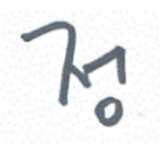
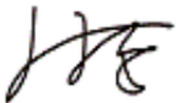


APPROVAL SHEET

ITEM	SK Broadband Bluetooth Remote
DESCRIPTION	Smart3 STB
PART NUMBER	BRM-BA02
RS MODEL	RD12D00
BUYER	SKB
DATE	2020.12.29
RCU VERSION	1.4
DOC VERSION	1.2

MAKER : REMOTE SOLUTION CO.,LTD.

Writer	EE	ME	Design	Software	Approval
					
2020.12.29	2020.12.29	2020.12.29	2020.12.29	2020.12.29	2020.12.29

DATE : 2020.12.29

REMOTE SOLUTION CO.,LTD.

FACTORY & HEAD OFFICE

92,CHOGOKRI, NAMMYUN, KIMCHON CITY, KYUNGBUK, KOREA

TEL : +82-54-420-4520

FAX : +82-54-420-4530

--

RCU Ver	Doc Ver	Date	Change Part	Description	Page
1.1	1.0	20.07.23		Initial	
1.1	1.1	20.10.21	Design	- Google key Icon Position Change - Rubber Silk Color Change(RS) - Back Label Change [OK] -> [▶II] Smart 2 -> deletion	27~31
1.4	1.2	20.12.29	Design	Change the printing specification of the back label after applying the QR code	27~31
			Software	LED scenario was changed by Stuck key	9~17

Product Design



REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	SPECIFICATION (TRANSMITTER REMOCON)	MODEL NO :	1
REFORM :		RD12D00	62
DECISION :			

==== INDEX =====

NO	CONTENTS	PAGE
1.	Application Range	2
2.	Product Specifications	2 ~ 6
3.	Reliability Tests	7 ~ 8
4.	Software Specification	9 ~ 19
5.	Part List (Mechanical , Electronical)	20 ~ 21
6.	Schematics	22 ~ 24
7.	PCB Diagram	25 ~ 27
8	PCB Outline Specification	28
9.	Design Specification	29 ~ 32
10	Mechanical Specification	33 ~ 47
11.	Packaging Specification	48
12	Assembling Specification	49
13	Rubber Tension Test	50
14	Manufacturing Process Flow Chart	51 ~ 53
15	Manufacturing Control Plan	54 ~ 55
16	TV Brand List	56 ~ 59
17	Grouping brand list	60~62

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	SPECIFICATION (TRANSMITTER REMOCON)	MODEL NO :	2
REFORM :		RD12D00	62
DECISION :			

1. Coverage : This product is manufactured as a remote solution and this specification applies to SK Broadband Smart2/3 STB remote control.

2. Product Specifications

2-1 Mechanical

2-1-1 Appearance

- 2-1-1-1 There should be no issue for Button Locking
- 2-1-1-2 There should be no stiff and looseness when opening or closing the battery cover
- 2-1-1-3 There should be no issue for attachment of label
- 2-1-1-4 There should be no spread of printing in RCU
- 2-1-1-5 There should be no warpage in RCU
- 2-1-1-6 There should be no stick effect from rubber
- 2-1-1-7 Spring turn count should be matching to Spec
- 2-1-1-8 There should be no electricity issue because of deformation of spring
- 2-1-1-9 Spring should be horizontal when inserting the Battery
- 2-1-1-10 Edge of Spring should be rounded
- 2-1-1-11 There should be no sharpness in case
- 2-1-1-12 The Printing of product should be same as product specification
- 2-1-1-13 When 5Kg of force is applied to each part of the body for 3 seconds, there should be no structural defects such as destruction
- 2-1-1-14 No other specific matters

2-1-2 Decomposition Structure

- 2-1-2-1 Confirmation of internal parts after disassembly should match specification (drawing)
- 2-1-2-2 There should be no abnormality when confirming the incorporation of components and soldering condition after disassembly
- 2-1-2-3 There should be no touching of Mechanical parts and Electrical parts
- 2-1-2-4 It should match the drawing (specification) when comparing with the parts list
- 2-1-2-5 PCB Print contents should match the drawings
- 2-1-2-6 Circuit components should use specified standard products
- 2-1-2-7 The Carbon Contact should not have Flux

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	<u>SPECIFICATION</u> (TRANSMITTER REMOCON)	MODEL NO :	3
REFORM :		RD12D00	62
DECISION :			

2-1-3 Button Specification

2-1-3-1 Touch Feeling : There is no defect when key button is pressed vertically

2-1-3-2 Operating Force : Metal Dome 130g±20g

Rubber Key : Less then 220g±30g (Small Key)

Rubber Key : Less then 250g±30g (Large Key)

2-1-3-3 Operating distance : 0.5±0.1 mm

2-1-3-4 Return force : more then 40% of the operating force Spec[Key center measurement]

2-1-3-5 Load: There should no defect PCB and other general , when applied for 3 seconds
with a force of 3Kg vertically

2-1-4 Battery Specifications

2-1-4-1 There should no defect when battery injecting and ejecting

2-1-4-2 There should no defect of electronical contact when battery insert

2-1-4-3 Gap distance : Gap distance between (+) side and (-) side should be less than 0.4mm

2-1-4-4 Battery should not be energized in reverse

2-1-4-5 There should no battery heating or deformation of the mechanic when reversed
battery inserting

2-1-4-6 There should be no problem when checking battery compatibility by manufacturer
[Compatibility by Size: AAA(L=44.2~43.4, Φ10.5 ~9.5)] , AA (L=50.5~49.0 , Φ14.5 ~ 13.5)]

2-1-5 Dimension

Outside dimension of the product : must meet individual approval specs (overall Length Tolerance:±0.8)

GAP (standard 0.3 mm) - GAP: Front knob and side gap should be less than 0.6 mm.

However, only the total length is measured during import inspection

Product Size : 48mm*175mm*23mm

Weight : 131.7(±2)g (With AA Battery x 2EA)

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	SPECIFICATION (TRANSMITTER REMOCON)	MODEL NO :	4
REFORM :		RD12D00	62
DECISION :			

2-2 Electrical properties

2-2-1 General Operating Test

2-2-1-1 There should be no problem in Button operation

2-2-1-2 In case of remote controller with Multi Brand, there should be no problem in operation by each other maker

2-2-1-3 Other buttons does not work when Button is operated

2-2-1-4 There should be no abnormality in continuous key operation

2-2-1-5 In case of various LEDs, there should be no problem when checking the brightness and blurring. [Set limit sample if necessary]

2-2-2 Current consumption

function	enter	Condition	SPEC		
			2.2V	2.5V	3.0V
Before leakage current pairing	Leave for 1 minute after power is applied	Average	20uA Below	20uA Below	20uA Below
After leakage current pairing	Leave for 1 minute after power is applied	Average	50uA Below	50uA Below	50uA Below
IR transmission	TV Volum (+) button 1 minute movement	Average	30mA Below	30mA Below	30mA Below
RF transmission	Volum (+) button 1 minute movement	Average	5mA Below	5mA Below	5mA Below
Buzzer	Text erase + 4	Peak	60mA Below	60mA Below	60mA Below
Backlight	Remote control angle 40° or more	Peak	OFF	20mA Below	20mA Below
Voice search	Voice search button	Peak	10mA Below	10mA Below	10mA Below

2-2-3 High Voltage : When inputting 3.4V voltage, there should be no abnormality in remote control key operation

2-2-4 IR LED Current(2ohm) : Over 300mA (2 Battery)

2-2-5 Power Consumption : Less then 300mW (Battery 3.0V)

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	<u>SPECIFICATION</u> (TRANSMITTER REMOCON)	MODEL NO :	5
REFORM :		RD12D00	62
DECISION :			

2-2-6 Oscillation frequency : Input Voltage : D.C 3.0V (Power supply 3.0V)
: 40.00 Mhz $\pm$ 10ppm

2-2-7 Oscillation stop voltage: Less than 1.9V

2-2-8 All Key Operation Test

2-2-8-1 All Key operation is abnormal or not checked

2-2-8-2 There should be no abnormality when operating each key ON / OFF more than 10 times
[ON / OFF every 1 second]

2-2-9 Decompression / Boost Operating Voltage

2-2-9-1 There should be no problem in operation when repeating 5 times at 2.2V ~ 3.4V

2-2-9-2 Check the voltage at 0V starting operation

2-2-9-3 Check the operation stop voltage at the voltage drop from 2.2V
[However, when there is no regulation, it should be less than 2.2V]

2-2-10 Contact resistance

2-2-10-1 Conduction / Carbon is inspected according to specification
[Conduction: 200 Ω or less / Carbon: 300 Ω or less]

2-2-11 Transmission Format (Output Wave Form)

2-2-11-1 Format : uPD6122

2-2-11-2 Carrier : 37.9kHz $\pm$ 3%

2-2-11-3 Frame : Interval(TF) : 108ms $\pm$ 3%

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	SPECIFICATION (TRANSMITTER REMOCON)	MODEL NO :	6
REFORM :			
DECISION :		RD12D00	75

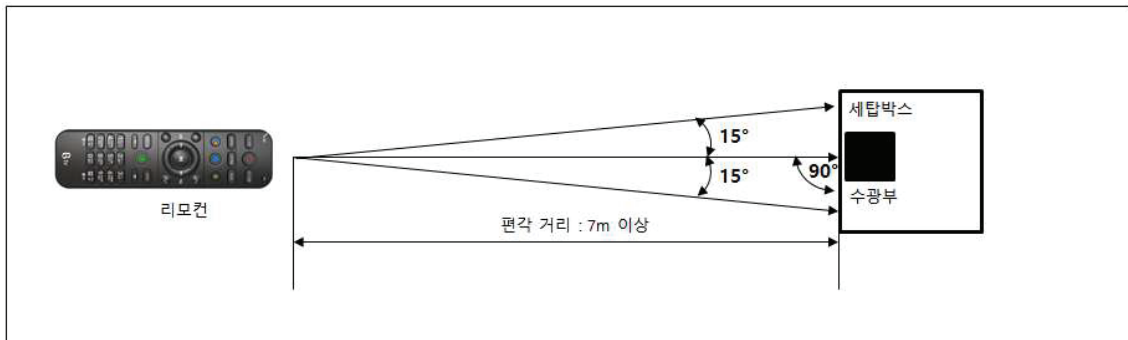
2-2-12 Operating distance and declination Operating distance:

2-2-12-1 Horizontal deflection (on optical axis) Straight line distance

When the receiver of the SET and the Remote Control Unit are horizontally or vertically on the optical axis



2-2-13-2 Remote control unit reference Horizontal deviation 15 ° (left, right, top, bottom) reaching distance (SET fixed)



2-2-12-3 RF straight line reach

RF Button : 7m

RF Voice transmission: 7m

- Measure using the buyer's set-top box. (Illumination : 200Lux, Temp. +25°C)

2-2-13 Buzzer Spec

Decibel : Measured at 10Cm distance using decibel meter: 85dB ±10dB [Applied voltage 3.0V]
(Measured using 1KHz test sound: 75±6dB)[Applied voltage 3.0V]

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	<u>SPECIFICATION</u> (TRANSMITTER REMOCON)	MODEL NO :	7
REFORM :			
DECISION :		RD12D00	62

3. Environmental characteristics

3-1 Printing test

3-1-1 Eraser test

3-1-1-1 No abnormality by carrying out the round trip 50 times with the load of 1.6Kg with the eraser

3-1-1-2 There should be no abnormality by scratching the printed surface with the fingernail 5 times.

3-1-2 Tape Test

3-1-2-1 After printing, coating area is attached with Tape with 1Kg load, it is peeled at 45 ° and tested after 3 times test

3-1-3 Alcohol test

3-1-3-1 Gently apply alcohol to the gauze and perform 20 ~ 50 reciprocations with a load of 1 kg.
(CASE: 20 times, RUBBER: 50 times)

3-1-4 Coating property

3-1-4-1 After leaving 2HR at room temperature, 3M SCOTCH Brand No. 600 or more TAPE equivalent or better After close contact, do not pull instantly at 15° from flat surface.

3-2 Reliability Test

3-2-1 Load Life Test

3-2-1-1 After inserting the batteries and operating at a rate of 30 ~ 60 times per minute and operating 100,000 times : There should be no abnormality in function when inspecting.

3-2-2 High temperature operation test

3-2-2-1 50 ° C $\pm$ 3 ° C, humidity 65%, and left for 24 hours

The operation inspection shall be carried out at intervals of 12 hours, so that there should be no abnormality in function and appearance

3-2-3 Low-temperature operation test

3-2-3-1 Put a rated load in a thermostat of -5 $\pm$ 3 ° C and leave it for 24 hours

The operation inspection shall be carried out at intervals of 12 hours, so that there should be no abnormality in function and appearance.

3-2-4 High temperature and high humidity operation test

3-2-4-1 Leave at rated temperature of 50 $\pm$ 3 ° C and humidity 80% for 24 hours

The operation inspection shall be carried out at intervals of 12 hours, so that there should be no abnormality in function and appearance.

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	SPECIFICATION (TRANSMITTER REMOCON)	MODEL NO :	8
REFORM :		RD12D00	62
DECISION :			

3-2-5 temperature preservation test

- 3-2-5-1 Leave in a thermostatic chamber at 70 ± 3 ° C for 48 hours in a no-load state, and leave it at room temperature and humidity for 1 hour
There should be no abnormality in function and appearance at the time of inspection

3-2-6 Cold storage test

- 3-2-6-1 Allow to stand for 48 hours in a no-load state in a thermostat at -20 ± 3 ° C for 1 hour
There should be no abnormality in function and appearance at the time of inspection

3-2-7 High temperature and high humidity preservation test

- 3-2-6-1 Temperature 50 ± 3 °C Leave in a constant temperature chamber of 95% humidity for 48 hours in a no-load state, and leave for one hour at normal temperature and humidity
There should be no abnormality in function and appearance at the time of inspection

3-2-8 Thermal shock test

- 3-2-8-1 Temperature: 70 ± 3 °C ~ -20 ± 3 °C, 50 cycles at intervals of 30 minutes, left at room temperature and humidity for 1 hour
There should be no abnormality in function and appearance at the time of inspection.

3-2-8 Vibration test

- 3-2-8-1 Vibration frequency: 20Hz ~ 2000Hz ~ 20Hz / 1Cycle Exact width: 1.5 ~ 3mm, Peak acceleration: 20 minutes each in X, Y and Z directions
There should be no abnormality in examination

3-2-9 Drop Test

- 3-2-9-1 Tested on Hardwood 6 times, once every 4 times [Dropping at 100cm after battery insertion]
3-2-9-1-1 No Top / Bottom Widening and Crack
3-2-9-1-2 No defective energization due to spring deformation
3-2-9-1-3 There should be no stick phenomenon due to the rubber deviation.
3-2-9-1-4 There should be no other unusual phenomenon.

3-2-10 Static test

- 3-2-10-1 Place the R / C with the battery inserted on the copper plate and perform the static test
3-2-10-1-1 ± 10 kV : No problem in operation
3-2-10-1-2 ± 12 kV : No destruction

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	SPECIFICATION (TRANSMITTER REMOCON)	MODEL NO :	9
REFORM :			
DECISION :		RD12D00	62

4. Software Specification (1/9)

RCU Key code table

SKB Android TV STB RCU Device Name : BRM_BA02_XXX *Remotesolution Device Name : BMM_BA02_XXX *moss Device Name : DUS_BA02_XXX *moss									
Position	No	Key	Code		RF(BLE)		USB HID Usage Name		Description
			MODE1 CUSTOM 0x007F	MODE2 CUSTOM 0x05A0	Page	Usage ID	Keyboard Page (0x07)	Consumer Page (0x0C)	
Front	1	동영상원 [Main Power]	Btv power + TV power	Btv power + TV power					order: Btv power + SKB TV power+ VER + SKB
	2	TV 전원[TV Power]	[0x02FD]+[0x08F7]	[0x02FD]+[0x08F7]					Dedicated TV only key Default Samsung LG
	3	Btv 전원 [Btv Power]	0x01FE	0x01EF	0x07	0x000100			only IR output sending IR or BT by R/BT mode changing
	4	채널가기	0x08A7	0x087A	0x07	0x005800			현재채널 -> 바로가기 변경(Rev0.13)
	5	신호채널 [Favorite CH]	0x05A0	0x058A	0x07	0x005800			
	6	편성표 [Program]	0x05D2	0x05D9	0x07	0x005D00			
Side	7	외부입력 [Source]	[0x01FE]+[0x0BF4]	[0x01FE]+[0x0BF4]					dedicated TV only key Default Samsung LG [Source] Now keys is working TV
	8	조음기 [Mute]	0x45BA	0x45AB	0x07	0x004500			
	9	TV 음량 [TV Vol+]	[0x07F9]+[0x02FD]	[0x07F9]+[0x02FD]					Dedicated TV only key Default Samsung LG
Front	10	TV 음량 [TV Vol-]	[0x08F4]+[0x03FC]	[0x08F4]+[0x03FC]					
	11	Google Assistant	0x042B	0x04B2	0x0C	0x0221			AC Search
	12	홈 [Home]	0x02FD	0x02DF	0x07	0x000200			order: HOME -> BRK - BATT INFO
	13	Zem KIDS	0x59A6	0x596A	0x07	0x005900			
	14	음량+ [VOL+]	0x43BC	0x43CB	0x07	0x004300			
	15	음량- [VOL-]	0x42BD	0x42DB	0x07	0x004200			
	16	▲ [UP]	0x49B6	0x496B	0x07	0x004900			
	17	▼ [DOWN]	0x4A85	0x4A5B	0x07	0x004A00			
	18	◀ [LEFT] / ▶ [RIGHT] (나비키)	0x4B84	0x4B4B	0x07	0x004B00			
	19	▶ [RIGHT] / ◀ [LEFT] (나비키)	0x4CB3	0x4C3B	0x07	0x004C00			
	20	OK / (채널/정지/정지) [PLAY/PAUSE]	0x46B9	0x469B	0x0C	0x0041			Menu Pick
	21	채널 + [CH+]	0x40BF	0x40FB	0x07	0x004000			
	22	채널 - [CH-]	0x41BE	0x41EB	0x07	0x004100			
	23	이전 [Prev]	0x4EB1	0x4E1B	0x07	0x004E00			
	24	나가기 [Exit]	0x34CB	0x34BC	0x07	0x003400			
	25	마이크 [Mic]	0x012E	0x01E2	0x07	0x002300			See "Hid voice search code" in RF Protocol sheet
	26	◀ ◀ [2x LEFT]	0x609F	0x609F	0x07	0x005000			
	27	▶ ▶ [2x RIGHT]	0x639C	0x63C8	0x07	0x006300			
	28	1	0x21DE	0x21ED	0x07	0x002100			
	29	2	0x22DD	0x22DD	0x07	0x002200			
	30	3	0x23DC	0x23DC	0x07	0x002300			
	31	4	0x24B8	0x24B8	0x07	0x002400			
	32	5	0x25DA	0x25AD	0x07	0x002500			
	33	6	0x26D9	0x26D9	0x07	0x002600			
	34	7	0x27D8	0x27D8	0x07	0x002700			
	35	8	0x28D7	0x28D7	0x07	0x002800			
	36	9	0x29DE	0x29ED	0x07	0x002900			
	37	* [존치자음] [Delete]	0x2AD5	0x2AD5	0x07	0x002A00			
	38	0	0x209F	0x20FD	0x07	0x002000			
	39	빠른 전환 [Change]	0x2BD4	0x2BD4	0x07	0x002B00			
Special Key Code	40	Normal Battery	0x3AC5	0x3AC5	0x07	0x003A00+0x00FFFF			
	41	Low Battery	0x3BC4	0x3BC4C	0x07	0x003B00+0x00FFFF			
	42	Empty Battery	0x3CC3	0x3CC3C	0x07	0x003C00+0x00FFFF			
	43	EarJack-Insert	0x3DC2	0x3DC2C	0x02	0x003D00+0x00FFFF			When the earphone jack is inserted(BT Connected)
	44	Break Data Code	0xFF00	0xFF00	0x07	0x00FFFF			IR: only Home key, BT: all keys
	45	RCU Ver#3	0xF310 ~ 0xF314	0xF310 ~ 0xF314	0x07	0x00F380 ~ 0x00F384 + 0x00FFFF			specific code by RCU manufacturer(RS) 0xF300~0xF30A: BT02 (UHD earphone1) 0xF310~0xF314: BT06 (UHD earphone2 - BLE) 0xF320~0xF324: BT03 (new Smart STB) 0xF330~0xF334: BT05 (surround STB) 0xF340~0xF344: BT07 (UHD earphone3 - BLE) 0xF350~0xF354: BT08 (AI STB - BLE) 0xF360~0xF364: BT09 (Kids RCU - BLE) 0xF370~0xF374: BA01(Android RCU - BLE) 0xF380~0xF384: BT10(AI 2 STB - BLE) 0xF3A0~0xF3A4: BT11(AI 2 STB - BLE) * lower 4bit is version code (0~A)
	46	RCU Ver#4	0xF4A0 ~ 0xF4A4	0xF4A0 ~ 0xF4A4	0x07	0x00F4A0 ~ 0x00F4A4 + 0x00FFFF			specific code by RCU manufacturer(Movcon) 0xF400~0xF40A: BT02 (UHD earphone1) 0xF410~0xF414: BT06 (UHD earphone2 - BLE) 0xF420~0xF424: BT03 (new Smart STB) 0xF430~0xF434: BT05 (surround STB) 0xF440~0xF444: BT07 (UHD earphone3 - BLE) 0xF450~0xF454: BT08 (AI STB - BLE) 0xF460~0xF464: BT09 (Kids RCU - BLE) 0xF470~0xF474: BA01(Android RCU - BLE) 0xF480~0xF484: BT10(AI 2 STB - BLE) 0xF4A0~0xF4A4: BT11(AI 2 STB - BLE) * lower 4bit is version code (0~A)
	47	RCU Ver#5	0xF510 ~ 0xF514	0xF510 ~ 0xF514	0x07	0x00F580 ~ 0x00F584 + 0x00FFFF			specific code by RCU manufacturer(UEI) 0xF500~0xF504: BT07 (UHD earphone3 - BLE) 0xF550~0xF554: BT08 (AI STB - BLE) 0xF560~0xF564: BT09 (Kids RCU - BLE) 0xF580~0xF584: SR01 (voice stick - BLE)
	48	Setup-Start	0x54A6	0x548A	0x02	0x005400+0x00FFFF			Start-setup-code BT07 is deleted
	49	Setup-Stop	0x55AA	0x55AA	0x02	0x005500+0x00FFFF			Stop-setup-code BT07 is deleted
	50	Drag Up	0x8778	0x8787	0x07	0x008700+0x00FFFF			
	51	Drag Down	0x827D	0x82D7	0x07	0x008200+0x00FFFF			
	52	Drag Left	0x837C	0x83C7	0x07	0x008300+0x00FFFF			
	53	Drag Right	0x847B	0x84B7	0x07	0x008400+0x00FFFF			
	54	ends	0x857A ~ 0xFF00	0x85A7 ~ 0xFF00	0x07	0x008500+0x00FFFF			BT-press-three(RCU-lockends)
	55	Unlocks	0x8679 ~ 0xFF00	0x86B7 ~ 0xFF00	0x07	0x008600+0x00FFFF			BT-press-three(RCU-unlockends)
	56	Locked Voice	0xD2D2	0xD2D2					If BLE is disconnected

	Function	Key combination	Press time	Description
Setting mode	1	Unpairing	[*] + [Home]	3sec remove pairing information
	2	Re-Pairing	[*] + [H]	3sec try pairing after removing pairing information
	3	TV Set (Manual)	[B tv power] + [Source]	3sec setup your TV with the numbering keys
	4	TV Set (Auto Search)	[B tv power] + [Source]	3sec setup your TV using CH+/- key
	5	TV Set(Grouping)	[*] + [B tv power]	3sec setup your TV with CH+/- key in TV group
	6	IR Code Learn	[TV power] + [OK]	3sec BT0007 is not supported
	7	Code Read Out	[B tv power] + [Source]	3sec press [All menu] after entry setting mode
	8	Change IR Code mode	[*] + [B]	3sec Mode 1 -> Mode 2
	9	Change BT-IR mode (BT)	[*] + [1]	3sec
	10	Change BT-IR mode (IR)	[*] + [2]	3sec Not-allowed-pairing(skip-pairing)
	11	Factory Default	[*] + [3]	3sec
	12	Buzzer Test	[*] + [4]	3sec stop buzzer when press any key
	13	Drag Up	[*] + [UP]	Immediately
	14	Drag Down	[*] + [DOWN]	Immediately
	15	Drag Left	[*] + [LEFT]	Immediately
	16	Drag Right	[*] + [RIGHT]	Immediately
	17	RCU-lock/unlock	[H]	3sec
	18	Backlight On/Off	[*] + [5]	3sec On/Off toggle(Default: On). On: LED twice/Off: LED 4-times blink
	19	Android Bugreport	[BACK] + [OK]	3sec BACK is IR code, OK is BLE code, after 3sec LED blink 1 time

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22

REFORM :

DECISION :

SPECIFICATION

(TRANSMITTER REMOCON)

MODEL NO :

10

RD12D00

62

4. Software Specification (2/9)

SKB Android TV STB RCU RF Protocol

1. BLE Device

BT/BLE/UART (Bluetooth v4.2 Single-Mode BLE)

2. BLE Profile & Service

GATT

HID over GATT Profile

Findable Profile (Access) → Included IAS

HIDOVER Service

Realtek OTA Update Service

Non-Removable Service → Realtek mSBC uses HID because it is a HOGP type

BLE/Battery Service

DSD(Device Information Service)

Android/Android TV/Android TV/Android TV/Android TV

Set Service - TV auto setup & power input type

Bluetooth Information Service - undecoded

Device Management Service - undecoded

USC(Immediate Alert Service) - call RCU

LEDs Link Loss Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

Bluetooth Information Service - undecoded

10. Advertisement data format

GAP ADTYPE FLAG

Discovery Mode: LE General Discoverable Mode | BR/EDR Not Supported

GAP ADTYPE LOCAL NAME

see 6 section

GAP ADTYPE 18BIT COMPLETE

Service: 0x18 (2003)

GAP ADTYPE APPEARANCE

see 4 section

11. Scan response data format

GAP ADTYPE LOCAL NAME

see 6 section

GAP ADTYPE APPEARANCE

see 4 section

12. Connection Parameters

Connection interval(DLE)	Connection interval(Voice)	Connection interval(OTA)
Minimum: 2.5ms 11.25ms	Minimum: 2.5ms 11.25ms	Minimum: 2.5ms 11.25ms
Maximum: 2.5ms 11.25ms	Maximum: 2.5ms 11.25ms	Maximum: 2.5ms 11.25ms
Slave Latency: 499 133	Slave Latency: 499 133	Slave Latency: 0
Supervision timeout: 10sec	Supervision timeout: 10sec	Supervision timeout: 10sec

13. Advertising Interval

Pairing (1) ADV	Interval(Min)	duration
Step1	undirect	10ms
Step2	Standby state	20s
Reconnect (2) ADV_DIRECT	Interval(Min)	duration
Step1	direct (high duty)	1.87ms
Step2	direct (low duty)	30ms
Step3	direct (low duty)	1.5s

*When inserting/reconnecting a battery

Depending on the paired / un-paired state, the above scheme works.

If paired after RCU cold boot, high duty DIRECT ADV starts after 12 seconds regardless of whether or not there is a key input.

* When connecting, when entering Any Key during ADV_DIRECT.

Regardless of the current step, if there is a key input, it is immediately executed again from Step1 (high duty ADV_DIRECT).

14. BT key code interval

BT key press interval: 300ms (continuous key), 80ms (normal key)

BT release key code: 30ms

3. Vendor ID / Product ID

Vendor ID : 0x0050 (Realtek)

Product ID : 0x0003 (BAC)

4. GAP Appearance Value(Device Class)

0x01B0 : Generic Remote Control

5. BD Address

14 4E 34 xx xx (14 4E 34 assigned by RemoteSolution)

00 13 78 xx xx (00 13 78 assigned by Moun)

40 19 20 xx xx (40 19 20 assigned by Moun added)

6. Device Name

RM_XXXX_XXXX (BLE)

9 8 7 6 5 4 3 2 1

RM : RemoteSolution, MM : Moun, UE : UE

XXXX : MAC Address last 3 characters

7. Method of pairing

Just Works

8. Voice Feature

NALC: 15bytes mSBC (8bytes transmitted twice, 57+3 byte, 42 Extended IE not used)

ATV: 13bytes ACPCM (detected ATV Voice sheet)

9. HID protocol table

* HID key press & hold code on ATT - Report ID(0x00)

NAME	Field	Description	Values	Size	Direction
1	Opcode	Notification	0x1B	1byte	
2	Att Handle	Handle	0x0000 ~ 0xFFFF	2byte	RCU -> STB
3	Payload	Keycode	Usage ID	2byte	

Release key code: 0x00 00 00 00

* HID Consumer Key code on ATT - Report ID(0x01)

NAME	Field	Description	Values	Size	Direction
1	Opcode	Notification	0x1B	1byte	
2	Att Handle	Handle	0x0000 ~ 0xFFFF	2byte	RCU -> STB
3	Payload	Keycode	Usage ID	2byte	

Release key code: 0x00 00 00 00

* HID Voice Search code on ATT - Report ID(0x05)

NAME	Field	Description	Values	Size	Direction
1	Opcode	Notification	0x1B	1byte	
2	Att Handle	Handle	0x0000 ~ 0xFFFF	2byte	RCU -> STB
3	Payload	Reserved	0x00	1byte	
4	Payload	Start voice	0x01	1byte	
5	Payload	Keycode 2	0x01	1byte	

Release key code: 0x00 23 FF

* HID Mic Start on ATT - Report ID(0x06)

NAME	Field	Description	Values	Size	Direction
1	Opcode	Write Request	0x12	1byte	
2	Att Handle	Handle	0x0000 ~ 0xFFFF	2byte	
3	Payload	Reserved	0x00	1byte	STB -> RCU
4	Payload	MIC Start	0x01	1byte	
5	Payload	Keycode 2	0x00	1byte	

* HID Mic Stop on ATT - Report ID(0x07)

NAME	Field	Description	Values	Size	Direction
1	Opcode	Write Request	0x12	1byte	
2	Att Handle	Handle	0x0000 ~ 0xFFFF	2byte	
3	Payload	Reserved	0x00	1byte	STB -> RCU
4	Payload	MIC Stop	0x01	1byte	
5	Payload	Keycode 2	0x00	1byte	

* HID Mic Unpairing on ATT - Report ID(0x08)

NAME	Field	Description	Values	Size	Direction
1	Opcode	Write Request	0x12	1byte	
2	Att Handle	Handle	0x0000 ~ 0xFFFF	2byte	
3	Payload	Reserved	0x00	1byte	STB -> RCU
4	Payload	Unpaired	0x01	1byte	
5	Payload	Keycode 2	0x00	1byte	

The RCU removes the pairing information of the RCU when it receives the command from the STB.

* Voice data on ATT - Report ID(0x09)

NAME	Field	Description	Values	Size	Direction
1	Opcode	Notification	0x1B	1byte	
2	Att Handle	Handle	0x0000 ~ 0xFFFF	2byte	RCU -> STB
3	Payload	Voice data	0x00 ~ 0xFFFF	128byte	

* QuickSet data on ATT - Report ID(0x0A)

NAME	Field	Description	Values	Size	Direction
1	Opcode	Notification	0x1B	1byte	
2	Att Handle	Handle	0x0000 ~ 0xFFFF	2byte	RCU -> STB
3	Payload	Sequence	0x00 ~ 0xFF	1byte	
4	Payload	Data	0x00 ~ 0xFF	1byte	

* QuickSet data on ATT - Report ID(0x0B)

NAME	Field	Description	Values	Size	Direction
1	Opcode	Write Request	0x12	1byte	
2	Att Handle	Handle	0x0000 ~ 0xFFFF	2byte	STB -> RCU
3	Payload	Sequence	0x00 ~ 0xFF	1byte	
4	Payload	Data	0x00 ~ 0xFF	1byte	

B-SET Protocol

* I-Set Service Class UUID : 0000FFED-0000-1000-8000-00005F9B34F8

* I-Set Command - UUID : 0000FFED-0000-1000-8000-00005F9B

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	SPECIFICATION (TRANSMITTER REMOCON)	MODEL NO :	11
REFORM :		RD12D00	62
DECISION :			

4. Software Specification (3/9)

SKB Android STB RCU Operation Scenarios

BT mode: BLE connected, IR mode: BLE disconnected

Bluetooth pairing scenario (BLE ↔ A2DP) - In the unpairing state, pressing the voice search key on the remote control will transmit the pairing start IR code. Or, when the car jack is inserted (battery voltage > 2.4V), it transmits the pairing IR code. - After transmitting the IR code, the remote control enters Advertising Mode and switches to the pairing mode. - In Advertising Mode, LED blinks at 1s (ON: 250ms, OFF: 750ms) cycle. - Ignore entering the setting mode by voice search and key combination during pairing (however, unpairing and repairing are supported) - When the IR Trigger Code is received from the STB, it searches for Bluetooth devices and tries to pair with the remote control BLE. After BT pairing is completed, CSR8630 (after Audio BT) of the remote controller enters Discovery Mode and switches to pairing mode. After pairing BT in STB, search for additional Bluetooth devices and try to pair with Audio BT. - When the audio BT is successfully paired with the remote control, LED Blink 5 times at 200ms (ON: 100ms, OFF: 100ms) cycle. - The remote controller ends Advertising after 20 seconds in BLE Advertising mode. And, Audio BT Discovery does not. After 20 seconds in the Audio BT Discovery mode, the Discovery mode is terminated, and BT Unpair is completed and the pairing scenario. - LED OFF when pairing fails
Bluetooth pairing reset (Unpairing) scenario - Press the [*] + [Home] keys for 3 seconds - When BT Unpair is completed normally, LED blinks 5 times quickly (ON: 100ms, OFF: 100ms) → When BT Unpair is completed normally, Power Off Audio BT. → Audio stream If connected, disconnect and proceed with Unpair.
Bluetooth re-pairing scenario - Press the [*] + [#] keys for 3 seconds - Bluetooth pairing reset (Unpairing) operation in progress - Bluetooth pairing operation in progress (regardless of the existing pairing)
Operation scenario when not paired - Regardless of whether pairing is successful, all keys except voice search key operate as IR. - Attempt pairing when performing the following operation. - Voice search key input - Enter [*] + [#] for 3sec Insert car jack (battery voltage > 2.4V).
Operation scenario when paired - TV key (TV power / TV volume / external input) operates irrespective of whether pairing is successful or not. The integrated power key is operated by IR. (B tv + TV). B tv power key operates by IR. - All other keys operate as BT. (But TV power / volume / external input key works only with IR) - In the case of BT disconnection in pairing state, all keys operate as IR.
All power operation scenario - When the [Integrated Power] button is input, it is output in the following order. Btv power cord -> TV power cord (toggle, discrete, learning) -> RCU version code --> iSet Macro (optional) - TV power cord classification - Toggle: When the TV power cord is toggled during manual setting or iSet setting - Discrete: When the TV power cord is discrete by the iSet setting - IR learning: In case of learning IR on the [TV power] button - iSet Macro - Output when iSet is set and external input code is discrete code * If iSet is interlocked, see Section 4 of the "iSet Operation Scenario" sheet. - When iSet is not set 1. BTV Power Code -> Break Code -> TV Code -> RCU Ver Code RCU ver information can be transmitted by DIS (Device Information Service). RCU Ver code is reviewed for deletion (TBD). 2. Default TV Code: Samsung LG batch code transmission - When setting iSet 1. BTV Power Code -> RCU Ver Code -> iSet linkage operation -> iSet TV power supply code (ON or OFF) RCU ver information can be transmitted by DIS (Device Information Service). RCU Ver code is reviewed for deletion (TBD). 2. Determine if a trigger code is required for iS operation (TBD). 3. Send TV Code when BT connection is disconnected Code output sequence: BTV power -> RCU ver -> iS TV power (toggle) 4. Even when changing from BT mode to IR mode, iSet linkage operation. * DIS is not used in the integrated power supply scenario, and will be used for other purposes (compared to ota version) in the future. - When the TV is powered by IR learning 1. Use the last set setting. 2. Ex) If IR learning is done at the end, the value is also used for integrated power supply. iSet MACRO is not used.
Battery information transmission scenario - Battery level transmission when the home button is input (in BT mode, BT / IR mode, IR code) - Detect voltage range: 1.8V ~ 3.2V divided into 3 levels (Empty / Low / Normal) 1. Normal: 2.4V or more-green LED 2. Low: More than 2.2V ~ less than 2.4V-red LED 3. Empty: less than 2.2V-red LED - Battery level transmission when BT Connect (Pairing or Reconnecting) 1. Battery level means key code (Normal, Low, Empty) - After RCU booting, after about 40ms after any key release, transmit the battery status (3 step code). 1. However, the integrated power, TV power, TV volume +/-, TV external input, home, microphone, GA (BA02) keys are excluded from this operation. - Battery information is not transmitted for key release that occurs after entering pairing mode. - After the key is released, it is applied up to 10 times based on the battery information transmission. (If key input occurs before sending the battery information code, the input key code output is given priority.) 1. If BT is connected 10 times (battery code) before and battery information is transmitted, battery information is not transmitted for the key release that occurs thereafter. - Battery voltage should be transmitted in level [%] and follow BAS specification. 1. 1.8 V or less: 0% 2. 3.2V or higher: 100% 3. The voltage between the above voltages is converted as a percentage.

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	SPECIFICATION (TRANSMITTER REMOCON)	MODEL NO :	12
REFORM :		RD12D00	62
DECISION :			

4. Software Specification (4/9)

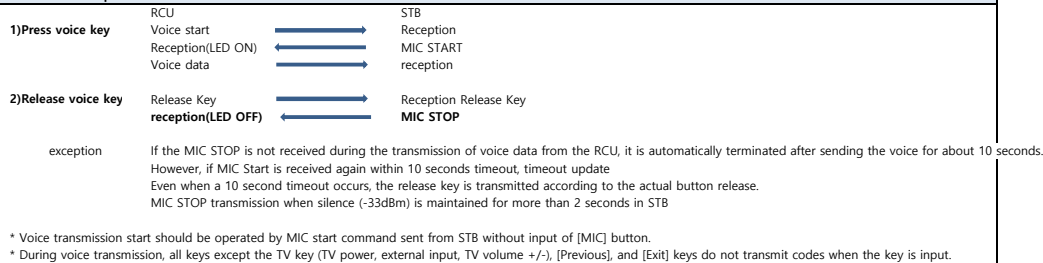
RCU Low Battery operation scenario

1. Low Voltage: 2.2V or more ~ less than 2.4V
2. RED LED ON when key code is transmitted at low voltage
3. No change in BT / IR mode
4. ~~Restrict audio BT (Streaming) operation at low voltage (maintain while streaming is in progress)~~
5. ~~After inserting the ear jack, the low voltage battery level code is output (usage limit pop-up display), (in BT mode in BT / IR mode in IR code)~~
6. OTA upgrade restrictions

RCU Empty Battery operation scenario

1. Empty Battery: Less than 2.2V
2. RED LED ON when key code is transmitted during empty voltage
3. BT / IR mode maintenance
4. ~~AD2P operation restriction (STOP during use), Empty Battery Code output when earphone is inserted~~
5. When the voice search key is input, the empty battery code is output. Do not transmit Mic Start
6. Empty Battery Code output when pairing is attempted. No pairing code sent
7. No cut-off voltage. Operates in empty until the battery runs out

Voice Transmission operation scenario



Drag Mode

1. * When the key + four-way key is combined, drag works as the four-way key (response to drag operation to use the web browser)
 In the process of entering the first drag mode, no break code is transmitted when one key is input while another key is input.
 For BT mode / IR mode key code definition, refer to the special key code in the CodeTable sheet.
 < Android key value of drag mode >

Key Name	Scancode	Android Keycode
Drag Up	0x136	KEYCODE_BUTTON_L1
Drag Down	0x137	KEYCODE_BUTTON_R1
Drag Left	0x138	KEYCODE_BUTTON_L2
Drag Right	0x139	KEYCODE_BUTTON_R2
2. When any one key is released after key combination, code transmission stops without sending break code.
3. When drag key combination again, send the corresponding key code (drag mode up / down / left / right)

BLE/IR Mode change operation scenario

- This concept is different from IR transmission when unpaired or disconnected.
- Factory Default: BLE mode.
- How to switch modes**
- BLE mode: [*] + [1] BLE mode when input for 3 seconds. LED 2 times Blink (ON: 250ms, OFF: 250ms)
 - IR mode: [*] + [2] IR mode switching when input for 3 seconds. LED 4 times Blink (ON: 250ms, OFF: 250ms)
- IR mode operation**
- IR transmission when a button is pressed. However, when the [Microphone] button is pressed, the voice is transmitted.
 - BT connection must be maintained and attempted to reconnect (Find Me)
 - ~~-When BT connection is made by attempting pairing by unpairing or repairing, it automatically switches to BT mode (maintains the previous mode in case of failure)~~
- BLE mode operation**
- Includes all operation scenarios except IR mode operation.
 - Maintains mode information during POR / repair.

Find me(Call RCU) operation scenario

- Using IAS (Immediate alert level service)
- Buzzer Well: See Buzzer Spec
- Backlight: Backlight is on while the buzzer is ringing in normal battery condition
- Output time: 1 minute
- Abort when inputting any button. (Output when the button is input)
- ~~Stopped buzzer sound when combining / disengaging earjack~~
- Periodic connection attempt is required in disconnected state. (TBD)
- After BT disconnection due to STB shutdown or link loss, the remote controller attempts to connect every 1.5 seconds.
- At this time, the average standby current consumed should be similar to the BT connection state.
- [*] + [4] Buzzer sound confirmation function when input for 3 seconds (test mode)

Factory Default operation scenario

- Factory default function by 2 key combination
- [*] + [3] Input for 3 seconds
- Initializes pairing information, TV setting information, BLE / IR mode information, iSet, IR learning contents, and manual setting of backlight On / Off.
- LED blink is processed in the same way as unpairing.

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22

REFORM :

DECISION :

SPECIFICATION

(TRANSMITTER REMOCON)

MODEL NO :

13

RD12D00

62

4. Software Specification (5/9)

OTA mode

- When requesting the battery level (BAS) of the OTA app, the remote control sends the battery level [%] value to the STB.
 - STB executes OTA only when the battery level of the remote control is 2.4V or higher.
 - STB shows a pop-up window indicating that OTA is impossible for other battery levels.
- Before upgrading, stop the audio stream.**
 - Before upgrade, turn off the back light.
- When the OTA is upgraded, the GREEN LED turns on.
 - Blink time may change later**
- LED operation for OTA result (Judging whether OTA was successful before rebooting after OTA is completed)
 - Success: GREEN LED blinks 3 times at 250ms intervals (ON: 250ms, OFF: 250ms)
 - * When the new f / w version and the old f / w version are different after the upgrade is completed
 - Failure: RED LED blinks 3 times at 250ms intervals (ON: 250ms, OFF: 250ms)
 - * If the new f / w version and the old f / w version are the same after completing the upgrade
 - * BT connection fails after entering OTA mode
 - * BT connection is lost when upgrading (Battery removal, STB shutdown)
- The OTA upgrade image is divided into app code and patch code.
 - App code image file name definition by manufacturer
 - * RS: BRM_BT11_Vxx_YYYYMMDD.bin
 - * MOVON: BMM_BT11_Vxx_YYYYMMDD.bin
 - Define patch code image file name (common to manufacturer)
 - * RTL_Bee2_Patch_Vxx.xx.bin
- OTA image creation uses Realtek MP_PackTool.

*** OTA AES256 key define by remote control manufacturer**

RS	MOVON
0x52,0x53,0x5f,0x52,0x44,0x31,0x32,0x43,	0x4D, 0x4F, 0x56, 0x4F, 0x4E, 0x20, 0x53, 0x4B,
0x28,0x53,0x4b,0x42,0x5f,0x42,0x52,0x4d,	0x42, 0x20, 0x52, 0x43, 0x55, 0x20, 0x42, 0x54,
0x5f,0x42,0x54,0x31,0x31,0x29,0x5f,0x41,	0x31, 0x31, 0x97, 0x0D, 0x8E, 0xEF, 0xDC, 0xD3,
0x49,0x32,0x5f,0x53,0x54,0x42,0x5f,0x58	0xD1, 0x11, 0xF6, 0x8E, 0x10, 0x60, 0xFB, 0x1A

*** Remote control manufacturer information**

Manufacturer	OTA Manufacturer Code (ASCII)
Address: 0x00002A00	BRM_BT11
Data Length: 8-bytes	MOVON
	BMM_BT11

*** Remote control version information location in RCU f/w**

Address: 0x00002908
Data Length: 4-bytes
- It is possible to obtain version information of images loaded from the

F/W VERSION

Offset(h)	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00000290	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
000002A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
000002B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
000002C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
000002D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

<리모트솔루션>

제조사 코드

<모본>

TV Setup scenario

1. Manual setting

1-1. [Btv power] + [External input] Press simultaneously for 3 seconds-> LED ON

TV start code transmission

1-2. 3-digit numeric button input (LED OFF when key input, LED ON when key release)

-> When the 3 digits entered are in the IR DB, the power off code of 3-Frame is transmitted; otherwise, the RED (regardless of battery level) LED is ON for 1 second and then the GREEN LED

-> However, when 0.0 is input, it is set as default (Samsung, LG) and at the same time, 3 times of LED Blink (ON: 250ms, OFF: 250ms), then the setting mode ends.

-> 1-2 ~ 1-3 can be repeated

1-3. Enter the [OK] key to complete the setting. At this time, LED 3 times Blink (ON: 250ms, OFF: 250ms)

TV termination code transmission

* Keys that can be entered except for numeric keys during manual setting

-> [TV power] key: Sends a TV power off code 3 frame corresponding to a 3-digit number when input.

-> [CH +/-] key: Switch to Auto search mode (search starts from next / previous of the current setting number)

-> When other keys are input, exit the setting mode with output of the TV synchronization end code.

2. Auto Search (full DB search)

2-1. [Btv power] + [External input] Press simultaneously for 3 seconds-> LED ON

TV start code transmission

2-2. Enter the [CH +] or [CH -] button.

-> Power off code transmission of 3-Frame (LED is OFF during code transmission, and remains ON when transmission is completed)

-> [CH +]: Power off code transmission of the next setting number

-> [CH -]: Power off code transmission of previous setting number

-> If the key is continuously input, the next or previous setting number is searched at about 500ms intervals and the power off code is automatically transmitted.

-> Even if the entire IR DB is looped, the search is still possible.

2-3. Enter the [OK] key to complete the setting. At this time, LED 3 times Blink (ON: 250ms, OFF: 250ms)

TV termination code transmission

* Searchable keys except [CH +] and [CH -]

-> [TV power] key: Sends the TV Power off code 3 frame of the set number searched when input.

-> Numeric keys: Switch to manual setting mode

-> When other keys are input, exit the setting mode with output of the TV synchronization end code.

3. Group Search (Brand DB search)

3-1. [Btv power] + Press one of [1] ~ [9] keys simultaneously for 3 seconds-> LED ON

TV start code transmission

3-2. Enter the [CH +] or [CH -] button.

-> Power-off code transmission of 3-Frame (LED is turned off during code transmission and keeps ON when transmission is completed)

-> [CH +]: Power off code transmission of the next setting number

-> [CH -]: Power off code transmission of previous setting number

-> If the key is continuously input, the next or previous setting number is searched at about 500ms intervals and the power off code is automatically transmitted.

-> Even if the IR DB of the group is looped, the search is still possible.

3-3. Enter the [OK] key to complete the setting. At this time, LED 3 times Blink (ON: 250ms, OFF: 250ms)

TV termination code transmission

* Searchable keys except [CH +] and [CH -]

-> [TV power] key: Sends the TV Power off code 3 frame of the set number searched when input.

-> When other keys are input, exit the setting mode with output of the TV synchronization end code.

* The power-off code of the 3-Frame that is output when setting may differ depending on the TV. If necessary, the power-off code must be output in more than 3-Frame.

* The waiting time for the setting mode is 15 seconds, and after this time, the setting mode ends with the TV sync code output. At this time, LED is blinked 10 times (ON: 100ms, OFF: 100ms).

-> Keep the previous setting.

* After completing the setting, iSet integration is not possible.

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	SPECIFICATION (TRANSMITTER REMOCON)	MODEL NO :	14
REFORM :		RD12D00	62
DECISION :			

4. Software Specification (6/9)

IR code mode changing

- Mode 1-> Mode 2 switching
 - 1-1. Press [*] + [9] keys simultaneously for 3 seconds
 - 1-2. Completed after 4 LED Blinks (ON: 250ms, OFF: 250ms)
- Mode 2-> Mode 1 switching
 - 2-1. Press [*] + [9] keys simultaneously for 3 seconds
 - 2-2. Completed after 2 LED Blinks (ON: 250ms, OFF: 250ms)

* IR code assignment after switching IR mode: see CodeTable

Code Read Out

This function reads the 3 digit number set on the TV.

- Press [Btv power] + [External input] key simultaneously for 3 seconds-> LED ON
 → ~~TV start code transmission~~
- Enter ~~[All Menu]~~[Program]-> LED OFF for about 1 second
- The set 3 digit number indicates LED Blink.
 - > LED Blink time for each digit (ON: 250ms, OFF: 250ms)
 - > LED OFF time between digits: 1 second
 - > Digit "0" blinks 10 times
- After the 3-digit setting number blinks, the TV sync exit code is transmitted.

* The waiting time for the setting mode is 15 seconds, and after this time, the setting mode is terminated with the TV sync code output. At this time, LED is blinked 10 times (ON: 100ms, OFF: 100ms)
 * Any key input is ignored while this function is being executed.

Back Light operating scenario

- ON condition
 - ON when remote pick-up or buzzer operation
 - ON when any key is input during audio playback (B / light is not ON when picked up)
 If key input continues, enters OFF mode after 2 seconds
 - OFF when Find me (buzzer) is running (must be OFF even when ON)
- ON time: It remains ON for 2 seconds, and OFF when there is no operation
 - 2 seconds extension when picking up before OFF
- Voltage range: 2.4V or more
 - At a voltage less than 2.4V, it does not turn on even if the pick up or buzzer operates.

* Detailed specifications: see "Backlight" tab

Stuck Key

If any key is pressed for a certain period of time, code transmission is restricted to reduce battery consumption.

- When any key is pressed for 2 minutes, the code (IR / BT) transmission is stopped.
 → ~~When QS-interlock key is input, code transmission stops after 30 seconds.~~
 -> In case of key combination in drag mode, code is stopped when pressed for 2 minutes.
- Link operation after entering Stuck Key mode
 - ~~LED OFF RED ON(OFF when all keys are released)~~
 - > Back light auto OFF, no reaction when pick up
 - ~~Automatic shutdown when A2DP working~~
 - ~~No operation when inserting ear jack~~

* Find me should work.

BackLight manual ON/OFF setup

You can manually control the On / Off setting of the backlight.
 Press [*] + [5] keys simultaneously for 3 seconds

- Backlight ON setting (default)
 - > When the backlight setting is Off, it is changed to the On state.
 - > Completed after 2 LED Blinks (ON: 250ms, OFF: 250ms)
- Set backlight OFF
 - > When the backlight setting is On, it is changed to the Off state.
 - > After 4 LED Blinks (ON: 250ms, OFF: 250ms)

Android Bug Report

- Set the Android Bug Report function.
 Press the [BACK] + [OK] keys simultaneously for 5 seconds
- > BACK key works as IR, and OK key works as BLE.
 - > After 3 seconds of pressing the combination key, the LED will blink once (ON: 250ms, OFF: 250ms).
 - > Bug Report starts after 2 seconds after 1 LED blink.

REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22	SPECIFICATION (TRANSMITTER REMOCON)	MODEL NO :	15
REFORM :			
DECISION :		RD12D00	62

4. Software Specification (7/9)

iSet operation scenario

This function is to set the TV manufacturer code of the remote control automatically by using the EDID information of the TV.

1. Scenario after pairing

- 1.1 After pairing is completed, STB sends power status information to the remote control.
 - * STB power OFF state: STB screen off command (0x02)
 - * STB power ON state: STB screen on command (0x03)The remote control stores the above information in memory and uses it for power and external input sync between STB and TV when the [Integrated Power] and [Btv Power] buttons are pressed.
 - 1.2 STB sends the iSet Start command (0x01) to the remote control and waits for a response from the remote control (0x0100).
 - 1.2.1 The remote control enables zero slave latency to speed up data reception (zero latency disable after success and failure (timeout)).
 - 1.2.2 The remote control has a timeout of 20 seconds after receiving the 0x01 command, in case there is no iSet operation of the STB.
When the timeout ends, the RCU responds with 0x0001.
 - 1.3 After receiving the response (0x0100) of the remote control, STB sends EDID raw data (256 bytes) of the TV to the remote control.
 - 1.3.1 STB is divided into 256 bytes of EDID data to be sent.
 - 1.3.2 After receiving EDID data, the remote controller responds with 0x0100 and restarts the 20-second timer.
 - 1.3.3 Check the received EDID length and if it exceeds 256 bytes, respond with 0x0007, end the 20-second timer, disable zero latency, and terminate the iSet.
 - 1.4 After sending all EDIDs, STB sends the iSet Stop command (0x00) command and ends the iSet task.
 - 1.4.1 The remote control disables the 20-second timer and disables zero slave latency.
 - 1.4.2 Validate some attributes as shown below.
 - * When the data length is less than 128 or the number of extension blocks is greater than 0 and the length exceeds 256
NG response code: 0x0107-> ISET_ERROR_CODE_INVALID_EDID_LENGTH
 - * Header information is wrong (first 8 digits of EDID data)
NG response code: 0x0104-> ISET_ERROR_CODE_INVALID_EDID_FORMAT
 - * When CheckSum is wrong
NG response code: 0x0102-> ISET_ERROR_CODE_CHKSUM_ERROR
 - * If HDMI OUI is wrong
NG response code: 0x0104-> ISET_ERROR_CODE_INVALID_EDID_FORMAT
 - 1.5 If the validity check is completed without abnormality, proceed as follows.
 - 1.5.1 When VID is "0"
- * Send OK response code (0x0005-> ISET_ERROR_CODE_UNKNOWN_VENDOR).
- * Save VID, PID, HDMI port number in NVM and exit iSet.
- 1.5.2 When VID and PID are searched in EDID TABLE (When the PID of the table is 0xFFFF, only VID is searched.)
- EDID TABLE example
- ```
/*=====
 * Table structure
 * vid[2], pid[2], set_no[2] // ; VID & PID 는 EDID raw data 순서로 기재한다.
 * end mark
 =====/
const byte IR_TV_EDID_TABLE[] = {
 TV_VID(0x4C20), TV_PID(0x9600), SET_NUM(341), // SAMSUNG(SAH) - LFD TV(국외 전광판/광고용)
 TV_VID(0x4C20), TV_PID(0xFFFF), SET_NUM(226), // SAMSUNG(SAH)
 TV_VID(0x1E60), TV_PID(0xFFFF), SET_NUM(227), // LG(GSH)
 TV_VID(0x2134), TV_PID(0xFFFF), SET_NUM(9), // HITACHI(HIT)
 TV_VID(0x2AC3), TV_PID(0xFFFF), SET_NUM(66), // JVC(JVC)
 TV_VID(0x4009), TV_PID(0xFFFF), SET_NUM(194), // SONY(SHY)
 TV_VID(0x3A09), TV_PID(0xFFFF), SET_NUM(95), // PANASONIC(HE1)
 TV_VID(0x5262), TV_PID(0xFFFF), SET_NUM(21), // TOSHIBA(TSD)
}
```
- In the table above, if SET\_NUM is not in F / W
- \* Send OK response code (0x0008-> ISET\_ERROR\_CODE\_UNKNOWN\_DEVICE).
  - \* Save the VID, PID, and HDMI port numbers in NVM (optional) and exit iSet.
- In the table above, if SET\_NUM is within F / W
- \* Send OK response code (0x0000-> ISET\_ERROR\_NONE).
  - \* VID, PID, and HDMI port numbers are stored in NVM.
  - \* LED 3 times Blink (ON: 100ms, OFF: 100ms) and iSet is finished.
- Note: The code of this setting number is used for power and external input synchronization between STB & TV.
- 1.5.3 When VID and PID are not searched in EDID TABLE
    - \* Send OK response code (0x0005-> ISET\_ERROR\_CODE\_UNKNOWN\_VENDOR).
    - \* Save VID, PID, HDMI port number in NVM and exit iSet.
  - 1.6 The TV field (3-byte) of the response code is described in detail in Section 6 below.

#### 2. Scenario when TV EDID is changed (TV change or HDMI port change)

Even if the previous EDID data (256 bytes) and the currently read EDID data 1 byte are different  
Proceed from Section 1.2 of "Post-Pairing Scenario".  
However, if the VID and PID are the same and the HDMI port is changed, there is no LED blink.

#### 3. Scenario after BT reconnection

- After the BT reconnects, the STB sends STB power status information to the remote control as in section 1.1 above.
- \* STB power OFF state: STB screen off command (0x02)
  - \* STB power ON state: STB screen on command (0x03)
- If the change of EDID is confirmed, follow item 2 above.
- After that, the STB sends EDID data to the remote control (always with or without change).

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 16 |
| REFORM :                 |                                                           | RD12D00    | 62 |
| DECISION :               |                                                           |            |    |

## 4. Software Specification (8/9)

### 4. Scenario according to STB [Integrated Power] button operation (BT connected state)

When the [Integrated Power] button is input while BT is connected, the TV power (toggle, ON, OFF) code is sent according to the current STB power status. Also, when it turns ON from STB OFF, it sends TV INPUT code 3 times repeatedly to switch HDMI port to STB.  
BT disconnected state is output in the order of STB power cord (IR)-> TV power toggle code-> STB version code (IR).

#### 4.1 Enter the [All Power] button

The remote control checks the existence of the "TV power ON and OFF" code (discrete) in the TV manufacturer's setting number set in the EDID table.

##### 4.1.1 When the TV power Discrete code (ON, OFF) is present, send the TV power cord as follows according to the STB power state.

STB power ON status: STB power cord (BT/IR) transmission -> TV power OFF code transmission -> STB version code (IR)

STB power OFF status: STB power cord (BT/IR) transmission -> TV power ON code transmission -> STB version code (IR) -> MACRO (TV INPUT)

\* MACRO output order

1. Send TV INPUT code 2 seconds after inputting [integrated power]

2. Send TV INPUT code 3 seconds after above 1

3. Transmit and terminate the TV INPUT code 5 seconds after the above 2

\* Macro output is available only when the TV INPUT code is discrete (no output when there is no discrete code)

\* During the TV INPUT code macro output, the LED turns ON.

\* If EDID is received during TV INPUT code macro output, macro output is stopped.

##### 4.1.2 Discrete code does not exist

STB power cord (IR)-> TV power toggle code-> STB version code (IR).

#### 4.2 STB screen ON / OFF command reception

Save screen status information from STB

\* During TV INPUT code transmission, when TV power OFF code is transmitted, TV INPUT code transmission is stopped.

### 5. Scenario according to STB [Btv power] button operation

If there is HDMI discrete code regardless of BT connection or not, send the TV INPUT code at the [Btv power] button to synchronize the external input.

#### 5.1 [Btv Power] button input

STB power cord (BT) transmission-> TV INPUT code transmission and termination after 1 second

#### 5.2 The remote control transmits the corresponding code when there is an HDMI discrete code of the set TV.

-No TV INPUT code transmission

### 6. i-Set Command Response Code "TV" Field Operation Scenario

This is a function to transmit the currently set TV tuning code to the STB, and the type and setting number set in the TV field (3-byte) are loaded.

#### 6.1 When receiving EDID of TV starting with i-Set Start cmd (0x01)

6.1.1 i-Set TV setup OK: "0x00" in TV Type field and synchronized code allocation by EDID in TV code field

TV Type: 0x00

TV Code: 0x0140 (320)-When the TV setting number set to EDID is 320

6.1.2 i-Set TV setup NG: Allocate the last set type (0x01 or 0x02) and tuned code in the TV Type field

Example 1: User manually tuned 350 times

TV Type: 0x01

TV Code: 0x015E (320)

Example 2: When the user has learned (Manual tuning code is 350)

TV Type: 0x02

TV Code: 0x015E (320)

#### 6.2 For STB request: i-Set Get TV code cmd (0x04)

6.2.1 When the remote control receives the above command (0x04) from the STB, it should send a response code within 5 seconds.

6.2.2 "Result" and "Error Code" fields are assigned as 0x01 and 0x00.

6.2.3 The "TV Type" field is assigned one of 0x00 (iSET), 0x01 (Manual), and 0x02 (IR Learning) according to the method in which the TV is tuned.

6.2.4 The "TV Code" field assigns the currently tuned code.

### 7. 기타

#### 7. Other

7.1 If TV manufacturer code is set manually after iSet setup

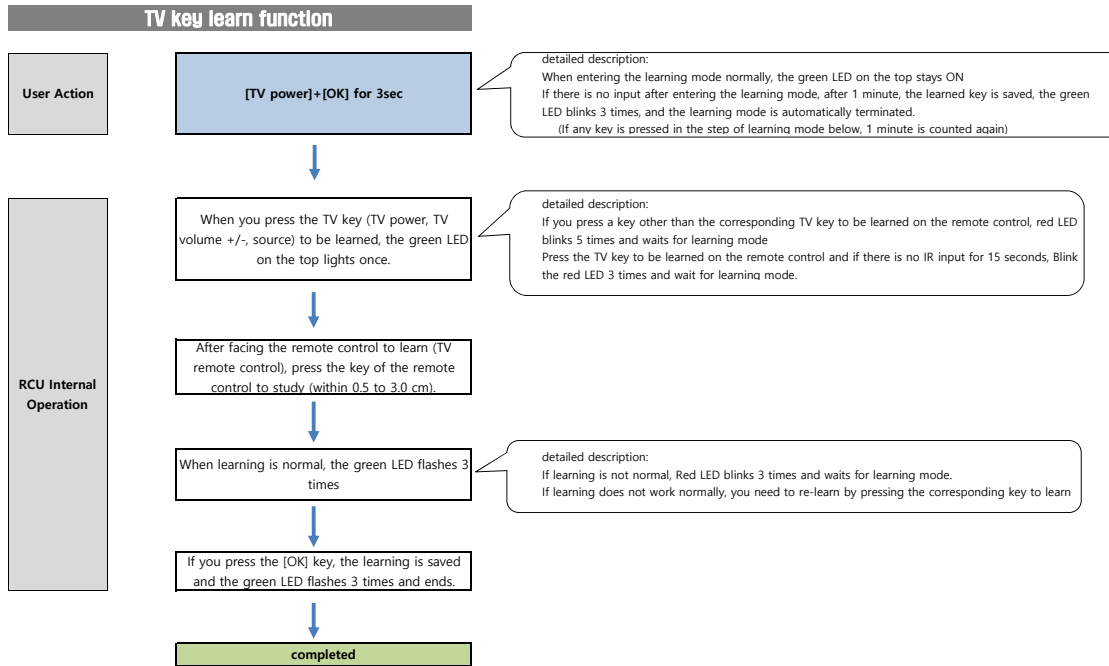
\* iSet function disable: Operates regardless of STB power status.

7.2 When VID & PID are connected to another TV, iSet setting and STB interlocking operation should be performed.

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 17 |
| REFORM :                 |                                                           | RD12D00    | 62 |
| DECISION :               |                                                           |            |    |

## 4. Software Specification (9/9)



\* However, when low battery (v2.4 or less), flashing of green LED is replaced with red

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 18 |
| REFORM :                 |                                                           | RD12D00    | 62 |
| DECISION :               |                                                           |            |    |

## 5. Part List

### 5.1 Mechanical List

| No. | Part Name        | Spec                                                              | Q'ty   | Maker                                 | 비고 |
|-----|------------------|-------------------------------------------------------------------|--------|---------------------------------------|----|
| 1   | TOP CASE         | ABS HF-0680, K21383(BLACK), SILK1                                 | 1      | 일상전자                                  |    |
| 2   | BOTTOM COVER     | ABS HF-0680, K21383(BLACK)                                        | 1      | 일상전자                                  |    |
| 3   | BATTERY COVER    | ABS HF-0680, K21383(BLACK)                                        | 1      | 일상전자                                  |    |
| 4   | IR WINDOW        | PC SC-1220R, 40697 B(D/RED)                                       | 1      | 일상전자                                  |    |
| 5   | CH VOL KNOB      | ABS HF-0680, K21383(BLACK), SILK1                                 | 1      | 일상전자                                  |    |
| 6   | INDICATOR LED    | PC LD7800, W1020J(MIKY) / TP-1020, LDW542(MILKY)                  | 1      | 일상전자                                  |    |
| 7   | SIDE KEY MUTE    | ABS HF-0680, K21383(BLACK), SILK1                                 | 1      | 일상전자                                  |    |
| 8   | SIDE KEY VOLUME  | ABS HF-0680, K21383(BLACK), SILK1                                 | 1      | 일상전자                                  |    |
| 9   | RUBBER KEYPAD    | SILICONE, COLOR2(CLEAR, YELLOW), SILK5, SPRAY2, LASER, SF COATING | 1      | RS HK<br>TAESUNG                      |    |
| 10  | METAL DOME SHEET | Φ5DR, 130G, 35KEY                                                 | 1      | 제이앤티텍                                 |    |
| 11  | (+)SPRING        | SUS 304 NI-CO Φ0.6                                                | 1      | 대성하이텍                                 |    |
| 12  | (-)SPRING        | SUS 304 NI-CO Φ0.6                                                | 1      | 대성하이텍                                 |    |
| 13  | COMMON SPRING    | SUS 304 NI-CO Φ0.6                                                | 1      | 신광스프링                                 |    |
| 14  | MESH             | MESH, RC56,0.05T                                                  | 1      | M.S International                     |    |
| 15  | PE BAG           | 80X265X0.08T, RECYCLE MARK                                        | 1      | 건아테크                                  |    |
| 16  | CARTON BOX       | 553*415*282 (80EA/1Box)                                           | 0.0125 | 대흥포장                                  |    |
| 17  | BACK LABEL       | BOPP,30X42,SILK2                                                  | 1      | 탐인쇄                                   |    |
| 18  | MANUAL           | SMILAR PAPER,250X170                                              | 1      | 아침인쇄                                  |    |
| 19  | LABEL            | ART PAPER, 16X4                                                   | 1      | 탐인쇄                                   |    |
| 20  | PASS LABEL       | ART PAPER,15X30,SILK2                                             | 1      | 탐인쇄                                   |    |
| 21  | TAPE             | TAPE, RB50                                                        | 1      | 제이앤티텍                                 |    |
| 22  | Alkaline Battery | ALKALINE BATTERY, 1.5V LR6, AA                                    | 2      | HUATAI<br>BEXEL<br>ROCKET<br>DURACELL |    |
|     |                  |                                                                   |        |                                       |    |
|     |                  |                                                                   |        |                                       |    |
|     |                  |                                                                   |        |                                       |    |
|     |                  |                                                                   |        |                                       |    |

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 19 |
| REFORM :                 |                                                           |            |    |
| DECISION :               |                                                           | RD12D00    | 62 |

## 5.2 Electronical Part List

| NO | Components Name            | Components Spec                                                                     | Manufacturer                                                     | Quantity | Reference                                                                                                    |
|----|----------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------|
| 1  | Antenna Chip               | ACA3216A1CCS                                                                        | Inpaq                                                            | 1        | ANT1                                                                                                         |
| 2  | Buzzer SMD                 | BM9027S<br>HR-9027BT3S2<br>KDM-09D-3V<br>BMY-2703                                   | FHD<br>Bosan<br>HS Tech                                          | 1        | BZ1                                                                                                          |
| 3  | Electrolytic Capacitor SMD | 47UF,16V,±20%,5053                                                                  | Samhwa<br>Samyoung                                               | 1        | CE1                                                                                                          |
| 4  | Ceramic Capacitor Chip     | 1.2PF,NP0,±0.25PF,1005                                                              | MURATA                                                           | 2        | C5,C6                                                                                                        |
| 5  | Ceramic Capacitor Chip     | 22PF,C0G,±5%,1005                                                                   | TDK                                                              | 1        | C2                                                                                                           |
| 6  | Ceramic Capacitor Chip     | 100PF,C0G,±5%,1005                                                                  | Samsung<br>YAGEO                                                 | 1        | C28                                                                                                          |
| 7  | Ceramic Capacitor Chip     | 150PF,X7R,±10%,1005                                                                 | Taiyo-uden                                                       | 1        | C27                                                                                                          |
| 8  | Ceramic Capacitor Chip     | 10NF,X5R,±10%,1005                                                                  | Darfon<br>samhwa                                                 | 1        | C34                                                                                                          |
| 9  | Ceramic Capacitor Chip     | 100NF,10V,X7R,±10%,1005                                                             | AVX                                                              | 11       | C7,C8,C9,C10,C11,C12,C21,C23,C25,C30,C31                                                                     |
| 10 | Ceramic Capacitor Chip     | 1UF,X5R,±10%,1005                                                                   | Kyocera<br>KEMET                                                 | 6        | C1,C17,C19,C20,C22,C24                                                                                       |
| 11 | Ceramic Capacitor Chip     | 2.2UF,X5R,±10%,1005                                                                 | Eyang<br>Fenghua                                                 | 1        | C18                                                                                                          |
| 12 | Ceramic Capacitor Chip     | 4.7UF,6.3V,X5R,±20%,1005                                                            | NIC Compenets                                                    | 2        | C13,C36                                                                                                      |
| 13 | Ceramic Capacitor Chip     | 10UF,6.3V,X5R,±20%,1005                                                             | Pilkcor<br>LRC                                                   | 6        | C14,C26,C29,C32,C33,C35                                                                                      |
| 14 | Switching Diode Chip       | 1N4148WS(SOD323)                                                                    | KEXIN<br>LRC                                                     | 1        | D1                                                                                                           |
| 15 | Schottky Chip              | 1KK2104(SOD123)<br>MBR0540W-HAF(SOD123FL)<br>MBR0540T1-D(SOD123)<br>MBR0540(SOD123) | PANJIT<br>KEC<br>IMS<br>Semtech<br>Diodes<br>Onsemi<br>Fairchild | 1        | D2                                                                                                           |
| 16 | NPN Transistor Chip        | MMBTSD123(SOT23)<br>STD123S(SOT23)                                                  | UTC<br>Vishay<br>First silicon                                   | 7        | Q1,Q2,Q3,Q4,Q5,Q6,Q7                                                                                         |
| 17 | IR LED SMD                 | BIR-HMC33M-TRC-SIDE(30DEG)                                                          |                                                                  | 1        | IR1                                                                                                          |
| 18 | Dual LED Chip              | BL-HGEJE36HTRB(RED/YG,15,1612)<br>19-226-R6G7C-A03-2T(R/G,1612)                     | Bright LED<br>Everight<br>Hong-Li                                | 1        | LED1                                                                                                         |
| 19 | White LED                  | BL-HZ336G-L8-TRB(WHITE,T4-4J,1608)<br>19-217UTD/S759/TR8(WHITE,C,1608)              | Inhere<br>GMA                                                    | 18       | LED2,LED3,LED4,LED5,LED6,LED8,LED9,LED11,<br>LED12,LED13,LED14,LED16,LED17,LED18,LED21,<br>LED22,LED23,LED24 |
| 20 | Inductor Chip              | 3.3NH,±0.3NH,1005                                                                   | Murata<br>TDK                                                    | 1        | L2                                                                                                           |
| 21 | Inductor Chip              | 3.6NH,±0.3NH,1005                                                                   | Sunlord<br>INPAQ<br>MAXECHO                                      | 1        | C34                                                                                                          |
| 22 | Power Inductor Chip        | 4.7UH,±20%,750MA,2012                                                               | Samsung<br>Chilisin                                              | 1        | L3                                                                                                           |
| 23 | Power Inductor Chip        | 10UH,±10%,2012                                                                      | Pilkcor<br>Darfon                                                | 1        | L4                                                                                                           |
| 24 | Analog Microphone SMD      | ZTS6151<br>AOS3729A-R38-NTM                                                         | Zillitek<br>Sanico                                               | 1        | MIC1                                                                                                         |
| 25 | Tact Switch SMD            | PTS099160(1.6N,R/A)<br>SKRTLAE010(1.6N,R/A)                                         | Foxeco<br>ALPS<br>EASTERN                                        | 4        | KB15,KB22,KB28,KB34                                                                                          |
| 26 | Photo Transistor Chip      | PT12-21B-TR8(SMD,R/A)<br>BPT-HPG33A-TRB                                             | Bright LED<br>Everight                                           | 1        | PT1                                                                                                          |
| 27 | Resistor Chip              | 0 OHM,1/16W,±5%,1005                                                                |                                                                  | 4        | R1,L1,FB1,R4                                                                                                 |
| 28 | Resistor Chip              | 2 OHM,1/10W,±5%,1608                                                                |                                                                  | 2        | R52,R17                                                                                                      |
| 29 | Resistor Chip              | 180 OHM,1/16W,±5%,1005                                                              | ABCO<br>YAGEO                                                    | 1        | R30                                                                                                          |
| 30 | Resistor Chip              | 270 OHM,1/16W,±5%,1005                                                              | TYCO                                                             | 5        | R41,R46,R47,R48,R49                                                                                          |
| 31 | Resistor Chip              | 300 OHM,1/16W,±5%,1005                                                              | Cosmetech                                                        | 1        | R9                                                                                                           |
| 32 | Resistor Chip              | 330 OHM,1/16W,±5%,1005                                                              | Samsung<br>ROHM                                                  | 5        | R31,R33,R34,R42,R43                                                                                          |
| 33 | Resistor Chip              | 470 OHM,1/16W,±5%,1005                                                              | TA-I<br>WALSIN                                                   | 7        | R7,R20,R21,R22,R23,R50,R53                                                                                   |
| 34 | Resistor Chip              | 560 OHM,1/16W,±1%,1005                                                              | PILKCOR                                                          | 7        | R27,R28,R29,R36,R37,R38,R39                                                                                  |
| 35 | Resistor Chip              | 1K OHM,1/16W,±5%,1005                                                               | Fenghua<br>AVX                                                   | 2        | R5,R16                                                                                                       |
| 36 | Resistor Chip              | 4.7K OHM,1/16W,±5%,1005                                                             | Murata<br>TDK                                                    | 2        | R2,R3                                                                                                        |
| 37 | Resistor Chip              | 10K OHM,1/16W,±5%,1005                                                              | Taiyouden                                                        | 3        | R8,R10,R12                                                                                                   |
| 38 | Resistor Chip              | 33K OHM,1/16W,±5%,1005                                                              | Darfon                                                           | 1        | R19                                                                                                          |
| 39 | Resistor Chip              | 47K OHM,1/16W,±5%,1005                                                              | Eyang                                                            | 2        | R11,R15                                                                                                      |
| 40 | Resistor Chip              | 82K OHM,1/16W,±5%,1005                                                              | KEMET                                                            | 1        | R13                                                                                                          |
| 41 | Resistor Chip              | 100K OHM,1/16W,±5%,1005                                                             | Kyocera<br>NIC Dompenets                                         | 6        | R18,R24,R25,R26,R51,R54                                                                                      |
| 42 | Resistor Chip              | 820K OHM,1/16W,±5%,1005                                                             |                                                                  | 1        | R14                                                                                                          |
| 43 | Bluetooth IC               | BLUETOOTH IC, RTL8762CKF(QFN48)                                                     | Realtek                                                          | 100      | U1                                                                                                           |
| 44 | Accelerometer IC           | LIS2DE12TR(LGA-12)<br>STK8BA57                                                      | STM<br>Sensortek                                                 | 100      | U2                                                                                                           |
| 45 | Boost Converter IC         | SYV7070<br>IM8132S<br>TPS61097A-33DBVR                                              | SILERGY<br>TI<br>IMS                                             | 100      | U3                                                                                                           |
| 46 | Crystal SMD                | X-TAL SMD, 40MHZ,7R40000002_S1,2016                                                 | TXC<br>H&S                                                       | 1        | X1                                                                                                           |
| 47 | PCB                        | PCB, RD12C,D(FR-4,1.2T,4L,OSP,CARBON)                                               | GE<br>SSSG<br>JSL<br>PENG YU                                     | 1        |                                                                                                              |



# REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22

REFORM :

DECISION :

## SPECIFICATION

(TRANSMITTER REMOCON)

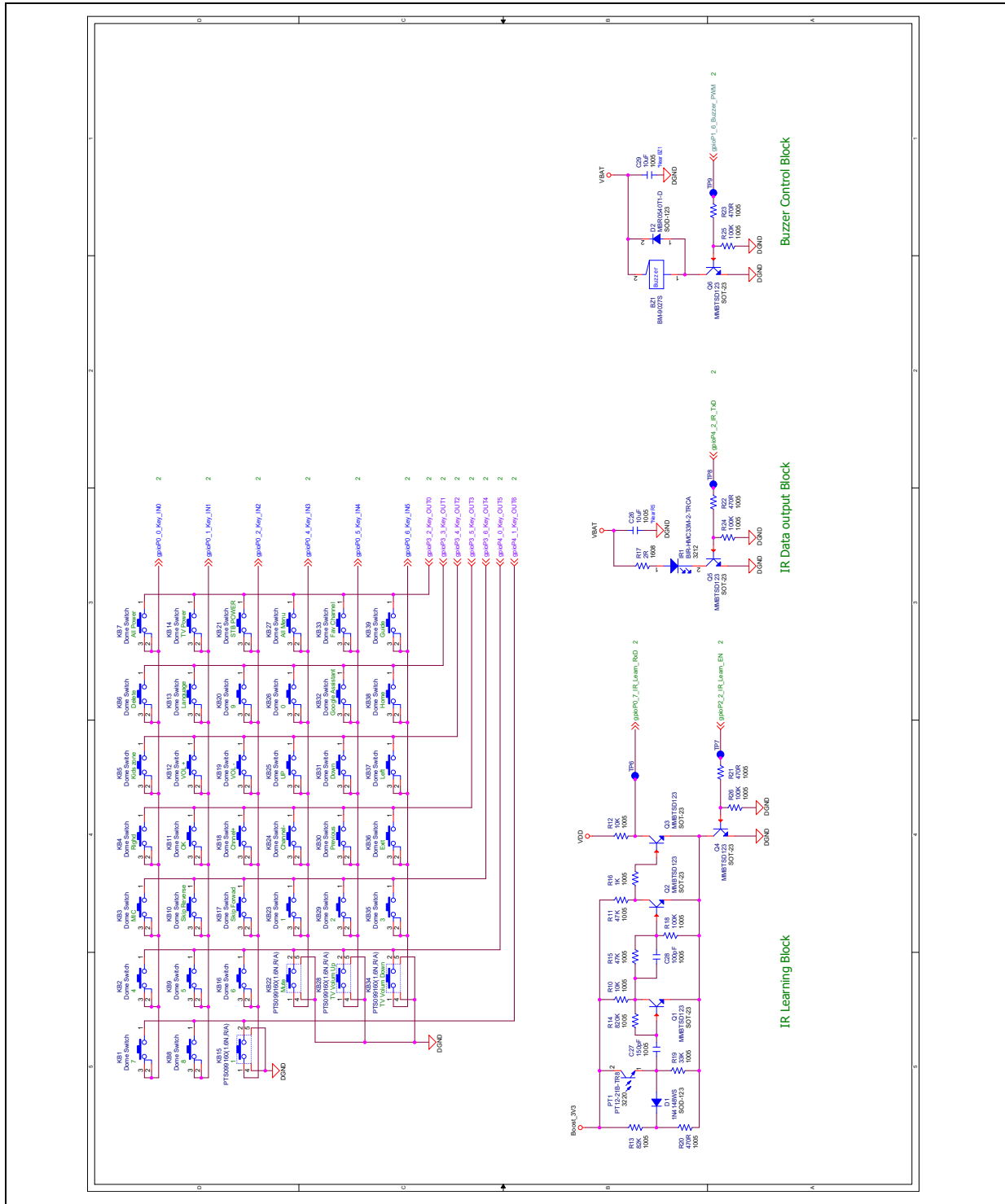
MODEL NO :

RD12D00

21

62

### 6.2 Keys / IR Learning / IR TxD / Buzzer PART



# REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22

REFORM :

DECISION :

## SPECIFICATION

(TRANSMITTER REMOCON)

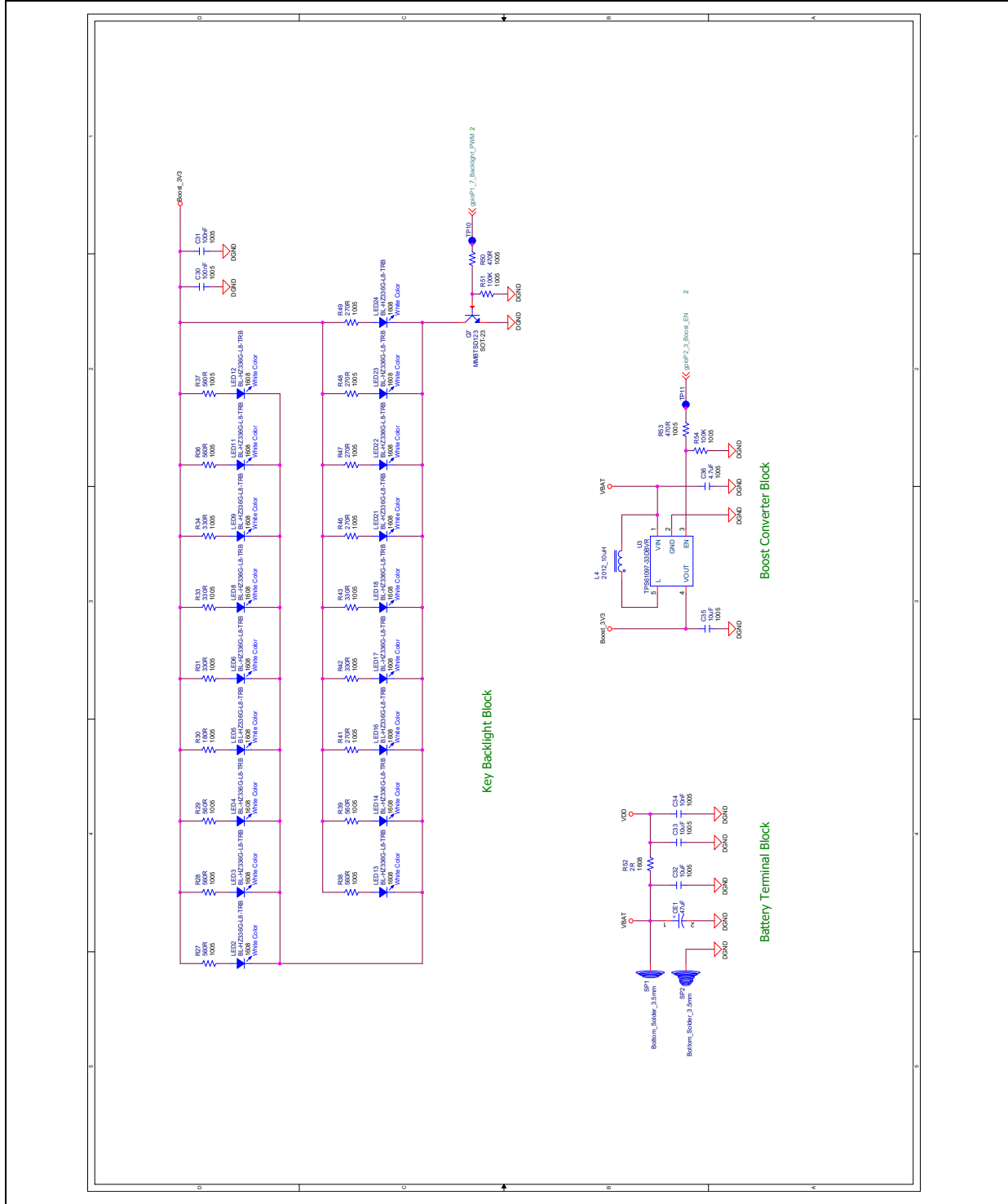
MODEL NO :

22

RD12D00

62

### 6.3 Backlight / Battery Terminal Part

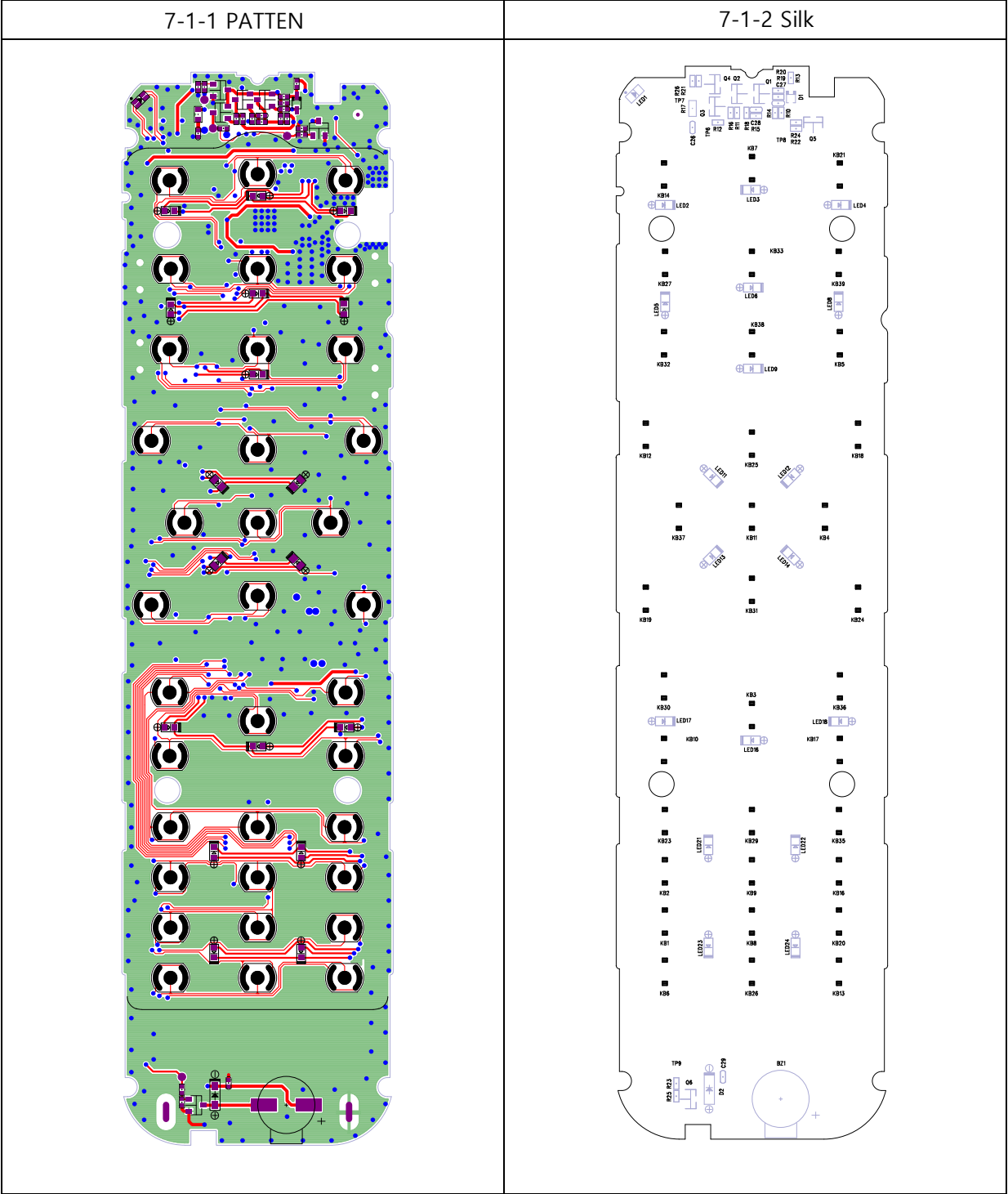


**REMOTE SOLUTION CO., LTD.**

|                          |                                                                                                       |            |    |
|--------------------------|-------------------------------------------------------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div style="text-align: center;"> <h1><u>SPECIFICATION</u></h1> <h2>(TRANSMITTER REMOCON)</h2> </div> | MODEL NO : | 23 |
| REFORM :                 |                                                                                                       | RD12D00    |    |
| DECISION :               |                                                                                                       |            | 62 |

## 7. PCB Diagram

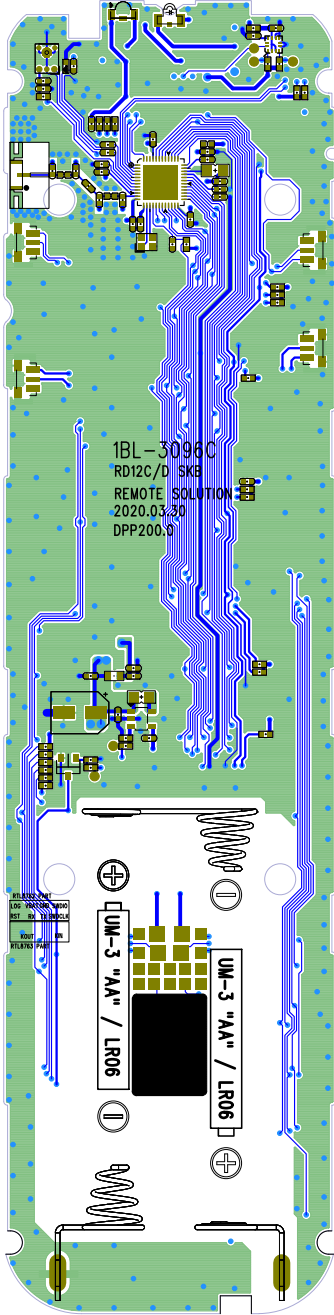
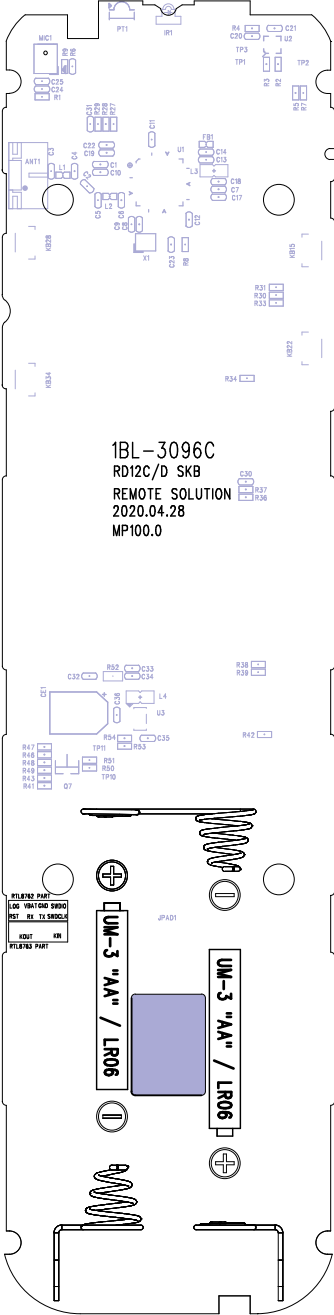
## 7.1 TOP PCB (1/3)



# REMOTE SOLUTION CO., LTD.

|                          |                                                     |            |    |
|--------------------------|-----------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : | 24 |
| REFORM :                 |                                                     |            |    |
| DECISION :               |                                                     | RD12D00    | 62 |

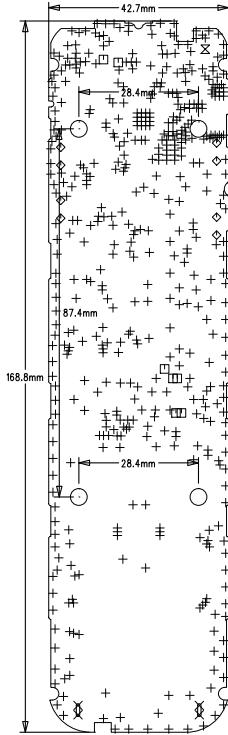
## 7.2 BOTTOM PCB(2/3)

| 7-1-3 PATTERN                                                                                                                                                                                                  | 7-1-4 Silk                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>1BL-3096C<br/>RD12C/D SKB<br/>REMOTE SOLUTION<br/>2020.03.30<br/>DPP200.0</p> <p>UM-3 "AA" / LR06</p> <p>90R1 / LR06</p> |  <p>1BL-3096C<br/>RD12C/D SKB<br/>REMOTE SOLUTION<br/>2020.04.28<br/>MP100.0</p> <p>UM-3 "AA" / LR06</p> <p>90R1 / LR06</p> |

# REMOTE SOLUTION CO., LTD.

|                          |                                                     |            |    |
|--------------------------|-----------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : | 25 |
| REFORM :                 |                                                     |            |    |
| DECISION :               |                                                     | RD12D00    | 62 |

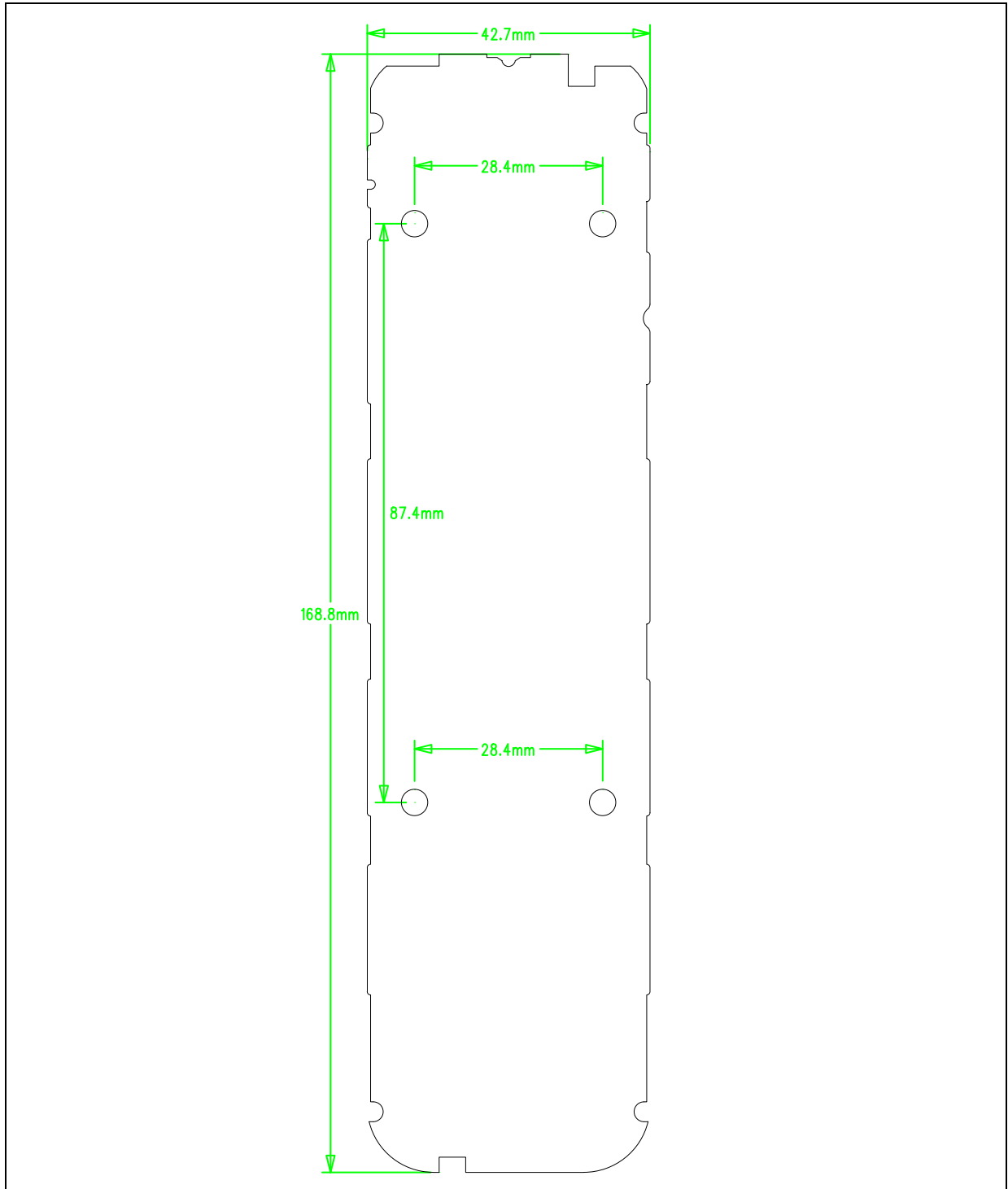
## 7.3 MAIN PCB (3/3)

| 7-1-5 Drill Chart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 7-1-6 Main PCB SPEC |     |        |        |     |     |     |   |     |        |         |   |   |     |        |     |   |   |     |        |     |   |   |    |        |     |   |   |    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----|--------|--------|-----|-----|-----|---|-----|--------|---------|---|---|-----|--------|-----|---|---|-----|--------|-----|---|---|----|--------|-----|---|---|----|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div></div> <table><thead><tr><th>SIZE</th><th>QTY</th><th>SYM</th><th>PLATED</th><th>TOL</th></tr></thead><tbody><tr><td>0.3</td><td>504</td><td>+</td><td>YES</td><td>+/-0.0</td></tr><tr><td>0.8 x 3</td><td>2</td><td>⊗</td><td>YES</td><td>+/-0.0</td></tr><tr><td>0.5</td><td>7</td><td>□</td><td>YES</td><td>+/-0.0</td></tr><tr><td>0.8</td><td>8</td><td>◇</td><td>NO</td><td>+/-0.0</td></tr><tr><td>0.5</td><td>1</td><td>⊗</td><td>NO</td><td>+/-0.0</td></tr></tbody></table> | SIZE                | QTY | SYM    | PLATED | TOL | 0.3 | 504 | + | YES | +/-0.0 | 0.8 x 3 | 2 | ⊗ | YES | +/-0.0 | 0.5 | 7 | □ | YES | +/-0.0 | 0.8 | 8 | ◇ | NO | +/-0.0 | 0.5 | 1 | ⊗ | NO | +/-0.0 | <div>1) PCB Material : FR4, 4-Layer</div> <div>2) PCB Thickness : 1.2T</div> <div>3) Copper Foil Thickness :<div>- Out Layer 0.5 OZ</div><div>- Inner Layer 0.5 OZ</div></div> <div>4) PCB Size<div>Single - 42.7_mm x 168.8mm</div><div>Array - 221.5_mm x _188.8_mm ( 5 In 1)</div></div> <div>5) SilkScreen Color : White</div> <div>6) PSR Ink Color : Green</div> <div>7) Surface : OSP</div> <div>8) Dome Key : Carbon</div> <div>9) PCB Version : 1BL-3096C</div> |
| SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | QTY                 | SYM | PLATED | TOL    |     |     |     |   |     |        |         |   |   |     |        |     |   |   |     |        |     |   |   |    |        |     |   |   |    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 504                 | +   | YES    | +/-0.0 |     |     |     |   |     |        |         |   |   |     |        |     |   |   |     |        |     |   |   |    |        |     |   |   |    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0.8 x 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2                   | ⊗   | YES    | +/-0.0 |     |     |     |   |     |        |         |   |   |     |        |     |   |   |     |        |     |   |   |    |        |     |   |   |    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 7                   | □   | YES    | +/-0.0 |     |     |     |   |     |        |         |   |   |     |        |     |   |   |     |        |     |   |   |    |        |     |   |   |    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 8                   | ◇   | NO     | +/-0.0 |     |     |     |   |     |        |         |   |   |     |        |     |   |   |     |        |     |   |   |    |        |     |   |   |    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1                   | ⊗   | NO     | +/-0.0 |     |     |     |   |     |        |         |   |   |     |        |     |   |   |     |        |     |   |   |    |        |     |   |   |    |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

# REMOTE SOLUTION CO., LTD.

|                          |                                                   |            |    |
|--------------------------|---------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <b>SPECIFICATION</b><br><br>(TRANSMITTER REMOCON) | MODEL NO : | 26 |
| REFORM :                 |                                                   | RD12D00    | 62 |
| DECISION :               |                                                   |            |    |

## 8. PCB Outline Specification – Main PCB

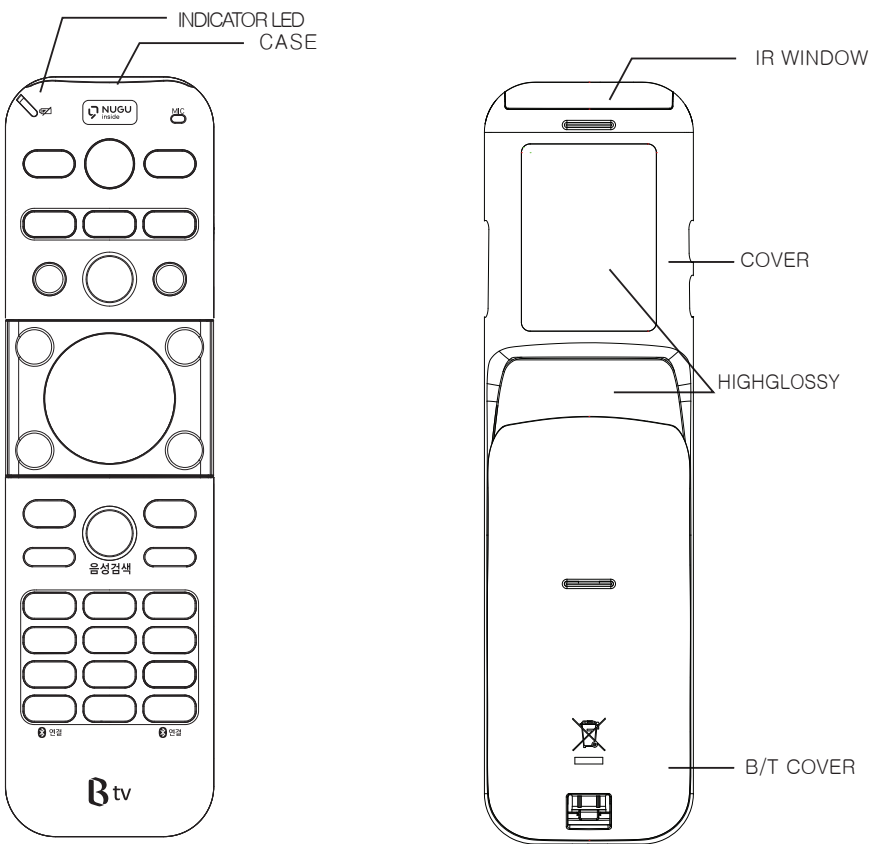


# REMOTE SOLUTION CO., LTD.

|                          |                                                     |            |    |
|--------------------------|-----------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : | 27 |
| REFORM :                 |                                                     |            |    |
| DECISION :               |                                                     | RD12D00    | 62 |

## 9. Design & Mechanical Specification

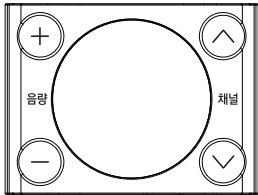
### 9. Design (1/5) – Mold

| DESIGN SPECIFICATION                                                                                                                                                                                                                                                                                                                                                              | Model : RD12D00 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|  <p>INDICATOR LED CASE</p> <p>IR WINDOW</p> <p>COVER</p> <p>HIGHGLOSSY</p> <p>B/T COVER</p> <p>Btv</p>                                                                                                                                                                                         |                 |
| <h4>1. MOLD</h4> <p>1.1 MOLD COLOR</p> <ul style="list-style-type: none"> <li>* CASE, B/T COVER : ABS, HF-0680, K21383(Black), TEXTURE</li> <li>* COVER : ABS, HF-0680, K21383(Black), TEXTURE &amp; HIGH GROSSY</li> <li>* IR WINDOW : PC, SC-1220R, 40697B(D/Red), HIGH GROSSY</li> </ul> <p>1.2 SILK COLOR</p> <ul style="list-style-type: none"> <li>* COOLGREY 3C</li> </ul> |                 |

# REMOTE SOLUTION CO., LTD.

|                          |                                                   |               |    |
|--------------------------|---------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <b>SPECIFICATION</b><br><br>(TRANSMITTER REMOCON) | MODEL NO : 28 | 62 |
| REFORM :                 |                                                   |               |    |
| DECISION :               |                                                   | RD12D00       |    |

## 9. Design (2/5) – KNOB

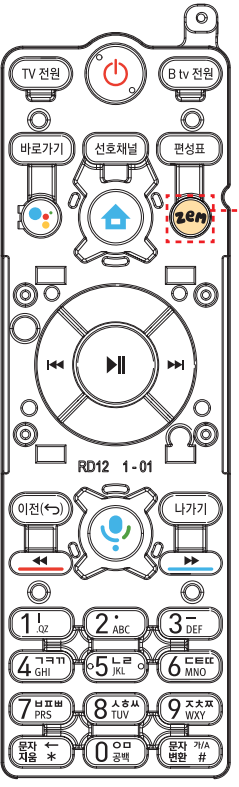
| DESIGN SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                  |  | Model : RD12D00                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------|
| <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CH/VOL KNOB</p> </div> <div style="text-align: center;">  <p>SIDE KNOB</p> </div> </div> |  |                                 |
| 2.KNOB                                                                                                                                                                                                                                                                                                                                                                                |  |                                 |
| 2.1 MOLD COLOR<br>* ABS, HF-0680, K21383(Black), TEXTURE                                                                                                                                                                                                                                                                                                                              |  | 2.2 SILK COLOR<br>* COOLGREY 3C |

# REMOTE SOLUTION CO., LTD.

|                          |                                               |               |    |
|--------------------------|-----------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <b>SPECIFICATION</b><br>(TRANSMITTER REMOCON) | MODEL NO : 29 | 62 |
| REFORM :                 |                                               |               |    |
| DECISION :               |                                               | RD12D00       |    |

## 9. Design (3/5) – RUBBER

DESIGN SPECIFICATION
Model : RD12D00



RD12 1-01

3.1.1

|                  |     |   |    |
|------------------|-----|---|----|
| P/T 7619C(RED)   | ●   | ⏻ | —  |
| P/T 7724C(GREEN) | ●   | ↶ | —  |
| P/T 123C(YELLOW) | ●   | — | —  |
| P/T 660C(BLUE)   | ●   | 🏠 | 🗣️ |
| BLACK            | 26m | — | —  |

TV 전원 ⏻
B tv 전원 ⏻

바로가기 📶
신호채널 🏠
편성표 🗣️

⏮
⏪
⏩
⏭

이전(←) 🗣️
나가기 →

1 123
2 ABC
3 DEF

4 GHI
5 JKL
6 MNO

7 PRS
8 TUV
9 WXY

문자  
지움 ← \*
0 음력
문자  
개/A  
번환 #

ALL BACK LIGHTING

3. RUBBER

3.1 RUBBER COLOR

3.1.1 P/T 1205C

3.1.2 OTHER TRANSLUCENCE WHITE

3.2 SPRAY & SILK COLOR

COOLGREY 3C SPRAY

SILK-7619C,7724C,123C,660C,BLACK

BLACK SPRAY

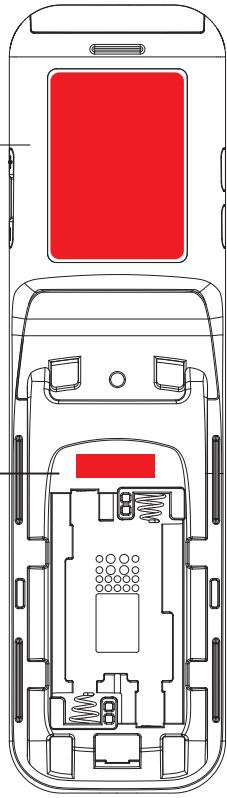
LASER ETCHING

SOFT COATING

# REMOTE SOLUTION CO., LTD.

|                          |                                                   |               |    |
|--------------------------|---------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <b>SPECIFICATION</b><br><br>(TRANSMITTER REMOCON) | MODEL NO : 30 | 62 |
| REFORM :                 |                                                   |               |    |
| DECISION :               |                                                   | RD12D00       |    |

## 9. Design (4/5) – LABEL

| DESIGN SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                           | Model : RD12D00 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------|
| <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p><b>리모컨 동작이 안될 때</b><br/>           1. 빨간LED가 켜지면 배터리를 교체해 주세요.<br/>           2. 셋톱박스 뒤 전원을 껐다 다시 켜 주세요.<br/>           3. 리모컨을 재연결해 주세요.<br/>           리모컨 [⬅] + [➡]을 동시에 3초간 누르면 녹색LED가 깜빡이면서 리모컨이 재연결 됩니다.</p> <p><b>TV볼륨/전원이 안될 때</b><br/>           TV전원 ON : [B tv전원] + [외부입력] 동시에 3초간 누름 → 녹색LED가 켜지면 [채널시퀀스 TV가 꺼질 때 까지 누름] → TV가 꺼지면 [⬅]를 눌러 종료</p> <p><b>B tv 이용가이드 보기 ▶</b> </p> <p>호환셋톱박스<br/>           Smart 2.3, mini / AI 2 max<br/> <b>모델명 BRM-BA02</b> </p> <p>공급원: SK브로드밴드 / 제조원: 리모트솔루션(주)<br/>           No.R-RMB-RD12 Made In Korea<br/>           해당 무선설비는 운용 중 전파혼신 가능성이 있습니다.</p> </div> <div style="width: 65%;">  </div> </div> |                                                                           |                 |
| SCALE 150%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                           |                 |
| <div style="text-align: center;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>VX.X YYYY.MM.DD</b> </div> </div> <div style="display: flex; justify-content: center; gap: 50px; margin-top: 5px;"> <div>Version No.<br/>(Changeable)</div> <div>Date of Manufacture<br/>(Changeable)</div> </div> <p style="text-align: center; color: red;">※ 소프트웨어에 반드시 Ver. 확인 할 것!</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                           |                 |
| 4. BACK LABEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5. VERSION LABEL                                                          |                 |
| 4.1 Material : White Bopp<br>4.2 Size : 30 X 42mm<br>4.3 Silk Color : Black, 360C<br>4.4 Coating : Matte Laminating                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5.1 Material : Art Paper<br>5.2 Size : 16 X 4mm<br>5.3 Silk Color : Black |                 |

**REMOTE SOLUTION CO., LTD.**

|                          |                                                                                                |            |    |
|--------------------------|------------------------------------------------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div style="text-align: center;"> <h1>SPECIFICATION</h1> <h2>(TRANSMITTER REMOCON)</h2> </div> | MODEL NO : | 31 |
| REFORM :                 |                                                                                                | RD12D00    | 62 |
| DECISION :               |                                                                                                |            |    |

## 9. Design (5/5) – MANUAL

[illegible]



# REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22

REFORM :

DECISION :

## SPECIFICATION

(TRANSMITTER REMOCON)

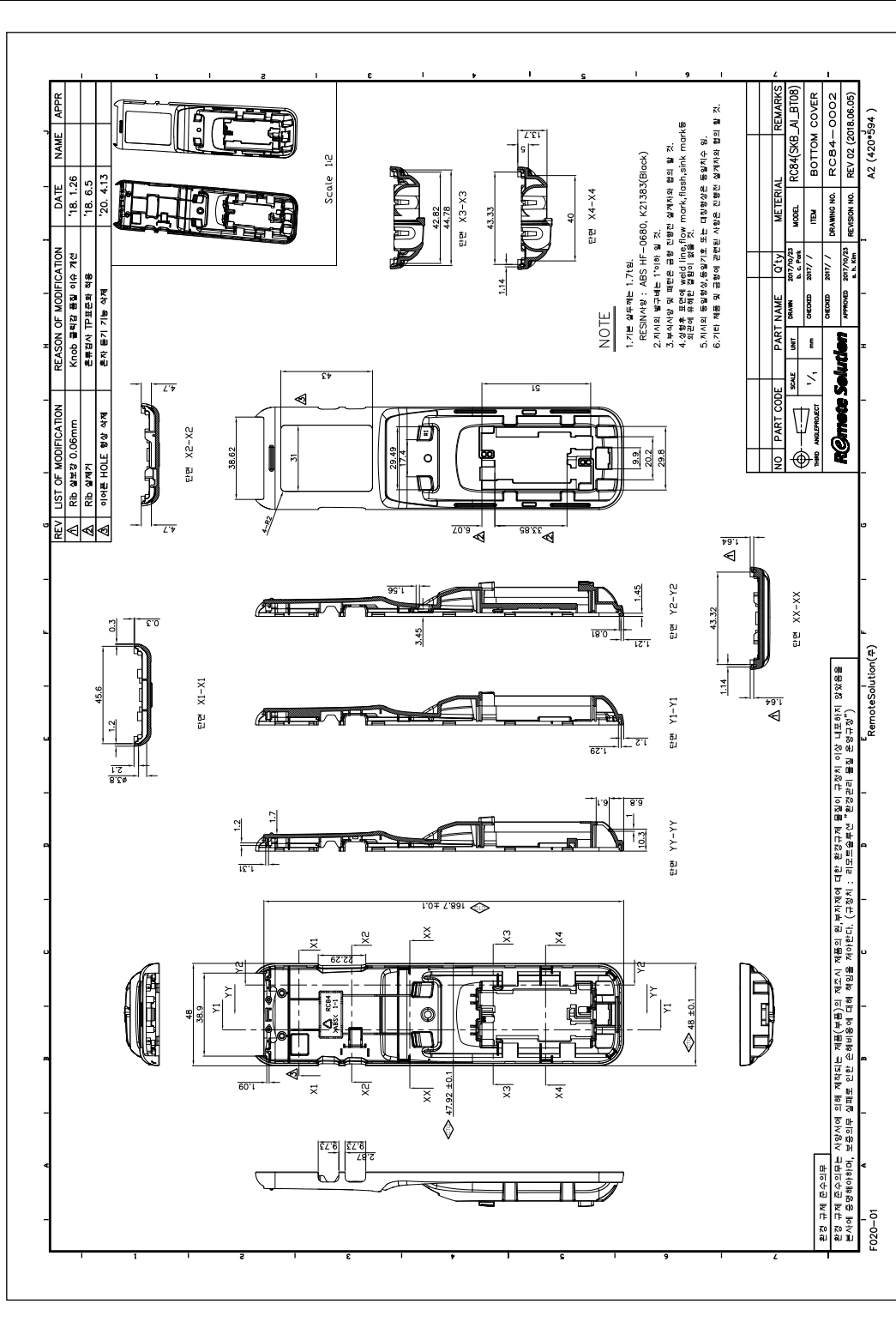
MODEL NO :

RD12D00

33

62

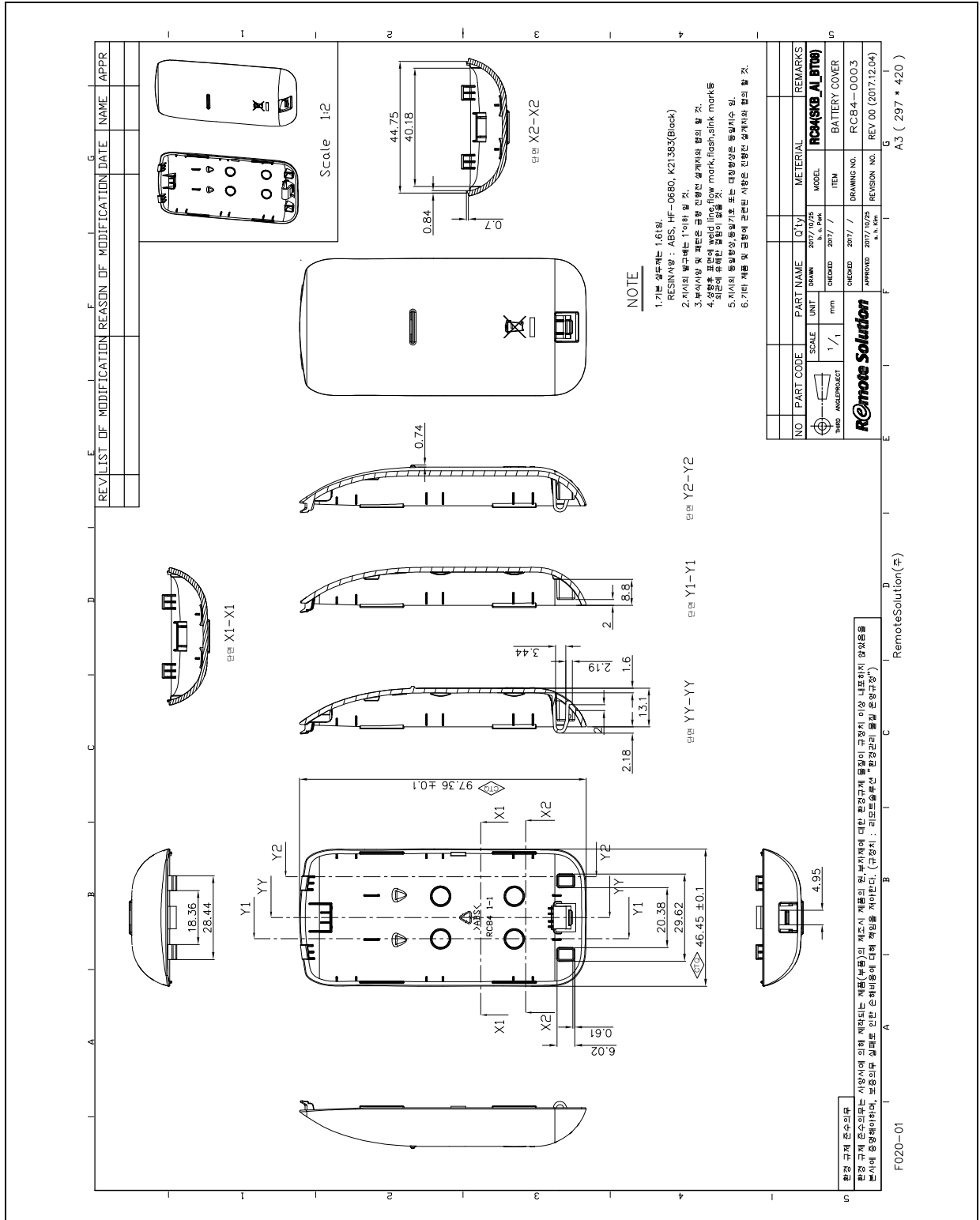
### 10. Mechanical Spec (2/15) – BOTTOM COVER



# REMOTE SOLUTION CO., LTD.

|                          |                                                     |               |    |
|--------------------------|-----------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : 34 | 62 |
| REFORM :                 |                                                     |               |    |
| DECISION :               |                                                     | RD12D00       |    |

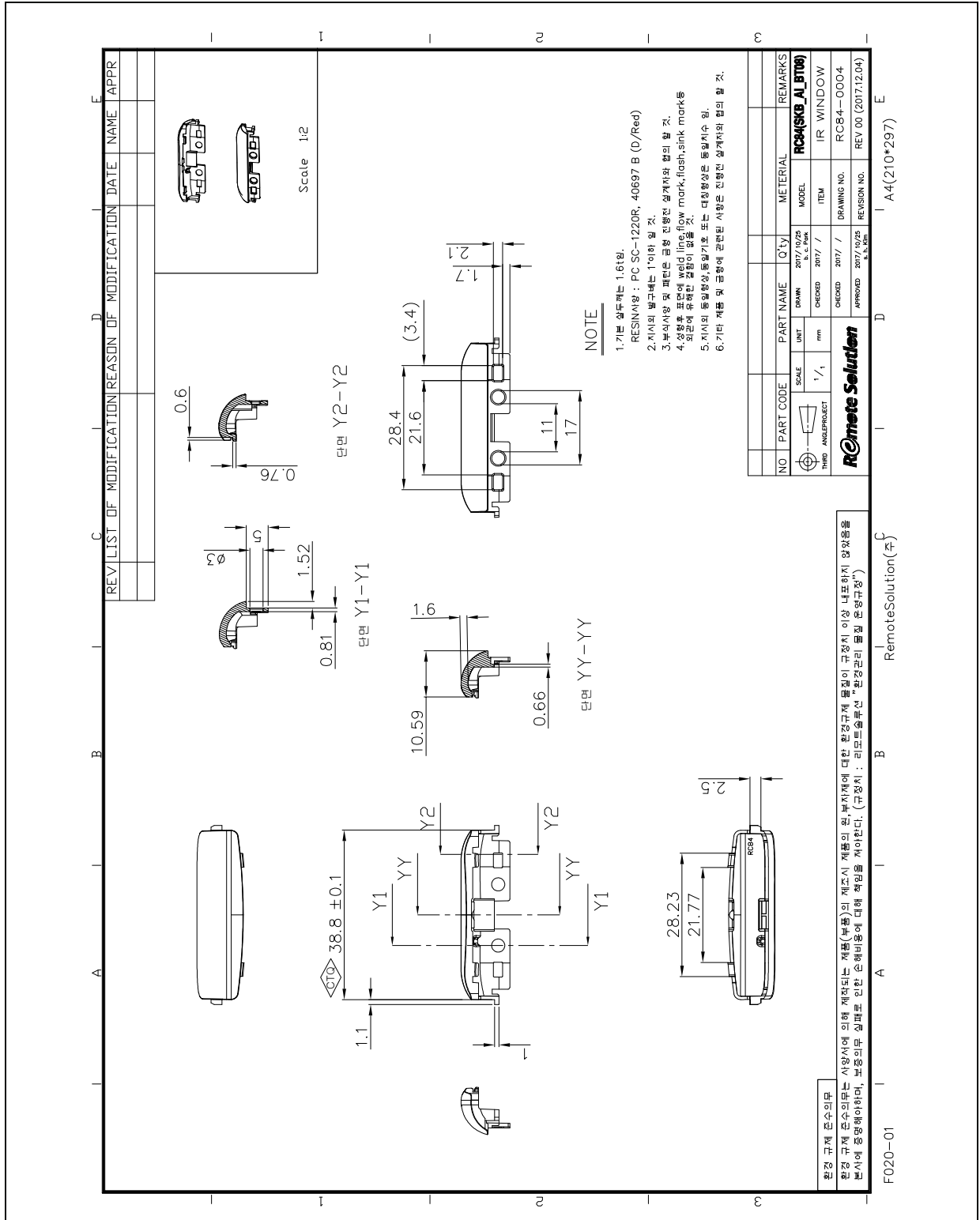
## 10. Mechanical Spec (3/15) – BATTERY COVER



# REMOTE SOLUTION CO., LTD.

|                          |                                                     |               |    |
|--------------------------|-----------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : 35 | 62 |
| REFORM :                 |                                                     |               |    |
| DECISION :               |                                                     | RD12D00       |    |

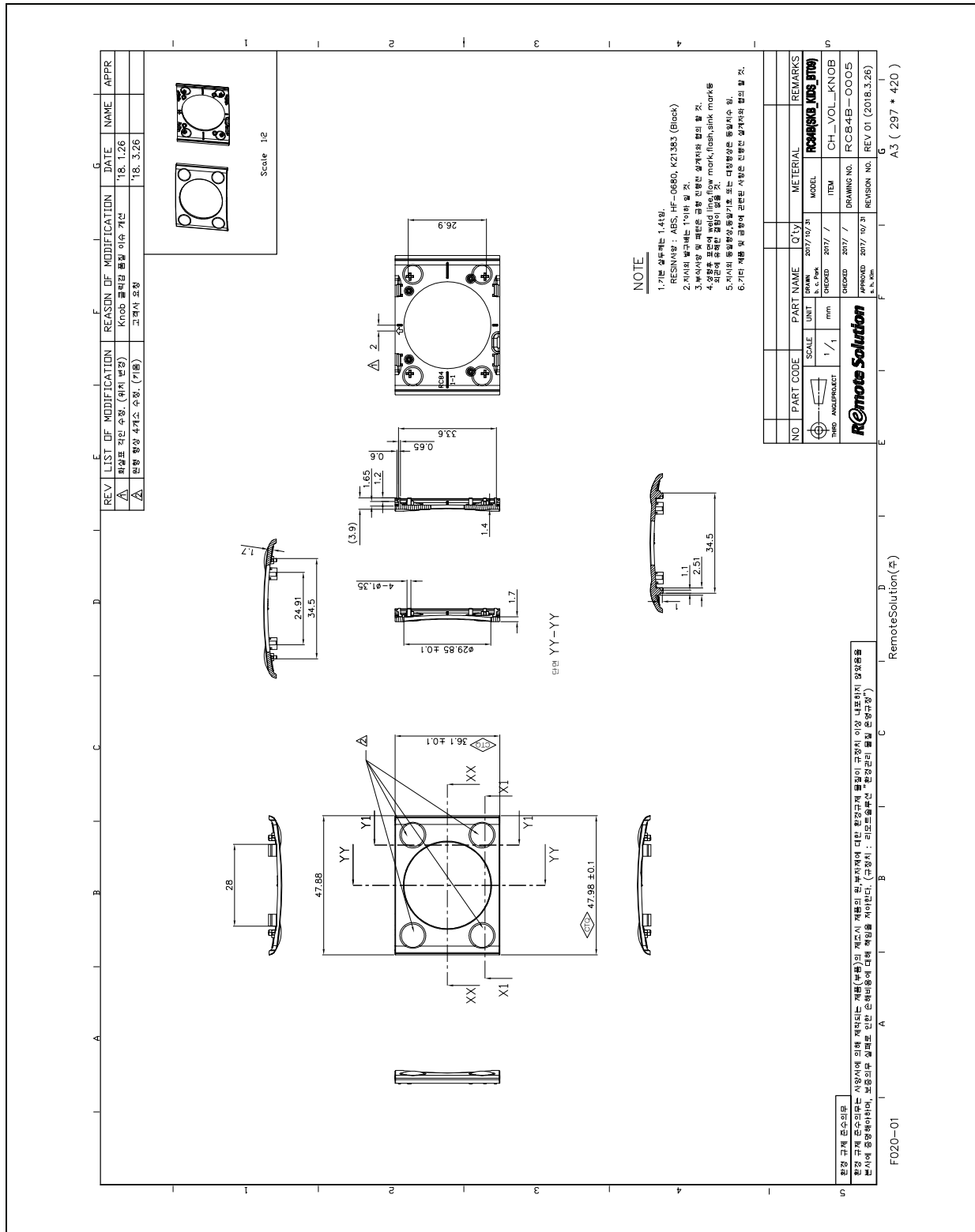
## 10. Mechanical Spec (4/15) – IR WINDOW



**REMOTE SOLUTION CO., LTD.**

|                          |                                                                                                       |            |    |
|--------------------------|-------------------------------------------------------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div style="text-align: center;"> <h1><u>SPECIFICATION</u></h1> <h2>(TRANSMITTER REMOCON)</h2> </div> | MODEL NO : | 36 |
| REFORM :                 |                                                                                                       |            |    |
| DECISION :               |                                                                                                       | RD12D00    | 62 |

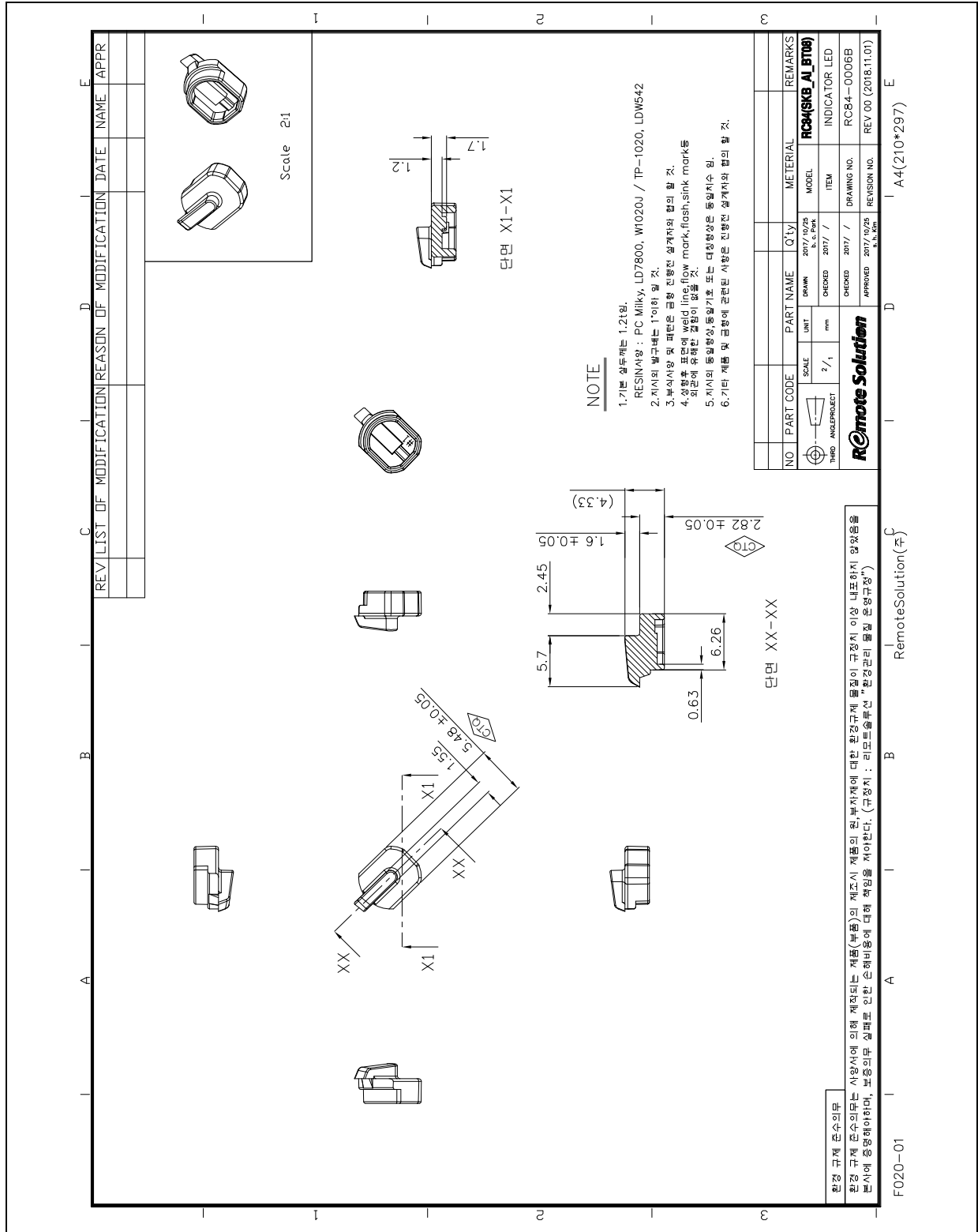
## 10. Mechanical Spec (5/15) – CH , VOL KNOB



# REMOTE SOLUTION CO., LTD.

|                          |                                               |               |    |
|--------------------------|-----------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <b>SPECIFICATION</b><br>(TRANSMITTER REMOCON) | MODEL NO : 37 | 62 |
| REFORM :                 |                                               |               |    |
| DECISION :               |                                               | RD12D00       |    |

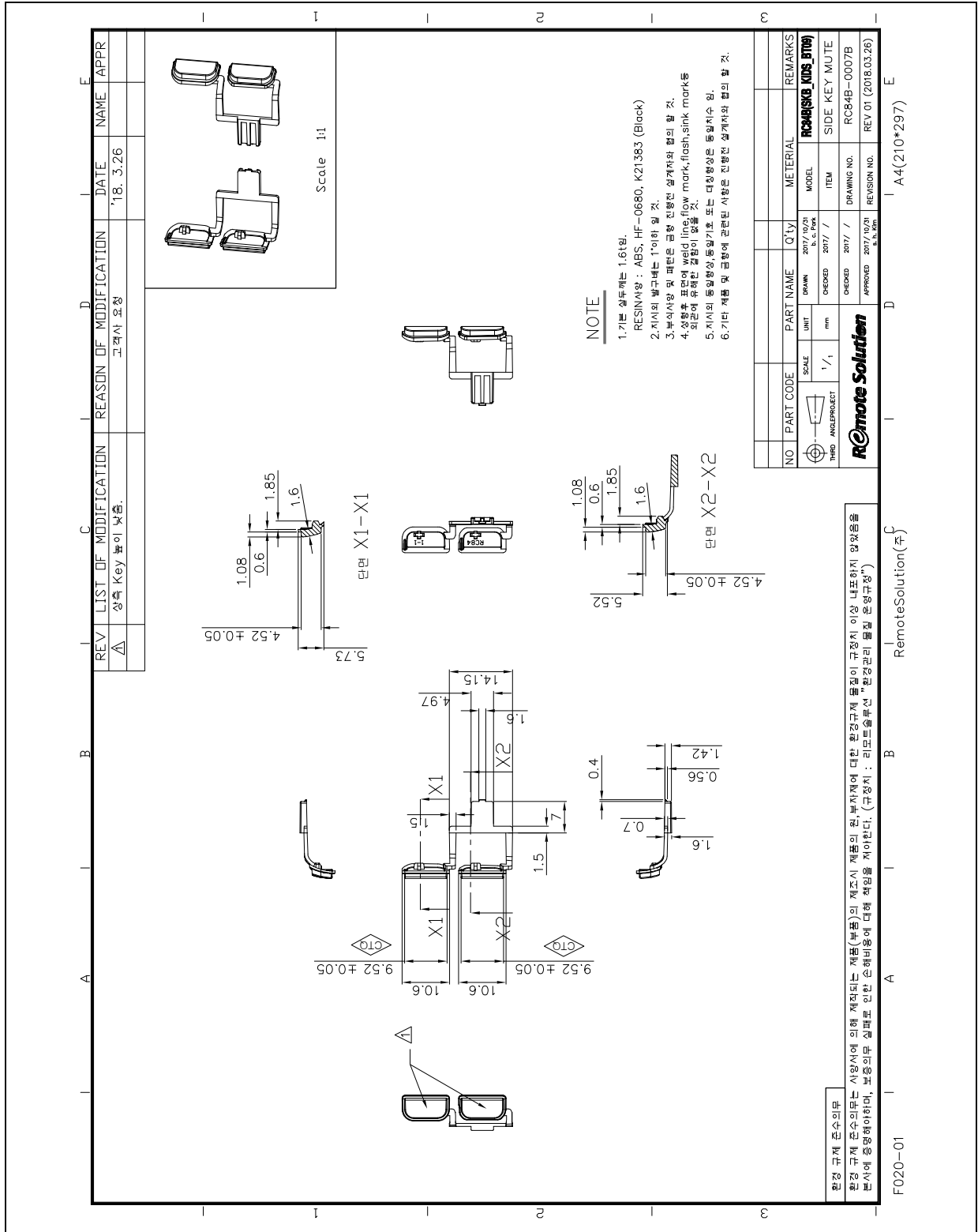
## 10. Mechanical Spec (6/15) – INDICATOR LED



# REMOTE SOLUTION CO., LTD.

|                          |                                                     |               |    |
|--------------------------|-----------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : 38 | 62 |
| REFORM :                 |                                                     |               |    |
| DECISION :               |                                                     | RD12D00       |    |

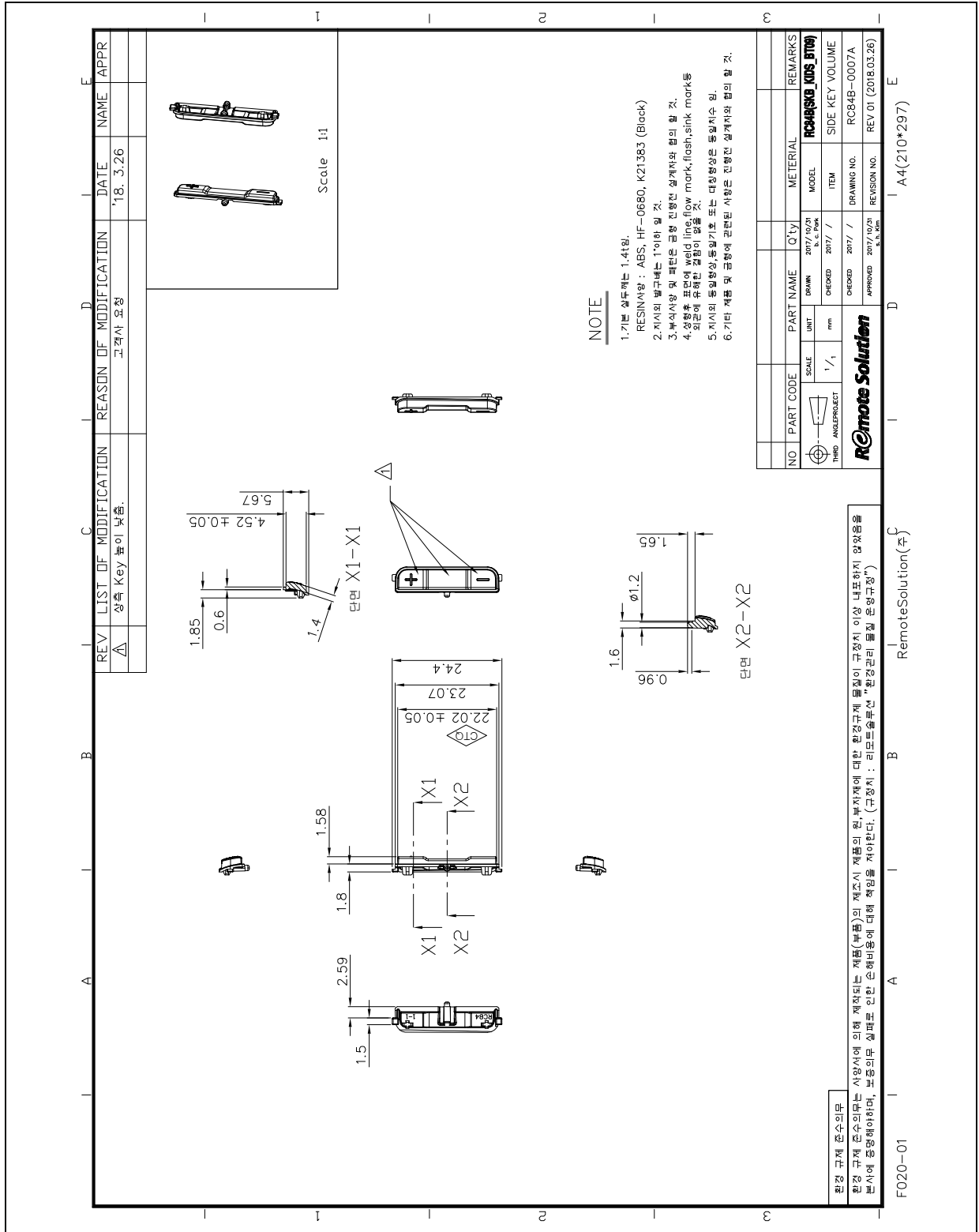
## 10. Mechanical Spec (7/15) – SIDE KEY MUTE



# REMOTE SOLUTION CO., LTD.

|                          |                                                           |               |    |
|--------------------------|-----------------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : 39 | 62 |
| REFORM :                 |                                                           |               |    |
| DECISION :               |                                                           | RD12D00       |    |

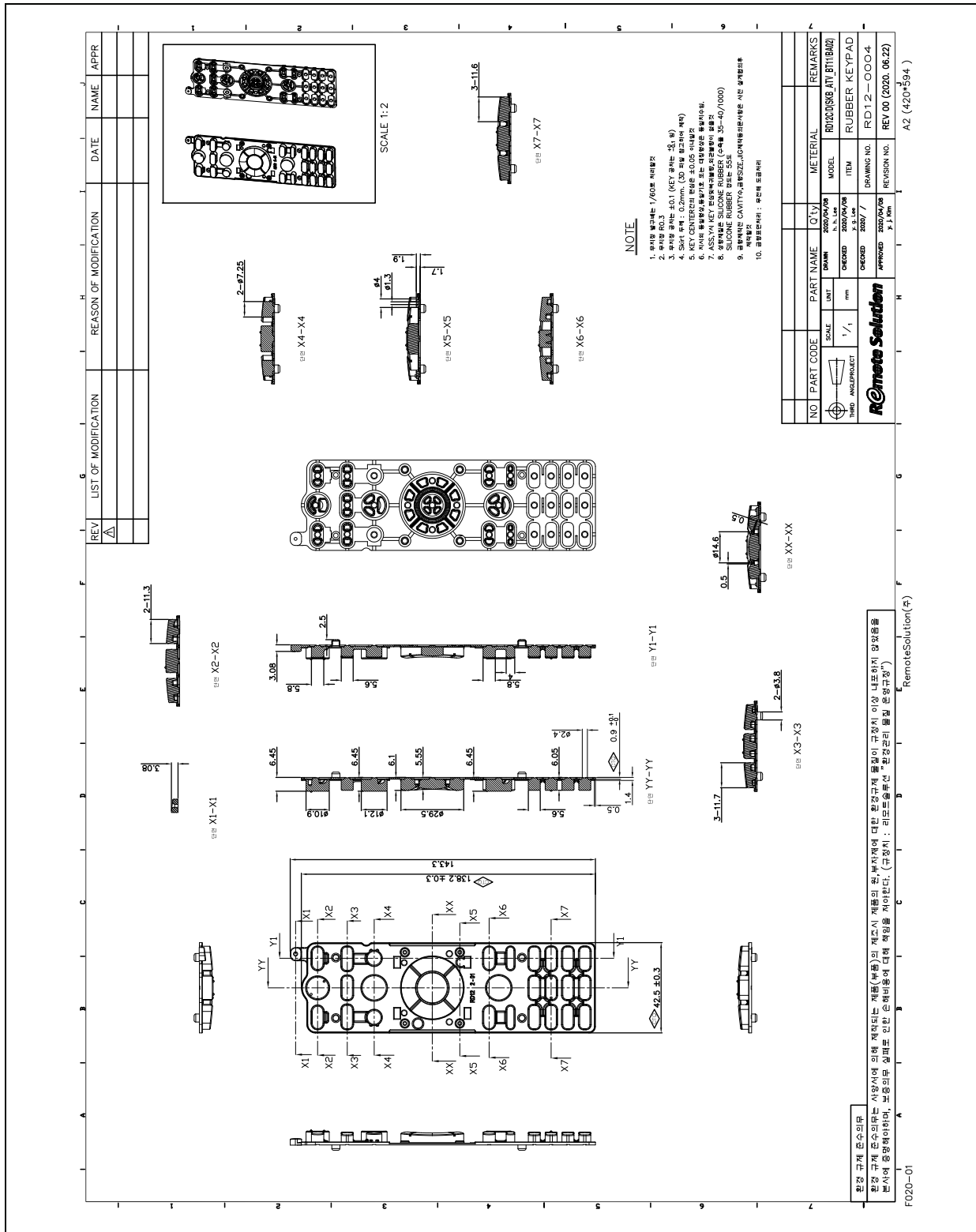
## 10. Mechanical Spec (8/15) – SIDE KEY VOLUME



**REMOTE SOLUTION CO., LTD.**

|                          |                                                                                                |            |    |
|--------------------------|------------------------------------------------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div style="text-align: center;"> <h1>SPECIFICATION</h1> <h2>(TRANSMITTER REMOCON)</h2> </div> | MODEL NO : | 40 |
| REFORM :                 |                                                                                                |            |    |
| DECISION :               |                                                                                                | RD12D00    | 62 |

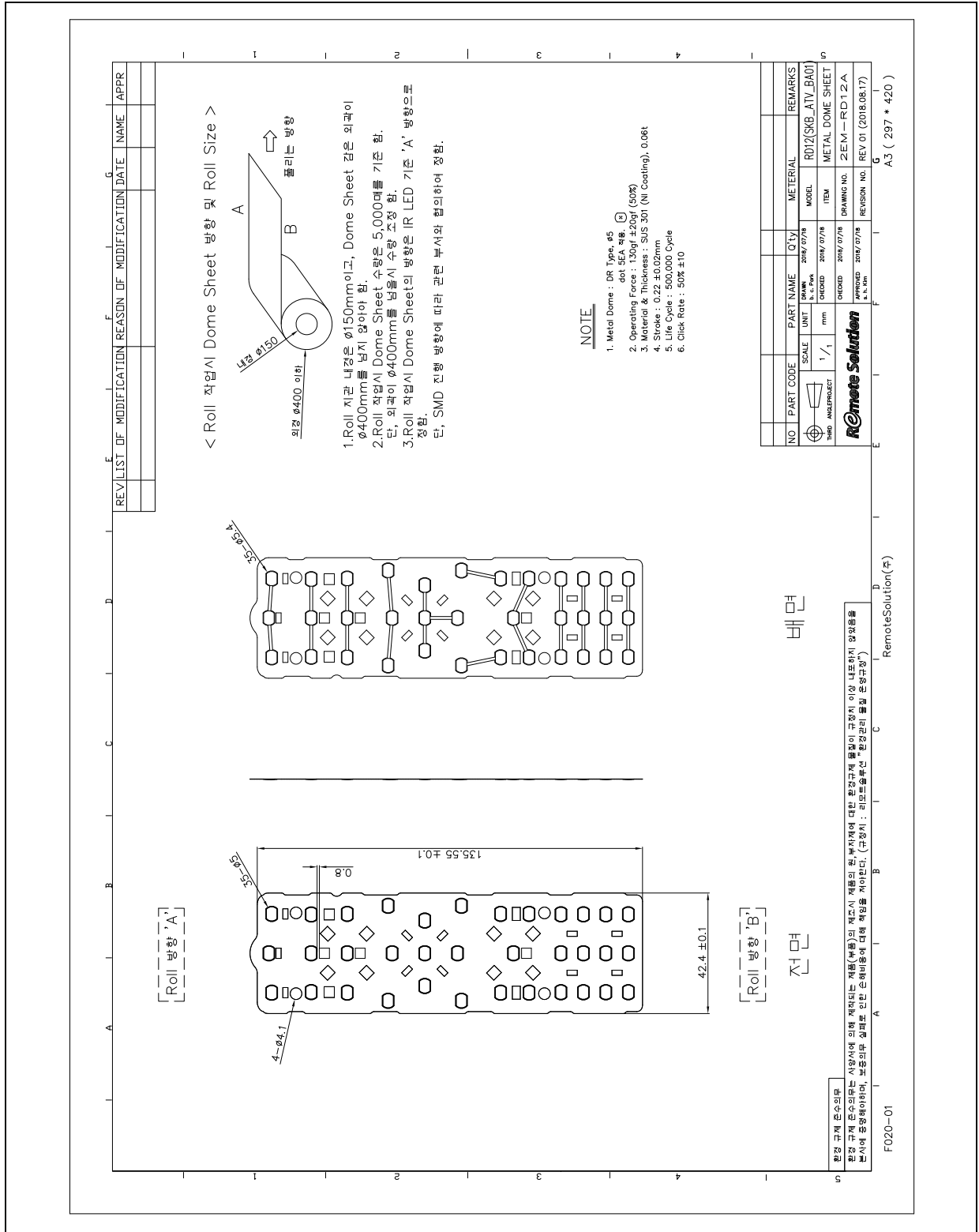
## 10. Mechanical Spec (9/15) – RUBBER KEYPAD



# REMOTE SOLUTION CO., LTD.

|                          |                                                     |               |    |
|--------------------------|-----------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : 41 | 62 |
| REFORM :                 |                                                     |               |    |
| DECISION :               |                                                     | RD12D00       |    |

## 10. Mechanical Spec (10/15) – METAL DOME



# REMOTE SOLUTION CO., LTD.

|                          |                                                     |               |    |
|--------------------------|-----------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : 42 | 62 |
| REFORM :                 |                                                     | RD12D00       |    |
| DECISION :               |                                                     |               |    |

## 10. Mechanical Spec (11/15) – (+) SPRING

| NO | MODEL | TITLE | MATERIAL | FINISH | REMARK |
|----|-------|-------|----------|--------|--------|
| 1  |       |       |          |        |        |
| 2  |       |       |          |        |        |

|     |                  |        |         |
|-----|------------------|--------|---------|
| 종 류 | 압 축 SPRING       | 총 권 수  | 2.25 권  |
| 재 질 | SUS304-WPB NI-CO | 권 방 향  | 우       |
| 선 경 | Ø0.6             | 자유장 길이 | 1.2±0.2 |

**NOTE**

- ① 지시치수 중점관리할것
- 재료 절단부 처리 주의할것
- BENDING 부 직각 유지 할 것  
직각부는 필히 자연 "R" 가공 할 것

**환경 규제 준수 의무**

환경 규제 준수 의무는 사양서에 의해 제작되는 제품(부품)의 제조시 제품의 원,부자재에 대한 환경규제 물질이 규정치 이상 내포하지 않았음을 본사에 증명해야하며, 보증의무 실패로 인한 손해비용에 대해 책임을 져야한다. (규정치 : 리모트솔루션 "환경관리 물질 운영규정")

| NO | PART CODE | PART NAME | Q'ty | MATERIAL | REMARKS |
|----|-----------|-----------|------|----------|---------|
|    |           |           |      |          |         |

|  |       |      |                          |                                                                 |
|--|-------|------|--------------------------|-----------------------------------------------------------------|
|  | SCALE | UNIT | DRAWN                    | <b>(+)SPRING</b><br><b>RC84(SKB_AI_BT08)</b><br><b>2SP-RC84</b> |
|  | 2/1   | mm   | 2017/10/19<br>b. c. Park |                                                                 |
|  |       |      | 2017/10/19<br>s. b. Lim  |                                                                 |
|  |       |      | 2017/10/19<br>s. h. Kim  |                                                                 |

# REMOTE SOLUTION CO., LTD.

|                          |                                                     |               |    |
|--------------------------|-----------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : 43 | 62 |
| REFORM :                 |                                                     | RD12D00       |    |
| DECISION :               |                                                     |               |    |

## 10. Mechanical Spec (12/15) – (-) SPRING

| NO | M O D E L | TITLE | MATERIAL | FINISH | REMARK |
|----|-----------|-------|----------|--------|--------|
| 1  |           |       |          |        |        |
| 2  |           |       |          |        |        |

|     |                  |        |         |
|-----|------------------|--------|---------|
| 종 류 | 압 축 SPRING       | 총 권 수  | 4.25 권  |
| 재 질 | SUS304-WPB NI-C□ | 권 방 향  | 좌       |
| 선 경 | φ0.6             | 자유장 길이 | 8 ± 0.2 |

**NOTE**

- ① 지시치수 중점관리 할 것
- 재료 절단부 처리 주의 할 것
- BENDING 부 직각 유지 할 것  
직각부는 필히 자연 "R" 가공 할 것

**환경 규제 준수 의무**

환경 규제 준수의무는 사양서에 의해 제작되는 제품(부품)의 제조시 제품의 원,부자재에 대한 환경규제 물질이 규정치 이상 내포하지 않았음을 본사에 증명해야하며, 보증의무 실패로 인한 손해비용에 대해 책임을 져야한다. (규정치 : 리모트솔루션 "환경관리 물질 운영규정")

| NO | PART CODE | PART NAME | Q'ty | MATERIAL | REMARKS |
|----|-----------|-----------|------|----------|---------|
|    |           |           |      |          |         |

SCALE 2/1

UNIT mm

DRAWN 2017/10/19  
b. c. Park

CHECKED 2017/10/19  
s. b. Lim

CHECKED 2017/10/19

APPROVED 2017/10/19  
s. h. Kim

**(-)SPRING**

**RC84(SKB\_AI\_BT08)**

**2SM-RC84**

**Remote Solution**

ISSUE **Z**

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |               |    |
|--------------------------|-----------------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : 44 | 62 |
| REFORM :                 |                                                           | RD12D00       |    |
| DECISION :               |                                                           |               |    |

## 10. Mechanical Spec (13/15) – (±) SPRING

| NO | MODEL | TITLE | MATERIAL | FINISH | REMARK |
|----|-------|-------|----------|--------|--------|
| 1  |       |       |          |        |        |
| 2  |       |       |          |        |        |

|     |                  |        |   |                                   |   |        |
|-----|------------------|--------|---|-----------------------------------|---|--------|
| 종 류 | 압 축 SPRING       | 총 권 수  | A | 2.25권                             | B | 4.25 권 |
| 재 질 | SUS304-WPB NI-C□ | 권 방 향  | A | 좌                                 | B | 우      |
| 선 경 | Ø0.6             | 자유장 길이 | A | 1.2 <sup>+0</sup> <sub>-0.2</sub> | B | 8 ±0.2 |

**NOTE**

- ① 지시치수 중점관리할것
- 재료 절단부 처리 주의할것
- BENDING부 직각유지할것  
직각부는 필히 자연"R"가공할것

환경 규제 준수 의무

환경 규제 준수의무는 사양서에 의해 제작되는 제품(부품)의 제조시 제품의 원,부자재에 대한 환경규제 물질이 규정치 이상 내포하지 않았음을 본사에 증명해야하며, 보증의무 실패로 인한 손해비용에 대해 책임을 지어한다. (규정치 : 리모트솔루션 "환경관리 물질 운영규정")

| NO | PART CODE | PART NAME | Q'ty | MATERIAL | REMARKS |
|----|-----------|-----------|------|----------|---------|
|    |           |           |      |          |         |

F020-01

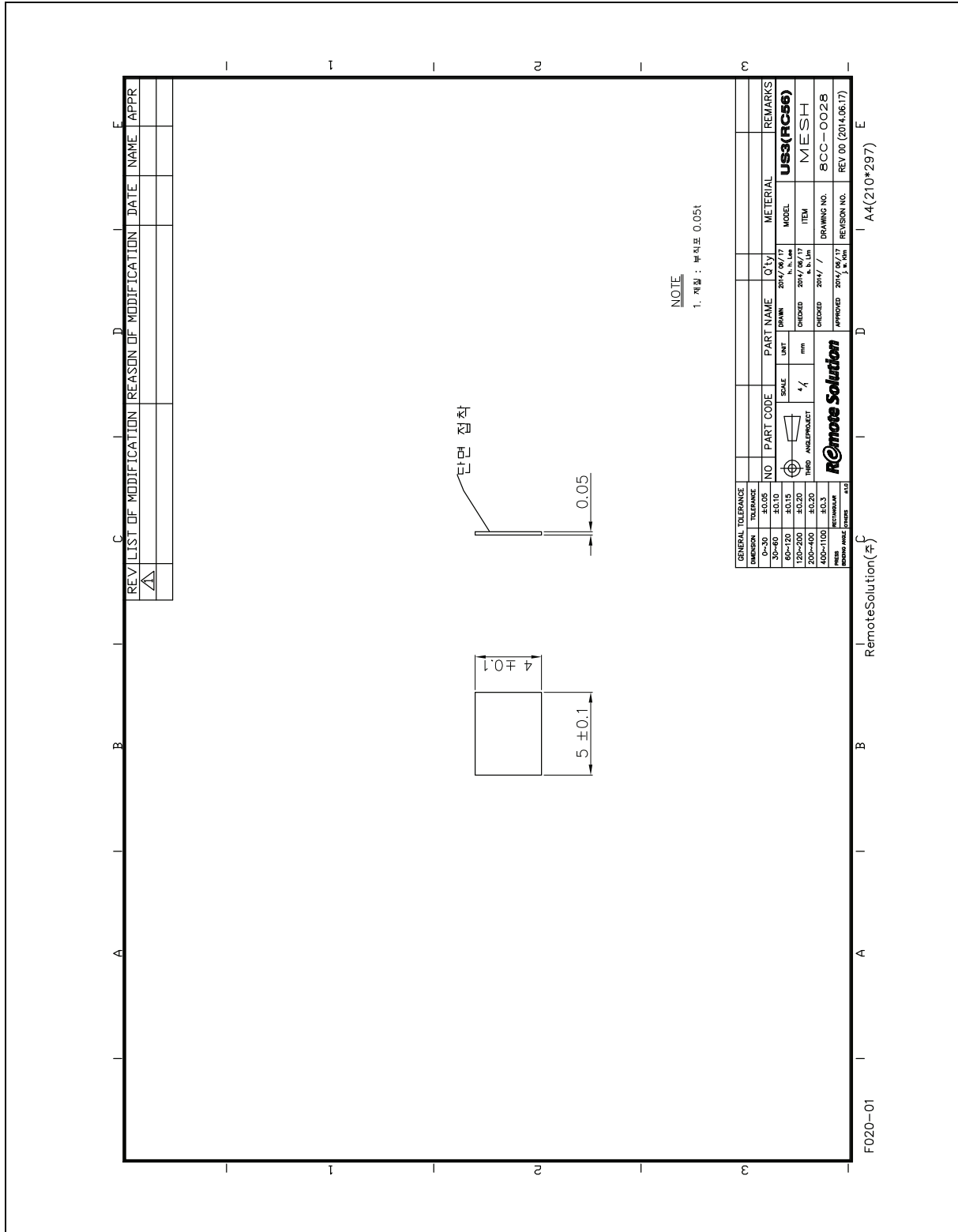
리모트솔루션(주)

A4 ( 210 \* 297 )

# REMOTE SOLUTION CO., LTD.

|                          |                                                     |               |    |
|--------------------------|-----------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : 45 | 62 |
| REFORM :                 |                                                     |               |    |
| DECISION :               |                                                     | RD12D00       |    |

## 10. Mechanical Spec (14/15) – MESH



# REMOTE SOLUTION CO., LTD.

|                          |                                                   |               |    |
|--------------------------|---------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <b>SPECIFICATION</b><br><br>(TRANSMITTER REMOCON) | MODEL NO : 46 | 62 |
| REFORM :                 |                                                   | RD12D00       |    |
| DECISION :               |                                                   |               |    |

## 10. Mechanical Spec (15/15) PE BAG

| NO | MODEL | TITLE | MATERIAL | FINISH |
|----|-------|-------|----------|--------|
| 1  |       |       |          |        |

COLOR : BLACK

**NOTE**

1. 도면 치수로 관리 할 것.  
2. 재료 : PE 0.05t 투명

| △ | ISSUE NO | MM/DD/YY   | SIGNATURE | CHANGE NO  | CHANGE CONTENTS                                      |
|---|----------|------------|-----------|------------|------------------------------------------------------|
|   | SCALE    | UNIT       | DRAWN     | 2014/12/10 | <b>PE BAG</b><br><b>CJ(RC60)</b><br><b>7PP-0052T</b> |
|   | N / S    | mm         | CHECKED   | 2014/12/10 |                                                      |
|   | DRAWN    | 2014/12/10 |           | ISSUE      |                                                      |
|   |          |            |           |            |                                                      |

# REMOTE SOLUTION CO., LTD.

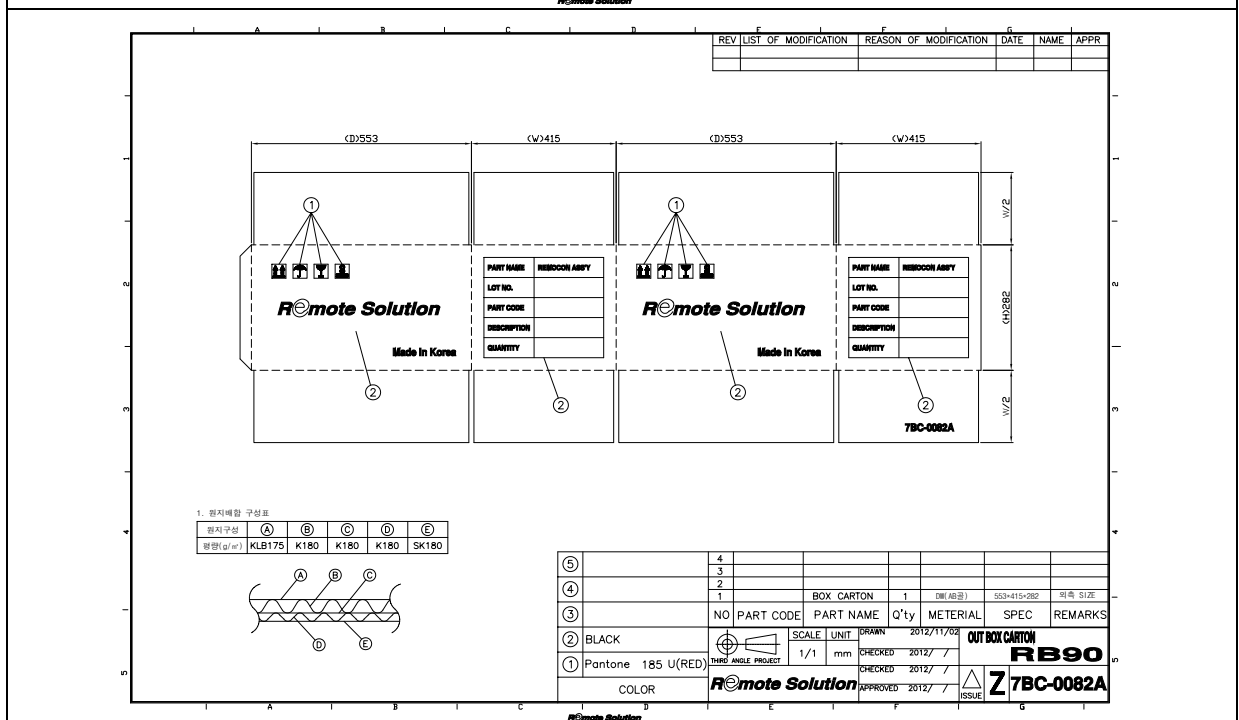
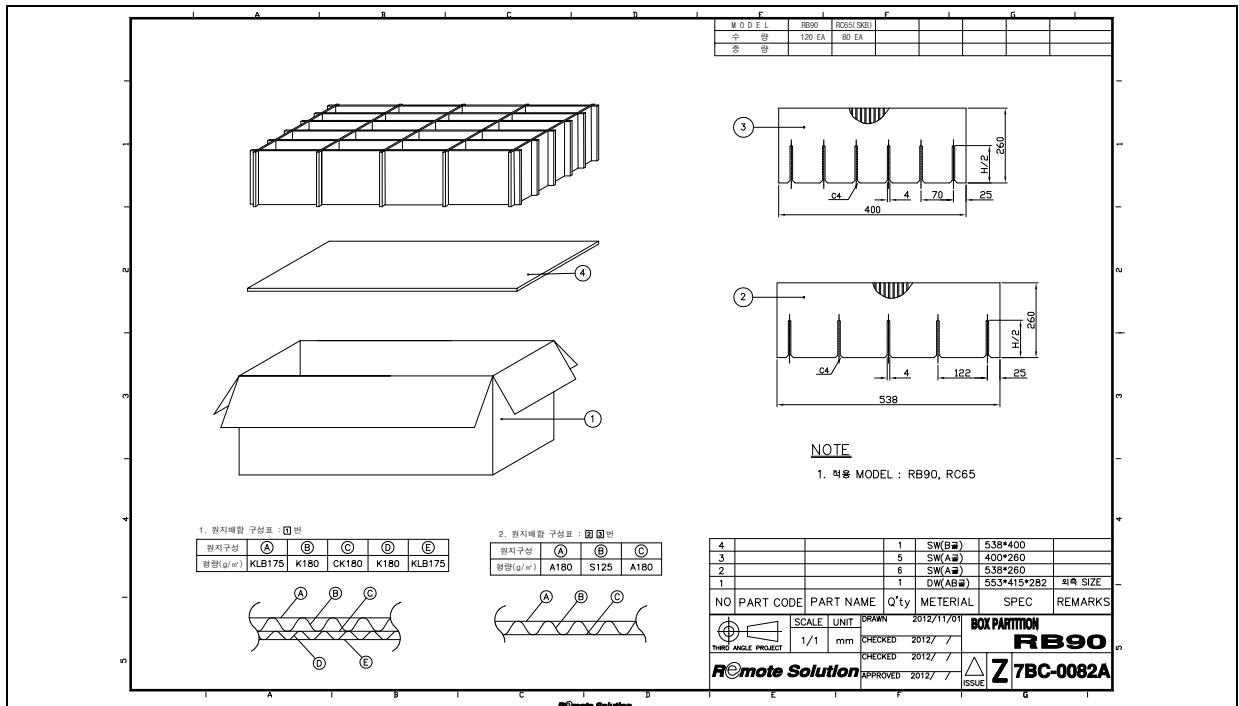
|                          |                                                     |            |    |
|--------------------------|-----------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <h2>SPECIFICATION</h2> <p>(TRANSMITTER REMOCON)</p> | MODEL NO : | 47 |
| REFORM :                 |                                                     |            |    |
| DECISION :               |                                                     | RD12D00    | 62 |

## 11. Packaging Specification

10-1 MATERIAL : CARTON

10-2 SIZE : 553 (L)\* 415 (W)\* 282 (H) (Out Side)

10-3 QUANTITY : 80EA



# REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22

REFORM :

DECISION :

## SPECIFICATION

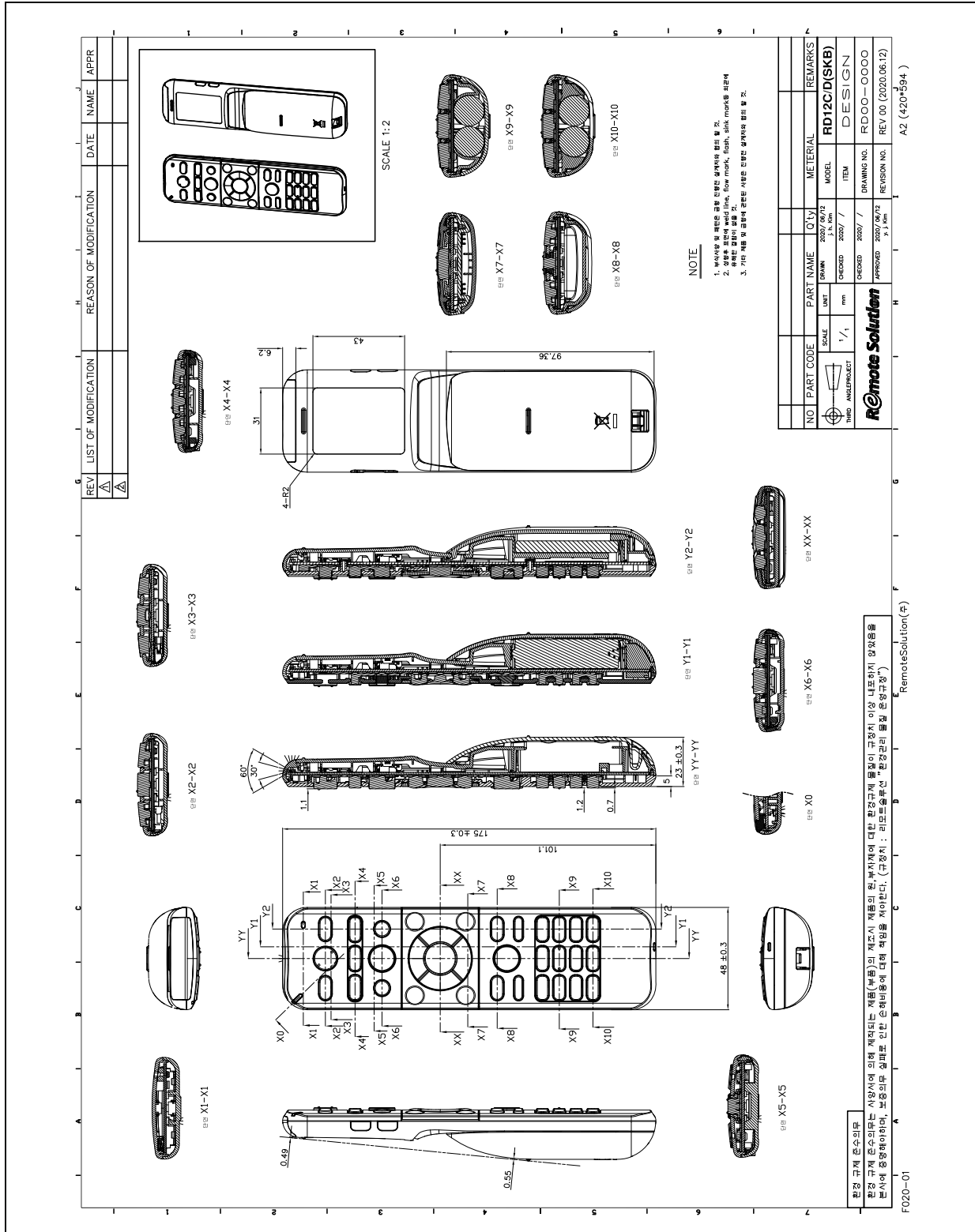
(TRANSMITTER REMOCON)

MODEL NO : 48

RD12D00

62

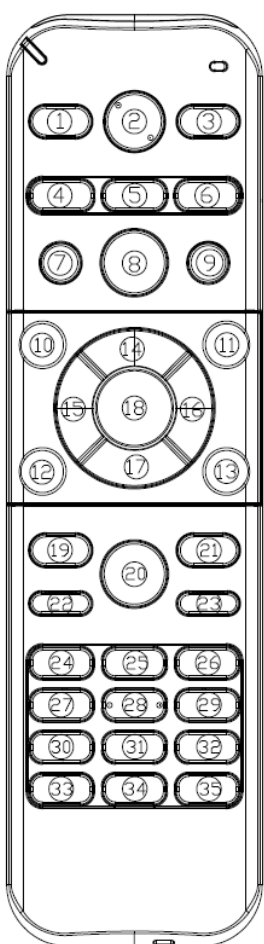
### 12. Assembling Specification



# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 49 |
| REFORM :                 |                                                           | RD12D00    | 62 |
| DECISION :               |                                                           |            |    |

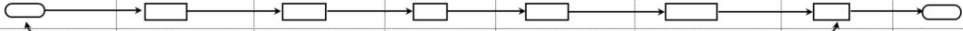
## 13. Rubber Tension Test

|  | NO. | Tension | Return                                                 | NO. | Tension | Return |
|------------------------------------------------------------------------------------|-----|---------|--------------------------------------------------------|-----|---------|--------|
|                                                                                    | 1   | 240     | 144                                                    | 25  | 230     | 138    |
|                                                                                    | 2   | 240     | 144                                                    | 26  | 240     | 144    |
|                                                                                    | 3   | 230     | 138                                                    | 27  | 240     | 144    |
|                                                                                    | 4   | 220     | 132                                                    | 28  | 230     | 138    |
|                                                                                    | 5   | 230     | 138                                                    | 29  | 220     | 132    |
|                                                                                    | 6   | 240     | 144                                                    | 30  | 240     | 144    |
|                                                                                    | 7   | 240     | 144                                                    | 31  | 230     | 138    |
|                                                                                    | 8   | 230     | 138                                                    | 32  | 230     | 138    |
|                                                                                    | 9   | 220     | 132                                                    | 33  | 240     | 144    |
|                                                                                    | 10  | 250     | 150                                                    | 34  | 220     | 132    |
|                                                                                    | 11  | 260     | 156                                                    | 35  | 230     | 138    |
|                                                                                    | 12  | 250     | 150                                                    |     |         |        |
|                                                                                    | 13  | 250     | 150                                                    |     |         |        |
|                                                                                    | 14  | 260     | 156                                                    |     |         |        |
|                                                                                    | 15  | 250     | 150                                                    |     |         |        |
|                                                                                    | 16  | 260     | 156                                                    |     |         |        |
|                                                                                    | 17  | 250     | 150                                                    |     |         |        |
|                                                                                    | 18  | 280     | 168                                                    |     |         |        |
|                                                                                    | 19  | 240     | 144                                                    |     |         |        |
|                                                                                    | 20  | 240     | 144                                                    |     |         |        |
|                                                                                    | 21  | 230     | 138                                                    |     |         |        |
|                                                                                    | 22  | 240     | 144                                                    |     |         |        |
|                                                                                    | 23  | 230     | 138                                                    |     |         |        |
| 24                                                                                 | 230 | 138     |                                                        |     |         |        |
| Tension Spec :                                                                     |     |         | Small Key : 220 ± 30gr                                 |     |         |        |
|                                                                                    |     |         | Large Key(10,11,12,13,14,15,16,17,18번 Key) : 250 ±30gr |     |         |        |

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |               |    |
|--------------------------|-----------------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : 50 | 62 |
| REFORM :                 |                                                           | RD12D00       |    |
| DECISION :               |                                                           |               |    |

## 14. Manufacturing Process Flow Chart (1/3) - SMD

|                                 |                       |                                                                                    |                                   |                                                                                   |                                                                                   |                      |                    |                                  |                                                                                     |
|---------------------------------|-----------------------|------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|--------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Customer                        | SKB                   | Process Flow Diagram                                                               |                                   |                                                                                   |                                                                                   | Document No          | RS-200325-02       | Sign                             |  |
| Product                         | BA02                  |                                                                                    |                                   |                                                                                   |                                                                                   | Date                 | 2020. 03. 25       | Review                           | 권대걸                                                                                 |
| Model                           | RD12D                 |                                                                                    |                                   |                                                                                   |                                                                                   | Part                 | SMD                | Approval                         |  |
| No.                             | Revision date         | Content                                                                            |                                   |                                                                                   | Check                                                                             | No.                  | Revision date      | Content                          | Check                                                                               |
|                                 |                       |                                                                                    |                                   |                                                                                   |                                                                                   |                      |                    |                                  |                                                                                     |
|                                 |                       |                                                                                    |                                   |                                                                                   |                                                                                   |                      |                    |                                  |                                                                                     |
| Process No                      |                       | 01                                                                                 | 02                                | 03                                                                                | 04                                                                                | 05                   | 06                 | 07                               | 08                                                                                  |
| P<br>r<br>o<br>c<br>e<br>s<br>s | Outsourcing           |                                                                                    |                                   |                                                                                   |                                                                                   |                      |                    |                                  |                                                                                     |
|                                 | MAIN                  |  |                                   |                                                                                   |                                                                                   |                      |                    |                                  |                                                                                     |
|                                 | SUB                   |                                                                                    |                                   |                                                                                   |                                                                                   |                      |                    |                                  |                                                                                     |
|                                 | Personnel             | -                                                                                  | -                                 |  |  | -                    | -                  | -                                | -                                                                                   |
| Process                         | LOADER                | SCREEN PRINTER                                                                     | Worktable                         | CHIP MOUNTER                                                                      | CHIP MOUNTER                                                                      | REFLOW               | UNLOADER           | VISION Check                     |                                                                                     |
| Content                         | .PCB Loading          | .Solder Paste Printing                                                             | .Spring Insert                    | .Chip Mounting                                                                    | .Chip Mounting                                                                    | .Soldering           | .PCB Unloading     | .PCB Inspection (Solder, part's) |                                                                                     |
| Machine                         | LOADER                | SCREEN PRINTER                                                                     | -                                 | CHIP MOUNTER                                                                      | CHIP MOUNTER                                                                      | REFLOW               | UNLOADER           | VISION Machine                   |                                                                                     |
| Tools                           | -                     | -                                                                                  | .Spring Insert Part's             | -                                                                                 | -                                                                                 | -                    | -                  | -                                |                                                                                     |
| Inspection Machine              | -                     | .3D Inspection machine                                                             | -                                 | -                                                                                 | -                                                                                 | -                    | -                  | -                                |                                                                                     |
| Focused Management Item         | .PCB Loading position | .Solder cream height                                                               | .Spring Reverse shovel<br>Warning | .Coordinate value                                                                 | .Coordinate value                                                                 | .temperature control | .PCB Loading posit | .Inspection criteria             |                                                                                     |
|                                 |                       |                                                                                    |                                   |                                                                                   |                                                                                   |                      |                    |                                  |                                                                                     |

RSC-200-D01 (Rev. 0)

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |               |    |
|--------------------------|-----------------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : 51 | 62 |
| REFORM :                 |                                                           |               |    |
| DECISION :               |                                                           | RD12D00       |    |

## 14. Manufacturing Process Flow Chart (2/3) - PBA

|                                 |                              |                                 |                                   |                                   |                        |                                   |              |          |     |
|---------------------------------|------------------------------|---------------------------------|-----------------------------------|-----------------------------------|------------------------|-----------------------------------|--------------|----------|-----|
| Customer                        | SKB                          | <div>Process Flow Diagram</div> |                                   |                                   |                        | Document No                       | RS-200325-02 | Sign     |     |
| Product                         | BA02                         |                                 |                                   |                                   |                        | Date                              | 2020.03.25   | Review   | 권덕걸 |
| Model                           | RD12D                        |                                 |                                   |                                   |                        | Part                              | PBA          | Approval |     |
| No.                             | Revision date                | Content                         | Check                             | No.                               | Revision date          | Content                           | Check        |          |     |
|                                 |                              |                                 |                                   |                                   |                        |                                   |              |          |     |
| Process No                      | 01                           | 02                              | 03                                | 04                                | 05                     | 06                                | 07           | 08       |     |
| P<br>r<br>o<br>c<br>e<br>s<br>s | Outsourcing                  |                                 |                                   |                                   |                        |                                   |              |          |     |
|                                 | MAIN                         |                                 |                                   |                                   |                        |                                   |              |          |     |
|                                 | SUB                          |                                 |                                   |                                   |                        |                                   |              |          |     |
|                                 | Personnel                    |                                 |                                   |                                   |                        |                                   |              |          |     |
| Process                         | Dome Sheet                   | Realtek Writing                 | leakage current test              | IR operation test                 | date printing marking  | Appearance inspection             |              |          |     |
| Content                         | .Dome Sheet Attach           | .RTL8762CA Writing              | .leakage current test             | .IR operation test                | .date printing marking | .Appearance inspection            |              |          |     |
| Machine                         | .Dome Sheet jig              | .Writing jig,PC                 | .PC                               | .PC                               | .marking machine       |                                   |              |          |     |
| Tools                           | .Dome Sheet jig tool         |                                 | .ammeter<br>.POWER Supply         | .ammeter<br>.POWER Supply         |                        |                                   |              |          |     |
| Inspection Machine              |                              |                                 |                                   |                                   |                        |                                   |              |          |     |
| Focused Management Item         | .Dome Sheet Attachment Check | .Writing Firmware check         | .Nonconforming product management | .Nonconforming product management | .Check print status    | .Nonconforming product management |              |          |     |

RSC-200-001 (Rev. 0)

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |               |    |
|--------------------------|-----------------------------------------------------------|---------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : 52 | 62 |
| REFORM :                 |                                                           | RD12D00       |    |
| DECISION :               |                                                           |               |    |

## 14. Manufacturing Process Flow Chart (3/3) – Assembly

|                                 |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
|---------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------------------------|-----------------------|--------------------------------|-----------------------------------------|-------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Customer                        | SKB           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            | Process Flow Diagram               |                       | Document No                    | RS-200325-02                            |                                                       | Sign                                                            |  |
| Product                         | BA02          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       | Date                           | 2020.03.25                              |                                                       | Review                                                          |  |
| Model                           | RD12D         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       | Part                           | Assembly                                |                                                       | Approval                                                        |  |
| No.                             | Revision date | Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                            |                                    | Check                 | No.                            | Revision date                           | Content                                               |                                                                 | Check                                                                               |
|                                 |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
|                                 |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
| Process No                      |               | 01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 02                                                         | 03                                 | 04                    | 05                             | 06                                      | 07                                                    | 08                                                              |                                                                                     |
| P<br>r<br>o<br>c<br>e<br>s<br>s | Outsourcing   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
|                                 | MAIN          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
|                                 | SUB           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
|                                 | Personnel     |         |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
| Process                         |               | TOP CASE Assembly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | TOP CASE Assembly                                          | TOP CASE Assembly                  | TOP CASE Assembly     | Assembly                       | attaching protective film               | IR CODE Test                                          | PCB FMC TEST                                                    |                                                                                     |
| Content                         |               | .Indicator LED insert<br>.SIDE KEY insert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | .Mesh Attach                                               | .Side key insert<br>.Rubber insert | .PCB Cutting & insert | .IR Window insert<br>.Assembly | .IR Window<br>attaching protective film | .IR CODE TEST<br>.Back Label attach<br>.SIDE KEY TEST | .Pairing TEST<br>.Rssi TEST<br>.Voice TEST<br>.BACK LIGHT CHECK |                                                                                     |
| Machine                         |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       | .Assembly machine              |                                         | .4IN1 Test machine                                    | .PC                                                             |                                                                                     |
| Tools                           |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       | .Pairing Dongle                                                 |                                                                                     |
| Inspection Machine              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       | .Monitor<br>.darkroom box                                       |                                                                                     |
| Focused Management Item         |               | .Scratch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | .Scratch                                                   | .Scratch                           | .Scratch              | .Assembly Status check         | .Check Attachment Status                | .IR CODE Check<br>.LED Check                          | .Rssi Test<br>.PAIRING Test<br>.Voice Test<br>.Unpairing Test   |                                                                                     |
| Process No                      |               | 09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 10                                                         |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
| P<br>r<br>o<br>c<br>e<br>s<br>s | Outsourcing   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
|                                 | MAIN          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
|                                 | SUB           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
|                                 | Personnel     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
| Process                         |               | Appearance inspection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Package                                                    |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
| Content                         |               | .BATTERYCOVER inset<br>.Appearance inspection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | .PE BAG Package<br>.Passed Label attach<br>.Insert Battery |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
| Machine                         |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
| Tools                           |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
| Inspection Machine              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |
| Focused Management Item         |               | .BATTERYCOVER inset<br>.Appearance inspection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | .packing quantity                                          |                                    |                       |                                |                                         |                                                       |                                                                 |                                                                                     |

PCS-200-001 Rev. 03

RSC-200-001 (Rev. 0)

**REMOTE SOLUTION CO., LTD.**

|                          |                                                                                                |            |    |
|--------------------------|------------------------------------------------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div style="text-align: center;"> <h1>SPECIFICATION</h1> <h2>(TRANSMITTER REMOCON)</h2> </div> | MODEL NO : | 53 |
| REFORM :                 |                                                                                                |            |    |
| DECISION :               |                                                                                                | RD12D00    | 62 |

## 15. Manufacturing Control Plan (1/2)

| STEPS                                           |         |             |           | ITEMS                                                                                                                                                   |          | Remote Control       |         |                                          |          |                                                                                                                |              |                               |       |                                     |                 | NO                                          |    | Revision date                         |    | The Reason of revision                             |          | Man               |                   | Process |         | SMD |  | PBA                                  |  | Assembly              |  |      |  |
|-------------------------------------------------|---------|-------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------|---------|------------------------------------------|----------|----------------------------------------------------------------------------------------------------------------|--------------|-------------------------------|-------|-------------------------------------|-----------------|---------------------------------------------|----|---------------------------------------|----|----------------------------------------------------|----------|-------------------|-------------------|---------|---------|-----|--|--------------------------------------|--|-----------------------|--|------|--|
|                                                 |         | Model       |           | SK Broadband AI BOX RCU (BA2)                                                                                                                           |          |                      |         |                                          |          |                                                                                                                |              |                               |       |                                     |                 |                                             |    |                                       |    |                                                    |          |                   |                   |         |         |     |  | A<br>P<br>P<br>R<br>O<br>V<br>A<br>L |  | made<br>review<br>adm |  |      |  |
|                                                 |         | Part Number |           | RD12000                                                                                                                                                 |          |                      |         |                                          |          |                                                                                                                |              |                               |       |                                     |                 |                                             |    |                                       |    |                                                    |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         | CFT         |           | PADIR Kiri, RADU4 Kiri, Y1 Ahn, H1 Yang,<br>Choi Sang-Pil (Y1 Na-Heon Nari), Park Tae-hyeon (ang)<br>OOSSO Sen, BM Kiri, Purnakus(G1 Woo), Sangeun(Lee) |          |                      |         |                                          |          |                                                                                                                |              |                               |       |                                     |                 | 2020.04.03                                  |    | Delete ADP08 (aperture) audio feature |    |                                                    |          |                   |                   |         |         |     |  | 12/6                                 |  | -                     |  | 12/6 |  |
| VENDOR CODE                                     |         |             |           | Customer technical acknowledge details (when required):                                                                                                 |          |                      |         |                                          |          |                                                                                                                |              |                               |       | Other admin/submit (when required): |                 |                                             |    |                                       |    |                                                    |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Process                                         |         | Equipment   |           | Manage the project                                                                                                                                      |          | Standard             |         | Management Criteria                      |          | How to check                                                                                                   |              | Cycle                         |       | Management Plan                     |                 | PD                                          |    | QC                                    |    | Division                                           |          | Corrective Action |                   | Remarks |         |     |  |                                      |  |                       |  |      |  |
| NO                                              | Process | NO          | Equipment | NO                                                                                                                                                      | Products | NO                   | Process | NO                                       | Standard | NO                                                                                                             | How to check | NO                            | Cycle | NO                                  | Management Plan | NO                                          | PD | NO                                    | QC | NO                                                 | Division | NO                | Corrective Action | NO      | Remarks |     |  |                                      |  |                       |  |      |  |
| Raw material inventory                          |         |             |           | Supplier (warehouse)                                                                                                                                    |          | Vendor Input         |         |                                          |          |                                                                                                                |              |                               |       |                                     |                 |                                             |    |                                       |    |                                                    |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Incoming inspection                             |         |             |           | Visual, Test film                                                                                                                                       |          | 1 Raw materials      |         | A visual inspection (Design)             |          | Don't allow harmful defects                                                                                    |              | Visual inspection             |       | Sampling                            |                 | Inspection specification                    |    | ○                                     |    | Isolation, return money, Insurance of abnormal     |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           | Vernier caliper                                                                                                                                         |          | 2 Raw materials      |         | The dimensional check                    |          | In line with the structure drawings length size management                                                     |              | measurement Data              |       | Sampling                            |                 | Inspection specification                    |    | ○                                     |    | Isolation, return money, Insurance of abnormal     |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           | Tension Gauge                                                                                                                                           |          | 3 Raw materials      |         | Characteristics of check                 |          | In accordance with specifications of the structure                                                             |              | measurement Data              |       | Sampling                            |                 | Inspection specification                    |    | ○                                     |    | Isolation, return money, Insurance of abnormal     |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           | Visual                                                                                                                                                  |          | 4 Raw materials      |         | Combined inspection                      |          | After the merger is not allowed to produce about                                                               |              | The assembly                  |       | Sampling                            |                 | Inspection specification                    |    | ○                                     |    | Isolation, return money, Insurance of abnormal     |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           | Chamber                                                                                                                                                 |          | 5 Raw materials      |         | Reliability Test                         |          | Reliability test no abnormalities                                                                              |              | measurement Data              |       | once a month                        |                 | Test specification                          |    | ○                                     |    | Isolation, return money, Insurance of abnormal     |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Materials Warehousing/releasing                 |         |             |           | EA 1000A II                                                                                                                                             |          | 6 Raw materials      |         | Harmful material                         |          | Hazardous substances management benchmark                                                                      |              | measurement Data              |       | Once a week                         |                 | Inspection of abnormal                      |    | ○                                     |    | Isolation, return money, Insurance of abnormal     |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           | A material cart                                                                                                                                         |          | 7 Raw materials      |         | FIFO                                     |          | Confirm materials specifications FIFO management                                                               |              | New product labeling          |       | Every Lot                           |                 | ERP PIG(SAP)                                |    |                                       |    |                                                    |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Prevention of static electricity                |         |             |           | Static Electricity Checker                                                                                                                              |          | 1 Static Electricity |         | Management of static Electricity         |          | Should be within Good Zone                                                                                     |              | Electrostatic tester          |       | once a day                          |                 | Check Sheet                                 |    | ○                                     |    | Anti-static shoes and Electrostatic tie to replace |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Soldering solder cream                          |         |             |           | Solder paste mixer (DMS200)                                                                                                                             |          | 1 Solder cream       |         | Storage of Solder cream                  |          | In cold storage with 5±3℃                                                                                      |              | Thermometer                   |       | once a day                          |                 | Measurement sheet of Solder temperature     |    | ○                                     |    | Reset, Adjustment                                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 2 Solder cream       |         | Soldering of Solder cream                |          | 45 sec                                                                                                         |              | Timer                         |       | Before using                        |                 | Management register of Stock and Delivery   |    | ○                                     |    | Reset, Adjustment                                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 3 Solder cream       |         | Leaking room temperature                 |          | 25±1℃, 2Hr (For proof)                                                                                         |              | Timer                         |       | Before using                        |                 | Management register of Stock and Delivery   |    | ○                                     |    | Reset, Adjustment                                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Supplying PCB                                   |         |             |           | Vacuum Loader (SESF-200)                                                                                                                                |          | 1 PCB                |         | Sorting status                           |          | For direction to sort out                                                                                      |              | Visual inspection             |       | 1/Lot                               |                 |                                             |    | ○                                     |    | rearrange                                          |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Cleaning PCB                                    |         |             |           | PCB Cleaner (PCC-4000)                                                                                                                                  |          | 1 PCB                |         | PCB The installation                     |          | PCB Pick upAfter drop phenomenon                                                                               |              | Visual inspection             |       | 1/Lot                               |                 |                                             |    | ○                                     |    | The new installation                               |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Spreading Solder cream                          |         |             |           | Screen Printer (HP-520S)                                                                                                                                |          | 1 Solder Cream       |         | Squeeze pressure                         |          | 14~16kg                                                                                                        |              | Check Equipment               |       | 1/Lot                               |                 | Equipment checked                           |    | ○                                     |    | From the near device                               |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           | Maintain a constant temperature device                                                                                                                  |          | 2 Solder Cream       |         | Condition of spreading Solder            |          | 35 ~ 100mmsec, 60℃ (Normal : 70~80mmsec)                                                                       |              | Check Equipment               |       | 1/Lot                               |                 | Equipment checked                           |    | ○                                     |    | From the near device                               |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 3 Solder Cream       |         | Condition of printing solder             |          | Thin less, Tin over No blockage                                                                                |              | Visual Inspection (Magnifier) |       | 1/Lot                               |                 | At the beginning, middle, end               |    | ○                                     |    | From the near device                               |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 4 Solder Cream       |         | Keeping internal test temperature        |          | 23 ~ 27 degrees                                                                                                |              | Set Display                   |       | once a day                          |                 |                                             |    | ○                                     |    | From the set temperature                           |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 5 Solder Cream       |         | Automatic cleaning → Metal mask          |          | There should be no scraps around the opening area (Manual Cleaning : 1Time/2hrs)                               |              | Equipment                     |       | once in 5 times                     |                 |                                             |    | ○                                     |    | Manual cleaning                                    |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Solder 3D measurement                           |         |             |           | 3D measuring machine (CP-2500)                                                                                                                          |          | 1 Solder Cream       |         | Solder thickness measurement             |          | Coating amount management by metal mask thickness                                                              |              | Check Equipment               |       | Every Time                          |                 | 3D measurement sheet                        |    | ○                                     |    | Reset, Adjustment                                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| SMD components patching                         |         |             |           | Chip components                                                                                                                                         |          | 1 Chip components    |         | Nozzle pressure                          |          | Air : 0.45 ~ 0.55 kg<br>Nozzle : -80 ± 10 mmHg                                                                 |              | Pressure gauge                |       | 1time/daily                         |                 | Equipment work sheet                        |    | ○                                     |    | Reset, Adjustment                                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           | Chip Mount                                                                                                                                              |          | 2 Chip components    |         | PMC specification is not confirmed       |          | Feeder List (MONITOR)<br>*To prevent the missing system                                                        |              | Visual inspection             |       | When the mode change                |                 | Record the account                          |    | ○                                     |    | Reset, Adjustment                                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 3 Chip components    |         | Part A pick up location                  |          | 5~20% of component area                                                                                        |              | Equipment to confirm          |       | When the mode change                |                 | Equipment work sheet                        |    | ○                                     |    | Reset, Adjustment                                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| SMD components patching                         |         |             |           | Chip components                                                                                                                                         |          | 4 Chip components    |         | Air/Nozzle pressure                      |          | Air : 4.5 ~ 5.5 kg<br>Nozzle : -100 ± 10 mmHg                                                                  |              | Pressure gauge                |       | 1 time/monthly                      |                 | equipment work sheet                        |    | ○                                     |    | Reset, Adjustment                                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 5 Chip components    |         | Part A pick up location                  |          | 5~20% of component area                                                                                        |              | Equipment to confirm          |       | When the mode change                |                 | equipment work sheet                        |    | ○                                     |    | Reset, Adjustment                                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Spring assembly                                 |         |             |           | Manual work                                                                                                                                             |          | 1 SMD products       |         | Insert the spring (+/-)                  |          | Most standard of BOM                                                                                           |              | Visual                        |       | When receiving material             |                 | System (SAP)                                |    | ○                                     |    | From the set parameters                            |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Reflow Soldering                                |         |             |           | SMD products                                                                                                                                            |          | 1 SMD products       |         | Preheat interval                         |          | Temperature : 150 ~ 200℃                                                                                       |              | Preheating temperature Check  |       | time/daily                          |                 | Reflow Profile                              |    | ○                                     |    | From the set parameters                            |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 2 SMD products       |         |                                          |          | Soldering time : 90 ~ 130sec                                                                                   |              | Preheating temperature Check  |       | time/daily                          |                 | Reflow Profile                              |    | ○                                     |    | From the set parameters                            |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 3 SMD products       |         | Soldering                                |          | Temperature : 200℃ 0.5 (peak 230~250℃)<br>*PCB 1.27 RFL4                                                       |              | Profile Check                 |       | time/daily                          |                 | Reflow Profile                              |    | ○                                     |    | From the set parameters                            |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 4 SMD products       |         |                                          |          | Soldering time : 40 ~ 70sec                                                                                    |              | Profile Check                 |       | time/daily                          |                 | Reflow Profile                              |    | ○                                     |    | From the set parameters                            |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| PCB Out                                         |         |             |           | SMB-220                                                                                                                                                 |          | 1 SMD products       |         | cool down                                |          | PCB finishing (per not allowed)                                                                                |              | Visual inspection             |       | All                                 |                 | equipment                                   |    | ○                                     |    | From the set parameters                            |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| visual inspection                               |         |             |           | Image tester (MV-3L)                                                                                                                                    |          | 1 SMD products       |         | Confirm the part inspection condition    |          | no tv, tv, less allowed, plug, inverse interpolation, not advanced part control within 1/3 of the scope of the |              | equipment                     |       | All                                 |                 | work sheet                                  |    | ○                                     |    | Identification, Isolation, Repair                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Analysis nonconforming products and disposition |         |             |           | Lupe Iron Solder                                                                                                                                        |          | 1 SMD products       |         | Management of soldering iron temperature |          | Temperature management of soldering iron(380~420℃)                                                             |              | Measuring temperature         |       | once a day                          |                 | Checklist for temperature of Soldering iron |    | ○                                     |    | Reset temperature, Change soldering iron           |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Attaching Metal Dome sheet                      |         |             |           | MetalDome sheet M/C                                                                                                                                     |          | 1 Raw Materials      |         | Attaching Metal Dome sheet               |          | Adhesion shall be good.                                                                                        |              | Equipment                     |       | All                                 |                 | work sheet                                  |    | ○                                     |    | Identification, Isolation, Repair                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Realtex IC Writing                              |         |             |           | Writing M/C                                                                                                                                             |          | 1 Main PCB/A         |         | Realtex IC Writing (RTL626CA)            |          | Writing(Programming) should be fine - RS / Test Program                                                        |              | Equipment                     |       | All                                 |                 | work sheet                                  |    | ○                                     |    | Identification, Isolation, Repair                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Leakage current inspection                      |         |             |           | Function Test M/C                                                                                                                                       |          | 1 Main PCB/A         |         | Leakage current inspection               |          | Current should be fine (satisfied with the spec)                                                               |              | Equipment                     |       | All                                 |                 | work sheet                                  |    | ○                                     |    | Identification, Isolation, Repair                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| I/R/F Power & Operating current inspection      |         |             |           | Function Test M/C                                                                                                                                       |          | 1 Main PCB/A         |         | I/R/F Operating Low voltage(2.3V input)  |          | No defect on I/R/F Operating                                                                                   |              | Equipment                     |       | All                                 |                 | work sheet                                  |    | ○                                     |    | Identification, Isolation, Repair                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           | Function Test M/C                                                                                                                                       |          | 2 Main PCB/A         |         | Operating current                        |          | Current should be fine (satisfied with the spec)                                                               |              | Equipment                     |       | All                                 |                 | work sheet                                  |    | ○                                     |    | Identification, Isolation, Repair                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Marking                                         |         |             |           | Marking M/C                                                                                                                                             |          | 1 PCB Assy           |         | Criteria management                      |          | None/defect - Marking manufacture date Defect - Attach nonconforming label                                     |              | Equipment                     |       | All                                 |                 | work sheet                                  |    | ○                                     |    | Identification, Isolation, Repair                  |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Packing                                         |         |             |           | Magazine                                                                                                                                                |          | 1 PCB Assy           |         | Product Packaging                        |          | No model missing identification confirmation                                                                   |              | Visually                      |       | All                                 |                 | equipment                                   |    | ○                                     |    | Re packing                                         |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
| Analysis nonconforming products and repair      |         |             |           | Magnifier, Soldering iron, inspection jig                                                                                                               |          | 1 PCB Assy           |         | Management of Soldering iron temperature |          | Temperature management of soldering iron(380~420℃)                                                             |              | Measuring temperature         |       | once a day                          |                 | Checklist for temperature of Soldering iron |    | ○                                     |    | Reset temperature, Change soldering iron           |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |
|                                                 |         |             |           |                                                                                                                                                         |          | 2 PCB Assy           |         | Analysis and repair                      |          | Should be no issue on solder point                                                                             |              | Function / Current test       |       | nonconforming                       |                 | Nonconforming Process checked               |    | ○                                     |    | Re-test after repair, scrap                        |          |                   |                   |         |         |     |  |                                      |  |                       |  |      |  |

# REMOTE SOLUTION CO., LTD.

INSTITUTION : 2020.04.22

REFORM :

DECISION :

## SPECIFICATION

(TRANSMITTER REMOCON)

MODEL NO : 54

RD12D00

62

### 15. Manufacturing Control Plan (2/2)

| No. | Process<br>Subprocess | Process                                    | Equipment                                                             | Manage the project |                                | Special<br>test                                                           | Management Criteria                                                                                                                                                                                                |                                |                     |                                              | Division |    | Corrective Action                        | Remark |
|-----|-----------------------|--------------------------------------------|-----------------------------------------------------------------------|--------------------|--------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------|----------------------------------------------|----------|----|------------------------------------------|--------|
|     |                       |                                            |                                                                       | NO                 | Products                       | Process                                                                   | Standard                                                                                                                                                                                                           | How to check                   | Cycle               | Management Plan                              | PD       | QC |                                          |        |
| 170 |                       | Top Case Asseby                            | Handwork                                                              | 1                  | Top Case, Keypad, Main PCBA    | Top Case + Keypad + Main PCBA                                             | Keypad and Main PCBA should not be lifted when seated                                                                                                                                                              | visually                       | All                 | work sheet                                   | ○        |    | Isolation, Repair                        |        |
| 180 |                       | Assembling                                 | Handwork                                                              | 1                  | Top Assy, Bottom Cover, Filter | Assembling, Top Case Assy + Bottom Cover                                  | There should be no deviations, gaps or gaps in spring<br>Check the filter combination<br>After the provisional match, the full match<br>Be careful not to damage the phone jack during temporary molding           | visually                       | All                 | work sheet                                   | ○        |    | Isolation, Repair                        |        |
| 190 |                       | Learning test                              | Handwork                                                              | 1                  | Finished                       | Checked RCU Learning + IR Filter part protective skin attach IR operation | No abnormality in learning function<br>Check the condition after attaching the IR filter part protective skin                                                                                                      | Visually                       | All                 | work sheet                                   | ○        |    | Identification, Isolation, Repair        |        |
| 200 |                       | IR Operating Inspection                    | 4IN1 Inspection JIG                                                   | 1                  | Finished                       | Inspection Attach Back Label Side key inspection                          | No abnormality of Full Key IR output<br>Check LED lighting<br>No side key abnormalities                                                                                                                            | Equipment                      | All                 | work sheet                                   | ○        |    | Identification, Isolation, Repair        |        |
| 210 |                       | RF Operating Inspection                    | RF Inspection JIG                                                     | 1                  | Finished Barcode               | Pairing                                                                   | Check pairing status and buzzer sound<br>Check RSSI value, SW, FW version<br>Voice and leakage current check<br>Version label (manufacture date)                                                                   | Visually                       | All                 | work sheet                                   | ○        |    | Containment, repair                      |        |
| 220 |                       | PE-BAG fusion                              | fusion JIG                                                            | 1                  | finished                       | PFusion of PE-BAG batteries                                               | No abnormality of PE-BAG fusion                                                                                                                                                                                    | Visually                       | All                 | work sheet                                   | ○        |    | Containment, repair                      |        |
| 230 |                       | visual Inspection                          | Visually                                                              | 1                  | finished                       | Appearance                                                                | There should be no abnormality in the state of matching (Gap, step)<br>There should be no abnormality on the IR Filter part's protective skin.<br>No abnormality in specifications, no foreign matter and no marks | Visually                       | All                 | work sheet                                   | ○        |    | Containment, repair                      |        |
|     |                       |                                            |                                                                       | 2                  | finished                       | Insert PE-BAG batteries                                                   | Inserting batteries into PE-BAG                                                                                                                                                                                    | Visually                       | All                 | work sheet                                   | ○        |    | Containment, repair                      |        |
| 240 |                       | Product packing                            | Handwork                                                              | 1                  | finished                       | Manual, PE-Bag                                                            | No manual missing or tearing                                                                                                                                                                                       | Visually                       | All                 | work sheet                                   | ○        |    | Containment, repair                      |        |
|     |                       |                                            |                                                                       | 2                  | finished                       | Carton Box packaging                                                      |                                                                                                                                                                                                                    | Visually                       | Box                 | work sheet Barcode label                     | ○        |    | Containment, repair                      |        |
| S6  |                       | Analysis nonconforming products and repair | Handwork                                                              | 1                  | finished                       | 분석 및 해결                                                                   | Management of equipment and poor performance, Caution and confirmation of parts damage when dismantling                                                                                                            | Visually/ Identification label | Nonconforming       | Nonconformity Management ledger              | ○        |    | Re-inspection after repair, Disposal     |        |
|     |                       |                                            |                                                                       | 2                  | finished                       | 식별관리                                                                      | Good and non-conforming products should not be mixed                                                                                                                                                               |                                | Nonconforming       | Nonconformity Management ledger              | ○        |    | Re-inspection after repair, Disposal     |        |
| 250 |                       | OQC                                        | Pairing Dongle, Inspection P/G, JIG, Power Supply, Currnt meter, Lupe | 1                  | finished                       | Visual inspection (Design)                                                | There should be no deleterious defect                                                                                                                                                                              | Standard Sample /Visual        | Sampling G-II, 0.65 | Standard document of test, Inspection Manual | ○        |    | Sorting, Rework, Releasing nonconforming |        |
|     |                       |                                            |                                                                       | 2                  | finished                       | Function test                                                             | Pairing, voice, LED lighting, buzzer, Full Key, i-Set<br>No abnormal operation                                                                                                                                     | Inspection P/G                 | Sampling G-II, 0.65 | Standard document of test, Inspection Manual | ○        |    | Sorting, Rework, Releasing nonconforming |        |
|     |                       |                                            |                                                                       | 3                  | finished                       | Electrical characteristics                                                | 1. RF (volume) operation current: TBD<br>2. IR (TV volume) operating current: TBD<br>3. Leakage current<br>-Before pairing: (AVR) TBD<br>-After pairing: (AVR) TBD<br>4. Operating voltage: TBD                    | Power Supply, currnt meter     | Sampling n=5, c=0   | Standard document of test, Inspection Manual | ○        |    | Sorting, Rework, Releasing nonconforming |        |
|     |                       |                                            |                                                                       | 4                  | finished                       | Overhaul                                                                  | Pattern Open/Short, 동박 들뜸, 냉납, 소납, 내부이물, 부품 미상, 파손 등이 없을 것                                                                                                                                                         | Visually, Lupe                 | n=1, c=0            | Standard document of test, Inspection Manual | ○        |    | Sorting, Rework, Releasing nonconforming |        |
|     |                       |                                            |                                                                       | 5                  | finished                       | Condition of packing                                                      | There should be no issues with packaging condition, dirt, identification and quantification                                                                                                                        | Visual                         | Sampling Check      | Standard document of test, Inspection Manual | ○        |    | Sorting, Rework, Releasing nonconforming |        |
| 57  |                       | Out Going                                  | Forklift, Truck                                                       | 1                  | finished                       | Product inventory management                                              | There should be no issues with quantity of stock, mixing product and condition of storage                                                                                                                          | Products list                  | Standby stock       | System(SAP)                                  |          |    |                                          |        |

※ 기호 설명

| No | 기호     | 의미                                          |
|----|--------|---------------------------------------------|
| 1  | 가공     | 원자재나 반제품을 인공적으로 처리하여 새로운 제품을 만들             |
| 2  | 방향지시   | 원자재, 반제품, 완제품이 공정에 따라 흐르는 이동하는 과정           |
| 3  | 저장     | 원자재, 반제품, 완제품이 공정에 따라 저장하는 과정               |
| 4  | 수량검사   | 원자재, 반제품, 완제품의 개수를 개량하여 그 결과 확인하는 과정        |
| 5  | 검사     | 원자재, 반제품, 완제품의 품질 특성을 시험하고 합격, 불합격을 판정하는 과정 |
| 6  | 수입출하검사 | 원자재의 품질 특성을 시험하고 합격, 불합격을 판정하는 과정           |
| 7  | 수리 공정  | 공정 부적합품에 대해 수리하여 양품, 불량품을 판정하는 과정           |

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 55 |
| REFORM :                 |                                                           |            |    |
| DECISION :               |                                                           | RD12D00    | 62 |

## 16. TV Brand List (1/4)

| Maker(Brand)Name            | Code number (3 digit) List                                                                                                                                                                |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 삼성(SAMSUNG)                 | 226 163 218 215 212 206 167 191 162 181 037 183 178 185 232<br>225 154 092 052 035 034 231 135 157 187 341                                                                                |
| 엘지(LG,금성,GOLDSTAR)          | 227 236 206 192 186 193 175 178 185 224 201 092 183 003 002<br>030 164 168 032 072 031 094 096 417                                                                                        |
| 대우(DAEWOO)                  | 014 231 043 190 177 217 176 159 166 233 029 158 150 206 178<br>185 216 165 169 156 152 155 151 228 195 153 170 188 198 038<br>160 189 039 199 182 235 092 050 053 202 047 051 179 344 375 |
| 대우루컴즈(DAEWOO LUCOMS)        | 327 335 350 351 352 353 226                                                                                                                                                               |
| 아남(ANAM)                    | 204 174 234 018 019 223 193 180 171 053 220 222 161 095 221<br>210 211 122 158 049 054 055 069 099 302 357 374                                                                            |
| 에이텍(ATEC)                   | 031                                                                                                                                                                                       |
| 이레전자(ERAE)                  | 004 006 007 008 011 012 013                                                                                                                                                               |
| 덱트론(DECTRON)                | 033                                                                                                                                                                                       |
| 디보스(DIBOSS)                 | 015 109                                                                                                                                                                                   |
| 디지털 디바이스(DIGITAL DEVICE)    | 301 312                                                                                                                                                                                   |
| 디지털스트림테크놀로지(DIGITAL STREAM) | 351 360                                                                                                                                                                                   |
| 디지털 싸이노스(DIGIAL CYNOS)      | 016                                                                                                                                                                                       |
| 삼보컴퓨터(TRIGEM COMPUTER)      | 332                                                                                                                                                                                       |
| 새찬전자(SAECCHAN)              | 028 041 044                                                                                                                                                                               |
| 코리아데이터시스템스(KDS)             | 033 073                                                                                                                                                                                   |
| 티디에스(TDS)                   | 103                                                                                                                                                                                       |
| 트라이뷰(TRIVIEW)               | 302                                                                                                                                                                                       |
| 프리즘 테크놀로지(PRISM TECHNOLOGY) | 303 355 227                                                                                                                                                                               |
| 하이얼(HAIER)                  | 033 077 078 302 333 345                                                                                                                                                                   |
| 한국전자(KEC)                   | 053 206                                                                                                                                                                                   |
| 한성(HANSUNG)                 | 378 414                                                                                                                                                                                   |
| 현대아이티(HYUNDAI IT) -현대이미지퀘스트 | 022 017 107 108 309                                                                                                                                                                       |
| 현우 맥 플러스(MCPLUS)            | 206                                                                                                                                                                                       |
| 휴리프(HULIF)                  | 104                                                                                                                                                                                       |
| 쿠메스전자(QUMES)                | 106                                                                                                                                                                                       |
| 뉴콤월드(NEWCOMMWORLD)          | 219                                                                                                                                                                                       |
| 다오코리아(DaoKorea)             | 304                                                                                                                                                                                       |
| 모뉴엘(Moneual) - 롯데마트         | 305 306 307 326                                                                                                                                                                           |
| 드림뷰(DreamView) - 이마트        | 308 332                                                                                                                                                                                   |
| 노브랜드(No Brand) - 이마트        | 308                                                                                                                                                                                       |
| 제이엘통상(XPEER) - 홈플러스         | 321                                                                                                                                                                                       |
| 우성엔터프라이즈(WeCube) - 홈플러스     | 322                                                                                                                                                                                       |
| 티바(TIVA, 스피드테크놀로지)          | 324                                                                                                                                                                                       |
| 스카이미디어(Vishorn)             | 325 330 336                                                                                                                                                                               |
| 동양전자(DONGYANG)              | 068                                                                                                                                                                                       |
| 비티씨정보통신(BTC)                | 316                                                                                                                                                                                       |
| 씨마디지털(CIMADIGITEC)          | 318 319 227                                                                                                                                                                               |
| LS전자(LS ELECTRONICS)        | 313                                                                                                                                                                                       |
| 모티브씨엔씨(MOTV)                | 311                                                                                                                                                                                       |
| 시그마TV(SIGMACOM)             | 310                                                                                                                                                                                       |
| 유니크로(UNIKRO)                | 100 317                                                                                                                                                                                   |
| 보임틀(VOIMTLE)                | 304                                                                                                                                                                                       |
| 보림전자(BOLIM)                 | 028 315 323                                                                                                                                                                               |
| 3S DIGITAL                  | 028                                                                                                                                                                                       |
| 삼인디스플레이(XSTIM)              | 104 320 329                                                                                                                                                                               |
| 유투스(케이엘전자 UTUS)             | 314                                                                                                                                                                                       |
| 인디텍(VIEWPIA)                | 107                                                                                                                                                                                       |
| 재원전자(JAEWON)                | 333                                                                                                                                                                                       |
| 지피앤씨(GPNC)                  | 327 306                                                                                                                                                                                   |
| 제노스미디어(ZENOS)               | 303 328                                                                                                                                                                                   |
| 제이아이케이솔루션(LEGRAND)          | 342                                                                                                                                                                                       |
| 파인포스(FINEFORCE)             | 306                                                                                                                                                                                       |
| 더블유시디(WCD)                  | 331                                                                                                                                                                                       |
| 토마토디스플레이(TOMATO DISPLAY)    | 337 306 356                                                                                                                                                                               |
| 넥스디지털(NEX)                  | 338                                                                                                                                                                                       |
| 매직나라(MAGIC NARA)            | 332 339                                                                                                                                                                                   |
| 유니크컴퍼니(UNIQUE COMPANY)      | 340                                                                                                                                                                                       |

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 56 |
| REFORM :                 |                                                           |            |    |
| DECISION :               |                                                           | RD12D00    | 62 |

## 16. TV Brand List (2/4)

| Maker(Brand)Name                    | Code number (3 digit) List |
|-------------------------------------|----------------------------|
| 알파스캔(ALPHASCAN)                     | 306 203 345                |
| 야마카시(YAMAKASI, 바이텍코리아)              | 343 346 347 348 349        |
| 자비오씨앤씨(XAVVIO)                      | 354                        |
| 티베라(TVERA)                          | 355                        |
| 스카이워스(SKYWORTH)                     | 353                        |
| 오리온정보통신(TOPSYNC)                    | 351 330 357 306            |
| 한스정보(HANSJUNGBO, HANS TOUCH)        | 356                        |
| 샤오미(XIAOMI)                         | 361                        |
| 디스플레이파크(DISPLAY PARK)               | 227                        |
| 스마트홈 일렉트로닉스(SMART HOME ELECTRONICS) | 362 363                    |
| 주연테크(JOOYON)                        | 302 346 373                |
| 대유위니아(WINIADAEWOO, WINIADIMCHAE)    | 338                        |
| 아낙(ANAC)                            | 345                        |
| 매직뷰(MAGICVU)                        | 355                        |
| 모넥스(MONEX)                          | 302                        |
| 엘디케이(LDK)                           | 226 206                    |
| 와사비망고(WASABIMANGO)                  | 227                        |
| 하이메이드(HIMADE)                       | 227 072                    |
| 인트로스(INTROS)                        | 227 355                    |
| 삼화디스플레이(SAMHWA)                     | 227                        |
| 아도니스 (ADONIS)                       | 355                        |
| 큐닉스 (QNIX)                          | 370 371 372                |
| 와이드뷰 (WIDE VU)                      | 373 360                    |
| 벅셀 (BEXEL)                          | 350                        |
| 폴라로이드 (POLAROID)                    | 072                        |
| 클라인즈 (KLEINZ)                       | 373                        |
| 아인즈 (EINZ)                          | 373                        |
| 티비스타 (TVSTAR)                       | 355                        |
| 더함 TV (THEHAM)                      | 072                        |
| 이엔티비 (ENTV)                         | 374                        |
| MOZEE                               | 373                        |
| 시네아이(DLT) -시네EYE                    | 373                        |
| ZEPA                                | 373                        |
| 젠티뷰(ZENTVIEW)                       | 356 373                    |
| FIDES                               | 226 072                    |
| 프리투스 (FREETOSS)                     | 226                        |
| CACC                                | 072                        |
| 제네시스 (GENESIS)                      | 226                        |
| 이노스 (INNOS)                         | 072                        |
| 스마트뷰 (SMART VIEW)                   | 418                        |
| 이스트라(ESTRA)                         | 419 351                    |
| COOCAA                              | 353                        |
| 티지앤크퍼니(TG&Co.)                      | 332                        |
| JAMOS                               | 358                        |
| A MARK                              | 092 154 193 206            |
| AOC                                 | 193 404                    |
| AUDIOVOX                            | 038                        |
| CANDEL                              | 150 081                    |
| CAMEL                               | 366                        |
| CETRONIC                            | 053                        |
| CHANGHONG                           | 351                        |
| CITIZEN                             | 050 052 092 150 163 081    |
| CLASSIC                             | 053                        |
| CONCERTO                            | 150                        |
| CONTEC                              | 053 135 157                |
| CORONADO                            | 092 154 206                |
| CRAIG                               | 053                        |
| CROWN                               | 053 092                    |
| CURTIS MATHES                       | 052 092 163                |
| CXC                                 | 053                        |
| DAYTRON                             | 092                        |
| DELL                                | 410                        |

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 57 |
| REFORM :                 |                                                           |            |    |
| DECISION :               |                                                           | RD12D00    | 62 |

## 16. TV Brand List (3/4)

| Maker(Brand)Name | Code number (3 digit) List                                                     |
|------------------|--------------------------------------------------------------------------------|
| DYNASTY          | 053                                                                            |
| ELECTROHOME      | 038 092                                                                        |
| EMERSON          | 359 026 038 053 092 111 135 154 206                                            |
| FUNAI            | 053 359                                                                        |
| FUJITSU          | 205 412                                                                        |
| FUTURETECH       | 053                                                                            |
| GE               | 042 167 037 049 067 071                                                        |
| GRUNDIG          | 401                                                                            |
| HISENSE          | 368                                                                            |
| HITACHI          | 377 009 023 024 025 083 097 098 150 139 206 376                                |
| HP               | 403                                                                            |
| INFINITY         | 068                                                                            |
| INKEL            | 209 353 163                                                                    |
| INSIGNIA         | 411                                                                            |
| JBL              | 068                                                                            |
| JCPENNY          | 052 092 089                                                                    |
| JVC              | 058 066 092 070 071 226                                                        |
| KENWOOD          | 058 070 415                                                                    |
| KLOSS            | 082                                                                            |
| KMC              | 092 154 206                                                                    |
| KTV              | 053 092 154 250                                                                |
| LUXMAN           | 051 150                                                                        |
| LXI              | 151 167 037 068 090                                                            |
| MAGNAVOX         | 001 150 154 167 037 068 206 185 081 082 085                                    |
| MARANTZ          | 068 108                                                                        |
| MATSUI           | 068                                                                            |
| METZ             | 408                                                                            |
| MGA              | 150                                                                            |
| MITSUBISHI       | 074 075 076 105 150                                                            |
| MTC              | 052 150 163                                                                    |
| NAD              | 090                                                                            |
| NEC              | 005 014 042 105 150 151 152 413                                                |
| NIKEI            | 053                                                                            |
| ONKING           | 053                                                                            |
| ONTEC            | 053                                                                            |
| ONWA             | 053                                                                            |
| ORION            | 111 101 227                                                                    |
| PANASONIC        | 095 161 049 054 055 223 067 068 238 061 069 071 250                            |
| PENNEY           | 150 163 167                                                                    |
| PHILCO           | 150 154 167 037 068 206 185 081 082 085                                        |
| PHILIPS          | 026 066 120 150 154 167 203 037 068 206 236 178 185 081 082<br>085 086 087 312 |
| PIONEER          | 002 003 027 097 367                                                            |
| PORTLAND         | 092 150 154 206                                                                |
| PROTON           | 032 092 122                                                                    |
| QUASAR           | 049 067 071 250                                                                |
| RADIO SHACK      | 053 185 092                                                                    |
| RCA              | 010 097 150 167 037                                                            |
| RUNCO            | 416                                                                            |
| REALISTIC        | 053                                                                            |
| SANYO            | 020 102 151                                                                    |
| SCOTT            | 053 092                                                                        |
| SEARS            | 092 150 151 163 167 037 206 089 090                                            |
| SHARP            | 001 062 063 064 065 092 208 206                                                |
| SONY             | 048 060 059 058 057 056 207 115 194 147 070 139 045 046 080                    |
| SOUNDESIGN       | 053 081                                                                        |
| SPECTRICON       | 193                                                                            |
| SSS              | 053                                                                            |
| SYLVANIA         | 051 150 167 185 037 068 081 082 085                                            |
| TATUNG           | 049                                                                            |
| TCL              | 334 009 369 376                                                                |
| TEAC             | 407                                                                            |

# REMOTE SOLUTION CO., LTD.

|                          |                                                   |            |    |
|--------------------------|---------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <b>SPECIFICATION</b><br><br>(TRANSMITTER REMOCON) | MODEL NO : | 58 |
| REFORM :                 |                                                   |            |    |
| DECISION :               |                                                   | RD12D00    | 62 |

## 16. TV Brand List (4/4)

| Maker(Brand)Name | Code number (3 digit) List              |
|------------------|-----------------------------------------|
| TECHNICS         | 095 071                                 |
| TECHWOOD         | 150                                     |
| TEKNIKA          | 053 092 150 154 163 165 052 206 081     |
| THOMSON          | 409                                     |
| TMK              | 150                                     |
| TOSHIBA          | 021 052 105 163 088 151 089 090 091 093 |
| TOTEVISION       | 092                                     |
| UNIDEN           | 406                                     |
| VICTOR           | 066                                     |
| VIDTECH          | 150                                     |
| VIEWSONIC        | 405                                     |
| VIZIO            | 364                                     |
| WARDS            | 092 150 154 167 185 037 068 071 206 085 |
| WESTING HOUSE    | 038 014 402                             |
| YAMAHA           | 150                                     |
| YUPITERUZENITH   | 053                                     |
| ZENITH           | 050 084 227                             |
| ZONDA            | 193                                     |

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 59 |
| REFORM :                 |                                                           |            |    |
| DECISION :               |                                                           | RD12D00    | 62 |

## 17. Grouping brand list (1/4)

|          | Maker(Brand)Name            | Code number (3 digit) List                                  |
|----------|-----------------------------|-------------------------------------------------------------|
| GROUP 01 | 삼성(SAMSUNG)                 | 226 163 218 215 212 206 167 191 162 181 037 183 178 185 232 |
|          |                             | 225 154 092 052 035 034 231 135 157 187 341                 |
| GROUP 02 | 엘지(LG,금성,GOLDSTAR)          | 227 236 206 192 186 193 175 178 185 224 201 092 183 003 002 |
|          |                             | 030 164 168 032 072 031 094 096 417                         |
| GROUP 03 | 대우(DAEWOO)                  | 014 231 043 190 177 217 176 159 166 233 029 158 150 206 178 |
|          |                             | 185 216 165 169 156 152 155 151 228 195 153 170 188 198 038 |
|          | 대우루컴즈(DAEWOO LUCOMS)        | 160 189 039 199 182 235 092 050 053 202 047 051 179 344 375 |
| GROUP 04 | 아남(ANAM)                    | 327 335 350 351 352 353 226                                 |
|          |                             |                                                             |
|          | 아남(ANAM)                    | 204 174 234 018 019 223 193 180 171 053 220 222 161 095 221 |
|          |                             | 210 211 122 158 049 054 055 069 099 302 357 374             |
|          | 이래전자(ERAЕ)                  | 004 006 007 008 011 012 013                                 |
|          | 디지털 디바이스(DIGITAL DEVICE)    | 301 312                                                     |
|          | 디지털스트림테크놀로지(DIGITAL STREAM) | 351 360                                                     |
|          | 삼보컴퓨터(TRIGEM COMPUTER)      | 332                                                         |
|          | 코리아데이터시스템스(KDS)             | 033 073                                                     |
|          | 티디에스(TDS)                   | 103                                                         |
|          | 트라이뷰(TRIVIEW)               | 302                                                         |
|          | 프리즘 테크놀로지(PRISM TECHNOLOGY) | 303 355 227                                                 |
|          | 한국전자(KEC)                   | 053 206                                                     |
|          | 현대아이티(현대이미지퀘스트)             | 022 017 107 108 309                                         |
|          | 현우 맥 플러스(MCPLUS)            | 206                                                         |
|          | 휴리프(HULIF)                  | 104                                                         |
|          | 쿠메스전자(QUMES)                | 106                                                         |
|          | 다오코리아(DaoKorea)             | 304                                                         |
|          | 모뉴엘(Moneual) - 롯데마트         | 305 306 307 326                                             |
|          | 드림뷰(DreamView) - 이마트        | 308 332                                                     |
|          | 노브랜드(No Brand) - 이마트        | 308                                                         |
|          | 제이엘통상(XPEER) - 홈플러스         | 321                                                         |
|          | 우성엔터프라이즈(WeCube) - 홈플러스     | 322                                                         |
|          | 티바(TIVA, 스피드테크놀로지)          | 324                                                         |
|          | 스카이미디어(Vishorn)             | 325 330 336                                                 |
|          | 동양전자(DONGYANG)              | 068                                                         |
|          | 비티씨정보통신(BTC)                | 316                                                         |
|          | 씨마디지털(CIMADIGITEC)          | 318 319 227                                                 |
|          | LS전자(LS ELECTRONICS)        | 313                                                         |
|          | 모티브씨엔씨(MOTV)                | 311                                                         |
|          | 시그마TV(SIGMACOM)             | 310                                                         |
|          | 유니크로(UNIKRO)                | 100 317                                                     |
|          | 보임틀(VOIMTLE)                | 304                                                         |
|          | 보림전자(BOLIM)                 | 028 315 323                                                 |
|          | 삼인디스플레이(XSTIM)              | 104 320 329                                                 |
|          | 유투스(케이엘전자 UTUS)             | 314                                                         |
|          | 인디텍(VIEWPIA)                | 107                                                         |
|          | 재원전자(JAEWON)                | 333                                                         |
|          | 지피엔씨(GPNC)                  | 327 306                                                     |
|          | 제노스미디어(ZENOS)               | 303 328                                                     |
|          | 제이아이케이솔루션(LEGRAND)          | 342                                                         |
|          | 파인포스(FINEFORCE)             | 306                                                         |
|          | 더블유시디(WCD)                  | 331                                                         |
|          | 토마토디스플레이(TOMATO DISPLAY)    | 337 306 356                                                 |
|          | 넥스디지털(NEX)                  | 338                                                         |
|          | 매직나라(MAGIC NARA)            | 332 339                                                     |
|          | 유니크컴퍼니(UNIQUE COMPANY)      | 340                                                         |
|          | 알파스칸(ALPHASCAN)             | 306 203 345                                                 |
|          | 야마카시(YAMAKASI, 바이텍코리아)      | 343 346 347 348 349                                         |
|          | 자비오씨엔씨(XAVVIO)              | 354                                                         |
|          | 티베라(TVERA)                  | 355                                                         |
|          | 스카이워스(SKYWORTH)             | 353                                                         |
|          | 오리온정보통신(TOPSYNC)            | 351 330 357 306                                             |

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 60 |
| REFORM :                 |                                                           |            |    |
| DECISION :               |                                                           | RD12D00    | 62 |

## 17. Grouping brand list (2/4)

|          | Maker(Brand)Name                    | Code number (3 digit) List                                                     |
|----------|-------------------------------------|--------------------------------------------------------------------------------|
|          | 한스정보(HANSJUNGBO, HANS TOUCH)        | 356                                                                            |
|          | 샤오미(XIAOMI)                         | 361                                                                            |
|          | 디스플레이파크(DISPLAY PARK)               | 227                                                                            |
|          | 스마트홈 일렉트로닉스(SMART HOME ELECTRONICS) | 362 363                                                                        |
|          | 주연테크(JOOYON)                        | 302 346 373                                                                    |
|          | 대유위니아(WINIADAEWOO, WINIADIMCHAE)    | 338                                                                            |
|          | 아낙(ANAC)                            | 345                                                                            |
|          | 매직뷰(MAGICVU)                        | 355                                                                            |
|          | 모넥스(MONEX)                          | 302                                                                            |
|          | 엘디케이(LDK)                           | 226 206                                                                        |
|          | 와사비망고(WASABIMANGO)                  | 227                                                                            |
|          | 하이메이드(HIMADE)                       | 227 072                                                                        |
|          | 인트로스(INTROS)                        | 227 355                                                                        |
|          | 삼화디스플레이(SAMHWA)                     | 227                                                                            |
|          | JAMOS                               | 358                                                                            |
|          | CAMEL                               | 366                                                                            |
|          | 아도니스(ADONIS)                        | 355                                                                            |
|          | 큐닉스(QNIX)                           | 370 371 372                                                                    |
|          | 와이드뷰 (WIDE VU)                      | 373 360                                                                        |
|          | 백셀 (BEXEL)                          | 350                                                                            |
|          | 폴라로이드 (POLAROID)                    | 072                                                                            |
|          | 클라인즈 (KLEINZ)                       | 373                                                                            |
|          | 아인즈 (IEINZ)                         | 373                                                                            |
|          | 티비스타 (TVSTAR)                       | 355                                                                            |
|          | 더함 TV (THEHAM)                      | 072                                                                            |
|          | 이엔티비 (ENTV)                         | 374                                                                            |
|          | MOZEE                               | 373                                                                            |
|          | 시네아이(DLT) -시네EYE                    | 373                                                                            |
|          | ZEPA                                | 373                                                                            |
|          | 젠티뷰(ZENTVIEW)                       | 356 373                                                                        |
|          | FIDES                               | 226 072                                                                        |
|          | 프리투스 (FREETOSS)                     | 226                                                                            |
|          | CACC                                | 072                                                                            |
|          | 제네시스 (GENESIS)                      | 226                                                                            |
|          | 이노스 (INNOS)                         | 072                                                                            |
|          | 한성(HANSUNG)                         | 378 414                                                                        |
|          | 스마트뷰 (SMART VIEW)                   | 418                                                                            |
|          | 이스트라(ESTRA)                         | 419 351                                                                        |
|          | COOCA                               | 353                                                                            |
|          | 티지엘컴퍼니(TG&Co.)                      | 332                                                                            |
| GROUP 05 | SONY                                | 048 060 059 058 057 056 207 115 194 147 070 139 045 046 080                    |
|          | PANASONIC                           | 095 161 049 054 055 223 067 068 238 061 069 071 250                            |
|          | NEC                                 | 005 014 042 105 150 151 152 413                                                |
|          | JVC                                 | 058 066 092 070 071 226                                                        |
|          | SANYO                               | 020 102 151                                                                    |
|          | PIONEER                             | 002 003 027 097 367                                                            |
|          | FUJITSU                             | 205 412                                                                        |
| GROUP 06 | SHARP                               | 001 062 063 064 065 092 208 206                                                |
|          | HITACHI                             | 377 009 023 024 025 083 097 098 150 139 206 376                                |
|          | HP                                  | 403                                                                            |
|          | TOSHIBA                             | 021 052 105 163 088 151 089 090 091 093                                        |
|          | mitsubishi                          | 074 075 076 105 150                                                            |
| GROUP 07 | PHILIPS                             | 026 066 120 150 154 167 203 037 068 206 236 178 185 081 082<br>085 086 087 312 |
|          | 하이얼(HAIER)                          | 033 077 078 302 333 345                                                        |
|          | HISENSE                             | 368                                                                            |
|          | ZENITH                              | 050 084 227                                                                    |
|          | CANDEL                              | 150 081                                                                        |
|          | EMERSON                             | 359 026 038 053 092 111 135 154 206                                            |

# REMOTE SOLUTION CO., LTD.

|                          |                                                           |            |    |
|--------------------------|-----------------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <div>SPECIFICATION</div> <div>(TRANSMITTER REMOCON)</div> | MODEL NO : | 61 |
| REFORM :                 |                                                           |            |    |
| DECISION :               |                                                           | RD12D00    | 62 |

## 17. Grouping brand list (3/4)

|          | Maker(Brand)Name       | Code number (3 digit) List                  |
|----------|------------------------|---------------------------------------------|
|          | GE                     | 042 167 037 049 067 071                     |
|          | GRUNDIG                | 401                                         |
|          | MAGNAVOX               | 001 150 154 167 037 068 206 185 081 082 085 |
|          | A MARK                 | 092 154 193 206                             |
|          | PENNEY                 | 150 163 167                                 |
| GROUP 08 | 에이텍(ATEC)              | 031                                         |
|          | 3S DIGITAL             | 028                                         |
|          | 뉴컴월드(NEWCOMMWORLD)     | 219                                         |
|          | 디지털 싸이노스(DIGIAL CYNOS) | 016                                         |
|          | 새찬전자(SAECHAN)          | 028 041 044                                 |
|          | AOC                    | 193 404                                     |
|          | AUDIOVOX               | 038                                         |
|          | CETRONIC               | 053                                         |
|          | CHANGHONG              | 351                                         |
|          | CITIZEN                | 050 052 092 150 163 081                     |
|          | CLASSIC                | 053                                         |
|          | CONCERTO               | 150                                         |
|          | CONTEC                 | 053 135 157                                 |
|          | CORONADO               | 092 154 206                                 |
|          | CRAIG                  | 053                                         |
|          | CROWN                  | 053 092                                     |
|          | CURTIS MATHES          | 052 092 163                                 |
|          | CXC                    | 053                                         |
|          | DAYTRON                | 092                                         |
|          | DELL                   | 410                                         |
|          | DYNASTY                | 053                                         |
|          | 덱트론(DECTRON)           | 033                                         |
|          | 디보스(DIBOSS)            | 015 109                                     |
|          | ELECTROHOME            | 038 092                                     |
|          | FUNAI                  | 053 359                                     |
|          | FUTURETECH             | 053                                         |
| GROUP 09 | INFINITY               | 068                                         |
|          | INKEL                  | 209 353 163                                 |
|          | INSIGNIA               | 411                                         |
|          | JBL                    | 068                                         |
|          | JCPENNY                | 052 092 089                                 |
|          | KENWOOD                | 058 070 415                                 |
|          | KLOSS                  | 082                                         |
|          | KMC                    | 092 154 206                                 |
|          | KTV                    | 053 092 154 250                             |
|          | LUXMAN                 | 051 150                                     |
|          | LXI                    | 151 167 037 068 090                         |
|          | MARANTZ                | 068 108                                     |
|          | MATSUI                 | 068                                         |
|          | METZ                   | 408                                         |
|          | MGA                    | 150                                         |
|          | MTC                    | 052 150 163                                 |
|          | NAD                    | 090                                         |
|          | NIKEI                  | 053                                         |
|          | ONKING                 | 053                                         |
|          | ONTEC                  | 053                                         |
|          | ONWA                   | 053                                         |
|          | ORION                  | 111 101 227                                 |
|          | PHILCO                 | 150 154 167 037 068 206 185 081 082 085     |
|          | PORTLAND               | 092 150 154 206                             |
|          | PROTON                 | 032 092 122                                 |
|          | QUASAR                 | 049 067 071 250                             |
|          | RADIO SHACK            | 053 185 092                                 |
|          | RCA                    | 010 097 150 167 037                         |
|          | RUNCO                  | 416                                         |

# REMOTE SOLUTION CO., LTD.

|                          |                                                   |            |    |
|--------------------------|---------------------------------------------------|------------|----|
| INSTITUTION : 2020.04.22 | <b>SPECIFICATION</b><br><br>(TRANSMITTER REMOCON) | MODEL NO : | 62 |
| REFORM :                 |                                                   |            |    |
| DECISION :               |                                                   | RD12D00    | 62 |

## 17. Grouping brand list (4/4)

| Maker(Brand)Name | Code number (3 digit) List              |
|------------------|-----------------------------------------|
| REALISTIC        | 053                                     |
| SCOTT            | 053 092                                 |
| SEARS            | 092 150 151 163 167 037 206 089 090     |
| SOUNDESIGN       | 053 081                                 |
| SPECTRICON       | 193                                     |
| SSS              | 053                                     |
| SYLVANIA         | 051 150 167 185 037 068 081 082 085     |
| TATUNG           | 049                                     |
| TCL              | 334 009 369 376                         |
| TEAC             | 407                                     |
| TECHNICS         | 095 071                                 |
| TECHWOOD         | 150                                     |
| TEKNIKA          | 053 092 150 154 163 165 052 206 081     |
| THOMSON          | 409                                     |
| TMK              | 150                                     |
| TOTEVISION       | 092                                     |
| UNIDEN           | 406                                     |
| VICTOR           | 066                                     |
| VIDTECH          | 150                                     |
| VIEWSONIC        | 405                                     |
| VIZIO            | 364                                     |
| WARDS            | 092 150 154 167 185 037 068 071 206 085 |
| WESTING HOUSE    | 038 014 402                             |
| YAMAHA           | 150                                     |
| YUPITERUZENITH   | 053                                     |
| ZONDA            | 193                                     |