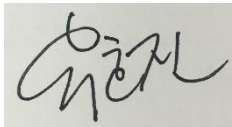


Movon Corporation



Approval Sheet

Item	Bluetooth Remote Controller
CUSTOMER	ALT
MODEL	BMM-BT12
VERSION	1.0
DATE	2021. 08. 19

개발사		
담당	검 토	승 인
		
유호진		심경석
승인유효기간	승인일로부터 1 년	

납품처		
담당	검 토	승 인
승인유효기간	승인일로부터 년	

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1. Revision History

1. 1 Revision History

No.	Date	Revision	Revision History	개 정 자
1	2021. 08. 19	New	First release	유호진

2. Product Introduction

2. 1 Product Description

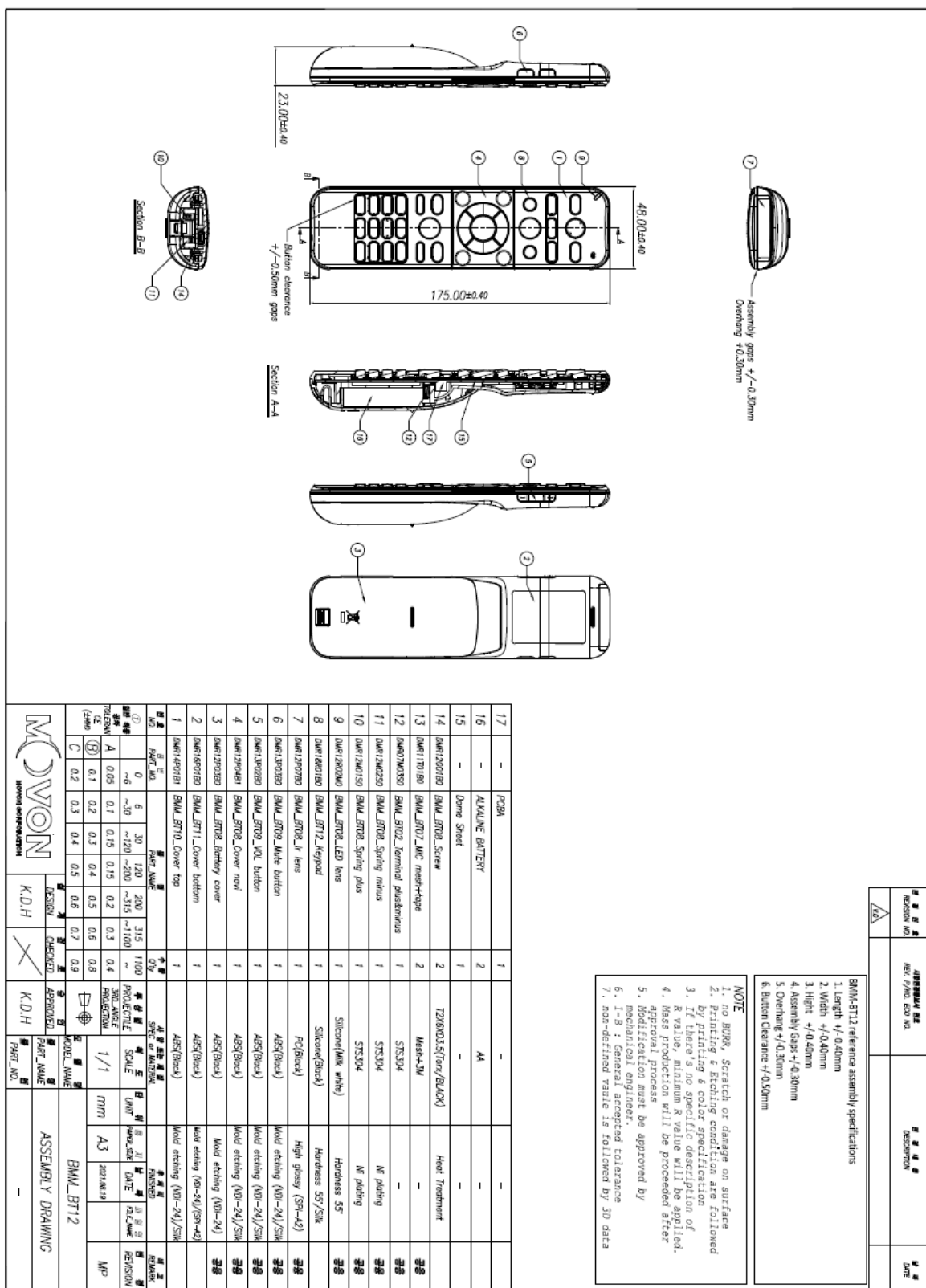
2.1.1 Model Name

Model	Bluetooth Remote Controller
Model No.	BMM-BT12
Certificate No (KC)	R-C-MVN-BMM-BT12

2.1.2 Appearance



2.1.3 Dimension

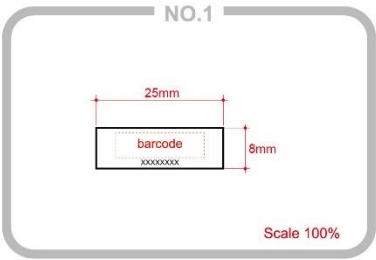
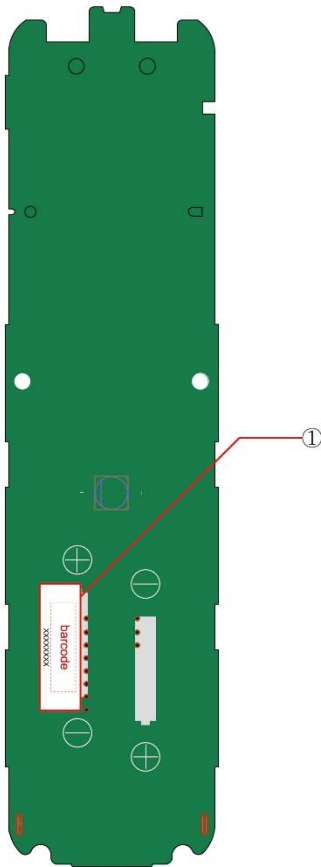


2.1.4 PCB Label Sticker Specification



PCB Label Sticker Specification

모 델	BMM-BT12	작성일	2021.08.18	발 신	담당	팀장	수 신	담당	팀장
품 명		용 도							
제작부서	Design Team	인쇄방법							
담당 자	ANN(심다정)	기 타							



Scale : 100 %

NO	NAME	COLOR	NO	NAME	COLOR
1	Sticker	Background(바탕) : White Text(문자) : Black	2		

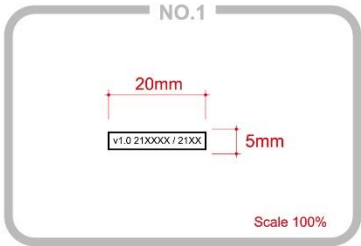
2.1.5 S/N Label Specification



S/N Label Sticker Specification

모 델	BT12	작성일	2021.08.18	발 신	담당	팀장	수 신	담당	팀장
품 명		용 도	SK 향						
제작부서	Design Team	인쇄방법							
담당자	ANN(심나정)	기 타							

SCALE 100%



NO	NAME	COLOR	NO	NAME	COLOR
1	Sticker	Background(바탕) : White Text(문자) : Black	2		

2.1.6 Label Specification



BackLabel Sticker

MOVON

모 델	BMM-BT12	작성일	2021.08.05	발 신	담당	실장	담당	실장
품 명	Design Team	용 도	SK 향					
설 달 자	ANN(심다경)	인쇄방법						
	기 타							



Size : 30 X 42mm

NO	NAME	COLOR
1	LABEL	White Bopp(유포지) Matte Laminating / ① BLACK TEXT:WHITE ② PANTONE 425C ③ PANTONE 422C

2.1.7 Printing Specification

MOVON

Printing Specification_1 BLACK

MOVON

이름	BMM-BT12	작업일	2021.05.14	판	담당	심장	수	담당	심장
프로젝트	Design Team	종류	SK형	신					
생성자	김다정(MAN)	크기							

NO	NAME	COLOR
1	ARTWORK_TOP	PANTONE COOL GRAY 3C
2	ARTWORK_L Side	PANTONE COOL GRAY 3C
3	ARTWORK_R Side	PANTONE COOL GRAY 3C

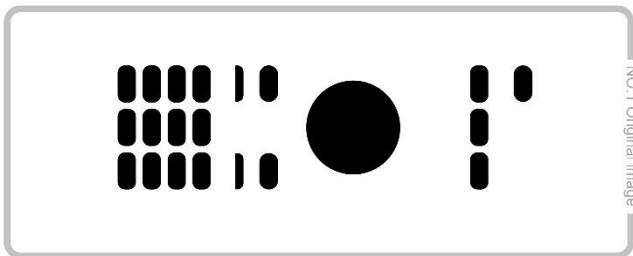
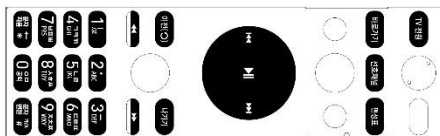
NO.1 Original image

NO.2 Original image

NO.3 Original image

Scale 100%

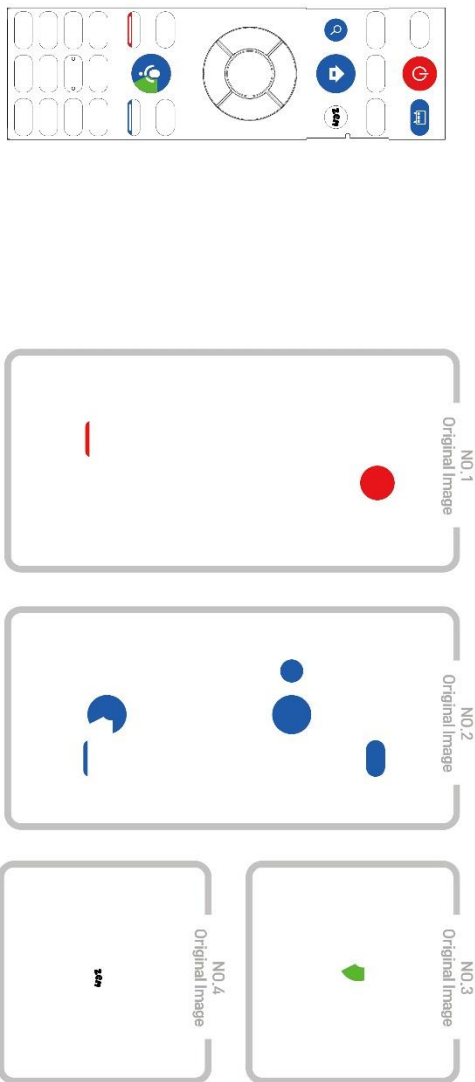
도	명	BWM-BT12	주요원	2021.05.14
제작자	제작	Design Team	확인	SKP
승인자	승인	김민정(MIN)	기	0
	담당	심장	수	심
	담당	심장		



Scale 100%

NO	NAME	COLOR
1	ARTWORK	PANTONE Warm Gray 1C

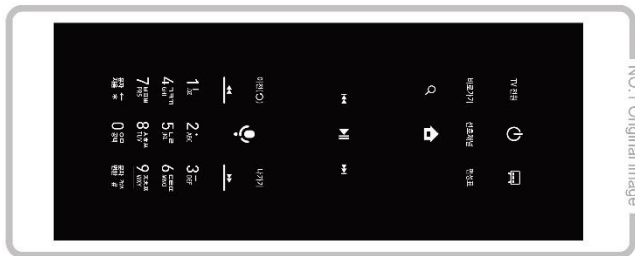
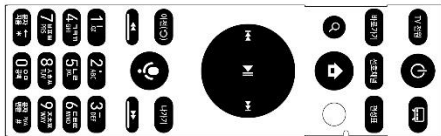
도	명	BMM-BT12	제안일	2021.05.14	비	단	설	단	설
제안/수정	Design Team	디자인팀	SK	신					
승인/취소	승인/취소(ANN)	승인/취소							



Scale 100%

NO	NAME	COLOR	NO	NAME	COLOR
1.	RED COLOR	PANTONE 199C	4.	ZEM COLOR	PANTONE BLACK
2.	BLUE COLOR	PANTONE 2995C			
3.	GREEN COLOR	PANTONE 361C			

구분	모델명	제안일	2021.05.14	제안자	SK팀	승인	승인	승인	승인
제안자	Design Team	승인자		승인자		승인자		승인자	
승인자	심다정(ANN)	승인자		승인자		승인자		승인자	



Scale 100%

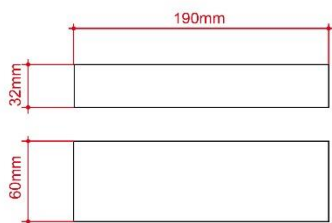
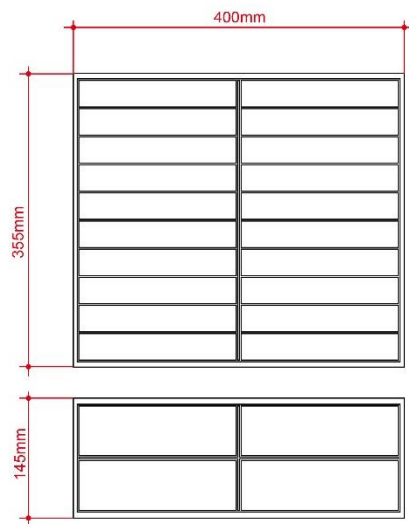
NO	NAME	COLOR
1	ARTWORK	PANTONE BLACK(Matte)(Refer to 'BMW BT08 Kids Zone COVER TOP')

2.1.8 Color Specification

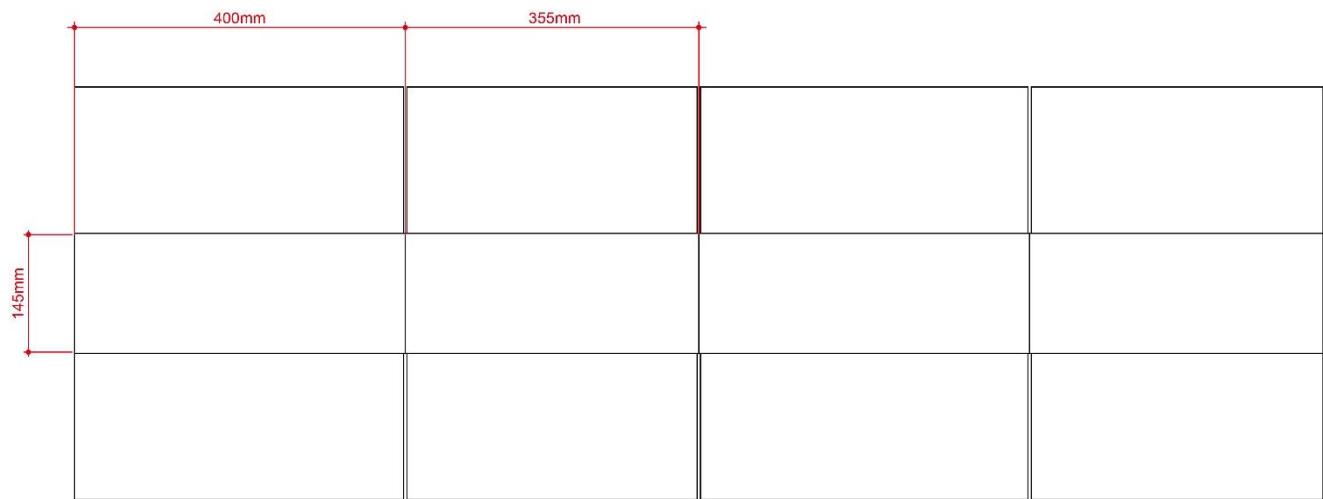
MOYON		MOYON																	
Colour Specification_1 BLACK																			
		<table border="1"> <tr> <td>도면명</td><td>BIM-BT12</td><td>작성일자</td><td>2020.06.22</td></tr> <tr> <td>도면번호</td><td>SK-01</td><td>작성인</td><td>김대성</td></tr> <tr> <td>Design Team</td><td>김대성</td><td>검核인</td><td>김대성</td></tr> <tr> <td>검核자</td><td>김대성(ANN)</td><td>기타</td><td></td></tr> </table>		도면명	BIM-BT12	작성일자	2020.06.22	도면번호	SK-01	작성인	김대성	Design Team	김대성	검核인	김대성	검核자	김대성(ANN)	기타	
도면명	BIM-BT12	작성일자	2020.06.22																
도면번호	SK-01	작성인	김대성																
Design Team	김대성	검核인	김대성																
검核자	김대성(ANN)	기타																	
NO	NAME	COLOR																	
1	COVER TOP	RESIN/COLOR : ABS/BLACK Finish : MOLD ETCHING(VDI-24)																	
2	POWER LED	RESIN/COLOR : TBD/MILKY Finish : MOLD ETCHING(VDI-24)																	
3	BUTTON LED	RESIN/COLOR : TBD/MILKY Finish : MOLD ETCHING(VDI-24)																	
4	COVER_NAVI	RESIN/COLOR : ABS/BLACK Finish : MOLD ETCHING(VDI-24)																	
5-1	COVER_BOTTOM	RESIN/COLOR : ABS/BLACK Finish : MOLD ETCHING(VDI-24)																	
5-2	COVER_BOTTOM	RESIN/COLOR : ABS/BLACK Finish : HIGH GLOSSY(SPI-A2)																	
6	IR LENS	RESIN/COLOR : PC/DARK VIOLET Finish : HIGH GLOSSY(SPI-A2)																	
7	BATTERY COVER	RESIN/COLOR : ABS/BLACK Finish : MOLD ETCHING(VDI-24)																	
8	VOL_BUTTON	RESIN/COLOR : ABS/BLACK Finish : MOLD ETCHING(VDI-24)																	
9	MUTE_BUTTON	RESIN/COLOR : ABS/BLACK Finish : MOLD ETCHING(VDI-24)																	
10	RUBBER KEY PAD	RESIN/COLOR : SILICON / BLACK																	
10-1	RUBBER KEY PAD	RESIN/COLOR : SILICON / PANTONE 1205C																	

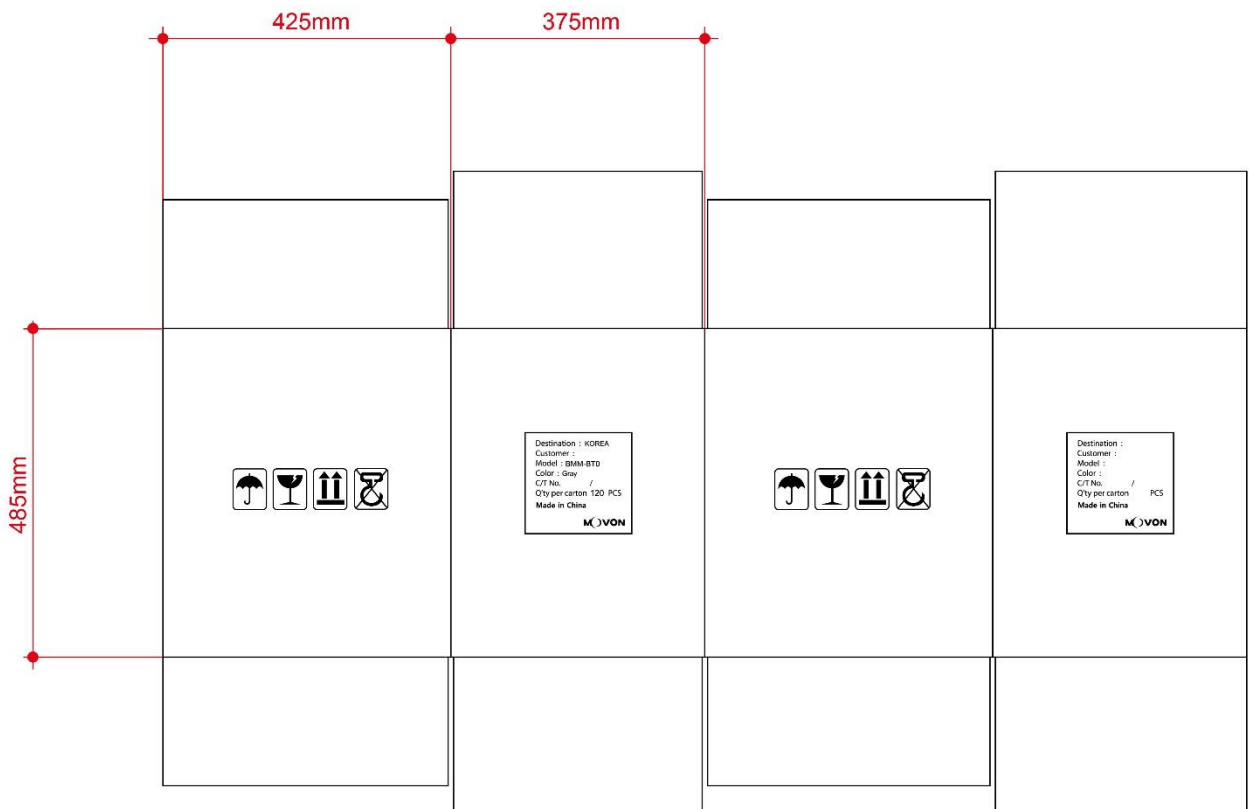
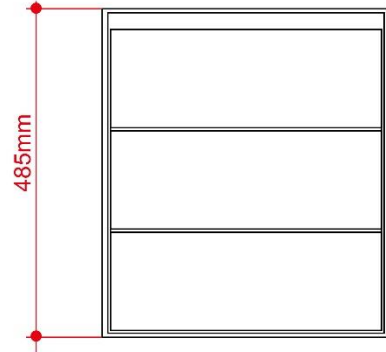
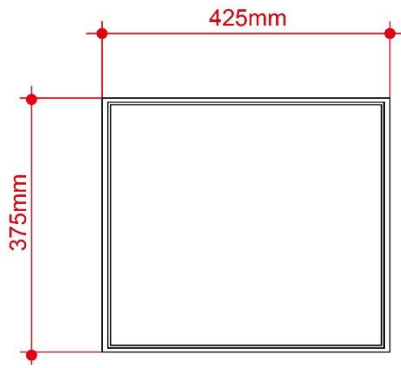
2.1.10 Carton Box Layout

Inner Box



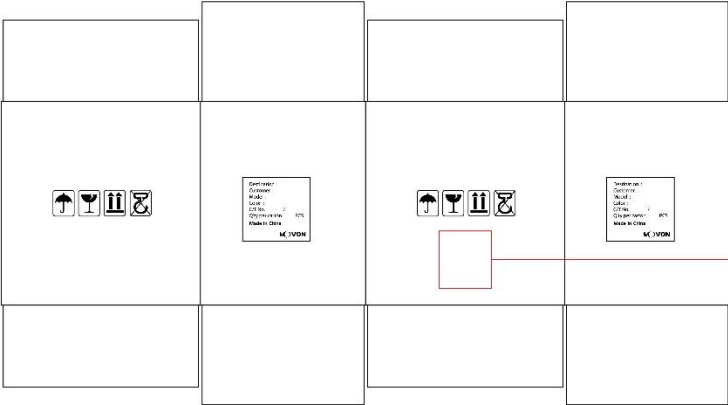
(에어비닐 포장된 개체 사이즈)





2.1.11 Label Sticker Specification

			문 델	ALT_BT12	작성일	2021. 08.18	발 신	담당	팀장	수 신	담당	팀장
Label Sticker Specification			품 명	Design Team	용 도							
			담당 자	심다경	기 타							



No. 01



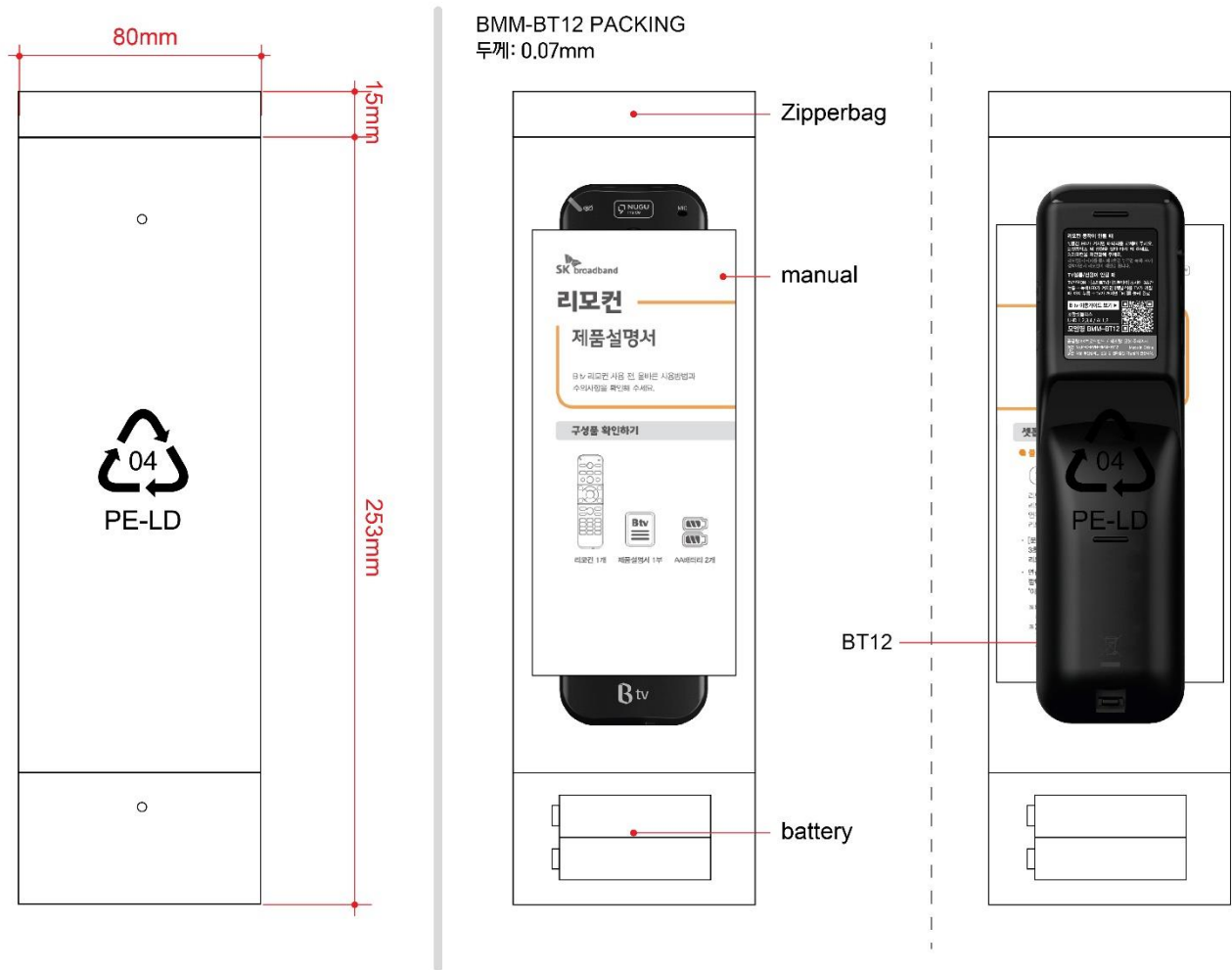
137mm

110mm

Scale : 100 %

NO	NAME	COLOR	NO	NAME	COLOR
1	Sticker	Background(바탕): BLUE Text(문자): WHITE			

2.1.12 Packing Specification



2.2 Battery Specification

2.2.1 Model Name

KODAK Xtralife Alkaline Battery AA

2.2.2 TECHNICAL INFORMATION

SCOPE

This specification defines the technical requirements for alkaline cells distributed by Strand Europe Ltd (hereafter referred to as Strand).

If not otherwise specified, the cells should meet or exceed the requirements of:

IEC 60086-1,2,5 and **ANSI C18.1** (Part 1 and Part 2).

Additional requirements exist which are defined outside of this document but are referenced explicitly within this engineering specification.

In case of any subject which is not covered with this specification, the Battery Supply Company and Strand should discuss and cooperate to solve this issue.

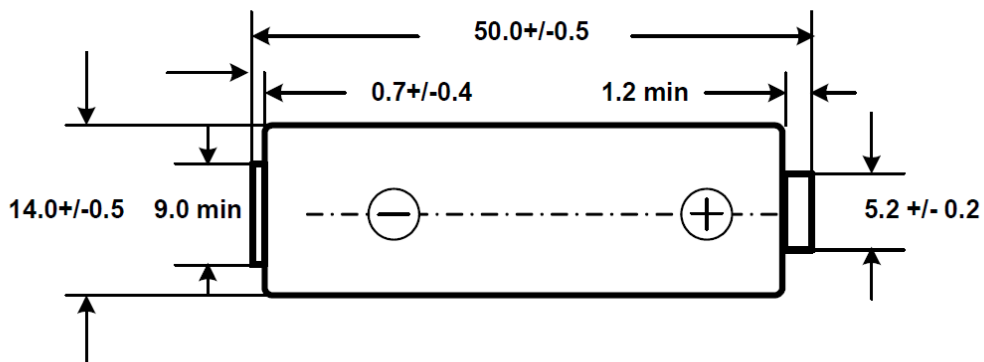
GENERAL:

Deviations from this specification must be documented in the suppliers drawings and require approval by Strand.

1.0 MECHANICAL REQUIREMENTS

1.1 Dimensions

If not otherwise specified in the drawing, the cell shall meet the dimensional requirements of standards listed in the scope



Dimensions are in millimeters and include label.

1.2 Weight

The weight of each cell is approximately:

22.0 g

1.3 Contamination

The cell shall not vent or leak or exhibit corrosion of metal parts as a result of exposure to any of the storage and / or operating tests of this specification for 7 years after date of manufacture. Leakage shall be determined by wiping the cell surface with a pH indicating paper or solution. Corrosion shall be determined by visual inspection.

1.4 Trade dress

The visual appearance shall meet the requirements of the designated Strand Artwork.

1.4.1 Date Code

Each cell unless otherwise agreed upon, shall be marked with a date code according to the relevant Date Code Specification.

1.4.2 General Appearance

The cell shall be clean. The printing on each cell should be legible and permanent. Blemishes, if any, shall conform to mutually agreed upon limit samples.

2.0 ELECTRICAL REQUIREMENTS

Note: Performance tolerances and acceptance limits are documented in paragraph 5 of this specification.

Unless otherwise stated, all measurements are to be performed at a

Standard Environment of:

**20°C ± 2 °C
50 ±15 % R.H.**

All samples shall be normalized for 24 hours at the above environment prior to measurement. The measurement accuracy for DCV (Direct Circuit Voltage) shall be ±0.1% or better. The load resistance of the total circuit shall be accurate within ±0.5% of the specified value.

2.1 Open Circuit Voltage

min:
max:

**OCV
1.50 VDC
1.65 VDC**

2.2 Closed Circuit Voltage

min:
Load Resistance (total circuit ±0.5%)
the measurement shall occur
after closing the circuit.

**CCV
1.4 VDC
3.90 Ohms
200 ±10 ms**

2.3 Cell Impedance

max:	0.15 Ohms
Frequency:	1000 Hz
A.C. Sine Wave Current	0.1 mA

2.4 Cell Service Life

Each cell shall be discharged according to each specified test method. The closed circuit voltage shall be monitored throughout the discharge period. The service life shall be reported as the total number of hours/minutes/cycles before the closed circuit voltage first falls below the specified Cutoff Voltage. Acceptance criteria are described in section 5.0.

2.4.1 1000 mA Photo Flash Test (ANSI / IEC)

Current Load	1000 mA
Cycle Time	10 seconds /minute
	1 Hour Per Day
Cutoff Voltage	0.9 Volt
Minimum Average Duration	360 cycles

2.4.2 Digital Camera Test (ANSI/IEC)

Load	1.5 W / 0.65 W
Cycle Time	2 sec at 1.5 Watts
	28 sec at 0.65 Watts
	5 minutes per 60 minutes
	24 HPD
Cutoff Voltage	1.05 Volt
Minimum Average Duration	52 cycles

2.4.3 Transistor Radio Test (IEC / ANSI)

Load Resistance ($\pm 0.5\%$)	43.0 Ohms
Cycle Time	4 hours per day
Cutoff Voltage	0.9 Volt
Minimum Average Duration	82 hours

2.4.4 Toy, Motor Test (IEC / ANSI)

Load Resistance ($\pm 0.5\%$)	3.9 Ohms
Cycle Time	1 hour per day
Cutoff Voltage	0.8 Volt
Minimum Average Duration	6.8 hours

2.4.5 Digital Audio (ANSI)

Current Load	100 mA
Cycle Time	1 hour per day
Cutoff Voltage	0.9 Volt
Minimum Average Duration	20,0 hours

2.4.6 Remote Control Test (IEC / ANSI)

Load Resistance ($\pm 0.5\%$)	24 Ohms
Cycle Time	15s/min, 8h per day
Cutoff Voltage	1.0 Volt
Minimum Average Duration	41 hours

2.4.7 Electronic Game Test (IEC / ANSI)

Current Load	250 mA
Cycle Time	1 hour per day
Cutoff Voltage	0.9 Volt
Minimum Average Duration	6.5 hours

2.4.8 Portable Lighting Test (IEC / ANSI)

Load Resistance ($\pm 0.5\%$)	3.3 Ohms
Cycle Time	4min/h, 8h per day
Cutoff Voltage	0.9 Volt
Minimum Average Duration	300 minutes

2.4.9 Toothbrush Test (ANSI)

Current Load	500 mA
Cycle Time	2min on/13 min off, 24 HPD
Cutoff Voltage	0.8 Volt
Minimum Average Duration	2.5 hours

2.4.10 Lot acceptance test

Load Resistance ($\pm 0.5\%$)	3.9 Ohms
Cycle Time	continuous
Cutoff Voltage	0.9 Volt
Minimum Average Duration	180 min

3.0 ENVIRONMENTAL REQUIREMENTS

3.1 Non Operating Environments

After being subjected to any of the non-operating environments as defined in this section (3.1.1 through 3.1.5) the cell shall meet the requirements of section 1.0, 2.1, 2.2 and 2.3 of this specification, in addition to the requirements specified with each test below.

3.1.1 Shelf Life - The cells are to be stored in air at: 20°C ± 2°C
50 ± 15 % R.H.
for a period of: 36 months.

At intervals of 12 months the cells shall meet the requirements of section1.0, 2.1, 2.2 and 2.3 of this specification following IEC requirements. They shall also meet the requirements below from section 2.4.1 and 2.4.3 such that:

	<u>12 months</u>	<u>24 months</u>	<u>36 months</u>
2.4.1 <u>Photopulse 1000mA</u>	310 cyc	270 cyc	255 cyc
2.4.3 <u>43 Ω Radio:</u>	78 h	74 h	70 h

3.1.2 Cold Storage in Air

The Cells are to be stored at -20°C ±2°C
for a period of 8 hours
After normalizing to Standard Environment the requirements of section 1.0, 2.1, 2.2 and 2.3 of this specification shall be met.
Requirement 2.4.1 shall also be tested to meet:

	<u>M.A.D.</u> (100%)
2.4.3 <u>43 Ω Radio:</u>	82.0 h

3.1.3 Very Hot Storage in Air

The Cells are to be stored at 70°C ±2°C
for a period of 7 days
After normalizing to Standard Environment the requirements of section 1.0, 2.1, 2.2 and 2.3 of this specification shall be met.
Requirement 2.4.1 shall also be tested to meet:

	<u>M.A.D.</u> (95%)
2.4.3 <u>43 Ω Radio</u>	78 h

3.1.4 Hot Storage in air ("45°C")

The Cells are to be stored at

45°C ±2°C

55 ±20 % R.H.

for a period of

90 days

After normalizing to Standard Environment the requirements of section 1.0, 2.1, 2.2 and 2.3 of this specification shall be met.

Requirement 2.4.1 and 2.4.3 shall also be tested to meet:

M.A.D.

2.4.1 Photopulse 1000mA

310 cyc

2.4.3 43 Ω Radio:

78 h

3.2 Operating Environment

The cells shall be exposed to the respective operating environments for **24 hours** prior to testing. The environment shall be maintained throughout the discharge test.

3.2.1 Hot Operation

The cells shall be discharged at a temperature of:

45°C ±2°C

The requirements of section 1.0, 2.1, 2.2 and 2.3 of this specification shall be met.

Requirement 2.4.1 shall also be tested to meet:

M.A.D.
(100%)

2.4.3 43 Ω Radio

82 h

3.2.2 Cold Operation

The Cells shall be discharged at a temperature of

0°C ±2°C

The requirements of section 1.0, 2.1, 2.2 and 2.3 of this specification shall be met.

Requirement 2.4.1 shall also be tested to meet:

M.A.D.
(33%)

2.4.1 43 Ω Radio

28 h

4.0 SAFETY / ENVIRONMENTAL REQUIREMENTS

It is intended that the overall safety characteristics of the cell equal or exceed those of present consumer Leclanche and alkaline cells. The supplier shall provide the necessary Material Safety Data Sheets / Product Safety Information.

4.1 Safety tests

The batteries pass all tests and requirements described in:

- 1) IEC 60086-5
- 2) ANSI C18.1M part 2

4.2 Heavy Metal Contents

The heavy metal contents of the cell shall conform to the applicable regulations stated by the applicable national and international authorities.

Mercury limit (per cell weight)	5 ppm
Cadmium limit (per cell weight)	20 ppm
Lead limit (per cell weight)	40 ppm

2.2.3 Certificate (Safety)

검 사 성 적 서

한국화학융합시험연구원

경기도 과천시 교육원로 98

Tel: 02-2164-0011 Fax: 02-2634-1008

접수번호 : SSK-000034

페이지 1 / 3



1. 의뢰자

- 상호 (업체명) : 모본 주식회사
- 성명 (대표자) : 송상희
- 주 소 : 서울특별시 강남구 삼성동 140-28 현죽빌딩 6층
- 의뢰일자 : 2016년 03월 02일

2. 검사성적서의 용도 : 자율안전확인대상공산품의 신고

3. 검사품목 / 시료명 : 건전지

- 안전기준상의 모델 구분 : LR6
- 제조자 제시 모델명 : KODAK Xtralife Alkaline AA Battery
- 제조국명 : 중국
- 제조업체명 : KODAK Batteries

4. 검사기간 : 2016년 03월 02일 ~ 2016년 04월 08일

5. 검사방법 : 자율안전확인 안전기준 부속서 5

[국가기술표준원 고시 제2015-685호(2015. 12. 30)]

6. 검사장소 : 경기도 과천시 교육원로 98

7. 검사환경 : 온도 (20 ± 2) °C, 습도 (55 ± 5) % R.H.

8. 검사결과 : 합격 (항목별 검사결과 붙임 참조)

확 인	작성자	성 명 원지일	기술책임자	성 명 홍인선
		Won Ji-il		Hong In-seon

위 성적서는 한국인정기구(KOLAS)로부터 공인받은 분야에 대한 검사결과입니다.

2016년 04월 08일



위변조 확인용 QR code

한국인정기구 인정

한국화학융합시험연구원장



비고 1. 이 성적서는 의뢰자가 제시한 품목(또는 시료)에 대한 검사결과로서 전체 제품에 대한 품질 및 성능은 보장하지 않습니다.

2. 이 성적서는 당 검사기관의 사전 서면동의 없이 광고, 선전 등 홍보 및 소송용으로 사용될 수 없으며, 용도 이외의 사용을 금합니다.

한국화학융합시험연구원

경기도 과천시 교육원로 98

Tel: 02-2164-0011 Fax: 02-2634-1008

접수번호 : SSK-000034

페이지 2 / 3



검 사 항 목	단위	시료구분	기 준 치	검 사 결 과	합부 판정
겉모양	-		사용상 지장이 생기는 이물, 오염, 흠집 및 변형이 없어야 하고, 표시가 명확할 것	사용상 지장이 생기는 이물, 오염, 흠집 및 변형이 없고 표시가 명확함	합격
개로전압	V		1.50 + 0.15, - 0.05	1.63	합격
수은	mg/kg		1 이하	0	합격
카드뮴	mg/kg		10 이하	0	합격
납	mg/kg		4 000 이하	1	합격
내누액	-		최대 치수를 초과하는 변형 및 누액이 없을 것	최대 치수를 초과하는 변형 및 누액이 없음	합격

- 이 하 여 백 -

2. 3 Product Specification

Model Name	BMM-BT12
Compliant	Bluetooth Specification V5.0
Profile	GAP, GATT, HID over GATT, HIDS, BAS, DIS, IAS
Carrier Frequency	2402 MHz to 2480 MHz
Modulation Method	GFSK, 1Mbps, 0.5BT Gaussian
Maximum Data Rate	Asynchronous: 2178.1kbps / 177.1kbps Synchronous: 1306.9kbps / 1306.9bpsa
Transmit Power	6dBm ±2dBm
Coverage Range	10m
Receiver Sensitivity	-80 dBm / 0.1% BER
Weight	128g (배터리 포함)
Dimension (mm)	48(W) X 175(L) X 23mm(T)
Operating Temperature	-10° to +50°C
Storage Temperature	-20° to +70°C
Battery	KODAK Xtralife Alkaline Battery AA 2,700mAh⁽¹⁾

(1) Standard capacity (75Ω continuously discharge at 20°C, End point voltage=0.8 volts)

2. 4 Electrical Characteristics

item		min.	Typ.	max.	unit	remark
Operating voltage		1.8	3.0	3.2	V	AA Alkaline Battery
Current	IR Sleep Mode	-	10	-	μA	Standby
	BLE Sleep Mode	-	25	-	μA	Standby
	Voice Search (BT / HID)	-	6	-	mA	
	IR Key	-	30	-	mA	STB Key
	BLE Key	-	2	-	mA	TV Key
	BUZZER	-	10	-	mA	
	Backlight	-	15	-	mA	

2.5 Bluetooth Specification

2.5.1 General Specification

Index	Description
Frequency	2,402MHz ~ 2,480MHz
Profile	GAP, GATT, HID over GATT, HIDS, BAS, IAS
RF	Frequency Hopping Spread Spectrum (FHSS)
Hopping Channel	40 channel with 2MHz-spacing (2,400~2,480 MHz)
Modulation Type	Gaussian Frequency Shift Keying (GFSK)
RF output	6dBm $\pm$ 2dBm

2.5.2 Bluetooth RF Specification

Index		Test condition					min.	max.	unit
		Test mode	Hopping	Packet type	Payload	No. of packet			
Average power		TX	on	DH1	PRBS9	5		8	dBm
Modulation	$\Delta f1_{avg}$	TX	off	DH1	BS55 BS0F	5		250	kHz
	$\Delta f2_{max}$						185		kHz
	$\Delta f2_{avg}/\Delta f1_{avg}$						0.88	-	
ICFT		TX	on		PRBS9	5	-75	75	kHz
Carrier frequency drift		TX	on	DH5	BS55	5	-40	40	kHz
sensitivity	Single slot	Loop back	off	DH1	PRBS9		-70	-	dBm
	Multi slot	Loop back	off	DH5	PRBS9		-70	-	dBm

2.6 Functionality

2.6.1 Button Functionality

No	Button	Function	LED	Description	Status	Remarks
1	BTV Power TV Power TV Volume +/- Mute Menu Search REW/FF Channel +/- Btv Volume +/- Home D-PAD / OK back Exit Previous Favorite Program time table 1 ~0, *, # ZEM KIDS SMART TV	IR Key Data BLE Key Data	GREEN LED Or BLUE LED (Smart TV)	Short Press	LED blinking (1 time)	- Transmit IR Signal - Transmit BLE Signal
2	[홈] + [*]	Un-pairing	GREEN LED	Long Press (3 sec)	LED blinking (5 sec)	- Erase Pairing history
3	NUGU Voice Search	Voice Search Entering Pairing mode	GREEN LED	Short Press	On/Off	- Run Voice search (UI) - Unpairing ↔ Pairing mode
4	[BTV전원] + [외부입력]	IR Auto Setting mode (All TV brand)	GREEN LED	Long Press (3 sec)	On	- Enter Auto IR setting mode - Press Channel button when <Auto Setting mode> up until TV power-off - Press [OK] button when TV power-off.
5	[*] + [#]	Pairing	GREEN LED	Long press (3 sec)	LED Blink every 1 sec	- Entering Pairing mode
6	[*] + 4방향	Drag Mode	GREEN LED	Short Press	ON OFF	- Browser UI Mouse Cursor

No	버튼	기능	LED	버튼 동작	Release	비고
7	[BTV전원] + [1]	Auto IR setting (Samsung/LG)	GREEN LED	Long Press (3 sec)	ON	- Enter Auto IR setting mode - Press Channel button when <Auto Setting mode> up until TV power-off - Press [OK] button when TV power-off.
8	[*] + [9]	MODE1/2	GREEN LED	Long Press (3 sec)	MODE2 : Blink 4 times MODE1 : Blink 2 times	- IR mode 1 or 2 switch
9	[*] + [5]	Backlighting On/Off Switch (toggle)	GREEN LED	Long Press (3 sec)	OFF : blink 4 times ON : blink 2 times	- Manual control / Backlit (ON/OFF, factory seting: ON).
10	[OK] + [TV전원]	IR Learning	GREEN LED	Long Press (3 sec)	ON	- If no key input on IR learning mode → Terminate IR learning mode after 60 sec (LED Blink 3 times) - Press [OK] Button on IR learning mode → Terminate IR learning mode (LED blink 3 times) - Press Target TV (TV power, TV vol, Output) on IR learning mode → LED blink 1 time, IR receiving status 15 sec, LED on - If no key input of IR receiving status → back to IR Learning mode - If IR signal receive properly on IR receiving status → Green LED blinks 3 times → back to learning mode If IR signal receive non-properly on IR receiving status → RED LED blinks 3 times → back to learning mode

2.6.2 LED Functionality

No	Status	LED Indication			Remarks
		Green LED	Blue LED	Red LED	
1	Pairing mode	Every 1 sec			Blink for 20 sec during pairing process Pairing success: Blink 5 times
2	Unpairing	5 times			
3	NUGU voice search	On (Searching)			Off
4	음성검색 버튼 이 외 Button Press	Blink 1 time			
5	음성검색 버튼, Smart TV 버튼, TV 버튼 in SMART TV MODE 외 Button Press	Blink 1 time			
	SMART TV Button Press TV Key Press in SMART TV MODE		Blink 1 time		
6	MODE1-> MODE2	Blink 4 time			
7	TV synchronization (Setting)	On (for 15 sec)			
8	TV synchronization	Blink 3 time			
9	Button Press(Low Battery status)			Blink 1 time	
	Status	Back-light LED			Remarks
11	RCU Pick up	Light ON (2 sec)			OFF after 2 sec

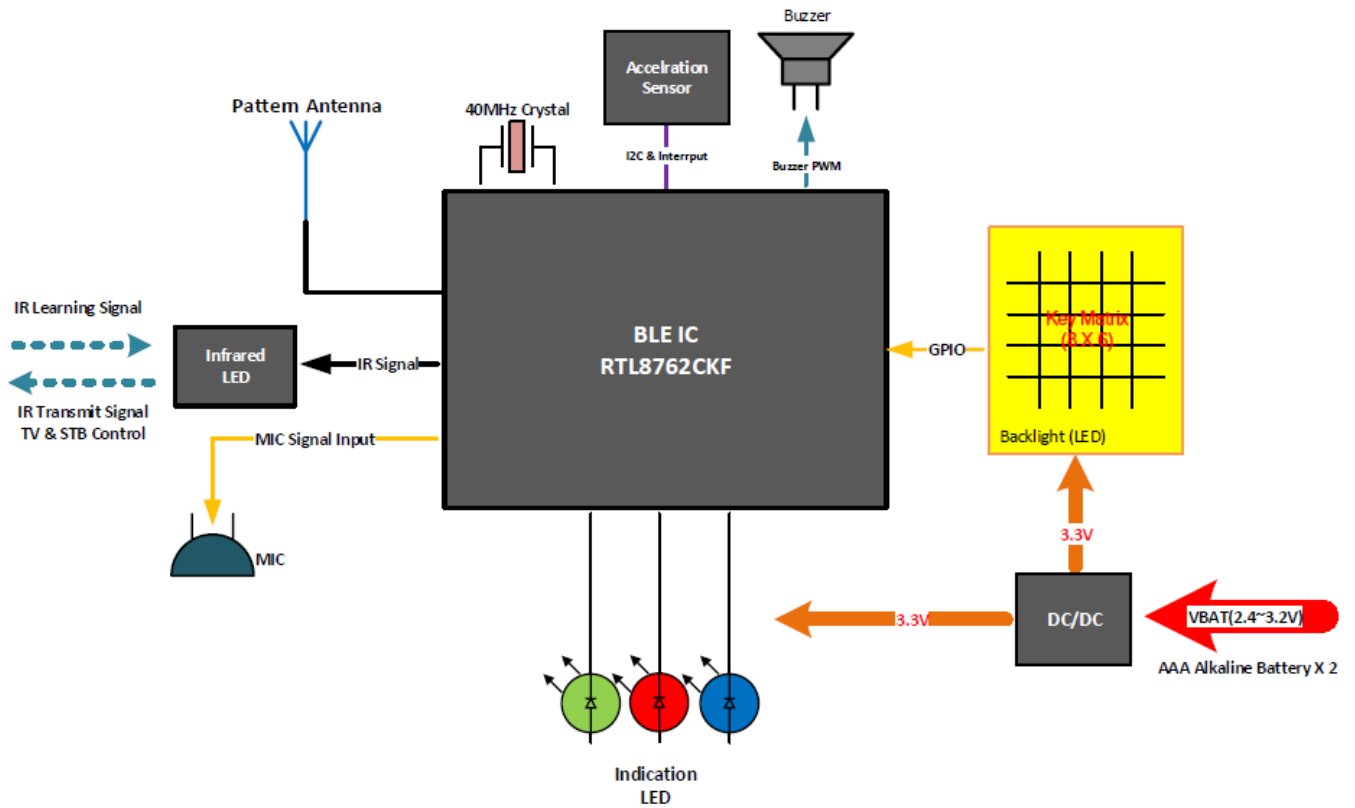
2.6.4 IR/BLE Key Code

No	Key	Code			
		IR(NEC Simple repeat)		RF(BLE)	
	Key name	MODE1 CUSTOM 0x807F	MODE2 CUSTOM 0xF5A0	Page	Usage ID
1	통합전원	Btv 전원 + TV 전원	Btv 전원 + TV 전원		
2	TV 전원	삼성 + LG	삼성 + LG		
3	스마트TV	삼성 + LG	삼성 + LG		
4	바로가기	0x58A7	0x587A	0x07	0x005800
5	선호채널	0x56A9	0x569A	0x07	0x005600
6	편성표	0x6D92	0x6D29	0x07	0x006D00
7	외부입력	[0x01FE]+[0x0BF4]	[0x01FE]+[0x0BF4]		
8	조용히	0x45BA	0x45AB	0x07	0x004500
9	Btv 음량+	0x43BC	0x43CB	0x07	0x004300
10	Btv 음량-	0x42BD	0x42DB	0x07	0x004200
11	검색	0x4FB0	0x4F0B	0x07	0x004F00
12	홈	0x02FD	0x02DF	0x07	0x000200
13	Zem KIDS	0x59A6	0x596A	0x07	0x005900
14	TV 음량+	삼성 + LG	삼성 + LG		
15	TV 음량-	삼성 + LG	삼성 + LG		
16	▲(상)	0x49B6	0x496B	0x07	0x004900
17	▼(하)	0x4AB5	0x4A5B	0x07	0x004A00
18	◀(좌)/ I ◀◀뒤건너뛰기	0x4BB4	0x4B4B	0x07	0x004B00
19	▶(우)/▶▶ I (앞건너뛰기)	0x4CB3	0x4C3B	0x07	0x004C00
20	OK/▶/II(재생/일시정지)	0x46B9	0x469B	0x0C	0x0041
21	채널^	0x40BF	0x40FB	0x07	0x004000
22	채널v	0x41BE	0x41EB	0x07	0x004100
23	이전	0x4EB1	0x4E1B	0x07	0x004E00
24	나가기	0x34CB	0x34BC	0x07	0x003400
25	마이크	0xD12E	0xD1E2	0x07	0x002300
26	◀◀(되감기)/ R	0x609F	0x60F9	0x07	0x006000
27	▶▶(빨리감기) / B	0x639C	0x63C9	0x07	0x006300
28	1	0x21DE	0x21ED	0x07	0x002100
29	2	0x22DD	0x22DD	0x07	0x002200
30	3	0x23DC	0x23CD	0x07	0x002300
31	4	0x24DB	0x24BD	0x07	0x002400
32	5	0x25DA	0x25AD	0x07	0x002500
33	6	0x26D9	0x269D	0x07	0x002600
34	7	0x27D8	0x278D	0x07	0x002700
35	8	0x28D7	0x287D	0x07	0x002800
36	9	0x29D6	0x296D	0x07	0x002900
37	*/문자지움	0x2AD5	0x2A5D	0x07	0x002A00
38	0	0x20DF	0x20FD	0x07	0x002000
39	#/문자변환	0x2BD4	0x2B4D	0x07	0x002B00
40	Btv 전원	0x01FE	0x01EF	0x07	0x000100

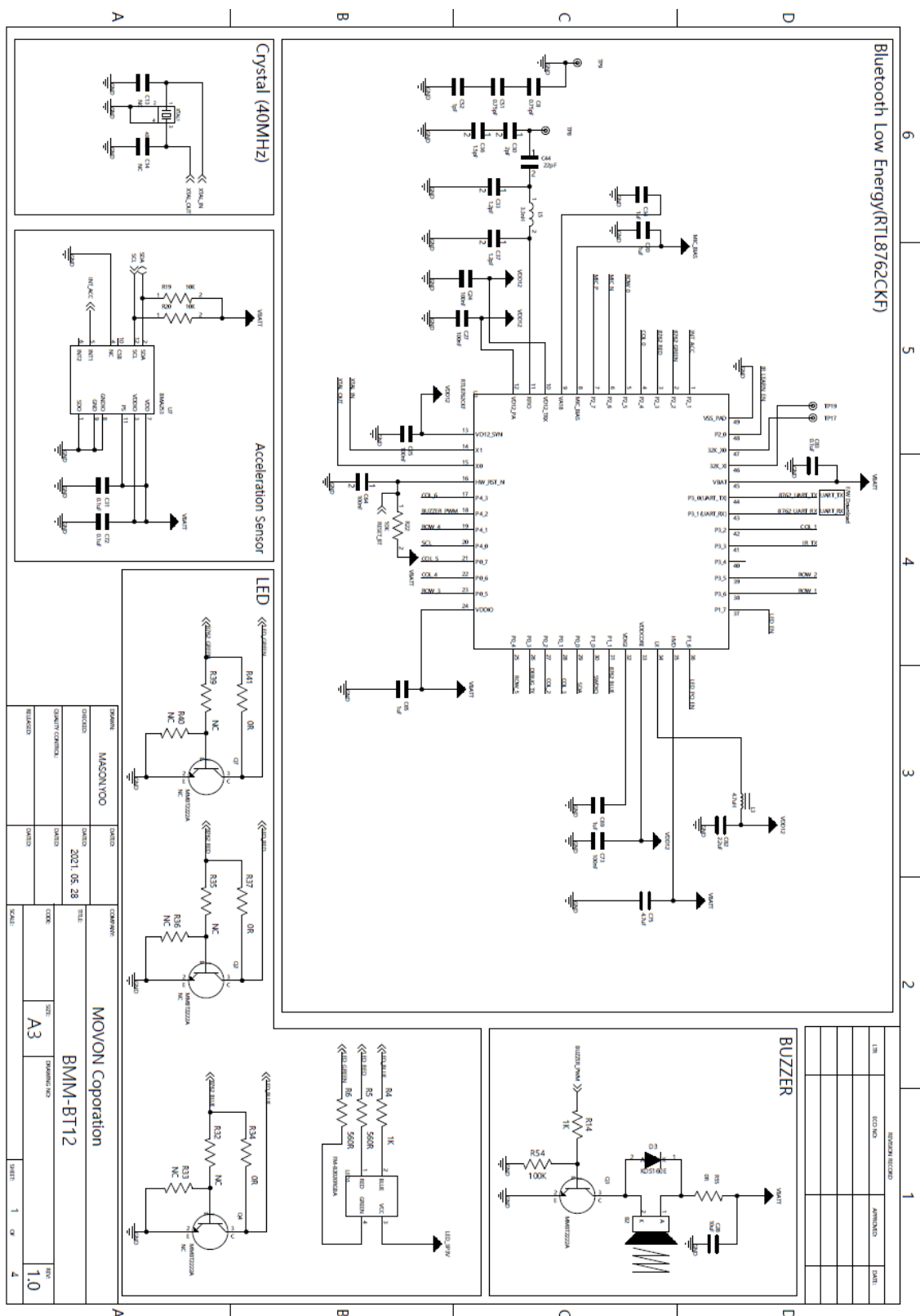
2.6.4 IR/BLE Key Code

41	Normal Battery	0x3AC5	0x3A5C	0x07	0x003A00 +0x00FFFF
42	Low Battery	0x3BC4	0x3B4C	0x07	0x003B00 +0x00FFFF
43	Empty Battery	0x3CC3	0x3C3C	0x07	0x003C00 +0x00FFFF
44	Break Data Code	0xFF00	0xFF00	0x07	0x00FFFF
45	RCU Ver#3	0xF310 ~ 0xF314	0xF310 ~ 0xF314		
46	RCU Ver#4	0xF4A0 ~ 0xF4A4	0xF4A0 ~ 0xF4A4		
47	RCU Ver#5	0xF510 ~ 0xF514	0xF510 ~ 0xF514		
48	드래그 모드(상)	0x8778	0x8787	0x07	0x008700 +0x00FFFF
49	드래그 모드(하)	0x827D	0x82D7	0x07	0x008200 +0x00FFFF
50	드래그 모드(좌)	0x837C	0x83C7	0x07	0x008300 +0x00FFFF
51	드래그 모드(우)	0x847B	0x84B7	0x07	0x008400 +0x00FFFF
52	음성 제한	0xD22D	0xD2D2		
53	Btv 제어모드	0x6699	0x6699	0x07	0x006600
54	TV 제어모드	0x6798	0x6789	0x07	0x006700
55	TV 제어모드 사용	0x6897	0x6879	0x07	0x006800

2.7 Block Diagram



2.8 Schematic



6

5

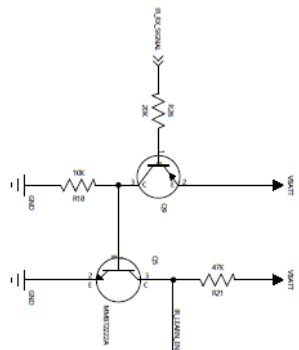
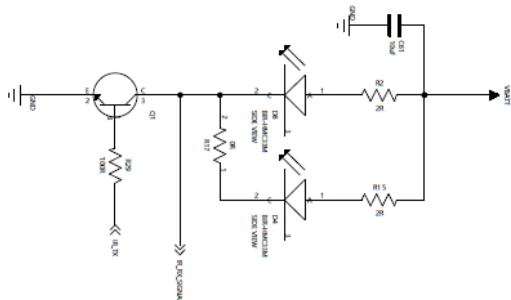
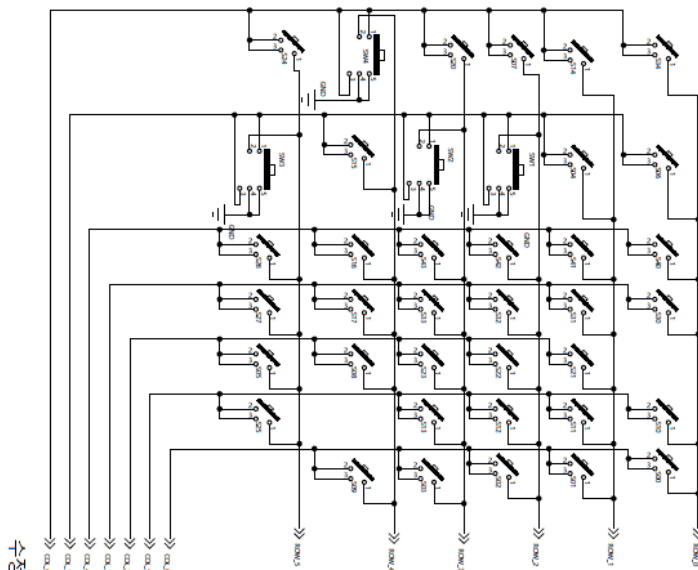
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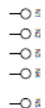
2

1

IR LEARNING PART

IR Part
IR Learning function added!KEY MATRIX PART
Carbon Type

수점

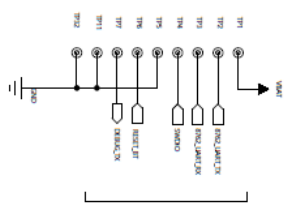


DRAWN	MASON/VOO	DATE	2021.05.28	TITLE	MOVON Coporation	REV	1.0
CHECKED		DATE					
QUANTITY CONTROL		DATE					
REMARKED		DATE					
SCALE				SHEET 3 OF 4			

REVISION RECORD			
VER.	ECO NO.	APPROVED	DATE

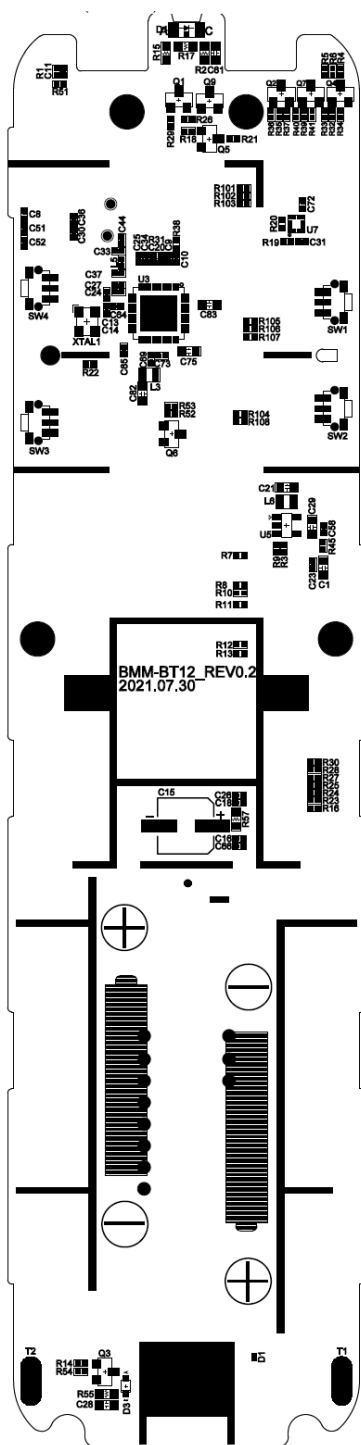
Test Point

R1153C07K_Part

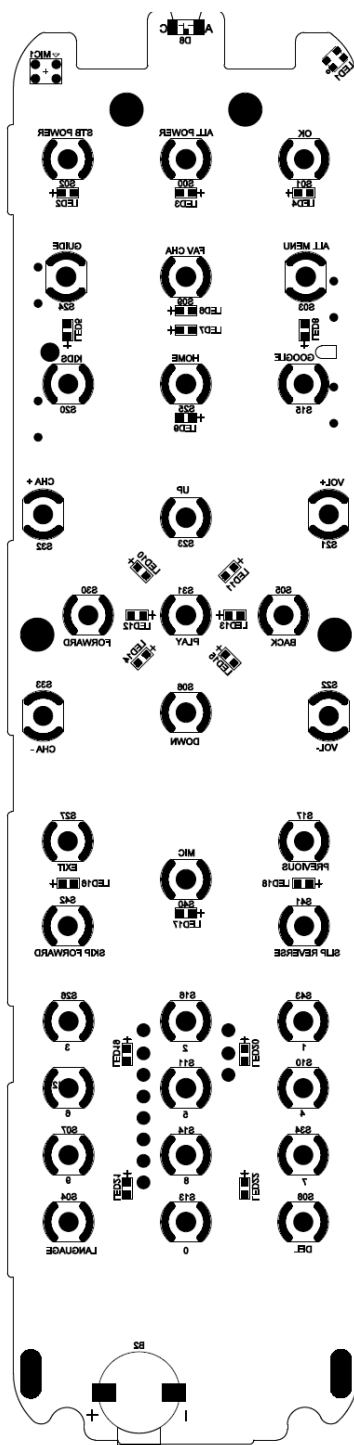


DESIGN	MASONVVO	DATE	2021.05.28	COMPANY	MOYON Coporation
CHECKED		DATE		TITLE	BMM-BT12
QUANTITY CONTROL		DATE		CODE	
RELEASED		DATE		SCALE	A3
					1.0
					4 of 4

2.9 Layout

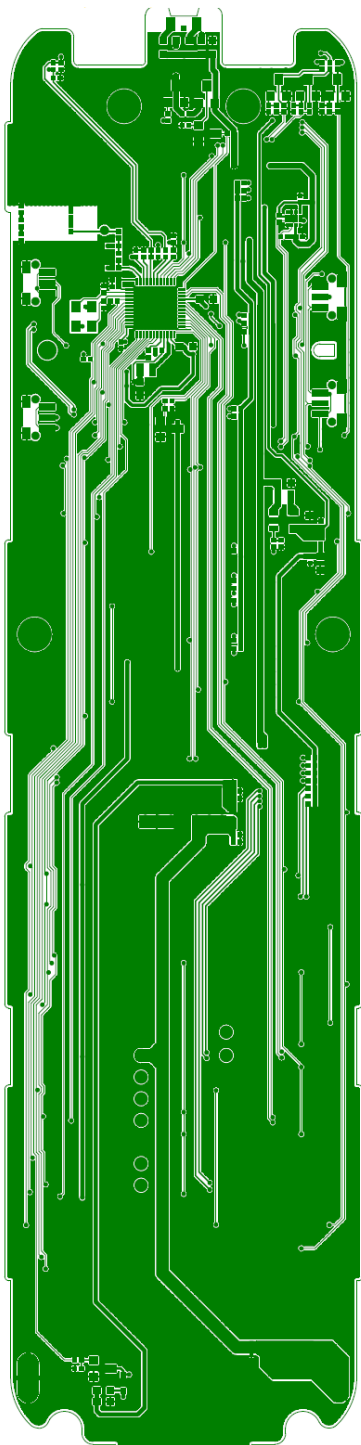


MAIN TOP Location

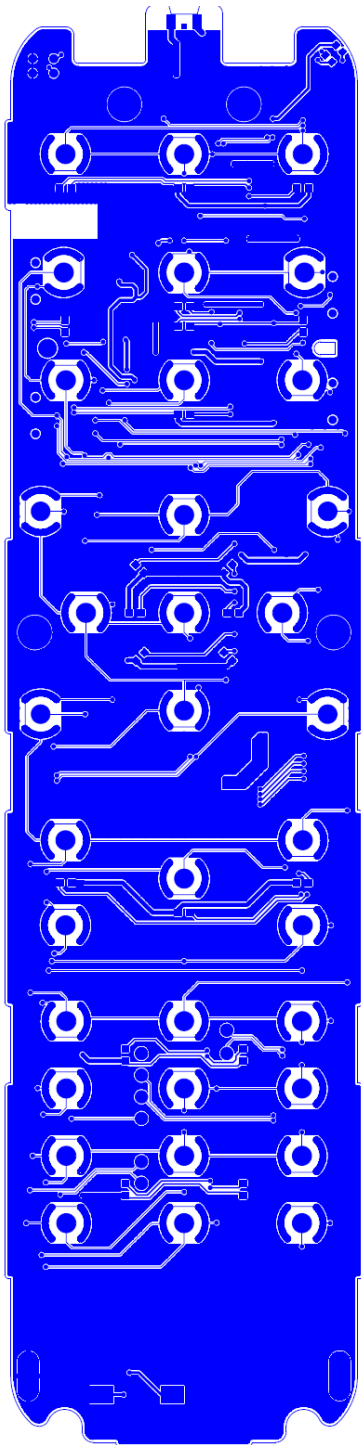


MAIN BOT Location

2.10 Layer Gerber



MAIN TOP Layer



MAIN BOT Layer

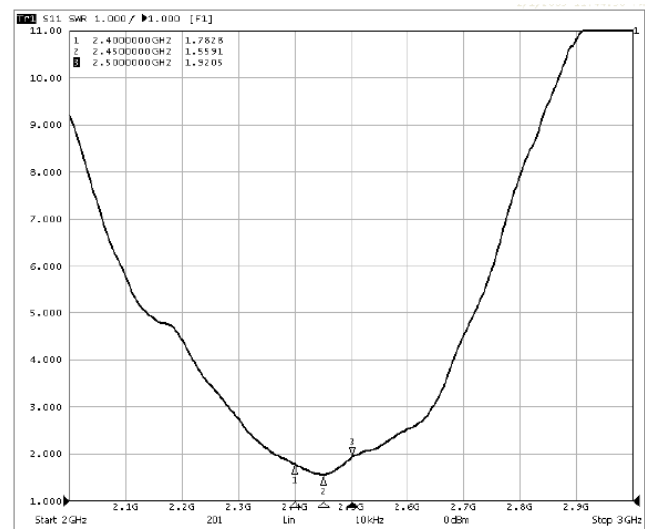
2.11 Part List (Hardware)

NO.	Description	Part Number	Manufacturer	Usage (unit)	Location
1	Bluetooth IC (New)	RTL8762CKF	Realtek	1	U3
2	MICRO MEMS MIC, TOP type, Sensitivity -42dB	AOS3729A-T42-NXC ZTS6111	Sanico Ziltek	1	MIC1
3	LED, SMD, RGB	FM-B2020RGBA	NATIONSTAR	1	LED1
4	Tact switch	SKRTLAE010	ALPS	4	SW1,SW2,SW3,SW4
5	LED, TOP VIEW	BL-HZ336G-L3-TRB(BIN : P4-2) FC-DA1608WD-460H5(BIN : B2-2, B2-3)	BRIGHT NATIONSTAR	16	LED2,LED3,LED4,LED5,LED6, LED8,LED9,LED12,LED13,LE D16,LED17,LED18, LED19,LED20,LED21,LED22
6	Buzzer (New)	BM9027S	D&F	1	B2
7	IR LED, SMD, IR Emitter, Sideview	BIR-HMC33M-2-TRCA	BRIGHT	1	D4
8	Acceleration sensor	BMA253 DA280B KXTJ3-1057	BOSCH MIRAMEMS KIONIX	1	U7
9	40MHz, Crystal, 3225, 7pF, +-10ppm, SMD(New)	E3SB40E00006DE	HOSONIC	1	XTAL1
10	Diode	KDS160E-RTK/P	KEC	1	D3
11	IC, Boost Convertor	IM8132S TPS61097A-33DBVR	IMS TI	1	U5
12	NPN TR	MMBT2222A MMBT222AG	Onsemi UTC	4	Q1,Q3,Q5,Q6
13	PNP TR	MMBT2907A	Onsemi	1	Q9
14	IND, 3.3nH, 1005 SMD	HK1005-3N3S-T	TAIYO YUDEN	1	L5
15	Power Inductor, 4.7uH	MCL2012S4R7MT	SUNLOAD	1	L3
16	Power Inductor, 10uH	MCL2012H100MT	SUNLOAD	1	L6
17	CAP, AL, 100uF, 16V, 6.3X5.7 SMD	VE-101M1CTR-0605 RV2-16V101MSU-R	SGP	1	C15
18	CAP, CER, 0.75pF, 50V, ±0.25pF, 1005 SMD	GJM1551C1HR75CB01	Murata	2	C8,C51
19	CAP, CER, 1pF, 50V, ±0.25pF, 1005 SMD	GJM1551C1H1R0CB01	Murata	1	C52
20	CAP, CER, 1.5pF, 50V, ±0.25pF, 1005 SMD	GJM1551C1H1R5CB01	Murata	1	C36
21	CAP, CER, 1.2pF, 50V, ±0.25pF, 1005 SMD	GJM1551C1H1R2CB01	Murata	2	C33,C37
22	CAP, CER, 2pF, 50V, ±0.25pF, 1005 SMD	GJM1551C1H2R0CB01	Murata	1	C30
23	CAP, CER, 22pF, 50V, ±5%, 1005 SMD	GJM1552C1H220B01	Murata	1	C44
24	CAP, CER, 10uF, 10V, ±10%, 1608 SMD	GRM188R61A106KE69	Murata	4	C21,C28,C29,C61
25	CAP, CER, 0.1uF, 10V, ±10%, 1608 SMD	GRM188R61A104KAAJ	Murata	1	C83
26	CAP, CER, 2.2uF, 10V, ±10%, 1608 SMD	GRM188R61A225KAAJ	Murata	2	C1,C82
27	CAP, CER, 4.7uF, 10V, ±10%, 1608 SMD	GRM188R61A475KAAJ	Murata	1	C75
28	CAP, CER, 0.1uF, 10V, ±10%, 1005 SMD	GRM155R61A104KA01	Murata	14	C11,C16,C18,C23,C24,C25,C 26,C27,C31, C58,C64,C66,C72,C73
29	CAP, CER, 1uF, 10V, ±10%, 1005 SMD	GRM155R61A105KE15	Murata	6	C9-10,C20,C34,C65,C69
30	RES, 100KΩ 1005J SMD	MCR01MZSJ_104J	ROHM	4	R3,R22,R52,R54
31	RES, 47KΩ 1005J SMD	MCR01MZSJ_473J	ROHM	1	R21
32	RES, 0ohm 1608J SMD	MCR03MZSJ_000J	ROHM	3	R17,R55,R57
33	RES, 0ohm 1005J SMD	MCR01MZSJ_000J	ROHM	4	R34,R37,R41,R45
34	RES, 2ohm, 1608J SMD	MCR03MZSJ_002J	ROHM	2	R2,R15
35	RES, 56ohm, 1005J SMD	MCR01MZSJ_560J	ROHM	2	R104,R107
36	RES, 200ohm 1005J SMD	MCR01MZSJ_201J	ROHM	2	R23,R38
37	RES, 390ohm 1005J SMD	MCR01MZSJ_391J	ROHM	2	R10,R11
38	RES, 560ohm 1005J SMD	MCR01MZSJ_561J	ROHM	2	R5,R6
39	RES, 150ohm 1005J SMD	MCR01MZSJ_151J	ROHM	3	R101,R103,R105
40	RES, 100ohm 1005J SMD	MCR01MZSJ_101J	ROHM	9	R16,R24,R25,R27,R28,R29,R 30,R102,R108
41	RES, 1KΩ 1005J SMD	MCR01MZSJ_102J	ROHM	3	R4,R14,R53
42	RES, 20KΩ 1005J SMD	MCR01MZSJ_203J	ROHM	1	R26
43	RES, 10KΩ 1005J SMD	MCR01MZSJ_103J	ROHM	4	R9,R18,R19,R20

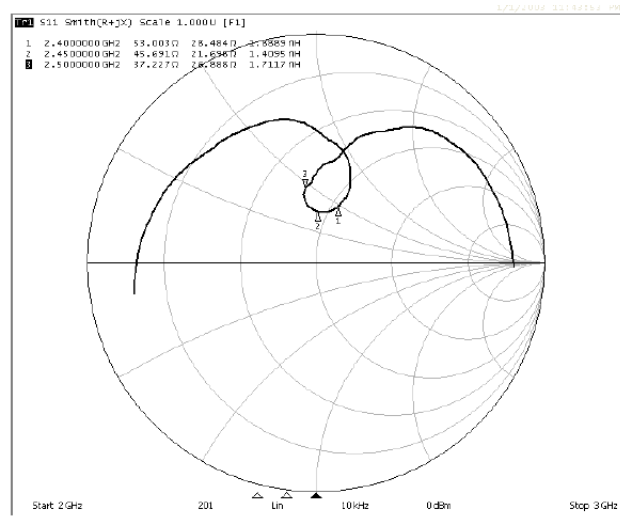
2.12 Part List (Mechanical)

BOM											작성		검토		승인		
Page : 1/1			SIS		용 명		BMM-BT11		모 델 명		BMM-BT11						
제품코드			용인/영우		작 성 자		입 대 호		VER		0						
작성부서					일 기		WF		작성일자		2020.09.18						
NO	IMAGE	PART NAME	PART NUMBER	MATERIAL	FINISH	MANUFACTURER	UNIT	QTY	Location	기타		MC,기중수발: 1DR					
										외고(part)	차액	외주	제조	사출대위			
1		BMM-B401 COVER TOP	DMR14P01B0	*ABS (BLACK)	*Mold etching (VDI-24) *SLK	KINGTECH	EA	1	China	1X2							
2		BMM-BT11 COVER BOTTOM	DMR16P01B0	*ABS (BLACK)	*Mold etching (VDI-24/SPH-A)	KINGTECH	EA	1	China	1X2 신규							
3		BMM-BT08 BATTERY COVER	DMR12P03B0	*ABS (BLACK)	*Mold etching (VDI-24)	KINGTECH	EA	1	China	1X4 BT08 공통							
4		BMM-BT08 COVER NAVI	DMR12P04B1	*ABS (BLACK)	*Mold etching (VDI-24) *SLK	KINGTECH	EA	1	China	1X4 BT08 공통							
5		BMM-BT09 VOL/BUTTON	DMR13P03B0	*ABS (BLACK)	*Mold etching (VDI-24) *SLK	KINGTECH	EA	1	China	1+4 BT09 공통							
6		BMM-BT09 MUTE/BUTTON	DMR13P03B0	*ABS (BLACK)	*Mold etching (VDI-24) *SLK	KINGTECH	EA	1	China	1+4 BT09 공통							
7		BMM-BT08 IR LENS	DMR12P07B0	*PC (DARK VIOLET) *Translucent	*HIGH GLOSSY (SPH-A)	KINGTECH	EA	1	China	1X4 BT08 공통							
8		BMM-BT11 KEY PAD	DMR16P01B0	*SILICONE (BLACK)	*SLK *Hardness 55 *BLACKLIGHTING	QMEC	EA	1	China	1X20							
9		BMM-BT08 LED LENS	DMR12R02M0	*SILICONE (MILK WHITE)	*Hardness 55 *Mold etching (VDI-24)	QMEC	EA	1	China	1X20 BT08 공통							
10		BMM-BT08 SPRING PLUS	DMR12M0150	*STS304	*NE COATING	QMEC	EA	1	China	BT08 공통							
11		BMM-BT08 SPRING MINUS	DMR12M0250	*STS304	*NE COATING	QMEC	EA	1	China	BT08 공통							
공용 자재																	
12		BMM-BT08 SPRING MINUS_PLUS	DMR07M0350	*STS304	~	QMEC	EA	1	China	BMM-BT02 공통							
13		BMM-BT08 MIC MESH	DMR11T01B0	*MESH TAPE	~	QMEC	EA	2	China	BT07 공통							
14		BMM-BT08 SCREW	DMR12001B0	*T2.0 X 5.0(L X D) 5.5 (BLACK/TAPPING 별나름)	*절취리	QMEC	EA	2	China	-							
계							EA	16				₩0.000	₩0.000	₩0.000			

2.13 ANT Specification



VSWR



SMITH CHART

Passive Gain			
Frequency(Mhz)	2400	2440	2480
Efficiency(dB)	-2.59	-2.08	-2.14
Efficiency(%)	52.03	61.88	61.07
Peak Gain(dB)	3.36	3.95	3.92

Active Gain				
Channel	0	19	39	Average
TRP (dBm)	6.18	6.97	5.72	6.32

4. Reliability Test

4.1 Inspection Item and Result

Test Area	Result	Remarks
Vibration Test	TBD	Added Reports
Strength Test	TBD	
Temp/Humid Cycle test	TBD	
Abrasion Test / Printing	TBD	
Abrasion Test / Keypad	TBD	
Salt mist test	TBD	
Button test	TBD	
Abrasion / Finishing (Mech)	TBD	

5. Certificate

5.1 KC Certificate

5.2 Bluetooth Certificate