

Movon Corporation



Approval Sheet

Item	Bluetooth Remote Controller
CUSTOMER	ALT
MODEL	BMM-BT10
VERSION	1.4
DATE	2019. 08. 02

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서강훈		심경석
승인유효기간	승인일로부터 1 년	

납품처		
담당	검 토	승 인
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1. Revision History

1. 1 Revision History

No.	Date	Revision	Revision History	개 정 자
1	2019. 06. 26	New	First release	서강훈
2	2019. 08. 02	Revision	Label Sticker Update	서강훈

2. Product Introduction

2. 1 Product Introduction

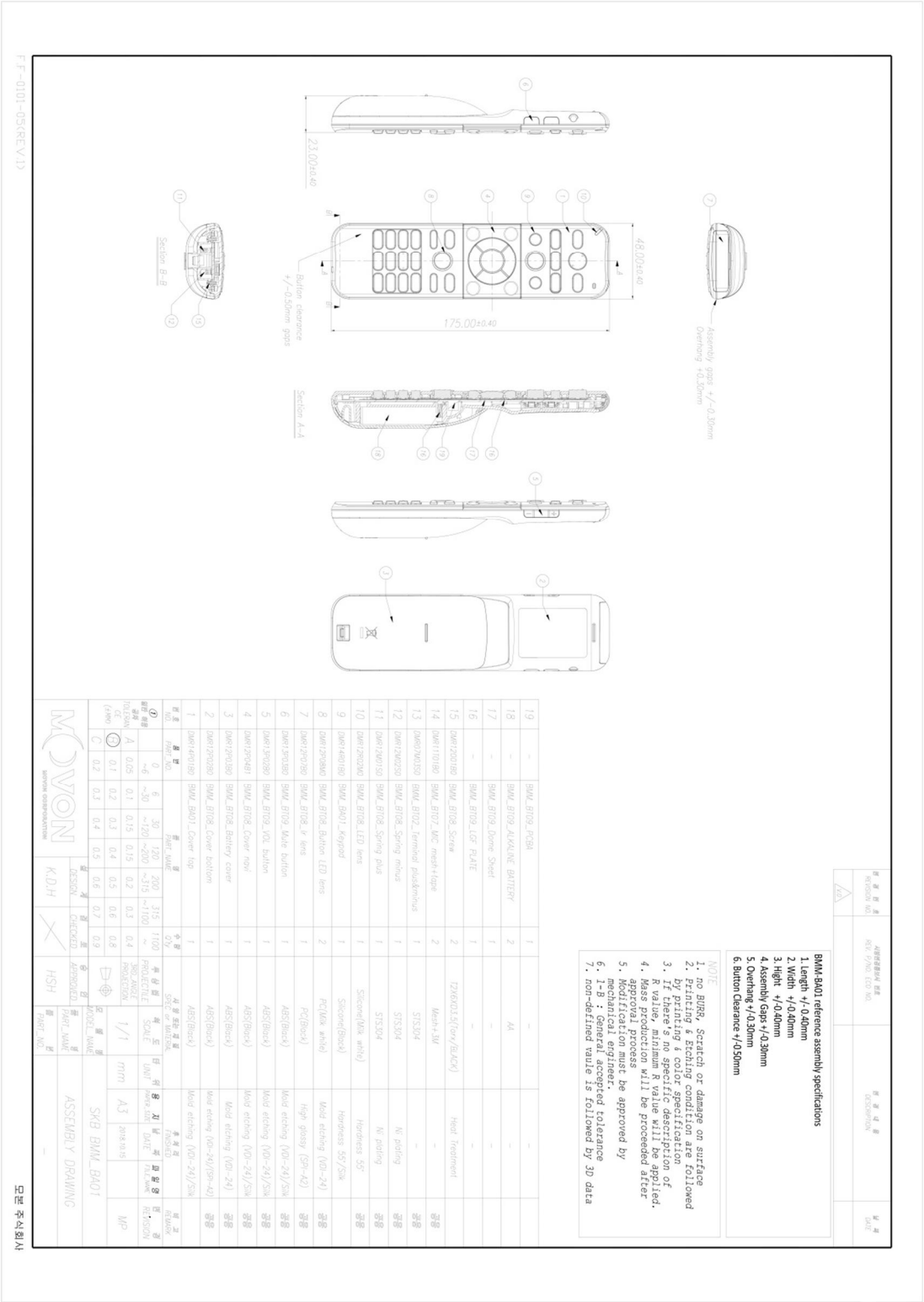
2.1.1 Model Name

Model	Bluetooth Remote Controller
Model No.	BMM-BT10
Certificate No (KC)	R-C-MVN-BMM-BA01

2.1.2 Appearance



2.1.3 Dimension



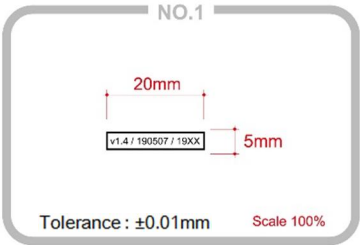
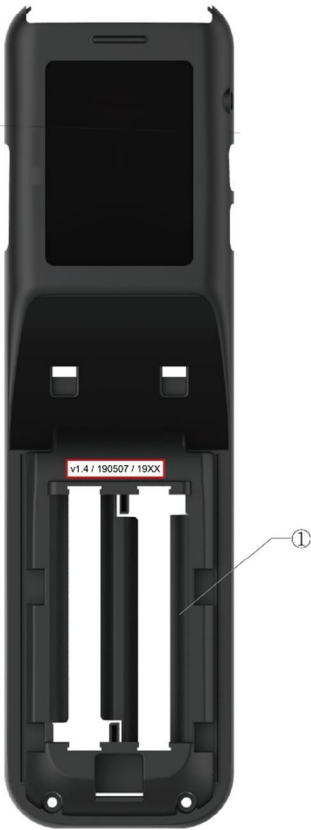
2.1.4 S/N Label



S/N Label Sticker Specification

모 델	BMM-BT10	작성일	2019.05.24	발 신	담당	팀장	수 신	담당	팀장
품 명		용 도	SK 향						
제작부서	Design Team	인쇄방법							
담당자	ANN(심다정)	기 타							

SCALE 100%



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

2.1.5 Label

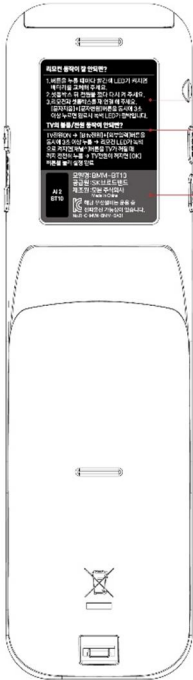


BackLabel Sticker

MOVON

문	물	BMM-BT10	작성일	2019.04.23			
품	명	Design Team	용	도	SK 향		
제	각	부	서	인	쇄	방	법
도	당	자	ANN(심다경)	기	타		

발	당	당	수	당	당
	신	장		신	장

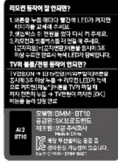


① Black background

② Gray Line

③ Gray background

NO. 1



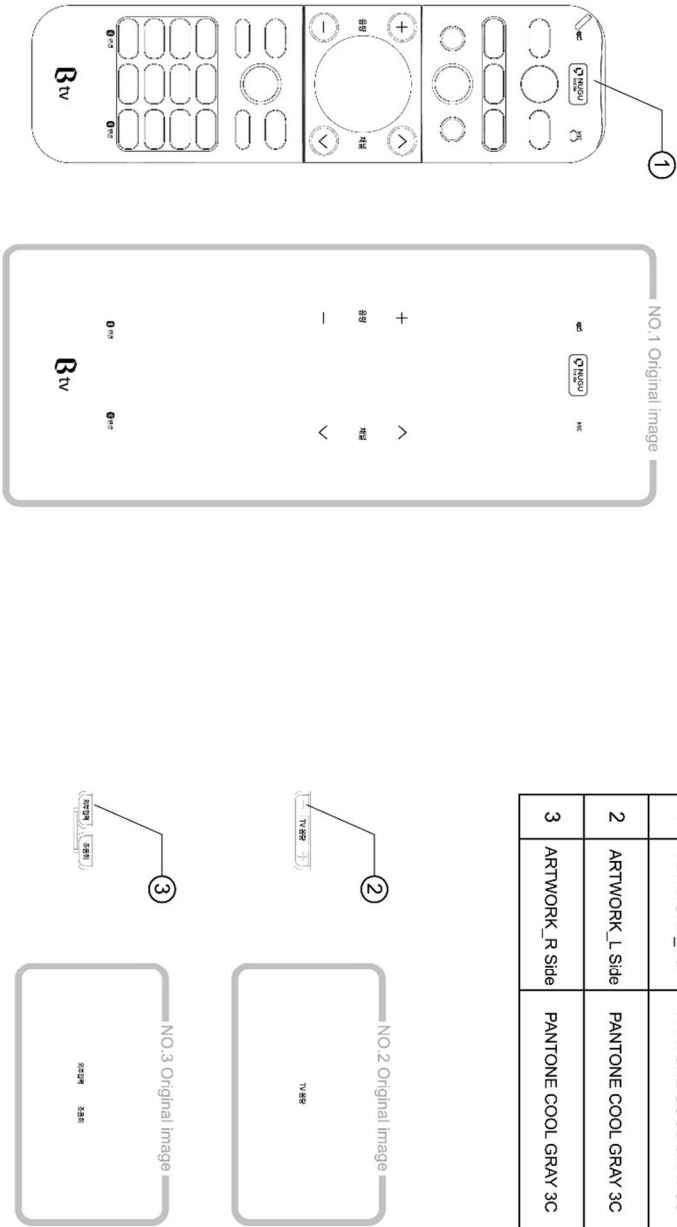
Tolerance : ±1mm Scale 100%

Size : 30 X 42mm

NO	NAME	COLOR
1	LABEL	White Bopp(유포지) Matte Laminating / ① BLACK TEXT:WHITE ② Cool Gray 6C ③ PANTONE 425C

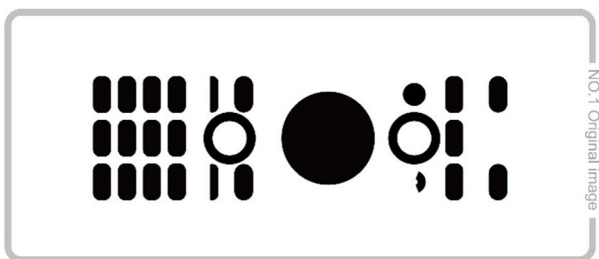
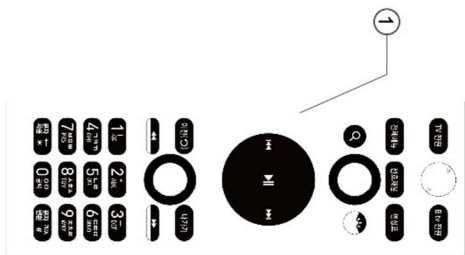
2.1.6 Printing Specification

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



Scale 100%

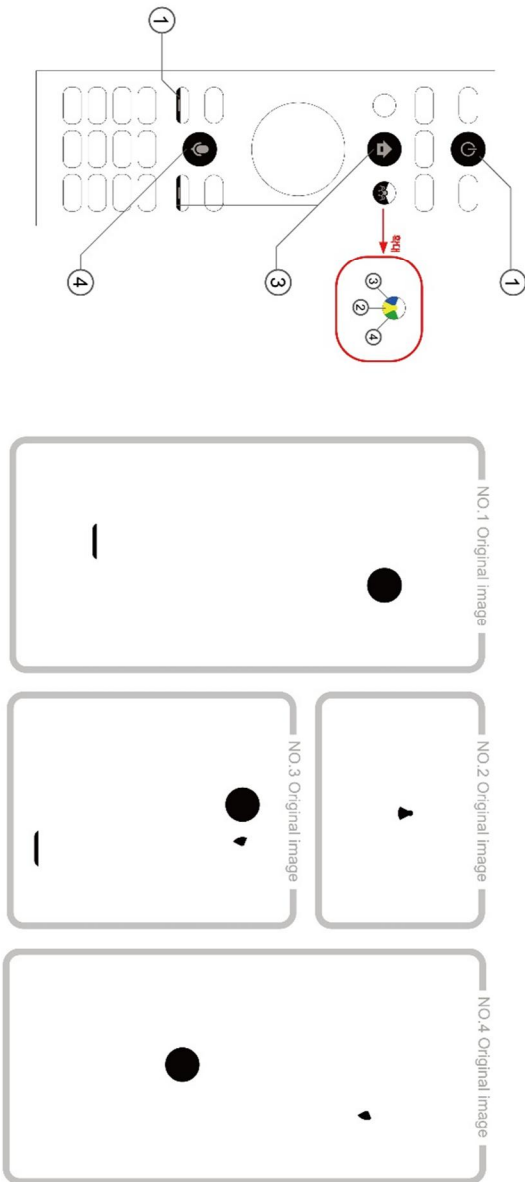
구분	모델명	제출일	제출인	검토인	승인인	승인인
기타사항	BMM-BT10	2019.04.09	SK탈			
제출인	Design Team	승인인				
검토인	심다정(JANN)	기타				



Scale 100%

NO	NAME	COLOR
1	ARTWORK	PANTONE COOL GRAY 3C

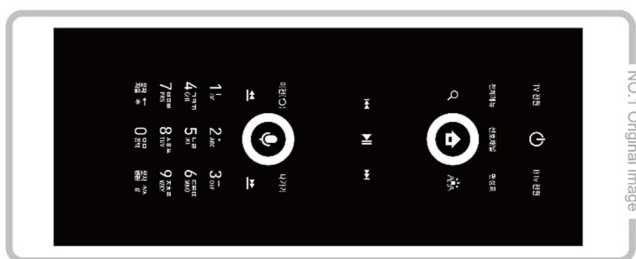
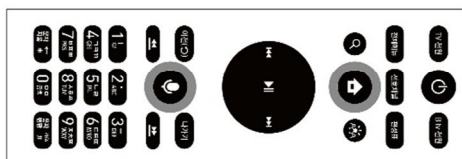
도	설	BMM-BT10	작성일	2019.04.05	검	단	설	수	단	결
제	내	Design Team	용	SK형	진	량	장	진	량	정
판	외	산	단	정	기	기				
(ANN)										



Scale 100%

NO	NAME	COLOR	NO	NAME	COLOR
1	RED COLOR ICON	PANTONE 7619C	4	GREEN COLOR ICON	PANTONE 7724C
2	YELLOW COLOR ICON	PANTONE 123C			
3	BLUE COLOR ICON	PANTONE 660C			

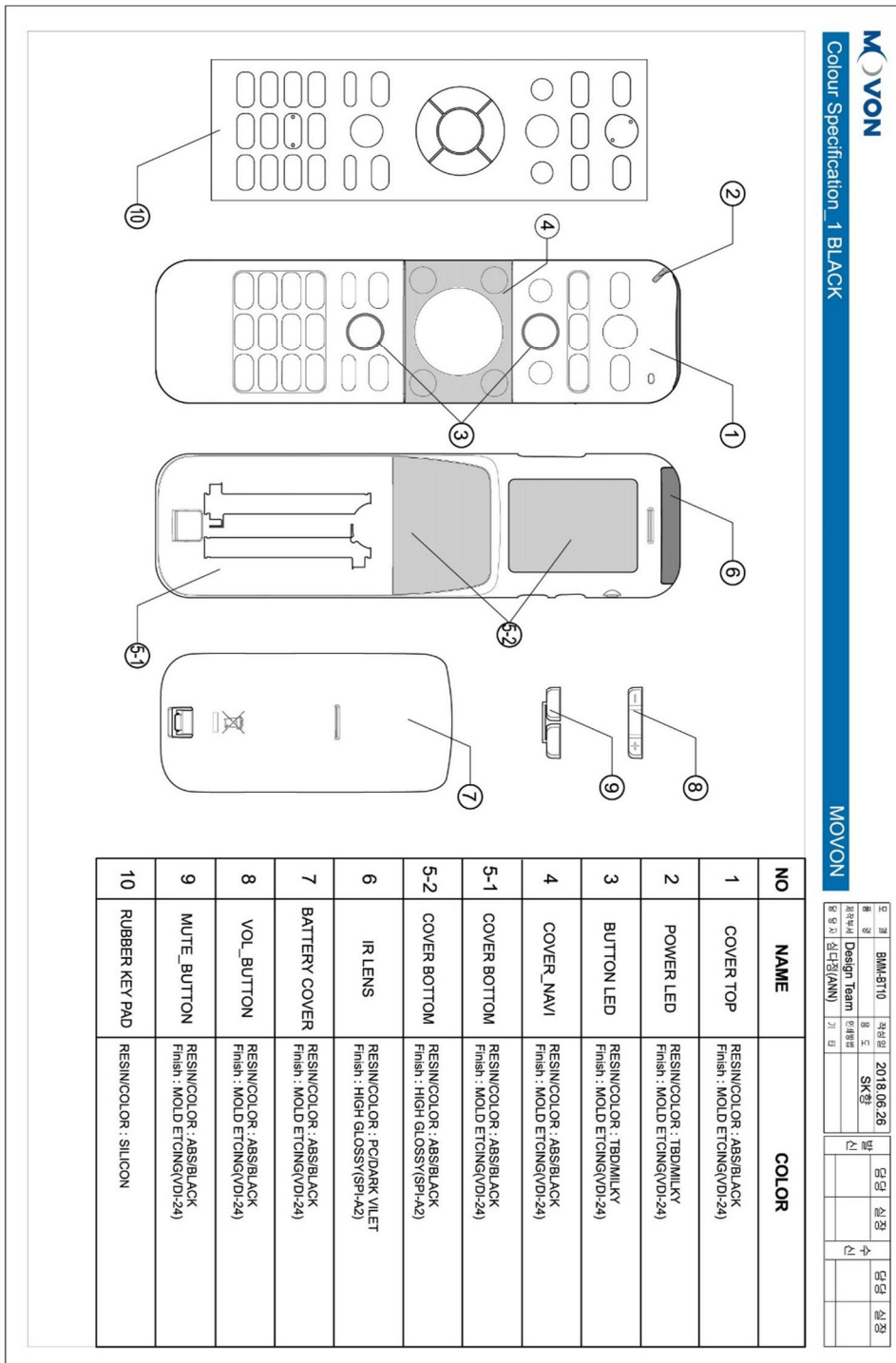
프로젝트명	BMM-BT10	작성일자	2019.04.09	설계자	SK형	검토자		승인자	
제작사	Design Team	입력일		출력일		수정		수정	
설계도면	설계도면(ANN)	기	C						



Scale 100%

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

2.1.7 Color Specification



2.1.8 Label Sticker Specification

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Label Sticker Specification

구분	ALT_BA01	작성일	2019. 07. 30
품명	제품부서	용도	
담당자	Design Team	인쇄방법	
	삼다정	기타	

발신	담당	팀장	수신	담당	팀장

No. 01

상품명			
MODEL	블루투스 리모콘		
품명			
FXN P/N	JSBMMBT10		
수량	EA		
납품일자	년 월 일		
납품업체명	모본 주식회사		

Tolerance : ±1mm

Scale : 100 %

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

BT10 manual (170mm x 250mm) 양면 인쇄

[illegible]

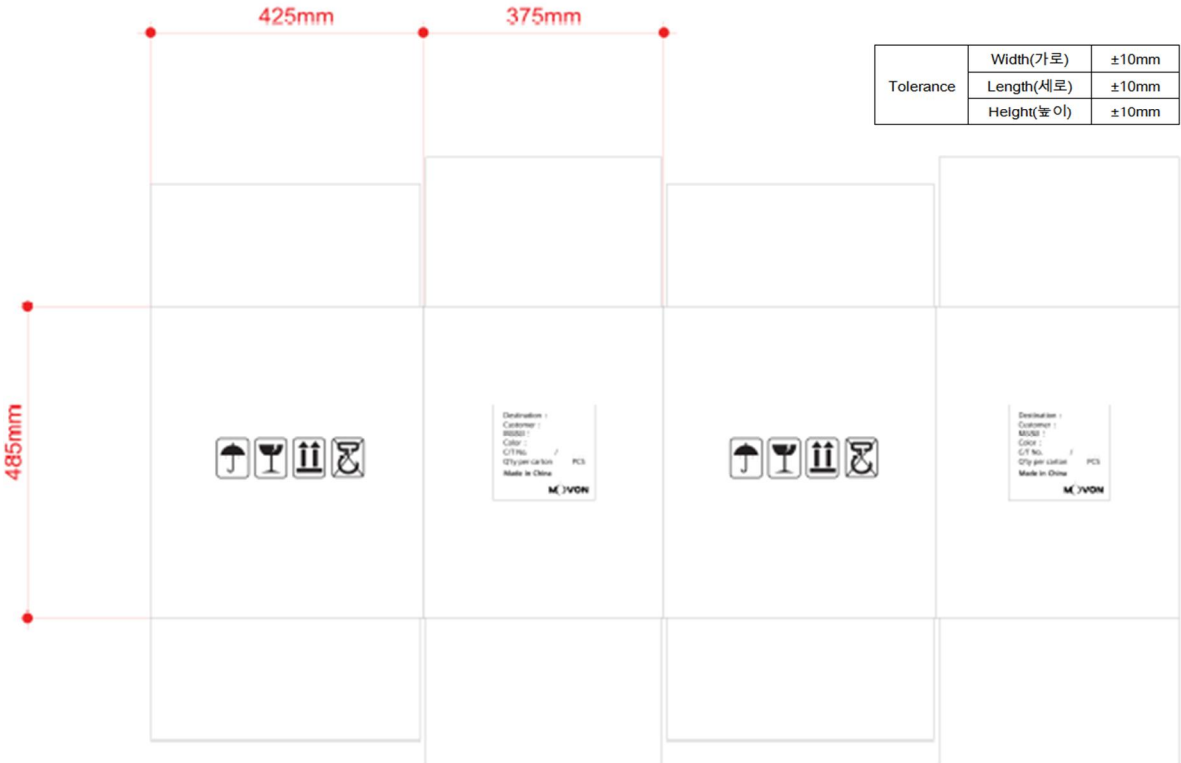
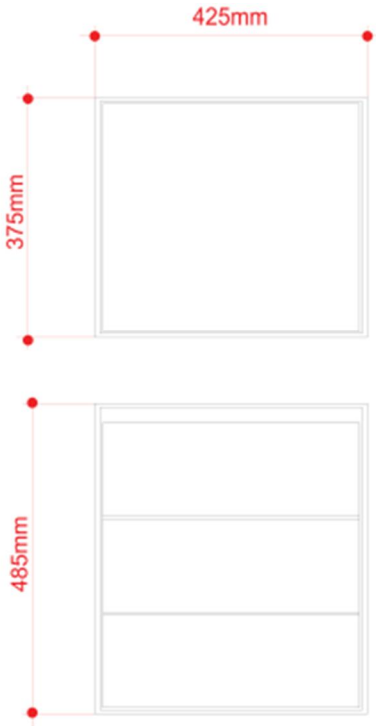
2.1.10 Carton Box Layout

Inner Box



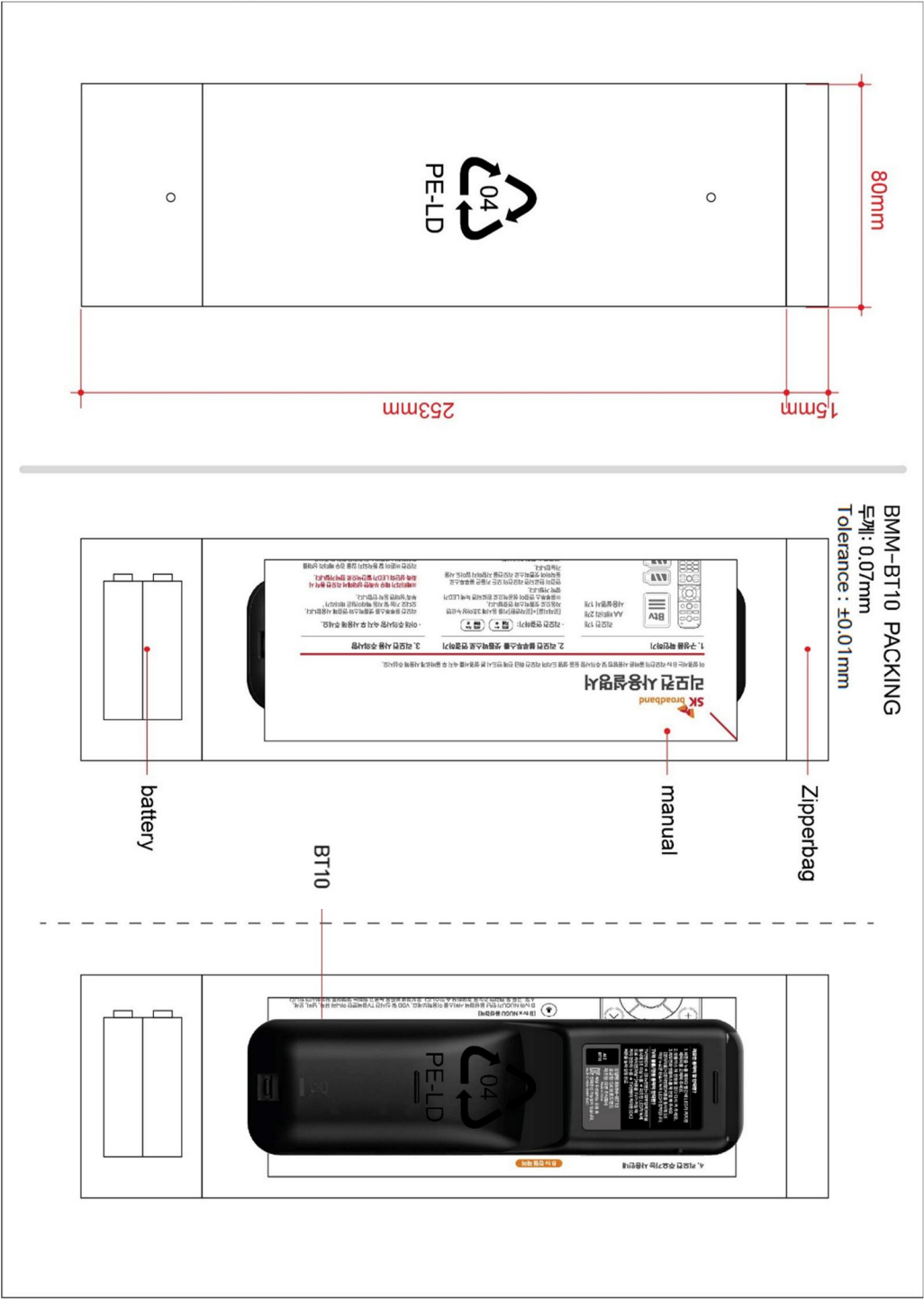
Outer Box

120ea



Tolerance	Width(가로)	±10mm
	Length(세로)	±10mm
	Height(높이)	±10mm

2.1.11 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.

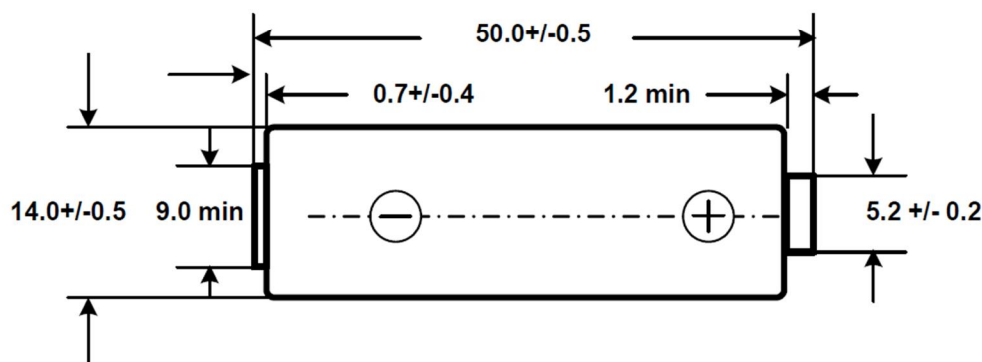
GENERAL:

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.
36 months.

for a period of:

At intervals of 12 months the cells shall meet the requirements of section 1.0, 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
for a period of

-20°C ±2°C
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:

M.A.D.
(100%)

2.4.3 43 Ω Radio:

82.0 h

3.1.3 Very Hot Storage in Air

The Cells are to be stored at
for a period of

70°C ±2°C
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:

M.A.D.
(95%)

2.4.3 43 Ω Radio

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 Won Ji-il	기술책임자 성 명 홍인선 Hong In-sun
-----	--------------------------	------------------------------

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2016년 04월 08일



위변조 확인용 QR code

한국인정기구 인정

한국화학융합시험연구원장



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 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 Production Specification

Model Name	BMM-BT10
Compliant	Bluetooth Specification V4.2
Profile	GAP, GATT, HID over GATT, Find Me, DIS, IAS, A2DP
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
Bluetooth Class	Class 2
Hopping	1600hops / sec, 1MHz Channel Space
Transmit Power	0dBm (typical)
Coverage Range	10m
Receiver Sensitivity	-70 dBm / 0.1% BER
Weight	129g (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 Product Specification

item		min.	Typ.	max.	unit	remark
Operating voltage		1.8	3.0	3.2	V	AA Alkaline Battery
Current	IR Sleep Mode	-	8	-	μA	Standby
	BLE Sleep Mode	-	8	-	μA	Standby
	Voice Search (BT / HID)	-	10.5	-	mA	
	Audio Streaming (BT / A2DP)	-	24	-	mA	
	IR Key	-	40	-	mA	STB Key
		-	40	-	mA	TV Key
	BLE Key	-	8	-	mA	
	BUZZER	-	24	-	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, Find Me, BAS, IAS, A2DP
RF	Frequency Hopping Spread Spectrum (FHSS)
Hopping Channel	79 channel with 1 MHz-spacing (2,402~2,480 MHz) 40 channel with 2MHz-spacing (2,400~2,480 MHz)
Modulation Type	Gaussian Frequency Shift Keying (GFSK)
RF output	-6~4 dBm (Class2)

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	-6	4	dBm
Modulation	$\Delta f1_{avg}$	TX	off	DH1	BS55 BS0F	5	140	175	kHz
	$\Delta f2_{avg}$						115		kHz
	$\frac{\Delta f2_{avg}}{\Delta f1_{avg}}$						0.8	-	
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	통합전원 BTV전원 TV 전원 외부 입력 TV 볼륨 BTV 볼륨 음소거 전체메뉴 REW/FF 채널 업/다운 볼륨 업/다운 홈 4방향 / OK 나가기 이전 선호채널 편성표 숫자 1 ~0, *, # 개인화키 검색	IR Key Data BLE Key Data	GREEN LED	Short Press	1번 점멸	- IR 신호를 송신 한다. - BLE 신호를 송신한다.
2	[홈] + [*]	Unpairing	GREEN LED	Long Press (3초)	5번 점멸	- Pairing 이력을 삭제한다.
3	NUGU 음성검색	음성 검색 실행 페어링 모드 진입	GREEN LED	Press Hold	음성 검색 실행 중일 때 ON 끝나면 OFF	- 셋탑의 음성검색 UI를 실행한다. - 음성검색을 종료하려면 버튼을 땀다. - Unpairing 상태이면 Pairing mode 진입한다.
4	[BTV전원] + [외부입력]	모든 제조사 IR 자동 설정 모드	GREEN LED	Long Press (3초)	On	- IR 자동 설정 모드로 진입한다. - 자동 설정 모드에 진입하면, 채널 키를 TV 전원이 꺼 질 때 까지 천천히 누른다. - TV 전원이 꺼지면, [OK] 버튼을 눌러서 설정을 저장한다.
5	[*] + [#]	Pairing	GREEN LED	Long press (3초)	1초마다 점멸	- Pairing mode 진입한다.
6	[*] + 4방향	Drag Mode	GREEN LED	Short Press	실행 중일 때 ON 끝나면 OFF	- Browser UI Mouse Cursor

No	버튼	기능	LED	버튼 동작	Release	비고
7	[BTV전원] + [1]	삼성/LG 제조사 IR 자동 설정 모드	GREEN LED	Long Press (3초)	ON	- 삼성/LG IR 자동 설정 모드로 진입한다. - 설정 모드에 진입하면, 채널 키를 TV 전원이 꺼 질 때 까지 천천히 누른다. - TV 전원이 꺼지면, [OK] 버튼을 눌러서 설정을 저장한다.
8	[*] + [9]	MODE1/2 전환	GREEN LED	Long Press (3초)	MODE2 진입 시 4번 깜박임 MODE1 진입 시 2번 깜박임	- IR 모드 1 혹은 2로 변환한다.
9	[*] + [5]	백라이트 On/Off 토글	GREEN LED	Long Press (3초)	OFF 진입 시 4번 깜박임 ON 진입 시 2번 깜박임	- 백라이트를 수동으로 ON/OFF 제어한다(Default ON).
10	[OK] + [TV전원]	IR 학습기능	GREEN LED	Long Press (3초)	ON	- 학습모드 진입상태에서 아무런 키 입력이 없으면 60초 후 LED 3회 깜빡이고 종료 - 학습모드 진입상태에서 [OK]버튼을 누르면 LED 3회 깜빡이고 종료 - 학습모드 진입상태에서 학습대상 TV키(TV전원, TV볼륨, 외부입력)를 누르면 LED 1회 깜빡이고 15초간 IR신호 수신상태로 진입. LED는 ON상태유지 - IR 신호 수신상태에서 15초간 입력이 없으면 학습모드로 돌아감 - IR 신호 수신상태에서 IR신호를 정상적으로 수신하면 Green LED 3회 깜빡이고 학습모드로 돌아감 - IR 신호 수신상태에서 IR신호를 정상적으로 수신하지 못하면 Red LED 3회 깜빡이고 학습모드로 돌아감

2.6.2 LED Functionality

No	상태	LED Indication		비고
		Green LED	Red LED	
1	Pairing mode	1초 간격으로 점멸		HID는 20초간 A2DP는 30초간 점멸
2	Unpairing	5번 점멸		
3	NUGU 음성검색 버튼 누르고 있음	검색중 On		음성검색 종료시 Off
4	음성검색 버튼 이 외 Button Press	1번 점멸		
5	MODE1-> MODE2	4번 점멸		
6	MODE2-> MODE1	2번 점멸		
7	TV 동조화 설정	15초간 On		
8	TV 동조화 성공	3번 점멸		
9	이어잭 결합	1번 점멸		
10	Low Battery 상태에서 Button Press		1번 점멸	
	상태	Back-light LED		비고
11	RCU Pick up	2초간 ON		2초 후 OFF

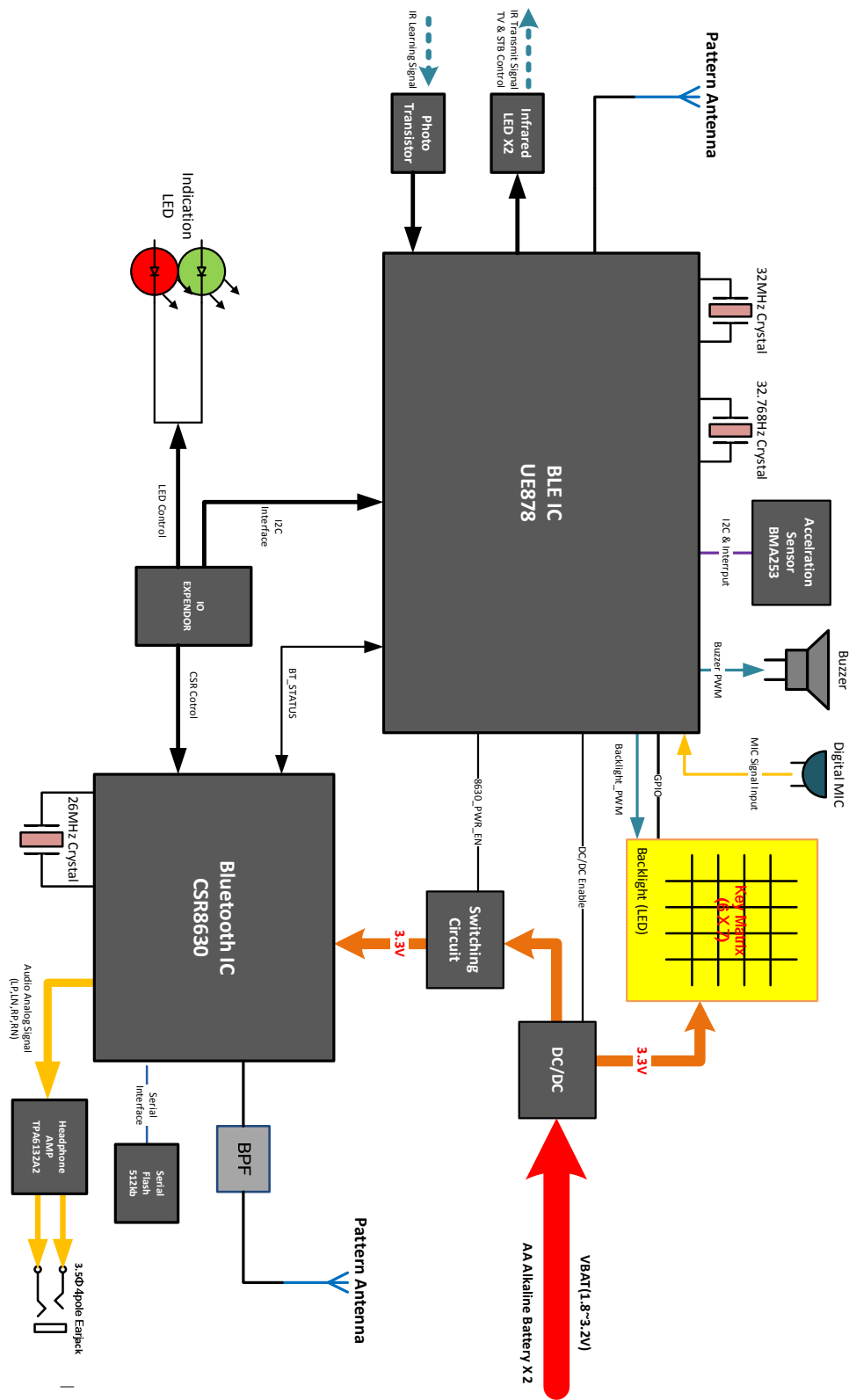
2.6.3 Earjack Functionality

No	상태	기능	LED	동작	비 고
1	A2DP Connectable	Reconnection	GREEN LED	결합	Reconnect 되고 자동으로 TV음성이 이어잭으로 들림
2	A2DP Streaming	Disconnection		해제	이어잭으로 들리던 음성이 TV로 들림

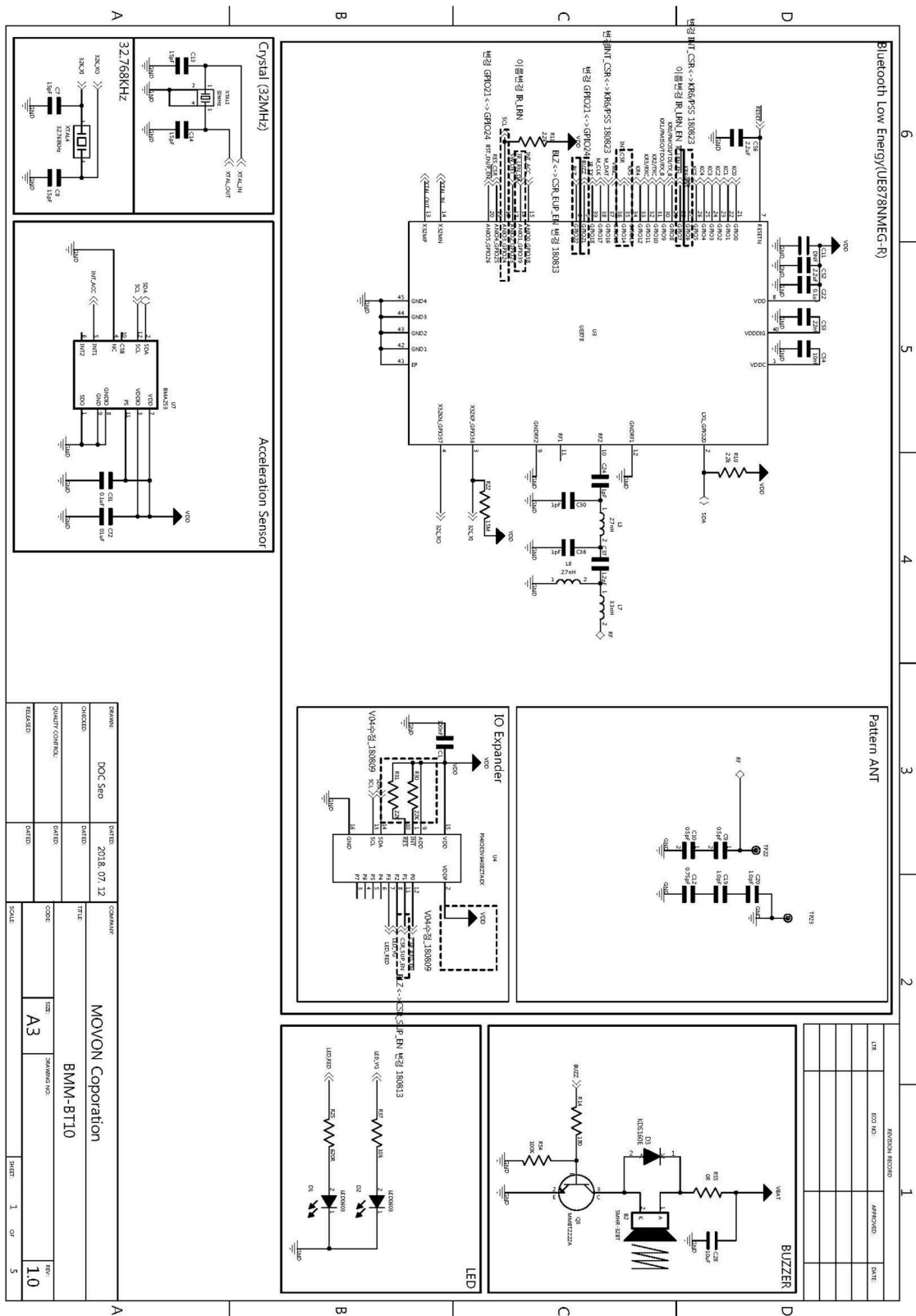
2.6.4 IR/BLE Key Code

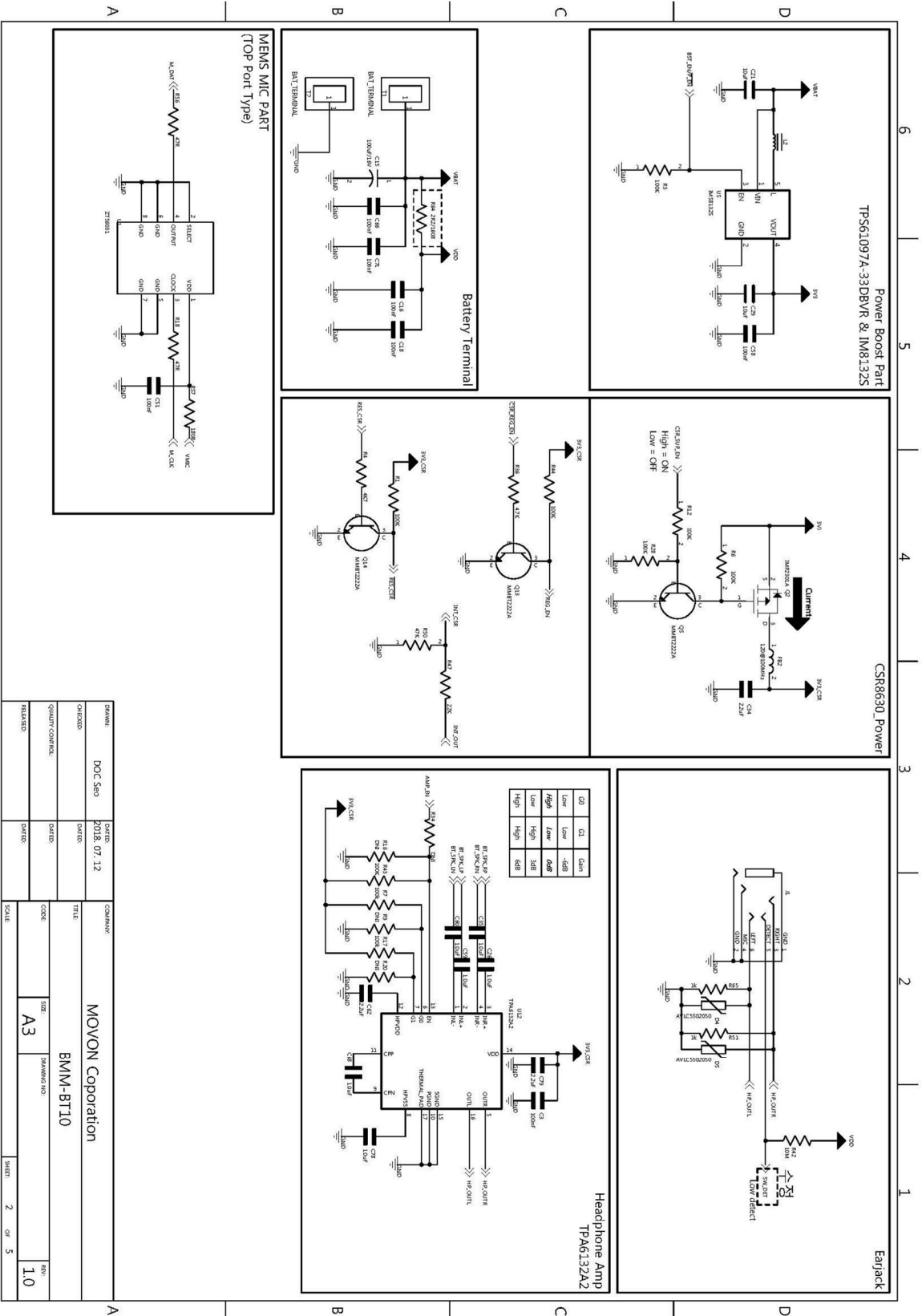
No	Key	Code			
		IR[NEC Simple repeat]		RF(BLE)	
	Key name	MODE1 CUSTOM 0x807F	MODE2 CUSTOM 0xF5A0	Page	Usage ID
1	통합전원	BTV전원 + TV전원	BTV전원 + TV전원		
2	TV 전원	[0x02FD]+[0x08F7]	[0x02FD]+[0x08F7]		
3	B tv 전원	0x01FE	0x01EF	0x07	0x0100
4	전체메뉴	0x47B8	0x478B	0x07	0x4700
5	선택채널	0x58A9	0x589A	0x07	0x5800
6	편선표	0x8D92	0x8D29	0x07	0x8D00
7	외부입력	[0x01FE]+[0x0BF4]	[0x01FE]+[0x0BF4]		
8	조용히	0x45BA	0x45AB	0x07	0x4500
9	TV 음량+	[0x07F8]+[0x02FD]	[0x07F8]+[0x02FD]		
10	TV 음량-	[0x0BF4]+[0x03FC]	[0x0BF4]+[0x03FC]		
11	검색	0x4FB0	0x4F0B	0x07	0x4F00
12	홈	0x02FD	0x02DF	0x07	0x0200
13	나만의 버튼	0x58A7	0x587A	0x07	0x5800
14	음량+	0x43BC	0x43CB	0x07	0x4300
15	음량-	0x42BD	0x42DB	0x07	0x4200
16	▲(상)	0x49B6	0x498B	0x07	0x4900
17	▼(하)	0x4AB5	0x4A5B	0x07	0x4A00
18	◀(좌)/ I ◀◀뒤꺼내기	0x4BB4	0x4B4B	0x07	0x4B00
19	▶(우)/▶▶ I (앞꺼내기)	0x4CB3	0x4C3B	0x07	0x4C00
20	OK/▶/II (재생/일시정지)	0x46B9	0x469B	0x07	0x4100
21	채널△	0x40BF	0x40FB	0x07	0x4000
22	채널▽	0x41BE	0x41EB	0x07	0x4100
23	이전	0x4EB1	0x4E1B	0x07	0x4E00
24	나가기	0x34CB	0x34BC	0x07	0x3400
25	마이크	0xD12E	0xD1E2	0x07	0x2300
26	◀◀(피킴기)/ R	0x609F	0x60F9	0x07	0x6000
27	▶▶(빨리킴기) / B	0x639C	0x63C9	0x07	0x6300
28	1	0x21DE	0x21ED	0x07	0x2100
29	2	0x22DD	0x22DD	0x07	0x2200
30	3	0x23DC	0x23CD	0x07	0x2300
31	4	0x24DB	0x24BD	0x07	0x2400
32	5	0x25DA	0x25AD	0x07	0x2500
33	6	0x26D9	0x269D	0x07	0x2600
34	7	0x27D8	0x278D	0x07	0x2700
35	8	0x28D7	0x287D	0x07	0x2800
36	9	0x29D6	0x296D	0x07	0x2900
37	*/문자지움	0x2AD5	0x2A5D	0x07	0x2A00
38	0	0x20DF	0x20FD	0x07	0x2000
39	#/문자번호	0x2BD4	0x2B4D	0x07	0x2B00

2.7 Block Diagram

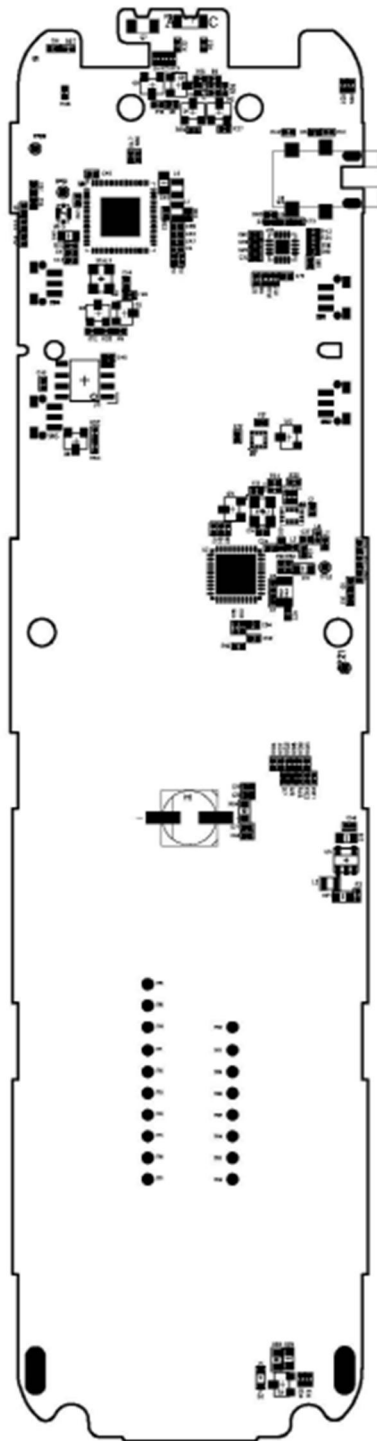


2.8 Schematic

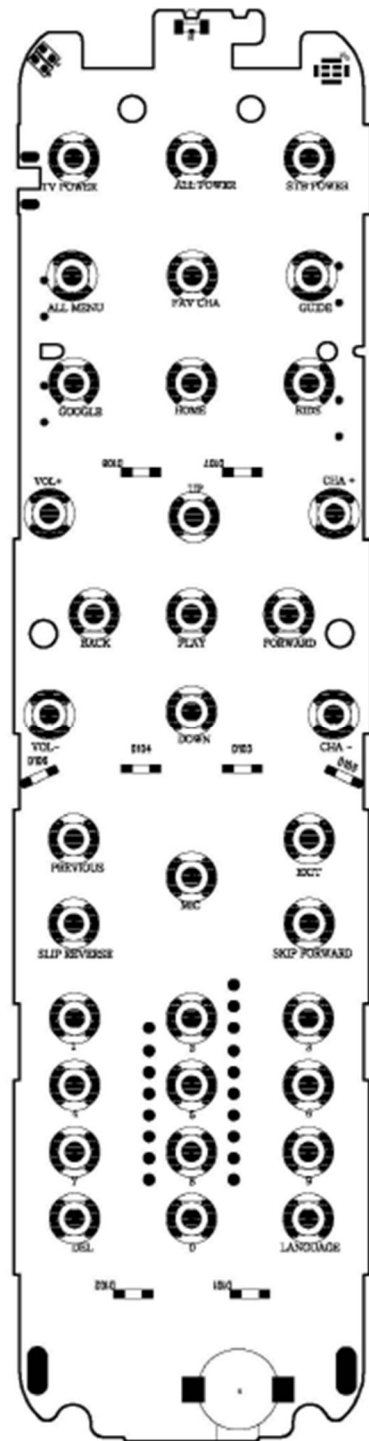




2.9 부품 배치도

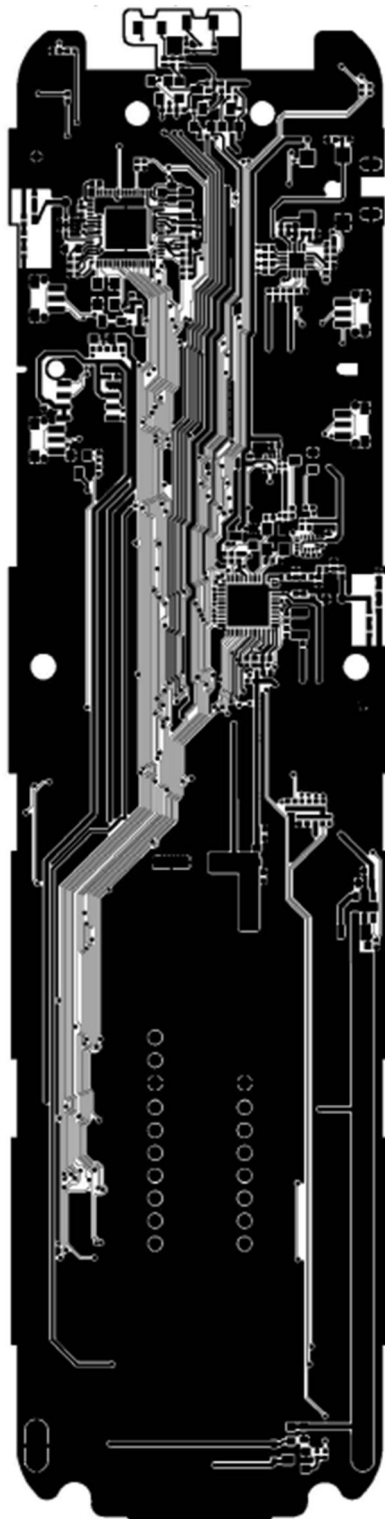


MAIN TOP Location

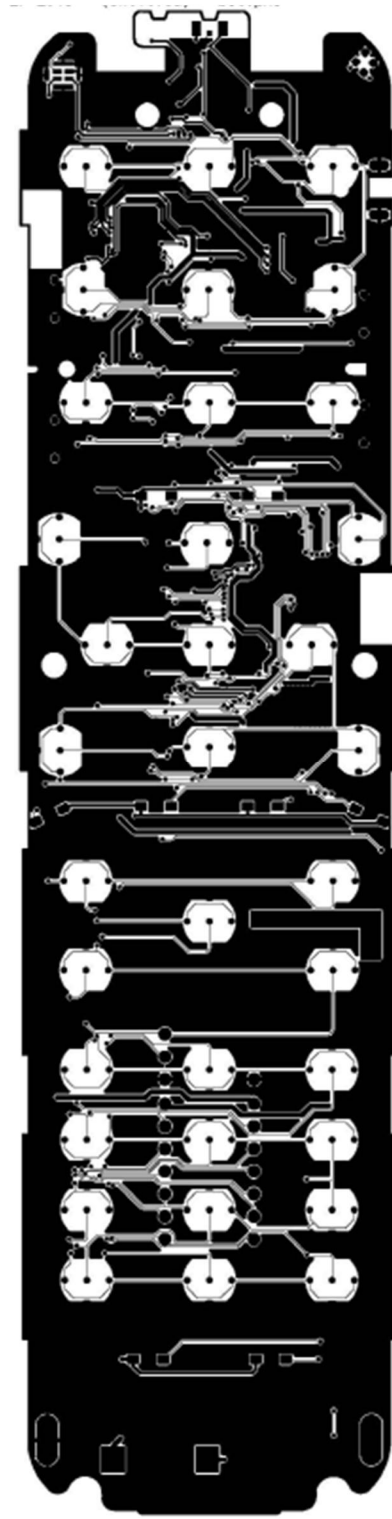


MAIN BOT Location

2.10 Layer별 Gerber



MAIN TOP Layer



MAIN BOT Layer

2.11 Part List (Hardware)

1	Bluetooth IC	UE878NMEG-R	UEI	OTO	EA	1	U3
2	Bluetooth IC	CSR8630B04-IQQF-R	CSR	WPG	EA	1	U8
3	Band Pass Filter	BF2012-L2R4DART LTB-2012-2G4H6-H1-QE	ACX MAG.LAYERS	휴택상사 QUESTONE	EA	1	U9
4	Buzzer	SMHR-32BT3S2	HS TechVIC	테크타이토	EA	1	B2
5	Switch, SMD side tact, 2.4N	CTT-1133-2	CTS	화인일렉트로닉스	EA	4	SW1,SW2,SW3,SW4
6	Acceleration sensor	BMA250E	BOSCH	KS반도체	EA	1	U7
7	Serial Falsh, 512kb, SOP8	MX25L512EMI-10G	Macronix	KS반도체	EA	1	U11
8	32.768KHz, Resonator, 3215 SMD, 7pF	SC-32S ETST00327000LE	정원전자 HOSONIC	정원전자 QUESTONE	EA	1	XTAL4
9	32MHz, Crystal, 3225, 9pF, +-10ppm, SMD	JYD3A1C3D4-9-32.000	정원전자	정원전자	EA	1	XTAL1
10	26MHz, Crystal, 3225, 8.7pF, +-10ppm, SMD	JYD3A1C3D4-8.7-26.000 E3S826E00002QE	정원전자 HOSONIC	정원전자 QUESTONE	EA	1	XTAL3
11	IO Expander,	PI4IOESV6408ZT	DIODES	세미게이트	EA	1	U4
12	IC, Headphone AMP	TPA6132A2TER	TI	WPGK	EA	1	U12
13	IC, Boost Converter	IM8132S	IMS	IMS	EA	1	U5
14	NPN TR	MMBT2222A	Onsemi	마루닉스	EA	7	Q3,Q5,Q6,Q8,Q9,Q13,Q14
15	P-ch MOSFET	IMP2301A(B)	IMS	IMS	EA	1	Q2
16	MICRO MEMS MIC, TOP type, Sensitivity -28dB	ZTS6131	ZILTEK	D&F KL	EA	1	U1
17	LED, SMD, 1608, Green	FC-DA1608UGK-S20D10	NATIONSTAR	디스플레이콤	EA	1	D2
18	LED, SMD, 1608, Red	FC-DA1608-HRK-620D	NATIONSTAR	디스플레이콤	EA	1	D1
19	LED, SMD, 1608, White, Sideview	BL-HZD39R-LW8-TR8	Bright	마루닉스	EA	8	D101~D108
20	PHOTO DIODE, SMD, IR Emitter, Sideview	PT26-51B	EVERLIGHT	세미게이트	EA	1	Q7
21	IR LED, SMD, IR Emitter, Sideview	BIR-HMC33M-2-TRCA	Bright	마루닉스	EA	1	D8
22	IR LED, SMD, IR Emitter, Topview	LTE-C9511TS-G-SK	LITEON	제이트로닉스	EA	1	D16
23	Shottky Diode	KDS160E-RTK/P	KEC	마루닉스	EA	1	D3
24	Varistor, 1005	AVLC5502050	AMOTECH	D&F	EA	4	D4,D5,D7,D15
25	CON, 3.5Φ AuIod Connector	DMPJ32860		SMTECH	EA	1	J1
26	chip BEAD, 1004, 120Ohm@100MHz, 7mA	BLM15PD121SN1	MURATA	마루닉스	EA	1	F82
28	IND, 2.7nH, 1005 SMD	HK1005 2N7S-T	TAIYO YUDEN	마루닉스	EA	2	L3, L6
29	IND, 3.3nH, 1005 SMD	HK1005 3N3S-T	TAIYO YUDEN	마루닉스	EA	1	L7
30	Power Inductor, 4.7uH	MCL2012S4R7MT	Sunload	마루닉스	EA	2	L1,L4
31	Power Inductor, 10uH	MCL2012H100MT	Sunload	마루닉스	EA	1	L2
32	CAP, AL, 100uF, 16V, 6.3X5.7 SMD	VE-101M1CTR-0605 RV2-16V101MSU-R	LENON ELNA	SGP 한일테크노	EA	1	C15
33	CAP, CER, 0.5pF, 20V, ±0.1pF, 1005 SMD	GQM1555C2DR58B01	MURATA		EA	2	C9,C10
34	CAP, CER, 1.0pF, 50V, ±0.1pF, 1005 SMD	GRM1555C1H1R08A01	MURATA		EA	6	C27,C33,C55,C19,C20,C32
35	CAP, CER, 2pF, 50V, ±0.1pF, 1005 SMD	GRM1555C1H2R08A01	MURATA		EA	1	C25
36	CAP, CER, 0.75pF, 50V, ±0.1pF, 1005 SMD	GQM1555C2DR758B01	MURATA		EA	1	C12
37	CAP, CER, 10uF, 10V, ±10%, 1608 SMD	GRM188R61A106KE69	MURATA		EA	3	C21,C28,C29
38	CAP, CER, 4.7uF, 10V, ±10%, 1608 SMD	GRM188R61A475KAAJ	MURATA		EA	2	C44,C46
39	DNF				EA	2	C11,C6

40	CAP, CER, 0.1uF, 10V, ±10%, 1005 SMD	GRM155R61A104KA01	MURATA	EA	16	C22,C31,C72,C1,C3,C4,C16,C18,C50,C51,C58,C66,C71,C2,C48,C23
41	CAP, CER, 1uF, 10V, ±10%, 1005 SMD	GRM155R61A105KE15	MURATA	EA	6	C26,C35,C59,C60,C68,C78
42	CAP, CER, 1.2pF, 50V, ±0.1pF, 1005 SMD	GRM1555C1H1R2BA01	MURATA	EA	1	C37
43	CAP, CER, 10nF, 16V, ±10%, 1005 SMD	GRM155R61C103KA01	MURATA	EA	3	C41,C43,C54
44	CAP, CER, 150pF, 50V, ±5%, 1005 SMD	GRM1555C1H151JA01	MURATA	EA	1	C5
45	CAP, CER, 15pF, 50V, ±5%, 1005 SMD	GRM1555C1H150JA01	MURATA	EA	3	C13,C14,C45
46	CAP, CER, 1pF, 50V, ±0.1pF, 1005 SMD	GRM1555C1H1R0BA01	MURATA	EA	3	C24,C30,C36
47	CAP, CER 2.2uF, 10V, ±10%, 0402 SMD	GRM155R61A225KE95	MURATA	EA	9	C17,C34,C38,C39,C40,C42,C49,C62,C52
48	CAP, CER, 22nF, 16V, ±10%, 1005 SMD	GRM155R61C223KA01	MURATA	EA	1	C53
49	CAP, CER, 470nF, 10V, ±10%, 1005 SMD	GRM155R61A474KE15	MURATA	EA	1	C47
50	CAP, CER, 7pF, 50V, ±0.1pF, 1005 SMD	GRM1555C1H7R0BA01	MURATA	EA	2	C7,C8
51	RES, 100KΩ 1005J SMD	MCR01MZSJ_104J	ROHM	EA	11	R1,R3,R6,R12,R28,R44,R43,R54,R7,R17,R52
52	RES, 180Ω 1005J SMD	MCR01MZSJ_181J	ROHM	EA	1	R57
53	RES, 22KΩ 1005J SMD	MCR01MZSJ_223J	ROHM	EA	2	R47, R31
54	RES, 4.7KΩ 1005J SMD	MCR01MZSJ_472J	ROHM	EA	2	R36,R4
55	RES, 47KΩ 1005J SMD	MCR01MZSJ_473J	ROHM	EA	1	R50
56	RES, 47Ω 1005J SMD	MCR01MZSJ_470J	ROHM	EA	2	R18,R56
57	RES, 0Ω 1005J SMD	MCR01MZSJ_000J	ROHM	EA	4	R45,R26,R29,R27
58	RES, 10MΩ 1005J SMD	MCR01MZSJ_106J	ROHM	EA	1	R42
59	RES, 10KΩ 1005J SMD	MCR01MZSJ_103J	ROHM	EA	4	R2,R5,R37,R61
60	RES, 15MΩ 1005J SMD	MCR01MZSJ_156J	ROHM	EA	1	R22
61	RES, 180Ω 1005J SMD	MCR01MZSJ_181J	ROHM	EA	1	R14
62	RES, 1KΩ 1005J SMD	MCR01MZSJ_102J	ROHM	EA	3	R51,R65,R53
63	RES, 2.2Ω 1005J SMD	MCR01MZSJ_2R2J	ROHM	EA	3	R32,R33,R70
64	RES, 2.2KΩ 1005J SMD	MCR01MZSJ_222J	ROHM	EA	2	R10,R11
65	RES, 620Ω 1005J SMD	MCR01MZSJ_621J	ROHM	EA	1	R25
66	DNF			EA	9	R9,R16,R20,R34,R23,R24,Q1,Q10,R30,
67	RES, 100Ω 1005J SMD	MCR01MZSJ_101J	ROHM	EA	1	R8
68	RES, 10KΩ 1005J SMD	MCR01MZSJ_103J	ROHM	EA	2	R19, R13
69	RES, 15KΩ 1005J SMD	MCR01MZSJ_153J	ROHM	EA	1	R15
70	RES, 1MΩ 1005J SMD	MCR01MZSJ_105J	ROHM	EA	1	R21
71	RES, 330Ω 1005J SMD	MCR01MZSJ_331J	ROHM	EA	8	R101~108
72	RES, 0Ω 1608J SMD	MCR03MZSJ_000J	ROHM	EA	1	R55
73	RES, 2.2Ω 1608J SMD	MCR03MZSJ_2R2J	ROHM	EA	1	R64
74	Main PCB, 2Layer MLB, 1.2T, OSP+Carbon			EA		

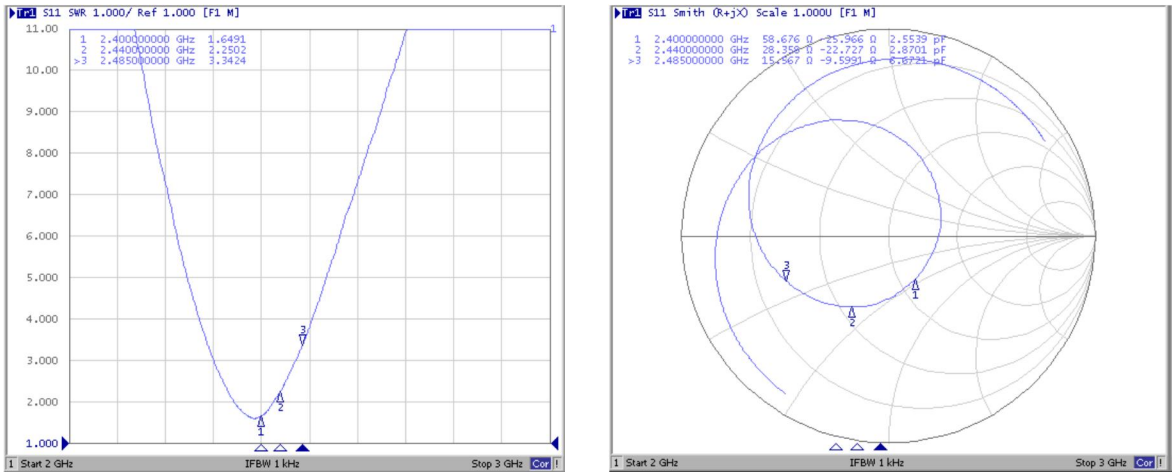
total 178

2.12 Part List (Mechanical)

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2.13 ANT Specification (BLE Part)

2.13.1 BLE Antenna



Passive Gain

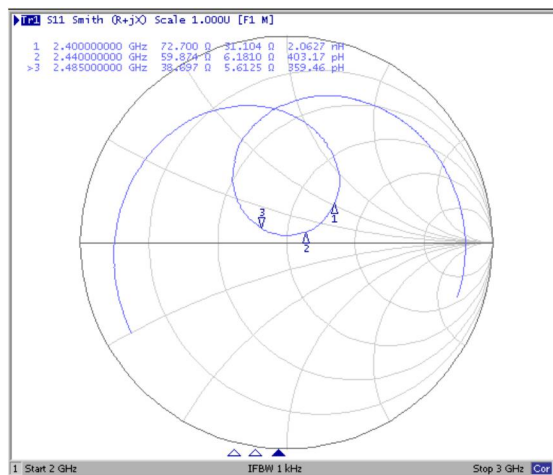
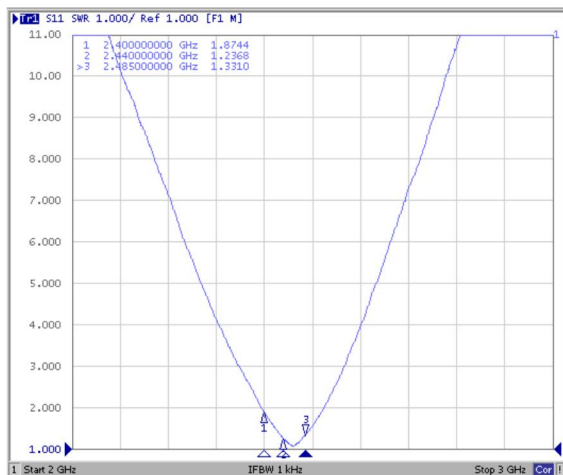
Frequency(MHz)	2400	2440	2480
Efficiency(dB)	-3.46	-3.82	-4.71
Efficiency(%)	45.05	41.47	33.82
Peak Gain(dB)	0.62	0.46	0.25

Active Data

TRP [Tx Power]

Channel	0ch	12ch.	39ch
TRP [dBm]	-2.67	-1.75	-0.07
Peak EIRP [dBm]	0.05	0.80	2.97
UHRP [dBm]	-5.45	-4.36	-2.80

2.13.2 Classic BT(Audio) Antenna



Passive Gain

Frequency(MHz)	2400	2440	2480
Efficiency(dB)	-3.34	-2.50	-2.60
Efficiency(%)	46.40	56.24	54.96
Peak Gain(dB)	1.81	2.80	3.05

Active Data

TRP [Tx Power]

Channel	0ch	39ch.	78ch
TRP [dBm]	-1.50	1.04	0.04
Peak EIRP [dBm]	5.16	7.64	6.92
UHRP [dBm]	-5.92	-3.49	-4.79

Active Data

TIS [Rx Sensitivity]

Channel	0ch	39ch.	78ch
TRP [dBm]	-76.73	-82.21	-81.30
Peak EIS [dBm]	-83.58	-88.78	-88.51
UHRP [dBm]	-72.17	-77.65	-76.45

4. Reliability Test

4.1 Test Area and result

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

5. Certificate

5.1 KC Certificate

CC03-BBEA-C00A-1CAE

방송통신기자재등의 적합인증서 Certificate of Broadcasting and Communication Equipments	
상호 또는 성명 Trade Name or Applicant	모본 주식회사
기자재명칭(명칭) Equipment Name	특정소출력 무선기기(무선데이터통신시스템용 무선기기)
기본모델명 Basic Model Number	BMM-BA01
파생모델명 Series Model Number	BMM-BT10
인증번호 Certification No.	R-C-MVN-BMM-BA01
제조사/제조국가 Manufacturer/ Country of Origin	모본 주식회사 / 중국
인증연월일 Date of Certification	2018-10-26
기타 Others	
위 기자재는 「전파법」 제58조의2 제2항에 따라 인증되었음을 증명합니다. It is verified that foregoing equipment has been certificated under the Clause 2, Article 58-2 of Radio Waves Act. 2019년(Year) 05월(Month) 09일(Day) 국립전파연구원장 Director General of National Radio Research Agency ※ 인증 받은 방송통신기자재는 반드시 "적합성평가표시" 를 부착하여 유통하여야 합니다. 위반시 과태료 처분 및 인증이 취소될 수 있습니다.	

5.2 Bluetooth Certificate

5.2.1 BMM-BT10 BLE Part

Listing Details

Declaration ID	D042360
Referenced Qualified Designs	94349 (Controller Subsystem) 80053 (Host Subsystem) 81643 (Profile Subsystem)
Company	Movon Corporation
Listing Date	2018-11-01
Specification Name	4.2
Wi-Fi Certification ID	
Reference Integration Notes (RIN)	No Files Uploaded
SDoC/DoC	Download (/Review/SDoc/120537)

Product List

✚ Add a Product (/addproducts/71598)

Product Name	Product Website	Product Category	Publish Date	Archive Date	Model Number	Subset ID	Description
BMM-BA01	www.movon.co.kr	Input Devices	2018-11-01		BMM-BA01_BLE		Remote Controller which support audio streaming.
BMM-BA01	www.movon.co.kr	Input Devices	2018-11-01		BMM-BA01_BLE	120852	Remote Controller which support audio streaming.
BMM-BT10	www.movon.co.kr	Input Devices	2019-05-15		BMM-BT10_BLE	120852	Remote Controller which support audio streaming.

5.2.2 BMM-BT10 Classic(Audio) Part

Listing Details

Declaration ID	D042359
Referenced Qualified Designs	58967 (End Product)
Company	Movon Corporation
Listing Date	2018-11-01
Specification Name	4.1
Wi-Fi Certification ID	
Reference Integration Notes (RIN)	No Files Uploaded
SDoC/DoC	Download (/Review/SDoc/120544)

Product List

✚ Add a Product (/addproducts/71605)

Product Name	Product Website	Product Category	Publish Date	Archive Date	Model Number	Subset ID	Description
BMM-BA01	www.movon.co.kr	Input Devices	2018-11-01		BMM-BA01_A2DP		Remote Controller which support audio streaming.
BMM-BA01	www.movon.co.kr	Input Devices	2018-11-01		BMM-BA01_A2DP	120862	Remote Controller which support audio streaming.
BMM-BT10	www.movon.co.kr	Input Devices	2019-05-15		BMM-BT10_A2DP	120862	Remote Controller which support audio streaming.