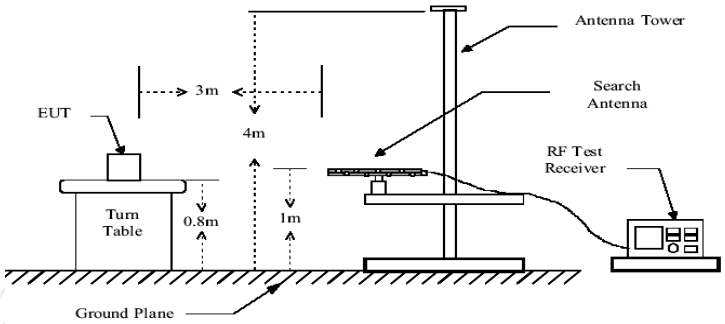
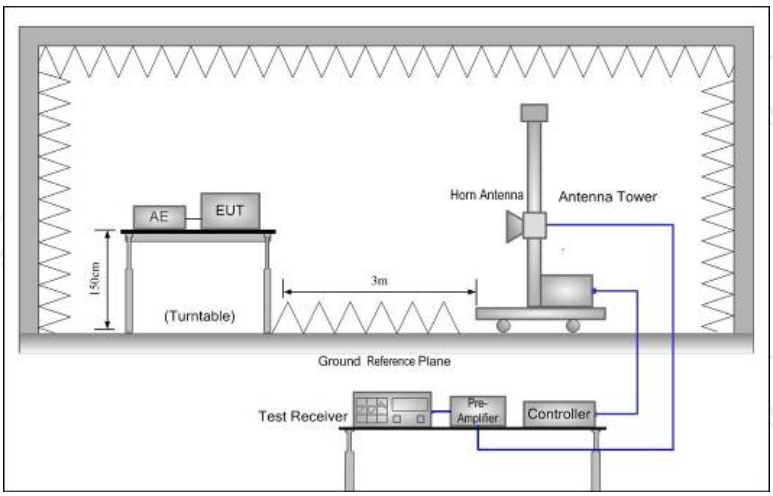


Above 1GHz



Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10:2013 Measurement Guidelines. 2. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. For the radiated emission test above 1GHz: Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT,

	depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak (3) For average measurement: use duty cycle correction factor method per 15.35(c). Duty cycle = On time/100 milliseconds On time =N1*L1+N2*L2+...+Nn-1*LNn-1+Nn*Ln Where N1 is number of type 1 pulses, L1 is length of type 1 pulses, etc. Average Emission Level = Peak Emission Level + 20*log(Duty cycle) Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
Test results:	PASS

6.11.2. Test Instruments

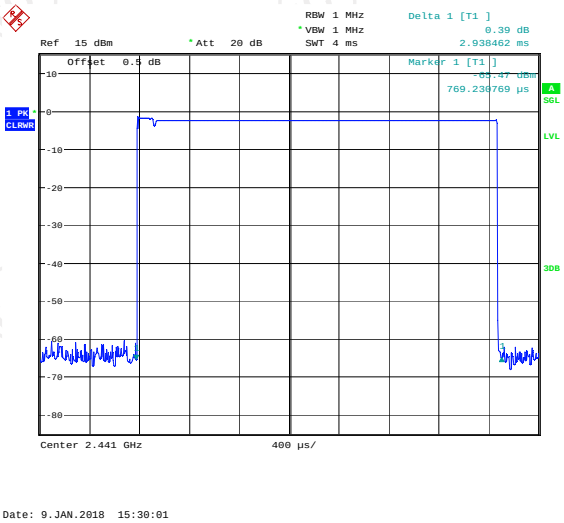
Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Test Receiver	ROHDE&SCHWARZ	ESVD	100008	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHWARZ	FSQ	200061	Sep. 27, 2018
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 27, 2018
Pre-amplifier	HP	8447D	2727A05017	Sep. 27, 2018
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBH 9170	582	Jun. 07, 2018
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
Coax cable (9KHz-1GHz)	TCT	RE-low-01	N/A	Sep. 27, 2018
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 27, 2018
Coax cable (9KHz-1GHz)	TCT	RE-low-03	N/A	Sep. 27, 2018
Coax cable (9KHz-40GHz)	TCT	RE-high-04	N/A	Sep. 27, 2018
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

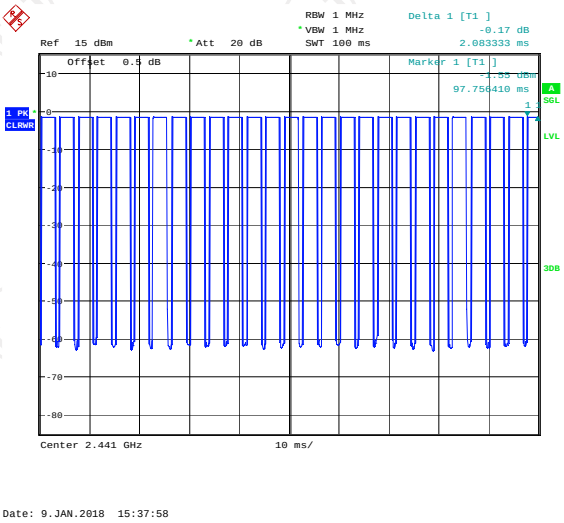
6.11.3. Test Data

Duty cycle correction factor for average measurement

2DH5 on time (One Pulse) Plot on Channel 39



2DH5 on time (Count Pulses) Plot on Channel 39



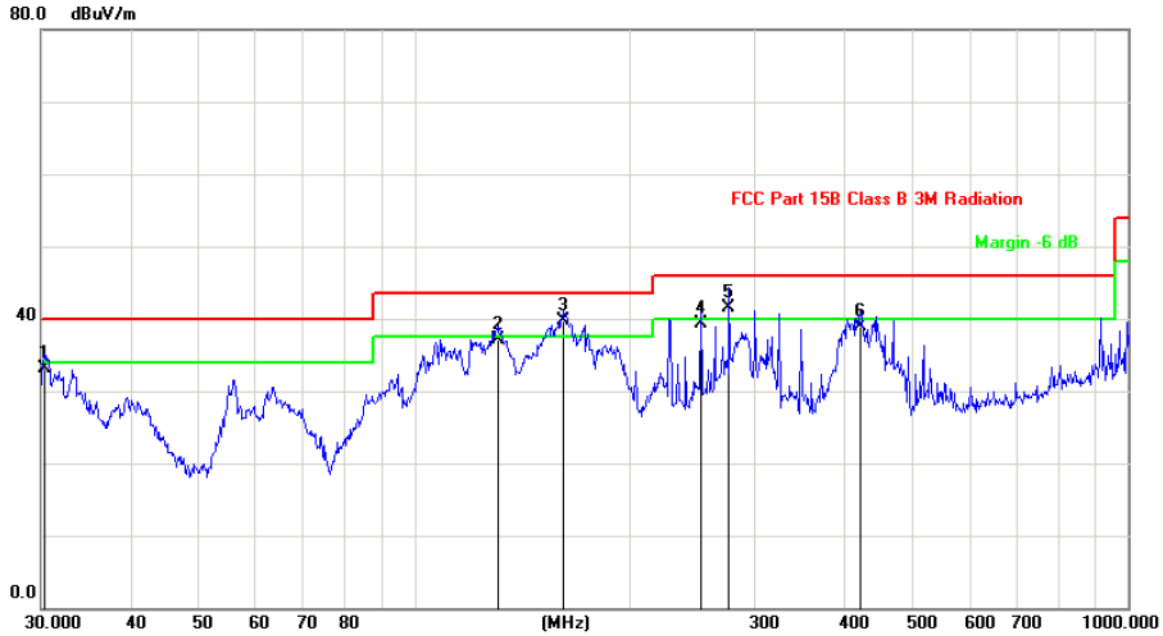
Note:

1. *Worst case Duty cycle = on time/100 milliseconds = (2.938*26+2.083)/100= 0.7847*
2. *Worst case Duty cycle correction factor = 20*log (Duty cycle) = -2.11dB*
3. *2DH5 has the highest duty cycle worst case and is reported.*
4. *The average levels were calculated from the peak level corrected with duty cycle correction factor (-2.11dB) derived from 20log (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.*

Please refer to following diagram for individual

Below 1GHz

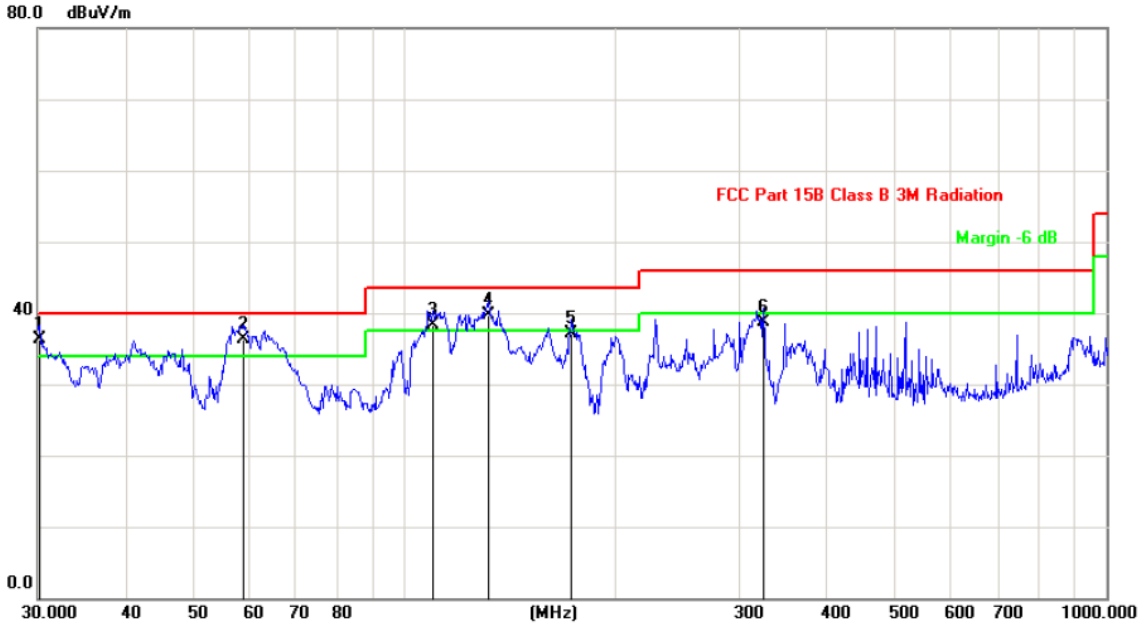
Horizontal:



Site	Polarization: *Horizontal*	Temperature:	25
Limit: FCC Part 15B Class B 3M Radiation	Power: AC 120V/60Hz	Humidity:	55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1		30.3171	46.79	-13.76	33.03	40.00	-6.97	QP			
2		131.2965	52.74	-15.65	37.09	43.50	-6.41	QP			
3	*	162.0414	54.76	-15.07	39.69	43.50	-3.81	QP			
4		252.0627	50.02	-10.73	39.29	46.00	-6.71	QP			
5	!	276.1235	51.30	-9.71	41.59	46.00	-4.41	QP			
6		422.0577	44.10	-5.20	38.90	46.00	-7.10	QP			

Vertical:



Site		Polarization:	*Vertical*	Temperature:	25
Limit: FCC Part 15B Class B 3M Radiation		Power:	AC 120V/60Hz	Humidity:	55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	!	30.2108	50.07	-13.77	36.30	40.00	-3.70	QP			
2	*	59.0251	49.72	-13.36	36.36	40.00	-3.64	QP			
3	!	109.7960	50.84	-12.48	38.36	43.50	-5.14	QP			
4	!	131.7574	55.41	-15.67	39.74	43.50	-3.76	QP			
5		172.5988	51.46	-14.41	37.05	43.50	-6.45	QP			
6		324.4560	46.71	-7.99	38.72	46.00	-7.28	QP			

Note: *1.The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported*

2. Measurements were conducted in all three channels (high, middle, low) and three modulation (GFSK, Pi/4 DQPSK, 8DPSK) and the worst case Mode (Middle channel and GFSK) was submitted only.

Above 1GHz

Modulation Type: GFSK									
Low channel: 2402 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level Peak (dBμV/m)	Emission Level AV (dBμV/m)	Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
2390	H	43.26	---	-8.27	34.99	---	74	54	-19.01
4804	H	48.82	---	0.66	49.48	---	74	54	-4.52
7206	H	34.25	---	9.5	43.75	---	74	54	-10.25
---	H	---	---	---	---	---	---	---	---
2390	V	41.83	---	-8.27	33.56	---	74	54	-20.44
4804	V	45.79	---	0.66	46.45	---	74	54	-7.55
7206	V	33.54	---	9.5	43.04	---	74	54	-10.96
---	V	---	---	---	---	---	---	---	---

Middle channel: 2441 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level Peak (dBμV/m)	Emission Level AV (dBμV/m)	Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
4882	H	43.81	---	0.99	44.80	---	74	54	-9.2
7323	H	38.76	---	9.87	48.63	---	74	54	-5.37
---	H	---	---	---	---	----	---	---	---
4882	V	45.16	---	0.99	46.05	---	74	54	-7.94
7323	V	34.17	---	9.87	44.04	---	74	54	-9.96
---	V	---	---	---	---	----	---	---	---

High channel: 2480 MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level Peak (dBμV/m)	Emission Level AV (dBμV/m)	Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
2483.5	H	45.63	---	-7.83	37.80	---	74	54	-16.20
4960	H	46.54	---	1.33	49.20	---	74	54	-4.8
7440	H	36.73	---	10.22	46.95	---	74	54	-7.05
---	H	---	---	---	---	---	---	---	---
2483.5	V	46.31	---	-7.83	38.48	---	74	54	-15.52
4960	V	46.92	---	1.33	48.25	---	74	54	-5.75
7440	V	34.59	---	10.22	44.81	---	74	54	-9.19
---	V	---	---	---	---	---	---	---	---

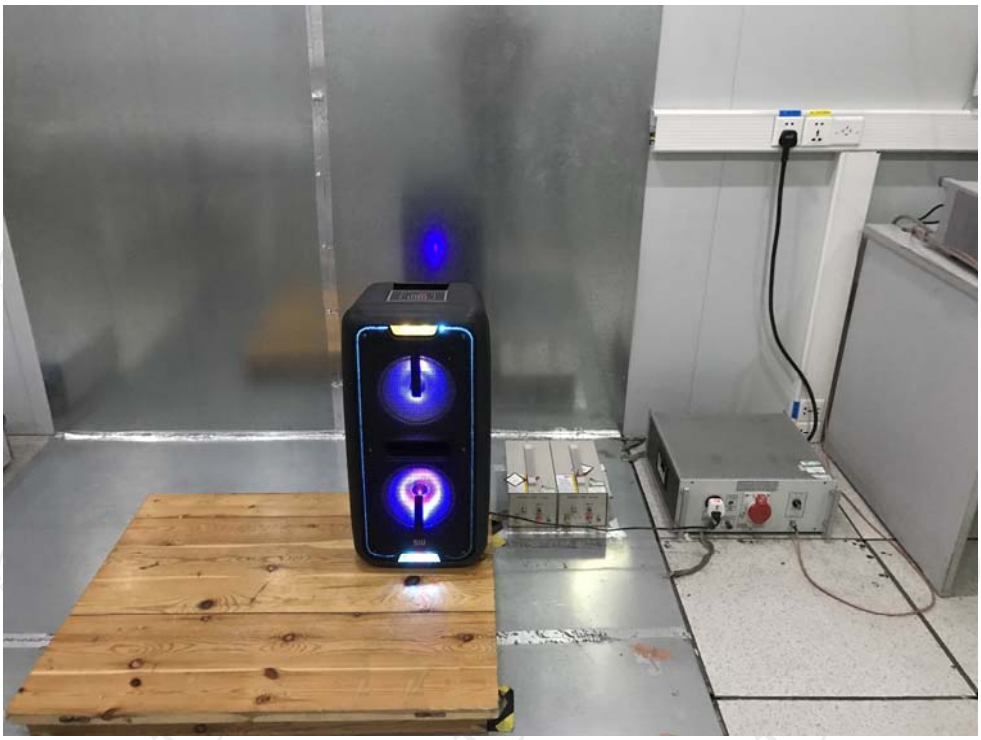
Note:

1. *Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier*
2. *Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)*
3. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
4. *Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.*
5. *Data of measurement shown "---"in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.*
6. *Measurements were conducted in all three modulation (GFSK, Pi/4 DQPSK, 8DPSK), and the worst case Mode (GFSK) was submitted only.*

Appendix A: Photographs of Test Setup

Product: SPEAKER
Model: SW 208-09
Radiated Emission

CE



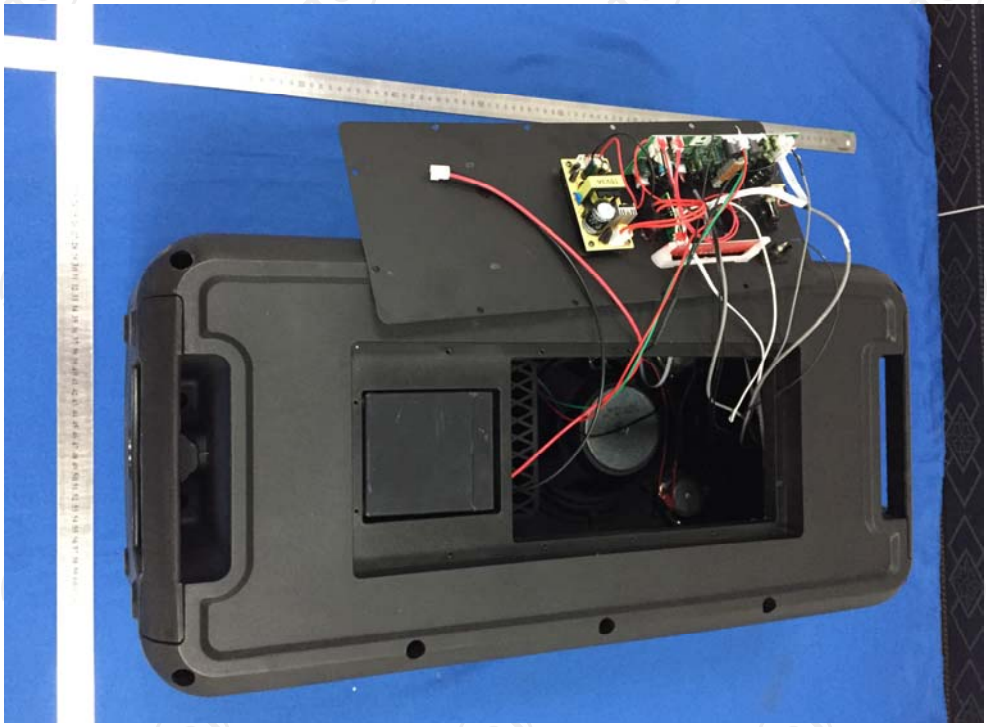
Appendix B: Photographs of EUT

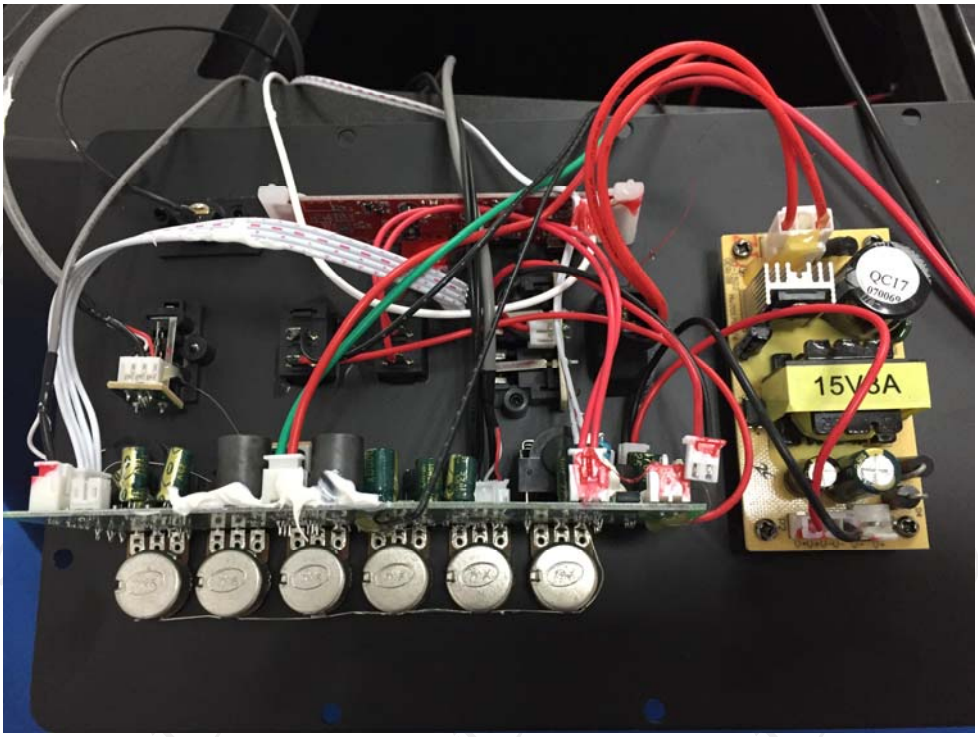
Product: SPEAKER
Model: SW 208-09
External Photos

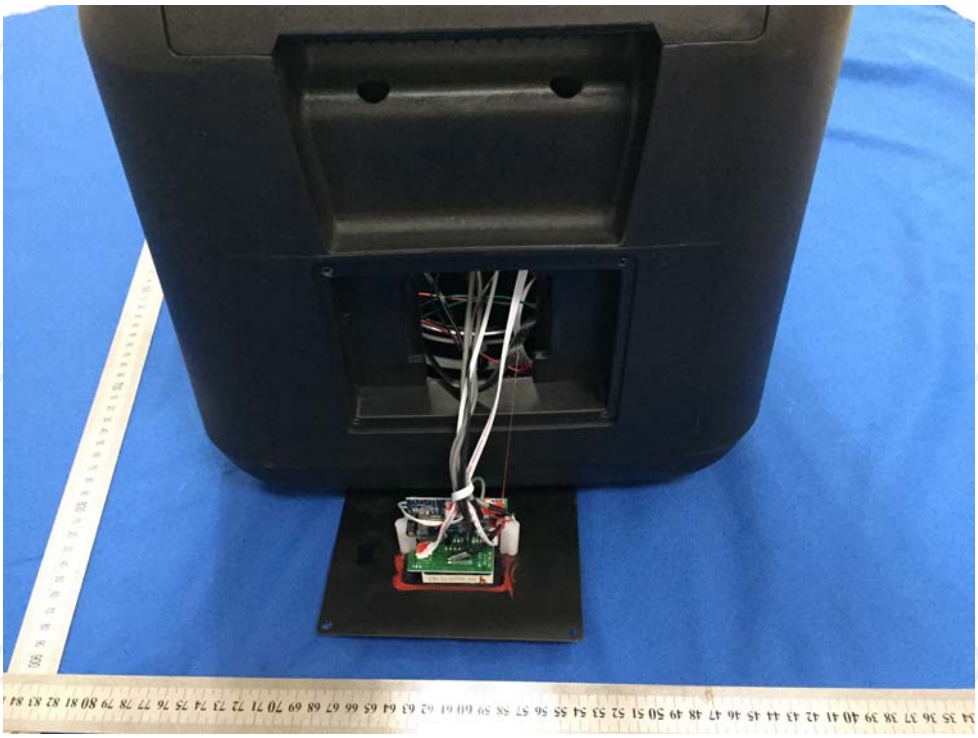
Made in China

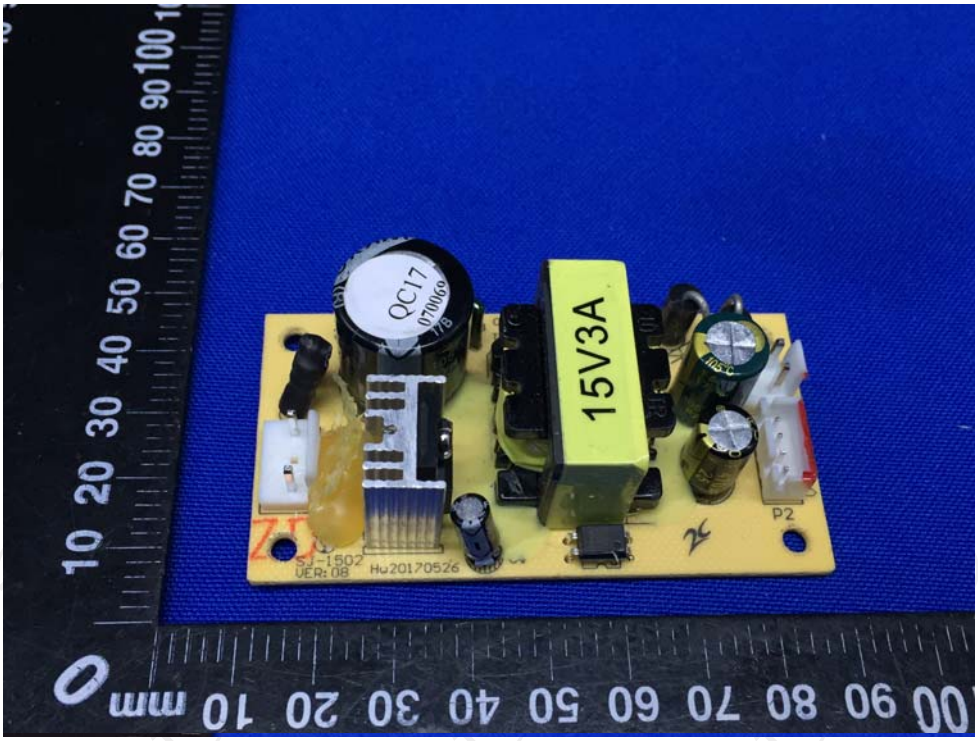
Made in China
CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
THERE ARE NO USER PARTS
INSIDE. REFER SERVICING
IF NECESSARY(SHOULD) TO LOCAL
SERVICE DEPARTMENT(S)
MODEL: SW208-09
FCC No.: 2AANSSW 208-09
MIC/INS
POWER
FULL
CHAR
LOW
VOLUME
AUX INPUT
AC INPUT

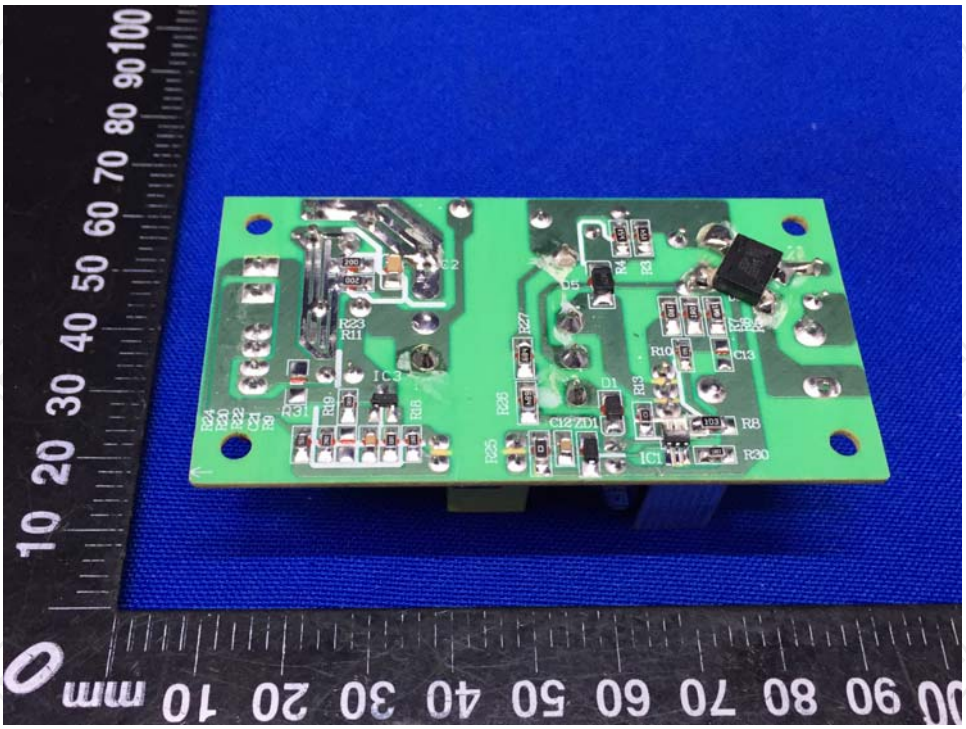
Product: Powered Speaker
Model: T1-BLK
Internal Photos

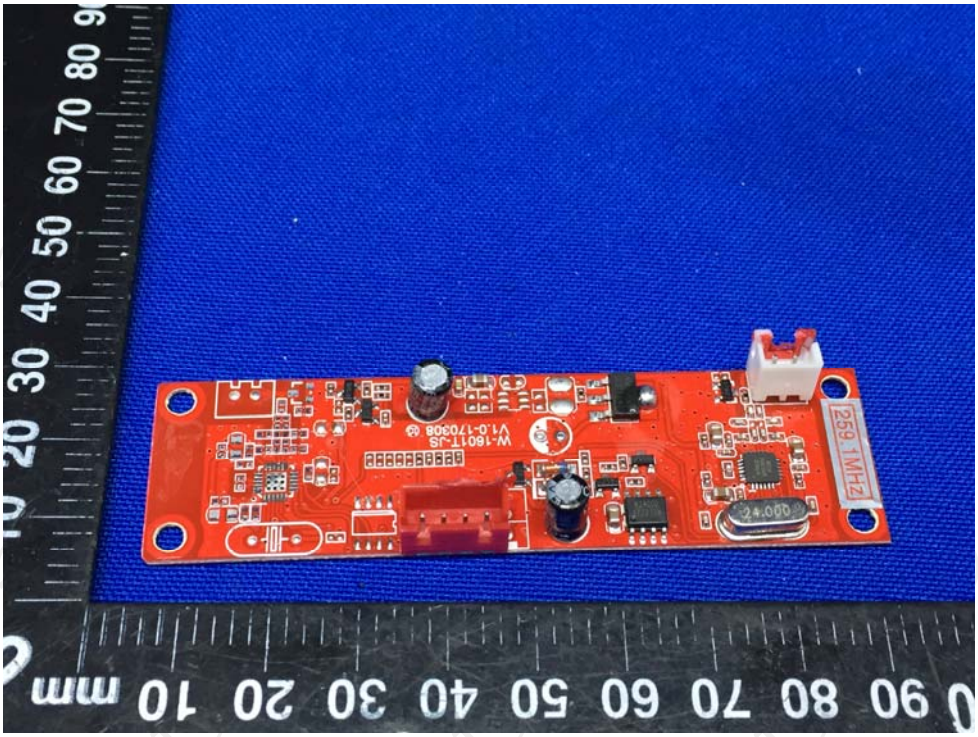


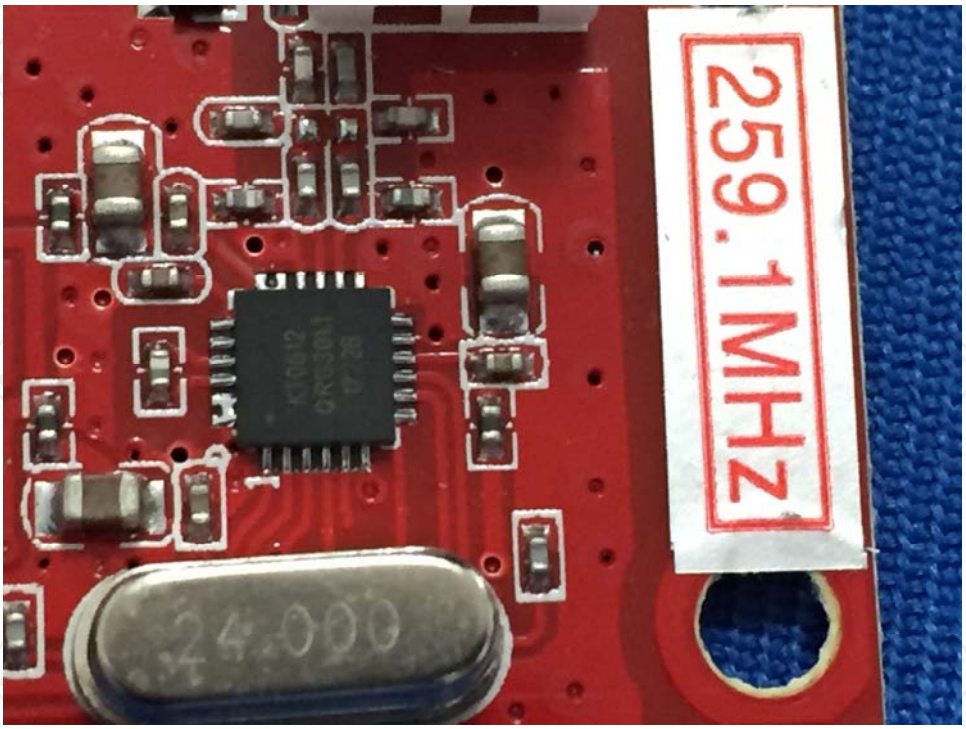

QC17
15V3A

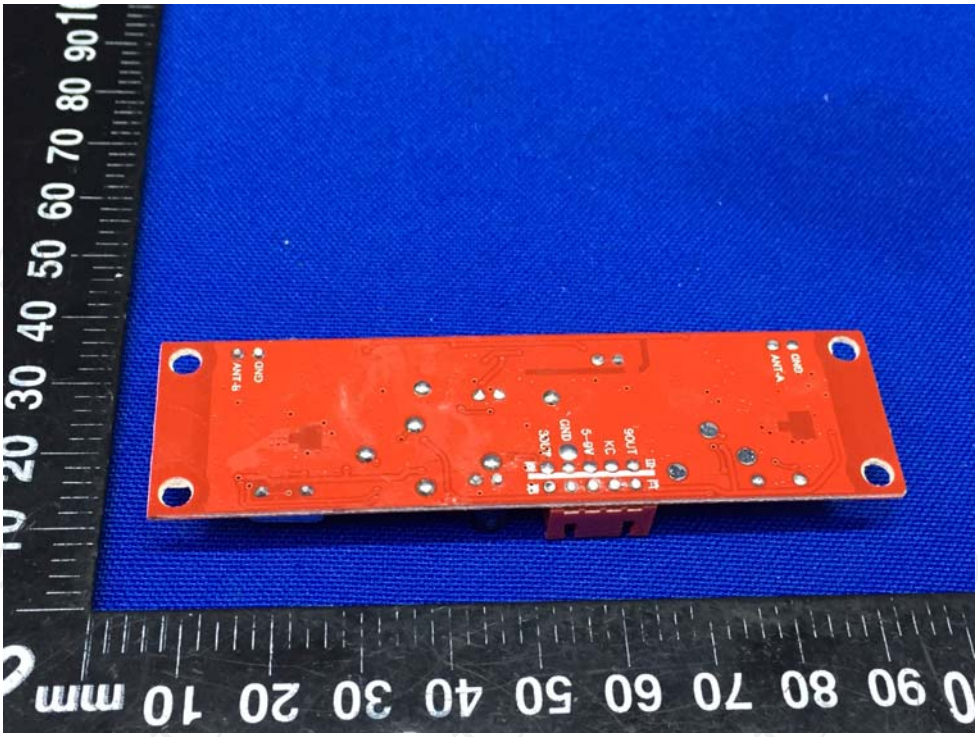


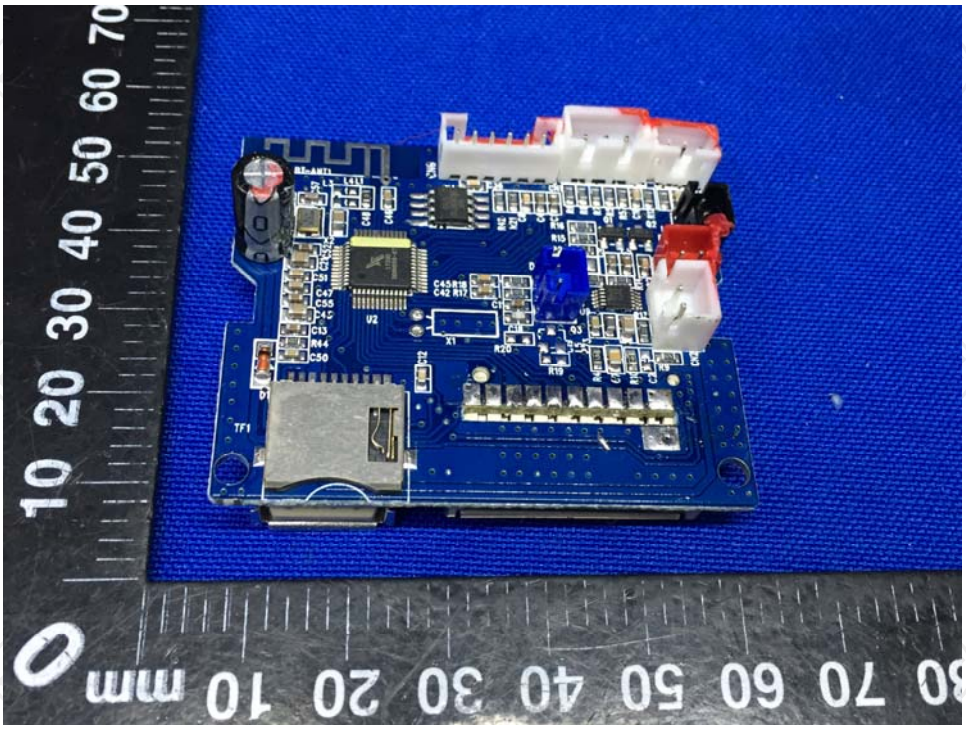

15V3A
QC17
P2
SJ-1502
VER: 08
Hu20170526

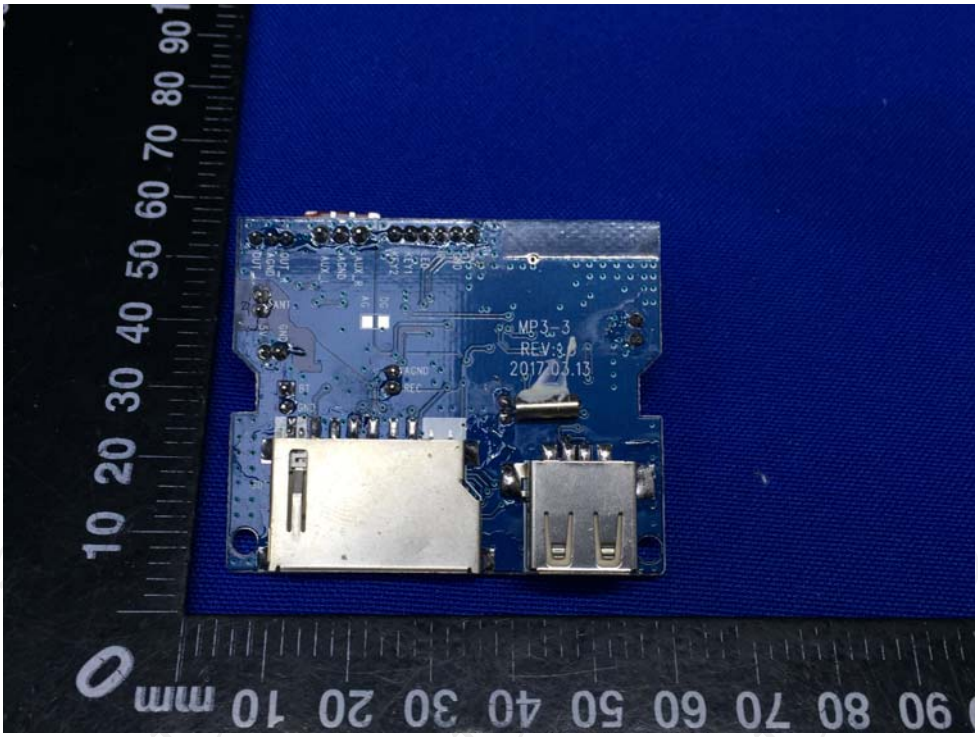



259.1MHz
24.000
W-16011-JS
V1.0-170308

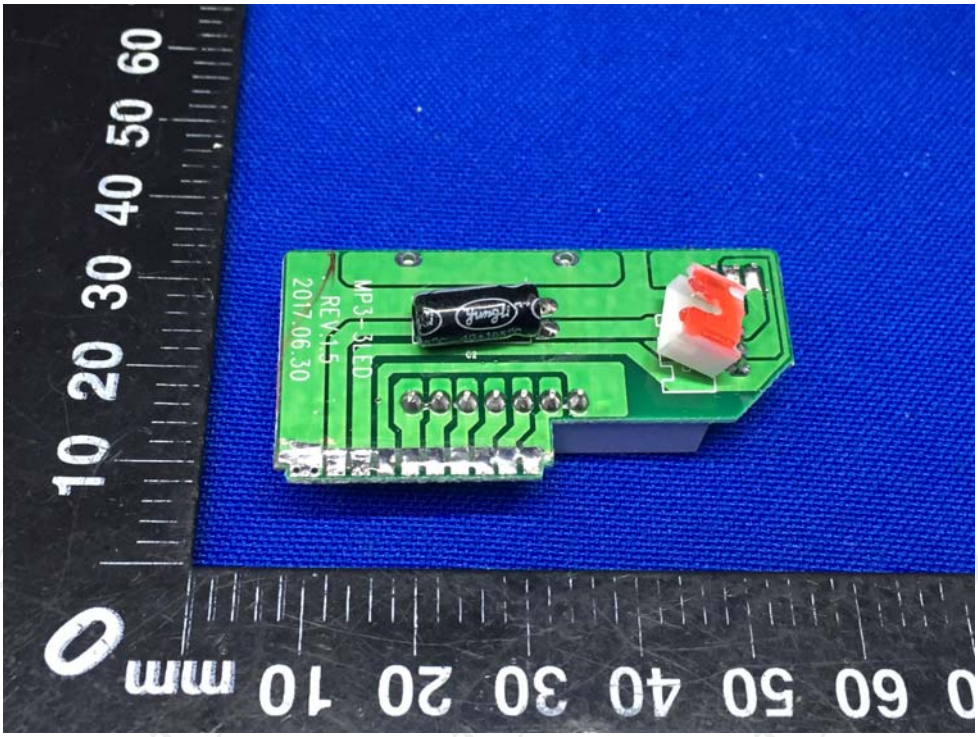

259.1MHz
24.000

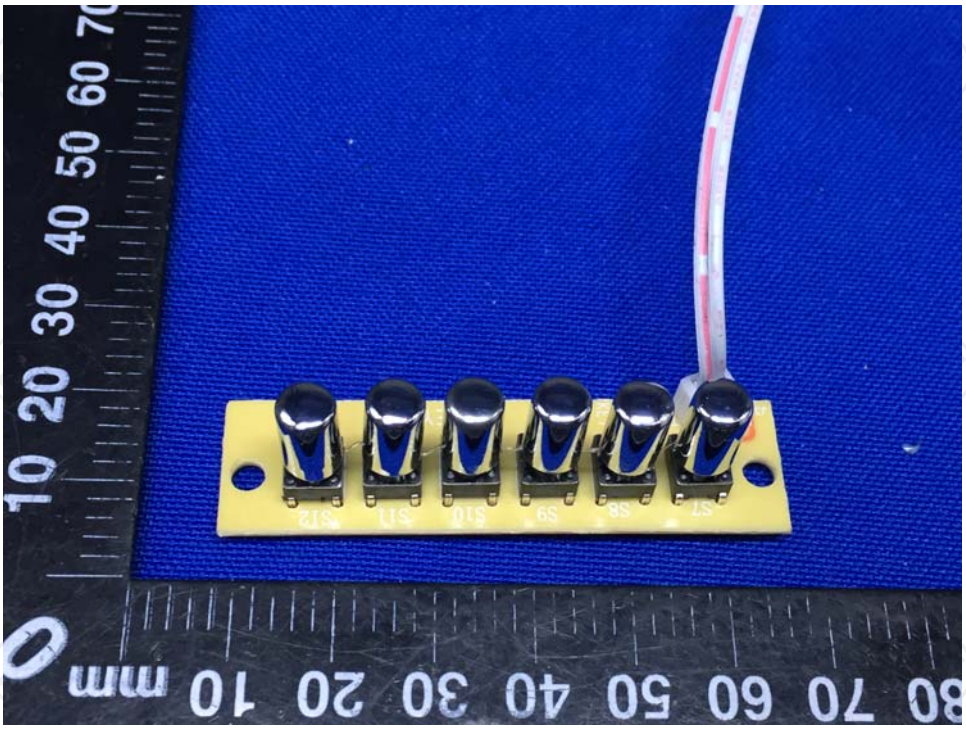


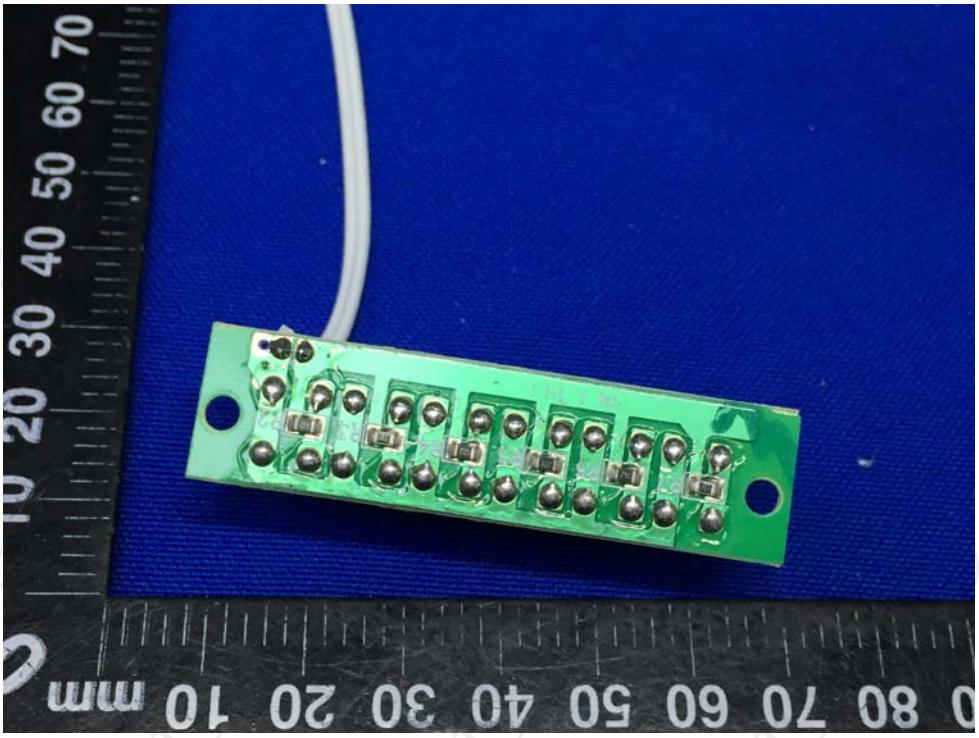


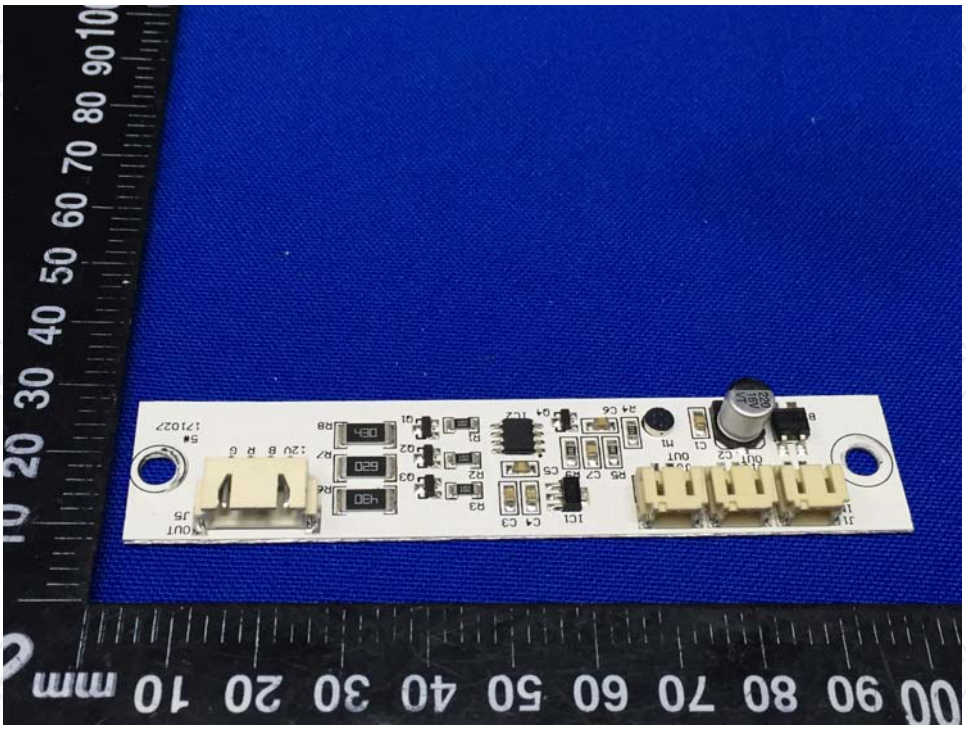

MP3_3
REV:3
2017.03.13

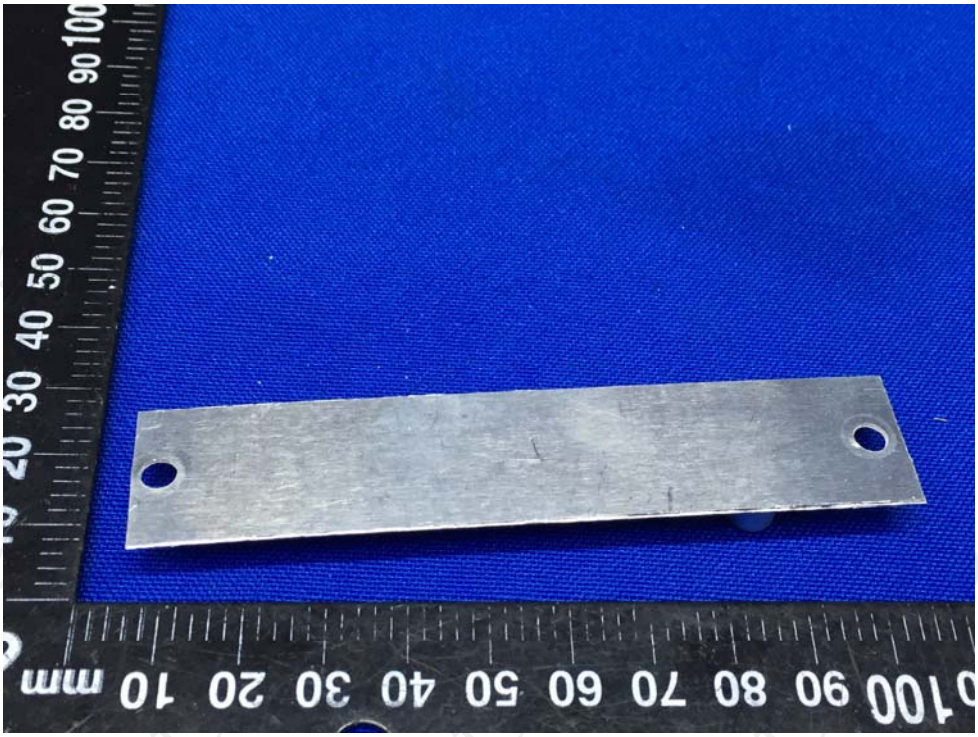
ZDS-40B18R-F8 0425

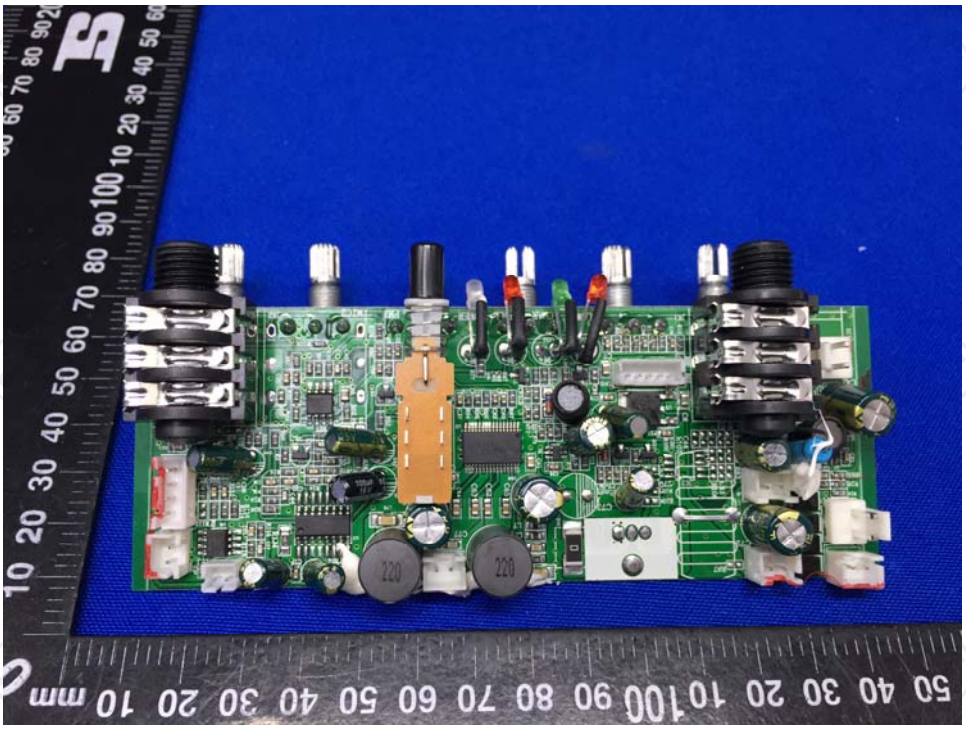

MP3-3LED
REV-1.5
2017.06.30

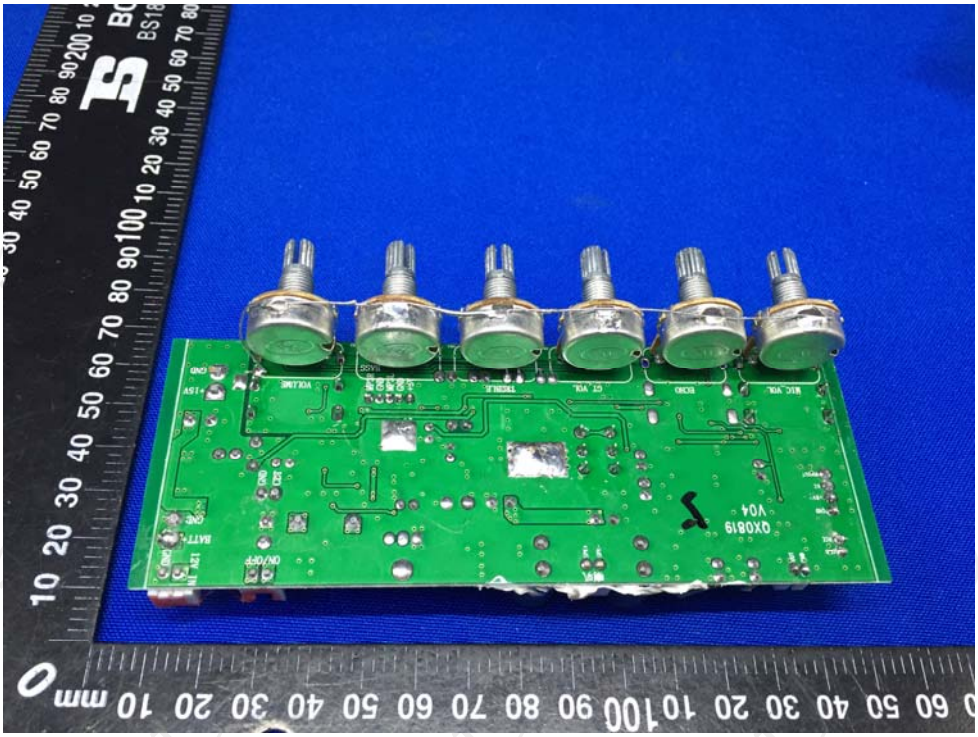




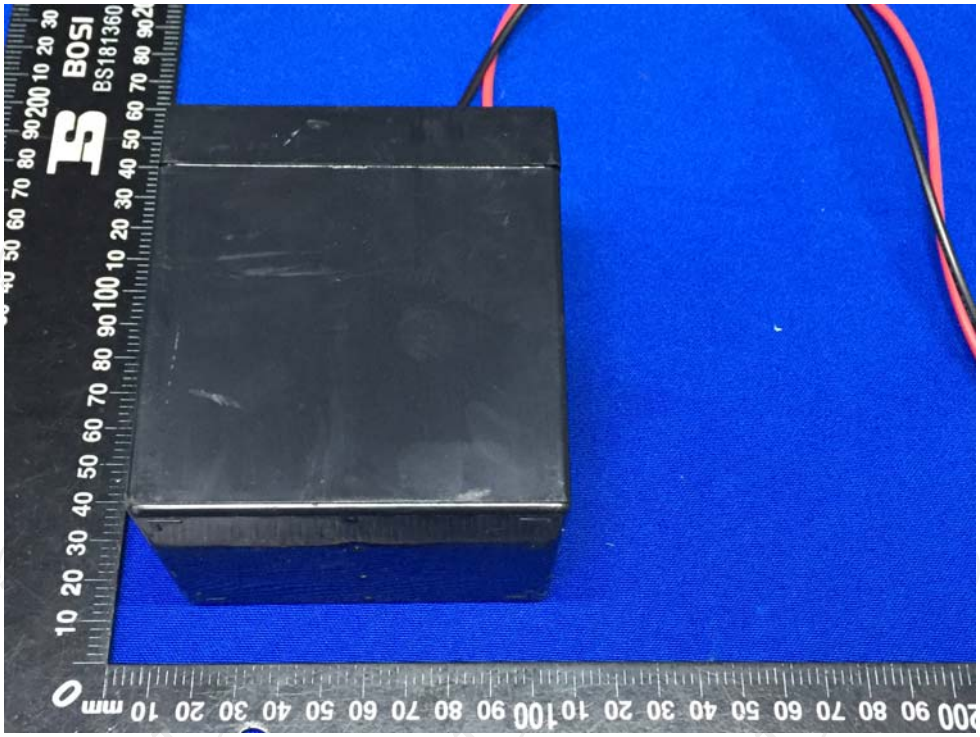








BOSI
BS181360
CHAONENG®
RECHARGEABLE BATTERY
FT 12V 4.5Ah
Standby use: 12.8~13.2V(25℃)
CAUTION
DO NOT SHORT CIRCUIT
DO NOT CHARGE IN A SEALED CONTAINER
SEALED LEAD BATTERY
MUST BE RECYCLED OR
DISPOSED OF PROPERLY



********END OF REPORT********