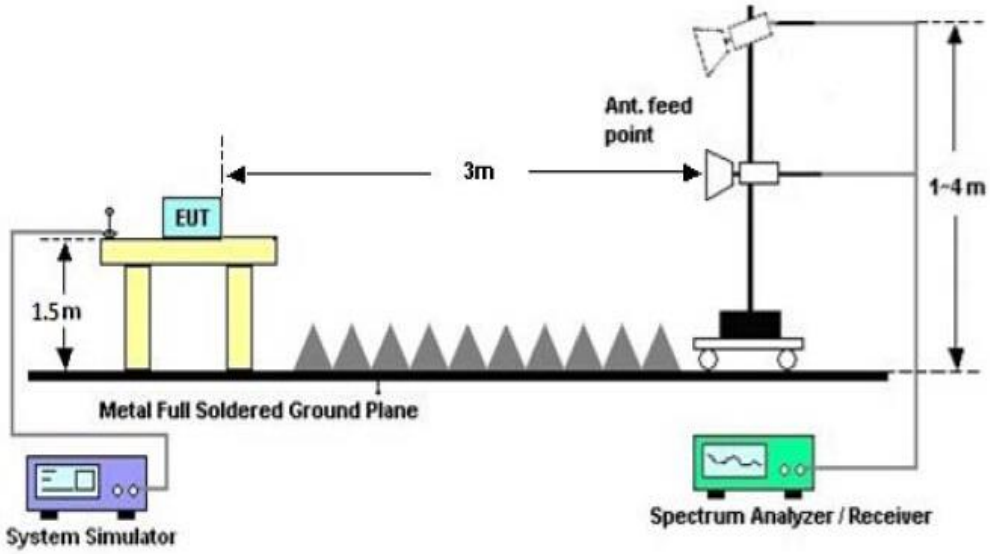
12. BAND EDGE EMISSION

12.1. MEASUREMENT PROCEDURE

1. Set the EUT Work on the top, the bottom operation frequency individually.
2. Set SPA Start or Stop Frequency=Operation Frequency,
   For unrestricted band: RBW=100kHz, VBW=300kHz
   For restricted band: RBW=1MHz, VBW=3*RBW
   Center frequency =Operation frequency
3. The band edges was measured and recorded.

12.2. TEST



12.3. TEST RESULT

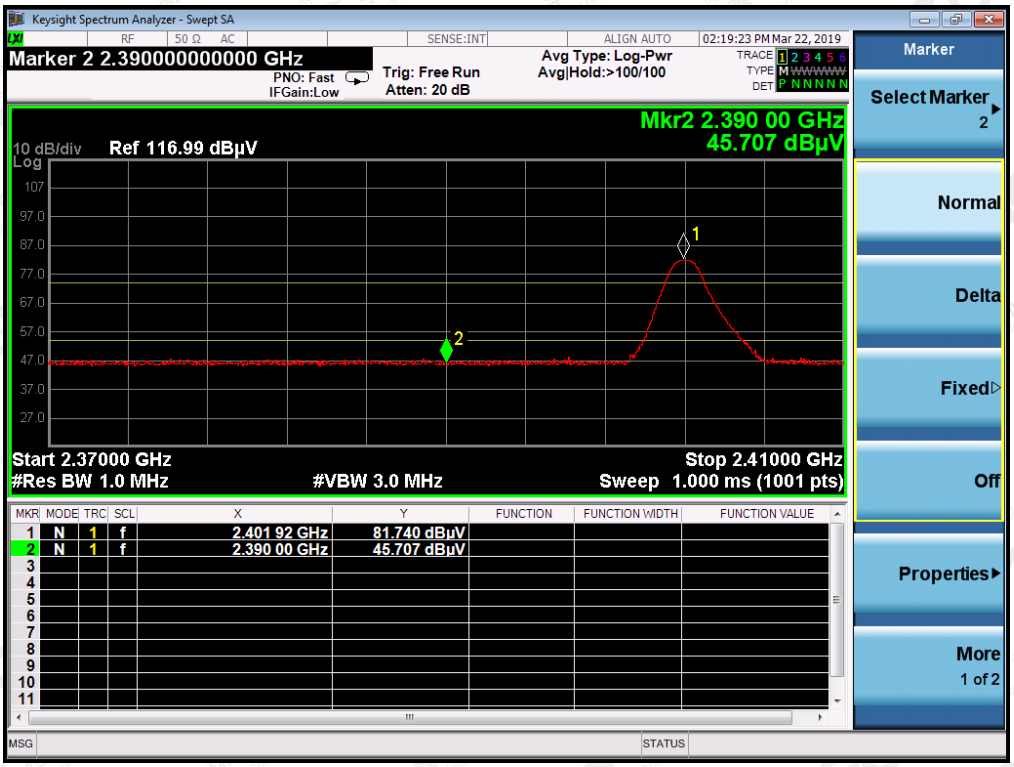
FOR BR/EDR:

EUT：	Multifunctional FM Radio Speaker	Model Name. ：	CR3037A
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60 Hz
Test Mode ：	Mode 1	Polarization :	Horizontal

PK Value

EUT：	Multifunctional FM Radio Speaker	Model Name. ：	CR3037A
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60 Hz
Test Mode ：	Mode 1	Polarization：	Vertical

PK Value



EUT：	Multifunctional FM Radio Speaker	Model Name. ：	CR3037A
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60 Hz
Test Mode ：	Mode 3	Polarization：	Horizontal

PK Value

EUT：	Multifunctional FM Radio Speaker	Model Name. ：	CR3037A
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60 Hz
Test Mode ：	Mode 3	Polarization：	Vertical

PK Value

Note: 1.The π /4-DQPSK modulation was the worst case and only the data of worst recorded in this report.

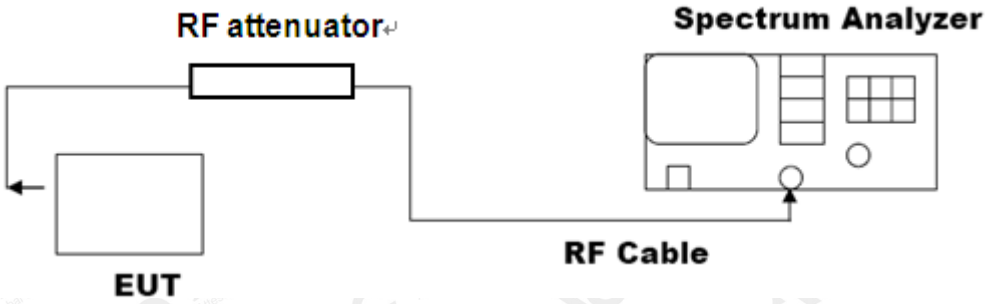
2. The factor had been edited in the “Input Correction” of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(μV) to represent the Amplitude. Use the F dB(μV/m) to represent the Field Strength. So A=F.

13. NUMBER OF HOPPING FREQUENCY

13.1. MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer Start = 2.4GHz Stop = 2.4835GHz
4. Set the Spectrum Analyzer as RBW>=1%span, VBW>=3RBW.

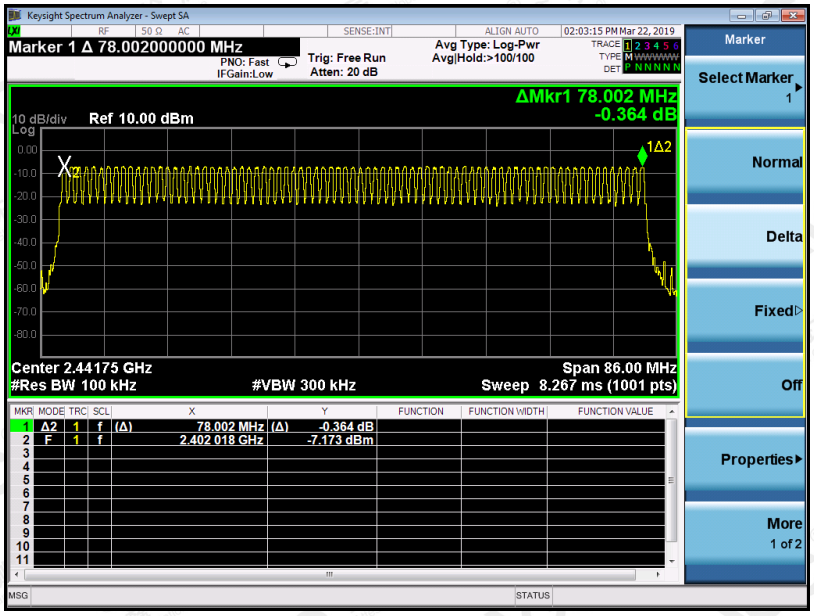
13.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)



13.3. LIMITS AND MEASUREMENT RESULT

TOTAL NO. OF HOPPING CHANNEL	LIMIT (NO. OF CH)	MEASUREMENT (NO. OF CH)	RESULT
	>=15	79	PASS

TEST PLOT FOR NO. OF TOTAL CHANNELS



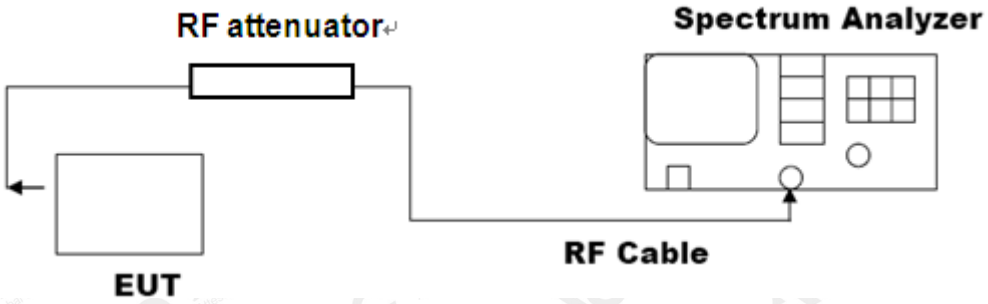
Note: All modes were tested, the test records reported is modulation GFSK.

14. TIME OF OCCUPANCY (DWELL TIME)

14.1. MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.
3. Set Span = zero span, centered on a hoping channel
4. Set the spectrum analyzer as RBW=1MHz, VBW>=RBW, Span = 0 Hz

14.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)



14.3. LIMITS AND MEASUREMENT RESULT

The Worst Case (1Mbps)

Channel	Time of Pulse for DH5 (ms)	Period Time (s)	Sweep Time (ms)	Limit (ms)
Low	3.000	31.6	320.00	400
Middle	3.000	31.6	320.00	400
High	3.004	31.6	320.43	400

Low Channel Time

3.000*(1600/6)/79*31.6=320.00ms

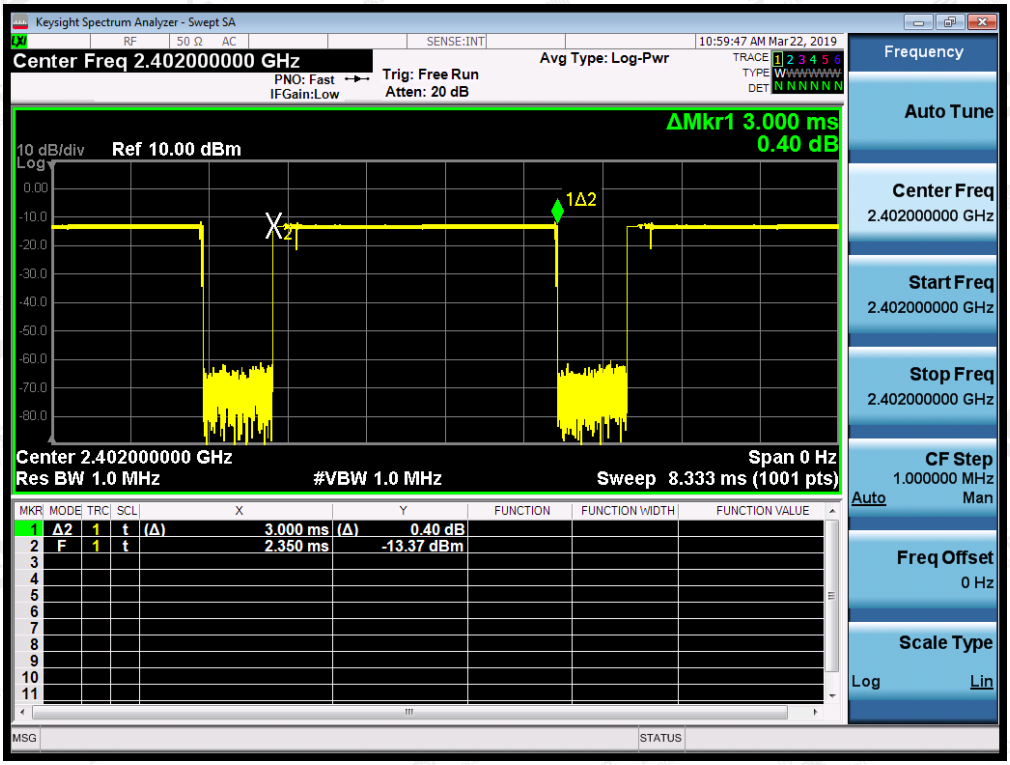
Middle Channel Time

3.000*(1600/6)/79*31.6=320.00ms

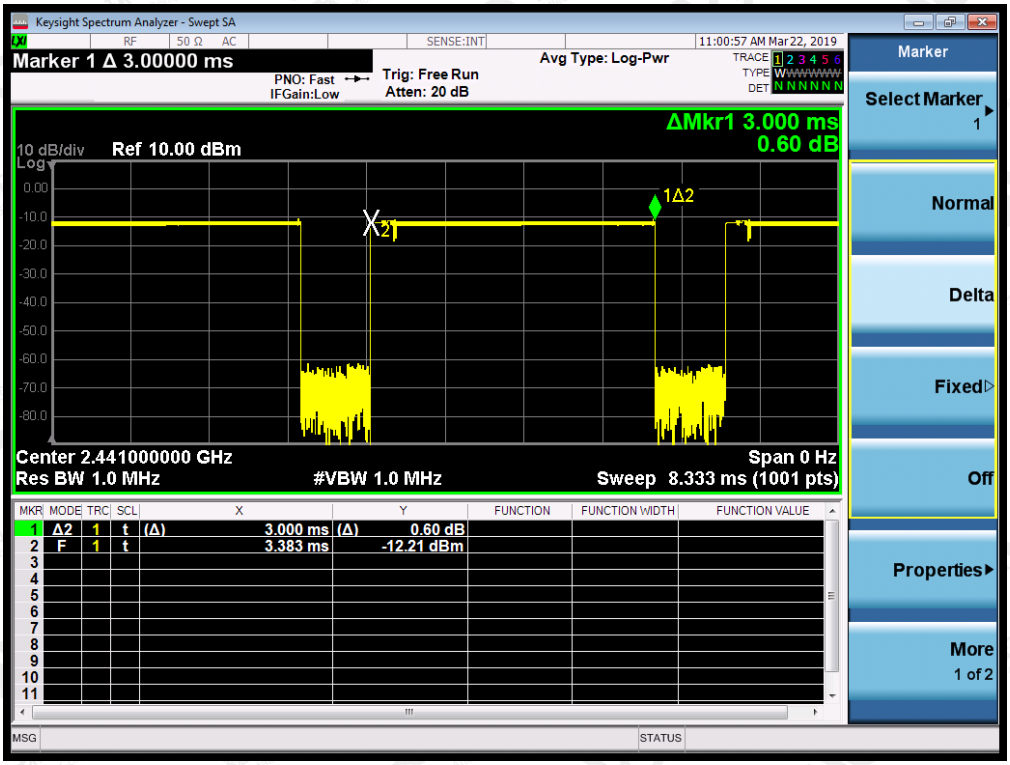
High Channel Time

3.004*(1600/6)/79*31.6=320.43ms

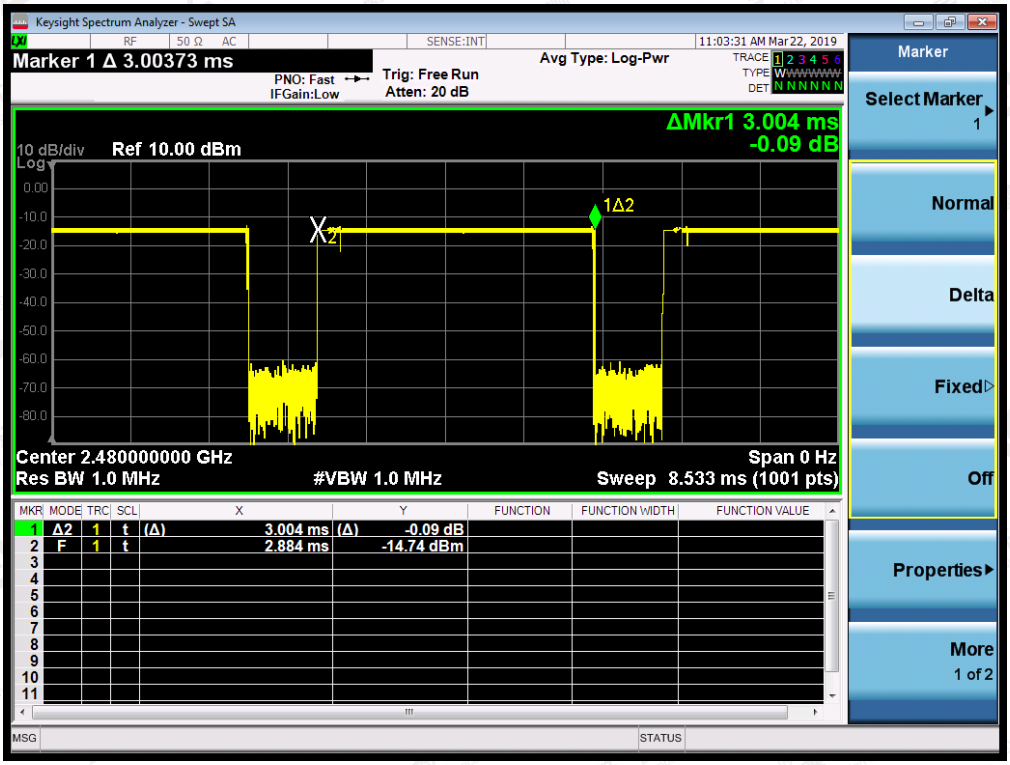
TEST PLOT OF LOW CHANNEL



TEST PLOT OF MIDDLE CHANNEL



TEST PLOT OF HIGH CHANNEL

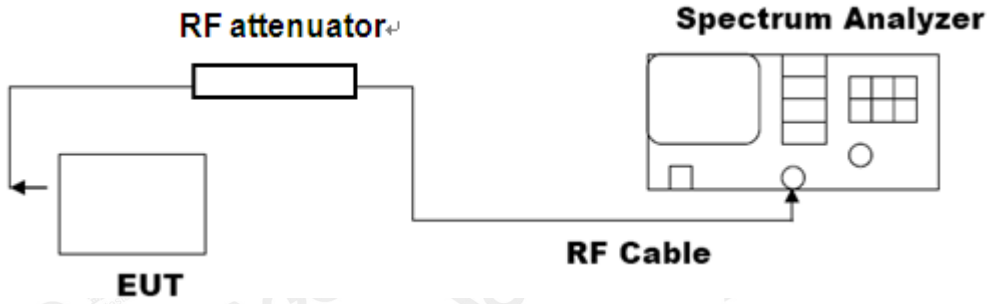


15. FREQUENCY SEPARATION

15.1. MEASUREMENT PROCEDURE

1. Place the EUT on the table and set it in transmitting mode
2. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer
3. Set Span = wide enough to capture the peaks of two adjacent channels Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span Video (or Average) Bandwidth (VBW) ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold

15.2. TEST SETUP (BLOCK DIAGRAM OF CONFIGURATION)



15.3. LIMITS AND MEASUREMENT RESULT

CHANNEL	CHANNEL SEPARATION	LIMIT	RESULT
	KHz	KHz	
CH00-CH01	1000	>=25 KHz or 2/3 20 dB BW	Pass

TEST PLOT FOR FREQUENCY SEPARATION（2Mbps）

16. LINE CONDUCTED EMISSION TEST

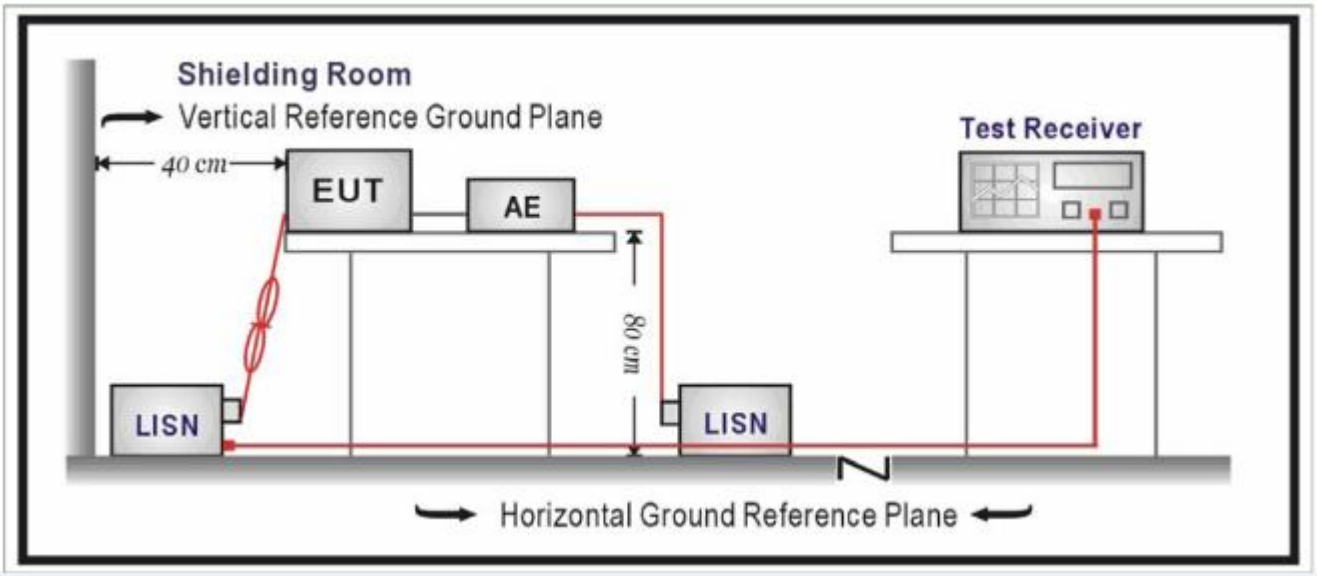
16.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note: 1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

16.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



16.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC voltage by battery which received 120V/60Hzpower by a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

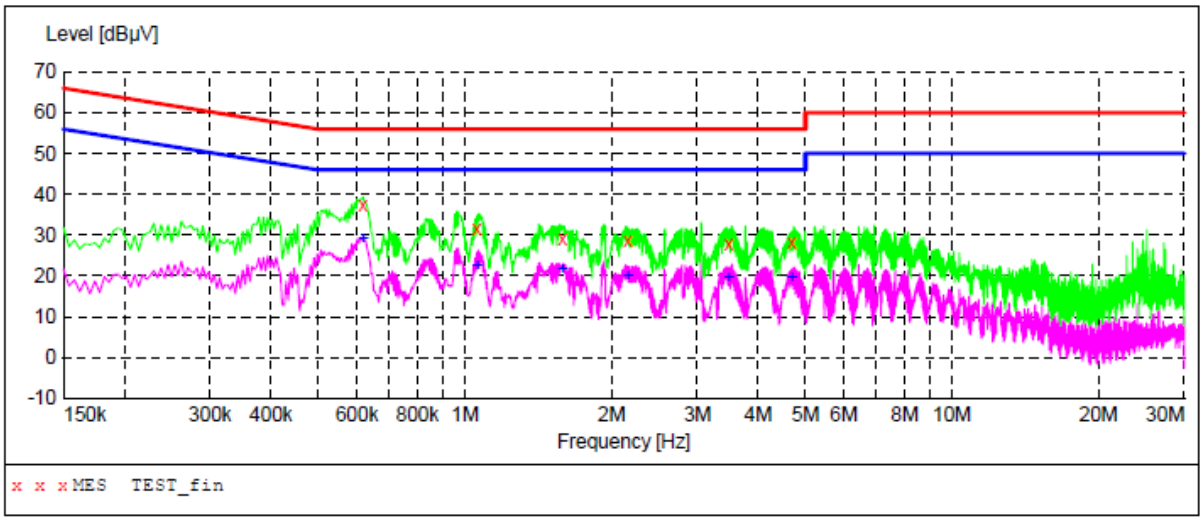
16.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

14.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION TEST LINE 1-L

SCAN TABLE: "Voltage (9K-30M)FS L"
Short Description: 9k-30M Voltage



MEASUREMENT RESULT: "TEST_fin"

3/21/2019 2:07PM

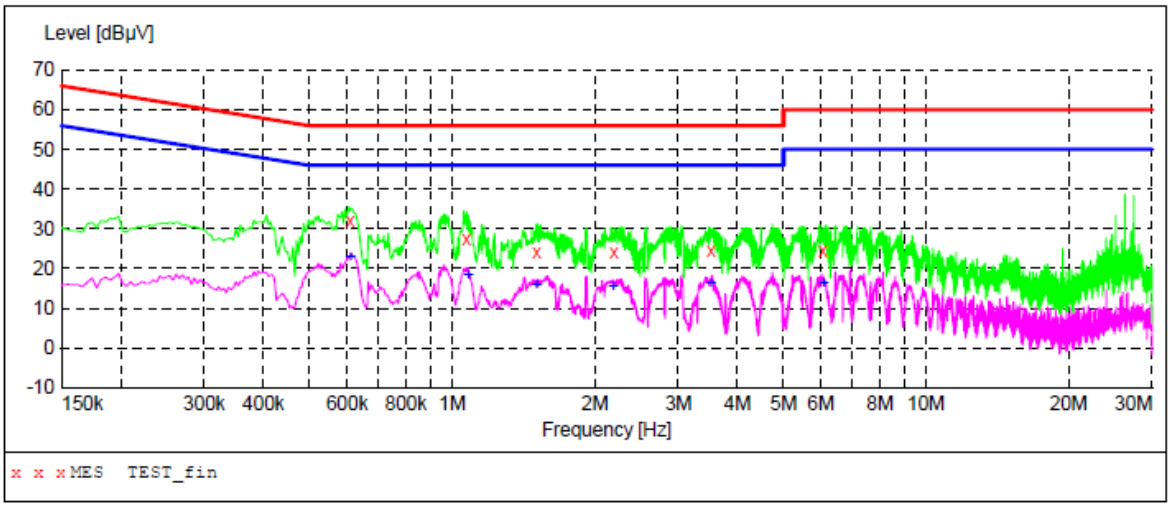
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.618000	37.30	10.3	56	18.7	QP	L1	FLO
1.058000	31.50	10.4	56	24.5	QP	L1	FLO
1.586000	28.90	10.4	56	27.1	QP	L1	FLO
2.158000	28.50	10.4	56	27.5	QP	L1	FLO
3.478000	28.00	10.4	56	28.0	QP	L1	FLO
4.690000	28.40	10.4	56	27.6	QP	L1	FLO

MEASUREMENT RESULT: "TEST_fin2"

3/21/2019 2:07PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.618000	28.90	10.3	46	17.1	AV	L1	FLO
1.058000	22.60	10.4	46	23.4	AV	L1	FLO
1.586000	21.60	10.4	46	24.4	AV	L1	FLO
2.158000	20.00	10.4	46	26.0	AV	L1	FLO
3.478000	19.40	10.4	46	26.6	AV	L1	FLO
4.690000	19.60	10.4	46	26.4	AV	L1	FLO

LINE CONDUCTED EMISSION TEST LINE 2-N



MEASUREMENT RESULT: "TEST_fin"

3/21/2019 2:02PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.610000	32.20	10.3	56	23.8	QP	N	FLO
1.074000	27.50	10.4	56	28.5	QP	N	FLO
1.506000	24.30	10.4	56	31.7	QP	N	FLO
2.198000	24.20	10.4	56	31.8	QP	N	FLO
3.518000	24.50	10.4	56	31.5	QP	N	FLO
6.062000	24.40	10.5	60	35.6	QP	N	FLO

MEASUREMENT RESULT: "TEST_fin2"

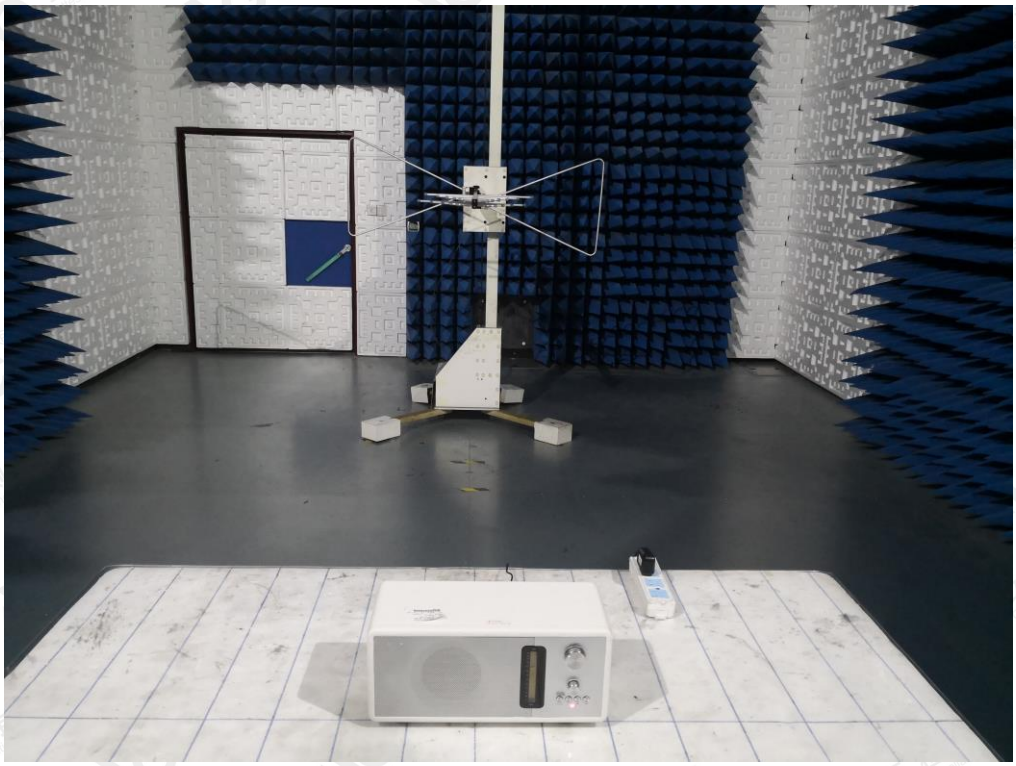
3/21/2019 2:02PM

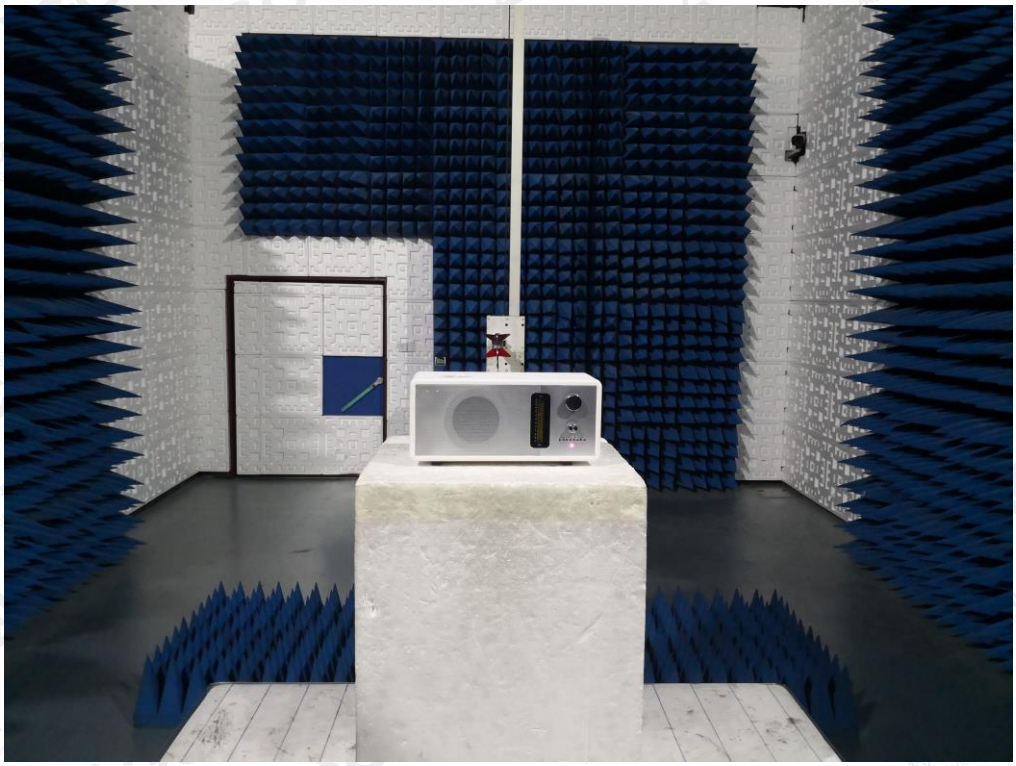
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.610000	22.90	10.3	46	23.1	AV	N	FLO
1.082000	18.30	10.4	46	27.7	AV	N	FLO
1.506000	16.00	10.4	46	30.0	AV	N	FLO
2.186000	15.20	10.4	46	30.8	AV	N	FLO
3.518000	16.30	10.4	46	29.7	AV	N	FLO
6.062000	16.20	10.5	50	33.8	AV	N	FLO

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST SETUP

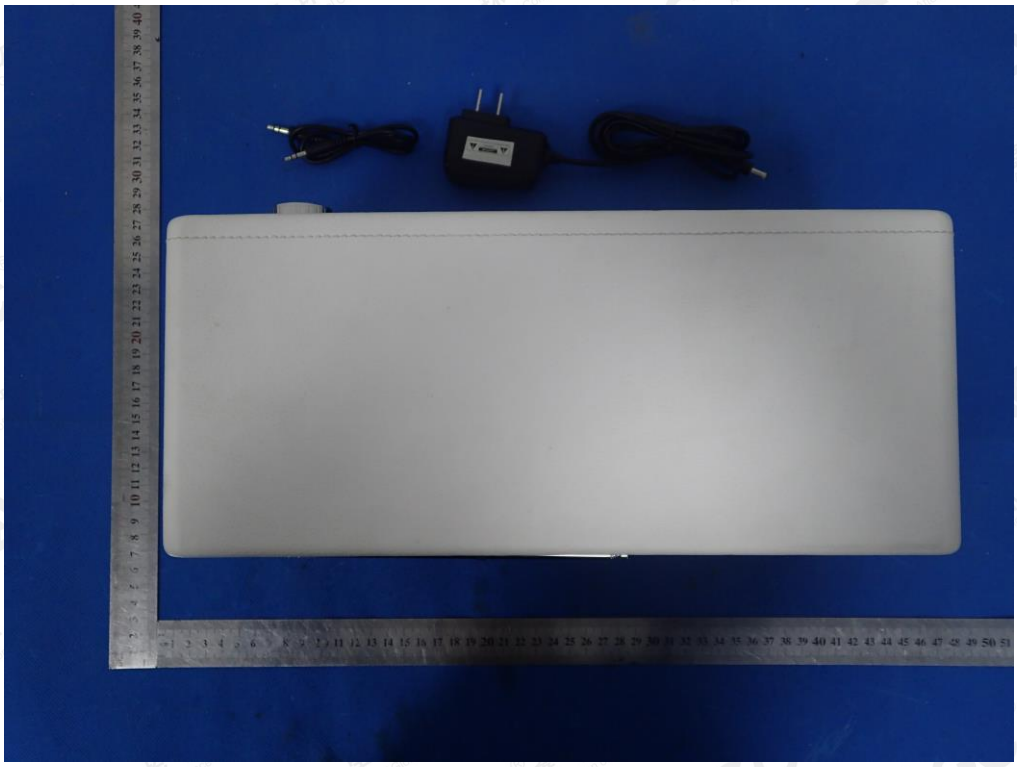
FCC RADIATED EMISSION TEST SETUP





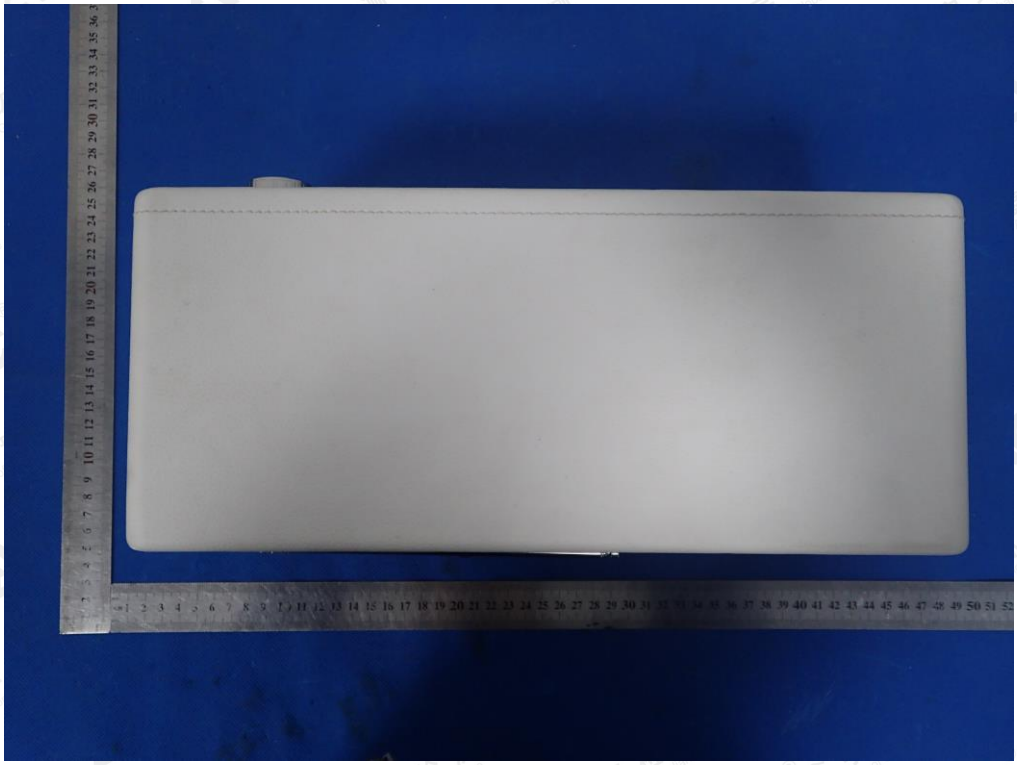
APPENDIX B: PHOTOGRAPHS OF EUT

ALL VIEW OF EUT



TOP VIEW OF EUT

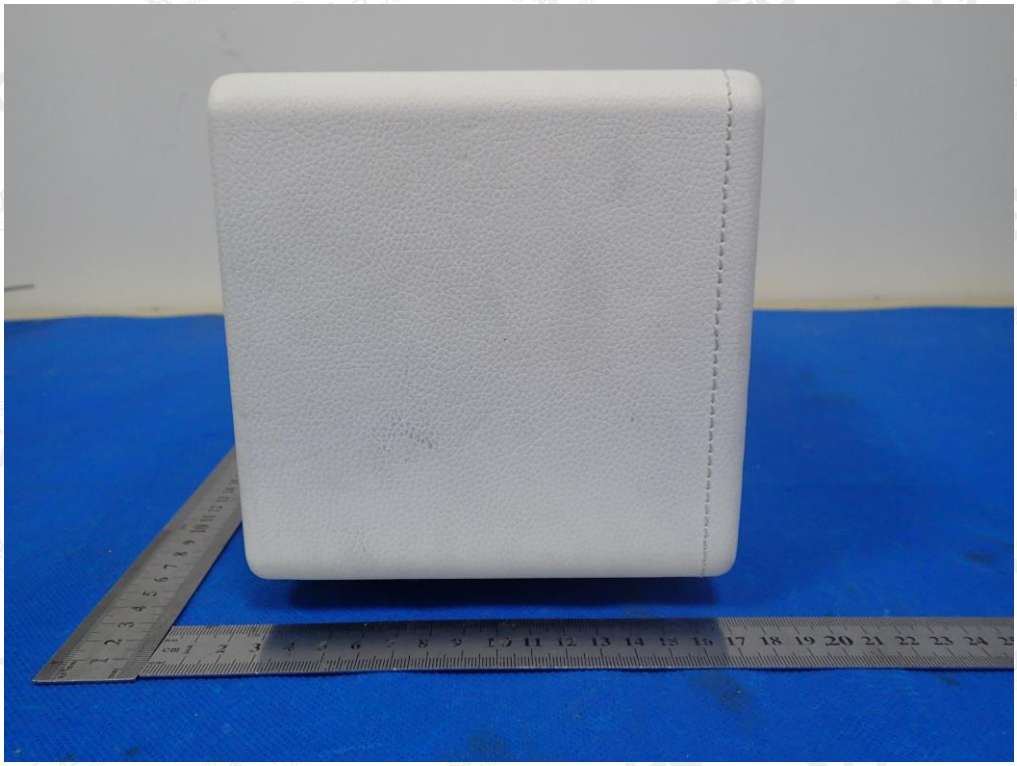
BOTTOM VIEW OF EUT



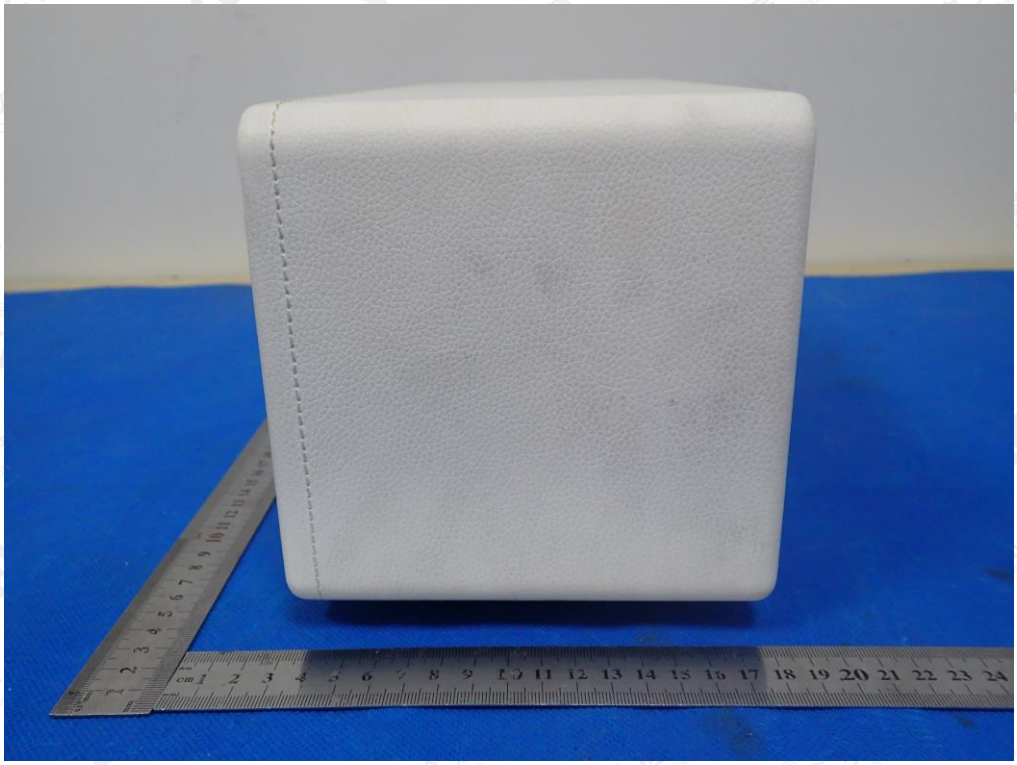
FRONT VIEW OF EUT

BACK VIEW OF EUT

LEFT VIEW OF EUT



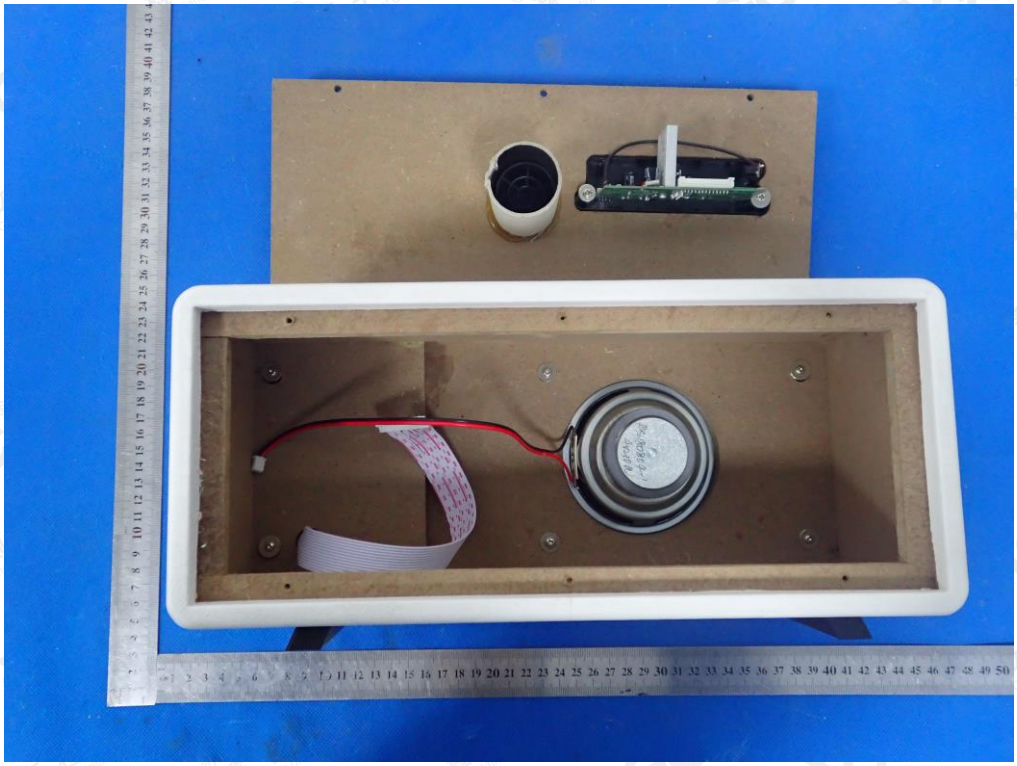
RIGHT VIEW OF EUT



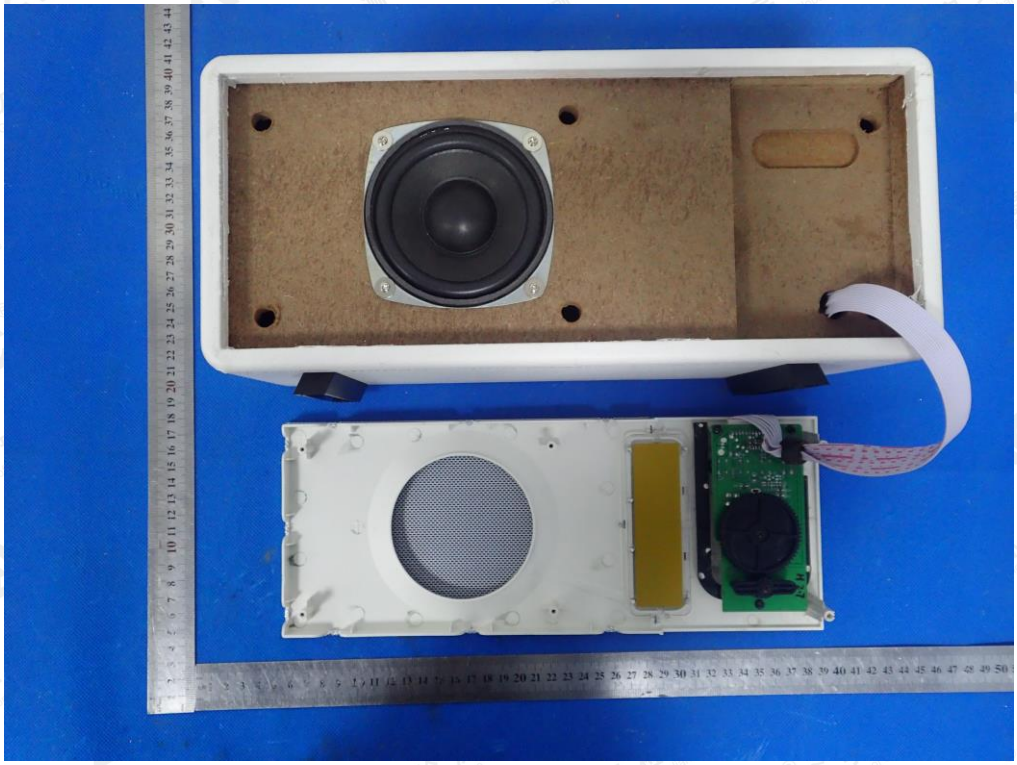
VIEW OF EUT (PORT)-1

VIEW OF EUT (PORT)-2

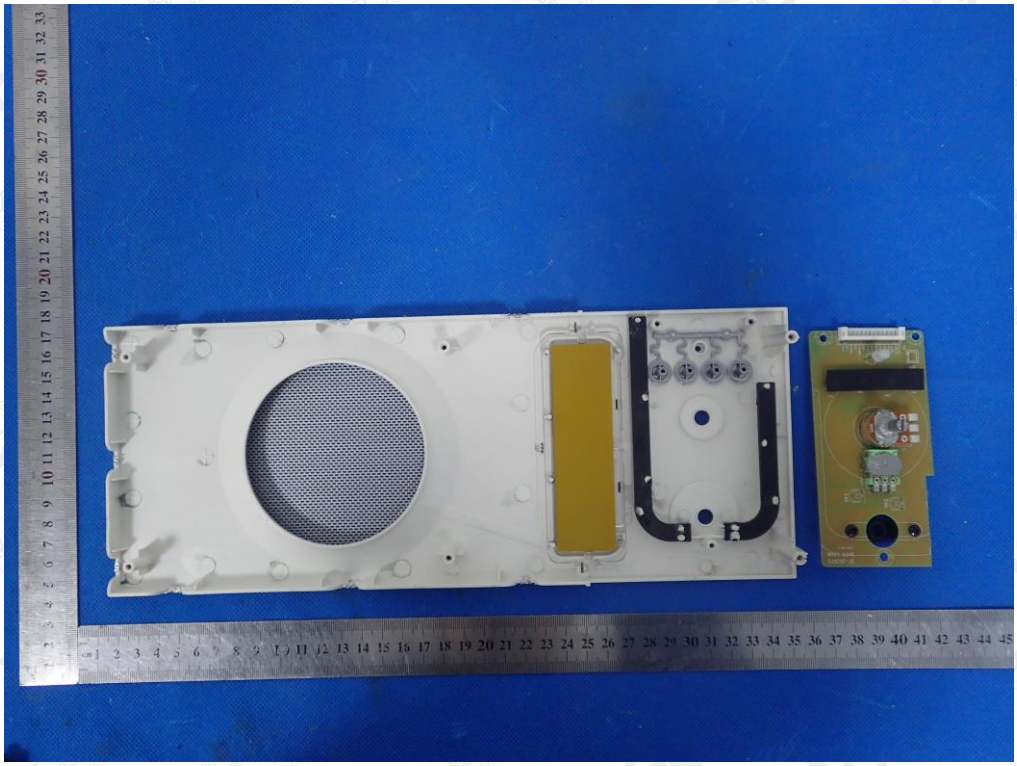
OPEN VIEW OF EUT-1



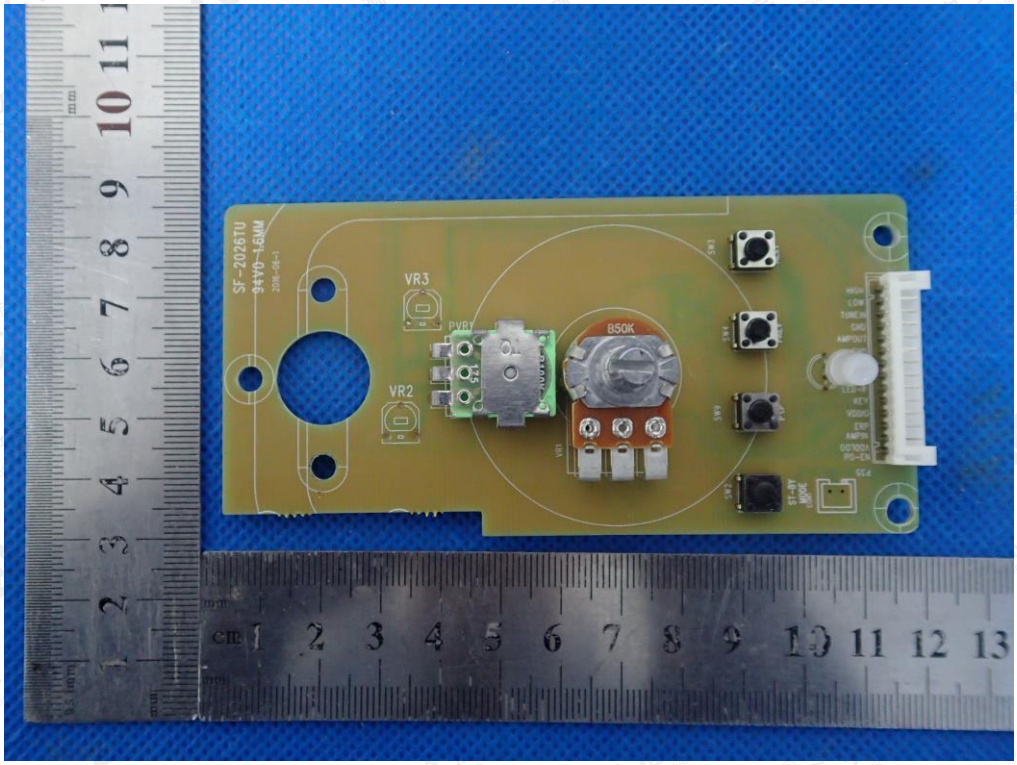
OPEN VIEW OF EUT-2



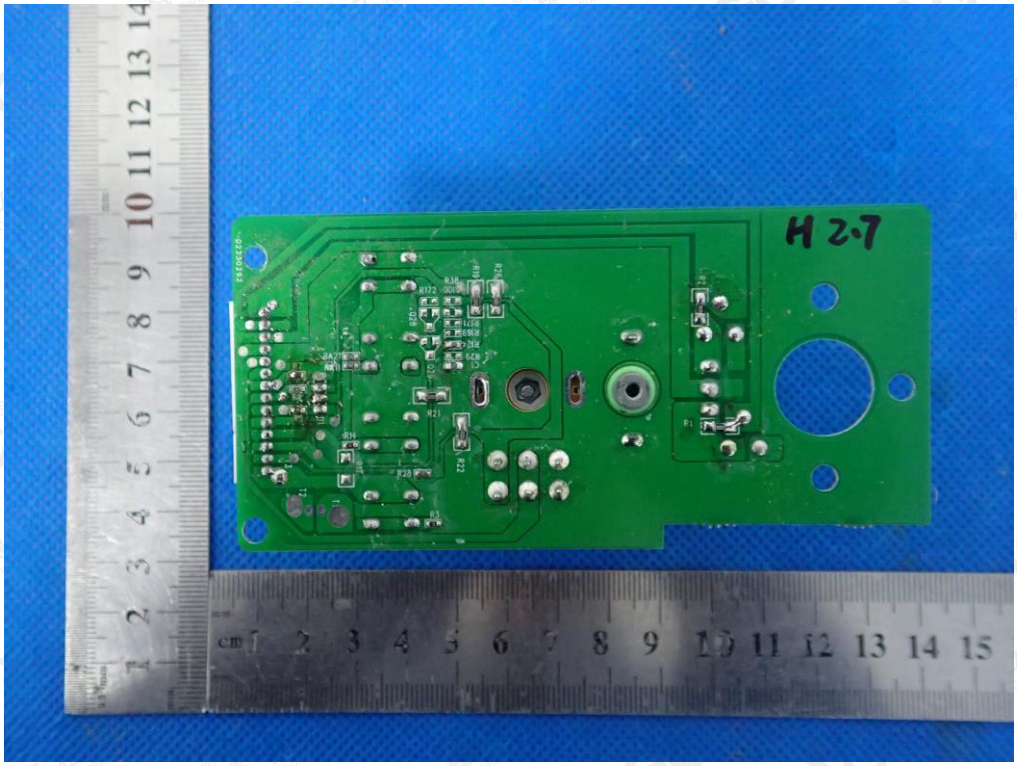
OPEN VIEW OF EUT-3



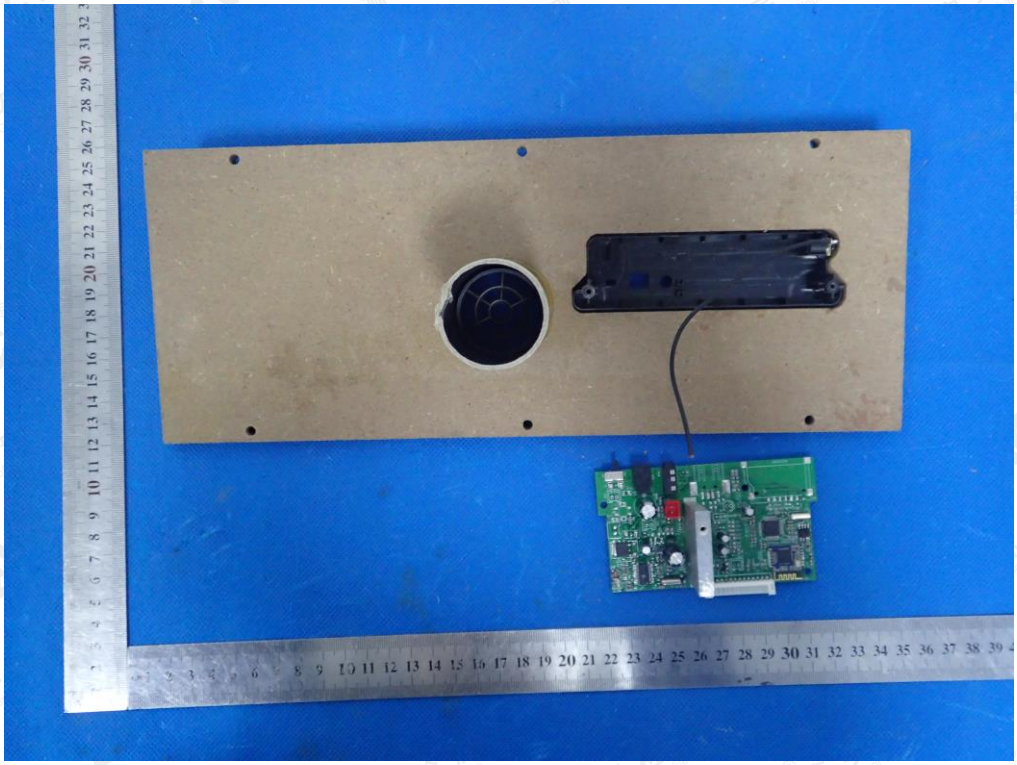
INTERNAL VIEW OF EUT-1



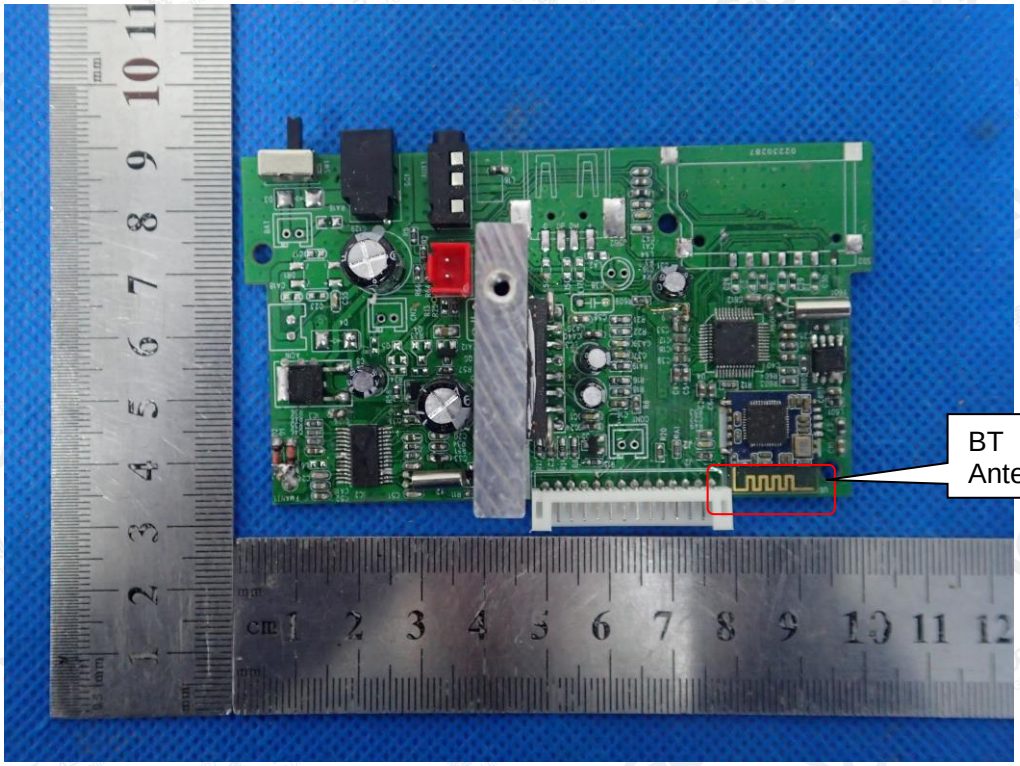
INTERNAL VIEW OF EUT-2



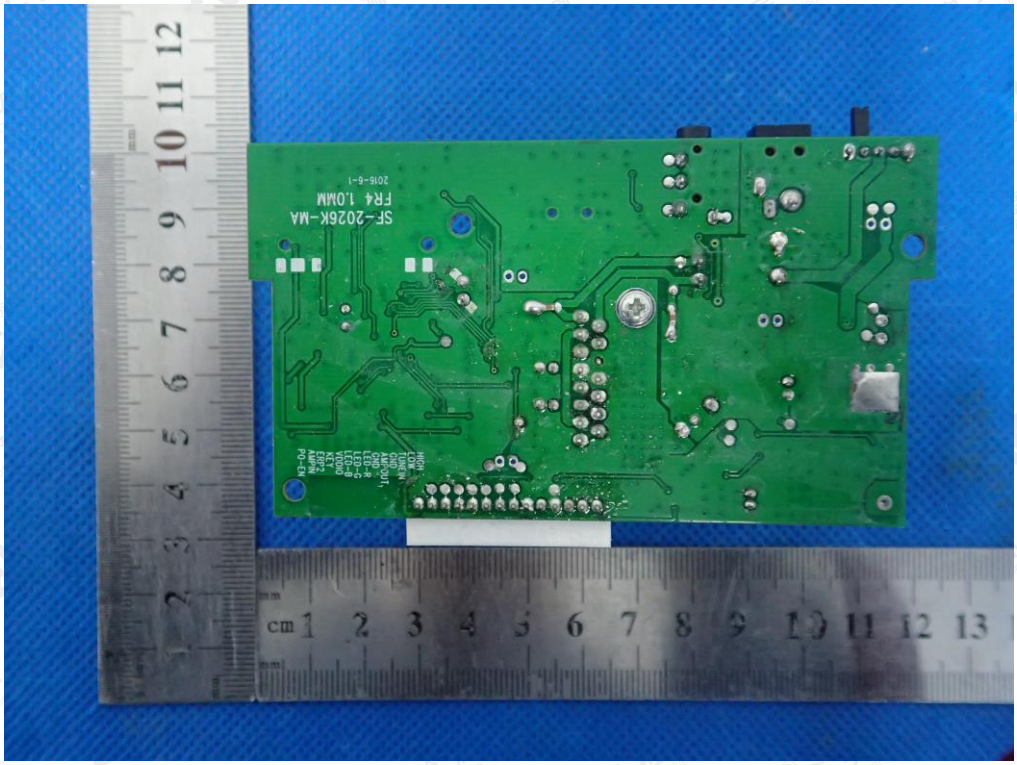
OPEN VIEW OF EUT-4



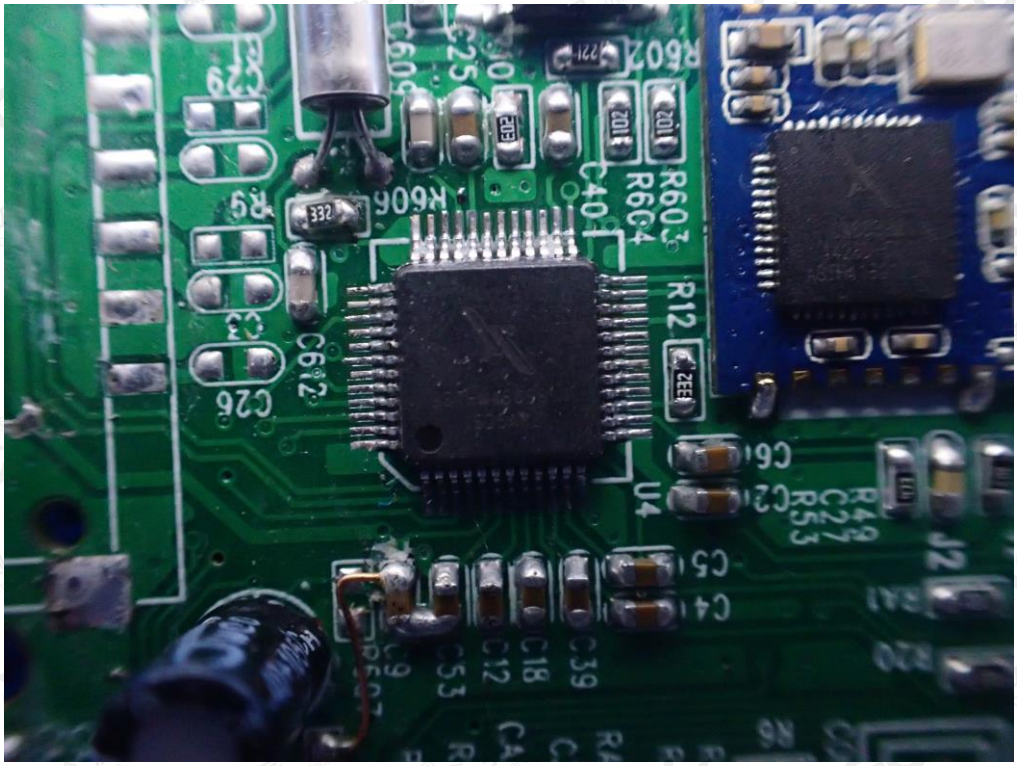
INTERNAL VIEW OF EUT-1



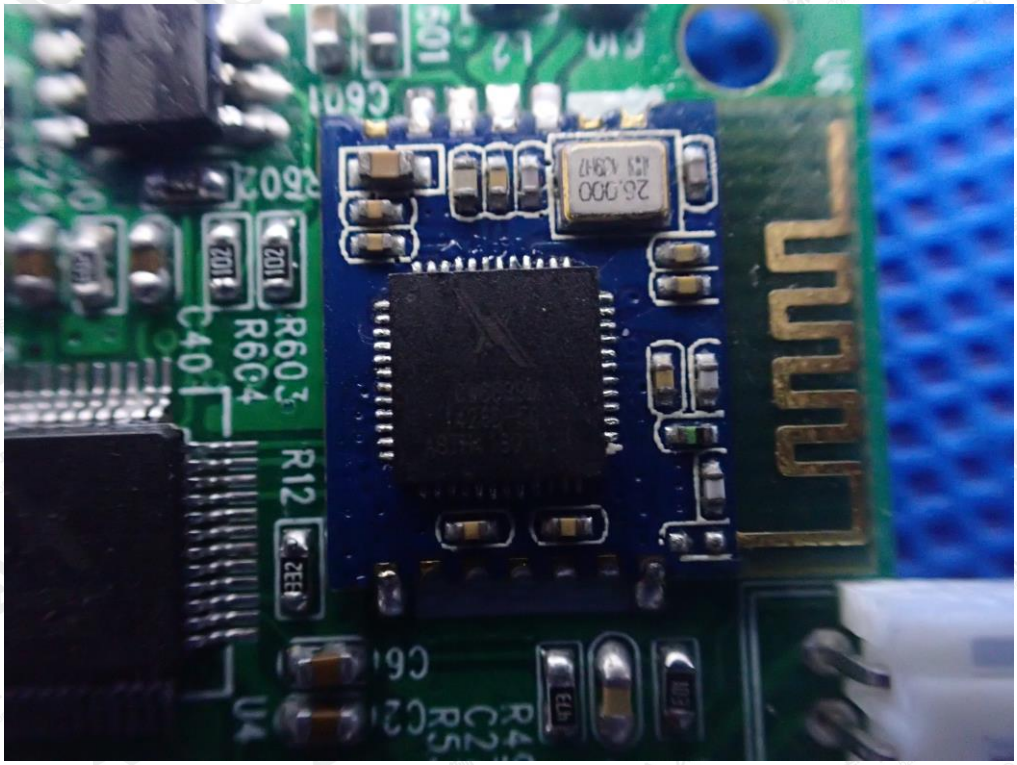
INTERNAL VIEW OF EUT-2



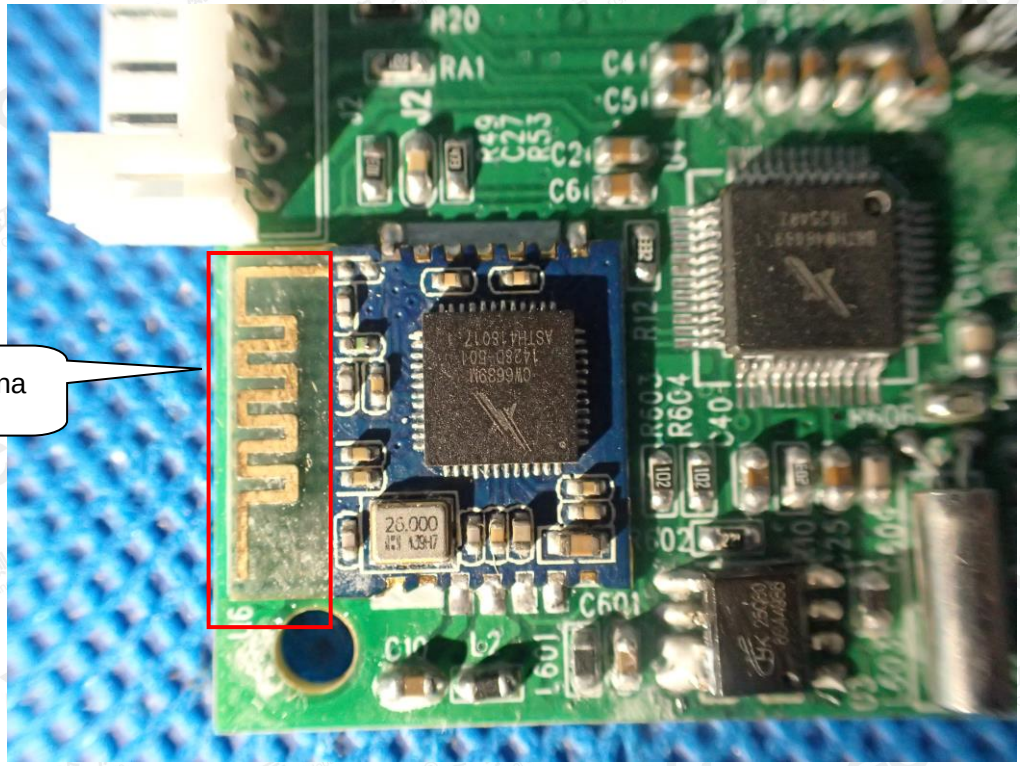
INTERNAL VIEW OF EUT-3



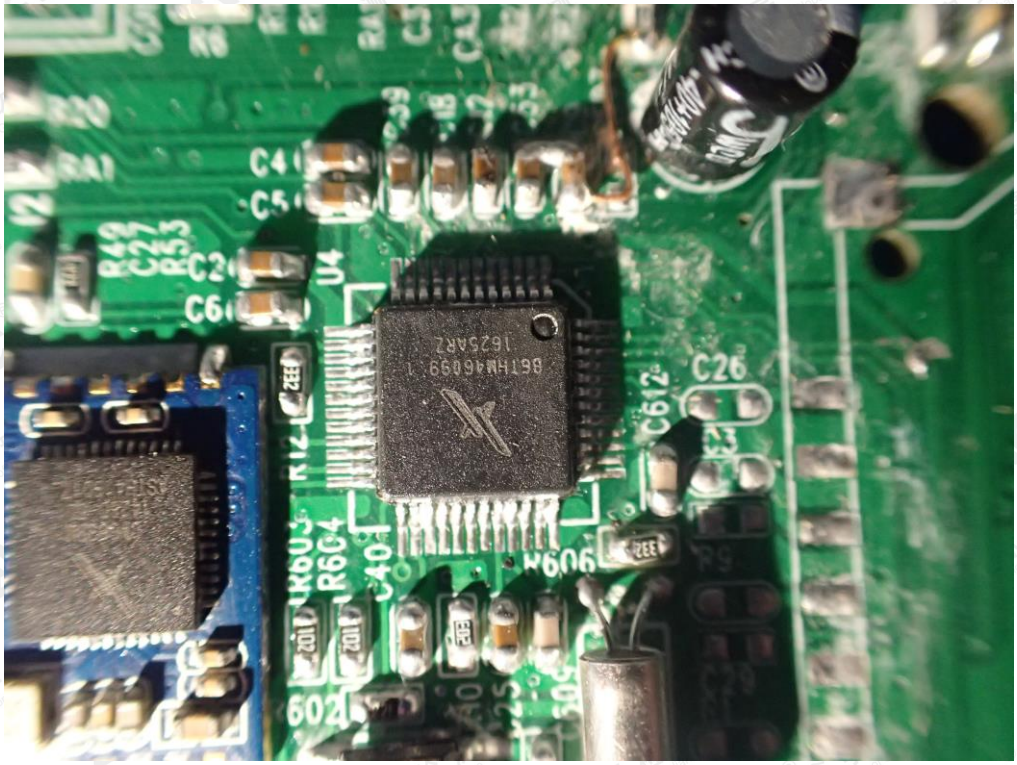
INTERNAL VIEW OF EUT-4



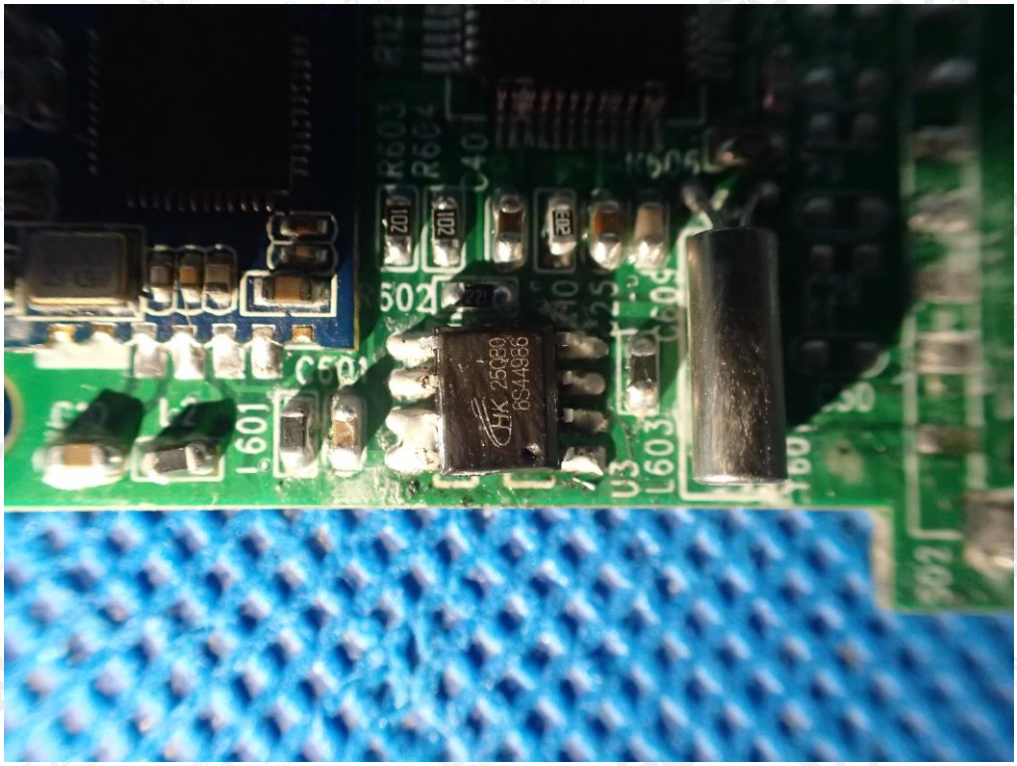
INTERNAL VIEW OF EUT-5



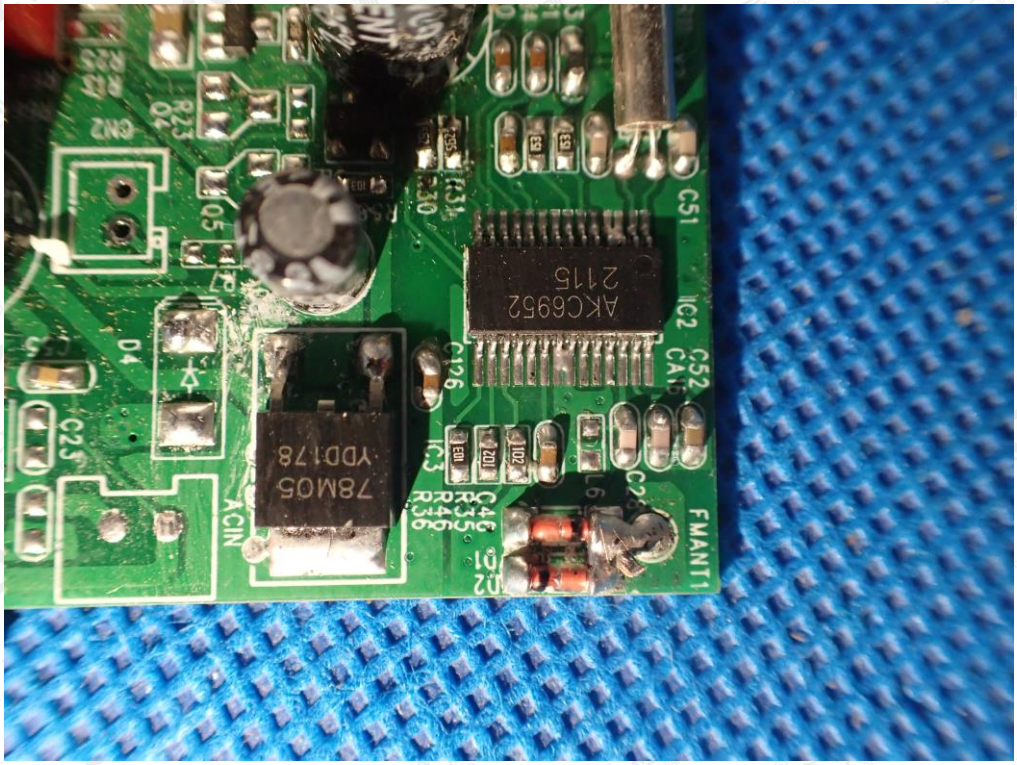
INTERNAL VIEW OF EUT-6



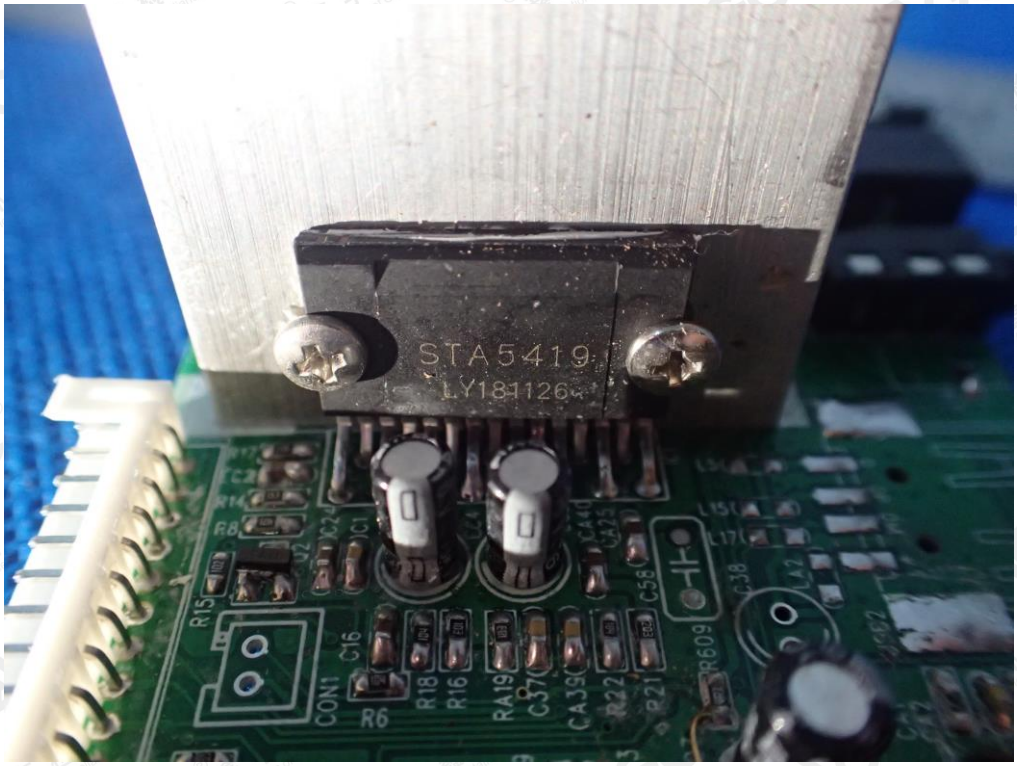
INTERNAL VIEW OF EUT-7



INTERNAL VIEW OF EUT-8



INTERNAL VIEW OF EUT-9



----END OF REPORT----