
FCC Test Report

Report No.: AGC01680160405FE03

FCC ID : 2AC9LHW087
APPLICATION PURPOSE : Original Equipment
PRODUCT DESIGNATION : 2.4G Keyboard
BRAND NAME : N/A
MODEL NAME : HW087
CLIENT : Shenzhen Hastech Industries Co., Ltd.
DATE OF ISSUE : May 23, 2016
STANDARD(S) : FCC Part 15 Rules
TEST PROCEDURE(S)
REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	May 23, 2016	Valid	Original Report

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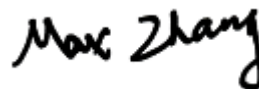
1. VERIFICATION OF CONFORMITY

Applicant	Shenzhen Hastech Industries Co., Ltd.
Address	3rd, 4th floor G-A1 Bldg & 1st, 2nd floor G-A2 Bldg Democracy West Industry Park, Shajing Town, Bao'an District, Shenzhen, China
Manufacturer	Shenzhen Hastech Industries Co., Ltd.
Address	3rd, 4th floor G-A1 Bldg & 1st, 2nd floor G-A2 Bldg Democracy West Industry Park, Shajing Town, Bao'an District, Shenzhen, China
Product Designation	2.4G Keyboard
Brand Name	N/A
Test Model	HW087
Date of test	Apr.19, 2016 to Apr.21, 2016
Deviation	None
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-US-BR/RF

We hereby certify that:

The above equipment was tested by Dongguan Precise Testing Service Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.249.

Tested by



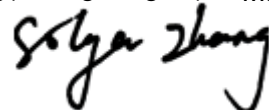
Max Zhang(Zhang Yi) May 23, 2016

Reviewed by



Rock Huang(Huang Dinglue) May 23, 2016

Approved by



Solger Zhang(Zhang Hongyi)
Authorized Officer May 23, 2016

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	2.403 GHz to 2.474GHz
Maximum field strength	79.82dBuV/m@3m(AV)
Modulation	GFSK
Number of channels	72
Antenna Gain	0dBi
Antenna Designation	PCB Antenna (Met 15.203 Antenna requirement)
Hardware Version	HTX-HW087-2533V1.1
Software Version	N/A
Power Supply	DC 3V by battery

2.2. TABLE OF CARRIER FREQUENCY

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2403	25	2427	49	2451
2	2404	26	2428	50	2452
3	2405	27	2429	51	2453
4	2406	28	2430	52	2454
5	2407	29	2431	53	2455
6	2408	30	2432	54	2456
7	2409	31	2433	55	2457
8	2410	32	2434	56	2458
9	2411	33	2435	57	2459
10	2412	34	2436	58	2460
11	2413	35	2437	59	2461
12	2414	36	2438	60	2462
13	2415	37	2439	61	2463
14	2416	38	2440	62	2464
15	2417	39	2441	63	2465
16	2418	40	2442	64	2466
17	2419	41	2443	65	2467
18	2420	42	2444	66	2468
19	2421	43	2445	67	2469
20	2422	44	2446	68	2470
21	2423	45	2447	69	2471
22	2424	46	2448	70	2472
23	2425	47	2449	71	2473
24	2426	48	2450	72	2474

3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 3.18\text{dB}$
2	All emissions, radiated	$\pm 3.91\text{dB}$
3	Temperature	$\pm 0.5^\circ\text{C}$
4	Humidity	$\pm 2\%$

4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel TX in GFSK modulation
2	Middle channel TX in GFSK modulation
3	High channel TX in GFSK modulation
4	TX OFF

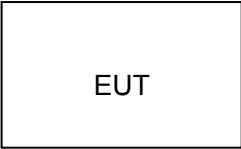
Note:

1. All the test modes can be supply by battery, only the result of the worst case was recorded in the report, if no other cases.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure :



5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	2.4G Keyboard	HW087	FCC ID:2AC9LHW087	EUT

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.249	Radiated Emission	Compliant
§15.249	Band Edges	Compliant
§15.215	20dB bandwidth	Compliant

6. TEST FACILITY

Site	Dongguan Precise Testing Service Co., Ltd.
Location	Building D, Baoding Technology Park, Guangming Road2, Dongcheng District, Dongguan, Guangdong, China.
FCC Registration No.	371540
Description	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.10:2013.

ALL TEST EQUIPMENT LIST

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 4, 2015	July 3, 2016
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 4, 2015	July 3, 2016
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 4, 2015	July 3, 2016
RF Cable	SCHWARZBECK	AK9515E	96221	July 4, 2015	July 3, 2016
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 6, 2015	June 5, 2016
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 6, 2015	June 5, 2016
Spectrum analyzer	Agilent	E4407B	MY46185649	June 6, 2015	June 5, 2016
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	June 6, 2015	June 5, 2016
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 6, 2015	June 5, 2016

7. RADIATED EMISSION

7.1 TEST LIMIT

Standard FCC15.249

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
900-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

Standard FCC 15.209

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		μ V/m	dB(μ V)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other: 74.0 dB(μ V)/m (Peak) 54.0 dB(μ V)/m (Average)	

Remark: (1) Emission level dB μ V = 20 log Emission level μ V/m
 (2) The smaller limit shall apply at the cross point between two frequency bands.
 (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

7.2. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. Place the measurement antenna 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.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

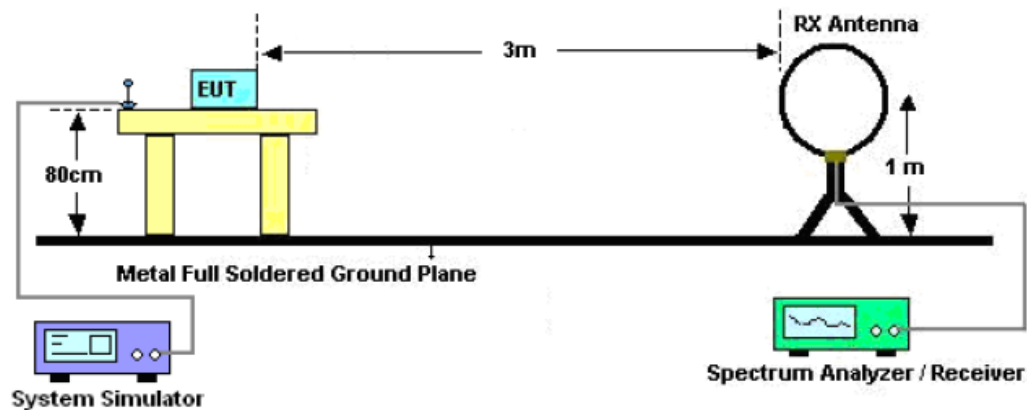
The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/1MHz for Peak, 1MHz/10Hz for Average

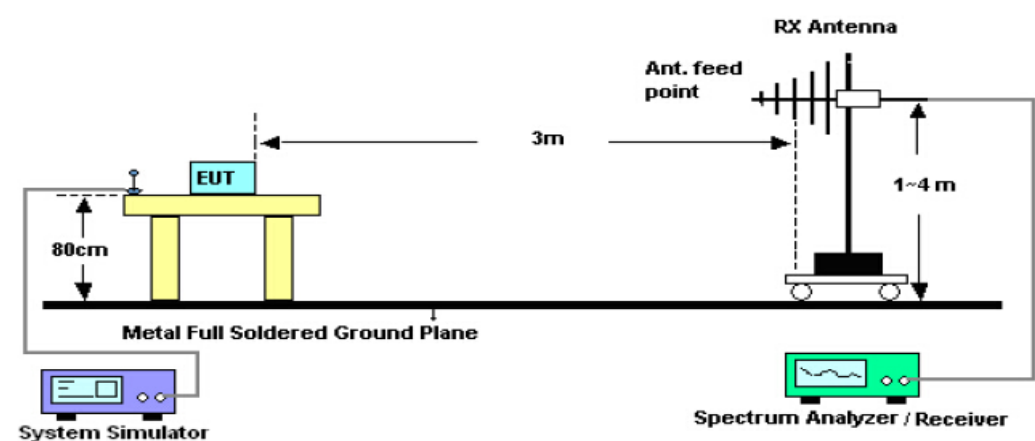
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

7.3. TEST SETUP

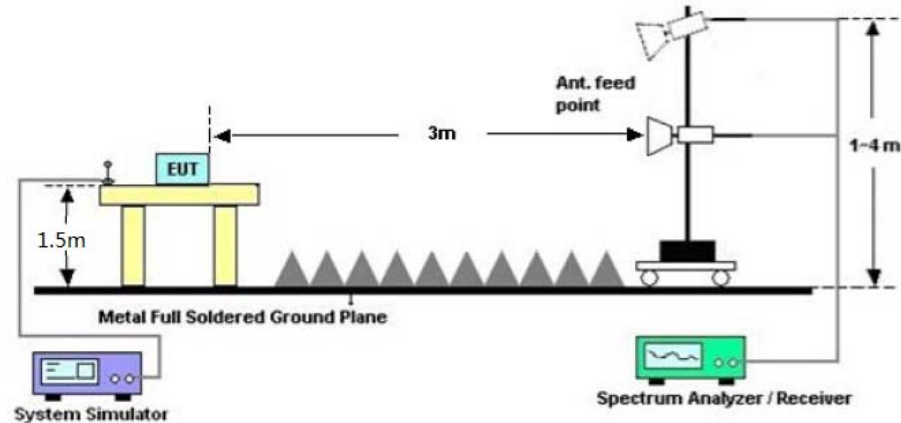
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



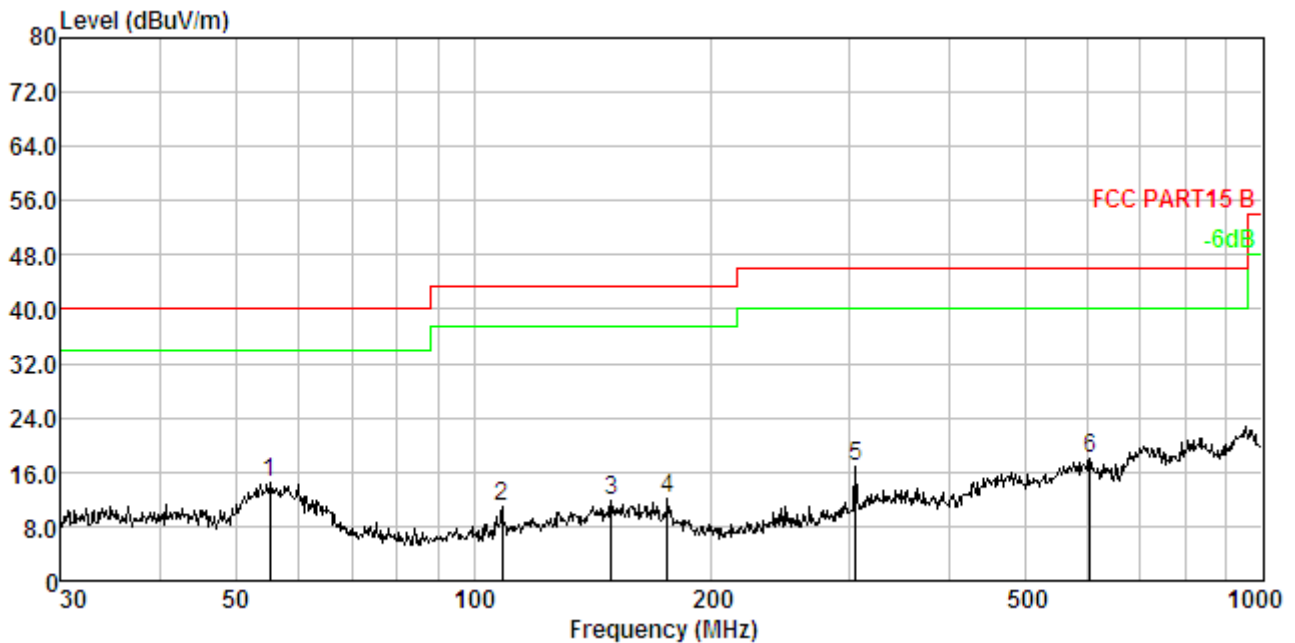
7.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION 30MHz- 1GHZ

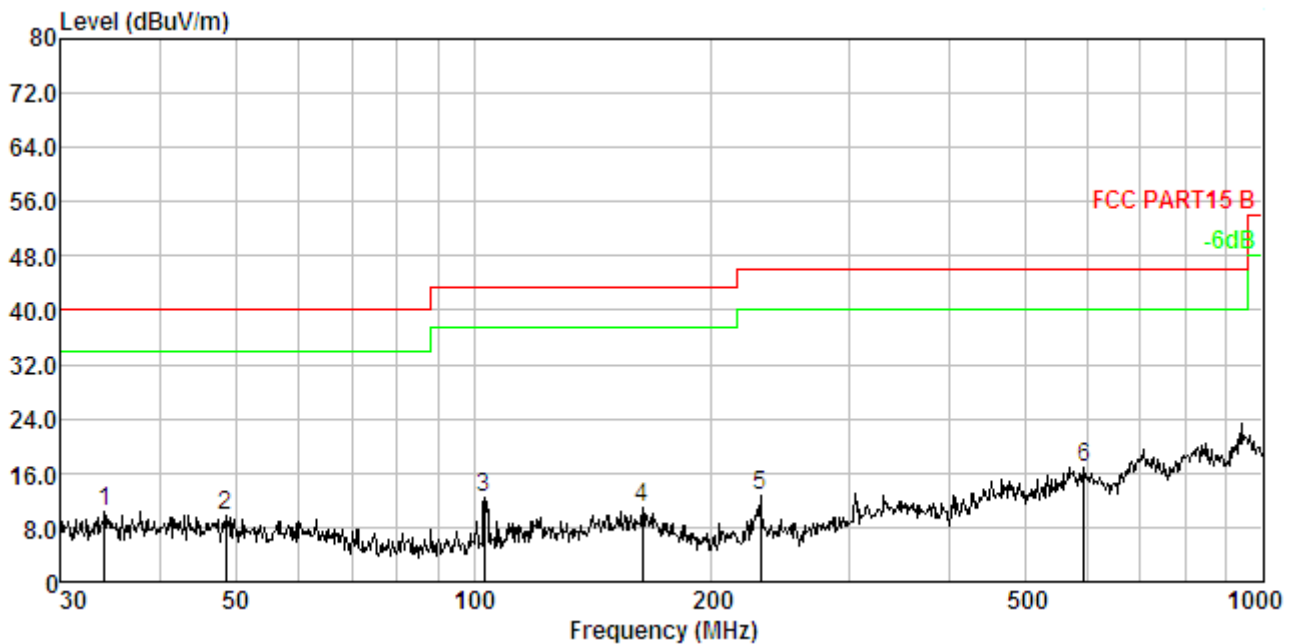
EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 1	Polarization :	Horizontal



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	55.221	1.61	11.91	30.99	30.18	14.33	40.00	-25.67	Peak
2.	108.647	2.22	10.96	28.21	30.42	10.97	43.50	-32.53	Peak
3.	149.486	2.51	13.87	25.85	30.53	11.70	43.50	-31.80	Peak
4.	176.269	2.66	12.77	27.22	30.59	12.06	43.50	-31.44	Peak
5.	304.610	3.15	13.30	31.24	30.78	16.91	46.00	-29.09	Peak
6.	603.539	3.77	19.17	26.06	31.01	17.99	46.00	-28.01	Peak

RESULT: PASS

EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 1	Polarization :	Vertical



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamplifier Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	34.037	1.17	13.33	25.94	30.01	10.43	40.00	-29.57	Peak
2.	48.502	1.49	12.55	25.83	30.14	9.73	40.00	-30.27	Peak
3.	103.080	2.17	10.50	30.18	30.40	12.45	43.50	-31.05	Peak
4.	163.755	2.59	13.67	25.31	30.56	11.01	43.50	-32.49	Peak
5.	230.907	2.90	11.29	29.06	30.68	12.57	46.00	-33.43	Peak
6.	593.050	3.76	18.97	25.13	31.01	16.85	46.00	-29.15	Peak

RESULT: PASS

Note:

Factor=Antenna Factor + Cable loss, Margin=Result-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

The mode 1 is the worst case, and only the data of the worst case recorded in this test report.

RADIATED EMISSION ABOVE 1GHZ

EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 ℃	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 1	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2403.013	90.74	-9.37	81.37	114	-32.63	peak
2403.013	86.74	-9.37	77.37	94	-16.63	AVG
4806.026	52.37	3.74	56.11	74	-17.89	peak
4806.026	42.63	3.74	46.37	54	-7.63	AVG
7209.039	42.74	8.14	50.88	74	-23.12	peak
7209.039	37.16	8.14	45.3	54	-8.7	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 ℃	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 1	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2403.013	88.34	-9.37	78.97	114	-35.03	peak
2403.013	84.29	-9.37	74.92	94	-19.08	AVG
4806.026	51.33	3.74	55.07	74	-18.93	peak
4806.026	41.61	3.74	45.35	54	-8.65	AVG
7209.039	40.89	8.14	49.03	74	-24.97	peak
7209.039	34.56	8.14	42.7	54	-11.3	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 ℃	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 2	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2442.016	91.86	-9.63	82.23	114	-31.77	peak
2442.016	87.39	-9.63	77.76	94	-16.24	AVG
4884.032	48.26	3.76	52.02	74	-21.98	peak
4884.032	42.87	3.76	46.63	54	-7.37	AVG
7326.048	42.16	8.17	50.33	74	-23.67	peak
7326.048	36.81	8.17	44.98	54	-9.02	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 ℃	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 2	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2442.016	89.74	-9.63	80.11	114	-33.89	peak
2442.016	85.14	-9.63	75.51	94	-18.49	AVG
4884.032	46.85	3.76	50.61	74	-23.39	peak
4884.032	41.54	3.76	45.3	54	-8.7	AVG
7326.048	40.26	8.17	48.43	74	-25.57	peak
7326.048	35.02	8.17	43.19	54	-10.81	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 3	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2474.021	94.53	-9.61	84.92	114	-29.08	peak
2474.021	89.43	-9.61	79.82	94	-14.18	AVG
4948.042	51.74	3.83	55.57	74	-18.43	peak
4948.042	45.85	3.83	49.68	54	-4.32	AVG
7422.063	44.34	8.21	52.55	74	-21.45	peak
7422.063	38.15	8.21	46.36	54	-7.64	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 3	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2474.021	92.43	-9.61	82.82	114	-31.18	peak
2474.021	88.58	-9.61	78.97	94	-15.03	AVG
4948.042	50.37	3.83	54.2	74	-19.8	peak
4948.042	44.42	3.83	48.25	54	-5.75	AVG
7422.063	43.16	8.21	51.37	74	-22.63	peak
7422.063	37.84	8.21	46.05	54	-7.95	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Note: Other emissions from 8G to 25 GHz are considered as ambient noise. No recording in the test report.

Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.

The “Factor” value can be calculated automatically by software of measurement system.

The spurious emissions of mode 4 are considered as ambient noise. No recording in the test report.

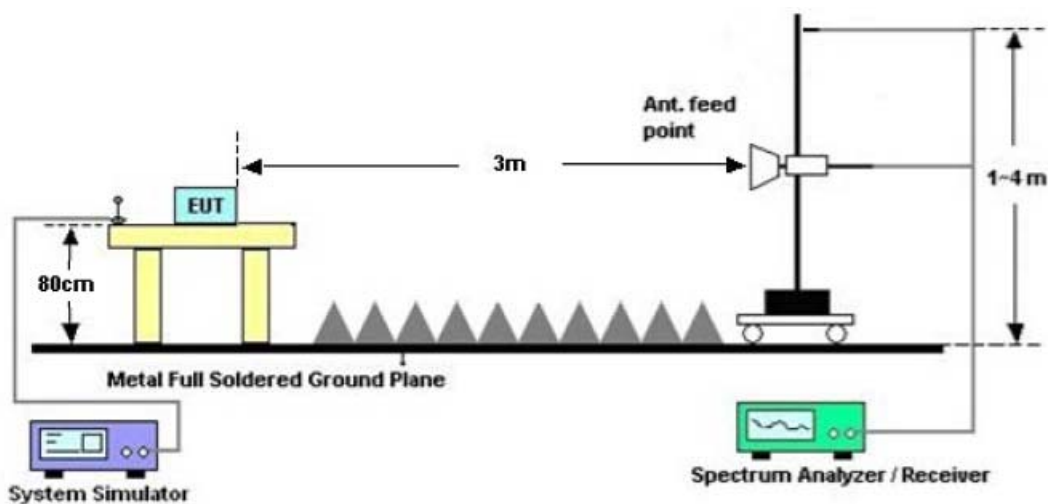
8. BAND EDGE EMISSION

8.1. MEASUREMENT PROCEDURE

1. The lowest or highest channels are tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
2. Max hold the trace of the setp 1, and the EUT operates at hopping-on test mode to verify the largest spurious emissions power.
3. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b) AVERAGE: RBW=1MHz ; VBW=1/on time(1KHz) / Sweep=AUTO

8.2 TEST SETUP

RADIATED EMISSION TEST SETUP



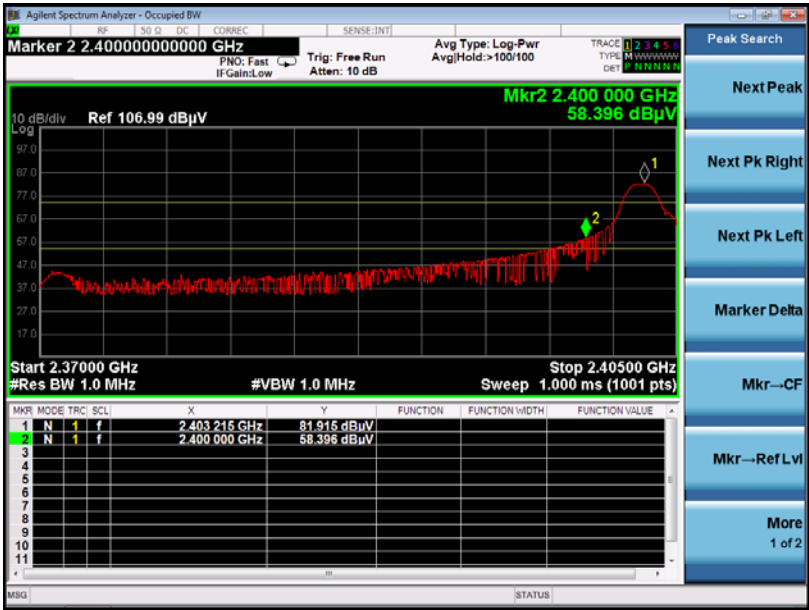
8.3 RADIATED TEST RESULT

Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level
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(μ V) to represent the Amplitude. Use the F dB(μ V/m) to represent the Field Strength. So A=F.

EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 1	Polarization :	Horizontal

PK Value

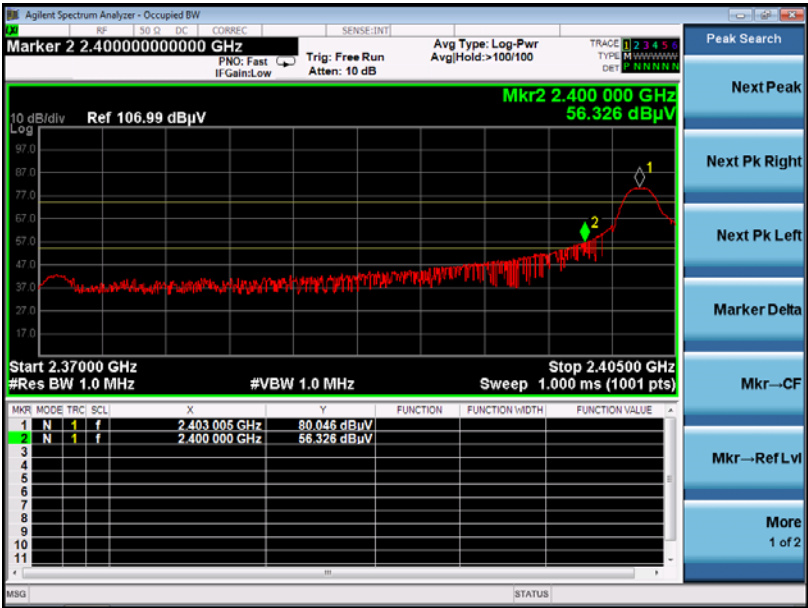


AV Value



EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 1	Polarization :	Vertical

PK Value

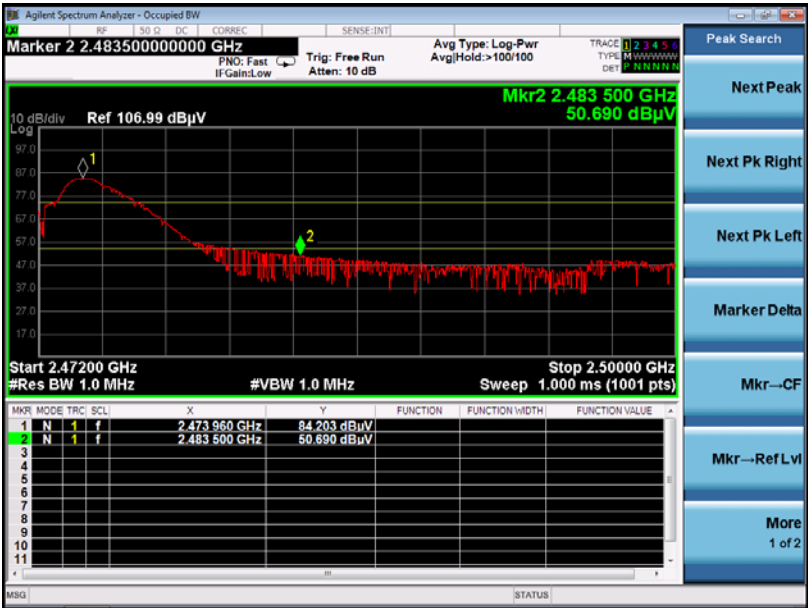


AV Value



EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 3	Polarization :	Horizontal

PK Value

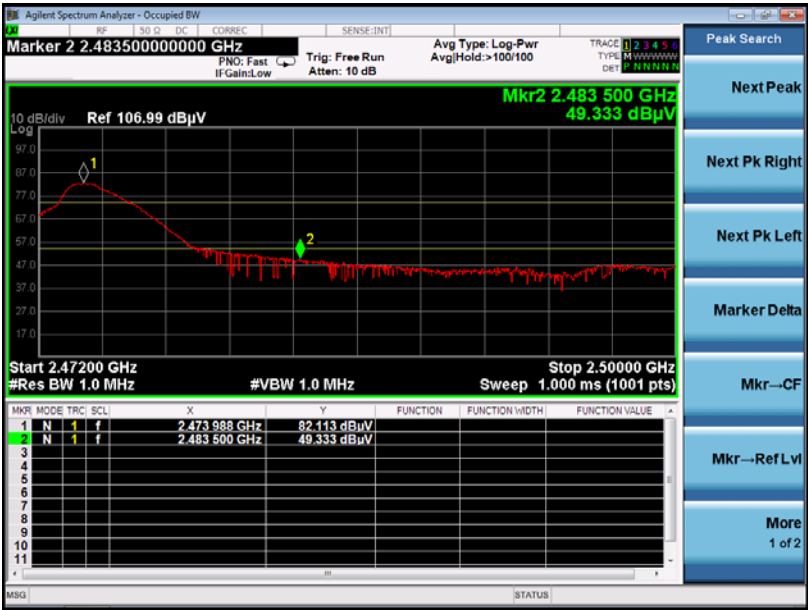


AV Value



EUT :	2.4G Keyboard	Model Name. :	HW087
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3V
Test Mode :	Mode 3	Polarization :	Vertical

PK Value



AV Value



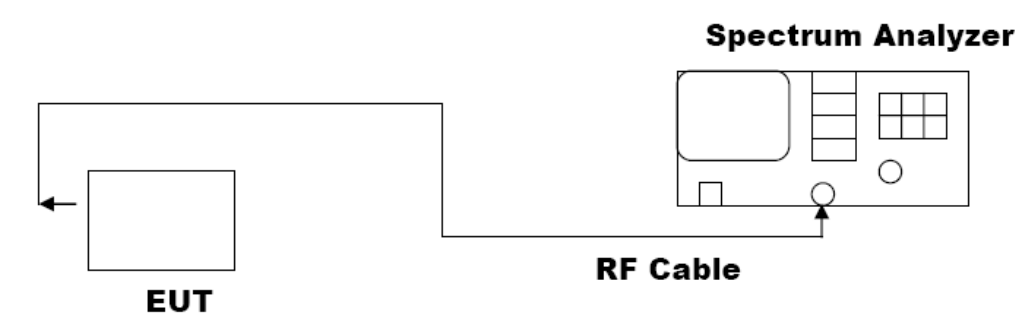
Note:
Factor=Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.
The “Factor” value can be calculated automatically by software of measurement system.

9. 20DB BANDWIDTH

9.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 1% of SPAN, VBW $\geq$ 3 $\times$ RBW.
4. Set SPA Trace 1 Max hold, then View.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

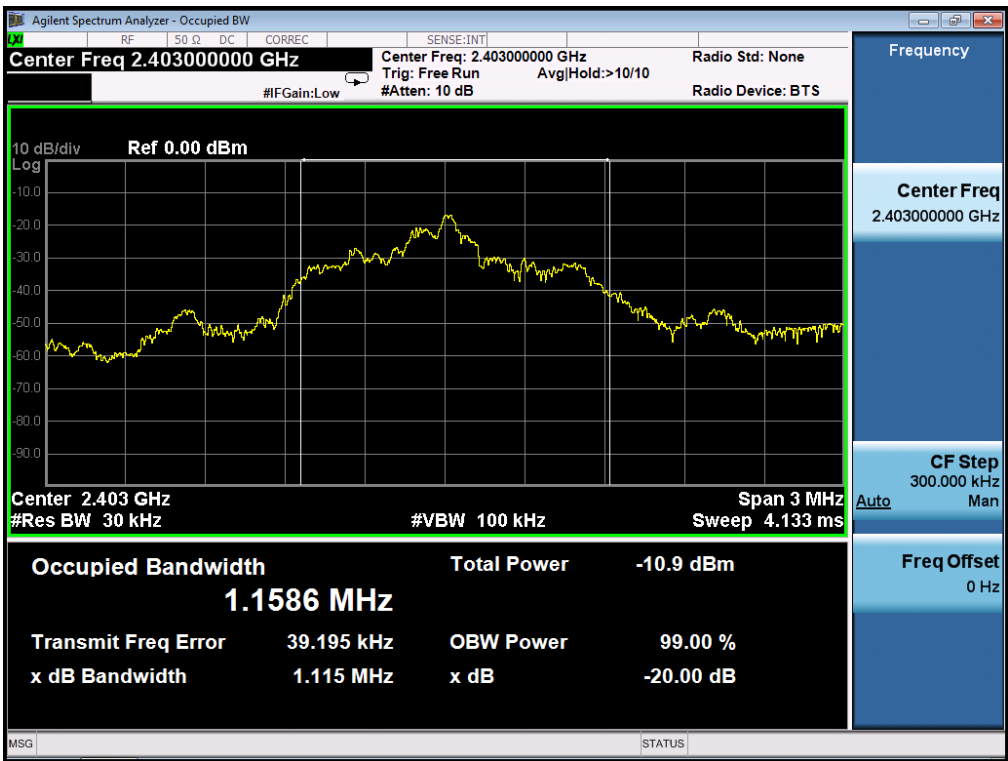


9.3. MEASUREMENT RESULTS

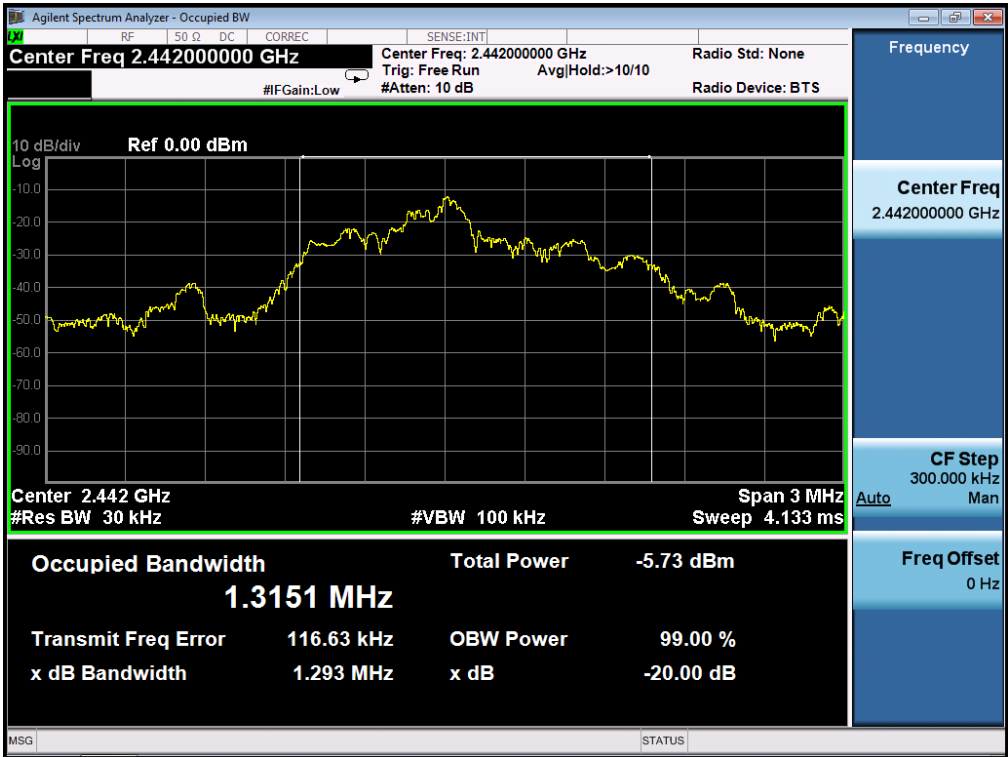
TEST ITEM	20DB BANDWIDTH
TEST MODE	Mode1;Mode2;Mode3

Test Data (MHz)		Criteria
Low Channel	1.115	PASS
Middle Channel	1.293	PASS
High Channel	1.681	PASS

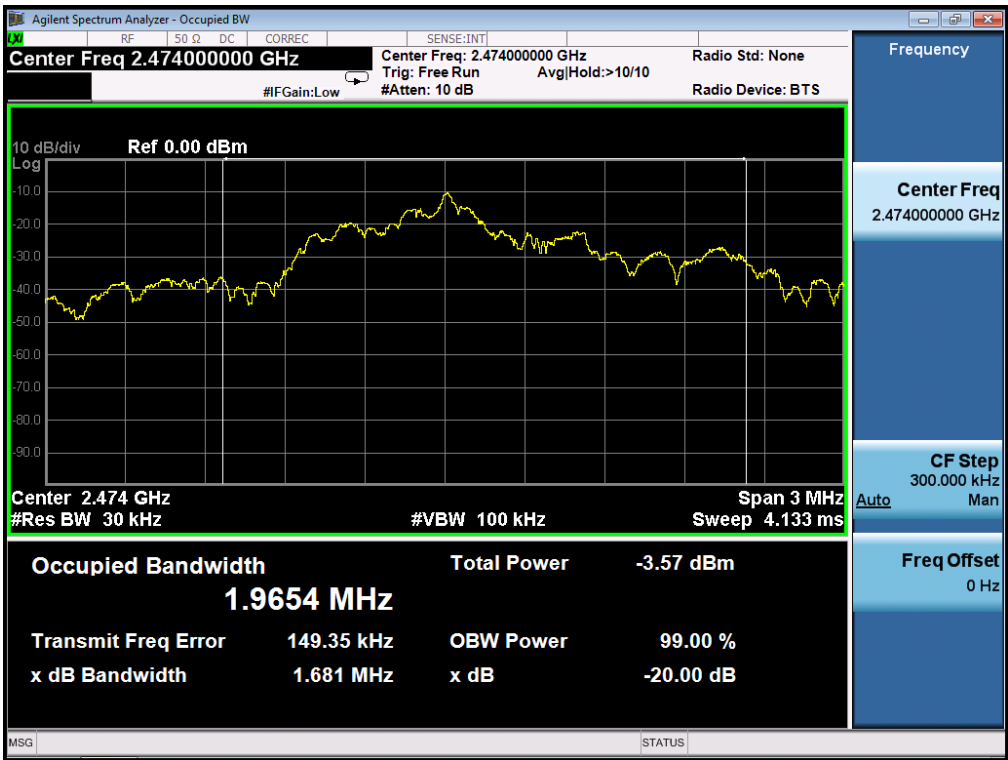
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

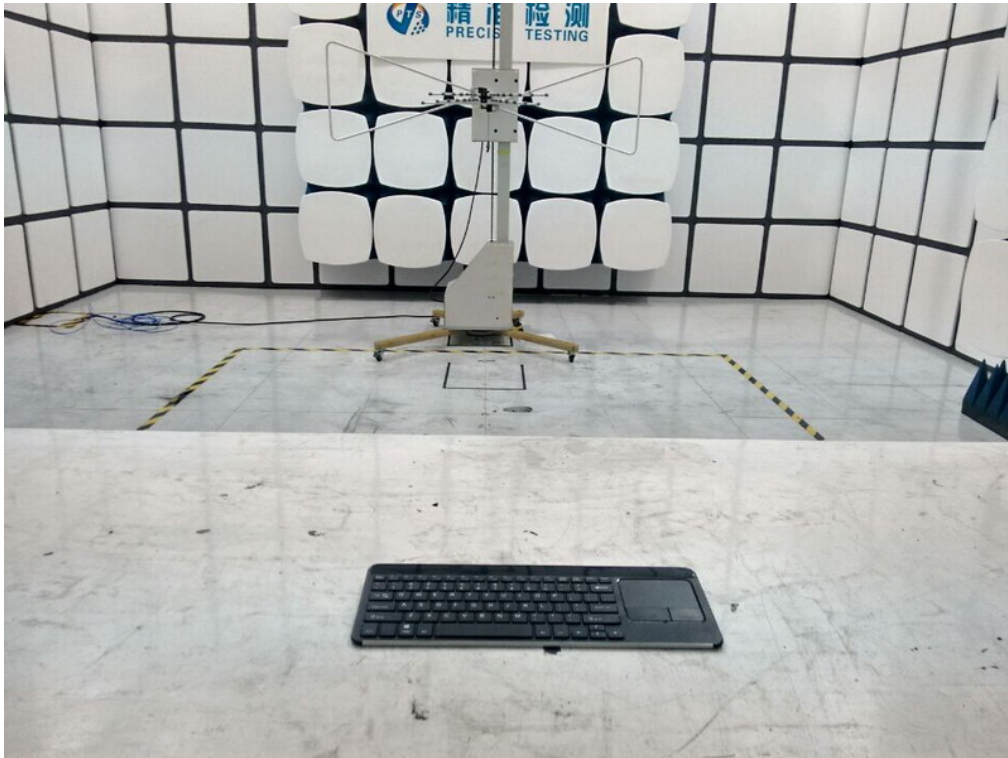


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

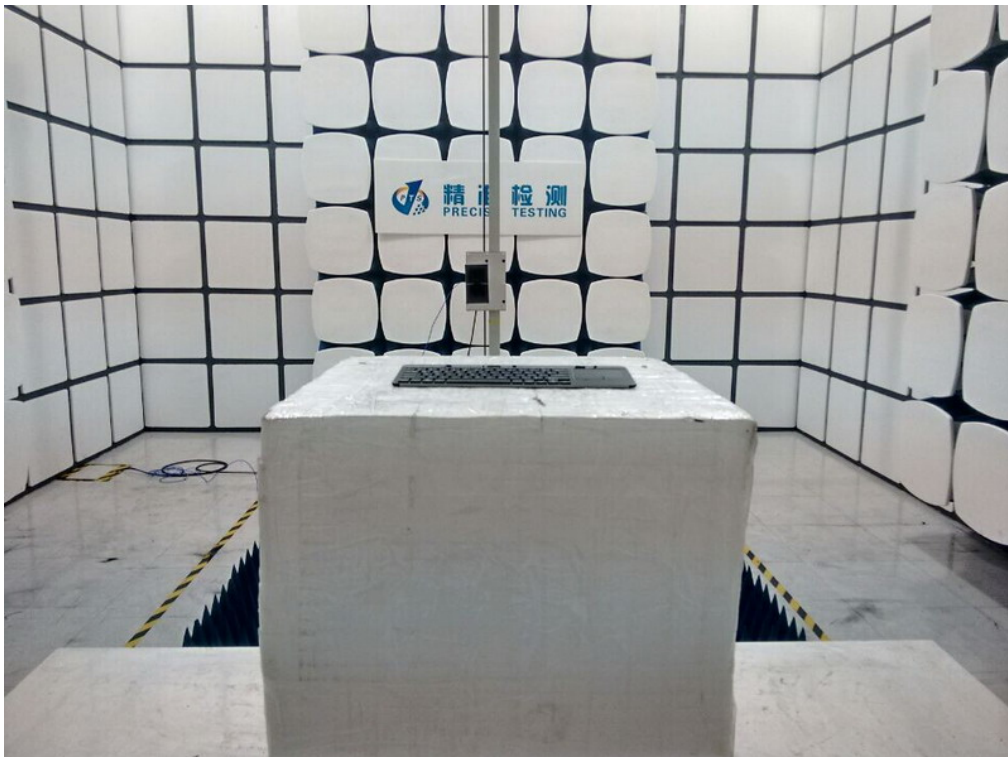


APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST SETUP BELOW 1GHz

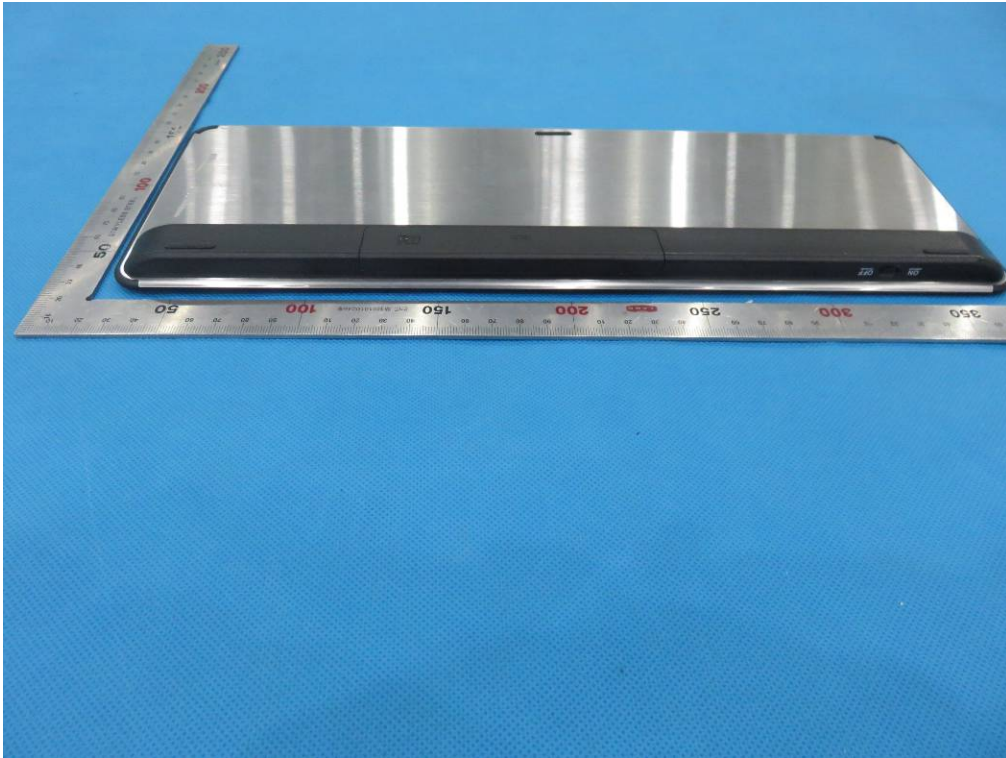


RADIATED EMISSION TEST SETUP ABOVE 1GHz

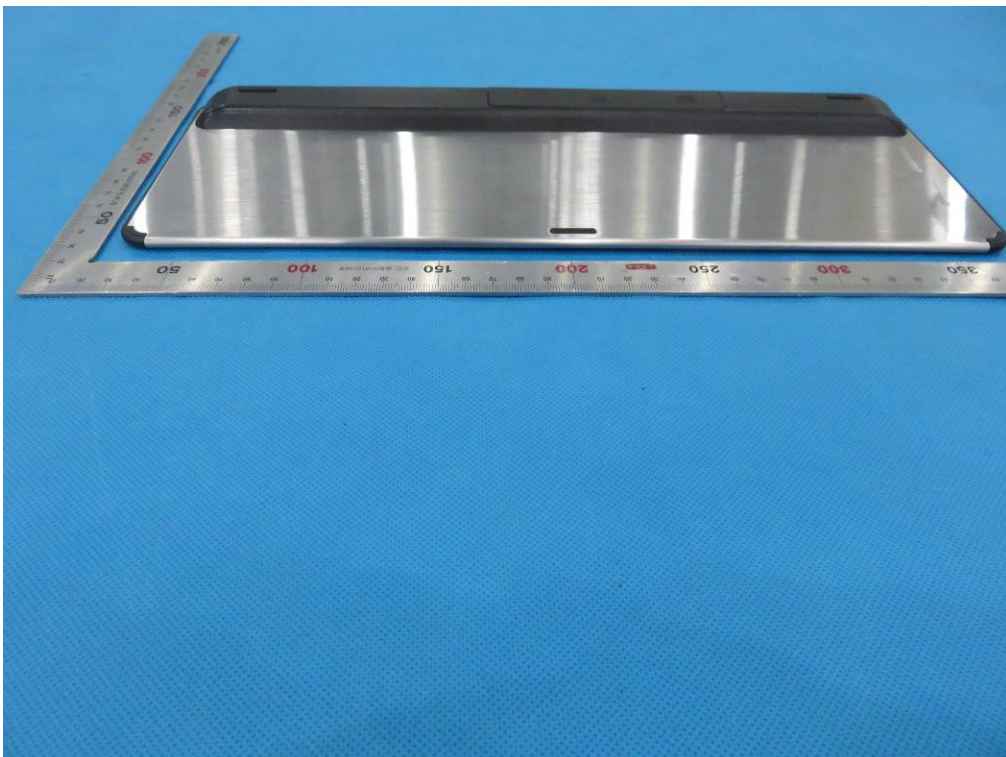


APPENDIX B: PHOTOGRAPHS OF EUT

TOP VIEW OF EUT



BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



BACK VIEW OF EUT



LEFT VIEW OF EUT



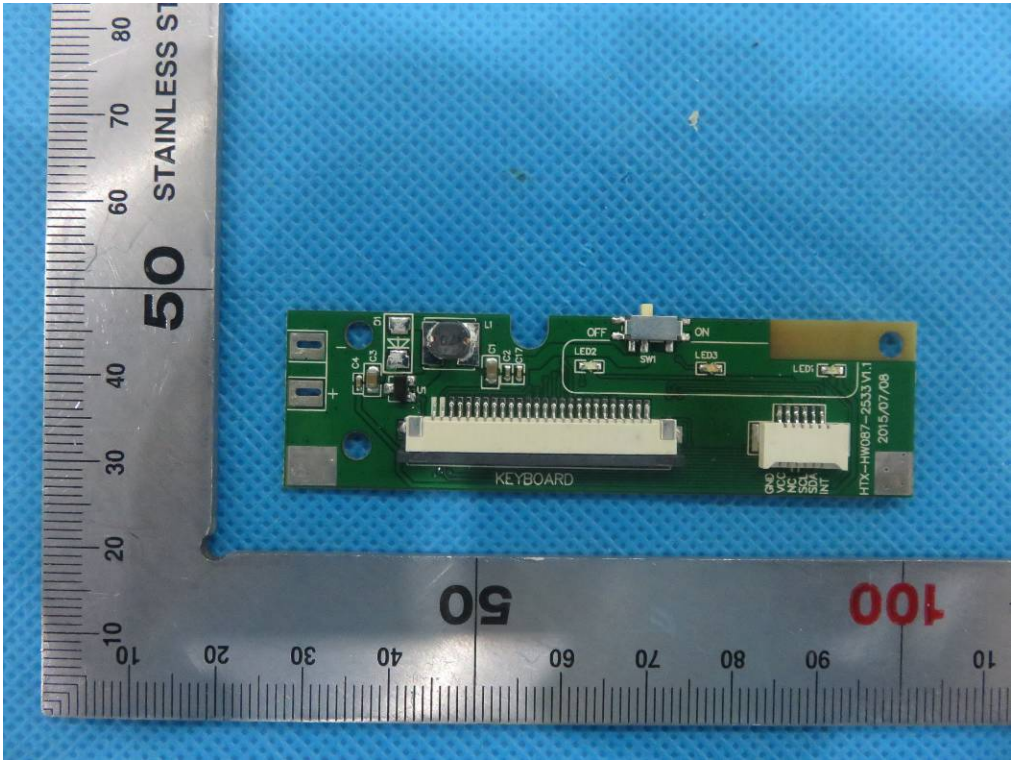
RIGHT VIEW OF EUT



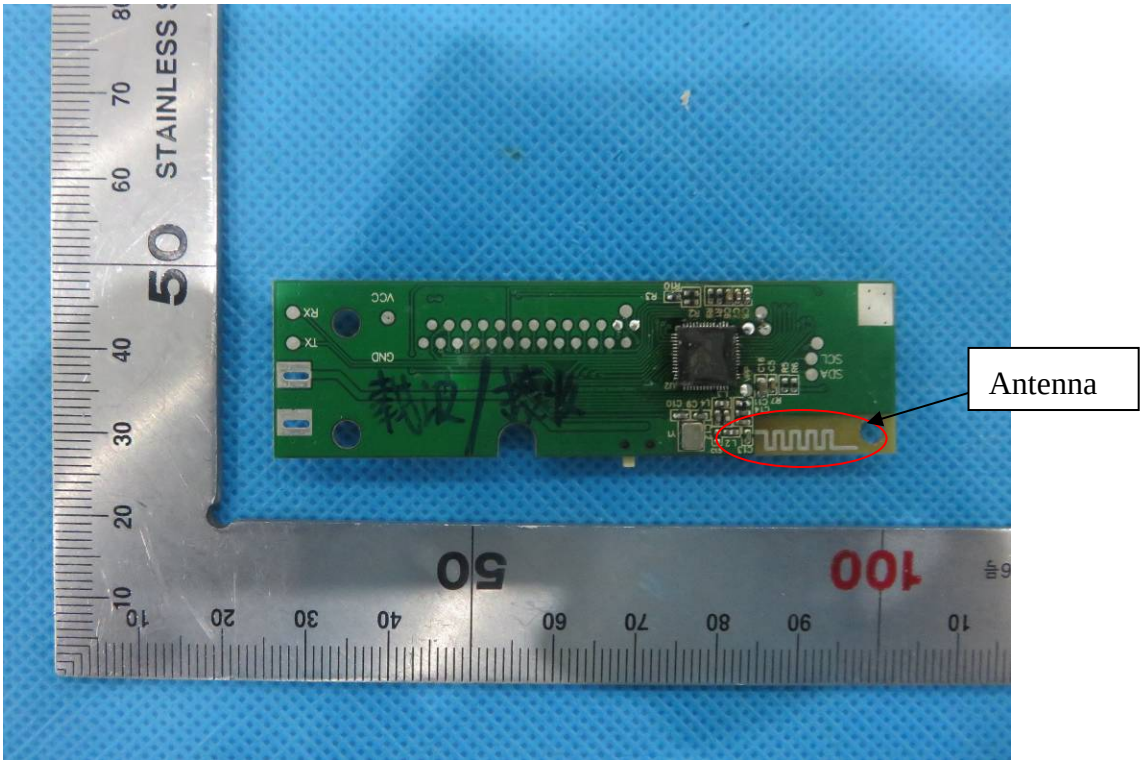
OPEN VIEW OF EUT



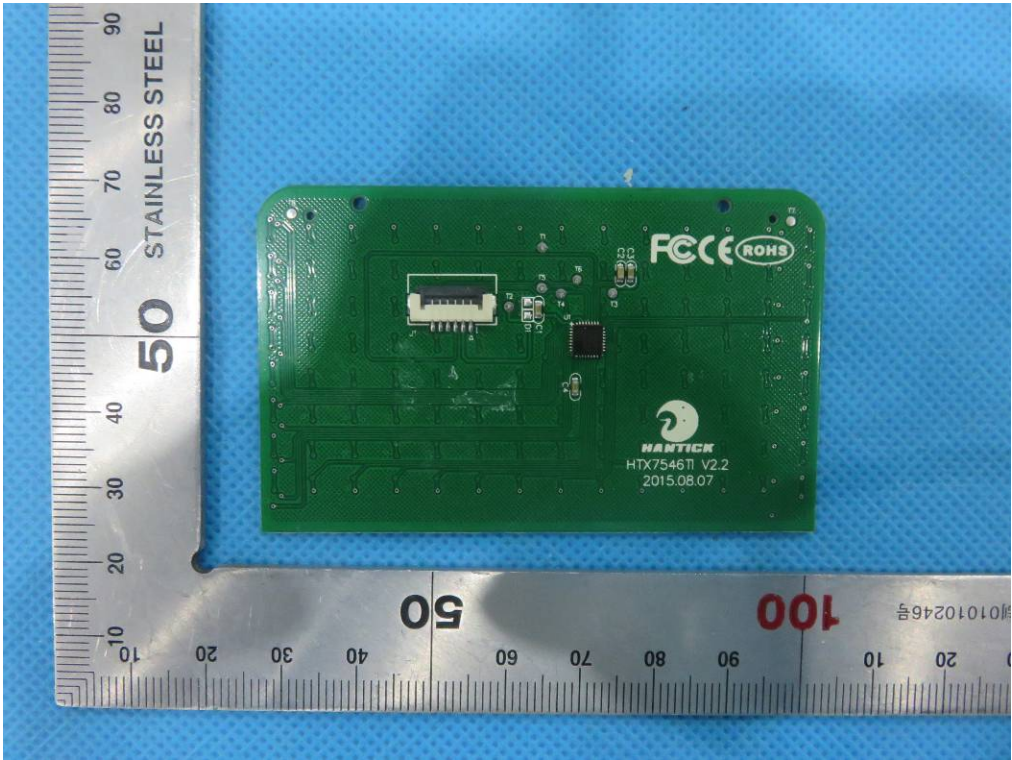
INTERNAL VIEW OF EUT-1



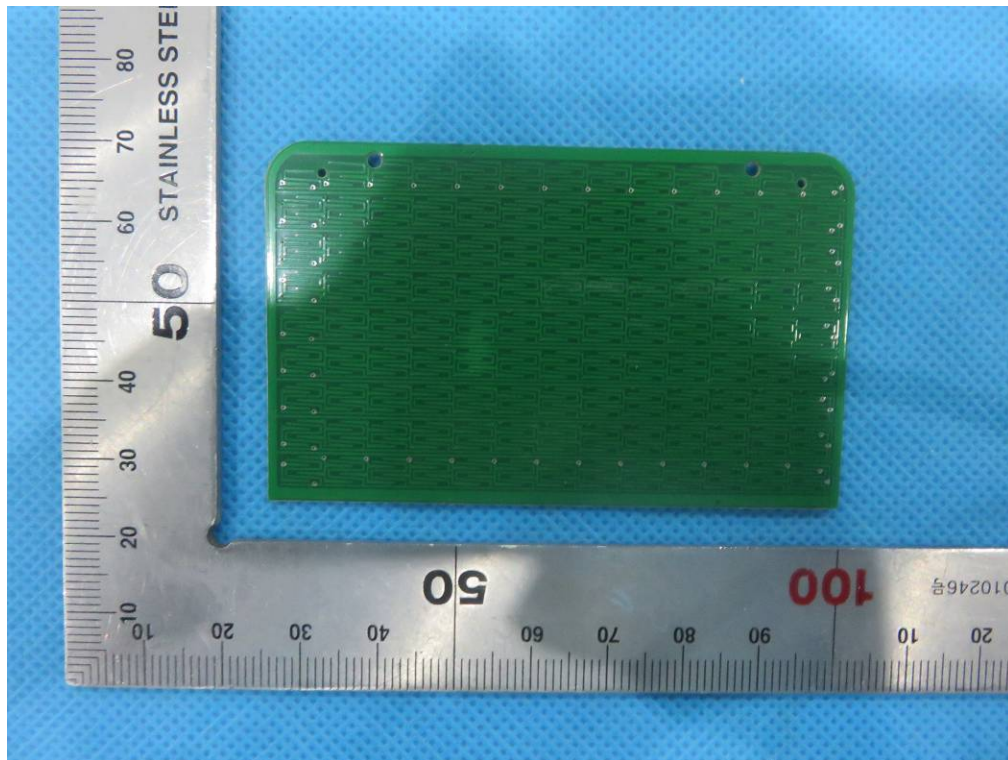
INTERNAL VIEW OF EUT-2



INTERNAL VIEW OF EUT-3



INTERNAL VIEW OF EUT-4



-----END OF REPORT-----