

FCC TEST REPORT

For

Shenzhen Loyal Eletronics Co., Ltd.

2.4G Wireless Keyboard

Model No.: KG3608, PC126A

Prepared For : Shenzhen Loyal Eletronics Co., Ltd.
Address : No.5 First Industrial Park, Shanmen, Songgang, Baoan, Shenzhen,
Guangdong, China

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TEST REPORT

Applicant : Shenzhen Loyal Eletronics Co., Ltd.
Manufacturer : Shenzhen Loyal Eletronics Co., Ltd.
Product Name : 2.4G Wireless Keyboard
Model No. : KG3608, PC126A
Trade Mark : N/A
Rating(s) : Input DC 3V 10mA by "AAA" Battery*2

Test Standard(s) : FCC Part15 Subpart C, Paragraph 15.249

Test Method(s) : ANSI C63.10: 2013

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : Aug. 28~Nov. 06, 2017

Prepared by :



Winkey Wang

(Tested Engineer / Winkey Wang)

Reviewer :

Tangcy. T.

(Project Manager / Tangcy. T)

Approved & Authorized Signer :

Tom Chen

(Manager / Tom Chen)

1. General Information

1.1. Client Information

Applicant	:	Shenzhen Loyal Eletronics Co., Ltd.
Address	:	No.5 First Industrial Park, Shanmen, Songgang, Baoan, Shenzhen, Guangdong, China
Manufacturer	:	Shenzhen Loyal Eletronics Co., Ltd.
Address	:	No.5 First Industrial Park, Shanmen, Songgang, Baoan, Shenzhen, Guangdong, China

1.2. Description of Device (EUT)

Product Name	:	2.4G Wireless Keyboard	
Model No.	:	KG3608, PC126A (Note: All samples are the same except the model number and colour, so we prepare "KG3608" for test only.)	
Trade Mark	:	N/A	
Test Power Supply	:	DC 3V By Battery	
Product Description	:	Operation Frequency:	2405-2472MHz
		Number of Channel:	68 Channels
		Modulation Type:	GFSK
		Antenna Type:	PCB Antenna
		Antenna Gain(Peak):	0 dBi
Remark: 1)For a more detailed features description, please refer to the manufacturer’s specifications or the User’s Manual.			

1.3. Auxiliary Equipment Used During Test

Adapter	:	N.A.
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1.4. Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Keeping TX mode
Mode 2	CH01
Mode 3	CH44
Mode 4	CH68

For Conducted Emission	
Final Test Mode	Description
Mode 1	Keeping TX mode

For Radiated Emission	
Final Test Mode	Description
Mode 2	CH01
Mode 3	CH44
Mode 4	CH68

Note:

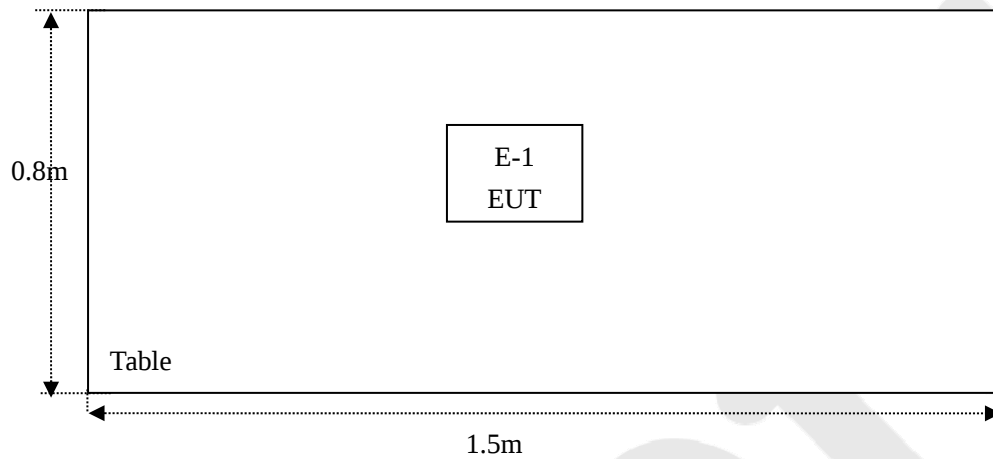
1. The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.
2. EUT built-in battery-powered, fully-charged battery use of the test battery.

1.5. List of Channels

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

1.6. Description of Test Setup

RE



1.7. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	May 27, 2017	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	May 27, 2017	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	May 27, 2017	1 Year
4.	Spectrum Analysis	Agilent	E4407B	US39390582	May 27, 2017	1 Year
5.	Spectrum Analysis	Agilent	N9038A	MY53227295	May 27, 2017	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	May 27, 2017	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	May 27, 2017	1 Year
8.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	May 31, 2017	1 Year
9.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	May 31, 2017	1 Year
10.	Loop Antenna	Schwarzbeck	HFH2-Z2	100047	Apr. 03, 2017	1 Year
11.	Horn Antenna	Schwarzbeck	BBHA9170	9170-375	May 27, 2017	1 Year
12.	Pre-amplifier	SONOMA	310N	186860	May 27, 2017	1 Year
13.	Pre-amplifier	SKET Electronic	BK1G40G50 A	KD25352	May 27, 2017	1 Year
14.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
15.	Power Sensor	DAER	RPR3006W	15I00041SN045	May 27, 2017	1 Year
16.	Power Sensor	DAER	RPR3006W	15I00041SN046	May 27, 2017	1 Year
17.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	May 27, 2017	1 Year
18.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	May 27, 2017	1 Year
19.	Signal Generator	Agilent	E4421B	MY41000743	May 27, 2017	1 Year
20.	DC Power supply	IVYTECH	IV6003	1601D6030007	May 26, 2017	1 Year
21.	TEMP&HUMI PROGRAMMABLE CHAMBER	Sertep	ZJ-HWHS80 B	ZJ-17042804	Mar. 03, 2017	1 Year

1.8. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.1 dB (Horizontal)
		Ur = 4.3 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4dB

1.9. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111, July 31, 2017.

ISED-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A-1, June 13, 2016.

Test Location

All Emissions tests were performed at

Shenzhen Anbotek Compliance Laboratory Limited.

at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

2. Summary of Test Results

Standard Section	Test Item	Result
15.203	Antenna Requirement	PASS
15.207	Conducted Emission	N/A
15.249	Radiated Emission	PASS
15.215(c)	20dB Bandwidth	PASS
15.249(c)	Band Edge	PASS
Remark: "N/A" is an abbreviation for Not Applicable.		

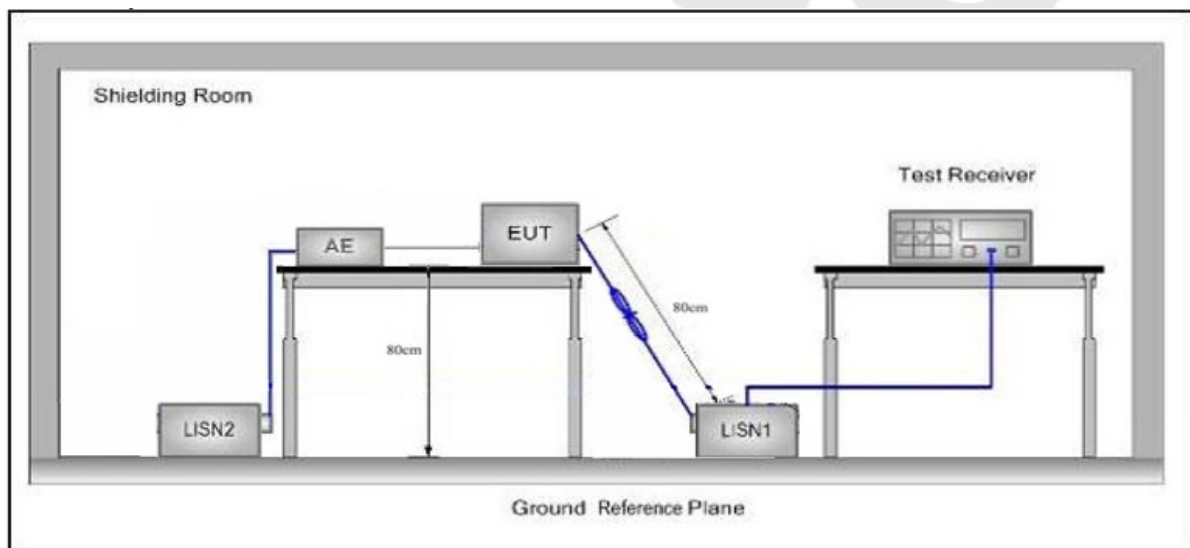
3. Conducted Emission Test

3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.207		
Test Limit	Frequency	Maximum RF Line Voltage (dBuV)	
		Quasi-peak Level	Average Level
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	56	46
	5MHz~30MHz	60	50

Remark: (1) *Decreasing linearly with logarithm of the frequency.
(2) The lower limit shall apply at the transition frequency.

3.2. Test Setup



3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2013 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

There is DC 3V Battery inside, So not test there

4. Radiated Emission and Band Edge

4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209 and 15.205				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	74.0	Peak	3

Remark:

(1)The lower limit shall apply at the transition frequency.

(2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Test Standard	FCC Part15 C Section 15.249					
Test Limit	Frequency (MHz)	Field Strength of fundamental ((millivolts /meter)	Field Strength of Harmonics (microvolts/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	2400~2483.5	50	-	114.0	Peak	3
	2400~2483.5	50	-	94.0	Average	3
	2400~2483.5	-	500	74.0	Peak	3
	2400~2483.5	-	500	54.0	Average	3

Remark:

(1) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

4.2. Test Setup

Figure 1. Below 30MHz

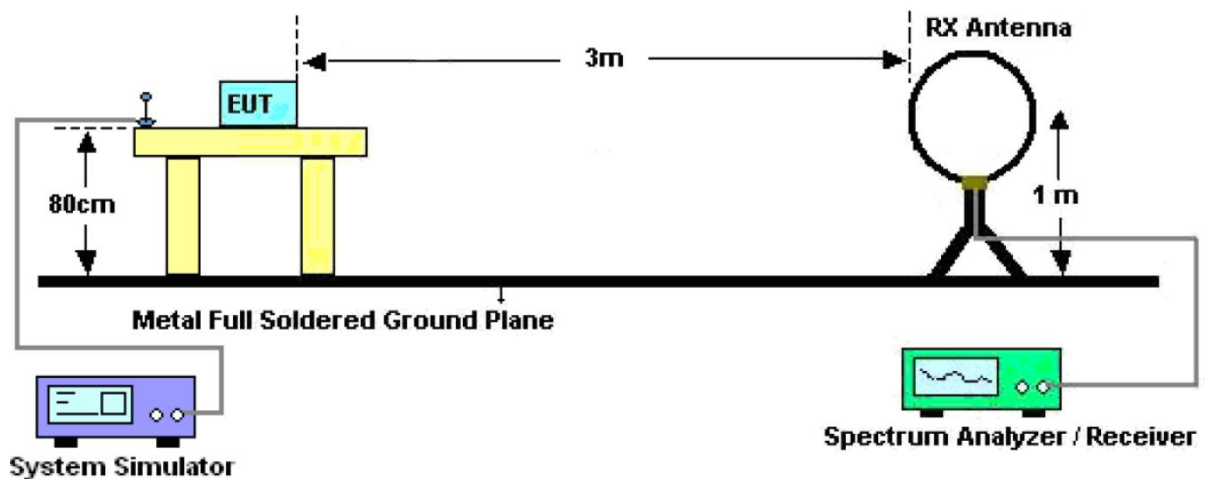


Figure 2. 30MHz to 1GHz

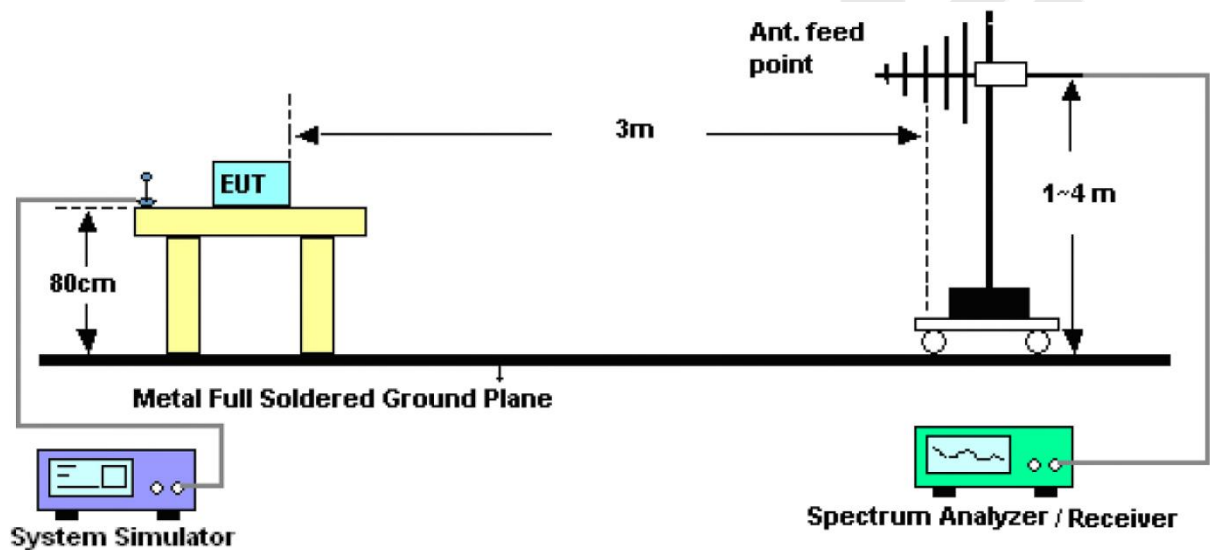
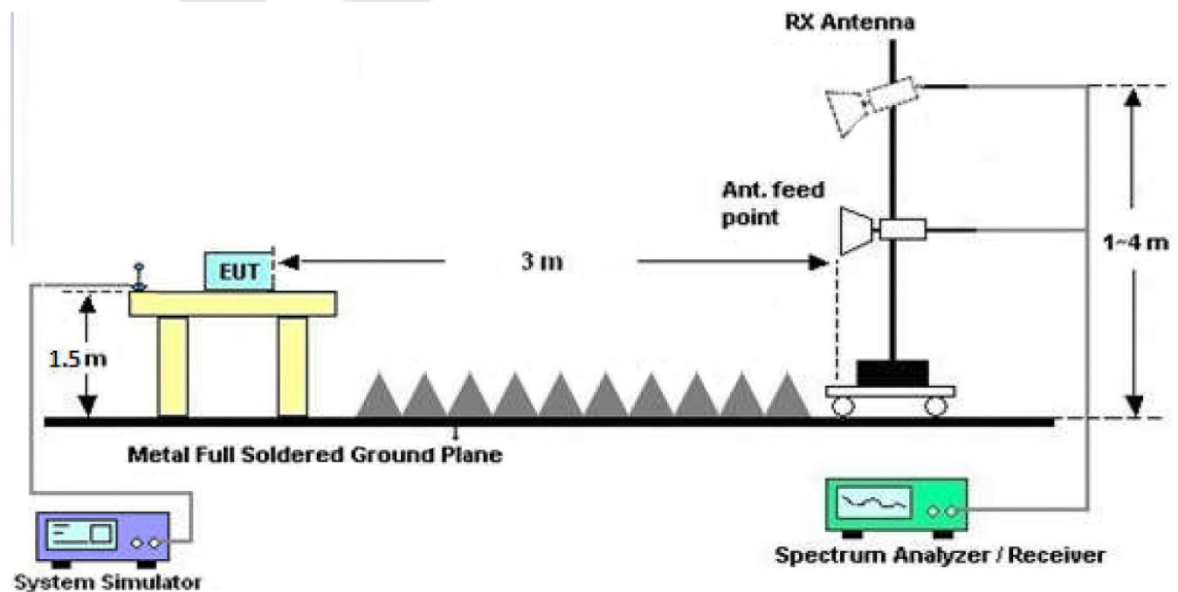


Figure 3. Above 1 GHz



4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

For the radiated emission test above 1GHz:

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.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

.

For above 1GHz,Set the spectrum analyzer as:

RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

RBW =1MHz, VBW =10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

4.4. Test Data

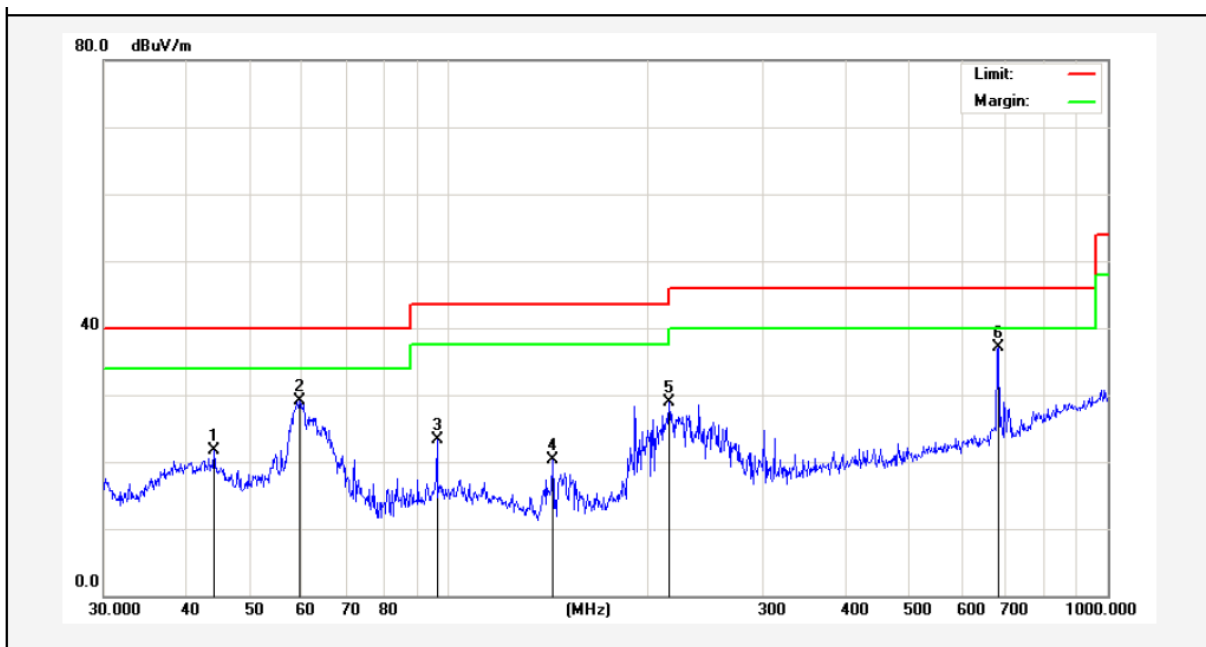
PASS

During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Test Results (30~1000MHz)

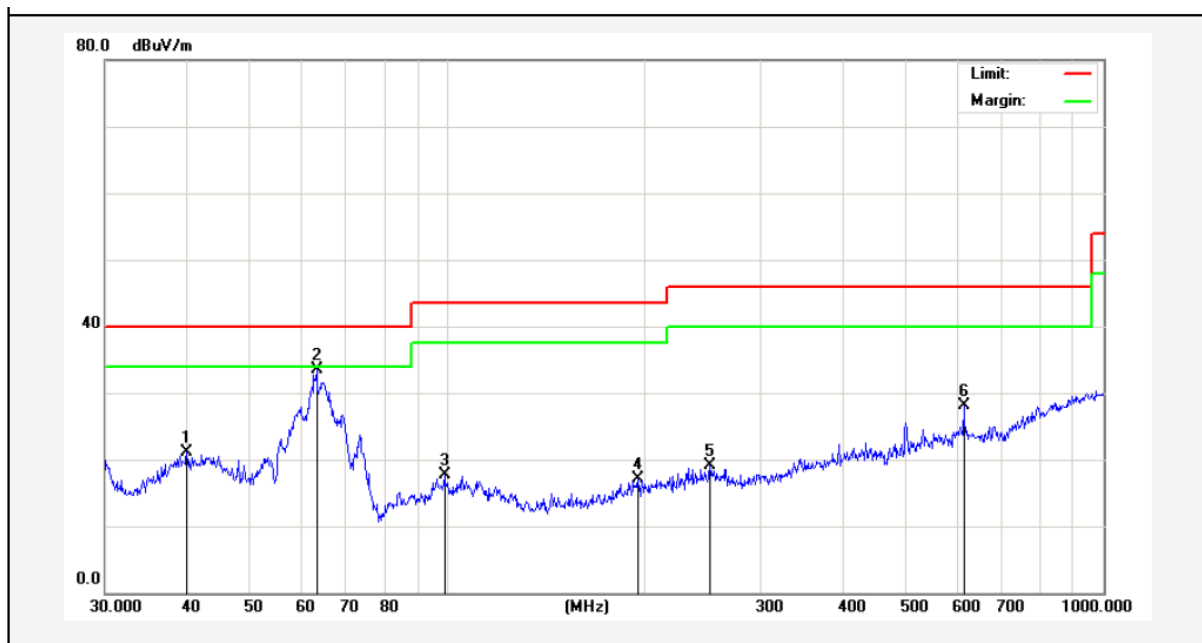
Job No.: 0217100047W Temp.(°C)/Hum.(%RH): 24.3°C/55%RH
Standard: FCC PART 15C Power Source: DC 3V
Test Mode: TX Mode Lowest CH Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	44.1202	33.90	-12.27	21.63	40.00	-18.37	QP	300	41	
2	59.4405	44.48	-15.34	29.14	40.00	-10.86	QP	300	96	
3	96.0986	44.36	-20.97	23.39	43.50	-20.11	QP	300	141	
4	143.8295	43.71	-23.43	20.28	43.50	-23.22	QP	300	165	
5	216.0240	49.22	-20.27	28.95	46.00	-17.05	QP	300	214	
6	682.3484	46.11	-8.97	37.14	46.00	-8.86	QP	300	263	

Test Results (30~1000MHz)

Job No.: 0217100047W Temp.(°C)/Hum.(%RH): 24.3°C/55%RH
Standard: FCC PART 15C Power Source: DC 3V
Test Mode: TX Mode Lowest CH Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	39.9942	32.02	-10.87	21.15	40.00	-18.85	QP	300	23	
2	63.0916	50.15	-16.67	33.48	40.00	-6.52	QP	300	64	
3	98.8326	33.60	-15.82	17.78	43.50	-25.72	QP	300	101	
4	195.1365	33.04	-15.89	17.15	43.50	-26.35	QP	300	147	
5	251.1804	33.18	-14.03	19.15	46.00	-26.85	QP	300	241	
6	612.0642	37.30	-9.15	28.15	46.00	-17.85	QP	300	302	

Test Results (1GHz-25GHz)

Test Mode: CH01 (Low channel)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
2405.0000	96.53	31.21	2.17	35.30	94.61	114.00	-19.39	V	Peak
2405.0000	92.33	31.21	2.17	35.30	90.41	94.00	-3.59	V	AVG
4810.0000	50.66	34.01	2.56	34.71	52.52	74.00	-21.48	V	Peak
4810.0000	46.95	34.01	2.56	34.71	48.81	54.00	-5.19	V	AVG
7215.0000	43.22	36.16	2.98	35.15	47.21	74.00	-26.79	V	Peak
7215.0000	33.69	36.16	2.98	35.15	37.68	54.00	-16.32	V	AVG
9620.0000	*								
12025.0000	*								
14430.0000	*								
16835.0000	*								
2405.0000	94.77	31.21	2.17	35.30	92.85	114.00	-21.15	H	Peak
2405.0000	88.65	31.21	2.17	35.30	86.73	94.00	-7.27	H	AVG
4810.0000	53.41	34.01	2.56	34.71	55.27	74.00	-18.73	H	Peak
4810.0000	48.36	34.01	2.56	34.71	50.22	54.00	-3.78	H	AVG
7215.0000	40.88	36.16	2.98	35.15	44.87	74.00	-29.13	H	Peak
7215.0000	37.12	36.16	2.98	35.15	41.11	54.00	-12.89	H	AVG
9620.0000	*								
12025.0000	*								
14430.0000	*								
16835.0000	*								

Note:

1. Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*” means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Test Mode: CH44 (Middle channel)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
2448.0000	90.66	31.22	2.21	34.62	89.47	114.00	-24.53	V	Peak
2448.0000	81.59	31.22	2.21	34.62	80.40	94.00	-13.60	V	AVG
4896.0000	48.72	35.02	2.59	34.60	51.73	74.00	-22.27	V	Peak
4896.0000	40.33	35.02	2.59	34.60	43.34	54.00	-10.66	V	AVG
7344.0000	45.95	36.19	3.02	35.16	50.00	74.00	-24.00	V	Peak
7344.0000	38.21	36.19	3.02	35.16	42.26	54.00	-11.74	V	AVG
9792.0000	*								
12240.0000	*								
14688.0000	*								
17136.0000	*								
2448.0000	93.47	31.22	2.21	34.62	92.28	114.00	-21.72	H	Peak
2448.0000	81.02	31.22	2.21	34.62	79.83	94.00	-14.17	H	AVG
4896.0000	45.36	35.02	2.59	34.60	48.37	74.00	-25.63	H	Peak
4896.0000	37.11	35.02	2.59	34.60	40.12	54.00	-13.88	H	AVG
7344.0000	40.21	36.19	3.02	35.16	44.26	74.00	-29.74	H	Peak
7344.0000	33.84	36.19	3.02	35.16	37.89	54.00	-16.11	H	AVG
9792.0000	*								
12240.0000	*								
14688.0000	*								
17136.0000	*								

Note:

1. Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*” means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Test Mode: CH68 (High channel)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
2472.0000	91.36	31.65	2.20	36.00	89.21	114.00	-24.79	V	Peak
2472.0000	84.56	31.65	2.20	36.00	82.41	94.00	-11.59	V	AVG
4944.0000	47.68	35.06	2.58	34.79	50.53	74.00	-23.47	V	Peak
4944.0000	40.85	35.06	2.58	34.79	43.70	54.00	-10.30	V	AVG
7416.0000	37.21	36.19	3.02	34.90	41.52	74.00	-32.48	V	Peak
7416.0000	30.71	36.19	3.02	34.90	35.02	54.00	-18.98	V	AVG
9888.0000	*								
12360.0000	*								
14832.0000	*								
17304.0000	*								
2470.0000	95.66	31.65	2.20	36.00	93.51	114.00	-20.49	H	Peak
2470.0000	84.15	31.65	2.20	36.00	82.00	94.00	-12.00	H	AVG
4940.0000	46.41	35.06	2.58	34.79	49.26	74.00	-24.74	H	Peak
4940.0000	39.41	35.06	2.58	34.79	42.26	54.00	-11.74	H	AVG
7410.0000	42.36	36.19	3.02	34.90	46.67	74.00	-27.33	H	Peak
7410.0000	33.74	36.19	3.02	34.90	38.05	54.00	-15.95	H	AVG
9880.0000	*								
12350.0000	*								
14820.0000	*								
17290.0000	*								

Note:

1. Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*” means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Radiated Band Edge:

Test Mode:					Test channel: Lowest			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
2390.00	56.37	29.15	3.41	34.01	54.92	74.00	-19.08	V
2400.00	63.44	29.16	3.43	34.01	62.02	74.00	-11.98	V
2390.00	55.84	29.15	3.41	34.01	54.39	74.00	-19.61	H
2400.00	60.98	29.16	3.43	34.01	59.56	74.00	-14.44	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
2390.00	41.36	29.15	3.41	34.01	39.91	54.00	-14.09	V
2400.00	46.74	29.16	3.43	34.01	45.32	54.00	-8.68	V
2390.00	43.66	29.15	3.41	34.01	42.21	54.00	-11.79	H
2400.00	45.11	29.16	3.43	34.01	43.69	54.00	-10.31	H

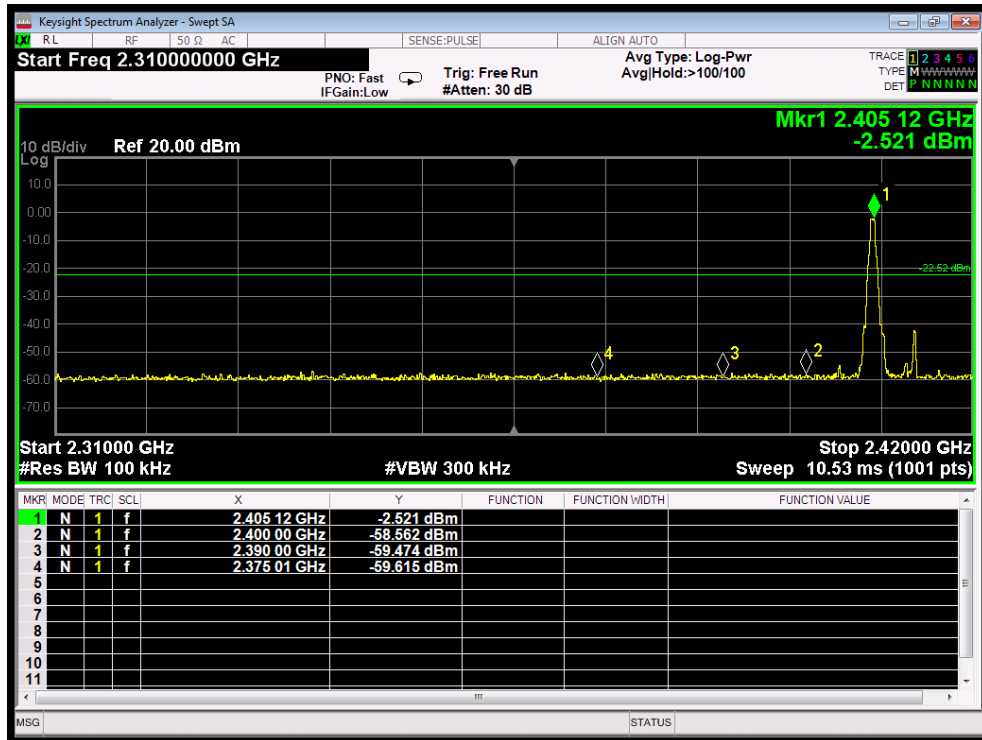
Test Mode:					Test channel: Highest			
Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
2483.50	60.84	29.28	3.53	34.03	59.62	74.00	-14.38	V
2500.00	45.22	29.30	3.56	34.03	44.05	74.00	-29.95	V
2483.50	53.66	29.28	3.53	34.03	52.44	74.00	-21.56	H
2500.00	52.17	29.30	3.56	34.03	51.00	74.00	-23.00	H
Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
2483.50	40.82	29.28	3.53	34.03	39.60	54.00	-14.40	V
2500.00	36.25	29.30	3.56	34.03	35.08	54.00	-18.92	V
2483.50	43.65	29.28	3.53	34.03	42.43	54.00	-11.57	H
2500.00	39.87	29.30	3.56	34.03	38.70	54.00	-15.30	H

Remark:

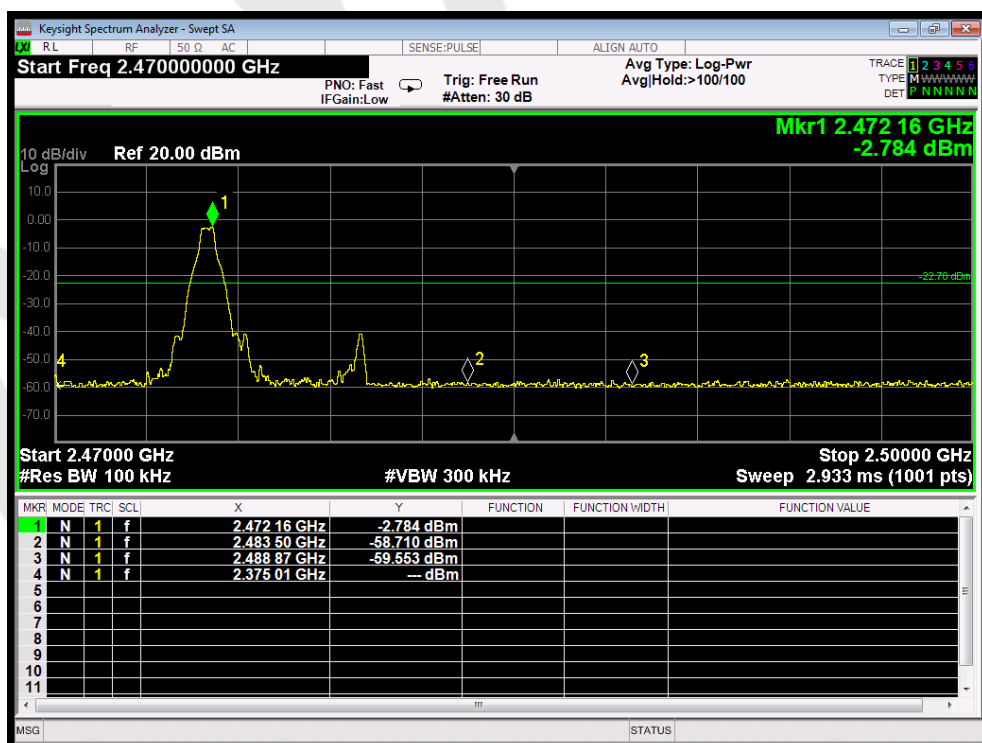
1. Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

Conducted band edge

Frequency Band (MHz)	Delta Peak toBand Emission (dBc)	Limit (dBc)	Results
2405	56.041	>20	PASS
2472	55.926	>20	PASS

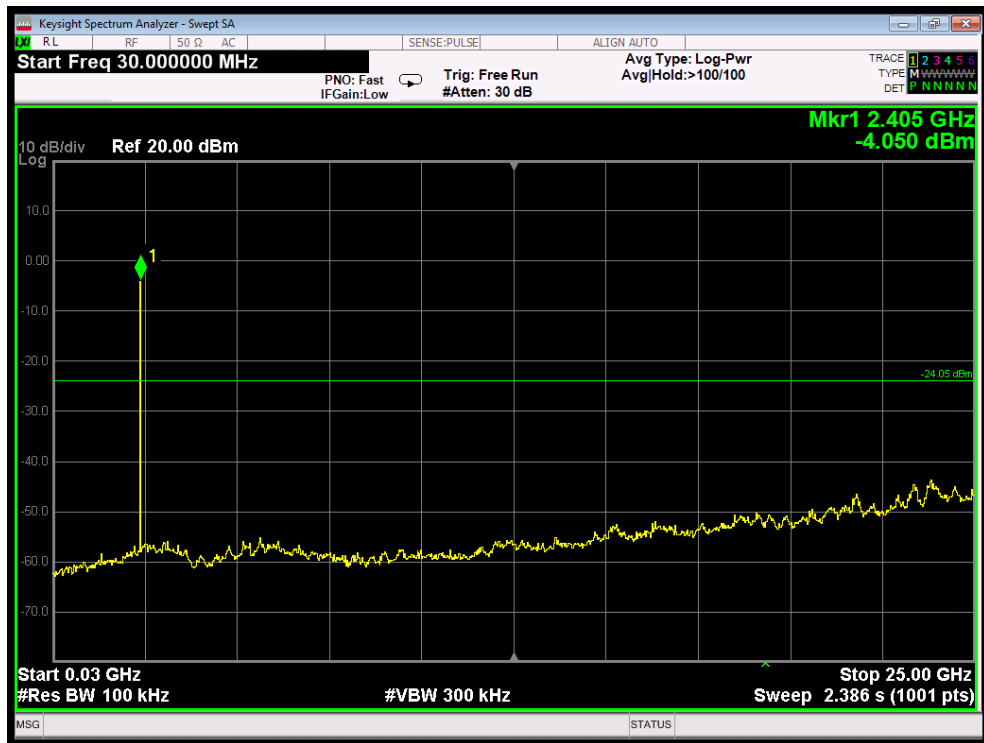


Lowest

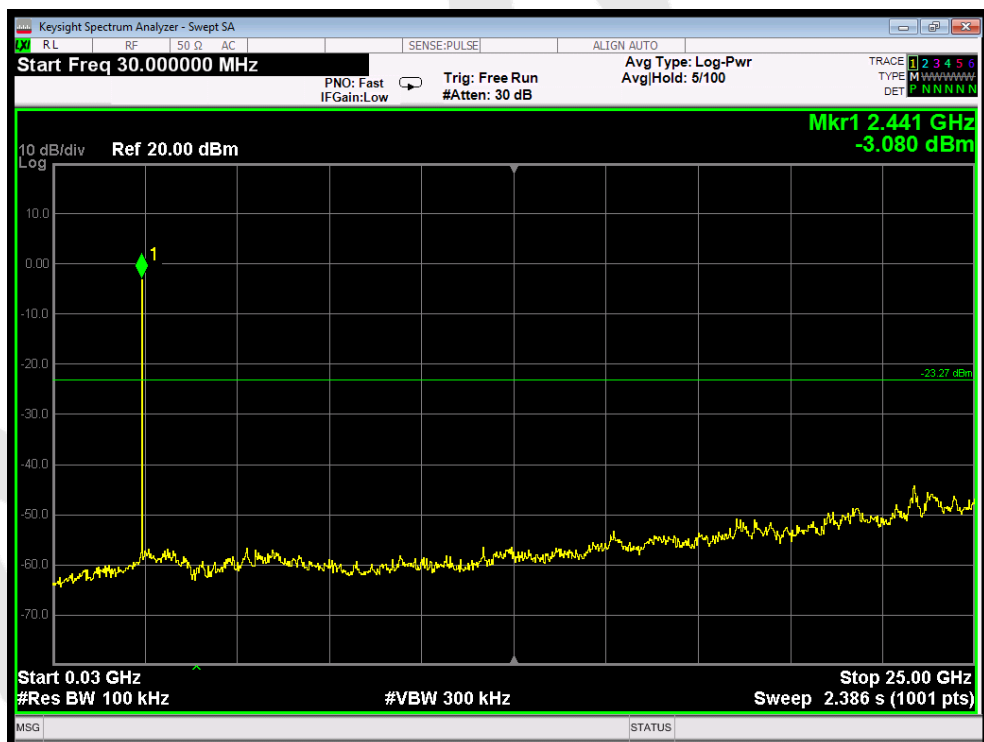


Highest

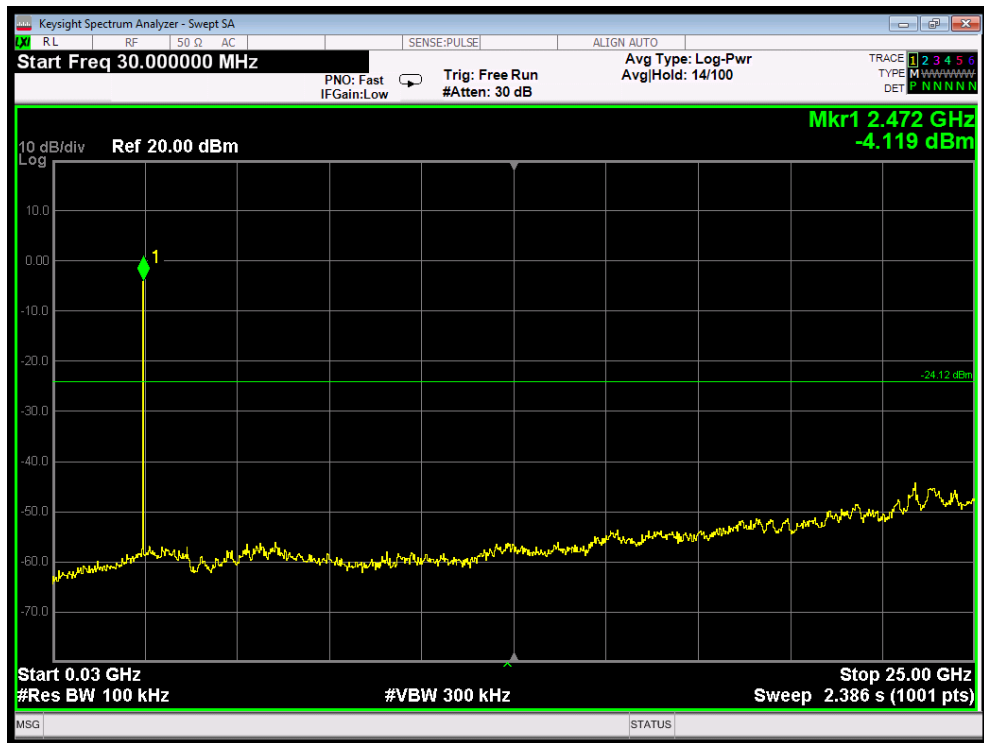
Conducted Emission Method



CH: Low



CH: Middle



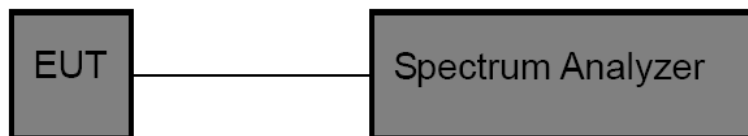
CH: High

5. 20dB Bandwidth Test

5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.249
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5.2. Test Setup



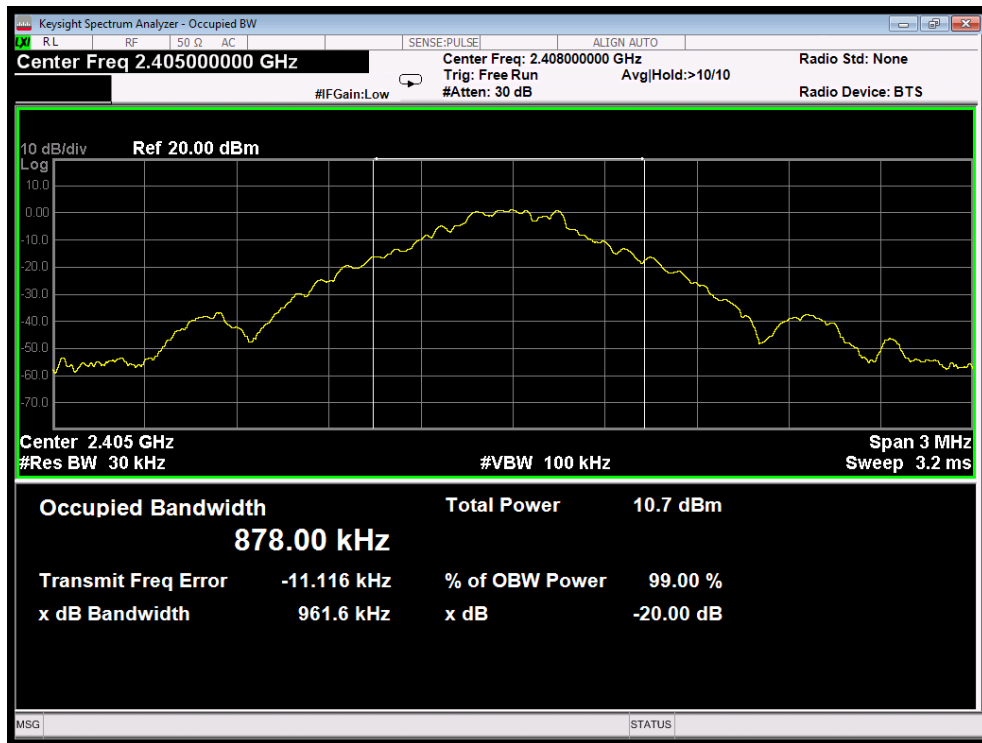
5.3. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as:
RBW = 30kHz, VBW $\geq$ 3*RBW = 100kHz,
Detector= Average
Trace mode= Max hold.
Sweep- auto couple.
4. Mark the peak frequency and -20dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

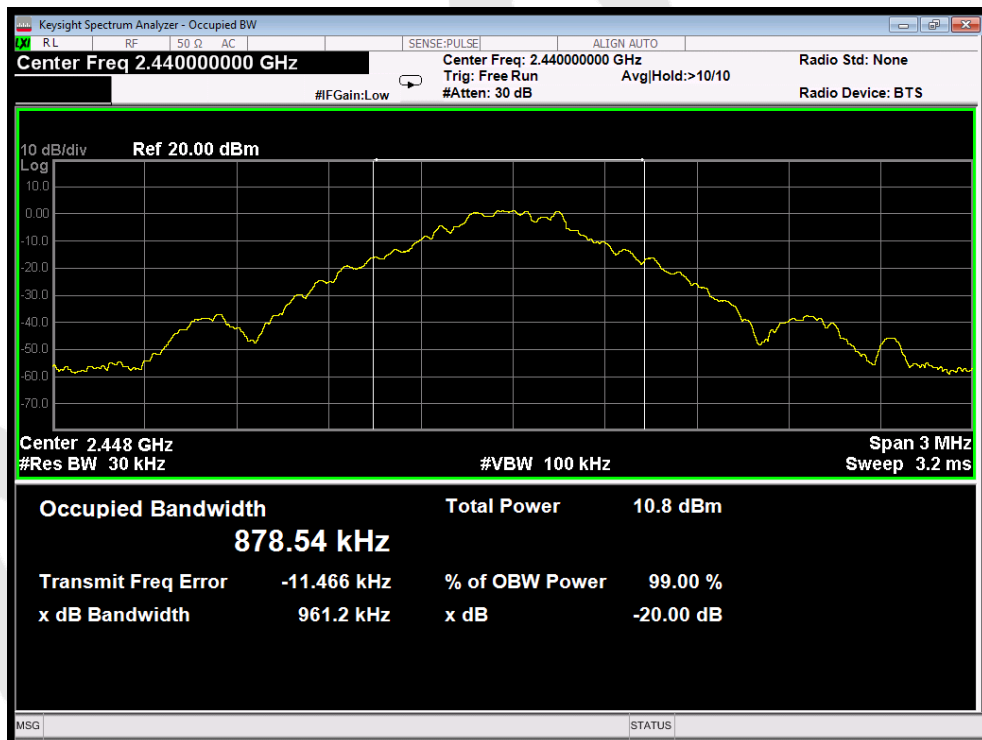
5.4. Test Data

Test Item	: 20dB Bandwidth	Test Mode	: TX Mode
Test Voltage	: DC 3V	Temperature	: 24°C
Test Result	: PASS	Humidity	: 55%RH

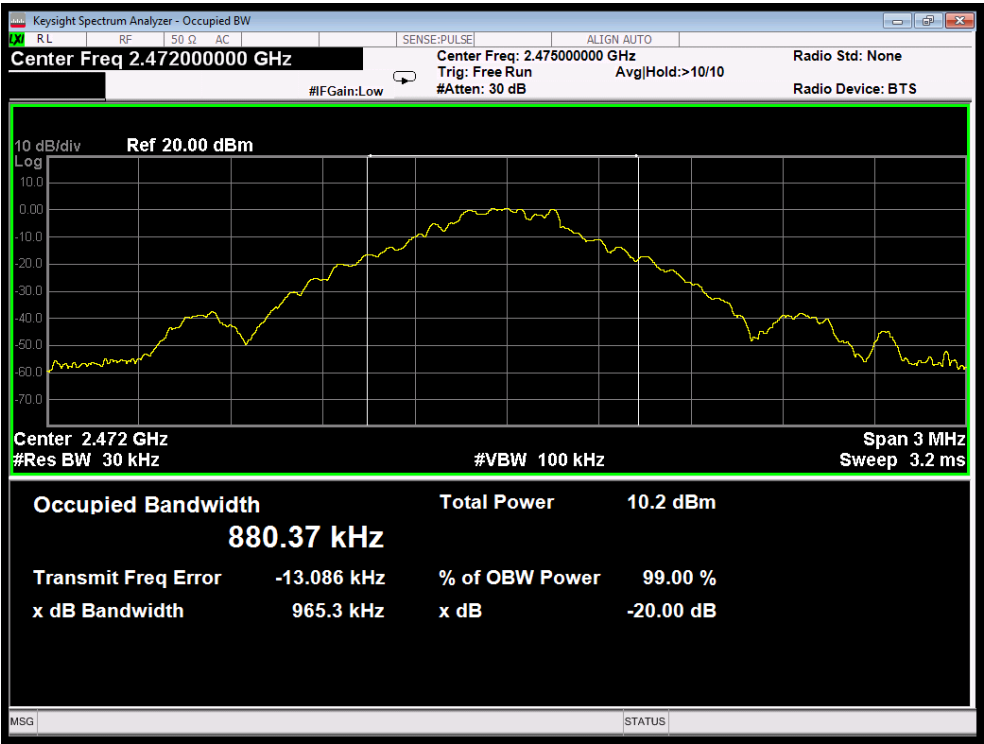
Frequency (MHz)	Bandwidth (kHz)	Result
2405 MHZ	961.6	PASS
2448 MHZ	961.2	PASS
2472 MHZ	965.3	PASS



Test Mode: Low



Test Mode: Middle



Test Mode: High

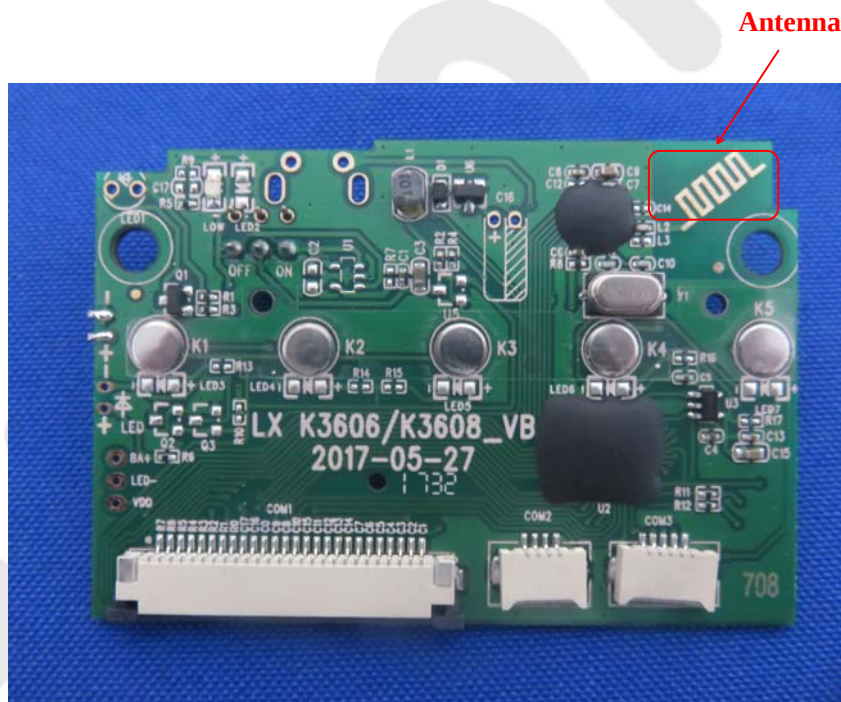
6. Antenna Requirement

6.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203
Requirement	1) 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

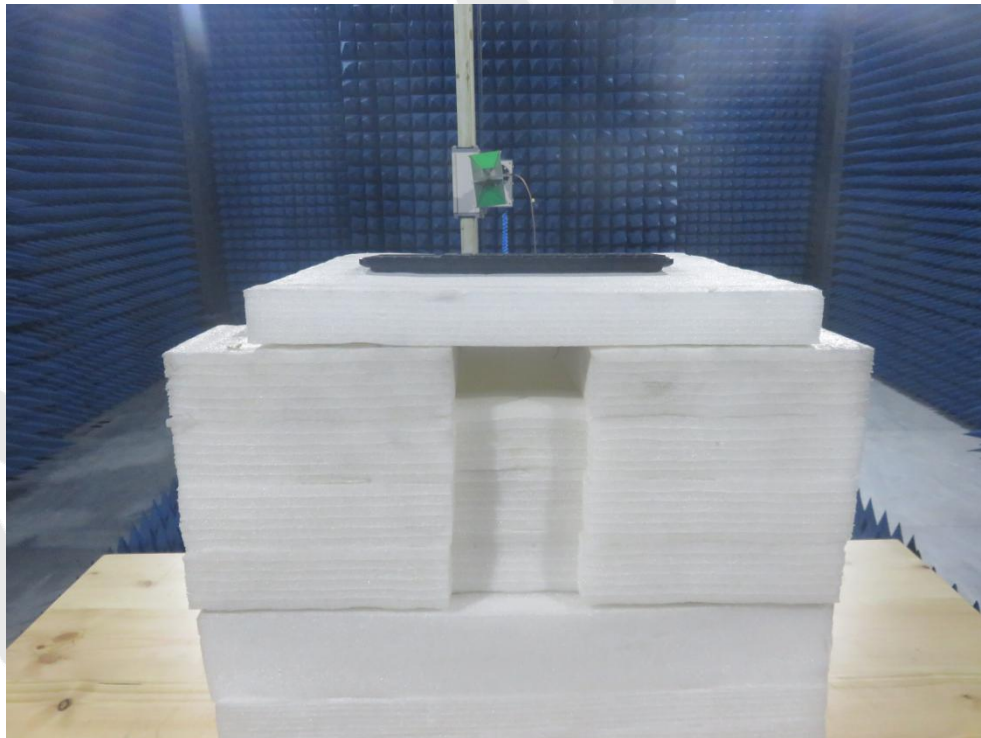
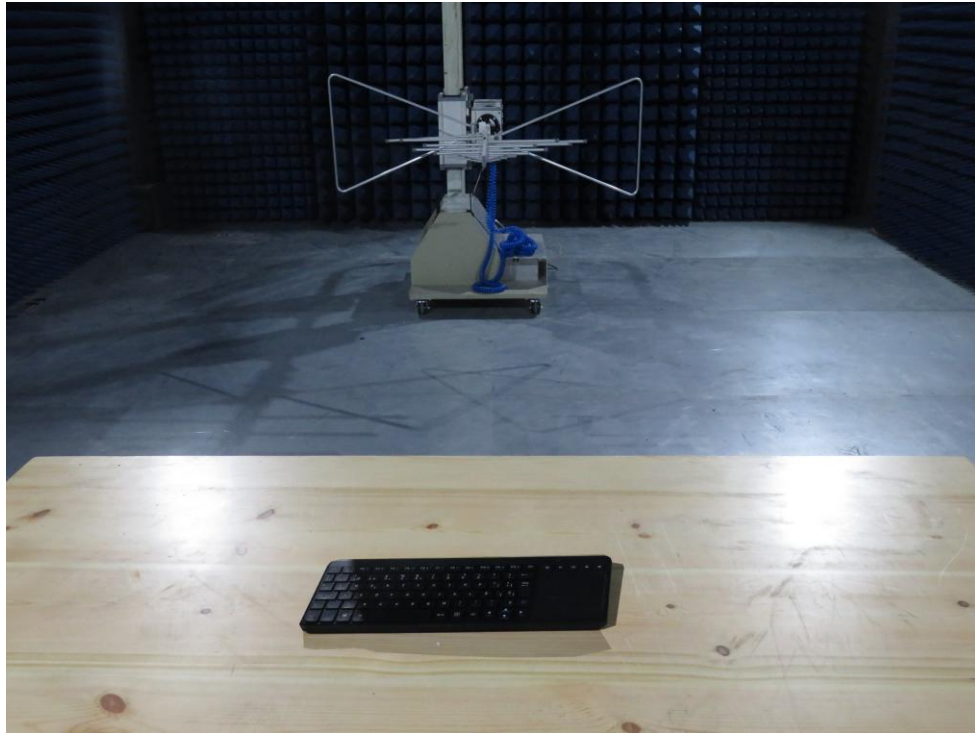
6.2. Antenna Connected Construction

The antenna is a PCB Antenna which permanently attached, and the best case gain of the antenna is 0 dBi. It complies with the standard requirement.



APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Radiation Emission Test



APPENDIX II -- EXTERNAL PHOTOGRAPH

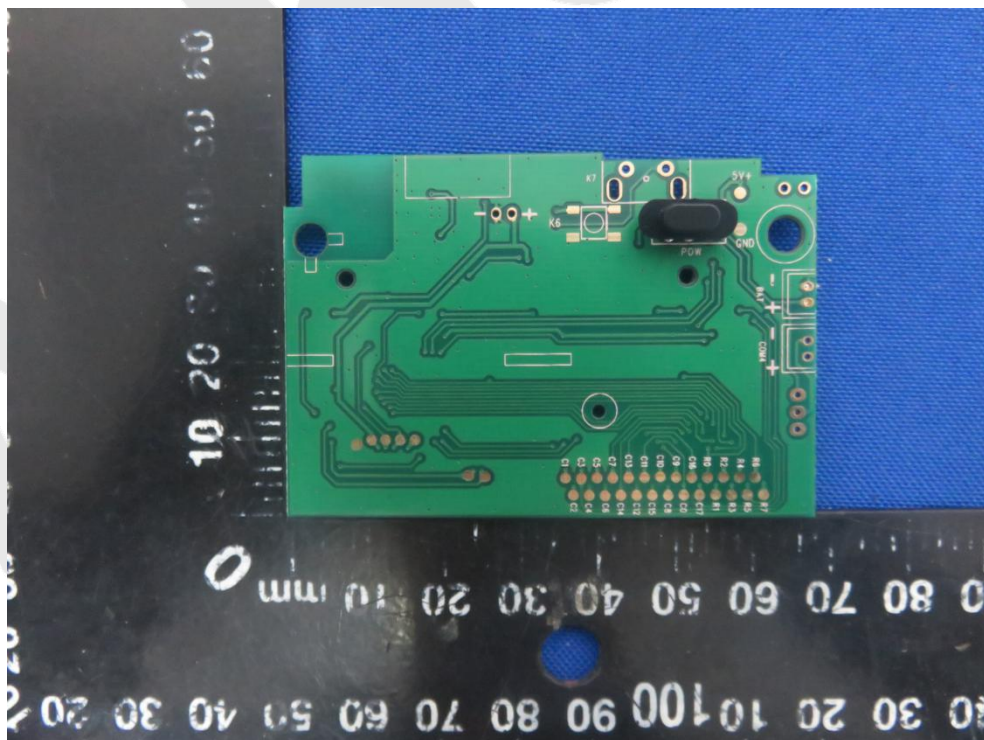
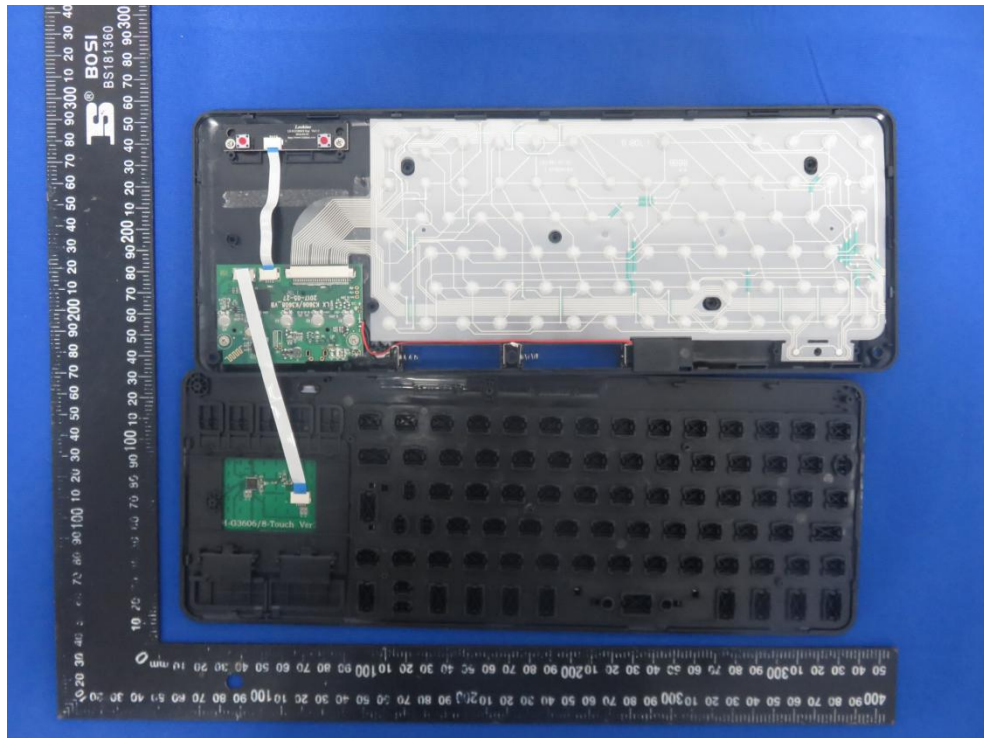


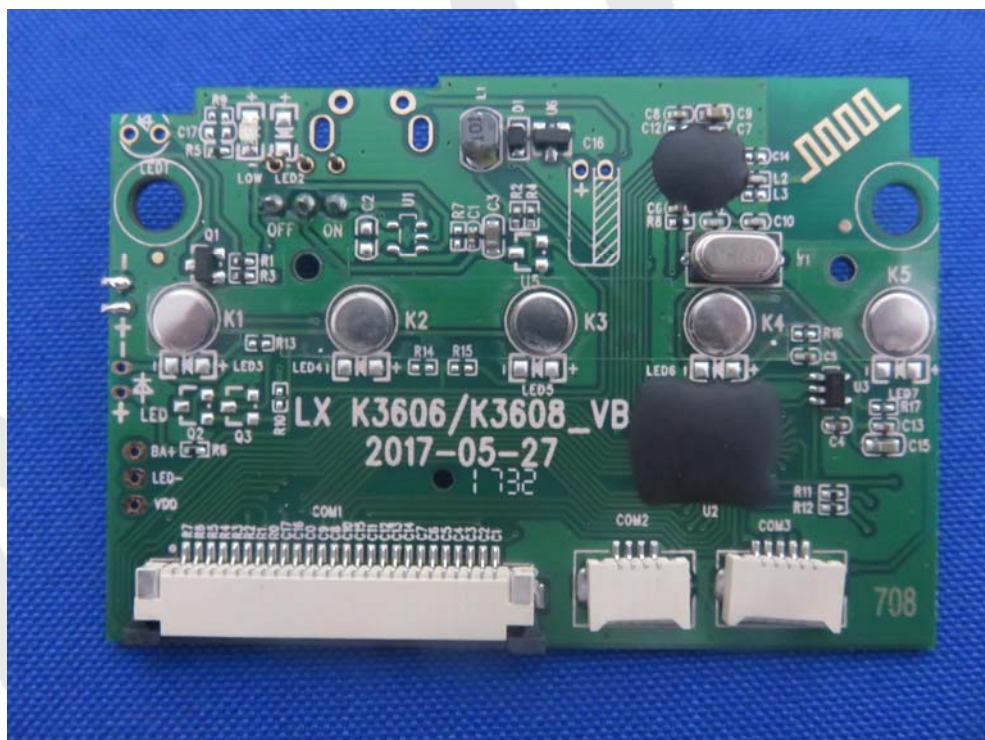
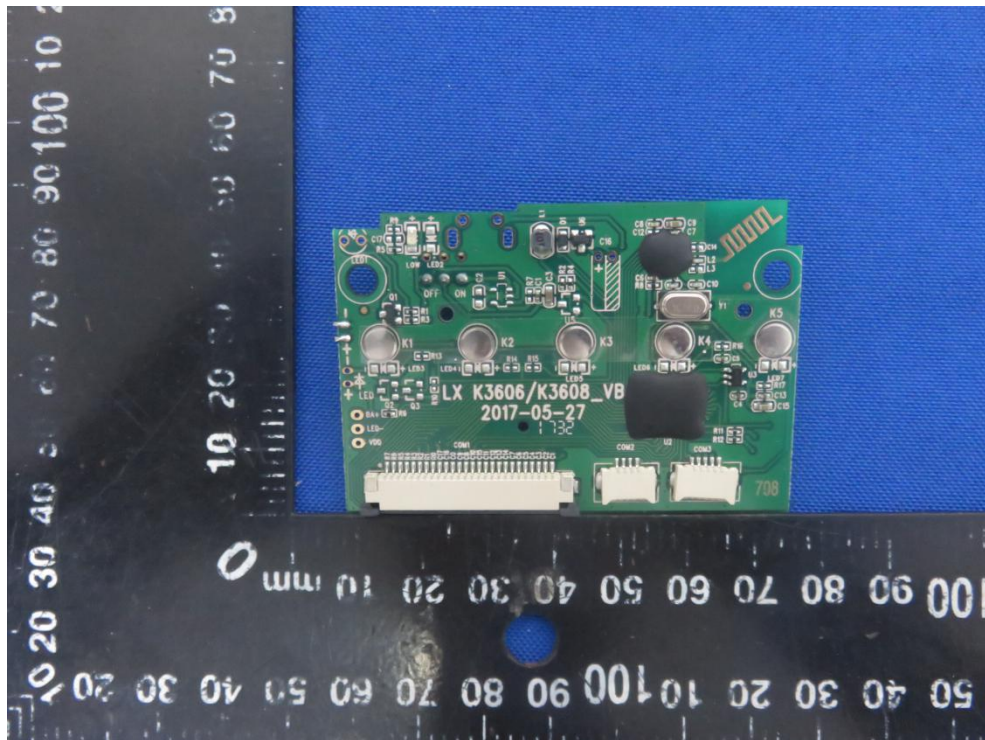


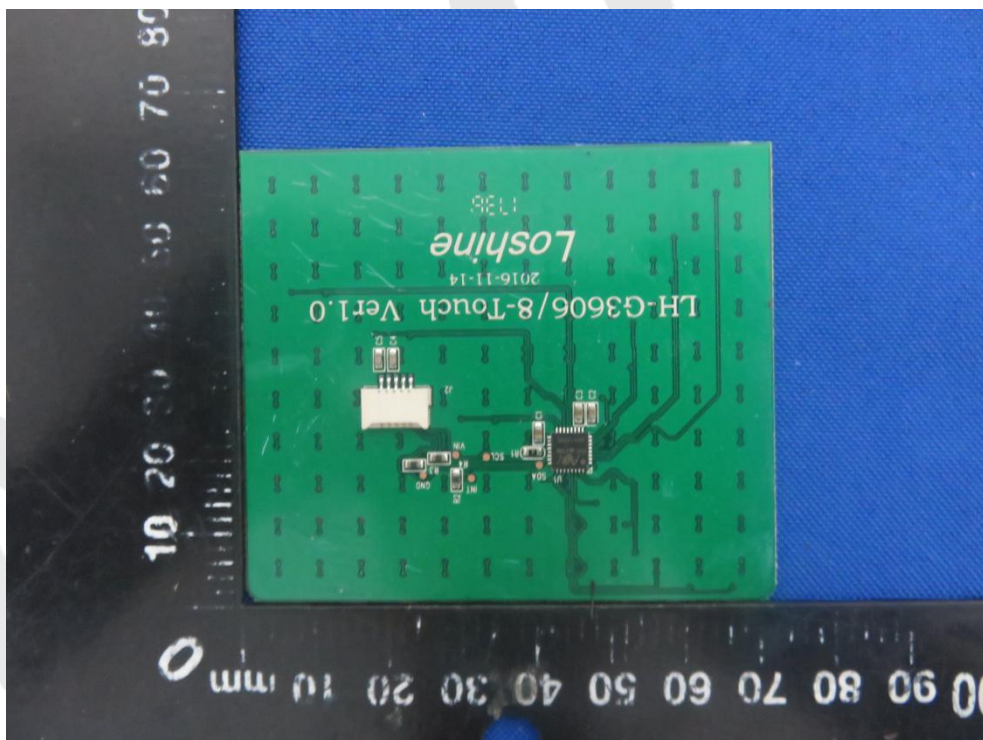
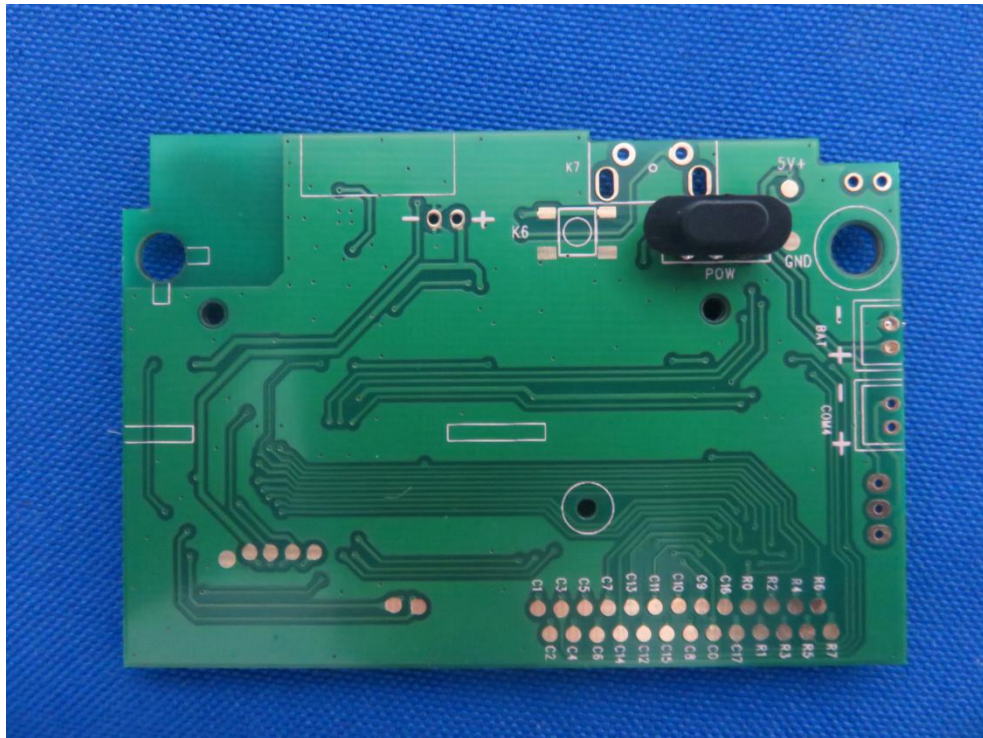


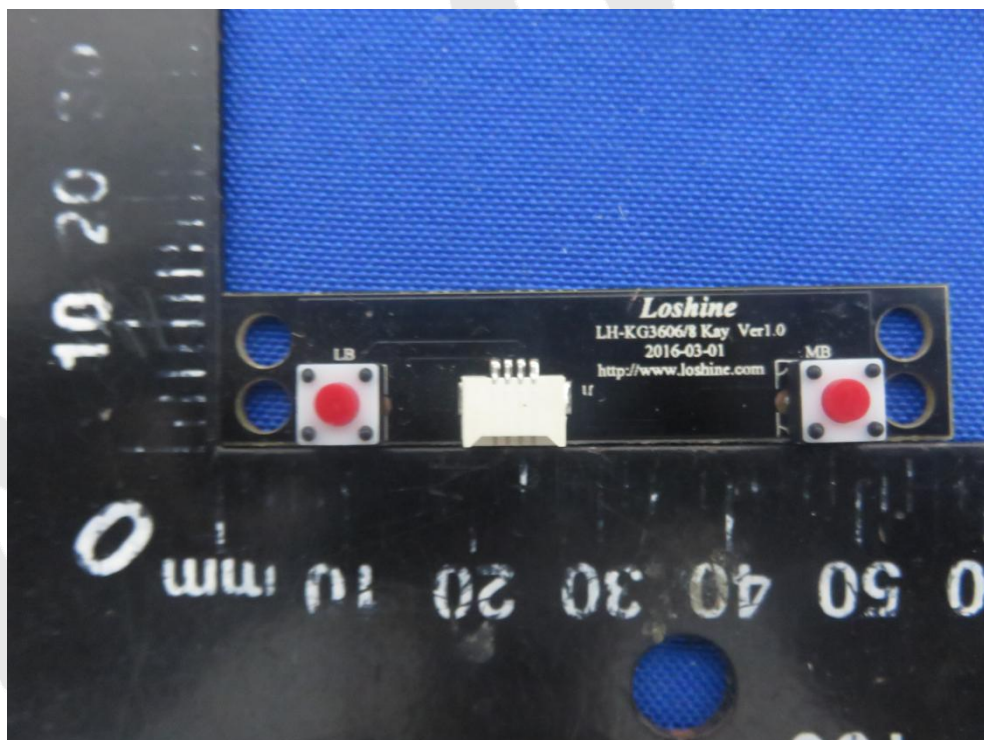
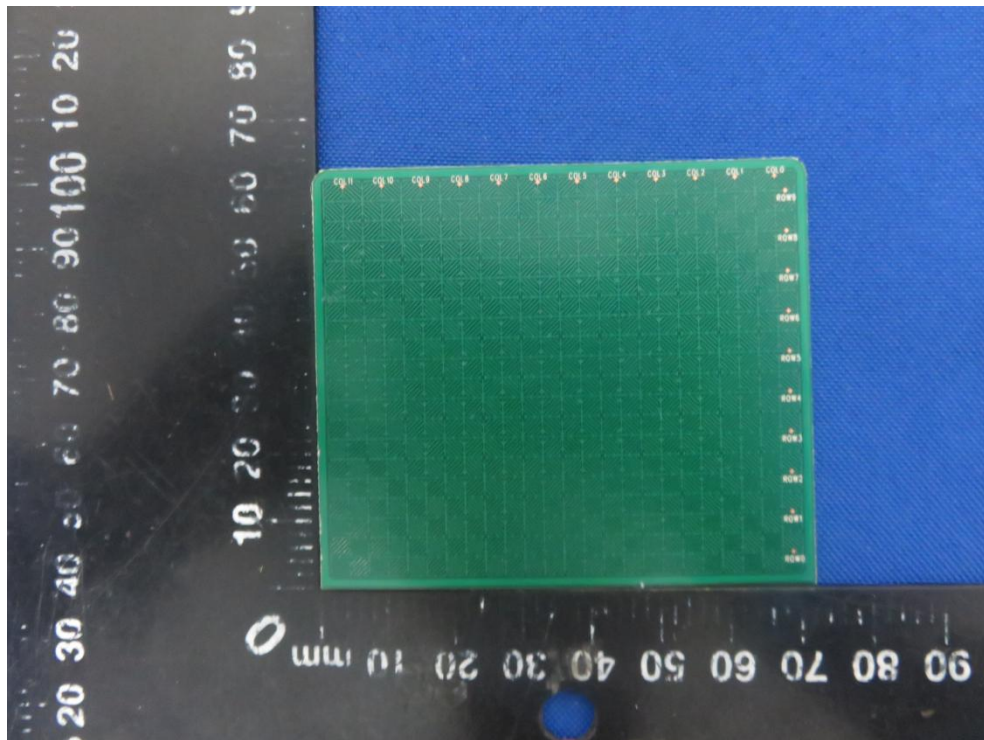


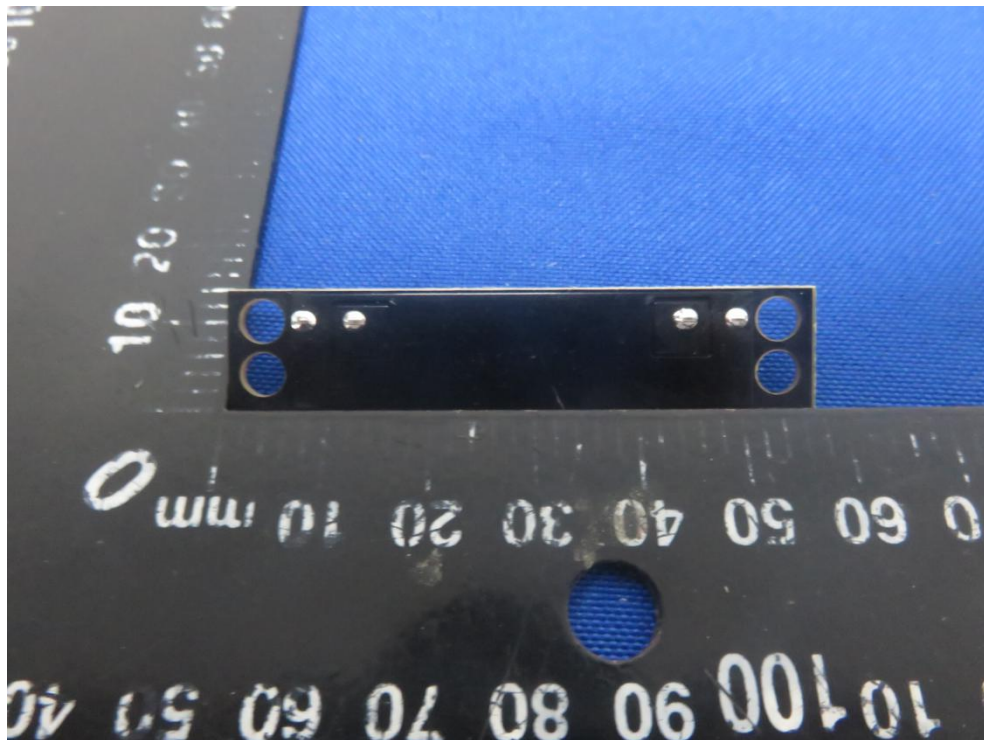
APPENDIX III -- INTERNAL PHOTOGRAPH











----- End of Report -----