



FCC TEST REPORT

**Test report
On Behalf of
Sena Technologies, Inc.
For
10Upad
Model No.: SP36**

FCC ID: S7A-SP36

Prepared for : Sena Technologies, Inc.
19, Heolleung-ro 569-gil, Gangnam-gu, Seoul, South Korea

Prepared By : Shenzhen HUAK Testing Technology Co., Ltd.
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Bao'an District, Shenzhen City, China

Date of Test: Aug. 29, 2018 ~ Sep. 04, 2018
Date of Report: Sep. 05, 2018
Report Number: HUAK180830940E



TEST RESULT CERTIFICATION

Applicant's name : Sena Technologies, Inc.

Address : 19, Heolleung-ro 569-gil, Gangnam-gu, Seoul, South Korea

Manufacture's Name : Sena Technologies, Inc.

Address : Floor 4G/4F, Science&Technology building, Maozhoushan industry park, BaoAn District, ShenZhen City, GuangDong province, China

Product description

Trade Mark : SENA

Product name..... : 10Upad

Model and/or type reference : SP36

APPLICATION PURPOSE..... : Class II Permissive Change

Standards : FCC Part 15 Subpart C Section 15.247

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Date of Test..... :

Date (s) of performance of tests..... : Aug. 29, 2018 ~ Sep. 04, 2018

Date of Issue..... : Aug. 05, 2018

Test Result..... : **Pass**

Testing Engineer :

(Gary Qian)

Technical Manager :

(Eden Hu)

Authorized Signatory :

(Jason Zhou)



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1. TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST	RESULT
CONDUCTED EMISSIONS TEST	COMPLIANT
RADIATED EMISSION TEST	COMPLIANT
PEAK OUTPUT POWER	COMPLIANT

Note: Owing to the product under testing was identical with the AGC08321161101's product except for the brand name and antenna. So the test data may refer to the AGC00150180401 (FCC ID:S7A-SP36) except for the data of radiated emission and conducted emissions.

1.2 TEST FACILITY

Test Firm : Shenzhen HUAKE Testing Technology Co., Ltd.

Address : 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park,
Fuhai Street, Bao'an District, Shenzhen City, China

Designation Number: : CN1229

Test Firm Registration Number : 616276

1.3 MEASUREMENT UNCERTAINTY

Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty(9kHz-30MHz) = 3.08dB, k=2

Radiated emission expanded uncertainty(30MHz-1000MHz) = 4.42dB, k=2

Radiated emission expanded uncertainty(Above 1GHz) = 4.06dB, k=2



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Operation Frequency	2.402 GHz to 2.480GHz
Bluetooth Version	V4.1
RF Output Power (for BR/EDR)	19.73dBm(Max)
RF Output Power (for BLE)	9.85dBm(Max)
Modulation	BR ☒ GFSK, EDR ☒ $\pi/4$ -DQPSK, ☒ 8DPSK BLE ☒ GFSK
Number of channels	79 for BR/EDR, 40 for BLE
Hardware Version	v1.0
Software Version	v1.0
Antenna Designation	Fixed Antenna
Antenna Gain	0.48dBi
Power Supply	DC 3.7V by battery
Note: The USB port only be used for charging and can't be used to transfer data with PC.	



2.2 CARRIER FREQUENCY OF CHANNELS

BR/EDR channel List

Frequency Band	Channel Number	Frequency
2400~2483.5MHz	0	2402MHz
	1	2403MHz
	:	:
	38	2440 MHz
	39	2441 MHz
	40	2442 MHz
	:	:
	77	2479 MHz
	78	2480 MHz

BLE Channel List

Frequency Band	Channel Number	Frequency
2400~2483.5MHz	0	2402MHz
	1	2404MHz
	:	:
	38	2478 MHz
	39	2480 MHz



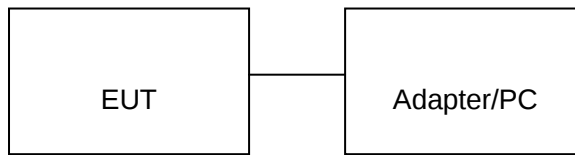
2.3 OPERATION OF EUT DURING TESTING

NO.	TEST MODE DESCRIPTION
1	Low channel GFSK
2	Middle channel GFSK
3	High channel GFSK
4	Low channel $\pi/4$ -DQPSK
5	Middle channel $\pi/4$ -DQPSK
6	High channel $\pi/4$ -DQPSK
7	Low channel 8DPSK
8	Middle channel 8DPSK
9	High channel 8DPSK
10	BT Link with charging
11	BT Link(Hopping mode)
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. 3. The EUT used fully-charged battery when tested.	



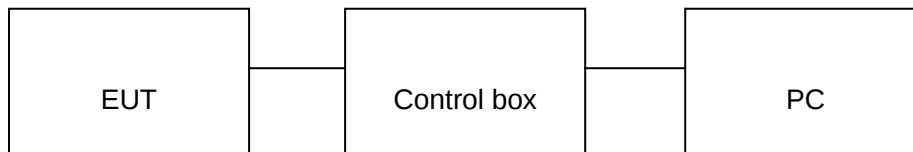
2.4 DESCRIPTION OF TEST SETUP

Configure 1: (Normal hopping)



Note: Owing to the EUT has own battery, and testing may be performed while adapter or PC removed.

Configuration: Continuous TX



2.5 EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
1	10Upad	SENA	SENA	EUT
2	Battery	XK	602248	Accessory
3	PC	APPLE	A1465	A.E
4	Control box	SERIAL	N/A	A.E
6	USB Cable	N/A	1m unshielded	A.E
7	Adapter	IPO	NTR-S01	A.E

**2.6 MEASUREMENT INSTRUMENTS LIST****TEST EQUIPMENT OF CONDUCTED EMISSION TEST**

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Dec. 28, 2017	1 Year
2.	Receiver	R&S	ESCI 7	HKE-010	Dec. 28, 2017	1 Year

TEST EQUIPMENT OF RADIATED EMISSION TEST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 28, 2017	1 Year
2.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 28, 2017	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 28, 2017	1 Year
4.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 28, 2017	1 Year
5.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 28, 2017	1 Year
6.	Horn Antenna	Schwarzbeck	9120D	HKE-013	Dec. 28, 2017	1 Year
7.	Broad-band Horn Antenna	Schwarzbeck	LB-180400-KF	HKE-031	Dec. 28, 2017	1 Year
8.	Pre-amplifier	EMCI	EMC051845SE	HKE-015	Dec. 28, 2017	1 Year
9.	Pre-amplifier	Agilent	83051A	HKE-016	Dec. 28, 2017	1 Year
10.	Filter (2.4-2.483GHz)	Micro-tronics	087	--	N/A	N/A
11.	Radiation Cable 1	MXT	HK1	R05	N/A	N/A
12.	Radiation Cable 2	MXT	HK1	R06	N/A	N/A

3. CONDUCTED EMISSIONS TEST

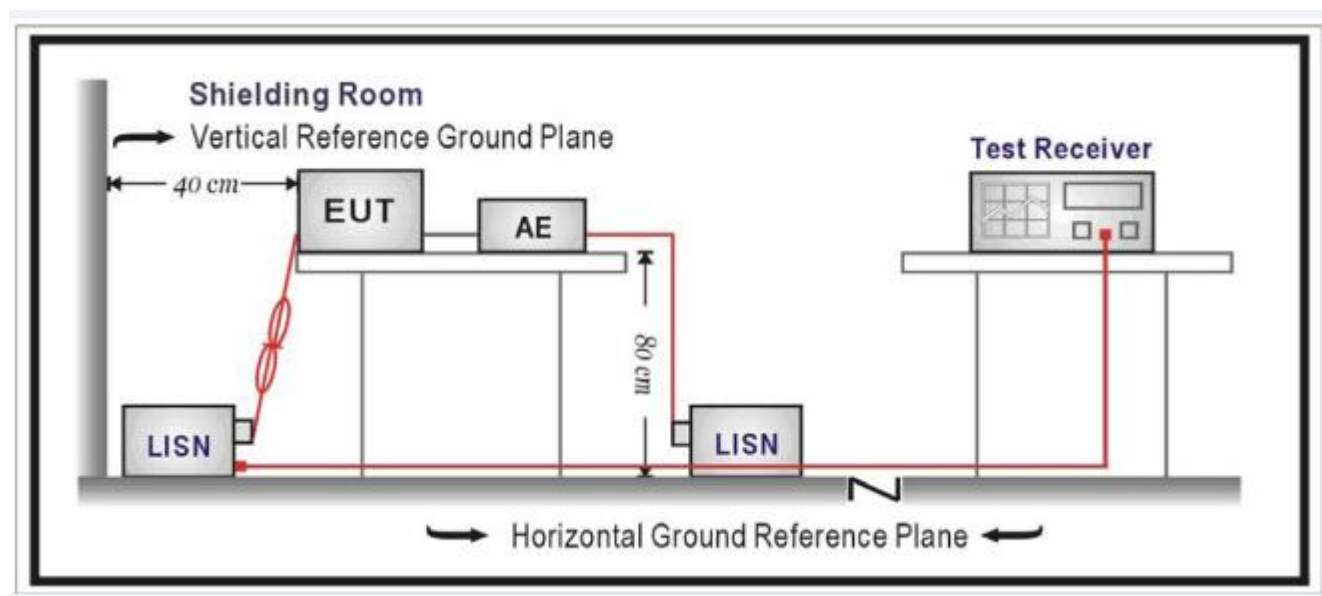
3.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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.

3.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST





3.3. 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 C63.10-2013 (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 C63.10-2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC charging voltage by adapter or PC which received 120V/60Hz power 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.

3.4. 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.

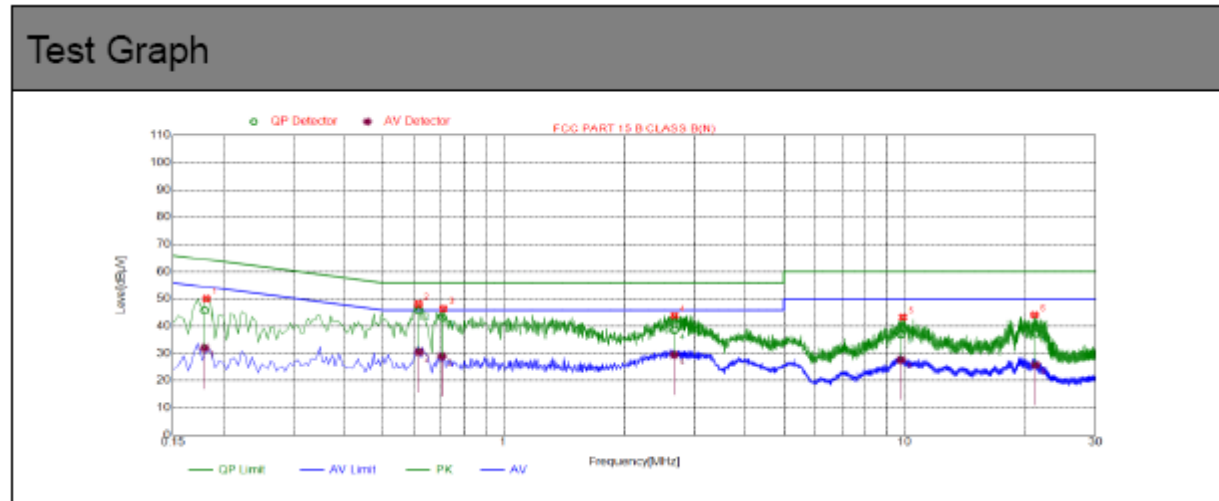
3.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

For BLE

BT Link with charging

By adapter(worst case)

Line Conducted Emission Test Line 1-L

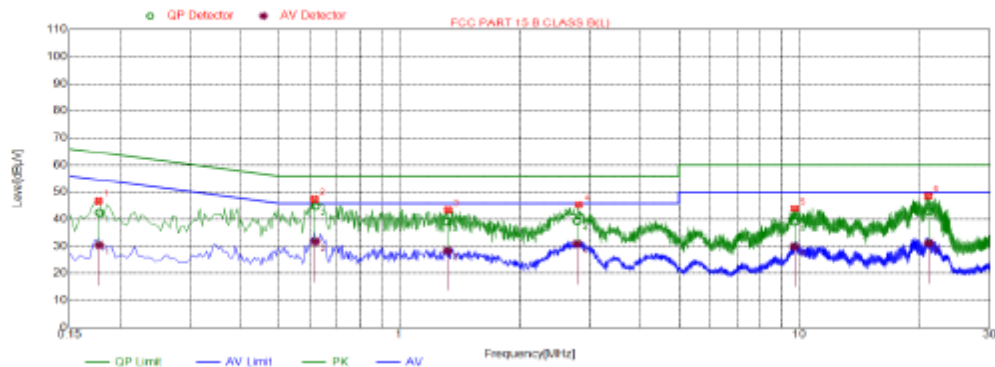


NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]
2	0.6159	10.05	45.69	56.00	10.31	30.53	46.00	15.47
3	0.7017	10.05	43.22	56.00	12.78	28.99	46.00	17.01
1	0.1795	10.06	45.80	64.51	18.71	31.94	54.51	22.57
4	2.6673	10.21	38.63	56.00	17.37	29.50	46.00	16.50
5	9.8095	10.07	37.05	60.00	22.95	27.70	50.00	22.30
6	21.2652	10.14	37.47	60.00	22.53	25.77	50.00	24.23



Line Conducted Emission Test Line 2-N

Test Graph



NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]
1	0.1777	10.05	42.32	64.59	22.27	30.42	54.59	24.17
2	0.6167	10.05	44.78	56.00	11.24	31.67	46.00	14.33
3	1.3192	10.10	39.09	56.00	16.91	28.46	46.00	17.54
4	2.7837	10.21	39.35	56.00	16.65	30.93	46.00	15.07
5	9.7258	10.08	39.11	60.00	20.89	29.92	50.00	20.08
6	21.0896	10.13	42.93	60.00	17.07	31.14	50.00	18.86



4. RADIATED EMISSION TEST

4.1 TEST LIMIT

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
0.009 ~ 0.490	300	$2400/F(\text{kHz})$	---
0.490 ~ 1.705	30	$24000/F(\text{kHz})$	---
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 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

Remark:

- (1) Emission level $\text{dB}\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
- (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.



4.2. MEASUREMENT PROCEDURE

1. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Below 1GHz)
2. The height of the test antenna shall vary between 1m to 4m.Both horizontal and vertical polarization Of the antenna are set to make the measurement.
3. The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
4. All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform(Below 1GHz)



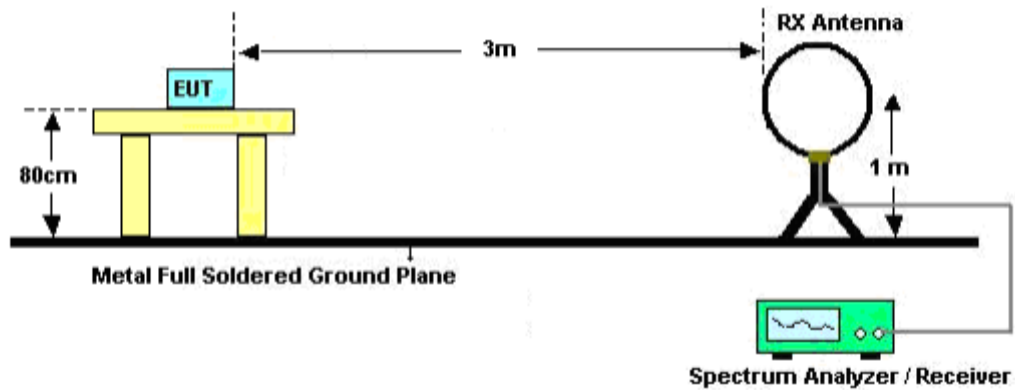
The following table is the setting of spectrum analyzer and receiver.

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

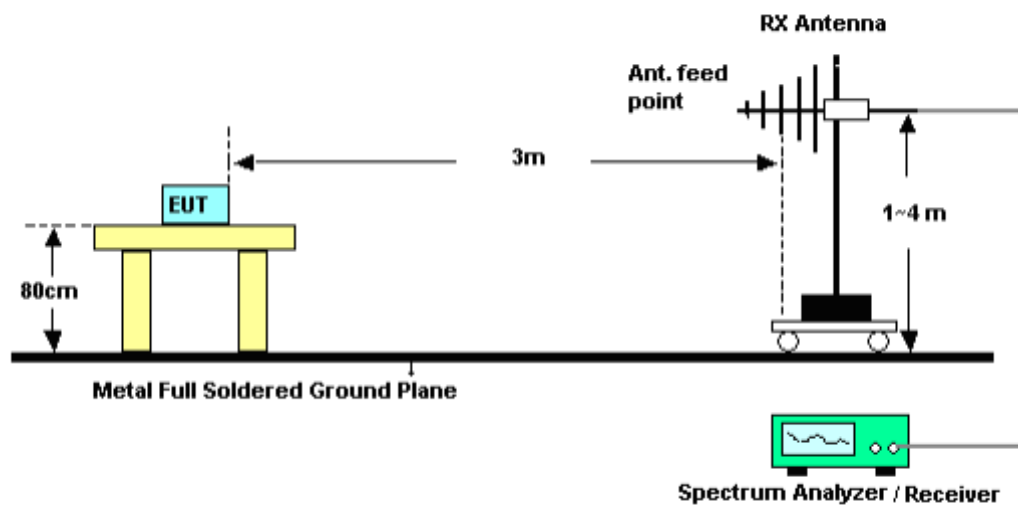
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

4.3. TEST SETUP

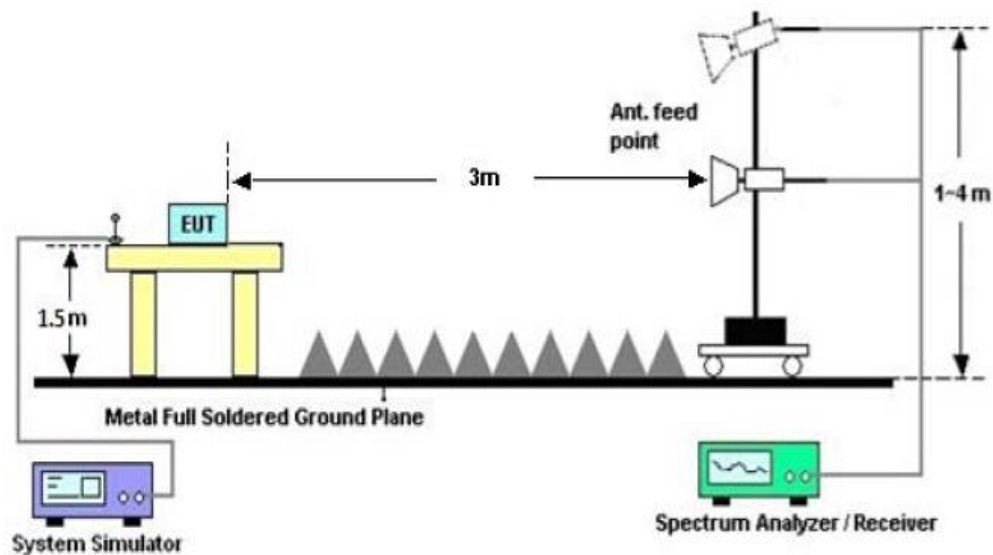
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz





4.4. TEST RESULT

For BR/EDR

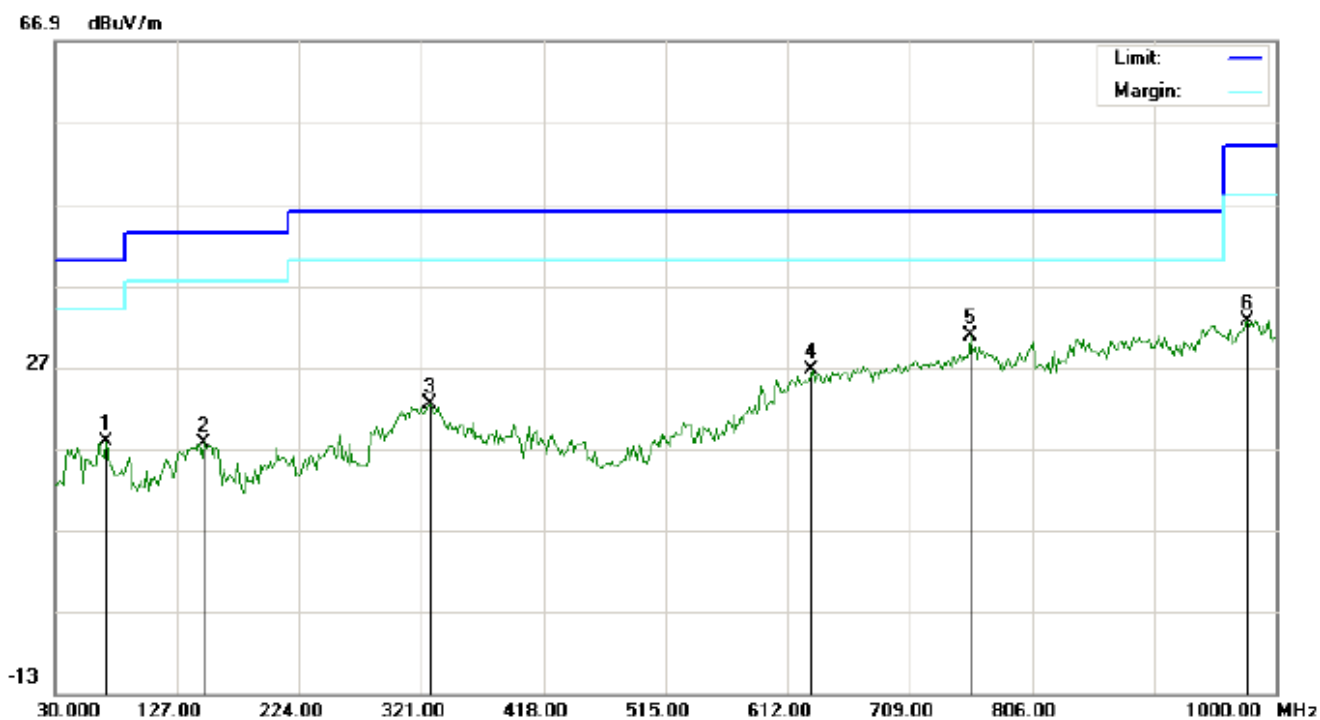
(Worst modulation: 8DPSK)

RADIATED EMISSION BELOW 30MHz

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

RADIATED EMISSION BELOW 1GHz

RADIATED EMISSION TEST- (30MHz-1GHz)-LOW CHANNEL-HORIZONTAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		70.4167	8.02	9.85	17.87	40.00	-22.13	peak			
2		148.0166	4.45	13.25	17.70	43.50	-25.80	peak			
3		327.4667	5.09	17.24	22.33	46.00	-23.67	peak			
4		631.3999	2.88	23.81	26.69	46.00	-19.31	peak			
5	*	757.5000	4.00	26.73	30.73	46.00	-15.27	peak			
6		977.3667	2.79	29.74	32.53	54.00	-21.47	peak			

RESULT: PASS



RADIATED EMISSION TEST- (30MHz-1GHz)-LOW CHANNEL -VERTICAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		80.1166	12.47	1.84	14.31	40.00	-25.69	peak			
2		170.6500	6.98	14.66	21.64	43.50	-21.86	peak			
3		240.1666	13.71	12.94	26.65	46.00	-19.35	peak			
4		426.0833	3.84	19.86	23.70	46.00	-22.30	peak			
5		744.5666	1.24	26.47	27.71	46.00	-18.29	peak			
6	*	951.5000	1.11	29.99	31.10	46.00	-14.90	peak			

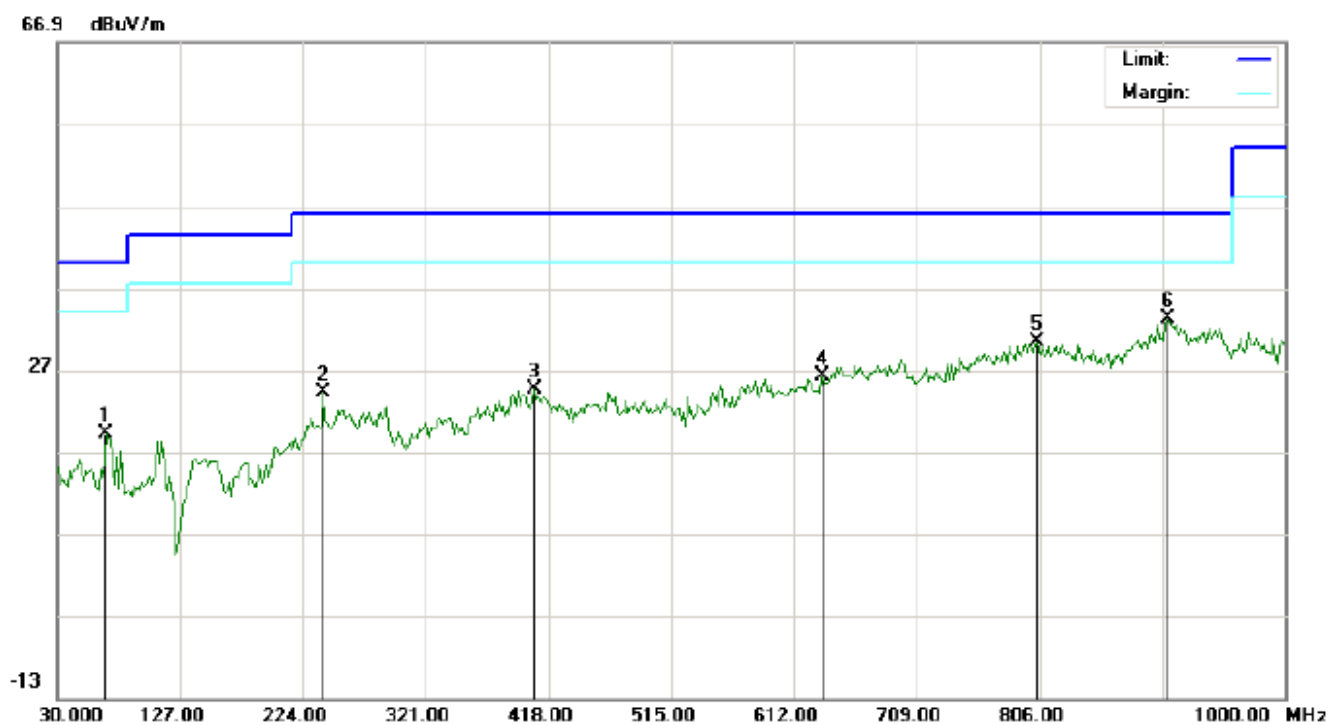
RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

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



RADIATED EMISSION TEST- (30MHz-1GHz)-MIDDLE CHANNEL-HORIZONTAL



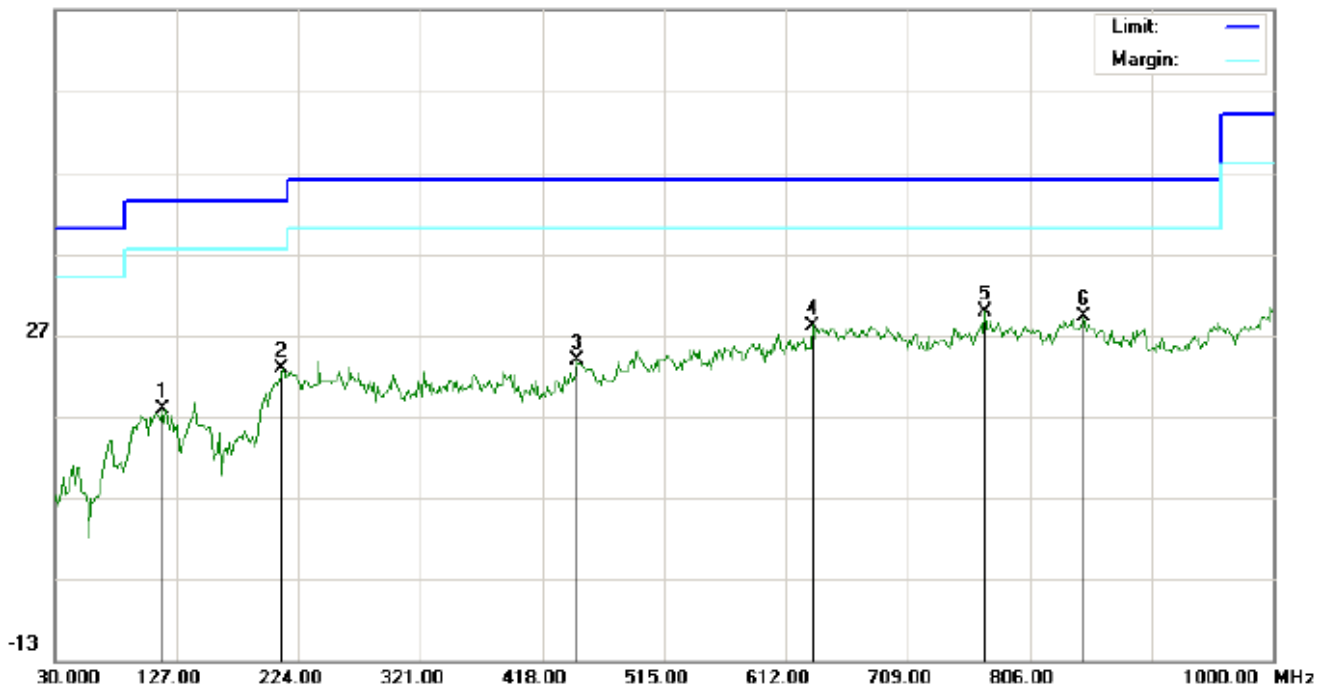
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		68.7998	14.47	4.73	19.20	40.00	-20.80	peak			
2		240.1666	11.21	12.94	24.15	46.00	-21.85	peak			
3		406.6832	5.41	19.27	24.68	46.00	-21.32	peak			
4		634.6332	2.66	23.51	26.17	46.00	-19.83	peak			
5		804.3832	3.08	27.32	30.40	46.00	-15.60	peak			
6	*	907.8500	4.46	28.83	33.29	46.00	-12.71	peak			

RESULT: PASS



RADIATED EMISSION TEST- (30MHz-1GHz)- MIDDLE CHANNEL -VERTICAL

66.9 dBuV/m



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		115.6833	10.94	6.86	17.80	43.50	-25.70	peak			
2		211.0666	11.87	10.87	22.74	43.50	-20.76	peak			
3		445.4832	3.34	20.45	23.79	46.00	-22.21	peak			
4		633.0167	4.29	23.81	28.10	46.00	-17.90	peak			
5	*	770.4333	2.97	26.91	29.88	46.00	-16.12	peak			
6		849.6499	1.87	27.31	29.18	46.00	-16.82	peak			

RESULT: PASS

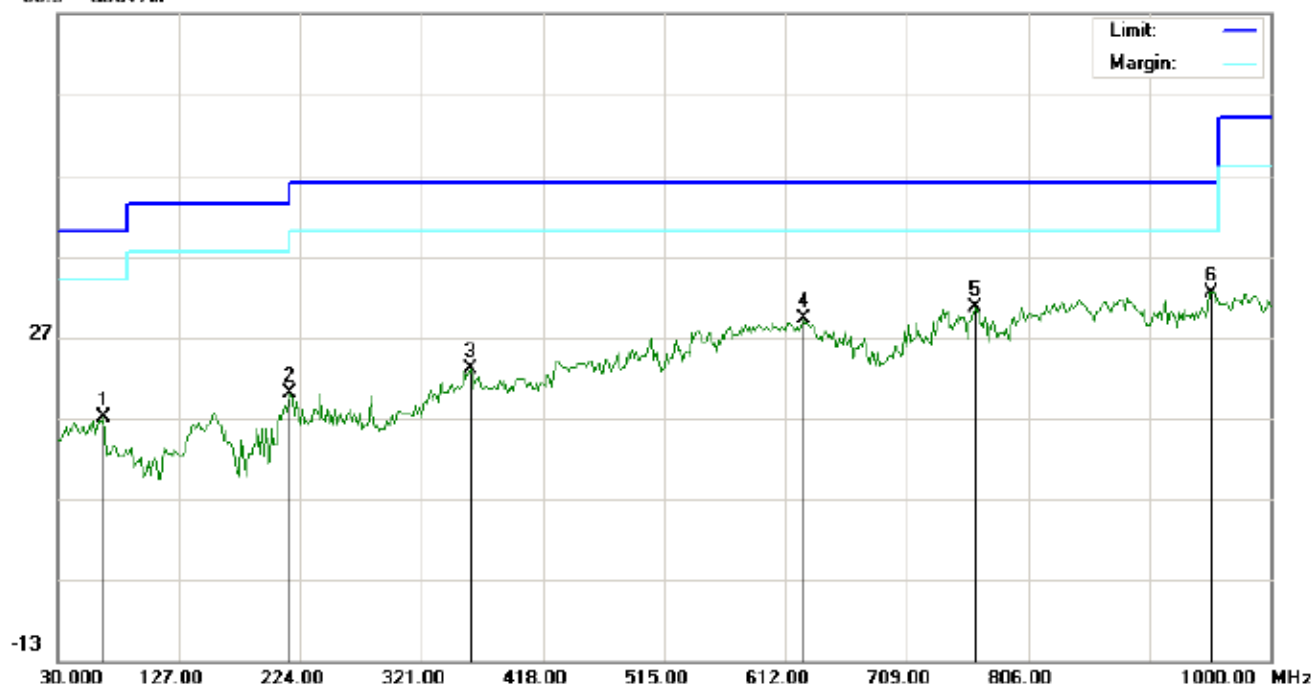
Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

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



RADIATED EMISSION TEST- (30MHz-1GHz)-HIGH CHANNEL-HORIZONTAL

66.9 dBuV/m

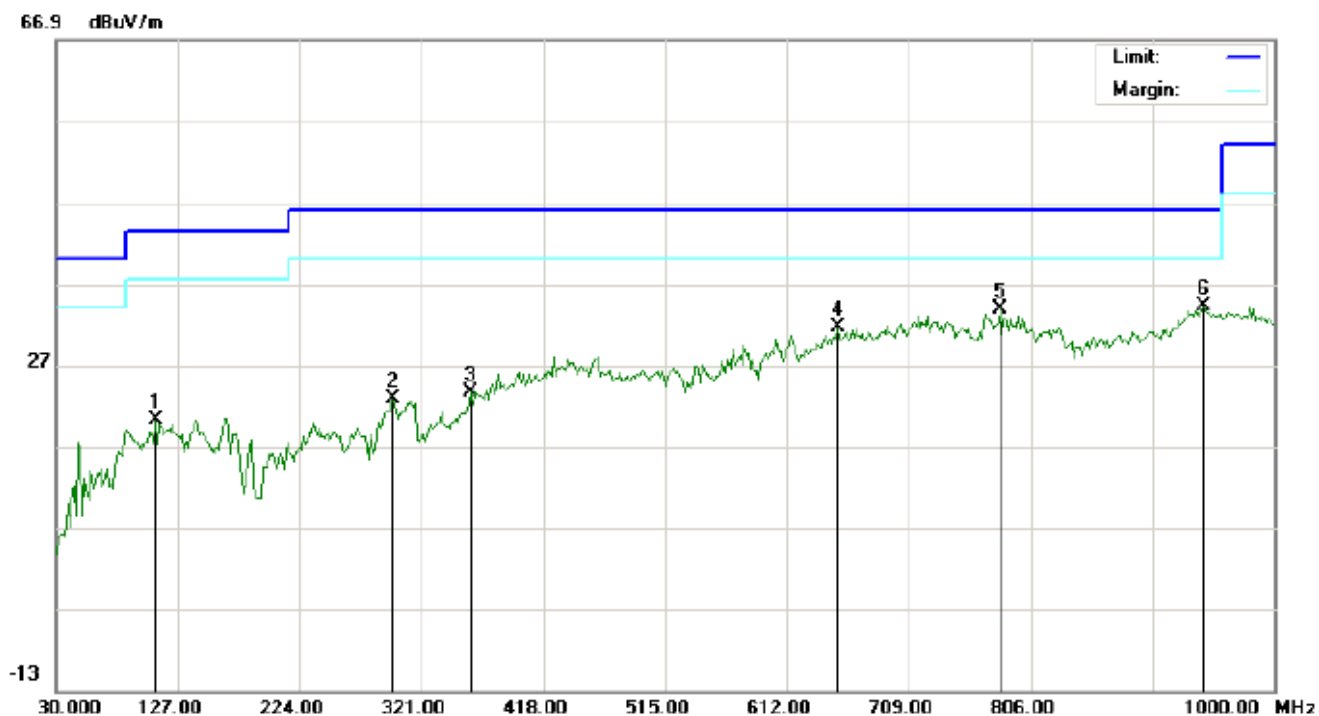


No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		67.1833	9.48	7.51	16.99	40.00	-23.01	peak			
2		215.9166	9.69	10.38	20.07	43.50	-23.43	peak			
3		359.8000	4.15	18.80	22.95	46.00	-23.05	peak			
4		626.5499	5.49	23.79	29.28	46.00	-16.72	peak			
5		763.9666	3.71	26.82	30.53	46.00	-15.47	peak			
6	*	953.1167	2.43	29.97	32.40	46.00	-13.60	peak			

RESULT: PASS



RADIATED EMISSION TEST- (30MHz-1GHz)-HIGH CHANNEL -VERTICAL

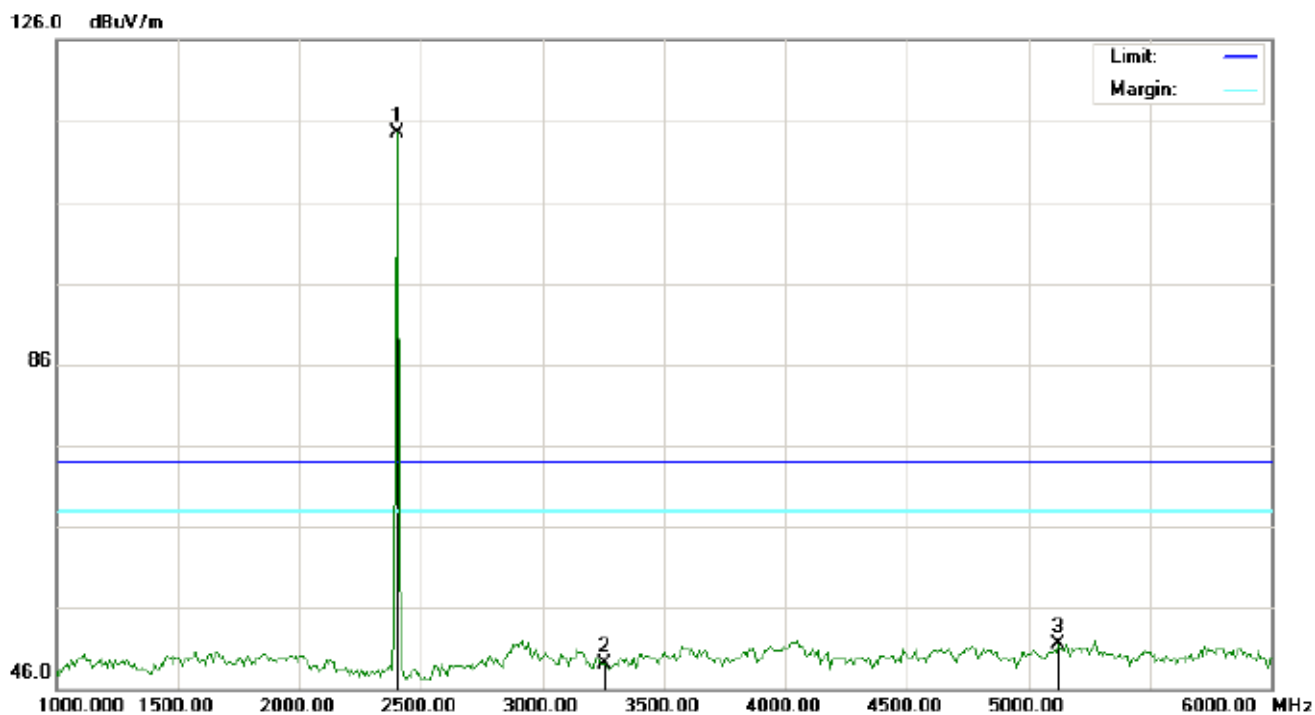


No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		109.2167	18.74	1.49	20.23	43.50	-23.27	peak			
2		298.3666	7.41	15.36	22.77	46.00	-23.23	peak			
3		359.8000	4.90	18.80	23.70	46.00	-22.30	peak			
4		652.4166	7.61	23.91	31.52	46.00	-14.48	peak			
5		781.7500	6.66	27.07	33.73	46.00	-12.27	peak			
6	*	943.4166	4.31	29.82	34.13	46.00	-11.87	peak			

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

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

**RADIATED EMISSION ABOVE 1GHz****RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics)-LOW CHANNEL-HORIZONTAL**

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2402.000	104.16	10.32	114.48	74.00	40.48	peak			
2		3256.000	37.21	11.88	49.09	74.00	-24.91	peak			
3		5125.000	45.86	5.70	51.56	74.00	-22.44	peak			

RESULT: PASS

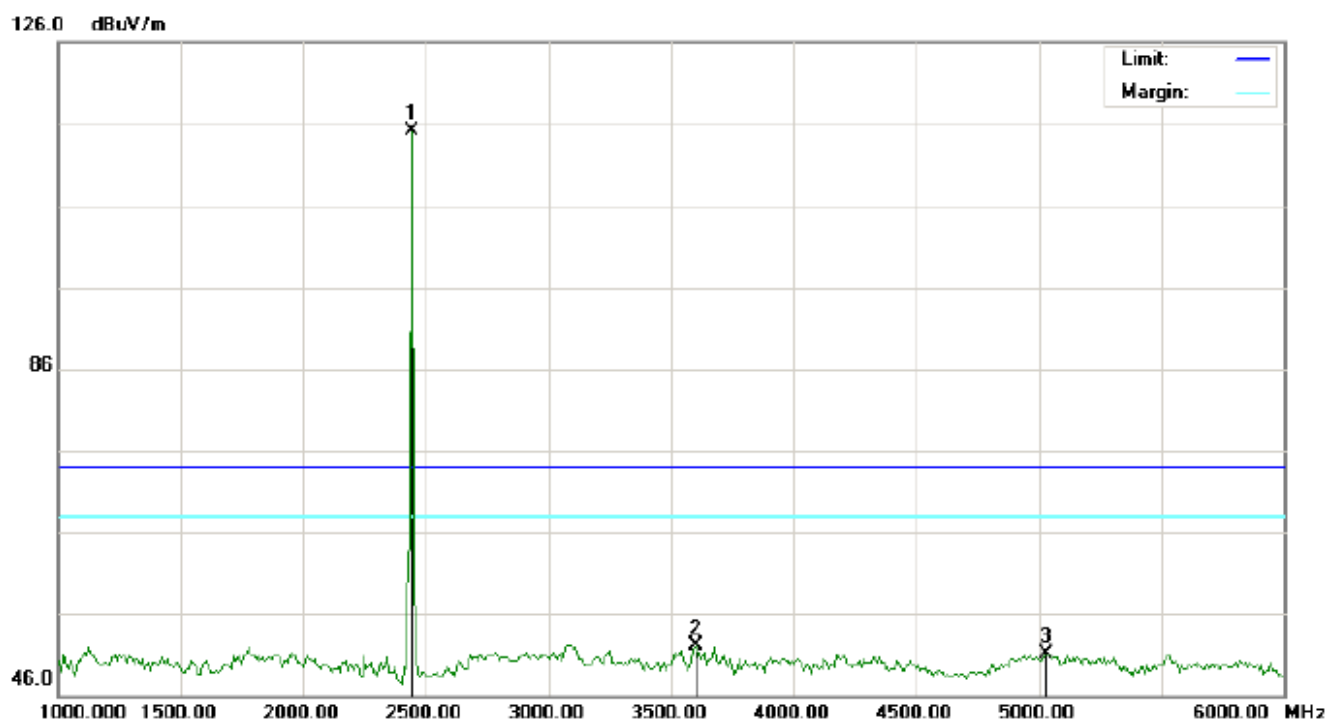
RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics)-LOW CHANNEL –VERTICAL

126.0 dBuV/m



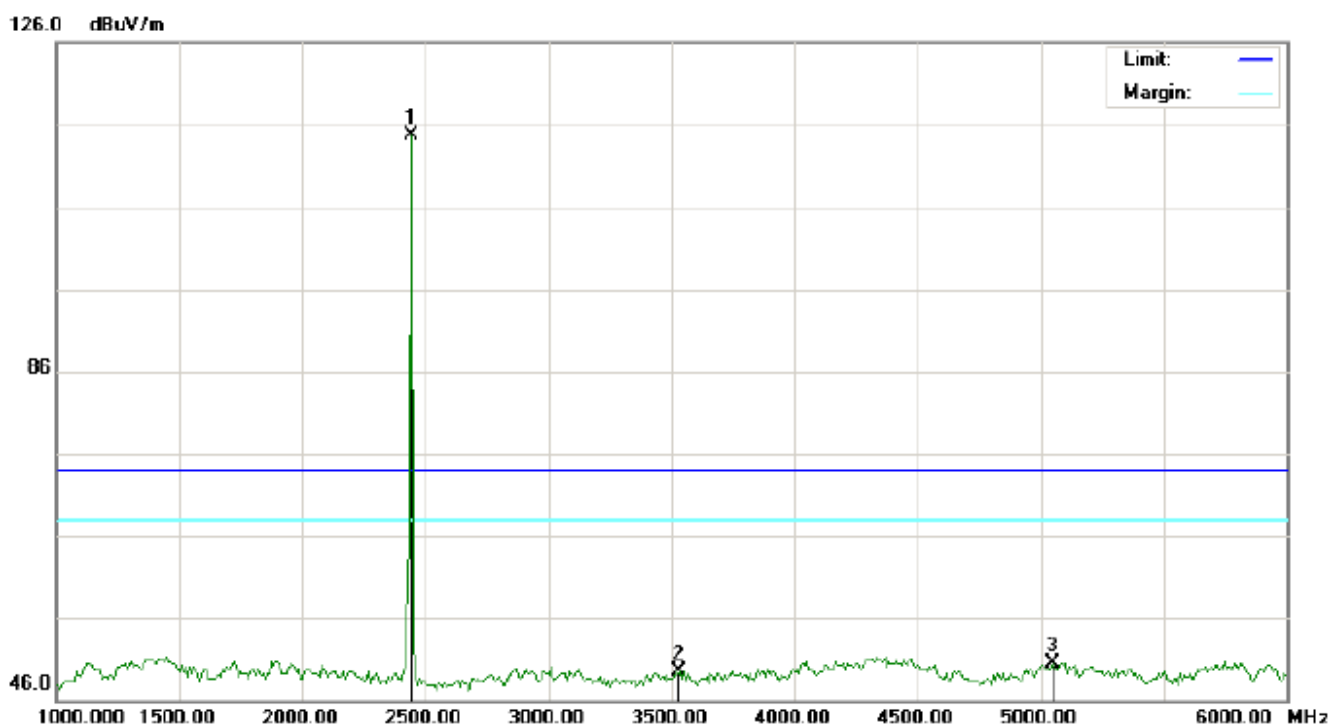
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2402.000	104.20	10.32	114.52	74.00	40.52	peak			
2		3375.000	40.01	11.99	52.00	74.00	-22.00	peak			
3		5108.333	45.27	6.03	51.30	74.00	-22.70	peak			

RESULT: PASS

RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics)-MIDDLE CHANNEL-HORIZONTAL

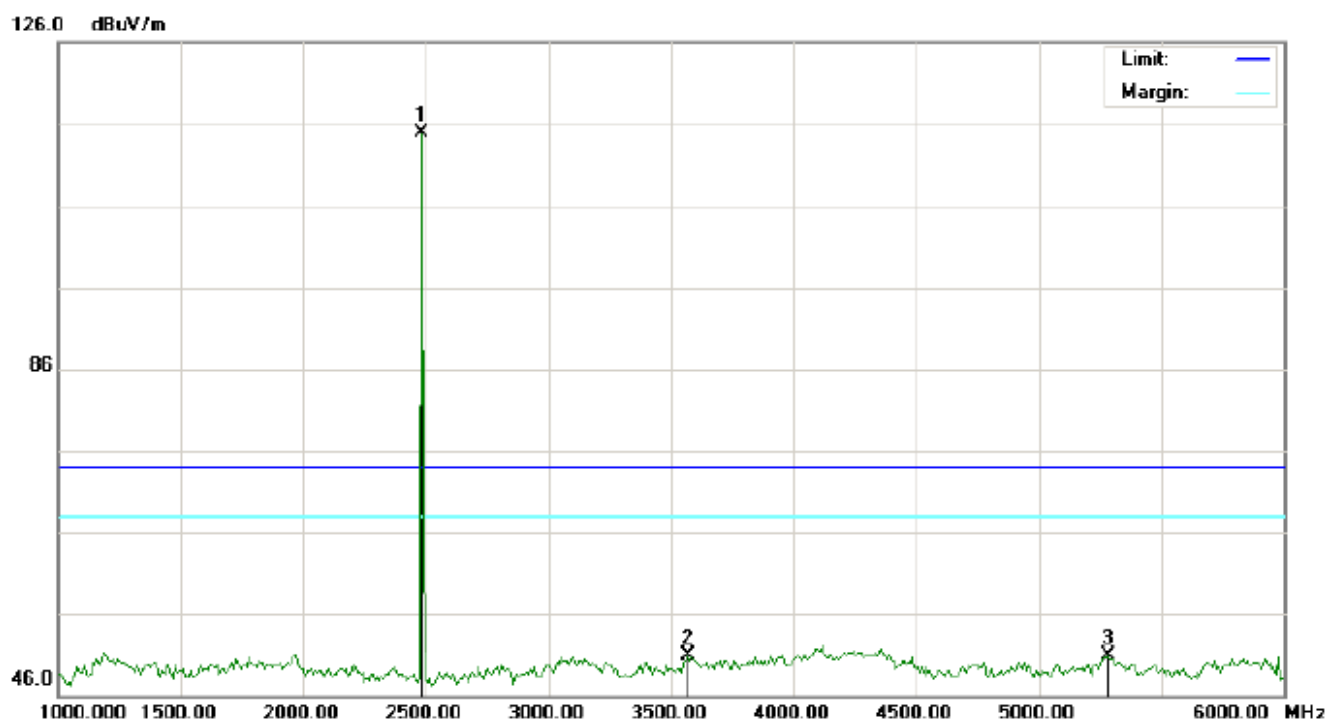
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2441.000	104.80	10.36	115.16	74.00	41.16	peak			
2		3600.000	39.32	12.73	52.05	74.00	-21.95	peak			
3		5033.333	43.49	7.53	51.02	74.00	-22.98	peak			

RESULT: PASS

RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics) - MIDDLE CHANNEL –VERTICAL

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2441.000	104.43	10.36	114.79	74.00	40.79	peak			
2		3533.333	37.25	12.32	49.57	74.00	-24.43	peak			
3		5050.000	43.31	7.20	50.51	74.00	-23.49	peak			

RESULT: PASS

RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics)-HIGH CHANNEL-HORIZONTAL

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	104.40	10.41	114.81	74.00	40.81	peak			
2		3566.667	38.34	12.52	50.86	74.00	-23.14	peak			
3		5283.333	48.44	2.53	50.97	74.00	-23.03	peak			

RESULT: PASS

RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics)-HIGH CHANNEL –VERTICAL

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	104.50	10.41	114.91	74.00	40.91	peak			
2		3375.000	38.79	11.99	50.78	74.00	-23.22	peak			
3		5308.333	49.37	2.03	51.40	74.00	-22.60	peak			

RESULT: PASS

Note: 6~25GHz at least have 20dB margin. 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



For BLE

RADIATED EMISSION BELOW 30MHz

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

RADIATED EMISSION BELOW 1GHz

RADIATED EMISSION TEST- (30MHz-1GHz)-LOW CHANNEL-HORIZONTAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		107.5999	7.25	8.72	15.97	43.50	-27.53	peak			
2		308.0667	6.19	15.95	22.14	46.00	-23.86	peak			
3		450.3333	3.25	20.59	23.84	46.00	-22.16	peak			
4		657.2667	0.84	24.04	24.88	46.00	-21.12	peak			
5		757.5000	2.00	26.73	28.73	46.00	-17.27	peak			
6	*	951.5000	4.10	29.99	34.09	46.00	-11.91	peak			

RESULT: PASS



RADIATED EMISSION TEST- (30MHz-1GHz)-LOW CHANNEL -VERTICAL

66.9 dBuV/m



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		146.4000	5.48	15.24	20.72	43.50	-22.78	peak			
2		316.1499	4.57	16.49	21.06	46.00	-24.94	peak			
3		510.1499	2.01	21.40	23.41	46.00	-22.59	peak			
4		650.7999	4.32	23.87	28.19	46.00	-17.81	peak			
5		830.2500	2.02	27.31	29.33	46.00	-16.67	peak			
6	*	919.1666	4.15	29.14	33.29	46.00	-12.71	peak			

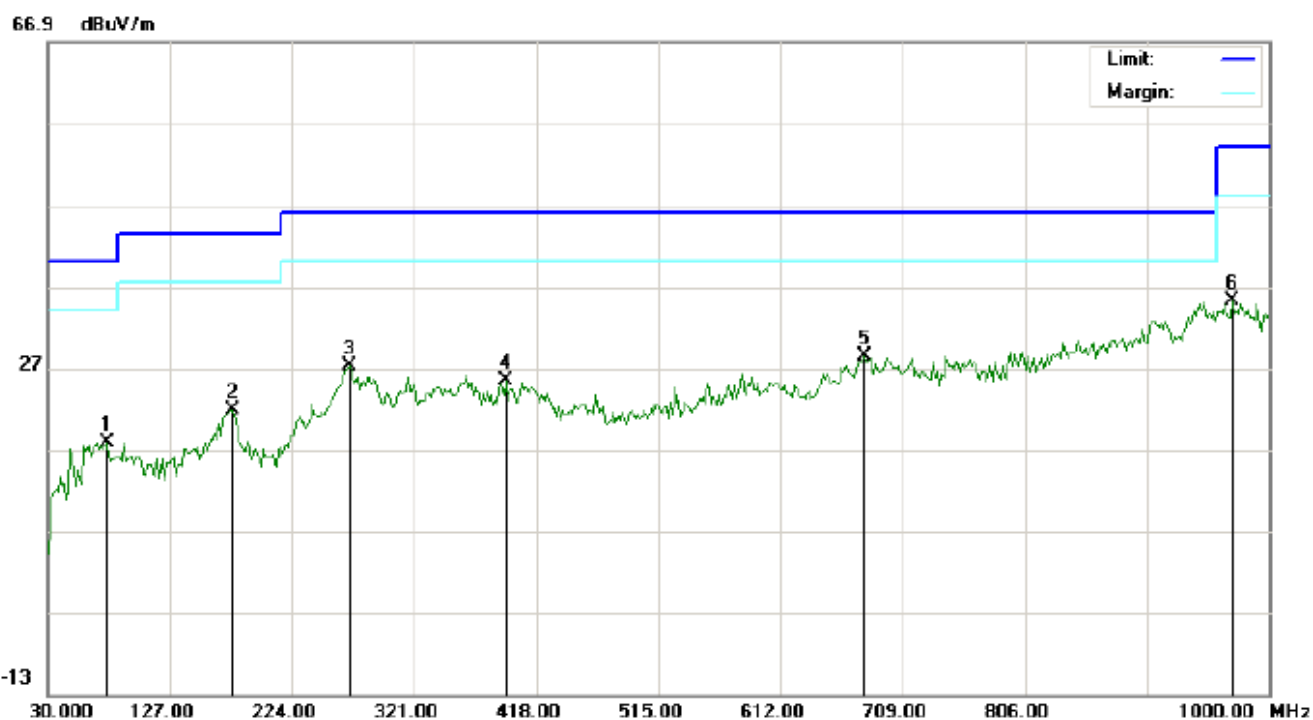
RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

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



RADIATED EMISSION TEST- (30MHz-1GHz)-MIDDLE CHANNEL-HORIZONTAL



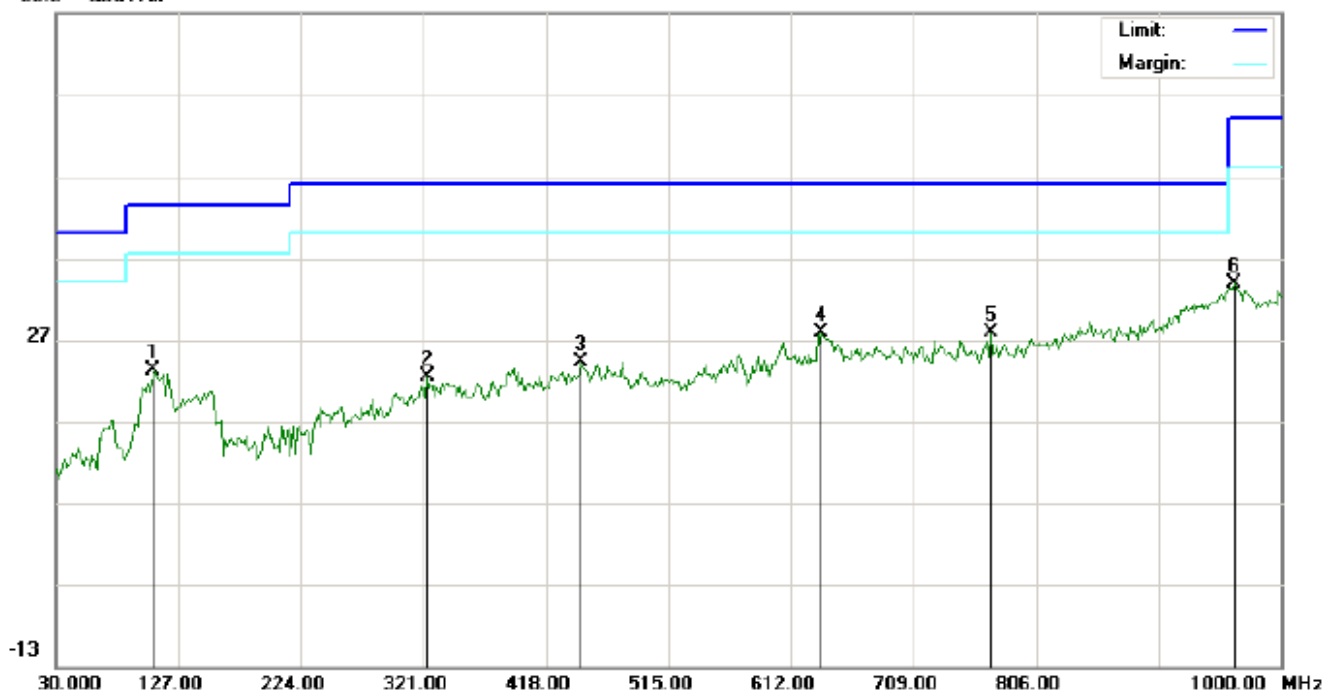
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		76.8833	15.29	2.57	17.86	40.00	-22.14	peak			
2		177.1167	7.57	14.25	21.82	43.50	-21.68	peak			
3		269.2667	12.71	14.48	27.19	46.00	-18.81	peak			
4		393.7500	6.39	19.03	25.42	46.00	-20.58	peak			
5	*	678.2833	3.77	24.61	28.38	46.00	-17.62	peak			
6		970.8999	5.31	29.80	35.11	54.00	-18.89	peak			

RESULT: PASS



RADIATED EMISSION TEST- (30MHz-1GHz)- MIDDLE CHANNEL -VERTICAL

66.9 dBuV/m



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		107.5999	14.46	8.72	23.18	43.50	-20.32	peak			
2		324.2332	5.32	17.02	22.34	46.00	-23.66	peak			
3		445.4832	3.84	20.45	24.29	46.00	-21.71	peak			
4		636.2500	3.96	23.82	27.78	46.00	-18.22	peak			
5	*	770.4333	0.97	26.91	27.88	46.00	-18.12	peak			
6		962.8166	3.85	29.88	33.73	54.00	-20.27	peak			

RESULT: PASS**Note:** 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

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



RADIATED EMISSION TEST- (30MHz-1GHz)-HIGH CHANNEL-HORIZONTAL



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		143.1665	4.06	14.43	18.49	43.50	-25.01	peak			
2		240.1666	16.70	7.90	24.60	46.00	-21.40	peak			
3		359.8000	6.15	18.80	24.95	46.00	-21.05	peak			
4		505.3000	6.45	21.27	27.72	46.00	-18.28	peak			
5		681.5167	-1.06	24.69	23.63	46.00	-22.37	peak			
6	*	873.8999	3.81	27.93	31.74	46.00	-14.26	peak			

RESULT: PASS



RADIATED EMISSION TEST- (30MHz-1GHz)-HIGH CHANNEL -VERTICAL

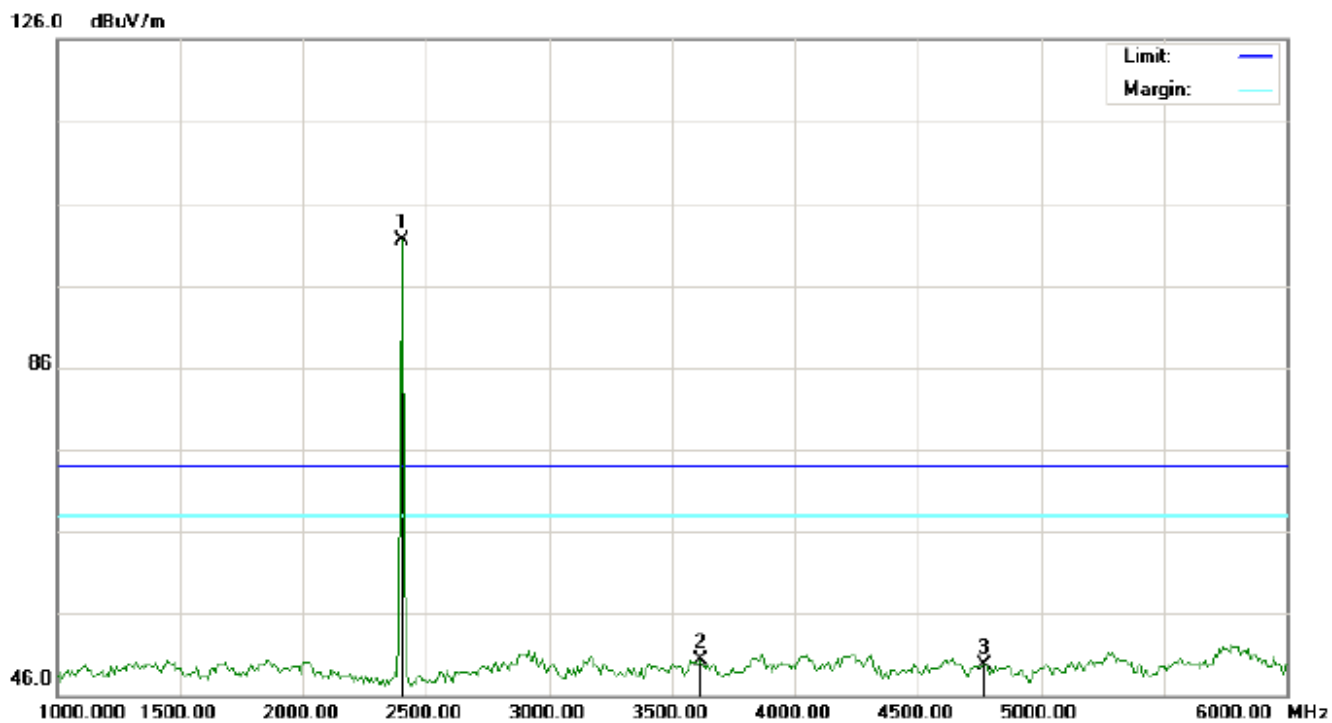


No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		104.3666	18.30	-0.93	17.37	43.50	-26.13	peak			
2		202.9833	13.84	9.29	23.13	43.50	-20.37	peak			
3		382.4332	3.77	18.95	22.72	46.00	-23.28	peak			
4		508.5332	4.35	21.36	25.71	46.00	-20.29	peak			
5		702.5333	-0.20	25.26	25.06	46.00	-20.94	peak			
6	*	943.4166	2.81	29.82	32.63	46.00	-13.37	peak			

RESULT: PASS

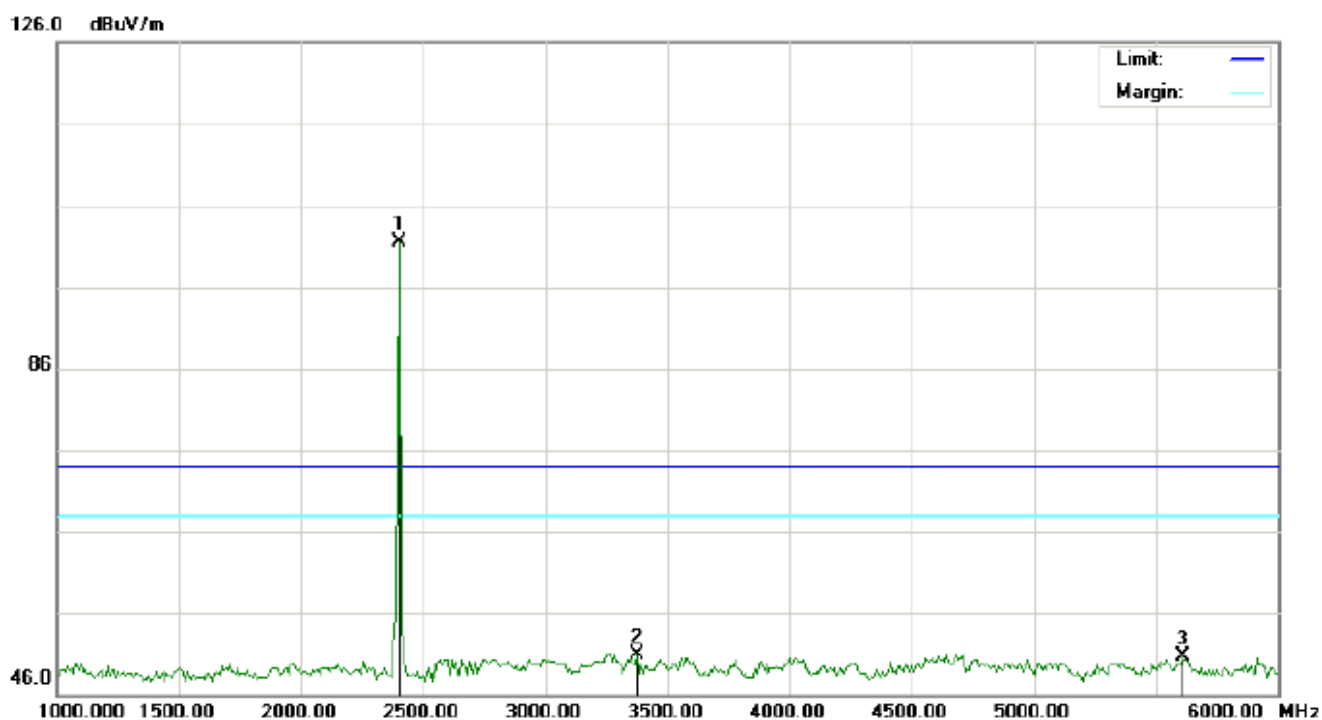
Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

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

**RADIATED EMISSION ABOVE 1GHz**RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics)-LOW CHANNEL-HORIZONTAL

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2402.000	91.13	10.32	101.45	74.00	27.45	peak			
2		3616.667	37.55	12.83	50.38	74.00	-23.62	peak			
3		4766.667	42.11	7.59	49.70	74.00	-24.30	peak			

RESULT: PASS

RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics)-LOW CHANNEL –VERTICAL

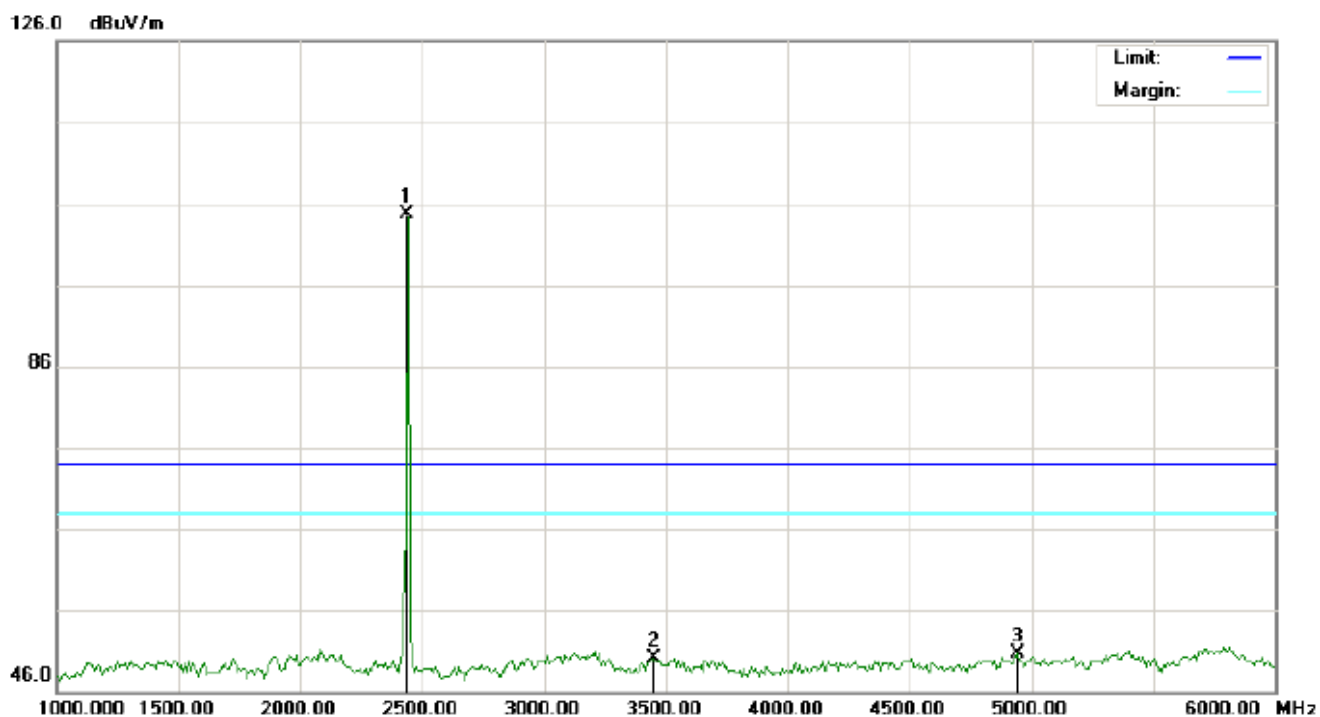
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2402.000	91.25	10.32	101.57	74.00	27.57	peak			
2		3375.000	39.01	11.99	51.00	74.00	-23.00	peak			
3		5608.333	52.52	-1.76	50.76	74.00	-23.24	peak			

RESULT: PASS

RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics)-MIDDLE CHANNEL-HORIZONTAL

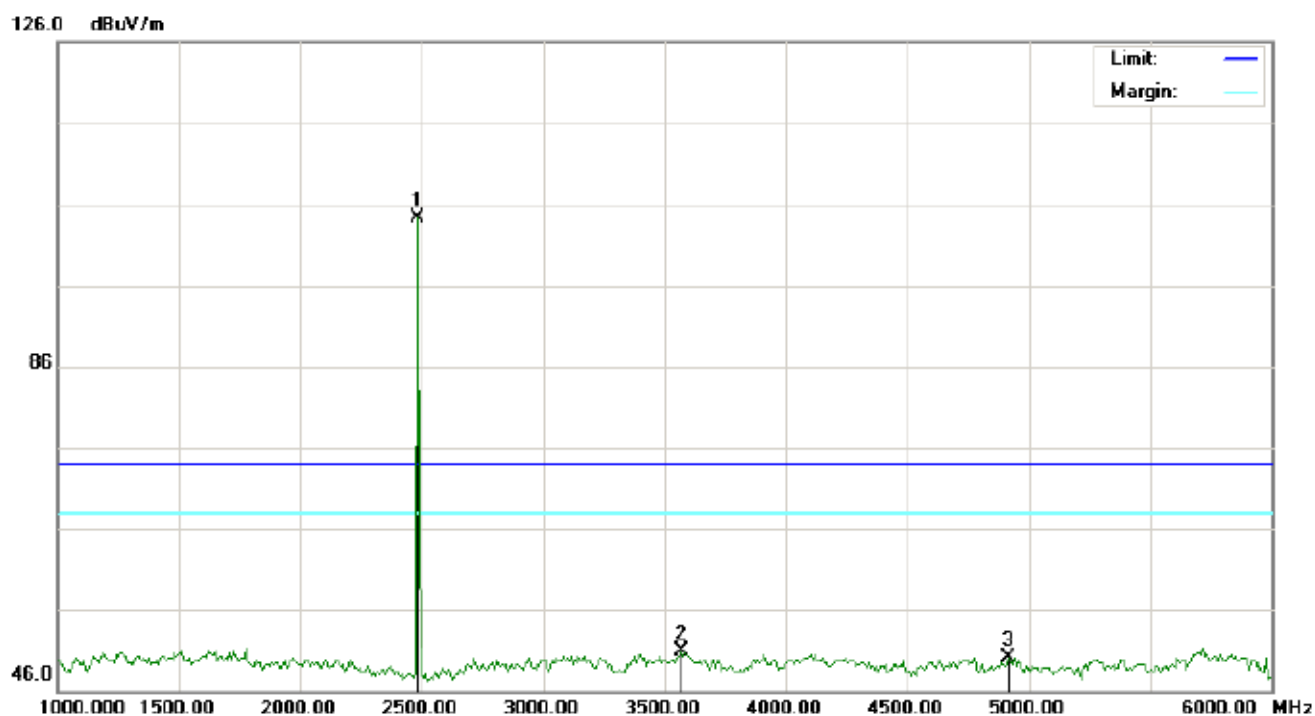
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2440.000	95.18	10.36	105.54	74.00	31.54	peak			
2		3441.667	39.01	12.05	51.06	74.00	-22.94	peak			
3		5116.667	45.60	5.86	51.46	74.00	-22.54	peak			

RESULT: PASS

RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics) - MIDDLE CHANNEL –VERTICAL

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2440.000	94.35	10.36	104.71	74.00	30.71	peak			
2		3450.000	38.11	12.06	50.17	74.00	-23.83	peak			
3		4941.667	42.57	8.05	50.62	74.00	-23.38	peak			

RESULT: PASS

RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics)-HIGH CHANNEL-HORIZONTAL

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	93.88	10.41	104.29	74.00	30.29	peak			
2		3566.667	38.34	12.52	50.86	74.00	-23.14	peak			
3		4916.667	42.18	7.98	50.16	74.00	-23.84	peak			

RESULT: PASS

RADIATED EMISSION ABOVE 1GHz (1-10th Harmonics)-HIGH CHANNEL –VERTICAL

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	94.00	10.41	104.41	74.00	30.41	peak			
2		3641.667	37.64	12.98	50.62	74.00	-23.38	peak			
3		4866.667	43.91	7.85	51.76	74.00	-22.24	peak			

RESULT: PASS

Note: 6~25GHz at least have 20dB margin. 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

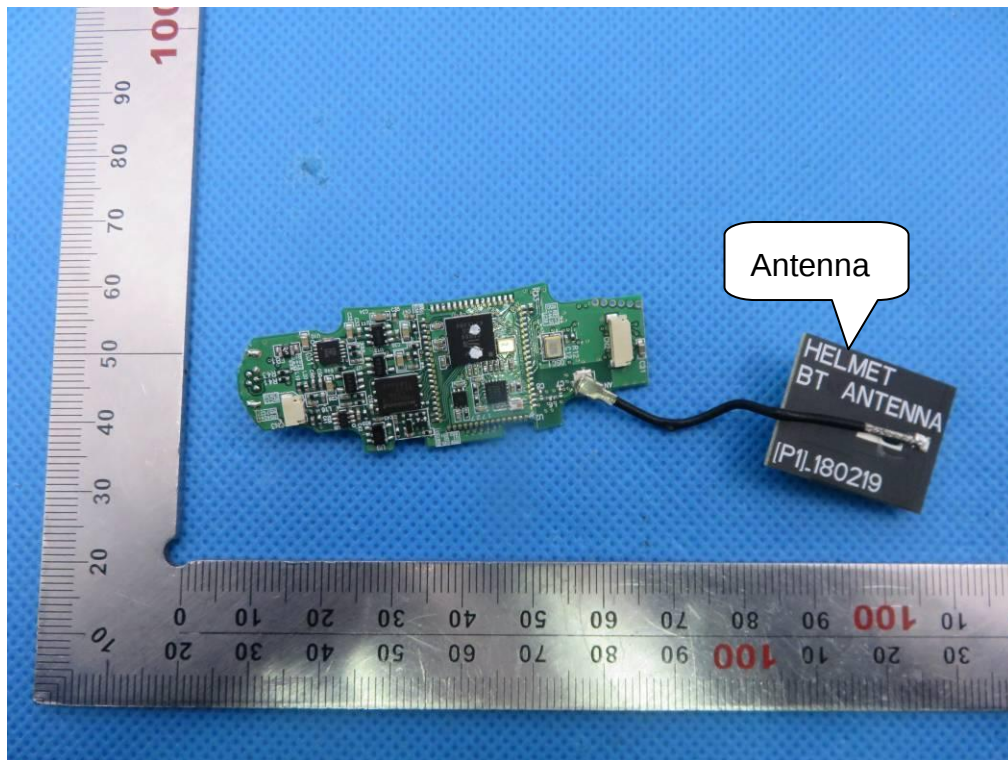
5. ANTENNA REQUIREMENT

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

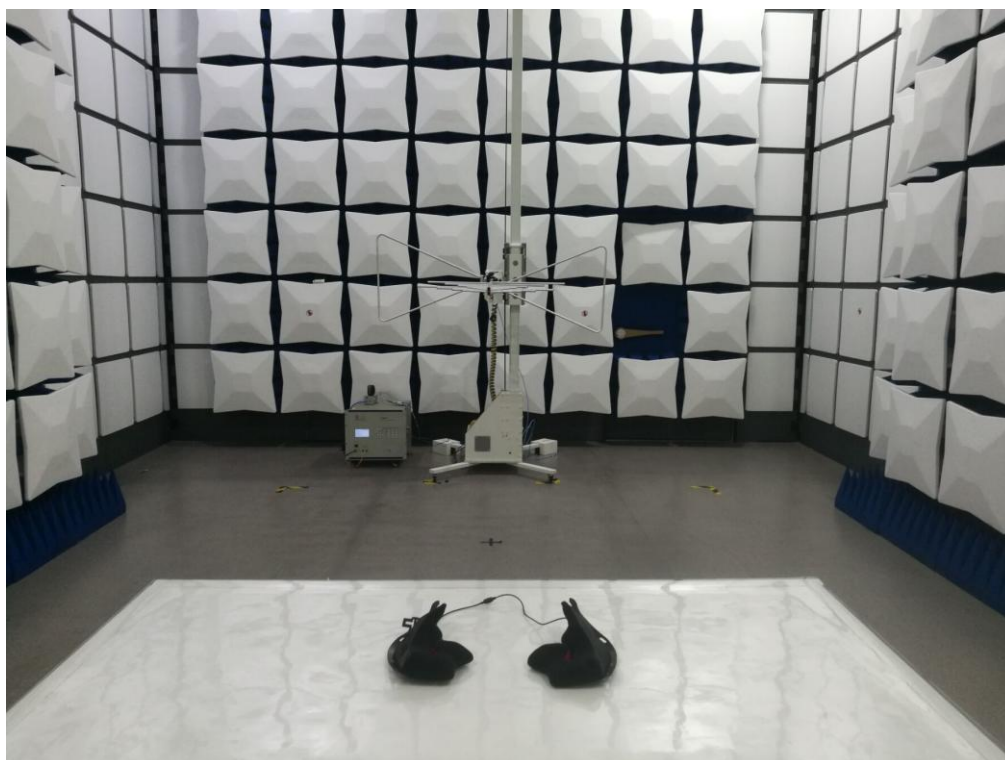


6. PHOTOGRAPH OF TEST

FCC LINE CONDUCTED EMISSION TEST SETUP



FCC RADIATED EMISSION TEST SETUP







7. 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



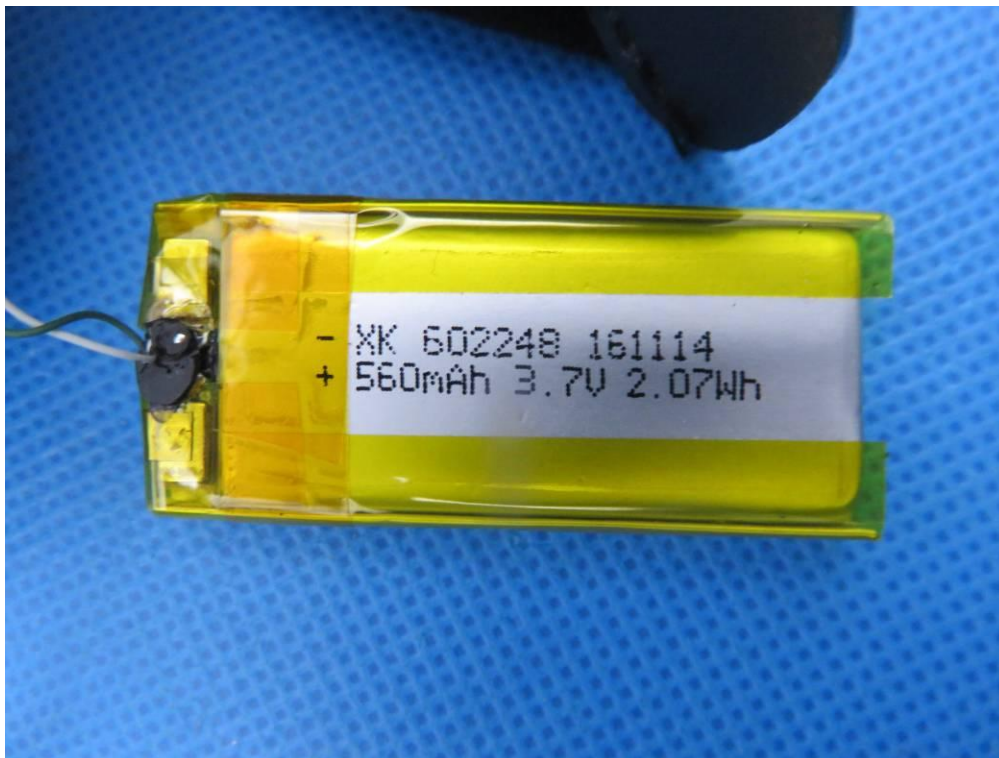
VIEW OF EUT (PORT)



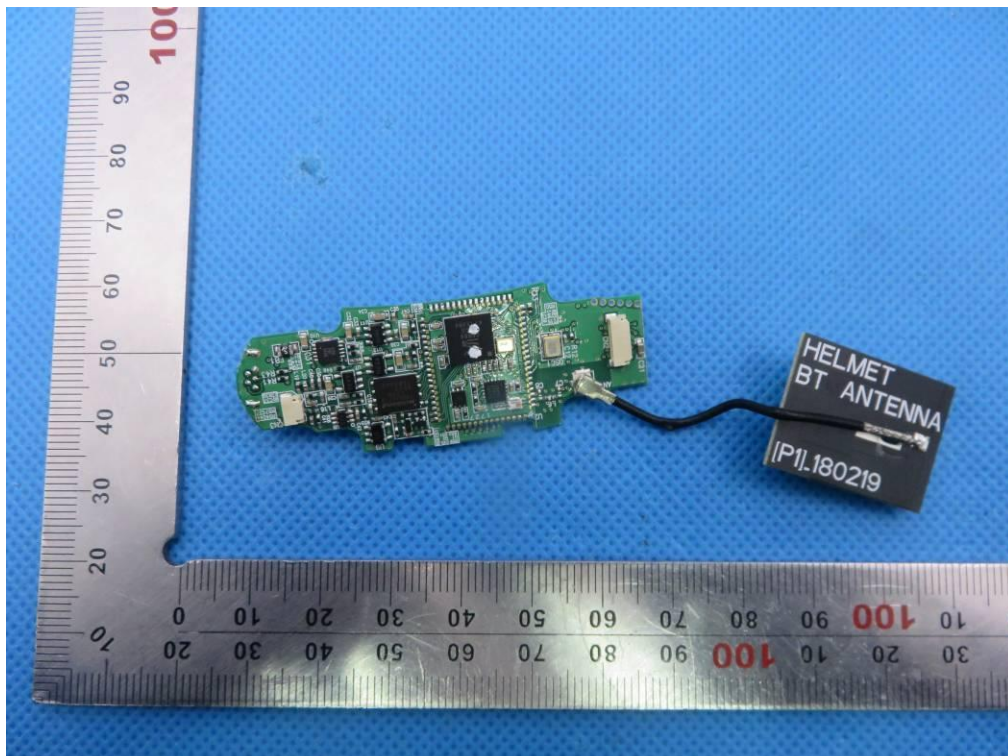
OPEN VIEW OF EUT



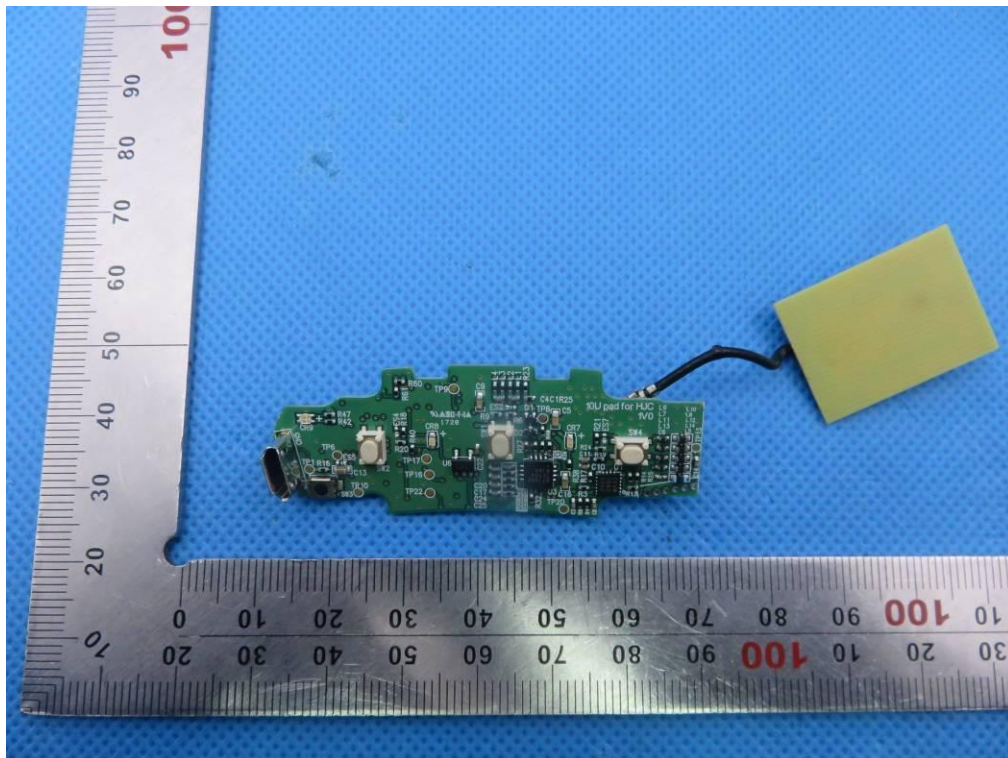
VIEW OF BATTERY



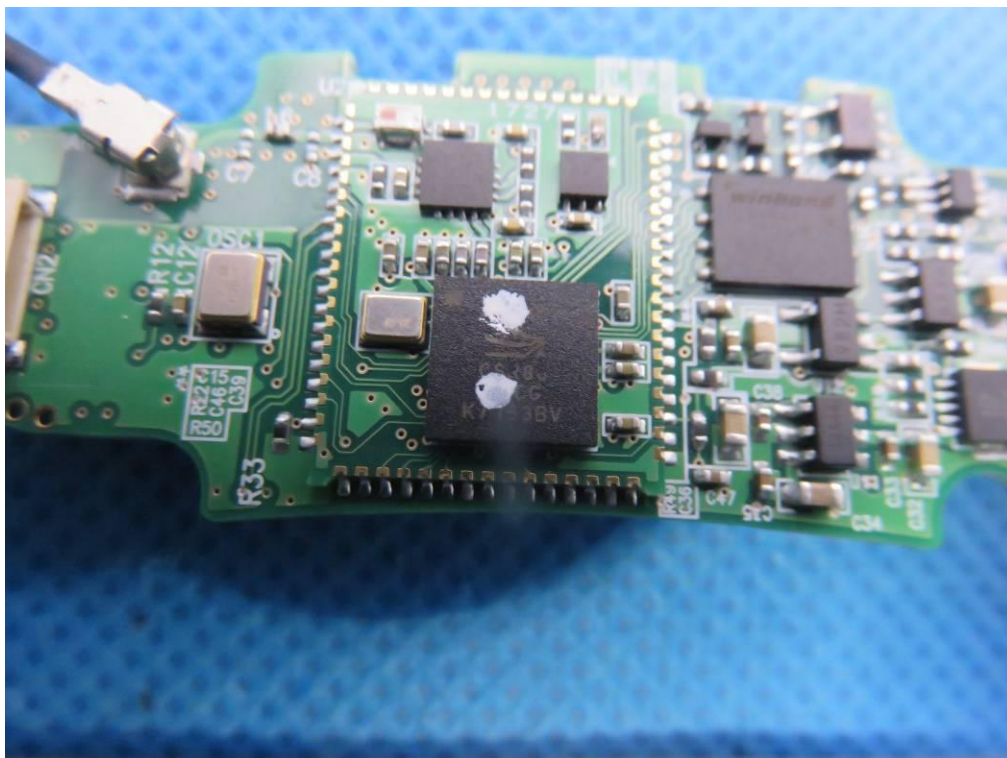
INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



INTERNAL VIEW OF EUT-3



VIEW OF ADAPTER (AE)



The adapter was supplied by HUAKE

--END OF REPORT--