ACCREDITED
CERTIFICATE #5473.01

Test Report No.:
FCC2023-0051-RF

TEST REPORT

FCC ID	:	2BCSN-WBR3-0001
Applicant	:	NINGBO HICON INDUSTRY TECHNOLOGY CO., LTD
Product Name	:	ice maker
Model No.	:	HZB-12/A-W, HZB-12/B-W, HZB-12/C-W, HZB-12/H-W, HZB-12/G-W, HZB-12/SA-W, HZB-12/SB-W, HZB-12/SH-W, HZB-12/SGW

CVC Testing Technology Co., Ltd.

Applicant	**Name:** NINGBO HICON INDUSTRY TECHNOLOGY CO., LTD **Address:** No.55, 4th Binhai Road, Qianwan New Area, Ningbo, Zhejiang, P.R.China
Manufacturer	**Name:** NINGBO HICON INDUSTRY TECHNOLOGY CO., LTD **Address:** No.55, 4th Binhai Road, Qianwan New Area, Ningbo, Zhejiang, P.R.China
Equipment Under Test	**Product Name :** ice maker **Model No. :** HZB-12/B-W, HZB-12/SB-W **Trade mark :** hicon **Serial no. :** 2308000001 **Sampling :** 1-1

Date of Receipt.	2023.7.27	**Date of Testing**	2023.9.13

Test Specification	**Test Result**
FCC CFR47 Part 15C Radio Frequency Devices ANSI C63.10-2020 KDB 558074 D01 15.247 Meas Guidance v05r02	PASS

Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied. **Seal of CVC** **Issue Date: 2023.9.25**

Approved by:	Reviewed by:	Tested by:
Chen HuaWen	**Xu Zhenfei**	**Lu Weiji**
		

Other Aspects: NONE.

Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested

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1. General Product Information

1.1 General information

Product Name	ice maker
Model No.	HZB-12/B-W
Additional model	HZB-12/A-W, HZB-12/C-W, HZB-12/H-W, HZB-12/G-W, HZB-12/SA-W, HZB-12/SB-W, HZB-12/SH-W, HZB-12/SGW
Power Supply	AC 115V
Serial Number(SN)	2308000001
HVIN	HZB-12/A-W, HZB-12/B-W, HZB-12/C-W, HZB-12/H-W, HZB-12/G-W, HZB-12/SA-W, HZB-12/SB-W, HZB-12/SH-W, HZB-12/SGW
firmware	1.0.1
software	1.0.1
Bluetooth Version	4.2
specific power settings	Bluetooth(Low Energy): 8 IEEE 802.11b: 87 IEEE 802.11g: 102 IEEE 802.11n(20MHz): 98
Antenna Type	Internal Antenna
Antenna Connector	A permanently attached antenna
Antenna Gain	2.54 dBi (provided by client)
Beamforming gain	Unsupported (provided by client)
Frequency Range	Bluetooth(Low Energy): 2402~2480MHz IEEE 802.11b/g/n (20MHz): 2412~2462MHz
Channel Number	Bluetooth(Low Energy):40 Channels IEEE 802.11b/g/n (20MHz): 11 Channels
Type of Modulation	Bluetooth(Low Energy):GFSK IEEE 802.11b: DSSS (CCK,DQPSK,DBPSK); IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK); IEEE 802.11n(HT20) : OFDM (64QAM,16QAM,QPSK,BPSK);
Max. Conducted Power	Bluetooth(Low Energy): 6.65 dBm IEEE 802.11b: 17.61 dBm IEEE 802.11g: 23.32 dBm IEEE 802.11n(20MHz): 22.46 dBm
Operate Temp.Range	10 ~ 43℃

Note：

1. The information of the EUT is declared by the manufacturer.
2. The laboratory is not responsible for the product technical specification provided by the client.
3. The product models of this application are: HZB-12/A-W, HZB-12/B-W, HZB-12/C-W, HZB-12/H-W, HZB-12/G-W, HZB-12/SA-W, HZB-12/SB-W, HZB-12/SH-W, and HZB-12/SGW. The material difference between the parts and the parts in the product model for inspection is shown in the table below:

No	Model	Name	Difference	Remarks
1	HZB-12/B-W	ice maker	Only the shell and appearance are different: HZB-12/A-W, HZB-12/B-W, HZB-12/C-W, HZB-12/H-W, HZB-12/G-W: Plastic casing, each model has a different appearance	Inspection model
2	HZB-12/A-W	ice maker		Coverage model
3	HZB-12/C-W	ice maker		Coverage model

4	HZB-12/H-W	ice maker	and identical functionality. HZB-12/SA-W, HZB-12/SB-W, HZB-12/SH-W, and HZB-12/SGW: Stainless steel housing, each model has a different appearance and identical functionality.	Coverage model
5	HZB-12/G-W	ice maker		Coverage model
6	HZB-12/SB-W	ice maker		Coverage model
7	HZB-12/SA-W	ice maker		Coverage model
8	HZB-12/SH-W	ice maker		Coverage model
9	HZB-12/SGW	ice maker		Coverage model

All the tests carried out on model HZB-12/B-W, only the shell and appearance is different, so HZB-12/SB-W only adds Radiated Emissions.

2. Test Sites

2.1 Test Facilities

The tests and measurements refer to this report were performed by RF testing Lab. of CVC Testing Technology Co., Ltd.

Add.: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou,Guangdong,510663, People's Republic of China

Telephone : +86-20-32293888

Fax : +86-20-32293889

FCC(Test firm designation number：CN1282)

IC(Test firm CAB identifier number：CN0103)

2.2 Description of Non-standard Method and Deviations

The testing and measurement methods used in this report are applied by all standard methods. Not any non-standard method or deviation from the used standards was used.

2.3 List of Test and Measurement Instruments

Refer to **Appendix X**.

3. Test Configuration

3.1 Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Test Mode	Antenna Delivery	Test Channel
Bluetooth(LE 1M)	1TX / 1RX	0,19,39
IEEE 802.11b	1TX / 1RX	1,6,11
IEEE 802.11g	1TX / 1RX	1,6,11
IEEE 802.11n 20 SISO	1TX / 1RX	1,6,11

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate and different channels. Preliminary tests have been done on all the configurations for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates and channels are shown as following table.

Test Mode	Data Rate		
	Antenna 1	Antenna 2	MIMO
Bluetooth(Low Energy)	1	/	/
IEEE 802.11b	1	/	/
IEEE 802.11g	6	/	/
IEEE 802.11n 2.4GHz 20MHz	MCS 0	/	/

Test Items	Test Antennas	Test Modes	Test Channels
Conducted Emissions	Antenna 1	IEEE 802.11n 20/ Bluetooth(Low Energy)	1/ 0
Radiated Emissions	Antenna 1	IEEE 802.11n 20/ Bluetooth(Low Energy)	11/ 0
Radiated Emissions (Band Edge)	Antenna 1	IEEE 802.11n 20/ Bluetooth(Low Energy)	1,11/ 0,39
Maximum conducted output power	Antenna 1	Bluetooth(Low Energy)/ IEEE 802.11b/ IEEE 802.11g/ IEEE 802.11n 20	0,19,39/ 1,6,11/ 1,6,11/ 1,6,11
Minimum 6 dB bandwidth	Antenna 1	Bluetooth(Low Energy)/ IEEE 802.11b/ IEEE 802.11g/ IEEE 802.11n 20	0,19,39/ 1,6,11/ 1,6,11/ 1,6,11
Occupied Channel Bandwidth	Antenna 1	Bluetooth(Low Energy)/ IEEE 802.11b/ IEEE 802.11g/ IEEE 802.11n 20	0,19,39/ 1,6,11/ 1,6,11/ 1,6,11
Band Edge Measurement	Antenna 1	Bluetooth(Low Energy)/ IEEE 802.11b/ IEEE 802.11g/ IEEE 802.11n 20	0,39/ 1,11/ 1,11/ 1,11
Maximum Power spectral density	Antenna 1	Bluetooth(Low Energy)/ IEEE 802.11b/ IEEE 802.11g/ IEEE 802.11n 20	0,19,39/ 1,6,11/ 1,6,11/ 1,6,11
Spurious RF Conducted Emissions	Antenna 1	Bluetooth(Low Energy)/ IEEE 802.11b/ IEEE 802.11g/ IEEE 802.11n 20	0,19,39/ 1,6,11/ 1,6,11/ 1,6,11

3.2 Duty cycle

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	12.41	12.54	98.96	---	---
		2437	12.41	12.53	99.04	---	---
		2462	12.41	12.54	98.96	---	---
11G	Ant1	2412	2.06	2.19	94.06	---	---
		2437	2.06	2.19	94.06	---	---
		2462	2.06	2.19	94.06	---	---
11N20SISO	Ant1	2412	1.92	2.05	93.66	---	---
		2437	1.92	2.05	93.66	---	---
		2462	1.92	2.05	93.66	---	---
BLE_1M	Ant1	2402	0.39	0.62	62.90	---	---
		2440	0.39	0.62	62.90	---	---
		2480	0.39	0.62	62.90	---	---

4. Summary of measurement results

Summary of measurements of results	Clause in FCC rules	Verdict	Note
Conducted Emissions	15.207	PASS	/
Radiated Emissions	15.247(d),15.205,15.209	PASS	/
Maximum conducted output power	15.247(b)(3)	PASS	Appendix C of WIFI2.4G_ diagram and Appendix C of BLE_ diagram
Minimum 6 dB bandwidth	15.247(a)(2)	PASS	Appendix A of WIFI2.4G_ diagram and Appendix A of BLE_ diagram
Occupied Channel Bandwidth	15.247(a)(2)	PASS	Appendix B of WIFI2.4G_ diagram and Appendix B of BLE_ diagram
Band Edge Measurement	15.247(d)	PASS	Appendix E of WIFI2.4G_ diagram and Appendix E of BLE_ diagram
Maximum Power spectral density	15.247(e)	PASS	Appendix D of WIFI2.4G_ diagram and Appendix D of BLE_ diagram
Spurious RF Conducted Emissions	15.247(d)	PASS	Appendix F of WIFI2.4G_ diagram and Appendix F of BLE_ diagram
Antenna Requirement	15.203	PASS	See note 1

Note1: According to 15.203, it is considered sufficient to comply with the provisions of this section.

5. Measurement procedure

5.1 Conducted Emission

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

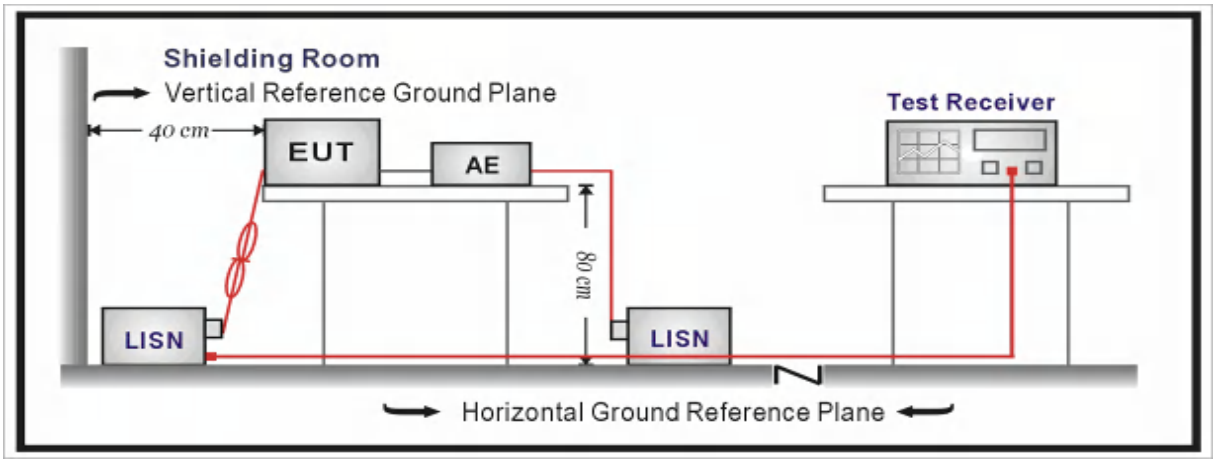
Method of Measurement:

The EUT was setup according to ANSI C63.10, 2013 for compliance to FCC 47CFR 15.247 requirements. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

Limits:

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
Note 1: The lower limit shall apply at the transition frequencies. Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

Test Setup:



Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Notes:

1. *The following Quasi-Peak and Average measurements were performed on the EUT:*
2. *Final Level =Reading + Factor.*

Measurement Uncertainty：

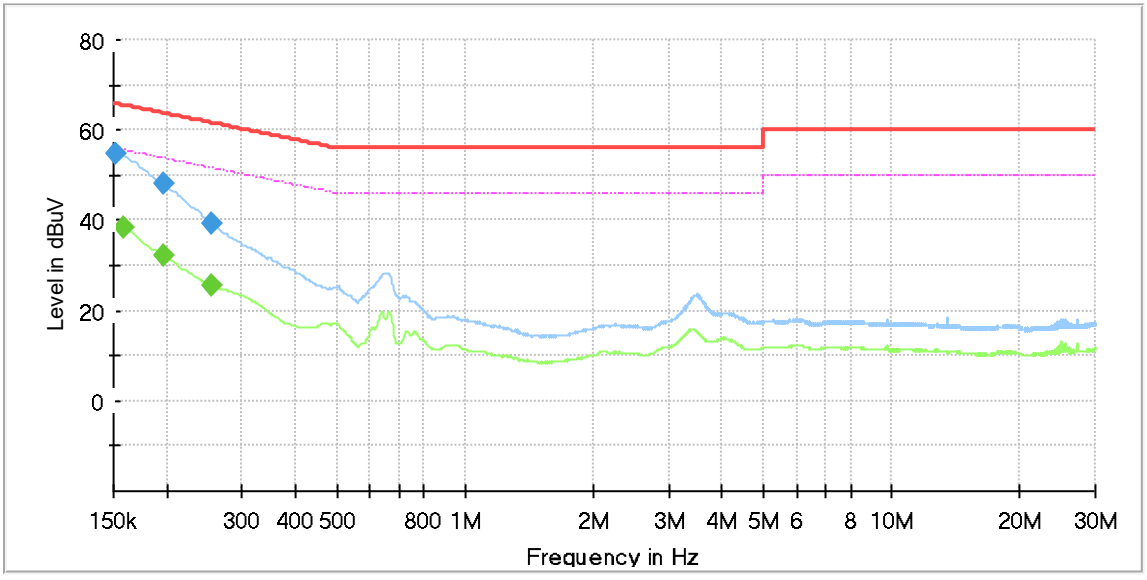
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96. U= 3.12 dB.

Test Results:

During the test, the Conducted Emission from 150kHz to 30MHz was performed in all modes with all channels, and all antennas. 802.11n20, Channel 1, Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

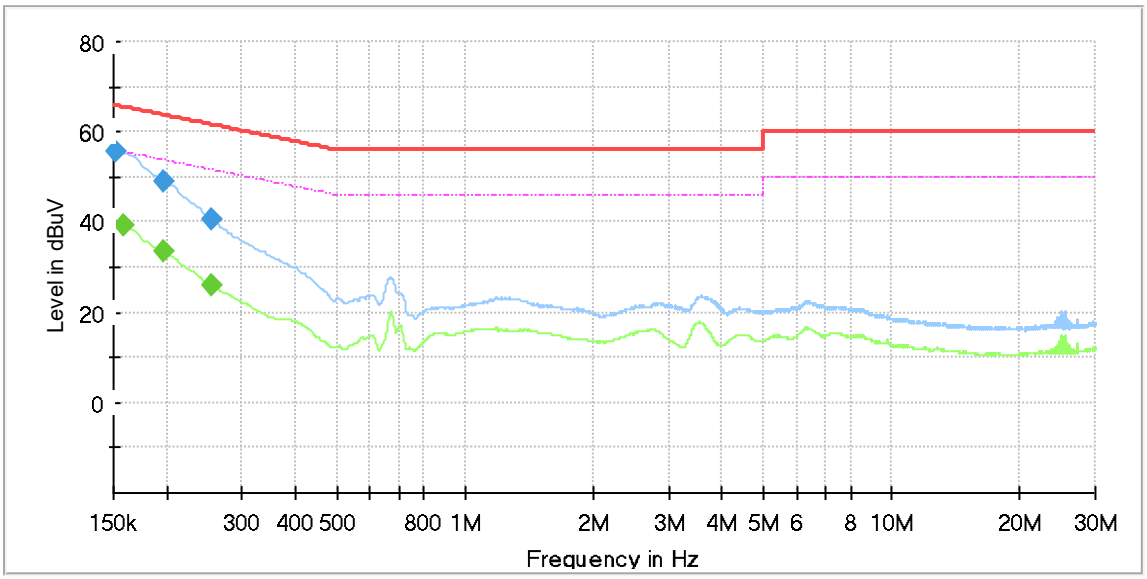
Power Line	L
Test channel	Worst-Case

Suspected List							
Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV]	Limit [dBµV]	Margin [dB]	Detector	Pass/Fail
0.152	19.5	35.2	54.7	65.9	11.2	QP	PASS
0.197	19.5	28.5	48.0	63.7	15.8	QP	PASS
0.256	19.4	19.9	39.3	61.6	22.3	QP	PASS
0.159	19.5	18.7	38.2	55.5	17.3	AV	PASS
0.197	19.5	12.9	32.4	53.7	21.3	AV	PASS
0.256	19.4	6.3	25.7	51.6	25.9	AV	PASS



Power Line	N
Test channel	Worst-Case

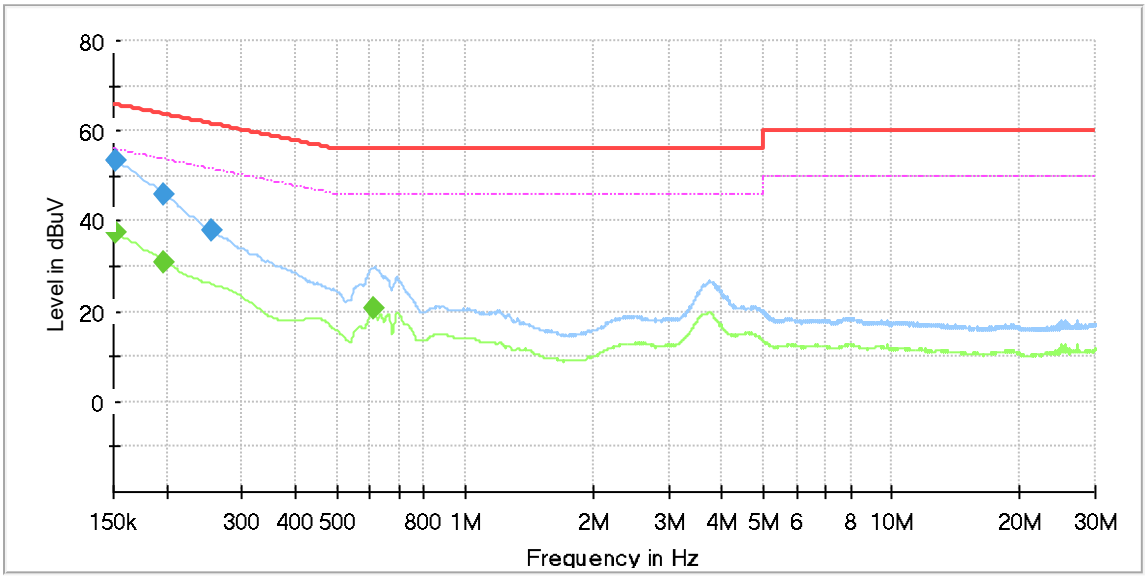
Suspected List							
Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV]	Limit [dBµV]	Margin [dB]	Detector	Pass/Fail
0.152	19.5	36.3	55.8	65.9	10.0	QP	PASS
0.197	19.5	29.7	49.2	63.7	14.5	QP	PASS
0.256	19.4	21.1	40.5	61.6	21.1	QP	PASS
0.159	19.5	19.7	39.2	55.5	16.3	AV	PASS
0.197	19.5	14.2	33.7	53.7	20.1	AV	PASS
0.256	19.4	6.5	25.9	51.6	25.6	AV	PASS



During the test, the Conducted Emission from 150kHz to 30MHz was performed in all modes with all channels, and all antennas. Bluetooth(LE_1M), Channel 0, Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

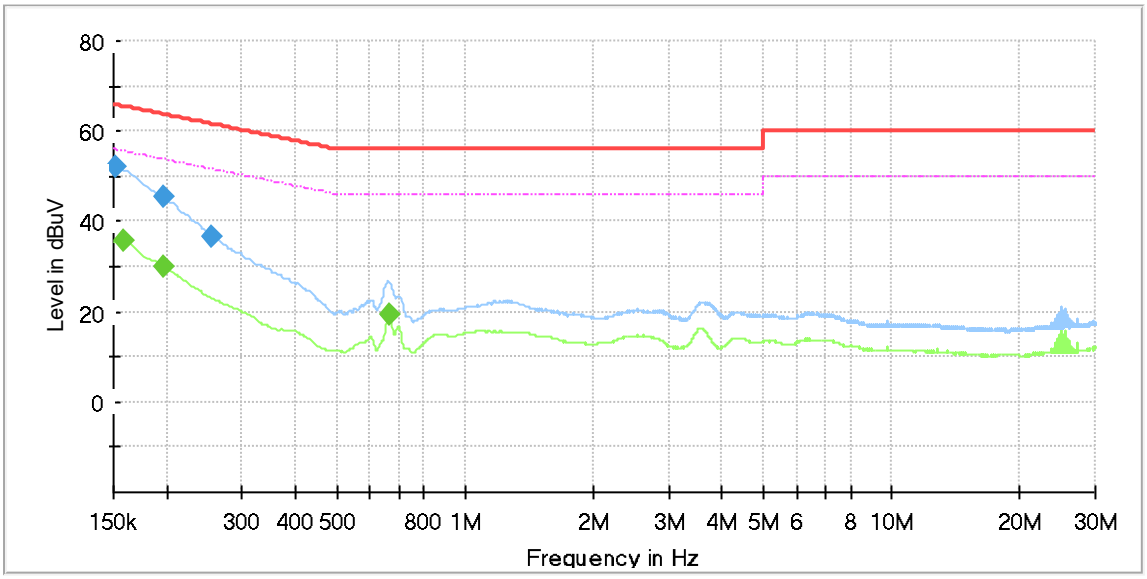
Power Line	L
Test channel	Worst-Case

Suspected List							
Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV]	Limit [dBµV]	Margin [dB]	Detector	Pass/Fail
0.152	19.5	34.00	53.5	65.9	12.3	QP	PASS
0.197	19.5	26.50	46.0	63.7	17.7	QP	PASS
0.256	19.4	18.40	37.8	61.6	23.7	QP	PASS
0.152	19.5	18.10	37.6	55.9	18.3	AV	PASS
0.197	19.5	11.60	31.1	53.7	22.6	AV	PASS
0.609	19.5	1.20	20.7	46.0	25.3	AV	PASS



Power Line	N
Test channel	Worst-Case

Suspected List							
Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV]	Limit [dBµV]	Margin [dB]	Detector	Pass/Fail
0.152	19.5	32.60	52.1	65.9	13.8	QP	PASS
0.197	19.5	25.90	45.4	63.7	18.4	QP	PASS
0.256	19.4	17.40	36.8	61.6	24.8	QP	PASS
0.159	19.5	16.20	35.7	55.5	19.8	AV	PASS
0.197	19.5	10.60	30.1	53.7	23.6	AV	PASS
0.663	19.5	-0.30	19.2	46.0	26.8	AV	PASS



5.2 Radiated Emission

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

The EUT was setup and tested according to ANSI C63.10, 2013.
The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from Antenna to the EUT was 3 meters.
The Antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the Antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.
The frequency range from 30MHz to 10th harmonic is checked.
Note: When doing emission measurement above 1GHz, the horn Antenna will be bended down a little (as horn Antenna has the narrow beamwidth) in order to keeping the Antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

Limits:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

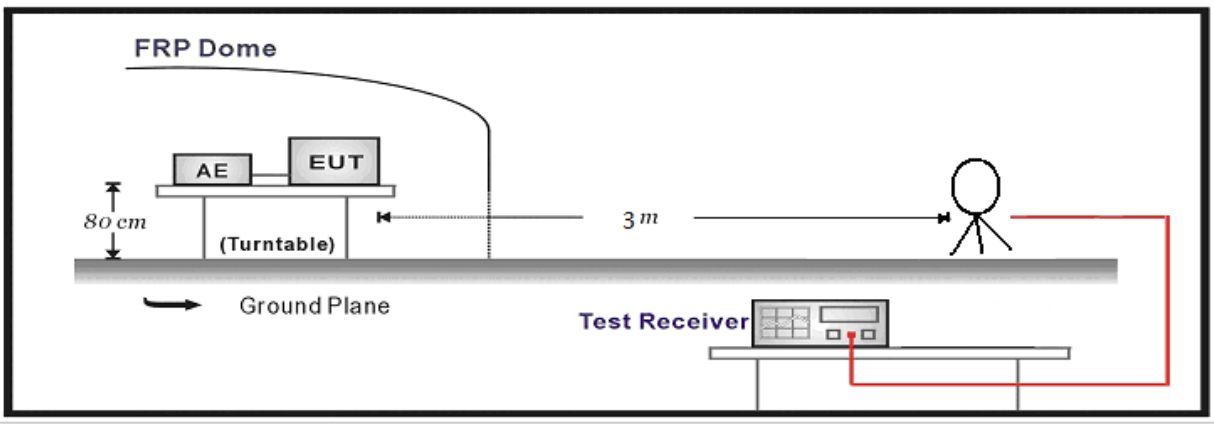
Frequency	Limit (μV/m)	Limit (dBμV/m @3m)	Remark
0.009MHz-0.490MHz	2400/F(kHz)@300m	20lg(240000/F(kHz))	Quasi-peak Level
0.490MHz~1.705MHz	24000/F(kHz)@30m	20lg(240000/F(kHz))	Quasi-peak Level
1.705MHz~30.0MHz	30@30m	49.54	Quasi-peak Level
30MHz-88MHz	100@3m	40.0	Quasi-peak Level
88MHz-216MHz	150@3m	43.5	Quasi-peak Level
216MHz-960MHz	200@3m	46.0	Quasi-peak Level
960MHz-1GHz	500@3m	54.0	Quasi-peak Level
Above 1GHz	500@3m	54.0	Average Level
	5000@3m	74.0	Peak Level

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

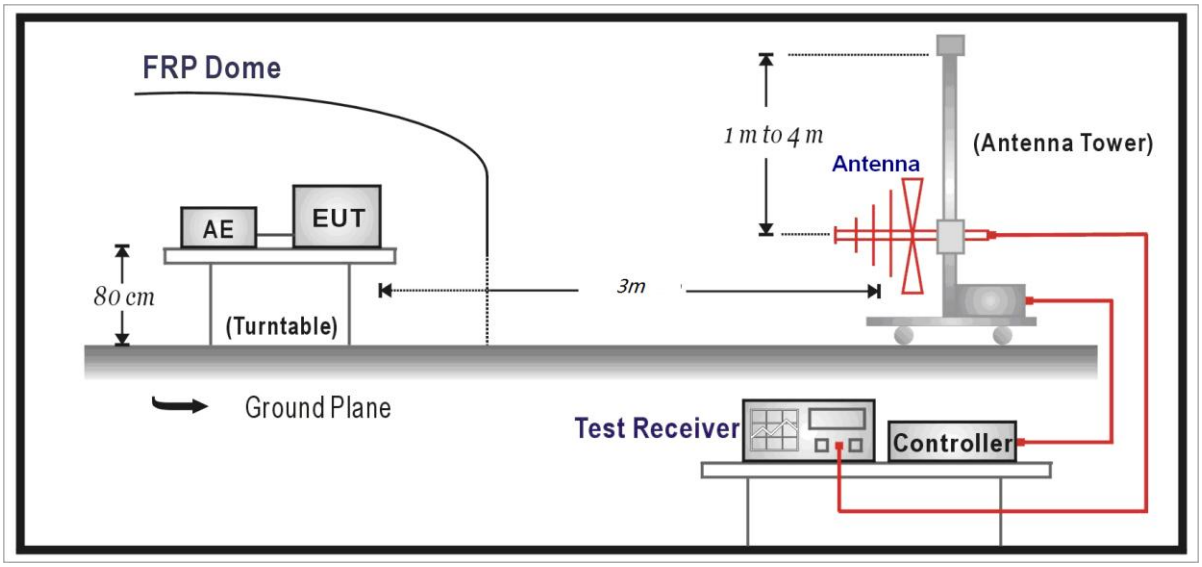
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.
12.57675-12.57725	322-335.4	3600-4400	/
13.36-13.41	/	/	/

Test Setup:

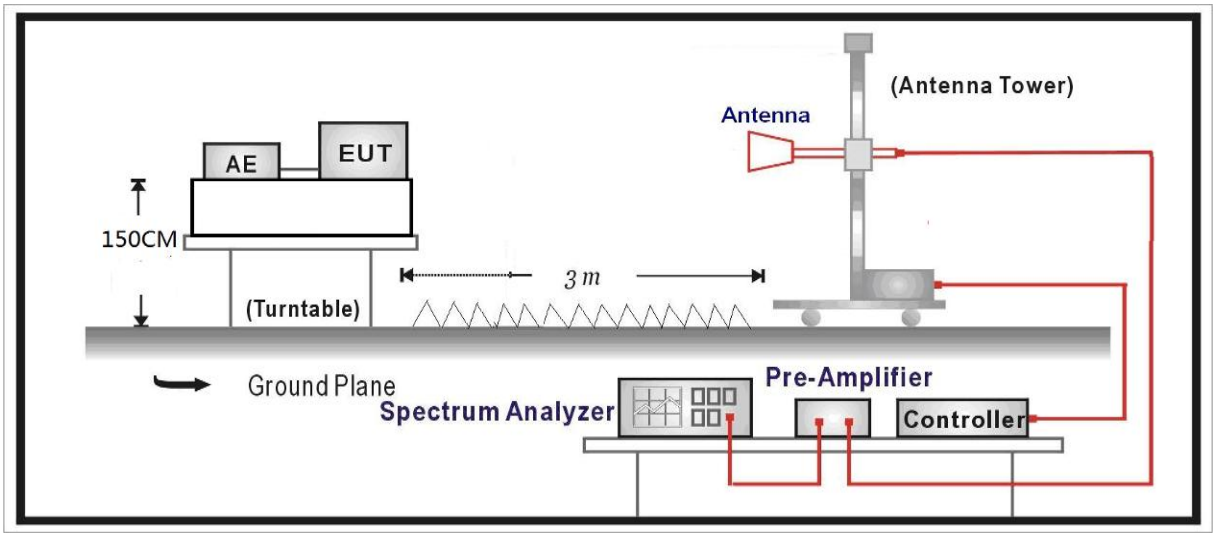
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



Measurement Data：

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Level =Reading - Factor

Factor = Preamplifier Factor – Antenna Factor–Cable Loss

Measurement Uncertainty：

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.19 dB
200MHz-1GHz	3.63 dB
Above 1GHz	3.68 dB

Test Results:

Model：HZB-12/B-W

SPURIOUS EMISSIONS：

WIFI:

During the test, the Radiates Emission from 9kHz to 40GHz was performed in WIFI all modes with all channels and all antennas. 802.11n20, Channel 11, Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Radiates Emission	9kHz~1GHz
Test channel	Worst-Case
Polarity	Horizontal

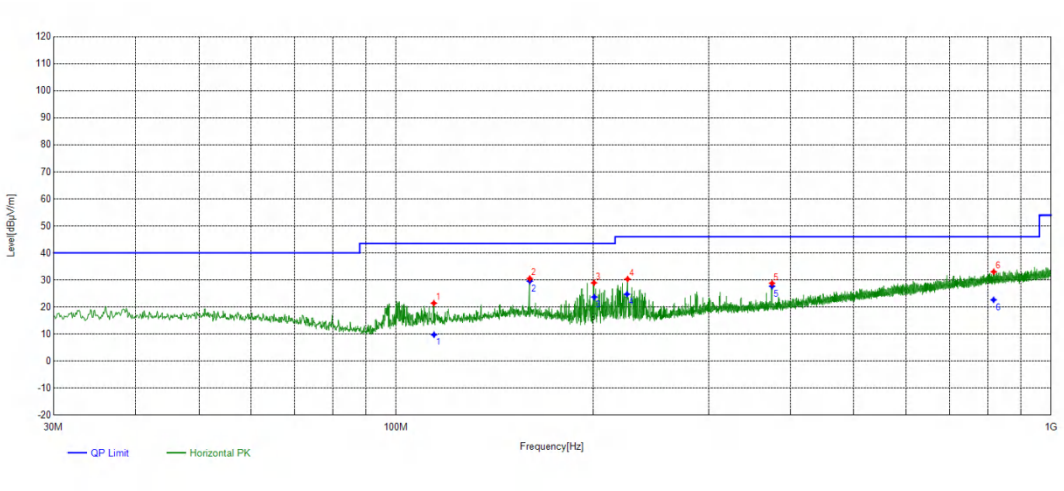
Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
114.2044	17.80	3.64	21.44	43.50	22.06	PK	100	199	PASS
159.993	20.87	9.66	30.53	43.50	12.97	PK	100	173	PASS
200.5431	17.35	11.60	28.95	43.50	14.55	PK	100	199	PASS
225.6686	18.38	11.95	30.33	46.00	15.67	PK	100	128	PASS
374.9665	23.31	5.49	28.80	46.00	17.20	PK	100	115	PASS
817.5248	32.33	0.71	33.04	46.00	12.96	PK	100	338	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List

Frequency [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
114.2623	17.80	9.75	43.50	33.75	260	199	PASS
160.0022	20.87	29.56	43.50	13.94	150	173	PASS
200.7231	17.35	23.71	43.50	19.79	140	199	PASS
225.218	18.38	24.75	46.00	21.25	310	128	PASS
375.0208	23.31	27.69	46.00	18.31	210	115	PASS
816.9922	32.33	22.66	46.00	23.34	290	338	PASS


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
Level[dBµV/m]
30M
100M
1G
Frequency[Hz]
QP Limit
Horizontal PK

Radiates Emission	9kHz~1GHz
Test channel	Worst-Case
Polarity	Vertical

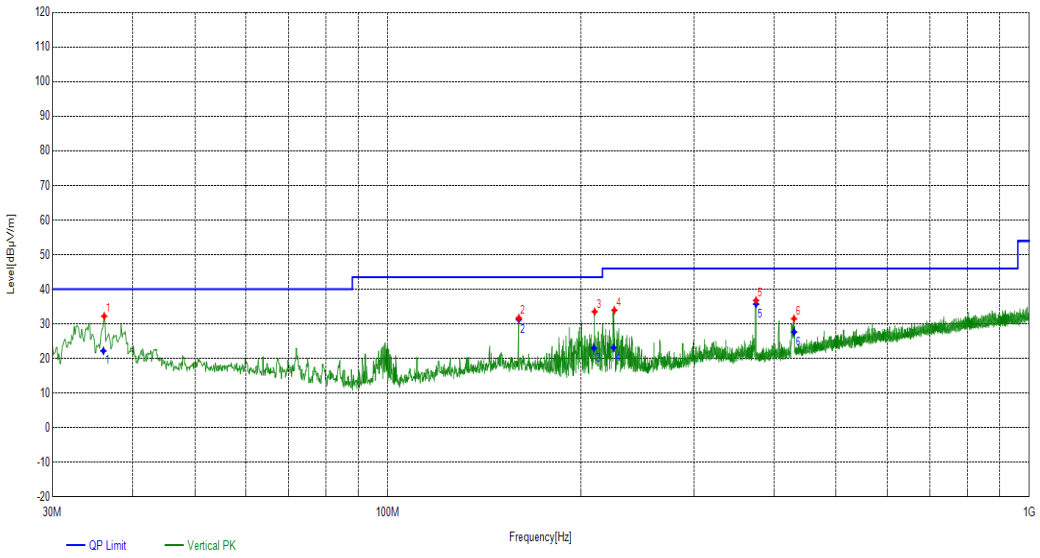
Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
36.1116	19.58	12.64	32.22	40.00	7.78	PK	100	84	PASS
159.993	20.87	10.83	31.70	43.50	11.80	PK	100	149	PASS
210.05	17.74	15.78	33.52	43.50	9.98	PK	100	359	PASS
225.4745	18.37	15.59	33.96	46.00	12.04	PK	100	281	PASS
374.9665	23.31	13.47	36.78	46.00	9.22	PK	100	58	PASS
429.777	24.75	6.74	31.49	46.00	14.51	PK	100	84	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List

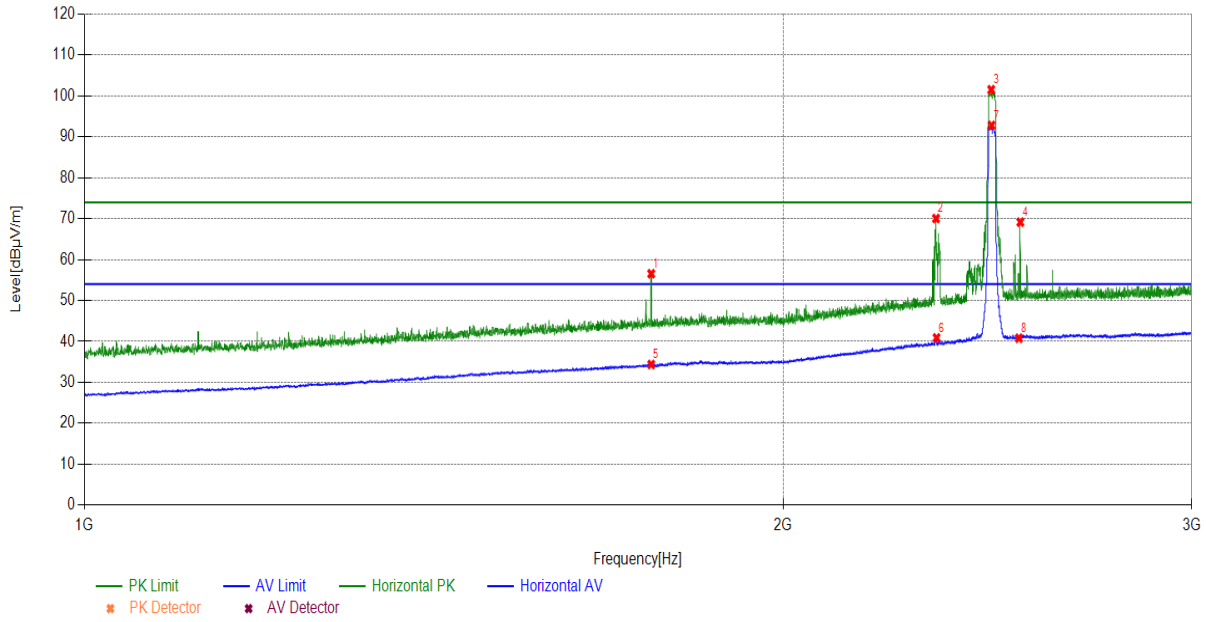
Frequency [MHz]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
36.0039	19.58	22.20	40.00	17.80	310	84	PASS
159.9906	20.87	31.25	43.50	12.25	170	149	PASS
209.4724	17.74	23.00	43.50	20.50	370	359	PASS
224.9132	18.37	23.11	46.00	22.89	120	281	PASS
374.9937	23.31	35.72	46.00	10.28	260	58	PASS
429.8516	24.75	27.65	46.00	18.35	240	84	PASS



Radiates Emission	1G~3G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
1754.8755	32.68	23.88	56.56	74.00	17.44	PK	150	241	PASS
2327.9328	36.69	33.35	70.04	74.00	3.96	PK	150	339	PASS
2458.9459	37.60	63.90	101.50	74.00	-27.50	PK	150	359	---
2531.1531	37.92	31.23	69.15	74.00	4.85	PK	150	241	PASS
1754.8755	32.68	1.69	34.37	54.00	19.63	AV	150	43	PASS
2329.1329	36.70	4.18	40.88	54.00	13.12	AV	150	311	PASS
2459.746	37.61	55.19	92.80	54.00	-38.80	AV	150	71	---
2527.5528	37.90	2.90	40.80	54.00	13.20	AV	150	71	PASS

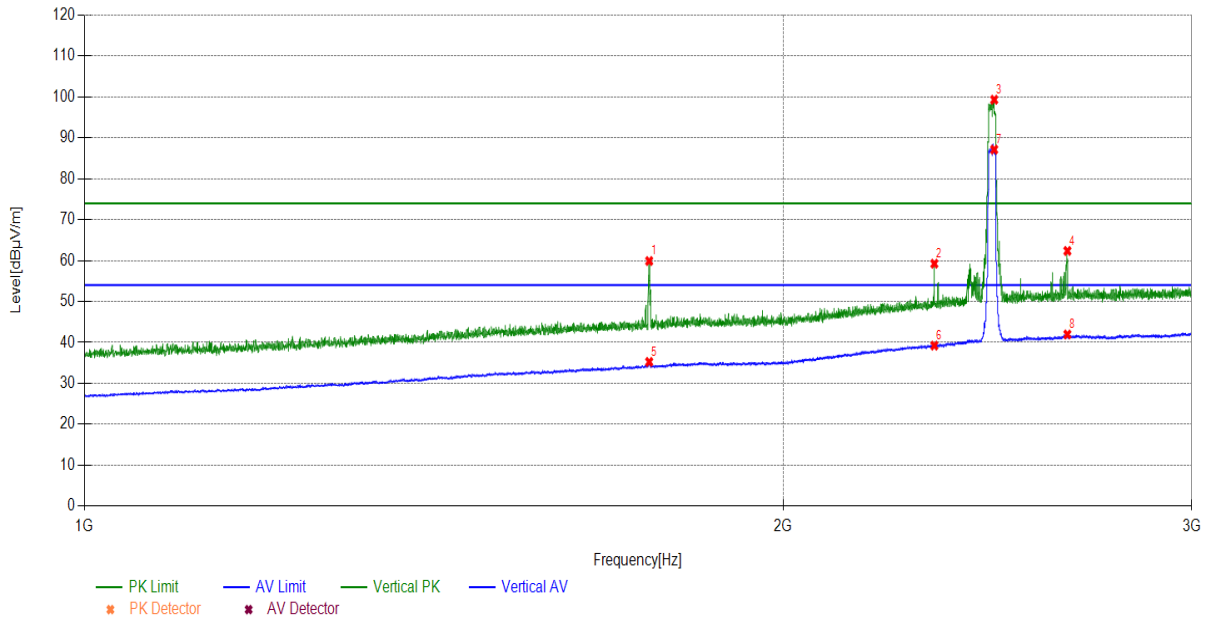


Note: The signal beyond the limit is carrier

Radiates Emission	1G~3G
Test channel	Worst-Case
polarization	Vertical

Suspected List

Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
1751.2751	32.65	27.26	59.91	74.00	14.09	PK	150	304	PASS
2323.9324	36.65	22.60	59.25	74.00	14.75	PK	150	22	PASS
2466.1466	37.64	61.66	99.30	74.00	-25.30	PK	150	219	---
2651.9652	38.35	24.01	62.36	74.00	11.64	PK	150	149	PASS
1751.2751	32.65	2.61	35.26	54.00	18.74	AV	150	304	PASS
2323.9324	36.65	2.59	39.24	54.00	14.76	AV	150	22	PASS
2466.1466	37.64	49.49	87.13	54.00	-33.13	AV	150	219	---
2651.9652	38.35	3.62	41.97	54.00	12.03	AV	150	262	PASS

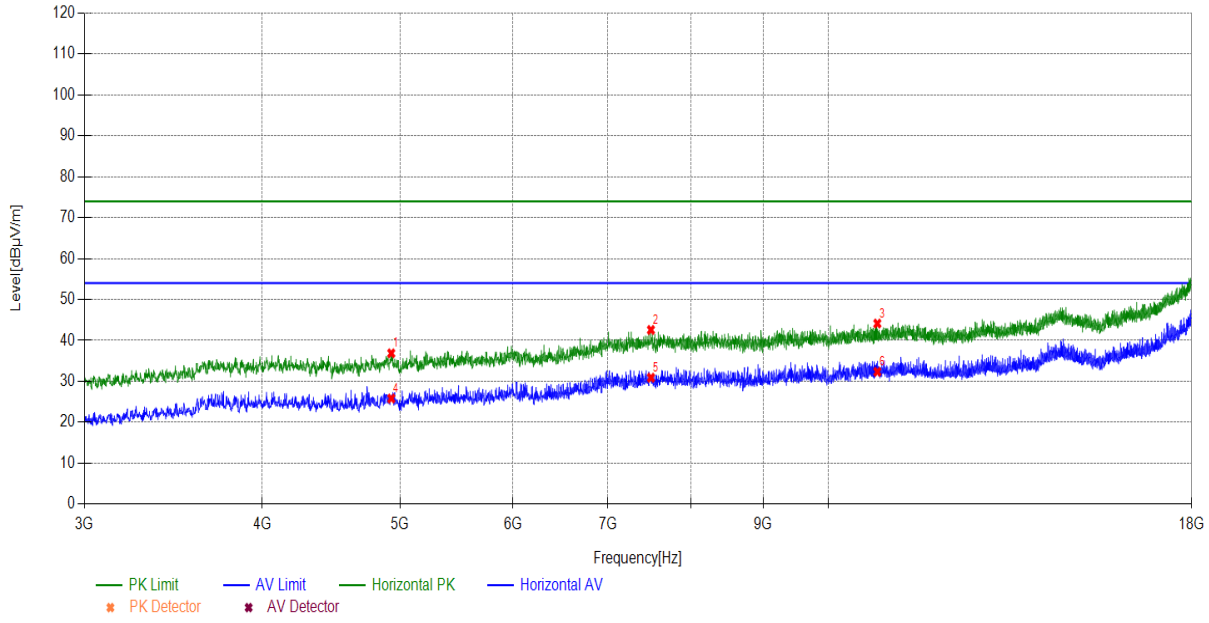


Note: The signal beyond the limit is carrier

Radiates Emission	3G~18G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

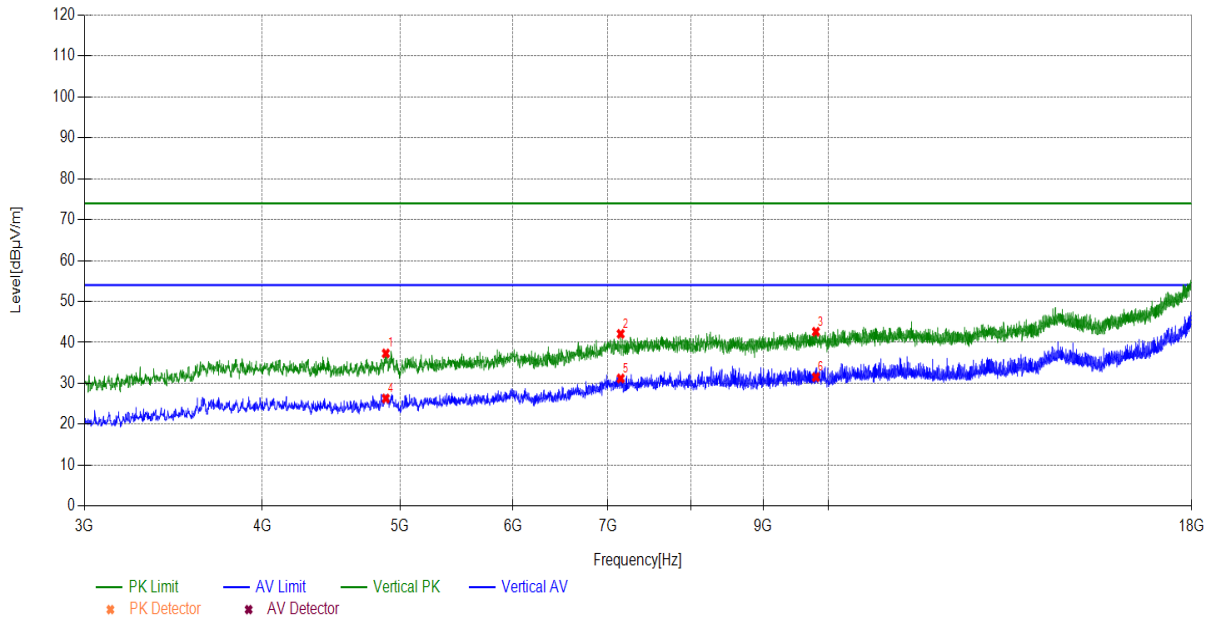
Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
4929.1929	1.15	35.73	36.88	74.00	37.12	PK	150	350	PASS
7503.4503	8.32	34.26	42.58	74.00	31.42	PK	150	50	PASS
10823.2823	11.79	32.35	44.14	74.00	29.86	PK	150	20	PASS
4929.1929	1.15	24.68	25.83	54.00	28.17	AV	150	10	PASS
7503.4503	8.32	22.59	30.91	54.00	23.09	AV	150	20	PASS
10823.2823	11.79	20.57	32.36	54.00	21.64	AV	150	240	PASS



Radiates Emission	3G~18G
Test channel	Worst-Case
polarization	Vertical

Suspected List

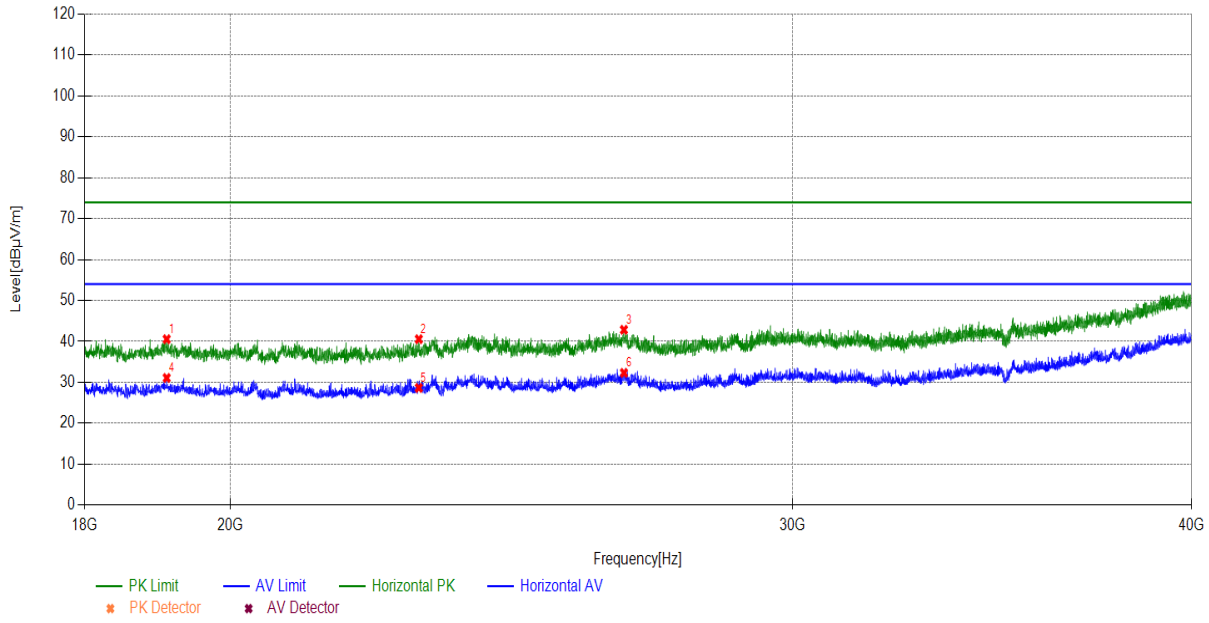
Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
4885.6886	0.97	36.37	37.34	74.00	36.66	PK	150	260	PASS
7144.9145	8.05	34.05	42.10	74.00	31.90	PK	150	190	PASS
9798.6799	11.57	31.04	42.61	74.00	31.39	PK	150	90	PASS
4885.6886	0.97	25.35	26.32	54.00	27.68	AV	150	10	PASS
7144.9145	8.05	23.17	31.22	54.00	22.78	AV	150	20	PASS
9798.6799	11.57	19.98	31.55	54.00	22.45	AV	150	10	PASS



Radiates Emission	18G~40G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

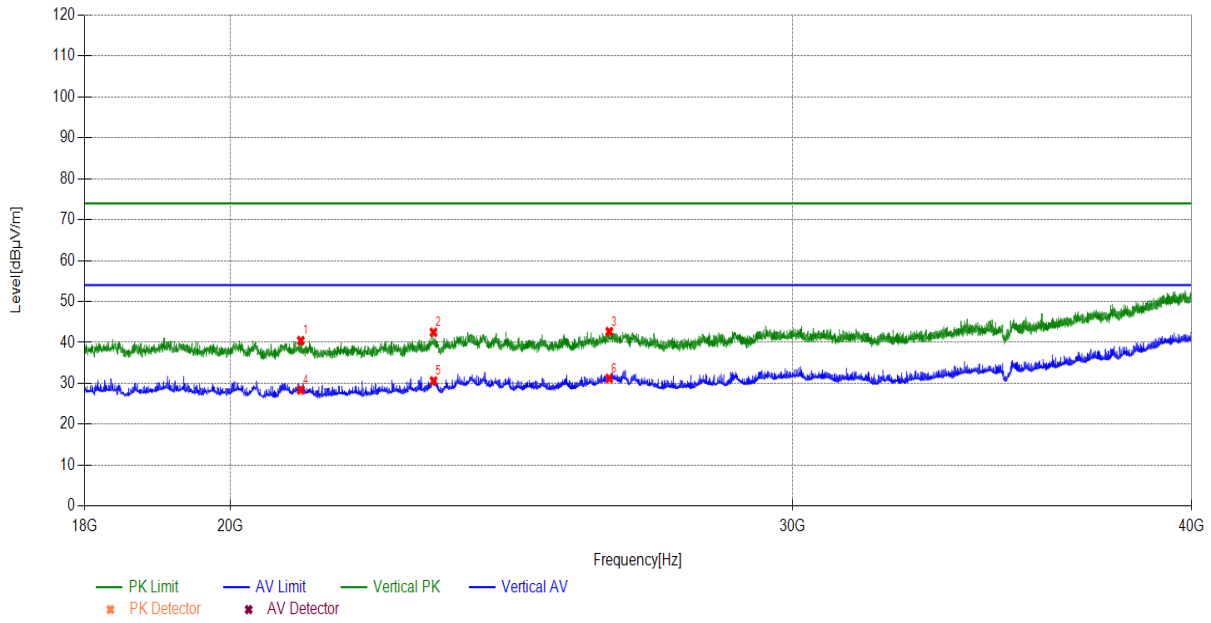
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
19100.11	1.34	39.22	40.56	74.00	33.44	PK	150	10	PASS
22908.6909	2.81	37.76	40.57	74.00	33.43	PK	150	60	PASS
26561.0561	4.72	38.14	42.86	74.00	31.14	PK	150	50	PASS
19100.11	1.34	29.76	31.10	54.00	22.90	AV	150	210	PASS
22908.6909	2.81	25.85	28.66	54.00	25.34	AV	150	110	PASS
26561.0561	4.72	27.61	32.33	54.00	21.67	AV	150	10	PASS



Radiates Emission	18G~40G
Test channel	Worst-Case
polarization	Vertical

Suspected List

Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
21038.5038	1.66	38.79	40.45	74.00	33.55	PK	150	140	PASS
23152.9153	3.02	39.48	42.50	74.00	31.50	PK	150	20	PASS
26281.6282	4.61	38.04	42.65	74.00	31.35	PK	150	320	PASS
21038.5038	1.66	26.75	28.41	54.00	25.59	AV	150	10	PASS
23152.9153	3.02	27.59	30.61	54.00	23.39	AV	150	200	PASS
26281.6282	4.61	26.62	31.23	54.00	22.77	AV	150	170	PASS



Bluetooth(Low Energy):

During the test, the Radiates Emission from 9kHz to 40GHz was performed in Bluetooth(Low Energy) all modes with all channels and all antennas. BLE(1Mbps), channel 0, antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Radiates Emission	9kHz~1GHz
Test channel	Worst-Case
Polarity	Horizontal

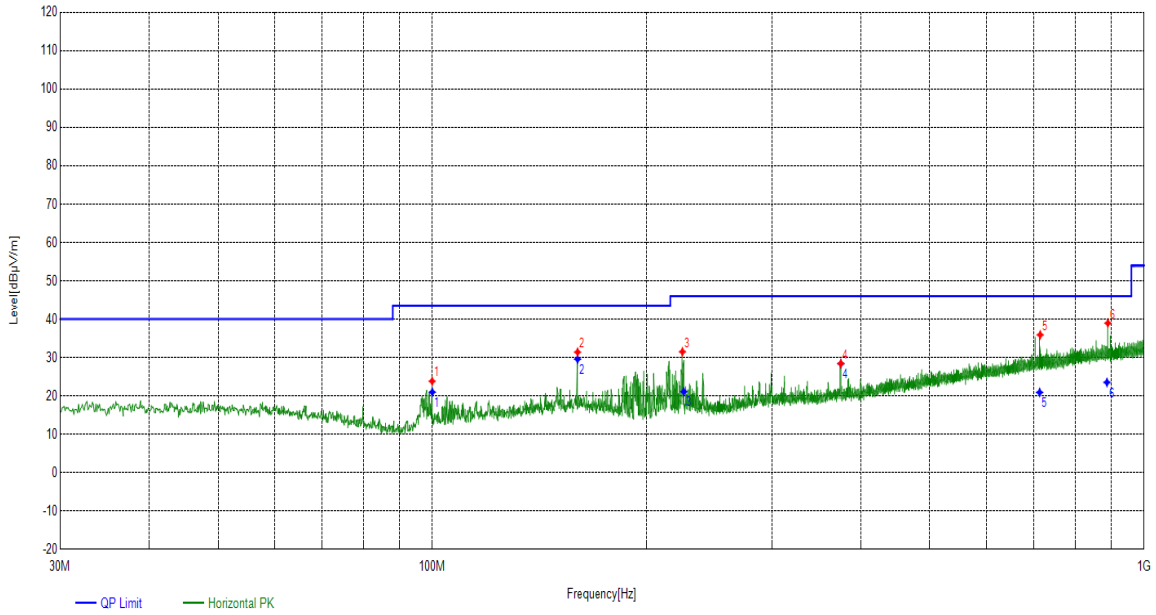
Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
99.944	15.93	7.90	23.83	43.50	19.67	PK	100	205	PASS
159.993	20.87	10.54	31.41	43.50	12.09	PK	100	151	PASS
224.6015	18.34	13.17	31.51	46.00	14.49	PK	100	118	PASS
374.9665	23.31	5.13	28.44	46.00	17.56	PK	100	112	PASS
714.5975	30.62	5.29	35.91	46.00	10.09	PK	100	171	PASS
889.603	32.93	6.04	38.97	46.00	7.03	PK	100	125	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List

Frequency [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
99.9903	15.93	20.98	43.50	22.52	140	205	PASS
159.9837	20.87	29.58	43.50	13.92	170	151	PASS
225.6124	18.34	21.11	46.00	24.89	350	118	PASS
374.9882	23.31	28.40	46.00	17.60	200	112	PASS
713.3155	30.62	20.92	46.00	25.08	260	171	PASS
886.861	32.93	23.53	46.00	22.47	270	125	PASS


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
Level[dBµV/m]
30M
100M
1G
Frequency[Hz]
QP Limit
Horizontal PK

Radiates Emission	9kHz~1GHz
Test channel	Worst-Case
Polarity	Vertical

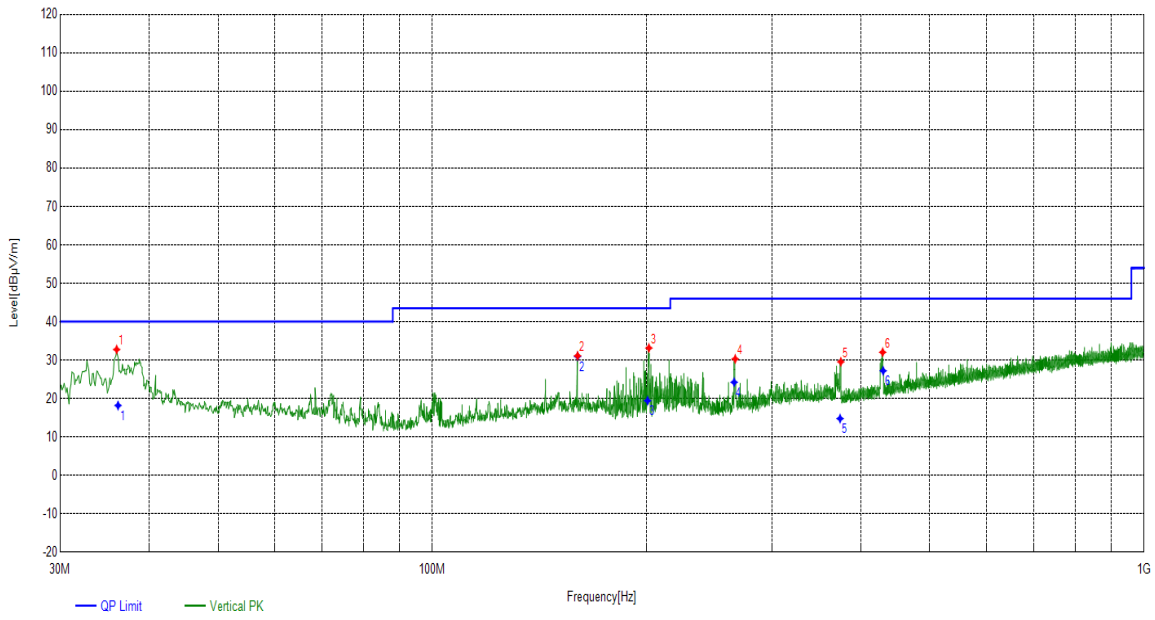
Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
36.0146	19.57	13.19	32.76	40.00	7.24	PK	100	168	PASS
159.993	20.87	10.24	31.11	43.50	12.39	PK	100	155	PASS
201.5132	17.40	15.75	33.15	43.50	10.35	PK	100	359	PASS
266.4126	20.06	10.24	30.30	46.00	15.70	PK	100	93	PASS
374.9665	23.31	6.25	29.56	46.00	16.44	PK	100	253	PASS
429.2919	24.73	7.32	32.05	46.00	13.95	PK	100	80	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List

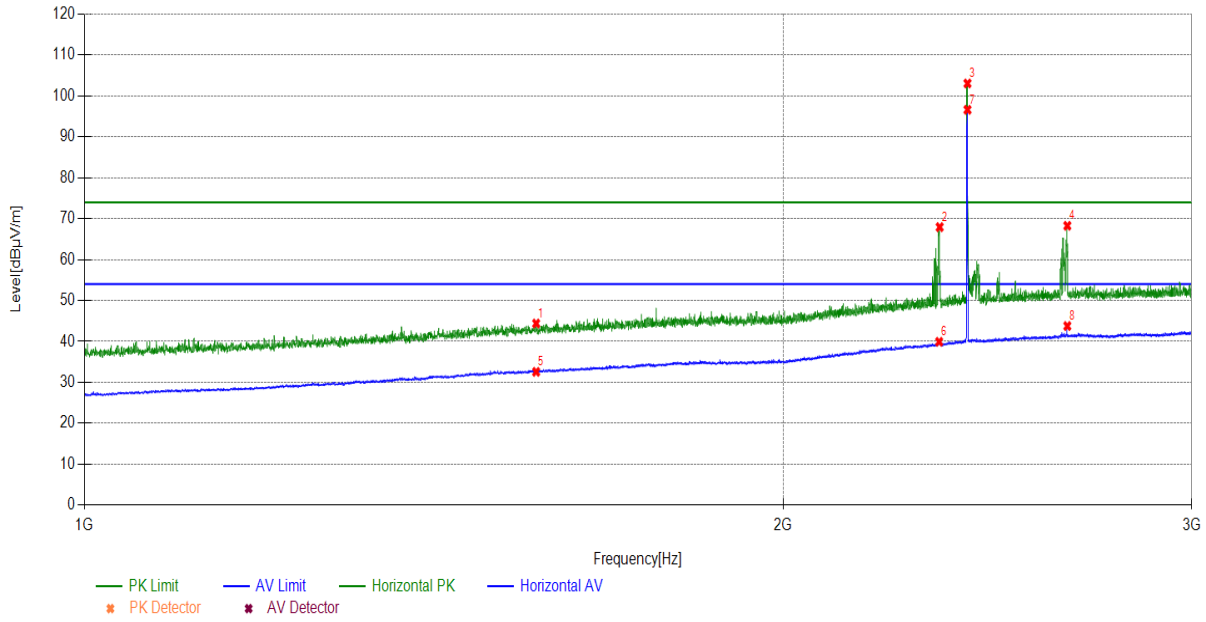
Frequency [MHz]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
36.1777	19.57	18.19	40.00	21.81	330	168	PASS
159.9883	20.87	30.97	43.50	12.53	160	155	PASS
200.65	17.40	19.45	43.50	24.05	310	359	PASS
265.5181	20.06	24.25	46.00	21.75	140	93	PASS
374.0386	23.31	14.78	46.00	31.22	130	253	PASS
429.9939	24.73	27.21	46.00	18.79	110	80	PASS



Radiates Emission	1G~3G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
1565.4565	31.30	13.10	44.40	74.00	29.60	PK	150	2	PASS
2336.3336	36.76	31.18	67.94	74.00	6.06	PK	150	168	PASS
2401.7402	37.34	65.70	103.04	74.00	-29.04	PK	150	69	---
2651.7652	38.35	29.91	68.26	74.00	5.74	PK	150	26	PASS
1565.4565	31.30	1.29	32.59	54.00	21.41	AV	150	69	PASS
2335.1335	36.75	3.18	39.93	54.00	14.07	AV	150	182	PASS
2401.7402	37.34	59.26	96.60	54.00	-42.60	AV	150	69	---
2651.7652	38.35	5.44	43.79	54.00	10.21	AV	150	26	PASS

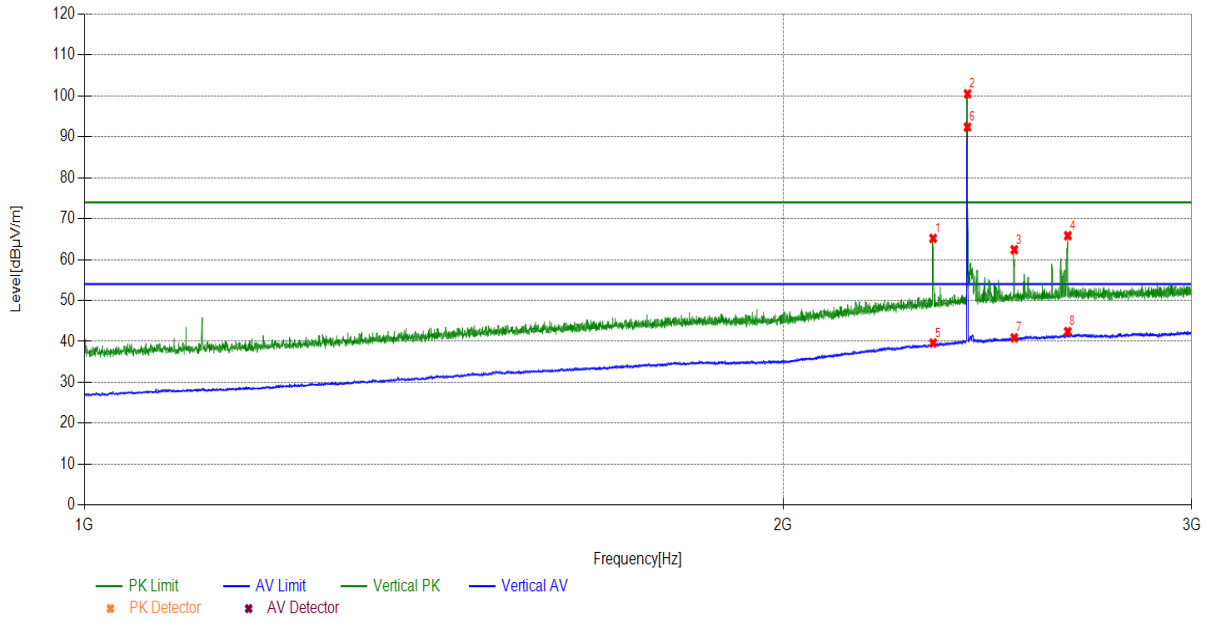


Note: The signal beyond the limit is carrier

Radiates Emission	1G~3G
Test channel	Worst-Case
polarization	Vertical

Suspected List

Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
2321.1321	36.63	28.56	65.19	74.00	8.81	PK	150	294	PASS
2401.9402	37.34	63.17	100.51	74.00	-26.51	PK	150	25	---
2515.7516	37.86	24.56	62.42	74.00	11.58	PK	150	359	PASS
2653.1653	38.35	27.49	65.84	74.00	8.16	PK	150	195	PASS
2321.1321	36.63	2.98	39.61	54.00	14.39	AV	150	294	PASS
2401.7402	37.34	55.04	92.38	54.00	-38.38	AV	150	11	---
2515.7516	37.86	3.03	40.89	54.00	13.11	AV	150	322	PASS
2652.9653	38.35	4.09	42.44	54.00	11.56	AV	150	195	PASS

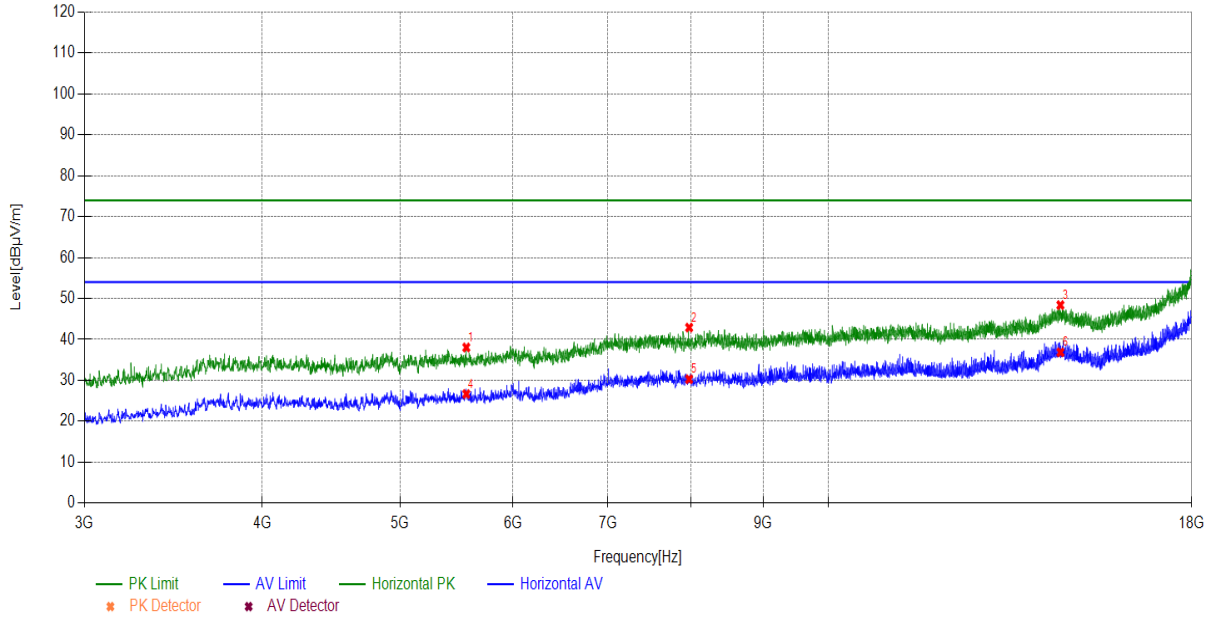


Note: The signal beyond the limit is carrier

Radiates Emission	3G~18G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

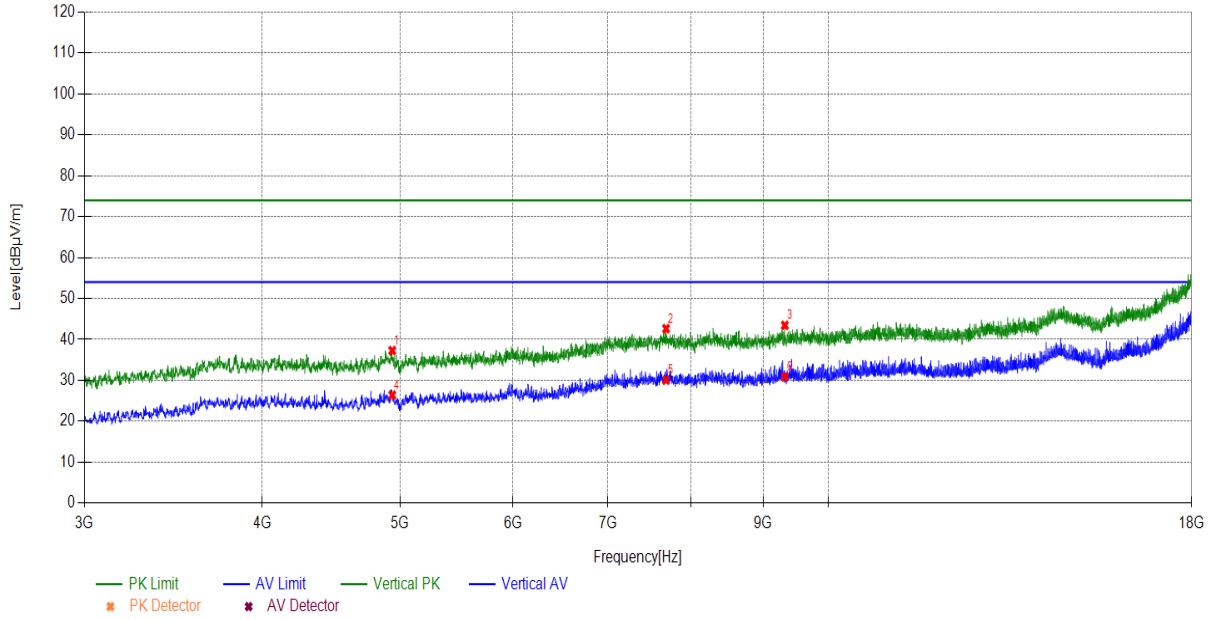
Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
5565.2565	3.05	35.01	38.06	74.00	35.94	PK	150	310	PASS
7981.9982	8.47	34.44	42.91	74.00	31.09	PK	150	290	PASS
14555.6556	17.25	31.15	48.40	74.00	25.60	PK	150	90	PASS
5565.2565	3.05	23.63	26.68	54.00	27.32	AV	150	50	PASS
7981.9982	8.47	21.83	30.30	54.00	23.70	AV	150	30	PASS
14555.6556	17.25	19.62	36.87	54.00	17.13	AV	150	10	PASS



Radiates Emission	3G~18G
Test channel	Worst-Case
polarization	Vertical

Suspected List

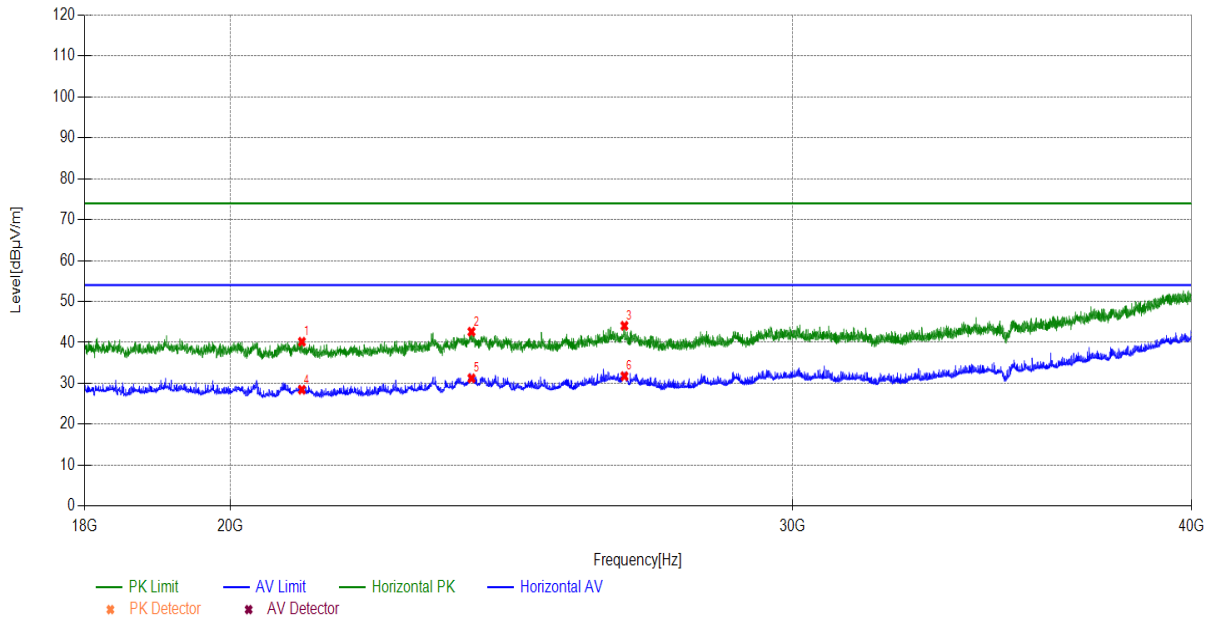
Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
4936.6937	1.19	36.12	37.31	74.00	36.69	PK	150	290	PASS
7689.4689	8.38	34.27	42.65	74.00	31.35	PK	150	220	PASS
9318.6319	10.72	32.75	43.47	74.00	30.53	PK	150	270	PASS
4936.6937	1.19	25.23	26.42	54.00	27.58	AV	150	40	PASS
7689.4689	8.38	21.67	30.05	54.00	23.95	AV	150	300	PASS
9318.6319	10.72	20.15	30.87	54.00	23.13	AV	150	60	PASS



Radiates Emission	18G~40G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

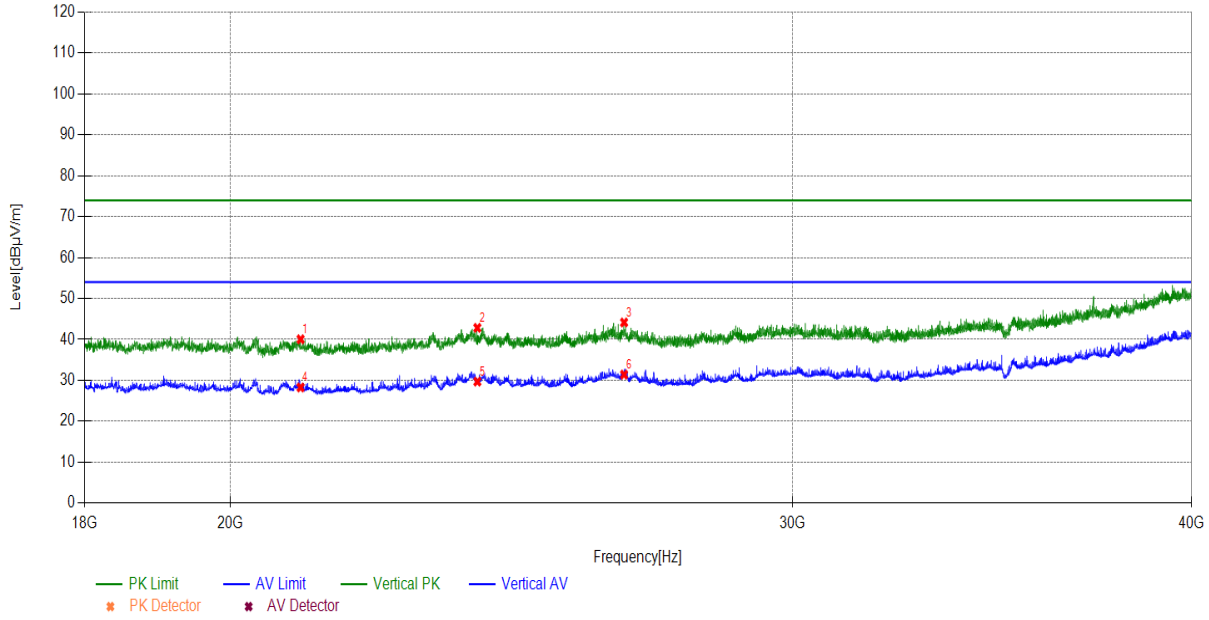
Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
21056.1056	1.66	38.52	40.18	74.00	33.82	PK	150	20	PASS
23795.3795	3.54	39.10	42.64	74.00	31.36	PK	150	310	PASS
26569.857	4.73	39.35	44.08	74.00	29.92	PK	150	290	PASS
21056.1056	1.66	26.80	28.46	54.00	25.54	AV	150	200	PASS
23795.3795	3.54	27.72	31.26	54.00	22.74	AV	150	30	PASS
26569.857	4.73	27.04	31.77	54.00	22.23	AV	150	250	PASS



Radiates Emission	18G~40G
Test channel	Worst-Case
polarization	Vertical

Suspected List

Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
21036.3036	1.66	38.40	40.06	74.00	33.94	PK	150	290	PASS
23896.5897	3.62	39.23	42.85	74.00	31.15	PK	150	90	PASS
26563.2563	4.73	39.43	44.16	74.00	29.84	PK	150	90	PASS
21036.3036	1.66	26.62	28.28	54.00	25.72	AV	150	220	PASS
23896.5897	3.62	26.09	29.71	54.00	24.29	AV	150	310	PASS
26563.2563	4.73	26.69	31.42	54.00	22.58	AV	150	180	PASS



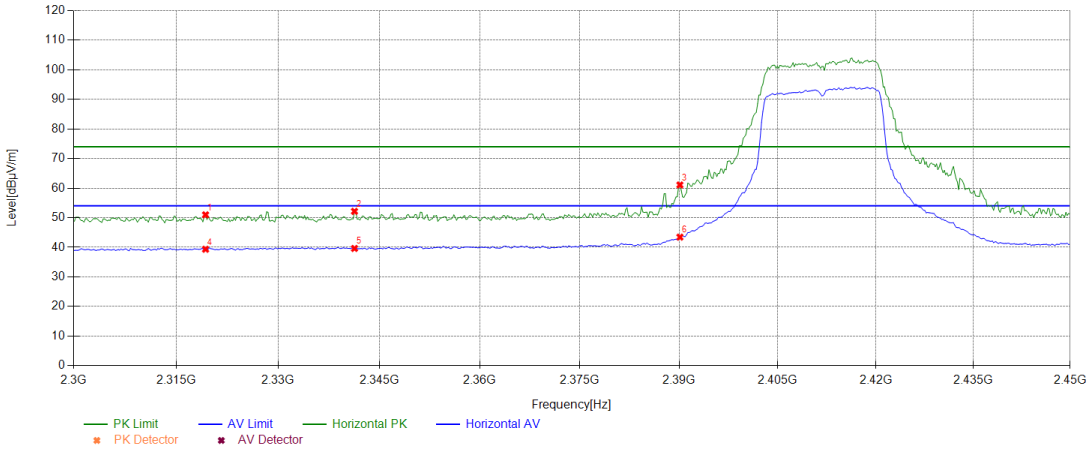
Band Edge:

During the test, the Band Edge was performed in WIFI all modes with all channels and all antennas. 802.11n20, Antenna1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Test mode	802.11n20
Test channel	Lowest channel
polarization	Horizontal

Suspected List

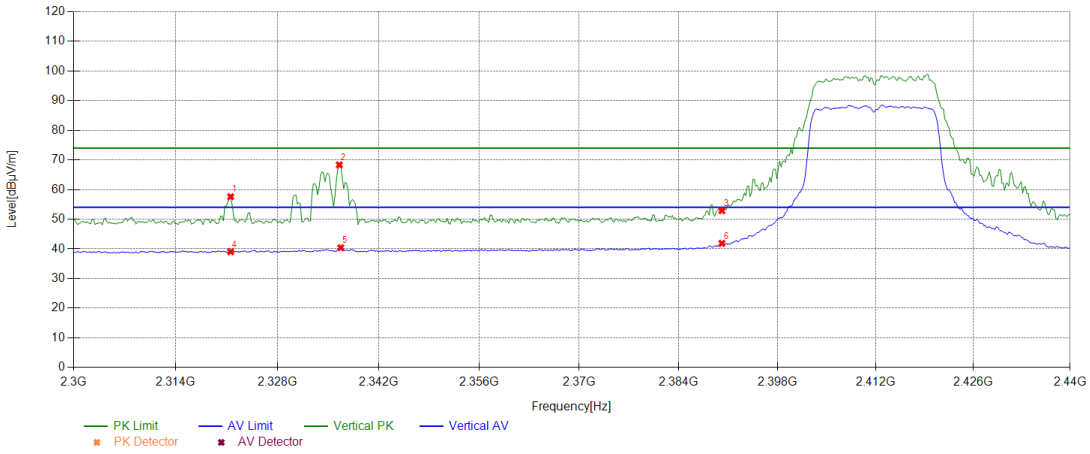
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2319.3319	36.61	14.37	50.98	74.00	23.02	PK	150	296	PASS
2341.3341	36.81	15.36	52.17	74.00	21.83	PK	150	140	PASS
2390.139	37.24	23.83	61.07	74.00	12.93	PK	150	56	PASS
2319.3319	36.61	2.74	39.35	54.00	14.65	AV	150	41	PASS
2341.3341	36.81	2.82	39.63	54.00	14.37	AV	150	3	PASS
2390.139	37.24	6.21	43.45	54.00	10.55	AV	150	27	PASS



Test mode	802.11n20
Test channel	Lowest channel
polarization	Vertical

Suspected List

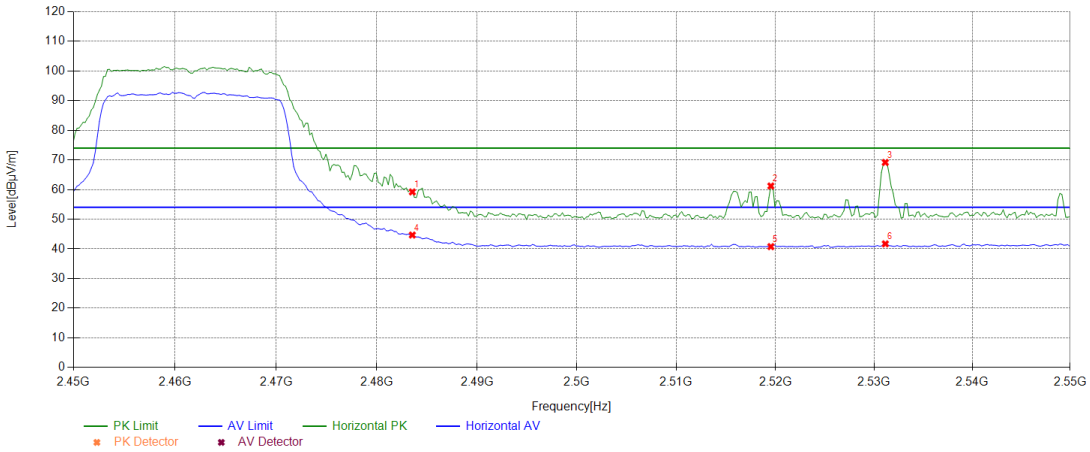
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2321.5322	36.63	20.98	57.61	74.00	16.39	PK	150	357	PASS
2336.5337	36.77	31.55	68.32	74.00	5.68	PK	150	1	PASS
2390.139	37.24	15.67	52.91	74.00	21.09	PK	150	34	PASS
2321.5322	36.63	2.43	39.06	54.00	14.94	AV	150	357	PASS
2336.7337	36.77	3.64	40.41	54.00	13.59	AV	150	1	PASS
2390.139	37.24	4.62	41.86	54.00	12.14	AV	150	20	PASS



Test mode	802.11n20
Test channel	Highest channel
polarization	Horizontal

Suspected List

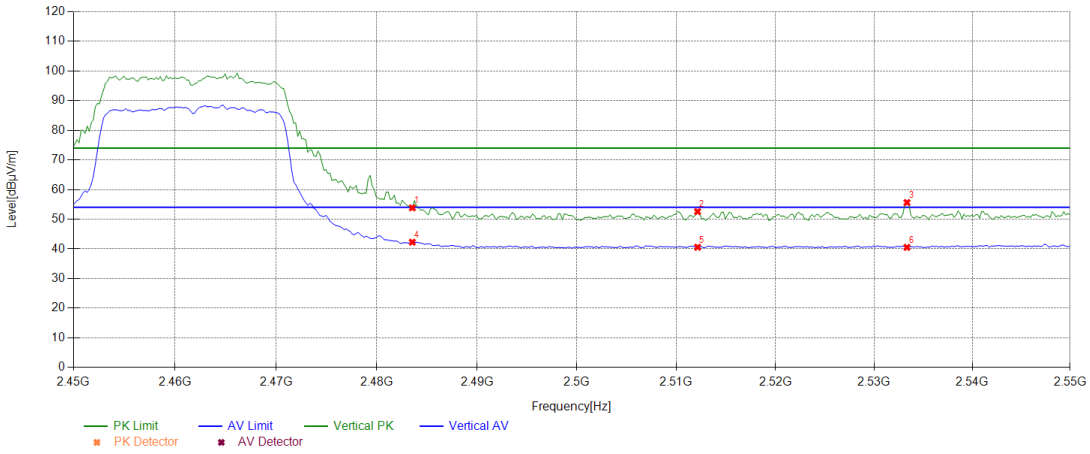
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2483.5484	37.72	21.49	59.21	74.00	14.79	PK	150	114	PASS
2519.552	37.87	23.34	61.21	74.00	12.79	PK	150	100	PASS
2531.1531	37.92	31.23	69.15	74.00	4.85	PK	150	241	PASS
2483.5484	37.72	6.95	44.67	54.00	9.33	AV	150	29	PASS
2519.552	37.87	2.91	40.78	54.00	13.22	AV	150	100	PASS
2531.1531	37.92	3.78	41.70	54.00	12.30	AV	150	241	PASS



Test mode	802.11n20
Test channel	Highest channel
polarization	Vertical

Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2483.5484	37.72	16.12	53.84	74.00	20.16	PK	150	262	PASS
2512.1512	37.84	14.75	52.59	74.00	21.41	PK	150	36	PASS
2533.3533	37.93	17.70	55.63	74.00	18.37	PK	150	177	PASS
2483.5484	37.72	4.54	42.26	54.00	11.74	AV	150	219	PASS
2512.1512	37.84	2.73	40.57	54.00	13.43	AV	150	50	PASS
2533.3533	37.93	2.60	40.53	54.00	13.47	AV	150	290	PASS

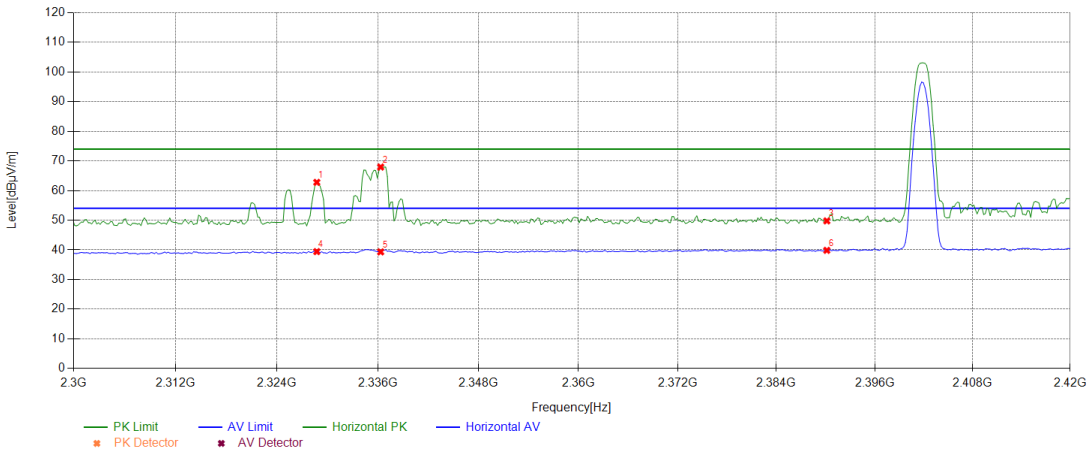


During the test, the Band Edge was performed in Bluetooth(Low Energy) all modes with all channels and all antenna. BLE(1Mbps), Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Test mode	BLE(1Mbps)
Test channel	Lowest channel
polarization	Horizontal

Suspected List

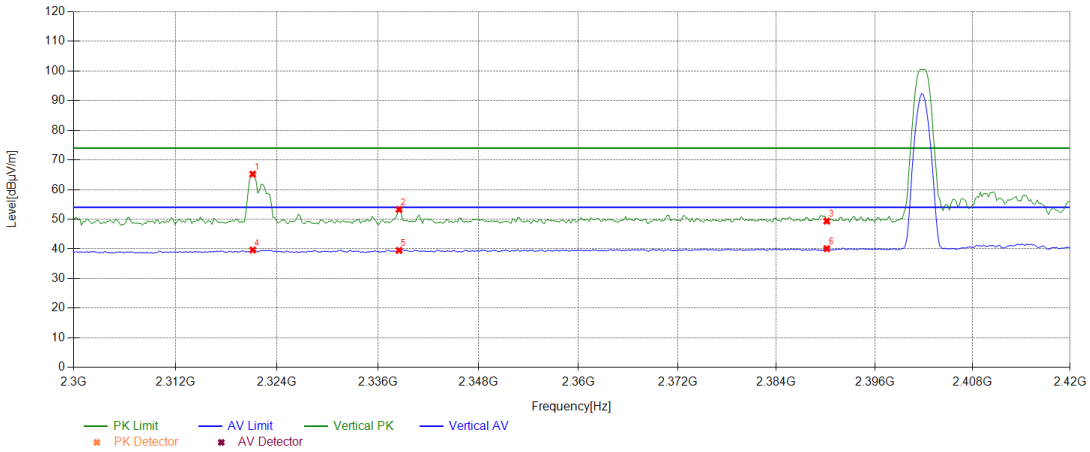
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2328.7329	36.70	26.07	62.77	74.00	11.23	PK	150	351	PASS
2336.3336	36.76	31.18	67.94	74.00	6.06	PK	150	168	PASS
2390.139	37.24	12.54	49.78	74.00	24.22	PK	150	111	PASS
2328.7329	36.70	2.73	39.43	54.00	14.57	AV	150	351	PASS
2336.3336	36.76	2.58	39.34	54.00	14.66	AV	150	197	PASS
2390.139	37.24	2.61	39.85	54.00	14.15	AV	150	2	PASS



Test mode	BLE(1Mbps)
Test channel	Lowest channel
polarization	Vertical

Suspected List

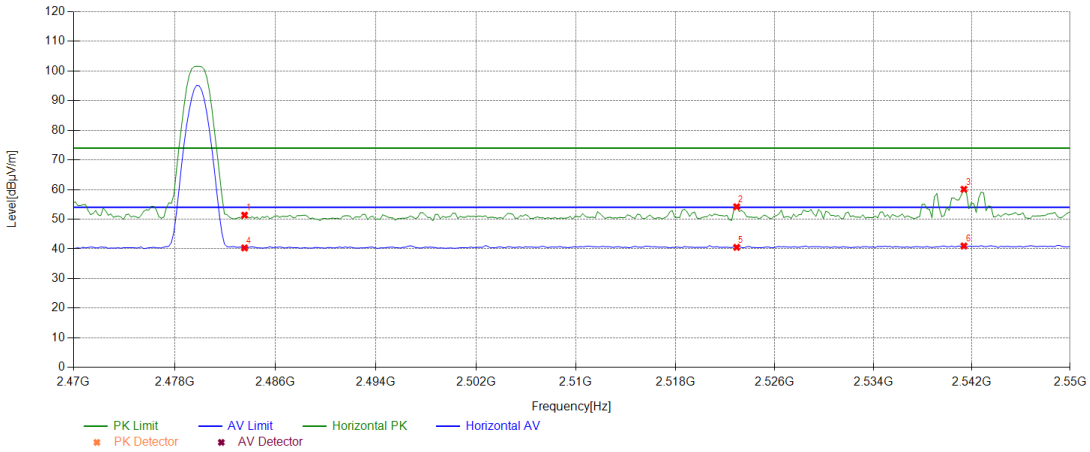
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2321.1321	36.63	28.56	65.19	74.00	8.81	PK	150	294	PASS
2338.5339	36.78	16.50	53.28	74.00	20.72	PK	150	280	PASS
2390.139	37.24	12.11	49.35	74.00	24.65	PK	150	123	PASS
2321.1321	36.63	2.98	39.61	54.00	14.39	AV	150	294	PASS
2338.5339	36.78	2.73	39.51	54.00	14.49	AV	150	25	PASS
2390.139	37.24	2.84	40.08	54.00	13.92	AV	150	53	PASS



Test mode	BLE(1Mbps)
Test channel	Highest channel
polarization	Horizontal

Suspected List

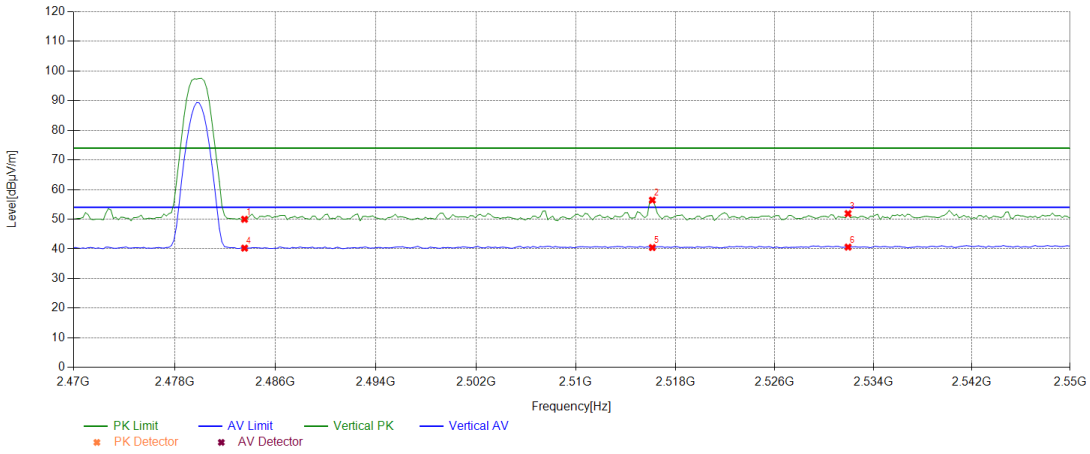
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2483.5484	37.72	13.66	51.38	74.00	22.62	PK	150	93	PASS
2522.9523	37.89	16.31	54.20	74.00	19.80	PK	150	334	PASS
2541.3541	37.96	22.14	60.10	74.00	13.90	PK	150	358	PASS
2483.5484	37.72	2.61	40.33	54.00	13.67	AV	150	207	PASS
2522.9523	37.89	2.64	40.53	54.00	13.47	AV	150	349	PASS
2541.3541	37.96	3.01	40.97	54.00	13.03	AV	150	358	PASS



Test mode	BLE(1Mbps)
Test channel	Highest channel
polarization	Vertical

Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2483.5484	37.72	12.25	49.97	74.00	24.03	PK	150	130	PASS
2516.1516	37.86	18.58	56.44	74.00	17.56	PK	150	144	PASS
2531.9532	37.92	13.98	51.90	74.00	22.10	PK	150	88	PASS
2483.5484	37.72	2.54	40.26	54.00	13.74	AV	150	73	PASS
2516.1516	37.86	2.59	40.45	54.00	13.55	AV	150	16	PASS
2531.9532	37.92	2.68	40.60	54.00	13.40	AV	150	300	PASS



Model：HZB-12/SB-W

SPURIOUS EMISSIONS：

WIFI:

During the test, the Radiates Emission from 9kHz to 40GHz was performed in WIFI all modes with all channels and all antennas. 802.11n20, Channel 11, Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Radiates Emission	9kHz~1GHz
Test channel	Worst-Case
Polarity	Horizontal

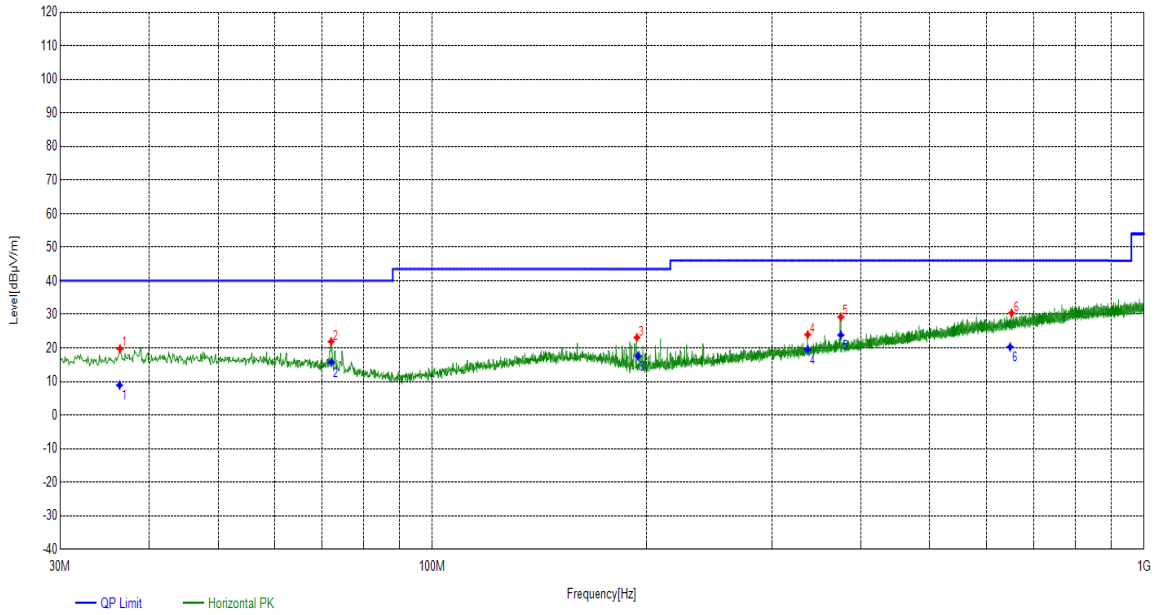
Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
36.4026	19.60	0.16	19.76	40.00	20.24	PK	100	185	PASS
72.1022	17.82	4.06	21.88	40.00	18.12	PK	100	139	PASS
193.8494	17.66	5.46	23.12	43.50	20.38	PK	100	152	PASS
336.8417	22.35	1.60	23.95	46.00	22.05	PK	100	73	PASS
374.9665	23.31	5.92	29.23	46.00	16.77	PK	100	172	PASS
651.4441	29.56	0.83	30.39	46.00	15.61	PK	100	126	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List

Frequency [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
36.3557	19.60	8.90	40.00	31.10	220	185	PASS
72.121	17.82	15.73	40.00	24.27	240	139	PASS
194.4863	17.66	17.57	43.50	25.93	300	152	PASS
336.7978	22.35	19.46	46.00	26.54	290	73	PASS
374.972	23.31	23.85	46.00	22.15	380	172	PASS
648.2953	29.56	20.29	46.00	25.71	280	126	PASS


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
Level[dBµV/m]
30M
100M
1G
Frequency[Hz]
QP Limit
Horizontal PK

Radiates Emission	9kHz~1GHz
Test channel	Worst-Case
Polarity	Vertical

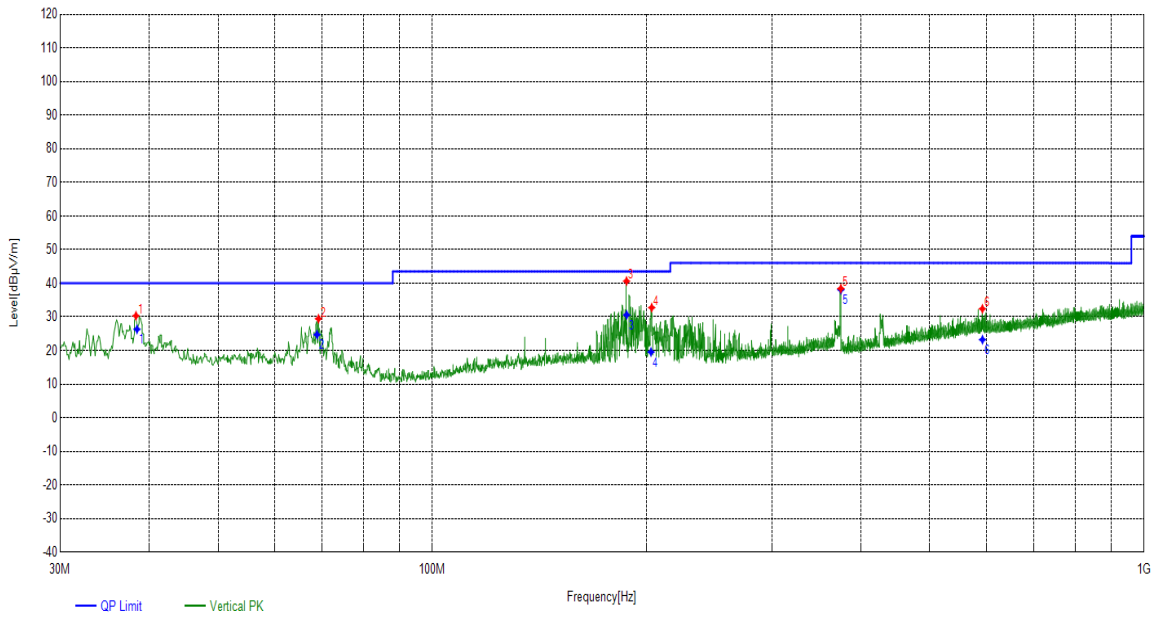
Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
38.3428	19.76	10.56	30.32	40.00	9.68	PK	100	357	PASS
69.1919	18.40	11.04	29.44	40.00	10.56	PK	100	72	PASS
187.4467	18.24	22.41	40.65	43.50	2.85	PK	100	119	PASS
203.3563	17.46	15.29	32.75	43.50	10.75	PK	100	145	PASS
374.9665	23.31	15.12	38.43	46.00	7.57	PK	100	92	PASS
592.7533	28.58	3.82	32.40	46.00	13.60	PK	100	132	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List

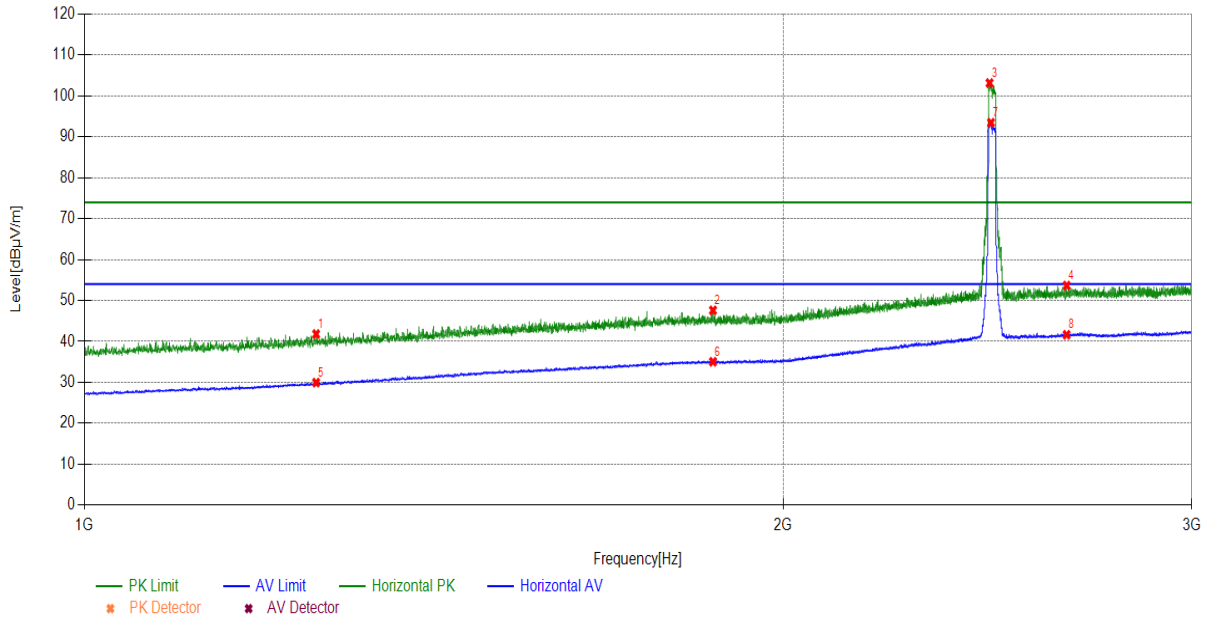
Frequency [MHz]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
38.4665	19.76	26.31	40.00	13.69	350	357	PASS
68.8704	18.40	24.72	40.00	15.28	320	72	PASS
187.5335	18.24	30.59	43.50	12.91	190	119	PASS
202.8736	17.46	19.56	43.50	23.94	380	145	PASS
375.0099	23.31	38.06	46.00	7.94	360	92	PASS
592.839	28.58	23.22	46.00	22.78	320	132	PASS



Radiates Emission	1G~3G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
1258.4258	28.47	13.34	41.81	74.00	32.19	PK	150	124	PASS
1865.6866	33.05	14.55	47.60	74.00	26.40	PK	150	96	PASS
2454.9455	37.59	65.54	103.13	74.00	-29.13	PK	150	208	---
2649.965	38.34	15.33	53.67	74.00	20.33	PK	150	26	PASS
1258.4258	28.47	1.49	29.96	54.00	24.04	AV	150	96	PASS
1865.6866	33.05	2.00	35.05	54.00	18.95	AV	150	292	PASS
2458.3458	37.60	55.85	93.45	54.00	-39.45	AV	150	208	---
2649.965	38.34	3.31	41.65	54.00	12.35	AV	150	96	PASS

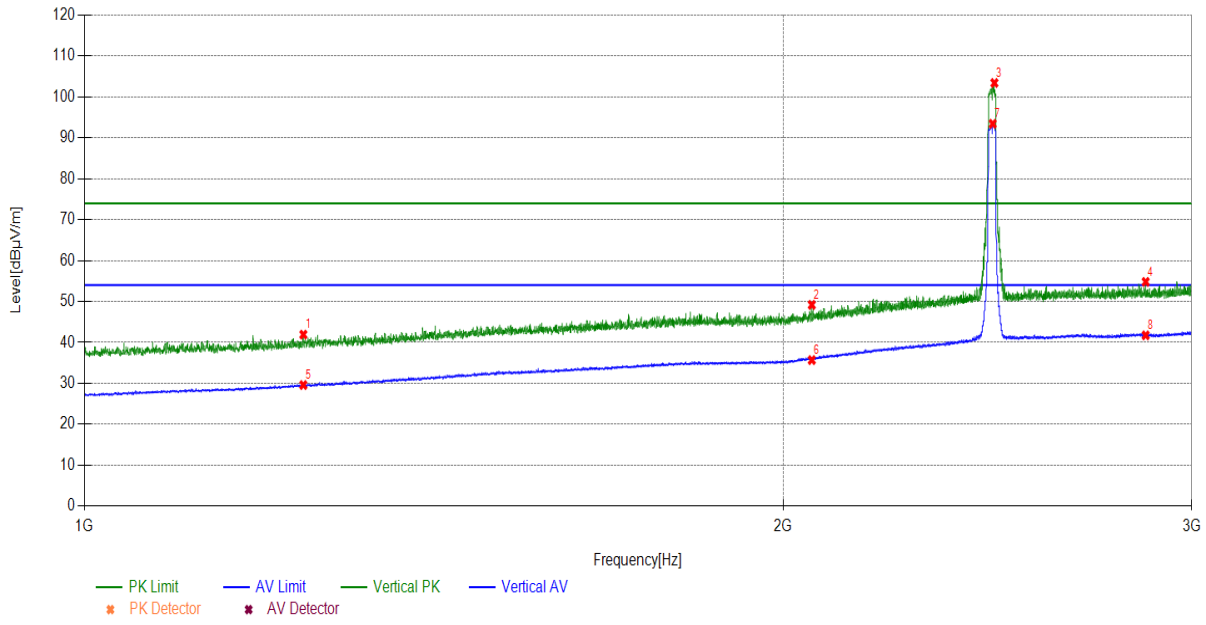


Note: The signal beyond the limit is carrier

Radiates Emission	1G~3G
Test channel	Worst-Case
polarization	Vertical

Suspected List

Frequency[MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
1242.6243	28.32	13.61	41.93	74.00	32.07	PK	150	306	PASS
2057.9058	33.81	15.38	49.19	74.00	24.81	PK	150	80	PASS
2466.7467	37.64	65.76	103.40	74.00	-29.40	PK	150	334	---
2866.1866	39.01	15.79	54.80	74.00	19.20	PK	150	108	PASS
1242.6243	28.32	1.29	29.61	54.00	24.39	AV	150	358	PASS
2057.9058	33.81	1.90	35.71	54.00	18.29	AV	150	38	PASS
2462.5463	37.62	55.80	93.42	54.00	-39.42	AV	150	348	---
2866.1866	39.01	2.75	41.76	54.00	12.24	AV	150	94	PASS

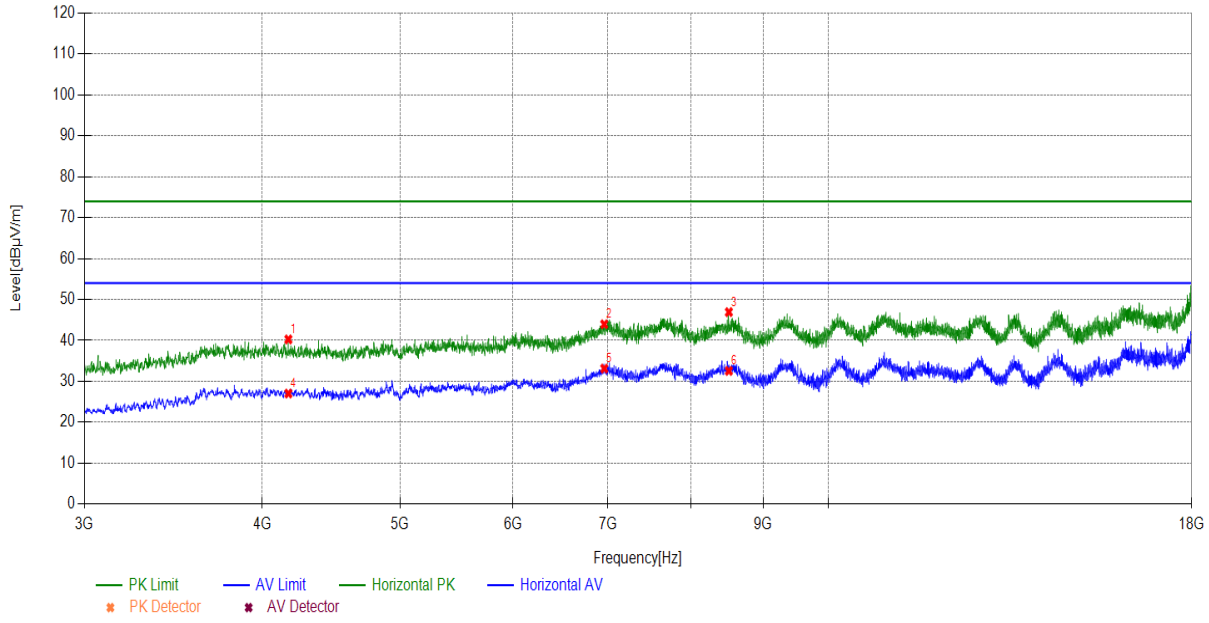


Note: The signal beyond the limit is carrier

Radiates Emission	3G~18G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

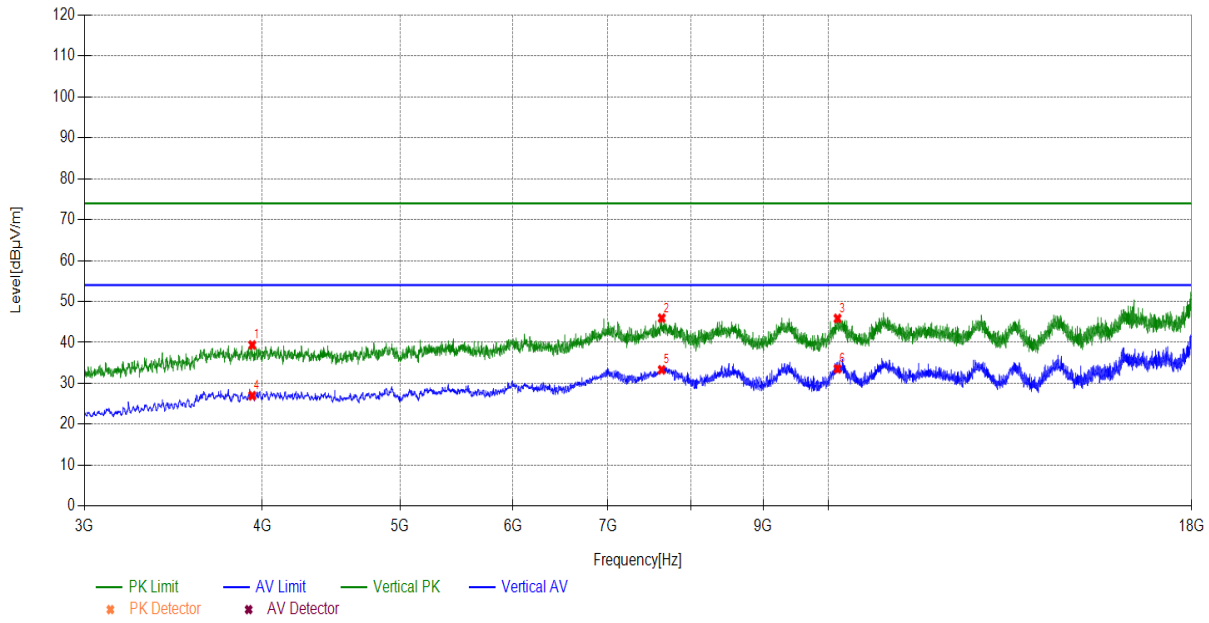
Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
4173.1173	-0.33	40.60	40.27	74.00	33.73	PK	150	270	PASS
6957.3957	7.79	36.18	43.97	74.00	30.03	PK	150	260	PASS
8511.5512	9.13	37.81	46.94	74.00	27.06	PK	150	230	PASS
4173.1173	-0.33	27.37	27.04	54.00	26.96	AV	150	360	PASS
6957.3957	7.79	25.35	33.14	54.00	20.86	AV	150	10	PASS
8511.5512	9.13	23.44	32.57	54.00	21.43	AV	150	90	PASS



Radiates Emission	3G~18G
Test channel	Worst-Case
polarization	Vertical

Suspected List

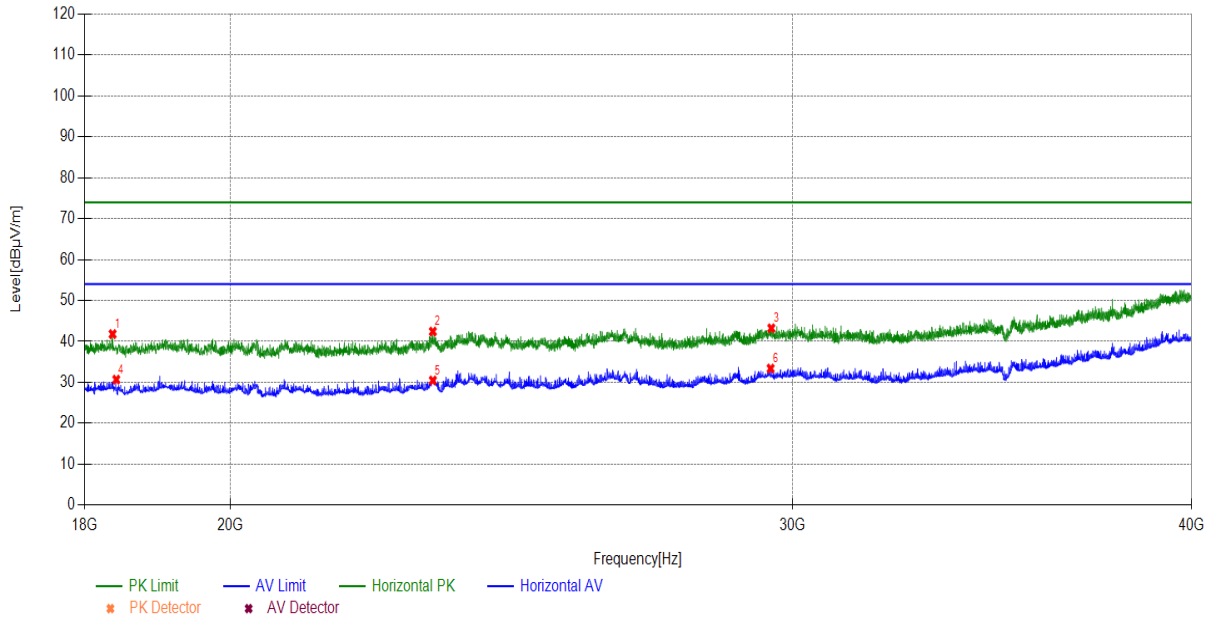
Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
3936.0936	-0.26	39.64	39.38	74.00	34.62	PK	150	60	PASS
7635.4635	8.36	37.59	45.95	74.00	28.05	PK	150	170	PASS
10148.2148	11.71	34.15	45.86	74.00	28.14	PK	150	80	PASS
3936.0936	-0.26	27.26	27.00	54.00	27.00	AV	150	230	PASS
7635.4635	8.36	24.96	33.32	54.00	20.68	AV	150	90	PASS
10148.2148	11.71	21.85	33.56	54.00	20.44	AV	150	60	PASS



Radiates Emission	18G~40G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

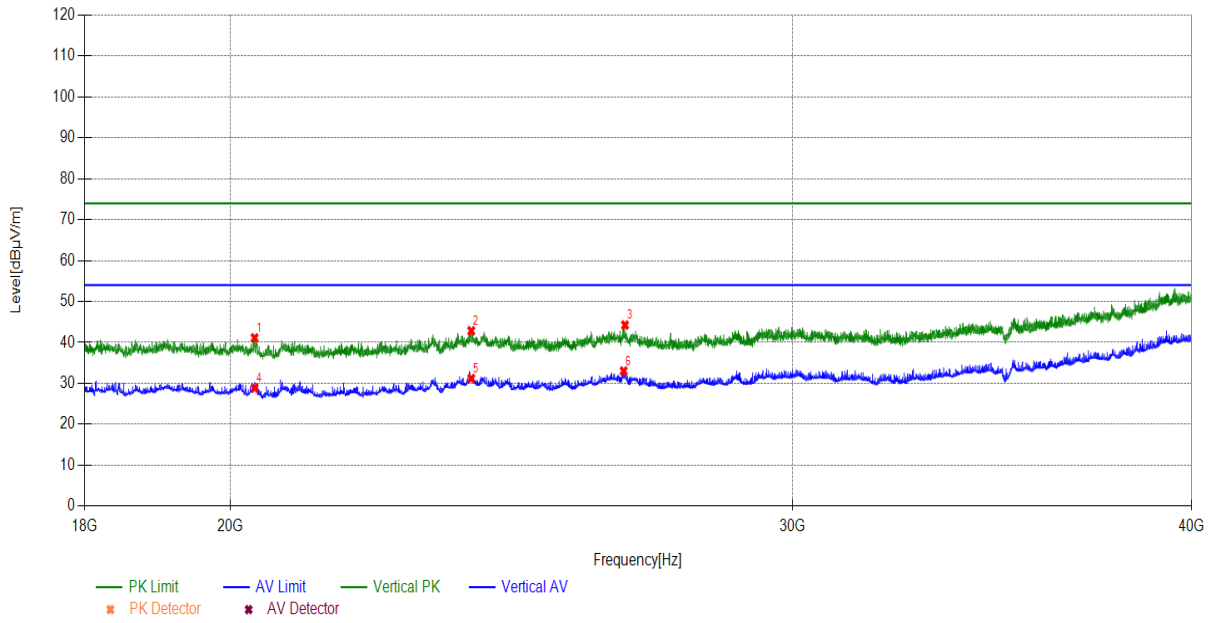
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
18369.637	1.19	40.62	41.81	74.00	32.19	PK	150	140	PASS
23141.9142	3.01	39.42	42.43	74.00	31.57	PK	150	120	PASS
29540.154	6.38	36.85	43.23	74.00	30.77	PK	150	50	PASS
18418.0418	1.20	29.49	30.69	54.00	23.31	AV	150	10	PASS
23141.9142	3.01	27.47	30.48	54.00	23.52	AV	150	40	PASS
29524.7525	6.37	27.03	33.40	54.00	20.60	AV	150	10	PASS



Radiates Emission	18G~40G
Test channel	Worst-Case
polarization	Vertical

Suspected List

Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
20349.835	1.42	39.69	41.11	74.00	32.89	PK	150	180	PASS
23790.9791	3.53	39.32	42.85	74.00	31.15	PK	150	200	PASS
26580.8581	4.73	39.53	44.26	74.00	29.74	PK	150	130	PASS
20349.835	1.42	27.47	28.89	54.00	25.11	AV	150	120	PASS
23790.9791	3.53	27.66	31.19	54.00	22.81	AV	150	10	PASS
26556.6557	4.72	28.31	33.03	54.00	20.97	AV	150	10	PASS



Bluetooth(Low Energy):

During the test, the Radiates Emission from 9kHz to 40GHz was performed in Bluetooth(Low Energy) all modes with all channels and all antennas. BLE(1Mbps), channel 0, antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Radiates Emission	9kHz~1GHz
Test channel	Worst-Case
Polarity	Horizontal

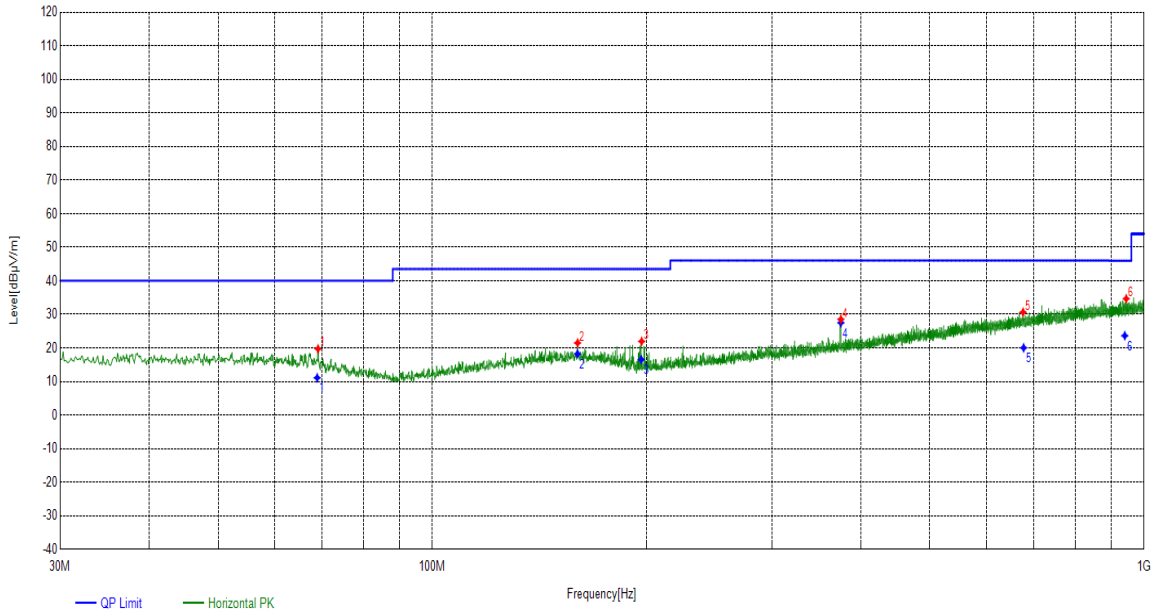
Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
69.0949	18.40	1.33	19.73	40.00	20.27	PK	100	110	PASS
159.993	20.87	0.61	21.48	43.50	22.02	PK	100	320	PASS
196.8567	17.49	4.47	21.96	43.50	21.54	PK	100	155	PASS
374.9665	23.31	5.22	28.53	46.00	17.47	PK	100	64	PASS
676.0846	29.96	0.68	30.64	46.00	15.36	PK	100	307	PASS
943.9284	33.52	1.13	34.65	46.00	11.35	PK	100	247	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List

Frequency [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
68.9029	18.40	11.11	40.00	28.89	350	110	PASS
159.9721	20.87	18.24	43.50	25.26	370	320	PASS
196.5775	17.49	16.53	43.50	26.97	310	155	PASS
374.9937	23.31	27.50	46.00	18.50	230	64	PASS
677.3272	29.96	20.04	46.00	25.96	360	307	PASS
939.5568	33.52	23.65	46.00	22.35	290	247	PASS


120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
Level[dBµV/m]
30M
100M
1G
Frequency[Hz]
QP Limit
Horizontal PK

Radiates Emission	9kHz~1GHz
Test channel	Worst-Case
Polarity	Vertical

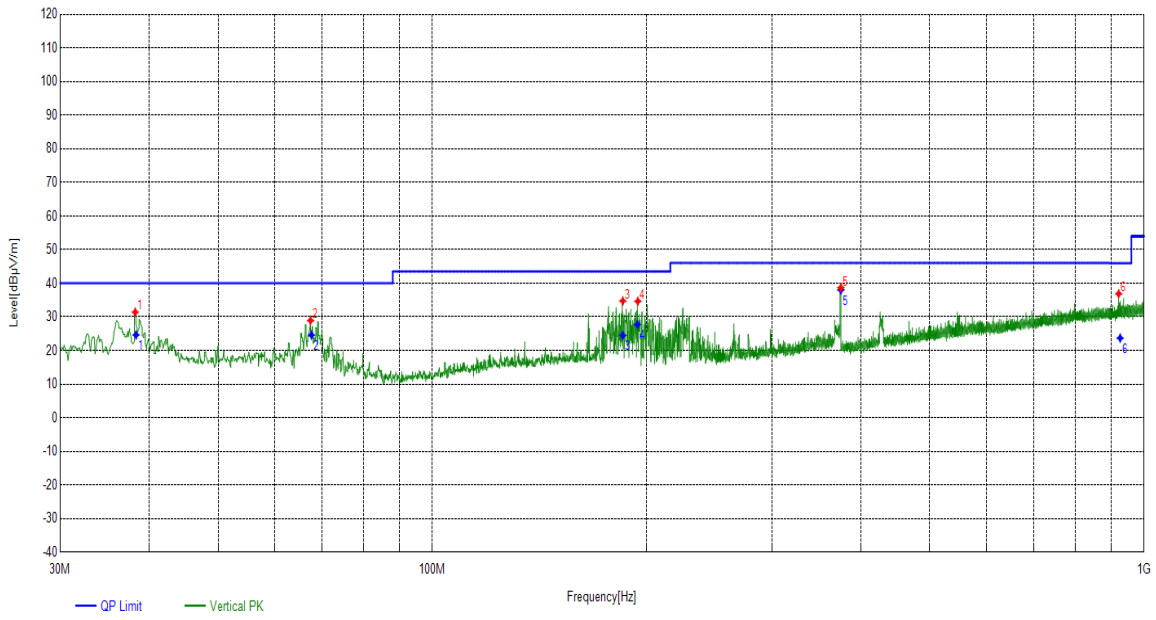
Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
38.2458	19.75	11.66	31.41	40.00	8.59	PK	100	290	PASS
67.4457	18.67	10.24	28.91	40.00	11.09	PK	100	20	PASS
185.2155	18.56	16.17	34.73	43.50	8.77	PK	100	112	PASS
194.4314	17.62	17.02	34.64	43.50	8.86	PK	100	198	PASS
374.9665	23.31	15.37	38.68	46.00	7.32	PK	100	93	PASS
921.2281	33.27	3.59	36.86	46.00	9.14	PK	100	86	PASS

Note: 9kHz~30MHz have been test and test data more than 20dB margin.

Final Data List

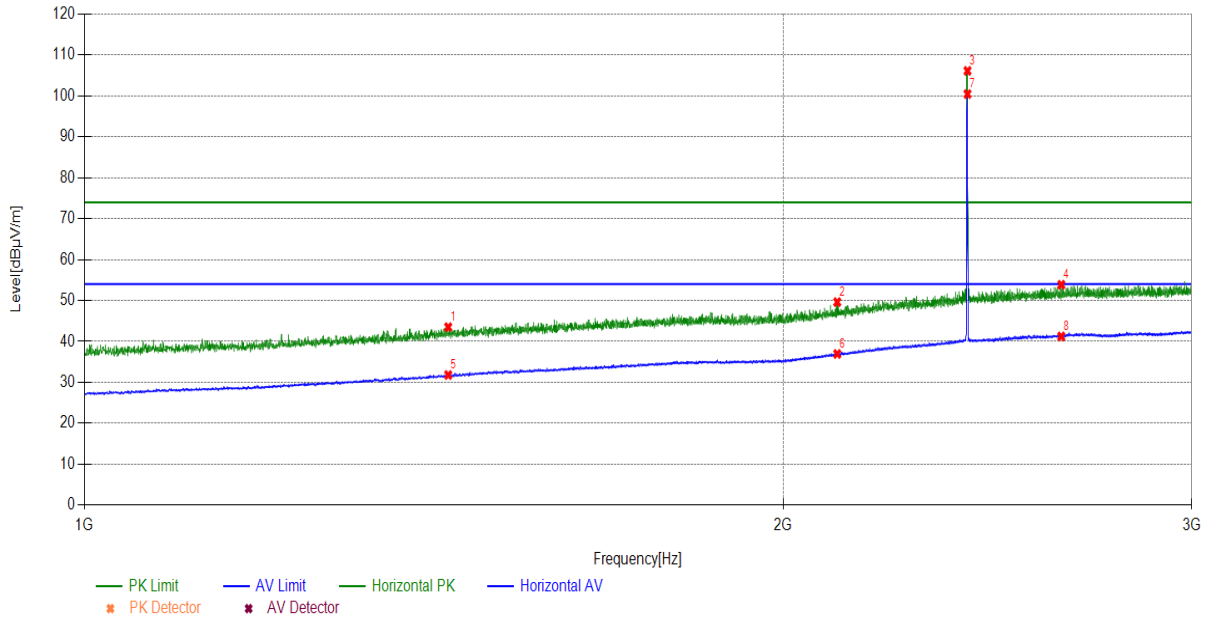
Frequency [MHz]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pass/Fail
38.3499	19.75	24.64	40.00	15.36	340	290	PASS
67.639	18.67	24.60	40.00	15.40	180	20	PASS
185.2182	18.56	24.49	43.50	19.01	390	112	PASS
194.1556	17.62	27.73	43.50	15.77	340	198	PASS
375.0099	23.31	37.98	46.00	8.02	390	93	PASS
925.588	33.27	23.69	46.00	22.31	210	86	PASS



Radiates Emission	1G~3G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
1434.6435	30.21	13.29	43.50	74.00	30.50	PK	150	333	PASS
2110.5111	34.45	15.17	49.62	74.00	24.38	PK	150	136	PASS
2401.7402	37.34	68.77	106.11	74.00	-32.11	PK	150	192	---
2635.9636	38.30	15.57	53.87	74.00	20.13	PK	150	192	PASS
1434.6435	30.21	1.60	31.81	54.00	22.19	AV	150	79	PASS
2110.5111	34.45	2.50	36.95	54.00	17.05	AV	150	357	PASS
2401.7402	37.34	63.10	100.44	54.00	-46.44	AV	150	192	---
2635.9636	38.30	2.94	41.24	54.00	12.76	AV	150	192	PASS

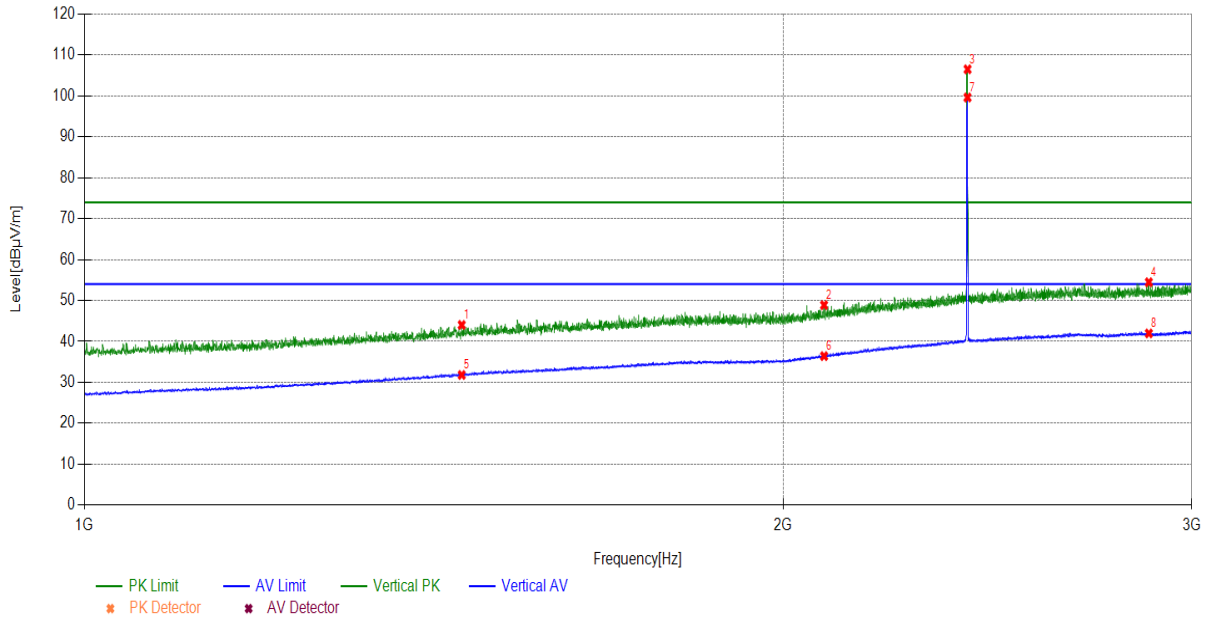


Note: The signal beyond the limit is carrier

Radiates Emission	1G~3G
Test channel	Worst-Case
polarization	Vertical

Suspected List

Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
1454.0454	30.43	13.62	44.05	74.00	29.95	PK	150	3	PASS
2083.1083	34.12	14.76	48.88	74.00	25.12	PK	150	197	PASS
2401.9402	37.34	69.16	106.50	74.00	-32.50	PK	150	338	---
2875.1875	39.03	15.44	54.47	74.00	19.53	PK	150	225	PASS
1454.0454	30.43	1.40	31.83	54.00	22.17	AV	150	266	PASS
2083.1083	34.12	2.31	36.43	54.00	17.57	AV	150	225	PASS
2401.7402	37.34	62.27	99.61	54.00	-45.61	AV	150	351	---
2875.1875	39.03	2.95	41.98	54.00	12.02	AV	150	42	PASS

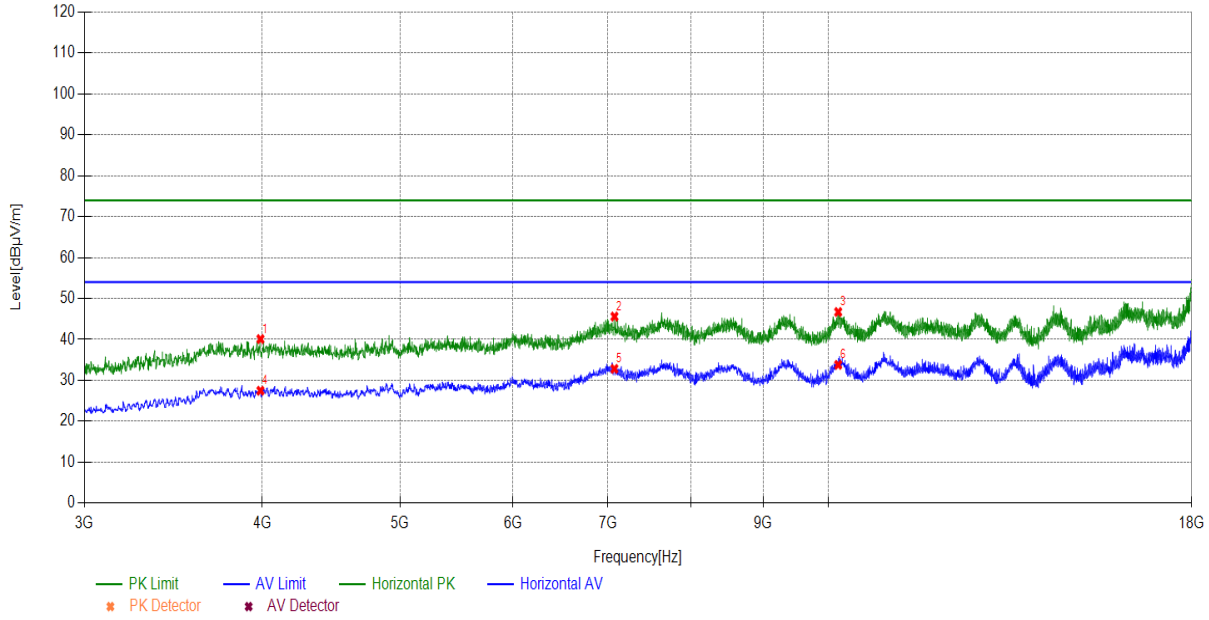


Note: The signal beyond the limit is carrier

Radiates Emission	3G~18G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

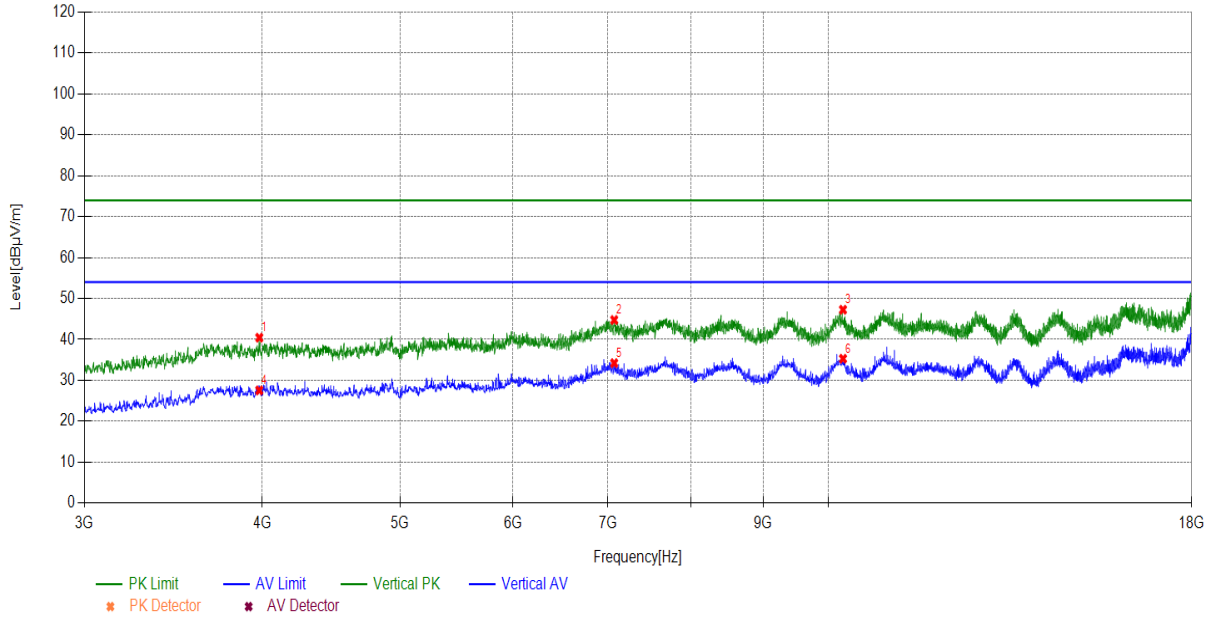
Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
3988.5989	-0.15	40.26	40.11	74.00	33.89	PK	150	170	PASS
7072.9073	8.03	37.57	45.60	74.00	28.40	PK	150	270	PASS
10158.7159	11.72	35.00	46.72	74.00	27.28	PK	150	260	PASS
3988.5989	-0.15	27.64	27.49	54.00	26.51	AV	150	160	PASS
7072.9073	8.03	24.80	32.83	54.00	21.17	AV	150	40	PASS
10158.7159	11.72	22.09	33.81	54.00	20.19	AV	150	120	PASS



Radiates Emission	3G~18G
Test channel	Worst-Case
polarization	Vertical

Suspected List

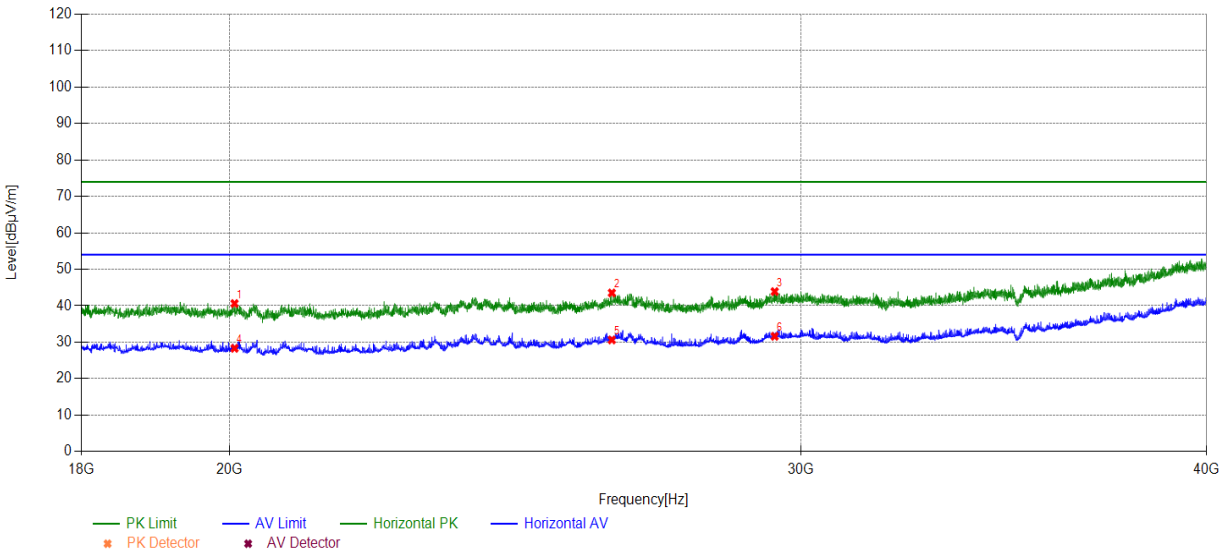
Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
3981.0981	-0.17	40.61	40.44	74.00	33.56	PK	150	240	PASS
7069.907	8.03	36.74	44.77	74.00	29.23	PK	150	210	PASS
10238.2238	11.80	35.46	47.26	74.00	26.74	PK	150	260	PASS
3981.0981	-0.17	27.74	27.57	54.00	26.43	AV	150	170	PASS
7069.907	8.03	26.19	34.22	54.00	19.78	AV	150	10	PASS
10238.2238	11.80	23.50	35.30	54.00	18.70	AV	150	10	PASS



Radiates Emission	18G~40G
Test channel	Worst-Case
polarization	Horizontal

Suspected List

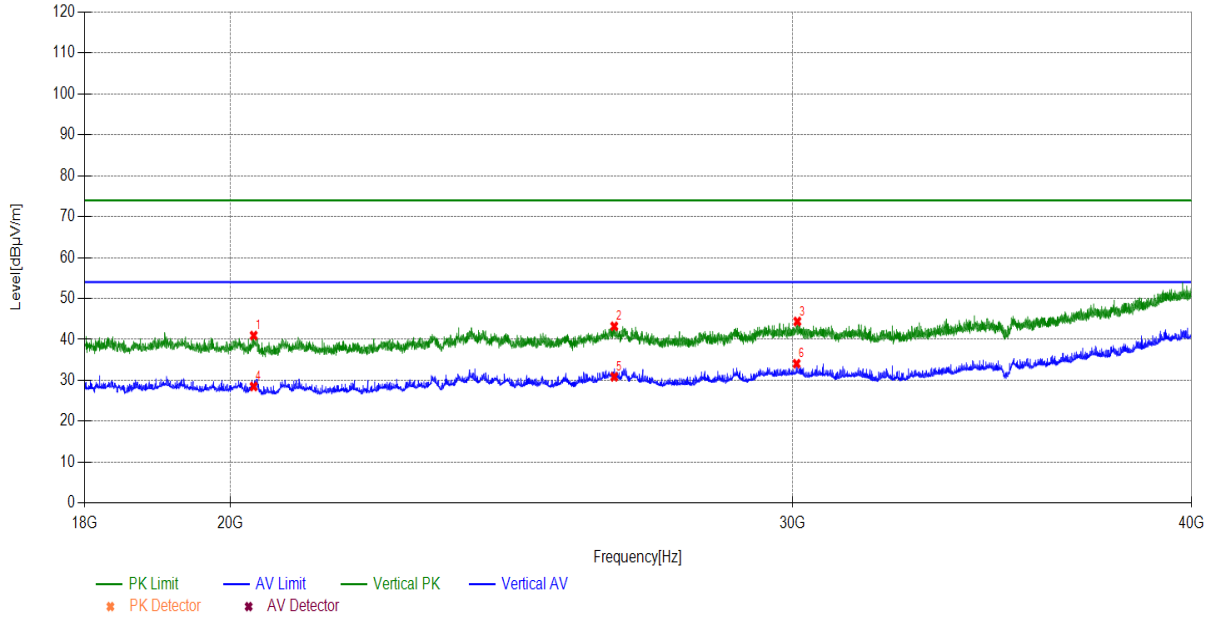
Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
20068.2068	1.32	39.30	40.62	74.00	33.38	PK	150	200	PASS
26228.8229	4.59	38.94	43.53	74.00	30.47	PK	150	170	PASS
29441.1441	6.31	37.58	43.89	74.00	30.11	PK	150	60	PASS
20068.2068	1.32	27.02	28.34	54.00	25.66	AV	150	210	PASS
26228.8229	4.59	26.05	30.64	54.00	23.36	AV	150	320	PASS
29441.1441	6.31	25.32	31.63	54.00	22.37	AV	150	330	PASS



Radiates Emission	18G~40G
Test channel	Worst-Case
polarization	Vertical

Suspected List

Frequency[MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/Fail
20336.6337	1.42	39.55	40.97	74.00	33.03	PK	150	230	PASS
26376.2376	4.65	38.58	43.23	74.00	30.77	PK	150	160	PASS
30099.0099	6.66	37.74	44.40	74.00	29.60	PK	150	280	PASS
20336.6337	1.42	27.10	28.52	54.00	25.48	AV	150	160	PASS
26376.2376	4.65	26.24	30.89	54.00	23.11	AV	150	80	PASS
30083.6084	6.66	27.43	34.09	54.00	19.91	AV	150	10	PASS



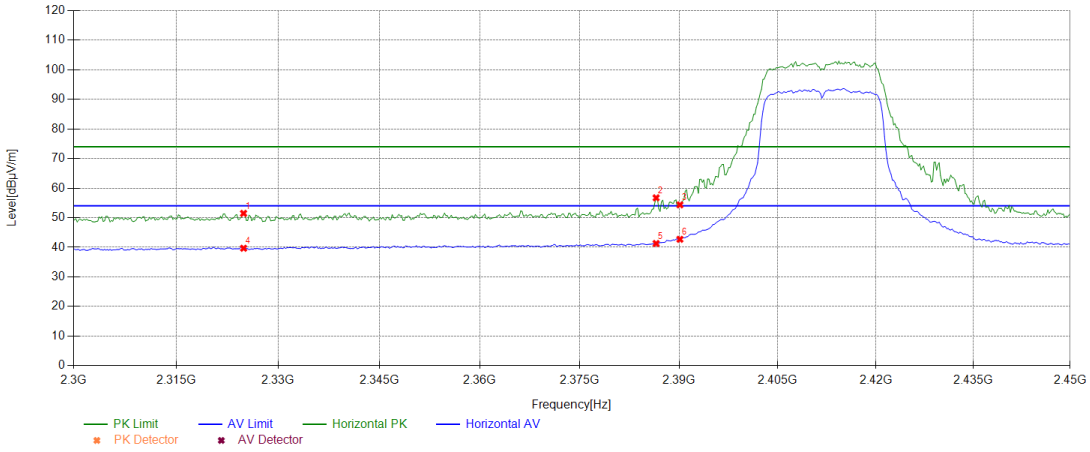
Band Edge：

During the test, the Band Edge was performed in WIFI all modes with all channels and all antennas. 802.11n20, Antenna1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Test mode	802.11n20
Test channel	Lowest channel
polarization	Horizontal

Suspected List

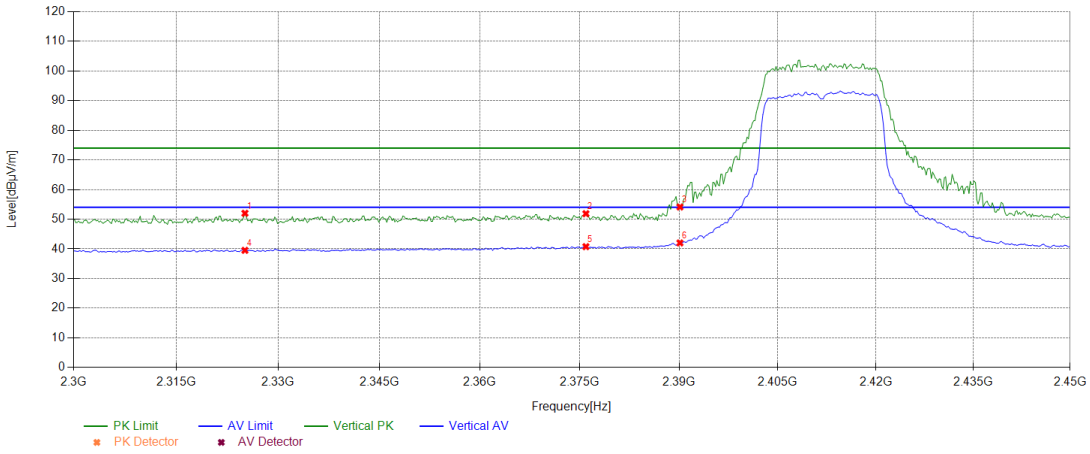
Frequency [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2324.9325	36.66	14.81	51.47	74.00	22.53	PK	150	205	PASS
2386.5387	37.21	19.51	56.72	74.00	17.28	PK	150	1	PASS
2390.139	37.24	17.12	54.36	74.00	19.64	PK	150	347	PASS
2324.9325	36.66	3.03	39.69	54.00	14.31	AV	150	358	PASS
2386.5387	37.21	4.08	41.29	54.00	12.71	AV	150	233	PASS
2390.139	37.24	5.48	42.72	54.00	11.28	AV	150	233	PASS



Test mode	802.11n20
Test channel	Lowest channel
polarization	Vertical

Suspected List

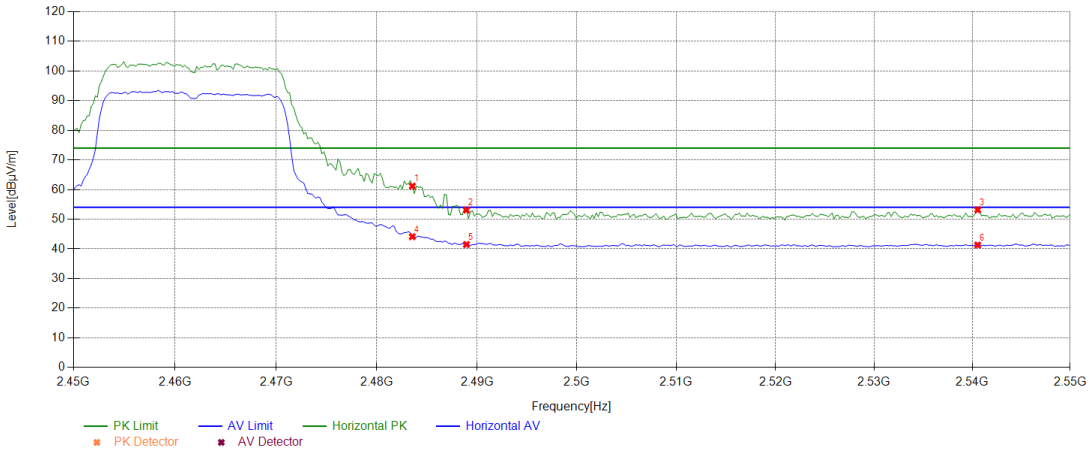
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2325.1325	36.66	15.35	52.01	74.00	21.99	PK	150	357	PASS
2375.9376	37.12	14.75	51.87	74.00	22.13	PK	150	348	PASS
2390.139	37.24	16.88	54.12	74.00	19.88	PK	150	319	PASS
2325.1325	36.66	2.86	39.52	54.00	14.48	AV	150	348	PASS
2375.9376	37.12	3.63	40.75	54.00	13.25	AV	150	348	PASS
2390.139	37.24	4.77	42.01	54.00	11.99	AV	150	348	PASS



Test mode	802.11n20
Test channel	Highest channel
polarization	Horizontal

Suspected List

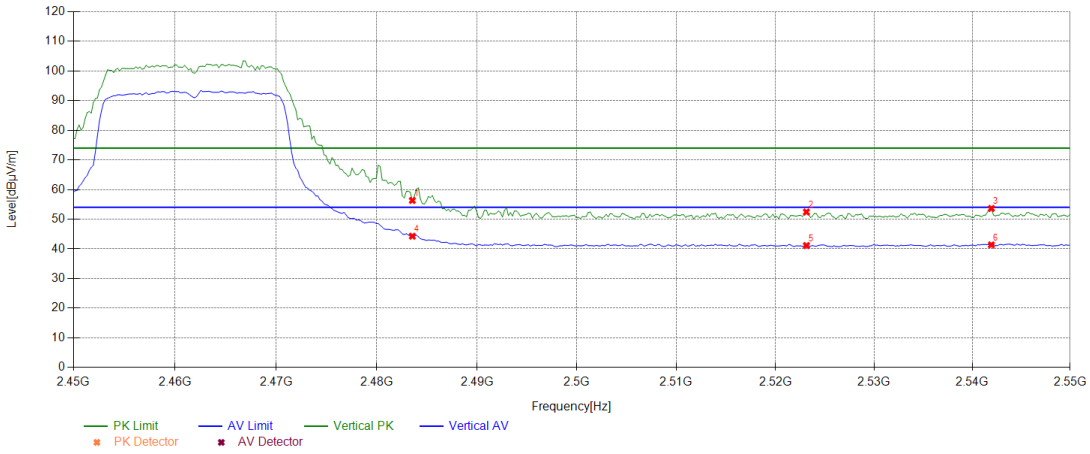
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2483.5484	37.72	23.45	61.17	74.00	12.83	PK	150	222	PASS
2488.9489	37.74	15.36	53.10	74.00	20.90	PK	150	208	PASS
2540.5541	37.96	15.22	53.18	74.00	20.82	PK	150	236	PASS
2483.5484	37.72	6.39	44.11	54.00	9.89	AV	150	208	PASS
2488.9489	37.74	3.75	41.49	54.00	12.51	AV	150	194	PASS
2540.5541	37.96	3.34	41.30	54.00	12.70	AV	150	208	PASS



Test mode	802.11n20
Test channel	Highest channel
polarization	Vertical

Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2483.5484	37.72	18.61	56.33	74.00	17.67	PK	150	320	PASS
2523.1523	37.89	14.54	52.43	74.00	21.57	PK	150	1	PASS
2541.9542	37.96	15.68	53.64	74.00	20.36	PK	150	278	PASS
2483.5484	37.72	6.57	44.29	54.00	9.71	AV	150	306	PASS
2523.1523	37.89	3.24	41.13	54.00	12.87	AV	150	108	PASS
2541.9542	37.96	3.40	41.36	54.00	12.64	AV	150	306	PASS

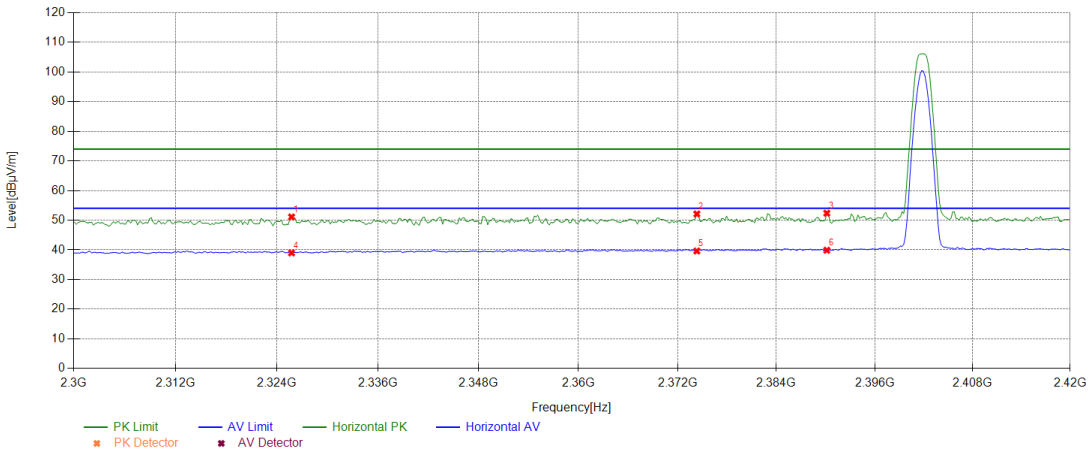


During the test, the Band Edge was performed in Bluetooth(Low Energy) all modes with all channels and all antenna. BLE(1Mbps), Antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Test mode	BLE(1Mbps)
Test channel	Lowest channel
polarization	Horizontal

Suspected List

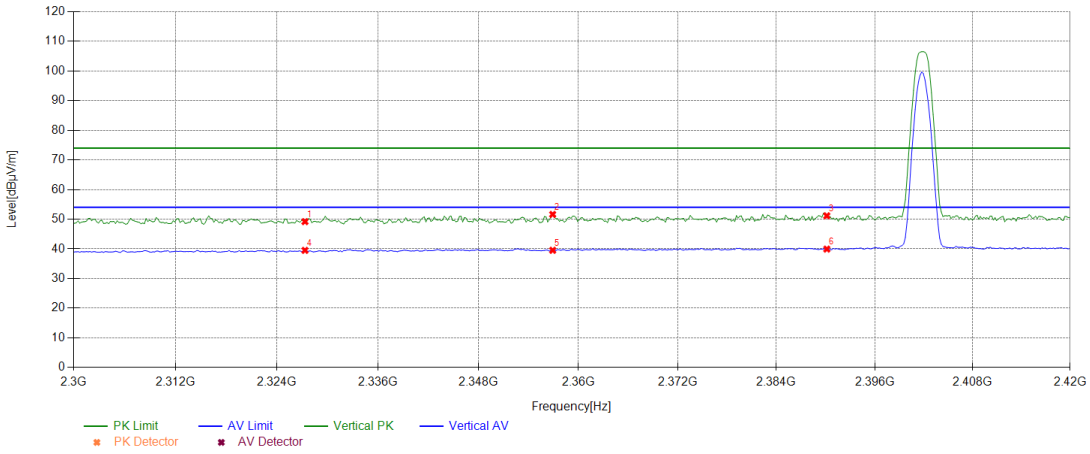
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2325.7326	36.67	14.43	51.10	74.00	22.90	PK	150	221	PASS
2374.3374	37.10	15.01	52.11	74.00	21.89	PK	150	108	PASS
2390.139	37.24	15.13	52.37	74.00	21.63	PK	150	164	PASS
2325.7326	36.67	2.31	38.98	54.00	15.02	AV	150	37	PASS
2374.3374	37.10	2.53	39.63	54.00	14.37	AV	150	207	PASS
2390.139	37.24	2.64	39.88	54.00	14.12	AV	150	93	PASS



Test mode	BLE(1Mbps)
Test channel	Lowest channel
polarization	Vertical

Suspected List

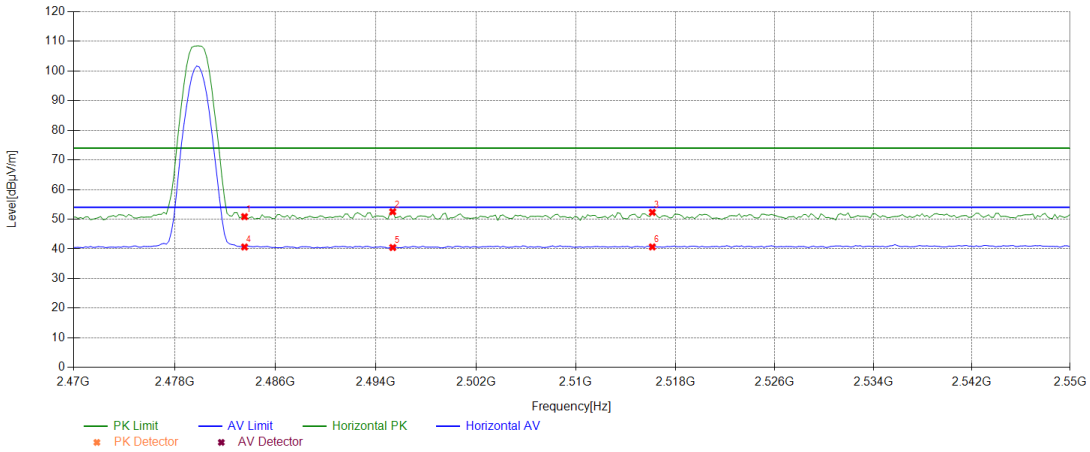
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2327.3327	36.68	12.52	49.20	74.00	24.80	PK	150	359	PASS
2356.9357	36.95	14.69	51.64	74.00	22.36	PK	150	169	PASS
2390.139	37.24	13.92	51.16	74.00	22.84	PK	150	154	PASS
2327.3327	36.68	2.83	39.51	54.00	14.49	AV	150	56	PASS
2356.9357	36.95	2.58	39.53	54.00	14.47	AV	150	266	PASS
2390.139	37.24	2.69	39.93	54.00	14.07	AV	150	359	PASS



Test mode	BLE(1Mbps)
Test channel	Highest channel
polarization	Horizontal

Suspected List

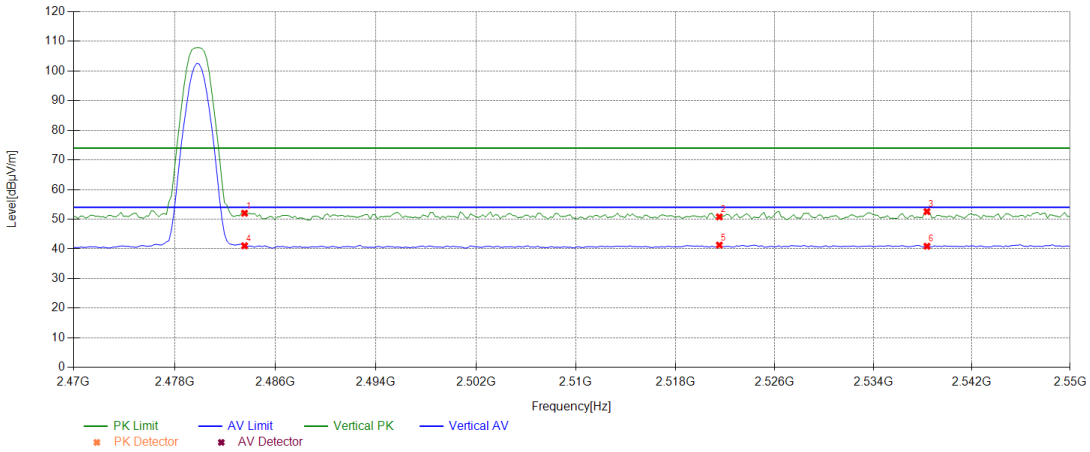
Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2483.5484	37.72	13.16	50.88	74.00	23.12	PK	150	43	PASS
2495.3495	37.77	14.75	52.52	74.00	21.48	PK	150	212	PASS
2516.1516	37.86	14.44	52.30	74.00	21.70	PK	150	212	PASS
2483.5484	37.72	2.93	40.65	54.00	13.35	AV	150	226	PASS
2495.3495	37.77	2.69	40.46	54.00	13.54	AV	150	85	PASS
2516.1516	37.86	2.81	40.67	54.00	13.33	AV	150	113	PASS



Test mode	BLE(1Mbps)
Test channel	Highest channel
polarization	Vertical

Suspected List

Frequency [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Height [cm]	Angle deg	Pass/ Fail
2483.5484	37.72	14.29	52.01	74.00	21.99	PK	150	344	PASS
2521.5522	37.88	12.92	50.80	74.00	23.20	PK	150	119	PASS
2538.3538	37.95	14.62	52.57	74.00	21.43	PK	150	330	PASS
2483.5484	37.72	3.32	41.04	54.00	12.96	AV	150	330	PASS
2521.5522	37.88	3.40	41.28	54.00	12.72	AV	150	274	PASS
2538.3538	37.95	2.95	40.90	54.00	13.10	AV	150	189	PASS



5.3 Maximum conducted output power

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

The EUT was tested according to DTS test procedure of ANSI C63.10 for compliance to FCC 47CFR 15.247 requirements. The maximum conducted output power using ANSI C63.10 section 11.9.2.3 AVGPM Average power meter method.

1. Power meter and sensor's minimum video bandwidth is 50MHz, larger than 802.11n(40MHz) bandwidth;
2. Fast responding diode sensors respond immediately to changes in power level to reduce total test time.
3. Use average detector to test.

During the process of the testing, The EUT was connected to Spectrum Analyzer with a known loss. The EUT is max power transmission with proper modulation. The Average detector is used. We use Maximum Average Conducted Output Power Level Method AVGSA-2 in KDB 558074 D01 /KDB662911 D01 for this test.

The conducted Power is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

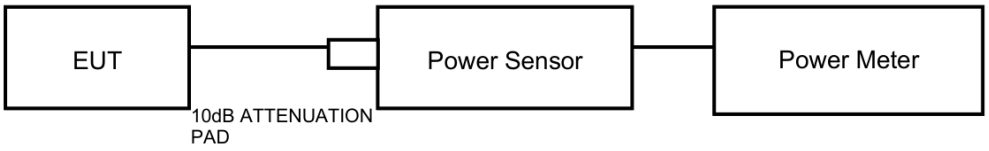
Limits:

Average Output Power	≤ 1W (30dBm)

Note: the conducted output power limit specified above is based on the use the antennas with directional gains that do not exceed 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated Levels above, as appropriate, by the amount in dB that the directional gain of antenna exceeds 6 dBi.

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Test Setup:



Measurement Uncertainty：

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.44 dB.

Test Results:

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	16.73	≤30	PASS
	Ant1	2437	17.25	≤30	PASS
	Ant1	2462	17.61	≤30	PASS
11G	Ant1	2412	22.20	≤30	PASS
	Ant1	2437	23.32	≤30	PASS
	Ant1	2462	22.52	≤30	PASS
11N20SISO	Ant1	2412	21.28	≤30	PASS
	Ant1	2437	22.46	≤30	PASS
	Ant1	2462	21.64	≤30	PASS
BLE_1M	Ant1	2402	5.07	≤30	PASS
	Ant1	2440	5.44	≤30	PASS
	Ant1	2480	6.65	≤30	PASS

5.4 Minimum 6 dB Bandwidth

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

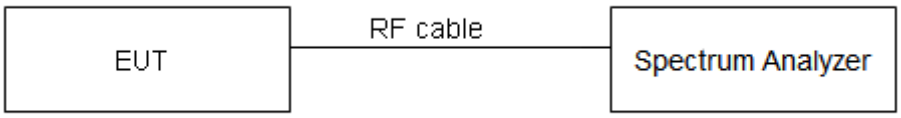
The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 100 kHz; VBW is set to 300 kHz on spectrum analyzer.
Detector=Peak, Trace mode=Max hold.

Limits:

Rule Part 15.247 (a) (2) specifies that “Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.”

Minimum 6dB Bandwidth	≥ 500 kHz

Test Setup:



Measurement Uncertainty：

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936 Hz.

Test Results:

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.08	2407.44	2416.52	≥0.5	PASS
		2437	9.08	2432.44	2441.52	≥0.5	PASS
		2462	9.56	2457.44	2467.00	≥0.5	PASS
11G	Ant1	2412	16.32	2403.80	2420.12	≥0.5	PASS
		2437	16.36	2428.80	2445.16	≥0.5	PASS
		2462	16.36	2453.80	2470.16	≥0.5	PASS
11N20SISO	Ant1	2412	17.56	2403.20	2420.76	≥0.5	PASS
		2437	17.56	2428.20	2445.76	≥0.5	PASS
		2462	17.56	2453.20	2470.76	≥0.5	PASS
BLE_1M	Ant1	2402	0.65	2401.66	2402.31	≥0.5	PASS
		2440	0.65	2439.66	2440.31	≥0.5	PASS
		2480	0.65	2479.65	2480.30	≥0.5	PASS

5.5 Occupied Channel Bandwidth

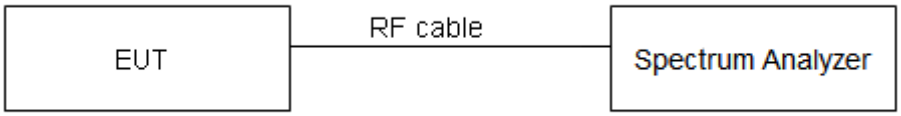
Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable. RBW is set to 50 kHz; VBW is set to 200 kHz on spectrum analyzer.
Detector=Peak, Trace mode=Max hold.

Test Setup:



Measurement Uncertainty：

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936 Hz.

Test Results:

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	14.186	2404.887	2419.073	---	---
		2437	14.106	2429.927	2444.033	---	---
		2462	14.186	2454.887	2469.073	---	---
11G	Ant1	2412	17.662	2403.169	2420.831	---	---
		2437	17.822	2428.089	2445.911	---	---
		2462	17.622	2453.169	2470.791	---	---
11N20SISO	Ant1	2412	18.581	2402.729	2421.311	---	---
		2437	18.701	2427.649	2446.351	---	---
		2462	18.541	2452.729	2471.271	---	---
BLE_1M	Ant1	2402	1.031	2401.473	2402.504	---	---
		2440	1.035	2439.469	2440.504	---	---
		2480	1.031	2479.473	2480.504	---	---

5.6 Band Edge Measurement

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

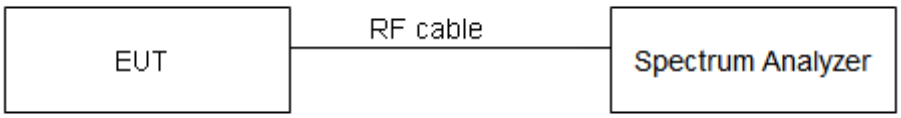
Method of Measurement:

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer.

Limits:

Rule Part 15.247(d) specifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Setup:



Measurement Uncertainty：

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U= 936 Hz, 2 GHz-3 GHz = 1.407 dB.

Test Results:

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	5.43	-42.89	≤-14.57	PASS
		High	2462	6.16	-48.72	≤-13.84	PASS
11G	Ant1	Low	2412	3.10	-28.02	≤-16.9	PASS
		High	2462	3.17	-40.39	≤-16.83	PASS
11N20SISO	Ant1	Low	2412	2.03	-29.69	≤-17.97	PASS
		High	2462	2.58	-42.05	≤-17.42	PASS
BLE_1M	Ant1	Low	2402	4.98	-49.57	≤-15.02	PASS
		High	2480	6.45	-48.22	≤-13.55	PASS

5.7 Maximum Power Spectral Density

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

During the process of the testing, The EUT was connected to Spectrum Analyzer with a known loss. The EUT is max power transmission with proper modulation. The Average detector is used. We use Method AVGPSD-2 in KDB 558074 D01 for this test.

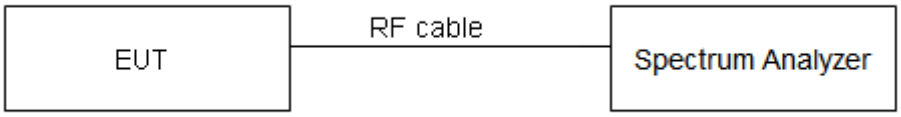
The conducted Power is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Limits:

Rule Part 15.247(e) specifies that" For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Maximum Power Spectral Density	≤ 8 dBm / 3kHz

Test Setup:



Measurement Uncertainty：

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.75dB.

Test Results:

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-7.17	≤8	PASS
		2437	-6.67	≤8	PASS
		2462	-6.69	≤8	PASS
11G	Ant1	2412	-10.42	≤8	PASS
		2437	-9.05	≤8	PASS
		2462	-9.54	≤8	PASS
11N20SISO	Ant1	2412	-10.42	≤8	PASS
		2437	-8.89	≤8	PASS
		2462	-9.38	≤8	PASS
BLE_1M	Ant1	2402	-10.02	≤8	PASS
		2440	-9.22	≤8	PASS
		2480	-8.65	≤8	PASS

5.8 Spurious RF Conducted Emissions

Ambient condition:

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.3kPa

Method of Measurement:

The EUT was connected to the spectrum analyzer with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. Set RBW to100kHz and VBW to 300 kHz, Sweep is set to AUTO .The test is in transmitting mode.

Limits:

Rule Part 15.247(d) pacifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Test Setup:

Measurement Uncertainty：

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

Test Results:

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	5.67	5.67	---	PASS
			30~1000	5.67	-61.17	≤-14.33	PASS
			1000~26500	5.67	-48.81	≤-14.33	PASS
		2437	Reference	6.18	6.18	---	PASS
			30~1000	6.18	-61.16	≤-13.82	PASS
			1000~26500	6.18	-50.02	≤-13.82	PASS
		2462	Reference	6.32	6.32	---	PASS
			30~1000	6.32	-60.18	≤-13.68	PASS
			1000~26500	6.32	-50.46	≤-13.68	PASS
11G	Ant1	2412	Reference	2.91	2.91	---	PASS
			30~1000	2.91	-60.75	≤-17.09	PASS
			1000~26500	2.91	-49.76	≤-17.09	PASS
		2437	Reference	4.32	4.32	---	PASS
			30~1000	4.32	-60.55	≤-15.68	PASS
			1000~26500	4.32	-49.83	≤-15.68	PASS
		2462	Reference	3.50	3.50	---	PASS
			30~1000	3.50	-61.07	≤-16.5	PASS
			1000~26500	3.50	-49.54	≤-16.5	PASS
11N20SISO	Ant1	2412	Reference	2.30	2.30	---	PASS
			30~1000	2.30	-60.26	≤-17.7	PASS
			1000~26500	2.30	-49.49	≤-17.7	PASS
		2437	Reference	3.11	3.11	---	PASS
			30~1000	3.11	-60.79	≤-16.89	PASS
			1000~26500	3.11	-49.99	≤-16.89	PASS
		2462	Reference	2.49	2.49	---	PASS
			30~1000	2.49	-61.25	≤-17.51	PASS
			1000~26500	2.49	-49.75	≤-17.51	PASS

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	4.98	4.98	---	PASS
			30~1000	4.98	-60.83	≤-15.02	PASS
			1000~26500	4.98	-50.14	≤-15.02	PASS
		2440	Reference	5.34	5.34	---	PASS
			30~1000	5.34	-60.37	≤-14.66	PASS
			1000~26500	5.34	-50.17	≤-14.66	PASS
		2480	Reference	6.57	6.57	---	PASS
			30~1000	6.57	-61.03	≤-13.43	PASS
			1000~26500	6.57	-50.07	≤-13.43	PASS

6. Appendix X

Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufacturer	Cal. Due
Spectrum Analyzer	FSV40	101580	DZ-000238-3	R&S	2024/04/22
Comprehensive Test Instrument	CMW270	100304	DZ-000240-1	R&S	2023/12/06
Analog Signal Generator	SMB100A	181858	DZ-000238-2	R&S	2024/05/29
Vector Signal Generator	SGT100A	111661	DZ-000238-1	R&S	2024/05/29
RF Radio Frequency Switch	JS0806-2	19H9080187	DZ-000241	Tonscend	2024/05/29
Programmable DC Power Supply	E3644A	MY58036222	DZ-000178	KEYSIGHT	2024/04/12
3m Semi-Anechoic Chamber	FACT-4	ST08035	WKNA-0024	ETS	2024/12/12
5m Semi-Anechoic Chamber	SAC-5	SAC-5-2.0	EM-000557	COMTEST	2024/11/02
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIGHT	2024/02/22
EMI Test Receiver	N9038A-508	MY532290079	EM-000397	Agilent	2024/02/22
EMI Test Receiver	ESR7	102235	VGDY-0956	R&S	2024/02/22
loop antenna	HLA 6121	540046	EM-000546	TESEQ	2024/06/05
Broadband Antenna	VULB 9168	01537	EM-000736-1	SCHWARZBECK	2024/04/24
Broadband Antenna	VULB 9163	9163-530	EM-000342	SCHWARZBECK	2024/06/10
Waveguide Horn Antenna	HF906	360306/008	EM-000093	R&S	2024/02/24
Waveguide Horn Antenna	BBHA9170	00949	EM-000383	SCHWARZBECK	2024/08/05
Bandstop Filters	SW-BSF-2400-100-7-A1	/	EM-000495	/	2024/08/30
5G Bandstop Filters	WRCJV12-4900-5100-5900-6100-50EE	1	DZ-000186	WI	2023/12/06
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWARZBECK	2024/06/04
EMI Test Receiver	ESR3	102394	VGDY-0705	R&S	2024/04/22
LISN	NSLK 8127	8127644	VGDY-0150	SCHWARZBECK	2024/07/27
Plus Limiter（#2）	VTSD 9561	9561-F017	VGDY-0152	SCHWARZBECK	2024/09/03
Shielding Room(#2)	GP1A	001	WKNF-0006	LEINING	2024/08/07
Temperature and humidity meter1	UT330THC	C231446120	DZ-000249-1	UNI-T	2024/08/30

The End

Important

1. The test report is invalid without the official stamp of CVC;
2. Any part photocopies of the test report are forbidden without the written permission from CVC;
3. The test report is invalid without the signatures of Author and Reviewer;
4. The test report is invalid if altered;
5. Objections to the test report must be submitted to CVC within 15 days;
6. Generally, commission test is responsible for the tested samples only;
7. As for the test result, "—" or " N/A" means "not applicable", " / "means "not testing", "P" means "pass" and "F" means "fail".

The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented.

Address: No.3,Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, China (Test location)
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