Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

FCC PART 15 SUBPART C TEST REPORT

FCC PART 15.247

Report Reference No..... :	**GTS20210419013-1-1**
FCC ID..... :	**2AZQ7SLU-A1000-B**
Compiled by (position+printed name+signature).. :	File administrators Yilia Zhong
Supervised by (position+printed name+signature).. :	Test Engineer Jenny Zeng
Approved by (position+printed name+signature).. :	Manager Simon Hu
Date of issue.....:	May.24, 2021
Representative Laboratory Name. :	**Shenzhen Global Test Service Co.,Ltd.**
Address..... :	No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong,China
Applicant's name.....:	**Wanma yun Electronic Technology (zhengzhou) Co., Ltd.**
Address..... :	Intelligent Terminal Mobile Phone Industrial Park, Crossing at Xingang Avenue and Renmin Road, Zhengzhou Airport District, China, 451162
Test specification.....**:**	
Standard.....:	**FCC Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz**
TRF Originator.....:	Shenzhen Global Test Service Co.,Ltd.
Master TRF.....:	Dated 2014-12

Test item description.....:	**UWB Indoor Anchor**
Trade Mark.....:	N/A
Manufacturer.....:	Wanma yun Electronic Technology (zhengzhou) Co., Ltd.
Model/Type reference..... :	SLU-A1000-B
Listed Models ..... :	N/A
Operation Frequency..... :	From 2412MHz to 2462MHz
Hardware Version .....:	V0.350
Software Version.....:	EVT
Rating.....:	DC 5.0V by adapter DC 53.5V by POE
Result.....:	**PASS**

T E S T R E P O R T

Test Report No. : GTS20210419013-1-1	May.24, 2021 Date of issue

Equipment under Test	:	UWB Indoor Anchor
Model /Type	:	SLU-A1000-B
Listed model	:	N/A
Applicant	:	**Wanma yun Electronic Technology (zhengzhou) Co., Ltd.**
Address	:	Intelligent Terminal Mobile Phone Industrial Park, Crossing at Xingang Avenue and Renmin Road, Zhengzhou Airport District, China, 451162
Manufacturer	:	**Wanma yun Electronic Technology (zhengzhou) Co., Ltd.**
Address	:	Intelligent Terminal Mobile Phone Industrial Park, Crossing at Xingang Avenue and Renmin Road, Zhengzhou Airport District, China, 451162

Test Result:	**PASS**

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.
ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices
KDB558074 D01 DTS Meas Guidance v05r02: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247.
KDB 662911D01 Multiple Transmitter Output v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	May.13, 2021
Testing commenced on	:	May.13, 2021
Testing concluded on	:	May.24, 2021

2.2. Product Description

Product Name	UWB Indoor Anchor
Trade Mark	N/A
Model/Type reference	SLU-A1000-B
List Models	N/A
Model Declaration	N/A
Power supply:	DC 5.0V by adapter DC 53.5V by POE
Sample ID	GTS20210419013-1-1# & GTS20210419013-1-2#
WIFI(2.4G Band)	
Frequency Range	2412MHz ~ 2462MHz
Channel Spacing	5MHz
Channel Number	11 Channel for 20MHz bandwidth(2412~2462MHz) 7 channels for 40MHz bandwidth(2422~2452MHz)
Modulation Type	802.11b: DSSS; 802.11g/n: OFDM
Antenna Description	Two Integrated antenna respectively.WLAN support 2*2MIMO technology. ANT0 used for WIFI TX/RX, 3.5dBi(Max.) for 2.4G Band ANT1 used for WIFI TX/RX, 3.5dBi(Max.) for 2.4G Band

2.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	○	120V / 60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 5V

2.4. Short description of the Equipment under Test (EUT)

This is a UWB Indoor Anchor .
For more details, refer to the user's manual of the EUT.

2.5. EUT operation mode

The application provider specific test software to control sample in continuous TX and RX (Duty Cycle >98%) for testing meet KDB558074 test requirement.

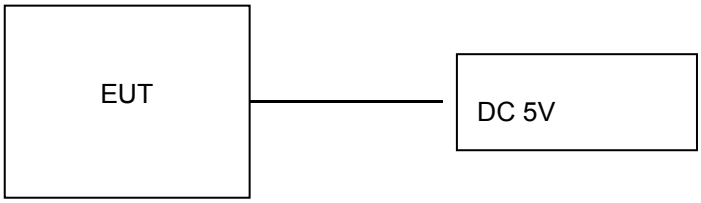
IEEE 802.11b/g/n: Thirteen channels are provided to the EUT.

Antenna	Chain 0		Chain 1		Simultaneously
Bandwidth Mode	20MHz	40MHz	20MHz	40MHz	/
IEEE 802.11b	☑	☐	☑	☐	☐
IEEE 802.11g	☑	☐	☑	☐	☐
IEEE 802.11n	☑	☑	☑	☑	☑

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432		
6	2437		
7	2442		

The EUT has been tested under operating condition.
AC main conducted emission pre-test voltage at both AC 120V/60Hz and AC 240V/60Hz, recorded worst case;
AC main conducted emission pre-test at charge from PC modes, recorded worst case;
This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.
Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be IEEE 802.11g mode (MCH).

2.6. Block Diagram of Test Setup



2.7. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: 2AZQ7SLU-A1000-B** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

2.8. EUT Exercise Software

The system was configured for testing in a continuous transmits condition and change test channels by software (CDM v2.12.26 WHQL Certified) provided by application.

2.9. Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
LENOVO	PC	DESKYOP-EUIVCNR	--	SDOC
Shenzhen Shunxingda Telecommunications Equipment Co., Ltd.	Adapter	SXD-206	--	--
--	POE	--	--	--

Note: The PC/Adapter/POE is only used for auxiliary testing.

2.10. External I/O Cable

I/O Port Description	Quantity	Cable
DC IN Port	1	N/A
LAN	1	N/A

2.11. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong,China.

3.2. Test Facility

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

CNAS (No. CNAS L8169)
Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2019 General Requirements) for the Competence of Testing and Calibration Laboratories.
A2LA (Certificate No. 4758.01)
Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.
Industry Canada Registration Number. is 24189.
FCC Designation Number is CN1234.
FCC Registered Test Site Number is165725.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Global Test Service Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen GTS laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~25GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.12 dB	(1)

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.5. Test Description

Applied Standard: FCC Part 15 Subpart C				
Fcc Rules	Description of Test	Test Sample	Result	Remark
/	On Time and Duty Cycle	GTS20210419013-1-1#	/	/
§15.247(b)	Maximum Conducted Output Power	GTS20210419013-1-1#	Compliant	Note 1
§15.247(e)	Power Spectral Density	GTS20210419013-1-1#	Compliant	Note 1
§15.247(a)(2)	6dB Bandwidth	GTS20210419013-1-1#	Compliant	Note 1
§2.1047	99% Occupied Bandwidth	/	N/A	N/A
§15.209, §15.247(d)	Conducted Spurious Emissions	GTS20210419013-1-1#	Compliant	Note 1
§15.209, §15.247(d)	Radiated Spurious Emissions	GTS20210419013-1-1# GTS20210419013-1-2#	Compliant	Note 1
§15.205	Emissions at Restricted Band	GTS20210419013-1-1# GTS20210419013-1-2#	Compliant	Note 1
§15.207(a)	AC Conducted Emissions	GTS20210419013-1-2#	Compliant	Note 1
§15.203 §15.247(c)	Antenna Requirements	GTS20210419013-1-1#	Compliant	Note 1
§15.247(i)§2.1091	RF Exposure	/	Compliant	Note 2

Remark:
1. The measurement uncertainty is not included in the test result.
2. NA = Not Applicable; NP = Not Performed
3. Note 1 – Test results inside test report;
4. Note 2 – Test results in other test report (SAR Report).
5. We tested all test mode and recorded worst case in report

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel
Maximum Peak Conducted Output Power Power Spectral Density 6dB Bandwidth Spurious RF conducted emission Radiated Emission 9kHz~1GHz& Radiated Emission 1GHz~10th Harmonic	11b/DSSS	1 Mbps	1/6/11
	11g/OFDM	6 Mbps	1/6/11
	11n(20MHz)/OFDM	6.5Mbps	1/6/11
	11n(40MHz)/OFDM	13.5Mbps	3/6/9
Band Edge	11b/DSSS	1 Mbps	1/11
	11g/OFDM	6 Mbps	1/11
	11n(20MHz)/OFDM	6.5Mbps	1/11
	11n(40MHz)/OFDM	13.5Mbps	3/9

3.6. Equipments Used during the Test

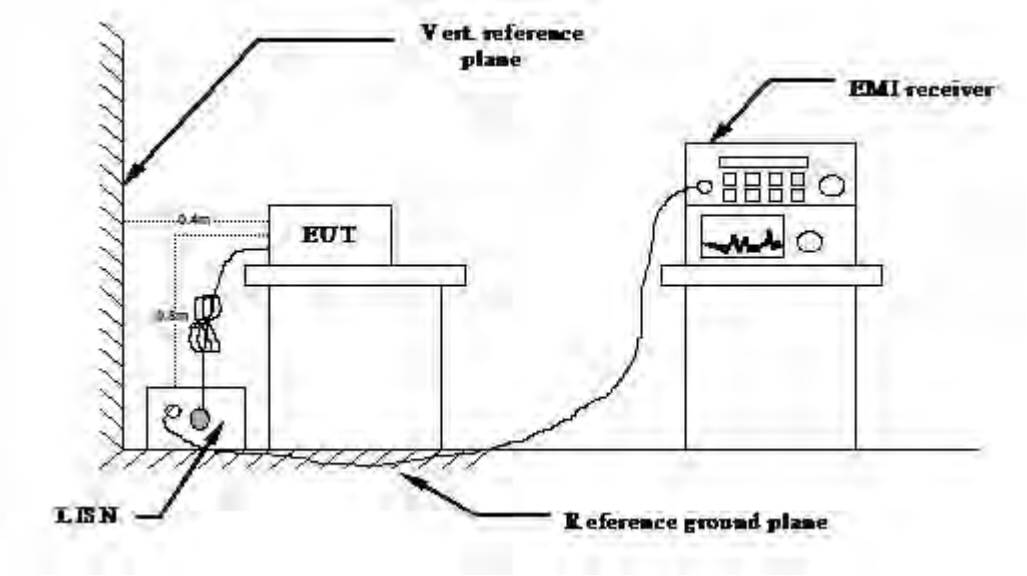
Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	CYBERTEK	EM5040A	E1850400105	2020/07/24	2021/07/23
LISN	R&S	ESH2-Z5	893606/008	2020/07/24	2021/07/23
EMI Test Receiver	R&S	ESPI3	101841-cd	2020/07/24	2021/07/23
EMI Test Receiver	R&S	ESCI7	101102	2020/09/20	2021/09/19
Spectrum Analyzer	Agilent	N9020A	MY48010425	2020/09/20	2021/09/19
Spectrum Analyzer	R&S	FSV40	100019	2020/07/24	2021/07/23
Vector Signal generator	Agilent	N5181A	MY49060502	2020/07/14	2021/07/13
Signal generator	Agilent	N5182A	3610AO1069	2020/09/20	2021/09/19
Climate Chamber	ESPEC	EL-10KA	A20120523	2020/09/20	2021/09/19
Controller	EM Electronics	Controller EM 1000	N/A	N/A	N/A
Horn Antenna	Schwarzbeck	BBHA 9120D	01622	2020/11/08	2021/11/07
40G high frequency antenna	Schwarzbeck	BBHA 9170	01001	2020/11/08	2021/11/07
Active Loop Antenna	Beijing Da Ze Technology Co.,Ltd.	ZN30900C	15006	2020/10/11	2021/10/10
Bilog Antenna	Schwarzbeck	VULB9163	000976	2020/07/26	2021/07/25
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2020/11/08	2021/11/07
Amplifier	Schwarzbeck	BBV 9743	#202	2020/07/24	2021/07/23
Amplifier	Schwarzbeck	BBV9179	9719-025	2020/07/24	2021/07/23
Amplifier	EMCI	EMC051845B	980355	2020/07/24	2021/07/23
Amplifier	Tonscend	TAP-184050	AP20E	2020/07/24	2021/07/23
Temperature/Humidity Meter	Gangxing	CTH-608	02	2020/07/24	2021/07/23
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	KL142031	2020/07/24	2021/07/23
High-Pass Filter	K&L	41H10-1375/U12750-O/O	KL142032	2020/07/24	2021/07/23
RF Cable(below 1GHz)	HUBER+SUHNER	RG214	RE01	2020/07/24	2021/07/23
RF Cable(above 1GHz)	HUBER+SUHNER	RG214	RE02	2020/07/24	2021/07/23
Data acquisition card	Agilent	U2531A	TW53323507	2020/07/24	2021/07/23
Power Sensor	Agilent	U2021XA	MY5365004	2020/07/24	2021/07/23
Test Control Unit	Tonscend	JS0806-1	178060067	2020/07/22	2021/07/21
Automated filter bank	Tonscend	JS0806-F	19F8060177	2020/07/24	2021/07/23
EMI Test Software	Tonscend	JS1120-1	Ver 2.6.8.0518	/	/
EMI Test Software	Tonscend	JS1120-3	Ver 2.5.77.0418	/	/
EMI Test Software	Tonscend	JS32-CE	Ver 2.5	/	/
EMI Test Software	Tonscend	JS32-RE	Ver 2.5.1.8	/	/

Note: The Cal.Interval was one year.

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. 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.
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 The EUT received DC 5V power, the adapter received AC120V/60Hz or AC 240V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5 All support equipments received AC power from a second LISN, if any.
6 The EUT 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.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following：

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

TEST RESULTS

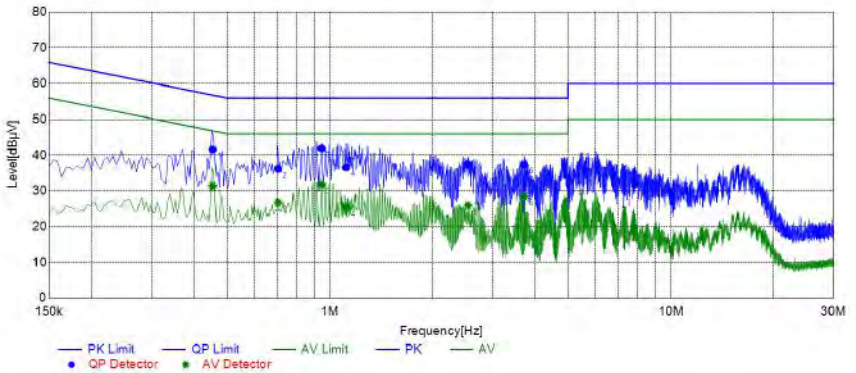
Remarks: We measured the radiation from 30 MHz to 25 GHz under AC120V in 802.11b/802.11g/802.11n HT20/802.11n HT40 mode, and recorded the worst case.

By adapter：

Temperature	23.6℃	Humidity	54.2%
Test Engineer	Jenny Zeng	Configurations	IEEE 802.11g (MCH)

Power supply:	AC 120V/60Hz	Polarization	L

Test Graph



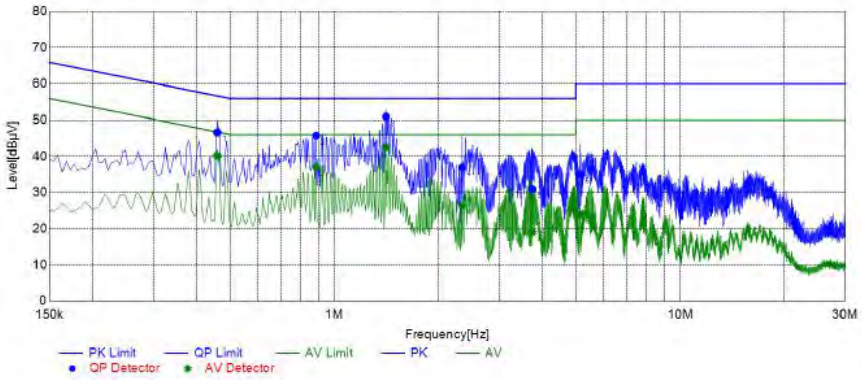
Final Data List

NO.	Frequency [MHz]	QP Reading [dBµV]	AVG. Reading [dBµV]	Factor [dB]	QP Result [dBµV]	AVG. Result [dBµV]	QP Limit [dBµV]	AVG. Limit [dBµV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.4535	31.55	21.28	10.04	41.59	31.32	56.81	46.81	15.22	15.49	L1	PASS
2	0.7046	26.11	16.63	10.05	36.16	26.68	56.00	46.00	19.84	19.32	L1	PASS
3	0.9442	31.86	21.69	10.06	41.92	31.75	56.00	46.00	14.08	14.25	L1	PASS
4	1.1154	26.50	15.30	10.08	36.58	25.38	56.00	46.00	19.42	20.62	L1	PASS
5	2.5442	27.26	15.63	10.23	37.49	25.86	56.00	46.00	18.51	20.14	L1	PASS
6	3.7095	27.01	17.98	10.37	37.38	28.35	56.00	46.00	18.62	17.65	L1	PASS

Note:1. Result (dBµV) = Reading (dBµV) + Factor (dB).
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

Power supply:	AC 120V/60Hz	Polarization	N

Test Graph



Final Data List

NO.	Frequency [MHz]	QP Reading [dBµV]	AVG. Reading [dBµV]	Factor [dB]	QP Result [dBµV]	AVG. Result [dBµV]	QP Limit [dBµV]	AVG. Limit [dBµV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.4586	36.56	30.13	10.05	46.61	40.18	56.72	46.72	10.11	6.54	N	PASS
2	0.8870	35.63	26.99	10.06	45.69	37.05	56.00	46.00	10.31	8.95	N	PASS
3	1.4109	40.87	32.34	10.10	50.97	42.44	56.00	46.00	5.03	3.56	N	PASS
4	2.3414	26.77	16.12	10.20	36.97	26.32	56.00	46.00	19.03	19.68	N	PASS
5	3.7376	20.63	8.63	10.37	31.00	19.00	56.00	46.00	25.00	27.00	N	PASS
6	5.1403	24.53	13.50	10.49	35.02	23.99	60.00	50.00	24.98	26.01	N	PASS

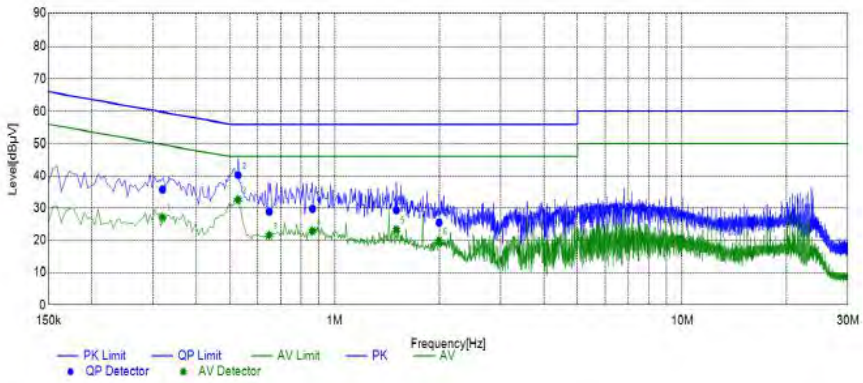
Note:1. Result (dBµV) = Reading (dBµV) + Factor (dB).
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

By POE:

Temperature	23.6℃	Humidity	54.2%
Test Engineer	Jenny Zeng	Configurations	IEEE 802.11g (MCH)

Power supply:	AC 120V/60Hz	Polarization	L

Test Graph



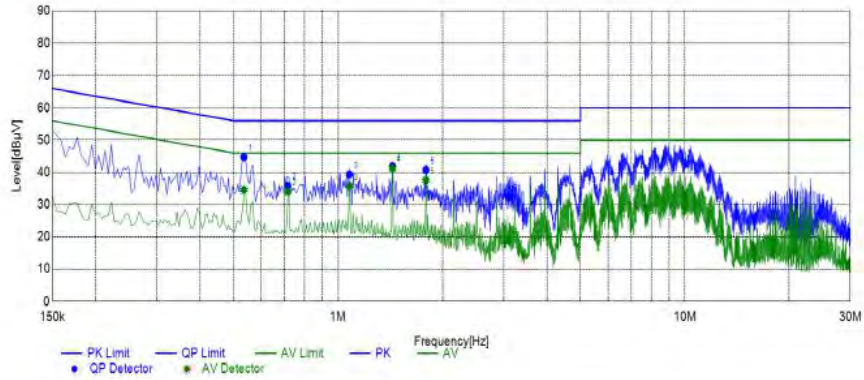
Final Data List

NO.	Frequency [MHz]	QP Reading [dBµV]	AVG. Reading [dBµV]	Factor [dB]	QP Result [dBµV]	AVG. Result [dBµV]	QP Limit [dBµV]	AVG. Limit [dBµV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.3195	25.74	17.16	9.98	35.72	27.14	59.72	49.72	24.00	22.58	L1	PASS
2	0.5273	30.16	22.54	10.06	40.22	32.60	56.00	46.00	15.78	13.40	L1	PASS
3	0.6481	18.80	11.57	10.06	28.86	21.63	56.00	46.00	27.14	24.37	L1	PASS
4	0.8634	19.73	12.86	10.06	29.79	22.92	56.00	46.00	26.21	23.08	L1	PASS
5	1.5049	19.23	13.20	10.11	29.34	23.31	56.00	46.00	26.66	22.69	L1	PASS
6	1.9984	15.30	9.68	10.15	25.45	19.83	56.00	46.00	30.55	26.17	L1	PASS

Note:1. Result (dBµV) = Reading (dBµV) + Factor (dB).
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

Power supply:	AC 120V/60Hz	Polarization	N

Test Graph



Final Data List

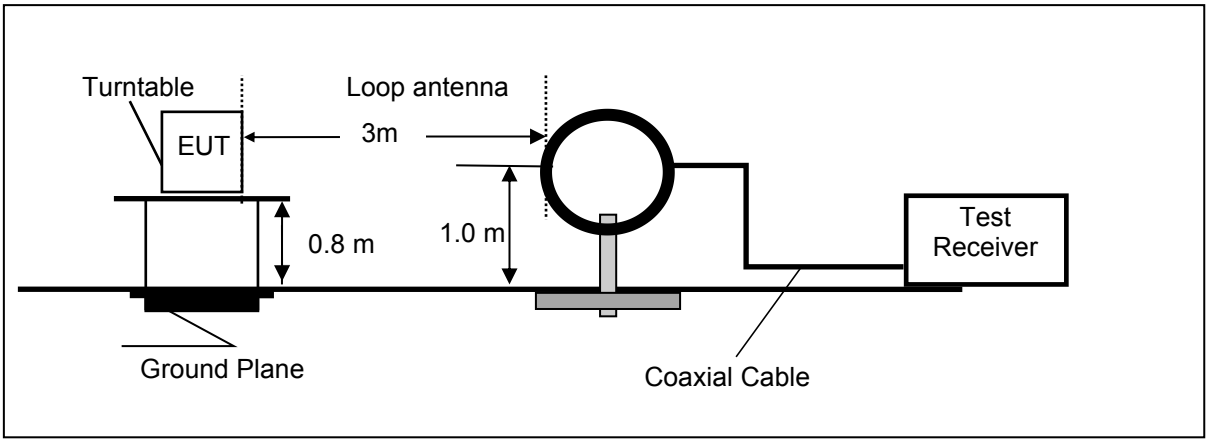
NO.	Frequency [MHz]	QP Reading [dBµV]	AVG. Reading [dBµV]	Factor [dB]	QP Result [dBµV]	AVG. Result [dBµV]	QP Limit [dBµV]	AVG. Limit [dBµV]	QP Margin [dB]	AVG. Margin [dB]	Line	Remark
1	0.5350	34.68	24.47	10.06	44.74	34.53	56.00	46.00	11.26	11.47	N	PASS
2	0.7161	25.75	23.93	10.05	35.80	33.98	56.00	46.00	20.20	12.02	N	PASS
3	1.0782	29.25	25.54	10.08	39.33	35.62	56.00	46.00	16.67	10.38	N	PASS
4	1.4360	31.88	31.12	10.10	41.98	41.22	56.00	46.00	14.02	4.78	N	PASS
5	1.7920	30.58	27.36	10.13	40.71	37.49	56.00	46.00	15.29	8.51	N	PASS
6	3.1013	22.04	8.49	10.30	32.34	18.79	56.00	46.00	23.66	27.21	N	PASS

Note:1. Result (dBµV) = Reading (dBµV) + Factor (dB).
2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

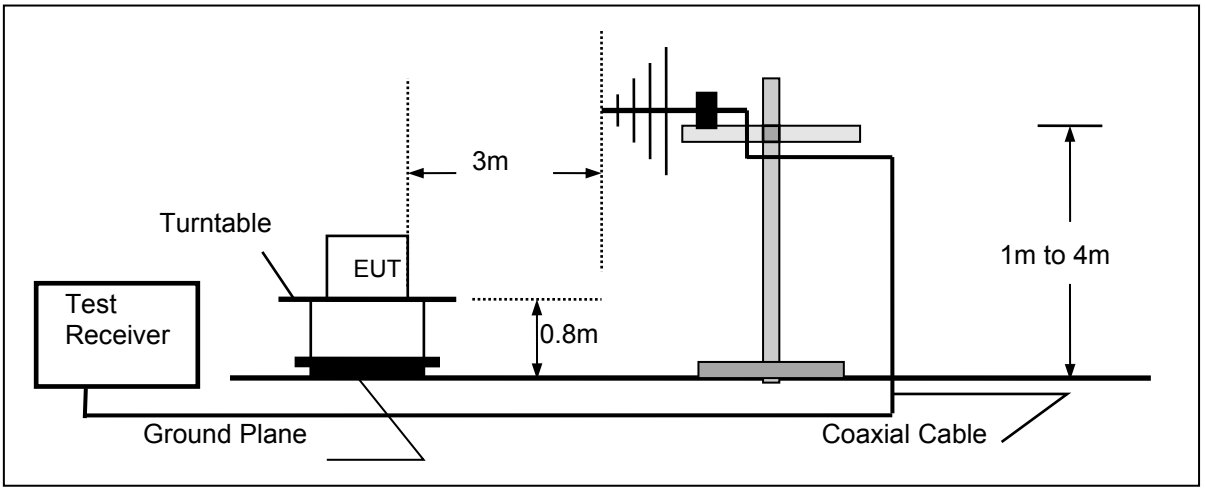
4.2. Radiated Emission

TEST CONFIGURATION

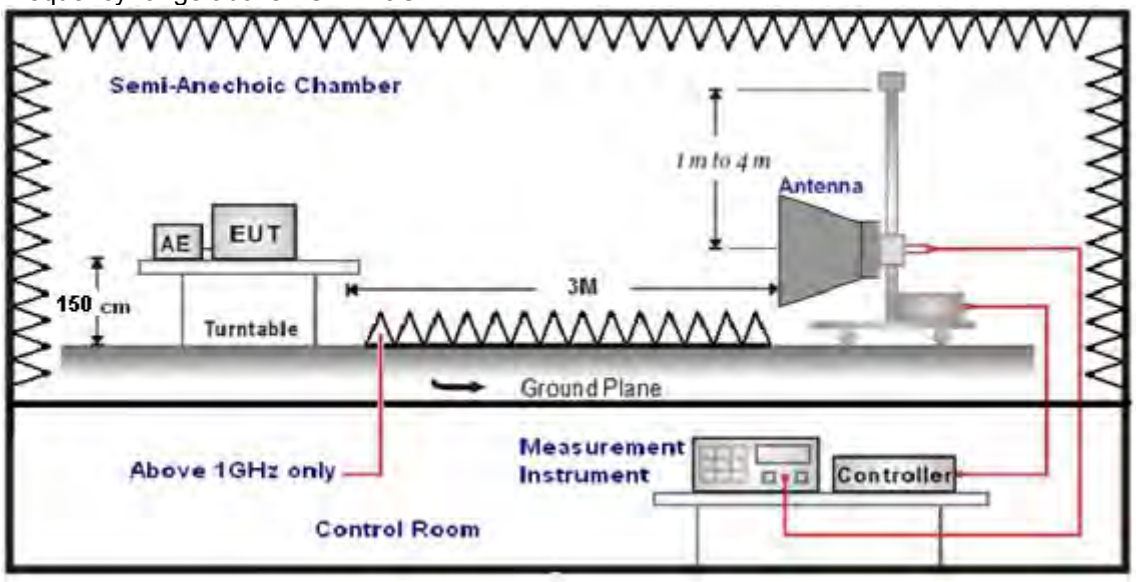
Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 30MHz –1GHz;the EUT was placed on a turn table which is 1.5m above ground plane when testing frequency range 1GHz – 25GHz.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 30MHz to 25GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

Transd=AF +CL-AG

RADIATION LIMIT

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the100kHz bandwidth within the band that contains the highest level of desired power.

The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST RESULTS

Remarks: 1) We measured the radiation from 30 MHz to 18 GHz under AC120V in 802.11b/802.11g/802.11n HT20/802.11n HT40 mode, and recorded the worst case.
2)18~25GHz: The test values lower than the limits of 20dB or in the noise floor level, the test data were not recorded in the report.

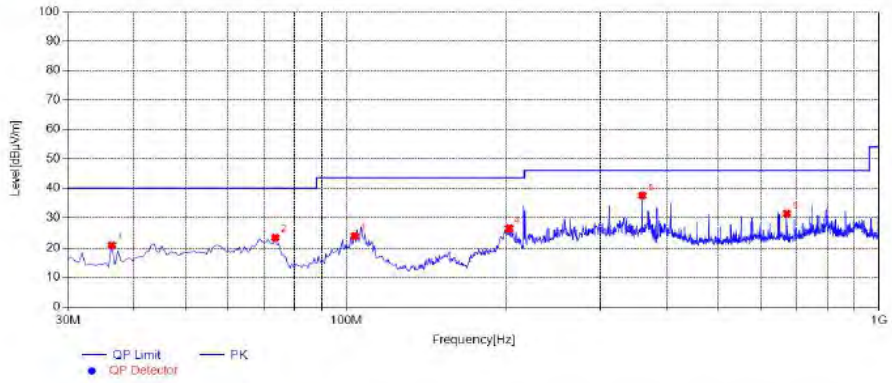
Temperature	23.4℃	Humidity	54.5%
Test Engineer	Jenny Zeng	Configurations	IEEE 802.11g (MCH)

For 30MHz-1GHz

By adapter:

Horizontal

Test Graph



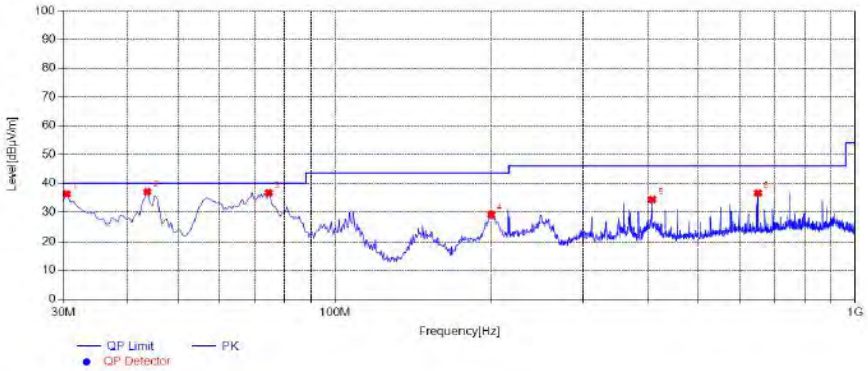
Suspected List

NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	36.3050	31.78	-10.71	21.07	40.00	18.93	100	318	PK	Horizonta	PASS
2	73.6500	35.57	-11.97	23.60	40.00	16.40	100	101	PK	Horizonta	PASS
3	103.7200	32.35	-8.30	24.05	43.50	19.45	100	332	PK	Horizonta	PASS
4	202.1750	35.09	-8.72	26.37	43.50	17.13	100	2	PK	Horizonta	PASS
5	359.8000	42.83	-5.38	37.45	46.00	8.55	100	202	PK	Horizonta	PASS
6	672.1400	31.84	-0.48	31.36	46.00	14.64	100	305	PK	Horizonta	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .
2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List											
NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	30.4850	47.66	-11.36	36.30	40.00	3.70	100	300	PK	Vertical	PASS
2	43.5800	44.52	-7.52	37.00	40.00	3.00	100	93	PK	Vertical	PASS
3	74.6200	49.12	-12.44	36.68	40.00	3.32	100	86	PK	Vertical	PASS
4	199.7500	37.80	-8.76	29.04	43.50	14.46	100	146	PK	Vertical	PASS
5	407.8150	38.77	-4.40	34.37	46.00	11.63	100	3	PK	Vertical	PASS
6	650.8000	36.93	-0.33	36.60	46.00	9.40	100	203	PK	Vertical	PASS

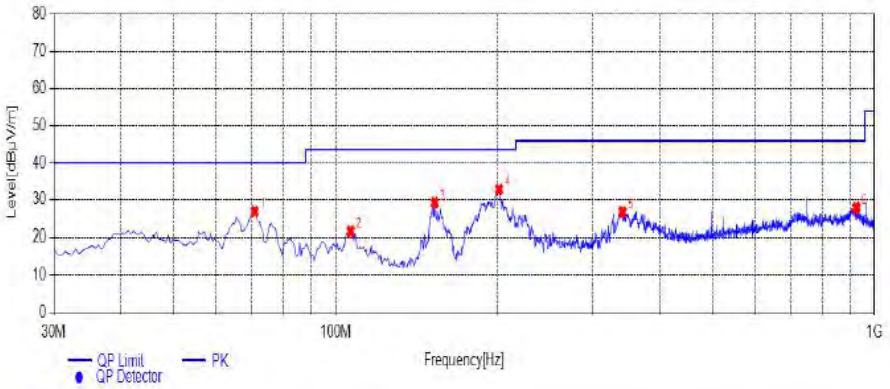
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

By POE:

Horizontal

Test Graph



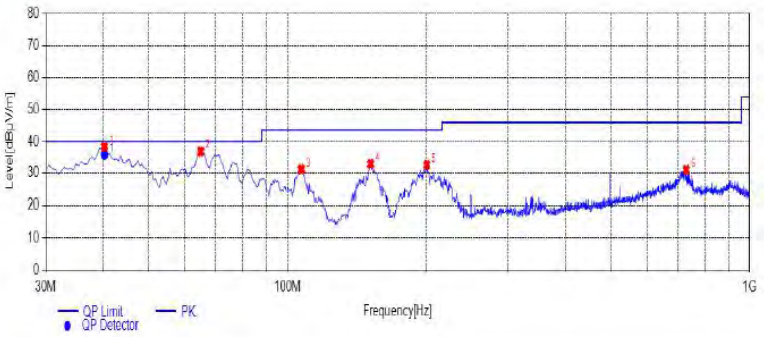
Suspected List											
NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	70.7400	37.66	-10.78	26.88	40.00	13.12	100	134	PK	Horizonta	PASS
2	106.6300	29.39	-7.79	21.60	43.50	21.90	100	112	PK	Horizonta	PASS
3	152.7050	41.62	-12.45	29.17	43.50	14.33	100	276	PK	Horizonta	PASS
4	201.2050	41.62	-8.86	32.76	43.50	10.74	100	50	PK	Horizonta	PASS
5	340.8850	33.02	-6.25	26.77	46.00	19.23	100	128	PK	Horizonta	PASS
6	925.7950	24.95	2.87	27.82	46.00	18.18	100	194	PK	Horizonta	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List											
NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	40.1850	46.00	-7.66	38.34	40.00	1.66	100	316	PK	Vertical	PASS
2	64.9200	46.44	-9.57	36.87	40.00	3.13	100	14	PK	Vertical	PASS
3	107.1150	38.91	-7.73	31.18	43.50	12.32	100	61	PK	Vertical	PASS
4	151.2500	45.71	-12.83	32.88	43.50	10.62	100	11	PK	Vertical	PASS
5	200.2350	41.44	-8.84	32.60	43.50	10.90	100	206	PK	Vertical	PASS
6	729.8550	31.14	-0.12	31.02	46.00	14.98	100	225	PK	Vertical	PASS

Quasi-peak Final Data List										
NO.	Frequency [MHz]	Reading [dBµV/m]	Factor [dB]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
1	40.1850	43.58	-7.66	35.92	40.00	4.08	100	316	Vertical	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

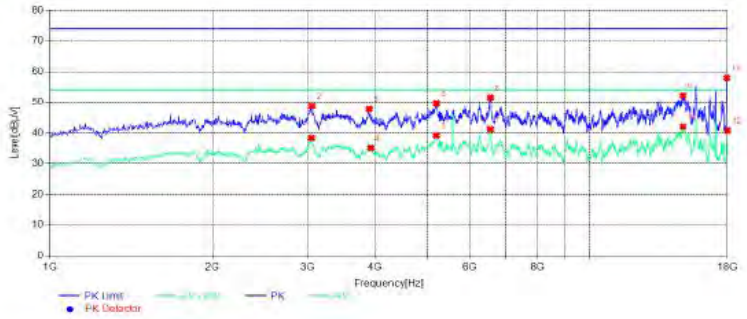
2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

For 1GHz~18GHz

802.11b Low

Horizontal

Test Graph



Suspected List

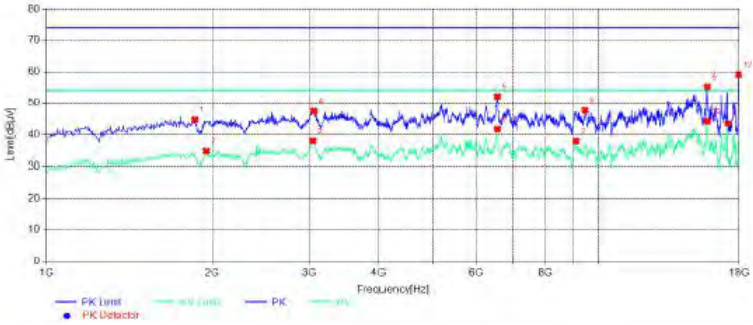
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3054.0108	14.57	15.61	100	290	AV	Horizontal	PASS
2	3060.8122	14.15	25.20	100	50	PK	Horizontal	PASS
3	3904.1808	14.76	26.16	100	200	PK	Horizontal	PASS
4	3931.3863	13.50	18.83	100	60	AV	Horizontal	PASS
5	5199.8400	16.06	14.84	100	20	AV	Horizontal	PASS
6	5199.8400	16.06	24.35	100	350	PK	Horizontal	PASS
7	6546.5093	21.00	12.82	100	290	AV	Horizontal	PASS
8	6549.9100	21.38	22.50	100	280	PK	Horizontal	PASS
9	14888.3777	22.05	21.88	100	190	PK	Horizontal	PASS
10	14891.7784	22.06	11.94	100	140	AV	Horizontal	PASS
11	17952.3905	26.82	16.04	100	80	PK	Horizontal	PASS
12	18000.0000	19.29	13.17	100	320	AV	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	1860.3721	10.17	29.31	100	90	PK	Vertical	PASS
2	1952.1904	10.24	19.24	100	130	AV	Vertical	PASS
3	3050.6101	14.77	16.12	100	290	AV	Vertical	PASS
4	3060.8122	14.15	26.48	100	310	PK	Vertical	PASS
5	6549.9100	21.38	22.03	100	10	PK	Vertical	PASS
6	6549.9100	21.38	12.31	100	130	AV	Vertical	PASS
7	9100.4201	19.73	16.17	100	230	AV	Vertical	PASS
8	9447.2895	19.90	26.27	100	190	PK	Vertical	PASS
9	15745.3491	22.50	18.80	100	60	PK	Vertical	PASS
10	15748.7498	22.54	9.81	100	170	AV	Vertical	PASS
11	17149.8300	23.91	10.52	100	160	AV	Vertical	PASS
12	17948.9898	26.87	14.89	100	120	PK	Vertical	PASS

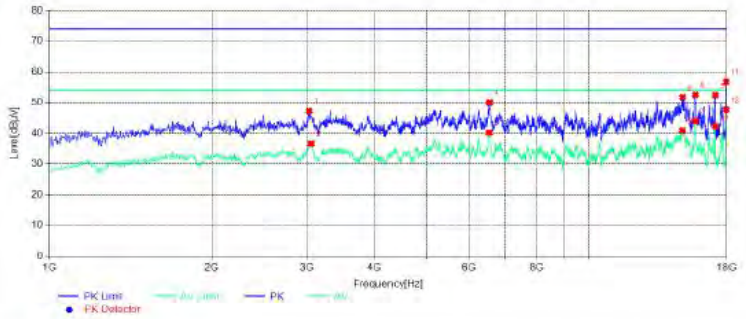
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11b Middle

Horizontal

Test Graph

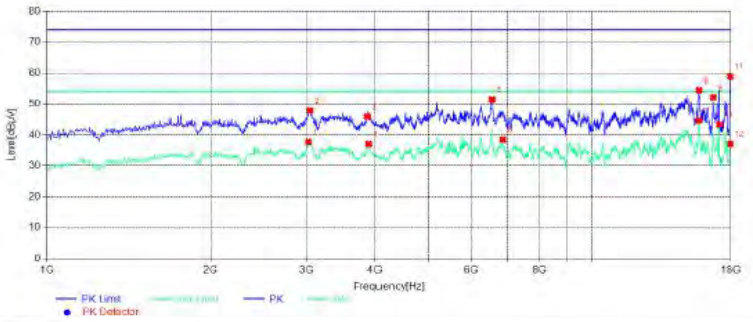


Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3030.2060	13.71	26.66	100	20	PK	Horizontal	PASS
2	3057.4115	14.36	17.30	100	20	AV	Horizontal	PASS
3	6536.3073	19.86	13.75	100	10	AV	Horizontal	PASS
4	6546.5093	21.00	24.04	100	20	PK	Horizontal	PASS
5	14901.9804	22.02	13.10	100	20	AV	Horizontal	PASS
6	14915.5831	21.66	22.32	100	20	PK	Horizontal	PASS
7	15735.1470	22.38	9.90	100	20	AV	Horizontal	PASS
8	15741.9484	22.46	21.44	100	10	PK	Horizontal	PASS
9	17146.4293	23.17	21.52	100	20	PK	Horizontal	PASS
10	17149.8300	23.91	11.61	100	20	AV	Horizontal	PASS
11	17952.3905	26.82	17.24	100	20	PK	Horizontal	PASS
12	17952.3905	26.82	6.27	100	20	AV	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .
2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



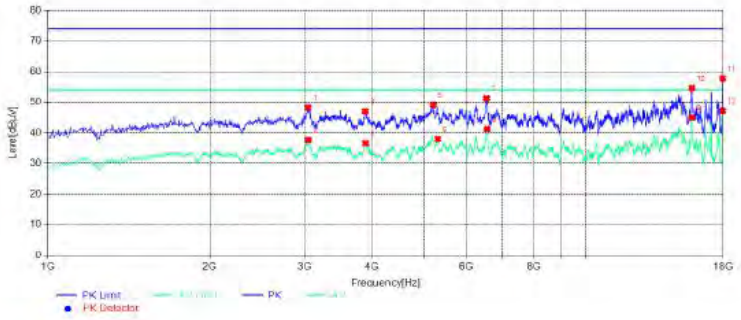
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3026.8054	13.52	16.32	100	120	AV	Vertical	PASS
2	3047.2094	14.65	26.12	100	260	PK	Vertical	PASS
3	3883.7768	13.89	28.07	100	80	PK	Vertical	PASS
4	3907.5815	14.60	16.93	100	130	AV	Vertical	PASS
5	6546.5093	21.00	22.61	100	250	PK	Vertical	PASS
6	6855.9712	16.62	15.51	100	90	AV	Vertical	PASS
7	15714.7429	22.15	9.33	100	260	AV	Vertical	PASS
8	15728.3457	22.30	19.56	100	120	PK	Vertical	PASS
9	16704.3409	18.84	21.92	100	260	PK	Vertical	PASS
10	17149.8300	23.91	10.77	100	210	AV	Vertical	PASS
11	17952.3905	26.82	15.11	100	230	PK	Vertical	PASS
12	17955.7912	26.28	16.87	100	230	AV	Vertical	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .
2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11b High

Horizontal

Test Graph



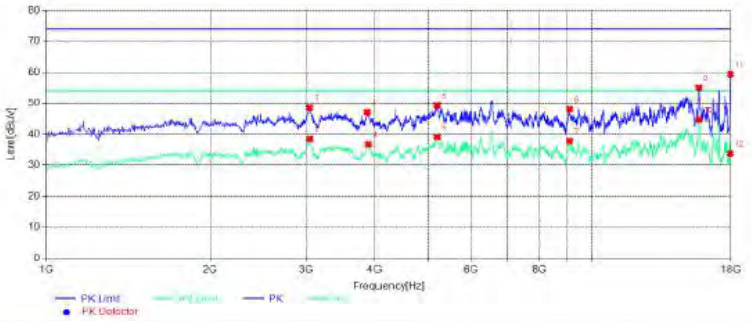
Suspected List

NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3047.2094	14.65	25.77	100	40	PK	Horizontal	PASS
2	3050.6101	14.77	16.37	100	50	AV	Horizontal	PASS
3	3890.5781	14.33	26.90	100	40	PK	Horizontal	PASS
4	3897.3795	14.78	17.34	100	110	AV	Horizontal	PASS
5	5206.6413	15.59	24.85	100	80	PK	Horizontal	PASS
6	5308.6617	14.98	16.02	100	80	AV	Horizontal	PASS
7	6536.3073	19.86	22.73	100	40	PK	Horizontal	PASS
8	6553.3107	20.93	12.81	100	110	AV	Horizontal	PASS
9	15735.1470	22.38	9.01	100	20	AV	Horizontal	PASS
10	15735.1470	22.38	19.37	100	50	PK	Horizontal	PASS
11	17952.3905	26.82	16.23	100	70	PK	Horizontal	PASS
12	17955.7912	26.28	6.78	100	140	AV	Horizontal	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .
2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

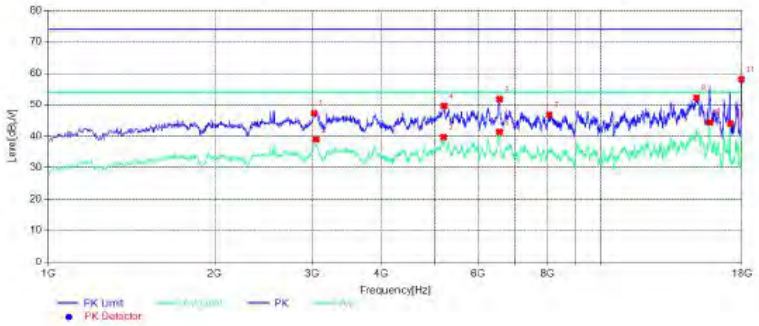
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3047.2094	14.65	25.44	100	240	PK	Vertical	PASS
2	3050.6101	14.77	15.46	100	240	AV	Vertical	PASS
3	3887.1774	14.11	26.80	100	250	PK	Vertical	PASS
4	3904.1808	14.76	17.23	100	110	AV	Vertical	PASS
5	5196.4393	15.93	24.69	100	80	PK	Vertical	PASS
6	5196.4393	15.93	14.87	100	290	AV	Vertical	PASS
7	9093.6187	19.38	16.25	100	210	AV	Vertical	PASS
8	9100.4201	19.73	25.91	100	100	PK	Vertical	PASS
9	15711.3423	22.11	18.97	100	160	PK	Vertical	PASS
10	15731.7463	22.34	9.30	100	320	AV	Vertical	PASS
11	17948.9898	26.87	14.61	100	230	PK	Vertical	PASS
12	17948.9898	26.87	20.22	100	30	AV	Vertical	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .
2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11g Low

Horizontal

Test Graph



Suspected List

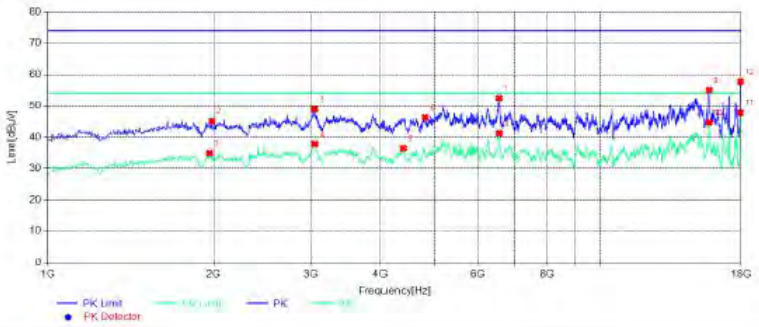
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3026.8054	13.52	26.63	100	190	PK	Horizontal	PASS
2	3054.0108	14.57	15.01	100	130	AV	Horizontal	PASS
3	5193.0386	15.80	14.35	100	130	AV	Horizontal	PASS
4	5203.2406	15.83	24.36	100	10	PK	Horizontal	PASS
5	6553.3107	20.93	22.30	100	320	PK	Horizontal	PASS
6	6553.3107	20.93	12.69	100	90	AV	Horizontal	PASS
7	8059.8120	16.52	27.17	100	180	PK	Horizontal	PASS
8	14895.1790	22.06	21.77	100	170	PK	Horizontal	PASS
9	15738.5477	22.42	9.60	100	240	AV	Horizontal	PASS
10	17149.8300	23.91	9.97	100	10	AV	Horizontal	PASS
11	17948.9898	26.87	15.91	100	110	PK	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	1965.7932	10.10	19.02	100	80	AV	Vertical	PASS
2	1986.1972	9.89	28.76	100	140	PK	Vertical	PASS
3	3050.6101	14.77	24.97	100	110	PK	Vertical	PASS
4	3054.0108	14.57	16.20	100	160	AV	Vertical	PASS
5	4390.4781	13.57	17.53	100	330	AV	Vertical	PASS
6	4808.7618	14.25	27.73	100	200	PK	Vertical	PASS
7	6549.9100	21.38	21.51	100	320	PK	Vertical	PASS
8	6553.3107	20.93	12.79	100	150	AV	Vertical	PASS
9	15745.3491	22.50	19.03	100	60	PK	Vertical	PASS
10	15745.3491	22.50	9.31	100	170	AV	Vertical	PASS
11	17948.9898	26.87	6.17	100	330	AV	Vertical	PASS
12	17948.9898	26.87	16.23	100	40	PK	Vertical	PASS

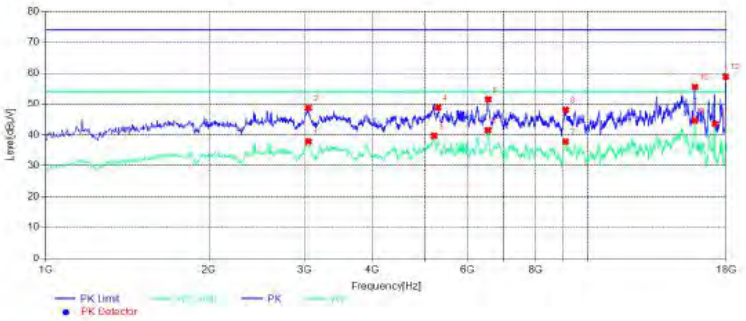
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11g Middle

Horizontal

Test Graph



Suspected List

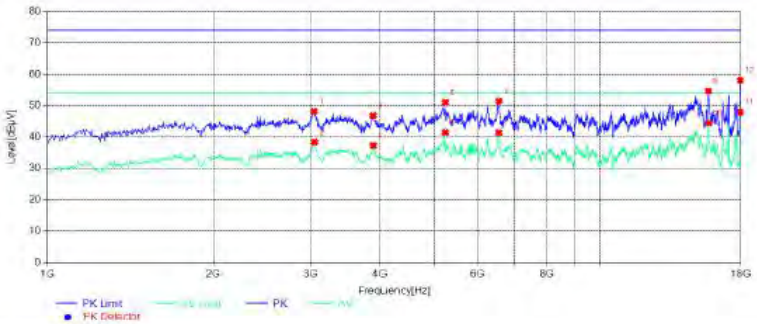
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3054.0108	14.57	16.19	100	290	AV	Horizontal	PASS
2	3054.0108	14.57	25.27	100	260	PK	Horizontal	PASS
3	5203.2406	15.83	14.37	100	40	AV	Horizontal	PASS
4	5298.4597	15.47	25.11	100	80	PK	Horizontal	PASS
5	6539.7079	20.24	12.56	100	340	AV	Horizontal	PASS
6	6549.9100	21.38	22.52	100	200	PK	Horizontal	PASS
7	9093.6187	19.38	16.22	100	60	AV	Horizontal	PASS
8	9097.0194	19.57	25.94	100	310	PK	Horizontal	PASS
9	15735.1470	22.38	9.40	100	230	AV	Horizontal	PASS
10	15752.1504	22.31	18.51	100	140	PK	Horizontal	PASS
11	17149.8300	23.91	10.41	100	50	AV	Horizontal	PASS
12	17948.9898	26.87	15.17	100	230	PK	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3047.2094	14.65	25.78	100	190	PK	Vertical	PASS
2	3054.0108	14.57	15.61	100	10	AV	Vertical	PASS
3	3897.3795	14.78	27.18	100	350	PK	Vertical	PASS
4	3900.7802	14.91	16.73	100	80	AV	Vertical	PASS
5	5237.2474	13.36	23.05	100	310	PK	Vertical	PASS
6	5237.2474	13.36	12.53	100	310	AV	Vertical	PASS
7	6549.9100	21.38	12.58	100	360	AV	Vertical	PASS
8	6553.3107	20.93	22.57	100	170	PK	Vertical	PASS
9	15701.1402	21.99	19.34	100	260	PK	Vertical	PASS
10	15748.7498	22.54	9.57	100	330	AV	Vertical	PASS
11	17948.9898	26.87	6.02	100	100	AV	Vertical	PASS
12	17952.3905	26.82	15.96	100	330	PK	Vertical	PASS

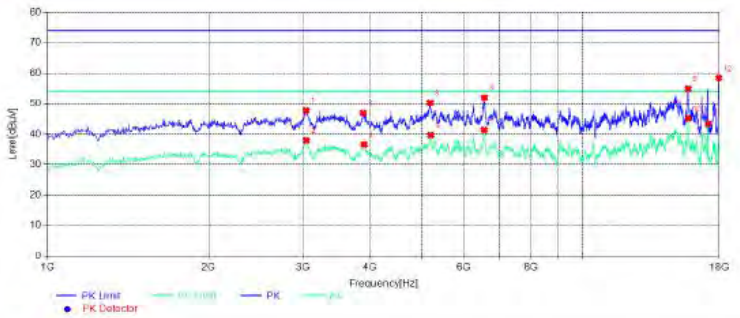
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11g High

Horizontal

Test Graph



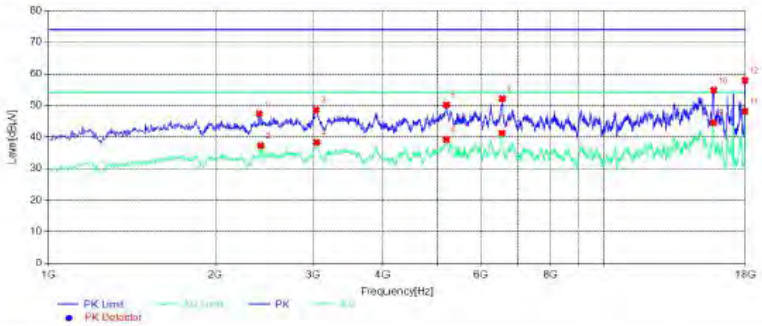
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3043.8088	14.46	26.22	100	60	PK	Horizontal	PASS
2	3047.2094	14.65	16.07	100	140	AV	Horizontal	PASS
3	3890.5781	14.33	26.97	100	80	PK	Horizontal	PASS
4	3904.1808	14.76	17.35	100	160	AV	Horizontal	PASS
5	5189.6379	15.66	23.76	100	170	PK	Horizontal	PASS
6	5199.8400	16.06	14.35	100	170	AV	Horizontal	PASS
7	6543.1086	20.62	12.67	100	120	AV	Horizontal	PASS
8	6553.3107	20.93	22.06	100	100	PK	Horizontal	PASS
9	15731.7463	22.34	19.11	100	30	PK	Horizontal	PASS
10	15741.9484	22.46	8.79	100	140	AV	Horizontal	PASS
11	17149.8300	23.91	10.54	100	150	AV	Horizontal	PASS
12	17952.3905	26.82	15.61	100	160	PK	Horizontal	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2401.0802	9.93	26.65	100	350	PK	Vertical	PASS
2	2418.0836	10.13	16.79	100	320	AV	Vertical	PASS
3	3040.4081	14.27	25.39	100	280	PK	Vertical	PASS
4	3050.6101	14.77	15.68	100	290	AV	Vertical	PASS
5	5193.0386	15.80	23.79	100	280	PK	Vertical	PASS
6	5193.0386	15.80	14.87	100	80	AV	Vertical	PASS
7	6543.1086	20.62	12.69	100	230	AV	Vertical	PASS
8	6549.9100	21.38	21.83	100	30	PK	Vertical	PASS
9	15748.7498	22.54	9.52	100	280	AV	Vertical	PASS
10	15772.5545	20.00	19.20	100	150	PK	Vertical	PASS
11	17948.9898	26.87	5.90	100	220	AV	Vertical	PASS
12	17948.9898	26.87	16.10	100	280	PK	Vertical	PASS

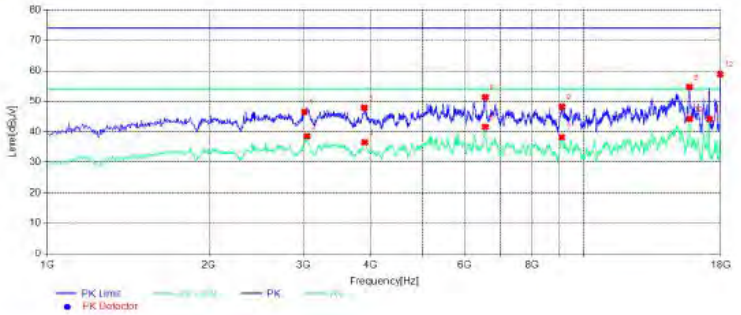
Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11n HT20 Low

Horizontal

Test Graph



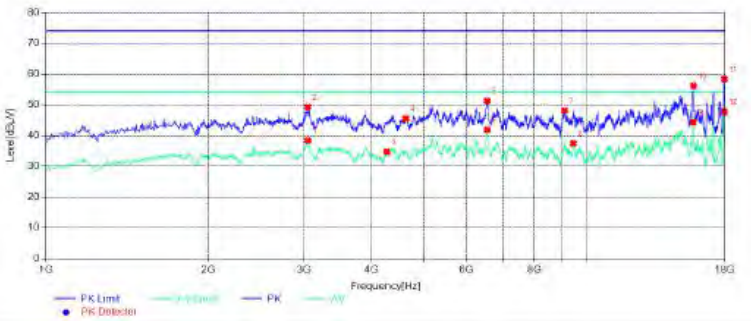
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3013.2026	12.76	27.52	100	50	PK	Horizontal	PASS
2	3050.6101	14.77	15.42	100	190	AV	Horizontal	PASS
3	3897.3795	14.78	26.12	100	280	PK	Horizontal	PASS
4	3904.1808	14.76	17.43	100	190	AV	Horizontal	PASS
5	6549.9100	21.38	12.48	100	130	AV	Horizontal	PASS
6	6549.9100	21.38	22.69	100	310	PK	Horizontal	PASS
7	9093.6187	19.38	15.83	100	300	AV	Horizontal	PASS
8	9100.4201	19.73	25.80	100	150	PK	Horizontal	PASS
9	15731.7463	22.34	19.33	100	360	PK	Horizontal	PASS
10	15741.9484	22.46	9.75	100	50	AV	Horizontal	PASS
11	17149.8300	23.91	9.86	100	10	AV	Horizontal	PASS
12	17952.3905	26.82	15.13	100	70	PK	Horizontal	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3050.6101	14.77	15.64	100	100	AV	Vertical	PASS
2	3050.6101	14.77	24.72	100	220	PK	Vertical	PASS
3	4268.0536	12.75	19.28	100	140	AV	Vertical	PASS
4	4631.9264	12.71	28.45	100	100	PK	Vertical	PASS
5	6546.5093	21.00	22.67	100	340	PK	Vertical	PASS
6	6549.9100	21.38	12.16	100	300	AV	Vertical	PASS
7	9100.4201	19.73	25.87	100	150	PK	Vertical	PASS
8	9447.2895	19.90	16.55	100	340	AV	Vertical	PASS
9	15724.9450	22.26	9.68	100	280	AV	Vertical	PASS
10	15748.7498	22.54	17.80	100	20	PK	Vertical	PASS
11	17948.9898	26.87	15.62	100	60	PK	Vertical	PASS
12	17948.9898	26.87	6.21	100	20	AV	Vertical	PASS

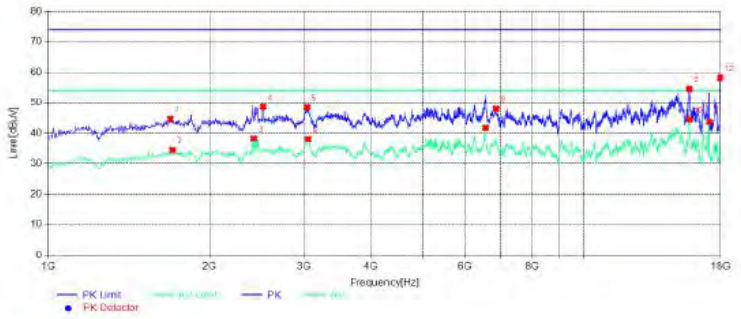
Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11n HT20 Middle

Horizontal

Test Graph



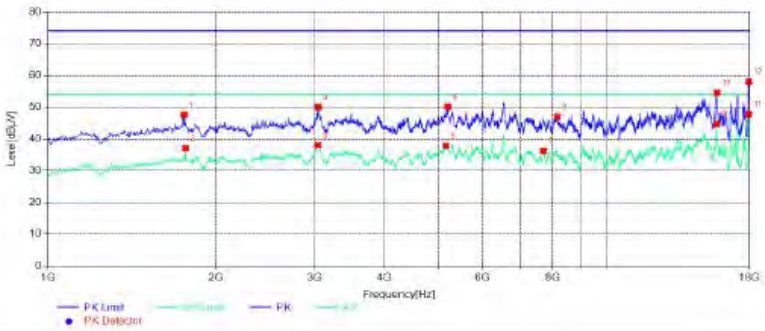
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	1690.3381	10.17	29.29	100	150	PK	Horizontal	PASS
2	1707.3415	10.25	19.46	100	360	AV	Horizontal	PASS
3	2421.4843	10.17	15.76	100	20	AV	Horizontal	PASS
4	2520.1040	10.77	25.30	100	110	PK	Horizontal	PASS
5	3043.8088	14.46	25.48	100	150	PK	Horizontal	PASS
6	3057.4115	14.36	15.97	100	360	AV	Horizontal	PASS
7	6549.9100	21.38	12.24	100	20	AV	Horizontal	PASS
8	6855.9712	16.62	25.97	100	310	PK	Horizontal	PASS
9	15721.5443	22.23	19.48	100	20	PK	Horizontal	PASS
10	15755.5511	21.93	9.42	100	220	AV	Horizontal	PASS
11	17149.8300	23.91	10.26	100	290	AV	Horizontal	PASS
12	17952.3905	26.82	15.85	100	270	PK	Horizontal	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	1751.5503	10.32	26.43	100	210	PK	Vertical	PASS
2	1765.1530	10.08	16.93	100	200	AV	Vertical	PASS
3	3040.4081	14.27	16.01	100	180	AV	Vertical	PASS
4	3047.2094	14.65	23.99	100	50	PK	Vertical	PASS
5	5159.0318	14.46	16.21	100	40	AV	Vertical	PASS
6	5196.4393	15.93	23.90	100	100	PK	Vertical	PASS
7	7702.7405	15.49	17.82	100	50	AV	Vertical	PASS
8	8155.0310	17.00	26.95	100	310	PK	Vertical	PASS
9	15731.7463	22.34	9.34	100	360	AV	Vertical	PASS
10	15755.5511	21.93	19.52	100	280	PK	Vertical	PASS
11	17948.9898	26.87	6.17	100	90	AV	Vertical	PASS
12	17948.9898	26.87	15.91	100	60	PK	Vertical	PASS

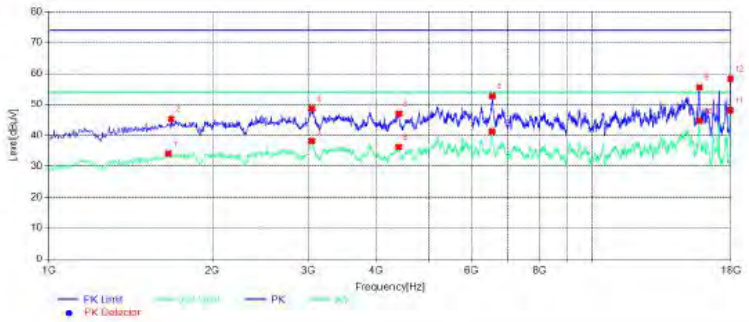
Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11n HT20 High

Horizontal

Test Graph



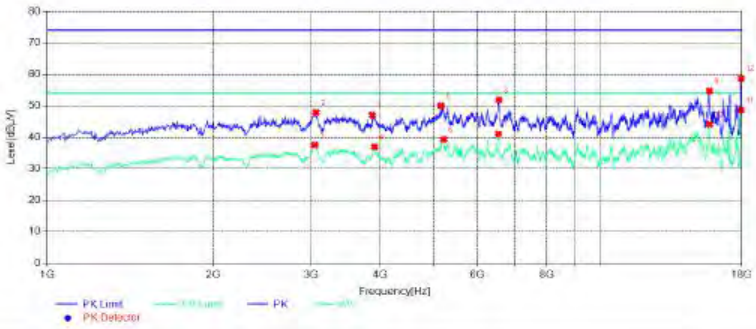
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	1659.7319	9.98	19.91	100	160	AV	Horizontal	PASS
2	1680.1360	10.10	28.62	100	190	PK	Horizontal	PASS
3	3050.6101	14.77	15.79	100	140	AV	Horizontal	PASS
4	3050.6101	14.77	25.29	100	150	PK	Horizontal	PASS
5	4404.0808	13.46	17.75	100	290	AV	Horizontal	PASS
6	4407.4815	13.25	26.90	100	210	PK	Horizontal	PASS
7	6539.7079	20.24	12.76	100	70	AV	Horizontal	PASS
8	6546.5093	21.00	21.26	100	40	PK	Horizontal	PASS
9	15735.1470	22.38	18.45	100	160	PK	Horizontal	PASS
10	15745.3491	22.50	9.29	100	150	AV	Horizontal	PASS
11	17948.9898	26.87	5.90	100	310	AV	Horizontal	PASS
12	17952.3905	26.82	15.75	100	100	PK	Horizontal	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3047.2094	14.65	16.44	100	280	AV	Vertical	PASS
2	3064.2128	13.95	26.08	100	30	PK	Vertical	PASS
3	3873.5747	13.22	26.94	100	270	PK	Vertical	PASS
4	3907.5815	14.60	17.10	100	100	AV	Vertical	PASS
5	5155.6311	14.33	24.00	100	110	PK	Vertical	PASS
6	5206.6413	15.59	14.69	100	120	AV	Vertical	PASS
7	6546.5093	21.00	12.90	100	340	AV	Vertical	PASS
8	6560.1120	19.99	22.12	100	160	PK	Vertical	PASS
9	15741.9484	22.46	19.28	100	60	PK	Vertical	PASS
10	15748.7498	22.54	9.89	100	310	AV	Vertical	PASS
11	17952.3905	26.82	5.35	100	260	AV	Vertical	PASS
12	17952.3905	26.82	15.29	100	170	PK	Vertical	PASS

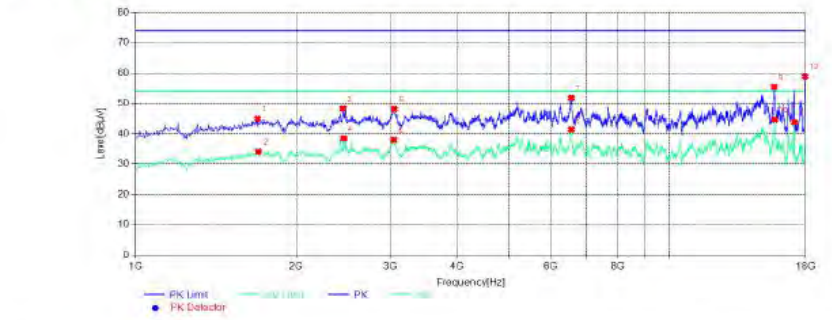
Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11n HT40 Low

Horizontal

Test Graph



Suspected List

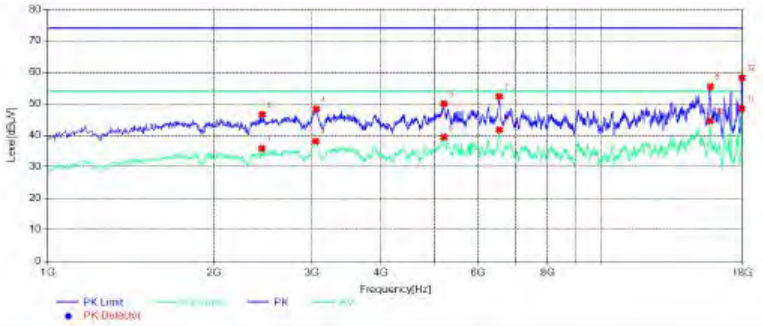
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	1693.7387	10.19	29.02	100	330	PK	Horizontal	PASS
2	1700.5401	10.23	19.90	100	80	AV	Horizontal	PASS
3	2448.6897	10.49	25.69	100	90	PK	Horizontal	PASS
4	2455.4911	10.53	15.46	100	80	AV	Horizontal	PASS
5	3050.6101	14.77	16.02	100	240	AV	Horizontal	PASS
6	3054.0108	14.57	25.84	100	200	PK	Horizontal	PASS
7	6549.9100	21.38	22.25	100	220	PK	Horizontal	PASS
8	6549.9100	21.38	12.61	100	120	AV	Horizontal	PASS
9	15697.7395	21.65	18.54	100	190	PK	Horizontal	PASS
10	15745.3491	22.50	9.36	100	50	AV	Horizontal	PASS
11	17146.4293	23.17	10.19	100	110	AV	Horizontal	PASS
12	17948.9898	26.87	15.14	100	200	PK	Horizontal	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2438.4877	10.37	18.23	100	60	AV	Vertical	PASS
2	2441.8884	10.41	27.49	100	170	PK	Vertical	PASS
3	3050.6101	14.77	15.92	100	310	AV	Vertical	PASS
4	3060.8122	14.15	25.67	100	300	PK	Vertical	PASS
5	5199.8400	16.06	23.97	100	210	PK	Vertical	PASS
6	5199.8400	16.06	14.60	100	130	AV	Vertical	PASS
7	6546.5093	21.00	21.72	100	320	PK	Vertical	PASS
8	6549.9100	21.38	12.29	100	280	AV	Vertical	PASS
9	15735.1470	22.38	18.47	100	70	PK	Vertical	PASS
10	15745.3491	22.50	9.46	100	100	AV	Vertical	PASS
11	17948.9898	26.87	5.57	100	40	AV	Vertical	PASS
12	17955.7912	26.28	15.76	100	350	PK	Vertical	PASS

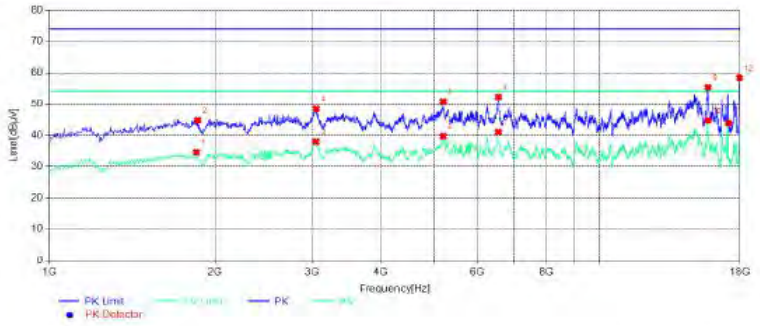
Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11n HT40 Middle

Horizontal

Test Graph



Suspected List

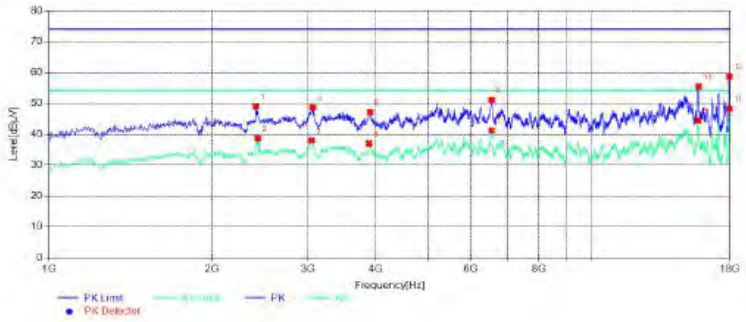
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	1850.1700	10.84	19.43	100	360	AV	Horizontal	PASS
2	1860.3721	10.17	29.15	100	220	PK	Horizontal	PASS
3	3054.0108	14.57	16.07	100	170	AV	Horizontal	PASS
4	3057.4115	14.36	25.49	100	20	PK	Horizontal	PASS
5	5196.4393	15.93	23.21	100	290	PK	Horizontal	PASS
6	5196.4393	15.93	14.32	100	250	AV	Horizontal	PASS
7	6546.5093	21.00	12.97	100	320	AV	Horizontal	PASS
8	6546.5093	21.00	21.72	100	220	PK	Horizontal	PASS
9	15735.1470	22.38	18.68	100	260	PK	Horizontal	PASS
10	15741.9484	22.46	9.26	100	210	AV	Horizontal	PASS
11	17149.8300	23.91	10.10	100	240	AV	Horizontal	PASS
12	17955.7912	26.28	15.65	100	40	PK	Horizontal	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2407.8816	10.01	25.00	100	250	PK	Vertical	PASS
2	2428.2857	10.25	15.29	100	320	AV	Vertical	PASS
3	3050.6101	14.77	16.04	100	150	AV	Vertical	PASS
4	3064.2128	13.95	25.34	100	120	PK	Vertical	PASS
5	3890.5781	14.33	16.99	100	130	AV	Vertical	PASS
6	3907.5815	14.60	26.88	100	280	PK	Vertical	PASS
7	6549.9100	21.38	12.81	100	120	AV	Vertical	PASS
8	6549.9100	21.38	22.86	100	360	PK	Vertical	PASS
9	15724.9450	22.26	9.54	100	140	AV	Vertical	PASS
10	15745.3491	22.50	18.54	100	60	PK	Vertical	PASS
11	17948.9898	26.87	5.75	100	150	AV	Vertical	PASS
12	17952.3905	26.82	15.36	100	180	PK	Vertical	PASS

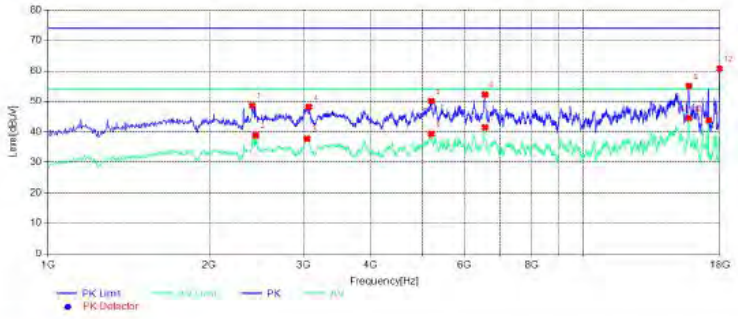
Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11n HT40 High

Horizontal

Test Graph



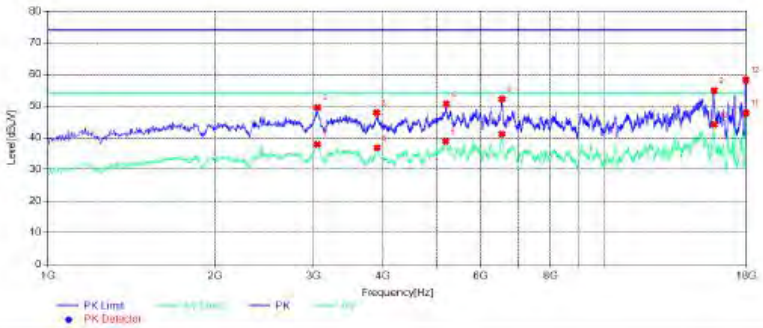
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2407.8816	10.01	25.36	100	160	PK	Horizontal	PASS
2	2445.2891	10.45	15.10	100	160	AV	Horizontal	PASS
3	3050.6101	14.77	16.30	100	100	AV	Horizontal	PASS
4	3071.0142	13.53	25.87	100	300	PK	Horizontal	PASS
5	5199.8400	16.06	23.96	100	110	PK	Horizontal	PASS
6	5199.8400	16.06	14.69	100	50	AV	Horizontal	PASS
7	6549.9100	21.38	12.59	100	310	AV	Horizontal	PASS
8	6549.9100	21.38	21.73	100	170	PK	Horizontal	PASS
9	15735.1470	22.38	18.95	100	170	PK	Horizontal	PASS
10	15745.3491	22.50	9.53	100	130	AV	Horizontal	PASS
11	17149.8300	23.91	10.14	100	190	AV	Horizontal	PASS
12	17952.3905	26.82	13.25	100	150	PK	Horizontal	PASS

Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	3050.6101	14.77	16.07	100	240	AV	Vertical	PASS
2	3054.0108	14.57	24.44	100	270	PK	Vertical	PASS
3	3897.3795	14.78	26.10	100	110	PK	Vertical	PASS
4	3904.1808	14.76	17.16	100	340	AV	Vertical	PASS
5	5189.6379	15.66	15.09	100	60	AV	Vertical	PASS
6	5199.8400	16.06	23.31	100	60	PK	Vertical	PASS
7	6546.5093	21.00	12.84	100	190	AV	Vertical	PASS
8	6549.9100	21.38	21.78	100	190	PK	Vertical	PASS
9	15745.3491	22.50	19.12	100	300	PK	Vertical	PASS
10	15745.3491	22.50	9.83	100	60	AV	Vertical	PASS
11	17948.9898	26.87	6.18	100	300	AV	Vertical	PASS
12	17948.9898	26.87	15.69	100	130	PK	Vertical	PASS

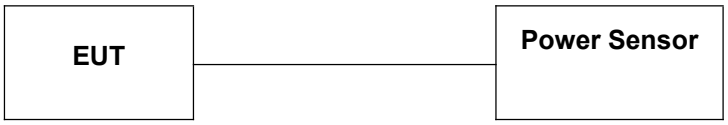
Note:1. Result (dBμV/m) = Reading(dBμV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

NOTE: All the modes have been tested and recorded worst mode in the report.(2*2MIMO)

4.3. Maximum Peak Output Power

TEST CONFIGURATION



TEST PROCEDURE

According to KDB558074 D01 DTS Measurement Guidance Section 9.1 Maximum peak conducted output power,9.1.2. and Average conducted output power, 9.2.3.1.

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

The maximum Average conducted output power may be measured using a wideband RF power meter with a thermocouple derector or equivalent. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

LIMIT

The Maximum Peak Output Power Measurement is 30dBm.

TEST RESULTS

Temperature	23.6℃	Humidity	52.4%
Test Engineer	Jenny Zeng	Configurations	IEEE 802.11b/g/n

Antenna 0:

Type	Channel	Output power PK (dBm)	Output power AV (dBm)	Limit (dBm)	Result
802.11b	01	15.66	12.33	30.00	Pass
	06	15.12	11.82		
	11	15.21	11.79		
802.11g	01	18.15	15.03	30.00	Pass
	06	18.72	15.48		
	11	18.45	14.95		
802.11n(HT20)	01	17.91	13.49	30.00	Pass
	06	18.32	14.07		
	11	18.03	13.73		
802.11n(HT40)	03	17.36	11.88	30.00	Pass
	06	17.34	12.3		
	09	17.61	12.36		

Antenna 1:

Type	Channel	Output power PK (dBm)	Output power AV (dBm)	Limit (dBm)	Result
802.11b	01	14.77	11.61	30.00	Pass
	06	14.98	11.62		
	11	14.83	11.8		
802.11g	01	18.18	15.13	30.00	Pass
	06	18.74	15.73		
	11	18.71	15.29		
802.11n(HT20)	01	18.19	13.76	30.00	Pass
	06	18.29	13.81		
	11	18.65	14.4		
802.11n(HT40)	03	17.1	11.9	30.00	Pass
	06	17.91	12.46		
	09	18.07	12.59		

Note: 1.The test results including the cable lose.
Duty cycle used in all test items: 100%

MIMO*2

Type	Channel	Peak Output power ANT0 (dBm)	Peak Output power ANT1 (dBm)	average Output power ANT0 (dBm)	average Output power ANT1 (dBm)	Peak Output power Total (dBm)	average Output power Total (dBm)	Limit (dBm)	Result
802.11n (HT20)	01	17.91	18.19	13.49	13.76	21.06	16.64	29.49	Pass
	06	18.32	18.29	14.07	13.81	21.32	16.95		
	11	18.03	18.65	13.73	14.4	21.36	17.09		
802.11n (HT40)	03	17.36	17.1	11.88	11.9	20.24	14.90	29.49	Pass
	06	17.34	17.91	12.3	12.46	20.64	15.39		
	09	17.61	18.07	12.36	12.59	20.86	15.49		

Remark:
The Directional Gain= Gain of individual transmit antennas (dBi) + Array gain;
Array gain = 10 log (Nant), where Nant is the number of transmit antennas
Directional Gain= 6.51dBi

4.4. Power Spectral Density

TEST CONFIGURATION

TEST PROCEDURE

According to KDB 558074 D01 Method PKPSD (peak PSD) This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

LIMIT

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.

TEST RESULTS

Temperature	23.6℃	Humidity	52.4%
Test Engineer	Jenny Zeng	Configurations	IEEE 802.11b/g/n

Antenna 0:

Type	Channel	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
802.11b	01	-11.16	8.00	Pass
	06	-3.93		
	11	0.89		
802.11g	01	-15.13	8.00	Pass
	06	-14.58		
	11	-14.36		
802.11n(HT20)	01	-16.11	8.00	Pass
	06	-14.58		
	11	-15.3		
802.11n(HT40)	03	-18.79	8.00	Pass
	06	-17.62		
	09	-18.91		

Antenna 1:

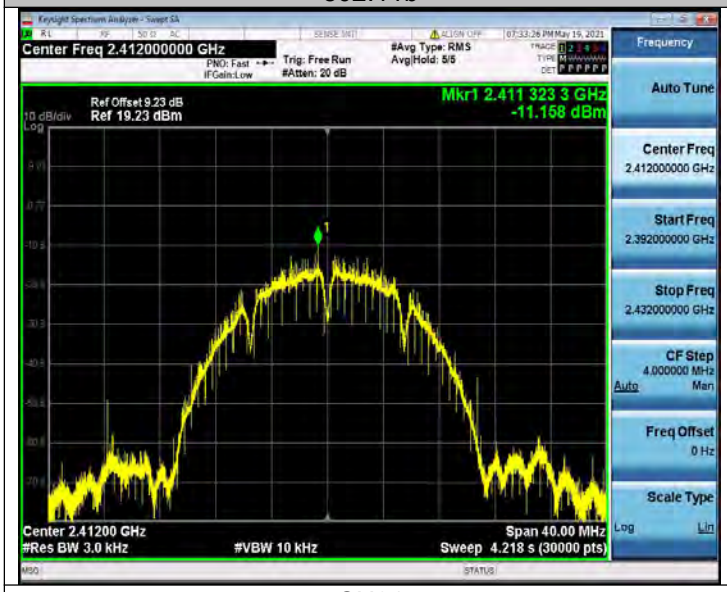
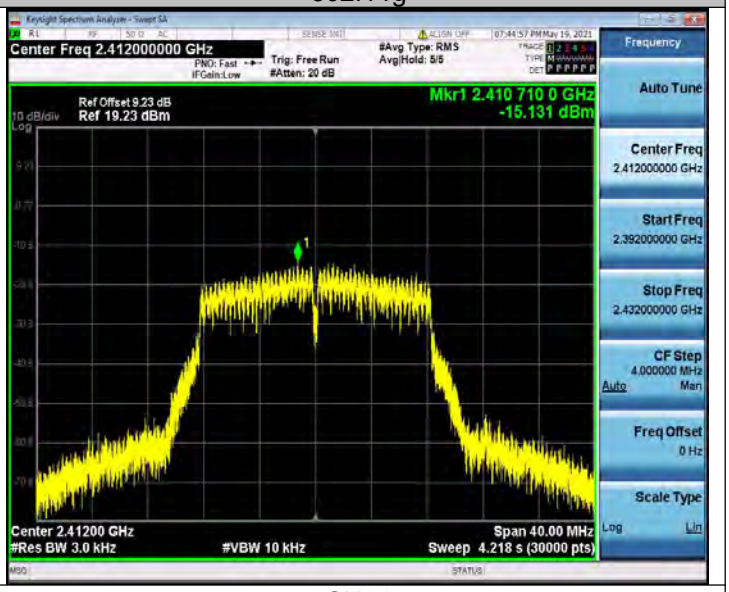
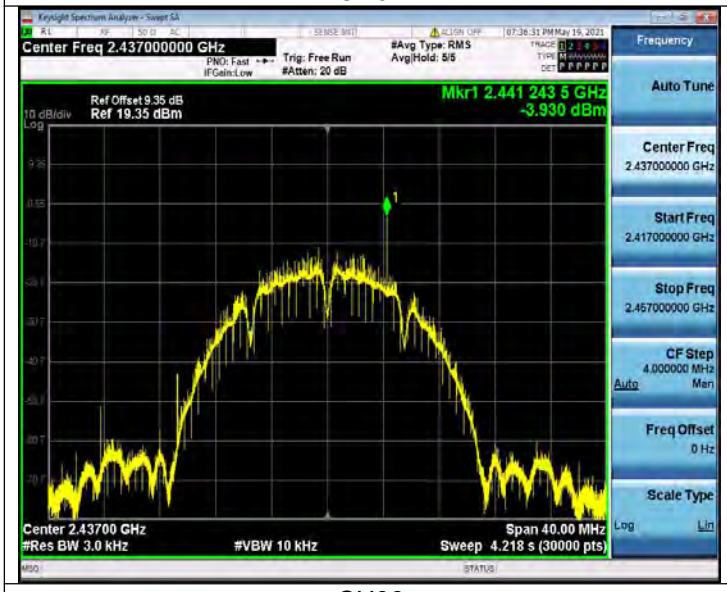
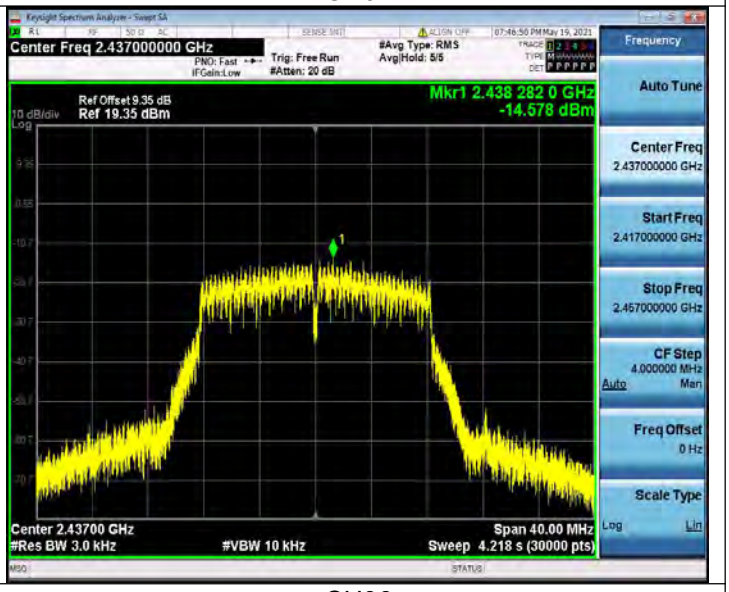
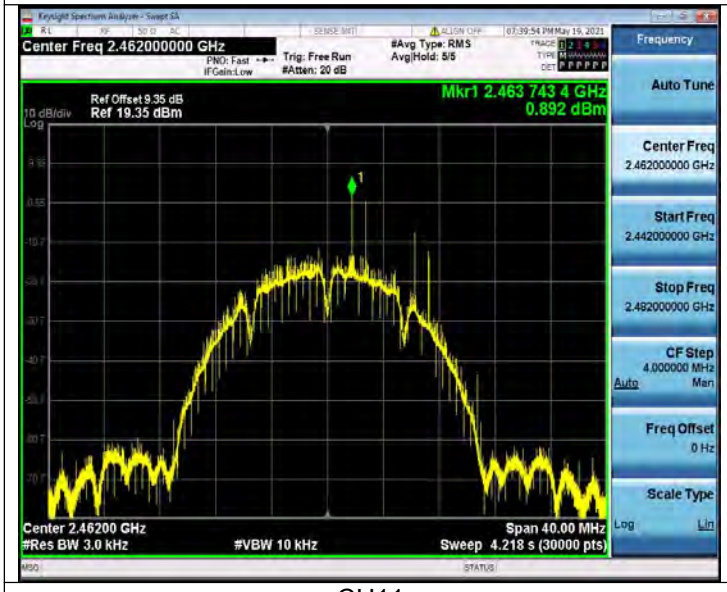
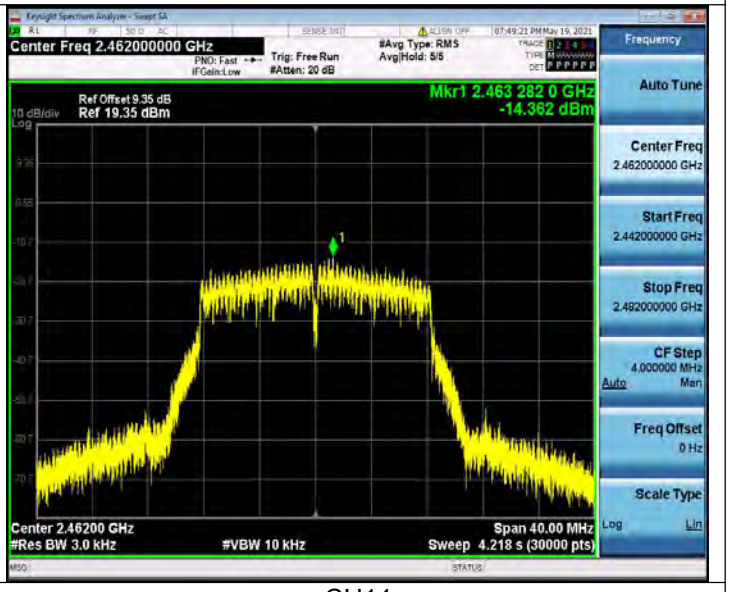
Type	Channel	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
802.11b	01	-1.94	8.00	Pass
	06	-11.25		
	11	-13.44		
802.11g	01	-15.39	8.00	Pass
	06	-15.11		
	11	-14.33		
802.11n(HT20)	01	-14.06	8.00	Pass
	06	-14.83		
	11	-14.33		
802.11n(HT40)	03	-18.04	8.00	Pass
	06	-17.35		
	09	-17.68		

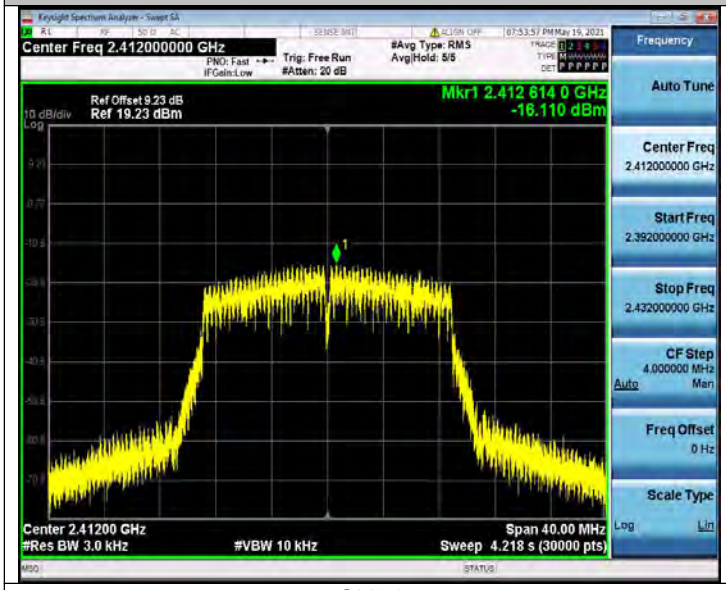
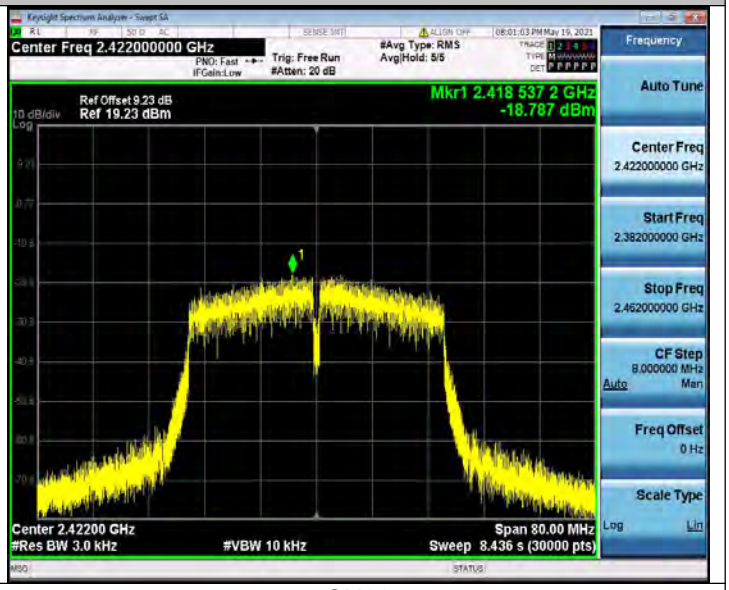
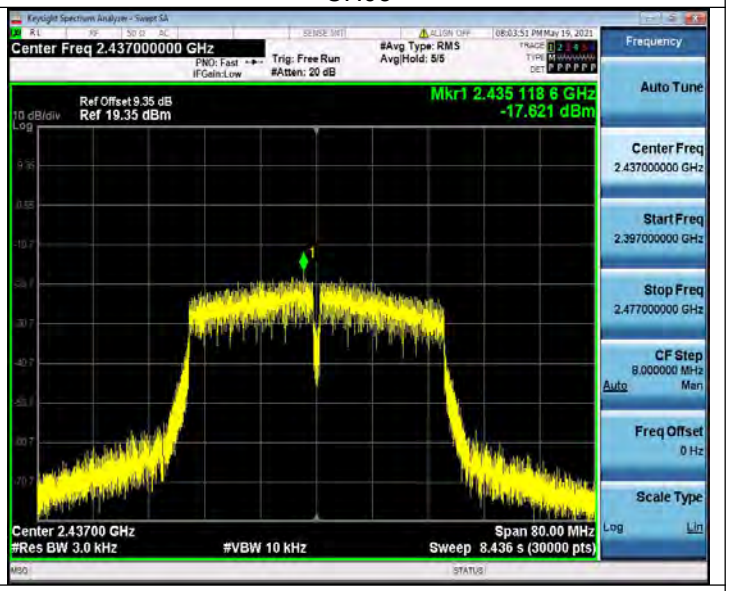
MIMO*2

Type	**Channel**	**Power Spectral Density ANT0 (dBm/3KHz)**	**Power Spectral Density ANT1 (dBm/3KHz)**	**Power Spectral Density Total (dBm/3KHz)**	**Limit (dBm/3KHz)**	**Result**
802.11n(HT20)	01	-16.11	-14.06	-11.95	7.49	Pass
	06	-14.58	-14.83	-11.69		
	11	-15.3	-14.33	-11.78		
802.11n(HT40)	03	-18.79	-18.04	-15.39	7.49	Pass
	06	-17.62	-17.35	-14.47		
	09	-18.91	-17.68	-15.24		

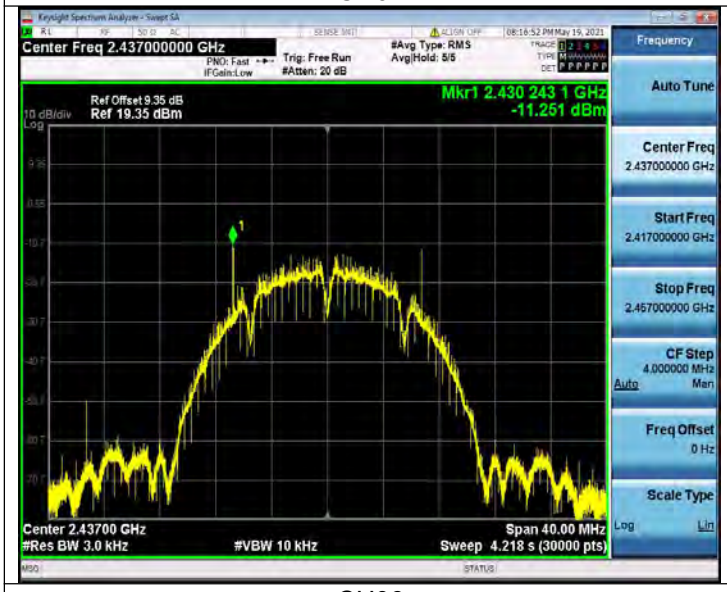
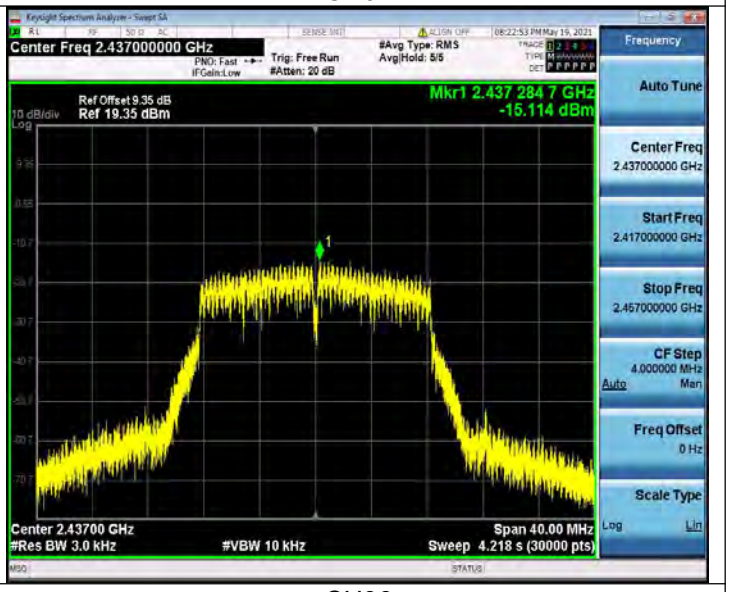
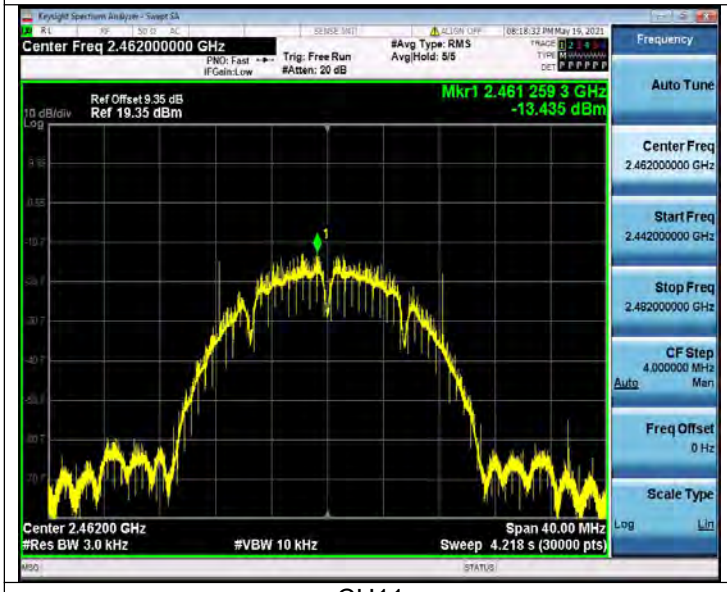
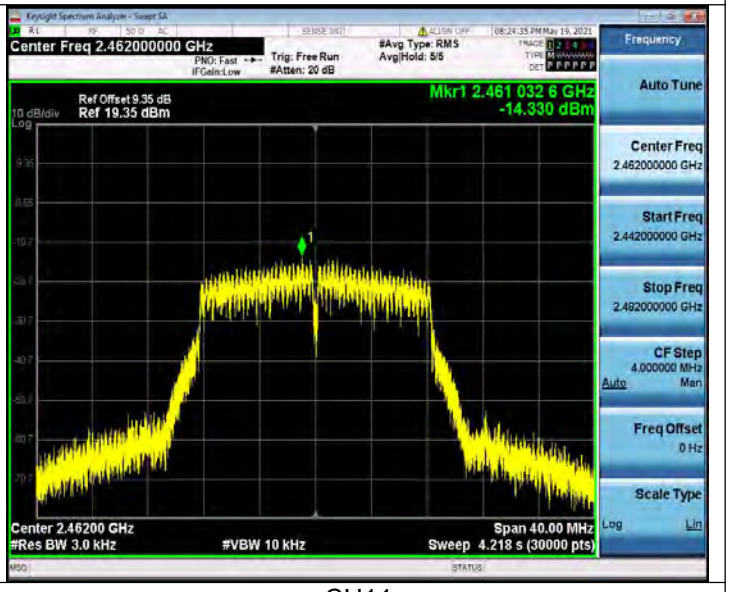
Remark:
The Directional Gain= Gain of individual transmit antennas (dBi) + Array gain;
Array gain = 10 log (Nant), where Nant is the number of transmit antennas
Directional Gain=6.51 dBi

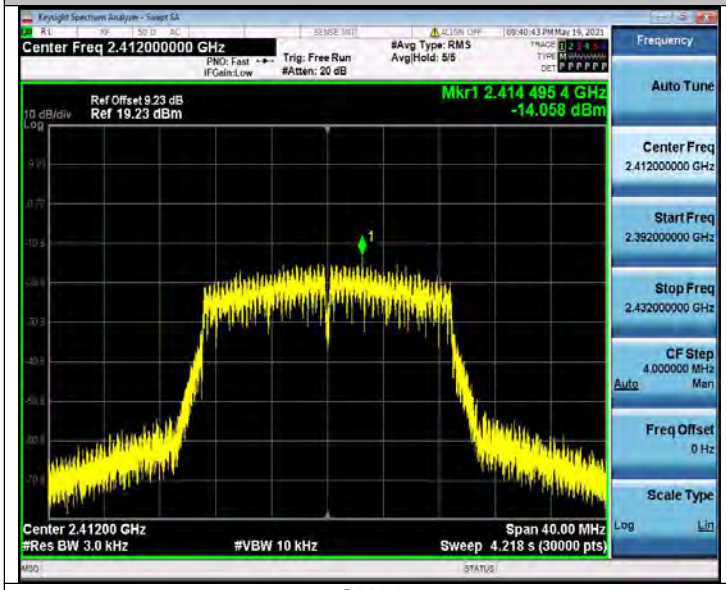
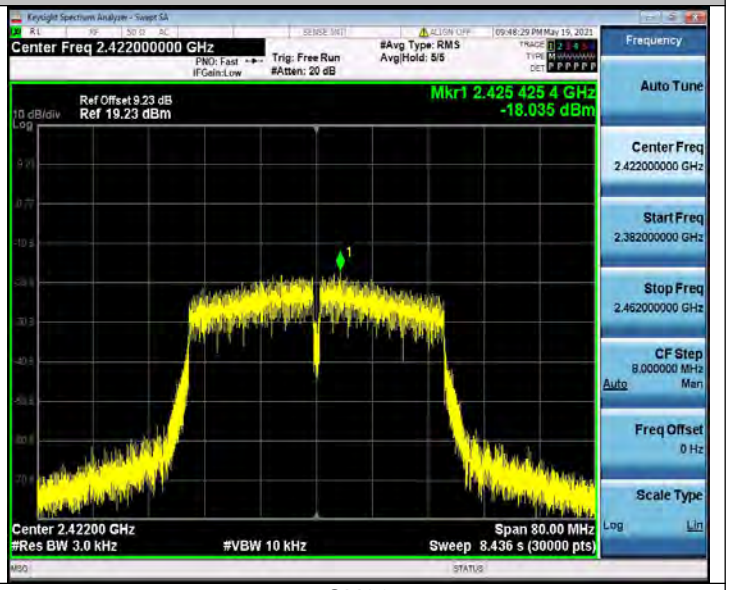
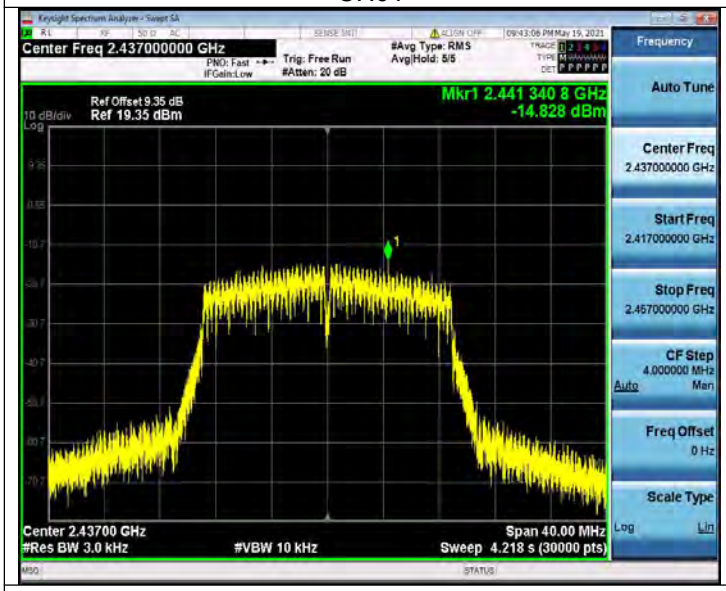
Antenna 0:

802.11b	802.11g
	
CH01	CH01
	
CH06	CH06
	
CH11	CH11

802.11 nHT20	802.11nHT40
	
CH01	CH03
	
CH06	CH06
	
CH11	CH09

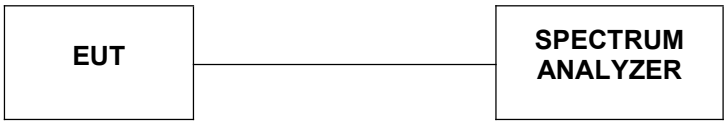
Antenna 1:

802.11b	802.11g
	
CH01	CH01
	
CH06	CH06
	
CH11	CH11

802.11 nHT20	802.11nHT40
	
CH01	CH03
	
CH06	CH06
	
CH11	CH09

4.5. 6dB Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=100 KHz and VBW=300KHz.
The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.
According to KDB558074 D01 for one of the following procedures may be used to determine the modulated DTS device signal bandwidth.
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

LIMIT

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

TEST RESULTS

Temperature	23.6℃	Humidity	52.4%
Test Engineer	Jenny Zeng	Configurations	IEEE 802.11b/g/n

Antenna 0:

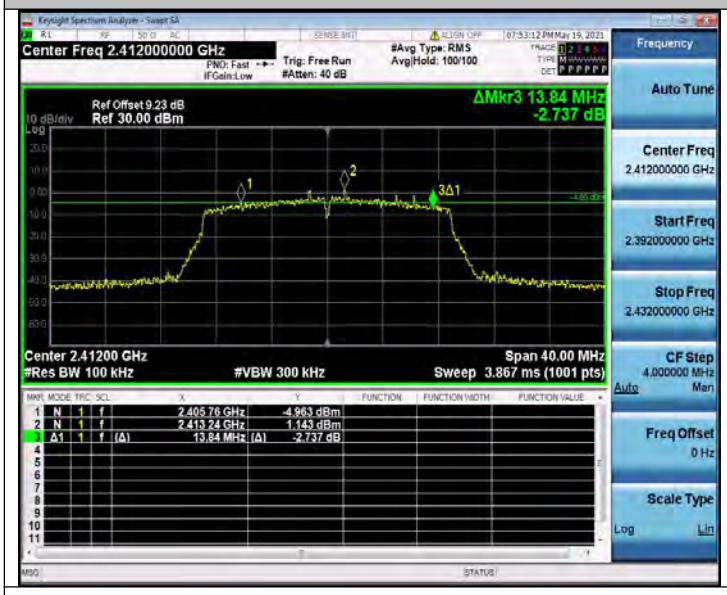
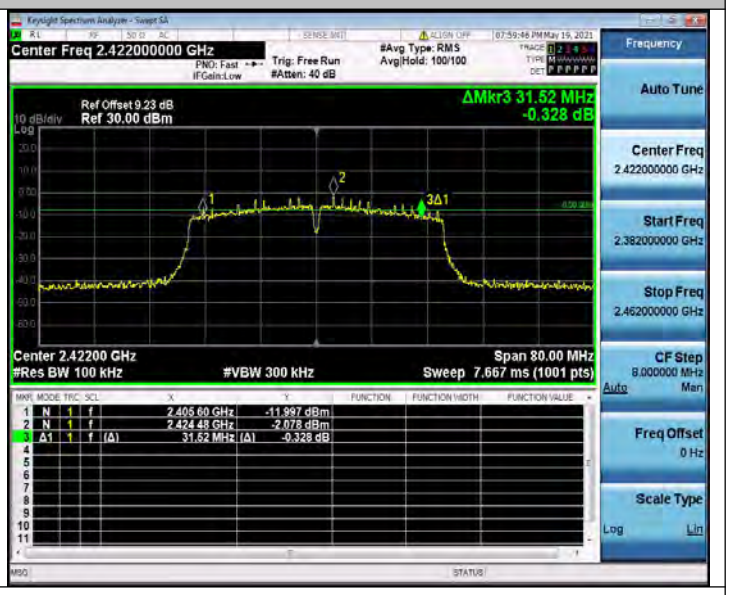
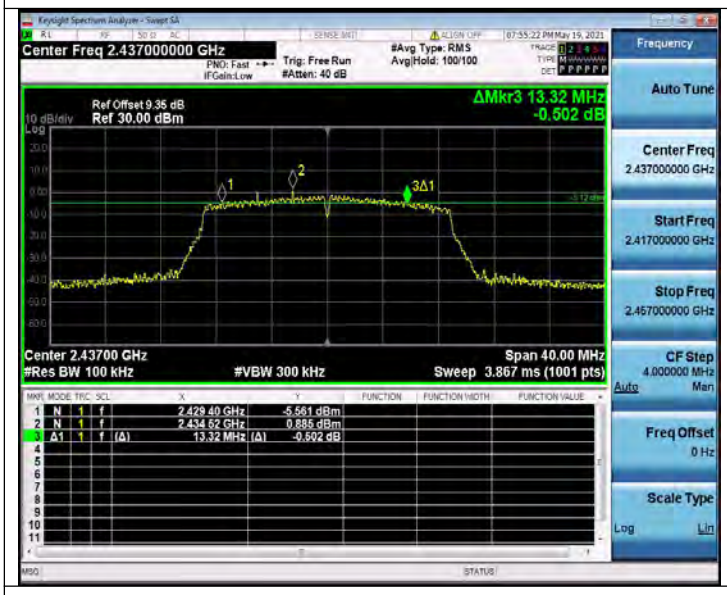
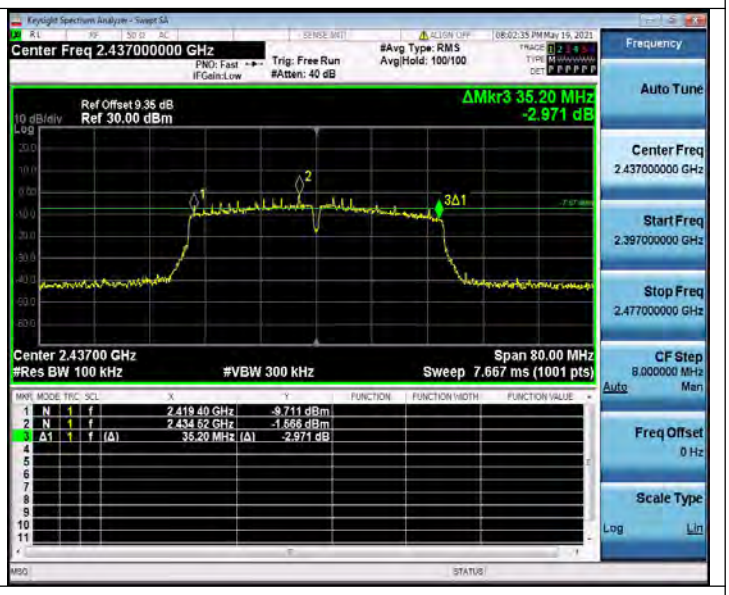
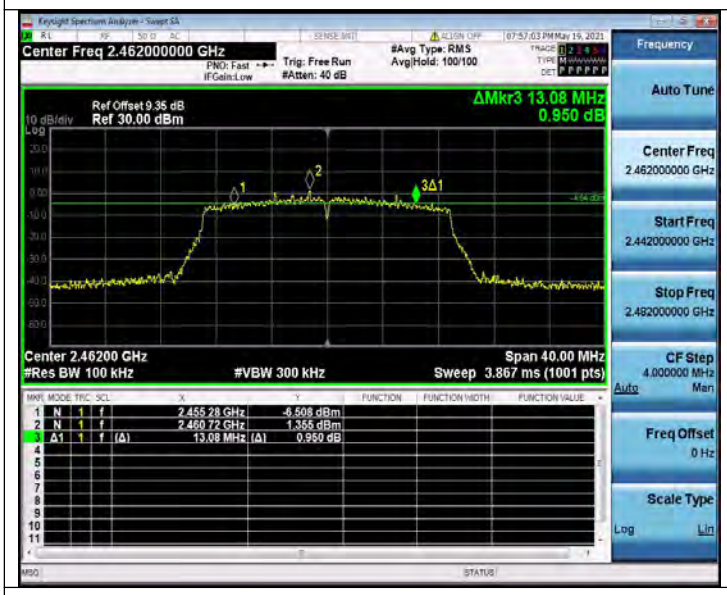
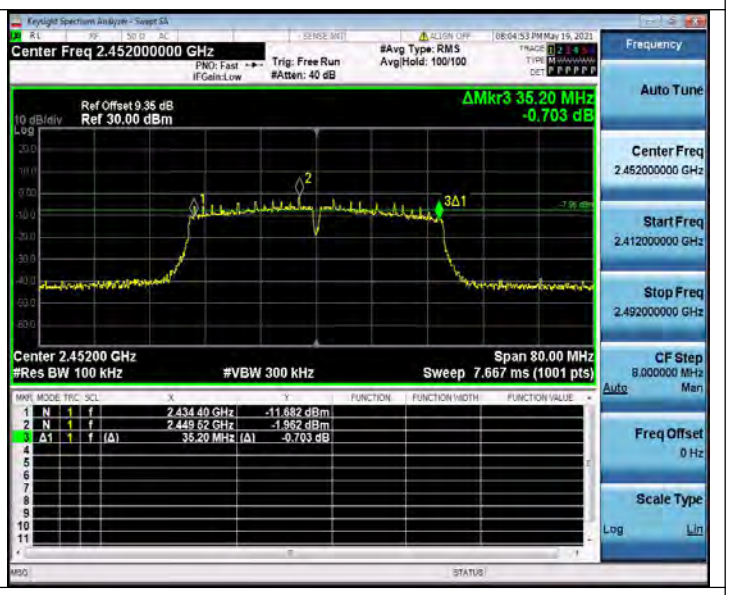
Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11b	01	9.080	≥500	Pass
	06	9.680		
	11	9.640		
802.11g	01	13.880	≥500	Pass
	06	15.200		
	11	13.280		
802.11nHT20	01	13.840	≥500	Pass
	06	13.320		
	11	13.080		
802.11nHT40	03	31.520	≥500	Pass
	06	35.200		
	09	35.200		

Antenna 1:

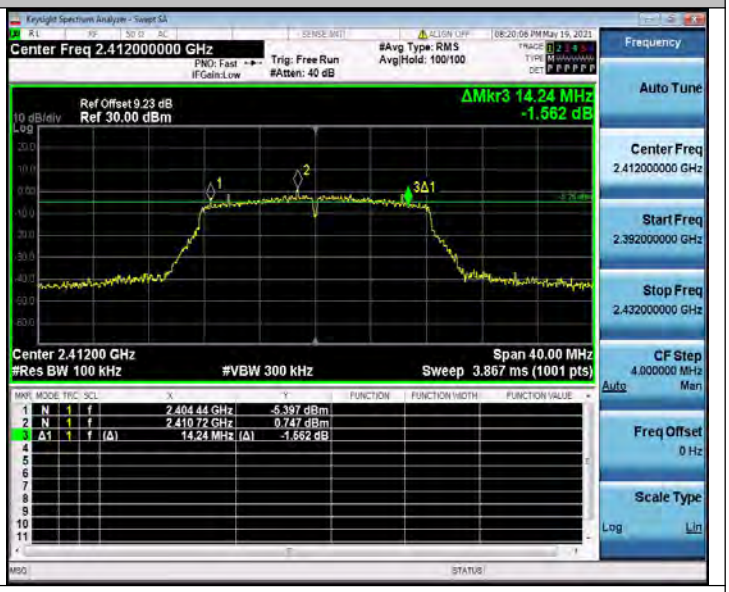
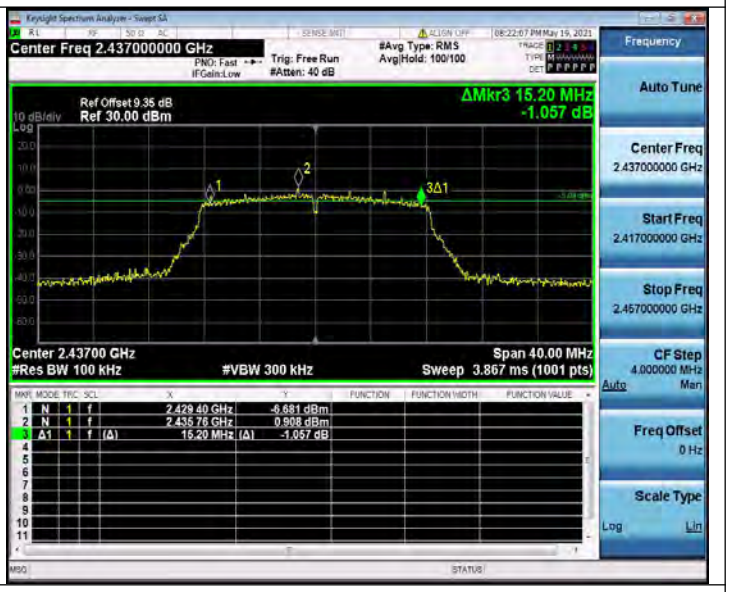
Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11b	01	9.640	≥500	Pass
	06	9.680		
	11	8.640		
802.11g	01	14.240	≥500	Pass
	06	15.200		
	11	15.120		
802.11nHT20	01	15.080	≥500	Pass
	06	12.960		
	11	13.960		
802.11nHT40	03	30.160	≥500	Pass
	06	34.080		
	09	35.200		

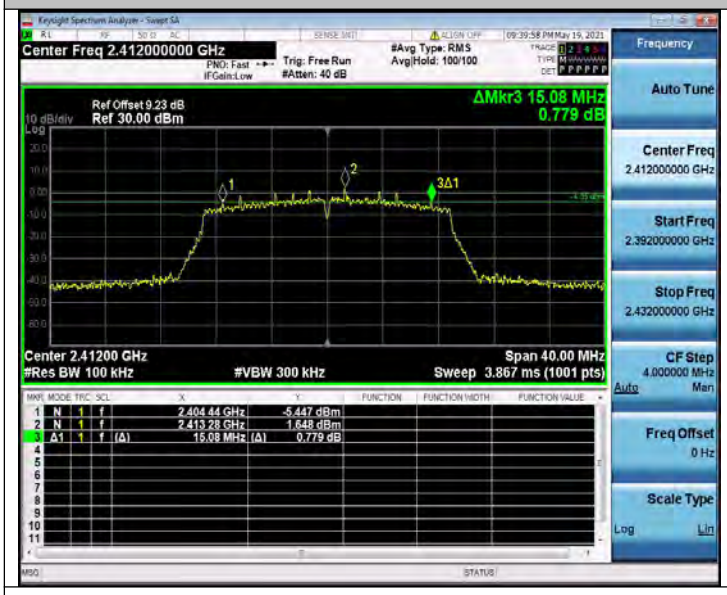
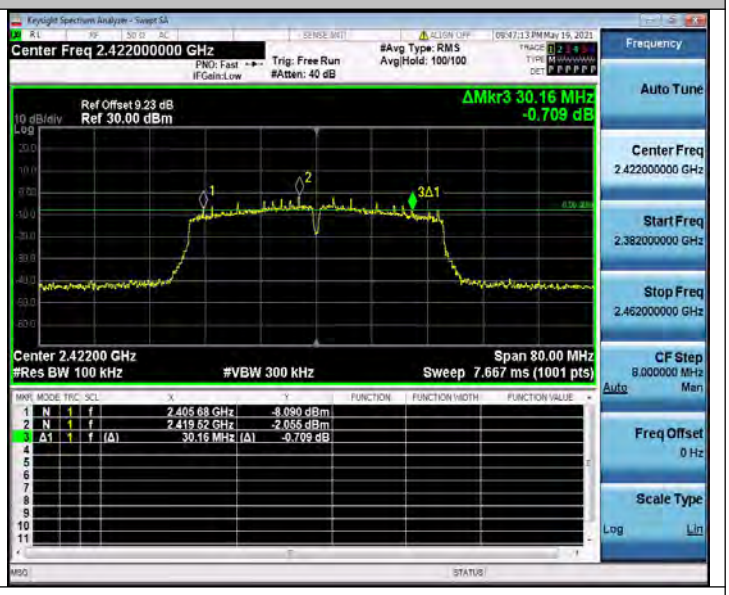
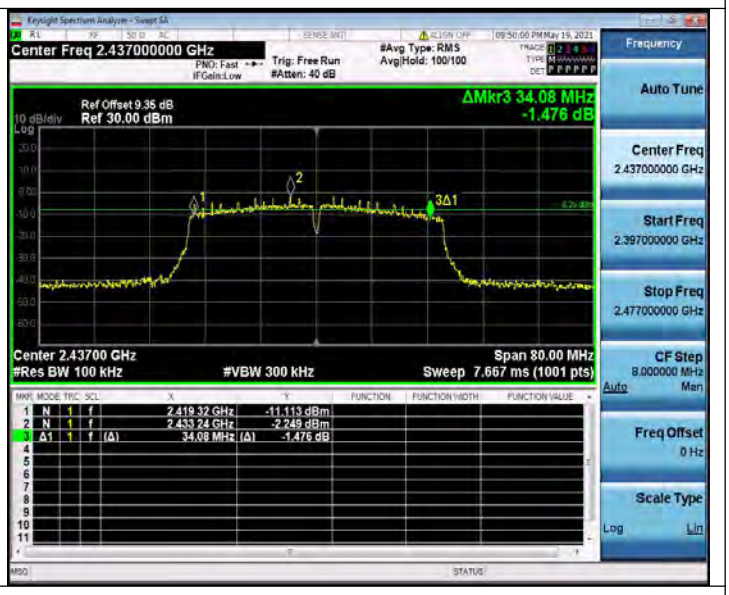
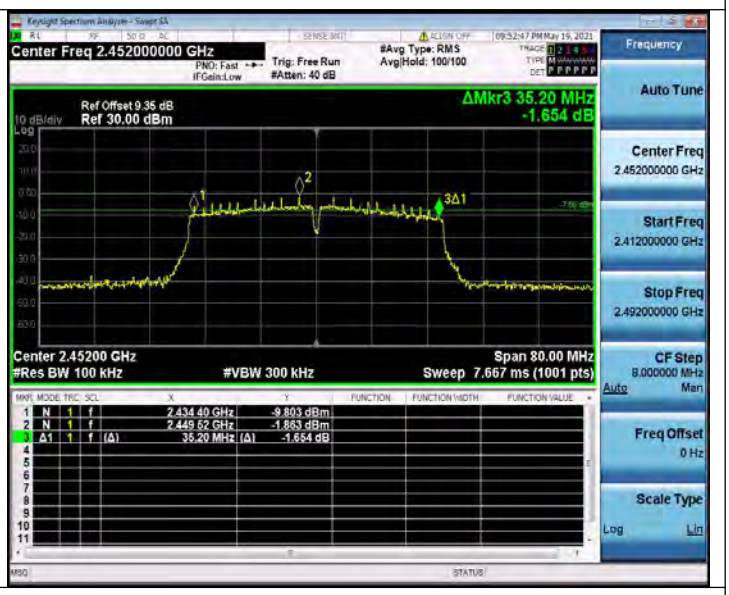
Antenna 0:

802.11b	802.11g
	
CH01	CH01
	
CH06	CH06
	
CH11	CH11

802.11n HT20	802.11n HT40
	
CH01	CH03
	
CH06	CH06
	
CH11	CH09

Antenna 1:

802.11b	802.11g
	
CH01	CH01
	
CH06	CH06
	
CH11	CH11

802.11n HT20	802.11n HT40
	
CH01	CH03
	
CH06	CH06
	
CH11	CH09

4.6. Band Edge Compliance of RF Emission

TEST REQUIREMENT

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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

TEST PROCEDURE

According to KDB 558074 D01 for Antenna-port conducted measurement. Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz for peak detector and RBW=1MHz, VBW=10Hz for peak detector.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.
6. Measure the conducted output power (in dBm) using the detector specified by the appropriate regulatory agency (see 12.2.2, 12.2.3, and 12.2.4 for guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
7. Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see 12.2.5 for guidance on determining the applicable antenna gain)
8. Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
9. For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
10. Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:
    $E = EIRP – 20\log D + 104.8$

where:
E = electric field strength in dBμV/m,
EIRP = equivalent isotropic radiated power in dBm
D = specified measurement distance in meters.

11. Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.
12. Compare the resultant electric field strength level to the applicable regulatory limit.
13. Perform radiated spurious emission test dures until all measured frequencies were complete.

LIMIT

Below -20dB of the highest emission level in operating band.
Radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

TEST RESULTS

NOTE: All the modes have been tested and recorded worst mode in the report.(2*2MIMO)

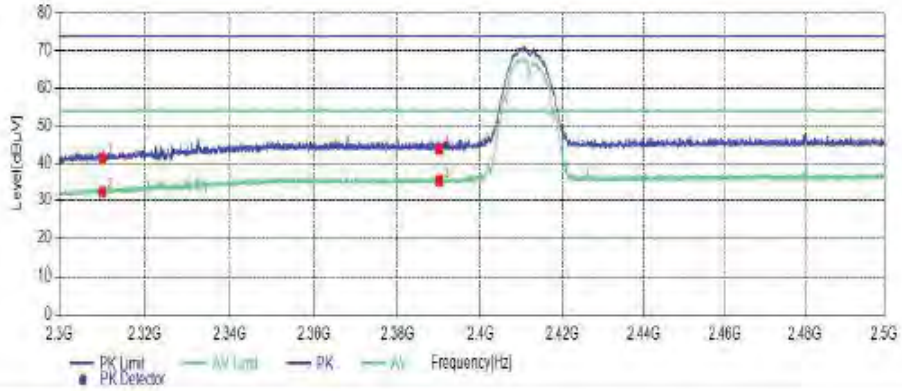
4.6.1 For Radiated Bandedge Measurement

Temperature	23.8℃	Humidity	53.7%
Test Engineer	Jenny Zeng	Configurations	IEEE 802.11b/g/n

802.11b Low

Horizontal

Test Graph



Suspected List

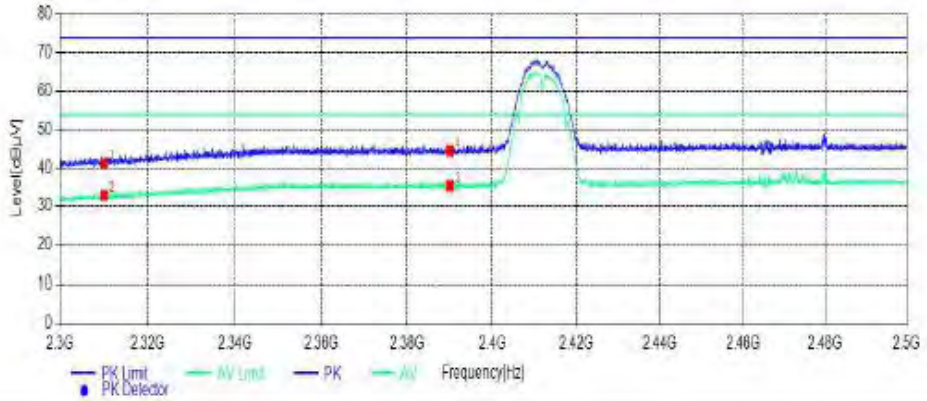
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2310.0000	7.62	32.63	150	323	PK	Horizontal	PASS
2	2310.0000	7.62	21.74	150	179	AV	Horizontal	PASS
3	2390.0000	9.99	18.77	150	274	AV	Horizontal	PASS
4	2390.0000	9.99	30.24	150	53	PK	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2310.0000	7.62	32.77	150	338	PK	Vertical	PASS
2	2310.0000	7.62	21.19	150	247	AV	Vertical	PASS
3	2390.0000	9.99	18.70	150	225	AV	Vertical	PASS
4	2390.0000	9.99	29.51	150	74	PK	Vertical	PASS

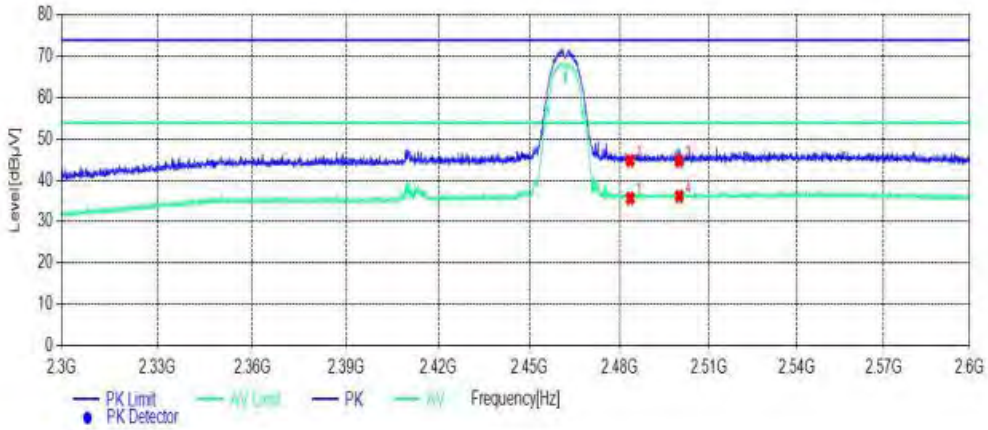
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11b High

Horizontal

Test Graph



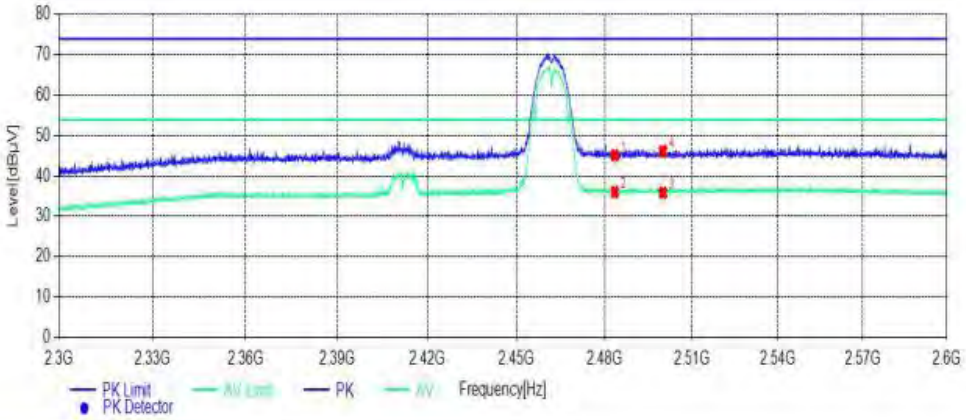
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2483.50	10.64	18.31	150	62	AV	Horizontal	PASS
2	2483.50	10.64	29.22	150	31	PK	Horizontal	PASS
3	2500.00	10.70	29.31	150	71	PK	Horizontal	PASS
4	2500.00	10.70	17.79	150	138	AV	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2483.50	10.64	28.88	150	171	PK	Vertical	PASS
2	2483.50	10.64	17.95	150	214	AV	Vertical	PASS
3	2500.00	10.70	18.15	150	232	AV	Vertical	PASS
4	2500.00	10.70	27.80	150	87	PK	Vertical	PASS

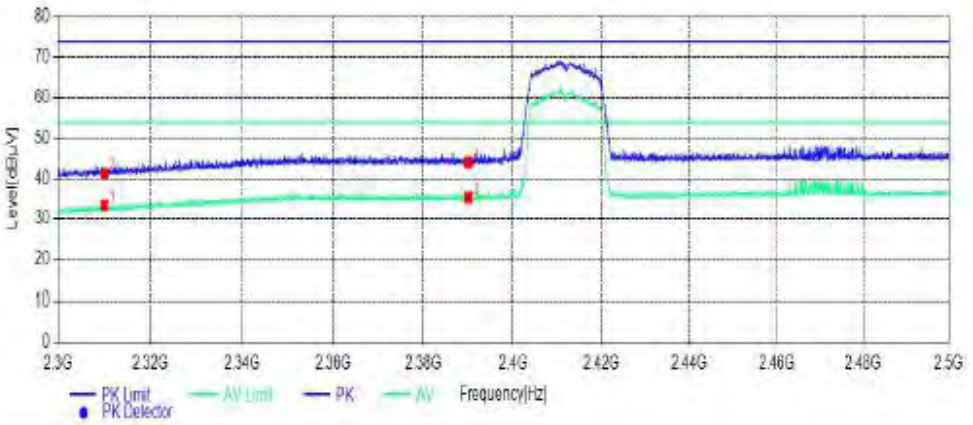
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11g Low

Horizontal

Test Graph



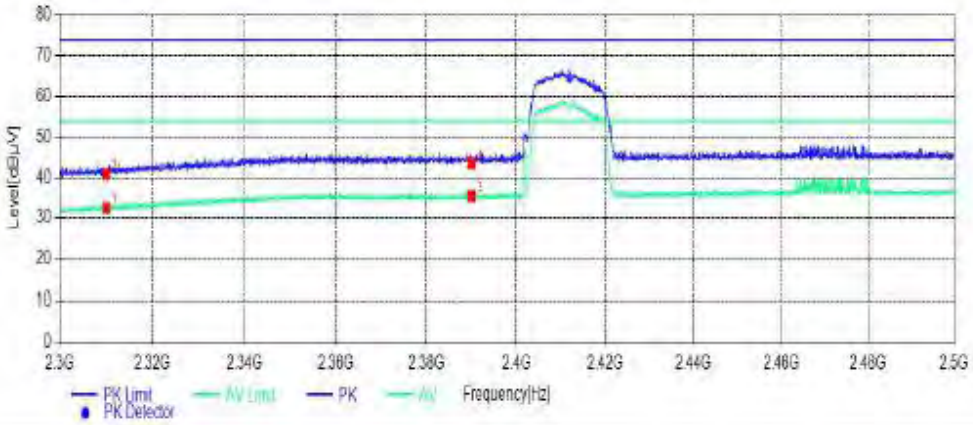
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2310.0000	7.62	20.56	150	86	AV	Horizontal	PASS
2	2310.0000	7.62	32.69	150	86	PK	Horizontal	PASS
3	2390.0000	9.99	18.71	150	117	AV	Horizontal	PASS
4	2390.0000	9.99	29.94	150	346	PK	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2310.0000	7.62	21.54	150	156	AV	Vertical	PASS
2	2310.0000	7.62	33.16	150	354	PK	Vertical	PASS
3	2390.0000	9.99	18.56	150	251	AV	Vertical	PASS
4	2390.0000	9.99	30.48	150	339	PK	Vertical	PASS

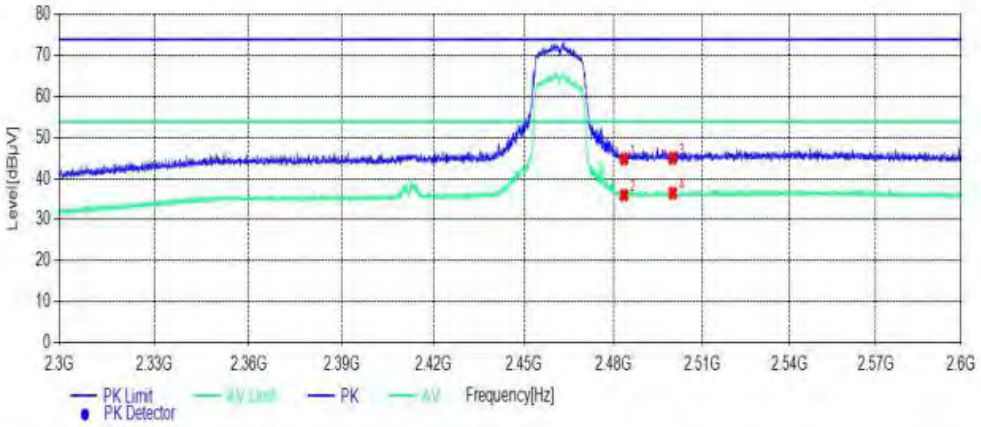
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11g High

Horizontal

Test Graph



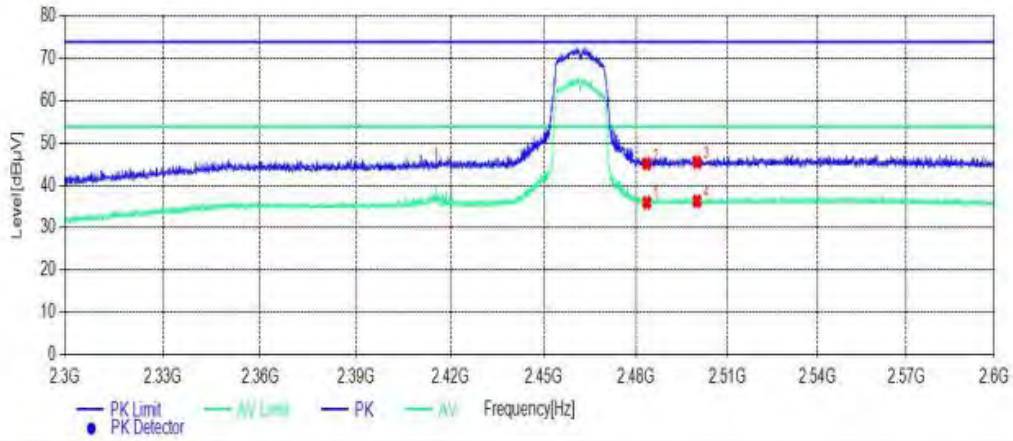
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2483.50	10.64	29.16	150	80	PK	Horizontal	PASS
2	2483.50	10.64	18.00	150	11	AV	Horizontal	PASS
3	2500.00	10.70	28.98	150	300	PK	Horizontal	PASS
4	2500.00	10.70	17.51	150	84	AV	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2483.50	10.64	18.01	150	36	AV	Vertical	PASS
2	2483.50	10.64	28.85	150	82	PK	Vertical	PASS
3	2500.00	10.70	28.48	150	331	PK	Vertical	PASS
4	2500.00	10.70	17.68	150	115	AV	Vertical	PASS

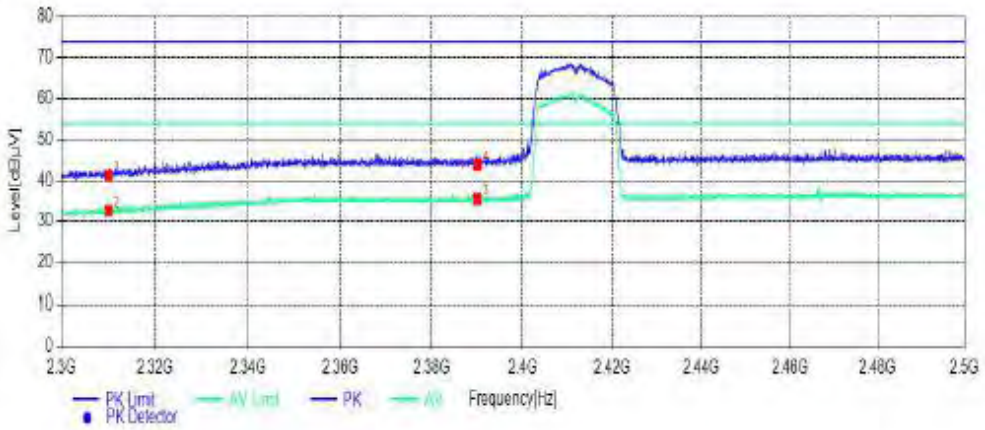
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11n HT20 Low

Horizontal

Test Graph



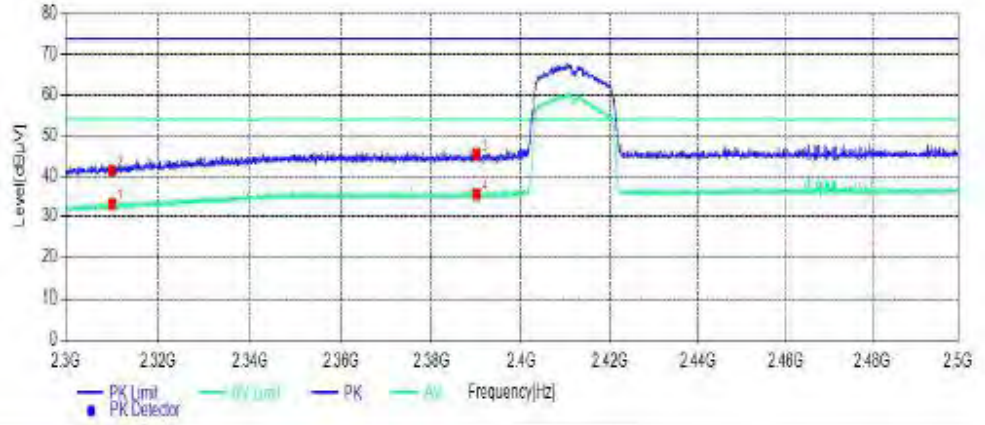
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2310.0000	7.62	32.74	150	37	PK	Horizontal	PASS
2	2310.0000	7.62	21.39	150	169	AV	Horizontal	PASS
3	2390.0000	9.99	18.47	150	154	AV	Horizontal	PASS
4	2390.0000	9.99	30.14	150	47	PK	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2310.0000	7.62	20.96	150	23	AV	Vertical	PASS
2	2310.0000	7.62	32.66	150	44	PK	Vertical	PASS
3	2390.0000	9.99	28.56	150	155	PK	Vertical	PASS
4	2390.0000	9.99	18.50	150	161	AV	Vertical	PASS

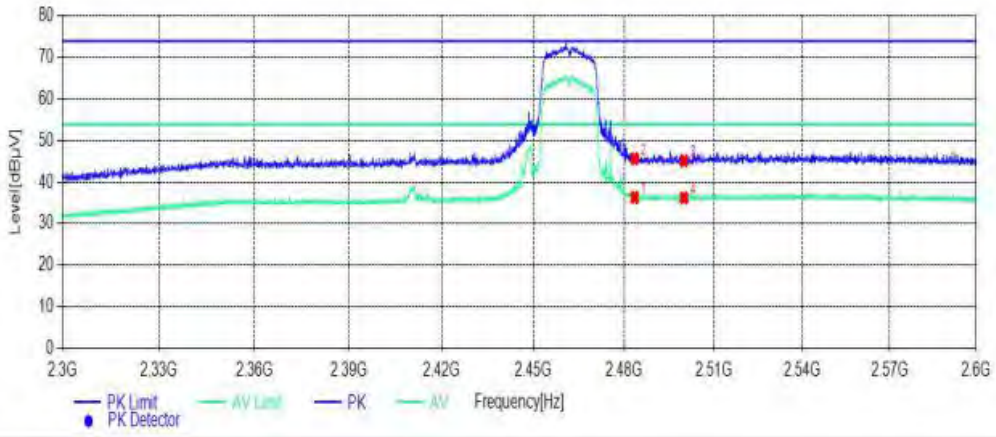
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11n HT20 High

Horizontal

Test Graph



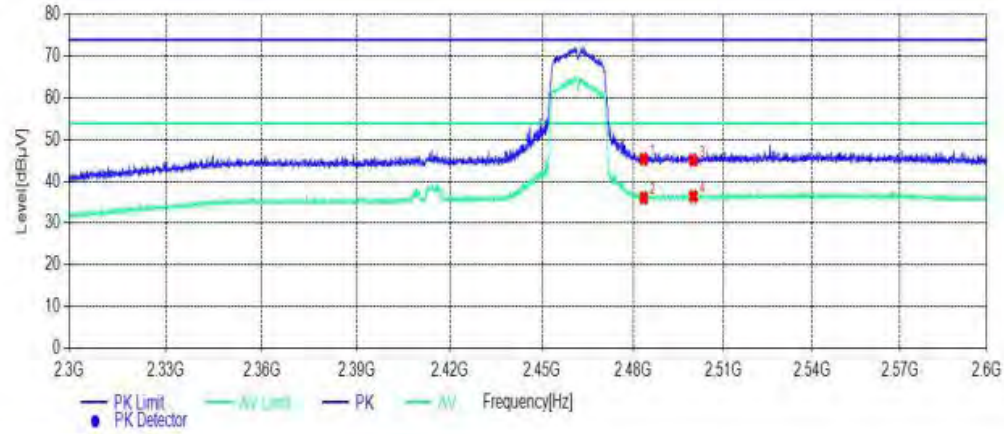
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2483.50	10.64	17.66	150	318	AV	Horizontal	PASS
2	2483.50	10.64	28.33	150	132	PK	Horizontal	PASS
3	2500.00	10.70	28.82	150	251	PK	Horizontal	PASS
4	2500.00	10.70	17.77	150	345	AV	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2483.50	10.64	28.60	150	101	PK	Vertical	PASS
2	2483.50	10.64	17.92	150	164	AV	Vertical	PASS
3	2500.00	10.70	28.90	150	65	PK	Vertical	PASS
4	2500.00	10.70	17.55	150	149	AV	Vertical	PASS

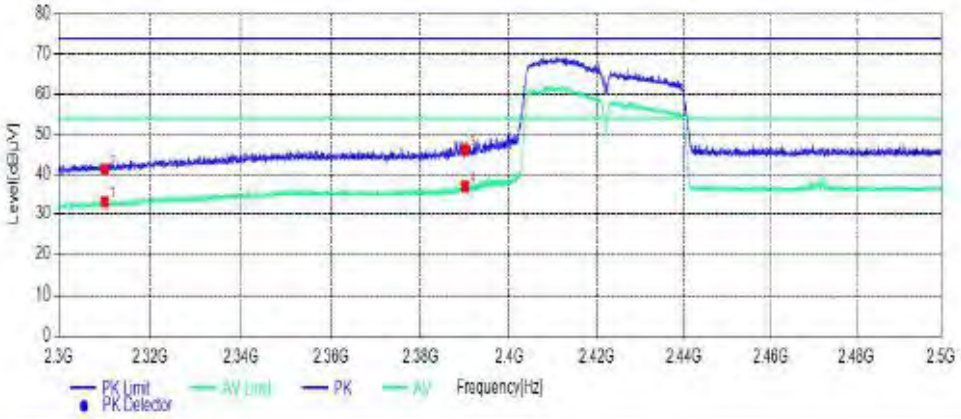
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11n HT40 Low

Horizontal

Test Graph



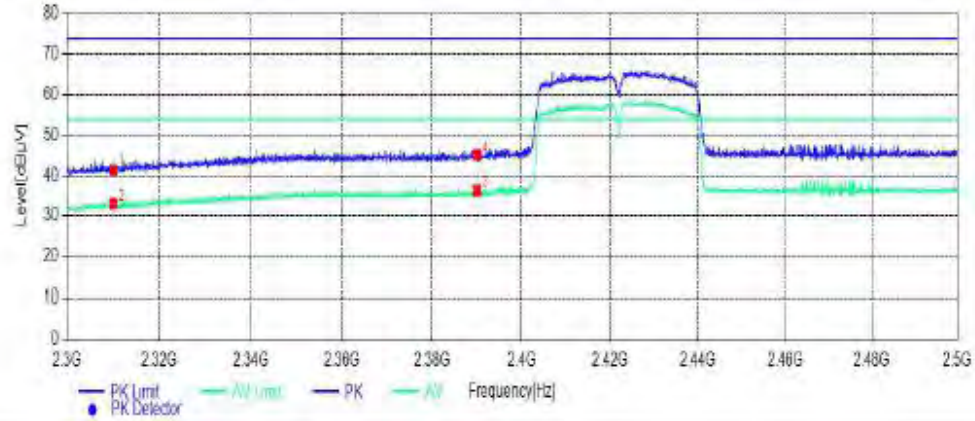
Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2310.0000	7.62	20.98	150	30	AV	Horizontal	PASS
2	2310.0000	7.62	32.75	150	330	PK	Horizontal	PASS
3	2390.0000	9.99	27.95	150	192	PK	Horizontal	PASS
4	2390.0000	9.99	17.05	150	267	AV	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List								
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2310.0000	7.62	32.69	150	202	PK	Vertical	PASS
2	2310.0000	7.62	21.02	150	116	AV	Vertical	PASS
3	2390.0000	9.99	17.68	150	356	AV	Vertical	PASS
4	2390.0000	9.99	28.85	150	123	PK	Vertical	PASS

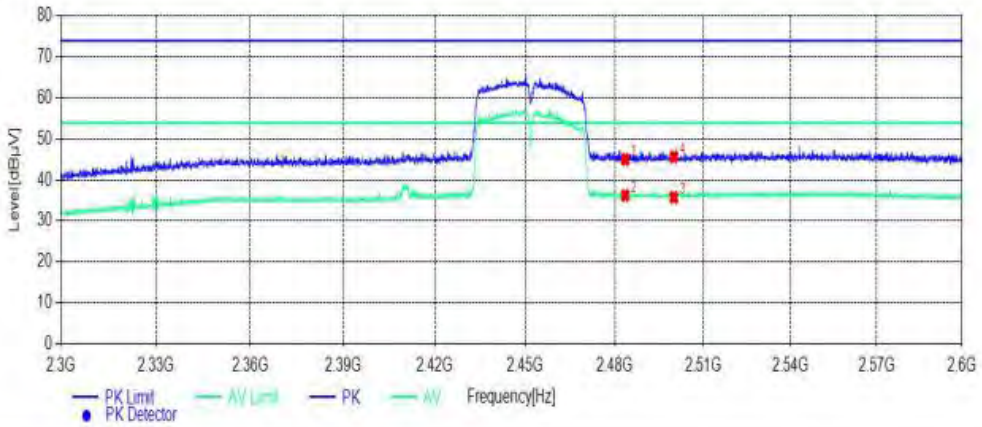
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

802.11n HT40 High

Horizontal

Test Graph



Suspected List

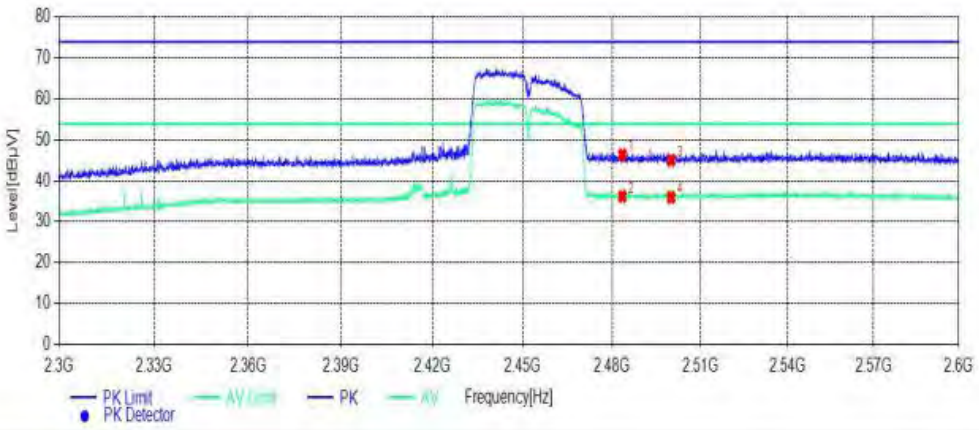
NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2483.50	10.64	28.93	150	46	PK	Horizontal	PASS
2	2483.50	10.64	17.77	150	210	AV	Horizontal	PASS
3	2500.00	10.70	18.22	150	43	AV	Horizontal	PASS
4	2500.00	10.70	28.33	150	61	PK	Horizontal	PASS

Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

Vertical

Test Graph



Suspected List

NO.	Frequency [MHz]	Factor [dB]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Remark
1	2483.50	10.64	27.56	150	82	PK	Vertical	PASS
2	2483.50	10.64	17.77	150	153	AV	Vertical	PASS
3	2500.00	10.70	28.96	150	221	PK	Vertical	PASS
4	2500.00	10.70	18.00	150	312	AV	Vertical	PASS

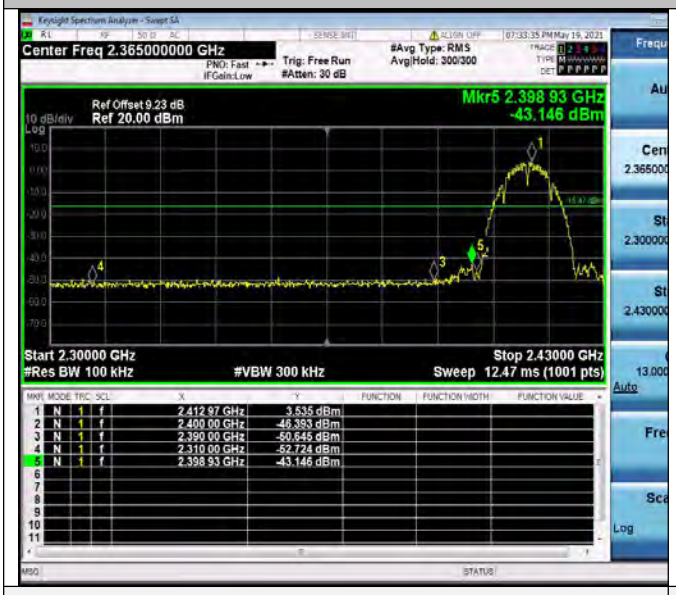
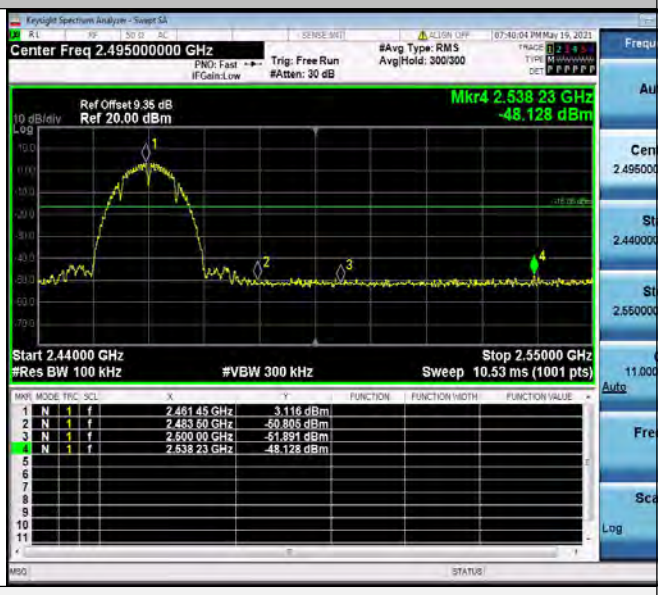
Note:1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

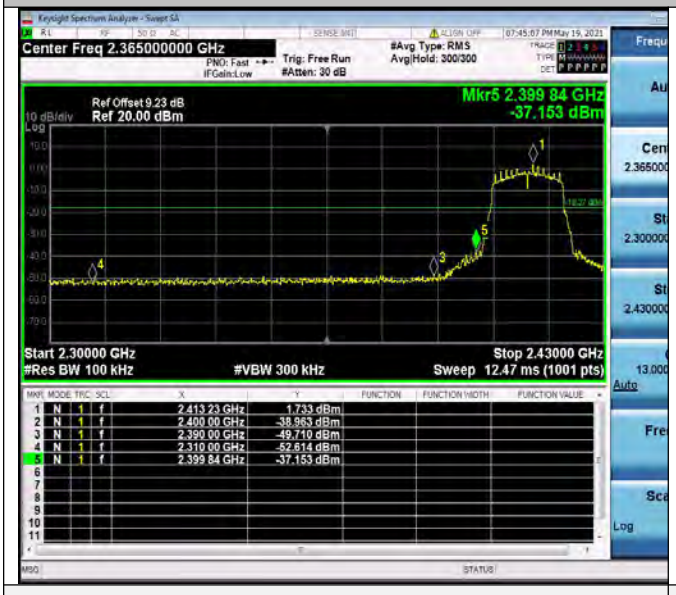
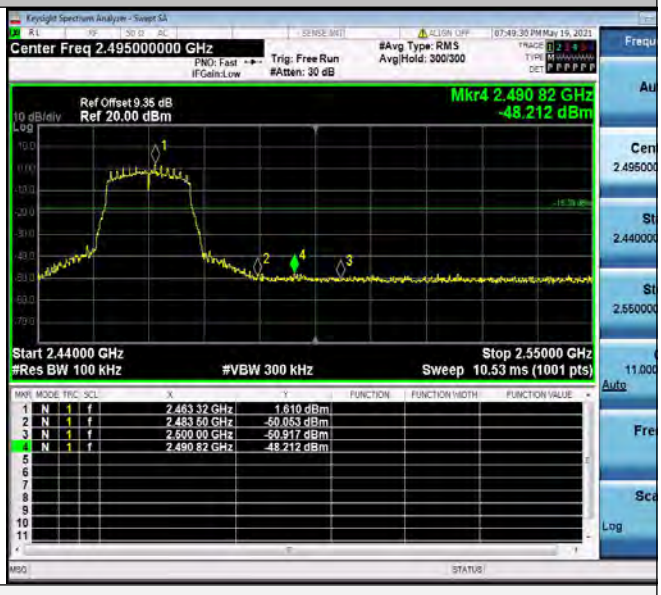
2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

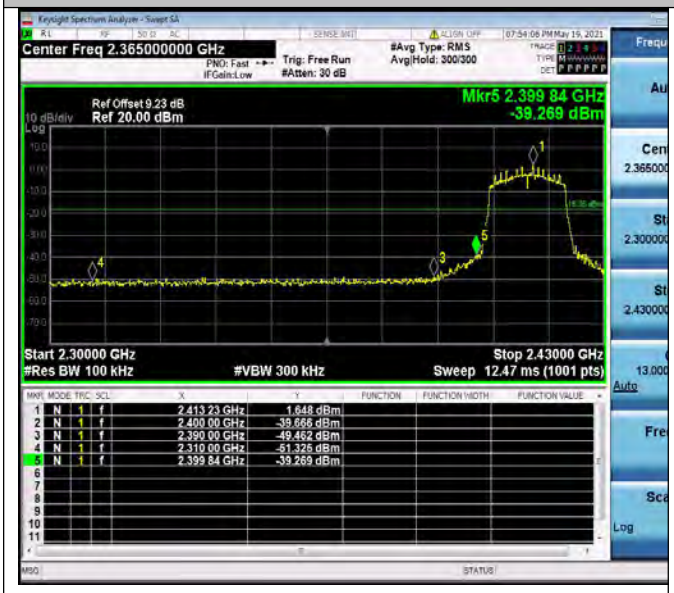
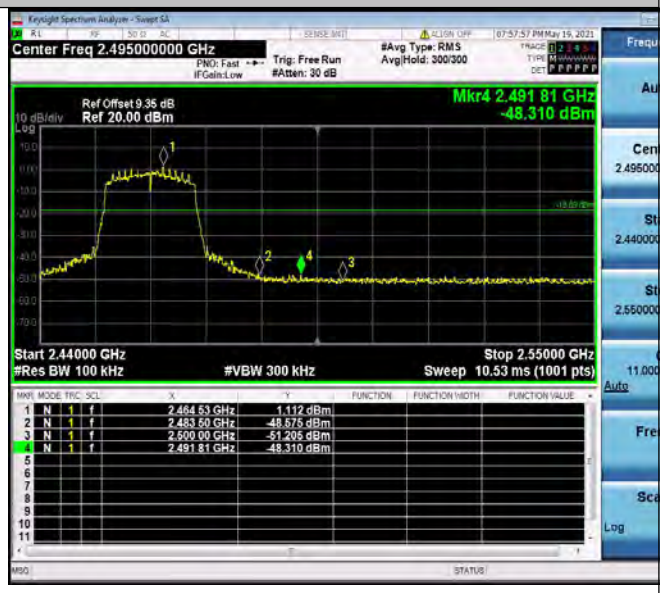
4.6.2 For Conducted Bandedge Measurement

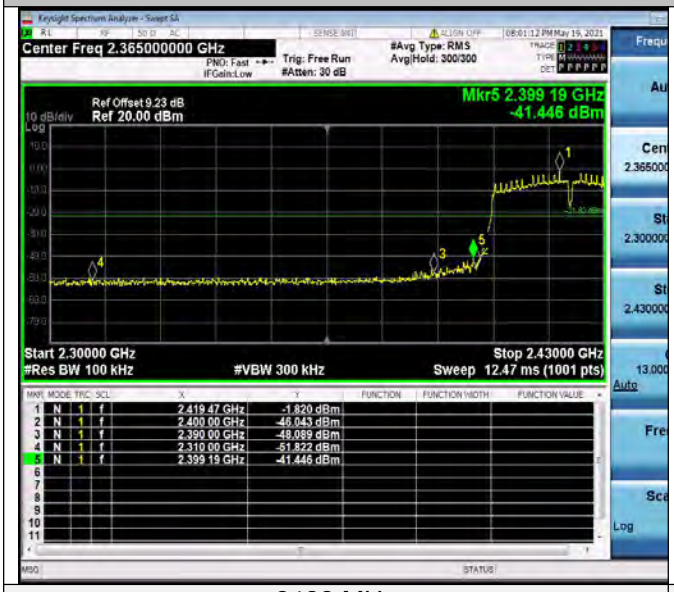
Temperature	23.6℃	Humidity	52.4%
Test Engineer	Jenny Zeng	Configurations	IEEE 802.11b/g/n

Antenna 0:

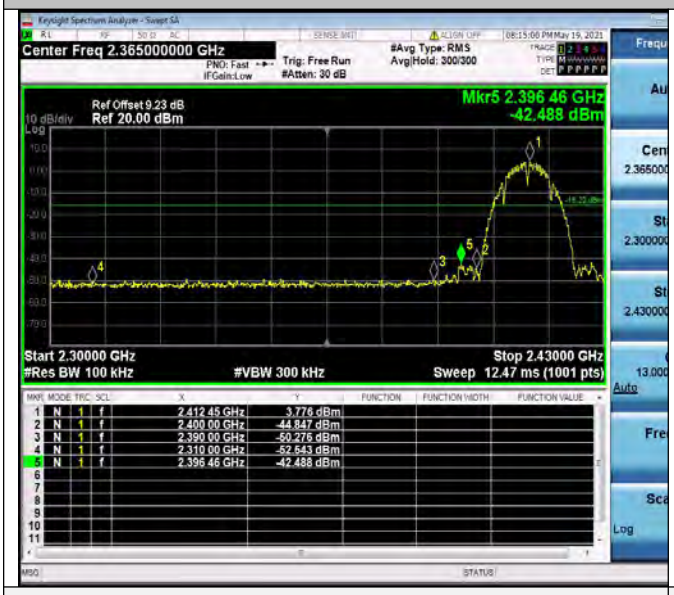
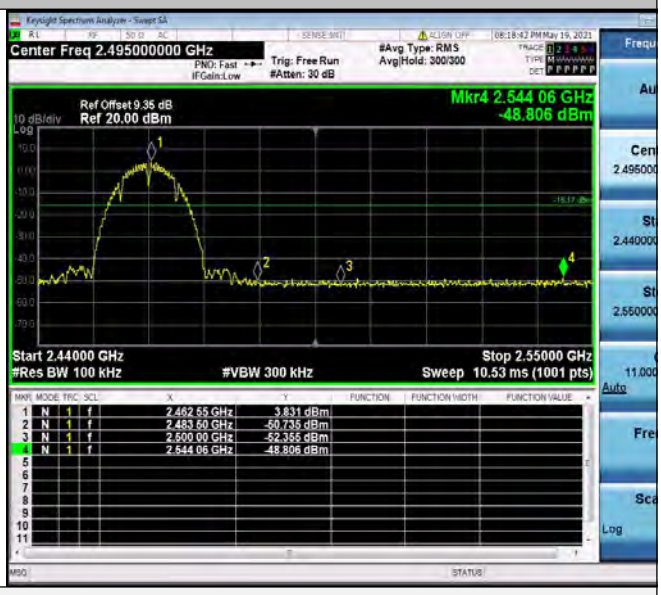
802.11b	
	
2412 MHz	2462 MHz

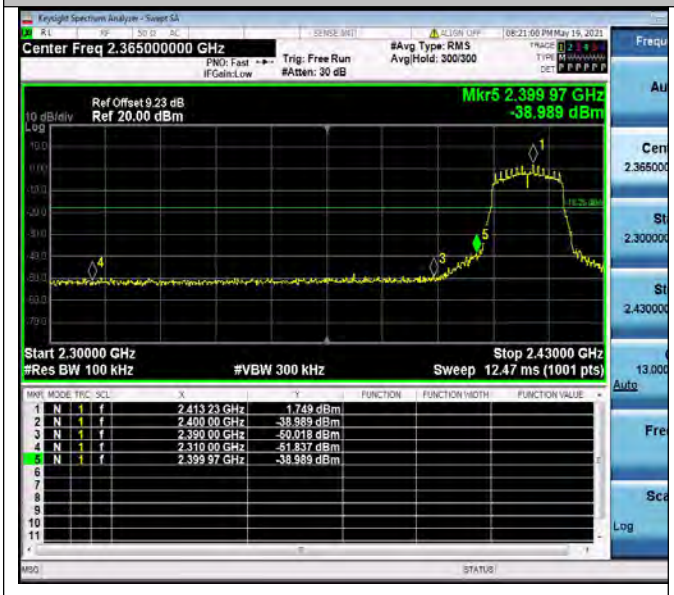
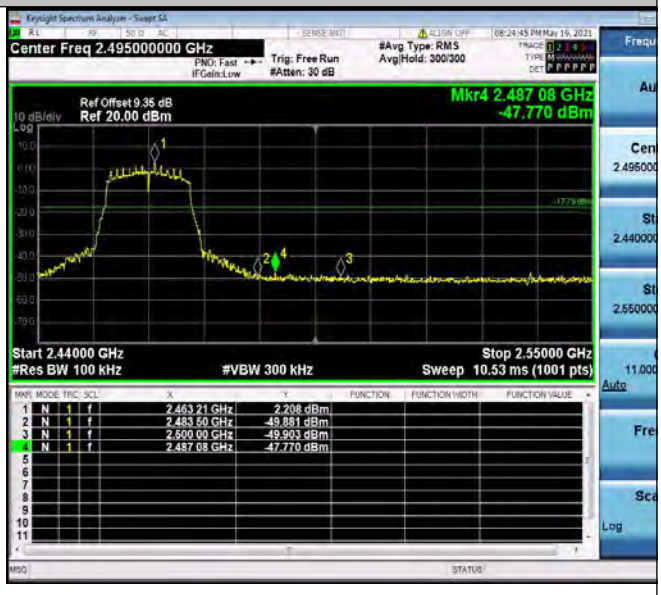
802.11g	
	
2412 MHz	2462 MHz

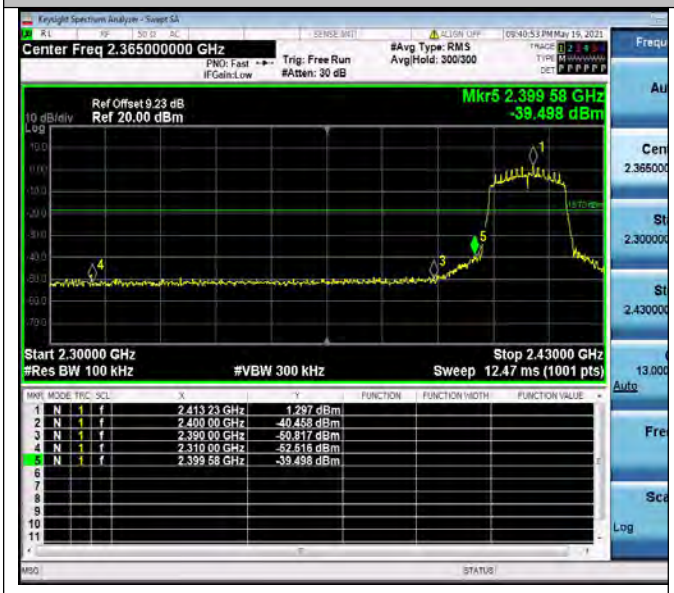
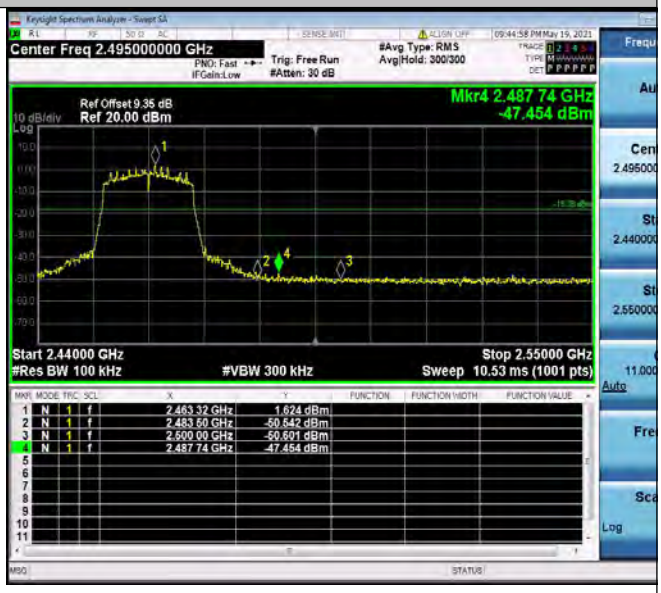
802.11n HT20	
	
2412 MHz	2462 MHz

802.11n HT40	
	
2422 MHz	2452 MHz

Antenna 1:

802.11b	
	
2412 MHz	2462 MHz

802.11g	
	
2412 MHz	2462 MHz

802.11n HT20	
	
2412 MHz	2462 MHz

802.11n HT40	
	
2422 MHz	2452 MHz

4.7. 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.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Antenna Information

The antenna is Integrated antenna, through the buckle stretched out, The directional gains of antenna used for transmitting is 3.5dBi.

5. TEST SETUP PHOTOS OF THE EUT

Refer to the attached **Test Setup Photos**.

6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Fig. 1

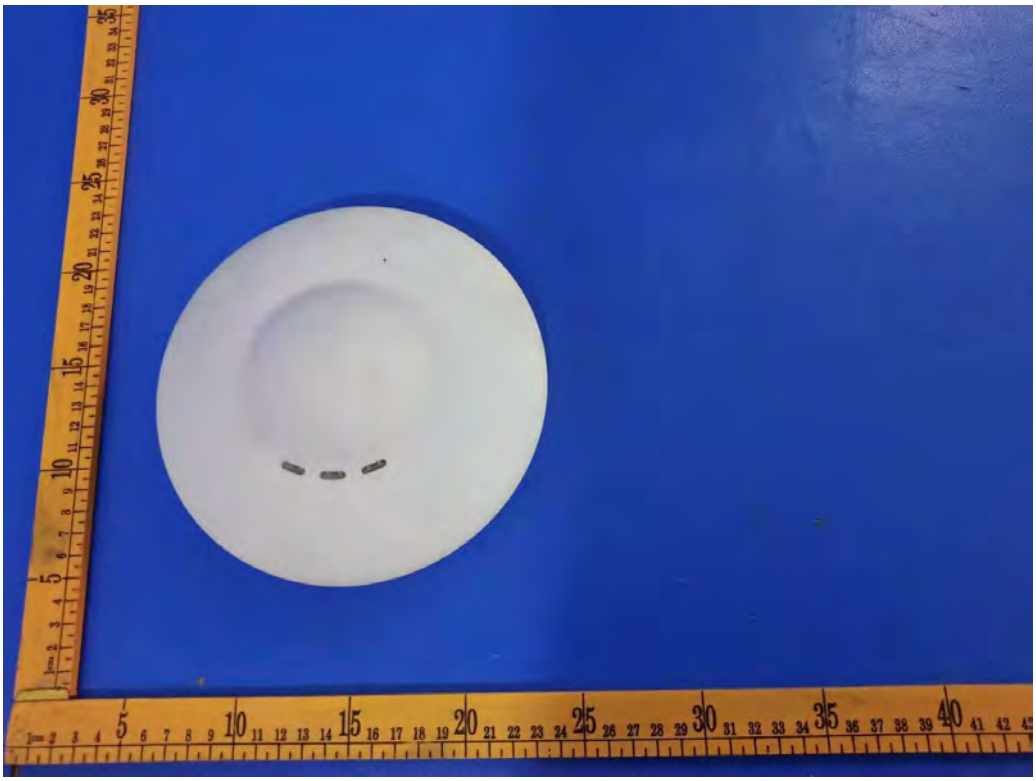


Fig. 2

Fig. 3

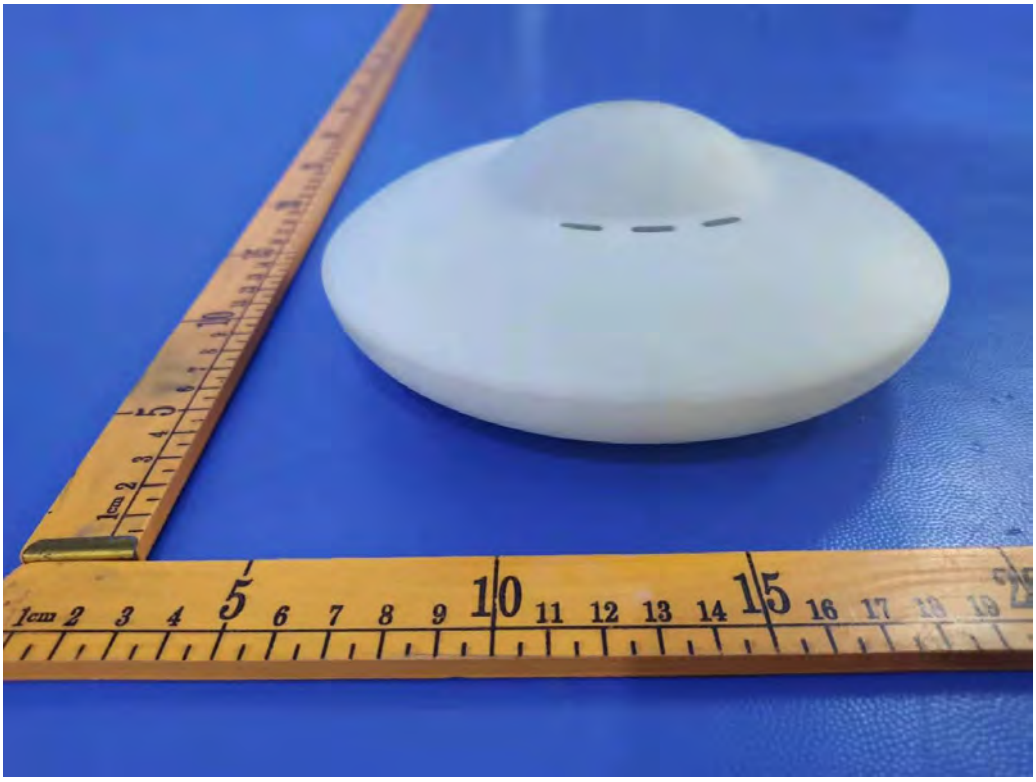


Fig. 4

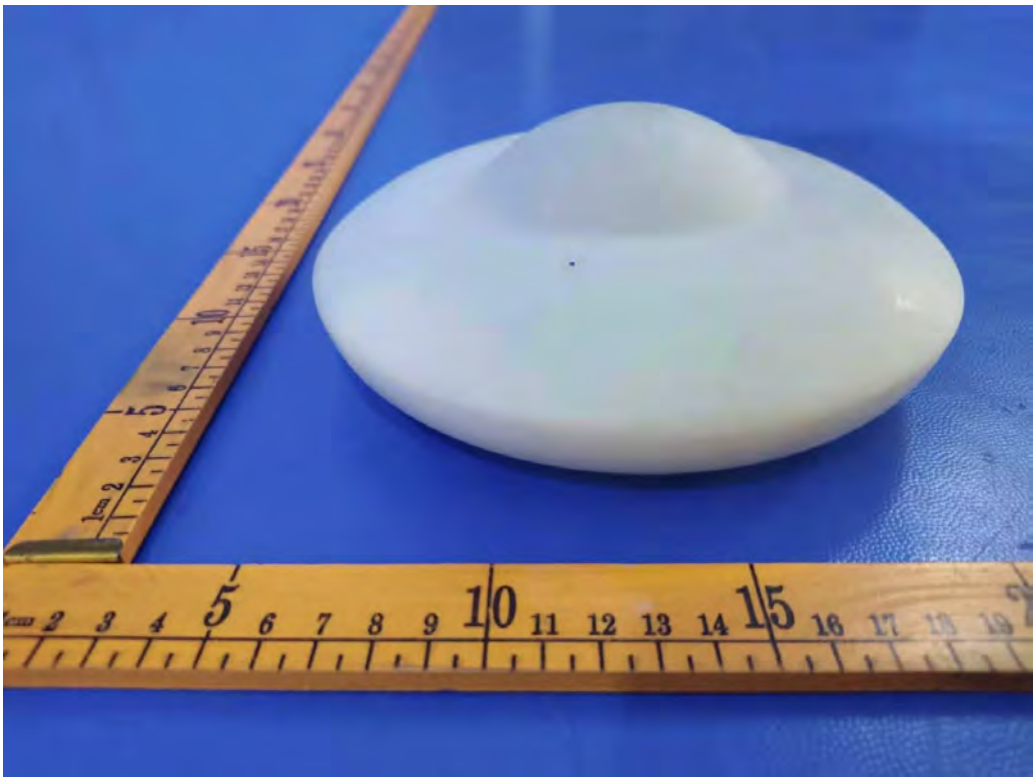


Fig. 5

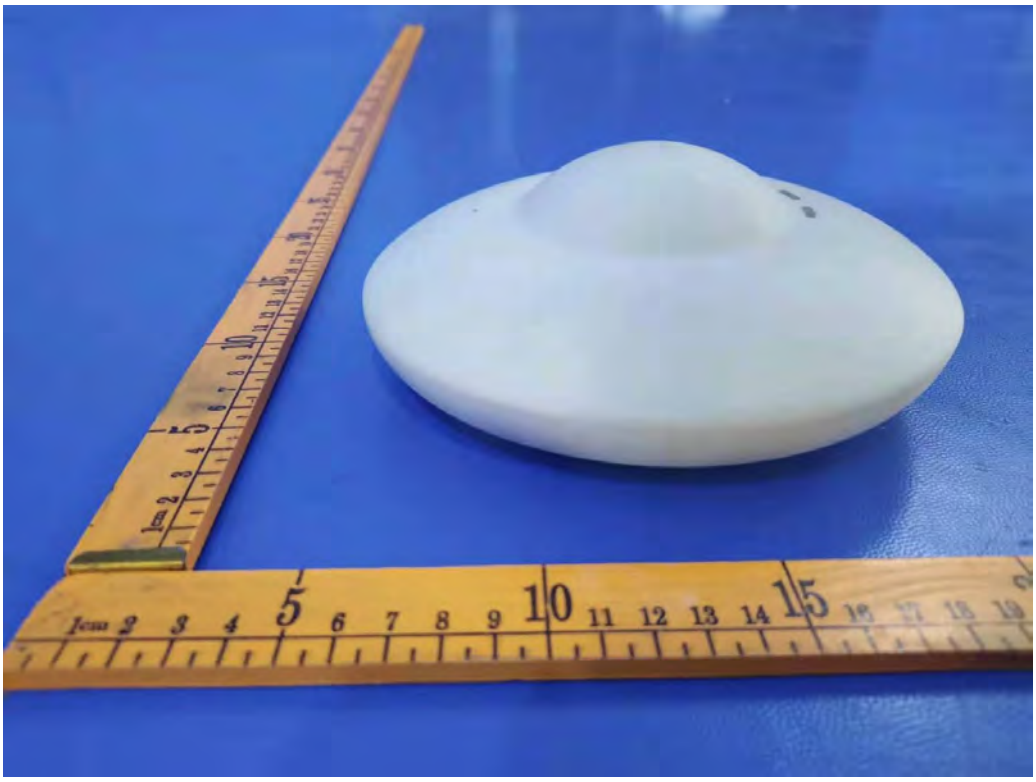


Fig. 6

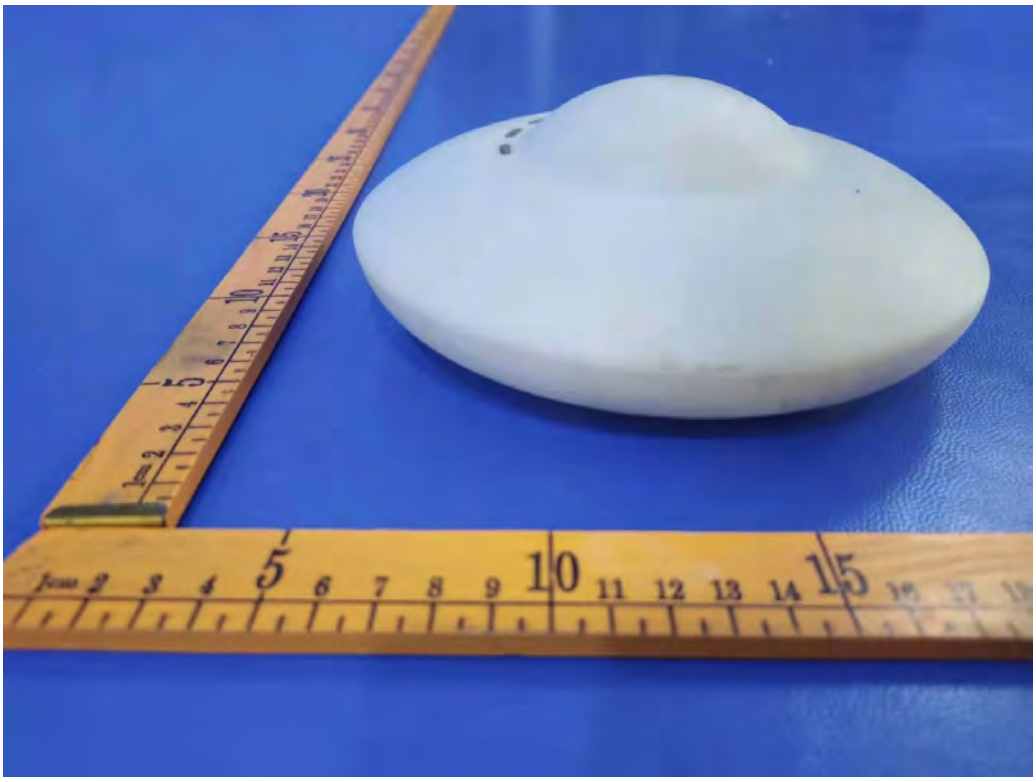


Fig. 7

Fig. 8

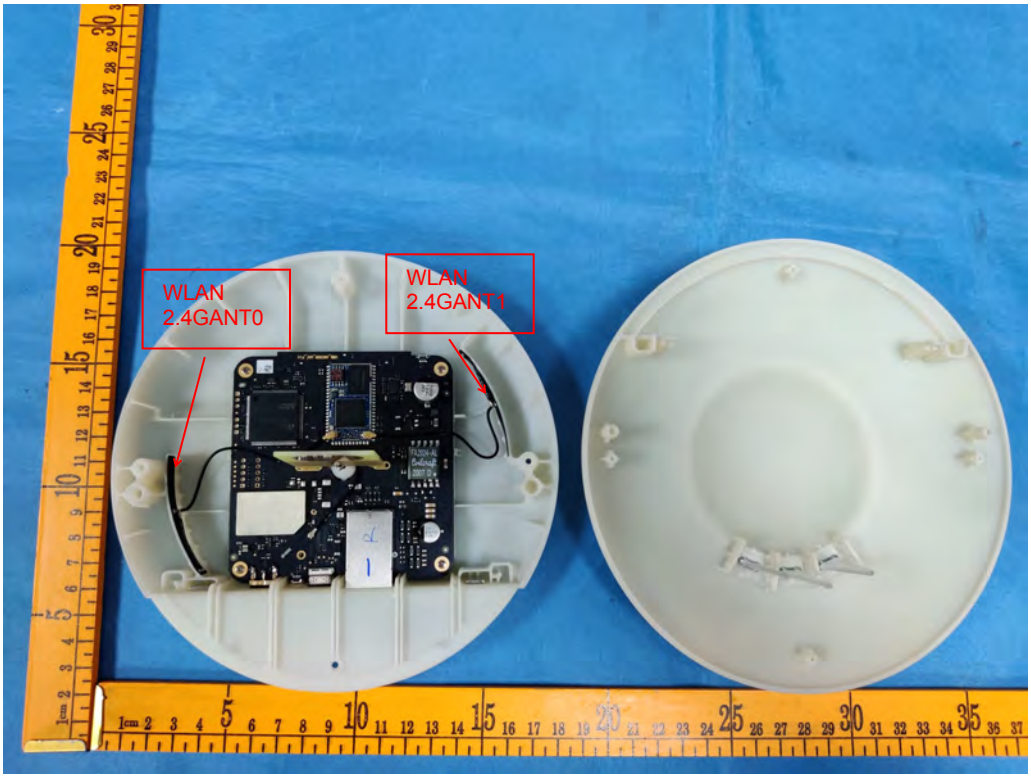


Fig. 9

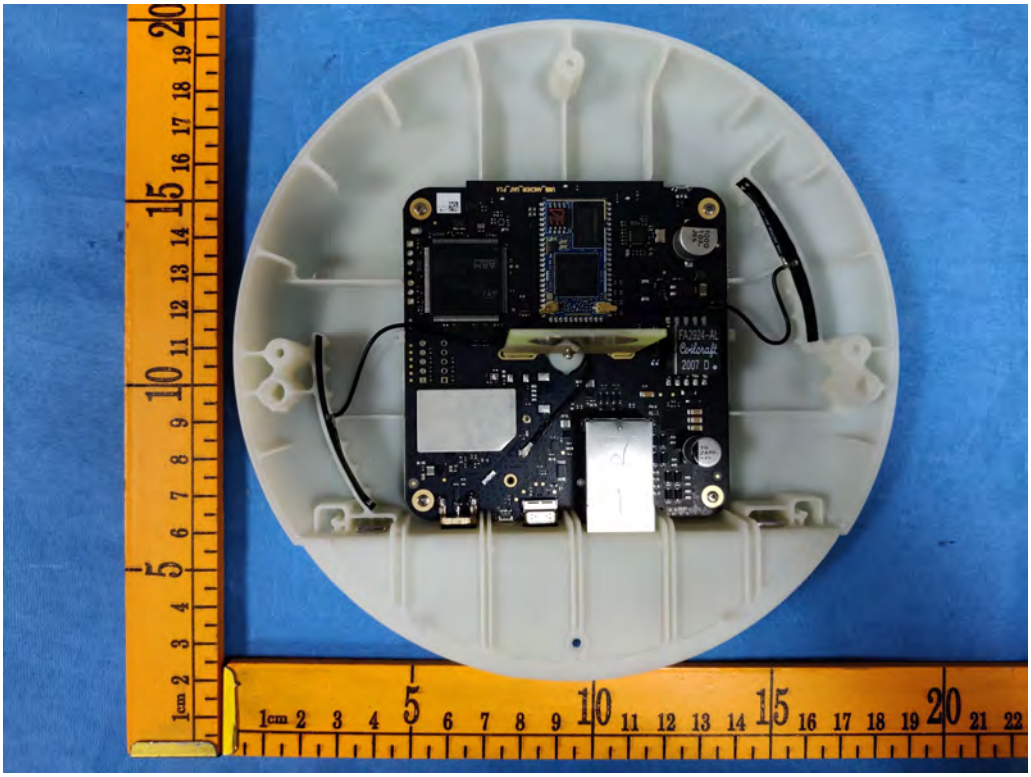


Fig. 10

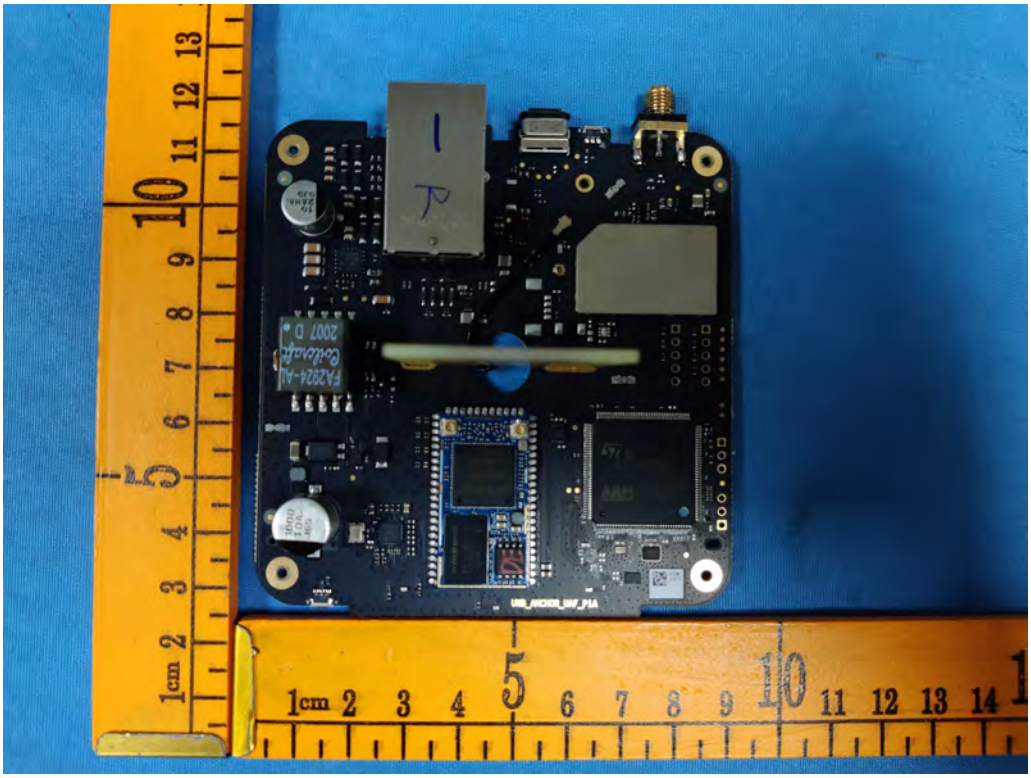


Fig. 11

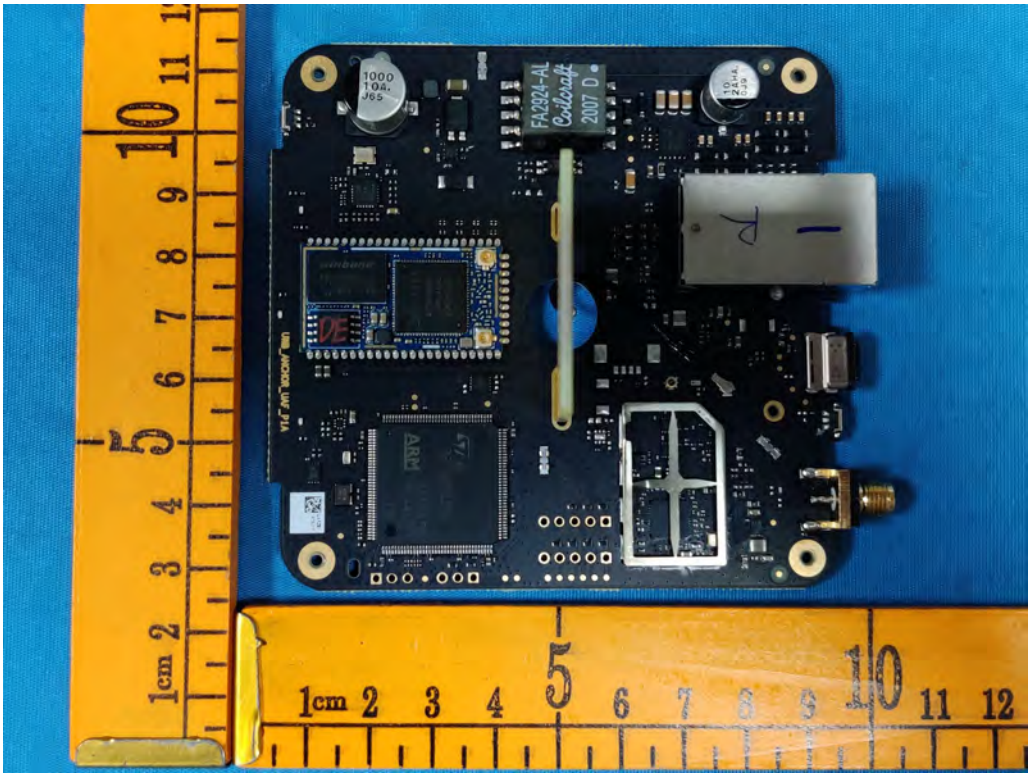


Fig. 12

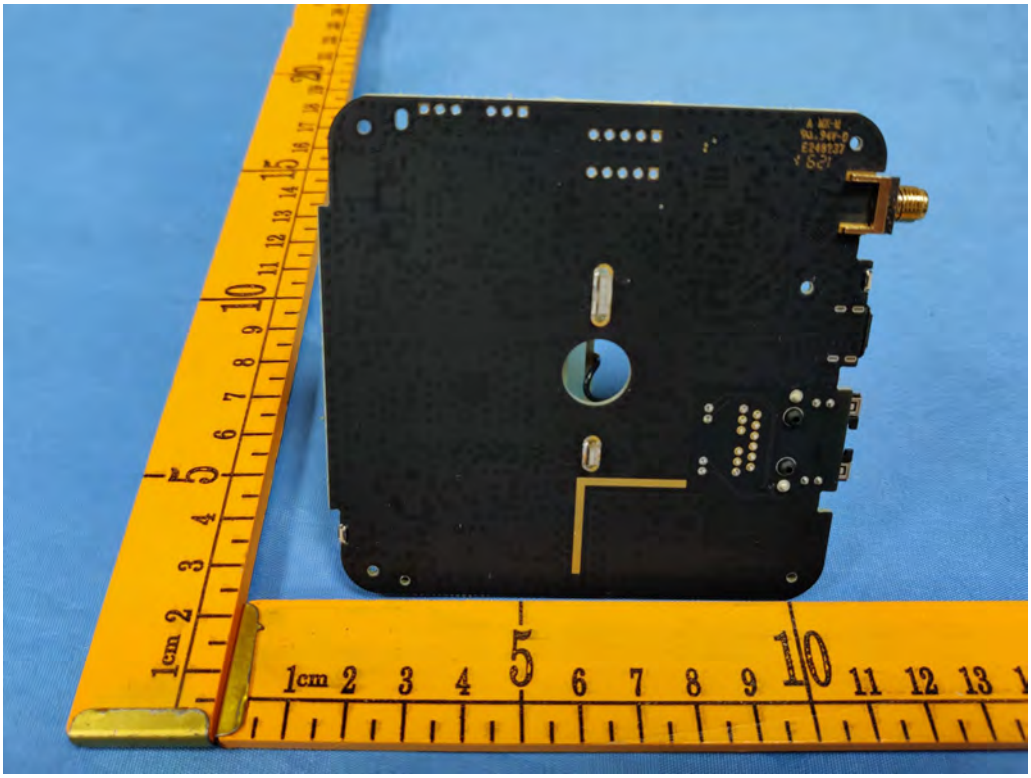


Fig. 13

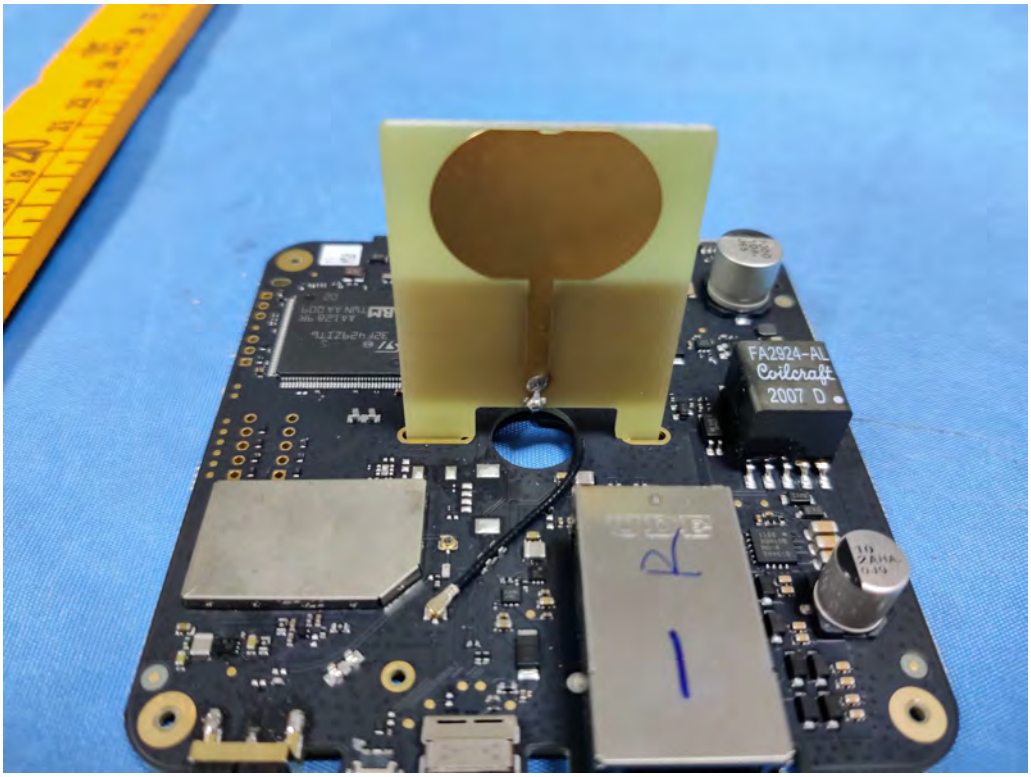


Fig. 14


FA292A-AL
Coilcraft
2007 D
ARM
UWB_ANCHOR_UAF_P1A

Fig. 15

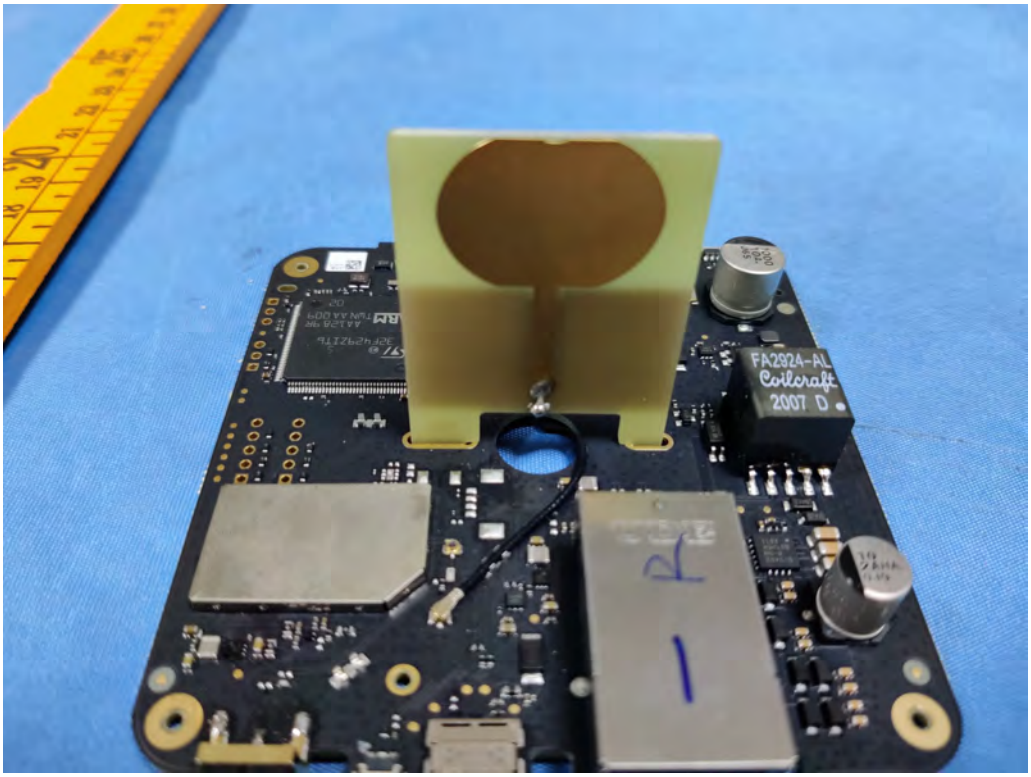

FA292A-AL
Coilcraft
2007 D

Fig. 16

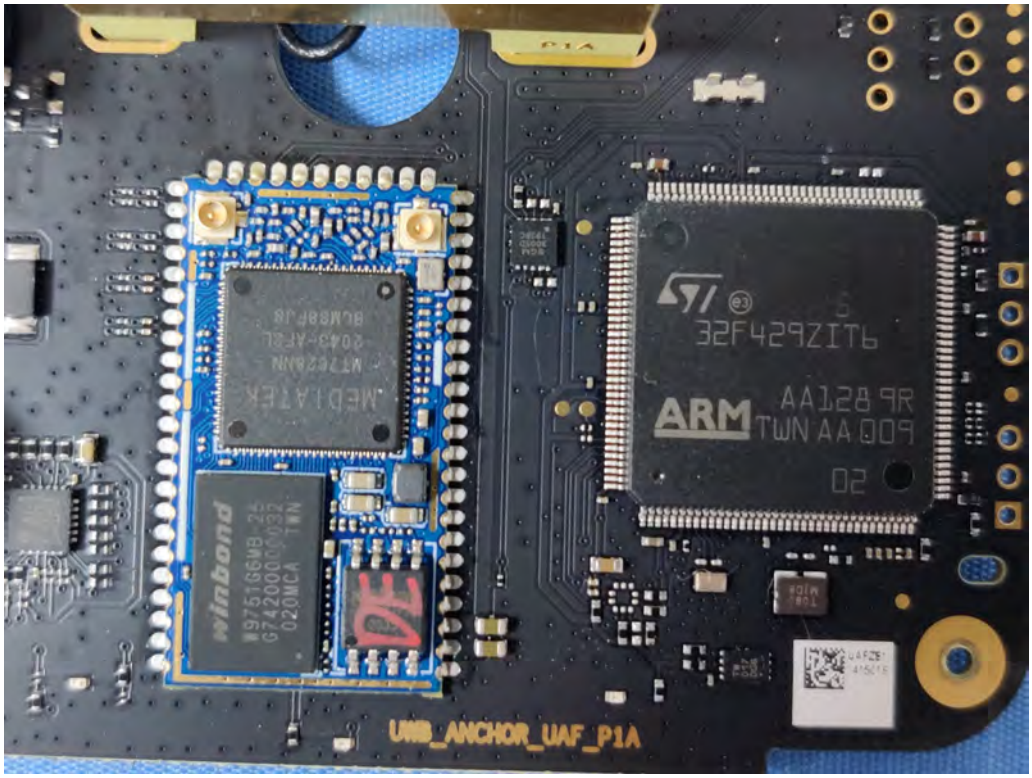


Fig. 17

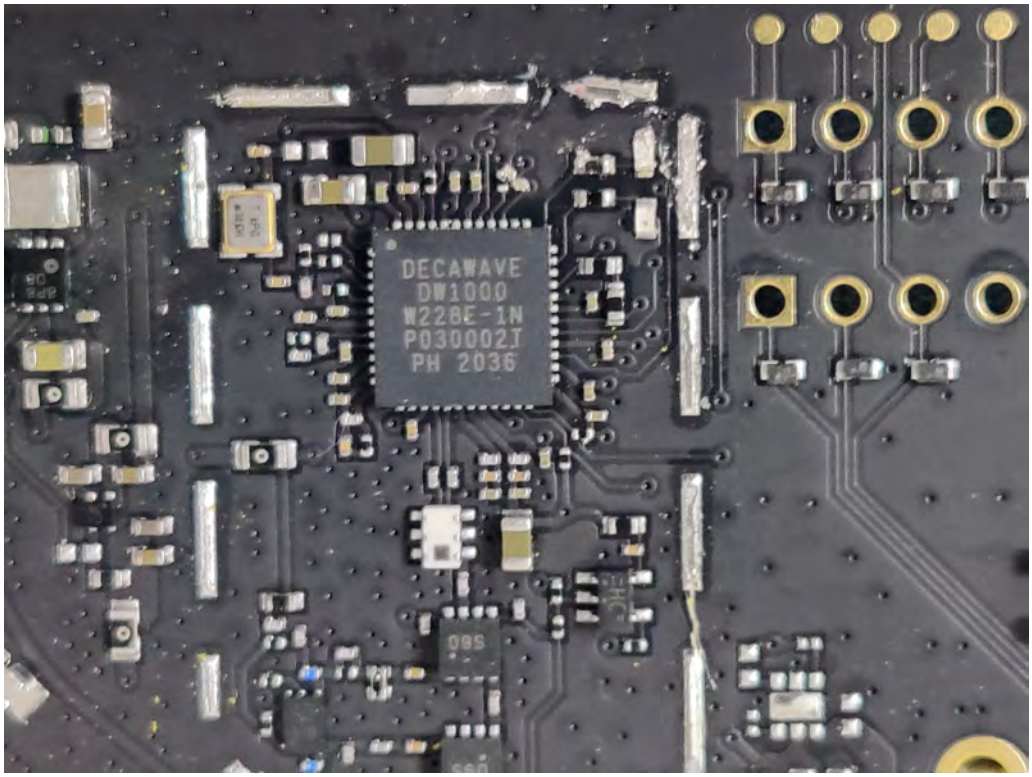


Fig. 18

.....End of Report.....