

TEST REPORT

Product : OF2006-CONTROL CENTER
Trade mark : OUTFORM
Model/Type reference : UM101734
Serial Number : N/A
Report Number : EED32K00200201
FCC ID : 2AO9X-UM101734
Date of Issue : Aug. 24, 2018
Test Standards : 47 CFR Part 15 Subpart C
Test result : PASS

Prepared for:

Outform Science and Technology Ltd.
No. A103 Medical Appliance and Industry Garden, #1019,
Nanhai road, Nanshan district, Shenzhen, China, 518035

Prepared by:

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Aug. 24, 2018

Check No.: 3096370718



2 Version

Version No.	Date	Description
00	Aug. 24, 2018	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203/15.247 (c)	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	PASS
Conducted Peak Output Power	47 CFR Part 15 Subpart C Section 15.247 (b)(3)	ANSI C63.10-2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.247 (a)(2)	ANSI C63.10-2013	PASS
Power Spectral Density	47 CFR Part 15 Subpart C Section 15.247 (e)	ANSI C63.10-2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
Radiated Spurious Emissions	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS

Remark:

Test according to ANSI C63.4-2014 & ANSI C63.10-2013.

The tested sample(s) and the sample information are provided by the client.

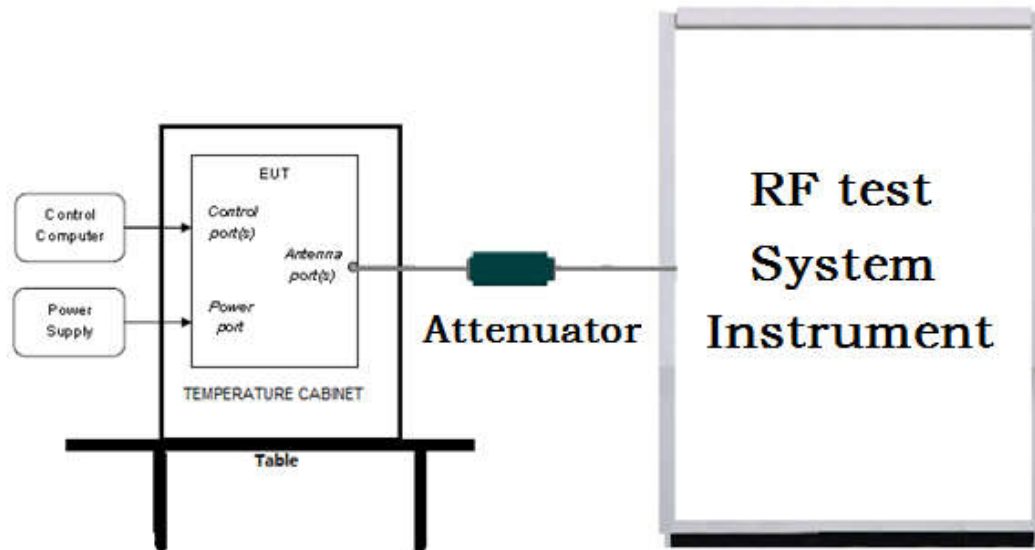
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5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

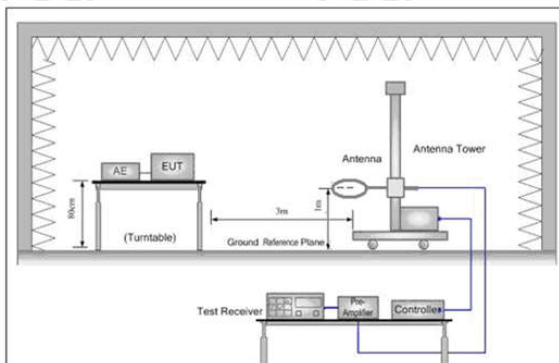


Figure 1. Below 30MHz

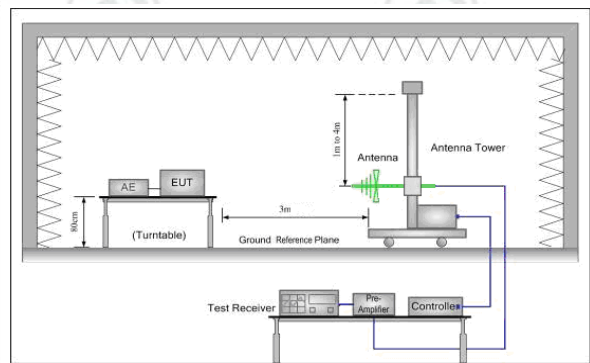


Figure 2. 30MHz to 1GHz

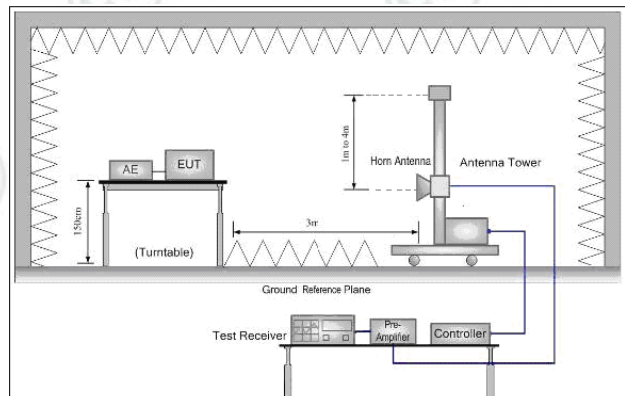
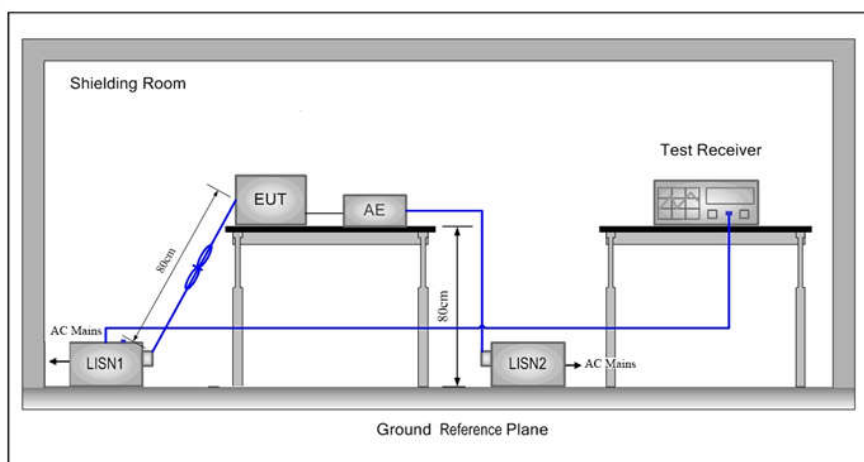


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	26 °C
Humidity:	60 % RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11b/g/n(HT20)	2412MHz ~2462 MHz	Channel 1	Channel 6	Channel11
		2412MHz	2437MHz	2462MHz
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.			

Test mode:

Pre-scan under all rate at lowest channel 1

Mode	802.11b							
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps				
Power(dBm)	16.80	16.85	17.00	17.16				
Mode	802.11g							
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Power(dBm)	21.41	21.30	21.11	20.98	21.07	21.18	21.24	21.13
Mode	802.11n (HT20)							
Data Rate	6.5Mbps	13Mbps	19.5Mbps	26Mbps	39Mbps	52Mbps	58.5Mbps	65Mbps
Power(dBm)	20.23	20.11	19.91	19.98	19.85	19.76	19.98	20.15

Through Pre-scan, 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20);

6 General Information

6.1 Client Information

Applicant:	Outform Science and Technology Ltd.
Address of Applicant:	No. A103 Medical Appliance and Industry Garden, #1019, Nanhai road, Nanshan district, Shenzhen, China, 518035
Manufacturer:	Outform Science & Technology (Shenzhen) Co., Ltd
Address of Manufacturer:	Room A103 and A105-1, Nanshan Medical Instrument Industry Park, No. 1019, Nanhai Avenue, Nanshan District Shenzhen, China.
Factory:	Outform Science & Technology (Shenzhen) Co., Ltd
Address of Factory:	Room A103 and A105-1, Nanshan Medical Instrument Industry Park, No. 1019, Nanhai Avenue, Nanshan District Shenzhen, China.

6.2 General Description of EUT

Product Name:	OF2006-CONTROL CENTER
Model No.(EUT):	UM101734
Trade Mark:	OUTFORM
EUT Supports Radios application:	WiFi 802.11b/g/n(HT20): 2412MHz to 2462MHz
Power Supply:	AC 120V, 60Hz
Sample Received Date:	Aug. 7, 2018
Sample tested Date:	Aug. 7, 2018 to Aug. 24, 2018

6.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g :OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20) : OFDM (64QAM, 16QAM, QPSK,BPSK)
Test Power Grade:	N/A (manufacturer declare)
Test Software of EUT:	RFTestTool (manufacturer declare)
Antenna Type and Gain:	Antenna Type:Dipole Antenna and Antenna Gain:2.0dBi
Test Voltage:	AC 120V, 60Hz

Operation Frequency each of channel(802.11b/g/n HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

6.4 Description of Support Units

The EUT has been tested with associated equipment below.

Associated equipment name		Manufacture	model	S/N serial number	Supplied by	Certification
AE1	AC Adapter	EDACPOWER Electronics Co., Ltd	EA10951C-165	E209833	Client	FCC

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

6.6 Deviation from Standards

None.

6.7 Abnormalities from Standard Conditions

None.

6.8 Other Information Requested by the Customer

None.

6.9 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.31dB (30MHz-1GHz)
		0.57dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-12.75GHz)
4	Conduction emission	3.6dB (9kHz to 150kHz)
		3.2dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	2.8%
7	DC power voltages	0.025%

7 Equipment List

RF test system					
Equipment	Manufacturer	Model No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Signal Generator	Keysight	E8257D	MY53401106	03-13-2018	03-12-2019
Spectrum Analyzer	Keysight	N9010A	MY54510339	03-13-2018	03-12-2019
Signal Generator	Keysight	N5182B	MY53051549	11-16-2017	11-15-2018
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-10-2018	01-09-2019
DC Power	Keysight	E3642A	MY54436035	03-13-2018	03-12-2019
power meter & power sensor	R&S	OSP120	101374	04-11-2018	04-10-2019
RF control unit	JS Tonscend	JS0806-2	2015860006	03-13-2018	03-12-2019
BT&WI-FI Automatic test software	JS Tonscend	JSTS1120-2	---	03-29-2018	03-28-2019
Temperature / Humidity Indicator	Defu	TH128	---	07-02-2018	07-01-2019

Conducted disturbance Test					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Temperature / Humidity Indicator	Defu	TH128	---	07-02-2018	07-01-2019
Receiver	R&S	ESCI	100435	05-25-2018	05-24-2019
LISN	R&S	ENV216	100098	05-11-2018	05-10-2019

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06-04-2016	06-03-2019
Spectrum Analyzer	Agilent	E4443A	MY45300910	11-16-2017	11-15-2018
Receiver	R&S	ESCI	100435	05-25-2018	05-24-2019
TRILOG Broadband Antenna	SCHWARZBEC K	VULB9163	9163-618	07-30-2018	07-29-2019
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1869	04-25-2018	04-23-2021
Spectrum Analyzer	R&S	FSP40	100416	05-11-2018	05-10-2019
Microwave Preamplifier	Tonscend	EMC051845SE	980380	01-19-2018	01-18-2019
Loop Antenna	ETS	6502	00071730	06-22-2017	06-21-2019
Double ridge horn antenna	A.H.SYSTEMS	SAS-574	6042	06-05-2018	06-03-2021
Pre-amplifier	A.H.SYSTEMS	PAP-1840-60	6041	06-05-2018	06-03-2021
Temperature/ Humidity Indicator	TAYLOR	1451	1905	05-02-2018	05-01-2019
Temperature/ Humidity Indicator	TAYLOR	1451	1905	05-02-2018	05-01-2019
Cable line	Fulai(7M)	SF106	5219/6A	01-10-2018	01-09-2019
Cable line	Fulai(6M)	SF106	5220/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5216/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5217/6A	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA09C L12-0395-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA08C L12-0393-001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA04C L12-0396-002	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA03C L12-0394-001	---	01-10-2018	01-09-2019

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15C	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Test Results List:

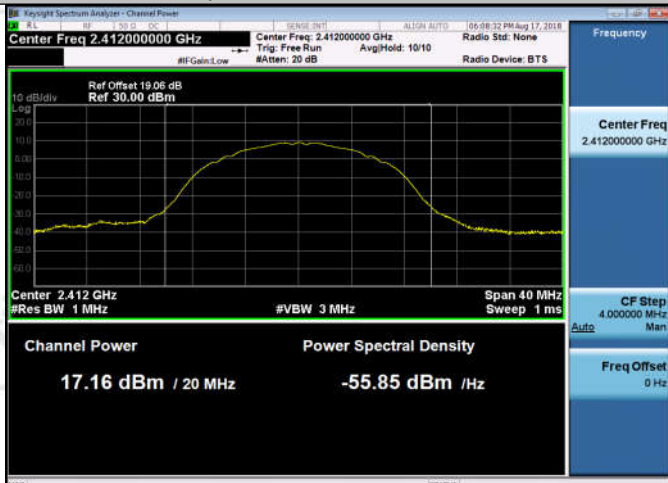
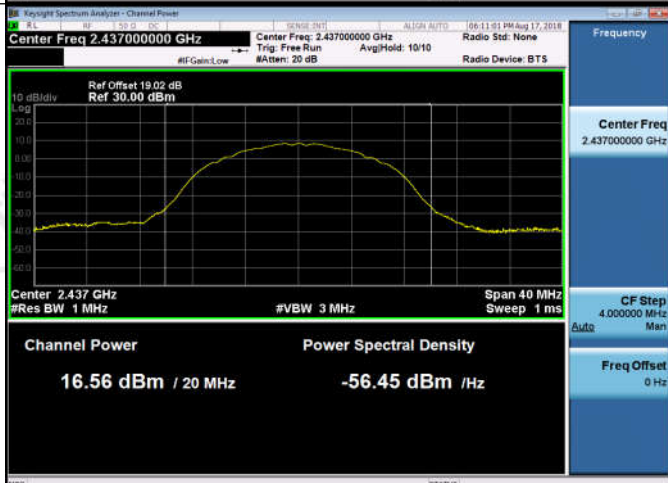
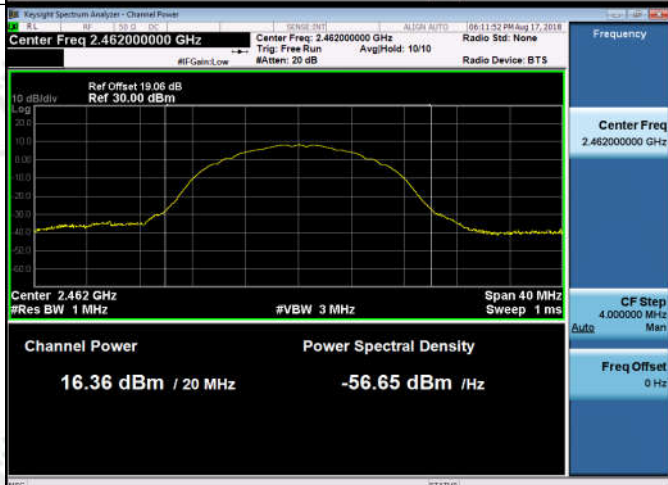
Test Requirement	Test method	Test item	Verdict	Note
Part15C Section 15.247 (b)(3)	ANSI C63.10	Conducted Peak Output Power	PASS	Appendix A)
Part15C Section 15.247 (a)(2)	ANSI C63.10	6dB Occupied Bandwidth	PASS	Appendix B)
Part15C Section 15.247(d)	ANSI C63.10	Band-edge for RF Conducted Emissions	PASS	Appendix C)
Part15C Section 15.247(d)	ANSI C63.10	RF Conducted Spurious Emissions	PASS	Appendix D)
Part15C Section 15.247 (e)	ANSI C63.10	Power Spectral Density	PASS	Appendix E)
Part15C Section 15.203/15.247 (c)	ANSI C63.10	Antenna Requirement	PASS	Appendix F)
Part15C Section 15.207	ANSI C63.10	AC Power Line Conducted Emission	PASS	Appendix G)
Part15C Section 15.205/15.209	ANSI C63.10	Restricted bands around fundamental frequency (Radiated Emission)	PASS	Appendix H)
Part15C Section 15.205/15.209	ANSI C63.10	Radiated Spurious Emissions	PASS	Appendix I)

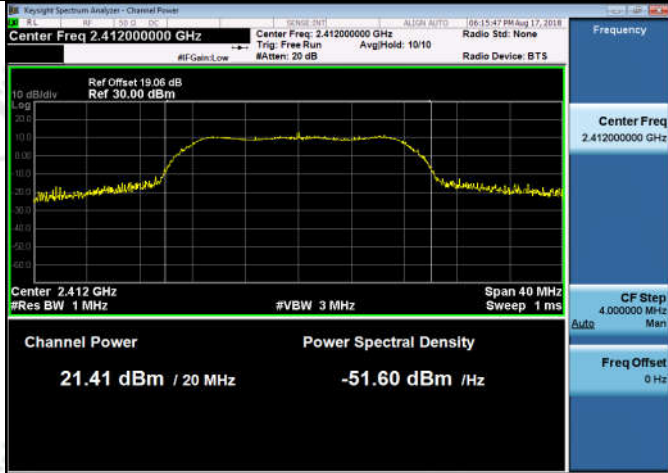
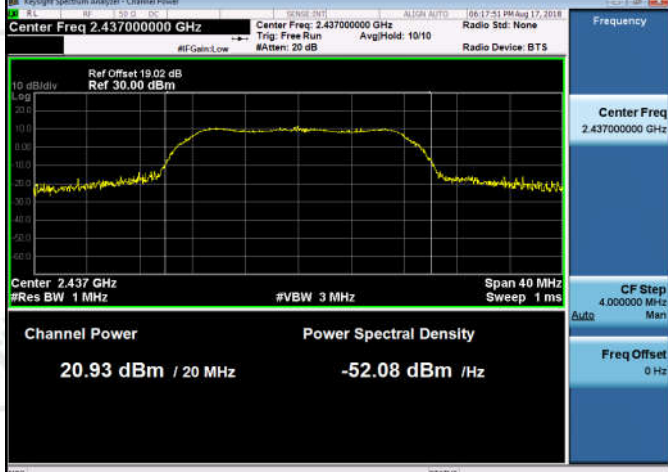
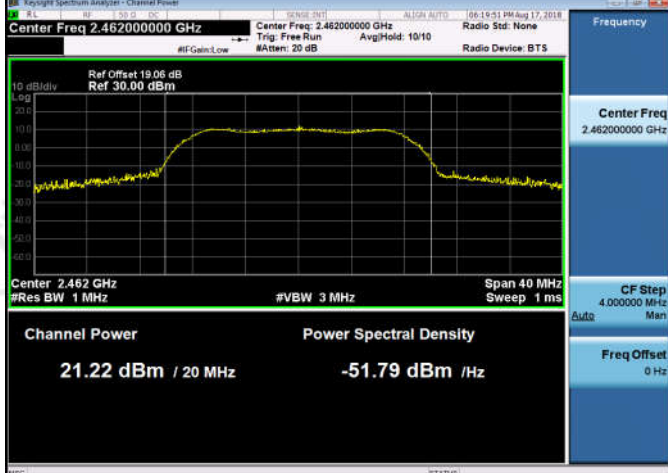
Appendix A): Conducted Peak Output Power

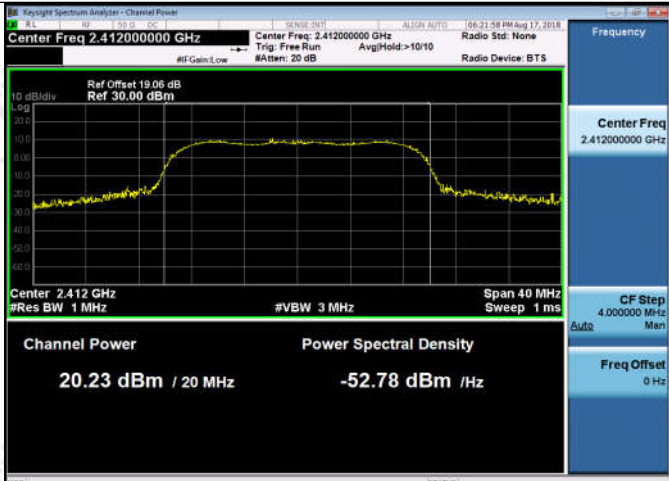
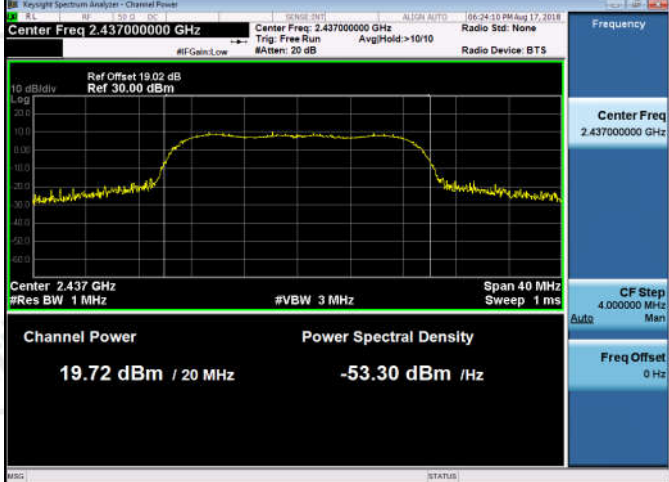
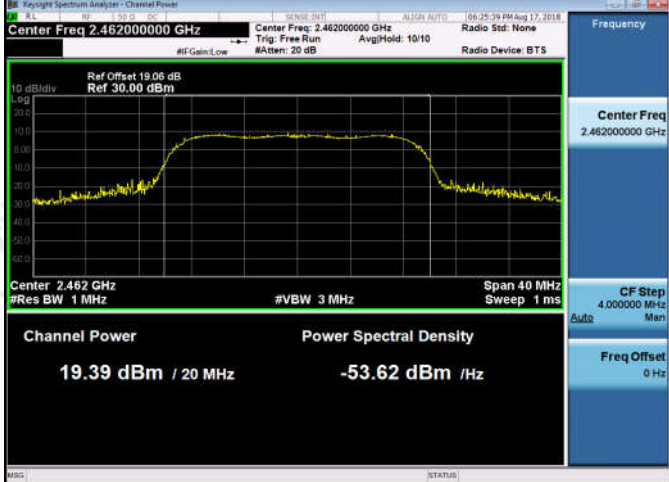
Result Table

Mode	Channel	Conducted Peak Output Power [dBm]	Verdict
11B	LCH	17.16	PASS
11B	MCH	16.56	PASS
11B	HCH	16.36	PASS
11G	LCH	21.41	PASS
11G	MCH	20.93	PASS
11G	HCH	21.22	PASS
11N20SISO	LCH	20.23	PASS
11N20SISO	MCH	19.72	PASS
11N20SISO	HCH	19.39	PASS

Test Graph

Graphs	
11B/LCH	 Keygraph Spectrum Analyzer - Channel Power Center Freq 2.412000000 GHz Center Freq: 2.412000000 GHz Radio Std: None Ref Offset 19.06 dB Ref 30.00 dBm Channel Power: 17.16 dBm / 20 MHz Power Spectral Density: -55.85 dBm / Hz Center 2.412 GHz Span 40 MHz Sweep 1 ms #Res BW 1 MHz #VBW 3 MHz Trig: Free Run Avg/Hold: 10/10 #IF Gain: Low #Atten: 20 dB Radio Device: BTS Frequency: Center Freq 2.412000000 GHz CF Step 4.000000 MHz Auto Man Freq Offset 0 Hz
11B/MCH	 Keygraph Spectrum Analyzer - Channel Power Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Radio Std: None Ref Offset 19.02 dB Ref 30.00 dBm Channel Power: 16.56 dBm / 20 MHz Power Spectral Density: -56.45 dBm / Hz Center 2.437 GHz Span 40 MHz Sweep 1 ms #Res BW 1 MHz #VBW 3 MHz Trig: Free Run Avg/Hold: 10/10 #IF Gain: Low #Atten: 20 dB Radio Device: BTS Frequency: Center Freq 2.437000000 GHz CF Step 4.000000 MHz Auto Man Freq Offset 0 Hz
11B/HCH	 Keygraph Spectrum Analyzer - Channel Power Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Radio Std: None Ref Offset 19.06 dB Ref 30.00 dBm Channel Power: 16.36 dBm / 20 MHz Power Spectral Density: -56.65 dBm / Hz Center 2.462 GHz Span 40 MHz Sweep 1 ms #Res BW 1 MHz #VBW 3 MHz Trig: Free Run Avg/Hold: 10/10 #IF Gain: Low #Atten: 20 dB Radio Device: BTS Frequency: Center Freq 2.462000000 GHz CF Step 4.000000 MHz Auto Man Freq Offset 0 Hz

11G/LCH	 Keynote Spectrum Analyzer - Channel Power Center Freq: 2.412000000 GHz Ref Offset: 19.06 dB Ref: 30.00 dBm Center: 2.412 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 40 MHz Sweep: 1 ms Channel Power: 21.41 dBm / 20 MHz Power Spectral Density: -51.60 dBm / Hz
11G/MCH	 Keynote Spectrum Analyzer - Channel Power Center Freq: 2.437000000 GHz Ref Offset: 19.02 dB Ref: 30.00 dBm Center: 2.437 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 40 MHz Sweep: 1 ms Channel Power: 20.93 dBm / 20 MHz Power Spectral Density: -52.08 dBm / Hz
11G/HCH	 Keynote Spectrum Analyzer - Channel Power Center Freq: 2.462000000 GHz Ref Offset: 19.06 dB Ref: 30.00 dBm Center: 2.462 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 40 MHz Sweep: 1 ms Channel Power: 21.22 dBm / 20 MHz Power Spectral Density: -51.79 dBm / Hz

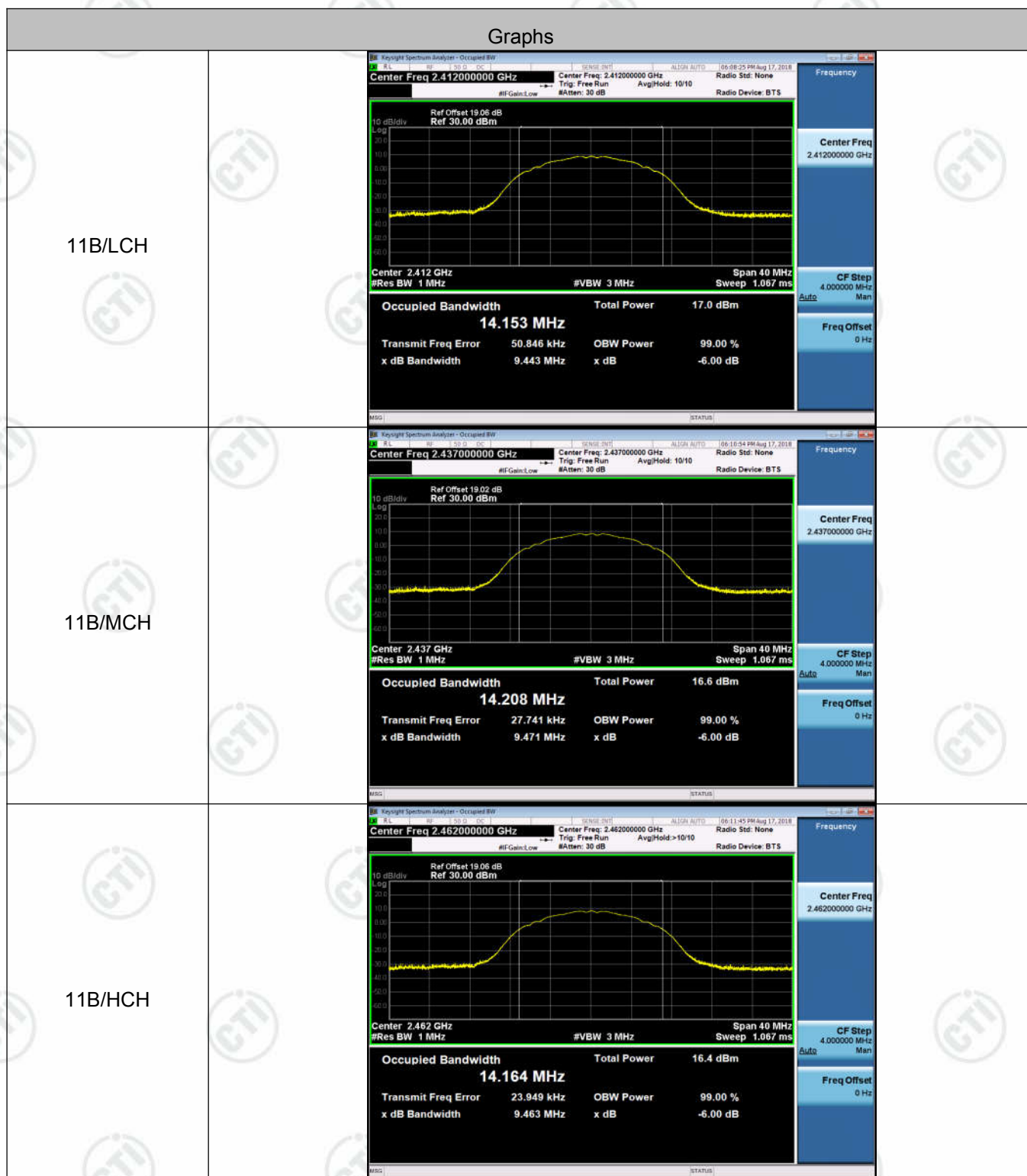
11N20SISO/LCH	
11N20SISO/MCH	
11N20SISO/HCH	

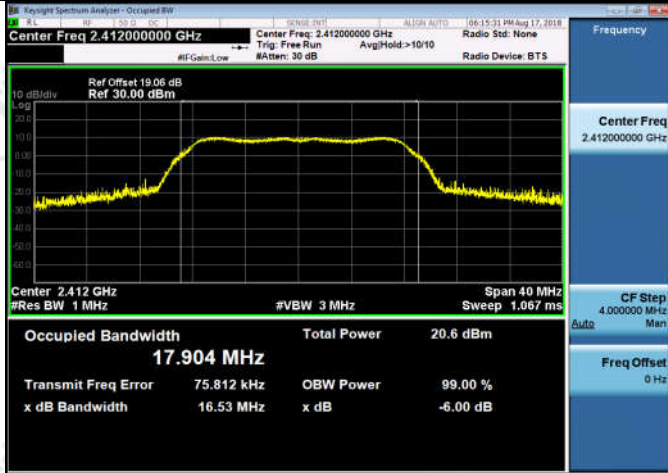
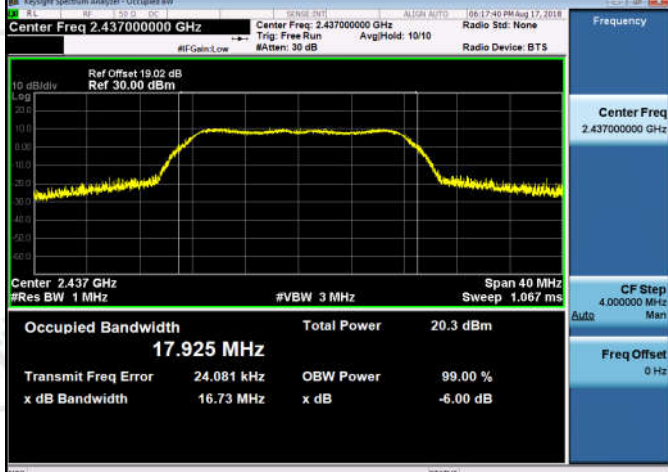
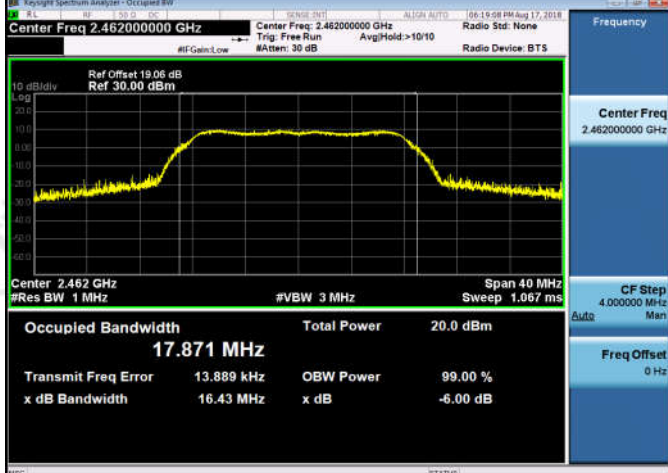
Appendix B): 6dB Occupied Bandwidth

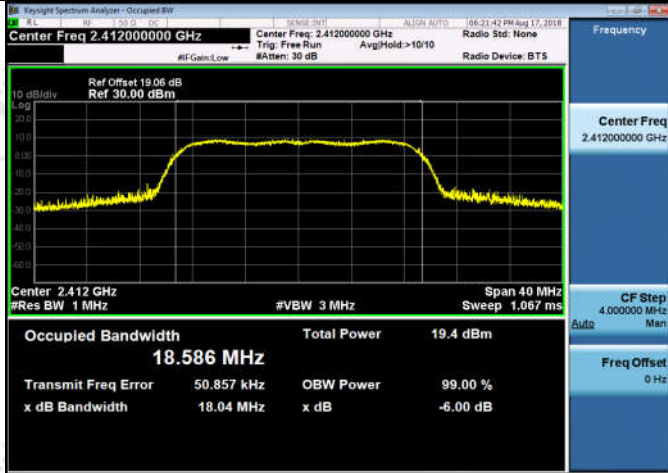
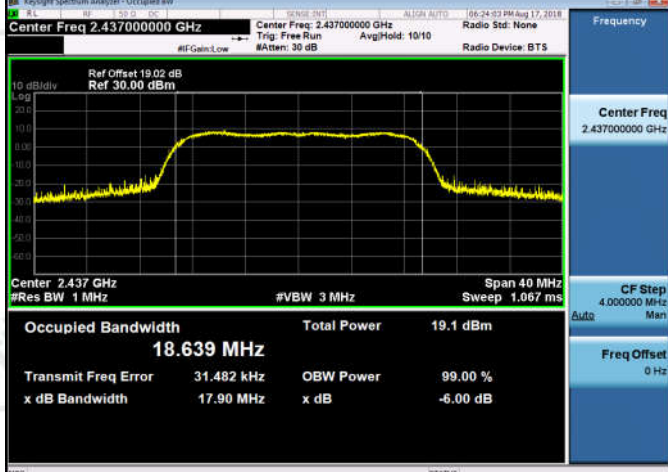
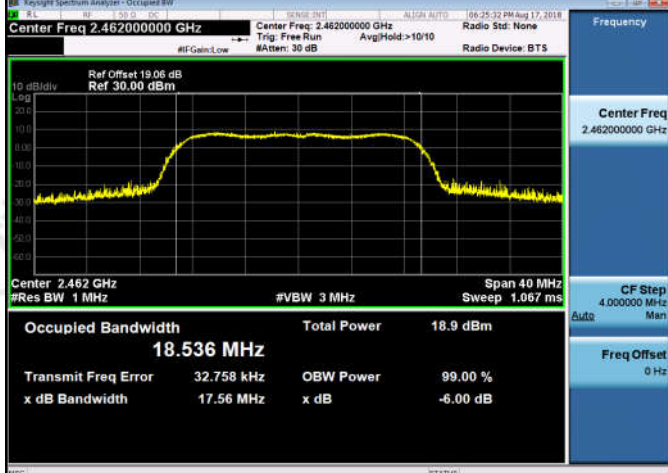
Result Table

Mode	Channel	6dB Bandwidth [MHz]	99% OBW [MHz]	Verdict
11B	LCH	9.443	14.153	PASS
11B	MCH	9.471	14.208	PASS
11B	HCH	9.463	14.164	PASS
11G	LCH	16.53	17.904	PASS
11G	MCH	16.73	17.925	PASS
11G	HCH	16.43	17.871	PASS
11N20SISO	LCH	18.04	18.586	PASS
11N20SISO	MCH	17.90	18.639	PASS
11N20SISO	HCH	17.56	18.536	PASS

Test Graph



11G/LCH	 Keynote Spectrum Analyzer - Occupied BW Center Freq: 2.412000000 GHz Ref Offset: 19.06 dB Ref: 30.00 dBm Center: 2.412 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 40 MHz Sweep: 1.067 ms Occupied Bandwidth: 17.904 MHz Total Power: 20.6 dBm Transmit Freq Error: 75.812 kHz OBW Power: 99.00 % x dB Bandwidth: 16.53 MHz x dB: -6.00 dB
11G/MCH	 Keynote Spectrum Analyzer - Occupied BW Center Freq: 2.437000000 GHz Ref Offset: 19.02 dB Ref: 30.00 dBm Center: 2.437 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 40 MHz Sweep: 1.067 ms Occupied Bandwidth: 17.925 MHz Total Power: 20.3 dBm Transmit Freq Error: 24.081 kHz OBW Power: 99.00 % x dB Bandwidth: 16.73 MHz x dB: -6.00 dB
11G/HCH	 Keynote Spectrum Analyzer - Occupied BW Center Freq: 2.462000000 GHz Ref Offset: 19.06 dB Ref: 30.00 dBm Center: 2.462 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 40 MHz Sweep: 1.067 ms Occupied Bandwidth: 17.871 MHz Total Power: 20.0 dBm Transmit Freq Error: 13.889 kHz OBW Power: 99.00 % x dB Bandwidth: 16.43 MHz x dB: -6.00 dB

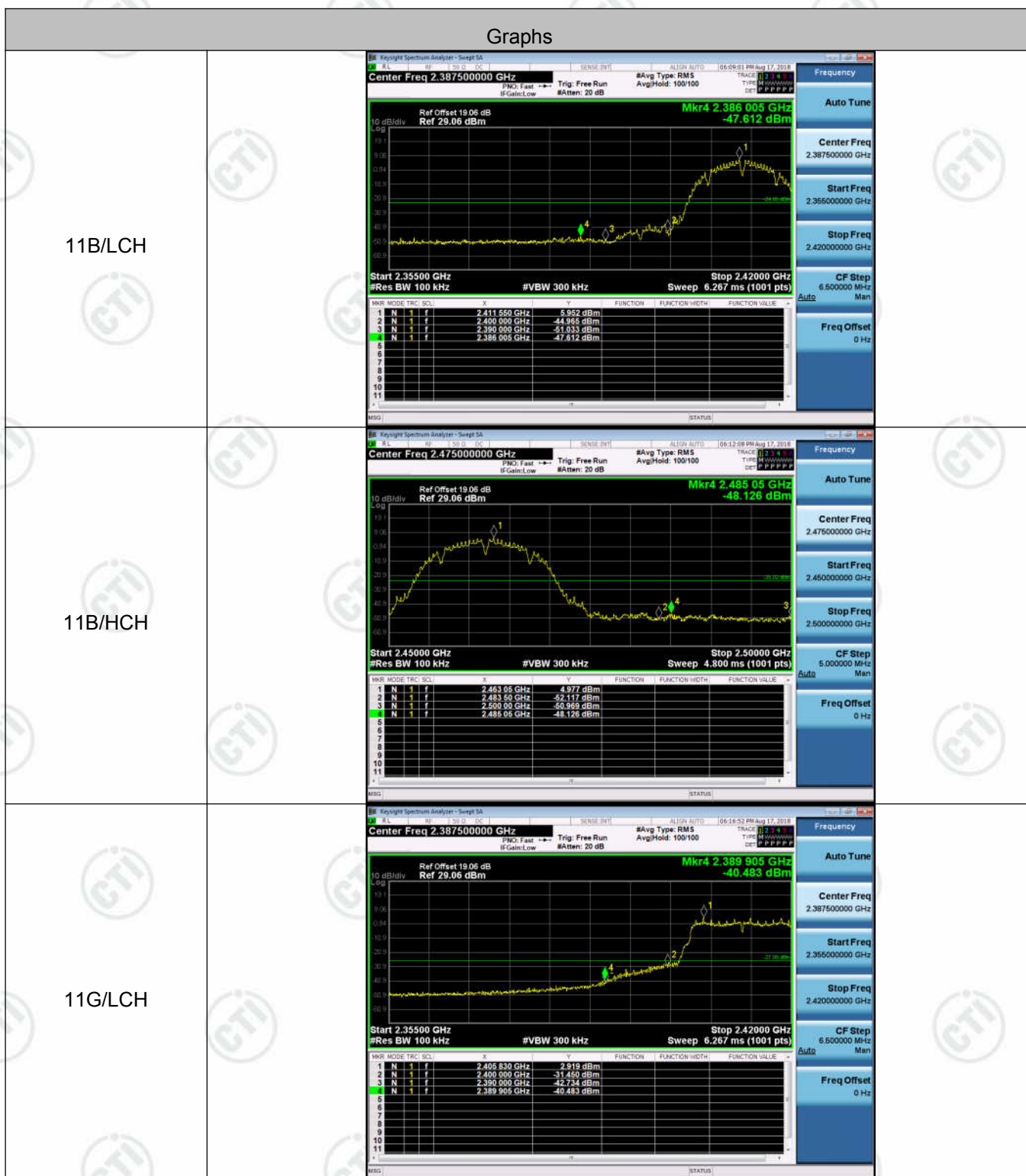
11N20SISO/LCH	 Center Freq 2.412000000 GHz Ref Offset 19.06 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 18.586 MHz Total Power 19.4 dBm Transmit Freq Error 50.857 kHz OBW Power 99.00 % x dB Bandwidth 18.04 MHz x dB -6.00 dB
11N20SISO/MCH	 Center Freq 2.437000000 GHz Ref Offset 19.02 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 18.639 MHz Total Power 19.1 dBm Transmit Freq Error 31.482 kHz OBW Power 99.00 % x dB Bandwidth 17.90 MHz x dB -6.00 dB
11N20SISO/HCH	 Center Freq 2.462000000 GHz Ref Offset 19.06 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 18.536 MHz Total Power 18.9 dBm Transmit Freq Error 32.758 kHz OBW Power 99.00 % x dB Bandwidth 17.56 MHz x dB -6.00 dB

Appendix C): Band-edge for RF Conducted Emissions

Result Table

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	5.952	-47.612	-24.05	PASS
11B	HCH	4.977	-48.126	-25.02	PASS
11G	LCH	2.919	-40.483	-27.08	PASS
11G	HCH	2.175	-40.145	-27.83	PASS
11N20SISO	LCH	1.510	-41.109	-28.49	PASS
11N20SISO	HCH	1.231	-40.842	-28.77	PASS

Test Graph



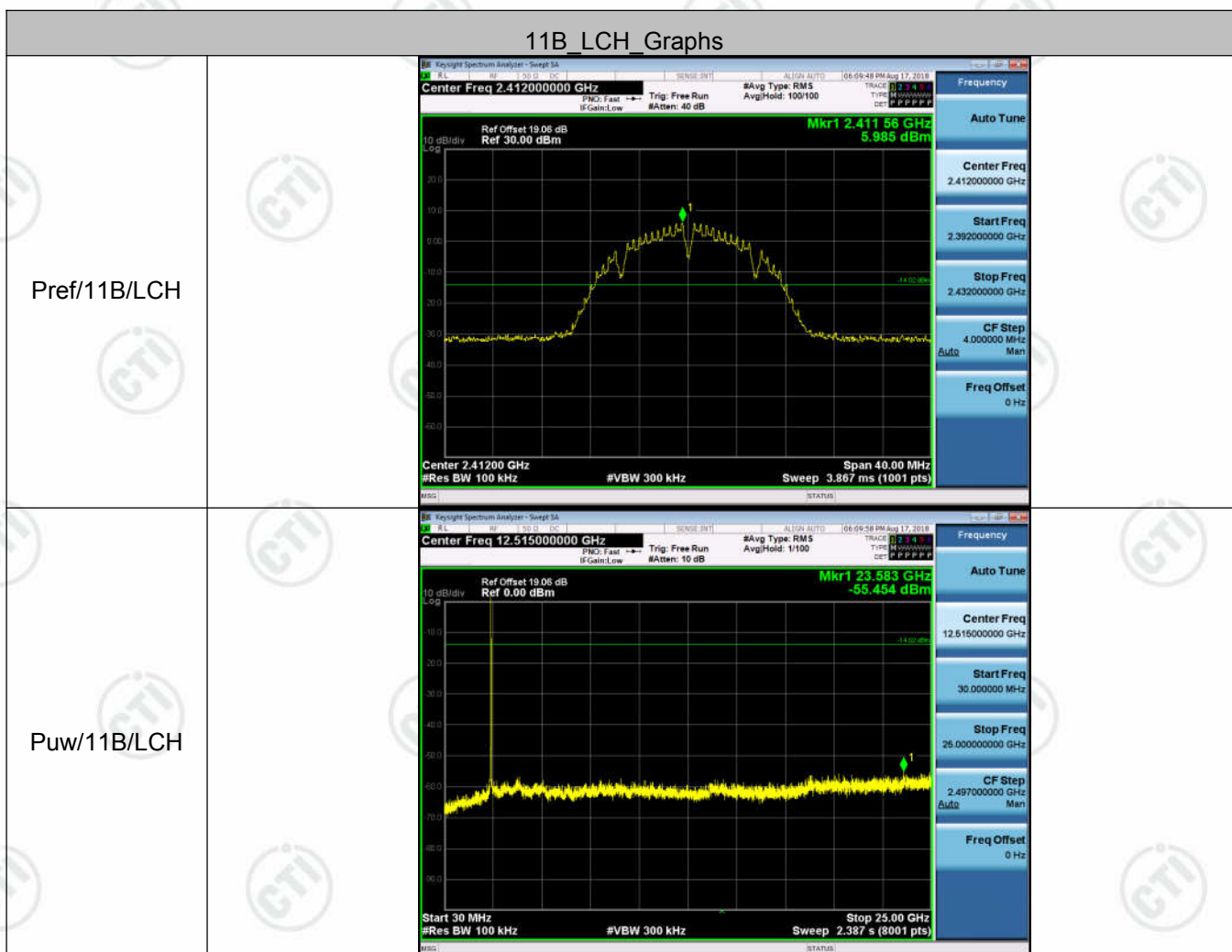
11G/HCH	 <table><thead><tr><th>NR</th><th>MODE</th><th>TRC</th><th>SOL</th><th>F</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr></thead><tbody><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.465 80 GHz</td><td></td><td></td><td>2.175 dBm</td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.483 65 GHz</td><td></td><td></td><td>-40.145 dBm</td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.500 00 GHz</td><td></td><td></td><td>-49.761 dBm</td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.483 65 GHz</td><td></td><td></td><td>-40.145 dBm</td></tr></tbody></table>	NR	MODE	TRC	SOL	F	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.465 80 GHz			2.175 dBm	2	N	1	f	2.483 65 GHz			-40.145 dBm	3	N	1	f	2.500 00 GHz			-49.761 dBm	4	N	1	f	2.483 65 GHz			-40.145 dBm
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Appendix D): RF Conducted Spurious Emissions

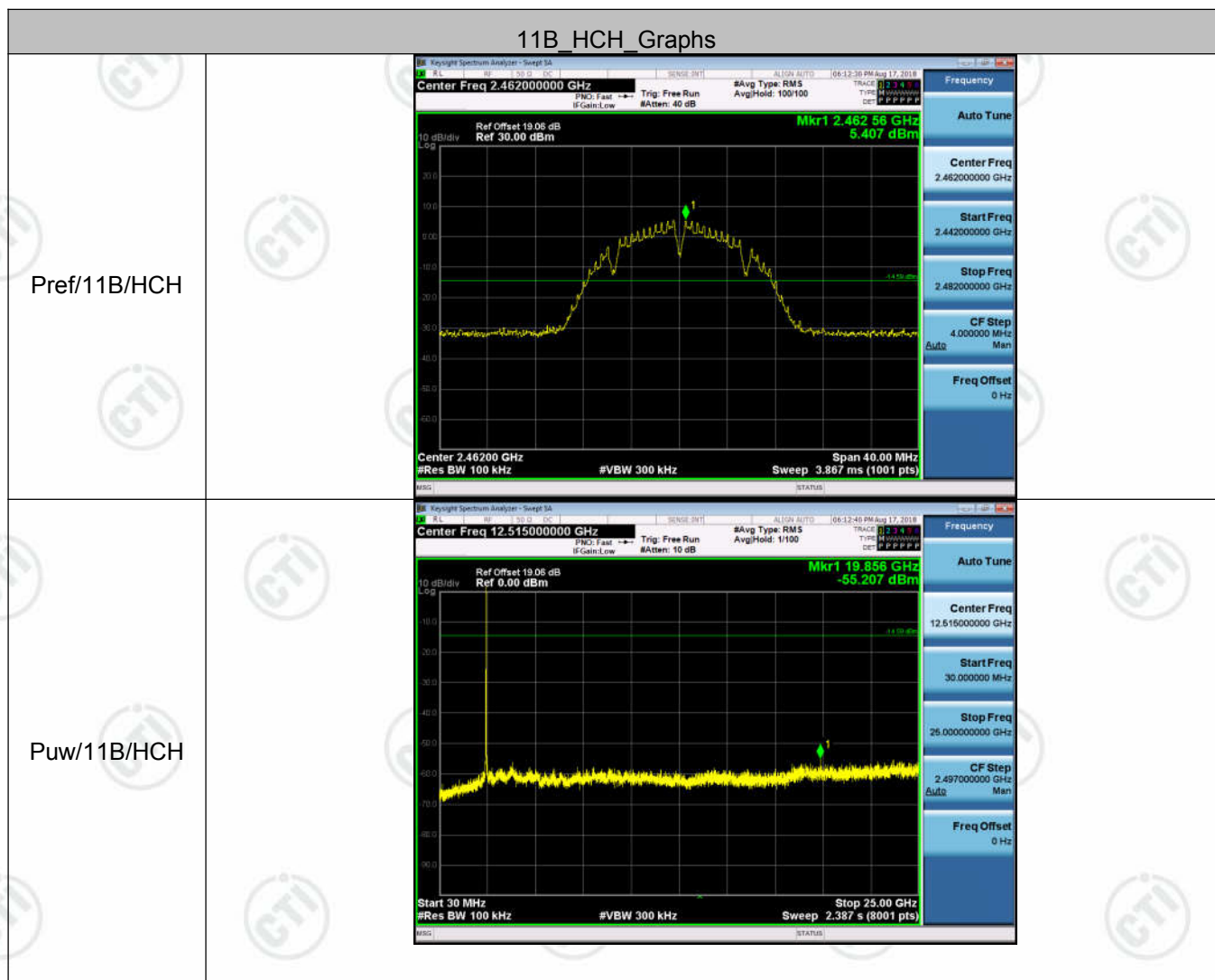
Result Table

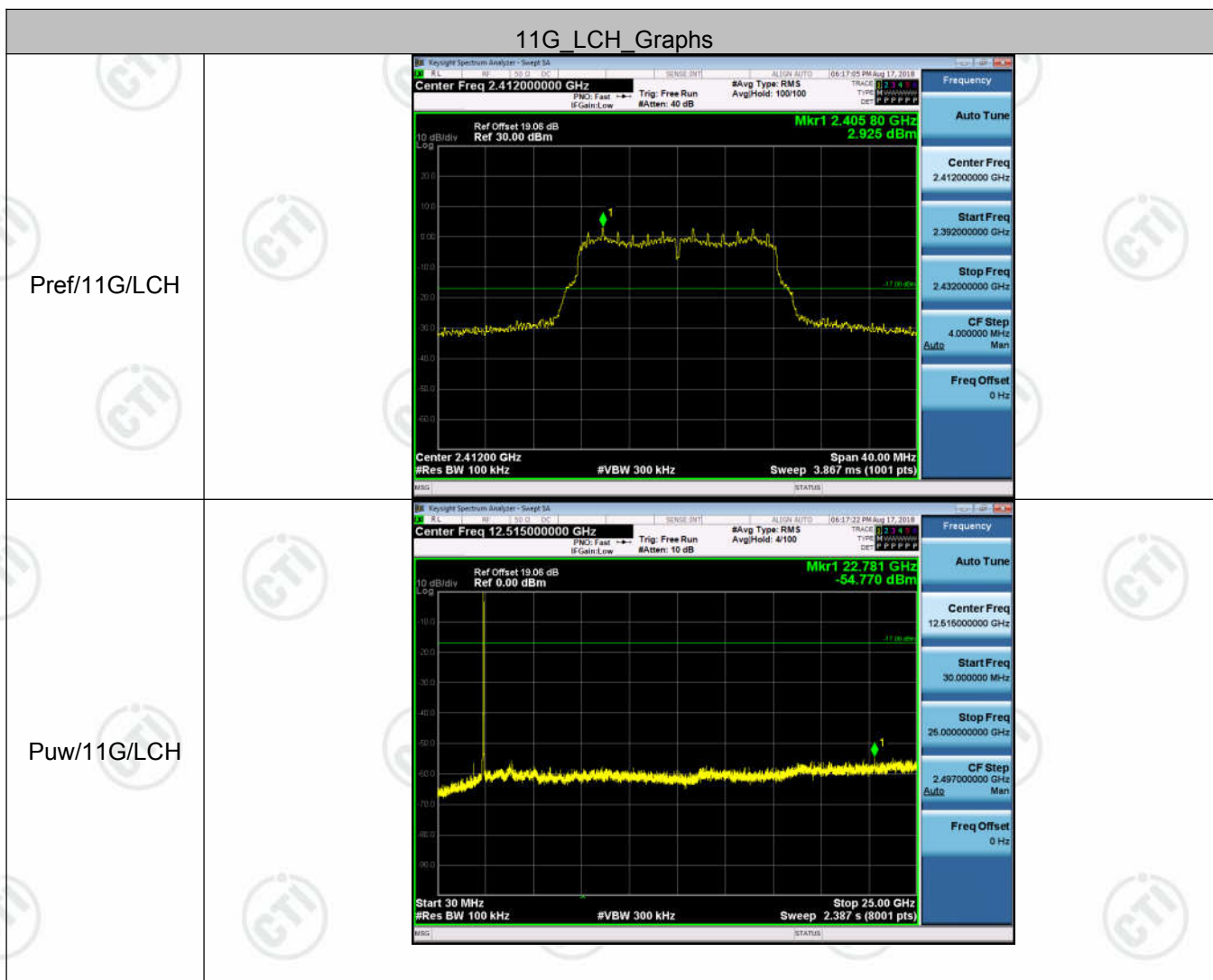
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
11B	LCH	5.985	<Limit	PASS
11B	MCH	5.312	<Limit	PASS
11B	HCH	5.407	<Limit	PASS
11G	LCH	2.925	<Limit	PASS
11G	MCH	2.559	<Limit	PASS
11G	HCH	2.651	<Limit	PASS
11N20SISO	LCH	1.829	<Limit	PASS
11N20SISO	MCH	1.611	<Limit	PASS
11N20SISO	HCH	0.379	<Limit	PASS

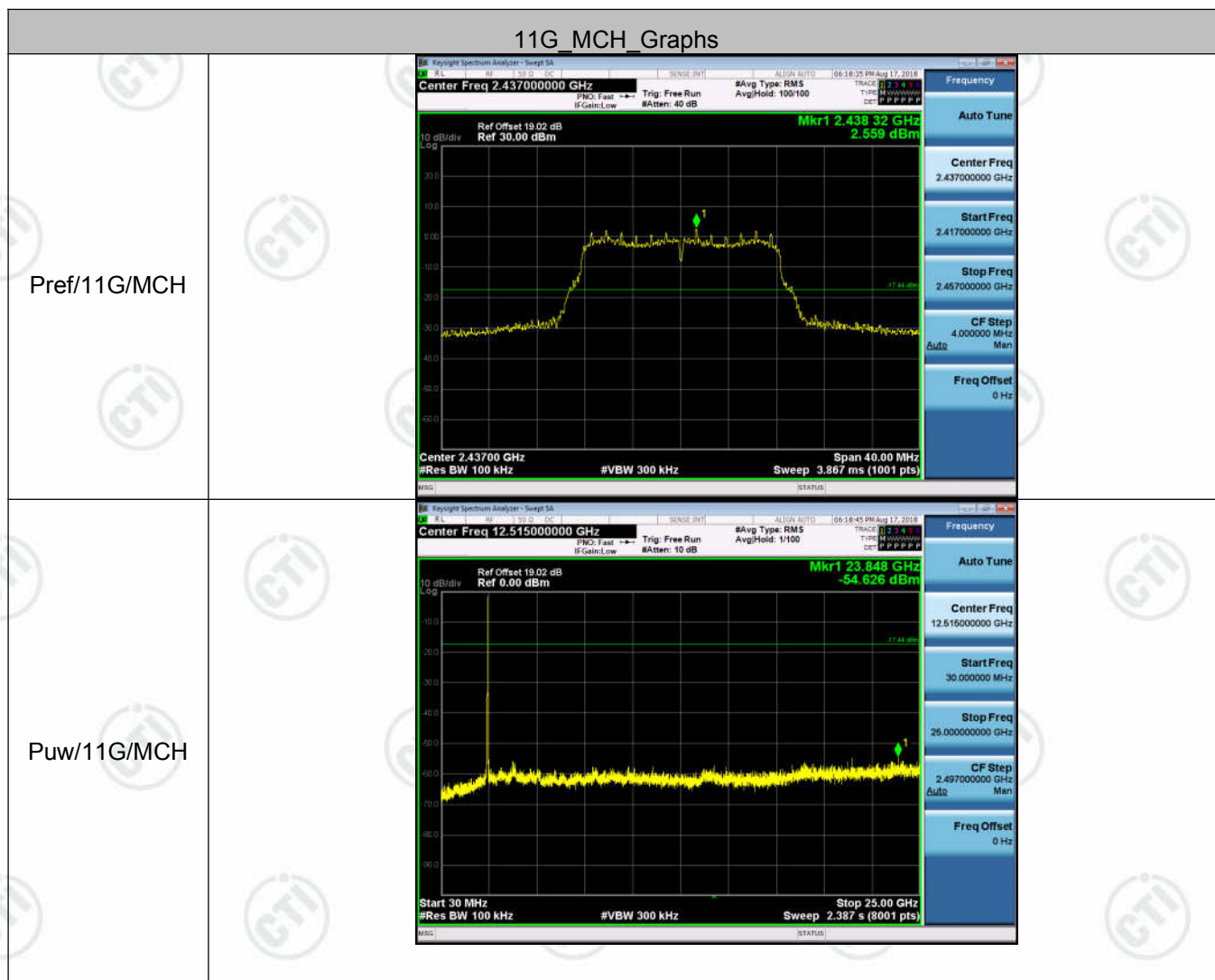
Test Graph

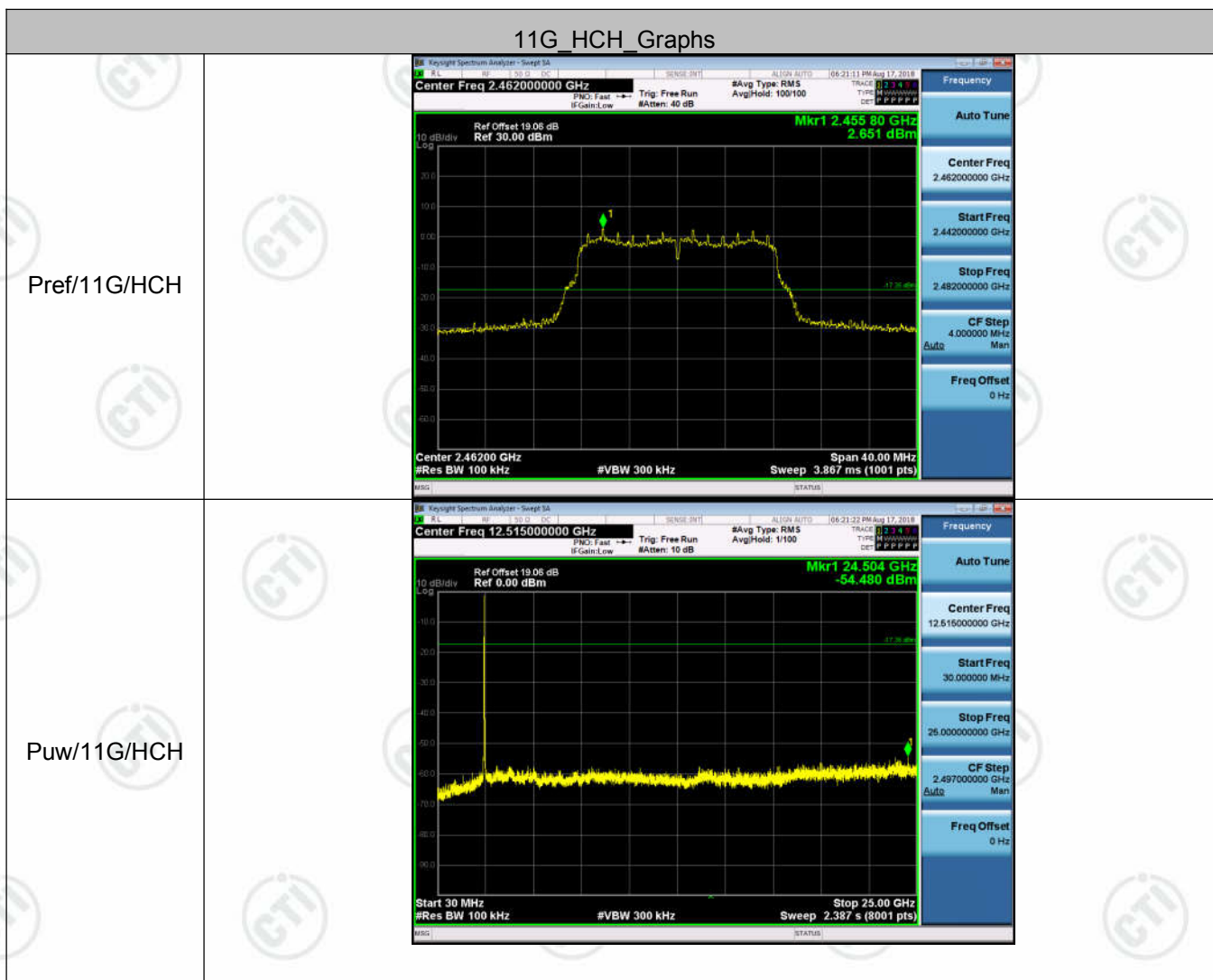


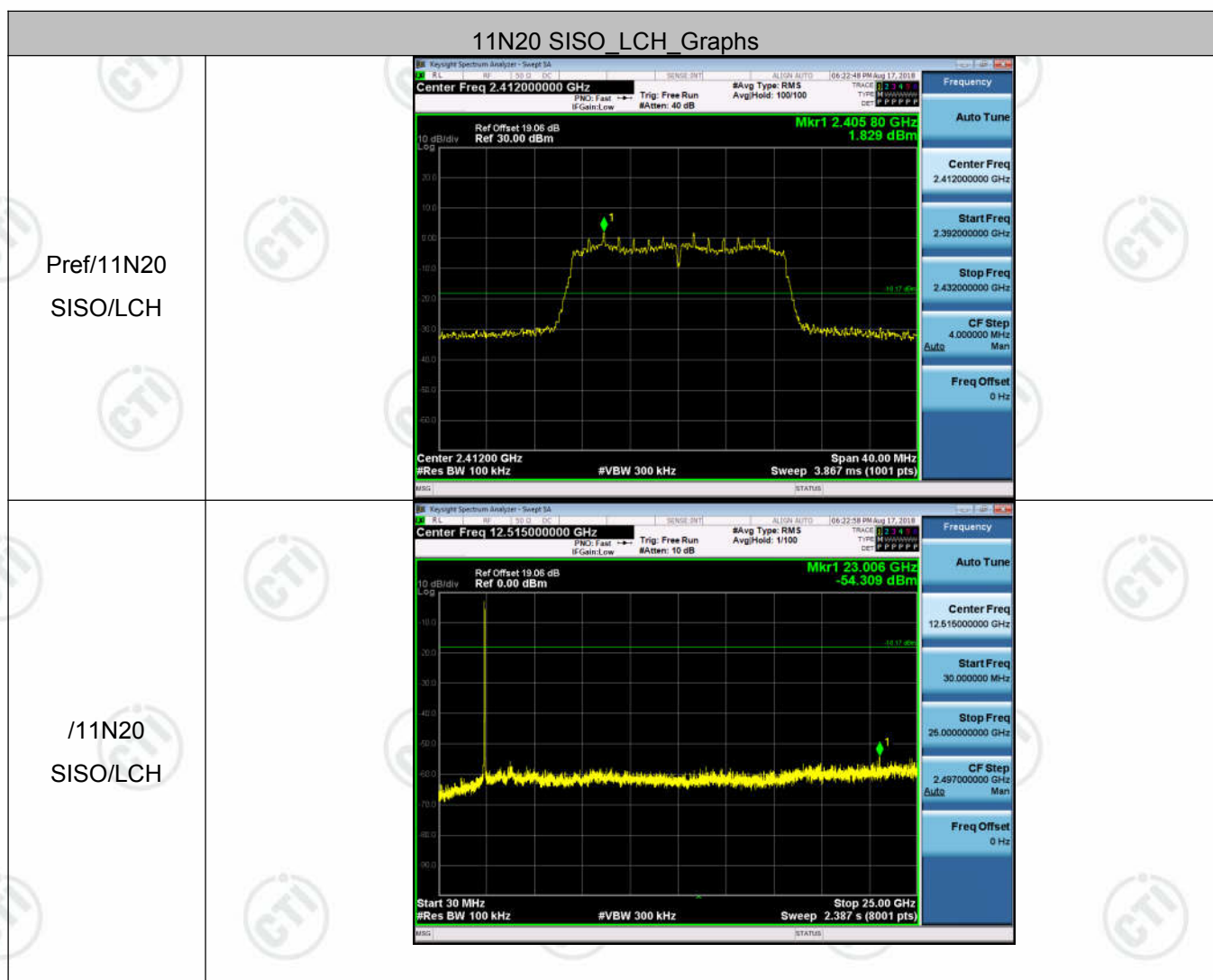






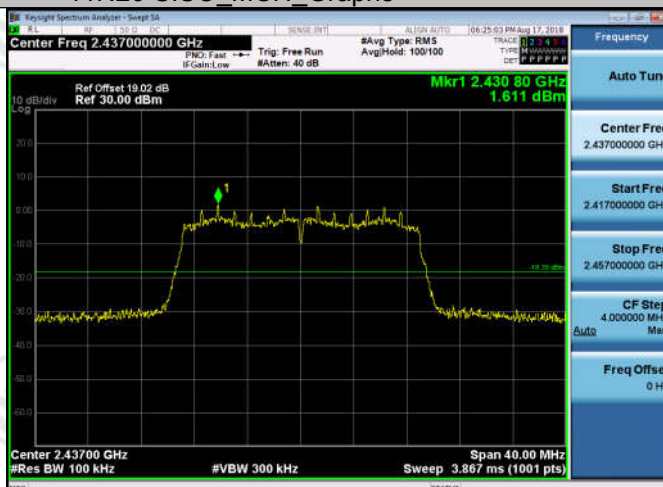




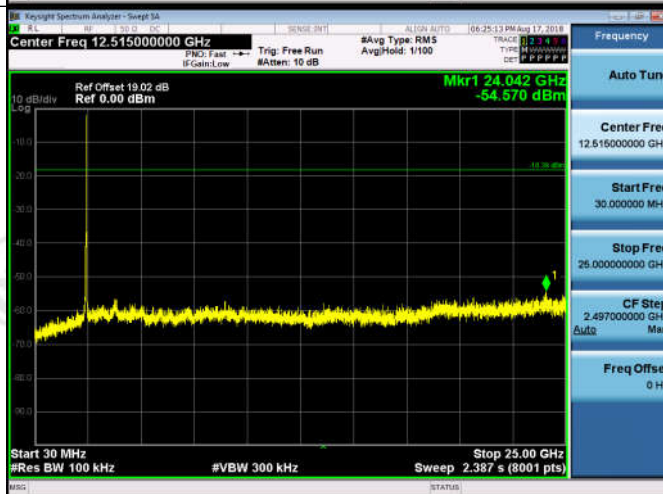


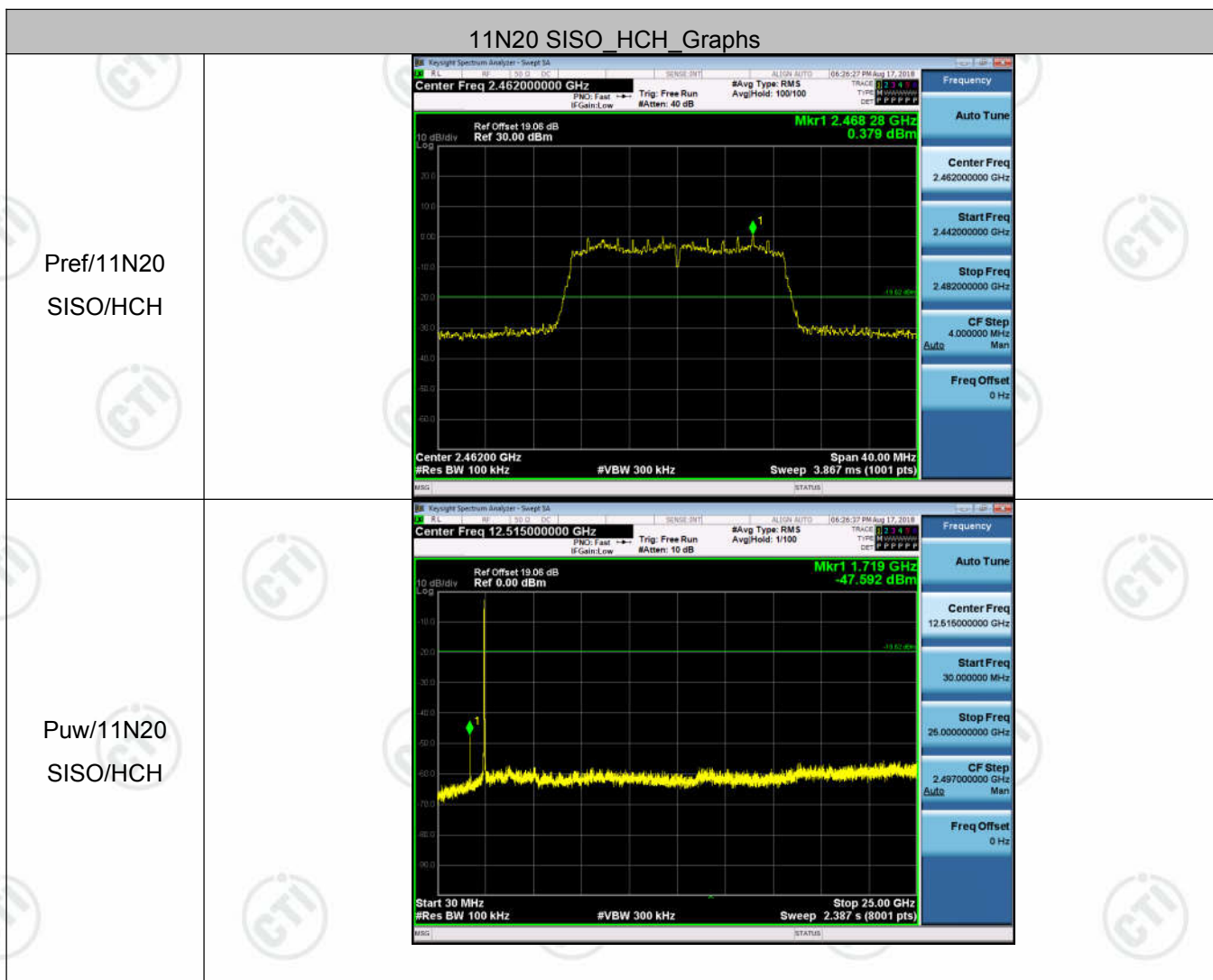
11N20 SISO_MCH_Graphs

Pref/11N20
SISO/MCH



Puw/11N20
SISO/MCH





Appendix E): Power Spectral Density

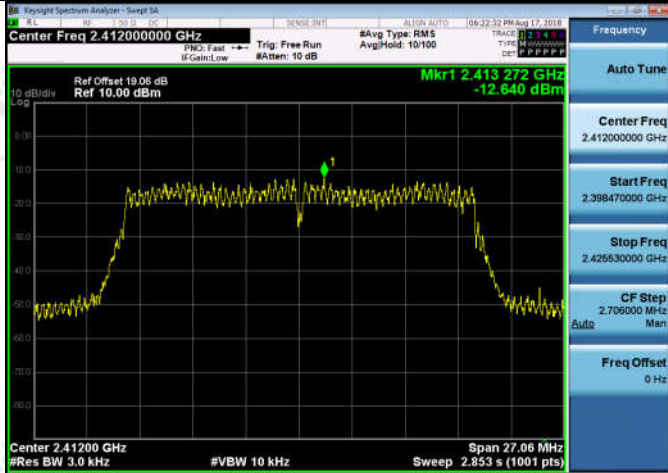
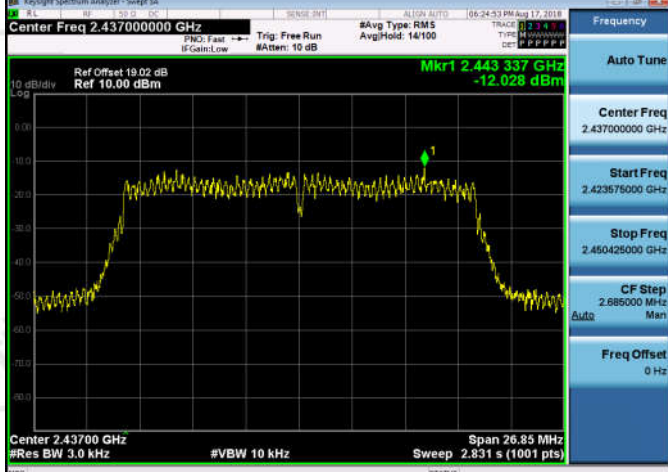
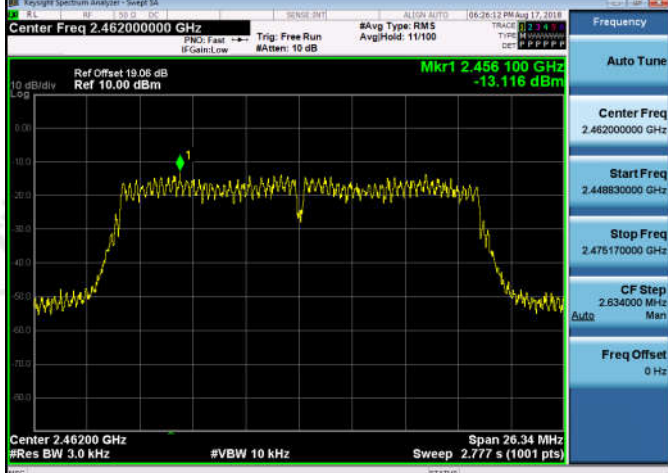
Result Table

Mode	Channel	Power Spectral Density [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	LCH	-8.521	8	PASS
11B	MCH	-8.962	8	PASS
11B	HCH	-8.623	8	PASS
11G	LCH	-11.206	8	PASS
11G	MCH	-11.133	8	PASS
11G	HCH	-11.658	8	PASS
11N20SISO	LCH	-12.640	8	PASS
11N20SISO	MCH	-12.028	8	PASS
11N20SISO	HCH	-13.116	8	PASS

Test Graph





11N20SISO/LCH	
11N20SISO/MCH	
11N20SISO/HCH	

Appendix F): Antenna Requirement

15.203 requirement:

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

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is Dipole Antenna and no consideration of replacement. The best case gain of the antenna is 2.0dBi



Appendix G): AC Power Line Conducted Emission

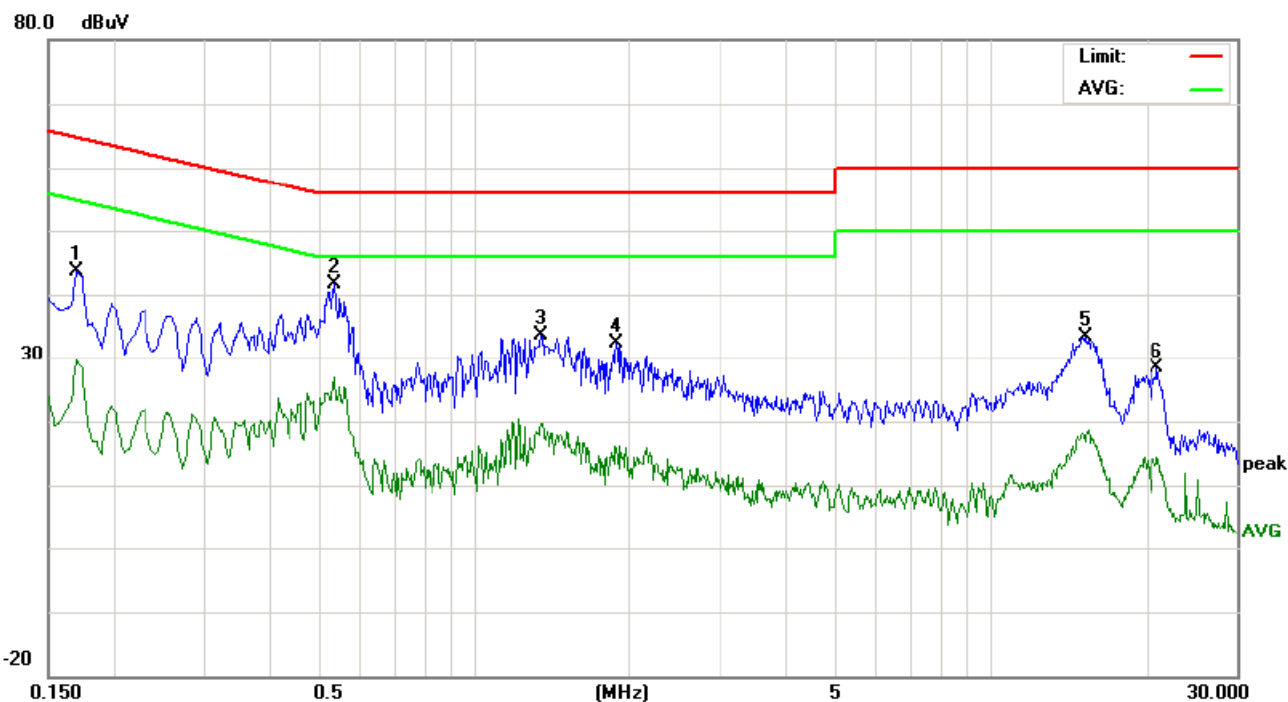
Test Procedure:	Test frequency range :150KHz-30MHz 1)The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3)The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.															
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr> <tr> <th>Quasi-peak</th><th>Average</th></tr> </thead> <tbody> <tr> <td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr> <tr> <td>0.5-5</td><td>56</td><td>46</td></tr> <tr> <td>5-30</td><td>60</td><td>50</td></tr> </tbody> </table> * The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. NOTE : The lower limit is applicable at the transition frequency		Frequency range (MHz)	Limit (dB μ V)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dB μ V)															
	Quasi-peak	Average														
0.15-0.5	66 to 56*	56 to 46*														
0.5-5	56	46														
5-30	60	50														

Measurement Data

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

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

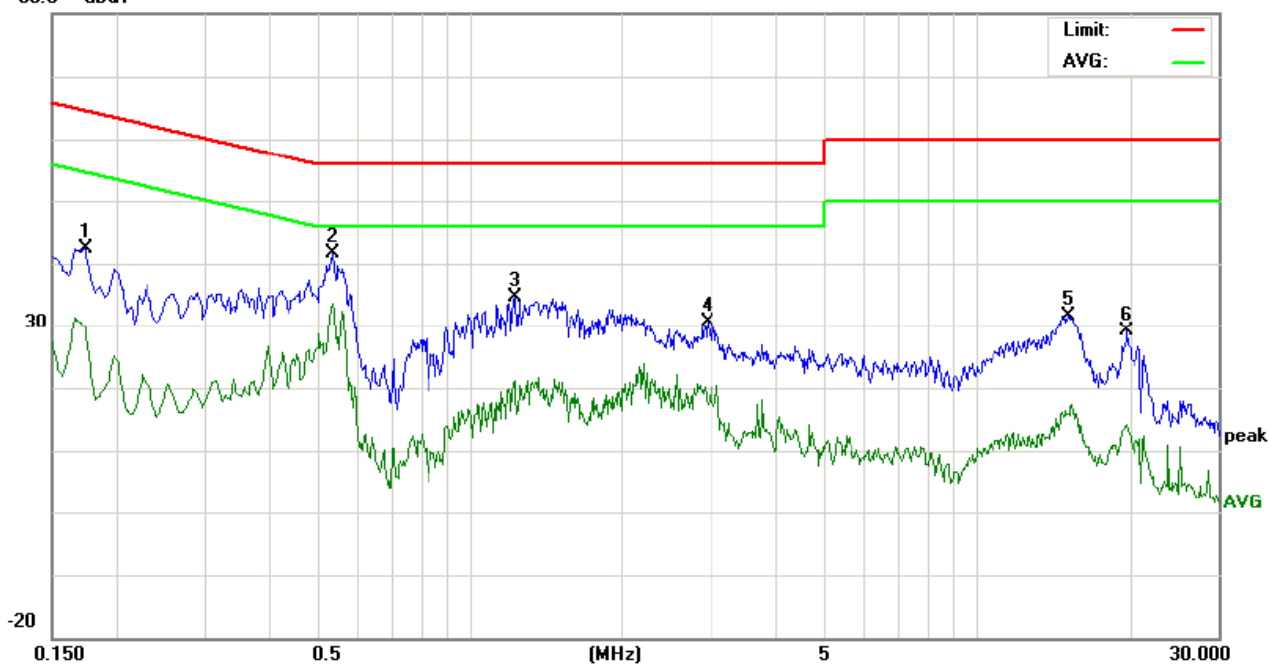
Live line:



No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1700	33.85	30.75	19.85	9.74	43.59	40.49	29.59	64.96	54.96	-24.47	-25.37	P	
2	0.5380	31.93	28.53	17.27	9.73	41.66	38.26	27.00	56.00	46.00	-17.74	-19.00	P	
3	1.3500	23.89	20.95	9.92	9.72	33.61	30.67	19.64	56.00	46.00	-25.33	-26.36	P	
4	1.8940	22.75	19.75	6.27	9.72	32.47	29.47	15.99	56.00	46.00	-26.53	-30.01	P	
5	15.3060	23.25	20.14	6.80	10.01	33.26	30.15	16.81	60.00	50.00	-29.85	-33.19	P	
6	21.1380	18.20	16.75	4.23	10.09	28.29	26.84	14.32	60.00	50.00	-33.16	-35.68	P	

Neutral line:

80.0 dBuV



No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1740	32.68	29.35	20.24	9.74	42.42	39.09	29.98	64.76	54.76	-25.67	-24.78	P	
2	0.5380	31.83	28.92	23.98	9.73	41.56	38.65	33.71	56.00	46.00	-17.35	-12.29	P	
3	1.2260	24.81	21.55	11.45	9.72	34.53	31.27	21.17	56.00	46.00	-24.73	-24.83	P	
4	2.9539	20.86	18.52	7.80	9.69	30.55	28.21	17.49	56.00	46.00	-27.79	-28.51	P	
5	15.2020	21.70	17.65	5.89	10.01	31.71	27.66	15.90	60.00	50.00	-32.34	-34.10	P	
6	19.7939	19.10	16.57	4.08	10.06	29.16	26.63	14.14	60.00	50.00	-33.37	-35.86	P	

Notes:

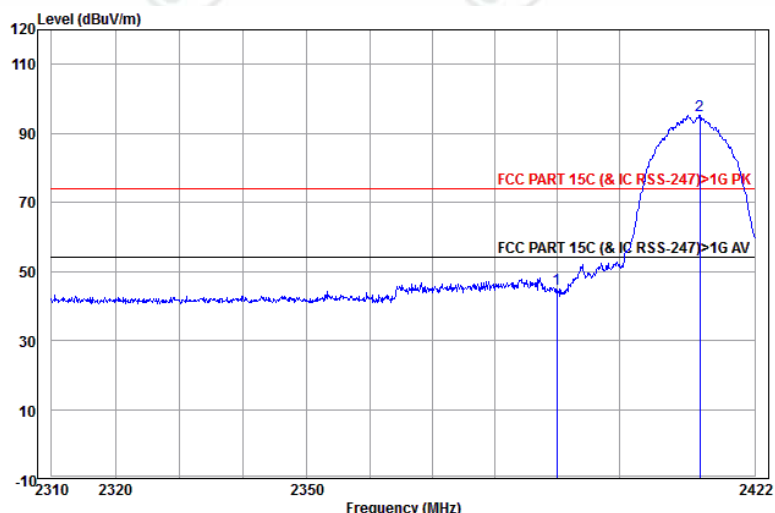
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

Appendix H): Restricted bands around fundamental frequency (Radiated)

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Test Procedure:	Below 1GHz test procedure as below: - The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. - The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. - The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. - For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading. - The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. - Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel Above 1GHz test procedure as below: - Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). - Test the EUT in the lowest channel , the Highest channel - The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. - Repeat above procedures until all frequencies measured was complete.				
Limit:	Frequency	Limit (dBμV/m @3m)		Remark	
	30MHz-88MHz	40.0		Quasi-peak Value	
	88MHz-216MHz	43.5		Quasi-peak Value	
	216MHz-960MHz	46.0		Quasi-peak Value	
	960MHz-1GHz	54.0		Quasi-peak Value	
	Above 1GHz	54.0		Average Value	
		74.0		Peak Value	

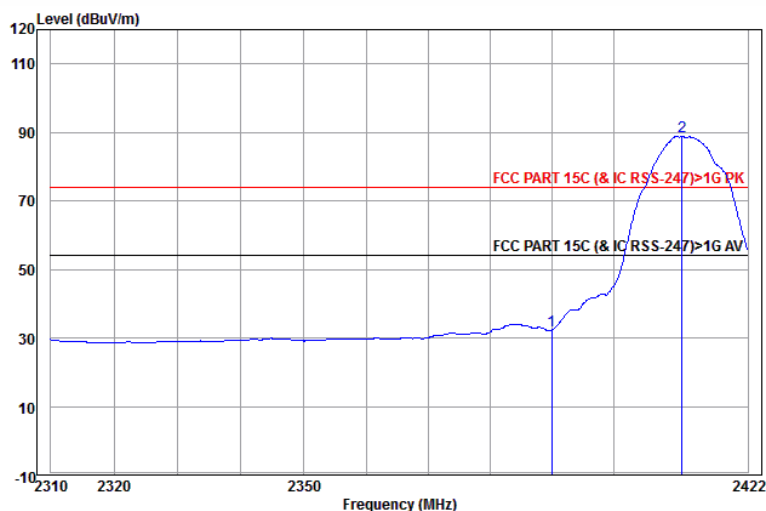
Test plot as follows:

Worse case mode:	802.11b (11Mbps)		
	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



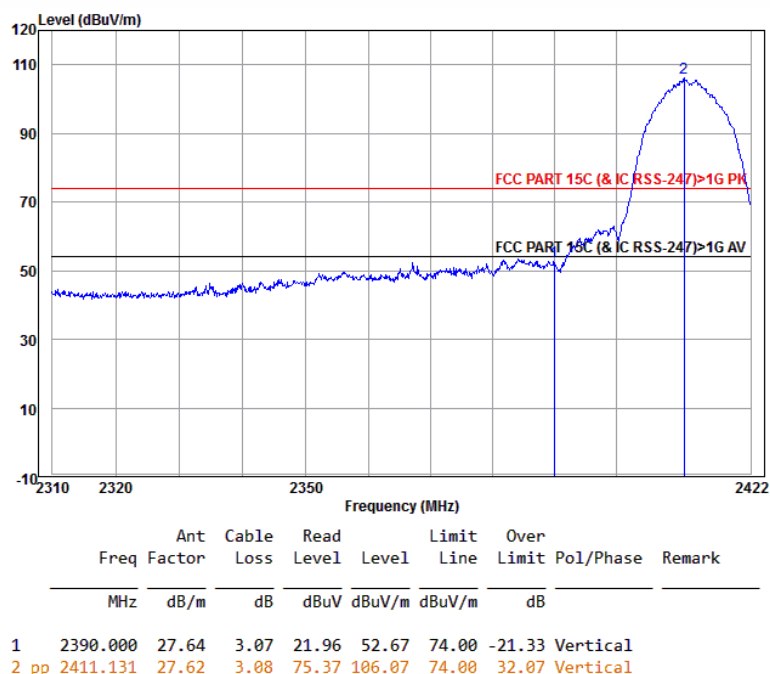
	Ant Freq	Cable Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz		dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	27.64	3.07	14.09	44.80	74.00	-29.20	Horizontal	
2 pp	2413.072	27.61	3.08	64.52	95.21	74.00	21.21	Horizontal	

Worse case mode:	802.11b (11Mbps)		
	Test channel: Lowest	Polarization: Horizontal	Remark: Average

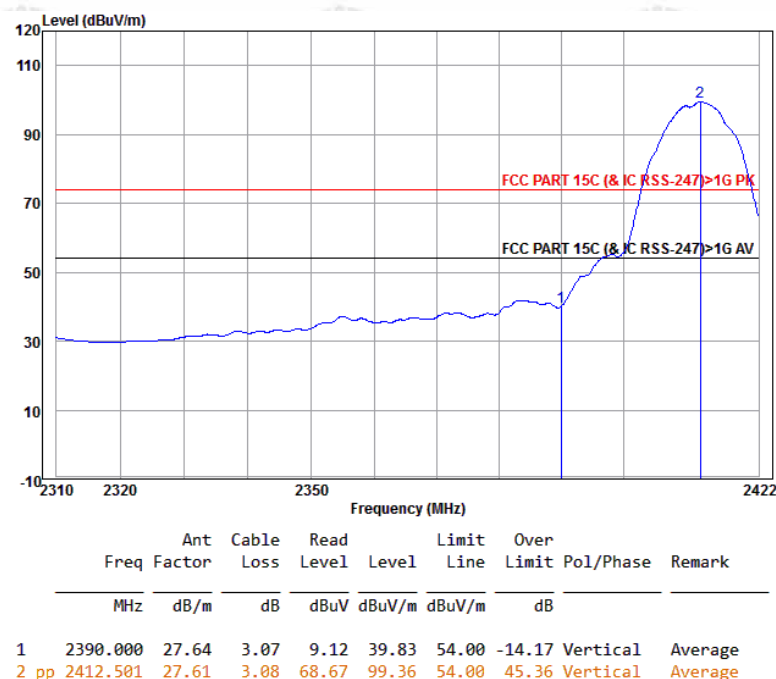


	Ant Freq	Cable Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz		dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	27.64	3.07	1.28	31.99	54.00	-22.01	Horizontal	Average
2 pp	2411.245	27.62	3.08	58.29	88.99	54.00	34.99	Horizontal	Average

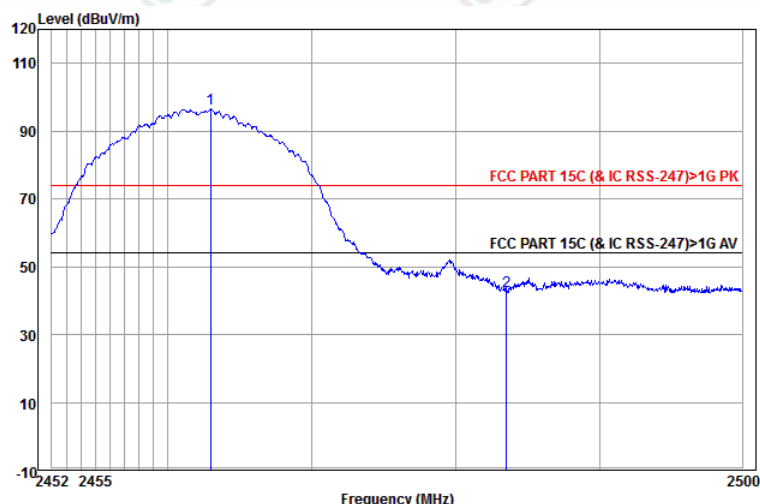
Worse case mode:	802.11b (11Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



Worse case mode:	802.11b (11Mbps)		
	Test channel: Lowest	Polarization: Vertical	Remark: Average

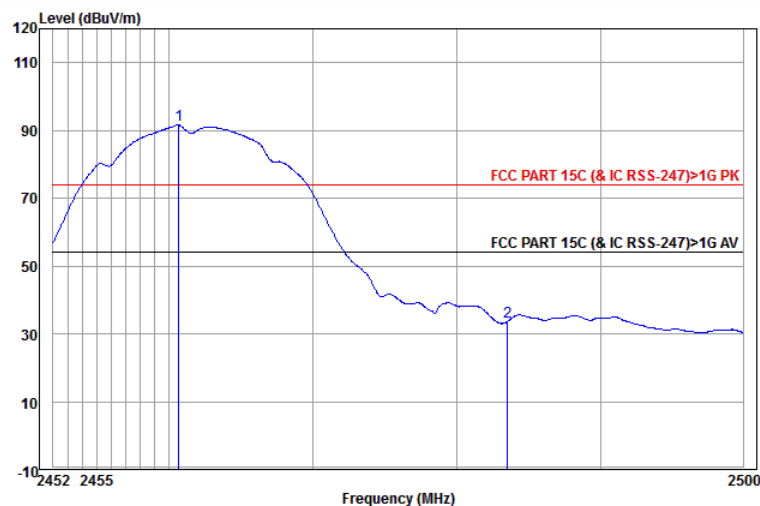


Worse case mode:	802.11b (11Mbps)		
	Test channel: Highest	Polarization: Horizontal	Remark: Peak



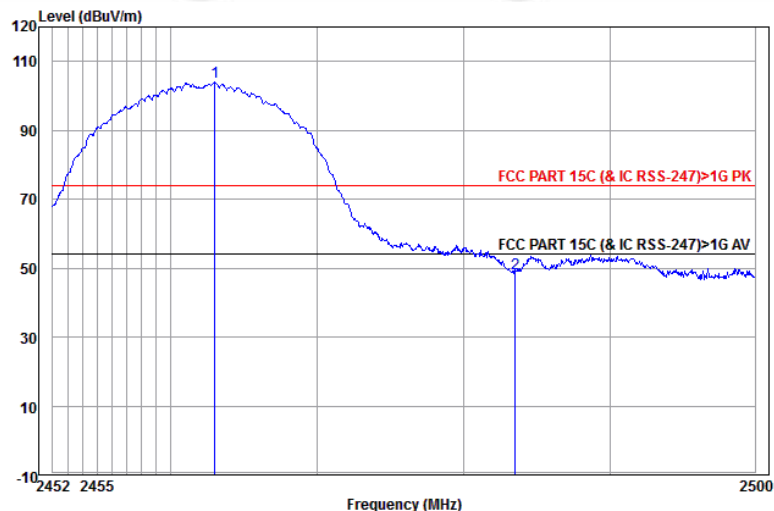
	Ant Freq	Cable Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2462.958	27.59	3.11	65.80	96.50	74.00	22.50	Horizontal	
2	2483.500	27.59	3.12	12.14	42.85	74.00	-31.15	Horizontal	

Worse case mode:	802.11b (11Mbps)		
	Test channel: Highest	Polarization: Horizontal	Remark: Average



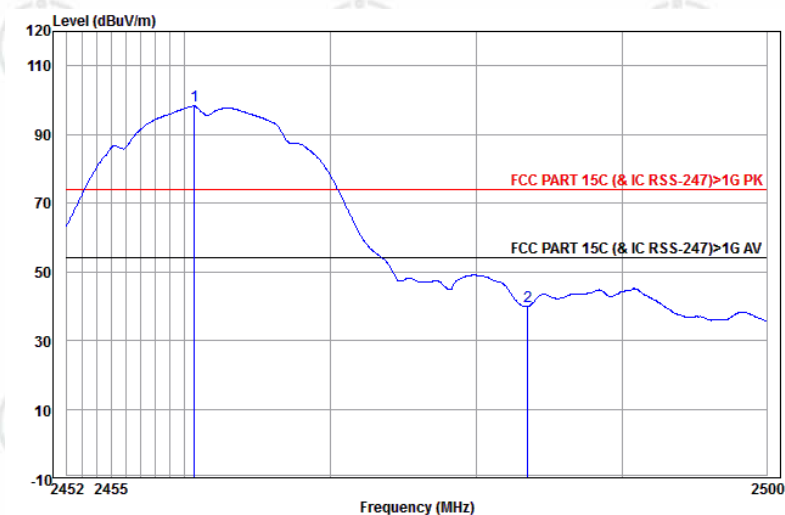
	Ant Freq	Cable Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2460.667	27.60	3.11	60.92	91.63	54.00	37.63	Horizontal	Average
2	2483.500	27.59	3.12	2.89	33.60	54.00	-20.40	Horizontal	Average

Worse case mode:	802.11b (11Mbps)		
	Test channel: Highest	Polarization: Vertical	Remark: Peak



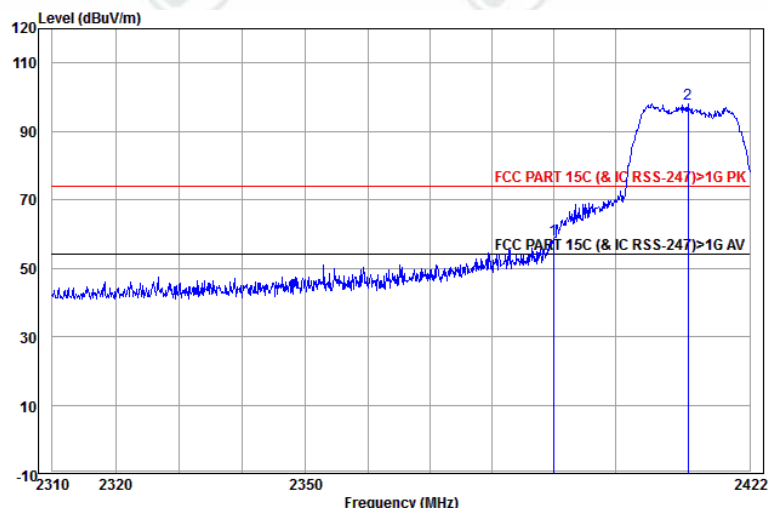
	Ant Freq	Cable Factor	Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz		dB	dBuV	dBuV/m	dBuV/m	dB		
1	2463.005	27.59	3.11	73.22	103.92	74.00	29.92	Vertical	
2	2483.500	27.59	3.12	17.73	48.44	74.00	-25.56	Vertical	

Worse case mode:	802.11b (11Mbps)		
	Test channel: Highest	Polarization: Vertical	Remark: Average



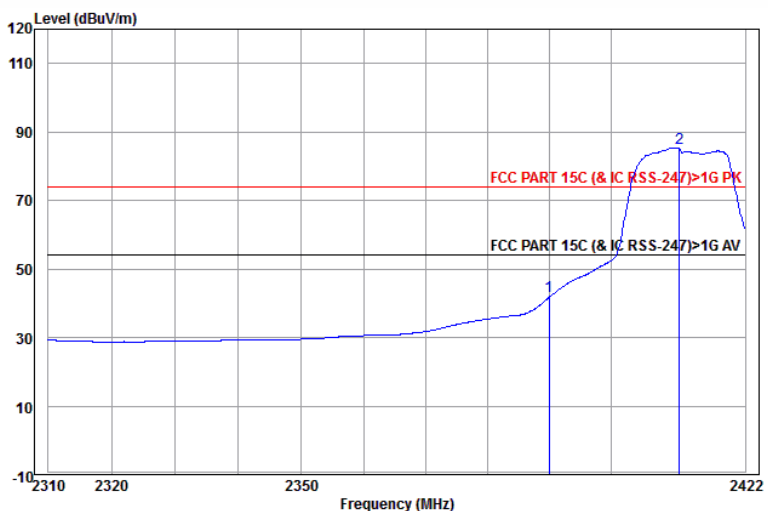
	Ant Freq	Cable Factor	Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz		dB	dBuV	dBuV/m	dBuV/m	dB		
1	2460.667	27.60	3.11	67.66	98.37	54.00	44.37	Vertical	Average
2	2483.500	27.59	3.12	9.14	39.85	54.00	-14.15	Vertical	Average

Worse case mode:	802.11g (6Mbps)		
	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



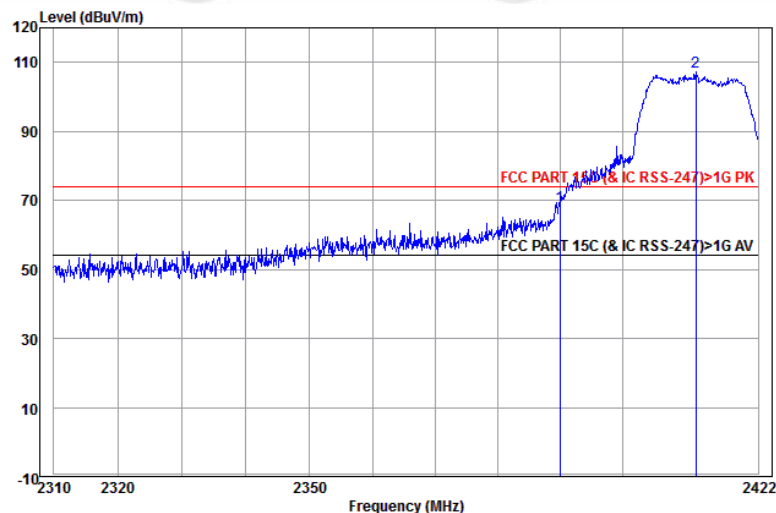
	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	27.64	3.07	27.61	58.32	74.00	-15.68	Horizontal	
2 pp	2411.930	27.62	3.08	67.30	98.00	74.00	24.00	Horizontal	

Worse case mode:	802.11g (6Mbps)		
	Test channel: Lowest	Polarization: Horizontal	Remark: Average



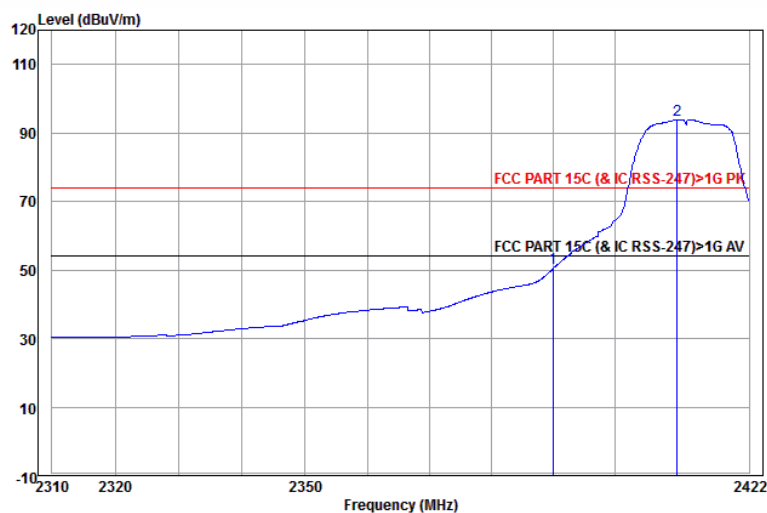
	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	27.64	3.07	11.20	41.91	54.00	-12.09	Horizontal	Average
2 pp	2411.245	27.62	3.08	54.75	85.45	54.00	31.45	Horizontal	Average

Worse case mode:	802.11g (6Mbps)		
	Test channel: Lowest	Polarization: Vertical	Remark: Peak



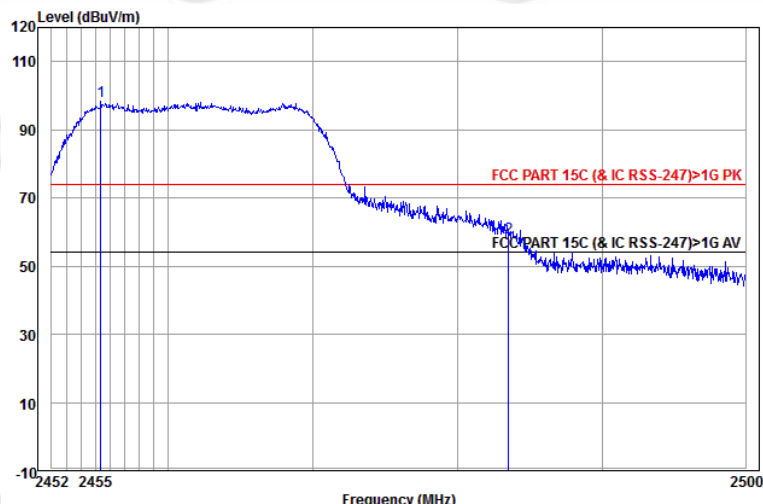
	Ant Freq	Cable Factor	Read Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	27.64	3.07	37.70	68.41	74.00	-5.59	Vertical	
2 pp	2411.930	27.62	3.08	76.41	107.11	74.00	33.11	Vertical	

Worse case mode:	802.11g (6Mbps)		
	Test channel: Lowest	Polarization: Vertical	Remark: Average



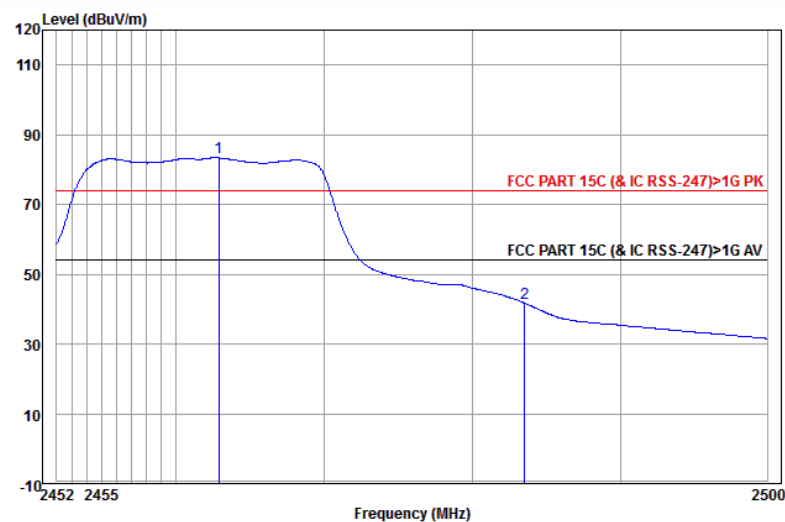
	Ant Freq	Cable Factor	Read Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	27.64	3.07	19.70	50.41	54.00	-3.59	Vertical	Average
2 pp	2410.218	27.62	3.08	63.24	93.94	54.00	39.94	Vertical	Average

Worse case mode:	802.11g (6Mbps)		
	Test channel: Highest	Polarization: Horizontal	Remark: Peak



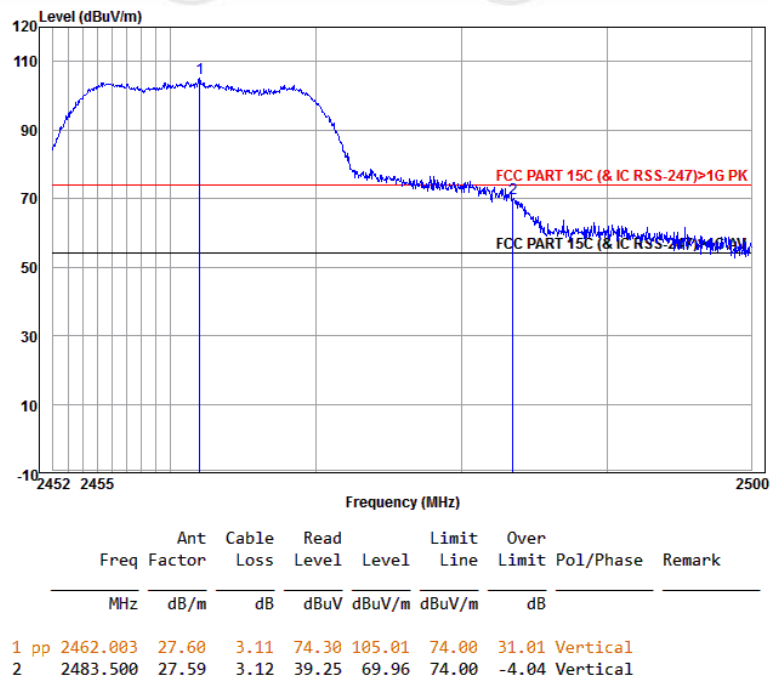
	Ant	Cable	Read	Limit	Over		
Freq	Factor	Loss	Level	Line	Limit	Pol/Phase	Remark
MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 2455.377	27.60	3.10	67.60	98.30	74.00	24.30	Horizontal
2 2483.500	27.59	3.12	27.76	58.47	74.00	-15.53	Horizontal

Worse case mode:	802.11g (6Mbps)		
	Test channel: Highest	Polarization: Horizontal	Remark: Average

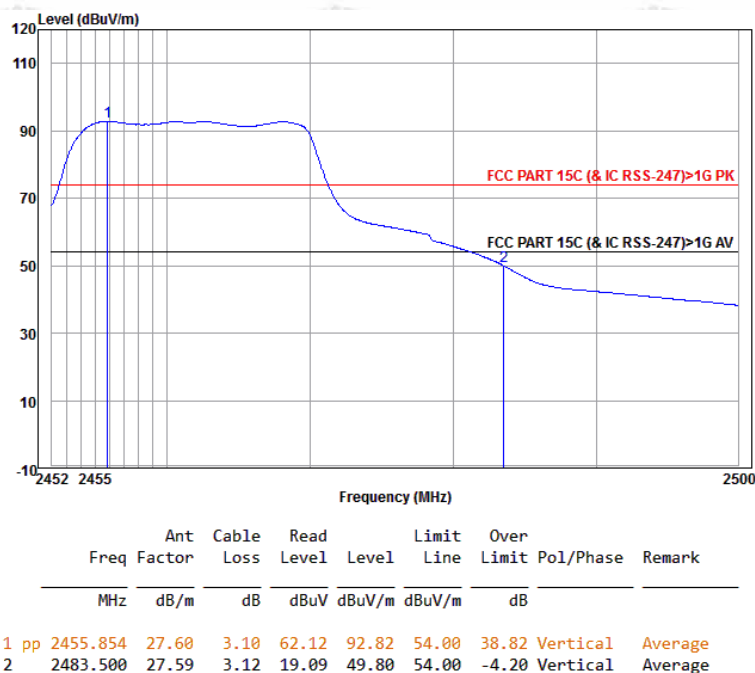


	Ant	Cable	Read	Limit	Over		
Freq	Factor	Loss	Level	Line	Limit	Pol/Phase	Remark
MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 2462.862	27.59	3.11	52.70	83.40	54.00	29.40	Horizontal Average
2 2483.500	27.59	3.12	10.91	41.62	54.00	-12.38	Horizontal Average

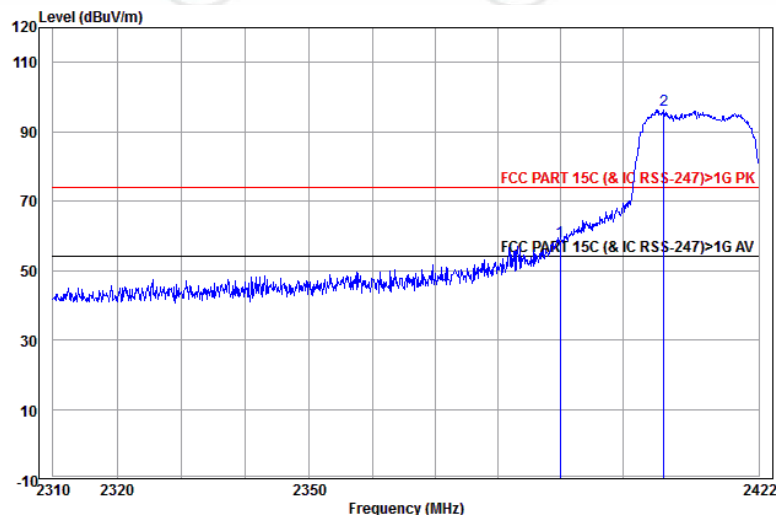
Worse case mode:	802.11g (6Mbps)		
	Test channel: Highest	Polarization: Vertical	Remark: Peak



Worse case mode:	802.11g (6Mbps)		
	Test channel: Highest	Polarization: Vertical	Remark: Average

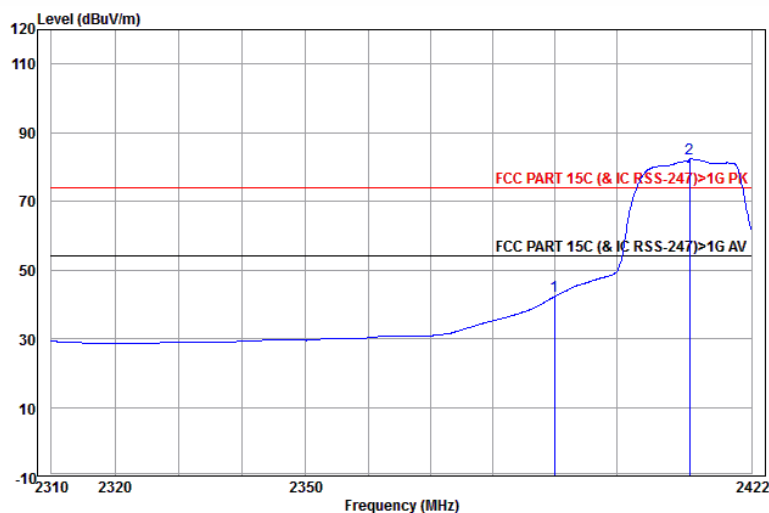


Worse case mode:	802.11n(HT20) (6.5Mbps)		
	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



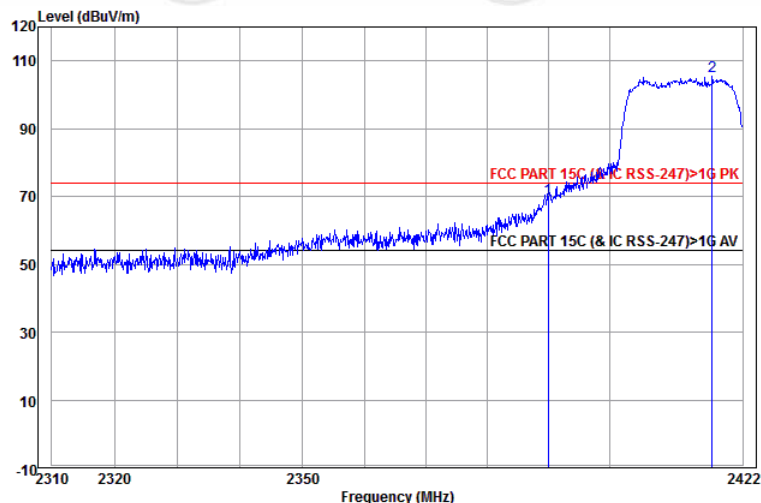
	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	27.64	3.07	27.58	58.29	74.00	-15.71	Horizontal	
2 pp	2406.683	27.62	3.08	65.71	96.41	74.00	22.41	Horizontal	

Worse case mode:	802.11n(HT20) (6.5Mbps)		
	Test channel: Lowest	Polarization: Horizontal	Remark: Average



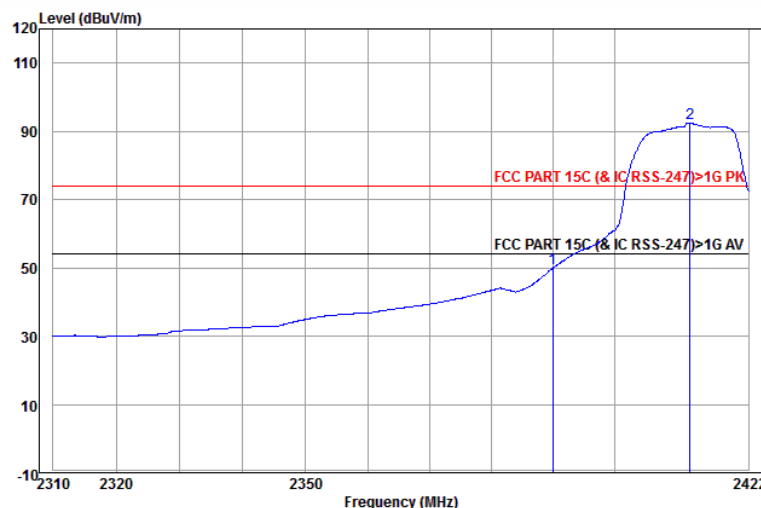
	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	27.64	3.07	11.81	42.52	54.00	-11.48	Horizontal	Average
2 pp	2411.930	27.62	3.08	51.61	82.31	54.00	28.31	Horizontal	Average

Worse case mode:	802.11n(HT20) (6.5Mbps)		
	Test channel: Lowest	Polarization: Vertical	Remark: Peak



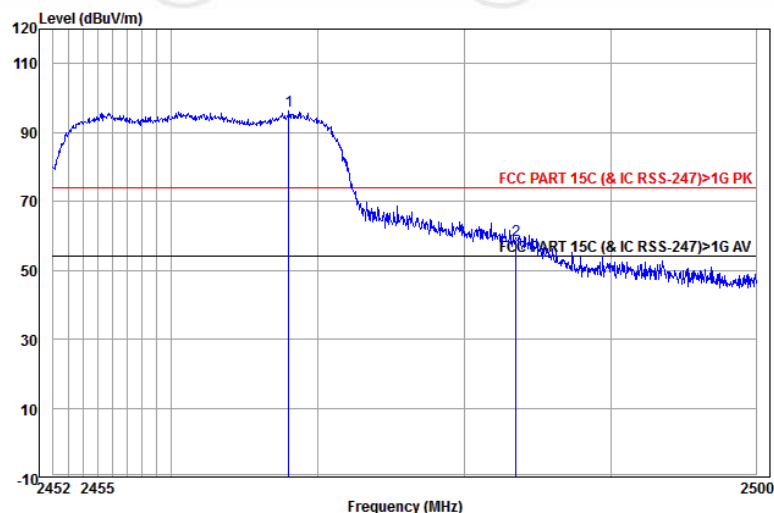
	Ant Freq	Cable Factor	Read Loss	Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	27.64	3.07	38.47	69.18	74.00	-4.82	Vertical	
2 pp	2416.960	27.61	3.08	74.71	105.40	74.00	31.40	Vertical	

Worse case mode:	802.11n(HT20) (6.5Mbps)		
	Test channel: Lowest	Polarization: Vertical	Remark: Average



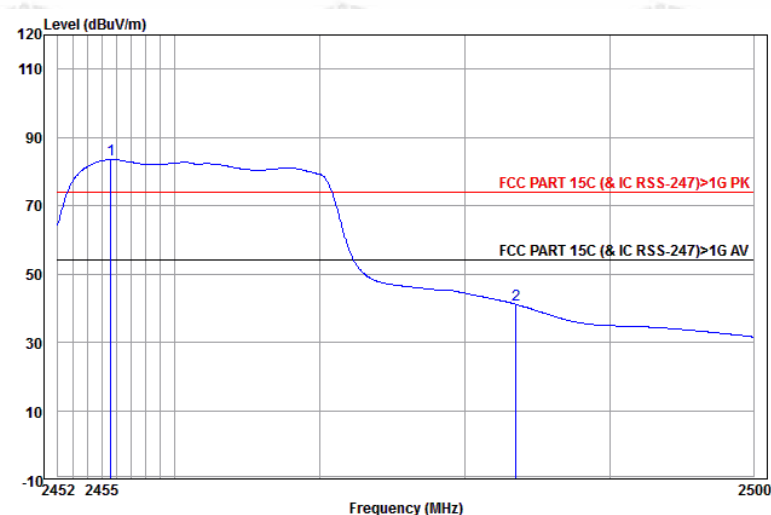
	Ant Freq	Cable Factor	Read Loss	Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	27.64	3.07	19.27	49.98	54.00	-4.02	Vertical	Average
2 pp	2412.387	27.61	3.08	61.70	92.39	54.00	38.39	Vertical	Average

Worse case mode:	802.11n(HT20) (6.5Mbps)		
	Test channel: Highest	Polarization: Horizontal	Remark: Peak



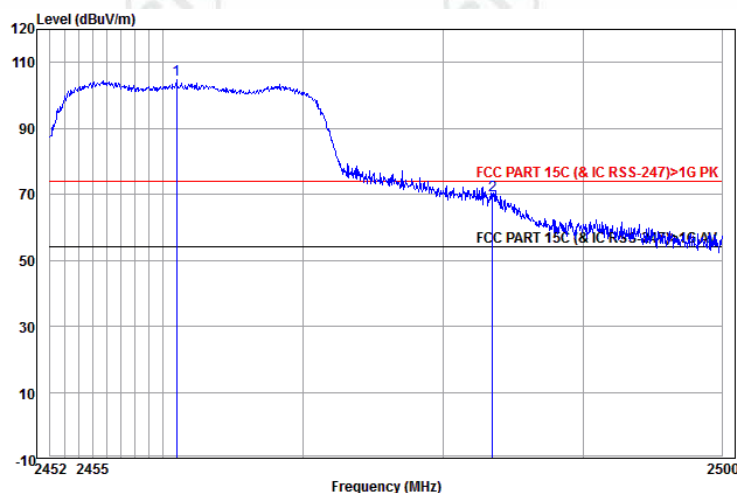
	Ant Freq	Cable Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz		dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2467.977	27.59	3.11	65.50	96.20	74.00	22.20	Horizontal	
2	2483.500	27.59	3.12	28.13	58.84	74.00	-15.16	Horizontal	

Worse case mode: Frequency: 2483.5MHz	802.11n(HT20) (6.5Mbps)		
	Test channel: Highest	Polarization: Horizontal	Remark: Average



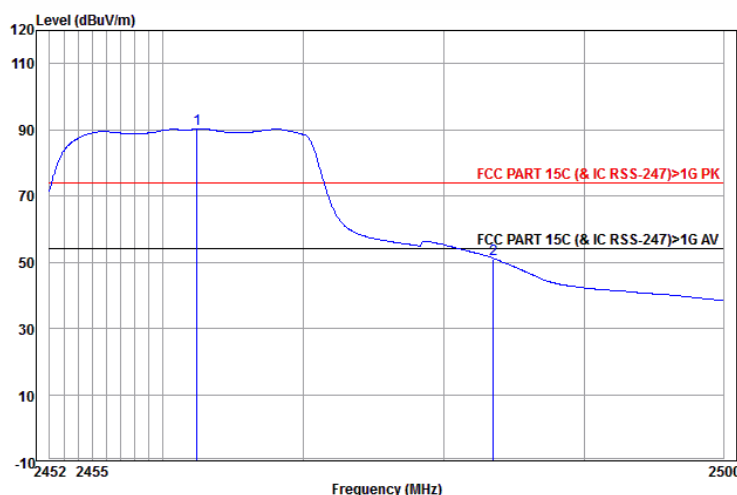
	Ant Freq	Cable Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz		dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2455.615	27.60	3.10	52.83	83.53	54.00	29.53	Horizontal	Average
2	2483.500	27.59	3.12	10.37	41.08	54.00	-12.92	Horizontal	Average

Worse case mode:	802.11n(HT20) (6.5Mbps)		
	Test channel: Highest	Polarization: Vertical	Remark: Peak



	Ant Freq	Cable Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2460.953	27.60	3.11	73.97	104.68	74.00	30.68	Vertical
2	2483.500	27.59	3.12	39.11	69.82	74.00	-4.18	Vertical

Worse case mode:	802.11n(HT20) (6.5Mbps)		
	Test channel: Highest	Polarization: Vertical	Remark: Average



	Ant Freq	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2462.433	27.59	3.11	59.59	90.29	54.00	36.29	Vertical Average
2	2483.500	27.59	3.12	20.05	50.76	54.00	-3.24	Vertical Average

Note:

1) Through Pre-scan transmitting mode and charge+transmitter mode with all kind of modulation and data rate, find the 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20) ; and then Only the worst case is recorded in the report.

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

Final Test Level =Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor- Antenna Factor-Cable Factor

Appendix I): Radiated Spurious Emissions

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Test Procedure:					
Below 1GHz test procedure as below:					
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.					
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.					
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.					
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.					
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.					
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.					
Above 1GHz test procedure as below:					
g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter)..					
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel					
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.					
j. Repeat above procedures until all frequencies measured was complete.					
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBµV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				

Radiated Spurious Emissions test Data:

Radiated Emission below 1GHz

WiFi 802.11b

NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	51.7323	12.92	0.81	-32.10	41.87	23.50	40.00	16.50	Pass	V
2	92.0924	9.73	1.11	-32.08	44.28	23.04	43.50	20.46	Pass	V
3	208.9038	11.13	1.71	-31.94	43.74	24.64	43.50	18.86	Pass	V
4	375.0010	14.85	2.31	-31.88	39.73	25.01	46.00	20.99	Pass	V
5	666.2533	19.53	3.08	-32.06	43.48	34.03	46.00	11.97	Pass	V
6	742.5105	20.27	3.26	-32.11	40.58	32.00	46.00	14.00	Pass	V
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	68.8078	9.31	0.94	-32.05	46.57	24.77	40.00	15.23	Pass	H
2	182.9026	9.28	1.59	-31.99	46.73	25.61	43.50	17.89	Pass	H
3	375.0010	14.85	2.31	-31.88	39.66	24.94	46.00	21.06	Pass	H
4	499.9620	17.00	2.67	-31.91	39.84	27.60	46.00	18.40	Pass	H
5	666.2533	19.53	3.08	-32.06	41.09	31.64	46.00	14.36	Pass	H
6	742.5105	20.27	3.26	-32.11	38.93	30.35	46.00	15.65	Pass	H

WiFi 802.11g

NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	74.2408	8.19	1.00	-32.05	47.20	24.34	40.00	15.66	Pass	V
2	120.0340	9.19	1.30	-32.06	43.58	22.01	43.50	21.49	Pass	V
3	208.9038	11.13	1.71	-31.94	44.01	24.91	43.50	18.59	Pass	V
4	499.9620	17.00	2.67	-31.91	42.64	30.40	46.00	15.60	Pass	V
5	665.6711	19.53	3.08	-32.06	42.08	32.63	46.00	13.37	Pass	V
6	742.5105	20.27	3.26	-32.11	41.15	32.57	46.00	13.43	Pass	V

NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	72.4945	8.53	0.98	-32.06	47.29	24.74	40.00	15.26	Pass	H
2	120.0340	9.19	1.30	-32.06	46.02	24.45	43.50	19.05	Pass	H
3	183.2907	9.31	1.59	-31.98	46.94	25.86	43.50	17.64	Pass	H
4	375.0010	14.85	2.31	-31.88	39.45	24.73	46.00	21.27	Pass	H
5	499.9620	17.00	2.67	-31.91	40.38	28.14	46.00	17.86	Pass	H
6	742.5105	20.27	3.26	-32.11	40.57	31.99	46.00	14.01	Pass	H

WiFi 802.11n(HT20)

NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	52.5085	12.80	0.82	-32.10	43.57	25.09	40.00	14.91	Pass	V
2	208.9038	11.13	1.71	-31.94	42.11	23.01	43.50	20.49	Pass	V
3	499.9620	17.00	2.67	-31.91	42.77	30.53	46.00	15.47	Pass	V
4	674.4029	19.60	3.10	-32.09	40.14	30.75	46.00	15.25	Pass	V
5	742.5105	20.27	3.26	-32.11	40.17	31.59	46.00	14.41	Pass	V
6	897.7415	22.07	3.60	-31.59	41.64	35.72	46.00	10.28	Pass	V

NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	86.2713	8.54	1.07	-32.08	45.86	23.39	40.00	16.61	Pass	H
2	185.0370	9.48	1.60	-31.99	46.46	25.55	43.50	17.95	Pass	H
3	375.0010	14.85	2.31	-31.88	42.28	27.56	46.00	18.44	Pass	H
4	499.9620	17.00	2.67	-31.91	43.46	31.22	46.00	14.78	Pass	H
5	665.6711	19.53	3.08	-32.06	42.42	32.97	46.00	13.03	Pass	H
6	742.5105	20.27	3.26	-32.11	39.06	30.48	46.00	15.52	Pass	H

Transmitter Emission above 1GHz

WiFi 802.11b				Test channel: Lowest			Remark: Peak			
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	3286.6787	33.31	4.55	-36.80	46.56	47.62	74.00	26.38	Pass	H
2	4824.0000	34.50	4.61	-36.11	40.48	43.48	74.00	30.52	Pass	H
3	5902.8653	35.64	5.07	-36.23	43.70	48.18	74.00	25.82	Pass	H
4	7236.0000	36.34	5.79	-36.44	40.62	46.31	74.00	27.69	Pass	H
5	8429.3429	36.57	6.37	-36.35	43.87	50.46	74.00	23.54	Pass	H
6	9648.0000	37.66	6.72	-36.92	41.93	49.39	74.00	24.61	Pass	H
7	1748.1496	30.04	3.23	-36.79	49.10	45.58	74.00	28.42	Pass	V
8	4824.0000	34.50	4.61	-36.11	40.74	43.74	74.00	30.26	Pass	V
9	5844.3594	35.55	5.07	-36.01	43.41	48.02	74.00	25.98	Pass	V
10	7236.0000	36.34	5.79	-36.44	42.19	47.88	74.00	26.12	Pass	V
11	7714.5965	36.51	6.25	-36.41	43.59	49.94	74.00	24.06	Pass	V
12	9648.0000	37.66	6.72	-36.92	41.99	49.45	74.00	24.55	Pass	V

WiFi 802.11b				Test channel: Middle			Remark: Peak			
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	4441.1941	34.42	4.78	-36.20	43.51	46.51	74.00	27.49	Pass	H
2	4874.0000	34.50	4.78	-36.09	40.47	43.66	74.00	30.34	Pass	H
3	7311.0000	36.41	5.85	-36.31	39.96	45.91	74.00	28.09	Pass	H
4	7720.4470	36.51	6.25	-36.43	43.10	49.43	74.00	24.57	Pass	H
5	8422.5173	36.57	6.36	-36.33	43.64	50.24	74.00	23.76	Pass	H
6	9748.0000	37.70	6.77	-36.79	42.90	50.58	74.00	23.42	Pass	H
7	2689.9380	32.70	4.11	-36.70	47.63	47.74	74.00	26.26	Pass	V
8	4301.7552	34.22	4.40	-36.13	43.92	46.41	74.00	27.59	Pass	V
9	4874.0000	34.50	4.78	-36.09	40.53	43.72	74.00	30.28	Pass	V
10	6343.6094	35.87	5.46	-36.14	42.29	47.48	74.00	26.52	Pass	V
11	7311.0000	36.41	5.85	-36.31	40.96	46.91	74.00	27.09	Pass	V
12	9748.0000	37.70	6.77	-36.79	42.07	49.75	74.00	24.25	Pass	V

WiFi 802.11b				Test channel: Highest			Remark: Peak			
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	3196.9697	33.28	4.65	-36.71	46.28	47.50	74.00	26.50	Pass	H
2	4924.0000	34.50	4.85	-36.17	41.30	44.48	74.00	29.52	Pass	H
3	5708.8209	35.33	5.01	-36.12	43.86	48.08	74.00	25.92	Pass	H
4	7386.0000	36.49	5.85	-36.34	40.33	46.33	74.00	27.67	Pass	H
5	8442.0192	36.58	6.39	-36.40	43.79	50.36	74.00	23.64	Pass	H
6	9848.0000	37.74	6.83	-36.93	42.92	50.56	74.00	23.44	Pass	H
7	2800.7602	32.88	4.24	-36.89	47.65	47.88	74.00	26.12	Pass	V
8	4924.0000	34.50	4.85	-36.17	40.91	44.09	74.00	29.91	Pass	V
9	6340.6841	35.87	5.46	-36.15	42.84	48.02	74.00	25.98	Pass	V
10	7386.0000	36.49	5.85	-36.34	40.07	46.07	74.00	27.93	Pass	V
11	8380.5881	36.55	6.27	-36.43	44.02	50.41	74.00	23.59	Pass	V
12	9848.0000	37.74	6.83	-36.93	40.71	48.35	74.00	25.65	Pass	V

WiFi 802.11g				Test channel: Lowest			Remark: Peak			
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	1997.7996	31.69	3.47	-36.74	47.78	46.20	74.00	27.80	Pass	H
2	3921.4671	33.74	4.34	-36.06	44.96	46.98	74.00	27.02	Pass	H
3	4824.0000	34.50	4.61	-36.11	40.19	43.19	74.00	30.81	Pass	H
4	7236.0000	36.34	5.79	-36.44	39.98	45.67	74.00	28.33	Pass	H
5	8418.6169	36.57	6.36	-36.33	44.20	50.80	74.00	23.20	Pass	H
6	9648.0000	37.66	6.72	-36.92	42.75	50.21	74.00	23.79	Pass	H
7	3167.7168	33.27	4.60	-36.87	46.05	47.05	74.00	26.95	Pass	V
8	4382.6883	34.34	4.54	-36.23	44.38	47.03	74.00	26.97	Pass	V
9	4824.0000	34.50	4.61	-36.11	41.91	44.91	74.00	29.09	Pass	V
10	7236.0000	36.34	5.79	-36.44	40.66	46.35	74.00	27.65	Pass	V
11	8251.8752	36.50	6.21	-36.61	43.88	49.98	74.00	24.02	Pass	V
12	9648.0000	37.66	6.72	-36.92	43.36	50.82	74.00	23.18	Pass	V

WiFi 802.11g				Test channel: Middle			Remark: Peak			
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	3373.4623	33.35	4.54	-36.68	46.44	47.65	74.00	26.35	Pass	H
2	4874.0000	34.50	4.78	-36.09	40.48	43.67	74.00	30.33	Pass	H
3	5717.5968	35.35	4.99	-36.12	43.90	48.12	74.00	25.88	Pass	H
4	6325.0825	35.87	5.46	-36.18	42.88	48.03	74.00	25.97	Pass	H
5	7311.0000	36.41	5.85	-36.31	40.56	46.51	74.00	27.49	Pass	H
6	9748.0000	37.70	6.77	-36.79	41.83	49.51	74.00	24.49	Pass	H
7	1749.3499	30.05	3.23	-36.79	50.16	46.65	74.00	27.35	Pass	V
8	4874.0000	34.50	4.78	-36.09	39.91	43.10	74.00	30.90	Pass	V
9	5568.4068	35.11	5.13	-36.07	43.34	47.51	74.00	26.49	Pass	V
10	7311.0000	36.41	5.85	-36.31	40.96	46.91	74.00	27.09	Pass	V
11	8422.5173	36.57	6.36	-36.33	44.18	50.78	74.00	23.22	Pass	V
12	9748.0000	37.70	6.77	-36.79	42.81	50.49	74.00	23.51	Pass	V

WiFi 802.11g				Test channel: Highest			Remark: Peak			
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	3330.5581	33.33	4.54	-36.74	47.75	48.88	74.00	25.12	Pass	H
2	4924.0000	34.50	4.85	-36.17	40.68	43.86	74.00	30.14	Pass	H
3	6364.0864	35.87	5.42	-36.19	43.41	48.51	74.00	25.49	Pass	H
4	7386.0000	36.49	5.85	-36.34	40.09	46.09	74.00	27.91	Pass	H
5	8404.9655	36.56	6.34	-36.28	43.43	50.05	74.00	23.95	Pass	H
6	9848.0000	37.74	6.83	-36.93	42.26	49.90	74.00	24.10	Pass	H
7	3096.5347	33.24	4.73	-36.82	47.03	48.18	74.00	25.82	Pass	V
8	4924.0000	34.50	4.85	-36.17	40.18	43.36	74.00	30.64	Pass	V
9	5542.0792	35.07	5.16	-36.06	43.47	47.64	74.00	26.36	Pass	V
10	7386.0000	36.49	5.85	-36.34	40.67	46.67	74.00	27.33	Pass	V
11	8427.3927	36.57	6.37	-36.35	44.26	50.85	74.00	23.15	Pass	V
12	9848.0000	37.74	6.83	-36.93	41.04	48.68	74.00	25.32	Pass	V

WiFi 802.11n(HT20)				Test channel: Lowest			Remark: Peak			
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	3023.4023	33.21	4.88	-36.79	46.22	47.52	74.00	26.48	Pass	H
2	4824.0000	34.50	4.61	-36.11	41.17	44.17	74.00	29.83	Pass	H
3	6395.2895	35.88	5.32	-36.32	43.64	48.52	74.00	25.48	Pass	H
4	7236.0000	36.34	5.79	-36.44	40.87	46.56	74.00	27.44	Pass	H
5	8442.0192	36.58	6.39	-36.40	44.31	50.88	74.00	23.12	Pass	H
6	9648.0000	37.66	6.72	-36.92	43.31	50.77	74.00	23.23	Pass	H
7	2962.7926	33.14	4.44	-36.79	46.81	47.60	74.00	26.40	Pass	V
8	4824.0000	34.50	4.61	-36.11	41.14	44.14	74.00	29.86	Pass	V
9	5652.2652	35.24	4.97	-36.02	43.96	48.15	74.00	25.85	Pass	V
10	7236.0000	36.34	5.79	-36.44	41.78	47.47	74.00	26.53	Pass	V
11	7716.5467	36.51	6.25	-36.42	44.16	50.50	74.00	23.50	Pass	V
12	9648.0000	37.66	6.72	-36.92	43.15	50.61	74.00	23.39	Pass	V

WiFi 802.11n(HT20)				Test channel: Middle			Remark: Peak			
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2878.3757	33.01	4.32	-36.76	47.12	47.69	74.00	26.31	Pass	H
2	4565.0315	34.50	4.84	-36.31	44.24	47.27	74.00	26.73	Pass	H
3	4874.0000	34.50	4.78	-36.09	40.57	43.76	74.00	30.24	Pass	H
4	6395.2895	35.88	5.32	-36.32	43.47	48.35	74.00	25.65	Pass	H
5	7311.0000	36.41	5.85	-36.31	40.18	46.13	74.00	27.87	Pass	H
6	9748.0000	37.70	6.77	-36.79	42.98	50.66	74.00	23.34	Pass	H
7	1855.7712	30.75	3.38	-36.93	48.70	45.90	74.00	28.10	Pass	V
8	4874.0000	34.50	4.78	-36.09	40.81	44.00	74.00	30.00	Pass	V
9	6344.5845	35.87	5.46	-36.14	43.53	48.72	74.00	25.28	Pass	V
10	7311.0000	36.41	5.85	-36.31	40.87	46.82	74.00	27.18	Pass	V
11	8434.2184	36.57	6.38	-36.37	44.13	50.71	74.00	23.29	Pass	V
12	9748.0000	37.70	6.77	-36.79	42.52	50.20	74.00	23.80	Pass	V

WiFi 802.11n(HT20)				Test channel: Highest			Remark: Peak			
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Magin [dB]	Result	Polarity
1	3080.9331	33.23	4.76	-36.83	47.06	48.22	74.00	25.78	Pass	H
2	5884.3384	35.61	5.07	-36.17	43.26	47.77	74.00	26.23	Pass	H
3	6226.5977	35.85	5.29	-36.32	41.04	45.86	74.00	28.14	Pass	H
4	7386.0000	36.49	5.85	-36.34	40.32	46.32	74.00	27.68	Pass	H
5	7707.7708	36.52	6.26	-36.40	43.88	50.26	74.00	23.74	Pass	H
6	9848.0000	37.74	6.83	-36.93	41.00	48.64	74.00	25.36	Pass	H
7	3326.6577	33.33	4.55	-36.75	46.73	47.86	74.00	26.14	Pass	V
8	4924.0000	34.50	4.85	-36.17	40.93	44.11	74.00	29.89	Pass	V
9	6157.3657	35.83	5.25	-36.21	43.69	48.56	74.00	25.44	Pass	V
10	7386.0000	36.49	5.85	-36.34	41.33	47.33	74.00	26.67	Pass	V
11	8413.7414	36.57	6.35	-36.31	44.35	50.96	74.00	23.04	Pass	V
12	9848.0000	37.74	6.83	-36.93	41.88	49.52	74.00	24.48	Pass	V

Note:

1) Through Pre-scan transmitting mode and charge+transmitter mode with all kind of modulation and data rate, find the 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20) ; and then Only the worst case is recorded in the report.

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

Final Test Level =Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

3) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

PHOTOGRAPHS OF TEST SETUP

Test Model No.: UM101734



Radiated spurious emission Test Setup-1(Below 30MHz)



Radiated spurious emission Test Setup-2(30MHz-1GHz)



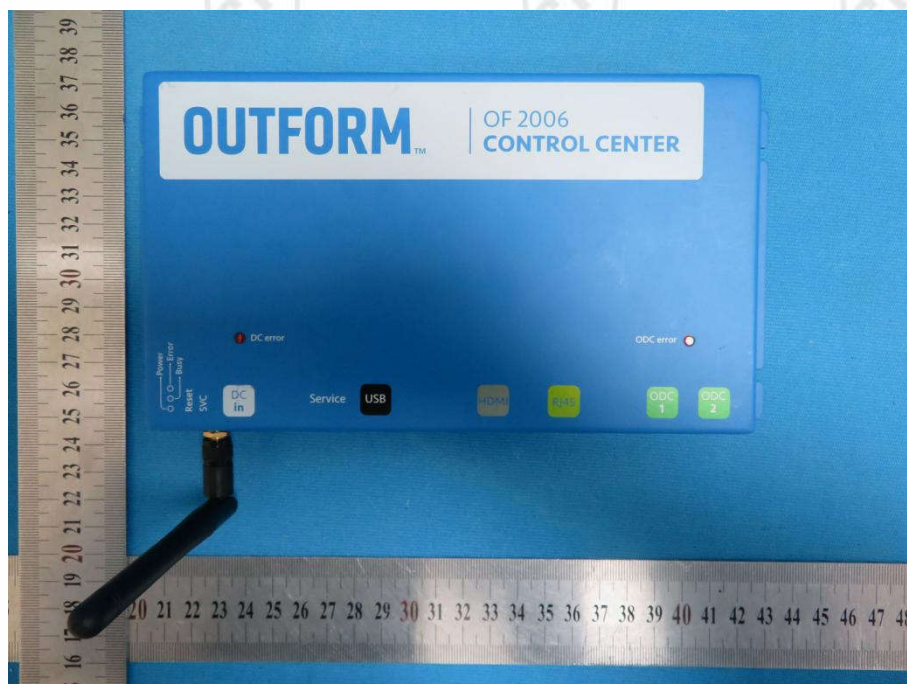
Radiated spurious emission Test Setup-3(Above 1GHz)



Conducted Emissions Test Setup

PHOTOGRAPHS OF EUT Constructional Details

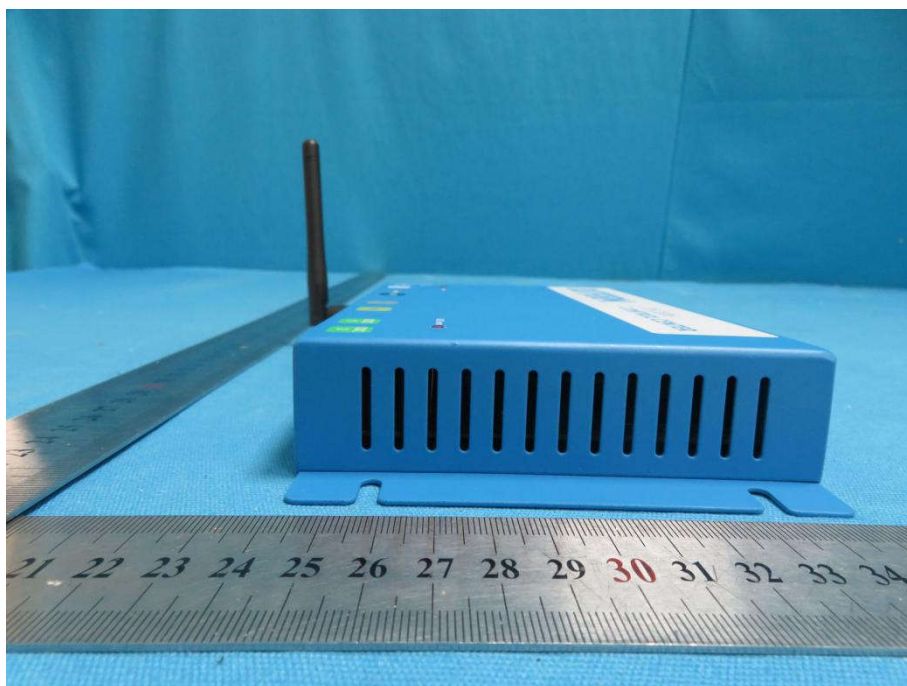
Test model No.: UM101734



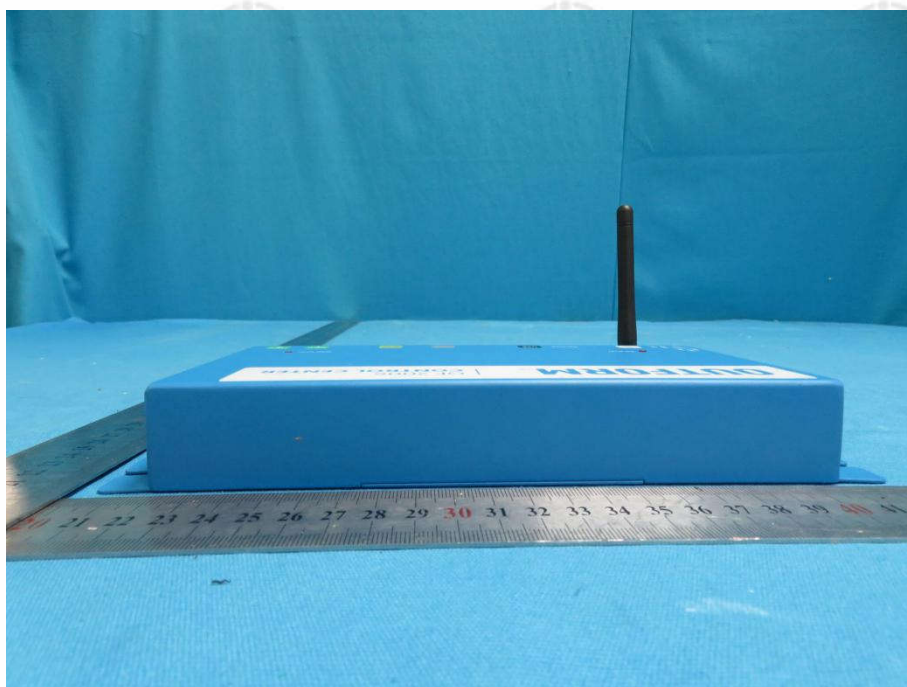
View of Product-1



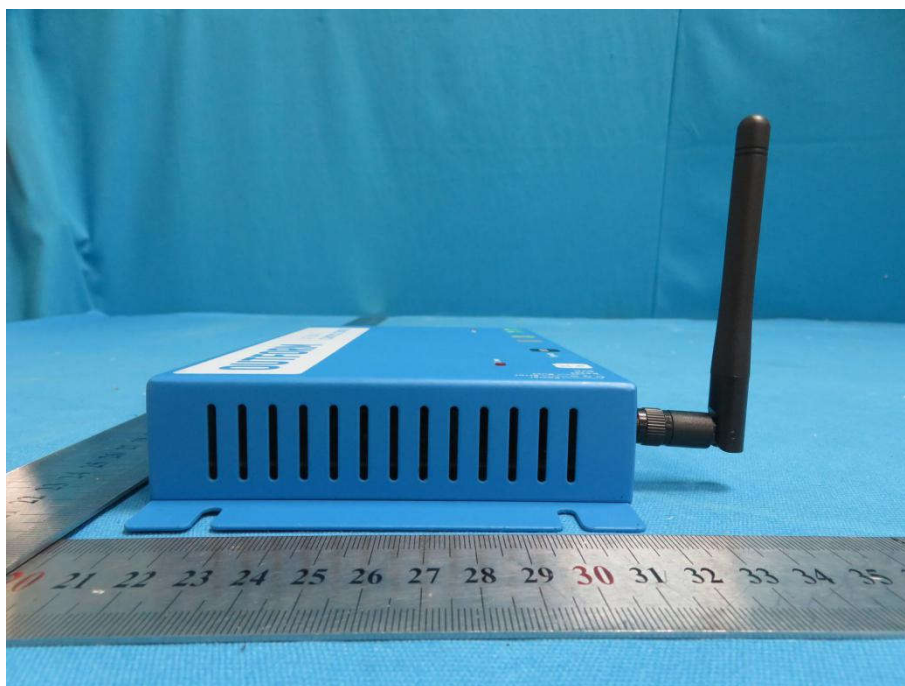
View of Product-2



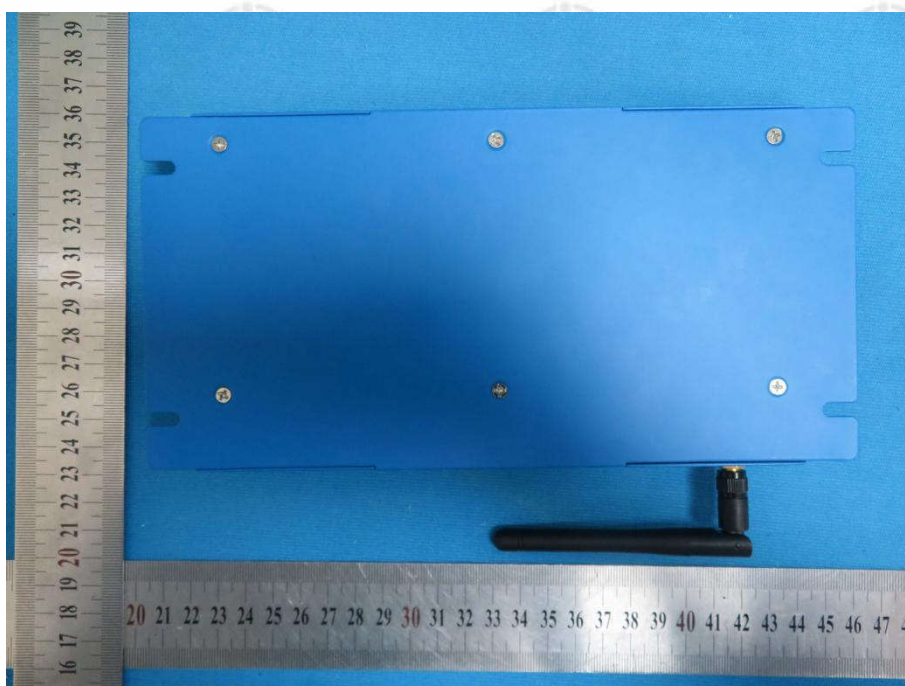
View of Product-3



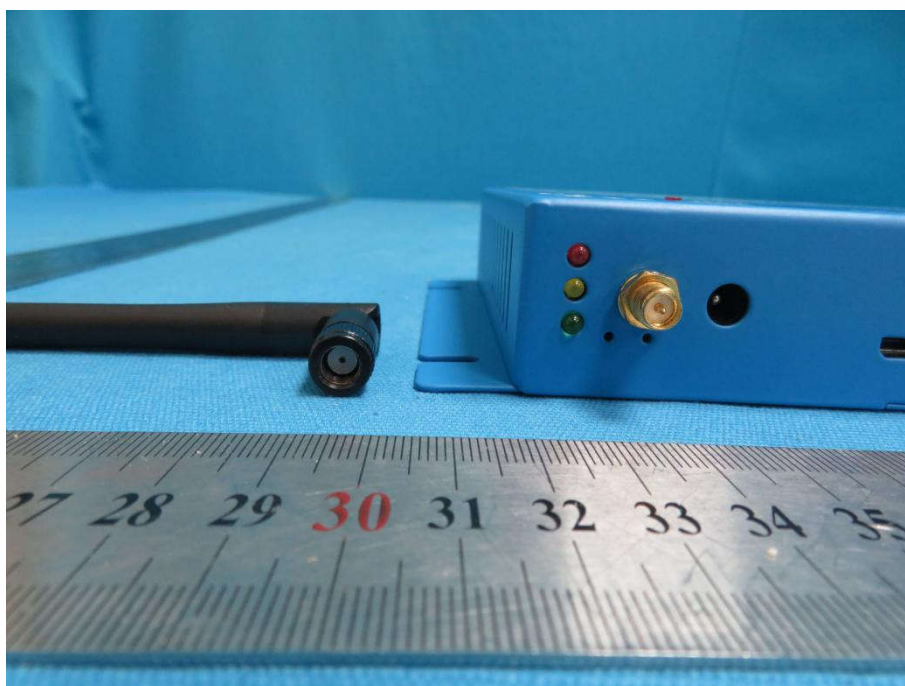
View of Product-4



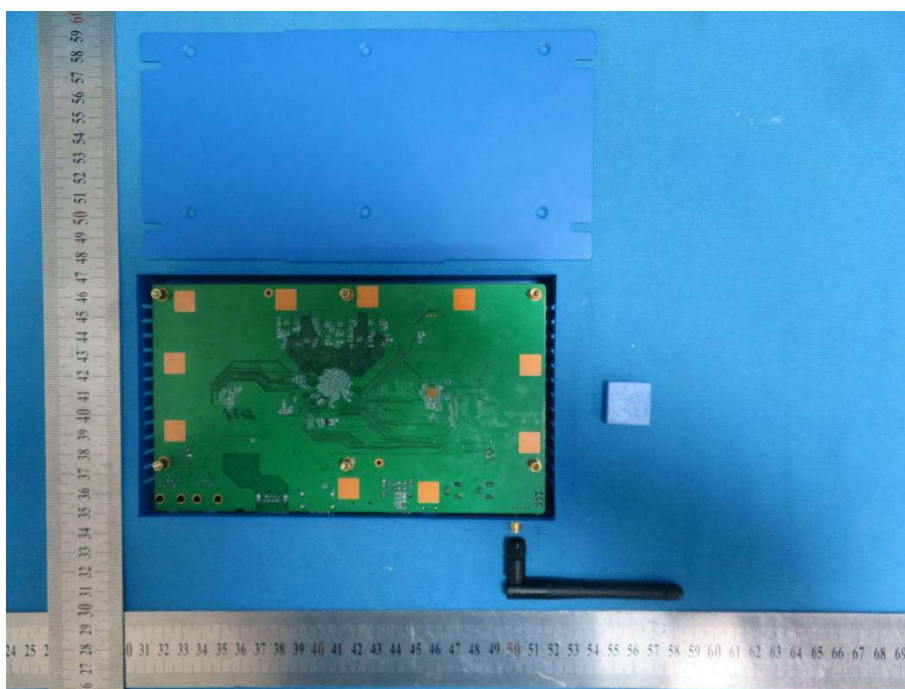
View of Product-5



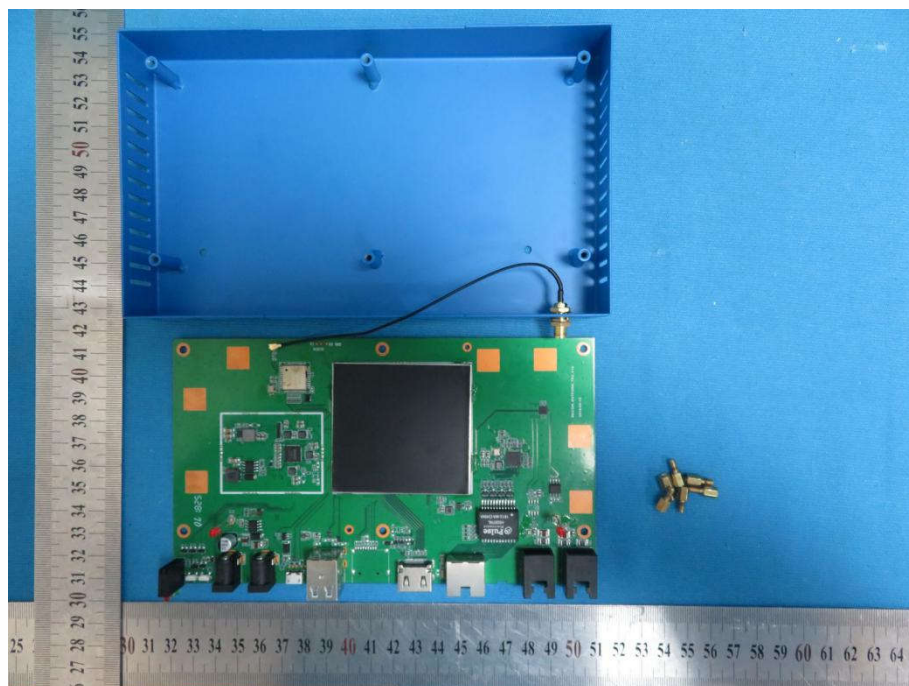
View of Product-6



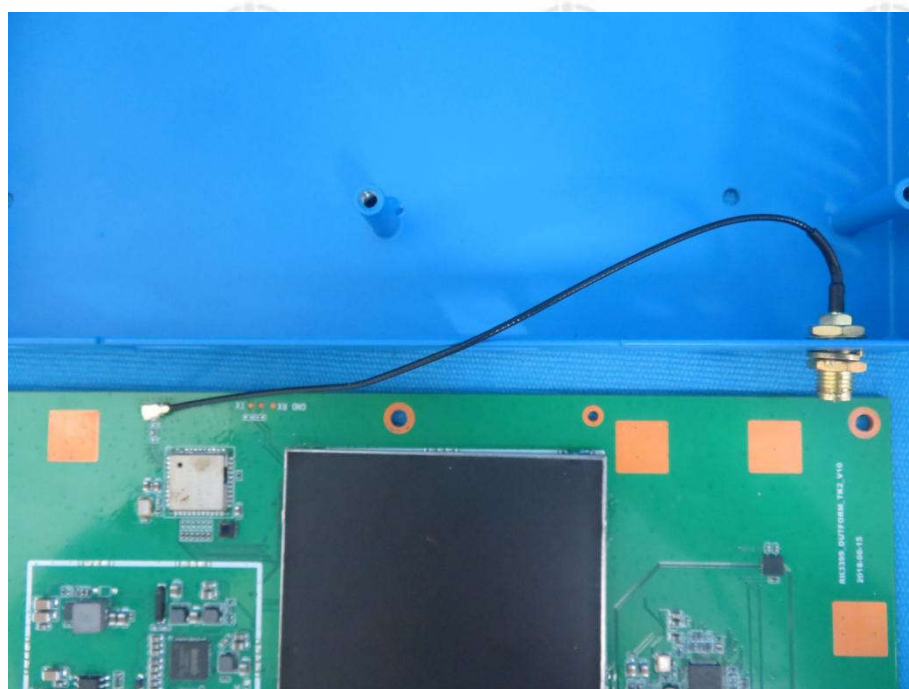
View of Product-7



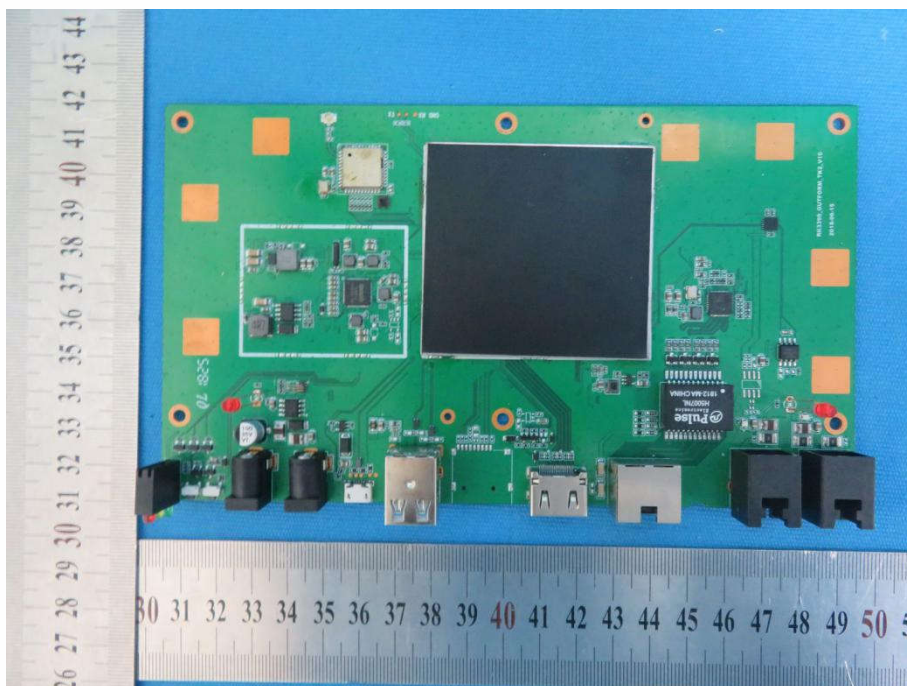
View of Product-8



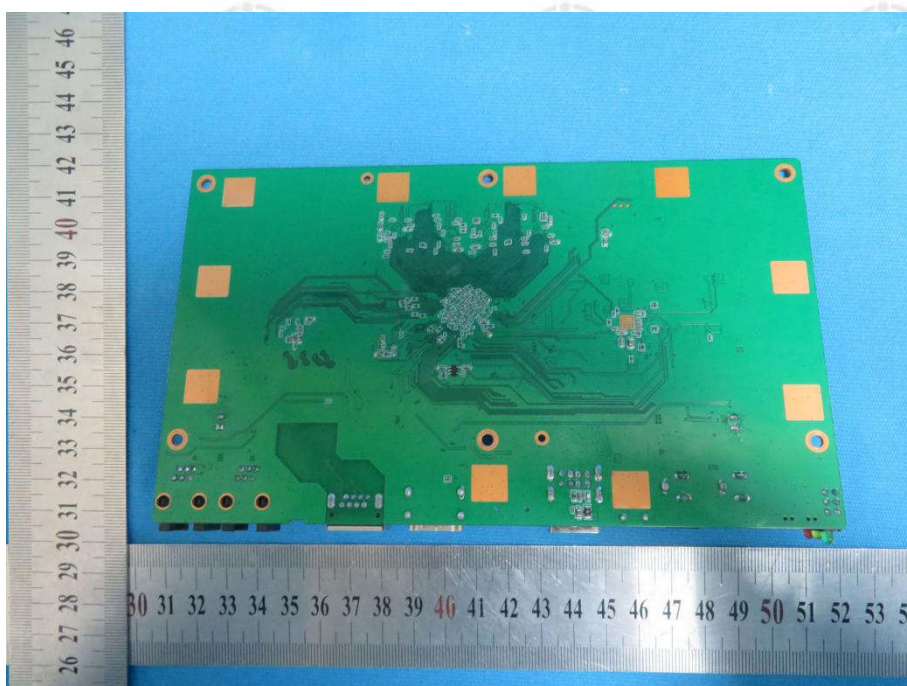
View of Product-9



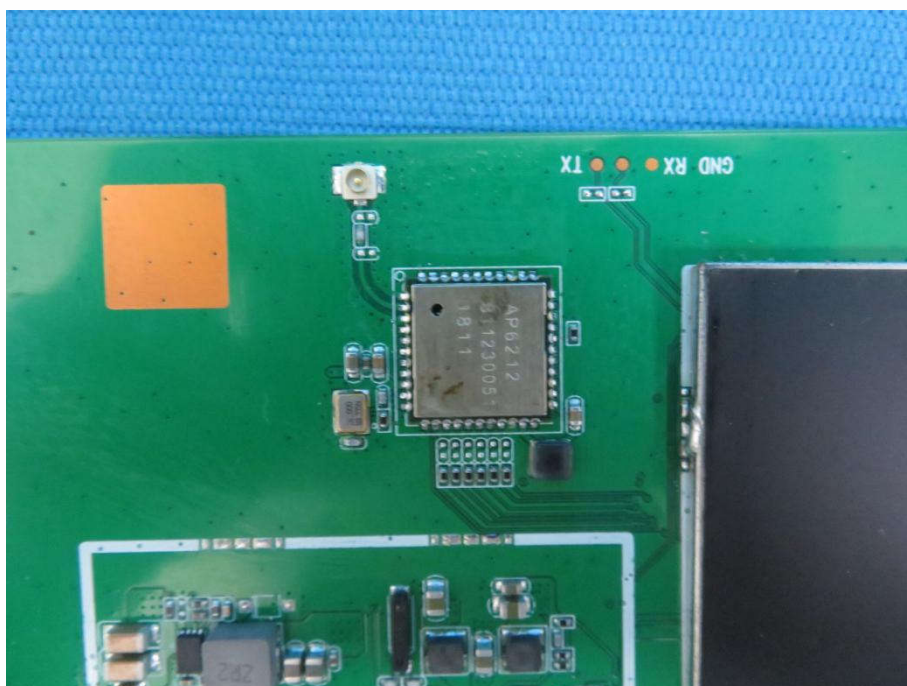
View of Product-10



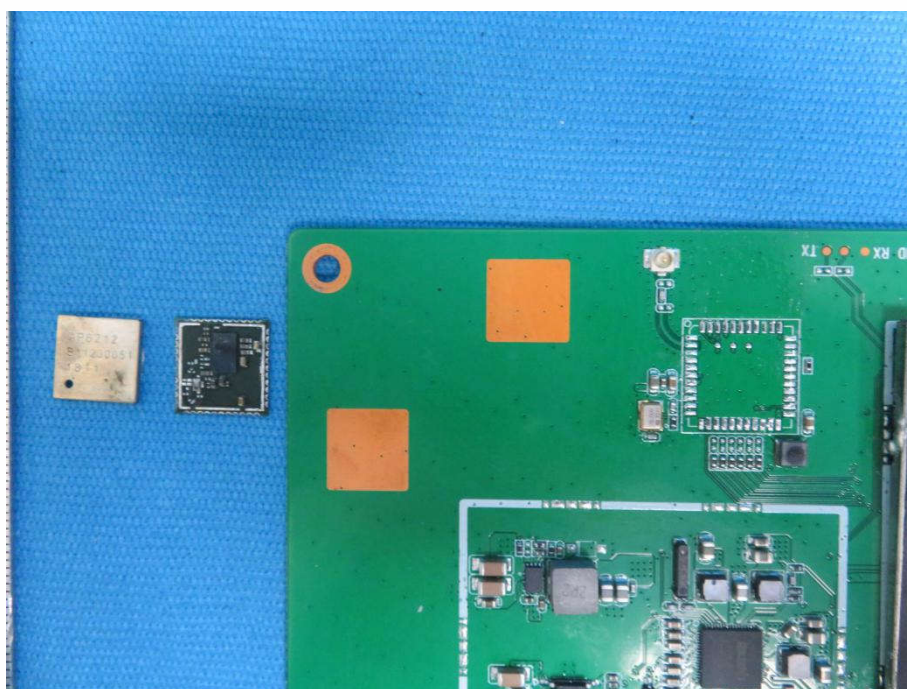
View of Product-11



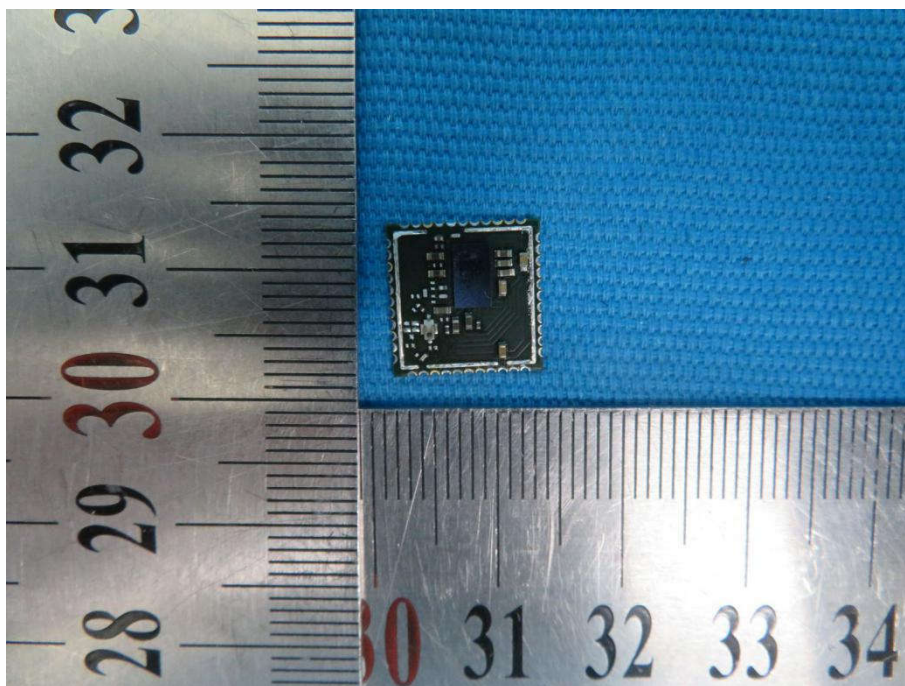
View of Product-12



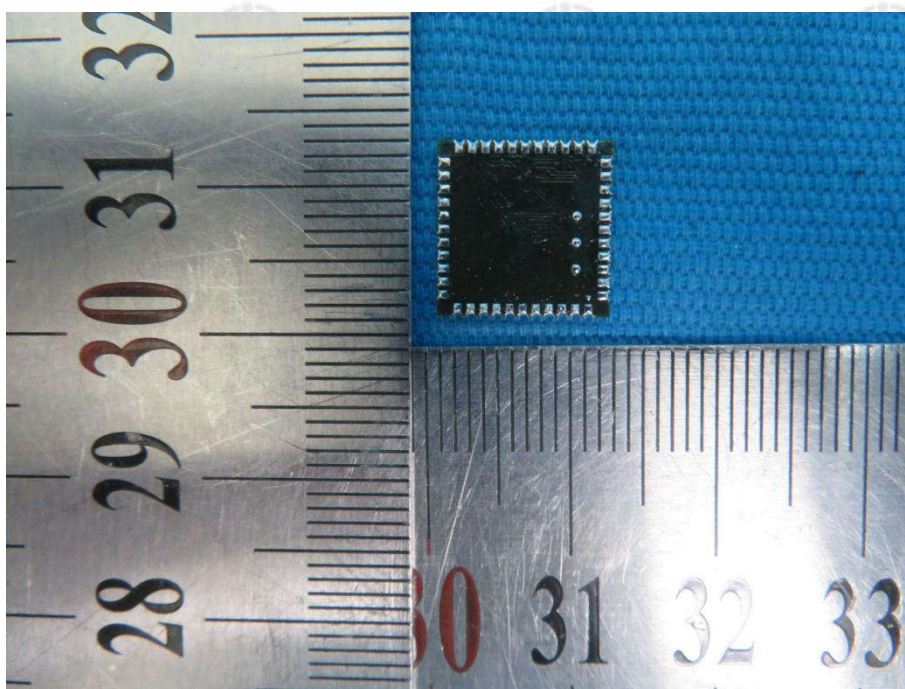
View of Product-13



View of Product-14



View of Product-15



View of Product-16

*** End of Report ***

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