

TEST REPORT

Product : WCDMA Digital Mobile Phone
Trade mark : RugGear
Model/Type reference : RG310, RG310EX, RG320EX
Serial Number : N/A
Report Number : EED32I00185904
FCC ID : ZLE-RG310
Date of Issue : Jul. 18, 2016
Test Standards : 47 CFR Part 15Subpart C (2015)
Test result : PASS

Prepared for:

Power Idea Technology Limited.

**4th Floor, A Section, Languang Science&technology Xinxu RD,
Hi-Tech Industrial Park North, Nanshan, ShenZhen, China**

Prepared by:

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Date:

Jul. 18, 2016

Check No.: 2384307786



2 Version

Version No.	Date	Description
00	Jul. 18, 2016	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/ KDB 558074 D01v03r05	PASS
6dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.247 (a)(2)	ANSI C63.10-2013/ KDB 558074 D01v03r05	PASS
Power Spectral Density	47 CFR Part 15 Subpart C Section 15.247 (e)	ANSI C63.10-2013/ KDB 558074 D01v03r05	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013/ KDB 558074 D01v03r05	PASS
RF Conducted Spurious Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013/ KDB 558074 D01v03r05	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.

Model No.: RG310, RG310EX, RG320EX

Only the model RG310 was tested, the PCB, Schematic, Hardware etc were identical for the above models, Only different model name due to difference agent and marketing purposes.

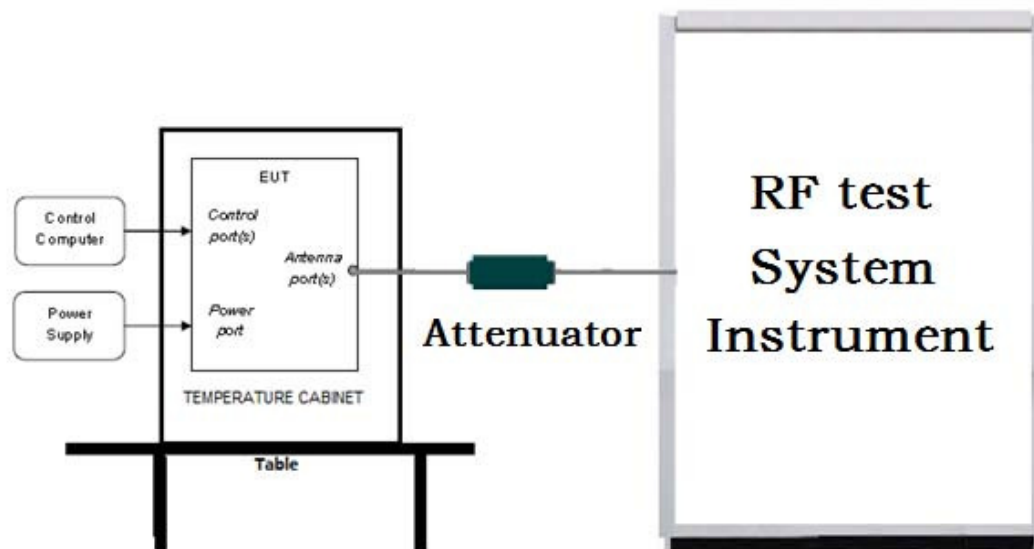
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5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

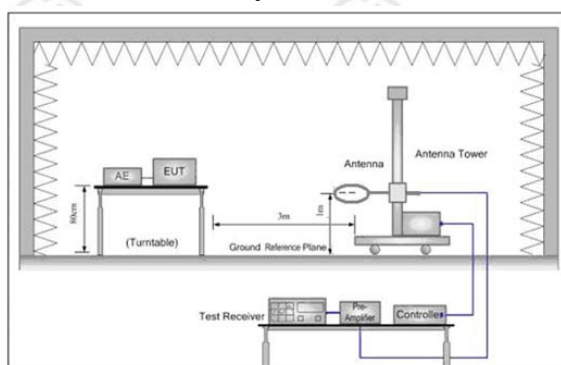


Figure 1. Below 30MHz

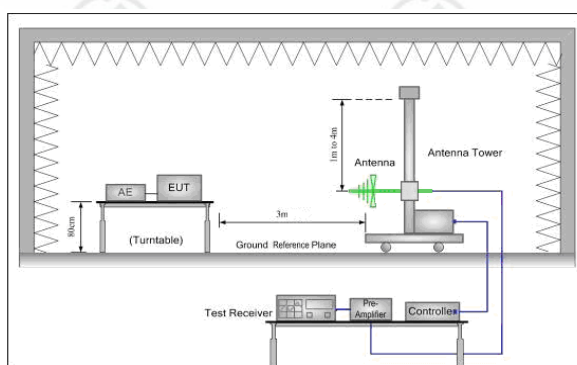


Figure 2. 30MHz to 1GHz

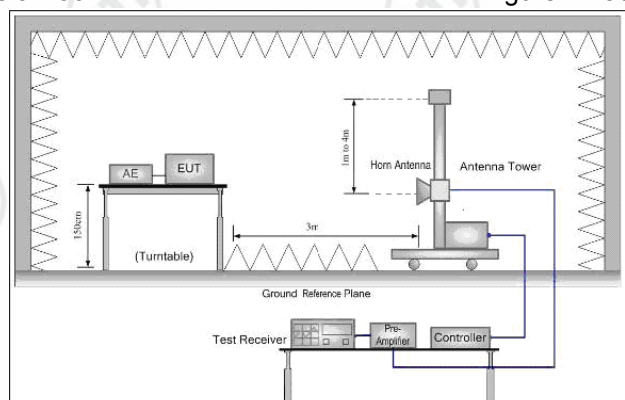
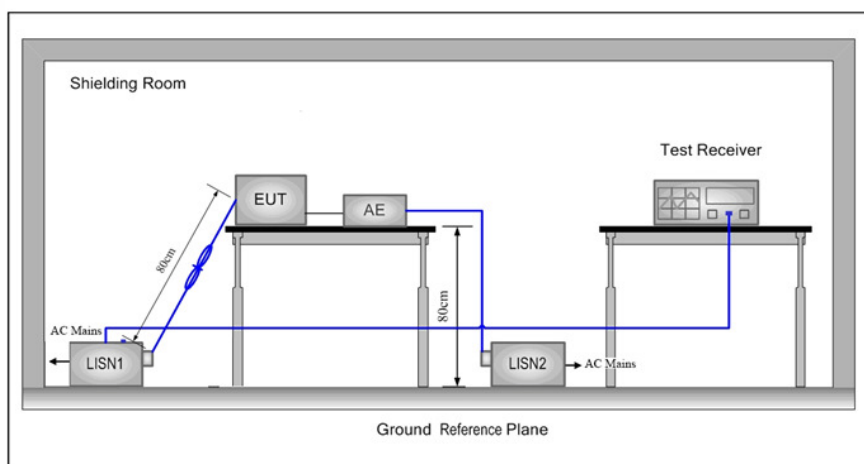


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	21°C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar

5.3 Test Condition

Test channel:

Test Mode	Tx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11b/g/n(HT20)	2412MHz ~2462 MHz	Channel 1	Channel 6	Channel11
		2412MHz	2437MHz	2462MHz
802.11n(HT40)	2422MHz ~2452 MHz	Channel 1	Channel 4	Channel7
		2422MHz	2437MHz	2452MHz
Transmitting mode:	Keep the EUT transmitted the continuous modulation test signal at the specific channel(s).			

Test mode:

Pre-scan under all rate at lowest channel 1

Mode	802.11b							
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps				
Power(dBm)	16.01	16.10	16.14	16.16				
Mode	802.11g							
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Power(dBm)	14.36	14.33	14.32	14.30	14.30	14.29	14.25	14.22
Mode	802.11n (HT20)							
Data Rate	6.5Mbps	13Mbps	19.5Mbps	26Mbps	39Mbps	52Mbps	58.5Mbps	65Mbps
Power(dBm)	14.67	14.66	14.61	14.60	14.57	14.55	14.53	14.50
Mode	802.11n (HT40)							
Data Rate	13.5Mbps	27Mbps	40.5Mbps	54Mbps	81Mbps	108Mbps	121.5Mbps	135Mbps
Power(dBm)	14.29	14.27	14.21	14.20	14.19	14.16	14.15	14.15

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); 13.5Mbps of rate is the worst case of 802.11n(HT40).

6 General Information

6.1 Client Information

Applicant:	Power Idea Technology Limited.
Address of Applicant:	4th Floor, A Section, Languang Science&technology Xinxi RD, Hi-Tech Industrial Park North, Nanshan, ShenZhen, China
Manufacturer:	Power Idea Technology Limited.
Address of Manufacturer:	4th Floor, A Section, Languang Science&technology Xinxi RD, Hi-Tech Industrial Park North, Nanshan, ShenZhen, China

6.2 General Description of EUT

Product Name:	WCDMA Digital Mobile Phone
Mode No.(EUT):	RG310, RG310EX, RG320EX
Test Mode No.:	RG310
Trade Mark:	RugGear
EUT Supports Radios application:	Wlan 2.4GHz 802.11b/g/n(HT20&HT40)
Power Supply:	Model: HKC0055010-2D Input: 100-240V~ 50/60Hz 0.2A Output: 5.0V \approx 1.0A
Battery	Li-ion 3.7V/3600mAh
Sample Received Date:	Jun. 30, 2016
Sample tested Date:	Jun. 30, 2016 to Jul. 18, 2016

6.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels IEEE 802.11n HT40: 7 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 and HT40) : OFDM (64QAM, 16QAM, QPSK,BPSK)
Sample Type:	Portable production
Test Power Grade:	802.11b: 14, 802.11g: 7, 802.11n(HT20): 7, 802.11n(HT40): 7
Test Software of EUT:	Engineer Mode
Antenna Type:	Integral antenna
Antenna Gain:	1.8dBi
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		

Operation Frequency each of channel(802.11n HT40)					
Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2422MHz	4	2437MHz	7	2452MHz
2	2427MHz	5	2442MHz		
3	2432MHz	6	2447MHz		

6.4 Description of Support Units

The EUT has been tested independently.

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China518101

Telephone: +86 (0) 755 3368 3668 Fax:+86 (0) 755 3368 3385

No tests were sub-contracted.

6.6 Test Facility

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

CNAS-Lab Code: L1910

Centre Testing International Group 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: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories..

A2LA-Lab Cert. No. 3061.01

Centre Testing International Group Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 886427

Centre Testing International Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 886427.

IC-Registration No.: 7408A-2

The 3m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408A-2 .

IC-Registration No.: 7408B-1

The 10m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408B-1.

NEMKO-Aut. No.: ELA503

Centre Testing International Group Co., Ltd. has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

VCCI

The Radiation 3 & 10 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-4096.

Main Ports Conducted Interference Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-4563.

Telecommunication Ports Conducted Disturbance Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-2146.

The Radiation 3 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-758

6.7 Deviation from Standards

None.

6.8 Abnormalities from Standard Conditions

None.

6.9 Other Information Requested by the Customer

None.

6.10 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	Mode No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Signal Generator	Keysight	E8257D	MY53401106	04-01-2016	03-31-2017
Communication test set test set	Agilent	N4010A	MY51400230	04-01-2016	03-31-2017
Spectrum Analyzer	Keysight	N9010A	MY54510339	04-01-2016	03-31-2017
Signal Generator	Keysight	N5182B	MY53051549	04-01-2016	03-31-2017
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-12-2016	01-11-2017
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-11-2017
DC Power	Keysight	E3642A	MY54436035	04-01-2016	03-31-2017
PC-1	Lenovo	R4960d	---	04-01-2016	03-31-2017
power meter & power sensor	R&S	OSP120	101374	04-01-2016	03-31-2017
RF control unit	JS Tonscend	JS0806-2	158060006	04-01-2016	03-31-2017
BT&Wi-Fi Automatic test software	JS Tonscend	JS1120-2	---	04-01-2016	03-31-2017

Conducted disturbance Test					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Receiver	R&S	ESCI	100009	06-16-2016	06-15-2017
Temperature/ Humidity Indicator	TAYLOR	1451	1905	04-27-2016	04-26-2017
Communication test set	Agilent	E5515C	GB47050534	04-01-2016	03-31-2017
Communication test set	R&S	CMW500	152394	04-01-2016	03-31-2017
LISN	R&S	ENV216	100098	06-16-2016	06-15-2017
LISN	schwarzbeck	NNLK8121	8121-529	06-16-2016	06-15-2017
Voltage Probe	R&S	ESH2-Z3	--	07-09-2014	07-07-2017
Current Probe	R&S	EZ17	100106	06-16-2016	06-15-2017
ISN	TESEQ GmbH	ISN T800	30297	01-29-2015	01-27-2017

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06-05-2016	06-05-2019
TRILOG Broadband Antenna	SCHWARZBECK	VULB9163	9163-484	05-23-2016	05-22-2017
Microwave Preamplifier	Agilent	8449B	3008A02425	02-04-2016	02-03-2017
Horn Antenna	ETS-LINDGREN	3117	00057410	06-30-2015	06-28-2018
Horn Antenna	A.H.SYSTEMS	SAS-574	374	06-30-2015	06-28-2018
Loop Antenna	ETS	6502	00071730	07-30-2015	07-28-2017
Spectrum Analyzer	R&S	FSP40	100416	06-16-2016	06-15-2017
Receiver	R&S	ESCI	100435	06-16-2016	06-15-2017
Multi device Controller	maturo	NCD/070/1071 1112	---	01-12-2016	01-11-2017
LISN	schwarzbeck	NNBM8125	81251547	06-16-2016	06-15-2017
LISN	schwarzbeck	NNBM8125	81251548	06-16-2016	06-15-2017
Signal Generator	Agilent	E4438C	MY45095744	04-01-2016	03-31-2017
Signal Generator	Keysight	E8257D	MY53401106	04-01-2016	03-31-2017
Temperature/ Humidity Indicator	TAYLOR	1451	1905	04-27-2016	04-26-2017
Communication test set	Agilent	E5515C	GB47050534	04-01-2016	03-31-2017
Cable line	Fulai(7M)	SF106	5219/6A	01-12-2016	01-11-2017
Cable line	Fulai(6M)	SF106	5220/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5216/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5217/6A	01-12-2016	01-11-2017
Communication test set	R&S	CMW500	152394	04-01-2016	03-31-2017
High-pass filter	Sinoscite	FL3CX03WG1 8NM12-0398- 002	---	01-12-2016	01-11-2017
High-pass filter	MICRO-TRONICS	SPA-F-63029- 4	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA09 CL12-0395- 001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA08 CL12-0393- 001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA04 CL12-0396- 002	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA03 CL12-0394- 001	---	01-12-2016	01-11-2017

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15C (2015)	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/ KDB 558074	Conducted Peak Output Power	PASS	Appendix A)
Part15C Section 15.247 (a)(2)	ANSI C63.10/ KDB 558074	6dB Occupied Bandwidth	PASS	Appendix B)
Part15C Section 15.247(d)	ANSI C63.10/ KDB 558074	Band-edge for RF Conducted Emissions	PASS	Appendix C)
Part15C Section 15.247(d)	ANSI C63.10/ KDB 558074	RF Conducted Spurious Emissions	PASS	Appendix D)
Part15C Section 15.247 (e)	ANSI C63.10/ KDB 558074	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

Test Procedure

1. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Measure the conducted output power and record the results in the test report.

Result Table

Mode	Channel	Conducted Peak Output Power [dBm]	Verdict
11B	LCH	16.16	PASS
11B	MCH	16.44	PASS
11B	HCH	16.44	PASS
11G	LCH	14.36	PASS
11G	MCH	14.83	PASS
11G	HCH	14.78	PASS
11N20SISO	LCH	14.67	PASS
11N20SISO	MCH	14.95	PASS
11N20SISO	HCH	14.97	PASS
11N40SISO	LCH	14.29	PASS
11N40SISO	MCH	14.53	PASS
11N40SISO	HCH	14.59	PASS

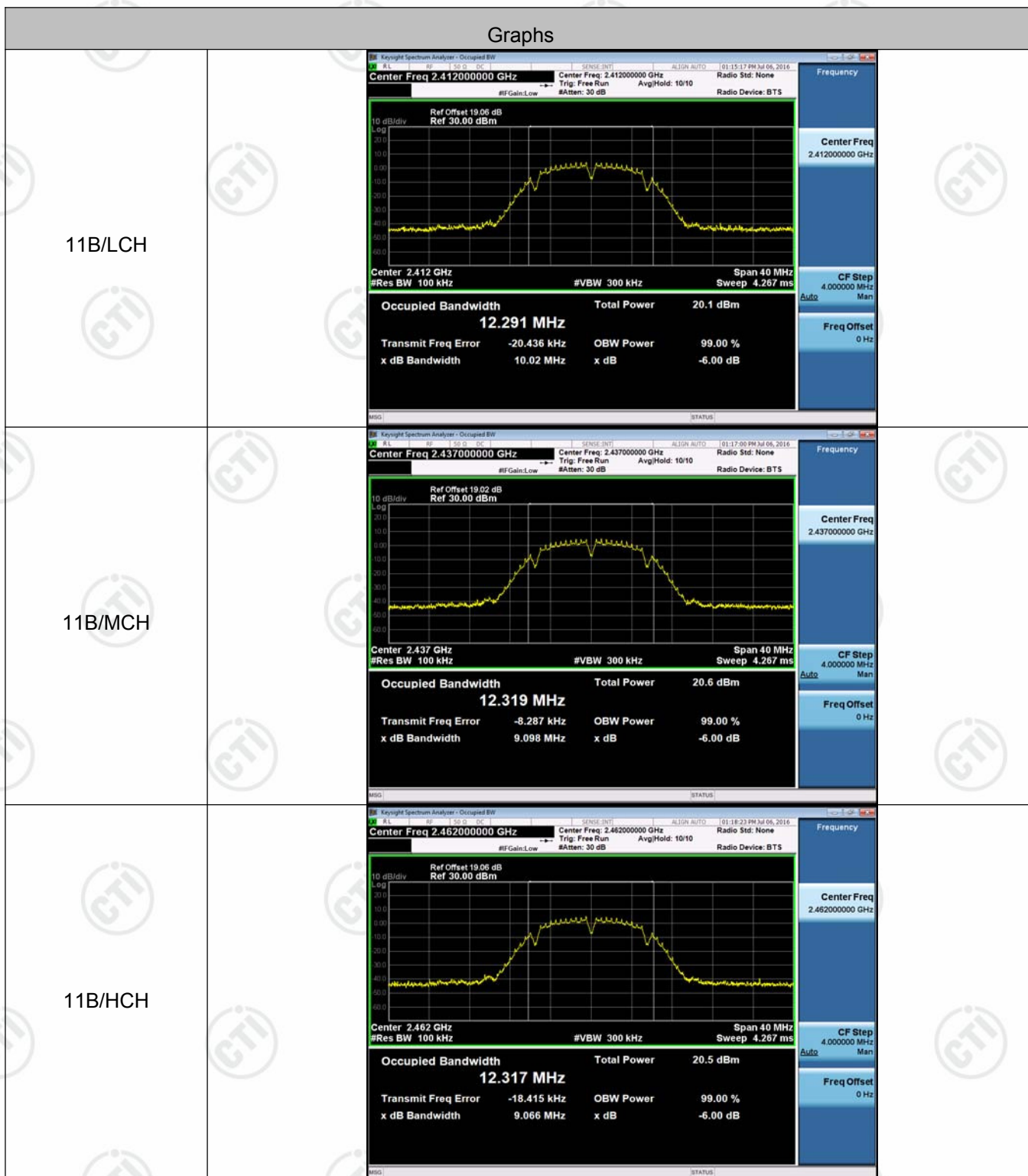
Appendix B): 6dB Occupied Bandwidth

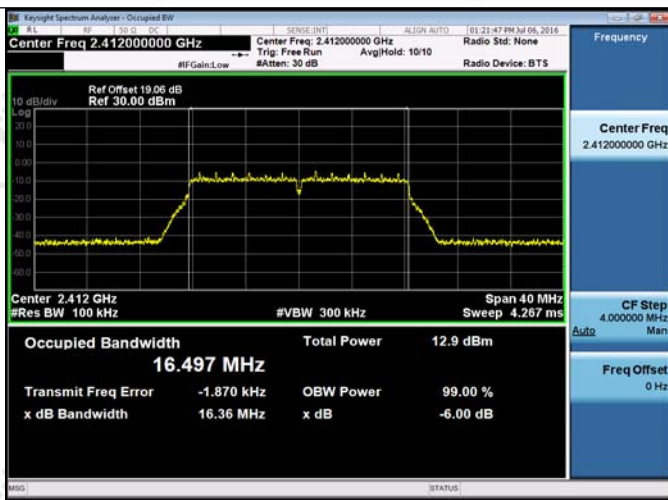
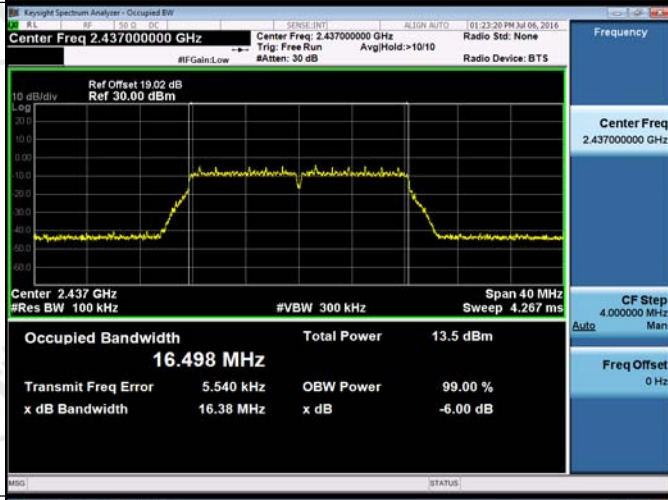
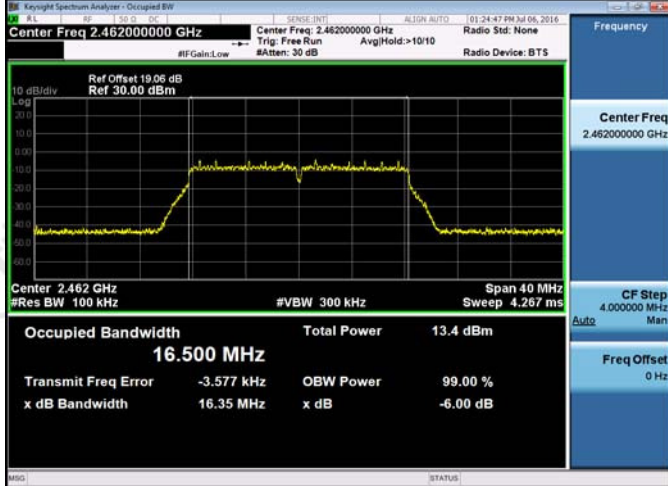
Result Table

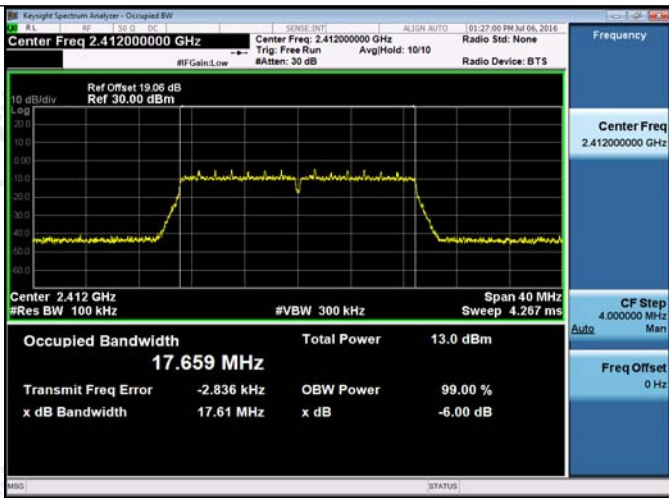
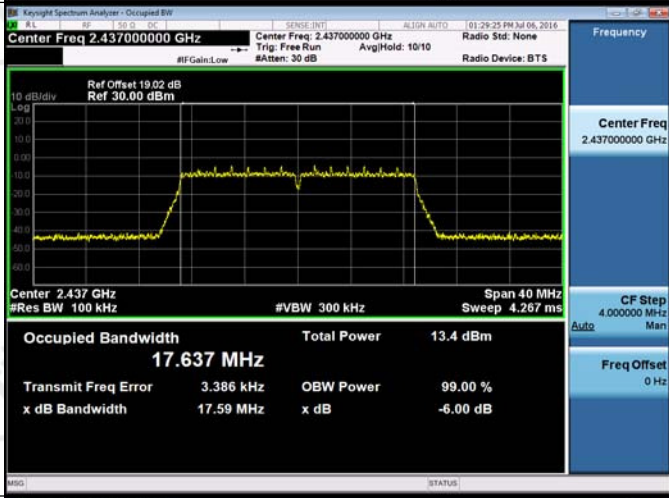
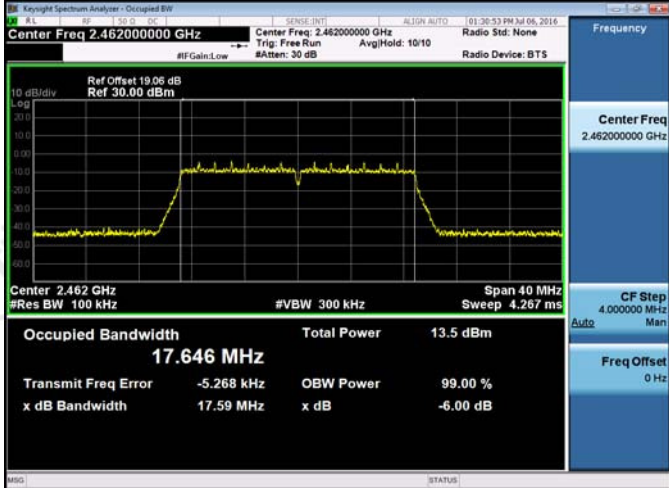
Mode	Channel	6dB Bandwidth [MHz]	99% OBW [MHz]	Verdict	Remark
11B	LCH	10.02	12.291	PASS	Peak detector
11B	MCH	9.098	12.319	PASS	
11B	HCH	9.066	12.317	PASS	
11G	LCH	16.36	16.497	PASS	
11G	MCH	16.38	16.498	PASS	
11G	HCH	16.35	16.500	PASS	
11N20SISO	LCH	17.61	17.659	PASS	
11N20SISO	MCH	17.59	17.637	PASS	
11N20SISO	HCH	17.59	17.646	PASS	
11N40SISO	LCH	36.04	36.080	PASS	
11N40SISO	MCH	36.06	36.052	PASS	
11N40SISO	HCH	35.87	36.061	PASS	

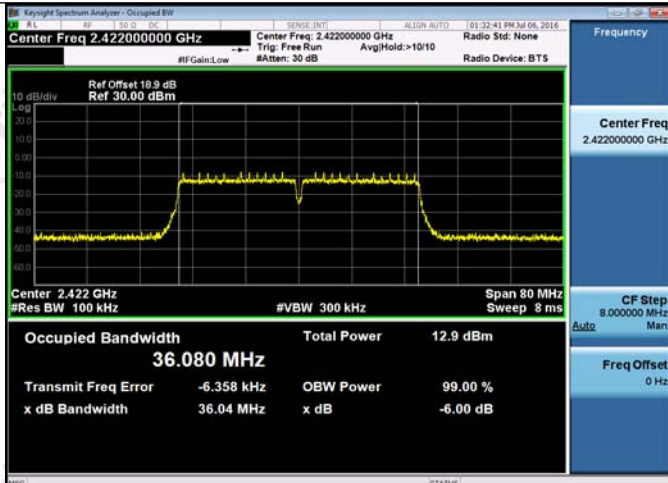
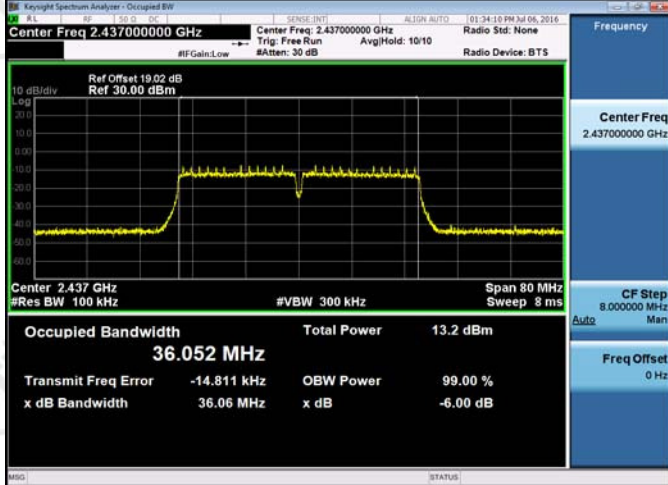
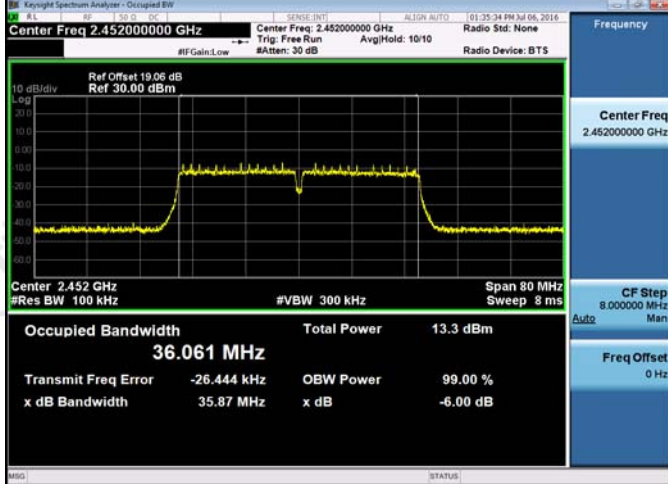
Test Graph

Graphs



11G/LCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.412 GHz #Res BW 100 kHz</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 16.497 MHz</p> <p>Total Power 12.9 dBm</p> <p>Transmit Freq Error -1.870 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 16.36 MHz</p> <p>x dB -6.00 dB</p>
11G/MCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>Center 2.437 GHz #Res BW 100 kHz</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 16.498 MHz</p> <p>Total Power 13.5 dBm</p> <p>Transmit Freq Error 5.540 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 16.38 MHz</p> <p>x dB -6.00 dB</p>
11G/HCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.462 GHz #Res BW 100 kHz</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 16.500 MHz</p> <p>Total Power 13.4 dBm</p> <p>Transmit Freq Error -3.577 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 16.35 MHz</p> <p>x dB -6.00 dB</p>

11N20SISO/LCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.412 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 17.659 MHz</p> <p>Total Power 13.0 dBm</p> <p>Transmit Freq Error -2.836 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 17.61 MHz</p> <p>x dB -6.00 dB</p>
11N20SISO/MCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>Center 2.437 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 17.637 MHz</p> <p>Total Power 13.4 dBm</p> <p>Transmit Freq Error 3.386 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 17.59 MHz</p> <p>x dB -6.00 dB</p>
11N20SISO/HCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.462 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 17.646 MHz</p> <p>Total Power 13.5 dBm</p> <p>Transmit Freq Error -5.268 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 17.59 MHz</p> <p>x dB -6.00 dB</p>

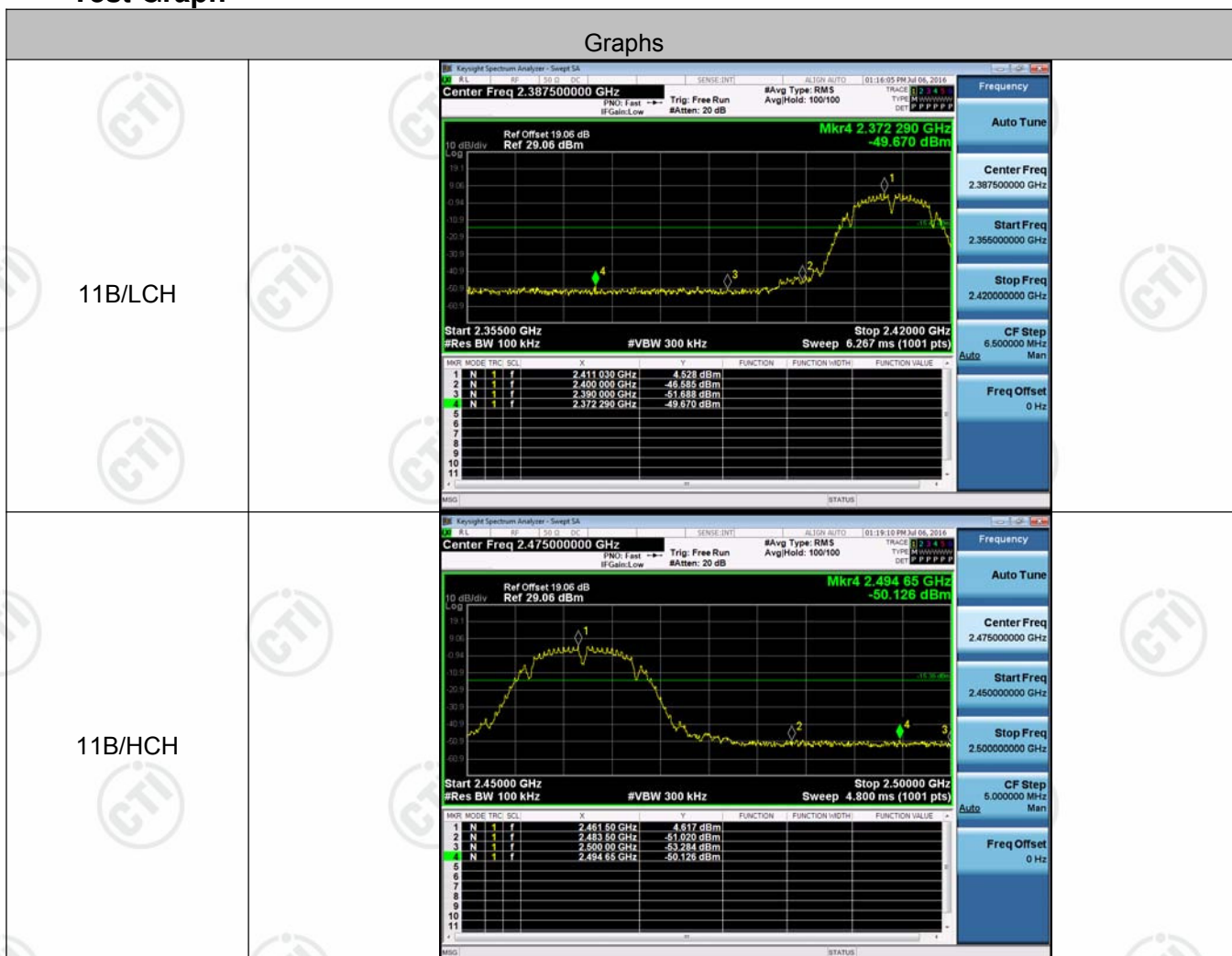
11N40SISO/LCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.422000000 GHz</p> <p>Ref Offset 18.9 dB Ref 30.00 dBm</p> <p>Center 2.422 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 36.080 MHz</p> <p>Total Power 12.9 dBm</p> <p>Transmit Freq Error -6.358 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 36.04 MHz</p> <p>x dB -6.00 dB</p>
11N40SISO/MCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>Center 2.437 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 36.052 MHz</p> <p>Total Power 13.2 dBm</p> <p>Transmit Freq Error -14.811 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 36.06 MHz</p> <p>x dB -6.00 dB</p>
11N40SISO/HCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.452000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.452 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 36.061 MHz</p> <p>Total Power 13.3 dBm</p> <p>Transmit Freq Error -26.444 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 35.87 MHz</p> <p>x dB -6.00 dB</p>

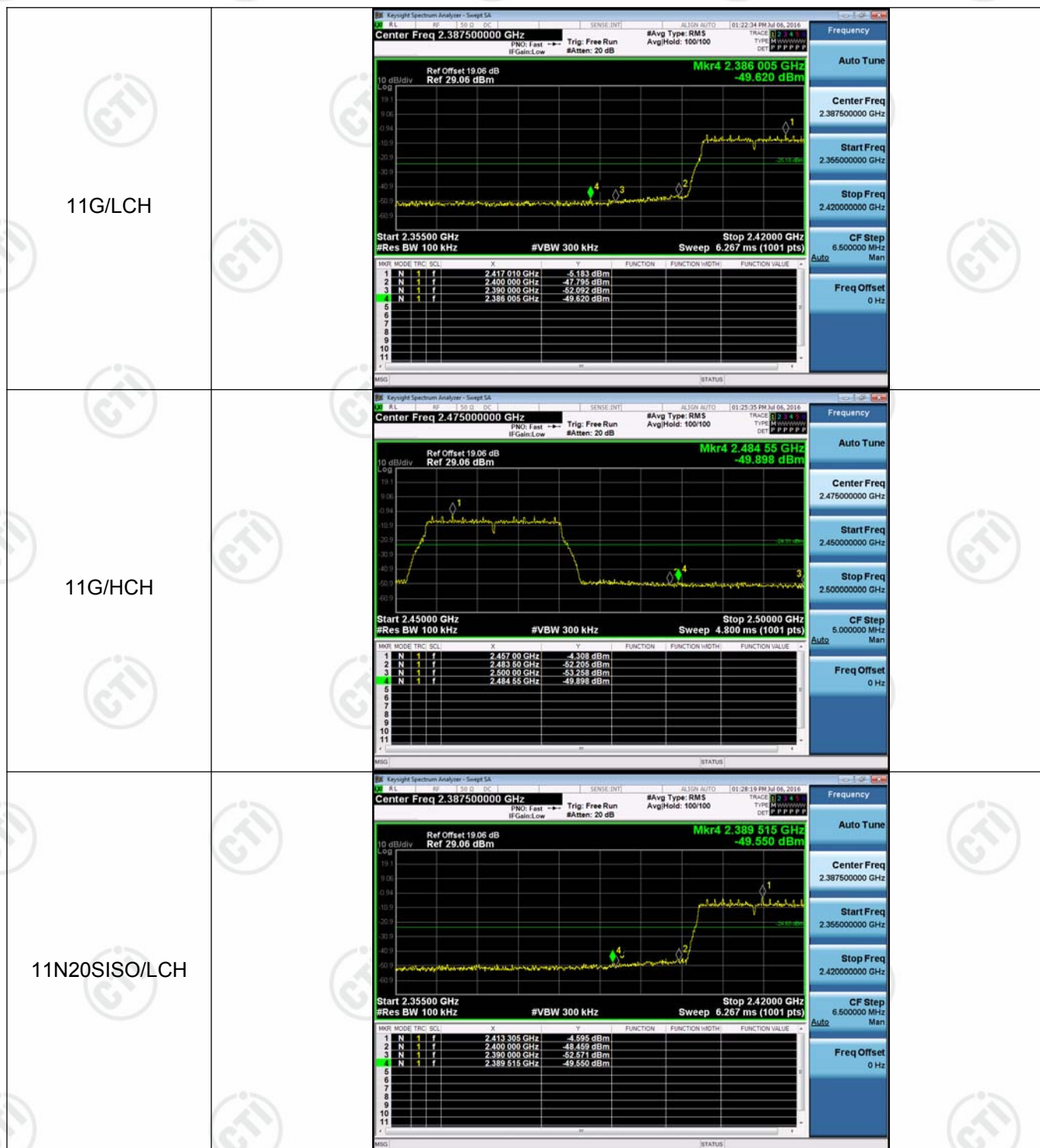
Appendix C): Band-edge for RF Conducted Emissions

Result Table

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	4.528	-49.670	-15.47	PASS
11B	HCH	4.617	-50.126	-15.38	PASS
11G	LCH	-5.183	-49.620	-25.18	PASS
11G	HCH	-4.308	-49.898	-24.31	PASS
11N20SISO	LCH	-4.595	-49.550	-24.6	PASS
11N20SISO	HCH	-4.321	-49.091	-24.32	PASS
11N40SISO	LCH	-7.798	-46.704	-27.8	PASS
11N40SISO	HCH	-7.722	-47.777	-27.72	PASS

Test Graph





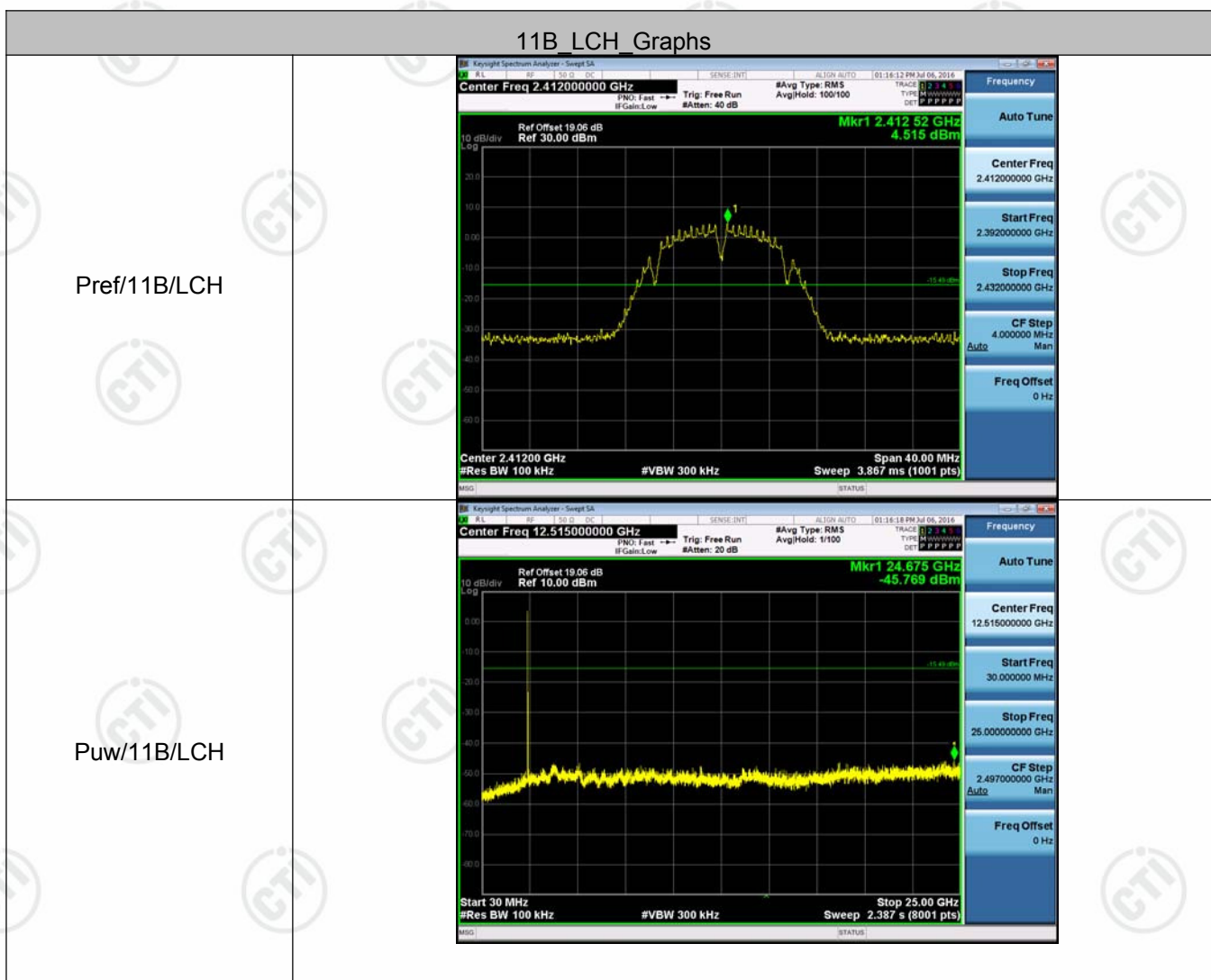
11N20SISO/HCH	<div><div><div>Keyight Spectrum Analyzer - Sweep SA</div><div>Center Freq 2.47500000 GHz</div><div>Ref Offset 19.06 dB Ref 29.06 dBm</div><div>Mkr4 2.48730 GHz -49.091 dBm</div><div>Start 2.45000 GHz #Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Stop 2.50000 GHz Sweep 4.800 ms (1001 pts)</div><table><thead><tr><th>MNR</th><th>MODE</th><th>TRIG</th><th>SOL</th><th>X</th><th>Y</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>2.45700 GHz</td><td>-4.321 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.48350 GHz</td><td>-49.919 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.50000 GHz</td><td>-61.317 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.48730 GHz</td><td>-49.091 dBm</td><td></td><td></td><td></td></tr></tbody></table></div><div><div>Frequency</div><div>Auto Tune</div><div>Center Freq 2.475000000 GHz</div><div>Start Freq 2.450000000 GHz</div><div>Stop Freq 2.500000000 GHz</div><div>CF Step 6.000000 MHz Man</div><div>Freq Offset 0 Hz</div></div></div>	MNR	MODE	TRIG	SOL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.45700 GHz	-4.321 dBm				2	N	1	f	2.48350 GHz	-49.919 dBm				3	N	1	f	2.50000 GHz	-61.317 dBm				4	N	1	f	2.48730 GHz	-49.091 dBm			
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4	N	1	f	2.48730 GHz	-49.091 dBm																																									
11N40SISO/LCH	<div><div><div>Keyight Spectrum Analyzer - Sweep SA</div><div>Center Freq 2.387500000 GHz</div><div>Ref Offset 16.9 dB Ref 28.90 dBm</div><div>Mkr4 2.387045 GHz -46.704 dBm</div><div>Start 2.35500 GHz #Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Stop 2.42000 GHz Sweep 6.267 ms (1001 pts)</div><table><thead><tr><th>MNR</th><th>MODE</th><th>TRIG</th><th>SOL</th><th>X</th><th>Y</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>2.419480 GHz</td><td>-7.798 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.400000 GHz</td><td>-49.862 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.390000 GHz</td><td>-60.437 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.387045 GHz</td><td>-46.704 dBm</td><td></td><td></td><td></td></tr></tbody></table></div><div><div>Frequency</div><div>Auto Tune</div><div>Center Freq 2.387500000 GHz</div><div>Start Freq 2.365000000 GHz</div><div>Stop Freq 2.420000000 GHz</div><div>CF Step 6.000000 MHz Man</div><div>Freq Offset 0 Hz</div></div></div>	MNR	MODE	TRIG	SOL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.419480 GHz	-7.798 dBm				2	N	1	f	2.400000 GHz	-49.862 dBm				3	N	1	f	2.390000 GHz	-60.437 dBm				4	N	1	f	2.387045 GHz	-46.704 dBm			
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11N40SISO/HCH	<div><div><div>Keyight Spectrum Analyzer - Sweep SA</div><div>Center Freq 2.475000000 GHz</div><div>Ref Offset 19.06 dB Ref 29.06 dBm</div><div>Mkr4 2.48760 GHz -47.777 dBm</div><div>Start 2.45000 GHz #Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Stop 2.50000 GHz Sweep 4.800 ms (1001 pts)</div><table><thead><tr><th>MNR</th><th>MODE</th><th>TRIG</th><th>SOL</th><th>X</th><th>Y</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>2.45450 GHz</td><td>-7.722 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.48350 GHz</td><td>-61.473 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.50000 GHz</td><td>-62.952 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.48760 GHz</td><td>-47.777 dBm</td><td></td><td></td><td></td></tr></tbody></table></div><div><div>Frequency</div><div>Auto Tune</div><div>Center Freq 2.475000000 GHz</div><div>Start Freq 2.450000000 GHz</div><div>Stop Freq 2.500000000 GHz</div><div>CF Step 6.000000 MHz Man</div><div>Freq Offset 0 Hz</div></div></div>	MNR	MODE	TRIG	SOL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.45450 GHz	-7.722 dBm				2	N	1	f	2.48350 GHz	-61.473 dBm				3	N	1	f	2.50000 GHz	-62.952 dBm				4	N	1	f	2.48760 GHz	-47.777 dBm			
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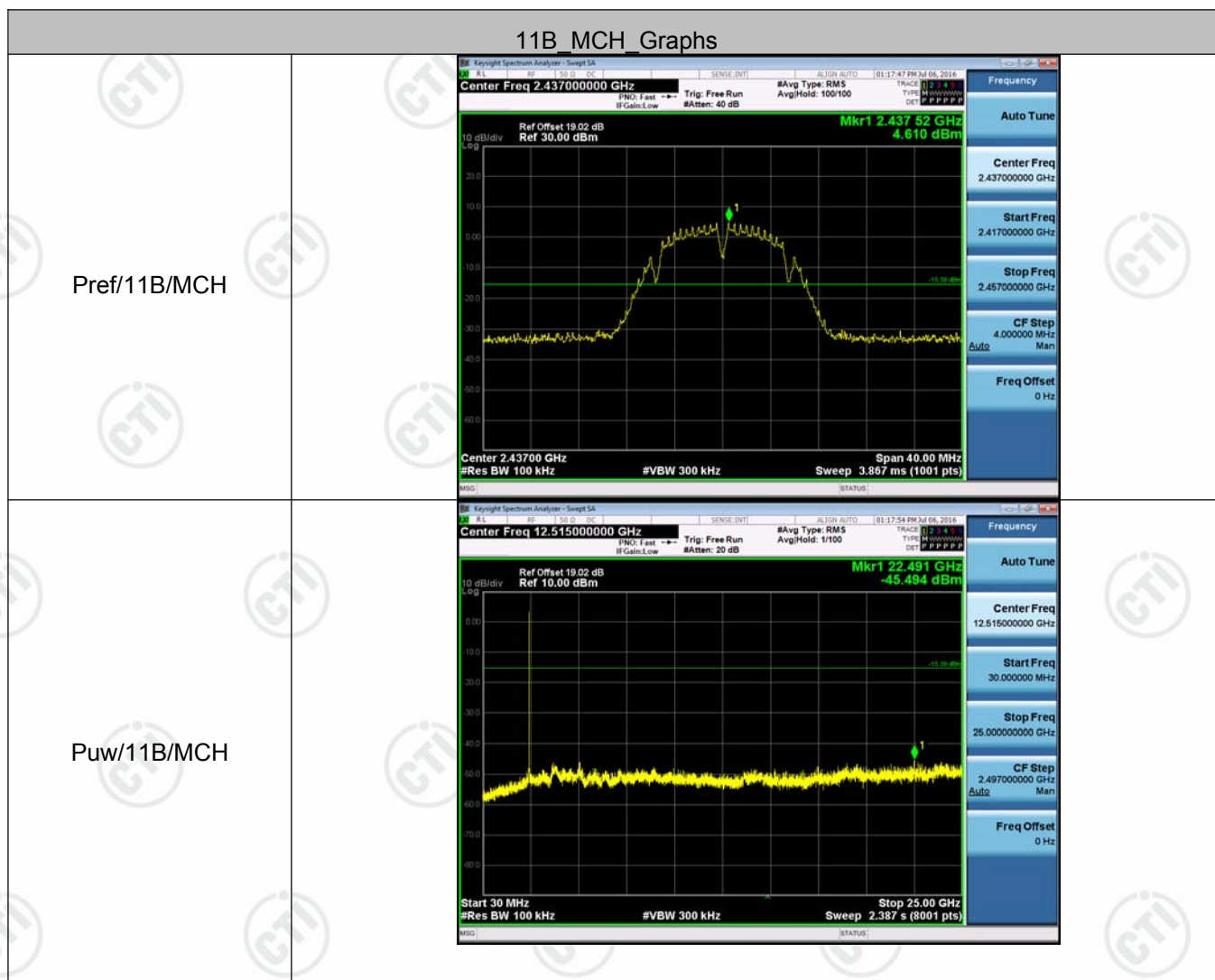
Appendix D): RF Conducted Spurious Emissions

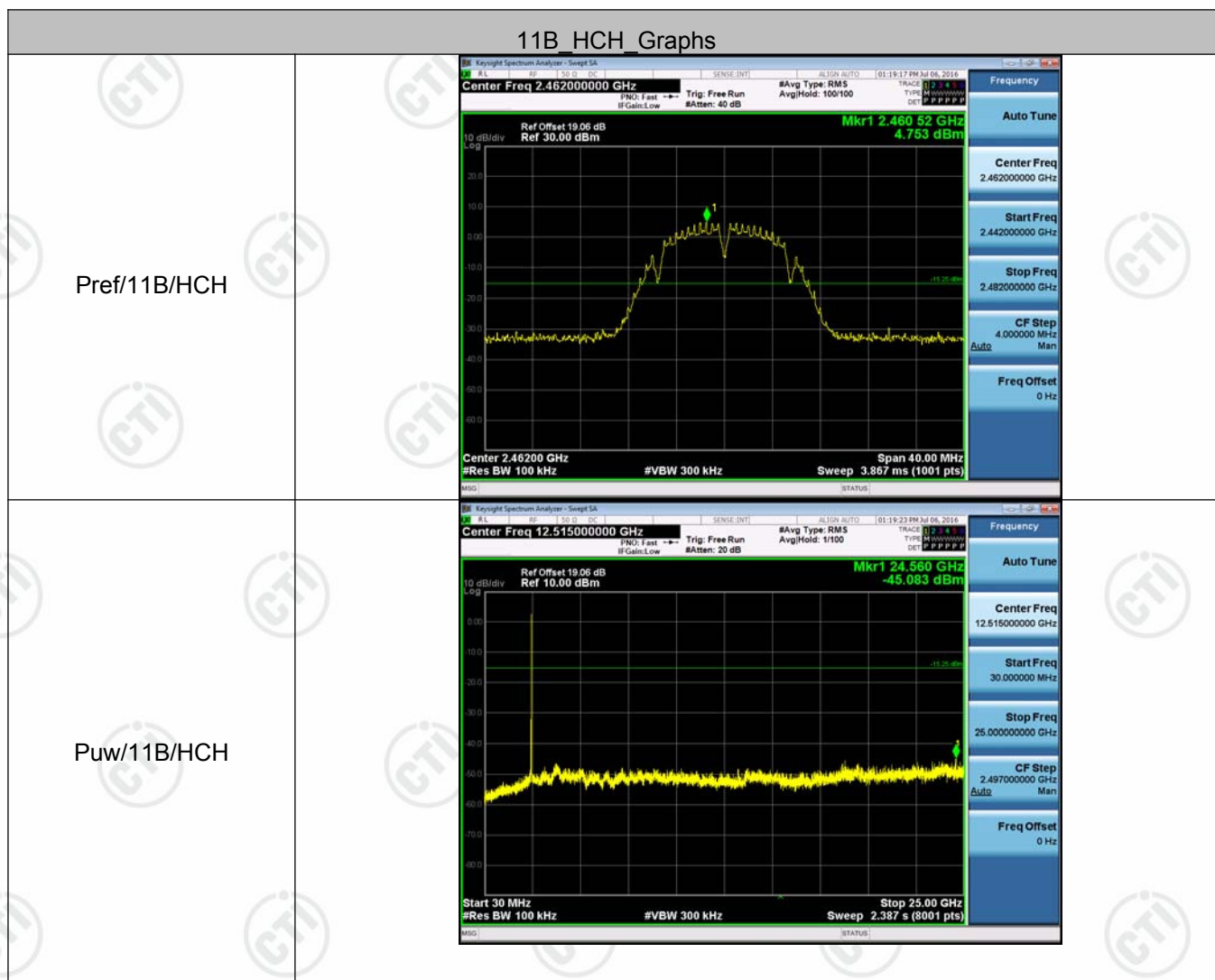
Result Table

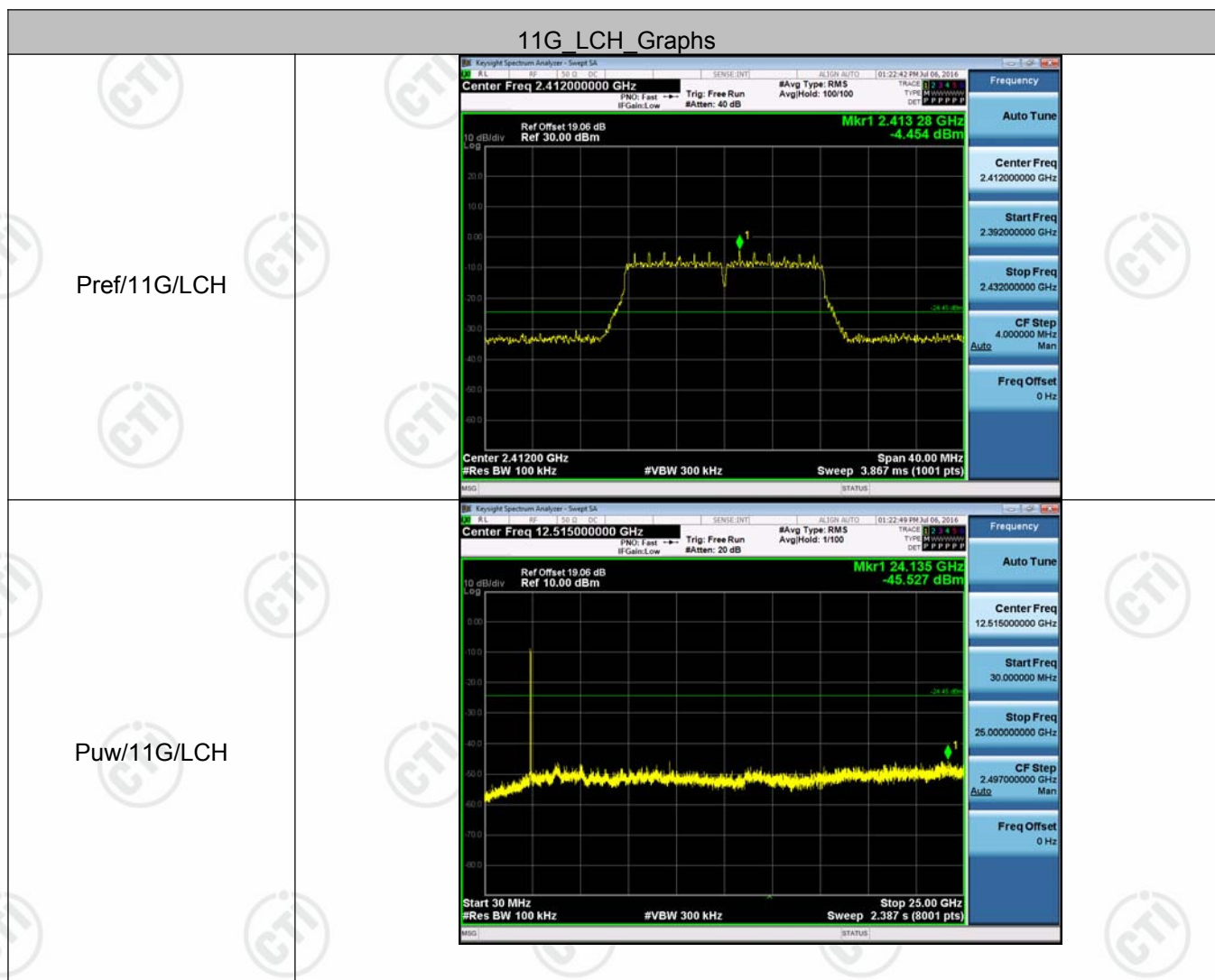
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
11B	LCH	4.515	<Limit	PASS
11B	MCH	4.61	<Limit	PASS
11B	HCH	4.753	<Limit	PASS
11G	LCH	-4.454	<Limit	PASS
11G	MCH	-4.484	<Limit	PASS
11G	HCH	-4.246	<Limit	PASS
11N20SISO	LCH	-4.737	<Limit	PASS
11N20SISO	MCH	-4.206	<Limit	PASS
11N20SISO	HCH	-4.241	<Limit	PASS
11N40SISO	LCH	-7.842	<Limit	PASS
11N40SISO	MCH	-7.599	<Limit	PASS
11N40SISO	HCH	-7.34	<Limit	PASS

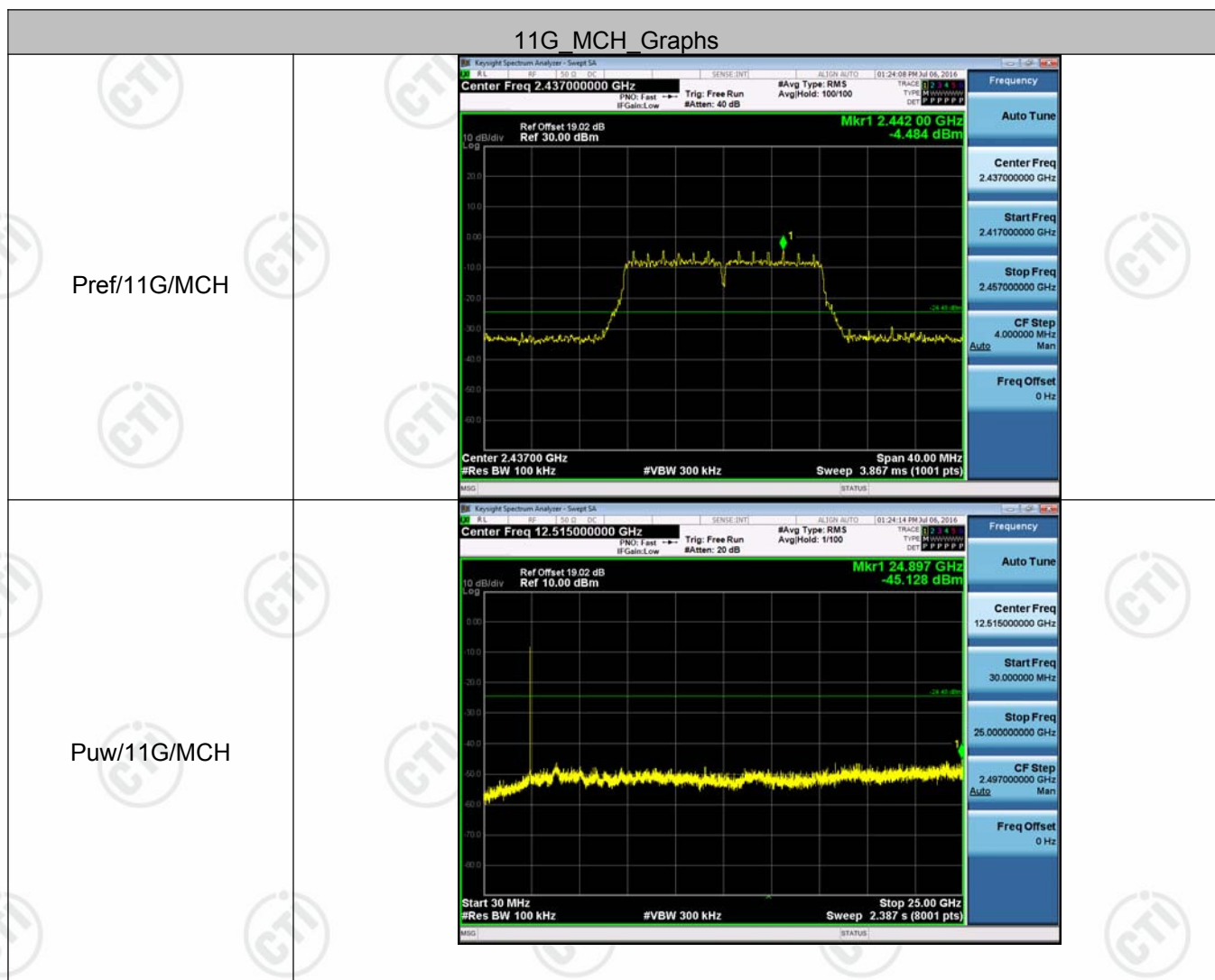
Test Graph



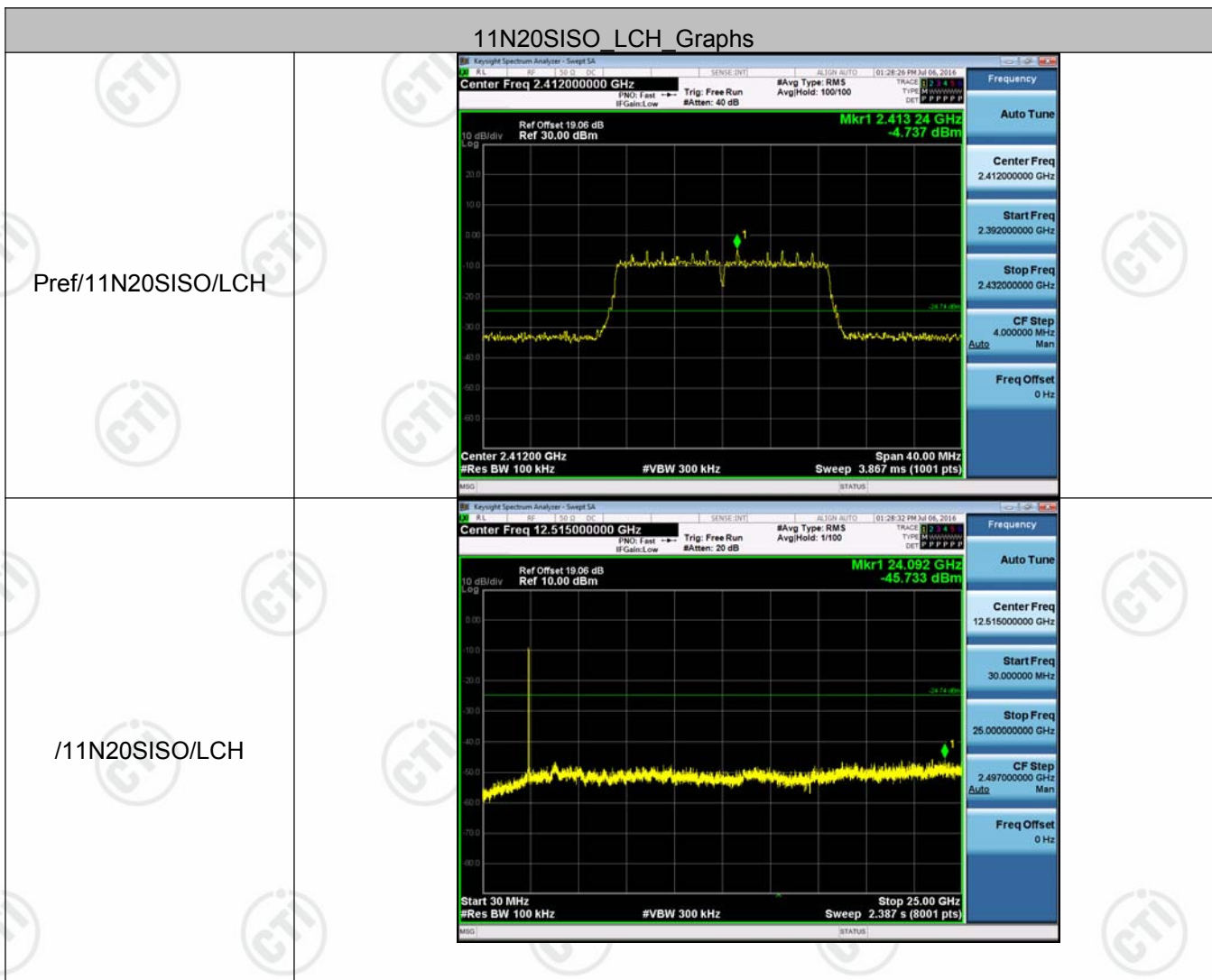


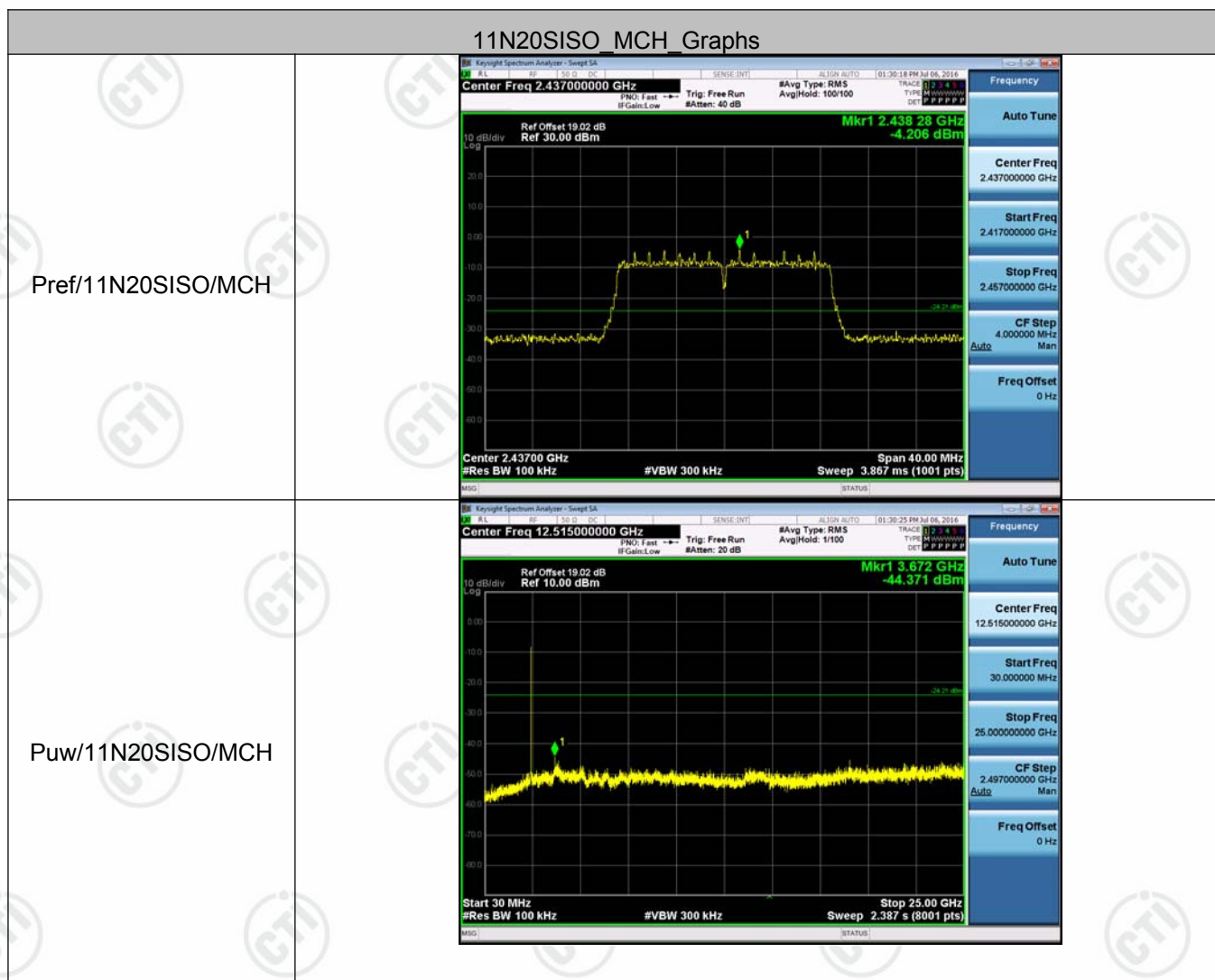






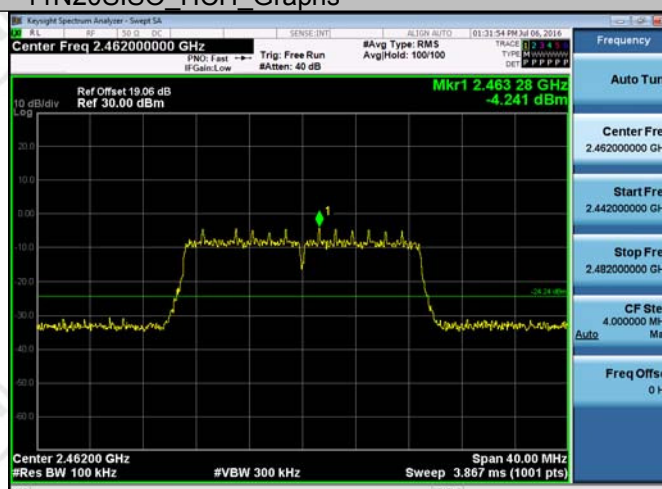




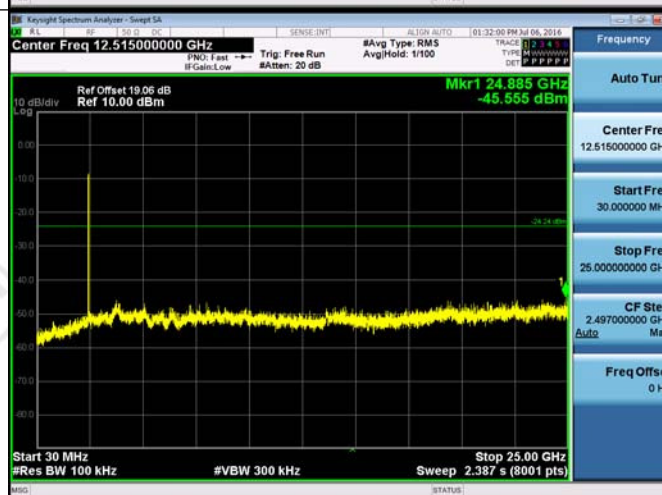


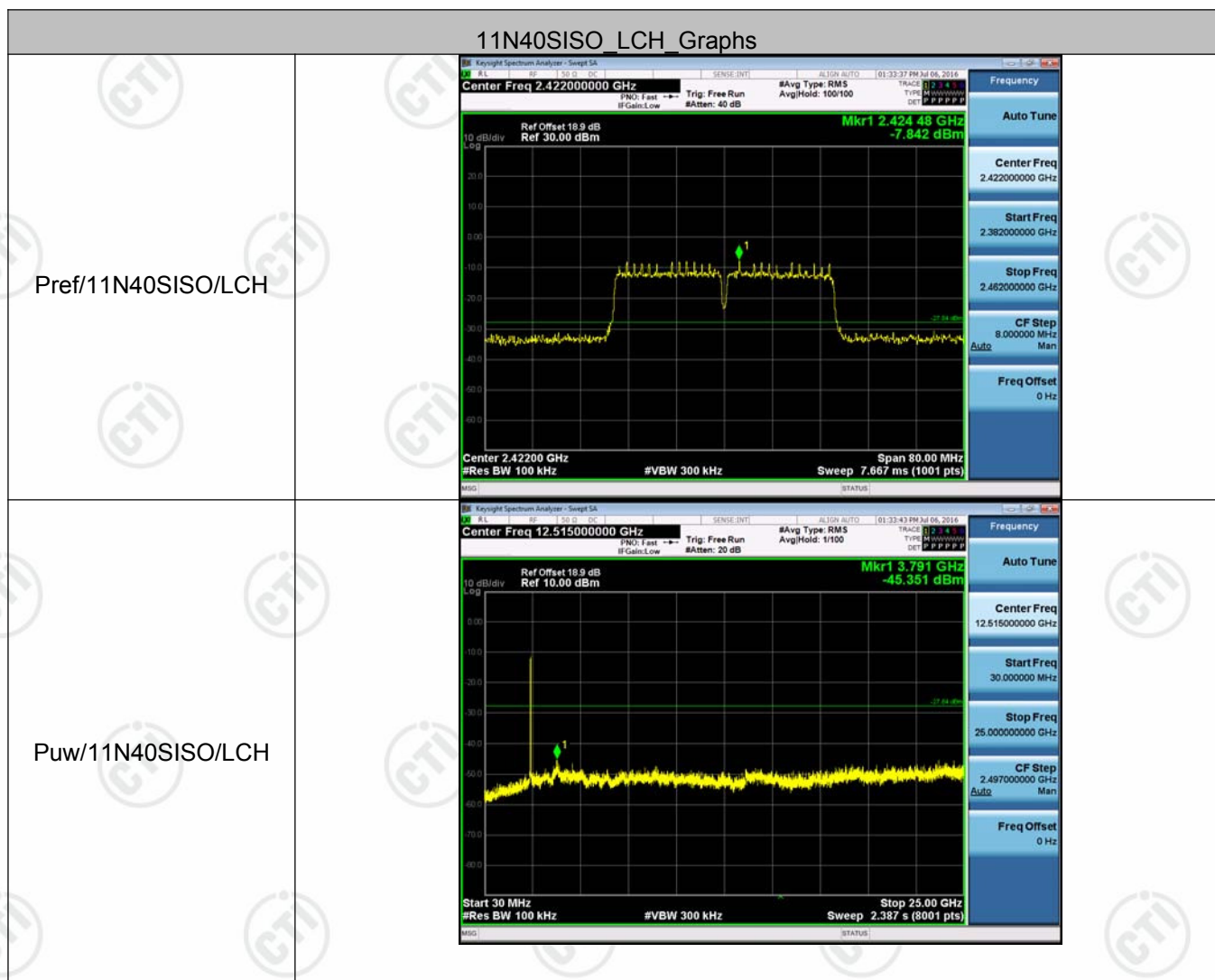
11N20SISO_HCH_Graphs

Pref/11N20SISO/HCH



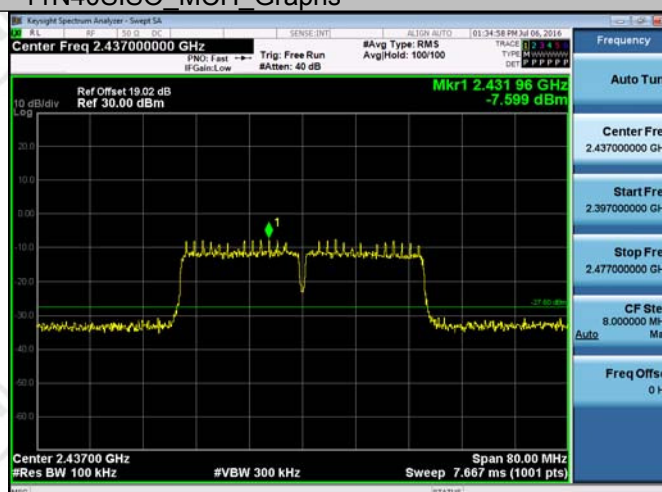
Puw/11N20SISO/HCH



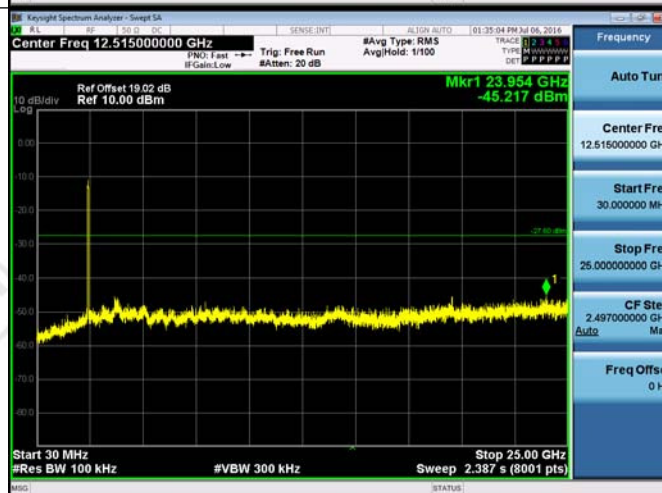


11N40SISO_MCH_Graphs

Pref/11N40SISO/MCH

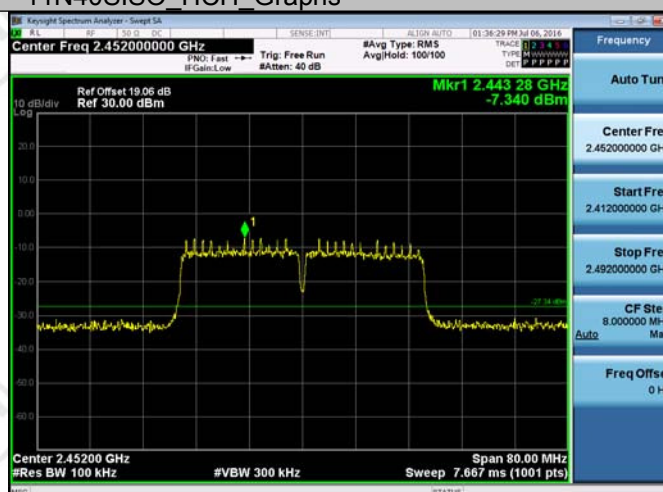


Puw/11N40SISO/MCH

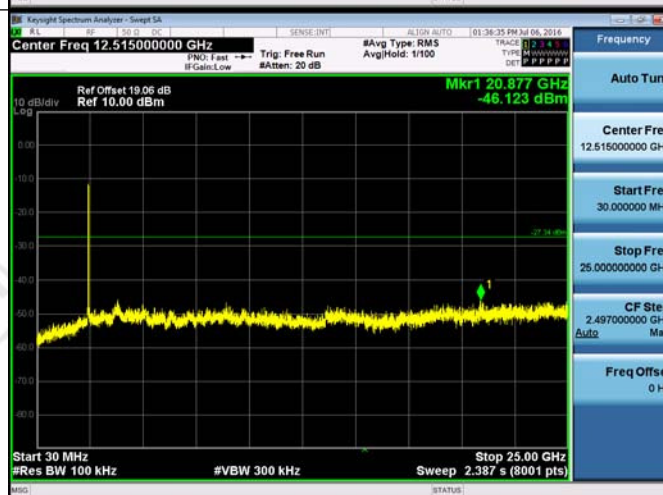


11N40SISO_HCH_Graphs

Pref/11N40SISO/HCH



Puw/11N40SISO/HCH



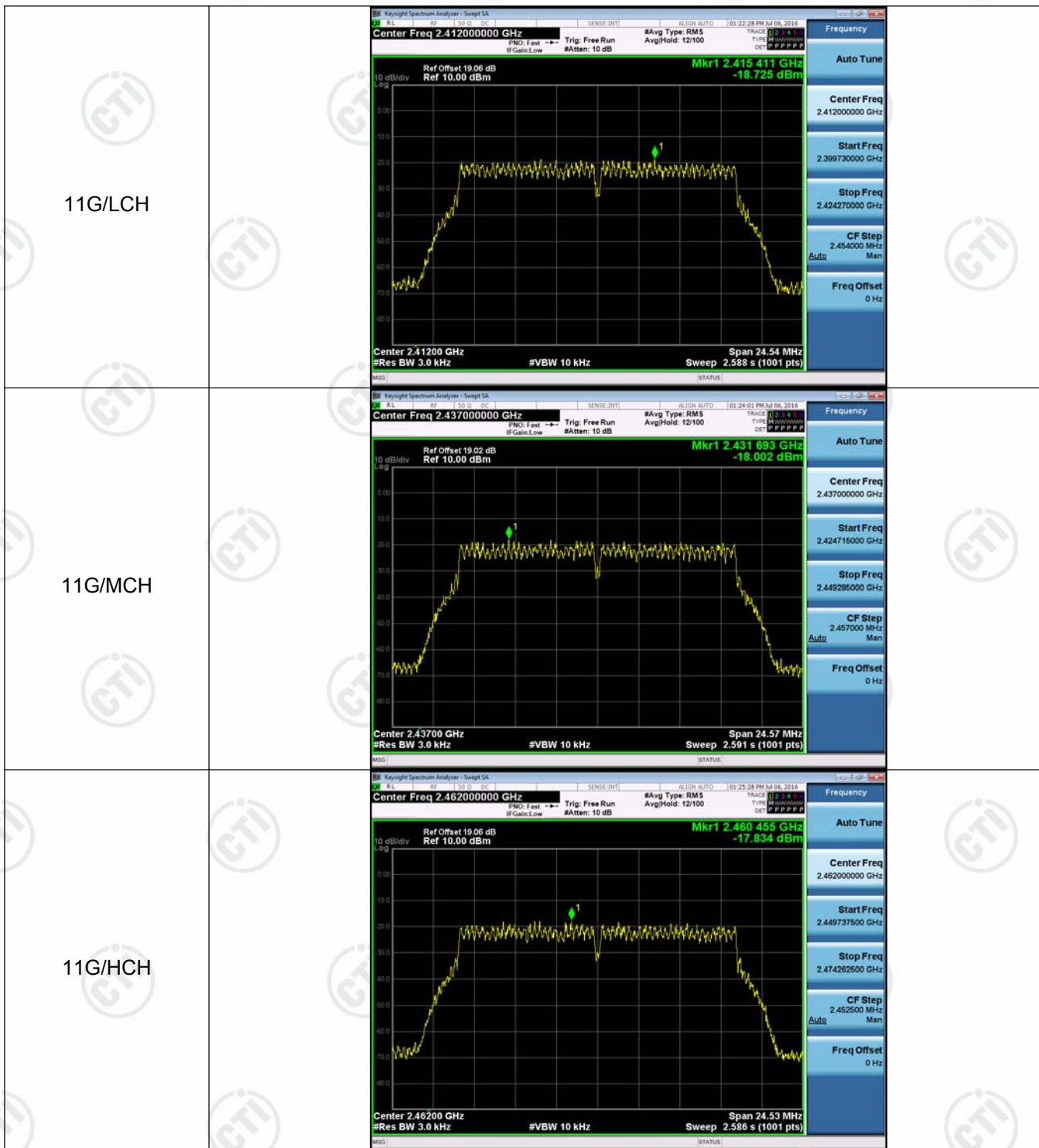
Appendix E): Power Spectral Density

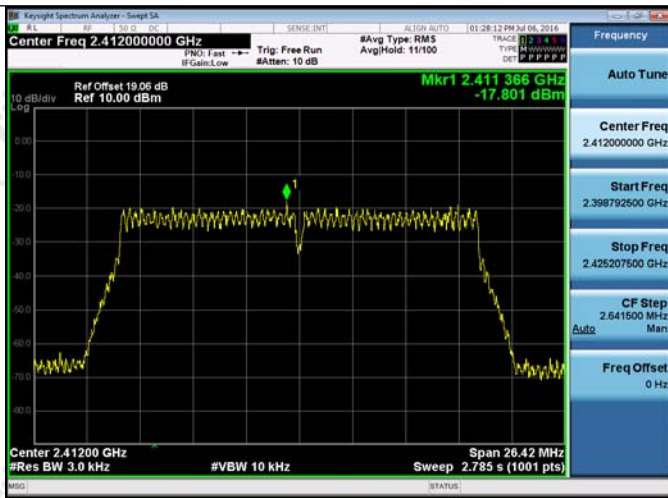
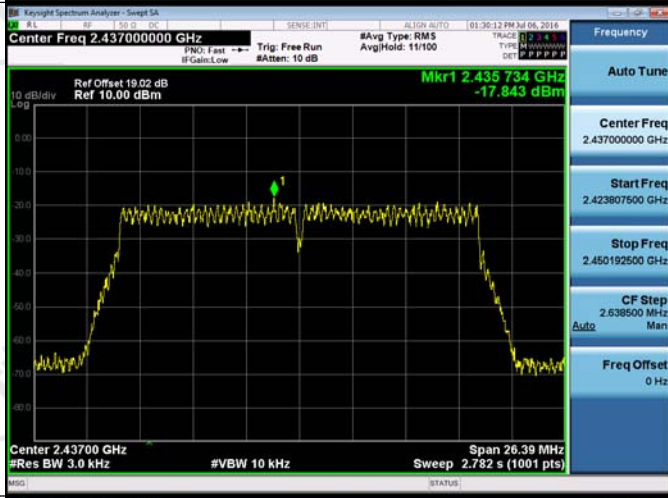
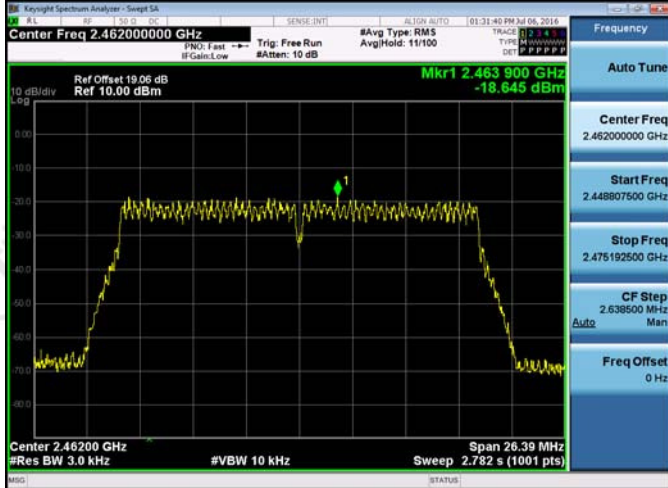
Result Table

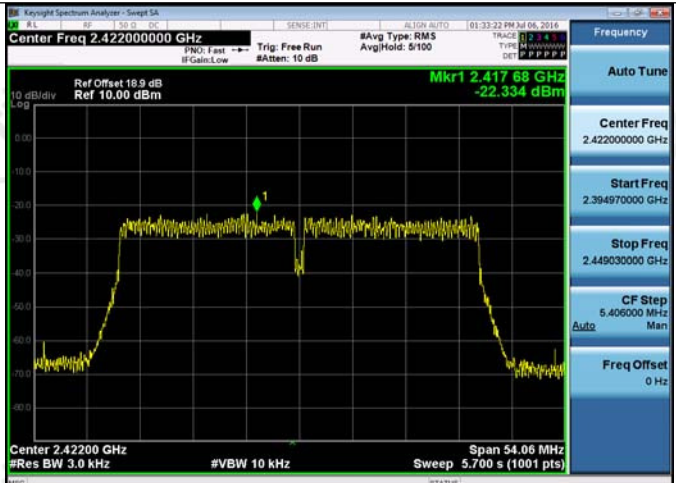
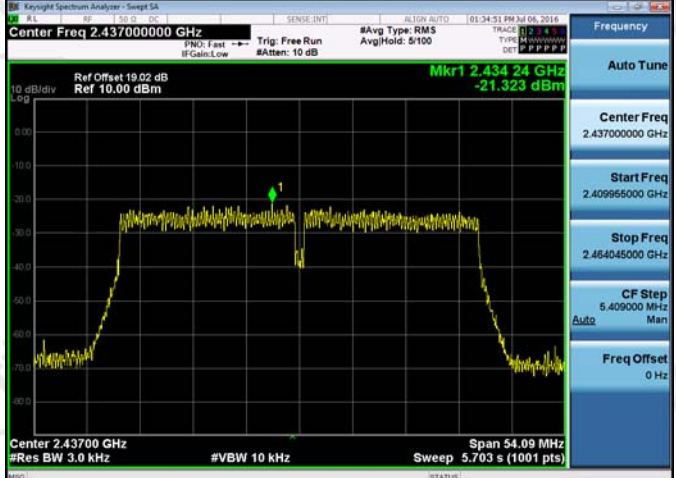
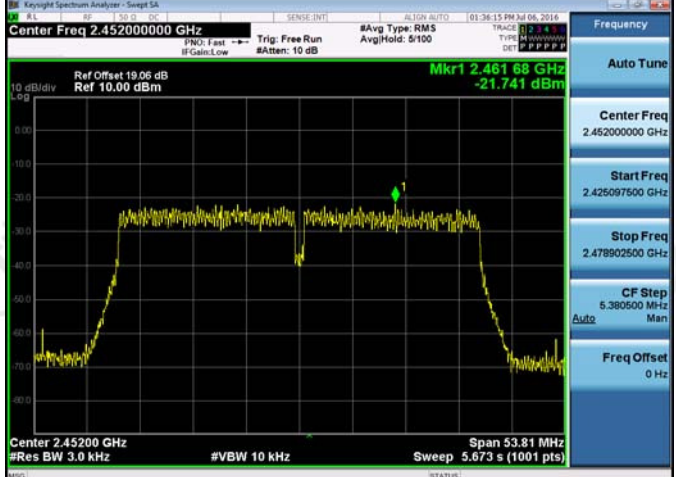
Mode	Channel	Power Spectral Density [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	LCH	-9.592	8	PASS
11B	MCH	-9.040	8	PASS
11B	HCH	-8.916	8	PASS
11G	LCH	-18.725	8	PASS
11G	MCH	-18.002	8	PASS
11G	HCH	-17.834	8	PASS
11N20SISO	LCH	-17.801	8	PASS
11N20SISO	MCH	-17.843	8	PASS
11N20SISO	HCH	-18.645	8	PASS
11N40SISO	LCH	-22.334	8	PASS
11N40SISO	MCH	-21.323	8	PASS
11N40SISO	HCH	-21.741	8	PASS

Test Graph





11N20SISO/LCH	 <p>Key: Keysight Spectrum Analyzer - Sweep SA</p> <p>Center Freq 2.412000000 GHz</p> <p>Ref Offset 19.06 dB Ref 10.00 dBm</p> <p>Mkr1 2.411 366 GHz -17.801 dBm</p> <p>Center 2.41200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 26.42 MHz Sweep 2.785 s (1001 pts)</p> <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.412000000 GHz</p> <p>Start Freq 2.398192500 GHz</p> <p>Stop Freq 2.425075000 GHz</p> <p>CF Step 2.641500 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
11N20SISO/MCH	 <p>Key: Keysight Spectrum Analyzer - Sweep SA</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.02 dB Ref 10.00 dBm</p> <p>Mkr1 2.435 734 GHz -17.843 dBm</p> <p>Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 26.39 MHz Sweep 2.782 s (1001 pts)</p> <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.437000000 GHz</p> <p>Start Freq 2.423807500 GHz</p> <p>Stop Freq 2.450192500 GHz</p> <p>CF Step 2.638500 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
11N20SISO/HCH	 <p>Key: Keysight Spectrum Analyzer - Sweep SA</p> <p>Center Freq 2.462000000 GHz</p> <p>Ref Offset 19.06 dB Ref 10.00 dBm</p> <p>Mkr1 2.463 900 GHz -18.645 dBm</p> <p>Center 2.46200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 26.39 MHz Sweep 2.782 s (1001 pts)</p> <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.462000000 GHz</p> <p>Start Freq 2.448807500 GHz</p> <p>Stop Freq 2.475192500 GHz</p> <p>CF Step 2.638500 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>

11N40SISO/LCH	 <p>Key: Keysight Spectrum Analyzer - Sweep SA Center Freq 2.42200000 GHz Ref Offset 18.9 dB Ref 10.00 dBm Mkr1 2.417 68 GHz -22.334 dBm Center 2.42200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 54.06 MHz Sweep 5.700 s (1001 pts)</p>
11N40SISO/MCH	 <p>Key: Keysight Spectrum Analyzer - Sweep SA Center Freq 2.43700000 GHz Ref Offset 19.02 dB Ref 10.00 dBm Mkr1 2.434 24 GHz -21.323 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 54.09 MHz Sweep 5.703 s (1001 pts)</p>
11N40SISO/HCH	 <p>Key: Keysight Spectrum Analyzer - Sweep SA Center Freq 2.45200000 GHz Ref Offset 19.06 dB Ref 10.00 dBm Mkr1 2.461 66 GHz -21.741 dBm Center 2.45200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 53.81 MHz Sweep 5.673 s (1001 pts)</p>

Appendix F): Antenna Requirement

15.203 requirement:

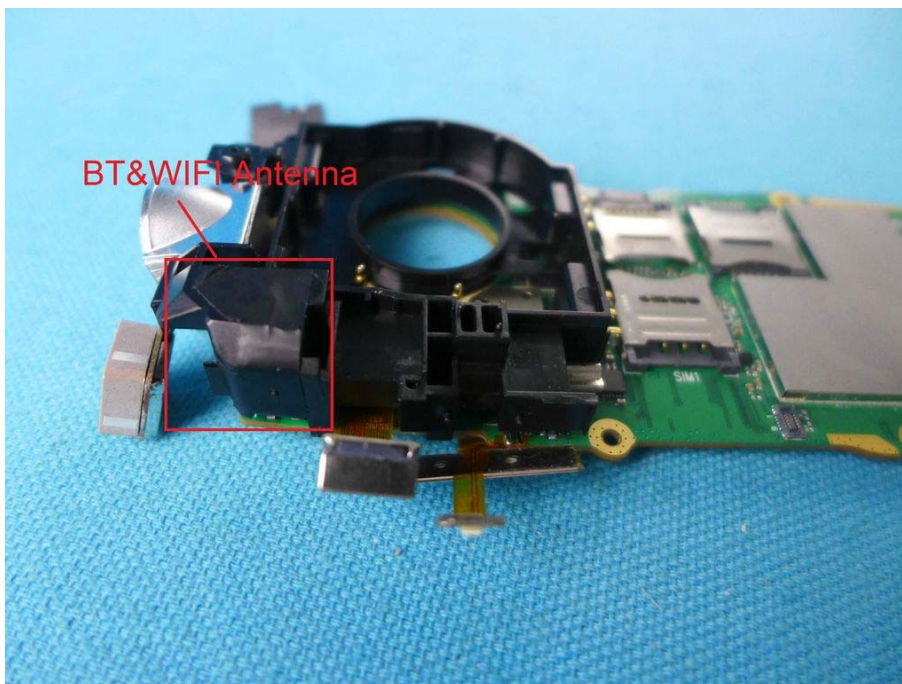
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit 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 integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1.8dBi.



Appendix G): AC Power Line Conducted Emission

Test Procedure:	<p>Test frequency range :150KHz-30MHz</p> <p>1)The mains terminal disturbance voltage test was conducted in a shielded room.</p> <p>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω 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.</p> <p>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,</p> <p>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.</p> <p>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.</p>														
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><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></table> <p>* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.</p> <p>NOTE : The lower limit is applicable at the transition frequency</p>	Frequency range (MHz)	Limit (dBμV)		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 (dBμV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													

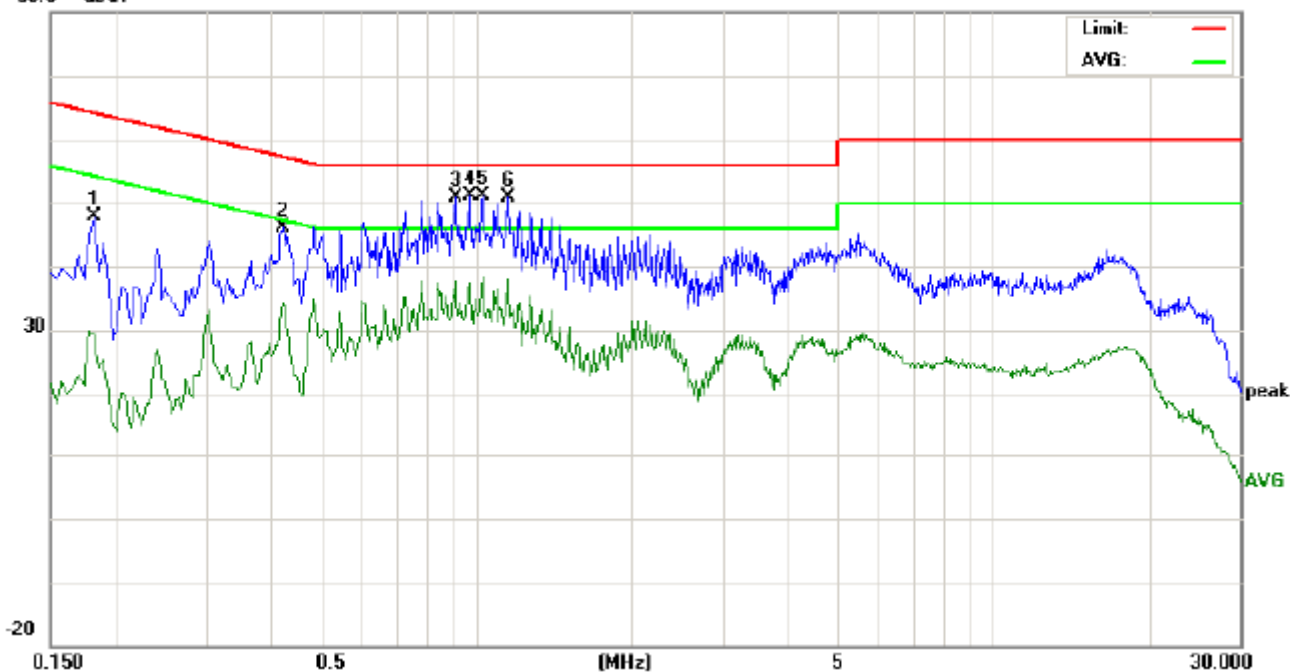
Measurement Data

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:

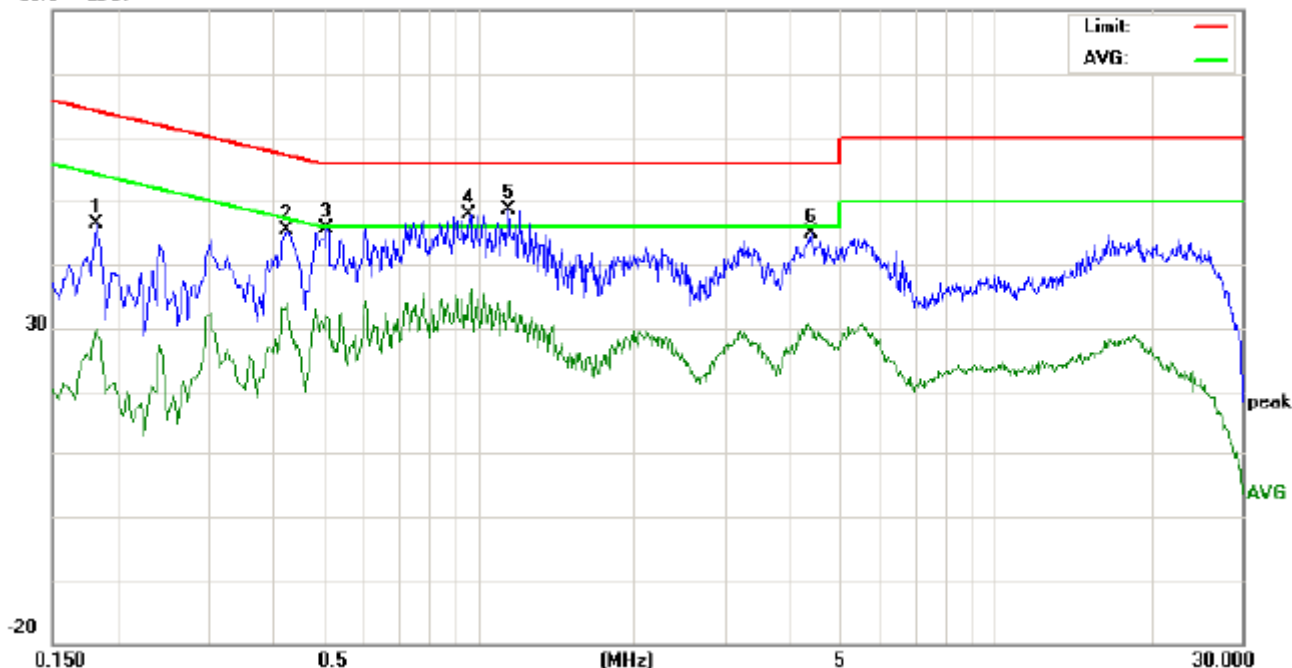
90.0 dBuV



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	0.1819	38.11	31.30	19.51	9.80	47.91	41.10	29.31	64.39	54.39	-23.29	-25.08	P	
2	0.4220	36.29	33.50	24.58	9.90	46.19	43.40	34.48	57.41	47.41	-14.01	-12.93	P	
3	0.9100	40.98	36.90	27.62	10.00	50.98	46.90	37.62	56.00	46.00	-9.10	-8.38	P	
4	0.9700	41.10	36.80	27.30	10.00	51.10	46.80	37.30	56.00	46.00	-9.20	-8.70	P	
5	1.0300	41.15	37.00	28.29	10.00	51.15	47.00	38.29	56.00	46.00	-9.00	-7.71	P	
6	1.1500	40.87	36.80	28.09	10.00	50.87	46.80	38.09	56.00	46.00	-9.20	-7.91	P	

Neutral line:

90.0 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	0.1819	36.54	30.30	20.13	9.80	46.34	40.10	29.93	64.39	54.39	-24.29	-24.46	P	
2	0.4260	35.43	32.60	24.05	9.90	45.33	42.50	33.95	57.33	47.33	-14.83	-13.38	P	
3	0.5100	35.81	31.00	21.86	9.90	45.71	40.90	31.76	56.00	46.00	-15.10	-14.24	P	
4	0.9620	37.99	32.40	24.39	10.00	47.99	42.40	34.39	56.00	46.00	-13.60	-11.61	P	
5	1.1460	38.60	31.40	24.22	10.00	48.60	41.40	34.22	56.00	46.00	-14.60	-11.78	P	
6	4.4140	34.77	28.40	19.88	10.00	44.77	38.40	29.88	56.00	46.00	-17.60	-16.12	P	

Notes:

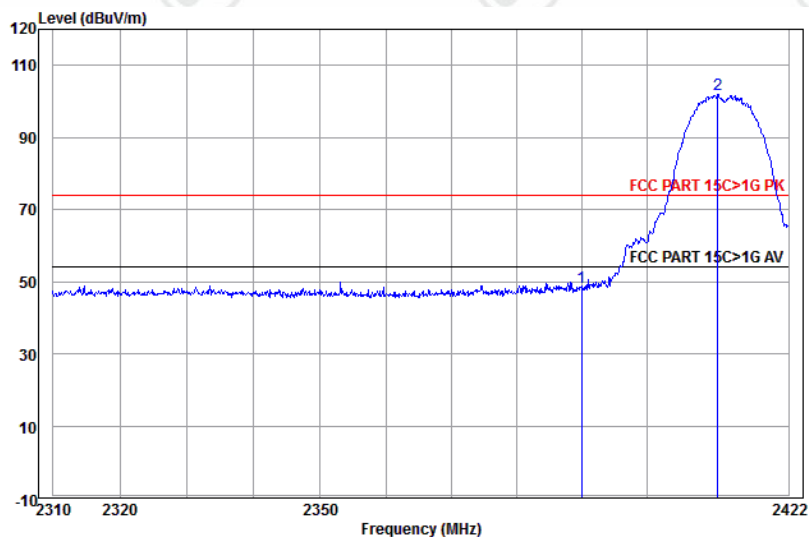
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. AC120V and 240V are tested and found the worst case is 120V, So only the 120V data were shown in the above.

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:	<p>Below 1GHz test procedure as below:</p> <ol style="list-style-type: none"> 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 <p>Above 1GHz test procedure as below:</p> <ol style="list-style-type: none"> 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	

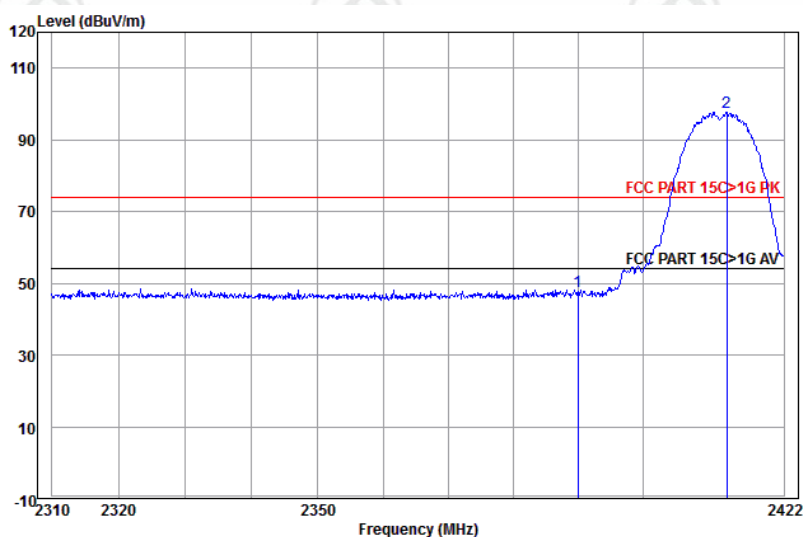
Test plot as follows:

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



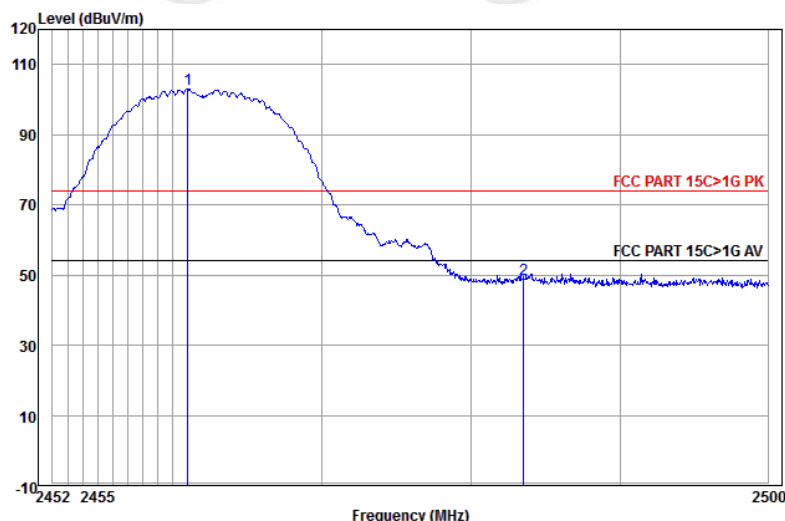
	Ant Freq	Cable Factor	Preamp Loss	Preamp Factor	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	45.91	48.33	74.00	-25.67	Horizontal	
2 pp	2411.016	32.58	4.33	34.39	99.42	101.94	74.00	27.94	Horizontal	

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



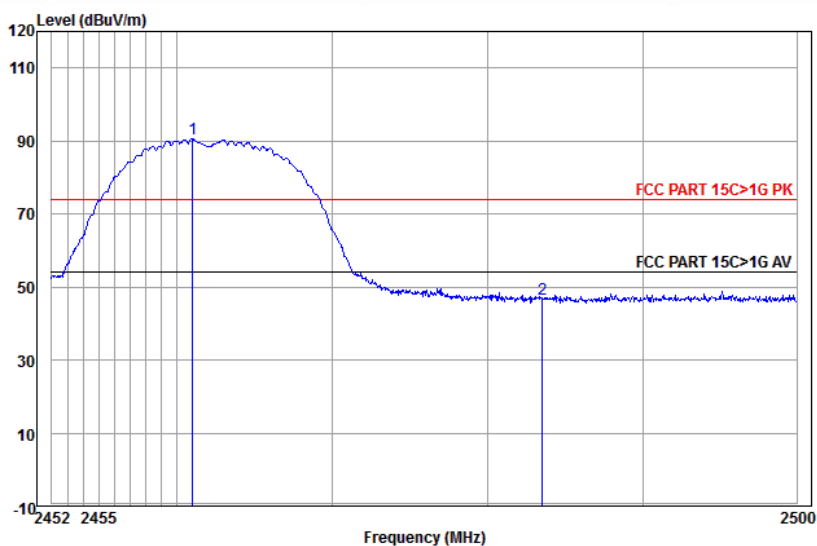
	Ant Freq	Cable Factor	Preamp Loss	Preamp Factor	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	45.32	47.74	74.00	-26.26	Vertical	
2 pp	2413.072	32.58	4.34	34.39	95.20	97.73	74.00	23.73	Vertical	

Worse case mode:	802.11b (11Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



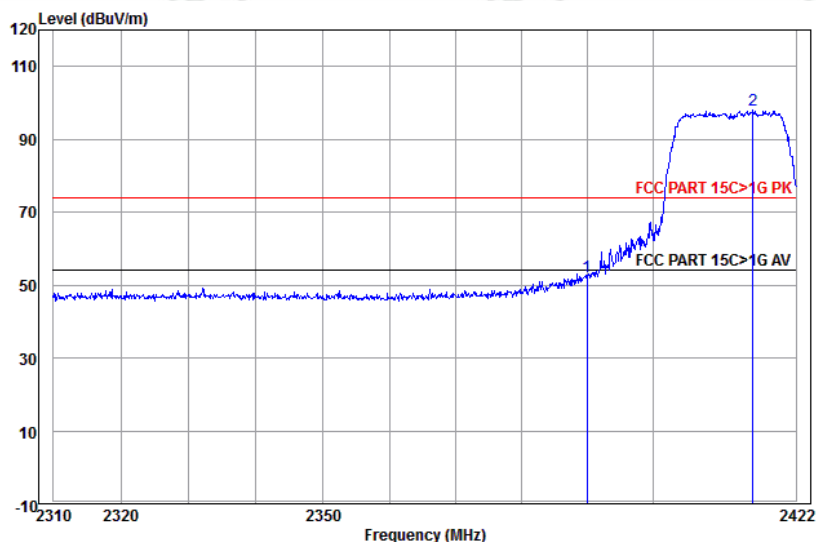
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2461.001	32.67	4.45	34.40	100.28	103.00	74.00	29.00	Horizontal
2	2483.500	32.71	4.51	34.41	46.08	48.89	74.00	-25.11	Horizontal

Worse case mode:	802.11b (11Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



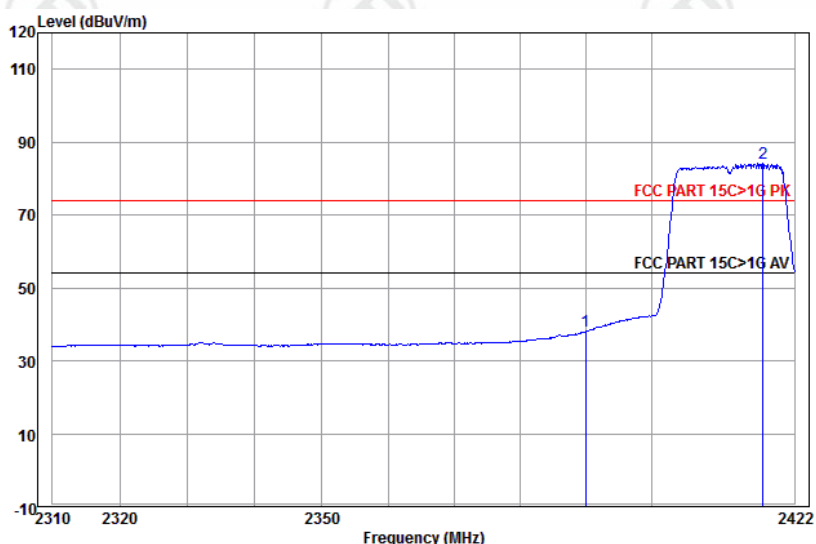
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2461.001	32.67	4.45	34.40	87.93	90.65	74.00	16.65	Vertical
2	2483.500	32.71	4.51	34.41	43.77	46.58	74.00	-27.42	Vertical

Worse case mode:	802.11g (6Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



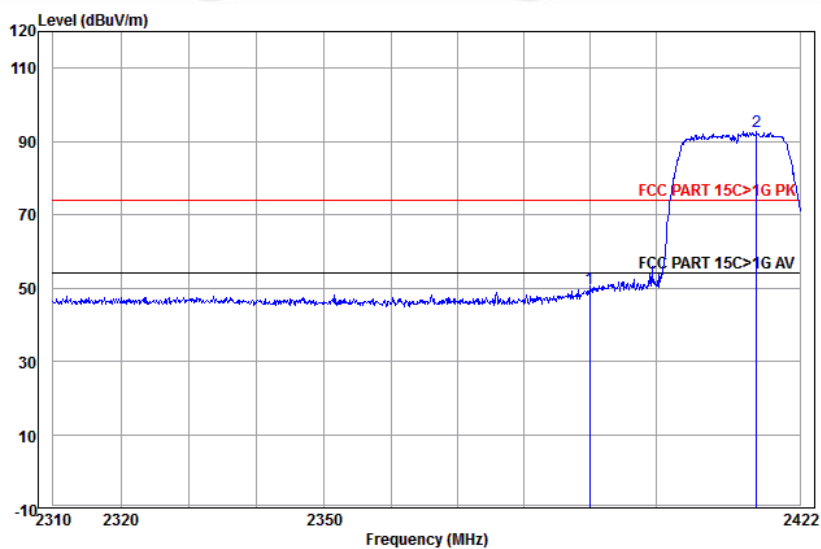
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	49.93	52.35	74.00	-21.65	Horizontal
2 pp	2415.358	32.58	4.34	34.39	95.68	98.21	74.00	24.21	Horizontal

Worse case mode:	802.11g (6Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Average



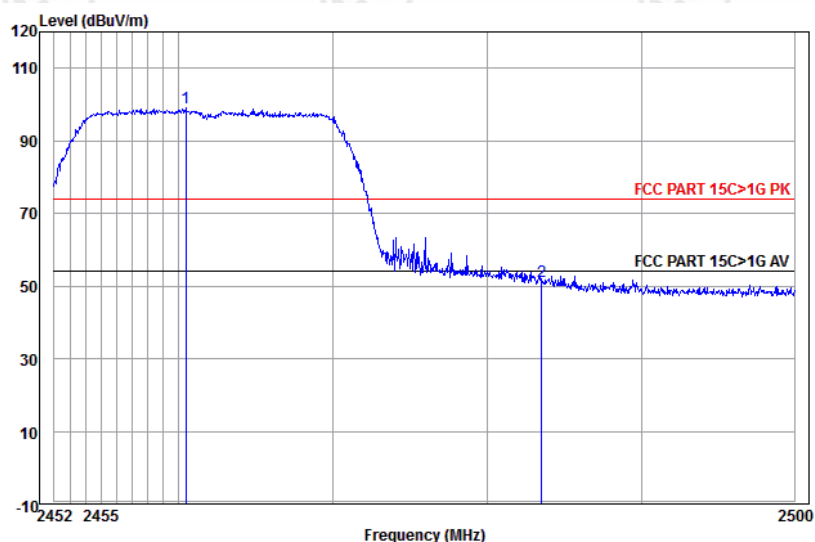
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	35.58	38.00	54.00	-16.00	Horizontal Average
2 pp	2417.188	32.59	4.35	34.39	81.57	84.12	54.00	30.12	Horizontal Average

Worse case mode:	802.11g (6Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



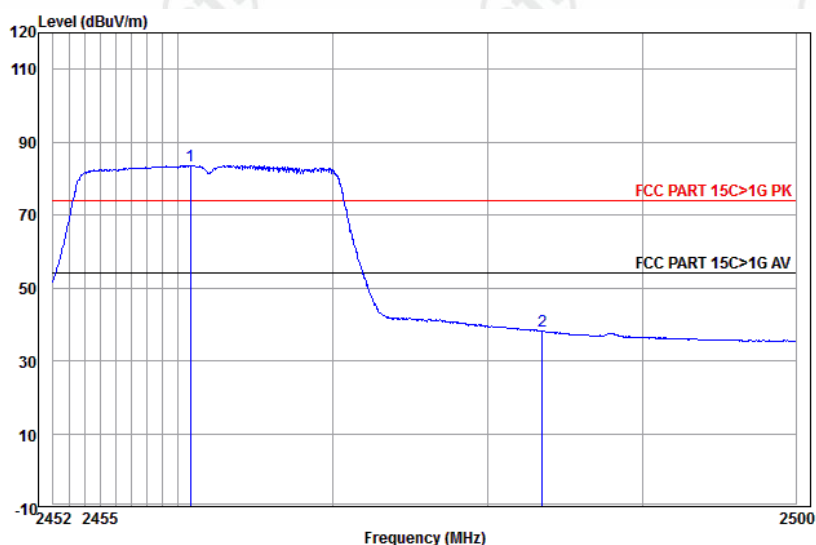
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	47.56	49.98	74.00	-24.02	Vertical
2 pp	2415.358	32.58	4.34	34.39	90.32	92.85	74.00	18.85	Vertical

Worse case mode:	802.11g (6Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



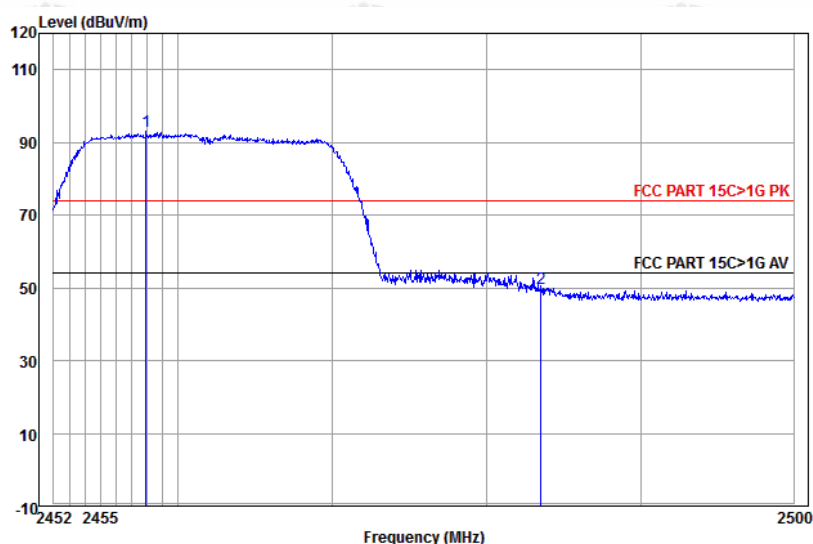
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2460.476	32.67	4.45	34.40	96.34	99.06	74.00	25.06	Horizontal
2	2483.500	32.71	4.51	34.41	48.46	51.27	74.00	-22.73	Horizontal

Worse case mode:	802.11g (6Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Average



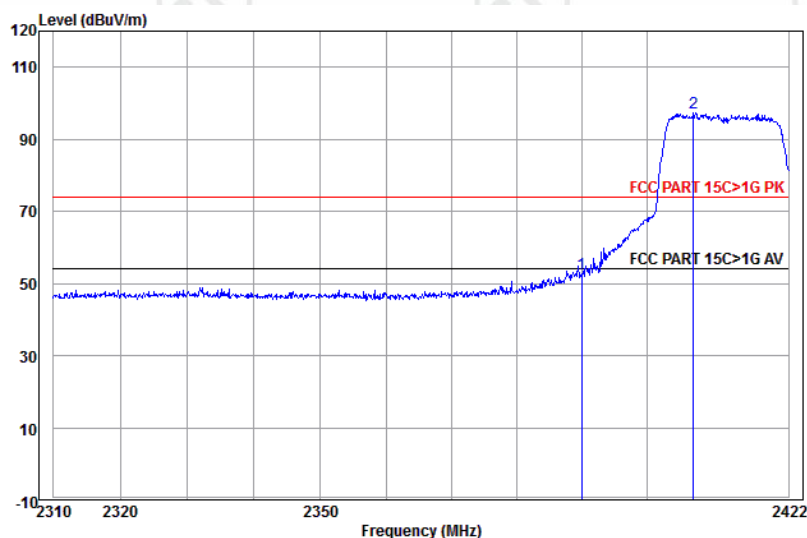
	Ant	Cable	Preamp	Read	Level	Limit	Over		
Freq	Factor	Loss	Factor	Level	Level	Line	Limit	Pol/Phase	Remark
MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp 2460.810	32.67	4.45	34.40	80.96	83.68	54.00	29.68	Horizontal	Average
2 2483.500	32.71	4.51	34.41	35.35	38.16	54.00	-15.84	Horizontal	Average

Worse case mode:	802.11g (6Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



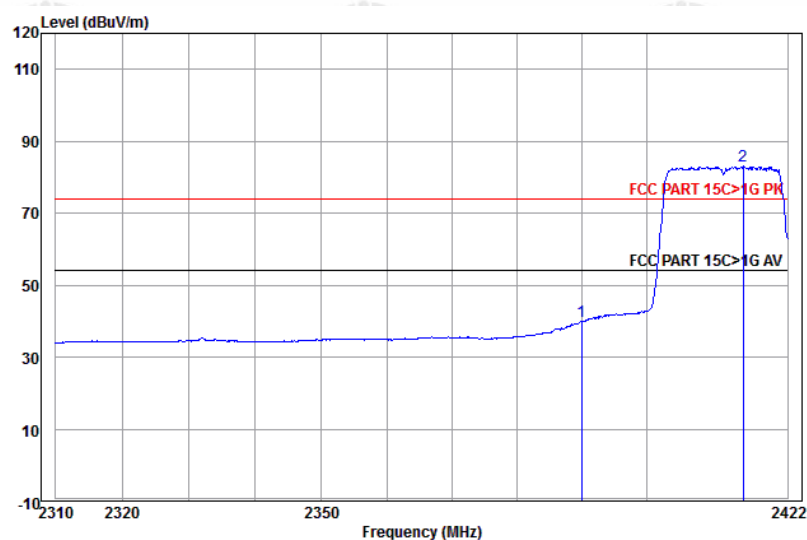
	Ant	Cable	Preamp	Read	Level	Limit	Over		
Freq	Factor	Loss	Factor	Level	Level	Line	Limit	Pol/Phase	Remark
MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp 2457.949	32.67	4.45	34.40	90.29	93.01	74.00	19.01	Vertical	
2 2483.500	32.71	4.51	34.41	47.06	49.87	74.00	-24.13	Vertical	

Worse case mode:	802.11n(HT20) (6.5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



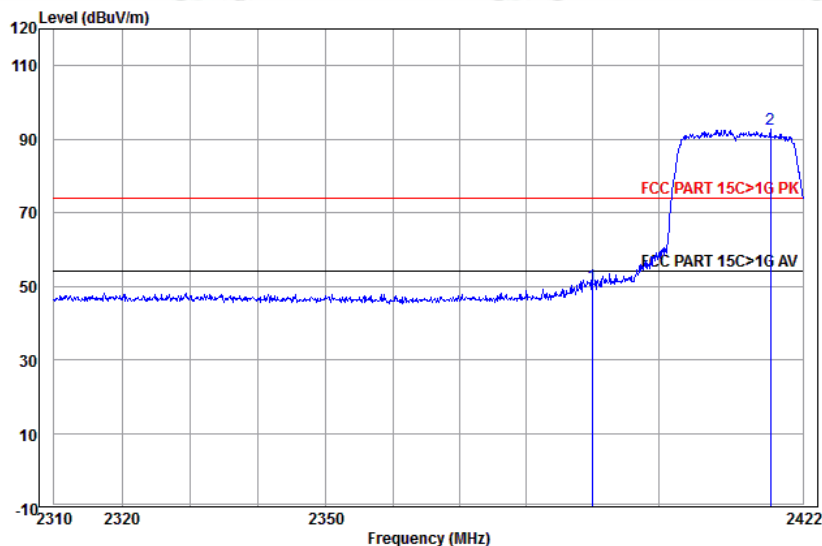
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	50.24	52.66	74.00	-21.34	Horizontal
2 pp	2407.252	32.57	4.32	34.39	95.00	97.50	74.00	23.50	Horizontal

Worse case mode:	802.11n(HT20) (6.5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Average



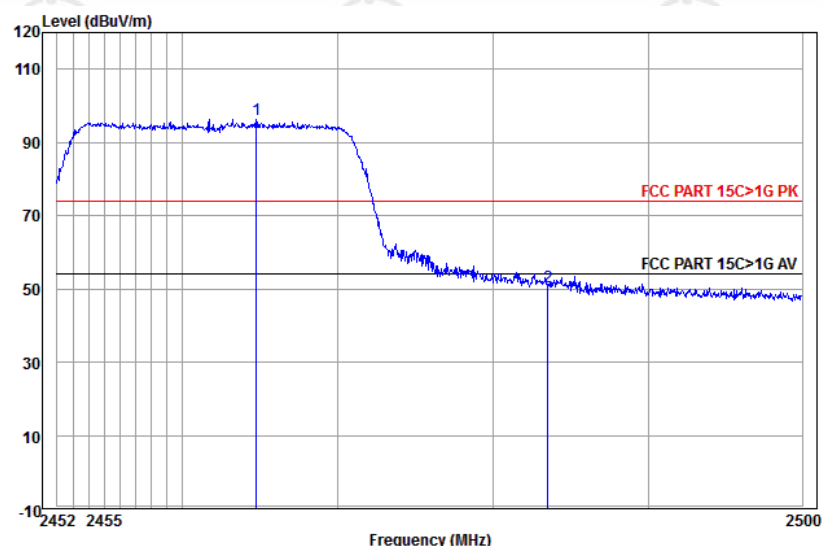
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	37.39	39.81	54.00	-14.19	Horizontal Average
2 pp	2415.129	32.58	4.34	34.39	80.52	83.05	54.00	29.05	Horizontal Average

Worse case mode:	802.11n(HT20) (6.5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



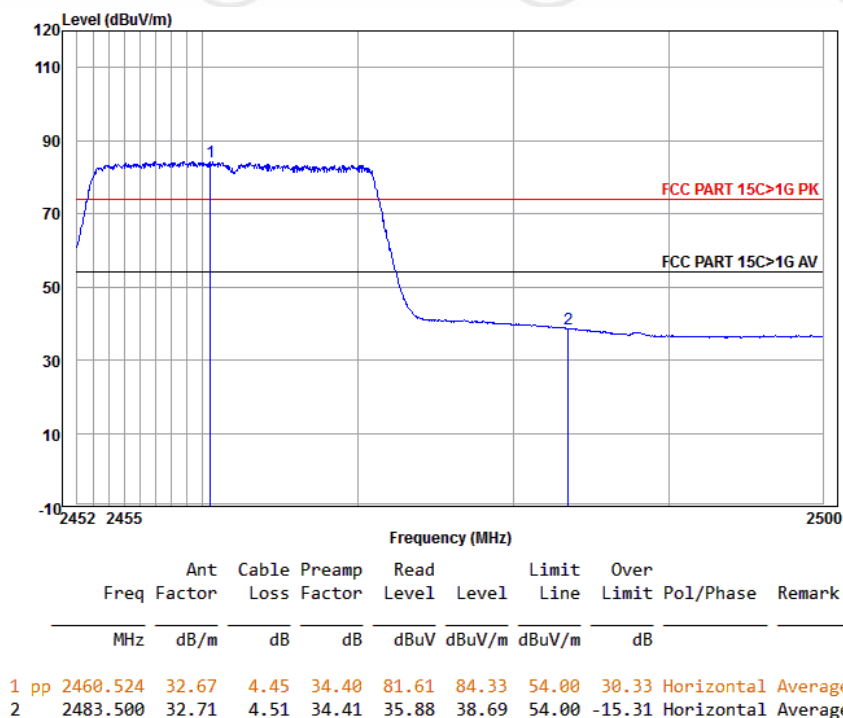
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	47.86	50.28	74.00	-23.72	Vertical
2 pp	2417.074	32.59	4.35	34.39	90.09	92.64	74.00	18.64	Vertical

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

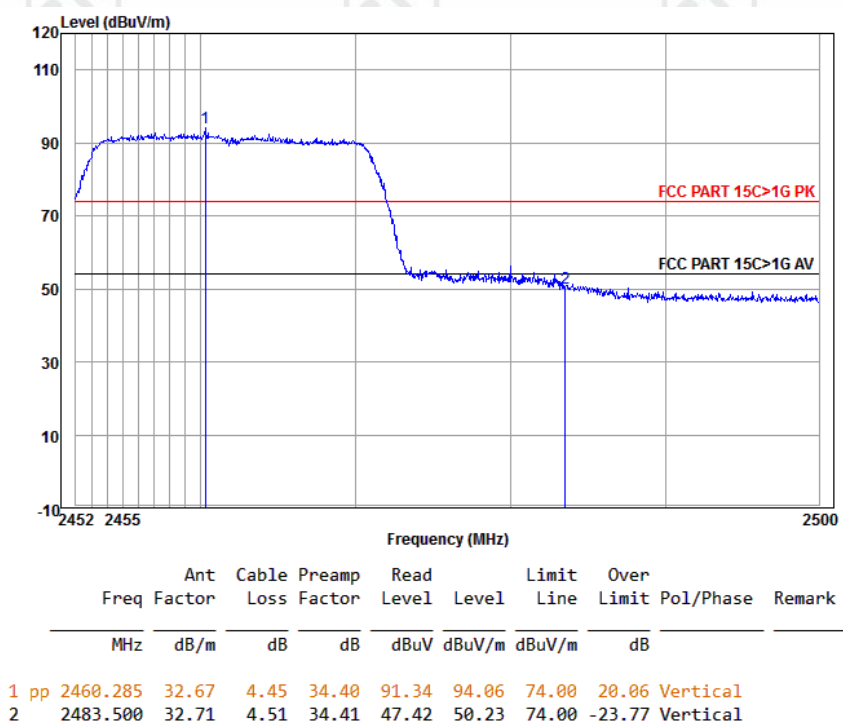


	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2464.725	32.68	4.46	34.40	93.61	96.35	74.00	22.35	Horizontal
2	2483.500	32.71	4.51	34.41	47.83	50.64	74.00	-23.36	Horizontal

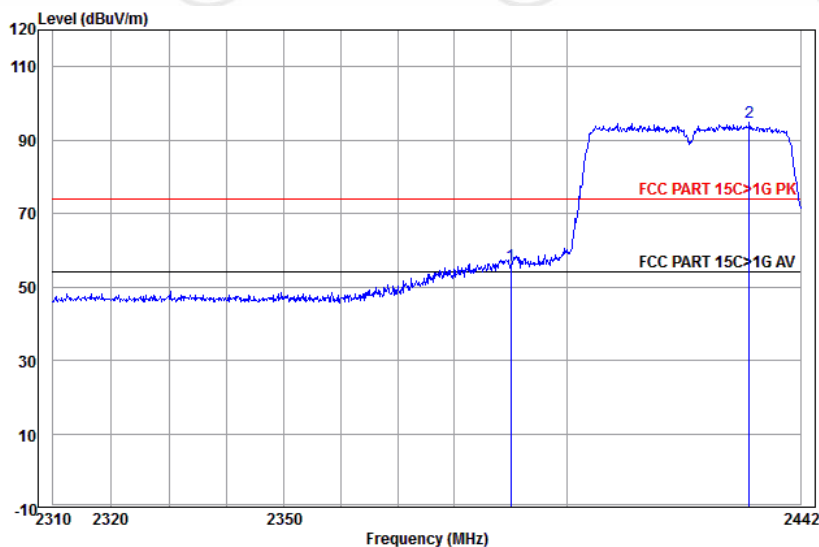
Worse case mode:	802.11n(HT20) (6.5Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Average



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

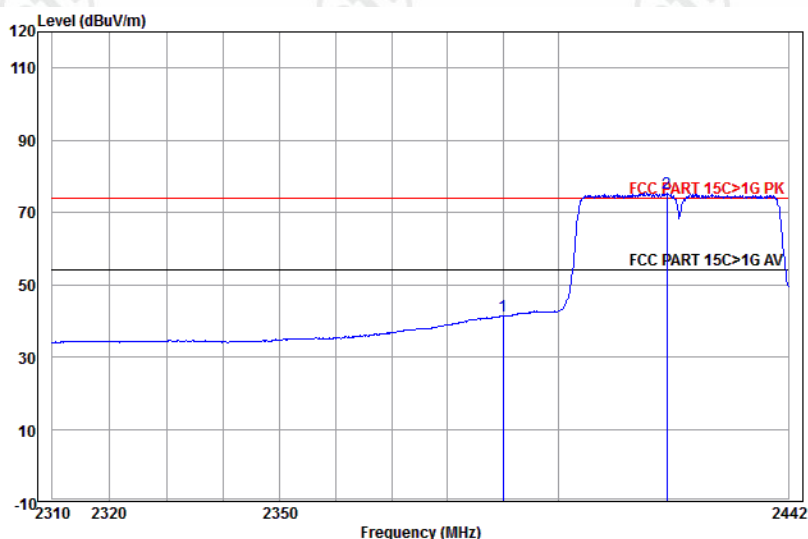


Worse case mode:	802.11n(HT40) (13.5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



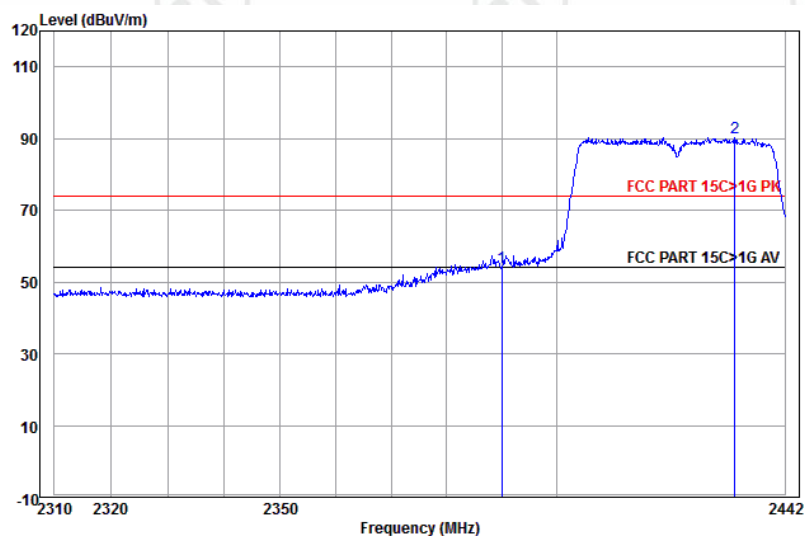
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	53.30	55.72	74.00	-18.28 Horizontal
2 pp	2432.790	32.62	4.38	34.40	92.18	94.78	74.00	20.78 Horizontal

Worse case mode:	802.11n(HT40) (13.5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Average



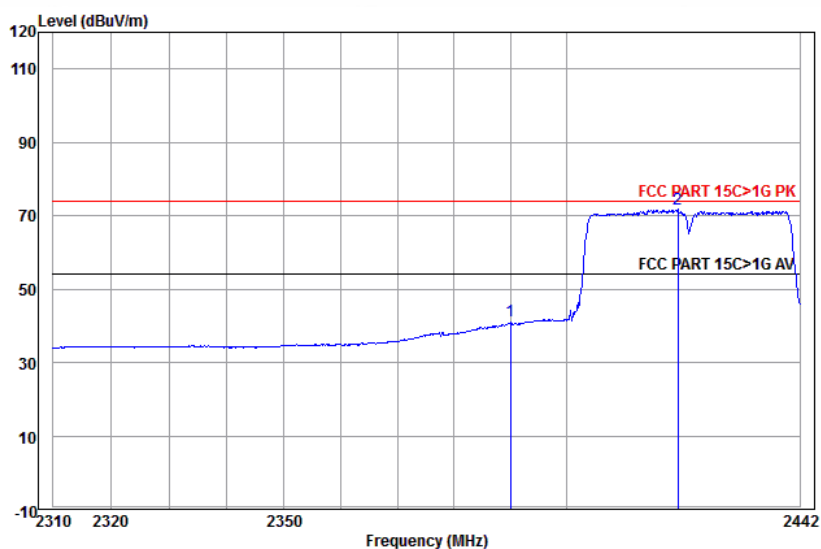
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	38.78	41.20	54.00	-12.80 Horizontal Average
2 pp	2419.712	32.59	4.35	34.39	72.94	75.49	54.00	21.49 Horizontal Average

Worse case mode:	802.11n(HT40) (13.5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



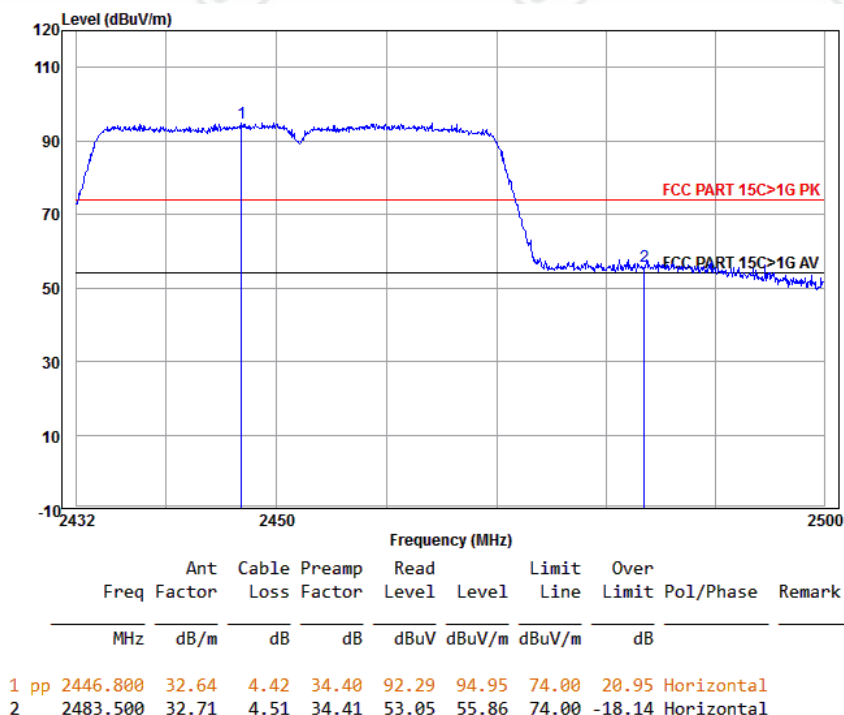
	Ant Freq	Cable Factor	Preamp Loss	Preamp Factor	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	51.60	54.02	74.00	-19.98	Vertical	
2 pp	2432.790	32.62	4.38	34.40	87.55	90.15	74.00	16.15	Vertical	

Worse case mode:	802.11n(HT40) (13.5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Average

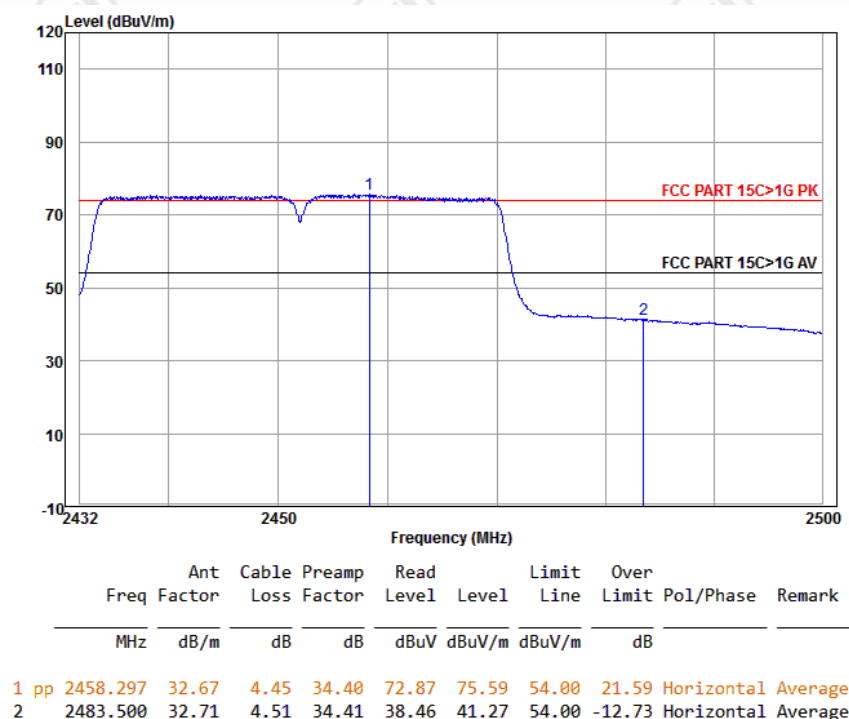


	Ant Freq	Cable Factor	Preamp Loss	Preamp Factor	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	38.89	41.31	54.00	-12.69	Vertical	Average
2 pp	2419.980	32.59	4.35	34.39	69.19	71.74	54.00	17.74	Vertical	Average

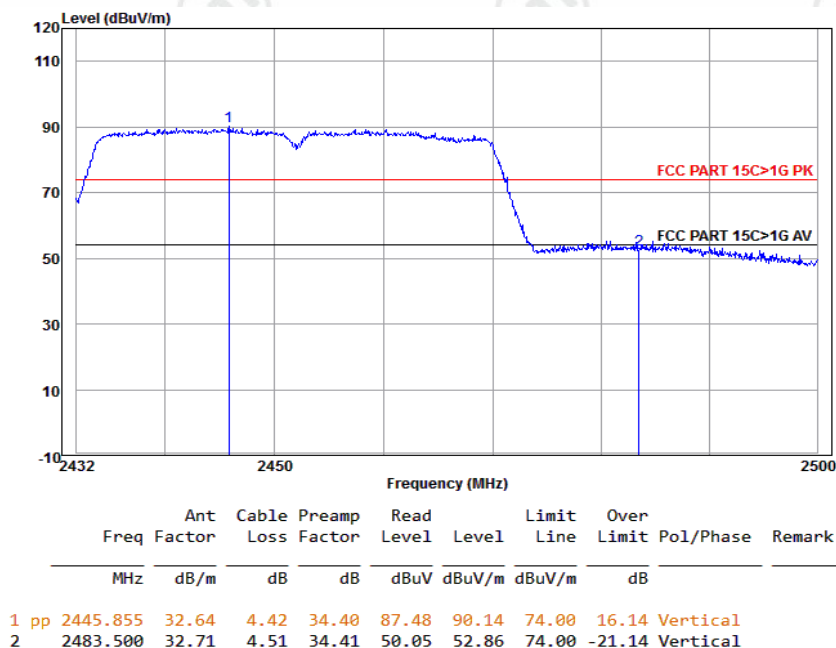
Worse case mode:	802.11n(HT40) (13.5Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



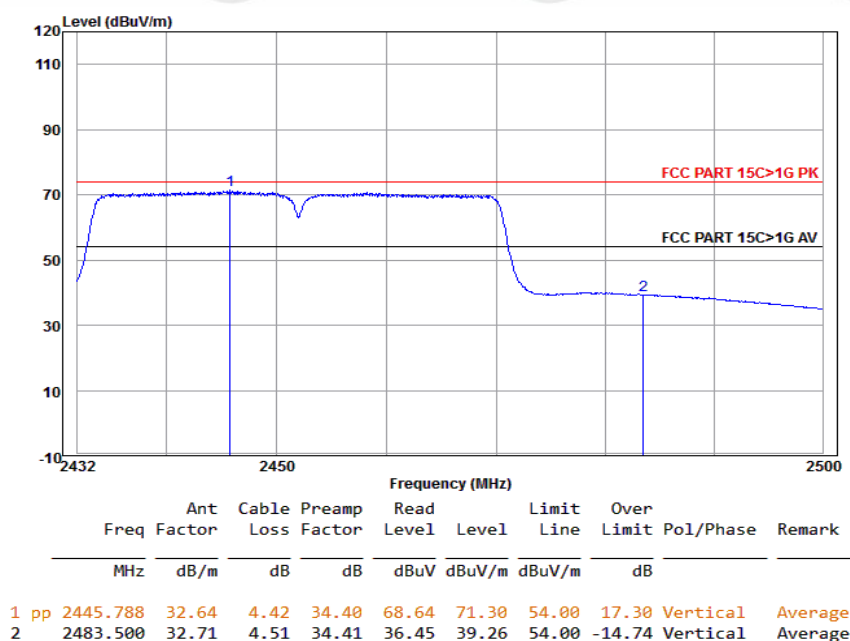
Worse case mode:	802.11n(HT40) (13.5Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Average



Worse case mode:	802.11n(HT40) (13.5Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



Worse case mode:	802.11n(HT40) (13.5Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Average



Remark:

1) Through Pre-scan 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) ; 13.5Mbps of rate is the worst case of 802.11n(HT40), 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 camber. 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.

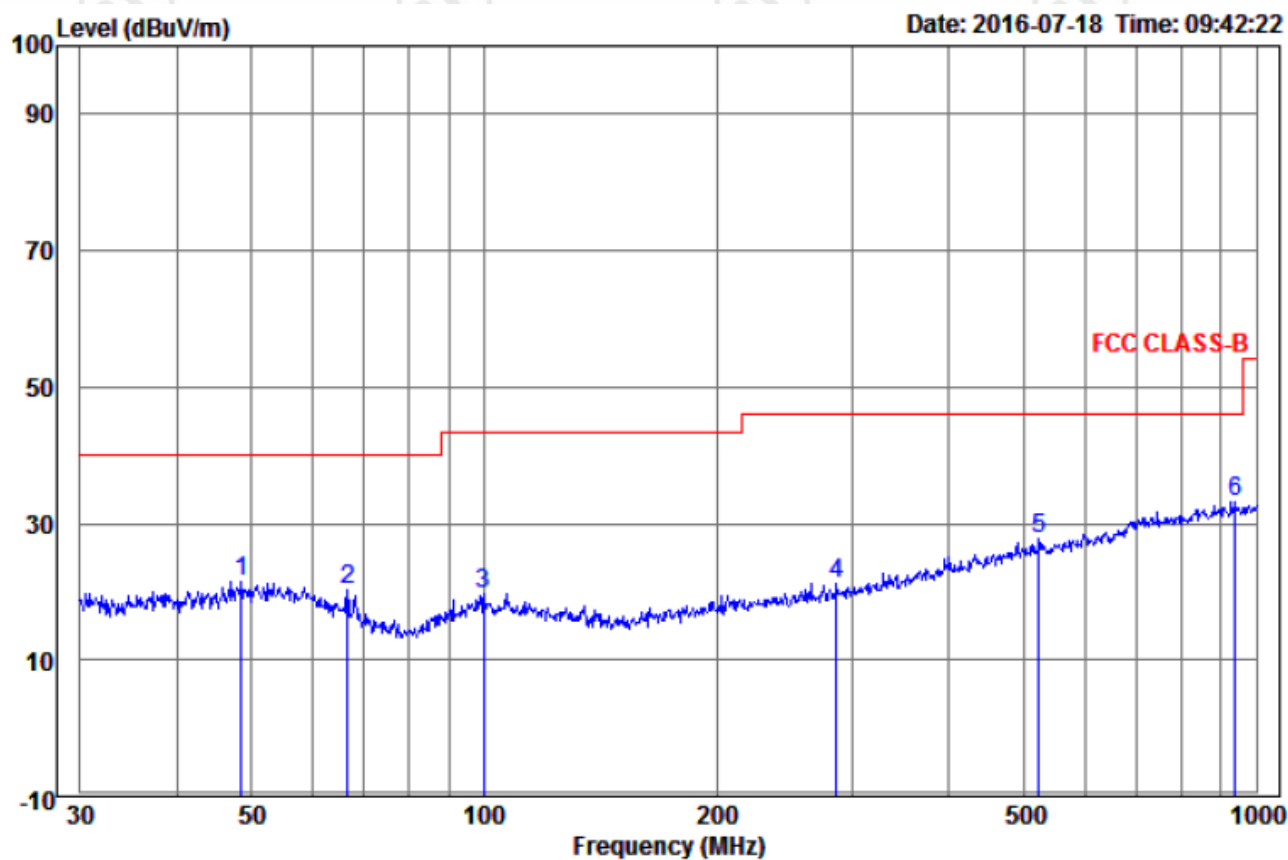
Limit:

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

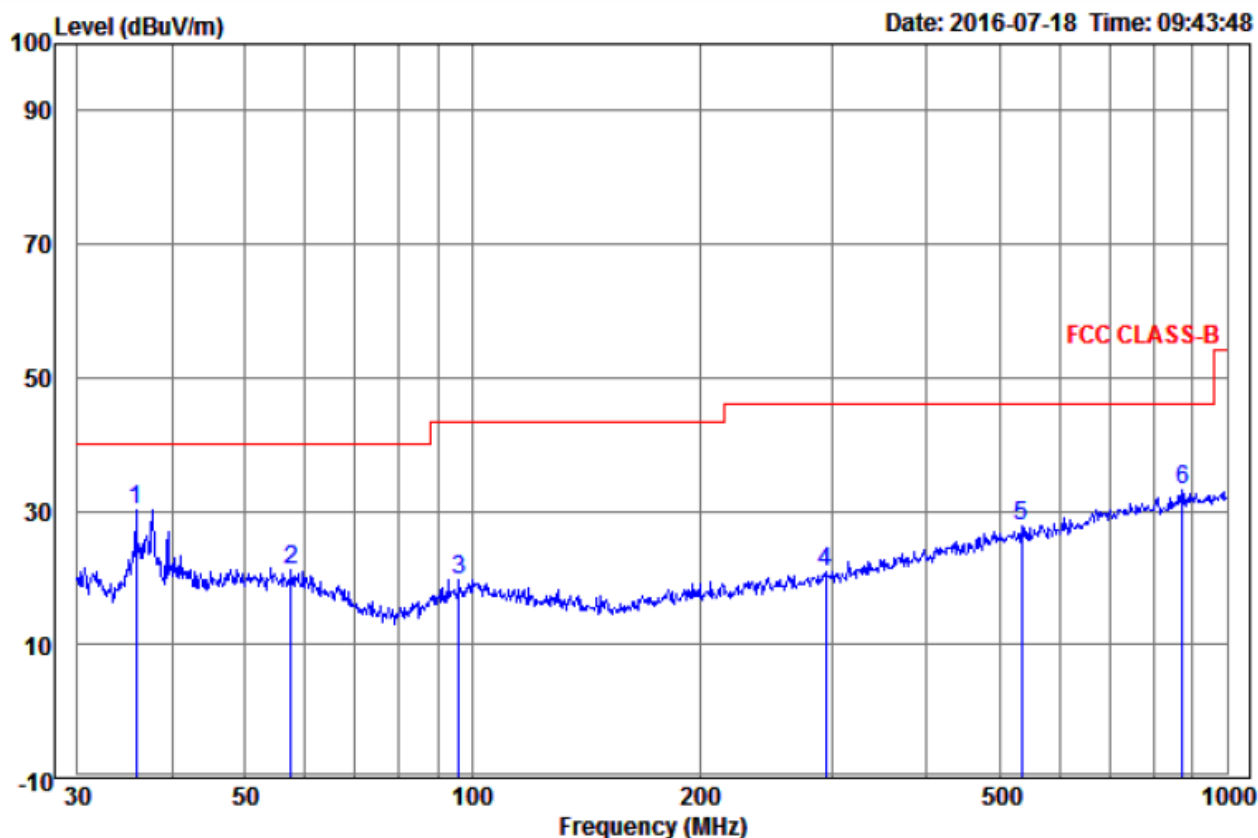
Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Radiated Spurious Emissions test Data: **Radiated Emission below 1GHz**

30MHz~1GHz (QP)



	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	48.502	14.98	1.28	5.17	21.43	40.00	-18.57	Horizontal	
2	66.499	11.53	1.44	7.25	20.22	40.00	-19.78	Horizontal	
3	99.878	13.18	1.57	4.93	19.68	43.50	-23.82	Horizontal	
4	285.978	13.21	2.37	5.59	21.17	46.00	-24.83	Horizontal	
5	522.718	18.49	3.17	6.09	27.75	46.00	-18.25	Horizontal	
6 pp	938.833	22.40	4.32	6.51	33.23	46.00	-12.77	Horizontal	



	Ant Freq	Cable Factor	Read Level	Limit Level	Over Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	35.875	13.56	0.78	15.77	30.11	40.00	-9.89	Vertical
2	57.594	14.09	1.42	5.53	21.04	40.00	-18.96	Vertical
3	96.099	12.44	1.58	5.66	19.68	43.50	-23.82	Vertical
4	294.114	13.38	2.38	5.25	21.01	46.00	-24.99	Vertical
5	533.832	18.54	3.18	5.92	27.64	46.00	-18.36	Vertical
6	872.183	22.13	4.25	6.75	33.13	46.00	-12.87	Vertical

Transmitter Emission above 1GHz

Test mode: 802.11b(11Mbps)			Test Frequency: 2412MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1476.193	30.82	2.81	34.69	45.29	44.23	74	-29.77	Pass	Horizontal
2055.225	31.83	3.39	34.31	44.71	45.62	74	-28.38	Pass	Horizontal
3893.520	32.88	5.46	34.59	43.28	47.03	74	-26.97	Pass	Horizontal
4824.000	34.73	5.10	34.35	44.41	49.89	74	-24.11	Pass	Horizontal
7236.000	36.42	6.69	34.90	42.26	50.47	74	-23.53	Pass	Horizontal
9648.000	37.93	7.70	35.07	38.59	49.15	74	-24.85	Pass	Horizontal
1357.254	30.58	2.69	34.80	43.47	41.94	74	-32.06	Pass	Vertical
1880.038	31.52	3.14	34.38	45.91	46.19	74	-27.81	Pass	Vertical
3616.451	33.08	5.50	34.56	44.60	48.62	74	-25.38	Pass	Vertical
4824.000	34.73	5.10	34.35	45.09	50.57	74	-23.43	Pass	Vertical
7236.000	36.42	6.69	34.90	42.19	50.40	74	-23.60	Pass	Vertical
9648.000	37.93	7.70	35.07	38.91	49.47	74	-24.53	Pass	Vertical

Test mode: 802.11b(11Mbps)			Test Frequency: 2437MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1364.182	30.60	2.69	34.80	44.08	42.57	74	-31.43	Pass	Horizontal
2055.225	31.83	3.39	34.31	44.91	45.82	74	-28.18	Pass	Horizontal
3709.691	33.01	5.49	34.57	44.18	48.11	74	-25.89	Pass	Horizontal
4874.000	34.84	5.09	34.33	43.64	49.24	74	-24.76	Pass	Horizontal
7311.000	36.43	6.76	34.90	41.74	50.03	74	-23.97	Pass	Horizontal
9748.000	38.03	7.61	35.05	39.92	50.51	74	-23.49	Pass	Horizontal
1364.182	30.60	2.69	34.80	44.22	42.71	74	-31.29	Pass	Vertical
1773.127	31.35	3.06	34.46	42.93	42.88	74	-31.12	Pass	Vertical
3598.087	33.09	5.51	34.56	45.17	49.21	74	-24.79	Pass	Vertical
4874.000	34.84	5.09	34.33	43.25	48.85	74	-25.15	Pass	Vertical
7311.000	36.43	6.76	34.90	41.72	50.01	74	-23.99	Pass	Vertical
9748.000	38.03	7.61	35.05	39.11	49.70	74	-24.30	Pass	Vertical

Test mode: 802.11b(11Mbps)			Test Frequency: 2462MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1428.142	30.73	2.76	34.74	45.92	44.67	74	-29.33	Pass	Horizontal
2086.856	31.90	3.48	34.32	45.76	46.82	74	-27.18	Pass	Horizontal
4924.000	34.94	5.07	34.32	44.83	50.52	74	-23.48	Pass	Horizontal
6561.030	36.19	6.87	34.65	41.39	49.80	74	-24.20	Pass	Horizontal
7386.000	36.44	6.83	34.90	39.74	48.11	74	-25.89	Pass	Horizontal
9848.000	38.14	7.53	35.03	39.29	49.93	74	-24.07	Pass	Horizontal
1479.955	30.83	2.81	34.69	43.94	42.89	74	-31.11	Pass	Vertical
1978.230	31.67	3.21	34.31	42.22	42.79	74	-31.21	Pass	Vertical
4014.288	32.84	5.43	34.60	42.51	46.18	74	-27.82	Pass	Vertical
4924.000	34.94	5.07	34.32	42.52	48.21	74	-25.79	Pass	Vertical
7386.000	36.44	6.83	34.90	41.78	50.15	74	-23.85	Pass	Vertical
9848.000	38.14	7.53	35.03	39.07	49.71	74	-24.29	Pass	Vertical

Test mode: 802.11g(6Mbps)			Test Frequency: 2412MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1457.523	30.79	2.79	34.71	46.04	44.91	74	-29.09	Pass	Horizontal
1870.490	31.51	3.14	34.39	45.94	46.20	74	-27.80	Pass	Horizontal
3883.622	32.88	5.46	34.59	44.43	48.18	74	-25.82	Pass	Horizontal
4824.000	34.73	5.10	34.35	43.93	49.41	74	-24.59	Pass	Horizontal
7236.000	36.42	6.69	34.90	40.38	48.59	74	-25.41	Pass	Horizontal
9648.000	37.93	7.70	35.07	39.80	50.36	74	-23.64	Pass	Horizontal
1621.985	31.10	2.94	34.57	46.23	45.70	74	-28.30	Pass	Vertical
3384.850	33.26	5.54	34.54	43.70	47.96	74	-26.04	Pass	Vertical
4824.000	34.73	5.10	34.35	43.56	49.04	74	-24.96	Pass	Vertical
6235.364	36.02	7.19	34.45	39.93	48.69	74	-25.31	Pass	Vertical
7236.000	36.42	6.69	34.90	42.06	50.27	74	-23.73	Pass	Vertical
9648.000	37.93	7.70	35.07	38.83	49.39	74	-24.61	Pass	Vertical

Test mode: 802.11g(6Mbps)			Test Frequency: 2437MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1360.714	30.59	2.69	34.80	43.83	42.31	74	-31.69	Pass	Horizontal
2018.928	31.74	3.29	34.30	43.02	43.75	74	-30.25	Pass	Horizontal
3738.129	32.99	5.48	34.58	44.36	48.25	74	-25.75	Pass	Horizontal
4874.000	34.84	5.09	34.33	42.90	48.50	74	-25.50	Pass	Horizontal
7311.000	36.43	6.76	34.90	42.39	50.68	74	-23.32	Pass	Horizontal
9748.000	38.03	7.61	35.05	39.70	50.29	74	-23.71	Pass	Horizontal
1483.727	30.84	2.81	34.69	43.40	42.36	74	-31.64	Pass	Vertical
1894.450	31.54	3.15	34.37	44.82	45.14	74	-28.86	Pass	Vertical
3757.208	32.97	5.48	34.58	44.02	47.89	74	-26.11	Pass	Vertical
4874.000	34.84	5.09	34.33	42.97	48.57	74	-25.43	Pass	Vertical
7311.000	36.43	6.76	34.90	42.46	50.75	74	-23.25	Pass	Vertical
9748.000	38.03	7.61	35.05	39.39	49.98	74	-24.02	Pass	Vertical

Test mode: 802.11g(6Mbps)			Test Frequency: 2462MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1406.496	30.68	2.74	34.76	46.37	45.03	74	-28.97	Pass	Horizontal
1978.230	31.67	3.21	34.31	41.62	42.19	74	-31.81	Pass	Horizontal
3325.070	33.31	5.56	34.54	44.62	48.95	74	-25.05	Pass	Horizontal
4924.000	34.94	5.07	34.32	43.71	49.40	74	-24.60	Pass	Horizontal
7386.000	36.44	6.83	34.90	42.10	50.47	74	-23.53	Pass	Horizontal
9848.000	38.14	7.53	35.03	39.15	49.79	74	-24.21	Pass	Horizontal
1472.440	30.82	2.80	34.70	45.49	44.41	74	-29.59	Pass	Vertical
2024.074	31.76	3.30	34.31	44.27	45.02	74	-28.98	Pass	Vertical
3953.443	32.83	5.45	34.60	42.89	46.57	74	-27.43	Pass	Vertical
4924.000	34.94	5.07	34.32	42.87	48.56	74	-25.44	Pass	Vertical
7386.000	36.44	6.83	34.90	41.33	49.70	74	-24.30	Pass	Vertical
9848.000	38.14	7.53	35.03	39.40	50.04	74	-23.96	Pass	Vertical

Test mode: 802.11n(HT20)(6.5Mbps)				Test Frequency: 2412MHz			Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1395.796	30.66	2.73	34.77	45.63	44.25	74	-29.75	Pass	Horizontal
2070.980	31.86	3.44	34.32	45.31	46.29	74	-27.71	Pass	Horizontal
3815.033	32.93	5.47	34.58	43.46	47.28	74	-26.72	Pass	Horizontal
4824.000	34.73	5.10	34.35	43.07	48.55	74	-25.45	Pass	Horizontal
7236.000	36.42	6.69	34.90	41.49	49.70	74	-24.30	Pass	Horizontal
9648.000	37.93	7.70	35.07	40.28	50.84	74	-23.16	Pass	Horizontal
1413.674	30.70	2.74	34.75	46.62	45.31	74	-28.69	Pass	Vertical
1933.424	31.60	3.18	34.34	42.11	42.55	74	-31.45	Pass	Vertical
3480.968	33.19	5.53	34.55	43.31	47.48	74	-26.52	Pass	Vertical
4824.000	34.73	5.10	34.35	43.19	48.67	74	-25.33	Pass	Vertical
7236.000	36.42	6.69	34.90	41.57	49.78	74	-24.22	Pass	Vertical
9648.000	37.93	7.70	35.07	40.01	50.57	74	-23.43	Pass	Vertical

Test mode: 802.11n(HT20)(6.5Mbps)				Test Frequency: 2437MHz			Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1232.117	30.30	2.55	34.93	45.66	43.58	74	-30.42	Pass	Horizontal
1837.456	31.46	3.11	34.41	46.06	46.22	74	-27.78	Pass	Horizontal
3410.797	33.24	5.54	34.54	44.34	48.58	74	-25.42	Pass	Horizontal
4874.000	34.84	5.09	34.33	42.34	47.94	74	-26.06	Pass	Horizontal
7311.000	36.43	6.76	34.90	42.30	50.59	74	-23.41	Pass	Horizontal
9748.000	38.03	7.61	35.05	39.56	50.15	74	-23.85	Pass	Horizontal
1247.899	30.34	2.57	34.91	45.40	43.40	74	-30.60	Pass	Vertical
1659.574	31.16	2.97	34.54	46.59	46.18	74	-27.82	Pass	Vertical
3507.652	33.17	5.52	34.55	43.55	47.69	74	-26.31	Pass	Vertical
4874.000	34.84	5.09	34.33	43.62	49.22	74	-24.78	Pass	Vertical
7311.000	36.43	6.76	34.90	41.58	49.87	74	-24.13	Pass	Vertical
9748.000	38.03	7.61	35.05	39.13	49.72	74	-24.28	Pass	Vertical

Test mode: 802.11n(HT20)(6.5Mbps)				Test Frequency: 2462MHz			Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1402.920	30.68	2.73	34.76	46.78	45.43	74	-28.57	Pass	Horizontal
2102.853	31.93	3.53	34.32	46.66	47.80	74	-26.20	Pass	Horizontal
3534.541	33.14	5.52	34.56	43.55	47.65	74	-26.35	Pass	Horizontal
4924.000	34.94	5.07	34.32	43.05	48.74	74	-25.26	Pass	Horizontal
7386.000	36.44	6.83	34.90	41.65	50.02	74	-23.98	Pass	Horizontal
9848.000	38.14	7.53	35.03	38.62	49.26	74	-24.74	Pass	Horizontal
1350.362	30.57	2.68	34.81	43.88	42.32	74	-31.68	Pass	Vertical
1973.201	31.66	3.21	34.32	41.82	42.37	74	-31.63	Pass	Vertical
3552.582	33.13	5.51	34.56	42.66	46.74	74	-27.26	Pass	Vertical
4924.000	34.94	5.07	34.32	43.11	48.80	74	-25.20	Pass	Vertical
7386.000	36.44	6.83	34.90	41.78	50.15	74	-23.85	Pass	Vertical
9748.000	38.03	7.61	35.05	38.42	49.01	74	-24.99	Pass	Vertical

Test mode: 802.11n(HT40)(13.5Mbps)				Test Frequency: 2422MHz			Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1238.405	30.32	2.56	34.92	44.83	42.79	74	-31.21	Pass	Horizontal
1737.384	31.29	3.03	34.48	42.48	42.32	74	-31.68	Pass	Horizontal
3498.735	33.17	5.52	34.55	43.82	47.96	74	-26.04	Pass	Horizontal
4844.000	34.77	5.10	34.34	42.09	47.62	74	-26.38	Pass	Horizontal
7266.000	36.43	6.72	34.90	42.06	50.31	74	-23.69	Pass	Horizontal
9688.000	37.97	7.66	35.06	39.51	50.08	74	-23.92	Pass	Horizontal
1689.410	31.21	2.99	34.52	44.74	44.42	74	-29.58	Pass	Vertical
2229.645	32.21	3.87	34.35	43.13	44.86	74	-29.14	Pass	Vertical
3728.625	33.00	5.48	34.58	44.11	48.01	74	-25.99	Pass	Vertical
4844.000	34.77	5.10	34.34	42.09	47.62	74	-26.38	Pass	Vertical
7266.000	36.43	6.72	34.90	41.24	49.49	74	-24.51	Pass	Vertical
9688.000	37.97	7.66	35.06	40.27	50.84	74	-23.16	Pass	Vertical

Test mode: 802.11n(HT40)(13.5Mbps)				Test Frequency: 2437MHz			Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1381.656	30.63	2.71	34.78	45.29	43.85	74	-30.15	Pass	Horizontal
1814.218	31.42	3.09	34.43	43.21	43.29	74	-30.71	Pass	Horizontal
3333.545	33.31	5.55	34.54	44.46	48.78	74	-25.22	Pass	Horizontal
4874.000	34.84	5.09	34.33	42.31	47.91	74	-26.09	Pass	Horizontal
7311.000	36.43	6.76	34.90	41.63	49.92	74	-24.08	Pass	Horizontal
9748.000	38.03	7.61	35.05	39.13	49.72	74	-24.28	Pass	Horizontal
1270.334	30.39	2.59	34.89	44.38	42.47	74	-31.53	Pass	Vertical
1988.327	31.68	3.22	34.31	42.43	43.02	74	-30.98	Pass	Vertical
3342.042	33.30	5.55	34.54	43.82	48.13	74	-25.87	Pass	Vertical
4874.000	34.84	5.09	34.33	41.55	47.15	74	-26.85	Pass	Vertical
7311.000	36.43	6.76	34.90	41.68	49.97	74	-24.03	Pass	Vertical
9748.000	38.03	7.61	35.05	39.06	49.65	74	-24.35	Pass	Vertical

Test mode: 802.11n(HT40)(13.5Mbps)				Test Frequency: 2452MHz			Remark: Peak		
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1235.257	30.31	2.56	34.93	45.96	43.90	74	-30.10	Pass	Horizontal
1851.542	31.48	3.12	34.40	46.97	47.17	74	-26.83	Pass	Horizontal
3299.775	33.34	5.56	34.53	44.34	48.71	74	-25.29	Pass	Horizontal
4904.000	34.90	5.07	34.33	42.08	47.72	74	-26.28	Pass	Horizontal
7356.000	36.44	6.80	34.90	42.45	50.79	74	-23.21	Pass	Horizontal
9808.000	38.10	7.56	35.04	39.23	49.85	74	-24.15	Pass	Horizontal
1698.033	31.23	3.00	34.51	44.10	43.82	74	-30.18	Pass	Vertical
2003.569	31.71	3.24	34.30	42.11	42.76	74	-31.24	Pass	Vertical
3376.244	33.27	5.55	34.54	44.69	48.97	74	-25.03	Pass	Vertical
4904.000	34.90	5.07	34.33	42.37	48.01	74	-25.99	Pass	Vertical
7356.000	36.44	6.80	34.90	41.07	49.41	74	-24.59	Pass	Vertical
9808.000	38.10	7.56	35.04	40.02	50.64	74	-23.36	Pass	Vertical

Remark:

1) Through Pre-scan transmitting 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) ; 13.5Mbps of rate is the worst case of 802.11n(HT40), 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:

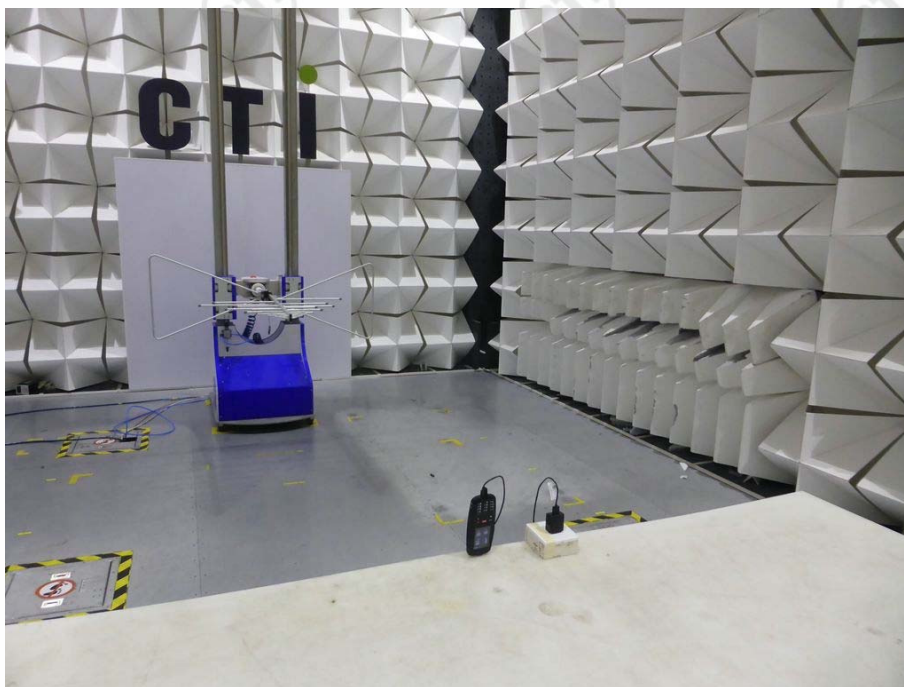
Final Test Level = Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor - Antenna Factor - Cable Factor

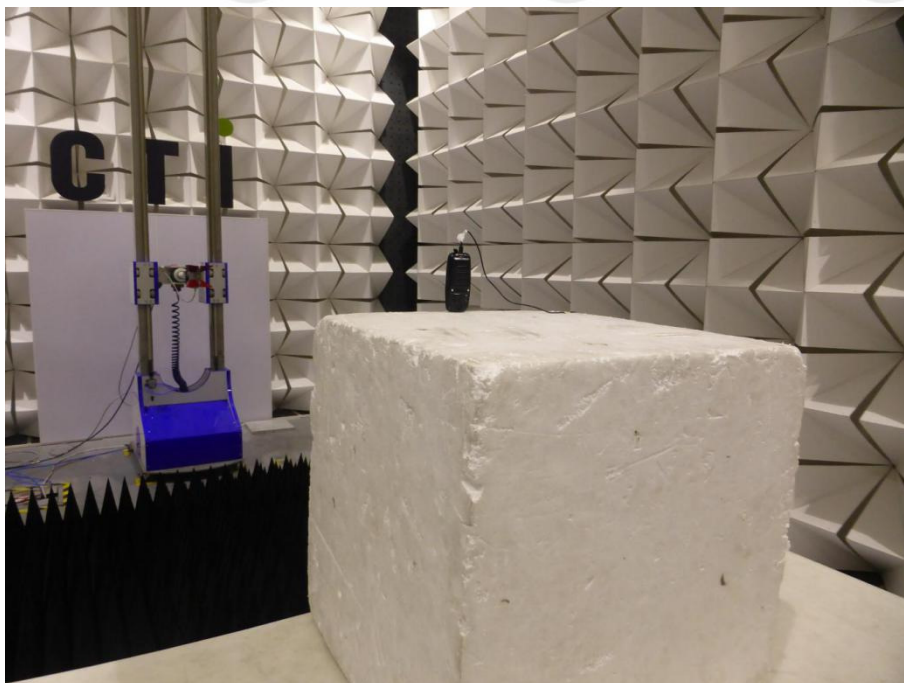
3) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below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

PHOTOGRAPHS OF TEST SETUP

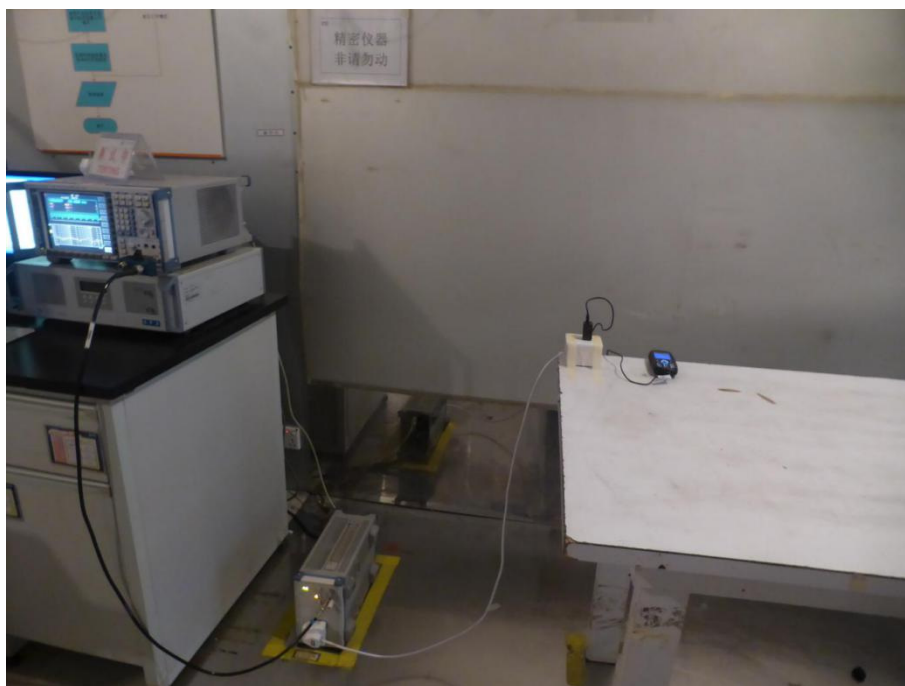
Test mode No.: RG310



Radiated spurious emission Test Setup-1 (Below 1GHz)



Radiated spurious emission Test Setup-2 (Above 1GHz)



Conducted Emissions Test Setup

PHOTOGRAPHS OF EUT Constructional Details

Test mode No.: RG310



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



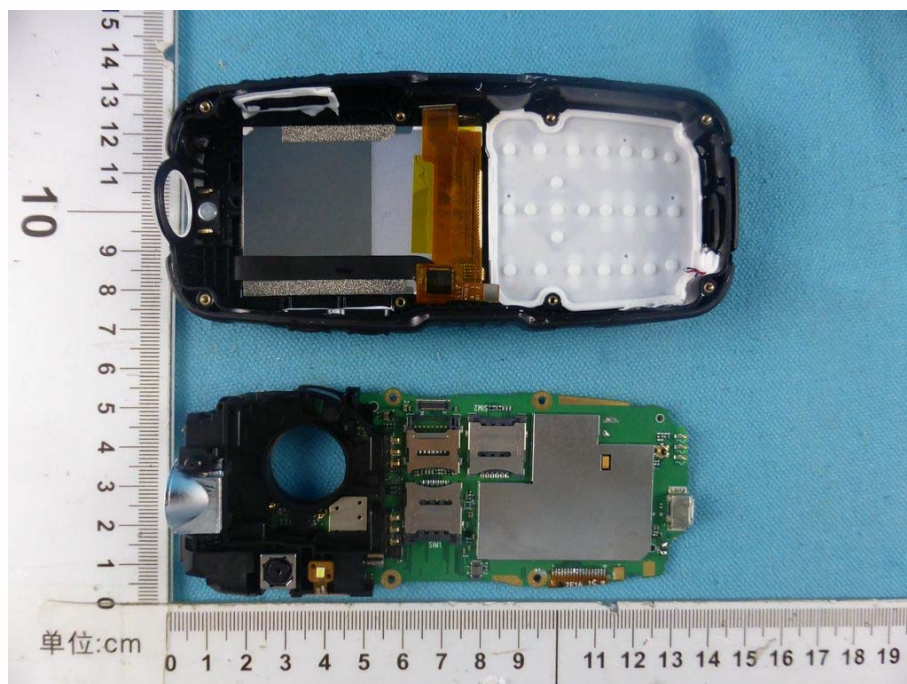
View of Product-12



View of Product-13



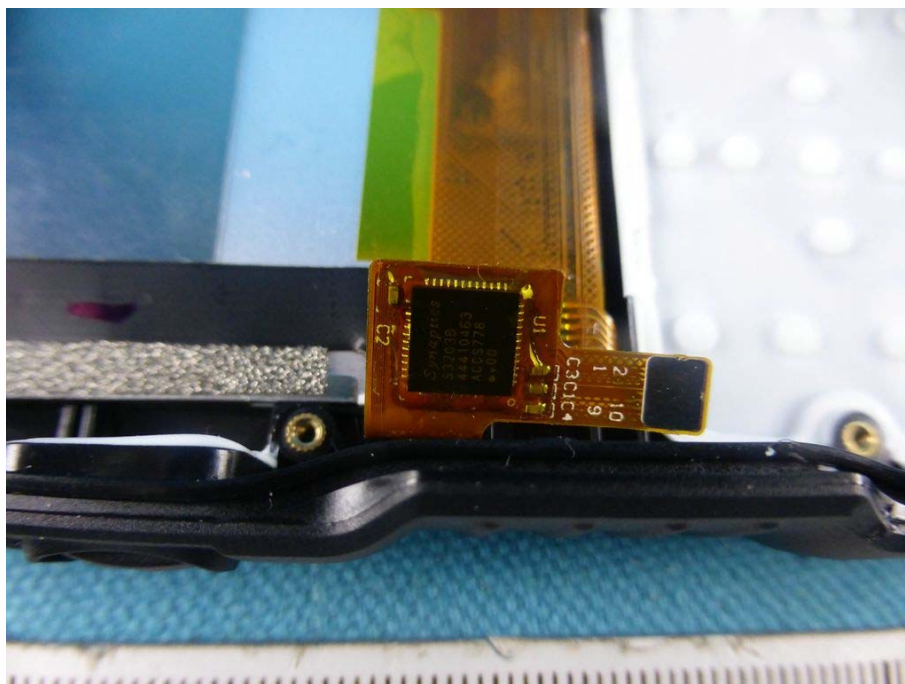
View of Product-14



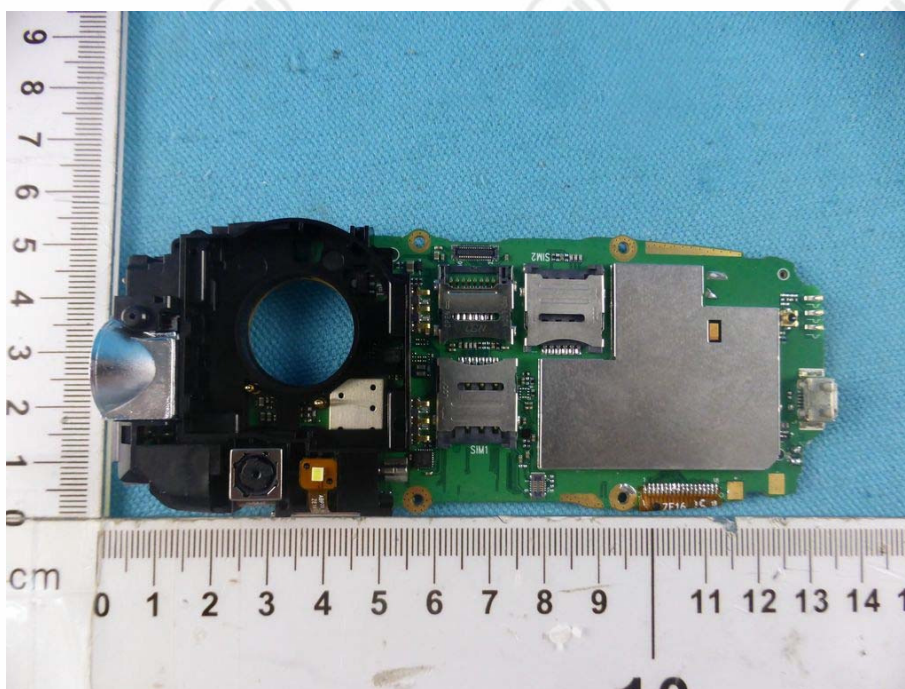
View of Product-15



View of Product-16



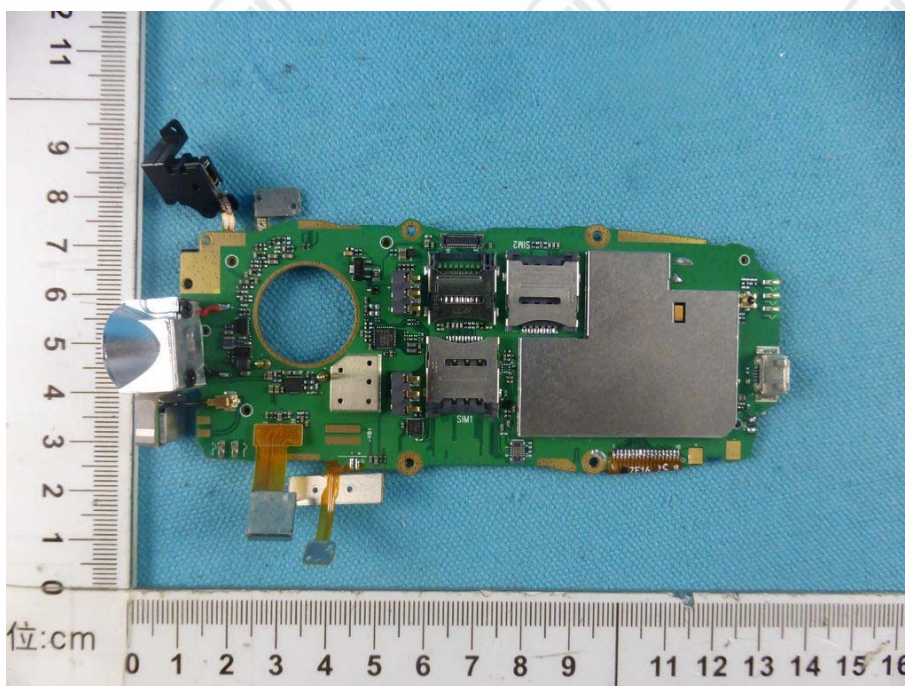
View of Product-17



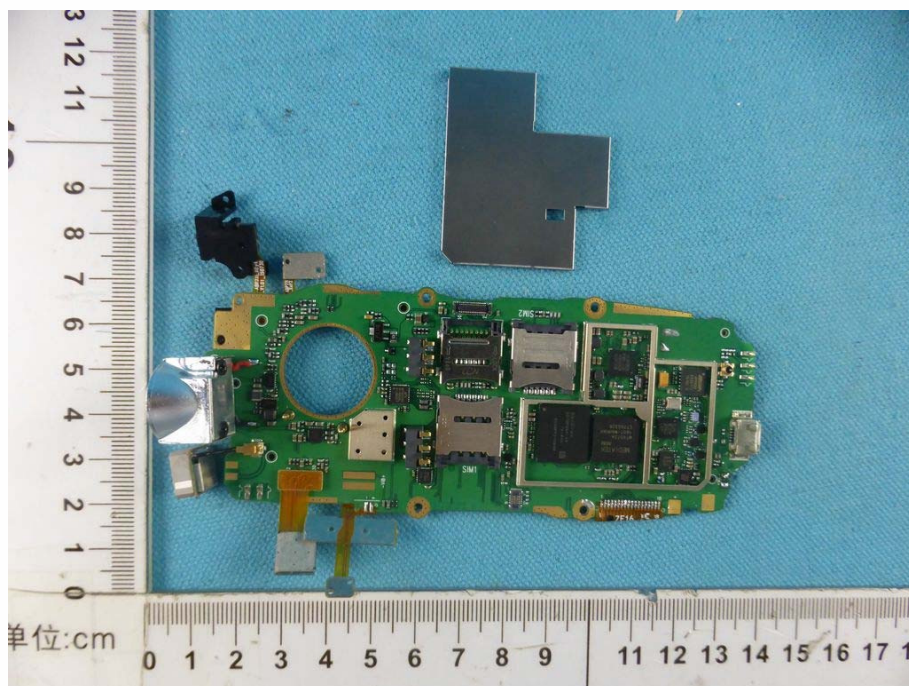
View of Product-18



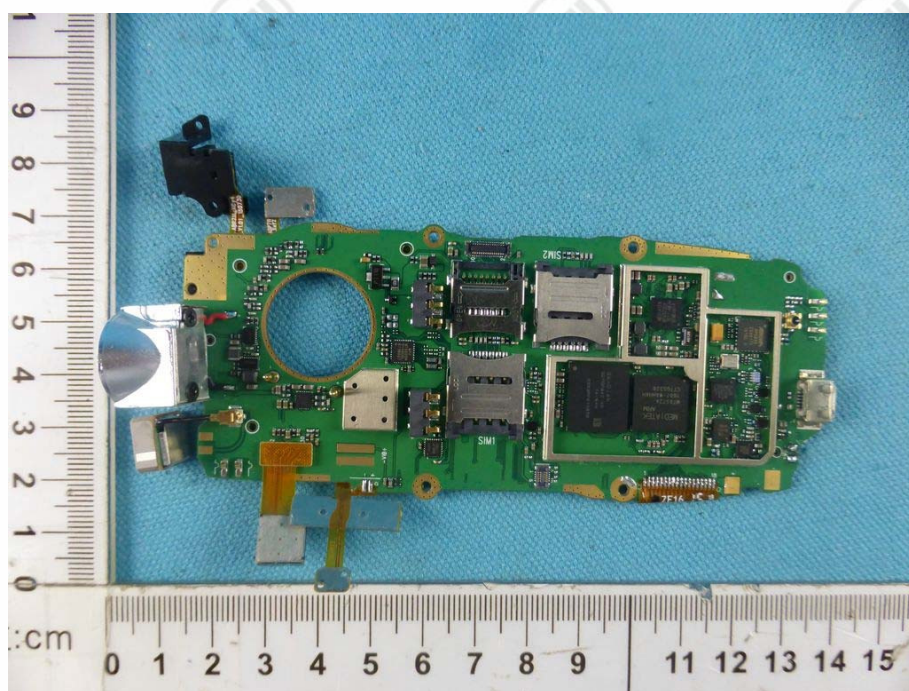
View of Product-19



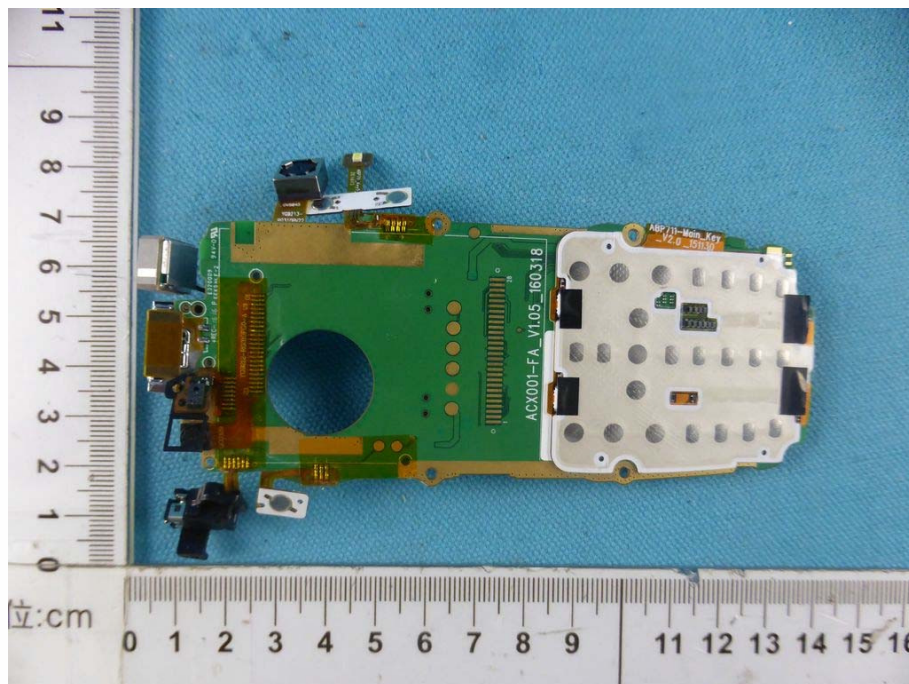
View of Product-20



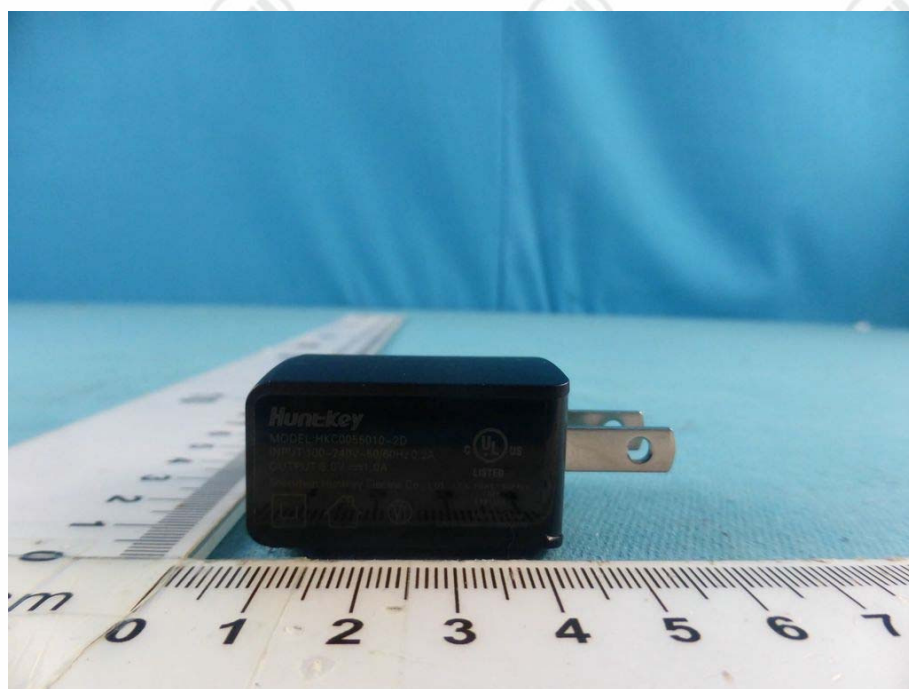
View of Product-21



View of Product-22



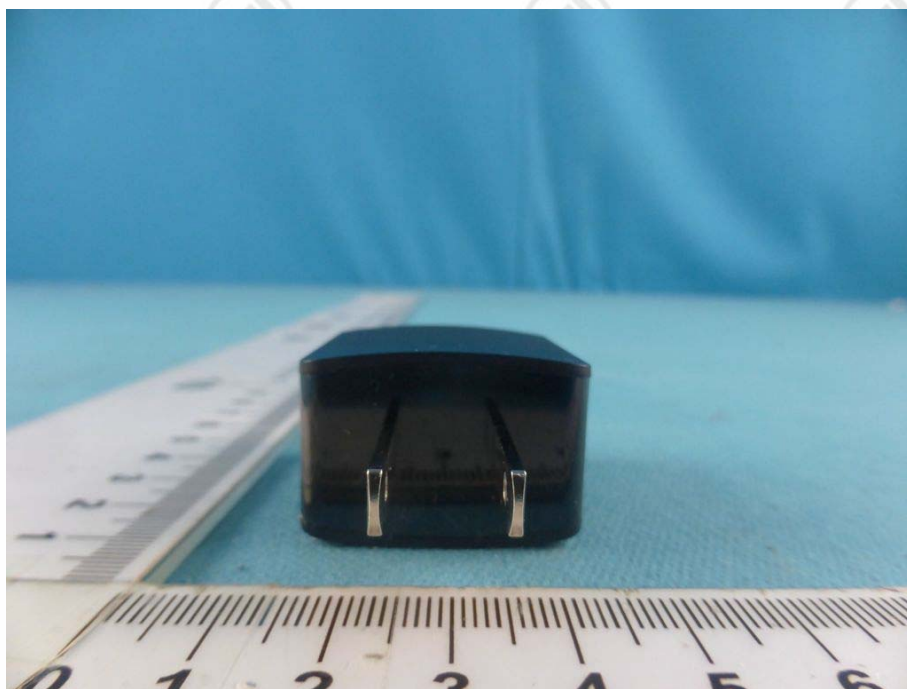
View of Product-23



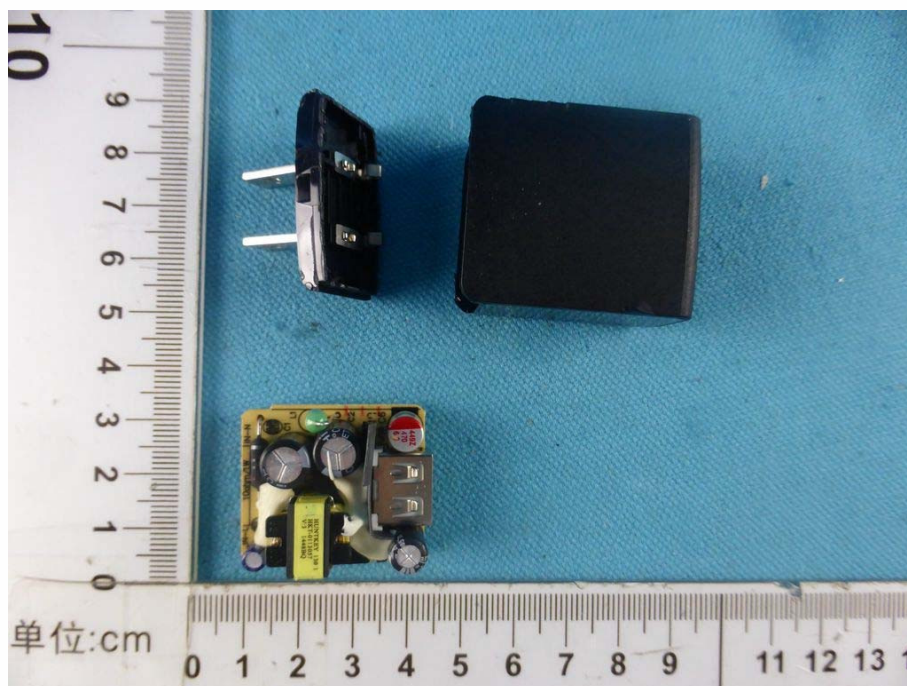
View of Product-24



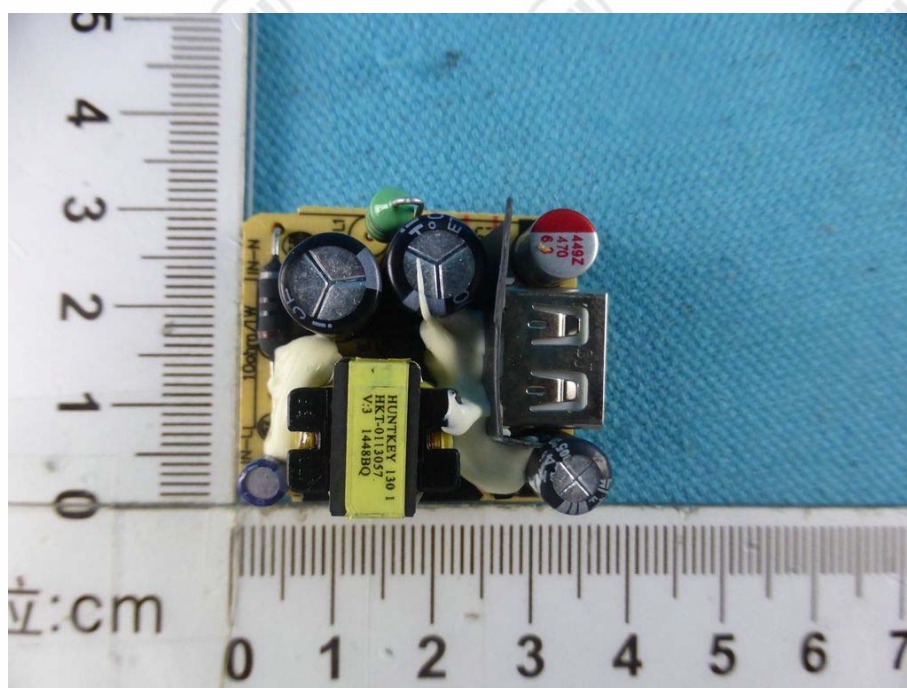
View of Product-25



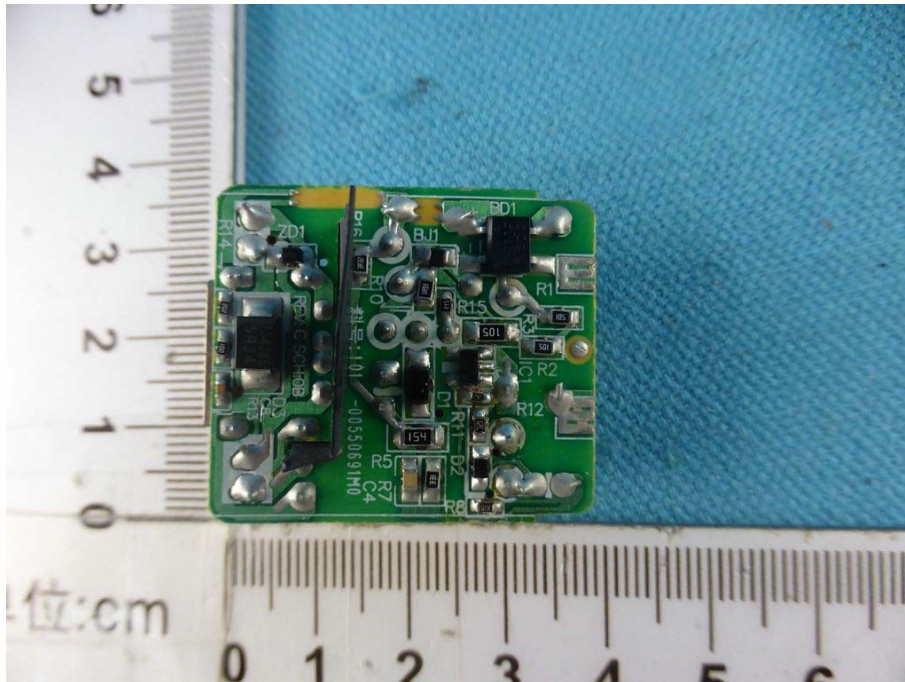
View of Product-26



View of Product-27



View of Product-28



View of Product-29

*** End of Report ***

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