FCC Test Report

Product Name	:	CBRS Wi-Fi Access Point with US power supply
Trade Name	:	MULTITECH
Model No.	:	MTCAPW-L12G2-A600VA-CUA
FCC ID	:	AU792U21F04867
Applicant	:	Multi Tech Systems Inc.
Address	:	2205 Woodale Drive, Mounds View, MN 55112 U.S.A
Date of Receipt	:	Aug. 23, 2021
Issued Date	:	Sep. 10, 2021
Report No.	:	2180959R-RFUSWL2V01
Report Version	:	V0.1

Testing Laboratory
3024

The test results relate only to the samples tested.
The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.
This report must not be used to claim product endorsement by TAF or any agency of the government.
Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.
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Test Report Certification

Product Name	:	CBRS Wi-Fi Access Point with US power supply
Applicant	:	Multi Tech Systems Inc.
Address	:	2205 Woodale Drive, Mounds View, MN 55112 U.S.A
Manufacturer	:	Multi Tech Systems Inc.
Address	:	2205 Woodale Drive, Mounds View, MN 55112 U.S.A
Trade Name	:	MULTITECH
Model No.	:	MTCAPW-L12G2-A600VA-CUA
FCC ID	:	AU792U21F04867
EUT Voltage	:	DC 12V (adapter)
Testing Voltage	:	AC 120V / 60Hz
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10: 2013
Laboratory Name	:	Hsin Chu Laboratory
Address	:	No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C. TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result	:	Complied

Documented By : Hailey Peng

(Hailey Peng / Senior Engineer)

Approved By : Louis Hsu

(Louis Hsu / Deputy Manager)

The test results relate only to the samples tested.
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Revision History

Version	Description	Issued Date
V0.1	Initial issue of report	Sep. 10, 2021

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1. General Information

1.1. EUT Description

Product Name	CBRS Wi-Fi Access Point with US power supply	
Trade Name	MULTITECH	
Model No.	MTCAPW-L12G2-A600VA-CUA	
Frequency Range / Channel Number	IEEE 802.11b/g	2412~2462MHz / 11 Channels
	IEEE 802.11n (20MHz)	2412~2462MHz / 11 Channels
	IEEE 802.11n (40MHz)	2422~2452MHz / 7Channels
Type of Modulation	IEEE 802.11b	DSSS (DBPSK, DQPSK, CCK)
	IEEE 802.11g/n	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Data Rate	IEEE 802.11b	1, 2, 5.5, 11Mbps
	IEEE 802.11g	6, 9, 18, 24, 36, 48, 54Mbps
	IEEE 802.11n	Support a subset of the combination of GI, MCS 0~MCS15 and bandwidth defined in 802.11n

This EUT contains a WWAN module and the detail as below.

Trade Name	Model	FCC ID	Bands	Channel Bandwidth	Operating Frequency Range (MHz)
Quectel	EG12-GT	XMR201909EG12GT	LTE Band 42 (CA)	20 MHz	TX: 3560-3590 RX: 3560-3590
			LTE Band 48	5 MHz	TX: 3552.5-3697.5 RX: 3552.5-3697.5
				10 MHz	TX: 3555-3695 RX: 3555-3695
				15 MHz	TX: 3557.5-3692.5 RX: 3557.5-3692.5
				20 MHz	TX: 3560-3590 RX: 3560-3590

Accessories Information					
No.	Equipment Name	Trade Name	Model No.	Rating	Remark
1	Adapter	AMIGO	AMS159A-1201000F	INPUT: AC 100~240V~ 50/60Hz, 0.5A OUTPUT: DC 12V, 1.0A, 12.0W	With power cable : Non-Shieled, 1.2m With plug
No.	Equipment Name	Description			
2	LAN Cable	Non-Shieled, 1.5m			
3	Pedestal				

Antenna Information						
Ant.	Manufacturer	Part Number	Type	Antenna Gain (dBi)	Maximum Antenna Gain (dBi)	Directional Gain (dBi)
0	INPAQ TECHNOLOGY CO., LTD	RFPCA501008IMAB401	PCB	3.39	3.39	6.30
1	INPAQ TECHNOLOGY CO., LTD	RFPCA501008IMAB402	PCB	3.19		

For IEEE 802.11b/g/n Mode: (2TX, 2RX)

Both Ant. 0 and Ant. 1 can be used as transmitting/receiving antennas, and them can transmit/receive signal simultaneously.

IEEE 802.11b/g & IEEE 802.11n (20MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
001	2412 MHz	002	2417 MHz	003	2422 MHz	004	2427 MHz
005	2432 MHz	006	2437 MHz	007	2442 MHz	008	2447 MHz
009	2452 MHz	010	2457 MHz	011	2462 MHz	-	-

IEEE 802.11n (40MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
003	2422 MHz	004	2427 MHz	005	2432 MHz	006	2437 MHz
007	2442 MHz	008	2447 MHz	009	2452 MHz	-	-

Note:

1. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
2. The above EUT information is declared by the manufacturer.

1.2. Test Mode

DEKRA has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

Test Mode	Mode 1: Transmit

Test Items	Test Mode	Modulation	Channel	Antenna	Result
AC Power Line Conducted Emission	Mode 1	11b	1	0+1	Pass
Maximum Conducted Output Power	Mode 1	11b	1/6/11	0+1	Pass
		11g	1/6/11	0+1	Pass
		11n (20MHz)	1/6/11	0+1	Pass
		11n (40MHz)	3/6/9	0+1	Pass
Radiated Emission Below 1GHz	Mode 1	11b	1	0+1	Pass
Radiated Emission Above 1GHz	Mode 1	11b	1/6/11	0+1	Pass
		11g	1/6/11	0+1	Pass
		11n (20MHz)	1/6/11	0+1	Pass
		11n (40MHz)	3/6/9	0+1	Pass
Antenna Port Conducted Emission	Mode 1	11b	1/6/11	0+1	Pass
		11g	1/6/11	0+1	Pass
		11n (20MHz)	1/6/11	0+1	Pass
		11n (40MHz)	3/6/9	0+1	Pass
Radiated Emission Band Edge	Mode 1	11b	1/6/11	0+1	Pass
		11g	1/6/11	0+1	Pass
		11n (20MHz)	1/6/11	0+1	Pass
		11n (40MHz)	3/6/9	0+1	Pass
Occupied Bandwidth & DTS Bandwidth	Mode 1	11b	1/6/11	0+1	Pass
		11g	1/6/11	0+1	Pass
		11n (20MHz)	1/6/11	0+1	Pass
		11n (40MHz)	3/6/9	0+1	Pass
Maximum Power Spectral Density	Mode 1	11b	1/6/11	0+1	Pass
		11g	1/6/11	0+1	Pass
		11n (20MHz)	1/6/11	0+1	Pass
		11n (40MHz)	3/6/9	0+1	Pass

Note:
1. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The worst case of data rate for 802.11b is 1 Mbps, for 802.11g is 6 Mbps, for 802.11n (20MHz)/802.11n (40MHz) are MCS 0, Nss1.
3. For below 1 GHz radiated emission and AC Power Line Conducted Emission have performed all modes of operation were investigated and the worst-case emissions are reported.
4. The EUT could be applied with WLAN 2.4GHz function and WWAN LTE function; therefore Co-location Maximum Permissible Exposure (Please refer to DEKRA Report No.: 2180959R-RFUSMPEV02) and Radiated Emission Co-location (Please refer to Appendix A) tests are added for simultaneously transmit between WLAN 2.4GHz function and WWAN LTE function.

1.3. Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

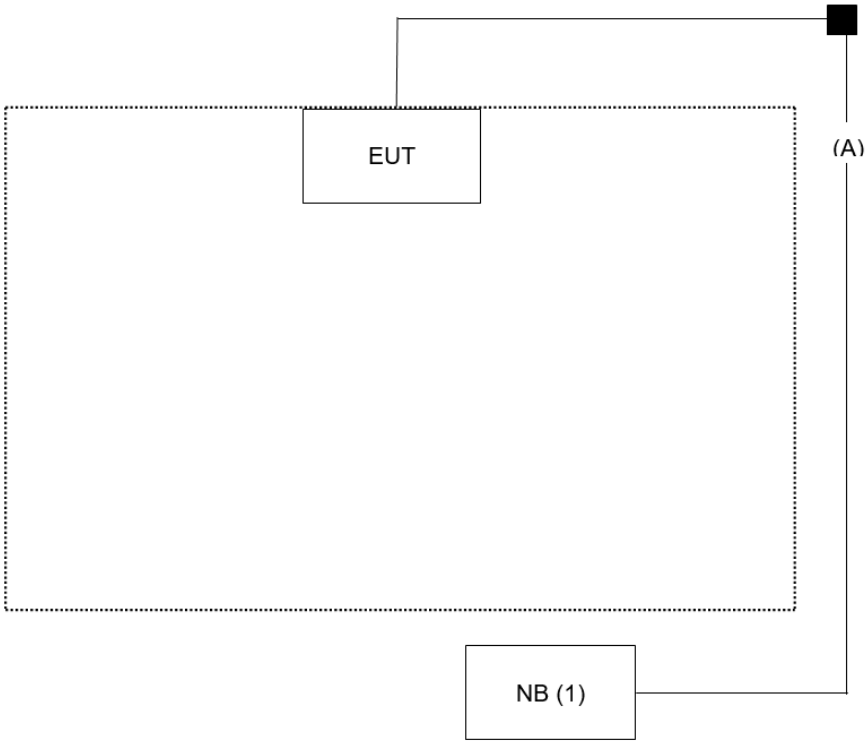
1.4. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	NB	ASUS	L402S	GBN0CV181952476	SDoC	Non-Shieled, 1.8m

1.5. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	Ethernet Cable	Non-Shieled, 10m

1.6. EUT Operation of during Test

1	Set the EUT as shown.
2	Execute control command by software “QATool”.
3	Configure test mode, test channel and data rate.
4	Let the EUT start transmitting signal continuously.
5	Verify that device is working properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Actually	Tested by	Test Date	Test Site
Temperature (°C)	AC Power Line Conducted Emission	25.5	Scott Lin	2021/9/1	SR2-H
Humidity (%RH)		57			
Temperature (°C)	Maximum Conducted Output Power	23	Elwin Lin	2021/8/30	SR12-H
Humidity (%RH)		64			
Temperature (°C)	Radiated Emission	23.7 ~ 24.3	Cyril Chen	2021/8/26 ~ 2021/8/27	CB4-H
Humidity (%RH)		61 ~ 62.4			
Temperature (°C)	Antenna Port Conducted Emission	22.5	Elwin Lin	2021/9/2	SR12-H
Humidity (%RH)		59			
Temperature (°C)	Radiated Emission Band Edge	23.7 ~ 24.3	Cyril Chen	2021/8/26 ~ 2021/8/27	CB4-H
Humidity (%RH)		61 ~ 62.4			
Temperature (°C)	Occupied Bandwidth & DTS Bandwidth	23	Elwin Lin	2021/8/30	SR12-H
Humidity (%RH)		64			
Temperature (°C)	Maximum Power Spectral Density	23	Elwin Lin	2021/8/30	SR12-H
Humidity (%RH)		64			

Note: Test site information refers to Laboratory Information.

USA	**:**	**FCC Registration Number: TW3024**
Canada	**:**	**CAB identifier : TW3024**

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
E mail address	info.tw@dekra.com
Website	http://www.dekra.com.tw
Note: Test site number for address 1 includes SR2-H. Test site number for address 2 includes CB2-H, CB3-H, CB4-H, SR10-H and SR12-H.	

1.8. List of Test Equipment

SR2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2020/12/24	2021/12/23
Test Receiver	R&S	ESCS 30	836858/022	2021/02/22	2022/02/21
LISN	R&S	ENV216	100092	2021/06/08	2022/06/07

CB4-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2020/10/12	2021/10/11
Signal & Spectrum Analyzer	R&S	FSV40	101049	2021/03/31	2022/03/30
Signal Analyzer	R&S	FSVA40	101435	2021/06/04	2022/06/03
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2021/01/25	2022/01/24
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	1209	2021/05/28	2022/05/27
Horn Antenna	Schwarzbeck	BBHA 9120D	01640	2020/09/17	2021/09/16
Horn Antenna	Schwarzbeck	BBHA 9170	203	2021/03/11	2022/03/10
Pre-Amplifier	EMCI	EMC01820I	980364	2021/08/27	2022/08/26
Pre-Amplifier	EMCI	EMC0031835	980233	2020/12/07	2021/12/06
Pre-Amplifier	DEKRA	AP-400C	201801231	2020/11/16	2021/11/15
Wideband Radio Communication Tester	R&S	CMW500	106071	2021/01/27	2022/01/26
Wireless Conn. Tseter	R&S	CMW500	157118	2021/07/07	2022/07/06
Coaxial Cable(10m)	Suhner	SF102_SF104	CB4-H	2021/08/09	2022/08/08
Radiated Software	AUDIX	e3 V9	CB4-H	NA	NA

SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2020/11/30	2021/11/29
Pulse Power Sensor	Anritsu	MA2411B	1531043	2020/11/30	2021/11/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2021/01/25	2022/01/24
Pulse Power Sensor	Anritsu	MA2411B	1531044	2020/11/30	2021/11/29
Power Meter	Keysight	8990B	MY51000248	2021/05/21	2022/05/20
Power Sensor	Keysight	N1923A	MY57240005	2021/05/21	2022/05/20
Spectrum Analyzer	Keysight	N9030B	MY57140404	2021/05/14	2022/05/13
Spectrum Analyzer	Keysight	N9010B	MY57110159	2021/03/29	2022/03/28
Wideband Radio Communication Tester	R&S	CMW500	106071	2021/01/27	2022/01/26
Wireless Conn. Tseter	R&S	CMW500	157118	2021/07/07	2022/07/06
Spectrum Analyzer	Agilent	N9010A	US47140172	2021/05/28	2022/05/27
Signal & Spectrum Analyzer	R&S	FSV40	101049	2021/03/31	2022/03/30

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

1.9. Uncertainty

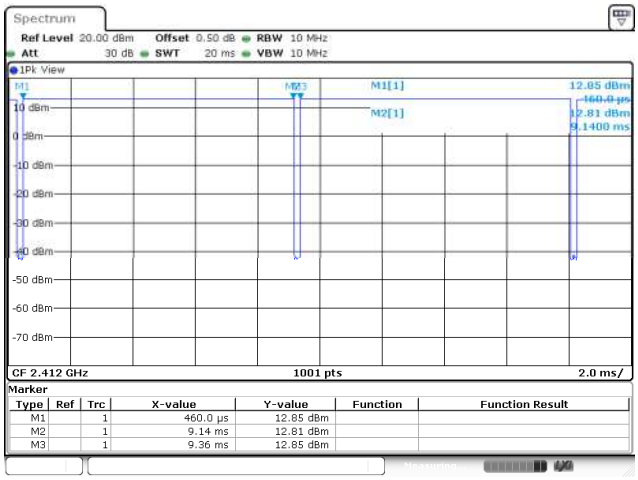
Uncertainties have been calculated according to the DEKRA internal document with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2).

Test Item	Uncertainty
AC Power Line Conducted Emission	± 2.1dB
Radiated Emission	± 3.40 dB below 1GHz ± 3.46 dB above 1GHz
Maximum Conducted Output Power	± 2.26
Antenna Port Conducted Emission	± 2.11dB
Radiated Emission Band Edge	± 3.46 dB above 1GHz
DTS Bandwidth	± 282Hz
Occupied Bandwidth	± 282Hz
Maximum Power Spectral Density	± 2.11dB

1.10. Duty Cycle

Modulation	On Times (ms)	On+Off Times (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	9.140	9.360	97.65%	0.103	0.109
802.11g	1.920	2.130	90.14%	0.451	0.521
802.11n (20MHz)	1.870	2.080	89.90%	0.462	0.535
802.11n (40MHz)	1.165	1.375	84.73%	0.720	0.858

802.11b

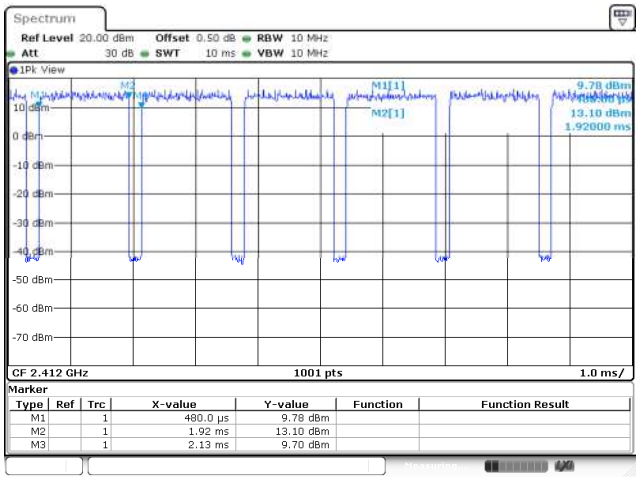


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	460.0 µs	12.85 dBm		
M2		1	9.14 ms	12.81 dBm		
M3		1	9.36 ms	12.85 dBm		

Date: 30.AUG.2021 15:31:15

802.11g

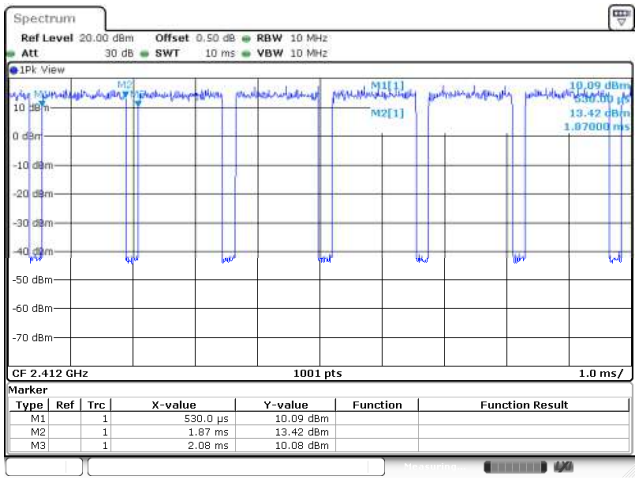


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	480.0 µs	9.78 dBm		
M2		1	1.92 ms	13.10 dBm		
M3		1	2.13 ms	9.70 dBm		

Date: 30.AUG.2021 16:12:16

802.11n (20MHz)

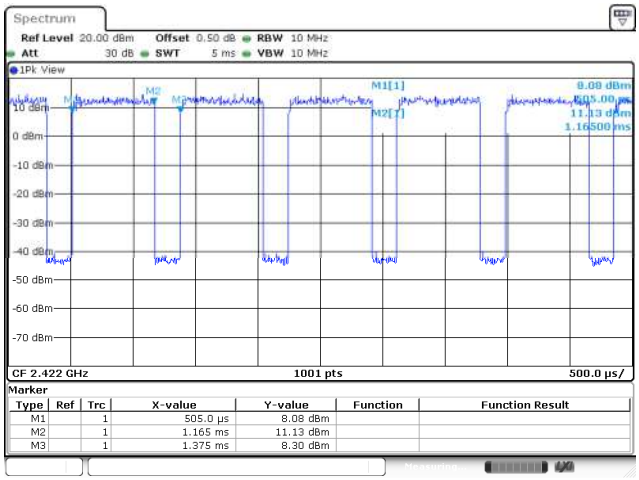


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	530.0 µs	10.09 dBm		
M2		1	1.87 ms	13.42 dBm		
M3		1	2.08 ms	10.08 dBm		

Date: 30.AUG.2021 16:16:05

802.11n (40MHz)



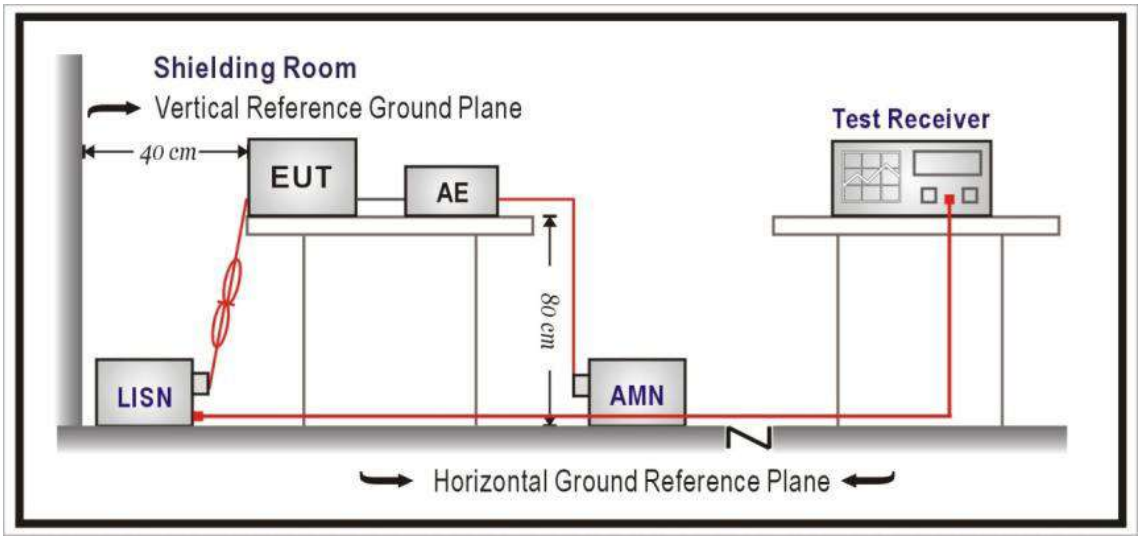
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	505.0 µs	8.08 dBm		
M2		1	1.165 ms	11.13 dBm		
M3		1	1.375 ms	8.30 dBm		

Date: 30.AUG.2021 16:49:08

2. AC Power Line Conducted Emission

2.1. Test Setup



2.2. Test Limit

Test Limit (dBuV)		
Frequency	QP	AV
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

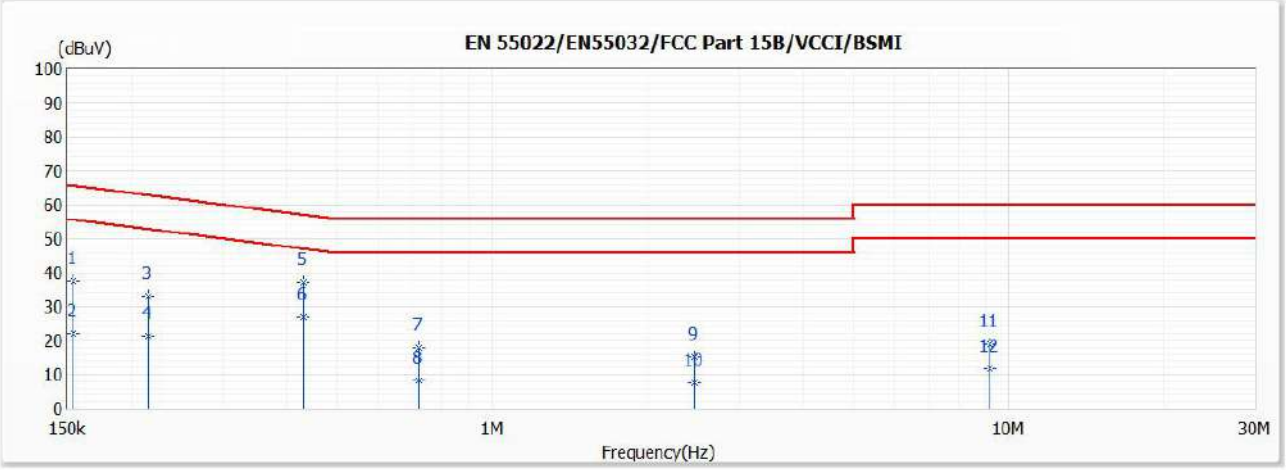
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. 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: 2013 on conducted measurement.
AC Power Line Conducted Emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9KHz.

2.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

2.5. Test Result of AC Power Line Conducted Emission

Test Mode	Mode 1	Phase	Line
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2412 MHz		

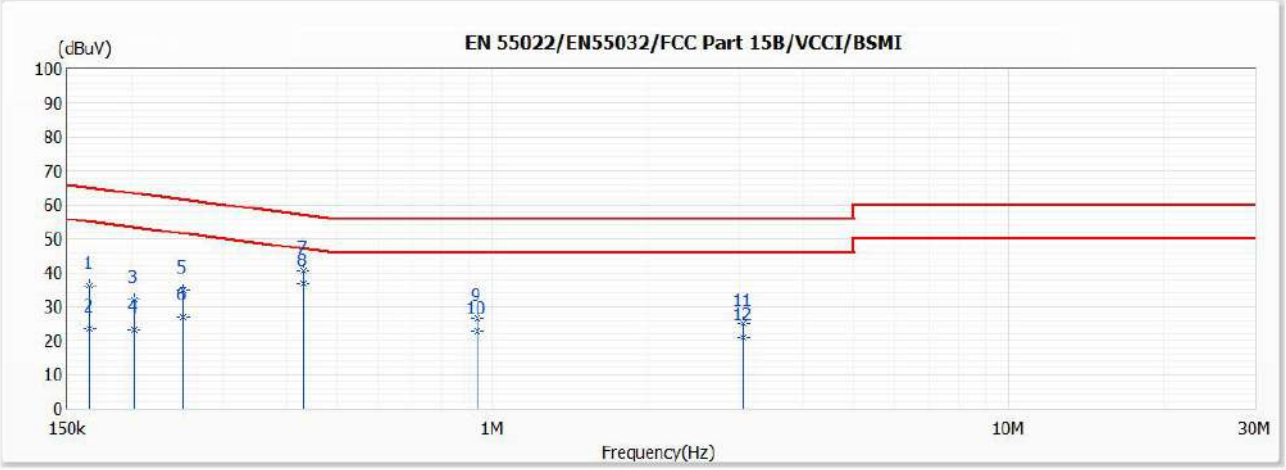


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.154	37.51	65.79	-28.28	27.88	9.63	QP
2	0.154	21.93	55.79	-33.86	12.30	9.63	AV
3	0.215	32.99	63.02	-30.03	23.35	9.64	QP
4	0.215	21.39	53.02	-31.63	11.75	9.64	AV
*5	0.429	37.19	57.27	-20.08	27.53	9.66	QP
6	0.429	27.01	47.27	-20.26	17.35	9.66	AV
7	0.720	17.96	56.00	-38.04	8.26	9.70	QP
8	0.720	8.43	46.00	-37.57	-1.27	9.70	AV
9	2.464	15.20	56.00	-40.80	5.40	9.80	QP
10	2.464	7.46	46.00	-38.54	-2.34	9.80	AV
11	9.211	18.88	60.00	-41.12	8.80	10.08	QP
12	9.211	11.80	50.00	-38.20	1.72	10.08	AV

Note:

1. "*" means this data is the worst emission level.
2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).
3. Margin = Emission Level - Limit.

Test Mode	Mode 1	Phase	Neutral
Test Condition	802.11b / Ant. 0 + Ant. 1 / 2412 MHz		



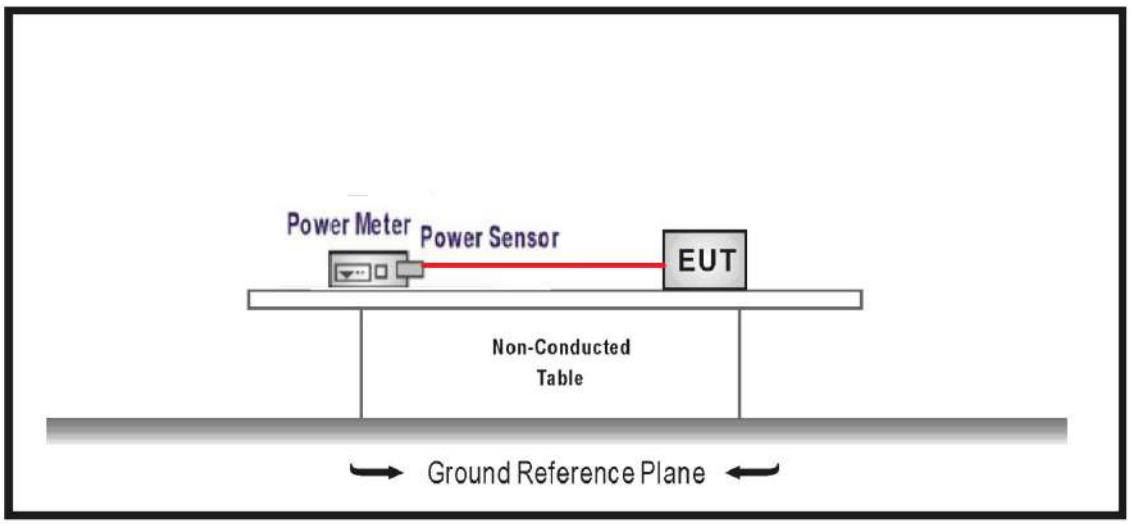
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.166	36.27	65.18	-28.91	26.63	9.64	QP
2	0.166	23.38	55.18	-31.80	13.74	9.64	AV
3	0.202	32.19	63.52	-31.33	22.55	9.64	QP
4	0.202	22.94	53.52	-30.58	13.30	9.64	AV
5	0.251	34.68	61.73	-27.05	25.04	9.64	QP
6	0.251	26.93	51.73	-24.80	17.29	9.64	AV
7	0.430	40.62	57.26	-16.64	30.95	9.67	QP
*8	0.430	36.73	47.26	-10.53	27.06	9.67	AV
9	0.931	26.61	56.00	-29.39	16.89	9.72	QP
10	0.931	22.93	46.00	-23.07	13.21	9.72	AV
11	3.068	25.33	56.00	-30.67	15.49	9.84	QP
12	3.068	21.02	46.00	-24.98	11.18	9.84	AV

Note:

1. "*" means this data is the worst emission level.
2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).
3. Margin = Emission Level - Limit.

3. Maximum Conducted Output Power

3.1. Test Setup



3.2. Test Limit

The maximum conducted output power shall be less 1 Watt.

3.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074 D01 v05r02 for compliance to FCC 47CFR 15.247 requirements.

3.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

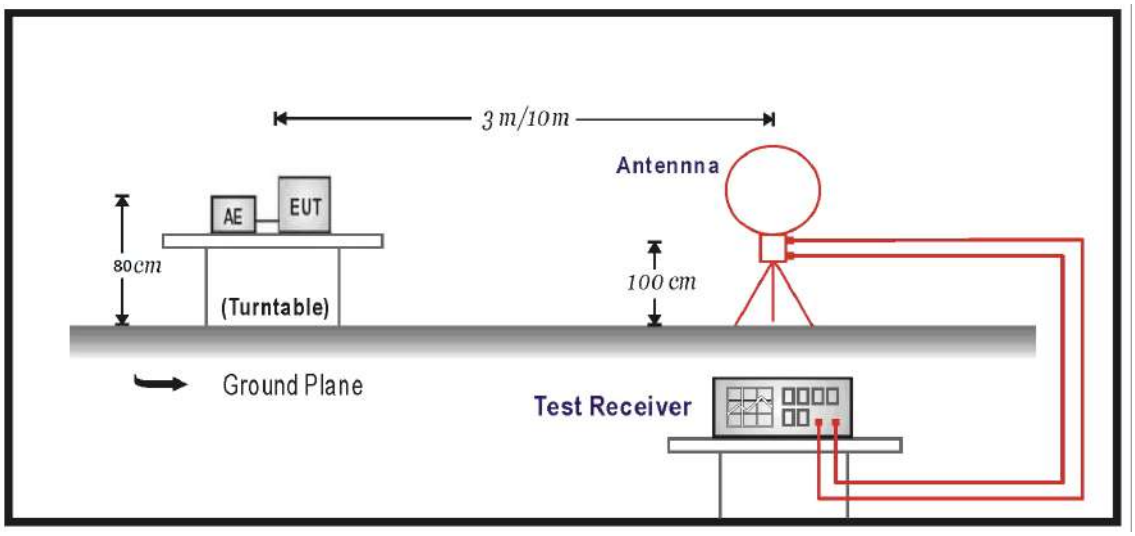
3.5. Test Result of Maximum Conducted Output Power

Modulation	Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)			Limit (dBm)	Result
			Ant. 0	Ant. 1	Total		
802.11b	1	2412	11.430	11.010	14.235	≦30.00	Pass
	6	2437	13.690	13.560	16.636	≦30.00	Pass
	11	2462	13.480	13.180	16.343	≦30.00	Pass
802.11g	1	2412	13.620	13.610	16.625	≦30.00	Pass
	6	2437	13.570	13.460	16.526	≦30.00	Pass
	11	2462	13.920	13.740	16.841	≦30.00	Pass
802.11n (20MHz)	1	2412	13.740	13.640	16.701	≦30.00	Pass
	6	2437	13.640	13.890	16.777	≦30.00	Pass
	11	2462	13.700	13.730	16.725	≦30.00	Pass
802.11n (40MHz)	3	2422	13.580	13.680	16.641	≦30.00	Pass
	6	2437	13.850	13.640	16.757	≦30.00	Pass
	9	2452	10.710	10.820	13.776	≦30.00	Pass

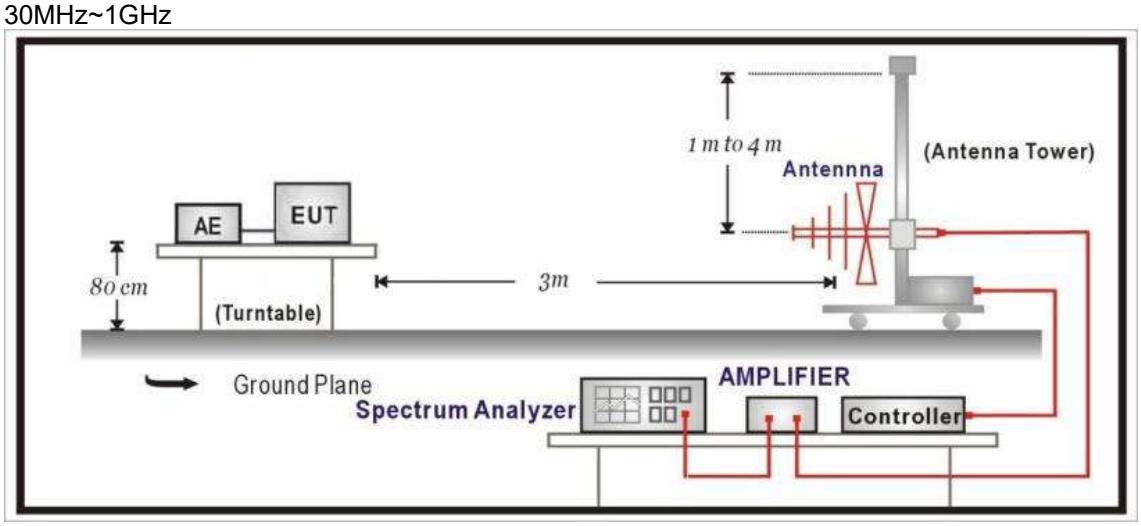
4. Radiated Emission

4.1. Test Setup

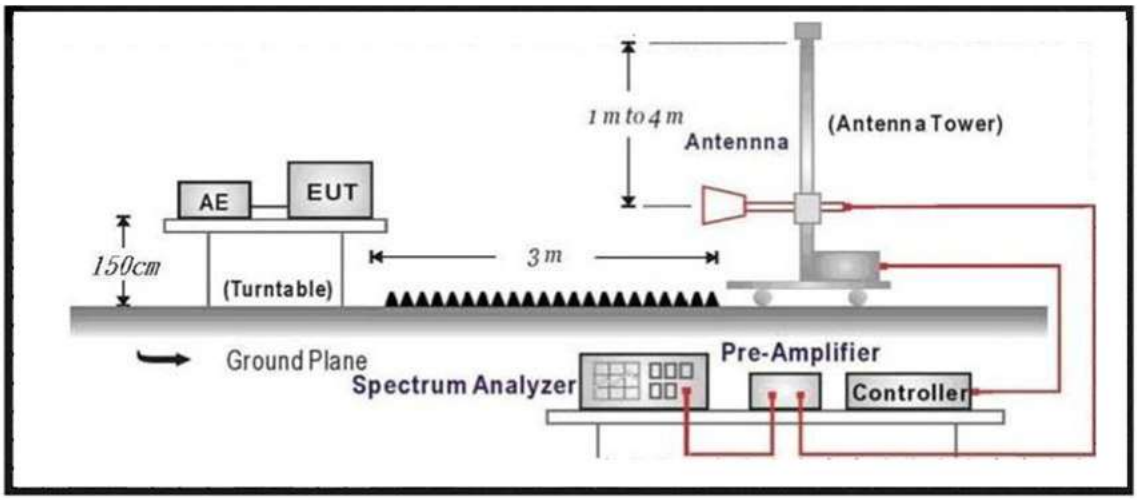
9kHz~30MHz



30MHz~1GHz



Above 1GHz



4.2. Test Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 30dB below the level of the fundamental or to the general radiated emission limit in paragraph 15.209, whichever is the lesser attenuation.

Frequency MHz	uV/m @3m	dBuV/m@3m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.3. Test Procedure

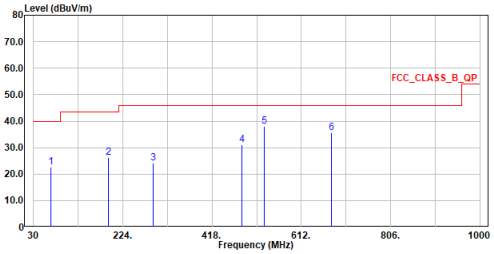
The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB 558074 D01V05r02 for compliance to FCC 47CFR 15.247 requirements.
The EUT and its simulators are placed on a turn table which is 0.8 or 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.
On any frequency or frequencies form 9kHz(inculde The the lowest oscillator frequency generated within the device up to the 10th harmonic) to 1000 MHz, the limit shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limit shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

4.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

4.5. Test Result of Radiated Emissions (30MHz~1GHz)

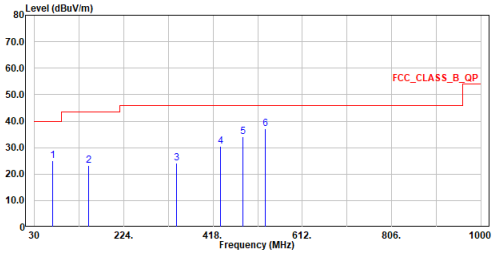
Site :CB4-H
Condition :3m Horizontal
Mode :11b_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	67.442	22.70	40.00	-17.30	27.02	-4.32	QP
2	193.348	26.15	43.50	-17.35	32.60	-6.45	QP
3	290.057	24.27	46.00	-21.73	27.08	-2.81	QP
4	483.378	31.23	46.00	-14.77	29.34	1.89	QP
5	531.781	38.05	46.00	-7.95	35.16	2.89	QP
6	676.699	35.68	46.00	-10.32	30.03	5.65	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

Site :CB4-H
Condition :3m Vertical
Mode :11b_TX_2412MHz
Test by :Cyril

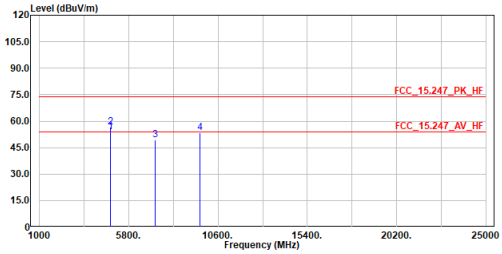


No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	69.964	25.05	40.00	-14.95	29.91	-4.86	QP
2	147.467	23.33	43.50	-20.17	26.69	-3.36	QP
3	338.266	24.25	46.00	-21.75	25.99	-1.74	QP
4	434.878	30.55	46.00	-15.45	29.63	0.92	QP
5	483.378	34.06	46.00	-11.94	32.17	1.89	QP
6	531.781	36.99	46.00	-9.01	34.10	2.89	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

4.6. Test Result of Radiated Emissions (1GHz~10th Harmonic)

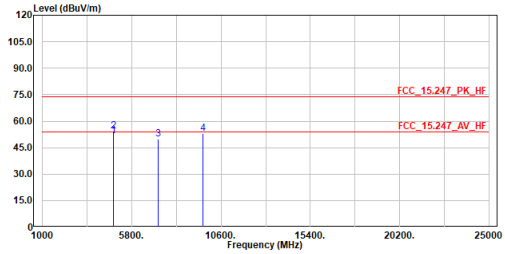
Site :CB4-H
Condition :3m ,Horizontal
Mode :11b_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4824.000	53.68	54.00	-0.32	55.12	-1.44	Average
2	4824.000	56.69	74.00	-17.31	58.13	-1.44	Peak
3	7236.000	49.26	74.00	-24.74	42.87	6.39	Peak
4	9648.000	53.37	74.00	-20.63	41.89	11.48	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

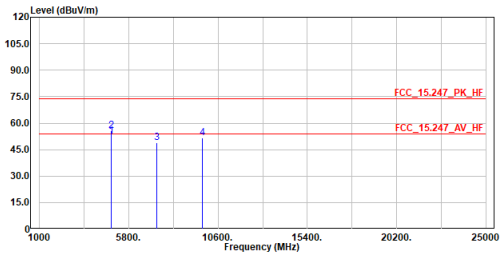
Site :CB4-H
Condition :3m ,Vertical
Mode :11b_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4824.000	51.54	54.00	-2.46	52.98	-1.44	Average
2	4824.000	54.37	74.00	-19.63	55.81	-1.44	Peak
3	7236.000	49.89	74.00	-24.11	43.50	6.39	Peak
4	9648.000	52.78	74.00	-21.22	41.30	11.48	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

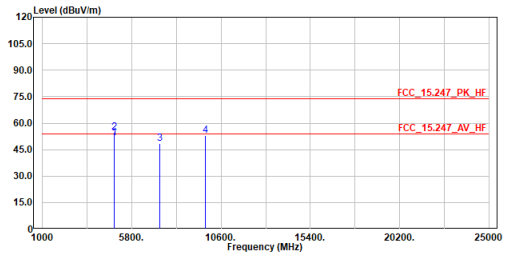
Site :CB4-H
Condition :3m Horizontal
Mode :11b_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	52.55	54.00	-1.45	53.95	-1.40	Average
2	4874.000	55.53	74.00	-18.47	56.93	-1.40	Peak
3	7311.000	48.90	74.00	-25.10	42.66	6.24	Peak
4	9748.000	51.42	74.00	-22.58	39.78	11.64	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

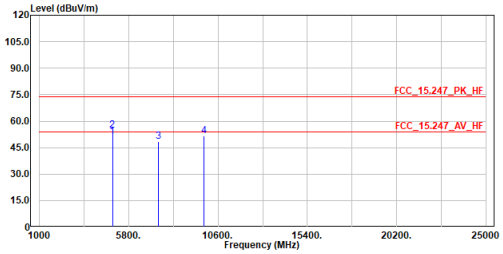
Site :CB4-H
Condition :3m Vertical
Mode :11b_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	51.83	54.00	-2.17	53.23	-1.40	Average
2	4874.000	54.99	74.00	-19.01	56.39	-1.40	Peak
3	7311.000	48.55	74.00	-25.45	42.31	6.24	Peak
4	9748.000	52.83	74.00	-21.17	41.19	11.64	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

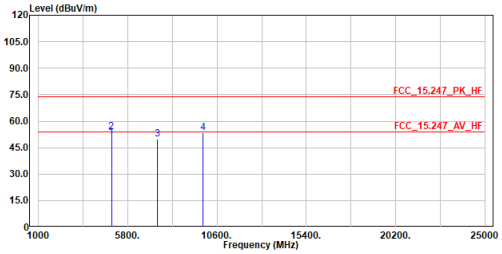
Site :CB4-H
Condition :3m ,Horizontal
Mode :11b_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4924.000	51.33	54.00	-2.67	52.64	-1.31	Average
2	4924.000	54.74	74.00	-19.26	56.05	-1.31	Peak
3	7386.000	48.52	74.00	-25.48	42.03	6.49	Peak
4	9848.000	51.60	74.00	-22.40	39.57	12.03	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

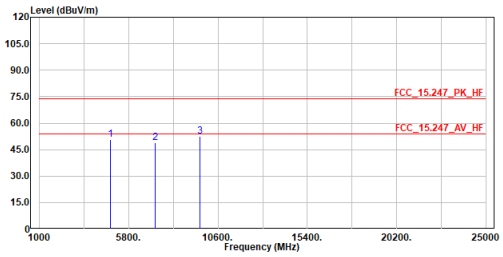
Site :CB4-H
Condition :3m ,Vertical
Mode :11b_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4924.000	50.54	54.00	-3.46	51.85	-1.31	Average
2	4924.000	54.02	74.00	-19.98	55.33	-1.31	Peak
3	7386.000	49.90	74.00	-24.10	43.41	6.49	Peak
4	9848.000	53.63	74.00	-20.37	41.60	12.03	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

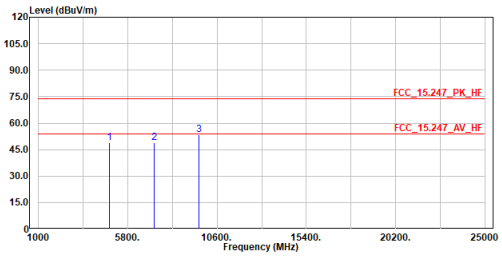
Site :CB4-H
Condition :3m ,Horizontal
Mode :11g_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4824.000	50.70	74.00	-23.30	52.14	-1.44	Peak
2	7236.000	49.08	74.00	-24.92	42.69	6.39	Peak
3	9648.000	52.32	74.00	-21.68	40.84	11.48	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

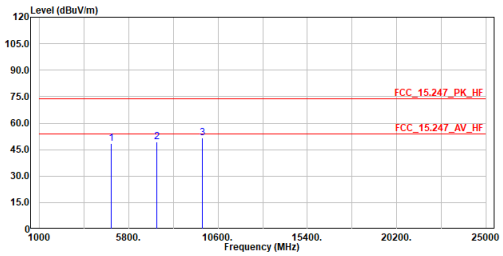
Site :CB4-H
Condition :3m ,Vertical
Mode :11g_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4824.000	48.88	74.00	-25.12	50.32	-1.44	Peak
2	7236.000	48.77	74.00	-25.23	42.38	6.39	Peak
3	9648.000	53.31	74.00	-20.69	41.83	11.48	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

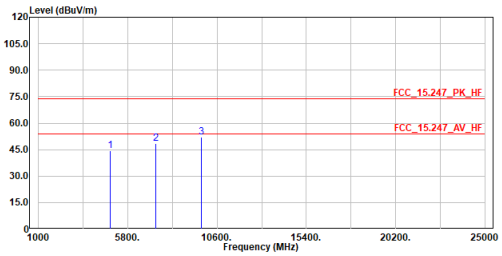
Site :CB4-H
Condition :3m ,Horizontal
Mode :11g_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	48.50	74.00	-25.50	49.90	-1.40	Peak
2	7311.000	49.36	74.00	-24.64	43.12	6.24	Peak
3	9748.000	51.69	74.00	-22.31	40.05	11.64	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

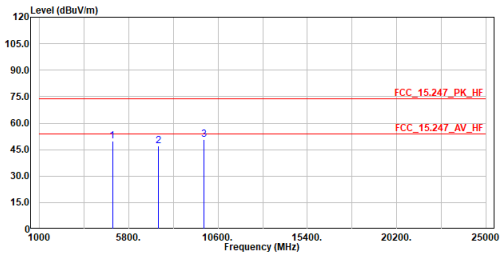
Site :CB4-H
Condition :3m ,Vertical
Mode :11g_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	44.50	74.00	-29.50	45.90	-1.40	Peak
2	7311.000	48.54	74.00	-25.46	42.30	6.24	Peak
3	9748.000	52.20	74.00	-21.80	40.56	11.64	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

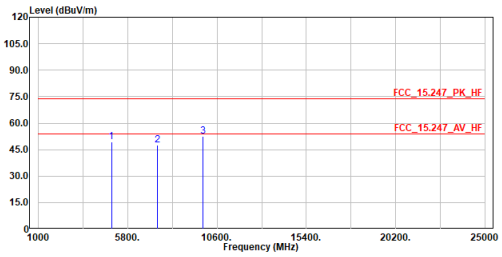
Site :CB4-H
Condition :3m ,Horizontal
Mode :11g_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4924.000	49.88	74.00	-24.12	51.19	-1.31	Peak
2	7386.000	46.96	74.00	-27.04	40.47	6.49	Peak
3	9848.000	50.56	74.00	-23.44	38.53	12.03	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

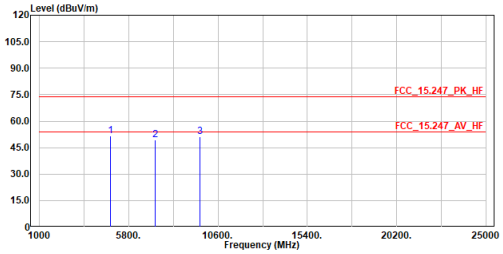
Site :CB4-H
Condition :3m ,Vertical
Mode :11g_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4924.000	49.19	74.00	-24.81	50.50	-1.31	Peak
2	7386.000	47.68	74.00	-26.32	41.19	6.49	Peak
3	9848.000	52.47	74.00	-21.53	40.44	12.03	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

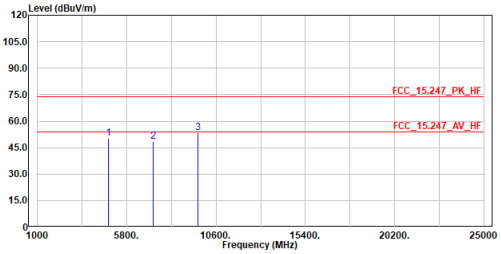
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n20_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4824.000	51.64	74.00	-22.36	53.08	-1.44	Peak
2	7236.000	49.47	74.00	-24.53	43.08	6.39	Peak
3	9648.000	51.32	74.00	-22.68	39.84	11.48	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

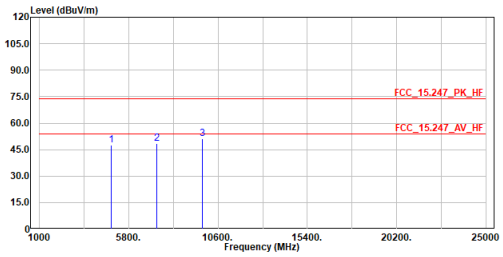
Site :CB4-H
Condition :3m ,Vertical
Mode :11n20_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4824.000	50.21	74.00	-23.79	51.65	-1.44	Peak
2	7236.000	48.63	74.00	-25.37	42.24	6.39	Peak
3	9648.000	53.30	74.00	-20.70	41.82	11.48	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

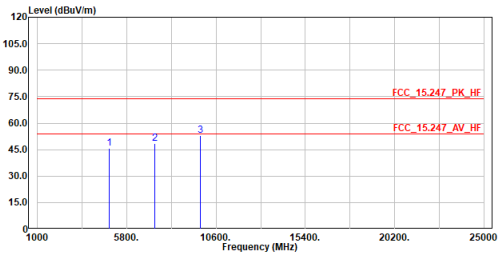
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n20_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	47.60	74.00	-26.40	49.00	-1.40	Peak
2	7311.000	48.45	74.00	-25.55	42.21	6.24	Peak
3	9748.000	51.04	74.00	-22.96	39.40	11.64	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

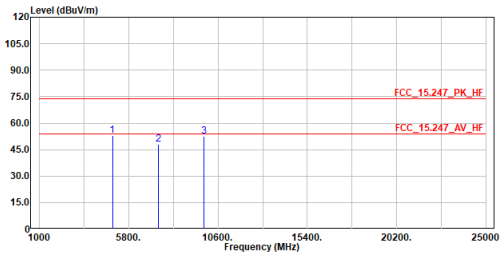
Site :CB4-H
Condition :3m ,Vertical
Mode :11n20_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	45.92	74.00	-28.08	47.32	-1.40	Peak
2	7311.000	48.35	74.00	-25.65	42.11	6.24	Peak
3	9748.000	53.16	74.00	-20.84	41.52	11.64	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

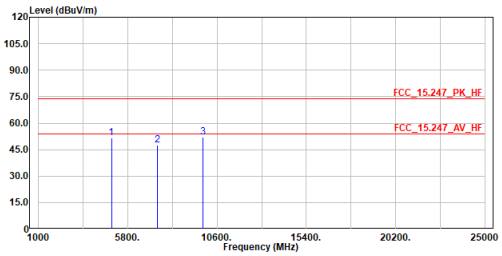
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n20_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4924.000	53.15	74.00	-20.85	54.46	-1.31	Peak
2	7386.000	47.81	74.00	-26.19	41.32	6.49	Peak
3	9848.000	52.30	74.00	-21.70	40.27	12.03	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

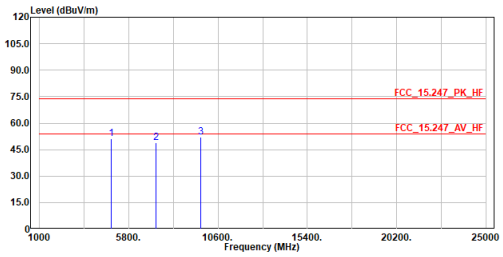
Site :CB4-H
Condition :3m ,Vertical
Mode :11n20_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4924.000	51.66	74.00	-22.34	52.97	-1.31	Peak
2	7386.000	47.71	74.00	-26.29	41.22	6.49	Peak
3	9848.000	52.22	74.00	-21.78	40.19	12.03	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

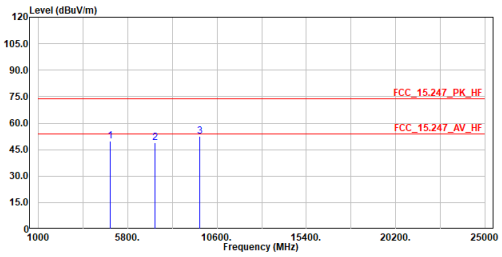
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n40_TX_2422MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4844.000	51.31	74.00	-22.69	52.71	-1.40	Peak
2	7266.000	49.05	74.00	-24.95	42.66	6.39	Peak
3	9688.000	52.14	74.00	-21.86	40.64	11.50	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

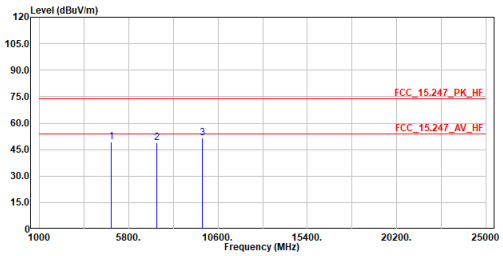
Site :CB4-H
Condition :3m ,Vertical
Mode :11n40_TX_2422MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4844.000	49.72	74.00	-24.28	51.12	-1.40	Peak
2	7266.000	48.90	74.00	-25.10	42.51	6.39	Peak
3	9688.000	52.55	74.00	-21.45	41.05	11.50	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

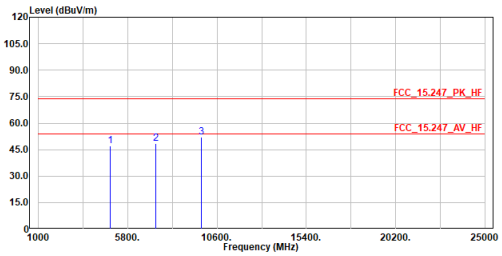
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n40_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	49.26	74.00	-24.74	50.66	-1.40	Peak
2	7311.000	48.79	74.00	-25.21	42.55	6.24	Peak
3	9748.000	51.53	74.00	-22.47	39.89	11.64	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

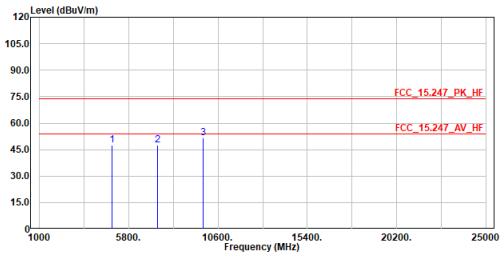
Site :CB4-H
Condition :3m ,Vertical
Mode :11n40_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4874.000	46.90	74.00	-27.10	48.30	-1.40	Peak
2	7311.000	48.30	74.00	-25.70	42.06	6.24	Peak
3	9748.000	52.13	74.00	-21.87	40.49	11.64	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

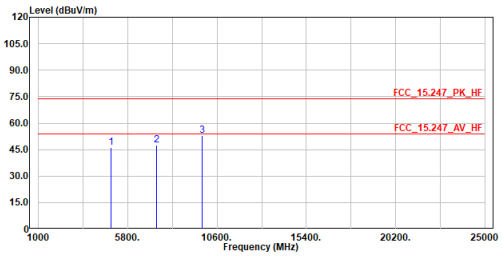
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n40_TX_2452MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4904.000	47.40	74.00	-26.60	48.79	-1.39	Peak
2	7356.000	47.70	74.00	-26.30	41.44	6.26	Peak
3	9808.000	51.45	74.00	-22.55	39.58	11.87	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :CB4-H
Condition :3m ,Vertical
Mode :11n40_TX_2452MHz
Test by :Cyril

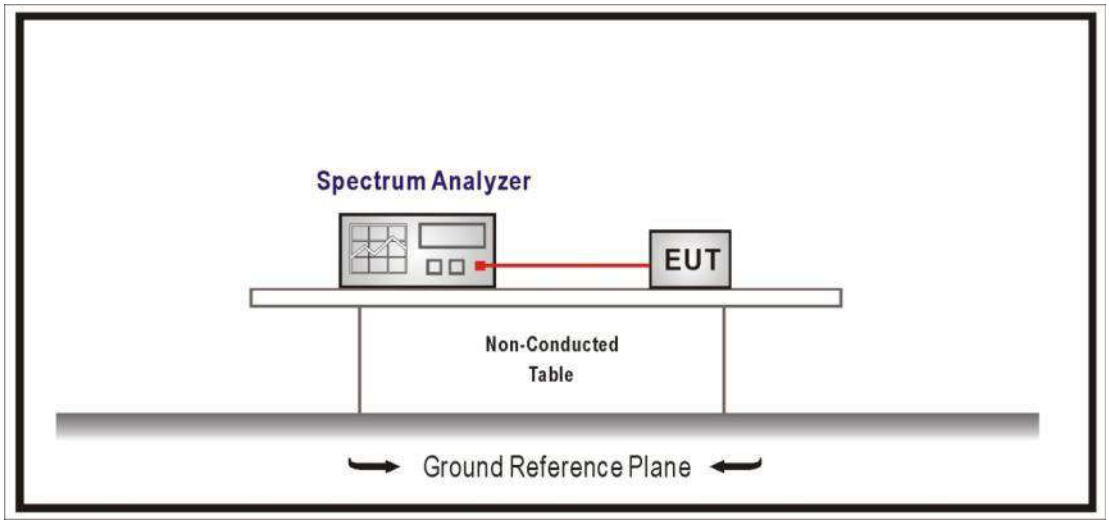


No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	4904.000	46.25	74.00	-27.75	47.64	-1.39	Peak
2	7356.000	47.44	74.00	-26.56	41.18	6.26	Peak
3	9808.000	53.11	74.00	-20.89	41.24	11.87	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

5. Antenna Port Conducted Emission

5.1. Test Setup



5.2. Test Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limit. If the transmitter complies with the conducted power limit based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limit specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limit specified in §15.209(a) (see §15.205(c)).

5.3. Test Procedure

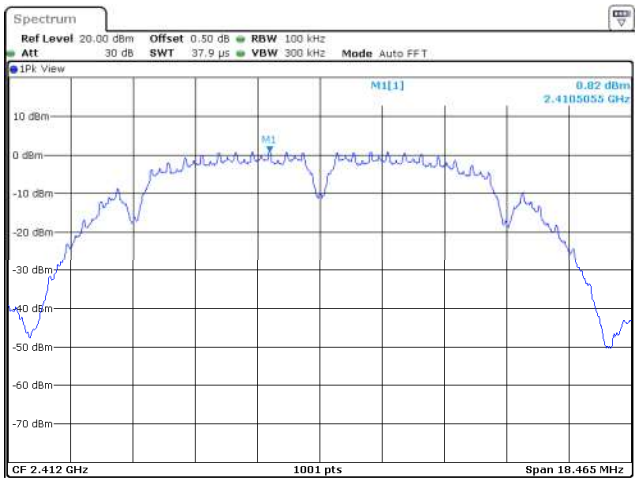
The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB 558074 D01 V05r02 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

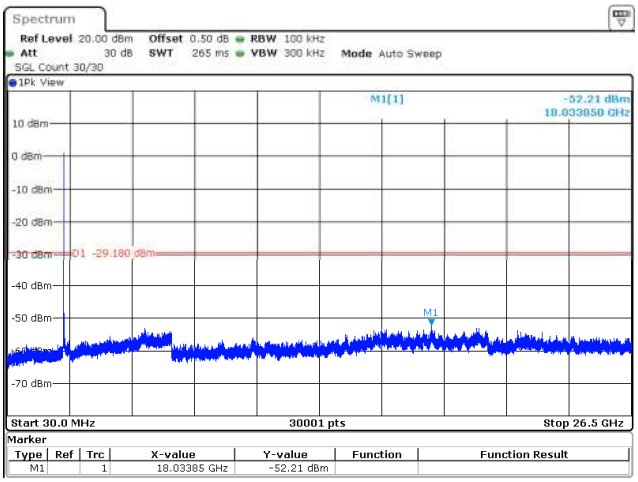
5.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

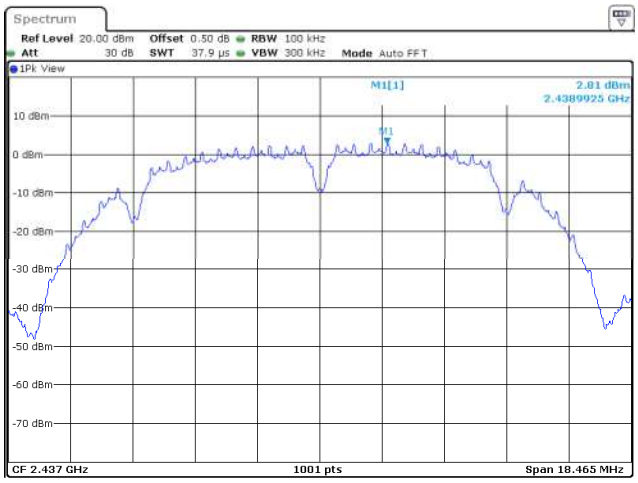
5.5. Test Result of Antenna Port Conducted Emission

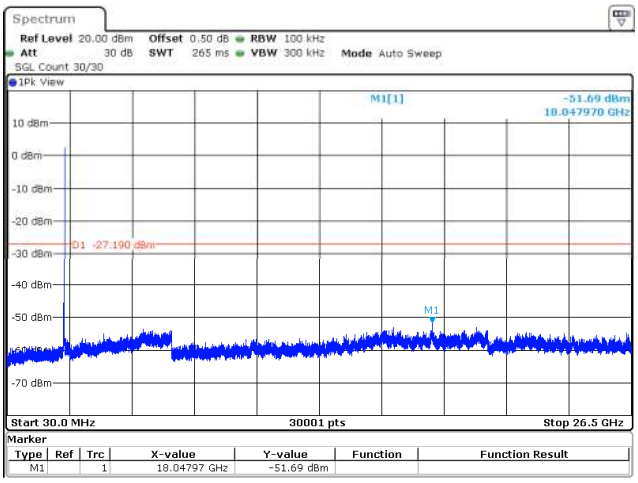
802.11b / Ant. 0 / 2412 MHz



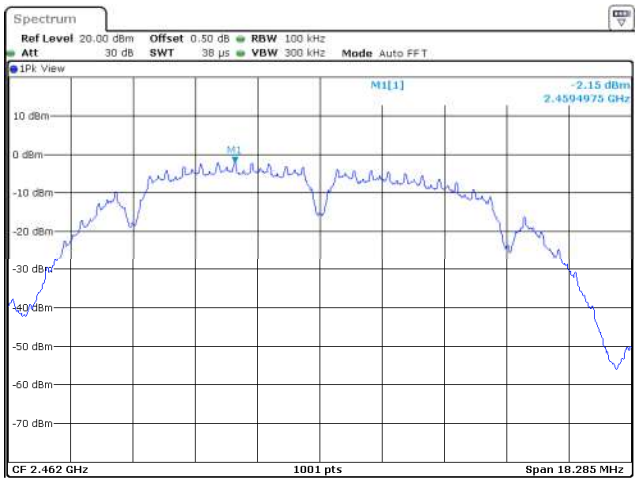


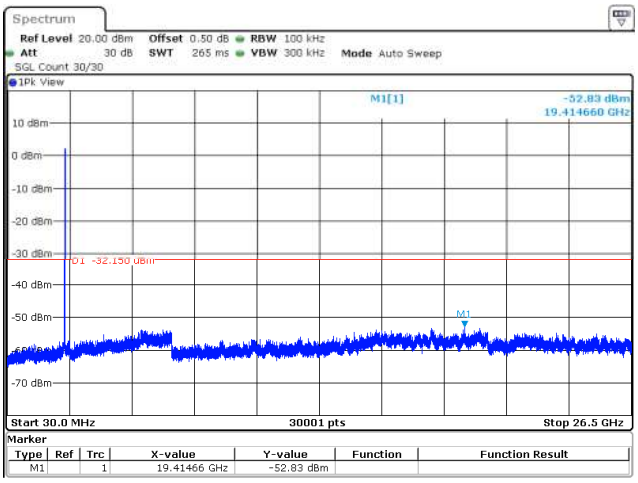
802.11b / Ant. 0 / 2437 MHz



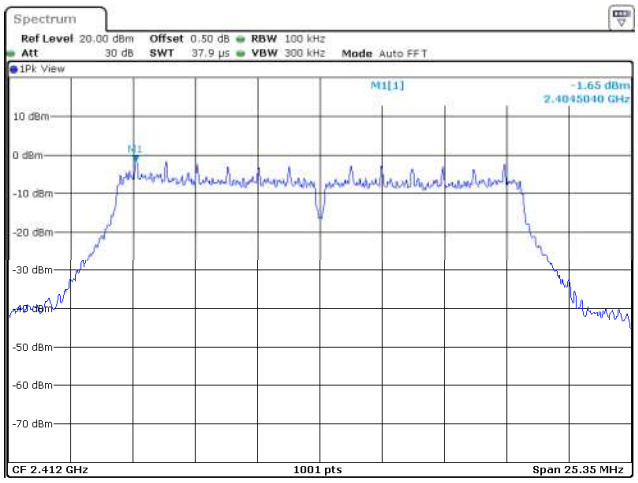


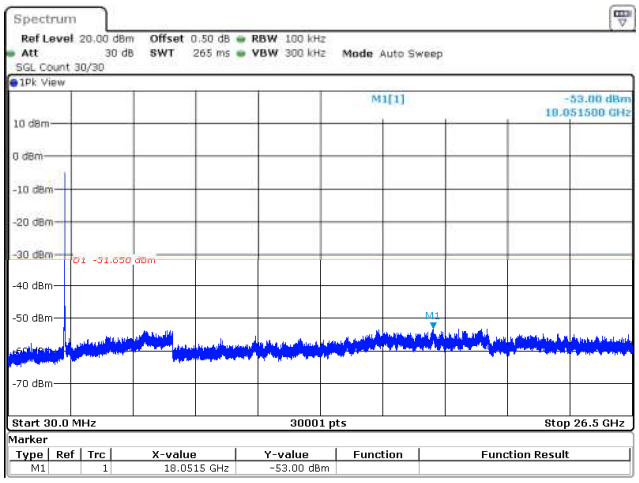
802.11b / Ant. 0 / 2462 MHz



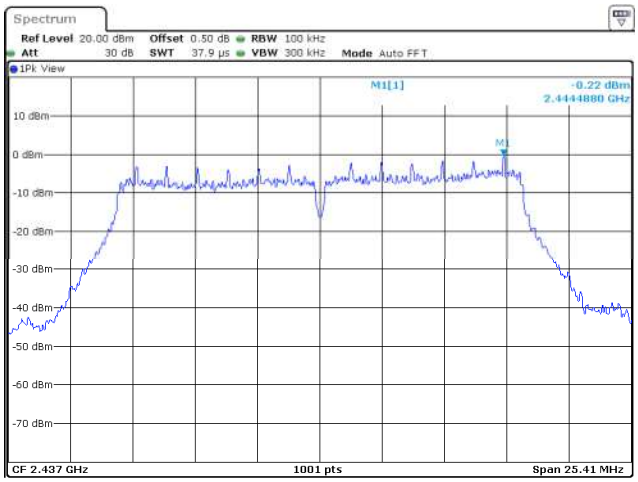


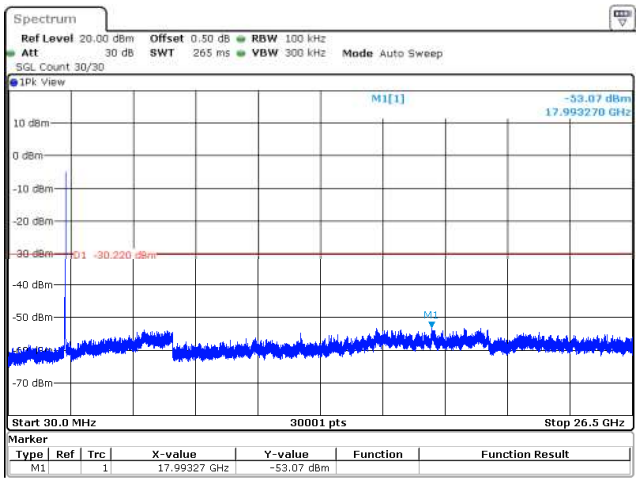
802.11g / Ant. 0 / 2412 MHz



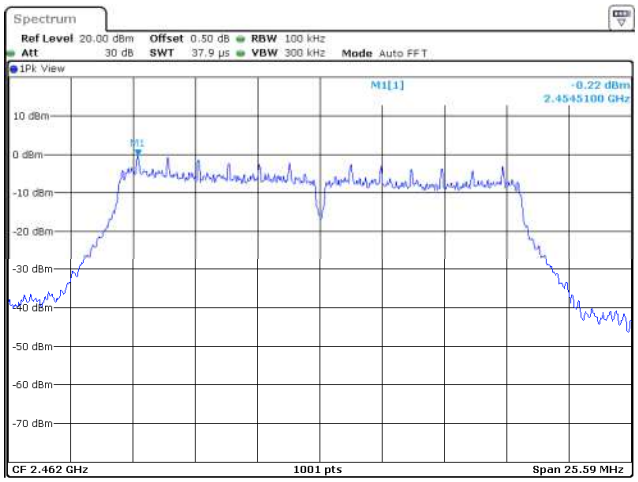


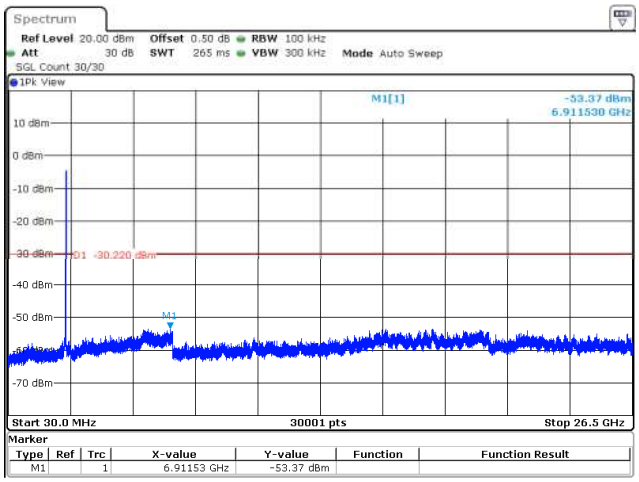
802.11g / Ant. 0 / 2437 MHz



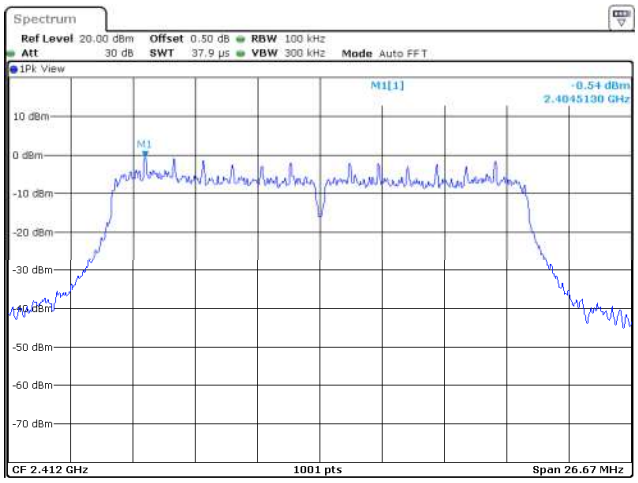


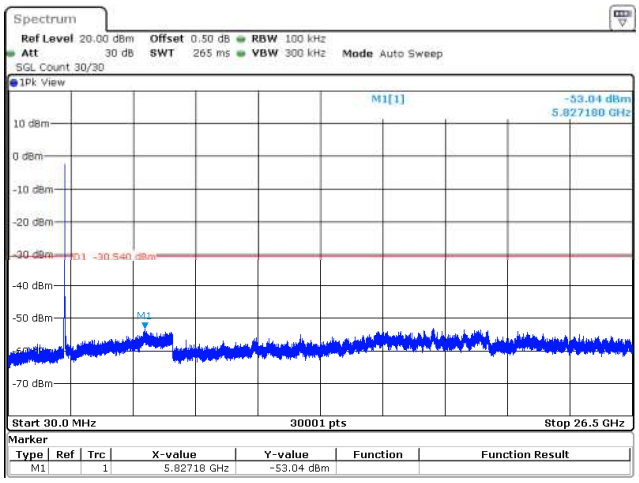
802.11g / Ant. 0 / 2462 MHz



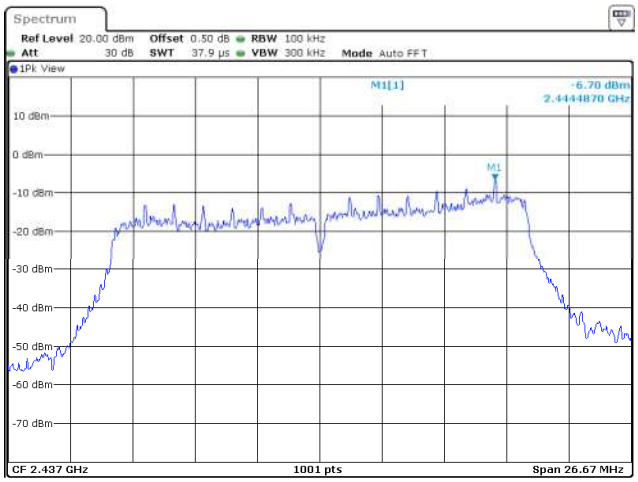


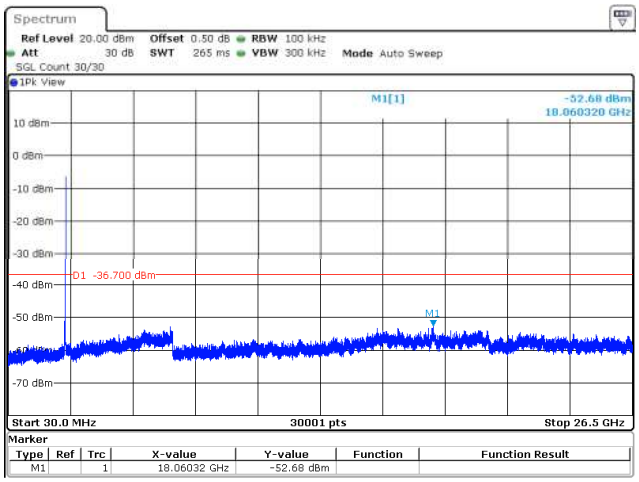
802.11n (20MHz) / Ant. 0 / 2412 MHz



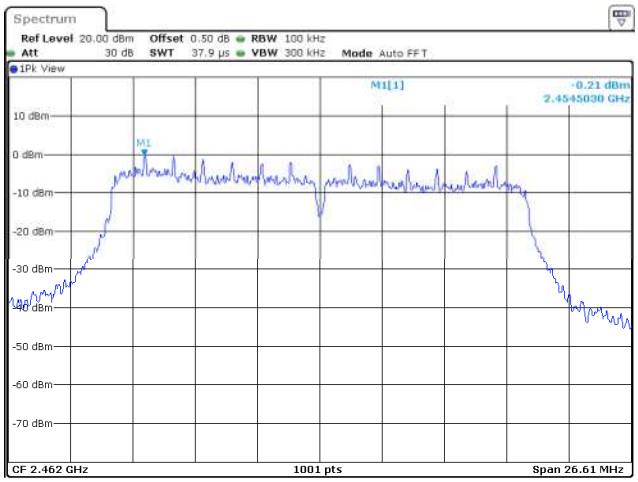


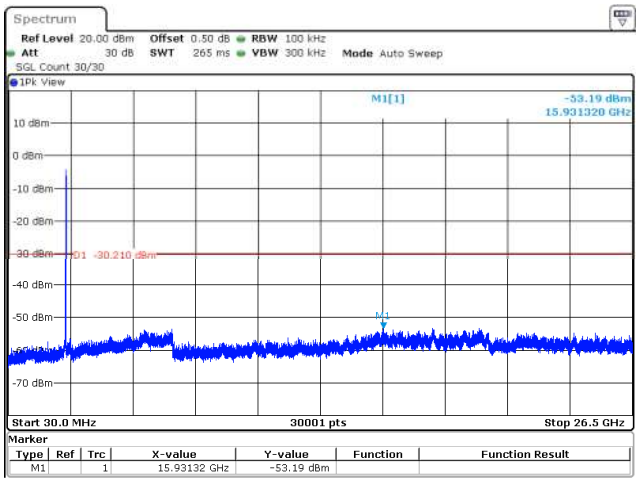
802.11n (20MHz) / Ant. 0 / 2437 MHz



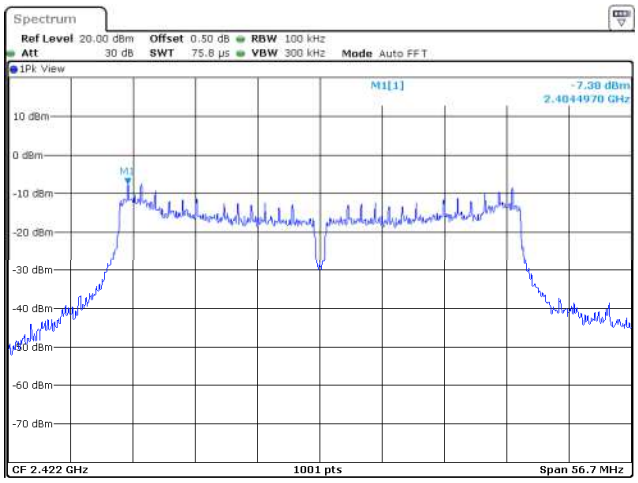


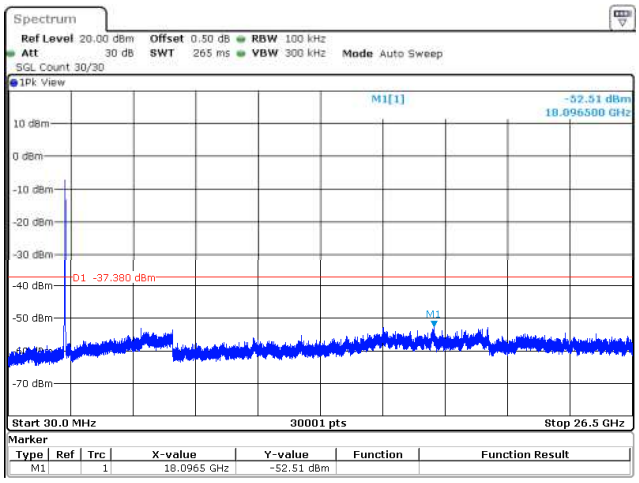
802.11n (20MHz) / Ant. 0 / 2462 MHz



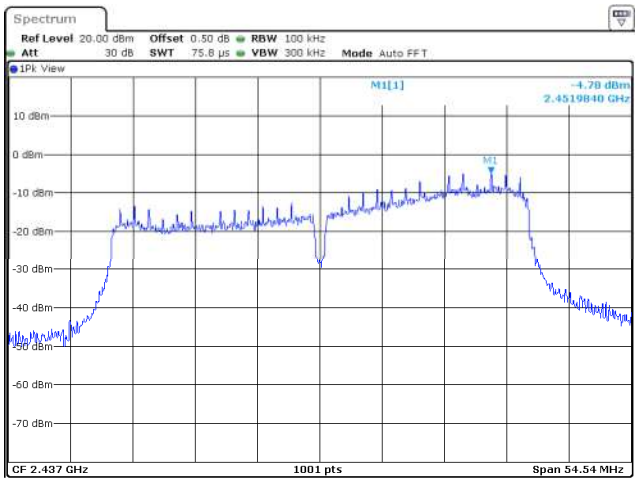


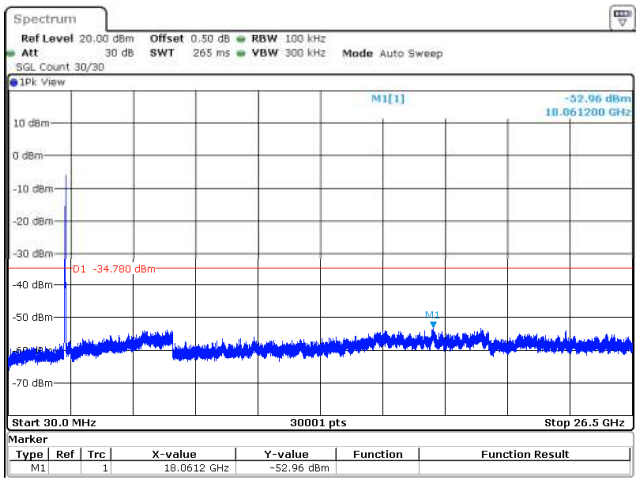
802.11n (40MHz) / Ant. 0 / 2422 MHz



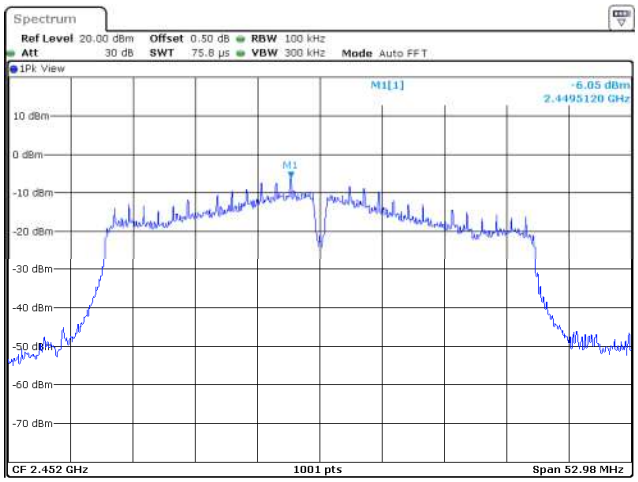


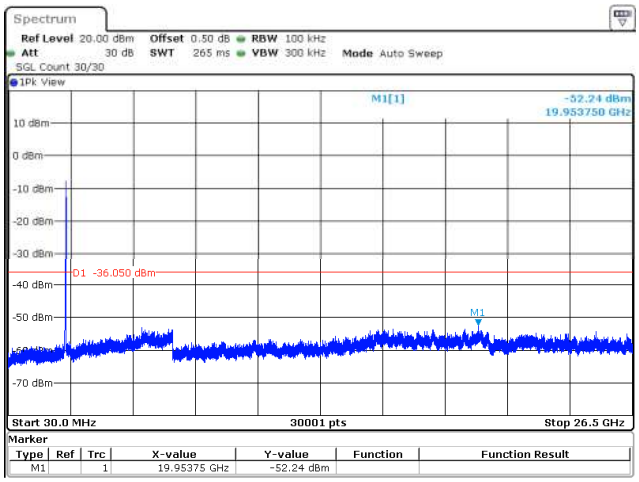
802.11n (40MHz) / Ant. 0 / 2437 MHz



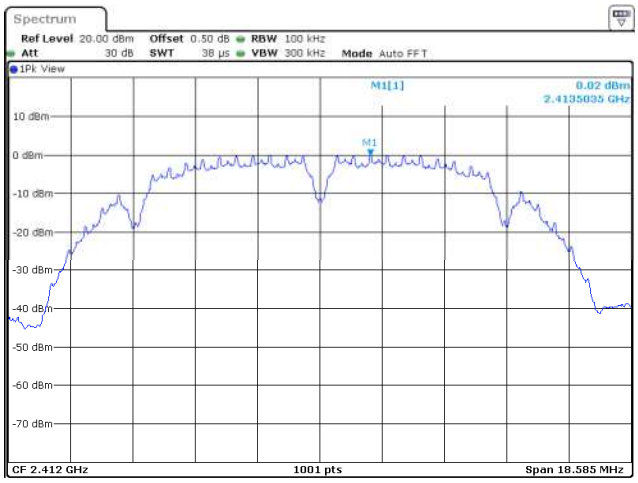


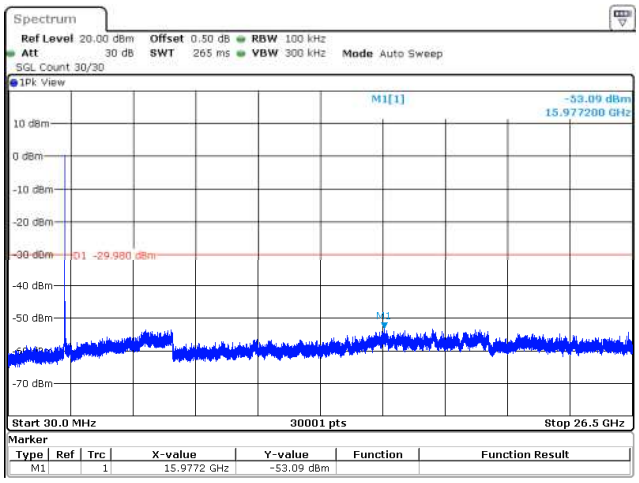
802.11n (40MHz) / Ant. 0 / 2452 MHz



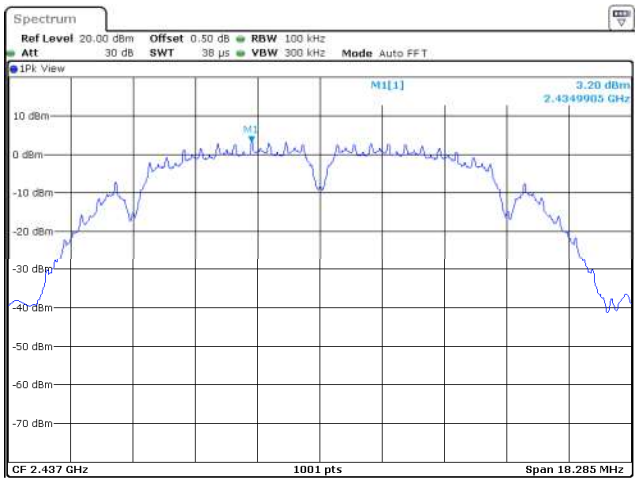


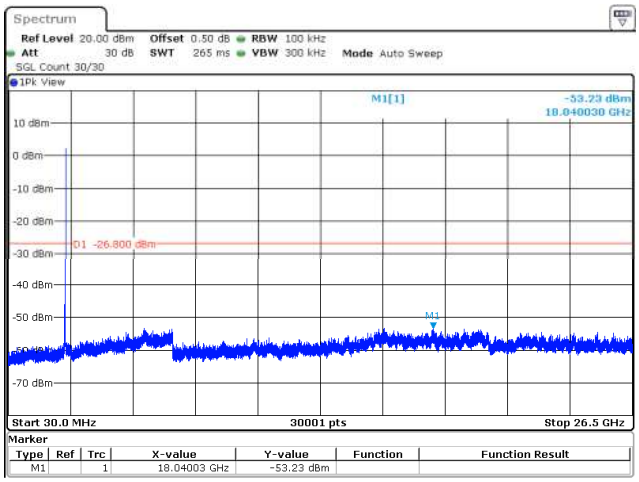
802.11b / Ant. 1 / 2412 MHz



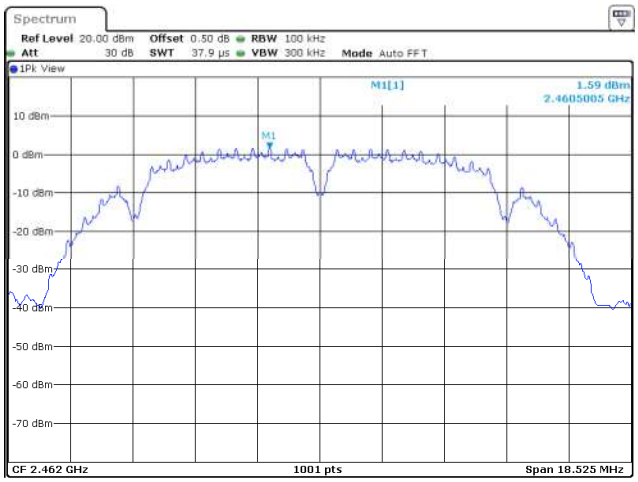


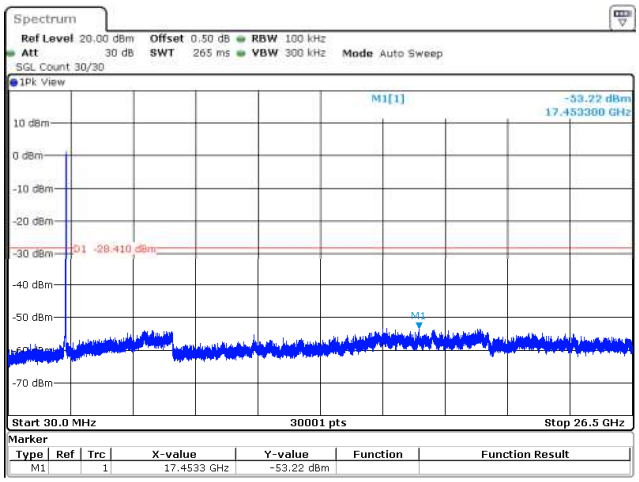
802.11b / Ant. 1 / 2437 MHz



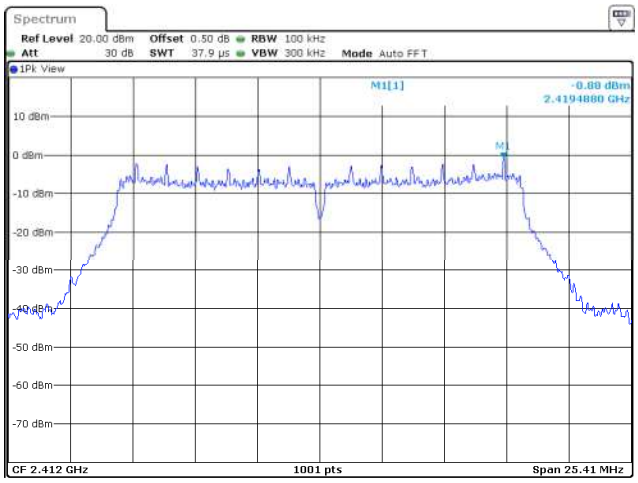


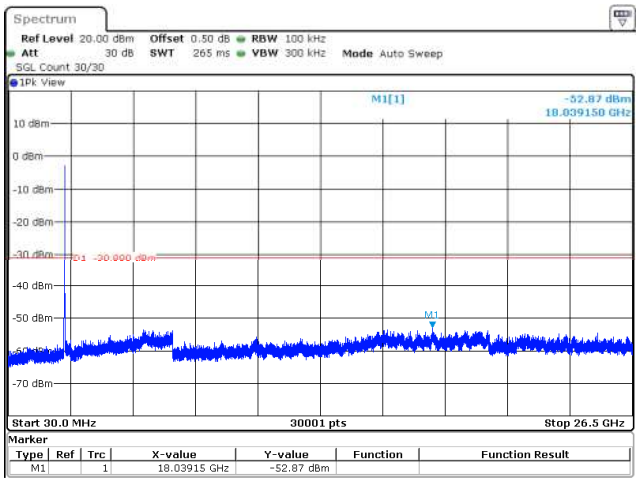
802.11b / Ant. 1 / 2462 MHz



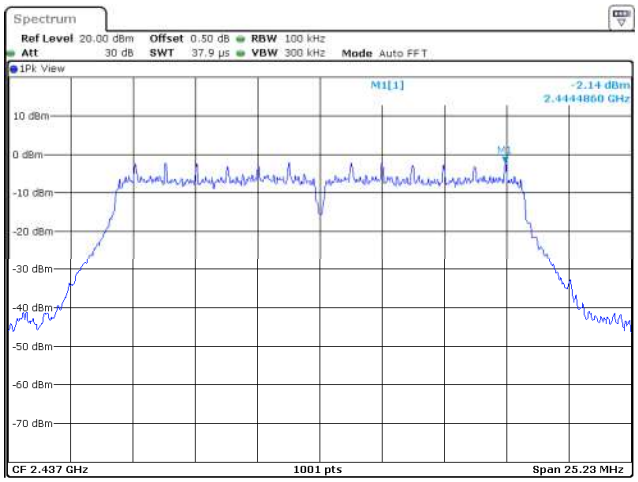


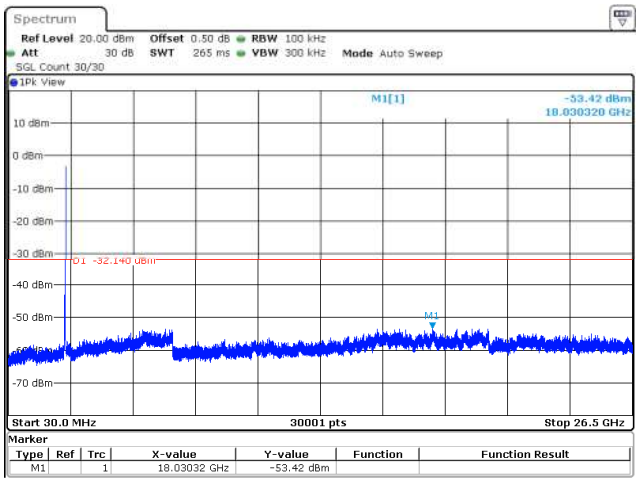
802.11g / Ant. 1 / 2412 MHz



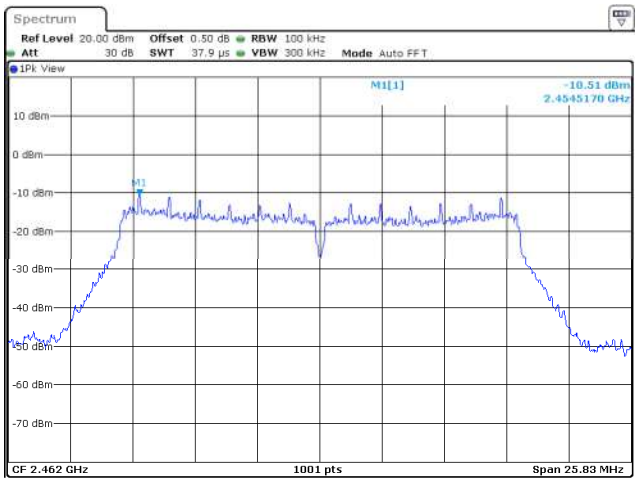


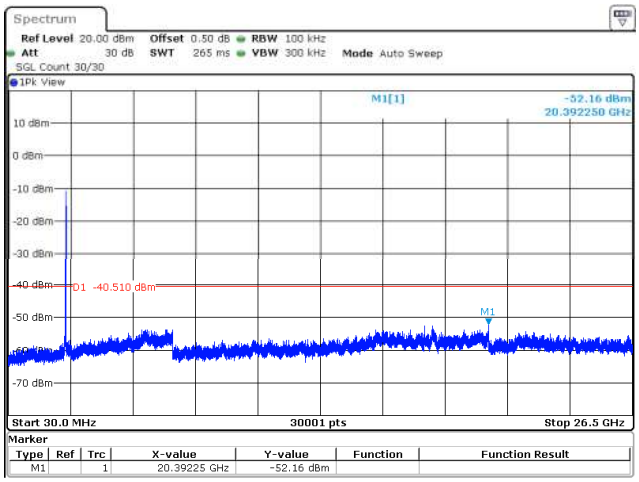
802.11g / Ant. 1 / 2437 MHz



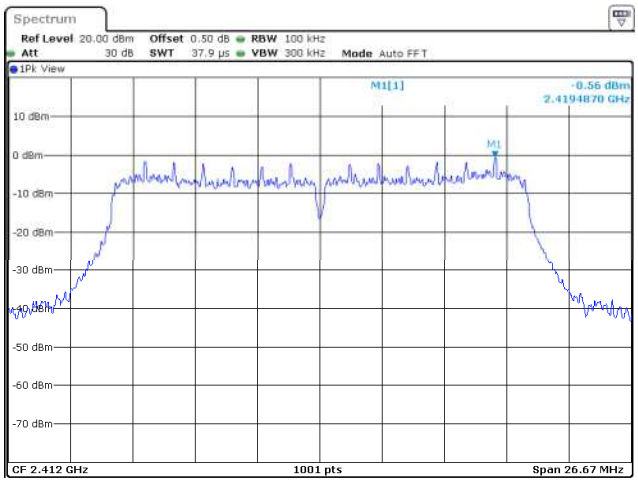


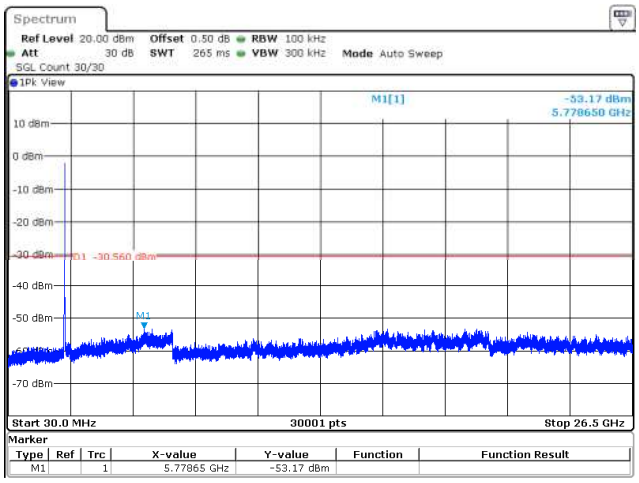
802.11g / Ant. 1 / 2462 MHz



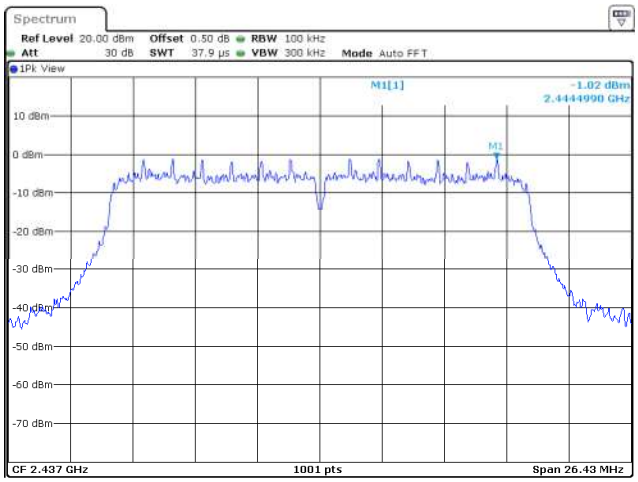


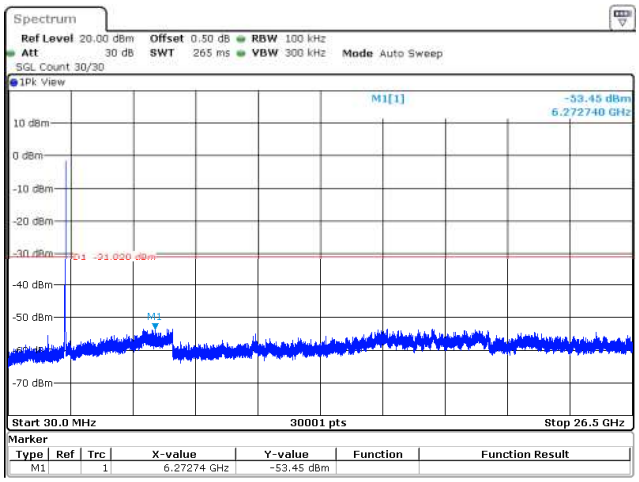
802.11n (20MHz) / Ant. 1 / 2412 MHz



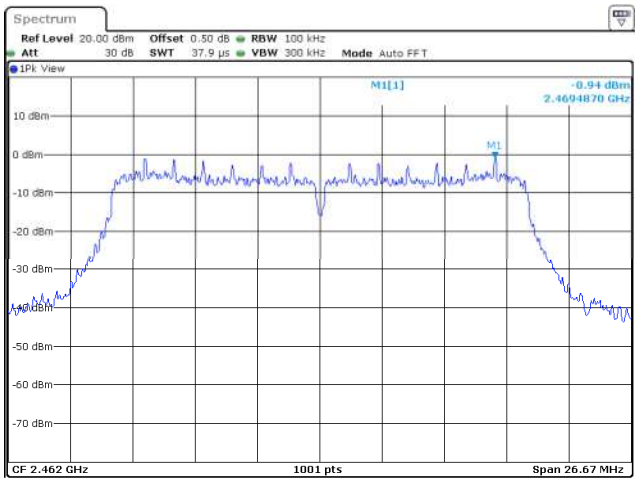


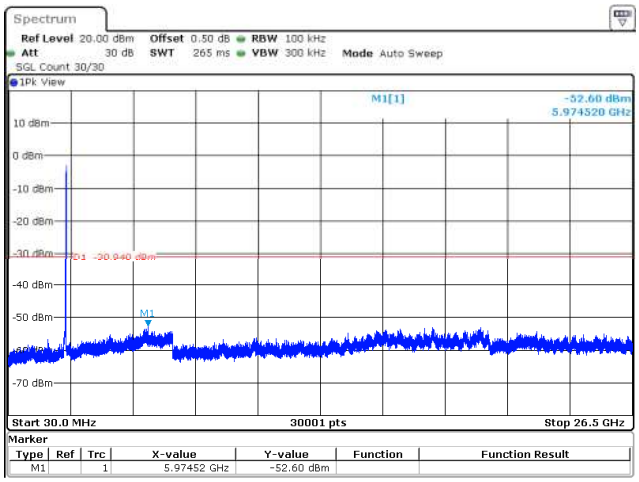
802.11n (20MHz) / Ant. 1 / 2437 MHz



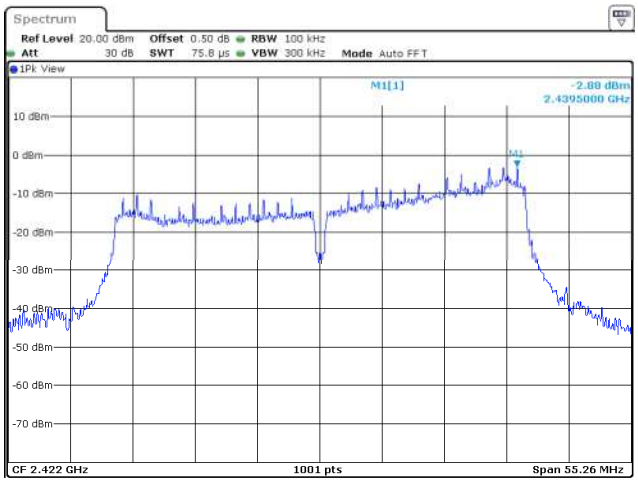


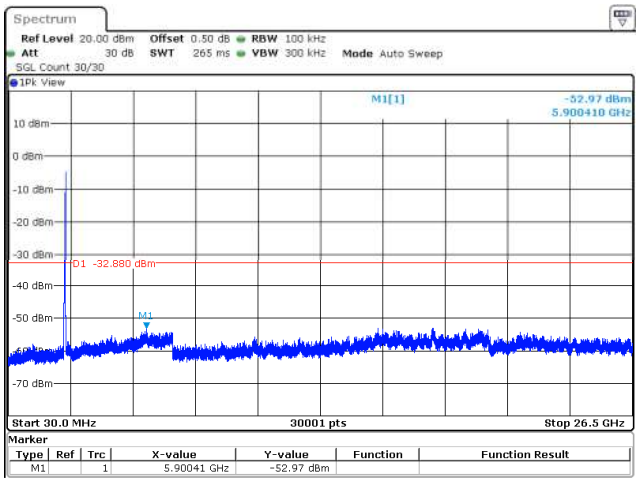
802.11n (20MHz) / Ant. 1 / 2462 MHz



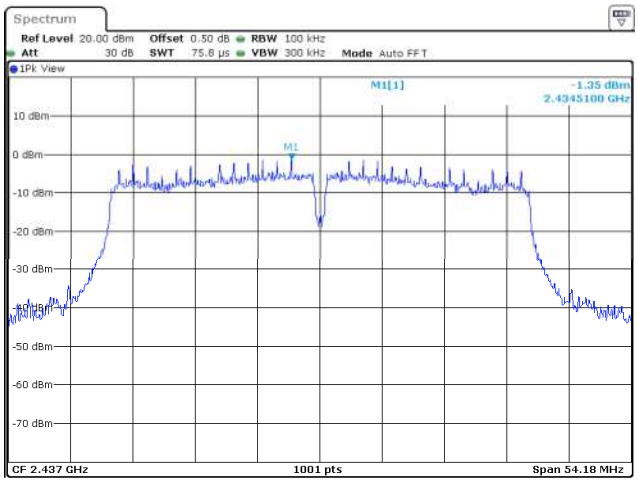


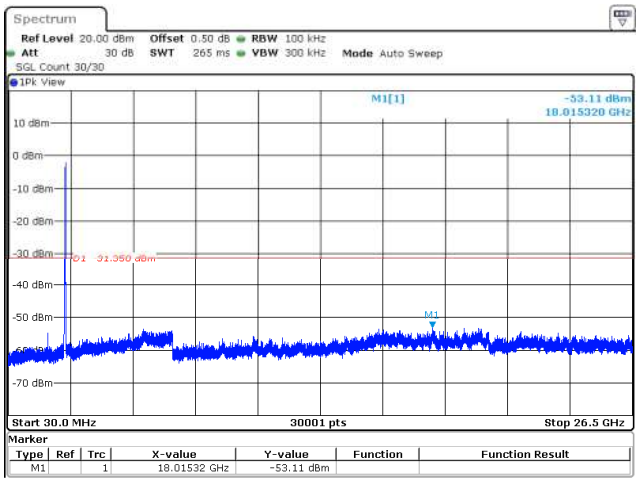
802.11n (40MHz) / Ant. 1 / 2422 MHz



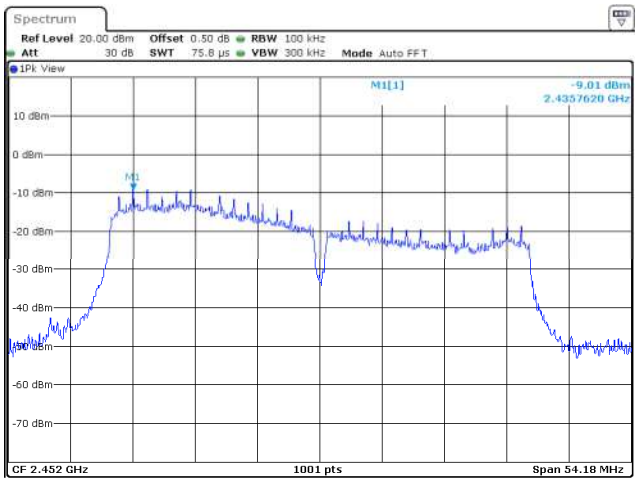


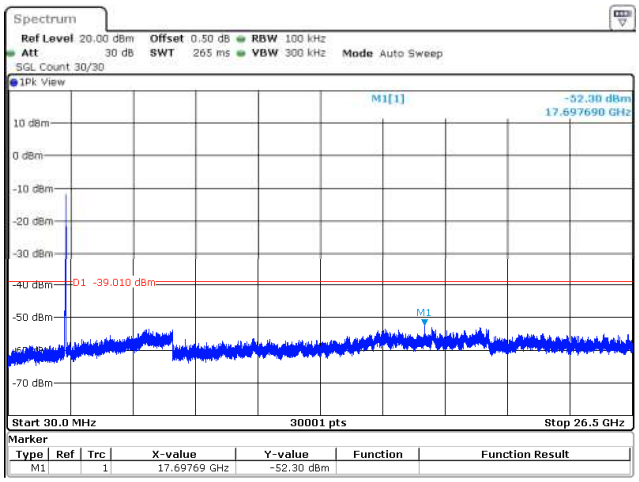
802.11n (40MHz) / Ant. 1 / 2437 MHz



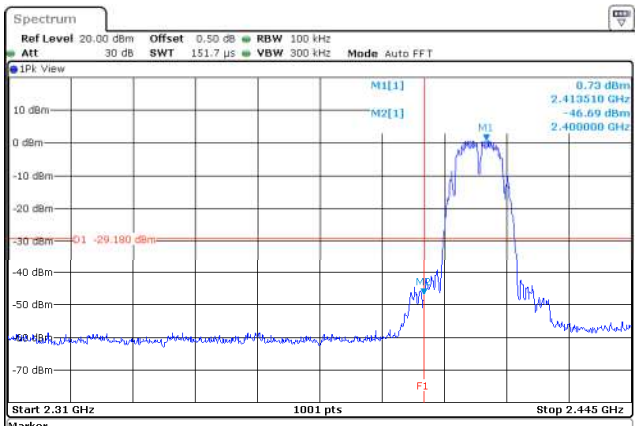


802.11n (40MHz) / Ant. 1 / 2452 MHz





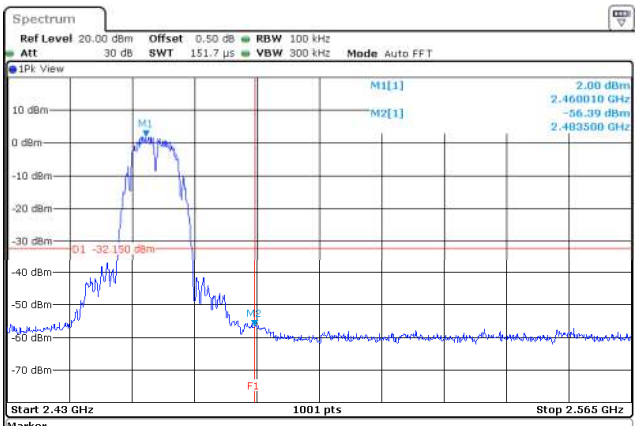
802.11b / Ant. 0 / 2412 MHz (Band Edge)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41351 GHz	0.73 dBm		
M2		1	2.4 GHz	-46.69 dBm		

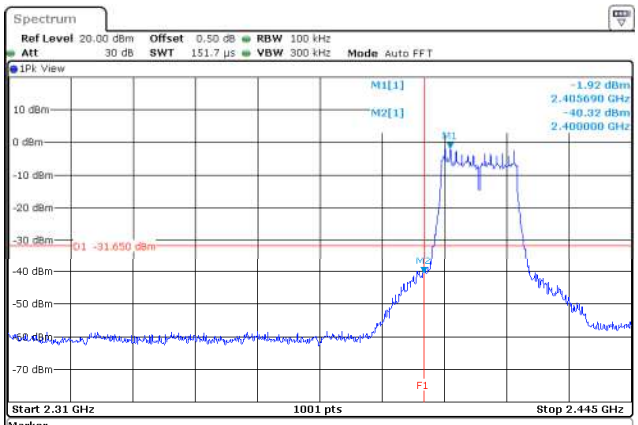
802.11b / Ant. 0 / 2462 MHz (Band Edge)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.46001 GHz	2.00 dBm		
M2		1	2.4835 GHz	-56.39 dBm		

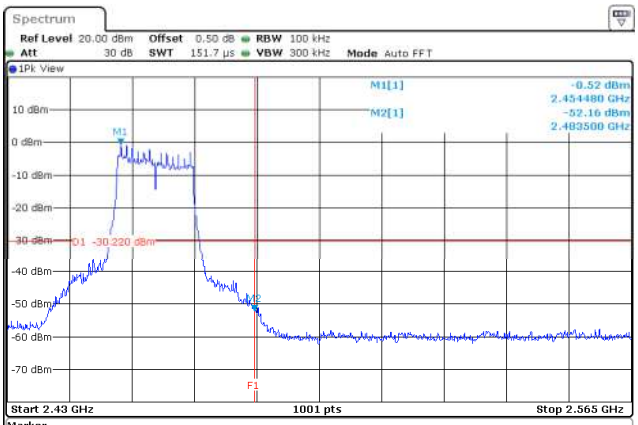
802.11g / Ant. 0 / 2412 MHz (Band Edge)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40569 GHz	-1.92 dBm		
M2		1	2.4 GHz	-40.32 dBm		

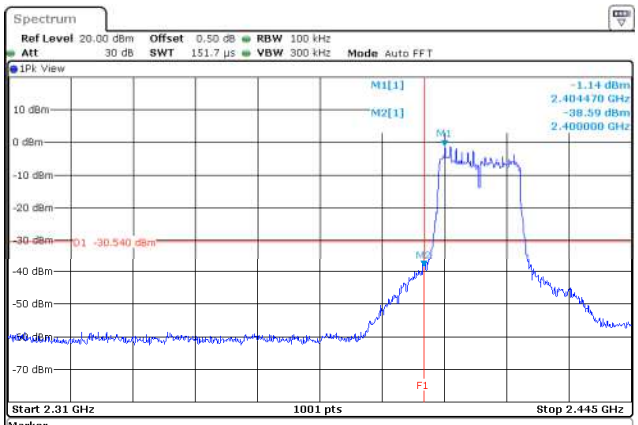
802.11g / Ant. 0 / 2462 MHz (Band Edge)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45448 GHz	-0.52 dBm		
M2		1	2.4835 GHz	-52.16 dBm		

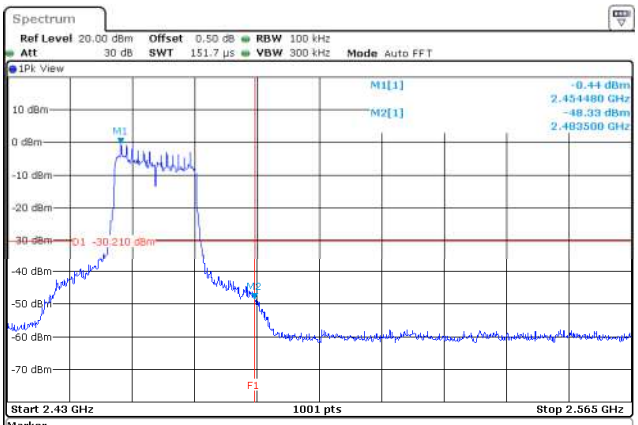
802.11n (20MHz) / Ant. 0 / 2412 MHz (Band Edge)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.40447 GHz	-1.14 dBm		
M2		1	2.4 GHz	-38.59 dBm		

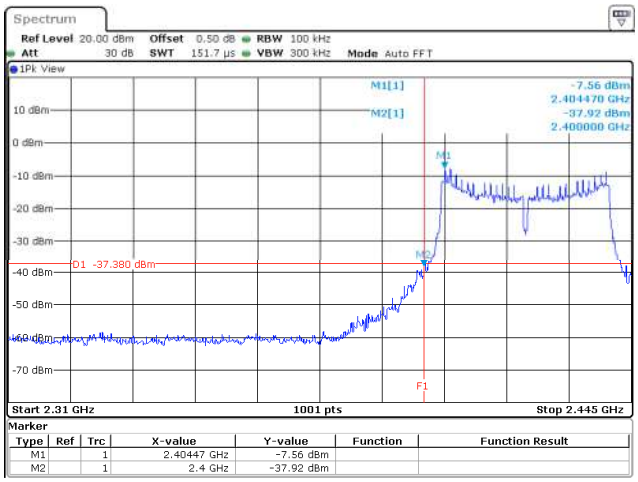
802.11n (20MHz) / Ant. 0 / 2462 MHz (Band Edge)



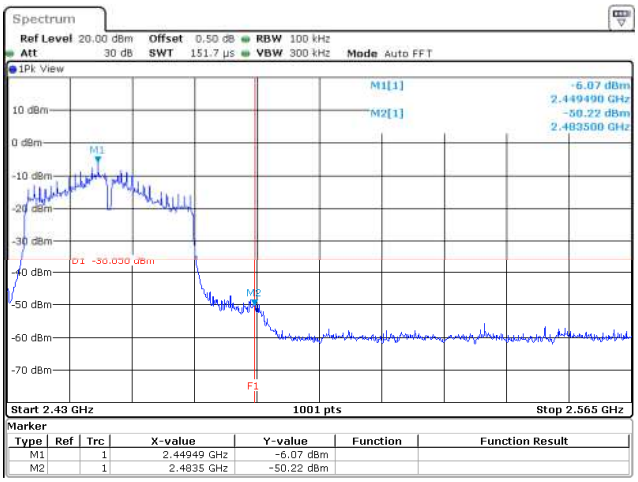
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45448 GHz	-0.44 dBm		
M2		1	2.4835 GHz	-48.33 dBm		

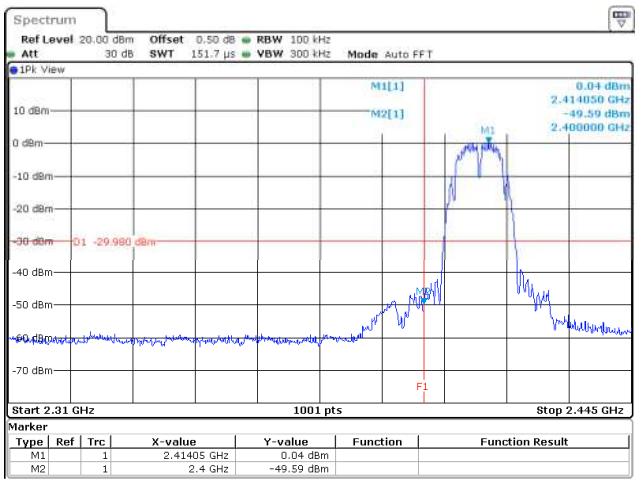
802.11n (40MHz) / Ant. 0 / 2422 MHz (Band Edge)



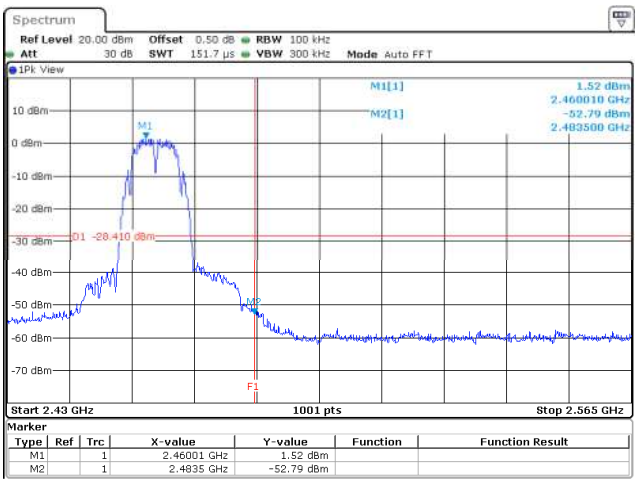
802.11n (40MHz) / Ant. 0 / 2452 MHz (Band Edge)



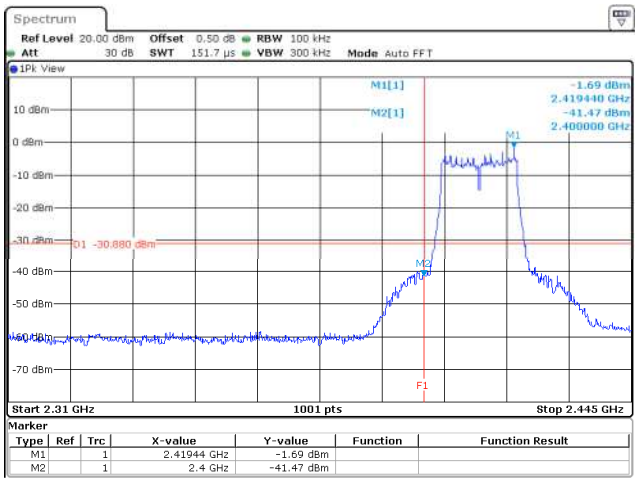
802.11b / Ant. 1 / 2412 MHz (Band Edge)



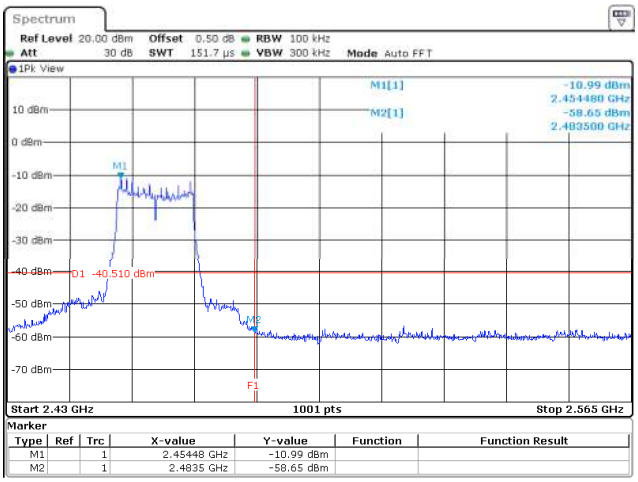
802.11b / Ant. 1 / 2462 MHz (Band Edge)



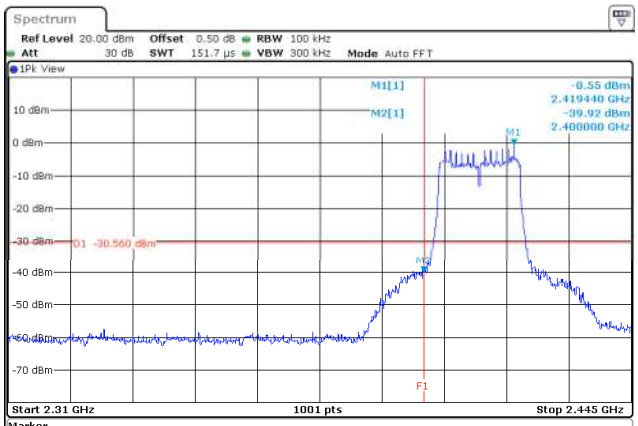
802.11g / Ant. 1 / 2412 MHz (Band Edge)



802.11g / Ant. 1 / 2462 MHz (Band Edge)



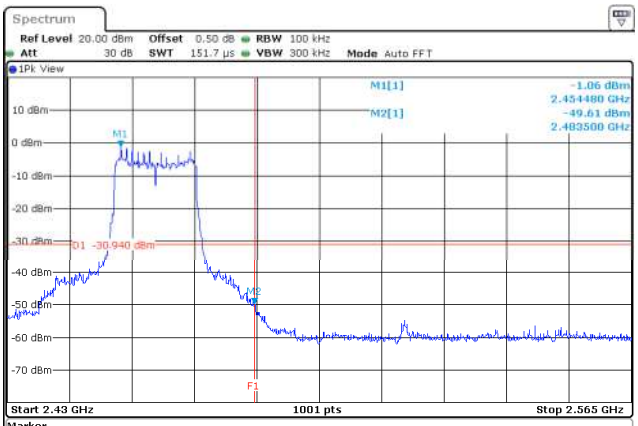
802.11n (20MHz) / Ant. 1 / 2412 MHz (Band Edge)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41944 GHz	-0.55 dBm		
M2		1	2.4 GHz	-39.92 dBm		

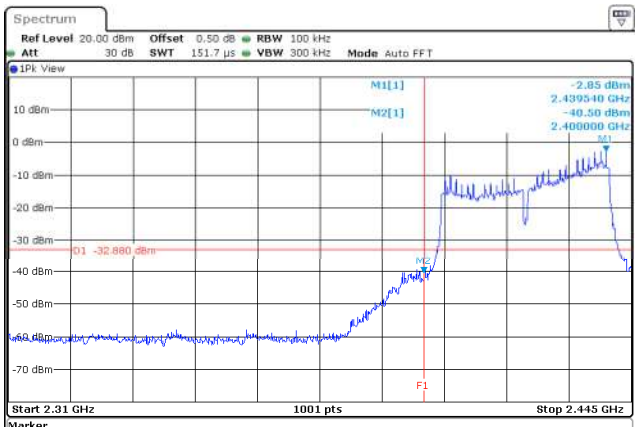
802.11n (20MHz) / Ant. 1 / 2462 MHz (Band Edge)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.45448 GHz	-1.06 dBm		
M2		1	2.4835 GHz	-49.61 dBm		

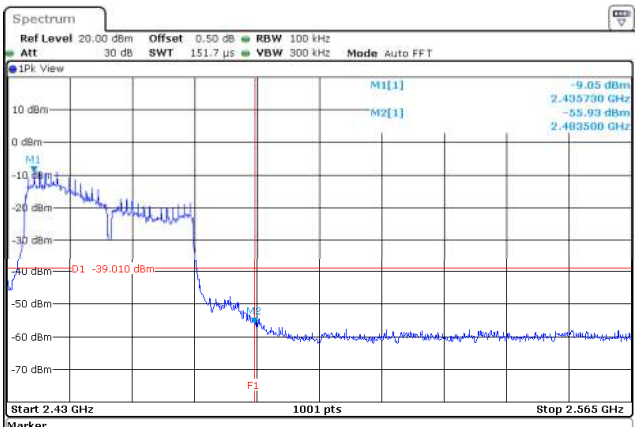
802.11n (40MHz) / Ant. 1 / 2422 MHz (Band Edge)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.43954 GHz	-2.85 dBm		
M2		1	2.4 GHz	-40.50 dBm		

802.11n (40MHz) / Ant. 1 / 2452 MHz (Band Edge)

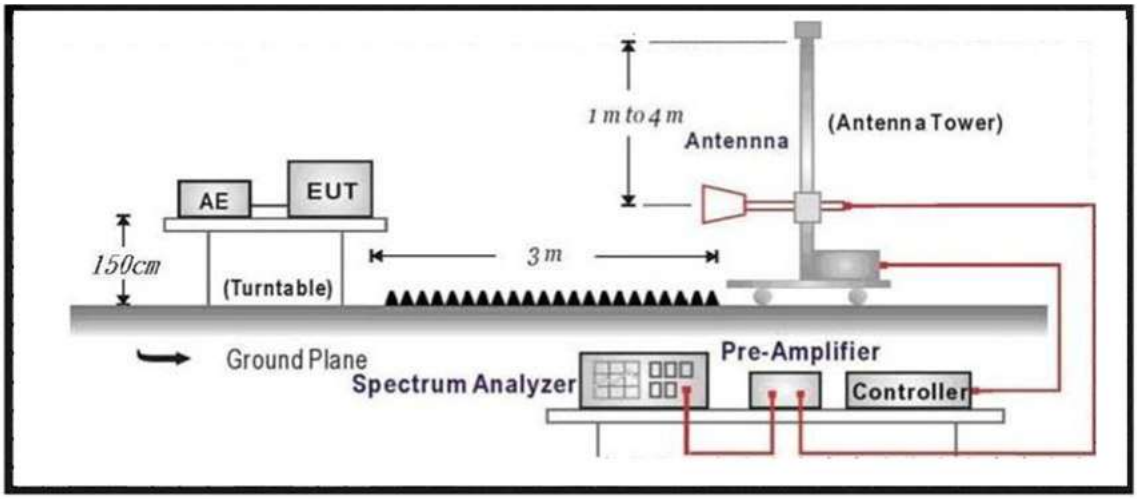


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.43573 GHz	-9.05 dBm		
M2		1	2.4835 GHz	-55.93 dBm		

6. Radiated Emission Band Edge

6.1. Test Setup



6.2. Test Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 30dB below the level of the fundamental or to the general radiated emission limit in paragraph 15.209, whichever is the lesser attenuation.

6.3. Test Procedure

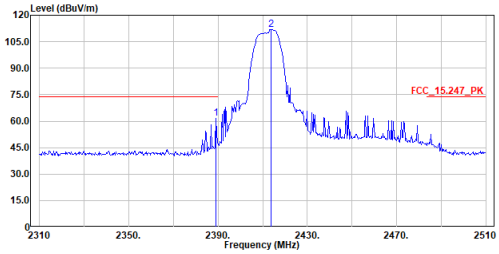
The EUT was setup according to ANSI C63.10: 2013 and tested according to FHSS test procedure of FCC KDB 558074 D01 v05r02 for compliance to FCC 47CFR 15.247 requirements.
The EUT and its simulators are placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

6.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247.

6.5. Test Result of Radiated Emission Band Edge

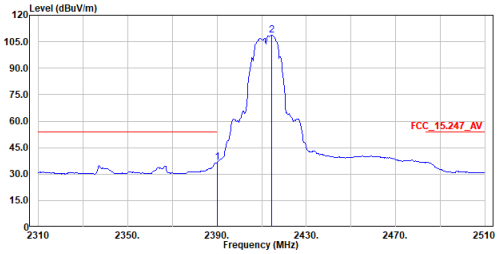
Site :CB4-H
Condition :3m ,Horizontal
Mode :11b_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.130	61.39	74.00	-12.61	48.77	12.62	Peak
2	2413.768	112.03	------	------	99.40	12.63	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

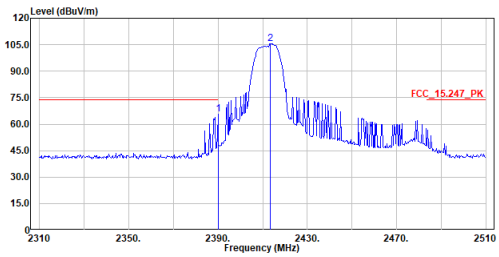
Site :CB4-H
Condition :3m ,Horizontal
Mode :11b_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	36.54	54.00	-17.46	23.44	13.10	Average
2	2414.638	108.88	------	------	95.77	13.11	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

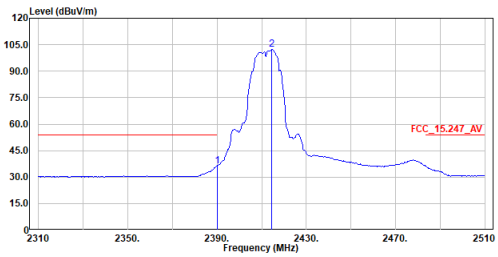
Site :CB4-H
Condition :3m ,VERTICAL
Mode :11b_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	65.53	74.00	-8.47	52.92	12.61	Peak
2	2413.478	105.58	------	------	92.95	12.63	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

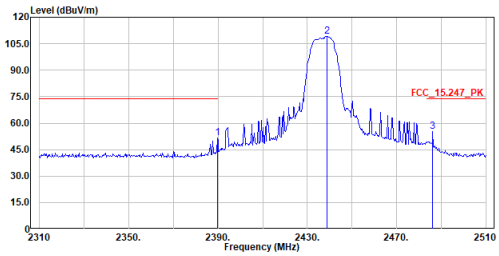
Site :CB4-H
Condition :3m ,VERTICAL
Mode :11b_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	36.20	54.00	-17.80	23.59	12.61	Average
2	2414.638	102.26	------	------	89.63	12.63	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

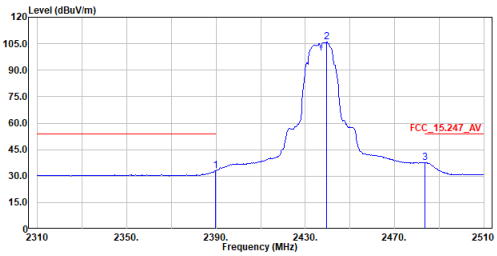
Site :CB4-H
Condition :3m ,Horizontal
Mode :11b_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.710	51.67	74.00	-22.33	39.06	12.61	Peak
2	2438.696	109.36	------	------	96.66	12.70	Peak
3	2486.232	55.31	74.00	-18.69	42.54	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

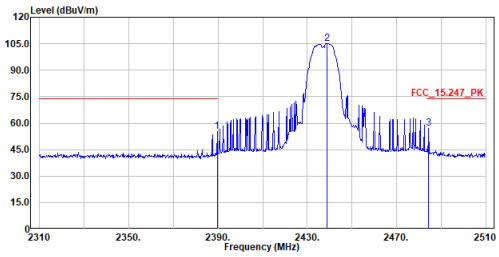
Site :CB4-H
Condition :3m ,Horizontal
Mode :11b_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.710	32.95	54.00	-21.05	20.34	12.61	Average
2	2439.565	105.76	------	------	93.05	12.71	Average
3	2483.623	37.58	54.00	-16.42	24.81	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

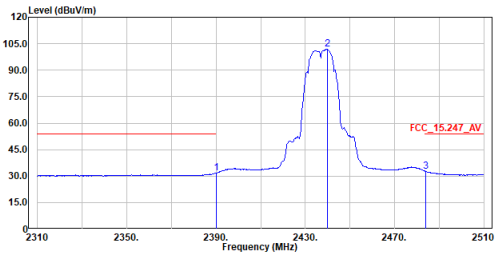
Site :CB4-H
Condition :3m ,Vertical
Mode :11b_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.600	55.14	74.00	-18.86	42.53	12.61	Peak
2	2438.800	105.25	------	------	92.55	12.70	Peak
3	2484.400	57.14	74.00	-16.86	44.37	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

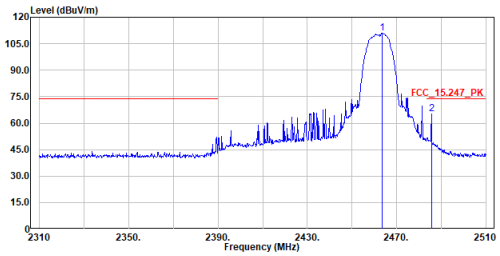
Site :CB4-H
Condition :3m ,Vertical
Mode :11b_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	31.70	54.00	-22.30	19.09	12.61	Average
2	2439.800	102.02	------	------	89.31	12.71	Average
3	2484.000	32.78	54.00	-21.22	20.01	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

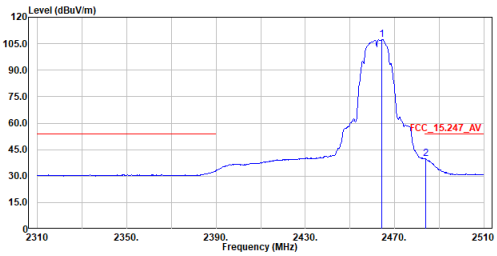
Site :CB4-H
Condition :3m ,Horizontal
Mode :11b_TX_2462MHz
Test by :Cyril



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2463.600	110.99	------	------	98.24	12.75	Peak
2	2485.600	65.06	74.00	-8.94	52.29	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

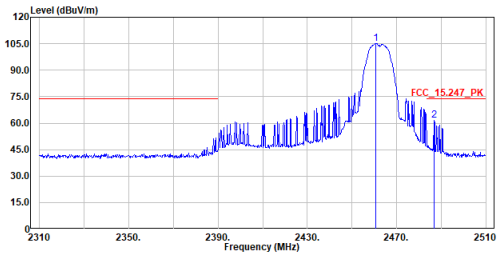
Site :CB4-H
Condition :3m ,Horizontal
Mode :11b_TX_2462MHz
Test by :Cyril



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2464.200	107.17	------	------	94.42	12.75	Average
2	2483.800	39.68	54.00	-14.32	26.91	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

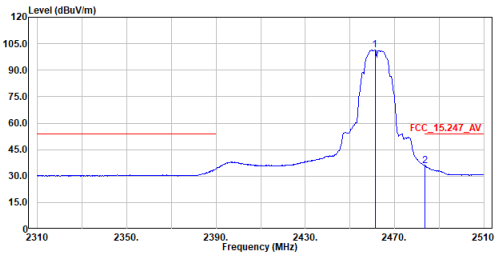
Site :CB4-H
Condition :3m ,Vertical
Mode :11b_TX_2462MHz
Test by :Cyril



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2460.600	105.10	------	------	92.35	12.75	Peak
2	2486.800	61.57	74.00	-12.43	48.79	12.78	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

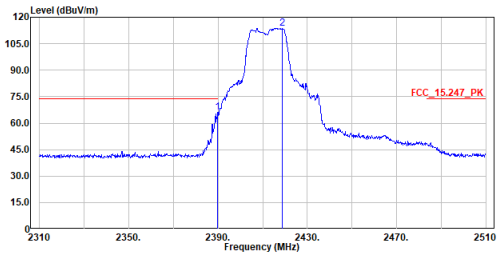
Site :CB4-H
Condition :3m ,Vertical
Mode :11b_TX_2462MHz
Test by :Cyril



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	2461.200	101.47	------	------	88.72	12.75	Average
2	2483.600	35.85	54.00	-18.15	23.08	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

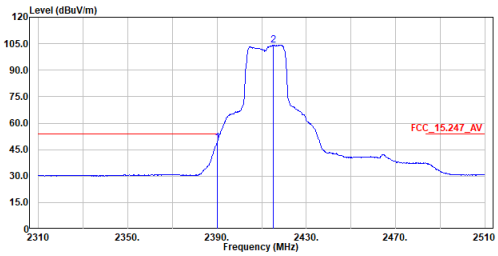
Site :CB4-H
Condition :3m ,Horizontal
Mode :11g_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.800	66.10	74.00	-7.90	53.49	12.61	Peak
2	2418.800	113.79	------	------	101.14	12.65	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

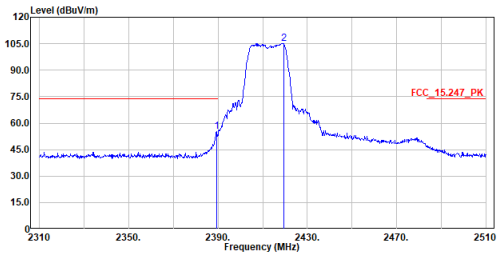
Site :CB4-H
Condition :3m ,Horizontal
Mode :11g_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	48.78	54.00	-5.22	36.17	12.61	Average
2	2415.200	104.21	------	------	91.58	12.63	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

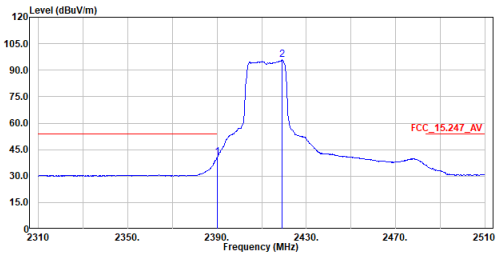
Site :CB4-H
Condition :3m ,Vertical
Mode :11g_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.400	55.24	74.00	-18.76	42.63	12.61	Peak
2	2419.400	105.21	------	------	92.56	12.65	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

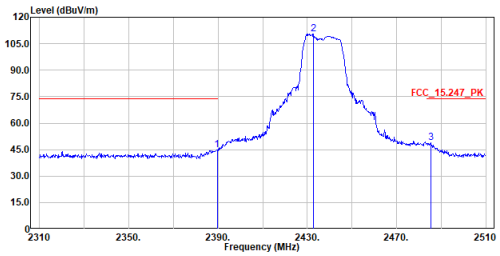
Site :CB4-H
Condition :3m ,Vertical
Mode :11g_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	40.58	54.00	-13.42	27.97	12.61	Average
2	2419.000	95.81	------	------	83.16	12.65	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

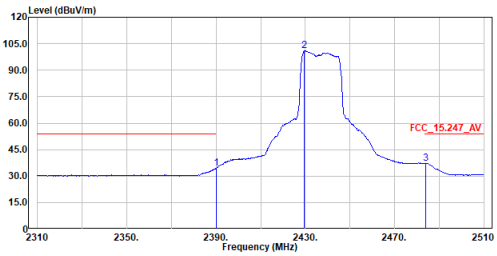
Site :CB4-H
Condition :3m ,Horizontal
Mode :11g_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.600	44.88	74.00	-29.12	32.27	12.61	Peak
2	2432.600	110.66	------	------	97.98	12.68	Peak
3	2485.400	48.80	74.00	-25.20	36.03	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

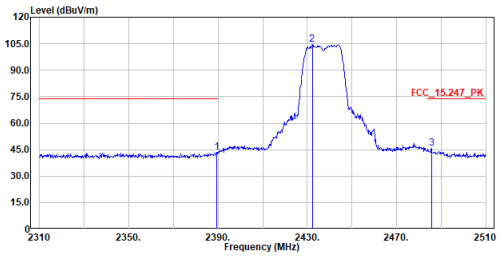
Site :CB4-H
Condition :3m ,Horizontal
Mode :11g_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	34.48	54.00	-19.52	21.87	12.61	Average
2	2429.600	100.99	------	------	88.31	12.68	Average
3	2483.800	37.29	54.00	-16.71	24.52	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

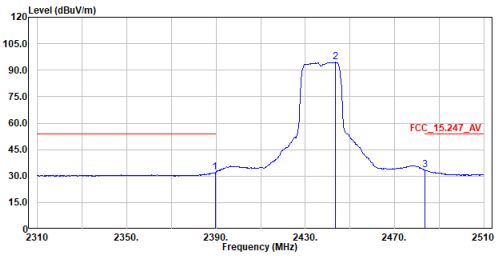
Site :CB4-H
Condition :3m ,Vertical
Mode :11g_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.400	43.61	74.00	-30.39	31.00	12.61	Peak
2	2432.200	104.49	------	------	91.81	12.68	Peak
3	2485.600	45.55	74.00	-28.45	32.78	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

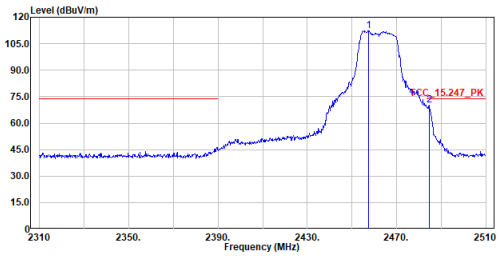
Site :CB4-H
Condition :3m ,Vertical
Mode :11g_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.600	32.30	54.00	-21.70	19.69	12.61	Average
2	2443.400	94.44	------	------	81.73	12.71	Average
3	2483.600	33.32	54.00	-20.68	20.55	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

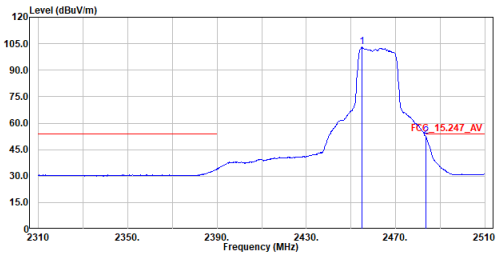
Site :CB4-H
Condition :3m ,Horizontal
Mode :11g_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2457.600	112.51	------	------	99.77	12.74	Peak
2	2484.600	70.25	74.00	-3.75	57.48	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

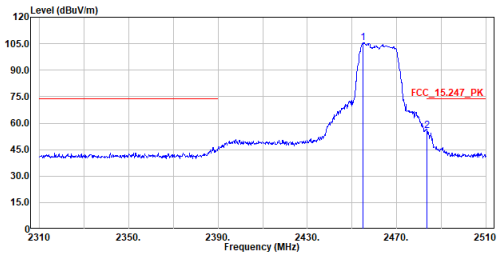
Site :CB4-H
Condition :3m ,Horizontal
Mode :11g_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2454.800	103.06	------	------	90.31	12.75	Average
2	2483.600	52.34	54.00	-1.66	39.57	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

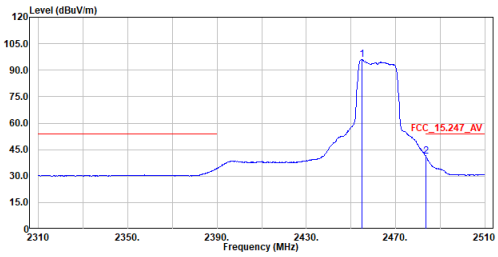
Site :CB4-H
Condition :3m ,Vertical
Mode :11g_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2455.000	105.61	------	------	92.86	12.75	Peak
2	2483.600	55.63	74.00	-18.37	42.86	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

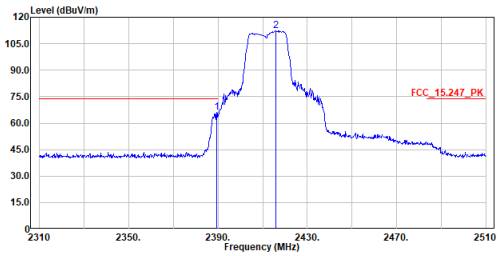
Site :CB4-H
Condition :3m ,Vertical
Mode :11g_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2454.800	96.10	------	------	83.35	12.75	Average
2	2483.600	41.14	54.00	-12.86	28.37	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

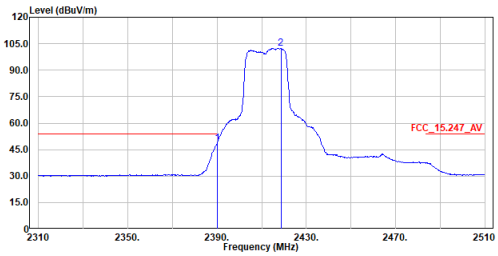
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n20_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.400	66.11	74.00	-7.89	53.50	12.61	Peak
2	2415.800	112.17	------	------	99.54	12.63	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

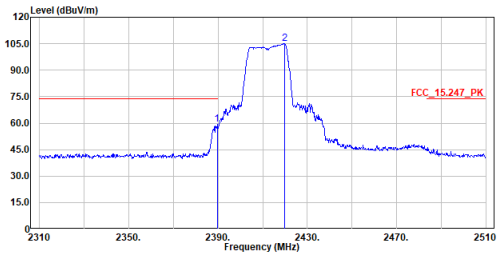
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n20_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	48.42	54.00	-5.58	35.81	12.61	Average
2	2418.600	102.35	------	------	89.70	12.65	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

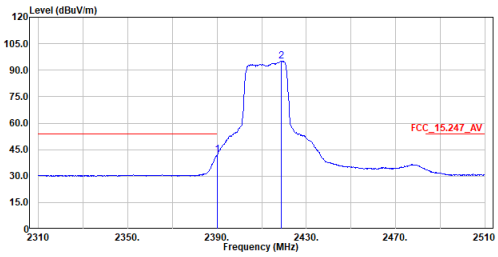
Site :CB4-H
Condition :3m ,Vertical
Mode :11n20_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.600	59.35	74.00	-14.65	46.74	12.61	Peak
2	2419.800	105.11	------	------	92.46	12.65	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

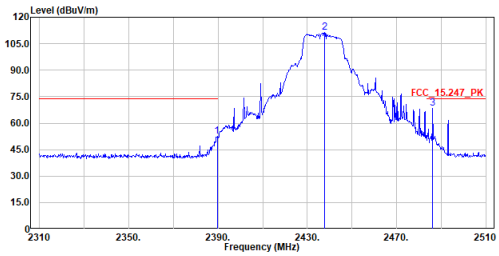
Site :CB4-H
Condition :3m ,Vertical
Mode :11n20_TX_2412MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	42.15	54.00	-11.85	29.54	12.61	Average
2	2418.800	95.25	------	------	82.60	12.65	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

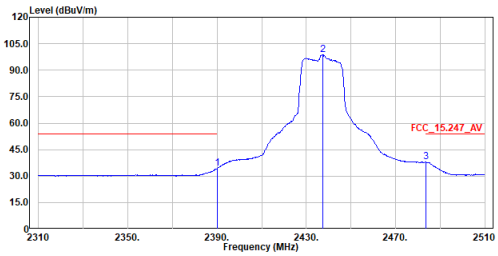
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n20_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.600	52.34	74.00	-21.66	39.73	12.61	Peak
2	2437.600	111.38	------	------	98.68	12.70	Peak
3	2486.200	68.57	74.00	-5.43	55.80	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

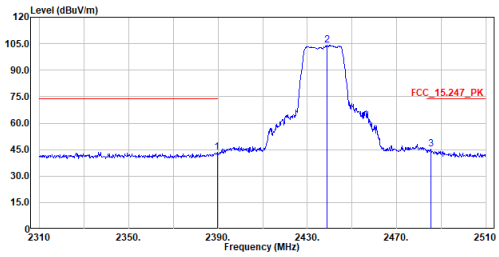
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n20_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	34.31	54.00	-19.69	21.70	12.61	Average
2	2437.400	98.84	------	------	86.14	12.70	Average
3	2483.600	37.86	54.00	-16.14	25.09	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

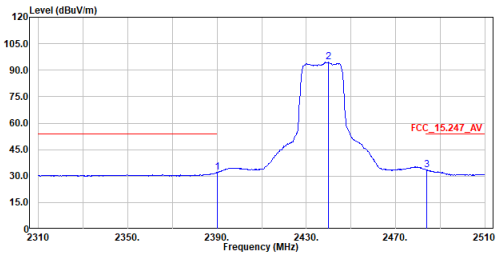
Site :CB4-H
Condition :3m ,Vertical
Mode :11n20_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.600	43.58	74.00	-30.42	30.97	12.61	Peak
2	2438.800	104.03	------	------	91.33	12.70	Peak
3	2485.200	45.41	74.00	-28.59	32.64	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

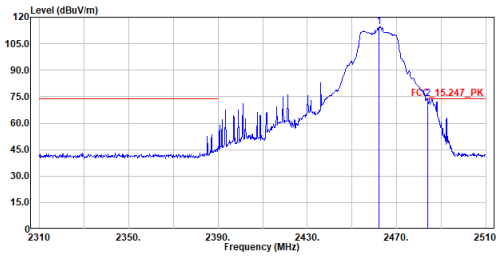
Site :CB4-H
Condition :3m ,Vertical
Mode :11n20_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	32.06	54.00	-21.94	19.45	12.61	Average
2	2439.800	94.45	------	------	81.74	12.71	Average
3	2483.800	33.69	54.00	-20.31	20.92	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

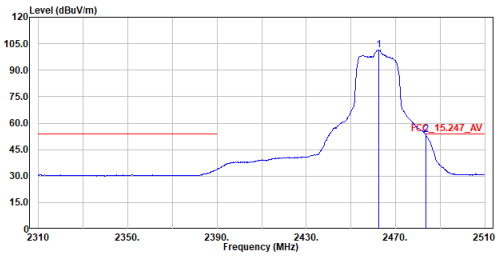
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n20_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2462.200	114.56	------	------	101.80	12.76	Peak
2	2483.800	73.68	74.00	-0.32	60.91	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

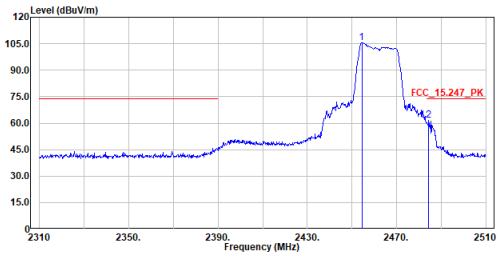
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n20_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2462.400	101.46	------	------	88.70	12.76	Average
2	2483.600	53.23	54.00	-0.77	40.46	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

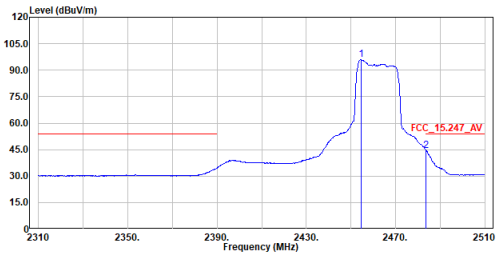
Site :CB4-H
Condition :3m ,Vertical
Mode :11n20_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2454.400	105.67	------	------	92.93	12.74	Peak
2	2484.400	61.41	74.00	-12.59	48.64	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

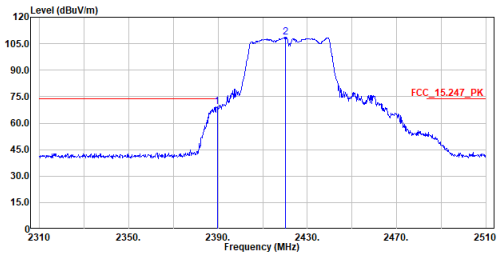
Site :CB4-H
Condition :3m ,Vertical
Mode :11n20_TX_2462MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2454.600	95.81	------	------	83.07	12.74	Average
2	2483.600	44.49	54.00	-9.51	31.72	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

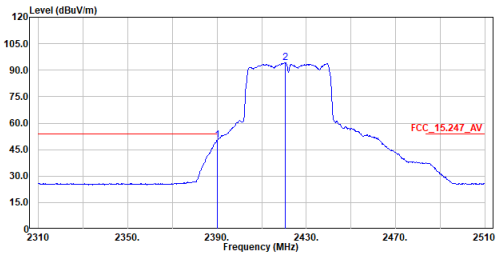
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n40_TX_2422MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.600	69.39	74.00	-4.61	56.78	12.61	Peak
2	2420.200	108.61	------	------	95.96	12.65	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

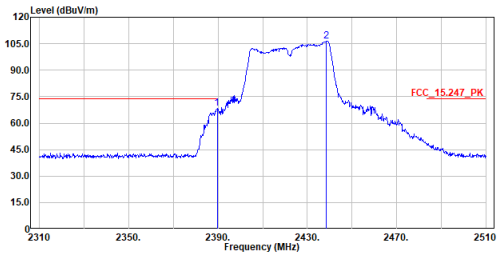
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n40_TX_2422MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	50.28	54.00	-3.72	42.94	7.34	Average
2	2420.400	94.20	------	------	86.86	7.34	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

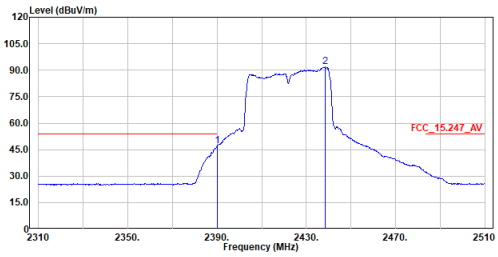
Site :CB4-H
Condition :3m ,Vertical
Mode :11n40_TX_2422MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.600	68.19	74.00	-5.81	55.58	12.61	Peak
2	2438.400	106.38	------	------	93.68	12.70	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

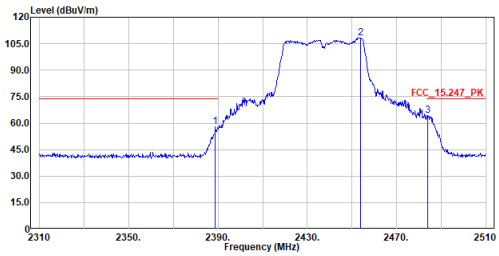
Site :CB4-H
Condition :3m ,Vertical
Mode :11n40_TX_2422MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	47.07	54.00	-6.93	39.73	7.34	Average
2	2438.600	91.71	------	------	84.34	7.37	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

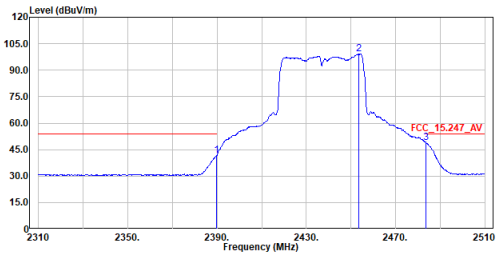
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n40_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2388.800	58.03	74.00	-15.97	45.41	12.62	Peak
2	2454.000	108.42	------	------	95.68	12.74	Peak
3	2484.000	64.36	74.00	-9.64	51.59	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

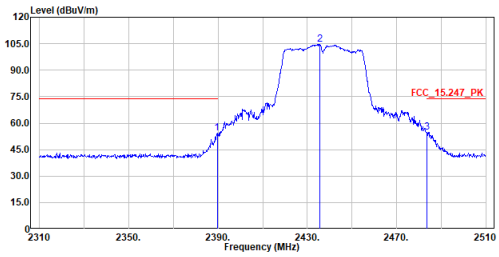
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n40_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.800	41.82	54.00	-12.18	29.21	12.61	Average
2	2453.400	99.22	------	------	86.48	12.74	Average
3	2483.600	48.87	54.00	-5.13	36.10	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

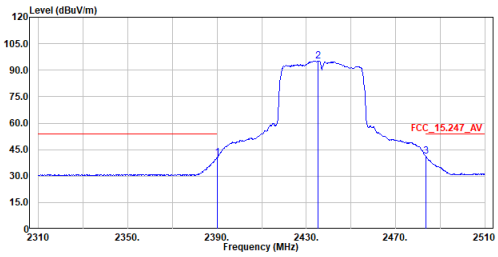
Site :CB4-H
Condition :3m ,Vertical
Mode :11n40_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2389.600	54.33	74.00	-19.67	41.72	12.61	Peak
2	2435.600	104.48	------	------	91.78	12.70	Peak
3	2483.600	54.92	74.00	-19.08	42.15	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

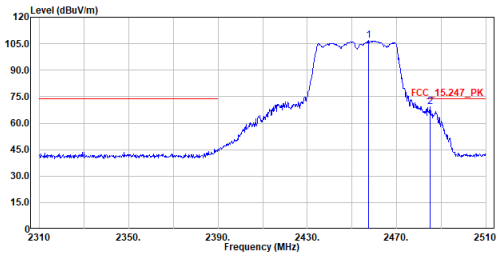
Site :CB4-H
Condition :3m ,Vertical
Mode :11n40_TX_2437MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2390.000	40.38	54.00	-13.62	27.77	12.61	Average
2	2435.200	95.29	------	------	82.60	12.69	Average
3	2483.600	41.26	54.00	-12.74	28.49	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

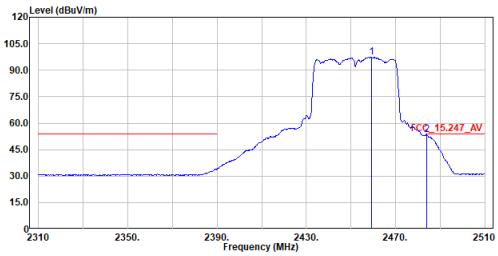
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n40_TX_2452MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2457.400	106.70	------	------	93.95	12.75	Peak
2	2485.000	69.14	74.00	-4.86	56.37	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

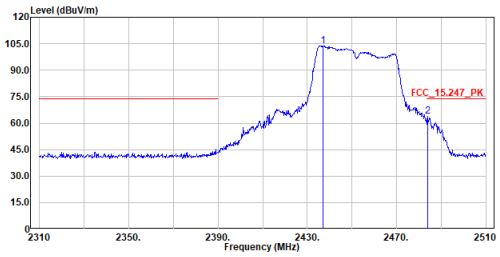
Site :CB4-H
Condition :3m ,Horizontal
Mode :11n40_TX_2452MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2459.200	97.36	------	------	84.62	12.74	Average
2	2483.800	53.45	54.00	-0.55	40.68	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

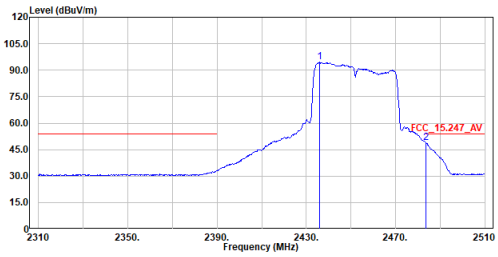
Site :CB4-H
Condition :3m ,Vertical
Mode :11n40_TX_2452MHz
Test by :Cyril



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2437.200	103.82	------	------	91.12	12.70	Peak
2	2483.800	63.73	74.00	-10.27	50.96	12.77	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :CB4-H
Condition :3m ,Vertical
Mode :11n40_TX_2452MHz
Test by :Cyril

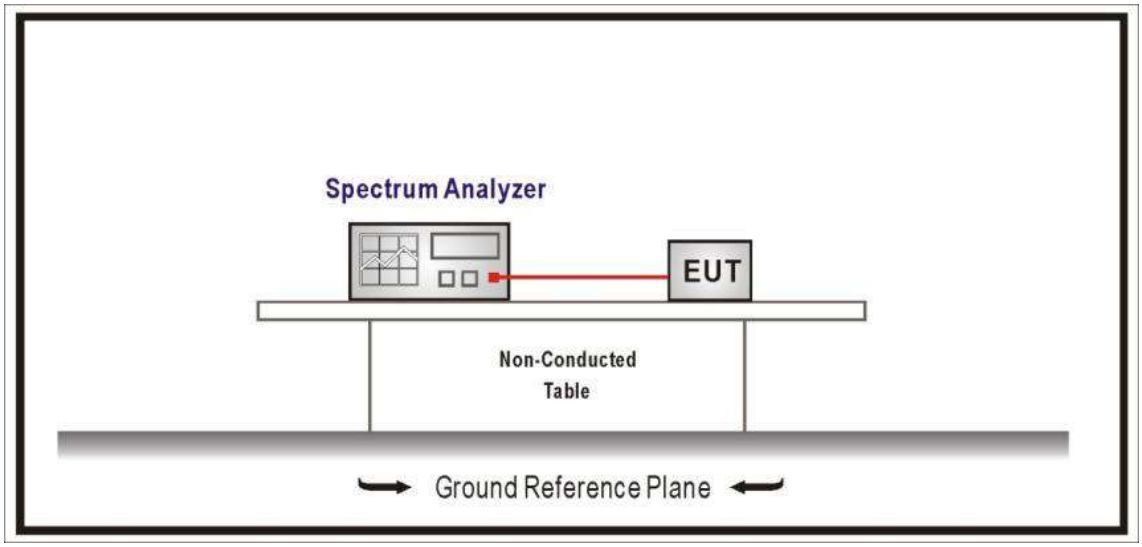


No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2436.000	94.42	------	------	81.72	12.70	Average
2	2483.600	48.94	54.00	-5.06	36.17	12.77	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

7. Occupied Bandwidth & DTS Bandwidth

7.1. Test Setup



7.2. Test Limit

The 6 dB bandwidth: ≧ 500 kHz.

Occupied Bandwidth: NA

7.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074 D01 V05r02 for compliance to FCC 47CFR 15.247 requirements.

7.4. Test Specification

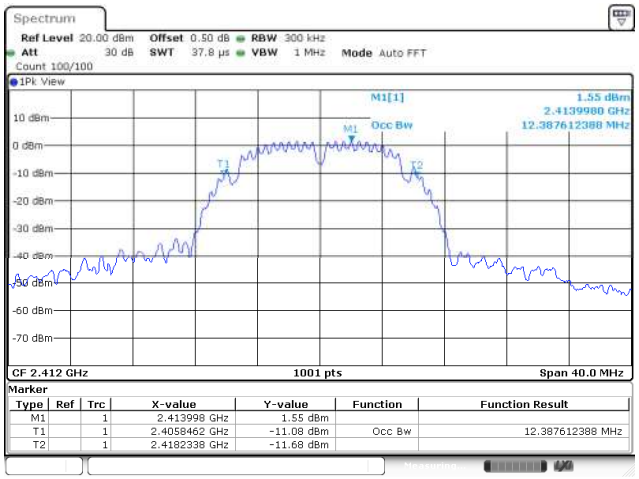
According to FCC Part 15 Subpart C Paragraph 15.247.

7.5. Test Result of Occupied Bandwidth

Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		Limit (MHz)	Result
			Ant. 0	Ant. 1		
802.11b	1	2412	12.388	12.308	-	Pass
	6	2437	12.188	12.308	-	Pass
	11	2462	12.308	12.308	-	Pass
802.11g	1	2412	16.823	17.103	-	Pass
	6	2437	16.703	16.863	-	Pass
	11	2462	16.983	16.943	-	Pass
802.11n (20MHz)	1	2412	17.782	17.822	-	Pass
	6	2437	17.782	17.662	-	Pass
	11	2462	17.742	17.822	-	Pass
802.11n (40MHz)	3	2422	37.243	36.763	-	Pass
	6	2437	36.683	36.204	-	Pass
	9	2452	36.284	36.923	-	Pass

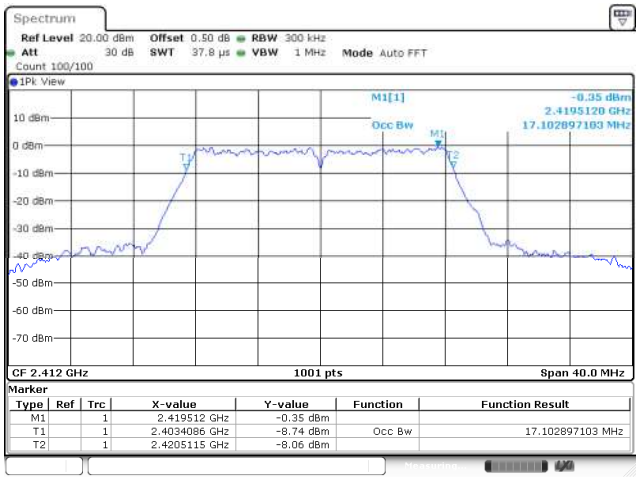
Spectrum plot of maximum value

802.11b / Ant. 0 / 2412 MHz



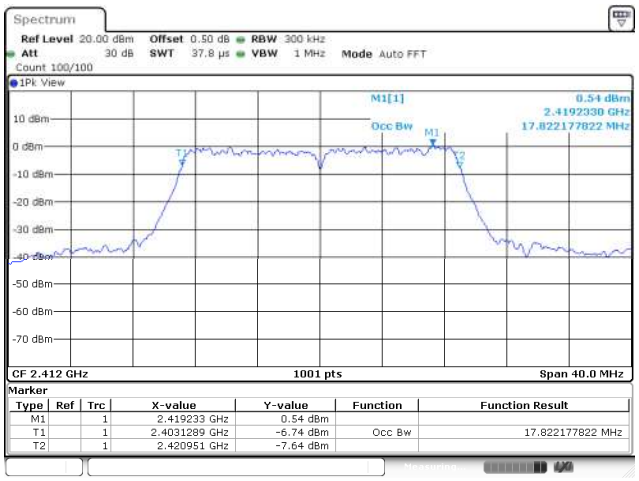
Date: 30.AUG.2021 15:31:49

802.11g / Ant. 1 / 2412 MHz



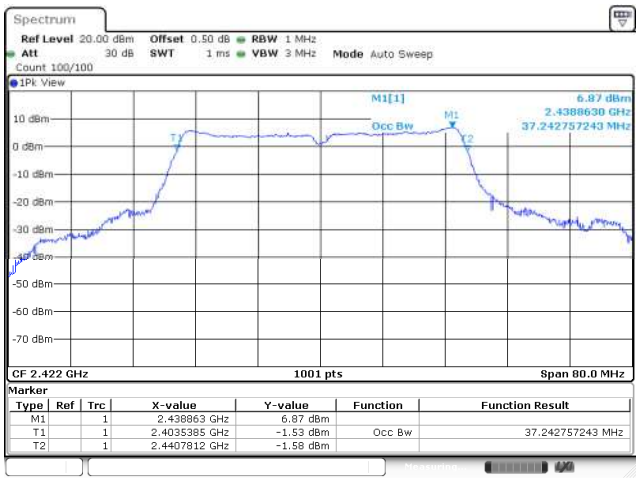
Date: 30.AUG.2021 16:07:55

802.11n (20MHz) / Ant. 1 / 2412 MHz



Date: 30.AUG.2021 16:19:36

802.11n (40MHz) / Ant. 0 / 2422 MHz



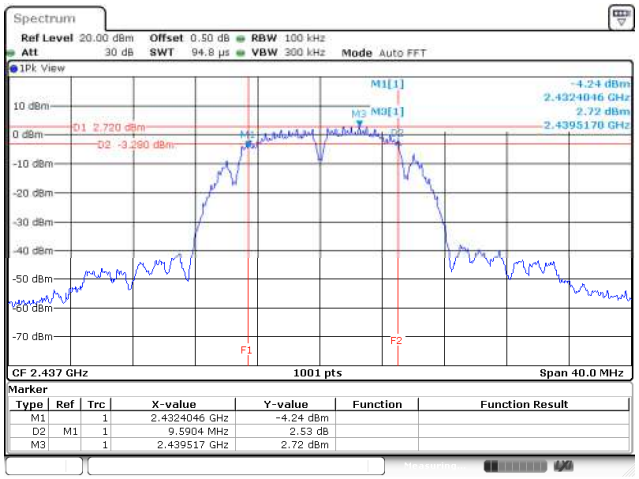
Date: 30.AUG.2021 16:49:38

7.6. Test Result of DTS Bandwidth

Modulation	Channel	Frequency (MHz)	DTS Bandwidth (MHz)		Limit (MHz)	Result
			Ant. 0	Ant. 1		
802.11b	1	2412	10.070	10.070	≧0.50	Pass
	6	2437	10.030	9.590	≧0.50	Pass
	11	2462	9.590	10.070	≧0.50	Pass
802.11g	1	2412	16.304	16.304	≧0.50	Pass
	6	2437	15.904	16.304	≧0.50	Pass
	11	2462	15.744	16.304	≧0.50	Pass
802.11n (20MHz)	1	2412	17.263	17.023	≧0.50	Pass
	6	2437	17.303	17.023	≧0.50	Pass
	11	2462	16.344	17.503	≧0.50	Pass
802.11n (40MHz)	3	2422	35.884	35.644	≧0.50	Pass
	6	2437	35.644	35.085	≧0.50	Pass
	9	2452	35.085	35.485	≧0.50	Pass

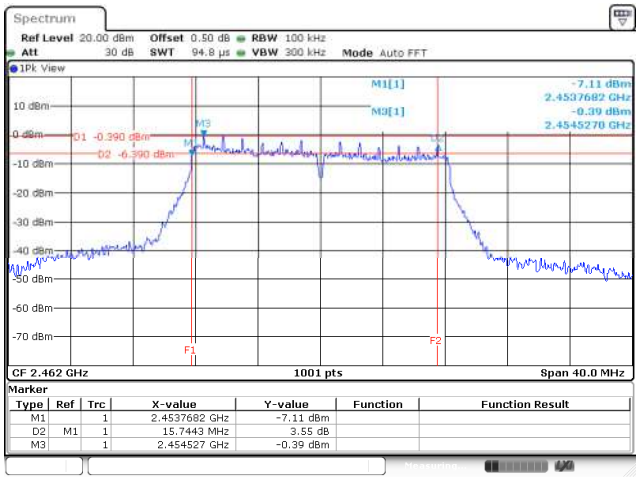
Spectrum plot of worst value

802.11b / Ant. 1 / 2437 MHz



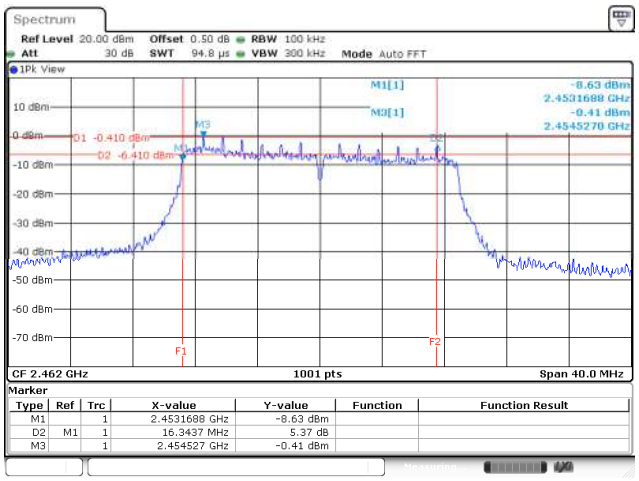
Date: 30.AUG.2021 15:40:04

802.11g / Ant. 0 / 2462 MHz



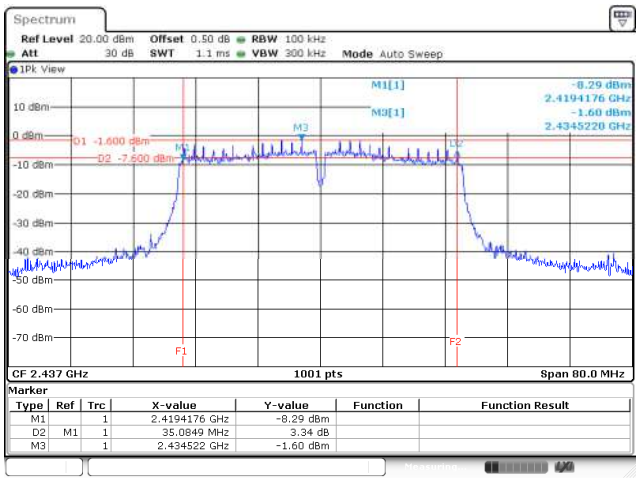
Date: 30.AUG.2021 15:54:32

802.11n (20MHz) / Ant. 0 / 2462 MHz



Date: 30.AUG.2021 16:32:01

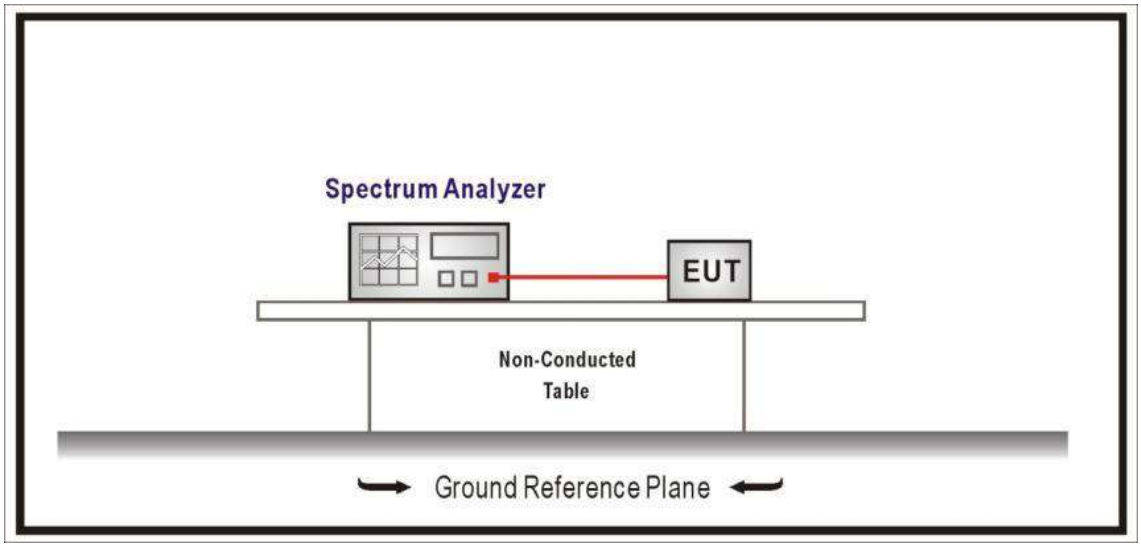
802.11n (40MHz) / Ant. 1 / 2437 MHz



Date: 30.AUG.2021 17:08:54

8. Maximum Power Spectral Density

8.1. Test Setup



8.2. Test Limit

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

8.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074 D01 V05r02 for compliance to FCC 47CFR 15.247 requirements.

8.4. Test Specification

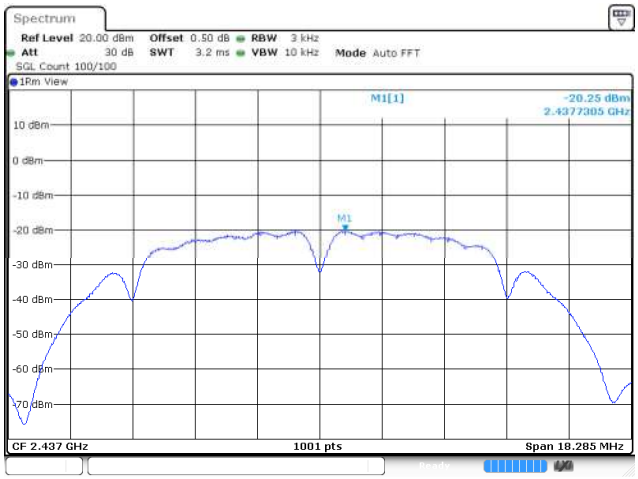
According to FCC Part 15 Subpart C Paragraph 15.247.

8.5. Test Result of Maximum Power Spectral Density

Modulation	Channel	Frequency (MHz)	Power Spectral Density (dBm / 3kHz)			Limit (dBm / 3kHz)	Result
			Ant. 0	Ant. 1	Total		
802.11b	1	2412	-22.97	-22.50	-19.615	≦7.699	Pass
	6	2437	-20.25	-20.68	-17.346	≦7.699	Pass
	11	2462	-21.06	-21.93	-18.360	≦7.699	Pass
802.11g	1	2412	-25.82	-25.82	-22.359	≦7.699	Pass
	6	2437	-24.94	-26.71	-22.274	≦7.699	Pass
	11	2462	-24.79	-26.30	-22.019	≦7.699	Pass
802.11n (20MHz)	1	2412	-25.27	-25.78	-22.045	≦7.699	Pass
	6	2437	-25.86	-26.29	-22.597	≦7.699	Pass
	11	2462	-25.21	-26.61	-22.381	≦7.699	Pass
802.11n (40MHz)	3	2422	-26.89	-25.39	-22.345	≦7.699	Pass
	6	2437	-26.70	-27.02	-23.127	≦7.699	Pass
	9	2452	-28.39	-26.99	-23.904	≦7.699	Pass

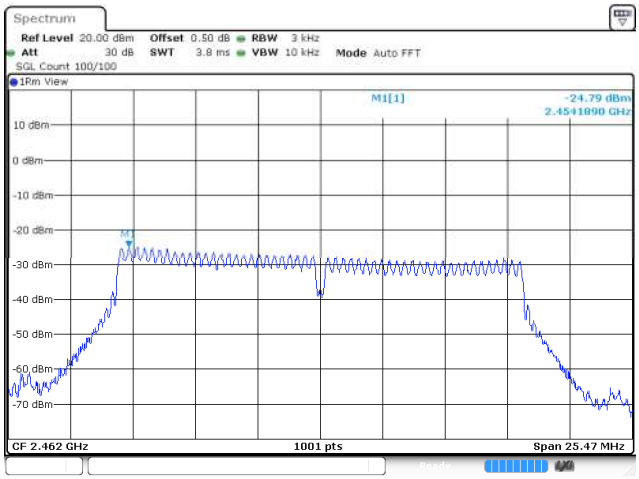
Spectrum plot of worst value

802.11b / Ant. 0 / 2437 MHz



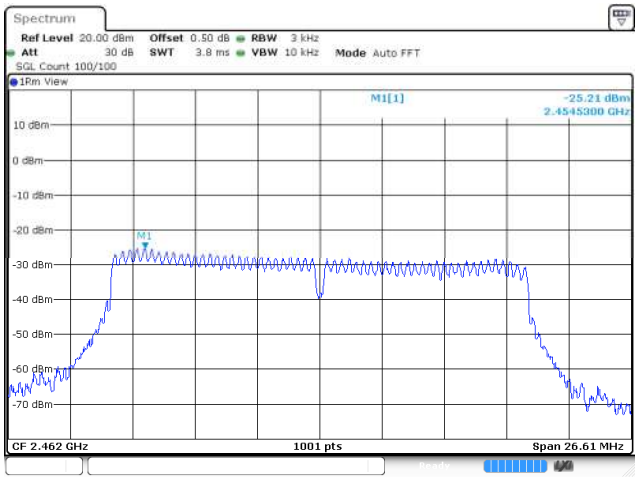
Date: 30.AUG.2021 15:37:09

802.11g / Ant. 0 / 2462 MHz



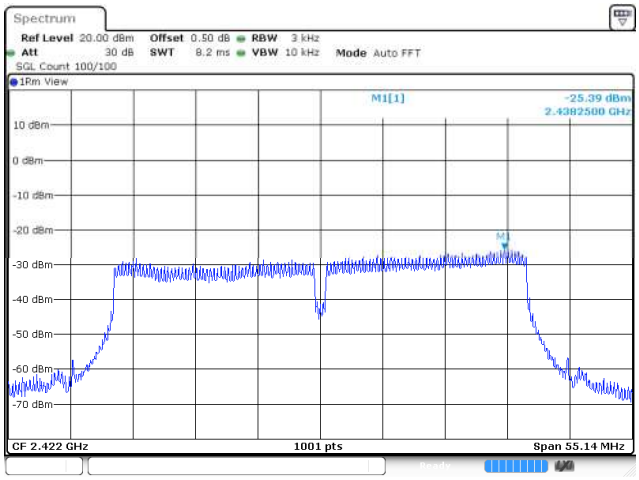
Date: 30.AUG.2021 15:55:01

802.11n (20MHz) / Ant. 0 / 2462 MHz



Date: 30.AUG.2021 16:32:30

802.11n (40MHz) / Ant. 1 / 2422 MHz



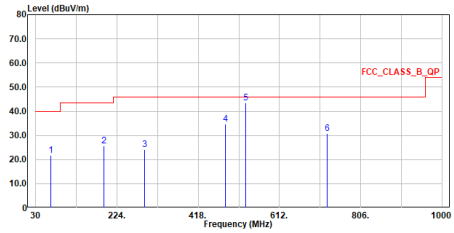
Date: 30.AUG.2021 16:45:37

Appendix A

➢ Test Result of Radiated Emissions Co-location

30MHz~1GHz:

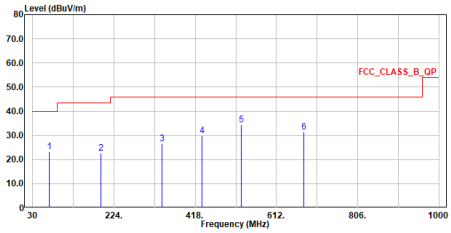
Site :CB4-H
Condition :3m Horizontal
Mode :Co-location_WIFI_2.4G+Band48
Test by :Cyril



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	66.666	21.78	40.00	-18.22	26.22	-4.44	QP
2	193.348	25.60	43.50	-17.90	32.05	-6.45	QP
3	290.057	24.01	46.00	-21.99	26.82	-2.81	QP
4	483.378	34.62	46.00	-11.38	32.73	1.89	QP
5	531.878	43.55	46.00	-2.45	40.66	2.89	QP
6	725.490	30.76	46.00	-15.24	24.16	6.60	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

Site :CB4-H
Condition :3m Vertical
Mode :Co-location_WIFI_2.4G+Band48
Test by :Cyril

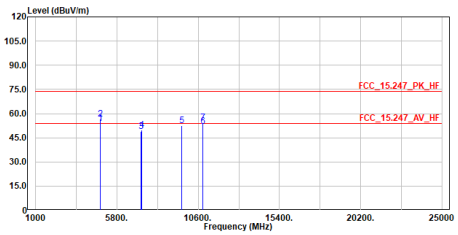


No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	70.255	23.31	40.00	-16.69	28.23	-4.92	QP
2	193.348	22.73	43.50	-20.77	29.18	-6.45	QP
3	338.460	26.52	46.00	-19.48	28.26	-1.74	QP
4	434.975	29.80	46.00	-16.20	28.88	0.92	QP
5	528.774	34.47	46.00	-11.53	31.62	2.85	QP
6	676.796	31.32	46.00	-14.68	25.68	5.64	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.
5. The other emission levels were very low against the limit.

Above 1GHz:

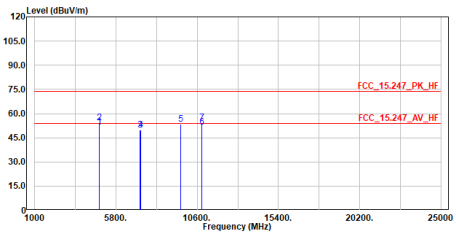
Site :CB4-H
Condition :3m ,Horizontal
Mode :Co-location_WIFI_2.4G+Band48
Test by :Cyril



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4824.000	53.71	54.00	-0.29	55.15	-1.44	Average
2	4824.000	56.77	74.00	-17.23	58.21	-1.44	Peak
3	7236.000	49.11	74.00	-24.89	42.72	6.39	Peak
4	7250.000	49.70	74.00	-24.30	43.23	6.47	Peak
5	9648.000	52.33	74.00	-21.67	40.85	11.48	Peak
6	10875.000	51.88	54.00	-2.12	38.06	13.82	Average
7	10875.000	54.46	74.00	-19.54	40.64	13.82	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.

Site :CB4-H
Condition :3m ,Vertical
Mode :Co-location_WIFI_2.4G+Band48
Test by :Cyril



No.	Frequency MHz	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Read Level dBuV	Factor dB	Remark
1	4824.000	51.49	54.00	-2.51	52.93	-1.44	Average
2	4824.000	54.33	74.00	-19.67	55.77	-1.44	Peak
3	7236.000	49.87	74.00	-24.13	43.48	6.39	Peak
4	7250.000	49.89	74.00	-24.11	43.42	6.47	Peak
5	9648.000	53.61	74.00	-20.39	42.13	11.48	Peak
6	10875.000	51.53	54.00	-2.47	37.71	13.82	Average
7	10875.000	54.23	74.00	-19.77	40.41	13.82	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna- Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The peak result complies with AVG limit, AVG result is deemed to comply with AVG limit.
5. The other emission levels were very low against the limit.