FCC Test Report

FCC ID	:	**UIDSBR-AC3200P**
Equipment	:	**AC3200 Wi-Fi Router with RipCurrent™ Technology**
Model No.	:	**SBR-AC3200P**
Brand Name	:	**ARRIS**
Applicant	:	**ARRIS Group, Inc.**
Address	:	**3871 Lakefield Drive, Suite 300, Suwanee, Georgia 30024, United States**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Aug. 06, 2015**
Tested Date	:	**Aug. 19 ~ Sep. 22, 2015**

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

Gary Chang / Manager

Testing Laboratory 2732

Table of Contents

1 GENERAL DESCRIPTION 5

1.1 Information 5
1.2 Local Support Equipment List 8
1.3 Test Setup Chart 8
1.4 The Equipment List 9
1.5 Test Standards 10
1.6 Measurement Uncertainty 10

2 TEST CONFIGURATION 11

2.1 Testing Condition 11
2.2 The Worst Test Modes and Channel Details 11

3 TRANSMITTER TEST RESULTS 12

3.1 Conducted Emissions 12
3.2 6dB and Occupied Bandwidth 17
3.3 RF Output Power 22
3.4 Power Spectral Density 24
3.5 Unwanted Emissions into Restricted Frequency Bands 27
3.6 Emissions in Non-Restricted Frequency Bands 69

4 TEST LABORATORY INFORMATION 88

Release Record

Report No.	Version	Description	Issued Date
FR580604AC	Rev. 01	Initial issue	Oct. 13, 2015

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.476MHz 32.04 (Margin -14.37dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2483.50MHz 52.97 (Margin -1.03dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: ***Non-beamforming mode*** 29.10 ***Beamforming mode*** 27.28	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11**	**Ch. Freq. (MHz)**	**Channel Number**	**Transmit Chains (N_{TX})**	**Data Rate / MCS**
2400-2483.5	b	2412-2462	1-11 [11]	3	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	3	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	3	MCS 0-23
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	3	MCS 0-23
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power. Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation. Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation. Note 4: 802.11n supports beamforming function.					

1.1.2 Antenna Details

Ant. No.	Type	Connector	Operating Frequency (MHz) / Gain (dBi)		
			2400~2483.5	**5150~5250**	**5725~5850**
1	Dipole	I-pex	4	4	-
2	Dipole	I-pex	3.5	3.3	-
3	Dipole	I-pex	3.3	2.9	-
4	Dipole	I-pex	-	-	3.7
5	Dipole	I-pex	-	-	3.4
6	Dipole	I-pex	-	-	2.8

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	100-240Vac, 50-60Hz Power line: 1.5m non-shielded without core

1.1.4 Accessories

Accessories		
No.	**Equipment**	**Description**
1	RJ45 cable	1m non-shielded without core

1.1.5 Channel List

Frequency band (MHz)		2400~2483.5	
802.11 b / g / n HT20		802.11n HT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	3	2422
2	2417	4	2427
3	2422	5	2432
4	2427	6	2437
5	2432	7	2442
6	2437	8	2447
7	2442	9	2452
8	2447	---	---
9	2452	---	---
10	2457	---	---
11	2462	---	---

1.1.6 Test Tool and Duty Cycle

Test Tool	MTool, version 2.0.2.1				
Duty Cycle and Duty Factor	Mode	Non-beamforming		Beamforming	
		Duty cycle (%)	Duty factor (dB)	Duty cycle (%)	Duty factor (dB)
	11b	100.00%	0.00	---	---
	11g	100.00%	0.00	---	---
	HT20	100.00%	0.00	98.61%	0.06
	HT40	100.00%	0.00	98.25%	0.08

1.1.7 Power Setting

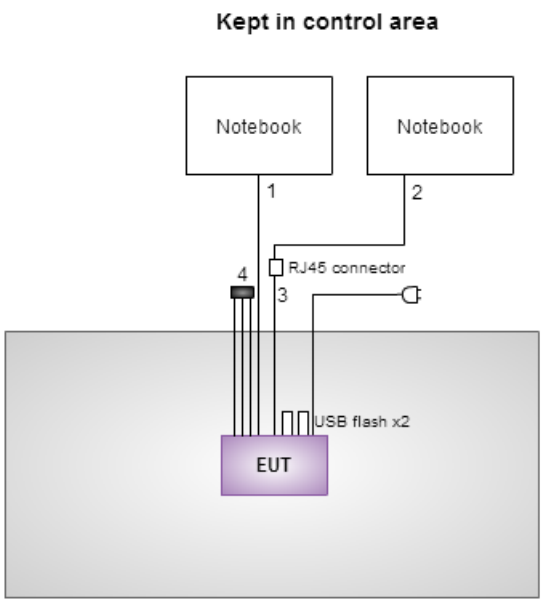
Modulation Mode	Test Frequency (MHz)	Power Set	
		Non-beamforming	Beamforming
11b	2412	94	---
11b	2437	94	---
11b	2462	94	---
11g	2412	78	---
11g	2437	92	---
11g	2462	74	---
HT20	2412	72	72
HT20	2437	92	90
HT20	2462	68	68
HT40	2422	72	68
HT40	2437	70	68
HT40	2452	56	56

1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E6440	DoC	RJ45, 10m non-shielded.
2	Notebook	DELL	Latitude E6440	DoC	RJ45, 10m non-shielded.
3	USB 2.0 flash	Kingston	DTSE9	---	---
4	USB 2.0 flash	Kingston	DTSE9	---	---
5	Load	ICC	---	---	RJ45, 5m non-shielded x3.

1.3 Test Setup Chart

Test Setup Diagram



1. RJ45, 10m non-shielded
2. RJ45, 10m non-shielded
3. RJ45, 1m non-shielded
4. RJ45, 5m (x3) non-shielded with load

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
EMC Receiver	R&S	ESCS 30	100169	Oct. 17, 2014	Oct. 16, 2015
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 17, 2014	Nov. 16, 2015
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 31, 2014	Dec. 30, 2015
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 2 / (03CH02-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101499	Dec. 31, 2014	Dec. 30, 2015
Receiver	R&S	ESR3	101657	Jan. 15, 2015	Jan. 14, 2016
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-524	Oct. 16, 2014	Oct. 15, 2015
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1095	Oct. 14, 2014	Oct. 13, 2015
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 10, 2014	Nov. 09, 2015
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 10, 2014	Nov. 09, 2015
Preamplifier	Burgeon	BPA-530	100218	Nov. 10, 2014	Nov. 09, 2015
Preamplifier	Agilent	83017A	MY39501309	Sep. 29, 2014	Sep. 28, 2015
Pre-Amplifier	WM	TF-130N-R1	923365	Feb. 10, 2015	Feb. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	Dec. 16, 2014	Dec. 15, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Dec. 16, 2014	Dec. 15, 2015
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16015/4	Dec. 16, 2014	Dec. 15, 2015
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-003	Dec. 16, 2014	Dec. 15, 2015
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-004	Dec. 16, 2014	Dec. 15, 2015
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Feb. 03, 2015	Feb. 02, 2016
Power Meter	Anritsu	ML2495A	1241002	Sep. 29, 2014	Sep. 28, 2015
Power Sensor	Anritsu	MA2411B	1207366	Sep. 29, 2014	Sep. 28, 2015
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247
ANSI C63.10-2013
FCC KDB 558074 D01 DTS Meas Guidance v03r03
FCC KDB 662911 D01 Multiple Transmitter Output v02r01

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated 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)

Measurement Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±34.134 Hz
Conducted power	±0.808 dB
Power density	±0.463 dB
Conducted emission	±2.670 dB
AC conducted emission	±2.92 dB
Radiated emission ≤ 1GHz	±3.62 dB
Radiated emission > 1GHz	±5.60 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 58%	Kevin Ma
Radiated Emissions	03CH02-WS	21-23°C / 62%	Warren Lee Felix Sung
RF Conducted	TH01-WS	21°C / 64%	Felix Sung

- FCC site registration No.: 657002
- IC site registration No.: 10807A-2

2.2 The Worst Test Modes and Channel Details

Non-beamforming mode

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	11b	2462	1 Mbps	---
Radiated Emissions ≤1GHz	11b	2462	1 Mbps	---
Radiated Emissions >1GHz Maximum Output Power 6dB bandwidth Power spectral density	11b 11g HT20 HT40	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462 2422 / 2437 / 2452	1 Mbps 6 Mbps MCS 0 MCS 0	---

Beamforming mode

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	HT20	2437	MCS 0	---
Radiated Emissions ≤1GHz	HT20	2437	MCS 0	---
Radiated Emissions >1GHz Maximum Output Power 6dB bandwidth Power spectral density	HT20 HT40	2412 / 2437 / 2462 2422 / 2437 / 2452	MCS 0 MCS 0	---

3 Transmitter Test Results

3.1 Conducted Emissions

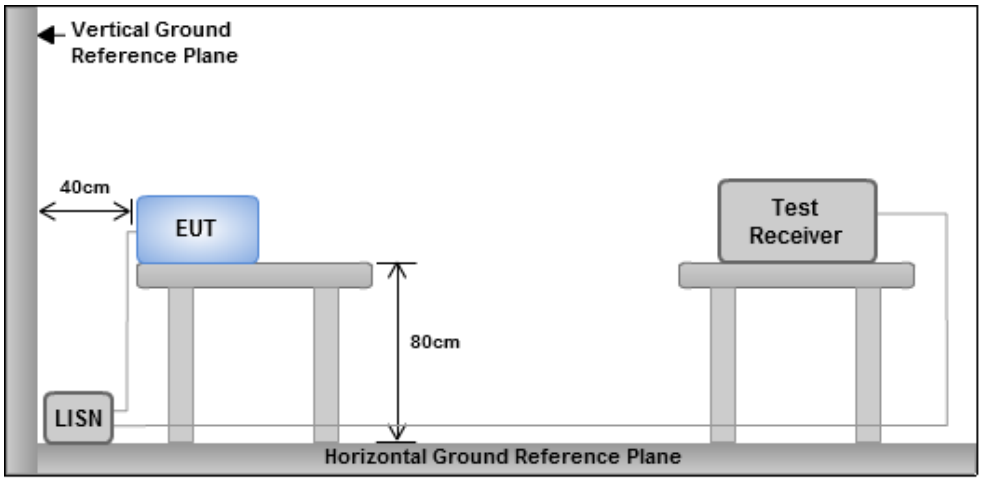
3.1.1 Limit of Conducted Emissions

Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

3.1.3 Test Setup

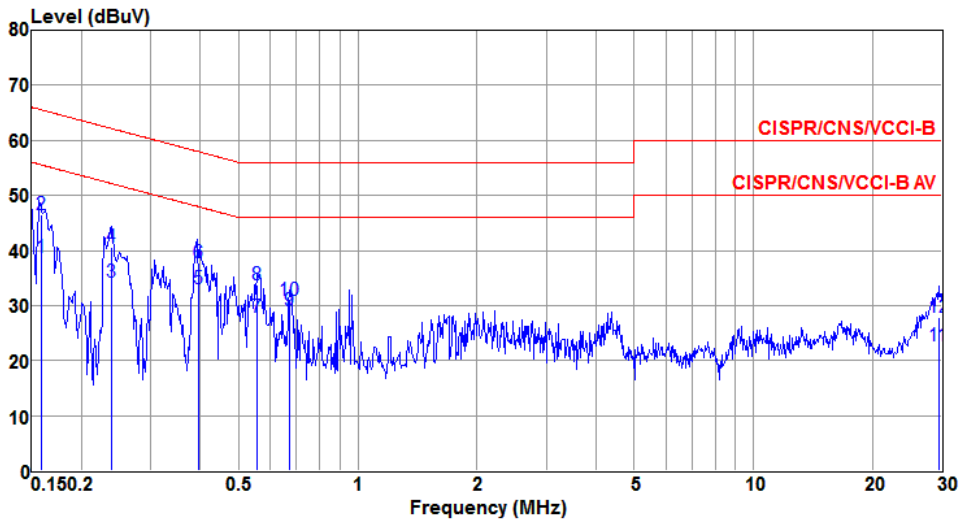


Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

Non-beamforming mode

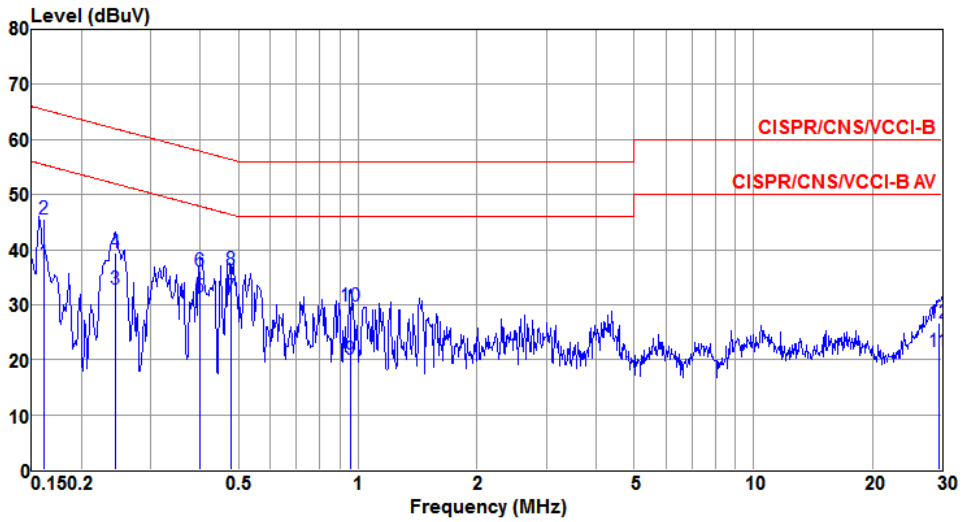
Modulation	11b	**Test Freq. (MHz)**	2462
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.159	38.80	55.51	-16.71	38.65	0.07	0.08	Average
2	0.159	46.43	65.51	-19.08	46.28	0.07	0.08	QP
3	0.239	34.28	52.13	-17.85	34.11	0.07	0.10	Average
4	0.239	40.55	62.13	-21.58	40.38	0.07	0.10	QP
5@	0.396	33.00	47.94	-14.94	32.82	0.07	0.11	Average
6	0.396	37.83	57.94	-20.11	37.65	0.07	0.11	QP
7	0.557	27.77	46.00	-18.23	27.57	0.07	0.13	Average
8	0.557	33.74	56.00	-22.26	33.54	0.07	0.13	QP
9	0.674	29.05	46.00	-16.95	28.83	0.08	0.14	Average
10	0.674	30.81	56.00	-25.19	30.59	0.08	0.14	QP
11	29.371	22.66	50.00	-27.34	22.17	0.38	0.11	Average
12	29.371	27.91	60.00	-32.09	27.42	0.38	0.11	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	11b	Test Freq. (MHz)	2462
Power Phase	Neutral		

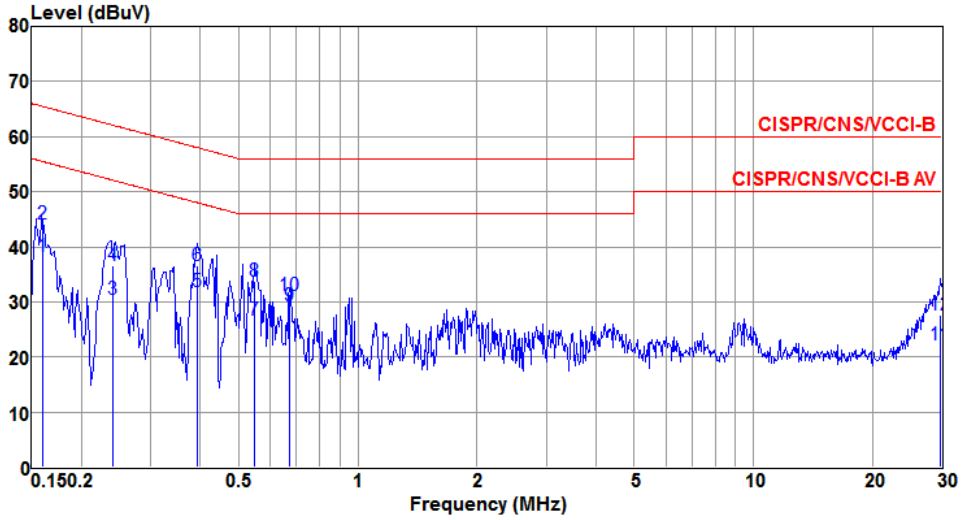


	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.160	37.52	55.45	-17.93	37.37	0.07	0.08	Average
2	0.160	45.57	65.45	-19.88	45.42	0.07	0.08	QP
3	0.243	32.83	51.99	-19.16	32.66	0.07	0.10	Average
4	0.243	39.32	61.99	-22.67	39.15	0.07	0.10	QP
5	0.399	31.45	47.88	-16.43	31.27	0.07	0.11	Average
6	0.399	36.07	57.88	-21.81	35.89	0.07	0.11	QP
7@	0.480	31.32	46.34	-15.02	31.13	0.07	0.12	Average
8	0.480	36.35	56.34	-19.99	36.16	0.07	0.12	QP
9	0.957	20.00	46.00	-26.00	19.76	0.08	0.16	Average
10	0.957	29.63	56.00	-26.37	29.39	0.08	0.16	QP
11	29.371	21.39	50.00	-28.61	20.86	0.42	0.11	Average
12	29.371	26.77	60.00	-33.23	26.24	0.42	0.11	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Beamforming mode

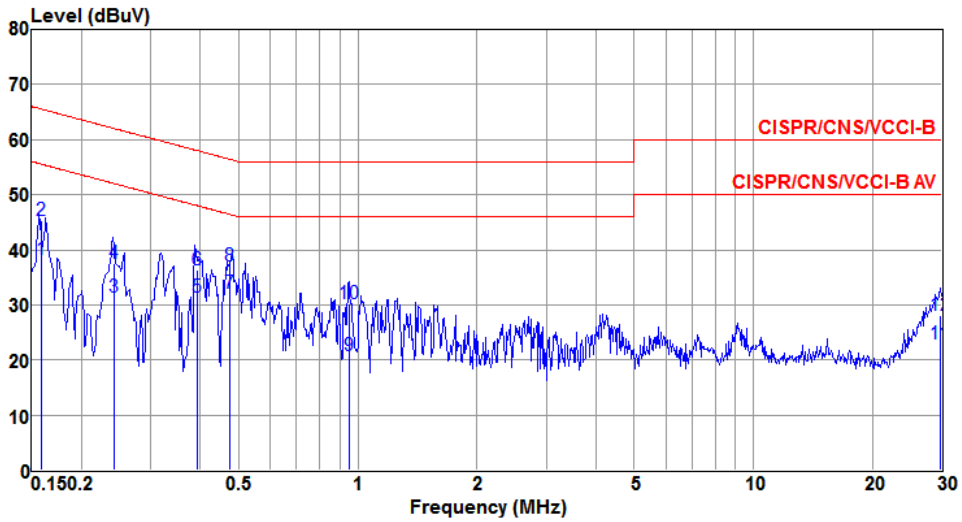
Modulation	HT20	**Test Freq. (MHz)**	2437
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.159	38.12	55.51	-17.39	37.97	0.07	0.08	Average
2	0.159	44.06	65.51	-21.45	43.91	0.07	0.08	QP
3	0.241	30.56	52.08	-21.52	30.39	0.07	0.10	Average
4	0.241	36.69	62.08	-25.39	36.52	0.07	0.10	QP
5@	0.394	31.95	47.98	-16.03	31.77	0.07	0.11	Average
6	0.394	36.49	57.98	-21.49	36.31	0.07	0.11	QP
7	0.546	26.74	46.00	-19.26	26.54	0.07	0.13	Average
8	0.546	33.80	56.00	-22.20	33.60	0.07	0.13	QP
9	0.674	29.37	46.00	-16.63	29.15	0.08	0.14	Average
10	0.674	31.11	56.00	-24.89	30.89	0.08	0.14	QP
11	29.684	22.21	50.00	-27.79	21.72	0.38	0.11	Average
12	29.684	27.62	60.00	-32.38	27.13	0.38	0.11	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	HT20	Test Freq. (MHz)	2437
Power Phase	Neutral		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.158	38.13	55.57	-17.44	37.98	0.07	0.08	Average
2	0.158	45.34	65.57	-20.23	45.19	0.07	0.08	QP
3	0.242	31.29	52.04	-20.75	31.12	0.07	0.10	Average
4	0.242	37.60	62.04	-24.44	37.43	0.07	0.10	QP
5	0.393	31.36	48.01	-16.65	31.18	0.07	0.11	Average
6	0.393	36.24	58.01	-21.77	36.06	0.07	0.11	QP
7@	0.476	32.04	46.41	-14.37	31.85	0.07	0.12	Average
8	0.476	37.14	56.41	-19.27	36.95	0.07	0.12	QP
9	0.948	20.80	46.00	-25.20	20.56	0.08	0.16	Average
10	0.948	30.15	56.00	-25.85	29.91	0.08	0.16	QP
11	29.684	22.81	50.00	-27.19	22.27	0.43	0.11	Average
12	29.684	28.15	60.00	-31.85	27.61	0.43	0.11	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

3.2 6dB and Occupied Bandwidth

3.2.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

3.2.2 Test Procedures

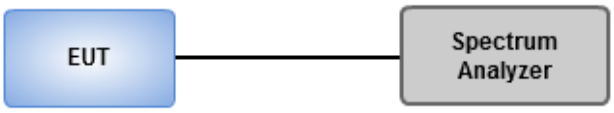
6dB Bandwidth

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

1. Set resolution bandwidth (RBW) = 1 MHz, Video bandwidth = 3 MHz.
2. Detector = Sample, Trace mode = max hold.
3 Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

3.2.3 Test Setup

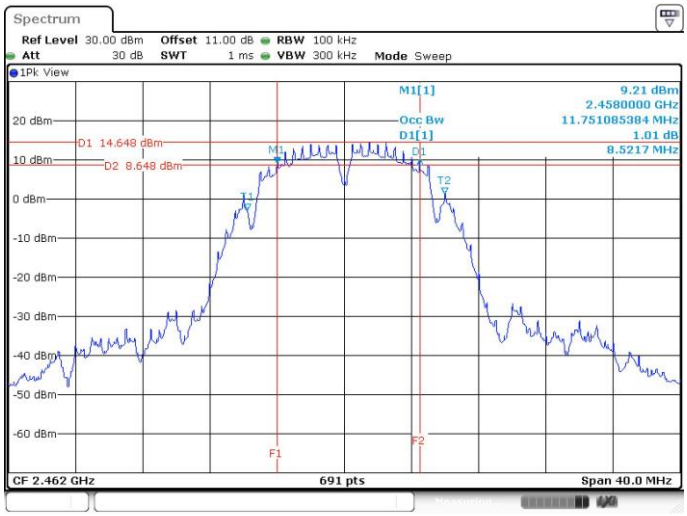


3.2.4 Test Result of 6dB and Occupied Bandwidth

Non-beamforming mode

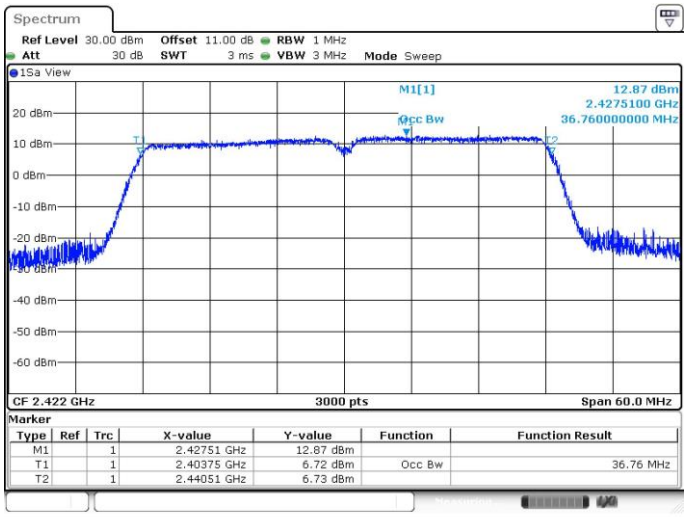
Modulation Mode	N_{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
11b	3	2412	9.04	9.04	9.04	---	500
11b	3	2437	9.04	8.58	8.58	---	500
11b	3	2462	9.04	8.52	9.04	---	500
11g	3	2412	16.35	16.35	16.35	---	500
11g	3	2437	16.29	16.35	16.35	---	500
11g	3	2462	16.35	16.35	16.29	---	500
HT20	3	2412	17.57	17.62	17.62	---	500
HT20	3	2437	17.22	17.62	17.62	---	500
HT20	3	2462	17.51	17.57	16.99	---	500
HT40	3	2422	35.94	35.94	36.41	---	500
HT40	3	2437	35.71	36.29	35.71	---	500
HT40	3	2452	35.71	35.71	35.71	---	500

Worst Plot



Modulation Mode	N_{TX}	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
11b	3	2412	11.90	11.88	11.92	---
11b	3	2437	11.90	11.87	11.90	---
11b	3	2462	11.91	11.78	11.83	---
11g	3	2412	16.97	16.85	16.84	---
11g	3	2437	17.00	16.90	16.97	---
11g	3	2462	16.87	16.83	16.83	---
HT20	3	2412	18.04	17.85	17.91	---
HT20	3	2437	18.12	17.93	17.97	---
HT20	3	2462	18.00	17.85	17.88	---
HT40	3	2422	36.76	36.66	36.74	---
HT40	3	2437	36.54	36.68	36.70	---
HT40	3	2452	36.56	36.60	36.58	---

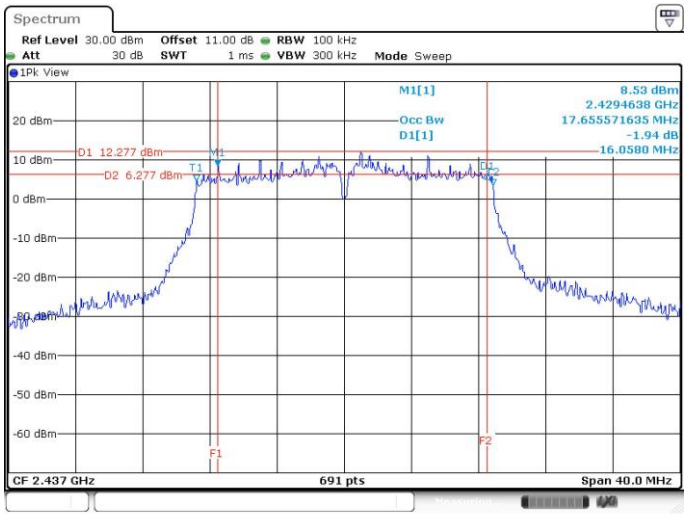
Worst Plot



Beamforming mode

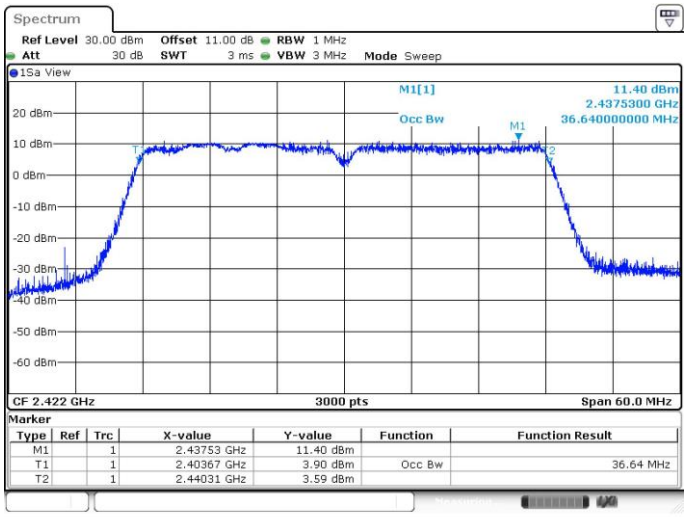
Modulation Mode	N_{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
HT20	3	2412	17.62	17.22	17.22	---	500
HT20	3	2437	16.06	17.62	17.22	---	500
HT20	3	2462	17.22	17.28	17.22	---	500
HT40	3	2422	35.13	35.13	33.86	---	500
HT40	3	2437	35.71	32.35	33.86	---	500
HT40	3	2452	32.70	32.70	35.13	---	500

Worst Plot



Modulation Mode	N_{TX}	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
HT20	3	2412	17.92	17.93	17.97	---
HT20	3	2437	18.01	17.97	17.99	---
HT20	3	2462	17.93	17.93	17.93	---
HT40	3	2422	36.64	36.62	36.62	---
HT40	3	2437	36.54	36.60	36.46	---
HT40	3	2452	36.54	36.54	36.38	---

Worst Plot



3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

☒ Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

☐ Antenna gain > 6dBi

☐ Non Fixed, point to point operations.
The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB

☐ Fixed, point to point operations
Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point Operations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations ,no any corresponding reduction is in transmitter peak output power

3.3.2 Test Procedures

☐ Maximum Peak Conducted Output Power

☐ **Spectrum analyzer**

1. Set RBW = 1MHz, VBW = 3MHz, Detector = Peak.
2. Sweep time = auto, Trace mode = max hold, Allow trace to fully stabilize.
3. Use the spectrum analyzer channel power measurement function with the band limits set equal to the DTS bandwidth edges.

☐ **Power meter**

1. A broadband Peak RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

☒ Maximum Conducted Output Power

☒ **Power meter**

1. A broadband Average RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.3.3 Test Setup

3.3.4 Test Result of Maximum Output Power

Non-beamforming mode

Modulation Mode	N_{TX}	Freq. (MHz)	Conducted (average) output power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
11b	3	2412	24.54	23.62	24.21	---	778.223	28.91	30.00
11b	3	2437	24.45	23.81	24.35	---	791.319	28.98	30.00
11b	3	2462	24.6	23.88	24.46	---	812.001	**29.10**	30.00
11g	3	2412	19.76	19.42	19.68	---	275.019	24.39	30.00
11g	3	2437	23.36	22.65	23.16	---	607.862	27.84	30.00
11g	3	2462	18.81	18.20	18.55	---	213.716	23.30	30.00
HT20	3	2412	18.32	17.65	18.14	---	191.294	22.82	30.00
HT20	3	2437	23.25	22.68	23.14	---	602.765	27.80	30.00
HT20	3	2462	17.28	17.00	17.14	---	155.336	21.91	30.00
HT40	3	2422	18.85	18.39	18.74	---	220.577	23.44	30.00
HT40	3	2437	18.43	17.72	18.3	---	196.427	22.93	30.00
HT40	3	2452	14.88	14.30	14.63	---	86.717	19.38	30.00

Beamforming mode

Modulation Mode	N_{TX}	Freq. (MHz)	Conducted (average) output power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
HT20	3	2412	17.92	17.88	18.32	---	191.241	22.82	27.62
HT20	3	2437	22.43	22.29	22.79	---	534.526	27.28	27.62
HT20	3	2462	17.23	17.02	17.55	---	160.080	22.04	27.62
HT40	3	2422	17.68	17.23	17.96	---	173.976	22.40	27.62
HT40	3	2437	17.62	17.54	18.11	---	179.278	22.54	27.62
HT40	3	2452	14.73	14.52	15.11	---	90.465	19.56	27.62

Note:

1. Directional gain = $10 * \log((10^{4/20}+10^{3.5/20}+10^{3.3/20})^2/3)$ = 8.38 dBi > 6 dBi
   Limit shall be reduced to 30 dBm – (8.38 dBi – 6 dBi) = 27.62 dBm.

3.4 Power Spectral Density

3.4.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

3.4.2 Test Procedures

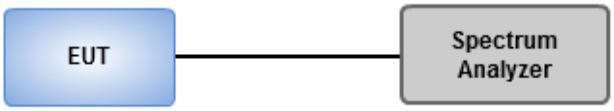
☐ Maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit.

1. Set the RBW = 3kHz, VBW = 10kHz.
2. Detector = Peak, Sweep time = auto couple.
3. Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

☒ Maximum (average) conducted output power was used to demonstrate compliance to the fundamental output power limit.

1. Set the RBW = 30kHz, VBW = 100 kHz.
2. Detector = RMS, Sweep time = auto couple.
3. Set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (maximum data rate per stream).
4. Perform the measurement over a single sweep.
5. Use the peak marker function to determine the maximum amplitude level.

3.4.3 Test Setup



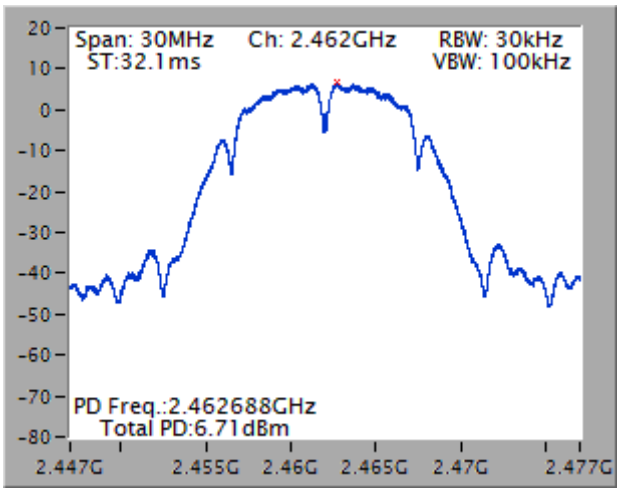
3.4.4 Test Result of Power Spectral Density

Non-beamforming mode

Modulation Mode	N_{TX}	Freq. (MHz)	Total Power Spectral Density (dBm/30kHz)	Limit (dBm/3kHz)
11b	3	2412	6.13	8.00
11b	3	2437	6.54	8.00
11b	3	2462	6.71	8.00
11g	3	2412	-0.18	8.00
11g	3	2437	3.86	8.00
11g	3	2462	-0.18	8.00
HT20	3	2412	-2.43	8.00
HT20	3	2437	2.90	8.00
HT20	3	2462	-2.79	8.00
HT40	3	2422	-4.21	8.00
HT40	3	2437	-4.39	8.00
HT40	3	2452	-7.96	8.00

Note: Test result is bin-by-bin summing measured value of each TX port.

Worst Plot

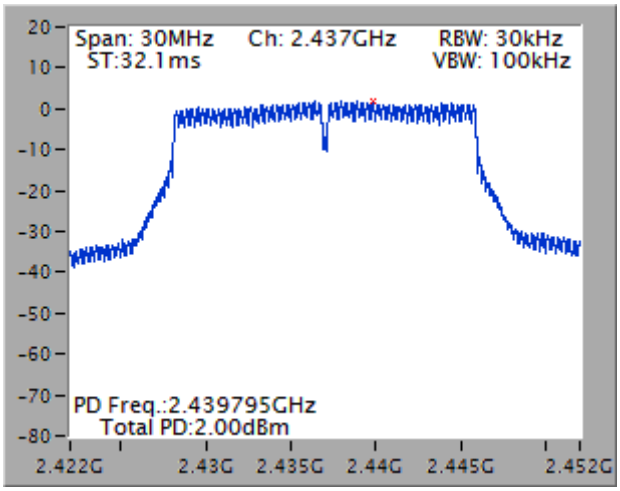


Beamforming mode

Modulation Mode	N_{TX}	Freq. (MHz)	Total Power Spectral Density (dBm/30kHz)	Limit (dBm/3kHz)
HT20	3	2412	-2.40	8.00
HT20	3	2437	2.00	8.00
HT20	3	2462	-1.72	8.00
HT40	3	2422	-7.68	8.00
HT40	3	2437	-4.27	8.00
HT40	3	2452	-7.57	8.00

Note: Test result is bin-by-bin summing measured value of each TX port.

Worst Plot



3.5 Unwanted Emissions into Restricted Frequency Bands

3.5.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.5.2 Test Procedures

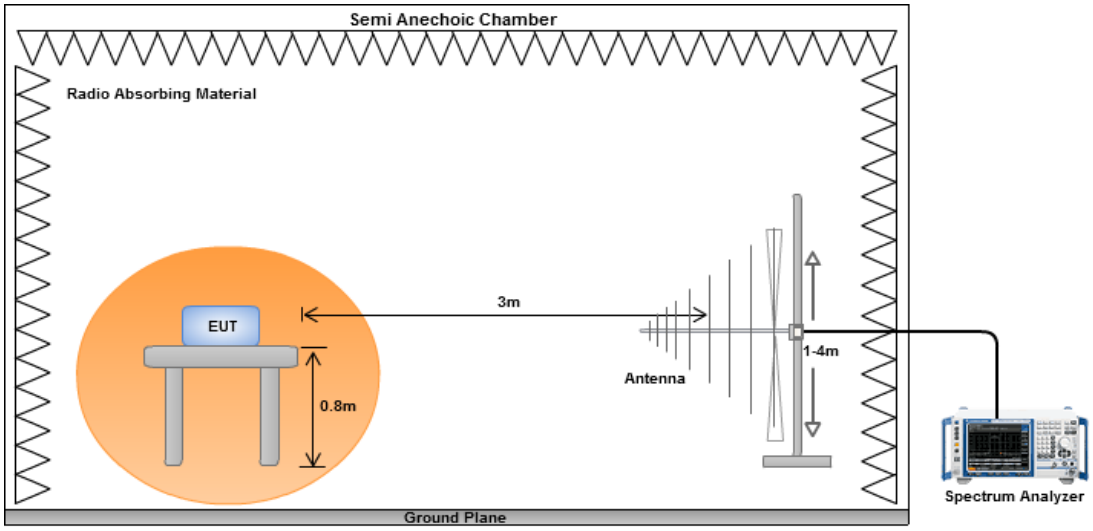
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

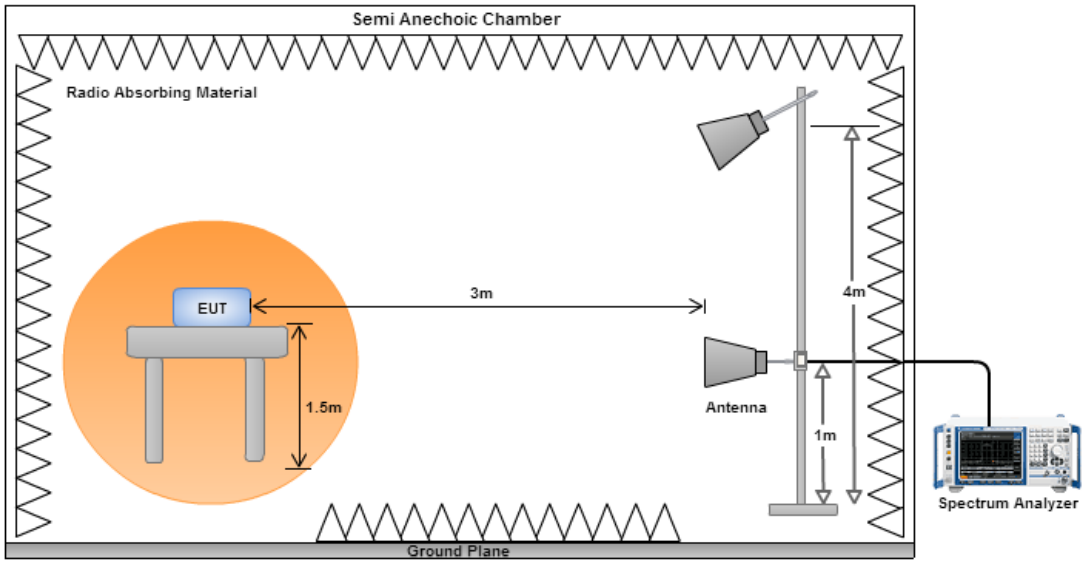
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.5.3 Test Setup

Radiated Emissions below 1 GHz



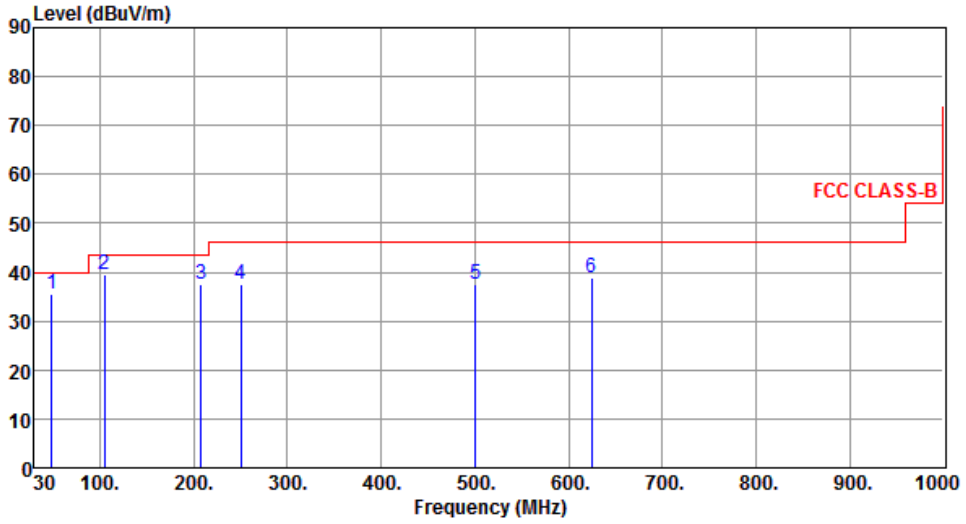
Radiated Emissions above 1 GHz



Non-beamforming mode

3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

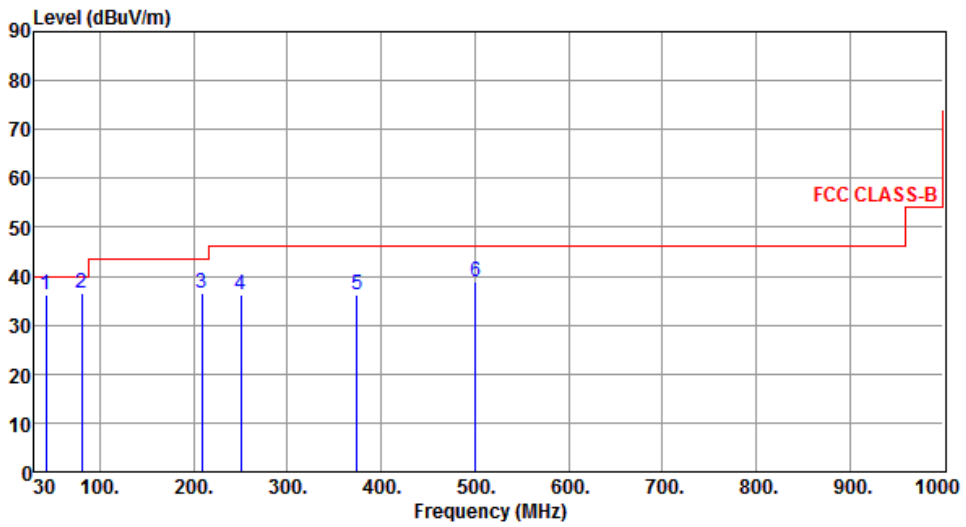
Modulation	11b	**Test Freq. (MHz)**	2462
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	48.43	35.53	40.00	-4.47	52.10	-16.57	Peak	---	---
2	104.69	39.51	43.50	-3.99	60.75	-21.24	Peak	---	---
3	207.51	37.38	43.50	-6.12	56.87	-19.49	Peak	---	---
4	250.19	37.45	46.00	-8.55	55.31	-17.86	Peak	---	---
5	500.45	37.65	46.00	-8.35	49.36	-11.71	Peak	---	---
6	624.61	38.93	46.00	-7.07	48.20	-9.27	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	11b	Test Freq. (MHz)	2462
Polarization	Vertical		

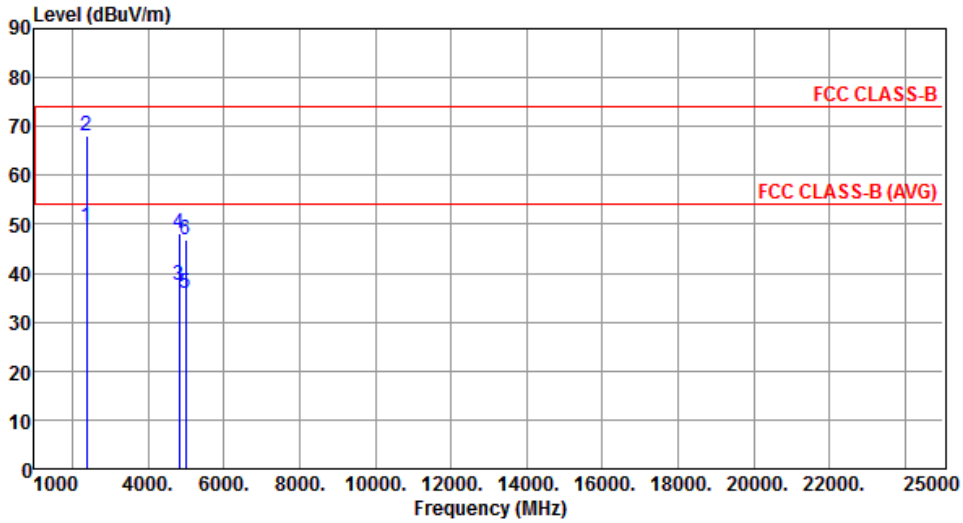


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	42.39	36.15	40.00	-3.85	53.17	-17.02	QP	100	300
2	80.44	36.48	40.00	-3.52	58.48	-22.00	Peak	---	---
3	208.48	36.65	43.50	-6.85	56.10	-19.45	Peak	---	---
4	250.19	36.32	46.00	-9.68	54.18	-17.86	Peak	---	---
5	374.35	36.29	46.00	-9.71	50.63	-14.34	Peak	---	---
6	500.45	38.89	46.00	-7.11	50.60	-11.71	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11b

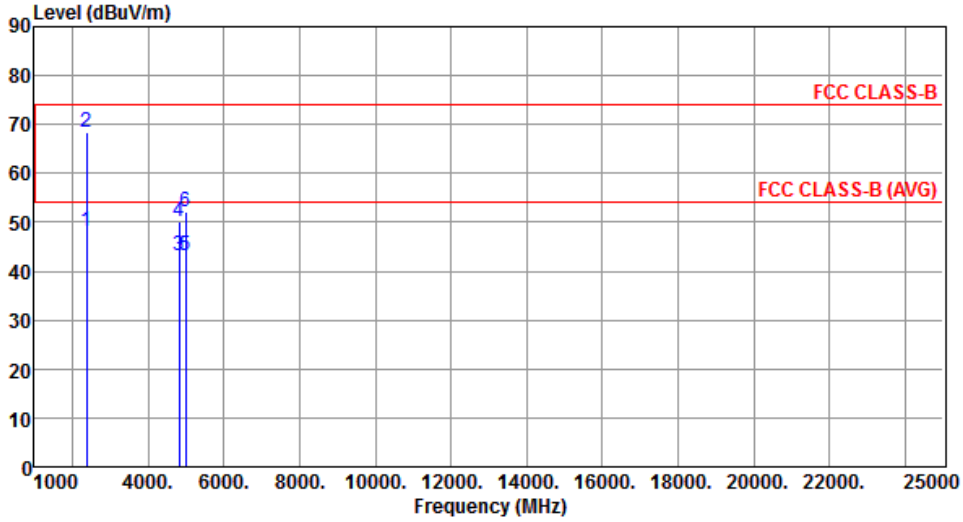
Modulation	11b	**Test Freq. (MHz)**	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	49.38	54.00	-4.62	52.03	-2.65	Average	243	336
2	2390.00	68.07	74.00	-5.93	70.72	-2.65	Peak	243	336
3	4824.00	37.68	54.00	-16.32	32.71	4.97	Average	270	96
4	4824.00	48.20	74.00	-25.80	43.23	4.97	Peak	270	96
5	5000.00	35.97	54.00	-18.03	30.59	5.38	Average	100	273
6	5000.00	46.67	74.00	-27.33	41.29	5.38	Peak	100	273

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

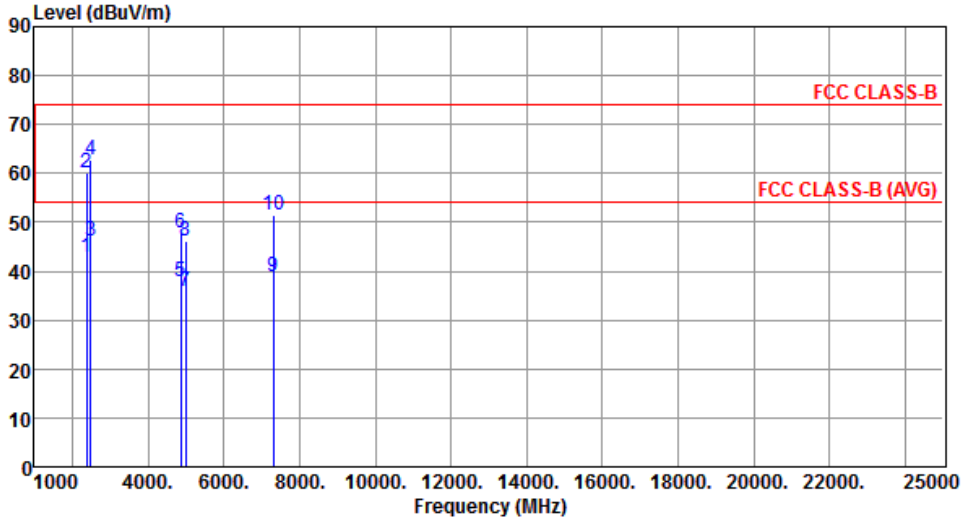
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.24	54.00	-5.76	50.89	-2.65	Average	135	7
2	2390.00	68.58	74.00	-5.42	71.23	-2.65	Peak	135	7
3	4824.00	43.08	54.00	-10.92	38.11	4.97	Average	135	209
4	4824.00	50.16	74.00	-23.84	45.19	4.97	Peak	135	209
5	5000.00	43.31	54.00	-10.69	37.93	5.38	Average	136	222
6	5000.00	52.21	74.00	-21.79	46.83	5.38	Peak	136	222

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

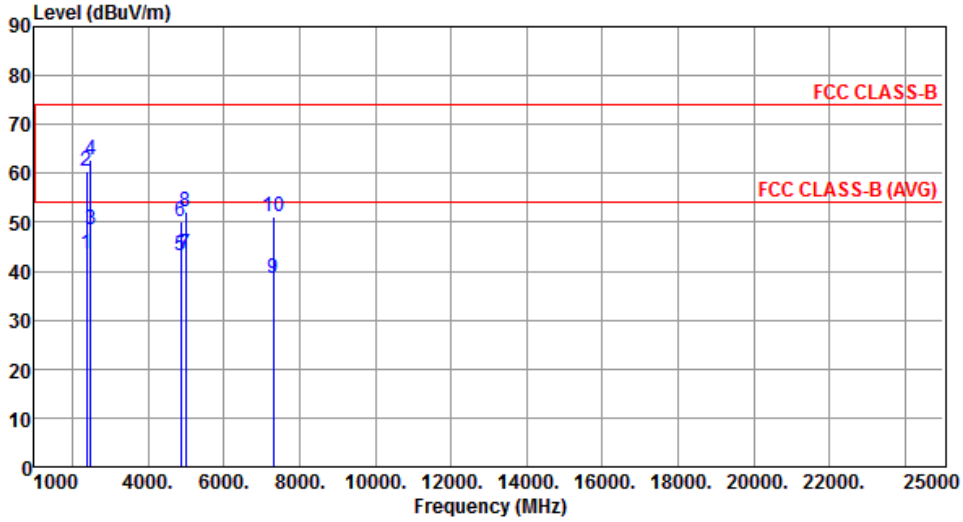
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	42.95	54.00	-11.05	45.60	-2.65	Average	292	3
2	2390.00	60.25	74.00	-13.75	62.90	-2.65	Peak	292	3
3	2483.50	46.04	54.00	-7.96	48.38	-2.34	Average	170	341
4	2483.50	62.79	74.00	-11.21	65.13	-2.34	Peak	170	341
5	4874.00	37.71	54.00	-16.29	32.63	5.08	Average	270	87
6	4874.00	47.89	74.00	-26.11	42.81	5.08	Peak	270	87
7	5000.00	35.77	54.00	-18.23	30.39	5.38	Average	100	271
8	5000.00	46.30	74.00	-27.70	40.92	5.38	Peak	100	271
9	7311.00	38.86	54.00	-15.14	28.75	10.11	Average	100	123
10	7311.00	51.36	74.00	-22.64	41.25	10.11	Peak	100	123

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

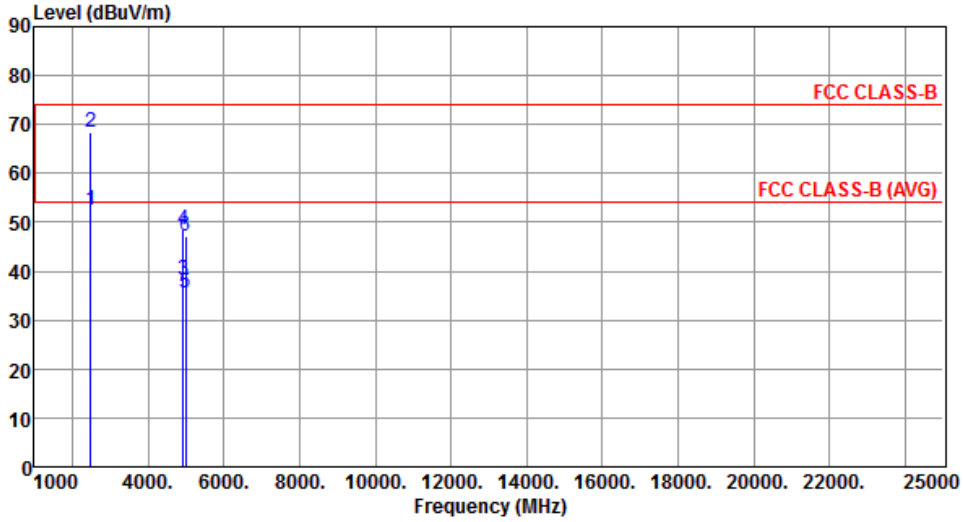
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	43.38	54.00	-10.62	46.03	-2.65	Average	200	233
2	2390.00	60.31	74.00	-13.69	62.96	-2.65	Peak	200	233
3	2483.50	48.44	54.00	-5.56	50.78	-2.34	Average	200	226
4	2483.50	62.61	74.00	-11.39	64.95	-2.34	Peak	200	226
5	4874.00	43.14	54.00	-10.86	38.06	5.08	Average	132	204
6	4874.00	50.20	74.00	-23.80	45.12	5.08	Peak	132	204
7	5000.00	43.36	54.00	-10.64	37.98	5.38	Average	136	211
8	5000.00	52.12	74.00	-21.88	46.74	5.38	Peak	136	211
9	7311.00	38.61	54.00	-15.39	28.50	10.11	Average	100	133
10	7311.00	51.15	74.00	-22.85	41.04	10.11	Peak	100	133

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

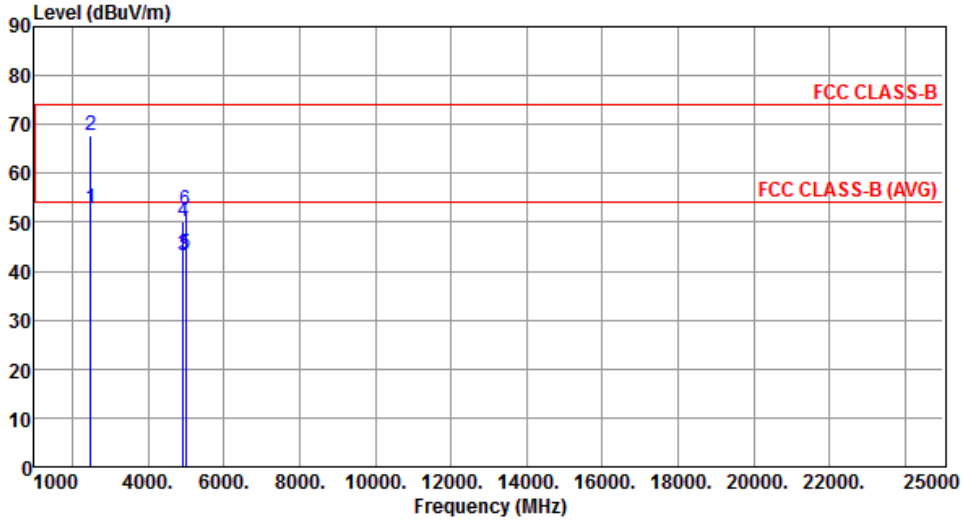
Modulation	11b	Test Freq. (MHz)	2462
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.45	54.00	-1.55	54.79	-2.34	Average	224	338
2	2483.50	68.50	74.00	-5.50	70.84	-2.34	Peak	224	338
3	4924.00	38.03	54.00	-15.97	32.82	5.21	Average	277	85
4	4924.00	48.55	74.00	-25.45	43.34	5.21	Peak	277	85
5	5000.00	35.60	54.00	-18.40	30.22	5.38	Average	110	43
6	5000.00	47.21	74.00	-26.79	41.83	5.38	Peak	110	43

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11b	Test Freq. (MHz)	2462
Polarization	Vertical		

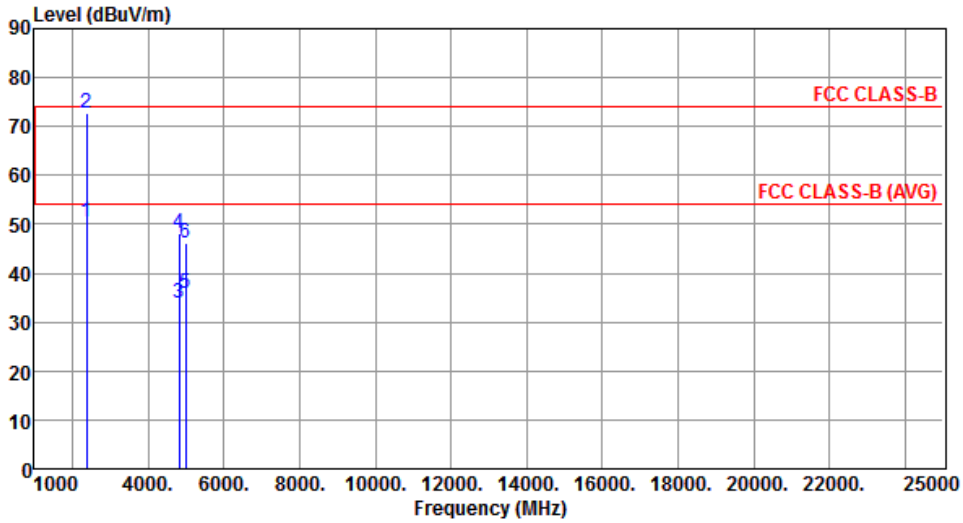


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.84	54.00	-1.16	55.18	-2.34	Average	189	206
2	2483.50	67.84	74.00	-6.16	70.18	-2.34	Peak	189	206
3	4924.00	43.13	54.00	-10.87	37.92	5.21	Average	135	211
4	4924.00	50.09	74.00	-23.91	44.88	5.21	Peak	135	211
5	5000.00	43.49	54.00	-10.51	38.11	5.38	Average	135	222
6	5000.00	52.36	74.00	-21.64	46.98	5.38	Peak	135	222

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11g

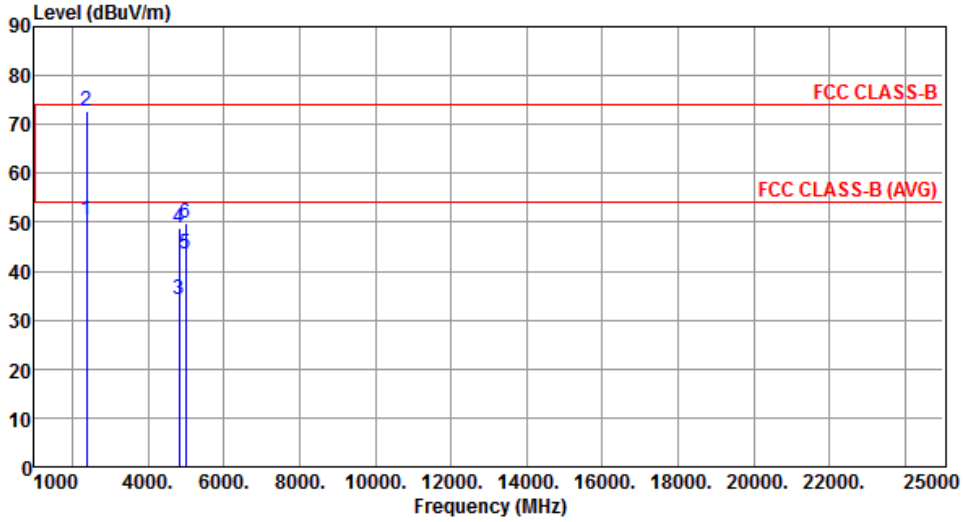
Modulation	11g	**Test Freq. (MHz)**	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.46	54.00	-3.54	53.11	-2.65	Average	291	10
2	2390.00	72.64	74.00	-1.36	75.29	-2.65	Peak	291	10
3	4824.00	33.86	54.00	-20.14	28.89	4.97	Average	123	221
4	4824.00	48.22	74.00	-25.78	43.25	4.97	Peak	123	221
5	5000.00	35.77	54.00	-18.23	30.39	5.38	Average	119	250
6	5000.00	46.17	74.00	-27.83	40.79	5.38	Peak	119	250

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

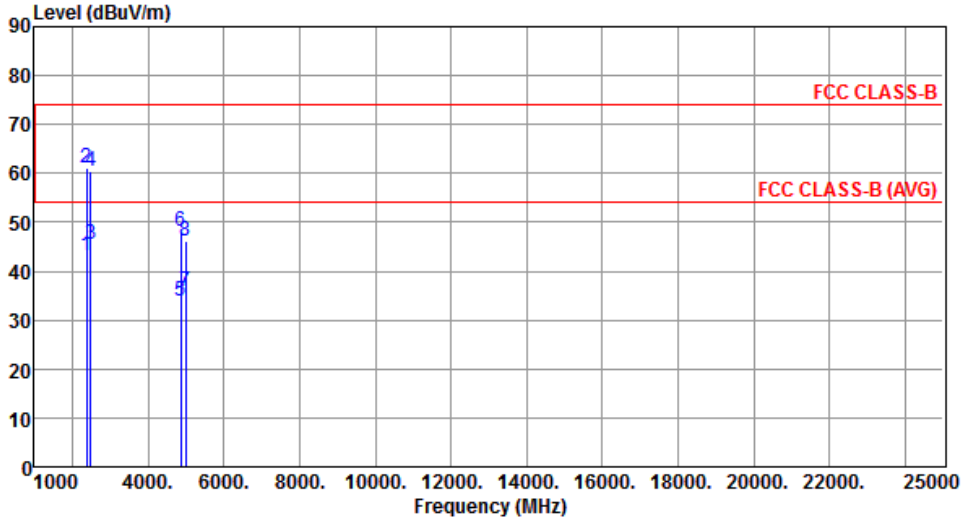
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.46	54.00	-3.54	53.11	-2.65	Average	201	231
2	2390.00	72.66	74.00	-1.34	75.31	-2.65	Peak	201	231
3	4824.00	34.13	54.00	-19.87	29.16	4.97	Average	122	226
4	4824.00	48.85	74.00	-25.15	43.88	4.97	Peak	122	226
5	5000.00	43.54	54.00	-10.46	38.16	5.38	Average	129	218
6	5000.00	49.66	74.00	-24.34	44.28	5.38	Peak	129	218

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

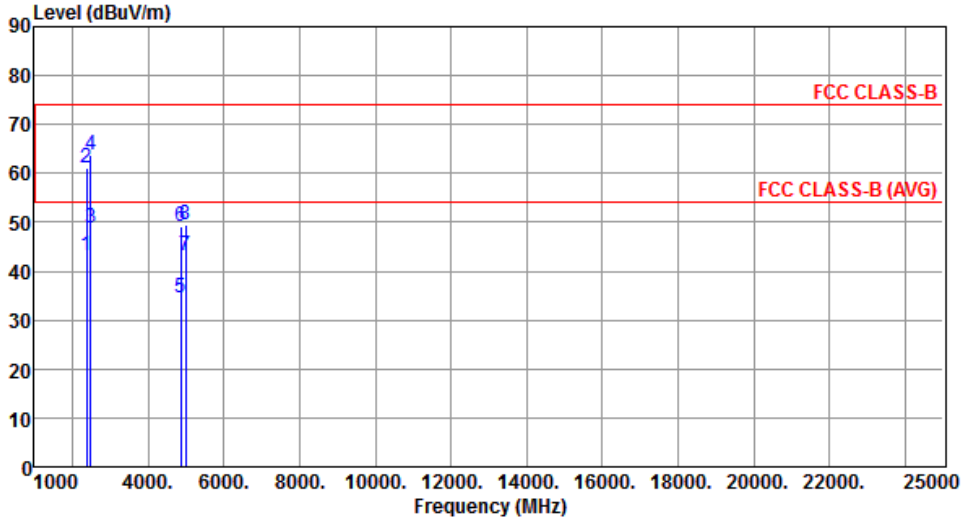
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	43.12	54.00	-10.88	45.77	-2.65	Average	255	336
2	2390.00	61.03	74.00	-12.97	63.68	-2.65	Peak	255	336
3	2483.50	45.43	54.00	-8.57	47.77	-2.34	Average	255	351
4	2483.50	60.58	74.00	-13.42	62.92	-2.34	Peak	255	351
5	4874.00	34.04	54.00	-19.96	28.96	5.08	Average	123	222
6	4874.00	48.25	74.00	-25.75	43.17	5.08	Peak	123	222
7	5000.00	35.91	54.00	-18.09	30.53	5.38	Average	119	246
8	5000.00	46.31	74.00	-27.69	40.93	5.38	Peak	119	246

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

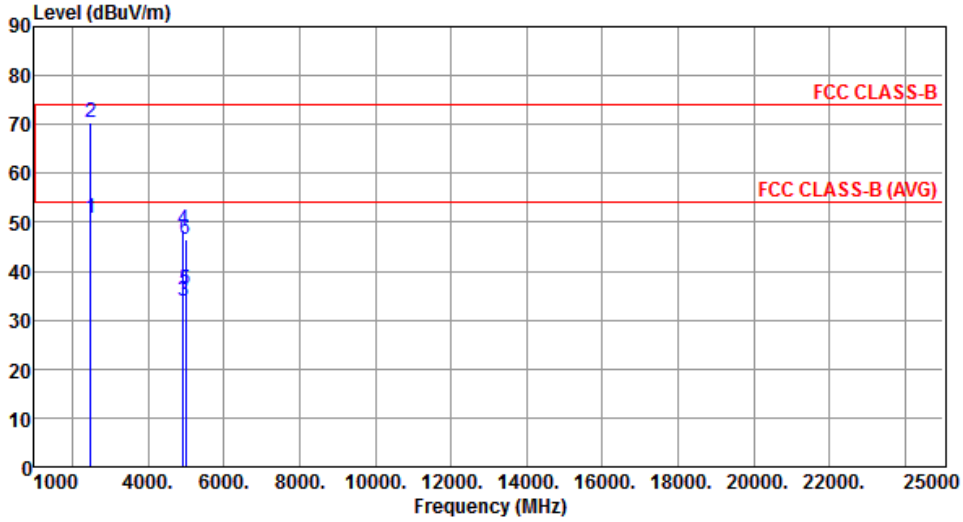
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	43.18	54.00	-10.82	45.83	-2.65	Average	193	225
2	2390.00	61.25	74.00	-12.75	63.90	-2.65	Peak	193	225
3	2483.50	48.87	54.00	-5.13	51.21	-2.34	Average	214	272
4	2483.50	63.67	74.00	-10.33	66.01	-2.34	Peak	214	272
5	4874.00	34.49	54.00	-19.51	29.41	5.08	Average	333	207
6	4874.00	49.04	74.00	-24.96	43.96	5.08	Peak	333	207
7	5000.00	43.29	54.00	-10.71	37.91	5.38	Average	125	213
8	5000.00	49.57	74.00	-24.43	44.19	5.38	Peak	125	213

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

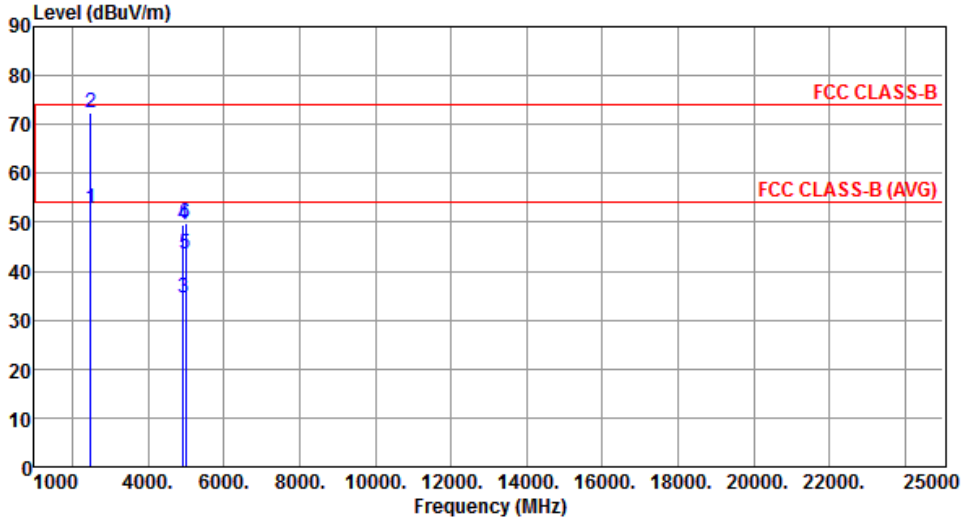
Modulation	11g	Test Freq. (MHz)	2462
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	50.72	54.00	-3.28	53.06	-2.34	Average	241	355
2	2483.50	70.28	74.00	-3.72	72.62	-2.34	Peak	241	355
3	4924.00	33.92	54.00	-20.08	28.71	5.21	Average	123	229
4	4924.00	48.52	74.00	-25.48	43.31	5.21	Peak	123	229
5	5000.00	36.11	54.00	-17.89	30.73	5.38	Average	116	255
6	5000.00	46.61	74.00	-27.39	41.23	5.38	Peak	116	255

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11g	Test Freq. (MHz)	2462
Polarization	Vertical		

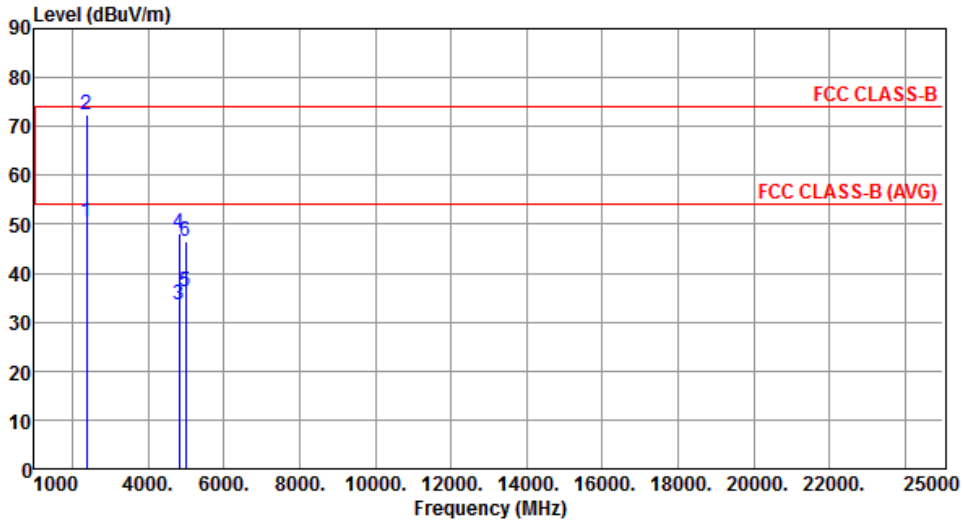


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.65	54.00	-1.35	54.99	-2.34	Average	208	273
2	2483.50	72.41	74.00	-1.59	74.75	-2.34	Peak	208	273
3	4924.00	34.55	54.00	-19.45	29.34	5.21	Average	121	243
4	4924.00	49.43	74.00	-24.57	44.22	5.21	Peak	121	243
5	5000.00	43.49	54.00	-10.51	38.11	5.38	Average	123	228
6	5000.00	49.89	74.00	-24.11	44.51	5.38	Peak	123	228

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20

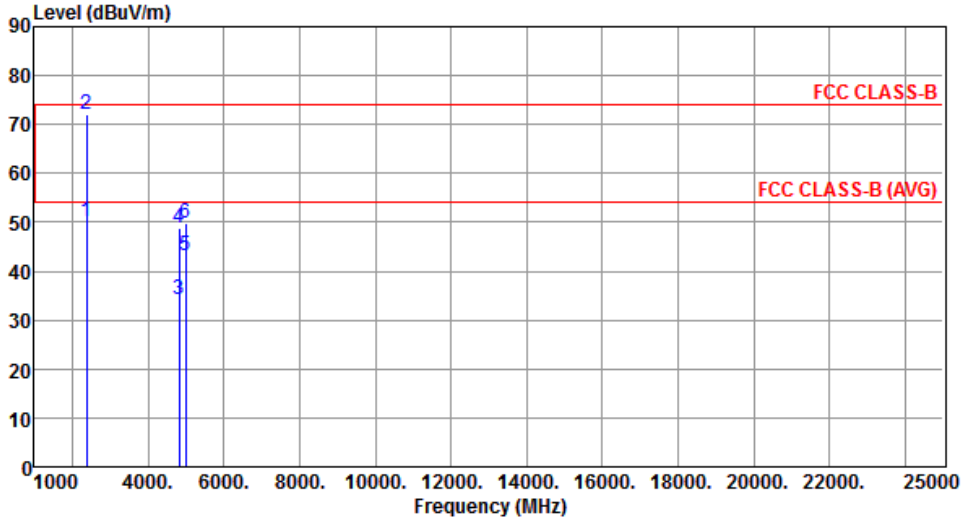
Modulation	HT20	**Test Freq. (MHz)**	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.64	54.00	-3.36	53.29	-2.65	Average	286	3
2	2390.00	72.46	74.00	-1.54	75.11	-2.65	Peak	286	3
3	4824.00	33.62	54.00	-20.38	28.65	4.97	Average	111	235
4	4824.00	48.22	74.00	-25.78	43.25	4.97	Peak	111	235
5	5000.00	36.06	54.00	-17.94	30.68	5.38	Average	111	246
6	5000.00	46.64	74.00	-27.36	41.26	5.38	Peak	111	246

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

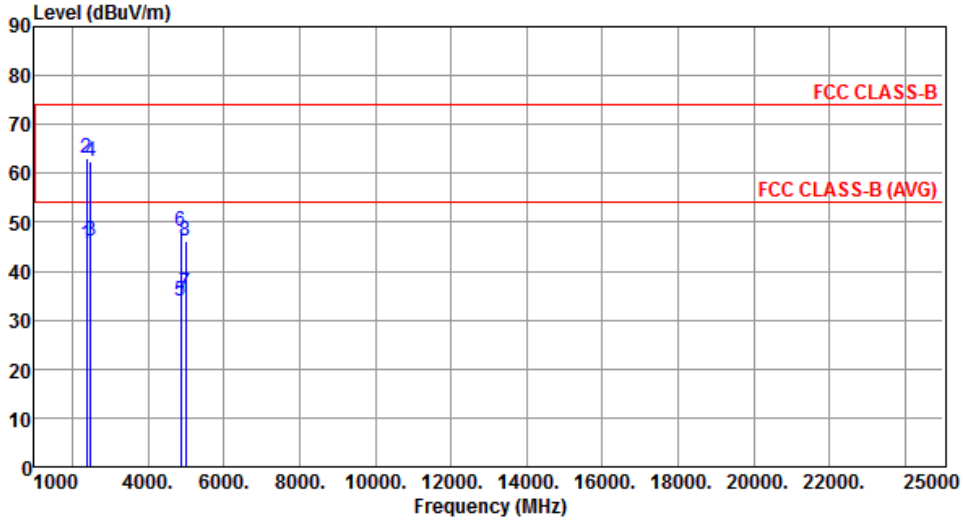
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.17	54.00	-3.83	52.82	-2.65	Average	179	222
2	2390.00	72.23	74.00	-1.77	74.88	-2.65	Peak	179	222
3	4824.00	34.25	54.00	-19.75	29.28	4.97	Average	123	216
4	4824.00	48.92	74.00	-25.08	43.95	4.97	Peak	123	216
5	5000.00	43.29	54.00	-10.71	37.91	5.38	Average	128	221
6	5000.00	49.73	74.00	-24.27	44.35	5.38	Peak	128	221

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

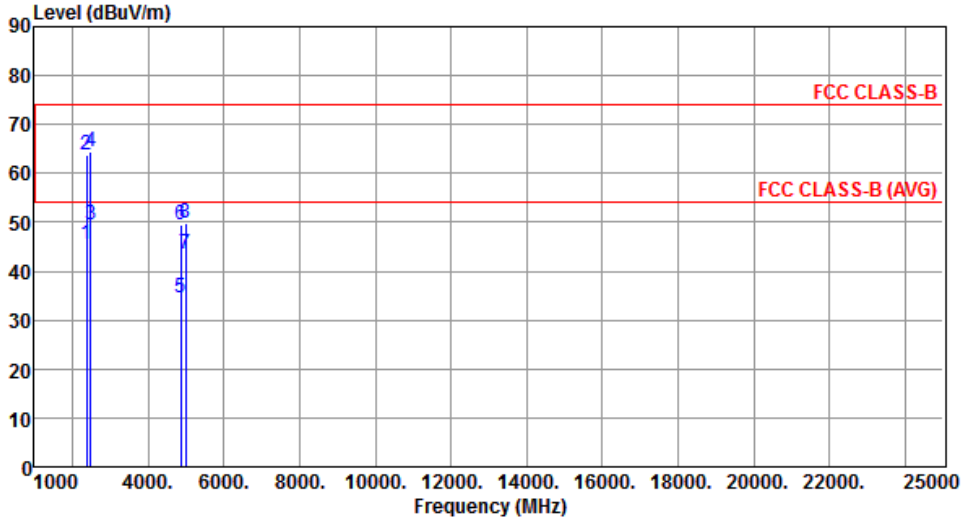
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	45.53	54.00	-8.47	48.18	-2.65	Average	222	331
2	2390.00	63.19	74.00	-10.81	65.84	-2.65	Peak	222	331
3	2483.50	46.18	54.00	-7.82	48.52	-2.34	Average	252	343
4	2483.50	62.38	74.00	-11.62	64.72	-2.34	Peak	252	343
5	4874.00	33.92	54.00	-20.08	28.84	5.08	Average	121	224
6	4874.00	48.15	74.00	-25.85	43.07	5.08	Peak	121	224
7	5000.00	35.69	54.00	-18.31	30.31	5.38	Average	116	243
8	5000.00	46.29	74.00	-27.71	40.91	5.38	Peak	116	243

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

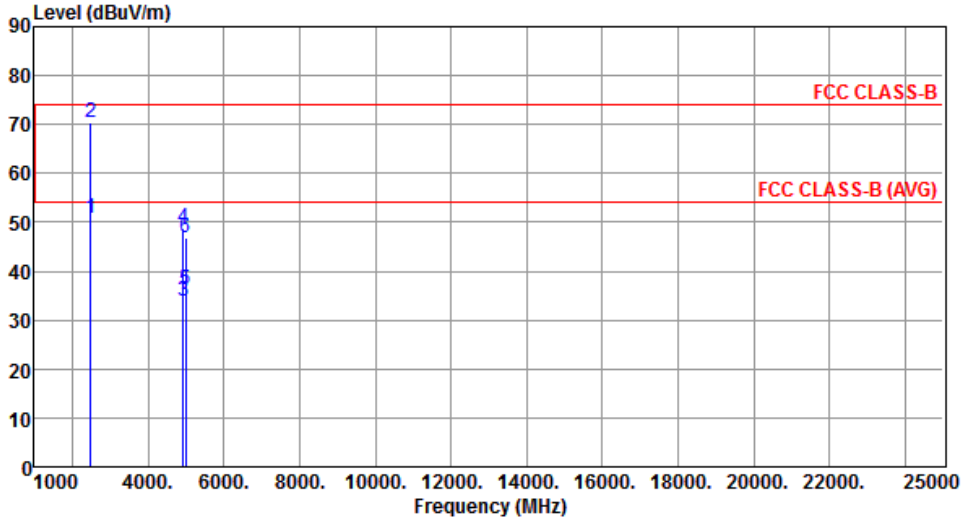
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	45.34	54.00	-8.66	47.99	-2.65	Average	188	226
2	2390.00	63.87	74.00	-10.13	66.52	-2.65	Peak	188	226
3	2483.50	49.58	54.00	-4.42	51.92	-2.34	Average	186	250
4	2483.50	64.55	74.00	-9.45	66.89	-2.34	Peak	186	250
5	4874.00	34.62	54.00	-19.38	29.54	5.08	Average	321	222
6	4874.00	49.35	74.00	-24.65	44.27	5.08	Peak	321	222
7	5000.00	43.51	54.00	-10.49	38.13	5.38	Average	129	225
8	5000.00	49.78	74.00	-24.22	44.40	5.38	Peak	129	225

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

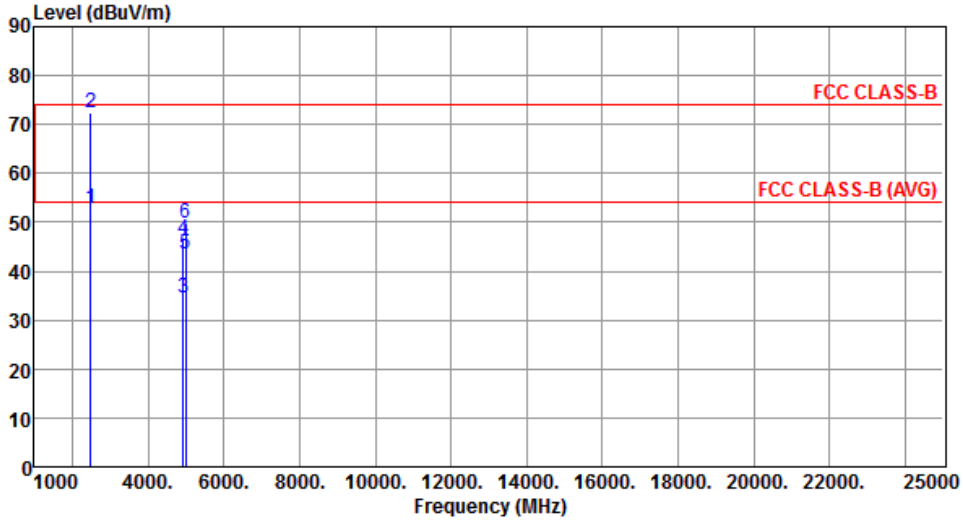
Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	50.77	54.00	-3.23	53.11	-2.34	Average	229	338
2	2483.50	70.49	74.00	-3.51	72.83	-2.34	Peak	229	338
3	4924.00	33.85	54.00	-20.15	28.64	5.21	Average	122	246
4	4924.00	48.76	74.00	-25.24	43.55	5.21	Peak	122	246
5	5000.00	36.12	54.00	-17.88	30.74	5.38	Average	108	233
6	5000.00	46.75	74.00	-27.25	41.37	5.38	Peak	108	233

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Vertical		

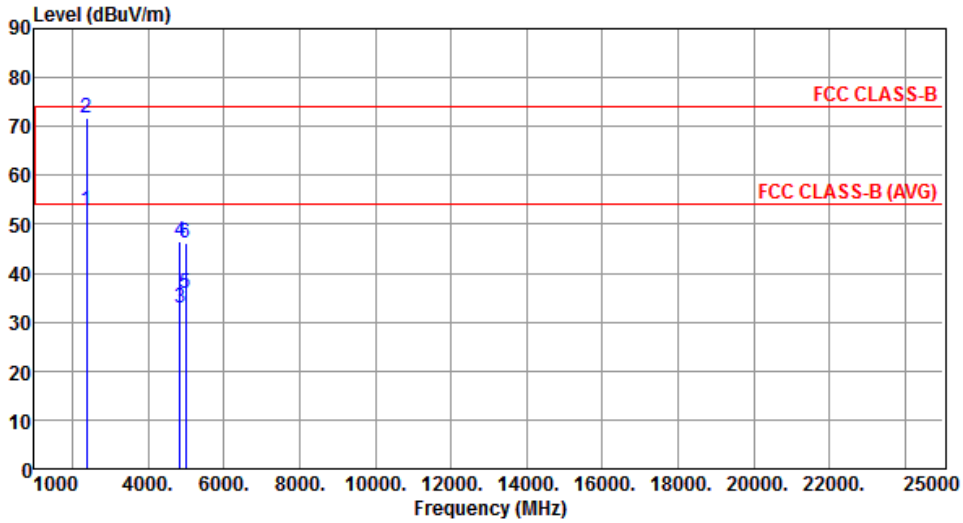


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.81	54.00	-1.19	55.15	-2.34	Average	221	270
2	2483.50	72.34	74.00	-1.66	74.68	-2.34	Peak	221	270
3	4924.00	34.52	54.00	-19.48	29.31	5.21	Average	325	321
4	4924.00	46.42	74.00	-27.58	41.21	5.21	Peak	325	321
5	5000.00	43.55	54.00	-10.45	38.17	5.38	Average	133	236
6	5000.00	49.89	74.00	-24.11	44.51	5.38	Peak	133	236

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.5.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40

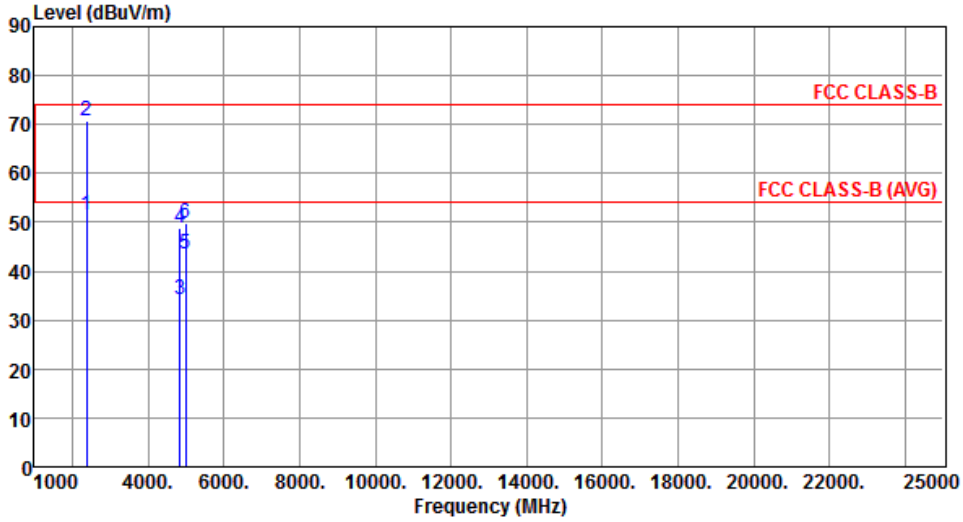
Modulation	HT40	**Test Freq. (MHz)**	2422
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.69	54.00	-1.31	55.34	-2.65	Average	146	339
2	2390.00	71.78	74.00	-2.22	74.43	-2.65	Peak	146	339
3	4844.00	32.91	54.00	-21.09	27.89	5.02	Average	133	255
4	4844.00	46.57	74.00	-27.43	41.55	5.02	Peak	133	255
5	5000.00	35.72	54.00	-18.28	30.34	5.38	Average	115	250
6	5000.00	46.18	74.00	-27.82	40.80	5.38	Peak	115	250

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

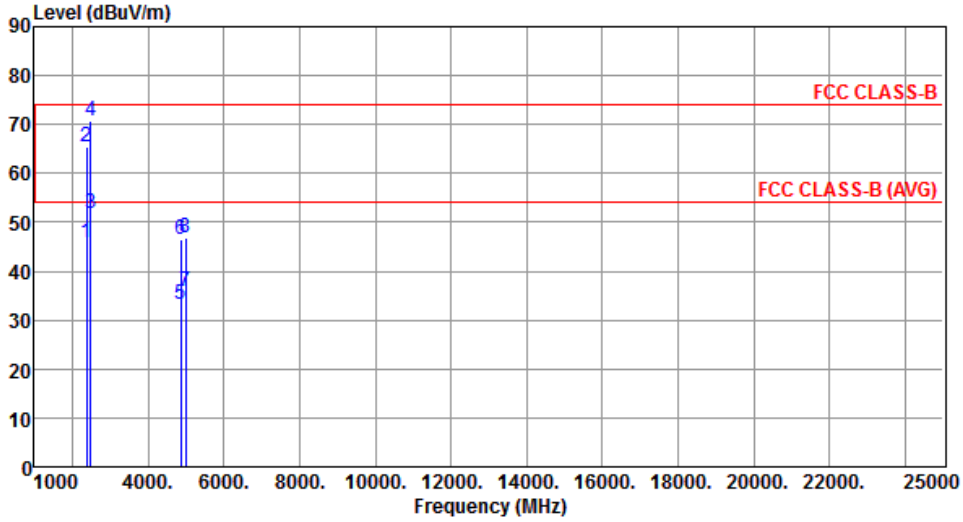
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	51.33	54.00	-2.67	53.98	-2.65	Average	233	233
2	2390.00	70.61	74.00	-3.39	73.26	-2.65	Peak	233	233
3	4844.00	34.05	54.00	-19.95	29.03	5.02	Average	128	243
4	4844.00	48.88	74.00	-25.12	43.86	5.02	Peak	128	243
5	5000.00	43.64	54.00	-10.36	38.26	5.38	Average	128	211
6	5000.00	49.97	74.00	-24.03	44.59	5.38	Peak	128	211

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

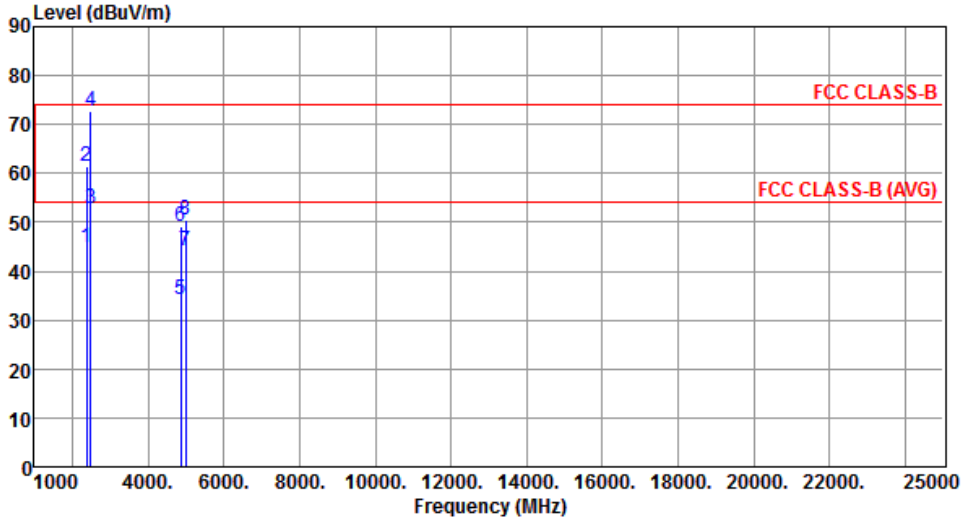
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	45.67	54.00	-8.33	48.32	-2.65	Average	226	23
2	2390.00	65.41	74.00	-8.59	68.06	-2.65	Peak	226	23
3	2483.50	51.77	54.00	-2.23	54.11	-2.34	Average	226	10
4	2483.50	70.79	74.00	-3.21	73.13	-2.34	Peak	226	10
5	4874.00	33.24	54.00	-20.76	28.16	5.08	Average	309	255
6	4874.00	46.61	74.00	-27.39	41.53	5.08	Peak	309	255
7	5000.00	35.85	54.00	-18.15	30.47	5.38	Average	309	255
8	5000.00	46.81	74.00	-27.19	41.43	5.38	Peak	309	255

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

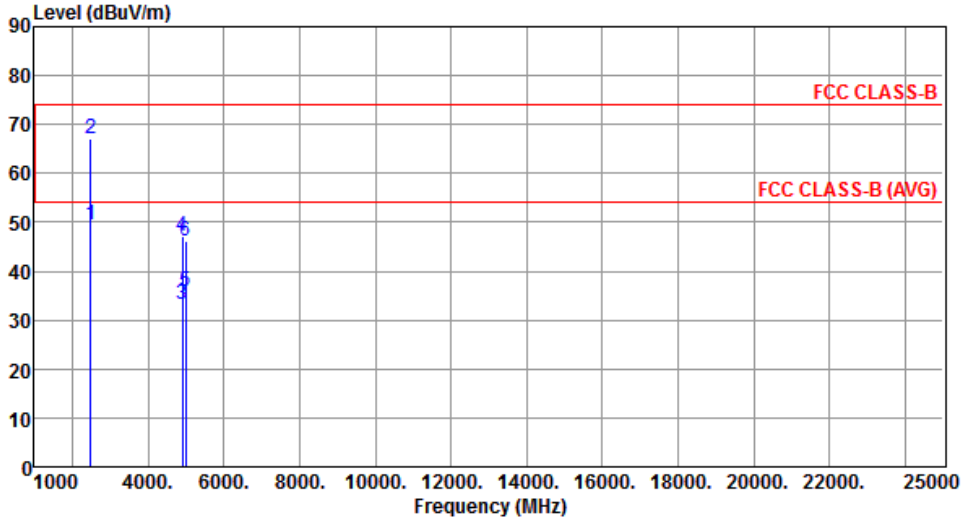
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	44.68	54.00	-9.32	47.33	-2.65	Average	233	236
2	2390.00	61.55	74.00	-12.45	64.20	-2.65	Peak	233	236
3	2483.50	52.97	54.00	-1.03	55.31	-2.34	Average	213	270
4	2483.50	72.87	74.00	-1.13	75.21	-2.34	Peak	213	270
5	4874.00	34.25	54.00	-19.75	29.17	5.08	Average	119	240
6	4874.00	49.30	74.00	-24.70	44.22	5.08	Peak	119	240
7	5000.00	44.30	54.00	-9.70	38.92	5.38	Average	128	224
8	5000.00	50.41	74.00	-23.59	45.03	5.38	Peak	128	224

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

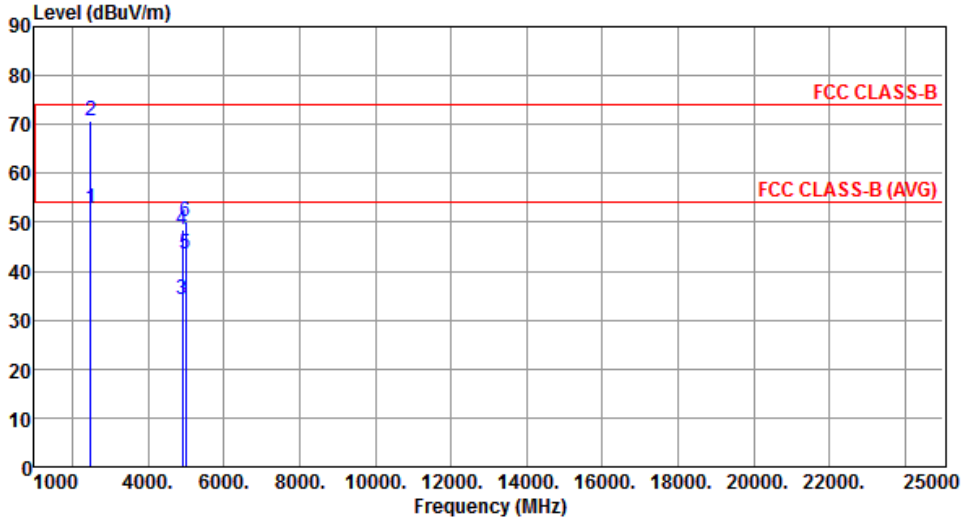
Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	49.62	54.00	-4.38	51.96	-2.34	Average	223	358
2	2483.50	67.16	74.00	-6.84	69.50	-2.34	Peak	223	358
3	4904.00	33.31	54.00	-20.69	28.14	5.17	Average	125	321
4	4904.00	47.28	74.00	-26.72	42.11	5.17	Peak	125	321
5	5000.00	35.74	54.00	-18.26	30.36	5.38	Average	118	251
6	5000.00	46.32	74.00	-27.68	40.94	5.38	Peak	118	251

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Vertical		



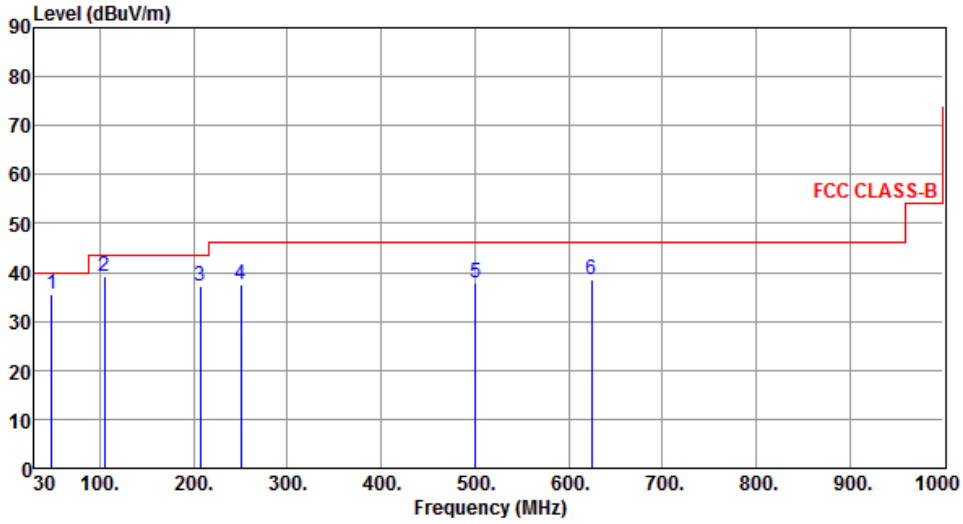
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.95	54.00	-1.05	55.29	-2.34	Average	206	261
2	2483.50	70.88	74.00	-3.12	73.22	-2.34	Peak	206	261
3	4904.00	34.12	54.00	-19.88	28.95	5.17	Average	121	227
4	4904.00	48.35	74.00	-25.65	43.18	5.17	Peak	121	227
5	5000.00	43.64	54.00	-10.36	38.26	5.38	Average	129	222
6	5000.00	50.27	74.00	-23.73	44.89	5.38	Peak	129	222

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Beamforming mode

3.5.9 Transmitter Radiated Unwanted Emissions (Below 1GHz)

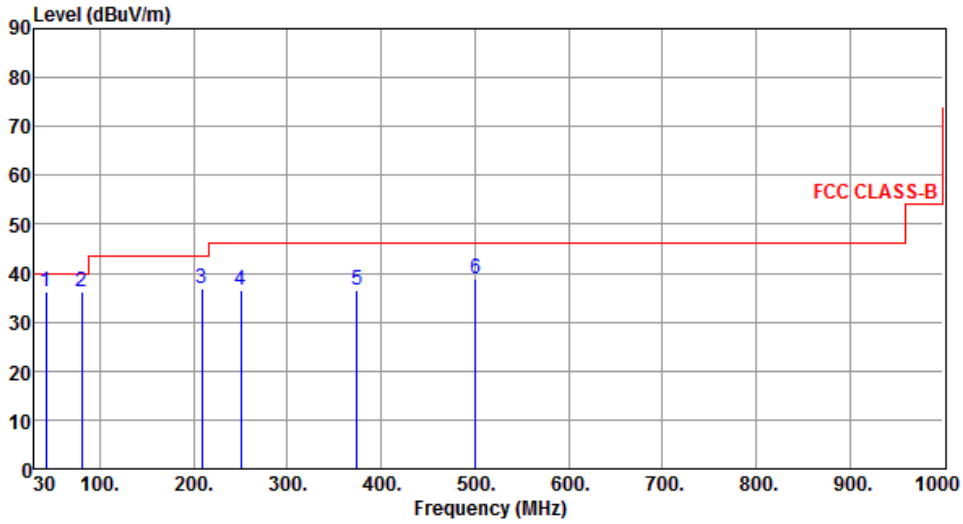
Modulation	HT20	**Test Freq. (MHz)**	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	48.38	35.64	40.00	-4.36	52.22	-16.58	Peak	---	---
2	104.63	39.28	43.50	-4.22	60.53	-21.25	Peak	---	---
3	207.46	37.11	43.50	-6.39	56.61	-19.50	Peak	---	---
4	250.13	37.54	46.00	-8.46	55.41	-17.87	Peak	---	---
5	500.52	37.95	46.00	-8.05	49.66	-11.71	Peak	---	---
6	624.62	38.66	46.00	-7.34	47.93	-9.27	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		

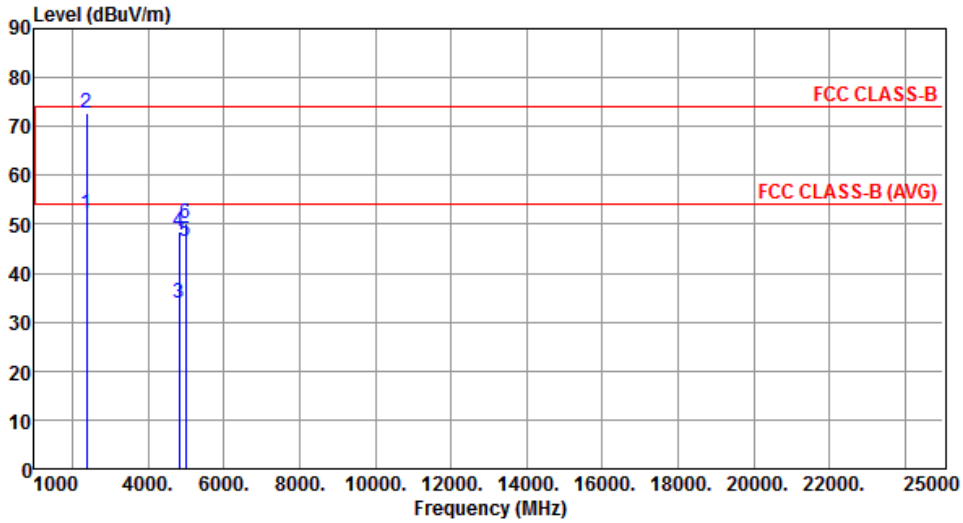


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	42.25	36.22	40.00	-3.78	53.25	-17.03	QP	105	307
2	80.42	36.28	40.00	-3.72	58.28	-22.00	Peak	---	---
3	208.53	36.78	43.50	-6.72	56.22	-19.44	Peak	---	---
4	250.13	36.63	46.00	-9.37	54.50	-17.87	Peak	---	---
5	374.32	36.54	46.00	-9.46	50.88	-14.34	Peak	---	---
6	500.42	38.76	46.00	-7.24	50.47	-11.71	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.5.10 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20

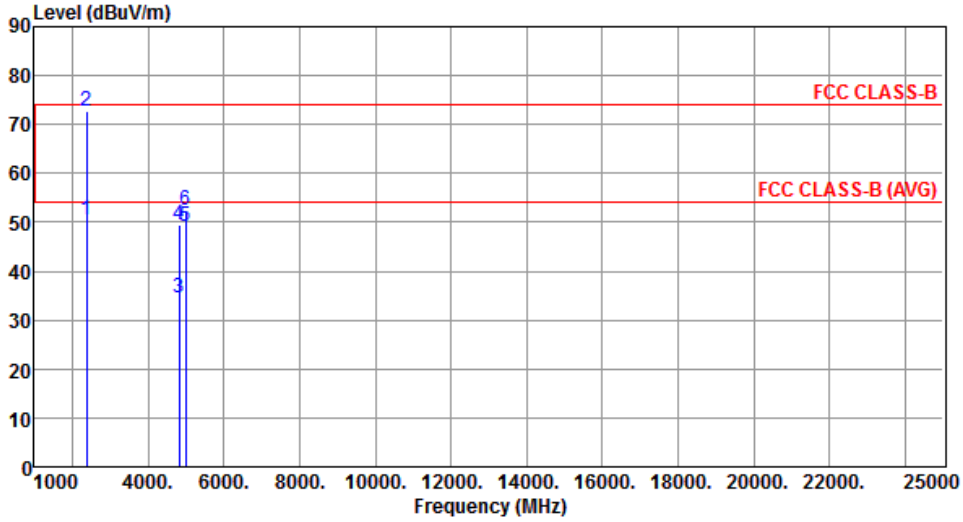
Modulation	HT20	**Test Freq. (MHz)**	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.23	54.00	-1.77	54.88	-2.65	Average	252	16
2	2390.00	72.78	74.00	-1.22	75.43	-2.65	Peak	252	16
3	4824.00	33.78	54.00	-20.22	28.81	4.97	Average	308	109
4	4824.00	48.36	74.00	-25.64	43.39	4.97	Peak	308	109
5	5000.00	46.43	54.00	-7.57	41.05	5.38	Average	355	74
6	5000.00	50.26	74.00	-23.74	44.88	5.38	Peak	355	74

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

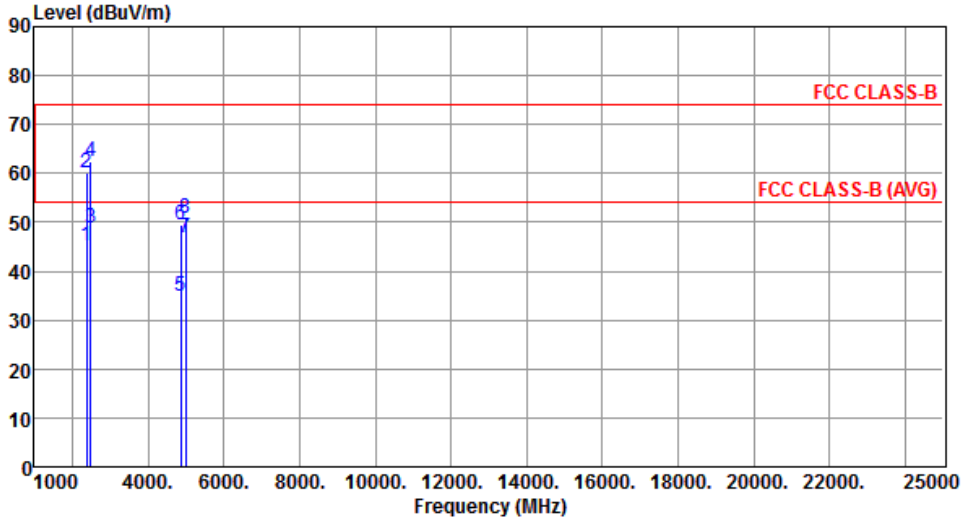
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.62	54.00	-3.38	53.27	-2.65	Average	177	259
2	2390.00	72.70	74.00	-1.30	75.35	-2.65	Peak	177	259
3	4824.00	34.53	54.00	-19.47	29.56	4.97	Average	192	209
4	4824.00	49.60	74.00	-24.40	44.63	4.97	Peak	192	209
5	5000.00	49.02	54.00	-4.98	43.64	5.38	Average	260	198
6	5000.00	52.43	74.00	-21.57	47.05	5.38	Peak	260	198

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

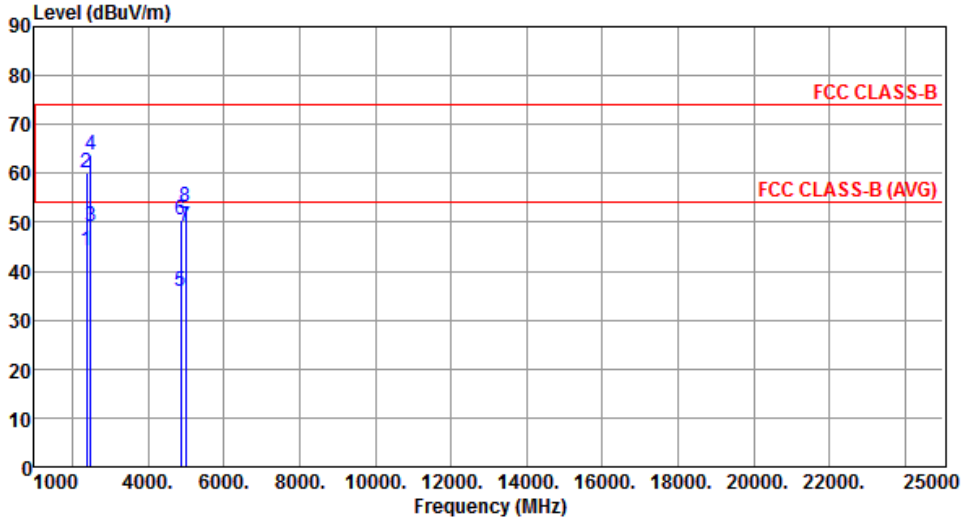
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	45.28	54.00	-8.72	47.93	-2.65	Average	262	18
2	2390.00	60.12	74.00	-13.88	62.77	-2.65	Peak	262	18
3	2483.50	48.88	54.00	-5.12	51.22	-2.34	Average	222	20
4	2483.50	62.37	74.00	-11.63	64.71	-2.34	Peak	222	20
5	4874.00	34.98	54.00	-19.02	29.90	5.08	Average	305	114
6	4874.00	49.37	74.00	-24.63	44.29	5.08	Peak	305	114
7	5000.00	46.81	54.00	-7.19	41.43	5.38	Average	358	78
8	5000.00	50.82	74.00	-23.18	45.44	5.38	Peak	358	78

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

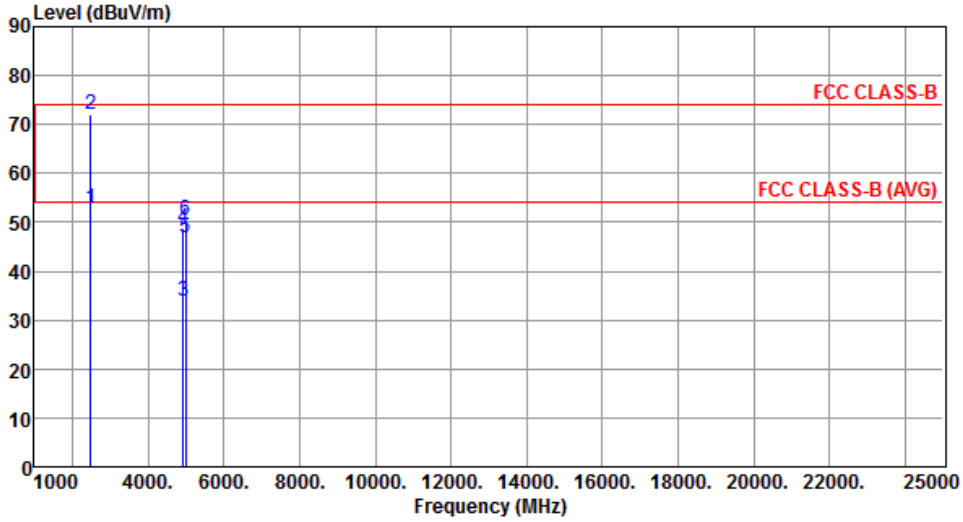
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	44.25	54.00	-9.75	46.90	-2.65	Average	198	262
2	2390.00	60.02	74.00	-13.98	62.67	-2.65	Peak	198	262
3	2483.50	49.04	54.00	-4.96	51.38	-2.34	Average	167	270
4	2483.50	63.80	74.00	-10.20	66.14	-2.34	Peak	167	270
5	4874.00	35.84	54.00	-18.16	30.76	5.08	Average	196	205
6	4874.00	50.55	74.00	-23.45	45.47	5.08	Peak	196	205
7	5000.00	49.31	54.00	-4.69	43.93	5.38	Average	266	191
8	5000.00	52.98	74.00	-21.02	47.60	5.38	Peak	266	191

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

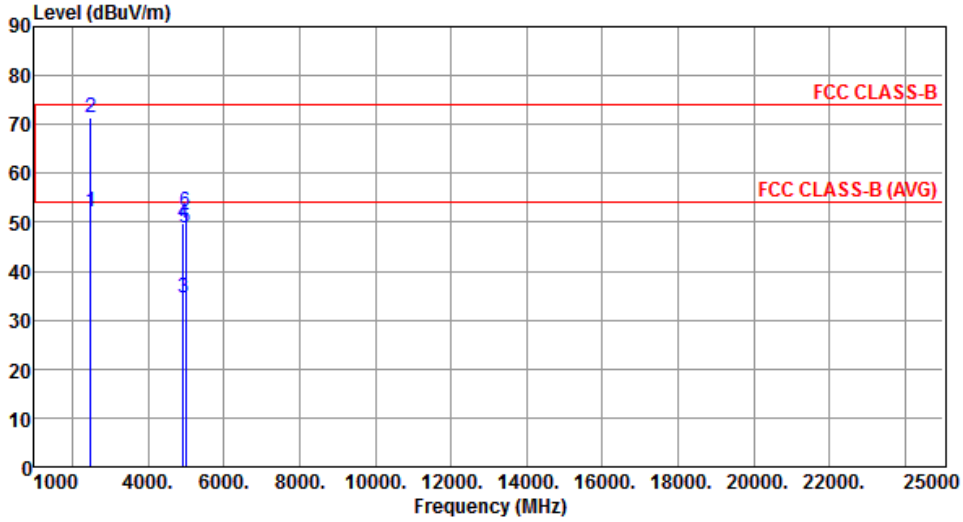
Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.87	54.00	-1.13	55.21	-2.34	Average	223	17
2	2483.50	72.15	74.00	-1.85	74.49	-2.34	Peak	223	17
3	4924.00	33.86	54.00	-20.14	28.65	5.21	Average	311	106
4	4924.00	48.71	74.00	-25.29	43.50	5.21	Peak	311	106
5	5000.00	46.75	54.00	-7.25	41.37	5.38	Average	351	71
6	5000.00	50.53	74.00	-23.47	45.15	5.38	Peak	351	71

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Vertical		

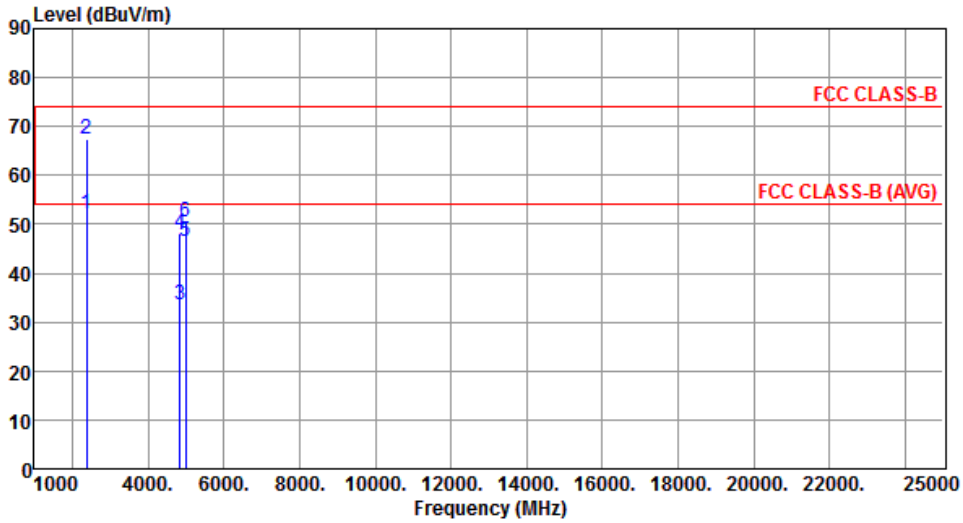


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.07	54.00	-1.93	54.41	-2.34	Average	237	243
2	2483.50	71.41	74.00	-2.59	73.75	-2.34	Peak	237	243
3	4924.00	34.42	54.00	-19.58	29.21	5.21	Average	194	213
4	4924.00	49.86	74.00	-24.14	44.65	5.21	Peak	194	213
5	5000.00	48.87	54.00	-5.13	43.49	5.38	Average	266	194
6	5000.00	52.17	74.00	-21.83	46.79	5.38	Peak	266	194

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.5.11 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40

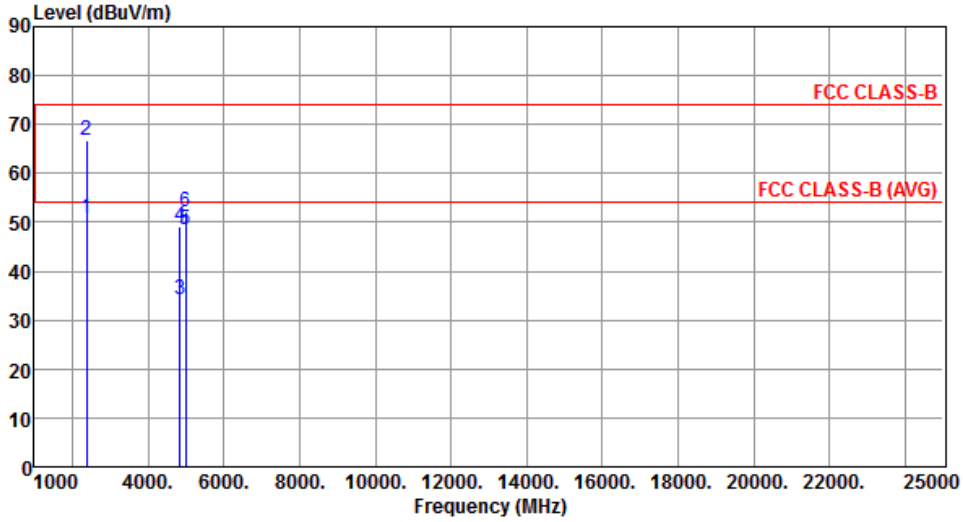
Modulation	HT40	**Test Freq. (MHz)**	2422
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.22	54.00	-1.78	54.87	-2.65	Average	255	16
2	2390.00	67.54	74.00	-6.46	70.19	-2.65	Peak	255	16
3	4844.00	33.42	54.00	-20.58	28.40	5.02	Average	305	105
4	4844.00	48.04	74.00	-25.96	43.02	5.02	Peak	305	105
5	5000.00	46.37	54.00	-7.63	40.99	5.38	Average	352	78
6	5000.00	50.33	74.00	-23.67	44.95	5.38	Peak	352	78

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

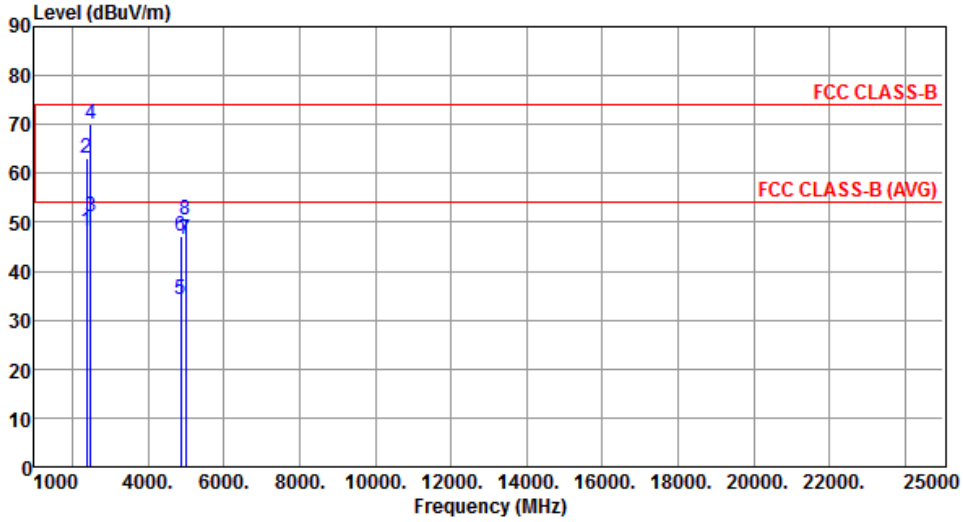
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.81	54.00	-3.19	53.46	-2.65	Average	138	272
2	2390.00	66.71	74.00	-7.29	69.36	-2.65	Peak	138	272
3	4844.00	34.12	54.00	-19.88	29.10	5.02	Average	196	202
4	4844.00	49.06	74.00	-24.94	44.04	5.02	Peak	196	202
5	5000.00	48.35	54.00	-5.65	42.97	5.38	Average	265	195
6	5000.00	52.03	74.00	-21.97	46.65	5.38	Peak	265	195

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

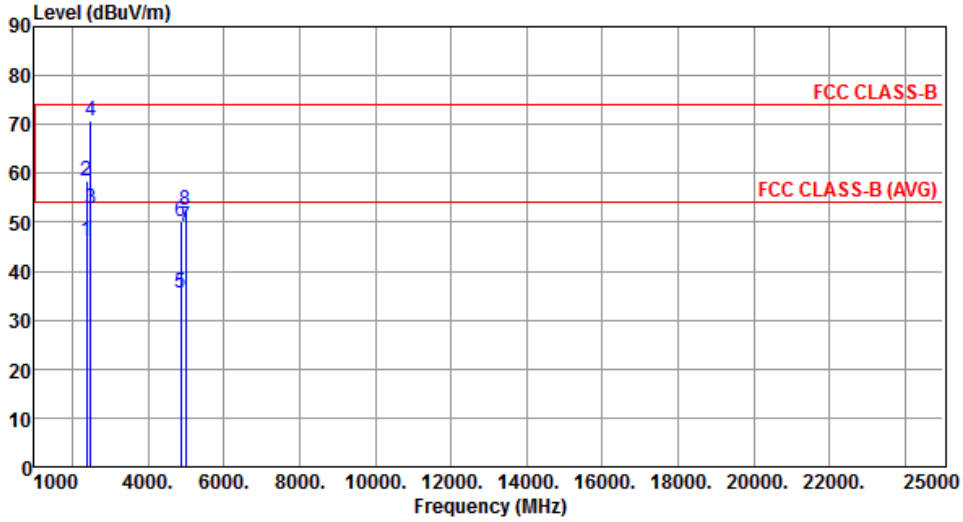
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.01	54.00	-5.99	50.66	-2.65	Average	253	17
2	2390.00	63.01	74.00	-10.99	65.66	-2.65	Peak	253	17
3	2483.50	51.26	54.00	-2.74	53.60	-2.34	Average	253	17
4	2483.50	70.20	74.00	-3.80	72.54	-2.34	Peak	253	17
5	4874.00	34.23	54.00	-19.77	29.15	5.08	Average	296	119
6	4874.00	47.03	74.00	-26.97	41.95	5.08	Peak	296	119
7	5000.00	46.43	54.00	-7.57	41.05	5.38	Average	355	74
8	5000.00	50.42	74.00	-23.58	45.04	5.38	Peak	355	74

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

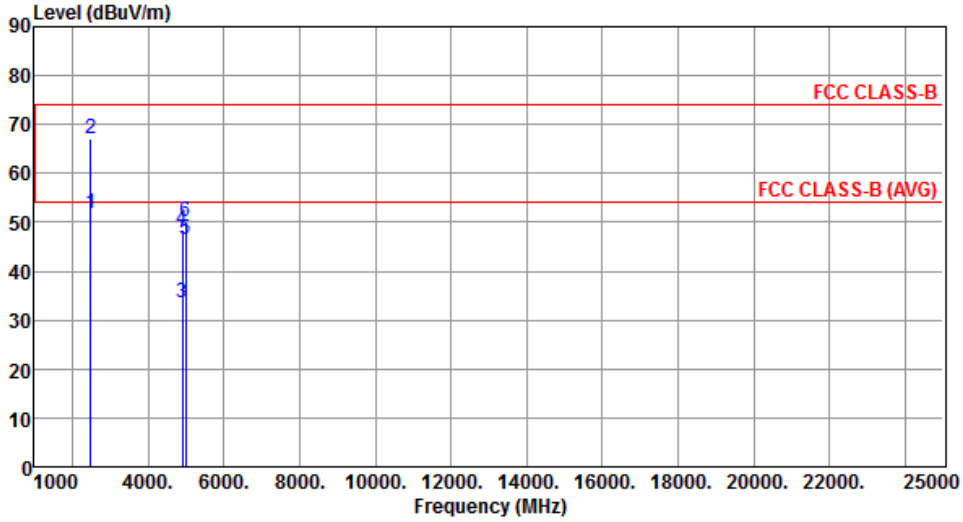
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	46.31	54.00	-7.69	48.96	-2.65	Average	146	259
2	2390.00	58.52	74.00	-15.48	61.17	-2.65	Peak	146	259
3	2483.50	52.65	54.00	-1.35	54.99	-2.34	Average	146	259
4	2483.50	70.66	74.00	-3.34	73.00	-2.34	Peak	146	259
5	4874.00	35.42	54.00	-18.58	30.34	5.08	Average	188	201
6	4874.00	50.12	74.00	-23.88	45.04	5.08	Peak	188	201
7	5000.00	49.03	54.00	-4.97	43.65	5.38	Average	265	199
8	5000.00	52.44	74.00	-21.56	47.06	5.38	Peak	265	199

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

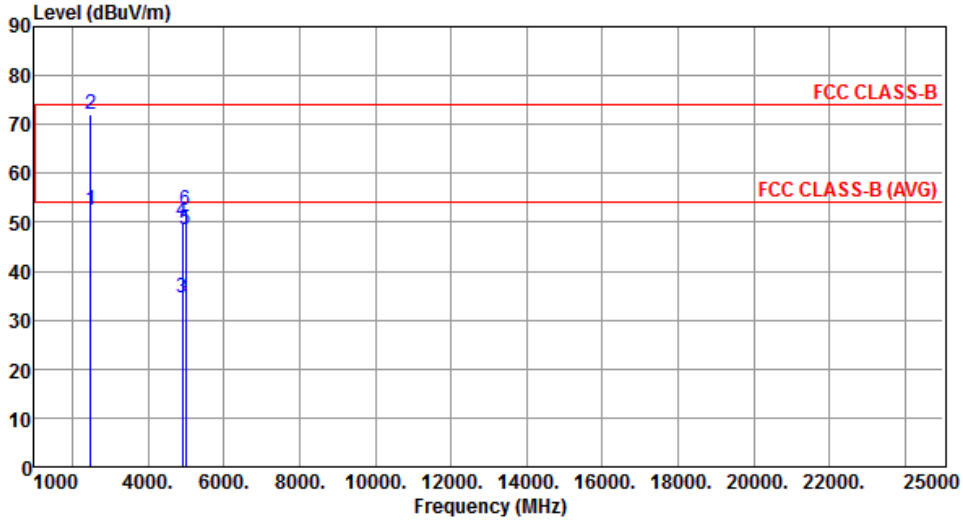
Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	51.95	54.00	-2.05	54.29	-2.34	Average	244	20
2	2483.50	67.03	74.00	-6.97	69.37	-2.34	Peak	244	20
3	4904.00	33.54	54.00	-20.46	28.37	5.17	Average	305	109
4	4904.00	48.36	74.00	-25.64	43.19	5.17	Peak	305	109
5	5000.00	46.61	54.00	-7.39	41.23	5.38	Average	357	78
6	5000.00	50.23	74.00	-23.77	44.85	5.38	Peak	357	78

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.56	54.00	-1.44	54.90	-2.34	Average	181	260
2	2483.50	72.10	74.00	-1.90	74.44	-2.34	Peak	181	260
3	4904.00	34.63	54.00	-19.37	29.46	5.17	Average	197	222
4	4904.00	50.08	74.00	-23.92	44.91	5.17	Peak	197	222
5	5000.00	48.64	54.00	-5.36	43.26	5.38	Average	264	191
6	5000.00	52.37	74.00	-21.63	46.99	5.38	Peak	264	191

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.6 Emissions in Non-Restricted Frequency Bands

3.6.1 Emissions in Non-Restricted Frequency Bands Limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz

3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Reference level measurement

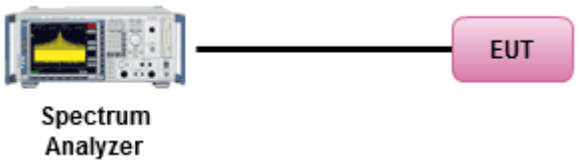
1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

3.6.4 Test Setup

Transmitter Radiated Bandedge Emissions



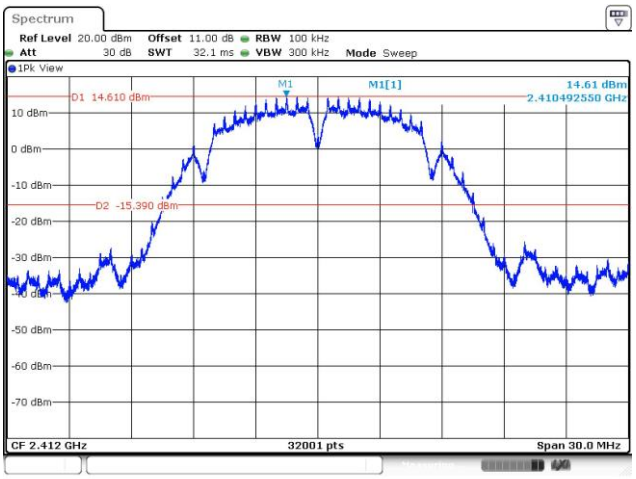
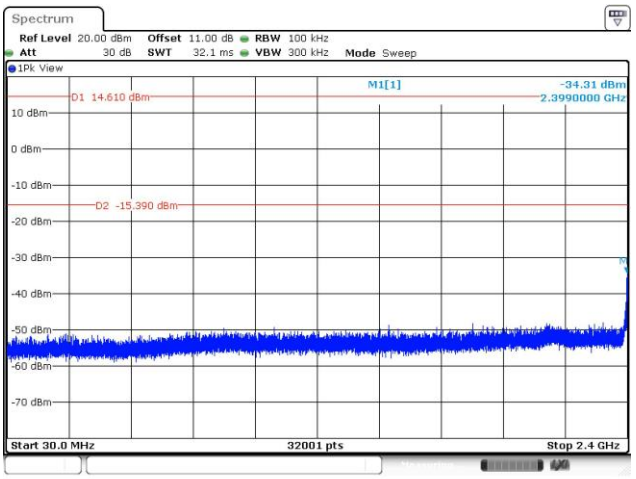
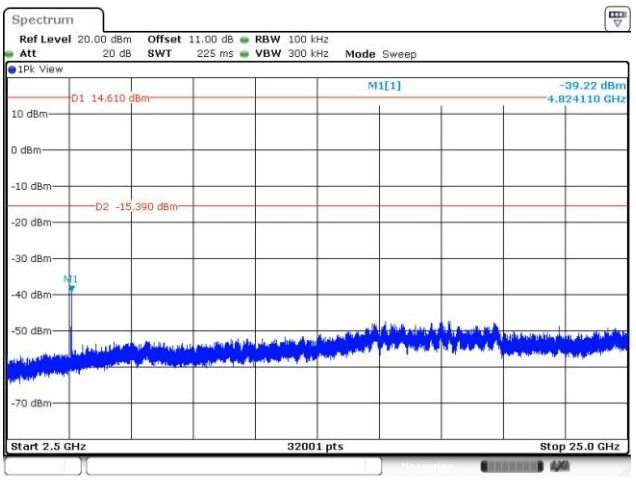
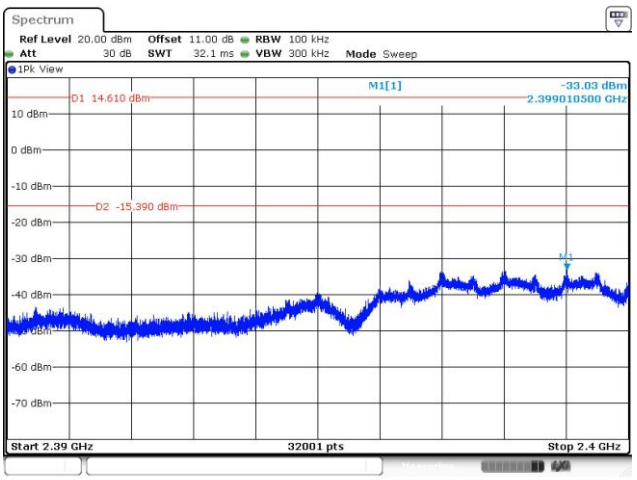
3.6.5 Test Result of Emissions in non-restricted frequency bands

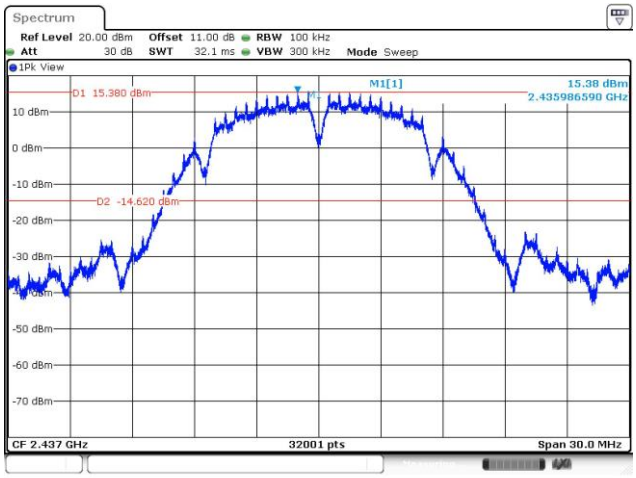
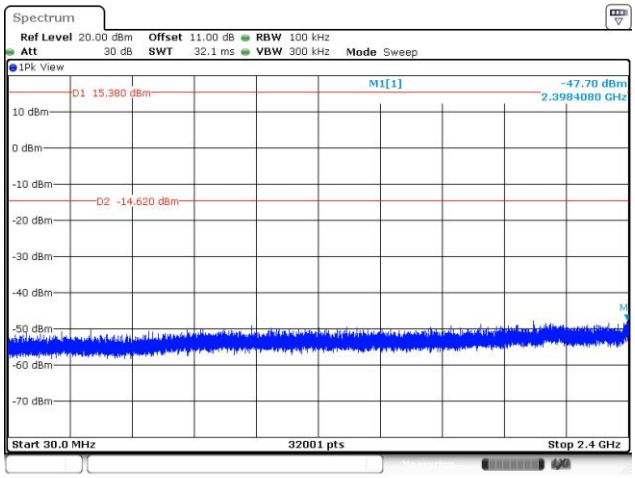
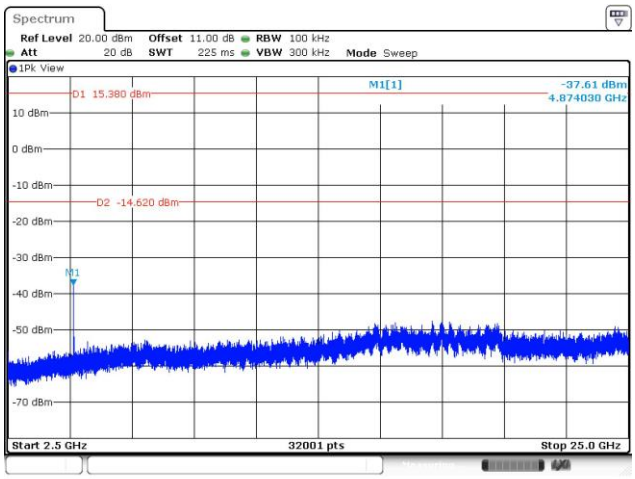
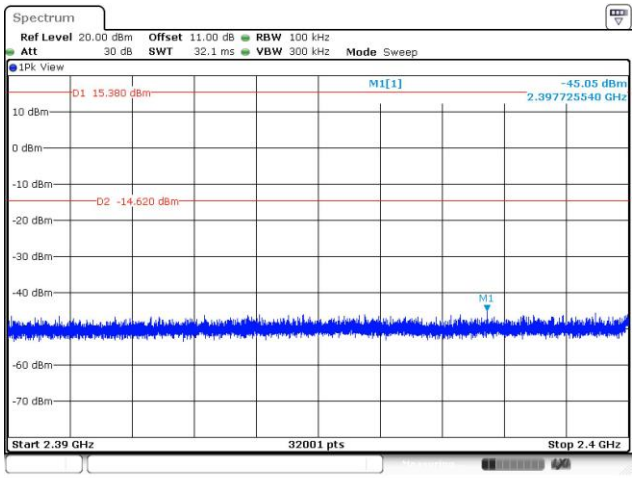
This test item is performed on each TX output individually without summing or adding 10 log(N_{ANT}) since measurements are made relative to the in-band emissions on the individual outputs. Only worst test result of each operating mode is presented.

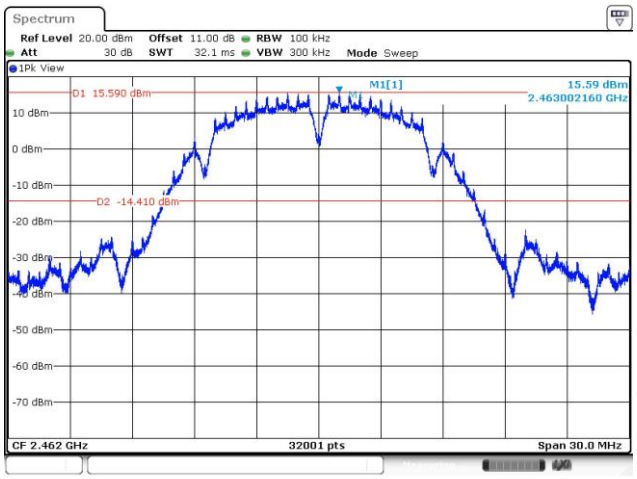
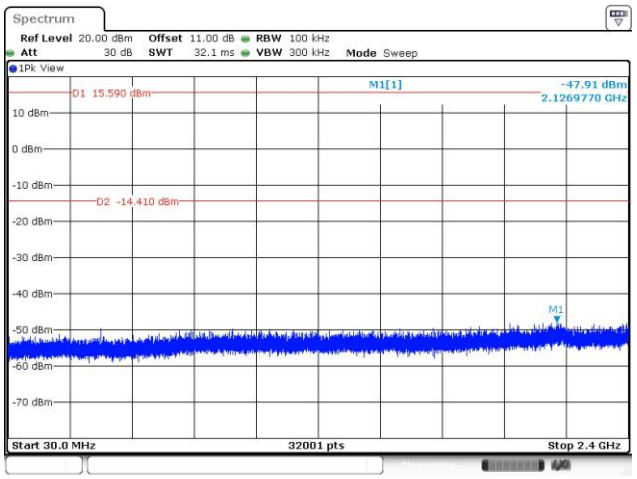
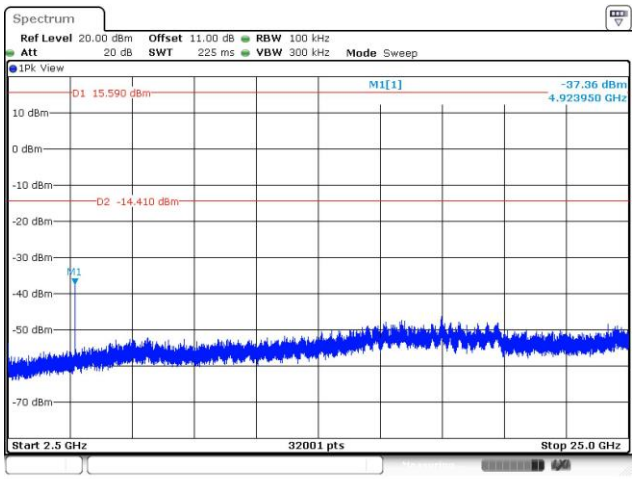
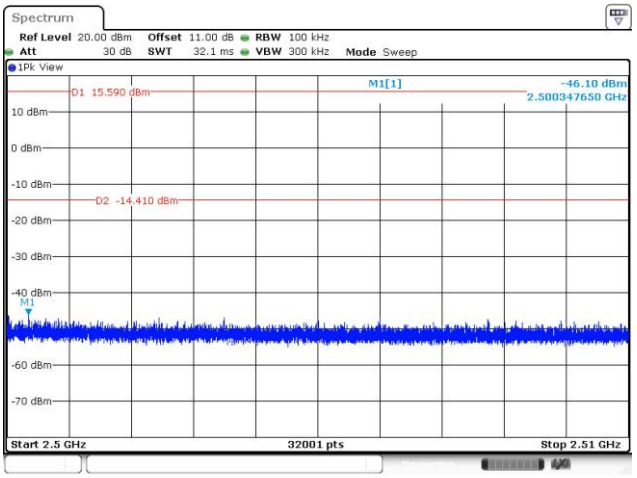
3.6.6 Unwanted Emissions into Non-Restricted Frequency Bands

Non-beamforming mode

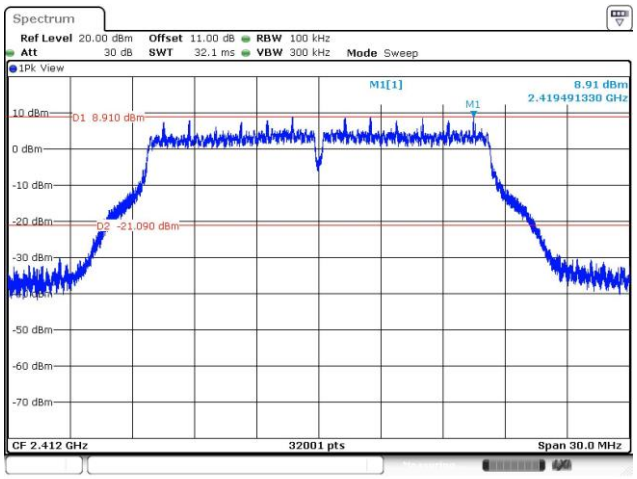
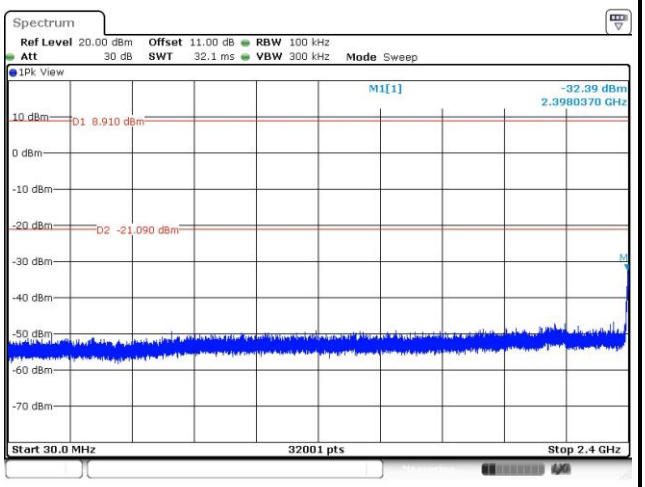
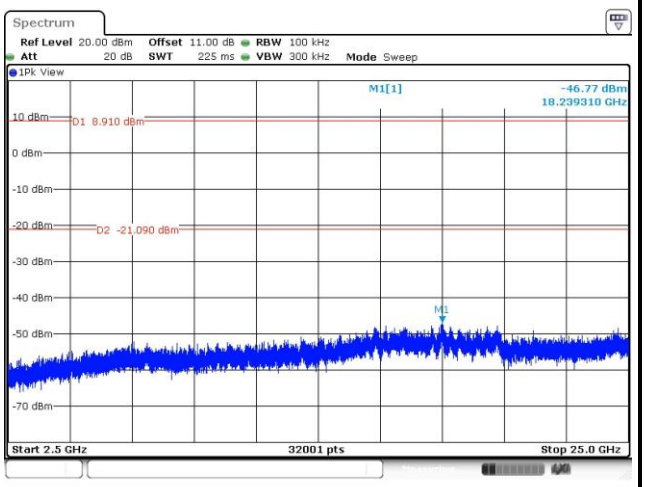
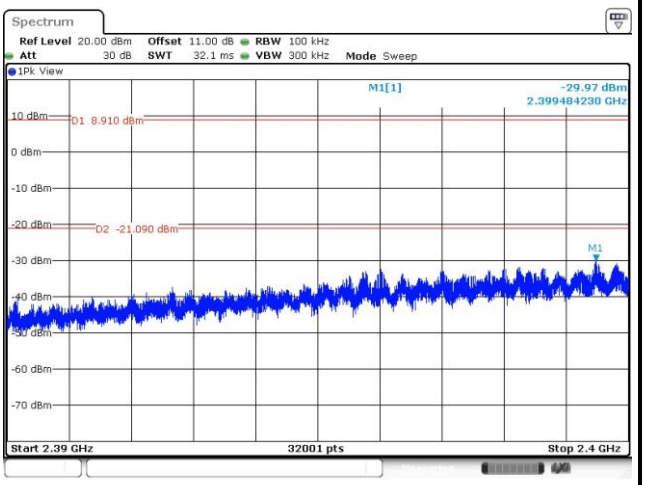
802.11b

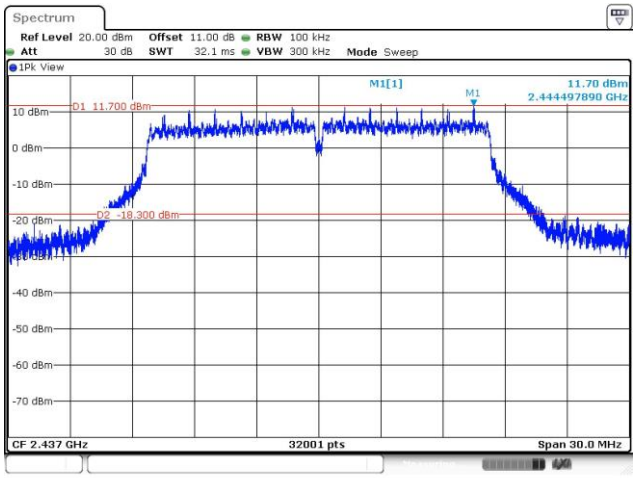
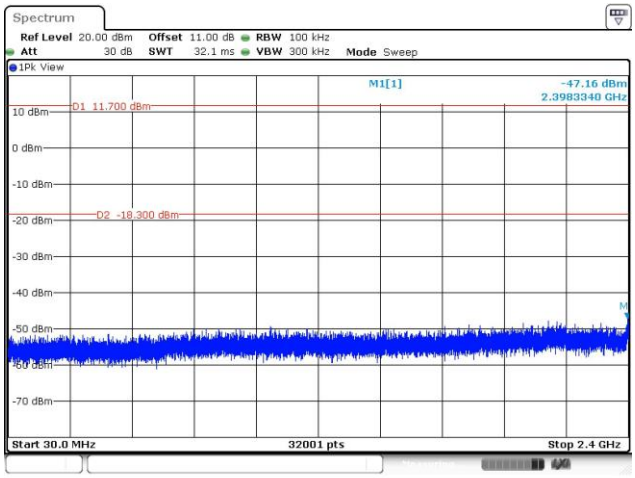
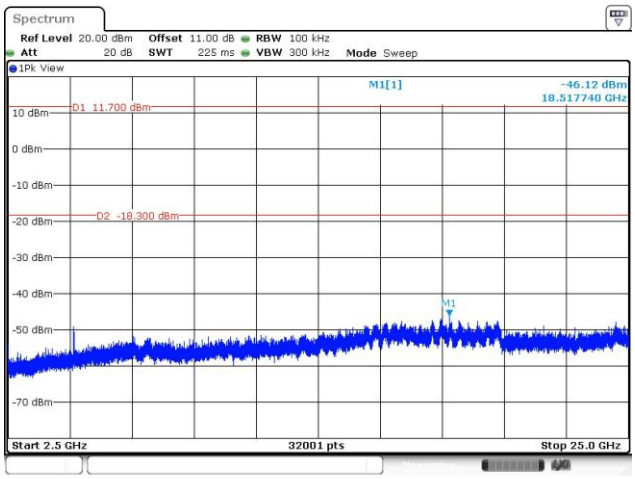
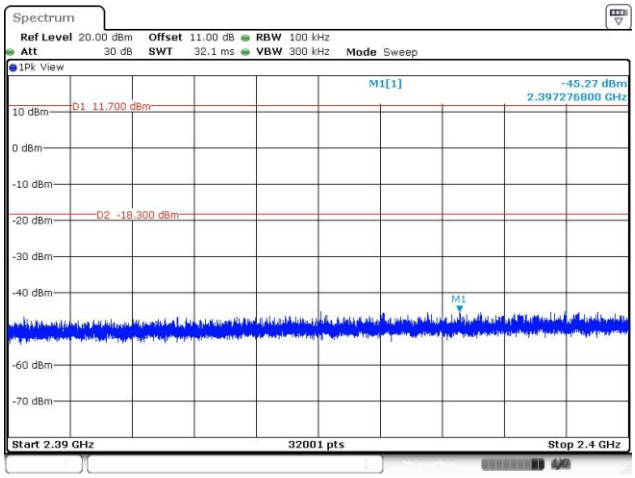
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

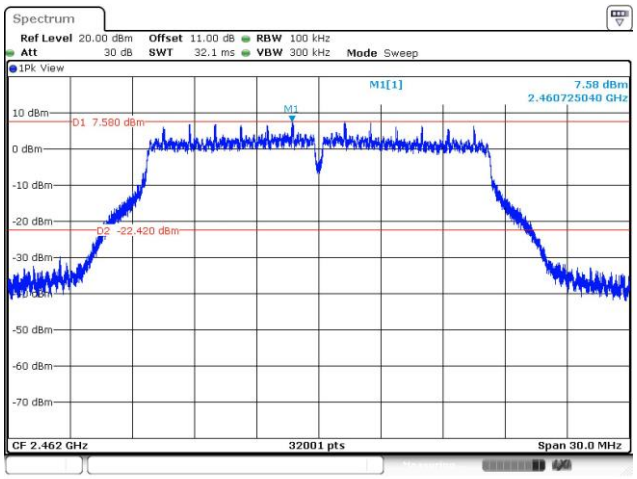
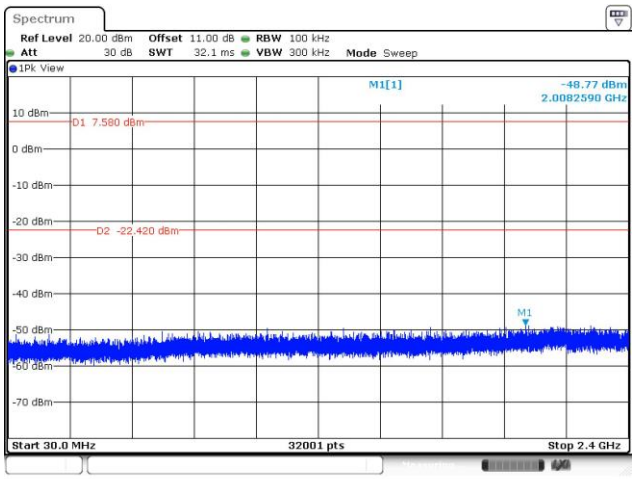
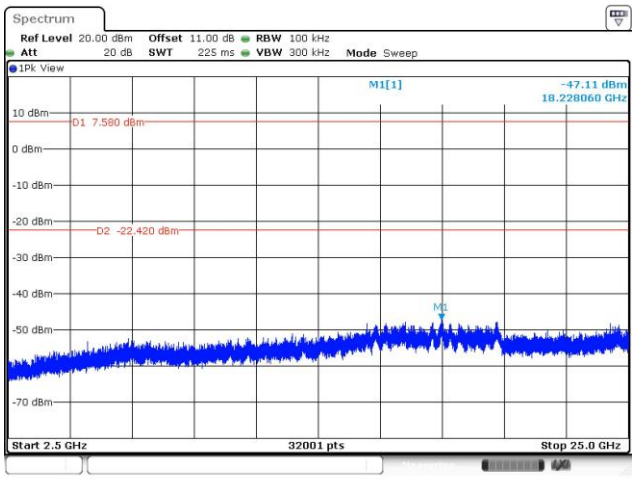
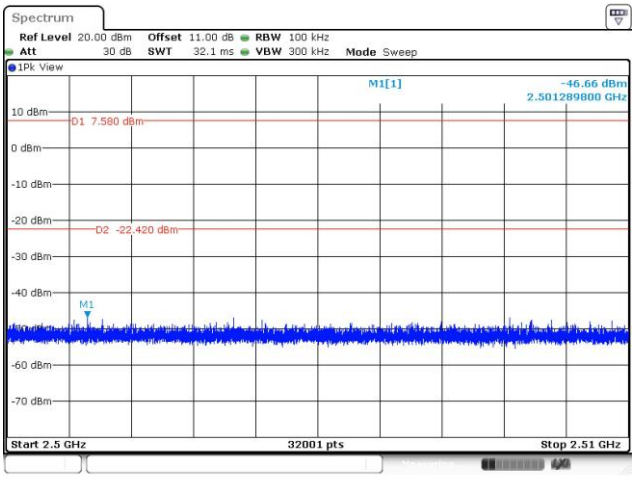
Reference Level	Tx 2437MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

Reference Level	Tx 2462MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

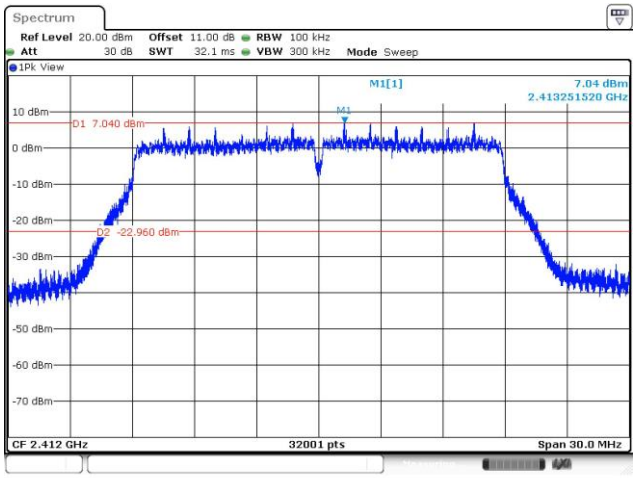
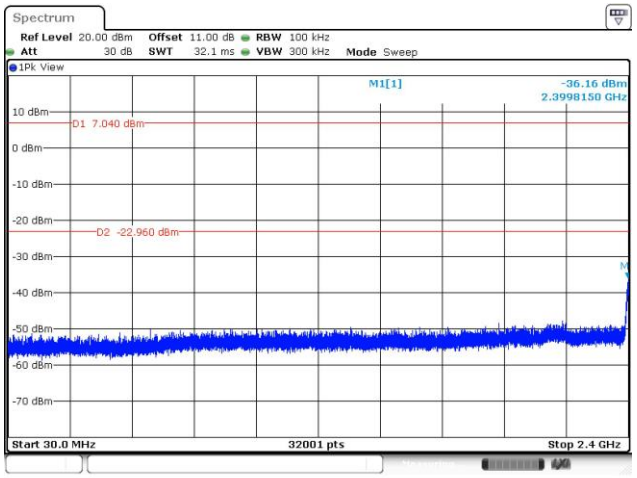
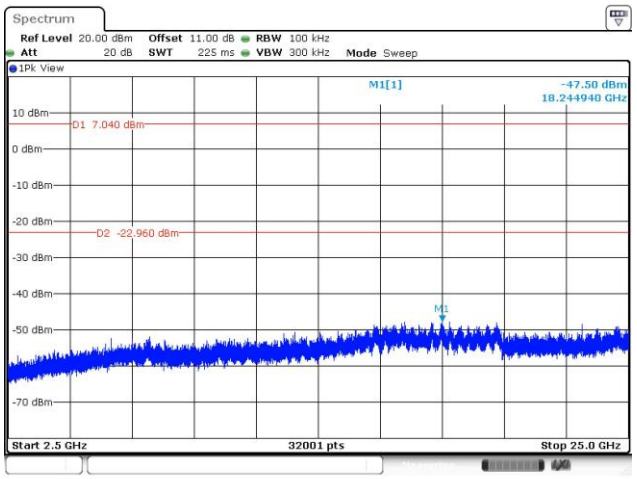
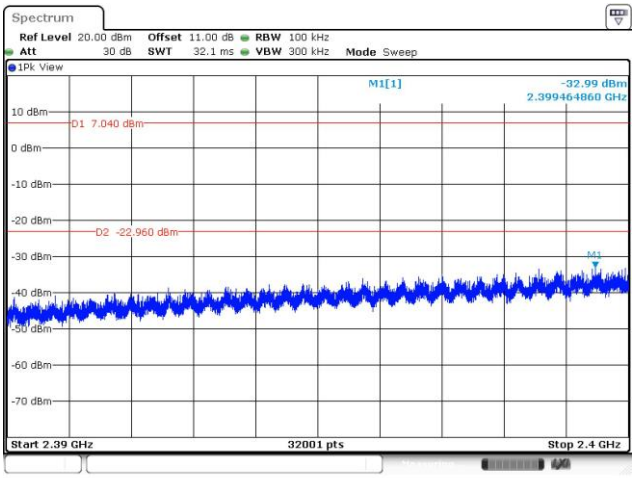
802.11g

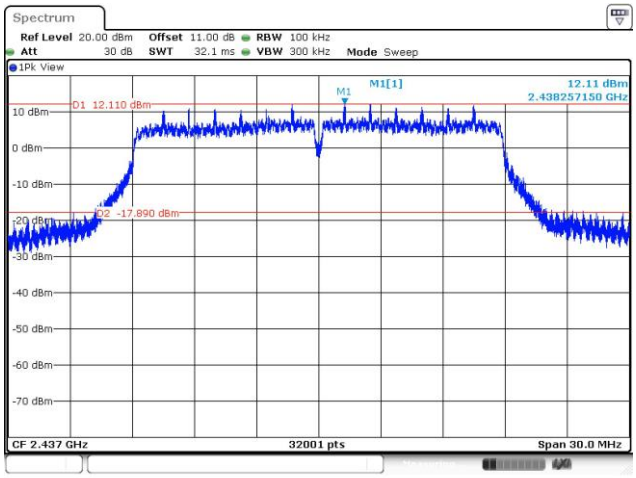
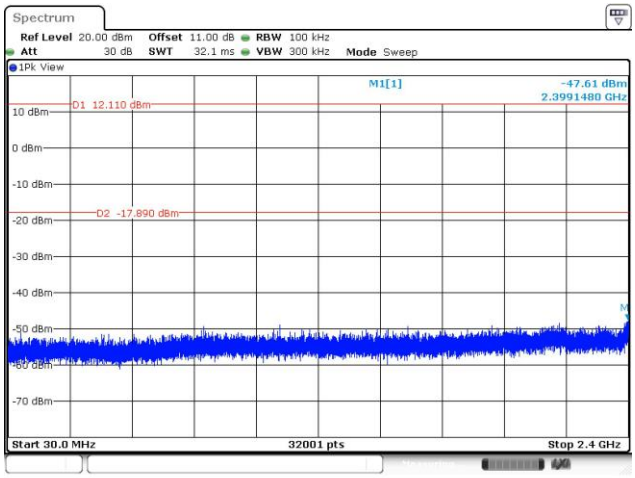
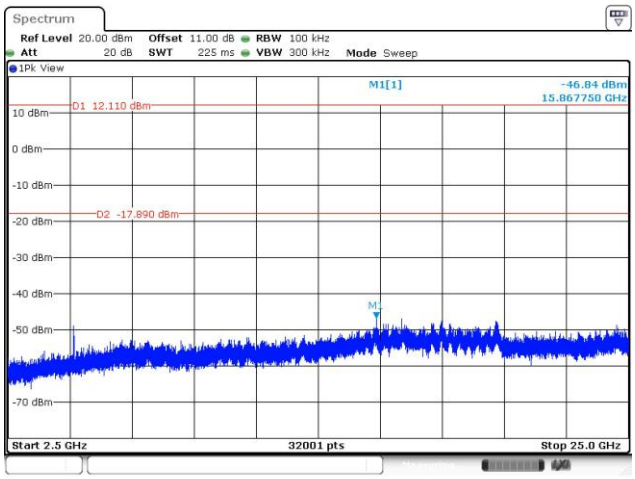
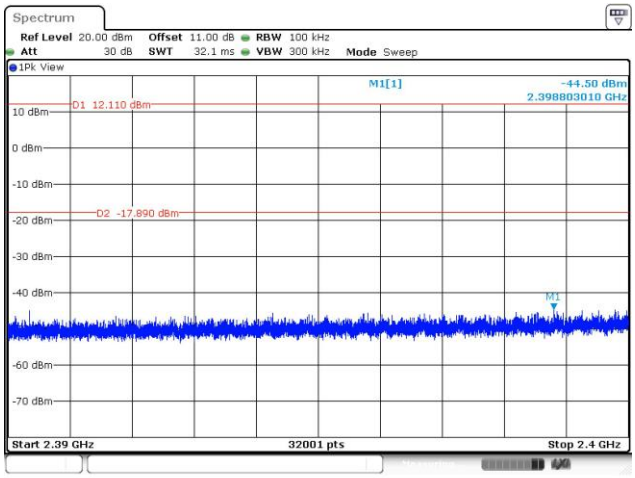
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

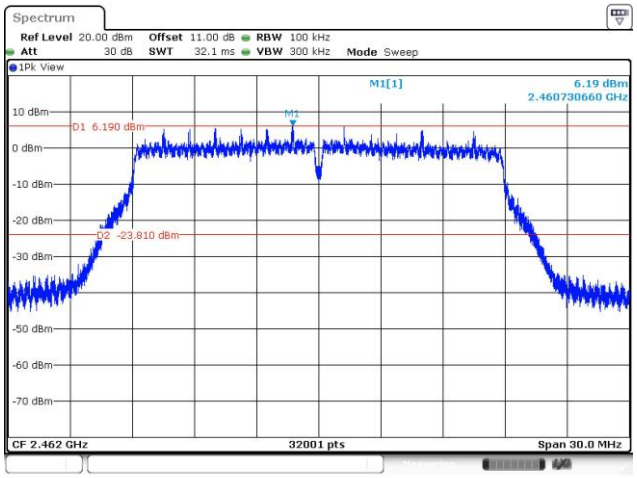
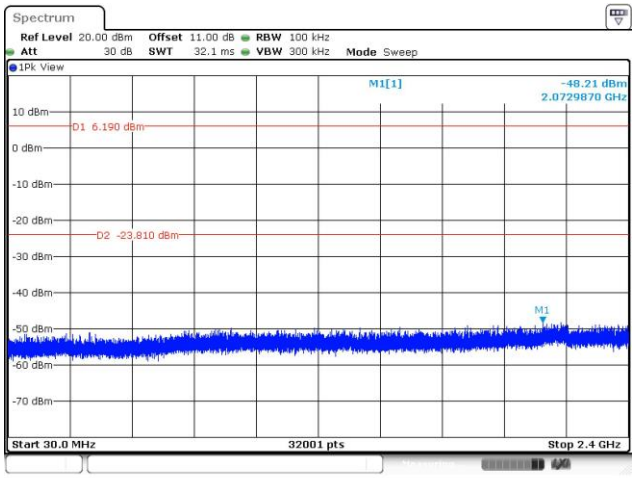
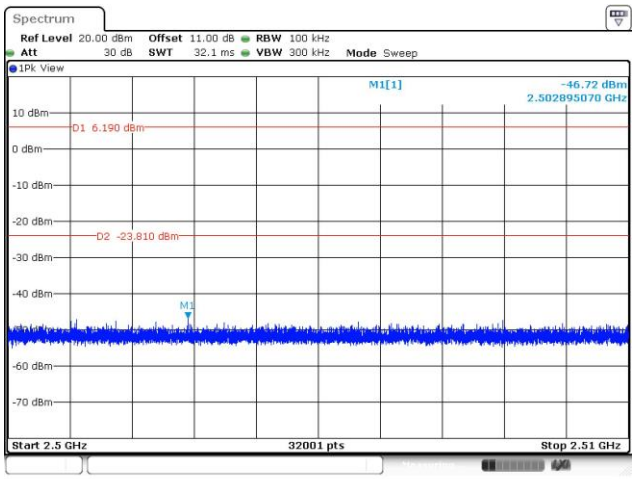
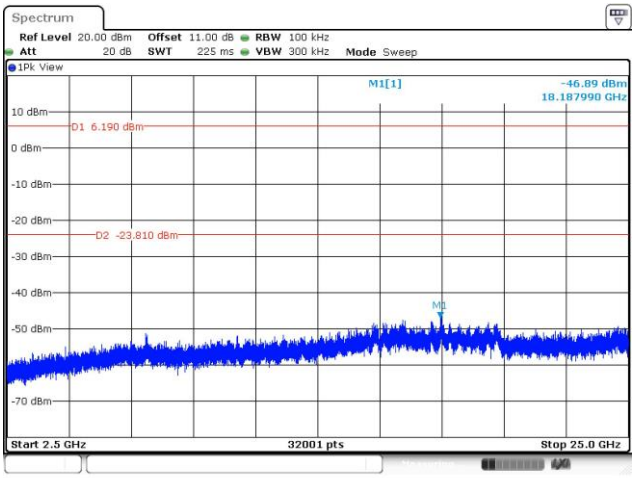
Reference Level	Tx 2437MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

Reference Level	Tx 2462MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

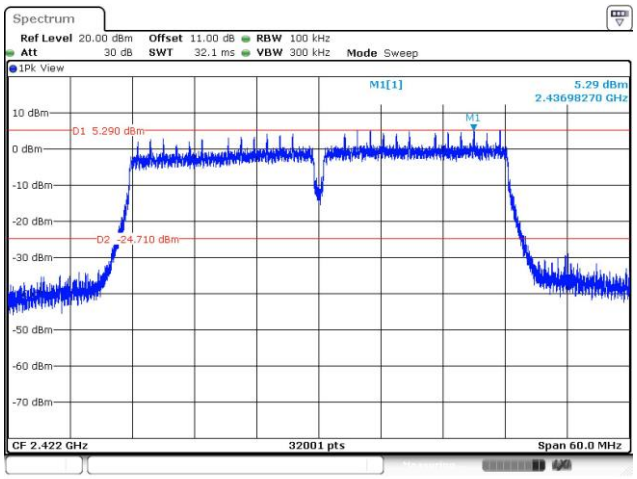
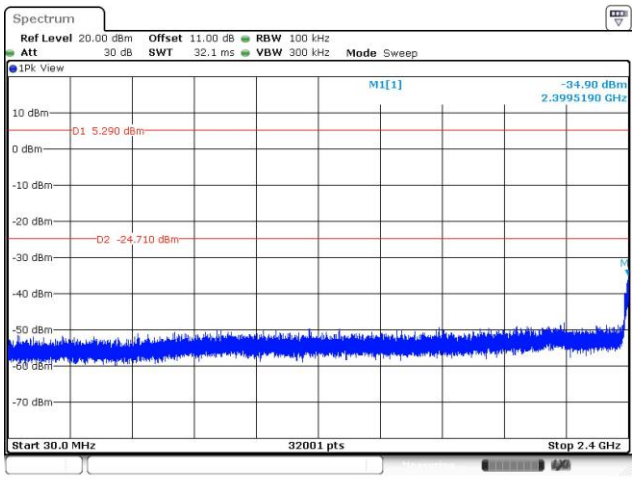
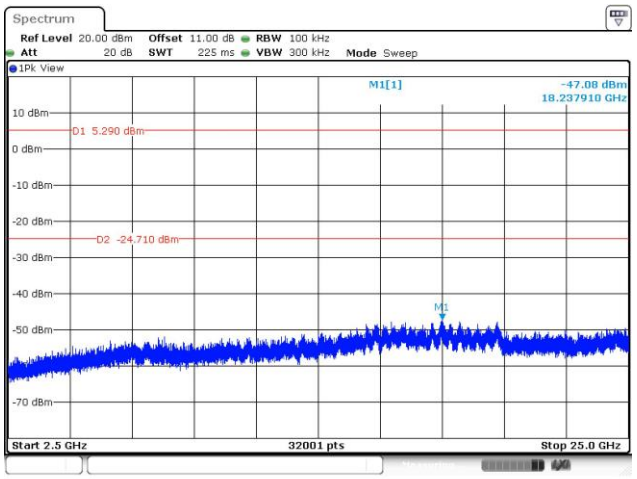
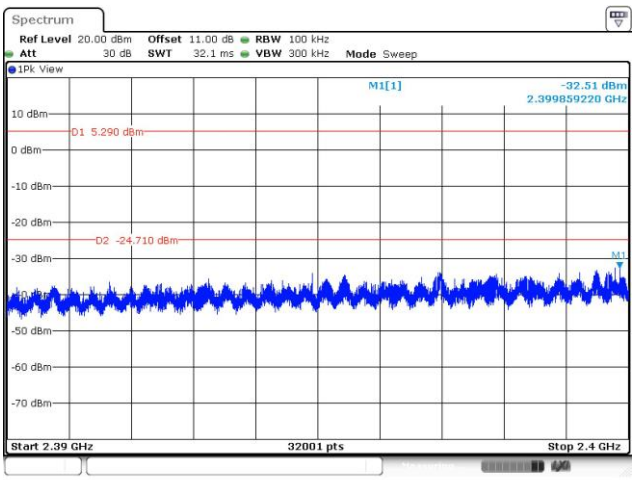
802.11n HT20

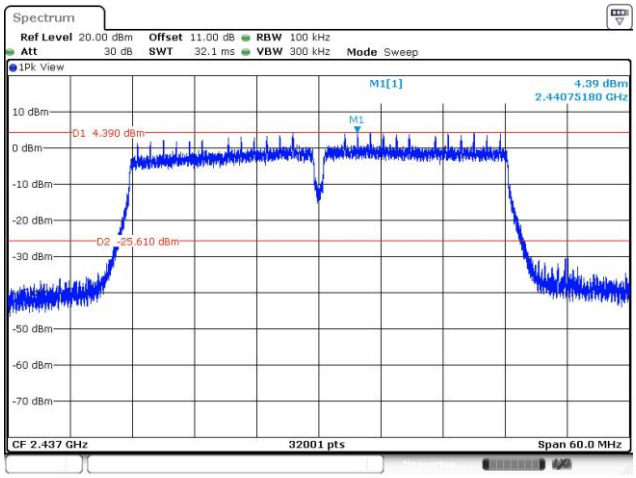
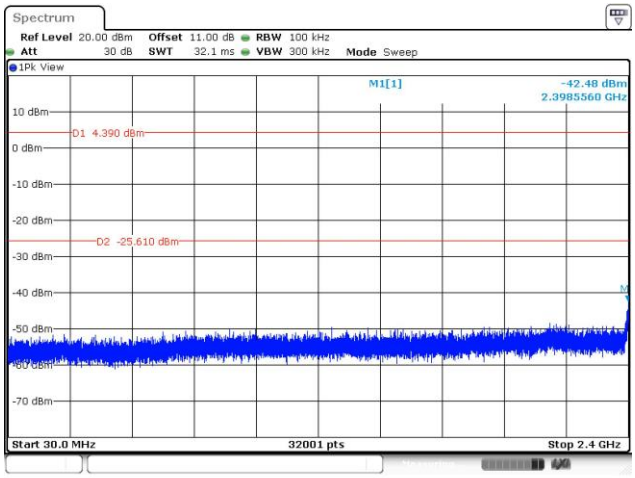
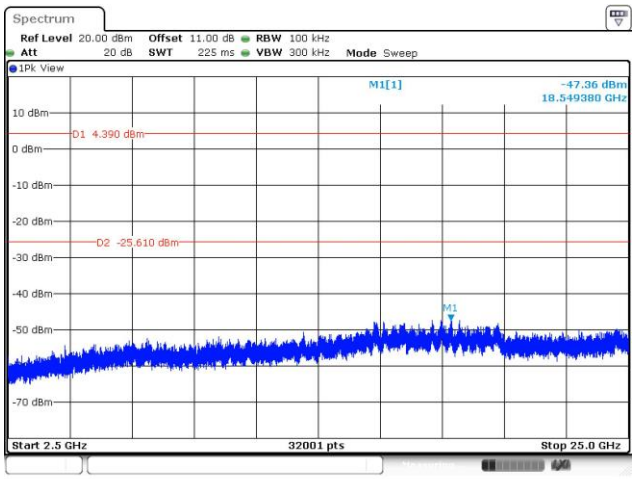
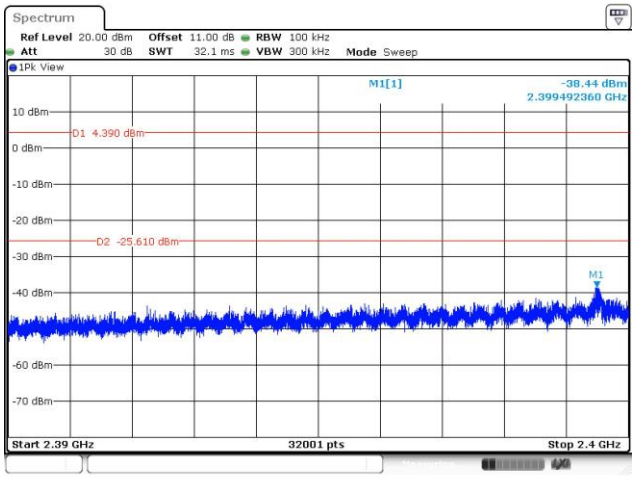
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

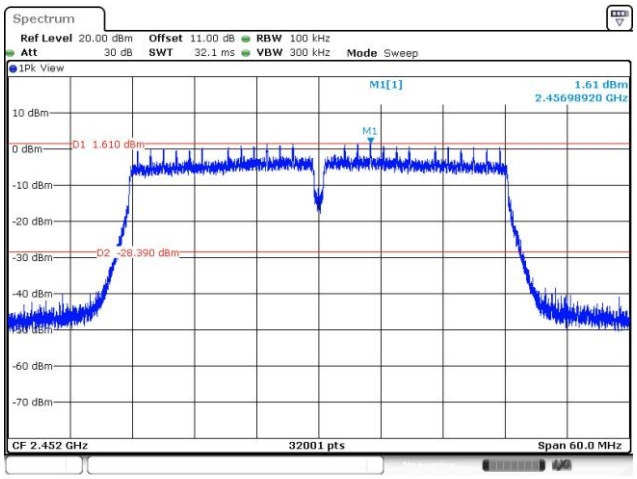
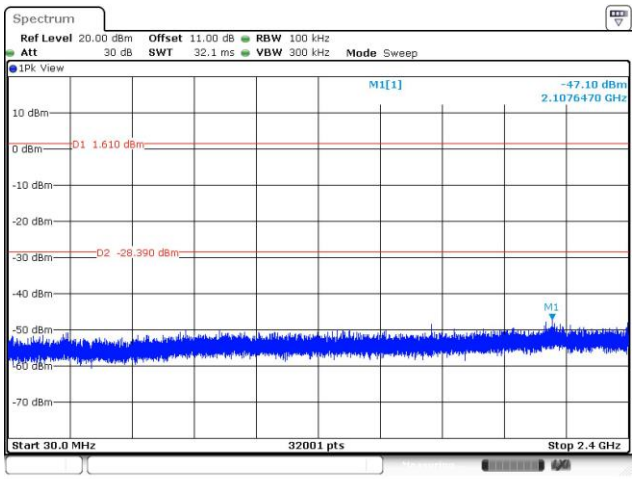
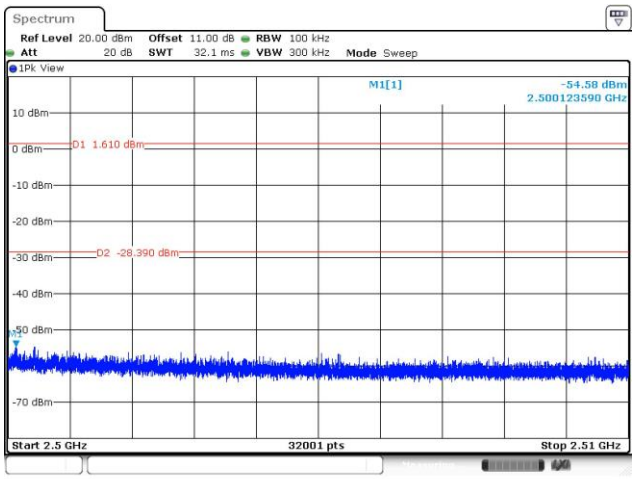
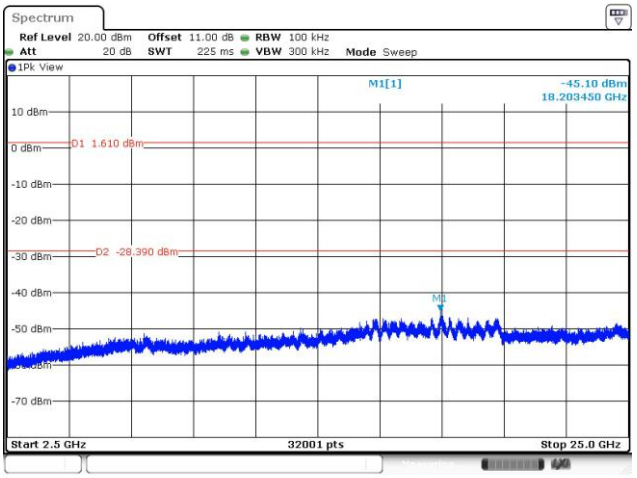
Reference Level	Tx 2437MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

Reference Level	Tx 2462MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

802.11n HT40

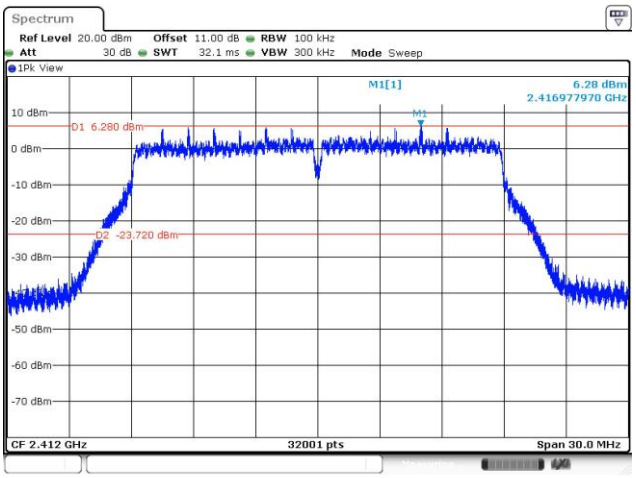
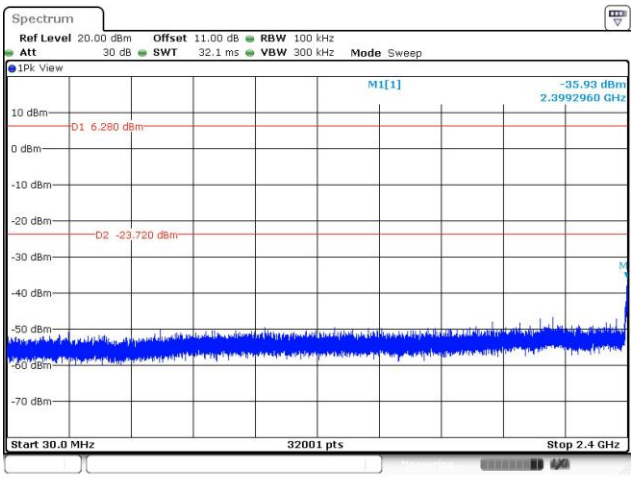
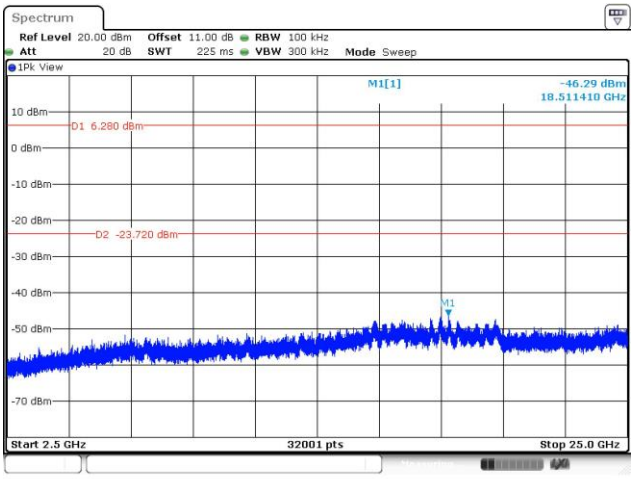
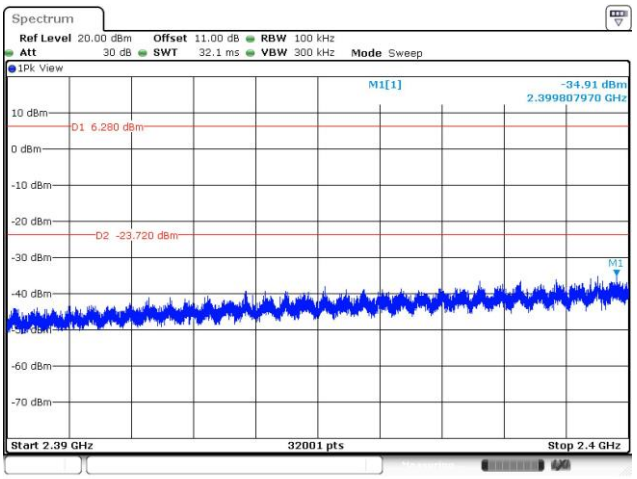
Reference Level	Tx 2422MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

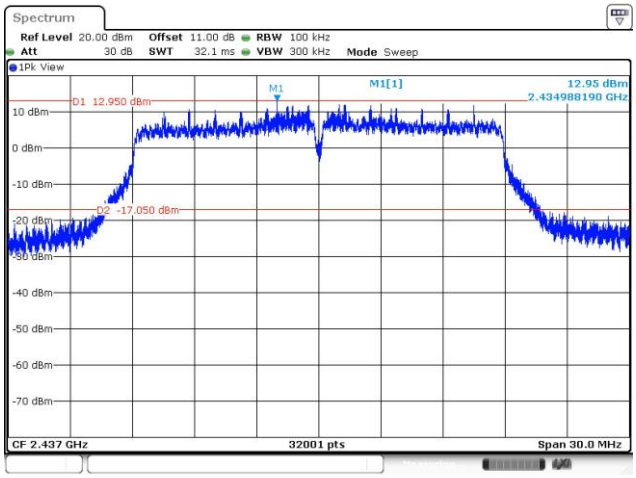
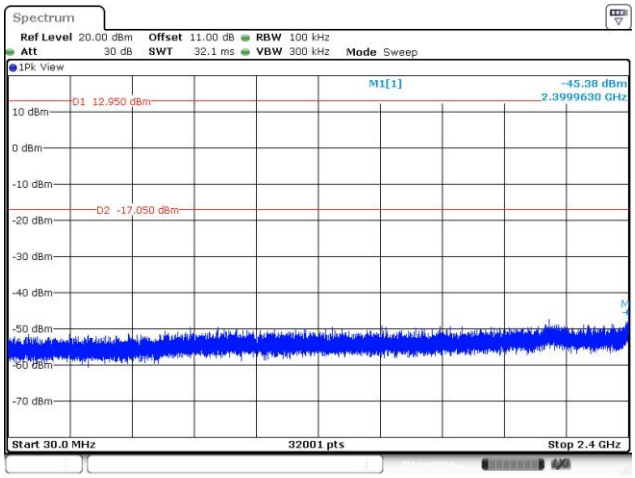
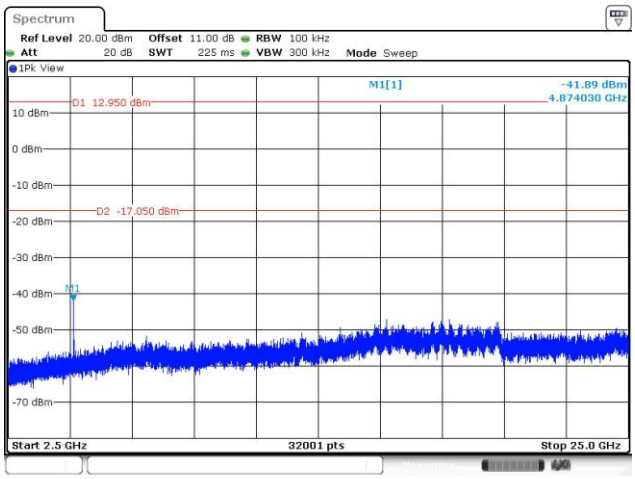
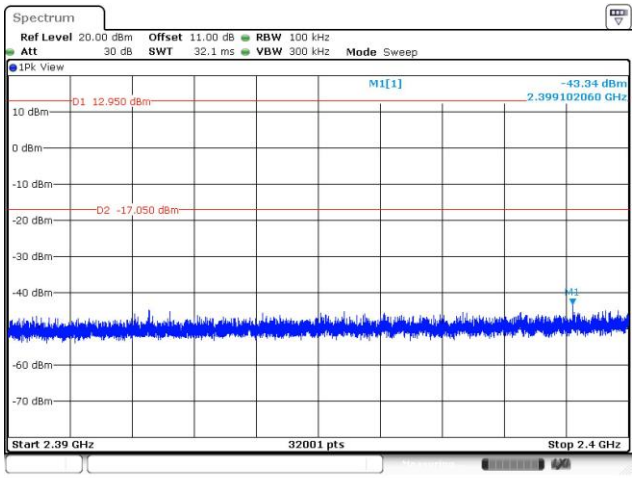
Reference Level	Tx 2437MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

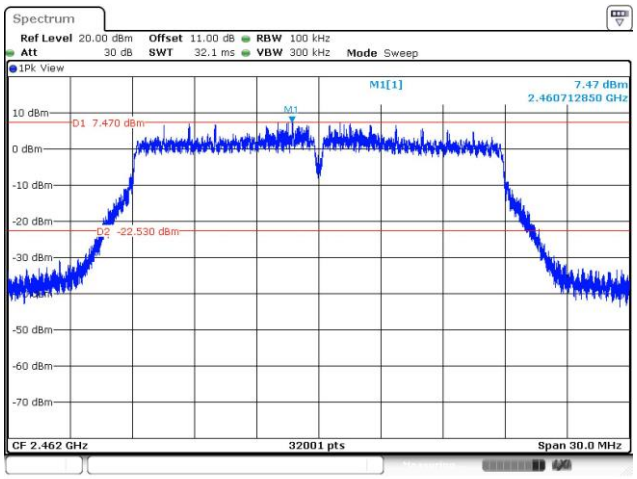
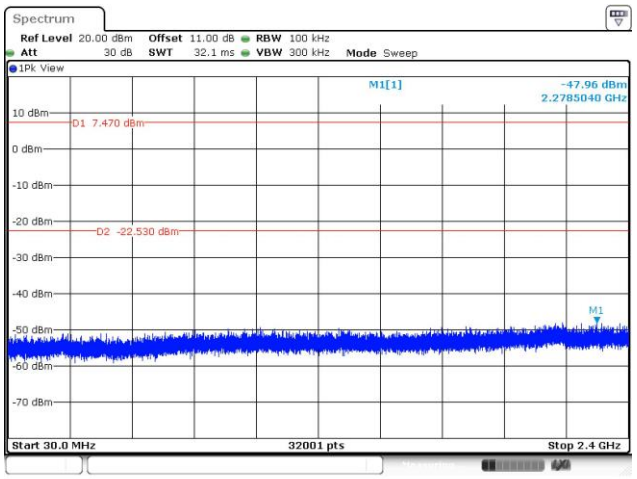
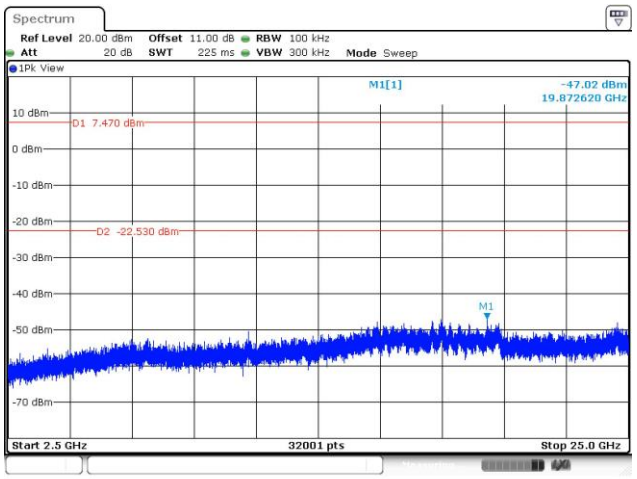
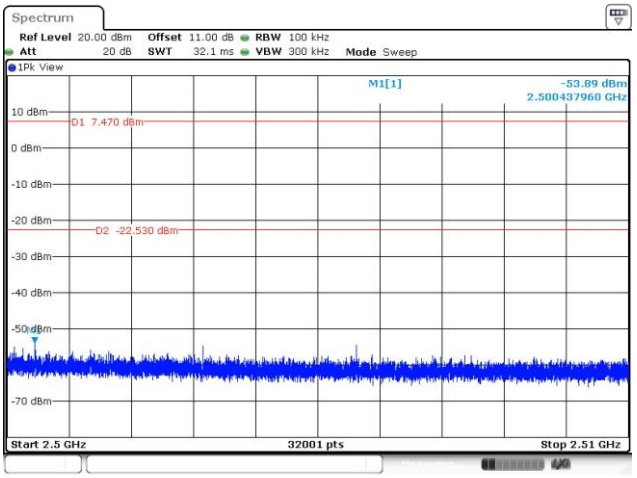
Reference Level	Tx 2452MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

Beamforming mode

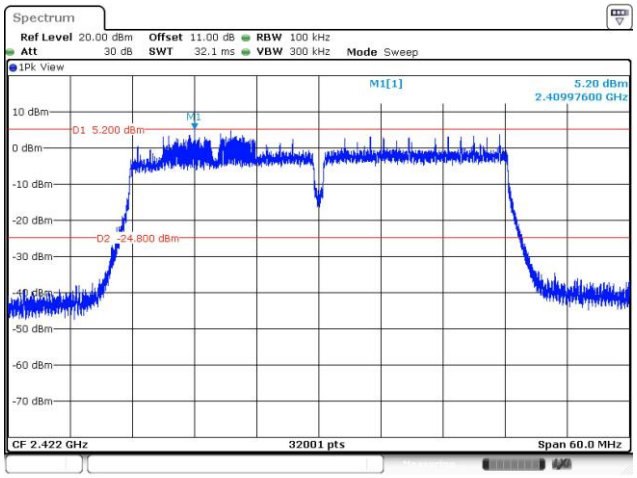
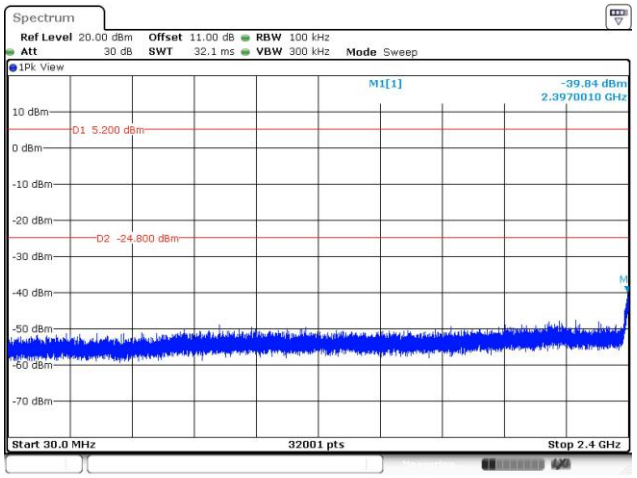
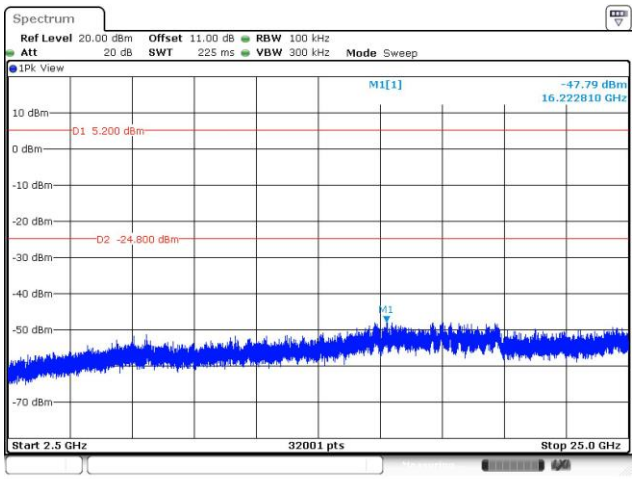
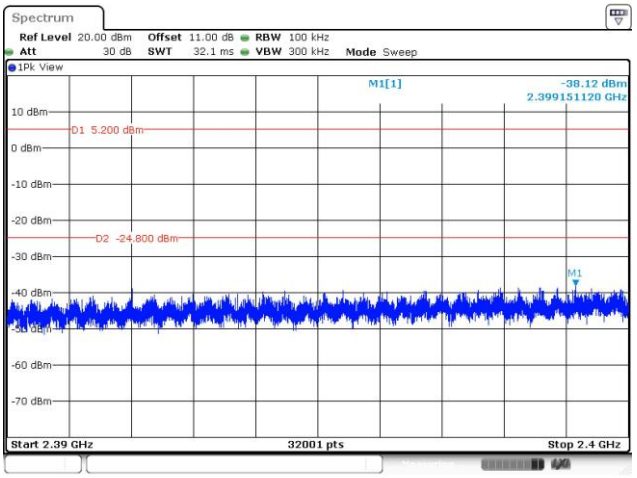
802.11n HT20

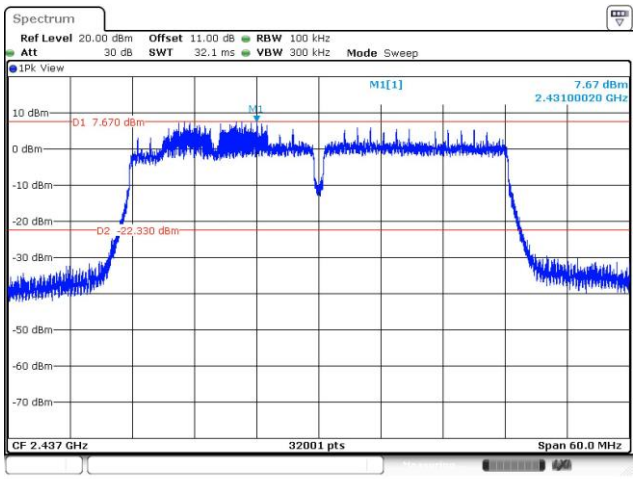
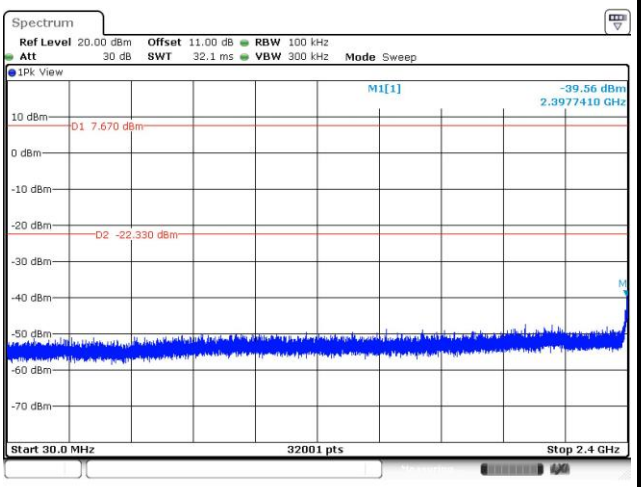
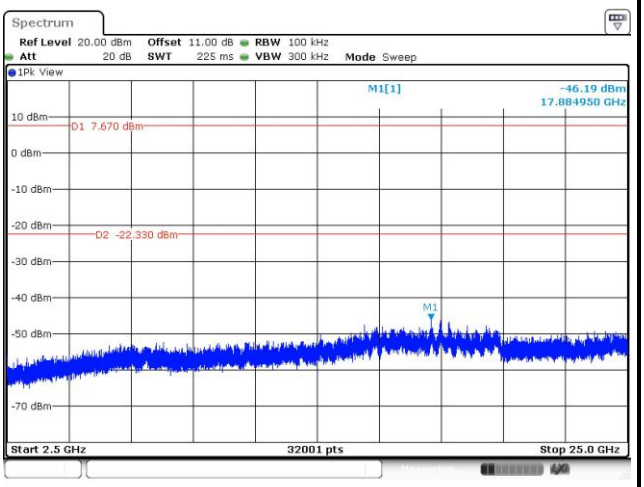
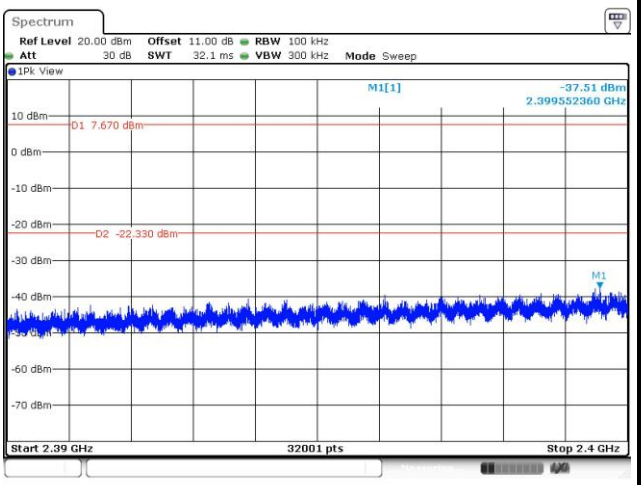
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

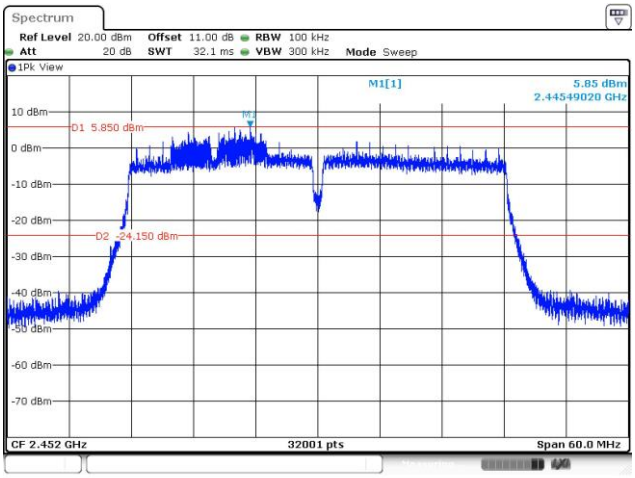
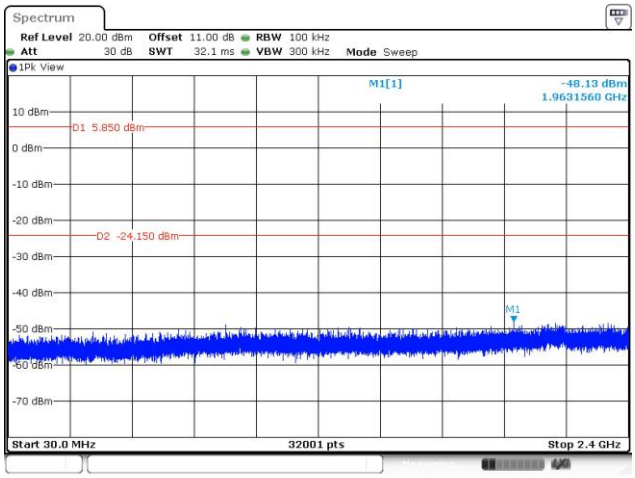
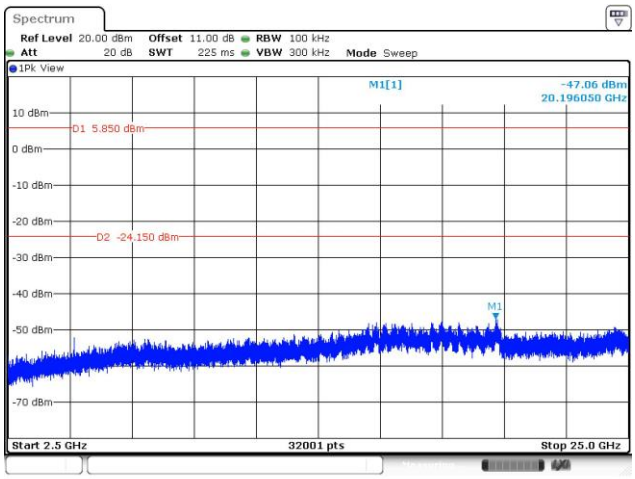
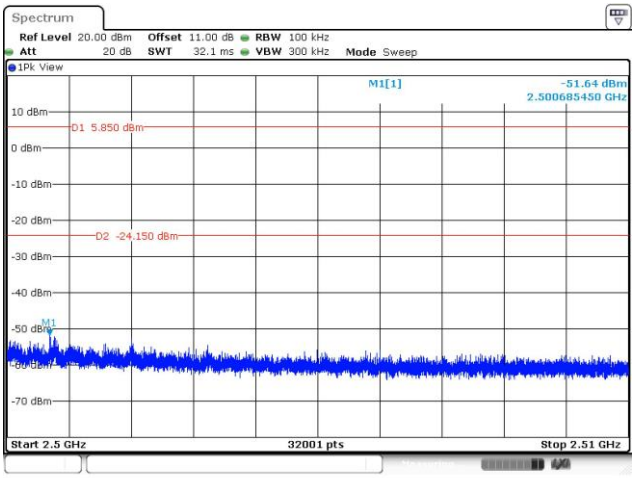
Reference Level	Tx 2437MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

Reference Level	Tx 2462MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

802.11n HT40

Reference Level	Tx 2422MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

Reference Level	Tx 2437MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

Reference Level	Tx 2452MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp, it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website http://www.icertifi.com.tw.

Linkou	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan, R.O.C.	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information

Tel: 886-3-271-8666
Fax: 886-3-318-0155
Email: ICC_Service@icertifi.com.tw

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