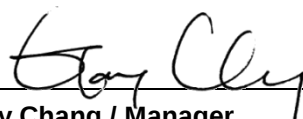


FCC Test Report

FCC ID : NKR-DHUBW69
Equipment : 802.11 abgn/ac 2x2 module with BT
Model No. : DHUB-W69
Brand Name : WNC
Applicant : Wistron NeWeb Corp.
Address : 20 Park Avenue II, Hsinchu Science Park,
Hsinchu 308, Taiwan, R.O.C.
Standard : 47 CFR FCC Part 15.247
Received Date : Dec. 16, 2015
Tested Date : Jan. 06 ~ Jan. 27, 2016

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



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Release Record

Report No.	Version	Description	Issued Date
FR5D1601AC	Rev. 01	Initial issue	Feb. 05, 2016

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.156MHz 53.83 (Margin -11.82dB) - QP	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2390.00MHz 72.98 (Margin -1.02dB) - pk	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 26.95	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]	1	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	2	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	MCS 0-15
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	MCS 0-15
Note 1: RF output power specifies that Maximum Peak Conducted 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: 801.11b only transmits at chain 0.					

1.1.2 Antenna Details

Ant. No.	Model	Type	Connector	Operating Frequency (MHz) / Gain (dBi)					Cable length (mm)
				2400~2483.5	5150~5250	5250~5350	5470~5725	5725~5850	
1	on board antenna	PIFA	---	2.14	3.8	4.4	4.8	3.3	---
2	E48u (Black cable)	PIFA	U.FL	2.51	3.62	3.68	3.18	2.06	240
	E48u (White cable)	PIFA	U.FL	2.11	2.92	2.98	2.48	1.36	410
3	E55u (Black cable)	PIFA	U.FL	2.11	3.02	3.08	2.58	1.46	380
	E55u (White cable)	PIFA	U.FL	2.61	3.82	3.88	3.38	2.26	210
4	M55 (Black cable)	PIFA	U.FL	-0.72	2.55	2.83	2.66	2.9	550
	M55 (White cable)	PIFA	U.FL	-0.22	3.45	3.73	3.56	3.8	360
5	M65 (Black cable)	PIFA	U.FL	1.11	1.12	1.18	0.68	-0.44	790
	M65 (White cable)	PIFA	U.FL	1.81	2.32	2.38	1.88	0.76	530

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	5Vdc from host
--------------------------	----------------

1.1.4 Accessories

N/A

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, V2.0.1.1		
Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	11b	100.00%	0.00
	11g	99.65%	0.02
	HT20	99.63%	0.02
	HT40	98.22%	0.08

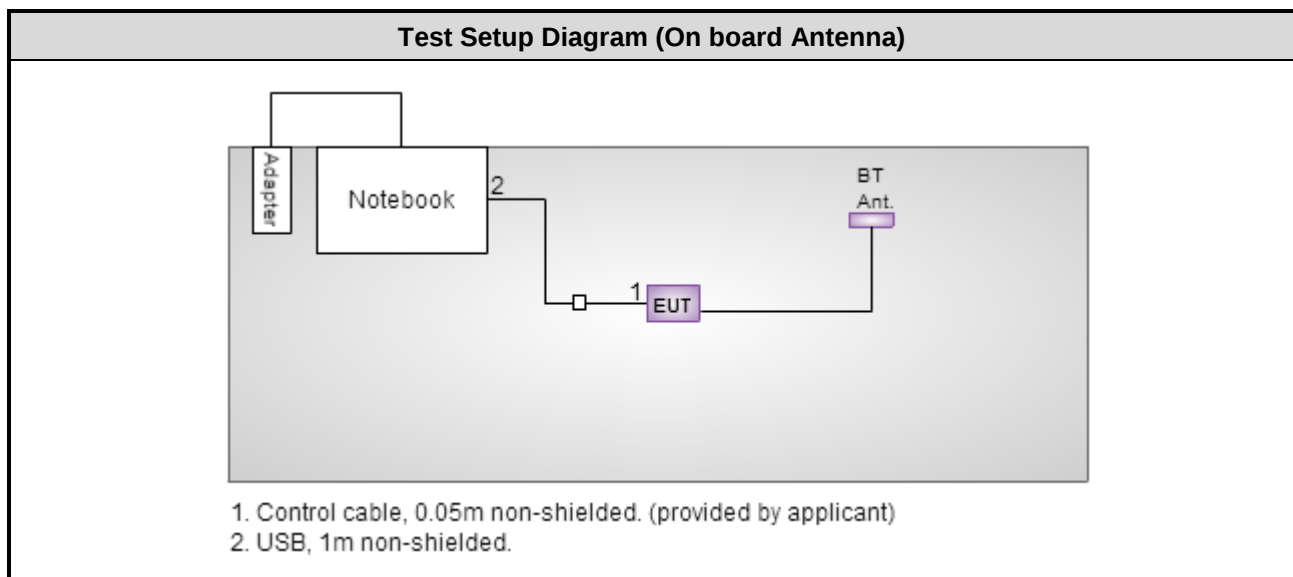
1.1.7 Power Setting

Modulation Mode	Test Frequency (MHz)	Power Set
11b	2412	72
11b	2437	80
11b	2462	74
11g	2412	64
11g	2437	80
11g	2462	70
HT20	2412	62
HT20	2437	80
HT20	2462	66
HT40	2422	44
HT40	2437	52
HT40	2452	56

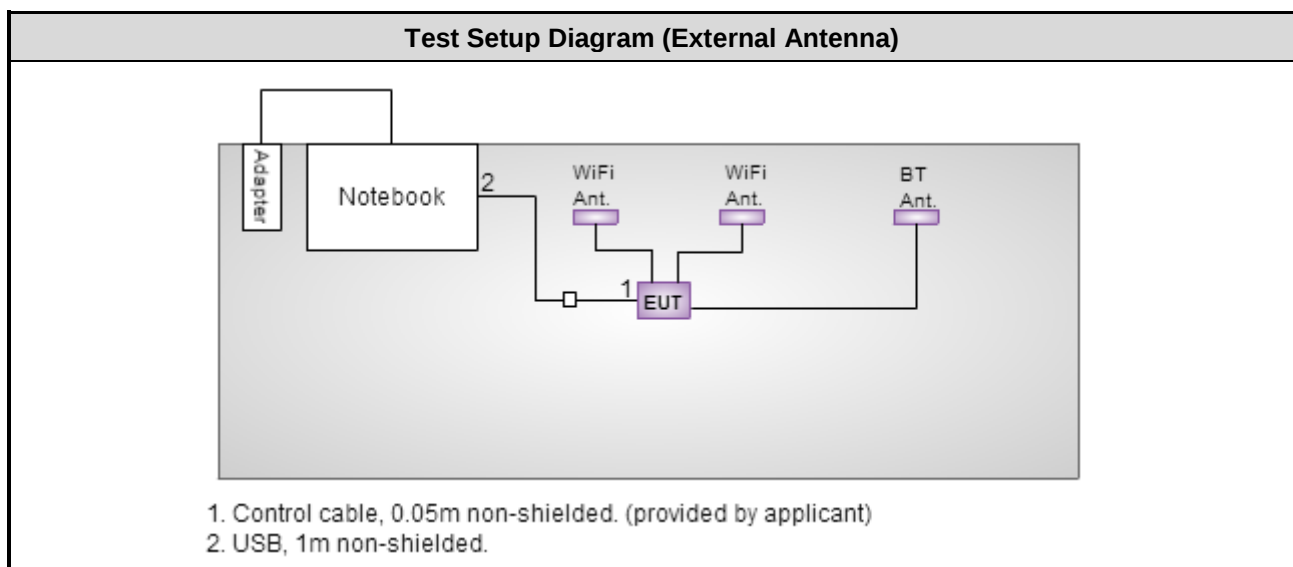
1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	Latitude E6440	DoC	USB, 1m non-shielded.

1.3 Test Setup Chart



Note: The distance between Wi-Fi antenna and BT antenna is 40cm.



Note:

- 1) The distance between 2 Wi-Fi antennas is 15cm.
- 2) The distance between Wi-Fi antenna and BT antenna is 40cm.

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. 21, 2015	Oct. 20, 2016
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2015	Nov. 12, 2016
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127-666	Nov. 26, 2015	Nov. 25, 2016
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 21, 2015	Dec. 20, 2016
50 ohm terminal (Support Unit)	NA	50	04	Apr. 15, 2015	Apr. 14, 2016
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 chamber1 / (03CH01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101498	Dec. 13, 2015	Dec. 12, 2016
Receiver	R&S	ESR3	101658	Nov. 04, 2015	Nov. 03, 2016
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Aug. 20, 2015	Aug. 19, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 16, 2015	Dec. 15, 2016
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 16, 2015	Nov. 15, 2016
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 10, 2015	Dec. 09, 2016
Preamplifier	Burgeon	BPA-530	SN:100219	Sep. 10, 2015	Sep. 09, 2016
Preamplifier	Agilent	83017A	MY39501308	Oct. 02, 2015	Oct. 01, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 10, 2015	Dec. 09, 2016
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 10, 2015	Dec. 09, 2016
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 10, 2015	Dec. 09, 2016
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. 21, 2015	Sep. 20, 2016
Power Sensor	Anritsu	MA2411B	1207366	Sep. 21, 2015	Sep. 20, 2016
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 v03r04

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	±2.90 dB
Radiated emission ≤ 1GHz	±3.66 dB
Radiated emission > 1GHz	±5.63 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	17°C / 59%	Sky Huang
Radiated Emissions	03CH01-WS	19-21°C / 62-65%	Warren Lee Aska Huang
RF Conducted	TH01-WS	22°C / 64%	Alex Huang

➤ FCC site registration No.: 657002

➤ IC site registration No.: 10807A-1

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	11g	2437	6 Mbps	1, 2
Radiated Emissions ≤1GHz	11g	2437	6 Mbps	1, 2, 3
Radiated Emissions >1GHz	11b 11g HT20 HT40	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462 2422 / 2437 / 2452	1 Mbps 6 Mbps MCS 0 MCS 0	1, 2
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	2

NOTE:

- The EUT and its antenna were pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The worst case for EUT and its antenna were listed below and were shown in this report.
- The following antennas are selected for final testing as below configurations:
 - Configuration 1: On board antenna; EUT: X-plane
 - Configuration 2: External antenna with highest gain (model E55u); EUT: X-plane, Antenna: Y-plane
 - Configuration 3: External antenna with longest cable length (model M65) ; EUT: X-plane, Antenna: Y-plane

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.

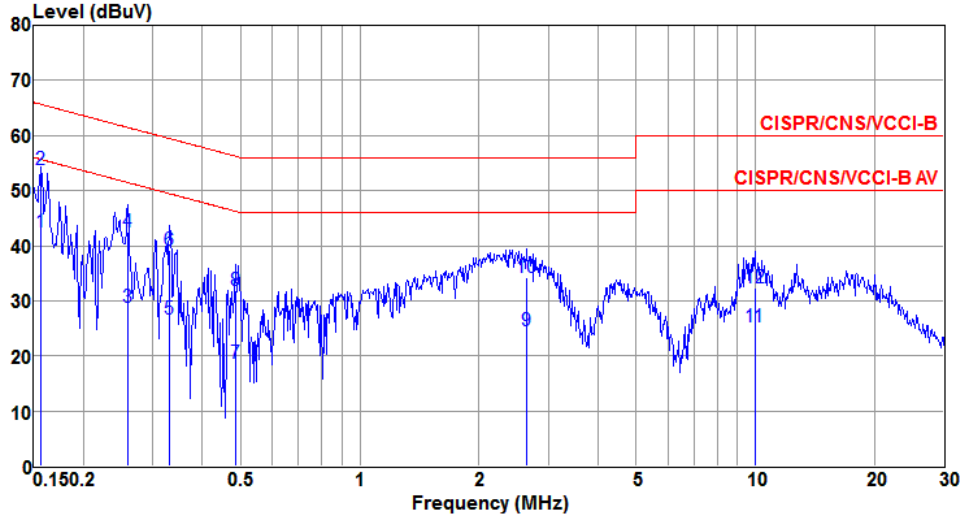
3.1.3 Test Setup



- 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

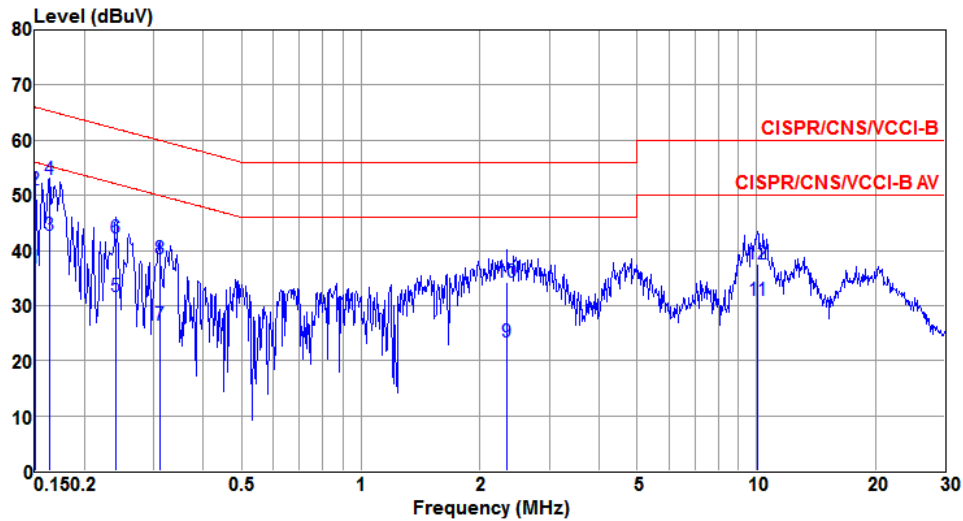
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Line	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.156	42.45	55.65	-13.20	42.32	0.11	0.02	Average
2	0.156	53.83	65.65	-11.82	53.70	0.11	0.02	QP
3	0.259	28.78	51.47	-22.69	28.64	0.12	0.02	Average
4	0.259	42.58	61.47	-18.89	42.44	0.12	0.02	QP
5	0.330	26.60	49.44	-22.84	26.45	0.12	0.03	Average
6	0.330	39.21	59.44	-20.23	39.06	0.12	0.03	QP
7	0.484	18.70	46.27	-27.57	18.53	0.13	0.04	Average
8	0.484	31.77	56.27	-24.50	31.60	0.13	0.04	QP
9	2.636	24.48	46.00	-21.52	24.21	0.17	0.10	Average
10	2.636	34.28	56.00	-21.72	34.01	0.17	0.10	QP
11	9.966	25.25	50.00	-24.75	24.85	0.24	0.16	Average
12	9.966	32.23	60.00	-27.77	31.83	0.24	0.16	QP

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

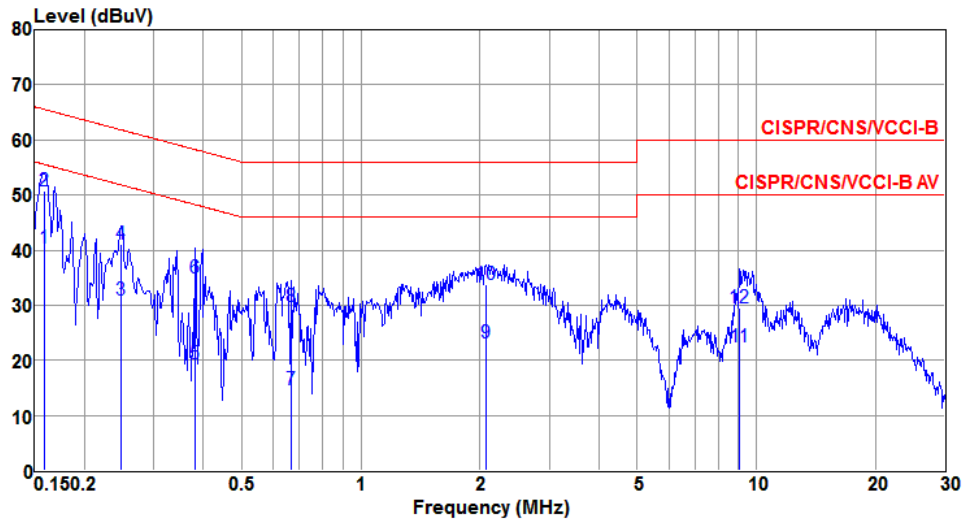
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Neutral	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	36.94	56.00	-19.06	36.79	0.13	0.02	Average
2	0.150	50.91	66.00	-15.09	50.76	0.13	0.02	QP
3	0.163	42.84	55.30	-12.46	42.70	0.12	0.02	Average
4	0.163	52.85	65.30	-12.45	52.71	0.12	0.02	QP
5	0.240	31.72	52.08	-20.36	31.59	0.11	0.02	Average
6	0.240	42.20	62.08	-19.88	42.07	0.11	0.02	QP
7	0.310	26.46	49.97	-23.51	26.30	0.13	0.03	Average
8	0.310	38.55	59.97	-21.42	38.39	0.13	0.03	QP
9	2.346	23.38	46.00	-22.62	23.12	0.17	0.09	Average
10	2.346	34.19	56.00	-21.81	33.93	0.17	0.09	QP
11	10.072	30.81	50.00	-19.19	30.38	0.27	0.16	Average
12	10.072	37.44	60.00	-22.56	37.01	0.27	0.16	QP

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

Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Line	Test Configuration	2

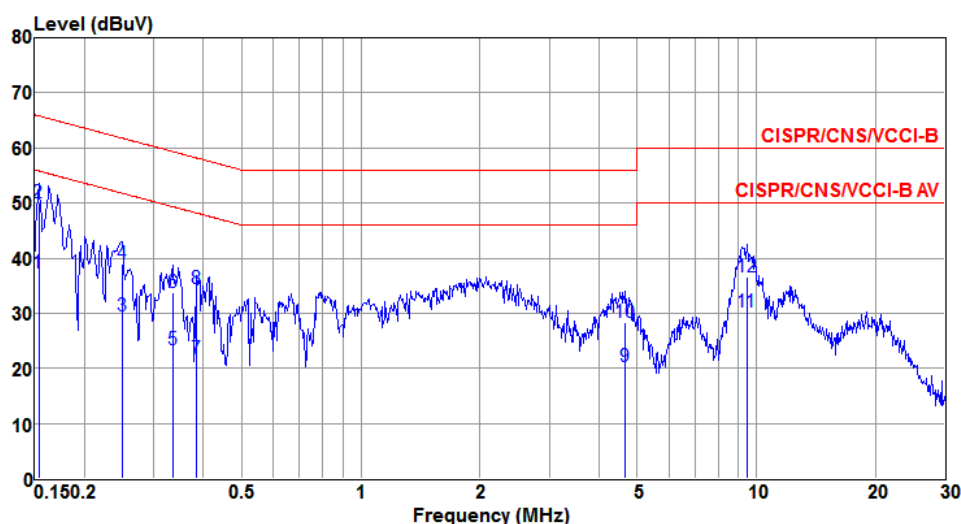


	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.159	40.30	55.52	-15.22	40.17	0.11	0.02	Average
2	0.159	50.86	65.52	-14.66	50.73	0.11	0.02	QP
3	0.247	30.85	51.86	-21.01	30.71	0.12	0.02	Average
4	0.247	41.09	61.86	-20.77	40.95	0.12	0.02	QP
5	0.381	19.47	48.25	-28.78	19.31	0.13	0.03	Average
6	0.381	35.00	58.25	-23.25	34.84	0.13	0.03	QP
7	0.668	14.58	46.00	-31.42	14.40	0.13	0.05	Average
8	0.668	29.84	56.00	-26.16	29.66	0.13	0.05	QP
9	2.077	23.13	46.00	-22.87	22.89	0.16	0.08	Average
10	2.077	33.68	56.00	-22.32	33.44	0.16	0.08	QP
11	9.059	22.38	50.00	-27.62	21.99	0.23	0.16	Average
12	9.059	29.59	60.00	-30.41	29.20	0.23	0.16	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Neutral	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.153	37.33	55.82	-18.49	37.18	0.13	0.02	Average
2@	0.153	49.94	65.82	-15.88	49.79	0.13	0.02	QP
3	0.249	29.54	51.78	-22.24	29.41	0.11	0.02	Average
4	0.249	39.01	61.78	-22.77	38.88	0.11	0.02	QP
5	0.334	23.43	49.35	-25.92	23.27	0.13	0.03	Average
6	0.334	33.77	59.35	-25.58	33.61	0.13	0.03	QP
7	0.385	21.66	48.17	-26.51	21.49	0.14	0.03	Average
8	0.385	34.52	58.17	-23.65	34.35	0.14	0.03	QP
9	4.672	20.31	46.00	-25.69	19.99	0.19	0.13	Average
10	4.672	28.21	56.00	-27.79	27.89	0.19	0.13	QP
11	9.451	30.11	50.00	-19.89	29.69	0.26	0.16	Average
12	9.451	36.69	60.00	-23.31	36.27	0.26	0.16	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

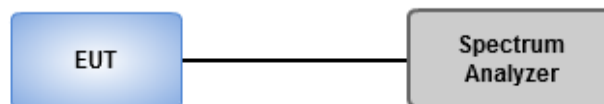
6dB Bandwidth

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.

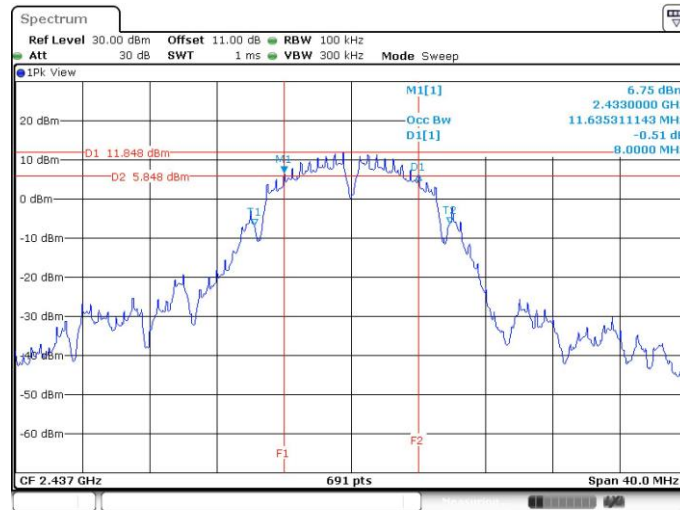
3.2.3 Test Setup



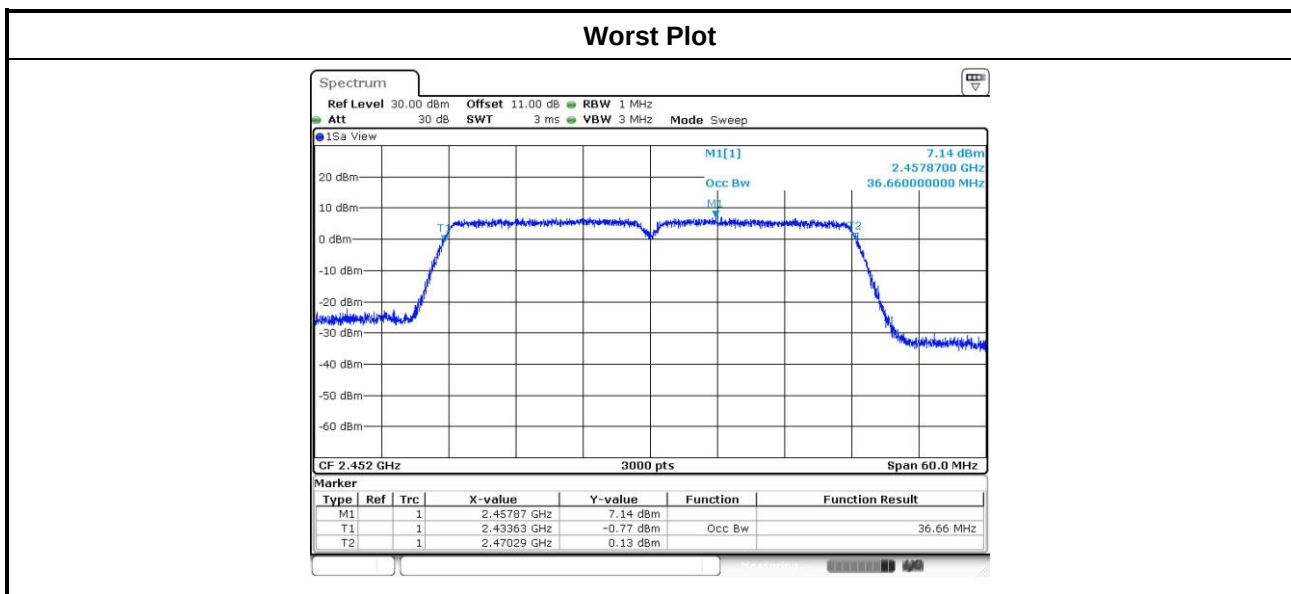
3.2.4 Test Result of 6dB and Occupied Bandwidth

Modulation Mode	N _{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
11b	1	2412	8.06	---	---	---	500
11b	1	2437	8.00	---	---	---	500
11b	1	2462	8.06	---	---	---	500
11g	2	2412	16.35	16.35	---	---	500
11g	2	2437	16.35	16.35	---	---	500
11g	2	2462	16.35	16.35	---	---	500
HT20	2	2412	17.62	17.62	---	---	500
HT20	2	2437	17.62	17.62	---	---	500
HT20	2	2462	17.62	17.62	---	---	500
HT40	2	2422	36.41	36.41	---	---	500
HT40	2	2437	36.41	36.41	---	---	500
HT40	2	2452	36.41	36.41	---	---	500

Worst Plot



Modulation Mode	N _{TX}	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
11b	1	2412	11.34	---	---	---
11b	1	2437	11.56	---	---	---
11b	1	2462	11.08	---	---	---
11g	2	2412	17.05	17.05	---	---
11g	2	2437	17.36	17.50	---	---
11g	2	2462	17.17	17.16	---	---
HT20	2	2412	19.33	18.01	---	---
HT20	2	2437	18.34	18.24	---	---
HT20	2	2462	18.13	18.03	---	---
HT40	2	2422	36.64	36.62	---	---
HT40	2	2437	36.64	36.58	---	---
HT40	2	2452	36.66	36.64	---	---



3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

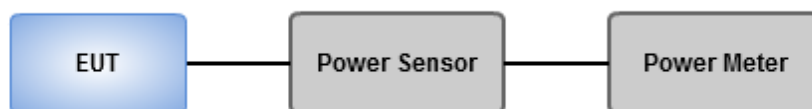
- ☒ Antenna gain $\leq 6\text{dBi}$, no any corresponding reduction is in output power limit.
- ☐ Antenna gain $> 6\text{dBi}$
 - ☐ Non Fixed, point to point operations.
The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna 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 (For reference only)
 - ☒ **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

Modulation Mode	N _{TX}	Freq. (MHz)	Peak conducted Output Power (dBm)							Ant. Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Total Power (mW)	Total Power (dBm)	Limit (dBm)			
11b	1	2412	21.58	---	---	---	143.880	21.58	30.00	2.61	24.19	36.00
11b	1	2437	22.69	---	---	---	185.780	22.69	30.00	2.61	25.30	36.00
11b	1	2462	20.65	---	---	---	116.145	20.65	30.00	2.61	23.26	36.00
11g	2	2412	21.34	22.53	---	---	315.205	24.99	30.00	2.61	27.60	36.00
11g	2	2437	23.41	24.42	---	---	495.975	26.95	30.00	2.61	29.56	36.00
11g	2	2462	22.97	23.65	---	---	429.892	26.33	30.00	2.61	28.94	36.00
HT20	2	2412	20.95	21.89	---	---	278.977	24.46	30.00	2.61	27.07	36.00
HT20	2	2437	23.46	24.09	---	---	478.268	26.80	30.00	2.61	29.41	36.00
HT20	2	2462	22.39	23.04	---	---	374.753	25.74	30.00	2.61	28.35	36.00
HT40	2	2422	19.35	17.63	---	---	144.042	21.58	30.00	2.61	24.19	36.00
HT40	2	2437	19.15	21.82	---	---	234.279	23.70	30.00	2.61	26.31	36.00
HT40	2	2452	20.79	21.49	---	---	260.879	24.16	30.00	2.61	26.77	36.00

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	1	2412	17.72	---	---	---	59.156	17.72	---
11b	1	2437	19.78	---	---	---	95.060	19.78	---
11b	1	2462	17.68	---	---	---	58.614	17.68	---
11g	2	2412	14.88	16.12	---	---	71.687	18.55	---
11g	2	2437	19.04	19.83	---	---	176.329	22.46	---
11g	2	2462	16.4	17.19	---	---	96.012	19.82	---
HT20	2	2412	14.58	15.16	---	---	61.517	17.89	---
HT20	2	2437	18.49	19.61	---	---	162.043	22.10	---
HT20	2	2462	15.49	15.85	---	---	73.859	18.68	---
HT40	2	2422	10.55	11.07	---	---	24.144	13.83	---
HT40	2	2437	12.56	13.29	---	---	39.361	15.95	---
HT40	2	2452	13.59	13.98	---	---	47.859	16.80	---

Note: Conducted average output power is for reference only.

3.4 Power Spectral Density

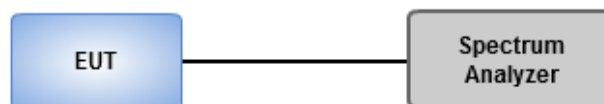
3.4.1 Limit of Power Spectral Density

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 = 100kHz, VBW = 300 kHz.
 2. Detector = RMS, Sweep time = auto couple.
 3. Set the sweep time to: $\geq 10 \times (\text{number of measurement points in sweep}) \times (\text{maximum data rate per stream})$.
 4. Perform the measurement over a single sweep.
 5. Use the peak marker function to determine the maximum amplitude level.

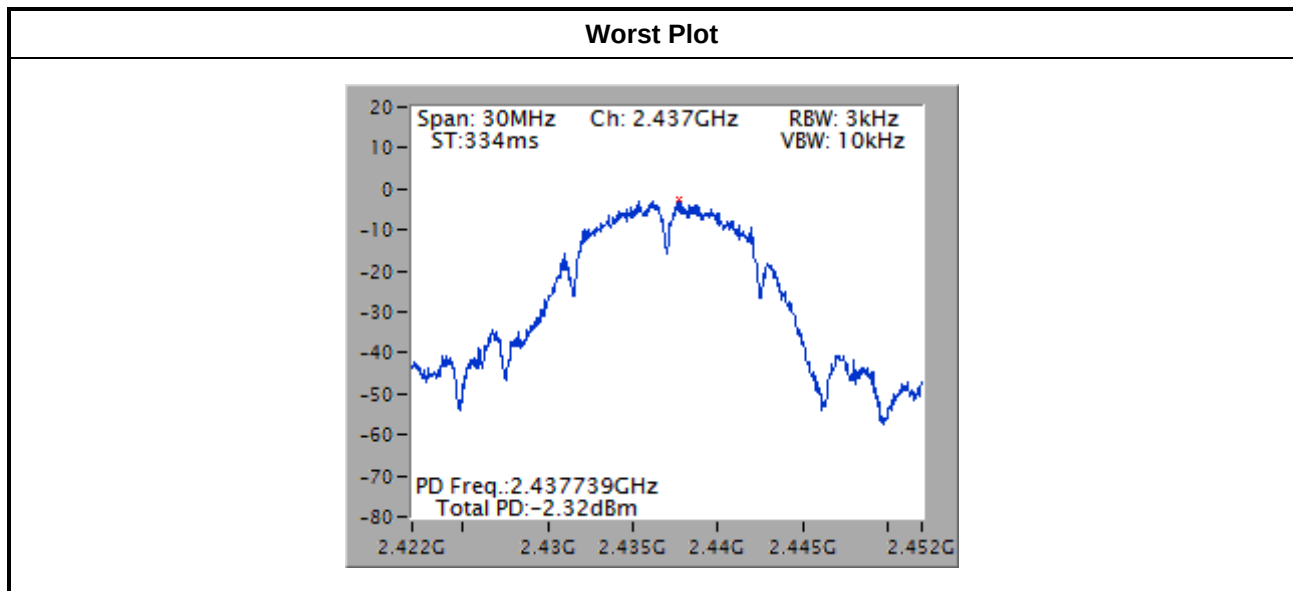
3.4.3 Test Setup



3.4.4 Test Result of Power Spectral Density

Modulation Mode	N _{TX}	Freq. (MHz)	Total Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
11b	1	2412	-5.14	8.00
11b	1	2437	-2.32	8.00
11b	1	2462	-4.67	8.00
11g	2	2412	-7.11	8.00
11g	2	2437	-3.54	8.00
11g	2	2462	-5.62	8.00
HT20	2	2412	-8.54	8.00
HT20	2	2437	-4.83	8.00
HT20	2	2462	-8.28	8.00
HT40	2	2422	-15.09	8.00
HT40	2	2437	-12.65	8.00
HT40	2	2452	-11.82	8.00

Note: Test result for 2TX mode y-bin summing measured value of each TX port.



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:
Quasi-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

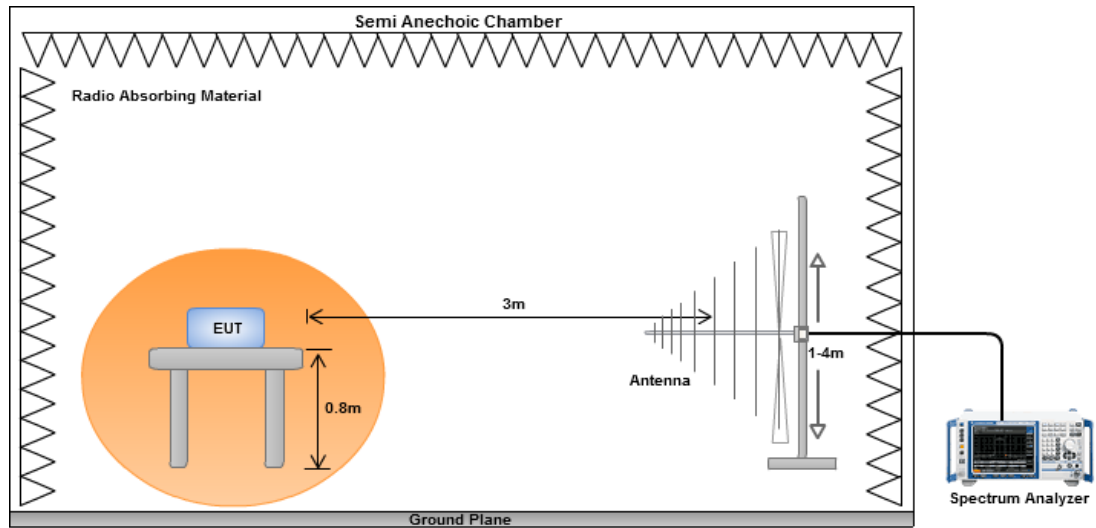
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission 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:

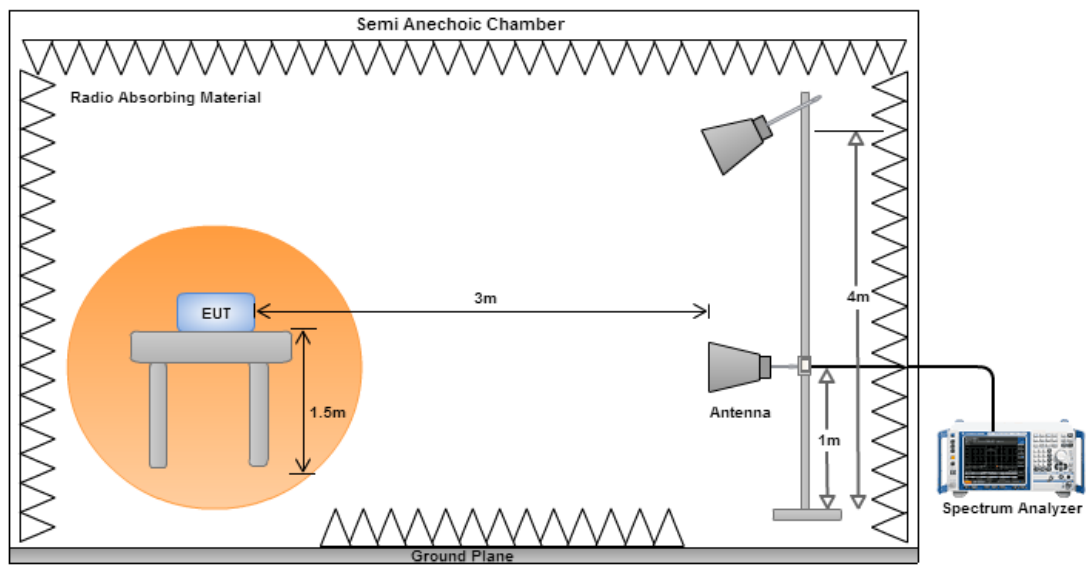
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz



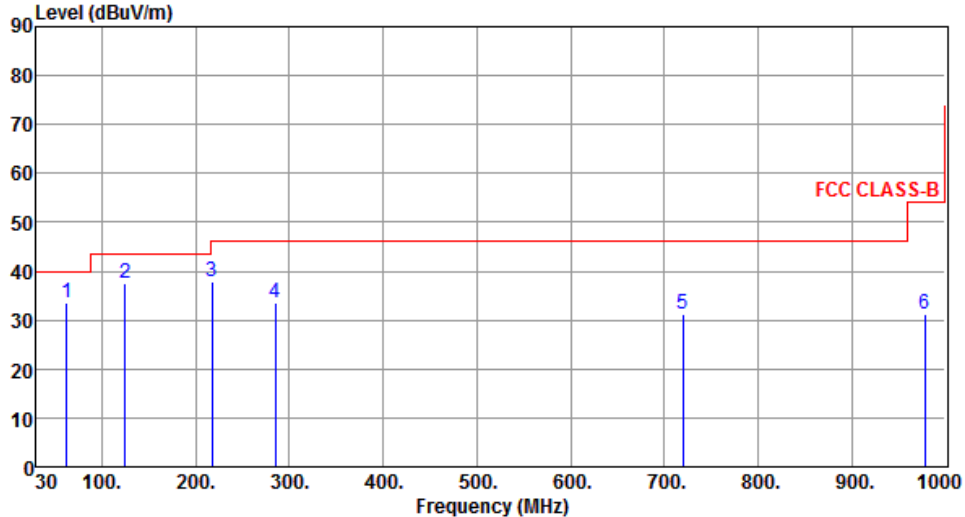
Radiated Emissions above 1 GHz



Test Configuration 1: On board Antenna

3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	1

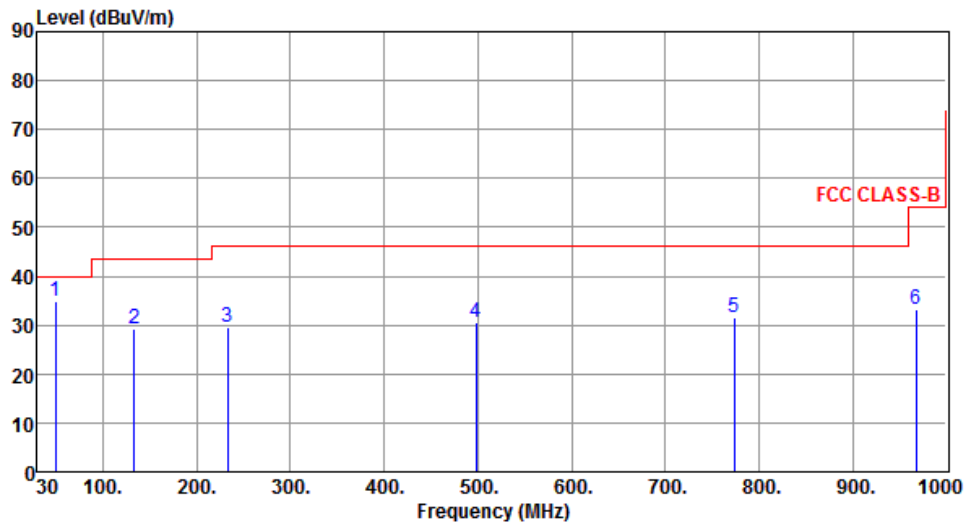


The graph displays the radiated unwanted emissions for an 11g transmitter. The y-axis represents the Level in dBUV/m, ranging from 0 to 90. The x-axis represents the Frequency in MHz, ranging from 30 to 1000. A red line indicates the FCC CLASS-B limit, which is 40 dBUV/m from 30 to 100 MHz, 45 dBUV/m from 100 to 200 MHz, and 55 dBUV/m from 200 to 1000 MHz. Six emission peaks are identified and labeled with blue numbers 1 through 6. The data for these peaks is provided in the table below.

	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	62.01	33.59	40.00	-6.41	51.46	-17.87	Peak	---	---
2	125.06	37.62	43.50	-5.88	56.04	-18.42	Peak	---	---
3	217.21	38.03	46.00	-7.97	57.13	-19.10	Peak	---	---
4	285.11	33.46	46.00	-12.54	49.73	-16.27	Peak	---	---
5	719.67	31.18	46.00	-14.82	38.81	-7.63	Peak	---	---
6	977.69	31.34	54.00	-22.66	35.60	-4.26	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	11g	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	49.40	34.74	40.00	-5.26	51.09	-16.35	Peak	---	---
2	133.79	29.19	43.50	-14.31	46.80	-17.61	Peak	---	---
3	232.73	29.44	46.00	-16.56	47.86	-18.42	Peak	---	---
4	498.51	30.63	46.00	-15.37	41.78	-11.15	Peak	---	---
5	773.99	31.71	46.00	-14.29	38.45	-6.74	Peak	---	---
6	967.99	33.13	54.00	-20.87	37.47	-4.34	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

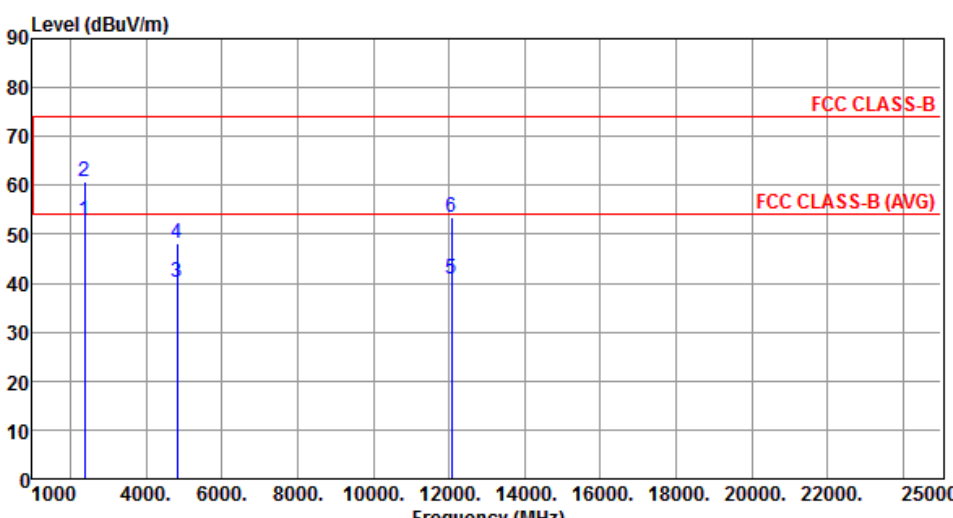
*Factor includes antenna factor , cable loss and amplifier gain

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

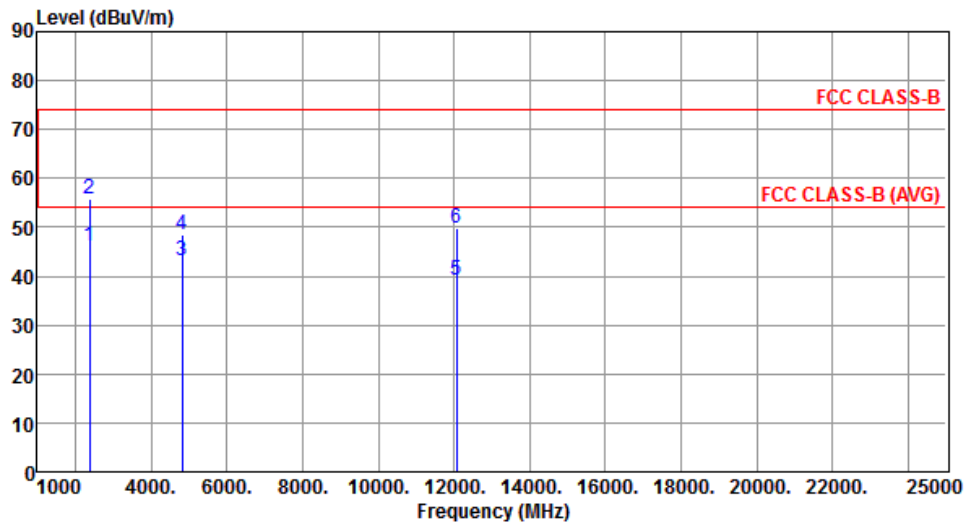
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	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	52.94	54.00	-1.06	56.29	-3.35	Average	237	264
2	2390.00	60.74	74.00	-13.26	64.09	-3.35	Peak	237	264
3	4824.00	40.20	54.00	-13.80	36.61	3.59	Average	120	115
4	4824.00	48.30	74.00	-25.70	44.71	3.59	Peak	120	115
5	12060.00	41.01	54.00	-12.99	26.88	14.13	Average	260	214
6	12060.00	53.40	74.00	-20.60	39.27	14.13	Peak	260	214

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	Test Configuration	1



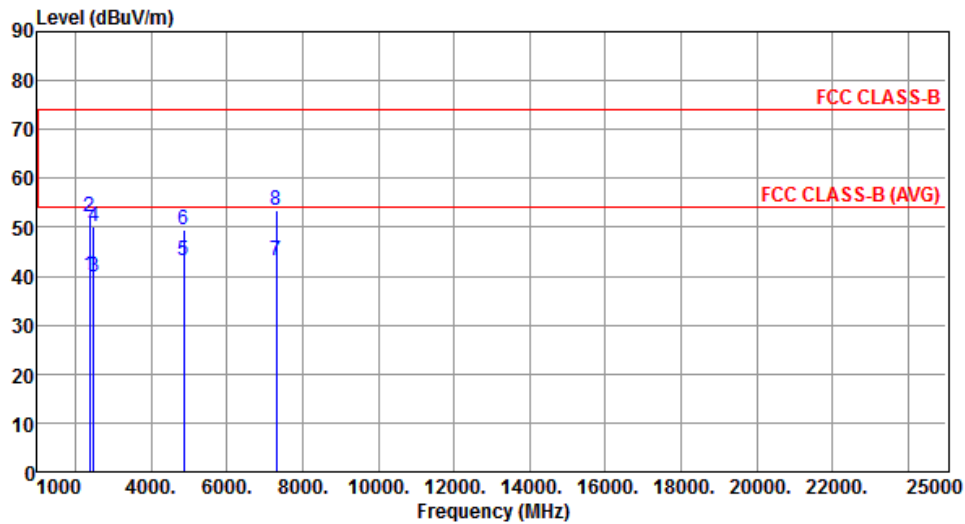
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	46.15	54.00	-7.85	49.50	-3.35	Average	263	203
2	2390.00	55.79	74.00	-18.21	59.14	-3.35	Peak	263	203
3	4824.00	43.20	54.00	-10.80	39.61	3.59	Average	240	92
4	4824.00	48.40	74.00	-25.60	44.81	3.59	Peak	240	92
5	12060.00	39.35	54.00	-14.65	25.22	14.13	Average	269	48
6	12060.00	49.74	74.00	-24.26	35.61	14.13	Peak	269	48

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	Test Configuration	1



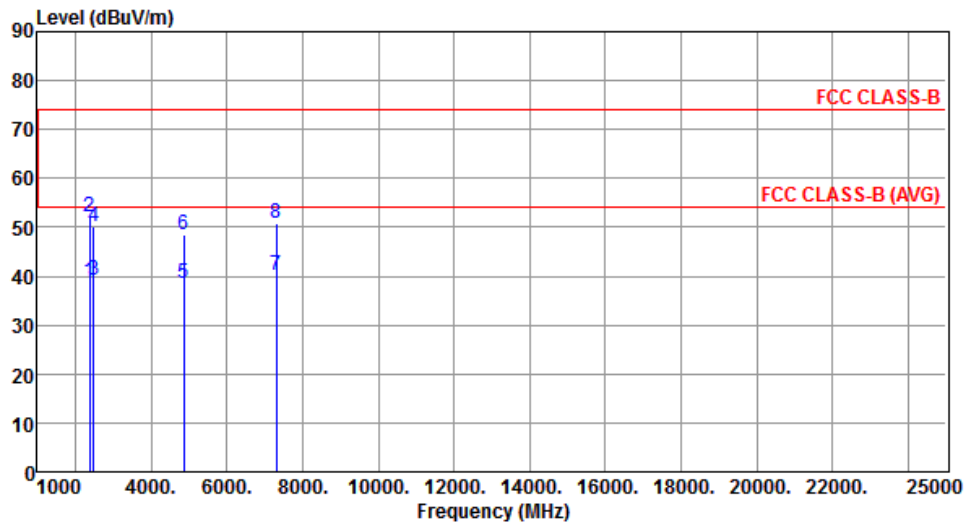
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	40.23	54.00	-13.77	43.58	-3.35	Average	262	262
2	2390.00	52.19	74.00	-21.81	55.54	-3.35	Peak	262	262
3	2483.50	39.85	54.00	-14.15	42.78	-2.93	Average	262	262
4	2483.50	50.23	74.00	-23.77	53.16	-2.93	Peak	262	262
5	4874.00	43.32	54.00	-10.68	39.57	3.75	Average	100	85
6	4874.00	49.53	74.00	-24.47	45.78	3.75	Peak	100	85
7	7311.00	43.15	54.00	-10.85	34.73	8.42	Average	262	320
8	7311.00	53.41	74.00	-20.59	44.99	8.42	Peak	262	320

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	Test Configuration	1



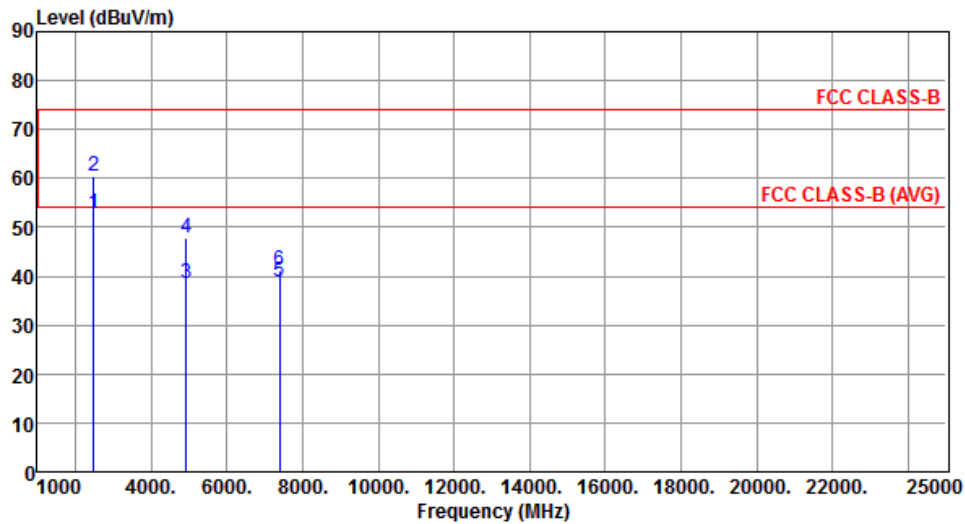
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.93	54.00	-15.07	42.28	-3.35	Average	260	202
2	2390.00	52.29	74.00	-21.71	55.64	-3.35	Peak	260	202
3	2483.50	39.27	54.00	-14.73	42.20	-2.93	Average	260	202
4	2483.50	50.23	74.00	-23.77	53.16	-2.93	Peak	260	202
5	4874.00	38.64	54.00	-15.36	34.89	3.75	Average	290	0
6	4874.00	48.61	74.00	-25.39	44.86	3.75	Peak	290	0
7	7311.00	40.11	54.00	-13.89	31.69	8.42	Average	235	297
8	7311.00	50.70	74.00	-23.30	42.28	8.42	Peak	235	297

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	Test Configuration	1



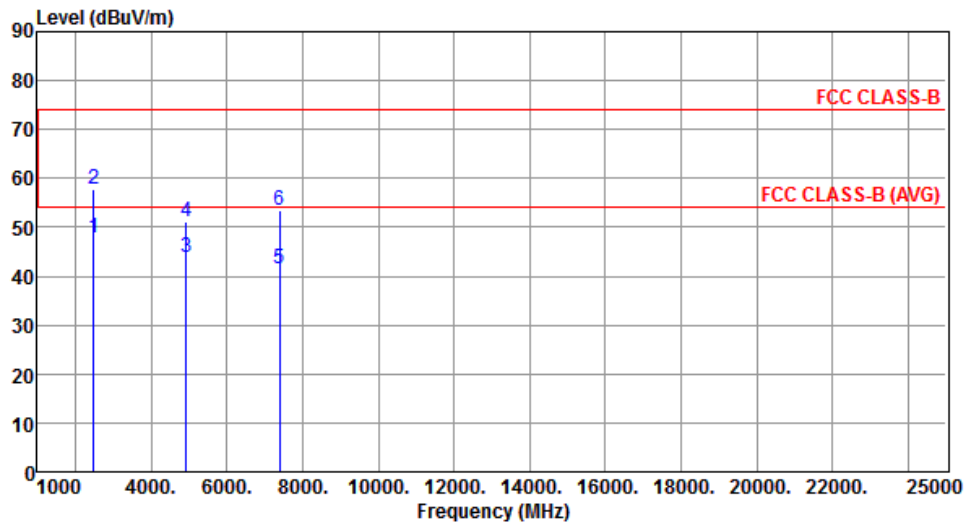
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.82	54.00	-1.18	55.75	-2.93	Average	254	262
2	2483.50	60.57	74.00	-13.43	63.50	-2.93	Peak	254	262
3	4924.00	38.61	54.00	-15.39	34.70	3.91	Average	265	277
4	4924.00	47.70	74.00	-26.30	43.79	3.91	Peak	265	277
5	7386.00	38.89	54.00	-15.11	30.43	8.46	Average	170	167
6	7386.00	41.16	74.00	-32.84	32.70	8.46	Peak	170	167

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	Test Configuration	1



	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	47.87	54.00	-6.13	50.80	-2.93	Average	279	191
2	2483.50	57.66	74.00	-16.34	60.59	-2.93	Peak	279	191
3	4924.00	43.96	54.00	-10.04	40.05	3.91	Average	100	171
4	4924.00	51.27	74.00	-22.73	47.36	3.91	Peak	100	171
5	7386.00	41.56	54.00	-12.44	33.10	8.46	Average	192	206
6	7386.00	53.57	74.00	-20.43	45.11	8.46	Peak	192	206

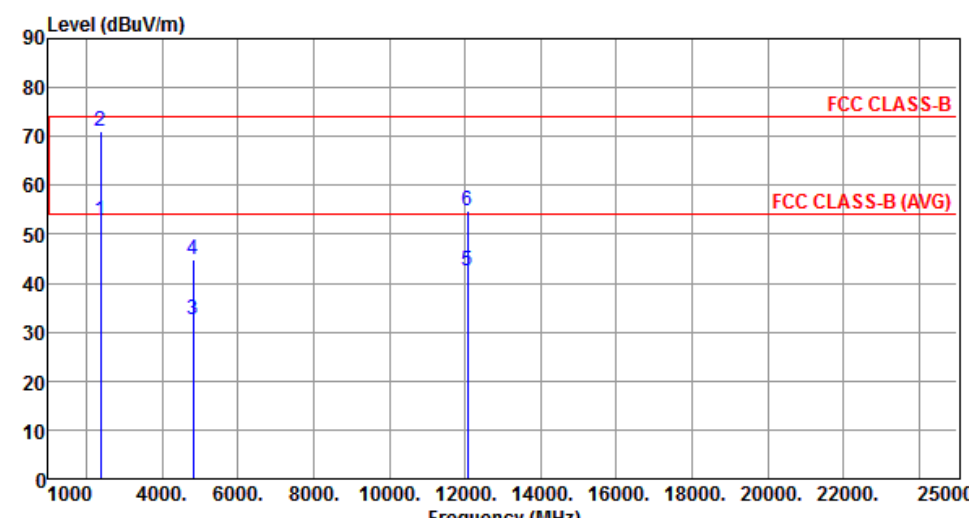
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*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

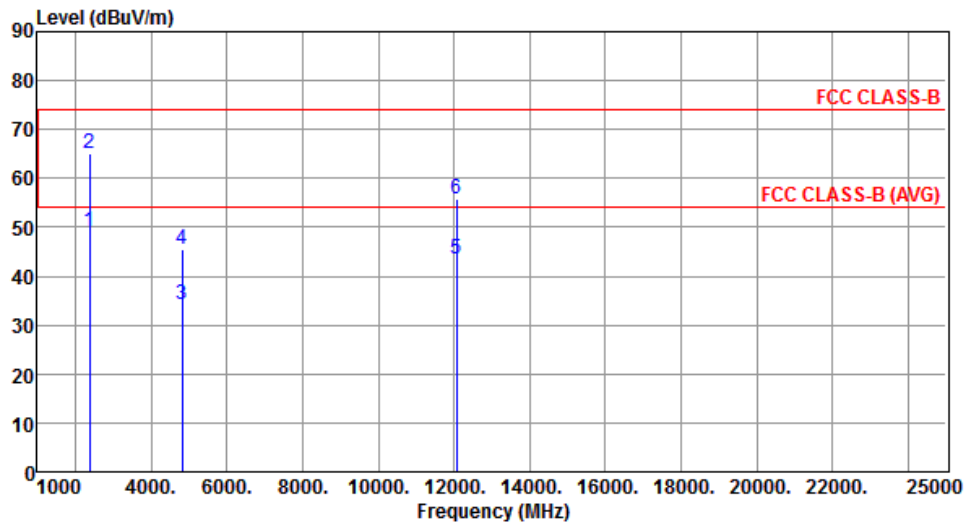
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	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	52.65	54.00	-1.35	56.00	-3.35	Average	262	262
2	2390.00	70.95	74.00	-3.05	74.30	-3.35	Peak	262	262
3	4824.00	32.53	54.00	-21.47	28.94	3.59	Average	326	145
4	4824.00	44.84	74.00	-29.16	41.25	3.59	Peak	326	145
5	12060.00	42.56	54.00	-11.44	28.43	14.13	Average	235	298
6	12060.00	54.93	74.00	-19.07	40.80	14.13	Peak	235	298

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	Test Configuration	1



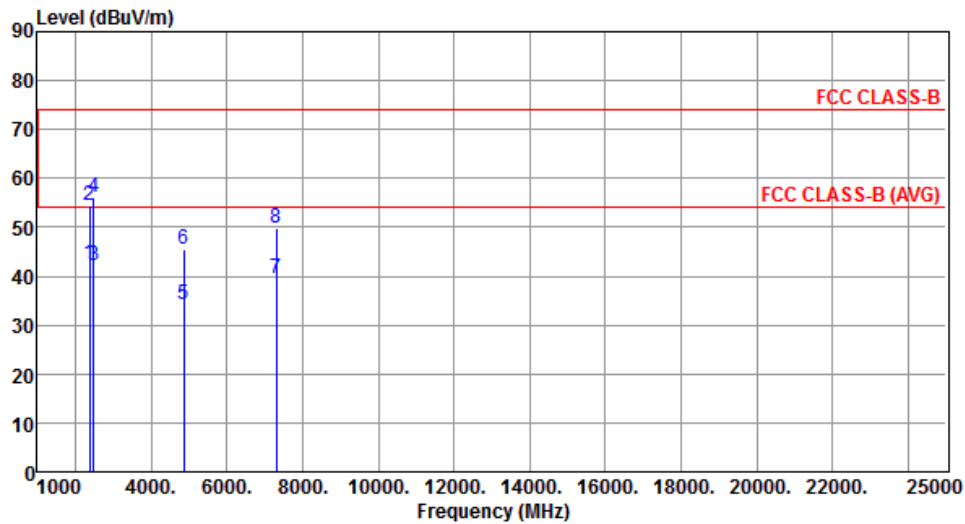
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	49.12	54.00	-4.88	52.47	-3.35	Average	262	246
2	2390.00	65.02	74.00	-8.98	68.37	-3.35	Peak	262	246
3	4824.00	34.23	54.00	-19.77	30.64	3.59	Average	196	329
4	4824.00	45.64	74.00	-28.36	42.05	3.59	Peak	196	329
5	12060.00	43.66	54.00	-10.34	29.53	14.13	Average	240	139
6	12060.00	55.66	74.00	-18.34	41.53	14.13	Peak	240	139

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	Test Configuration	1



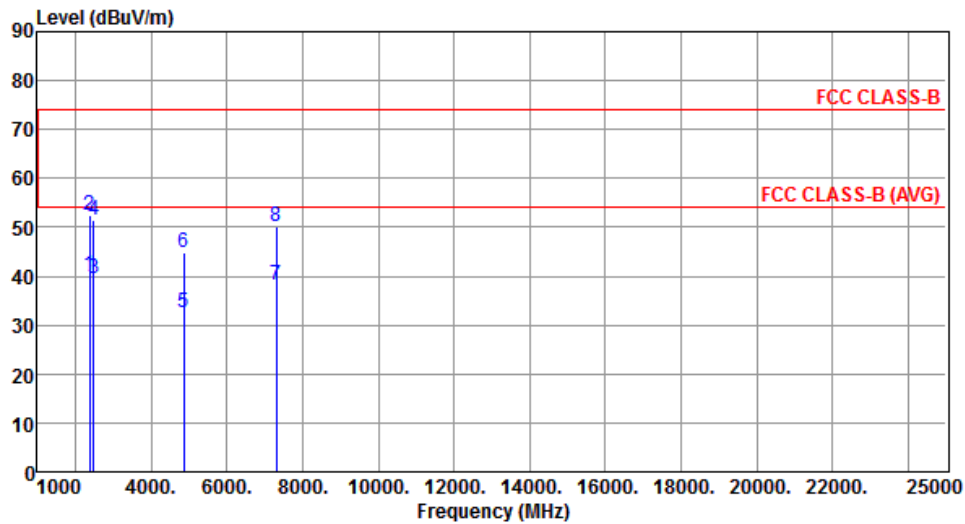
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	42.48	54.00	-11.52	45.83	-3.35	Average	260	262
2	2390.00	54.52	74.00	-19.48	57.87	-3.35	Peak	260	262
3	2483.50	42.23	54.00	-11.77	45.16	-2.93	Average	260	262
4	2483.50	56.05	74.00	-17.95	58.98	-2.93	Peak	260	262
5	4874.00	34.13	54.00	-19.87	30.38	3.75	Average	270	84
6	4874.00	45.34	74.00	-28.66	41.59	3.75	Peak	270	84
7	7311.00	39.41	54.00	-14.59	30.99	8.42	Average	254	297
8	7311.00	49.73	74.00	-24.27	41.31	8.42	Peak	254	297

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	Test Configuration	1



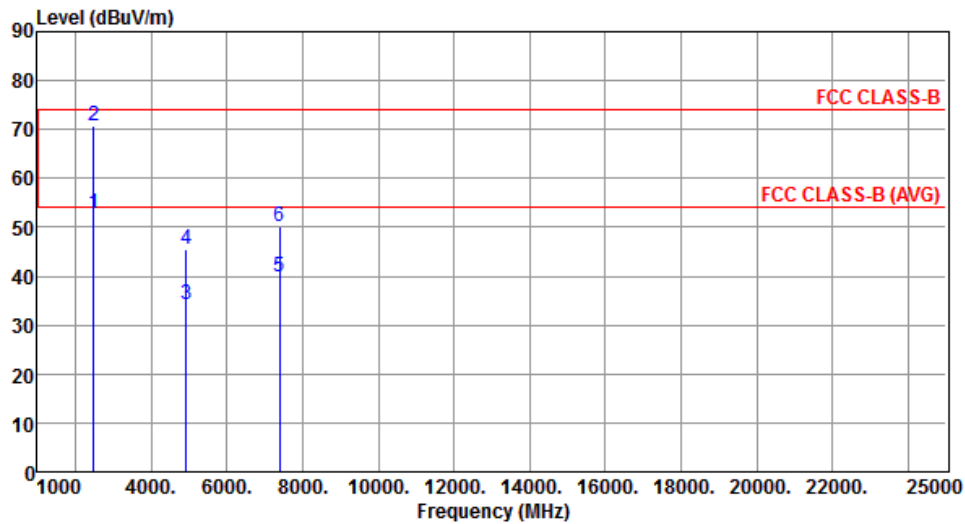
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	40.19	54.00	-13.81	43.54	-3.35	Average	260	201
2	2390.00	52.51	74.00	-21.49	55.86	-3.35	Peak	260	201
3	2483.50	39.37	54.00	-14.63	42.30	-2.93	Average	260	201
4	2483.50	51.54	74.00	-22.46	54.47	-2.93	Peak	260	201
5	4874.00	32.55	54.00	-21.45	28.80	3.75	Average	351	238
6	4874.00	44.77	74.00	-29.23	41.02	3.75	Peak	351	238
7	7311.00	38.35	54.00	-15.65	29.93	8.42	Average	190	226
8	7311.00	50.01	74.00	-23.99	41.59	8.42	Peak	190	226

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	Test Configuration	1



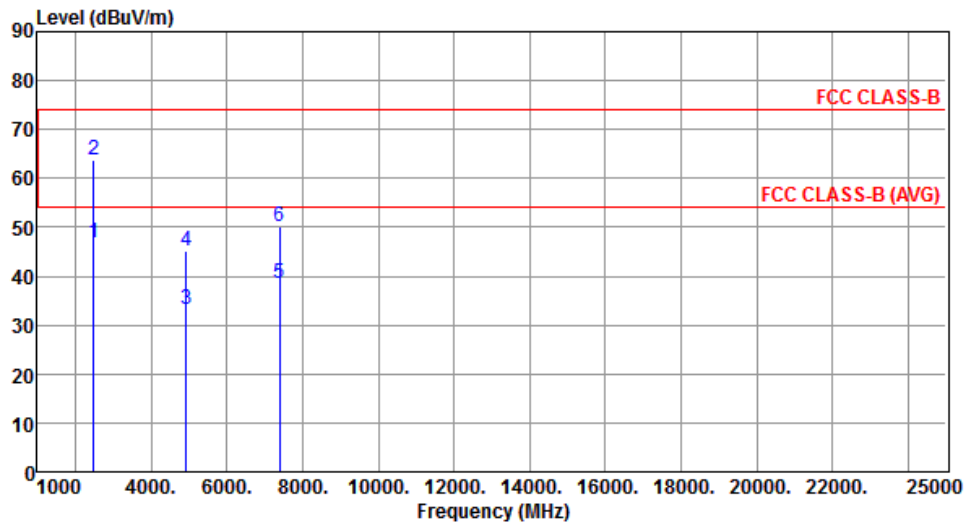
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.86	54.00	-1.14	55.79	-2.93	Average	250	260
2	2483.50	70.62	74.00	-3.38	73.55	-2.93	Peak	250	260
3	4924.00	34.23	54.00	-19.77	30.32	3.91	Average	266	231
4	4924.00	45.47	74.00	-28.53	41.56	3.91	Peak	266	231
5	7386.00	39.73	54.00	-14.27	31.27	8.46	Average	311	123
6	7386.00	50.15	74.00	-23.85	41.69	8.46	Peak	311	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	11g	Test Freq. (MHz)	2462
Polarization	Vertical	Test Configuration	1



	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	46.92	54.00	-7.08	49.85	-2.93	Average	280	192
2	2483.50	63.63	74.00	-10.37	66.56	-2.93	Peak	280	192
3	4924.00	33.26	54.00	-20.74	29.35	3.91	Average	211	118
4	4924.00	45.17	74.00	-28.83	41.26	3.91	Peak	211	118
5	7386.00	38.56	54.00	-15.44	30.10	8.46	Average	222	165
6	7386.00	50.02	74.00	-23.98	41.56	8.46	Peak	222	165

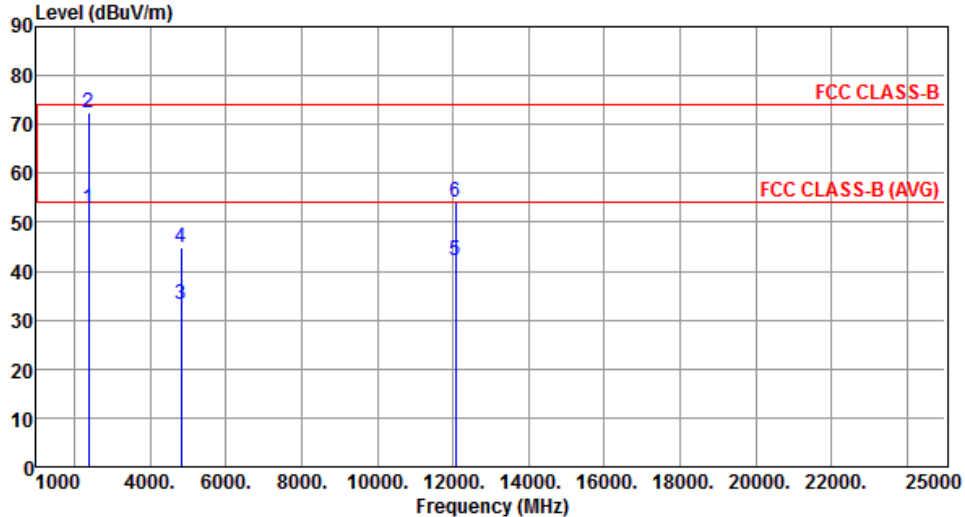
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*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

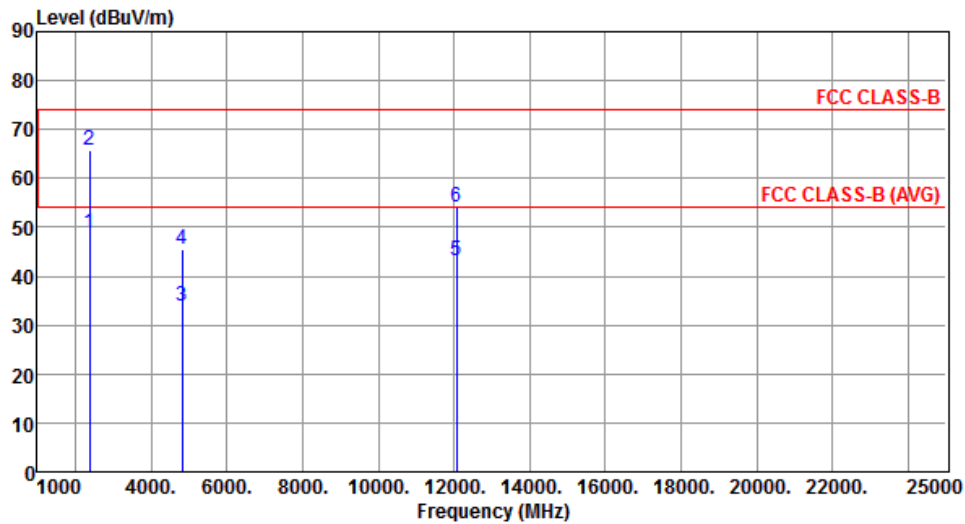
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	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	52.86	54.00	-1.14	56.21	-3.35	Average	260	298
2	2390.00	72.52	74.00	-1.48	75.87	-3.35	Peak	260	298
3	4824.00	33.20	54.00	-20.80	29.61	3.59	Average	241	139
4	4824.00	44.84	74.00	-29.16	41.25	3.59	Peak	241	139
5	12060.00	42.08	54.00	-11.92	27.95	14.13	Average	177	275
6	12060.00	54.11	74.00	-19.89	39.98	14.13	Peak	177	275

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	Test Configuration	1



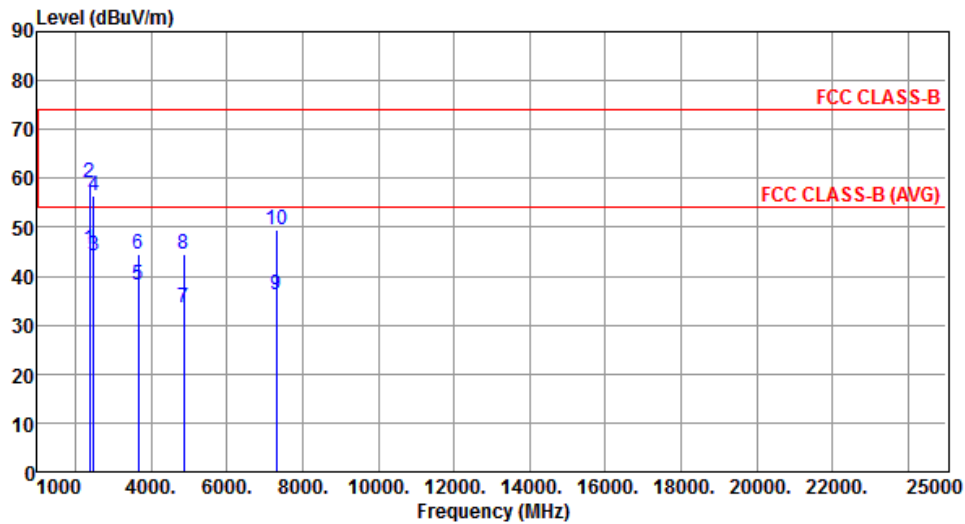
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.77	54.00	-5.23	52.12	-3.35	Average	260	169
2	2390.00	65.89	74.00	-8.11	69.24	-3.35	Peak	260	169
3	4824.00	33.83	54.00	-20.17	30.24	3.59	Average	236	147
4	4824.00	45.56	74.00	-28.44	41.97	3.59	Peak	236	147
5	12060.00	43.03	54.00	-10.97	28.90	14.13	Average	190	8
6	12060.00	54.17	74.00	-19.83	40.04	14.13	Peak	190	8

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	Test Configuration	1



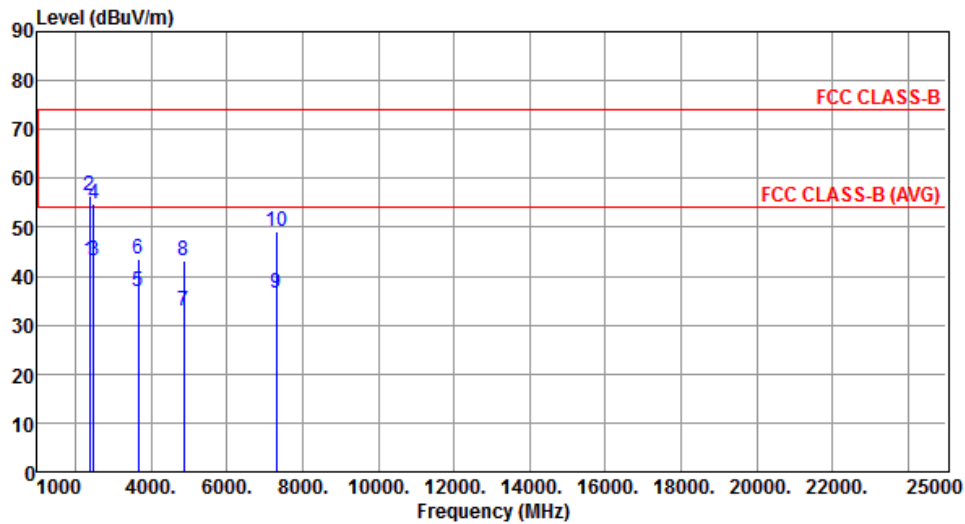
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	45.56	54.00	-8.44	48.91	-3.35	Average	262	306
2	2390.00	58.99	74.00	-15.01	62.34	-3.35	Peak	262	306
3	2483.50	44.30	54.00	-9.70	47.23	-2.93	Average	262	306
4	2483.50	56.45	74.00	-17.55	59.38	-2.93	Peak	262	306
5	3656.00	38.26	54.00	-15.74	37.86	0.40	Average	215	285
6	3656.00	44.39	74.00	-29.61	43.99	0.40	Peak	215	285
7	4874.00	33.57	54.00	-20.43	29.82	3.75	Average	300	215
8	4874.00	44.56	74.00	-29.44	40.81	3.75	Peak	300	215
9	7311.00	36.35	54.00	-17.65	27.93	8.42	Average	207	59
10	7311.00	49.34	74.00	-24.66	40.92	8.42	Peak	207	59

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	Test Configuration	1



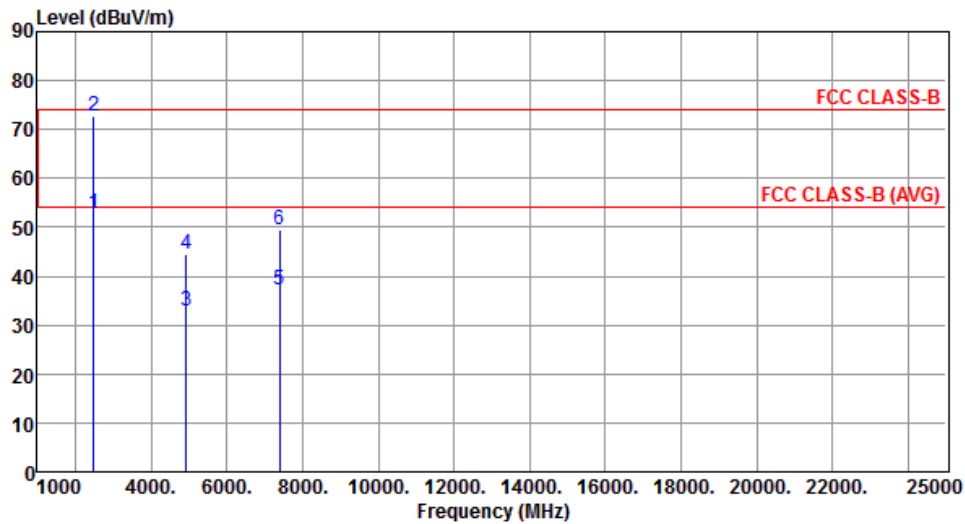
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	43.16	54.00	-10.84	46.51	-3.35	Average	261	169
2	2390.00	56.34	74.00	-17.66	59.69	-3.35	Peak	261	169
3	2483.50	43.22	54.00	-10.78	46.15	-2.93	Average	261	169
4	2483.50	54.86	74.00	-19.14	57.79	-2.93	Peak	261	169
5	3656.00	36.93	54.00	-17.07	36.53	0.40	Average	229	168
6	3656.00	43.39	74.00	-30.61	42.99	0.40	Peak	229	168
7	4874.00	32.87	54.00	-21.13	29.12	3.75	Average	209	271
8	4874.00	43.23	74.00	-30.77	39.48	3.75	Peak	209	271
9	7311.00	36.65	54.00	-17.35	28.23	8.42	Average	341	257
10	7311.00	49.19	74.00	-24.81	40.77	8.42	Peak	341	257

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	Test Configuration	1



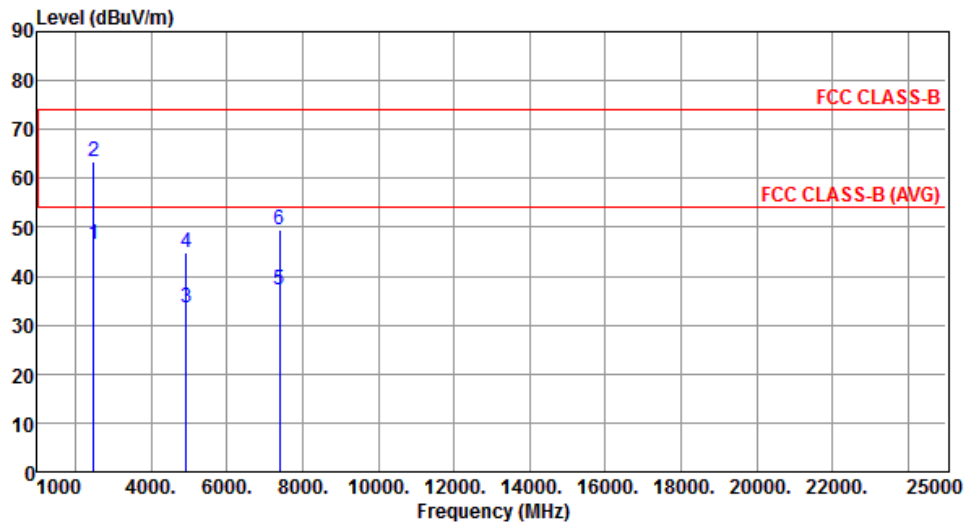
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.81	54.00	-1.19	55.74	-2.93	Average	251	309
2	2483.50	72.56	74.00	-1.44	75.49	-2.93	Peak	251	309
3	4924.00	32.92	54.00	-21.08	29.01	3.91	Average	105	269
4	4924.00	44.50	74.00	-29.50	40.59	3.91	Peak	105	269
5	7386.00	37.16	54.00	-16.84	28.70	8.46	Average	198	207
6	7386.00	49.35	74.00	-24.65	40.89	8.46	Peak	198	207

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	Test Configuration	1



	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	46.33	54.00	-7.67	49.26	-2.93	Average	258	170
2	2483.50	63.27	74.00	-10.73	66.20	-2.93	Peak	258	170
3	4924.00	33.50	54.00	-20.50	29.59	3.91	Average	209	214
4	4924.00	44.98	74.00	-29.02	41.07	3.91	Peak	209	214
5	7386.00	37.23	54.00	-16.77	28.77	8.46	Average	333	120
6	7386.00	49.56	74.00	-24.44	41.10	8.46	Peak	333	120

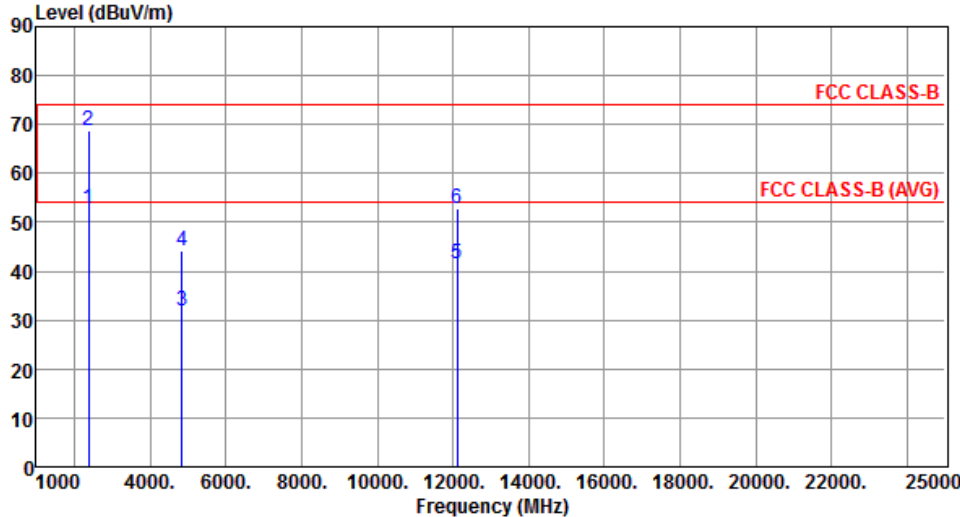
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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

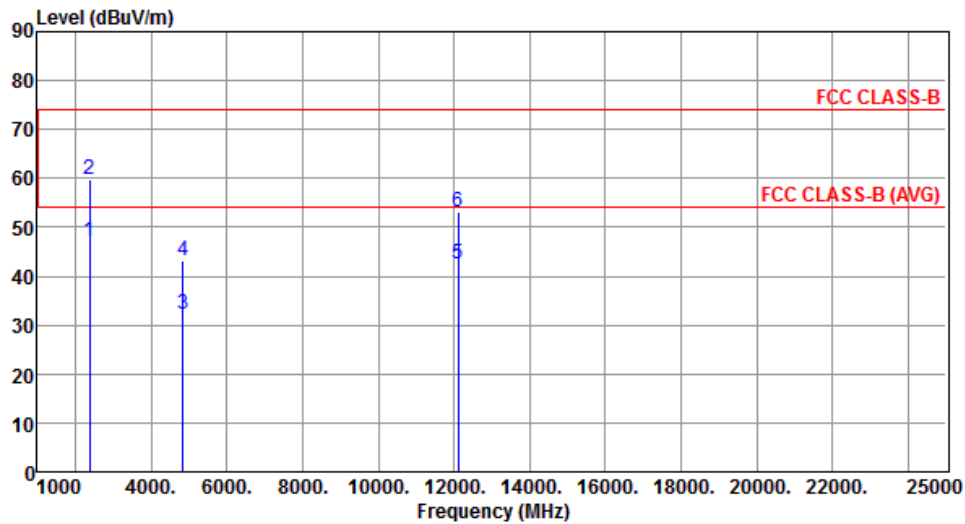
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Horizontal	Test Configuration	1



	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	52.89	54.00	-1.11	56.24	-3.35	Average	206	206
2	2390.00	68.64	74.00	-5.36	71.99	-3.35	Peak	206	206
3	4844.00	32.01	54.00	-21.99	28.35	3.66	Average	249	205
4	4844.00	44.22	74.00	-29.78	40.56	3.66	Peak	249	205
5	12110.00	41.39	54.00	-12.61	27.22	14.17	Average	281	190
6	12110.00	52.89	74.00	-21.11	38.72	14.17	Peak	281	190

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	Test Configuration	1



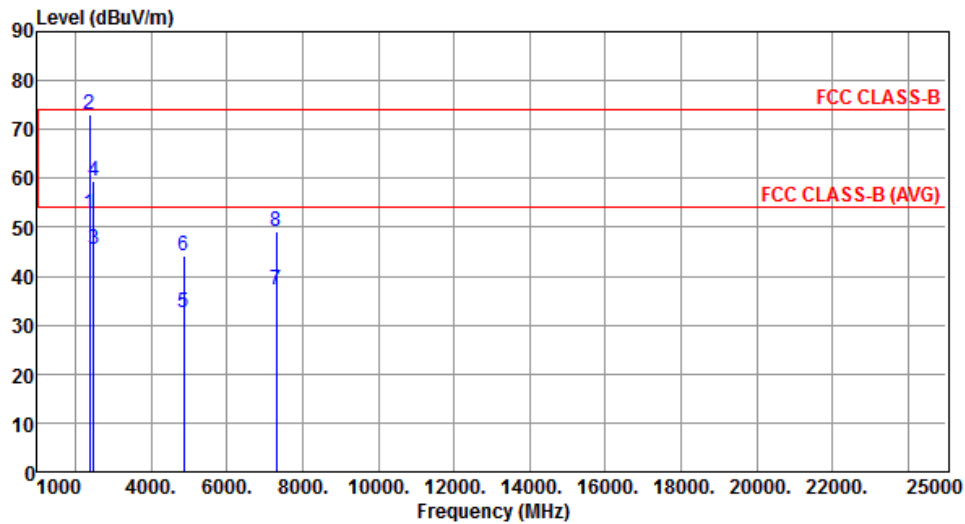
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	47.22	54.00	-6.78	50.57	-3.35	Average	250	181
2	2390.00	59.89	74.00	-14.11	63.24	-3.35	Peak	250	181
3	4844.00	32.24	54.00	-21.76	28.58	3.66	Average	180	147
4	4844.00	43.21	74.00	-30.79	39.55	3.66	Peak	180	147
5	12110.00	42.49	54.00	-11.51	28.32	14.17	Average	390	257
6	12110.00	53.17	74.00	-20.83	39.00	14.17	Peak	390	257

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	Test Configuration	1



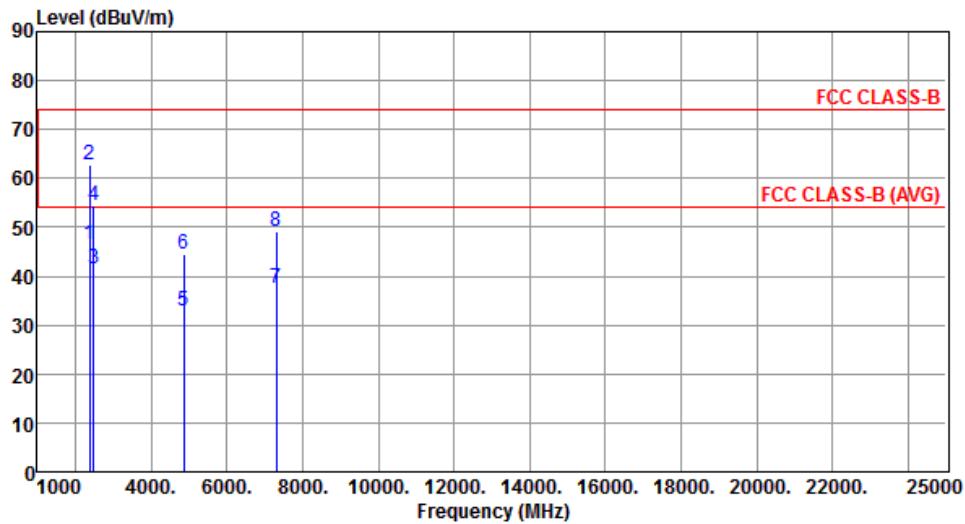
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.89	54.00	-1.11	56.24	-3.35	Average	170	232
2	2390.00	72.98	74.00	-1.02	76.33	-3.35	Peak	170	232
3	2483.50	45.42	54.00	-8.58	48.35	-2.93	Average	170	232
4	2483.50	59.50	74.00	-14.50	62.43	-2.93	Peak	170	232
5	4874.00	32.54	54.00	-21.46	28.79	3.75	Average	194	254
6	4874.00	44.23	74.00	-29.77	40.48	3.75	Peak	194	254
7	7311.00	37.34	54.00	-16.66	28.92	8.42	Average	103	97
8	7311.00	49.14	74.00	-24.86	40.72	8.42	Peak	103	97

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	Test Configuration	1



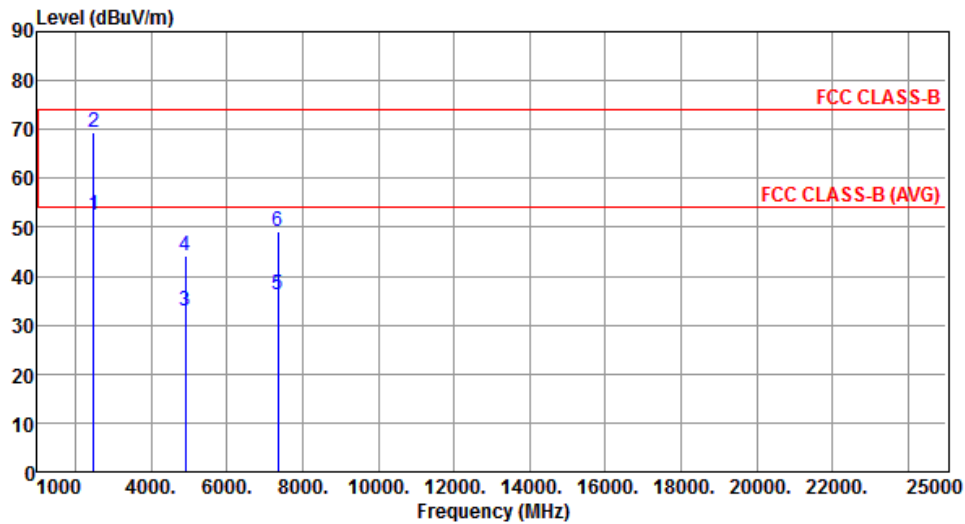
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	46.58	54.00	-7.42	49.93	-3.35	Average	100	139
2	2390.00	62.72	74.00	-11.28	66.07	-3.35	Peak	100	139
3	2483.50	41.54	54.00	-12.46	44.47	-2.93	Average	100	139
4	2483.50	54.50	74.00	-19.50	57.43	-2.93	Peak	100	139
5	4874.00	32.95	54.00	-21.05	29.20	3.75	Average	209	135
6	4874.00	44.58	74.00	-29.42	40.83	3.75	Peak	209	135
7	7311.00	37.49	54.00	-16.51	29.07	8.42	Average	295	177
8	7311.00	49.13	74.00	-24.87	40.71	8.42	Peak	295	177

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	Test Configuration	1



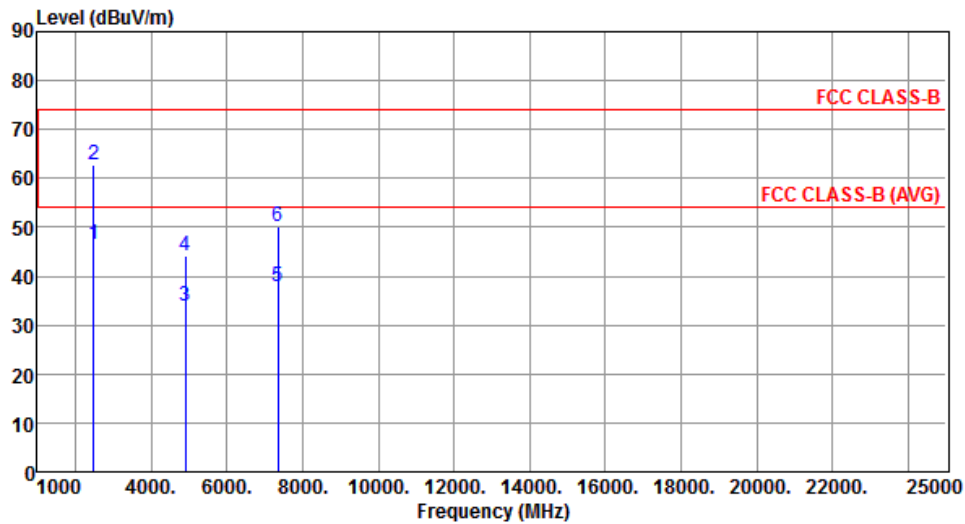
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.33	54.00	-1.67	55.26	-2.93	Average	250	261
2	2483.50	69.37	74.00	-4.63	72.30	-2.93	Peak	250	261
3	4904.00	32.97	54.00	-21.03	29.11	3.86	Average	197	235
4	4904.00	44.28	74.00	-29.72	40.42	3.86	Peak	197	235
5	7356.00	36.27	54.00	-17.73	27.83	8.44	Average	218	297
6	7356.00	49.10	74.00	-24.90	40.66	8.44	Peak	218	297

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	Test Configuration	1



	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	46.55	54.00	-7.45	49.48	-2.93	Average	260	192
2	2483.50	62.82	74.00	-11.18	65.75	-2.93	Peak	260	192
3	4904.00	33.86	54.00	-20.14	30.00	3.86	Average	270	248
4	4904.00	44.29	74.00	-29.71	40.43	3.86	Peak	270	248
5	7356.00	37.72	54.00	-16.28	29.28	8.44	Average	350	65
6	7356.00	50.13	74.00	-23.87	41.69	8.44	Peak	350	65

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

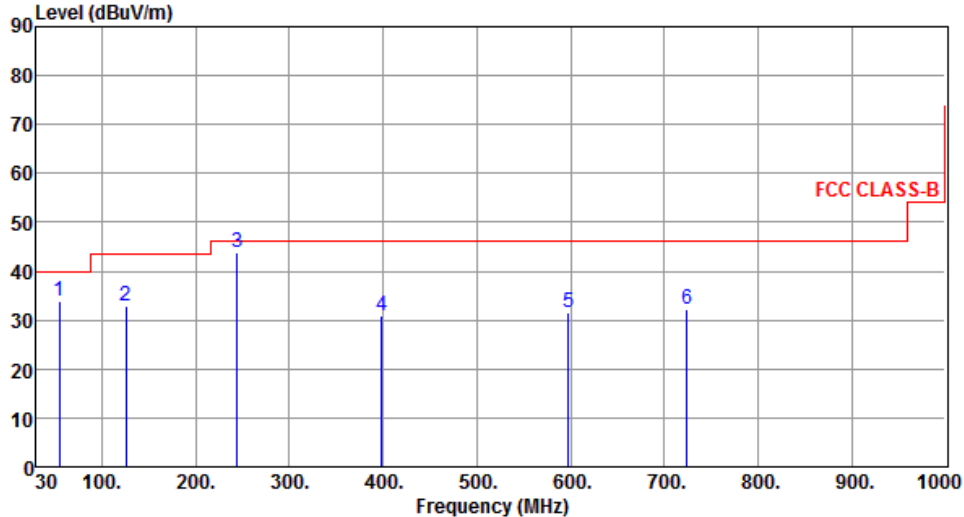
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Test Configuration 2: External Antenna with highest gain (Model E55u)

3.5.9 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	2

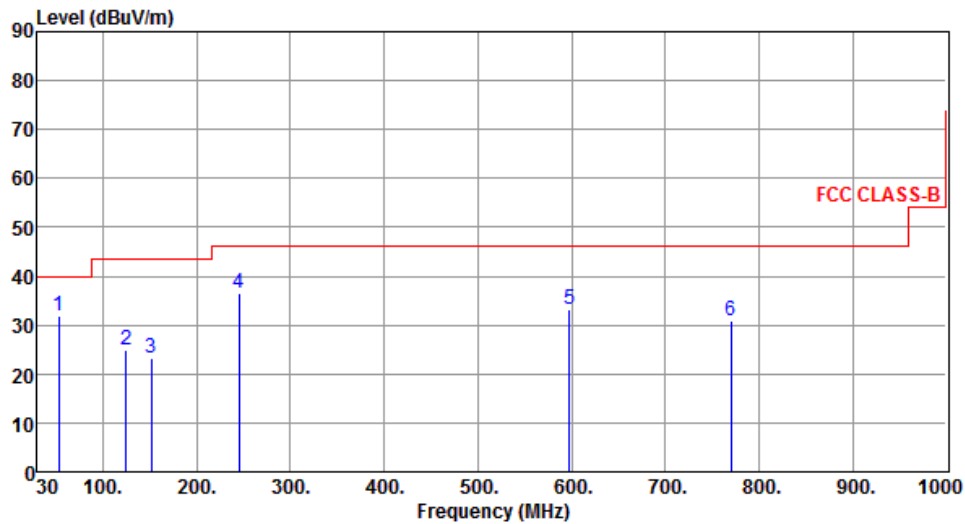


The graph displays the radiated unwanted emissions for a transmitter. The y-axis represents the Level in dBuV/m, ranging from 0 to 90. The x-axis represents the Frequency in MHz, ranging from 30 to 1000. A red line indicates the FCC CLASS-B limit, which is 40 dBuV/m from 30 MHz to 100 MHz, 45 dBuV/m from 100 MHz to 1000 MHz, and 55 dBuV/m from 1000 MHz to 10000 MHz. Six emission peaks are identified and labeled 1 through 6, with their corresponding data provided in the table below.

	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	54.25	34.00	40.00	-6.00	50.85	-16.85	Peak	---	---
2	126.03	32.91	43.50	-10.59	51.25	-18.34	Peak	---	---
3	244.37	43.89	46.00	-2.11	61.74	-17.85	Peak	---	---
4	398.60	30.74	46.00	-15.26	44.19	-13.45	Peak	---	---
5	597.45	31.68	46.00	-14.32	41.25	-9.57	Peak	---	---
6	724.52	32.26	46.00	-13.74	39.77	-7.51	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	11g	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	53.28	31.72	40.00	-8.28	48.45	-16.73	Peak	---	---
2	125.06	24.98	43.50	-18.52	43.40	-18.42	Peak	---	---
3	151.25	23.11	43.50	-20.39	39.84	-16.73	Peak	---	---
4	245.34	36.51	46.00	-9.49	54.33	-17.82	Peak	---	---
5	597.45	33.28	46.00	-12.72	42.85	-9.57	Peak	---	---
6	770.11	30.98	46.00	-15.02	37.75	-6.77	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

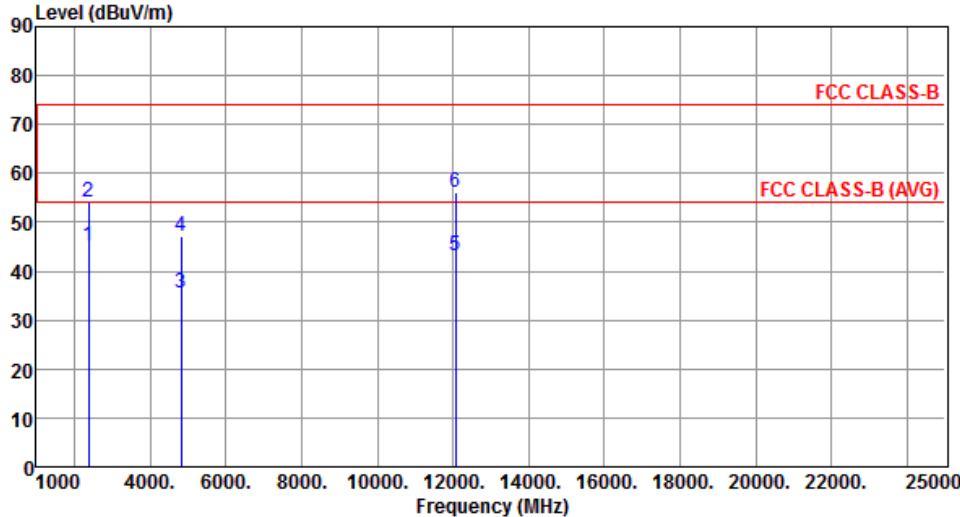
*Factor includes antenna factor , cable loss and amplifier gain

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 11b

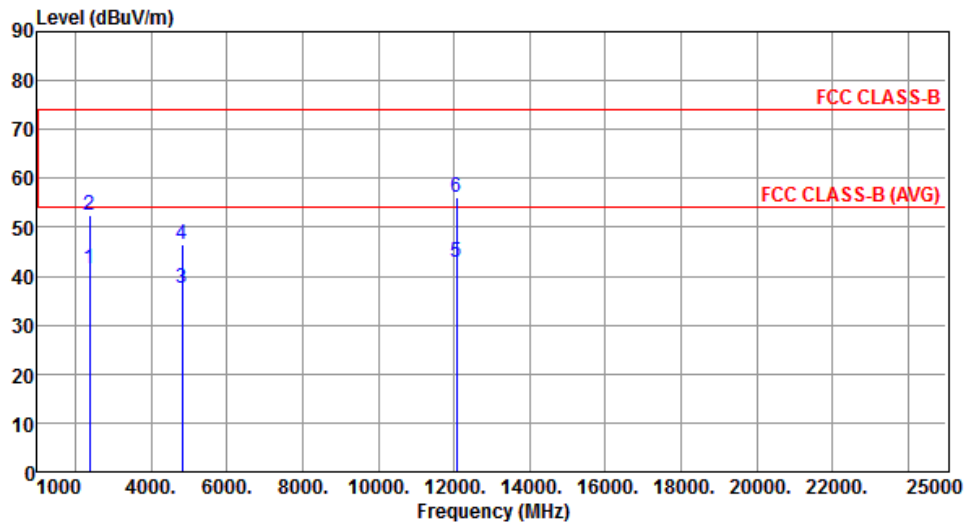
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	2



	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	45.05	54.00	-8.95	48.40	-3.35	Average	140	92
2	2390.00	54.06	74.00	-19.94	57.41	-3.35	Peak	140	92
3	4824.00	35.62	54.00	-18.38	32.03	3.59	Average	100	173
4	4824.00	47.22	74.00	-26.78	43.63	3.59	Peak	100	173
5	12060.00	43.22	54.00	-10.78	29.09	14.13	Average	100	222
6	12060.00	56.28	74.00	-17.72	42.15	14.13	Peak	100	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)	2412
Polarization	Vertical	Test Configuration	2



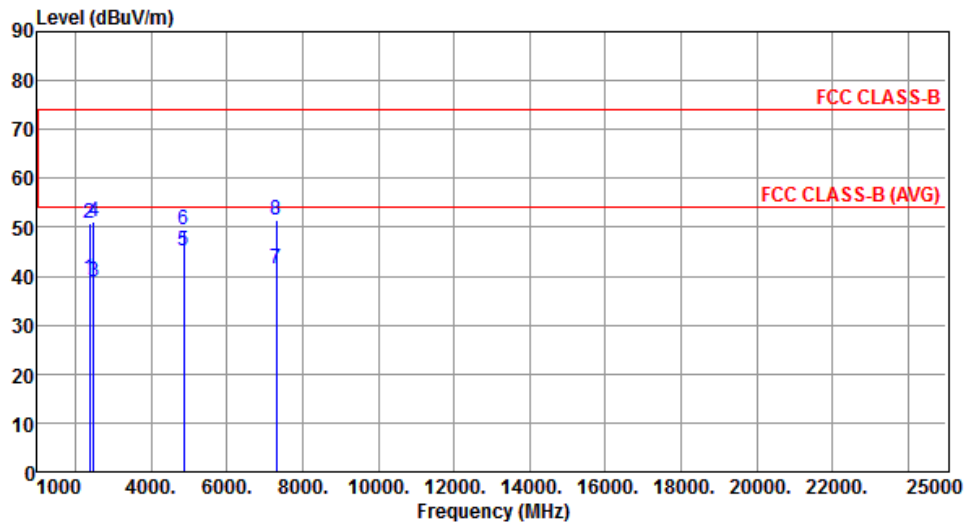
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	41.67	54.00	-12.33	45.02	-3.35	Average	100	304
2	2390.00	52.46	74.00	-21.54	55.81	-3.35	Peak	100	304
3	4824.00	37.37	54.00	-16.63	33.78	3.59	Average	100	336
4	4824.00	46.41	74.00	-27.59	42.82	3.59	Peak	100	336
5	12060.00	43.00	54.00	-11.00	28.87	14.13	Average	100	156
6	12060.00	56.04	74.00	-17.96	41.91	14.13	Peak	100	156

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	Test Configuration	2



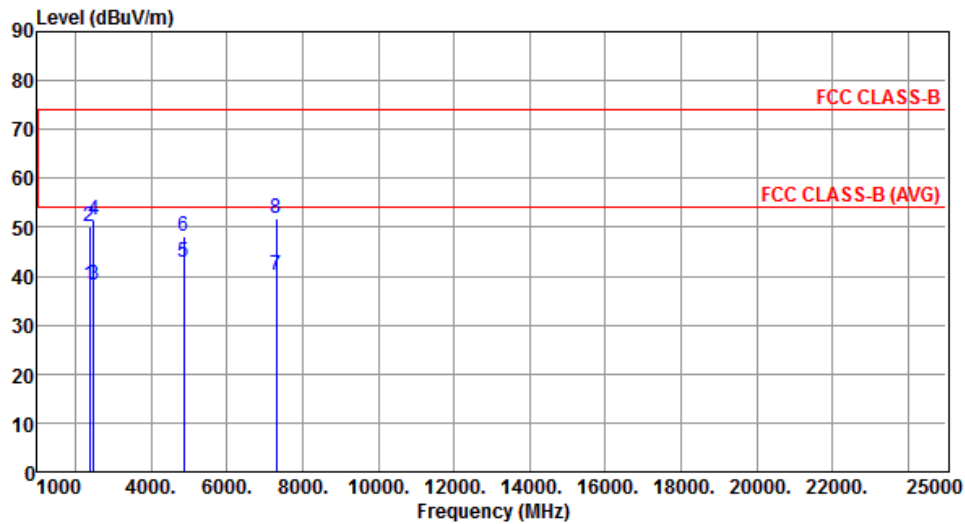
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	39.60	54.00	-14.40	42.95	-3.35	Average	140	92
2	2390.00	50.81	74.00	-23.19	54.16	-3.35	Peak	140	92
3	2483.50	38.79	54.00	-15.21	41.72	-2.93	Average	140	92
4	2483.50	51.14	74.00	-22.86	54.07	-2.93	Peak	140	92
5	4874.00	45.15	54.00	-8.85	41.40	3.75	Average	100	52
6	4874.00	49.61	74.00	-24.39	45.86	3.75	Peak	100	52
7	7311.00	41.36	54.00	-12.64	32.94	8.42	Average	214	317
8	7311.00	51.56	74.00	-22.44	43.14	8.42	Peak	214	317

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	Test Configuration	2



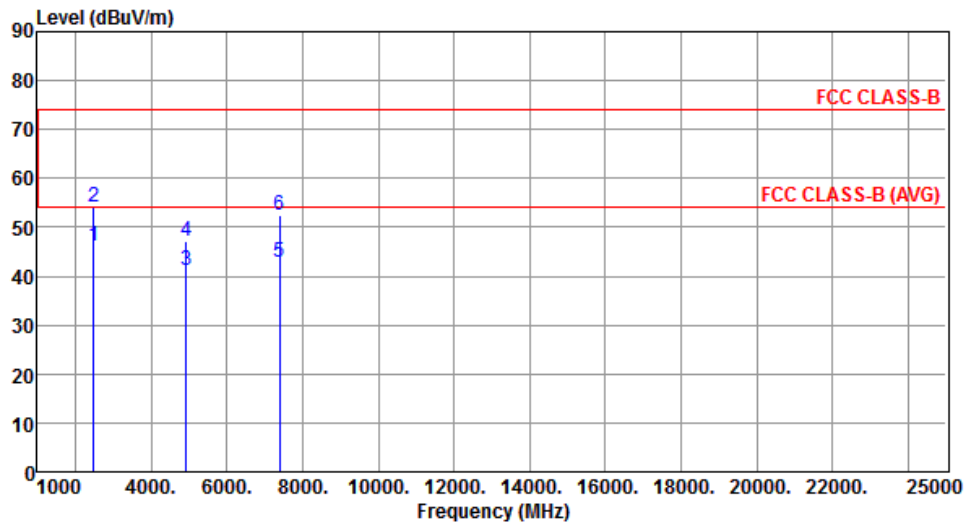
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.15	54.00	-15.85	41.50	-3.35	Average	100	303
2	2390.00	50.11	74.00	-23.89	53.46	-3.35	Peak	100	303
3	2483.50	38.14	54.00	-15.86	41.07	-2.93	Average	100	303
4	2483.50	51.51	74.00	-22.49	54.44	-2.93	Peak	100	303
5	4874.00	42.98	54.00	-11.02	39.23	3.75	Average	104	3
6	4874.00	48.23	74.00	-25.77	44.48	3.75	Peak	104	3
7	7311.00	40.26	54.00	-13.74	31.84	8.42	Average	100	16
8	7311.00	51.82	74.00	-22.18	43.40	8.42	Peak	100	16

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	Test Configuration	2



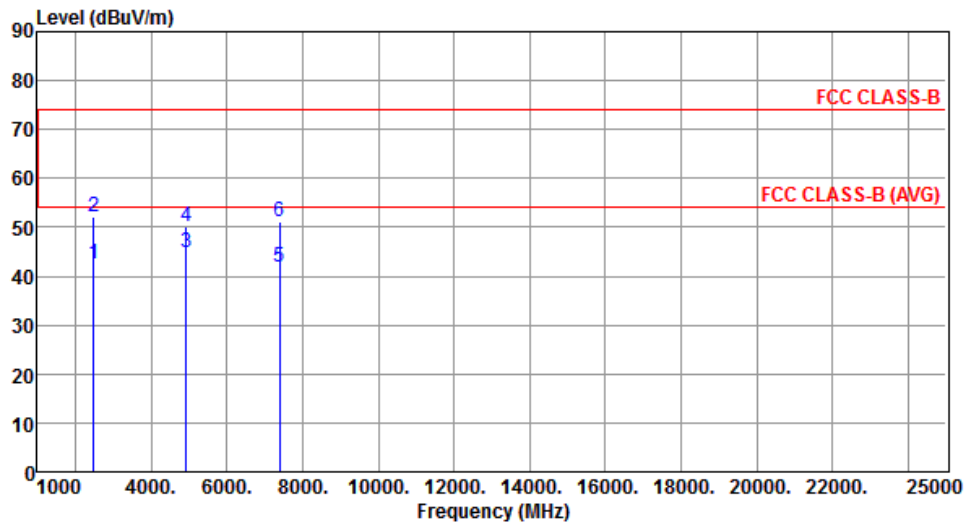
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	46.20	54.00	-7.80	49.13	-2.93	Average	103	40
2	2483.50	54.26	74.00	-19.74	57.19	-2.93	Peak	103	40
3	4924.00	41.12	54.00	-12.88	37.21	3.91	Average	100	0
4	4924.00	47.05	74.00	-26.95	43.14	3.91	Peak	100	0
5	7386.00	42.87	54.00	-11.13	34.41	8.46	Average	113	53
6	7386.00	52.44	74.00	-21.56	43.98	8.46	Peak	113	53

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	Test Configuration	2



	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	42.34	54.00	-11.66	45.27	-2.93	Average	100	338
2	2483.50	52.29	74.00	-21.71	55.22	-2.93	Peak	100	338
3	4924.00	44.78	54.00	-9.22	40.87	3.91	Average	100	326
4	4924.00	50.02	74.00	-23.98	46.11	3.91	Peak	100	326
5	7386.00	41.83	54.00	-12.17	33.37	8.46	Average	100	338
6	7386.00	51.19	74.00	-22.81	42.73	8.46	Peak	100	338

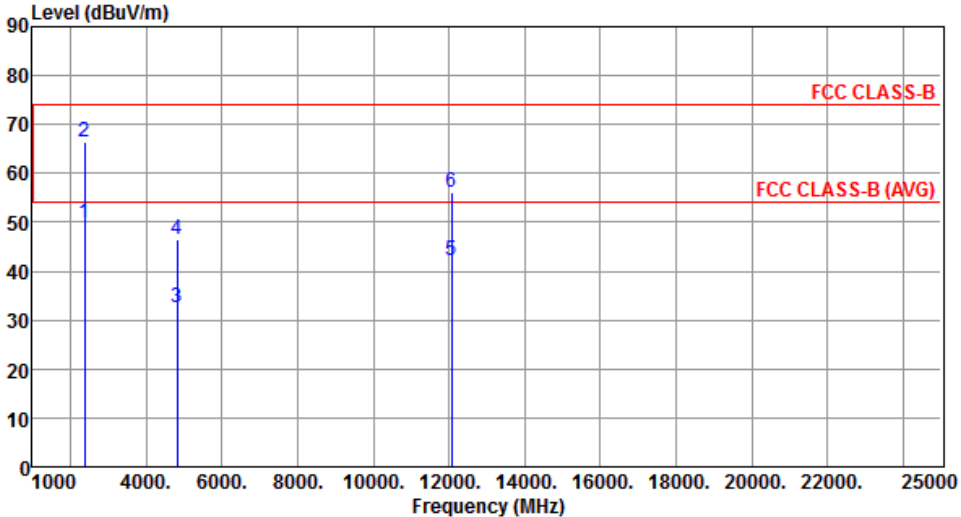
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*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 11g

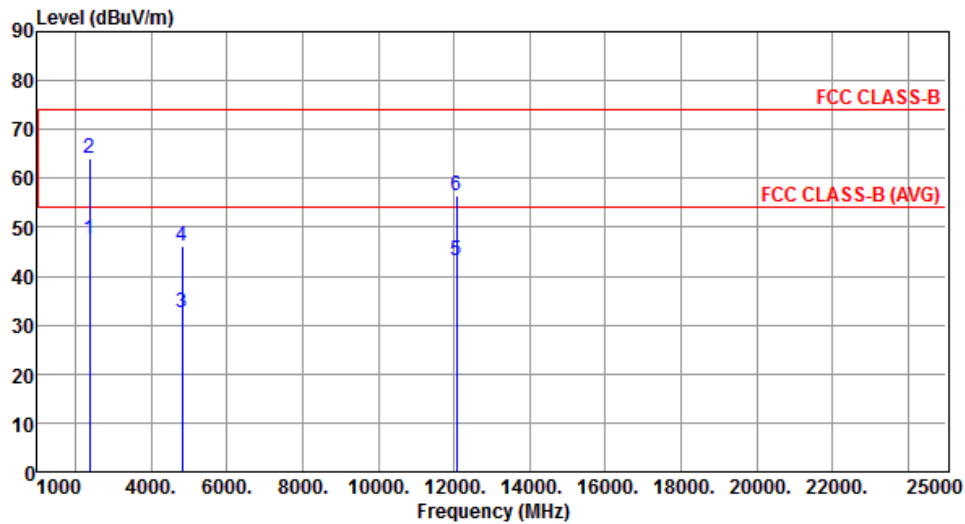
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	2



	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	49.83	54.00	-4.17	53.18	-3.35	Average	103	52
2	2390.00	66.41	74.00	-7.59	69.76	-3.35	Peak	103	52
3	4824.00	32.40	54.00	-21.60	28.81	3.59	Average	100	218
4	4824.00	46.47	74.00	-27.53	42.88	3.59	Peak	100	218
5	12060.00	42.31	54.00	-11.69	28.18	14.13	Average	100	177
6	12060.00	56.14	74.00	-17.86	42.01	14.13	Peak	100	177

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	Test Configuration	2



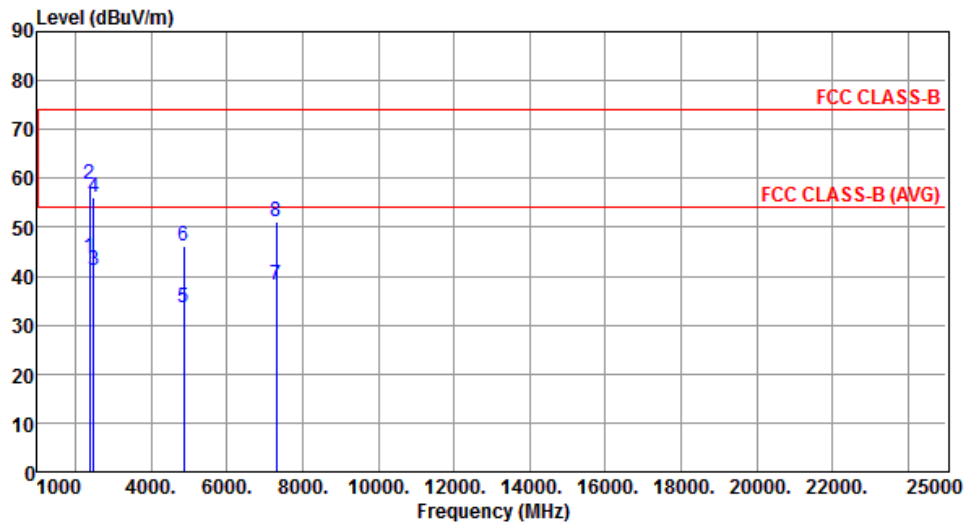
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	47.57	54.00	-6.43	50.92	-3.35	Average	261	279
2	2390.00	64.02	74.00	-9.98	67.37	-3.35	Peak	261	279
3	4824.00	32.50	54.00	-21.50	28.91	3.59	Average	100	166
4	4824.00	46.06	74.00	-27.94	42.47	3.59	Peak	100	166
5	12060.00	43.28	54.00	-10.72	29.15	14.13	Average	100	137
6	12060.00	56.35	74.00	-17.65	42.22	14.13	Peak	100	137

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	Test Configuration	2



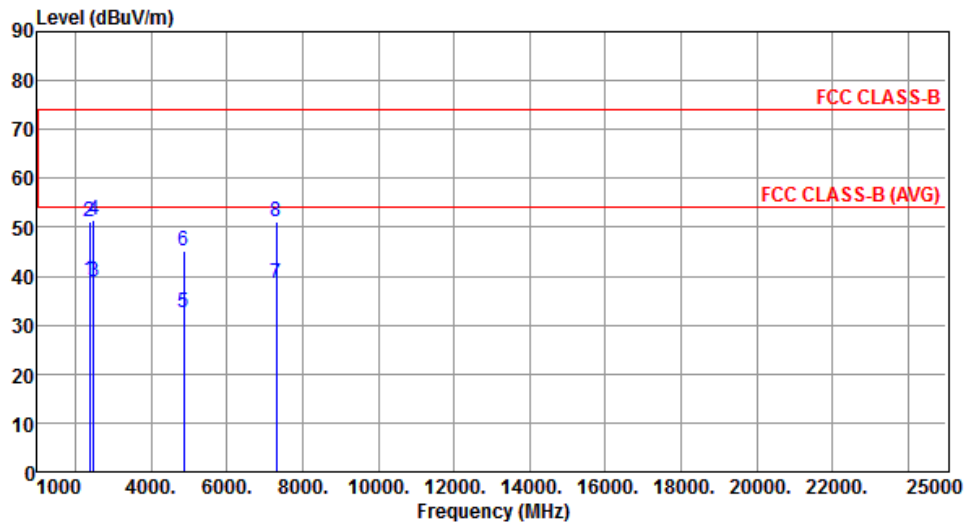
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	43.79	54.00	-10.21	47.14	-3.35	Average	100	48
2	2390.00	58.70	74.00	-15.30	62.05	-3.35	Peak	100	48
3	2483.50	41.09	54.00	-12.91	44.02	-2.93	Average	100	48
4	2483.50	56.09	74.00	-17.91	59.02	-2.93	Peak	100	48
5	4874.00	33.50	54.00	-20.50	29.75	3.75	Average	100	136
6	4874.00	46.25	74.00	-27.75	42.50	3.75	Peak	100	136
7	7311.00	38.18	54.00	-15.82	29.76	8.42	Average	100	200
8	7311.00	51.26	74.00	-22.74	42.84	8.42	Peak	100	200

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	Test Configuration	2



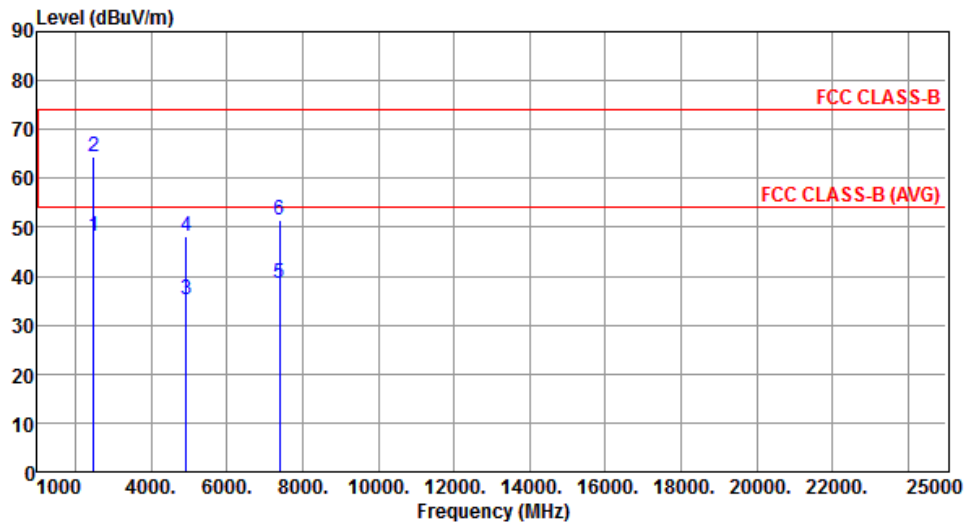
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	39.34	54.00	-14.66	42.69	-3.35	Average	259	303
2	2390.00	51.07	74.00	-22.93	54.42	-3.35	Peak	259	303
3	2483.50	38.75	54.00	-15.25	41.68	-2.93	Average	259	303
4	2483.50	51.57	74.00	-22.43	54.50	-2.93	Peak	259	303
5	4874.00	32.57	54.00	-21.43	28.82	3.75	Average	100	0
6	4874.00	45.13	74.00	-28.87	41.38	3.75	Peak	100	0
7	7311.00	38.63	54.00	-15.37	30.21	8.42	Average	100	131
8	7311.00	51.28	74.00	-22.72	42.86	8.42	Peak	100	131

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	Test Configuration	2



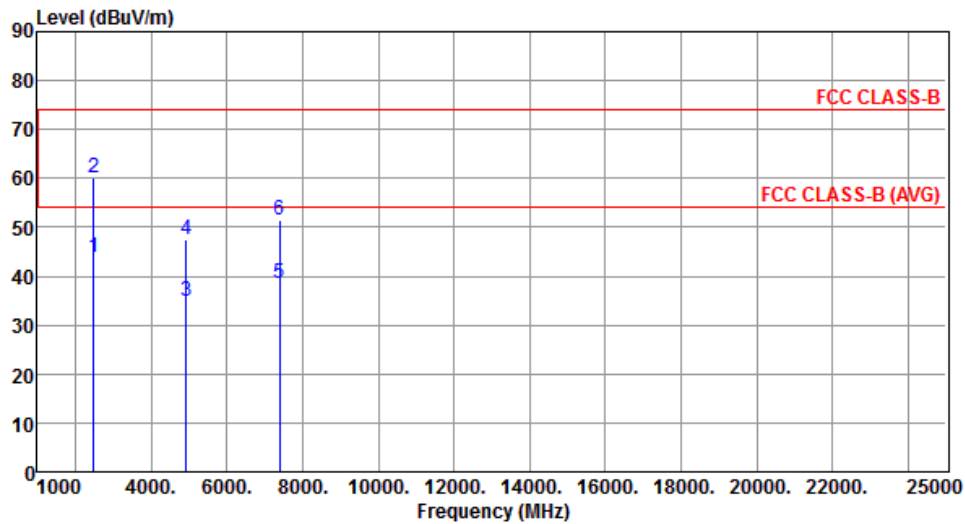
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	48.06	54.00	-5.94	50.99	-2.93	Average	100	17
2	2483.50	64.53	74.00	-9.47	67.46	-2.93	Peak	100	17
3	4924.00	35.08	54.00	-18.92	31.17	3.91	Average	100	0
4	4924.00	48.28	74.00	-25.72	44.37	3.91	Peak	100	0
5	7386.00	38.55	54.00	-15.45	30.09	8.46	Average	100	177
6	7386.00	51.52	74.00	-22.48	43.06	8.46	Peak	100	177

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	Test Configuration	2



	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	43.68	54.00	-10.32	46.61	-2.93	Average	100	212
2	2483.50	59.99	74.00	-14.01	62.92	-2.93	Peak	100	212
3	4924.00	35.02	54.00	-18.98	31.11	3.91	Average	100	318
4	4924.00	47.34	74.00	-26.66	43.43	3.91	Peak	100	318
5	7386.00	38.46	54.00	-15.54	30.00	8.46	Average	100	212
6	7386.00	51.37	74.00	-22.63	42.91	8.46	Peak	100	212

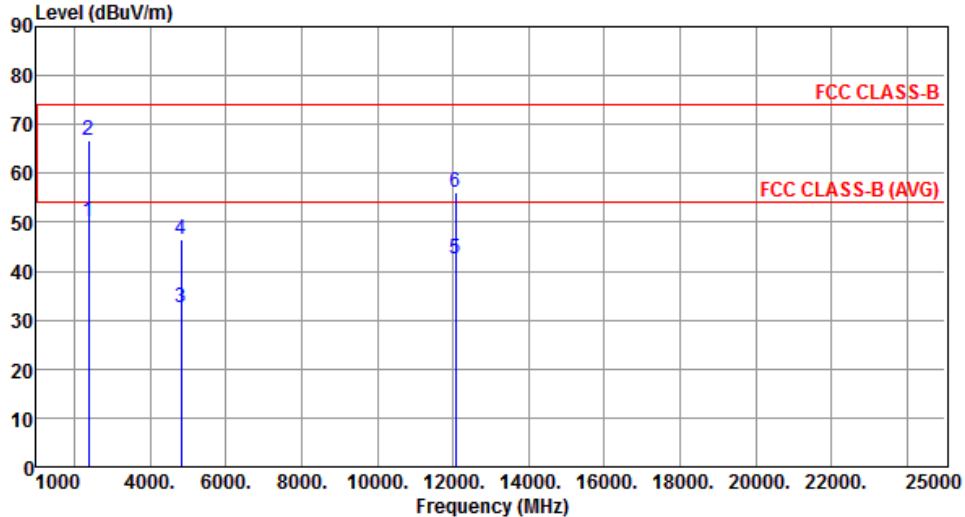
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

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

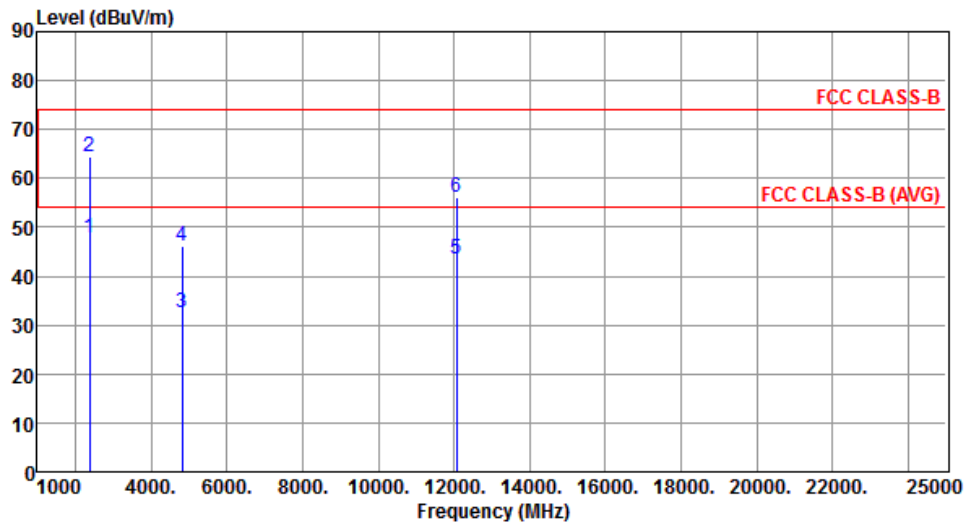
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	2



	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	50.06	54.00	-3.94	53.41	-3.35	Average	102	50
2	2390.00	66.75	74.00	-7.25	70.10	-3.35	Peak	102	50
3	4824.00	32.59	54.00	-21.41	29.00	3.59	Average	100	215
4	4824.00	46.41	74.00	-27.59	42.82	3.59	Peak	100	215
5	12060.00	42.40	54.00	-11.60	28.27	14.13	Average	100	168
6	12060.00	56.20	74.00	-17.80	42.07	14.13	Peak	100	168

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	Test Configuration	2



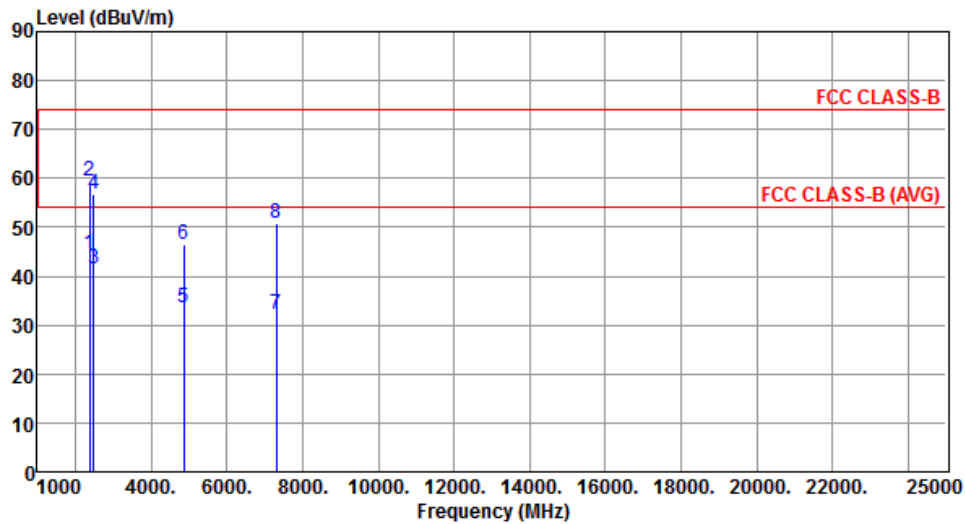
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	47.74	54.00	-6.26	51.09	-3.35	Average	260	275
2	2390.00	64.59	74.00	-9.41	67.94	-3.35	Peak	260	275
3	4824.00	32.67	54.00	-21.33	29.08	3.59	Average	100	156
4	4824.00	46.22	74.00	-27.78	42.63	3.59	Peak	100	156
5	12060.00	43.40	54.00	-10.60	29.27	14.13	Average	100	142
6	12060.00	56.13	74.00	-17.87	42.00	14.13	Peak	100	142

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	Test Configuration	2



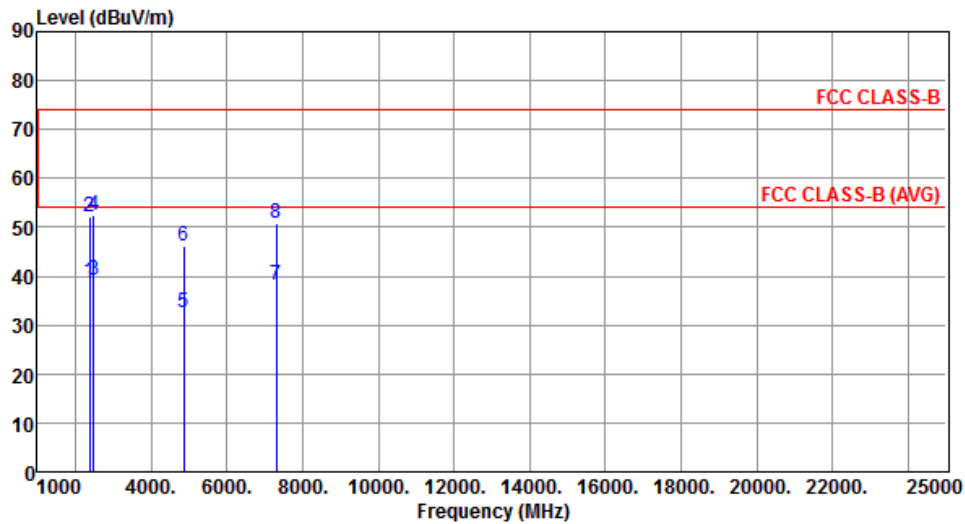
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	44.36	54.00	-9.64	47.71	-3.35	Average	100	52
2	2390.00	59.36	74.00	-14.64	62.71	-3.35	Peak	100	52
3	2483.50	41.40	54.00	-12.60	44.33	-2.93	Average	100	52
4	2483.50	56.62	74.00	-17.38	59.55	-2.93	Peak	100	52
5	4874.00	33.63	54.00	-20.37	29.88	3.75	Average	100	141
6	4874.00	46.45	74.00	-27.55	42.70	3.75	Peak	100	141
7	7311.00	32.18	54.00	-21.82	23.76	8.42	Average	100	188
8	7311.00	50.98	74.00	-23.02	42.56	8.42	Peak	100	188

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	Test Configuration	2



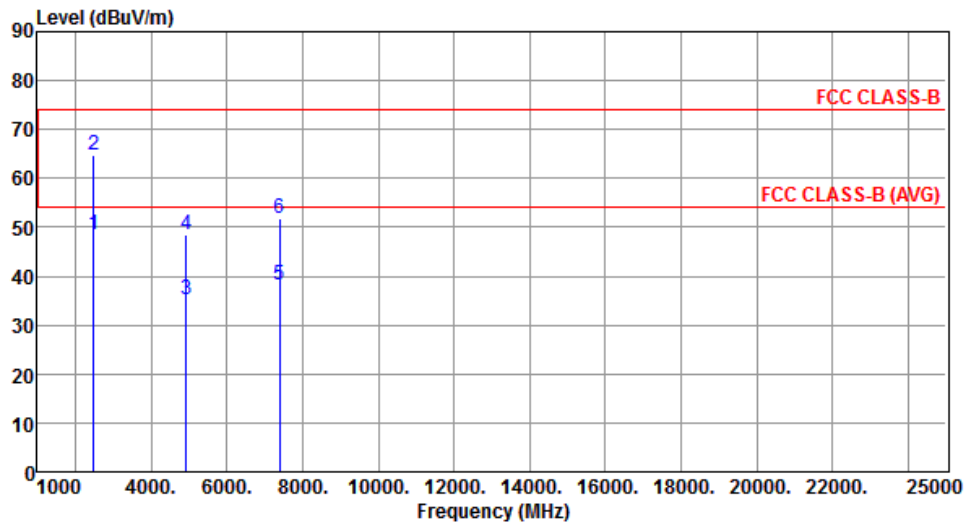
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.98	54.00	-15.02	42.33	-3.35	Average	255	300
2	2390.00	51.98	74.00	-22.02	55.33	-3.35	Peak	255	300
3	2483.50	39.18	54.00	-14.82	42.11	-2.93	Average	255	300
4	2483.50	52.35	74.00	-21.65	55.28	-2.93	Peak	255	300
5	4874.00	32.49	54.00	-21.51	28.74	3.75	Average	100	2
6	4874.00	46.28	74.00	-27.72	42.53	3.75	Peak	100	2
7	7311.00	38.28	54.00	-15.72	29.86	8.42	Average	100	138
8	7311.00	50.89	74.00	-23.11	42.47	8.42	Peak	100	138

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	Test Configuration	2



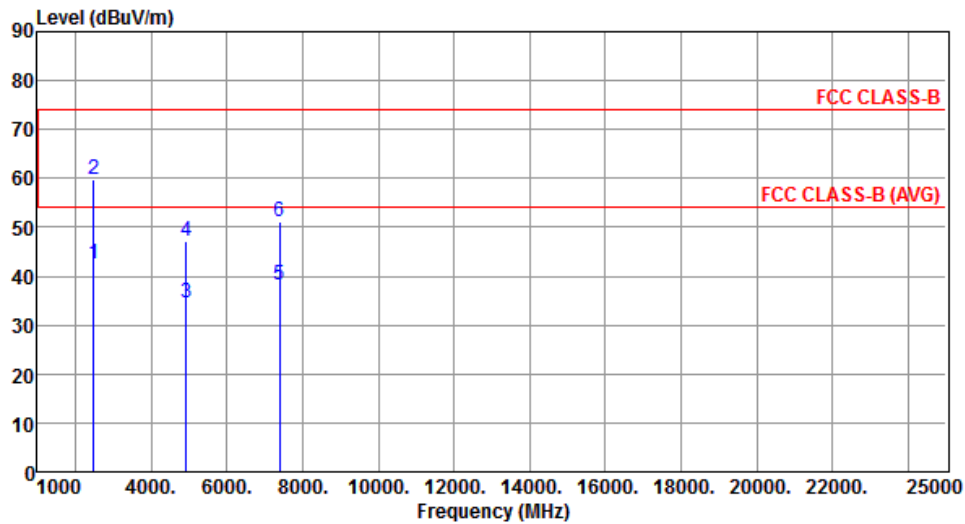
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	48.53	54.00	-5.47	51.46	-2.93	Average	100	20
2	2483.50	64.69	74.00	-9.31	67.62	-2.93	Peak	100	20
3	4924.00	35.23	54.00	-18.77	31.32	3.91	Average	100	0
4	4924.00	48.36	74.00	-25.64	44.45	3.91	Peak	100	0
5	7386.00	38.34	54.00	-15.66	29.88	8.46	Average	100	165
6	7386.00	51.72	74.00	-22.28	43.26	8.46	Peak	100	165

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	Test Configuration	2



	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	42.53	54.00	-11.47	45.46	-2.93	Average	260	303
2	2483.50	59.75	74.00	-14.25	62.68	-2.93	Peak	260	303
3	4924.00	34.57	54.00	-19.43	30.66	3.91	Average	100	315
4	4924.00	47.07	74.00	-26.93	43.16	3.91	Peak	100	315
5	7386.00	38.23	54.00	-15.77	29.77	8.46	Average	100	209
6	7386.00	51.18	74.00	-22.82	42.72	8.46	Peak	100	209

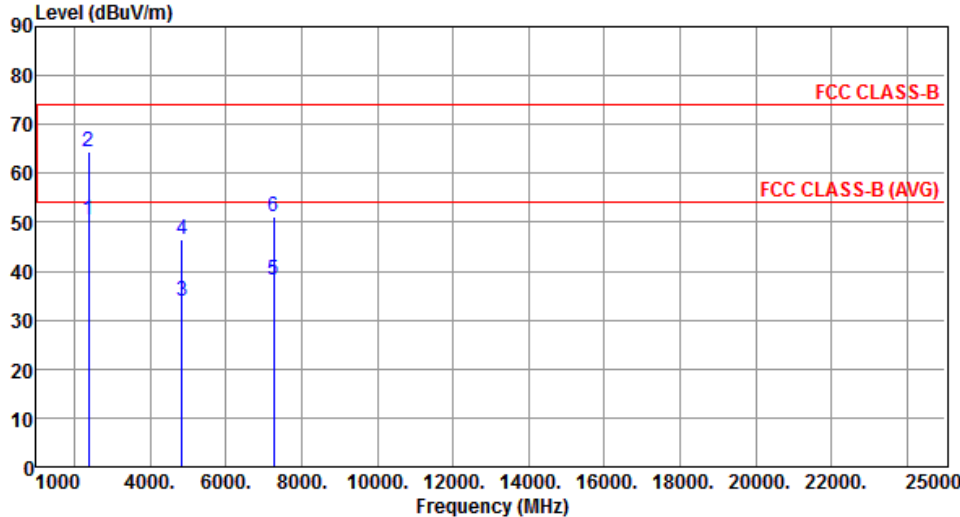
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

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

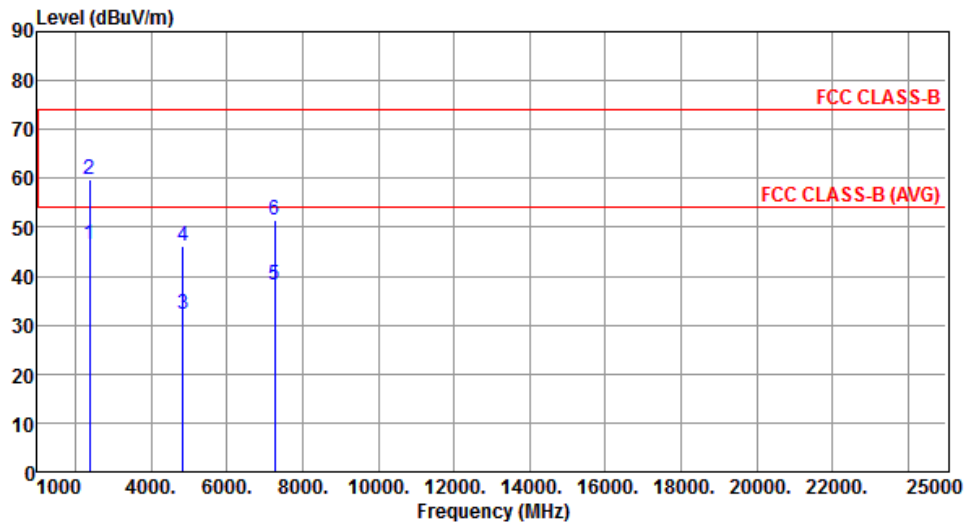
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Horizontal	Test Configuration	2



	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	50.44	54.00	-3.56	53.79	-3.35	Average	118	43
2	2390.00	64.47	74.00	-9.53	67.82	-3.35	Peak	118	43
3	4844.00	33.77	54.00	-20.23	30.11	3.66	Average	100	248
4	4844.00	46.33	74.00	-27.67	42.67	3.66	Peak	100	248
5	7266.00	38.09	54.00	-15.91	29.67	8.42	Average	100	248
6	7266.00	51.18	74.00	-22.82	42.76	8.42	Peak	100	248

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	Test Configuration	2



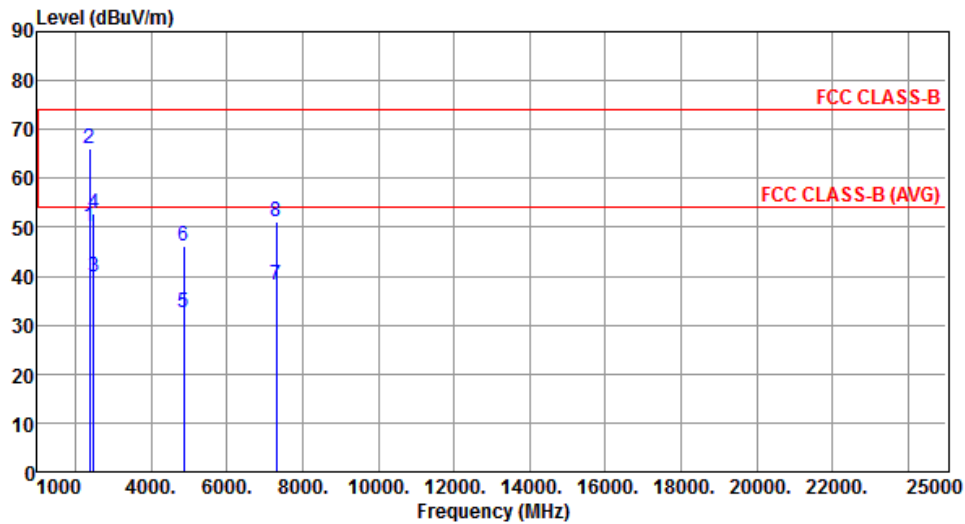
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	46.34	54.00	-7.66	49.69	-3.35	Average	266	302
2	2390.00	59.73	74.00	-14.27	63.08	-3.35	Peak	266	302
3	4844.00	32.27	54.00	-21.73	28.61	3.66	Average	100	56
4	4844.00	46.32	74.00	-27.68	42.66	3.66	Peak	100	56
5	7266.00	38.19	54.00	-15.81	29.77	8.42	Average	100	263
6	7266.00	51.36	74.00	-22.64	42.94	8.42	Peak	100	263

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	Test Configuration	2



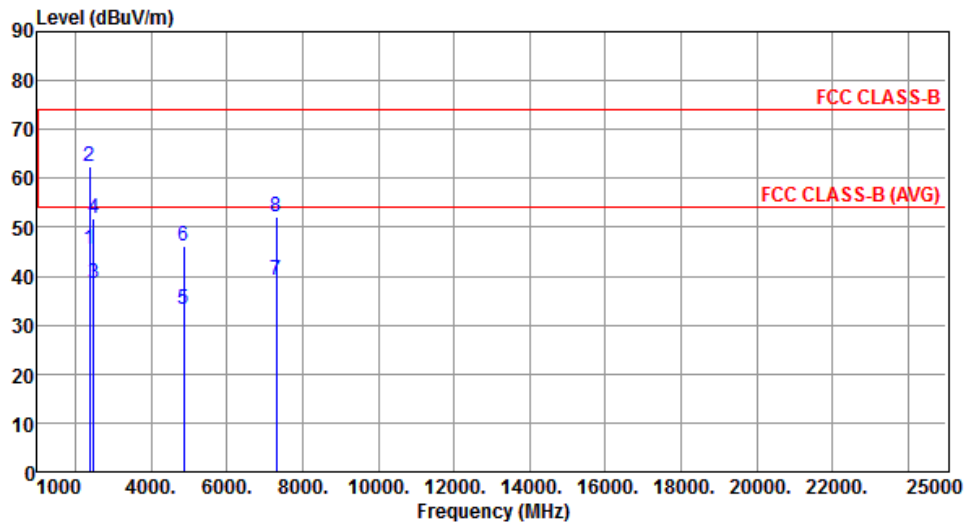
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.10	54.00	-3.90	53.45	-3.35	Average	118	26
2	2390.00	66.16	74.00	-7.84	69.51	-3.35	Peak	118	26
3	2483.50	39.97	54.00	-14.03	42.90	-2.93	Average	118	26
4	2483.50	52.68	74.00	-21.32	55.61	-2.93	Peak	118	26
5	4874.00	32.53	54.00	-21.47	28.78	3.75	Average	100	182
6	4874.00	46.22	74.00	-27.78	42.47	3.75	Peak	100	182
7	7311.00	38.19	54.00	-15.81	29.77	8.42	Average	100	123
8	7311.00	50.99	74.00	-23.01	42.57	8.42	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	HT40	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	2



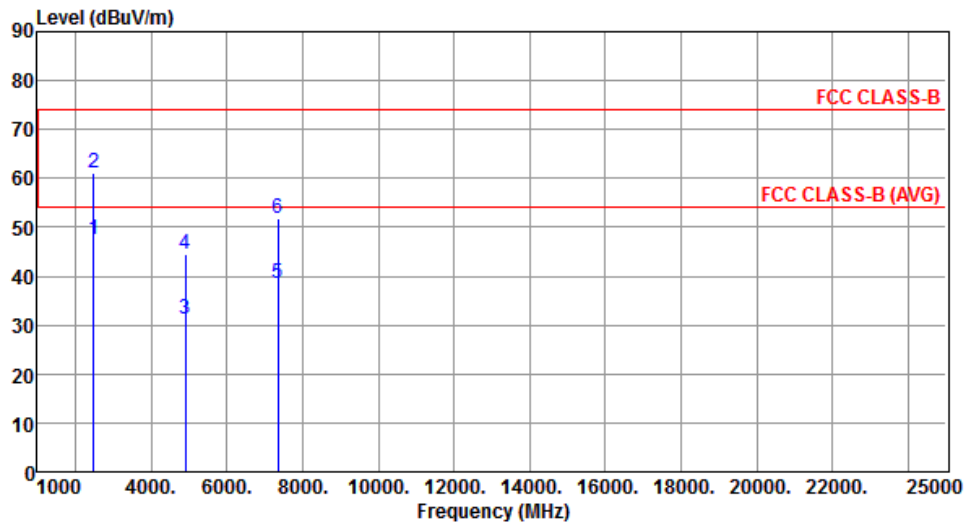
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	45.41	54.00	-8.59	48.76	-3.35	Average	264	305
2	2390.00	62.58	74.00	-11.42	65.93	-3.35	Peak	264	305
3	2483.50	38.62	54.00	-15.38	41.55	-2.93	Average	264	305
4	2483.50	51.80	74.00	-22.20	54.73	-2.93	Peak	264	305
5	4874.00	33.28	54.00	-20.72	29.53	3.75	Average	100	168
6	4874.00	46.14	74.00	-27.86	42.39	3.75	Peak	100	168
7	7311.00	39.30	54.00	-14.70	30.88	8.42	Average	100	196
8	7311.00	52.10	74.00	-21.90	43.68	8.42	Peak	100	196

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	Test Configuration	2



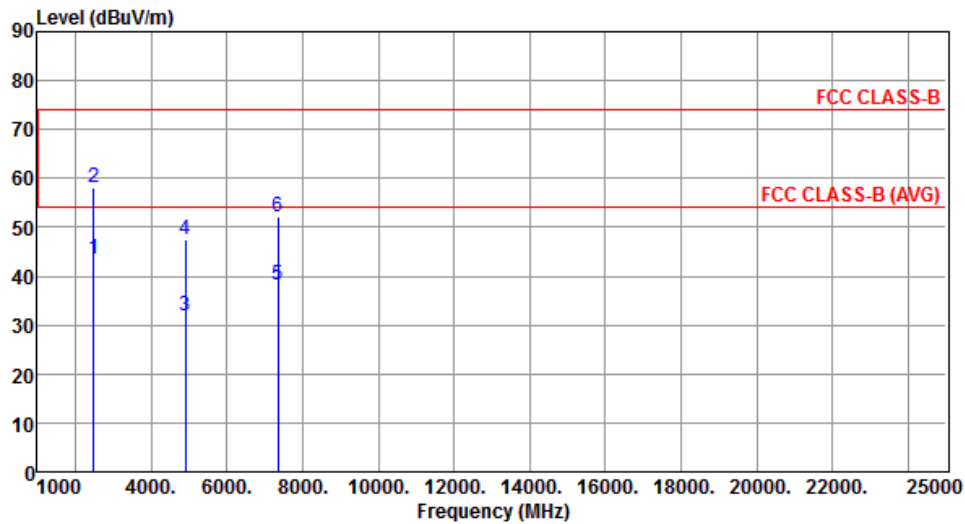
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	47.43	54.00	-6.57	50.36	-2.93	Average	100	90
2	2483.50	61.13	74.00	-12.87	64.06	-2.93	Peak	100	90
3	4904.00	31.16	54.00	-22.84	27.30	3.86	Average	100	162
4	4904.00	44.38	74.00	-29.62	40.52	3.86	Peak	100	162
5	7356.00	38.38	54.00	-15.62	29.94	8.44	Average	100	38
6	7356.00	51.70	74.00	-22.30	43.26	8.44	Peak	100	38

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	Test Configuration	2



	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	43.57	54.00	-10.43	46.50	-2.93	Average	389	301
2	2483.50	58.04	74.00	-15.96	60.97	-2.93	Peak	389	301
3	4904.00	32.01	54.00	-21.99	28.15	3.86	Average	100	155
4	4904.00	47.37	74.00	-26.63	43.51	3.86	Peak	100	155
5	7356.00	38.15	54.00	-15.85	29.71	8.44	Average	100	196
6	7356.00	52.17	74.00	-21.83	43.73	8.44	Peak	100	196

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

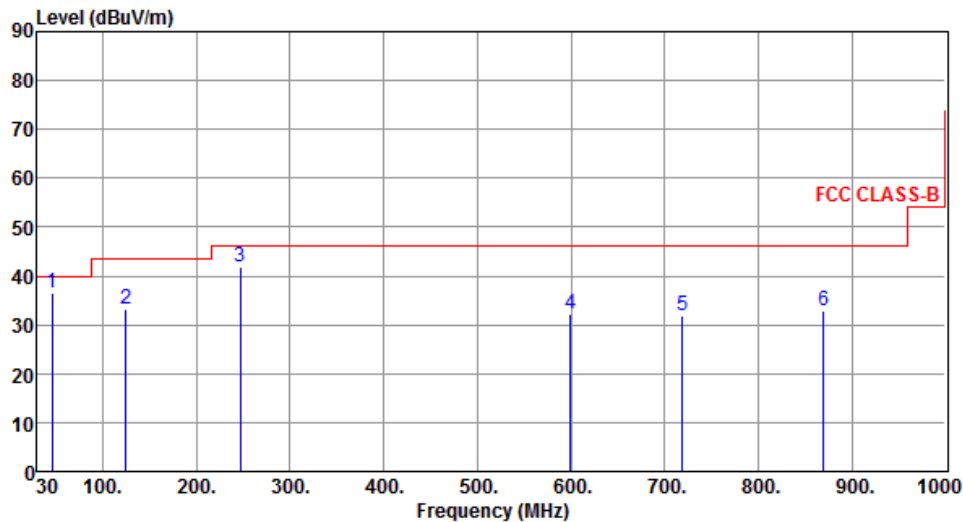
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Test Configuration 3: External Antenna with longest cable (Model M65)

3.5.14 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	45.52	36.68	40.00	-3.32	52.99	-16.31	Peak	---	---
2	125.06	33.21	43.50	-10.29	51.63	-18.42	Peak	---	---
3	247.28	41.95	46.00	-4.05	59.73	-17.78	Peak	---	---
4	599.39	32.32	46.00	-13.68	41.85	-9.53	Peak	---	---
5	718.70	31.98	46.00	-14.02	39.63	-7.65	Peak	---	---
6	870.02	32.90	46.00	-13.10	38.51	-5.61	Peak	---	---

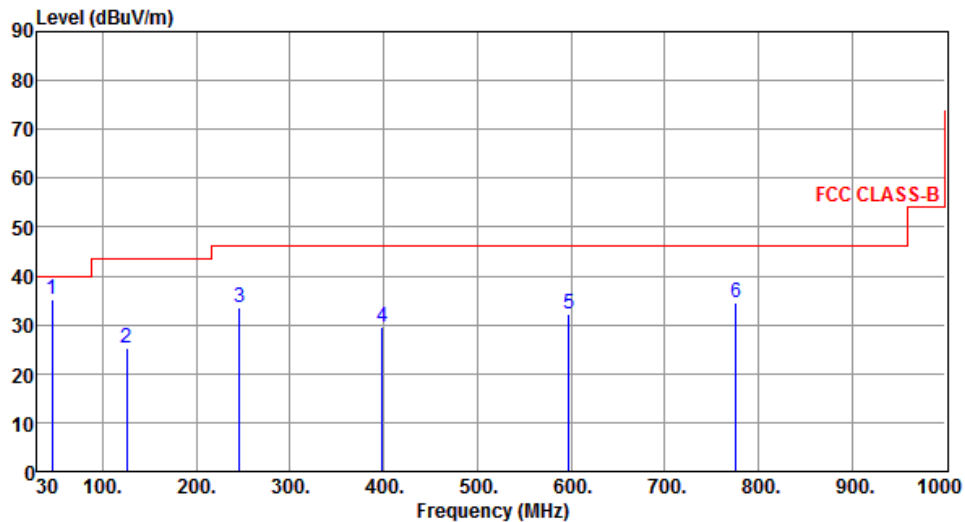
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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	11g	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	45.52	35.13	40.00	-4.87	51.44	-16.31	Peak	---	---
2	126.03	25.27	43.50	-18.23	43.61	-18.34	Peak	---	---
3	246.31	33.48	46.00	-12.52	51.28	-17.80	Peak	---	---
4	398.60	29.71	46.00	-16.29	43.16	-13.45	Peak	---	---
5	597.45	32.29	46.00	-13.71	41.86	-9.57	Peak	---	---
6	775.93	34.53	46.00	-11.47	41.25	-6.72	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.

3.6 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 20 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

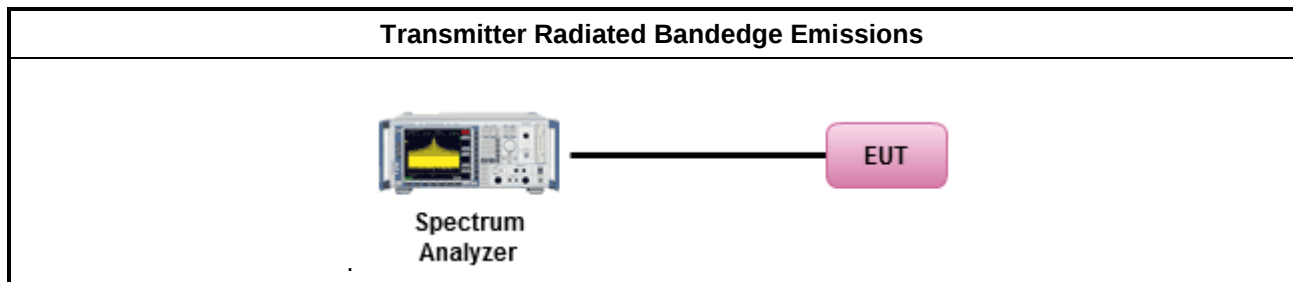
Reference level measurement

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

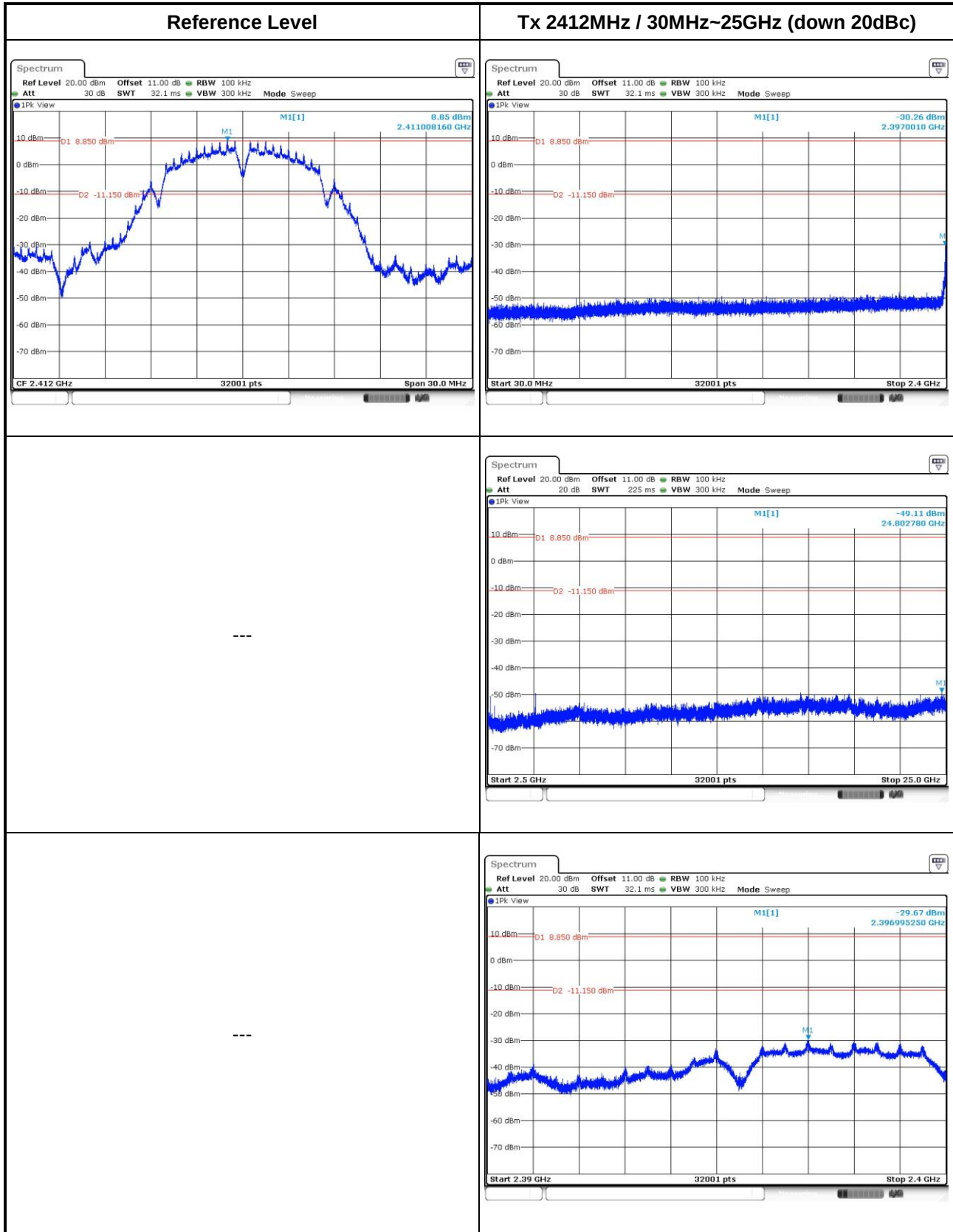


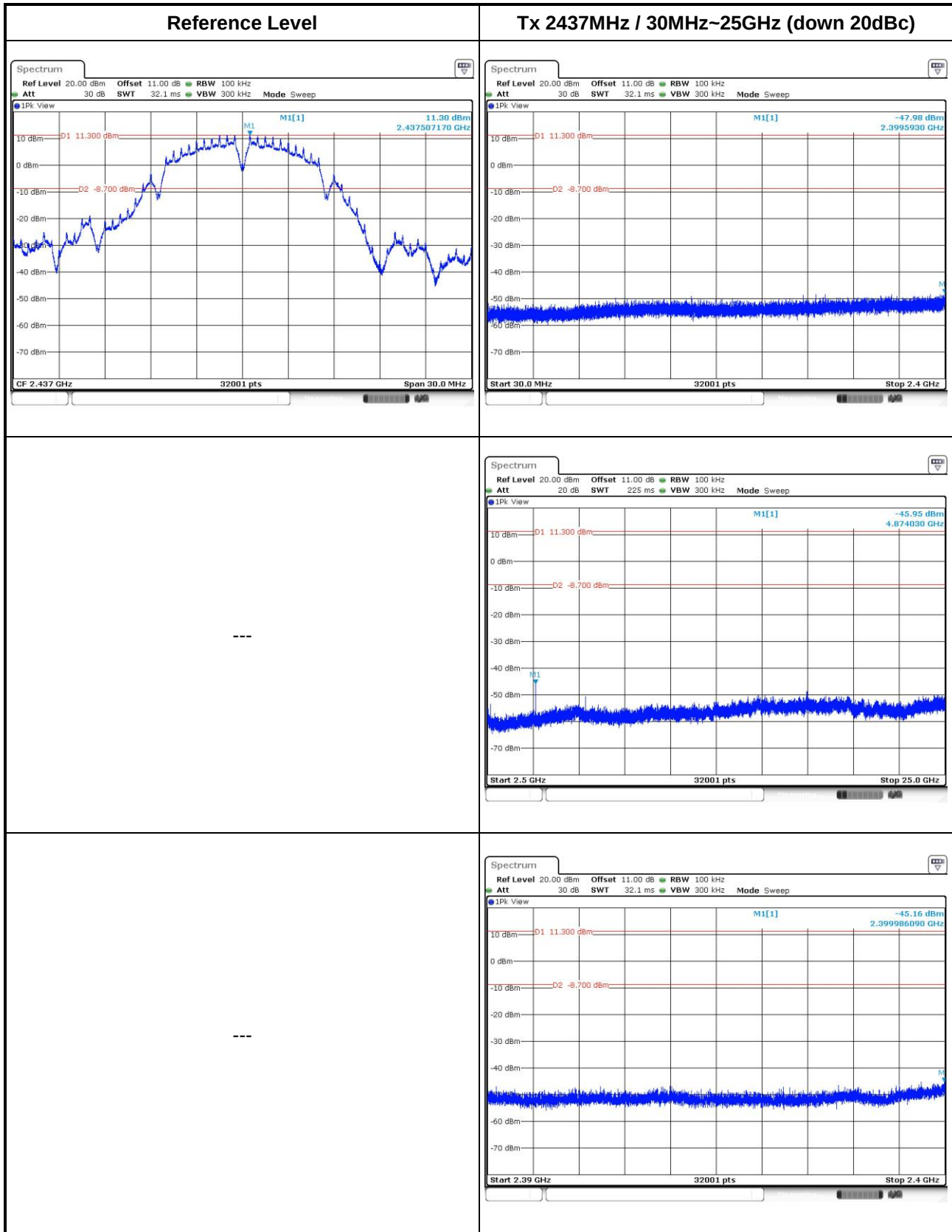
3.6.5 Test Result of Emissions in non-restricted frequency bands

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.

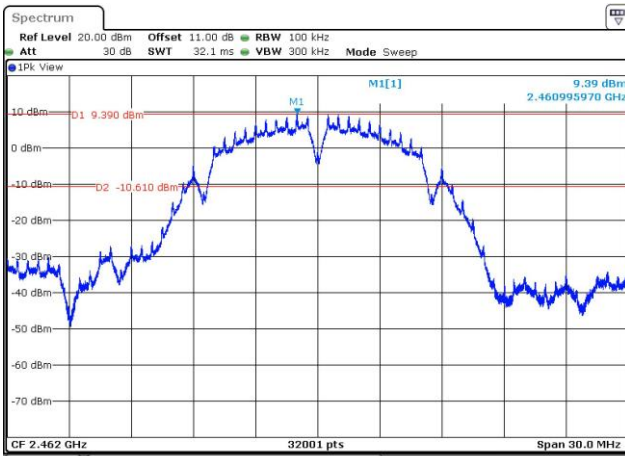
3.6.6 Unwanted Emissions into Non-Restricted Frequency Bands

802.11b

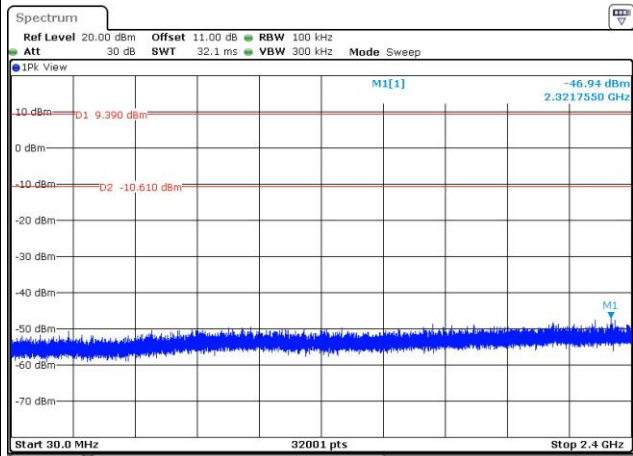


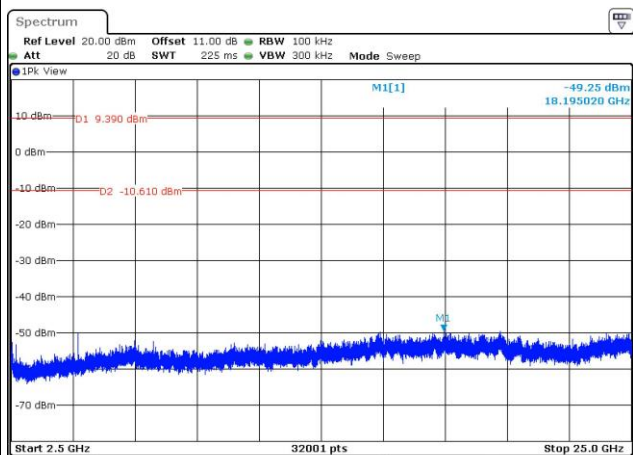


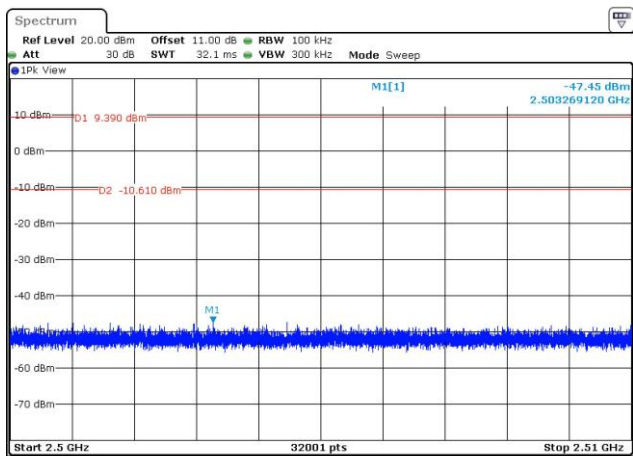
Reference Level



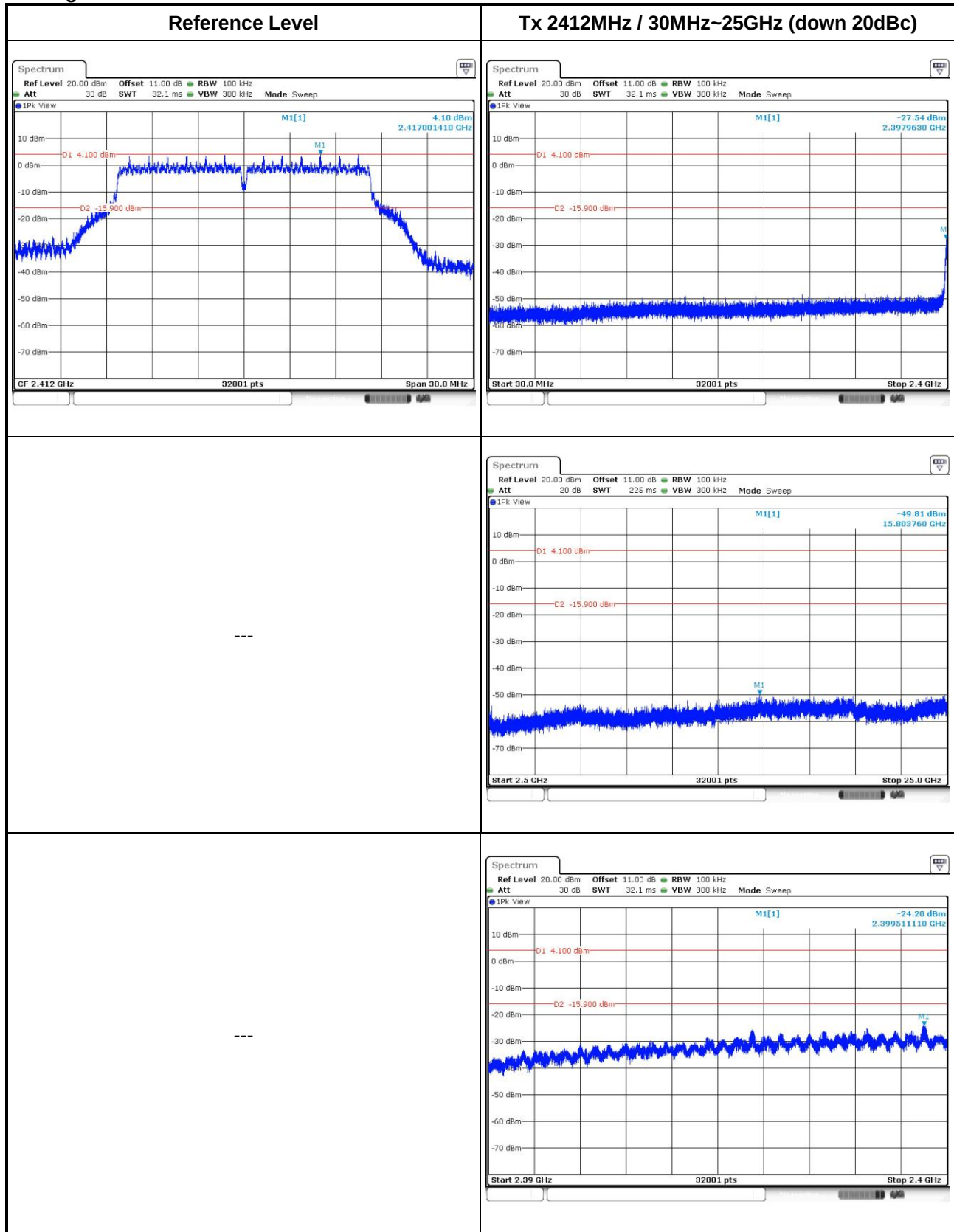
Tx 2462MHz / 30MHz~25GHz (down 20dBc)



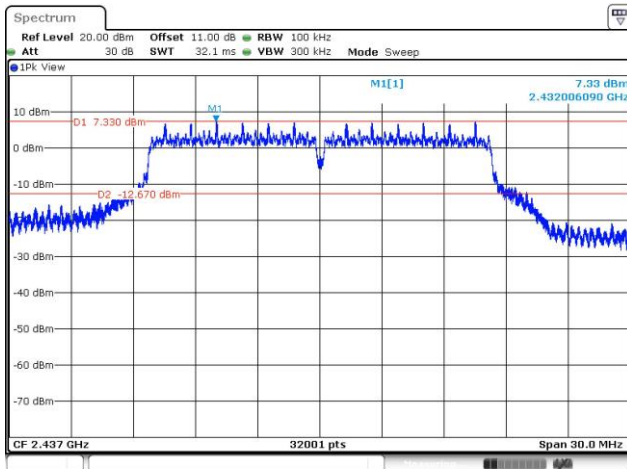




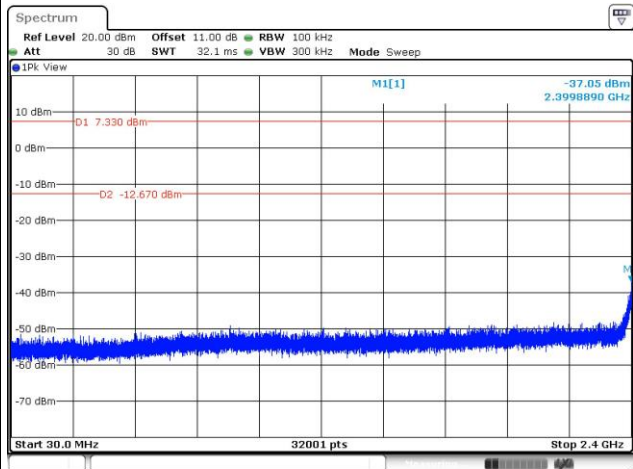
802.11g

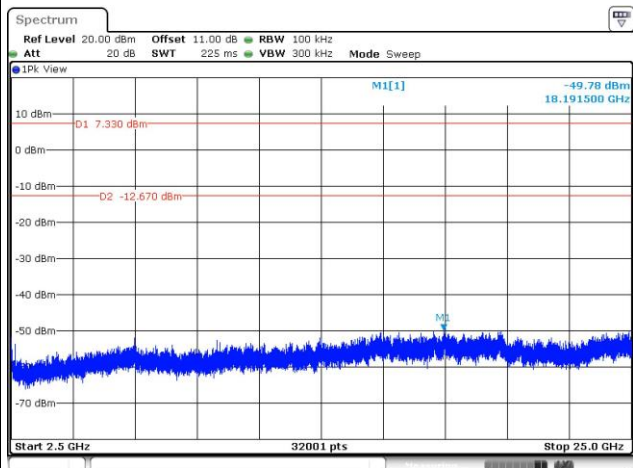


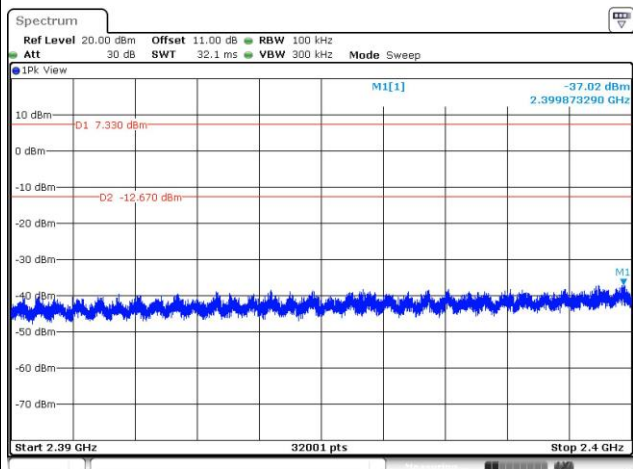
Reference Level

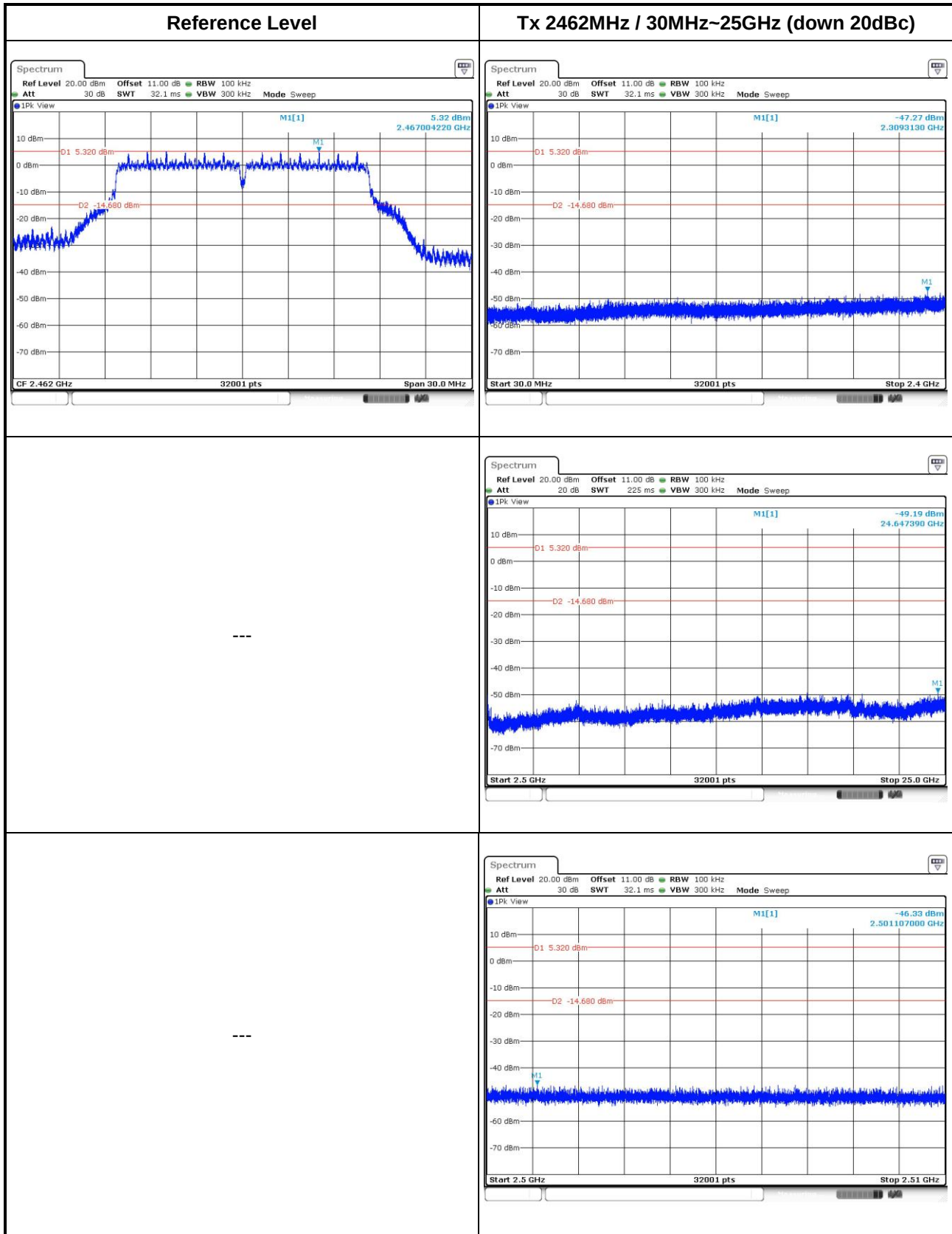


Tx 2437MHz / 30MHz~25GHz (down 20dBc)

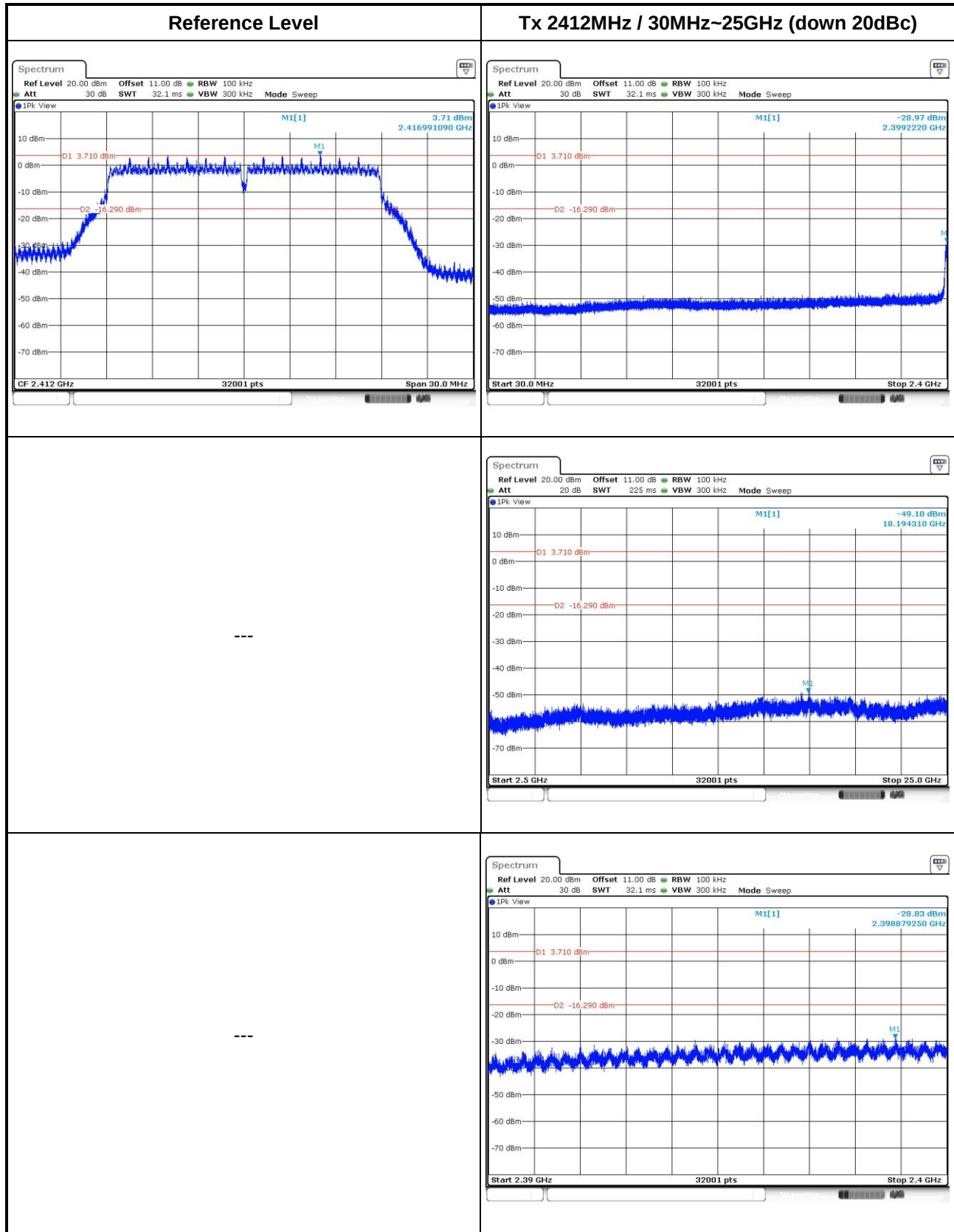




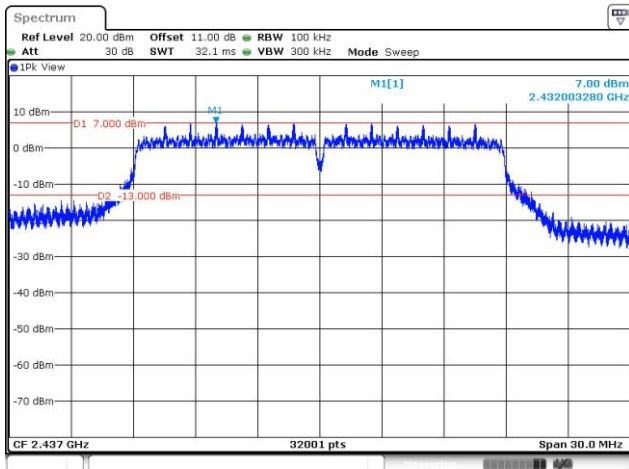




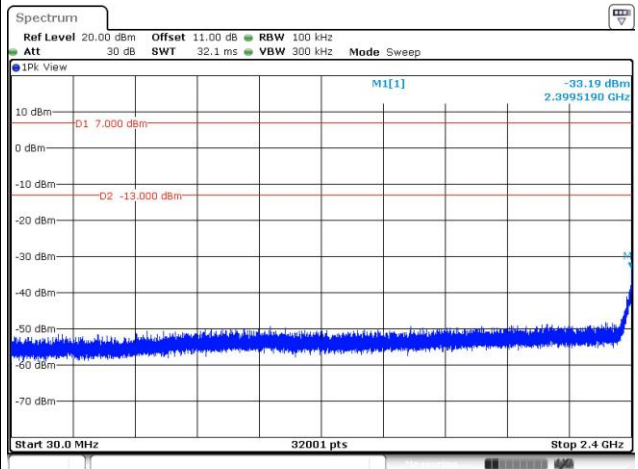
802.11n HT20

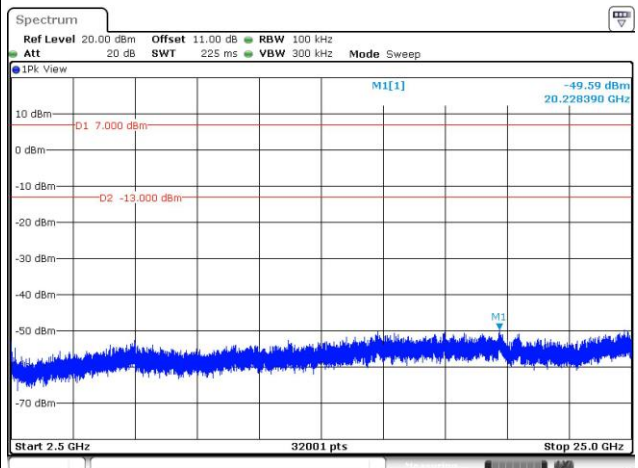


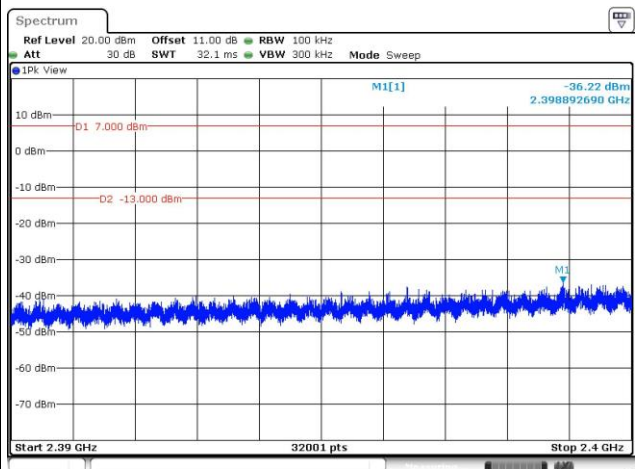
Reference Level

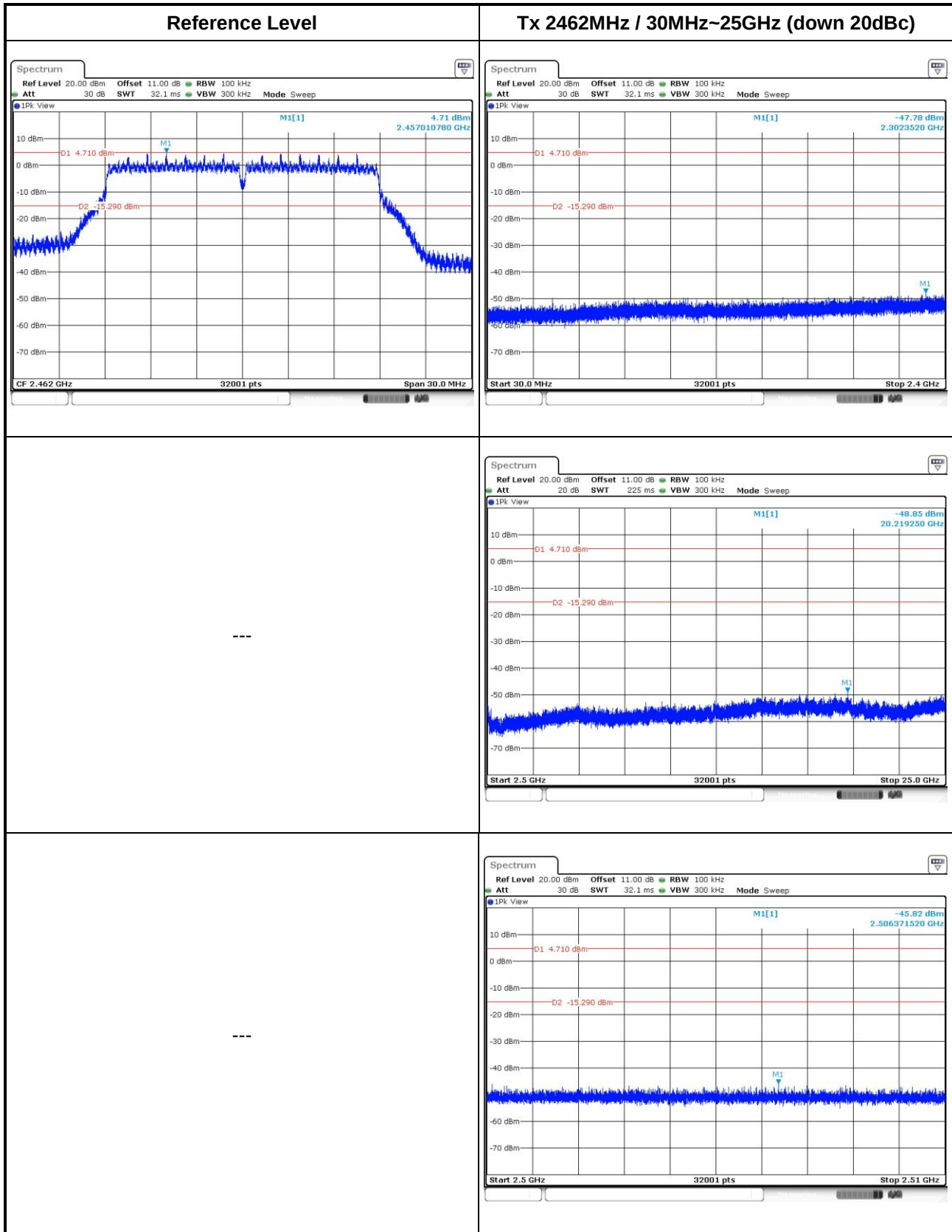


Tx 2437MHz / 30MHz~25GHz (down 20dBc)

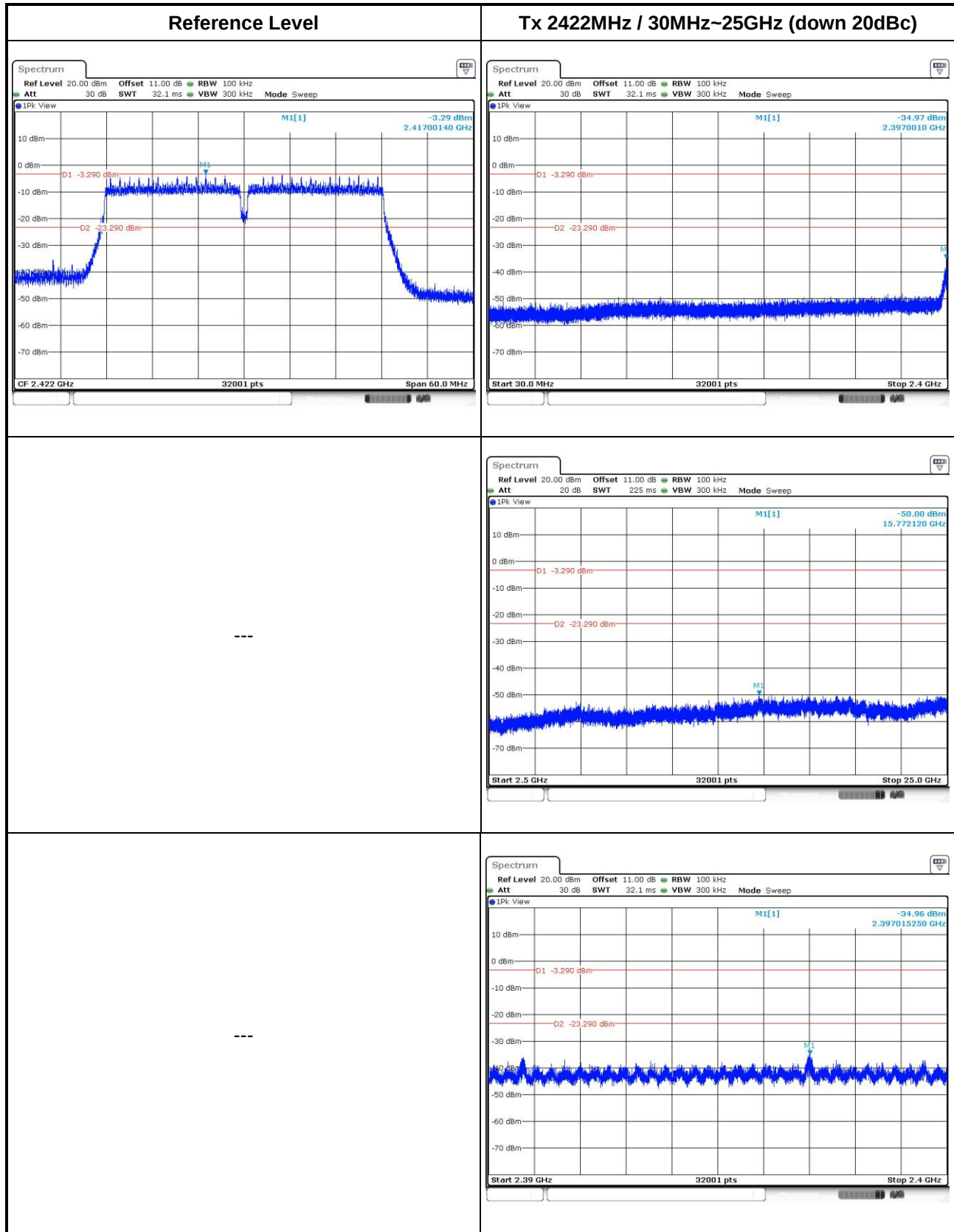


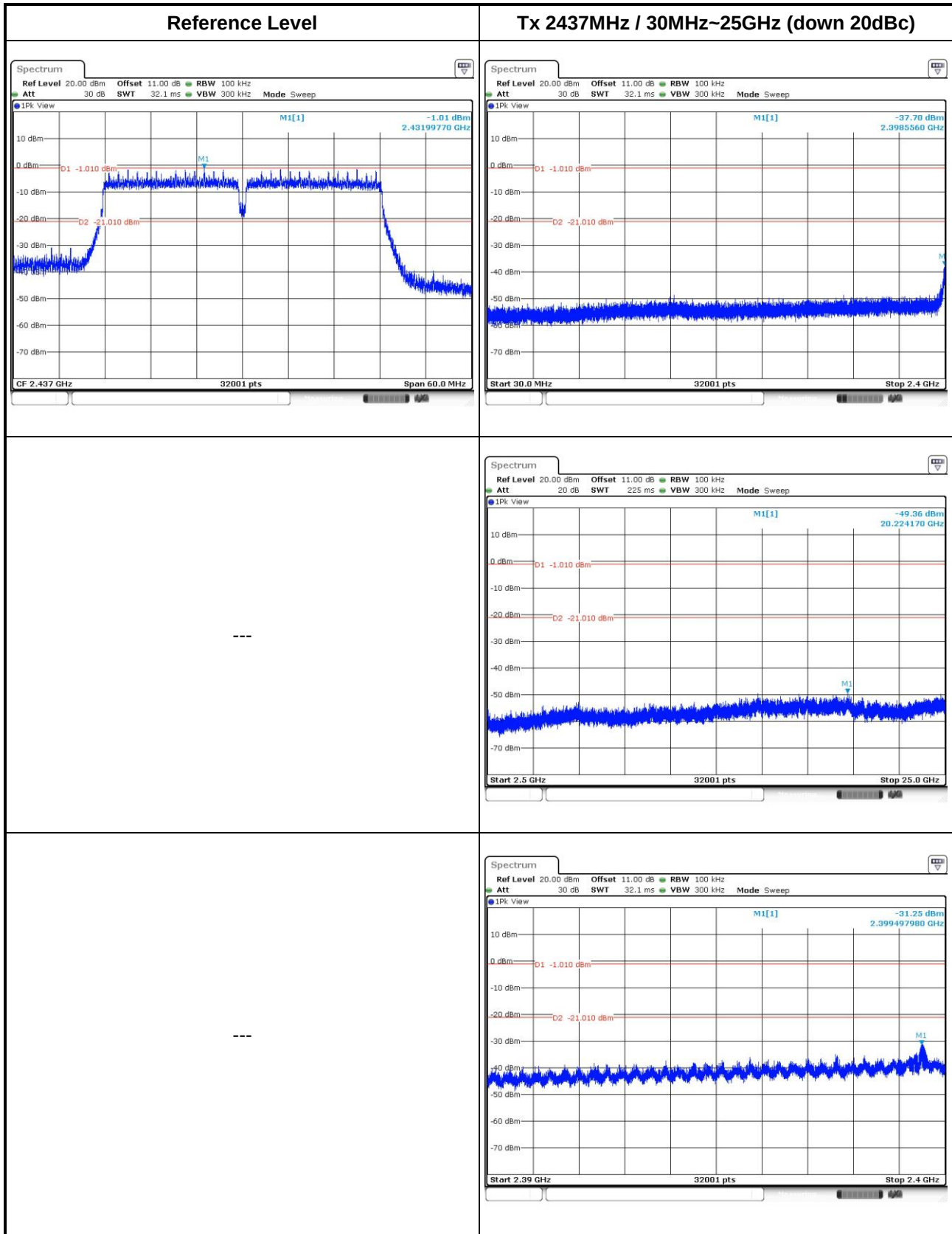




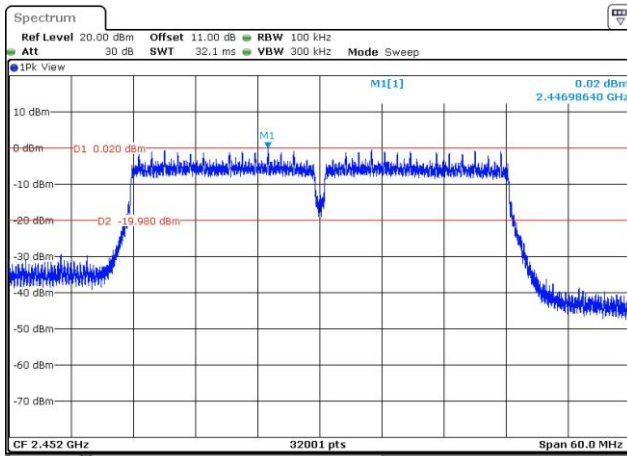


802.11n HT40

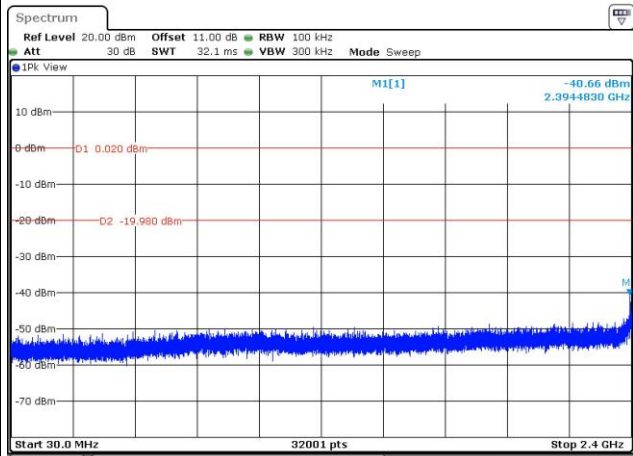


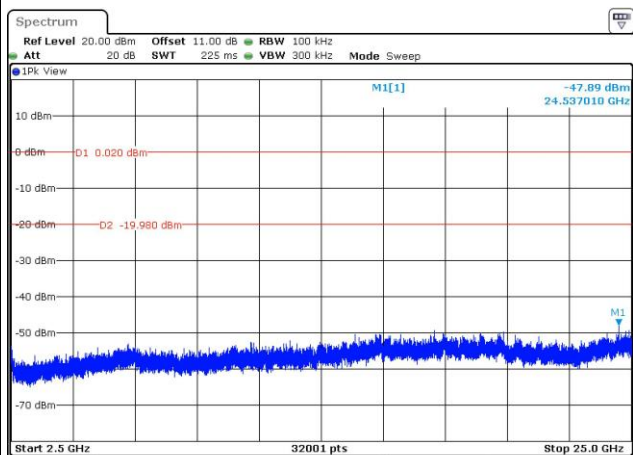


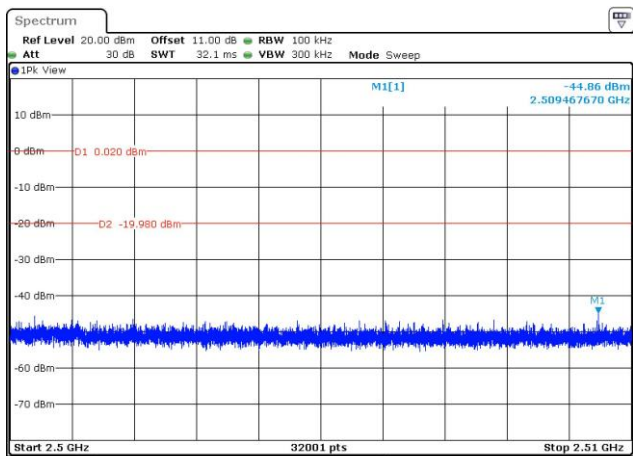
Reference Level



Tx 2452MHz / 30MHz~25GHz (down 20dBc)







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

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Kwei Shan

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Kwei Shan Site II

Tel: 886-3-271-8640

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

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