

FCC Test Report

FCC ID : XU8TEW755AP
Equipment : N300 PoE Access Point
Model No. : TEW-755AP
Brand Name : TRENDnet
Applicant : TRENDnet, Inc.
Address : 20675 Manhattan Place, Torrance, CA 90501,
USA
Standard : 47 CFR FCC Part 15.247
Received Date : Aug. 05, 2015
Tested Date : Aug. 05 ~ Aug. 12, 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



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Release Record

Report No.	Version	Description	Issued Date
FR580603	Rev. 01	Initial issue	Sep. 01, 2015

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.264MHz 44.25 (Margin -7.05dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2483.50MHz 52.95 (Margin -1.05dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 29.83	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]	2	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.					

1.1.2 Antenna Details

Ant. No.	Type	Gain (dBi)	Connector	Remark
1	PIFA	4	---	---

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type 1	12Vdc from AC adapter
Power Supply Type 2 (support unit only)	POE Brand: Allied Telesis Model: AT-GS950/10PS Power Rating: Input: 100-240Vac Output: DC 48Vdc to 57Vdc

1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC Adapter	Brand Name: CWT Model Name: 2AAJ012F US Power Rating: I/P: 100-240Vac, 50-60Hz, 0.35A O/P: 12Vdc, 1.0A Power Line: 1.23m non-shielded cable w/o core
2	AC Adapter	Brand Name: AMIGO Model Name: AMS135-1201000FU Power Rating: I/P: 100-240Vac, 50-60Hz, 0.5A O/P: 12Vdc, 1.0A Power Line: 1.22m non-shielded cable w/o 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	ART2-GUI, Version 2.3		
Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	11b	100.00%	0.00
	11g	100.00%	0.00
	HT20	100.00%	0.00
	HT40	100.00%	0.00

1.1.7 Power Setting

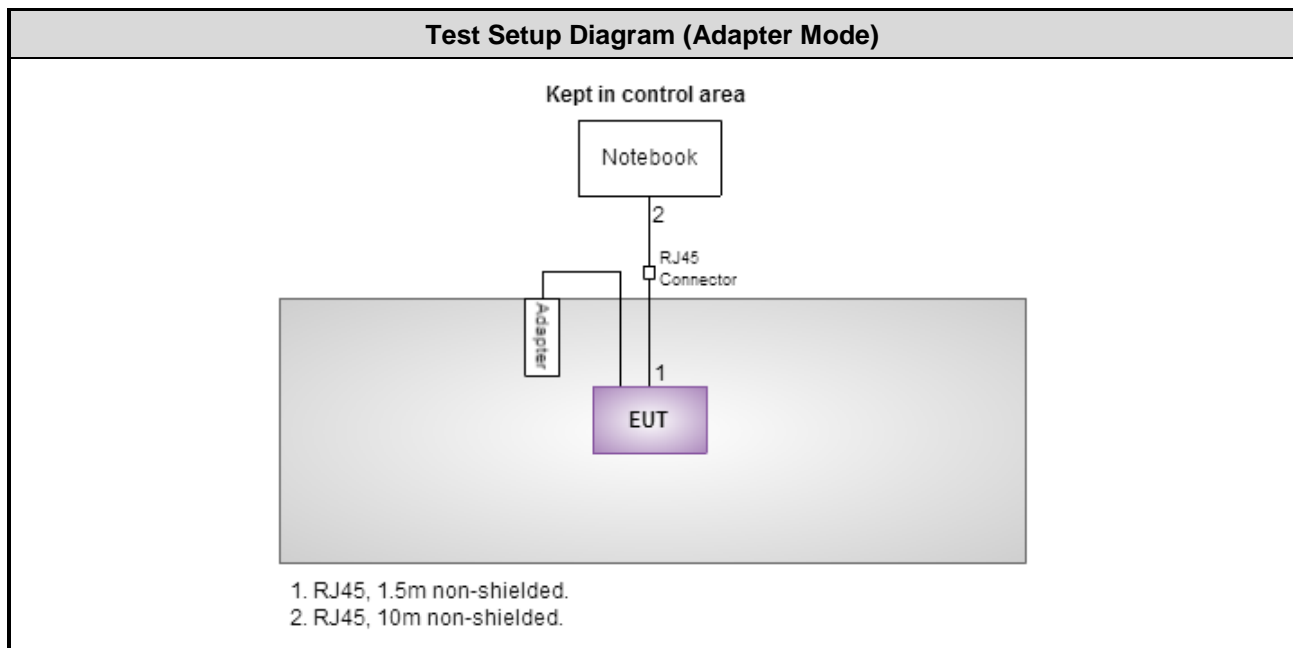
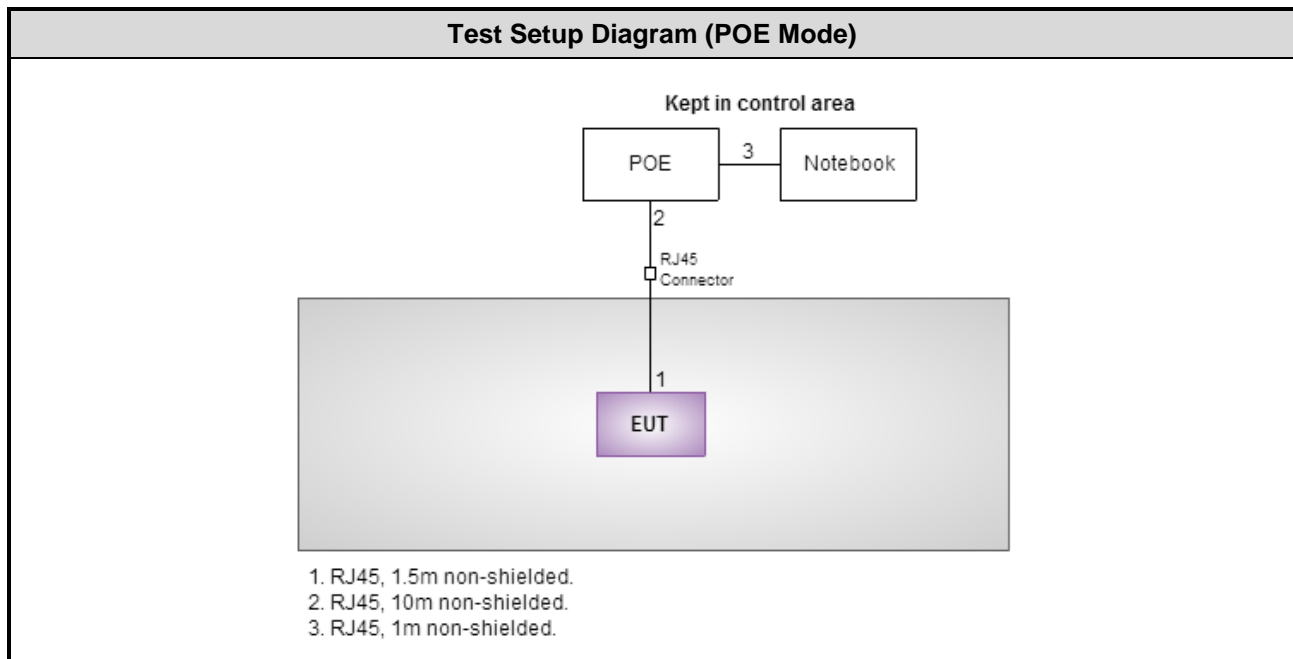
Modulation Mode	Test Frequency (MHz)	Power Set
11b	2412	24.5
11b	2437	24.5
11b	2462	23.5
11g	2412	21.0
11g	2437	20.0
11g	2462	19.5
HT20	2412	21.0
HT20	2437	20.5
HT20	2462	19.5
HT40	2422	20.0
HT40	2437	22.5
HT40	2452	20.5

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	Latitude E6440	---	For Adapter mode: RJ45, 10m non-shielded. For POE mode: RJ45, 1.5m non-shielded.
2	POE	Allied Telesis	AT-GS950/10P S	---	RJ45, 10m non-shielded.

Note: No.2 was provided by applicant.

1.3 Test Setup Chart



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
Preamplifier	EMC	EMC184045B	980192	Aug. 26, 2014	Aug. 25, 2015
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 ≤ 1 GHz	± 3.62 dB
Radiated emission > 1 GHz	± 5.6 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 56%	Kevin Ma
Radiated Emissions	03CH02-WS	22°C / 61%	Anderson Hong
RF Conducted	TH01-WS	23°C / 61%	Felix Sung

➤ FCC site registration No.: 657002

➤ IC site registration No.: 10807A-2

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Conducted Emissions	11g	2437	6 Mbps	1, 2
Radiated Emissions ≤1GHz	11g	2437	6 Mbps	1, 2
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
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	1

NOTE:

- The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** results were found as the worst case and were shown in this report.
- Adapter 1 and Adapter 2 had been pretested and found that **Adapter 1** was the worst case and was selected for final testing. (Adapter 1: 2AAJ012F US; Adapter 2: AMS135-1201000FU).
- This device can be powered by adapter or POE, both power supplies were selected to perform related test items for final testing as below test configuration.
 - Configuration 1: POE mode, Z-plane.
 - Configuration 2: Adapter mode, Z-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.

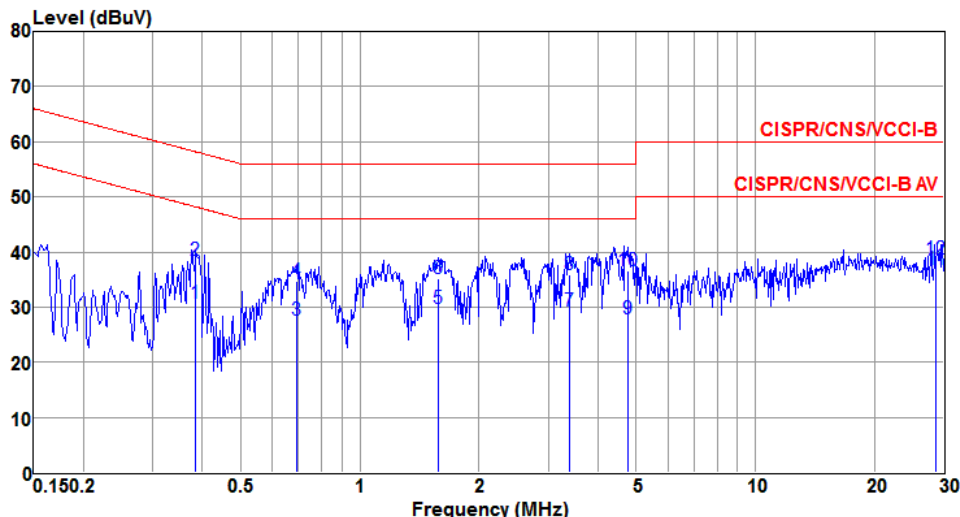
3.1.3 Test Setup



- 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

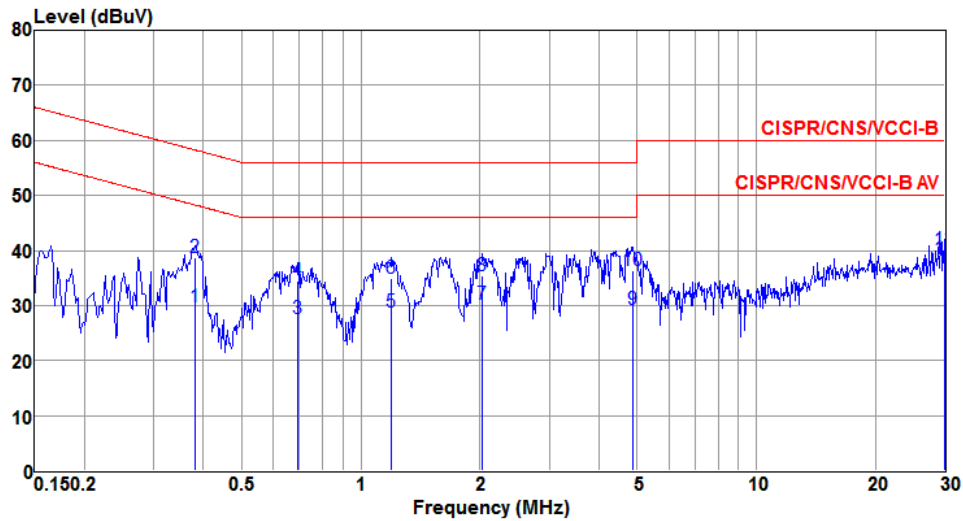
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Line	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.383	30.70	48.21	-17.51	30.52	0.07	0.11	Average
2	0.383	38.49	58.21	-19.72	38.31	0.07	0.11	QP
3	0.694	27.70	46.00	-18.30	27.48	0.08	0.14	Average
4	0.694	34.59	56.00	-21.41	34.37	0.08	0.14	QP
5	1.577	29.73	46.00	-16.27	29.43	0.09	0.21	Average
6	1.577	35.19	56.00	-20.81	34.89	0.09	0.21	QP
7	3.399	29.36	46.00	-16.64	28.95	0.12	0.29	Average
8	3.399	35.80	56.00	-20.20	35.39	0.12	0.29	QP
9	4.746	27.80	46.00	-18.20	27.35	0.14	0.31	Average
10	4.746	36.47	56.00	-19.53	36.02	0.14	0.31	QP
11*	28.682	36.71	50.00	-13.29	36.24	0.37	0.10	Average
12	28.682	38.77	60.00	-21.23	38.30	0.37	0.10	QP

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

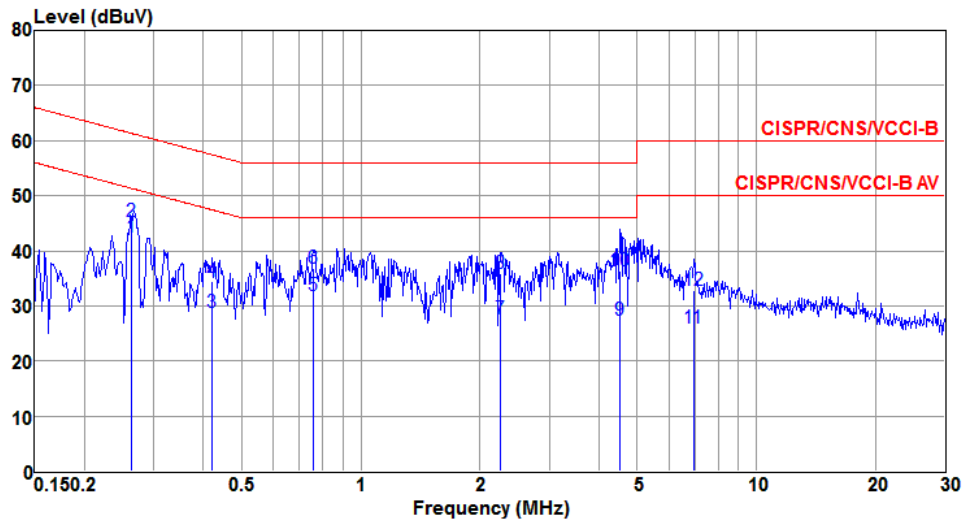
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Neutral	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.381	29.71	48.25	-18.54	29.53	0.07	0.11	Average
2	0.381	38.71	58.25	-19.54	38.53	0.07	0.11	QP
3	0.690	27.58	46.00	-18.42	27.36	0.08	0.14	Average
4	0.690	34.53	56.00	-21.47	34.31	0.08	0.14	QP
5	1.197	28.76	46.00	-17.24	28.49	0.09	0.18	Average
6	1.197	34.93	56.00	-21.07	34.66	0.09	0.18	QP
7	2.033	30.18	46.00	-15.82	29.84	0.10	0.24	Average
8	2.033	35.45	56.00	-20.55	35.11	0.10	0.24	QP
9	4.874	29.18	46.00	-16.82	28.72	0.15	0.31	Average
10	4.874	36.26	56.00	-19.74	35.80	0.15	0.31	QP
11*	29.898	38.51	50.00	-11.49	37.97	0.43	0.11	Average
12	29.898	40.19	60.00	-19.81	39.65	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).

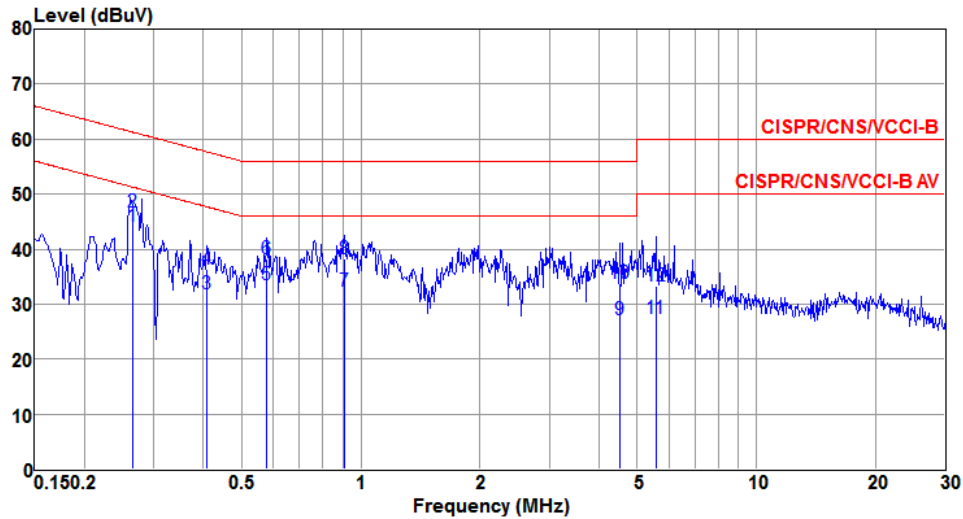
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Line	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1*	0.263	42.58	51.33	-8.75	42.26	0.22	0.10	Average
2	0.263	45.39	61.33	-15.94	45.07	0.22	0.10	QP
3	0.421	28.72	47.42	-18.70	28.43	0.18	0.11	Average
4	0.421	34.35	57.42	-23.07	34.06	0.18	0.11	QP
5	0.759	31.86	46.00	-14.14	31.60	0.12	0.14	Average
6	0.759	36.81	56.00	-19.19	36.55	0.12	0.14	QP
7	2.261	27.61	46.00	-18.39	26.79	0.57	0.25	Average
8	2.261	35.98	56.00	-20.02	35.16	0.57	0.25	QP
9	4.501	27.31	46.00	-18.69	26.69	0.31	0.31	Average
10	4.501	36.40	56.00	-19.60	35.78	0.31	0.31	QP
11	6.951	25.90	50.00	-24.10	25.09	0.51	0.30	Average
12	6.951	32.75	60.00	-27.25	31.94	0.51	0.30	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*	0.264	44.25	51.30	-7.05	43.95	0.20	0.10	Average
2	0.264	46.71	61.30	-14.59	46.41	0.20	0.10	QP
3	0.408	31.87	47.68	-15.81	31.63	0.13	0.11	Average
4	0.408	36.43	57.68	-21.25	36.19	0.13	0.11	QP
5	0.579	33.51	46.00	-12.49	33.19	0.19	0.13	Average
6	0.579	38.14	56.00	-17.86	37.82	0.19	0.13	QP
7	0.909	32.26	46.00	-13.74	31.85	0.26	0.15	Average
8	0.909	38.13	56.00	-17.87	37.72	0.26	0.15	QP
9	4.525	27.06	46.00	-18.94	26.04	0.71	0.31	Average
10	4.525	33.74	56.00	-22.26	32.72	0.71	0.31	QP
11	5.564	27.42	50.00	-22.58	26.45	0.66	0.31	Average
12	5.564	33.33	60.00	-26.67	32.36	0.66	0.31	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

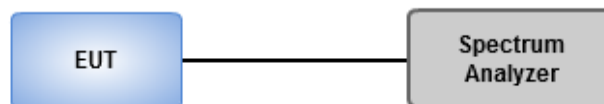
6dB Bandwidth

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.

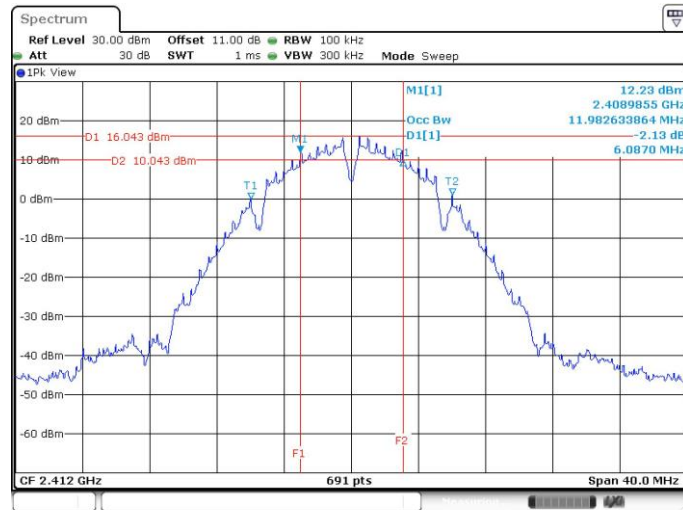
3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

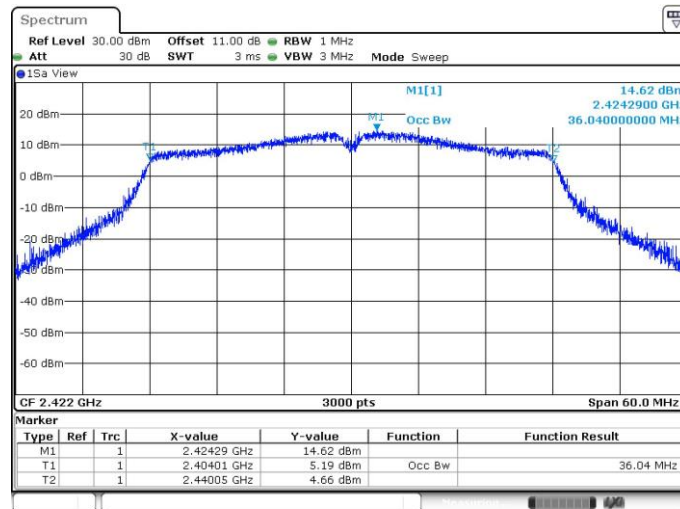
Modulation Mode	N _{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
11b	2	2412	6.09	7.07	---	---	500
11b	2	2437	7.07	6.61	---	---	500
11b	2	2462	6.61	6.55	---	---	500
11g	2	2412	14.43	13.80	---	---	500
11g	2	2437	14.78	15.07	---	---	500
11g	2	2462	15.07	15.07	---	---	500
HT20	2	2412	13.86	13.86	---	---	500
HT20	2	2437	15.01	15.07	---	---	500
HT20	2	2462	12.00	13.86	---	---	500
HT40	2	2422	28.75	31.30	---	---	500
HT40	2	2437	31.30	30.15	---	---	500
HT40	2	2452	31.42	26.32	---	---	500

Worst Plots



Modulation Mode	N _{TX}	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
11b	2	2412	12.00	11.65	---	---
11b	2	2437	12.03	11.58	---	---
11b	2	2462	11.93	12.03	---	---
11g	2	2412	16.18	16.24	---	---
11g	2	2437	16.18	16.23	---	---
11g	2	2462	16.18	16.25	---	---
HT20	2	2412	17.31	17.43	---	---
HT20	2	2437	17.33	17.43	---	---
HT20	2	2462	17.32	17.44	---	---
HT40	2	2422	35.96	36.04	---	---
HT40	2	2437	36.00	35.80	---	---
HT40	2	2452	36.02	35.74	---	---

Worst Plots



3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

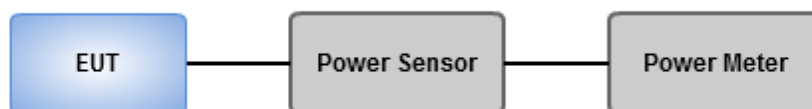
- ☒ Antenna gain $\leq 6\text{dBi}$, no any corresponding reduction is in output power limit.
- ☐ Antenna gain $> 6\text{dBi}$
 - ☐ Non Fixed, point to point operations.
The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna 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)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
11b	2	2412	26.02	25.04	---	---	719.099	28.57	30.00
11b	2	2437	26.20	25.49	---	---	770.867	28.87	30.00
11b	2	2462	25.66	25.22	---	---	700.789	28.46	30.00
11g	2	2412	26.80	26.79	---	---	956.159	29.81	30.00
11g	2	2437	26.88	26.76	---	---	961.770	29.83	30.00
11g	2	2462	26.74	26.81	---	---	951.796	29.79	30.00
HT20	2	2412	26.87	26.71	---	---	955.221	29.80	30.00
HT20	2	2437	26.88	26.71	---	---	956.342	29.81	30.00
HT20	2	2462	26.82	26.75	---	---	953.991	29.80	30.00
HT40	2	2422	25.35	25.02	---	---	660.455	28.20	30.00
HT40	2	2437	26.79	26.73	---	---	948.507	29.77	30.00
HT40	2	2452	25.62	25.49	---	---	718.751	28.57	30.00

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	2	2412	23.13	22.54	---	---	385.062	25.86	30.00
11b	2	2437	23.28	22.57	---	---	393.531	25.95	30.00
11b	2	2462	23.01	22.40	---	---	373.766	25.73	30.00
11g	2	2412	19.22	18.87	---	---	160.651	22.06	30.00
11g	2	2437	19.02	18.69	---	---	153.760	21.87	30.00
11g	2	2462	19.01	18.53	---	---	150.901	21.79	30.00
HT20	2	2412	19.10	18.78	---	---	156.792	21.95	30.00
HT20	2	2437	19.21	18.89	---	---	160.814	22.06	30.00
HT20	2	2462	19.02	18.64	---	---	152.913	21.84	30.00
HT40	2	2422	18.04	17.75	---	---	123.246	20.91	30.00
HT40	2	2437	19.62	19.54	---	---	181.572	22.59	30.00
HT40	2	2452	18.06	18.02	---	---	127.360	21.05	30.00

Note: Conducted average output power is for reference only.

3.4 Power Spectral Density

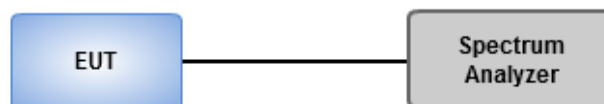
3.4.1 Limit of Power Spectral Density

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.

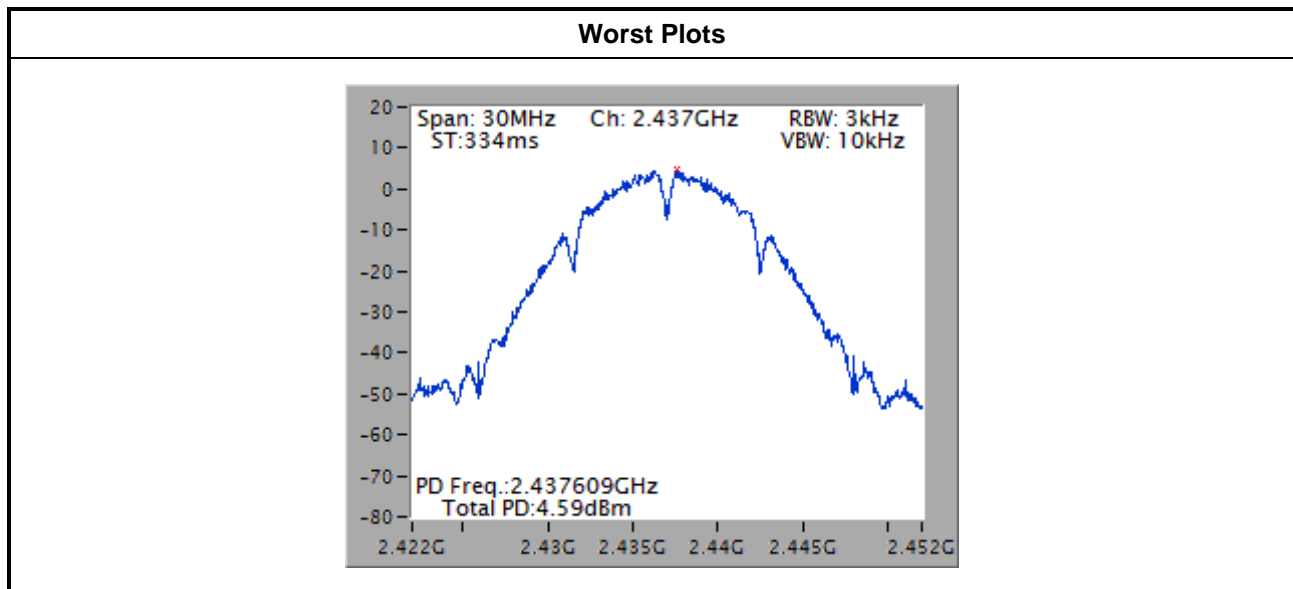
3.4.3 Test Setup



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	2	2412	3.84	8.00
11b	2	2437	4.59	8.00
11b	2	2462	3.54	8.00
11g	2	2412	-1.42	8.00
11g	2	2437	-1.26	8.00
11g	2	2462	-1.37	8.00
HT20	2	2412	-2.19	8.00
HT20	2	2437	-1.18	8.00
HT20	2	2462	-2.30	8.00
HT40	2	2422	-5.21	8.00
HT40	2	2437	-0.72	8.00
HT40	2	2452	-4.26	8.00

Note: Test result is bin-by-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:
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

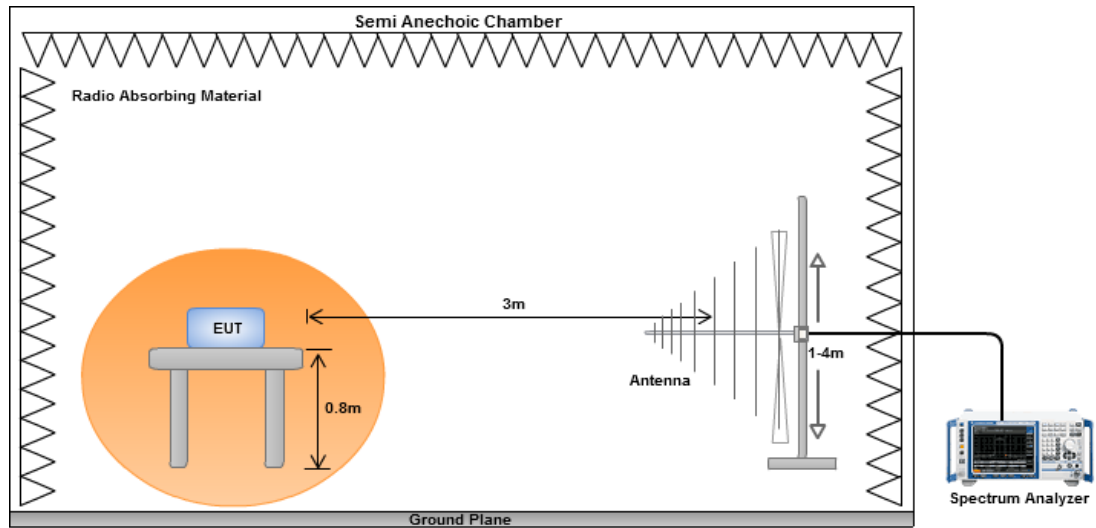
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

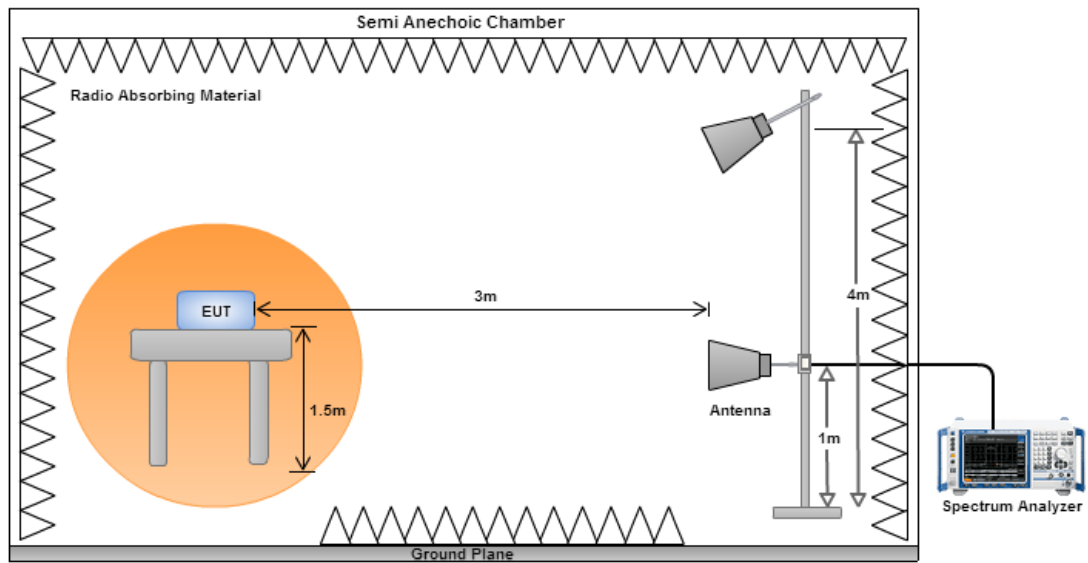
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz

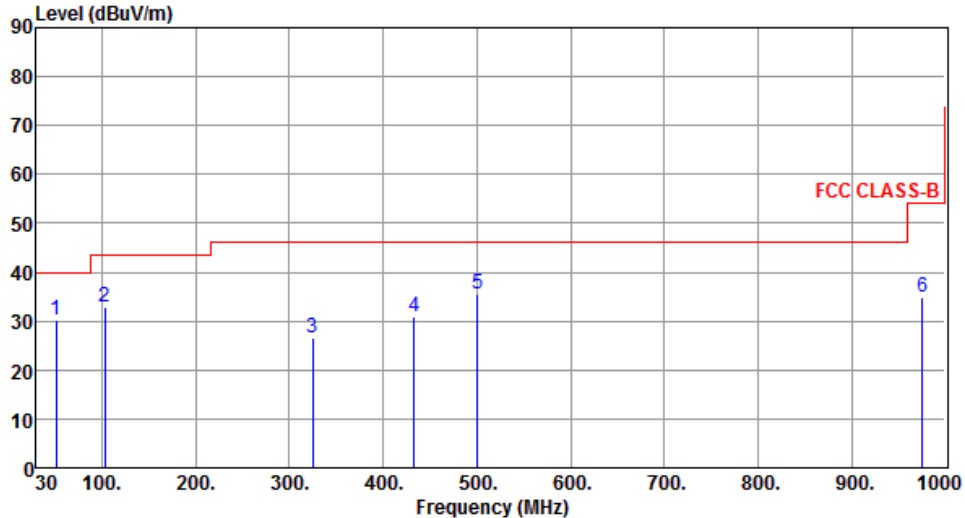


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

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

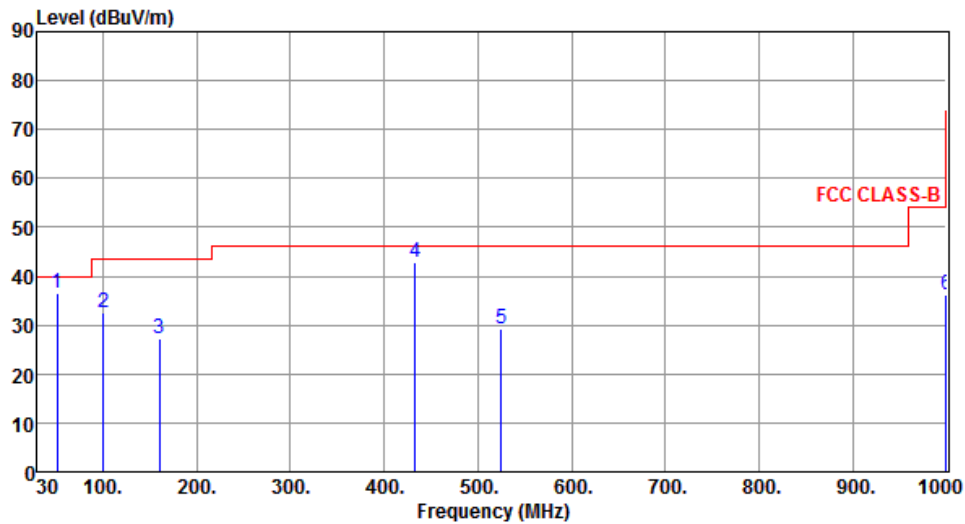


The graph displays the radiated unwanted emissions for a transmitter. The y-axis represents the Level in dBUV/m, ranging from 0 to 90. The x-axis represents the Frequency in MHz, ranging from 30 to 1000. A red line indicates the FCC CLASS-B limit, which is 40 dBUV/m from 30 MHz to 100 MHz, 45 dBUV/m from 100 MHz to 1000 MHz, and 55 dBUV/m above 1000 MHz. Six emission peaks are identified and labeled with 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	51.34	30.10	40.00	-9.90	46.64	-16.54	Peak	---	---
2	102.75	32.98	43.50	-10.52	54.49	-21.51	Peak	---	---
3	324.88	26.50	46.00	-19.50	42.03	-15.53	Peak	---	---
4	433.52	30.88	46.00	-15.12	43.76	-12.88	Peak	---	---
5	500.45	35.68	46.00	-10.32	47.39	-11.71	Peak	---	---
6	975.75	34.95	54.00	-19.05	39.59	-4.64	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	51.34	36.61	40.00	-3.39	53.15	-16.54	QP	103	24
2	100.81	32.58	43.50	-10.92	54.39	-21.81	Peak	---	---
3	159.98	27.37	43.50	-16.13	44.32	-16.95	Peak	---	---
4	433.52	42.97	46.00	-3.03	55.85	-12.88	Peak	---	---
5	524.70	29.22	46.00	-16.78	40.43	-11.21	Peak	---	---
6	1000.00	36.23	54.00	-17.77	40.75	-4.52	Peak	---	---

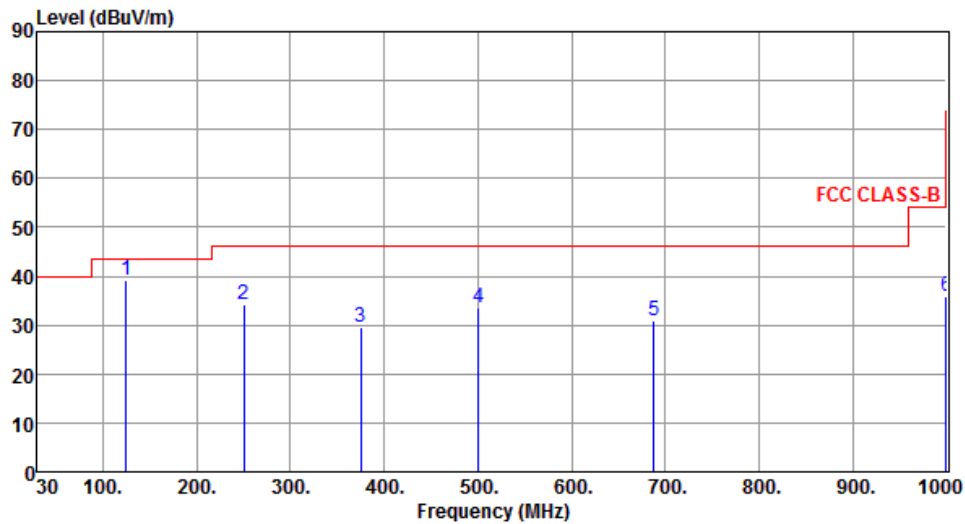
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*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	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	125.06	39.03	43.50	-4.47	58.17	-19.14	Peak	---	---
2	250.19	34.25	46.00	-11.75	52.11	-17.86	Peak	---	---
3	375.32	29.47	46.00	-16.53	43.78	-14.31	Peak	---	---
4	500.45	33.47	46.00	-12.53	45.18	-11.71	Peak	---	---
5	687.66	30.97	46.00	-15.03	39.40	-8.43	Peak	---	---
6	1000.00	35.75	54.00	-18.25	40.27	-4.52	Peak	---	---

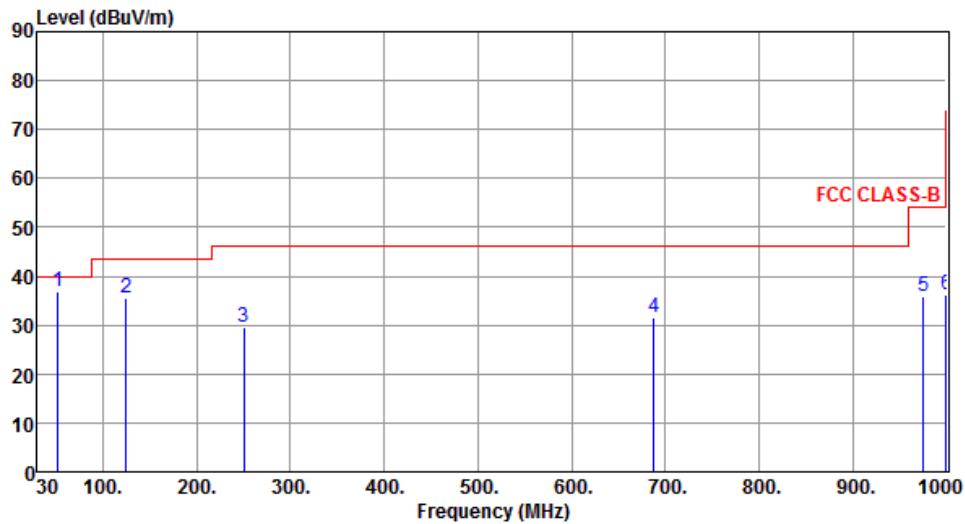
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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	52.31	36.90	40.00	-3.10	53.48	-16.58	Peak	---	---
2	125.06	35.41	43.50	-8.09	54.55	-19.14	Peak	---	---
3	250.19	29.59	46.00	-16.41	47.45	-17.86	Peak	---	---
4	687.66	31.42	46.00	-14.58	39.85	-8.43	Peak	---	---
5	975.75	35.74	54.00	-18.26	40.38	-4.64	Peak	---	---
6	1000.00	36.12	54.00	-17.88	40.64	-4.52	Peak	---	---

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

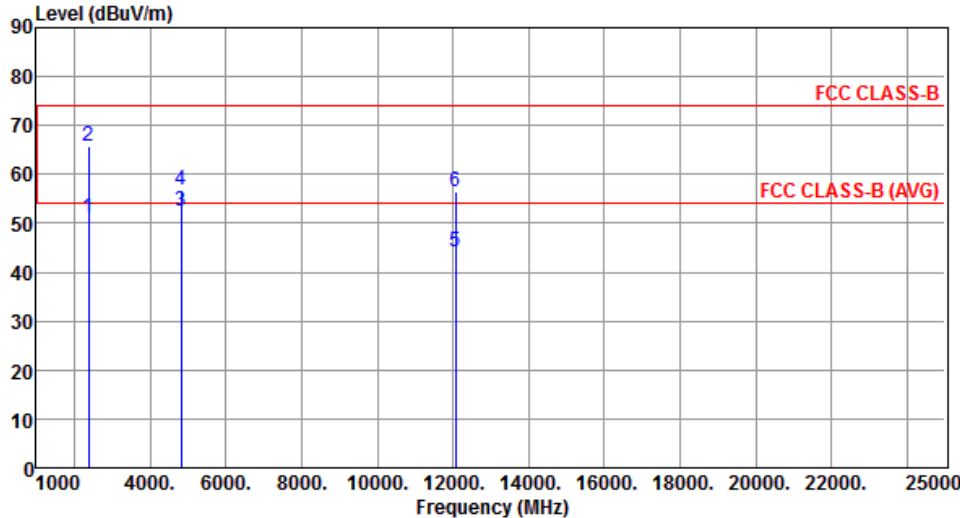
*Factor includes antenna factor , cable loss and amplifier gain

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

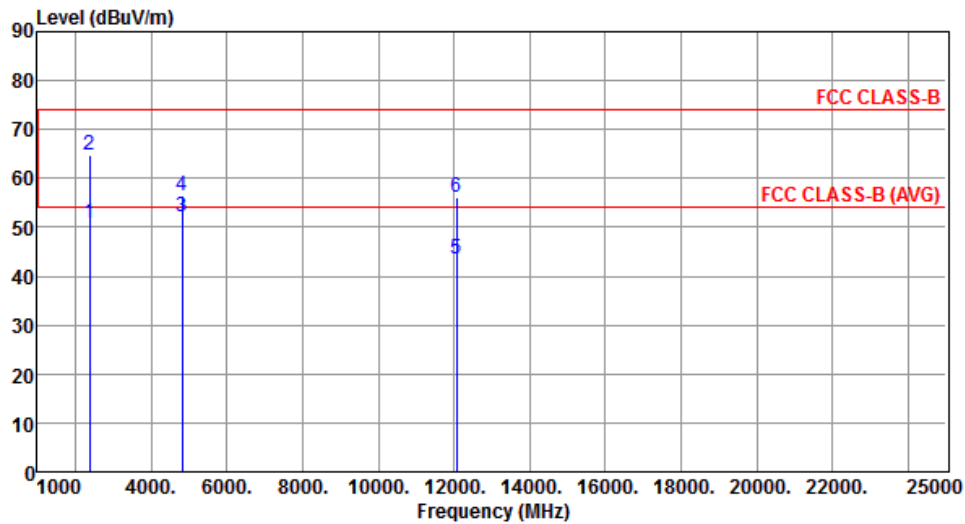
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	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	51.18	54.00	-2.82	53.83	-2.65	Average	220	304
2	2390.00	65.87	74.00	-8.13	68.52	-2.65	Peak	220	304
3	4824.00	52.50	54.00	-1.50	47.53	4.97	Average	250	272
4	4824.00	56.66	74.00	-17.34	51.69	4.97	Peak	250	272
5	12060.00	44.26	54.00	-9.74	28.77	15.49	Average	252	34
6	12060.00	56.31	74.00	-17.69	40.82	15.49	Peak	252	34

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



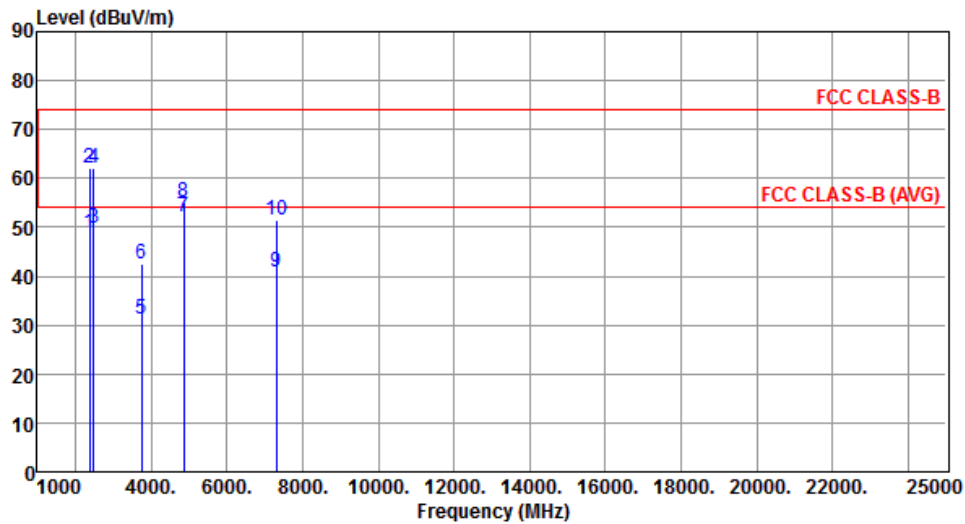
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.66	54.00	-3.34	53.31	-2.65	Average	334	332
2	2390.00	64.74	74.00	-9.26	67.39	-2.65	Peak	334	332
3	4824.00	52.20	54.00	-1.80	47.23	4.97	Average	224	48
4	4824.00	56.61	74.00	-17.39	51.64	4.97	Peak	224	48
5	12060.00	43.48	54.00	-10.52	27.99	15.49	Average	122	37
6	12060.00	56.05	74.00	-17.95	40.56	15.49	Peak	122	37

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



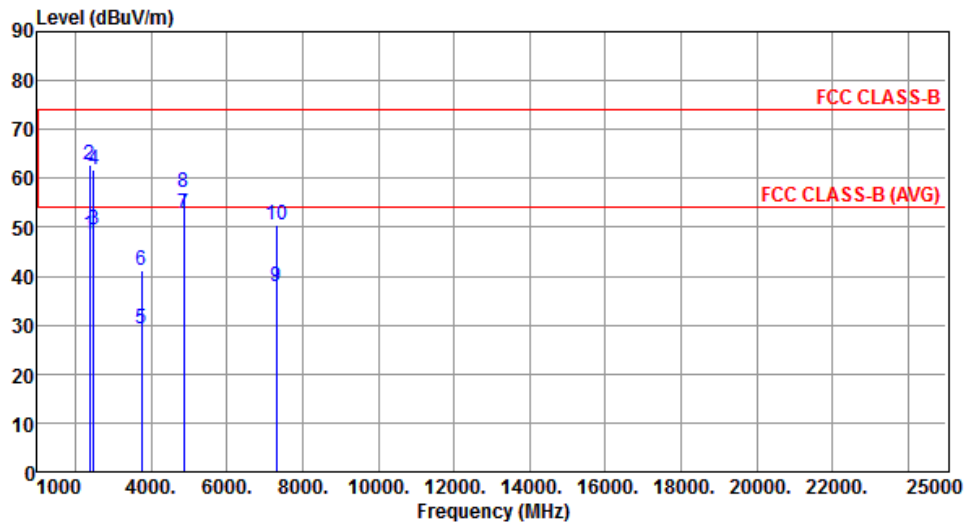
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.66	54.00	-5.34	51.31	-2.65	Average	115	65
2	2390.00	62.19	74.00	-11.81	64.84	-2.65	Peak	115	65
3	2483.50	49.88	54.00	-4.12	52.22	-2.34	Average	198	302
4	2483.50	62.21	74.00	-11.79	64.55	-2.34	Peak	198	302
5	3750.00	31.13	54.00	-22.87	30.07	1.06	Average	122	224
6	3750.00	42.57	74.00	-31.43	41.51	1.06	Peak	122	224
7	4874.00	52.29	54.00	-1.71	47.21	5.08	Average	260	11
8	4874.00	55.12	74.00	-18.88	50.04	5.08	Peak	260	11
9	7311.00	40.96	54.00	-13.04	30.85	10.11	Average	243	231
10	7311.00	51.59	74.00	-22.41	41.48	10.11	Peak	243	231

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



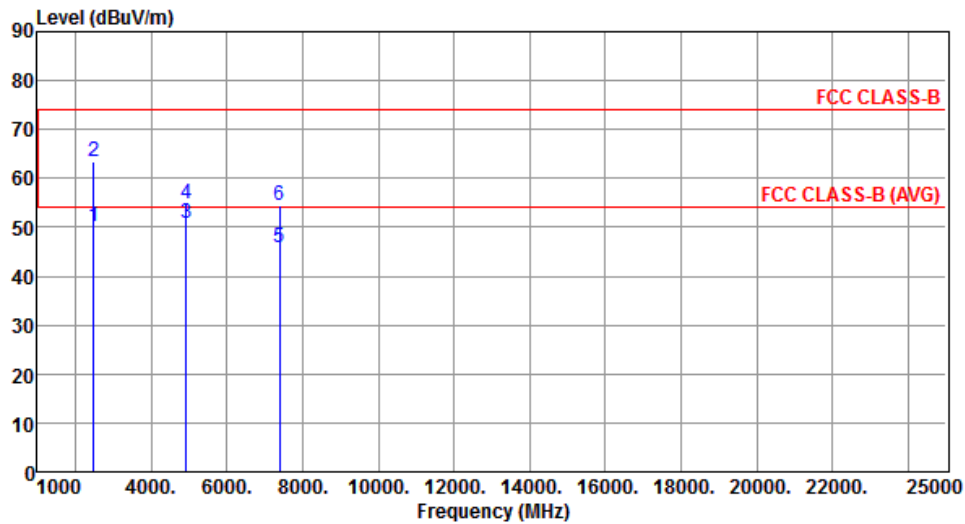
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.64	54.00	-5.36	51.29	-2.65	Average	308	332
2	2390.00	62.77	74.00	-11.23	65.42	-2.65	Peak	308	332
3	2483.50	49.59	54.00	-4.41	51.93	-2.34	Average	217	20
4	2483.50	61.92	74.00	-12.08	64.26	-2.34	Peak	217	20
5	3750.00	29.19	54.00	-24.81	28.13	1.06	Average	250	144
6	3750.00	41.06	74.00	-32.94	40.00	1.06	Peak	250	144
7	4874.00	52.74	54.00	-1.26	47.66	5.08	Average	133	10
8	4874.00	57.05	74.00	-16.95	51.97	5.08	Peak	133	10
9	7311.00	37.76	54.00	-16.24	27.65	10.11	Average	158	27
10	7311.00	50.40	74.00	-23.60	40.29	10.11	Peak	158	27

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



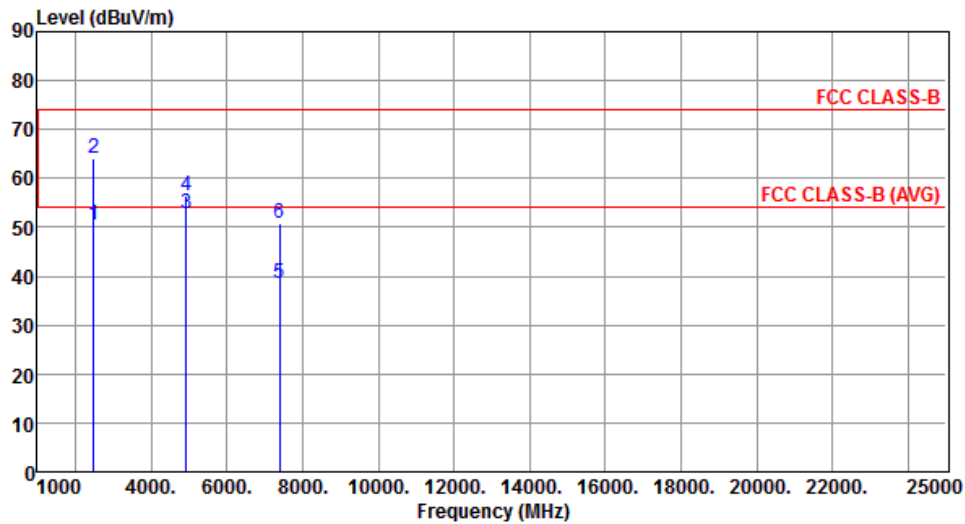
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	50.11	54.00	-3.89	52.45	-2.34	Average	232	47
2	2483.50	63.43	74.00	-10.57	65.77	-2.34	Peak	232	47
3	4924.00	50.88	54.00	-3.12	45.67	5.21	Average	206	303
4	4924.00	54.75	74.00	-19.25	49.54	5.21	Peak	206	303
5	7386.00	45.70	54.00	-8.30	35.39	10.31	Average	303	224
6	7386.00	54.34	74.00	-19.66	44.03	10.31	Peak	303	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	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	50.46	54.00	-3.54	52.80	-2.34	Average	252	17
2	2483.50	64.16	74.00	-9.84	66.50	-2.34	Peak	252	17
3	4924.00	52.92	54.00	-1.08	47.71	5.21	Average	267	28
4	4924.00	56.32	74.00	-17.68	51.11	5.21	Peak	267	28
5	7386.00	38.62	54.00	-15.38	28.31	10.31	Average	281	61
6	7386.00	50.85	74.00	-23.15	40.54	10.31	Peak	281	61

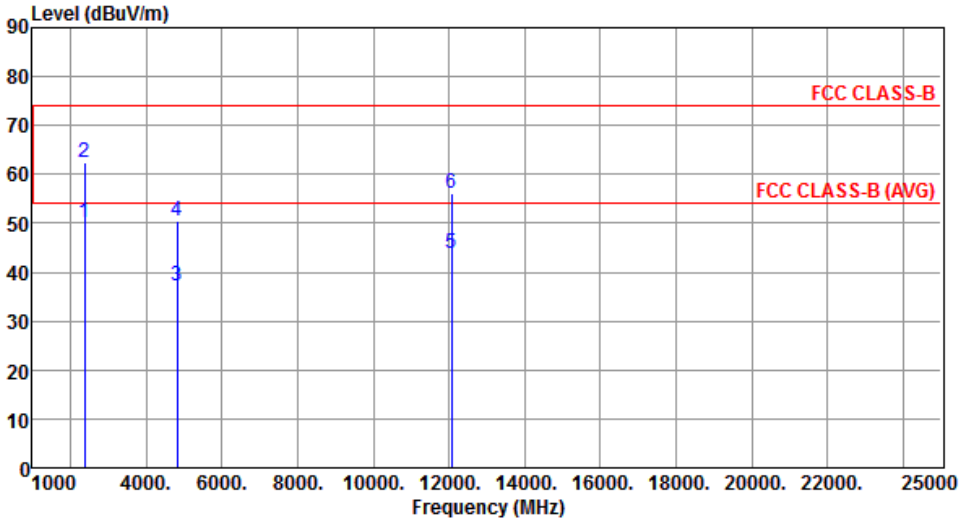
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*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

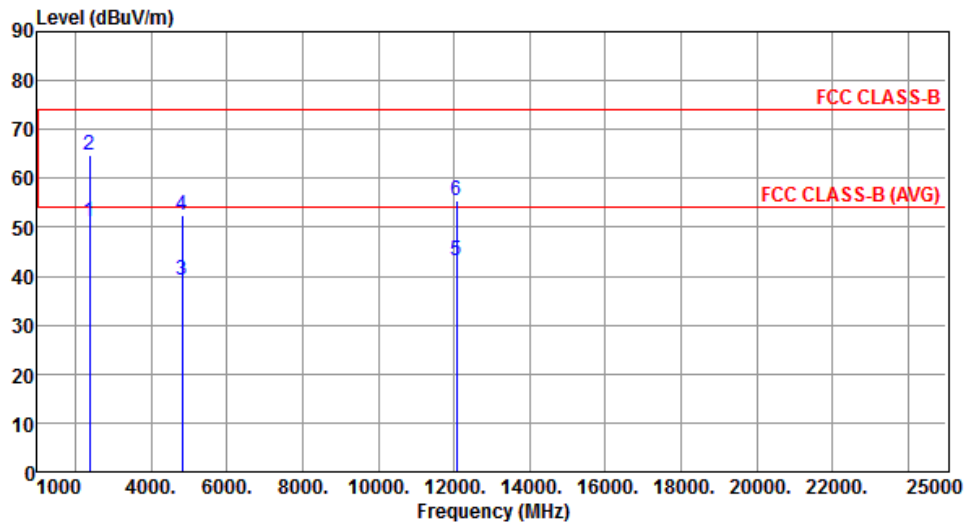
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	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	50.27	54.00	-3.73	52.92	-2.65	Average	243	296
2	2390.00	62.35	74.00	-11.65	65.00	-2.65	Peak	243	296
3	4824.00	37.21	54.00	-16.79	32.24	4.97	Average	249	50
4	4824.00	50.48	74.00	-23.52	45.51	4.97	Peak	249	50
5	12060.00	43.76	54.00	-10.24	28.27	15.49	Average	243	43
6	12060.00	56.02	74.00	-17.98	40.53	15.49	Peak	243	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	11g	Test Freq. (MHz)	2412
Polarization	Vertical	Test Configuration	1



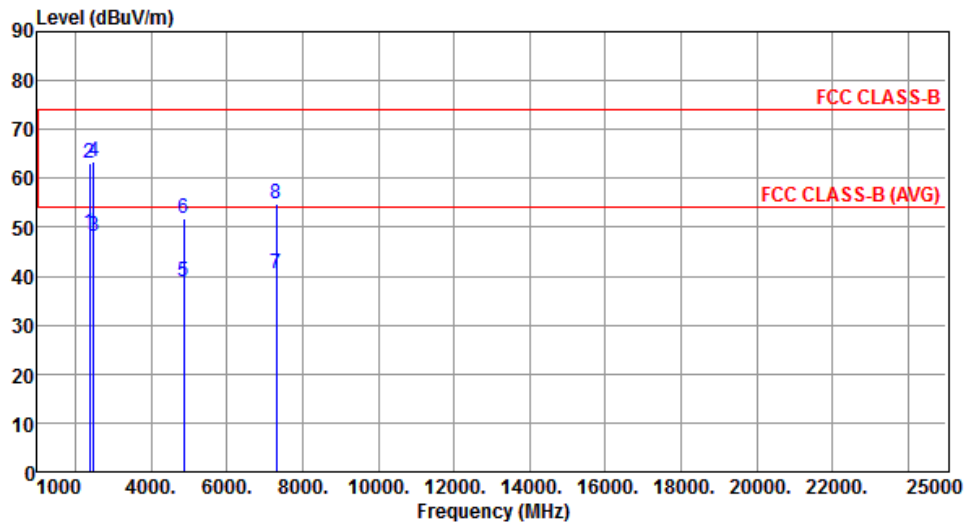
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	51.22	54.00	-2.78	53.87	-2.65	Average	297	337
2	2390.00	64.90	74.00	-9.10	67.55	-2.65	Peak	297	337
3	4824.00	39.33	54.00	-14.67	34.36	4.97	Average	248	49
4	4824.00	52.62	74.00	-21.38	47.65	4.97	Peak	248	49
5	12060.00	43.05	54.00	-10.95	27.56	15.49	Average	128	31
6	12060.00	55.52	74.00	-18.48	40.03	15.49	Peak	128	31

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



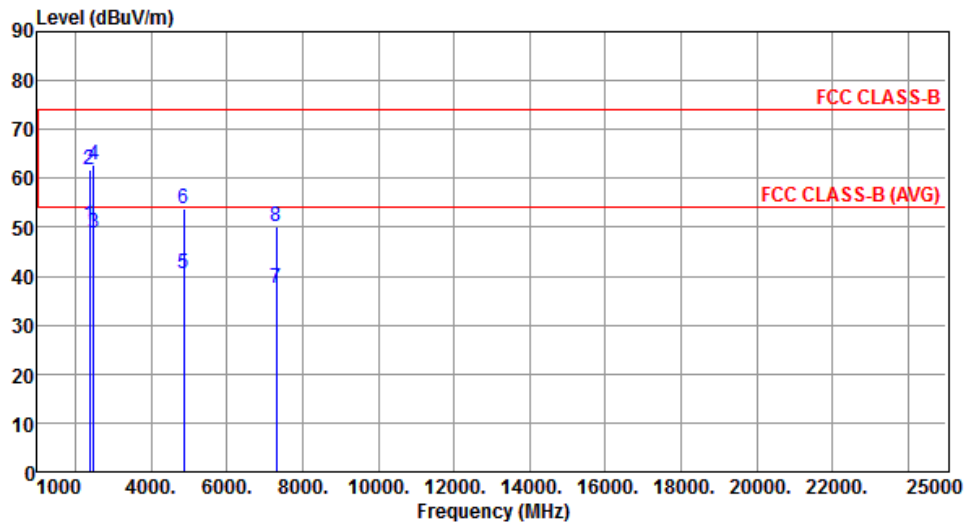
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.78	54.00	-5.22	51.43	-2.65	Average	180	308
2	2390.00	63.00	74.00	-11.00	65.65	-2.65	Peak	180	308
3	2483.50	48.19	54.00	-5.81	50.53	-2.34	Average	289	44
4	2483.50	63.45	74.00	-10.55	65.79	-2.34	Peak	289	44
5	4874.00	38.94	54.00	-15.06	33.86	5.08	Average	255	37
6	4874.00	51.91	74.00	-22.09	46.83	5.08	Peak	255	37
7	7311.00	40.38	54.00	-13.62	30.27	10.11	Average	214	238
8	7311.00	54.67	74.00	-19.33	44.56	10.11	Peak	214	238

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



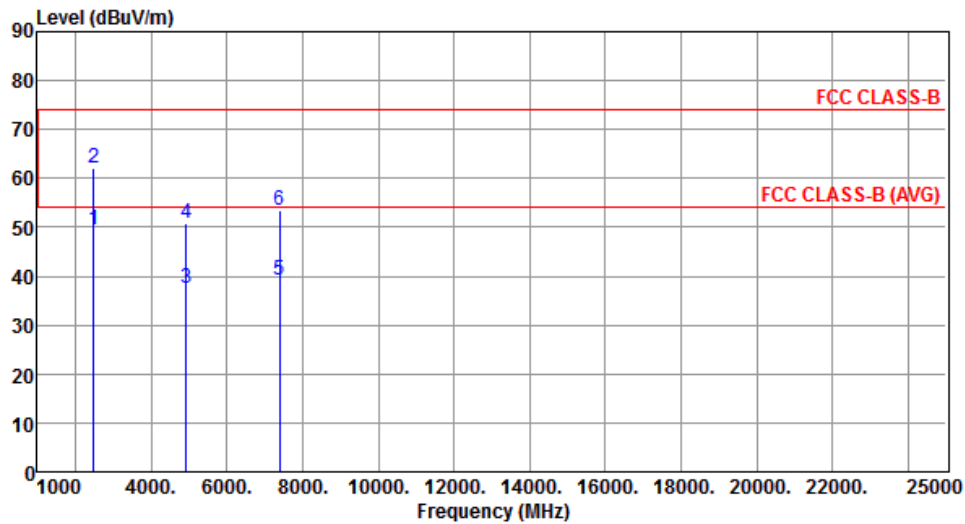
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.35	54.00	-3.65	53.00	-2.65	Average	274	341
2	2390.00	61.80	74.00	-12.20	64.45	-2.65	Peak	274	341
3	2483.50	48.89	54.00	-5.11	51.23	-2.34	Average	299	337
4	2483.50	62.62	74.00	-11.38	64.96	-2.34	Peak	299	337
5	4874.00	40.47	54.00	-13.53	35.39	5.08	Average	254	39
6	4874.00	53.95	74.00	-20.05	48.87	5.08	Peak	254	39
7	7311.00	37.44	54.00	-16.56	27.33	10.11	Average	216	33
8	7311.00	50.21	74.00	-23.79	40.10	10.11	Peak	216	33

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



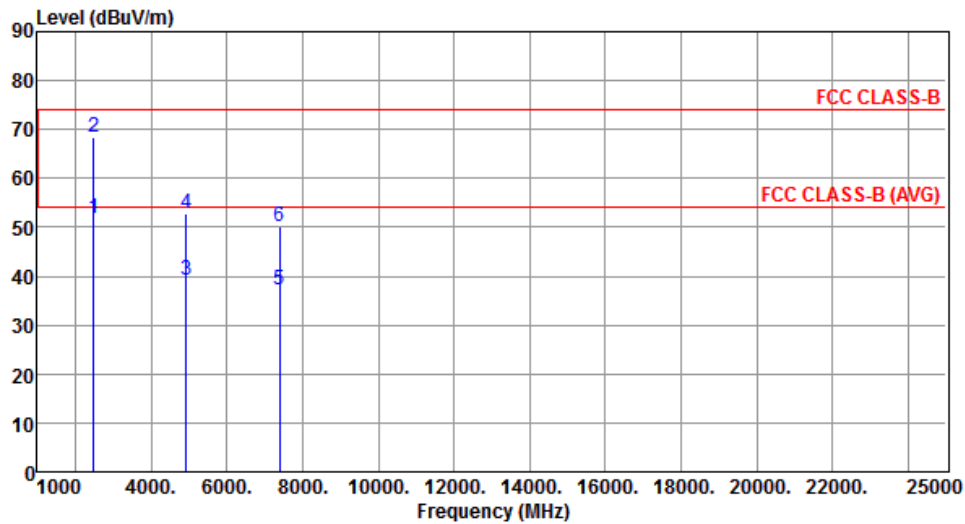
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	49.61	54.00	-4.39	51.95	-2.34	Average	239	321
2	2483.50	61.98	74.00	-12.02	64.32	-2.34	Peak	239	321
3	4924.00	37.65	54.00	-16.35	32.44	5.21	Average	250	45
4	4924.00	50.83	74.00	-23.17	45.62	5.21	Peak	250	45
5	7386.00	39.21	54.00	-14.79	28.90	10.31	Average	210	231
6	7386.00	53.58	74.00	-20.42	43.27	10.31	Peak	210	231

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	51.90	54.00	-2.10	54.24	-2.34	Average	263	335
2	2483.50	68.55	74.00	-5.45	70.89	-2.34	Peak	263	335
3	4924.00	39.33	54.00	-14.67	34.12	5.21	Average	251	43
4	4924.00	52.86	74.00	-21.14	47.65	5.21	Peak	251	43
5	7386.00	37.26	54.00	-16.74	26.95	10.31	Average	213	31
6	7386.00	50.11	74.00	-23.89	39.80	10.31	Peak	213	31

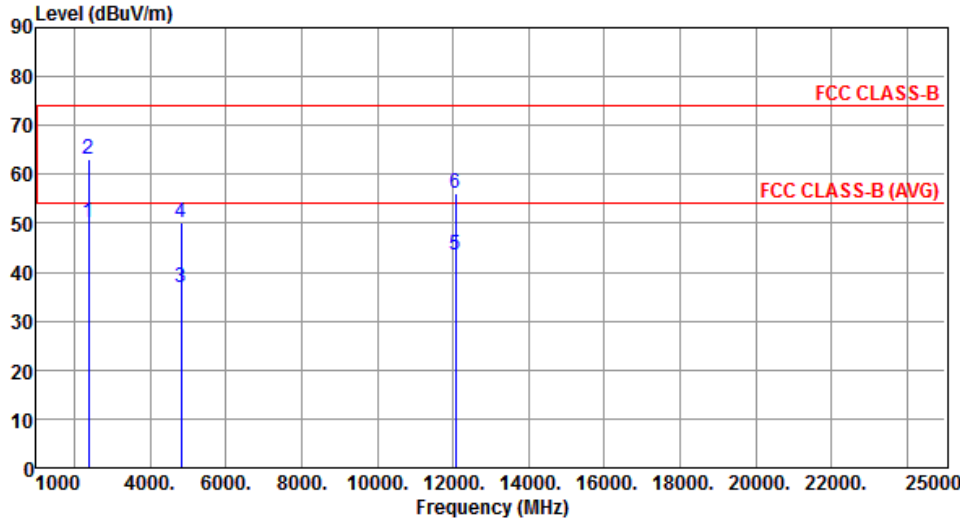
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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

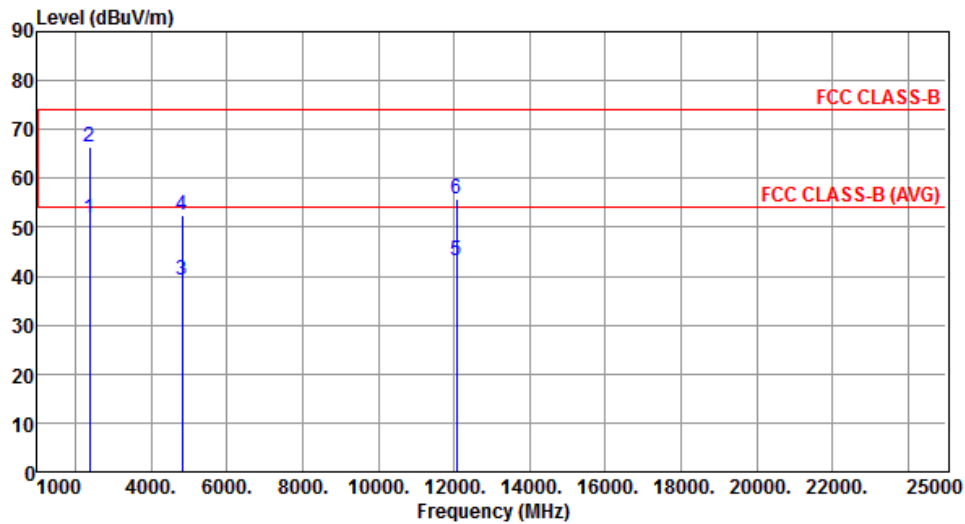
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	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	50.23	54.00	-3.77	52.88	-2.65	Average	138	314
2	2390.00	63.15	74.00	-10.85	65.80	-2.65	Peak	138	314
3	4824.00	36.95	54.00	-17.05	31.98	4.97	Average	243	59
4	4824.00	50.22	74.00	-23.78	45.25	4.97	Peak	243	59
5	12060.00	43.59	54.00	-10.41	28.10	15.49	Average	252	48
6	12060.00	55.98	74.00	-18.02	40.49	15.49	Peak	252	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	HT20	Test Freq. (MHz)	2412
Polarization	Vertical	Test Configuration	1



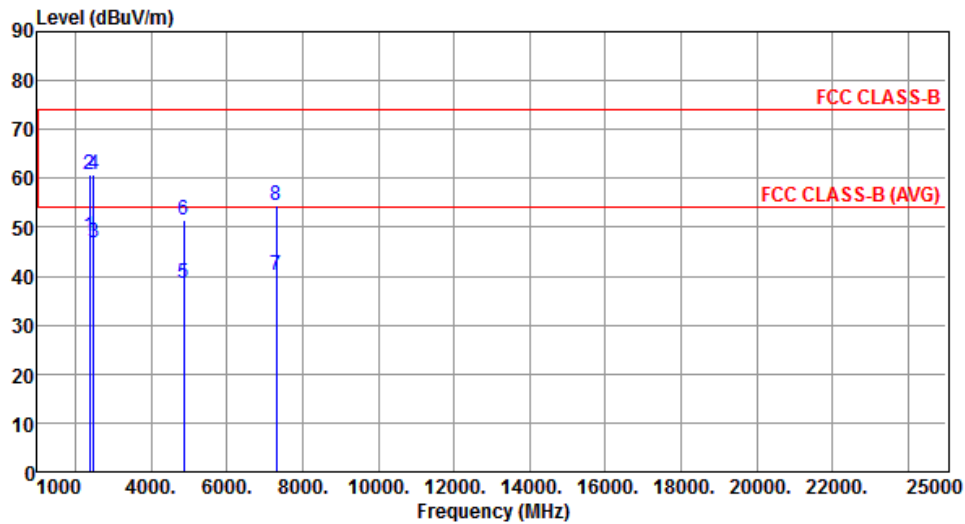
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	51.67	54.00	-2.33	54.32	-2.65	Average	296	339
2	2390.00	66.35	74.00	-7.65	69.00	-2.65	Peak	296	339
3	4824.00	39.07	54.00	-14.93	34.10	4.97	Average	243	40
4	4824.00	52.39	74.00	-21.61	47.42	4.97	Peak	243	40
5	12060.00	43.20	54.00	-10.80	27.71	15.49	Average	139	39
6	12060.00	55.69	74.00	-18.31	40.20	15.49	Peak	139	39

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



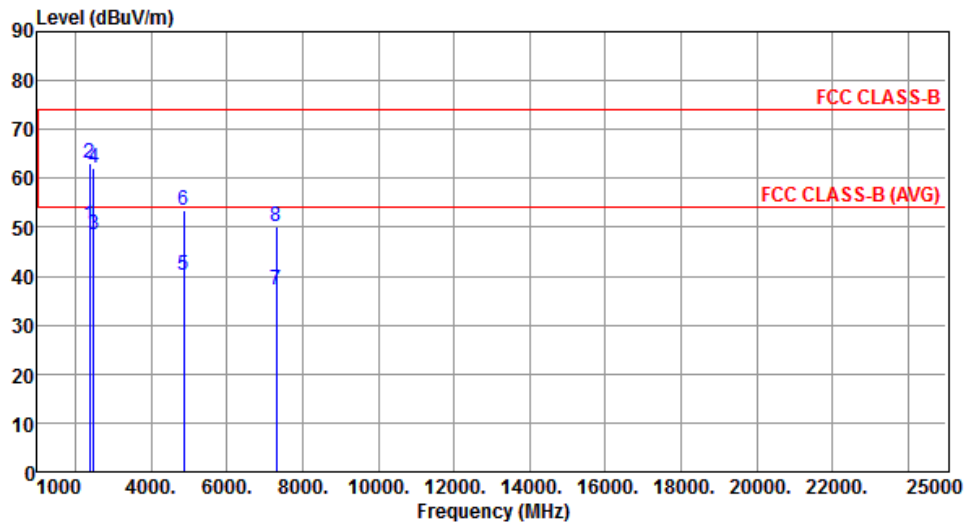
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.26	54.00	-5.74	50.91	-2.65	Average	175	314
2	2390.00	60.62	74.00	-13.38	63.27	-2.65	Peak	175	314
3	2483.50	46.98	54.00	-7.02	49.32	-2.34	Average	173	308
4	2483.50	60.61	74.00	-13.39	62.95	-2.34	Peak	173	308
5	4874.00	38.64	54.00	-15.36	33.56	5.08	Average	253	41
6	4874.00	51.42	74.00	-22.58	46.34	5.08	Peak	253	41
7	7311.00	40.15	54.00	-13.85	30.04	10.11	Average	210	233
8	7311.00	54.39	74.00	-19.61	44.28	10.11	Peak	210	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)	2437
Polarization	Vertical	Test Configuration	1



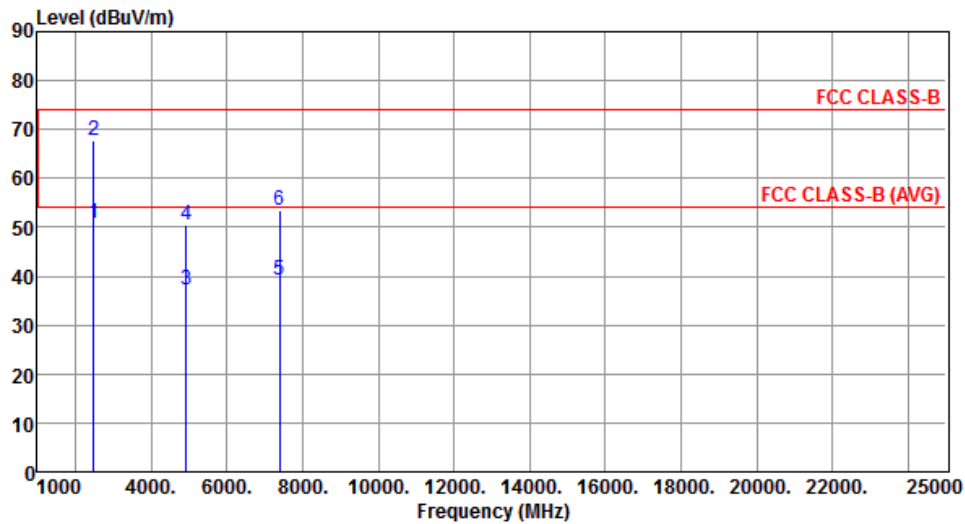
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.33	54.00	-3.67	52.98	-2.65	Average	276	338
2	2390.00	63.21	74.00	-10.79	65.86	-2.65	Peak	276	338
3	2483.50	48.52	54.00	-5.48	50.86	-2.34	Average	236	339
4	2483.50	62.25	74.00	-11.75	64.59	-2.34	Peak	236	339
5	4874.00	40.26	54.00	-13.74	35.18	5.08	Average	243	41
6	4874.00	53.62	74.00	-20.38	48.54	5.08	Peak	243	41
7	7311.00	37.15	54.00	-16.85	27.04	10.11	Average	209	37
8	7311.00	50.00	74.00	-24.00	39.89	10.11	Peak	209	37

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



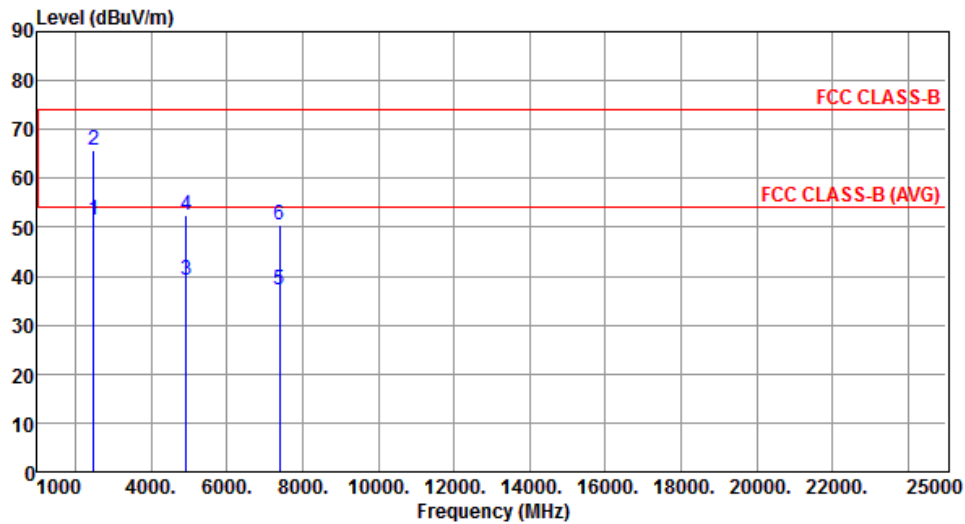
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	50.89	54.00	-3.11	53.23	-2.34	Average	259	59
2	2483.50	67.67	74.00	-6.33	70.01	-2.34	Peak	268	47
3	4924.00	37.24	54.00	-16.76	32.03	5.21	Average	256	58
4	4924.00	50.42	74.00	-23.58	45.21	5.21	Peak	256	58
5	7386.00	39.14	54.00	-14.86	28.83	10.31	Average	210	239
6	7386.00	53.36	74.00	-20.64	43.05	10.31	Peak	210	239

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	51.33	54.00	-2.67	53.67	-2.34	Average	301	20
2	2483.50	65.64	74.00	-8.36	67.98	-2.34	Peak	301	20
3	4924.00	39.12	54.00	-14.88	33.91	5.21	Average	263	57
4	4924.00	52.45	74.00	-21.55	47.24	5.21	Peak	263	57
5	7386.00	37.09	54.00	-16.91	26.78	10.31	Average	217	36
6	7386.00	50.49	74.00	-23.51	40.18	10.31	Peak	217	36

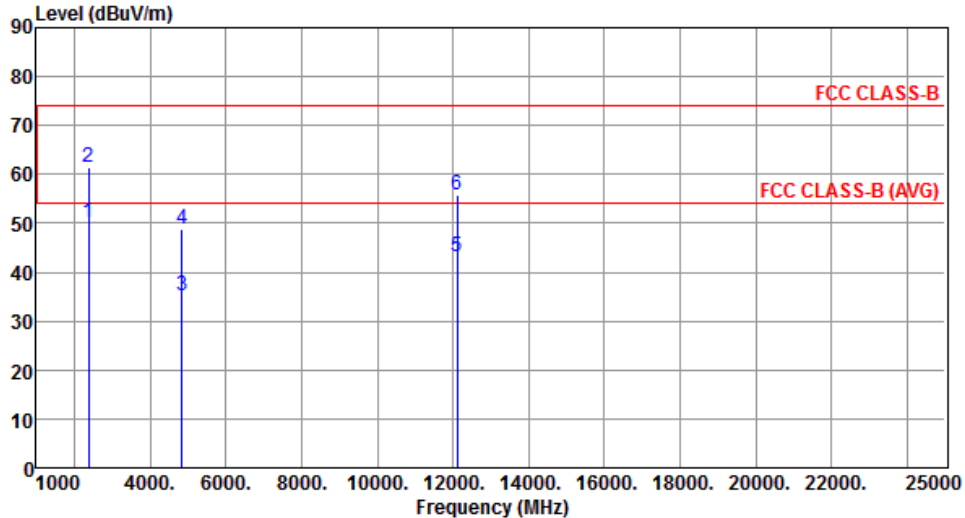
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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

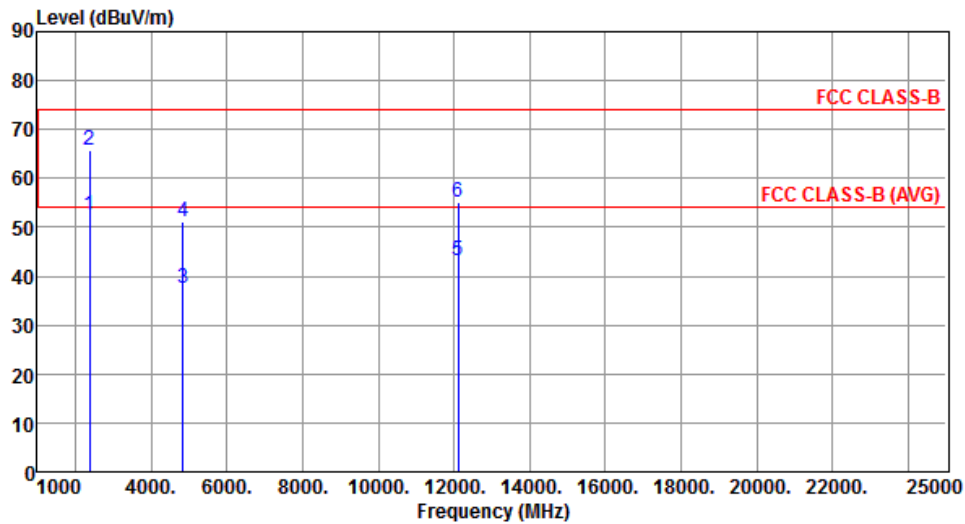
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Horizontal	Test Configuration	1



	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	50.03	54.00	-3.97	52.68	-2.65	Average	161	318
2	2390.00	61.58	74.00	-12.42	64.23	-2.65	Peak	161	318
3	4844.00	35.27	54.00	-18.73	30.25	5.02	Average	257	71
4	4844.00	48.75	74.00	-25.25	43.73	5.02	Peak	257	71
5	12110.00	43.26	54.00	-10.74	27.80	15.46	Average	243	61
6	12110.00	55.71	74.00	-18.29	40.25	15.46	Peak	243	61

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



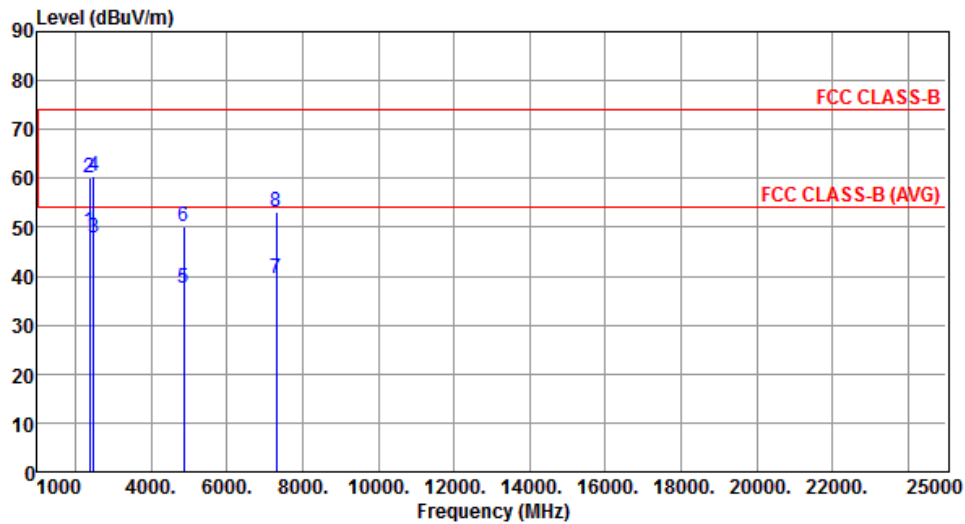
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.64	54.00	-1.36	55.29	-2.65	Average	318	345
2	2390.00	65.65	74.00	-8.35	68.30	-2.65	Peak	318	345
3	4844.00	37.65	54.00	-16.35	32.63	5.02	Average	218	58
4	4844.00	51.01	74.00	-22.99	45.99	5.02	Peak	218	58
5	12110.00	43.16	54.00	-10.84	27.70	15.46	Average	136	33
6	12110.00	55.27	74.00	-18.73	39.81	15.46	Peak	136	33

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



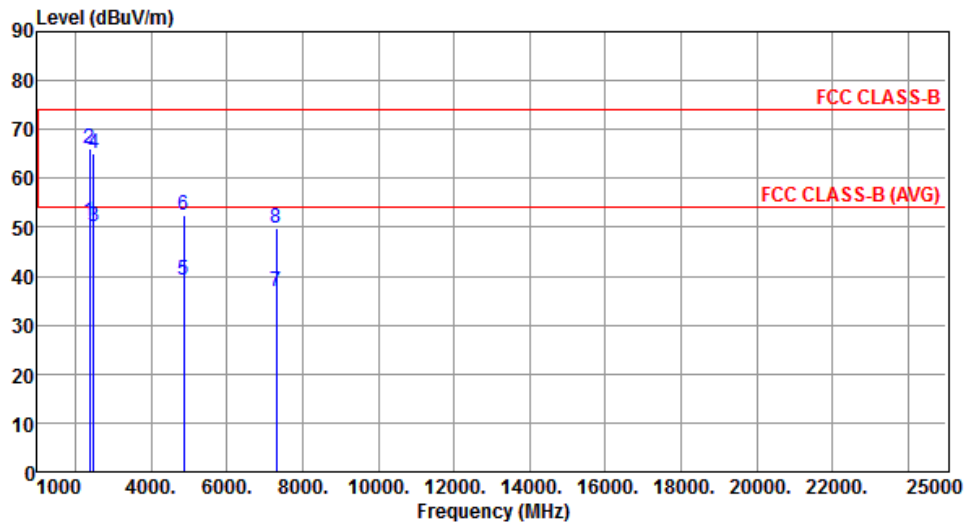
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	49.09	54.00	-4.91	51.74	-2.65	Average	240	54
2	2390.00	59.95	74.00	-14.05	62.60	-2.65	Peak	240	54
3	2483.50	47.94	54.00	-6.06	50.28	-2.34	Average	268	55
4	2483.50	60.50	74.00	-13.50	62.84	-2.34	Peak	268	55
5	4874.00	37.59	54.00	-16.41	32.51	5.08	Average	252	48
6	4874.00	50.24	74.00	-23.76	45.16	5.08	Peak	252	48
7	7311.00	39.36	54.00	-14.64	29.25	10.11	Average	213	245
8	7311.00	53.27	74.00	-20.73	43.16	10.11	Peak	213	245

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



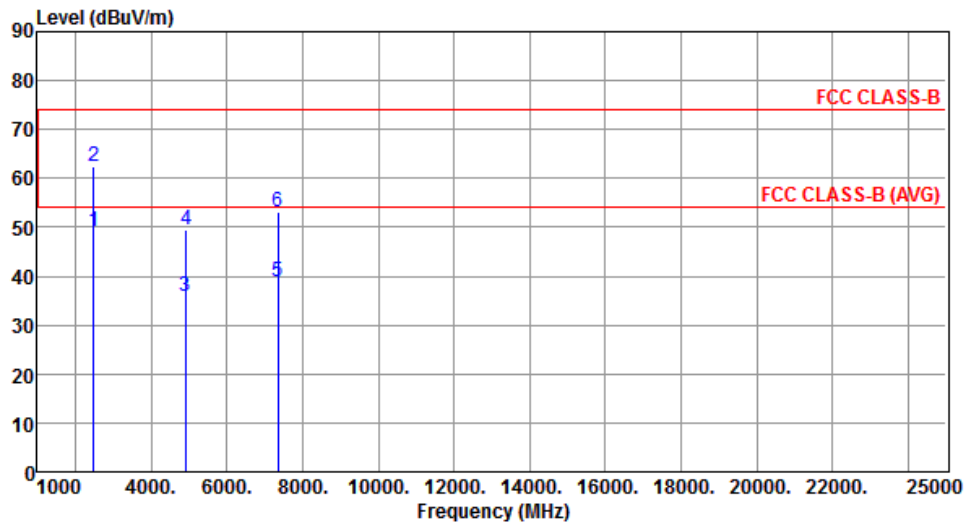
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	51.28	54.00	-2.72	53.93	-2.65	Average	321	345
2	2390.00	66.21	74.00	-7.79	68.86	-2.65	Peak	321	345
3	2483.50	50.21	54.00	-3.79	52.55	-2.34	Average	297	334
4	2483.50	65.11	74.00	-8.89	67.45	-2.34	Peak	297	334
5	4874.00	39.11	54.00	-14.89	34.03	5.08	Average	250	48
6	4874.00	52.55	74.00	-21.45	47.47	5.08	Peak	250	48
7	7311.00	37.02	54.00	-16.98	26.91	10.11	Average	205	35
8	7311.00	49.89	74.00	-24.11	39.78	10.11	Peak	205	35

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



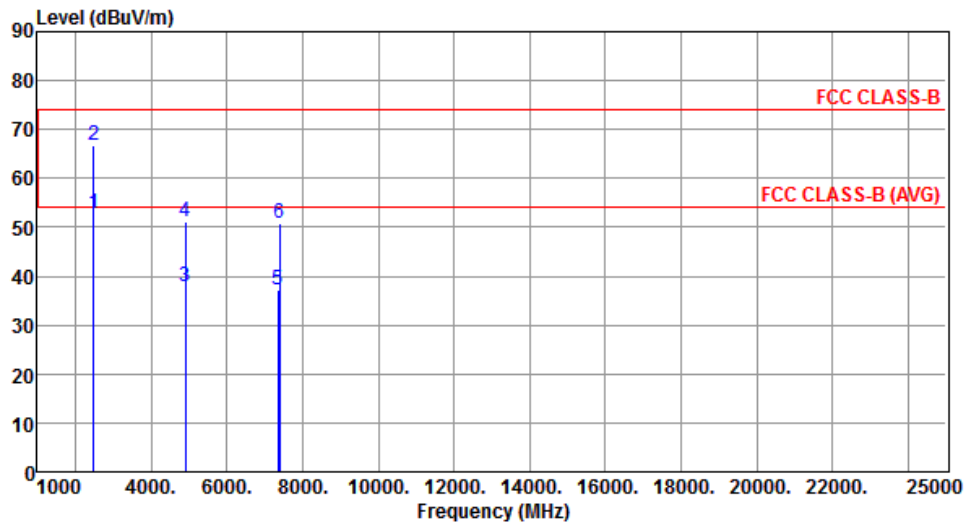
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	49.13	54.00	-4.87	51.47	-2.34	Average	258	314
2	2483.50	62.34	74.00	-11.66	64.68	-2.34	Peak	258	314
3	4904.00	36.01	54.00	-17.99	30.84	5.17	Average	239	62
4	4924.00	49.58	74.00	-24.42	44.37	5.21	Peak	239	62
5	7356.00	38.88	54.00	-15.12	28.65	10.23	Average	210	234
6	7356.00	53.17	74.00	-20.83	42.94	10.23	Peak	210	234

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	52.95	54.00	-1.05	55.29	-2.34	Average	301	339
2	2483.50	66.63	74.00	-7.37	68.97	-2.34	Peak	301	339
3	4904.00	37.84	54.00	-16.16	32.67	5.17	Average	261	68
4	4904.00	50.98	74.00	-23.02	45.81	5.17	Peak	261	68
5	7356.00	37.24	54.00	-16.76	27.01	10.23	Average	222	27
6	7386.00	50.78	74.00	-23.22	40.47	10.31	Peak	222	27

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 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

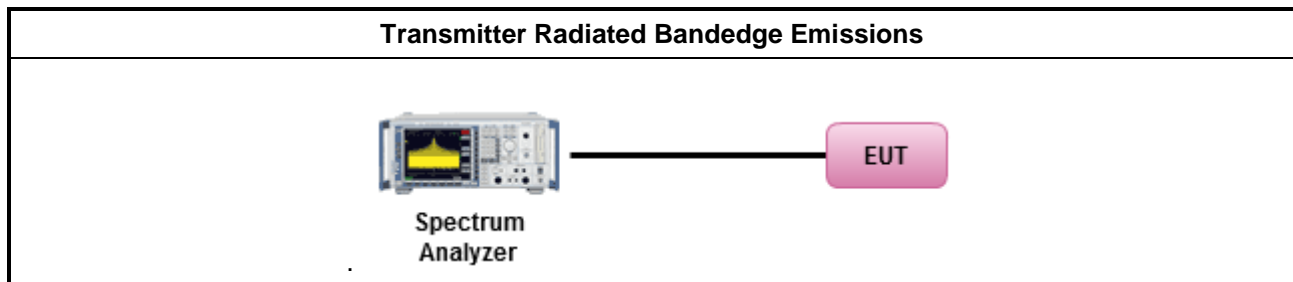
Reference level measurement

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

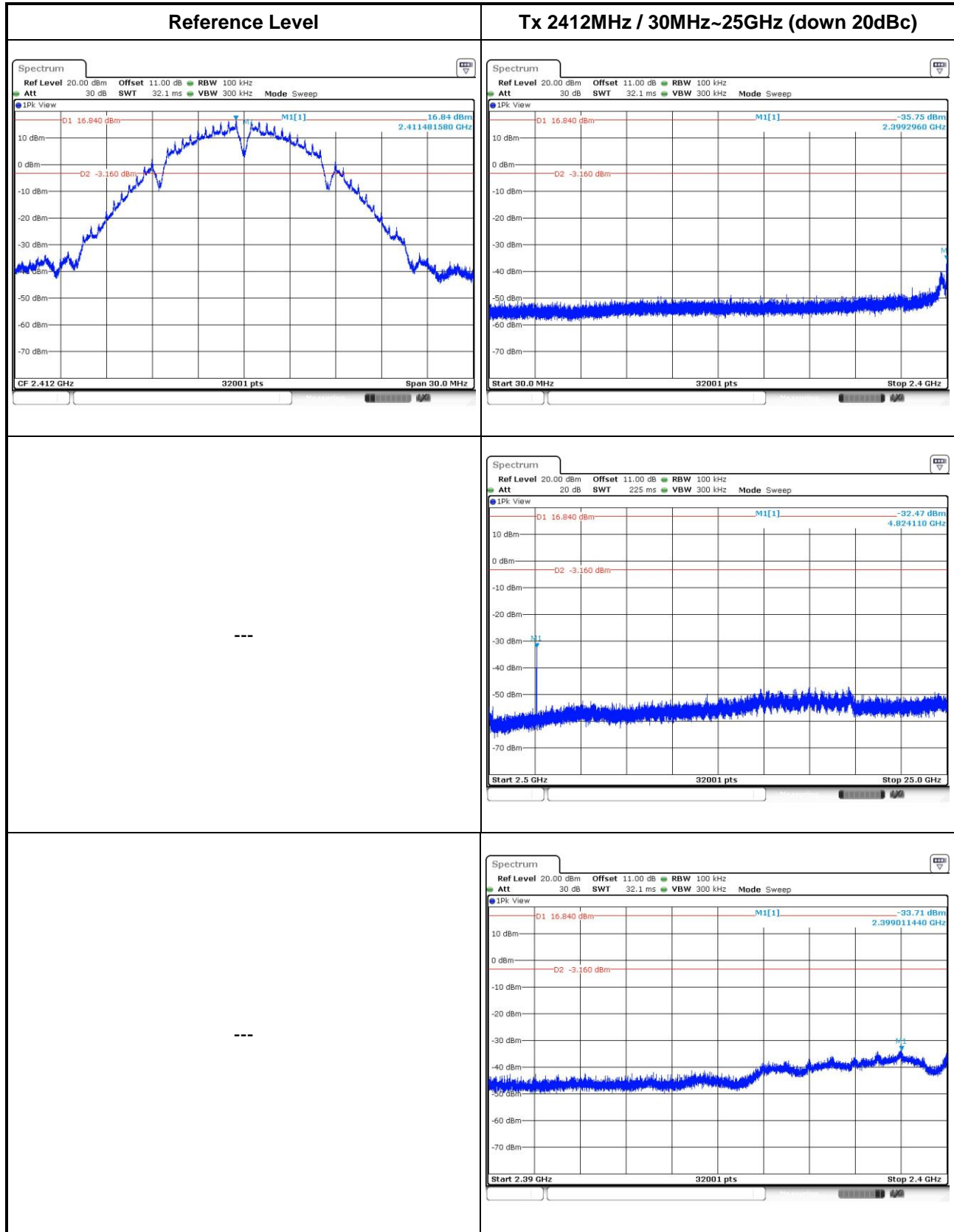


3.6.5 Test Result of Emissions in non-restricted frequency bands

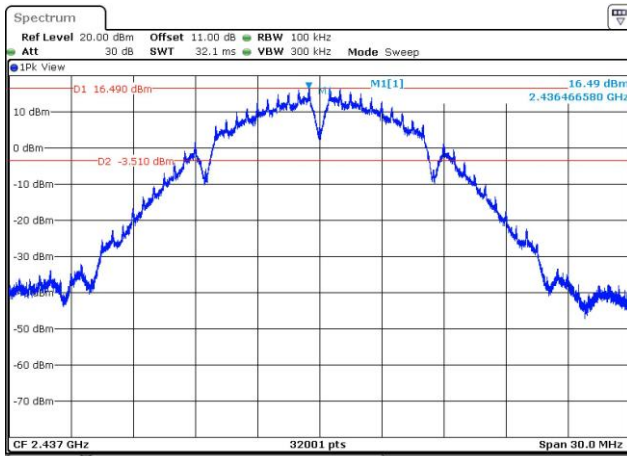
This test item is performed on each TX output individually without summing or adding $10 \log(N_{ANT})$ since measurements are made relative to the in-band emissions on the individual outputs. Only worst test result of each operating mode is presented.

3.6.6 Unwanted Emissions into Non-Restricted Frequency Bands

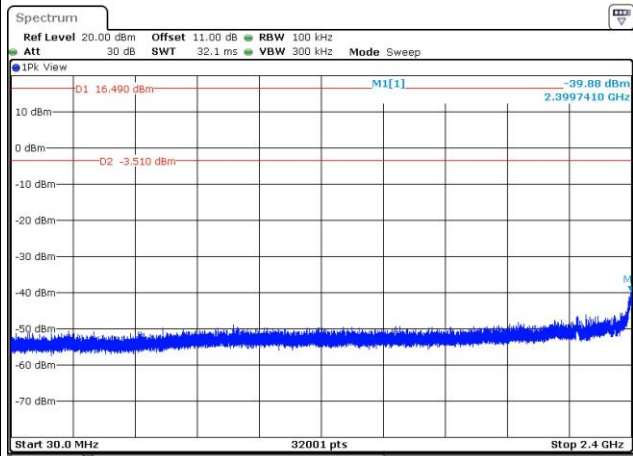
802.11b

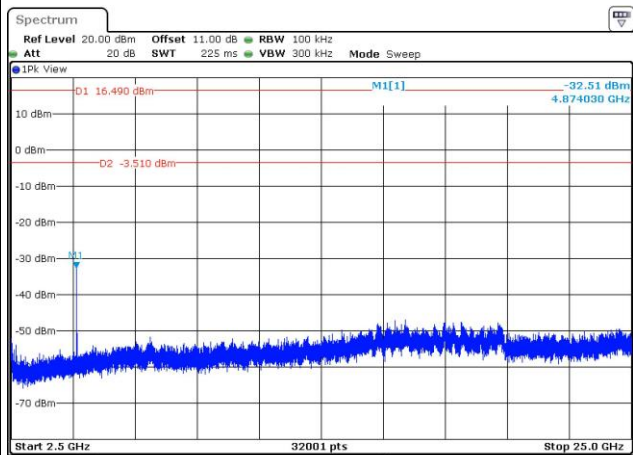


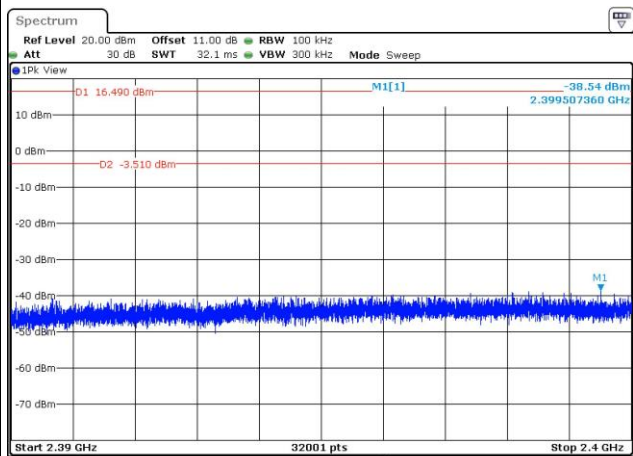
Reference Level



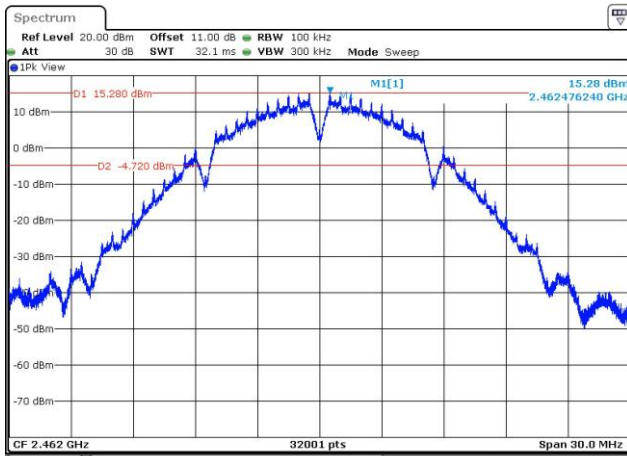
Tx 2437MHz / 30MHz~25GHz (down 20dBc)



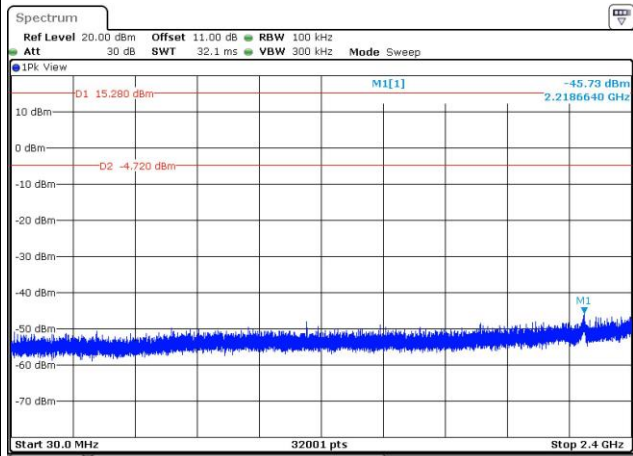


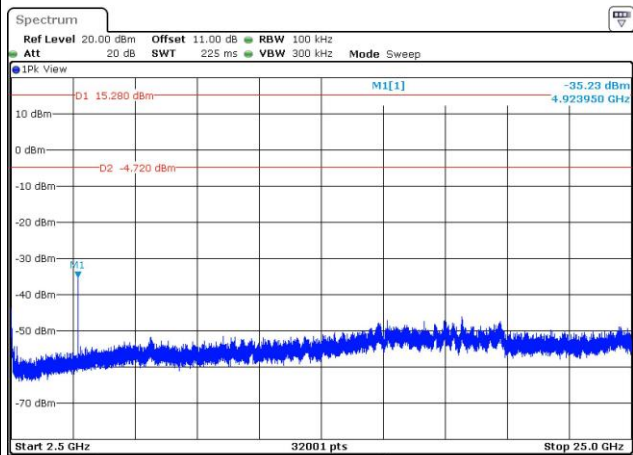


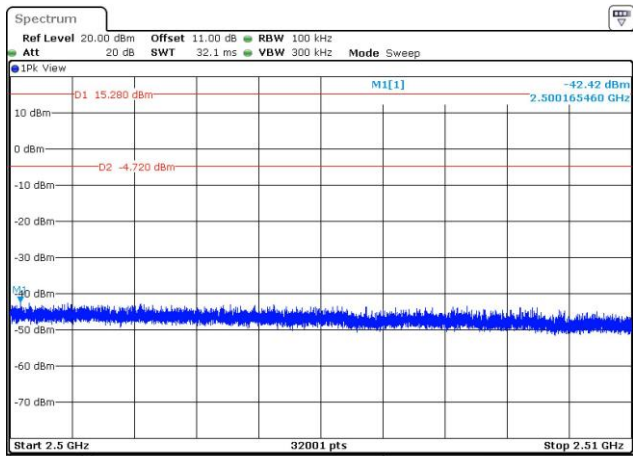
Reference Level



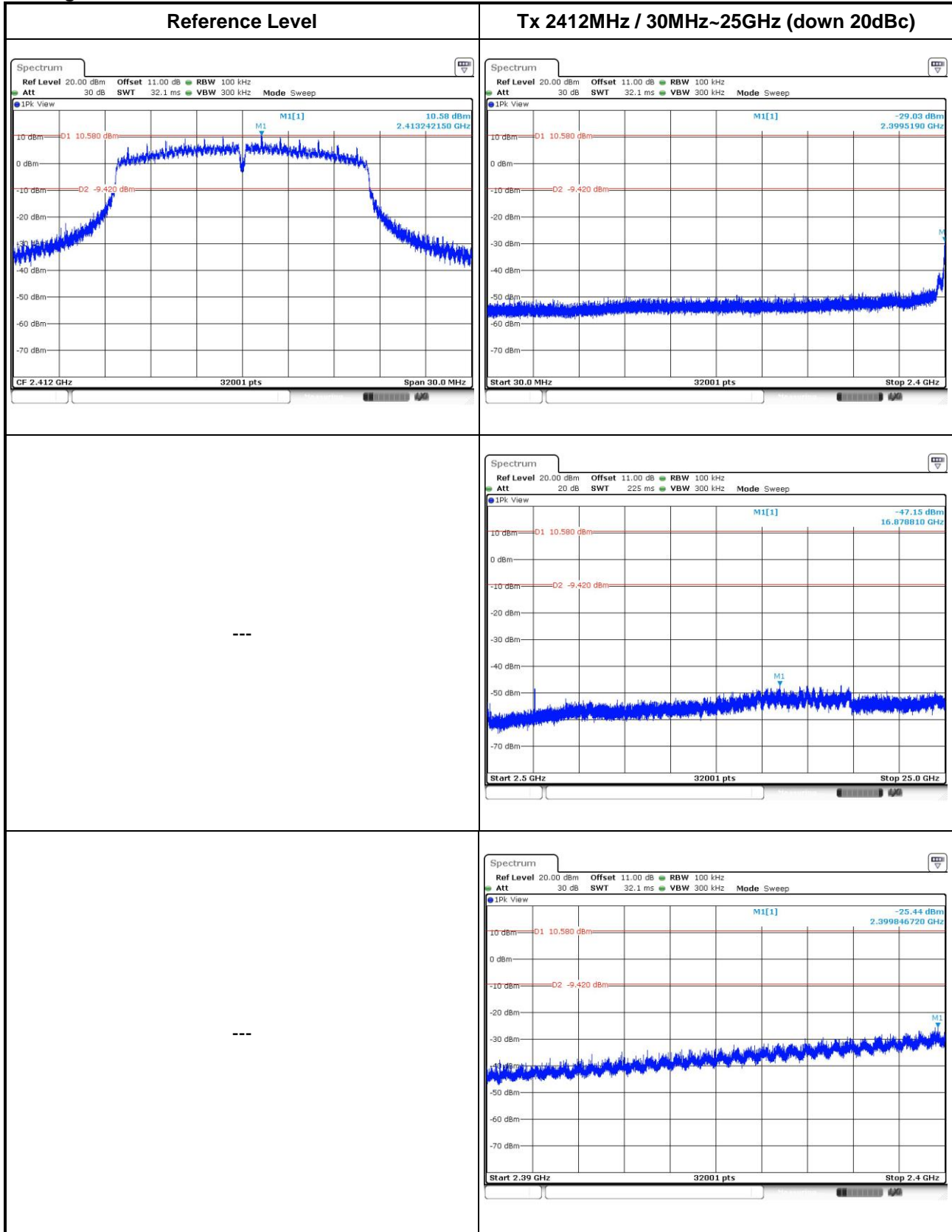
Tx 2462MHz / 30MHz~25GHz (down 20dBc)



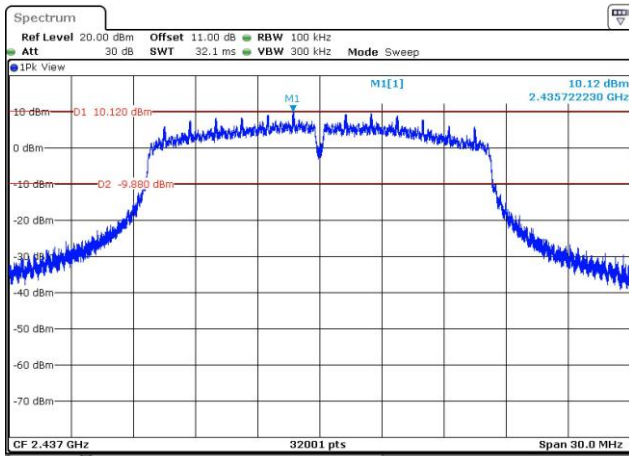




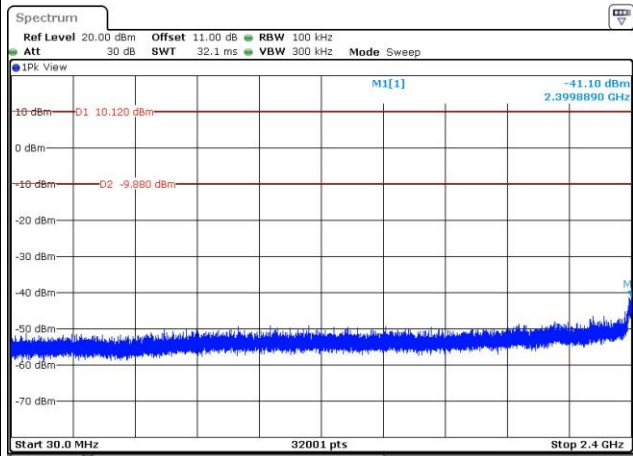
802.11g

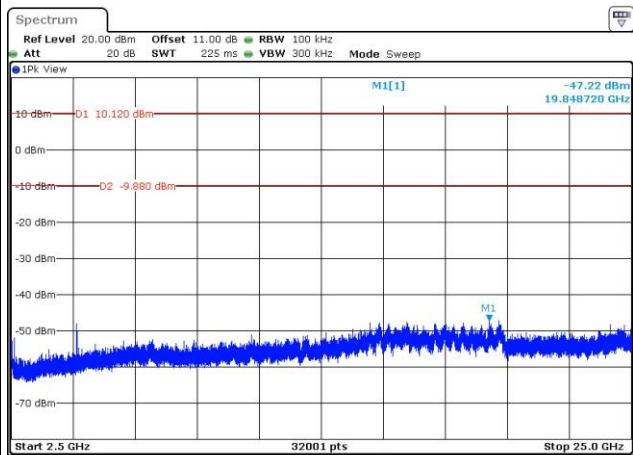


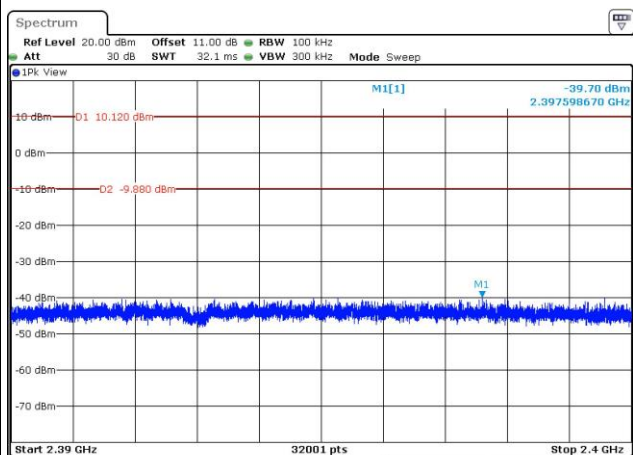
Reference Level



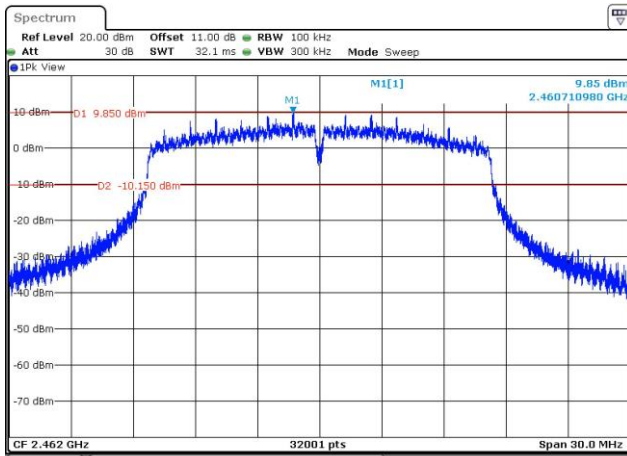
Tx 2437MHz / 30MHz~25GHz (down 20dBc)



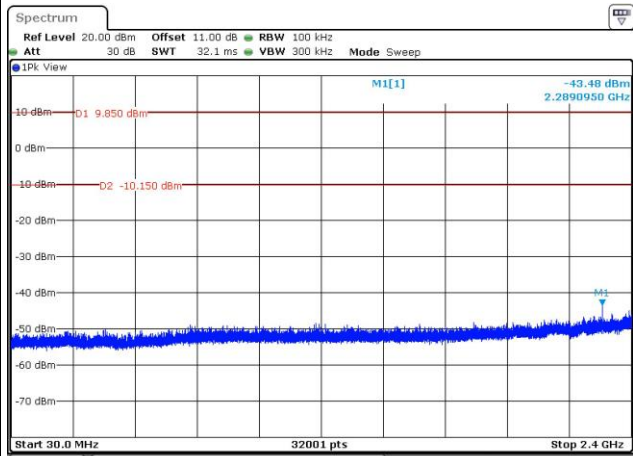


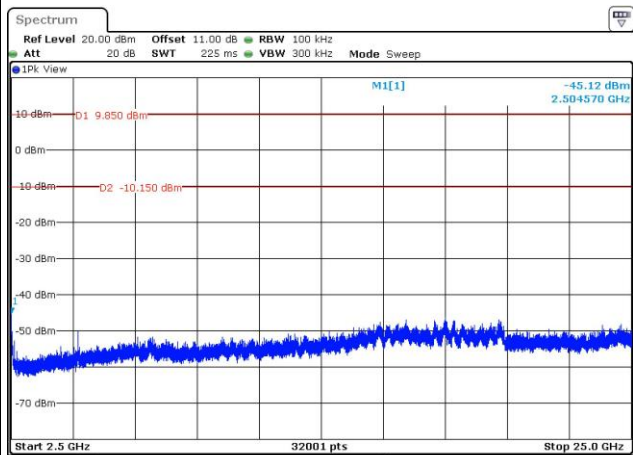


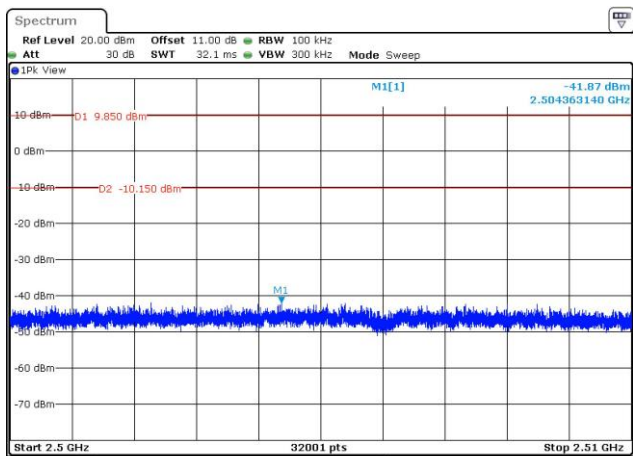
Reference Level



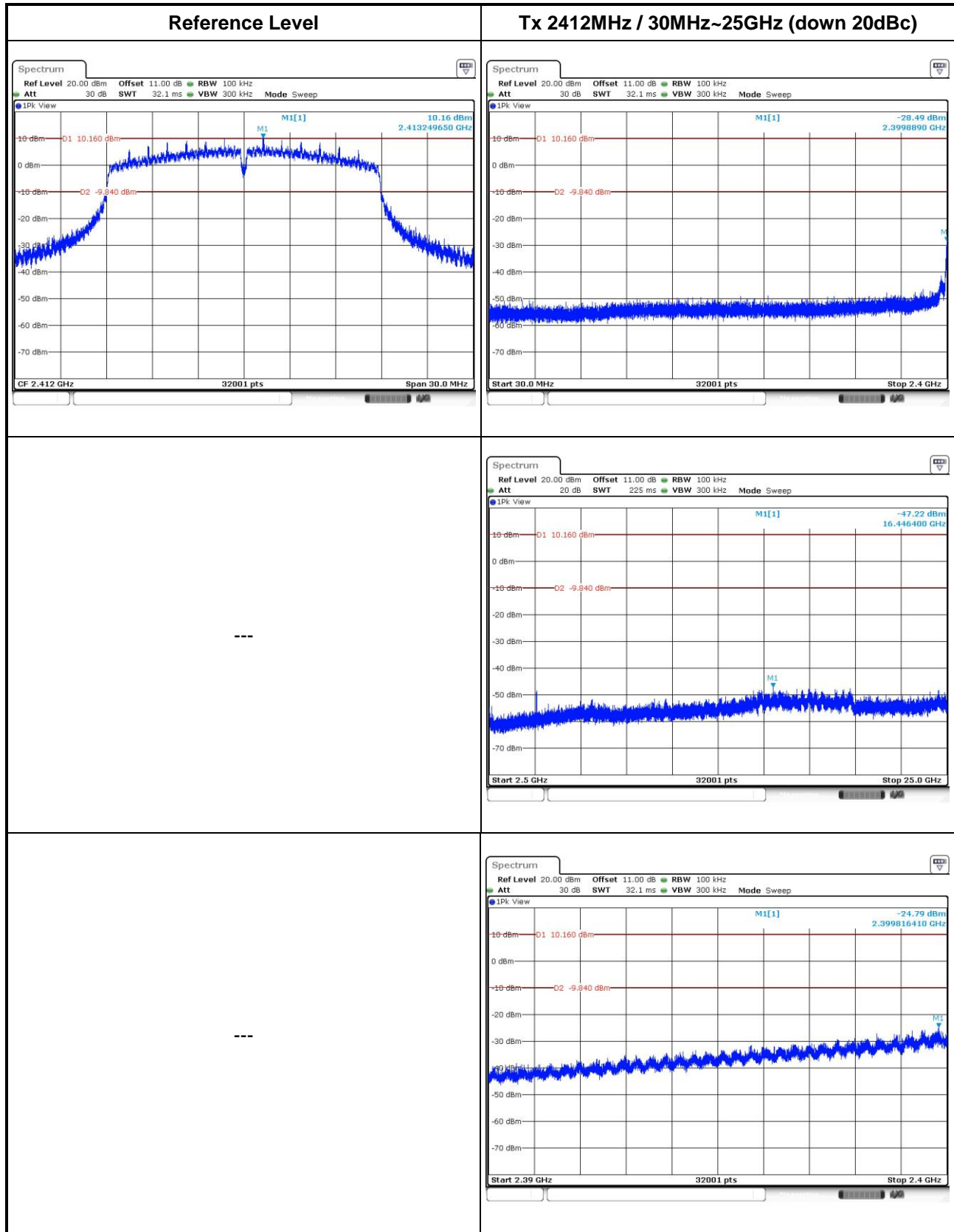
Tx 2462MHz / 30MHz~25GHz (down 20dBc)



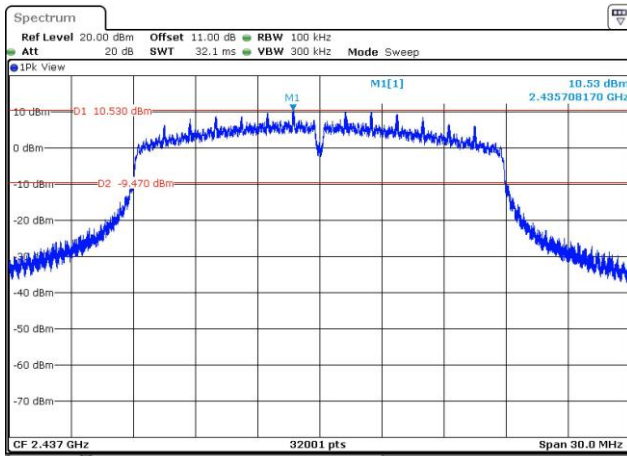




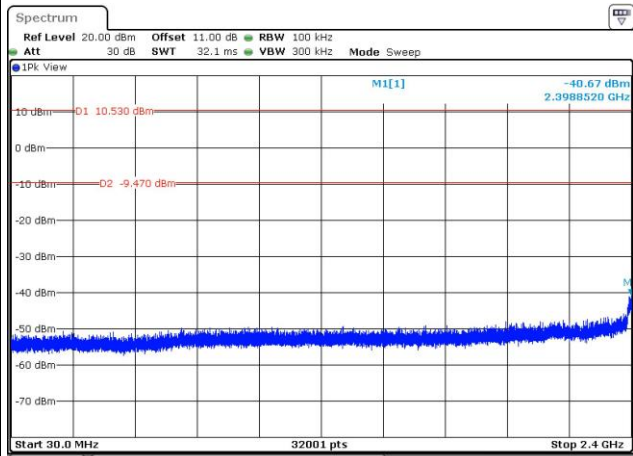
802.11n HT20

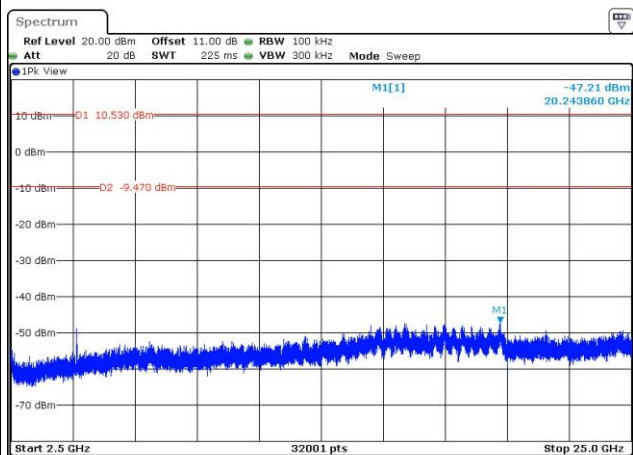


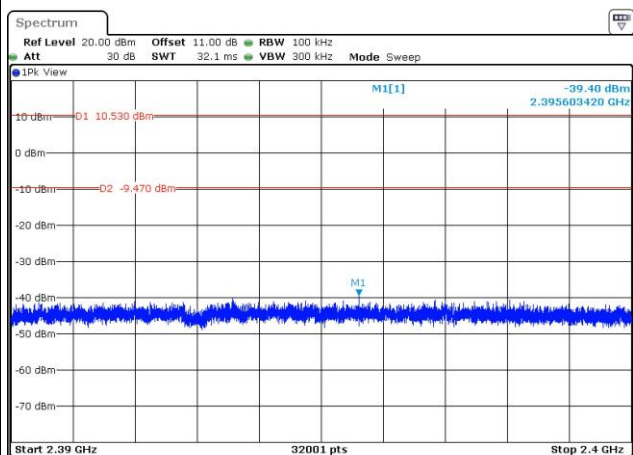
Reference Level



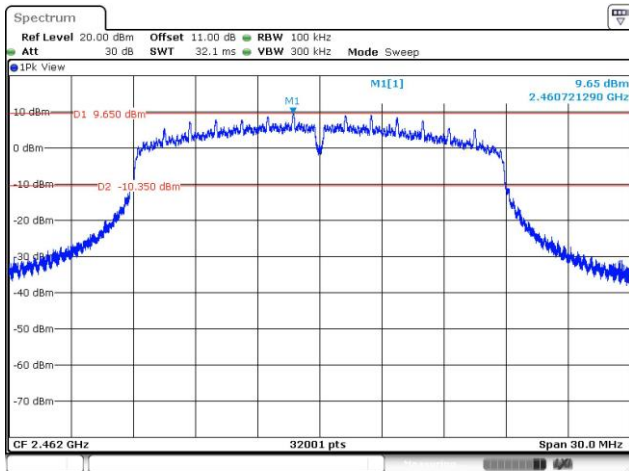
Tx 2437MHz / 30MHz~25GHz (down 20dBc)



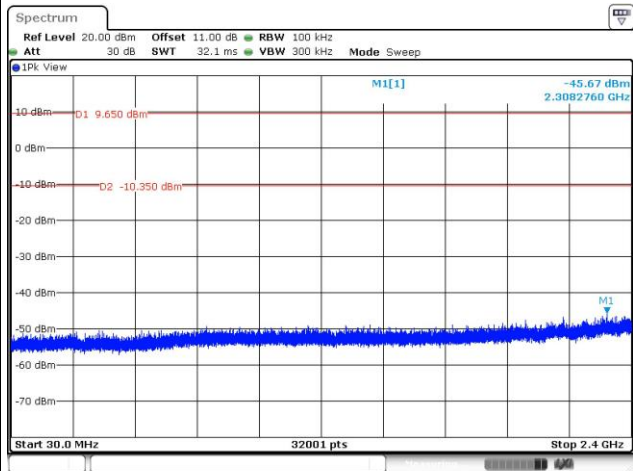


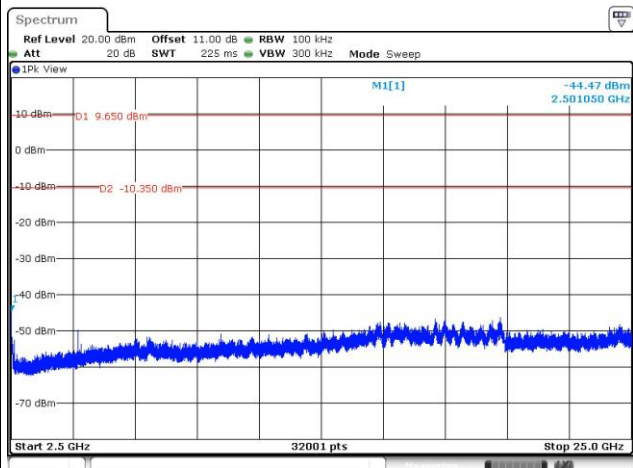


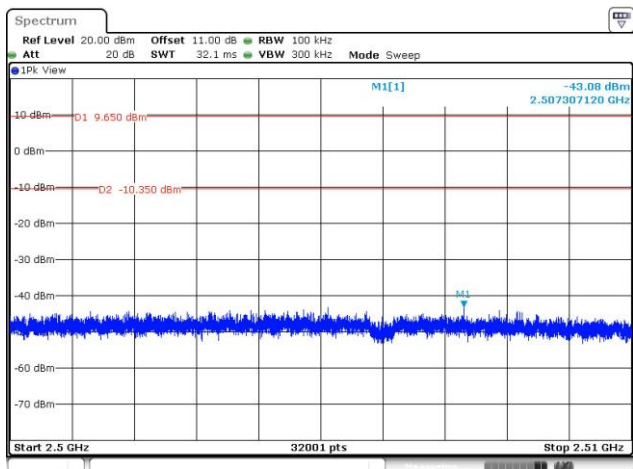
Reference Level



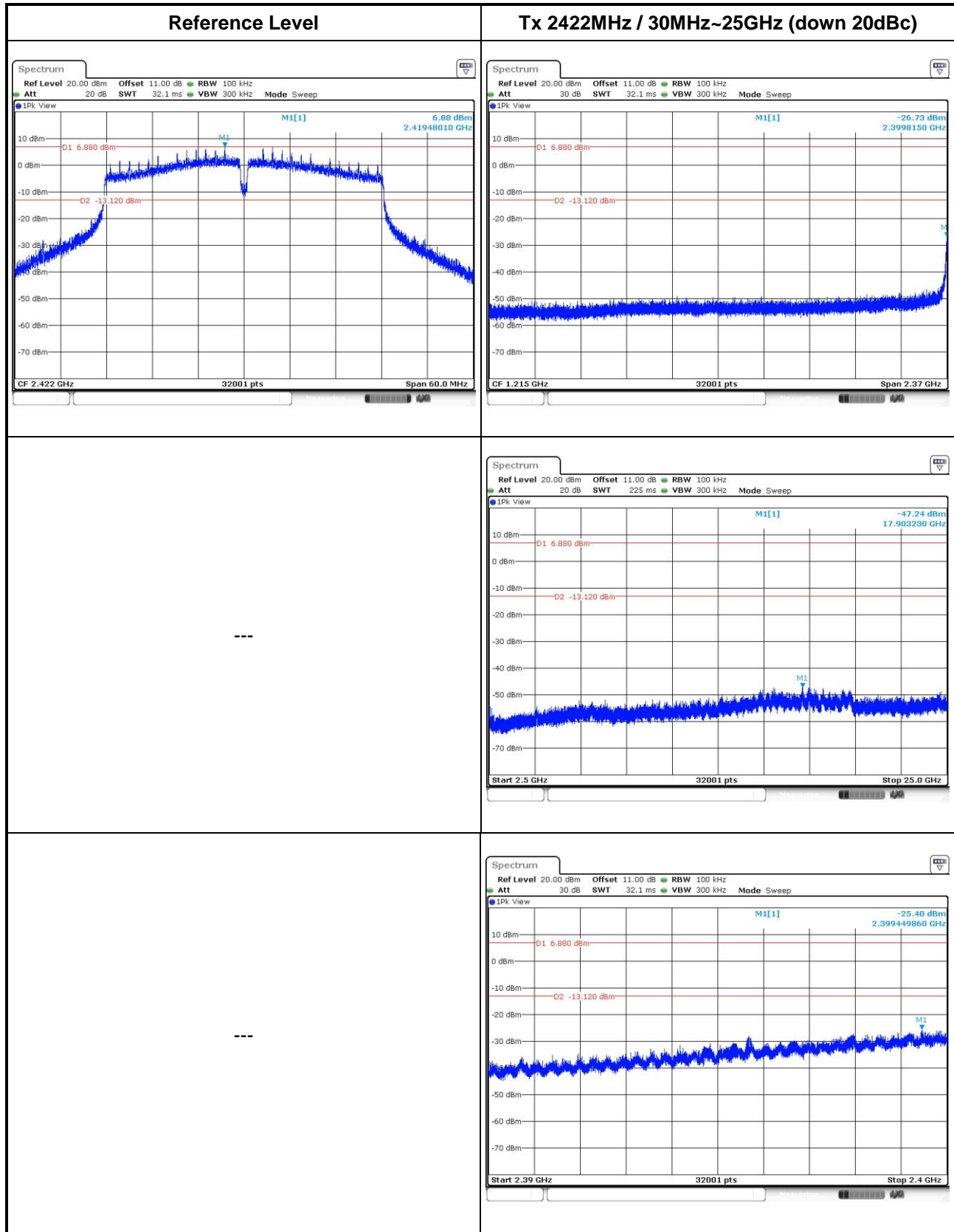
Tx 2462MHz / 30MHz~25GHz (down 20dBc)



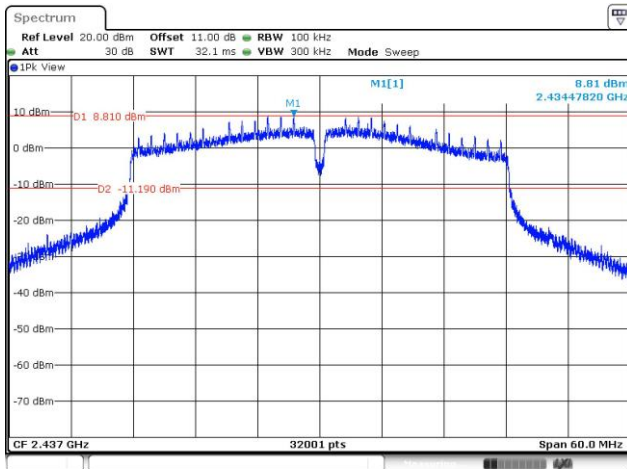




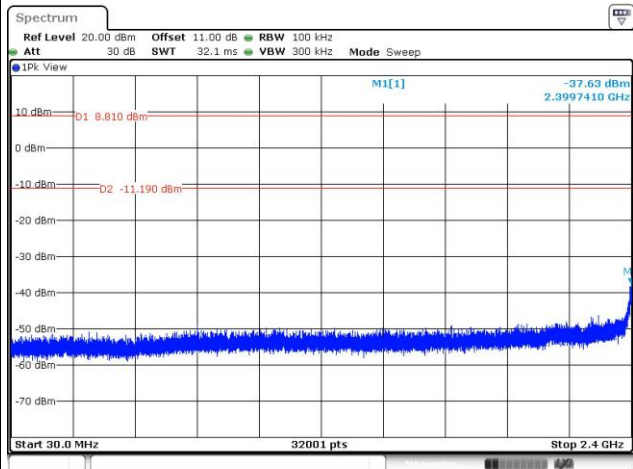
802.11n HT40

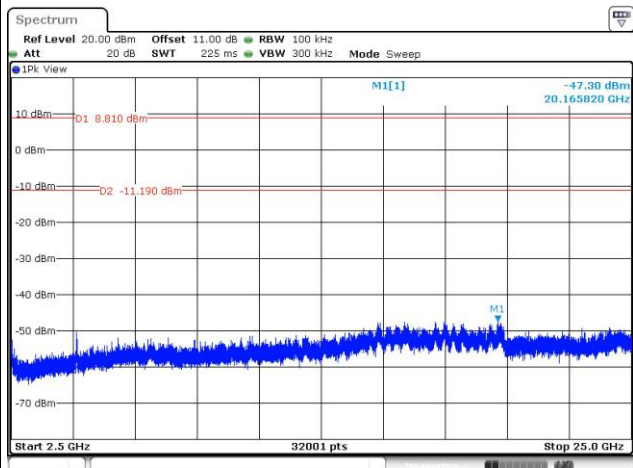


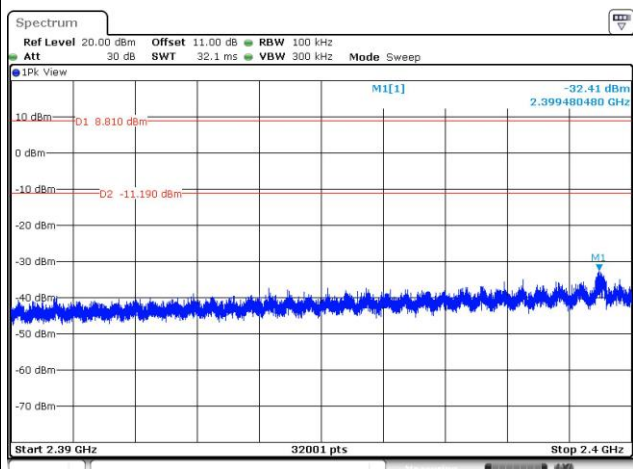
Reference Level



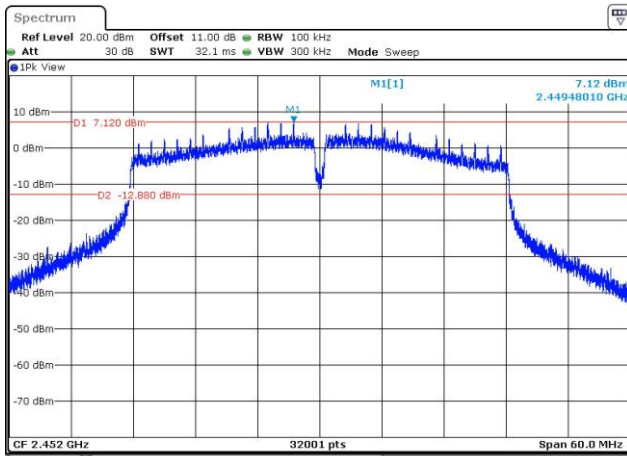
Tx 2437MHz / 30MHz~25GHz (down 20dBc)



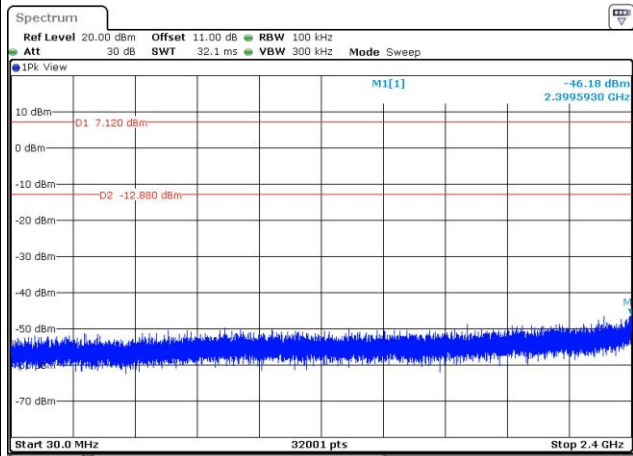


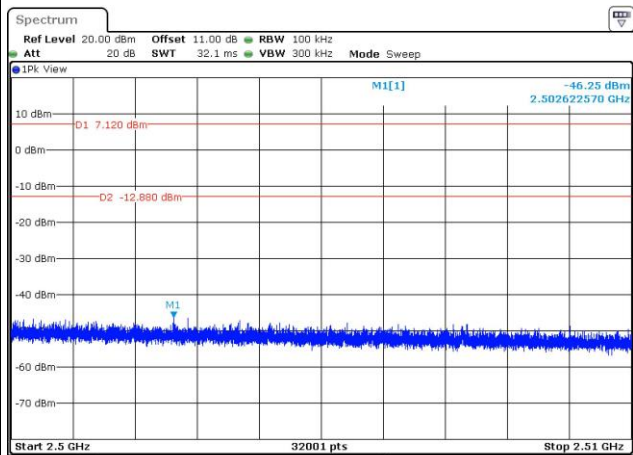


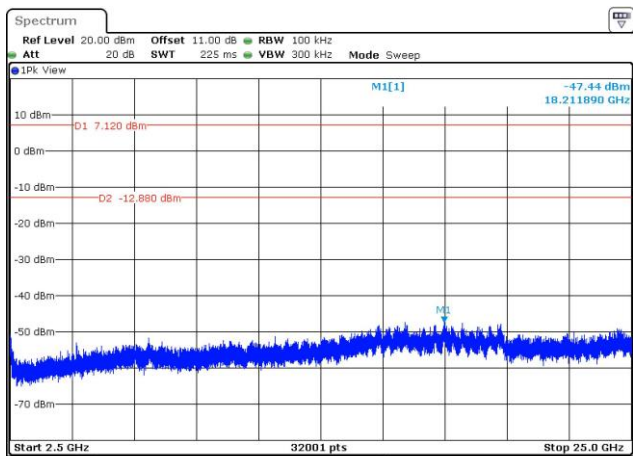
Reference Level



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>.

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