

FCC Test Report

FCC ID : XU8TEW825DAP
Equipment : AC1750 Dual Band PoE Access Point
Model No. : TEW-825DAP
Multiple Listing : Refer to item 1.1.1 for more details
Brand Name : TRENDnet
Applicant : TRENDnet, Inc.
Address : 20675 Manhattan Place, Torrance, CA 90501,
USA
Standard : 47 CFR FCC Part 15.247
Received Date : Jan. 14, 2016
Tested Date : Jan. 14 ~ Feb. 22, 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.

Reviewed by:


Along Chen / Assistant Manager

Approved by:


Gary Chang / Manager



Table of Contents

1	GENERAL DESCRIPTION	5
1.1	Information.....	5
1.2	Local Support Equipment List.....	7
1.3	Test Setup Chart.....	8
1.4	The Equipment List	9
1.5	Test Standards	10
1.6	Measurement Uncertainty	10
2	TEST CONFIGURATION.....	11
2.1	Testing Condition	11
2.2	The Worst Test Modes and Channel Details.....	11
3	TRANSMITTER TEST RESULTS	12
3.1	Conducted Emissions	12
3.2	6dB and Occupied Bandwidth	17
3.3	RF Output Power	20
3.4	Power Spectral Density	22
3.5	Unwanted Emissions into Restricted Frequency Bands	24
3.6	Emissions in Non-Restricted Frequency Bands	54
4	TEST LABORATORY INFORMATION	67

Release Record

Report No.	Version	Description	Issued Date
FR621702AC	Rev. 01	Initial issue	Oct. 03, 2016
FR621702AC	Rev. 02	Modified KDB No. and FCC site registration No.	Dec. 21, 2016

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.299MHz 41.11 (Margin -9.15dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2483.50MHz 72.99 (Margin -1.01dB) - PK	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 29.89	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 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
TRENDnet	TEW-825DAP	AC1750 Dual Band PoE Access Point	Main test model
	TEW-825DAP3K	AC1750 Dual Band PoE Preconfigured Access Point Kit	Marketing purpose
	TEW-825DAP2K	AC1750 Dual Band PoE Preconfigured Access Point Kit	
	TEW-825DAP3KAC	AC1750 Dual Band Wireless Controller Kit	
	TEW-825DAP2KAC	AC1750 Dual Band Wireless Controller Kit	
✦ All models are electrically identical, different model names are for marketing purpose.			

1.1.2 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate / MCS
2400-2483.5	b	2412-2462	1-11 [11]	3	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	3	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	3	MCS 0-23
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	3	MCS 0-23
Note 1: RF output power specifies that Maximum 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.					

1.1.3 Antenna Details

Ant. No.	Type	Connector	Antenna Gain (dBi)		
			2400~2483.5MHz	5150~5250 MHz	5725~5850 MHz
1	PIFA	N/A	4	4	4

1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from AC adapter. 48Vdc from POE
-------------------	--

1.1.5 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter 1	Brand Name: CWT Model Name: 2ABB018F US I/P: 100-240Vac, 50-60Hz, 0.6A O/P: 12Vdc, 1.5A DC 1.2m non-shielded cable w/o core
2	AC adapter 2	Brand Name: AMIGO Model Name: AMS115-1201500FU I/P: 100-240Vac, 50-60Hz, 0.8A O/P: 12Vdc, 1.5A DC 1.2m non-shielded cable w/o core

1.1.6 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	---	---

1.1.7 Test Tool and Duty Cycle

Test Tool	ART2 Command, V4_9_815		
Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	11b	100.00%	0.00
	11g	98.60%	0.06
	HT20	98.13%	0.08
	HT40	100.00%	0.00

1.1.8 Power Setting

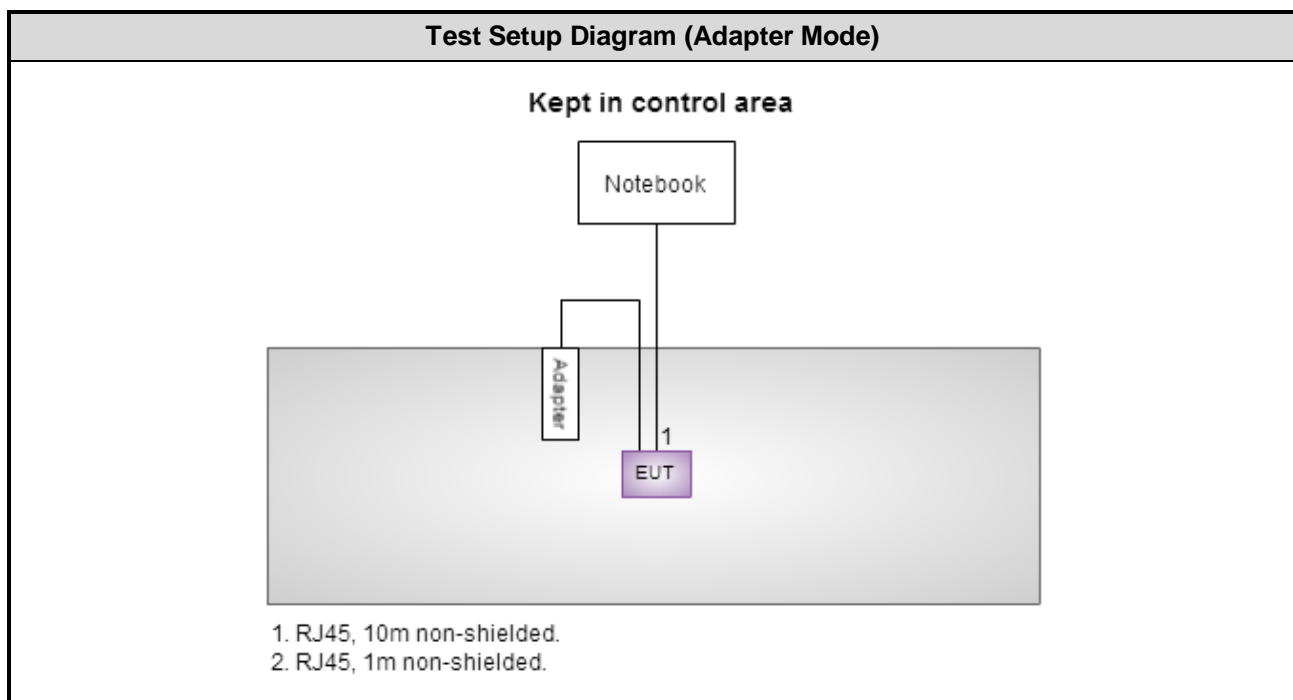
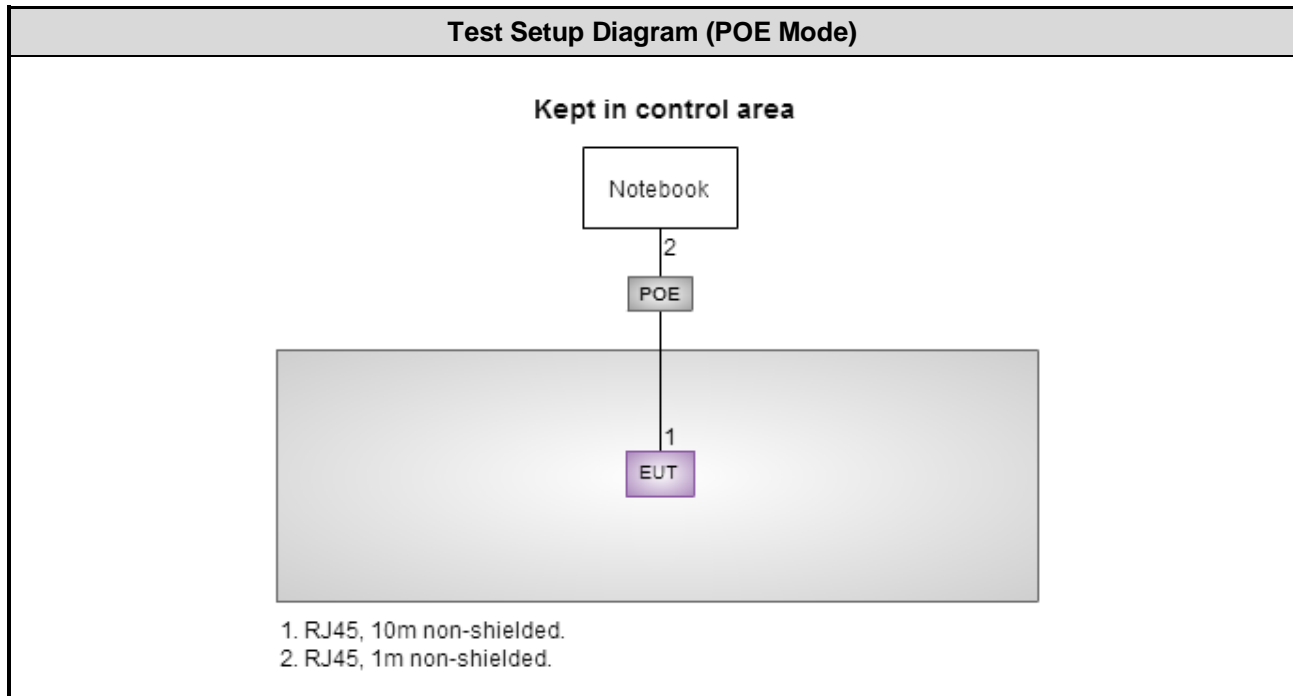
Modulation Mode	Test Frequency (MHz)	Power Set
11b	2412	23
11b	2437	23
11b	2462	23
11g	2412	17
11g	2437	17
11g	2462	17
HT20	2412	17
HT20	2437	17
HT20	2462	17
HT40	2422	17
HT40	2437	19
HT40	2452	19

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	Latitude E5420	DoC	Adapter mode: RJ45, 10m non-shielded. POE mode: RJ45, 1m non-shielded.
2	POE	Allied Telesis	AT-GS950/10PS	---	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. 21, 2015	Oct. 20, 2016
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2015	Nov. 12, 2016
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 21, 2015	Dec. 20, 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 chamber 2 / (03CH02-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101499	Dec. 17, 2015	Dec. 16, 2016
Receiver	R&S	ESR3	101657	Jan. 12, 2016	Jan. 11, 2017
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-523	Nov. 09, 2015	Nov. 08, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1095	Oct. 07, 2015	Oct. 06, 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	100218	Nov. 03, 2015	Nov. 02, 2016
Preamplifier	Agilent	83017A	MY39501309	Sep. 22, 2015	Sep. 21, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16015/4	Dec. 10, 2015	Dec. 09, 2016
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-003	Dec. 10, 2015	Dec. 09, 2016
LF cable 10M	EMCC	CFD400-E	CFD400-001	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	101498	Dec. 13, 2015	Dec. 12, 2016
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 14, 2015	Sep. 13, 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 v03r05

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 ≤ 1 GHz	± 3.87 dB
Radiated emission > 1 GHz	± 5.60 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	18°C / 55%	Sky Huang
Radiated Emissions	03CH02-WS	19-20°C / 60-68%	Morgan Chen
RF Conducted	TH01-WS	21°C / 64%	Alex Huang

➤ FCC site registration No.: TW2732

➤ 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	HT40	2437	MCS 0	1, 2
Radiated Emissions ≤1GHz	HT40	2437	MCS 0	1, 2
Radiated Emissions >1GHz	11b	2412 / 2437 / 2462	1 Mbps	1
Maximum Output Power	11g	2412 / 2437 / 2462	6 Mbps	
6dB bandwidth	HT20	2412 / 2437 / 2462	MCS 0	
Power spectral density	HT40	2422 / 2437 / 2452	MCS 0	

NOTE:

- The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.
- Adapter **CWT** and **AMIGO** had been covered during the pretest in the original report. The worst adapter is **CWT**.
- The EUT was pretested at power supplied by AC adapter and POE. The power supplied by POE was found to be the worst case and was selected for final testing as below test configurations.
- Test configurations are listed as below:
 - Configuration 1: POE mode
 - Configuration 2: adapter mode

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

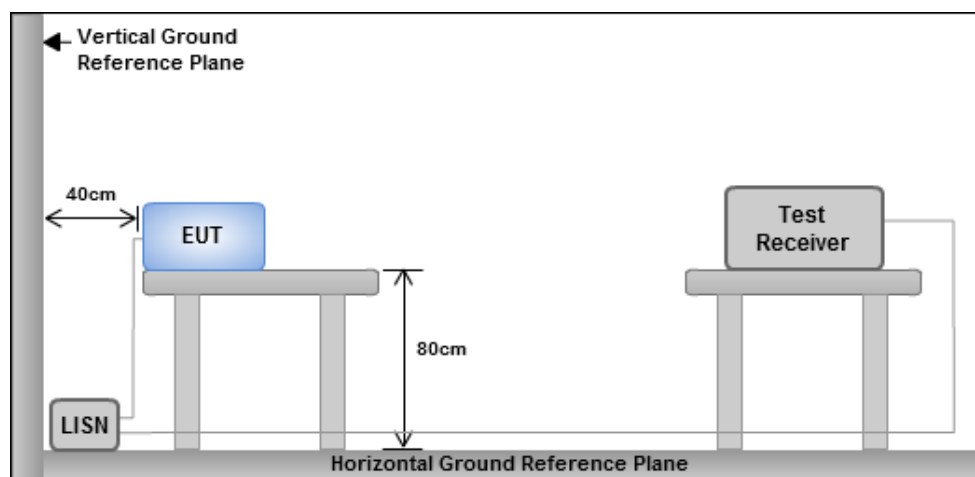
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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.

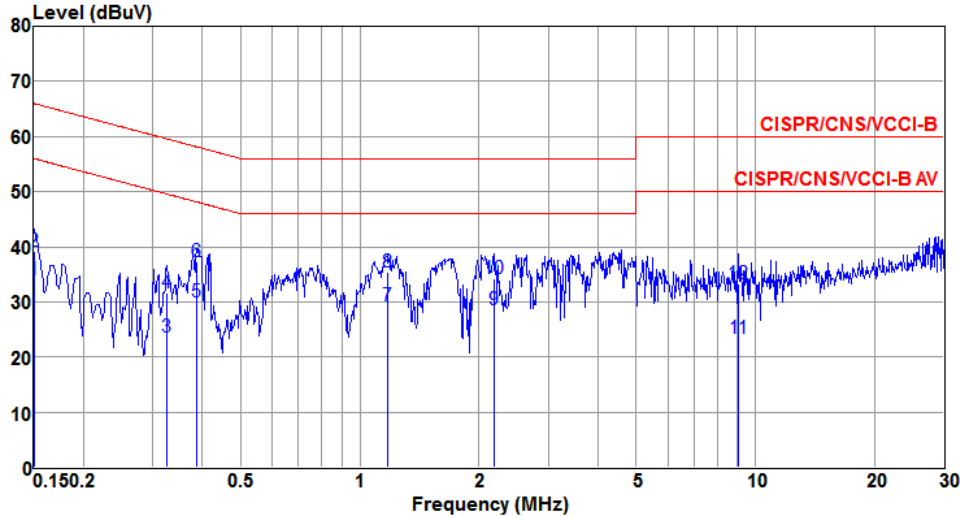
3.1.3 Test Setup



- 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

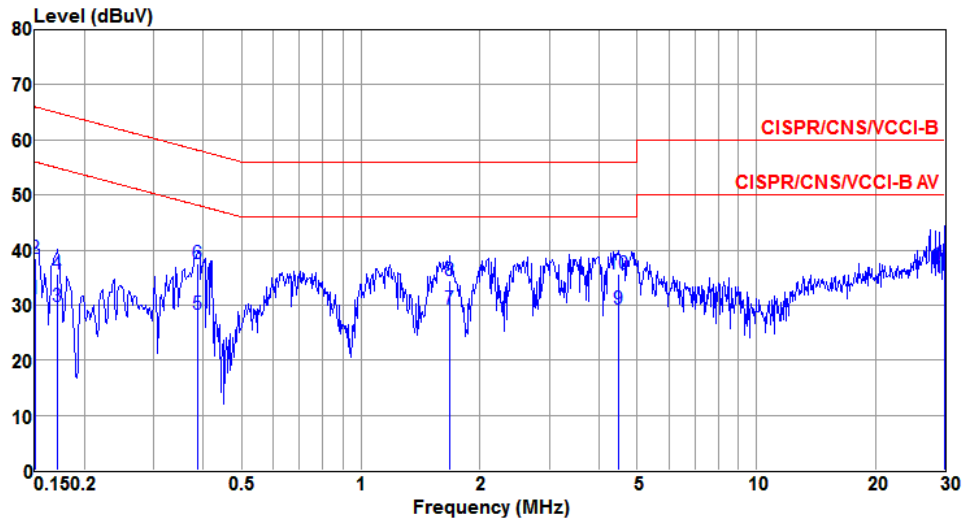
Modulation	HT40	Test Freq. (MHz)	2437
Power Phase	Line	Test Configuration	1



	Freq	Level	Limit	Over	Read	LISN	cable	Remark
	MHz	dBuV	Line	Limit	Level	factor	loss	
			dBuV	dB	dBuV	dB	dB	
1	0.150	33.96	56.00	-22.04	33.02	0.92	0.02	Average
2	0.150	39.21	66.00	-26.79	38.27	0.92	0.02	QP
3	0.325	23.64	49.57	-25.93	23.41	0.20	0.03	Average
4	0.325	31.61	59.57	-27.96	31.38	0.20	0.03	QP
5	0.387	30.04	48.12	-18.08	29.83	0.18	0.03	Average
6	0.387	37.36	58.12	-20.76	37.15	0.18	0.03	QP
7	1.172	29.27	46.00	-16.73	29.00	0.21	0.06	Average
8	1.172	35.39	56.00	-20.61	35.12	0.21	0.06	QP
9	2.178	28.47	46.00	-17.53	27.80	0.58	0.09	Average
10	2.178	34.20	56.00	-21.80	33.53	0.58	0.09	QP
11	9.059	23.40	50.00	-26.60	22.62	0.62	0.16	Average
12	9.059	33.24	60.00	-26.76	32.46	0.62	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).

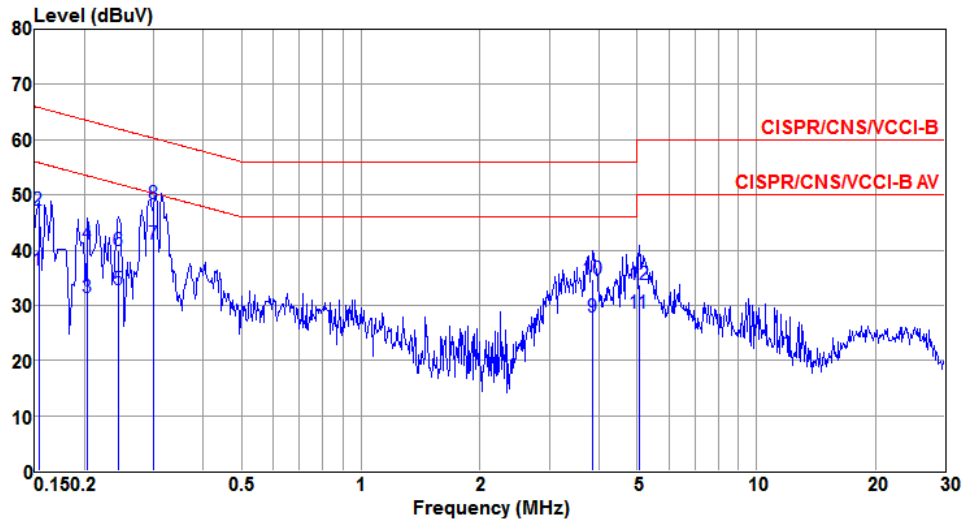
Modulation	HT40	Test Freq. (MHz)	2437
Power Phase	Neutral	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	31.17	56.00	-24.83	30.30	0.85	0.02	Average
2	0.150	38.57	66.00	-27.43	37.70	0.85	0.02	QP
3	0.171	29.84	54.90	-25.06	29.25	0.57	0.02	Average
4	0.171	35.67	64.90	-29.23	35.08	0.57	0.02	QP
5	0.387	28.33	48.12	-19.79	28.16	0.14	0.03	Average
6	0.387	37.63	58.12	-20.49	37.46	0.14	0.03	QP
7	1.680	29.16	46.00	-16.84	28.85	0.23	0.08	Average
8	1.680	34.40	56.00	-21.60	34.09	0.23	0.08	QP
9	4.478	29.22	46.00	-16.78	28.39	0.71	0.12	Average
10	4.478	35.55	56.00	-20.45	34.72	0.71	0.12	QP
11@	29.841	34.83	50.00	-15.17	33.33	1.27	0.23	Average
12	29.841	37.46	60.00	-22.54	35.96	1.27	0.23	QP

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

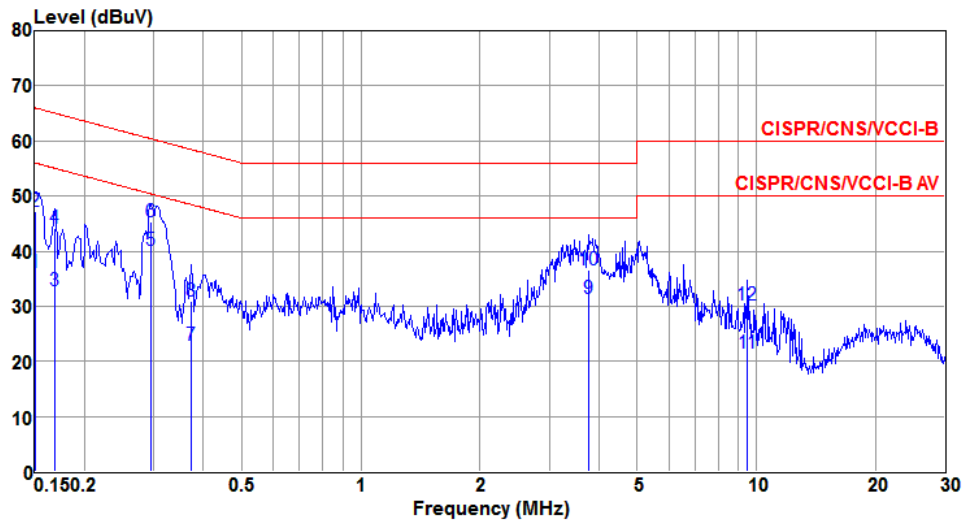
Modulation	HT40	Test Freq. (MHz)	2437
Power Phase	Line	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.153	36.33	55.82	-19.49	35.43	0.88	0.02	Average
2	0.153	47.22	65.82	-18.60	46.32	0.88	0.02	QP
3	0.204	31.39	53.45	-22.06	31.12	0.25	0.02	Average
4	0.204	41.16	63.45	-22.29	40.89	0.25	0.02	QP
5	0.244	32.85	51.95	-19.10	32.60	0.23	0.02	Average
6	0.244	39.88	61.95	-22.07	39.63	0.23	0.02	QP
7@	0.299	41.11	50.26	-9.15	40.87	0.21	0.03	Average
8	0.299	48.50	60.26	-11.76	48.26	0.21	0.03	QP
9	3.860	27.86	46.00	-18.14	27.46	0.28	0.12	Average
10	3.860	34.80	56.00	-21.20	34.40	0.28	0.12	QP
11	5.058	28.54	50.00	-21.46	28.04	0.37	0.13	Average
12	5.058	33.76	60.00	-26.24	33.26	0.37	0.13	QP

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

Modulation	HT40	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	0.150	36.11	56.00	-19.89	35.24	0.85	0.02	Average
2	0.150	47.31	66.00	-18.69	46.44	0.85	0.02	QP
3	0.169	32.71	55.03	-22.32	32.08	0.61	0.02	Average
4	0.169	44.18	65.03	-20.85	43.55	0.61	0.02	QP
5	0.294	40.13	50.41	-10.28	39.92	0.18	0.03	Average
6	0.294	45.20	60.41	-15.21	44.99	0.18	0.03	QP
7	0.373	22.90	48.43	-25.53	22.73	0.14	0.03	Average
8	0.373	30.94	58.43	-27.49	30.77	0.14	0.03	QP
9	3.759	31.30	46.00	-14.70	30.49	0.69	0.12	Average
10	3.759	36.70	56.00	-19.30	35.89	0.69	0.12	QP
11	9.502	21.49	50.00	-28.51	20.80	0.53	0.16	Average
12	9.502	30.15	60.00	-29.85	29.46	0.53	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

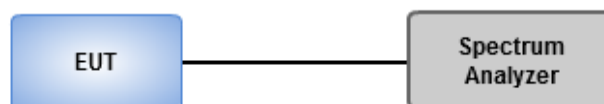
6dB Bandwidth

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.

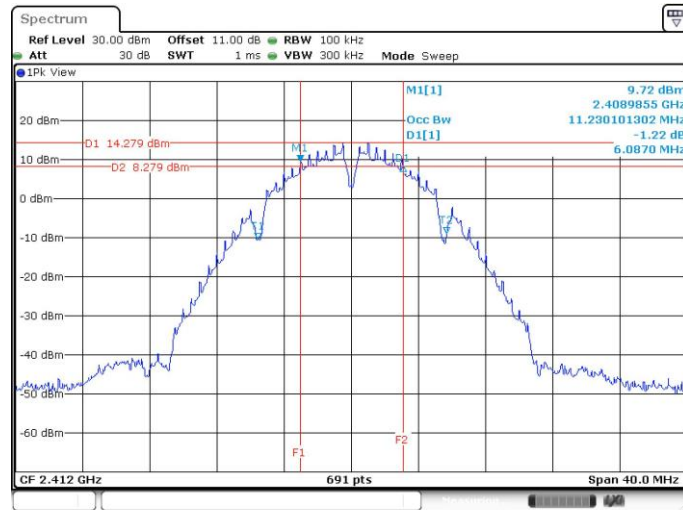
3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

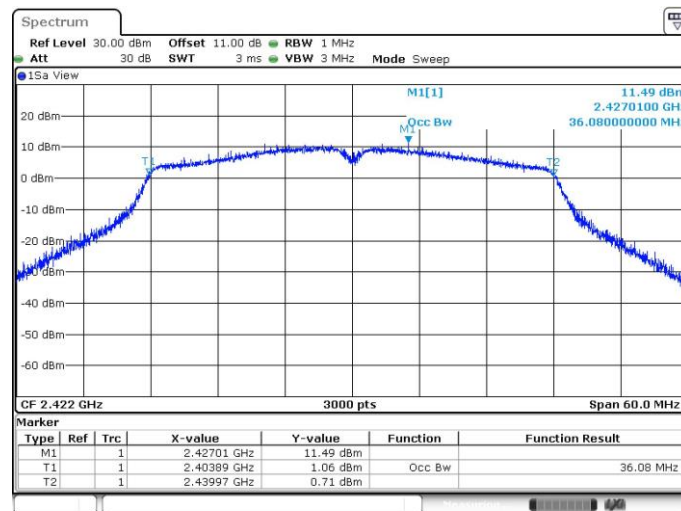
Modulation Mode	N _{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
11b	3	2412	7.03	6.09	6.09	---	500
11b	3	2437	7.54	7.07	7.07	---	500
11b	3	2462	7.01	7.07	7.54	---	500
11g	3	2412	11.94	15.07	15.19	---	500
11g	3	2437	14.43	15.07	15.13	---	500
11g	3	2462	13.86	12.58	15.13	---	500
HT20	3	2412	13.86	11.94	14.96	---	500
HT20	3	2437	15.07	13.86	15.13	---	500
HT20	3	2462	13.86	13.86	15.07	---	500
HT40	3	2422	32.23	30.96	32.46	---	500
HT40	3	2437	30.15	31.07	31.88	---	500
HT40	3	2452	32.35	30.61	31.88	---	500

Worst Plot



Modulation Mode	N _{TX}	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
11b	3	2412	11.92	11.94	11.91	---
11b	3	2437	11.94	11.22	11.83	---
11b	3	2462	11.92	11.94	11.84	---
11g	3	2412	16.18	16.15	16.19	---
11g	3	2437	16.19	16.19	16.19	---
11g	3	2462	16.19	16.14	16.18	---
HT20	3	2412	17.32	17.47	17.34	---
HT20	3	2437	17.32	17.29	17.34	---
HT20	3	2462	17.30	17.26	17.36	---
HT40	3	2422	36.00	35.80	36.08	---
HT40	3	2437	36.04	35.72	36.06	---
HT40	3	2452	35.96	35.78	36.02	---

Worst Plot



3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

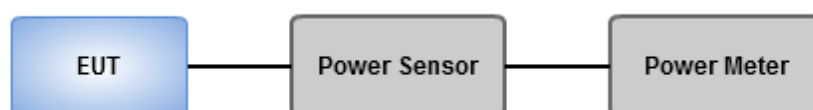
- ☒ Antenna gain $\leq 6\text{dBi}$, no any corresponding reduction is in output power limit.
- ☐ Antenna gain $> 6\text{dBi}$
 - ☐ Non Fixed, point to point operations.
The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna 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	3	2412	25.10	25.20	24.93	---	965.896	29.85	30.00	4.00	33.85	36.00
11b	3	2437	25.38	24.25	24.95	---	923.824	29.66	30.00	4.00	33.66	36.00
11b	3	2462	24.02	24.36	24.5	---	807.084	29.07	30.00	4.00	33.07	36.00
11g	3	2412	24.41	24.66	24.51	---	850.961	29.30	30.00	4.00	33.30	36.00
11g	3	2437	24.25	24.61	24.36	---	828.038	29.18	30.00	4.00	33.18	36.00
11g	3	2462	24.56	24.85	24.19	---	853.673	29.31	30.00	4.00	33.31	36.00
HT20	3	2412	24.31	24.02	24.55	---	807.224	29.07	30.00	4.00	33.07	36.00
HT20	3	2437	24.55	24.31	24.33	---	825.895	29.17	30.00	4.00	33.17	36.00
HT20	3	2462	24.44	24.12	24.41	---	812.255	29.10	30.00	4.00	33.10	36.00
HT40	3	2422	22.81	22.31	22.88	---	555.290	27.45	30.00	4.00	31.45	36.00
HT40	3	2437	25.67	24.8	24.84	---	975.762	29.89	30.00	4.00	33.89	36.00
HT40	3	2452	25.03	24.91	25.22	---	960.821	29.83	30.00	4.00	33.83	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	3	2412	22.01	22.03	21.91	---	473.681	26.75	---
11b	3	2437	21.9	21.1	21.6	---	428.251	26.32	---
11b	3	2462	21.99	21.39	21.5	---	437.100	26.41	---
11g	3	2412	16.31	16.51	16.23	---	129.504	21.12	---
11g	3	2437	16.25	16.42	16.39	---	129.574	21.13	---
11g	3	2462	16.51	16.71	16.25	---	133.822	21.27	---
HT20	3	2412	16.5	16.01	16.11	---	125.403	20.98	---
HT20	3	2437	16.66	16.22	16.23	---	130.200	21.15	---
HT20	3	2462	16.52	16.18	16.09	---	127.014	21.04	---
HT40	3	2422	15.47	15.21	15.49	---	103.826	20.16	---
HT40	3	2437	17.86	17.42	17.65	---	174.512	22.42	---
HT40	3	2452	18.01	17.68	18.25	---	188.689	22.76	---

Note: Conducted average output power is for reference only.

3.4 Power Spectral Density

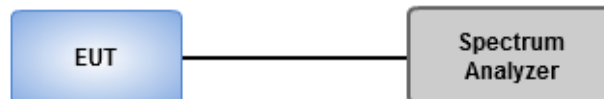
3.4.1 Limit of Power Spectral Density

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. Perform the measurement over a single sweep.
 4. Use the peak marker function to determine the maximum amplitude level.

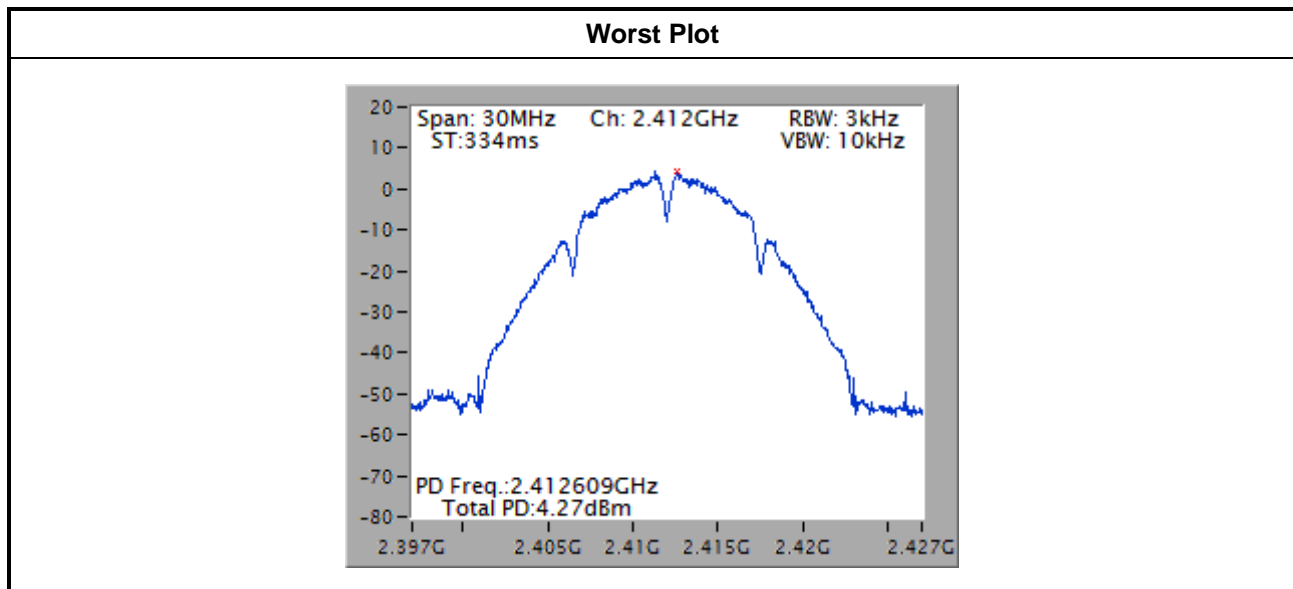
3.4.3 Test Setup



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	3	2412	4.27	8.00
11b	3	2437	2.76	8.00
11b	3	2462	2.87	8.00
11g	3	2412	-3.55	8.00
11g	3	2437	-3.74	8.00
11g	3	2462	-2.64	8.00
HT20	3	2412	-4.34	8.00
HT20	3	2437	-4.22	8.00
HT20	3	2462	-3.52	8.00
HT40	3	2422	-7.88	8.00
HT40	3	2437	-6.34	8.00
HT40	3	2452	-6.48	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:
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

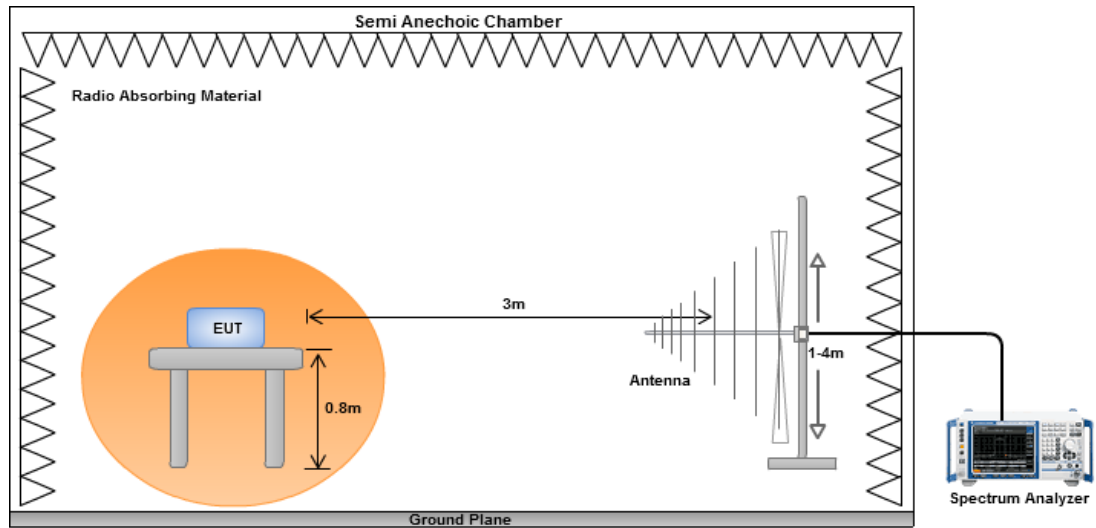
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

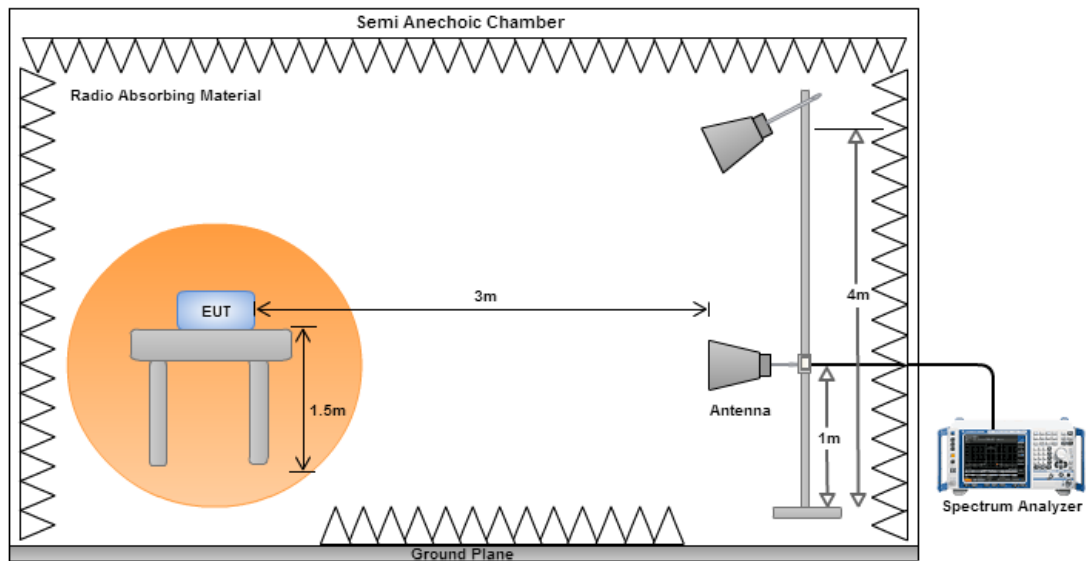
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz

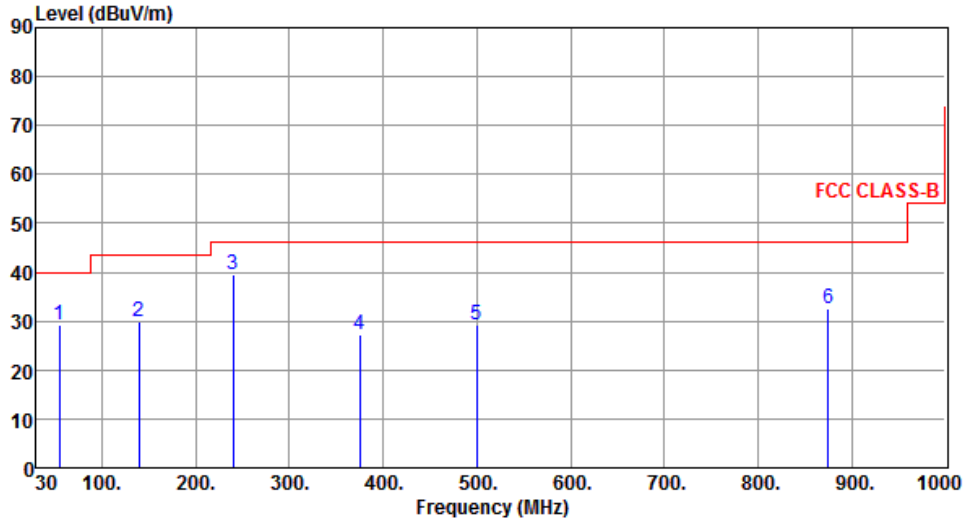


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	1

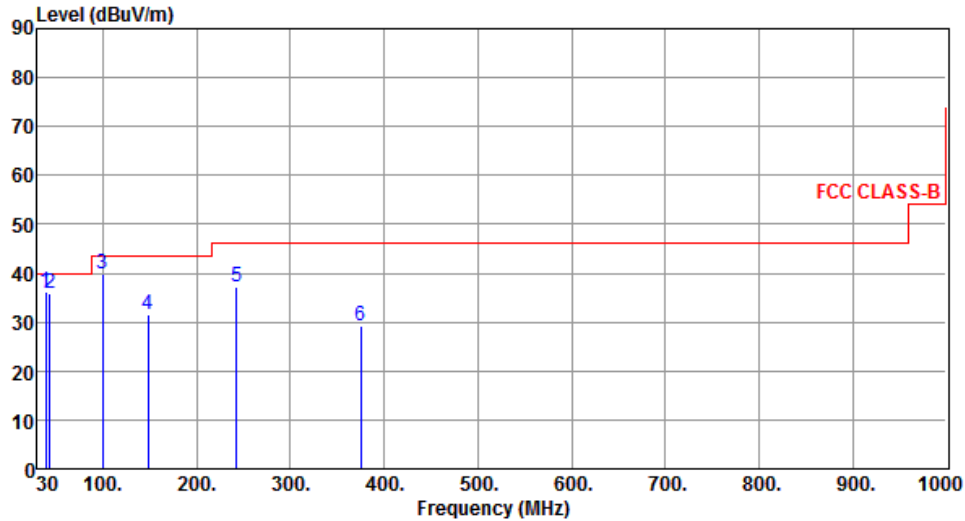


The graph displays the radiated unwanted emissions for a transmitter. The y-axis represents the Level in dBuV/m, ranging from 0 to 90. The x-axis represents the Frequency in MHz, ranging from 30 to 1000. A red line indicates the FCC CLASS-B limit, which is 40 dBuV/m from 30 MHz to 100 MHz, 45 dBuV/m from 100 MHz to 240 MHz, and 55 dBuV/m from 240 MHz to 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	54.23	29.32	40.00	-10.68	41.46	-12.14	Peak	---	---
2	139.32	29.80	43.50	-13.70	42.12	-12.32	Peak	---	---
3	240.35	39.44	46.00	-6.56	52.43	-12.99	Peak	---	---
4	375.16	27.32	46.00	-18.68	36.66	-9.34	Peak	---	---
5	500.26	29.14	46.00	-16.86	35.65	-6.51	Peak	---	---
6	875.32	32.59	46.00	-13.41	33.51	-0.92	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	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	38.56	36.22	40.00	-3.78	48.21	-11.99	QP	120	10
2	43.21	35.95	40.00	-4.05	47.64	-11.69	QP	100	277
3	99.84	39.85	43.50	-3.65	56.52	-16.67	Peak	---	---
4	148.52	31.67	43.50	-11.83	43.64	-11.97	Peak	---	---
5	242.43	37.28	46.00	-8.72	50.23	-12.95	Peak	---	---
6	375.32	29.12	46.00	-16.88	38.45	-9.33	Peak	---	---

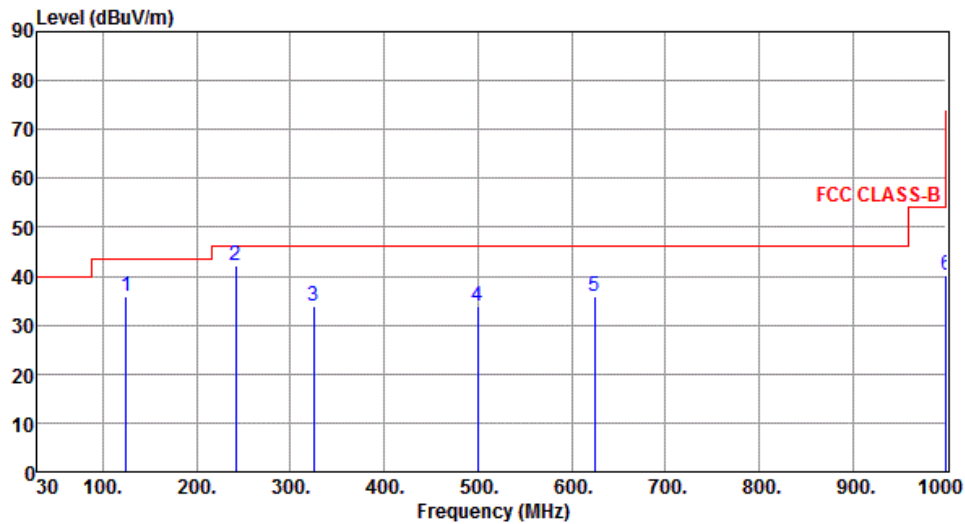
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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	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	125.06	35.99	43.50	-7.51	49.56	-13.57	Peak	---	---
2	241.46	42.26	46.00	-3.74	55.23	-12.97	QP	115	251
3	325.12	33.79	46.00	-12.21	44.36	-10.57	Peak	---	---
4	500.26	33.94	46.00	-12.06	40.45	-6.51	Peak	---	---
5	624.86	35.84	46.00	-10.16	40.13	-4.29	Peak	---	---
6	1000.00	40.22	54.00	-13.78	39.55	0.67	Peak	---	---

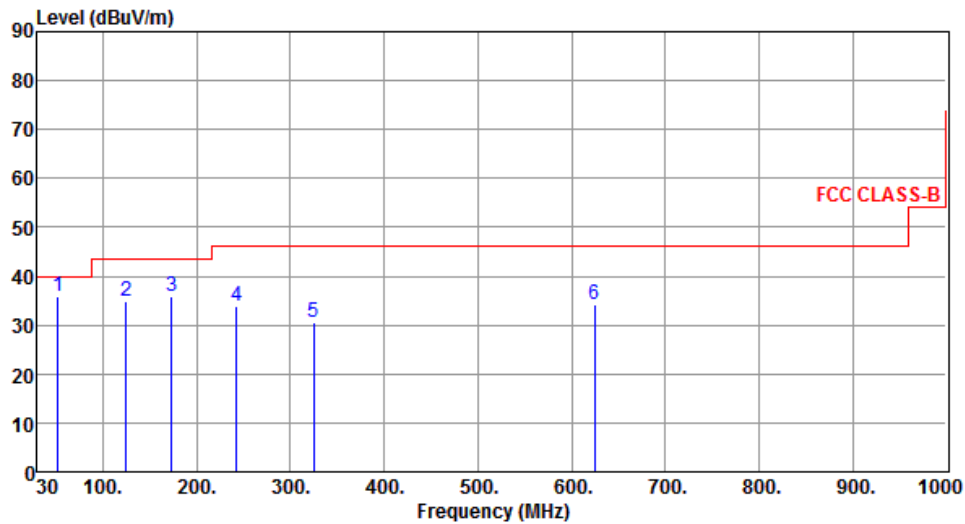
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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	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	52.31	36.03	40.00	-3.97	47.96	-11.93	Peak	---	---
2	125.06	34.98	43.50	-8.52	48.55	-13.57	Peak	---	---
3	173.42	35.82	43.50	-7.68	48.25	-12.43	Peak	---	---
4	242.36	33.80	46.00	-12.20	46.75	-12.95	Peak	---	---
5	324.96	30.39	46.00	-15.61	40.96	-10.57	Peak	---	---
6	624.82	34.16	46.00	-11.84	38.45	-4.29	Peak	---	---

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

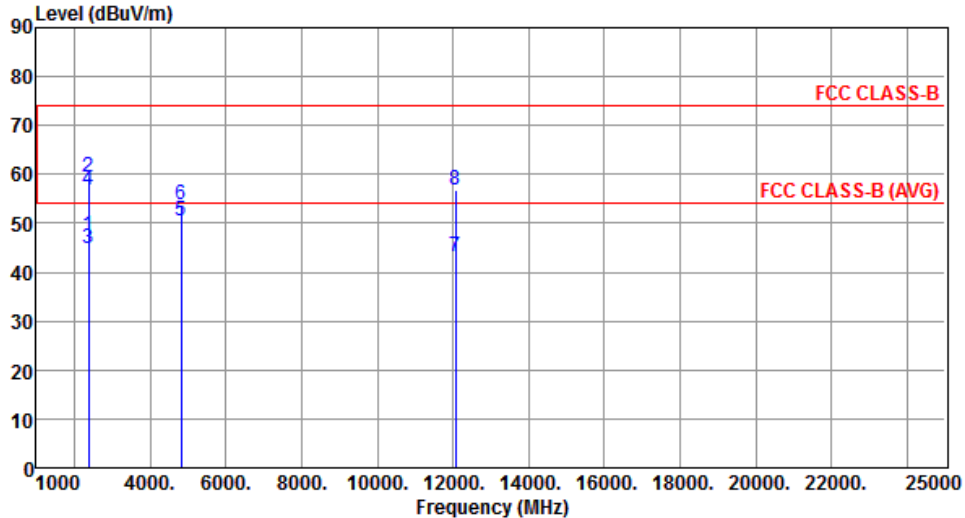
*Factor includes antenna factor , cable loss and amplifier gain

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

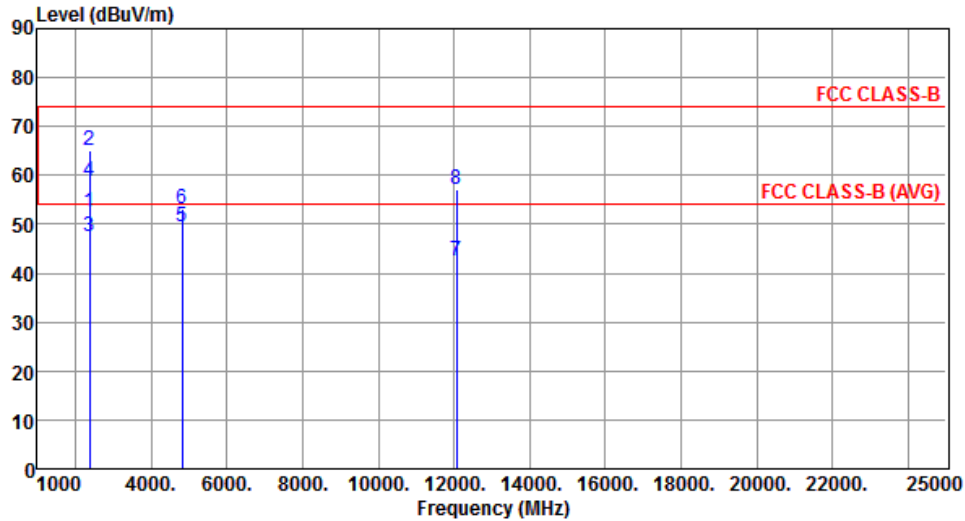
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2370.00	47.38	54.00	-6.62	50.52	-3.14	Average	312	59
2	2370.00	59.52	74.00	-14.48	62.66	-3.14	Peak	312	59
3	2390.00	44.88	54.00	-9.12	47.94	-3.06	Average	277	85
4	2390.00	56.85	74.00	-17.15	59.91	-3.06	Peak	277	85
5	4824.00	50.58	54.00	-3.42	46.32	4.26	Average	345	319
6	4824.00	53.81	74.00	-20.19	49.55	4.26	Peak	345	319
7	12060.00	43.10	54.00	-10.90	29.25	13.85	Average	325	9
8	12060.00	56.73	74.00	-17.27	42.88	13.85	Peak	325	9

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



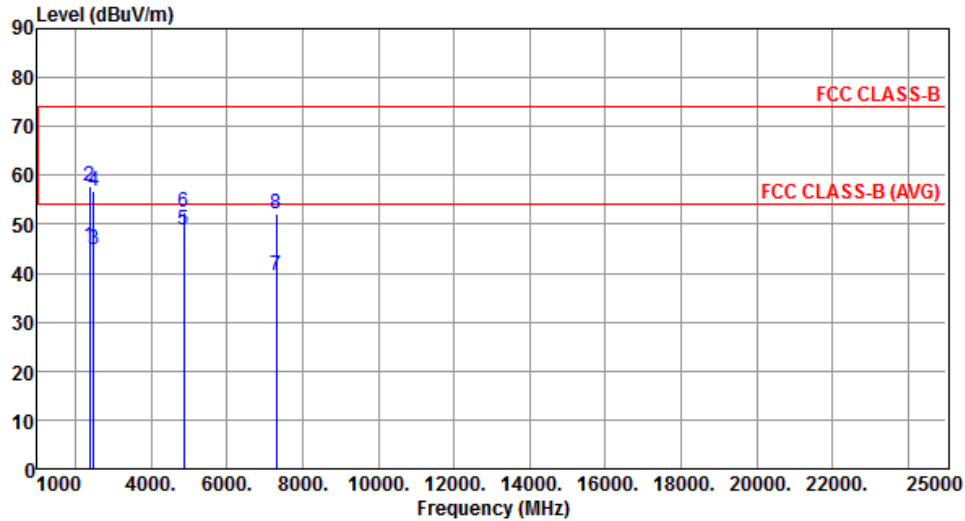
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2370.00	52.58	54.00	-1.42	55.72	-3.14	Average	303	275
2	2370.00	65.18	74.00	-8.82	68.32	-3.14	Peak	303	275
3	2390.00	47.43	54.00	-6.57	50.49	-3.06	Average	341	193
4	2390.00	58.82	74.00	-15.18	61.88	-3.06	Peak	341	193
5	4824.00	49.42	54.00	-4.58	45.16	4.26	Average	285	0
6	4824.00	53.25	74.00	-20.75	48.99	4.26	Peak	285	0
7	12060.00	42.55	54.00	-11.45	28.70	13.85	Average	299	333
8	12060.00	57.07	74.00	-16.93	43.22	13.85	Peak	299	333

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



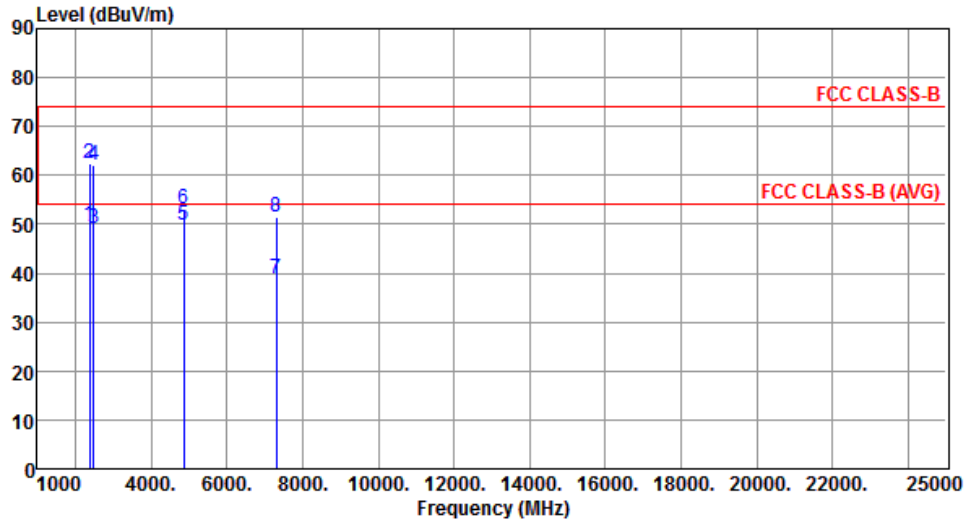
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	45.37	54.00	-8.63	48.43	-3.06	Average	258	225
2	2390.00	57.89	74.00	-16.11	60.95	-3.06	Peak	258	225
3	2483.50	44.97	54.00	-9.03	47.66	-2.69	Average	222	333
4	2483.50	56.66	74.00	-17.34	59.35	-2.69	Peak	222	333
5	4874.00	48.67	54.00	-5.33	44.27	4.40	Average	385	258
6	4874.00	52.61	74.00	-21.39	48.21	4.40	Peak	385	258
7	7311.00	39.46	54.00	-14.54	30.25	9.21	Average	355	211
8	7311.00	52.20	74.00	-21.80	42.99	9.21	Peak	355	211

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

*Factor includes antenna factor , cable loss and amplifier gain

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

Modulation	11b	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	1



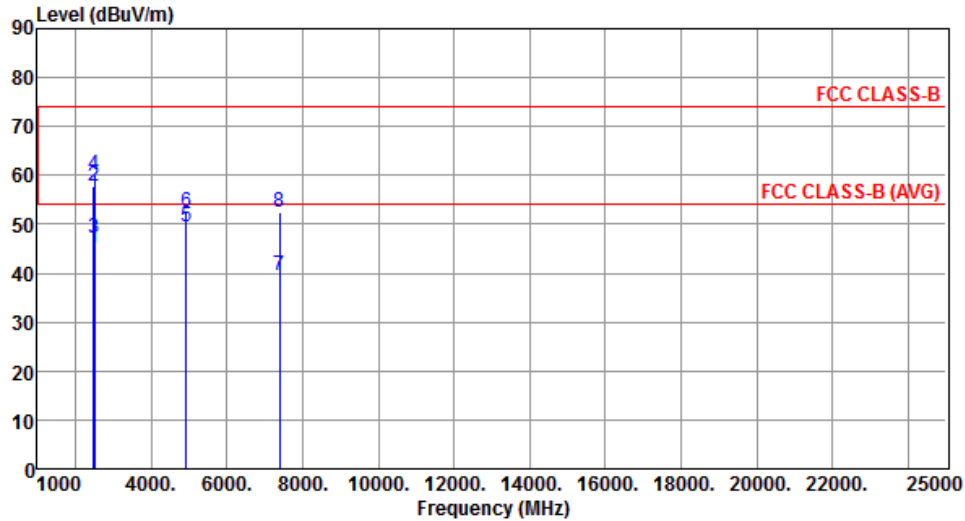
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	49.93	54.00	-4.07	52.99	-3.06	Average	296	278
2	2390.00	62.53	74.00	-11.47	65.59	-3.06	Peak	296	278
3	2483.50	49.22	54.00	-4.78	51.91	-2.69	Average	320	141
4	2483.50	61.99	74.00	-12.01	64.68	-2.69	Peak	320	141
5	4874.00	49.80	54.00	-4.20	45.40	4.40	Average	276	341
6	4874.00	53.30	74.00	-20.70	48.90	4.40	Peak	276	341
7	7311.00	38.76	54.00	-15.24	29.55	9.21	Average	299	330
8	7311.00	51.63	74.00	-22.37	42.42	9.21	Peak	299	330

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



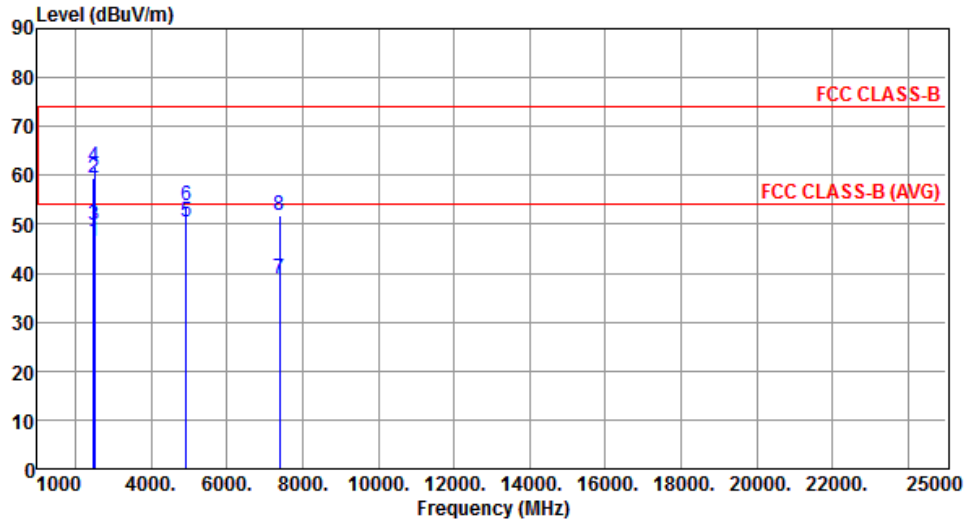
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	45.19	54.00	-8.81	47.88	-2.69	Average	285	266
2	2483.50	57.67	74.00	-16.33	60.36	-2.69	Peak	285	266
3	2500.00	47.22	54.00	-6.78	49.86	-2.64	Average	312	333
4	2500.00	59.98	74.00	-14.02	62.62	-2.64	Peak	312	333
5	4924.00	49.55	54.00	-4.45	45.02	4.53	Average	320	153
6	4924.00	52.36	74.00	-21.64	47.83	4.53	Peak	320	153
7	7386.00	39.55	54.00	-14.45	30.16	9.39	Average	311	229
8	7386.00	52.33	74.00	-21.67	42.94	9.39	Peak	311	229

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	46.42	54.00	-7.58	49.11	-2.69	Average	333	330
2	2483.50	59.29	74.00	-14.71	61.98	-2.69	Peak	333	330
3	2500.00	49.67	54.00	-4.33	52.31	-2.64	Average	318	194
4	2500.00	61.91	74.00	-12.09	64.55	-2.64	Peak	318	194
5	4924.00	50.37	54.00	-3.63	45.84	4.53	Average	390	322
6	4924.00	53.80	74.00	-20.20	49.27	4.53	Peak	390	322
7	7386.00	38.89	54.00	-15.11	29.50	9.39	Average	252	302
8	7386.00	51.71	74.00	-22.29	42.32	9.39	Peak	252	302

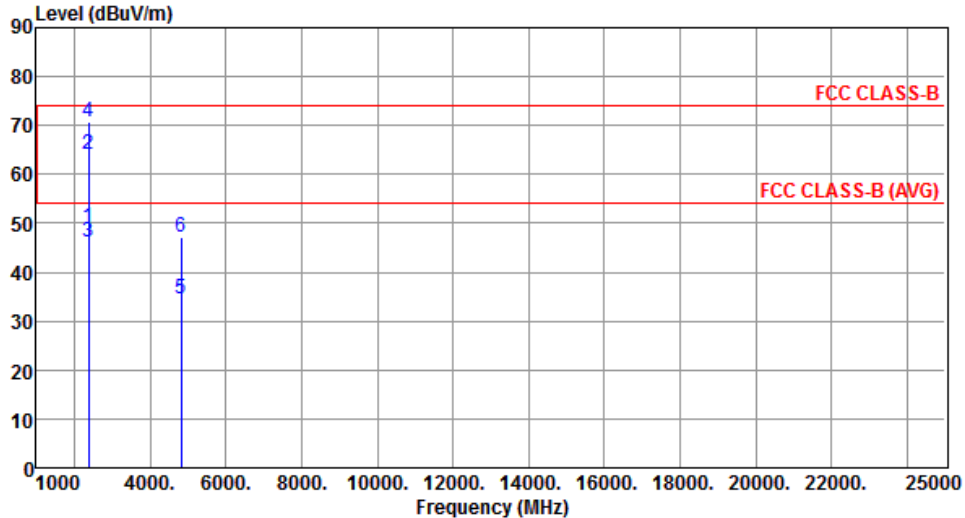
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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

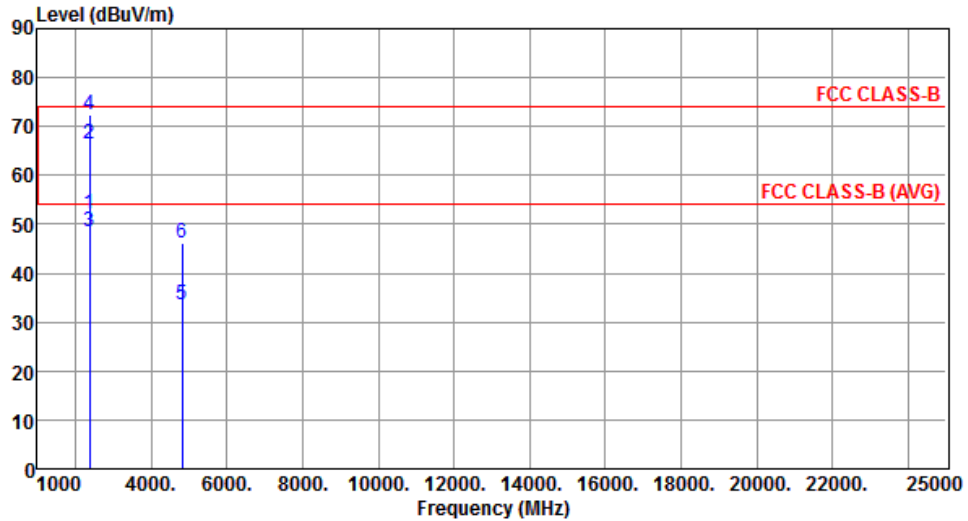
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2370.00	49.20	54.00	-4.80	52.34	-3.14	Average	333	179
2	2370.00	63.95	74.00	-10.05	67.09	-3.14	Peak	333	179
3	2390.00	46.30	54.00	-7.70	49.36	-3.06	Average	346	168
4	2390.00	70.75	74.00	-3.25	73.81	-3.06	Peak	346	168
5	4824.00	34.48	54.00	-19.52	30.22	4.26	Average	249	225
6	4824.00	47.15	74.00	-26.85	42.89	4.26	Peak	249	225

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

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



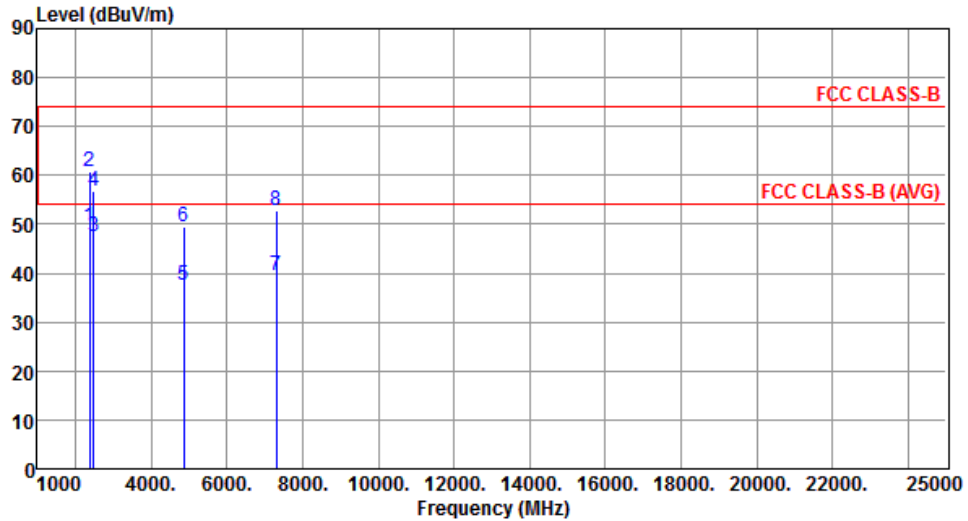
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2370.00	52.22	54.00	-1.78	55.36	-3.14	Average	302	292
2	2370.00	66.46	74.00	-7.54	69.60	-3.14	Peak	302	292
3	2390.00	48.44	54.00	-5.56	51.50	-3.06	Average	302	292
4	2390.00	72.45	74.00	-1.55	75.51	-3.06	Peak	302	292
5	4824.00	33.62	54.00	-20.38	29.36	4.26	Average	257	222
6	4824.00	46.28	74.00	-27.72	42.02	4.26	Peak	257	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	11g	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	1



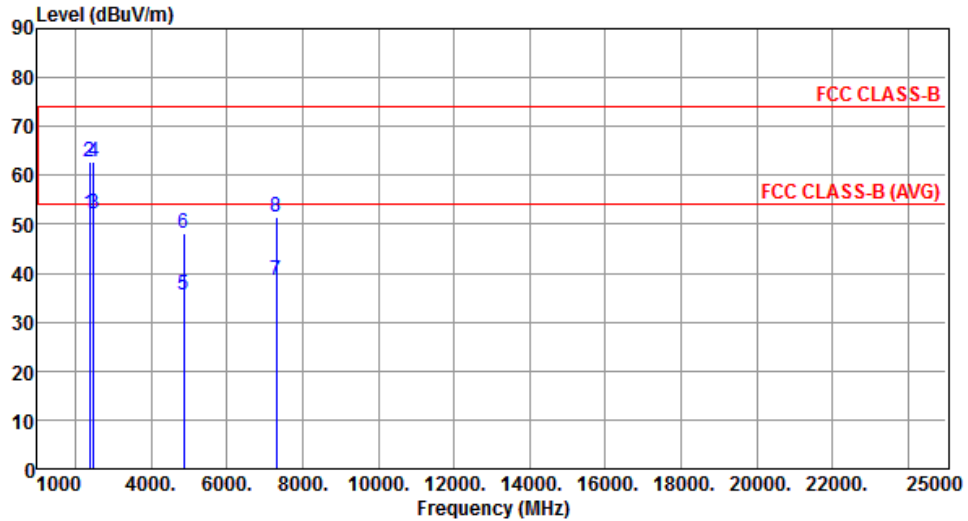
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	49.63	54.00	-4.37	52.69	-3.06	Average	332	177
2	2390.00	60.82	74.00	-13.18	63.88	-3.06	Peak	332	177
3	2483.50	47.62	54.00	-6.38	50.31	-2.69	Average	311	188
4	2483.50	56.85	74.00	-17.15	59.54	-2.69	Peak	311	188
5	4874.00	37.65	54.00	-16.35	33.25	4.40	Average	258	219
6	4874.00	49.62	74.00	-24.38	45.22	4.40	Peak	258	219
7	7311.00	39.46	54.00	-14.54	30.25	9.21	Average	258	219
8	7311.00	52.76	74.00	-21.24	43.55	9.21	Peak	258	219

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



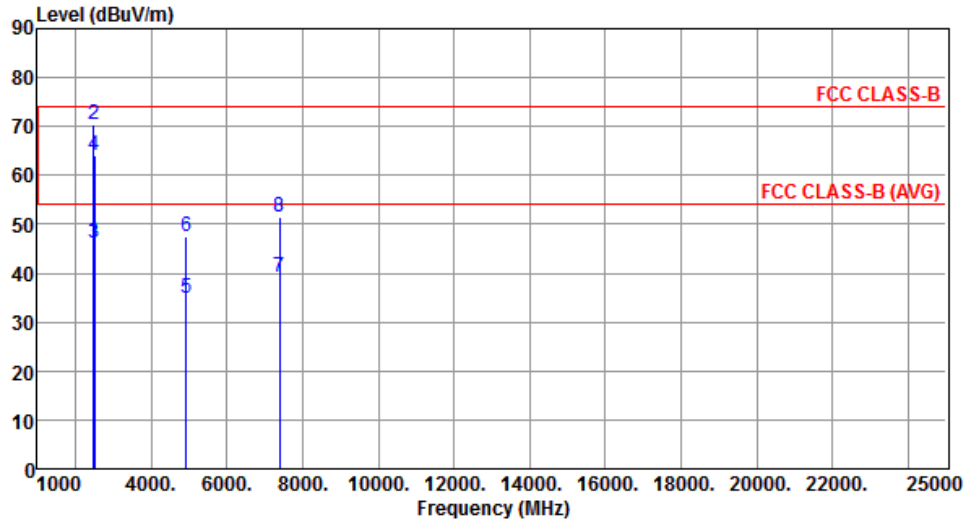
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.23	54.00	-1.77	55.29	-3.06	Average	333	328
2	2390.00	62.79	74.00	-11.21	65.85	-3.06	Peak	333	328
3	2483.50	51.98	54.00	-2.02	54.67	-2.69	Average	315	300
4	2483.50	62.88	74.00	-11.12	65.57	-2.69	Peak	315	300
5	4874.00	35.62	54.00	-18.38	31.22	4.40	Average	305	204
6	4874.00	48.25	74.00	-25.75	43.85	4.40	Peak	305	204
7	7311.00	38.46	54.00	-15.54	29.25	9.21	Average	325	270
8	7311.00	51.46	74.00	-22.54	42.25	9.21	Peak	325	270

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



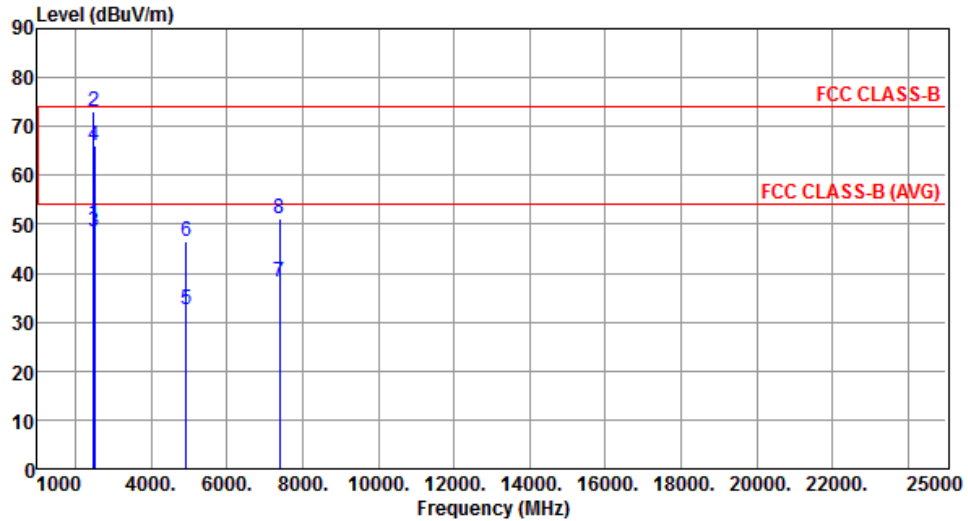
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	46.55	54.00	-7.45	49.24	-2.69	Average	328	165
2	2483.50	70.50	74.00	-3.50	73.19	-2.69	Peak	328	165
3	2500.00	46.04	54.00	-7.96	48.68	-2.64	Average	333	166
4	2500.00	64.26	74.00	-9.74	66.90	-2.64	Peak	333	166
5	4924.00	34.72	54.00	-19.28	30.19	4.53	Average	348	205
6	4924.00	47.44	74.00	-26.56	42.91	4.53	Peak	348	205
7	7386.00	39.23	54.00	-14.77	29.84	9.39	Average	311	344
8	7386.00	51.40	74.00	-22.60	42.01	9.39	Peak	311	344

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	50.00	54.00	-4.00	52.69	-2.69	Average	313	305
2	2483.50	72.95	74.00	-1.05	75.64	-2.69	Peak	313	305
3	2500.00	48.56	54.00	-5.44	51.20	-2.64	Average	302	275
4	2500.00	66.15	74.00	-7.85	68.79	-2.64	Peak	302	275
5	4924.00	32.54	54.00	-21.46	28.01	4.53	Average	325	211
6	4924.00	46.48	74.00	-27.52	41.95	4.53	Peak	325	211
7	7386.00	38.33	54.00	-15.67	28.94	9.39	Average	296	339
8	7386.00	51.27	74.00	-22.73	41.88	9.39	Peak	296	339

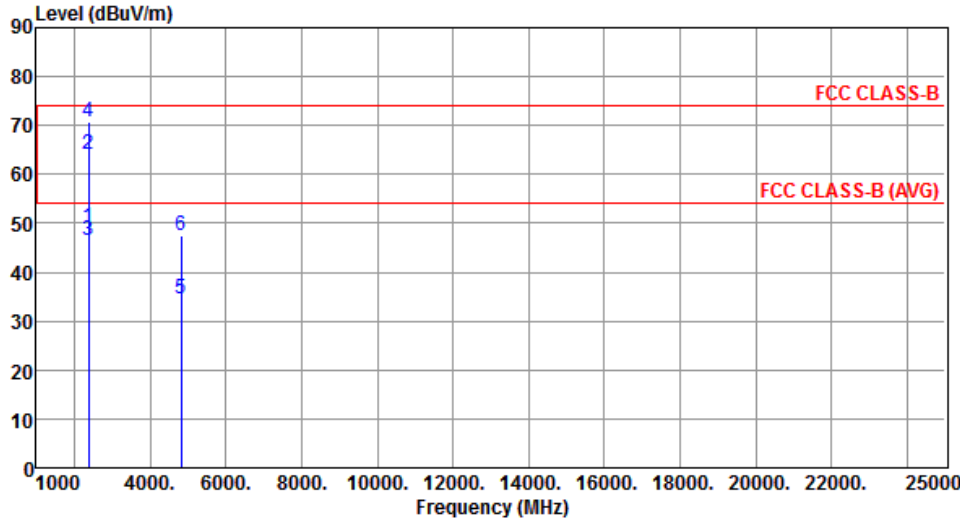
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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

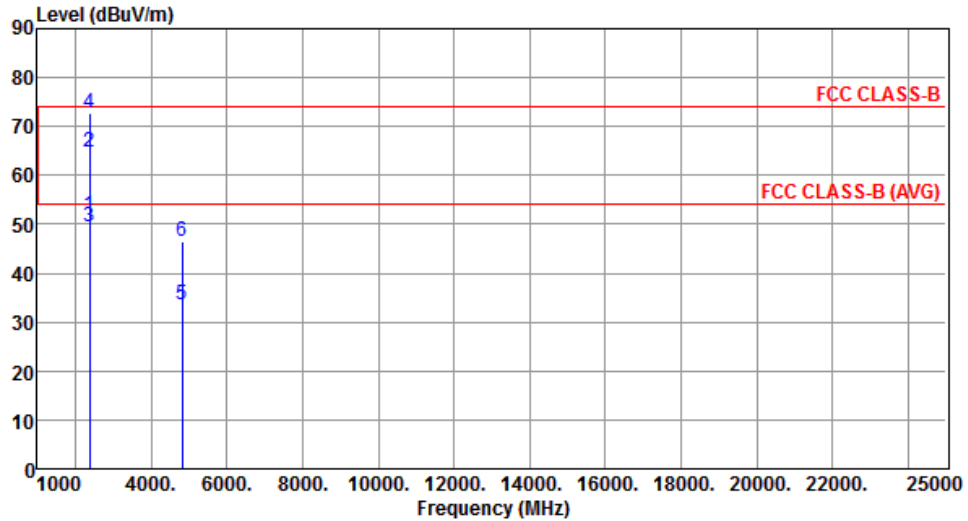
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2370.00	49.12	54.00	-4.88	52.26	-3.14	Average	312	156
2	2370.00	64.25	74.00	-9.75	67.39	-3.14	Peak	312	156
3	2390.00	46.52	54.00	-7.48	49.58	-3.06	Average	312	156
4	2390.00	70.85	74.00	-3.15	73.91	-3.06	Peak	312	156
5	4824.00	34.55	54.00	-19.45	30.29	4.26	Average	325	110
6	4824.00	47.58	74.00	-26.42	43.32	4.26	Peak	325	110

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



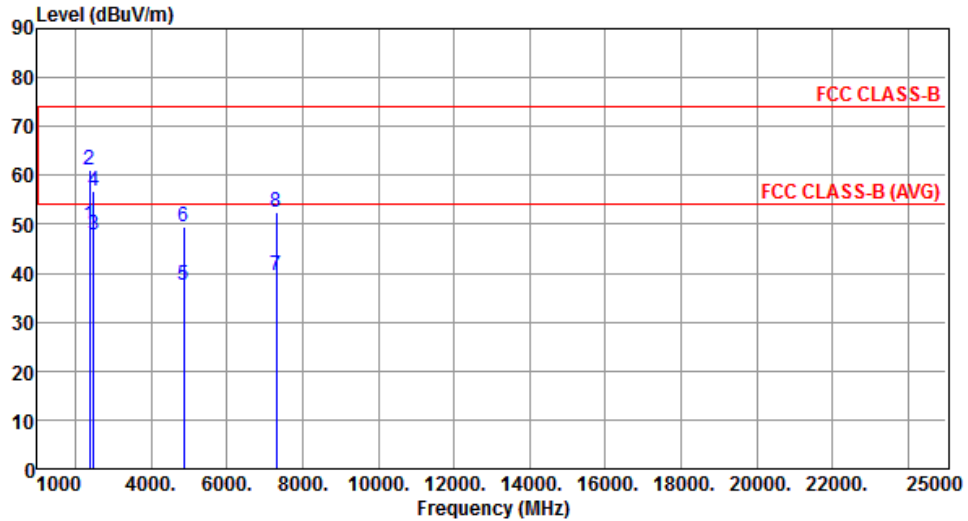
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2370.00	51.85	54.00	-2.15	54.99	-3.14	Average	280	190
2	2370.00	64.82	74.00	-9.18	67.96	-3.14	Peak	280	190
3	2390.00	49.47	54.00	-4.53	52.53	-3.06	Average	295	220
4	2390.00	72.74	74.00	-1.26	75.80	-3.06	Peak	295	220
5	4824.00	33.67	54.00	-20.33	29.41	4.26	Average	312	279
6	4824.00	46.38	74.00	-27.62	42.12	4.26	Peak	312	279

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



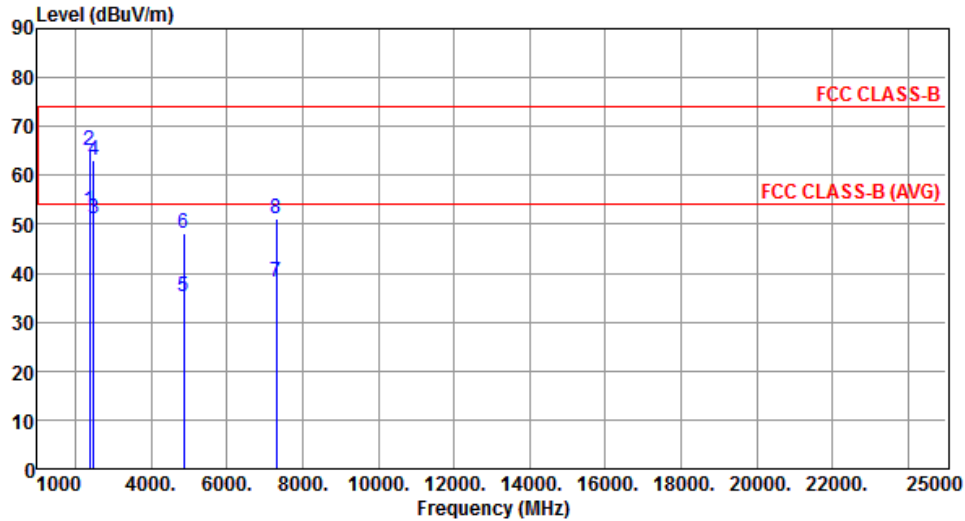
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	49.74	54.00	-4.26	52.80	-3.06	Average	322	222
2	2390.00	60.98	74.00	-13.02	64.04	-3.06	Peak	322	222
3	2483.50	47.74	54.00	-6.26	50.43	-2.69	Average	322	222
4	2483.50	56.77	74.00	-17.23	59.46	-2.69	Peak	322	222
5	4874.00	37.52	54.00	-16.48	33.12	4.40	Average	302	154
6	4874.00	49.51	74.00	-24.49	45.11	4.40	Peak	302	154
7	7311.00	39.38	54.00	-14.62	30.17	9.21	Average	333	229
8	7311.00	52.61	74.00	-21.39	43.40	9.21	Peak	333	229

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



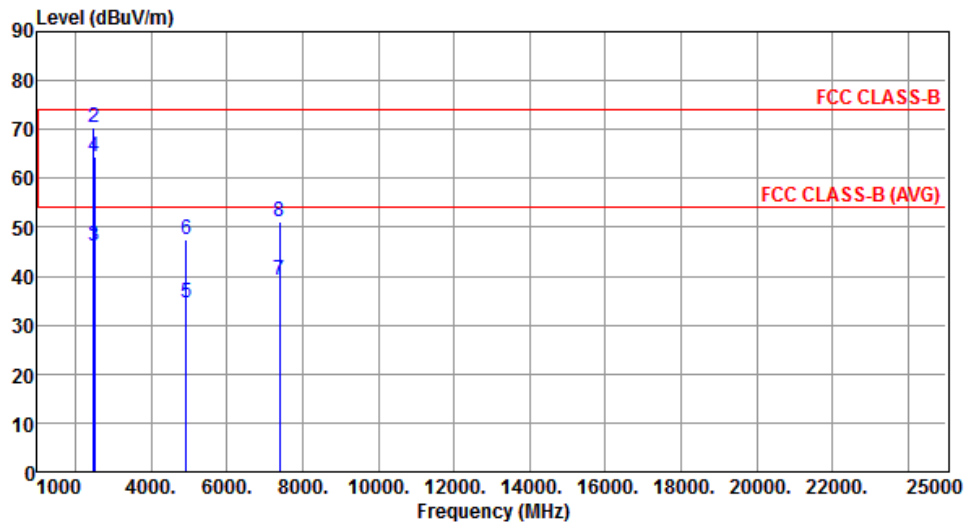
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.94	54.00	-1.06	56.00	-3.06	Average	333	303
2	2390.00	65.19	74.00	-8.81	68.25	-3.06	Peak	333	303
3	2483.50	51.06	54.00	-2.94	53.75	-2.69	Average	319	287
4	2483.50	63.21	74.00	-10.79	65.90	-2.69	Peak	319	287
5	4874.00	35.25	54.00	-18.75	30.85	4.40	Average	355	222
6	4874.00	48.11	74.00	-25.89	43.71	4.40	Peak	355	222
7	7311.00	38.25	54.00	-15.75	29.04	9.21	Average	325	202
8	7311.00	51.25	74.00	-22.75	42.04	9.21	Peak	325	202

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



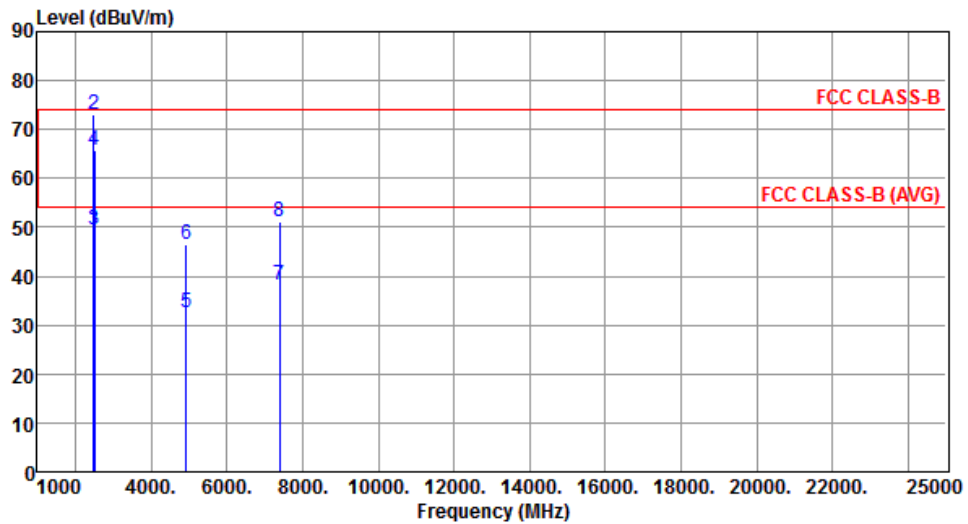
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	46.11	54.00	-7.89	48.80	-2.69	Average	333	152
2	2483.50	70.45	74.00	-3.55	73.14	-2.69	Peak	333	152
3	2500.00	46.12	54.00	-7.88	48.76	-2.64	Average	312	170
4	2500.00	64.29	74.00	-9.71	66.93	-2.64	Peak	312	170
5	4924.00	34.58	54.00	-19.42	30.05	4.53	Average	336	330
6	4924.00	47.38	74.00	-26.62	42.85	4.53	Peak	336	330
7	7386.00	39.15	54.00	-14.85	29.76	9.39	Average	322	228
8	7386.00	51.25	74.00	-22.75	41.86	9.39	Peak	322	228

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

*Factor includes antenna factor , cable loss and amplifier gain

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

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	49.42	54.00	-4.58	52.11	-2.69	Average	322	332
2	2483.50	72.99	74.00	-1.01	75.68	-2.69	Peak	322	332
3	2500.00	49.52	54.00	-4.48	52.16	-2.64	Average	312	320
4	2500.00	65.76	74.00	-8.24	68.40	-2.64	Peak	312	320
5	4924.00	32.41	54.00	-21.59	27.88	4.53	Average	333	333
6	4924.00	46.41	74.00	-27.59	41.88	4.53	Peak	333	333
7	7386.00	38.25	54.00	-15.75	28.86	9.39	Average	257	333
8	7386.00	51.12	74.00	-22.88	41.73	9.39	Peak	257	333

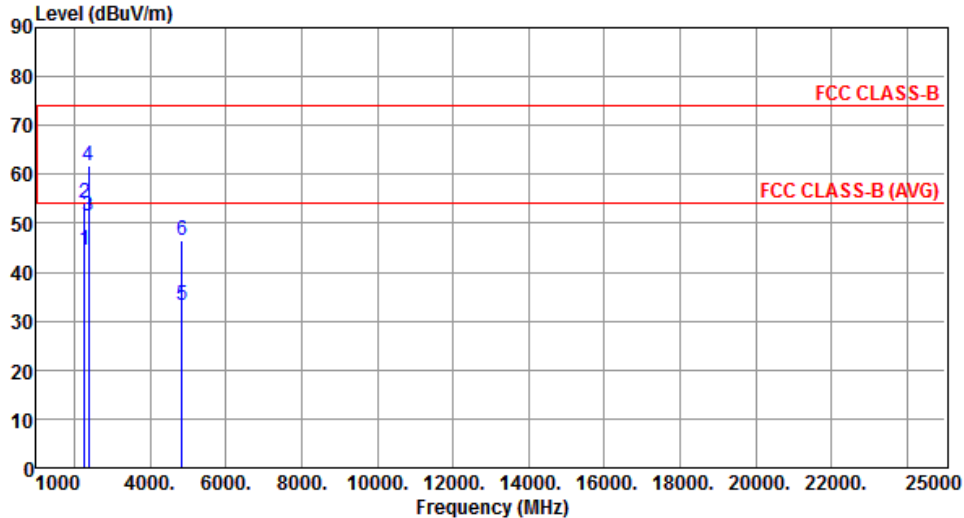
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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

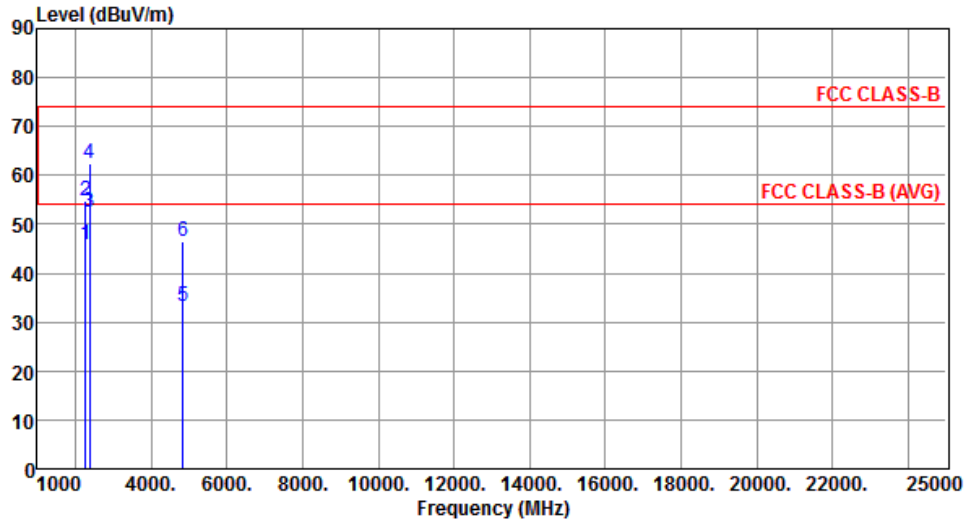
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2275.00	44.58	54.00	-9.42	48.06	-3.48	Average	306	311
2	2275.00	54.02	74.00	-19.98	57.50	-3.48	Peak	306	311
3	2390.00	51.31	54.00	-2.69	54.37	-3.06	Average	287	313
4	2390.00	61.85	74.00	-12.15	64.91	-3.06	Peak	287	313
5	4844.00	33.29	54.00	-20.71	28.97	4.32	Average	279	191
6	4844.00	46.51	74.00	-27.49	42.19	4.32	Peak	279	191

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

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



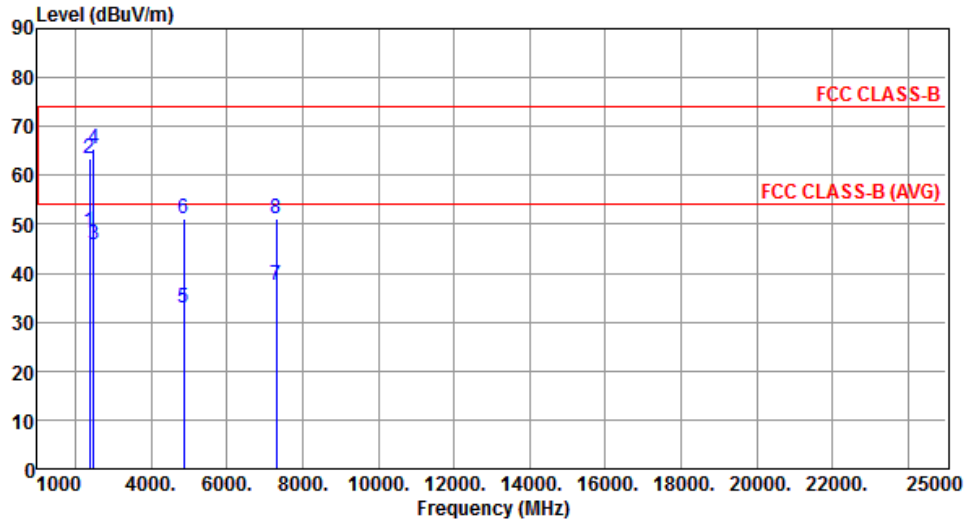
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2275.00	45.87	54.00	-8.13	49.35	-3.48	Average	311	318
2	2275.00	54.64	74.00	-19.36	58.12	-3.48	Peak	311	318
3	2390.00	52.38	54.00	-1.62	55.44	-3.06	Average	290	298
4	2390.00	62.50	74.00	-11.50	65.56	-3.06	Peak	290	298
5	4844.00	33.05	54.00	-20.95	28.73	4.32	Average	322	225
6	4844.00	46.65	74.00	-27.35	42.33	4.32	Peak	322	225

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

*Factor includes antenna factor , cable loss and amplifier gain

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

Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	1



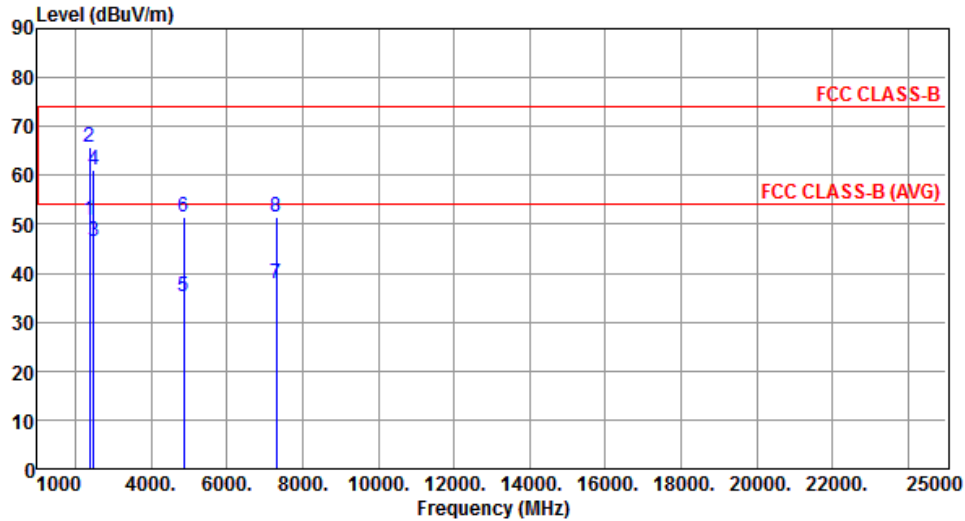
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.55	54.00	-5.45	51.61	-3.06	Average	377	322
2	2390.00	63.38	74.00	-10.62	66.44	-3.06	Peak	377	322
3	2483.50	45.85	54.00	-8.15	48.54	-2.69	Average	288	345
4	2483.50	65.32	74.00	-8.68	68.01	-2.69	Peak	288	345
5	4874.00	32.78	54.00	-21.22	28.38	4.40	Average	269	324
6	4874.00	51.12	74.00	-22.88	46.72	4.40	Peak	269	324
7	7311.00	37.39	54.00	-16.61	28.18	9.21	Average	249	244
8	7311.00	50.98	74.00	-23.02	41.77	9.21	Peak	249	244

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



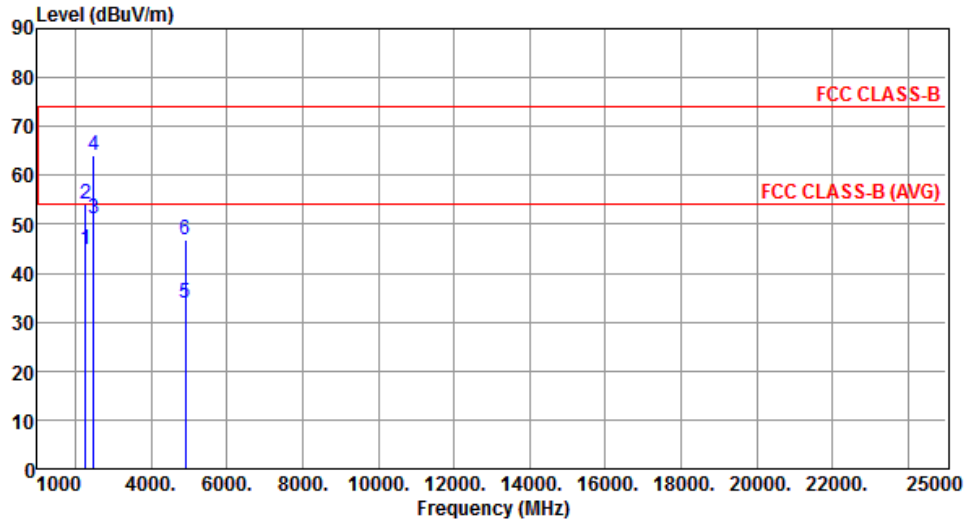
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	50.89	54.00	-3.11	53.95	-3.06	Average	381	305
2	2390.00	65.83	74.00	-8.17	68.89	-3.06	Peak	381	305
3	2483.50	46.55	54.00	-7.45	49.24	-2.69	Average	370	311
4	2483.50	61.18	74.00	-12.82	63.87	-2.69	Peak	370	311
5	4874.00	35.19	54.00	-18.81	30.79	4.40	Average	247	229
6	4874.00	51.56	74.00	-22.44	47.16	4.40	Peak	247	229
7	7311.00	37.82	54.00	-16.18	28.61	9.21	Average	219	88
8	7311.00	51.36	74.00	-22.64	42.15	9.21	Peak	219	88

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



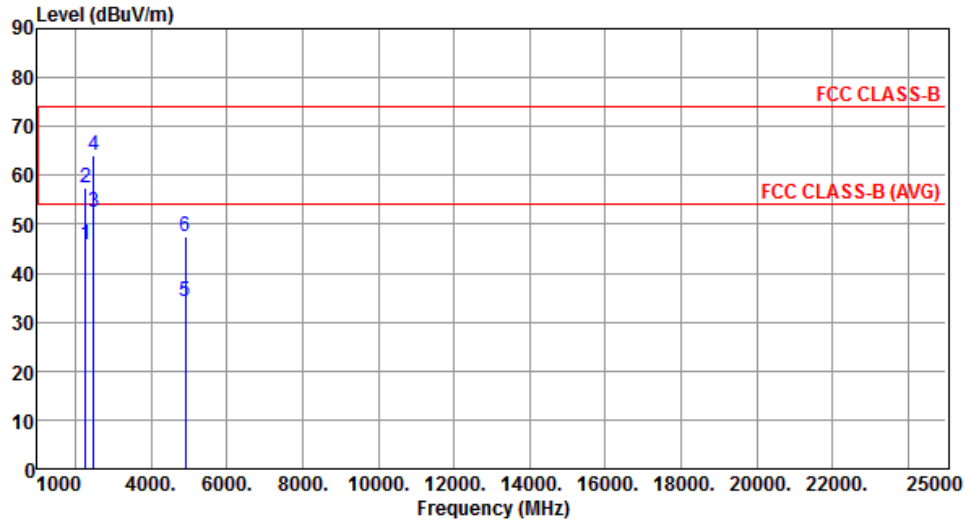
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2275.00	44.88	54.00	-9.12	48.36	-3.48	Average	333	263
2	2275.00	54.12	74.00	-19.88	57.60	-3.48	Peak	333	263
3	2483.50	50.98	54.00	-3.02	53.67	-2.69	Average	187	270
4	2483.50	64.26	74.00	-9.74	66.95	-2.69	Peak	187	270
5	4904.00	33.88	54.00	-20.12	29.40	4.48	Average	199	311
6	4904.00	46.85	74.00	-27.15	42.37	4.48	Peak	199	311

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	2275.00	45.85	54.00	-8.15	49.33	-3.48	Average	352	103
2	2275.00	57.55	74.00	-16.45	61.03	-3.48	Peak	352	103
3	2483.50	52.33	54.00	-1.67	55.02	-2.69	Average	341	97
4	2483.50	64.18	74.00	-9.82	66.87	-2.69	Peak	341	97
5	4904.00	34.12	54.00	-19.88	29.64	4.48	Average	309	159
6	4904.00	47.52	74.00	-26.48	43.04	4.48	Peak	309	159

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

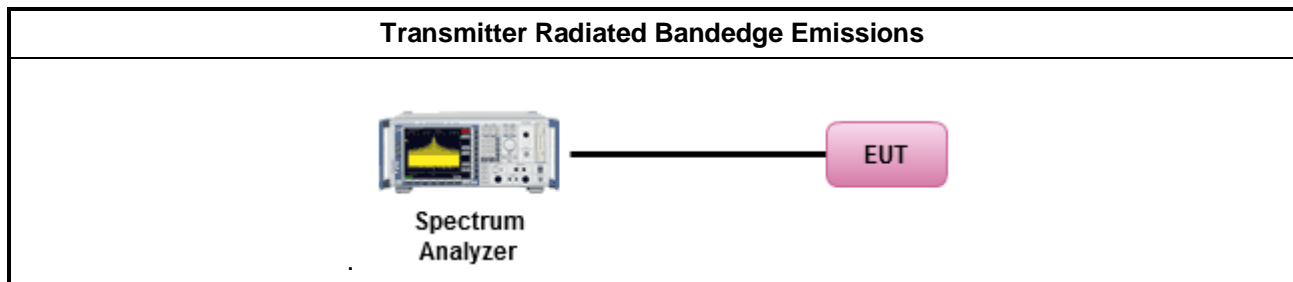
Reference level measurement

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

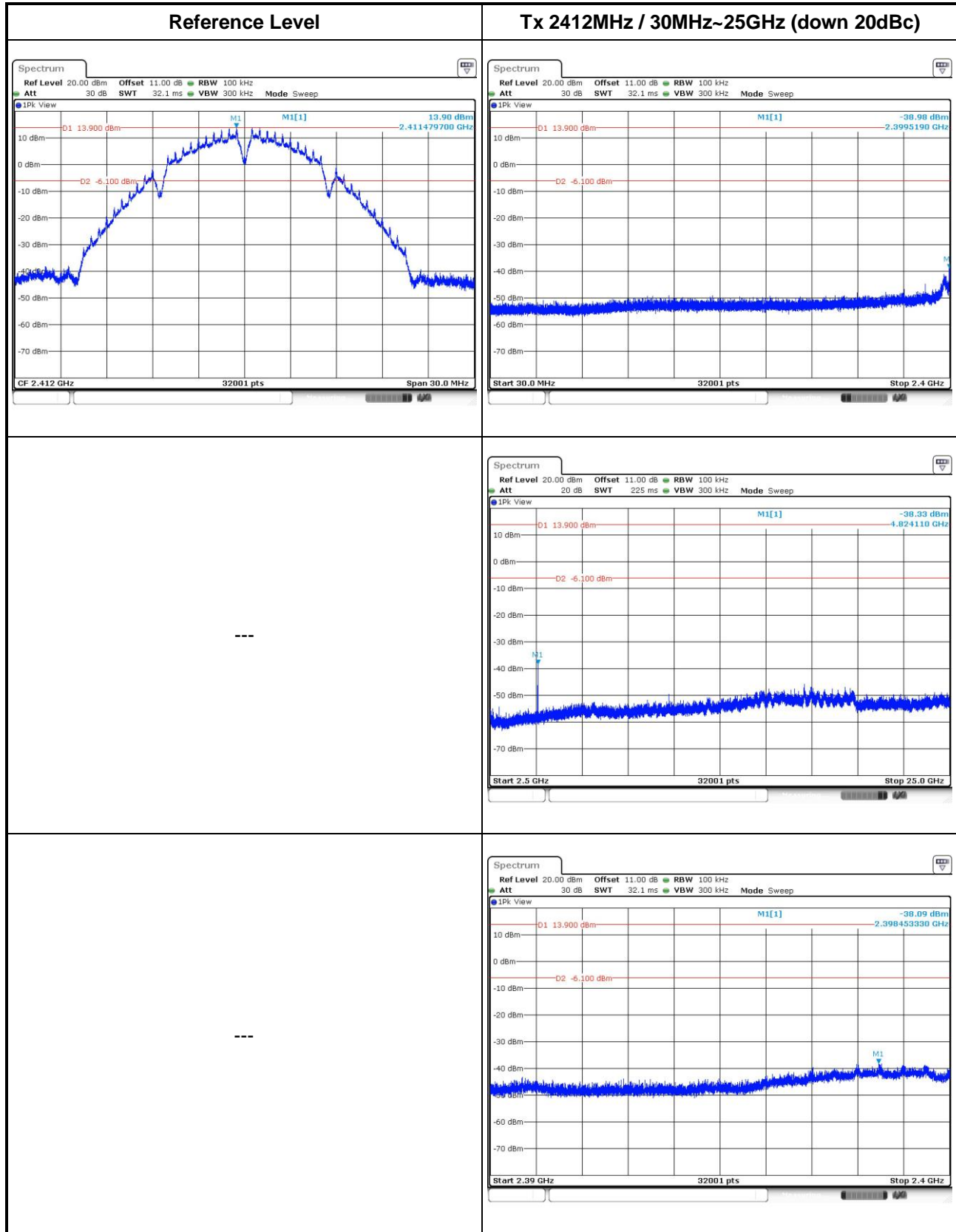


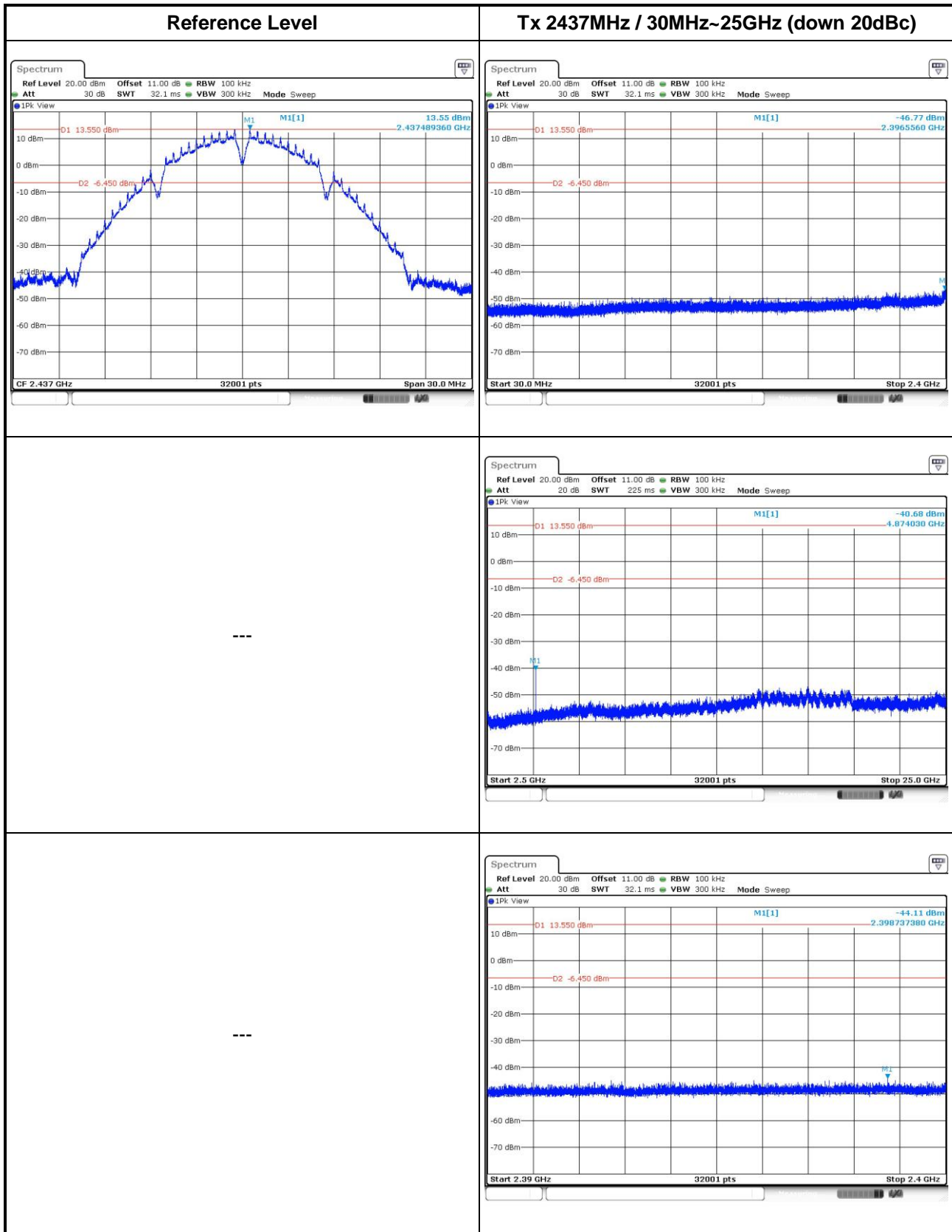
3.6.5 Test Result of Emissions in non-restricted frequency bands

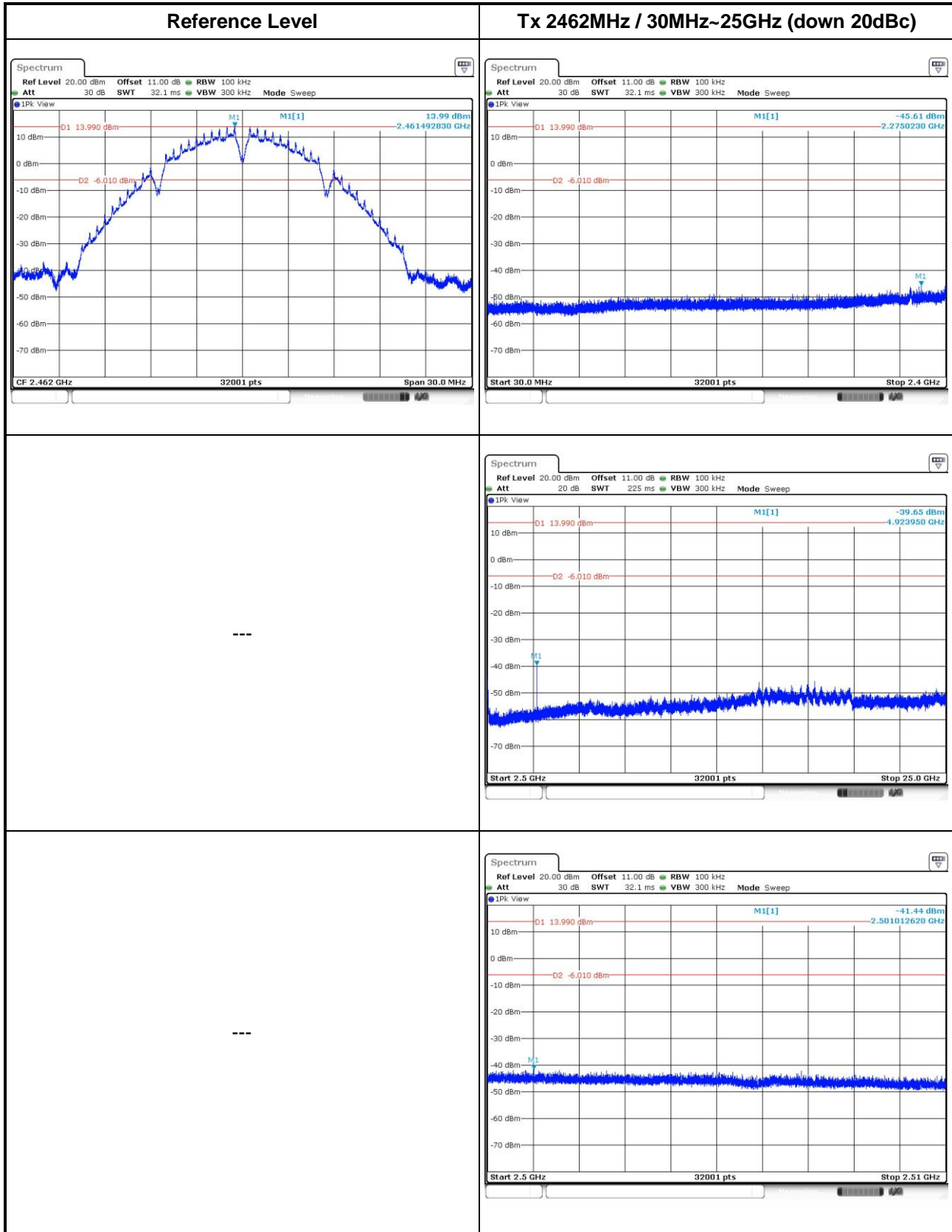
This test item is performed on each TX output individually without summing or adding $10 \log(N_{ANT})$ since measurements are made relative to the in-band emissions on the individual outputs. Only worst test result of each operating mode is presented.

3.6.6 Unwanted Emissions into Non-Restricted Frequency Bands

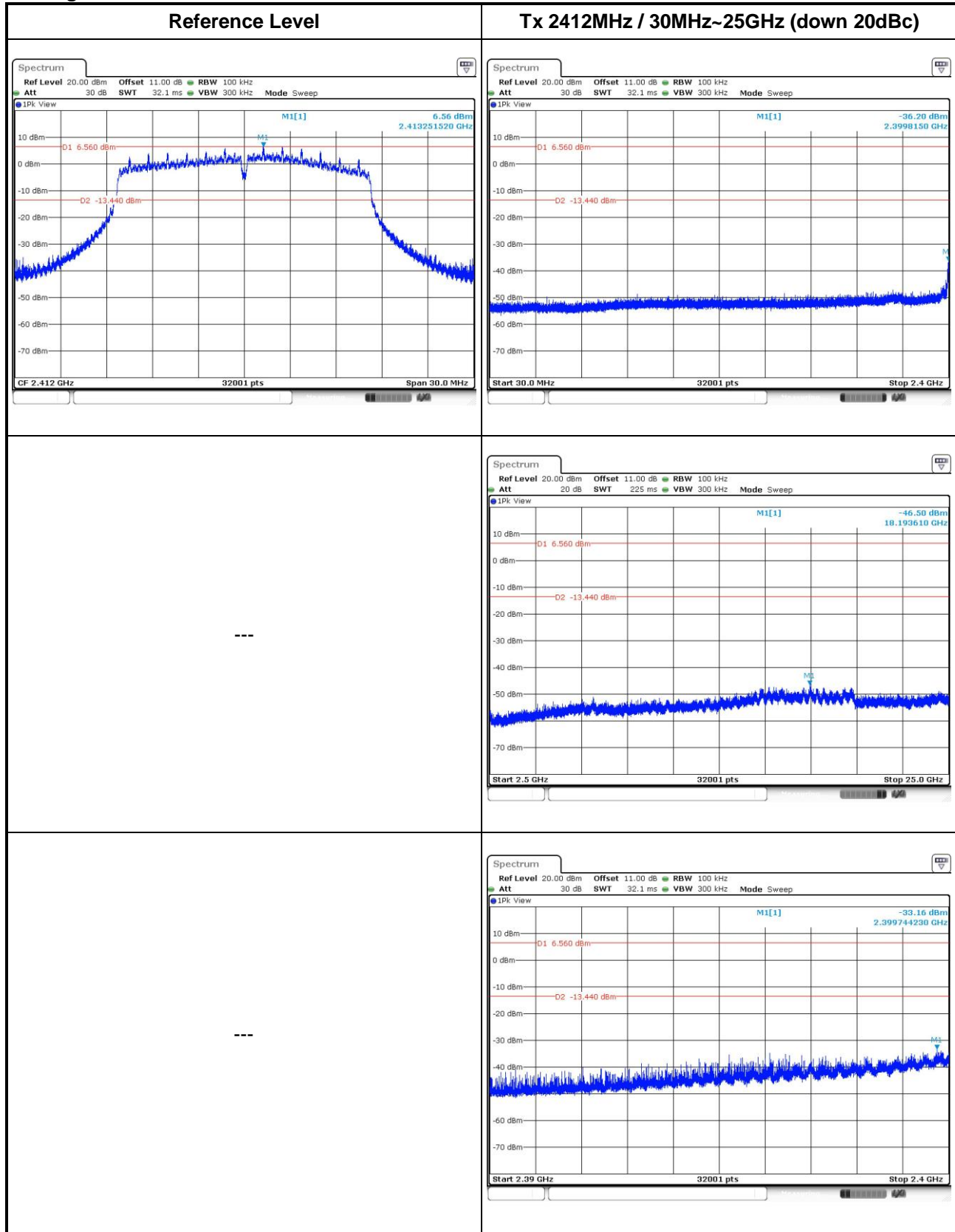
802.11b



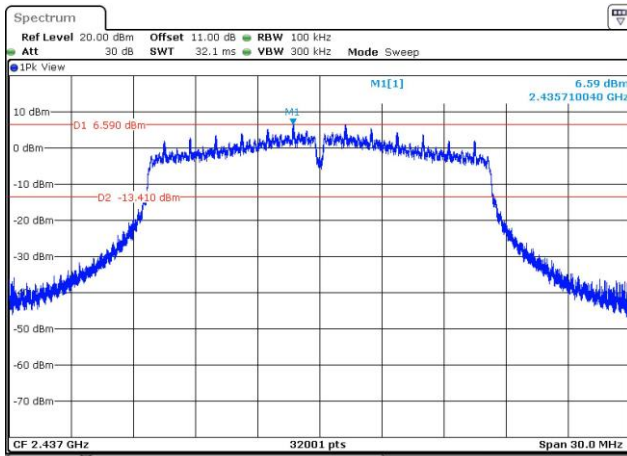




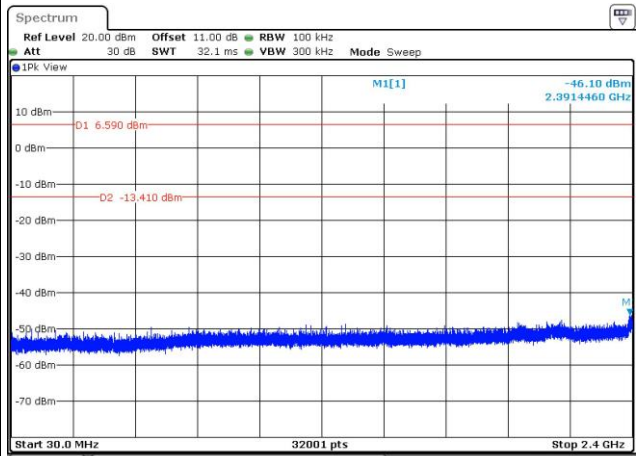
802.11g

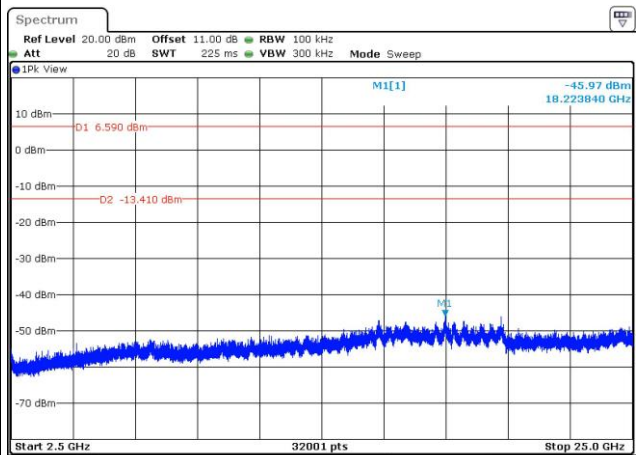


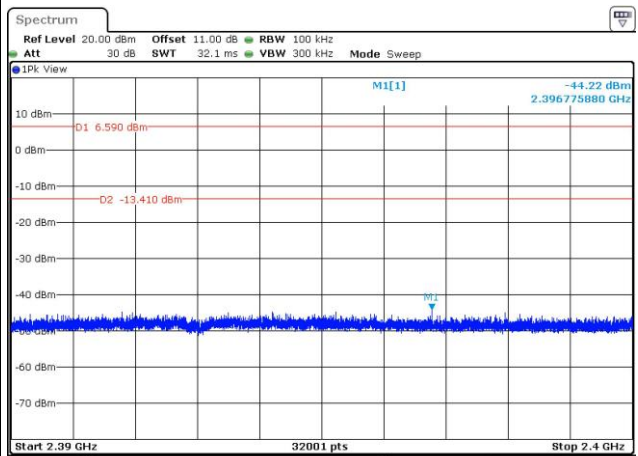
Reference Level



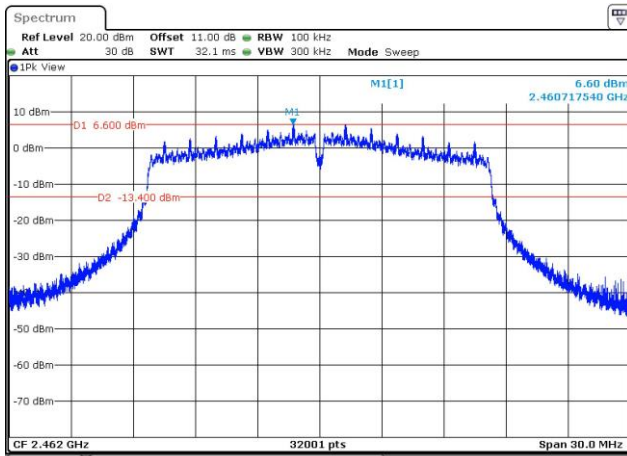
Tx 2437MHz / 30MHz~25GHz (down 20dBc)



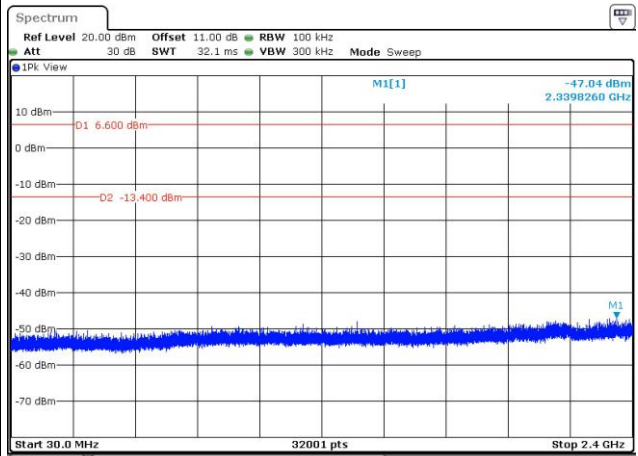


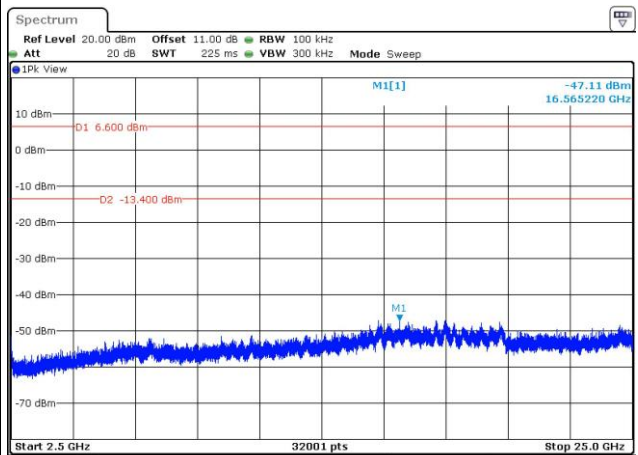


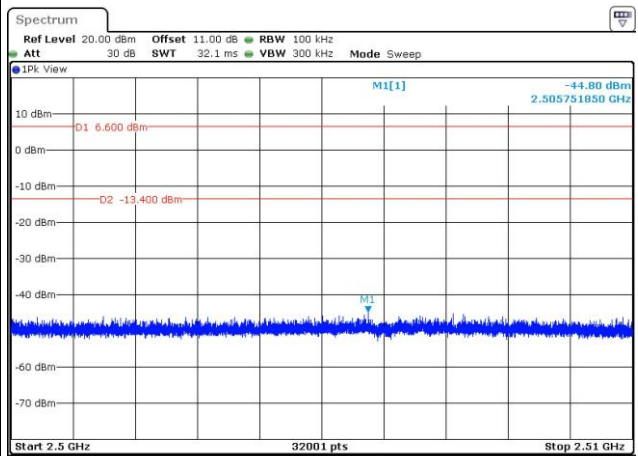
Reference Level



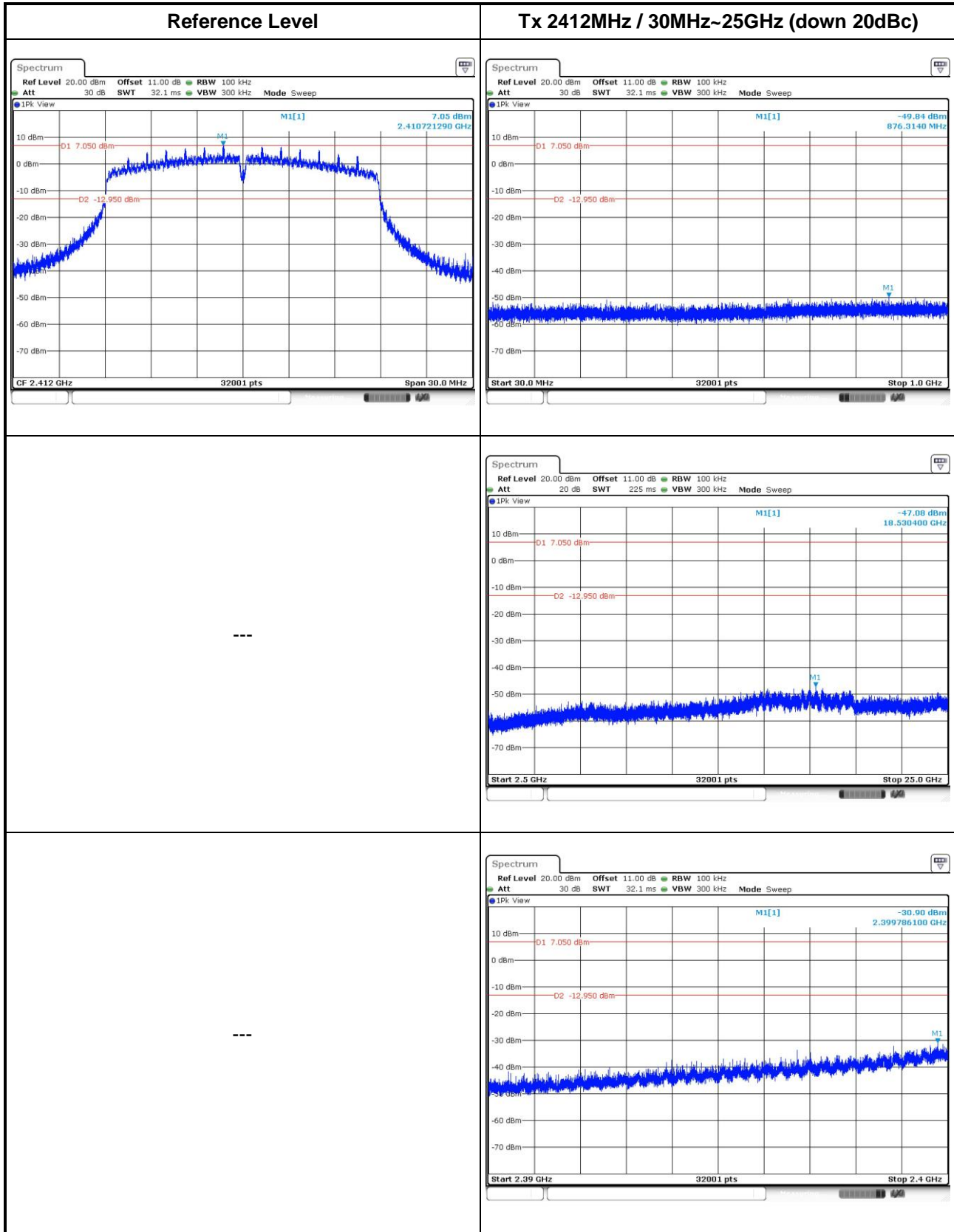
Tx 2462MHz / 30MHz~25GHz (down 20dBc)



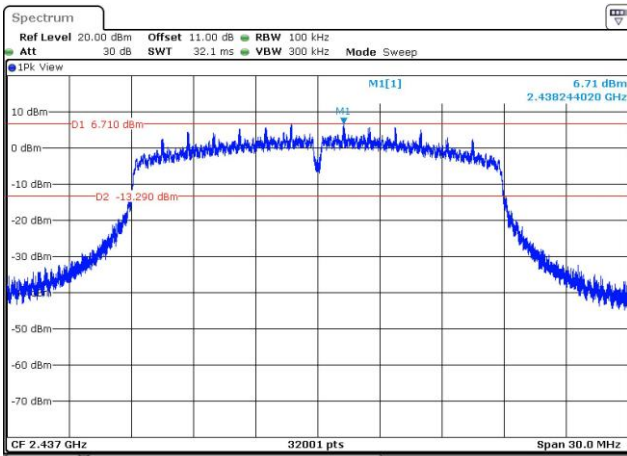




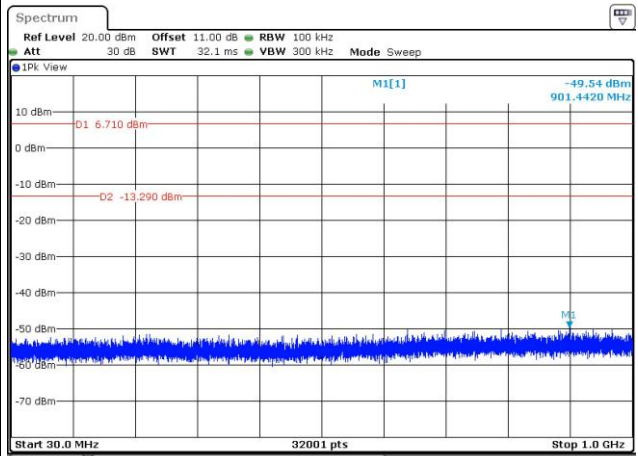
802.11n HT20

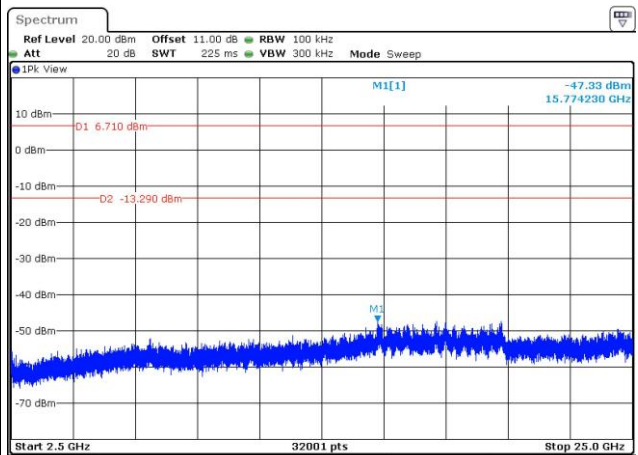


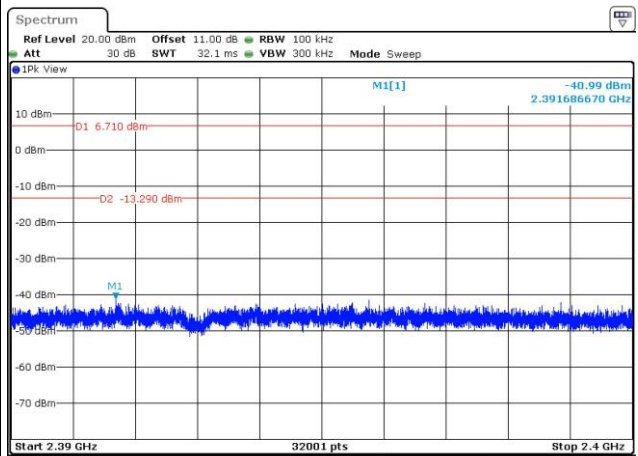
Reference Level

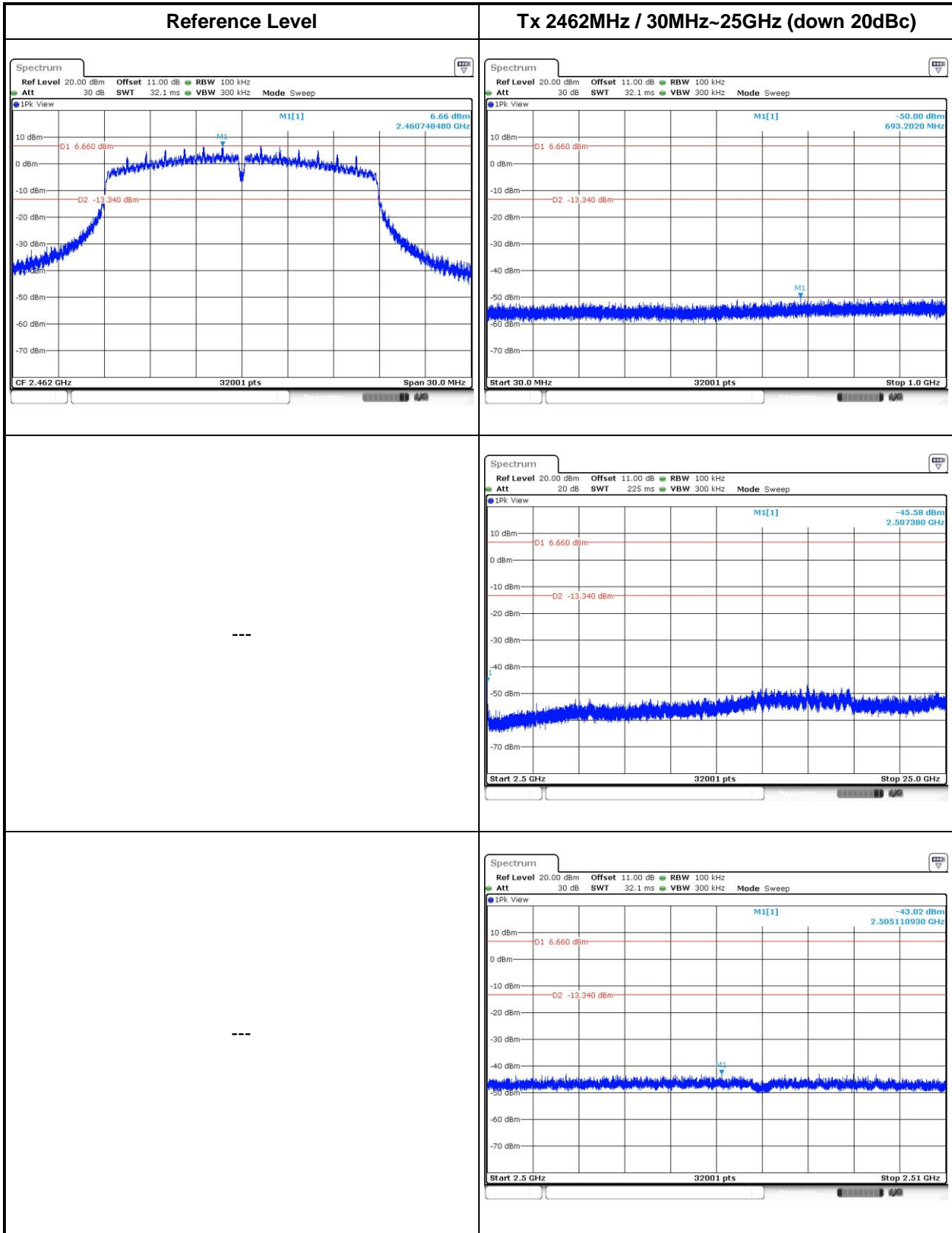


Tx 2437MHz / 30MHz~25GHz (down 20dBc)

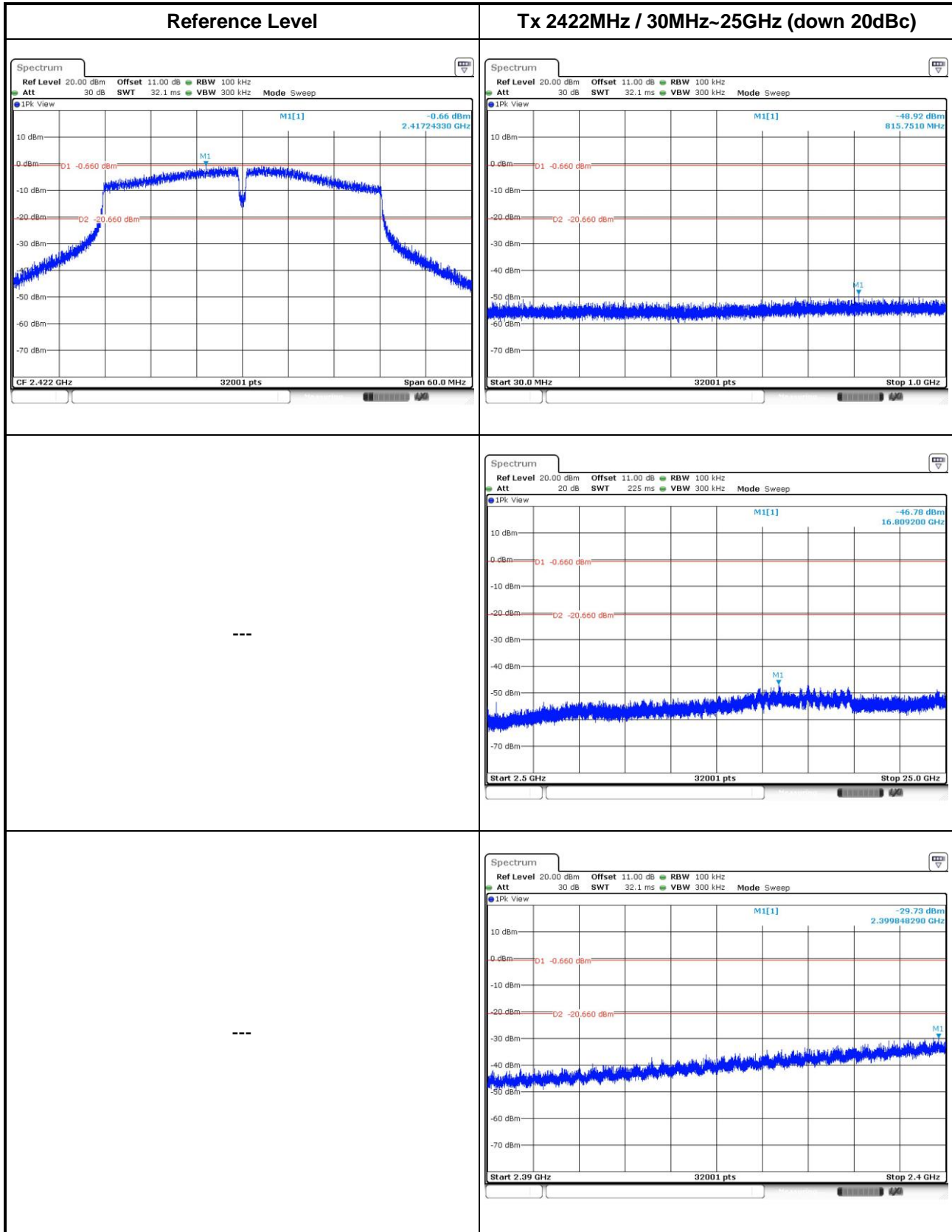


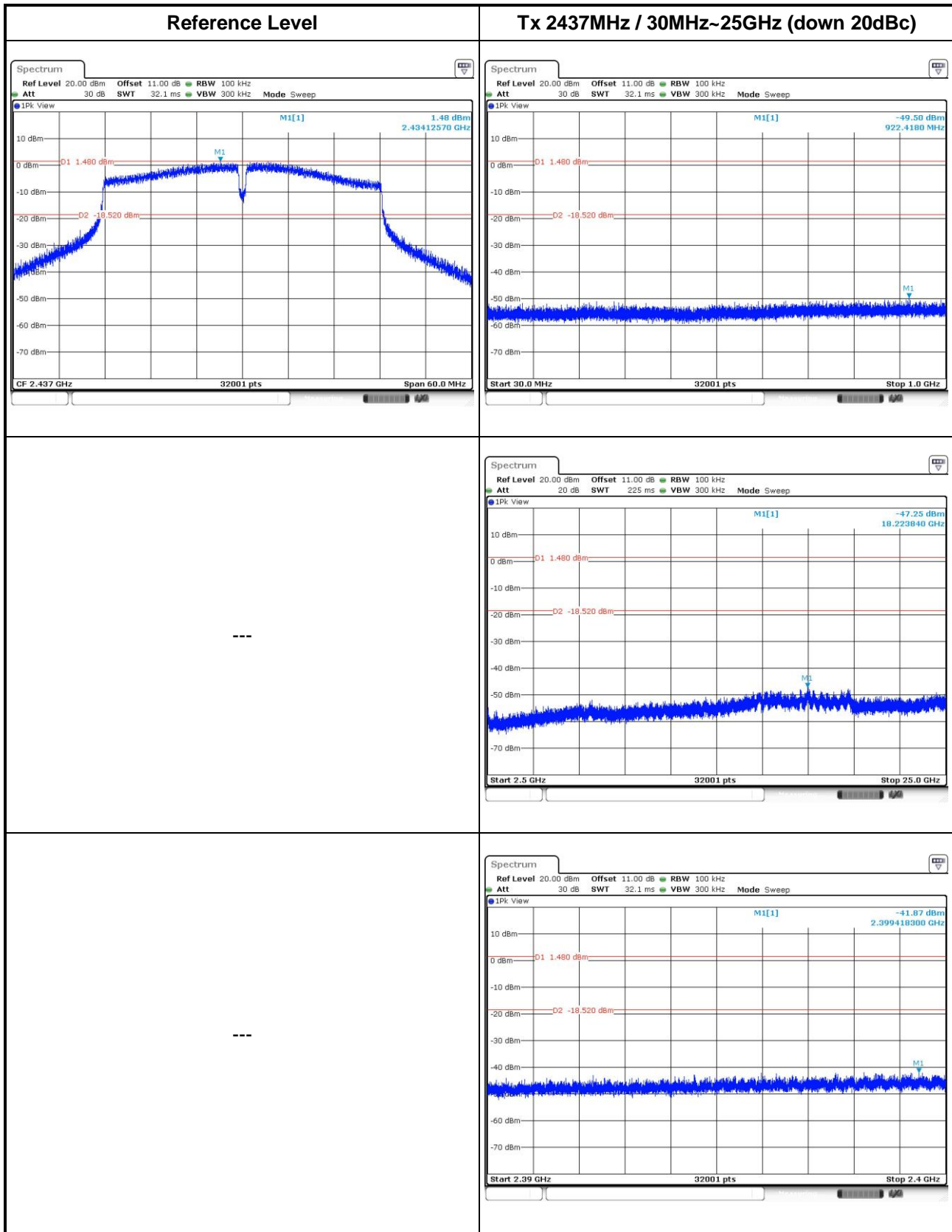


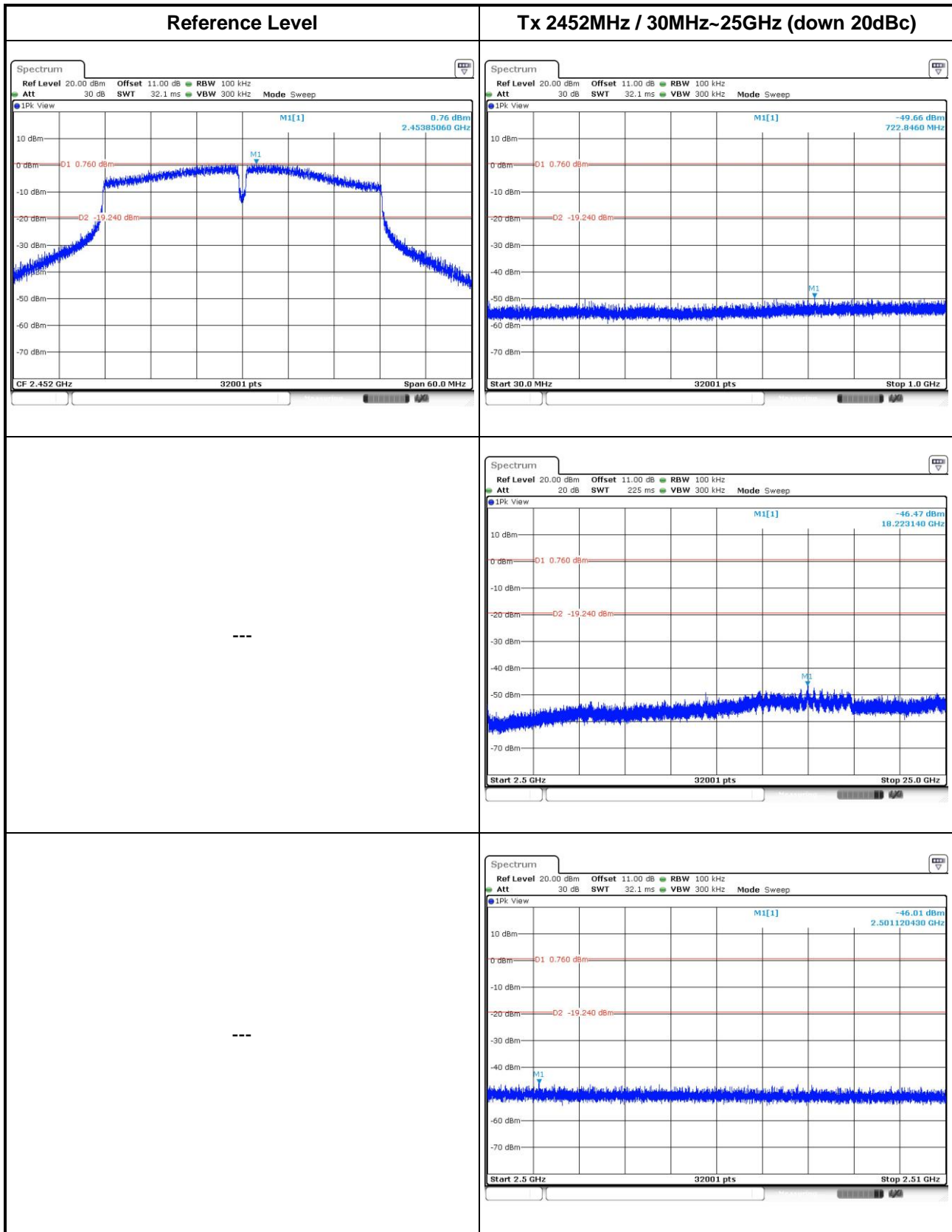




802.11n HT40







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

Tel: 886-2-2601-1640

No. 30-2, Ding Fwu Tsuen, Lin Kou
District, New Taipei City, Taiwan,
R.O.C.

Kwei Shan

Tel: 886-3-271-8666

No. 3-1, Lane 6, Wen San 3rd
St., Kwei Shan Hsiang, Tao Yuan
Hsien 333, Taiwan, R.O.C.

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

Fax: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

==END==