FCC Test Report

FCC ID	:	**I88NBG6817**
Equipment	:	**AC2600 MU-MIMO Dual-Band Wireless Gigabit Router**
Model No.	:	**NBG6817**
Brand Name	:	**ZYXEL**
Applicant	:	**ZyXEL Communications Corporation**
Address	:	**No.2, Industry East Road IX, Science Park, Hsinchu, Taiwan**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Apr. 13, 2016**
Tested Date	:	**Apr. 18 ~ Jul. 19, 2016**

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

Approved & Reviewed by:

Gary Chang / Manager

Testing Laboratory
2732

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Release Record

Report No.	Version	Description	Issued Date
FR641302AC	Rev. 01	Initial issue	May 30, 2016
FR641302AC	Rev. 02	1. Location of one antenna cable is changed. 2. CPU heat sink changed. 3. Capacitor of DC in portion is replaced with a higher capacitance value and specification capacitor.	Jul. 22, 2016
FR641302AC	Rev. 03	Brand name changed.	Jul. 28, 2016

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.464MHz 37.15 (Margin -9.48dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2483.50MHz 53.86 (Margin -0.14dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: ***Non-beamforming mode*** 29.46 ***Beamforming mode*** 26.83	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]	4	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	4	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	4	MCS 0-31
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	4	MCS 0-31
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power. Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation. Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.. Note 4: 802.11n supports beamforming function.					

1.1.2 Antenna Details

Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)		
			2400~2483.5	5150~5250	5725~5850
RFA-25-Z3-79-140	Dipole	UFL	2.17	1.32	2.09
RFA-25-Z3-79B-200	Dipole	UFL	1.08	2.48	2.81
RFA-25-Z3-79BL-150	Dipole	UFL	2.25	1.3	2.72
RFA-25-Z3-79W-200	Dipole	UFL	1.16	0.98	1.85

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from AC adapter

1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand Name: APD Model Name: WA-36A12FU Power Rating: I/P: 100-240Vac, 50-60Hz, 0.9A Max O/P: 12Vdc, 3A Power Line: 1.5m non-shielded cable with one core
2	RJ45 Cable	0.9m shielded cable without core.

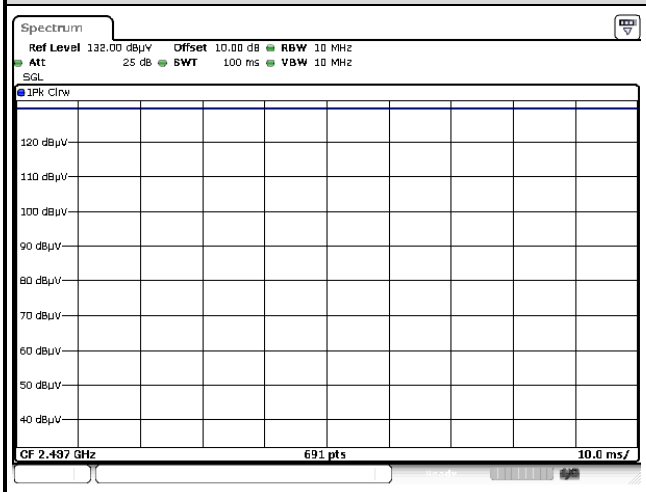
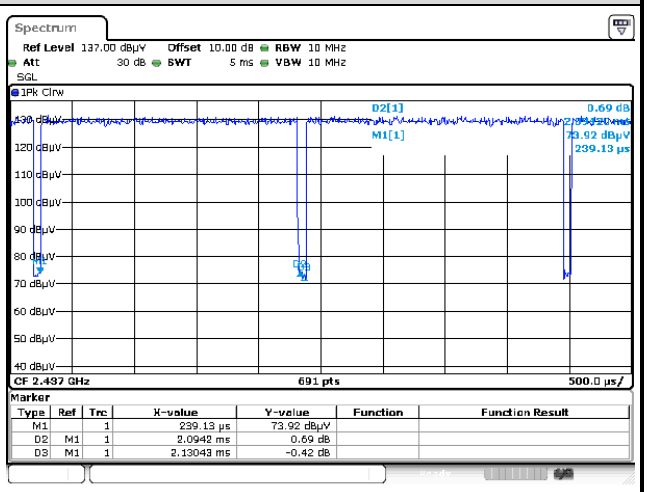
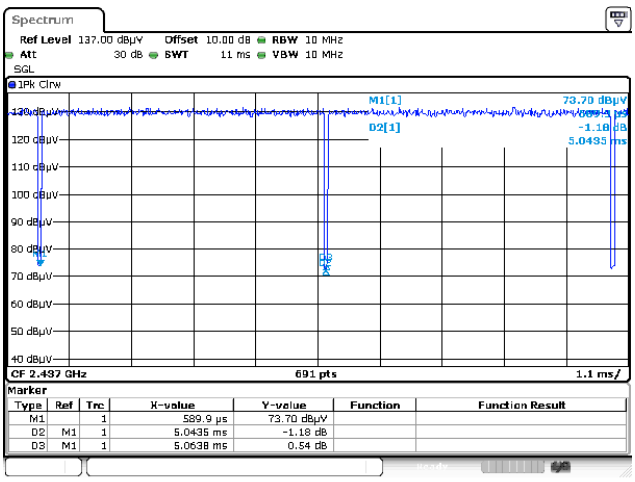
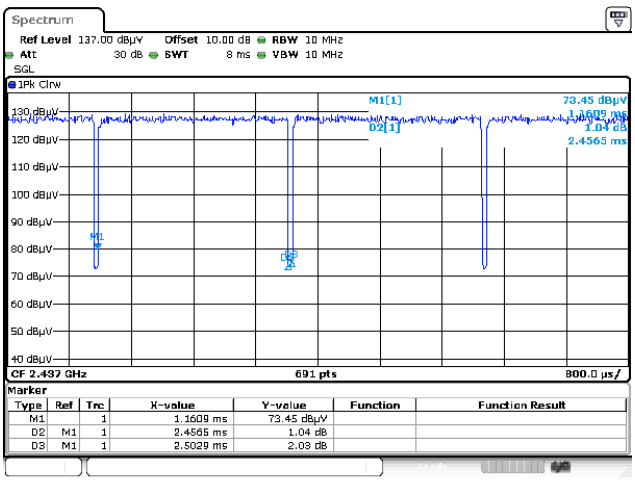
1.1.5 Channel List

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

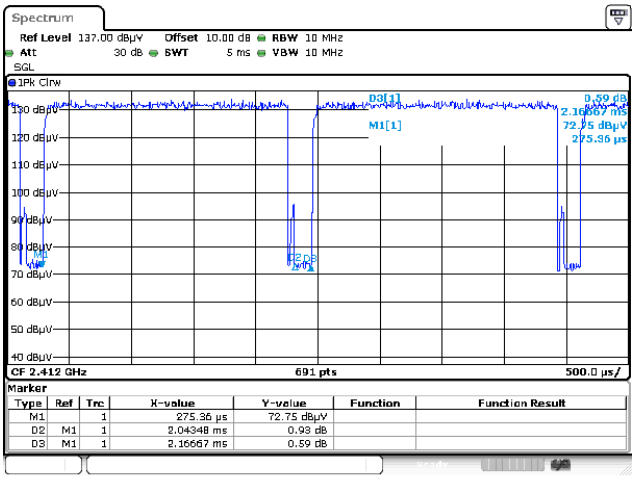
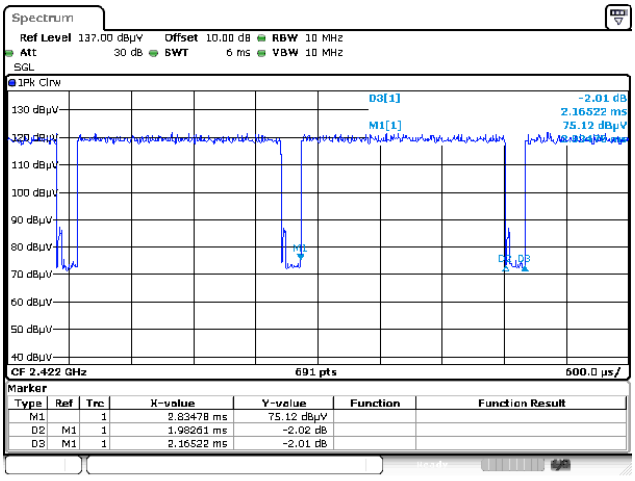
1.1.6 Test Tool and Duty Cycle

Test Tool	Non-beamforming: QCARCT, V3.0.144.0 Beamforming: LanTest			
Duty Cycle and Duty Factor	Mode	Non-beamforming		Beamforming	
		Duty cycle (%)	Duty factor (dB)	Duty cycle (%)	Duty factor (dB)
	11b	100.00%	0.00	---	---
	11g	98.30%	0.07	---	---
	HT20	99.60%	0.02	94.31%	0.25
	HT40	98.15%	0.08	91.57%	0.38

Non-beamforming mode

11b	11g
	
11n HT20	**11n HT40**
	

Beamforming mode

11n HT20	11n HT40
	

1.1.7 Power Setting

Modulation Mode	Test Frequency (MHz)	Power Set	
		Non-beamforming	Beamforming
11b	2412	22	---
11b	2437	24	---
11b	2462	22.5	---
11g	2412	22.5	---
11g	2437	24.5	---
11g	2462	23	---
HT20	2412	22	23
HT20	2437	24	27
HT20	2462	22	24
HT40	2422	18.5	21
HT40	2437	21	24
HT40	2452	19	22

1.2 Local Support Equipment List

Non-beamforming mode

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**S/N**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E5420	B6FV9T1	RJ45, 8m shielded.
2	Notebook	DELL	Latitude E6430	74GB4X1	RJ45, 10m non-shielded.
3	USB 2.0 flash	Kingston	DTSE9	FXVJ0	---
4	USB 3.0 flash	pqi	U273V 16G	51882	---
5	Load	ICC	---	---	RJ45, 1.5m (x3) non-shielded

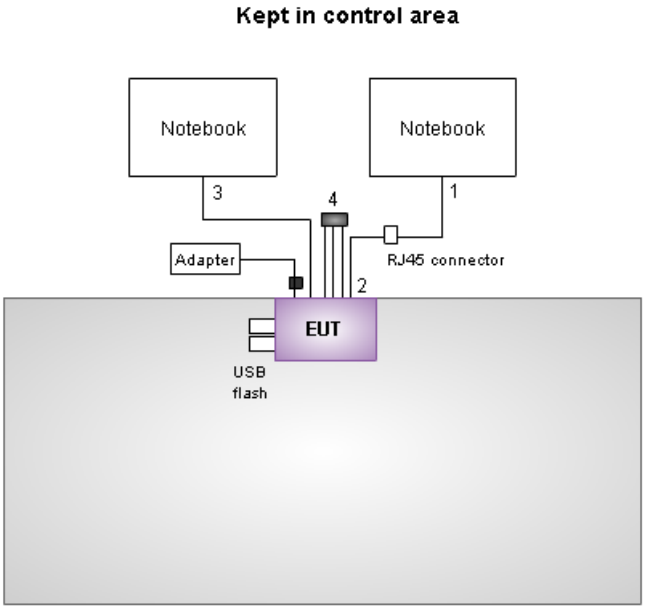
Beamforming mode

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**S/N**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E5420	B6FV9T1	RJ45, 8m shielded.
2	Notebook	DELL	Latitude E6430	74GB4X1	RJ45, 10m non-shielded.
3	USB 2.0 flash	Kingston	DTSE9	FXVJ0	---
4	USB 3.0 flash	pqi	U273V 16G	51882	---
5	Load	ICC	---	---	RJ45, 1.5m (x3) non-shielded
6	Notebook	DELL	Latitude E6430	G3GB4X1	RJ45, 1m non-shielded.
7	Client	ZyXEL	NBG6817	---	---

Note: No. 7 is provided by applicant.

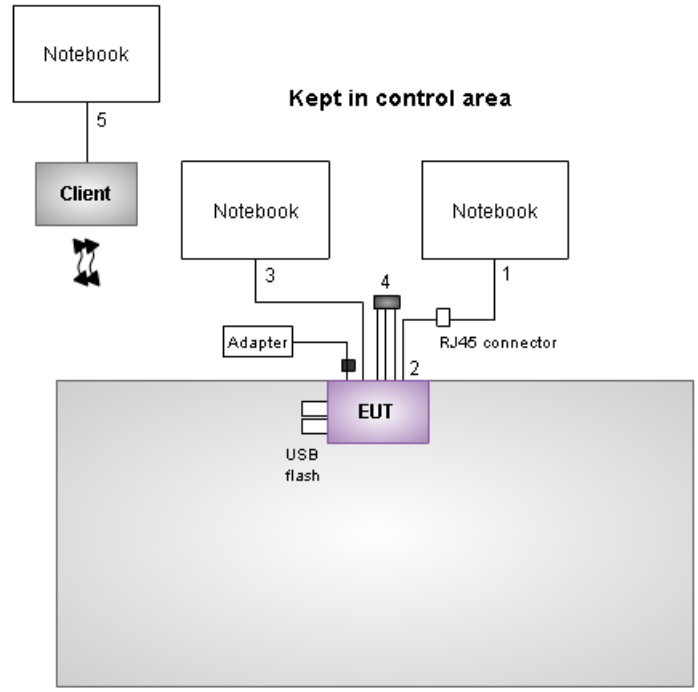
1.3 Test Setup Chart

Non-beamforming mode

Test Setup Diagram
 1. RJ45, 8m shielded 2. RJ45, 0.9m shielded 3. RJ45, 10m non-shielded 4. RJ45, 1.5m (x3) non-shielded with load

Beamforming mode

Test Setup Diagram



1. RJ45, 8m shielded
2. RJ45, 0.9m shielded
3. RJ45, 10m non-shielded
4. RJ45, 1.5m (x3) non-shielded with load
5. RJ45, 1m non-shielded

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**
Receiver	R&S	ESR3	101657	Jan. 12, 2016	Jan. 11, 2017
LISN	R&S	ENV216	101579	Jan. 11, 2016	Jan. 10, 2017
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 chamber1 / (03CH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101498	Dec. 13, 2015	Dec. 12, 2016
Receiver	R&S	ESR3	101658	Nov. 04, 2015	Nov. 03, 2016
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Aug. 20, 2015	Aug. 19, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 16, 2015	Dec. 15, 2016
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016
Preamplifier	Burgeon	BPA-530	SN:100219	Sep. 10, 2015	Sep. 09, 2016
Preamplifier	Agilent	83017A	MY39501308	Oct. 02, 2015	Oct. 01, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 10, 2015	Dec. 09, 2016
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 10, 2015	Dec. 09, 2016
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 10, 2015	Dec. 09, 2016
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 16, 2015	Nov. 15, 2016
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Feb. 17, 2016	Feb. 16, 2017
Power Meter	Anritsu	ML2495A	1241002	Sep. 21, 2015	Sep. 20, 2016
Power Sensor	Anritsu	MA2411B	1207366	Sep. 21, 2015	Sep. 20, 2016
Signal Generator	R&S	SMB100A	175727	Oct. 05, 2015	Oct. 04, 2016
AC POWER SOURCE	APC	AFC-500W	F312060012	Oct. 26, 2015	Oct. 25, 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 ≤ 1GHz	±3.66 dB
Radiated emission > 1GHz	±5.63 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 63%	Howard Huang
Radiated Emissions	03CH01-WS	22-24°C / 61-66%	Vincent Yeh Anderson Hung Felix Sung
RF Conducted	TH01-WS	21°C / 64%	Alex Huang

- FCC site registration No.: 181692
- IC site registration No.: 10807A-1

2.2 The Worst Test Modes and Channel Details

Non-beamforming mode

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

Beamforming mode

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

3 Transmitter Test Results

3.1 Conducted Emissions

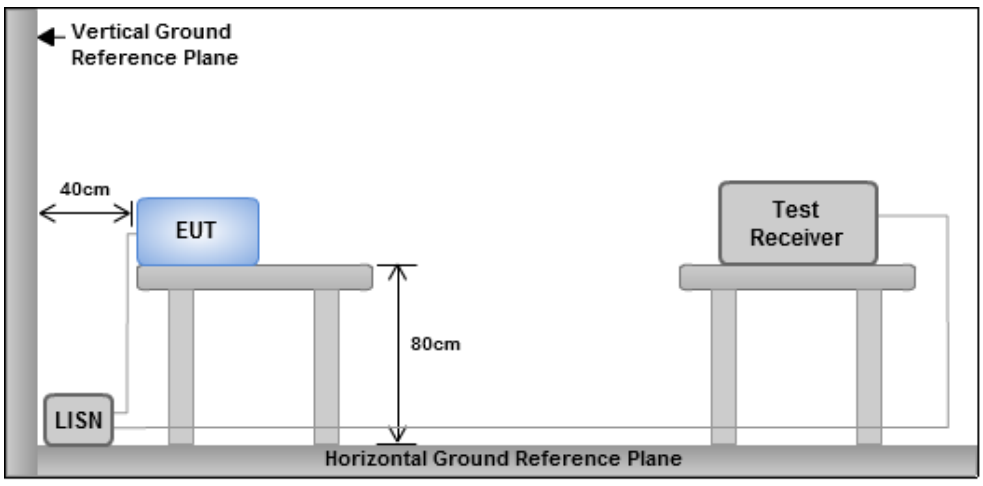
3.1.1 Limit of Conducted Emissions

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

3.1.2 Test Procedures

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

3.1.3 Test Setup



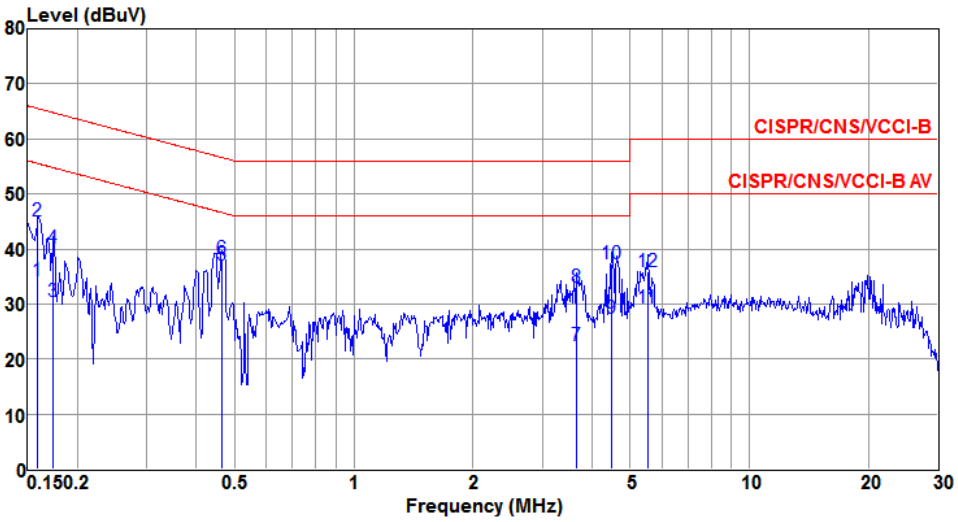
Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

Non-beamforming mode

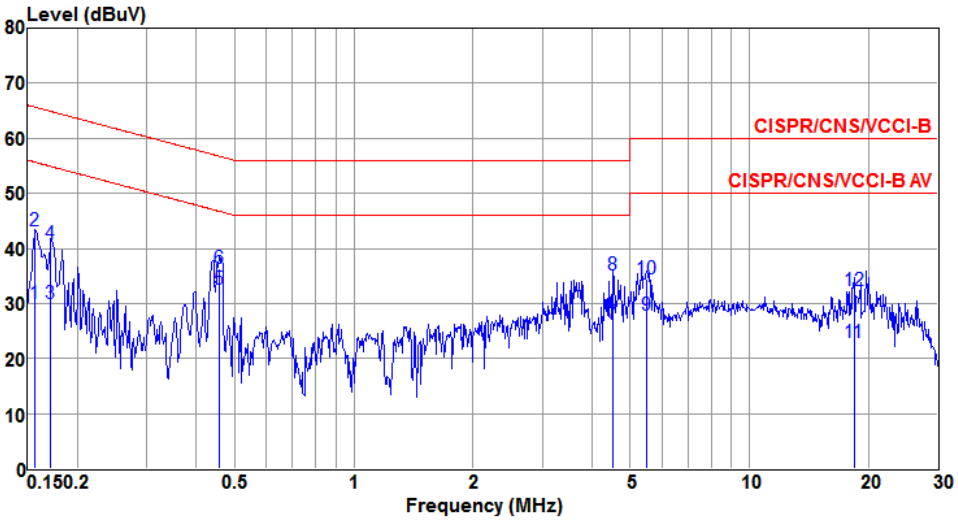
Modulation	11b	Test Freq. (MHz)	2437
Power Phase	Line		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.159	34.27	55.52	-21.25	24.62	9.63	0.02	Average
2	0.159	45.15	65.52	-20.37	35.50	9.63	0.02	QP
3	0.174	30.52	54.77	-24.25	20.86	9.64	0.02	Average
4	0.174	40.13	64.77	-24.64	30.47	9.64	0.02	QP
5@	0.464	37.15	46.63	-9.48	27.49	9.63	0.03	Average
6	0.464	38.30	56.63	-18.33	28.64	9.63	0.03	QP
7	3.642	22.49	46.00	-23.51	12.74	9.64	0.11	Average
8	3.642	32.98	56.00	-23.02	23.23	9.64	0.11	QP
9	4.478	27.30	46.00	-18.70	17.54	9.64	0.12	Average
10	4.478	37.38	56.00	-18.62	27.62	9.64	0.12	QP
11	5.535	29.20	50.00	-20.80	19.42	9.65	0.13	Average
12	5.535	35.82	60.00	-24.18	26.04	9.65	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	11b	Test Freq. (MHz)	2437
Power Phase	Neutral		

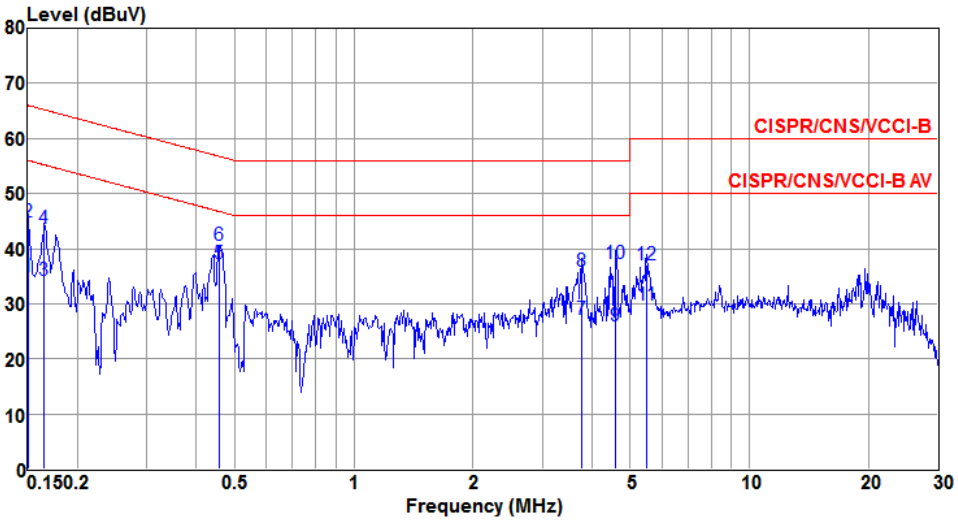


	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.156	29.98	55.65	-25.67	20.34	9.62	0.02	Average
2	0.156	43.12	65.65	-22.53	33.48	9.62	0.02	QP
3	0.171	30.07	54.90	-24.83	20.43	9.62	0.02	Average
4	0.171	40.93	64.90	-23.97	31.29	9.62	0.02	QP
5@	0.456	32.65	46.76	-14.11	22.99	9.63	0.03	Average
6	0.456	36.40	56.76	-20.36	26.74	9.63	0.03	QP
7	4.501	26.38	46.00	-19.62	16.62	9.64	0.12	Average
8	4.501	35.22	56.00	-20.78	25.46	9.64	0.12	QP
9	5.505	27.92	50.00	-22.08	18.14	9.65	0.13	Average
10	5.505	34.51	60.00	-25.49	24.73	9.65	0.13	QP
11	18.426	23.00	50.00	-27.00	13.05	9.77	0.18	Average
12	18.426	32.35	60.00	-27.65	22.40	9.77	0.18	QP

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

Beamforming mode

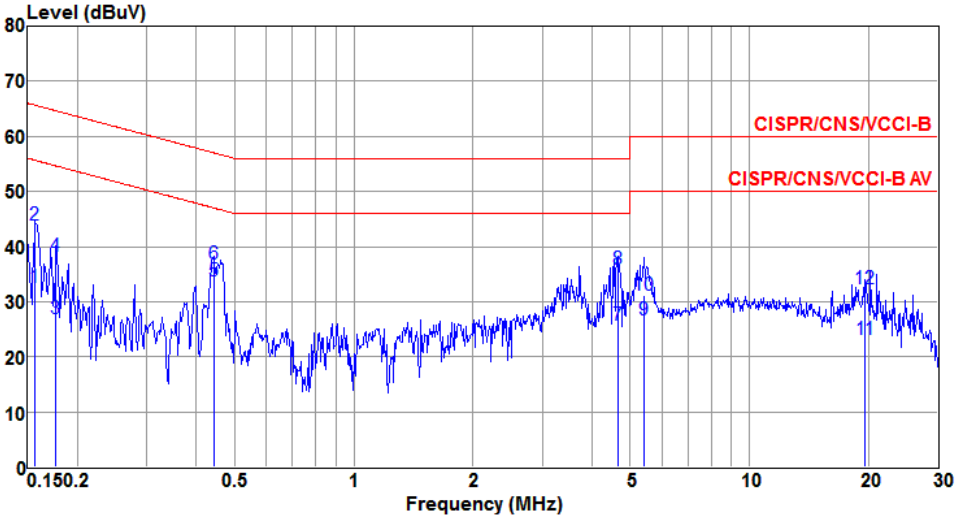
Modulation	HT20	Test Freq. (MHz)	2437
Power Phase	Line		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.150	34.92	56.00	-21.08	25.27	9.63	0.02	Average
2	0.150	44.93	66.00	-21.07	35.28	9.63	0.02	QP
3	0.165	34.14	55.21	-21.07	24.49	9.63	0.02	Average
4	0.165	43.77	65.21	-21.44	34.12	9.63	0.02	QP
5@	0.456	37.20	46.76	-9.56	27.54	9.63	0.03	Average
6	0.456	40.70	56.76	-16.06	31.04	9.63	0.03	QP
7	3.779	27.23	46.00	-18.77	17.47	9.64	0.12	Average
8	3.779	35.97	56.00	-20.03	26.21	9.64	0.12	QP
9	4.598	25.98	46.00	-20.02	16.20	9.65	0.13	Average
10	4.598	37.26	56.00	-18.74	27.48	9.65	0.13	QP
11	5.505	29.73	50.00	-20.27	19.95	9.65	0.13	Average
12	5.505	37.08	60.00	-22.92	27.30	9.65	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	HT20	Test Freq. (MHz)	2437
Power Phase	Neutral		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.156	32.54	55.65	-23.11	22.90	9.62	0.02	Average
2	0.156	43.90	65.65	-21.75	34.26	9.62	0.02	QP
3	0.177	26.95	54.64	-27.69	17.31	9.62	0.02	Average
4	0.177	38.31	64.64	-26.33	28.67	9.62	0.02	QP
5@	0.442	33.85	47.02	-13.17	24.19	9.63	0.03	Average
6	0.442	36.91	57.02	-20.11	27.25	9.63	0.03	QP
7	4.647	25.68	46.00	-20.32	15.91	9.64	0.13	Average
8	4.647	35.94	56.00	-20.06	26.17	9.64	0.13	QP
9	5.419	26.58	50.00	-23.42	16.80	9.65	0.13	Average
10	5.419	31.07	60.00	-28.93	21.29	9.65	0.13	QP
11	19.635	23.11	50.00	-26.89	13.16	9.78	0.17	Average
12	19.635	32.43	60.00	-27.57	22.48	9.78	0.17	QP

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

3.2 6dB and Occupied Bandwidth

3.2.1 Limit of 6dB Bandwidth

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

3.2.2 Test Procedures

6dB Bandwidth

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

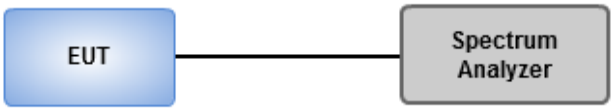
Occupied Bandwidth

1. Set resolution bandwidth (RBW) = 1 MHz, Video bandwidth = 3 MHz.
2. Detector = Sample, Trace mode = max hold.

3 Sweep = auto couple, Allow the trace to stabilize.

4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

3.2.3 Test Setup

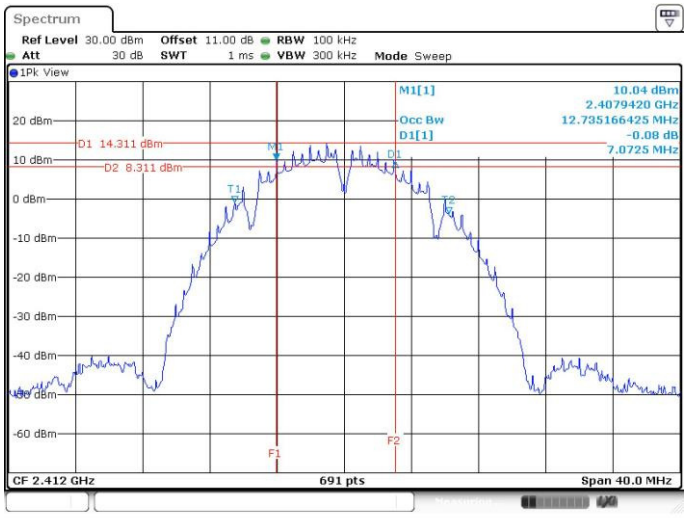


3.2.4 Test Result of 6dB and Occupied Bandwidth

Non-beamforming mode

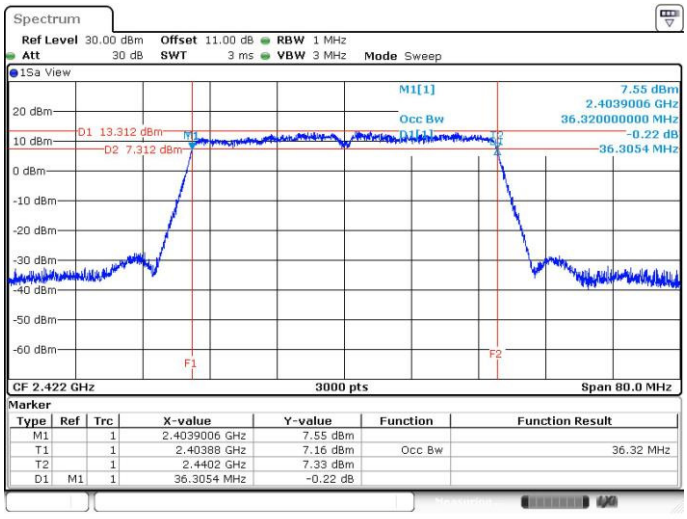
Modulation Mode	N_{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
11b	4	2412	8.06	7.07	8.06	8.06	500
11b	4	2437	8.06	7.07	8.06	8.06	500
11b	4	2462	8.06	7.07	7.07	8.06	500
11g	4	2412	15.88	16.29	15.30	15.88	500
11g	4	2437	16.35	15.65	15.88	16.06	500
11g	4	2462	16.29	16.00	15.30	16.29	500
HT20	4	2412	16.52	15.65	15.25	15.71	500
HT20	4	2437	16.93	16.52	15.94	15.65	500
HT20	4	2462	17.57	16.29	17.16	16.29	500
HT40	4	2422	35.01	35.13	35.25	35.13	500
HT40	4	2437	35.01	35.25	35.25	35.25	500
HT40	4	2452	35.01	35.25	35.25	35.13	500

Worst Plot



Modulation Mode	N_{TX}	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
11b	4	2412	12.87	12.83	12.95	12.91
11b	4	2437	12.91	12.87	12.44	12.67
11b	4	2462	12.83	12.71	12.68	12.68
11g	4	2412	16.43	16.44	16.36	16.41
11g	4	2437	16.45	16.47	16.37	16.43
11g	4	2462	16.43	16.41	16.39	16.44
HT20	4	2412	17.59	17.59	17.52	17.56
HT20	4	2437	17.55	17.53	17.51	17.56
HT20	4	2462	17.56	17.55	17.51	17.57
HT40	4	2422	36.08	36.13	36.32	36.27
HT40	4	2437	36.08	36.24	36.32	36.21
HT40	4	2452	36.05	36.29	36.32	36.21

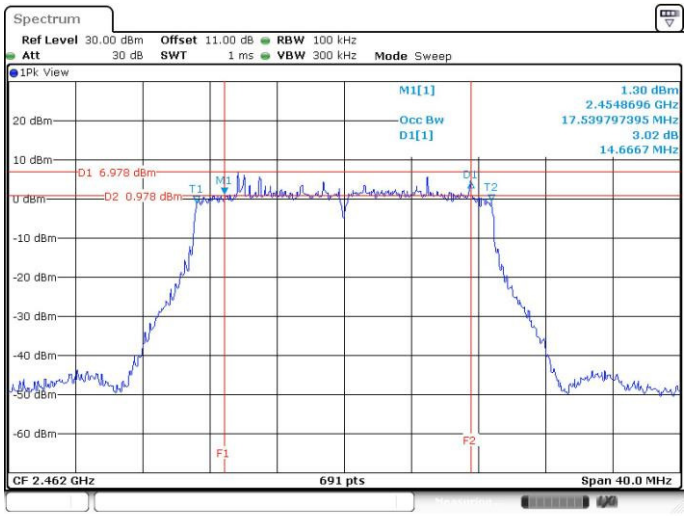
Worst Plot



Beamforming mode

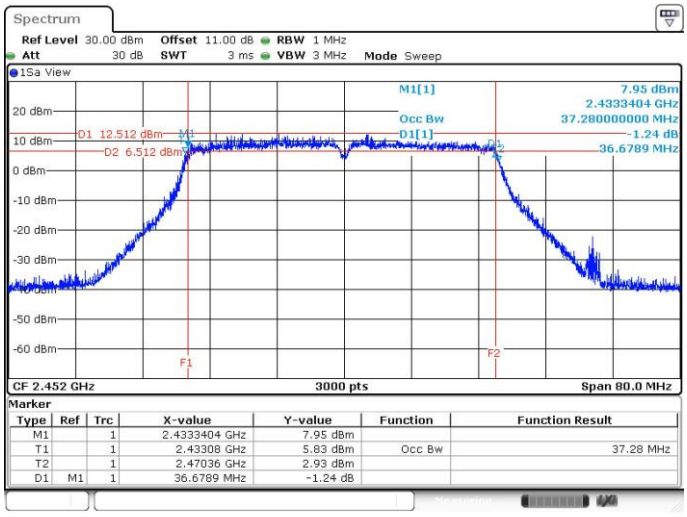
Modulation Mode	N_{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
HT20	4	2412	17.28	17.57	16.64	16.99	500
HT20	4	2437	17.16	16.81	15.83	15.88	500
HT20	4	2462	15.71	15.88	15.77	14.67	500
HT40	4	2422	36.87	35.36	36.29	35.83	500
HT40	4	2437	36.06	36.52	36.64	36.17	500
HT40	4	2452	36.75	36.41	32.81	35.36	500

Worst Plot



Modulation Mode	N_{TX}	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
HT20	4	2412	17.68	17.65	17.53	17.59
HT20	4	2437	17.63	17.59	17.53	17.59
HT20	4	2462	17.61	17.57	17.56	17.59
HT40	4	2422	37.01	36.72	36.85	37.23
HT40	4	2437	37.23	37.07	36.99	36.88
HT40	4	2452	37.07	37.17	37.28	37.04

Worst Plot



3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

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

☐ Antenna gain > 6dBi

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

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

3.3.2 Test Procedures

☐ Maximum Peak Conducted Output Power

- ☐ **Spectrum analyzer**
  1. Set RBW = 1MHz, VBW = 3MHz, Detector = Peak.
  2. Sweep time = auto, Trace mode = max hold, Allow trace to fully stabilize.
  3. Use the spectrum analyzer channel power measurement function with the band limits set equal to the DTS bandwidth edges.
- ☐ **Power meter**
  1. A broadband Peak RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

☒ Maximum Conducted Output Power

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

3.3.3 Test Setup

3.3.4 Test Result of Maximum Output Power

Non-beamforming mode

Modulation Mode	N_{TX}	Freq. (MHz)	Conducted (Average) Output Power (dBm)							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	4	2412	21.11	21.73	21.49	21.39	556.708	27.46	30.00	2.25	29.71	36.00
11b	4	2437	23.49	23.43	23.51	23.31	882.327	**29.46**	30.00	2.25	31.71	36.00
11b	4	2462	21.74	21.48	21.69	21.68	584.686	27.67	30.00	2.25	29.92	36.00
11g	4	2412	21.02	21.43	21.35	21.18	533.147	27.27	30.00	2.25	29.52	36.00
11g	4	2437	23.04	23.25	23.12	23.06	820.139	29.14	30.00	2.25	31.39	36.00
11g	4	2462	22.49	21.55	21.47	21.36	597.363	27.76	30.00	2.25	30.01	36.00
HT20	4	2412	20.14	20.21	20.07	20.14	413.131	26.16	30.00	2.25	28.41	36.00
HT20	4	2437	22.38	22.51	22.45	22.35	698.803	28.44	30.00	2.25	30.69	36.00
HT20	4	2462	20.13	20.35	20.18	20.03	416.356	26.19	30.00	2.25	28.44	36.00
HT40	4	2422	18.11	18.34	18.05	18.14	261.937	24.18	30.00	2.25	26.43	36.00
HT40	4	2437	20.63	20.72	20.53	20.55	460.124	26.63	30.00	2.25	28.88	36.00
HT40	4	2452	18.65	18.66	18.59	18.47	289.318	24.61	30.00	2.25	26.86	36.00

Beamforming mode

Modulation Mode	N_{TX}	Freq. (MHz)	Conducted (Average) 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)			
HT20	4	2412	16.82	16.89	17.02	16.83	195.494	22.91	28.30	7.70	30.61	36.00
HT20	4	2437	20.65	20.95	20.89	20.76	482.464	26.83	28.30	7.70	34.53	36.00
HT20	4	2462	17.25	17.43	17.22	17.29	214.726	23.32	28.30	7.70	31.02	36.00
HT40	4	2422	14.53	14.78	14.53	14.62	115.793	20.64	28.30	7.70	28.34	36.00
HT40	4	2437	17.89	17.53	17.78	17.53	234.745	23.71	28.30	7.70	31.41	36.00
HT40	4	2452	15.52	15.59	15.47	15.78	144.951	21.61	28.30	7.70	29.31	36.00

Note:

Directional gain = 10 * log((10$^{2.17/20}$+10$^{1.08/20}$+10$^{2.25/20}$+10$^{1.16/20}$)^2/4) = 7.70 dBi > 6 dBi

Limit shall be reduced to 30 dBm – (7.70 dBi – 6 dBi) = 28.30 dBm

3.4 Power Spectral Density

3.4.1 Limit of Power Spectral Density

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

3.4.2 Test Procedures

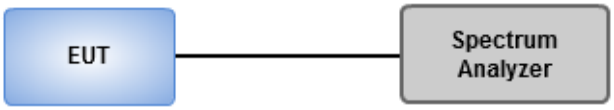
☒ Method AVGPSD-1 (For non-Beamforming mode)

1. Set the RBW = 30kHz, VBW = 100kHz.
2. Detector = RMS, Sweep time = auto couple.
3. Employ trace averaging (RMS) mode over a minimum of 100 traces.
4. Use the peak marker function to determine the maximum amplitude level.

☒ Method AVGPSD-2 Alternative(For Beamforming mode)

1. Set the RBW = 30kHz, VBW = 100 kHz, Detector = RMS
2. Manually set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (total on/off period of the transmitted signal).
3. Perform the measurement over a single sweep.
4. Use the peak marker function to determine the maximum amplitude level.
5. Add 10 log (1/x), where x is the duty cycle

3.4.3 Test Setup



3.4.4 Test Result of Power Spectral Density

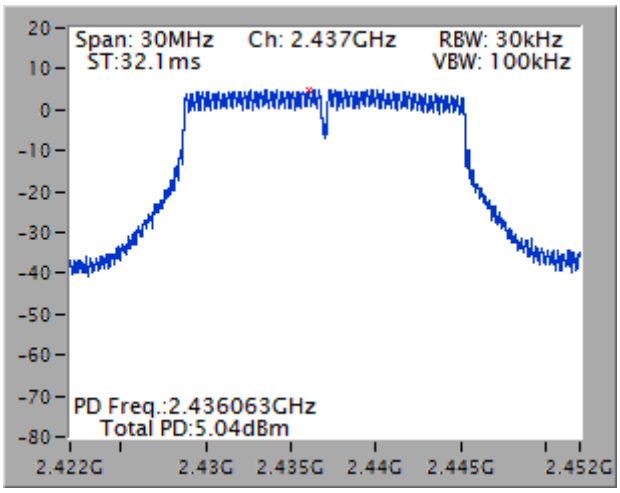
Non-beamforming mode

Modulation Mode	N_{TX}	Freq. (MHz)	PPSD w/o D.F (dBm/30kHz)	Duty Factor (dB)	PPSD with D.F (dBm/30kHz)	Limit (dBm/3kHz)
11b	4	2412	1.37	0.00	1.37	8.00
11b	4	2437	3.36	0.00	3.36	8.00
11b	4	2462	1.75	0.00	1.75	8.00
11g	4	2412	3.45	0.00	3.45	8.00
11g	4	2437	5.04	0.00	5.04	8.00
11g	4	2462	3.71	0.00	3.71	8.00
HT20	4	2412	2.30	0.00	2.30	8.00
HT20	4	2437	4.33	0.00	4.33	8.00
HT20	4	2462	3.21	0.00	3.21	8.00
HT40	4	2422	-3.14	0.00	-3.14	8.00
HT40	4	2437	-0.52	0.00	-0.52	8.00
HT40	4	2452	-2.74	0.00	-2.74	8.00

Note 1: Test result is bin-by-bin summing measured value of each TX port.

Note 2: D.F is duty factor

Worst Plot



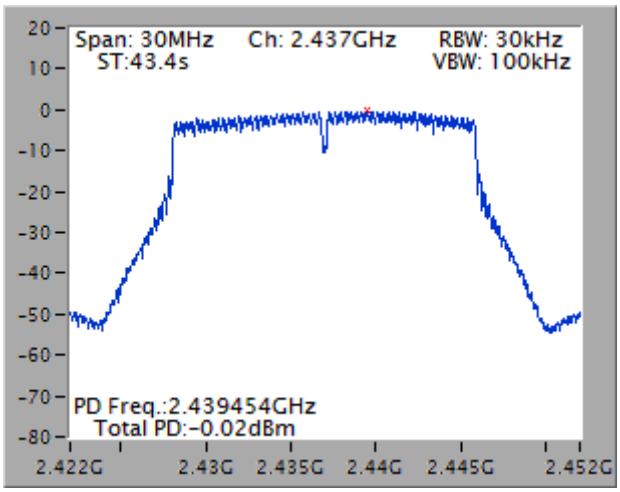
Beamforming mode

Modulation Mode	N_{TX}	Freq. (MHz)	PPSD w/o D.F (dBm/30kHz)	Duty Factor (dB)	PPSD with D.F (dBm/30kHz)	Limit (dBm/3kHz)
HT20	4	2412	-4.49	0.25	-4.24	8.00
HT20	4	2437	-0.02	0.25	0.23	8.00
HT20	4	2462	-3.89	0.25	-3.64	8.00
HT40	4	2422	-8.39	0.38	-8.01	8.00
HT40	4	2437	-5.02	0.38	-4.64	8.00
HT40	4	2452	-7.05	0.38	-6.67	8.00

Note 1: Test result is bin-by-bin summing measured value of each TX port.

Note 2: D.F is duty factor

Worst Plot



Note: Test plot without duty factor

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

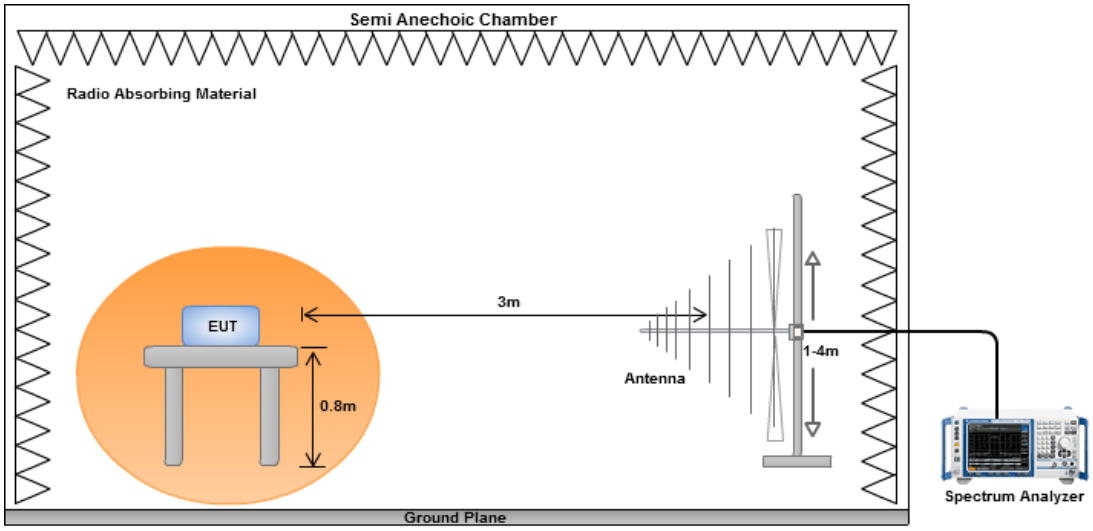
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

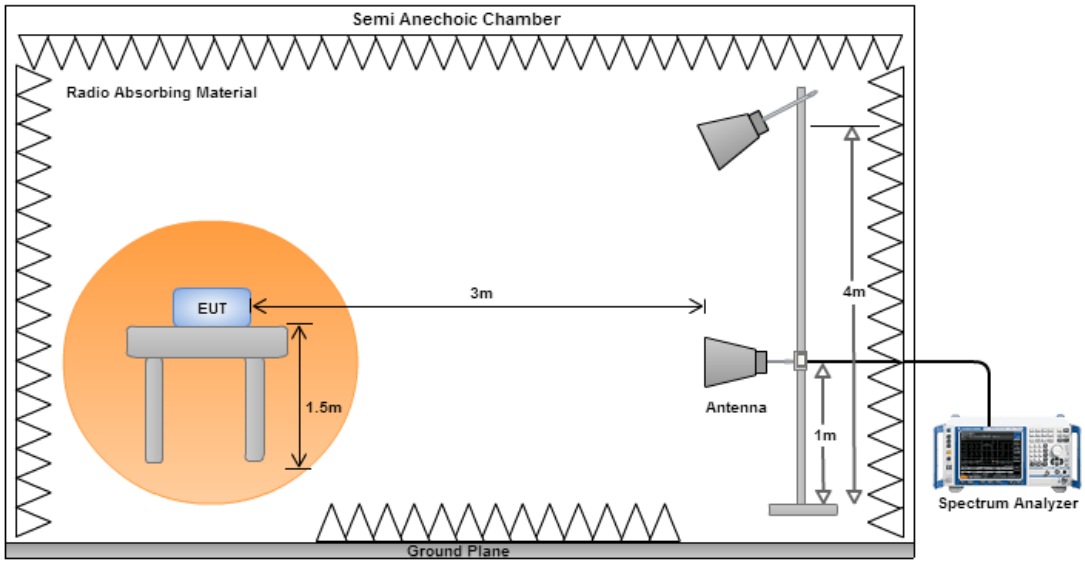
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.
4. Final tests are performed with the beam locked at the worst-case orientation determined in the baseline scan(methodology for circular beamforming pattern) for beamforming mode.

3.5.3 Test Setup

Radiated Emissions below 1 GHz



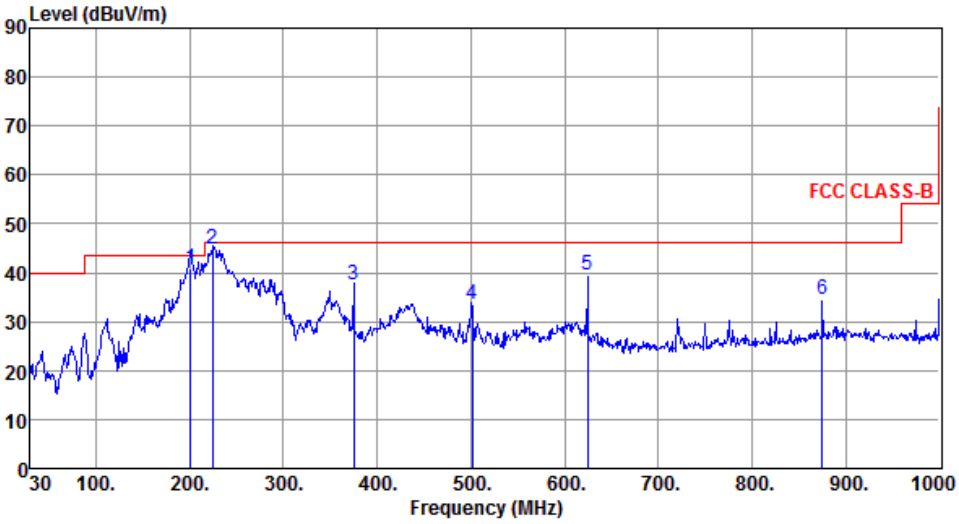
Radiated Emissions above 1 GHz



Non-beamforming mode

3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

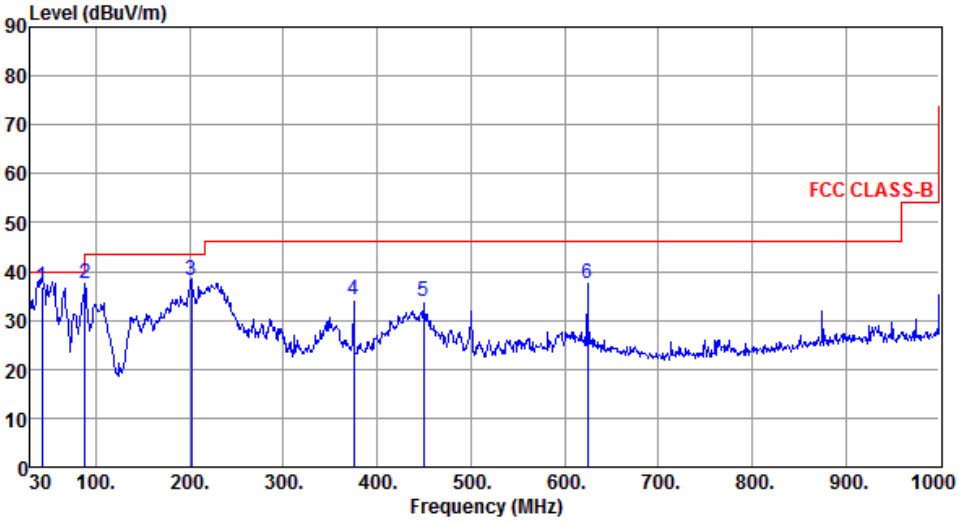
Modulation	11b	**Test Freq. (MHz)**	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	200.65	40.71	43.50	-2.79	60.00	-19.29	QP	100	188
2	224.53	44.73	46.00	-1.27	63.55	-18.82	QP	100	346
3	375.25	37.53	46.00	-8.47	51.63	-14.10	Peak	---	---
4	501.45	33.56	46.00	-12.44	44.66	-11.10	Peak	---	---
5	624.73	39.41	46.00	-6.59	48.51	-9.10	Peak	---	---
6	874.55	34.69	46.00	-11.31	40.26	-5.57	Peak	---	---

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

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

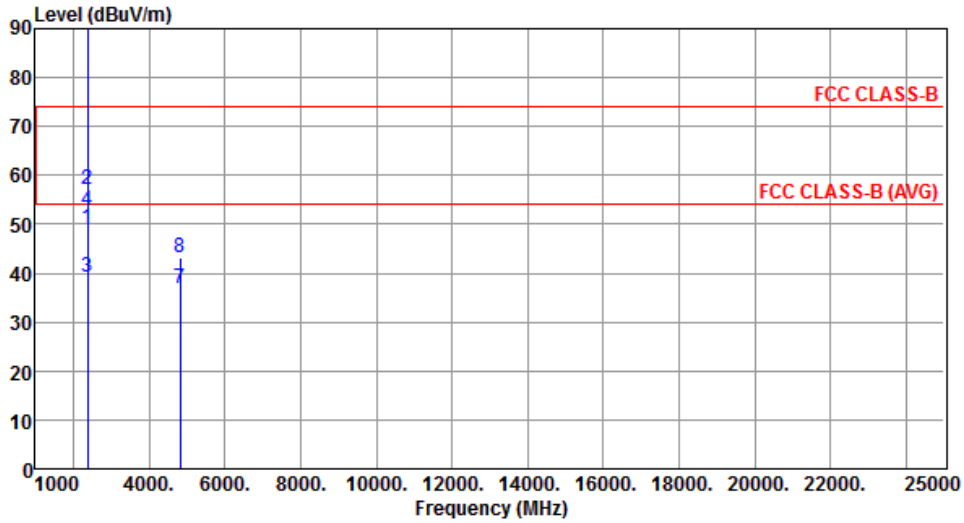


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	42.55	36.78	40.00	-3.22	53.35	-16.57	QP	100	15
2	88.20	37.53	43.50	-5.97	60.21	-22.68	Peak	---	---
3	201.69	38.19	43.50	-5.31	57.49	-19.30	Peak	---	---
4	375.32	34.15	46.00	-11.85	48.25	-14.10	Peak	---	---
5	450.01	33.81	46.00	-12.19	45.98	-12.17	Peak	---	---
6	624.61	37.40	46.00	-8.60	46.51	-9.11	Peak	---	---

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

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

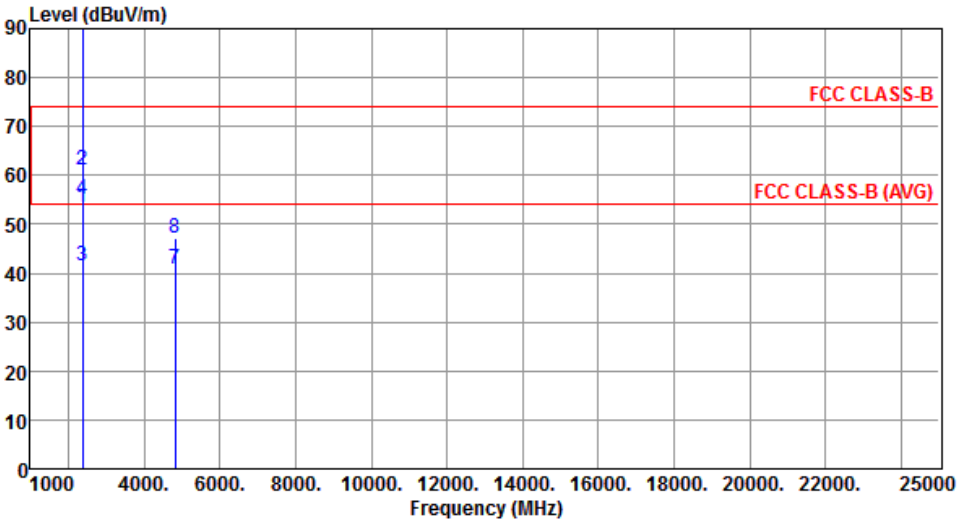
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2370.00	49.27	54.00	-4.73	52.69	-3.42	Average	243	319
2		2370.00	57.04	74.00	-16.96	60.46	-3.42	Peak	243	319
3		2390.00	39.32	54.00	-14.68	42.67	-3.35	Average	243	319
4		2390.00	52.75	74.00	-21.25	56.10	-3.35	Peak	243	319
5	*	2412.00	108.14			111.39	-3.25	Average	243	319
6	*	2412.00	110.68			113.93	-3.25	Peak	243	319
7		4824.00	36.82	54.00	-17.18	33.23	3.59	Average	275	111
8		4824.00	43.28	74.00	-30.72	39.69	3.59	Peak	275	111

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:"*" is Peak / Average value of fundamental frequency

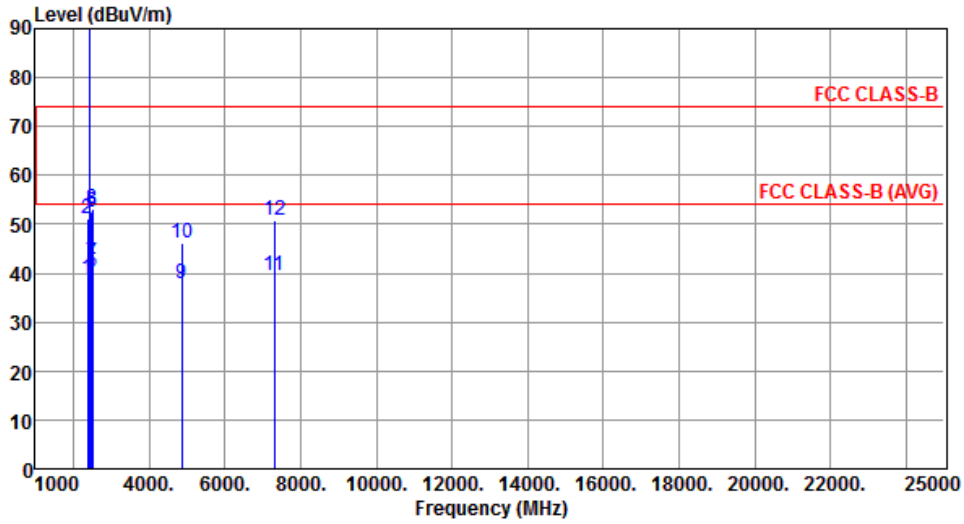
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2370.00	53.53	54.00	-0.47	56.95	-3.42	Average	100	209
2		2370.00	61.20	74.00	-12.80	64.62	-3.42	Peak	100	209
3		2390.00	41.44	54.00	-12.56	44.79	-3.35	Average	100	205
4		2390.00	54.99	74.00	-19.01	58.34	-3.35	Peak	100	205
5	*	2412.00	116.27			119.52	-3.25	Average	100	205
6	*	2412.00	118.88			122.13	-3.25	Peak	100	205
7		4824.00	40.70	54.00	-13.30	37.11	3.59	Average	159	150
8		4824.00	47.27	74.00	-26.73	43.68	3.59	Peak	159	150

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:"*" is Peak / Average value of fundamental frequency

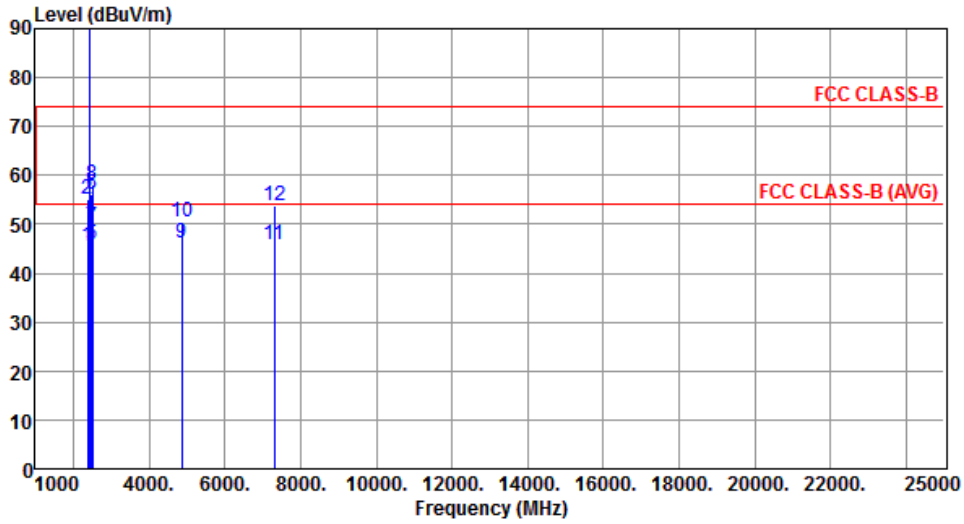
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	38.77	54.00	-15.23	42.12	-3.35	Average	247	312
2		2390.00	51.03	74.00	-22.97	54.38	-3.35	Peak	247	312
3	*	2437.00	109.69			112.82	-3.13	Average	247	312
4	*	2437.00	112.30			115.43	-3.13	Peak	247	312
5		2483.50	40.18	54.00	-13.82	43.11	-2.93	Average	247	312
6		2483.50	52.50	74.00	-21.50	55.43	-2.93	Peak	247	312
7		2500.00	42.05	54.00	-11.95	44.91	-2.86	Average	247	312
8		2500.00	53.26	74.00	-20.74	56.12	-2.86	Peak	247	312
9		4874.00	37.72	54.00	-16.28	33.97	3.75	Average	278	112
10		4874.00	46.11	74.00	-27.89	42.36	3.75	Peak	278	112
11		7311.00	39.65	54.00	-14.35	31.23	8.42	Average	100	297
12		7311.00	50.78	74.00	-23.22	42.36	8.42	Peak	100	297

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

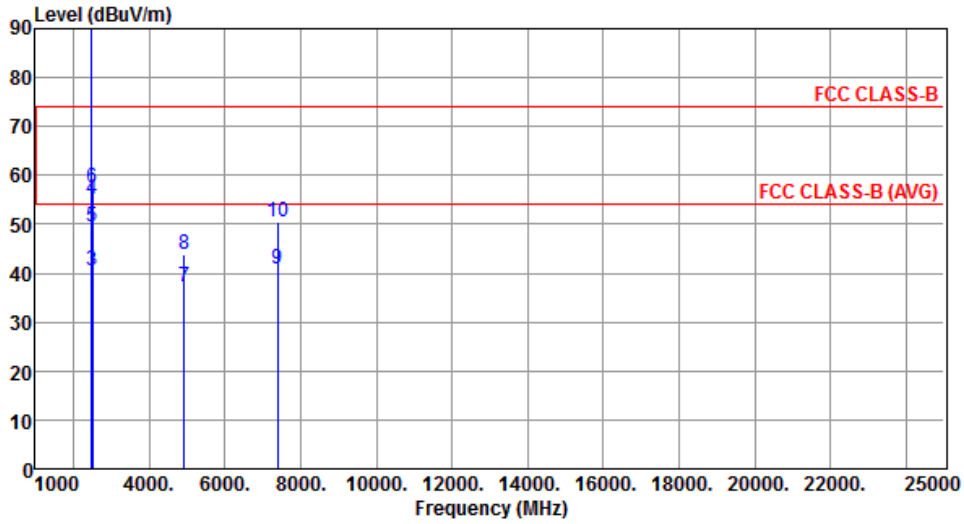
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	45.45	54.00	-8.55	48.80	-3.35	Average	106	219
2		2390.00	55.09	74.00	-18.91	58.44	-3.35	Peak	106	219
3	*	2437.00	118.93			122.06	-3.13	Average	106	219
4	*	2437.00	121.59			124.72	-3.13	Peak	106	219
5		2483.50	45.99	54.00	-8.01	48.92	-2.93	Average	106	219
6		2483.50	56.19	74.00	-17.81	59.12	-2.93	Peak	106	219
7		2500.00	49.33	54.00	-4.67	52.19	-2.86	Average	122	215
8		2500.00	58.07	74.00	-15.93	60.93	-2.86	Peak	122	215
9		4874.00	46.31	54.00	-7.69	42.56	3.75	Average	327	18
10		4874.00	50.35	74.00	-23.65	46.60	3.75	Peak	327	18
11		7311.00	45.71	54.00	-8.29	37.29	8.42	Average	397	25
12		7311.00	53.75	74.00	-20.25	45.33	8.42	Peak	397	25

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:"*" is Peak / Average value of fundamental frequency

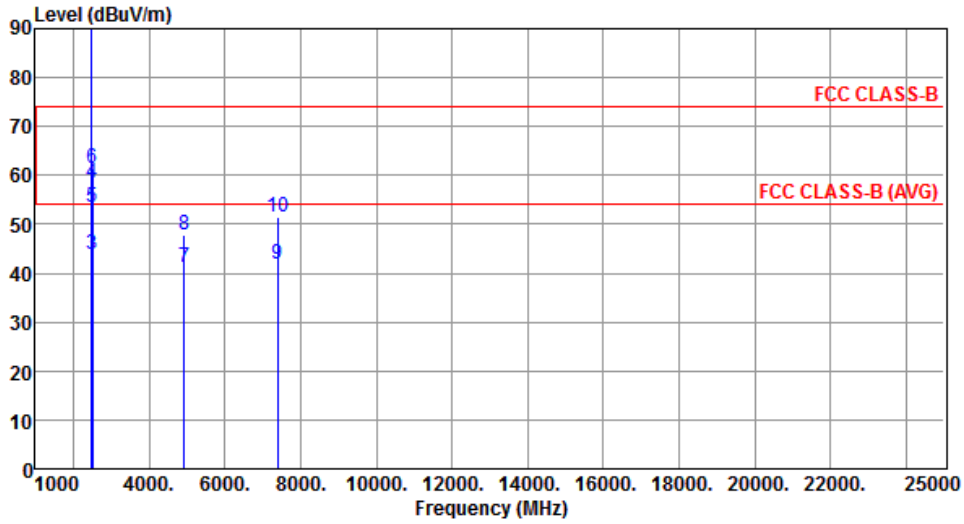
Modulation	11b	Test Freq. (MHz)	2462
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	108.27			111.30	-3.03	Average	243	315
2	*	2462.00	111.12			114.15	-3.03	Peak	243	315
3		2483.50	40.65	54.00	-13.35	43.58	-2.93	Average	243	315
4		2483.50	55.25	74.00	-18.75	58.18	-2.93	Peak	243	315
5		2500.00	49.54	54.00	-4.46	52.40	-2.86	Average	243	315
6		2500.00	57.48	74.00	-16.52	60.34	-2.86	Peak	243	315
7		4924.00	37.12	54.00	-16.88	33.21	3.91	Average	275	104
8		4924.00	43.83	74.00	-30.17	39.92	3.91	Peak	275	104
9		7386.00	40.85	54.00	-13.15	32.39	8.46	Average	107	293
10		7386.00	50.33	74.00	-23.67	41.87	8.46	Peak	107	293

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:"*" is Peak / Average value of fundamental frequency

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

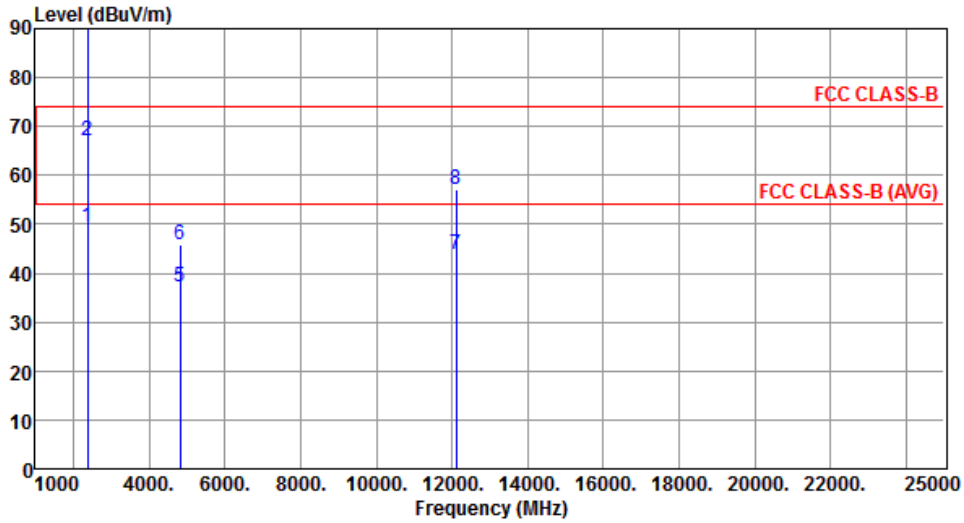


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	116.39			119.42	-3.03	Average	128	223
2	*	2462.00	119.16			122.19	-3.03	Peak	128	223
3		2483.50	43.72	54.00	-10.28	46.65	-2.93	Average	128	223
4		2483.50	58.50	74.00	-15.50	61.43	-2.93	Peak	128	223
5		2500.00	53.63	54.00	-0.37	56.49	-2.86	Average	142	220
6		2500.00	61.57	74.00	-12.43	64.43	-2.86	Peak	142	220
7		4924.00	41.08	54.00	-12.92	37.17	3.91	Average	106	46
8		4924.00	47.95	74.00	-26.05	44.04	3.91	Peak	106	46
9		7386.00	41.99	54.00	-12.01	33.53	8.46	Average	102	252
10		7386.00	51.61	74.00	-22.39	43.15	8.46	Peak	102	252

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:"*" is Peak / Average value of fundamental frequency

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

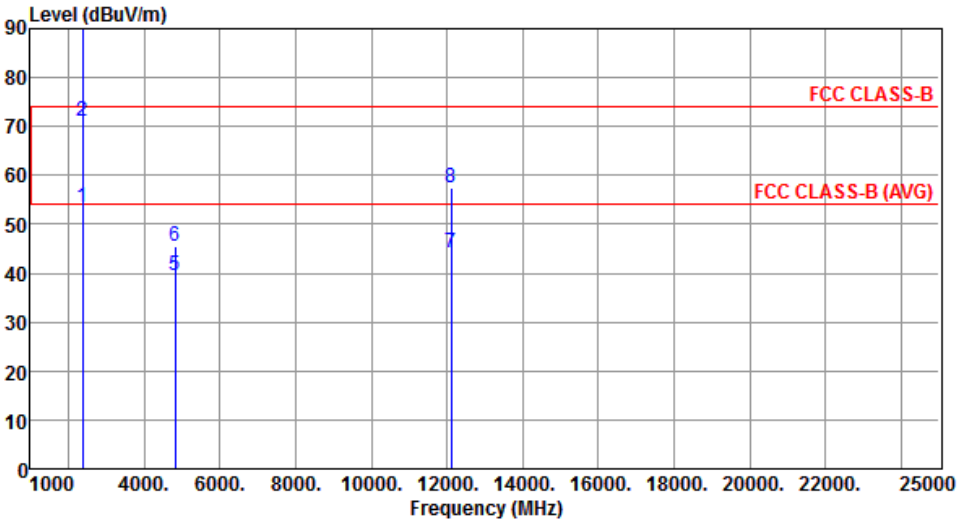
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	49.57	54.00	-4.43	52.92	-3.35	Average	268	113
2		2390.00	67.02	74.00	-6.98	70.37	-3.35	Peak	268	113
3	*	2412.00	101.46			104.71	-3.25	Average	268	113
4	*	2412.00	114.35			117.60	-3.25	Peak	268	113
5		4824.00	37.28	54.00	-16.72	33.69	3.59	Average	270	113
6		4824.00	45.72	74.00	-28.28	42.13	3.59	Peak	270	113
7		12100.00	43.95	54.00	-10.05	29.79	14.16	Average	185	183
8		12100.00	57.16	74.00	-16.84	43.00	14.16	Peak	185	183

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:"*" is Peak / Average value of fundamental frequency

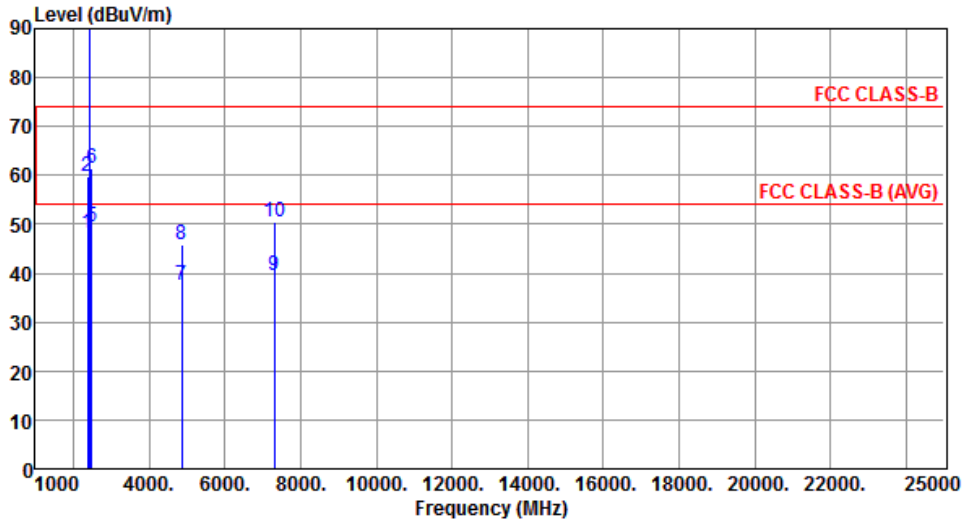
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.62	54.00	-0.38	56.97	-3.35	Average	284	167
2		2390.00	71.15	74.00	-2.85	74.50	-3.35	Peak	284	167
3	*	2412.00	109.58			112.83	-3.25	Average	315	186
4	*	2412.00	122.41			125.66	-3.25	Peak	315	186
5		4824.00	39.56	54.00	-14.44	35.97	3.59	Average	318	16
6		4824.00	45.37	74.00	-28.63	41.78	3.59	Peak	318	16
7		12100.00	44.29	54.00	-9.71	30.13	14.16	Average	100	133
8		12100.00	57.60	74.00	-16.40	43.44	14.16	Peak	100	133

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

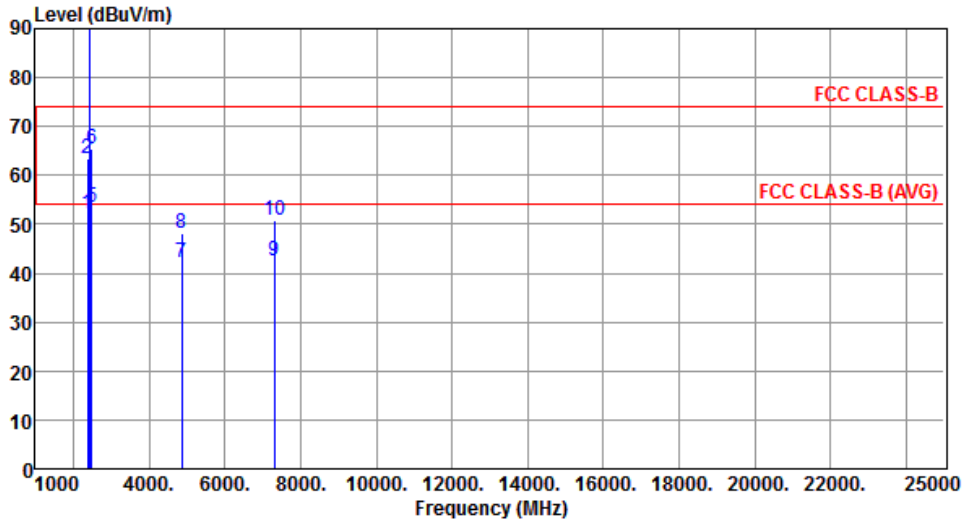
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	48.21	54.00	-5.79	51.56	-3.35	Average	238	316
2		2390.00	59.62	74.00	-14.38	62.97	-3.35	Peak	238	316
3	*	2437.00	102.85			105.98	-3.13	Average	238	316
4	*	2437.00	115.67			118.80	-3.13	Peak	238	316
5		2483.50	49.43	54.00	-4.57	52.36	-2.93	Average	238	316
6		2483.50	61.34	74.00	-12.66	64.27	-2.93	Peak	238	316
7		4874.00	37.54	54.00	-16.46	33.79	3.75	Average	275	119
8		4874.00	45.89	74.00	-28.11	42.14	3.75	Peak	275	119
9		7311.00	39.56	54.00	-14.44	31.14	8.42	Average	100	291
10		7311.00	50.52	74.00	-23.48	42.10	8.42	Peak	100	291

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:"*" is Peak / Average value of fundamental frequency

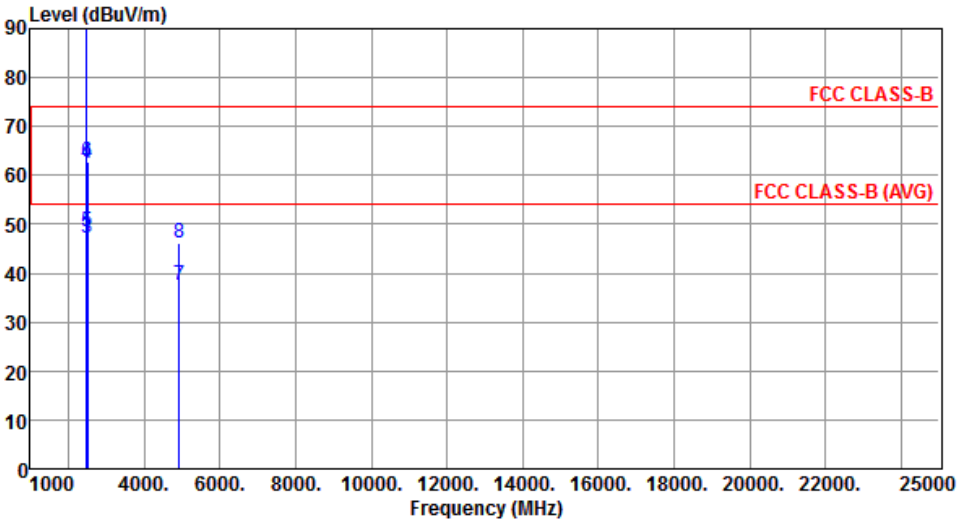
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	52.05	54.00	-1.95	55.40	-3.35	Average	140	111
2		2390.00	63.55	74.00	-10.45	66.90	-3.35	Peak	140	111
3	*	2437.00	110.97			114.10	-3.13	Average	176	119
4	*	2437.00	123.89			127.02	-3.13	Peak	176	119
5		2483.50	53.56	54.00	-0.44	56.49	-2.93	Average	178	177
6		2483.50	65.42	74.00	-8.58	68.35	-2.93	Peak	178	177
7		4874.00	42.25	54.00	-11.75	38.50	3.75	Average	321	12
8		4874.00	48.06	74.00	-25.94	44.31	3.75	Peak	321	12
9		7311.00	42.56	54.00	-11.44	34.14	8.42	Average	382	19
10		7311.00	50.92	74.00	-23.08	42.50	8.42	Peak	382	19

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:"*" is Peak / Average value of fundamental frequency

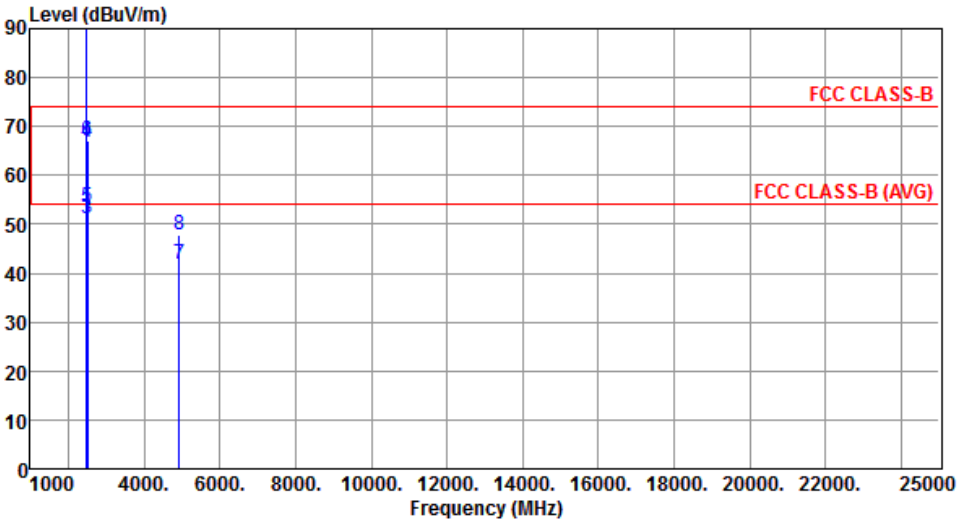
Modulation	11g	Test Freq. (MHz)	2462
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	100.75			103.78	-3.03	Average	249	317
2	*	2462.00	113.83			116.86	-3.03	Peak	249	317
3		2483.50	47.21	54.00	-6.79	50.14	-2.93	Average	249	317
4		2483.50	62.54	74.00	-11.46	65.47	-2.93	Peak	249	317
5		2500.00	48.38	54.00	-5.62	51.24	-2.86	Average	249	317
6		2500.00	62.88	74.00	-11.12	65.74	-2.86	Peak	249	317
7		4924.00	37.43	54.00	-16.57	33.52	3.91	Average	263	109
8		4924.00	46.10	74.00	-27.90	42.19	3.91	Peak	263	109

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:"*" is Peak / Average value of fundamental frequency

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

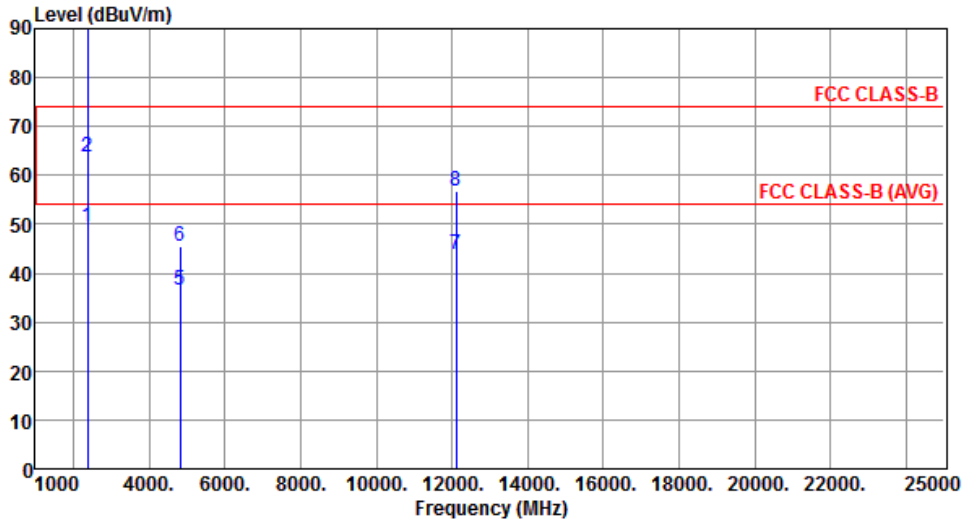


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	108.86			111.89	-3.03	Average	169	113
2	*	2462.00	121.69			124.72	-3.03	Peak	169	113
3		2483.50	51.06	54.00	-2.94	53.99	-2.93	Average	160	141
4		2483.50	66.62	74.00	-7.38	69.55	-2.93	Peak	160	141
5		2500.00	53.60	54.00	-0.40	56.46	-2.86	Average	249	132
6		2500.00	66.92	74.00	-7.08	69.78	-2.86	Peak	249	132
7		4924.00	41.83	54.00	-12.17	37.92	3.91	Average	312	23
8		4924.00	47.80	74.00	-26.20	43.89	3.91	Peak	312	23

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:"*" is Peak / Average value of fundamental frequency

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

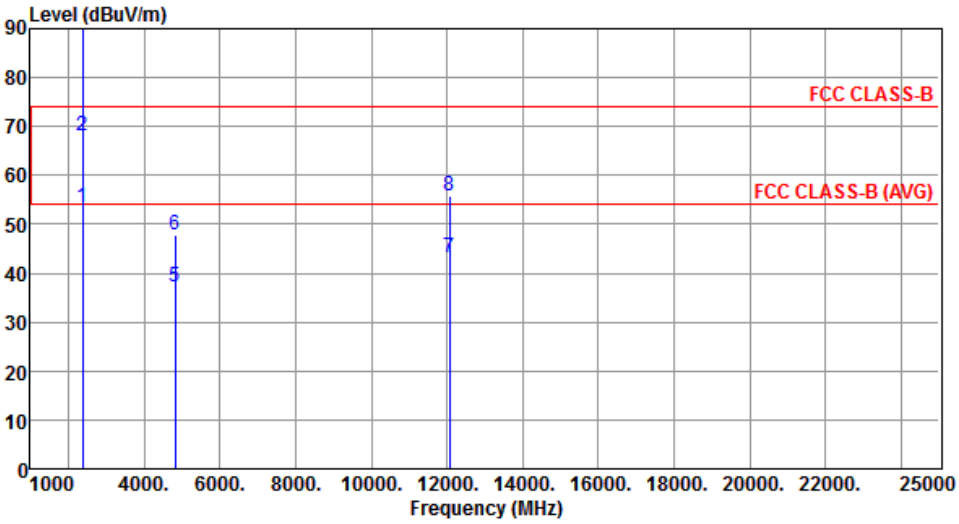
Modulation	HT20	**Test Freq. (MHz)**	2412
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	49.45	54.00	-4.55	52.80	-3.35	Average	243	319
2		2390.00	63.86	74.00	-10.14	67.21	-3.35	Peak	243	319
3	*	2412.00	101.37			104.62	-3.25	Average	243	319
4	*	2412.00	113.08			116.33	-3.25	Peak	243	319
5		4824.00	36.52	54.00	-17.48	32.93	3.59	Average	273	119
6		4824.00	45.65	74.00	-28.35	42.06	3.59	Peak	273	119
7		12100.00	43.84	54.00	-10.16	29.68	14.16	Average	114	175
8		12100.00	56.86	74.00	-17.14	42.70	14.16	Peak	114	175

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:"*" is Peak / Average value of fundamental frequency

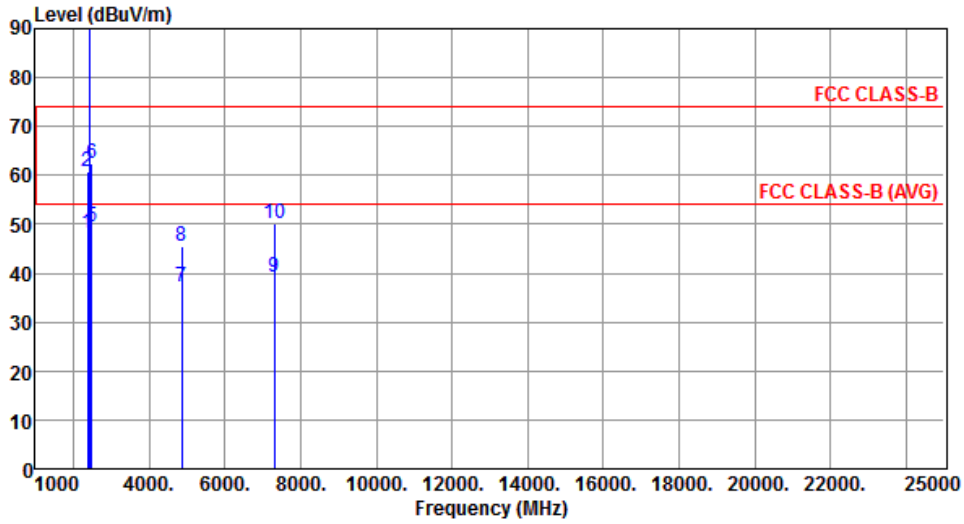
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.52	54.00	-0.48	56.87	-3.35	Average	140	217
2		2390.00	68.01	74.00	-5.99	71.36	-3.35	Peak	140	217
3	*	2412.00	109.53			112.78	-3.25	Average	303	255
4	*	2412.00	121.24			124.49	-3.25	Peak	303	255
5		4824.00	37.12	54.00	-16.88	33.53	3.59	Average	344	232
6		4824.00	47.91	74.00	-26.09	44.32	3.59	Peak	344	232
7		12060.00	43.28	54.00	-10.72	29.15	14.13	Average	222	168
8		12060.00	55.81	74.00	-18.19	41.68	14.13	Peak	222	168

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

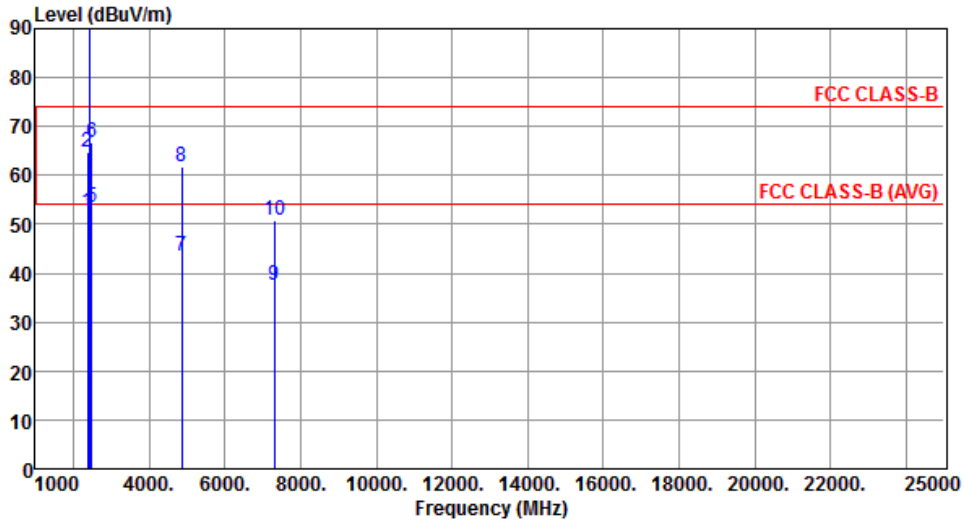
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	48.22	54.00	-5.78	51.57	-3.35	Average	243	305
2		2390.00	60.74	74.00	-13.26	64.09	-3.35	Peak	243	305
3	*	2437.00	103.84			106.97	-3.13	Average	243	305
4	*	2437.00	115.07			118.20	-3.13	Peak	243	305
5		2483.50	49.51	54.00	-4.49	52.44	-2.93	Average	243	305
6		2483.50	62.37	74.00	-11.63	65.30	-2.93	Peak	243	305
7		4874.00	37.12	54.00	-16.88	33.37	3.75	Average	278	111
8		4874.00	45.34	74.00	-28.66	41.59	3.75	Peak	278	111
9		7311.00	39.24	54.00	-14.76	30.82	8.42	Average	100	298
10		7311.00	50.15	74.00	-23.85	41.73	8.42	Peak	100	298

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

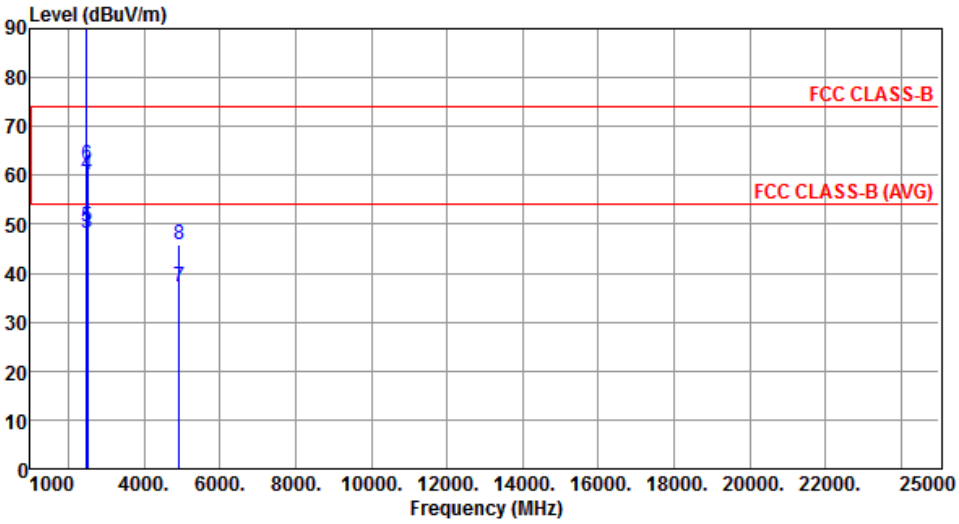
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	52.31	54.00	-1.69	55.66	-3.35	Average	141	113
2		2390.00	64.85	74.00	-9.15	68.20	-3.35	Peak	141	113
3	*	2437.00	111.90			115.03	-3.13	Average	332	179
4	*	2437.00	123.23			126.36	-3.13	Peak	332	179
5		2483.50	53.62	54.00	-0.38	56.55	-2.93	Average	140	183
6		2483.50	66.60	74.00	-7.40	69.53	-2.93	Peak	140	183
7		4874.00	43.62	54.00	-10.38	39.87	3.75	Average	265	333
8		4874.00	61.65	74.00	-12.35	57.90	3.75	Peak	265	333
9		7311.00	37.39	54.00	-16.61	28.97	8.42	Average	222	122
10		7311.00	50.78	74.00	-23.22	42.36	8.42	Peak	222	122

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:"*" is Peak / Average value of fundamental frequency

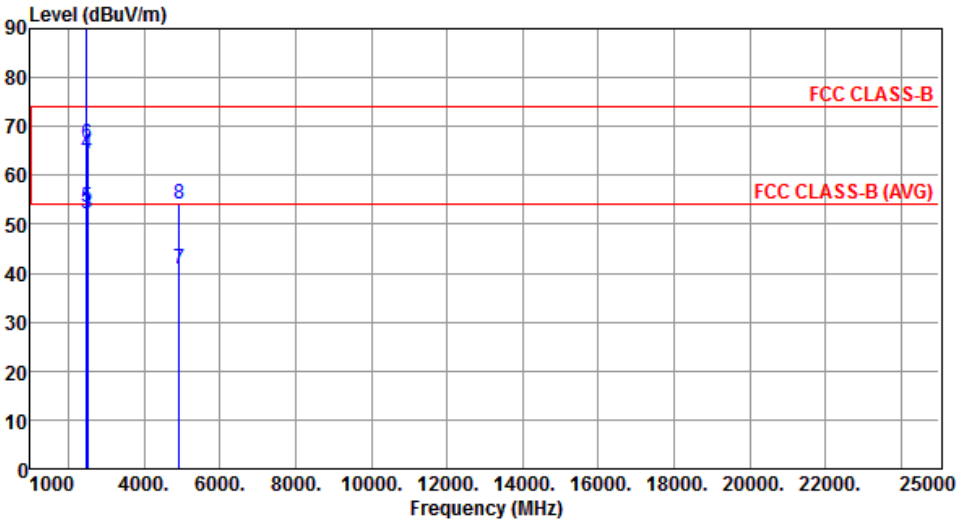
Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	101.74			104.77	-3.03	Average	240	319
2	*	2462.00	113.83			116.86	-3.03	Peak	240	319
3		2483.50	48.12	54.00	-5.88	51.05	-2.93	Average	240	319
4		2483.50	60.27	74.00	-13.73	63.20	-2.93	Peak	240	319
5		2500.00	49.41	54.00	-4.59	52.27	-2.86	Average	240	319
6		2500.00	62.10	74.00	-11.90	64.96	-2.86	Peak	240	319
7		4924.00	37.35	54.00	-16.65	33.44	3.91	Average	254	101
8		4924.00	45.96	74.00	-28.04	42.05	3.91	Peak	254	101

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:"*" is Peak / Average value of fundamental frequency

Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Vertical		

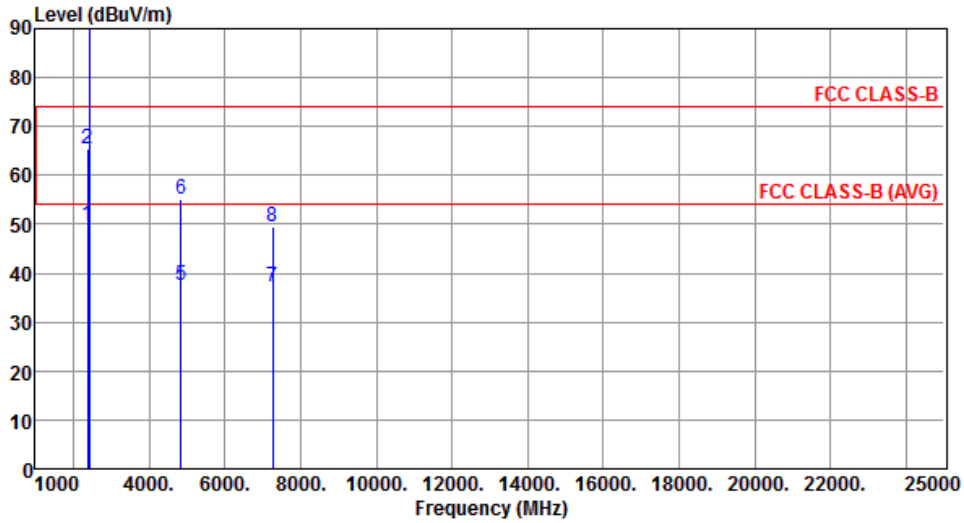


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	109.85			112.88	-3.03	Average	144	165
2	*	2462.00	121.91			124.94	-3.03	Peak	144	165
3		2483.50	52.25	54.00	-1.75	55.18	-2.93	Average	144	165
4		2483.50	64.30	74.00	-9.70	67.23	-2.93	Peak	144	165
5		2500.00	53.57	54.00	-0.43	56.43	-2.86	Average	100	133
6		2500.00	66.27	74.00	-7.73	69.13	-2.86	Peak	100	133
7		4924.00	40.85	54.00	-13.15	36.94	3.91	Average	222	189
8		4924.00	54.27	74.00	-19.73	50.36	3.91	Peak	222	189

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:"*" is Peak / Average value of fundamental frequency

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

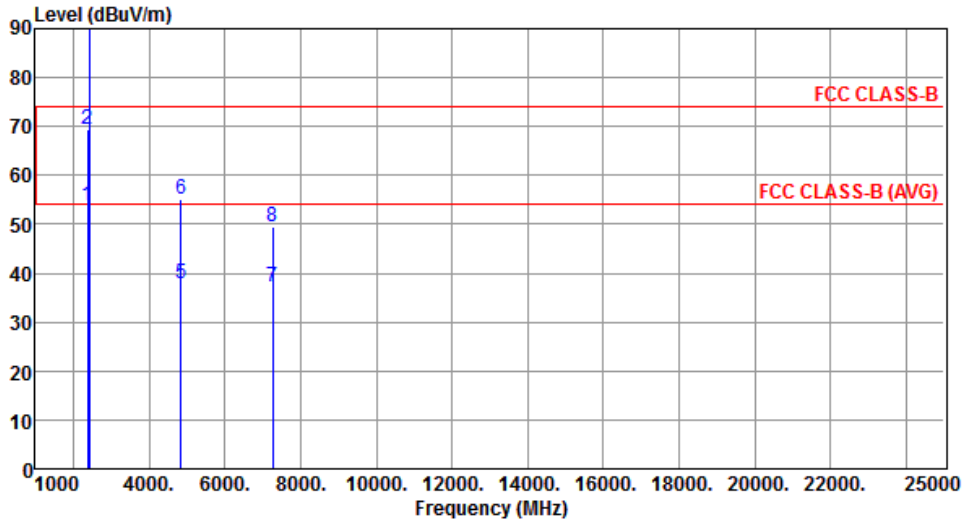
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	49.65	54.00	-4.35	53.00	-3.35	Average	243	305
2		2390.00	65.28	74.00	-8.72	68.63	-3.35	Peak	243	305
3	*	2422.00	95.76			98.96	-3.20	Average	243	305
4	*	2422.00	107.63			110.83	-3.20	Peak	243	305
5		4844.00	37.54	54.00	-16.46	33.88	3.66	Average	270	119
6		4844.00	55.02	74.00	-18.98	51.36	3.66	Peak	270	119
7		7266.00	37.15	54.00	-16.85	28.73	8.42	Average	100	294
8		7266.00	49.43	74.00	-24.57	41.01	8.42	Peak	100	294

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:"*" is Peak / Average value of fundamental frequency

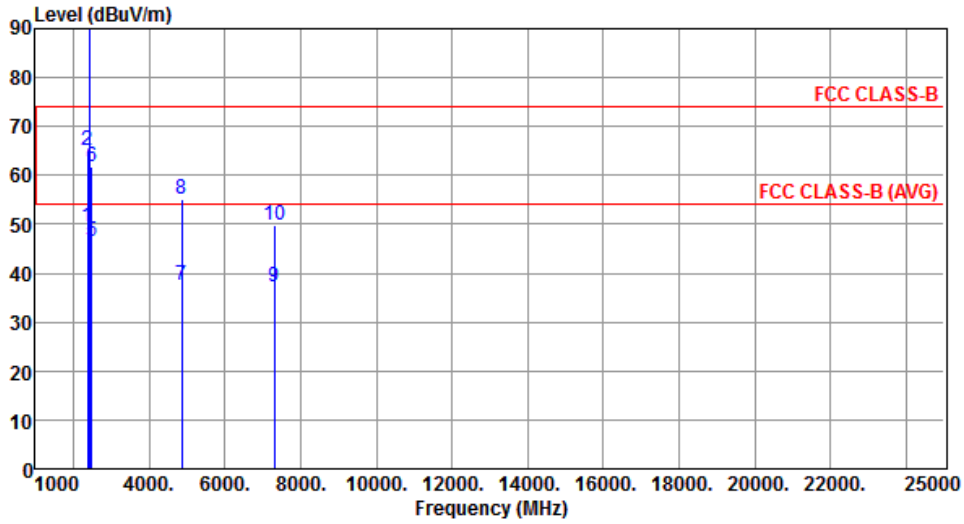
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.77	54.00	-0.23	57.12	-3.35	Average	265	333
2		2390.00	69.55	74.00	-4.45	72.90	-3.35	Peak	265	333
3	*	2422.00	104.08			107.28	-3.20	Average	266	198
4	*	2422.00	115.76			118.96	-3.20	Peak	266	198
5		4844.00	37.99	54.00	-16.01	34.33	3.66	Average	222	176
6		4844.00	55.15	74.00	-18.85	51.49	3.66	Peak	222	176
7		7266.00	37.30	54.00	-16.70	28.88	8.42	Average	333	143
8		7266.00	49.58	74.00	-24.42	41.16	8.42	Peak	333	143

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:"*" is Peak / Average value of fundamental frequency

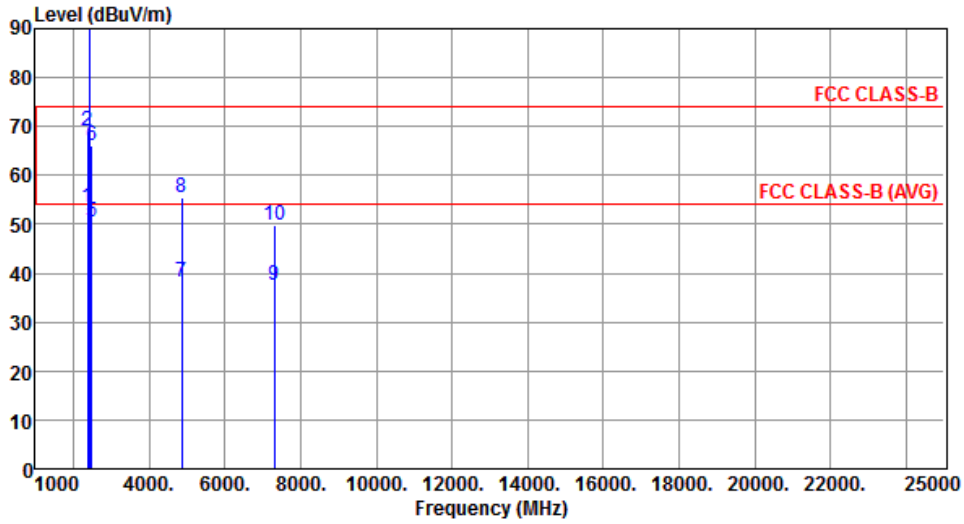
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	49.46	54.00	-4.54	52.81	-3.35	Average	242	317
2		2390.00	65.03	74.00	-8.97	68.38	-3.35	Peak	242	317
3	*	2437.00	98.84			101.97	-3.13	Average	242	317
4	*	2437.00	109.81			112.94	-3.13	Peak	242	317
5		2483.50	46.59	54.00	-7.41	49.52	-2.93	Average	242	317
6		2483.50	61.83	74.00	-12.17	64.76	-2.93	Peak	242	317
7		4874.00	37.50	54.00	-16.50	33.75	3.75	Average	269	104
8		4874.00	55.23	74.00	-18.77	51.48	3.75	Peak	269	104
9		7311.00	37.36	54.00	-16.64	28.94	8.42	Average	102	288
10		7311.00	49.73	74.00	-24.27	41.31	8.42	Peak	102	288

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:"*" is Peak / Average value of fundamental frequency

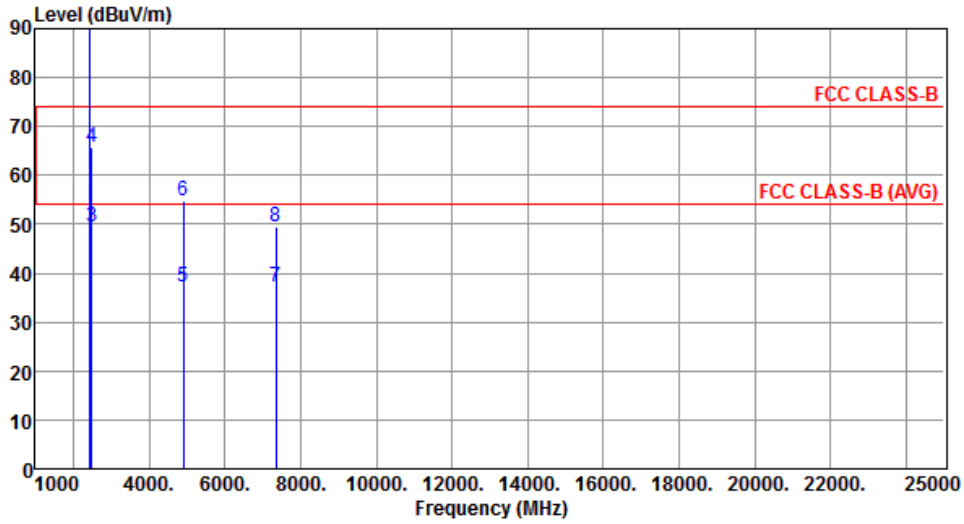
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.62	54.00	-0.38	56.97	-3.35	Average	225	153
2		2390.00	69.14	74.00	-4.86	72.49	-3.35	Peak	225	153
3	*	2437.00	106.89			110.02	-3.13	Average	225	153
4	*	2437.00	117.99			121.12	-3.13	Peak	225	153
5		2483.50	50.62	54.00	-3.38	53.55	-2.93	Average	225	196
6		2483.50	66.06	74.00	-7.94	68.99	-2.93	Peak	225	196
7		4874.00	38.26	54.00	-15.74	34.51	3.75	Average	224	172
8		4874.00	55.51	74.00	-18.49	51.76	3.75	Peak	224	172
9		7311.00	37.68	54.00	-16.32	29.26	8.42	Average	330	140
10		7311.00	49.92	74.00	-24.08	41.50	8.42	Peak	330	140

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:"*" is Peak / Average value of fundamental frequency

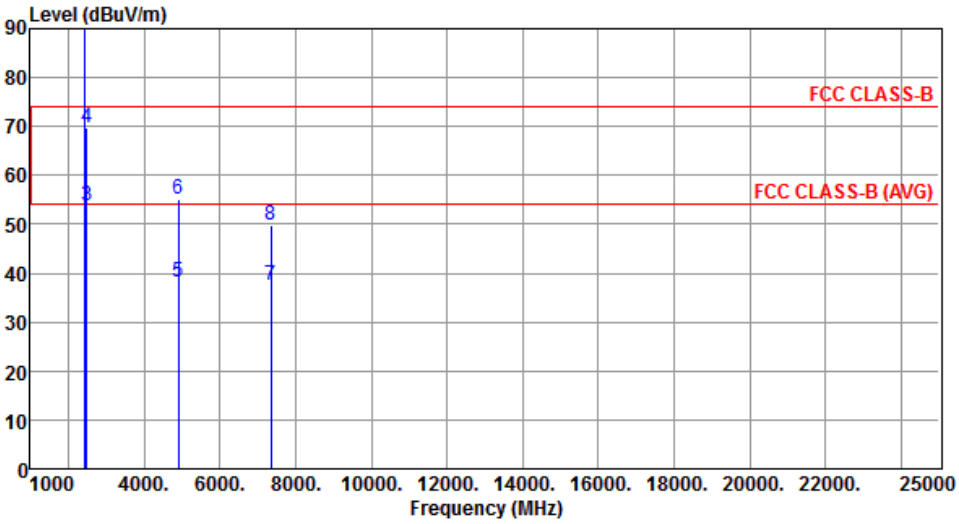
Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2452.00	97.42			100.48	-3.06	Average	245	310
2	*	2452.00	109.05			112.11	-3.06	Peak	245	310
3		2483.50	49.57	54.00	-4.43	52.50	-2.93	Average	245	310
4		2483.50	65.73	74.00	-8.27	68.66	-2.93	Peak	245	310
5		4904.00	37.12	54.00	-16.88	33.26	3.86	Average	272	110
6		4904.00	54.95	74.00	-19.05	51.09	3.86	Peak	272	110
7		7356.00	37.31	54.00	-16.69	28.87	8.44	Average	100	257
8		7356.00	49.62	74.00	-24.38	41.18	8.44	Peak	100	257

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Vertical		



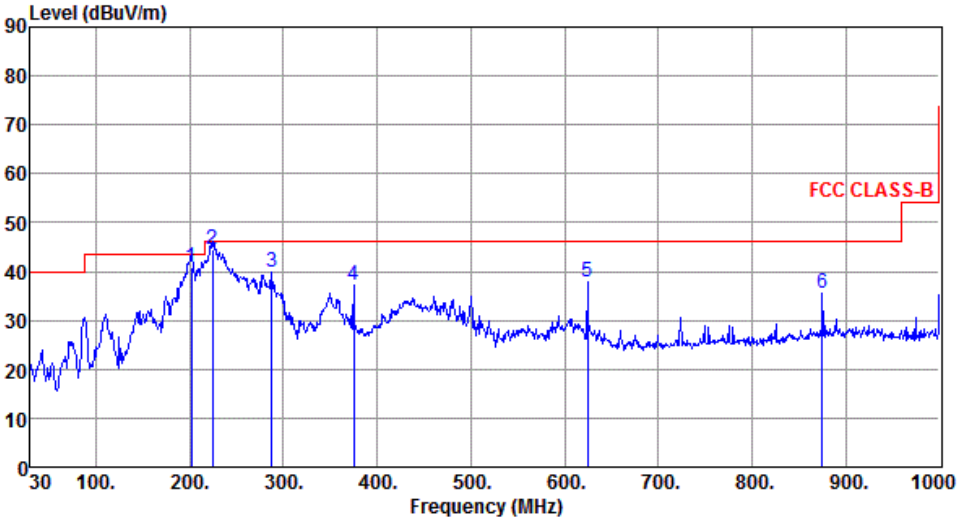
		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2452.00	105.45			108.51	-3.06	Average	222	154
2	*	2452.00	117.14			120.20	-3.06	Peak	222	154
3		2483.50	53.86	54.00	-0.14	56.79	-2.93	Average	222	154
4		2483.50	69.89	74.00	-4.11	72.82	-2.93	Peak	222	154
5		4904.00	38.04	54.00	-15.96	34.18	3.86	Average	213	168
6		4904.00	55.24	74.00	-18.76	51.38	3.86	Peak	213	168
7		7356.00	37.42	54.00	-16.58	28.98	8.44	Average	333	147
8		7356.00	49.73	74.00	-24.27	41.29	8.44	Peak	333	147

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:"*" is Peak / Average value of fundamental frequency

Beamforming mode

3.5.9 Transmitter Radiated Unwanted Emissions (Below 1GHz)

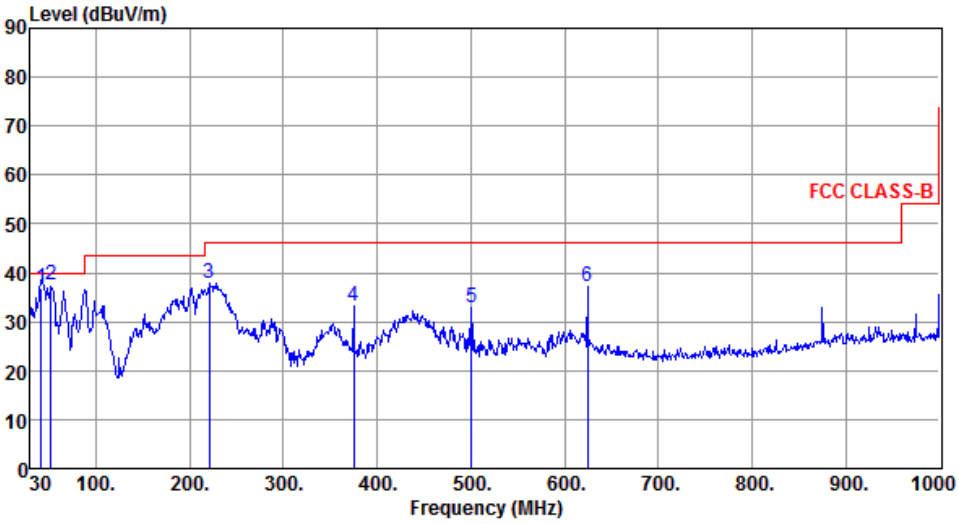
Modulation	HT20	**Test Freq. (MHz)**	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	201.83	40.73	43.50	-2.77	60.03	-19.30	QP	200	200
2	224.35	44.59	46.00	-1.41	63.42	-18.83	QP	200	332
3	288.02	39.76	46.00	-6.24	55.93	-16.17	Peak	---	---
4	375.32	37.26	46.00	-8.74	51.36	-14.10	Peak	---	---
5	624.61	38.01	46.00	-7.99	47.12	-9.11	Peak	---	---
6	874.87	35.50	46.00	-10.50	41.06	-5.56	Peak	---	---

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

Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		

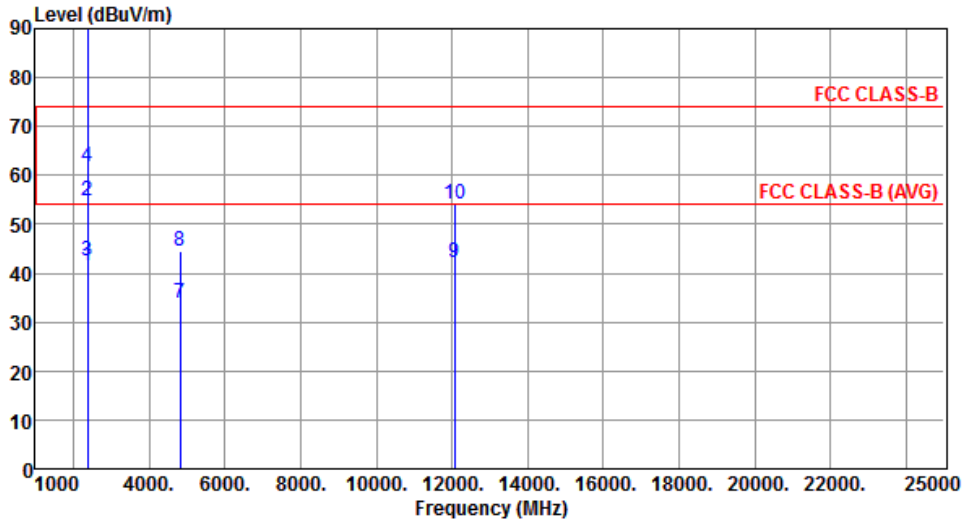


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	41.64	36.86	40.00	-3.14	53.53	-16.67	QP	100	5
2	52.31	37.43	40.00	-2.57	54.06	-16.63	QP	100	335
3	221.09	37.95	46.00	-8.05	56.92	-18.97	Peak	---	---
4	375.32	33.26	46.00	-12.74	47.36	-14.10	Peak	---	---
5	500.45	33.03	46.00	-12.97	44.14	-11.11	Peak	---	---
6	624.61	37.25	46.00	-8.75	46.36	-9.11	Peak	---	---

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

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

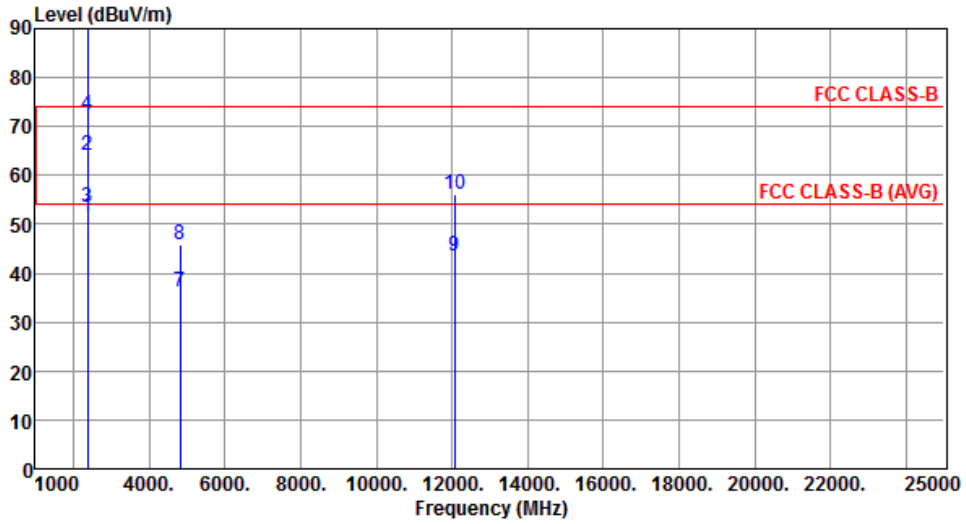
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2379.00	41.46	54.00	-12.54	44.84	-3.38	Average	116	312
2		2379.00	54.92	74.00	-19.08	58.30	-3.38	Peak	116	312
3		2390.00	42.52	54.00	-11.48	45.87	-3.35	Average	116	312
4		2390.00	61.90	74.00	-12.10	65.25	-3.35	Peak	116	312
5	*	2412.00	97.88			101.13	-3.25	Average	116	312
6	*	2412.00	109.01			112.26	-3.25	Peak	116	312
7		4824.00	33.78	54.00	-20.22	30.19	3.59	Average	100	334
8		4824.00	44.47	74.00	-29.53	40.88	3.59	Peak	100	334
9		12060.00	42.27	54.00	-11.73	28.14	14.13	Average	100	207
10		12060.00	54.00	74.00	-20.00	39.87	14.13	Peak	100	207

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

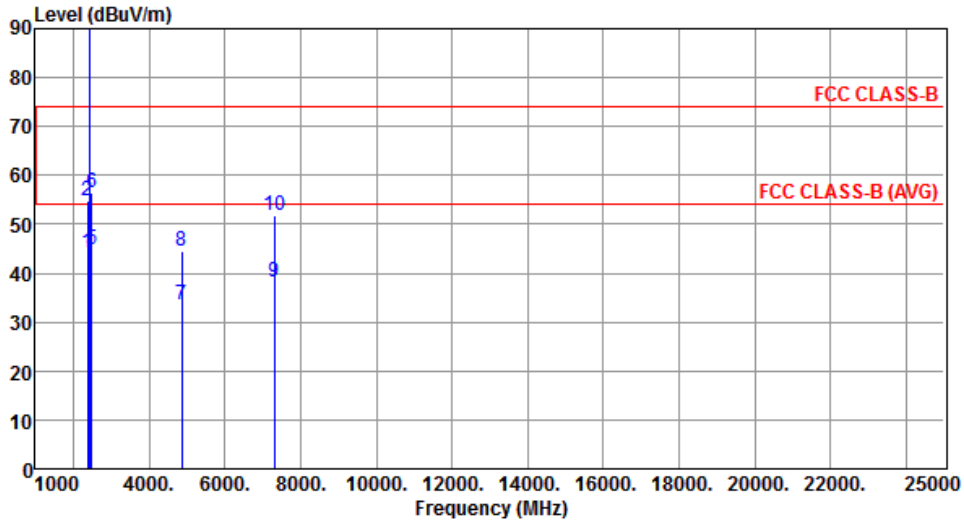
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2379.00	51.48	54.00	-2.52	54.86	-3.38	Average	193	134
2		2379.00	64.16	74.00	-9.84	67.54	-3.38	Peak	193	134
3		2390.00	53.55	54.00	-0.45	56.90	-3.35	Average	193	329
4		2390.00	72.49	74.00	-1.51	75.84	-3.35	Peak	193	329
5	*	2412.00	108.78			112.03	-3.25	Average	193	134
6	*	2412.00	120.36			123.61	-3.25	Peak	193	134
7		4824.00	36.06	54.00	-17.94	32.47	3.59	Average	100	225
8		4824.00	45.91	74.00	-28.09	42.32	3.59	Peak	100	225
9		12060.00	43.47	54.00	-10.53	29.34	14.13	Average	100	137
10		12060.00	56.16	74.00	-17.84	42.03	14.13	Peak	100	137

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

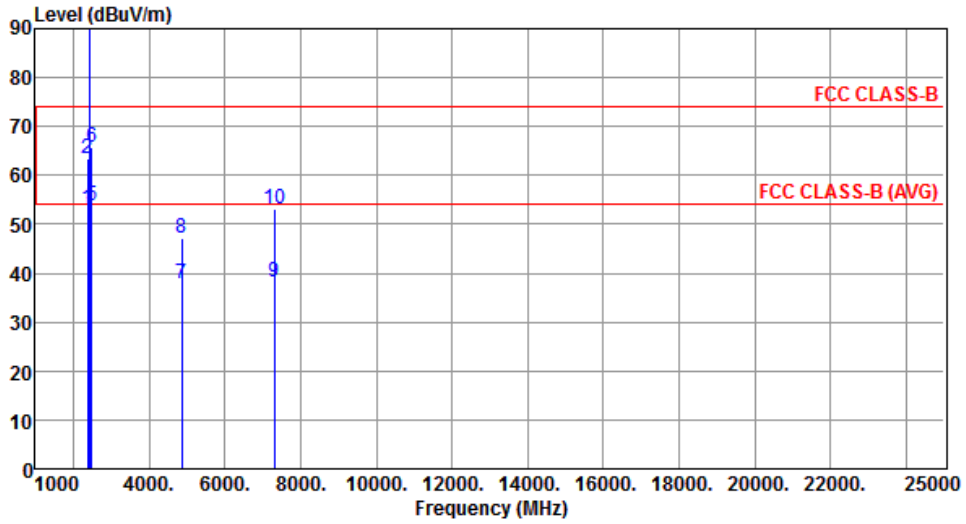
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	44.30	54.00	-9.70	47.65	-3.35	Average	365	304
2		2390.00	54.95	74.00	-19.05	58.30	-3.35	Peak	365	304
3	*	2437.00	101.65			104.78	-3.13	Average	365	325
4	*	2437.00	113.89			117.02	-3.13	Peak	365	325
5		2483.50	44.83	54.00	-9.17	47.76	-2.93	Average	365	352
6		2483.50	56.61	74.00	-17.39	59.54	-2.93	Peak	365	352
7		4874.00	33.57	54.00	-20.43	29.82	3.75	Average	100	41
8		4874.00	44.62	74.00	-29.38	40.87	3.75	Peak	100	41
9		7311.00	38.05	54.00	-15.95	29.63	8.42	Average	100	205
10		7311.00	51.79	74.00	-22.21	43.37	8.42	Peak	100	205

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:"*" is Peak / Average value of fundamental frequency

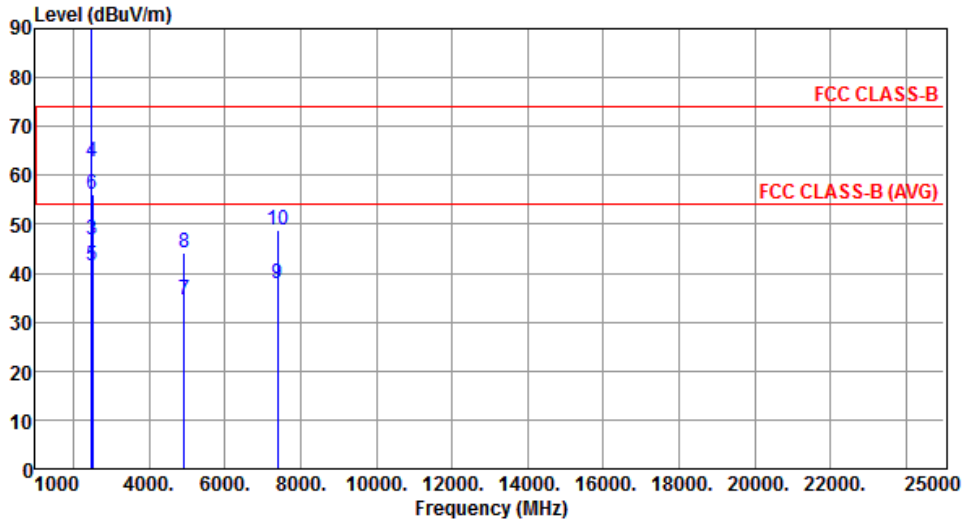
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.14	54.00	-0.86	56.49	-3.35	Average	100	136
2		2390.00	63.27	74.00	-10.73	66.62	-3.35	Peak	100	136
3	*	2437.00	112.38			115.51	-3.13	Average	100	136
4	*	2437.00	124.14			127.27	-3.13	Peak	100	136
5		2483.50	53.84	54.00	-0.16	56.77	-2.93	Average	100	136
6		2483.50	65.85	74.00	-8.15	68.78	-2.93	Peak	100	136
7		4874.00	37.76	54.00	-16.24	34.01	3.75	Average	100	212
8		4874.00	47.08	74.00	-26.92	43.33	3.75	Peak	100	212
9		7311.00	38.29	54.00	-15.71	29.87	8.42	Average	100	113
10		7311.00	53.15	74.00	-20.85	44.73	8.42	Peak	100	113

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:"*" is Peak / Average value of fundamental frequency

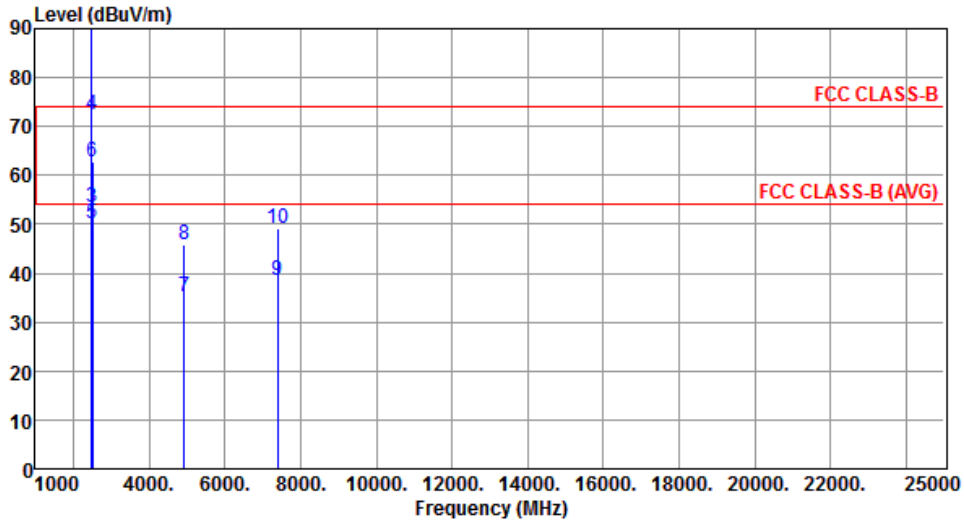
Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	97.78			100.81	-3.03	Average	163	99
2	*	2462.00	109.58			112.61	-3.03	Peak	163	99
3		2483.50	46.92	54.00	-7.08	49.85	-2.93	Average	163	99
4		2483.50	62.74	74.00	-11.26	65.67	-2.93	Peak	163	99
5		2499.00	41.62	54.00	-12.38	44.48	-2.86	Average	163	99
6		2499.00	56.12	74.00	-17.88	58.98	-2.86	Peak	163	99
7		4924.00	34.59	54.00	-19.41	30.68	3.91	Average	100	84
8		4924.00	44.32	74.00	-29.68	40.41	3.91	Peak	100	84
9		7386.00	38.02	54.00	-15.98	29.56	8.46	Average	100	62
10		7386.00	48.85	74.00	-25.15	40.39	8.46	Peak	100	62

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:"*" is Peak / Average value of fundamental frequency

Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Vertical		

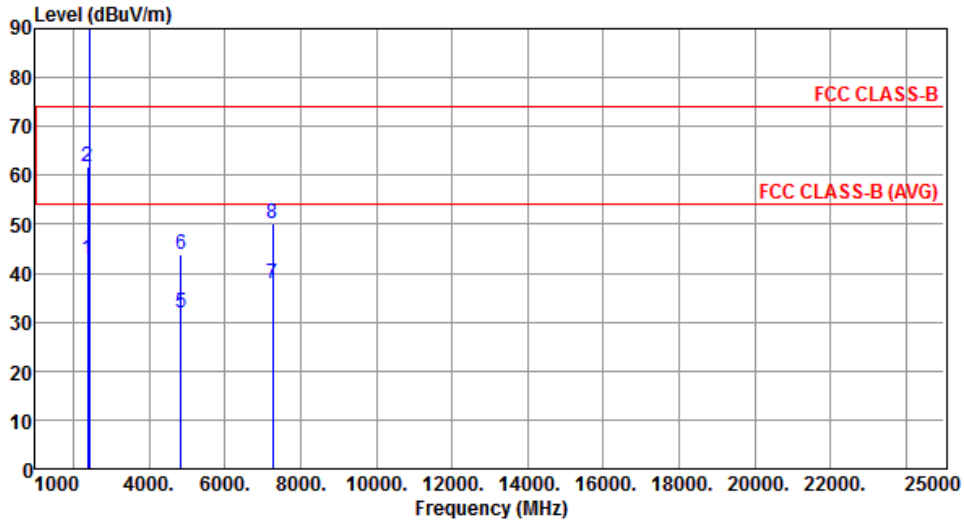


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	108.48			111.51	-3.03	Average	158	134
2	*	2462.00	121.03			124.06	-3.03	Peak	158	134
3		2483.50	53.62	54.00	-0.38	56.55	-2.93	Average	158	134
4		2483.50	72.56	74.00	-1.44	75.49	-2.93	Peak	158	134
5		2499.00	50.23	54.00	-3.77	53.09	-2.86	Average	158	134
6		2499.00	62.62	74.00	-11.38	65.48	-2.86	Peak	158	134
7		4924.00	35.20	54.00	-18.80	31.29	3.91	Average	100	129
8		4924.00	45.74	74.00	-28.26	41.83	3.91	Peak	100	129
9		7386.00	38.63	54.00	-15.37	30.17	8.46	Average	100	325
10		7386.00	49.25	74.00	-24.75	40.79	8.46	Peak	100	325

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:"*" is Peak / Average value of fundamental frequency

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

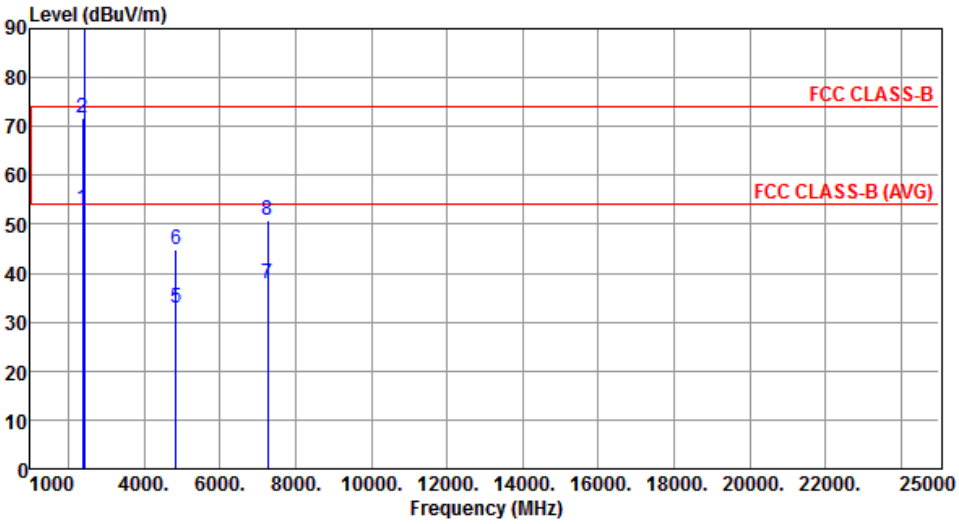
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	42.73	54.00	-11.27	46.08	-3.35	Average	100	312
2		2390.00	61.93	74.00	-12.07	65.28	-3.35	Peak	100	312
3	*	2422.00	94.27			97.47	-3.20	Average	100	312
4	*	2422.00	104.45			107.65	-3.20	Peak	100	312
5		4844.00	31.72	54.00	-22.28	28.06	3.66	Average	100	239
6		4844.00	43.75	74.00	-30.25	40.09	3.66	Peak	100	239
7		7266.00	37.98	54.00	-16.02	29.56	8.42	Average	100	96
8		7266.00	50.00	74.00	-24.00	41.58	8.42	Peak	100	96

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:"*" is Peak / Average value of fundamental frequency

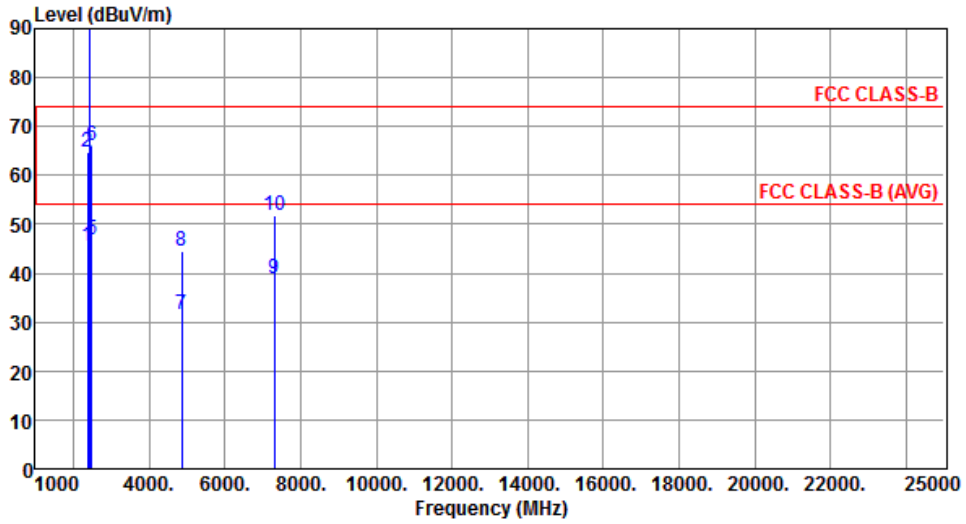
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.27	54.00	-0.73	56.62	-3.35	Average	302	144
2		2390.00	71.90	74.00	-2.10	75.25	-3.35	Peak	302	144
3	*	2422.00	105.58			108.78	-3.20	Average	302	144
4	*	2422.00	114.99			118.19	-3.20	Peak	302	144
5		4844.00	32.79	54.00	-21.21	29.13	3.66	Average	100	174
6		4844.00	44.99	74.00	-29.01	41.33	3.66	Peak	100	174
7		7266.00	37.90	54.00	-16.10	29.48	8.42	Average	100	211
8		7266.00	50.73	74.00	-23.27	42.31	8.42	Peak	100	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).
Note 3:"*" is Peak / Average value of fundamental frequency

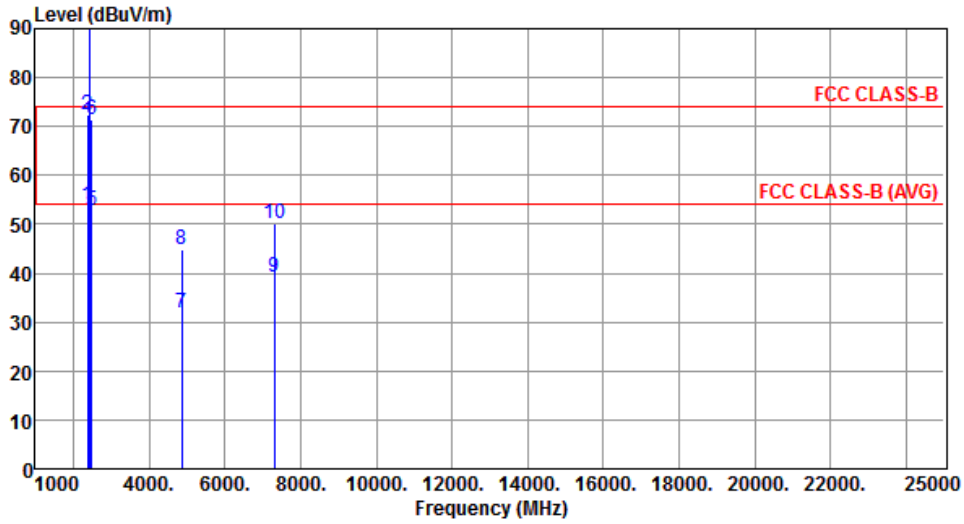
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	45.50	54.00	-8.50	48.85	-3.35	Average	384	323
2		2390.00	64.67	74.00	-9.33	68.02	-3.35	Peak	384	323
3	*	2437.00	98.26			101.39	-3.13	Average	384	323
4	*	2437.00	108.81			111.94	-3.13	Peak	384	323
5		2483.50	46.75	54.00	-7.25	49.68	-2.93	Average	384	323
6		2483.50	66.06	74.00	-7.94	68.99	-2.93	Peak	384	323
7		4874.00	31.44	54.00	-22.56	27.69	3.75	Average	100	153
8		4874.00	44.58	74.00	-29.42	40.83	3.75	Peak	100	153
9		7311.00	38.91	54.00	-15.09	30.49	8.42	Average	100	214
10		7311.00	51.65	74.00	-22.35	43.23	8.42	Peak	100	214

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

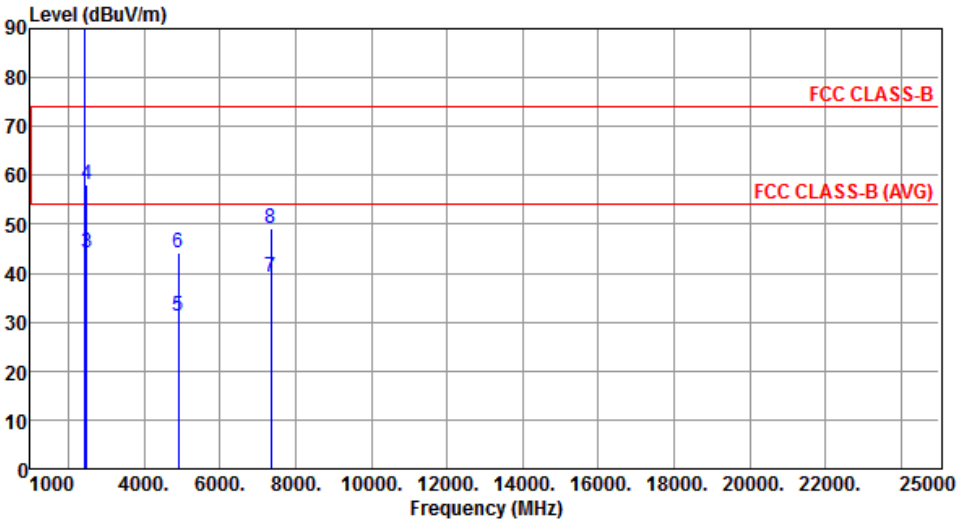
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	53.82	54.00	-0.18	57.17	-3.35	Average	209	141
2		2390.00	72.29	74.00	-1.71	75.64	-3.35	Peak	209	141
3	*	2437.00	108.20			111.33	-3.13	Average	209	141
4	*	2437.00	118.51			121.64	-3.13	Peak	209	141
5		2483.50	52.93	54.00	-1.07	55.86	-2.93	Average	209	141
6		2483.50	71.43	74.00	-2.57	74.36	-2.93	Peak	209	141
7		4874.00	31.97	54.00	-22.03	28.22	3.75	Average	100	87
8		4874.00	44.89	74.00	-29.11	41.14	3.75	Peak	100	87
9		7311.00	39.27	54.00	-14.73	30.85	8.42	Average	100	221
10		7311.00	50.26	74.00	-23.74	41.84	8.42	Peak	100	221

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

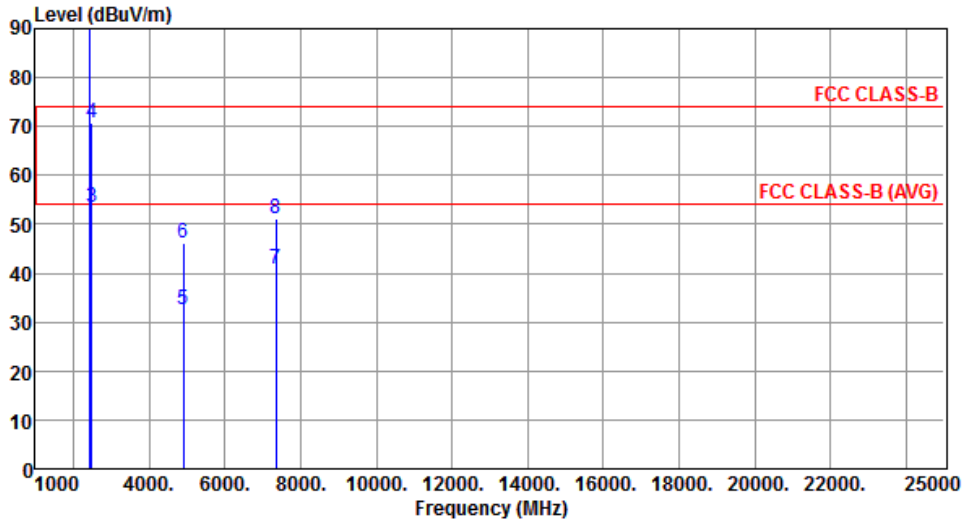
Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2452.00	96.76			99.82	-3.06	Average	357	332
2	*	2452.00	105.95			109.01	-3.06	Peak	357	332
3		2483.50	44.21	54.00	-9.79	47.14	-2.93	Average	357	332
4		2483.50	58.10	74.00	-15.90	61.03	-2.93	Peak	357	332
5		4904.00	31.33	54.00	-22.67	27.47	3.86	Average	100	301
6		4904.00	44.19	74.00	-29.81	40.33	3.86	Peak	100	301
7		7356.00	39.16	54.00	-14.84	30.72	8.44	Average	100	314
8		7356.00	49.07	74.00	-24.93	40.63	8.44	Peak	100	314

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:"*" is Peak / Average value of fundamental frequency

Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2452.00	106.47			109.53	-3.06	Average	156	133
2	*	2452.00	116.04			119.10	-3.06	Peak	156	133
3		2483.50	53.60	54.00	-0.40	56.53	-2.93	Average	156	133
4		2483.50	70.71	74.00	-3.29	73.64	-2.93	Peak	156	133
5		4904.00	32.38	54.00	-21.62	28.52	3.86	Average	100	146
6		4904.00	46.16	74.00	-27.84	42.30	3.86	Peak	100	146
7		7356.00	40.84	54.00	-13.16	32.40	8.44	Average	100	75
8		7356.00	51.31	74.00	-22.69	42.87	8.44	Peak	100	75

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:"*" is Peak / Average value of fundamental frequency

3.6 Emissions in Non-Restricted Frequency Bands

3.6.1 Emissions in Non-Restricted Frequency Bands Limit

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

3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

Reference level measurement

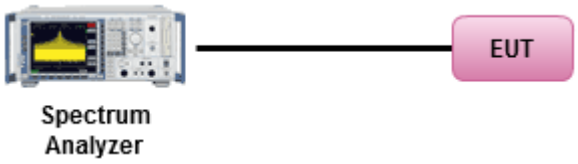
1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

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

3.6.4 Test Setup

Transmitter Radiated Bandedge Emissions



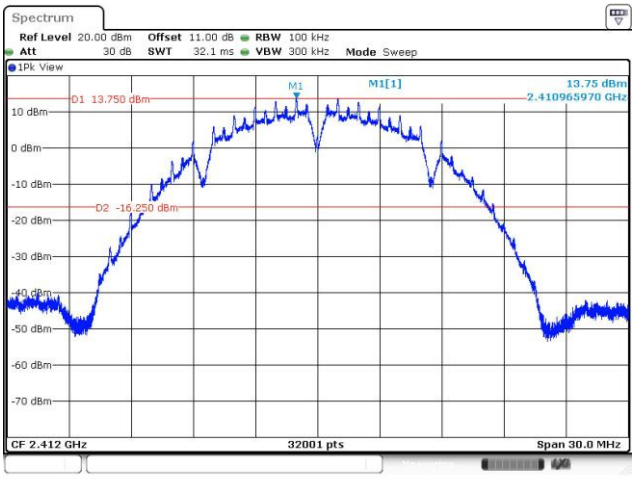
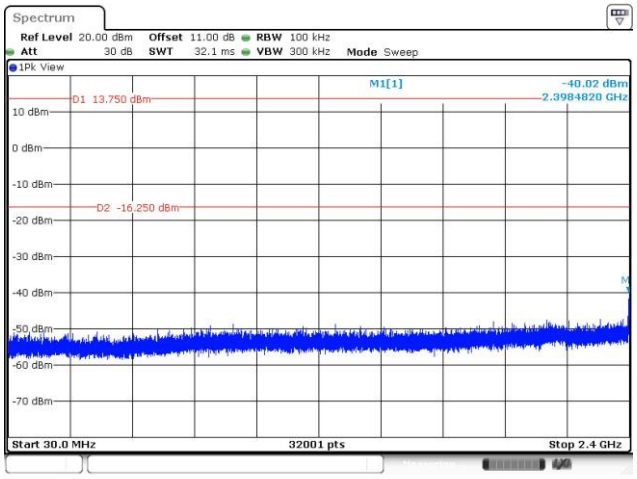
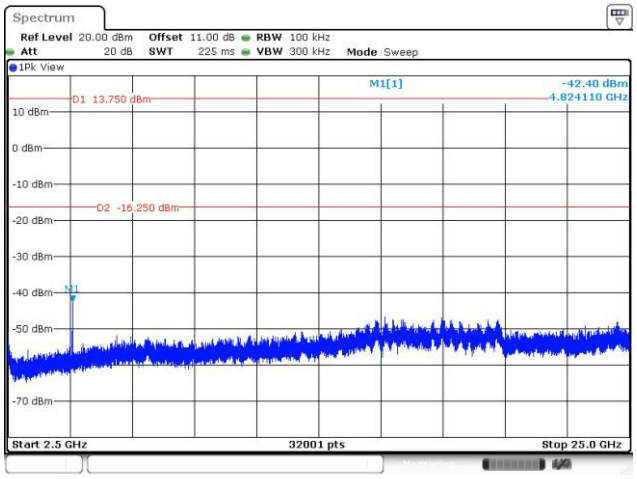
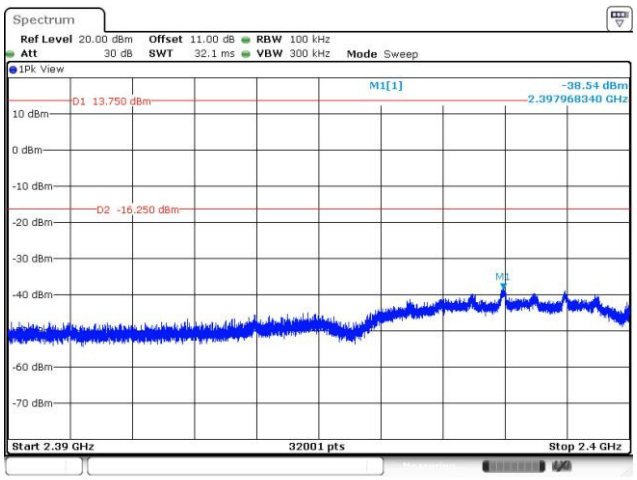
3.6.5 Test Result of Emissions in non-restricted frequency bands

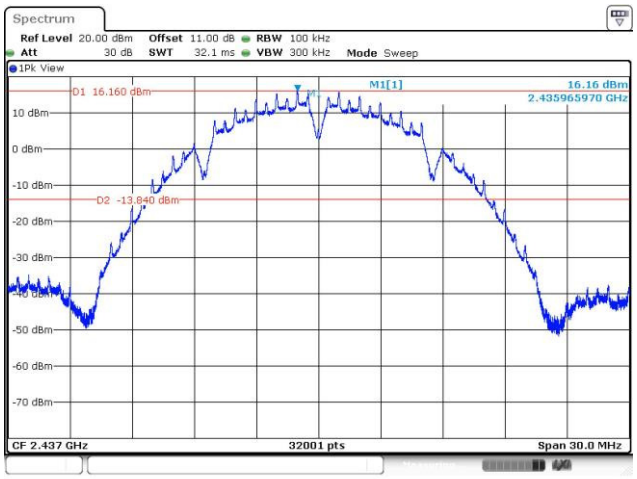
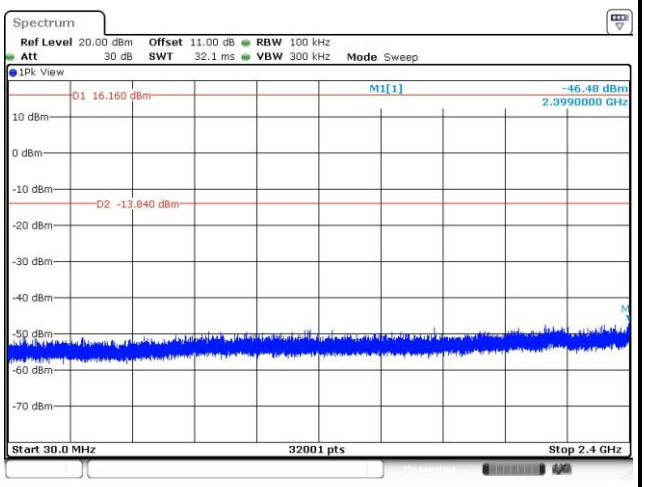
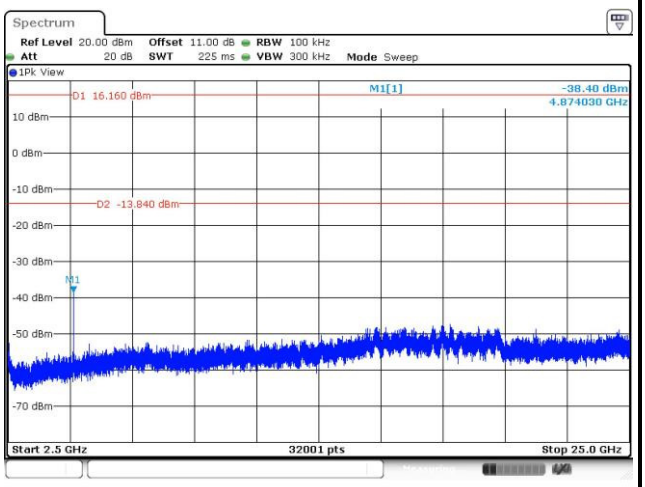
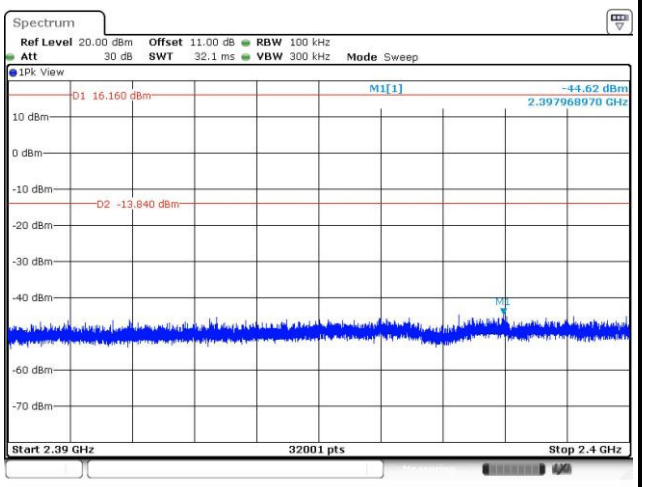
This test item is performed on each TX output individually without summing or adding 10 log(N_{ANT}) since measurements are made relative to the in-band emissions on the individual outputs. Only worst test result of each operating mode is presented.

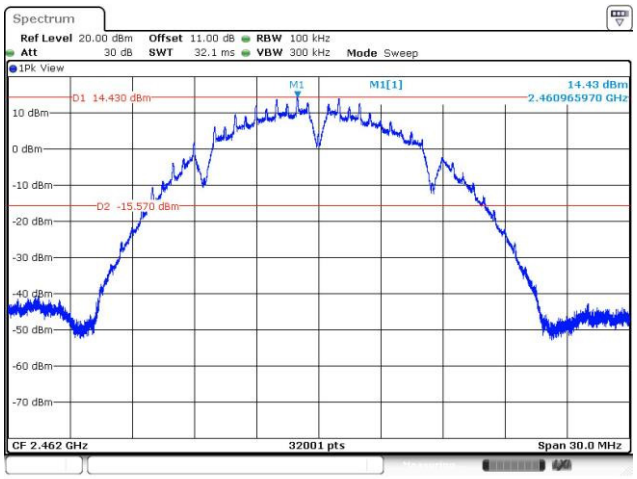
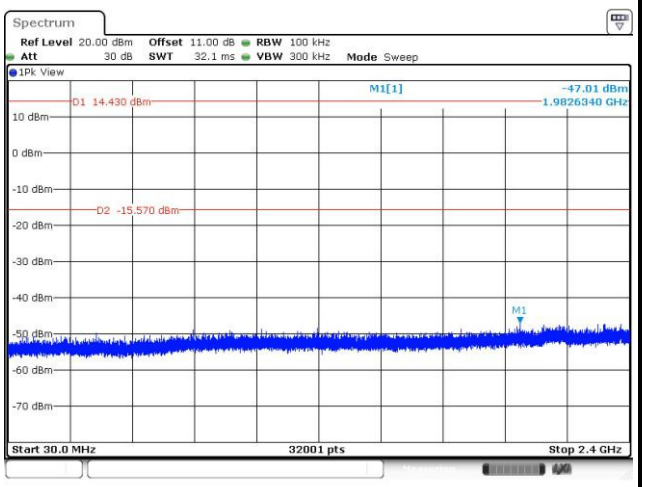
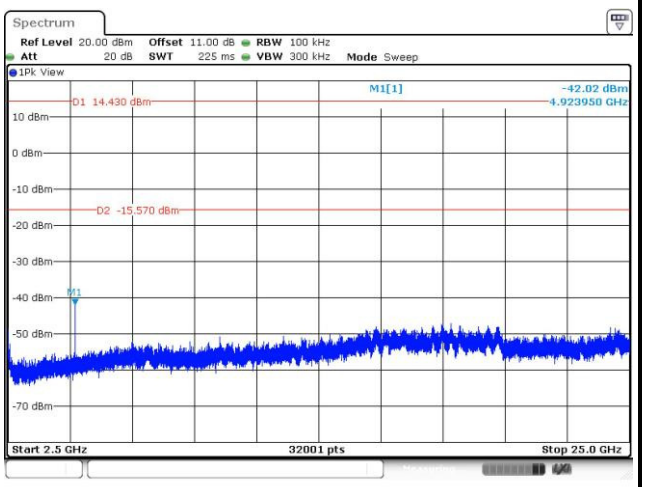
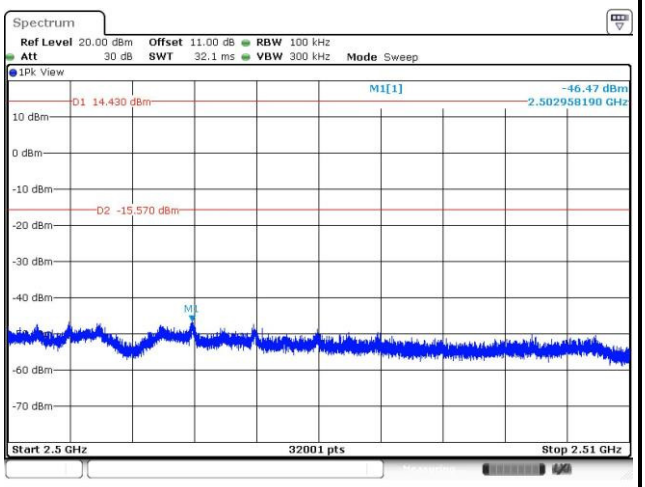
Non-beamforming mode

3.6.6 Unwanted Emissions into Non-Restricted Frequency Bands

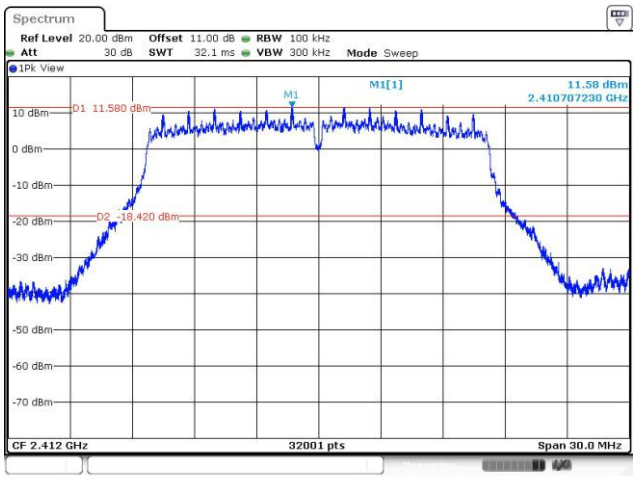
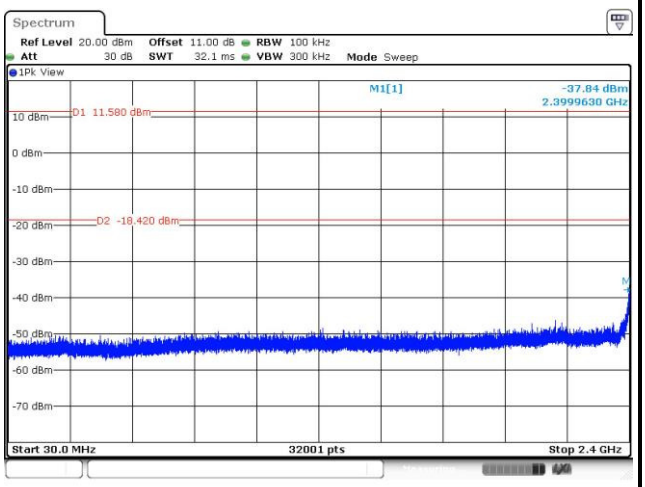
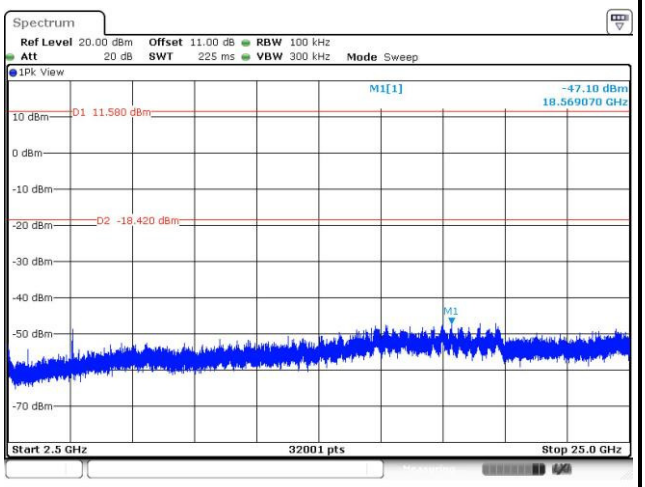
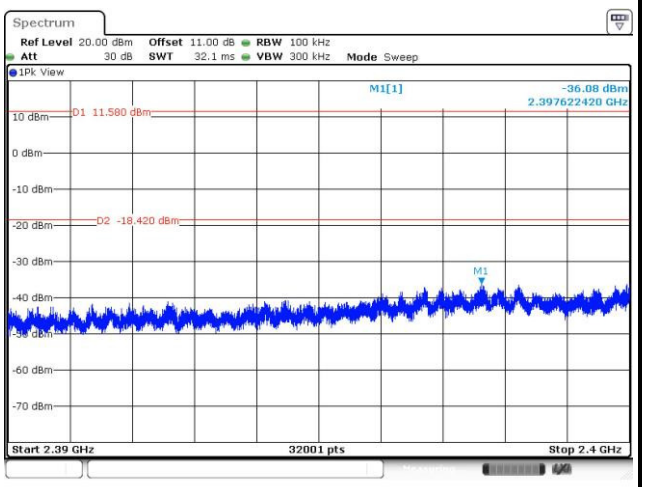
802.11b

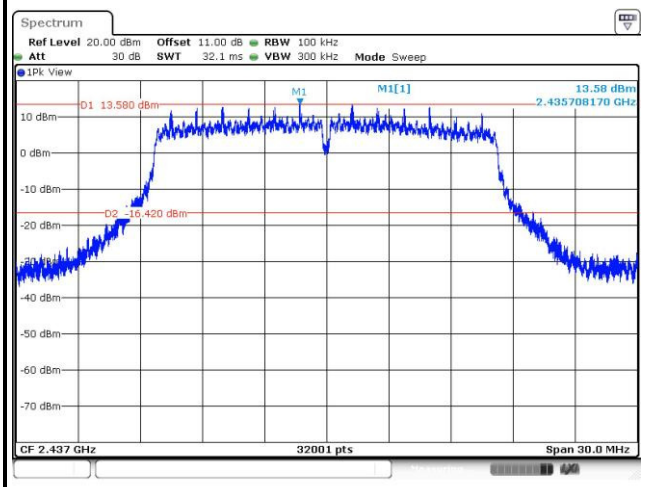
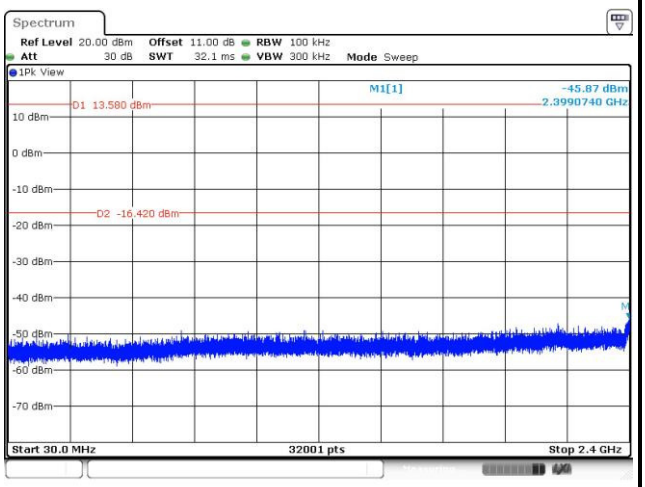
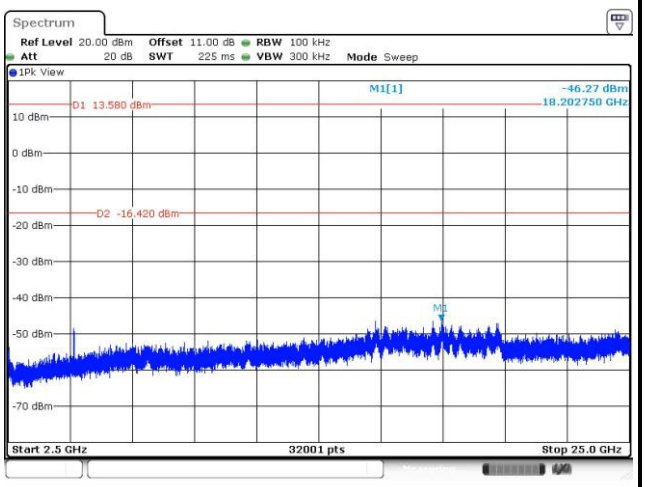
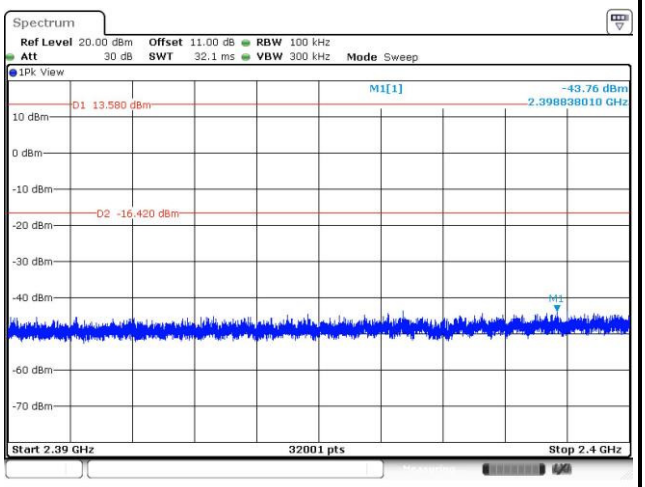
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

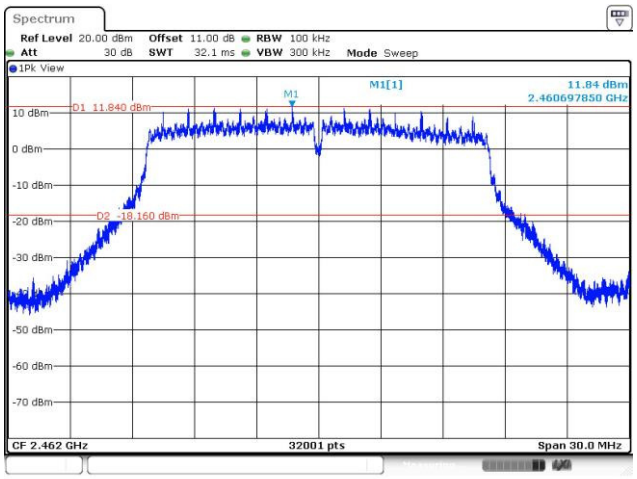
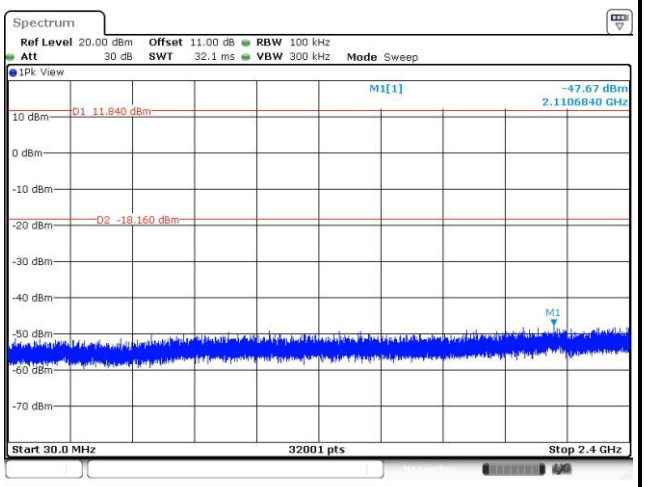
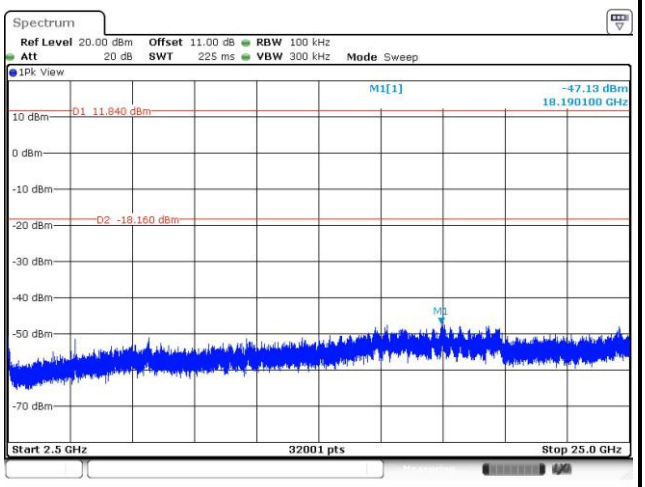
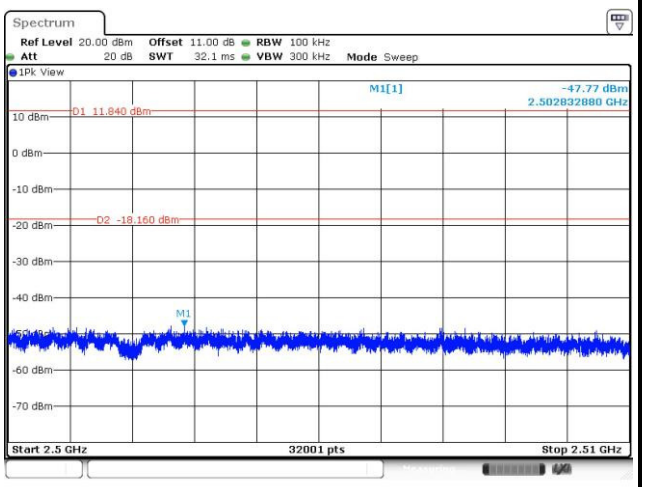
Reference Level	Tx 2437MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

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

802.11g

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

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

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

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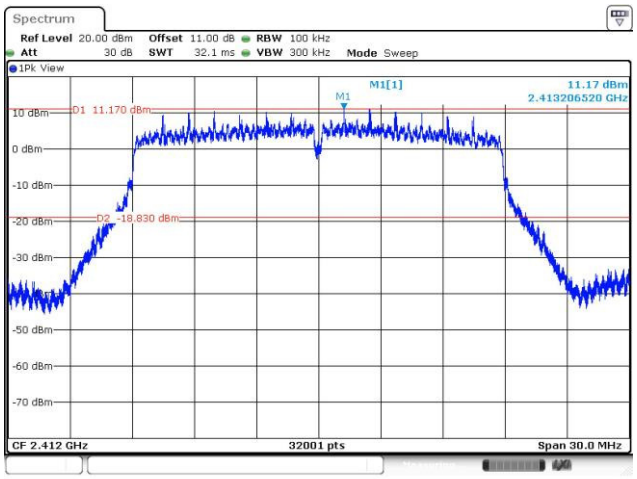
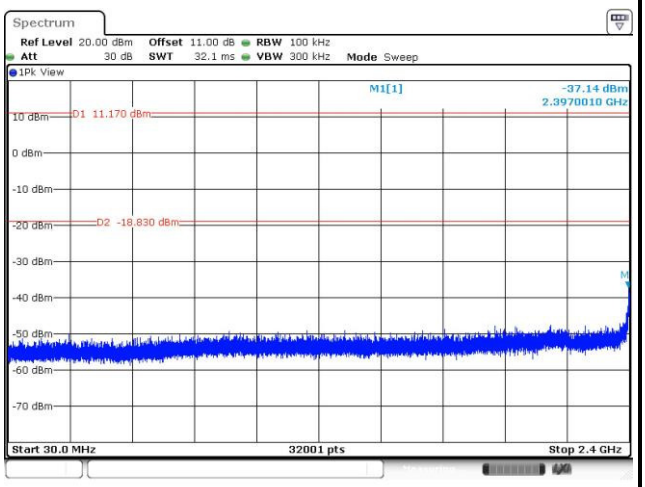
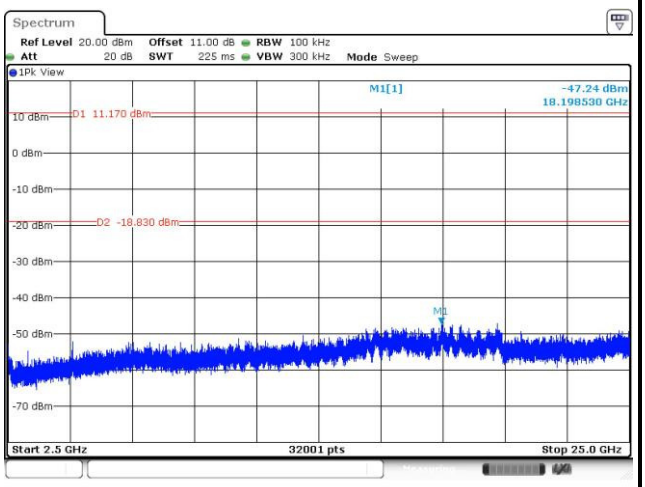
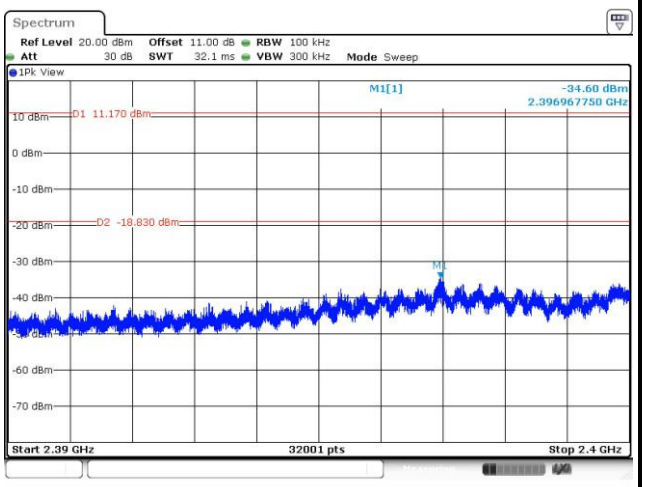
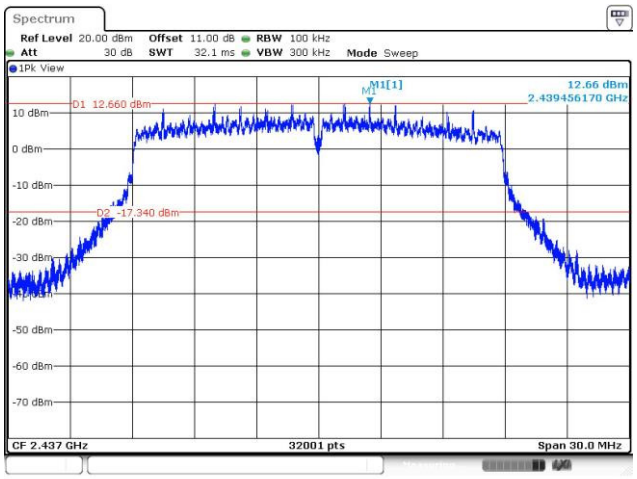
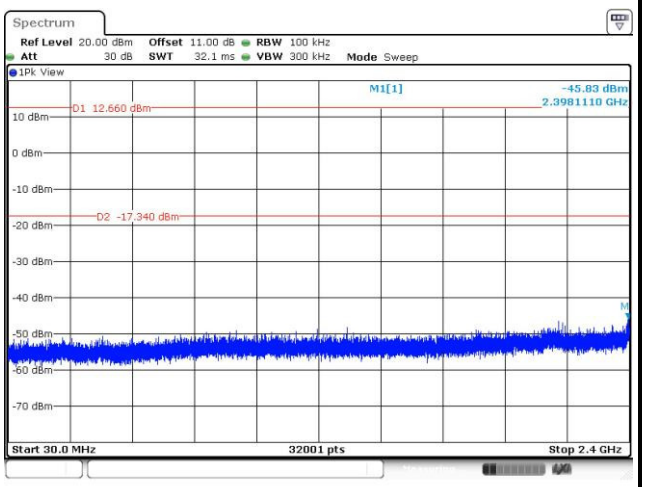
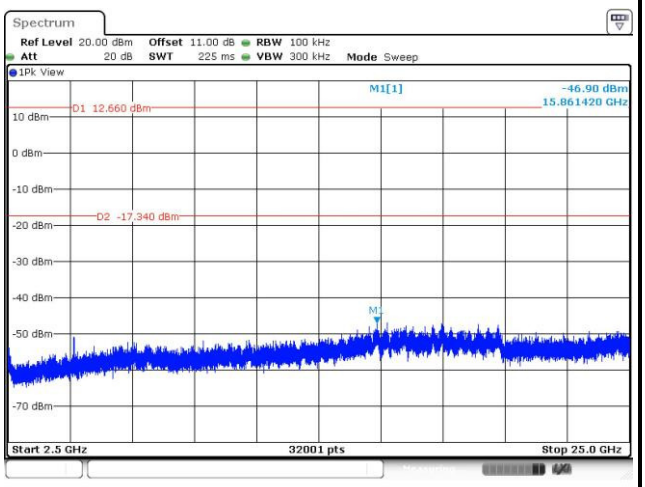
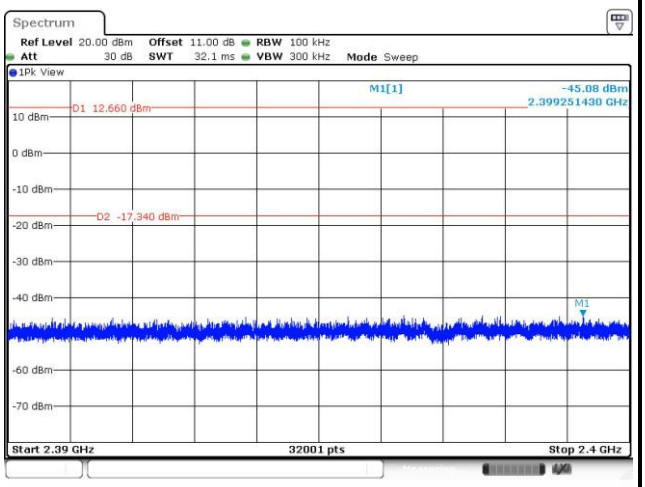
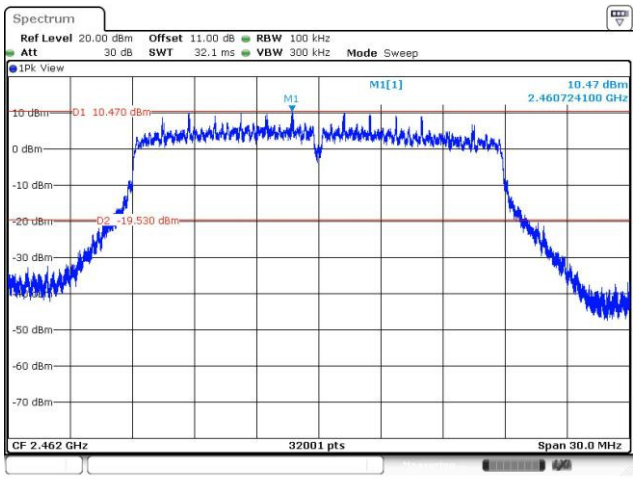
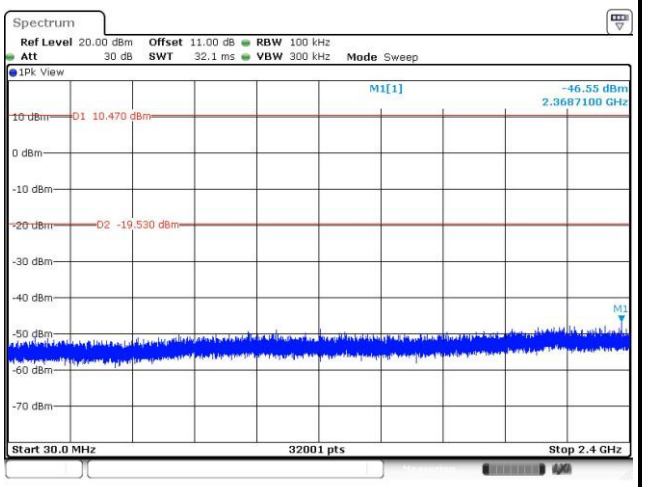
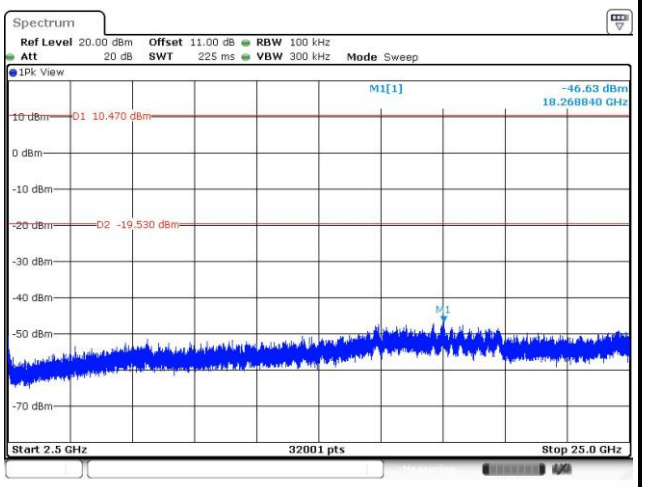
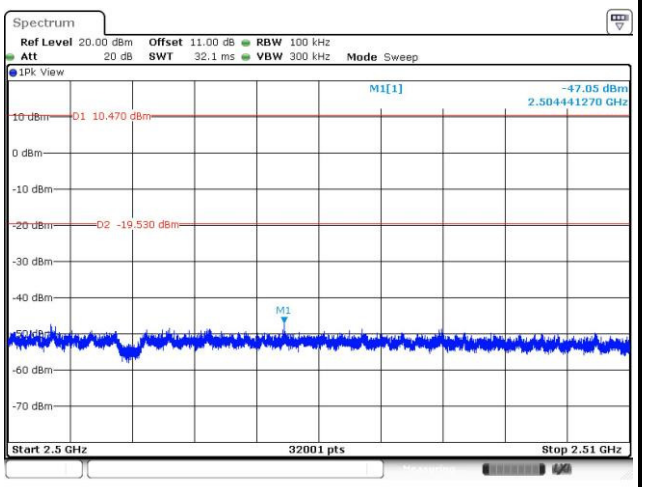
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

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

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

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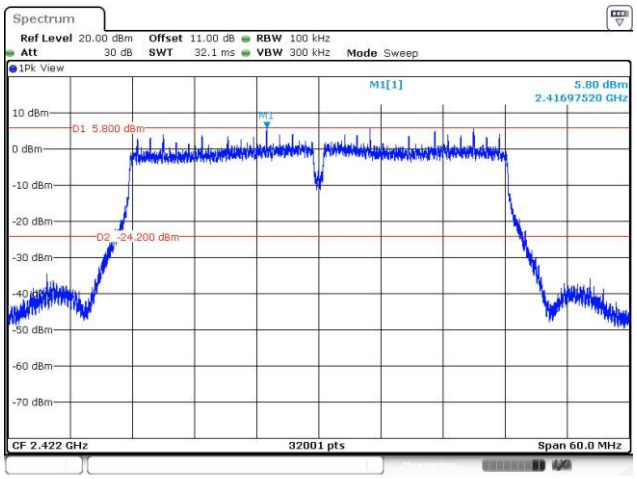
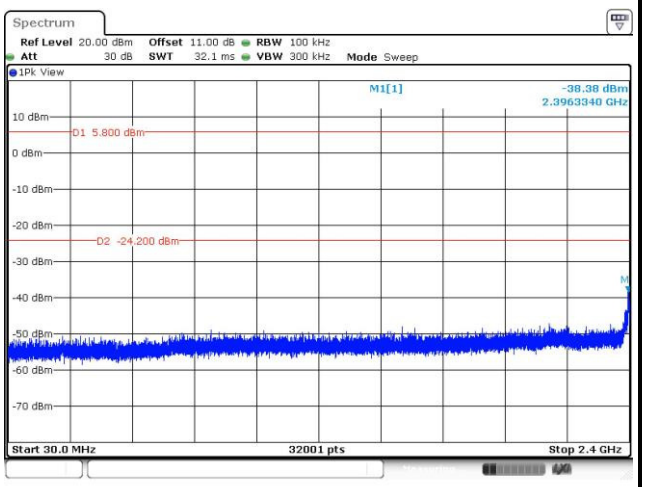
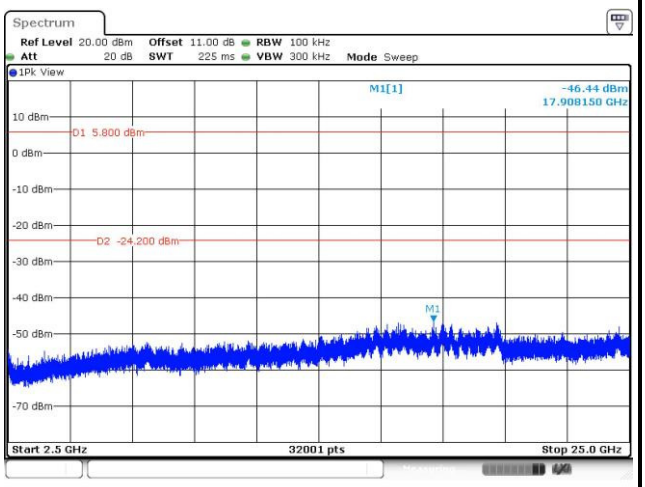
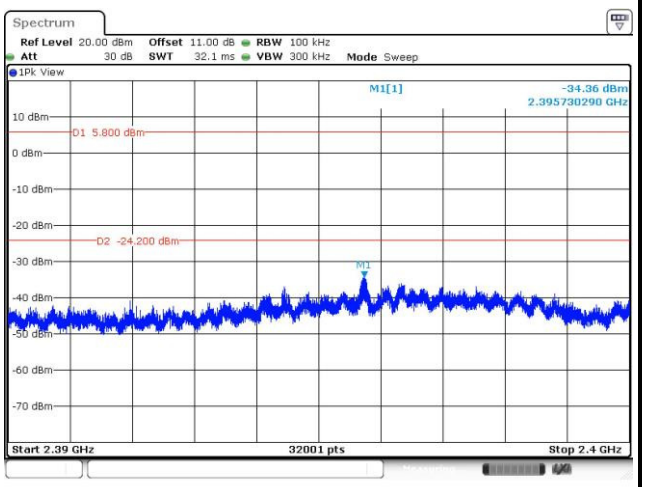
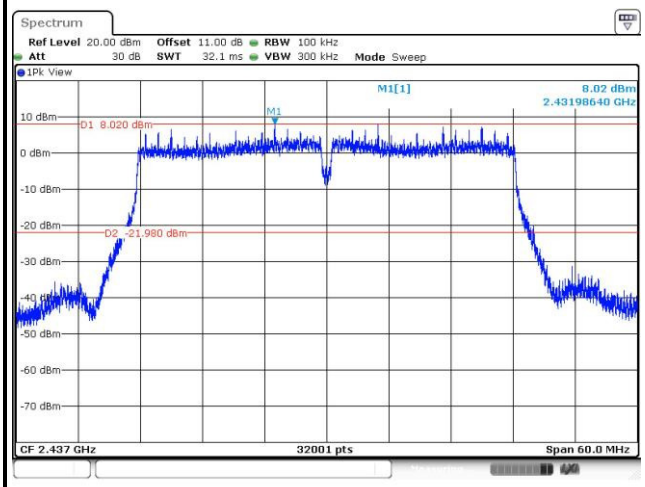
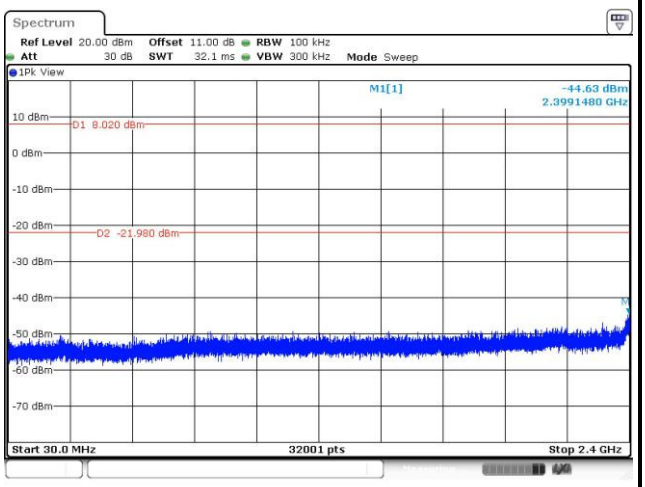
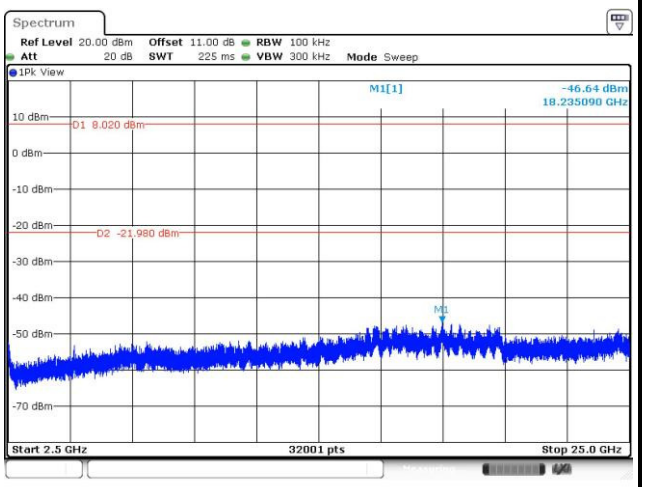
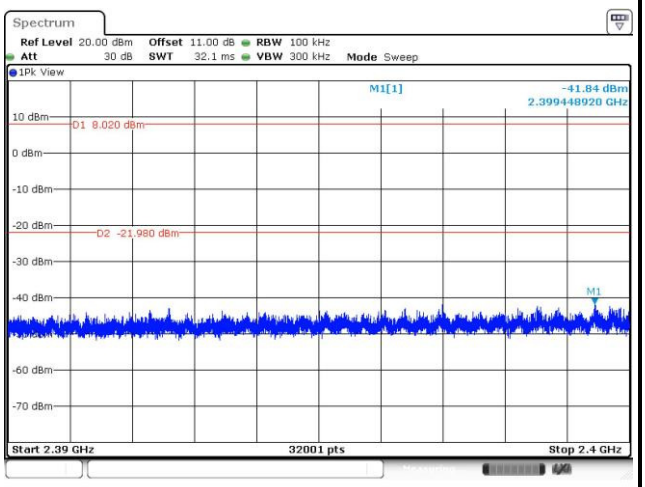
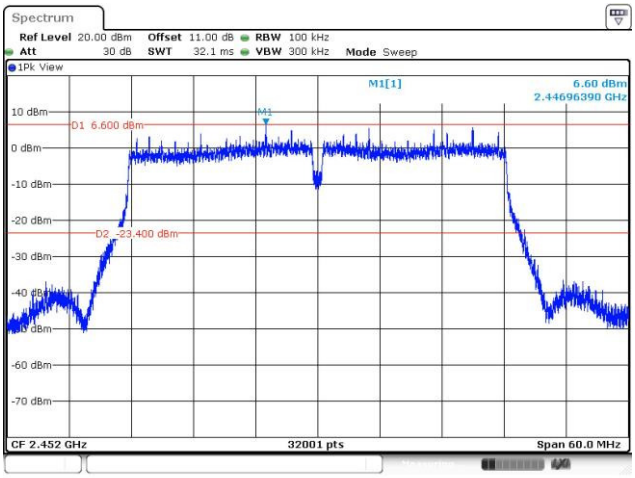
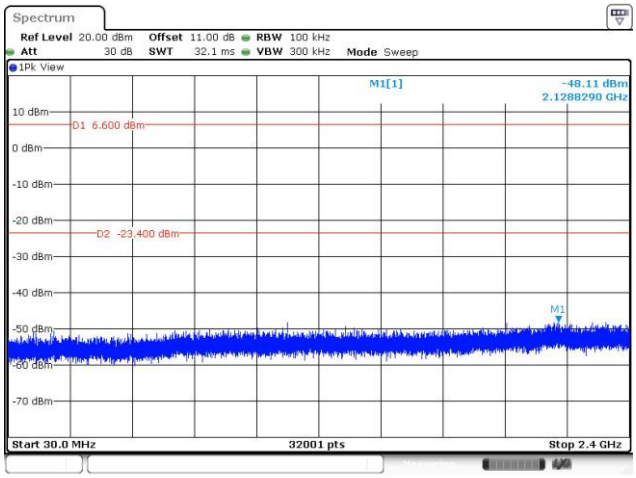
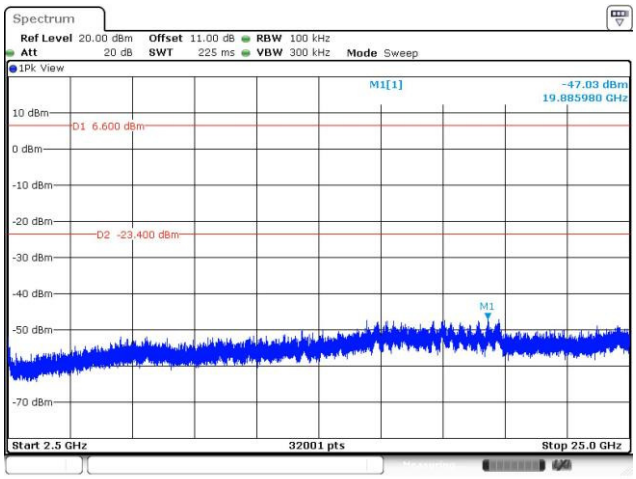
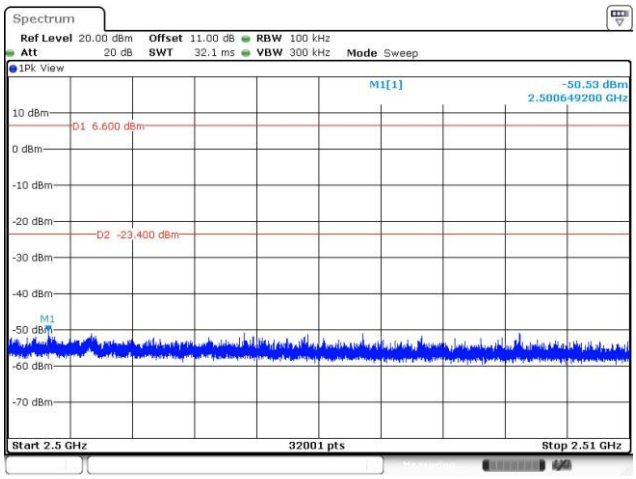
Reference Level	Tx 2422MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

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

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

Beamforming mode

3.6.7 Unwanted Emissions into Non-Restricted Frequency Bands

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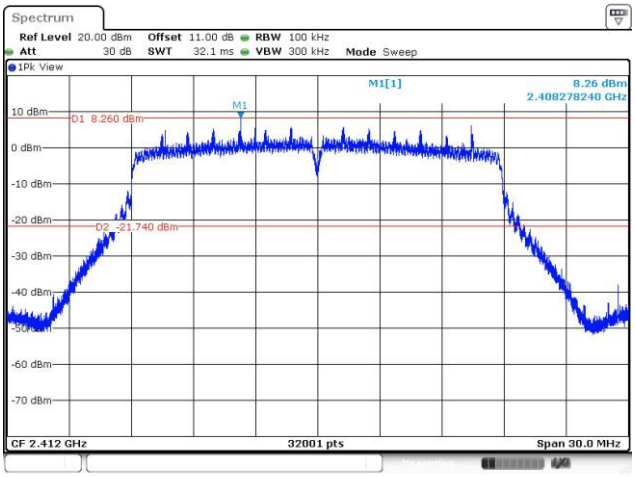
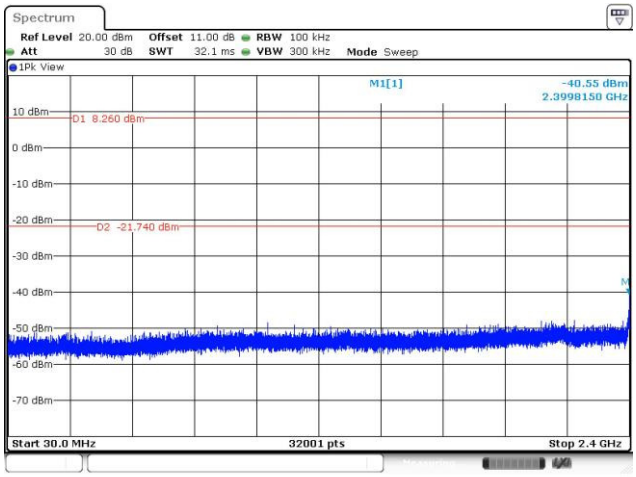
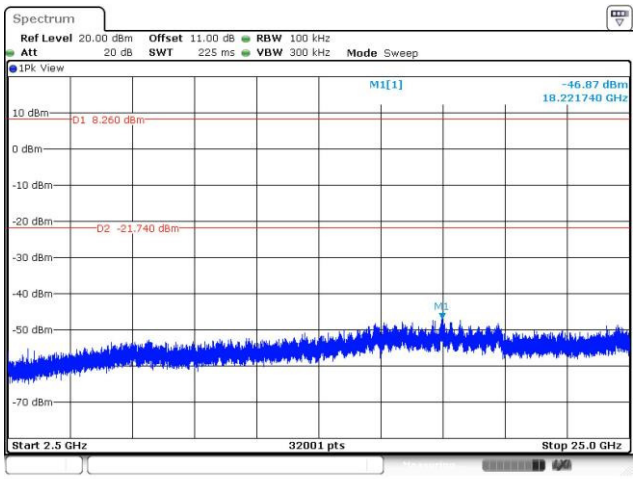
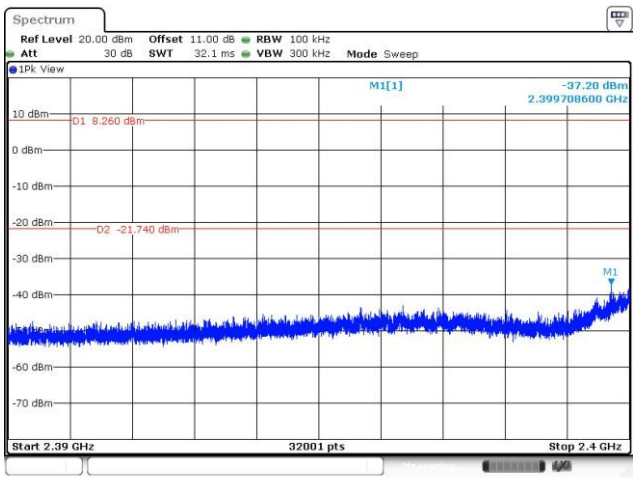
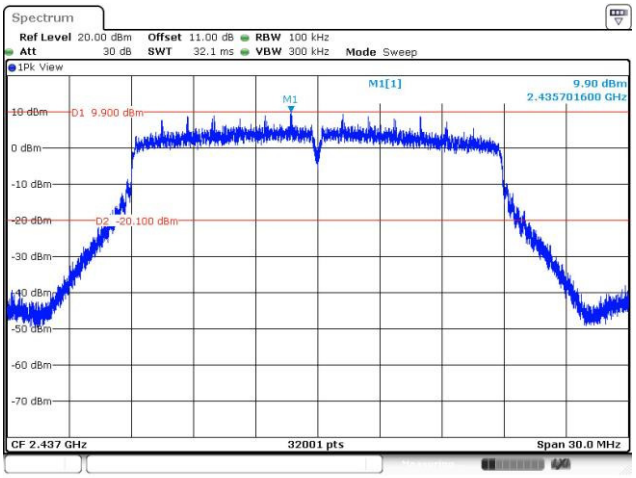
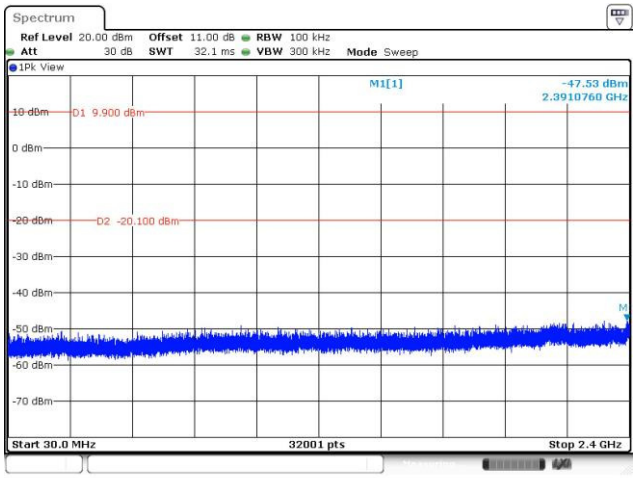
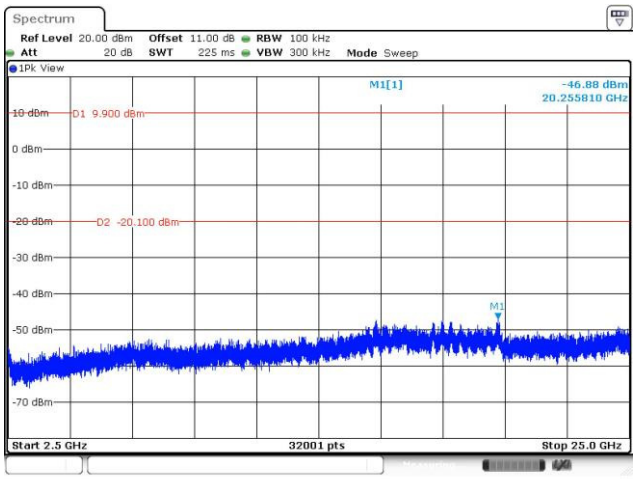
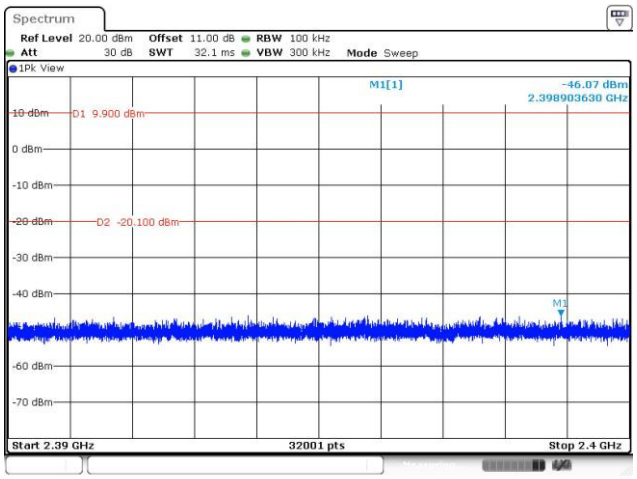
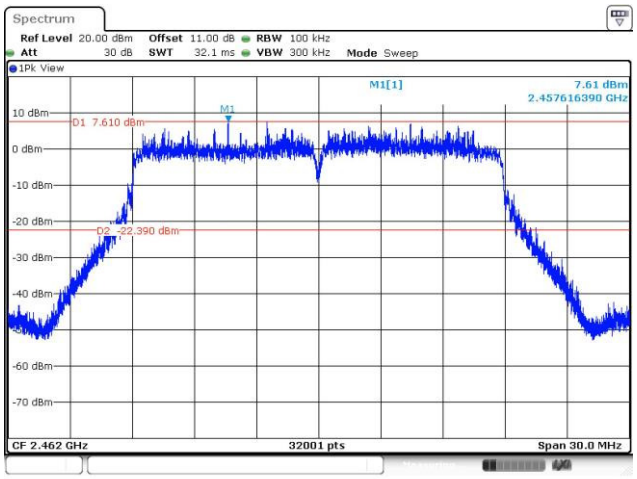
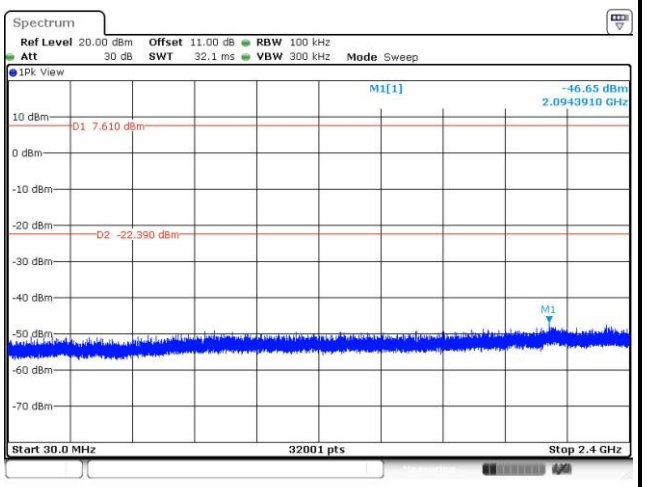
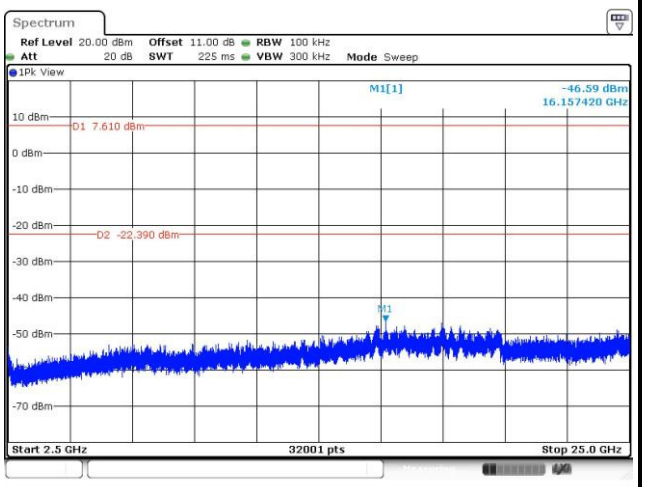
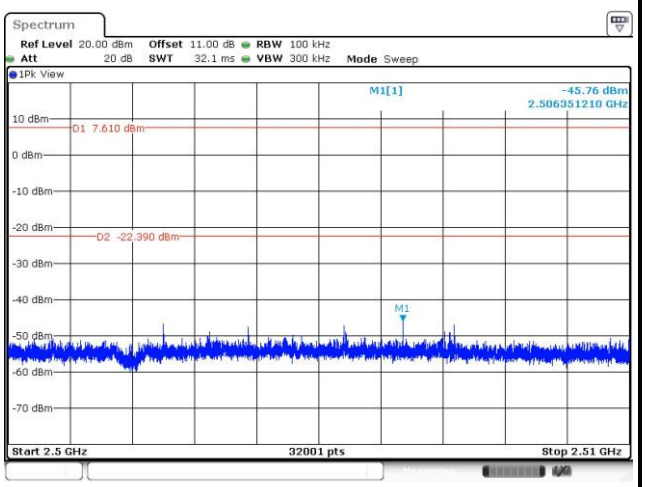
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

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

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

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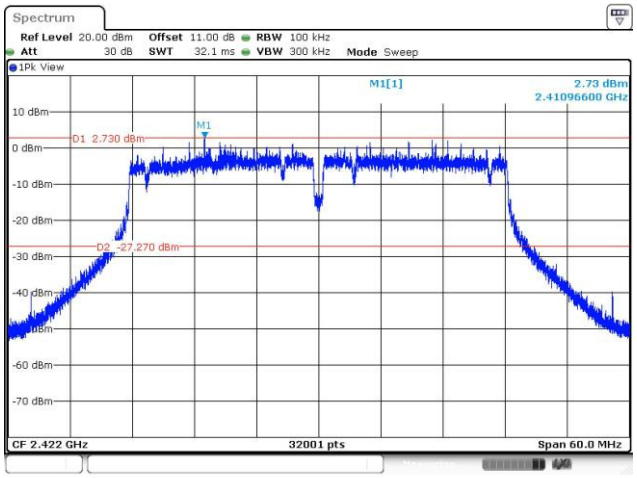
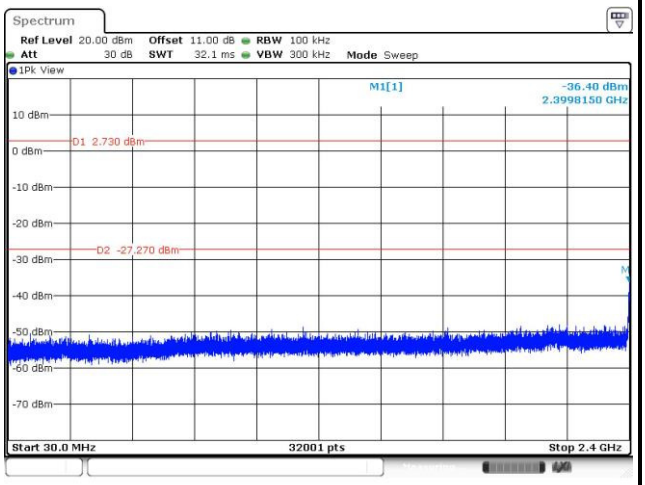
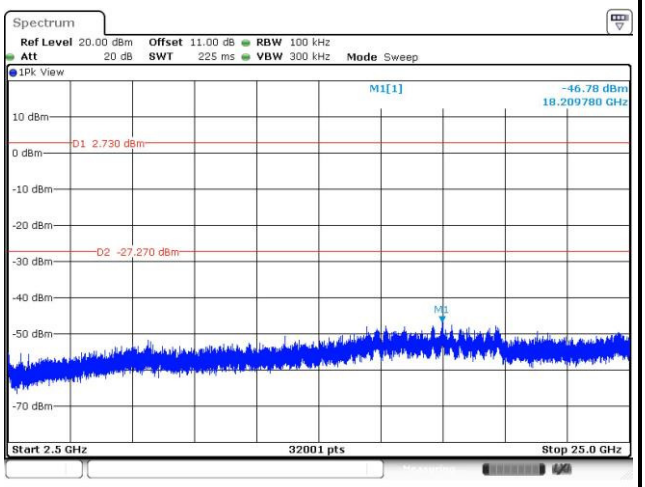
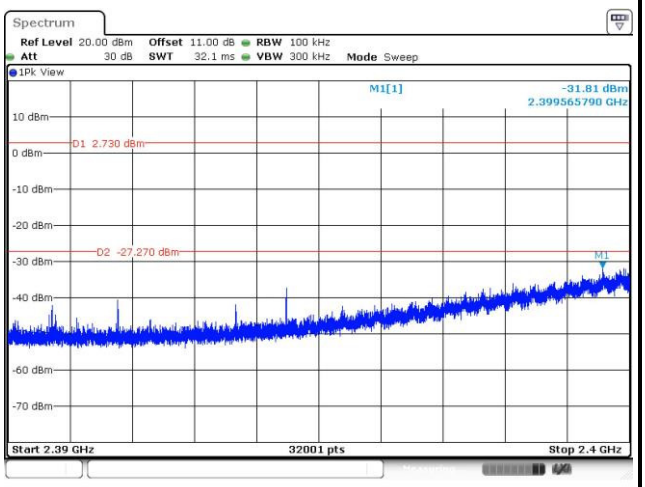
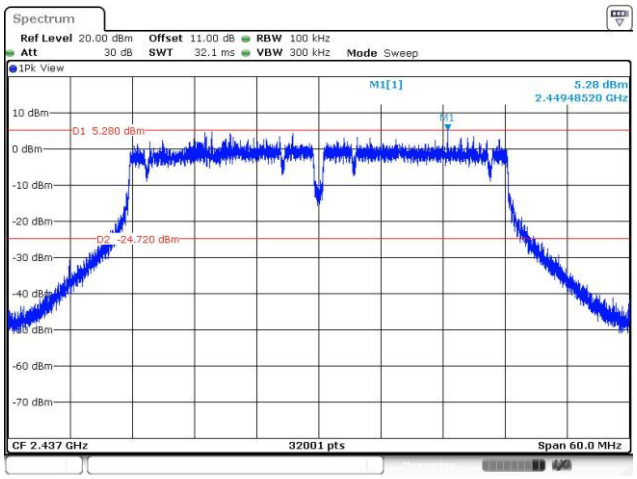
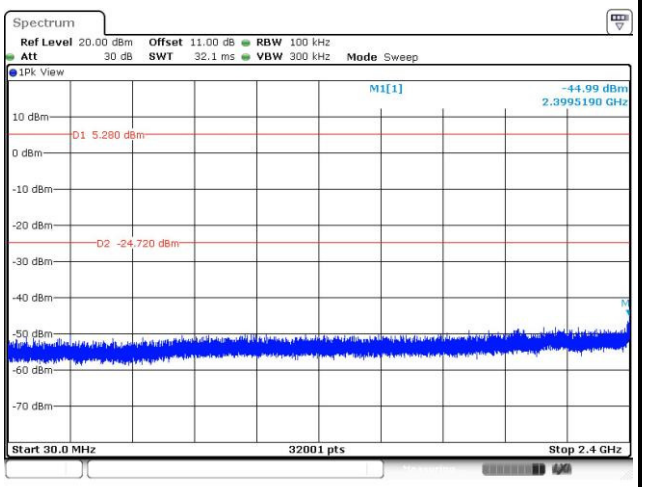
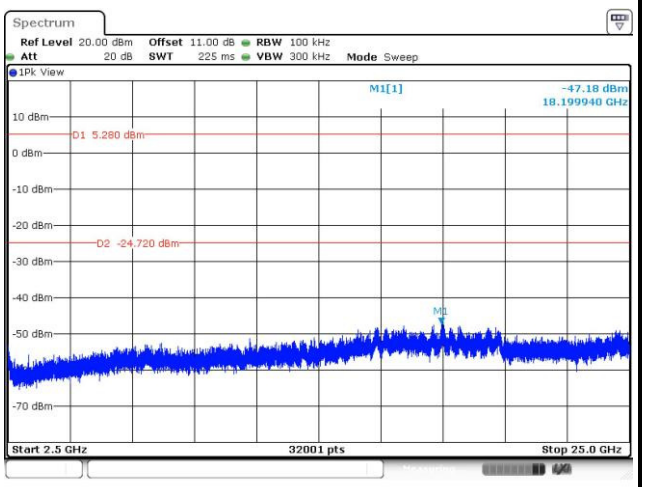
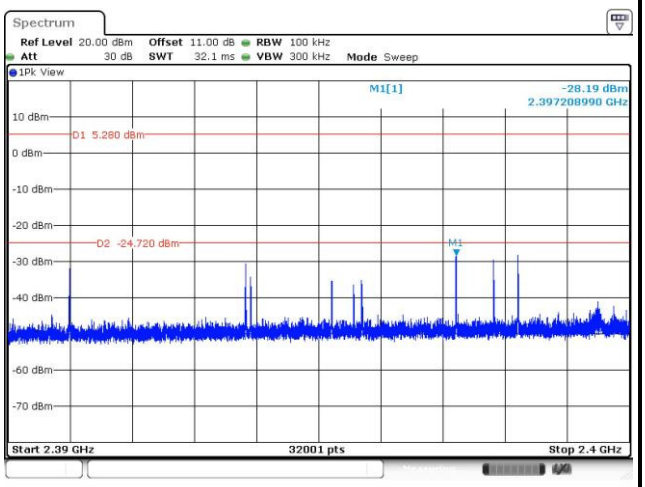
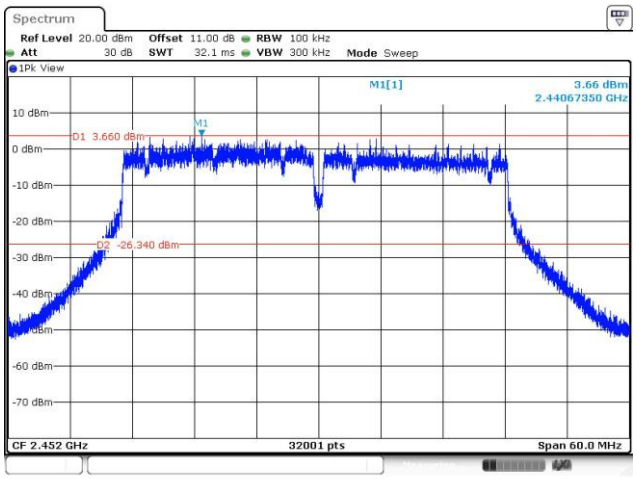
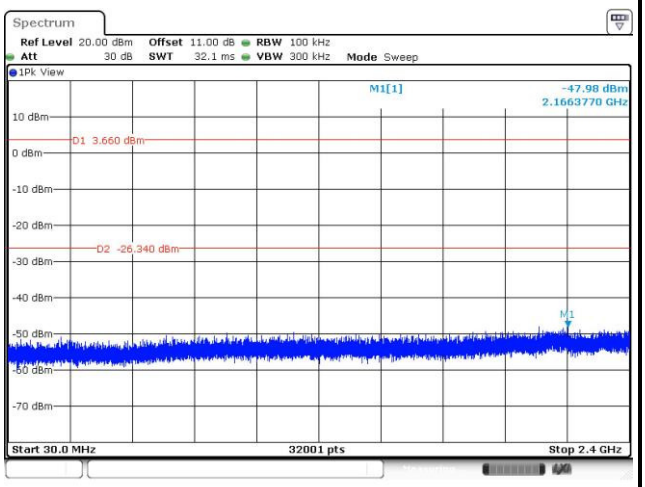
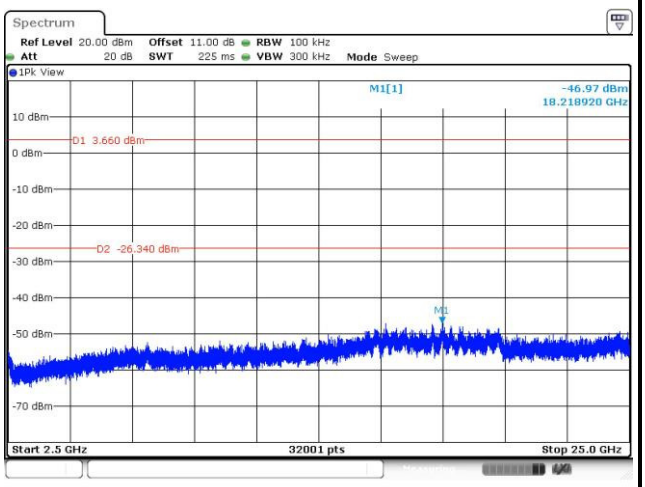
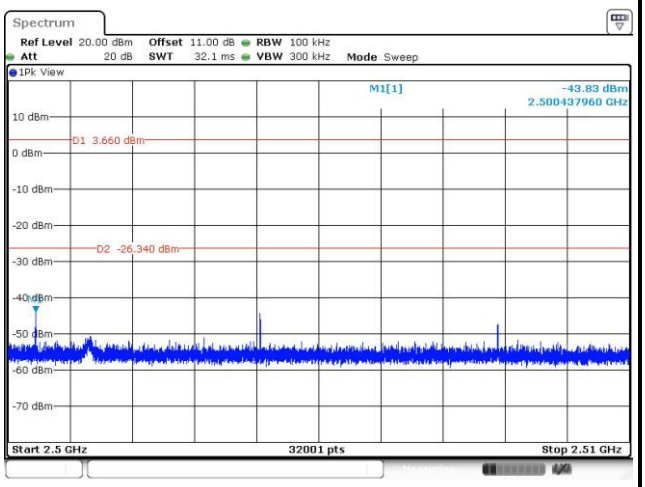
Reference Level	Tx 2422MHz / 30MHz~25GHz (down 30dBc)
	
---	
---	

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

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

4 Test laboratory information

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

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

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

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

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

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

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