FCC Test Report

FCC ID	:	**O62-DL200**
Equipment	:	**DATA LOGGER**
Model No.	:	**DL200**
Multiple Listing	:	**DL200XX (X=0-9, A-Z or Blank)** **(Only for marketing purpose.)**
Brand Name	:	**Darfon**
Applicant	:	**Darfon Electronics Corp**
Address	:	**167, ShanYing Road, Gueishan, Taoyuan 33341, Taiwan**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Sep. 20, 2016**
Tested Date	:	**Sep. 22, 2016**

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

Reviewed by: **Approved by:**

Along Chen / Assistant Manager **Gary Chang / Manager**

Testing Laboratory
2732

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Release Record

Report No.	Version	Description	Issued Date
FR692001AC	Rev. 01	Initial issue	Oct. 19, 2016

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.343MHz 45.62 (Margin -3.51dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2483.50MHz 52.99 (Margin -1.01dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 26.46	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N_{TX})	Data Rate / MCS
2400-2483.5	b	2412-2462	1-11 [11]	2	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	2	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	MCS 0-15
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	MCS 0-15
Note 1: RF output power specifies that Maximum Peak Conducted Output Power. Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation. Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.					

1.1.2 Antenna Details

Model	Type	Gain (dBi)	Connector	Remark
11320Y11008B1	Dipole	3.38	R-SMA	---

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from adapter

1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand Name: Powertron Electronics Corp. Model Name: PA1024-120IB200 Power Rating: I/P: 100-240Vac, 50-60Hz, 0.6A O/P: 12Vdc, 2.0A, 24W Max DC 1.4m non-shielded without core
2	RJ45 cable	1.4m non-shielded without core
3	Power Terminal Block	---
4	Wall Mount Kits DIN-Rail Bracket	---
5	RS485 cable	1.7m shielded without core
6	USB flash drive	Brand: SanDisk Model: SDCZ33 Capacity: 8GB

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	RT5x9x QA, Version: 1.0.9.0		
Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	11b	98.37%	0.07
	11g	88.94%	0.51
	HT20	87.91%	0.56
	HT40	78.37%	1.06

1.1.7 Power Setting

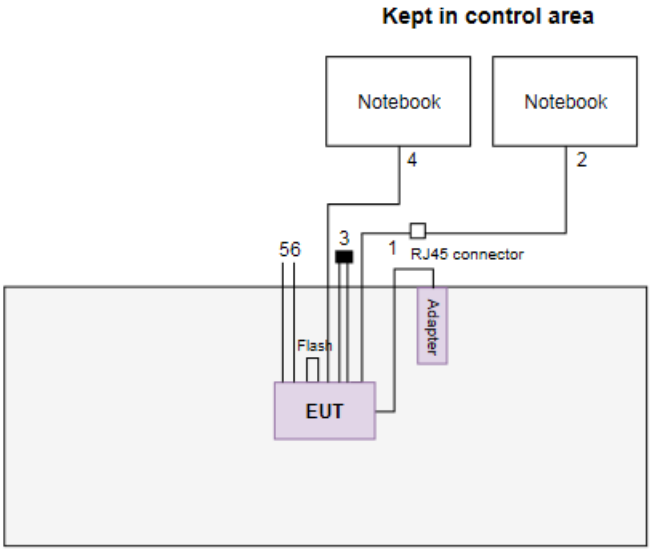
Modulation Mode	Test Frequency (MHz)	Power Set
11b	2412	19/19
11b	2437	1D/1F
11b	2462	1A/1B
11g	2412	14/14
11g	2437	11/13
11g	2462	12/14
HT20	2412	12/12
HT20	2437	11/13
HT20	2462	12/14
HT40	2422	0B/0B
HT40	2437	10/12
HT40	2452	09/0B

1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E6430	DoC	RJ45, 10m non-shielded.
2	Notebook	DELL	Latitude E6430	DoC	RJ45, 10m non-shielded.
3	RJ45 Load	ICC	---	---	RJ45, 1m (x2) non-shielded.

1.3 Test Setup Chart

Test Setup Diagram



1. RJ45, 1.4m non-shielded
2. RJ45, 10m non-shielded
3. RJ45, 1m (x2) non-shielded with load
4. RJ45, 10m non-shielded
5. RS485, 1.7m shielded
6. Console, 1.7m 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**
EMC Receiver	R&S	ESCS 30	100169	Oct. 21, 2015	Oct. 20, 2016
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2015	Nov. 12, 2016
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 21, 2015	Dec. 20, 2016
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 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. 04, 2016	Aug. 03, 2017
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 16, 2015	Dec. 15, 2016
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 16, 2015	Nov. 15, 2016
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 10, 2015	Dec. 09, 2016
Preamplifier	EMC	EMC02325	980225	Aug. 05, 2016	Aug. 04, 2017
Preamplifier	Agilent	83017A	MY39501308	Oct. 02, 2015	Oct. 01, 2016
Preamplifier	EMC	EMC184045B	980192	Aug. 24, 2016	Aug. 23, 2017
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 1M	EMC	EMCCFD400-NM-NM-1000	16052	Dec. 10, 2015	Dec. 09, 2016
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 10, 2015	Dec. 09, 2016
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 10, 2015	Dec. 09, 2016
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Feb. 17, 2016	Feb. 16, 2017
Power Meter	Anritsu	ML2495A	1218007	Oct. 14, 2015	Oct. 13, 2016
Power Sensor	Anritsu	MA2411B	1207367	Oct. 14, 2015	Oct. 13, 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	21°C / 51%	Howard Huang
Radiated Emissions	03CH01-WS	24°C / 62%	Kevin Lee
RF Conducted	TH01-WS	22°C / 66%	Alex Huang

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

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	11g	2412	6 Mbps	---
Radiated Emissions ≤1GHz	11g	2412	6 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	---

NOTE:

The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.

3 Transmitter Test Results

3.1 Conducted Emissions

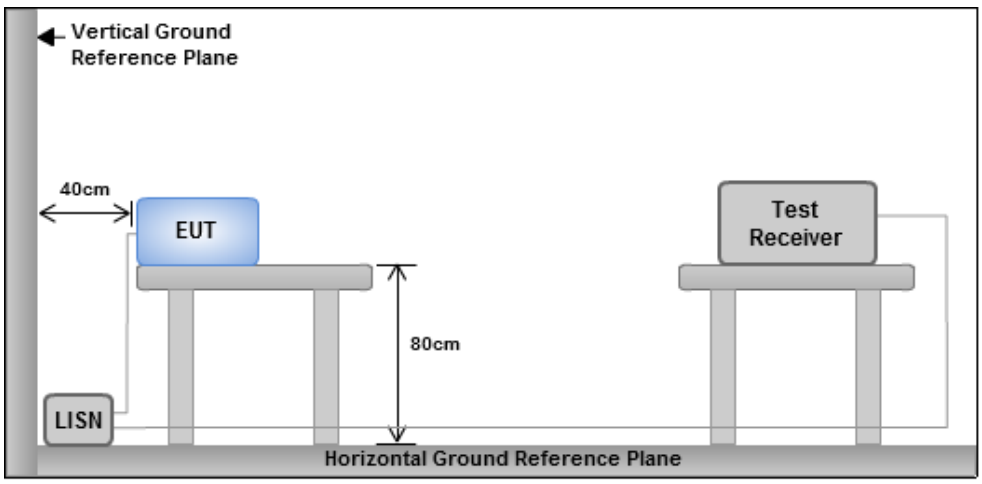
3.1.1 Limit of Conducted Emissions

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

3.1.2 Test Procedures

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

3.1.3 Test Setup

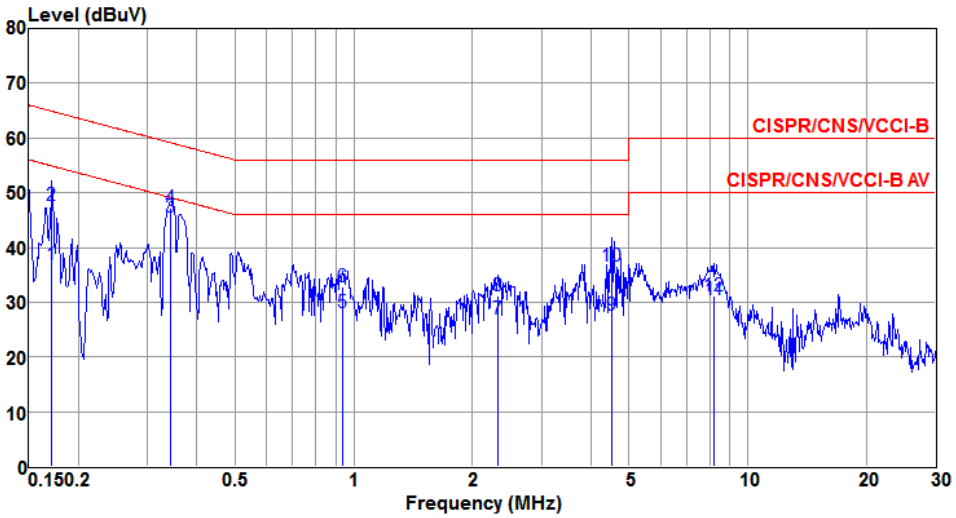


Note: 1. Support units were connected to second LISN.

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

3.1.4 Test Result of Conducted Emissions

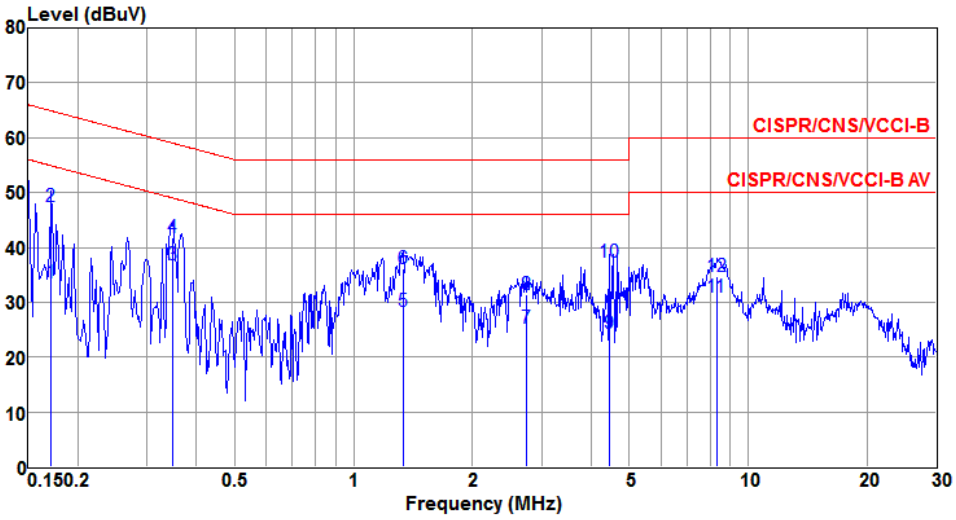
Modulation	11g	Test Freq. (MHz)	2412
Power Phase	Line		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.171	36.76	54.90	-18.14	36.13	0.61	0.02	Average
2	0.171	47.77	64.90	-17.13	47.14	0.61	0.02	QP
3@	0.343	45.62	49.13	-3.51	45.39	0.20	0.03	Average
4	0.343	47.20	59.13	-11.93	46.97	0.20	0.03	QP
5	0.938	28.13	46.00	-17.87	27.97	0.10	0.06	Average
6	0.938	32.89	56.00	-23.11	32.73	0.10	0.06	QP
7	2.321	26.92	46.00	-19.08	26.28	0.55	0.09	Average
8	2.321	31.27	56.00	-24.73	30.63	0.55	0.09	QP
9	4.525	27.58	46.00	-18.42	27.14	0.31	0.13	Average
10	4.525	36.58	56.00	-19.42	36.14	0.31	0.13	QP
11	8.235	30.35	50.00	-19.65	29.62	0.58	0.15	Average
12	8.235	31.08	60.00	-28.92	30.35	0.58	0.15	QP

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

Modulation	11g	Test Freq. (MHz)	2412
Power Phase	Neutral		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.171	33.44	54.90	-21.46	32.85	0.57	0.02	Average
2	0.171	47.49	64.90	-17.41	46.90	0.57	0.02	QP
3@	0.348	36.71	49.00	-12.29	36.53	0.15	0.03	Average
4	0.348	41.89	59.00	-17.11	41.71	0.15	0.03	QP
5	1.338	28.23	46.00	-17.77	27.91	0.25	0.07	Average
6	1.338	36.06	56.00	-19.94	35.74	0.25	0.07	QP
7	2.750	25.35	46.00	-20.65	24.79	0.46	0.10	Average
8	2.750	31.28	56.00	-24.72	30.72	0.46	0.10	QP
9	4.454	24.21	46.00	-21.79	23.38	0.71	0.12	Average
10	4.454	37.21	56.00	-18.79	36.38	0.71	0.12	QP
11	8.323	30.87	50.00	-19.13	30.16	0.56	0.15	Average
12	8.323	34.66	60.00	-25.34	33.95	0.56	0.15	QP

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

3.2 6dB and Occupied Bandwidth

3.2.1 Limit of 6dB Bandwidth

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

3.2.2 Test Procedures

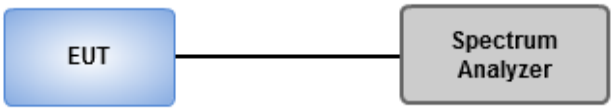
6dB Bandwidth

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

Occupied Bandwidth

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

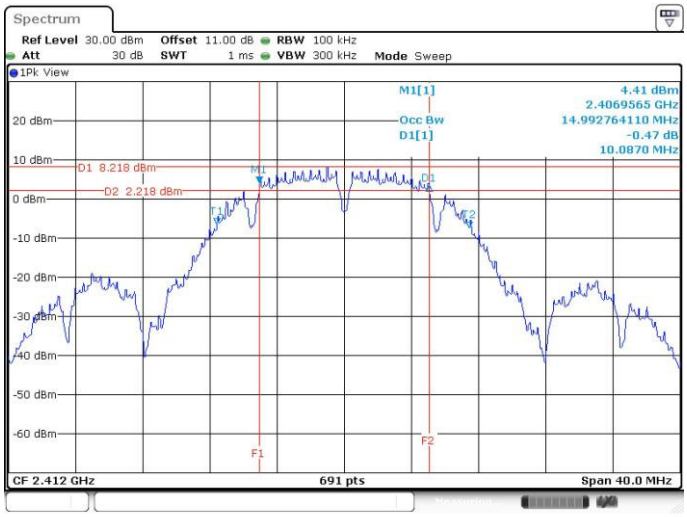
3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

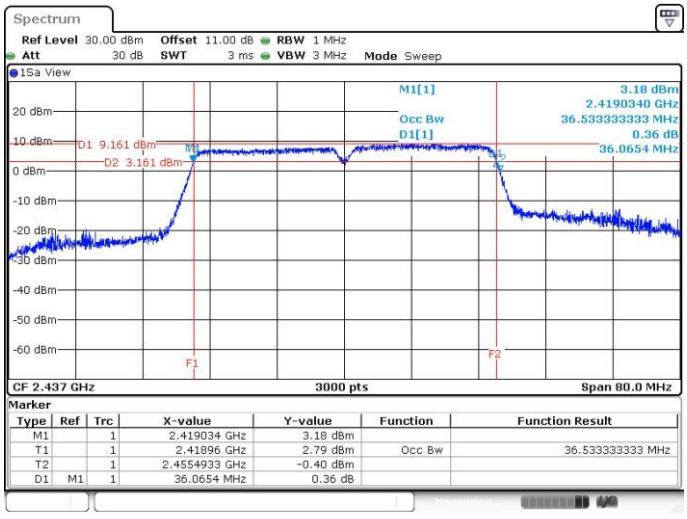
Modulation Mode	N_{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
11b	2	2412	10.09	11.07	---	---	500
11b	2	2437	10.09	11.07	---	---	500
11b	2	2462	11.07	11.07	---	---	500
11g	2	2412	16.35	16.35	---	---	500
11g	2	2437	16.06	16.35	---	---	500
11g	2	2462	16.06	16.35	---	---	500
HT20	2	2412	16.41	16.58	---	---	500
HT20	2	2437	16.41	16.93	---	---	500
HT20	2	2462	16.41	16.06	---	---	500
HT40	2	2422	35.71	35.36	---	---	500
HT40	2	2437	35.36	35.25	---	---	500
HT40	2	2452	35.13	35.25	---	---	500

Worst Plot



Modulation Mode	N_{TX}	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
11b	2	2412	15.05	14.73	---	---
11b	2	2437	21.49	15.21	---	---
11b	2	2462	15.27	14.83	---	---
11g	2	2412	16.96	16.81	---	---
11g	2	2437	17.93	16.96	---	---
11g	2	2462	17.07	16.84	---	---
HT20	2	2412	17.61	17.59	---	---
HT20	2	2437	19.65	17.84	---	---
HT20	2	2462	17.84	17.67	---	---
HT40	2	2422	36.48	36.32	---	---
HT40	2	2437	36.53	36.43	---	---
HT40	2	2452	36.05	36.16	---	---

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 (For reference only)

☒ **Power meter**

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

3.3.3 Test Setup

3.3.4 Test Result of Maximum Output Power

Modulation Mode	N_{TX}	Freq. (MHz)	Peak conducted Output Power (dBm)							Ant. Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Total Power (mW)	Total Power (dBm)	Limit (dBm)			
11b	2	2412	20.82	20.69	---	---	238.001	23.77	30.00	3.38	27.15	36.00
11b	2	2437	21.98	22.62	---	---	340.571	25.32	30.00	3.38	28.70	36.00
11b	2	2462	20.14	19.99	---	---	203.046	23.08	30.00	3.38	26.46	36.00
11g	2	2412	23.36	23.53	---	---	442.194	**26.46**	30.00	3.38	29.84	36.00
11g	2	2437	22.19	22.9	---	---	360.561	25.57	30.00	3.38	28.95	36.00
11g	2	2462	22.12	22.98	---	---	361.539	25.58	30.00	3.38	28.96	36.00
HT20	2	2412	22.41	22.57	---	---	354.898	25.50	30.00	3.38	28.88	36.00
HT20	2	2437	22.18	22.97	---	---	363.349	25.60	30.00	3.38	28.98	36.00
HT20	2	2462	22.12	22.87	---	---	356.572	25.52	30.00	3.38	28.90	36.00
HT40	2	2422	19.52	19.59	---	---	180.528	22.57	30.00	3.38	25.95	36.00
HT40	2	2437	22.11	22.43	---	---	337.540	25.28	30.00	3.38	28.66	36.00
HT40	2	2452	19.22	18.93	---	---	161.723	22.09	30.00	3.38	25.47	36.00

Modulation Mode	N_{TX}	Freq. (MHz)	Conducted (Average) Output Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
11b	2	2412	18.91	18.64	---	---	150.918	21.79	---
11b	2	2437	20.52	20.76	---	---	231.844	23.65	---
11b	2	2462	18.39	18.03	---	---	132.557	21.22	---
11g	2	2412	16.22	16.04	---	---	82.058	19.14	---
11g	2	2437	15.25	15.19	---	---	66.533	18.23	---
11g	2	2462	14.88	15.11	---	---	63.195	18.01	---
HT20	2	2412	15.02	14.6	---	---	60.609	17.83	---
HT20	2	2437	15.11	15.22	---	---	65.700	18.18	---
HT20	2	2462	14.84	14.95	---	---	61.740	17.91	---
HT40	2	2422	11.77	11.44	---	---	28.963	14.62	---
HT40	2	2437	15.08	14.91	---	---	63.185	18.01	---
HT40	2	2452	11.4	10.81	---	---	25.854	14.13	---

Note: Conducted average output power is for reference only.

3.4 Power Spectral Density

3.4.1 Limit of Power Spectral Density

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

3.4.2 Test Procedures

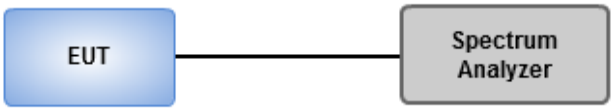
☒ Maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit.

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

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

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

3.4.3 Test Setup

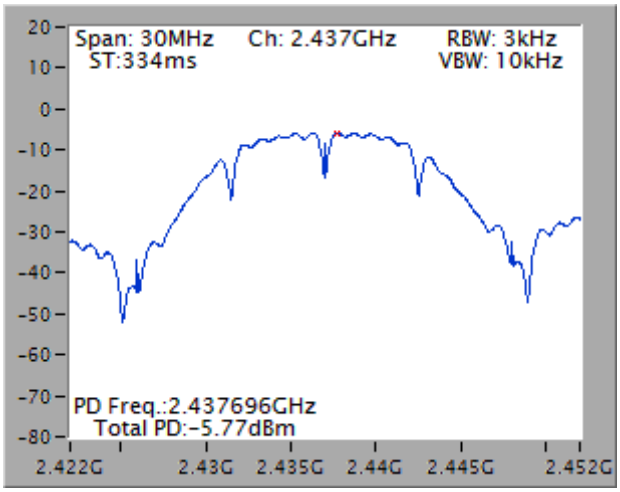


3.4.4 Test Result of Power Spectral Density

Modulation Mode	N_{TX}	Freq. (MHz)	Total Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
11b	2	2412	-8.11	8.00
11b	2	2437	-5.77	8.00
11b	2	2462	-8.82	8.00
11g	2	2412	-8.27	8.00
11g	2	2437	-9.63	8.00
11g	2	2462	-9.90	8.00
HT20	2	2412	-9.53	8.00
HT20	2	2437	-8.51	8.00
HT20	2	2462	-9.79	8.00
HT40	2	2422	-15.61	8.00
HT40	2	2437	-11.58	8.00
HT40	2	2452	-15.73	8.00

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

Worst Plot



3.5 Unwanted Emissions into Restricted Frequency Bands

3.5.1 Limit of Unwanted Emissions into Restricted Frequency Bands

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

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

3.5.2 Test Procedures

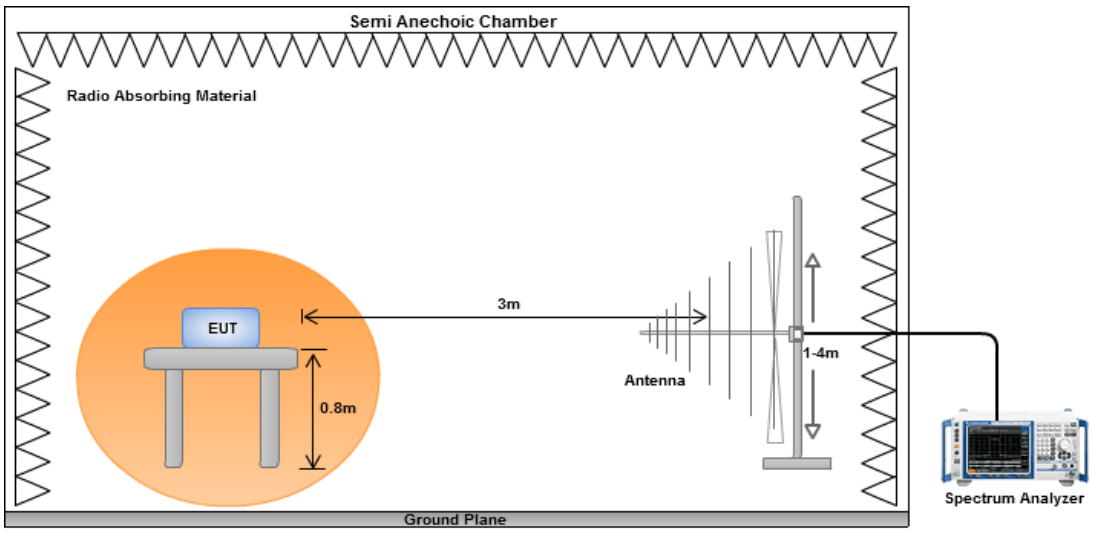
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

Note:

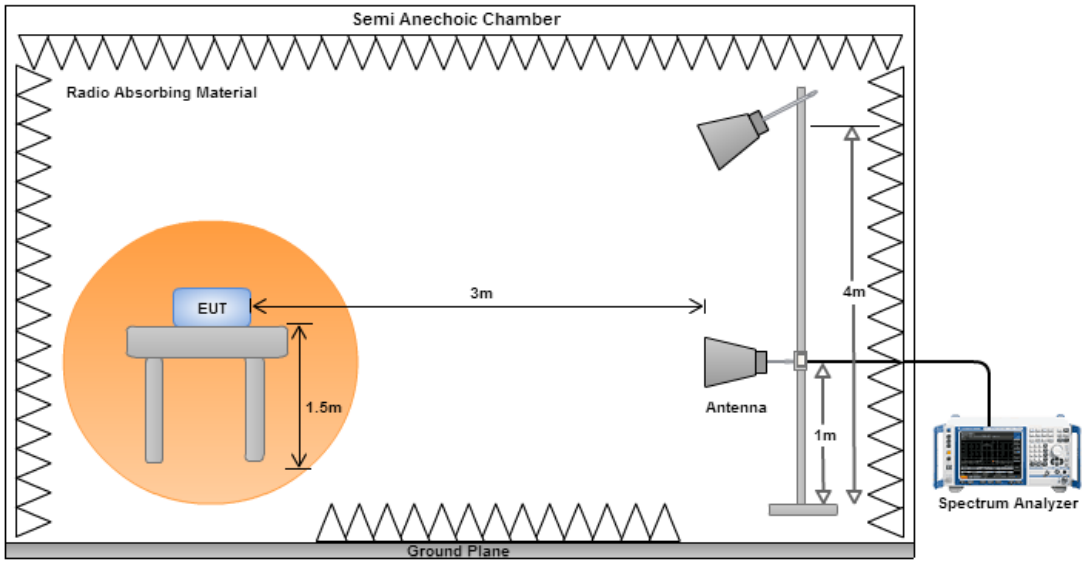
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz

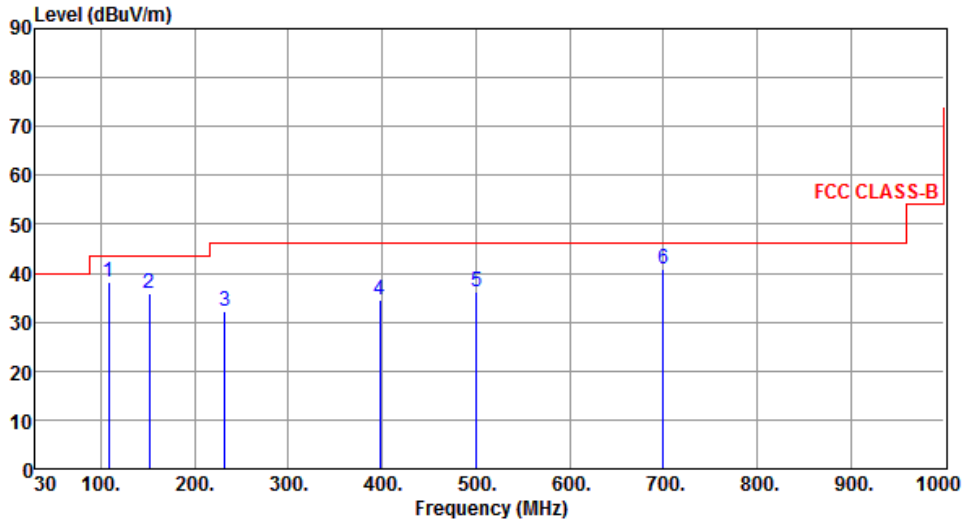


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

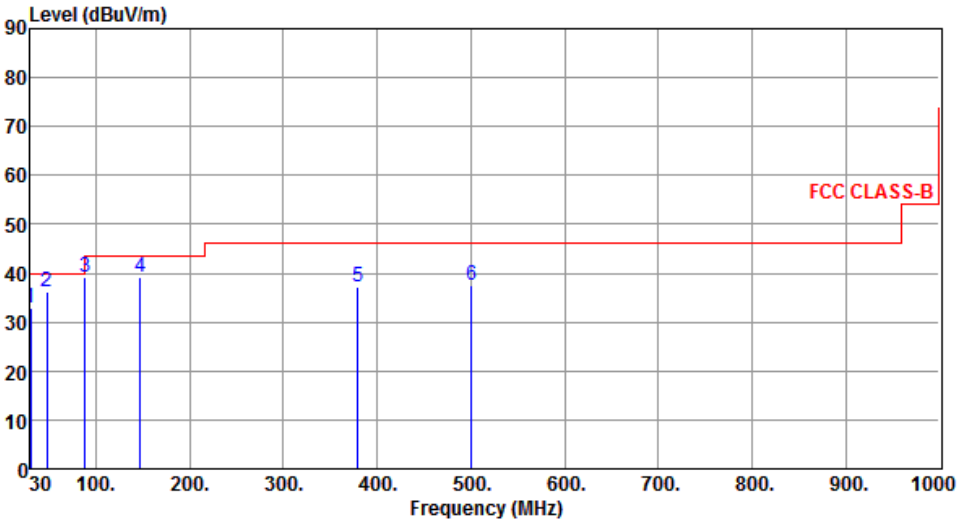
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	108.57	38.10	43.50	-5.40	49.65	-11.55	Peak	---	---
2	151.25	36.03	43.50	-7.47	44.37	-8.34	Peak	---	---
3	231.76	32.07	46.00	-13.93	41.61	-9.54	Peak	---	---
4	397.63	34.68	46.00	-11.32	39.93	-5.25	Peak	---	---
5	500.45	36.32	46.00	-9.68	39.39	-3.07	Peak	---	---
6	700.27	40.71	46.00	-5.29	40.24	0.47	Peak	---	---

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

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

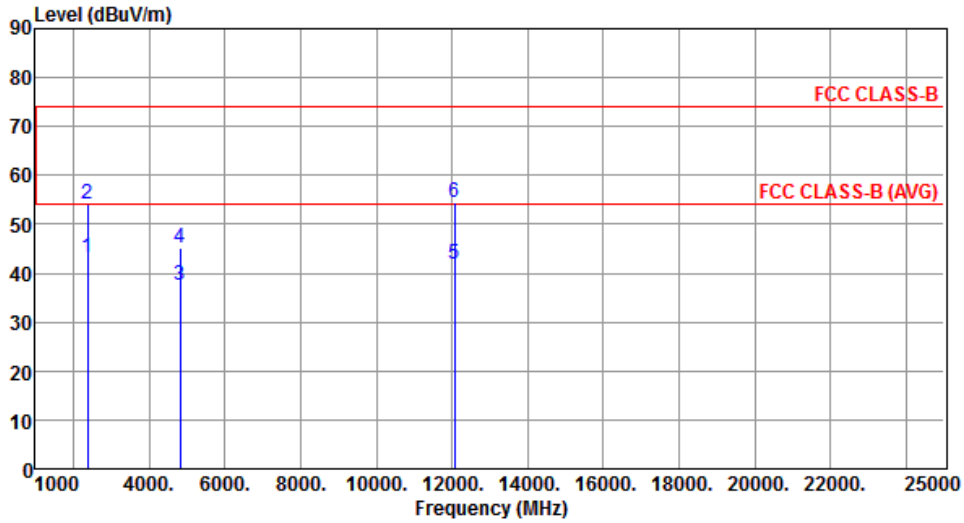


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	30.00	33.02	40.00	-6.98	41.90	-8.88	QP	150	276
2	47.46	36.05	40.00	-3.95	43.71	-7.66	QP	100	310
3	88.20	39.23	43.50	-4.27	53.44	-14.21	Peak	---	---
4	147.37	39.12	43.50	-4.38	47.50	-8.38	Peak	---	---
5	379.20	37.30	46.00	-8.70	43.02	-5.72	Peak	---	---
6	500.45	37.57	46.00	-8.43	40.64	-3.07	Peak	---	---

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

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

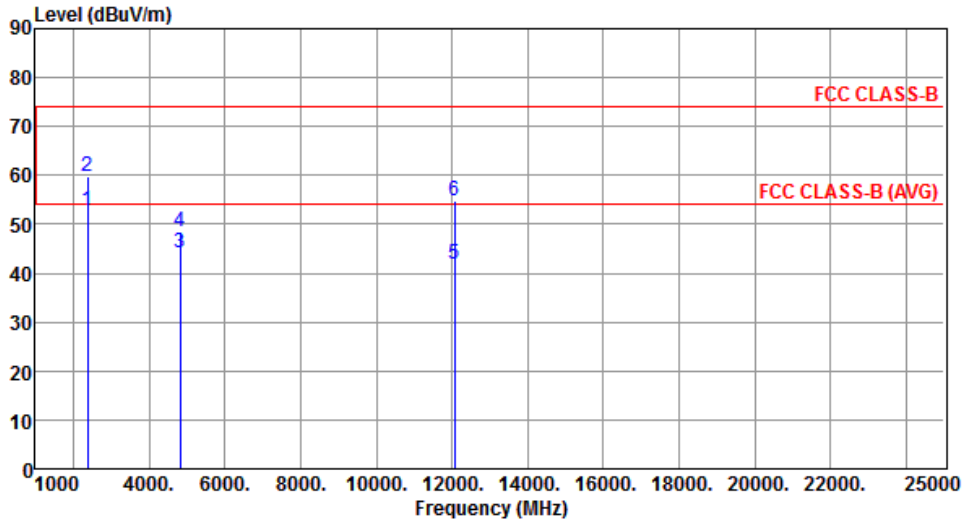
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	43.14	54.00	-10.86	46.49	-3.35	Average	100	348
2	2390.00	54.10	74.00	-19.90	57.45	-3.35	Peak	100	348
3	4824.00	37.39	54.00	-16.61	33.80	3.59	Average	156	176
4	4824.00	45.23	74.00	-28.77	41.64	3.59	Peak	156	176
5	12060.00	41.76	54.00	-12.24	27.63	14.13	Average	100	211
6	12060.00	54.44	74.00	-19.56	40.31	14.13	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).

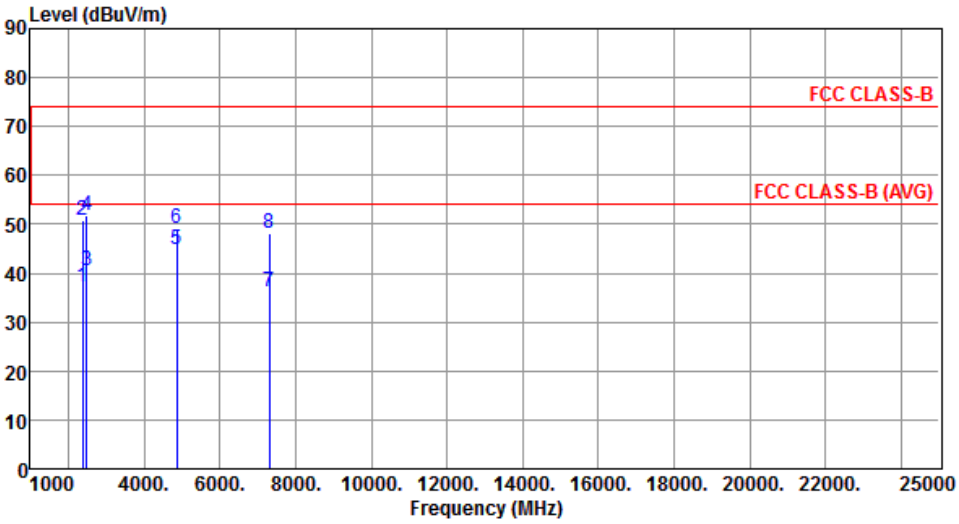
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.66	54.00	-1.34	56.01	-3.35	Average	169	82
2	2390.00	59.65	74.00	-14.35	63.00	-3.35	Peak	169	82
3	4824.00	44.21	54.00	-9.79	40.62	3.59	Average	100	152
4	4824.00	48.64	74.00	-25.36	45.05	3.59	Peak	100	152
5	12060.00	41.92	54.00	-12.08	27.79	14.13	Average	100	115
6	12060.00	54.64	74.00	-19.36	40.51	14.13	Peak	100	115

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

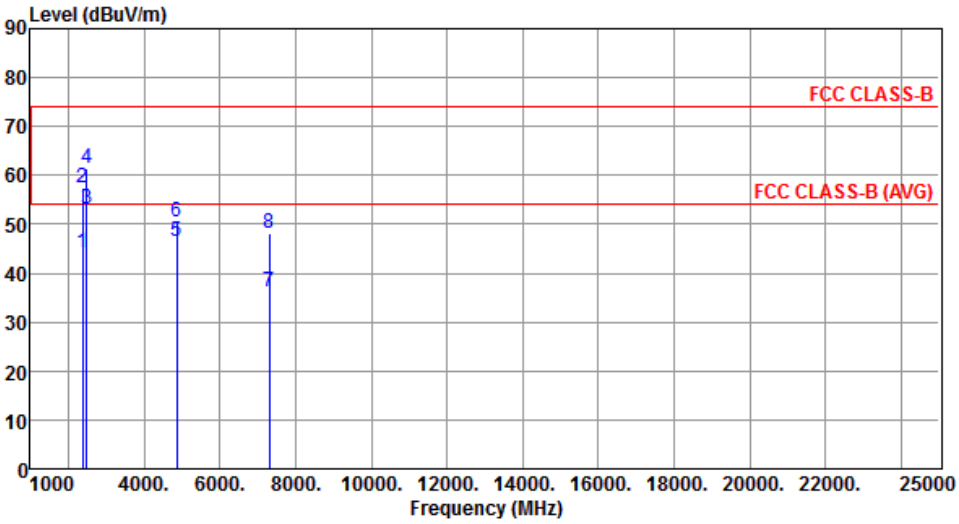
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	37.21	54.00	-16.79	40.56	-3.35	Average	100	345
2	2390.00	50.93	74.00	-23.07	54.28	-3.35	Peak	100	345
3	2483.50	40.68	54.00	-13.32	43.61	-2.93	Average	100	345
4	2483.50	51.70	74.00	-22.30	54.63	-2.93	Peak	100	345
5	4874.00	44.89	54.00	-9.11	41.14	3.75	Average	162	175
6	4874.00	49.28	74.00	-24.72	45.53	3.75	Peak	162	175
7	7311.00	36.35	54.00	-17.65	27.93	8.42	Average	111	115
8	7311.00	48.23	74.00	-25.77	39.81	8.42	Peak	111	115

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

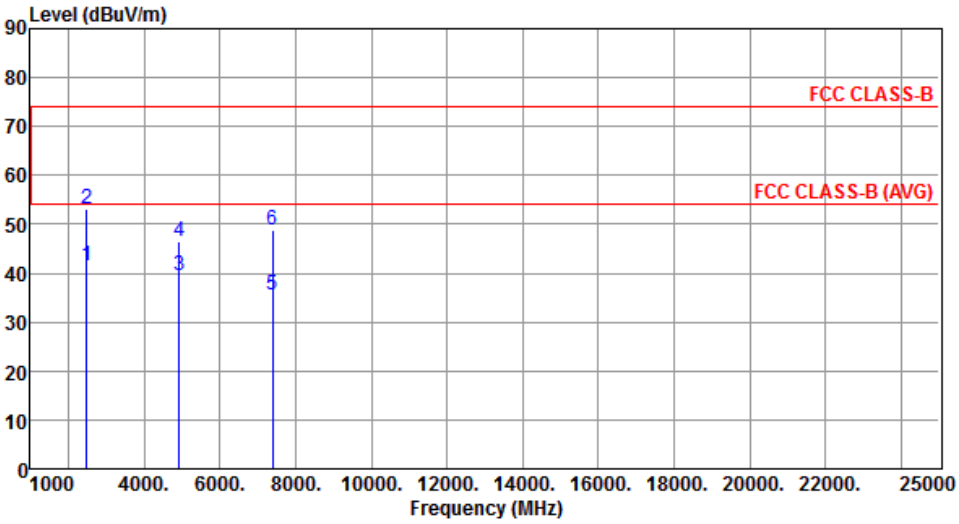
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	44.15	54.00	-9.85	47.50	-3.35	Average	168	97
2	2390.00	57.41	74.00	-16.59	60.76	-3.35	Peak	168	97
3	2483.50	52.99	54.00	-1.01	55.92	-2.93	Average	168	97
4	2483.50	61.56	74.00	-12.44	64.49	-2.93	Peak	168	97
5	4874.00	46.36	54.00	-7.64	42.61	3.75	Average	100	155
6	4874.00	50.49	74.00	-23.51	46.74	3.75	Peak	100	155
7	7311.00	36.11	54.00	-17.89	27.69	8.42	Average	100	158
8	7311.00	48.08	74.00	-25.92	39.66	8.42	Peak	100	158

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

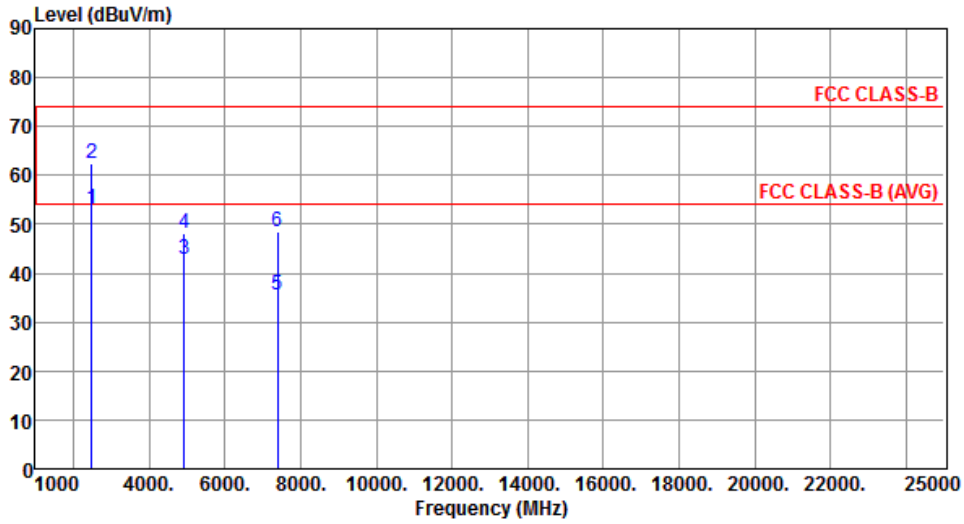
Modulation	11b	Test Freq. (MHz)	2462
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	41.48	54.00	-12.52	44.41	-2.93	Average	100	346
2	2483.50	53.18	74.00	-20.82	56.11	-2.93	Peak	100	346
3	4924.00	39.43	54.00	-14.57	35.52	3.91	Average	100	231
4	4924.00	46.54	74.00	-27.46	42.63	3.91	Peak	100	231
5	7386.00	35.70	54.00	-18.30	27.24	8.46	Average	100	146
6	7386.00	48.73	74.00	-25.27	40.27	8.46	Peak	100	146

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

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

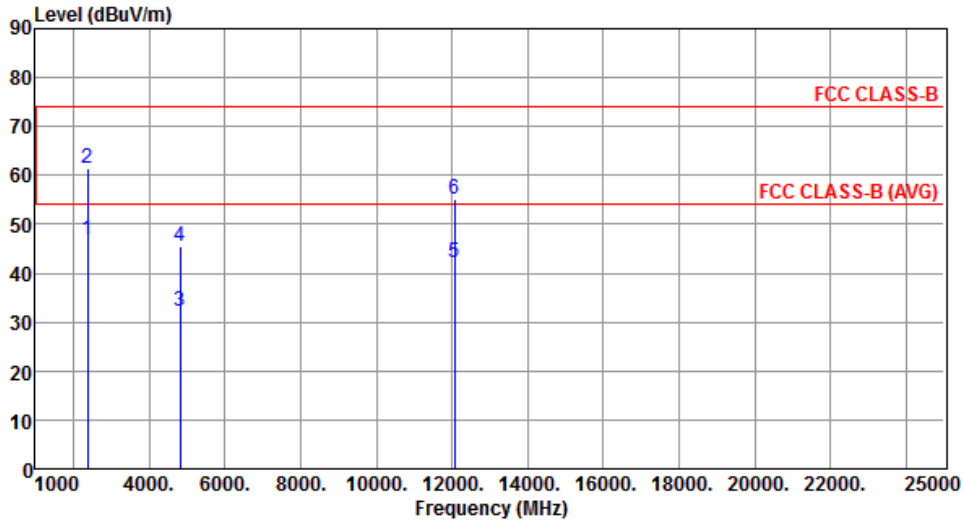


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.99	54.00	-1.01	55.92	-2.93	Average	168	95
2	2483.50	62.31	74.00	-11.69	65.24	-2.93	Peak	168	95
3	4924.00	42.94	54.00	-11.06	39.03	3.91	Average	112	154
4	4924.00	48.10	74.00	-25.90	44.19	3.91	Peak	112	154
5	7386.00	35.57	54.00	-18.43	27.11	8.46	Average	100	160
6	7386.00	48.51	74.00	-25.49	40.05	8.46	Peak	100	160

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

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

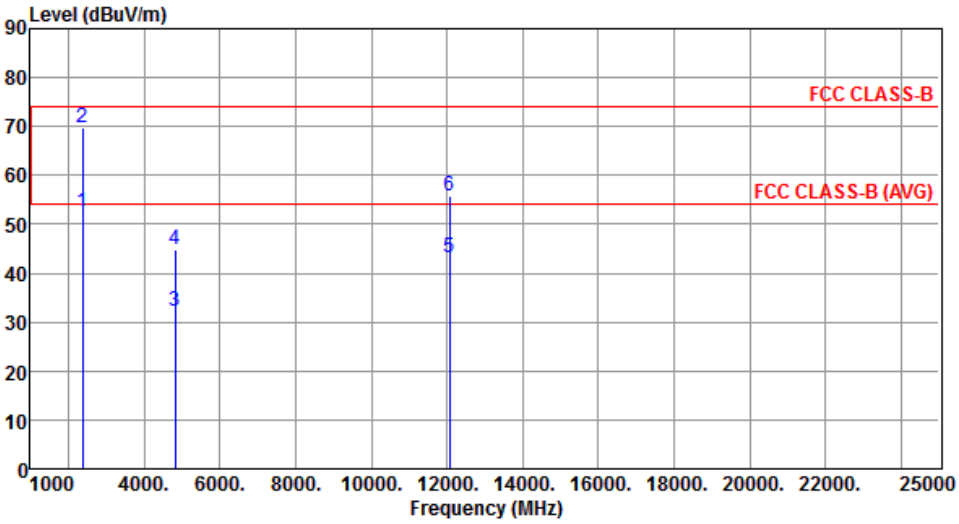
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	46.70	54.00	-7.30	50.05	-3.35	Average	175	160
2	2390.00	61.38	74.00	-12.62	64.73	-3.35	Peak	175	160
3	4824.00	32.17	54.00	-21.83	28.58	3.59	Average	115	72
4	4824.00	45.37	74.00	-28.63	41.78	3.59	Peak	115	72
5	12060.00	42.32	54.00	-11.68	28.19	14.13	Average	134	175
6	12060.00	55.28	74.00	-18.72	41.15	14.13	Peak	134	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).

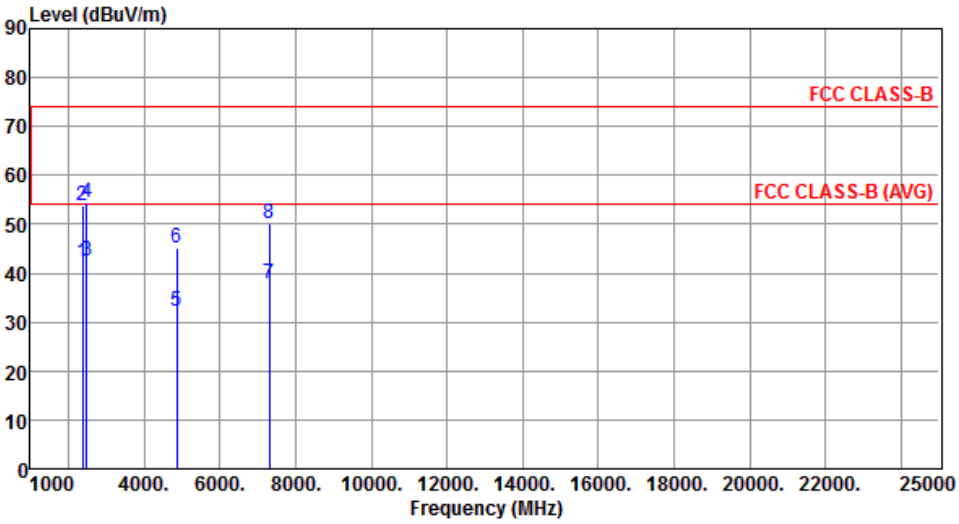
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Vertical		



	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	52.62	54.00	-1.38	55.97	-3.35	Average	160	95
2	2390.00	69.88	74.00	-4.12	73.23	-3.35	Peak	160	95
3	4824.00	32.28	54.00	-21.72	28.69	3.59	Average	105	314
4	4824.00	44.96	74.00	-29.04	41.37	3.59	Peak	105	314
5	12060.00	43.12	54.00	-10.88	28.99	14.13	Average	152	63
6	12060.00	55.78	74.00	-18.22	41.65	14.13	Peak	152	63

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

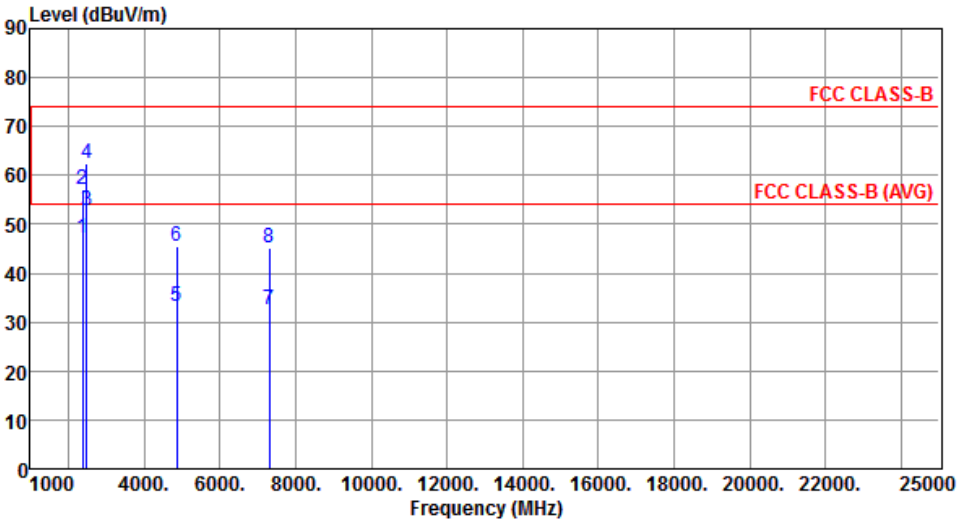
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	42.32	54.00	-11.68	45.67	-3.35	Average	193	157
2	2390.00	53.83	74.00	-20.17	57.18	-3.35	Peak	193	157
3	2483.50	42.64	54.00	-11.36	45.57	-2.93	Average	193	157
4	2483.50	54.62	74.00	-19.38	57.55	-2.93	Peak	193	157
5	4874.00	32.13	54.00	-21.87	28.38	3.75	Average	125	143
6	4874.00	45.30	74.00	-28.70	41.55	3.75	Peak	125	143
7	7311.00	37.95	54.00	-16.05	29.53	8.42	Average	140	208
8	7311.00	50.02	74.00	-23.98	41.60	8.42	Peak	140	208

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

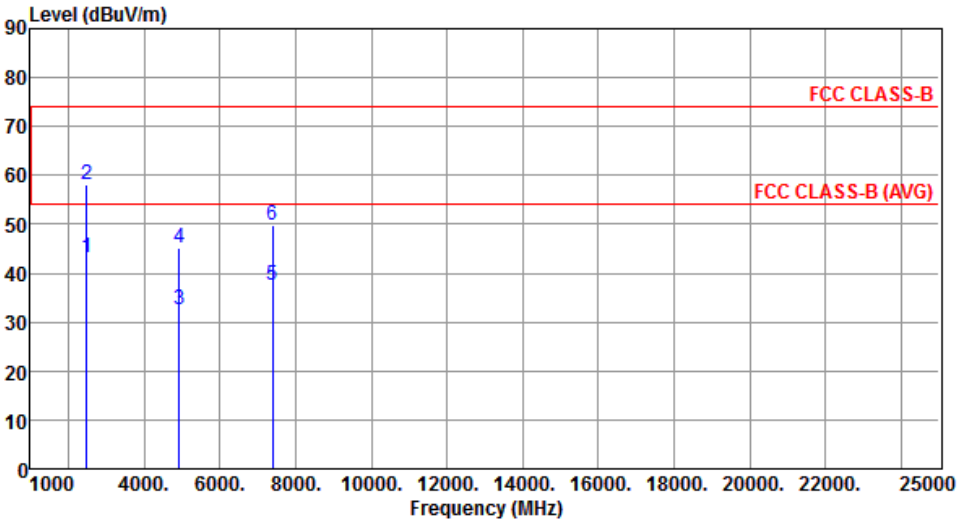
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	47.24	54.00	-6.76	50.59	-3.35	Average	165	102
2	2390.00	57.21	74.00	-16.79	60.56	-3.35	Peak	165	102
3	2483.50	52.80	54.00	-1.20	55.73	-2.93	Average	165	102
4	2483.50	62.41	74.00	-11.59	65.34	-2.93	Peak	165	102
5	4874.00	33.33	54.00	-20.67	29.58	3.75	Average	122	91
6	4874.00	45.41	74.00	-28.59	41.66	3.75	Peak	122	91
7	7311.00	32.71	54.00	-21.29	24.29	8.42	Average	115	72
8	7311.00	45.16	74.00	-28.84	36.74	8.42	Peak	115	72

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

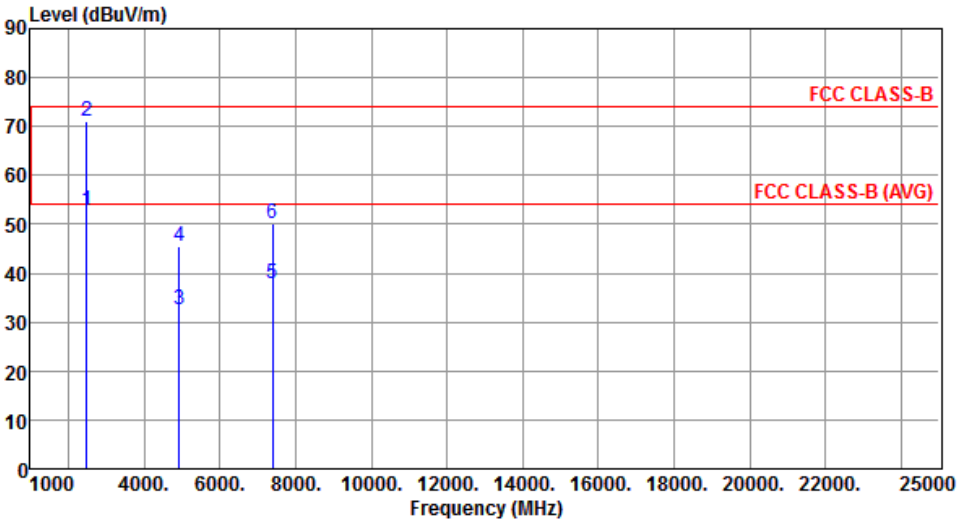
Modulation	11g	Test Freq. (MHz)	2462
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	43.13	54.00	-10.87	46.06	-2.93	Average	142	167
2	2483.50	58.26	74.00	-15.74	61.19	-2.93	Peak	142	167
3	4924.00	32.48	54.00	-21.52	28.57	3.91	Average	103	120
4	4924.00	45.26	74.00	-28.74	41.35	3.91	Peak	103	120
5	7386.00	37.48	54.00	-16.52	29.02	8.46	Average	141	84
6	7386.00	49.81	74.00	-24.19	41.35	8.46	Peak	141	84

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

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

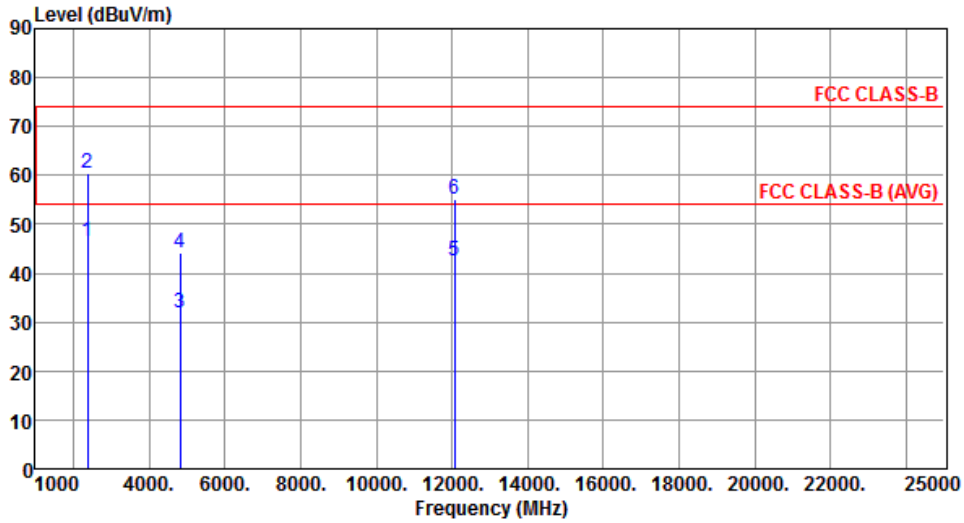


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.86	54.00	-1.14	55.79	-2.93	Average	163	98
2	2483.50	70.92	74.00	-3.08	73.85	-2.93	Peak	163	98
3	4924.00	32.65	54.00	-21.35	28.74	3.91	Average	140	223
4	4924.00	45.58	74.00	-28.42	41.67	3.91	Peak	140	223
5	7386.00	37.78	54.00	-16.22	29.32	8.46	Average	100	120
6	7386.00	50.14	74.00	-23.86	41.68	8.46	Peak	100	120

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

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

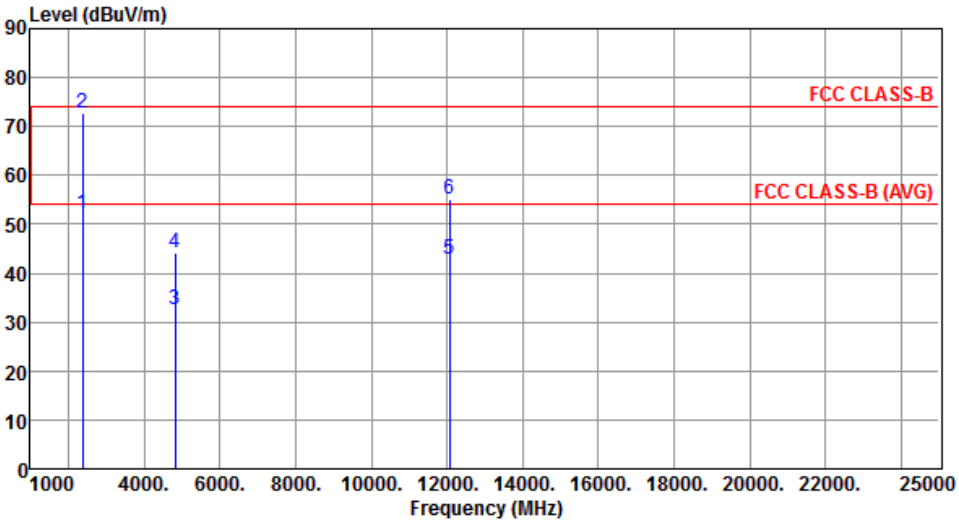
Modulation	HT20	**Test Freq. (MHz)**	2412
Polarization	Horizontal		



	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	46.52	54.00	-7.48	49.87	-3.35	Average	175	162
2	2390.00	60.31	74.00	-13.69	63.66	-3.35	Peak	175	162
3	4824.00	31.97	54.00	-22.03	28.38	3.59	Average	107	42
4	4824.00	44.22	74.00	-29.78	40.63	3.59	Peak	107	42
5	12060.00	42.36	54.00	-11.64	28.23	14.13	Average	130	174
6	12060.00	55.07	74.00	-18.93	40.94	14.13	Peak	130	174

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

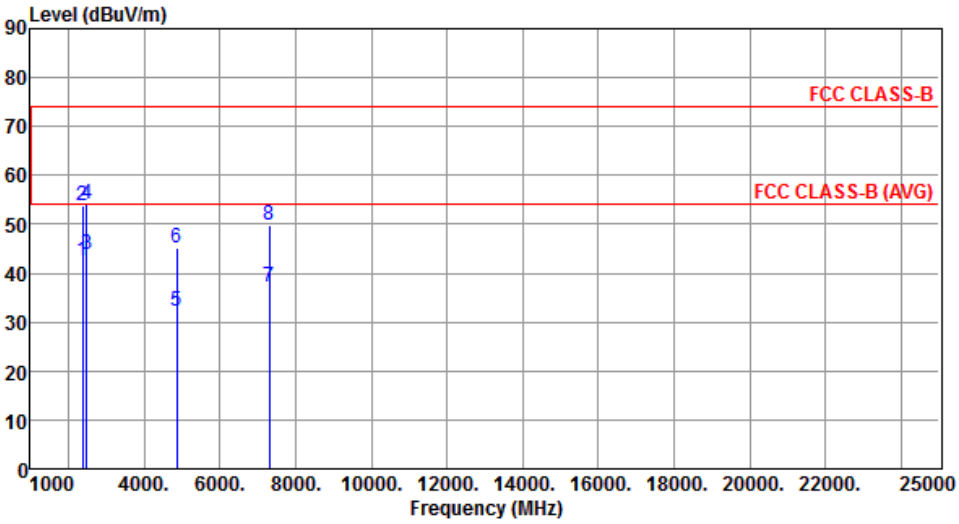
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.29	54.00	-1.71	55.64	-3.35	Average	164	96
2	2390.00	72.68	74.00	-1.32	76.03	-3.35	Peak	164	96
3	4824.00	32.43	54.00	-21.57	28.84	3.59	Average	110	51
4	4824.00	44.17	74.00	-29.83	40.58	3.59	Peak	110	51
5	12060.00	42.99	54.00	-11.01	28.86	14.13	Average	150	75
6	12060.00	55.27	74.00	-18.73	41.14	14.13	Peak	150	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).

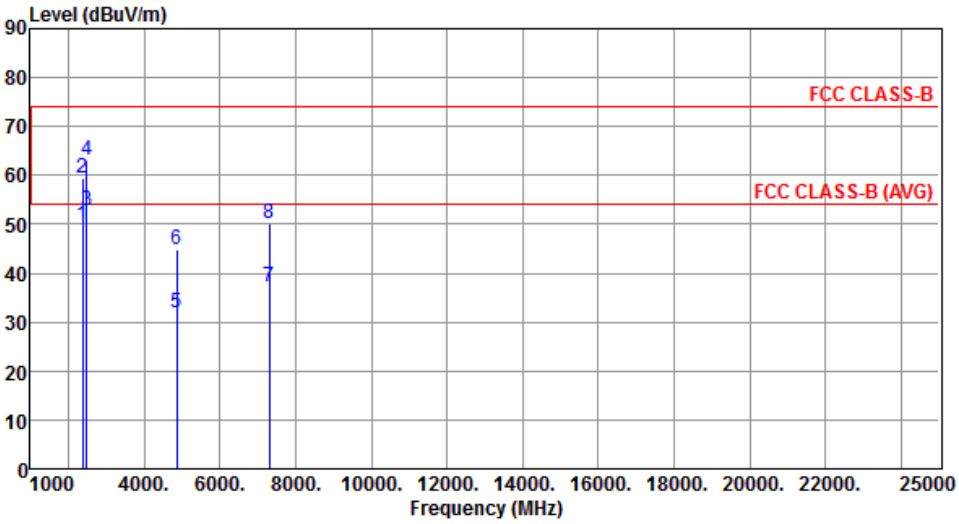
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal		



	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	42.50	54.00	-11.50	45.85	-3.35	Average	188	162
2	2390.00	53.76	74.00	-20.24	57.11	-3.35	Peak	188	162
3	2483.50	43.75	54.00	-10.25	46.68	-2.93	Average	188	162
4	2483.50	54.01	74.00	-19.99	56.94	-2.93	Peak	188	162
5	4874.00	32.11	54.00	-21.89	28.36	3.75	Average	100	252
6	4874.00	45.10	74.00	-28.90	41.35	3.75	Peak	100	252
7	7311.00	37.28	54.00	-16.72	28.86	8.42	Average	155	36
8	7311.00	49.70	74.00	-24.30	41.28	8.42	Peak	155	36

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

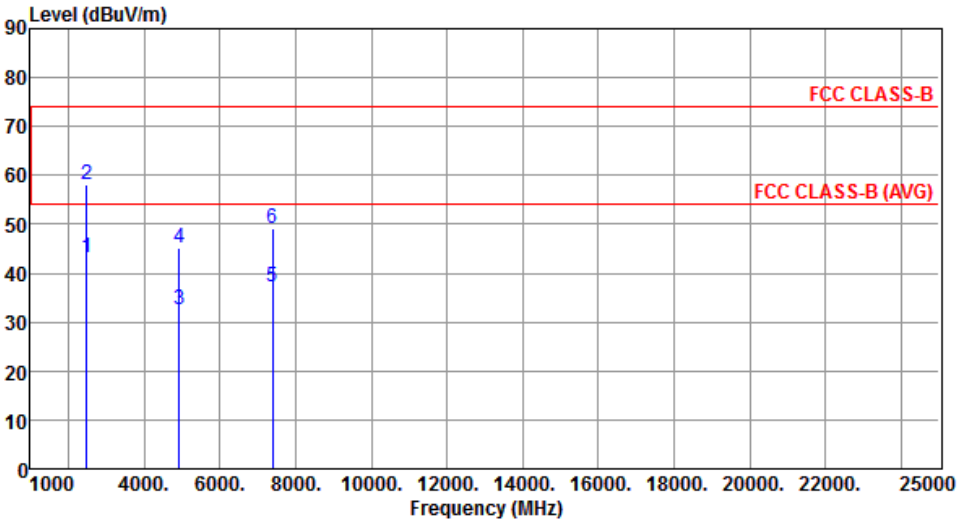
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		



	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	49.77	54.00	-4.23	53.12	-3.35	Average	168	97
2	2390.00	59.33	74.00	-14.67	62.68	-3.35	Peak	168	97
3	2483.50	52.86	54.00	-1.14	55.79	-2.93	Average	168	97
4	2483.50	62.97	74.00	-11.03	65.90	-2.93	Peak	168	97
5	4874.00	31.99	54.00	-22.01	28.24	3.75	Average	130	172
6	4874.00	44.72	74.00	-29.28	40.97	3.75	Peak	130	172
7	7311.00	37.11	54.00	-16.89	28.69	8.42	Average	112	185
8	7311.00	50.05	74.00	-23.95	41.63	8.42	Peak	112	185

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

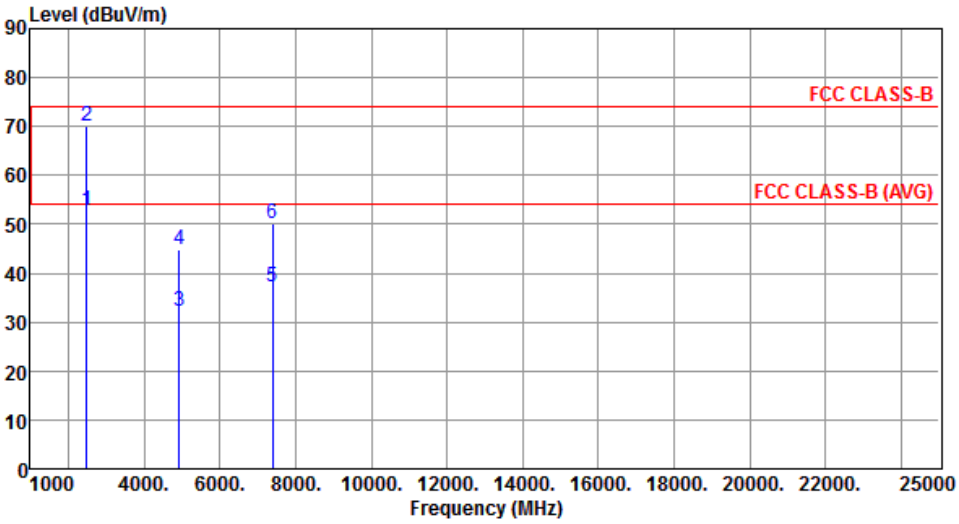
Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	43.03	54.00	-10.97	45.96	-2.93	Average	150	162
2	2483.50	58.16	74.00	-15.84	61.09	-2.93	Peak	150	162
3	4924.00	32.48	54.00	-21.52	28.57	3.91	Average	145	163
4	4924.00	45.29	74.00	-28.71	41.38	3.91	Peak	145	163
5	7386.00	37.11	54.00	-16.89	28.65	8.46	Average	175	81
6	7386.00	49.27	74.00	-24.73	40.81	8.46	Peak	175	81

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

Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Vertical		

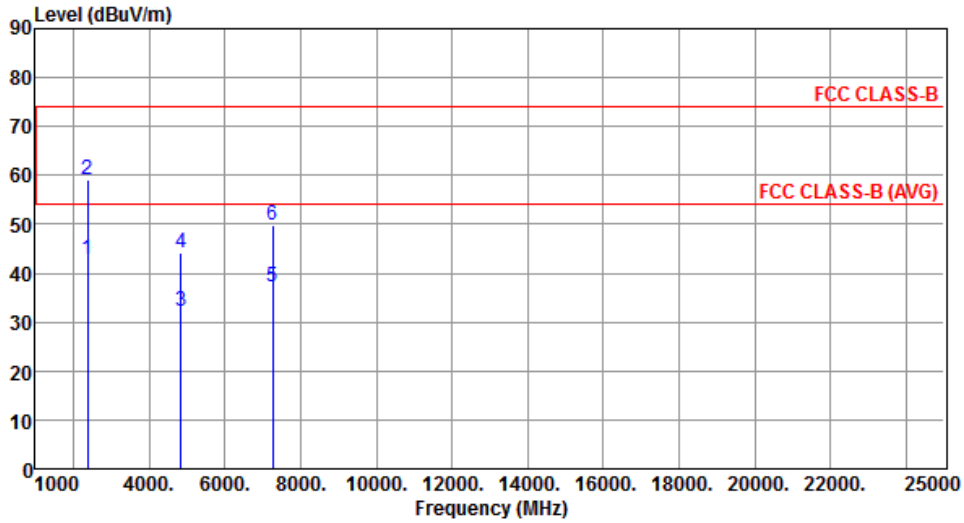


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.76	54.00	-1.24	55.69	-2.93	Average	164	94
2	2483.50	70.21	74.00	-3.79	73.14	-2.93	Peak	164	94
3	4924.00	32.26	54.00	-21.74	28.35	3.91	Average	115	83
4	4924.00	44.89	74.00	-29.11	40.98	3.91	Peak	115	83
5	7386.00	37.32	54.00	-16.68	28.86	8.46	Average	194	137
6	7386.00	50.04	74.00	-23.96	41.58	8.46	Peak	194	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).

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

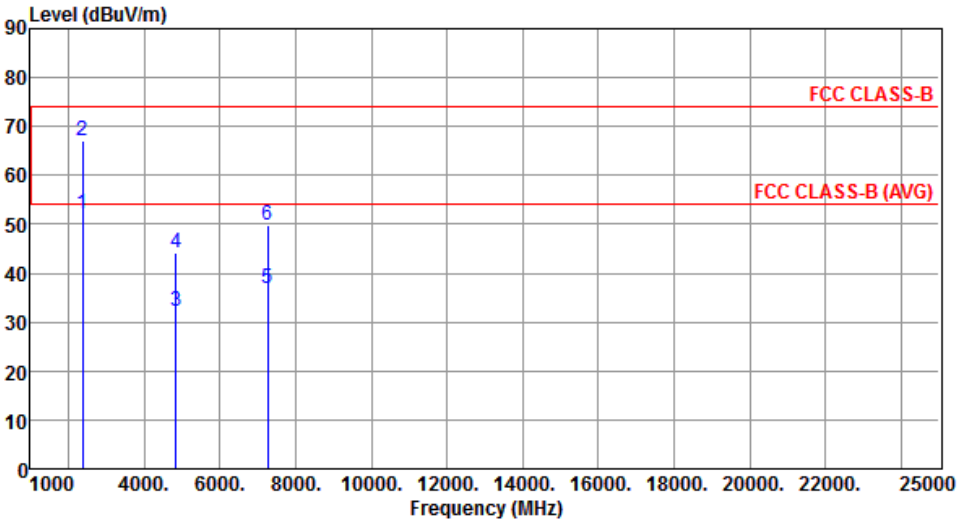
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Horizontal		



	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	42.80	54.00	-11.20	46.15	-3.35	Average	197	160
2	2390.00	59.02	74.00	-14.98	62.37	-3.35	Peak	197	160
3	4844.00	32.19	54.00	-21.81	28.53	3.66	Average	192	71
4	4844.00	44.33	74.00	-29.67	40.67	3.66	Peak	192	71
5	7266.00	37.07	54.00	-16.93	28.65	8.42	Average	117	195
6	7266.00	49.68	74.00	-24.32	41.26	8.42	Peak	117	195

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

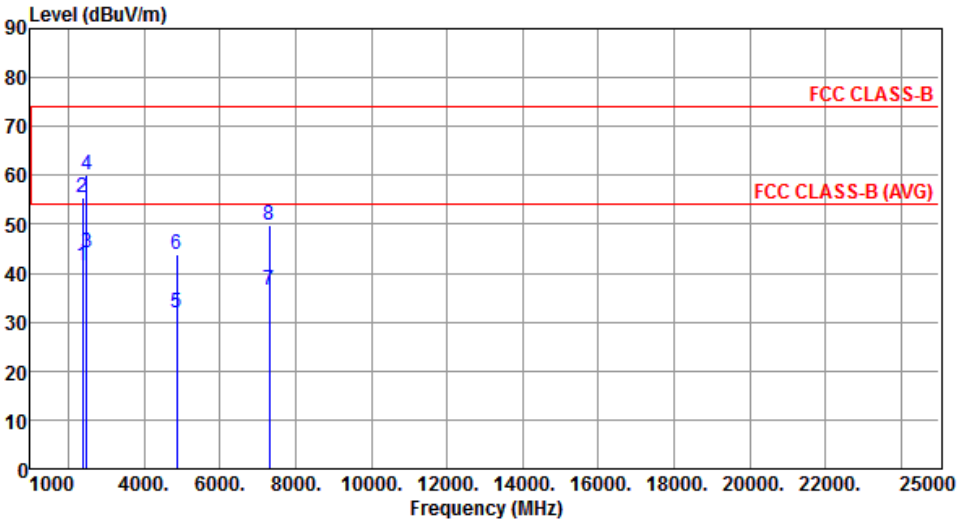
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Vertical		



	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	52.13	54.00	-1.87	55.48	-3.35	Average	162	94
2	2390.00	67.15	74.00	-6.85	70.50	-3.35	Peak	162	94
3	4844.00	32.22	54.00	-21.78	28.56	3.66	Average	141	25
4	4844.00	44.21	74.00	-29.79	40.55	3.66	Peak	141	25
5	7266.00	36.98	54.00	-17.02	28.56	8.42	Average	119	56
6	7266.00	49.84	74.00	-24.16	41.42	8.42	Peak	119	56

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

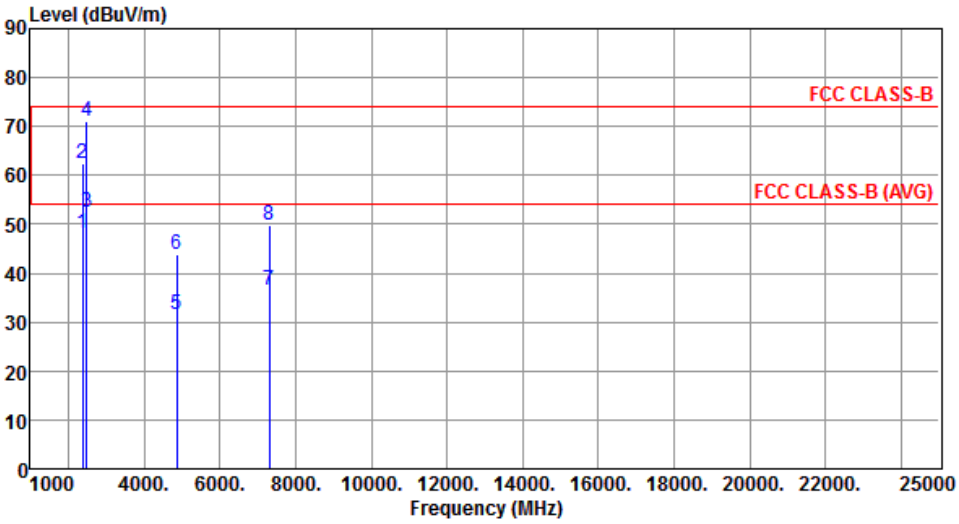
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	41.67	54.00	-12.33	45.02	-3.35	Average	189	165
2	2390.00	55.41	74.00	-18.59	58.76	-3.35	Peak	189	165
3	2483.50	44.28	54.00	-9.72	47.21	-2.93	Average	189	165
4	2483.50	60.23	74.00	-13.77	63.16	-2.93	Peak	189	165
5	4874.00	31.81	54.00	-22.19	28.06	3.75	Average	131	47
6	4874.00	43.95	74.00	-30.05	40.20	3.75	Peak	131	47
7	7311.00	36.45	54.00	-17.55	28.03	8.42	Average	121	240
8	7311.00	49.80	74.00	-24.20	41.38	8.42	Peak	121	240

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

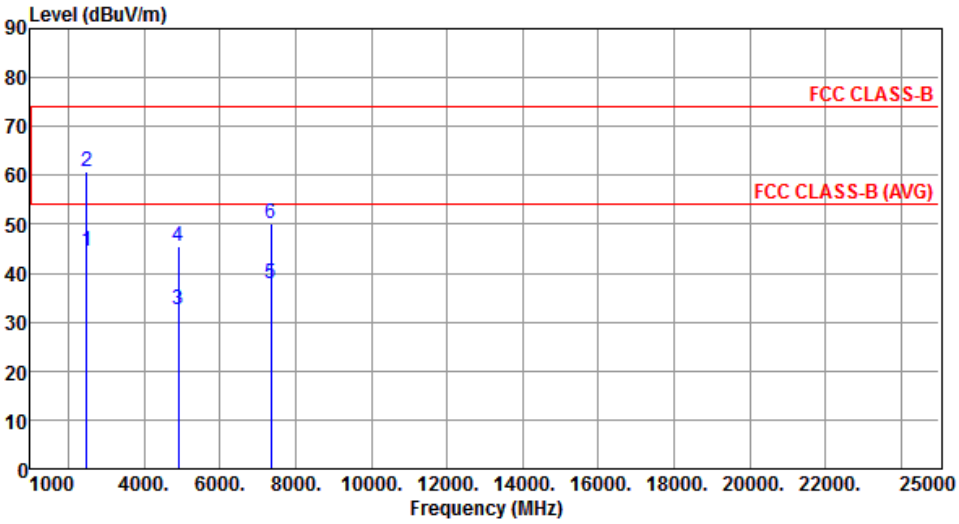
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.30	54.00	-5.70	51.65	-3.35	Average	160	94
2	2390.00	62.52	74.00	-11.48	65.87	-3.35	Peak	160	94
3	2483.50	52.63	54.00	-1.37	55.56	-2.93	Average	160	94
4	2483.50	70.91	74.00	-3.09	73.84	-2.93	Peak	160	94
5	4874.00	31.71	54.00	-22.29	27.96	3.75	Average	212	65
6	4874.00	43.99	74.00	-30.01	40.24	3.75	Peak	212	65
7	7311.00	36.49	54.00	-17.51	28.07	8.42	Average	115	243
8	7311.00	49.77	74.00	-24.23	41.35	8.42	Peak	115	243

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

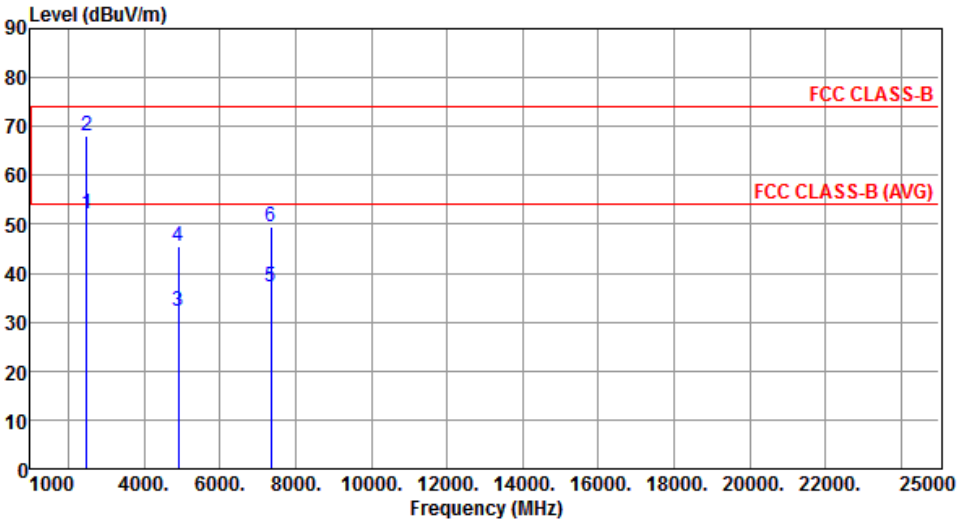
Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	44.44	54.00	-9.56	47.37	-2.93	Average	180	163
2	2483.50	60.74	74.00	-13.26	63.67	-2.93	Peak	180	163
3	4904.00	32.48	54.00	-21.52	28.62	3.86	Average	131	105
4	4904.00	45.48	74.00	-28.52	41.62	3.86	Peak	131	105
5	7356.00	37.82	54.00	-16.18	29.38	8.44	Average	110	69
6	7356.00	50.12	74.00	-23.88	41.68	8.44	Peak	110	69

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

Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.08	54.00	-1.92	55.01	-2.93	Average	162	96
2	2483.50	68.14	74.00	-5.86	71.07	-2.93	Peak	162	96
3	4904.00	32.30	54.00	-21.70	28.44	3.86	Average	110	212
4	4904.00	45.48	74.00	-28.52	41.62	3.86	Peak	110	212
5	7356.00	37.27	54.00	-16.73	28.83	8.44	Average	181	52
6	7356.00	49.32	74.00	-24.68	40.88	8.44	Peak	181	52

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

3.6 Emissions in Non-Restricted Frequency Bands

3.6.1 Emissions in Non-Restricted Frequency Bands Limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz

3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

Reference level measurement

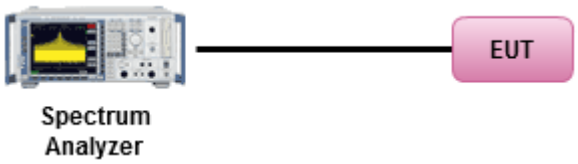
1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

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

3.6.4 Test Setup

Transmitter Radiated Bandedge Emissions

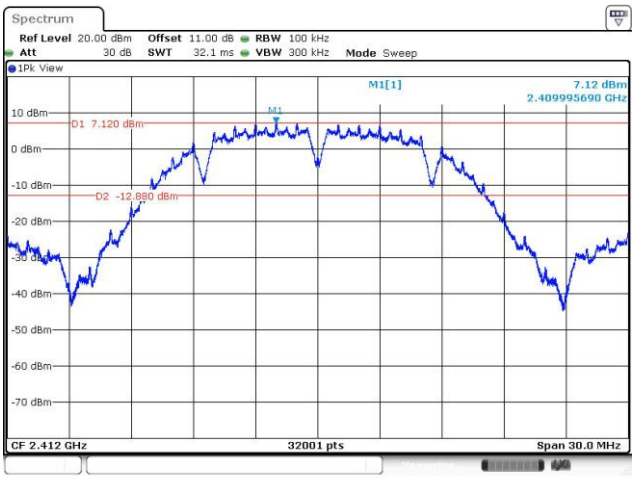
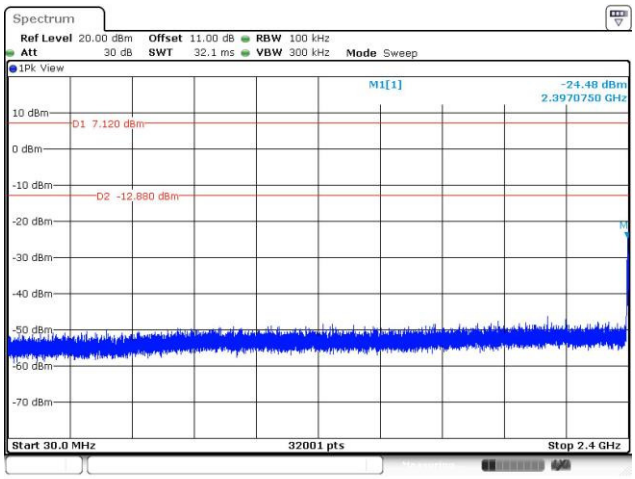
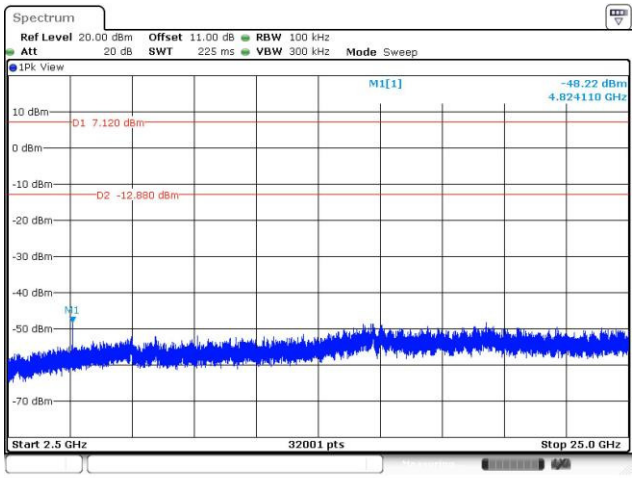
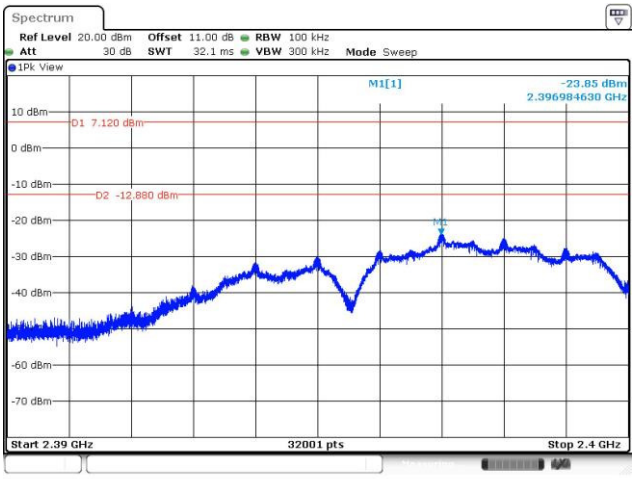


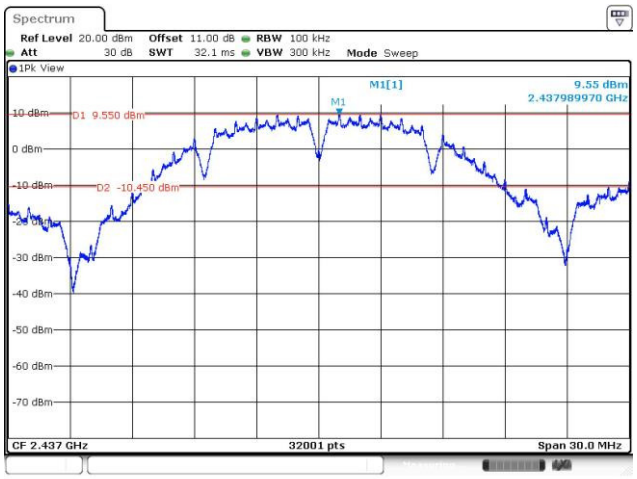
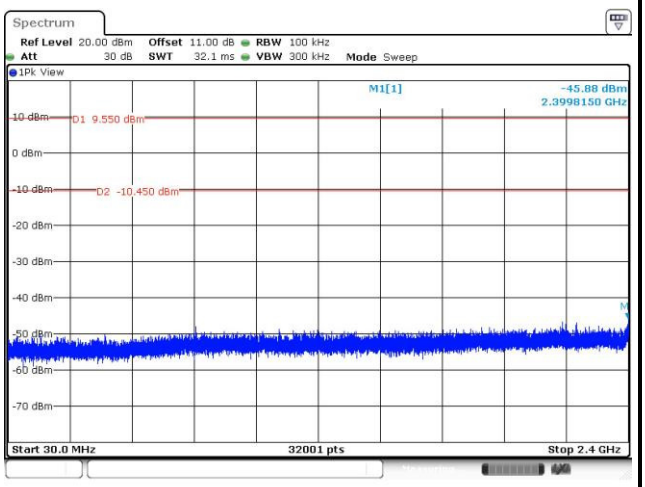
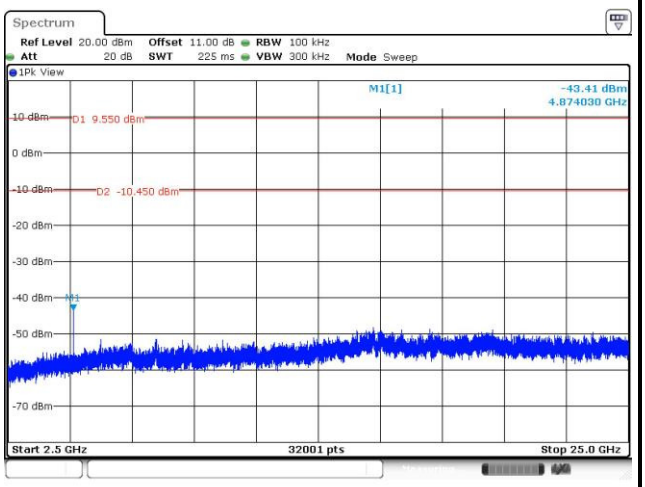
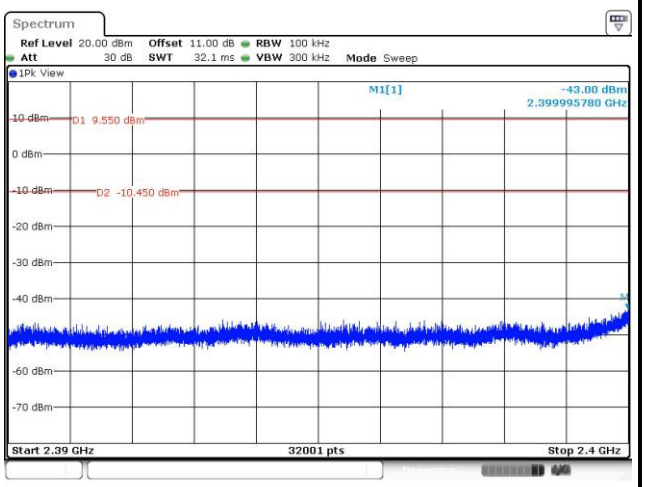
3.6.5 Test Result of Emissions in non-restricted frequency bands

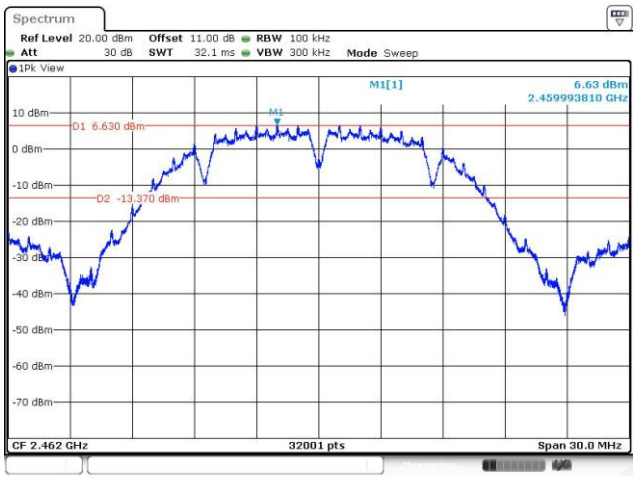
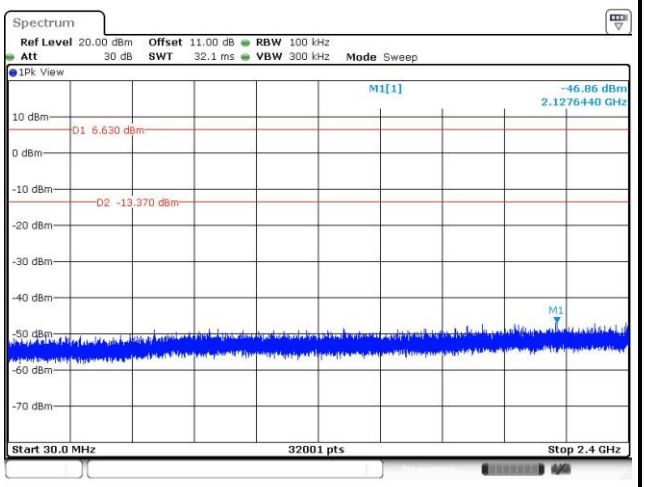
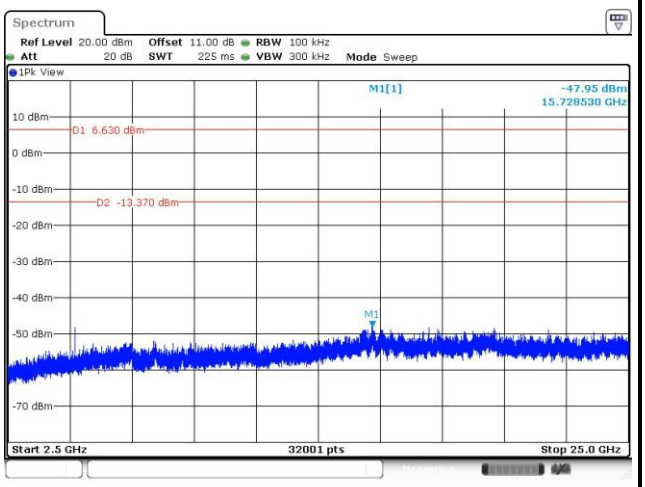
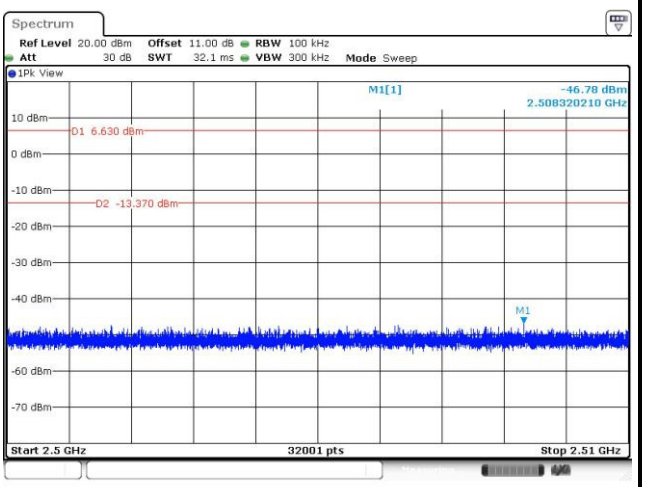
This test item is performed on each TX output individually without summing or adding 10 log(N_{ANT}) since measurements are made relative to the in-band emissions on the individual outputs. Only worst test result of each operating mode is presented.

3.6.6 Unwanted Emissions into Non-Restricted Frequency Bands

802.11b

Reference Level	Tx 2412MHz / 30MHz~25GHz (down 20dBc)
	
---	
---	

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

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

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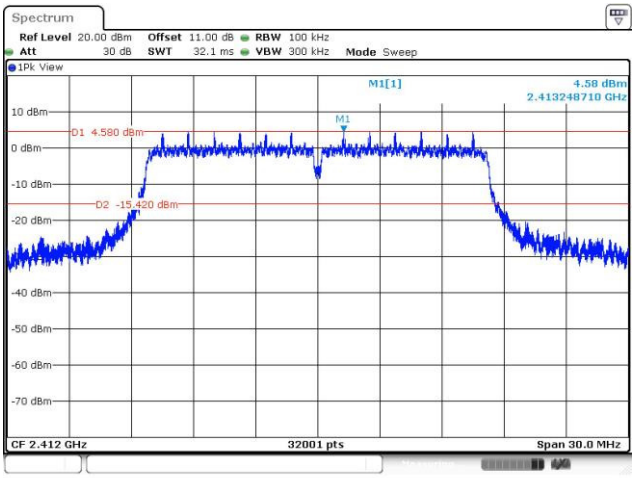
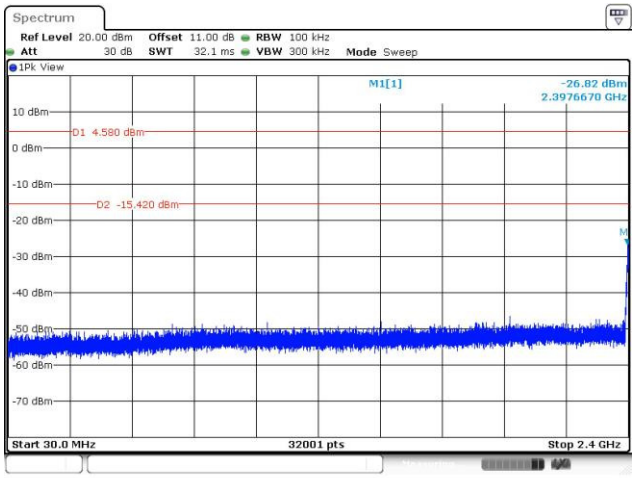
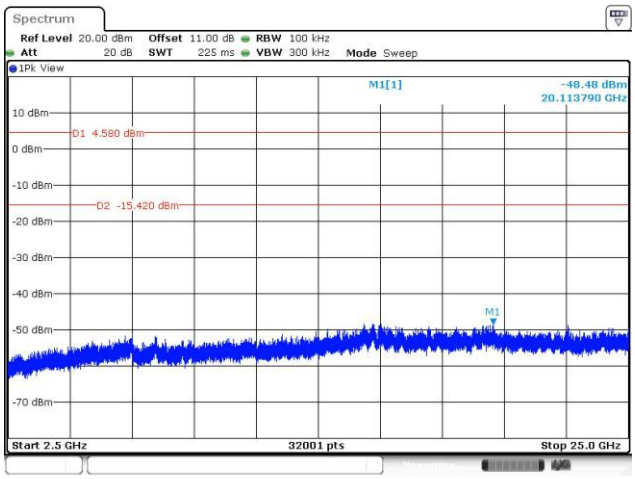
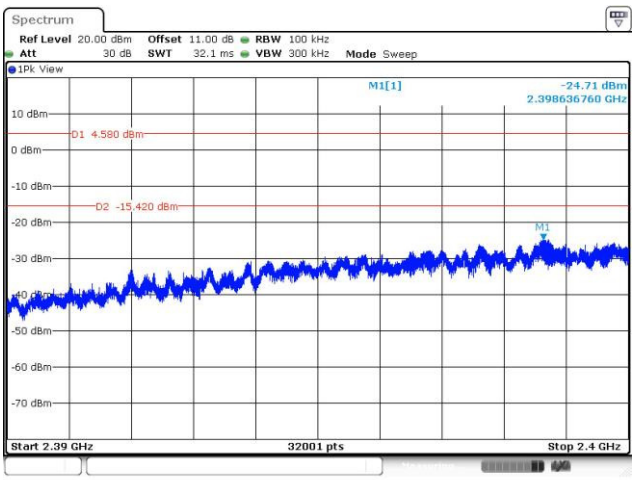
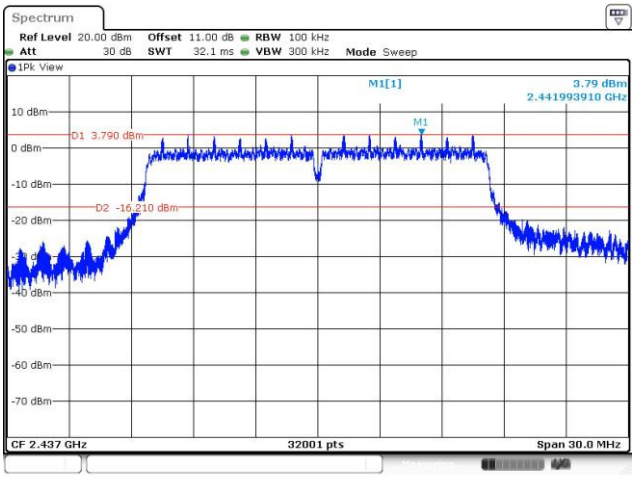
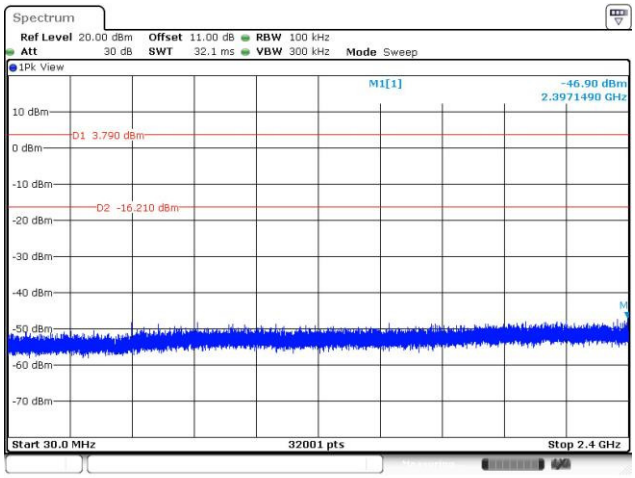
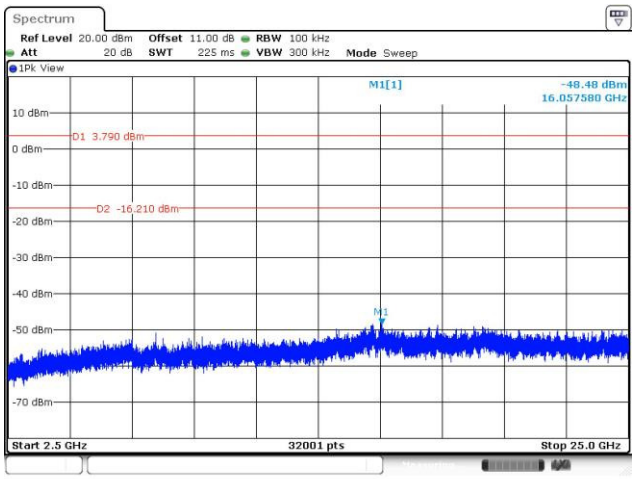
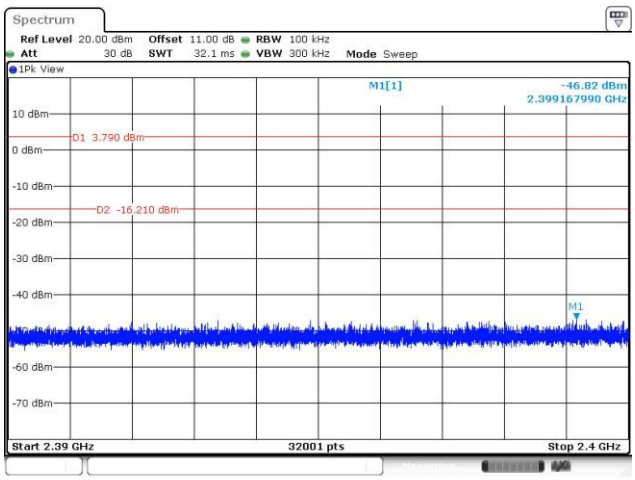
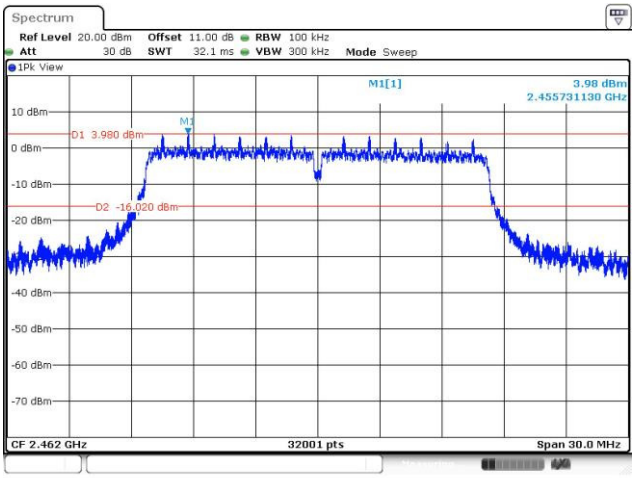
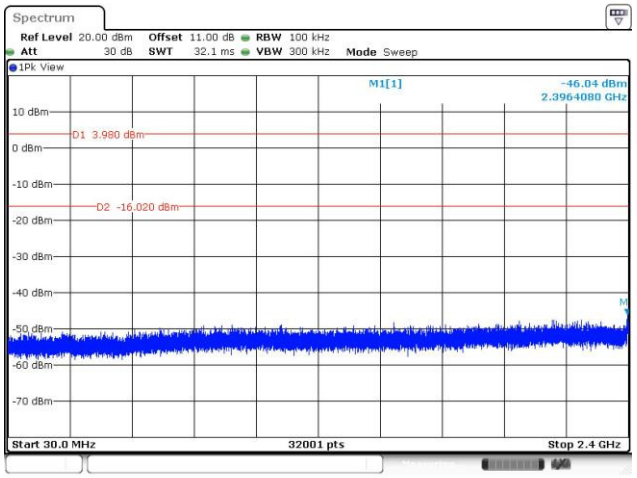
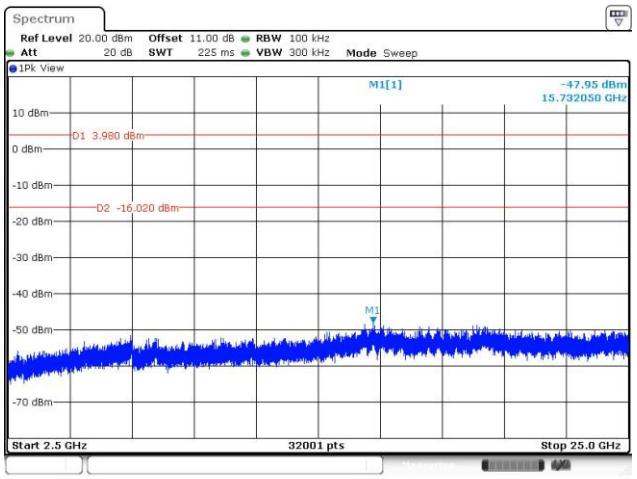
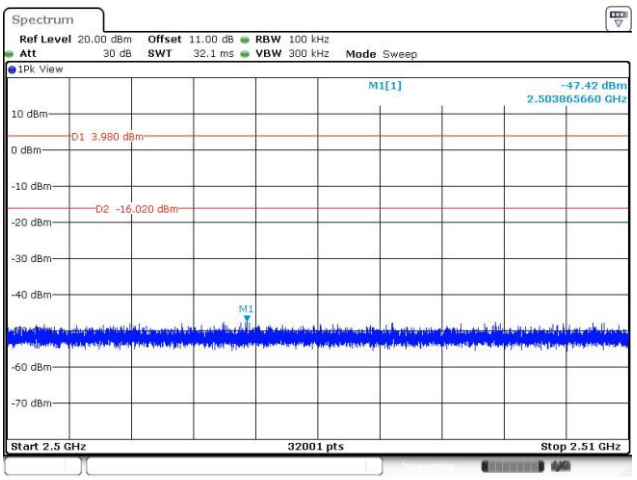
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 20dBc)
	
---	
---	

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

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

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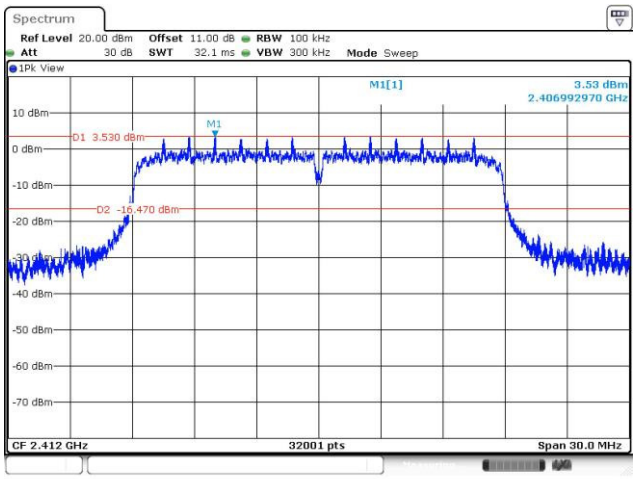
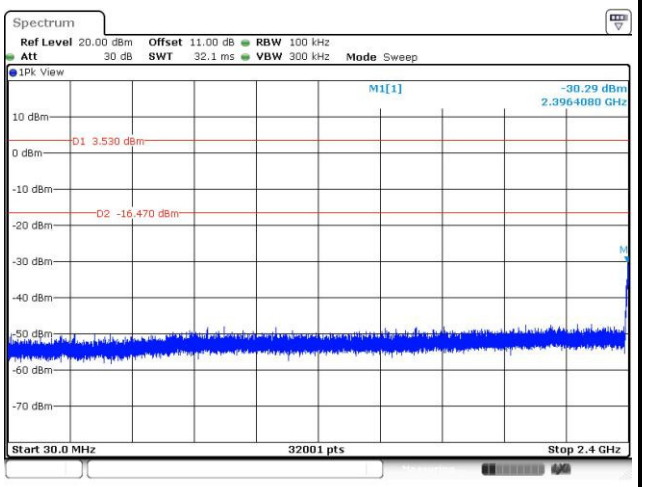
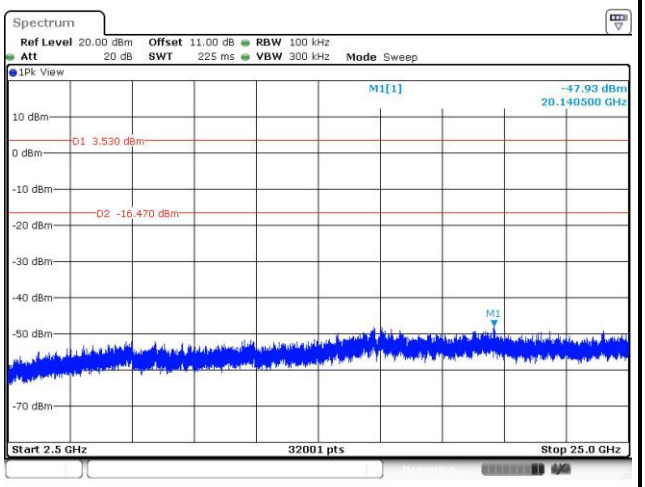
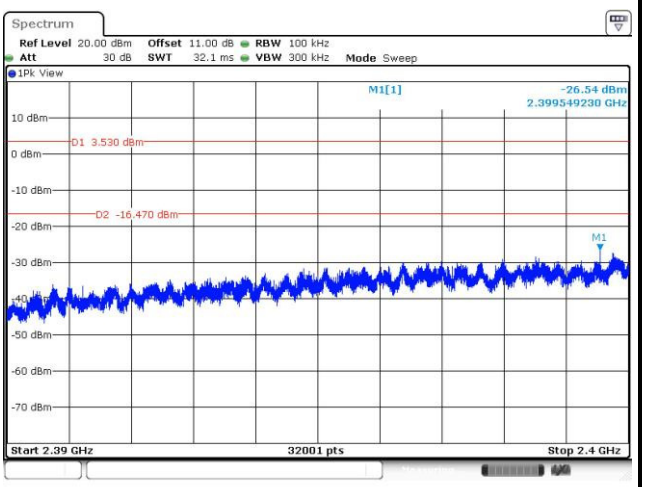
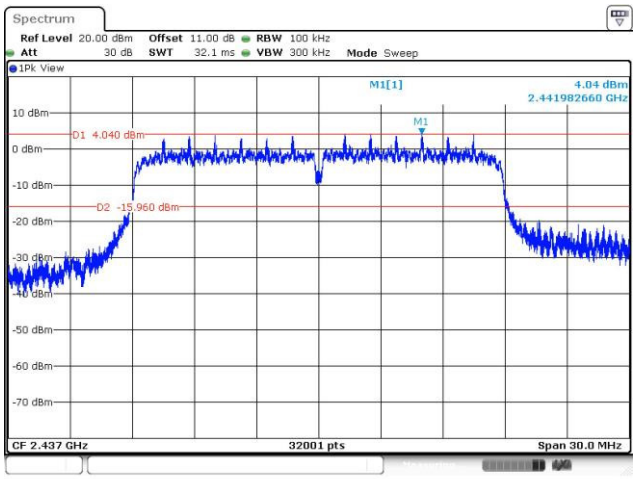
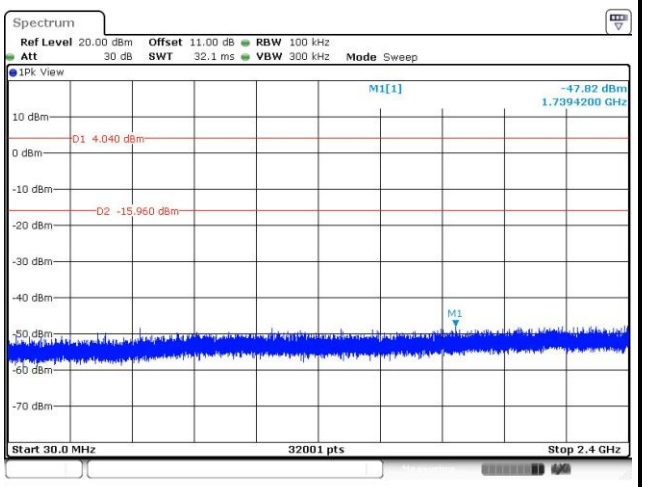
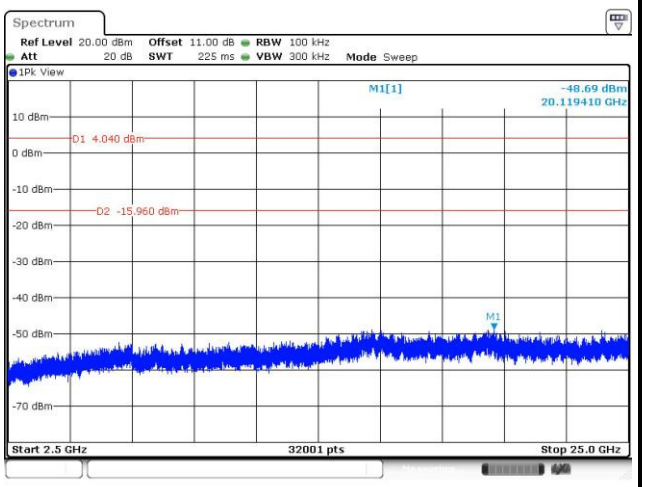
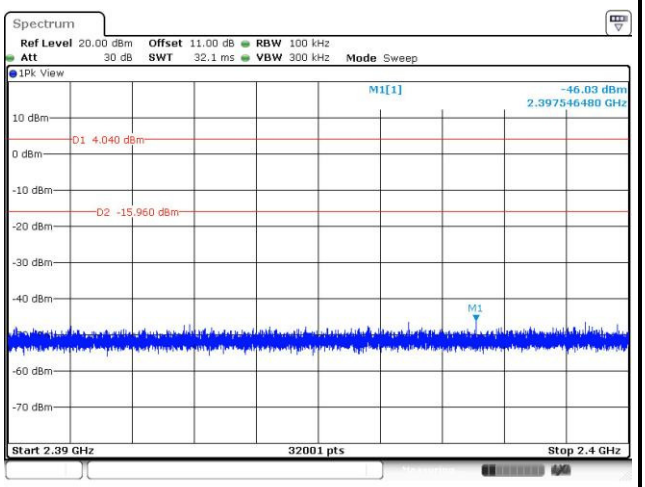
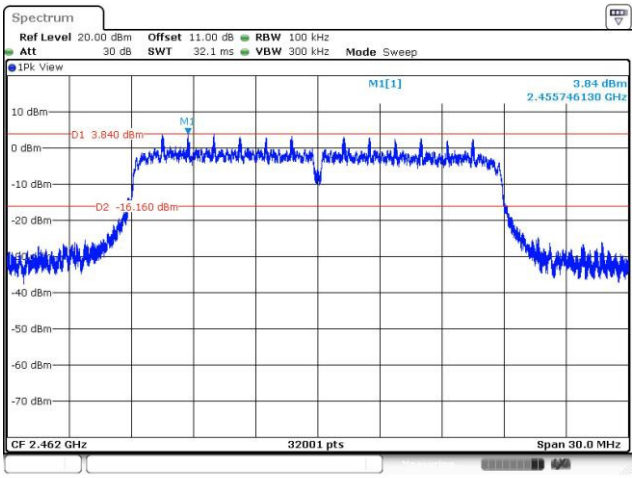
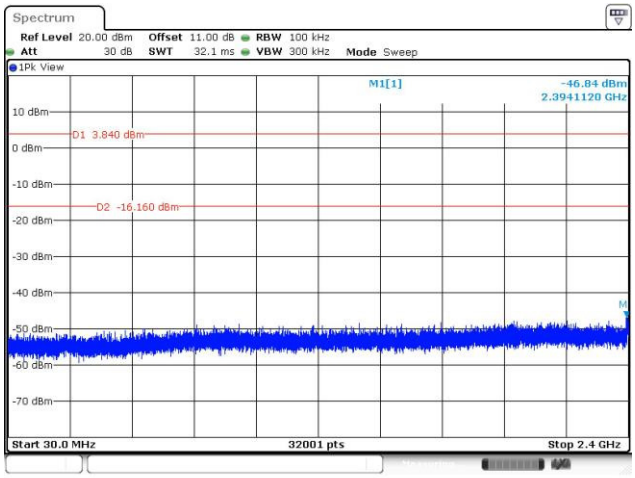
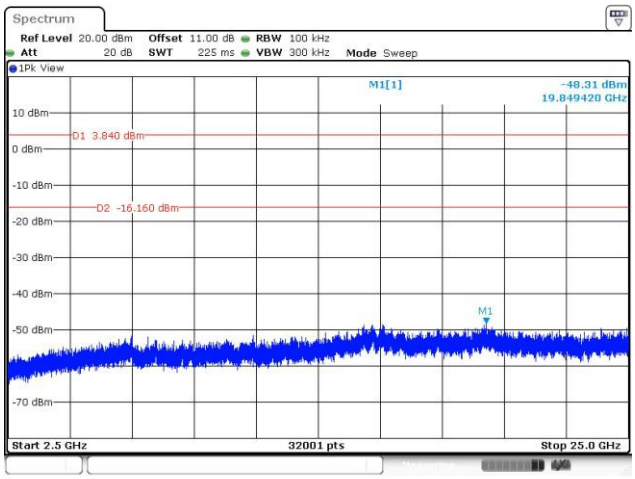
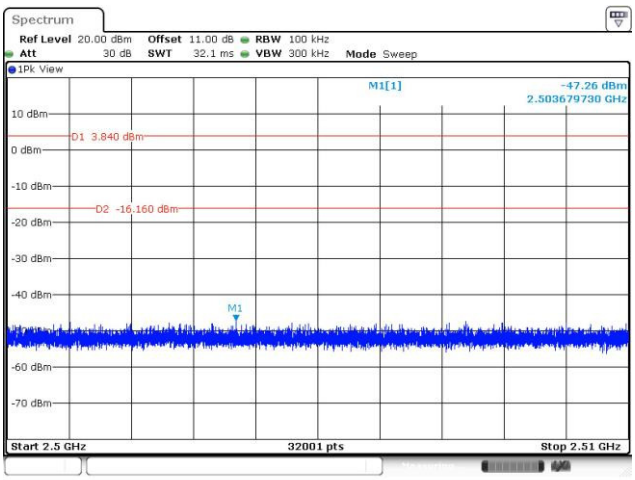
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 20dBc)
	
---	
---	

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

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

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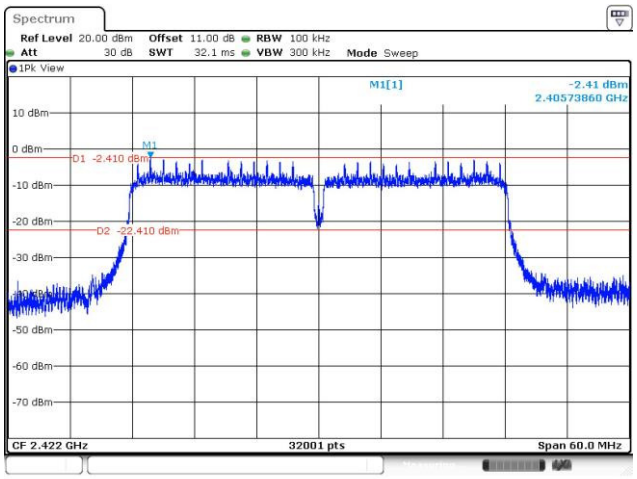
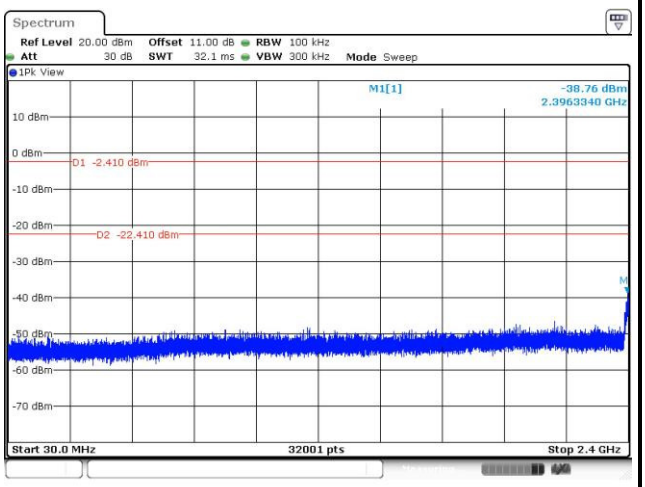
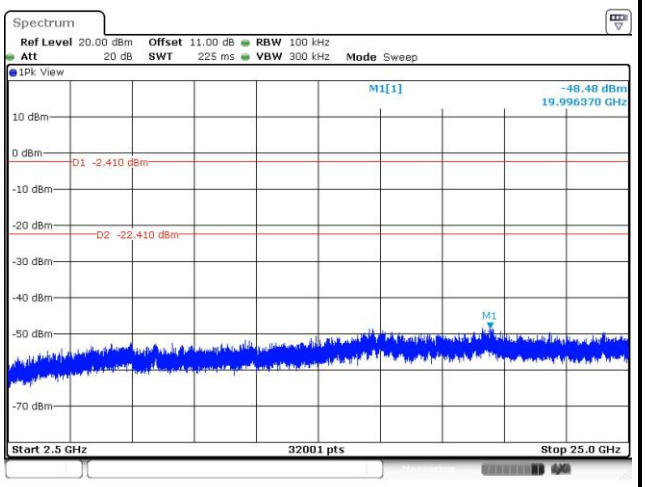
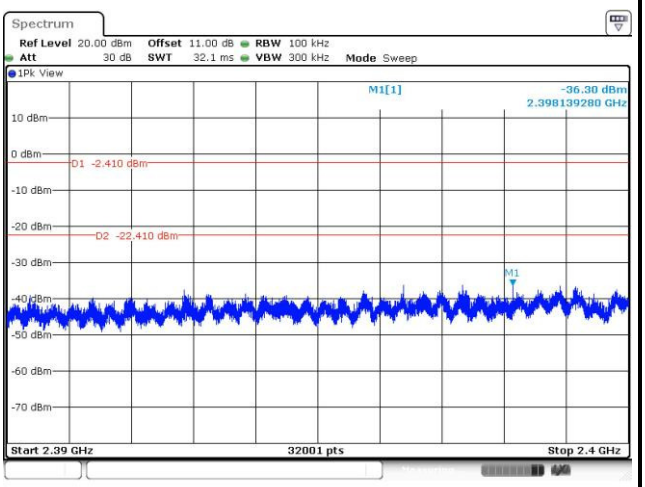
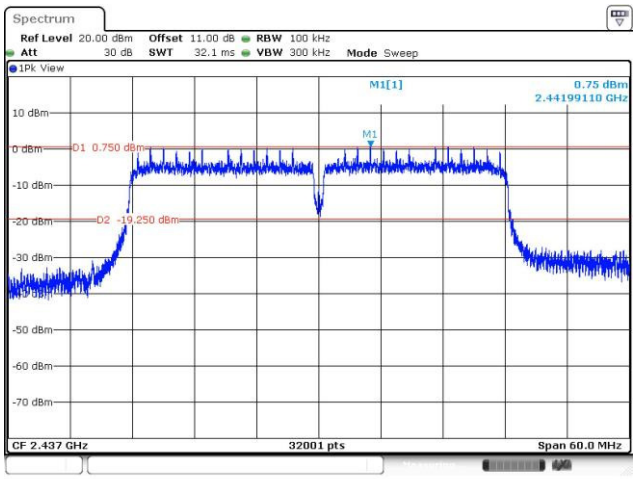
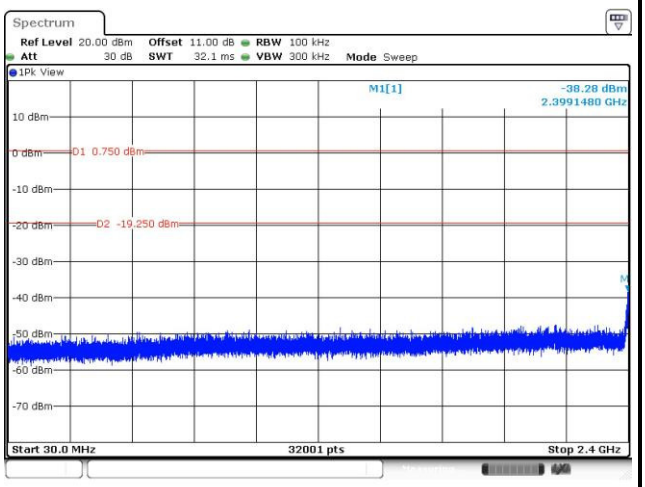
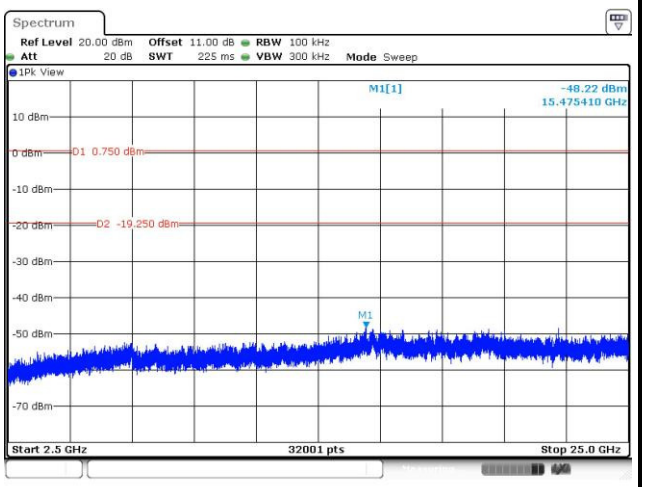
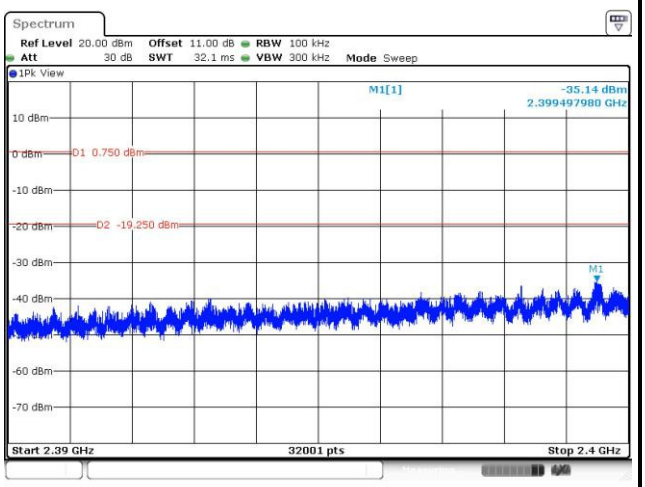
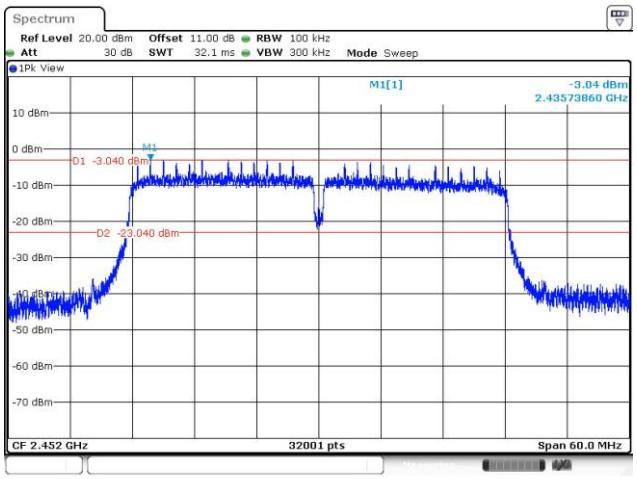
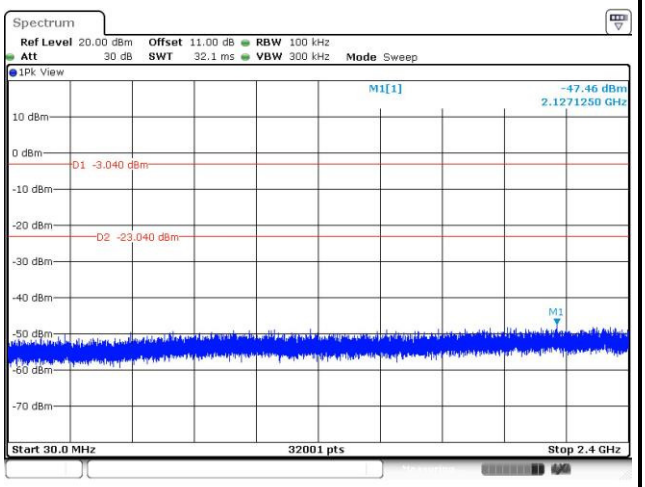
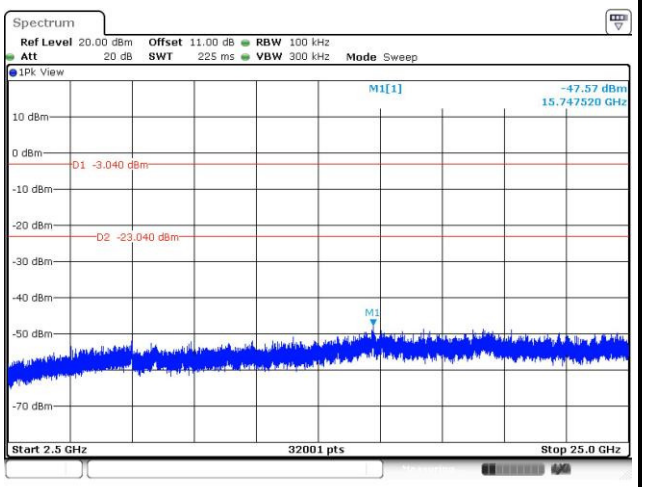
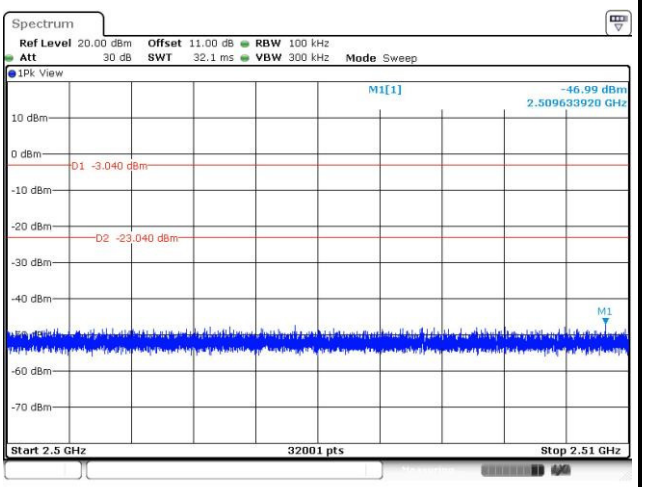
Reference Level	Tx 2422MHz / 30MHz~25GHz (down 20dBc)
	
---	
---	

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

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

4 Test laboratory information

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

International Certification Corp (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 District. 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

==END==