FCC Test Report

FCC ID	:	**NKR-SY30**
Equipment	:	**WLAN/BT Module**
Model No.	:	**DHSR-SY30**
Brand Name	:	**Wistron NeWeb Corp.**
Applicant	:	**Wistron NeWeb Corp.**
Address	:	**20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C.**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Dec. 07, 2015**
Tested Date	:	**Dec. 11, 2015 ~ Jan. 15, 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
FR5D0701AC	Rev. 01	Initial issue	Jan. 29, 2016

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 21.035MHz 17.71 (Margin -32.29dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2390.00MHz 52.93 (Margin -1.07dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 23.42	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

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

1.1.2 Antenna Details

Ant. No.	Model	Type	Connector	Frequency band (MHz) / Antenna Gain (dBi)		
				2400~2483.5	5150~5250	5725~5850
1	Antenna 1 (Green PCB, Cable 1)	Dipole	UFL	0.21	-2.06	-0.95
2	Antenna 2 (Blue PCB, Cable 2)	Dipole	UFL	1.25	1.39	-0.3

Note: Antenna 2 with highest gain was chosen for final test.

The following antenna cables are used in this EUT. The only difference is cable length.
For Antenna 1 (Green PCB, Cable 1)

Cable No.	Model (Cable Color: Black)	Cable No.	Model (Cable Color: Gray)	Cable Length (mm)
1	8JJEKQ1990000001H1	22	8JJEKR1990000001H1	199
2	8JJEKQ2100000001H1	23	8JJEKR2100000001H1	210
3	8JJEKQ2200000001H1	24	8JJEKR2200000001H1	220
4	8JJEKQ2300000001H1	25	8JJEKR2300000001H1	230
5	8JJEKQ2400000001H1	26	8JJEKR2400000001H1	240
6	8JJEKQ2500000001H1	27	8JJEKR2500000001H1	250
7	8JJEKQ2600000001H1	28	8JJEKR2600000001H1	260
8	8JJEKQ2700000001H1	29	8JJEKR2700000001H1	270
9	8JJEKQ2800000001H1	30	8JJEKR2800000001H1	280
10	8JJEKQ2900000001H1	31	8JJEKR2900000001H1	290
11	8JJEKQ3000000001H1	32	8JJEKR3000000001H1	300
12	8JJEKQ3100000001H1	33	8JJEKR3100000001H1	310
13	8JJEKQ3200000001H1	34	8JJEKR3200000001H1	320
14	8JJEKQ3300000001H1	35	8JJEKR3300000001H1	330
15	8JJEKQ3400000001H1	36	8JJEKR3400000001H1	340
16	8JJEKQ3500000001H1	37	8JJEKR3500000001H1	350
17	8JJEKQ3600000001H1	38	8JJEKR3600000001H1	360
18	8JJEKQ3700000001H1	39	8JJEKR3700000001H1	370
19	8JJEKQ3800000001H1	40	8JJEKR3800000001H1	380
20	8JJEKQ3900000001H1	41	8JJEKR3900000001H1	390
21	8JJEKQ4000000001H1	42	8JJEKR4000000001H1	400

For Antenna 2 (Blue PCB, Cable 2)

Cable No.	Model (Cable Color: Black)	Cable No.	Model (Cable Color: Gray)	Cable No.	Model (Cable Color: White)	Cable Length (mm)
1	8JJEKQ4000000001H1	52	8JJEKR4000000001H1	103	8JJEKP4000000001H1	400
2	8JJEKQ4100000001H1	53	8JJEKR4100000001H1	104	8JJEKP4100000001H1	410
3	8JJEKQ4200000001H1	54	8JJEKR4200000001H1	105	8JJEKP4200000001H1	420
4	8JJEKQ4300000001H1	55	8JJEKR4300000001H1	106	8JJEKP4300000001H1	430
5	8JJEKQ4400000001H1	56	8JJEKR4400000001H1	107	8JJEKP4400000001H1	440
6	8JJEKQ4500000001H1	57	8JJEKR4500000001H1	108	8JJEKP4500000001H1	450
7	8JJEKQ4600000001H1	58	8JJEKR4600000001H1	109	8JJEKP4600000001H1	460
8	8JJEKQ4700000001H1	59	8JJEKR4700000001H1	110	8JJEKP4700000001H1	470
9	8JJEKQ4800000001H1	60	8JJEKR4800000001H1	111	8JJEKP4800000001H1	480
10	8JJEKQ4900000001H1	61	8JJEKR4900000001H1	112	8JJEKP4900000001H1	490
11	8JJEKQ5000000001H1	62	8JJEKR5000000001H1	113	8JJEKP5000000001H1	500
12	8JJEKQ5100000001H1	63	8JJEKR5100000001H1	114	8JJEKP5100000001H1	510
13	8JJEKQ5200000001H1	64	8JJEKR5200000001H1	115	8JJEKP5200000001H1	520
14	8JJEKQ5300000001H1	65	8JJEKR5300000001H1	116	8JJEKP5300000001H1	530
15	8JJEKQ5400000001H1	66	8JJEKR5400000001H1	117	8JJEKP5400000001H1	540
16	8JJEKQ5500000001H1	67	8JJEKR5500000001H1	118	8JJEKP5500000001H1	550
17	8JJEKQ5600000001H1	68	8JJEKR5600000001H1	119	8JJEKP5600000001H1	560
18	8JJEKQ5700000001H1	69	8JJEKR5700000001H1	120	8JJEKP5700000001H1	570
19	8JJEKQ5800000001H1	70	8JJEKR5800000001H1	121	8JJEKP5800000001H1	580
20	8JJEKQ5900000001H1	71	8JJEKR5900000001H1	122	8JJEKP5900000001H1	590
21	8JJEKQ6000000001H1	72	8JJEKR6000000001H1	123	8JJEKP6000000001H1	600
22	8JJEKQ6100000001H1	73	8JJEKR6100000001H1	124	8JJEKP6100000001H1	610
23	8JJEKQ6200000001H1	74	8JJEKR6200000001H1	125	8JJEKP6200000001H1	620
24	8JJEKQ6300000001H1	75	8JJEKR6300000001H1	126	8JJEKP6300000001H1	630
25	8JJEKQ6400000001H1	76	8JJEKR6400000001H1	127	8JJEKP6400000001H1	640
26	8JJEKQ6500000001H1	77	8JJEKR6500000001H1	128	8JJEKP6500000001H1	650
27	8JJEKQ6600000001H1	78	8JJEKR6600000001H1	129	8JJEKP6600000001H1	660
28	8JJEKQ6700000001H1	79	8JJEKR6700000001H1	130	8JJEKP6700000001H1	670
29	8JJEKQ6800000001H1	80	8JJEKR6800000001H1	131	8JJEKP6800000001H1	680
30	8JJEKQ6900000001H1	81	8JJEKR6900000001H1	132	8JJEKP6900000001H1	690
31	8JJEKQ7000000001H1	82	8JJEKR7000000001H1	133	8JJEKP7000000001H1	700
32	8JJEKQ7100000001H1	83	8JJEKR7100000001H1	134	8JJEKP7100000001H1	710
33	8JJEKQ7200000001H1	84	8JJEKR7200000001H1	135	8JJEKP7200000001H1	720
34	8JJEKQ7300000001H1	85	8JJEKR7300000001H1	136	8JJEKP7300000001H1	730
35	8JJEKQ7400000001H1	86	8JJEKR7400000001H1	137	8JJEKP7400000001H1	740
36	8JJEKQ7500000001H1	87	8JJEKR7500000001H1	138	8JJEKP7500000001H1	750
37	8JJEKQ7600000001H1	88	8JJEKR7600000001H1	139	8JJEKP7600000001H1	760

38	8JJEKQ7700000001H1	89	8JJEKR7700000001H1	140	8JJEKP7700000001H1	770
39	8JJEKQ7800000001H1	90	8JJEKR7800000001H1	141	8JJEKP7800000001H1	780
40	8JJEKQ7900000001H1	91	8JJEKR7900000001H1	142	8JJEKP7900000001H1	790
41	8JJEKQ8000000001H1	92	8JJEKR8000000001H1	143	8JJEKP8000000001H1	800
42	8JJEKQ8100000001H1	93	8JJEKR8100000001H1	144	8JJEKP8100000001H1	810
43	8JJEKQ8200000001H1	94	8JJEKR8200000001H1	145	8JJEKP8200000001H1	820
44	8JJEKQ8300000001H1	95	8JJEKR8300000001H1	146	8JJEKP8300000001H1	830
45	8JJEKQ8400000001H1	96	8JJEKR8400000001H1	147	8JJEKP8400000001H1	840
46	8JJEKQ8500000001H1	97	8JJEKR8500000001H1	148	8JJEKP8500000001H1	850
47	8JJEKQ8600000001H1	98	8JJEKR8600000001H1	149	8JJEKP8600000001H1	860
48	8JJEKQ8700000001H1	99	8JJEKR8700000001H1	150	8JJEKP8700000001H1	870
49	8JJEKQ8800000001H1	100	8JJEKR8800000001H1	151	8JJEKP8800000001H1	880
50	8JJEKQ8900000001H1	101	8JJEKR8900000001H1	152	8JJEKP8900000001H1	890
51	8JJEKQ9000000001H1	102	8JJEKR9000000001H1	153	8JJEKP9000000001H1	900

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	DC 4V/1A

1.1.4 Accessories

N/A

1.1.5 Channel List

Channel	Frequency(MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

1.1.6 Test Tool and Duty Cycle

Test Tool	WCN Combo Tool, version: W1417		
Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	11b	100.00%	0.00
	11g	94.23%	0.26
	HT20	93.33%	0.30

1.1.7 Power Setting

Modulation Mode	Test Frequency (MHz)	Power Set
11b	2412	20.5
11b	2437	20.5
11b	2462	20.5
11g	2412	20.5
11g	2437	21
11g	2462	21
HT20	2412	19.5
HT20	2437	21
HT20	2462	20

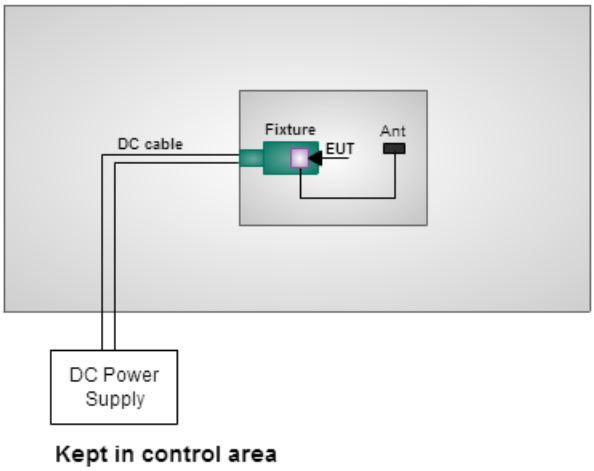
1.2 Local Support Equipment List

Support Equipment List						
No.	**Equipment**	**Brand**	**Model**	**S/N**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E6440	2ZC4Z52	DoC	---
2	DC Power Supply	GW INSTEK	GPC-3060D	EM884797	---	---
3	Fixture	---	---	---	---	---

Note: Fixture was supplied by applicant.

1.3 Test Setup Chart

Test Setup Diagram



Note: The support notebook was disconnected from EUT and removed from test table when EUT is set to transmit continuously.

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Dec. 31, 2015				
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)				
Tested Date	Dec. 11, 2015 ~ Jan. 15, 2016				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Feb. 03, 2015	Feb. 02, 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 1095	Oct. 07, 2015	Oct. 06, 2016
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 16, 2015	Nov. 15, 2016
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 10, 2015	Dec. 09, 2016
Preamplifier	Burgeon	BPA-530	SN:100219	Sep. 10, 2015	Sep. 09, 2016
Preamplifier	Agilent	83017A	MY39501308	Oct. 02, 2015	Oct. 01, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 10, 2015	Dec. 09, 2016
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 10, 2015	Dec. 09, 2016
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 10, 2015	Dec. 09, 2016
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Jan. 11 ~ Jan. 15, 2016				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Feb. 03, 2015	Feb. 02, 2016
Power Meter	Anritsu	ML2495A	1241002	Sep. 21, 2015	Sep. 20, 2016
Power Sensor	Anritsu	MA2411B	1207366	Sep. 21, 2015	Sep. 20, 2016
DC POWER SOURCE	GW INSTEK	GPC-3060D	EM884797	Oct. 20, 2015	Oct. 19, 2016
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247
ANSI C63.10-2013
FCC KDB 558074 D01 DTS Meas Guidance v03r04

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	20°C / 59%	Peter Lin
Radiated Emissions	03CH01-WS	21-23°C / 61-65%	Anderson Hung
RF Conducted	TH01-WS	21°C / 64%	Alex Huang

- FCC site registration No.: 657002
- IC site registration No.: 10807A-1

2.2 The Worst Test Modes and Channel Details

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

NOTE:

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Y-plane** result was found as the worst case and was shown in this report.
2. See item 1.1.2 antenna sheet list. **cable length 400mm & 900mm** were selected for radiated emission below 1GHz test. **Cable length 400mm** was for radiated emission above 1GHz test.
3. Test configurations are listed as below:
   1) Configuration 1: Antenna cable length: 400mm.
   2) Configuration 2: Antenna cable length: 900mm.

3 Transmitter Test Results

3.1 Conducted Emissions

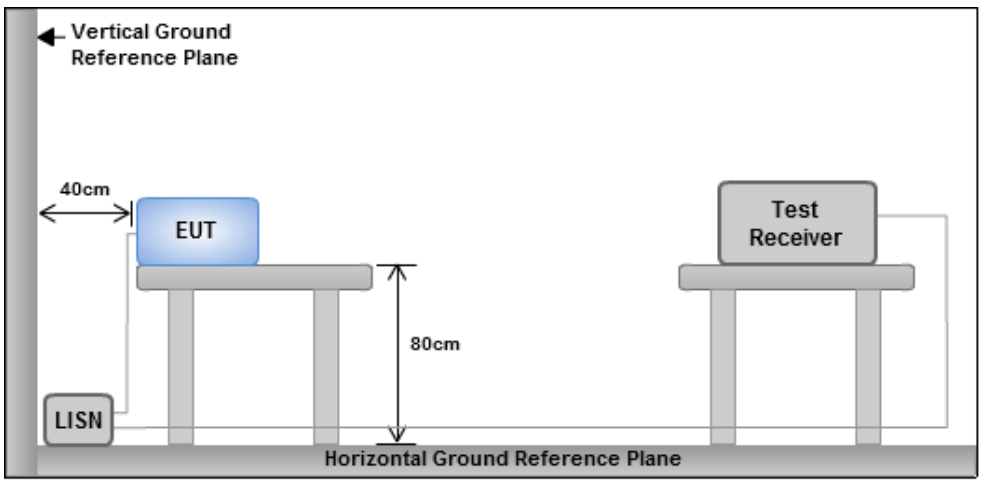
3.1.1 Limit of Conducted Emissions

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

3.1.2 Test Procedures

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

3.1.3 Test Setup

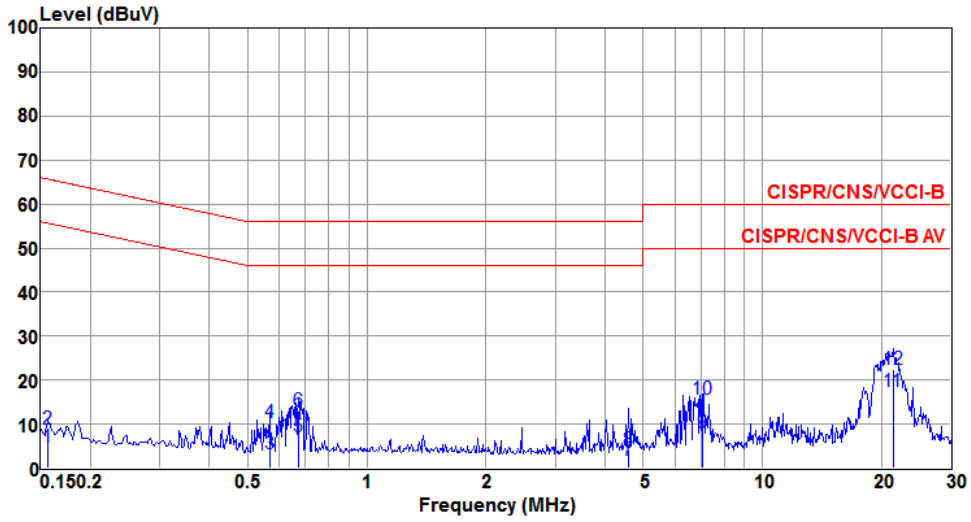


Note: 1. Support units were connected to second LISN.

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

3.1.4 Test Result of Conducted Emissions

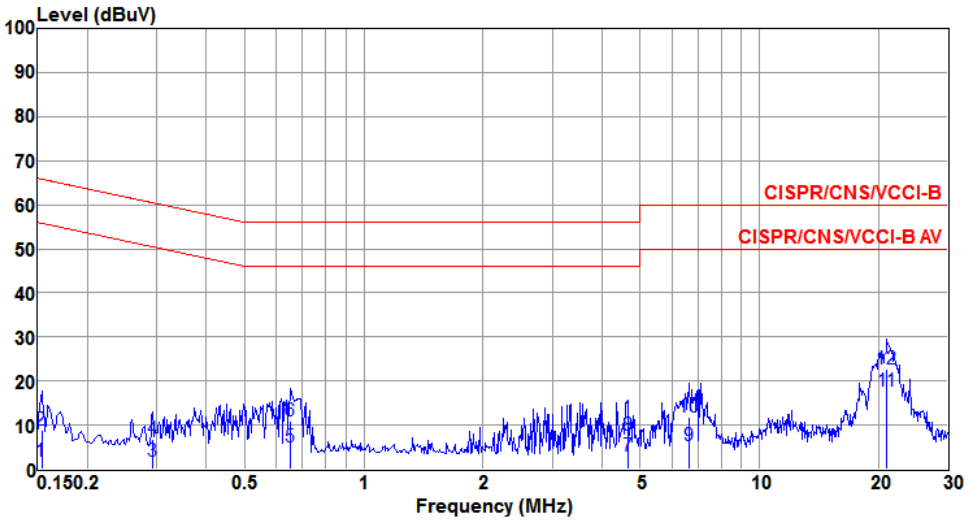
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Line		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.156	4.67	55.65	-50.98	4.54	0.11	0.02	Average
2	0.156	8.79	65.65	-56.86	8.66	0.11	0.02	QP
3	0.567	3.19	46.00	-42.81	3.02	0.13	0.04	Average
4	0.567	10.30	56.00	-45.70	10.13	0.13	0.04	QP
5	0.672	7.13	46.00	-38.87	6.95	0.13	0.05	Average
6	0.672	12.91	56.00	-43.09	12.73	0.13	0.05	QP
7	4.598	1.67	46.00	-44.33	1.34	0.20	0.13	Average
8	4.598	4.02	56.00	-51.98	3.69	0.20	0.13	QP
9	7.062	8.08	50.00	-41.92	7.72	0.22	0.14	Average
10	7.062	15.79	60.00	-44.21	15.43	0.22	0.14	QP
11@	21.373	17.51	50.00	-32.49	16.94	0.38	0.19	Average
12	21.373	22.55	60.00	-37.45	21.98	0.38	0.19	QP

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

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



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.153	1.66	55.82	-54.16	1.51	0.13	0.02	Average
2	0.153	8.77	65.82	-57.05	8.62	0.13	0.02	QP
3	0.292	1.74	50.46	-48.72	1.59	0.12	0.03	Average
4	0.292	6.76	60.46	-53.70	6.61	0.12	0.03	QP
5	0.651	4.89	46.00	-41.11	4.71	0.13	0.05	Average
6	0.651	10.98	56.00	-45.02	10.80	0.13	0.05	QP
7	4.647	2.96	46.00	-43.04	2.64	0.19	0.13	Average
8	4.647	7.55	56.00	-48.45	7.23	0.19	0.13	QP
9	6.662	5.21	50.00	-44.79	4.84	0.23	0.14	Average
10	6.662	11.90	60.00	-48.10	11.53	0.23	0.14	QP
11@	21.035	17.71	50.00	-32.29	17.11	0.41	0.19	Average
12	21.035	22.74	60.00	-37.26	22.14	0.41	0.19	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

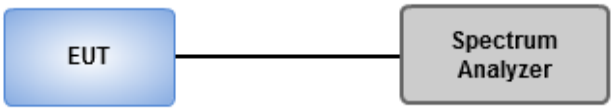
6dB Bandwidth

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) = 300 kHz, Video bandwidth = 1 MHz.
2. Detector = Sample, Trace mode = max hold.
3 Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

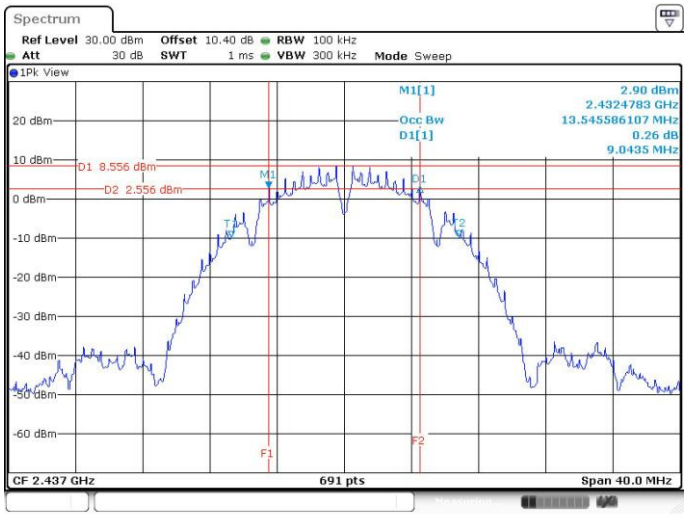
3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

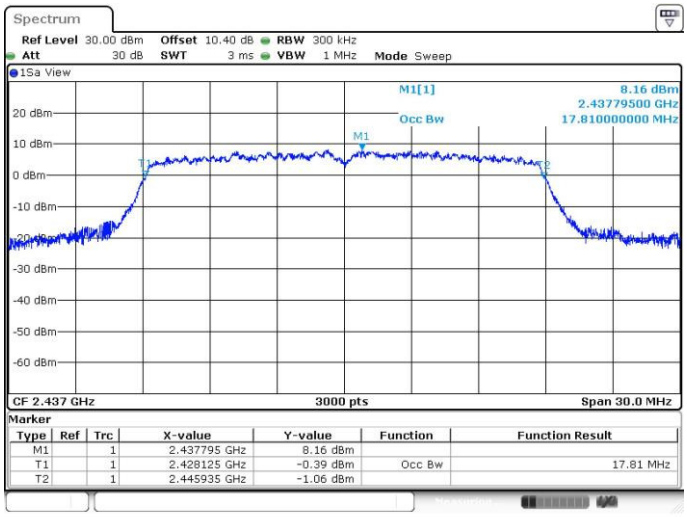
Modulation Mode	N_{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
11b	1	2412	9.04	---	---	---	500
11b	1	2437	9.04	---	---	---	500
11b	1	2462	9.04	---	---	---	500
11g	1	2412	15.54	---	---	---	500
11g	1	2437	15.36	---	---	---	500
11g	1	2462	15.36	---	---	---	500
HT20	1	2412	15.94	---	---	---	500
HT20	1	2437	15.88	---	---	---	500
HT20	1	2462	15.88	---	---	---	500

Worst Plot



Modulation Mode	N_{TX}	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
11b	1	2412	13.70	---	---	---
11b	1	2437	13.59	---	---	---
11b	1	2462	13.52	---	---	---
11g	1	2412	16.90	---	---	---
11g	1	2437	16.90	---	---	---
11g	1	2462	16.88	---	---	---
HT20	1	2412	17.78	---	---	---
HT20	1	2437	17.81	---	---	---
HT20	1	2462	17.78	---	---	---

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	1	2412	19.14	---	---	---	82.035	19.14	30.00	1.25	20.39	36.00
11b	1	2437	18.86	---	---	---	76.913	18.86	30.00	1.25	20.11	36.00
11b	1	2462	18.75	---	---	---	74.989	18.75	30.00	1.25	20.00	36.00
11g	1	2412	23.23	---	---	---	210.378	23.23	30.00	1.25	24.48	36.00
11g	1	2437	23.42	---	---	---	219.786	**23.42**	30.00	1.25	24.67	36.00
11g	1	2462	23.36	---	---	---	216.770	23.36	30.00	1.25	24.61	36.00
HT20	1	2412	22.79	---	---	---	190.108	22.79	30.00	1.25	24.04	36.00
HT20	1	2437	23.25	---	---	---	211.349	23.25	30.00	1.25	24.50	36.00
HT20	1	2462	23.08	---	---	---	203.236	23.08	30.00	1.25	24.33	36.00

Modulation Mode	N_{TX}	Freq. (MHz)	Conducted (Average) Output Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
11b	1	2412	16.91	---	---	---	49.091	16.91	---
11b	1	2437	16.71	---	---	---	46.881	16.71	---
11b	1	2462	16.52	---	---	---	44.875	16.52	---
11g	1	2412	16.69	---	---	---	46.666	16.69	---
11g	1	2437	16.98	---	---	---	49.888	**16.98**	---
11g	1	2462	16.68	---	---	---	46.559	16.68	---
HT20	1	2412	15.78	---	---	---	37.844	15.78	---
HT20	1	2437	16.89	---	---	---	48.865	16.89	---
HT20	1	2462	15.89	---	---	---	38.815	15.89	---

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

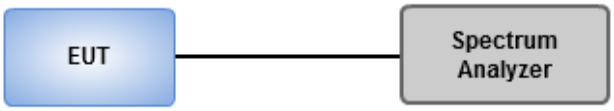
☒ Maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit.

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.

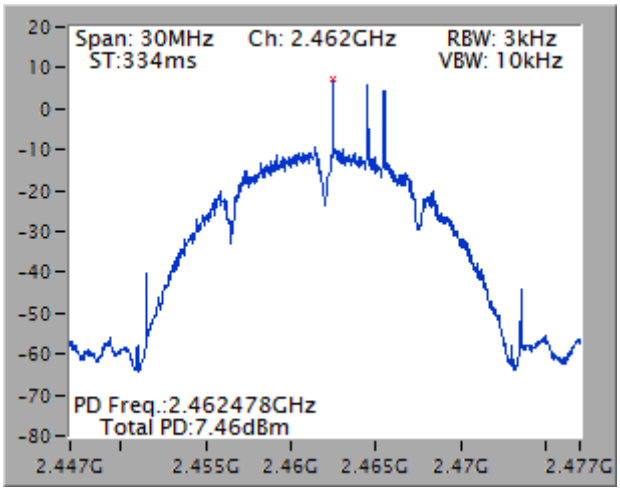
3.4.3 Test Setup



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	1	2412	7.36	8.00
11b	1	2437	7.31	8.00
11b	1	2462	7.46	8.00
11g	1	2412	-9.47	8.00
11g	1	2437	-9.80	8.00
11g	1	2462	-9.98	8.00
HT20	1	2412	-9.88	8.00
HT20	1	2437	-9.03	8.00
HT20	1	2462	-9.46	8.00

Worst Plots



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

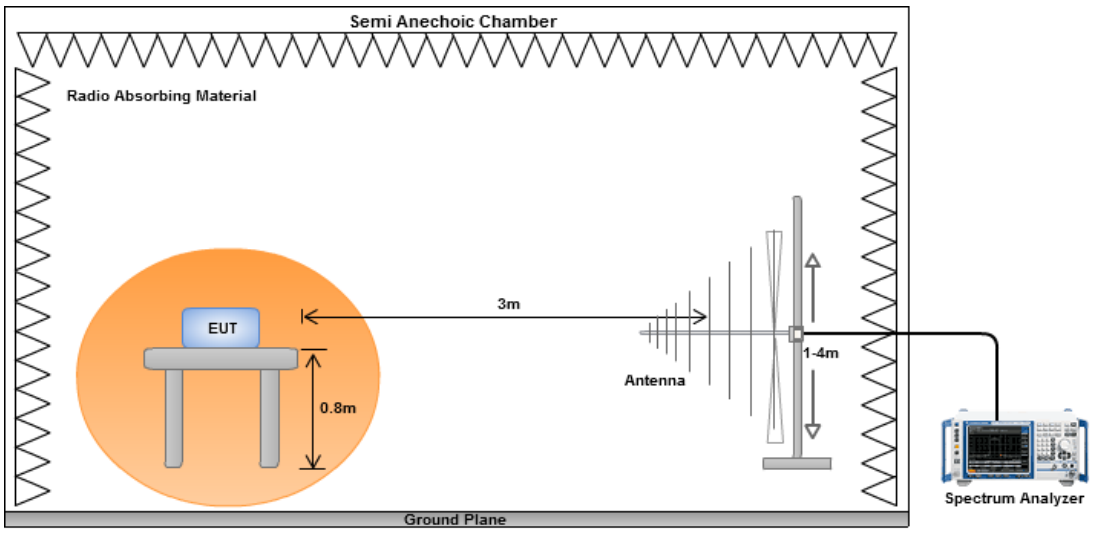
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

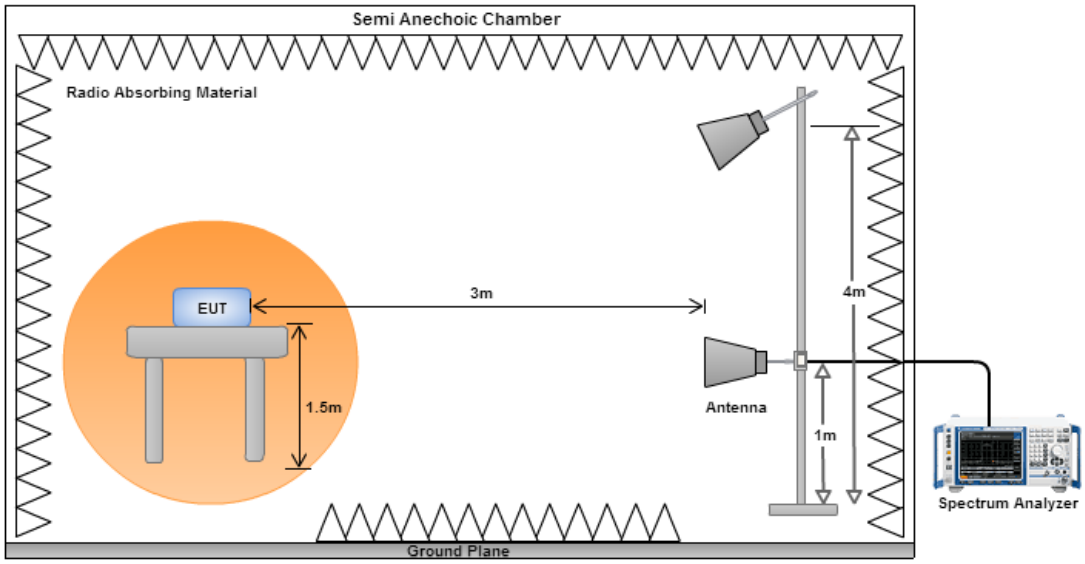
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz



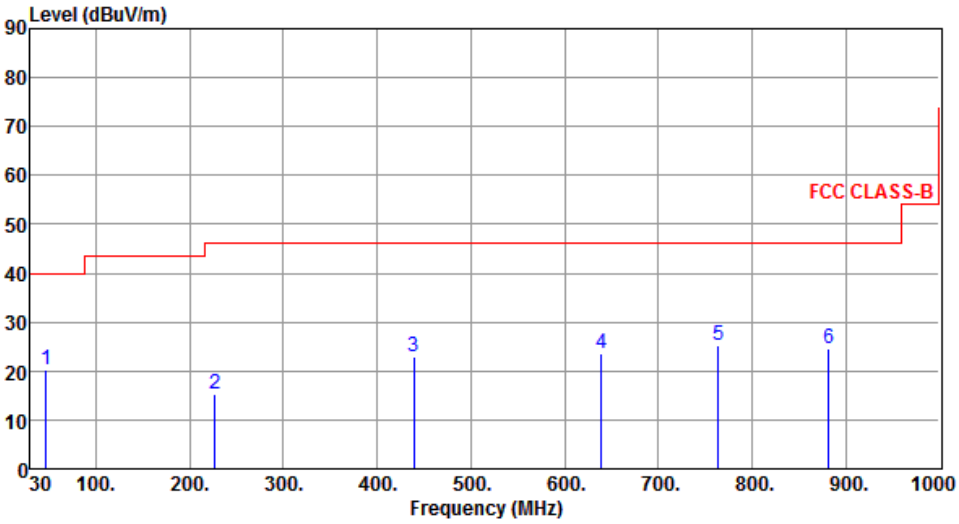
Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Configuration 1: Antenna cable length: 400mm

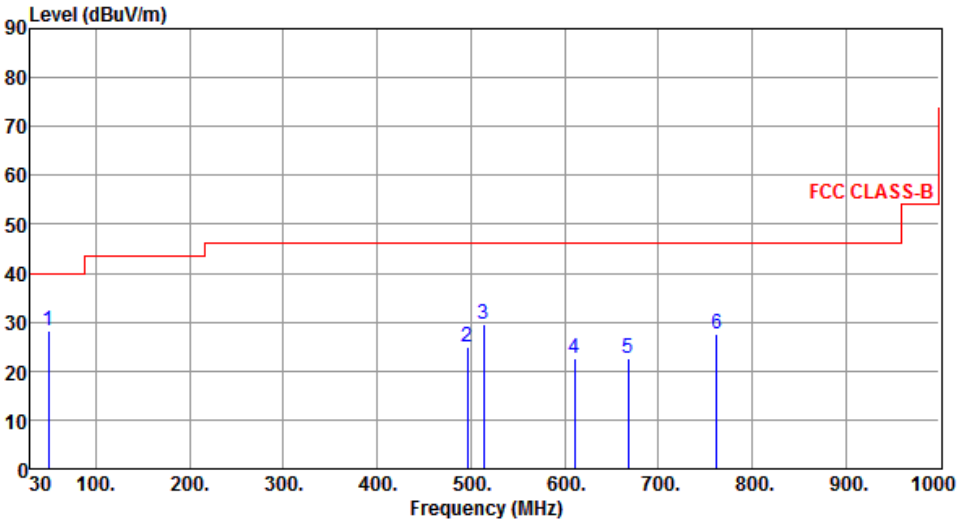
Modulation	11g	**Test Freq. (MHz)**	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	46.49	20.20	40.00	-19.80	36.52	-16.32	Peak	---	---
2	226.91	15.21	46.00	-30.79	33.92	-18.71	Peak	---	---
3	439.34	23.01	46.00	-22.99	35.44	-12.43	Peak	---	---
4	639.16	23.53	46.00	-22.47	32.38	-8.85	Peak	---	---
5	764.29	25.40	46.00	-20.60	32.21	-6.81	Peak	---	---
6	881.66	24.74	46.00	-21.26	30.21	-5.47	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)	2437
Polarization	Vertical		

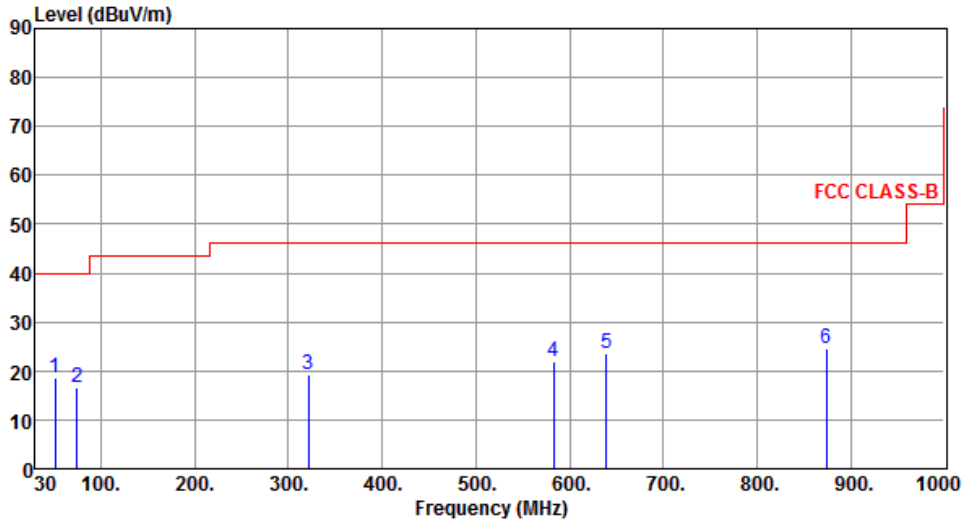


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	49.40	28.31	40.00	-11.69	44.66	-16.35	Peak	---	---
2	496.57	24.94	46.00	-21.06	36.13	-11.19	Peak	---	---
3	514.03	29.48	46.00	-16.52	40.41	-10.93	Peak	---	---
4	611.03	22.52	46.00	-23.48	31.85	-9.33	Peak	---	---
5	668.26	22.62	46.00	-23.38	31.07	-8.45	Peak	---	---
6	762.35	27.57	46.00	-18.43	34.41	-6.84	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.

Configuration 2: Antenna cable length: 900mm

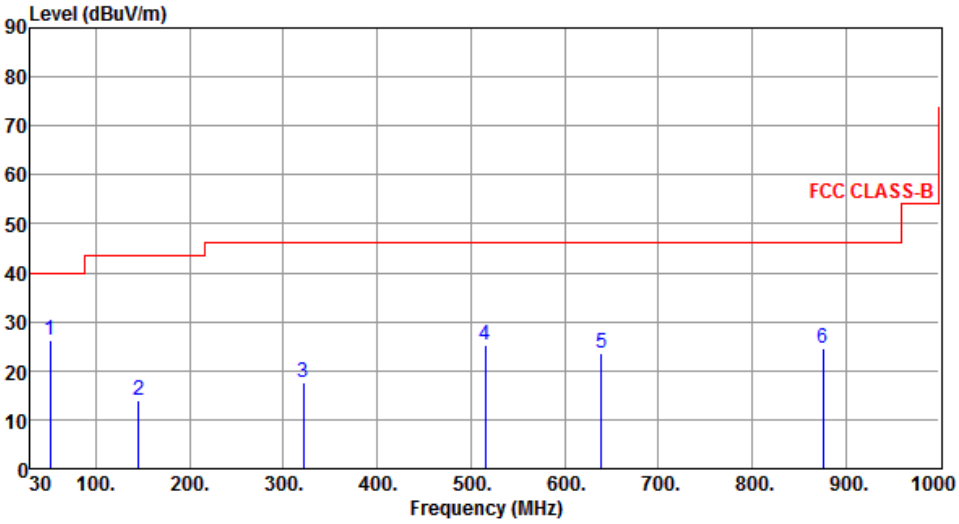
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	51.34	18.76	40.00	-21.24	35.28	-16.52	Peak	---	---
2	74.62	16.56	40.00	-23.44	36.79	-20.23	Peak	---	---
3	321.00	19.34	46.00	-26.66	34.70	-15.36	Peak	---	---
4	582.90	21.89	46.00	-24.11	31.74	-9.85	Peak	---	---
5	639.16	23.52	46.00	-22.48	32.37	-8.85	Peak	---	---
6	873.90	24.42	46.00	-21.58	29.99	-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	11g	Test Freq. (MHz)	2437
Polarization	Vertical		

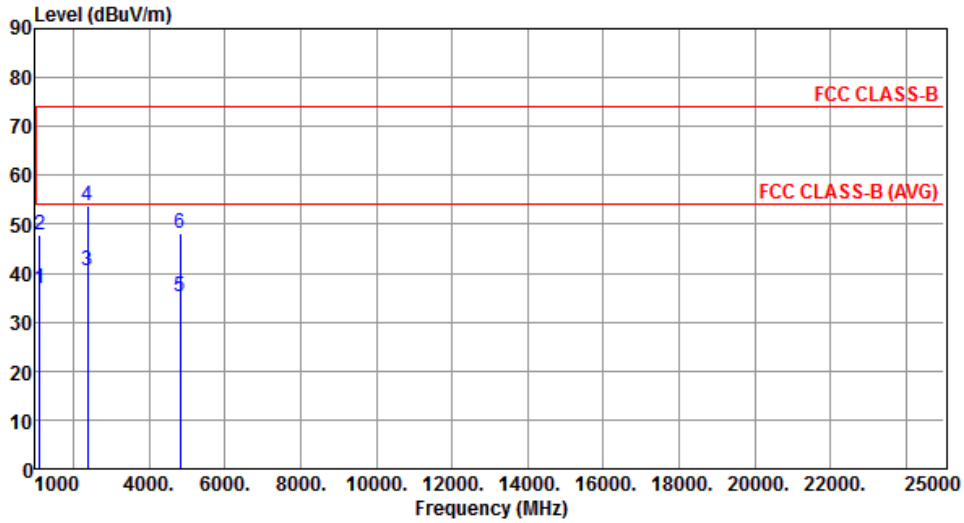


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	51.34	26.18	40.00	-13.82	42.70	-16.52	Peak	---	---
2	145.43	13.97	43.50	-29.53	30.81	-16.84	Peak	---	---
3	321.00	17.48	46.00	-28.52	32.84	-15.36	Peak	---	---
4	515.00	25.37	46.00	-20.63	36.29	-10.92	Peak	---	---
5	639.16	23.70	46.00	-22.30	32.55	-8.85	Peak	---	---
6	875.84	24.60	46.00	-21.40	30.14	-5.54	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

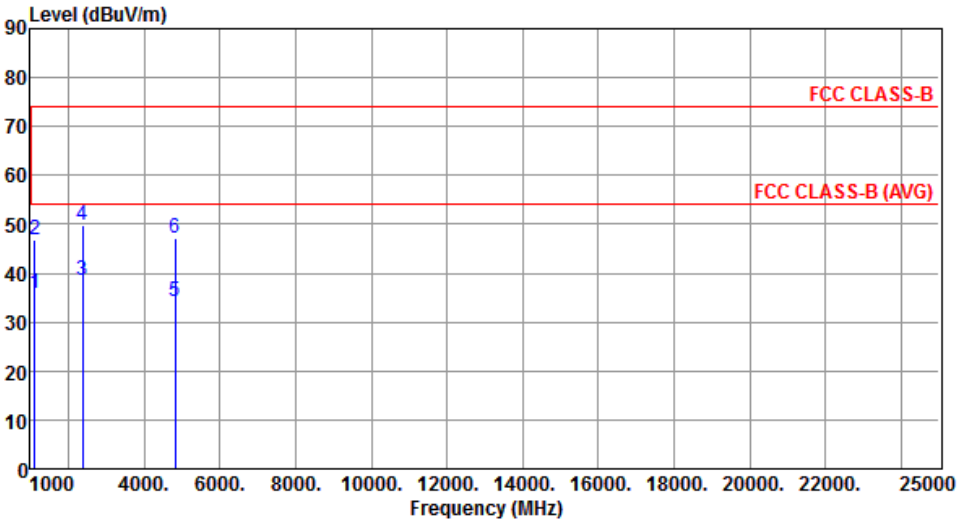
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1109.00	36.86	54.00	-17.14	47.24	-10.38	Average	100	355
2	1109.00	47.82	74.00	-26.18	58.20	-10.38	Peak	100	355
3	2390.00	40.48	54.00	-13.52	42.86	-2.38	Average	100	2
4	2390.00	53.66	74.00	-20.34	56.04	-2.38	Peak	100	2
5	4824.00	35.09	54.00	-18.91	30.00	5.09	Average	126	39
6	4824.00	48.09	74.00	-25.91	43.00	5.09	Peak	126	39

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

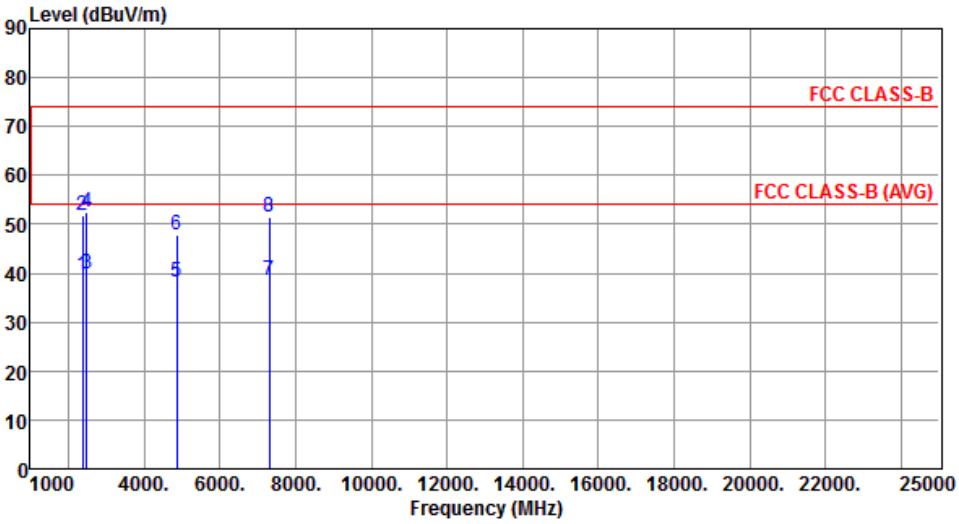
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1109.00	35.72	54.00	-18.28	46.10	-10.38	Average	210	76
2	1109.00	46.76	74.00	-27.24	57.14	-10.38	Peak	210	76
3	2390.00	38.37	54.00	-15.63	40.75	-2.38	Average	277	91
4	2390.00	49.79	74.00	-24.21	52.17	-2.38	Peak	277	91
5	4824.00	34.12	54.00	-19.88	29.03	5.09	Average	222	273
6	4824.00	47.27	74.00	-26.73	42.18	5.09	Peak	222	273

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).

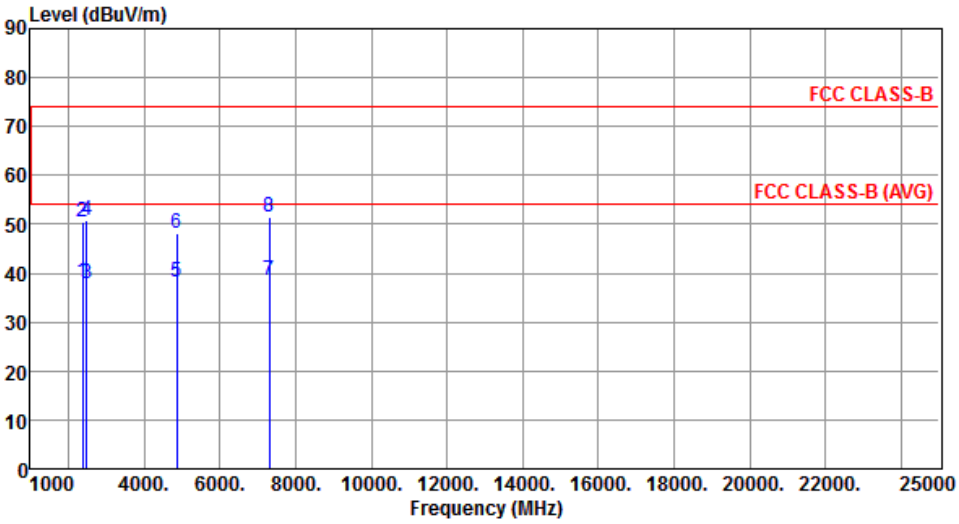
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		



	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	39.55	54.00	-14.45	41.93	-2.38	Average	103	0
2	2390.00	51.95	74.00	-22.05	54.33	-2.38	Peak	103	0
3	2483.50	39.93	54.00	-14.07	42.29	-2.36	Average	103	0
4	2483.50	52.41	74.00	-21.59	54.77	-2.36	Peak	103	0
5	4874.00	38.12	54.00	-15.88	32.84	5.28	Average	138	26
6	4874.00	47.96	74.00	-26.04	42.68	5.28	Peak	138	26
7	7311.00	38.43	54.00	-15.57	28.83	9.60	Average	182	345
8	7311.00	51.60	74.00	-22.40	42.00	9.60	Peak	182	345

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).

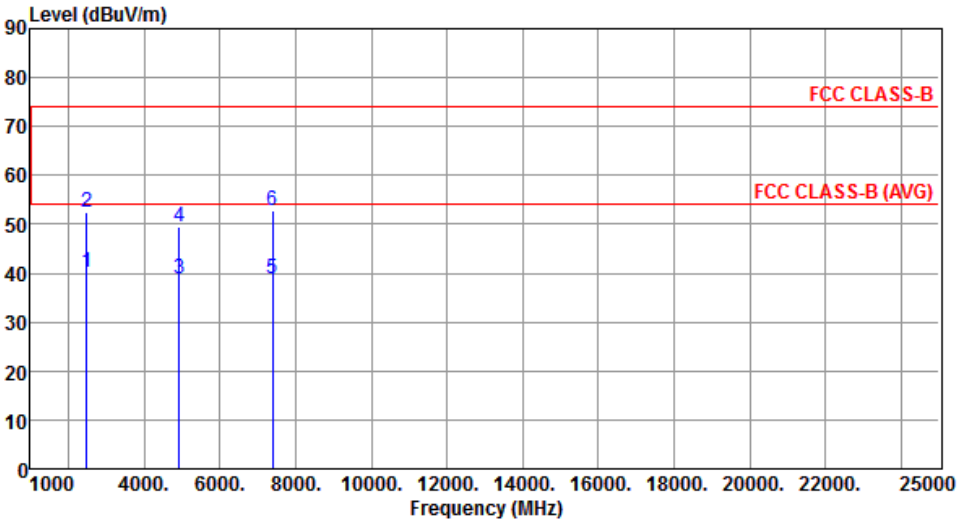
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Vertical		



	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	38.10	54.00	-15.90	40.48	-2.38	Average	281	94
2	2390.00	50.63	74.00	-23.37	53.01	-2.38	Peak	281	94
3	2483.50	38.02	54.00	-15.98	40.38	-2.36	Average	281	94
4	2483.50	50.94	74.00	-23.06	53.30	-2.36	Peak	281	94
5	4874.00	38.07	54.00	-15.93	32.79	5.28	Average	186	233
6	4874.00	48.14	74.00	-25.86	42.86	5.28	Peak	186	233
7	7311.00	38.44	54.00	-15.56	28.84	9.60	Average	220	224
8	7311.00	51.62	74.00	-22.38	42.02	9.60	Peak	220	224

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

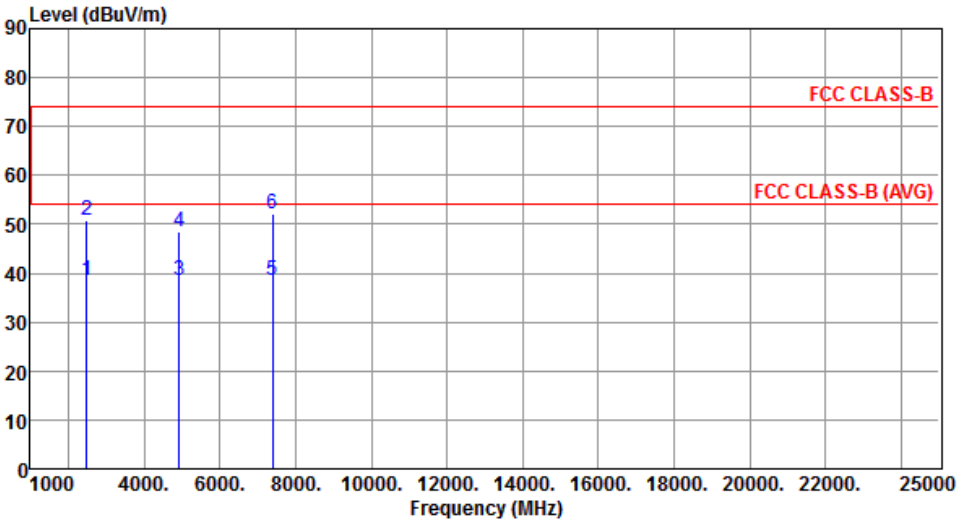
Modulation	11b	Test Freq. (MHz)	2462
Polarization	Horizontal		



	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	40.14	54.00	-13.86	42.50	-2.36	Average	101	1
2	2483.50	52.60	74.00	-21.40	54.96	-2.36	Peak	101	1
3	4924.00	38.71	54.00	-15.29	33.24	5.47	Average	146	32
4	4924.00	49.45	74.00	-24.55	43.98	5.47	Peak	146	32
5	7386.00	38.71	54.00	-15.29	29.11	9.60	Average	152	329
6	7386.00	52.66	74.00	-21.34	43.06	9.60	Peak	152	329

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		

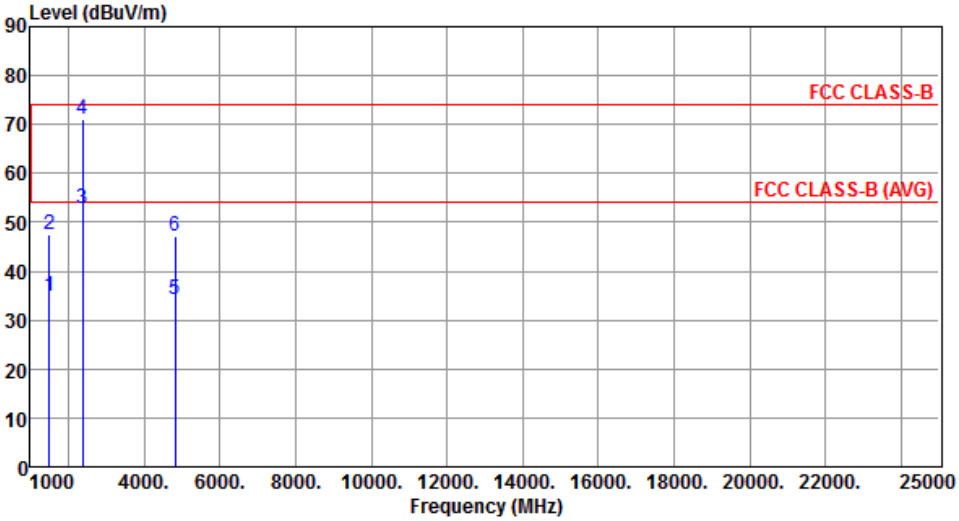


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	38.63	54.00	-15.37	40.99	-2.36	Average	277	100
2	2483.50	50.74	74.00	-23.26	53.10	-2.36	Peak	277	100
3	4924.00	38.44	54.00	-15.56	32.97	5.47	Average	287	158
4	4924.00	48.45	74.00	-25.55	42.98	5.47	Peak	287	158
5	7386.00	38.55	54.00	-15.45	28.95	9.60	Average	196	352
6	7386.00	52.18	74.00	-21.82	42.58	9.60	Peak	196	352

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

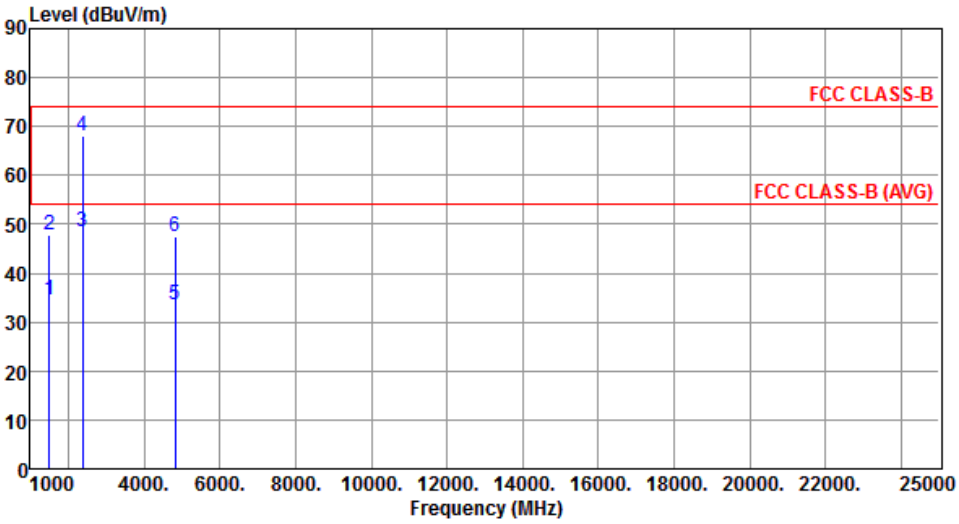
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.98	54.00	-19.02	41.81	-6.83	Average	103	187
2	1500.00	47.64	74.00	-26.36	54.47	-6.83	Peak	103	187
3	2390.00	52.93	54.00	-1.07	55.31	-2.38	Average	109	0
4	2390.00	70.98	74.00	-3.02	73.36	-2.38	Peak	109	0
5	4824.00	34.12	54.00	-19.88	29.03	5.09	Average	168	322
6	4824.00	47.26	74.00	-26.74	42.17	5.09	Peak	168	322

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).

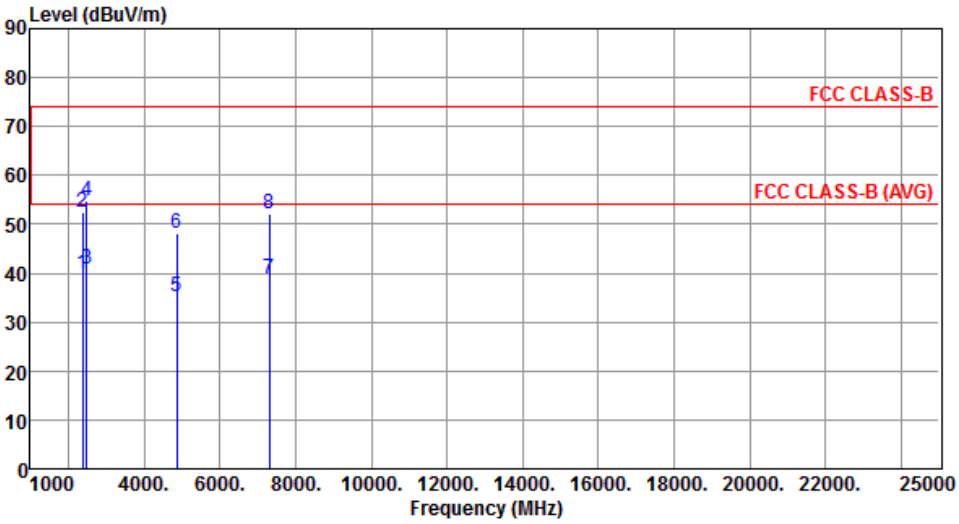
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.64	54.00	-19.36	41.47	-6.83	Average	123	242
2	1500.00	47.96	74.00	-26.04	54.79	-6.83	Peak	123	242
3	2390.00	48.37	54.00	-5.63	50.75	-2.38	Average	226	254
4	2390.00	67.98	74.00	-6.02	70.36	-2.38	Peak	226	254
5	4824.00	33.56	54.00	-20.44	28.47	5.09	Average	193	316
6	4824.00	47.46	74.00	-26.54	42.37	5.09	Peak	193	316

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).

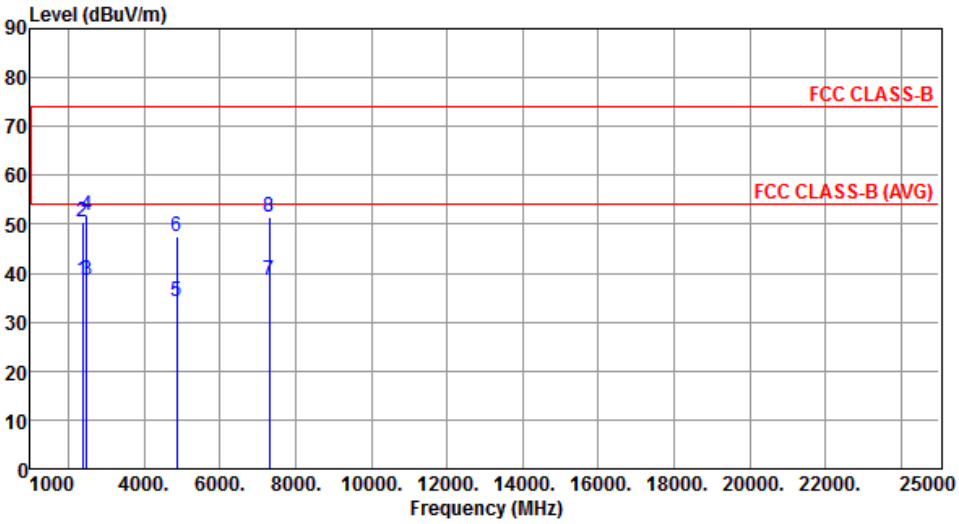
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		



	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	39.69	54.00	-14.31	42.07	-2.38	Average	100	359
2	2390.00	52.31	74.00	-21.69	54.69	-2.38	Peak	100	359
3	2483.50	40.91	54.00	-13.09	43.27	-2.36	Average	100	359
4	2483.50	54.66	74.00	-19.34	57.02	-2.36	Peak	100	359
5	4874.00	35.11	54.00	-18.89	29.83	5.28	Average	161	338
6	4874.00	48.24	74.00	-25.76	42.96	5.28	Peak	161	338
7	7311.00	38.98	54.00	-15.02	29.38	9.60	Average	226	11
8	7311.00	52.23	74.00	-21.77	42.63	9.60	Peak	226	11

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).

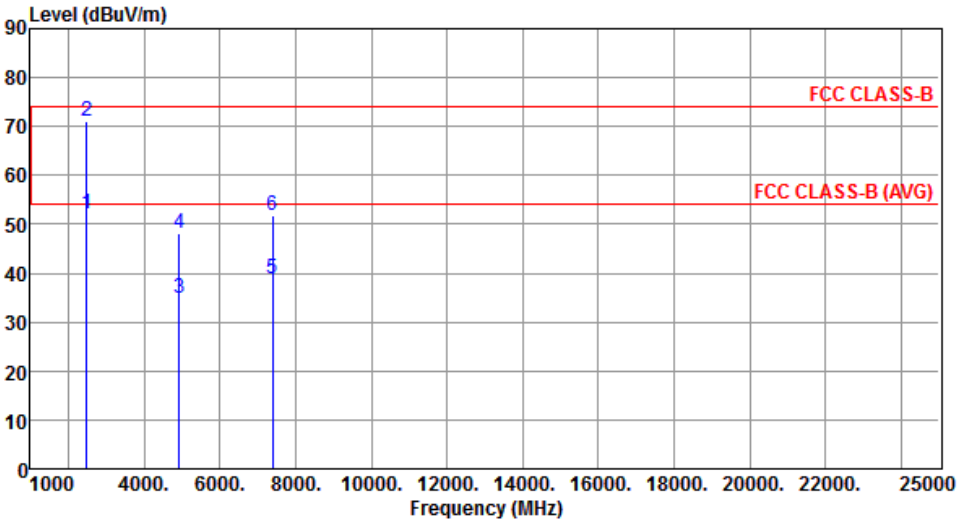
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		



	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	38.41	54.00	-15.59	40.79	-2.38	Average	142	11
2	2390.00	50.56	74.00	-23.44	52.94	-2.38	Peak	142	11
3	2483.50	38.40	54.00	-15.60	40.76	-2.36	Average	142	11
4	2483.50	51.73	74.00	-22.27	54.09	-2.36	Peak	142	11
5	4874.00	34.32	54.00	-19.68	29.04	5.28	Average	198	326
6	4874.00	47.55	74.00	-26.45	42.27	5.28	Peak	198	326
7	7311.00	38.61	54.00	-15.39	29.01	9.60	Average	214	138
8	7311.00	51.48	74.00	-22.52	41.88	9.60	Peak	214	138

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

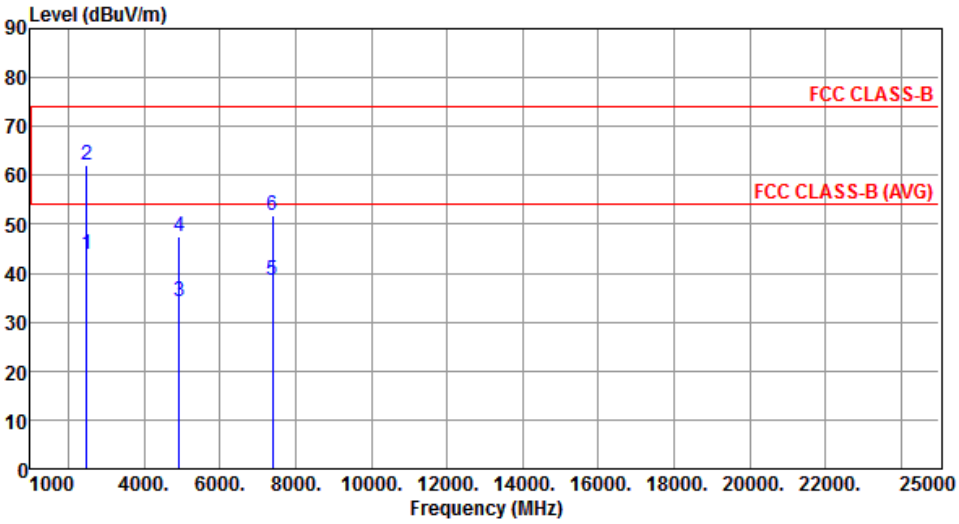
Modulation	11g	Test Freq. (MHz)	2462
Polarization	Horizontal		



	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	52.10	54.00	-1.90	54.46	-2.36	Average	100	7
2	2483.50	70.97	74.00	-3.03	73.33	-2.36	Peak	100	7
3	4924.00	34.95	54.00	-19.05	29.48	5.47	Average	173	318
4	4924.00	48.06	74.00	-25.94	42.59	5.47	Peak	173	318
5	7386.00	38.72	54.00	-15.28	29.12	9.60	Average	233	15
6	7386.00	51.94	74.00	-22.06	42.34	9.60	Peak	233	15

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		

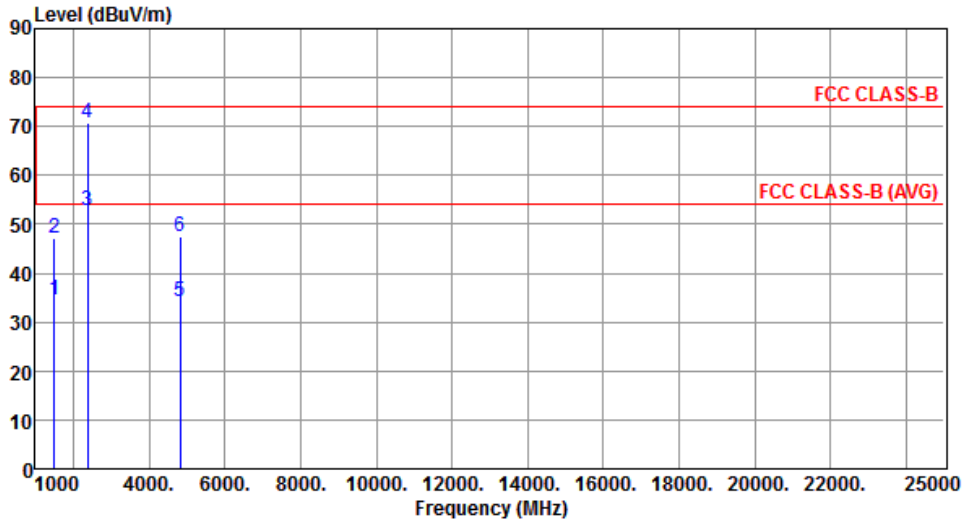


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	43.94	54.00	-10.06	46.30	-2.36	Average	351	133
2	2483.50	62.08	74.00	-11.92	64.44	-2.36	Peak	351	133
3	4924.00	34.12	54.00	-19.88	28.65	5.47	Average	192	324
4	4924.00	47.43	74.00	-26.57	41.96	5.47	Peak	192	324
5	7386.00	38.62	54.00	-15.38	29.02	9.60	Average	211	124
6	7386.00	51.89	74.00	-22.11	42.29	9.60	Peak	211	124

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

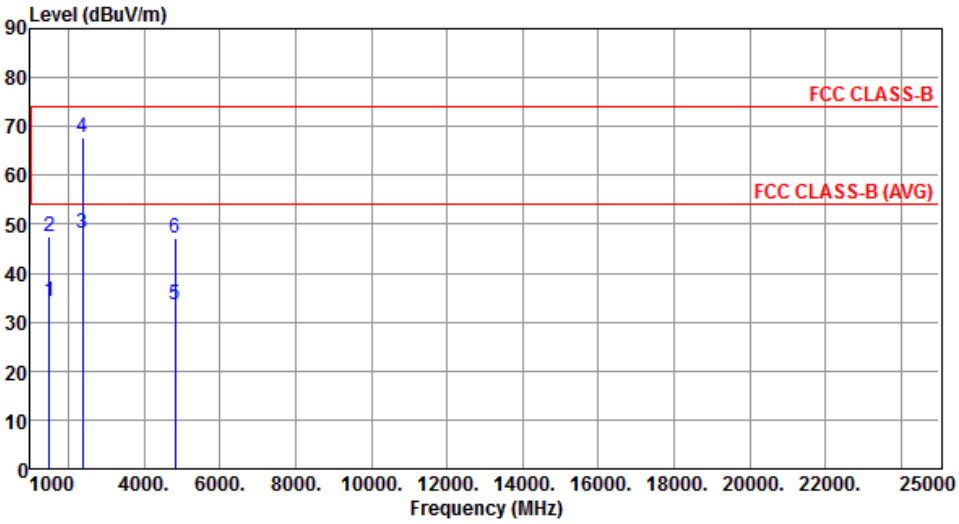
Modulation	HT20	**Test Freq. (MHz)**	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.49	54.00	-19.51	41.32	-6.83	Average	100	184
2	1500.00	47.30	74.00	-26.70	54.13	-6.83	Peak	100	184
3	2390.00	52.80	54.00	-1.20	55.18	-2.38	Average	213	359
4	2390.00	70.78	74.00	-3.22	73.16	-2.38	Peak	213	359
5	4824.00	34.33	54.00	-19.67	29.24	5.09	Average	160	325
6	4824.00	47.62	74.00	-26.38	42.53	5.09	Peak	160	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).

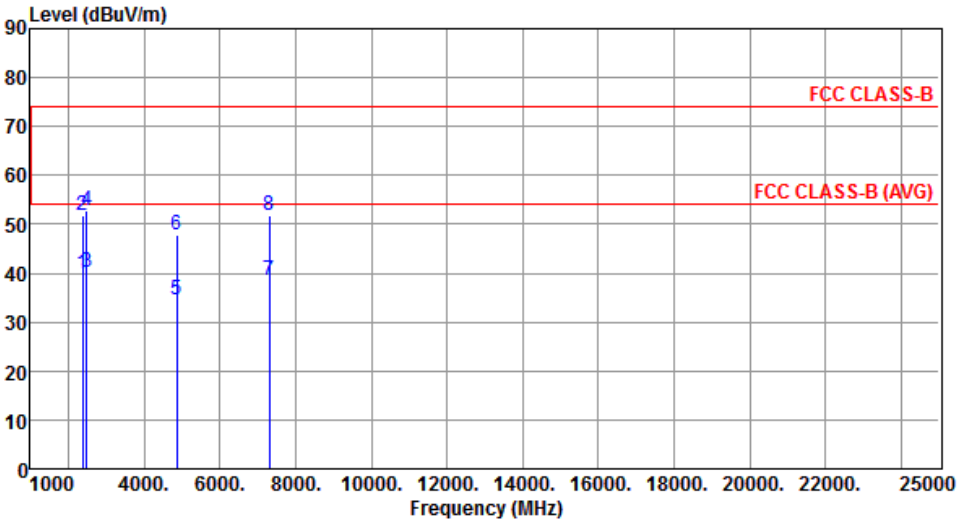
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	34.29	54.00	-19.71	41.12	-6.83	Average	127	256
2	1500.00	47.48	74.00	-26.52	54.31	-6.83	Peak	127	256
3	2390.00	48.03	54.00	-5.97	50.41	-2.38	Average	222	266
4	2390.00	67.60	74.00	-6.40	69.98	-2.38	Peak	222	266
5	4824.00	33.62	54.00	-20.38	28.53	5.09	Average	196	322
6	4824.00	47.20	74.00	-26.80	42.11	5.09	Peak	196	322

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).

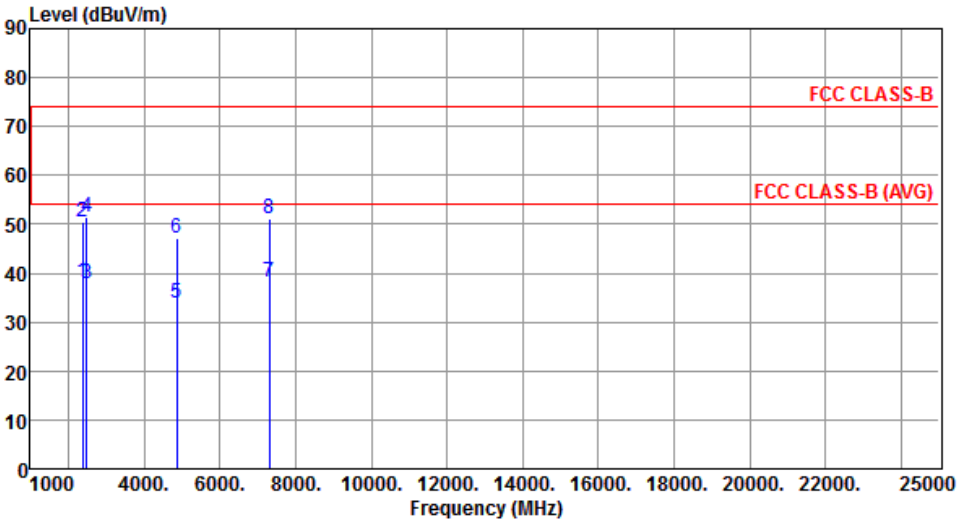
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal		



	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	39.79	54.00	-14.21	42.17	-2.38	Average	266	348
2	2390.00	51.71	74.00	-22.29	54.09	-2.38	Peak	266	348
3	2483.50	40.25	54.00	-13.75	42.61	-2.36	Average	266	348
4	2483.50	52.74	74.00	-21.26	55.10	-2.36	Peak	266	348
5	4874.00	34.68	54.00	-19.32	29.40	5.28	Average	165	334
6	4874.00	47.80	74.00	-26.20	42.52	5.28	Peak	165	334
7	7311.00	38.46	54.00	-15.54	28.86	9.60	Average	237	15
8	7311.00	51.72	74.00	-22.28	42.12	9.60	Peak	237	15

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).

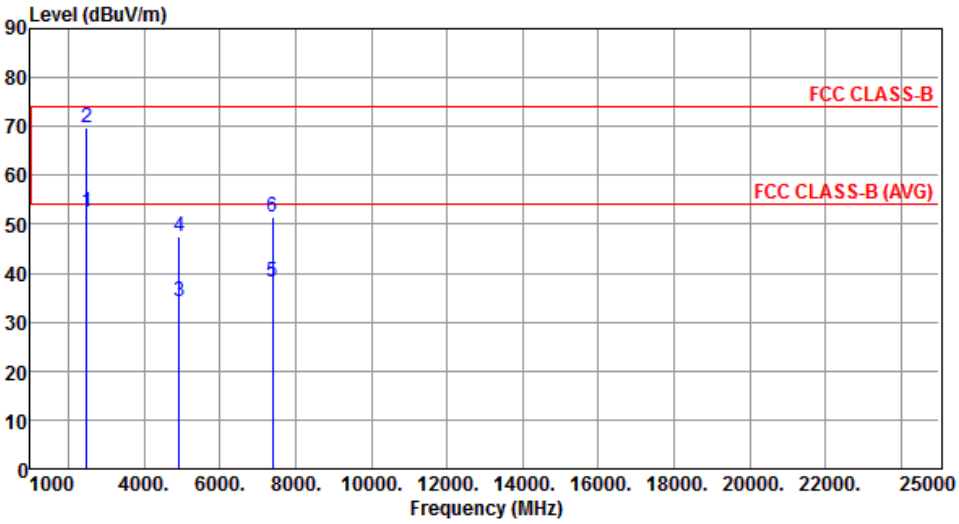
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		



	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	38.13	54.00	-15.87	40.51	-2.38	Average	146	23
2	2390.00	50.35	74.00	-23.65	52.73	-2.38	Peak	146	23
3	2483.50	38.01	54.00	-15.99	40.37	-2.36	Average	146	23
4	2483.50	51.56	74.00	-22.44	53.92	-2.36	Peak	146	23
5	4874.00	33.84	54.00	-20.16	28.56	5.28	Average	194	321
6	4874.00	47.04	74.00	-26.96	41.76	5.28	Peak	194	321
7	7311.00	38.29	54.00	-15.71	28.69	9.60	Average	213	134
8	7311.00	51.11	74.00	-22.89	41.51	9.60	Peak	213	134

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).

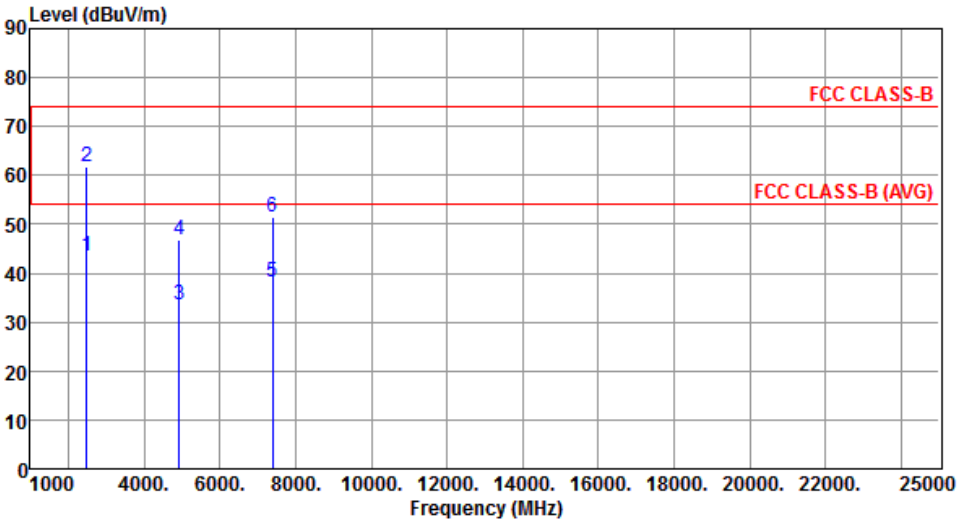
Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Horizontal		



	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	52.47	54.00	-1.53	54.83	-2.36	Average	284	359
2	2483.50	69.87	74.00	-4.13	72.23	-2.36	Peak	284	359
3	4924.00	34.32	54.00	-19.68	28.85	5.47	Average	169	327
4	4924.00	47.54	74.00	-26.46	42.07	5.47	Peak	169	327
5	7386.00	38.19	54.00	-15.81	28.59	9.60	Average	237	19
6	7386.00	51.46	74.00	-22.54	41.86	9.60	Peak	237	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).

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	43.41	54.00	-10.59	45.77	-2.36	Average	354	139
2	2483.50	61.70	74.00	-12.30	64.06	-2.36	Peak	354	139
3	4924.00	33.65	54.00	-20.35	28.18	5.47	Average	199	327
4	4924.00	46.87	74.00	-27.13	41.40	5.47	Peak	199	327
5	7386.00	38.11	54.00	-15.89	28.51	9.60	Average	217	131
6	7386.00	51.40	74.00	-22.60	41.80	9.60	Peak	217	131

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

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

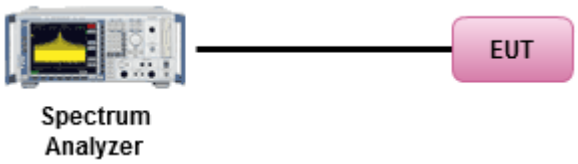
1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

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

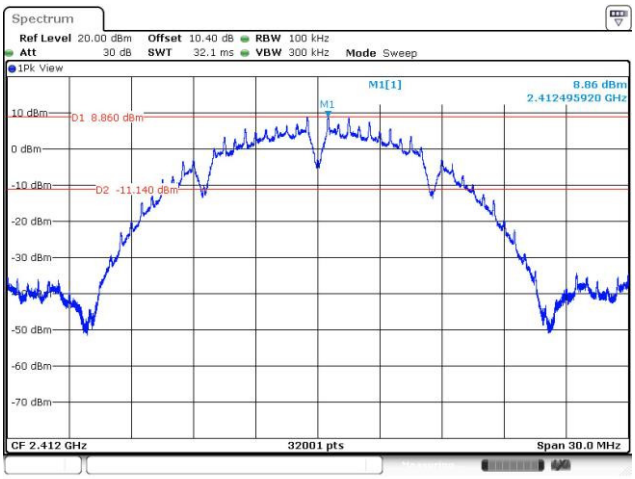
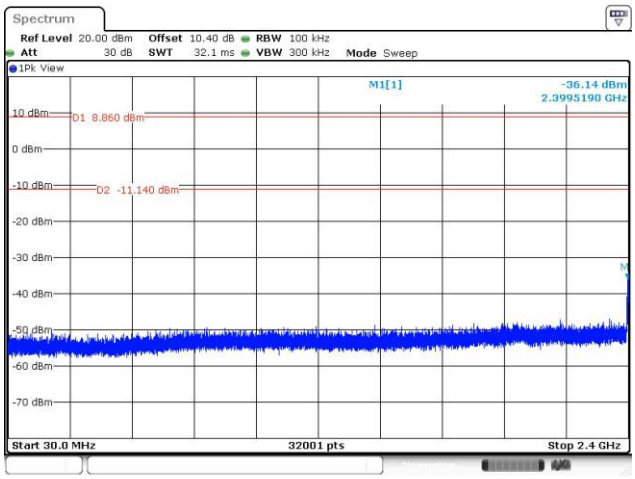
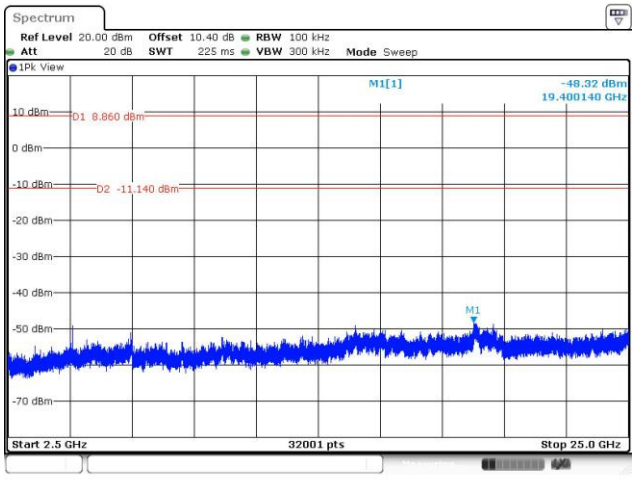
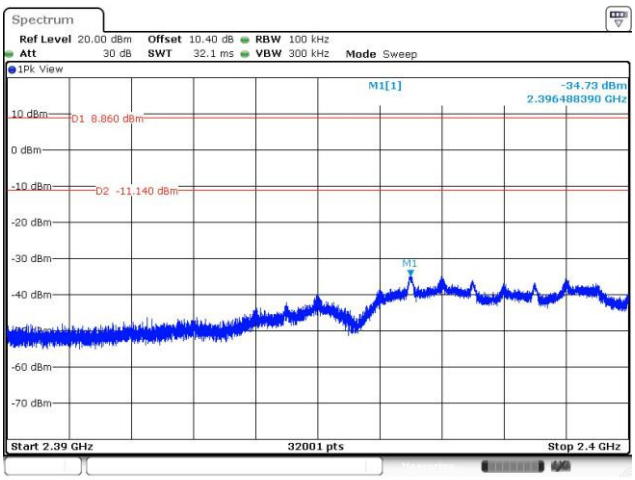
3.6.4 Test Setup

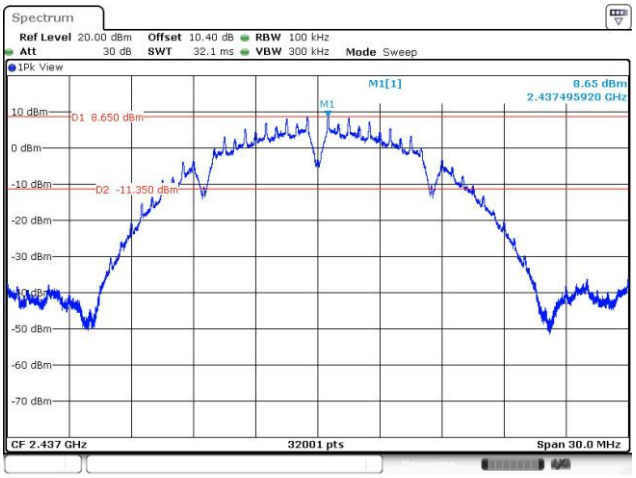
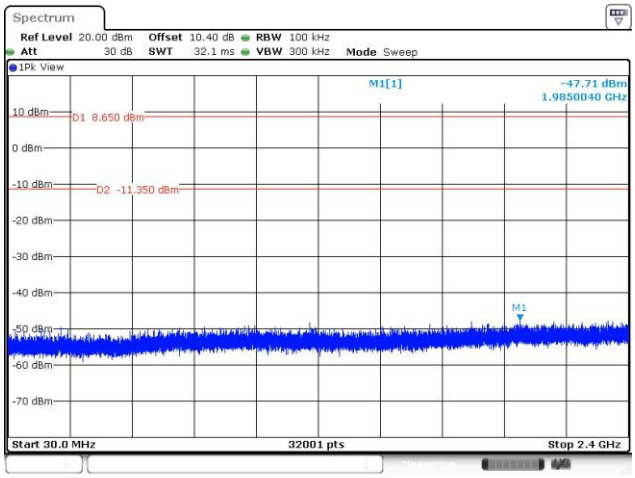
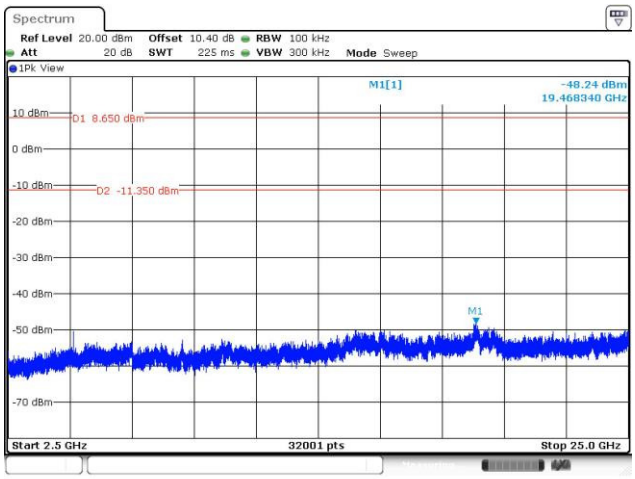
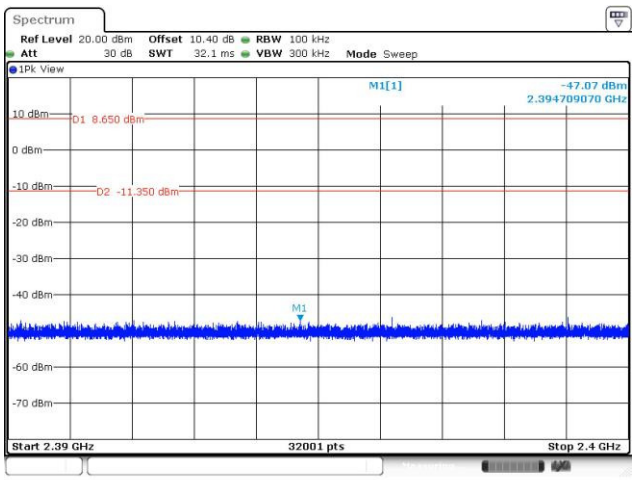
Transmitter Radiated Bandedge Emissions

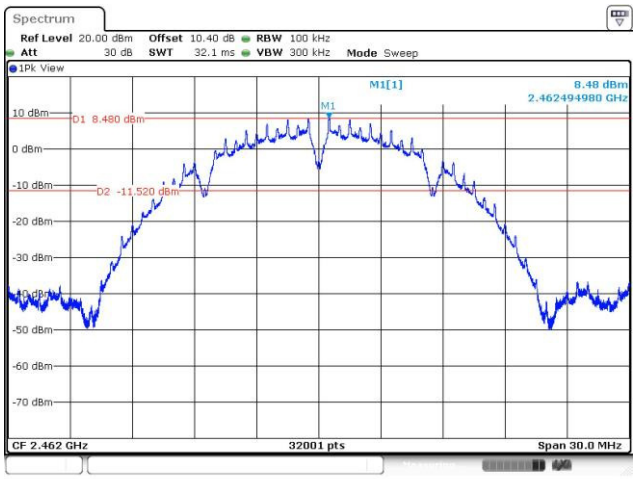
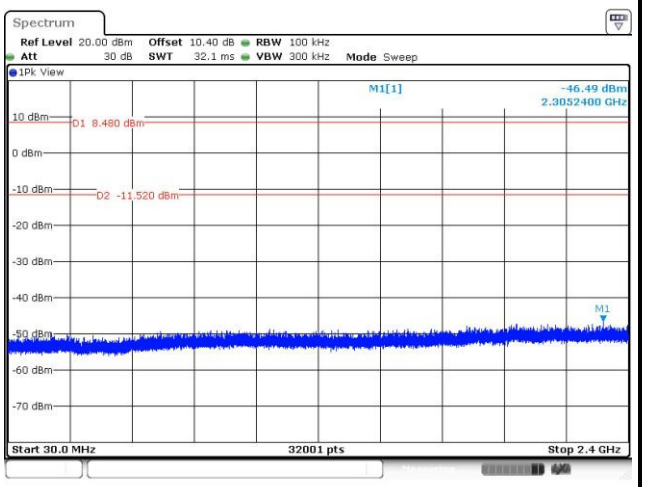
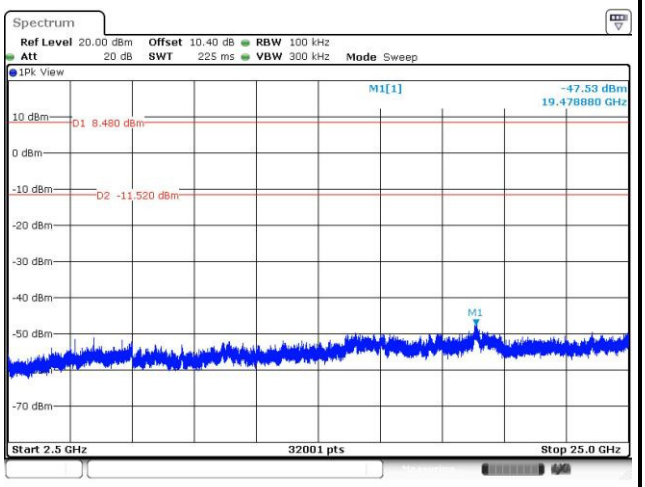
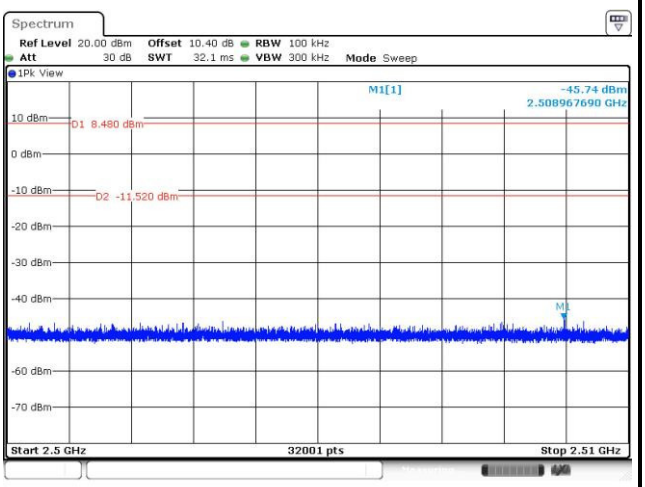


3.6.5 Unwanted Emissions into Non-Restricted Frequency Bands

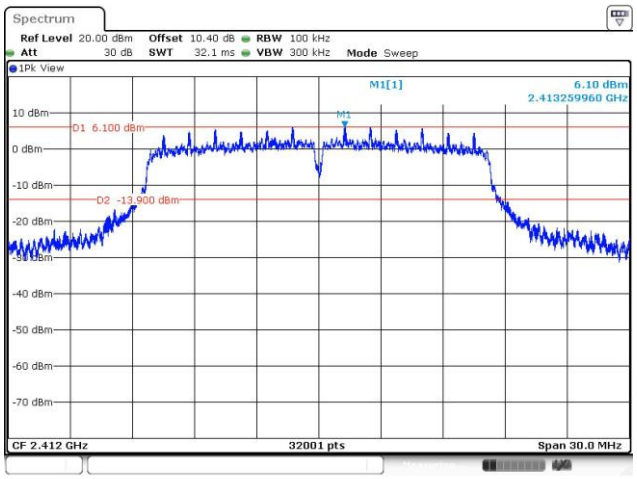
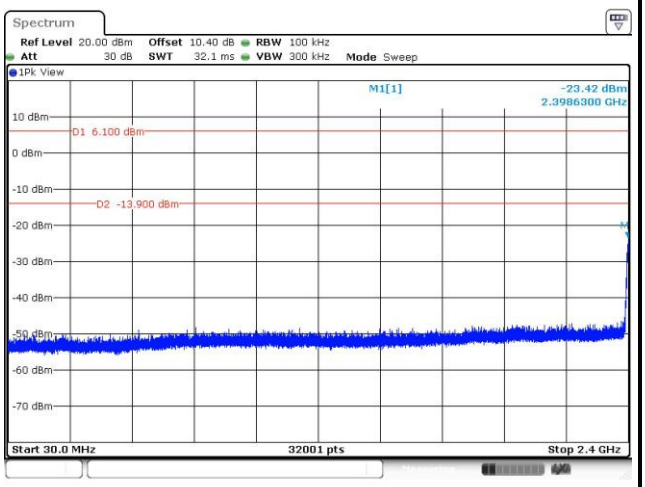
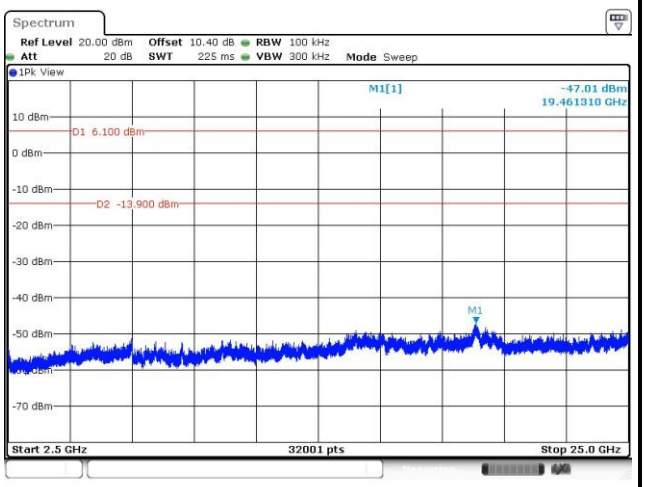
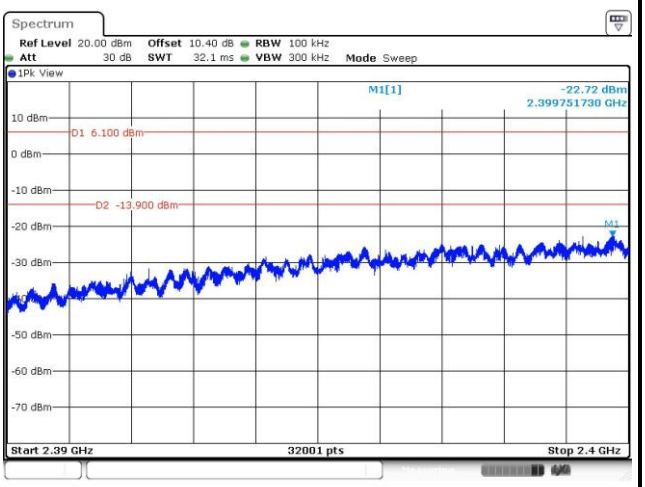
802.11b

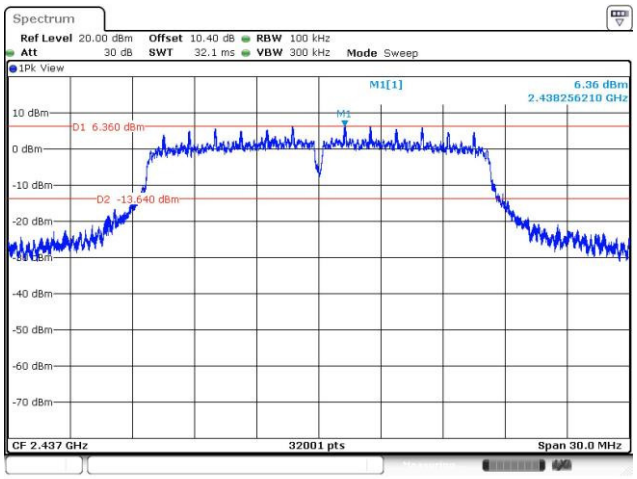
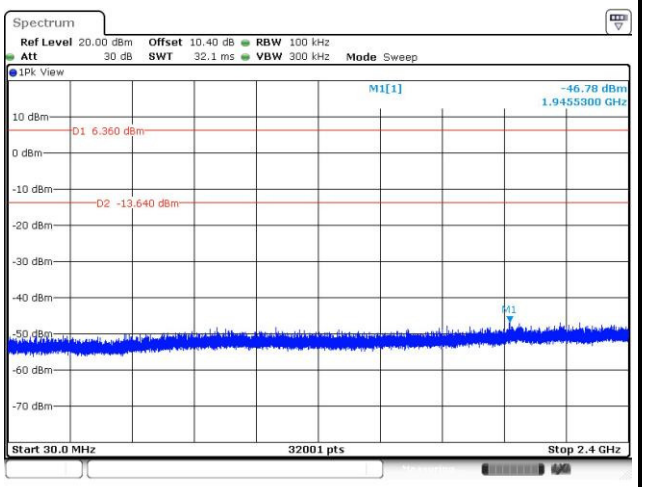
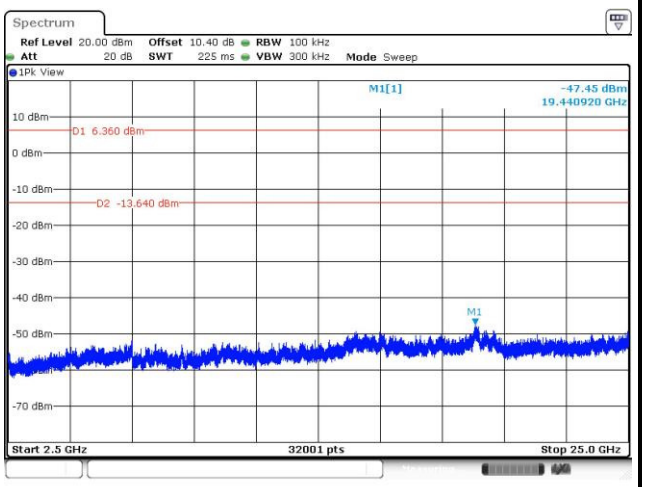
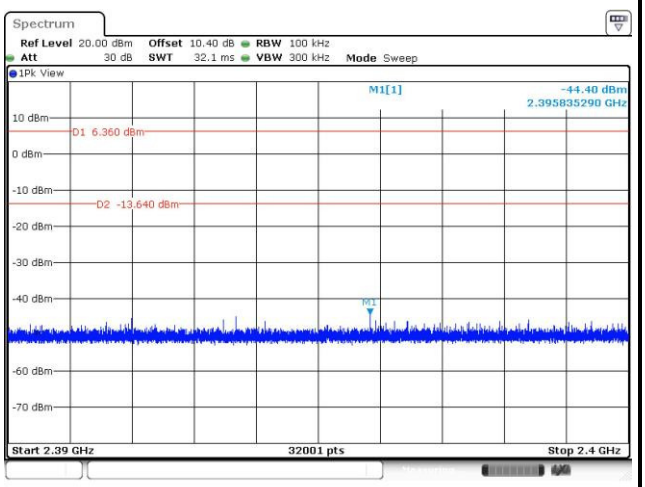
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 20dBc)
	
---	
---	

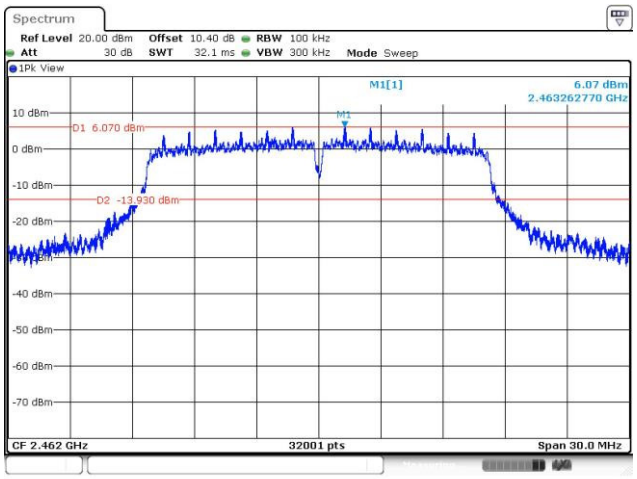
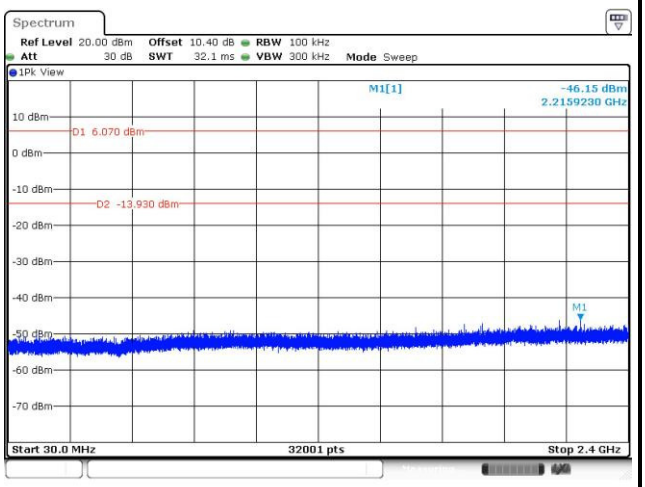
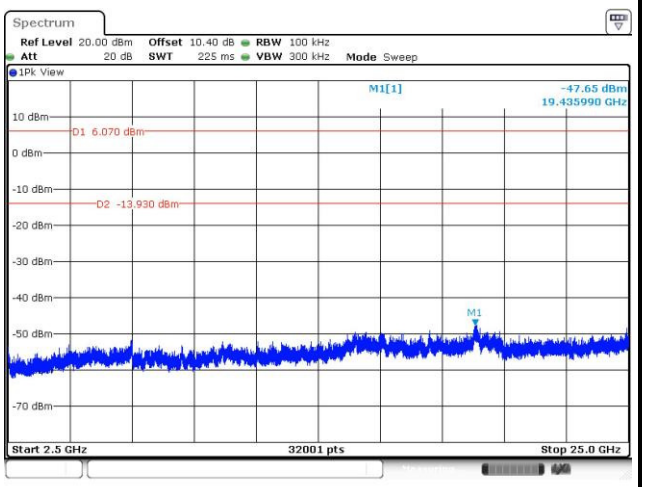
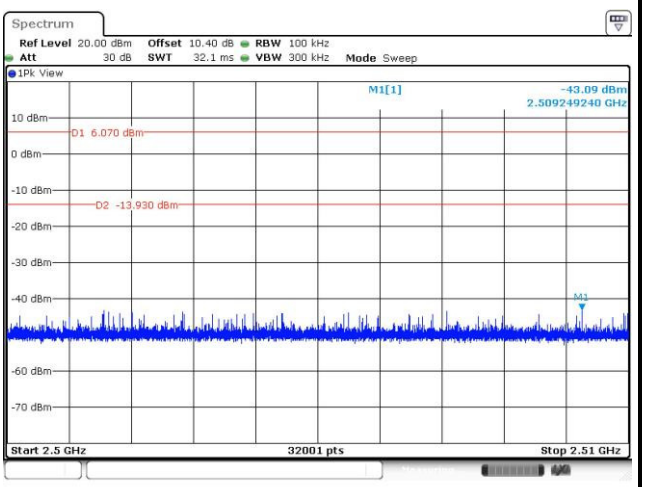
Reference Level	Tx 2437MHz / 30MHz~25GHz (down 20dBc)
	
---	
---	

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

802.11g

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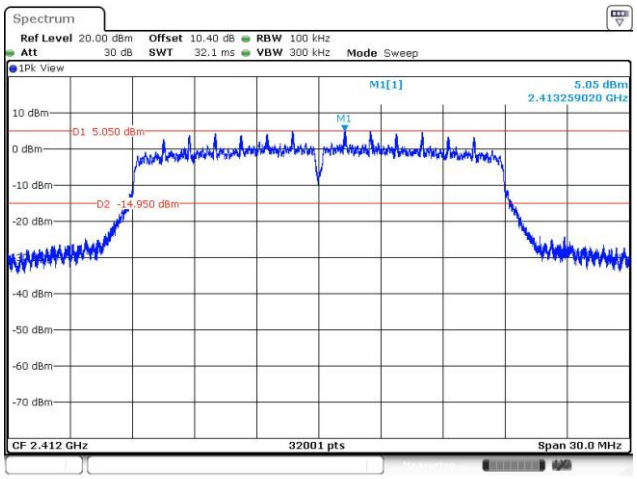
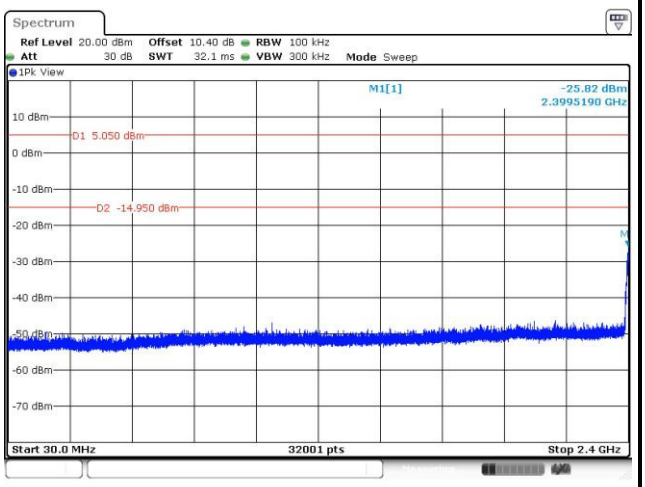
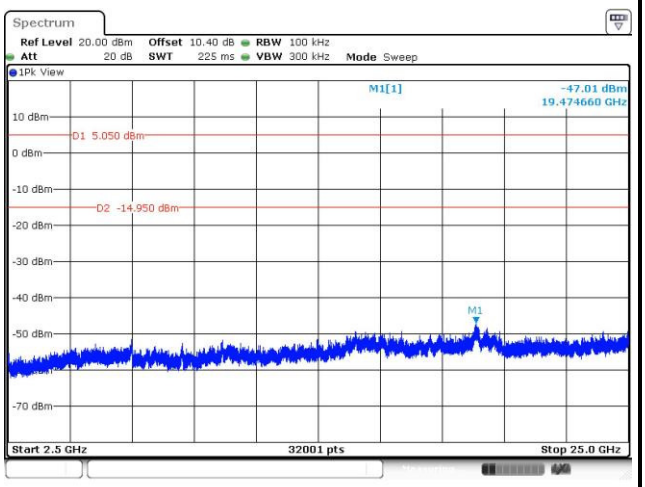
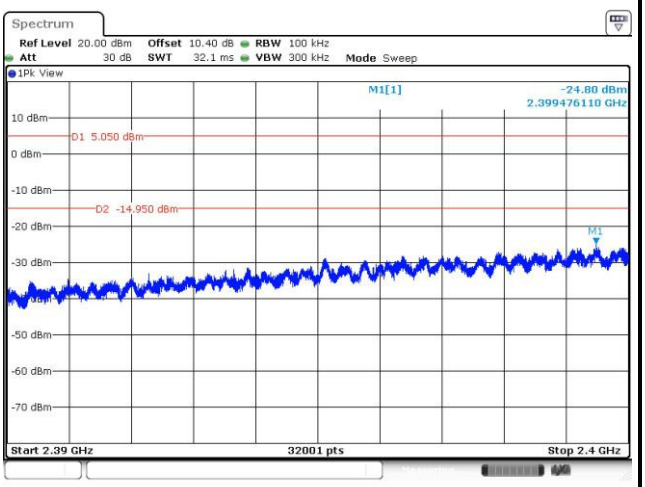
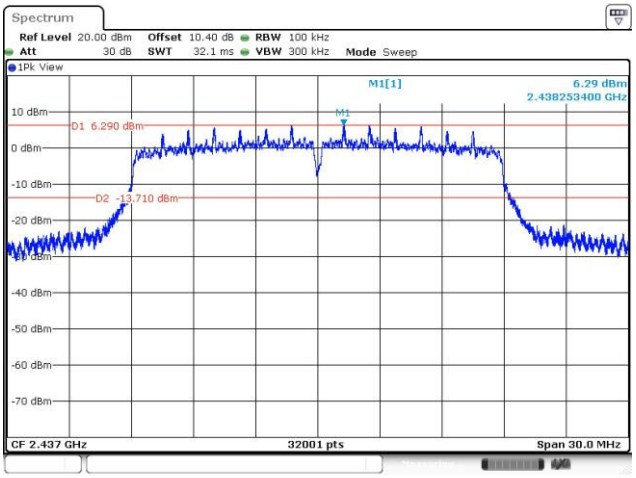
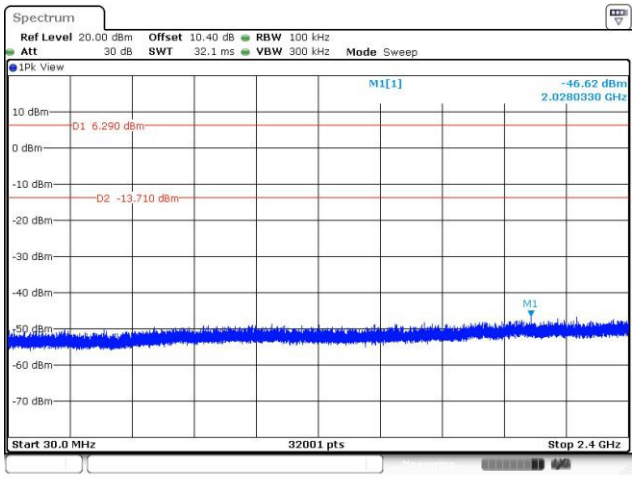
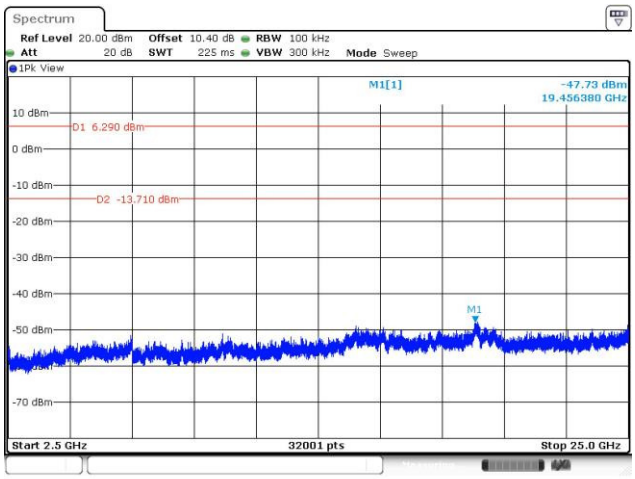
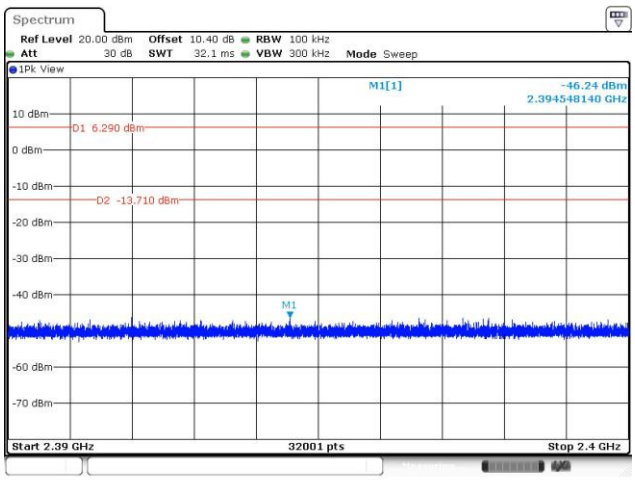
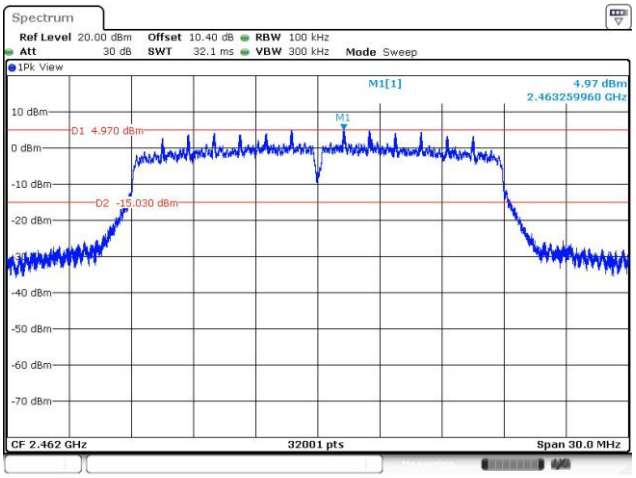
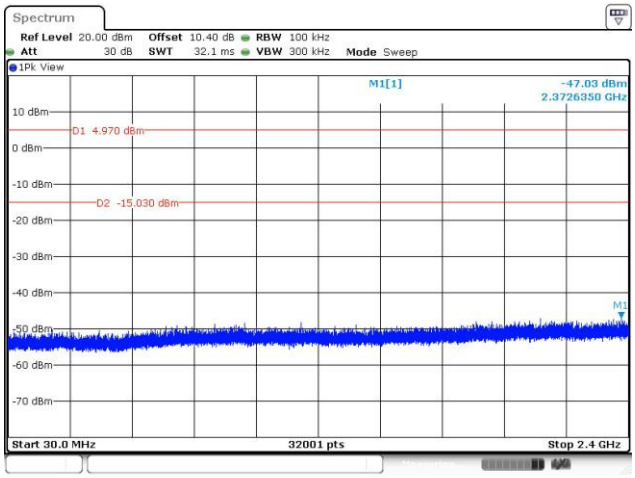
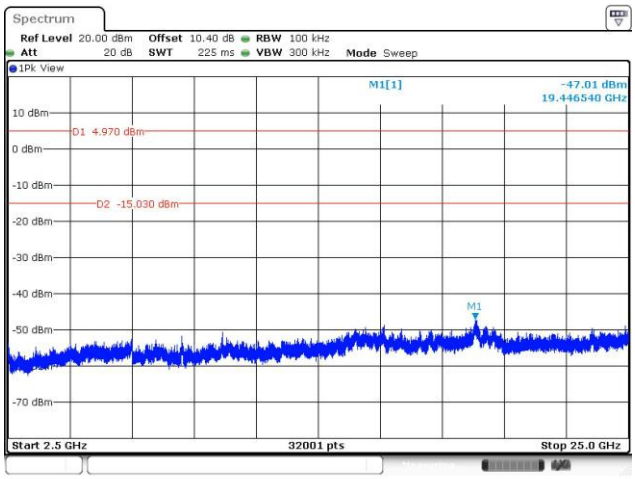
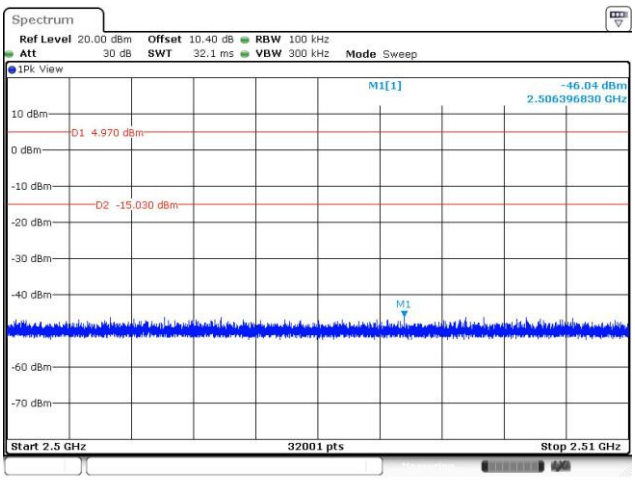
Reference Level	Tx 2412MHz / 30MHz~25GHz (down 20dBc)
	
---	
---	

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

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

4 Test laboratory information

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

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

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

Linkou	**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 Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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

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

==END==