FCC C2PC Test Report

FCC ID	:	**NKR-DNUA134**
Equipment	:	**802.11n a/b/g USB dongle**
Model No.	:	**DNUA-134**
Brand Name	:	**WNC**
Applicant	:	**Wistron Neweb Corporation**
Address	:	**20 Park Avenue II, Hsinchu Science Park, Hsinchu 308,Taiwan,R.O.C.**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Aug. 02, 2013**
Tested Date	:	**Dec. 08 ~ Dec. 10, 2013**

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
FR380201-02AC	Rev. 01	Initial issue	Jan. 20, 2014

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.156MHz 45.92 (Margin -9.77dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2483.50MHz 72.72 (Margin -1.28dB) - PK	Pass

1 General Description

1.1 Information

This report is prepared for FCC class II permissive change. No hardware and software is change for the device. The difference compared with original design is adding plastics housing to change type from modular to non-modular then also modifying product name for the type change. In this report, conducted emission and radiated emission tests had been re-tested and only its data was recorded in the following sections.

1.1.1 Specification of the Equipment under Test (EUT)

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

1.1.2 Antenna Details

Ant. No.	Type	Gain (dBi)	Connector	Remark
1	Printed	1.7	U.FL	---
2	Printed	1.39	U.FL	---

1.1.3 EUT Operational Condition

Power Supply Type	5Vdc from Host

1.1.4 Accessories

N/A

1.1.5 Channel List

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

1.1.6 Test Tool and Duty Cycle

Test Tool	ART2-GUI V2.3		
Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	11b	100.00%	0.00
	11g	98.26%	0.08
	HT20	98.14%	0.08
	HT40	95.00%	0.22

1.1.7 Power Setting

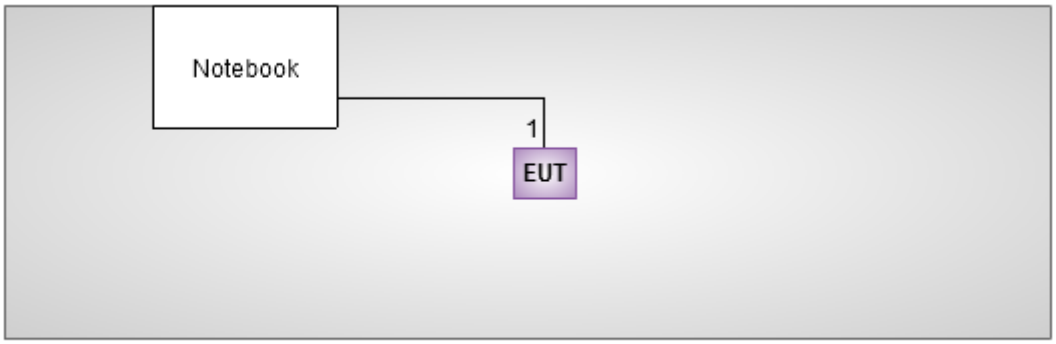
Modulation Mode	Test Frequency (MHz)	Power Set
11b	2412	13
11b	2437	17.5
11b	2462	14
11g	2412	7.5
11g	2437	14
11g	2462	7
HT20	2412	6.5
HT20	2437	14
HT20	2462	7
HT40	2422	6
HT40	2437	9
HT40	2452	7

1.2 Local Support Equipment List

Support Equipment List						
No.	**Equipment**	**Brand**	**Model**	**S/N**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	E6430	---	DoC	USB 1m shielded cable w/o core.

1.3 Test Setup Chart

Test Setup Diagram



1. USB, 1m shielded w/o core

1.4 The Equipment List

Test Item	Radiated Emission				
Test Site	966 chamber 2 / (03CH02-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101499	Jan. 28, 2013	Jan. 27, 2014
Receiver	R&S	ESR3	101657	Jan. 30,2013	Jan. 29, 2014
Bilog Antenna	ScHwarzbeck	VULB9168	VULB9168-524	Jan. 11, 2013	Jan. 10, 2014
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120D	BBHA 9120 D 1095	Jan. 29, 2013	Jan. 28,2014
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Jan. 14, 2013	Jan. 13, 2014
Amplifier	Burgeon	BPA-530	100218	Dec. 09, 2013	Dec. 08, 2014
Amplifier	Agilent	83017A	MY39501309	Dec. 09, 2013	Dec. 08, 2014
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16015/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R03m	Woken	CFD400NL-LW	CFD400NL-003	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R10m	Woken	CFD400NL-LW	CFD400NL-004	Dec. 25, 2012	Dec. 24, 2013
control	EM Electronics	EM1000	060608	N/A	N/A
Note: Calibration Interval of instruments listed above is one year.					

Loop Antenna	R&S	HFH2-Z2	100330	Nov. 15, 2012	Nov. 14, 2014
Amplifier	EM	EM18G40G	060572	Jun. 20, 2013	Jun. 19, 2015
Note: Calibration Interval of instruments listed above is two year.					

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. 15, 2013	Oct. 14, 2014
LISN	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-667	Nov. 23, 2013	Nov. 22, 2014
LISN (Support Unit)	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-666	Dec. 04, 2013	Dec. 03, 2014
ISN	TESEQ	ISN T800	34406	Apr. 08, 2013	Apr. 07, 2014
ISN	TESEQ	ISN T200A	30494	Apr. 09, 2013	Apr. 08, 2014
ISN	TESEQ	ISN ST08	22589	Jan. 24, 2013	Jan. 23, 2014
RF Current Probe	FCC	F-33-4	121630	Nov. 29, 2013	Nov, 28, 2014
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Apr. 24, 2013	Apr. 23, 2014
ESH3-Z6 V-Network(+)	R&S	ESH3-Z6	100920	Nov. 29, 2013	Nov. 28, 2014
ESH3-Z6 V-Network(-)	R&S	ESH3-Z6	100951	Jan. 30, 2013	Jan. 29, 2014
Two-Line V-Network	R&S	ENV216	101579	Jan. 07, 2013	Jan. 06, 2014
50 ohm terminal	NA	50	01	Apr. 22, 2013	Apr. 21, 2014
50 ohm terminal	NA	50	02	Apr. 22, 2013	Apr. 21, 2014
50 ohm terminal	NA	50	03	Apr. 22, 2013	Apr. 21, 2014
50 ohm terminal (Support Unit)	NA	50	04	Apr. 22, 2013	Apr. 21, 2014
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 C63.10-2009
FCC KDB 558074 D01 DTS Meas Guidance v03r01
FCC KDB 662911 D01 Multiple Transmitter Output v02r01

Note: The EUT has been tested and complied with FCC part 15B requirement. FCC Part 15B test results are issued to another report.

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**
AC conducted emission	±2.43 dB
Radiated emission	±2.49 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	20°C / 61%	Skys Huang
Radiated Emissions	03CH02-WS	20°C / 64%	Anderson Hong

- FCC site registration No.: 657002
- IC site registration No.: 10807A-2

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Conducted Emissions	11g	2437	6 Mbps	---
Radiated Emissions ≤1GHz	11g	2437	6 Mbps	---
Radiated Emissions >1GHz	11b	2412 / 2437 / 2462	1 Mbps	---
	11g	2412 / 2437 / 2462	6 Mbps	
	HT20	2412 / 2437 / 2462	MCS 0	
	HT40	2422 / 2437 / 2452	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 **Z-plane** results were found as the worst case and were shown in this report.

3 Transmitter Test Results

3.1 Conducted Emissions

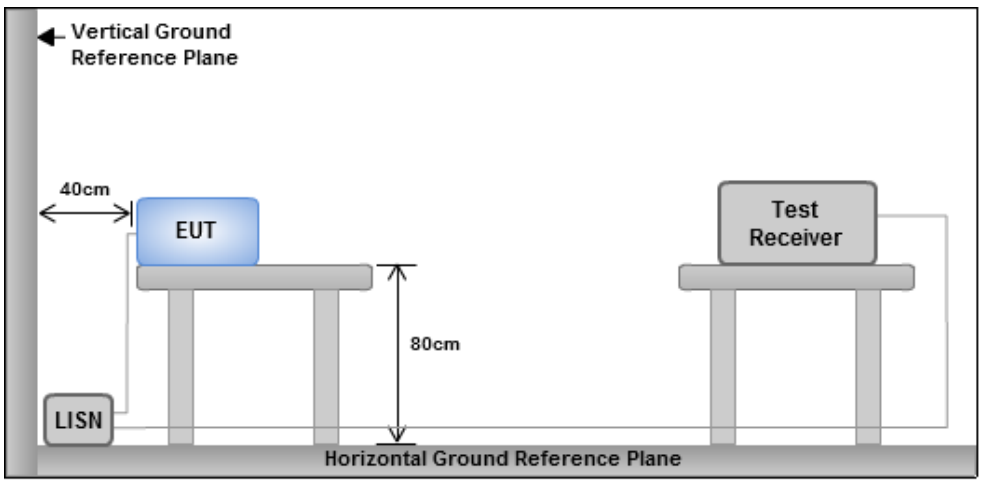
3.1.1 Limit of Conducted Emissions

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

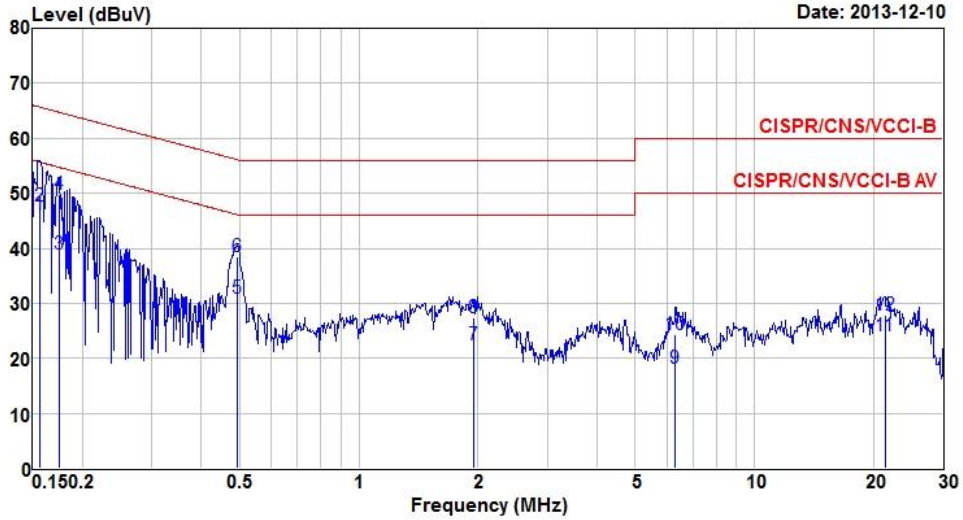


Note: 1. Support units were connected to second LISN.

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

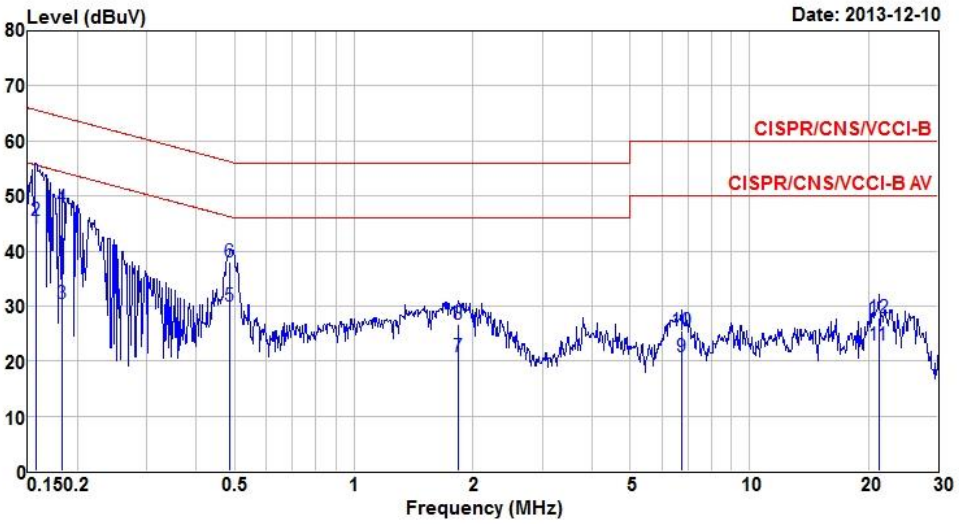
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Line		



		Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
		MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	*	0.156	45.92	55.69	-9.77	45.45	0.40	0.07	Average
2		0.156	47.64	65.69	-18.05	47.17	0.40	0.07	QP
3		0.175	38.86	54.72	-15.86	38.34	0.39	0.13	Average
4		0.175	49.71	64.72	-15.01	49.19	0.39	0.13	QP
5		0.491	30.91	46.14	-15.23	30.47	0.39	0.05	Average
6		0.491	38.57	56.14	-17.57	38.13	0.39	0.05	QP
7		1.949	22.48	46.00	-23.52	21.89	0.43	0.16	Average
8		1.949	27.34	56.00	-28.66	26.75	0.43	0.16	QP
9		6.319	18.12	50.00	-31.88	17.44	0.50	0.18	Average
10		6.319	24.43	60.00	-35.57	23.75	0.50	0.18	QP
11		21.373	24.09	50.00	-25.91	23.26	0.55	0.28	Average
12		21.373	27.80	60.00	-32.20	26.97	0.55	0.28	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dBuV) = Limit Line (dBuV) – Level (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	*	0.157	44.11	55.60	-11.49	43.55	0.48	0.08	Average
2		0.157	45.54	65.60	-20.06	44.98	0.48	0.08	QP
3		0.182	30.48	54.37	-23.89	29.86	0.48	0.14	Average
4		0.182	47.92	64.37	-16.45	47.30	0.48	0.14	QP
5		0.486	29.92	46.23	-16.31	29.40	0.47	0.05	Average
6		0.486	38.06	56.23	-18.17	37.54	0.47	0.05	QP
7		1.839	20.80	46.00	-25.20	20.15	0.50	0.15	Average
8		1.839	26.73	56.00	-29.27	26.08	0.50	0.15	QP
9		6.733	20.73	50.00	-29.27	20.02	0.54	0.17	Average
10		6.733	25.56	60.00	-34.44	24.85	0.54	0.17	QP
11		21.260	23.01	50.00	-26.99	22.18	0.55	0.28	Average
12		21.260	27.87	60.00	-32.13	27.04	0.55	0.28	QP

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

3.2 Unwanted Emissions into Restricted Frequency Bands

3.2.1 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.

3.2.2 Test Procedures

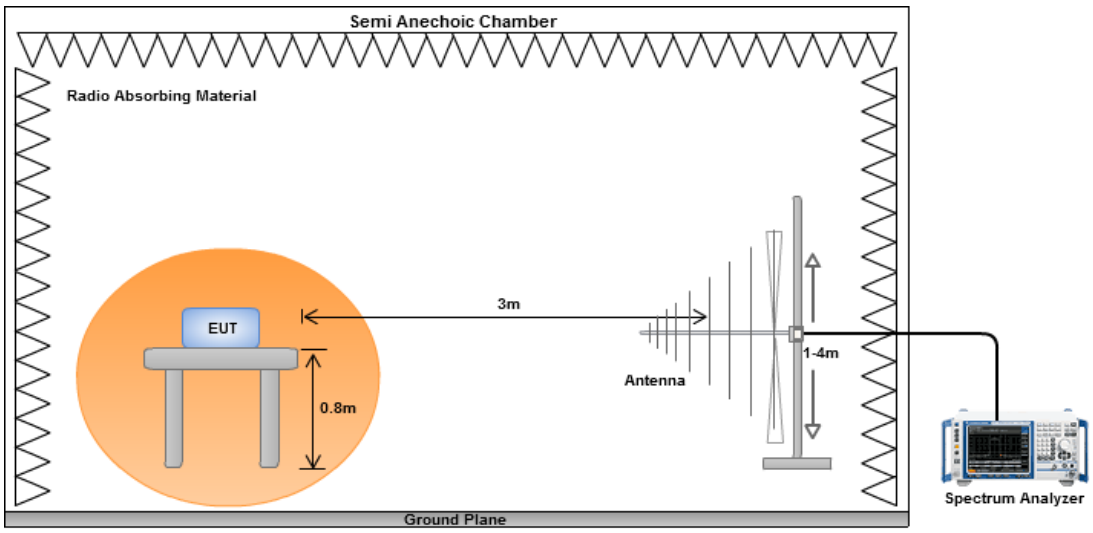
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
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:

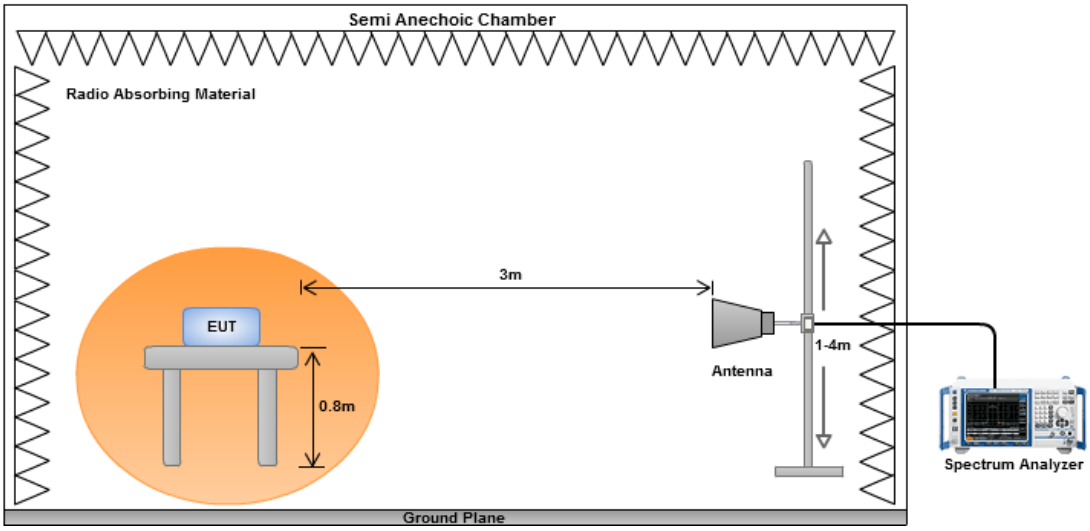
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.2.3 Test Setup

Radiated Emissions below 1 GHz

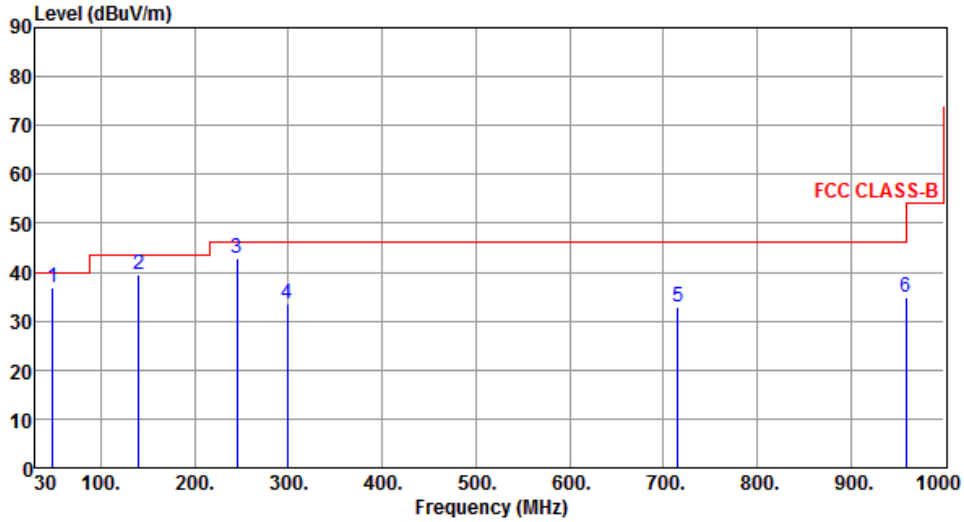


Radiated Emissions above 1 GHz



3.2.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

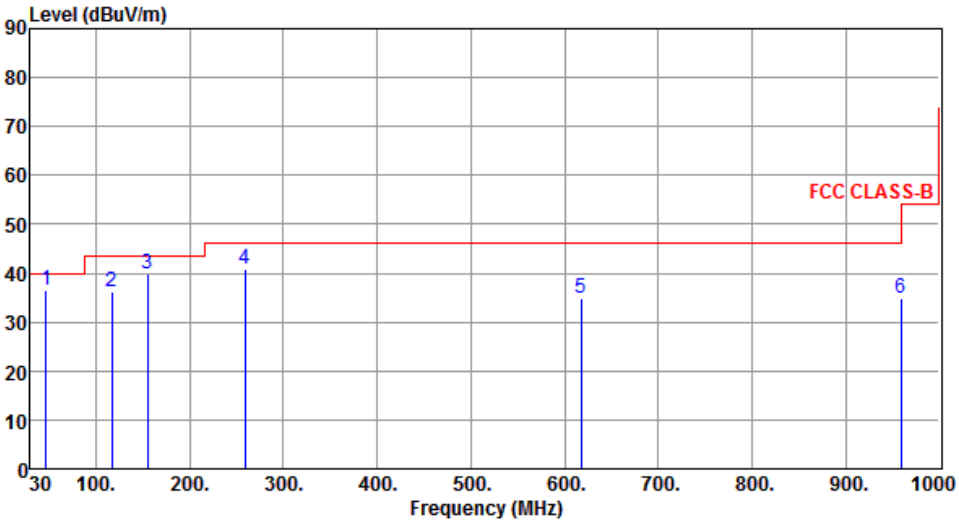
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	48.43	36.79	40.00	-3.21	48.97	-12.18	Peak	---	---
2	140.58	39.43	43.50	-4.07	52.66	-13.23	Peak	---	---
3	245.34	42.86	46.00	-3.14	57.01	-14.15	Peak	---	---
4	298.69	33.70	46.00	-12.30	46.19	-12.49	Peak	---	---
5	715.79	32.96	46.00	-13.04	36.63	-3.67	Peak	---	---
6	959.26	34.96	46.00	-11.04	34.55	0.41	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).

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

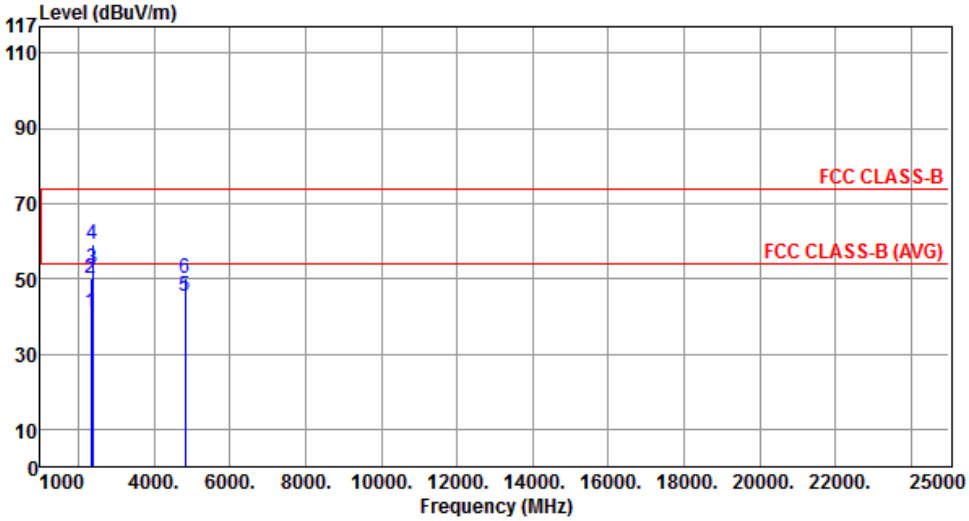


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	46.49	36.57	40.00	-3.43	48.78	-12.21	Peak	---	---
2	117.30	36.26	43.50	-7.24	51.74	-15.48	Peak	---	---
3	155.13	39.92	43.50	-3.58	52.82	-12.90	Peak	---	---
4	258.92	40.95	46.00	-5.05	54.77	-13.82	Peak	---	---
5	617.82	34.80	46.00	-11.20	39.99	-5.19	Peak	---	---
6	959.26	34.77	46.00	-11.23	34.36	0.41	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).

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

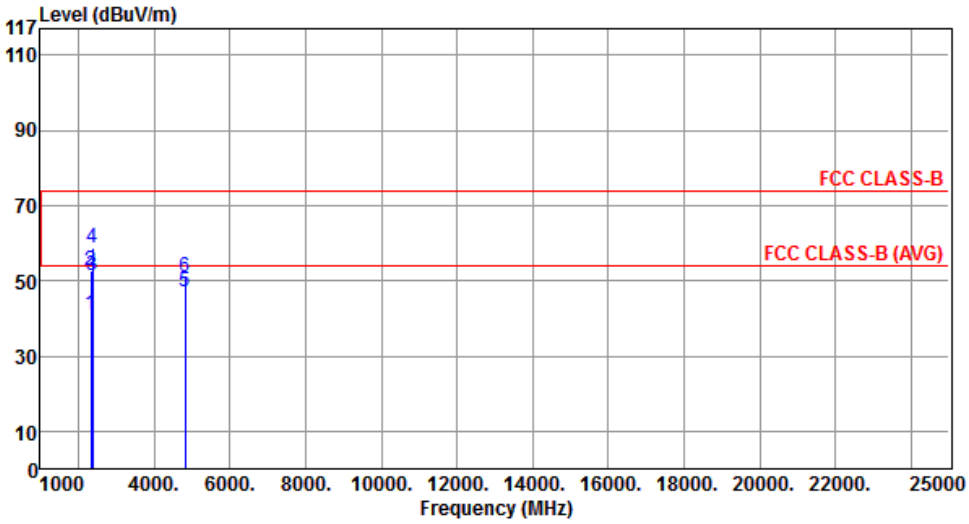
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2330.00	41.13	54.00	-12.87	44.33	-3.20	Average	---	---
2	2330.00	49.93	74.00	-24.07	53.13	-3.20	Peak	---	---
3	2390.00	52.51	54.00	-1.49	55.41	-2.90	Average	---	---
4	2390.00	59.12	74.00	-14.88	62.02	-2.90	Peak	---	---
5	4824.00	45.42	54.00	-8.58	40.73	4.69	Average	---	---
6	4824.00	50.11	74.00	-23.89	45.42	4.69	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).

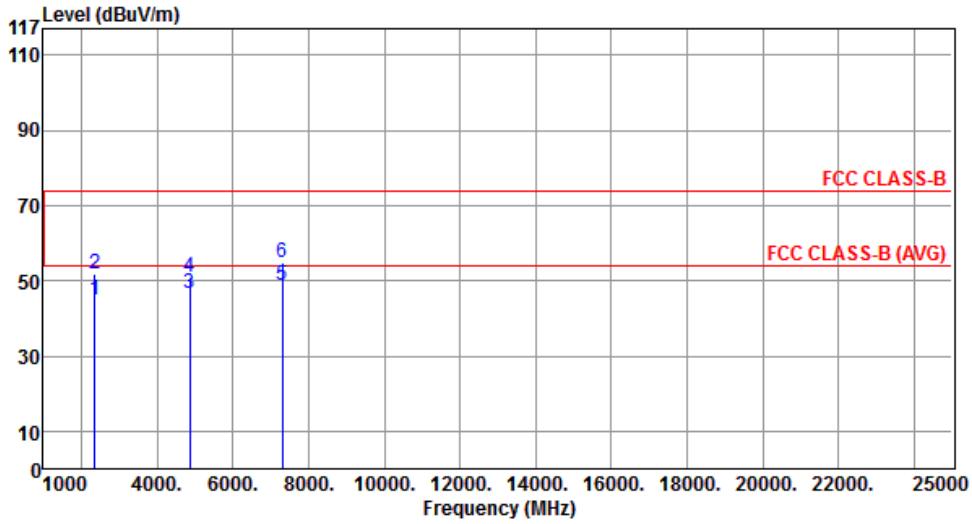
Modulation	11b	**Test Freq. (MHz)**	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2330.00	40.84	54.00	-13.16	44.04	-3.20	Average	---	---
2	2330.00	52.53	74.00	-21.47	55.73	-3.20	Peak	---	---
3	2390.00	51.48	54.00	-2.52	54.38	-2.90	Average	---	---
4	2390.00	58.67	74.00	-15.33	61.57	-2.90	Peak	---	---
5	4824.00	47.05	54.00	-6.95	42.36	4.69	Average	---	---
6	4824.00	50.86	74.00	-23.14	46.17	4.69	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).

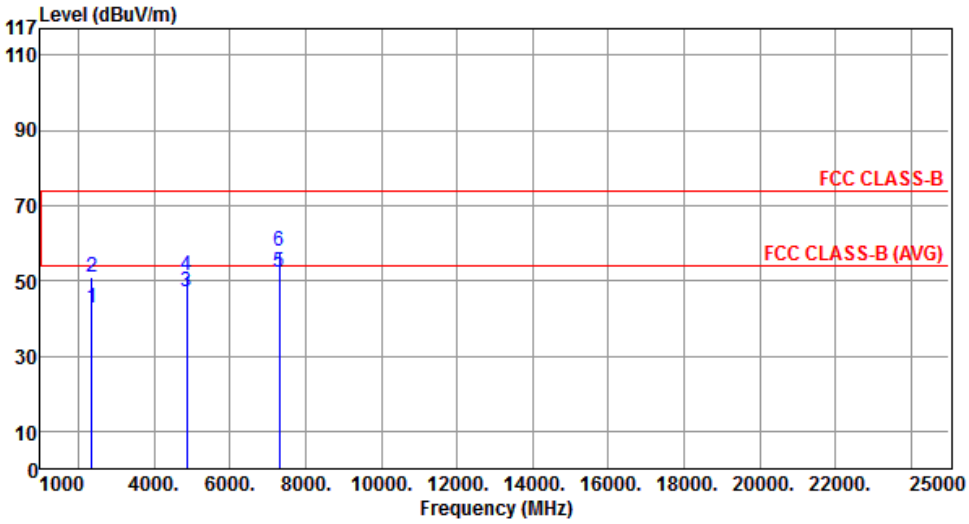
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2356.00	44.79	54.00	-9.21	47.86	-3.07	Average	---	---
2	2356.00	51.86	74.00	-22.14	54.93	-3.07	Peak	---	---
3	4874.00	46.75	54.00	-7.25	41.98	4.77	Average	---	---
4	4874.00	51.03	74.00	-22.97	46.26	4.77	Peak	---	---
5	7311.00	48.88	54.00	-5.12	39.31	9.57	Average	---	---
6	7311.00	54.79	74.00	-19.21	45.22	9.57	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).

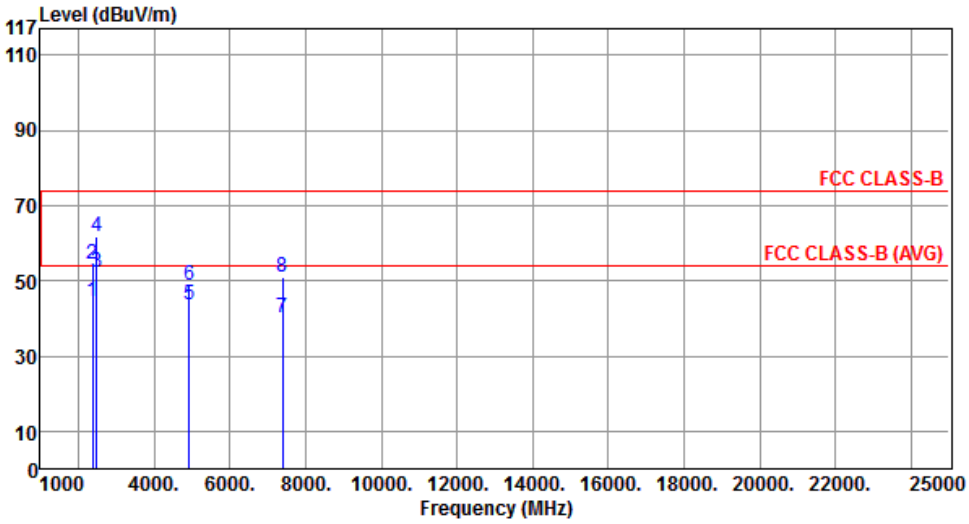
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2356.00	42.86	54.00	-11.14	45.93	-3.07	Average	---	---
2	2356.00	50.94	74.00	-23.06	54.01	-3.07	Peak	---	---
3	4874.00	47.23	54.00	-6.77	42.46	4.77	Average	---	---
4	4874.00	51.33	74.00	-22.67	46.56	4.77	Peak	---	---
5	7311.00	52.40	54.00	-1.60	42.83	9.57	Average	---	---
6	7311.00	57.75	74.00	-16.25	48.18	9.57	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).

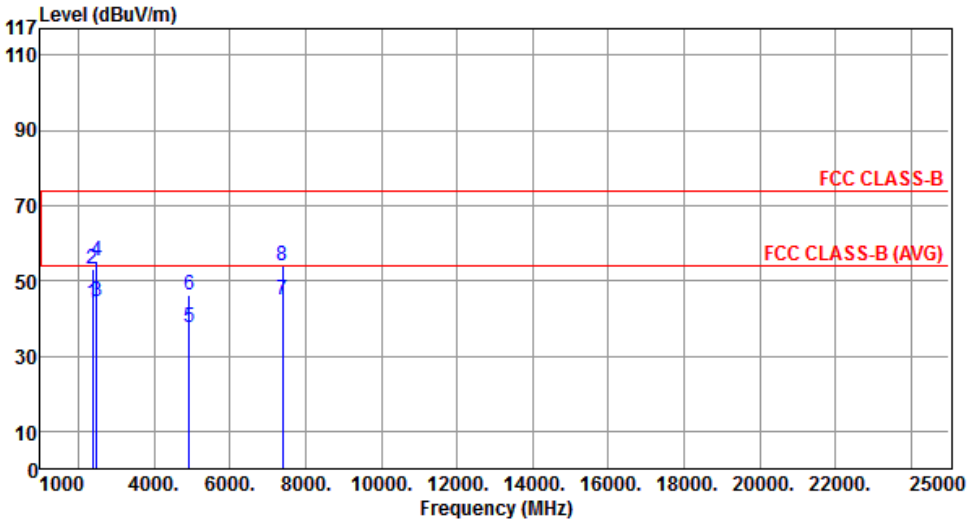
Modulation	11b	Test Freq. (MHz)	2462
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2380.00	44.42	54.00	-9.58	47.36	-2.94	Average	---	---
2	2380.00	54.21	74.00	-19.79	57.15	-2.94	Peak	---	---
3	2483.50	52.17	54.00	-1.83	54.59	-2.42	Average	---	---
4	2483.50	61.78	74.00	-12.22	64.20	-2.42	Peak	---	---
5	4924.00	43.66	54.00	-10.34	38.80	4.86	Average	---	---
6	4924.00	48.97	74.00	-25.03	44.11	4.86	Peak	---	---
7	7386.00	40.11	54.00	-13.89	30.43	9.68	Average	---	---
8	7386.00	51.13	74.00	-22.87	41.45	9.68	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).

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

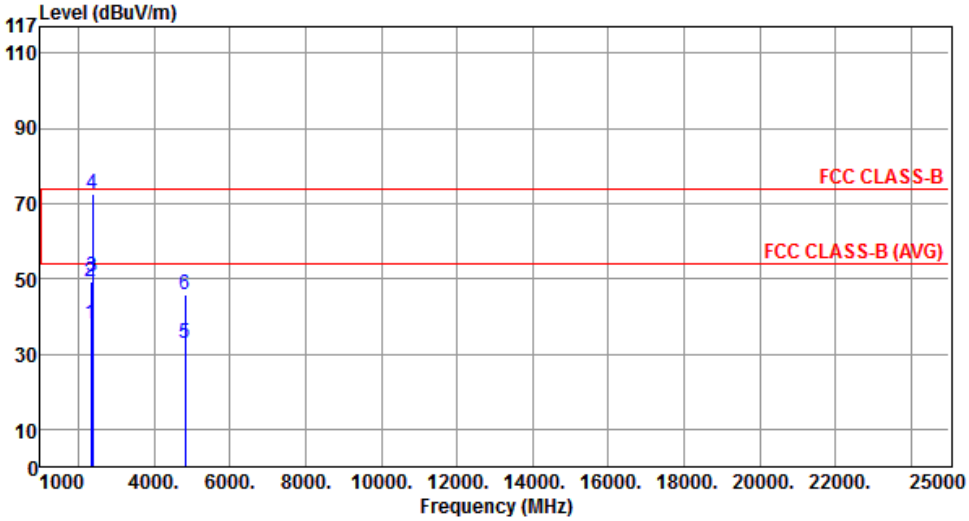


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2380.00	43.85	54.00	-10.15	46.79	-2.94	Average	---	---
2	2380.00	53.12	74.00	-20.88	56.06	-2.94	Peak	---	---
3	2483.50	44.47	54.00	-9.53	46.89	-2.42	Average	---	---
4	2483.50	55.18	74.00	-18.82	57.60	-2.42	Peak	---	---
5	4924.00	37.68	54.00	-16.32	32.82	4.86	Average	---	---
6	4924.00	46.27	74.00	-27.73	41.41	4.86	Peak	---	---
7	7386.00	45.08	54.00	-8.92	35.40	9.68	Average	---	---
8	7386.00	53.97	74.00	-20.03	44.29	9.68	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).

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

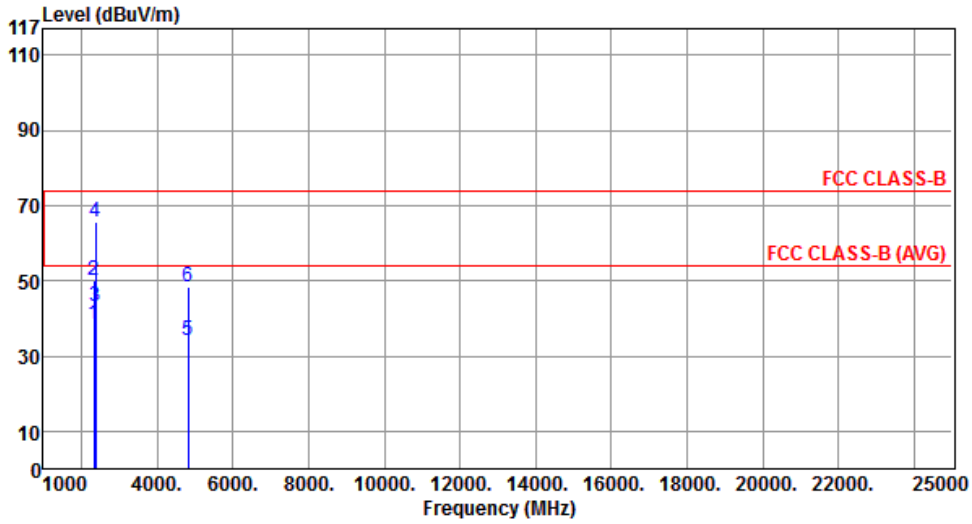
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2330.00	38.18	54.00	-15.82	41.38	-3.20	Average	---	---
2	2330.00	49.30	74.00	-24.70	52.50	-3.20	Peak	---	---
3	2390.00	50.48	54.00	-3.52	53.38	-2.90	Average	---	---
4	2390.00	72.53	74.00	-1.47	75.43	-2.90	Peak	---	---
5	4824.00	32.69	54.00	-21.31	28.00	4.69	Average	---	---
6	4824.00	45.92	74.00	-28.08	41.23	4.69	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).

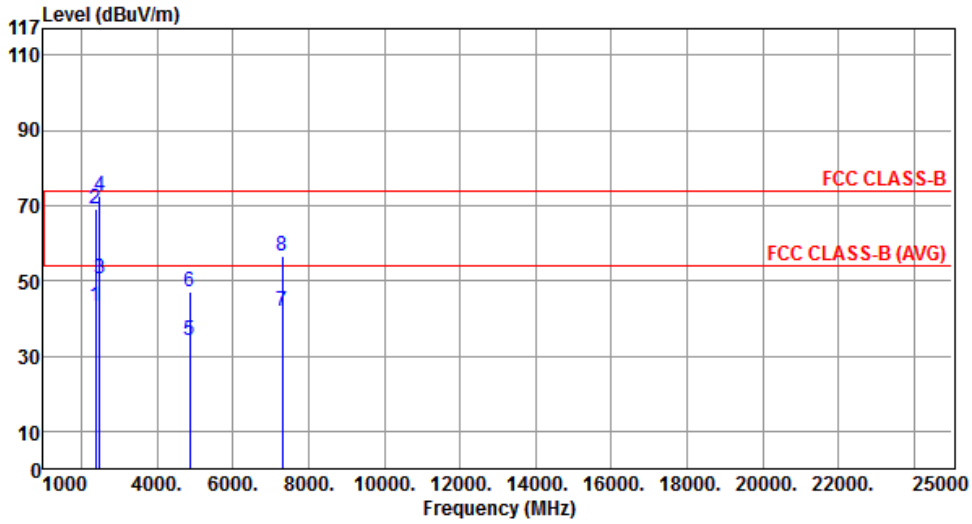
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2330.00	38.28	54.00	-15.72	41.48	-3.20	Average	---	---
2	2330.00	50.27	74.00	-23.73	53.47	-3.20	Peak	---	---
3	2390.00	43.11	54.00	-10.89	46.01	-2.90	Average	---	---
4	2390.00	65.43	74.00	-8.57	68.33	-2.90	Peak	---	---
5	4824.00	34.18	54.00	-19.82	29.49	4.69	Average	---	---
6	4824.00	48.49	74.00	-25.51	43.80	4.69	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).

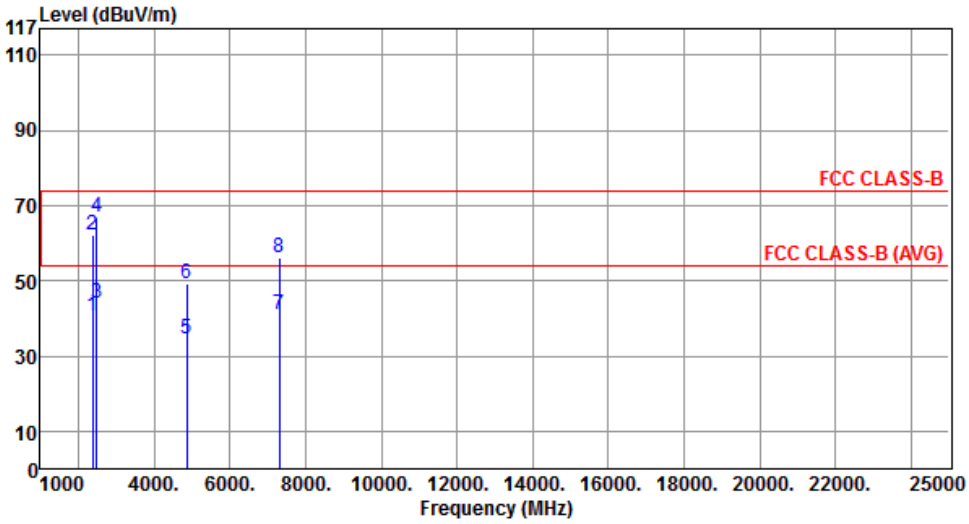
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		



	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	43.08	54.00	-10.92	45.98	-2.90	Average	---	---
2	2390.00	68.89	74.00	-5.11	71.79	-2.90	Peak	---	---
3	2483.50	50.53	54.00	-3.47	52.95	-2.42	Average	---	---
4	2483.50	72.67	74.00	-1.33	75.09	-2.42	Peak	---	---
5	4874.00	34.13	54.00	-19.87	29.36	4.77	Average	---	---
6	4874.00	46.88	74.00	-27.12	42.11	4.77	Peak	---	---
7	7311.00	42.00	54.00	-12.00	32.43	9.57	Average	---	---
8	7311.00	56.76	74.00	-17.24	47.19	9.57	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).

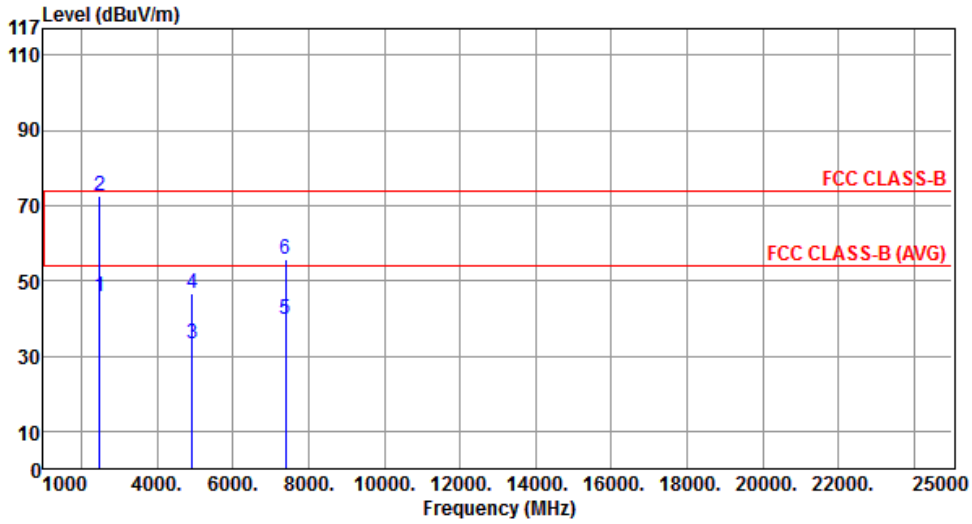
Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		



	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	40.43	54.00	-13.57	43.33	-2.90	Average	---	---
2	2390.00	62.18	74.00	-11.82	65.08	-2.90	Peak	---	---
3	2483.50	44.08	54.00	-9.92	46.50	-2.42	Average	---	---
4	2483.50	67.10	74.00	-6.90	69.52	-2.42	Peak	---	---
5	4874.00	34.75	54.00	-19.25	29.98	4.77	Average	---	---
6	4874.00	49.16	74.00	-24.84	44.39	4.77	Peak	---	---
7	7311.00	41.18	54.00	-12.82	31.61	9.57	Average	---	---
8	7311.00	56.27	74.00	-17.73	46.70	9.57	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).

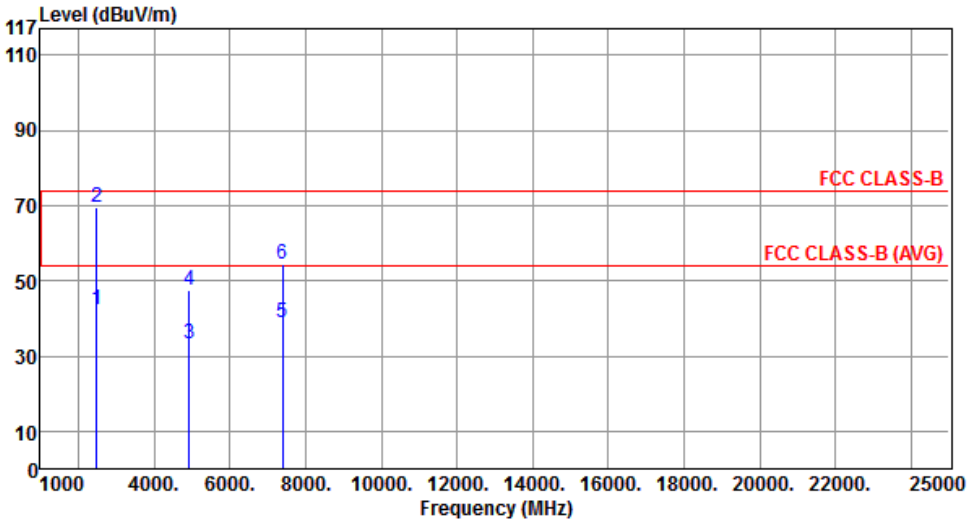
Modulation	11g	Test Freq. (MHz)	2462
Polarization	Horizontal		



	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	45.55	54.00	-8.45	47.97	-2.42	Average	---	---
2	2483.50	72.72	74.00	-1.28	75.14	-2.42	Peak	---	---
3	4924.00	33.18	54.00	-20.82	28.32	4.86	Average	---	---
4	4924.00	46.43	74.00	-27.57	41.57	4.86	Peak	---	---
5	7386.00	39.87	54.00	-14.13	30.19	9.68	Average	---	---
6	7386.00	55.54	74.00	-18.46	45.86	9.68	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).

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

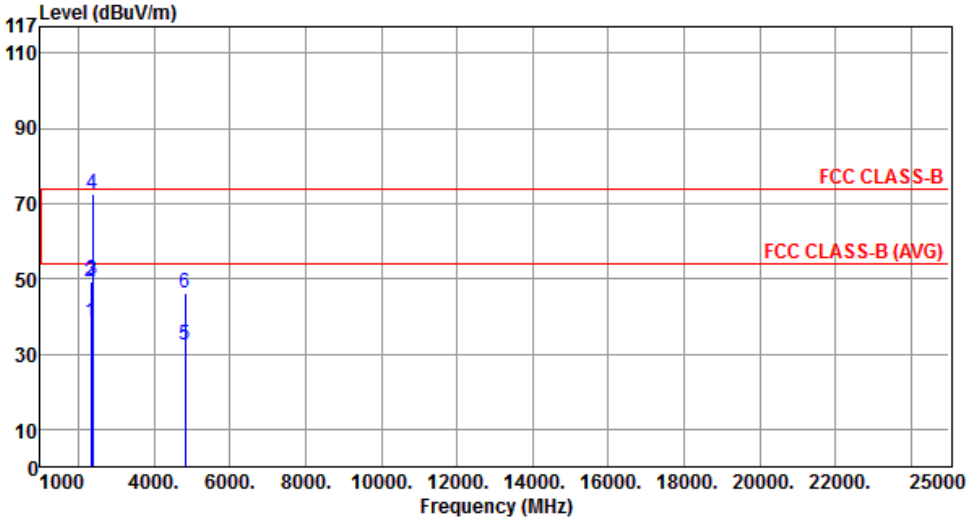


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	42.49	54.00	-11.51	44.91	-2.42	Average	---	---
2	2483.50	69.72	74.00	-4.28	72.14	-2.42	Peak	---	---
3	4924.00	33.13	54.00	-20.87	28.27	4.86	Average	---	---
4	4924.00	47.54	74.00	-26.46	42.68	4.86	Peak	---	---
5	7386.00	38.96	54.00	-15.04	29.28	9.68	Average	---	---
6	7386.00	54.54	74.00	-19.46	44.86	9.68	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).

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

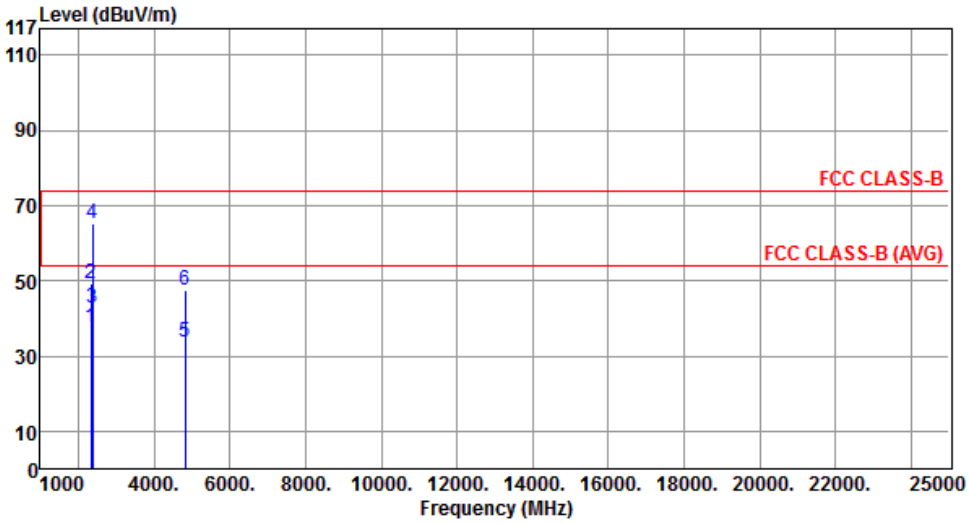
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2330.00	38.43	54.00	-15.57	41.63	-3.20	Average	---	---
2	2330.00	49.13	74.00	-24.87	52.33	-3.20	Peak	---	---
3	2390.00	49.49	54.00	-4.51	52.39	-2.90	Average	---	---
4	2390.00	72.64	74.00	-1.36	75.54	-2.90	Peak	---	---
5	4824.00	32.55	54.00	-21.45	27.86	4.69	Average	---	---
6	4824.00	46.11	74.00	-27.89	41.42	4.69	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).

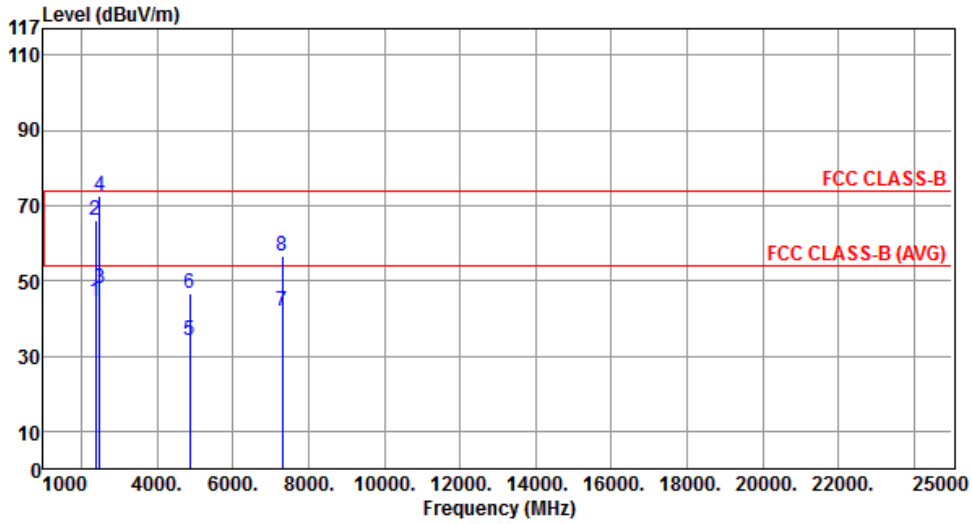
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2330.00	37.55	54.00	-16.45	40.75	-3.20	Average	---	---
2	2330.00	49.43	74.00	-24.57	52.63	-3.20	Peak	---	---
3	2390.00	42.84	54.00	-11.16	45.74	-2.90	Average	---	---
4	2390.00	65.03	74.00	-8.97	67.93	-2.90	Peak	---	---
5	4824.00	33.74	54.00	-20.26	29.05	4.69	Average	---	---
6	4824.00	47.64	74.00	-26.36	42.95	4.69	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).

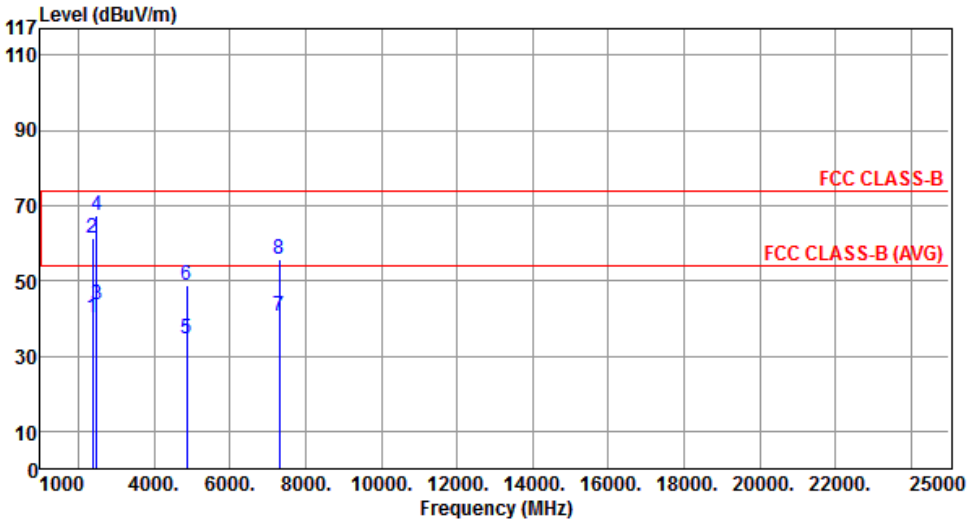
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	44.52	54.00	-9.48	47.42	-2.90	Average	---	---
2	2390.00	66.00	74.00	-8.00	68.90	-2.90	Peak	---	---
3	2483.50	47.83	54.00	-6.17	50.25	-2.42	Average	---	---
4	2483.50	72.58	74.00	-1.42	75.00	-2.42	Peak	---	---
5	4874.00	33.95	54.00	-20.05	29.18	4.77	Average	---	---
6	4874.00	46.54	74.00	-27.46	41.77	4.77	Peak	---	---
7	7311.00	41.97	54.00	-12.03	32.40	9.57	Average	---	---
8	7311.00	56.72	74.00	-17.28	47.15	9.57	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).

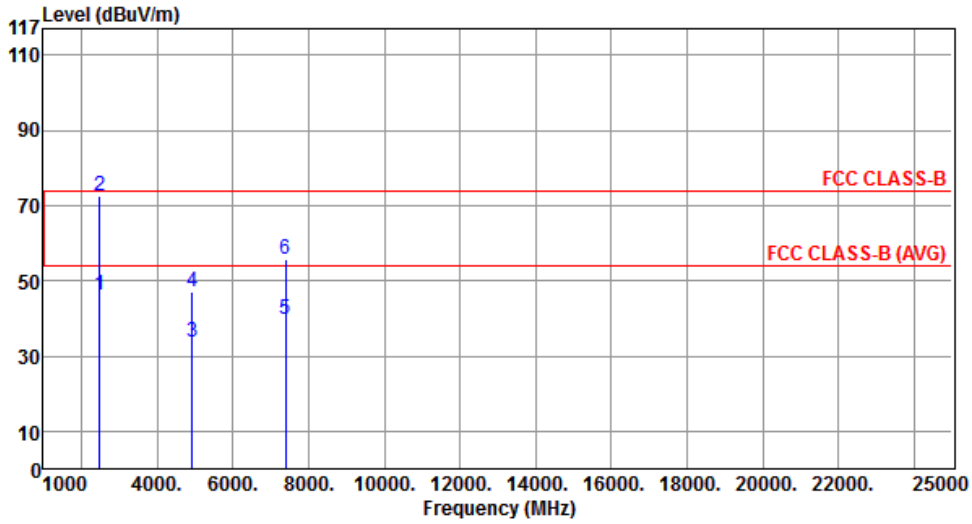
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		



	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	39.94	54.00	-14.06	42.84	-2.90	Average	---	---
2	2390.00	61.19	74.00	-12.81	64.09	-2.90	Peak	---	---
3	2483.50	43.43	54.00	-10.57	45.85	-2.42	Average	---	---
4	2483.50	67.28	74.00	-6.72	69.70	-2.42	Peak	---	---
5	4874.00	34.61	54.00	-19.39	29.84	4.77	Average	---	---
6	4874.00	48.82	74.00	-25.18	44.05	4.77	Peak	---	---
7	7311.00	40.68	54.00	-13.32	31.11	9.57	Average	---	---
8	7311.00	55.79	74.00	-18.21	46.22	9.57	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).

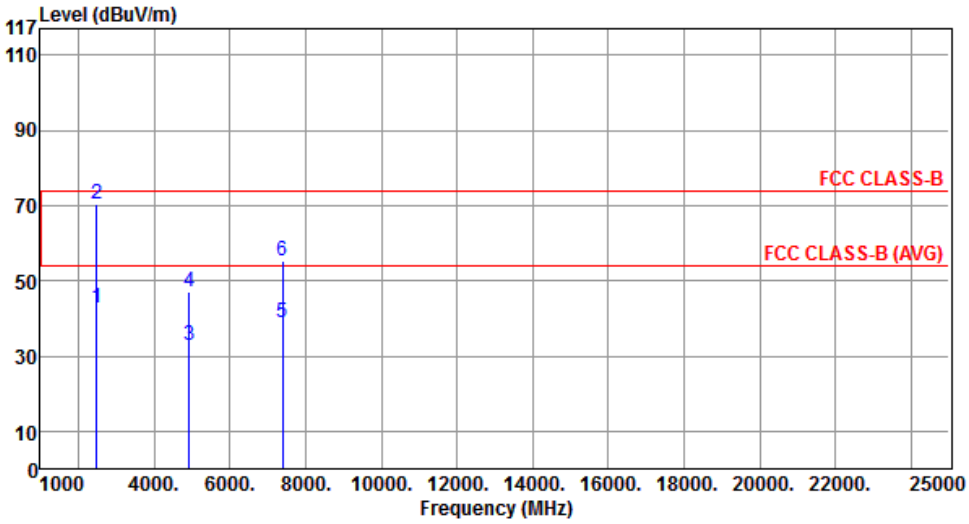
Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Horizontal		



	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	46.11	54.00	-7.89	48.53	-2.42	Average	---	---
2	2483.50	72.59	74.00	-1.41	75.01	-2.42	Peak	---	---
3	4924.00	33.52	54.00	-20.48	28.66	4.86	Average	---	---
4	4924.00	47.24	74.00	-26.76	42.38	4.86	Peak	---	---
5	7386.00	39.72	54.00	-14.28	30.04	9.68	Average	---	---
6	7386.00	55.87	74.00	-18.13	46.19	9.68	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).

Modulation	HT20	**Test Freq. (MHz)**	2462
Polarization	Vertical		

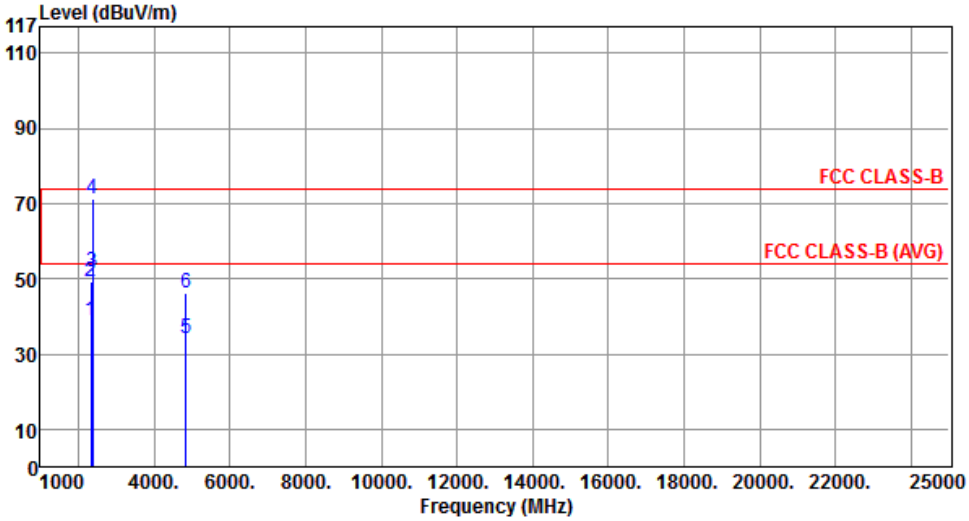


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	42.63	54.00	-11.37	45.05	-2.42	Average	---	---
2	2483.50	70.18	74.00	-3.82	72.60	-2.42	Peak	---	---
3	4924.00	32.64	54.00	-21.36	27.78	4.86	Average	---	---
4	4924.00	47.11	74.00	-26.89	42.25	4.86	Peak	---	---
5	7386.00	38.74	54.00	-15.26	29.06	9.68	Average	---	---
6	7386.00	55.22	74.00	-18.78	45.54	9.68	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).

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

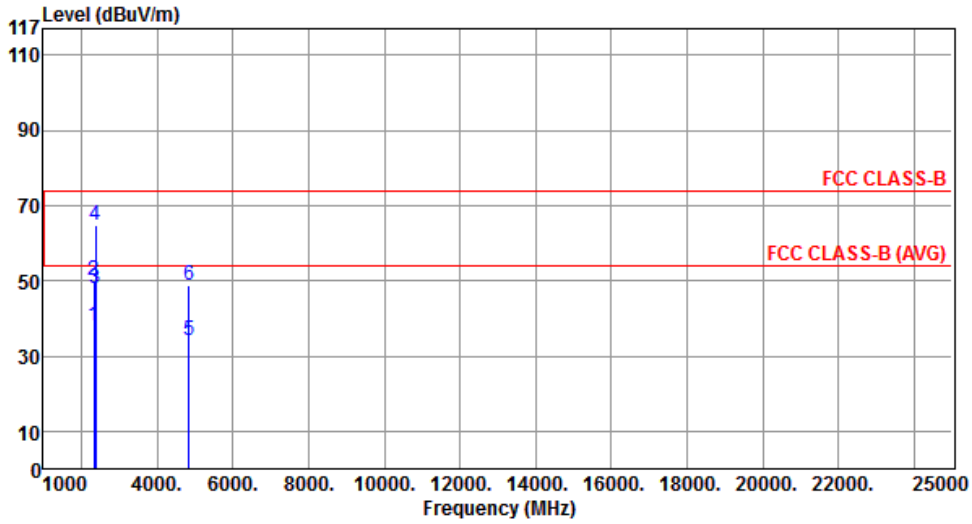
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2339.00	38.75	54.00	-15.25	41.90	-3.15	Average	---	---
2	2339.00	49.19	74.00	-24.81	52.34	-3.15	Peak	---	---
3	2390.00	51.94	54.00	-2.06	54.84	-2.90	Average	---	---
4	2390.00	71.28	74.00	-2.72	74.18	-2.90	Peak	---	---
5	4844.00	33.94	54.00	-20.06	29.23	4.71	Average	---	---
6	4844.00	46.33	74.00	-27.67	41.62	4.71	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).

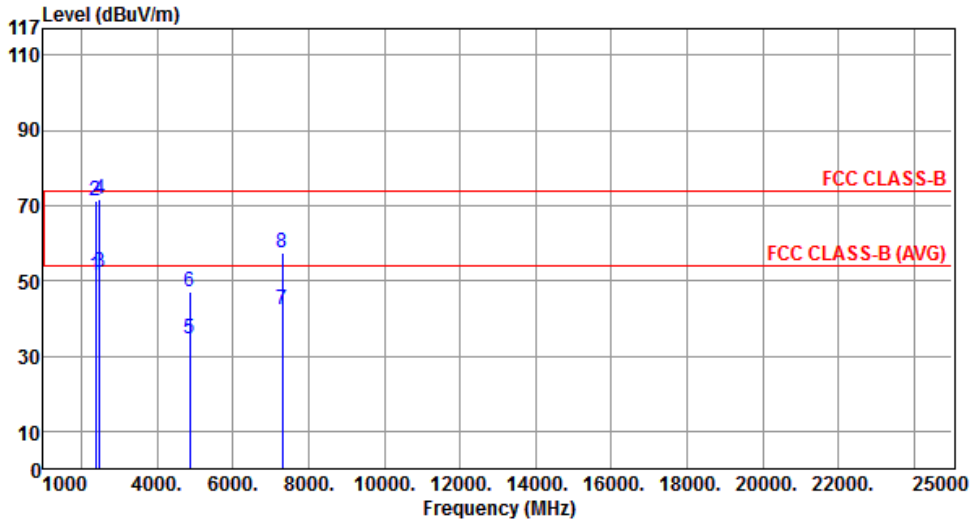
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2339.00	38.17	54.00	-15.83	41.32	-3.15	Average	---	---
2	2339.00	50.00	74.00	-24.00	53.15	-3.15	Peak	---	---
3	2390.00	48.09	54.00	-5.91	50.99	-2.90	Average	---	---
4	2390.00	64.57	74.00	-9.43	67.47	-2.90	Peak	---	---
5	4844.00	34.28	54.00	-19.72	29.57	4.71	Average	---	---
6	4844.00	48.68	74.00	-25.32	43.97	4.71	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).

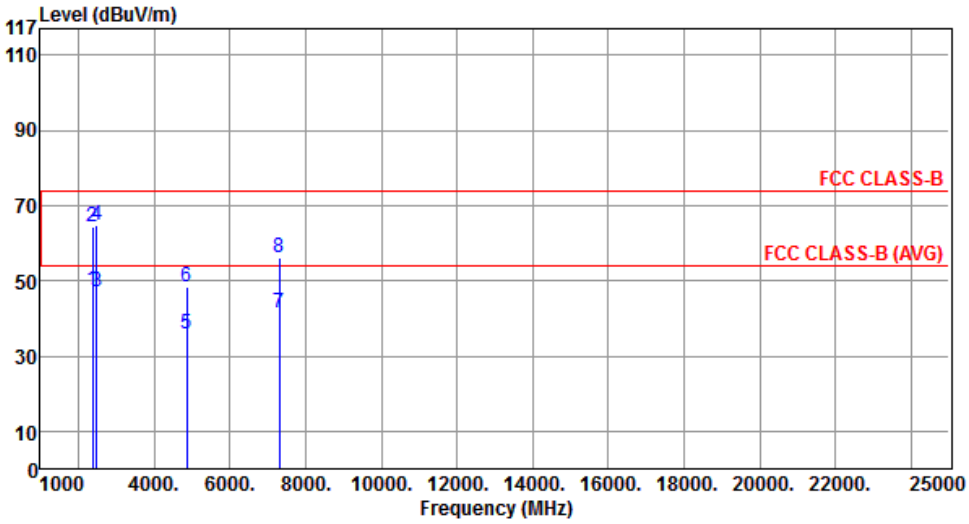
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal		



	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	51.28	54.00	-2.72	54.18	-2.90	Average	---	---
2	2390.00	71.08	74.00	-2.92	73.98	-2.90	Peak	---	---
3	2483.50	52.27	54.00	-1.73	54.69	-2.42	Average	---	---
4	2483.50	71.73	74.00	-2.27	74.15	-2.42	Peak	---	---
5	4874.00	34.60	54.00	-19.40	29.83	4.77	Average	---	---
6	4874.00	47.02	74.00	-26.98	42.25	4.77	Peak	---	---
7	7311.00	42.17	54.00	-11.83	32.60	9.57	Average	---	---
8	7311.00	57.22	74.00	-16.78	47.65	9.57	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).

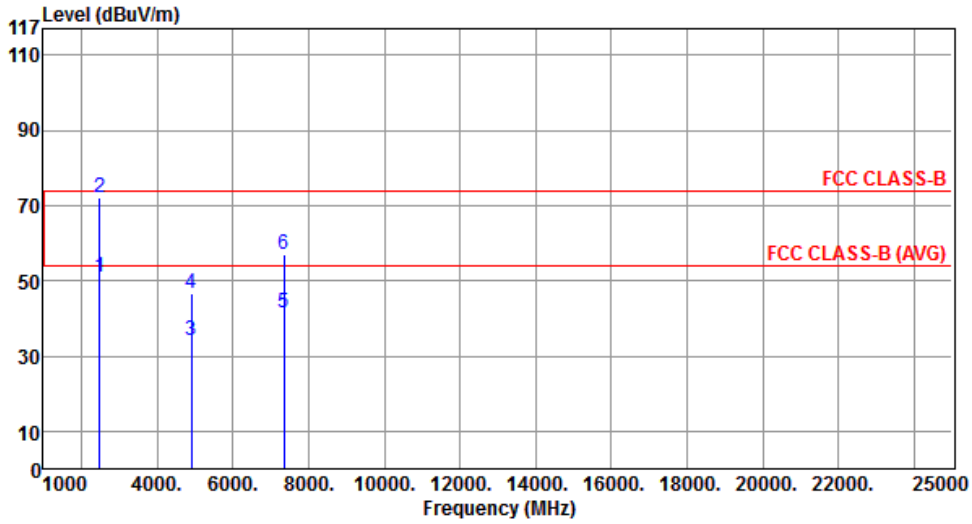
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Vertical		



	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	47.43	54.00	-6.57	50.33	-2.90	Average	---	---
2	2390.00	64.12	74.00	-9.88	67.02	-2.90	Peak	---	---
3	2483.50	47.14	54.00	-6.86	49.56	-2.42	Average	---	---
4	2483.50	64.72	74.00	-9.28	67.14	-2.42	Peak	---	---
5	4874.00	35.66	54.00	-18.34	30.89	4.77	Average	---	---
6	4874.00	48.29	74.00	-25.71	43.52	4.77	Peak	---	---
7	7311.00	41.38	54.00	-12.62	31.81	9.57	Average	---	---
8	7311.00	56.00	74.00	-18.00	46.43	9.57	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).

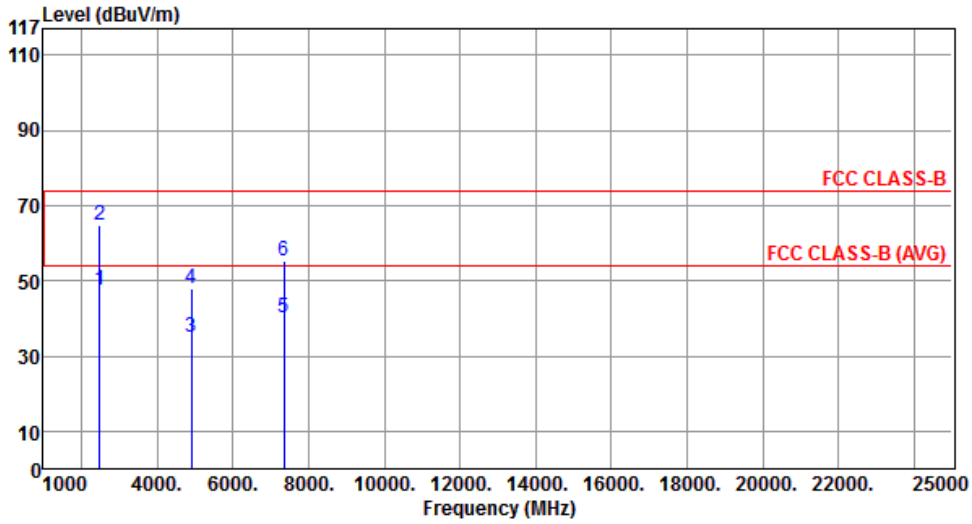
Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Horizontal		



	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	51.13	54.00	-2.87	53.55	-2.42	Average	---	---
2	2483.50	72.27	74.00	-1.73	74.69	-2.42	Peak	---	---
3	4904.00	33.97	54.00	-20.03	29.15	4.82	Average	---	---
4	4904.00	46.68	74.00	-27.32	41.86	4.82	Peak	---	---
5	7356.00	41.37	54.00	-12.63	31.74	9.63	Average	---	---
6	7356.00	56.93	74.00	-17.07	47.30	9.63	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).

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	47.54	54.00	-6.46	49.96	-2.42	Average	---	---
2	2483.50	64.92	74.00	-9.08	67.34	-2.42	Peak	---	---
3	4904.00	34.79	54.00	-19.21	29.97	4.82	Average	---	---
4	4904.00	48.08	74.00	-25.92	43.26	4.82	Peak	---	---
5	7356.00	40.18	54.00	-13.82	30.55	9.63	Average	---	---
6	7356.00	55.19	74.00	-18.81	45.56	9.63	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).

4 Test laboratory information

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

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

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

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