

# FCC C2PC Test Report

**FCC ID** : ZQ6-AP6234A  
**Equipment** : Wifi Dual Band + BT combo module  
**Model No.** : AP6234A, AP6234AL  
**Brand Name** : Ampak  
**Applicant** : Ampak Technology Inc  
**Address** : No.1 Jen Ai Road, Hsinchu Industrial Park,  
Hukou, Hsinchu, Taiwan, 30352  
**Standard** : 47 CFR FCC Part 15.247  
**Received Date** : Jul. 03, 2014  
**Tested Date** : Jul. 03 ~ Jul. 10, 2014

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:



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Gary Chang / Manager



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## Release Record

Report No.	Version	Description	Issued Date
FR440102-11AI	Rev. 01	Initial issue	Sep. 18, 2014

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## Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.474MHz 35.44 (Margin -11.01dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]:3830.00MHz 50.88 (Margin -3.12dB) - AV	Pass

# 1 General Description

## 1.1 Information

This report is prepared for FCC class II change

This report is issued as a supplementary report to original ICC report no. FR440102-07AN. The modification is adding 2nd antenna (PIFA antenna), therefore, radiated emission and conducted emission has been re-tested after re-evaluation, and only its data was recorded in the following sections.

Brand Name	Model Name	Product Name	Description
Ampak	AP6234A	Wifi Dual Band + BT combo module	Without 2.4G SAW filter
	AP6234AL		With 2.4G SAW filter

### 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 <sub>TX</sub> )	Data Rate / MCS
5725-5850	a	5745-5825	149-165 [5]	1	6-54 Mbps
5725-5850	n (HT20)	5745-5825	149-165 [5]	1	MCS 0-7
5725-5850	n (HT40)	5755-5795	151-159 [2]	1	MCS 0-7

Note 1: RF output power specifies that Maximum Peak Conducted Output Power..  
 Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

### 1.1.2 Antenna Details

Ant. No.	Type	Operating Frequency (MHz) / Gain (dBi)					Connector
		2400~2483.5	5150~5250	5250~5350	5470~5725	5725~5850	
1	Dipole(Original)	2	3	3	3	3	UFL
2	PIFA(New)	3.53	5.30	4.93	5.31	5.55	UFL

### 1.1.3 Power Supply Type of Equipment under Test (EUT)

<b>Power Supply Type</b>	3.3Vdc from host.
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### 1.1.4 Accessories

N/A

### 1.1.5 Channel List

Frequency band (MHz)		5725~5850	
802.11 a / HT20		802.11n HT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
149	5745	151	5755
153	5765	159	5795
157	5785	---	---
161	5805	---	---
165	5825	---	---

### 1.1.6 Test Tool and Duty Cycle

Test Tool	MP tool, V2.0.1.1		
Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	11a	99.51%	0.02
	HT20	99.26%	0.03
	HT40	98.21%	0.08

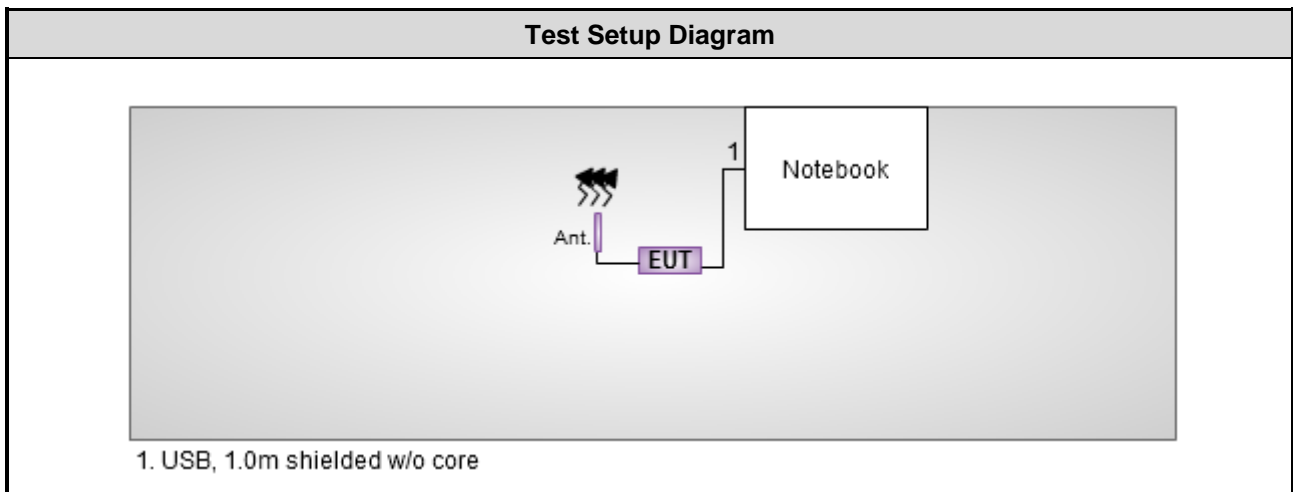
### 1.1.7 Power Setting

Modulation Mode	Test Frequency (MHz)	Power Set
11a	5745	92
11a	5785	92
11a	5825	92
HT20	5745	92
HT20	5785	92
HT20	5825	92
HT40	5755	92
HT40	5795	92

### 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 1.0m shielded cable w/o core.

### 1.3 Test Setup Chart



## 1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
EMC Receiver	R&S	ESCS 30	100169	Oct. 15, 2013	Oct. 14, 2014
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 23, 2013	Nov. 22, 2014
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127-666	Dec. 04, 2013	Dec. 03, 2014
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Apr. 23, 2014	Apr. 22, 2015
50 ohm terminal (Support Unit)	NA	50	04	Apr. 18, 2014	Apr. 17, 2015

Note: Calibration Interval of instruments listed above is one year.

Test Item	Radiated Emission				
Test Site	966 chamber 2 / (03CH02-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101499	Feb. 08, 2014	Feb. 07, 2015
Receiver	R&S	ESR3	101657	Jan. 18, 2014	Jan. 17, 2015
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-524	Jan. 08, 2014	Jan. 07, 2015
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1095	Jan. 07, 2014	Jan. 06, 2015
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Dec. 27, 2013	Dec. 26, 2014
Preamplifier	Burgeon	BPA-530	100218	Dec. 09, 2013	Dec. 08, 2014
Preamplifier	Agilent	83017A	MY39501309	Dec. 09, 2013	Dec. 08, 2014
Preamplifier	WM	TF-130N-R1	923365	Oct. 23, 2013	Oct. 22, 2014
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	Dec. 17, 2013	Dec. 16, 2014
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Dec. 17, 2013	Dec. 16, 2014
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16015/4	Dec. 17, 2013	Dec. 16, 2014
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-003	Dec. 17, 2013	Dec. 16, 2014
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-004	Dec. 17, 2013	Dec. 16, 2014

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 15, 2012	Nov. 14, 2014

Note: Calibration Interval of instruments listed above is two 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

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	$\pm 2.92$ dB
Radiated emission < 1GHz	$\pm 3.26$ dB
Radiated emission > 1GHz	$\pm 4.94$ dB

## 2 Test Configuration

### 2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 68%	Skys Huang
Radiated Emissions	03CH02-WS	21-25°C / 65-68%	Anderson Hung York Lin

➤ 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 (Mbps) / MCS	Test Configuration
Conducted Emissions	HT40	5755	MCS 0	1
Radiated Emissions ≤1GHz	HT40	5755	MCS 0	1
Radiated Emissions >1GHz RF Output Power 6dB bandwidth Power spectral density	11a HT20 HT40	5745 / 5785 / 5825 5745 / 5785 / 5825 5755 / 5795	6 Mbps MCS 0 MCS 0	1

**NOTE:**

- The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Y-plane** results were found as the worst case and were shown in this report.
- Two samples had been pre-tested on the following test configurations. **Configuration 1** (Model AP6234A) is the worst case and only its data was record in this test report.
  - Configuration 1 : AP6234A
  - Configuration 2 : AP6234AL

## 3 Transmitter Test Results

### 3.1 Conducted Emissions

#### 3.1.1 Limit of Conducted Emissions

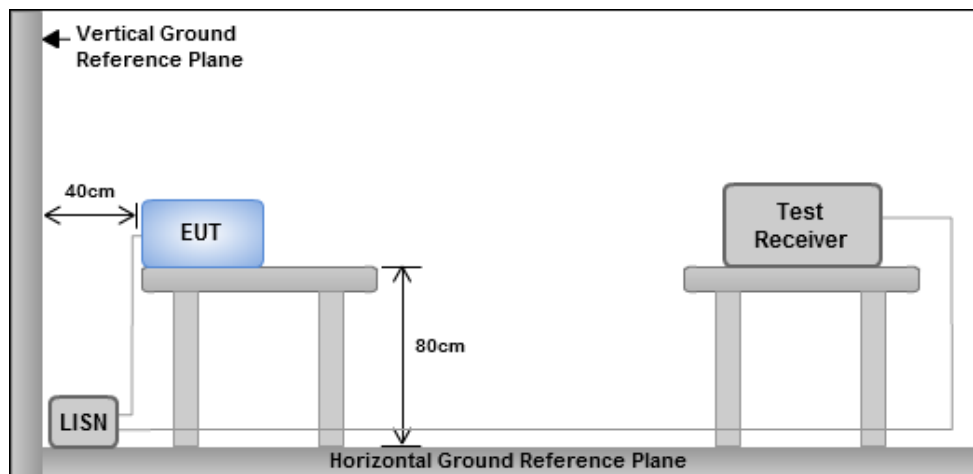
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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  $\Omega$  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.

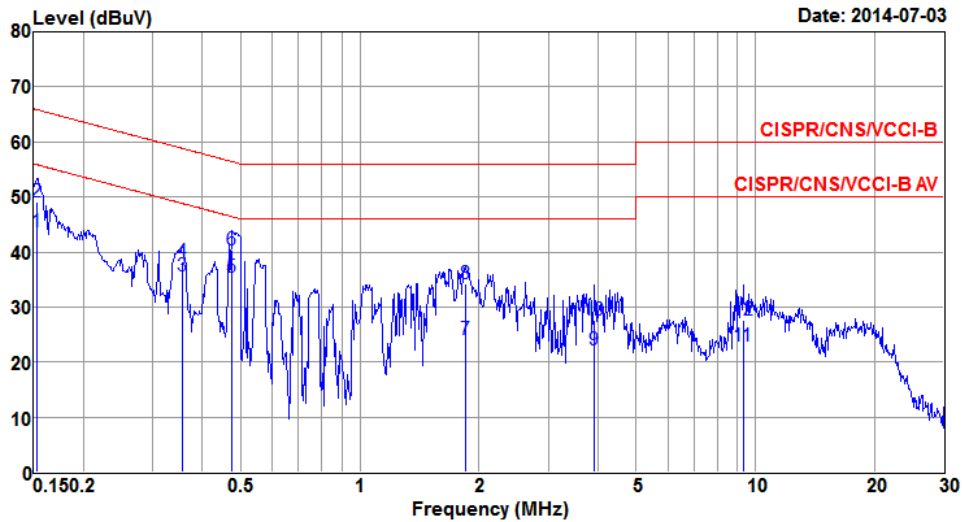
#### 3.1.3 Test Setup



- 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

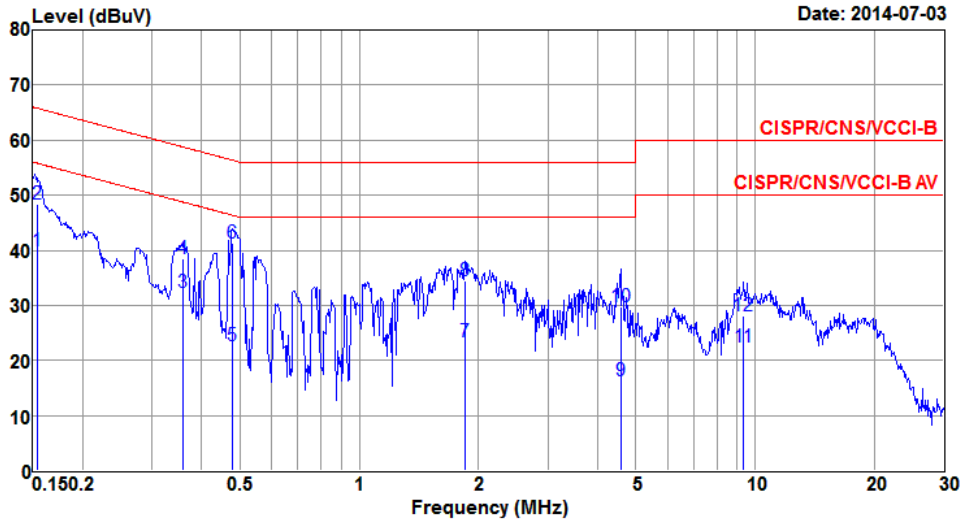
Modulation Mode	HT40	Test Freq. (MHz)	5755
Power Phase	Line	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.152	43.78	55.87	-12.09	43.36	0.40	0.02	Average
2	0.152	49.09	65.87	-16.78	48.67	0.40	0.02	QP
3	0.356	35.61	48.83	-13.22	35.20	0.39	0.02	Average
4	0.356	38.21	58.83	-20.62	37.80	0.39	0.02	QP
5*	0.474	35.44	46.45	-11.01	35.00	0.39	0.05	Average
6	0.474	40.36	56.45	-16.09	39.92	0.39	0.05	QP
7	1.848	24.16	46.00	-21.84	23.69	0.43	0.04	Average
8	1.848	34.24	56.00	-21.76	33.77	0.43	0.04	QP
9	3.922	22.21	46.00	-23.79	21.60	0.46	0.15	Average
10	3.922	27.51	56.00	-28.49	26.90	0.46	0.15	QP
11	9.302	22.95	50.00	-27.05	22.18	0.53	0.24	Average
12	9.302	27.74	60.00	-32.26	26.97	0.53	0.24	QP

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

<b>Modulation Mode</b>	HT40	<b>Test Freq. (MHz)</b>	5755
<b>Power Phase</b>	Neutral	<b>Test Configuration</b>	1



	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.154	39.83	55.78	-15.95	39.33	0.48	0.02	Average
2	0.154	48.31	65.78	-17.47	47.81	0.48	0.02	QP
3	0.360	32.43	48.74	-16.31	31.94	0.47	0.02	Average
4	0.360	38.54	58.74	-20.20	38.05	0.47	0.02	QP
5	0.479	22.66	46.36	-23.70	22.13	0.47	0.06	Average
6*	0.479	41.22	56.36	-15.14	40.69	0.47	0.06	QP
7	1.848	23.46	46.00	-22.54	22.92	0.50	0.04	Average
8	1.848	34.37	56.00	-21.63	33.83	0.50	0.04	QP
9	4.574	16.22	46.00	-29.78	15.53	0.53	0.16	Average
10	4.574	29.75	56.00	-26.25	29.06	0.53	0.16	QP
11	9.352	22.49	50.00	-27.51	21.69	0.56	0.24	Average
12	9.352	28.17	60.00	-31.83	27.37	0.56	0.24	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 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:**  
Quasi-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

**Note 2:**  
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

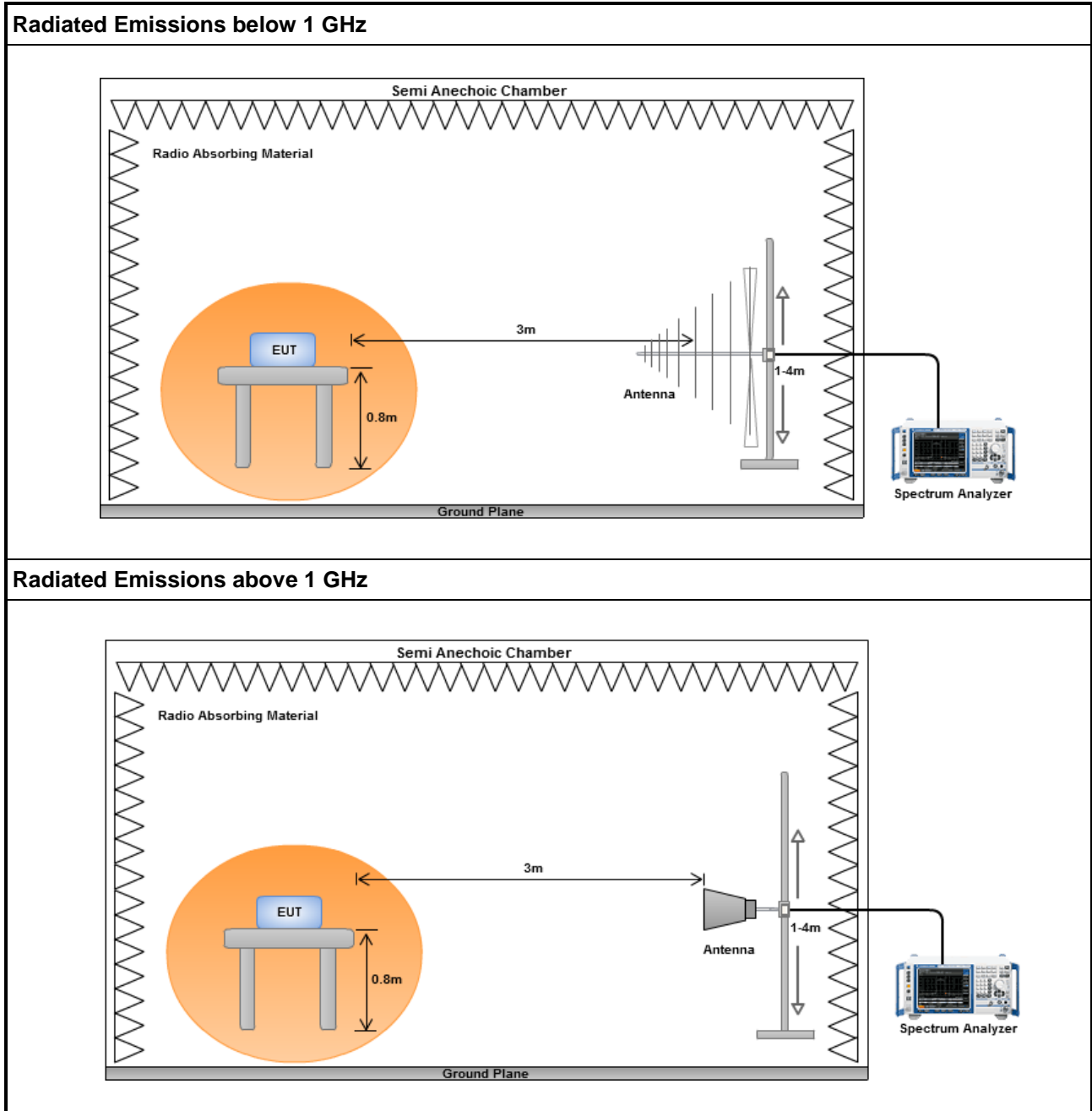
### 3.2.2 Test Procedures

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.

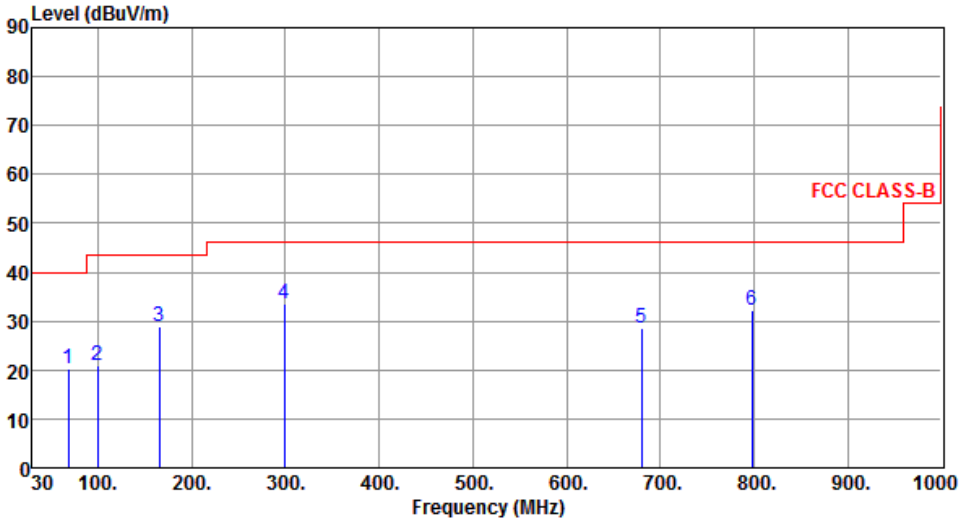
Note:

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

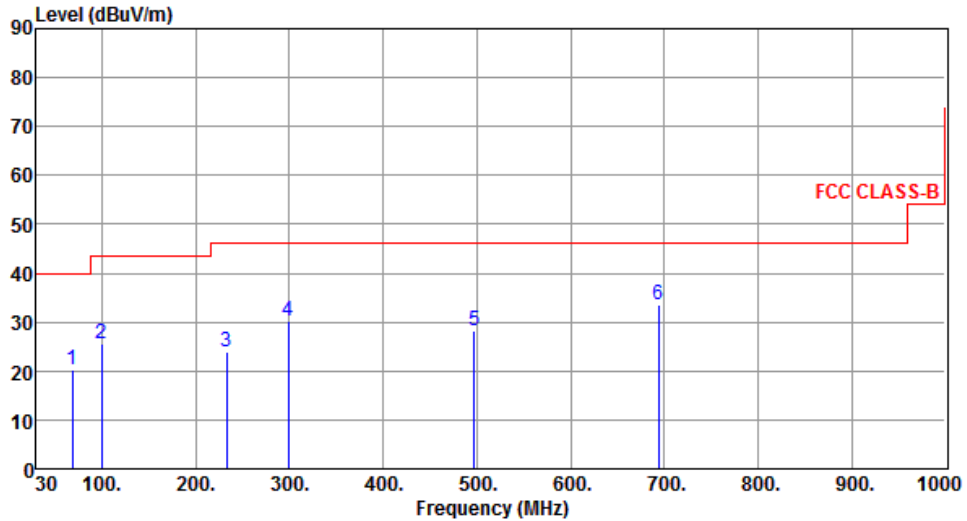


### 3.2.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	HT40	Test Freq. (MHz)	5755																																																																								
Polarization	Horizontal	Test Configuration	1																																																																								
 <p>The graph plots Level (dBuV/m) on the y-axis (0 to 90) against Frequency (MHz) on the x-axis (30 to 1000). A red line represents the FCC CLASS-B limit, which is 40 dBuV/m from 30 to 100 MHz, 45 dBuV/m from 100 to 300 MHz, and 55 dBuV/m from 300 to 1000 MHz. Six blue vertical lines represent emission peaks labeled 1 through 6, with their respective levels and frequencies listed in the table below.</p>																																																																											
	<table border="1"> <thead> <tr> <th>Freq.</th> <th>Emission level</th> <th>Limit</th> <th>Margin</th> <th>SA reading</th> <th>Factor</th> <th>Remark</th> <th>ANT High</th> <th>Turn Table</th> </tr> <tr> <th>MHz</th> <th>dBuV/m</th> <th>dBuV/m</th> <th>dB</th> <th>dBuV</th> <th>dB</th> <th></th> <th>cm</th> <th>deg</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20.34</td> <td>40.00</td> <td>-19.66</td> <td>39.17</td> <td>-18.83</td> <td>Peak</td> <td>---</td> <td>---</td> </tr> <tr> <td>2</td> <td>20.80</td> <td>43.50</td> <td>-22.70</td> <td>42.46</td> <td>-21.66</td> <td>Peak</td> <td>---</td> <td>---</td> </tr> <tr> <td>3</td> <td>29.05</td> <td>43.50</td> <td>-14.45</td> <td>46.21</td> <td>-17.16</td> <td>Peak</td> <td>---</td> <td>---</td> </tr> <tr> <td>4</td> <td>33.63</td> <td>46.00</td> <td>-12.37</td> <td>49.88</td> <td>-16.25</td> <td>Peak</td> <td>---</td> <td>---</td> </tr> <tr> <td>5</td> <td>28.44</td> <td>46.00</td> <td>-17.56</td> <td>37.05</td> <td>-8.61</td> <td>Peak</td> <td>---</td> <td>---</td> </tr> <tr> <td>6</td> <td>32.22</td> <td>46.00</td> <td>-13.78</td> <td>38.92</td> <td>-6.70</td> <td>Peak</td> <td>---</td> <td>---</td> </tr> </tbody> </table>	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg	1	20.34	40.00	-19.66	39.17	-18.83	Peak	---	---	2	20.80	43.50	-22.70	42.46	-21.66	Peak	---	---	3	29.05	43.50	-14.45	46.21	-17.16	Peak	---	---	4	33.63	46.00	-12.37	49.88	-16.25	Peak	---	---	5	28.44	46.00	-17.56	37.05	-8.61	Peak	---	---	6	32.22	46.00	-13.78	38.92	-6.70	Peak	---	---		
Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table																																																																			
MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg																																																																			
1	20.34	40.00	-19.66	39.17	-18.83	Peak	---	---																																																																			
2	20.80	43.50	-22.70	42.46	-21.66	Peak	---	---																																																																			
3	29.05	43.50	-14.45	46.21	-17.16	Peak	---	---																																																																			
4	33.63	46.00	-12.37	49.88	-16.25	Peak	---	---																																																																			
5	28.44	46.00	-17.56	37.05	-8.61	Peak	---	---																																																																			
6	32.22	46.00	-13.78	38.92	-6.70	Peak	---	---																																																																			
<p>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.</p>																																																																											



<b>Modulation</b>	HT40	<b>Test Freq. (MHz)</b>	5755
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	68.80	20.20	40.00	-19.80	39.03	-18.83	Peak	---	---
2	99.84	25.45	43.50	-18.05	47.11	-21.66	Peak	---	---
3	232.73	23.84	46.00	-22.16	42.43	-18.59	Peak	---	---
4	298.69	30.27	46.00	-15.73	46.52	-16.25	Peak	---	---
5	497.54	28.34	46.00	-17.66	40.07	-11.73	Peak	---	---
6	693.48	33.50	46.00	-12.50	41.91	-8.41	Peak	---	---

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

\*Factor includes antenna factor , cable loss and amplifier gain

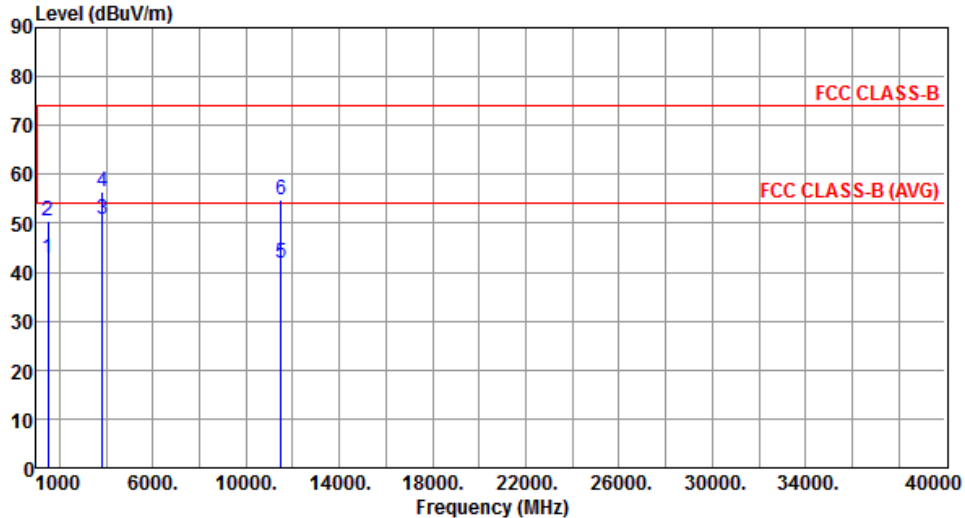
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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

<b>Modulation</b>	11a	<b>Test Freq. (MHz)</b>	5745
<b>Polarization</b>	Horizontal	<b>Test Configuration</b>	1

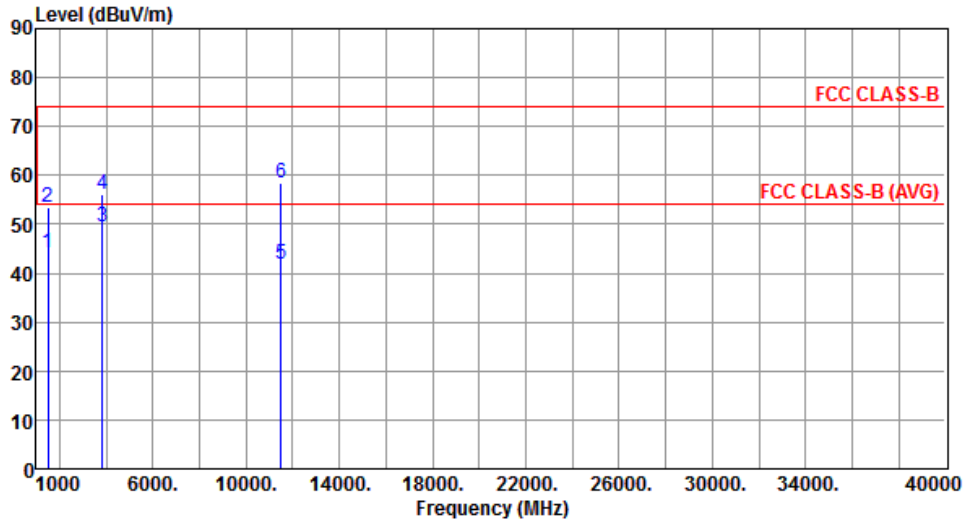
  



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	42.68	54.00	-11.32	49.15	-6.47	Average	---	---
2	1500.00	50.62	74.00	-23.38	57.09	-6.47	Peak	---	---
3	3830.00	50.88	54.00	-3.12	49.07	1.81	Average	---	---
4	3830.00	56.36	74.00	-17.64	54.55	1.81	Peak	---	---
5	11490.00	41.92	54.00	-12.08	26.72	15.20	Average	---	---
6	11490.00	54.87	74.00	-19.13	39.67	15.20	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).

<b>Modulation</b>	11a	<b>Test Freq. (MHz)</b>	5745
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	1



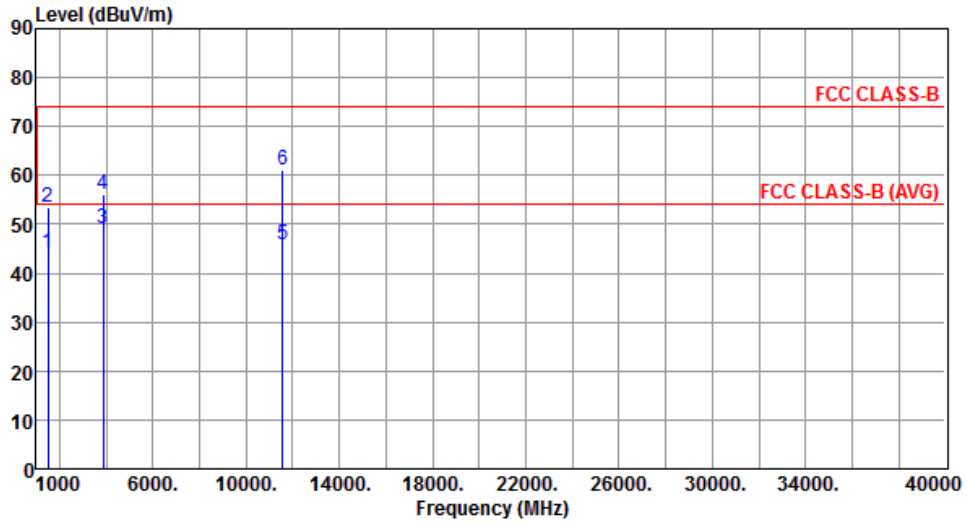
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	44.03	54.00	-9.97	50.50	-6.47	Average	---	---
2	1500.00	53.35	74.00	-20.65	59.82	-6.47	Peak	---	---
3	3830.00	49.60	54.00	-4.40	47.79	1.81	Average	---	---
4	3830.00	56.17	74.00	-17.83	54.36	1.81	Peak	---	---
5	11490.00	41.76	54.00	-12.24	26.56	15.20	Average	---	---
6	11490.00	58.43	74.00	-15.57	43.23	15.20	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).

<b>Modulation</b>	11a	<b>Test Freq. (MHz)</b>	5785
<b>Polarization</b>	Horizontal	<b>Test Configuration</b>	1



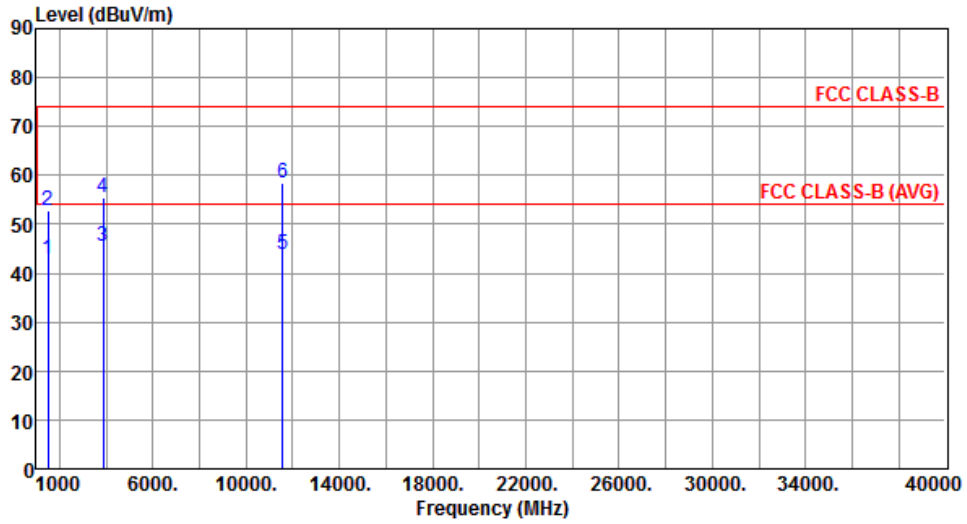
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	44.01	54.00	-9.99	50.48	-6.47	Average	---	---
2	1500.00	53.34	74.00	-20.66	59.81	-6.47	Peak	---	---
3	3856.00	49.25	54.00	-4.75	47.33	1.92	Average	---	---
4	3856.00	56.21	74.00	-17.79	54.29	1.92	Peak	---	---
5	11570.00	45.93	54.00	-8.07	30.78	15.15	Average	---	---
6	11570.00	61.15	74.00	-12.85	46.00	15.15	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).

<b>Modulation</b>	11a	<b>Test Freq. (MHz)</b>	5785
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	1



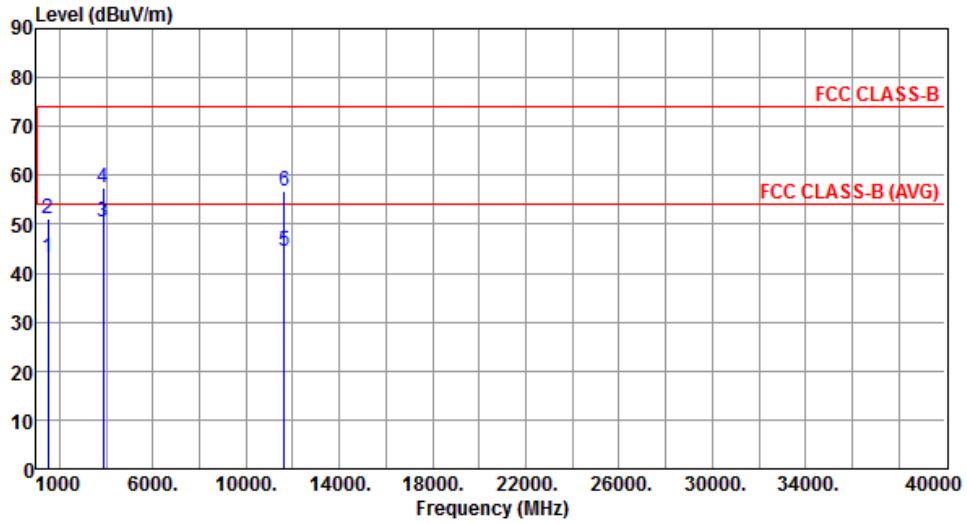
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	42.86	54.00	-11.14	49.33	-6.47	Average	---	---
2	1500.00	52.71	74.00	-21.29	59.18	-6.47	Peak	---	---
3	3856.00	45.53	54.00	-8.47	43.61	1.92	Average	---	---
4	3856.00	55.31	74.00	-18.69	53.39	1.92	Peak	---	---
5	11570.00	44.00	54.00	-10.00	28.85	15.15	Average	---	---
6	11570.00	58.31	74.00	-15.69	43.16	15.15	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).

<b>Modulation</b>	11a	<b>Test Freq. (MHz)</b>	5825
<b>Polarization</b>	Horizontal	<b>Test Configuration</b>	1



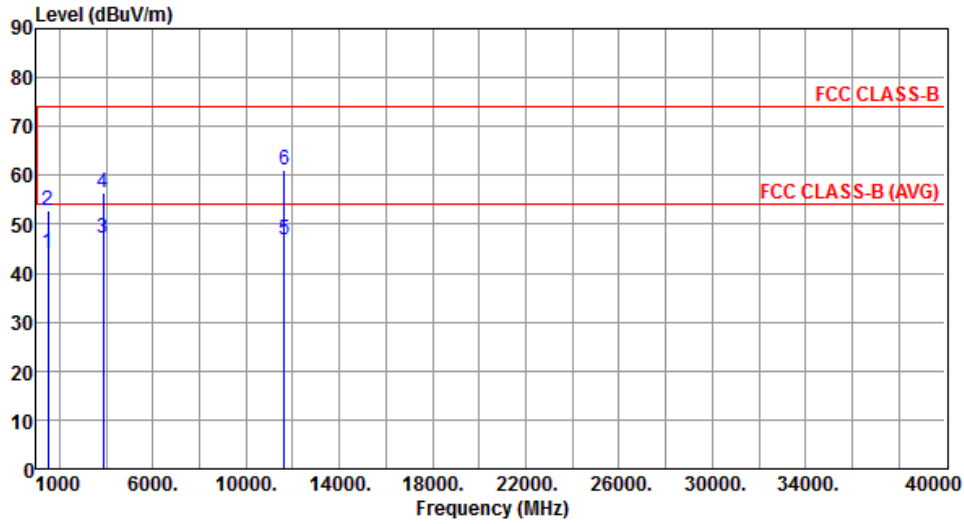
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	43.19	54.00	-10.81	49.66	-6.47	Average	---	---
2	1500.00	51.07	74.00	-22.93	57.54	-6.47	Peak	---	---
3	3883.00	50.49	54.00	-3.51	48.45	2.04	Average	---	---
4	3883.00	57.42	74.00	-16.58	55.38	2.04	Peak	---	---
5	11650.00	44.57	54.00	-9.43	29.46	15.11	Average	---	---
6	11650.00	56.85	74.00	-17.15	41.74	15.11	Peak	---	---

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

\*Factor includes antenna factor , cable loss and amplifier gain

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

<b>Modulation</b>	11a	<b>Test Freq. (MHz)</b>	5825
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	44.14	54.00	-9.86	50.61	-6.47	Average	---	---
2	1500.00	52.86	74.00	-21.14	59.33	-6.47	Peak	---	---
3	3883.00	47.23	54.00	-6.77	45.19	2.04	Average	---	---
4	3883.00	56.48	74.00	-17.52	54.44	2.04	Peak	---	---
5	11650.00	46.88	54.00	-7.12	31.77	15.11	Average	---	---
6	11650.00	61.17	74.00	-12.83	46.06	15.11	Peak	---	---

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

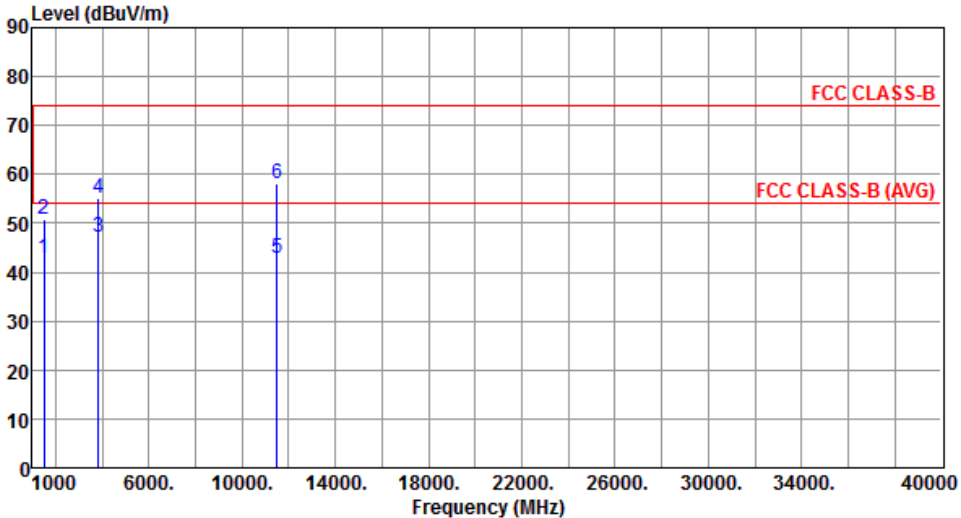
\*Factor includes antenna factor , cable loss and amplifier gain

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

### 3.2.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	5745
<b>Polarization</b>	Horizontal	<b>Test Configuration</b>	1

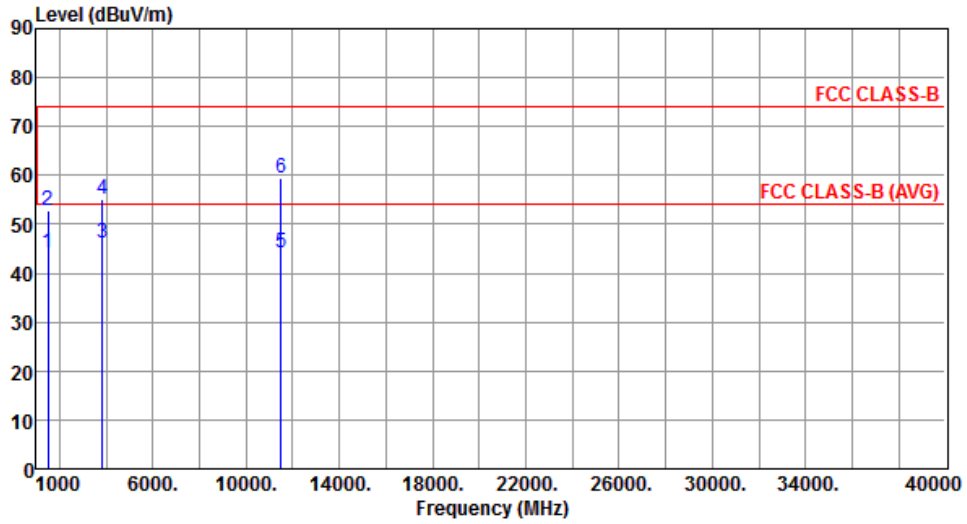


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	42.72	54.00	-11.28	49.19	-6.47	Average	---	---
2	1500.00	50.72	74.00	-23.28	57.19	-6.47	Peak	---	---
3	3830.00	47.20	54.00	-6.80	45.39	1.81	Average	---	---
4	3830.00	55.11	74.00	-18.89	53.30	1.81	Peak	---	---
5	11490.00	42.85	54.00	-11.15	27.65	15.20	Average	---	---
6	11490.00	58.13	74.00	-15.87	42.93	15.20	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).



<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	5745
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	1



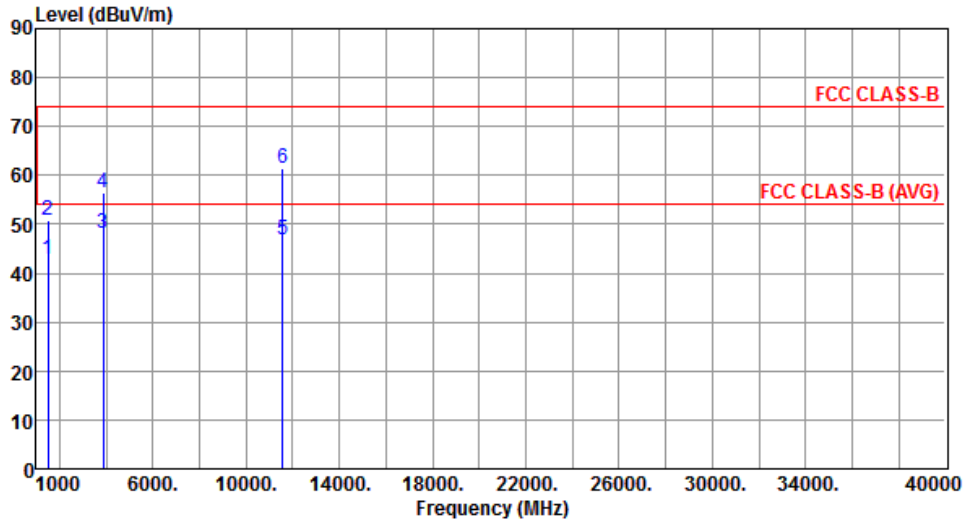
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	44.00	54.00	-10.00	50.47	-6.47	Average	---	---
2	1500.00	52.64	74.00	-21.36	59.11	-6.47	Peak	---	---
3	3830.00	46.30	54.00	-7.70	44.49	1.81	Average	---	---
4	3830.00	55.27	74.00	-18.73	53.46	1.81	Peak	---	---
5	11490.00	44.28	54.00	-9.72	29.08	15.20	Average	---	---
6	11490.00	59.30	74.00	-14.70	44.10	15.20	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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	5785
<b>Polarization</b>	Horizontal	<b>Test Configuration</b>	1



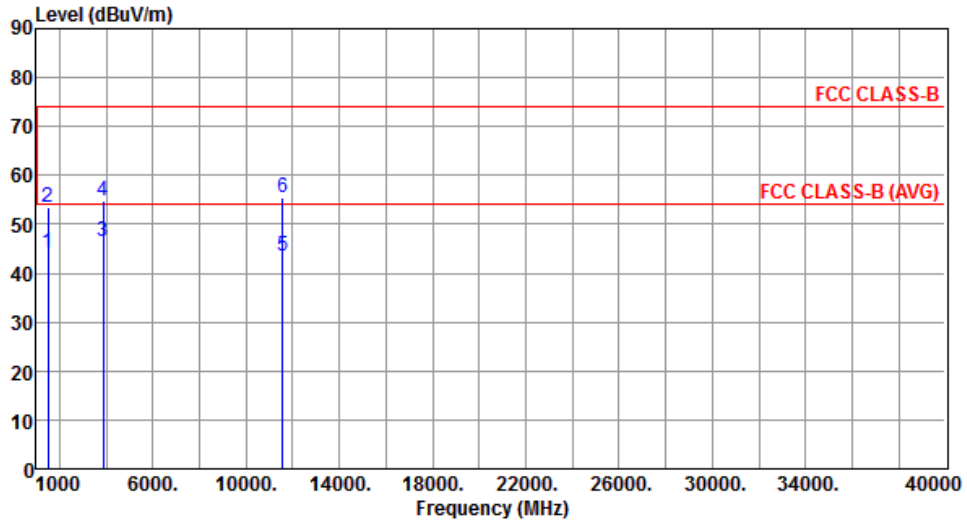
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	42.88	54.00	-11.12	49.35	-6.47	Average	---	---
2	1500.00	50.72	74.00	-23.28	57.19	-6.47	Peak	---	---
3	3856.00	48.09	54.00	-5.91	46.17	1.92	Average	---	---
4	3856.00	56.47	74.00	-17.53	54.55	1.92	Peak	---	---
5	11570.00	46.85	54.00	-7.15	31.70	15.15	Average	---	---
6	11570.00	61.41	74.00	-12.59	46.26	15.15	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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	5785
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	1



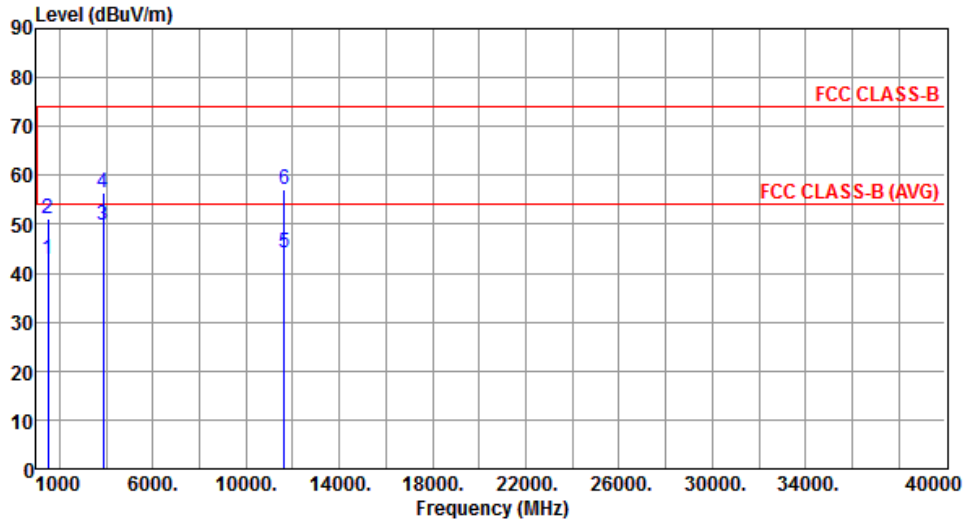
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	44.17	54.00	-9.83	50.64	-6.47	Average	---	---
2	1500.00	53.31	74.00	-20.69	59.78	-6.47	Peak	---	---
3	3856.00	46.44	54.00	-7.56	44.52	1.92	Average	---	---
4	3856.00	54.84	74.00	-19.16	52.92	1.92	Peak	---	---
5	11570.00	43.59	54.00	-10.41	28.44	15.15	Average	---	---
6	11570.00	55.31	74.00	-18.69	40.16	15.15	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).

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	5825
<b>Polarization</b>	Horizontal	<b>Test Configuration</b>	1



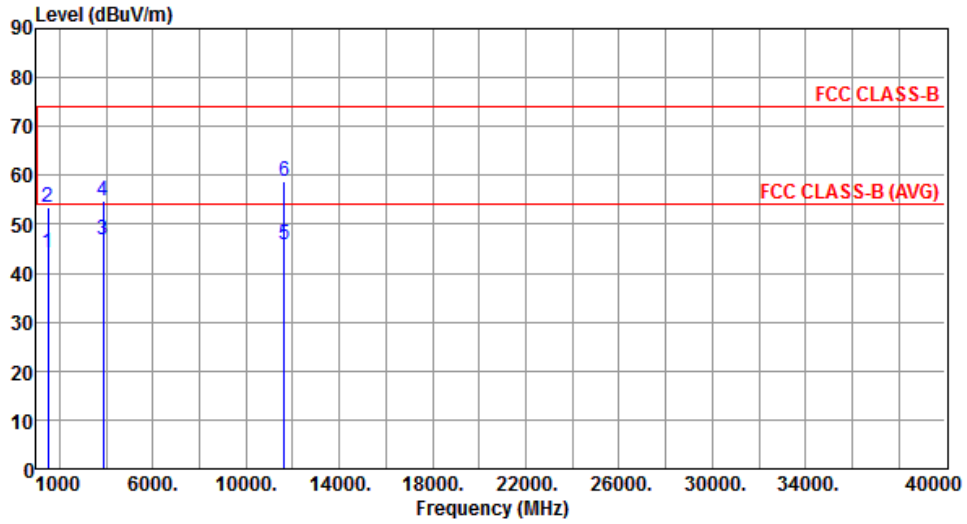
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	42.86	54.00	-11.14	49.33	-6.47	Average	---	---
2	1500.00	51.29	74.00	-22.71	57.76	-6.47	Peak	---	---
3	3883.00	49.82	54.00	-4.18	47.78	2.04	Average	---	---
4	3883.00	56.56	74.00	-17.44	54.52	2.04	Peak	---	---
5	11650.00	44.15	54.00	-9.85	29.04	15.11	Average	---	---
6	11650.00	57.16	74.00	-16.84	42.05	15.11	Peak	---	---

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

\*Factor includes antenna factor , cable loss and amplifier gain

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

<b>Modulation</b>	HT20	<b>Test Freq. (MHz)</b>	5825
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	44.04	54.00	-9.96	50.51	-6.47	Average	---	---
2	1500.00	53.30	74.00	-20.70	59.77	-6.47	Peak	---	---
3	3883.00	46.76	54.00	-7.24	44.72	2.04	Average	---	---
4	3883.00	54.70	74.00	-19.30	52.66	2.04	Peak	---	---
5	11650.00	45.89	54.00	-8.11	30.78	15.11	Average	---	---
6	11650.00	58.77	74.00	-15.23	43.66	15.11	Peak	---	---

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

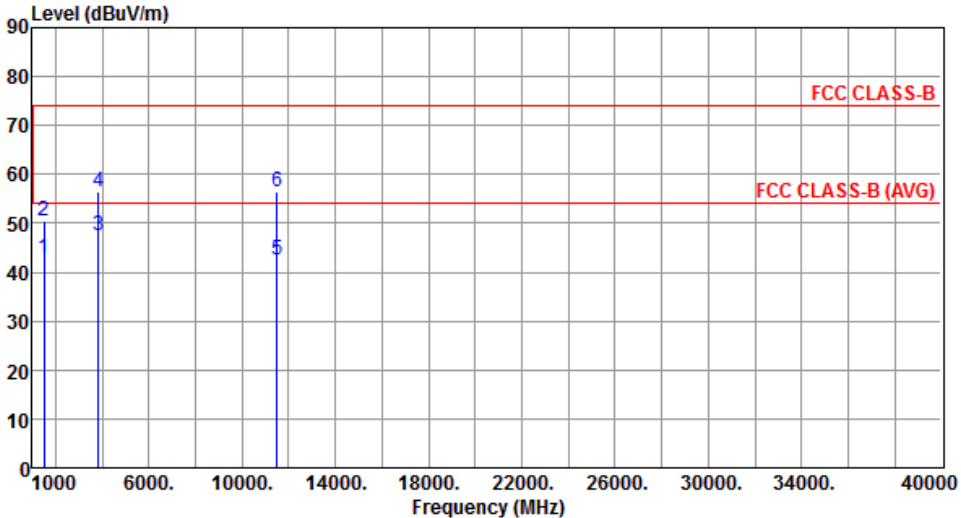
\*Factor includes antenna factor , cable loss and amplifier gain

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

### 3.2.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40

Modulation	HT40	Test Freq. (MHz)	5755
Polarization	Horizontal	Test Configuration	1



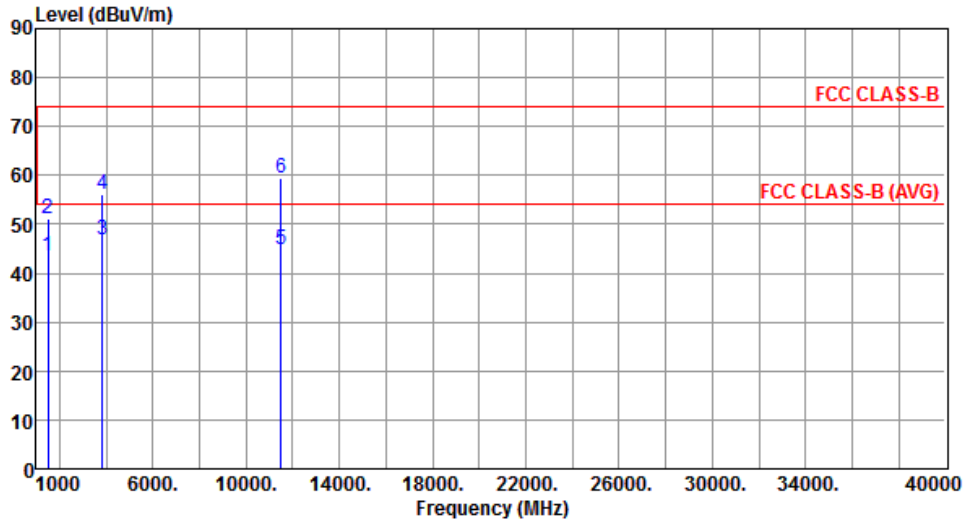
The graph plots Level (dBuV/m) on the y-axis (0 to 90) against Frequency (MHz) on the x-axis (1000 to 40000). Two horizontal red lines represent the FCC CLASS-B limit at approximately 74 dBuV/m and the FCC CLASS-B (AVG) limit at approximately 54 dBuV/m. Six vertical blue lines represent emission peaks, labeled 1 through 6. Peak 6 is the highest, reaching approximately 56.54 dBuV/m at 11510 MHz.

	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	42.75	54.00	-11.25	49.22	-6.47	Average	---	---
2	1500.00	50.62	74.00	-23.38	57.09	-6.47	Peak	---	---
3	3836.00	47.54	54.00	-6.46	45.70	1.84	Average	---	---
4	3836.00	56.60	74.00	-17.40	54.76	1.84	Peak	---	---
5	11510.00	42.43	54.00	-11.57	27.25	15.18	Average	---	---
6	11510.00	56.54	74.00	-17.46	41.36	15.18	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).

<b>Modulation</b>	HT40	<b>Test Freq. (MHz)</b>	5755
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	1



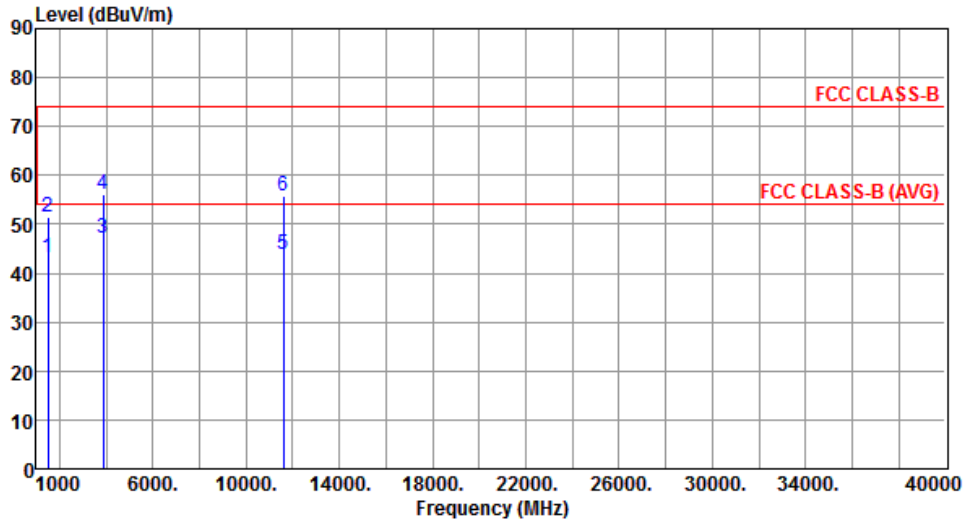
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	43.64	54.00	-10.36	50.11	-6.47	Average	---	---
2	1500.00	51.01	74.00	-22.99	57.48	-6.47	Peak	---	---
3	3836.00	46.81	54.00	-7.19	44.97	1.84	Average	---	---
4	3836.00	56.04	74.00	-17.96	54.20	1.84	Peak	---	---
5	11510.00	44.67	54.00	-9.33	29.49	15.18	Average	---	---
6	11510.00	59.46	74.00	-14.54	44.28	15.18	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).

<b>Modulation</b>	HT40	<b>Test Freq. (MHz)</b>	5795
<b>Polarization</b>	Horizontal	<b>Test Configuration</b>	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	43.01	54.00	-10.99	49.48	-6.47	Average	---	---
2	1500.00	51.41	74.00	-22.59	57.88	-6.47	Peak	---	---
3	3863.00	47.18	54.00	-6.82	45.22	1.96	Average	---	---
4	3863.00	56.27	74.00	-17.73	54.31	1.96	Peak	---	---
5	11590.00	43.87	54.00	-10.13	28.73	15.14	Average	---	---
6	11590.00	55.81	74.00	-18.19	40.67	15.14	Peak	---	---

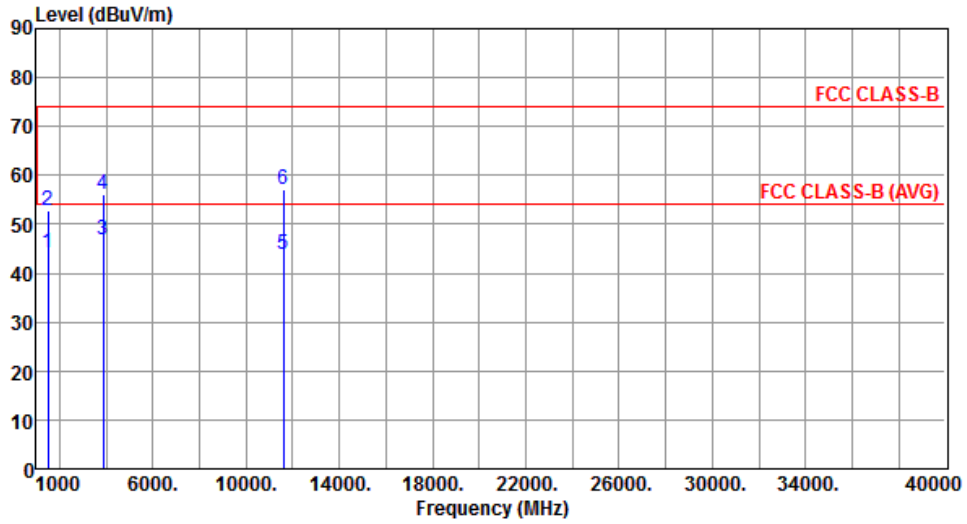
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor , cable loss and amplifier gain

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



<b>Modulation</b>	HT40	<b>Test Freq. (MHz)</b>	5795
<b>Polarization</b>	Vertical	<b>Test Configuration</b>	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1500.00	44.10	54.00	-9.90	50.57	-6.47	Average	---	---
2	1500.00	52.64	74.00	-21.36	59.11	-6.47	Peak	---	---
3	3863.00	46.76	54.00	-7.24	44.80	1.96	Average	---	---
4	3863.00	56.01	74.00	-17.99	54.05	1.96	Peak	---	---
5	11590.00	43.73	54.00	-10.27	28.59	15.14	Average	---	---
6	11590.00	57.00	74.00	-17.00	41.86	15.14	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>.

### **Linkou**

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District, New Taipei City, Taiwan,  
R.O.C.

### **Kwei Shan**

Tel: 886-3-271-8666

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

### **Kwei Shan Site II**

Tel: 886-3-271-8640

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

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Email: ICC\_Service@icertifi.com.tw

==END==