

# FCC Test Report

**FCC ID** : 2AAS9-PICONODE  
**Equipment** : RPMA Piconode Module  
**Model No.** : GR0136  
**Brand Name** : BROWAN  
**Applicant** : BROWAN COMMUNICATIONS  
INCORPORATION  
**Address** : No.15-1 Zhonghua Rd., Hsinchu Industrial  
Park, Hukou, Hsinchu, Taiwan (R.O.C.), 30352  
**Standard** : 47 CFR FCC Part 15.247  
**Received Date** : Sep. 17, 2020  
**Tested Date** : Oct. 28 ~ Nov. 06, 2020

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

Reviewed by:

Approved by:

  
\_\_\_\_\_  
Along Chen / Assistant Manager

  
\_\_\_\_\_  
Gary Chang / Manager



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## Release Record

Report No.	Version	Description	Issued Date
FR982302-01	Rev. 01	Initial issue	Dec. 01, 2020

## Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 4.525MHz 32.52 (Margin -13.48dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2376.00MHz 53.43 (Margin -0.57dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 22.48	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

### Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

### Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

# 1 General Description

## 1.1 Information

### 1.1.1 Specification of the Equipment under Test (EUT)

RF General Information			
Frequency Range (MHz)	Mode	Ch. Frequency (MHz)	Channel Number
2400~2483.5	DSSS (with RPMA)	2402~2475.63	1-38 [38]

### 1.1.2 Antenna Details

Ant. No.	Brand	Model	Type	Connector	Gain (dBi)	Remarks
1	Linx	ANT-2.4-USP	Mono-pole	RSMA	3.8	External
2	Taiyo Yuden	AH 104F2450S1	Mono-pole (Inverted F)	RSMA	1.9	External
3	Taoglas	GW.34.5153	Dipole	RSMA	5.89	External
4	ethertronics	1001013	PIFA / magnetic Dipole	---	2.6	Internal
5	Jesoncom	10I010D	Mono-pole	RSMA	4.8	External

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

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

N/A

### 1.1.5 Channel List

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2402	20	2439.81
2	2403.99	21	2441.8
3	2405.98	22	2443.79
4	2407.97	23	2445.78
5	2409.96	24	2447.77
6	2411.95	25	2449.76
7	2413.94	26	2451.75
8	2415.93	27	2453.74
9	2417.92	28	2455.73
10	2419.91	29	2457.72
11	2421.9	30	2459.71
12	2423.89	31	2461.7
13	2425.88	32	2463.69
14	2427.87	33	2465.68
15	2429.86	34	2467.67
16	2431.85	35	2469.66
17	2433.84	36	2471.65
18	2435.83	37	2473.64
19	2437.82	38	2475.63

### 1.1.6 Test Tool and Duty Cycle

<b>Test Tool</b>	EMC Certification Tools, Version: 1.6.14.1	
<b>Duty Cycle and Duty Factor</b>	<b>Duty Cycle (%)</b>	<b>Duty Factor (dB)</b>
	100	0

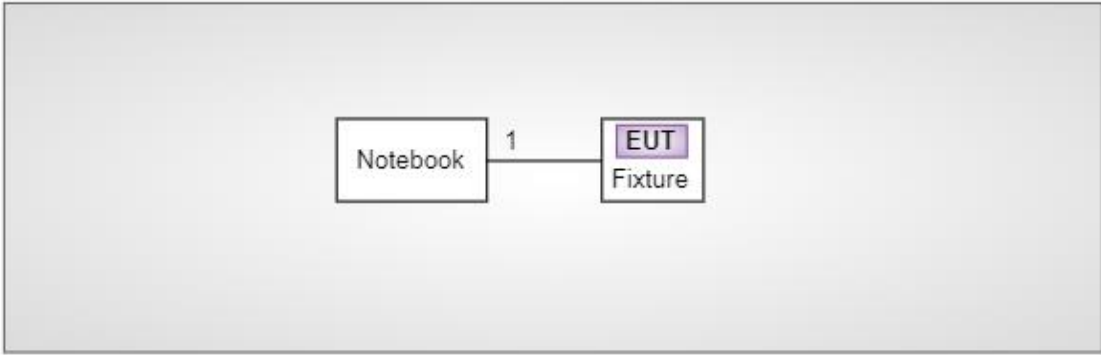
### 1.1.7 Power Index of Test Tool

Modulation Mode	Test Frequency (MHz)	Power Index
DSSS (with RPMA)	2402	55
DSSS (with RPMA)	2437.82	55
DSSS (with RPMA)	2475.63	55

## 1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	Notebook	DELL	Latitude E5480	DoC	---
2	Fixture	Gemtek	RPMA shield One	---	Provided by applicant.

## 1.3 Test Setup Chart

Test Setup Diagram	
 <pre> graph LR     Notebook[Notebook] --- 1 --- EUT[EUT Fixture]           </pre>	
No.	Signal cable / Length (m)
1	USB, 1m non-shielded.

## 1.4 The Equipment List

<b>Test Item</b>	Conducted Emission				
<b>Test Site</b>	Conduction room 1 / (CO01-WS)				
<b>Tested Date</b>	Nov. 06, 2020				
<b>Instrument</b>	<b>Brand</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibration Date</b>	<b>Calibration Until</b>
Receiver	R&S	ESR3	101658	Dec. 12, 2019	Dec. 11, 2020
LISN	R&S	ENV216	101579	Mar. 12, 2020	Mar. 11, 2021
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 21, 2020	Oct. 20, 2021
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

<b>Test Item</b>	Radiated Emission				
<b>Test Site</b>	966 chamber1 / (03CH01-WS)				
<b>Tested Date</b>	Oct. 28 ~ Oct. 31, 2020				
<b>Instrument</b>	<b>Brand</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibration Date</b>	<b>Calibration Until</b>
Spectrum Analyzer	R&S	FSV40	101498	Dec. 17, 2019	Dec. 16, 2020
Receiver	R&S	ESR3	101657	Feb. 14, 2020	Feb. 13, 2021
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 10, 2020	Jul. 09, 2021
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 12, 2019	Dec. 11, 2020
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 15, 2019	Nov. 14, 2020
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 13, 2019	Nov. 12, 2020
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 06, 2020	Oct. 05, 2021
Preamplifier	EMC	EMC02325	980225	Jul. 03, 2020	Jul. 02, 2021
Preamplifier	Agilent	83017A	MY39501308	Sep. 26, 2020	Sep. 25, 2021
Preamplifier	EMC	EMC184045B	980192	Jul. 21, 2020	Jul. 20, 2021
RF Cable	EMC	EMC104-SM-SM-8000	181106	Oct. 06, 2020	Oct. 05, 2021
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 06, 2020	Oct. 05, 2021
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Oct. 06, 2020	Oct. 05, 2021
LF cable 1M	EMC	EMCCFD400-NM-NM-1000	160502	Oct. 06, 2020	Oct. 05, 2021
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 06, 2020	Oct. 05, 2021
LF cable 11M	EMC	EMCCFD400-NW-NW-11000	200801	Oct. 06, 2020	Oct. 05, 2021
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					



<b>Test Item</b>	RF Conducted				
<b>Test Site</b>	(TH01-WS)				
<b>Tested Date</b>	Nov. 03, 2020				
<b>Instrument</b>	<b>Brand</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Calibration Date</b>	<b>Calibration Until</b>
Spectrum Analyzer	R&S	FSV40	101063	Apr. 30, 2020	Apr. 29, 2021
Power Meter	Anritsu	ML2495A	1241001	Jul. 21, 2020	Jul. 20, 2021
Power Sensor	Anritsu	MA2411B	1207362	Jul. 21, 2020	Jul. 20, 2021
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

## 1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

## 1.7 Deviation from Test Standard and Measurement Procedure

None

## 1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ( $k=2$ )).

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	$\pm 34.130$ Hz
Conducted power	$\pm 0.808$ dB
Power density	$\pm 0.583$ dB
Conducted emission	$\pm 2.715$ dB
AC conducted emission	$\pm 2.92$ dB
Radiated emission $\leq 1$ GHz	$\pm 3.41$ dB
Radiated emission $> 1$ GHz	$\pm 4.59$ dB

## 2 Test Configuration

### 2.1 Testing Facility

<b>Test Laboratory</b>	International Certification Corp.
<b>Test Site</b>	CO01-WS, 03CH01-WS, TH01-WS
<b>Address of Test Site</b>	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

### 2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Test Configuration
Conducted Emissions	DSSS	2402	3
Radiated Emissions ≤1GHz	DSSS	2402	1, 2, 3, 4, 5
Radiated Emissions >1GHz	DSSS	2402 / 2437.82 / 2475.63	1, 2, 3, 4, 5
Maximum Output Power 6dB bandwidth Power spectral density	DSSS	2402 / 2437.82 / 2475.63	3

**NOTE:**

1. The EUT had five antennas been tested by following test configurations.
  - 1) Configuration 1: Linx antenna, X-plane
  - 2) Configuration 2: Taiyo Yuden antenna, Y-plane
  - 3) Configuration 3: Taoglas antenna, Y-plane
  - 4) Configuration 4: ethertronics antenna, X-plane
  - 5) Configuration 5: Jesoncom antenna, Y-plane

## 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



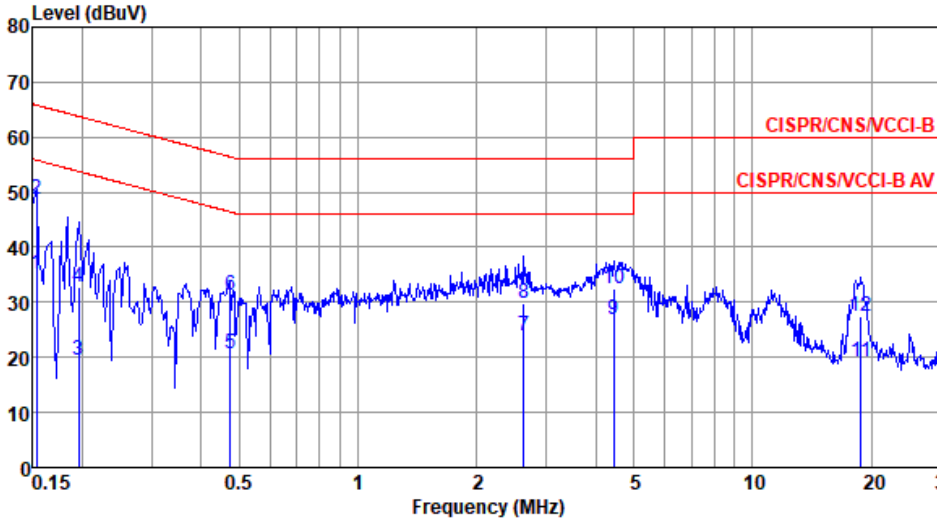
Note: 1. Support units were connected to second LISN.

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Power Phase</b>	Line		

Test by : Alex Tsai      Temperature: 22°C      Humidity: 58%

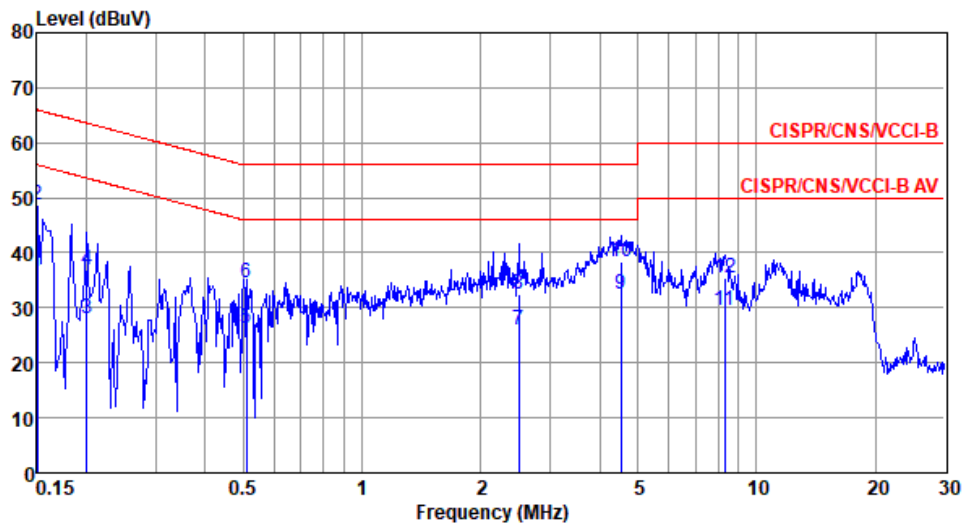


	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.153	35.24	55.82	-20.58	25.55	9.64	0.05	Average
2*	0.153	48.71	65.82	-17.11	39.02	9.64	0.05	QP
3	0.195	19.41	53.80	-34.39	9.72	9.63	0.06	Average
4	0.195	32.75	63.80	-31.05	23.06	9.63	0.06	QP
5	0.474	20.73	46.45	-25.72	11.01	9.63	0.09	Average
6	0.474	31.42	56.45	-25.03	21.70	9.63	0.09	QP
7	2.636	23.79	46.00	-22.21	13.93	9.64	0.22	Average
8	2.636	29.88	56.00	-26.12	20.02	9.64	0.22	QP
9	4.454	26.87	46.00	-19.13	16.92	9.65	0.30	Average
10	4.454	32.52	56.00	-23.48	22.57	9.65	0.30	QP
11	18.820	19.10	50.00	-30.90	8.73	9.72	0.65	Average
12	18.820	27.56	60.00	-32.44	17.19	9.72	0.65	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</b>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Power Phase</b>	Neutral		

Test by : Alex Tsai      Temperature: 22°C      Humidity: 58%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	36.63	56.00	-19.37	26.92	9.66	0.05	Average
2	0.150	48.59	66.00	-17.41	38.88	9.66	0.05	QP
3	0.201	28.19	53.58	-25.39	18.48	9.65	0.06	Average
4	0.201	36.90	63.58	-26.68	27.19	9.65	0.06	QP
5	0.510	26.32	46.00	-19.68	16.58	9.65	0.09	Average
6	0.510	34.50	56.00	-21.50	24.76	9.65	0.09	QP
7	2.500	26.12	46.00	-19.88	16.24	9.66	0.22	Average
8	2.500	32.49	56.00	-23.51	22.61	9.66	0.22	QP
9*	4.525	32.52	46.00	-13.48	22.54	9.68	0.30	Average
10	4.525	38.38	56.00	-17.62	28.40	9.68	0.30	QP
11	8.323	29.58	50.00	-20.42	19.49	9.72	0.37	Average
12	8.323	35.48	60.00	-24.52	25.39	9.72	0.37	QP

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

## 3.2 6dB and Occupied Bandwidth

### 3.2.1 Limit of 6dB Bandwidth

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

### 3.2.2 Test Procedures

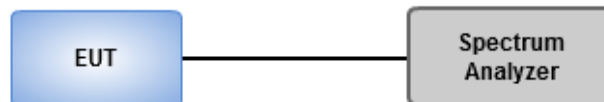
#### 6dB Bandwidth

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

#### Occupied Bandwidth

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

### 3.2.3 Test Setup



### 3.2.4 Test Result of 6dB and Occupied Bandwidth

<b>Ambient Condition</b>	23°C / 63%	<b>Tested By</b>	Brad Wu
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#### Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
2.4G	1.022M	1.551M	1M55D1D	992.754k	1.54M

**Max-N dB** = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;  
**Min-N dB** = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

#### Result

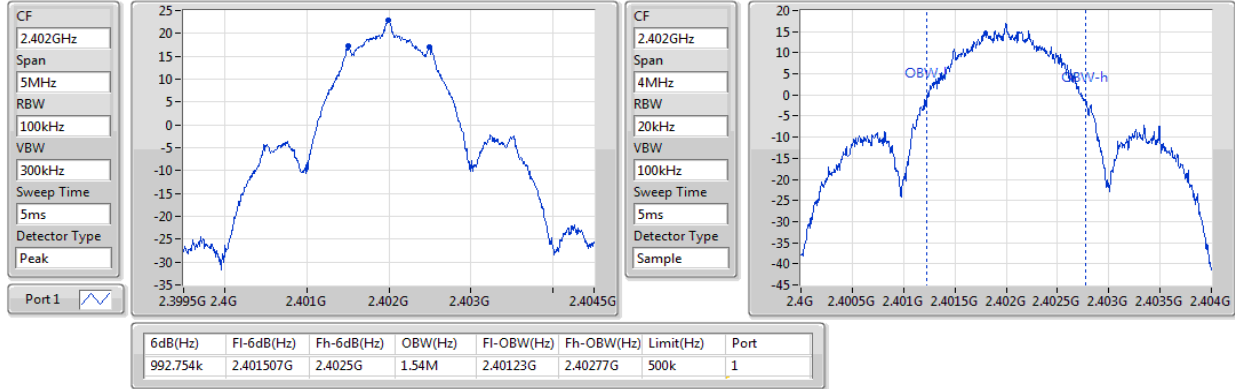
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
2.4G	-	-	-	-
2402MHz	Pass	500k	992.754k	1.54M
2437.82MHz	Pass	500k	1.022M	1.551M
2475.63MHz	Pass	500k	1.022M	1.551M

**Port X-N dB** = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

## 2.4G

## EBW-DTS

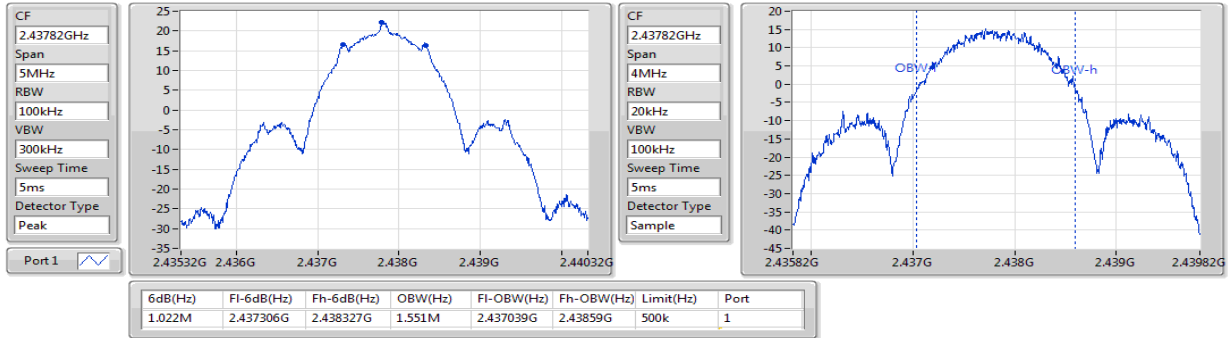
### 2402MHz



## 2.4G

## EBW-DTS

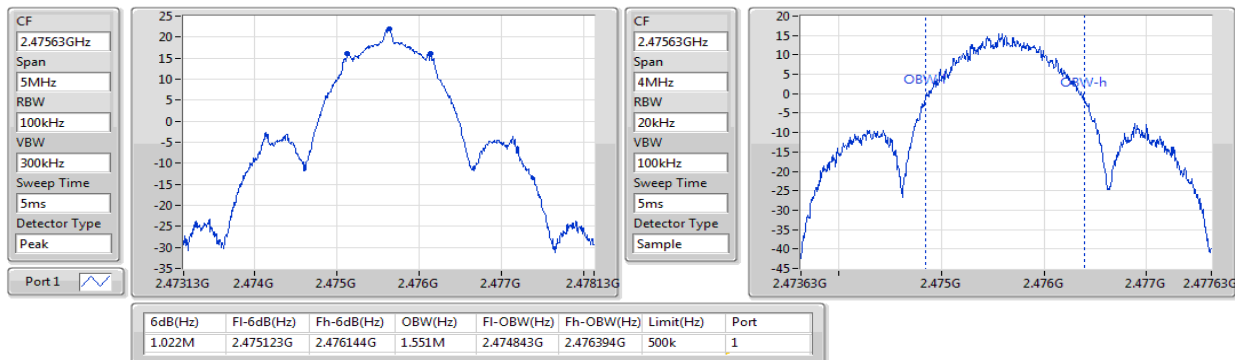
### 2437.82MHz



## 2.4G

## EBW-DTS

### 2475.63MHz





### 3.3 RF Output Power

#### 3.3.1 Limit of RF Output Power

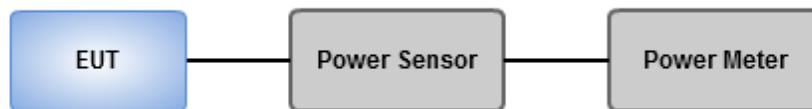
Conducted power shall not exceed 1Watt.

Antenna gain  $\leq 6\text{dBi}$ , no any corresponding reduction is in output power limit.

#### 3.3.2 Test Procedures

A broadband 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

<b>Ambient Condition</b>	23°C / 63%	<b>Tested By</b>	Brad Wu
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#### Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
2.4G	22.48	0.17701

#### Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
2.4G	-	-	-	-
2402MHz	Pass	5.89	22.48	30.00
2437.82MHz	Pass	5.89	21.78	30.00
2475.63MHz	Pass	5.89	21.45	30.00

Note: Average power is for reference only.

## 3.4 Power Spectral Density

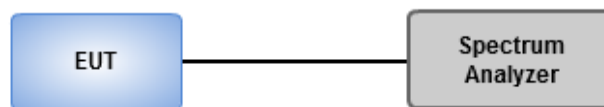
### 3.4.1 Limit of Power Spectral Density

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

### 3.4.2 Test Procedures

1. Set the RBW = 3 kHz, VBW = 10 kHz.
2. Detector = RMS, Sweep time = auto couple.
3. Sweep time = auto couple.
4. Employ trace averaging (RMS) mode over a minimum of 100 traces.
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

<b>Ambient Condition</b>	23°C / 63%	<b>Tested By</b>	Brad Wu
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#### Summary

<b>Mode</b>	<b>PD (dBm/3kHz)</b>
2.4-2.4835GHz	-
2.4G	-0.63

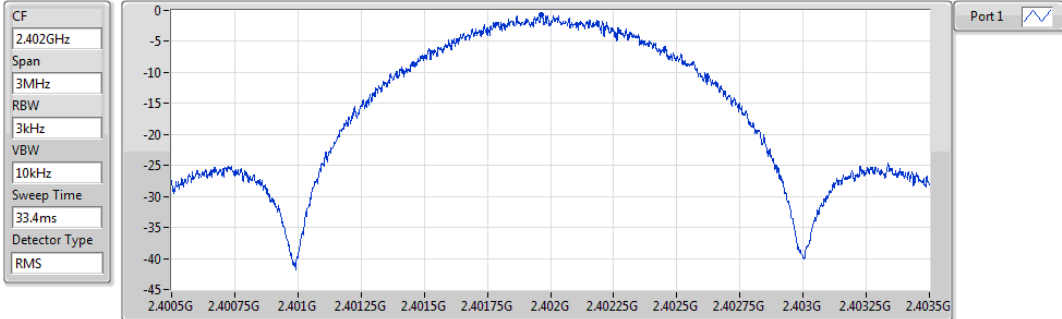
#### Result

<b>Mode</b>	<b>Result</b>	<b>Gain (dBi)</b>	<b>PD (dBm/3kHz)</b>	<b>PD Limit (dBm/3kHz)</b>
2.4G	-	-	-	-
2402MHz	Pass	5.89	-0.63	8.00
2437.82MHz	Pass	5.89	-0.98	8.00
2475.63MHz	Pass	5.89	-1.49	8.00

## 2.4G

## PSD

### 2402MHz

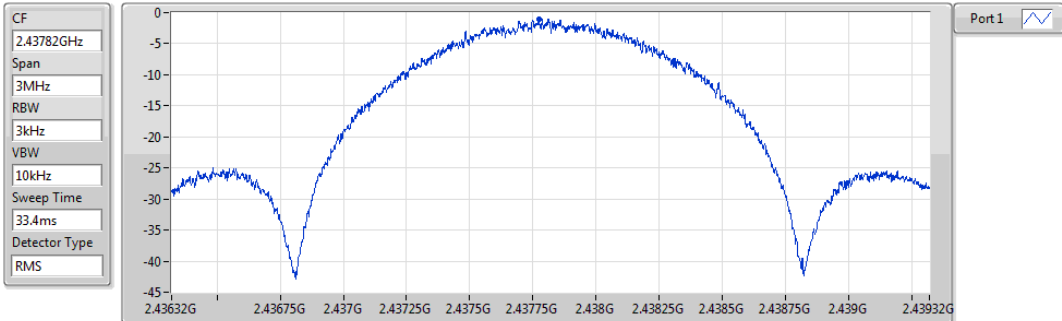


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.63	-0.63	-0.63

## 2.4G

## PSD

### 2437.82MHz

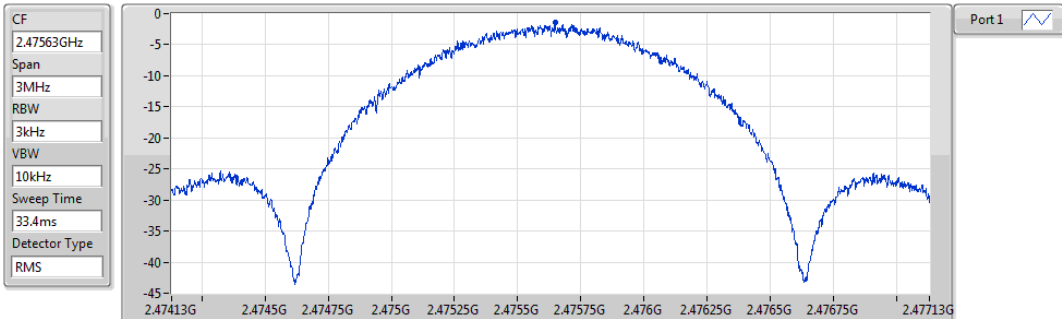


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.98	-0.98	-0.98

## 2.4G

## PSD

### 2475.63MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-1.49	-1.49	-1.49

## 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:**  
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.

### 3.5.2 Test Procedures

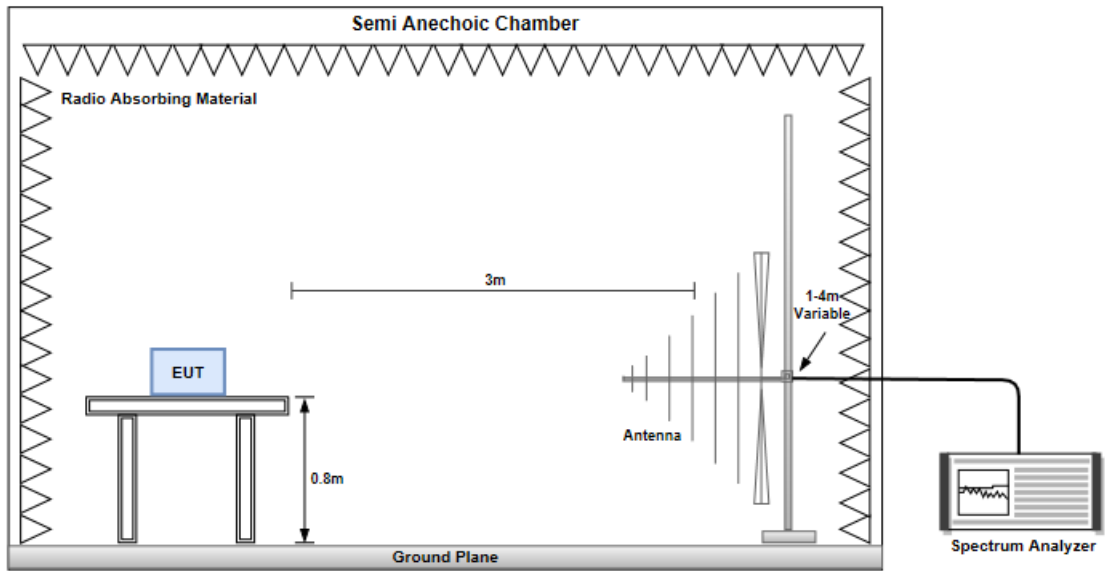
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

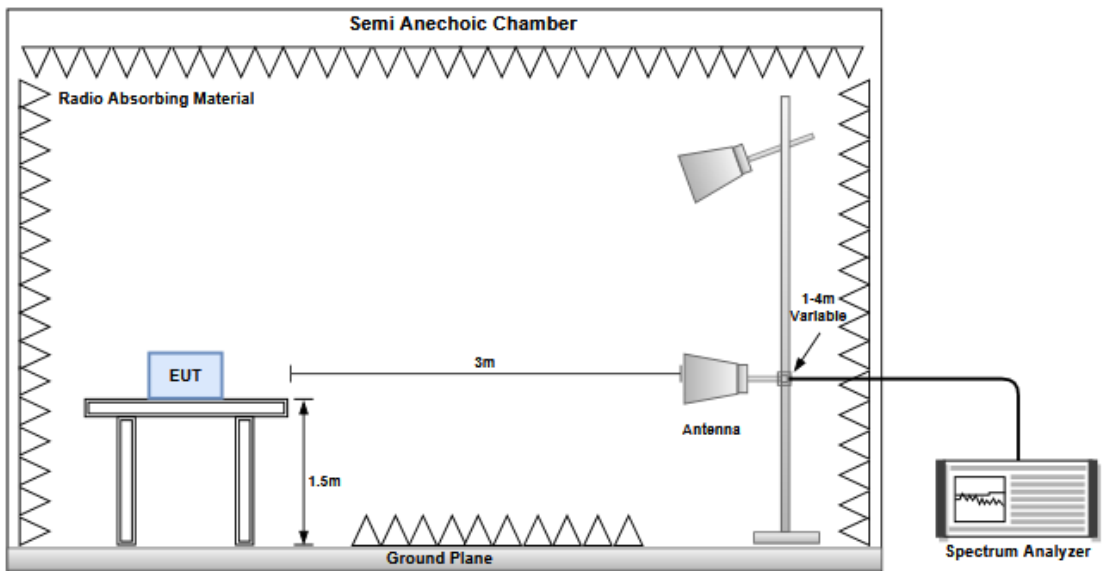
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

### 3.5.3 Test Setup

#### Radiated Emissions below 1 GHz

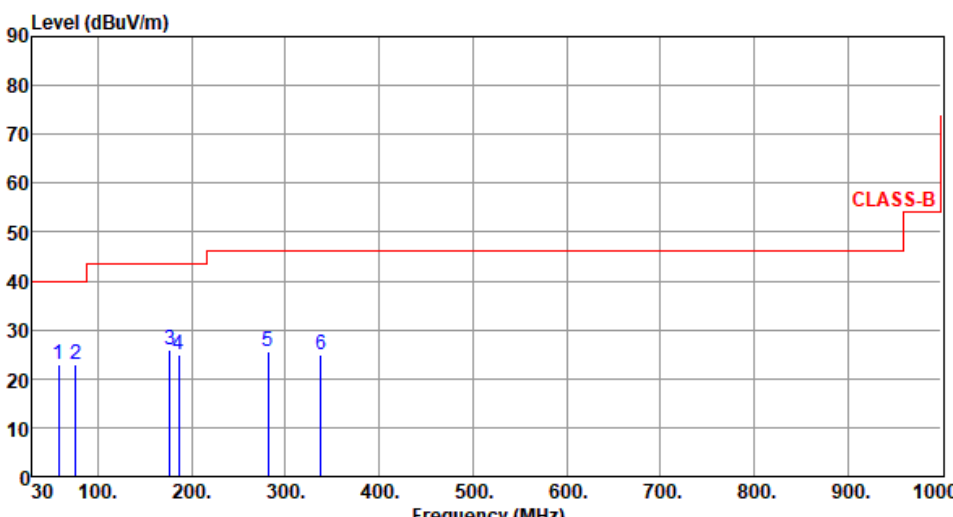


#### Radiated Emissions above 1 GHz



### Configuration 1: Linx antenna, X-plane

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

Modulation	DSSS	Test Freq. (MHz)	2402						
Polarization	Horizontal								
Test By :BRAD WU      Temperature(°C):22      Humidity(%):63									
 <p>The graph displays the radiated unwanted emissions for a Linx antenna in the X-plane. The y-axis represents the emission level in dBuV/m, ranging from 0 to 90. The x-axis represents the frequency in MHz, ranging from 30 to 1000. A red step function indicates the CLASS-B emission limit. Several peaks are observed, with the highest being at 960 MHz. Six specific peaks are labeled with numbers 1 through 6, corresponding to the data in the table below.</p>									
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High cm	Turn Table deg
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB			
1	58.13	22.88	40.00	-17.12	31.85	-8.97	Peak	---	---
2	76.56	22.97	40.00	-17.03	35.39	-12.42	Peak	---	---
3	176.47	25.85	43.50	-17.65	35.78	-9.93	Peak	---	---
4	186.17	24.82	43.50	-18.68	35.81	-10.99	Peak	---	---
5	281.23	25.47	46.00	-20.53	34.10	-8.63	Peak	---	---
6	337.49	25.04	46.00	-20.96	32.05	-7.01	Peak	---	---

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

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

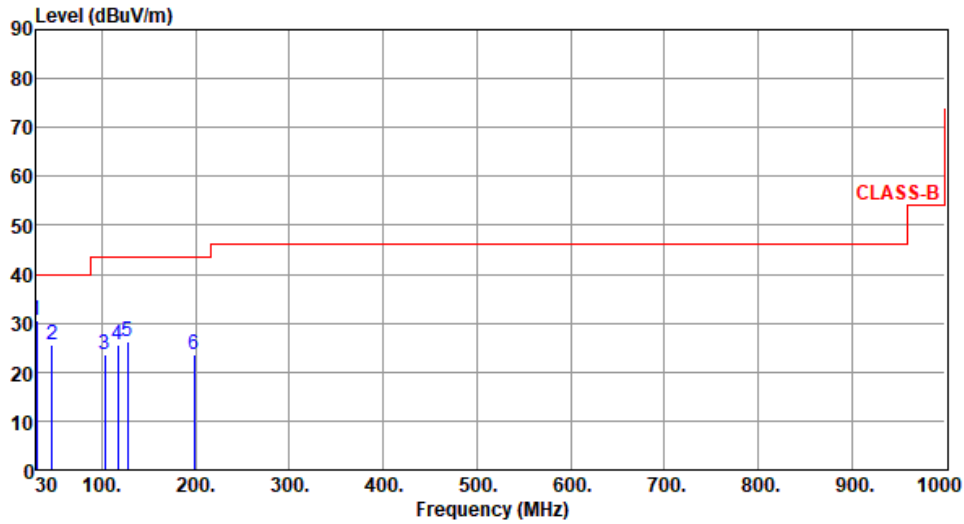
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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



<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):22      Humidity(%):63



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	30.04	30.67	40.00	-9.33	40.16	-9.49	Peak	---	---
2	46.49	25.68	40.00	-14.32	34.01	-8.33	Peak	---	---
3	102.75	23.61	43.50	-19.89	36.59	-12.98	Peak	---	---
4	117.30	25.59	43.50	-17.91	36.52	-10.93	Peak	---	---
5	127.00	26.09	43.50	-17.41	36.09	-10.00	Peak	---	---
6	198.78	23.62	43.50	-19.88	35.56	-11.94	Peak	---	---

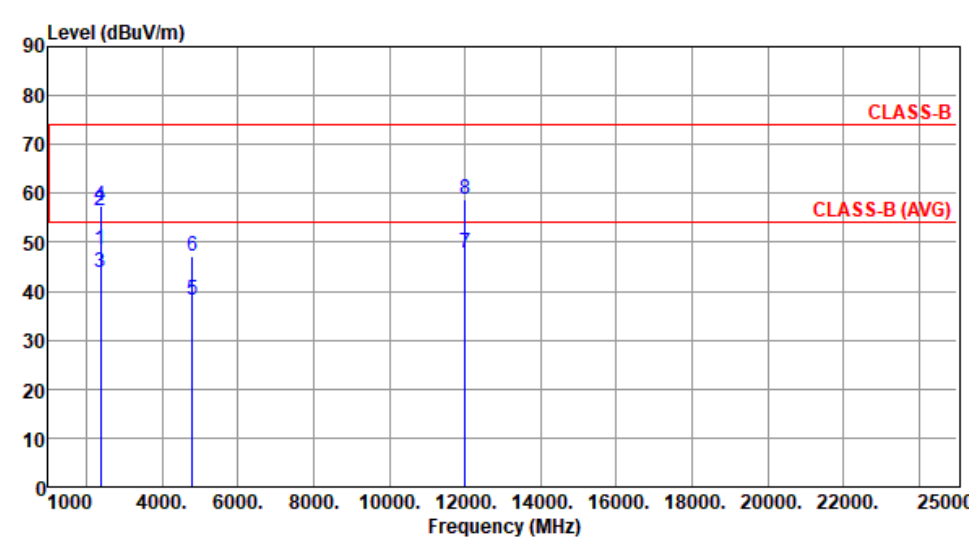
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*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.

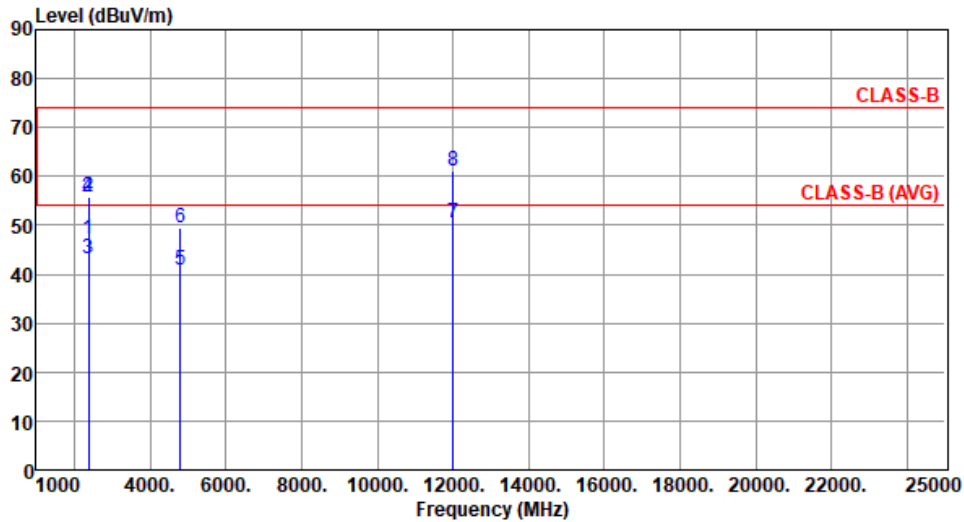
### 3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation	DSSS	Test Freq. (MHz)	2402						
Polarization	Horizontal								
Test By :BRAD WU      Temperature(°C):23      Humidity(%):64									
									
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2376.00	48.63	54.00	-5.37	51.32	-2.69	Average	136	321
2	2376.00	56.51	74.00	-17.49	59.20	-2.69	Peak	136	321
3	2390.00	43.69	54.00	-10.31	46.44	-2.75	Average	136	321
4	2390.00	57.37	74.00	-16.63	60.12	-2.75	Peak	136	321
5	4804.00	38.12	54.00	-15.88	34.60	3.52	Average	115	254
6	4804.00	47.25	74.00	-26.75	43.73	3.52	Peak	115	254
7	12010.00	47.95	54.00	-6.05	33.77	14.18	Average	182	104
8	12010.00	58.64	74.00	-15.36	44.46	14.18	Peak	182	104

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>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%) :64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2376.00	47.10	54.00	-6.90	49.79	-2.69	Average	219	268
2	2376.00	55.83	74.00	-18.17	58.52	-2.69	Peak	219	268
3	2390.00	43.10	54.00	-10.90	45.85	-2.75	Average	219	268
4	2390.00	55.94	74.00	-18.06	58.69	-2.75	Peak	219	268
5	4804.00	40.70	54.00	-13.30	37.18	3.52	Average	101	275
6	4804.00	49.37	74.00	-24.63	45.85	3.52	Peak	101	275
7	12010.00	50.42	54.00	-3.58	36.24	14.18	Average	361	114
8	12010.00	61.19	74.00	-12.81	47.01	14.18	Peak	361	114

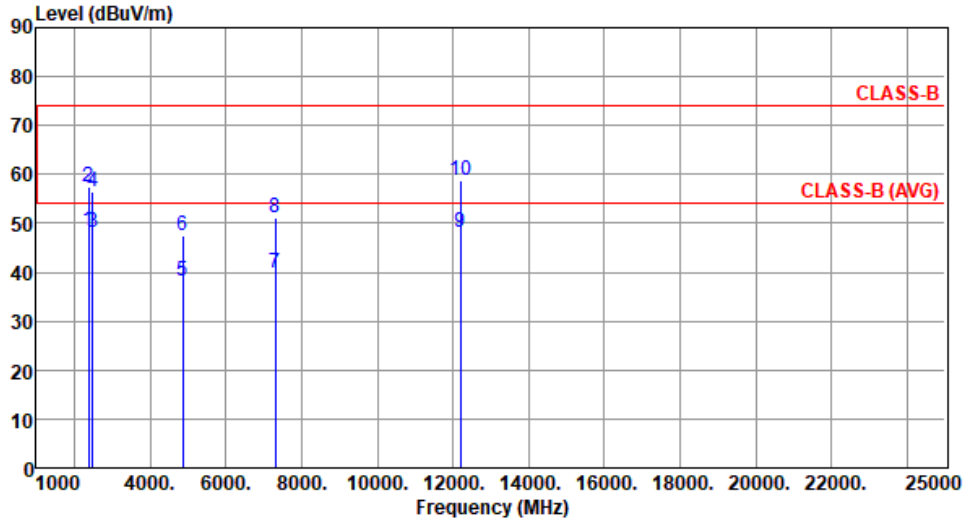
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2437.82
<b>Polarization</b>	Horizontal		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2386.00	48.42	54.00	-5.58	51.15	-2.73	Average	134	317
2	2386.00	57.41	74.00	-16.59	60.14	-2.73	Peak	134	317
3	2490.00	48.06	54.00	-5.94	51.02	-2.96	Average	134	317
4	2490.00	56.37	74.00	-17.63	59.33	-2.96	Peak	134	317
5	4875.64	38.29	54.00	-15.71	34.68	3.61	Average	113	251
6	4875.64	47.40	74.00	-26.60	43.79	3.61	Peak	113	251
7	7313.46	39.72	54.00	-14.28	30.59	9.13	Average	110	331
8	7313.46	51.27	74.00	-22.73	42.14	9.13	Peak	110	331
9	12189.10	48.02	54.00	-5.98	33.56	14.46	Average	188	101
10	12189.10	58.95	74.00	-15.05	44.49	14.46	Peak	188	101

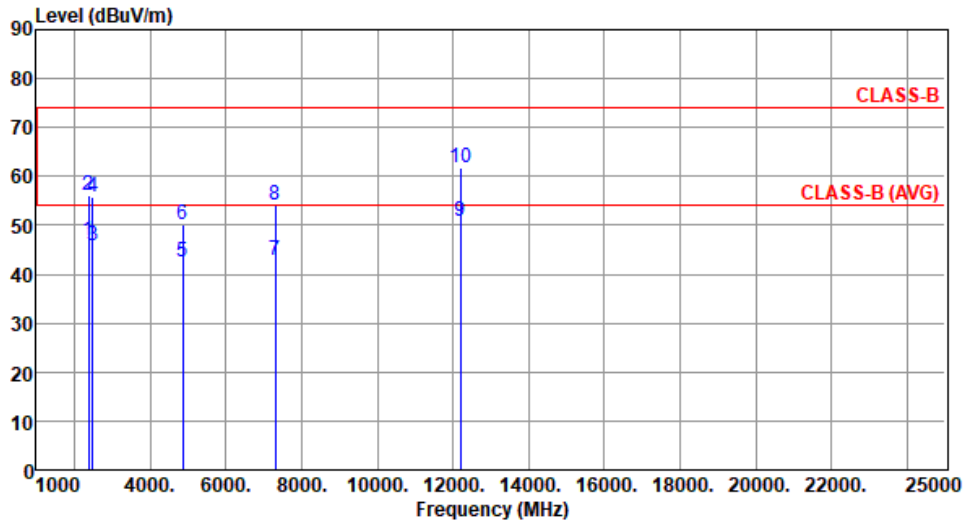
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2437.82
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2386.00	46.77	54.00	-7.23	49.50	-2.73	Average	213	274
2	2386.00	56.22	74.00	-17.78	58.95	-2.73	Peak	213	274
3	2490.00	45.94	54.00	-8.06	48.90	-2.96	Average	213	274
4	2490.00	55.83	74.00	-18.17	58.79	-2.96	Peak	213	274
5	4875.64	42.42	54.00	-11.58	38.81	3.61	Average	100	278
6	4875.64	49.99	74.00	-24.01	46.38	3.61	Peak	100	278
7	7313.46	43.00	54.00	-11.00	33.87	9.13	Average	192	263
8	7313.46	54.28	74.00	-19.72	45.15	9.13	Peak	192	263
9	12189.10	50.91	54.00	-3.09	36.45	14.46	Average	357	109
10	12189.10	61.78	74.00	-12.22	47.32	14.46	Peak	357	109

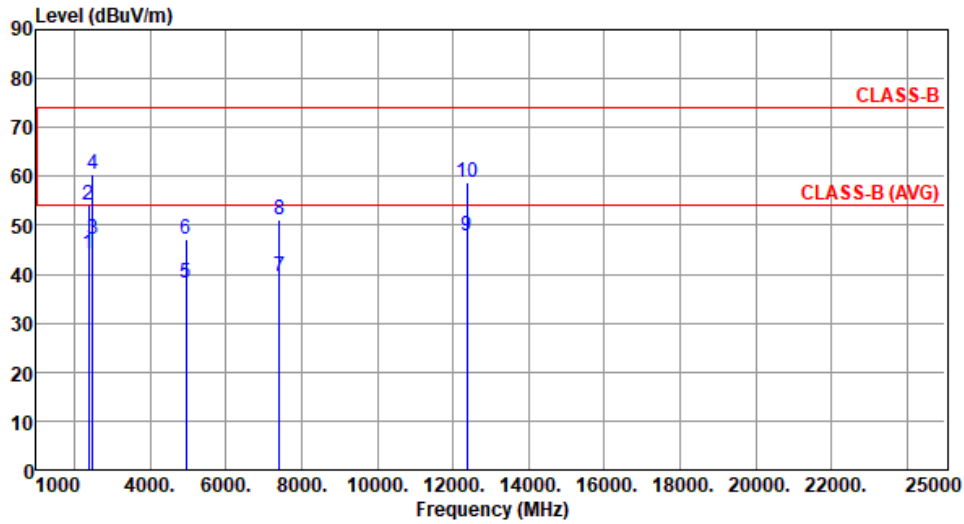
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2475.63
<b>Polarization</b>	Horizontal		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2372.00	44.23	54.00	-9.77	46.89	-2.66	Average	133	318
2	2372.00	54.18	74.00	-19.82	56.84	-2.66	Peak	133	318
3	2483.50	47.08	54.00	-6.92	50.05	-2.97	Average	133	318
4	2483.50	60.44	74.00	-13.56	63.41	-2.97	Peak	133	318
5	4951.26	38.14	54.00	-15.86	34.41	3.73	Average	115	256
6	4951.26	47.29	74.00	-26.71	43.56	3.73	Peak	115	256
7	7426.89	39.64	54.00	-14.36	30.62	9.02	Average	108	336
8	7426.89	51.16	74.00	-22.84	42.14	9.02	Peak	108	336
9	12378.15	47.86	54.00	-6.14	33.75	14.11	Average	185	102
10	12378.15	58.86	74.00	-15.14	44.75	14.11	Peak	185	102

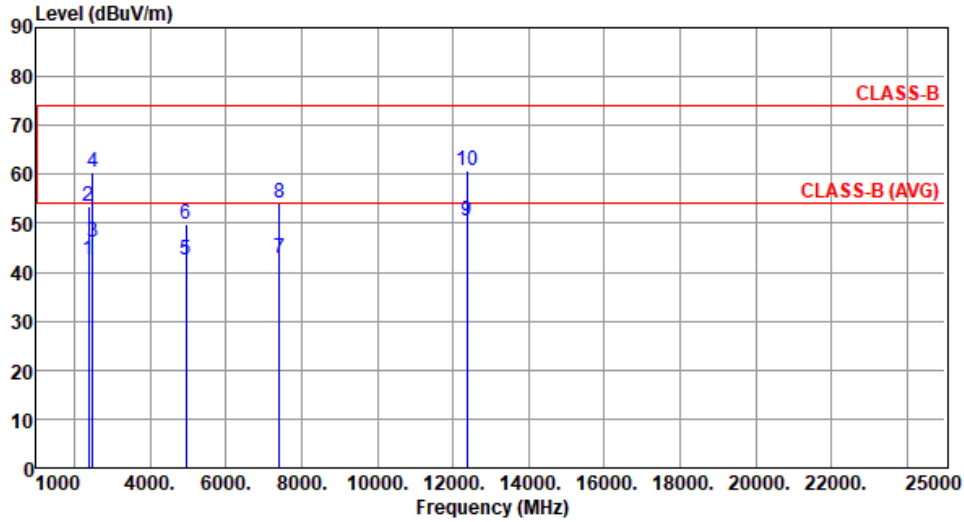
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2475.63
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2372.00	42.42	54.00	-11.58	45.08	-2.66	Average	209	270
2	2372.00	53.54	74.00	-20.46	56.20	-2.66	Peak	209	270
3	2483.50	46.29	54.00	-7.71	49.26	-2.97	Average	209	270
4	2483.50	60.31	74.00	-13.69	63.28	-2.97	Peak	209	270
5	4951.26	42.40	54.00	-11.60	38.67	3.73	Average	102	299
6	4951.26	49.93	74.00	-24.07	46.20	3.73	Peak	102	299
7	7426.89	42.70	54.00	-11.30	33.68	9.02	Average	213	257
8	7426.89	54.19	74.00	-19.81	45.17	9.02	Peak	213	257
9	12378.15	50.54	54.00	-3.46	36.43	14.11	Average	356	135
10	12378.15	60.67	74.00	-13.33	46.56	14.11	Peak	356	135

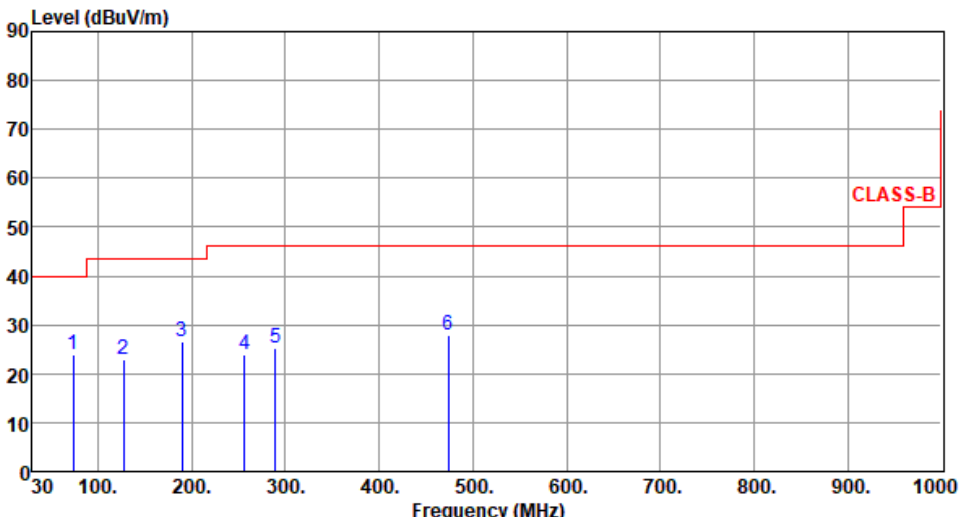
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

**Configuration 2: Taiyo Yuden antenna, Y-plane**

**3.5.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)**

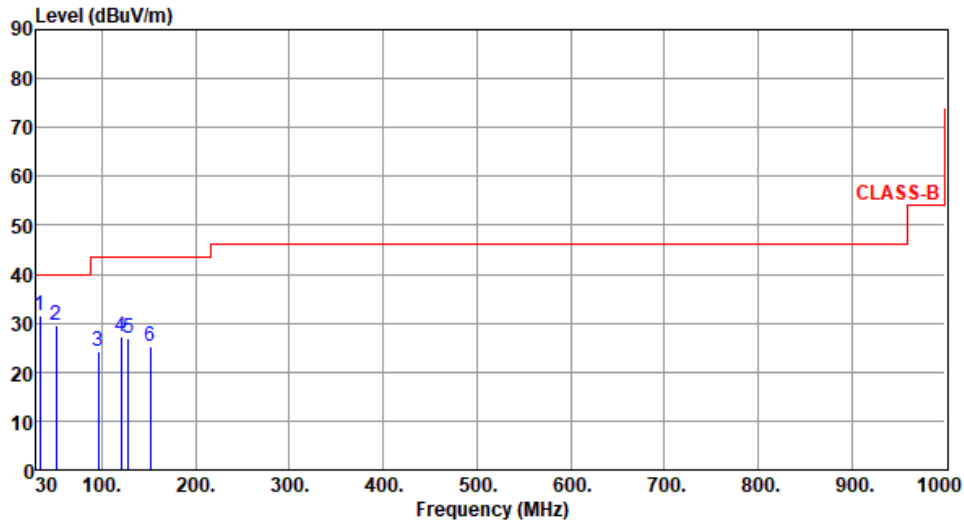
<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402						
<b>Polarization</b>	Horizontal								
Test By :BRAD WU      Temperature(°C):22      Humidity(%):63									
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	73.65	23.91	40.00	-16.09	35.72	-11.81	Peak	---	---
2	127.00	22.97	43.50	-20.53	32.97	-10.00	Peak	---	---
3	190.05	26.71	43.50	-16.79	38.17	-11.46	Peak	---	---
4	256.01	24.01	46.00	-21.99	33.91	-9.90	Peak	---	---
5	288.99	25.31	46.00	-20.69	33.75	-8.44	Peak	---	---
6	474.26	28.00	46.00	-18.00	31.78	-3.78	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.



<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):22      Humidity(%):63



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	33.88	31.46	40.00	-8.54	40.85	-9.39	Peak	---	---
2	51.34	29.63	40.00	-10.37	38.20	-8.57	Peak	---	---
3	95.96	24.10	43.50	-19.40	38.39	-14.29	Peak	---	---
4	120.21	27.15	43.50	-16.35	37.79	-10.64	Peak	---	---
5	127.97	26.97	43.50	-16.53	37.06	-10.09	Peak	---	---
6	151.25	25.21	43.50	-18.29	34.13	-8.92	Peak	---	---

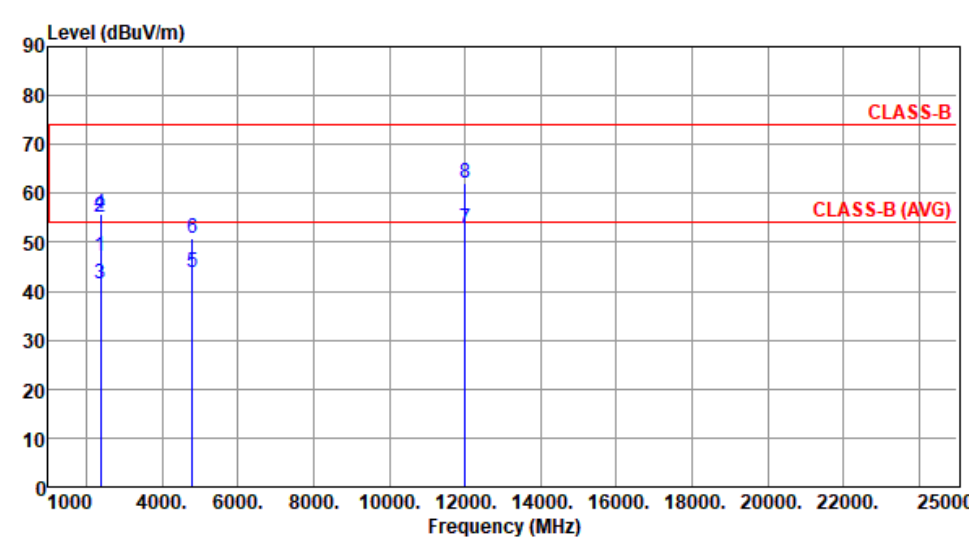
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*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.

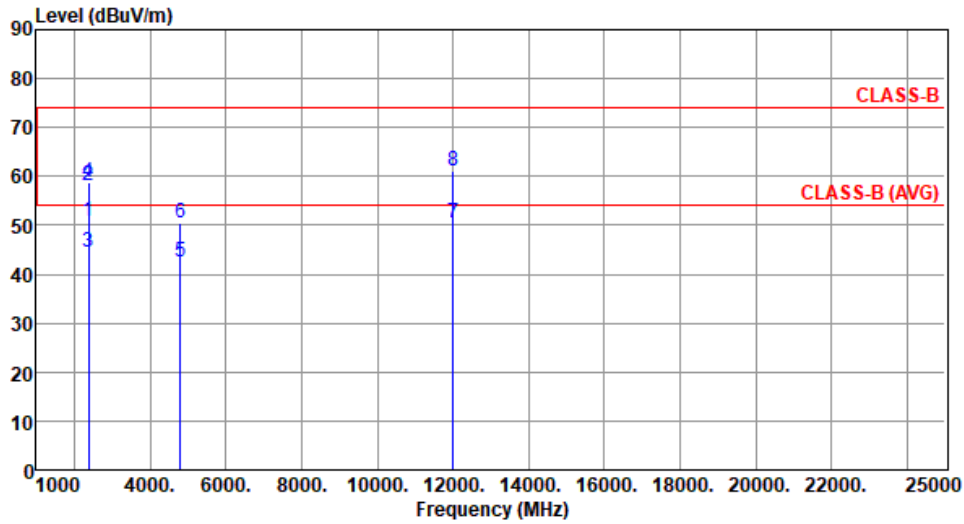
### 3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation	DSSS	Test Freq. (MHz)	2402						
Polarization	Horizontal								
Test By :BRAD WU      Temperature(°C):23      Humidity(%):64									
									
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2376.00	47.03	54.00	-6.97	49.72	-2.69	Average	100	141
2	2376.00	55.28	74.00	-18.72	57.97	-2.69	Peak	100	141
3	2390.00	41.63	54.00	-12.37	44.38	-2.75	Average	100	141
4	2390.00	55.77	74.00	-18.23	58.52	-2.75	Peak	100	141
5	4804.00	43.95	54.00	-10.05	40.43	3.52	Average	200	2
6	4804.00	50.96	74.00	-23.04	47.44	3.52	Peak	200	2
7	12010.00	52.76	54.00	-1.24	38.58	14.18	Average	162	335
8	12010.00	62.20	74.00	-11.80	48.02	14.18	Peak	162	335

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>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2376.00	50.67	54.00	-3.33	53.36	-2.69	Average	102	116
2	2376.00	58.23	74.00	-15.77	60.92	-2.69	Peak	102	116
3	2390.00	44.39	54.00	-9.61	47.14	-2.75	Average	102	116
4	2390.00	58.88	74.00	-15.12	61.63	-2.75	Peak	102	116
5	4804.00	42.51	54.00	-11.49	38.99	3.52	Average	103	304
6	4804.00	50.46	74.00	-23.54	46.94	3.52	Peak	103	304
7	12010.00	50.52	54.00	-3.48	36.34	14.18	Average	125	311
8	12010.00	60.95	74.00	-13.05	46.77	14.18	Peak	125	311

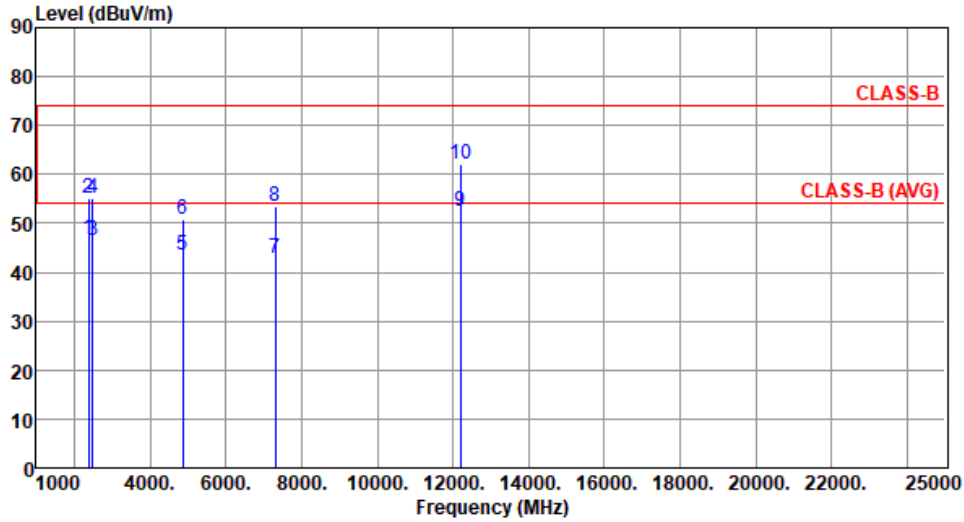
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2437.82
<b>Polarization</b>	Horizontal		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2386.00	46.95	54.00	-7.05	49.68	-2.73	Average	102	139
2	2386.00	55.24	74.00	-18.76	57.97	-2.73	Peak	102	139
3	2490.00	46.42	54.00	-7.58	49.38	-2.96	Average	102	139
4	2490.00	55.00	74.00	-19.00	57.96	-2.96	Peak	102	139
5	4875.64	43.40	54.00	-10.60	39.79	3.61	Average	206	358
6	4875.64	50.89	74.00	-23.11	47.28	3.61	Peak	206	358
7	7313.46	42.72	54.00	-11.28	33.59	9.13	Average	150	4
8	7313.46	53.51	74.00	-20.49	44.38	9.13	Peak	150	4
9	12189.10	52.61	54.00	-1.39	38.15	14.46	Average	148	334
10	12189.10	61.98	74.00	-12.02	47.52	14.46	Peak	148	334

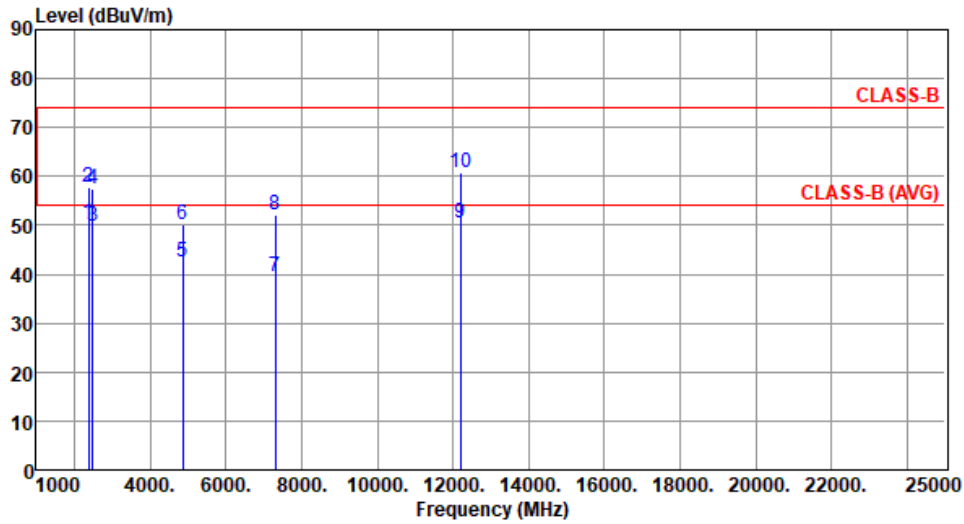
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2437.82
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2386.00	50.58	54.00	-3.42	53.31	-2.73	Average	102	118
2	2386.00	57.86	74.00	-16.14	60.59	-2.73	Peak	102	118
3	2490.00	49.88	54.00	-4.12	52.84	-2.96	Average	102	118
4	2490.00	57.40	74.00	-16.60	60.36	-2.96	Peak	102	118
5	4875.64	42.36	54.00	-11.64	38.75	3.61	Average	101	296
6	4875.64	50.10	74.00	-23.90	46.49	3.61	Peak	101	296
7	7313.46	39.64	54.00	-14.36	30.51	9.13	Average	100	91
8	7313.46	52.03	74.00	-21.97	42.90	9.13	Peak	100	91
9	12189.10	50.39	54.00	-3.61	35.93	14.46	Average	122	308
10	12189.10	60.87	74.00	-13.13	46.41	14.46	Peak	122	308

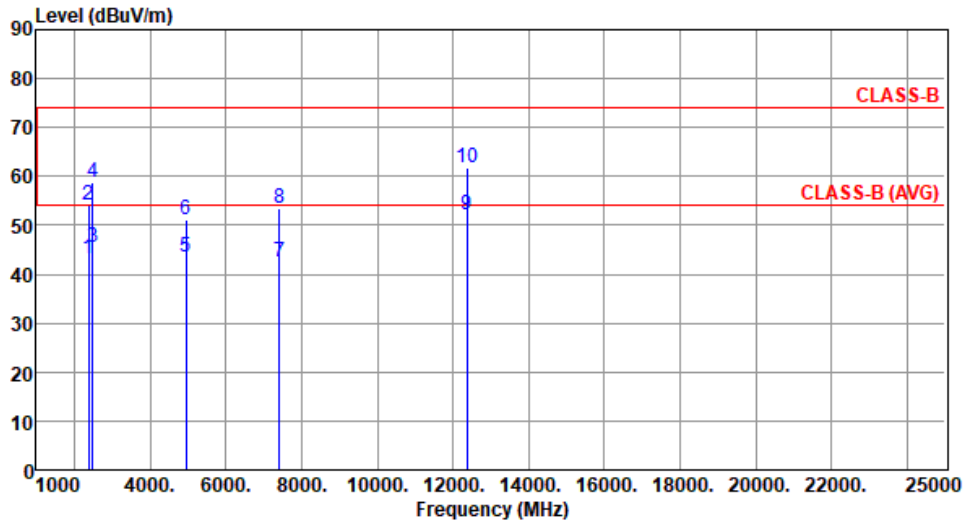
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2475.63
<b>Polarization</b>	Horizontal		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2372.00	43.19	54.00	-10.81	45.85	-2.66	Average	111	135
2	2372.00	54.08	74.00	-19.92	56.74	-2.66	Peak	111	135
3	2483.50	45.42	54.00	-8.58	48.39	-2.97	Average	111	135
4	2483.50	58.62	74.00	-15.38	61.59	-2.97	Peak	111	135
5	4951.26	43.61	54.00	-10.39	39.88	3.73	Average	215	4
6	4951.26	51.17	74.00	-22.83	47.44	3.73	Peak	215	4
7	7426.89	42.65	54.00	-11.35	33.63	9.02	Average	148	9
8	7426.89	53.41	74.00	-20.59	44.39	9.02	Peak	148	9
9	12378.15	51.98	54.00	-2.02	37.87	14.11	Average	164	331
10	12378.15	61.68	74.00	-12.32	47.57	14.11	Peak	164	331

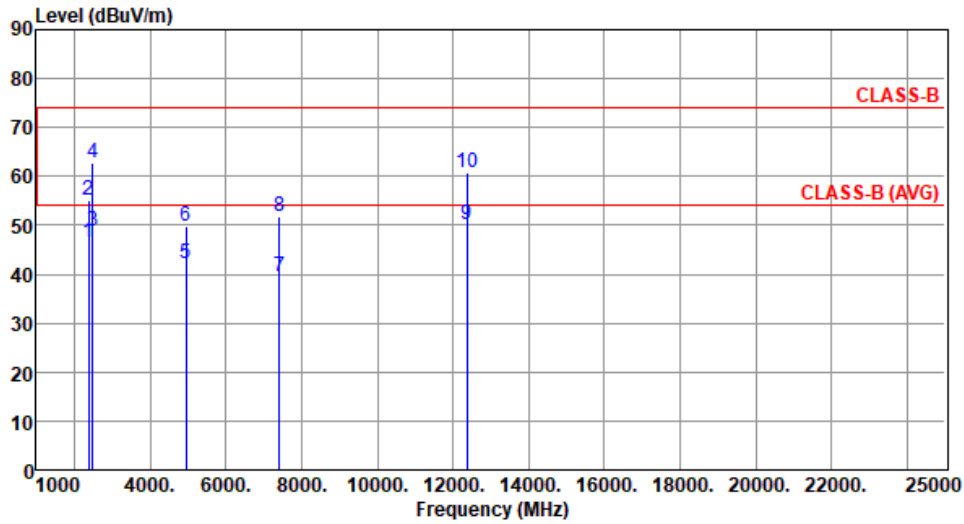
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2475.63
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%) :64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2372.00	46.48	54.00	-7.52	49.14	-2.66	Average	106	116
2	2372.00	55.10	74.00	-18.90	57.76	-2.66	Peak	106	116
3	2483.50	48.71	54.00	-5.29	51.68	-2.97	Average	106	116
4	2483.50	62.88	74.00	-11.12	65.85	-2.97	Peak	106	116
5	4951.26	42.14	54.00	-11.86	38.41	3.73	Average	106	305
6	4951.26	49.96	74.00	-24.04	46.23	3.73	Peak	106	305
7	7426.89	39.48	54.00	-14.52	30.46	9.02	Average	100	96
8	7426.89	51.95	74.00	-22.05	42.93	9.02	Peak	100	96
9	12378.15	50.14	54.00	-3.86	36.03	14.11	Average	125	314
10	12378.15	60.62	74.00	-13.38	46.51	14.11	Peak	125	314

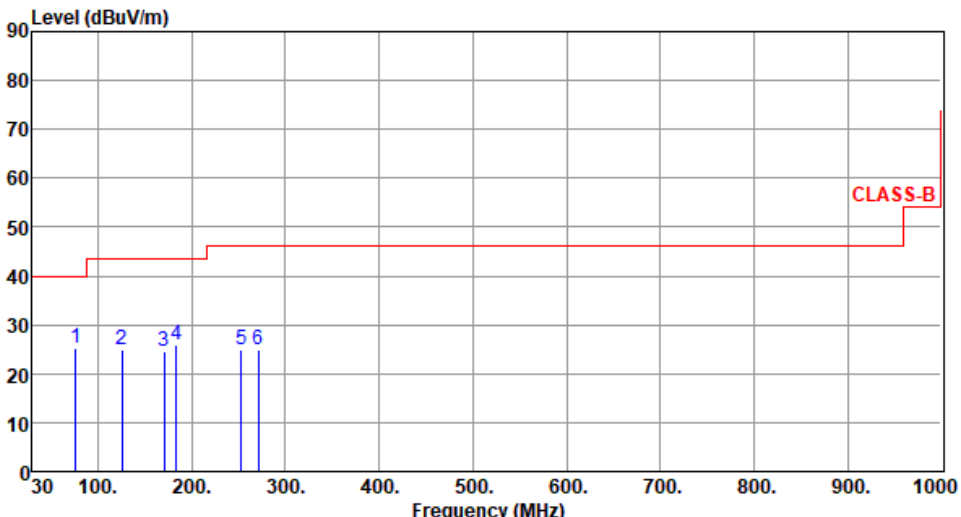
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

**Configuration 3: Taoglas antenna, Y-plane**

**3.5.8 Transmitter Radiated Unwanted Emissions (Below 1GHz)**

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402						
<b>Polarization</b>	Horizontal								
Test By :BRAD WU      Temperature(°C):22      Humidity(%):63									
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	76.56	25.23	40.00	-14.77	37.65	-12.42	Peak	---	---
2	126.03	24.79	43.50	-18.71	35.08	-10.29	Peak	---	---
3	170.65	24.62	43.50	-18.88	33.89	-9.27	Peak	---	---
4	183.26	25.96	43.50	-17.54	36.66	-10.70	Peak	---	---
5	253.10	24.74	46.00	-21.26	34.75	-10.01	Peak	---	---
6	271.53	24.91	46.00	-21.09	34.00	-9.09	Peak	---	---

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

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

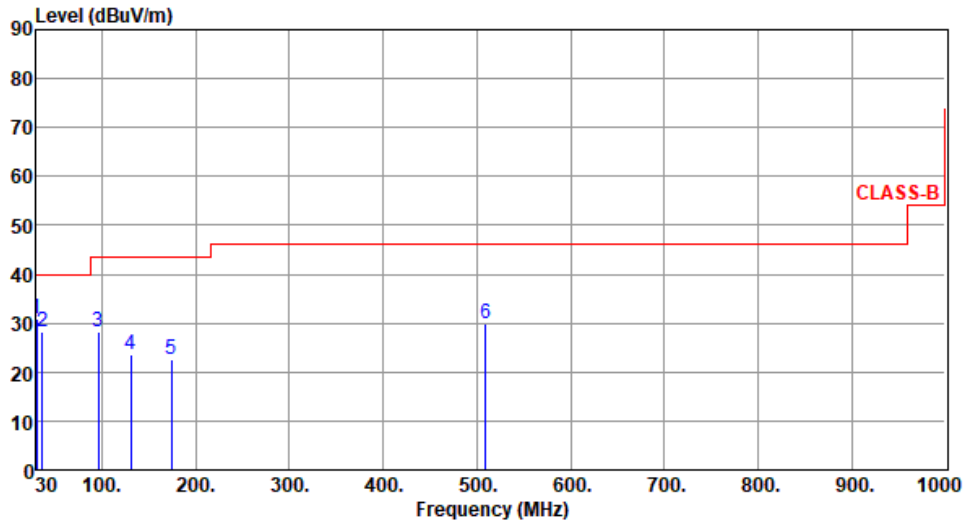
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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



<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):22      Humidity(%):63



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	30.02	30.76	40.00	-9.24	40.25	-9.49	Peak	---	---
2	36.79	28.31	40.00	-11.69	37.32	-9.01	Peak	---	---
3	95.96	28.25	43.50	-15.25	42.54	-14.29	Peak	---	---
4	130.88	23.52	43.50	-19.98	33.31	-9.79	Peak	---	---
5	174.53	22.74	43.50	-20.76	32.43	-9.69	Peak	---	---
6	509.18	30.00	46.00	-16.00	33.01	-3.01	Peak	---	---

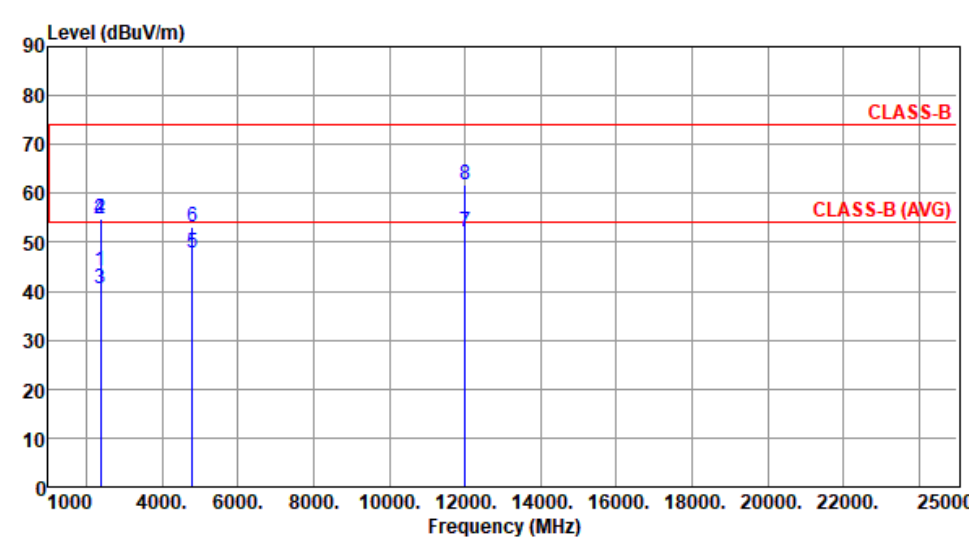
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*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.

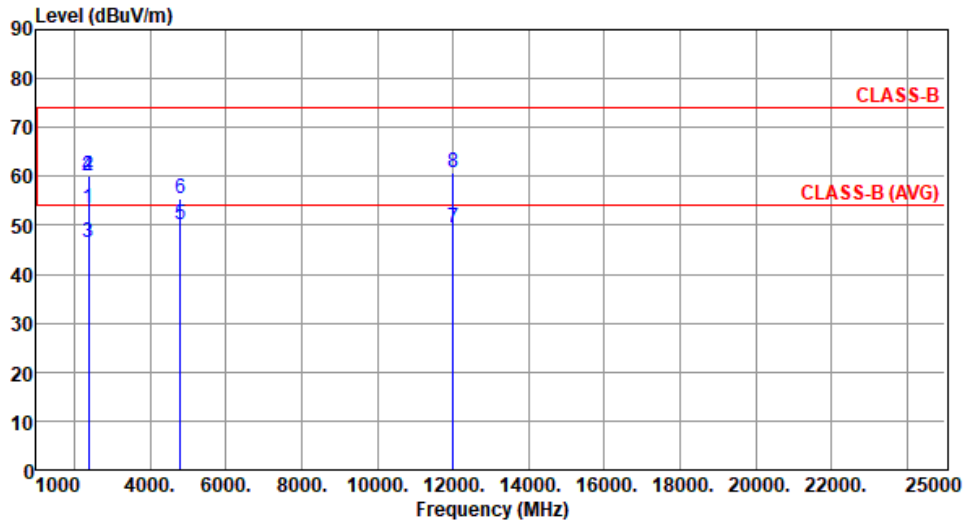
### 3.5.9 Transmitter Radiated Unwanted Emissions (Above 1GHz)

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402						
<b>Polarization</b>	Horizontal								
Test By : BRAD WU      Temperature(°C): 23      Humidity(%): 64									
 <p>The graph plots Level (dBUV/m) on the y-axis (0 to 90) against Frequency (MHz) on the x-axis (1000 to 25000). Two horizontal red lines represent limits: CLASS-B at approximately 74 dBUV/m and CLASS-B (AVG) at approximately 54 dBUV/m. Eight data points are shown as vertical blue lines with labels 1 through 8. Points 1, 2, 3, 4, 5, and 6 are clustered between 2300 and 4800 MHz. Points 7 and 8 are at 12010 MHz.</p>									
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBUV/m	dBUV/m	dB	dBuV	dB		cm	deg
1	2376.00	44.22	54.00	-9.78	46.91	-2.69	Average	100	143
2	2376.00	54.86	74.00	-19.14	57.55	-2.69	Peak	100	143
3	2390.00	40.51	54.00	-13.49	43.26	-2.75	Average	100	143
4	2390.00	54.74	74.00	-19.26	57.49	-2.75	Peak	100	143
5	4804.00	47.70	54.00	-6.30	44.18	3.52	Average	252	2
6	4804.00	53.17	74.00	-20.83	49.65	3.52	Peak	252	2
7	12010.00	52.20	54.00	-1.80	38.02	14.18	Average	160	333
8	12010.00	61.83	74.00	-12.17	47.65	14.18	Peak	160	333

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>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2376.00	53.43	54.00	-0.57	56.12	-2.69	Average	158	271
2	2376.00	60.16	74.00	-13.84	62.85	-2.69	Peak	158	271
3	2390.00	46.54	54.00	-7.46	49.29	-2.75	Average	158	271
4	2390.00	60.26	74.00	-13.74	63.01	-2.75	Peak	158	271
5	4804.00	50.13	54.00	-3.87	46.61	3.52	Average	192	5
6	4804.00	55.52	74.00	-18.48	52.00	3.52	Peak	192	5
7	12010.00	49.64	54.00	-4.36	35.46	14.18	Average	100	311
8	12010.00	60.70	74.00	-13.30	46.52	14.18	Peak	100	311

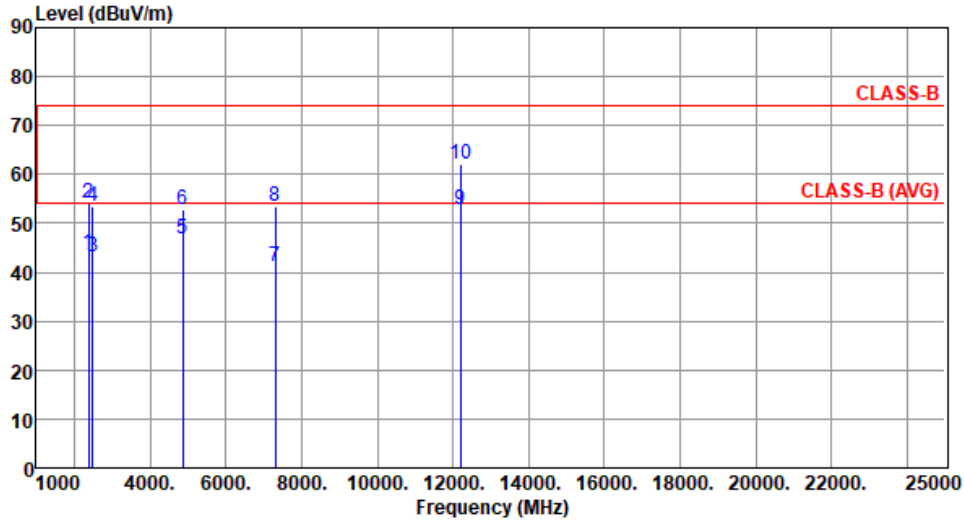
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2437.82
<b>Polarization</b>	Horizontal		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2386.00	43.86	54.00	-10.14	46.59	-2.73	Average	126	144
2	2386.00	54.22	74.00	-19.78	56.95	-2.73	Peak	126	144
3	2490.00	43.05	54.00	-10.95	46.01	-2.96	Average	126	144
4	2490.00	53.56	74.00	-20.44	56.52	-2.96	Peak	126	144
5	4875.64	46.71	54.00	-7.29	43.10	3.61	Average	239	1
6	4875.64	52.67	74.00	-21.33	49.06	3.61	Peak	239	1
7	7313.46	41.07	54.00	-12.93	31.94	9.13	Average	100	3
8	7313.46	53.33	74.00	-20.67	44.20	9.13	Peak	100	3
9	12189.10	52.75	54.00	-1.25	38.29	14.46	Average	165	328
10	12189.10	62.21	74.00	-11.79	47.75	14.46	Peak	165	328

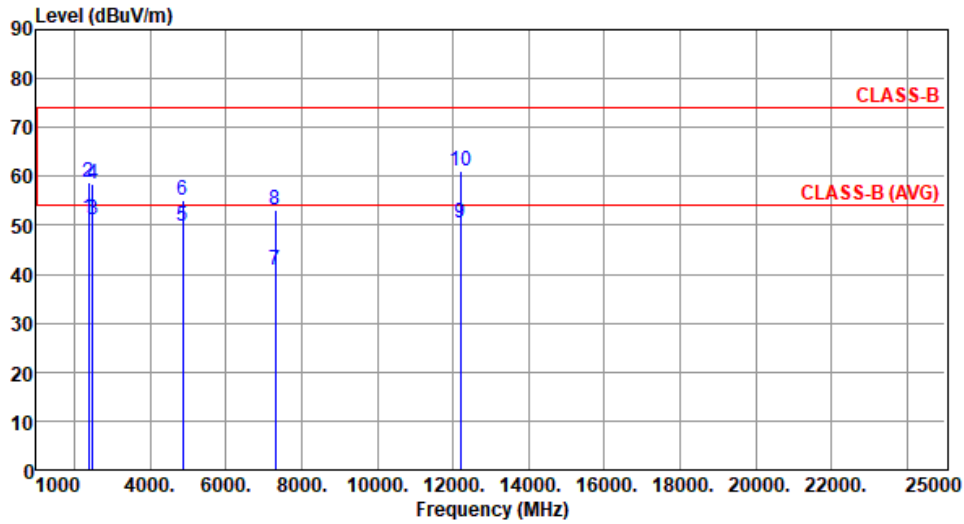
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2437.82
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2386.00	51.61	54.00	-2.39	54.34	-2.73	Average	166	269
2	2386.00	58.91	74.00	-15.09	61.64	-2.73	Peak	166	269
3	2490.00	51.20	54.00	-2.80	54.16	-2.96	Average	166	269
4	2490.00	58.53	74.00	-15.47	61.49	-2.96	Peak	166	269
5	4875.64	49.72	54.00	-4.28	46.11	3.61	Average	201	2
6	4875.64	55.03	74.00	-18.97	51.42	3.61	Peak	201	2
7	7313.46	40.92	54.00	-13.08	31.79	9.13	Average	279	104
8	7313.46	53.05	74.00	-20.95	43.92	9.13	Peak	279	104
9	12189.10	50.62	54.00	-3.38	36.16	14.46	Average	113	310
10	12189.10	61.08	74.00	-12.92	46.62	14.46	Peak	113	310

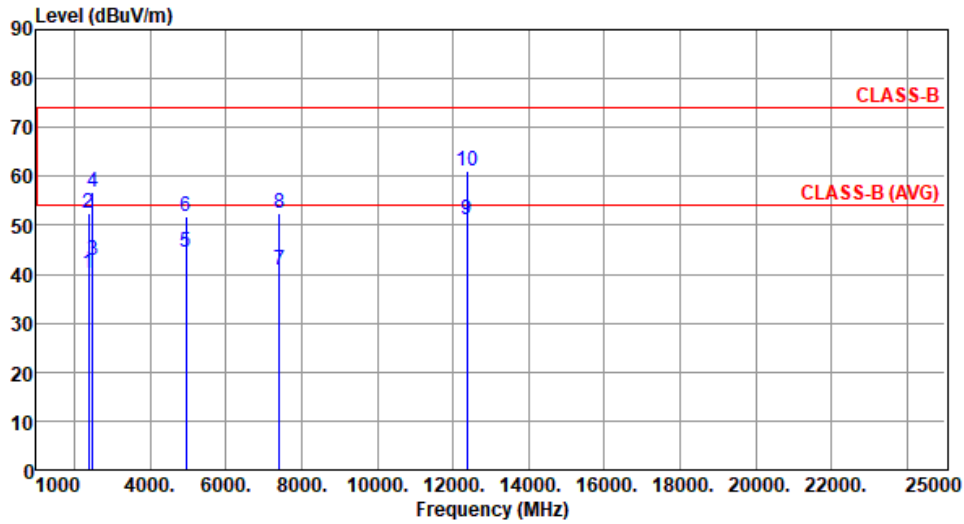
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2475.63
<b>Polarization</b>	Horizontal		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2372.00	40.32	54.00	-13.68	42.98	-2.66	Average	125	146
2	2372.00	52.39	74.00	-21.61	55.05	-2.66	Peak	125	146
3	2483.50	42.94	54.00	-11.06	45.91	-2.97	Average	125	146
4	2483.50	56.92	74.00	-17.08	59.89	-2.97	Peak	125	146
5	4951.26	44.62	54.00	-9.38	40.89	3.73	Average	222	4
6	4951.26	51.85	74.00	-22.15	48.12	3.73	Peak	222	4
7	7426.89	40.84	54.00	-13.16	31.82	9.02	Average	100	4
8	7426.89	52.47	74.00	-21.53	43.45	9.02	Peak	100	4
9	12378.15	51.24	54.00	-2.76	37.13	14.11	Average	163	328
10	12378.15	61.00	74.00	-13.00	46.89	14.11	Peak	163	328

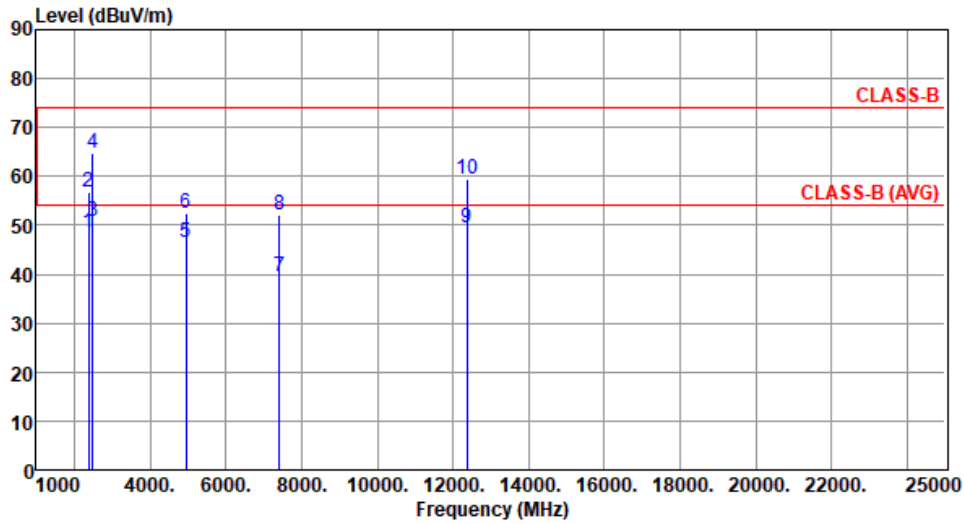
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2475.63
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2372.00	48.38	54.00	-5.62	51.04	-2.66	Average	156	268
2	2372.00	56.63	74.00	-17.37	59.29	-2.66	Peak	156	268
3	2483.50	50.71	54.00	-3.29	53.68	-2.97	Average	156	268
4	2483.50	64.61	74.00	-9.39	67.58	-2.97	Peak	156	268
5	4951.26	46.38	54.00	-7.62	42.65	3.73	Average	207	5
6	4951.26	52.33	74.00	-21.67	48.60	3.73	Peak	207	5
7	7426.89	39.68	54.00	-14.32	30.66	9.02	Average	268	110
8	7426.89	52.16	74.00	-21.84	43.14	9.02	Peak	268	110
9	12378.15	49.54	54.00	-4.46	35.43	14.11	Average	111	318
10	12378.15	59.43	74.00	-14.57	45.32	14.11	Peak	111	318

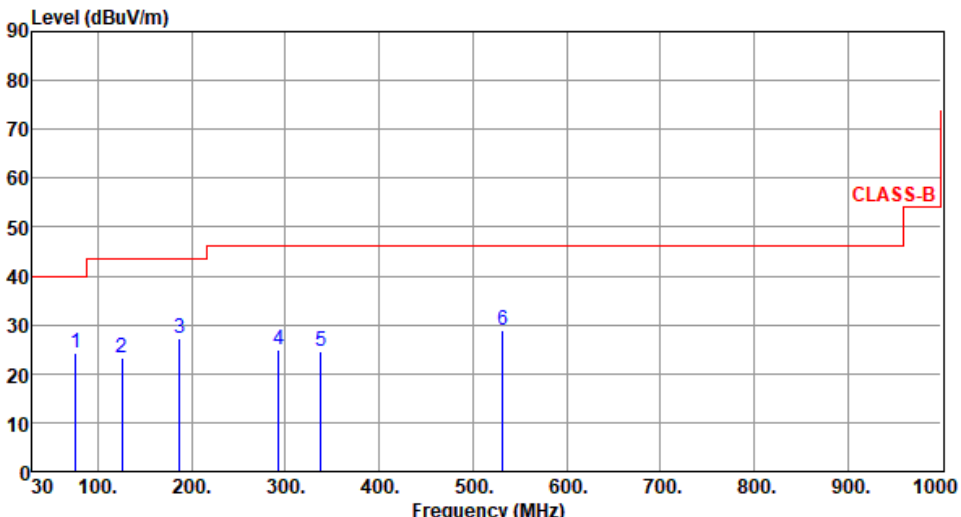
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

**Configuration 4: ethertronics antenna, X-plane**

**3.5.10 Transmitter Radiated Unwanted Emissions (Below 1GHz)**

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402						
<b>Polarization</b>	Horizontal								
Test By :BRAD WU      Temperature(°C):22      Humidity(%):63									
 <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 step function represents the CLASS-B limit, starting at 40 dBuV/m, stepping up to 45 dBuV/m at 100 MHz, and to 55 dBuV/m at 950 MHz. Six blue vertical lines indicate emission peaks at 76.56, 126.03, 187.14, 292.87, 337.49, and 531.49 MHz, labeled 1 through 6 respectively.</p>									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	76.56	24.11	40.00	-15.89	36.53	-12.42	Peak	---	---
2	126.03	23.37	43.50	-20.13	33.66	-10.29	Peak	---	---
3	187.14	27.13	43.50	-16.37	38.29	-11.16	Peak	---	---
4	292.87	25.02	46.00	-20.98	33.37	-8.35	Peak	---	---
5	337.49	24.56	46.00	-21.44	31.57	-7.01	Peak	---	---
6	531.49	28.82	46.00	-17.18	31.55	-2.73	Peak	---	---

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

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

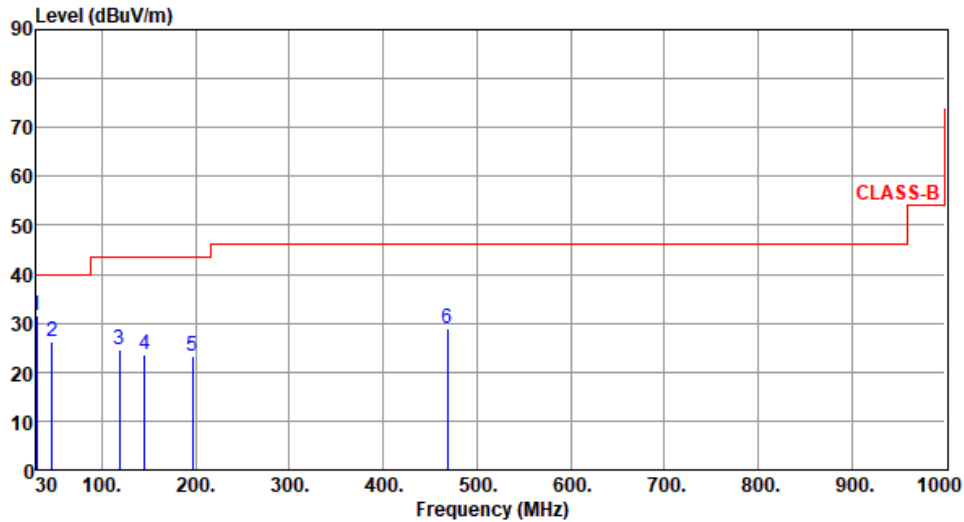
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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



<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):22      Humidity(%):63



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	30.01	31.43	40.00	-8.57	40.91	-9.48	Peak	---	---
2	46.49	26.33	40.00	-13.67	34.66	-8.33	Peak	---	---
3	118.27	24.71	43.50	-18.79	35.61	-10.90	Peak	---	---
4	145.43	23.61	43.50	-19.89	32.65	-9.04	Peak	---	---
5	196.84	23.33	43.50	-20.17	35.20	-11.87	Peak	---	---
6	468.44	28.95	46.00	-17.05	32.84	-3.89	Peak	---	---

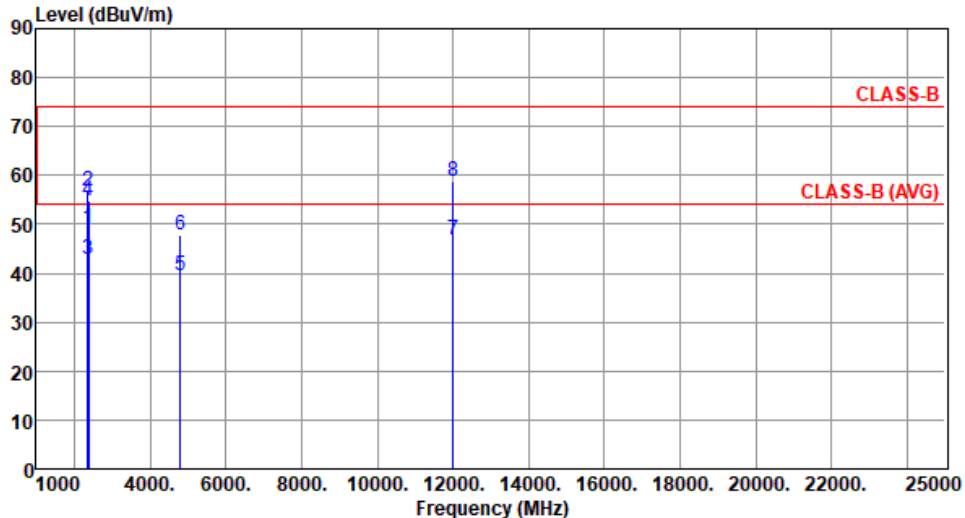
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*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.

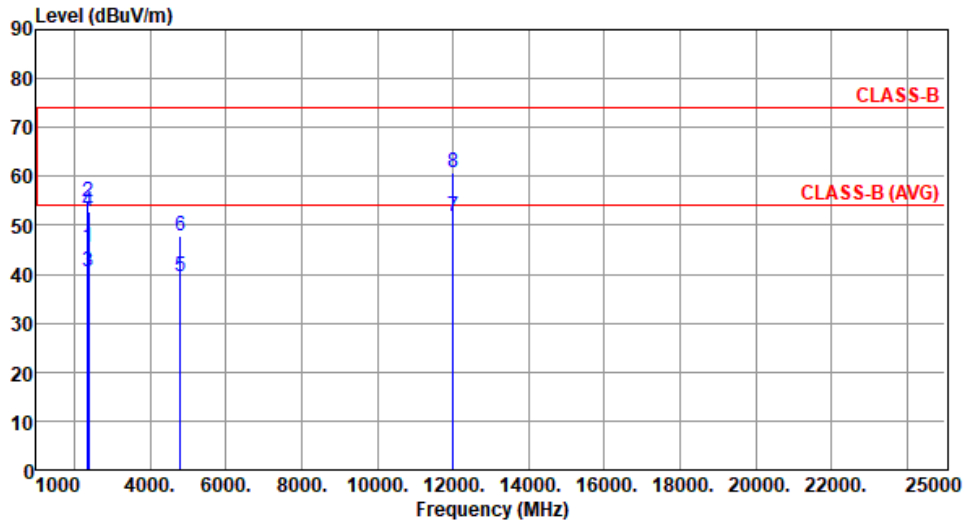
### 3.5.11 Transmitter Radiated Unwanted Emissions (Above 1GHz)

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402						
<b>Polarization</b>	Horizontal								
Test By :BRAD WU      Temperature(°C):23      Humidity(%):64									
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2349.00	49.28	54.00	-4.72	51.85	-2.57	Average	148	157
2	2349.00	56.68	74.00	-17.32	59.25	-2.57	Peak	148	157
3	2390.00	42.69	54.00	-11.31	45.44	-2.75	Average	148	157
4	2390.00	54.88	74.00	-19.12	57.63	-2.75	Peak	148	157
5	4804.00	39.52	54.00	-14.48	36.00	3.52	Average	228	21
6	4804.00	47.85	74.00	-26.15	44.33	3.52	Peak	228	21
7	12010.00	46.73	54.00	-7.27	32.55	14.18	Average	181	58
8	12010.00	58.77	74.00	-15.23	44.59	14.18	Peak	181	58

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>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2349.00	45.59	54.00	-8.41	48.16	-2.57	Average	101	136
2	2349.00	54.85	74.00	-19.15	57.42	-2.57	Peak	101	136
3	2390.00	40.58	54.00	-13.42	43.33	-2.75	Average	101	136
4	2390.00	52.79	74.00	-21.21	55.54	-2.75	Peak	101	136
5	4804.00	39.53	54.00	-14.47	36.01	3.52	Average	309	121
6	4804.00	47.76	74.00	-26.24	44.24	3.52	Peak	309	121
7	12010.00	51.66	54.00	-2.34	37.48	14.18	Average	310	68
8	12010.00	60.79	74.00	-13.21	46.61	14.18	Peak	310	68

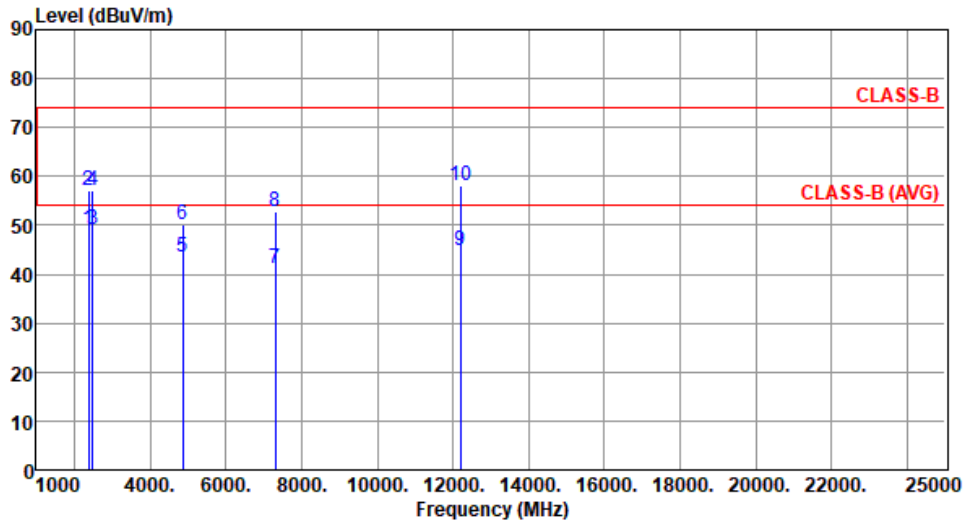
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2437.82
<b>Polarization</b>	Horizontal		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2386.00	49.28	54.00	-4.72	52.01	-2.73	Average	148	160
2	2386.00	57.20	74.00	-16.80	59.93	-2.73	Peak	148	160
3	2490.00	49.05	54.00	-4.95	52.01	-2.96	Average	144	155
4	2490.00	57.10	74.00	-16.90	60.06	-2.96	Peak	144	155
5	4875.64	43.46	54.00	-10.54	39.85	3.61	Average	225	25
6	4875.64	50.27	74.00	-23.73	46.66	3.61	Peak	225	25
7	7313.46	41.09	54.00	-12.91	31.96	9.13	Average	200	30
8	7313.46	52.93	74.00	-21.07	43.80	9.13	Peak	200	30
9	12189.10	44.87	54.00	-9.13	30.41	14.46	Average	100	15
10	12189.10	58.14	74.00	-15.86	43.68	14.46	Peak	100	15

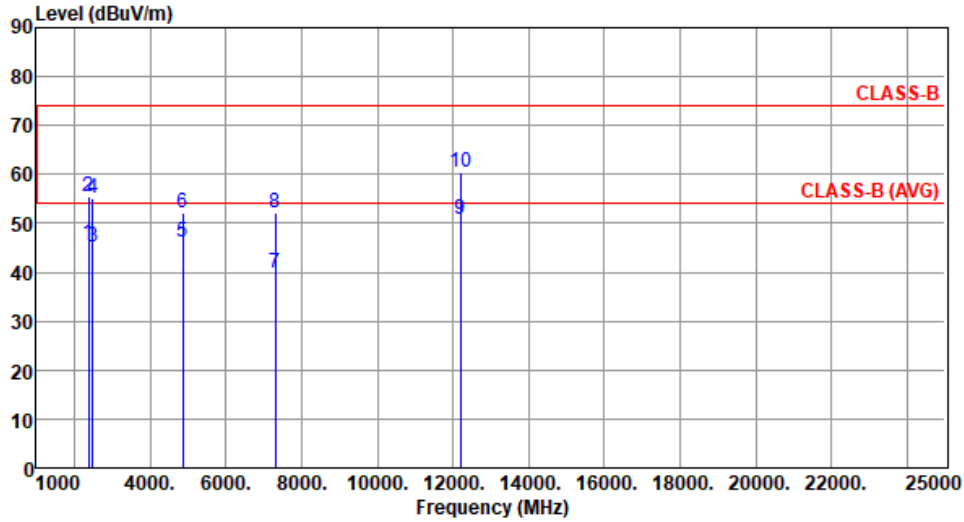
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2437.82
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2386.00	45.68	54.00	-8.32	48.41	-2.73	Average	106	141
2	2386.00	55.39	74.00	-18.61	58.12	-2.73	Peak	106	141
3	2490.00	45.26	54.00	-8.74	48.22	-2.96	Average	106	141
4	2490.00	54.98	74.00	-19.02	57.94	-2.96	Peak	106	141
5	4875.64	46.23	54.00	-7.77	42.62	3.61	Average	299	125
6	4875.64	52.02	74.00	-21.98	48.41	3.61	Peak	299	125
7	7313.46	39.92	54.00	-14.08	30.79	9.13	Average	100	9
8	7313.46	52.24	74.00	-21.76	43.11	9.13	Peak	100	9
9	12189.10	50.68	54.00	-3.32	36.22	14.46	Average	310	64
10	12189.10	60.41	74.00	-13.59	45.95	14.46	Peak	310	64

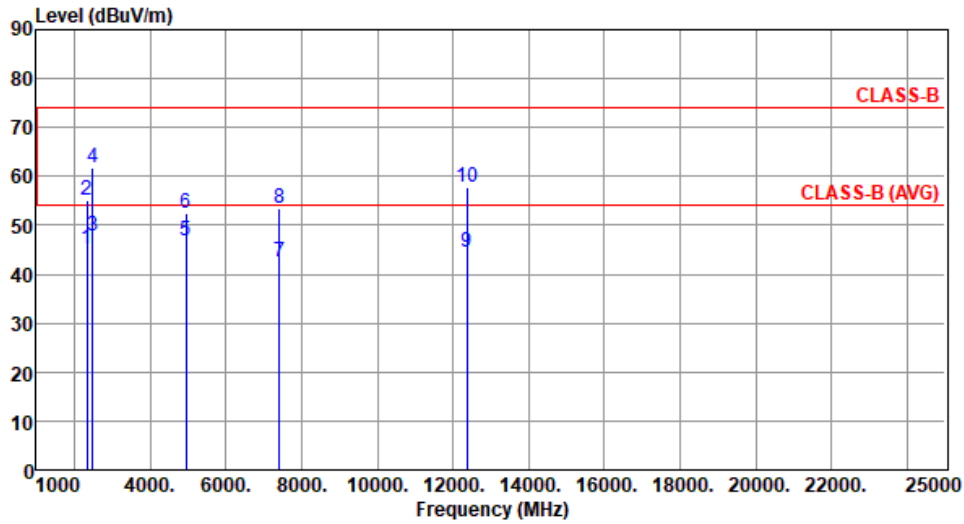
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2475.63
<b>Polarization</b>	Horizontal		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2346.00	45.25	54.00	-8.75	47.81	-2.56	Average	166	161
2	2346.00	55.24	74.00	-18.76	57.80	-2.56	Peak	166	161
3	2483.50	47.97	54.00	-6.03	50.94	-2.97	Average	166	161
4	2483.50	61.71	74.00	-12.29	64.68	-2.97	Peak	166	161
5	4951.26	46.66	54.00	-7.34	42.93	3.73	Average	235	39
6	4951.26	52.31	74.00	-21.69	48.58	3.73	Peak	235	39
7	7426.89	42.48	54.00	-11.52	33.46	9.02	Average	202	33
8	7426.89	53.44	74.00	-20.56	44.42	9.02	Peak	202	33
9	12378.15	44.47	54.00	-9.53	30.36	14.11	Average	100	22
10	12378.15	57.66	74.00	-16.34	43.55	14.11	Peak	100	22

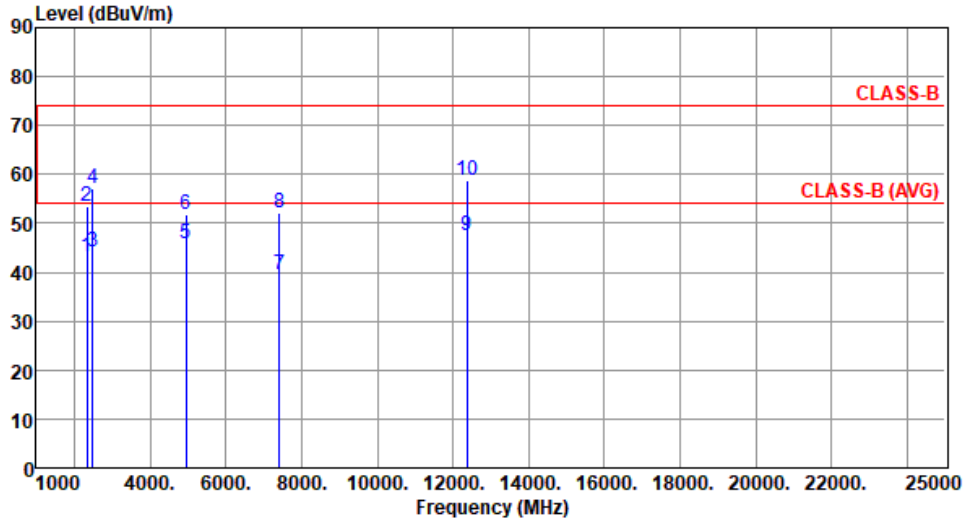
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2475.63
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2346.00	43.10	54.00	-10.90	45.66	-2.56	Average	100	142
2	2346.00	53.60	74.00	-20.40	56.16	-2.56	Peak	100	142
3	2483.50	44.02	54.00	-9.98	46.99	-2.97	Average	100	142
4	2483.50	57.17	74.00	-16.83	60.14	-2.97	Peak	100	142
5	4951.26	45.91	54.00	-8.09	42.18	3.73	Average	304	116
6	4951.26	51.66	74.00	-22.34	47.93	3.73	Peak	304	116
7	7426.89	39.44	54.00	-14.56	30.42	9.02	Average	100	25
8	7426.89	52.20	74.00	-21.80	43.18	9.02	Peak	100	25
9	12378.15	47.58	54.00	-6.42	33.47	14.11	Average	322	61
10	12378.15	58.86	74.00	-15.14	44.75	14.11	Peak	322	61

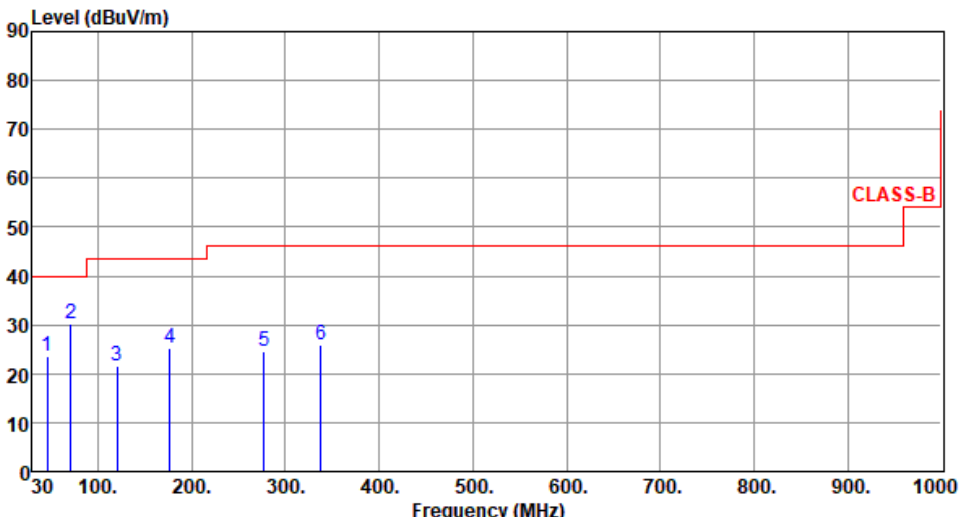
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

**Configuration 5: Jersoncom antenna, Y-plane**

**3.5.12 Transmitter Radiated Unwanted Emissions (Below 1GHz)**

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402						
<b>Polarization</b>	Horizontal								
Test By :BRAD WU      Temperature(°C):22      Humidity(%):63									
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	45.52	23.52	40.00	-16.48	31.81	-8.29	Peak	---	---
2	70.74	30.25	40.00	-9.75	41.27	-11.02	Peak	---	---
3	120.21	21.65	43.50	-21.85	32.29	-10.64	Peak	---	---
4	176.47	25.28	43.50	-18.22	35.21	-9.93	Peak	---	---
5	277.35	24.44	46.00	-21.56	33.21	-8.77	Peak	---	---
6	337.49	25.76	46.00	-20.24	32.77	-7.01	Peak	---	---

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

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

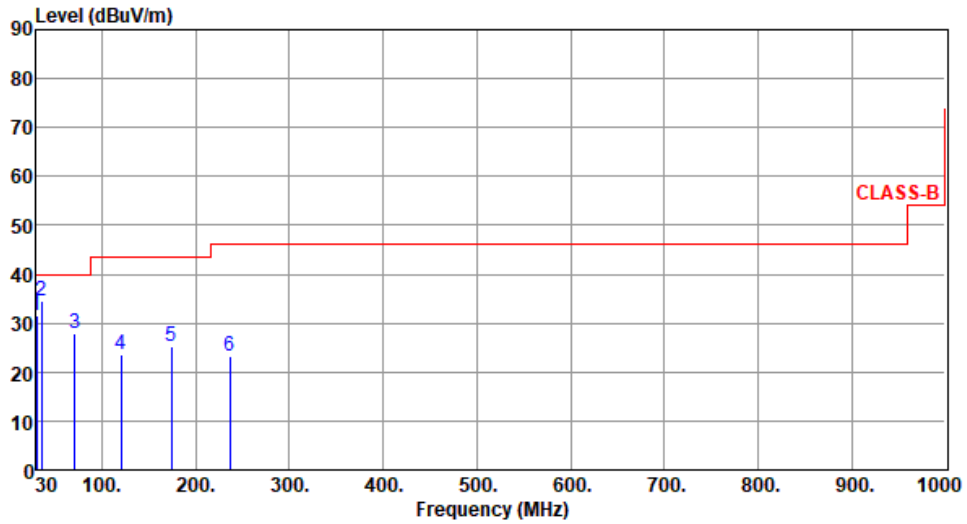
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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



<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):22      Humidity(%):63



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	30.02	31.39	40.00	-8.61	40.88	-9.49	Peak	---	---
2	35.82	34.54	40.00	-5.46	43.76	-9.22	Peak	---	---
3	70.74	27.77	40.00	-12.23	38.79	-11.02	Peak	---	---
4	120.21	23.72	43.50	-19.78	34.36	-10.64	Peak	---	---
5	174.53	25.22	43.50	-18.28	34.91	-9.69	Peak	---	---
6	236.61	23.12	46.00	-22.88	33.96	-10.84	Peak	---	---

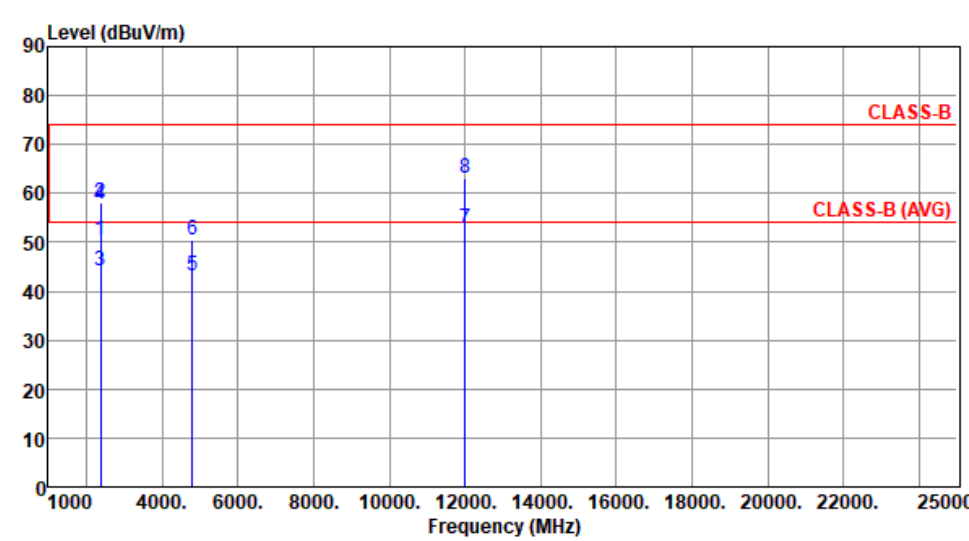
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor\* (dB)

\*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.

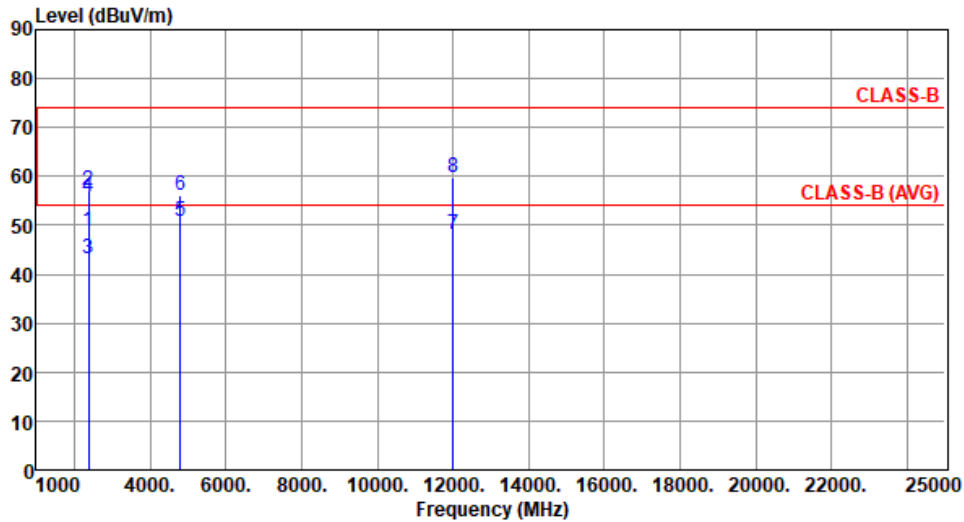
### 3.5.13 Transmitter Radiated Unwanted Emissions (Above 1GHz)

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2402						
<b>Polarization</b>	Horizontal								
Test By :BRAD WU      Temperature(°C):23      Humidity(%):64									
									
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2376.00	50.62	54.00	-3.38	53.31	-2.69	Average	100	124
2	2376.00	58.11	74.00	-15.89	60.80	-2.69	Peak	100	124
3	2390.00	44.23	54.00	-9.77	46.98	-2.75	Average	100	124
4	2390.00	57.79	74.00	-16.21	60.54	-2.75	Peak	100	124
5	4804.00	43.07	54.00	-10.93	39.55	3.52	Average	106	231
6	4804.00	50.47	74.00	-23.53	46.95	3.52	Peak	106	231
7	12010.00	52.92	54.00	-1.08	38.74	14.18	Average	166	344
8	12010.00	62.99	74.00	-11.01	48.81	14.18	Peak	166	344

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>	DSSS	<b>Test Freq. (MHz)</b>	2402
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2376.00	48.97	54.00	-5.03	51.66	-2.69	Average	100	30
2	2376.00	57.01	74.00	-16.99	59.70	-2.69	Peak	100	30
3	2390.00	43.11	54.00	-10.89	45.86	-2.75	Average	100	30
4	2390.00	55.84	74.00	-18.16	58.59	-2.75	Peak	100	30
5	4804.00	50.73	54.00	-3.27	47.21	3.52	Average	296	150
6	4804.00	55.99	74.00	-18.01	52.47	3.52	Peak	296	150
7	12010.00	48.00	54.00	-6.00	33.82	14.18	Average	128	311
8	12010.00	59.78	74.00	-14.22	45.60	14.18	Peak	128	311

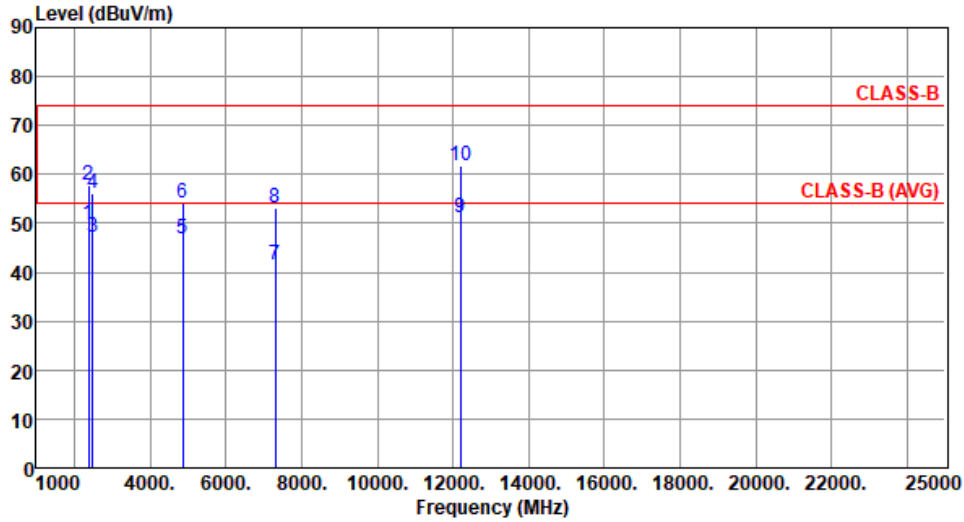
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2437.82
<b>Polarization</b>	Horizontal		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2386.00	49.71	54.00	-4.29	52.44	-2.73	Average	100	118
2	2386.00	57.63	74.00	-16.37	60.36	-2.73	Peak	100	118
3	2490.00	47.08	54.00	-6.92	50.04	-2.96	Average	100	118
4	2490.00	56.12	74.00	-17.88	59.08	-2.96	Peak	100	118
5	4875.64	46.89	54.00	-7.11	43.28	3.61	Average	112	251
6	4875.64	53.99	74.00	-20.01	50.38	3.61	Peak	112	251
7	7313.46	41.57	54.00	-12.43	32.44	9.13	Average	100	351
8	7313.46	53.29	74.00	-20.71	44.16	9.13	Peak	100	351
9	12189.10	51.22	54.00	-2.78	36.76	14.46	Average	157	341
10	12189.10	61.73	74.00	-12.27	47.27	14.46	Peak	157	341

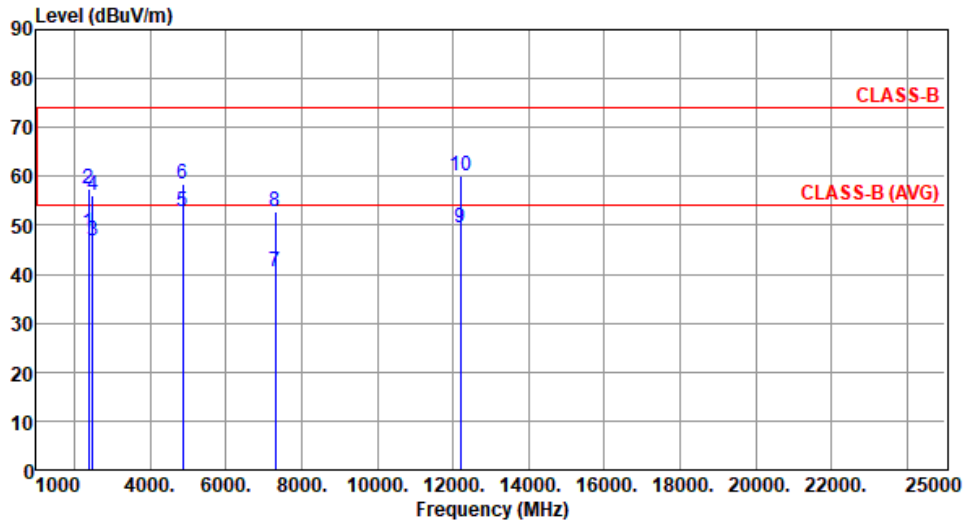
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2437.82
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%) :64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2386.00	48.41	54.00	-5.59	51.14	-2.73	Average	100	33
2	2386.00	57.29	74.00	-16.71	60.02	-2.73	Peak	100	33
3	2490.00	46.82	54.00	-7.18	49.78	-2.96	Average	100	33
4	2490.00	56.09	74.00	-17.91	59.05	-2.96	Peak	100	33
5	4875.64	52.91	54.00	-1.09	49.30	3.61	Average	262	153
6	4875.64	58.43	74.00	-15.57	54.82	3.61	Peak	262	153
7	7313.46	40.35	54.00	-13.65	31.22	9.13	Average	100	111
8	7313.46	52.74	74.00	-21.26	43.61	9.13	Peak	100	111
9	12189.10	49.50	54.00	-4.50	35.04	14.46	Average	114	309
10	12189.10	60.09	74.00	-13.91	45.63	14.46	Peak	114	309

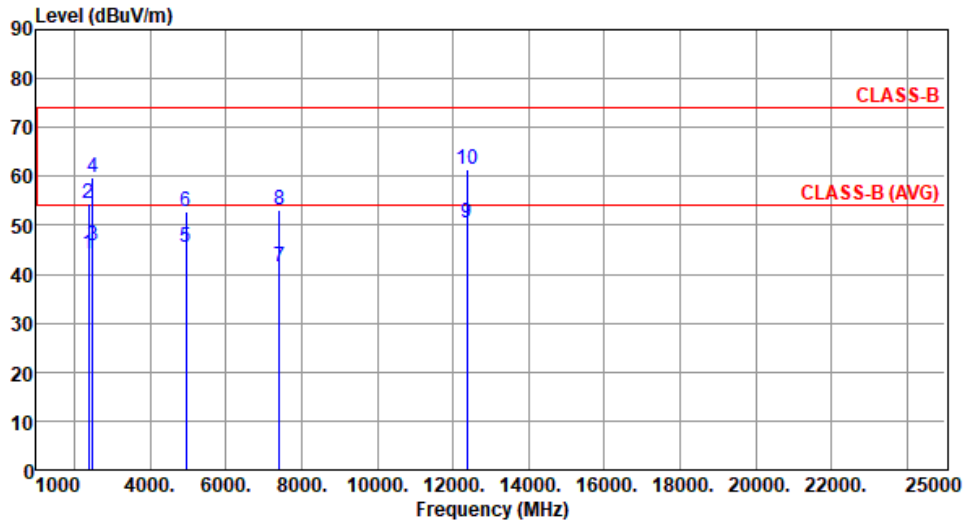
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2475.63
<b>Polarization</b>	Horizontal		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2372.00	44.23	54.00	-9.77	46.89	-2.66	Average	100	120
2	2372.00	54.38	74.00	-19.62	57.04	-2.66	Peak	100	120
3	2483.50	45.89	54.00	-8.11	48.86	-2.97	Average	100	120
4	2483.50	59.67	74.00	-14.33	62.64	-2.97	Peak	100	120
5	4951.26	45.62	54.00	-8.38	41.89	3.73	Average	135	258
6	4951.26	52.81	74.00	-21.19	49.08	3.73	Peak	135	258
7	7426.89	41.35	54.00	-12.65	32.33	9.02	Average	100	352
8	7426.89	53.16	74.00	-20.84	44.14	9.02	Peak	100	352
9	12378.15	50.34	54.00	-3.66	36.23	14.11	Average	221	331
10	12378.15	61.36	74.00	-12.64	47.25	14.11	Peak	221	331

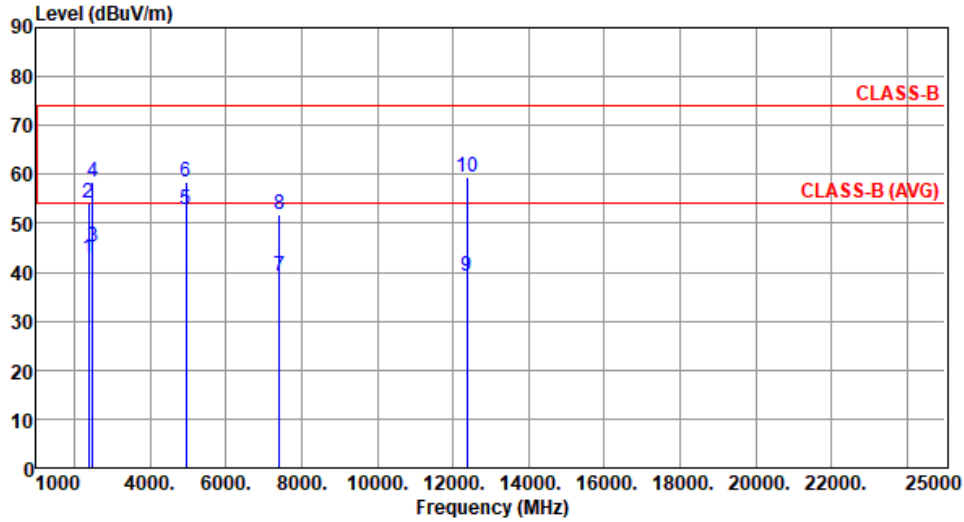
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

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

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

<b>Modulation</b>	DSSS	<b>Test Freq. (MHz)</b>	2475.63
<b>Polarization</b>	Vertical		

Test By :BRAD WU      Temperature(°C):23      Humidity(%):64



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2372.00	43.00	54.00	-11.00	45.66	-2.66	Average	102	32
2	2372.00	54.21	74.00	-19.79	56.87	-2.66	Peak	102	32
3	2483.50	45.25	54.00	-8.75	48.22	-2.97	Average	102	32
4	2483.50	58.34	74.00	-15.66	61.31	-2.97	Peak	102	32
5	4951.26	52.64	54.00	-1.36	48.91	3.73	Average	253	156
6	4951.26	58.37	74.00	-15.63	54.64	3.73	Peak	253	156
7	7426.89	39.18	54.00	-14.82	30.16	9.02	Average	100	106
8	7426.89	51.96	74.00	-22.04	42.94	9.02	Peak	100	106
9	12378.15	39.18	54.00	-14.82	25.07	14.11	Average	147	329
10	12378.15	59.45	74.00	-14.55	45.34	14.11	Peak	147	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).

## 3.6 Emissions in Non-Restricted Frequency Bands

### 3.6.1 Emissions in Non-Restricted Frequency Bands Limit

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

### 3.6.2 Test Procedures

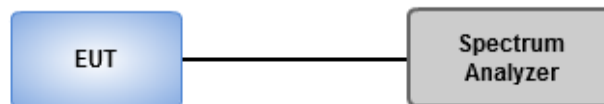
#### Reference level measurement

1. Set RBW=100 kHz, VBW = 300 kHz , 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=100 kHz, VBW = 300 kHz , 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.

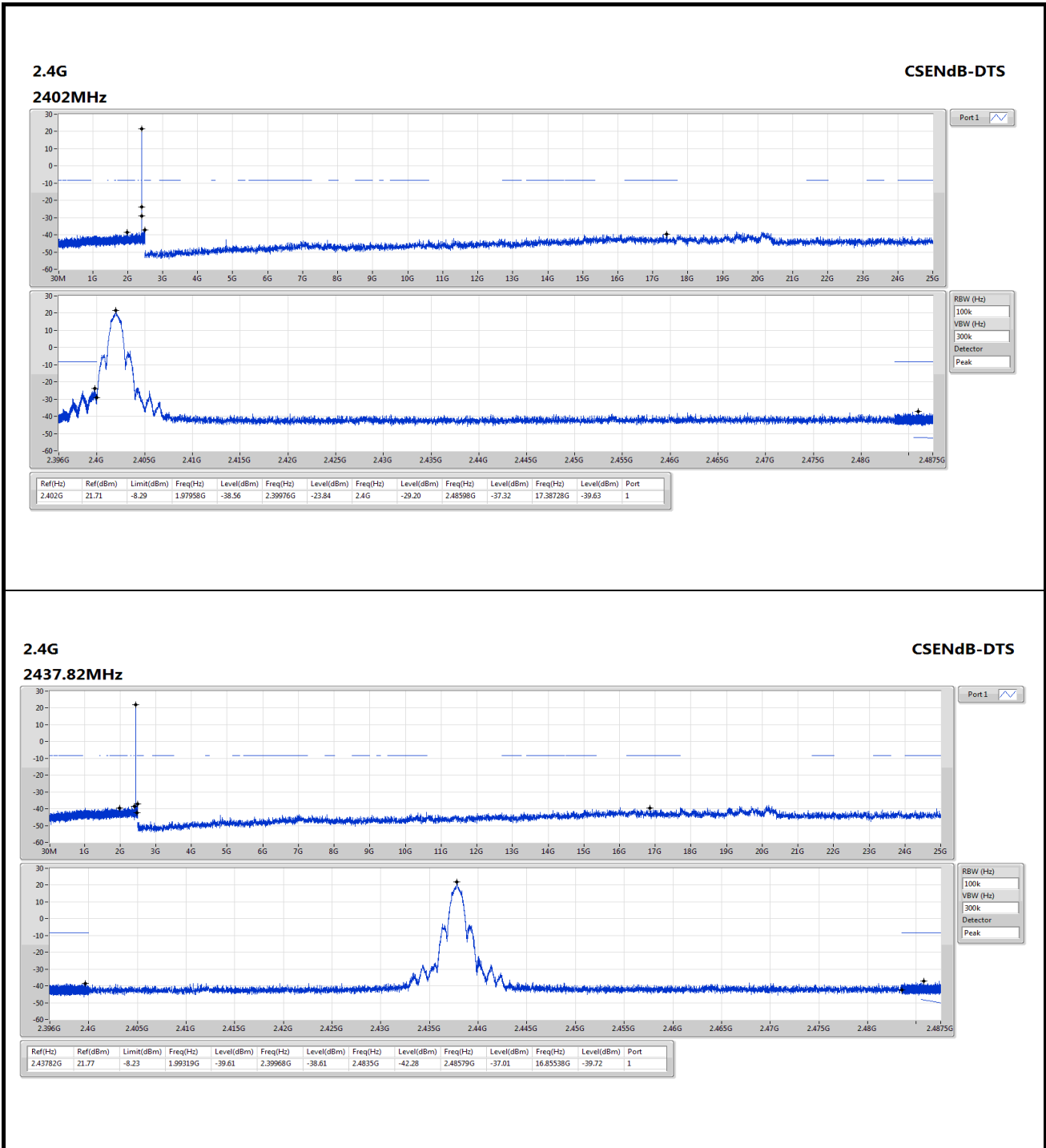
### 3.6.3 Test Setup

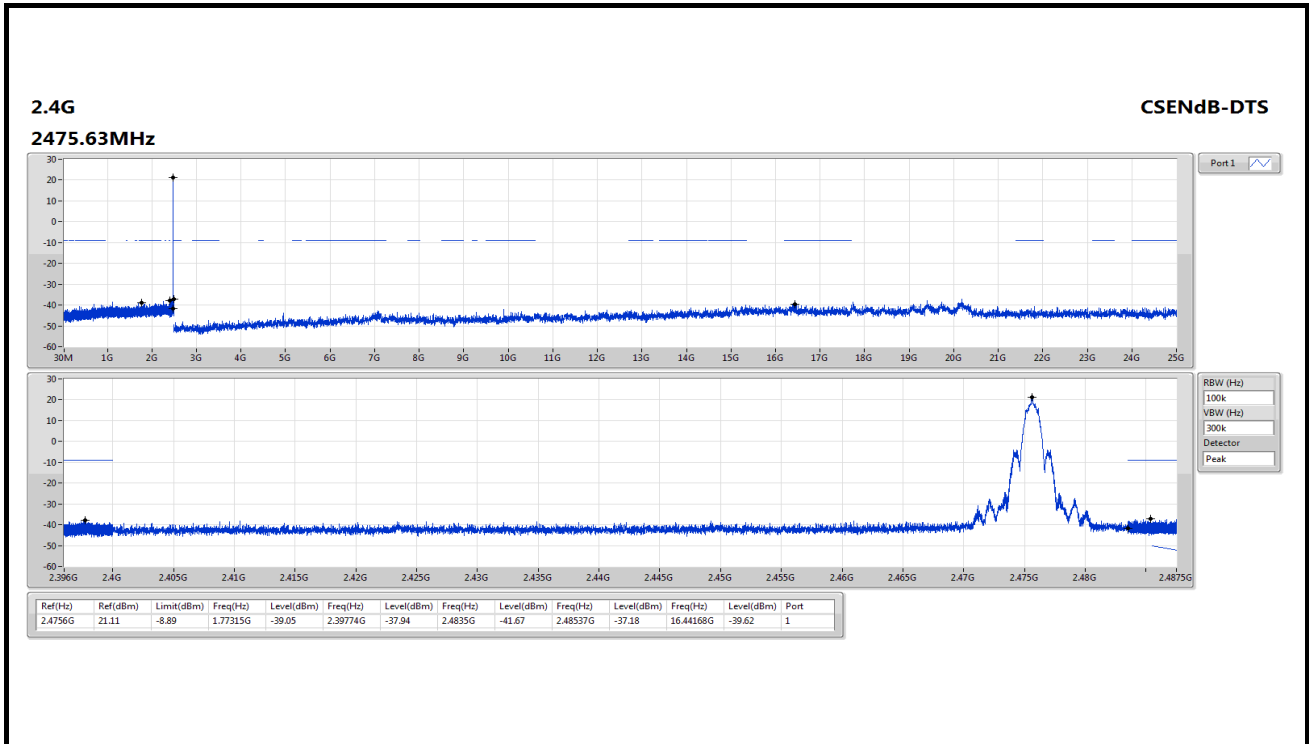




### 3.6.4 Unwanted Emissions into Non-Restricted Frequency Bands

Ambient Condition	23°C / 63%	Tested By	Brad Wu
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## 4 Test laboratory information

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

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

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

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

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