

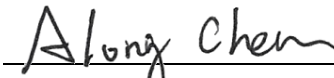
# FCC Test Report

**FCC ID** : JVPVS20R  
**Equipment** : InstaShow Host  
**Model No.** : VS20R  
**Brand Name** : BenQ  
**Applicant** : BenQ Corporation  
**Address** : 16 Jihu Road, Neihu, Taipei 114, Taiwan  
**Standard** : 47 CFR FCC Part 15.407  
**Received Date** : Dec. 27, 2022  
**Tested Date** : Feb. 08 ~ Feb. 22, 2023

We, International Certification Corporation, 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 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
FR2D2701AN	Rev. 01	Initial issue	Mar. 14, 2023
FR2D2701AN	Rev. 02	Adding information of embed Wi-Fi modules	Mar. 28, 2023

## Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emissions	[dBuV]: 0.402MHz 45.56 (Margin -12.25dB) - QP	Pass
15.407(b) 15.209	Unwanted Emissions	[dBuV/m at 3m]: 5150.00MHz 53.84 (Margin -0.16dB) - AV	Pass
15.407(a)	Emission Bandwidth	Meet the requirement of limit	Pass
15.407(e)	6dB bandwidth	Meet the requirement of limit	Pass
15.407(a)	Conducted Output Power	Max Power [dBm]: 5150~5250MHz: 25.50 5725~5850MHz: 26.96	Pass
15.407(a)	Power Spectral Density	Meet the requirement of limit	Pass
15.407(g)	Frequency Stability	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)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N <sub>TX</sub> )	Data Rate / MCS
5150-5250 5725-5850	n (HT20)	5180-5240 5745-5825	36-48 [4] 149-165 [5]	2	MCS 0-15
5150-5250 5725-5850	n (HT40)	5190-5230 5755-5795	38-46 [2] 151-159 [2]	2	MCS 0-15
5150-5250 5725-5850	ac (VHT20)	5180-5240 5745-5825	36-48 [4] 149-165 [5]	2	MCS 0-9
5150-5250 5725-5850	ac (VHT40)	5190-5230 5755-5795	38-46 [2] 151-159 [2]	2	MCS 0-9
5150-5250 5725-5850	ac (VHT80)	5210 5775	42 [1] 155 [1]	2	MCS 0-9
5150-5250 5725-5850	n (HT20)	5180-5240 5745-5825	36-48 [4] 149-165 [5]	4	MCS 0-31
5150-5250 5725-5850	n (HT40)	5190-5230 5755-5795	38-46 [2] 151-159 [2]	4	MCS 0-31
5150-5250 5725-5850	ac (VHT20)	5180-5240 5745-5825	36-48 [4] 149-165 [5]	4	MCS 0-9
5150-5250 5725-5850	ac (VHT40)	5190-5230 5755-5795	38-46 [2] 151-159 [2]	4	MCS 0-9
5150-5250 5725-5850	ac (VHT80)	5210 5775	42 [1] 155 [1]	4	MCS 0-9

Note 1: OFDM- BPSK, QPSK, 16QAM, 64QAM and 256QAM modulation.  
 Note 2: The conducted power of single chain is same for 2TX and 4TX operating mode. Therefore, 4TX configuration is chosen for final testing.  
 Note 3: The device uses 2 Wi-Fi modules.  
 Module 1- CWD-07M7615-00 (Wi-Fi Chip: MT7615, TX / RX)  
 Module 2-BL-M8811CU2 (Wi-Fi Chip: RTL8811, RX only)

### 1.1.2 Antenna Details

For module 1

Ant. No.	Brand	Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)	
					5150~5250	5725~5850
1	Invax	AN2450-5025BRS	Dipole	RP-SMA(M)	3.23	4.74

For module 2

Ant. No.	Brand	Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)	
					5150~5250	5725~5850
1	VSO	JR7Q00242	PIFA	I-PEX	1.4	2.6

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

<b>Power Supply Type</b>	12Vdc from AC adapter
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### 1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand: Zhuzhou Dachuan Electronic Technology Co., Ltd. Model: DCT36W120300ZZ-D0 I/P: 100-240Vac, 50/60Hz, 1.0A max O/P: 12Vdc, 3.0A, 36.0W Power Line: 1.5m non-shielded without core
2	HDMI cable	0.83m shielded without core

### 1.1.5 Channel List

802.11 n HT20 / ac VHT20		802.11n HT40 / ac VHT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
36	5180	38	5190
40	5200	46	5230
44	5220	151	5755
48	5240	159	5795
149	5745	<b>802.11ac VHT80</b>	
153	5765	42	5210
157	5785	155	5775
161	5805	-	-
165	5825	-	-

### 1.1.6 Test Tool and Duty Cycle

Test Tool	Tera Term, Version: 4.74		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	ac VHT20	86.86%	0.61
	ac VHT40	85.19%	0.70
	ac VHT80	86.51%	0.63

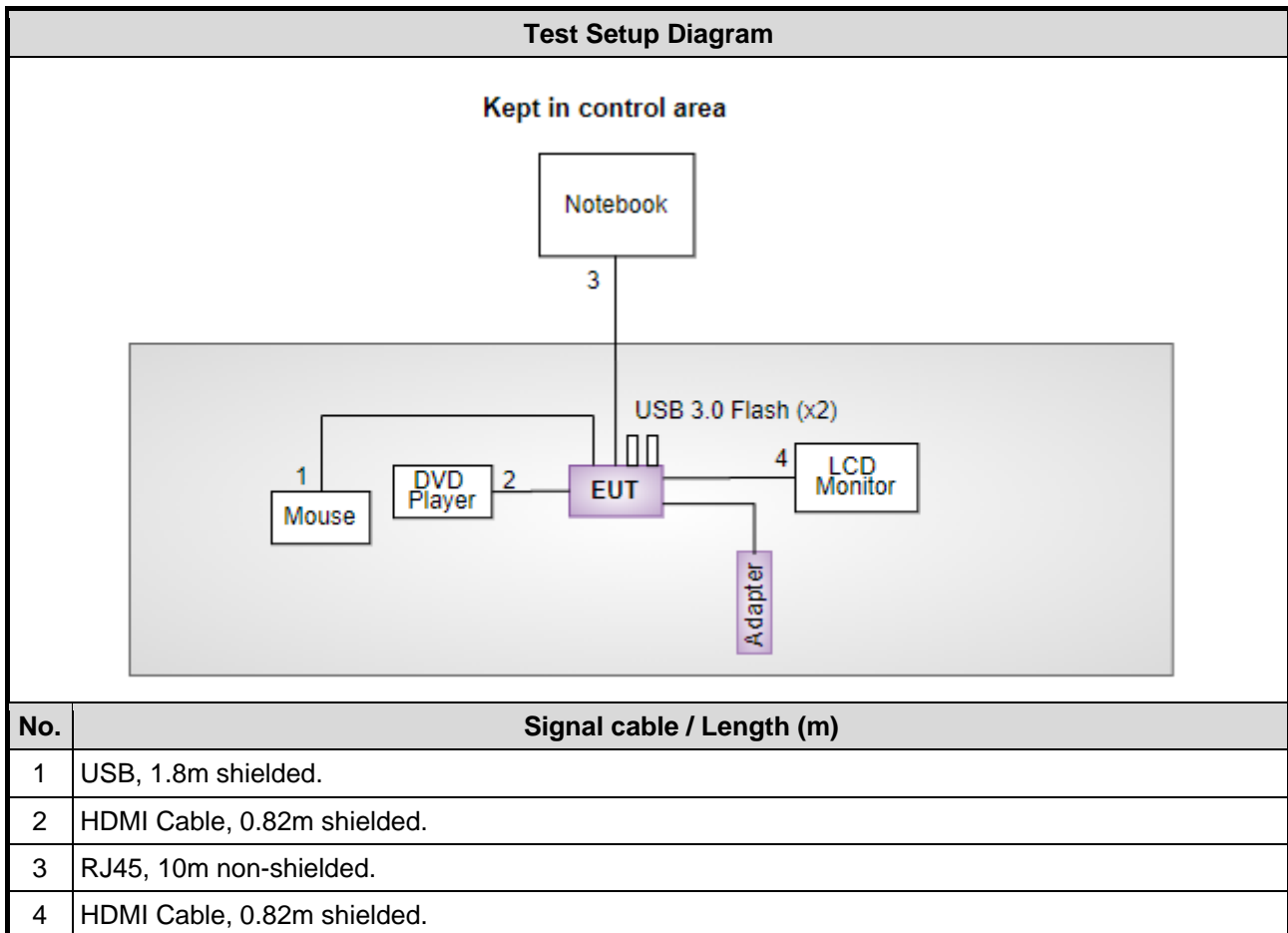
### 1.1.7 Power Index of Test Tool

Modulation Mode	Test Frequency (MHz)	Power Index
ac VHT20	5180	22
ac VHT20	5200	26
ac VHT20	5240	34
ac VHT20	5745	40
ac VHT20	5785	40
ac VHT20	5825	34
ac VHT40	5190	13
ac VHT40	5230	27
ac VHT40	5755	32
ac VHT40	5795	34
ac VHT80	5210	13
ac VHT80	5775	20

## 1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	Notebook	DELL	Latitude E5470	DoC	---
2	DVD Player	SONY	BDP-S190	DoC	---
3	Mouse	DELL	MS111-L	---	---
4	LCD Monitor	ASUS(27" )	MX27UCS	---	---
5	USB 3.0 Flash	Transcend	JetFlash 700	---	---
6	USB 3.0 Flash	Transcend	JetFlash 700	---	---

## 1.3 Test Setup Chart





## 1.4 The Equipment List

<b>Test Item</b>	Conducted Emission				
<b>Test Site</b>	Conduction room 1 / (CO01-WS)				
<b>Tested Date</b>	Feb. 22, 2023				
<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	101657	Mar. 15, 2022	Mar. 14, 2023
LISN	R&S	ENV216	101579	Apr. 21, 2022	Apr. 20, 2023
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127667	Jan. 02, 2023	Jan. 01, 2024
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 17, 2022	Oct. 16, 2023
50 ohm terminal (Support Unit)	NA	50	01	May 10, 2022	May 09, 2023
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 chamber3 / (03CH03-WS)				
<b>Tested Date</b>	Feb. 08 ~ Feb. 22, 2023				
<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	101657	Mar. 15, 2022	Mar. 14, 2023
Spectrum Analyzer	R&S	FSV40	101499	Mar. 08, 2022	Mar. 07, 2023
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 01, 2022	Oct. 31, 2023
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Jun. 28, 2022	Jun. 27, 2023
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Dec. 15, 2022	Dec. 14, 2023
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 27, 2022	Oct. 26, 2023
Preamplifier	EMC	EMC02325	980187	Jul. 16, 2022	Jul. 15, 2023
Preamplifier	EMC	EMC184045SE	980897	Aug. 01, 2022	Jul. 31, 2023
Preamplifier	EMC	EMC184045SE	980903	Jul. 16, 2022	Jul. 15, 2023
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 04, 2022	Oct. 03, 2023
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Sep. 23, 2022	Sep. 22, 2023
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Sep. 23, 2022	Sep. 22, 2023
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Sep. 23, 2022	Sep. 22, 2023
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Sep. 23, 2022	Sep. 22, 2023
RF cable-8M	EMC	EMC104-SM-SM-8000	181107	Sep. 23, 2022	Sep. 22, 2023
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>	Feb. 21 ~ Feb. 22, 2023				
<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	101910	Apr. 08, 2022	Apr. 07, 2023
Power Meter	Anritsu	ML2495A	1241002	Nov. 23, 2022	Nov. 22, 2023
Power Sensor	Anritsu	MA2411B	1207366	Nov. 23, 2022	Nov. 22, 2023
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Jun. 22, 2022	Jun. 21, 2023
AC POWER SOURCE	APC	AFC-500W	F312060012	Dec. 09, 2022	Dec. 08, 2023
Measurement Software	Sporton	SENSE-15407_NII	V5.10.8.9	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

## 1.5 Test Standards

47 CFR FCC Part 15.407  
ANSI C63.10-2013

## 1.6 Reference Guidance

FCC KDB 412172 D01 Determining ERP and EIRP v01r01  
FCC KDB 662911 D01 Multiple Transmitter Output v02r01  
FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

## 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	±34.130 Hz
Conducted power	±0.808 dB
Frequency error	±1×10 <sup>-9</sup>
Power density	±0.583 dB
Conducted emission	±2.715 dB
AC conducted emission	±2.92 dB
Unwanted Emission ≤ 1GHz	±3.96 dB
Unwanted Emission > 1GHz	±4.51 dB
Time	±0.1%
Temperature	±0.4 °C

## 2 Test Configuration

### 2.1 Testing Facility

<b>Test Laboratory</b>	International Certification Corporation
<b>Test Site</b>	CO01-WS, TH01-WS
<b>Address of Test Site</b>	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)
<b>Test Site</b>	03CH03-WS
<b>Address of Test Site</b>	No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

- FCC Designation No.: TW0009
- FCC site registration No.: 207696
- ISED#: 10807C
- CAB identifier: TW2732

### 2.2 The Worst Test Modes and Channel Details

For Frequency band 5150-5250 MHz				
Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	ac VHT20	5240	MCS 0	---
Radiated Emissions ≤1GHz	ac VHT20	5240	MCS 0	---
RF Output Power				
Radiated Emissions >1GHz	ac VHT20	5180 / 5200 / 5240	MCS 0	---
Emission Bandwidth	ac VHT40	5190 / 5230	MCS 0	
Peak Power Spectral Density	ac VHT80	5210	MCS 0	
Frequency Stability	Un-modulation	5200	---	---
For Frequency band 5725-5850 MHz				
Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	ac VHT20	5745	MCS 0	---
Radiated Emissions ≤1GHz	ac VHT20	5745	MCS 0	---
Radiated Emissions >1GHz				
Emission Bandwidth	ac VHT20	5745 / 5785 / 5825	MCS 0	---
6dB bandwidth	ac VHT40	5755 / 5795	MCS 0	
Peak Power Spectral Density	ac VHT80	5775	MCS 0	
Frequency Stability	Un-modulation	5785	---	---
<b>NOTE:</b>				
1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The <b>X-plane</b> results were found as the worst case and were shown in this report.				

## 3 Transmitter Test Results

### 3.1 Emission Bandwidth

#### 3.1.1 Limit of Emission Bandwidth

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

#### 3.1.2 Test Procedures

##### 26dB Bandwidth

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW, Detector = Peak.
3. Trace mode = max hold.
4. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

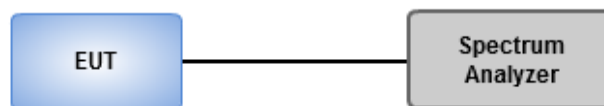
##### Occupied Bandwidth

1. Set RBW = 1 % to 5 % of the OBW.
2. Set VBW  $\geq$  3 RBW.
3. Sample detection and single sweep mode shall be used.
4. Use the 99 % power bandwidth function of the instrument.

##### 6dB Bandwidth

1. Set RBW = 100kHz, VBW = 300kHz.
2. Detector = Peak, Trace mode = max hold.
3. 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 frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### 3.1.3 Test Setup



#### 3.1.4 Test Results

<b>Ambient Condition</b>	21~22°C / 66~67%	<b>Tested By</b>	Akun Chung
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Refer to Appendix A.

## 3.2 Conducted Output Power

### 3.2.1 Limit of Conducted Output Power

Frequency band 5150-5250 MHz	
Operating Mode	Limit
<input type="checkbox"/> Outdoor access point	Conducted Power: 1 W The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm)
<input checked="" type="checkbox"/> Indoor access point	Conducted Power: 1 W
<input type="checkbox"/> Fixed point-to-point access points	Conducted Power: 1 W
<input type="checkbox"/> Client devices	Conducted Power: 250 mW

Frequency Band (MHz)	Limit
<input checked="" type="checkbox"/> 5725 ~ 5850	Conducted Power: 1 W

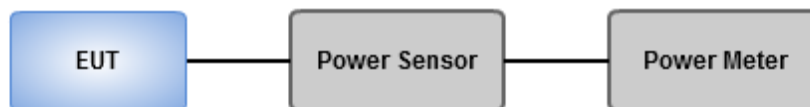
Note: "B" is the 26dB emission bandwidth in MHz.

### 3.2.2 Test Procedures

#### Method PM-G (Measurement using a gated RF average power meter)

Measurements is performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

### 3.2.3 Test Setup



### 3.2.4 Test Results

Ambient Condition	21~22°C / 66~67%	Tested By	Akun Chung
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Refer to Appendix B.

### 3.3 Power Spectral Density

#### 3.3.1 Limit of Peak Power Spectral Density

Frequency band 5150-5250 MHz		
Operating Mode		Limit
<input type="checkbox"/>	Outdoor access point	17 dBm / MHz
<input checked="" type="checkbox"/>	Indoor access point	17 dBm / MHz
<input type="checkbox"/>	Fixed point-to-point access points	17 dBm / MHz
<input type="checkbox"/>	Client devices	11 dBm / MHz

Frequency Band (MHz)	Limit
<input checked="" type="checkbox"/> 5725 ~ 5850	30 dBm /500 kHz

### 3.3.2 Test Procedures

#### For 5150 ~ 5250 MHz

Duty cycle  $\geq$  98 %

1. Set RBW = 1 MHz, VBW = 3 MHz, Sweep time = auto, Detector = RMS.
2. Trace average 100 traces.
3. Use the peak marker function to determine the maximum amplitude level.

Duty cycle < 98 %

1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = RMS.
2. Set sweep time  $\geq 10 * (\text{number of points in sweep}) * (\text{total on/off period of the transmitted signal})$ .
3. Perform a single sweep.
4. Use the peak marker function to determine the maximum amplitude level.
5. Add  $10 \log(1/x)$ , where x is the duty cycle.

#### For 5725 ~ 5850 MHz

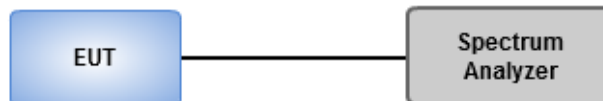
Duty cycle  $\geq$  98 %

1. Set RBW = 500 kHz, VBW = 3 MHz, Sweep time = auto, Detector = RMS.
2. Trace average 100 traces.
3. Use the peak marker function to determine the maximum amplitude level.

Duty cycle < 98 %

1. Set RBW = 500 kHz, VBW = 3 MHz, Detector = RMS.
2. Set sweep time  $\geq 10 * (\text{number of points in sweep}) * (\text{total on/off period of the transmitted signal})$ .
3. Perform a single sweep.
4. Use the peak marker function to determine the maximum amplitude level.
5. Add  $10 \log(1/x)$ , where x is the duty cycle.

### 3.3.3 Test Setup



### 3.3.4 Test Results

<b>Ambient Condition</b>	21~22°C / 66~67%	<b>Tested By</b>	Akun Chung
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Refer to Appendix C.



### 3.4 Unwanted Emissions

#### 3.4.1 Limit of Unwanted Emissions

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

**Note 1:**  
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

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

Un-restricted band emissions above 1GHz Limit	
Operating Band	Limit
5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.725 - 5.850 GHz	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

### 3.4.2 Test Procedures

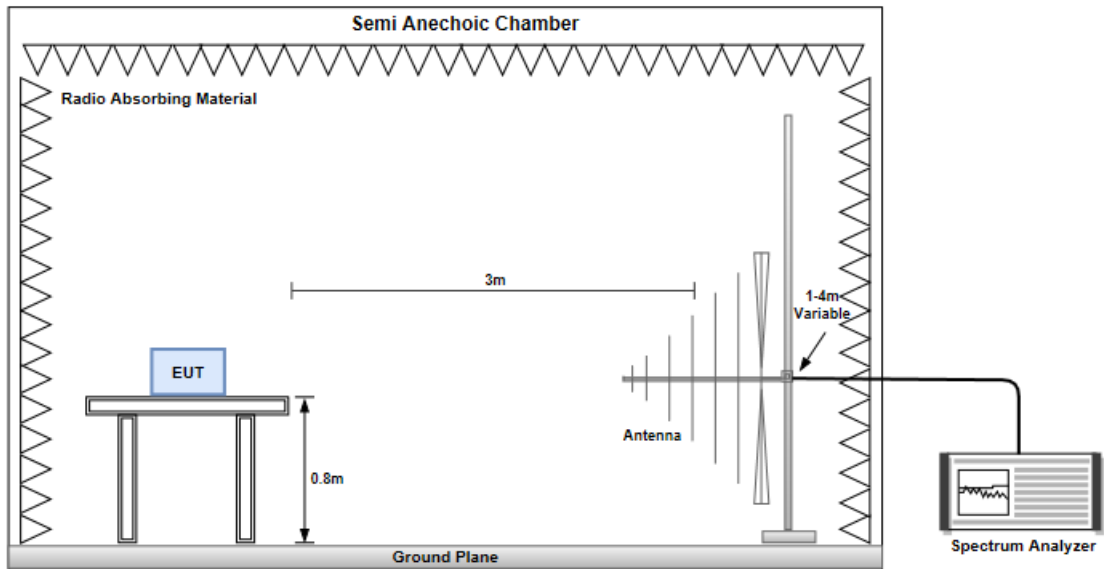
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

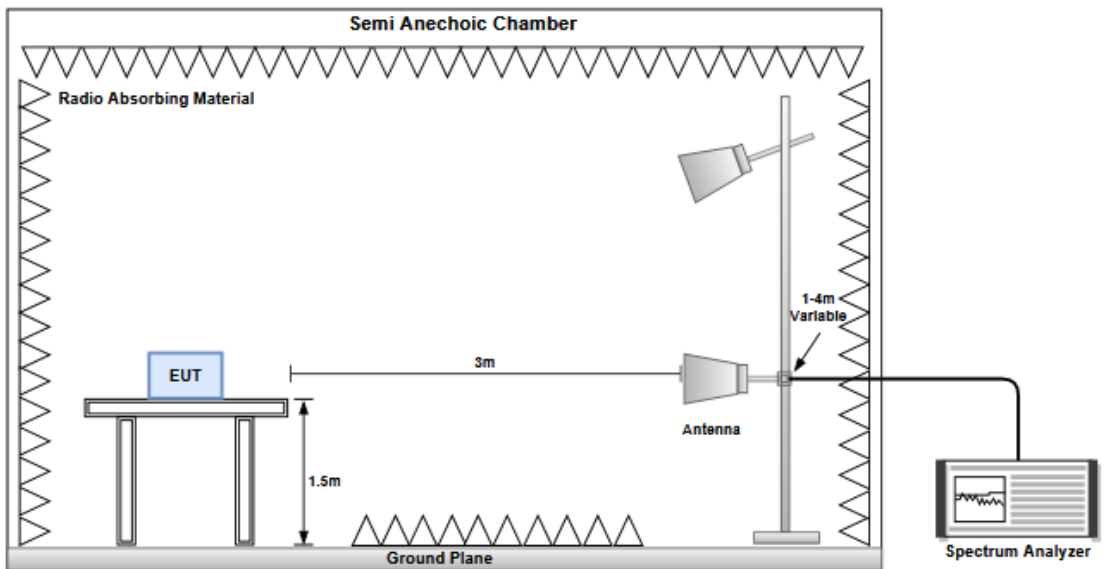
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

### 3.4.3 Test Setup

#### Radiated Emissions below 1 GHz



#### Radiated Emissions above 1 GHz



### 3.4.4 Test Results

Refer to Appendix D.

## 3.5 Frequency Stability

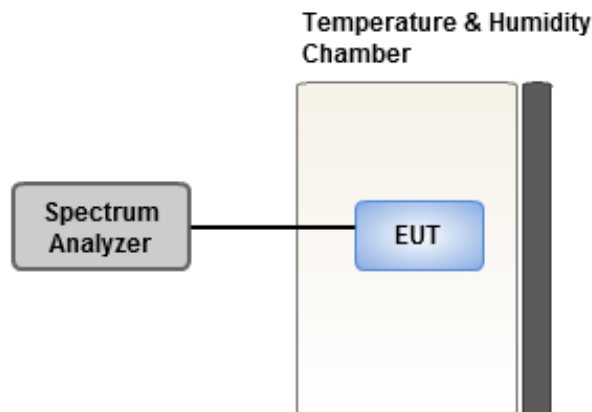
### 3.5.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

### 3.5.2 Test Procedures

1. The EUT is installed in an environment test chamber with external power source.
2. Set the chamber to operate at 20 centigrade and external power source to output at nominal voltage of EUT.
3. A sufficient stabilization period at each temperature is used prior to each frequency measurement.
4. When temperature is stabled, measure the frequency stability.
5. The test shall be performed under normal and extreme condition for temperature and voltage.

### 3.5.3 Test Setup



### 3.5.4 Test Results

<b>Ambient Condition</b>	21~22°C / 66~67%	<b>Tested By</b>	Akun Chung
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Refer to Appendix E.

## 3.6 AC Power Line Conducted Emissions

### 3.6.1 Limit of AC Power Line Conducted Emissions

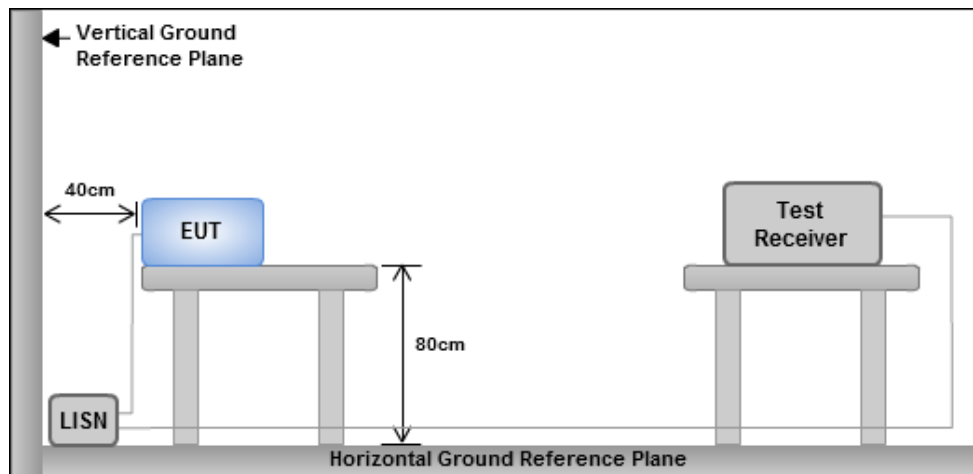
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: \* Decreases with the logarithm of the frequency.

### 3.6.2 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

### 3.6.3 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

### 3.6.4 Test Results

Refer to Appendix F.

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

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

### **Linkou**

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou  
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 Dist., Tao Yuan  
City 33381, Taiwan (R.O.C.)  
No.2-1, Lane 6, Wen San 3rd  
St., Kwei Shan Dist., Tao Yuan  
City 33381, Taiwan (R.O.C.)

### **Kwei Shan Site II**

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd  
St., Kwei Shan Dist., Tao Yuan  
City 33381, Taiwan (R.O.C.)

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

Tel: 886-3-271-8666

Fax: 886-3-318-0345

Email: ICC\_Service@icertifi.com.tw

==END==



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
ac20_20MHz_Nss4,(MCS0)_4TX	35.31M	18.291M	18M3D1D	19.8M	17.511M
ac40_40MHz_Nss4,(MCS0)_4TX	40.656M	36.282M	36M3D1D	39.6M	35.922M
ac80_80MHz_Nss4,(MCS0)_4TX	80.784M	75.082M	75M1D1D	79.992M	74.963M
5.725-5.85GHz	-	-	-	-	-
ac20_20MHz_Nss4,(MCS0)_4TX	15.114M	19.58M	19M6D1D	13.794M	17.721M
ac40_40MHz_Nss4,(MCS0)_4TX	35.112M	37.541M	37M5D1D	34.98M	36.102M
ac80_80MHz_Nss4,(MCS0)_4TX	74.976M	74.963M	75M0D1D	72.336M	74.843M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;  
 Max-OBW = Maximum 99% occupied bandwidth;  
 Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Minimum 26dB down bandwidth for other band;  
 Min-OBW = Minimum 99% occupied bandwidth

Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)	Port 3-N dB (Hz)	Port 3-OBW (Hz)	Port 4-N dB (Hz)	Port 4-OBW (Hz)
ac20_20MHz_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5180MHz	Pass	Inf	20.196M	17.631M	19.998M	17.541M	19.8M	17.541M	19.998M	17.511M
5200MHz	Pass	Inf	20.46M	17.721M	19.998M	17.571M	19.866M	17.541M	20.196M	17.571M
5240MHz	Pass	Inf	35.31M	18.291M	25.938M	17.721M	26.268M	17.691M	33.924M	17.961M
5745MHz	Pass	500k	15.048M	18.291M	15.114M	19.04M	15.048M	18.201M	15.114M	19.01M
5785MHz	Pass	500k	13.794M	18.231M	15.114M	19.58M	14.982M	19.49M	15.048M	19.43M
5825MHz	Pass	500k	15.048M	17.841M	15.114M	17.811M	15.048M	17.721M	15.114M	17.961M
ac40_40MHz_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5190MHz	Pass	Inf	39.6M	35.922M	40.524M	36.282M	39.732M	36.042M	39.6M	36.042M
5230MHz	Pass	Inf	39.864M	36.162M	40.656M	36.222M	39.732M	36.042M	39.6M	36.102M
5755MHz	Pass	500k	34.98M	36.102M	35.112M	36.582M	35.112M	36.342M	35.112M	36.462M
5795MHz	Pass	500k	34.98M	36.702M	35.112M	37.121M	35.112M	36.702M	34.98M	37.541M
ac80_80MHz_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5210MHz	Pass	Inf	80.784M	74.963M	80.256M	75.082M	79.992M	74.963M	80.52M	74.963M
5775MHz	Pass	500k	72.336M	74.963M	73.656M	74.963M	72.6M	74.843M	74.976M	74.963M

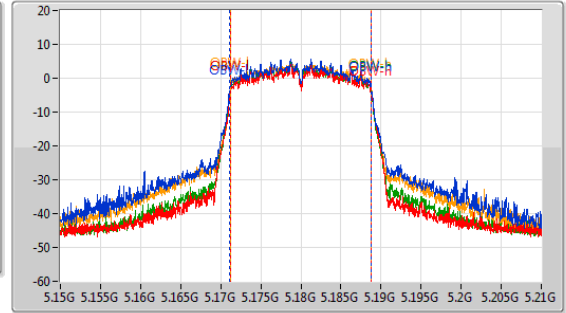
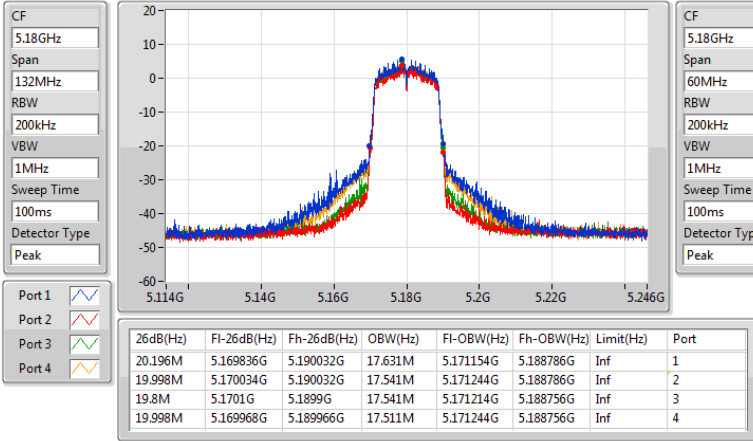
Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band  
 Port X-OBW = Port X 99% occupied bandwidth



5.15-5.25GHz\_ac20\_20MHz\_Nss4,(MCS0)\_4TX

EBW

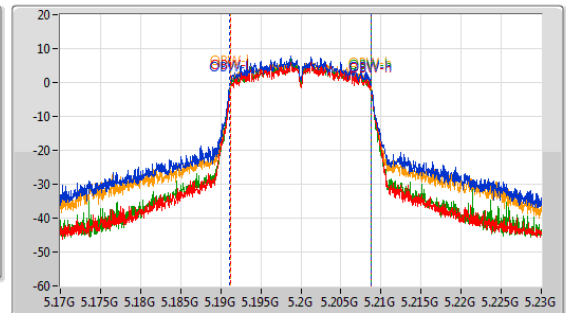
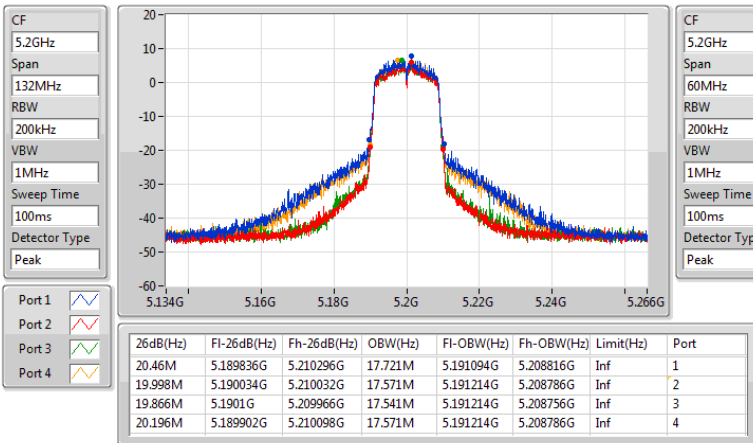
5180MHz



5.15-5.25GHz\_ac20\_20MHz\_Nss4,(MCS0)\_4TX

EBW

5200MHz





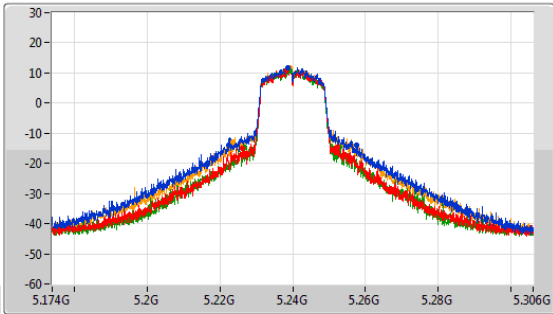


5.15-5.25GHz\_ac20\_20MHz\_Nss4,(MCS0)\_4TX

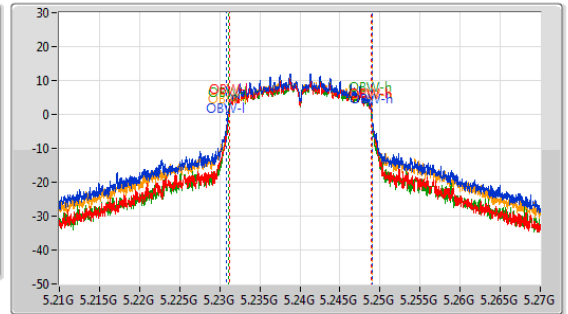
EBW

5240MHz

CF: 5.24GHz  
 Span: 132MHz  
 RBW: 300kHz  
 VBW: 1MHz  
 Sweep Time: 100ms  
 Detector Type: Peak



CF: 5.24GHz  
 Span: 60MHz  
 RBW: 200kHz  
 VBW: 1MHz  
 Sweep Time: 100ms  
 Detector Type: Peak



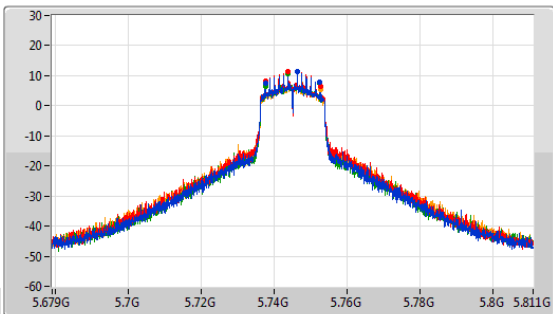
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
35.31M	5.222378G	5.257688G	18.291M	5.230795G	5.249085G	Inf	1
25.938M	5.226272G	5.25221G	17.721M	5.231184G	5.248906G	Inf	2
26.268M	5.226668G	5.252936G	17.691M	5.231154G	5.248846G	Inf	3
33.924M	5.2235G	5.257424G	17.961M	5.231034G	5.248996G	Inf	4

5.725-5.85GHz\_ac20\_20MHz\_Nss4,(MCS0)\_4TX

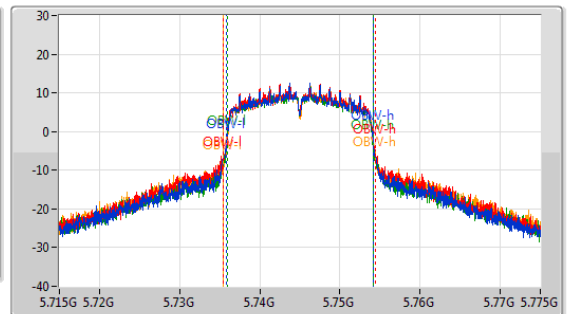
EBW

5745MHz

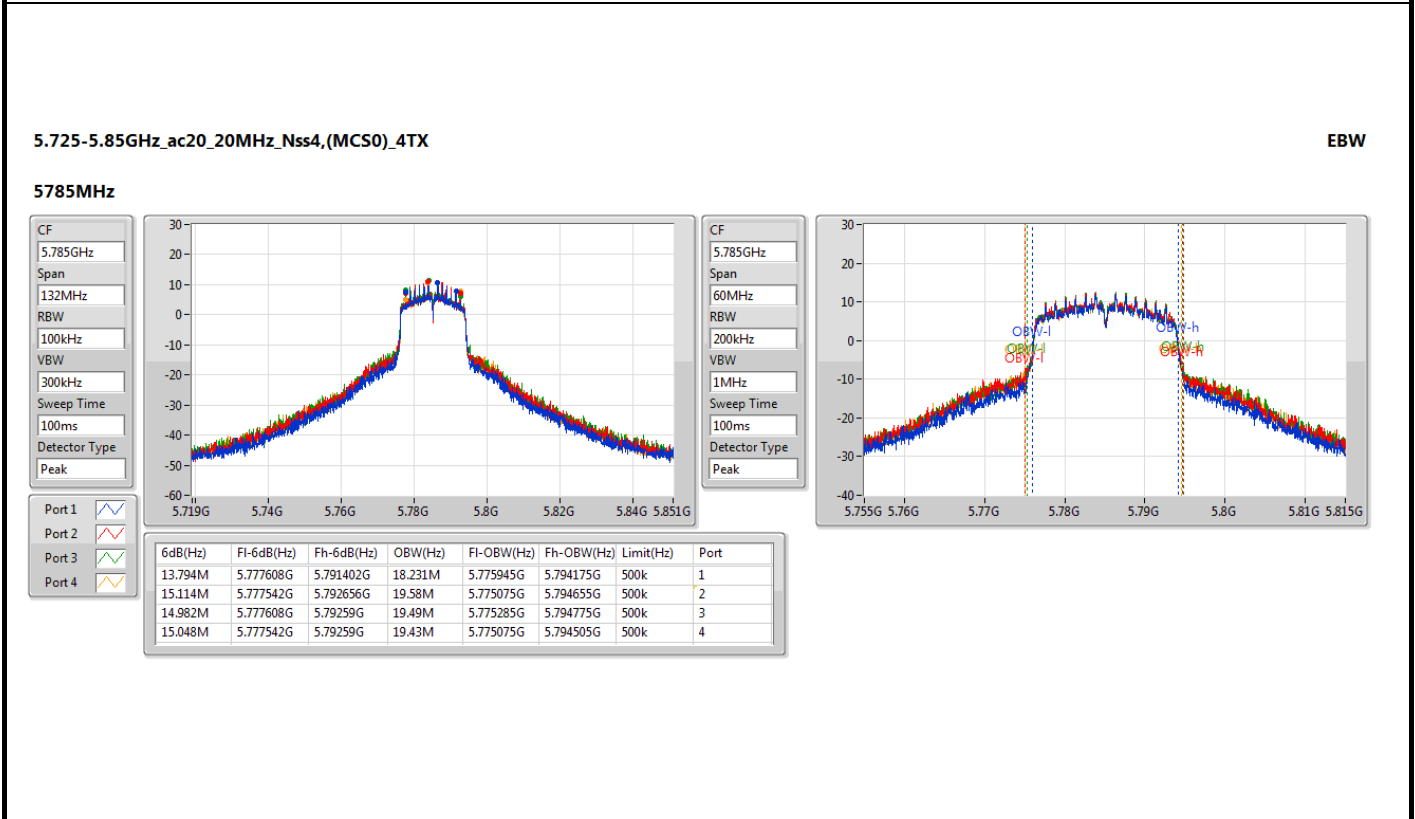
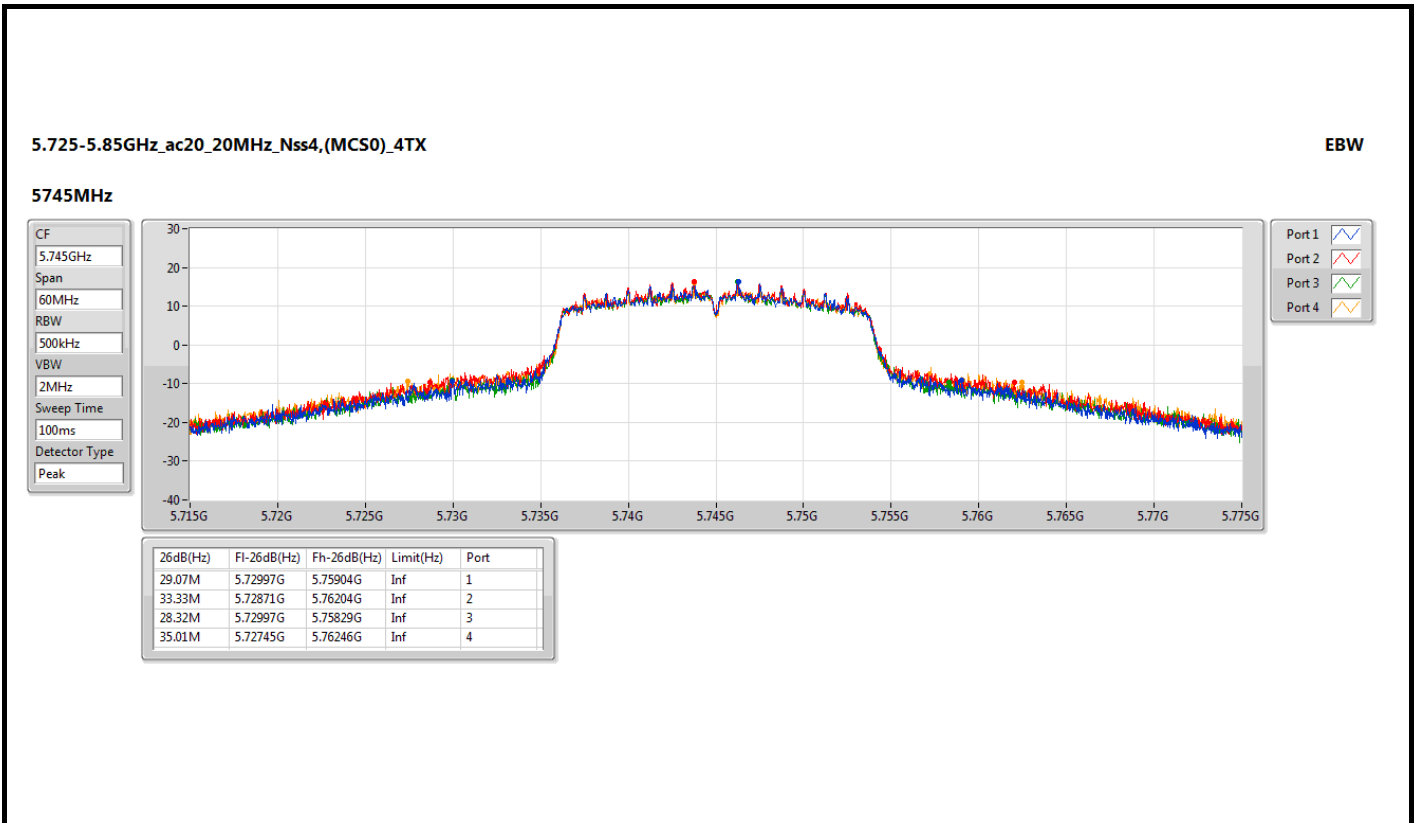
CF: 5.745GHz  
 Span: 132MHz  
 RBW: 100kHz  
 VBW: 300kHz  
 Sweep Time: 100ms  
 Detector Type: Peak

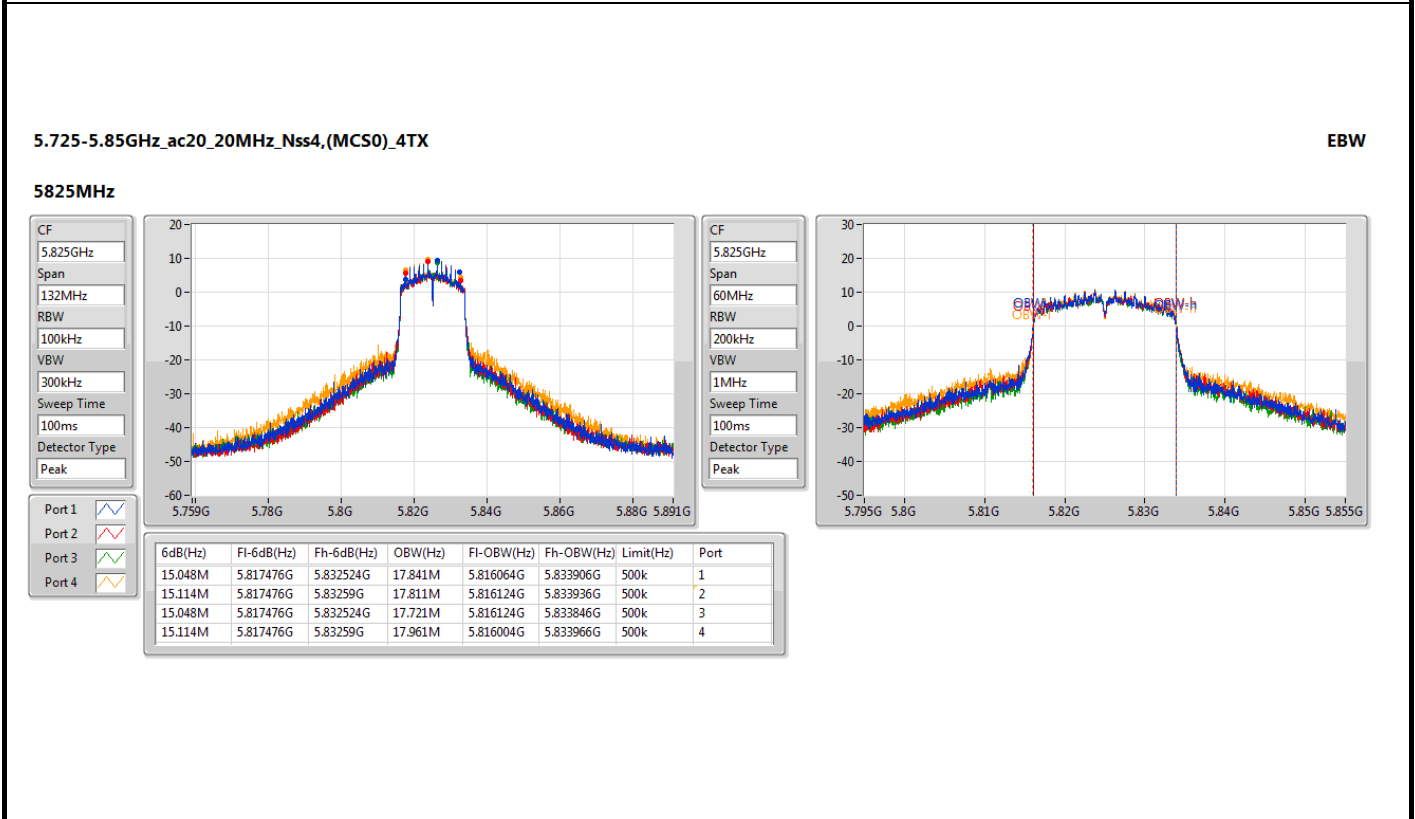
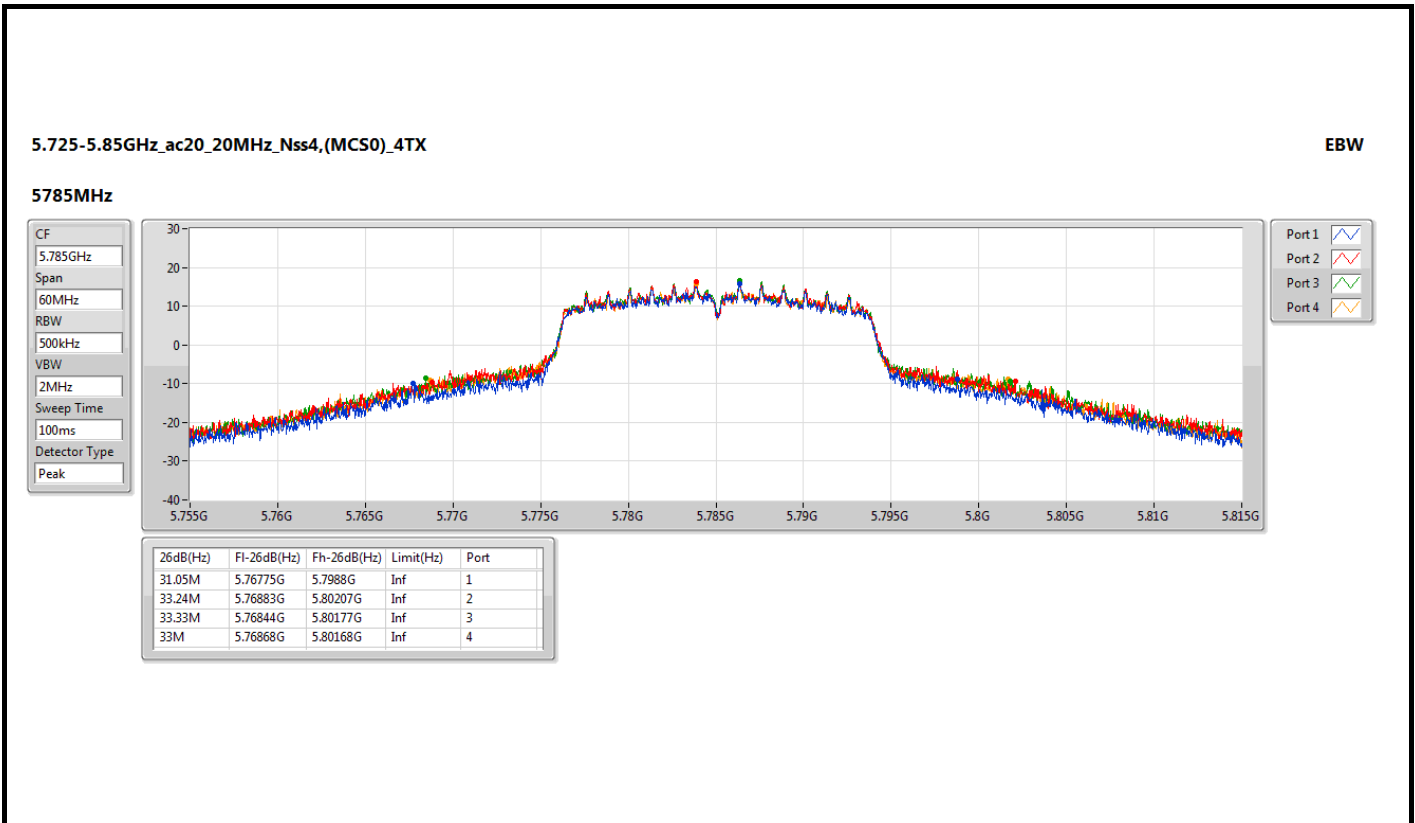


CF: 5.745GHz  
 Span: 60MHz  
 RBW: 200kHz  
 VBW: 1MHz  
 Sweep Time: 100ms  
 Detector Type: Peak



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
15.048M	5.737476G	5.752524G	18.291M	5.735825G	5.754115G	500k	1
15.114M	5.737476G	5.75259G	19.04M	5.735375G	5.754415G	500k	2
15.048M	5.737476G	5.752524G	18.201M	5.735915G	5.754115G	500k	3
15.114M	5.737476G	5.75259G	19.01M	5.735435G	5.754445G	500k	4





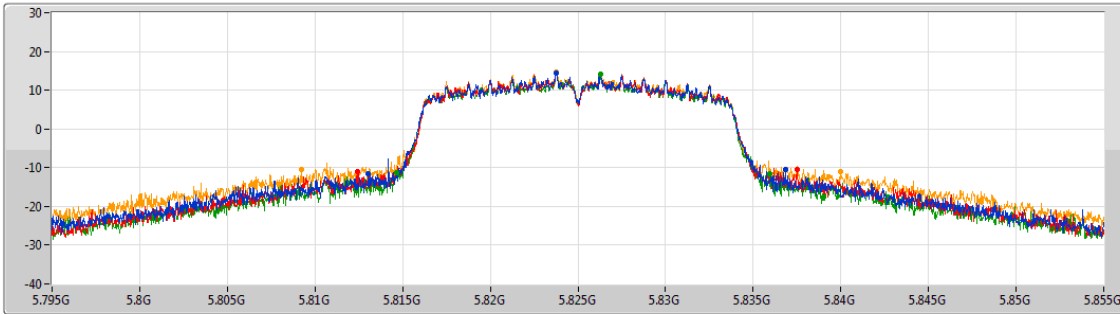


5.725-5.85GHz\_ac20\_20MHz\_Nss4,(MCS0)\_4TX

EBW

5825MHz

CF  
5.825GHz  
Span  
60MHz  
RBW  
500kHz  
VBW  
2MHz  
Sweep Time  
100ms  
Detector Type  
Peak



Port 1  
Port 2  
Port 3  
Port 4

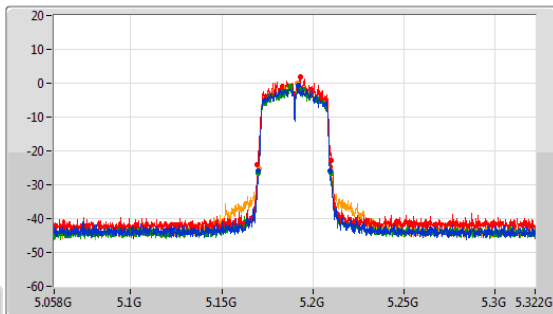
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	Limit(Hz)	Port
23.76M	5.81306G	5.83682G	Inf	1
25.08M	5.81243G	5.83751G	Inf	2
21.24M	5.81468G	5.83592G	Inf	3
30.78M	5.80922G	5.84G	Inf	4

5.15-5.25GHz\_ac40\_40MHz\_Nss4,(MCS0)\_4TX

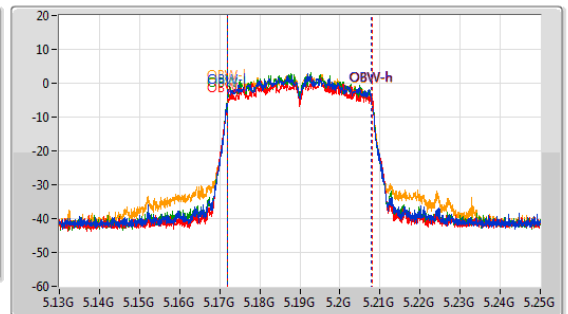
EBW

5190MHz

CF  
5.19GHz  
Span  
264MHz  
RBW  
500kHz  
VBW  
2MHz  
Sweep Time  
100ms  
Detector Type  
Peak



CF  
5.19GHz  
Span  
120MHz  
RBW  
500kHz  
VBW  
2MHz  
Sweep Time  
100ms  
Detector Type  
Peak



Port 1  
Port 2  
Port 3  
Port 4

26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
39.6M	5.169936G	5.209536G	35.922M	5.171949G	5.207871G	Inf	1
40.524M	5.169672G	5.210196G	36.282M	5.171889G	5.208171G	Inf	2
39.732M	5.170068G	5.2098G	36.042M	5.171949G	5.207991G	Inf	3
39.6M	5.170332G	5.209932G	36.042M	5.171949G	5.207991G	Inf	4

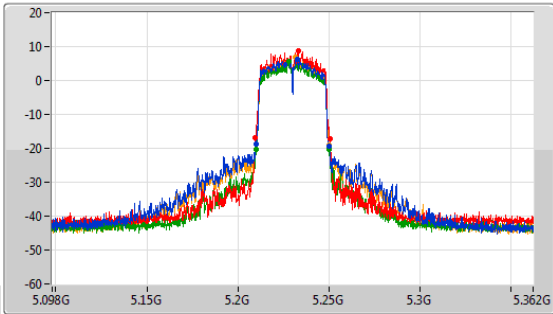


5.15-5.25GHz\_ac40\_40MHz\_Nss4,(MCS0)\_4TX

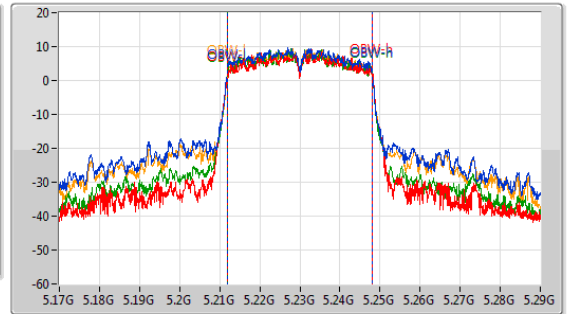
EBW

5230MHz

CF: 5.23GHz  
 Span: 264MHz  
 RBW: 500kHz  
 VBW: 2MHz  
 Sweep Time: 100ms  
 Detector Type: Peak



CF: 5.23GHz  
 Span: 120MHz  
 RBW: 500kHz  
 VBW: 2MHz  
 Sweep Time: 100ms  
 Detector Type: Peak



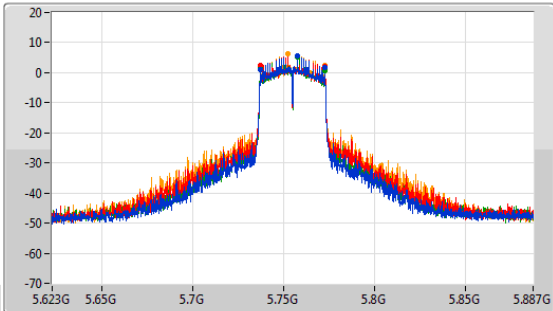
26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
39.864M	5.210068G	5.249932G	36.162M	5.211829G	5.247991G	Inf	1
40.656M	5.209672G	5.250328G	36.222M	5.211889G	5.248111G	Inf	2
39.732M	5.210068G	5.2498G	36.042M	5.211949G	5.247991G	Inf	3
39.6M	5.2102G	5.2498G	36.102M	5.211949G	5.248051G	Inf	4

5.725-5.85GHz\_ac40\_40MHz\_Nss4,(MCS0)\_4TX

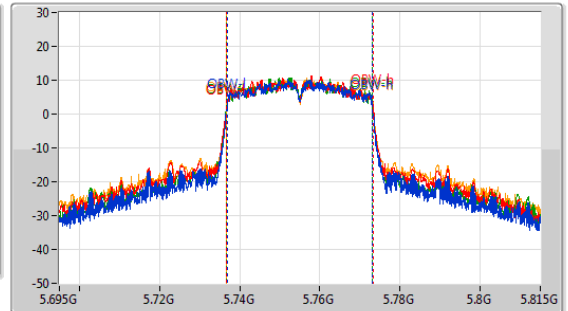
EBW

5755MHz

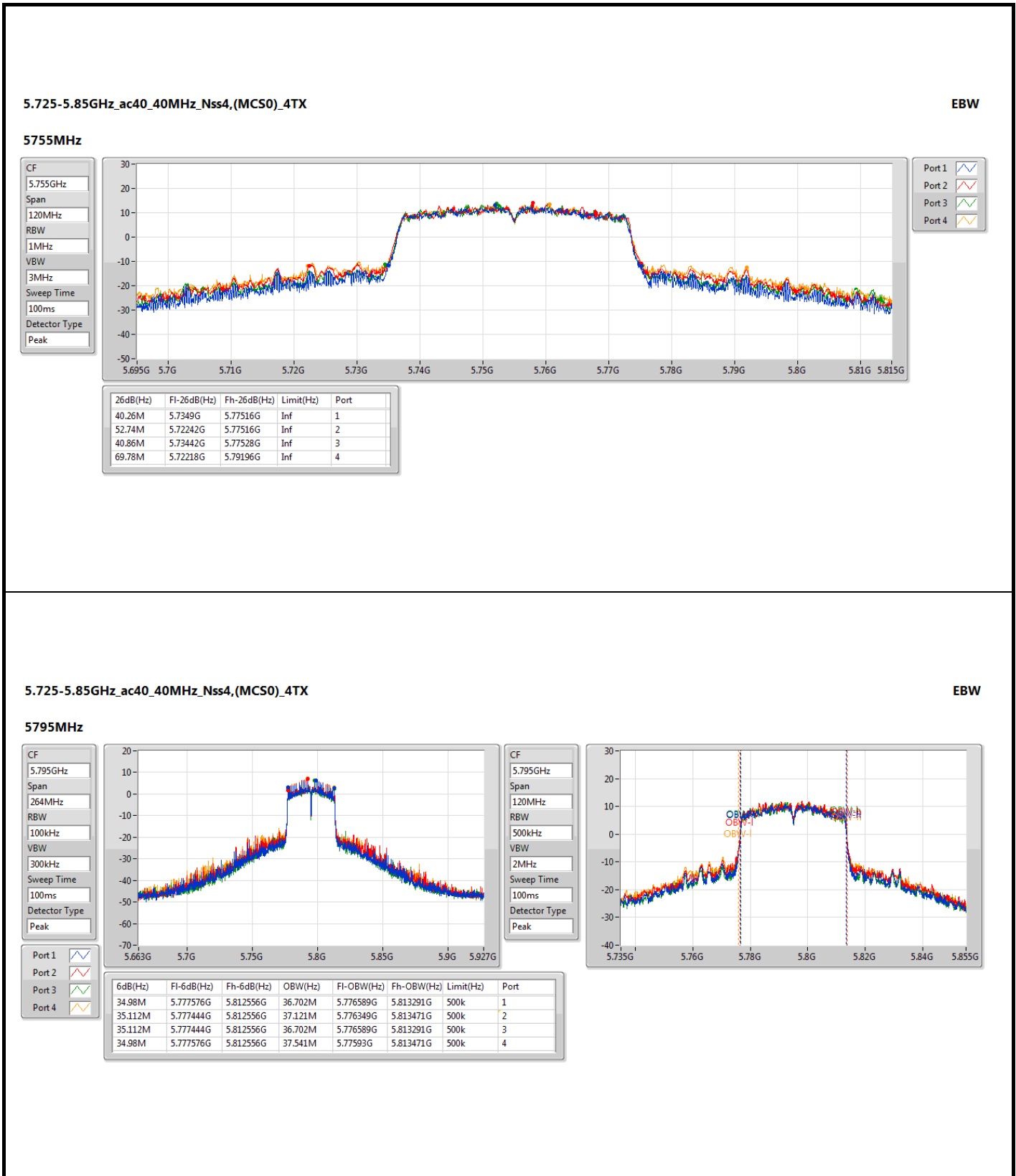
CF: 5.755GHz  
 Span: 264MHz  
 RBW: 100kHz  
 VBW: 300kHz  
 Sweep Time: 100ms  
 Detector Type: Peak

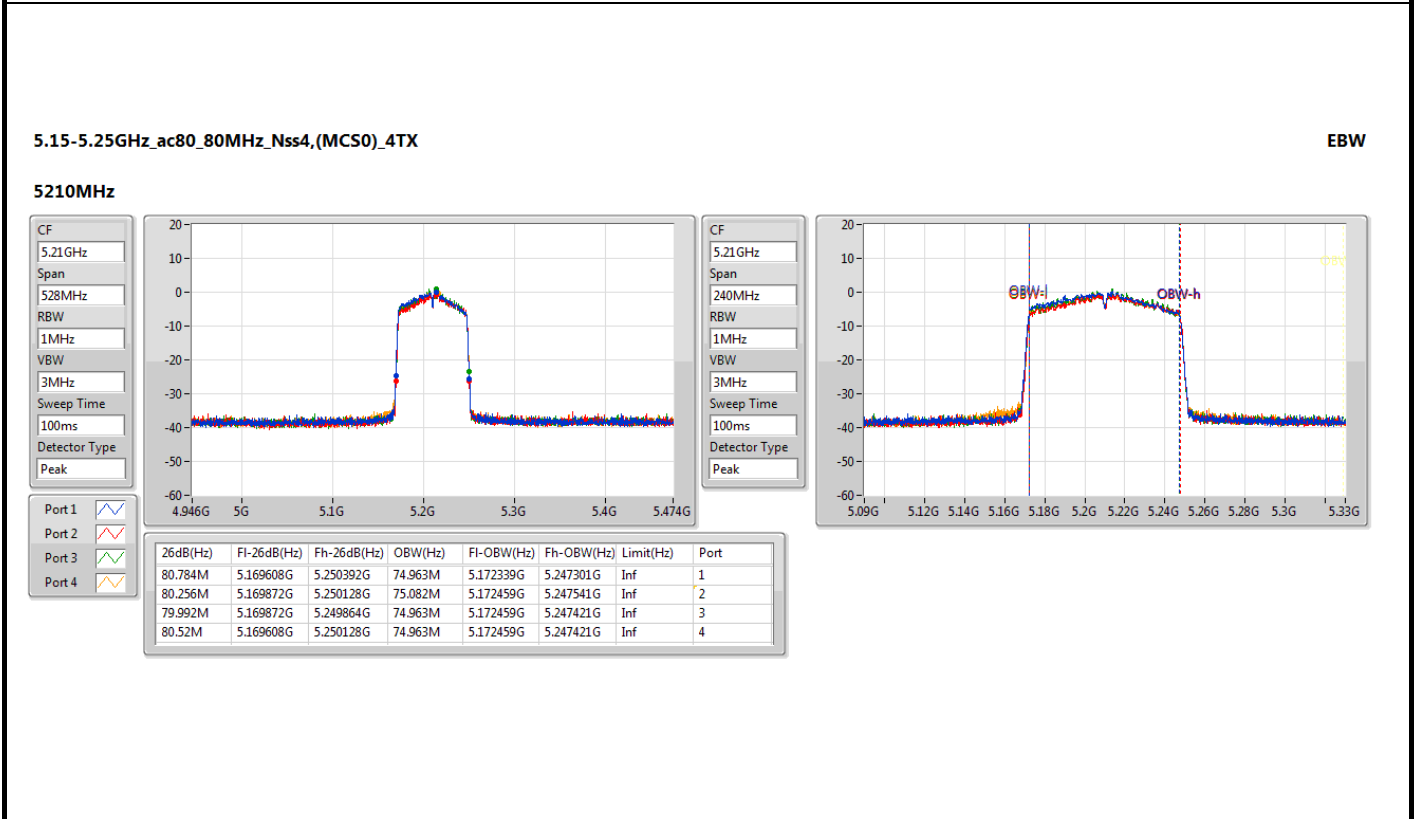
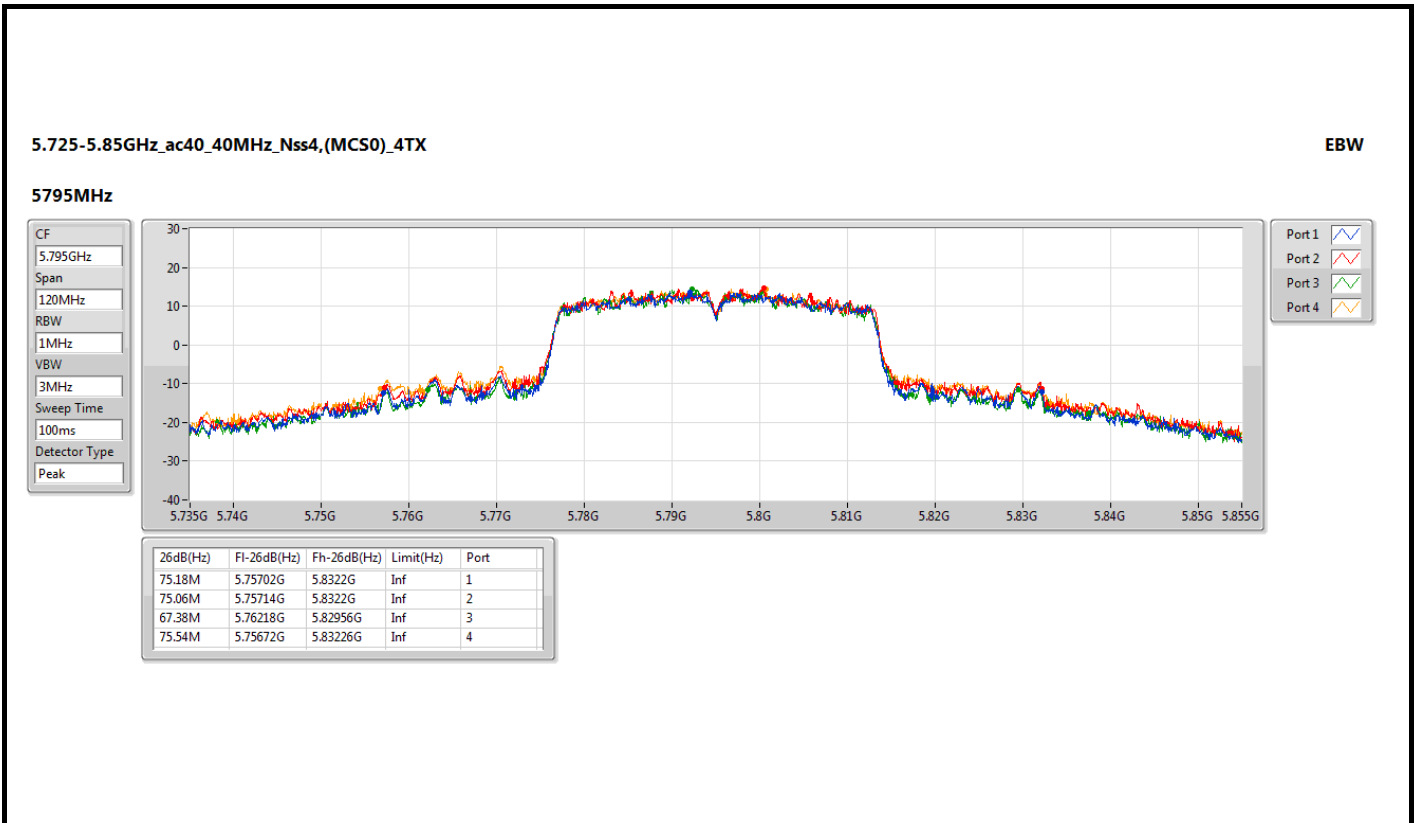


CF: 5.755GHz  
 Span: 120MHz  
 RBW: 500kHz  
 VBW: 2MHz  
 Sweep Time: 100ms  
 Detector Type: Peak



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
34.98M	5.737576G	5.772556G	36.102M	5.736889G	5.772991G	500k	1
35.112M	5.737444G	5.772556G	36.582M	5.736649G	5.773231G	500k	2
35.112M	5.737444G	5.772556G	36.342M	5.736769G	5.773111G	500k	3
35.112M	5.737444G	5.772556G	36.462M	5.736769G	5.773231G	500k	4





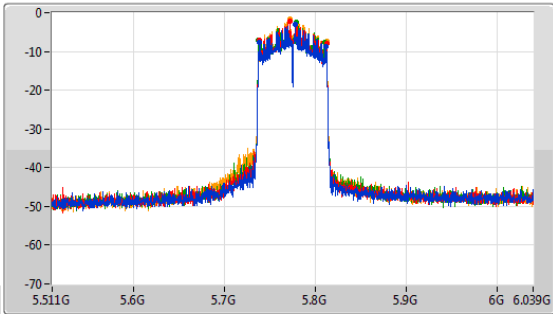


5.725-5.85GHz\_ac80\_80MHz\_Nss4,(MCS0)\_4TX

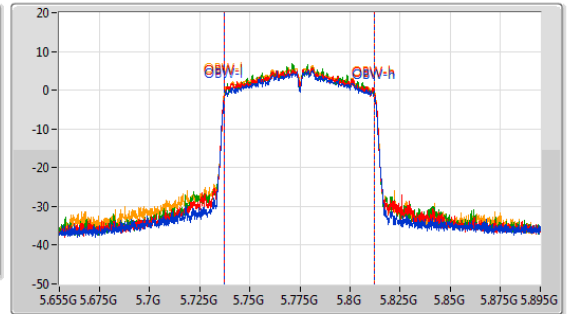
EBW

5775MHz

CF: 5.775GHz  
 Span: 528MHz  
 RBW: 100kHz  
 VBW: 300kHz  
 Sweep Time: 100ms  
 Detector Type: Peak



CF: 5.775GHz  
 Span: 240MHz  
 RBW: 1MHz  
 VBW: 3MHz  
 Sweep Time: 100ms  
 Detector Type: Peak



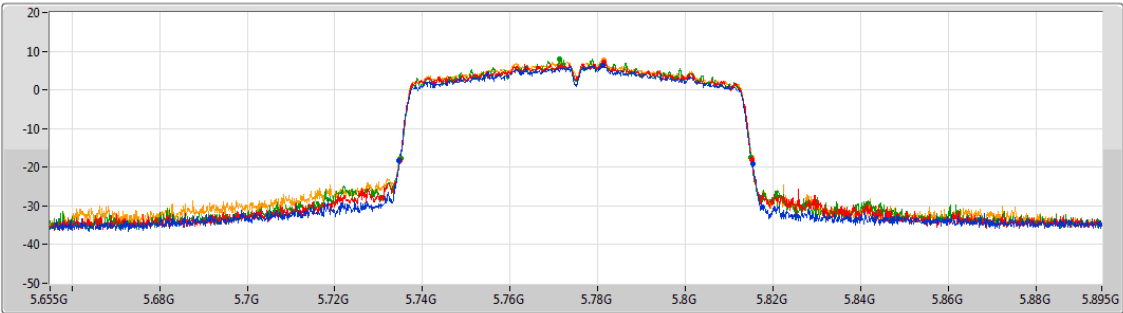
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
72.336M	5.738832G	5.811168G	74.963M	5.737459G	5.812421G	500k	1
73.656M	5.738832G	5.812488G	74.963M	5.737459G	5.812421G	500k	2
72.6M	5.737512G	5.810112G	74.843M	5.737459G	5.812301G	500k	3
74.976M	5.737512G	5.812488G	74.963M	5.737459G	5.812421G	500k	4

5.725-5.85GHz\_ac80\_80MHz\_Nss4,(MCS0)\_4TX

EBW

5775MHz

CF: 5.775GHz  
 Span: 240MHz  
 RBW: 1MHz  
 VBW: 3MHz  
 Sweep Time: 100ms  
 Detector Type: Peak



Port 1  
 Port 2  
 Port 3  
 Port 4

26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	Limit(Hz)	Port
80.64M	5.73468G	5.81532G	Inf	1
80.16M	5.73492G	5.81508G	Inf	2
79.92M	5.73504G	5.81496G	Inf	3
80.28M	5.7348G	5.81508G	Inf	4





**Conducted Output Power(Average)**

**Appendix B**

**Summary**

Mode	Total Power (dBm)	Total Power (W)	EIRP (dBm)	EIRP (W)
5.15-5.25GHz	-	-	-	-
ac20_20MHz_Nss4,(MCS0)_4TX	25.50	0.35481	28.73	0.74645
ac40_40MHz_Nss4,(MCS0)_4TX	22.53	0.17906	25.76	0.37670
ac80_80MHz_Nss4,(MCS0)_4TX	14.59	0.02877	17.82	0.06053
5.725-5.85GHz	-	-	-	-
ac20_20MHz_Nss4,(MCS0)_4TX	26.96	0.49659	31.70	1.47911
ac40_40MHz_Nss4,(MCS0)_4TX	25.04	0.31915	29.78	0.95060
ac80_80MHz_Nss4,(MCS0)_4TX	18.37	0.06871	23.11	0.20464

**Result**

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Port 3 (dBm)	Port 4 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
ac20_20MHz_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5180MHz	Pass	3.23	14.52	12.95	13.62	14.15	19.87	30.00	23.10	36.00
5200MHz	Pass	3.23	16.66	15.02	15.54	16.11	21.90	30.00	25.13	36.00
5240MHz	Pass	3.23	20.02	19.18	19.19	19.48	25.50	30.00	28.73	36.00
5745MHz	Pass	4.74	20.71	21.25	20.55	21.22	26.96	30.00	31.70	36.00
5785MHz	Pass	4.74	21.03	21.15	20.75	20.72	26.94	30.00	31.68	36.00
5825MHz	Pass	4.74	20.75	21.02	20.63	20.52	26.75	30.00	31.49	36.00
ac40_40MHz_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5190MHz	Pass	3.23	10.02	8.62	9.77	10.25	15.73	30.00	18.96	36.00
5230MHz	Pass	3.23	17.32	15.82	16.03	16.72	22.53	30.00	25.76	36.00
5755MHz	Pass	4.74	18.02	18.25	17.69	18.33	24.10	30.00	28.84	36.00
5795MHz	Pass	4.74	19.02	19.11	18.52	19.37	25.04	30.00	29.78	36.00
ac80_80MHz_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5210MHz	Pass	3.23	7.95	8.21	9.12	8.91	14.59	30.00	17.82	36.00
5775MHz	Pass	4.74	11.85	12.25	12.21	13.01	18.37	30.00	23.11	36.00

DG = Directional Gain; Port X = Port X output power



Summary

Mode	PD (dBm/RBW)	EIRP PD (dBm/RBW)
5.15-5.25GHz	-	-
ac20_20MHz_Nss4,(MCS0)_4TX	13.86	17.09
ac40_40MHz_Nss4,(MCS0)_4TX	8.02	11.25
ac80_80MHz_Nss4,(MCS0)_4TX	-4.42	-1.19
5.725-5.85GHz	-	-
ac20_20MHz_Nss4,(MCS0)_4TX	13.22	17.96
ac40_40MHz_Nss4,(MCS0)_4TX	9.08	13.82
ac80_80MHz_Nss4,(MCS0)_4TX	-0.11	4.63

RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band;

Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	Port 3 (dBm/RBW)	Port 4 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)	EIRP PD (dBm/RBW)	EIRP PD Limit (dBm/RBW)
ac20_20MHz_Nss4,(MCS0)_4TX										
5180MHz	Pass	3.23	2.97	1.39	2.22	2.61	8.19	17.00	11.42	23.00
5200MHz	Pass	3.23	5.52	3.49	4.13	4.79	10.37	17.00	13.60	23.00
5240MHz	Pass	3.23	8.29	7.65	7.84	8.03	13.86	17.00	17.09	23.00
5745MHz	Pass	4.74	7.17	7.36	7.39	7.24	13.22	30.00	17.96	36.00
5785MHz	Pass	4.74	6.88	7.17	7.73	7.03	13.08	30.00	17.82	36.00
5825MHz	Pass	4.74	6.21	6.24	6.04	6.39	12.13	30.00	16.87	36.00
ac40_40MHz_Nss4,(MCS0)_4TX										
5190MHz	Pass	3.23	-4.59	-6.04	-4.60	-4.40	1.06	17.00	4.29	23.00
5230MHz	Pass	3.23	2.98	1.12	1.71	2.37	8.02	17.00	11.25	23.00
5755MHz	Pass	4.74	2.14	2.20	2.10	2.29	8.04	30.00	12.78	36.00
5795MHz	Pass	4.74	3.12	3.10	2.55	3.55	9.08	30.00	13.82	36.00
ac80_80MHz_Nss4,(MCS0)_4TX										
5210MHz	Pass	3.23	-9.95	-10.71	-10.48	-10.14	-4.42	17.00	-1.19	23.00
5775MHz	Pass	4.74	-6.52	-6.11	-6.14	-5.38	-0.11	30.00	4.63	36.00

DG = Directional Gain

For 5.15 ~ 5.25 GHz

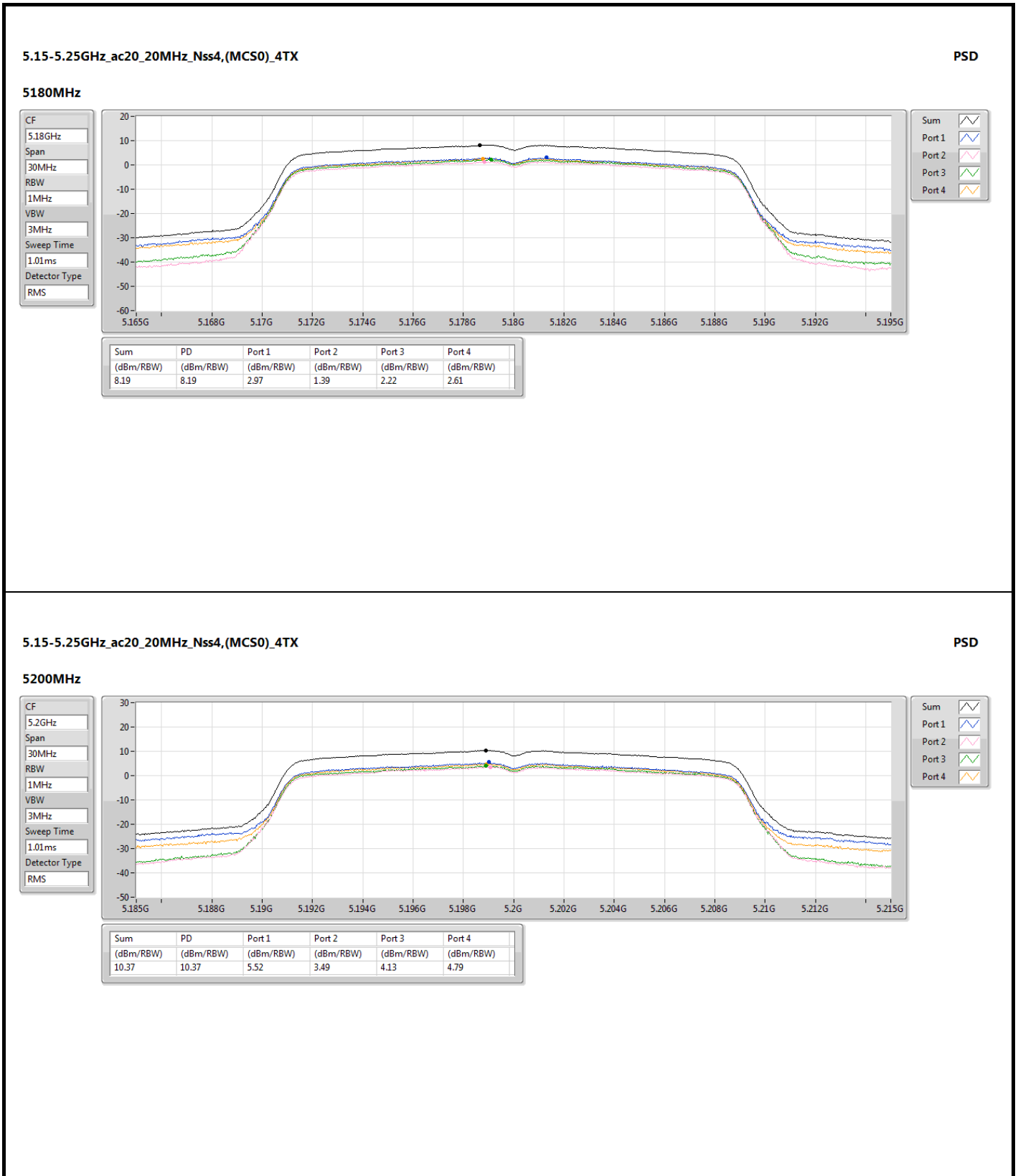
Directional gain =  $3.23 + 10 \cdot \log(4/4) = 3.23$  dBi

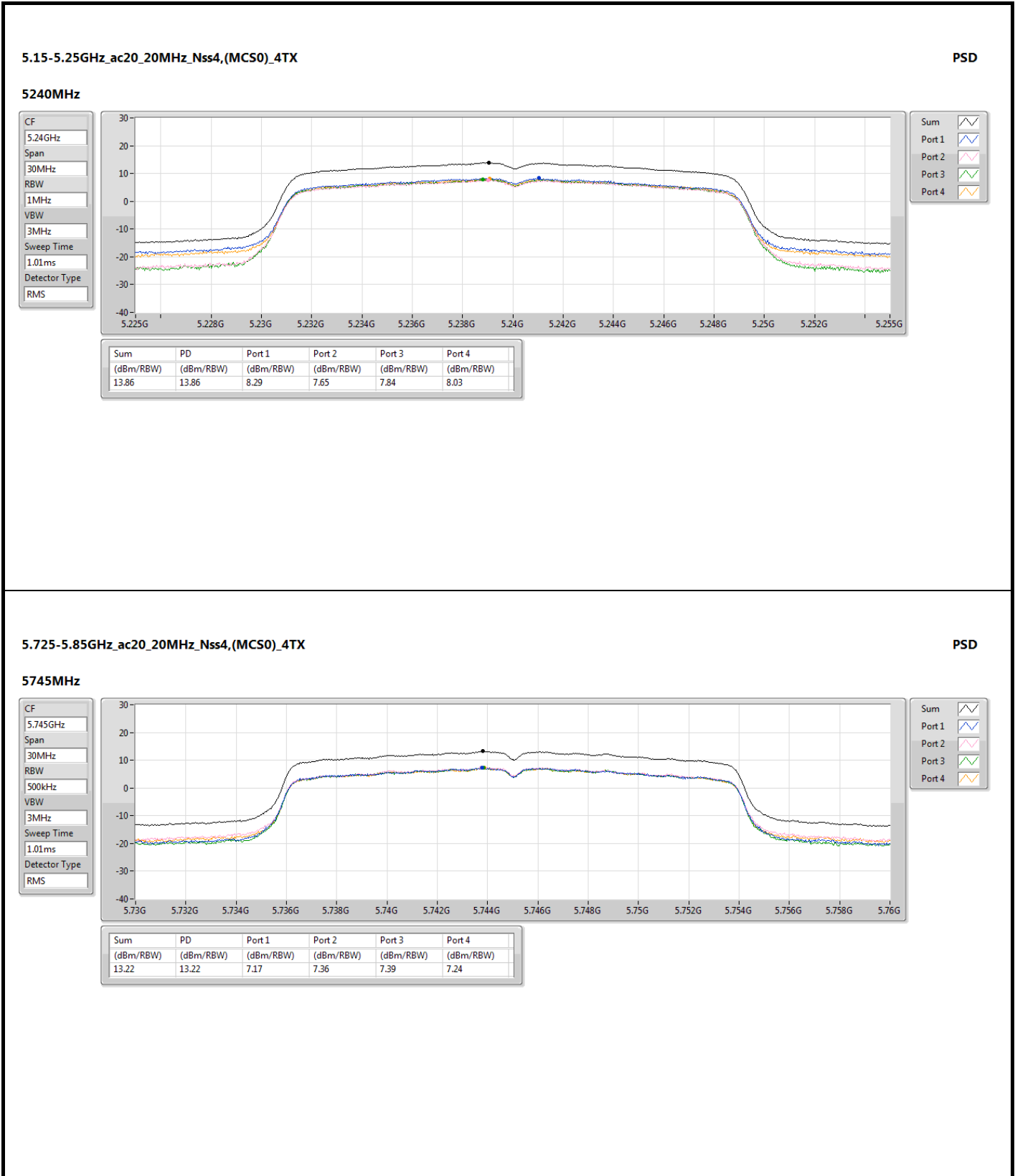
For 5.725 ~ 5.55 GHz

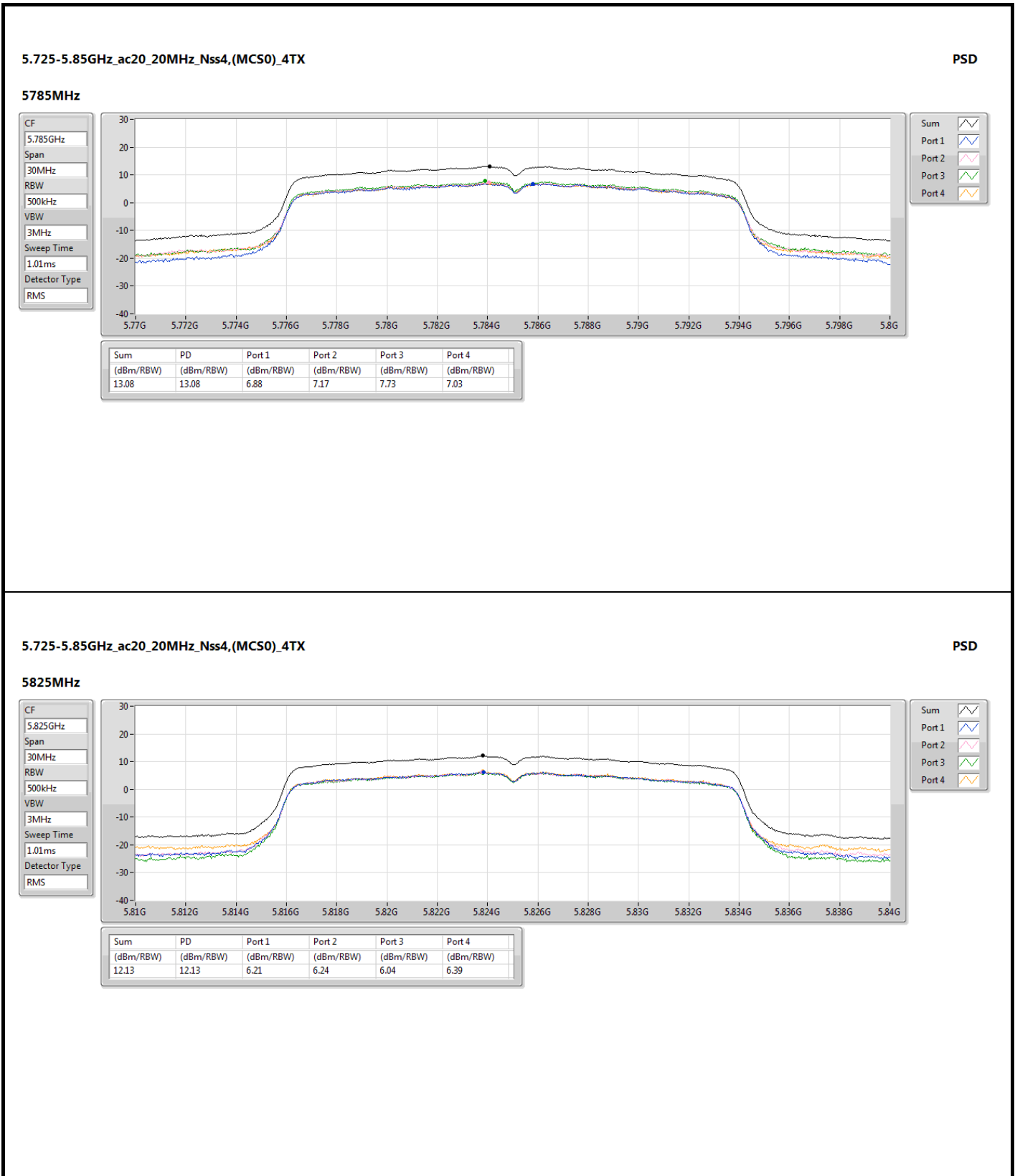
Directional gain =  $4.74 + 10 \cdot \log(4/4) = 4.74$  dBi

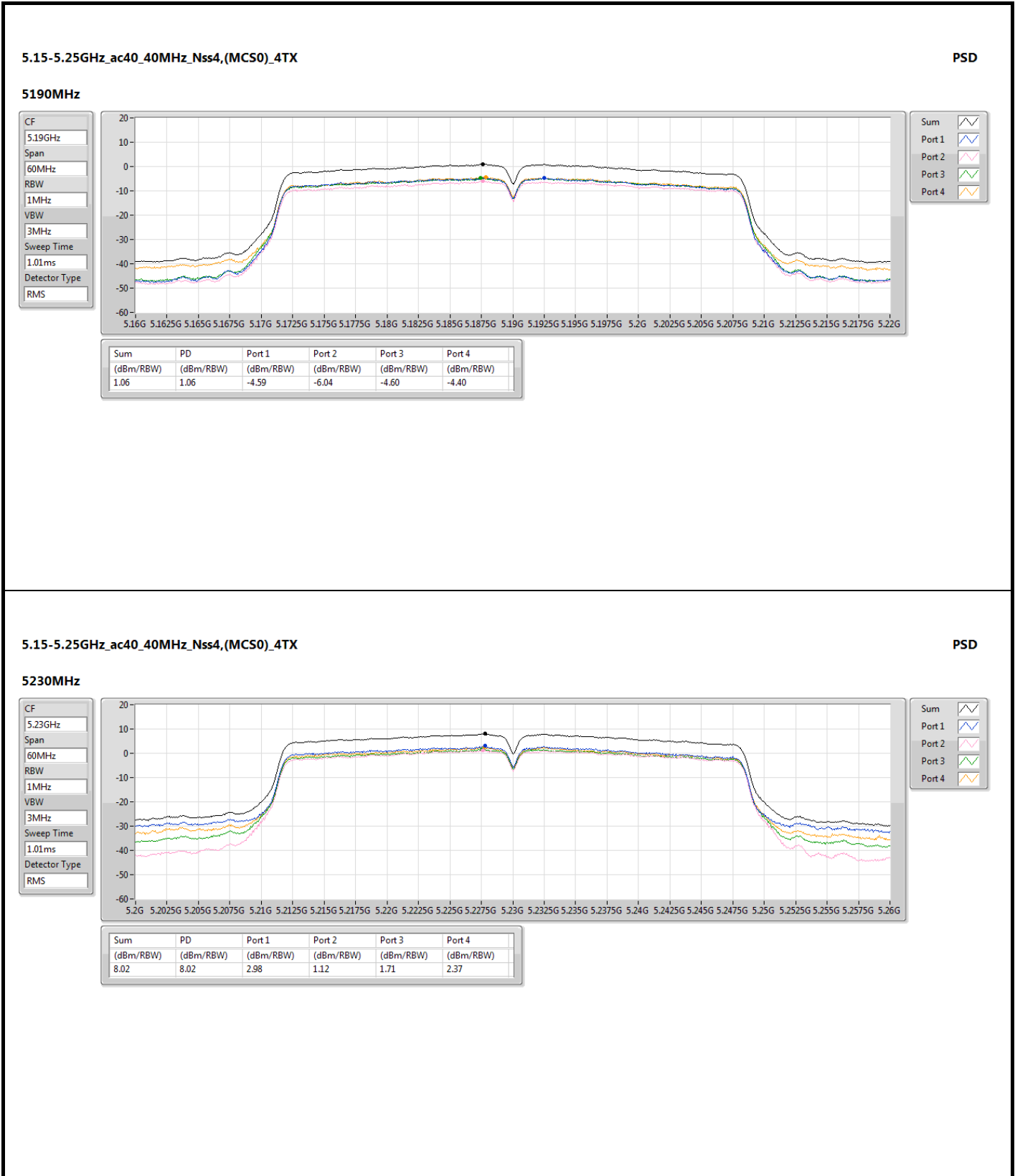
RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band;

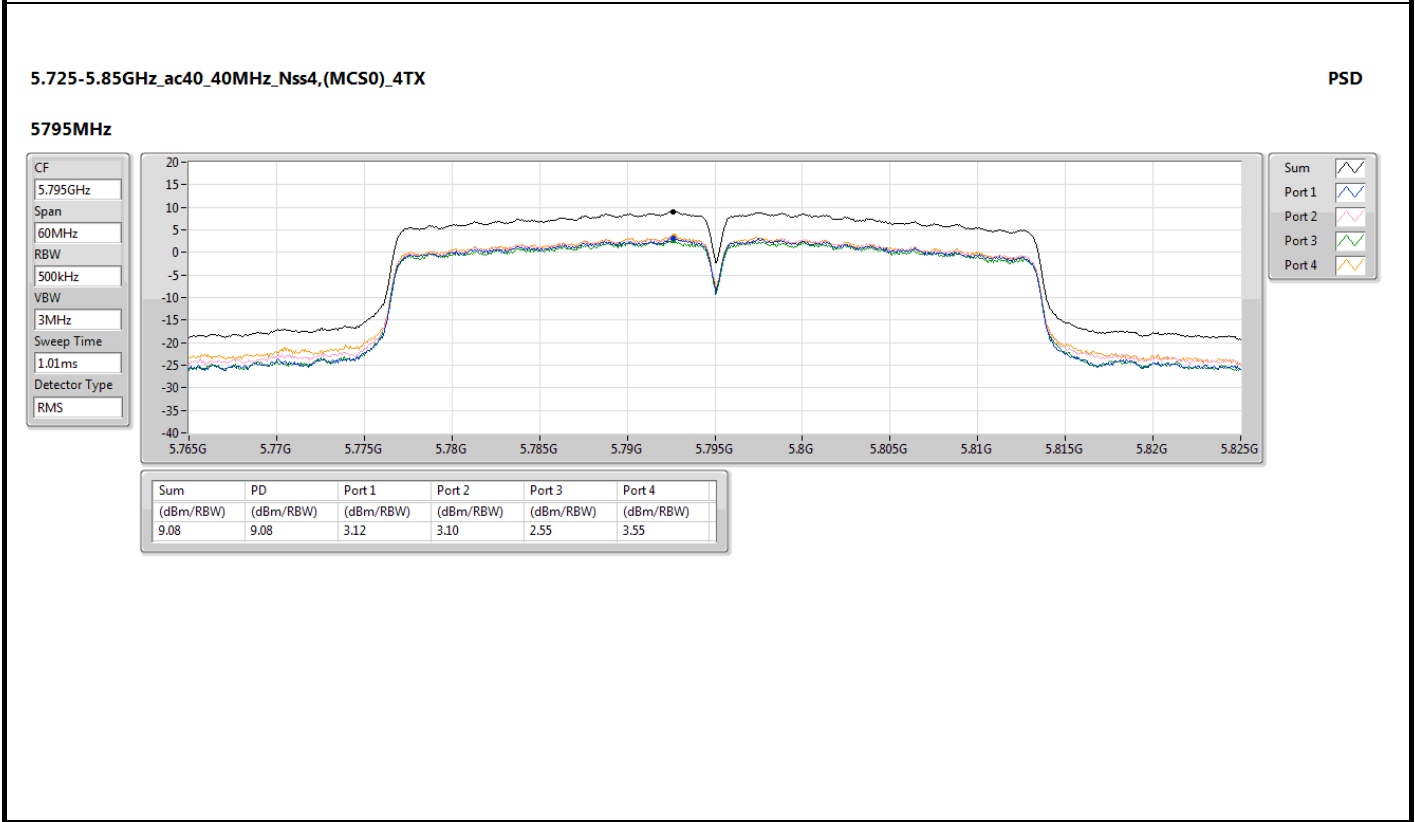
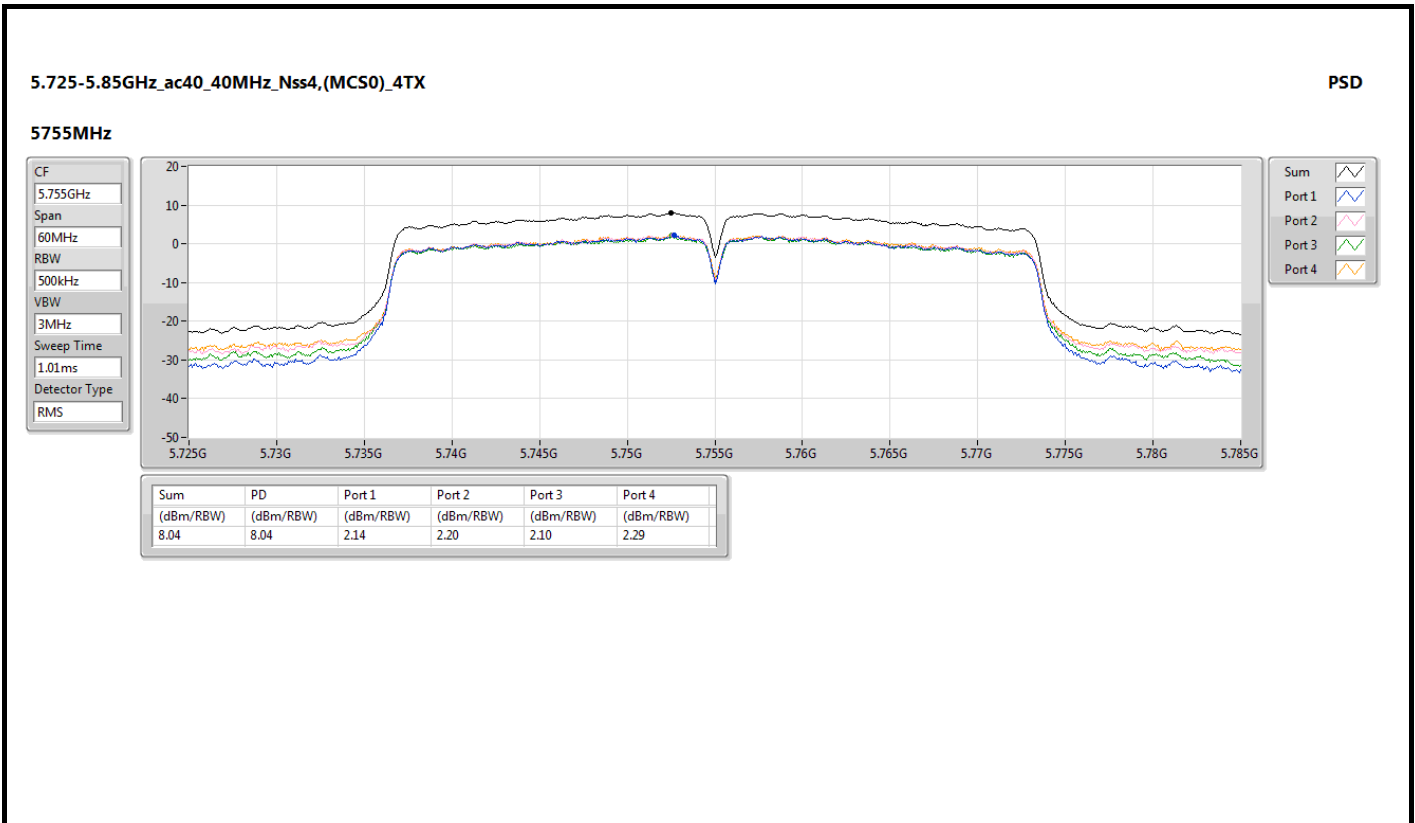
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

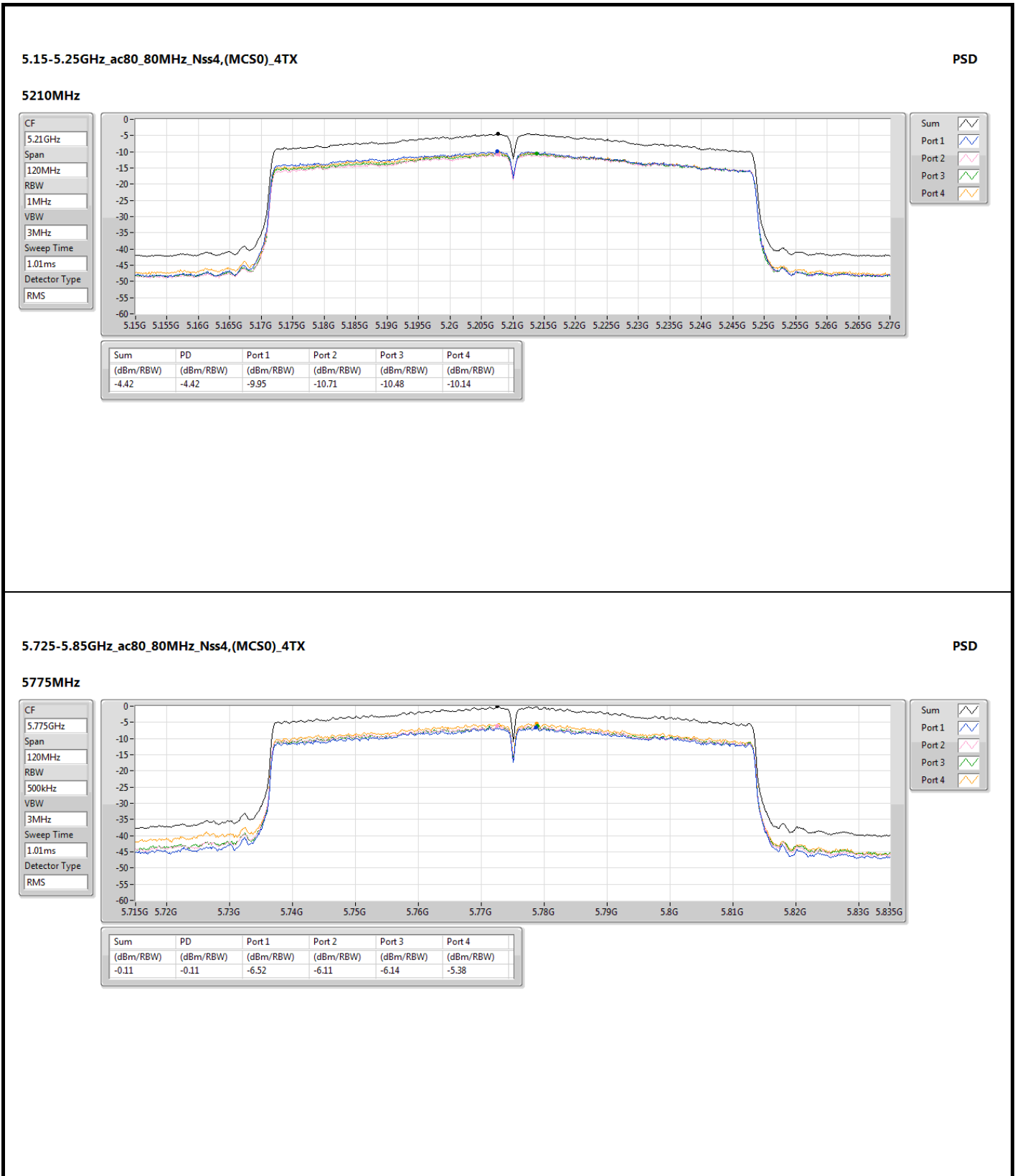












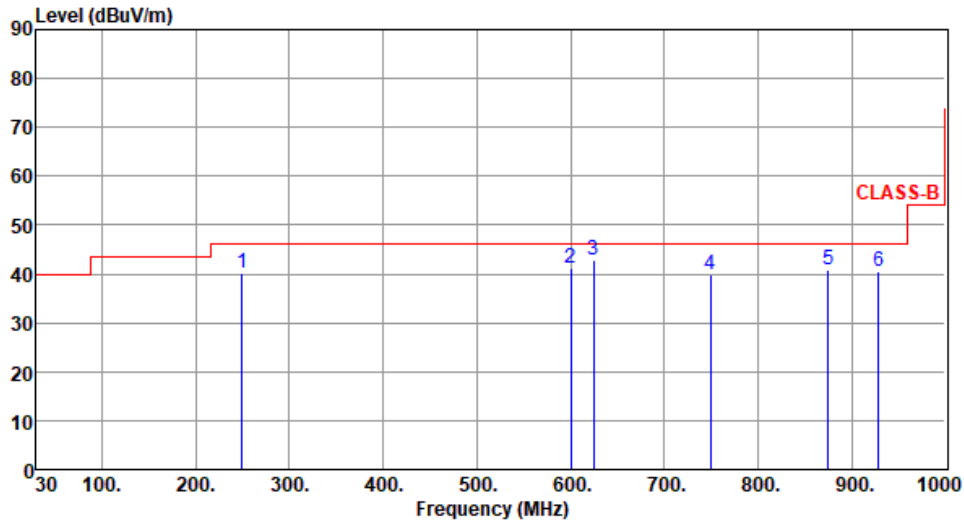




Unwanted Emissions (Below 1GHz)

Modulation	ac VHT20	Test Freq. (MHz)	5240
Polarization	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/m	Remark	ANT High cm	Turn Table deg
1	249.22	40.13	46.00	-5.87	49.77	-9.64	Peak	---	---
2	600.36	41.25	46.00	-4.75	41.12	0.13	Peak	---	---
3	624.61	42.86	46.00	-3.14	42.20	0.66	QP	132	45
4	749.74	39.92	46.00	-6.08	36.69	3.23	Peak	---	---
5	874.87	40.82	46.00	-5.18	35.75	5.07	Peak	---	---
6	928.22	40.56	46.00	-5.44	34.31	6.25	Peak	---	---

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

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

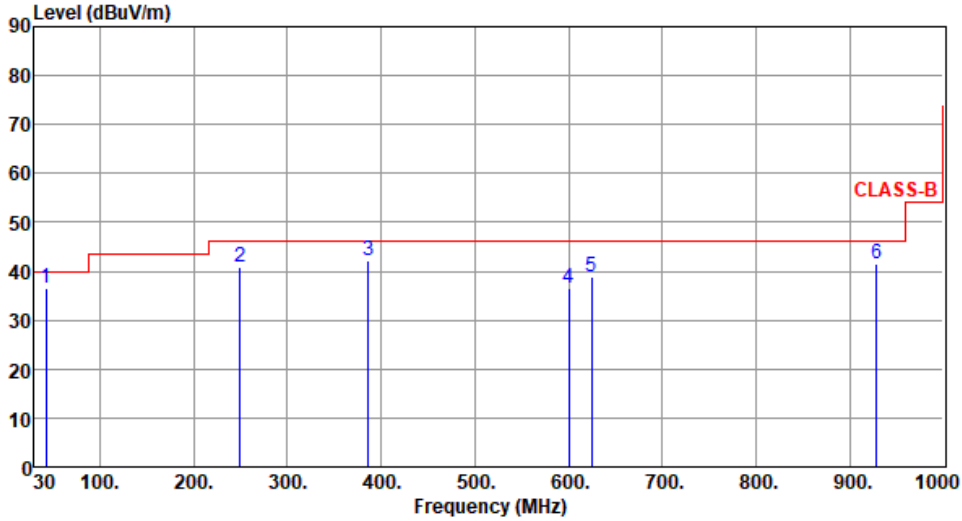
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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



Modulation	ac VHT20	Test Freq. (MHz)	5240
Polarization	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/m	Remark	ANT High cm	Turn Table deg
1	42.61	36.68	40.00	-3.32	45.53	-8.85	QP	100	291
2	249.22	40.97	46.00	-5.03	50.61	-9.64	Peak	---	---
3	385.99	42.07	46.00	-3.93	47.39	-5.32	Peak	---	---
4	600.36	36.53	46.00	-9.47	36.40	0.13	Peak	---	---
5	624.61	39.01	46.00	-6.99	38.35	0.66	Peak	---	---
6	928.22	41.56	46.00	-4.44	35.31	6.25	Peak	---	---

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

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

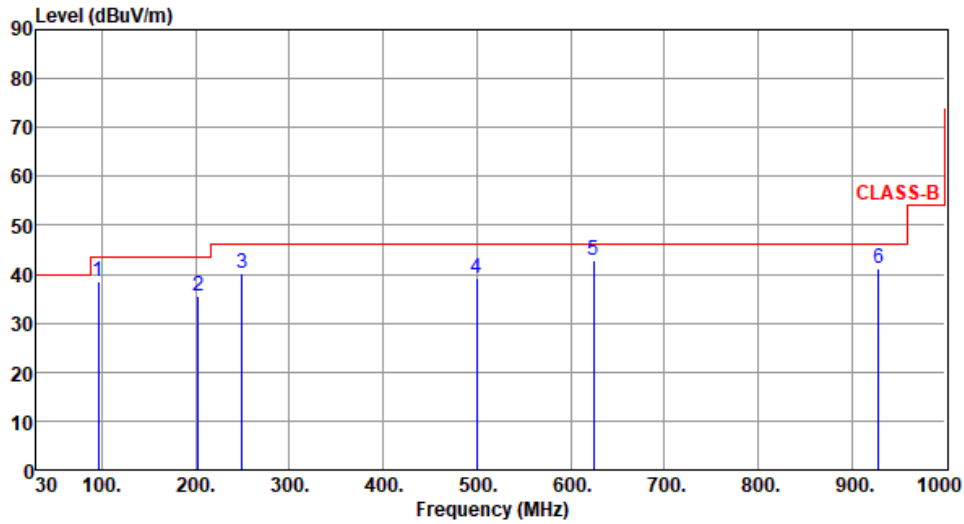
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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



<b>Modulation</b>	ac VHT20	<b>Test Freq. (MHz)</b>	5745
<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/m	Remark	ANT High cm	Turn Table deg
1	95.96	38.55	43.50	-4.95	52.40	-13.85	Peak	---	---
2	202.66	35.45	43.50	-8.05	47.27	-11.82	Peak	---	---
3	249.22	40.06	46.00	-5.94	49.70	-9.64	Peak	---	---
4	499.48	39.31	46.00	-6.69	41.80	-2.49	Peak	---	---
5	624.61	42.92	46.00	-3.08	42.26	0.66	QP	130	43
6	928.22	41.03	46.00	-4.97	34.78	6.25	Peak	---	---

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

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

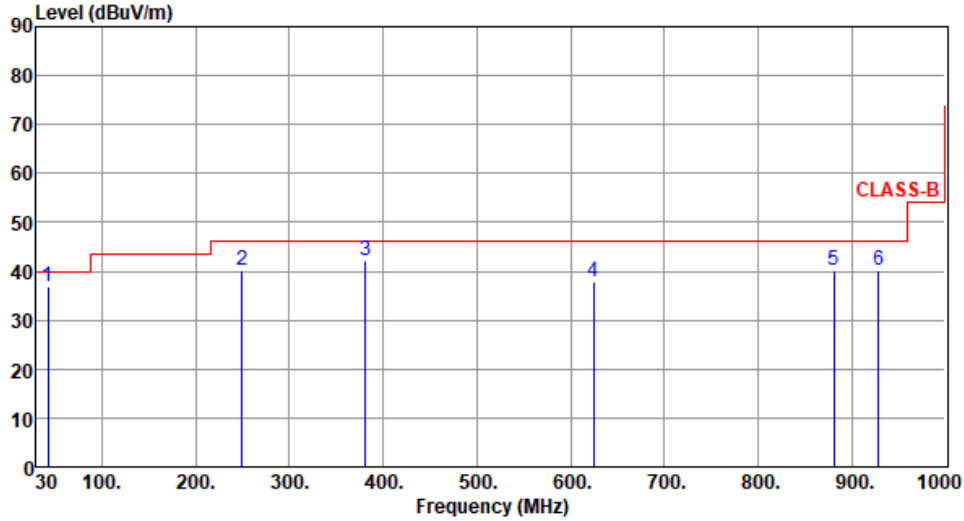
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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



<b>Modulation</b>	ac VHT20	<b>Test Freq. (MHz)</b>	5745
<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/m	Remark	ANT High cm	Turn Table deg
1	42.61	36.84	40.00	-3.16	45.69	-8.85	QP	100	289
2	249.22	40.28	46.00	-5.72	49.92	-9.64	Peak	---	---
3	381.14	42.23	46.00	-3.77	47.75	-5.52	Peak	---	---
4	624.61	37.96	46.00	-8.04	37.30	0.66	Peak	---	---
5	880.69	40.32	46.00	-5.68	35.20	5.12	Peak	---	---
6	928.22	40.06	46.00	-5.94	33.81	6.25	Peak	---	---

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

\*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.



Unwanted Emissions (Above 1GHz) for ac VHT20

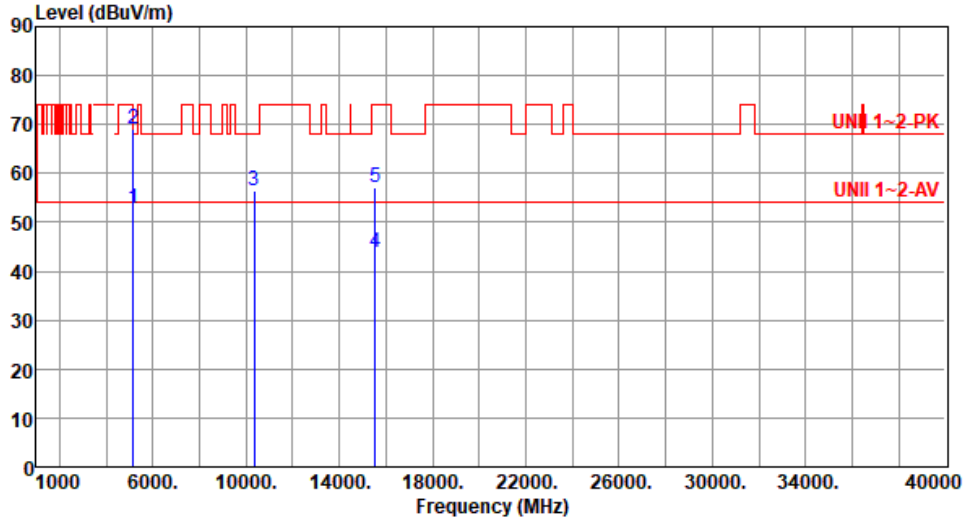
Modulation	ac VHT20	Test Freq. (MHz)	5180						
Polarization	Horizontal								
Test By :Brad Wu      Temperature(°C):24      Humidity(%):65									
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	43.62	54.00	-10.38	42.80	0.82	Average	261	82
2	5150.00	58.84	74.00	-15.16	58.02	0.82	Peak	261	82
3	10360.00	55.49	68.20	-12.71	47.00	8.49	Peak	100	145
4	15540.00	43.62	54.00	-10.38	37.64	5.98	Average	100	315
5	15540.00	56.53	74.00	-17.47	50.55	5.98	Peak	100	315

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



Modulation	ac VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	52.70	54.00	-1.30	51.88	0.82	Average	172	247
2	5150.00	69.10	74.00	-4.90	68.28	0.82	Peak	172	247
3	10360.00	56.32	68.20	-11.88	47.83	8.49	Peak	100	185
4	15540.00	43.86	54.00	-10.14	37.88	5.98	Average	100	168
5	15540.00	57.02	74.00	-16.98	51.04	5.98	Peak	100	168

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

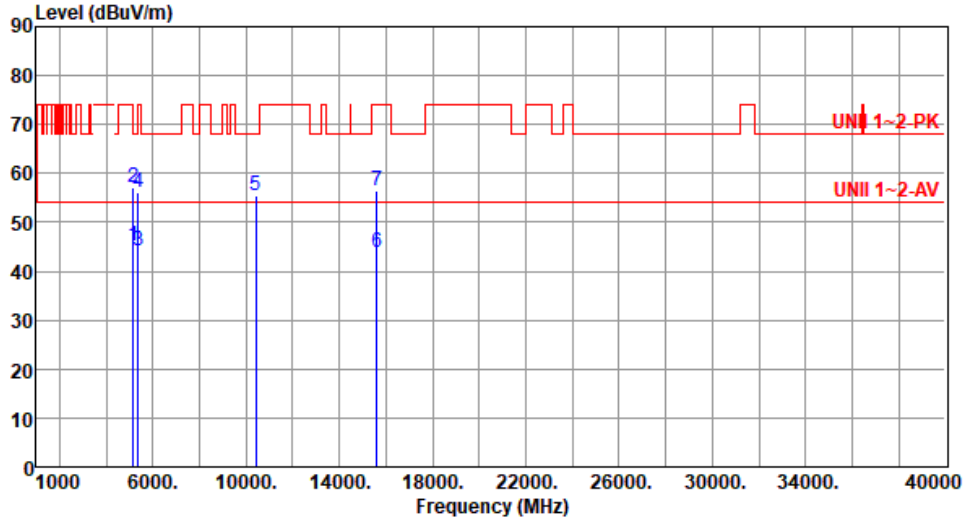
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT20	Test Freq. (MHz)	5200
Polarization	Horizontal		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	45.06	54.00	-8.94	44.24	0.82	Average	264	78
2	5150.00	57.12	74.00	-16.88	56.30	0.82	Peak	264	78
3	5350.00	44.29	54.00	-9.71	44.15	0.14	Average	264	78
4	5350.00	56.20	74.00	-17.80	56.06	0.14	Peak	264	78
5	10400.00	55.62	68.20	-12.58	46.98	8.64	Peak	100	141
6	15600.00	43.76	54.00	-10.24	38.01	5.75	Average	100	306
7	15600.00	56.62	74.00	-17.38	50.87	5.75	Peak	100	306

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

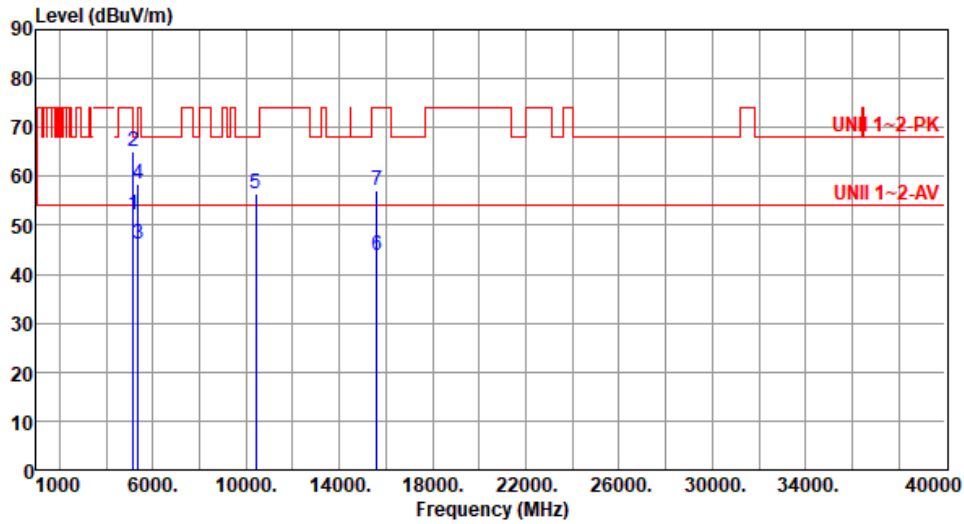
\*Factor includes antenna factor , cable loss and amplifier gain

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



<b>Modulation</b>	ac VHT20	<b>Test Freq. (MHz)</b>	5200
<b>Polarization</b>	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	52.27	54.00	-1.73	51.45	0.82	Average	175	245
2	5150.00	64.95	74.00	-9.05	64.13	0.82	Peak	175	245
3	5350.00	46.24	54.00	-7.76	46.10	0.14	Average	175	245
4	5350.00	58.34	74.00	-15.66	58.20	0.14	Peak	175	245
5	10400.00	56.50	68.20	-11.70	47.86	8.64	Peak	100	181
6	15600.00	43.93	54.00	-10.07	38.18	5.75	Average	100	162
7	15600.00	57.10	74.00	-16.90	51.35	5.75	Peak	100	162

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

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

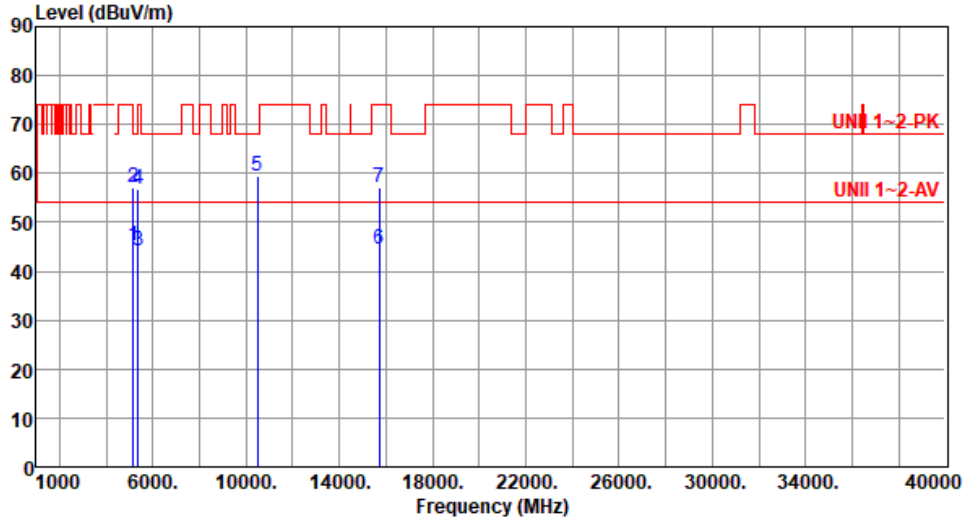
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).





<b>Modulation</b>	ac VHT20	<b>Test Freq. (MHz)</b>	5240
<b>Polarization</b>	Horizontal		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	45.10	54.00	-8.90	44.28	0.82	Average	264	78
2	5150.00	57.00	74.00	-17.00	56.18	0.82	Peak	264	78
3	5350.00	44.20	54.00	-9.80	44.06	0.14	Average	264	78
4	5350.00	56.83	74.00	-17.17	56.69	0.14	Peak	264	78
5	10480.00	59.39	68.20	-8.81	50.70	8.69	Peak	108	146
6	15720.00	44.48	54.00	-9.52	38.76	5.72	Average	100	313
7	15720.00	57.13	74.00	-16.87	51.41	5.72	Peak	100	313

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

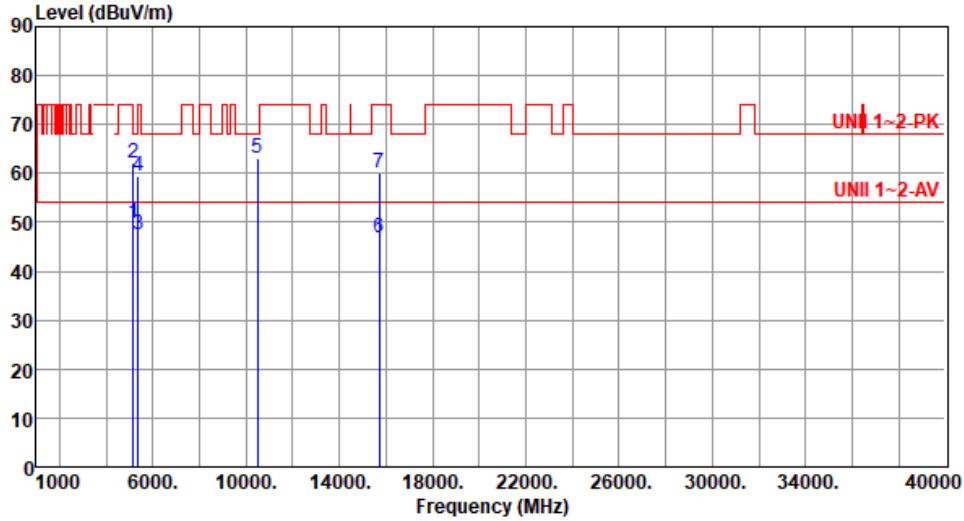
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	49.93	54.00	-4.07	49.11	0.82	Average	171	249
2	5150.00	62.04	74.00	-11.96	61.22	0.82	Peak	171	249
3	5350.00	47.39	54.00	-6.61	47.25	0.14	Average	171	249
4	5350.00	59.53	74.00	-14.47	59.39	0.14	Peak	171	249
5	10480.00	62.94	68.20	-5.26	54.25	8.69	Peak	100	189
6	15720.00	46.95	54.00	-7.05	41.23	5.72	Average	100	172
7	15720.00	59.98	74.00	-14.02	54.26	5.72	Peak	100	172

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

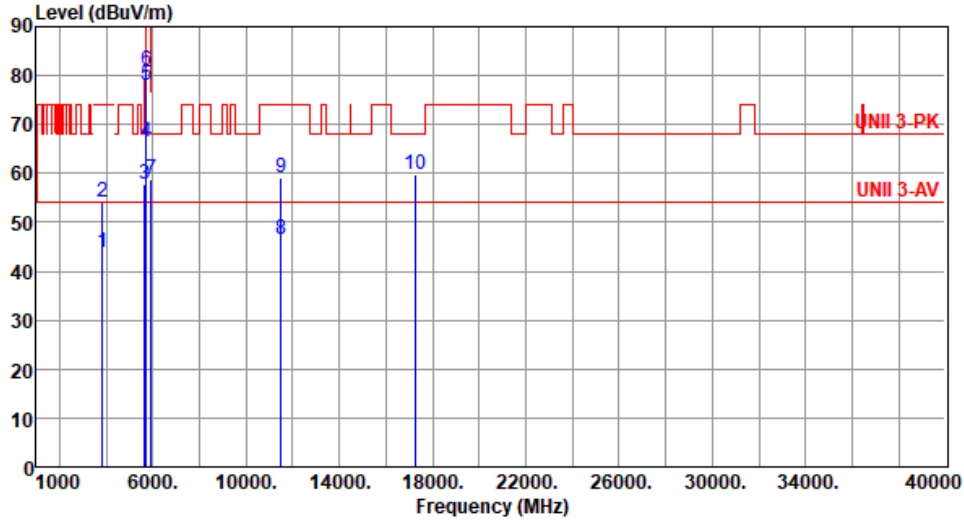
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT20	Test Freq. (MHz)	5745
Polarization	Horizontal		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	3830.00	43.82	54.00	-10.18	45.25	-1.43	Average	100	119
2	3830.00	54.16	74.00	-19.84	55.59	-1.43	Peak	100	119
3	5650.00	57.82	68.20	-10.38	57.28	0.54	Peak	110	115
4	5700.00	66.42	105.20	-38.78	65.56	0.86	Peak	110	115
5	5720.00	78.16	110.80	-32.64	77.25	0.91	Peak	110	115
6	5725.00	81.12	122.20	-41.08	80.19	0.93	Peak	110	115
7	5925.00	58.65	68.20	-9.55	57.16	1.49	Peak	110	115
8	11490.00	46.52	54.00	-7.48	37.81	8.71	Average	100	131
9	11490.00	59.13	74.00	-14.87	50.42	8.71	Peak	100	131
10	17235.00	59.68	68.20	-8.52	53.42	6.26	Peak	100	61

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

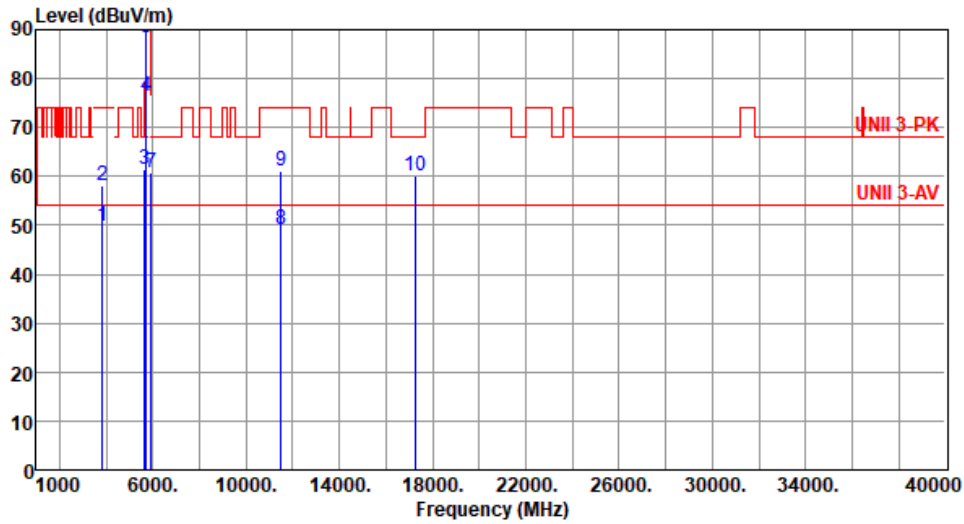
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT20	Test Freq. (MHz)	5745
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	3830.00	49.88	54.00	-4.12	51.31	-1.43	Average	236	243
2	3830.00	57.99	74.00	-16.01	59.42	-1.43	Peak	236	243
3	5650.00	61.56	68.20	-6.64	61.02	0.54	Peak	187	194
4	5700.00	76.37	105.20	-28.83	75.51	0.86	Peak	187	194
5	5720.00	88.32	110.80	-22.48	87.41	0.91	Peak	187	194
6	5725.00	91.23	122.20	-30.97	90.30	0.93	Peak	187	194
7	5925.00	60.71	68.20	-7.49	59.22	1.49	Peak	187	194
8	11490.00	49.29	54.00	-4.71	40.58	8.71	Average	100	115
9	11490.00	61.08	74.00	-12.92	52.37	8.71	Peak	100	115
10	17235.00	60.16	68.20	-8.04	53.90	6.26	Peak	100	29

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

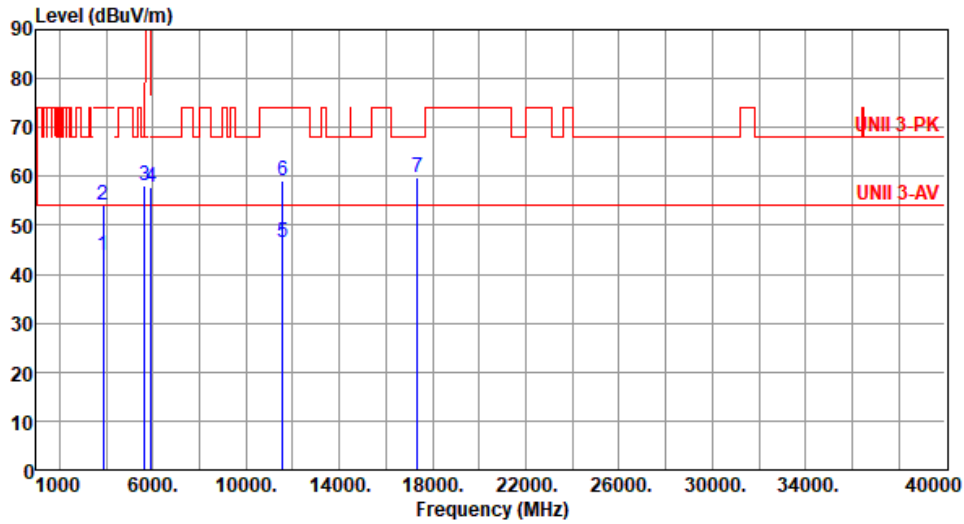
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	3856.66	43.71	54.00	-10.29	45.07	-1.36	Average	100	114
2	3856.66	54.09	74.00	-19.91	55.45	-1.36	Peak	100	114
3	5650.00	58.10	68.20	-10.10	57.56	0.54	Peak	108	118
4	5925.00	57.77	68.20	-10.43	56.28	1.49	Peak	108	118
5	11570.00	46.64	54.00	-7.36	38.05	8.59	Average	100	129
6	11570.00	59.19	74.00	-14.81	50.60	8.59	Peak	100	129
7	17355.00	59.76	68.20	-8.44	53.18	6.58	Peak	100	56

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

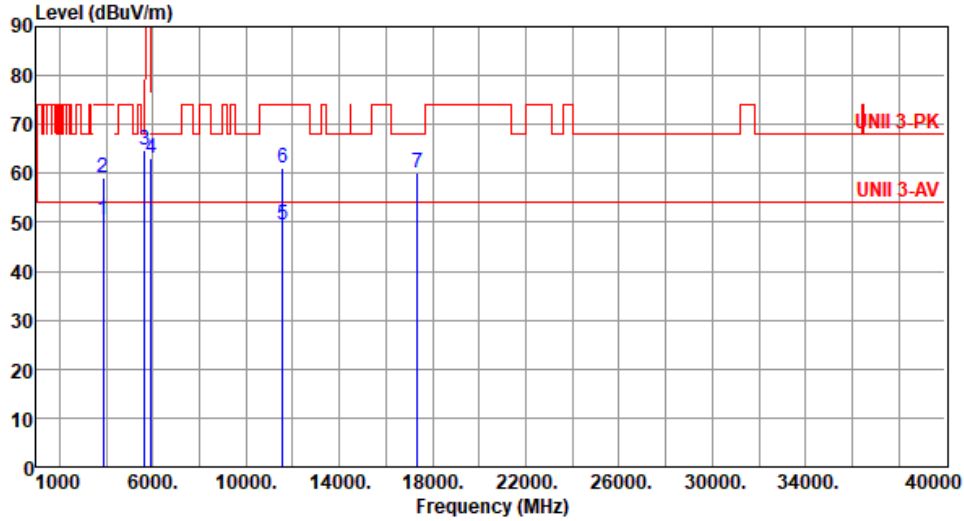
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT20	Test Freq. (MHz)	5785
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	3856.66	50.49	54.00	-3.51	51.85	-1.36	Average	238	244
2	3856.66	58.98	74.00	-15.02	60.34	-1.36	Peak	238	244
3	5650.00	64.64	68.20	-3.56	64.10	0.54	Peak	135	215
4	5925.00	63.05	68.20	-5.15	61.56	1.49	Peak	135	215
5	11570.00	49.40	54.00	-4.60	40.81	8.59	Average	100	113
6	11570.00	61.22	74.00	-12.78	52.63	8.59	Peak	100	113
7	17355.00	60.02	68.20	-8.18	53.44	6.58	Peak	100	22

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

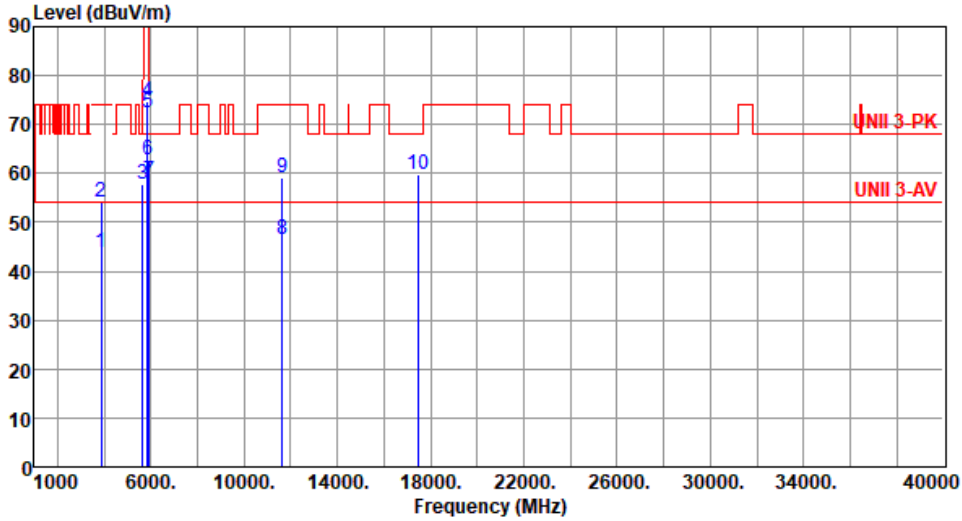
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	3883.33	43.82	54.00	-10.18	45.14	-1.32	Average	100	111
2	3883.33	54.16	74.00	-19.84	55.48	-1.32	Peak	100	111
3	5650.00	57.65	68.20	-10.55	57.11	0.54	Peak	110	114
4	5850.00	74.62	122.20	-47.58	73.38	1.24	Peak	110	114
5	5855.00	72.45	110.80	-38.35	71.19	1.26	Peak	110	114
6	5875.00	62.65	105.20	-42.55	61.29	1.36	Peak	110	114
7	5925.00	58.49	68.20	-9.71	57.00	1.49	Peak	110	114
8	11650.00	46.51	54.00	-7.49	38.28	8.23	Average	100	131
9	11650.00	59.03	74.00	-14.97	50.80	8.23	Peak	100	131
10	17475.00	59.62	68.20	-8.58	52.53	7.09	Peak	100	66

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

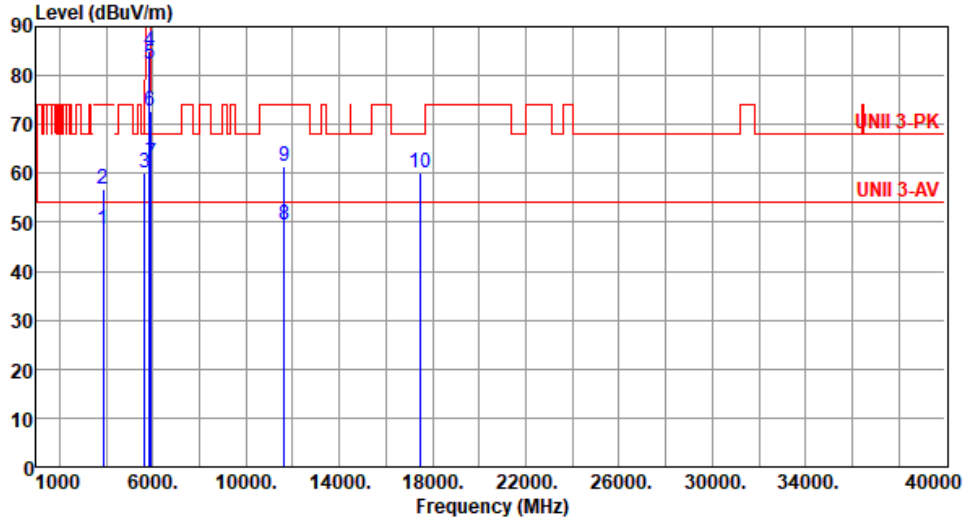
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT20	Test Freq. (MHz)	5825
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	3883.33	48.51	54.00	-5.49	49.83	-1.32	Average	241	242
2	3883.33	56.87	74.00	-17.13	58.19	-1.32	Peak	241	242
3	5650.00	60.01	68.20	-8.19	59.47	0.54	Peak	198	196
4	5850.00	84.87	122.20	-37.33	83.63	1.24	Peak	198	196
5	5855.00	82.51	110.80	-28.29	81.25	1.26	Peak	198	196
6	5875.00	72.89	105.20	-32.31	71.53	1.36	Peak	198	196
7	5925.00	62.11	68.20	-6.09	60.62	1.49	Peak	198	196
8	11650.00	49.52	54.00	-4.48	41.29	8.23	Average	100	118
9	11650.00	61.34	74.00	-12.66	53.11	8.23	Peak	100	118
10	17475.00	60.16	68.20	-8.04	53.07	7.09	Peak	100	29

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

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

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





Unwanted Emissions (Above 1GHz) for ac VHT40

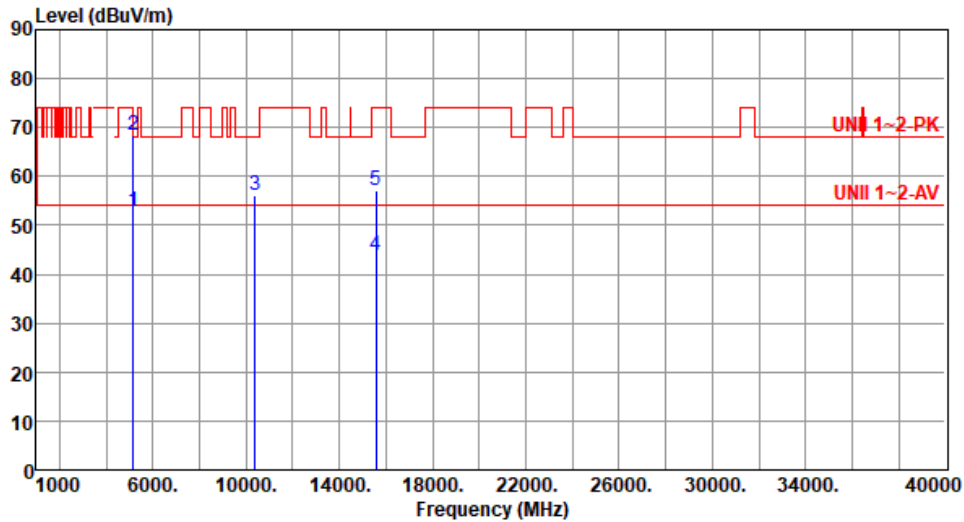
Modulation	ac VHT40	Test Freq. (MHz)	5190						
Polarization	Horizontal								
Test By :Brad Wu      Temperature(°C):24      Humidity(%):65									
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	43.96	54.00	-10.04	43.14	0.82	Average	264	85
2	5150.00	58.65	74.00	-15.35	57.83	0.82	Peak	264	85
3	10380.00	55.48	68.20	-12.72	46.91	8.57	Peak	100	146
4	15570.00	43.62	54.00	-10.38	37.76	5.86	Average	100	301
5	15570.00	56.45	74.00	-17.55	50.59	5.86	Peak	100	301

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



Modulation	ac VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	52.95	54.00	-1.05	52.13	0.82	Average	201	246
2	5150.00	68.48	74.00	-5.52	67.66	0.82	Peak	201	246
3	10380.00	56.22	68.20	-11.98	47.65	8.57	Peak	100	169
4	15570.00	43.84	54.00	-10.16	37.98	5.86	Average	100	153
5	15570.00	57.02	74.00	-16.98	51.16	5.86	Peak	100	153

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

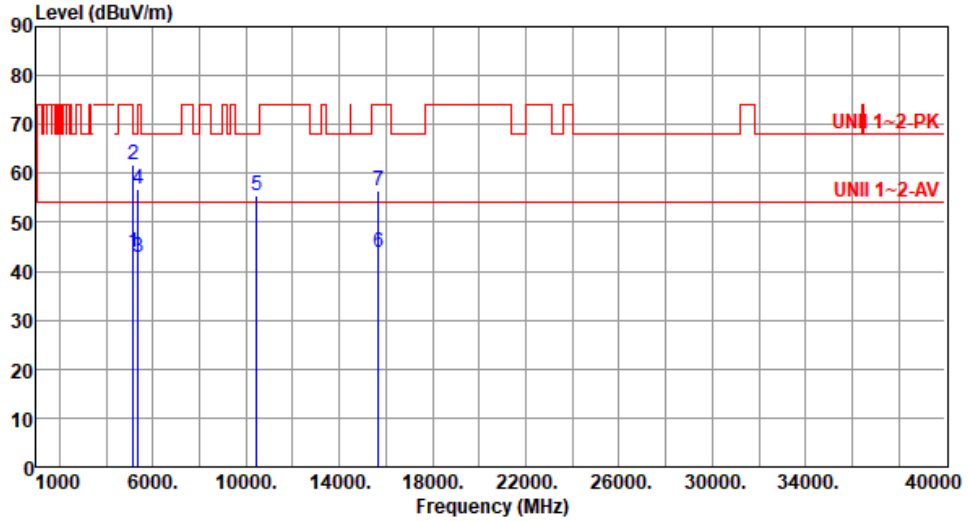
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT40	Test Freq. (MHz)	5230
Polarization	Horizontal		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	43.81	54.00	-10.19	42.99	0.82	Average	266	75
2	5150.00	61.65	74.00	-12.35	60.83	0.82	Peak	266	75
3	5350.00	42.95	54.00	-11.05	42.81	0.14	Average	266	75
4	5350.00	56.64	74.00	-17.36	56.50	0.14	Peak	266	75
5	10460.00	55.49	68.20	-12.71	46.81	8.68	Peak	100	133
6	15690.00	43.68	54.00	-10.32	37.93	5.75	Average	100	312
7	15690.00	56.55	74.00	-17.45	50.80	5.75	Peak	100	312

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

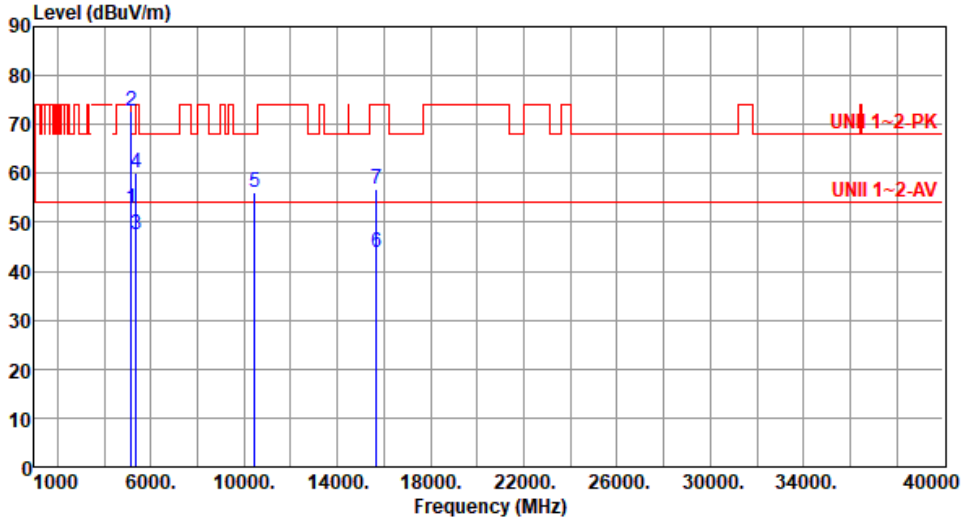
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT40	Test Freq. (MHz)	5230
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	52.94	54.00	-1.06	52.12	0.82	Average	200	240
2	5150.00	72.78	74.00	-1.22	71.96	0.82	Peak	200	240
3	5350.00	47.64	54.00	-6.36	47.50	0.14	Average	200	240
4	5350.00	60.13	74.00	-13.87	59.99	0.14	Peak	200	240
5	10460.00	56.29	68.20	-11.91	47.61	8.68	Peak	100	175
6	15690.00	43.81	54.00	-10.19	38.06	5.75	Average	100	163
7	15690.00	56.95	74.00	-17.05	51.20	5.75	Peak	100	163

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

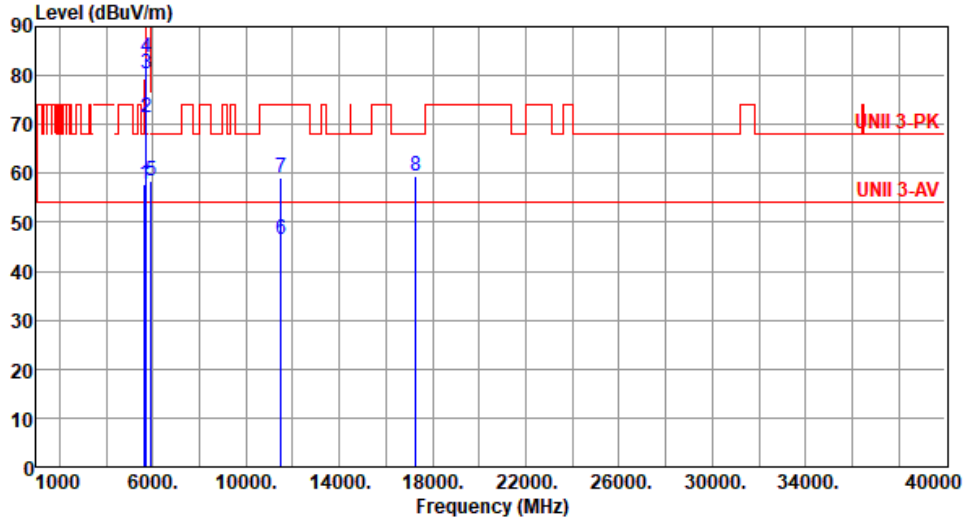
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5650.00	57.82	68.20	-10.38	57.28	0.54	Peak	114	118
2	5700.00	71.24	105.20	-33.96	70.38	0.86	Peak	114	118
3	5720.00	80.36	110.80	-30.44	79.45	0.91	Peak	114	118
4	5725.00	83.68	122.20	-38.52	82.75	0.93	Peak	114	118
5	5925.00	58.46	68.20	-9.74	56.97	1.49	Peak	114	118
6	11510.00	46.35	54.00	-7.65	37.65	8.70	Average	100	136
7	11510.00	59.04	74.00	-14.96	50.34	8.70	Peak	100	136
8	17265.00	59.56	68.20	-8.64	53.29	6.27	Peak	100	53

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

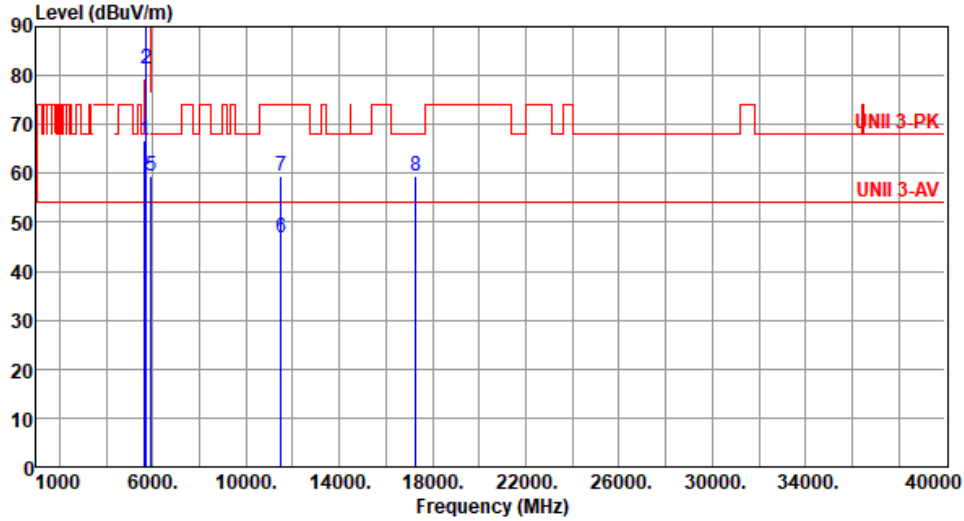
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT40	Test Freq. (MHz)	5755
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5650.00	66.61	68.20	-1.59	66.07	0.54	Peak	195	195
2	5700.00	81.39	105.20	-23.81	80.53	0.86	Peak	195	195
3	5720.00	90.68	110.80	-20.12	89.77	0.91	Peak	195	195
4	5725.00	93.87	122.20	-28.33	92.94	0.93	Peak	195	195
5	5925.00	59.37	68.20	-8.83	57.88	1.49	Peak	195	195
6	11510.00	46.68	54.00	-7.32	37.98	8.70	Average	100	105
7	11510.00	59.29	74.00	-14.71	50.59	8.70	Peak	100	105
8	17265.00	59.54	68.20	-8.66	53.27	6.27	Peak	100	92

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

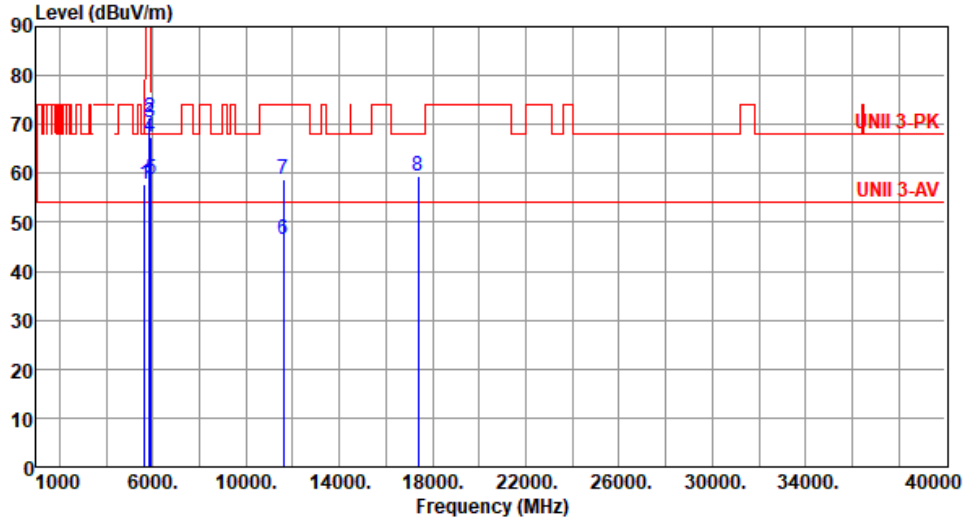
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5650.00	57.86	68.20	-10.34	57.32	0.54	Peak	108	119
2	5850.00	71.24	122.20	-50.96	70.00	1.24	Peak	108	119
3	5855.00	70.45	110.80	-40.35	69.19	1.26	Peak	108	119
4	5875.00	67.29	105.20	-37.91	65.93	1.36	Peak	108	119
5	5925.00	58.62	68.20	-9.58	57.13	1.49	Peak	108	119
6	11590.00	46.48	54.00	-7.52	37.93	8.55	Average	100	136
7	11590.00	58.91	74.00	-15.09	50.36	8.55	Peak	100	136
8	17385.00	59.48	68.20	-8.72	52.75	6.73	Peak	100	76

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

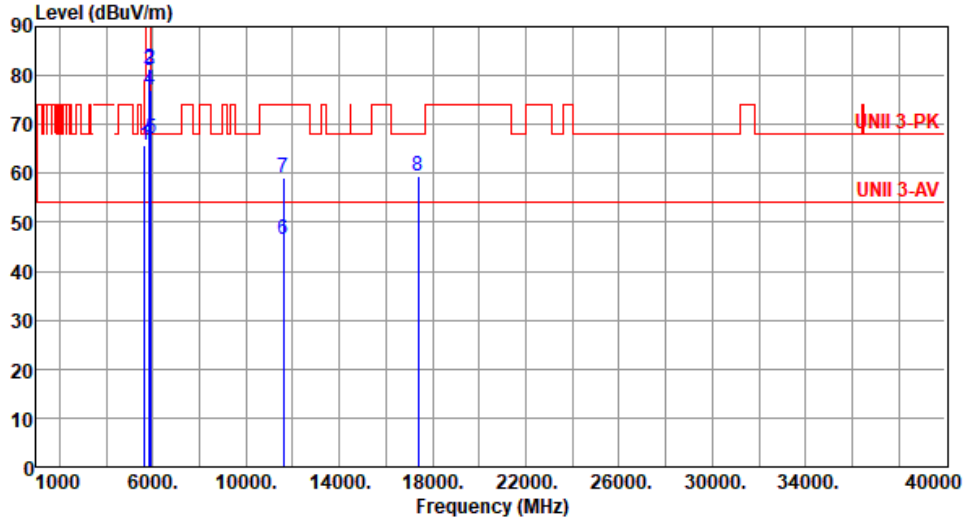
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT40	Test Freq. (MHz)	5795
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5650.00	65.78	68.20	-2.42	65.24	0.54	Peak	201	194
2	5850.00	81.31	122.20	-40.89	80.07	1.24	Peak	201	194
3	5855.00	80.92	110.80	-29.88	79.66	1.26	Peak	201	194
4	5875.00	77.16	105.20	-28.04	75.80	1.36	Peak	201	194
5	5925.00	67.10	68.20	-1.10	65.61	1.49	Peak	201	194
6	11590.00	46.45	54.00	-7.55	37.90	8.55	Average	100	124
7	11590.00	59.11	74.00	-14.89	50.56	8.55	Peak	100	124
8	17385.00	59.56	68.20	-8.64	52.83	6.73	Peak	100	88

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

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

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





Unwanted Emissions (Above 1GHz) for ac VHT80

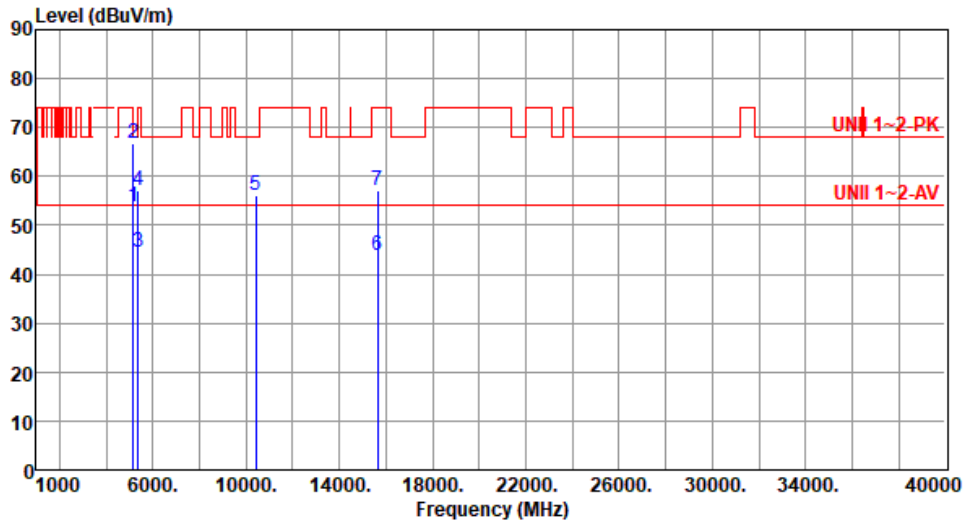
Modulation	ac VHT80	Test Freq. (MHz)	5210						
Polarization	Horizontal								
Test By :Brad Wu      Temperature(°C):24      Humidity(%):65									
<p>The plot shows a red stepped line representing the emission level across a frequency range from 1000 to 40000 MHz. Two horizontal red lines indicate limits: UNII 1~2-PK at approximately 70 dBuV/m and UNII 1~2-AV at approximately 55 dBuV/m. Several peaks are marked with blue vertical lines and numbered 1 through 7. Peak 1 is at 5150 MHz, peak 2 at 5150 MHz, peak 3 at 5350 MHz, peak 4 at 5350 MHz, peak 5 at 10420 MHz, peak 6 at 15630 MHz, and peak 7 at 15630 MHz.</p>									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	43.95	54.00	-10.05	43.13	0.82	Average	258	85
2	5150.00	56.82	74.00	-17.18	56.00	0.82	Peak	258	85
3	5350.00	44.53	54.00	-9.47	44.39	0.14	Average	258	85
4	5350.00	57.04	74.00	-16.96	56.90	0.14	Peak	258	85
5	10420.00	55.41	68.20	-12.79	46.76	8.65	Peak	100	142
6	15630.00	43.51	54.00	-10.49	37.77	5.74	Average	100	298
7	15630.00	56.39	74.00	-17.61	50.65	5.74	Peak	100	298

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



Modulation	ac VHT80	Test Freq. (MHz)	5210
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5150.00	53.84	54.00	-0.16	53.02	0.82	Average	192	248
2	5150.00	66.69	74.00	-7.31	65.87	0.82	Peak	192	248
3	5350.00	44.62	54.00	-9.38	44.48	0.14	Average	192	248
4	5350.00	57.16	74.00	-16.84	57.02	0.14	Peak	192	248
5	10420.00	56.19	68.20	-12.01	47.54	8.65	Peak	100	161
6	15630.00	43.79	54.00	-10.21	38.05	5.74	Average	100	144
7	15630.00	56.98	74.00	-17.02	51.24	5.74	Peak	100	144

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

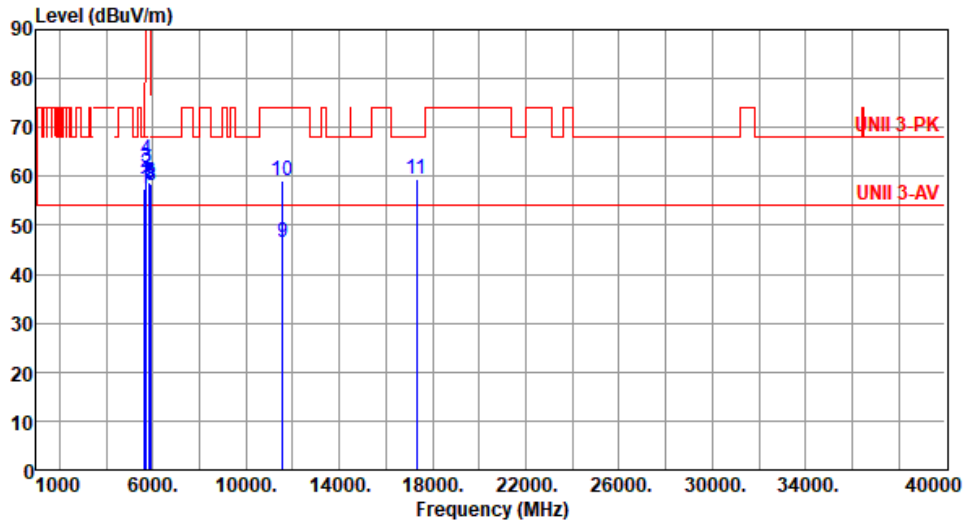
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT80	Test Freq. (MHz)	5775
Polarization	Horizontal		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5650.00	57.46	68.20	-10.74	56.92	0.54	Peak	109	121
2	5700.00	60.68	105.20	-44.52	59.82	0.86	Peak	109	121
3	5720.00	61.65	110.80	-49.15	60.74	0.91	Peak	109	121
4	5725.00	63.52	122.20	-58.68	62.59	0.93	Peak	109	121
5	5850.00	58.69	122.20	-63.51	57.45	1.24	Peak	109	121
6	5855.00	58.54	110.80	-52.26	57.28	1.26	Peak	109	121
7	5875.00	58.35	105.20	-46.85	56.99	1.36	Peak	109	121
8	5925.00	58.16	68.20	-10.04	56.67	1.49	Peak	109	121
9	11550.00	46.34	54.00	-7.66	37.71	8.63	Average	100	121
10	11550.00	59.03	74.00	-14.97	50.40	8.63	Peak	100	121
11	17325.00	59.45	68.20	-8.75	53.02	6.43	Peak	100	92

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

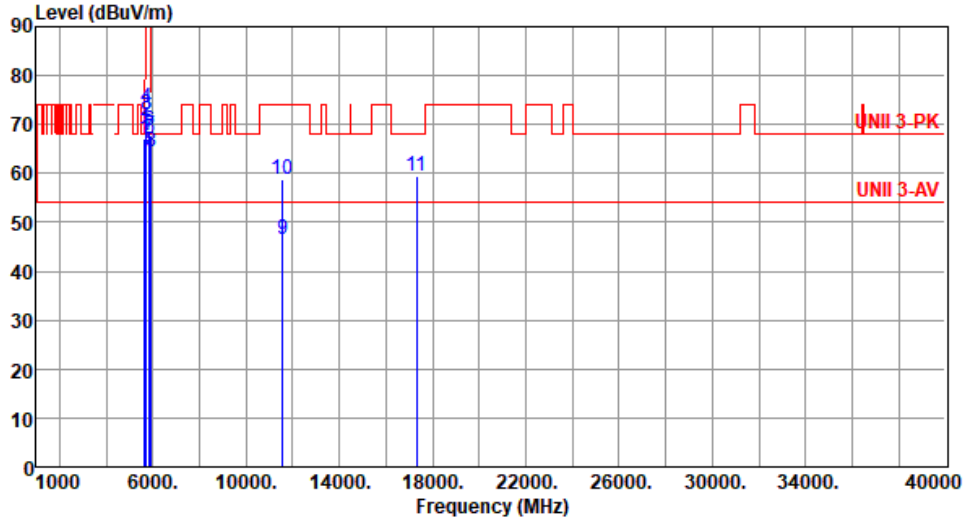
\*Factor includes antenna factor , cable loss and amplifier gain

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



Modulation	ac VHT80	Test Freq. (MHz)	5775
Polarization	Vertical		

Test By :Brad Wu      Temperature(°C):24      Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	5650.00	67.08	68.20	-1.12	66.54	0.54	Peak	138	233
2	5700.00	70.80	105.20	-34.40	69.94	0.86	Peak	138	233
3	5720.00	71.92	110.80	-38.88	71.01	0.91	Peak	138	233
4	5725.00	73.46	122.20	-48.74	72.53	0.93	Peak	138	233
5	5850.00	67.12	122.20	-55.08	65.88	1.24	Peak	138	233
6	5855.00	68.68	110.80	-42.12	67.42	1.26	Peak	138	233
7	5875.00	67.60	105.20	-37.60	66.24	1.36	Peak	138	233
8	5925.00	64.30	68.20	-3.90	62.81	1.49	Peak	138	233
9	11550.00	46.35	54.00	-7.65	37.72	8.63	Average	100	141
10	11550.00	58.82	74.00	-15.18	50.19	8.63	Peak	100	141
11	17325.00	59.39	68.20	-8.81	52.96	6.43	Peak	100	82

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

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

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



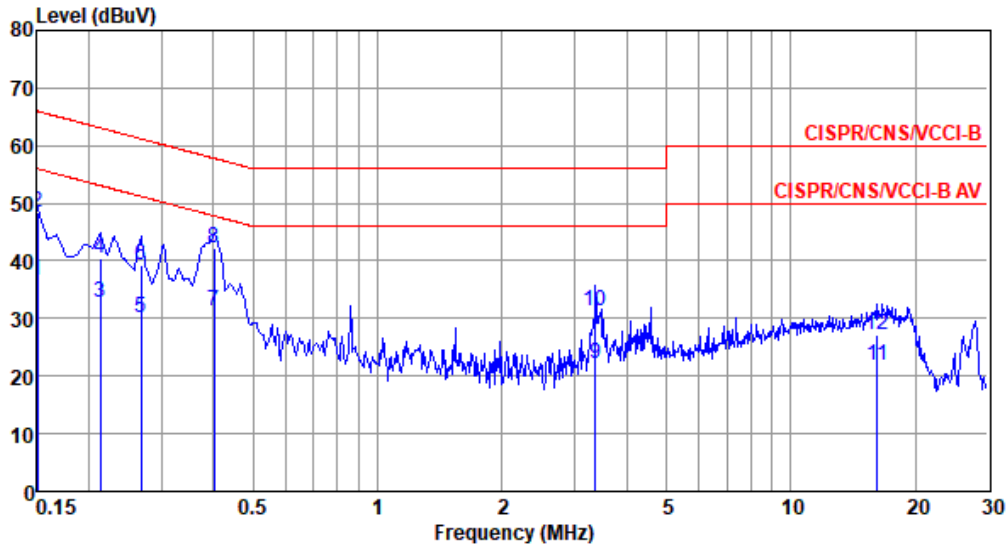
Frequency: 5200 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°CVmax	29.27	29.99	29.51	29.86
T20°CVmin	34.17	34.06	34.26	35.06
T50°CVnom	41.35	41.60	41.96	41.56
T40°CVnom	43.42	44.12	43.64	43.79
T30°CVnom	34.90	35.40	34.42	35.28
T20°CVnom	31.77	32.31	31.65	32.03
T10°CVnom	22.37	22.52	22.62	22.79
T0°CVnom	16.38	16.82	16.12	15.98
T-10°CVnom	10.46	10.22	10.94	10.44
T-20°CVnom	3.02	3.20	3.40	2.77
T-30°CVnom	3.46	3.37	4.05	4.34
Vnom [V]: 110	Vmax [V]: 126.5		Vmin [V]: 93.5	
Tnom [°C]: 20	Tmax [°C]: 50		Tmin [°C]: -30	

Frequency: 5785 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°CVmax	34.31	34.03	35.03	34.39
T20°CVmin	29.82	30.10	30.44	29.71
T50°CVnom	61.23	61.57	60.78	61.27
T40°CVnom	54.00	54.08	53.84	54.10
T30°CVnom	44.67	45.07	45.05	44.95
T20°CVnom	32.01	32.54	32.36	32.35
T10°CVnom	19.45	19.31	19.81	19.08
T0°CVnom	9.06	9.31	9.36	9.45
T-10°CVnom	3.82	4.04	4.41	3.90
T-20°CVnom	-1.02	-1.27	-0.77	-1.11
T-30°CVnom	-1.30	-0.79	-0.61	-1.48
Vnom [V]: 110	Vmax [V]: 126.5		Vmin [V]: 93.5	
Tnom [°C]: 20	Tmax [°C]: 50		Tmin [°C]: -30	



Modulation Mode	VHT20	Test Freq. (MHz)	5240
Power Phase	Line		

Test by : Brad Wu      Temperature: 21°C      Humidity: 61%



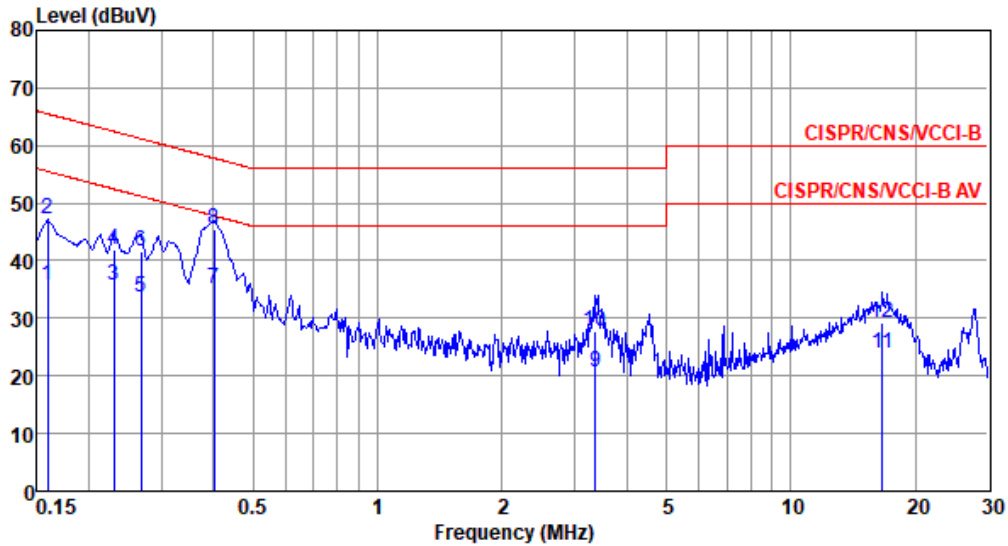
	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.150	36.70	56.00	-19.30	26.78	9.68	0.06	0.18	Average
2	0.150	48.41	66.00	-17.59	38.49	9.68	0.06	0.18	QP
3	0.213	32.65	53.10	-20.45	22.71	9.68	0.06	0.20	Average
4	0.213	40.55	63.10	-22.55	30.61	9.68	0.06	0.20	QP
5	0.267	30.02	51.20	-21.18	20.04	9.68	0.06	0.24	Average
6	0.267	39.24	61.20	-21.96	29.26	9.68	0.06	0.24	QP
7	0.402	31.31	47.81	-16.50	21.28	9.67	0.06	0.30	Average
8*	0.402	42.13	57.81	-15.68	32.10	9.67	0.06	0.30	QP
9	3.364	22.00	46.00	-24.00	11.73	9.70	0.17	0.40	Average
10	3.364	31.38	56.00	-24.62	21.11	9.70	0.17	0.40	QP
11	16.226	21.92	50.00	-28.08	11.23	9.73	0.46	0.50	Average
12	16.226	27.01	60.00	-32.99	16.32	9.73	0.46	0.50	QP

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



Modulation Mode	VHT20	Test Freq. (MHz)	5240
Power Phase	Neutral		

Test by : Brad Wu      Temperature: 21°C      Humidity: 61%



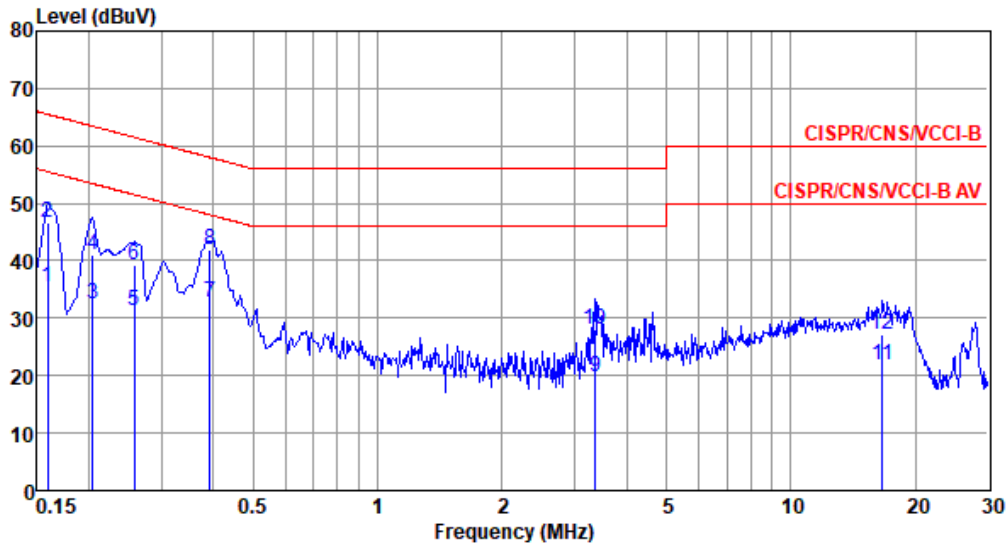
	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.159	35.82	55.52	-19.70	25.97	9.61	0.06	0.18	Average
2	0.159	47.32	65.52	-18.20	37.47	9.61	0.06	0.18	QP
3	0.230	35.58	52.44	-16.86	25.70	9.61	0.06	0.21	Average
4	0.230	41.92	62.44	-20.52	32.04	9.61	0.06	0.21	QP
5	0.267	33.61	51.20	-17.59	23.70	9.61	0.06	0.24	Average
6	0.267	41.74	61.20	-19.46	31.83	9.61	0.06	0.24	QP
7	0.402	35.22	47.81	-12.59	25.25	9.61	0.06	0.30	Average
8*	0.402	45.56	57.81	-12.25	35.59	9.61	0.06	0.30	QP
9	3.364	20.52	46.00	-25.48	10.32	9.63	0.17	0.40	Average
10	3.364	27.84	56.00	-28.16	17.64	9.63	0.17	0.40	QP
11	16.661	24.05	50.00	-25.95	13.32	9.76	0.47	0.50	Average
12	16.661	29.14	60.00	-30.86	18.41	9.76	0.47	0.50	QP

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



Modulation Mode	VHT20	Test Freq. (MHz)	5745
Power Phase	Line		

Test by : Brad Wu      Temperature: 21°C      Humidity: 61%



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.159	35.38	55.52	-20.14	25.46	9.68	0.06	0.18	Average
2	0.159	46.74	65.52	-18.78	36.82	9.68	0.06	0.18	QP
3	0.204	32.62	53.45	-20.83	22.69	9.68	0.06	0.19	Average
4	0.204	41.10	63.45	-22.35	31.17	9.68	0.06	0.19	QP
5	0.258	31.30	51.51	-20.21	21.33	9.68	0.06	0.23	Average
6	0.258	39.18	61.51	-22.33	29.21	9.68	0.06	0.23	QP
7*	0.393	32.70	47.99	-15.29	22.67	9.67	0.06	0.30	Average
8	0.393	41.92	57.99	-16.07	31.89	9.67	0.06	0.30	QP
9	3.364	19.89	46.00	-26.11	9.62	9.70	0.17	0.40	Average
10	3.364	28.19	56.00	-27.81	17.92	9.70	0.17	0.40	QP
11	16.661	21.77	50.00	-28.23	11.07	9.73	0.47	0.50	Average
12	16.661	27.02	60.00	-32.98	16.32	9.73	0.47	0.50	QP

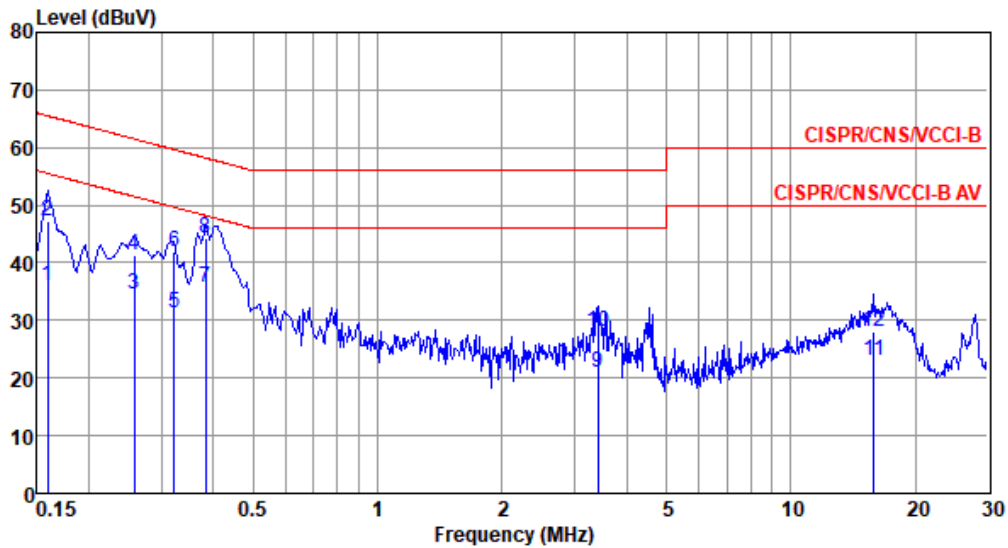
Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).  
 2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).





Modulation Mode	VHT20	Test Freq. (MHz)	5745
Power Phase	Neutral		

Test by : Brad Wu      Temperature: 21°C      Humidity: 61%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.159	36.07	55.52	-19.45	26.22	9.61	0.06	0.18	Average
2	0.159	47.34	65.52	-18.18	37.49	9.61	0.06	0.18	QP
3	0.258	34.43	51.51	-17.08	24.53	9.61	0.06	0.23	Average
4	0.258	41.32	61.51	-20.19	31.42	9.61	0.06	0.23	QP
5	0.322	31.23	49.66	-18.43	21.29	9.61	0.06	0.27	Average
6	0.322	41.96	59.66	-17.70	32.02	9.61	0.06	0.27	QP
7*	0.383	35.74	48.21	-12.47	25.78	9.61	0.06	0.29	Average
8	0.383	44.32	58.21	-13.89	34.36	9.61	0.06	0.29	QP
9	3.417	20.93	46.00	-25.07	10.71	9.64	0.17	0.41	Average
10	3.417	28.17	56.00	-27.83	17.95	9.64	0.17	0.41	QP
11	15.885	23.04	50.00	-26.96	12.33	9.76	0.45	0.50	Average
12	15.885	28.16	60.00	-31.84	17.45	9.76	0.45	0.50	QP

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