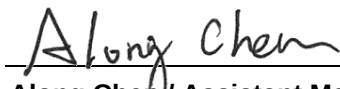


FCC Test Report

FCC ID : SWX-GBELR
Equipment : GigaBeam LR
Model No. : GBE-LR
Brand Name : UBIQUITI
Applicant : Ubiquiti Inc.
Address : 685 Third Avenue, (27th Floor) New York, New York 10017 USA
Standard : 47 CFR FCC Part 15.407
Received Date : Aug. 19, 2019
Tested Date : Aug. 19 ~ Sep. 06, 2019

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:



Along Chen / Assistant Manager

Approved by:



Gary Chang / Manager



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Release Record

Report No.	Version	Description	Issued Date
FR983001AN	Rev. 01	Initial issue	Sep. 24, 2019

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.168MHz 50.95 (Margin -14.13dB) - QP	Pass
15.407(b) 15.209	Radiated Emissions	[dBuV/m at 3m]: 5150.00MHz 53.79 (Margin -0.21dB) - 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)	RF Output Power	Max Power [dBm]: 5150-5250MHz: 25.32 5725-5850MHz: 25.49	Pass
15.407(a)	Peak 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)	Proprietary protocol (BW: MHz)	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate / MCS
5150-5250	20	5160-5240	32-48 [17]	2	MCS 0-9
5150-5250	40	5170-5230	34-46 [13]	2	MCS 0-9
5150-5250	80	5190-5210	38-42 [5]	2	MCS 0-9
Note 1: RF output power specifies that .					
Note 2: Modulation uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.					

RF General Information					
Frequency Range (MHz)	Proprietary protocol (BW: MHz)	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate / MCS
5725-5850	20	5735-5840	147-168 [22]	2	MCS 0-9
5725-5850	40	5745-5830	149-166 [18]	2	MCS 0-9
5725-5850	80	5765-5810	153-162 [10]	2	MCS 0-9
Note 1: RF output power specifies that .					
Note 2: Modulation uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.					

1.1.2 Antenna Details

Ant. No.	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)	
			5150~5250	5725~5850
1	internal antenna	N/A	11	11

Note: The antenna is Cross Polarized Antenna

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	24Vdc from POE
-------------------	----------------

1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	POE	Brand: UBIQUITI Model: GP-A240-050G Power Rating: I/P: 100-240Vac, 50/60Hz, 0.3A O/P: 24Vdc, 0.5A Power Line: 0.6m non-shielded without core

1.1.5 Channel List

For Frequency band 5150-5250 MHz			
Proprietary protocol (BW: 20 MHz)		Proprietary protocol (BW: 40 MHz)	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
32	5160	34	5170
33	5165	35	5175
34	5170	36	5180
35	5175	37	5185
36	5180	38	5190
37	5185	39	5195
38	5190	40	5200
39	5195	41	5205
40	5200	42	5210
41	5205	43	5215
42	5210	44	5220
43	5215	45	5225
44	5220	46	5230
45	5225	Proprietary protocol (BW: 80 MHz)	
46	5230	38	5190
47	5235	39	5195
48	5240	40	5200
---	---	41	5205
---	---	42	5210

For Frequency band 5725~5850 MHz			
Proprietary protocol (BW: 20 MHz)		Proprietary protocol (BW: 40 MHz)	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
147	5735	149	5745
148	5740	150	5750
149	5745	151	5755
150	5750	152	5760
151	5755	153	5765
152	5760	154	5770
153	5765	155	5775
154	5770	156	5780
155	5775	157	5785
156	5780	158	5790
157	5785	159	5795
158	5790	160	5800
159	5795	161	5805
160	5800	162	5810
161	5805	163	5815
162	5810	164	5820
163	5815	165	5825
164	5820	166	5830
165	5825	Proprietary protocol (BW: 80 MHz)	
166	5830	153	5765
167	5835	154	5770
168	5840	155	5775
---	---	156	5780
---	---	157	5785
---	---	158	5790
---	---	159	5795
---	---	160	5800
---	---	161	5805
---	---	162	5810

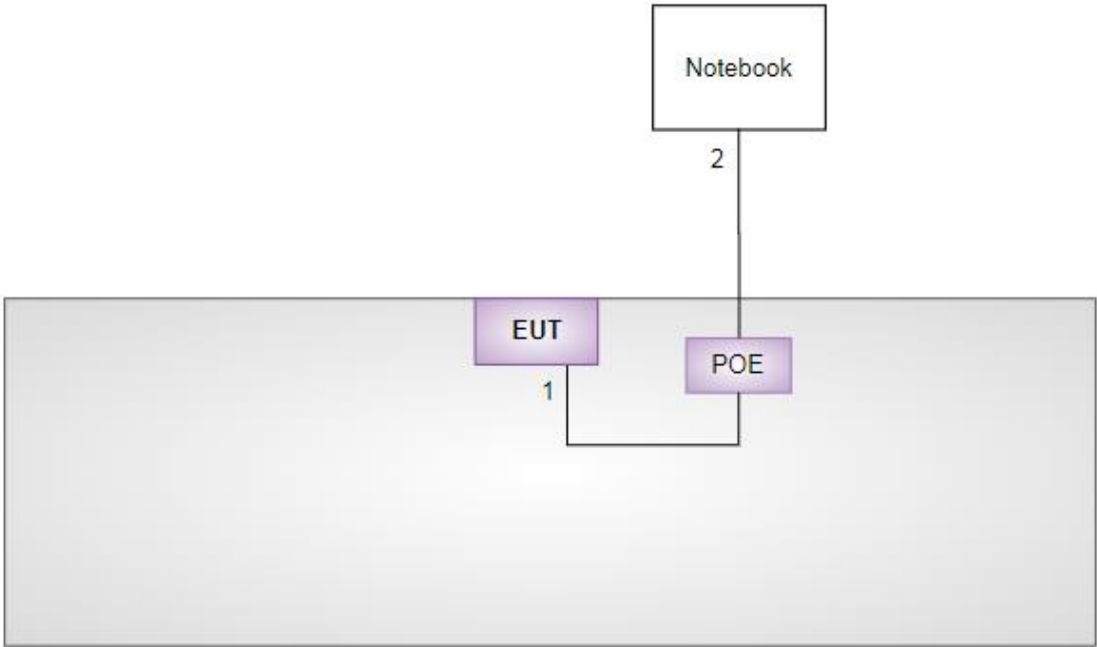
1.1.6 Test Tool and Duty Cycle

Test Tool	Putty, version: 0.60.0.0		
Duty Cycle and Duty Factor	Proprietary protocol (BW: MHz)	Duty Cycle (%)	Duty Factor (dB)
	20	89.34%	0.49
	40	80.93%	0.92
	80	85.09%	0.70

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	Notebook	DELL	Latitude E6440	DoC	---

1.3 Test Setup Chart

Test Setup Diagram	
Kept in control area 	
No.	Signal cable / Length (m)
1	RJ45, 1m non-shielded.
2	RJ45, 10m non-shielded.

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Jan. 08, 2019	Jan. 07, 2020
LISN	R&S	ENV216	101579	Mar. 08, 2019	Mar. 07, 2020
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 23, 2018	Oct. 22, 2019
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 3 / (03CH03-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101499	Jan. 07, 2019	Jan. 06, 2020
Receiver	R&S	ESR3	101658	Dec. 11, 2018	Dec. 10, 2019
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 17, 2019	Apr. 16, 2020
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Jan. 07, 2019	Jan. 06, 2020
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 15, 2018	Nov. 14, 2019
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 09, 2018	Nov. 08, 2019
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 08, 2018	Oct. 07, 2019
Preamplifier	EMC	EMC02325	980187	Aug. 14, 2019	Aug. 13, 2020
Preamplifier	Agilent	83017A	MY53270013	Dec. 27, 2018	Dec. 26, 2019
Preamplifier	EMC	EMC184045B	980192	Aug. 01, 2019	Jul. 31, 2020
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Oct. 01, 2018	Sep. 30, 2019
RF cable-8M	EMC	EMC104-SM-SM-8000	181107	Oct. 01, 2018	Sep. 30, 2019
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Oct. 01, 2018	Sep. 30, 2019
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Oct. 01, 2018	Sep. 30, 2019
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Oct. 01, 2018	Sep. 30, 2019
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Oct. 01, 2018	Sep. 30, 2019
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101063	Apr. 17, 2019	Apr. 16, 2020
Power Meter	Anritsu	ML2495A	1241002	Oct. 09, 2018	Oct. 08, 2019
Power Sensor	Anritsu	MA2411B	1207366	Oct. 09, 2018	Oct. 08, 2019
DC POWER SOURCE	GW INSTEK	GPC-6030D	EM892433	Oct. 25, 2018	Oct. 24, 2019
Measurement Software	Sporton	SENSE-15407_NII	V5.10	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Testing Applied Standards

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

47 CFR FCC Part 15.407

ANSI C63.10-2013

FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

FCC KDB 412172 D01 Determining ERP and EIRP v01r01

1.6 Deviation from Test Standard and Measurement Procedure

None

1.7 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$))

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	± 34.130 Hz
Conducted power	± 0.808 dB
Frequency error	$\pm 1 \times 10^{-9}$
Power density	± 0.583 dB
Conducted emission	± 2.715 dB
AC conducted emission	± 2.92 dB
Radiated emission ≤ 1 GHz	± 3.96 dB
Radiated emission > 1 GHz	± 4.51 dB
Time	$\pm 0.1\%$
Temperature	± 0.4 °C

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	24°C / 63%	Alex Tsai
Radiated Emissions	03CH03-WS	24-25°C / 64-66%	Roger lu
RF Conducted	TH01-WS	24°C / 65%	Roger Lu

- FCC Designation No.: TW0009
- FCC site registration No.: 207696
- ISSED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

For Frequency band 5150-5250 MHz				
Test item	Proprietary protocol (BW: MHz)	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	20	5240	MCS 0	---
Radiated Emissions ≤1GHz	20	5240	MCS 0	---
RF Output Power				
Radiated Emissions >1GHz	20	5160 / 5165 / 5200 / 5240	MCS 0	---
Emission Bandwidth	40	5170 / 5175 / 5200 / 5230	MCS 0	
Peak Power Spectral Density	80	5190 / 5195 / 5200 / 5210	MCS 0	
Frequency Stability	Un-modulation	5200	---	---

For Frequency band 5725-5850 MHz				
Test item	Proprietary protocol (BW: MHz)	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	40	5790	MCS 0	---
Radiated Emissions ≤1GHz	40	5790	MCS 0	---
Radiated Emissions >1GHz				
Emission Bandwidth	20	5735 / 5790 / 5840	MCS 0	---
6dB bandwidth	40	5745 / 5790 / 5830	MCS 0	
Peak Power Spectral Density	80	5765 / 5790 / 5810	MCS 0	
Frequency Stability	Un-modulation	5790	---	---

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

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

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

3.1.2 Test Procedures

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

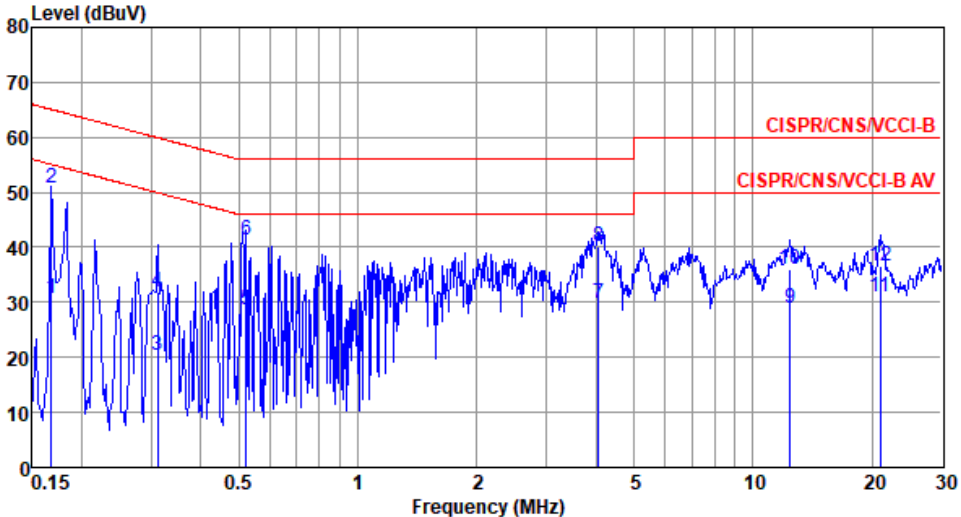
3.1.3 Test Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

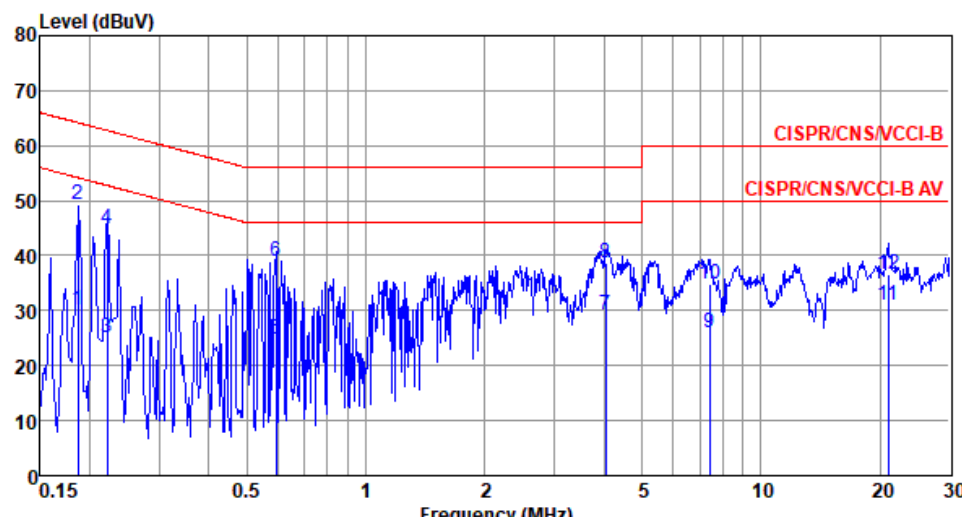
Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5240
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.168	30.80	55.08	-24.28	21.06	9.53	0.06	Average
2*	0.168	50.78	65.08	-14.30	41.04	9.53	0.06	QP
3	0.312	20.47	49.93	-29.46	10.60	9.56	0.08	Average
4	0.312	31.81	59.93	-28.12	21.94	9.56	0.08	QP
5	0.521	28.75	46.00	-17.25	18.81	9.58	0.09	Average
6	0.521	41.47	56.00	-14.53	31.53	9.58	0.09	QP
7	4.070	29.96	46.00	-16.04	19.69	9.61	0.28	Average
8	4.070	40.05	56.00	-15.95	29.78	9.61	0.28	QP
9	12.449	29.06	50.00	-20.94	18.48	9.65	0.50	Average
10	12.449	35.93	60.00	-24.07	25.35	9.65	0.50	QP
11	21.035	31.09	50.00	-18.91	20.18	9.66	0.62	Average
12	21.035	36.74	60.00	-23.26	25.83	9.66	0.62	QP

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

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5240
Power Phase	Neutral		



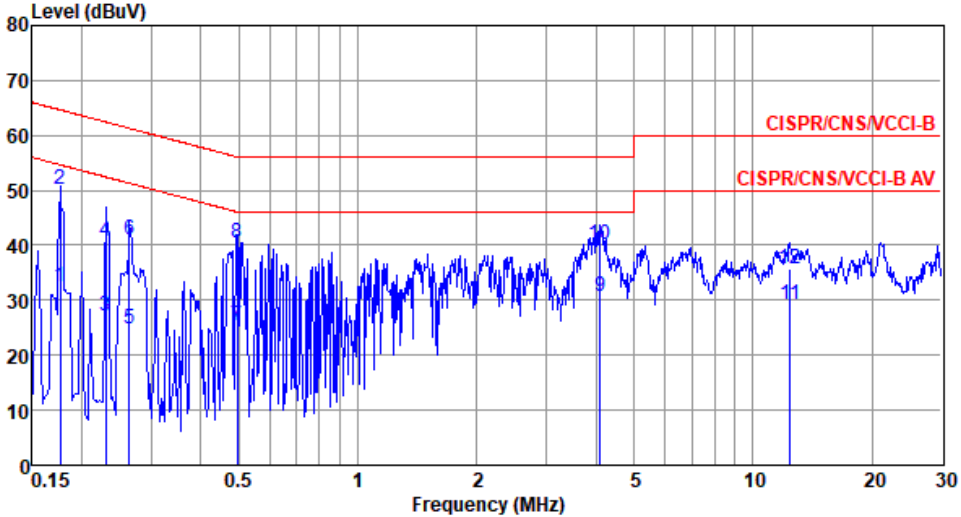
The graph displays the measured noise level in dBUV across a frequency range from 0.15 MHz to 30 MHz. Two red lines represent the CISPR/CNS/VCCI-B and CISPR/CNS/VCCI-B AV limits. The blue line shows the measured noise level, which is generally below the limits, with some peaks labeled 2, 4, 6, 7, 9, 10, and 11. The y-axis ranges from 0 to 80 dBUV, and the x-axis is logarithmic from 0.15 to 30 MHz.

	Freq	Level	Limit	Over	Read	LISN	cable	Remark
	MHz	dBuV	Line	Limit	Level	factor	loss	
			dBuV	dB	dBuV	dB	dB	
1	0.186	30.05	54.20	-24.15	20.27	9.58	0.07	Average
2*	0.186	49.26	64.20	-14.94	39.48	9.58	0.07	QP
3	0.222	25.02	52.74	-27.72	15.23	9.58	0.07	Average
4	0.222	44.73	62.74	-18.01	34.94	9.58	0.07	QP
5	0.592	24.82	46.00	-21.18	14.94	9.62	0.09	Average
6	0.592	38.85	56.00	-17.15	28.97	9.62	0.09	QP
7	4.049	29.13	46.00	-16.87	18.93	9.66	0.28	Average
8	4.049	38.62	56.00	-17.38	28.42	9.66	0.28	QP
9	7.407	26.04	50.00	-23.96	15.67	9.69	0.39	Average
10	7.407	34.76	60.00	-25.24	24.39	9.69	0.39	QP
11	21.035	31.04	50.00	-18.96	20.11	9.81	0.62	Average
12	21.035	36.62	60.00	-23.38	25.69	9.81	0.62	QP

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB).

Note 2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

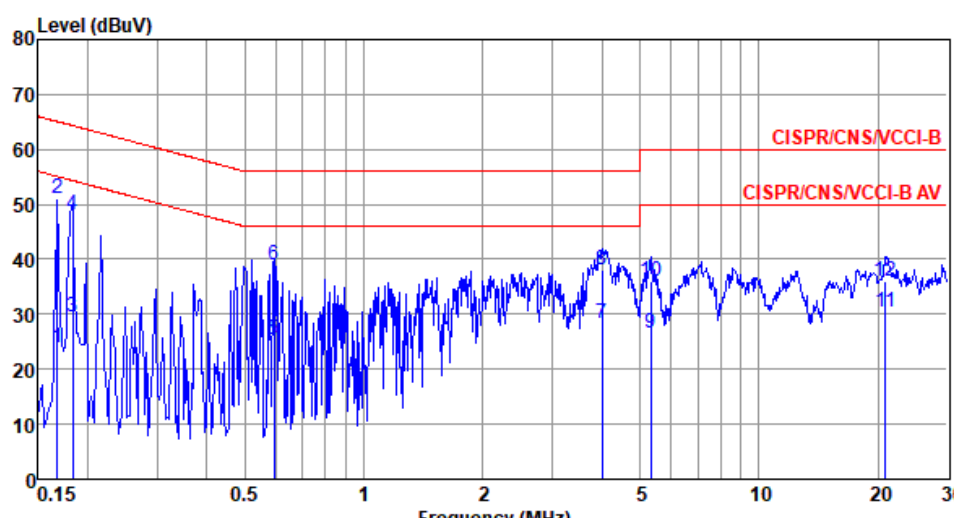
Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5790
Power Phase	Line		



	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.177	32.37	54.64	-22.27	22.61	9.54	0.06	Average
2*	0.177	50.24	64.64	-14.40	40.48	9.54	0.06	QP
3	0.230	27.04	52.44	-25.40	17.22	9.55	0.07	Average
4	0.230	40.63	62.44	-21.81	30.81	9.55	0.07	QP
5	0.264	24.93	51.29	-26.36	15.09	9.55	0.07	Average
6	0.264	41.16	61.29	-20.13	31.32	9.55	0.07	QP
7	0.494	25.27	46.10	-20.83	15.34	9.58	0.08	Average
8	0.494	40.43	56.10	-15.67	30.50	9.58	0.08	QP
9	4.114	30.66	46.00	-15.34	20.39	9.61	0.28	Average
10	4.114	40.08	56.00	-15.92	29.81	9.61	0.28	QP
11	12.449	29.10	50.00	-20.90	18.52	9.65	0.50	Average
12	12.449	35.78	60.00	-24.22	25.20	9.65	0.50	QP

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

Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5790
Power Phase	Neutral		



Freq	Level	Limit	Over	Read	LISN	cable	Remark	
MHz	dBuV	dBuV	dB	dBuV	factor	loss		
1	0.168	23.81	55.08	-31.27	14.06	9.57	0.06	Average
2*	0.168	50.95	65.08	-14.13	41.20	9.57	0.06	QP
3	0.183	29.61	54.33	-24.72	19.84	9.58	0.06	Average
4	0.183	48.18	64.33	-16.15	38.41	9.58	0.06	QP
5	0.592	25.31	46.00	-20.69	15.43	9.62	0.09	Average
6	0.592	38.95	56.00	-17.05	29.07	9.62	0.09	QP
7	4.006	28.39	46.00	-17.61	18.19	9.66	0.28	Average
8	4.006	38.20	56.00	-17.80	28.00	9.66	0.28	QP
9	5.333	26.69	50.00	-23.31	16.41	9.68	0.33	Average
10	5.333	35.89	60.00	-24.11	25.61	9.68	0.33	QP
11	20.924	30.41	50.00	-19.59	19.49	9.81	0.62	Average
12	20.924	35.99	60.00	-24.01	25.07	9.81	0.62	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

3.2 Emission Bandwidth

3.2.1 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.

3.2.2 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.

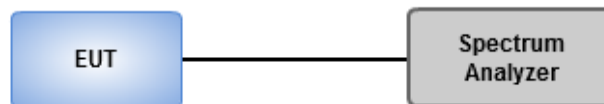
Occupied Bandwidth

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.

3.2.3 Test Setup



3.2.4 Test Result of Emission Bandwidth

Summary

Proprietary protocol (BW: MHz)	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
20_Nss1,(MCS0)_2TX	31.739M	17.8M	17M8D1D	19.783M	17.583M
40_Nss1,(MCS0)_2TX	40M	36.035M	36M0D1D	39.13M	35.89M
80_Nss1,(MCS0)_2TX	84.638M	75.832M	75M8D1D	83.478M	75.543M
5.725-5.85GHz	-	-	-	-	-
20_Nss1,(MCS0)_2TX	17.536M	17.873M	17M9D1D	16.884M	17.583M
40_Nss1,(MCS0)_2TX	35.362M	36.179M	36M2D1D	33.333M	35.89M
80_Nss1,(MCS0)_2TX	75.942M	75.832M	75M8D1D	67.246M	75.832M

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 / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

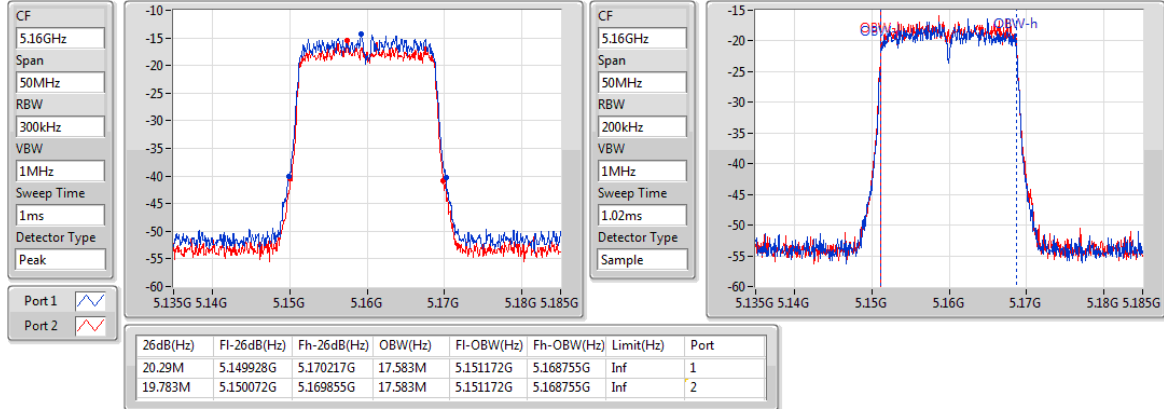
Proprietary protocol (BW: MHz)	Result	Limit (Hz)	Port 1 -N dB (Hz)	Port 1 -OBW (Hz)	Port 2 -N dB (Hz)	Port 2 -OBW (Hz)
20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5160MHz	Pass	Inf	20.29M	17.583M	19.783M	17.583M
5165MHz	Pass	Inf	19.928M	17.583M	19.783M	17.583M
5200MHz	Pass	Inf	25.507M	17.656M	31.739M	17.8M
5240MHz	Pass	Inf	23.478M	17.728M	29.928M	17.728M
5735MHz	Pass	500k	16.884M	17.656M	17.536M	17.583M
5790MHz	Pass	500k	17.536M	17.873M	17.536M	17.656M
5840MHz	Pass	500k	17.536M	17.728M	17.536M	17.728M
40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5170MHz	Pass	Inf	39.275M	35.89M	39.565M	35.89M
5175MHz	Pass	Inf	39.13M	35.89M	39.42M	35.89M
5200MHz	Pass	Inf	39.13M	35.89M	39.565M	35.89M
5230MHz	Pass	Inf	39.565M	35.89M	40M	36.035M
5745MHz	Pass	500k	33.913M	36.035M	35.362M	36.035M
5790MHz	Pass	500k	35.072M	36.179M	33.478M	36.179M
5830MHz	Pass	500k	34.928M	35.89M	33.333M	36.179M
80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	Inf	83.768M	75.832M	83.768M	75.832M
5195MHz	Pass	Inf	84.348M	75.832M	84.058M	75.832M
5200MHz	Pass	Inf	84.638M	75.543M	83.478M	75.832M
5210MHz	Pass	Inf	84.058M	75.832M	84.058M	75.832M
5765MHz	Pass	500k	74.493M	75.832M	67.246M	75.832M
5790MHz	Pass	500k	75.942M	75.832M	73.913M	75.832M
5810MHz	Pass	500k	70.725M	75.832M	75.362M	75.832M

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;

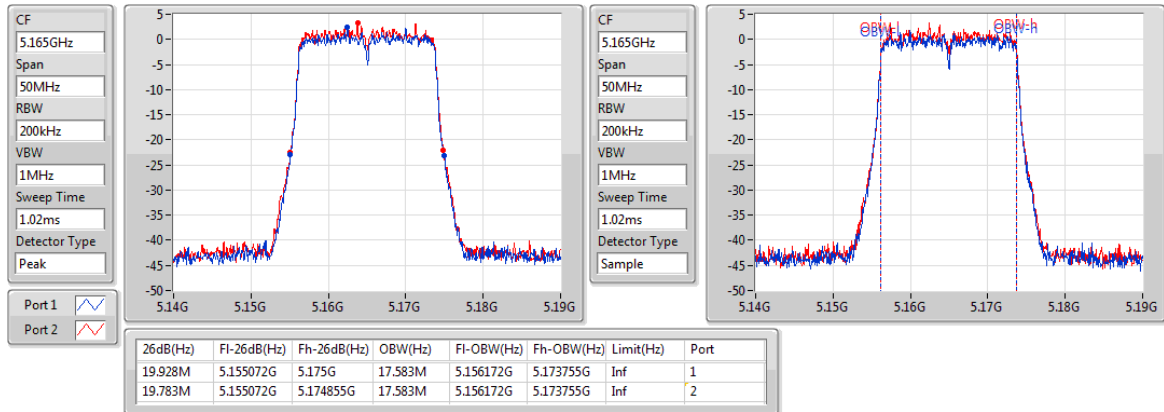
EBW

5160MHz



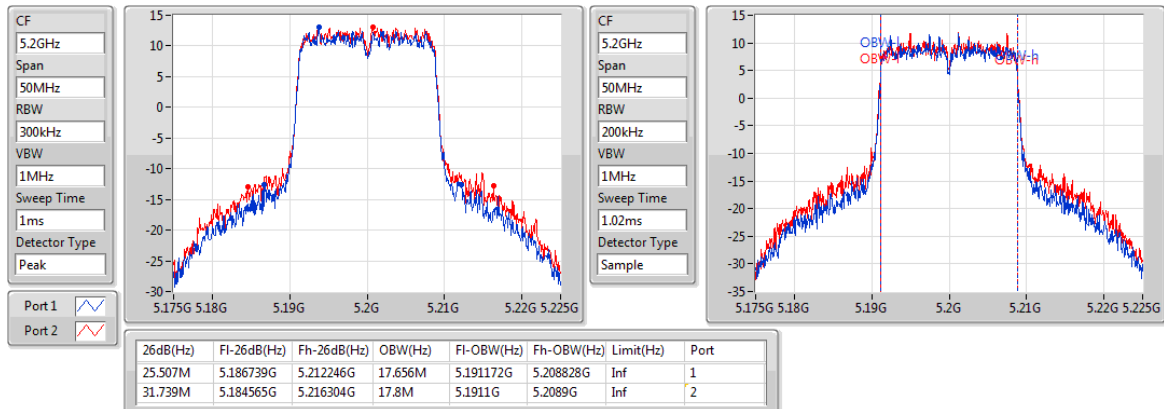
EBW

5165MHz



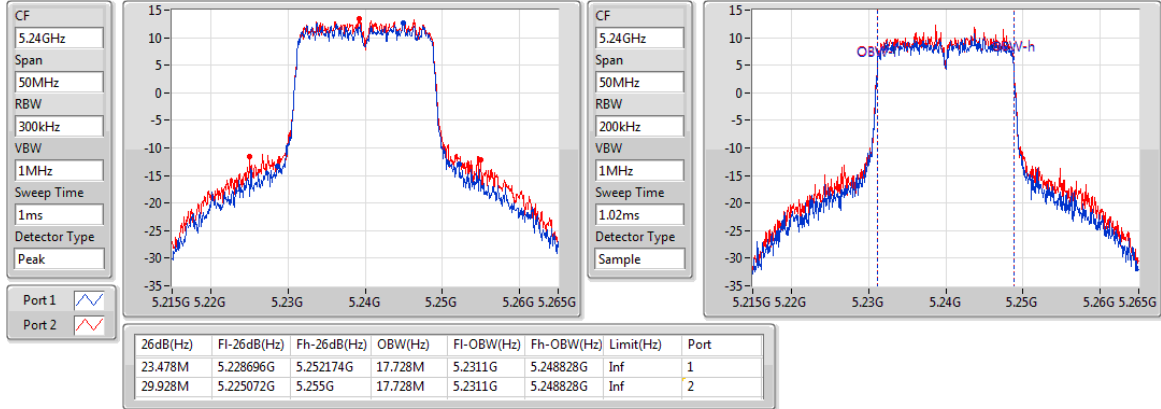
EBW

5200MHz



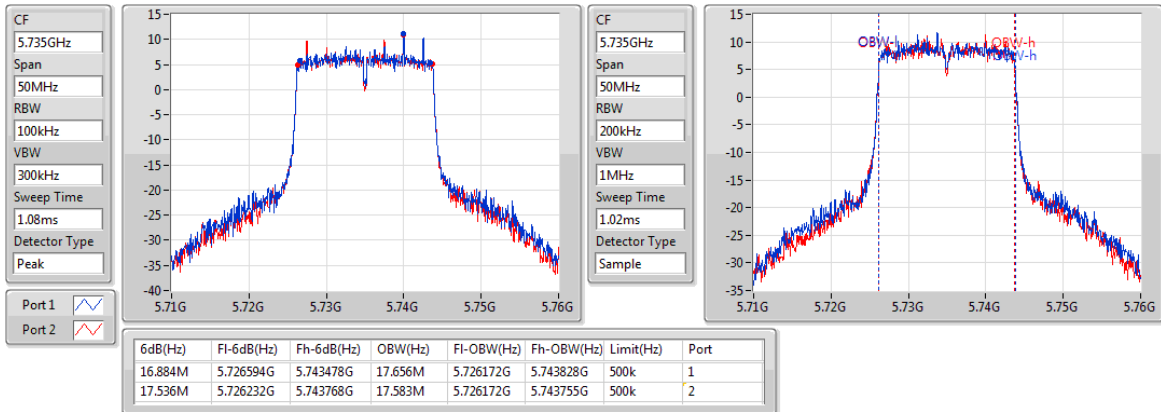
EBW

5240MHz



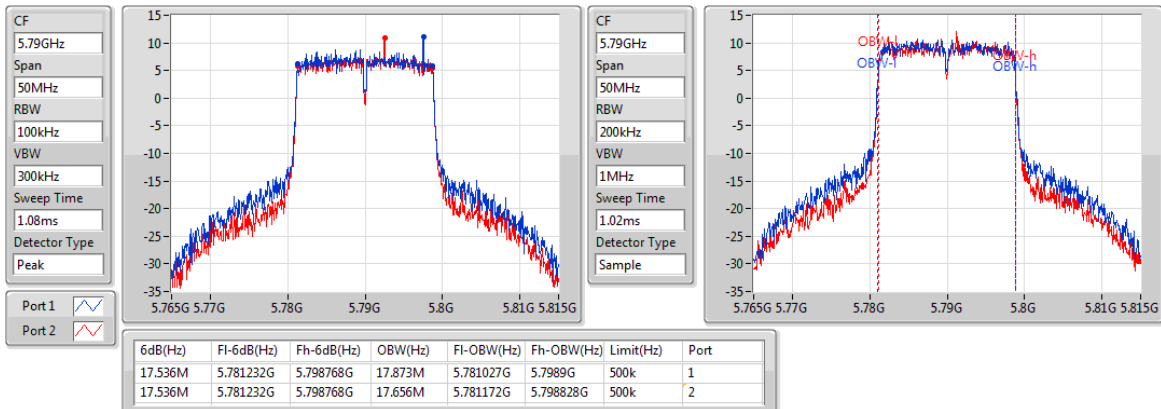
EBW

5735MHz



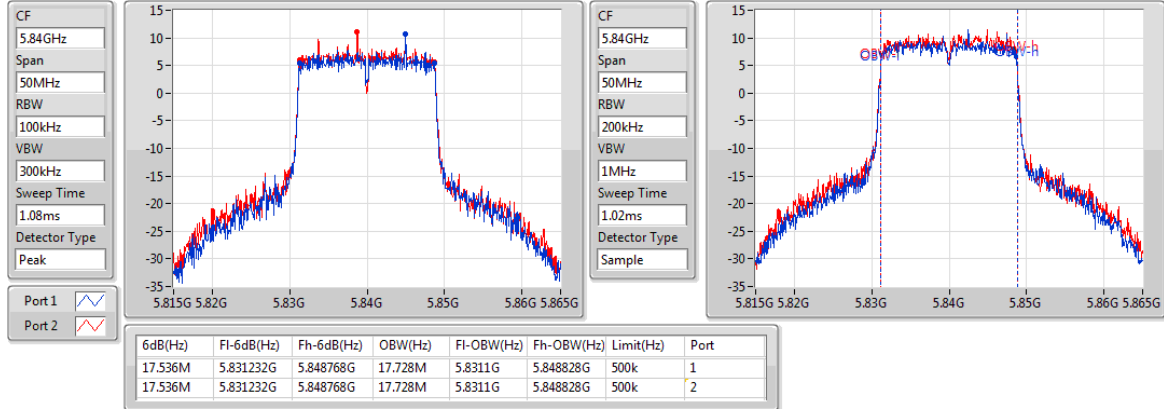
EBW

5790MHz



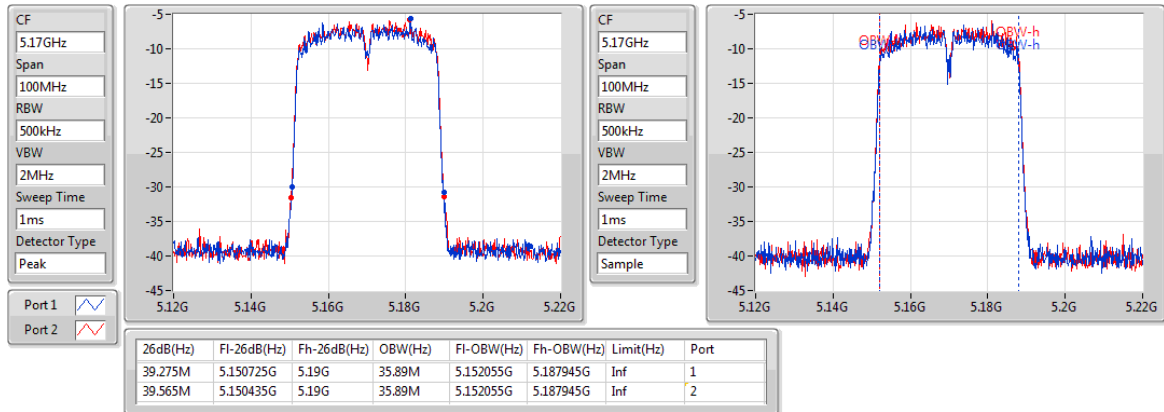
EBW

5840MHz



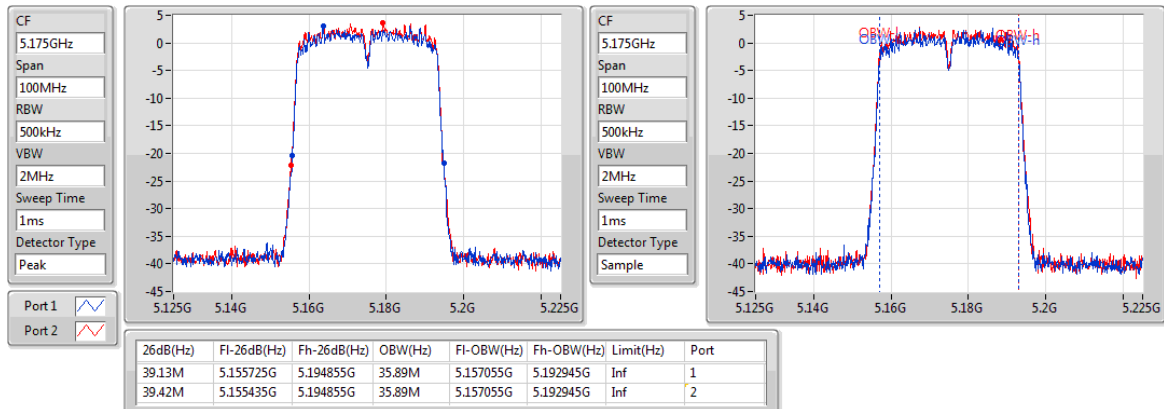
EBW

5170MHz



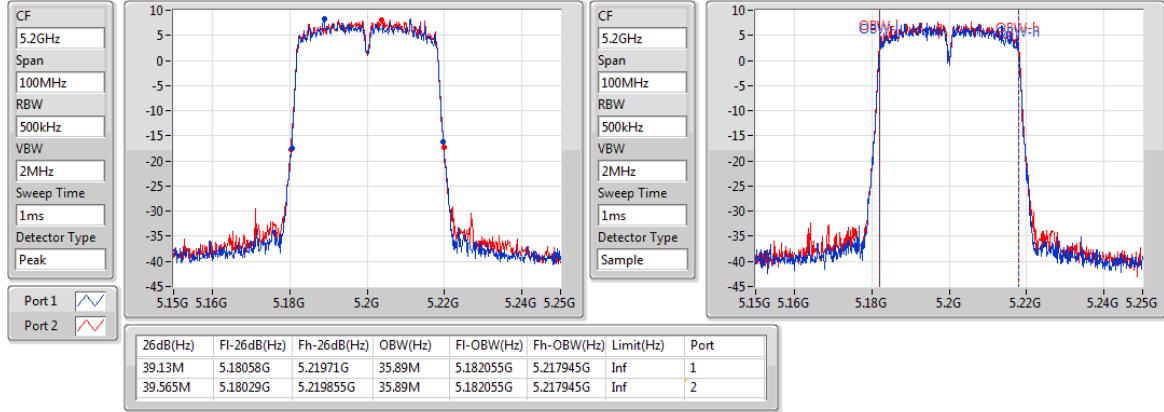
EBW

5175MHz



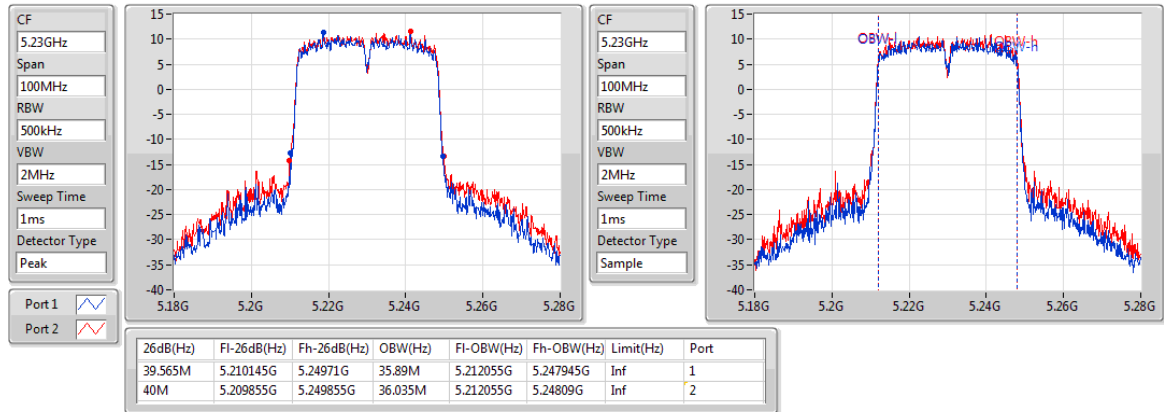
EBW

5200MHz



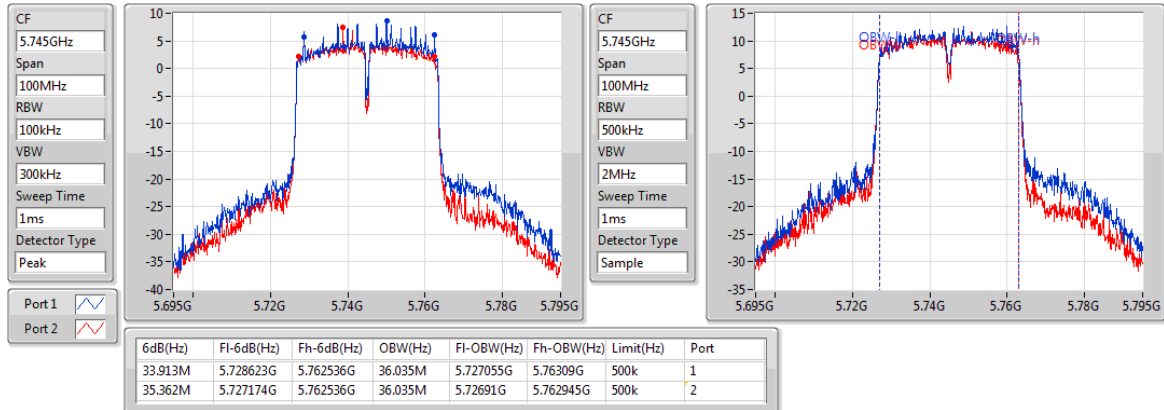
EBW

5230MHz



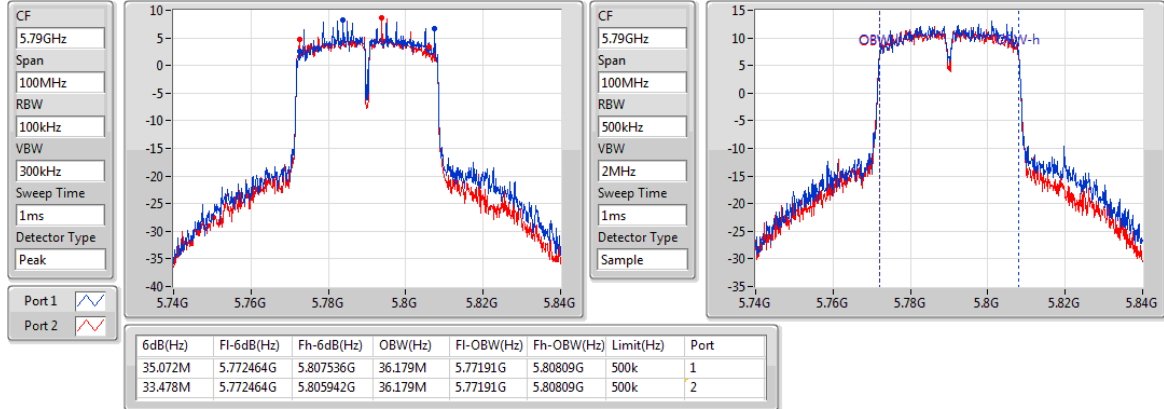
EBW

5745MHz



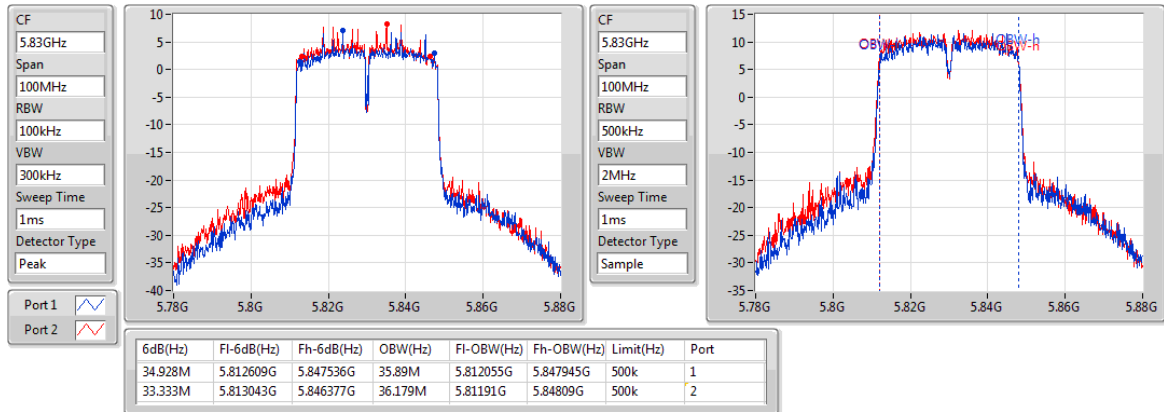
EBW

5790MHz



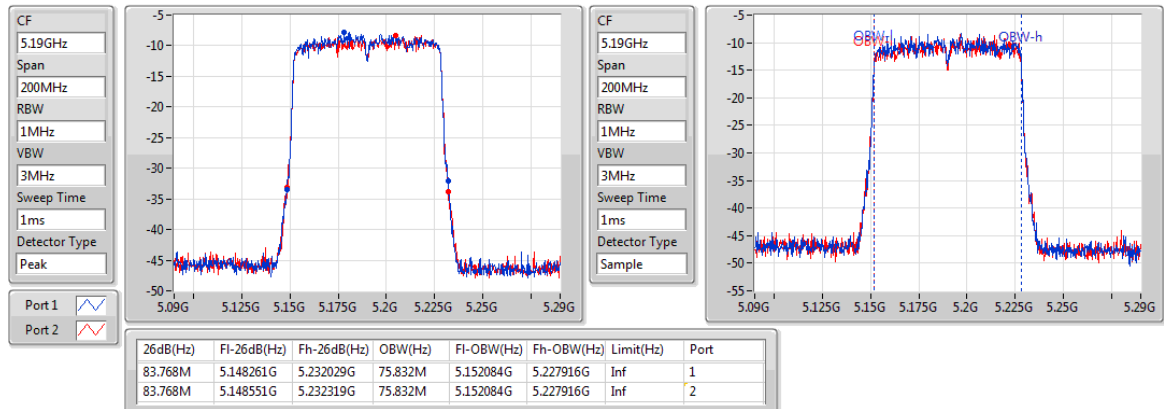
EBW

5830MHz



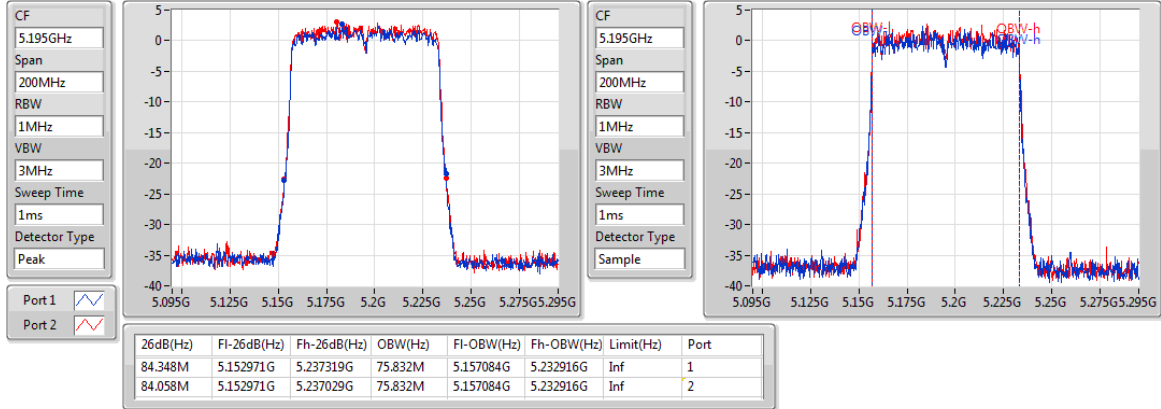
EBW

5190MHz



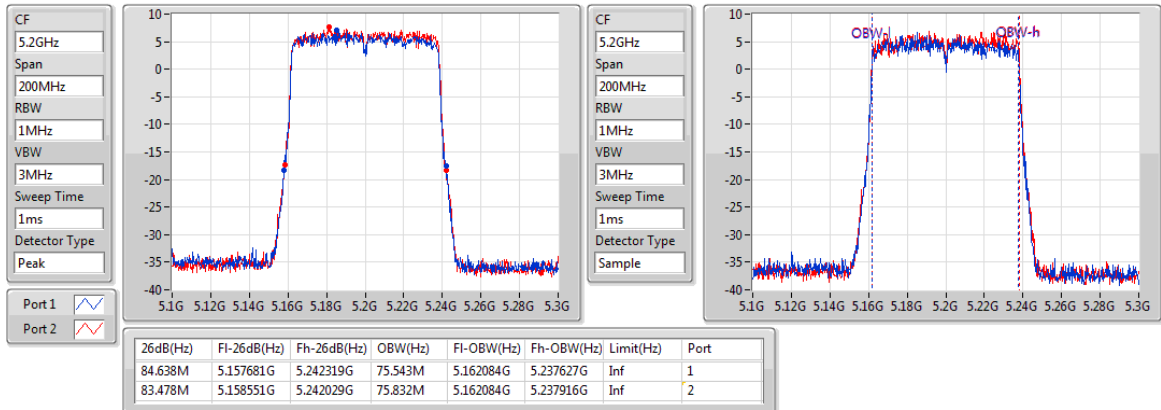
EBW

5195MHz



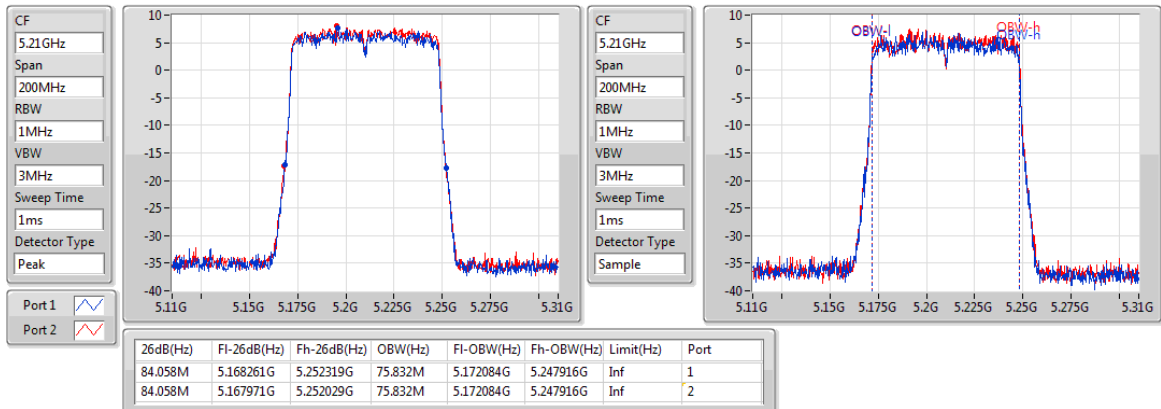
EBW

5200MHz



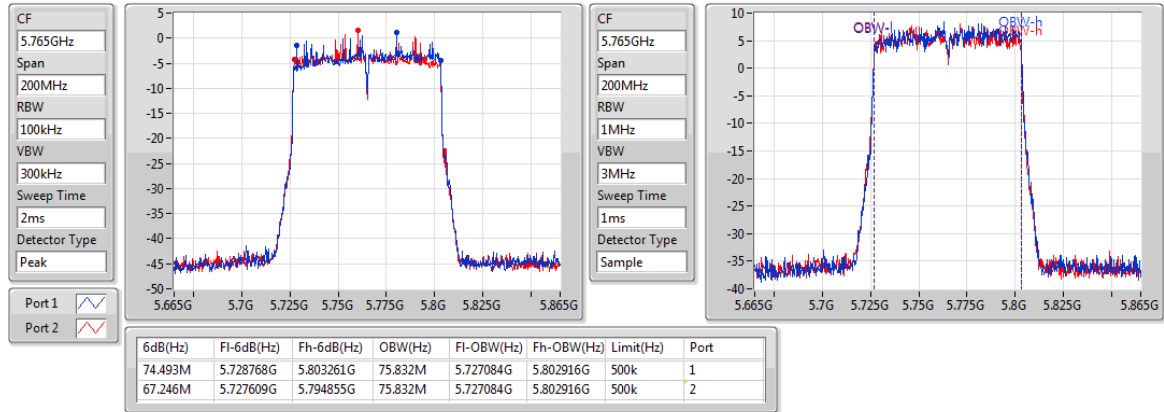
EBW

5210MHz



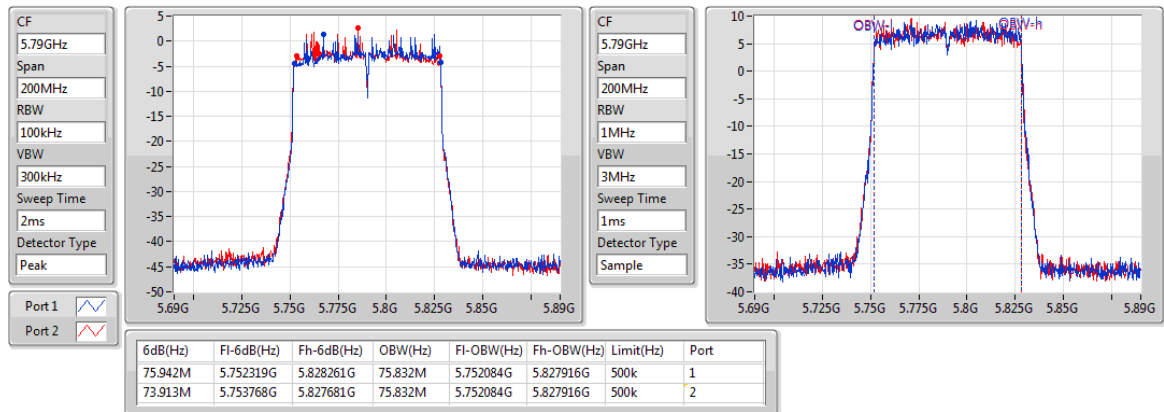
EBW

5765MHz



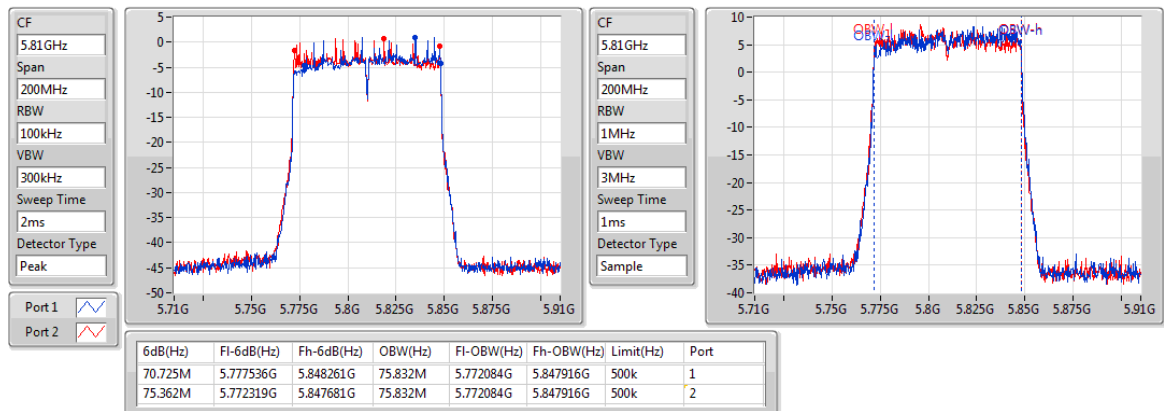
EBW

5790MHz



EBW

5810MHz



3.3 RF Output Power

3.3.1 Limit of RF Output Power

Frequency band 5150-5250 MHz		
Operating Mode		Limit
☐	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)
☐	Indoor access point	Conducted Power: 1 W
☒	Fixed point-to-point access points	Conducted Power: 1 W Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power.
☐	Client devices	Conducted Power: 250 mW

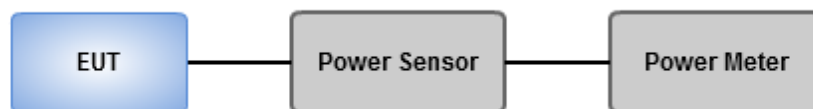
Frequency Band (MHz)	Limit
☒ 5725 ~ 5850	Conducted Power: 1 W Fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power

3.3.2 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.

3.3.3 Test Setup



3.3.4 Test Result of Maximum Conducted Output Power

Summary

Proprietary protocol (BW: MHz)	Total Power (dBm)	Total Power (W)	EIRP (dBm)	EIRP (W)
5.15-5.25GHz	-	-	-	-
20_Nss1,(MCS0)_2TX	25.32	0.34041	36.32	4.28549
40_Nss1,(MCS0)_2TX	23.84	0.24210	34.84	3.04789
80_Nss1,(MCS0)_2TX	19.83	0.09616	30.83	1.21060
5.725-5.85GHz	-	-	-	-
20_Nss1,(MCS0)_2TX	25.46	0.35156	36.46	4.42588
40_Nss1,(MCS0)_2TX	25.49	0.35400	36.49	4.45656
80_Nss1,(MCS0)_2TX	21.43	0.13900	32.43	1.74985

Result

Proprietary protocol (BW: MHz)	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5160MHz	Pass	11.00	-4.65	-4.55	-1.59	30.00	9.41	53.00
5165MHz	Pass	11.00	13.36	13.71	16.55	30.00	27.55	53.00
5200MHz	Pass	11.00	22.06	22.51	25.30	30.00	36.30	53.00
5240MHz	Pass	11.00	22.04	22.57	25.32	30.00	36.32	53.00
5735MHz	Pass	11.00	22.25	22.14	25.21	30.00	36.21	Inf
5790MHz	Pass	11.00	22.52	22.37	25.46	30.00	36.46	Inf
5840MHz	Pass	11.00	22.09	22.67	25.40	30.00	36.40	Inf
40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5170MHz	Pass	11.00	3.49	3.58	6.55	30.00	17.55	53.00
5175MHz	Pass	11.00	12.44	13.07	15.78	30.00	26.78	53.00
5200MHz	Pass	11.00	17.09	17.75	20.44	30.00	31.44	53.00
5230MHz	Pass	11.00	20.44	21.19	23.84	30.00	34.84	53.00
5745MHz	Pass	11.00	22.29	22.11	25.21	30.00	36.21	Inf
5790MHz	Pass	11.00	22.63	22.32	25.49	30.00	36.49	Inf
5830MHz	Pass	11.00	21.51	22.15	24.85	30.00	35.85	Inf
80_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5190MHz	Pass	11.00	1.15	1.22	4.20	30.00	15.20	53.00
5195MHz	Pass	11.00	11.53	12.19	14.88	30.00	25.88	53.00
5200MHz	Pass	11.00	16.11	16.42	19.28	30.00	30.28	53.00
5210MHz	Pass	11.00	16.47	17.14	19.83	30.00	30.83	53.00
5765MHz	Pass	11.00	17.56	17.24	20.41	30.00	31.41	Inf
5790MHz	Pass	11.00	18.46	18.38	21.43	30.00	32.43	Inf
5810MHz	Pass	11.00	17.72	17.76	20.75	30.00	31.75	Inf

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

3.4 Peak Power Spectral Density

3.4.1 Limit of Peak Power Spectral Density

Frequency band 5150-5250 MHz		
Operating Mode		Limit
☐	Outdoor access point	17 dBm / MHz
☐	Indoor access point	17 dBm / MHz
☒	Fixed point-to-point access points	17 dBm / MHz Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum power spectral density.
☐	Client devices	11 dBm / MHz

Frequency Band (MHz)		Limit
☒	5725 ~ 5850	30 dBm /500 kHz

3.4.2 Test Procedures

For 5150 ~ 5250 MHz

Duty cycle < 98 %

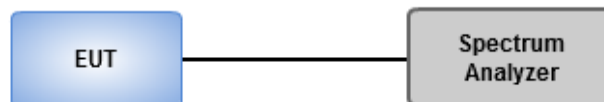
1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = RMS.
2. Set sweep time $\geq 10 \times (\text{number of points in sweep}) \times (\text{total on/off period of the transmitted signal})$.
3. Perform a single sweep.
4. Use the peak marker function to determine the maximum amplitude level.
5. Add $10 \log(1/x)$,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

For 5725 ~ 5850 MHz

Duty cycle < 98 %

1. Set RBW = 500 kHz, VBW = 3 MHz, Detector = RMS.
2. Set sweep time $\geq 10 \times (\text{number of points in sweep}) \times (\text{total on/off period of the transmitted signal})$.
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.

3.4.3 Test Setup



3.4.4 Test Result of Peak Power Spectral Density

Summary

Proprietary protocol (BW: MHz)	PD (dBm/RBW)	EIRP PD (dBm/RBW)
5.15-5.25GHz	-	-
20_Nss1,(MCS0)_2TX	11.82	22.82
40_Nss1,(MCS0)_2TX	7.55	18.55
80_Nss1,(MCS0)_2TX	0.34	11.34
5.725-5.85GHz	-	-
20_Nss1,(MCS0)_2TX	10.58	21.58
40_Nss1,(MCS0)_2TX	7.76	18.76
80_Nss1,(MCS0)_2TX	0.63	11.63

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

Result

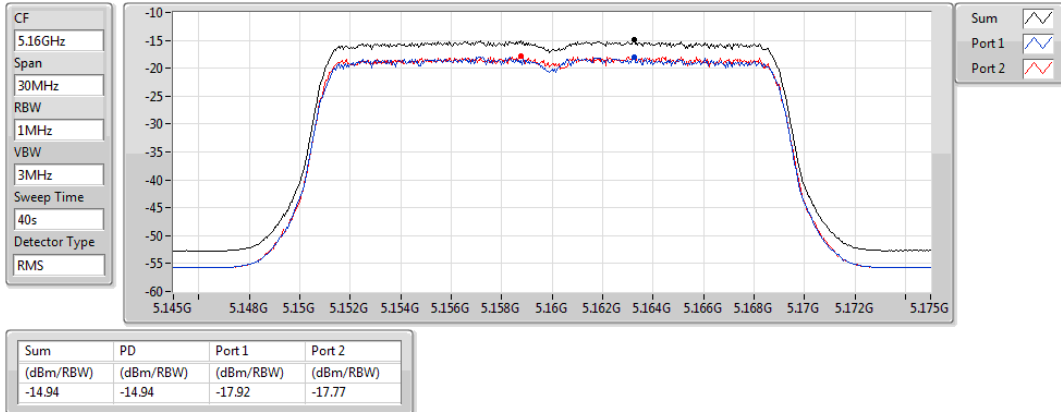
Proprietary protocol (BW: MHz)	Result	DG (dBi)	Port 1 (dBm/R BW)	Port 2 (dBm/R BW)	PD (dBm/R BW)	PD Limit (dBm/R BW)	EIRP PD (dBm/R BW)	EIRP PD Limit (dBm/R BW)
20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5160MHz	Pass	11.00	-17.92	-17.77	-14.94	17.00	-3.94	40.00
5165MHz	Pass	11.00	-0.65	0.16	2.73	17.00	13.73	40.00
5200MHz	Pass	11.00	8.46	9.21	11.82	17.00	22.82	40.00
5240MHz	Pass	11.00	8.45	9.15	11.81	17.00	22.81	40.00
5735MHz	Pass	11.00	7.31	7.12	10.19	30.00	21.19	Inf
5790MHz	Pass	11.00	7.86	7.5	10.58	30.00	21.58	Inf
5840MHz	Pass	11.00	7.03	7.65	10.28	30.00	21.28	Inf
40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5170MHz	Pass	11.00	-12.62	-12.08	-9.41	17.00	1.59	40.00
5175MHz	Pass	11.00	-3.65	-2.9	-0.30	17.00	10.70	40.00
5200MHz	Pass	11.00	1.37	1.95	4.62	17.00	15.62	40.00
5230MHz	Pass	11.00	4.21	4.91	7.55	17.00	18.55	40.00
5745MHz	Pass	11.00	4.86	4.22	7.51	30.00	18.51	Inf
5790MHz	Pass	11.00	4.93	4.66	7.76	30.00	18.76	Inf
5830MHz	Pass	11.00	3.7	4.4	7.02	30.00	18.02	Inf
80_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5190MHz	Pass	11.00	-18.33	-18.46	-15.42	17.00	-4.42	40.00
5195MHz	Pass	11.00	-8.02	-7.31	-4.66	17.00	6.34	40.00
5200MHz	Pass	11.00	-3.45	-2.83	-0.16	17.00	10.84	40.00
5210MHz	Pass	11.00	-2.97	-2.37	0.34	17.00	11.34	40.00
5765MHz	Pass	11.00	-3.22	-3.76	-0.57	30.00	10.43	Inf
5790MHz	Pass	11.00	-2.16	-2.34	0.63	30.00	11.63	Inf
5810MHz	Pass	11.00	-3.14	-3.17	-0.32	30.00	10.68	Inf

DG = Directional Gain; 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 Xpower density;

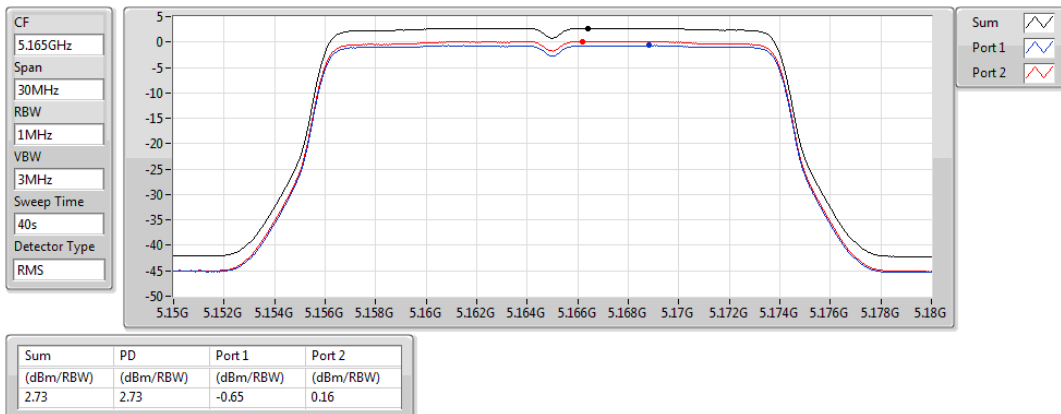
PSD

5160MHz



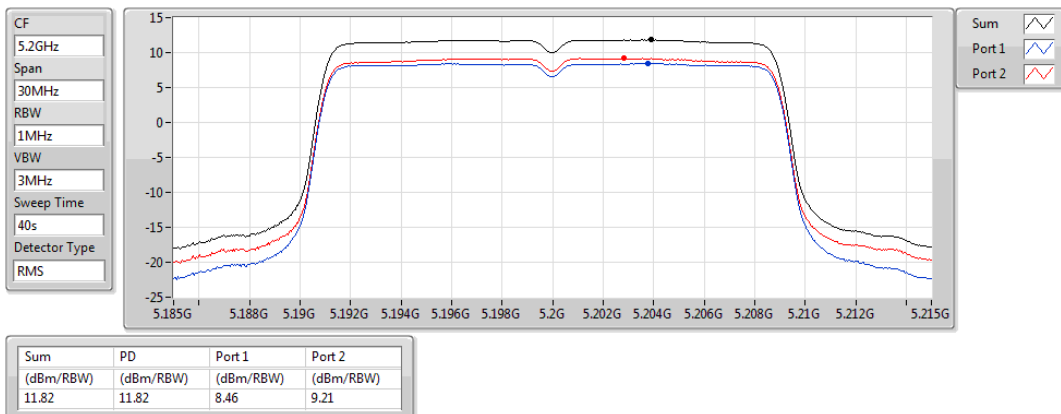
PSD

5165MHz



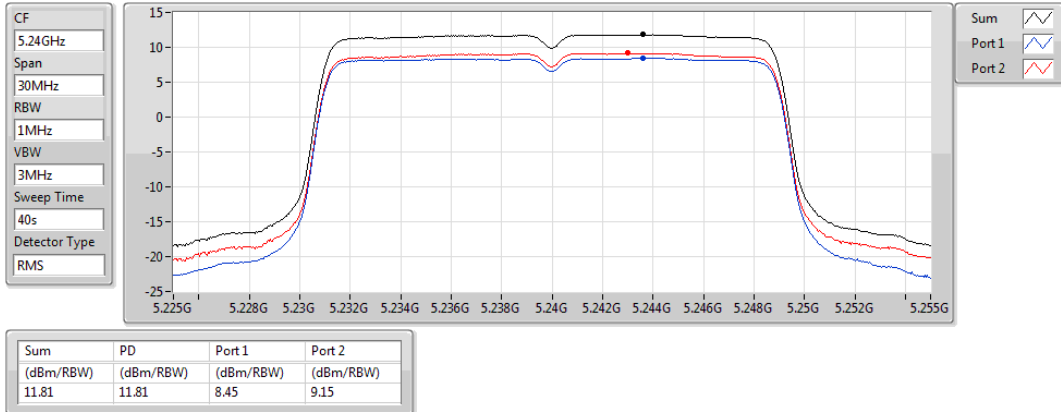
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5200MHz



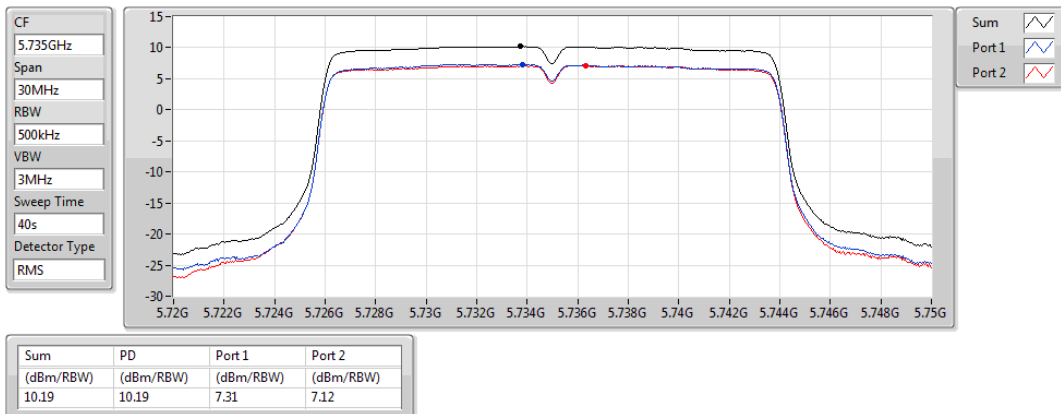
PSD

5240MHz



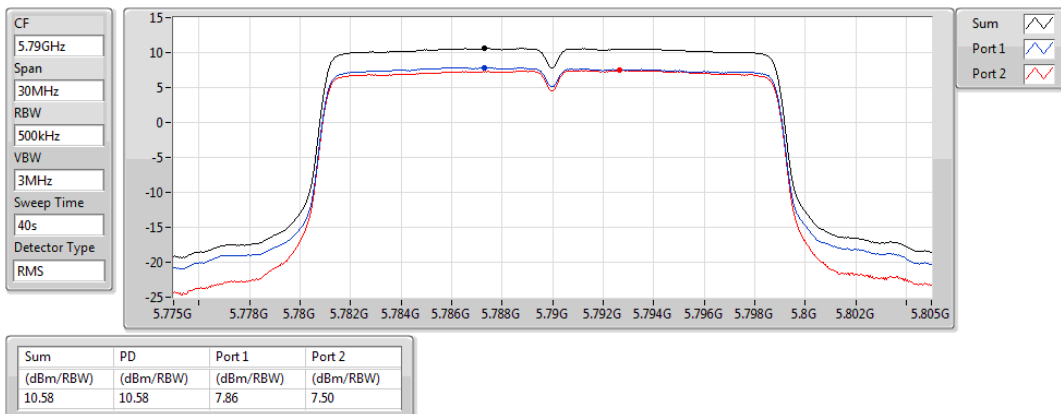
PSD

5735MHz



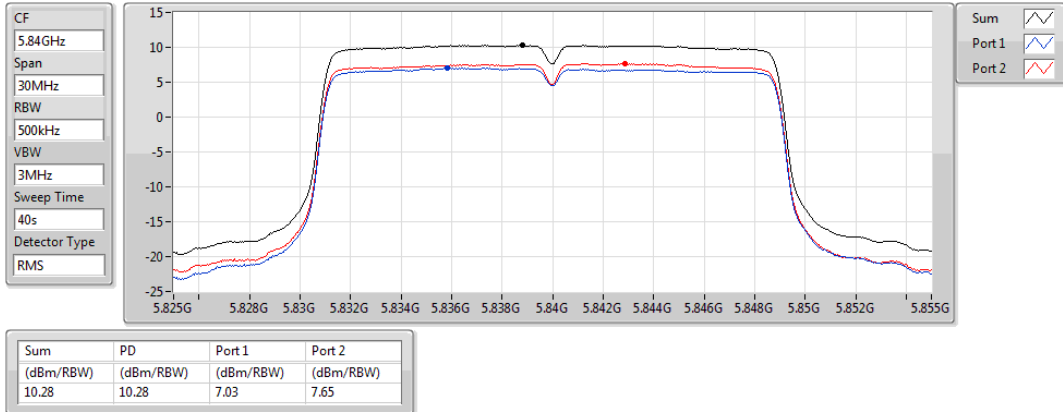
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5790MHz



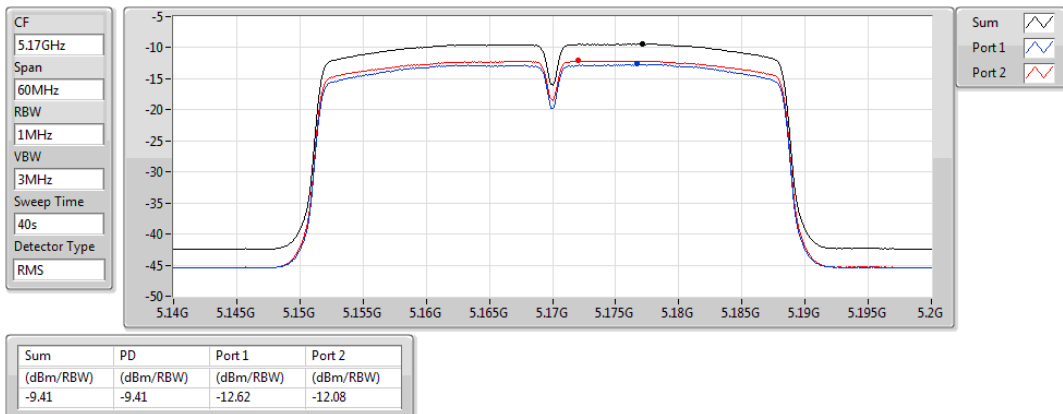
PSD

5840MHz



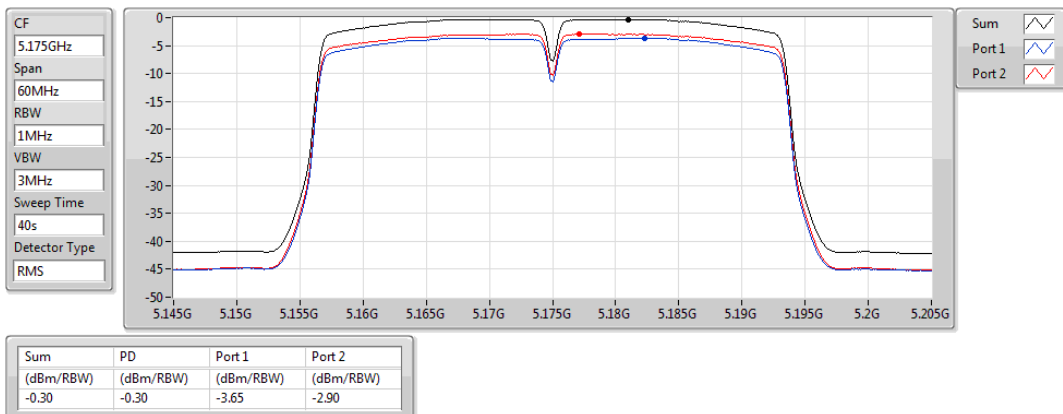
PSD

5170MHz



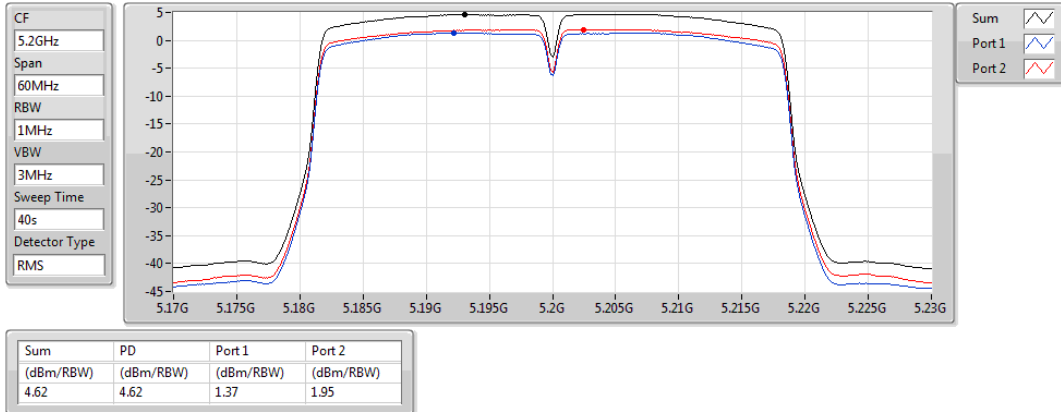
PSD

5175MHz



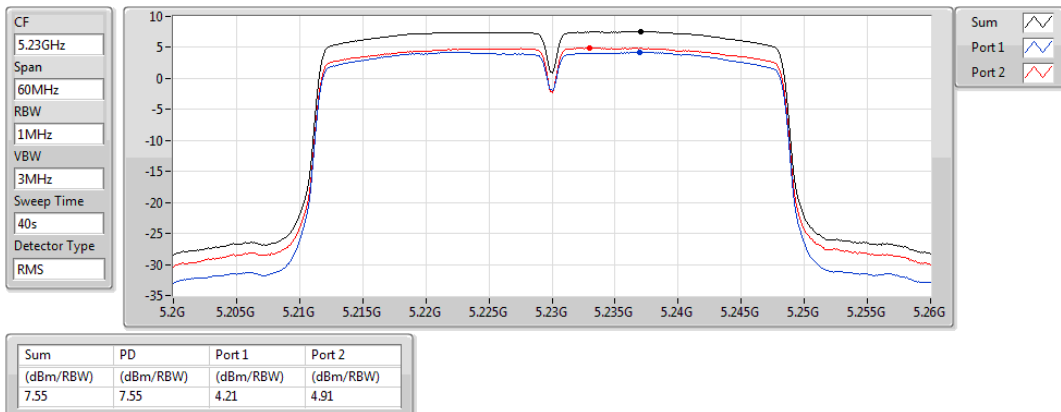
PSD

5200MHz



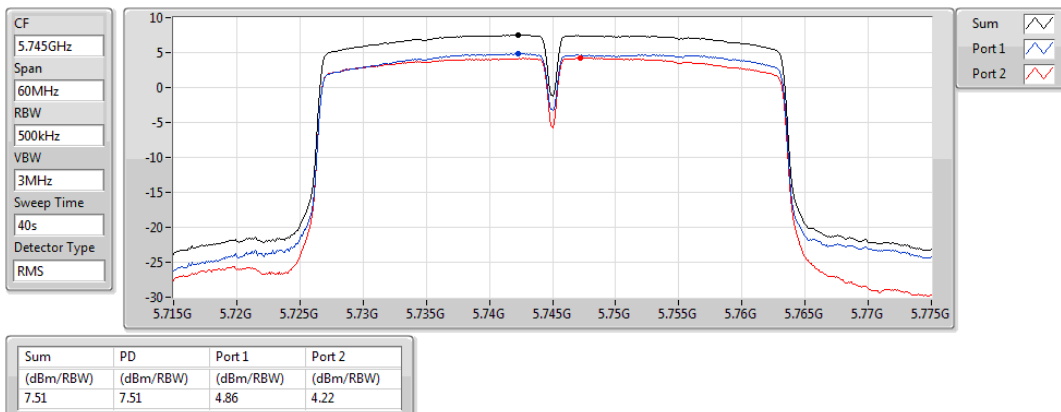
PSD

5230MHz



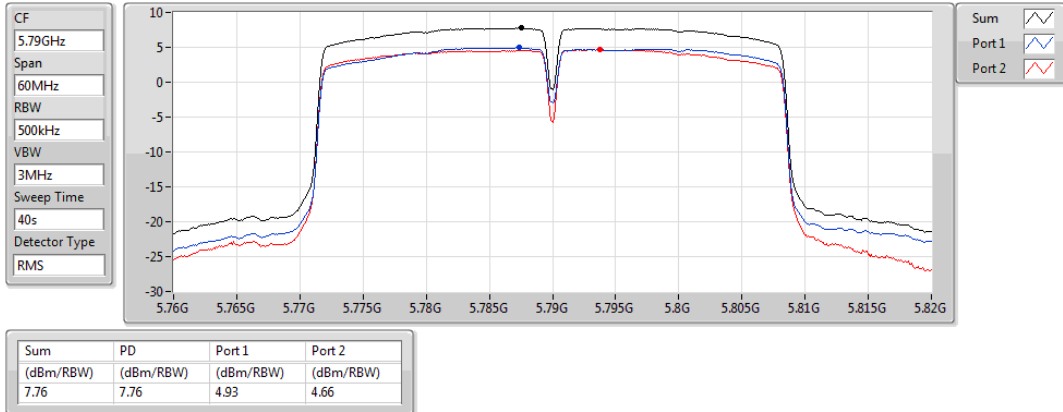
PSD

5745MHz



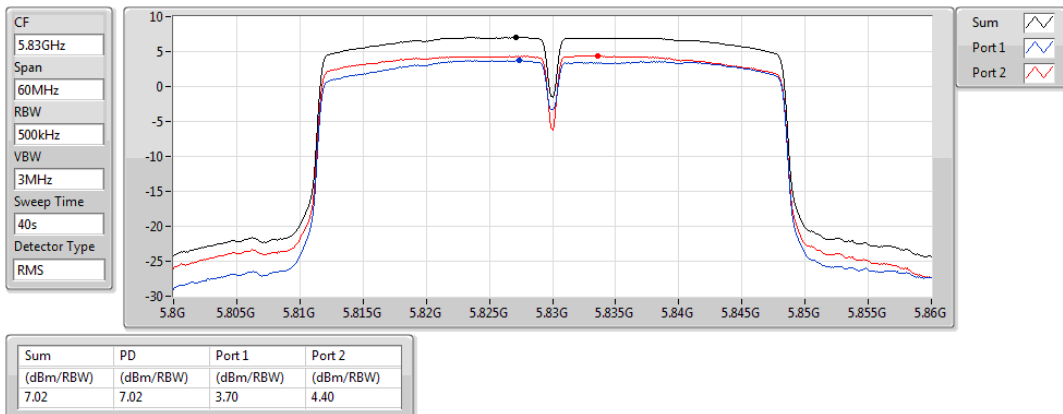
PSD

5790MHz



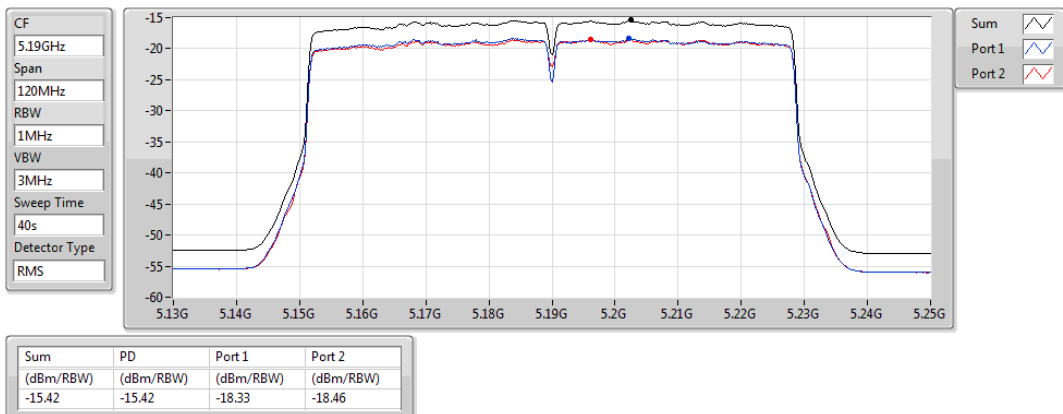
PSD

5830MHz



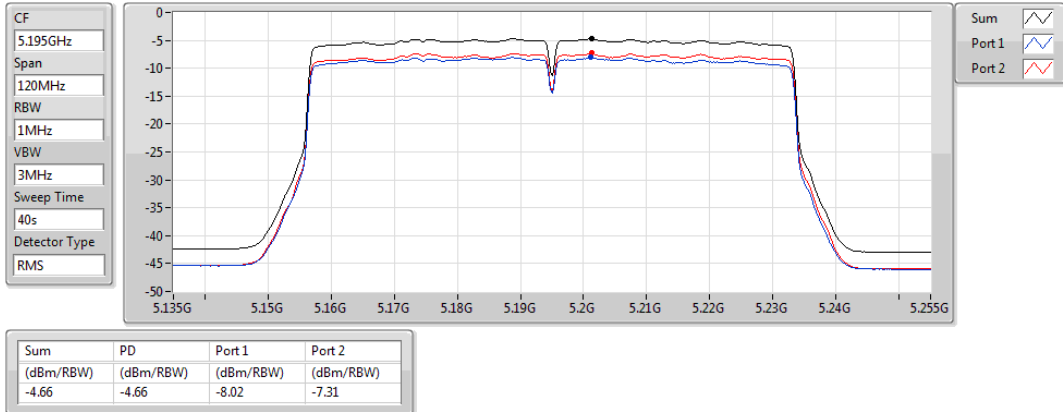
PSD

5190MHz



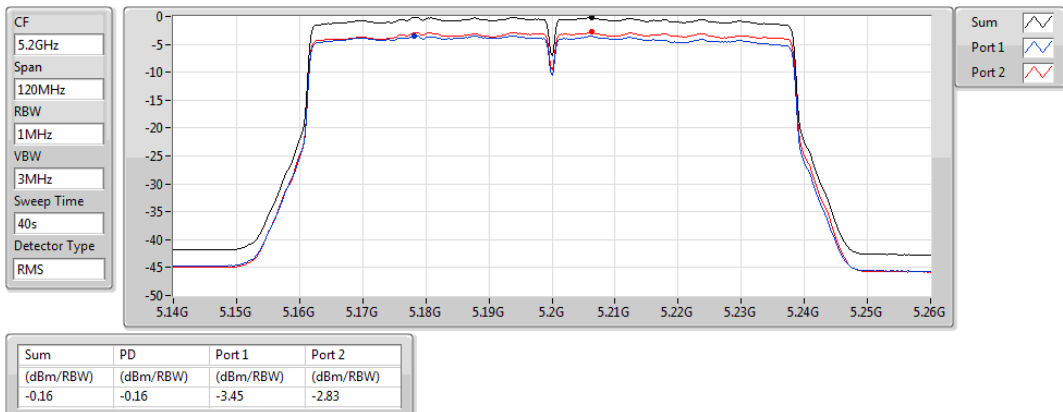
PSD

5195MHz



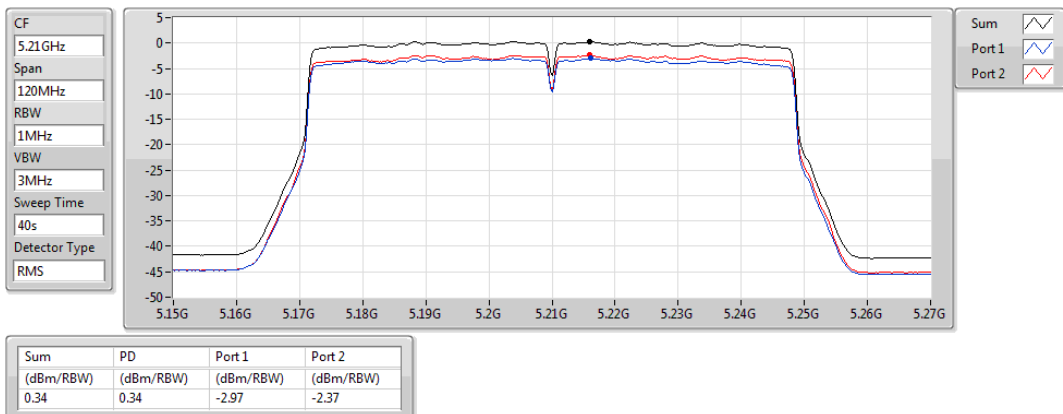
PSD

5200MHz



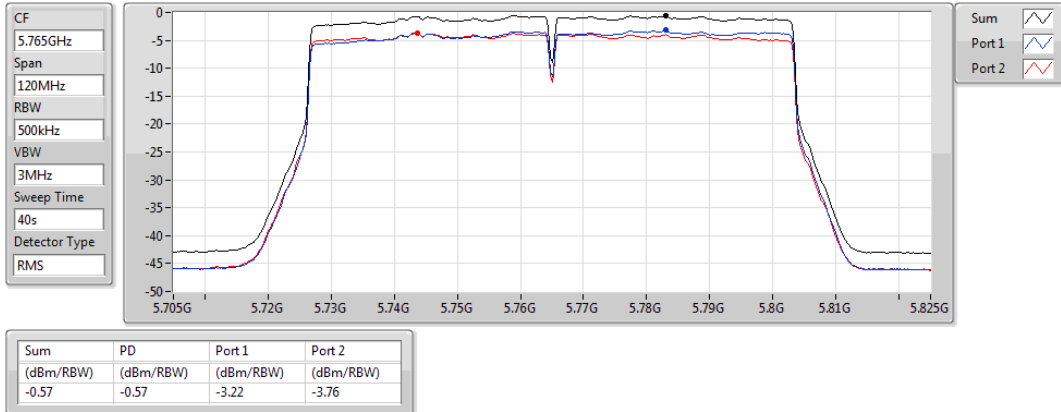
PSD

5210MHz



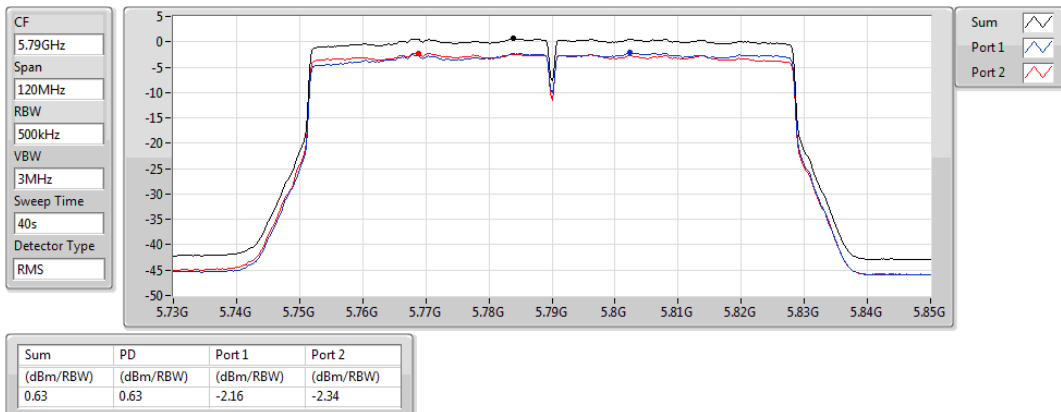
PSD

5765MHz



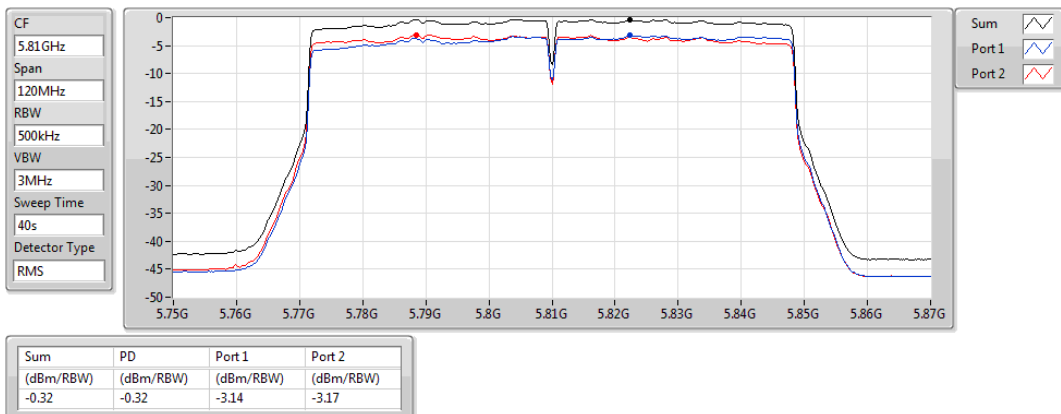
PSD

5790MHz



PSD

5810MHz



3.5 Transmitter Radiated and Band Edge Emissions

3.5.1 Limit of Transmitter Radiated and Band Edge 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).

3.5.2 Test Procedures

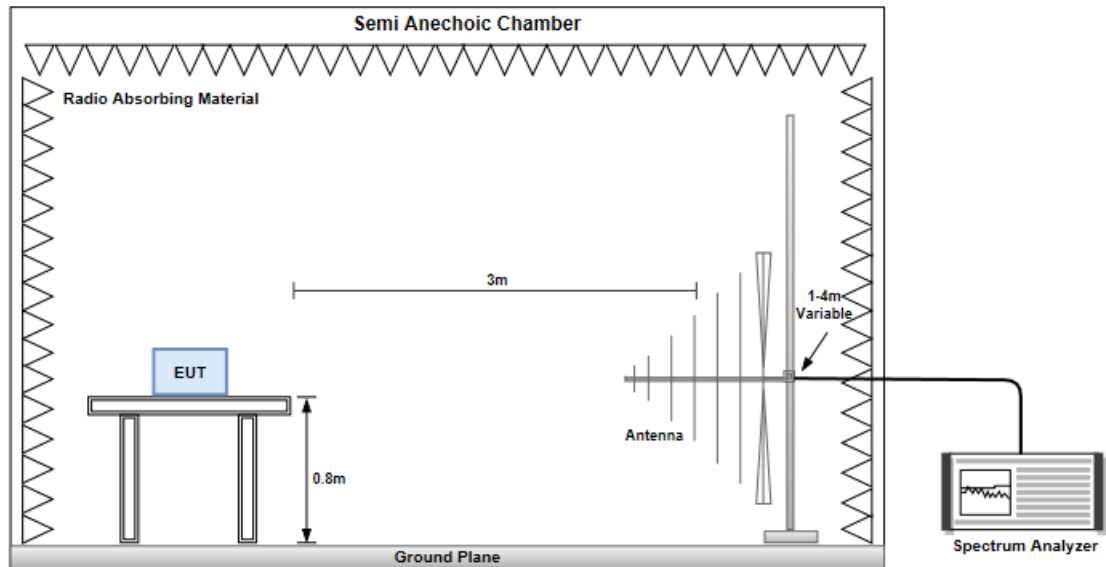
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

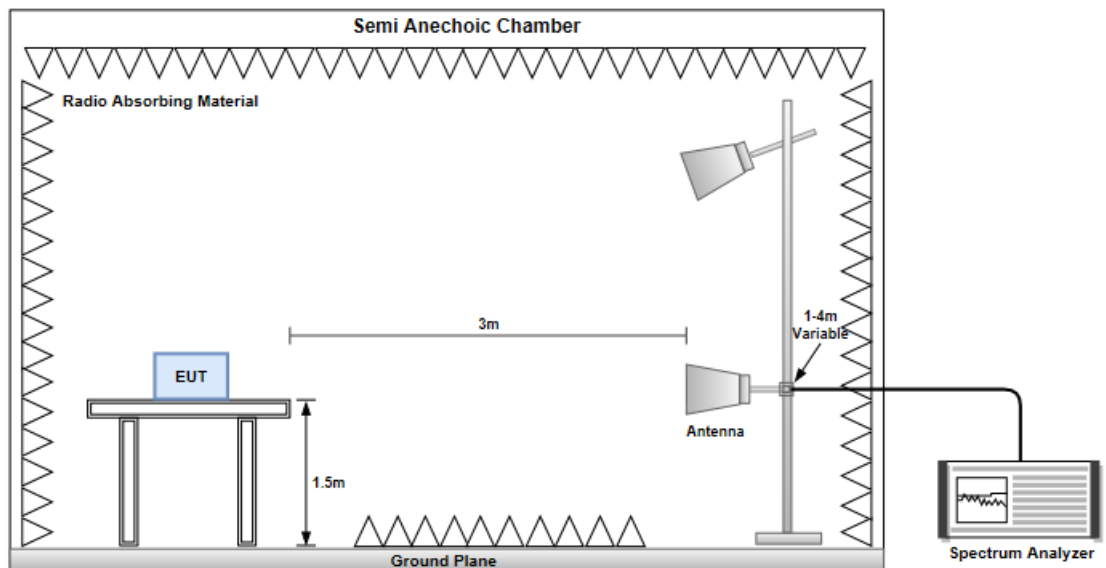
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



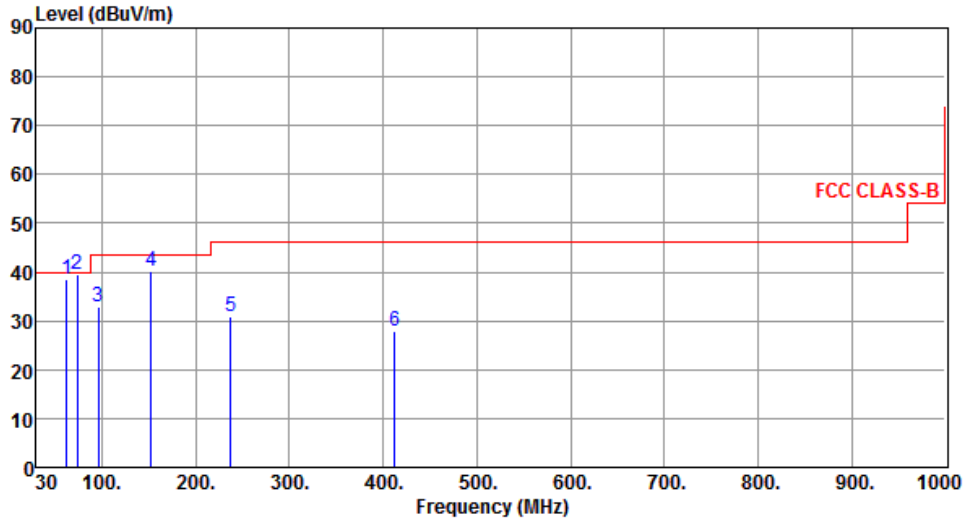
3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5240
Polarization	Horizontal		
Level (dBuV/m) <			

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5240
Polarization	Vertical		
Level (dBuV/m) </			

Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5790
Polarization	Horizontal		
Level (dBuV/m)			

Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5790
Polarization	Vertical		



The graph displays the emission level in dBUV/m against frequency in MHz. A red line indicates the FCC CLASS-B limit, which is 40 dBUV/m from 30 MHz to 100 MHz, 45 dBUV/m from 100 MHz to 200 MHz, and 55 dBUV/m from 200 MHz to 1000 MHz. Blue vertical lines represent measured peaks at 62.37 MHz, 74.06 MHz, 95.88 MHz, 152.33 MHz, 237.56 MHz, and 412.29 MHz. The peak levels are 38.66, 39.64, 32.87, 40.12, 30.88, and 27.84 dBUV/m respectively. The margins are -1.34, -0.36, -10.63, -3.38, -15.12, and -18.16 dB respectively.

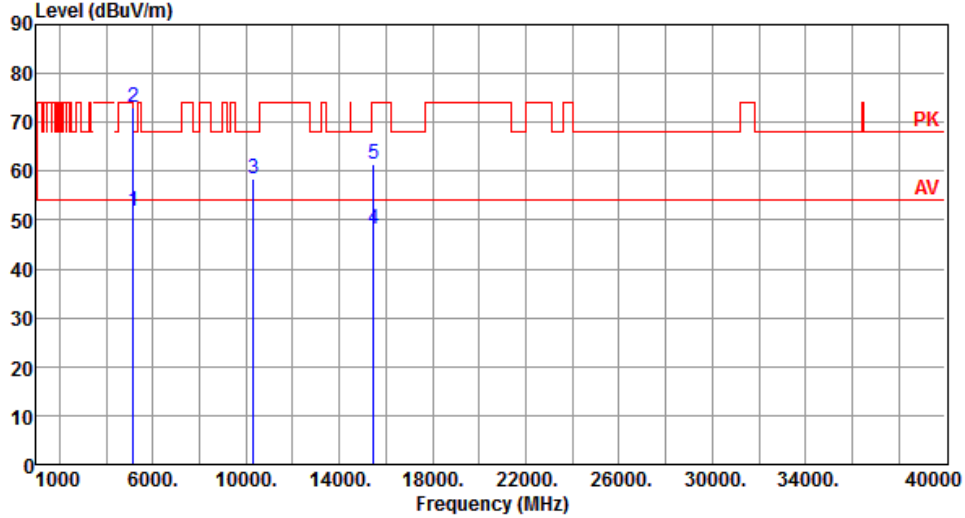
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	62.37	38.66	40.00	-1.34	48.33	-9.67	QP	140	4
2	74.06	39.64	40.00	-0.36	51.55	-11.91	QP	100	176
3	95.88	32.87	43.50	-10.63	47.17	-14.30	Peak	---	---
4	152.33	40.12	43.50	-3.38	48.80	-8.68	Peak	---	---
5	237.56	30.88	46.00	-15.12	41.39	-10.51	Peak	---	---
6	412.29	27.84	46.00	-18.16	33.19	-5.35	Peak	---	---

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 20 MHz

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5160
Polarization	Horizontal		
Level (dBUV/m) <			

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5160
Polarization	Vertical		



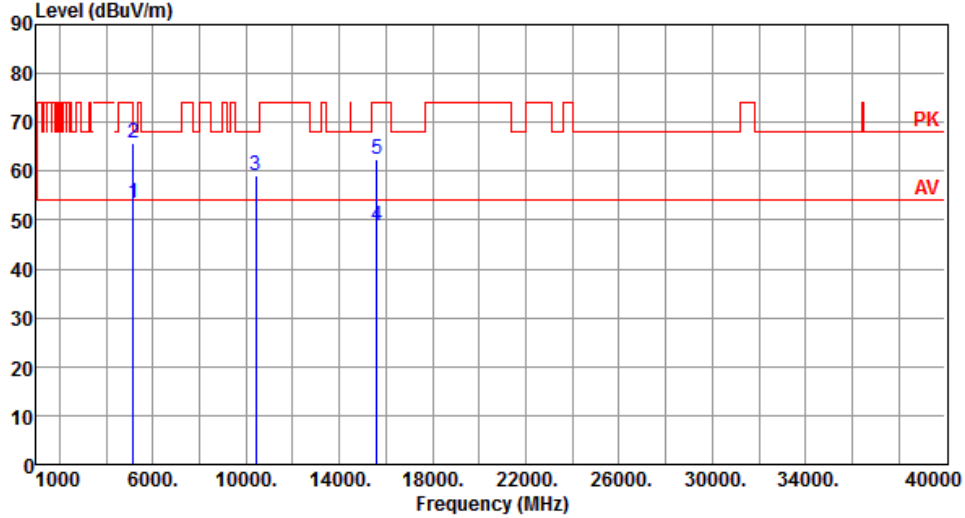
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	51.82	54.00	-2.18	44.36	7.46	Average	115	180
2	5150.00	72.97	74.00	-1.03	65.51	7.46	Peak	115	180
3	10320.00	58.59	68.20	-9.61	42.15	16.44	Peak	100	20
4	15480.00	48.21	54.00	-5.79	30.47	17.74	Average	100	70
5	15480.00	61.42	74.00	-12.58	43.68	17.74	Peak	100	70

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).

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5165
Polarization	Horizontal		
Level (dBuV/m)			

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5165
Polarization	Vertical		
Level (dBUV/m) </			

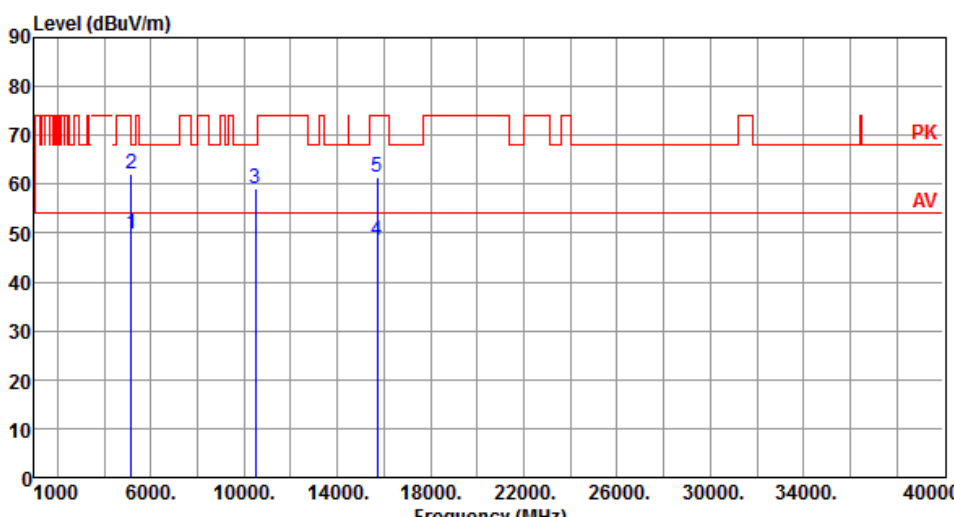
Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5200
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.55	54.00	-0.45	46.09	7.46	Average	187	190
2	5150.00	65.84	74.00	-8.16	58.38	7.46	Peak	187	190
3	10400.00	59.17	68.20	-9.03	42.26	16.91	Peak	100	30
4	15600.00	48.76	54.00	-5.24	31.42	17.34	Average	100	50
5	15600.00	62.42	74.00	-11.58	45.08	17.34	Peak	100	50

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).

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5200
Polarization	Vertical		
Level (dBuV/m)			

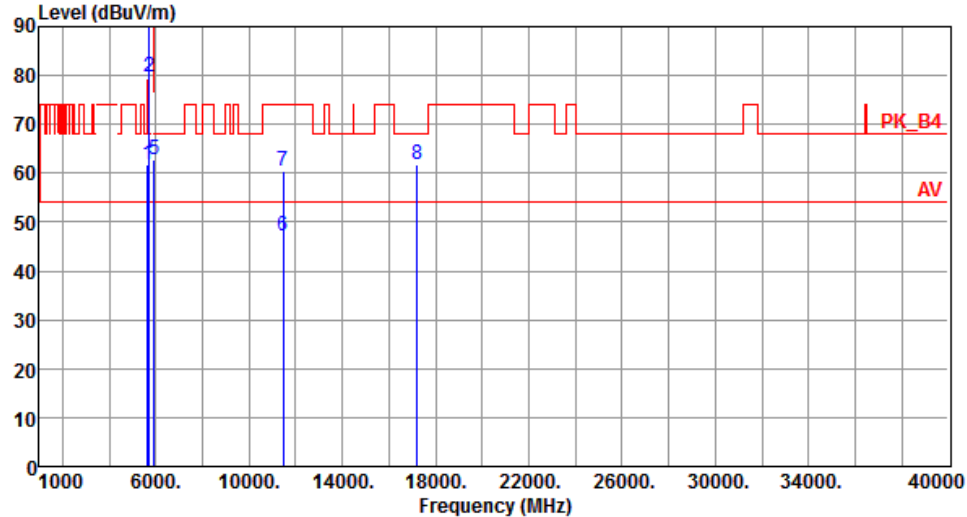
Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5240						
Polarization	Horizontal								
									
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	49.69	54.00	-4.31	42.23	7.46	Average	188	192
2	5150.00	62.02	74.00	-11.98	54.56	7.46	Peak	188	192
3	10480.00	59.20	68.20	-9.00	42.31	16.89	Peak	100	50
4	15720.00	48.63	54.00	-5.37	31.56	17.07	Average	100	60
5	15720.00	61.33	74.00	-12.67	44.26	17.07	Peak	100	60

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).

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5240
Polarization	Vertical		
Level (dBuV/m)			

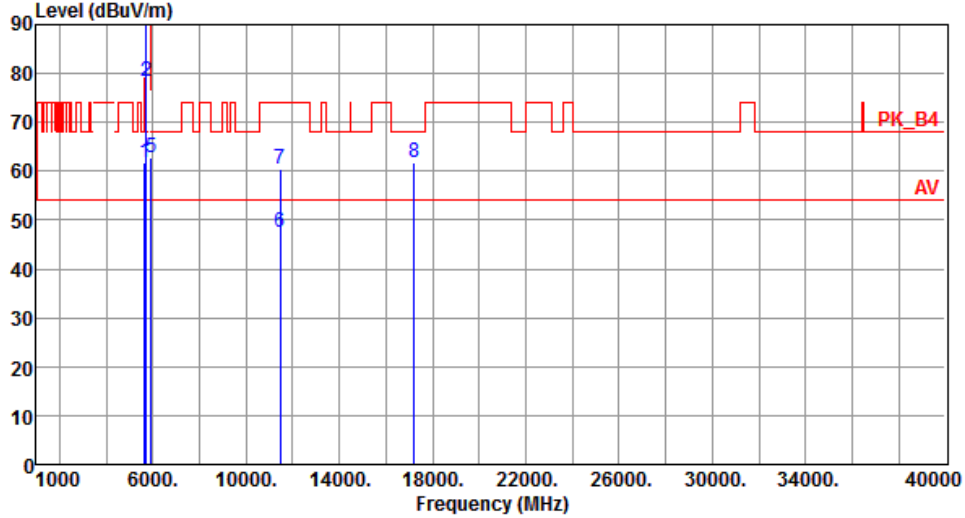
Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5735						
Polarization	Horizontal								
									
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
	MHz	level			reading			High	Table
		dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5650.00	61.78	68.20	-6.42	54.39	7.39	Peak	174	179
2	5700.00	79.56	105.20	-25.64	71.85	7.71	Peak	174	179
3	5720.00	100.39	110.80	-10.41	92.63	7.76	Peak	174	179
4	5725.00	105.46	122.20	-16.74	97.69	7.77	Peak	174	179
5	5925.00	62.83	68.20	-5.37	54.53	8.30	Peak	174	179
6	11470.00	47.18	54.00	-6.82	30.15	17.03	Average	100	165
7	11470.00	60.43	74.00	-13.57	43.40	17.03	Peak	100	165
8	17205.00	61.87	68.20	-6.33	43.22	18.65	Peak	100	50

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).

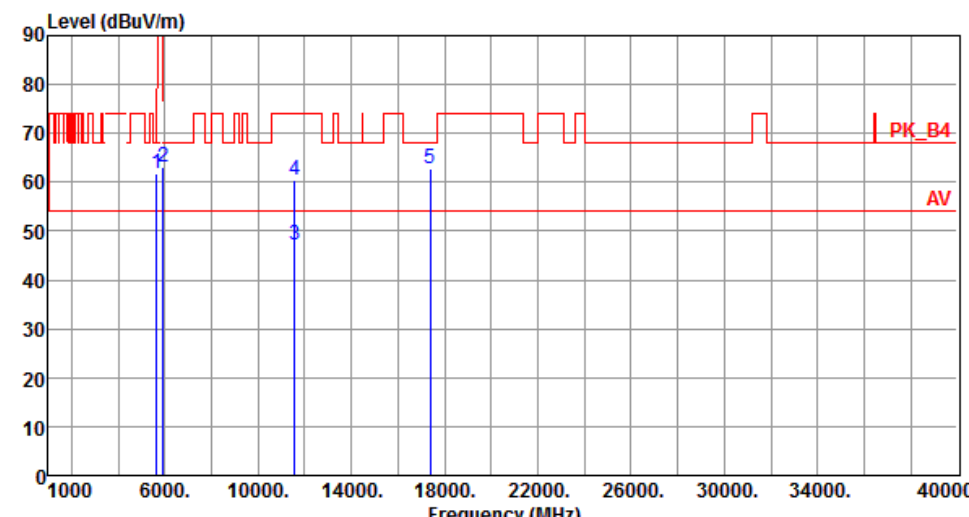
Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5735
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	61.67	68.20	-6.53	54.28	7.39	Peak	113	175
2	5700.00	78.40	105.20	-26.80	70.69	7.71	Peak	113	175
3	5720.00	100.30	110.80	-10.50	92.54	7.76	Peak	113	175
4	5725.00	105.33	122.20	-16.87	97.56	7.77	Peak	113	175
5	5925.00	62.68	68.20	-5.52	54.38	8.30	Peak	113	175
6	11470.00	47.35	54.00	-6.65	30.32	17.03	Average	100	50
7	11470.00	60.39	74.00	-13.61	43.36	17.03	Peak	100	50
8	17205.00	61.83	68.20	-6.37	43.18	18.65	Peak	100	80

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).

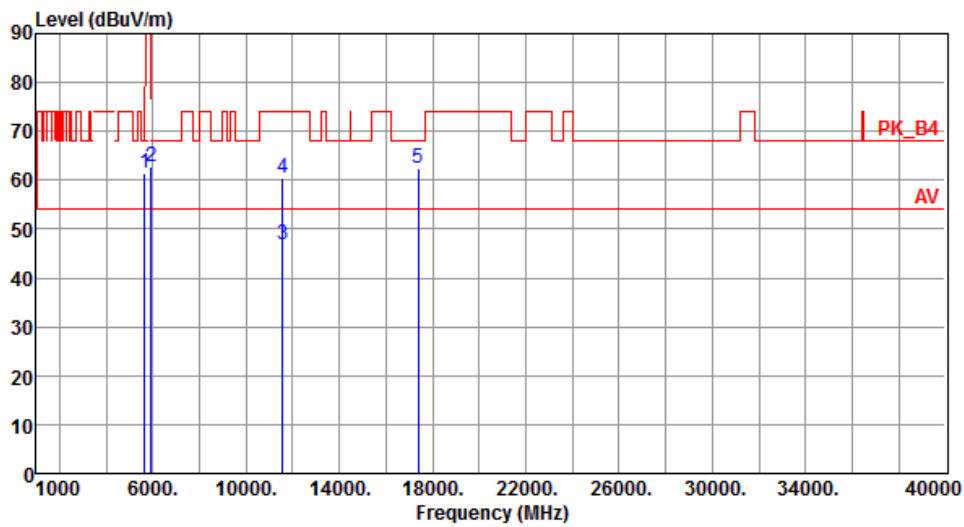
Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5790
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	61.70	68.20	-6.50	54.31	7.39	Peak	175	176
2	5925.00	62.99	68.20	-5.21	54.69	8.30	Peak	175	176
3	11580.00	47.14	54.00	-6.86	30.25	16.89	Average	102	166
4	11580.00	60.44	74.00	-13.56	43.55	16.89	Peak	102	166
5	17370.00	62.66	68.20	-5.54	43.16	19.50	Peak	100	90

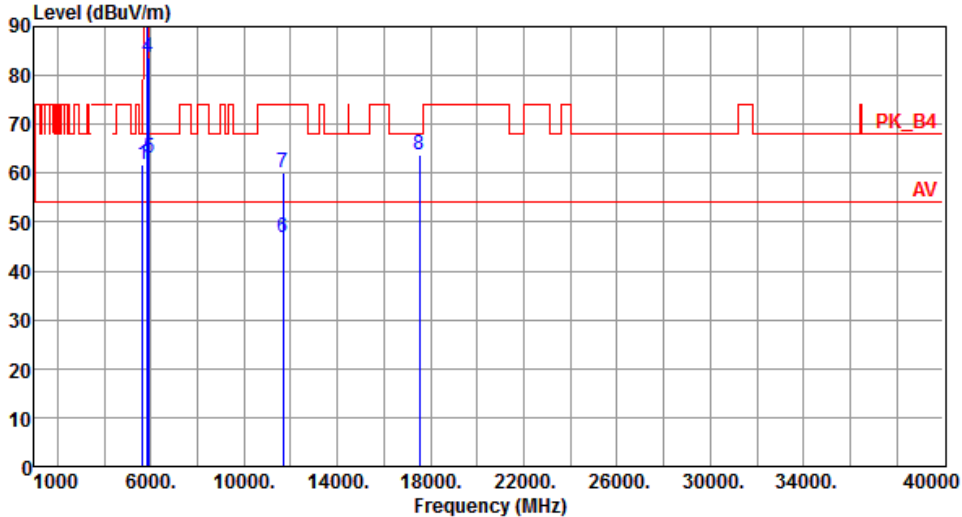
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5790
Polarization	Vertical		

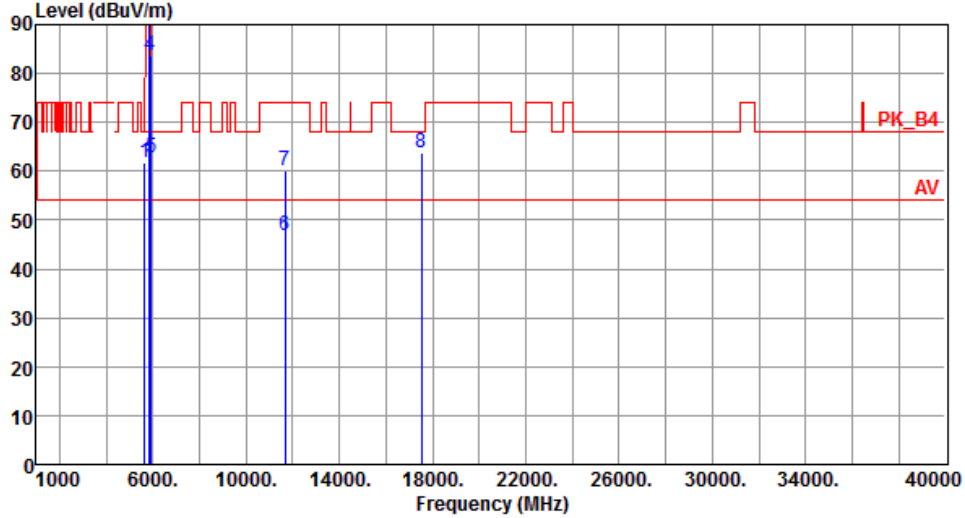


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	61.54	68.20	-6.66	54.15	7.39	Peak	116	179
2	5925.00	62.62	68.20	-5.58	54.32	8.30	Peak	116	179
3	11580.00	46.78	54.00	-7.22	29.89	16.89	Average	100	180
4	11580.00	60.56	74.00	-13.44	43.67	16.89	Peak	100	180
5	17370.00	62.53	68.20	-5.67	43.03	19.50	Peak	100	50

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).

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5840						
Polarization	Horizontal								
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	61.68	68.20	-6.52	54.29	7.39	Peak	170	182
2	5850.00	108.46	122.20	-13.74	100.31	8.15	Peak	170	182
3	5855.00	105.42	110.80	-5.38	97.26	8.16	Peak	170	182
4	5875.00	83.62	105.20	-21.58	75.42	8.20	Peak	170	182
5	5925.00	62.98	68.20	-5.22	54.68	8.30	Peak	170	182
6	11680.00	46.88	54.00	-7.12	30.29	16.59	Average	100	166
7	11680.00	60.17	74.00	-13.83	43.58	16.59	Peak	100	166
8	17520.00	63.66	68.20	-4.54	43.38	20.28	Peak	110	20
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).									

Proprietary protocol (BW)	20MHz	Test Freq. (MHz)	5840
Polarization	Vertical		

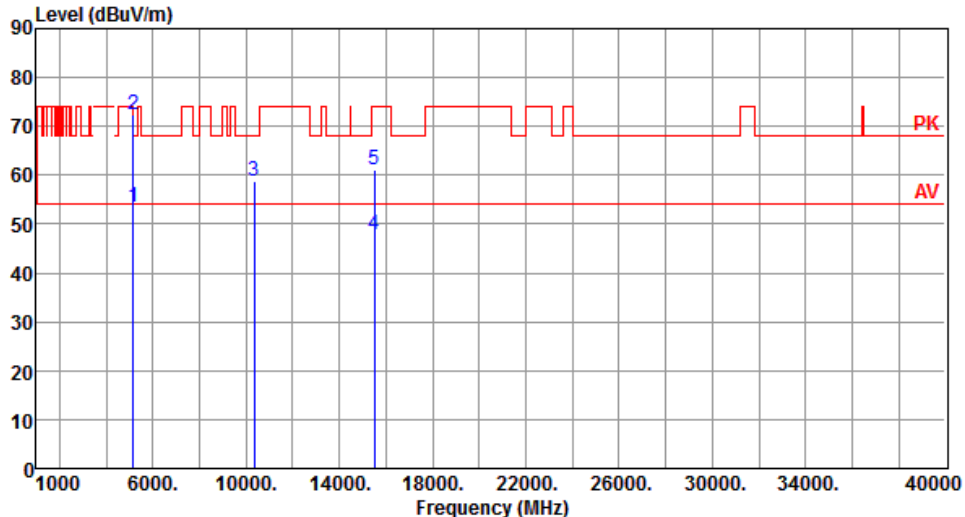


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	61.64	68.20	-6.56	54.25	7.39	Peak	126	179
2	5850.00	108.44	122.20	-13.76	100.29	8.15	Peak	126	179
3	5855.00	105.29	110.80	-5.51	97.13	8.16	Peak	126	179
4	5875.00	83.53	105.20	-21.67	75.33	8.20	Peak	126	179
5	5925.00	62.85	68.20	-5.35	54.55	8.30	Peak	126	179
6	11680.00	46.92	54.00	-7.08	30.33	16.59	Average	100	80
7	11680.00	60.04	74.00	-13.96	43.45	16.59	Peak	100	80
8	17520.00	63.90	68.20	-4.30	43.62	20.28	Peak	100	70

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

3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 40 MHz

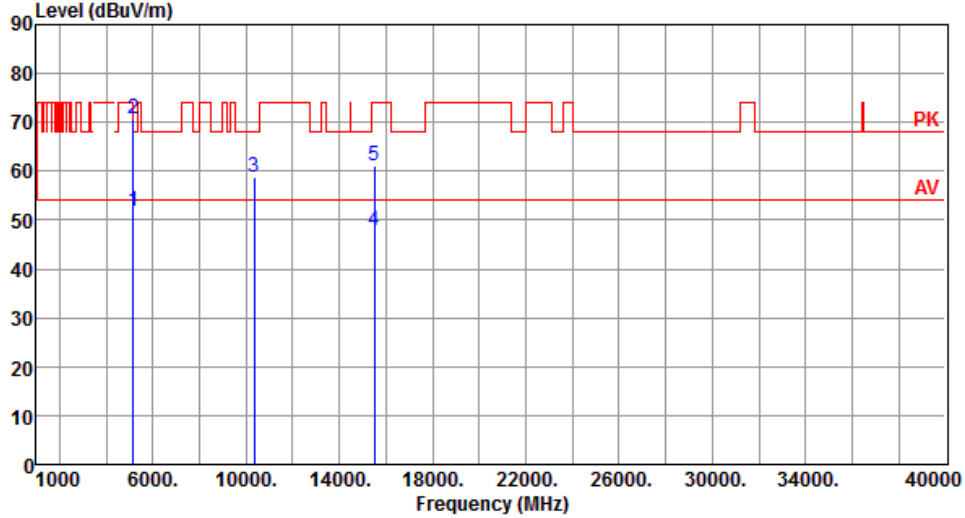
Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5170
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.58	54.00	-0.42	46.12	7.46	Average	198	182
2	5150.00	72.54	74.00	-1.46	65.08	7.46	Peak	198	182
3	10340.00	58.91	68.20	-9.29	42.35	16.56	Peak	100	90
4	15510.00	47.98	54.00	-6.02	30.39	17.59	Average	100	50
5	15510.00	61.12	74.00	-12.88	43.53	17.59	Peak	100	50

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).

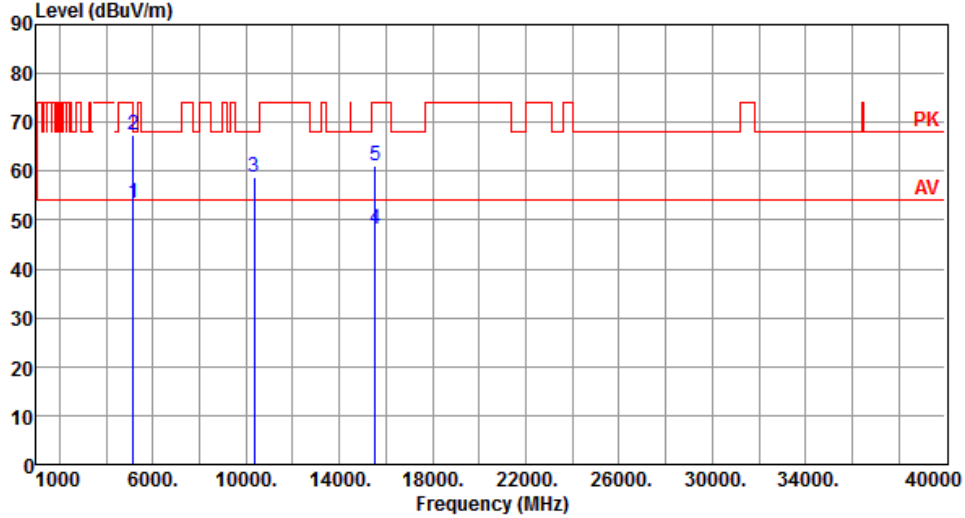
Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5170
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	51.68	54.00	-2.32	44.22	7.46	Average	116	173
2	5150.00	70.71	74.00	-3.29	63.25	7.46	Peak	116	173
3	10340.00	58.79	68.20	-9.41	42.23	16.56	Peak	100	40
4	15510.00	47.71	54.00	-6.29	30.12	17.59	Average	100	30
5	15510.00	61.21	74.00	-12.79	43.62	17.59	Peak	100	30

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).

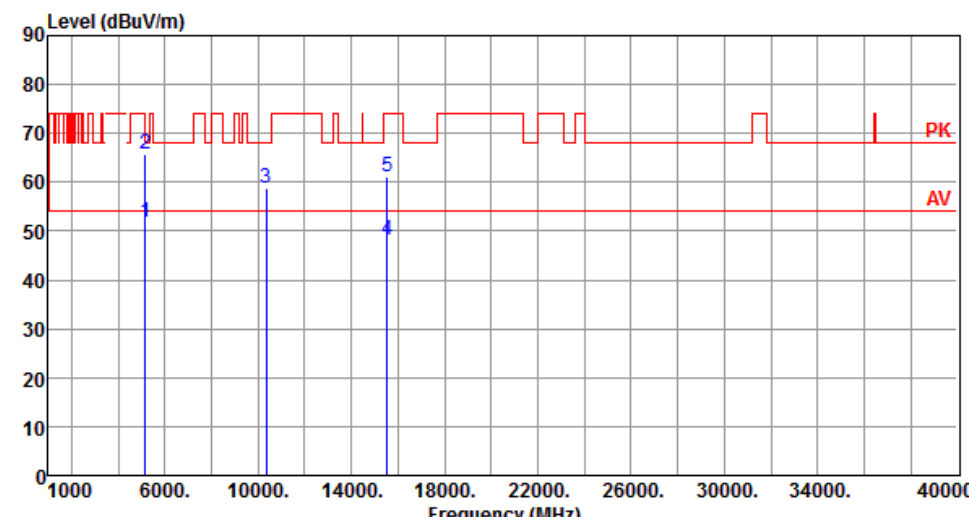
Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5175
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.52	54.00	-0.48	46.06	7.46	Average	195	188
2	5150.00	67.35	74.00	-6.65	59.89	7.46	Peak	195	188
3	10350.00	58.89	68.20	-9.31	42.28	16.61	Peak	100	40
4	15525.00	48.01	54.00	-5.99	30.46	17.55	Average	100	90
5	15525.00	61.12	74.00	-12.88	43.57	17.55	Peak	100	90

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).

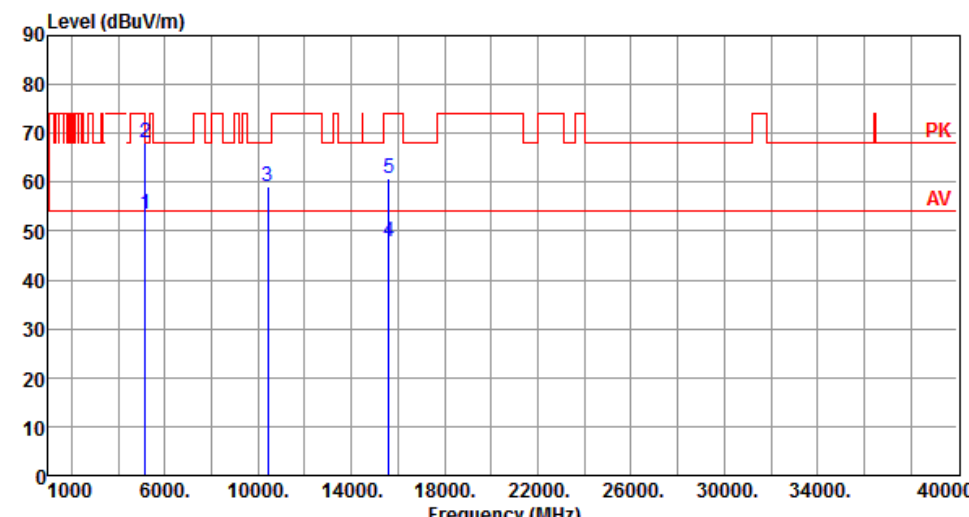
Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5175
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	51.82	54.00	-2.18	44.36	7.46	Average	113	175
2	5150.00	65.72	74.00	-8.28	58.26	7.46	Peak	113	175
3	10350.00	58.92	68.20	-9.28	42.31	16.61	Peak	100	70
4	15525.00	48.08	54.00	-5.92	30.53	17.55	Average	100	40
5	15525.00	61.21	74.00	-12.79	43.66	17.55	Peak	100	40

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).

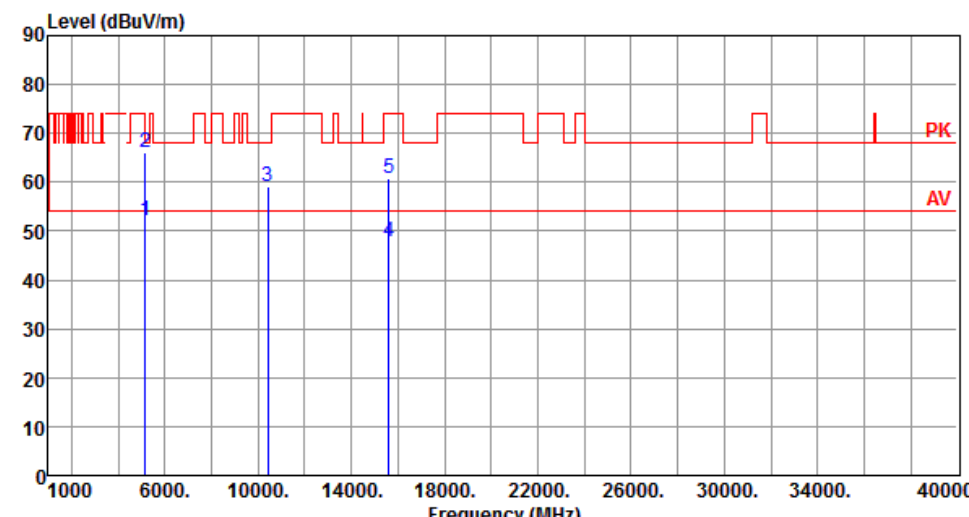
Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5200
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.55	54.00	-0.45	46.09	7.46	Average	164	174
2	5150.00	67.95	74.00	-6.05	60.49	7.46	Peak	164	174
3	10400.00	59.09	68.20	-9.11	42.18	16.91	Peak	100	90
4	15600.00	47.92	54.00	-6.08	30.58	17.34	Average	100	20
5	15600.00	60.87	74.00	-13.13	43.53	17.34	Peak	100	20

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).

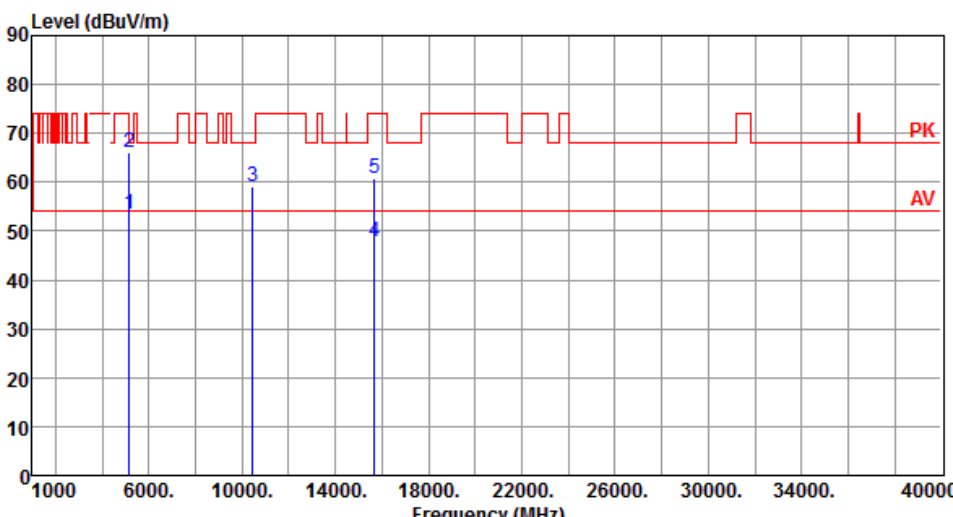
Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5200
Polarization	Vertical		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	52.23	54.00	-1.77	44.77	7.46	Average	123	182
2	5150.00	66.22	74.00	-7.78	58.76	7.46	Peak	123	182
3	10400.00	59.14	68.20	-9.06	42.23	16.91	Peak	100	80
4	15600.00	47.77	54.00	-6.23	30.43	17.34	Average	100	40
5	15600.00	60.71	74.00	-13.29	43.37	17.34	Peak	100	40

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).

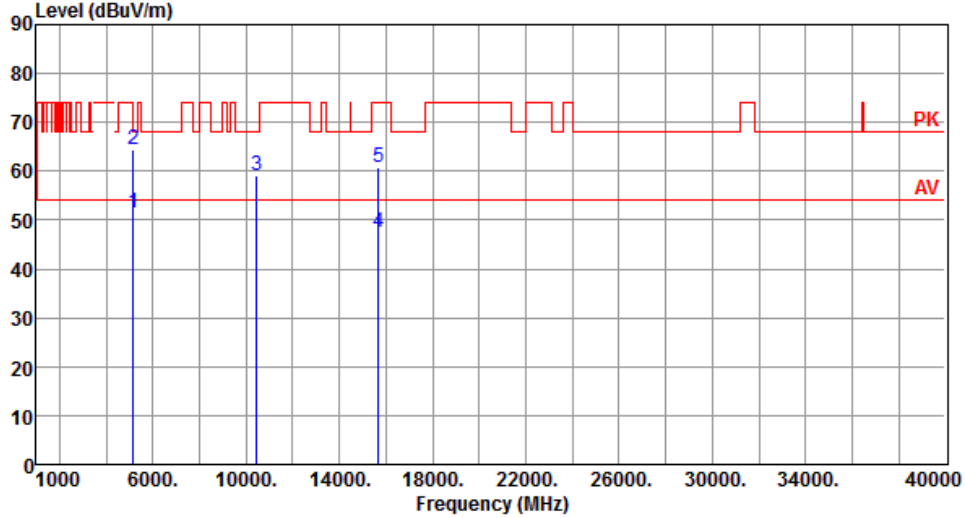
Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5230
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.58	54.00	-0.42	46.12	7.46	Average	181	173
2	5150.00	66.22	74.00	-7.78	58.76	7.46	Peak	181	173
3	10460.00	59.25	68.20	-8.95	42.36	16.89	Peak	100	40
4	15690.00	47.72	54.00	-6.28	30.53	17.19	Average	100	20
5	15690.00	60.78	74.00	-13.22	43.59	17.19	Peak	100	20

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).

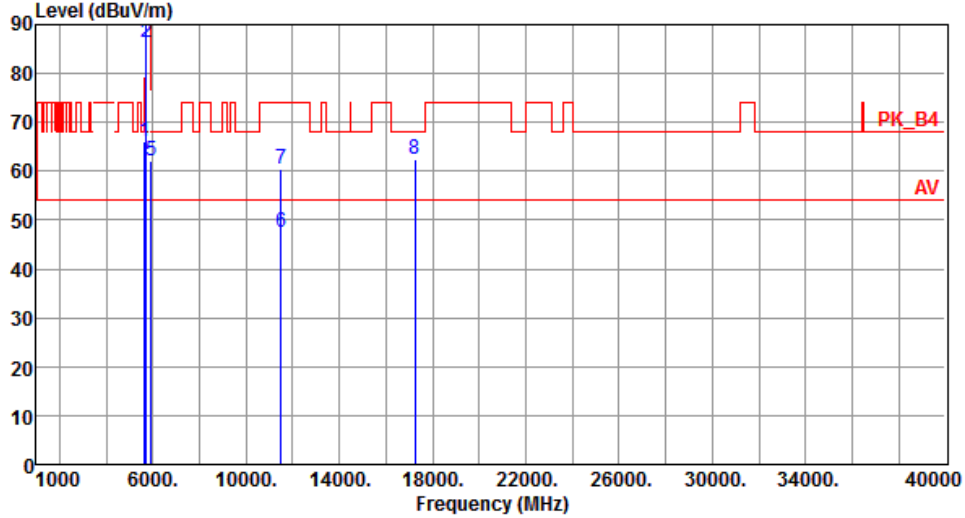
Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5230
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	51.49	54.00	-2.51	44.03	7.46	Average	114	181
2	5150.00	64.35	74.00	-9.65	56.89	7.46	Peak	114	181
3	10460.00	59.11	68.20	-9.09	42.22	16.89	Peak	100	70
4	15690.00	47.63	54.00	-6.37	30.44	17.19	Average	100	50
5	15690.00	60.74	74.00	-13.26	43.55	17.19	Peak	100	50

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).

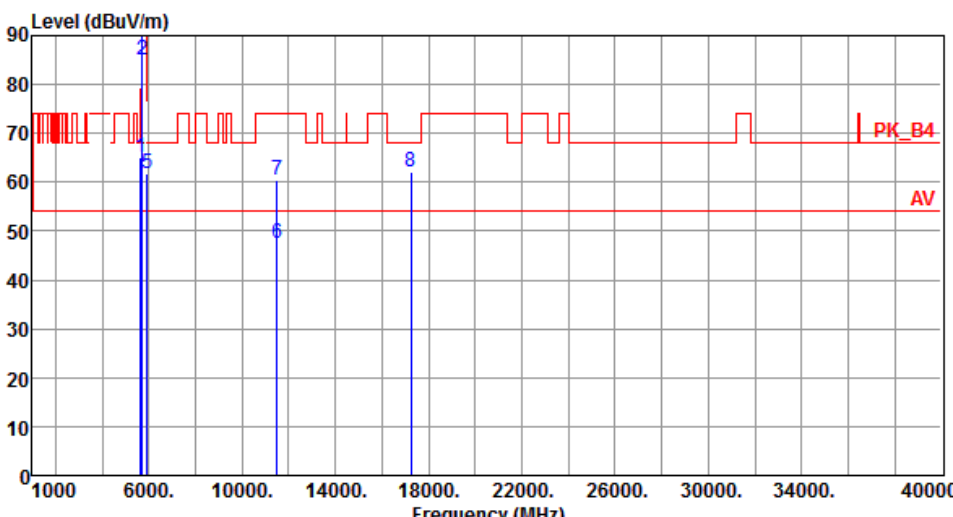
Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5745
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	66.10	68.20	-2.10	58.71	7.39	Peak	170	176
2	5700.00	86.29	105.20	-18.91	78.58	7.71	Peak	170	176
3	5720.00	95.04	110.80	-15.76	87.28	7.76	Peak	170	176
4	5725.00	97.64	122.20	-24.56	89.87	7.77	Peak	170	176
5	5925.00	62.14	68.20	-6.06	53.84	8.30	Peak	170	176
6	11490.00	47.45	54.00	-6.55	30.39	17.06	Average	100	20
7	11490.00	60.43	74.00	-13.57	43.37	17.06	Peak	100	20
8	17235.00	62.37	68.20	-5.83	43.59	18.78	Peak	100	30

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).

Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5745
Polarization	Vertical		



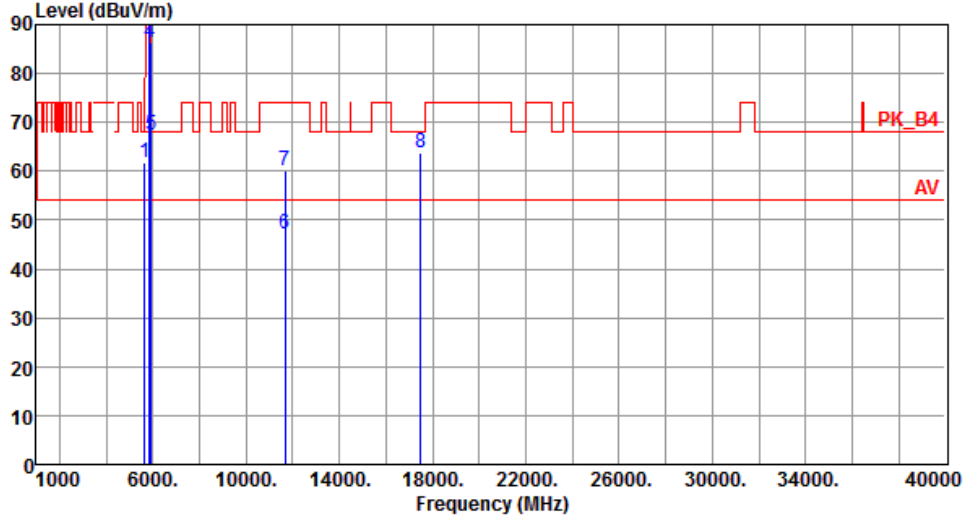
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	65.08	68.20	-3.12	57.69	7.39	Peak	115	178
2	5700.00	85.16	105.20	-20.04	77.45	7.71	Peak	115	178
3	5720.00	94.06	110.80	-16.74	86.30	7.76	Peak	115	178
4	5725.00	97.38	122.20	-24.82	89.61	7.77	Peak	115	178
5	5925.00	61.91	68.20	-6.29	53.61	8.30	Peak	115	178
6	11490.00	47.49	54.00	-6.51	30.43	17.06	Average	100	40
7	11490.00	60.31	74.00	-13.69	43.25	17.06	Peak	100	40
8	17235.00	62.25	68.20	-5.95	43.47	18.78	Peak	100	50

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).

Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5790
Polarization	Horizontal		
Level (dBuV/m) </			

Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5790
Polarization	Vertical		
Level (dBuV/m)			

Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5830
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	61.65	68.20	-6.55	54.26	7.39	Peak	183	179
2	5850.00	97.16	122.20	-25.04	89.01	8.15	Peak	183	179
3	5855.00	92.82	110.80	-17.98	84.66	8.16	Peak	183	179
4	5875.00	86.24	105.20	-18.96	78.04	8.20	Peak	183	179
5	5925.00	67.26	68.20	-0.94	58.96	8.30	Peak	183	179
6	11660.00	47.08	54.00	-6.92	30.42	16.66	Average	100	50
7	11660.00	60.12	74.00	-13.88	43.46	16.66	Peak	100	50
8	17490.00	63.66	68.20	-4.54	43.58	20.08	Peak	100	20

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).

Proprietary protocol (BW)	40MHz	Test Freq. (MHz)	5830
Polarization	Vertical		

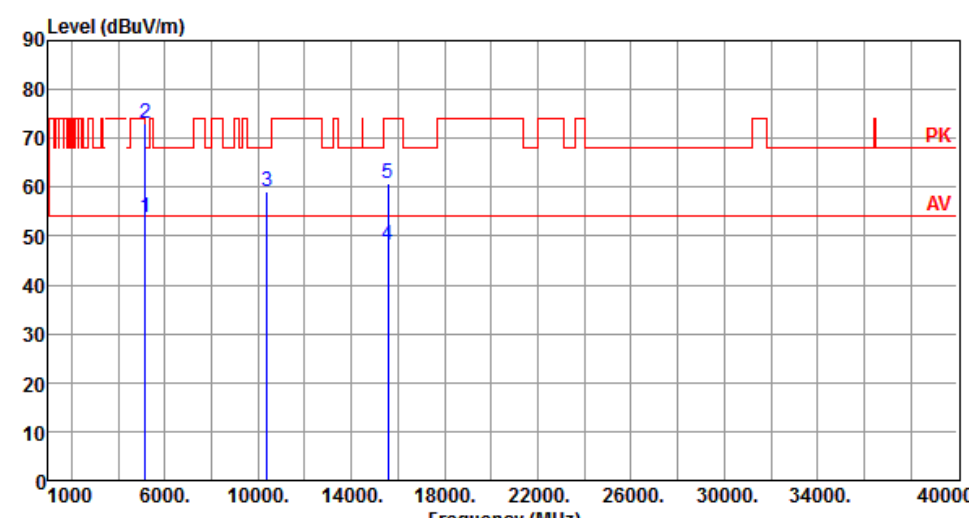


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	61.58	68.20	-6.62	54.19	7.39	Peak	119	175
2	5850.00	96.41	122.20	-25.79	88.26	8.15	Peak	119	175
3	5855.00	92.48	110.80	-18.32	84.32	8.16	Peak	119	175
4	5875.00	86.21	105.20	-18.99	78.01	8.20	Peak	119	175
5	5925.00	66.14	68.20	-2.06	57.84	8.30	Peak	119	175
6	11660.00	46.97	54.00	-7.03	30.31	16.66	Average	100	60
7	11660.00	60.17	74.00	-13.83	43.51	16.66	Peak	100	60
8	17490.00	63.53	68.20	-4.67	43.45	20.08	Peak	100	30

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

3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 80 MHz

Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5190
Polarization	Horizontal		

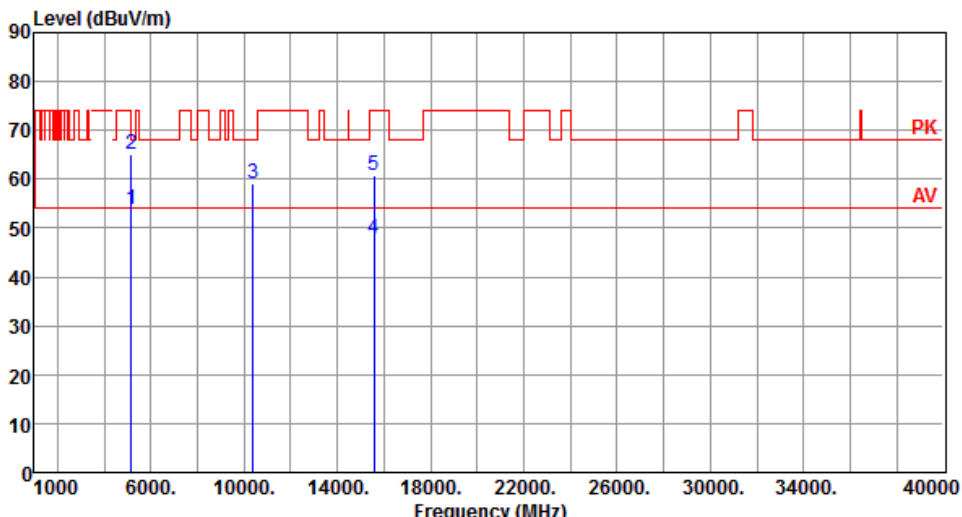


	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.79	54.00	-0.21	46.33	7.46	Average	183	180
2	5150.00	73.14	74.00	-0.86	65.68	7.46	Peak	183	180
3	10380.00	59.15	68.20	-9.05	42.36	16.79	Peak	100	90
4	15570.00	48.02	54.00	-5.98	30.60	17.42	Average	100	20
5	15570.00	60.94	74.00	-13.06	43.52	17.42	Peak	100	20

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).

Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5190
Polarization	Vertical		
Level (dBuV/m)			

Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5195
Polarization	Horizontal		



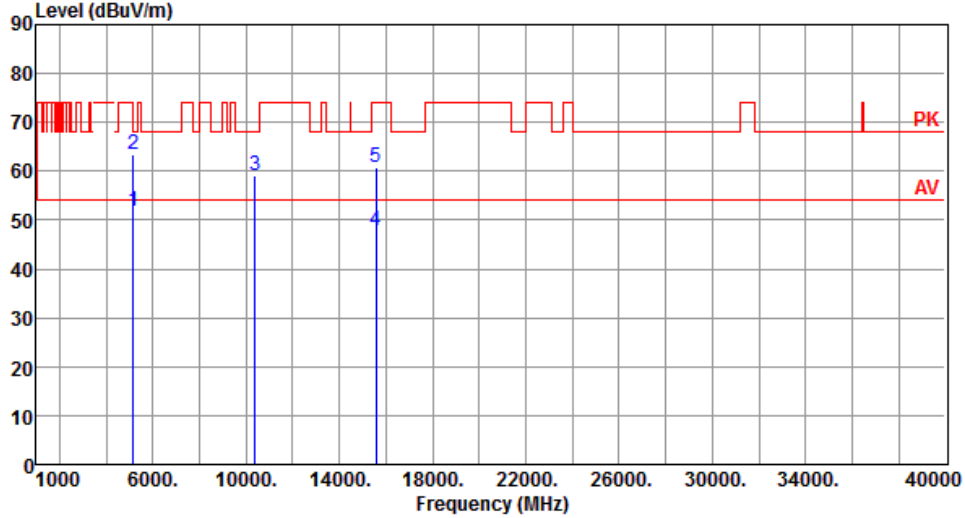
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
	MHz	dBuV/m	dBuV/m	dB	reading	dB		High	Table
					dBuV			cm	deg
1	5150.00	53.73	54.00	-0.27	46.27	7.46	Average	192	180
2	5150.00	65.17	74.00	-8.83	57.71	7.46	Peak	192	180
3	10390.00	59.03	68.20	-9.17	42.18	16.85	Peak	100	30
4	15585.00	47.85	54.00	-6.15	30.46	17.39	Average	100	70
5	15585.00	60.65	74.00	-13.35	43.26	17.39	Peak	100	70

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).

Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5195
Polarization	Vertical		

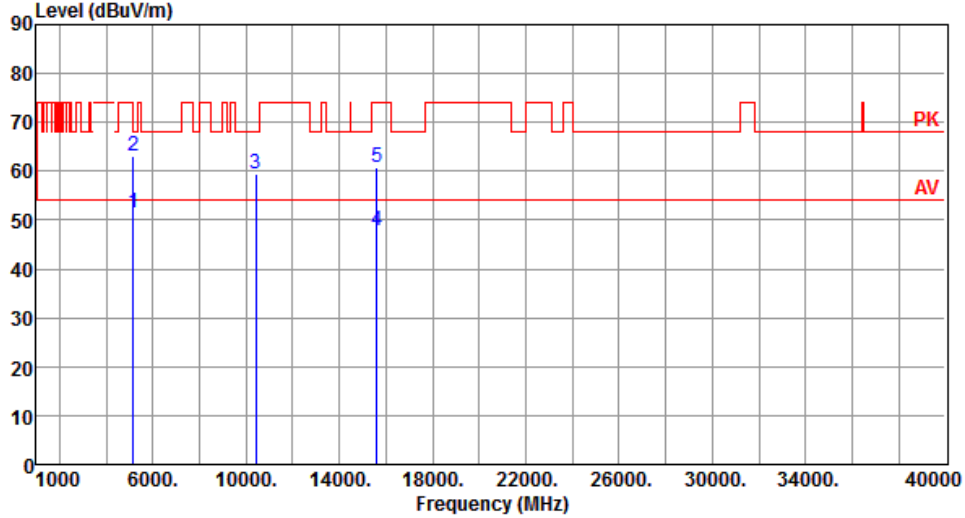


	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	51.81	54.00	-2.19	44.35	7.46	Average	126	178
2	5150.00	63.42	74.00	-10.58	55.96	7.46	Peak	126	178
3	10390.00	59.11	68.20	-9.09	42.26	16.85	Peak	100	50
4	15585.00	47.92	54.00	-6.08	30.53	17.39	Average	100	60
5	15585.00	60.77	74.00	-13.23	43.38	17.39	Peak	100	60

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).

Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5200
Polarization	Horizontal		
Level (dBuV/m) </			

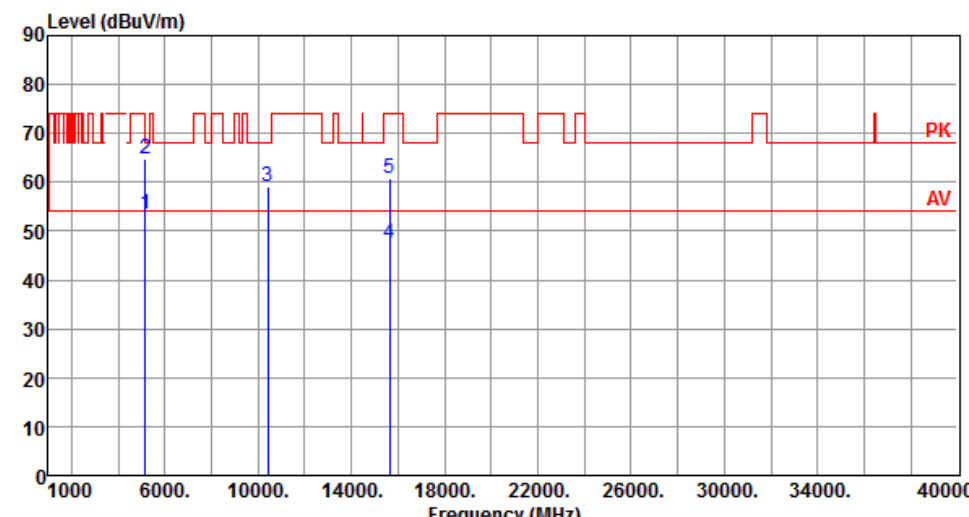
Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5200
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	51.35	54.00	-2.65	43.89	7.46	Average	124	181
2	5150.00	62.95	74.00	-11.05	55.49	7.46	Peak	124	181
3	10400.00	59.30	68.20	-8.90	42.39	16.91	Peak	100	40
4	15600.00	47.79	54.00	-6.21	30.45	17.34	Average	100	60
5	15600.00	60.76	74.00	-13.24	43.42	17.34	Peak	100	60

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).

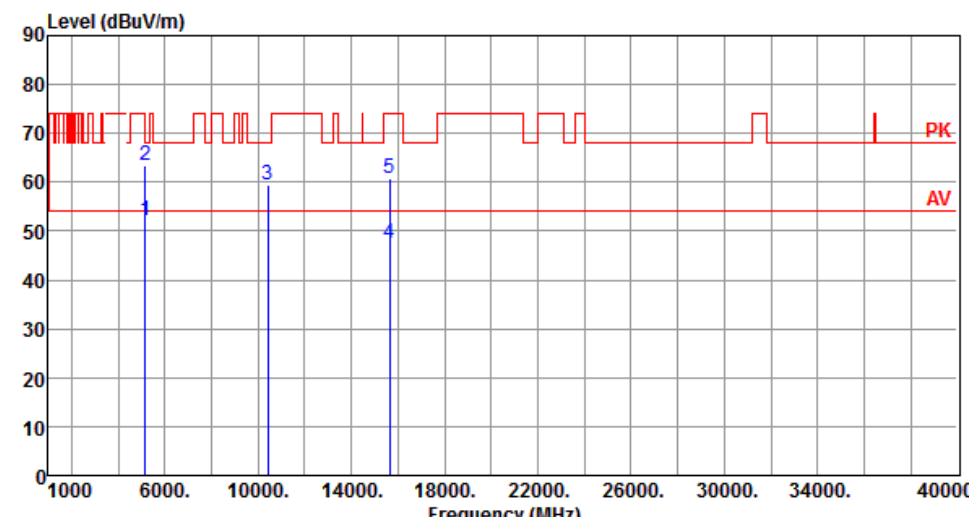
Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5210
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.54	54.00	-0.46	46.08	7.46	Average	179	173
2	5150.00	64.63	74.00	-9.37	57.17	7.46	Peak	179	173
3	10420.00	59.25	68.20	-8.95	42.35	16.90	Peak	100	50
4	15630.00	47.57	54.00	-6.43	30.28	17.29	Average	100	20
5	15630.00	60.73	74.00	-13.27	43.44	17.29	Peak	100	20

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).

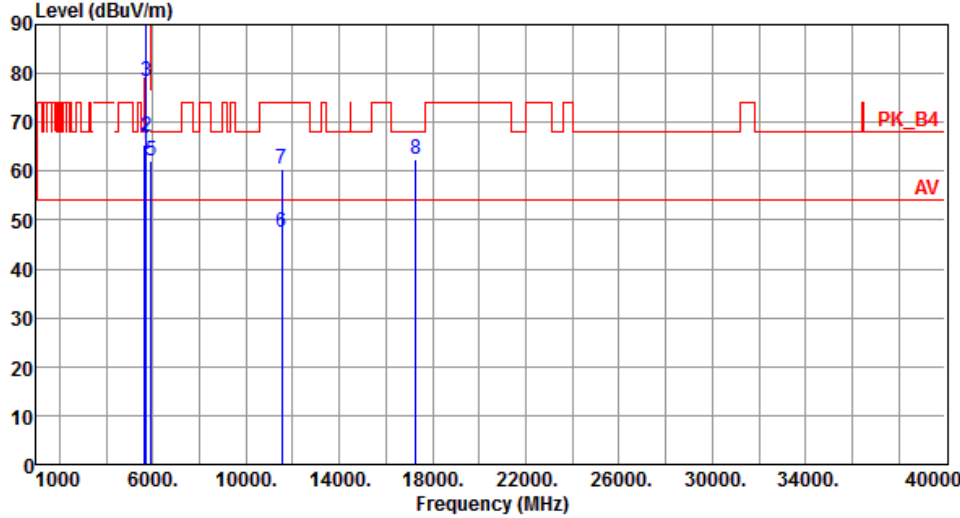
Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5210
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	52.21	54.00	-1.79	44.75	7.46	Average	126	178
2	5150.00	63.48	74.00	-10.52	56.02	7.46	Peak	126	178
3	10420.00	59.31	68.20	-8.89	42.41	16.90	Peak	100	60
4	15630.00	47.59	54.00	-6.41	30.30	17.29	Average	100	40
5	15630.00	60.67	74.00	-13.33	43.38	17.29	Peak	100	40

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).

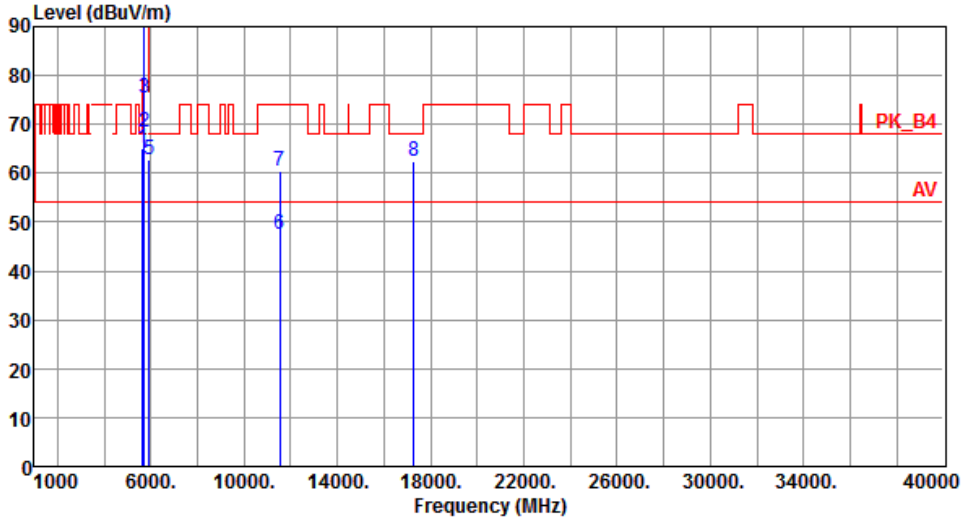
Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5765
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	65.55	68.20	-2.65	58.16	7.39	Peak	174	175
2	5700.00	67.01	105.20	-38.19	59.30	7.71	Peak	174	175
3	5720.00	78.53	110.80	-32.27	70.77	7.76	Peak	174	175
4	5725.00	93.96	122.20	-28.24	86.19	7.77	Peak	174	175
5	5925.00	62.00	68.20	-6.20	53.70	8.30	Peak	174	175
6	11530.00	47.54	54.00	-6.46	30.52	17.02	Average	100	20
7	11530.00	60.50	74.00	-13.50	43.48	17.02	Peak	100	20
8	17295.00	62.59	68.20	-5.61	43.55	19.04	Peak	100	50

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).

Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5765
Polarization	Vertical		



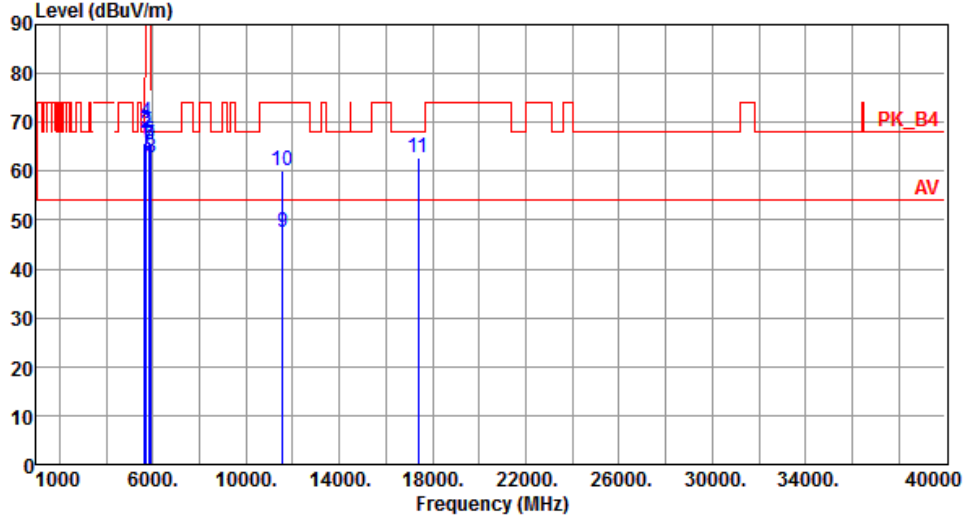
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	65.09	68.20	-3.11	57.70	7.39	Peak	173	180
2	5700.00	68.38	105.20	-36.82	60.67	7.71	Peak	173	180
3	5720.00	75.50	110.80	-35.30	67.74	7.76	Peak	173	180
4	5725.00	90.96	122.20	-31.24	83.19	7.77	Peak	173	180
5	5925.00	62.86	68.20	-5.34	54.56	8.30	Peak	173	180
6	11530.00	47.57	54.00	-6.43	30.55	17.02	Average	100	40
7	11530.00	60.54	74.00	-13.46	43.52	17.02	Peak	100	40
8	17295.00	62.45	68.20	-5.75	43.41	19.04	Peak	100	50

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).

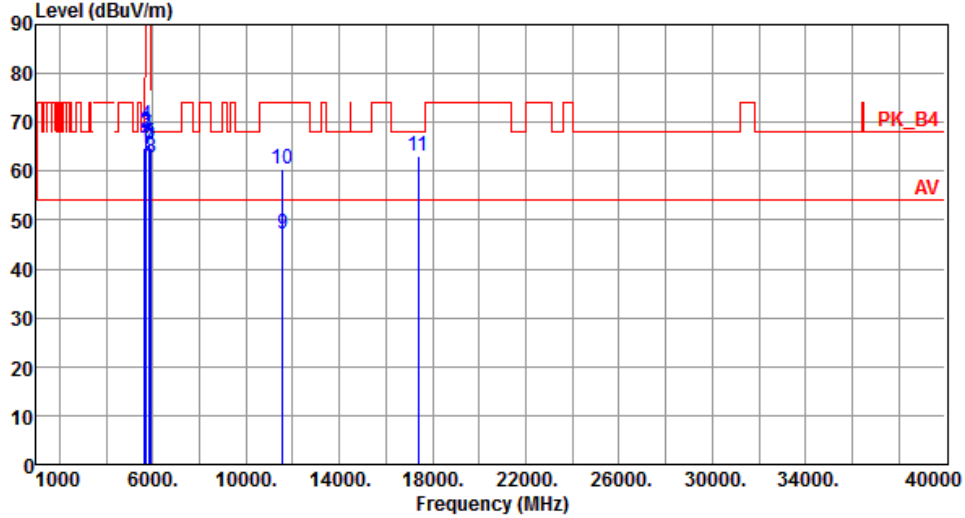
Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5790
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	65.64	68.20	-2.56	58.25	7.39	Peak	154	177
2	5700.00	67.88	105.20	-37.32	60.17	7.71	Peak	154	177
3	5720.00	68.41	110.80	-42.39	60.65	7.76	Peak	154	177
4	5725.00	70.03	122.20	-52.17	62.26	7.77	Peak	154	177
5	5850.00	66.18	122.20	-56.02	58.03	8.15	Peak	154	177
6	5855.00	65.57	110.80	-45.23	57.41	8.16	Peak	154	177
7	5875.00	65.41	105.20	-39.79	57.21	8.20	Peak	154	177
8	5925.00	62.90	68.20	-5.30	54.60	8.30	Peak	154	177
9	11580.00	47.46	54.00	-6.54	30.57	16.89	Average	100	40
10	11580.00	60.25	74.00	-13.75	43.36	16.89	Peak	100	40
11	17370.00	62.92	68.20	-5.28	43.42	19.50	Peak	100	80

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).

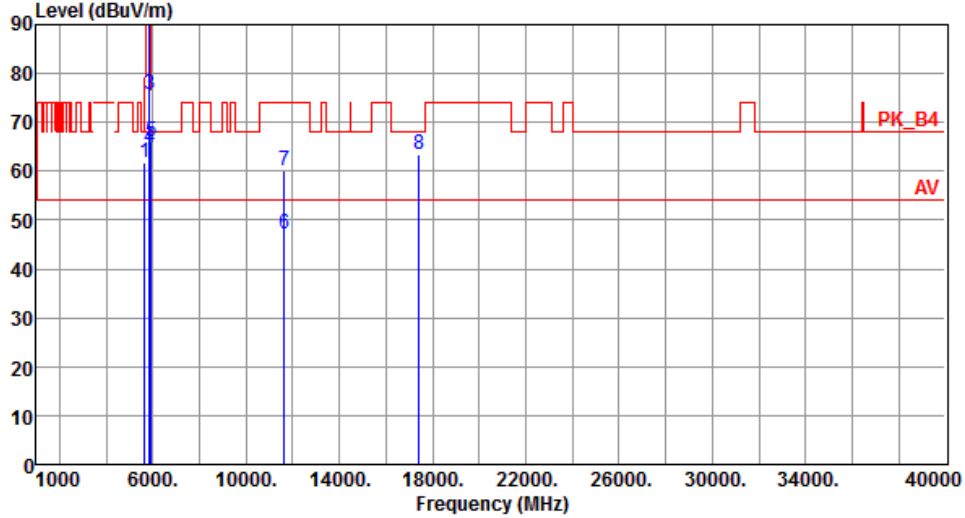
Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5790
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	64.77	68.20	-3.43	57.38	7.39	Peak	116	175
2	5700.00	67.73	105.20	-37.47	60.02	7.71	Peak	116	175
3	5720.00	68.20	110.80	-42.60	60.44	7.76	Peak	116	175
4	5725.00	69.36	122.20	-52.84	61.59	7.77	Peak	116	175
5	5850.00	65.84	122.20	-56.36	57.69	8.15	Peak	116	175
6	5855.00	65.27	110.80	-45.53	57.11	8.16	Peak	116	175
7	5875.00	64.65	105.20	-40.55	56.45	8.20	Peak	116	175
8	5925.00	62.85	68.20	-5.35	54.55	8.30	Peak	116	175
9	11580.00	47.31	54.00	-6.69	30.42	16.89	Average	100	50
10	11580.00	60.32	74.00	-13.68	43.43	16.89	Peak	100	50
11	17370.00	62.97	68.20	-5.23	43.47	19.50	Peak	100	60

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).

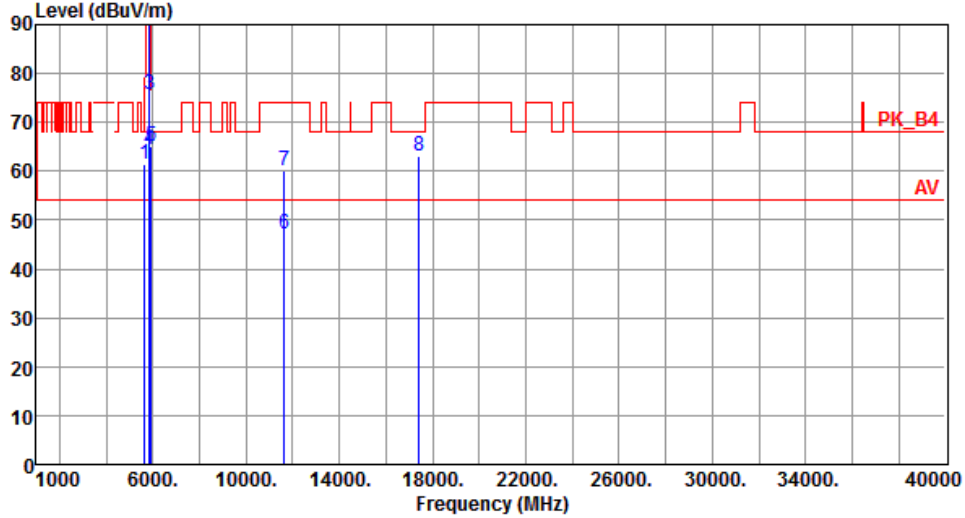
Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5810
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	61.66	68.20	-6.54	54.27	7.39	Peak	156	177
2	5850.00	94.74	122.20	-27.46	86.59	8.15	Peak	156	177
3	5855.00	75.67	110.80	-35.13	67.51	8.16	Peak	156	177
4	5875.00	64.84	105.20	-40.36	56.64	8.20	Peak	156	177
5	5925.00	66.13	68.20	-2.07	57.83	8.30	Peak	156	177
6	11620.00	47.21	54.00	-6.79	30.42	16.79	Average	100	20
7	11620.00	60.00	74.00	-14.00	43.21	16.79	Peak	100	20
8	17430.00	63.37	68.20	-4.83	43.55	19.82	Peak	100	90

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).

Proprietary protocol (BW)	80MHz	Test Freq. (MHz)	5810
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	61.54	68.20	-6.66	54.15	7.39	Peak	112	179
2	5850.00	94.39	122.20	-27.81	86.24	8.15	Peak	112	179
3	5855.00	75.58	110.80	-35.22	67.42	8.16	Peak	112	179
4	5875.00	64.44	105.20	-40.76	56.24	8.20	Peak	112	179
5	5925.00	65.05	68.20	-3.15	56.75	8.30	Peak	112	179
6	11620.00	47.12	54.00	-6.88	30.33	16.79	Average	100	70
7	11620.00	60.18	74.00	-13.82	43.39	16.79	Peak	100	70
8	17430.00	63.23	68.20	-4.97	43.41	19.82	Peak	100	60

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 Frequency Stability

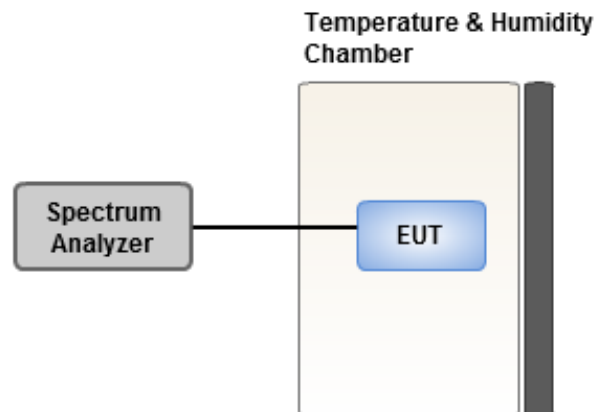
3.6.1 Limit of Frequency Stability

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.

3.6.2 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.

3.6.3 Test Setup



3.6.4 Test Result of Frequency Stability

Frequency: 5200 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°C Vmax	5.81	6.40	6.60	6.23
T20°C Vmin	4.81	5.09	5.11	5.08
T50°C Vnom	4.30	3.76	4.02	4.12
T40°C Vnom	4.24	4.18	3.37	3.93
T30°C Vnom	2.88	3.53	3.33	2.61
T20°C Vnom	4.35	3.43	3.17	3.68
T10°C Vnom	3.79	4.38	3.40	3.68
T0°C Vnom	3.16	3.27	2.80	3.54
T-10°C Vnom	3.34	3.81	3.88	3.88
T-20°C Vnom	1.09	1.29	1.88	1.63
T-30°C Vnom	0.92	1.43	1.08	1.41
Vnom [Vac]: 120		Vmax [Vac]: 138		Vmin [Vac]: 102
Tnom [°C]: 20		Tmax [°C]: 50		Tmin [°C]: -30

Frequency: 5790 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°C Vmax	6.20	6.16	6.61	6.02
T20°C Vmin	5.46	4.86	4.86	5.92
T50°C Vnom	3.79	3.98	4.04	4.27
T40°C Vnom	3.78	3.82	3.69	3.15
T30°C Vnom	4.35	4.50	4.56	4.58
T20°C Vnom	4.77	5.27	4.28	5.25
T10°C Vnom	4.95	4.41	5.12	5.04
T0°C Vnom	3.25	3.91	3.67	4.03
T-10°C Vnom	3.62	3.41	3.71	3.98
T-20°C Vnom	1.87	1.46	1.84	1.74
T-30°C Vnom	1.24	1.53	1.04	1.06
Vnom [Vac]: 120		Vmax [Vac]: 138		Vmin [Vac]: 102
Tnom [°C]: 20		Tmax [°C]: 50		Tmin [°C]: -30

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>.

Linkou

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Taiwan, R.O.C.

Kwei Shan

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

Kwei Shan Site II

Tel: 886-3-271-8640

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

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

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