

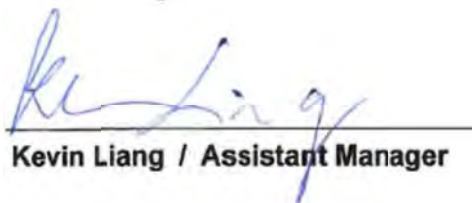
# FCC Test Report

**Equipment** : Wireless Mini PCI  
**Brand Name** :   
**Model No.** : XW346E  
**Part No.** : 33500007x-E (x=0~9, a~z, A~Z, blank, “-” or “+”)  
**FCC ID** : HDC424RG350X  
**Standard** : 47 CFR FCC Part 15.407  
**Frequency** : 5150 MHz – 5250 MHz  
5725 MHz – 5850 MHz  
**FCC Classification** : NII  
**Applicant** : Adtran Inc.  
901 Explorer Blvd., Huntsville, AL 35806, US  
**Manufacturer** : XAVi Technologies Corporation  
9F, No.129, Hsing Te Rd., Sanchung Dist.,  
New Taipei City 241, Taiwan, R.O.C.  
**Function** :  Outdoor;  Indoor;  Fixed P2P  
 Portable Client  
**Operate Mode** : Master

The product sample received on Jun. 08, 2016 and completely tested on Jul. 15, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

  
Kevin Liang / Assistant Manager





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**Appendix I. Test Result of AC Power-line Conducted Emissions**

**Appendix A. Test Result of Emission Bandwidth**

**Appendix B. Test Result of Maximum Conducted Output Power**

**Appendix C. Test Result of Power Spectral Density**

**Appendix D. Transmitter Bandedge Emissions**

**Appendix E. Transmitter Unwanted Emissions**

**Appendix F. Frequency Stability**

**Appendix G. Test Photos**

**Appendix H. Photographs of EUT**



## Summary of Test Result

Conformance Test Specifications			
Report Clause	Ref. Std. Clause	Description	Result
1.1.2	15.203	Antenna Requirement	Complied
3.1	15.207	AC Power-line Conducted Emissions	Complied
3.2	15.407(a)	Emission Bandwidth	Complied
3.3	15.407(a)	Maximum Conducted Output Power	Complied
3.4	15.407(a)	Peak Power Spectral Density	Complied
3.5	15.407(b)	Unwanted Emissions	Complied
3.7	15.407(g)	Frequency Stability	Complied



Revision History

Report No.	Version	Description	Issued Date
FR630717AN	Rev. 02	Initial issue of report	Sep. 09, 2016

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

Band	Mode	BWch (MHz)	Nss-Min	Nant
5.2G	11a	20	1	1(1)
5.2G	11a	20	1	1(2)
5.2G	11a	20	1	1(3)
5.8G	11a	20	1	1(1)
5.8G	11a	20	1	1(2)
5.8G	11a	20	1	1(3)
5.2G	HT20	20	1,(M0-23)	3
5.8G	HT20	20	1,(M0-23)	3
5.2G	HT40	40	1,(M0-23)	3
5.8G	HT40	40	1,(M0-23)	3
5.2G	VHT20	20	1,(M0-8)	3
5.8G	VHT20	20	1,(M0-8)	3
5.2G	VHT40	40	1,(M0-9)	3
5.8G	VHT40	40	1,(M0-9)	3
5.2G	VHT80	80	1,(M0-9)	3
5.8G	VHT	80	1,(M0-9)	3
5.2G	VHT20(TxBF)	20	1,(M0NSS1-8NSS1)	3
5.8G	VHT20(TxBF)	20	1, (M0NSS1-8NSS1)	3
5.2G	VHT40(TxBF)	40	1, (M0NSS1-9NSS1)	3
5.8G	VHT40(TxBF)	40	1, (M0NSS1-9NSS1)	3
5.2G	VHT80(TxBF)	80	1, (M0NSS1-9NSS1)	3
5.8G	VHT80(TxBF)	80	1, (M0NSS1-9NSS1)	3

Note:

- 5.2G is the 5.2GHz Band (5.15-5.25GHz).
- 5.8G is the 5.8GHz Band (5.725-5.850GHz).
- 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40 and VHT80 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

1.1.2 Antenna Information

Antenna Category	
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
	<input checked="" type="checkbox"/> Temporary RF connector provided
	<input type="checkbox"/> No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.
<input type="checkbox"/>	External antenna (dedicated antennas)
	<input type="checkbox"/> Single power level with corresponding antenna(s).
	<input type="checkbox"/> Multiple power level and corresponding antenna(s).
	<input type="checkbox"/> RF connector provided
	<input type="checkbox"/> Unique antenna connector. (e.g., MMCX, U.FL, IPX, and RP-SMA, RP-N type...)
	<input type="checkbox"/> Standard antenna connector. (e.g., SMA, N, BNC, and TNC type...)

Antenna General Information			
No.	Ant. Cat.	Ant. Type	Gain (dBi)
1	Integral	PCB PIFA	3.7
2	Integral	PCB PIFA	3.7
3	Integral	PCB PIFA	3.7

1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input type="checkbox"/> Production ; <input checked="" type="checkbox"/> Pre-Production ; <input type="checkbox"/> Prototype
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.: ...
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: ...
<input type="checkbox"/>	Other:



### 1.1.4 Mode Test Duty Cycle

Operated Mode for Worst Duty Cycle	
<input checked="" type="checkbox"/> Operated test mode for worst duty cycle	
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)
<input checked="" type="checkbox"/> 98.6% - IEEE 802.11n (11a)	0.06
<input checked="" type="checkbox"/> 98.6% - IEEE 802.11n (HT20)	0.06
<input checked="" type="checkbox"/> 97.1% - IEEE 802.11n (HT40)	0.13
<input checked="" type="checkbox"/> 98.6% - IEEE 802.11n (VHT20)	0.06
<input checked="" type="checkbox"/> 97.1% - IEEE 802.11n (VHT40)	0.13
<input checked="" type="checkbox"/> 94.3% - IEEE 802.11n (VHT80)	0.25
<input checked="" type="checkbox"/> 88.2% - IEEE 802.11n (VHT20) (TxBF)	0.55
<input checked="" type="checkbox"/> 88.3% - IEEE 802.11n (VHT40) (TxBF)	0.54
<input checked="" type="checkbox"/> 76% - IEEE 802.11n (VHT80) (TxBF)	1.19

### 1.1.5 EUT Operational Condition

<b>Supply Voltage</b>	<input checked="" type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	
<b>Type of DC Source</b>	<input checked="" type="checkbox"/> External AC adapter	<input checked="" type="checkbox"/> From UPS System	<input type="checkbox"/> Battery
<b>Test Voltage</b>	<input checked="" type="checkbox"/> Vnom (110 V)	<input checked="" type="checkbox"/> Vmax (126.5 V)	<input checked="" type="checkbox"/> Vmin (93.5 V)
<b>Test Climatic</b>	<input checked="" type="checkbox"/> Tnom (20°C)	<input checked="" type="checkbox"/> Tmax (50°C)	<input checked="" type="checkbox"/> Tmin (-5°C)



### 1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013
- ♦ FCC KDB 789033 D02 v01r02
- ♦ FCC-16-24-UNII
- ♦ FCC KDB 662911 D01 v02r01
- ♦ FCC KDB 644545 D03 v01

### 1.3 Testing Location Information

Testing Location				
<input checked="" type="checkbox"/>	HWA YA	ADD	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.	
		TEL	886-3-327-3456	FAX : 886-3-327-0973
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Ryan	23°C / 55%	17/06/2016
RF Conducted	TH01-HY	Ryan	23.5°C / 65%	15/07/2016
Radiated	03CH03-HY	Ryan	23.5°C / 65%	15/07/2016

Test site registered number [ 553509 ] with FCC.



## 1.4 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))

<b>Measurement Uncertainty</b>		
<b>Test Item</b>		<b>Uncertainty</b>
AC power-line conducted emissions		±2.3 dB
Emission bandwidth, 6dB bandwidth		±0.6 %
RF output power, conducted		±0.1 dB
Power density, conducted		±0.6 dB
Unwanted emissions, conducted	9 – 150 kHz	±0.4 dB
	0.15 – 30 MHz	±0.4 dB
	30 – 1000 MHz	±0.6 dB
	1 – 18 GHz	±0.5 dB
	18 – 40 GHz	±0.5 dB
	40 – 200 GHz	N/A
All emissions, radiated	9 – 150 kHz	±2.5 dB
	0.15 – 30 MHz	±2.3 dB
	30 – 1000 MHz	±2.6 dB
	1 – 18 GHz	±3.6 dB
	18 – 40 GHz	±3.8 dB
	40 – 200 GHz	N/A
Temperature		±0.8 °C
<b>Humidity</b>		±5 %
DC and low frequency voltages		±0.9%
Time		±1.4 %
Duty Cycle		±0.6 %



## 2 Test Configuration of EUT

### 2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing			
Modulation Mode	Transmit Chains (N <sub>TX</sub> )	Data Rate / MCS	Worst Data Rate / MCS
11a	1	6-54Mbps	6 Mbps
HT20	3	MCS 0-23	MCS 0
HT40	3	MCS 0-23	MCS 0
VHT20, BF	3	MCS 0-8	MCS 0
VHT40, BF	3	MCS 0-9	MCS 0
VHT80, BF	3	MCS 0-9	MCS 0
VHT20(TxBF)	3	MCS 0NSS1-8NSS1	MCS 0NSS1
VHT40(TxBF)	3	MCS 0NSS1-9NSS1	MCS 0NSS1
VHT80(TxBF)	3	MCS 0NSS1-9NSS1	MCS 0NSS1



## 2.2 Test Channel Mode

Test Software Version	Mtool V2.0.1.0
-----------------------	----------------

Band	Mode	BWch (MHz)	Ch. (MHz)	Power Setting
5.2G	11a	20	5180	85
5.2G	11a	20	5200	85
5.2G	11a	20	5240	120
5.2G	11a	20	5180	81
5.2G	11a	20	5200	81
5.2G	11a	20	5240	120
5.2G	11a	20	5180	91
5.2G	11a	20	5200	120
5.2G	11a	20	5240	120
5.2G	HT20	20	5180	68
5.2G	HT20	20	5200	68
5.2G	HT20	20	5240	78
5.2G	HT40	40	5190	59
5.2G	HT40	40	5230	81
5.2G	VHT20	20	5180	70
5.2G	VHT20	20	5200	71
5.2G	VHT20	20	5240	81
5.2G	VHT40	40	5190	60
5.2G	VHT40	40	5230	82
5.2G	VHT80	80	5210	57
5.2G	VHT20(TxBF)	20	5180	42
5.2G	VHT20(TxBF)	20	5200	47
5.2G	VHT20(TxBF)	20	5240	75
5.2G	VHT40(TxBF)	40	5190	60
5.2G	VHT40(TxBF)	40	5230	77
5.2G	VHT80(TxBF)	80	5210	57



Band	Mode	BWch (MHz)	Ch. (MHz)	Power Setting
5.8G	11a	20	5745	80
5.8G	11a	20	5785	81
5.8G	11a	20	5825	82
5.8G	11a	20	5745	120
5.8G	11a	20	5785	120
5.8G	11a	20	5825	120
5.8G	11a	20	5745	79
5.8G	11a	20	5785	79
5.8G	11a	20	5825	74
5.8G	HT20	20	5745	71
5.8G	HT20	20	5785	73
5.8G	HT20	20	5825	74
5.8G	HT40	40	5755	81
5.8G	HT40	40	5795	82
5.8G	VHT20	20	5745	73
5.8G	VHT20	20	5785	75
5.8G	VHT20	20	5825	76
5.8G	VHT40	40	5755	82
5.8G	VHT40	40	5795	83
5.8G	VHT80	80	5775	78
5.8G	VHT20(TxBF)	20	5745	68
5.8G	VHT20(TxBF)	20	5785	65
5.8G	VHT20(TxBF)	20	5825	66
5.8G	VHT40(TxBF)	40	5755	77
5.8G	VHT40(TxBF)	40	5795	87
5.8G	VHT80(TxBF)	80	5775	71

**Abbreviation Explanation**

Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Test Cond.	Abbreviation
5.2G	VHT40	40	1,(M0-9)	2	5190	L	TN,VN	5.2G;VHT40;40;1,(M0-9);2;5190;L;TN,VN
5.2G	VHT80	80	1,(M0-9)	2	5210	S	TN,VN	5.2G;VHT80;80;1,(M0-9);2;5210;S;TN,VN

**Note:**

- ◆ Test range channel consist of L (Low Ch.), M (Middle Ch.), H (High Ch.), S (Single Ch. or Intra- band Ch.) and C (Inter-band Ch.).


### 2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	Adapter Mode
2	UPS Mode
For operating mode 2 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Maximum Conducted Output Power
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emission Bandwidth, Peak Power Spectral Density, Frequency Stability
Test Condition	Conducted measurement at transmit chains

Note: Based on 802.11ac EIRP power was the worst case. Therefore only 802.11ac was tested.

The Worst Case Mode for Following Conformance Tests	
Tests Item	Transmitter Bandedge Emissions , Transmitter Unwanted Emissions
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
User Position	<input checked="" type="checkbox"/> EUT will be placed in fixed position. <input type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. <input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions.
Operating Mode < 1GHz	<input checked="" type="checkbox"/> 1. Adapter Mode <input checked="" type="checkbox"/> 2. UPS Mode
For operating mode 2 is the worst case and it was record in this test report.	
Orthogonal Planes of EUT	Z Plane
	
Worst Planes of EUT	V

Note: Based on 802.11ac EIRP power was the worst case. Therefore only 802.11ac was tested.



## 2.4 Support Equipment

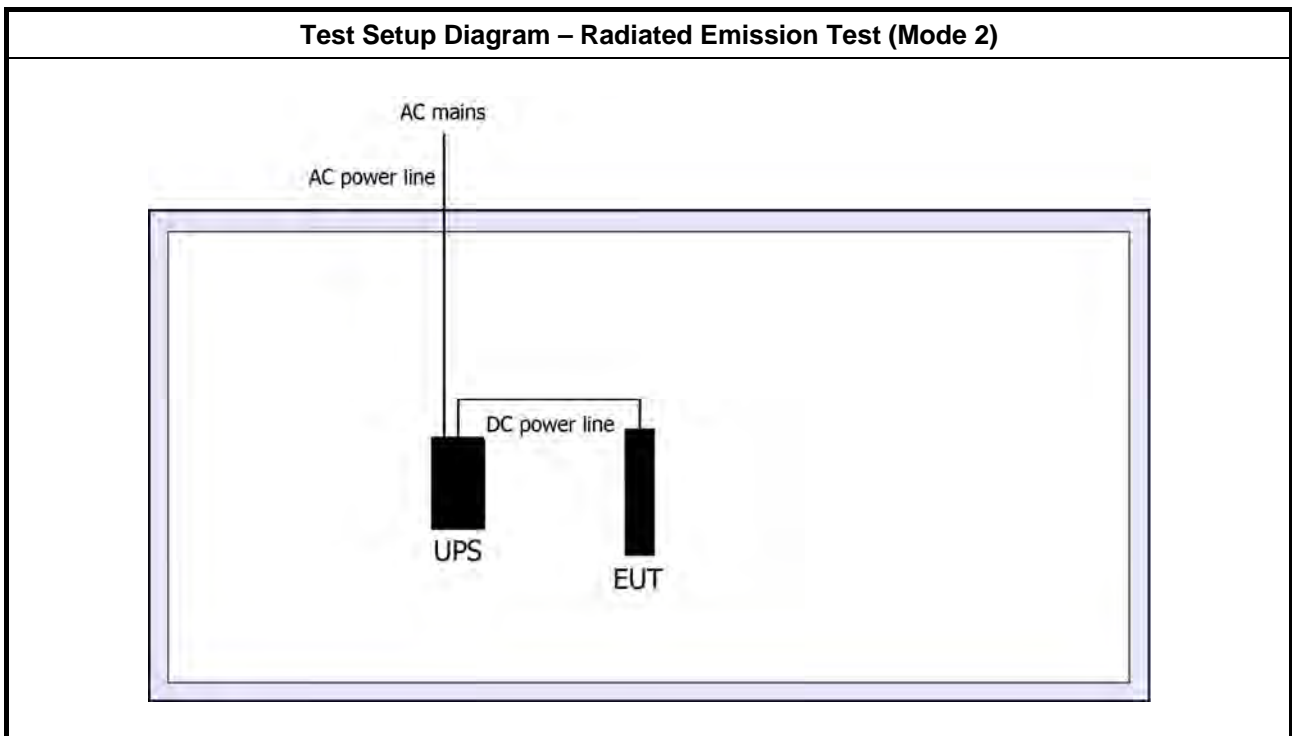
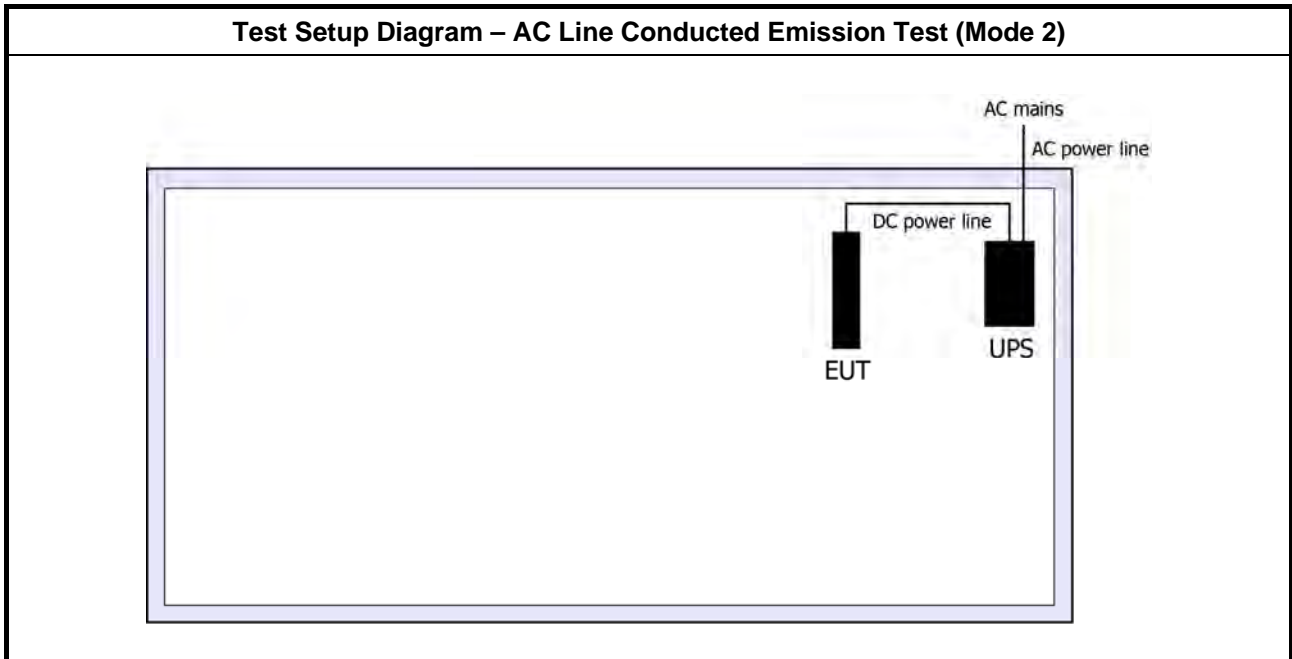
Support Equipment - AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook(Remote)	DELL	E5530	DoC
2	Adapter for NoteBook(Remote)	DELL	LA65NS2-0	DoC
3	UPS	Cyber	CSN27U12V3	-
4	AC Adapter for EUT	MOSO	MSA-C2500IS12.0-30F-US	-

Support Equipment - Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E6400	DoC
2	Adapter for NoteBook	DELL	HA65NM130	DoC
3	UPS	Cyber	CSN27U12V3	-
4	AC Adapter for EUT	MOSO	MSA-C2500IS12.0-30F-US	-

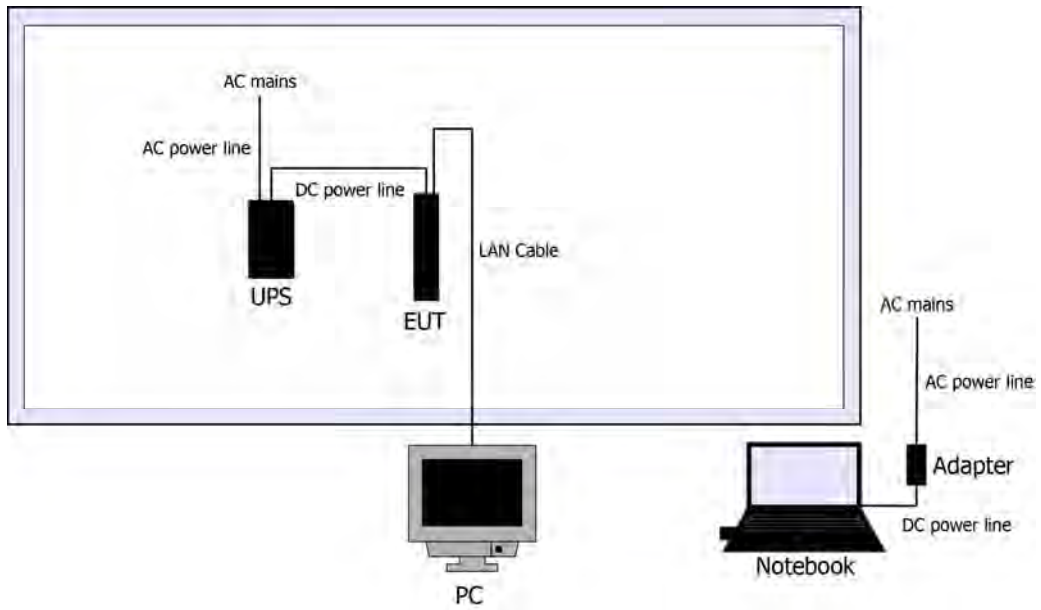
Support Equipment - Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook(Remote)	DELL	E6400	DoC
2	Adapter for NoteBook(Remote)	DELL	HA65NM130	DoC
3	UPS	Cyber	CSN27U12V3	-
4	AC Adapter for EUT	MOSO	MSA-C2500IS12.0-30F-US	-
5	PC(Remote)	DELL	OPTIPLEX 760	-

\* Note. The support equipment No. 3 and No. 4 was provided from customer.

## 2.5 Test Setup Diagram



Test Setup Diagram – Radiated Emission Test for TxBF (Mode 2)





### 3 Transmitter Test Result

#### 3.1 AC Power-line Conducted Emissions

##### 3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line 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.

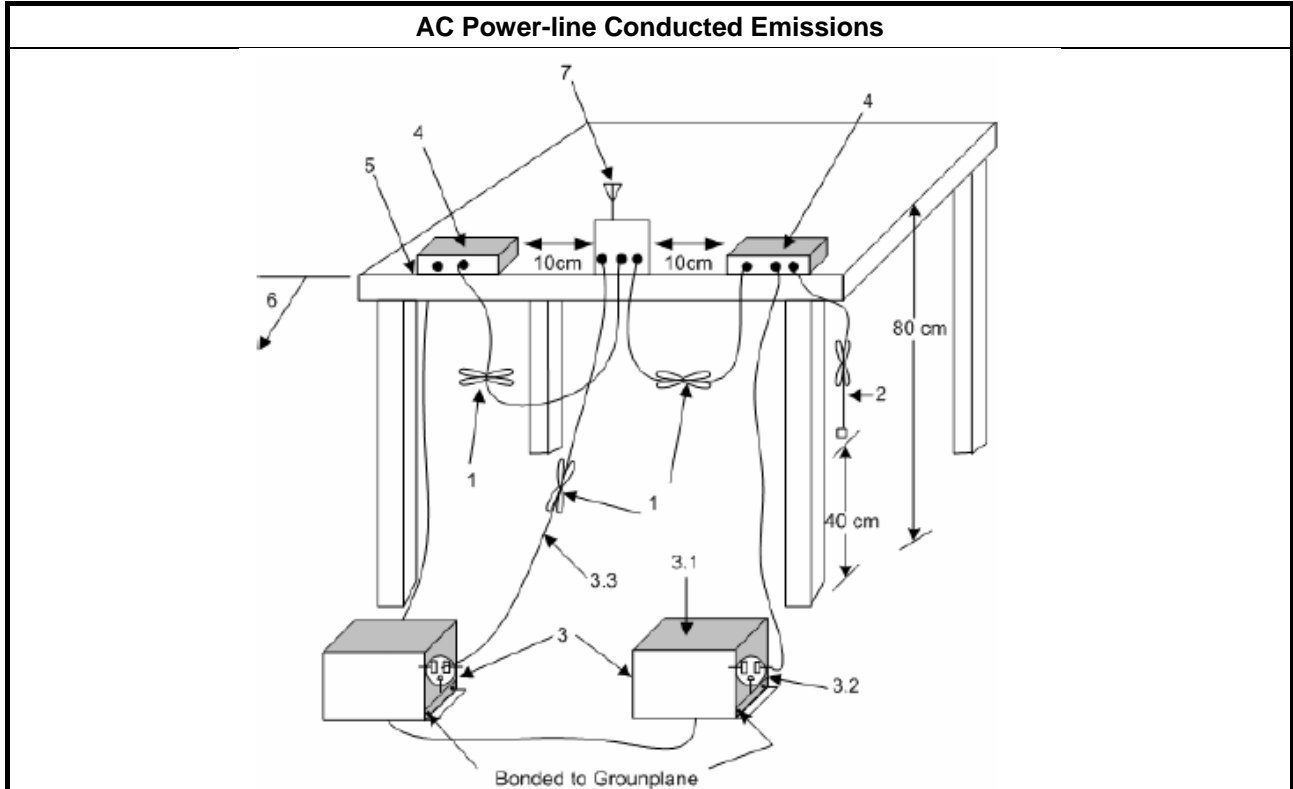
##### 3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

##### 3.1.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

##### 3.1.4 Test Setup



##### 3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix I

### 3.2 Emission Bandwidth

#### 3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit	
<b>UNII Devices</b>	
<input checked="" type="checkbox"/>	For the 5.15-5.25 GHz band, N/A
<input checked="" type="checkbox"/>	For the 5.725-5.85 GHz band, 6 dB emission bandwidth $\geq$ 500kHz.

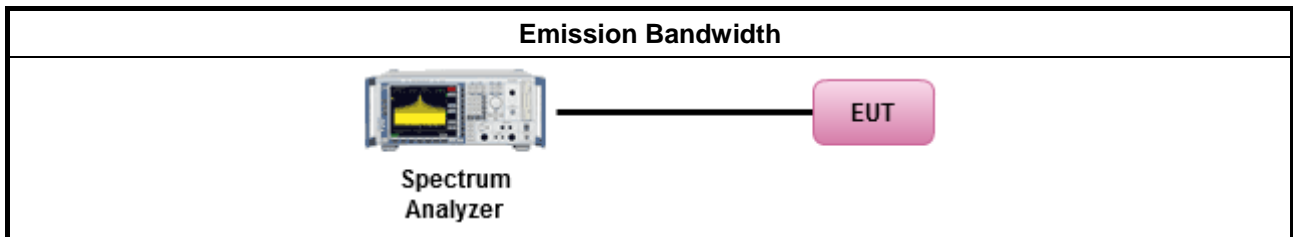
#### 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.2.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>For the emission bandwidth shall be measured using one of the options below:</li> </ul>	
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause C for EBW and clause D for OBW measurement.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
<input type="checkbox"/>	Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.

#### 3.2.4 Test Setup



#### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix A

### 3.3 Maximum Conducted Output Power

#### 3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit					
<b>UNII Devices</b>					
<ul style="list-style-type: none"> <li>▪ For the 5.15-5.25 GHz band:           <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td> <ul style="list-style-type: none"> <li>▪ Outdoor AP: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math>. e.i.r.p. at any elevation angle above 30 degrees <math>\leq 125</math>mW [21dBm]</li> <li>▪ Indoor AP: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math></li> <li>▪ Point-to-point AP: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 23</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 23)</math>.</li> <li>▪ Mobile or Portable Client: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 250 mW. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 24 - (G_{TX} - 6)</math>.</li> </ul> </td> </tr> </table> </li> <li>▪ For the 5.25-5.35 GHz band, the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 250 mW or <math>11 \text{ dBm} + 10 \log B</math>, where B is the 26 dB emission bandwidth in MHz. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 24 - (G_{TX} - 6)</math>.</li> <li>▪ For the 5.47-5.725 GHz band, the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 250 mW or <math>11 \text{ dBm} + 10 \log B</math>, where B is the 26 dB emission bandwidth in MHz. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 24 - (G_{TX} - 6)</math>.</li> <li>▪ For the 5.725-5.85 GHz band:           <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td> <ul style="list-style-type: none"> <li>▪ Point-to-multipoint systems (P2M): the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math>.</li> <li>▪ Point-to-point systems (P2P): the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W.</li> </ul> </td> </tr> </table> </li> </ul>			<ul style="list-style-type: none"> <li>▪ Outdoor AP: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math>. e.i.r.p. at any elevation angle above 30 degrees <math>\leq 125</math>mW [21dBm]</li> <li>▪ Indoor AP: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math></li> <li>▪ Point-to-point AP: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 23</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 23)</math>.</li> <li>▪ Mobile or Portable Client: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 250 mW. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 24 - (G_{TX} - 6)</math>.</li> </ul>		<ul style="list-style-type: none"> <li>▪ Point-to-multipoint systems (P2M): the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math>.</li> <li>▪ Point-to-point systems (P2P): the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W.</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Outdoor AP: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math>. e.i.r.p. at any elevation angle above 30 degrees <math>\leq 125</math>mW [21dBm]</li> <li>▪ Indoor AP: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math></li> <li>▪ Point-to-point AP: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 23</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 23)</math>.</li> <li>▪ Mobile or Portable Client: the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 250 mW. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 24 - (G_{TX} - 6)</math>.</li> </ul>				
	<ul style="list-style-type: none"> <li>▪ Point-to-multipoint systems (P2M): the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math>.</li> <li>▪ Point-to-point systems (P2P): the maximum conducted output power (<math>P_{Out}</math>) shall not exceed the lesser of 1 W.</li> </ul>				
$P_{Out}$ = maximum conducted output power in dBm, $G_{TX}$ = the maximum transmitting antenna directional gain in dBi.					

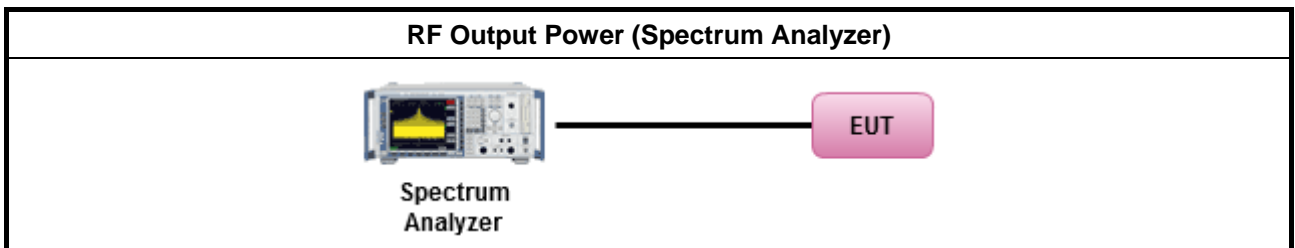
### 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>Maximum Conducted Output Power</li> </ul>	
[duty cycle ≥ 98% or external video / power trigger]	
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
duty cycle < 98% and average over on/off periods with duty factor	
<input type="checkbox"/>	Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
Wideband RF power meter and average over on/off periods with duty factor	
<input type="checkbox"/>	Refer as FCC KDB 789033, clause E Method PM (using an RF average power meter).
<ul style="list-style-type: none"> <li>For conducted measurement.</li> </ul>	
<ul style="list-style-type: none"> <li>If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.</li> </ul>	
<ul style="list-style-type: none"> <li>If multiple transmit chains, EIRP calculation could be following as methods:  <math>P_{total} = P_1 + P_2 + \dots + P_n</math>                      (calculated in linear unit [mW] and transfer to log unit [dBm])  <math>EIRP_{total} = P_{total} + DG</math> </li> </ul>	

### 3.3.4 Test Setup



### 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix B

### 3.4 Peak Power Spectral Density

#### 3.4.1 Peak Power Spectral Density Limit

Peak Power Spectral Density Limit													
<b>UNII Devices</b>													
<ul style="list-style-type: none"> <li>▪ For the 5.15-5.25 GHz band:               <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px;">▪</td> <td>Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 17 - (G_{TX} - 6)</math>.</td> </tr> <tr> <td>▪</td> <td>Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 17 - (G_{TX} - 6)</math>.</td> </tr> <tr> <td>▪</td> <td>Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If <math>G_{TX} &gt; 23</math> dBi, then <math>P_{Out} = 17 - (G_{TX} - 23)</math>.</td> </tr> <tr> <td>▪</td> <td>Mobile or Portable Client: the peak power spectral density (PPSD) <math>\leq 11</math> dBm/MHz. If <math>G_{TX} &gt; 6</math> dBi, then <math>PPSD = 11 - (G_{TX} - 6)</math>.</td> </tr> </table> </li> <li>▪ For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) <math>\leq 11</math> dBm/MHz. If <math>G_{TX} &gt; 6</math> dBi, then <math>PPSD = 11 - (G_{TX} - 6)</math>.</li> <li>▪ For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) <math>\leq 11</math> dBm/MHz. If <math>G_{TX} &gt; 6</math> dBi, then <math>PPSD = 11 - (G_{TX} - 6)</math>.</li> <li>▪ For the 5.725-5.85 GHz band:               <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px;">▪</td> <td>Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) <math>\leq 30</math> dBm/500kHz. If <math>G_{TX} &gt; 6</math> dBi, then <math>PPSD = 30 - (G_{TX} - 6)</math>.</td> </tr> <tr> <td>▪</td> <td>Point-to-point systems (P2P): the peak power spectral density (PPSD) <math>\leq 30</math> dBm/500kHz.</td> </tr> </table> </li> </ul>		▪	Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$ .	▪	Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$ .	▪	Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 23$ dBi, then $P_{Out} = 17 - (G_{TX} - 23)$ .	▪	Mobile or Portable Client: the peak power spectral density (PPSD) $\leq 11$ dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$ .	▪	Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) $\leq 30$ dBm/500kHz. If $G_{TX} > 6$ dBi, then $PPSD = 30 - (G_{TX} - 6)$ .	▪	Point-to-point systems (P2P): the peak power spectral density (PPSD) $\leq 30$ dBm/500kHz.
▪	Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$ .												
▪	Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$ .												
▪	Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 23$ dBi, then $P_{Out} = 17 - (G_{TX} - 23)$ .												
▪	Mobile or Portable Client: the peak power spectral density (PPSD) $\leq 11$ dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$ .												
▪	Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) $\leq 30$ dBm/500kHz. If $G_{TX} > 6$ dBi, then $PPSD = 30 - (G_{TX} - 6)$ .												
▪	Point-to-point systems (P2P): the peak power spectral density (PPSD) $\leq 30$ dBm/500kHz.												
<p><b>PPSD</b> = peak power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz  <b>G<sub>TX</sub></b> = the maximum transmitting antenna directional gain in dBi.</p>													

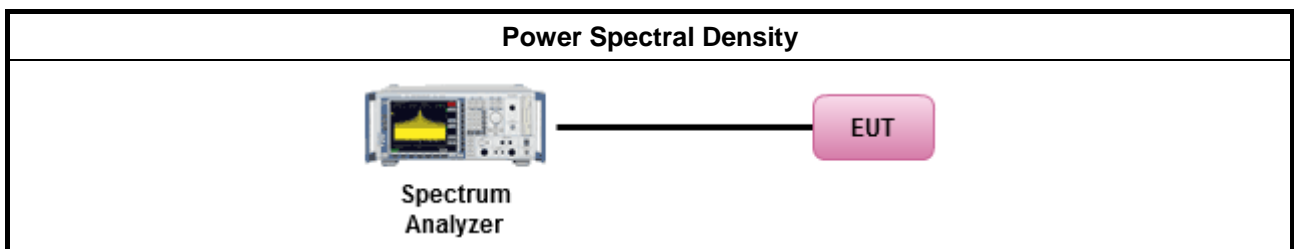
#### 3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.4.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>▪ Peak power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the peak power spectral density and use the peak search function on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density shall be measured using below options:</li> </ul>	
<input type="checkbox"/>	Refer as FCC KDB 789033, F5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth
[duty cycle ≥ 98% or external video / power trigger]	
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
duty cycle < 98% and average over on/off periods with duty factor	
<input type="checkbox"/>	Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
<ul style="list-style-type: none"> <li>▪ For conducted measurement.</li> </ul>	
<ul style="list-style-type: none"> <li>▪ If the EUT supports multiple transmit chains using options given below:</li> </ul>	
<input checked="" type="checkbox"/>	Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the N <sub>TX</sub> output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
<input type="checkbox"/>	Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
<input type="checkbox"/>	Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.
<ul style="list-style-type: none"> <li>▪ If multiple transmit chains, EIRP PPSD calculation could be following as methods:  <math>PPSD_{total} = PPSD_1 + PPSD_2 + \dots + PPSD_n</math>                      (calculated in linear unit [mW] and transfer to log unit [dBm])  <math>EIRP_{total} = PPSD_{total} + DG</math> </li> </ul>	

### 3.4.4 Test Setup



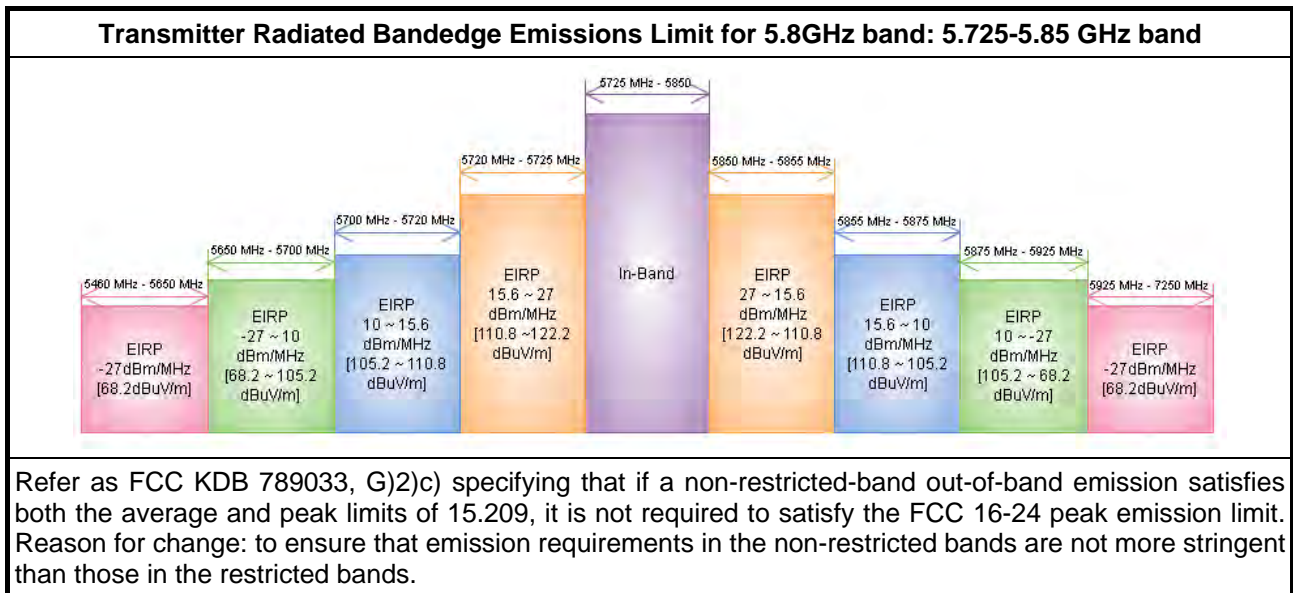
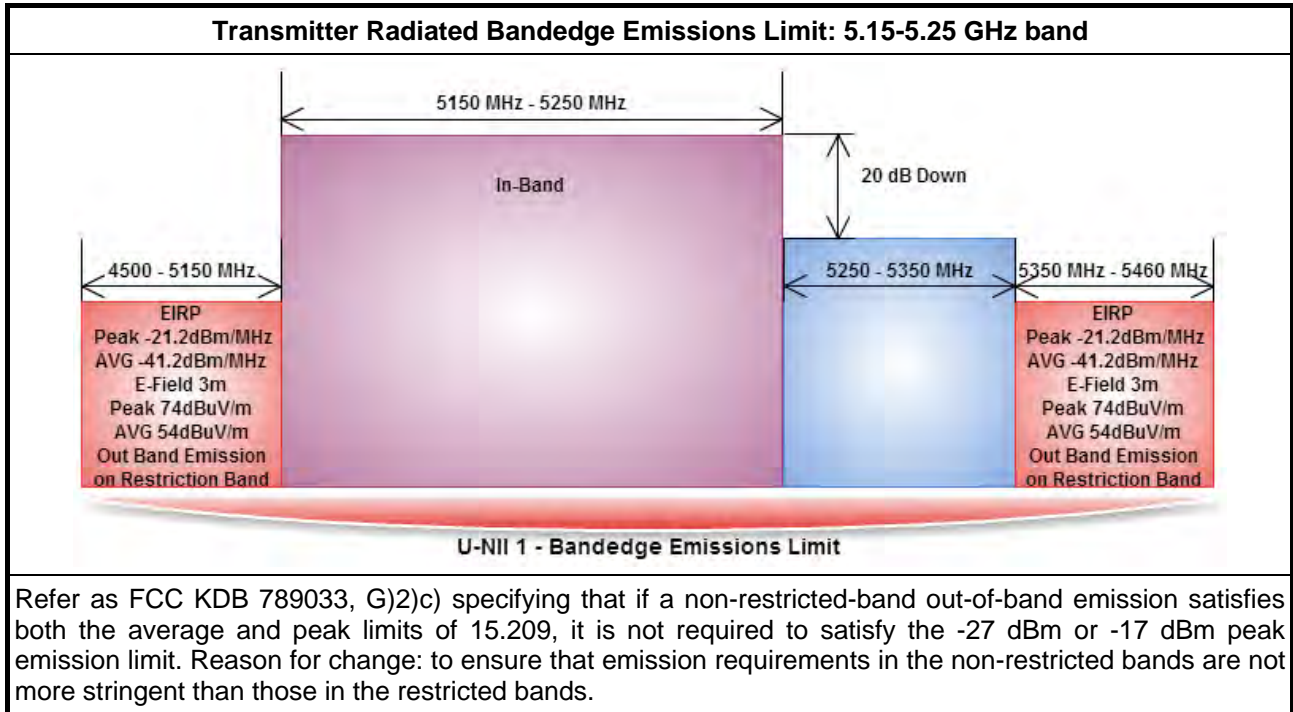


### **3.4.5 Test Result of Peak Power Spectral Density**

Refer as Appendix C

### 3.5 Transmitter Bandedge Emissions

#### 3.5.1 Transmitter Radiated Bandedge Emissions Limit



#### 3.5.2 Measuring Instruments

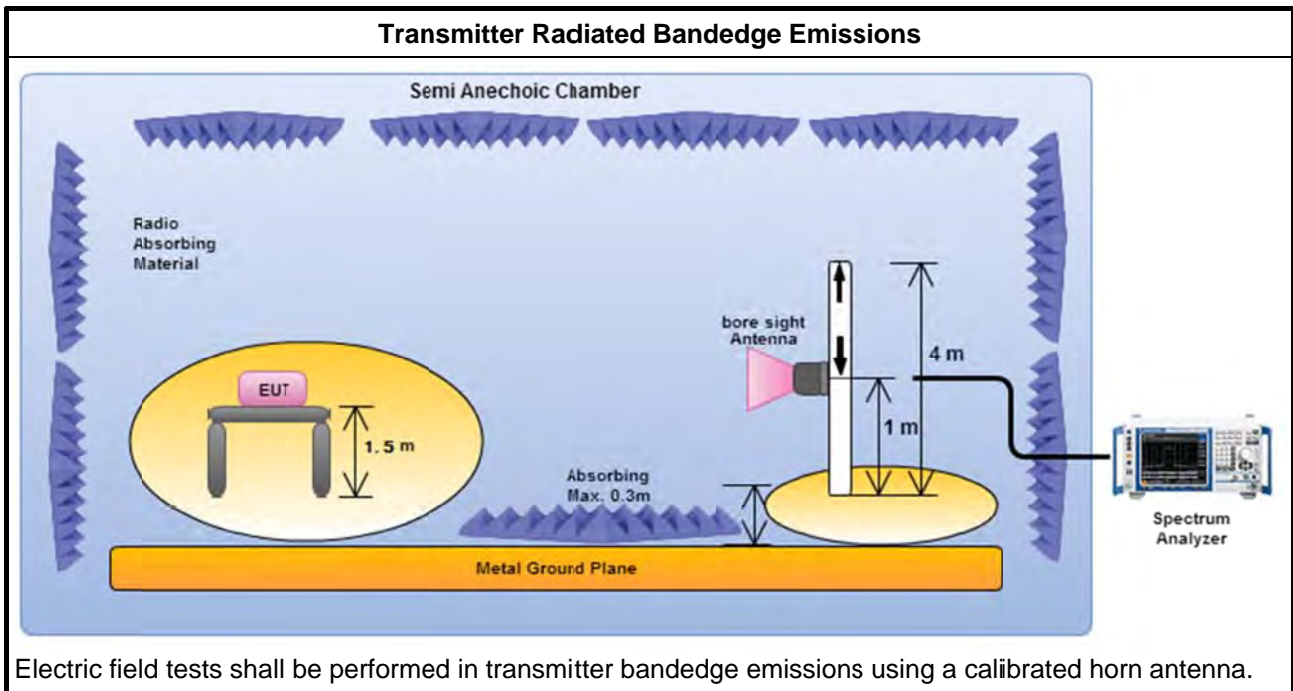
Refer a test equipment and calibration data table in this test report.



3.5.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.10 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
<input type="checkbox"/>	If EUT operate in adjacent contiguous bands, bandedge testing performed at the lowest frequency channel at lower-band and highest frequency channel at higher-band. Transmitter in-band emissions will consist of adjacent contiguous bands (e.g., IEEE 802.11ac VHT160 The lowest frequency channel at lower-band and highest frequency channel at higher-band in-band emissions will consist of two adjacent contiguous bands.)
<input type="checkbox"/>	Operating in 5.15-5.25 GHz band (lower-band) and 5.25-5.35 GHz band (higher-band).
<input type="checkbox"/>	Operating in 5.47-5.725 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band).
<input type="checkbox"/>	If EUT operate in individual non-contiguous bands, bandedge testing performed at the lowest frequency channel and highest frequency channel within lower-band and higher-band. (e.g., (e.g., IEEE 802.11ac VHT160)
<input type="checkbox"/>	Operating in 5.25-5.35 GHz band (lower-band) and 5.47-5.725 GHz band (higher-band).
<input type="checkbox"/>	Operating in 5.15-5.25 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band).
<input checked="" type="checkbox"/>	For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.
<input type="checkbox"/>	Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).
<input type="checkbox"/>	Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). VBW $\geq$ 1/T, where T is pulse time.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause G)5) measurement procedure peak limit.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/>	For the transmitter bandedge emissions shall be measured using following options below:
<input type="checkbox"/>	Refer as FCC KDB 789033, clause G)3)d) for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.10 for band-edge testing.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.10.6.2 for marker-delta method for band-edge measurements.
<input checked="" type="checkbox"/>	For radiated measurement, refer as ANSI C63.10, clause 6.6. Test distance is 3m.
<input checked="" type="checkbox"/>	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). Measurements in the bandedge are typically made at a closer distance 3m, because the instrumentation noise floor is typically close to the radiated emission limit.

3.5.4 Test Setup



### 3.5.5 Transmitter Radiated Bandedge Emissions

Refer as Appendix D

### 3.6 Transmitter Unwanted Emissions

#### 3.6.1 Transmitter Radiated Unwanted Emissions Limit

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz 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: Test distance for frequencies at or above 30 MHz, 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).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

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]
5.25 - 5.35 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.47 - 5.725 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.725 - 5.85 GHz	5.650-5700 GHz: e.i.r.p. -27 ~ 10 dBm [68.2 ~ 105.2 dBuV/m@3m] 5.700-5720 GHz: e.i.r.p. 10 ~ 15.6 dBm [105.2 ~ 110.8 dBuV/m@3m] 5.720-5725 GHz: e.i.r.p. 15.6 ~ 27 dBm [110.8 ~ 122.2 dBuV/m@3m] 5.850-5.855 GHz: e.i.r.p. 27 ~ 15.6 dBm [122.2 ~ 110.8 dBuV/m@3m] 5.855-5.875 GHz: e.i.r.p. 15.6 ~ 10 dBm [110.8 ~ 105.2 dBuV/m@3m] 5.875-5.925 GHz: e.i.r.p. 10 ~ -27 dBm [105.2 ~ 68.2dBuV/m@3m] Other un-restricted band: e.i.r.p. -27 dBm [68.2 dBuV/m@3m]

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).



### 3.6.2 Measuring Instruments

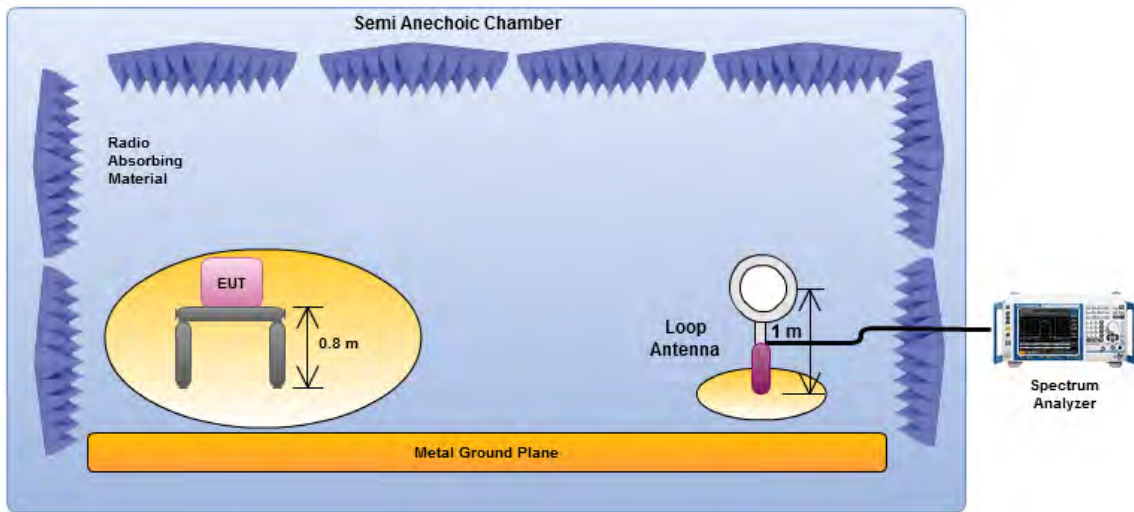
Refer a test equipment and calibration data table in this test report.

### 3.6.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	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. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. 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).
<input checked="" type="checkbox"/>	The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
<input checked="" type="checkbox"/>	For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.
<input type="checkbox"/>	Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).
<input type="checkbox"/>	Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). $VBW \geq 1/T$ , where T is pulse time.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause G)5) measurement procedure peak limit.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/>	For radiated measurement.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz. For 1 GHz to 5 GHz, test distance is 3m; For 5 GHz to 40 GHz, test distance is 3m.
<input checked="" type="checkbox"/>	The any unwanted emissions level shall not exceed the fundamental emission level.
<input checked="" type="checkbox"/>	All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

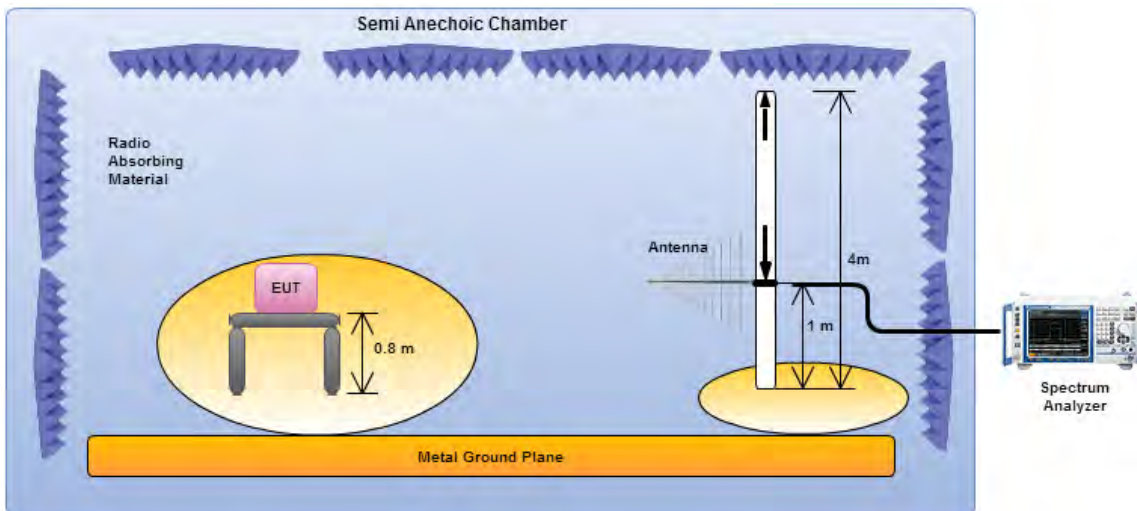
### 3.6.4 Test Setup

#### Transmitter Spurious and Out of Band Emissions (9 kHz - 30 MHz)

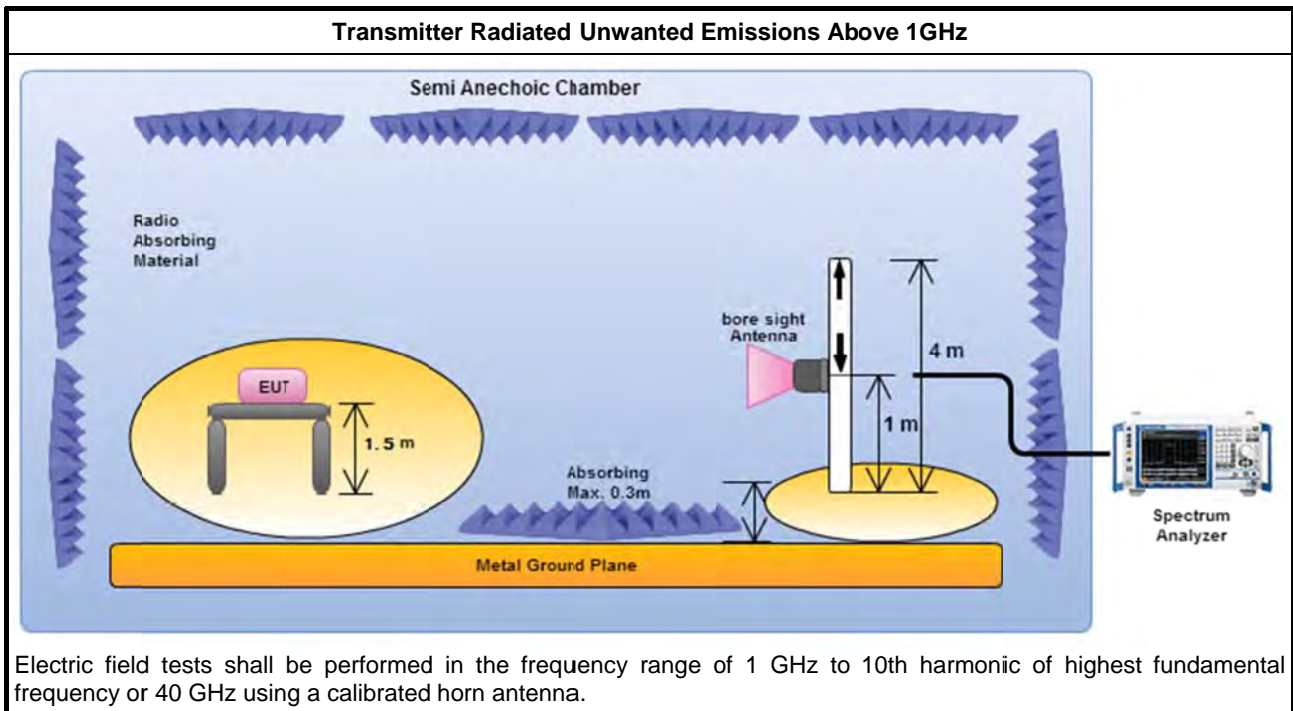


Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna.

#### Transmitter Radiated Unwanted Emissions Below 1GHz



Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna.



### 3.6.5 Transmitter Radiated Unwanted Emissions-with Antenna (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. Any spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.

### 3.6.6 Test Result of Transmitter Radiated Unwanted Emissions

Refer as Appendix E

### 3.7 Frequency Stability

#### 3.7.1 Frequency Stability Limit

Frequency Stability Limit	
<b>UNII Devices</b>	
<ul style="list-style-type: none"> <li>In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.</li> </ul>	
<b>IEEE Std. 802.11</b>	
<ul style="list-style-type: none"> <li>The transmitter center frequency tolerance shall be <math>\pm 20</math> ppm maximum for the 5 GHz.</li> </ul>	

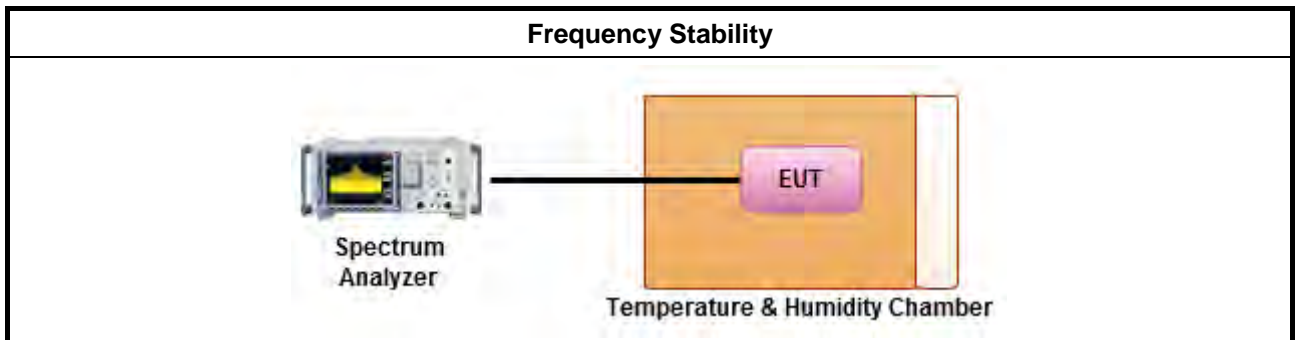
#### 3.7.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.7.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>Refer as ANSI C63.10, clause 6.8 for frequency stability tests</li> </ul>	
	<ul style="list-style-type: none"> <li>Frequency stability with respect to ambient temperature</li> </ul>
	<ul style="list-style-type: none"> <li>Frequency stability when varying supply voltage</li> </ul>

#### 3.7.4 Test Setup



#### 3.7.5 Test Result of Frequency Stability

Refer as Appendix F



## 4 Test Equipment and Calibration Data

### Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
EMC Receiver	KEYSIGHT	N9038A	MY54130031	20Hz ~ 8.4GHz	Apr. 14, 2016	Apr. 13, 2017
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 26, 2016	Jan. 25, 2017
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	Oct. 30, 2015	Oct. 29, 2016
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	NCR	NCR

### Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101500	9KHz~40GHz	May 12, 2016	May 11, 2017
Power Sensor	Anritsu	MA2411B	917017	300MHz ~ 40GHz	Feb. 04, 2016	Feb. 03, 2017
Power Meter	Anritsu	ML2495A	949003	300MHz ~ 40GHz	Feb. 04, 2016	Feb. 03, 2017
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 28, 2015	Jul. 27, 2016
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jun. 28, 2015	Jun. 27, 2016
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-00 1	-20 ~ 100°C	Jun. 25, 2016	Jun. 24, 2017

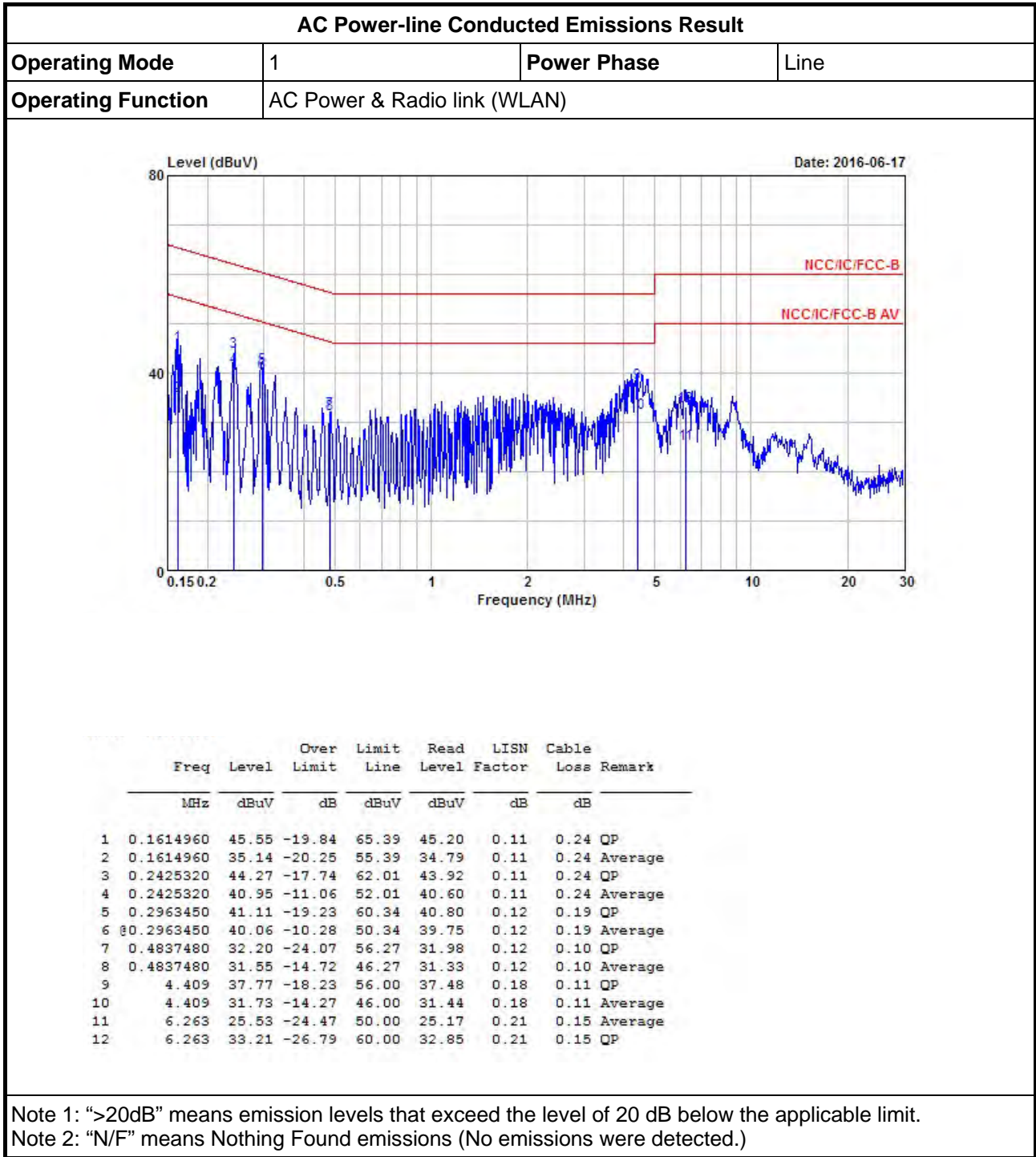
### Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Nov. 28, 2015	Nov. 27, 2016
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz ~ 18GHz 3m	Dec. 16, 2015	Dec. 15, 2016
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 10, 2016	May 09, 2017
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Sep. 02, 2015	Sep. 01, 2016
Spectrum	R&S	FSV40	101513	9kHz ~ 40GHz	Feb. 16, 2016	Feb. 15, 2017
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 18, 2015	Sep. 17, 2016
Horn Antenna	SCHWARZBECK	BBHA9120D	1531	1GHz ~ 18GHz	Apr. 22, 2016	Apr. 21, 2017
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz ~ 40GHz	Jan. 29, 2016	Jan. 28, 2017
Amplifier	MITEQ	JS44-18004000-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	Jun. 01, 2017
Loop Antenna	TESEQ	HLA 6120	31244	9 kHz~30 MHz	Feb.02.2015	Feb.01.2017





AC Power-line Conducted Emissions Result																																																																																																																																										
Operating Mode	1	Power Phase	Neutral																																																																																																																																							
Operating Function	AC Power & Radio link (WLAN)																																																																																																																																									
<div style="text-align: right;">Date: 2016-06-17</div> <p>The graph displays the AC power-line conducted emissions. The y-axis represents Level in dBUV, ranging from 0 to 80. The x-axis represents Frequency in MHz, ranging from 0.15 to 30. Two red lines indicate the NCC/IC/FCC-B and NCC/IC/FCC-B AV limits. A blue line shows the measured emission levels, with several peaks labeled 1 through 12.</p>																																																																																																																																										
<table border="1"> <thead> <tr> <th></th> <th>Freq</th> <th>Level</th> <th>Over</th> <th>Limit</th> <th>Read</th> <th>LISN</th> <th>Cable</th> <th>Remark</th> </tr> <tr> <th></th> <th>MHz</th> <th>dBuV</th> <th>Limit</th> <th>Line</th> <th>Level</th> <th>Factor</th> <th>Loss</th> <th></th> </tr> <tr> <th></th> <th></th> <th></th> <th>dB</th> <th>dBuV</th> <th>dBuV</th> <th>dB</th> <th>dB</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.1622960</td> <td>45.68</td> <td>-19.67</td> <td>65.35</td> <td>45.34</td> <td>0.10</td> <td>0.24</td> <td>QP</td> </tr> <tr> <td>2</td> <td>0.1622960</td> <td>35.75</td> <td>-19.60</td> <td>55.35</td> <td>35.41</td> <td>0.10</td> <td>0.24</td> <td>Average</td> </tr> <tr> <td>3</td> <td>0.2417320</td> <td>44.87</td> <td>-17.17</td> <td>62.04</td> <td>44.52</td> <td>0.11</td> <td>0.24</td> <td>QP</td> </tr> <tr> <td>4</td> <td>0.2417320</td> <td>41.83</td> <td>-10.21</td> <td>52.04</td> <td>41.48</td> <td>0.11</td> <td>0.24</td> <td>Average</td> </tr> <tr> <td>5</td> <td>0.2978930</td> <td>42.37</td> <td>-17.93</td> <td>60.30</td> <td>42.06</td> <td>0.12</td> <td>0.19</td> <td>QP</td> </tr> <tr> <td>6</td> <td>0.2978930</td> <td>41.35</td> <td>-8.95</td> <td>50.30</td> <td>41.04</td> <td>0.12</td> <td>0.19</td> <td>Average</td> </tr> <tr> <td>7</td> <td>0.6472440</td> <td>32.37</td> <td>-23.63</td> <td>56.00</td> <td>32.14</td> <td>0.13</td> <td>0.10</td> <td>QP</td> </tr> <tr> <td>8</td> <td>0.6472440</td> <td>31.54</td> <td>-14.46</td> <td>46.00</td> <td>31.31</td> <td>0.13</td> <td>0.10</td> <td>Average</td> </tr> <tr> <td>9</td> <td>2.190</td> <td>23.19</td> <td>-22.81</td> <td>46.00</td> <td>22.77</td> <td>0.15</td> <td>0.27</td> <td>Average</td> </tr> <tr> <td>10</td> <td>2.190</td> <td>34.39</td> <td>-21.61</td> <td>56.00</td> <td>33.97</td> <td>0.15</td> <td>0.27</td> <td>QP</td> </tr> <tr> <td>11</td> <td>4.552</td> <td>38.65</td> <td>-17.35</td> <td>56.00</td> <td>38.35</td> <td>0.19</td> <td>0.11</td> <td>QP</td> </tr> <tr> <td>12</td> <td>4.552</td> <td>33.27</td> <td>-12.73</td> <td>46.00</td> <td>32.97</td> <td>0.19</td> <td>0.11</td> <td>Average</td> </tr> </tbody> </table>					Freq	Level	Over	Limit	Read	LISN	Cable	Remark		MHz	dBuV	Limit	Line	Level	Factor	Loss					dB	dBuV	dBuV	dB	dB		1	0.1622960	45.68	-19.67	65.35	45.34	0.10	0.24	QP	2	0.1622960	35.75	-19.60	55.35	35.41	0.10	0.24	Average	3	0.2417320	44.87	-17.17	62.04	44.52	0.11	0.24	QP	4	0.2417320	41.83	-10.21	52.04	41.48	0.11	0.24	Average	5	0.2978930	42.37	-17.93	60.30	42.06	0.12	0.19	QP	6	0.2978930	41.35	-8.95	50.30	41.04	0.12	0.19	Average	7	0.6472440	32.37	-23.63	56.00	32.14	0.13	0.10	QP	8	0.6472440	31.54	-14.46	46.00	31.31	0.13	0.10	Average	9	2.190	23.19	-22.81	46.00	22.77	0.15	0.27	Average	10	2.190	34.39	-21.61	56.00	33.97	0.15	0.27	QP	11	4.552	38.65	-17.35	56.00	38.35	0.19	0.11	QP	12	4.552	33.27	-12.73	46.00	32.97	0.19	0.11	Average
	Freq	Level	Over	Limit	Read	LISN	Cable	Remark																																																																																																																																		
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<p>Note 1: "&gt;20dB" means emission levels that exceed the level of 20 dB below the applicable limit.            Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)</p>																																																																																																																																										





Emission Bandwidth Summary

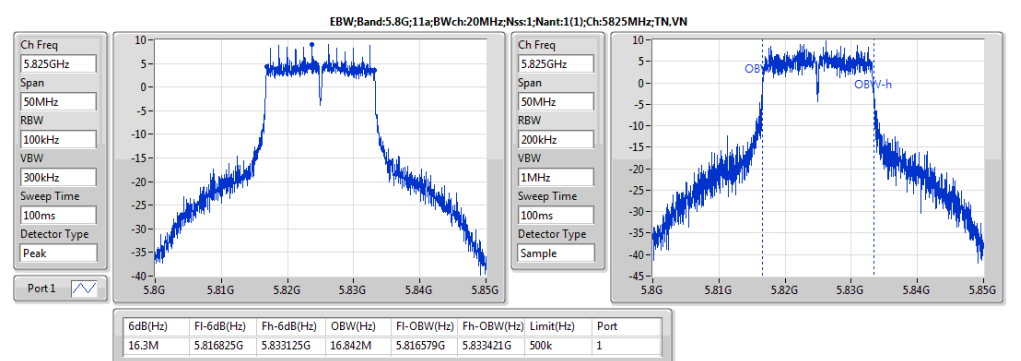
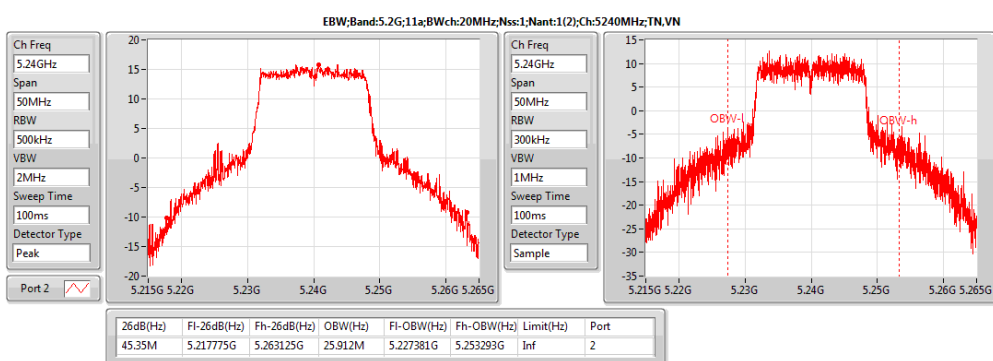
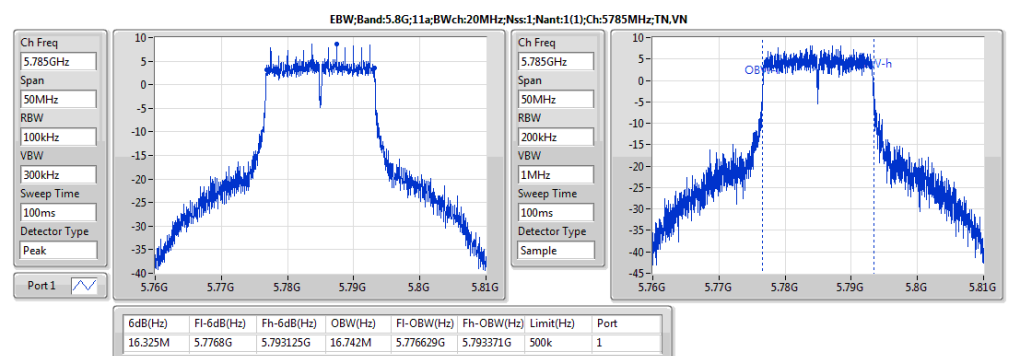
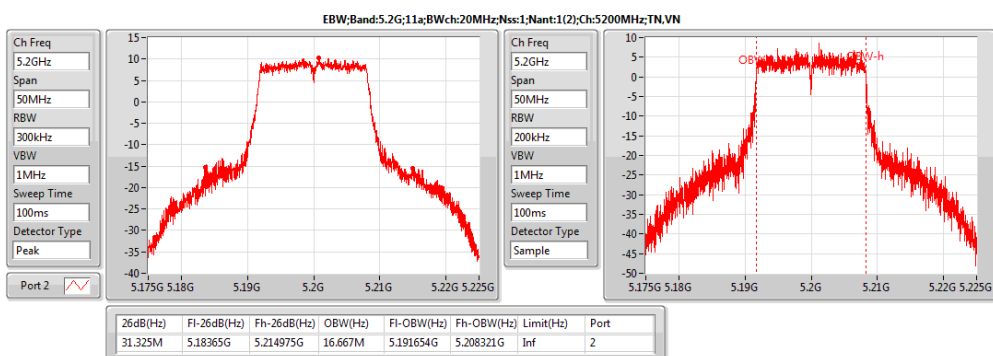
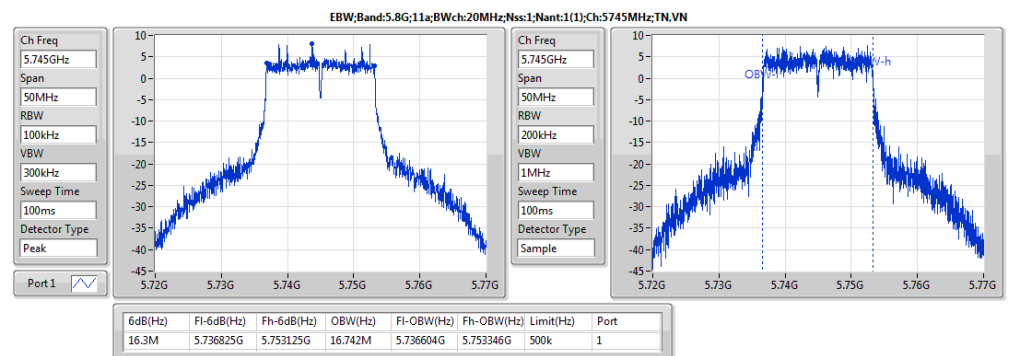
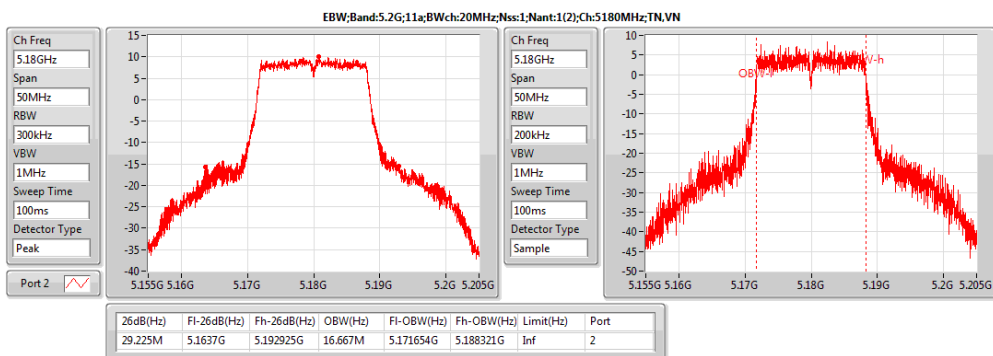
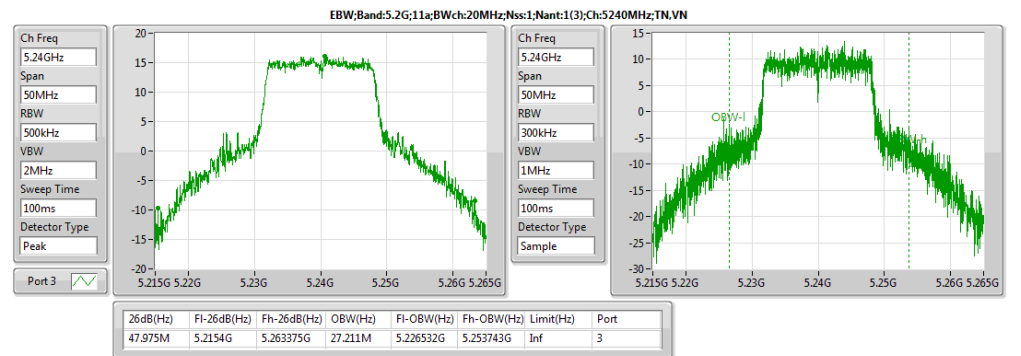
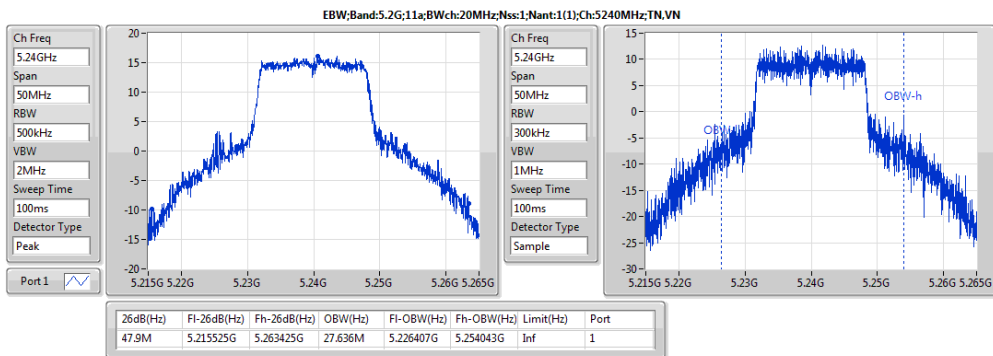
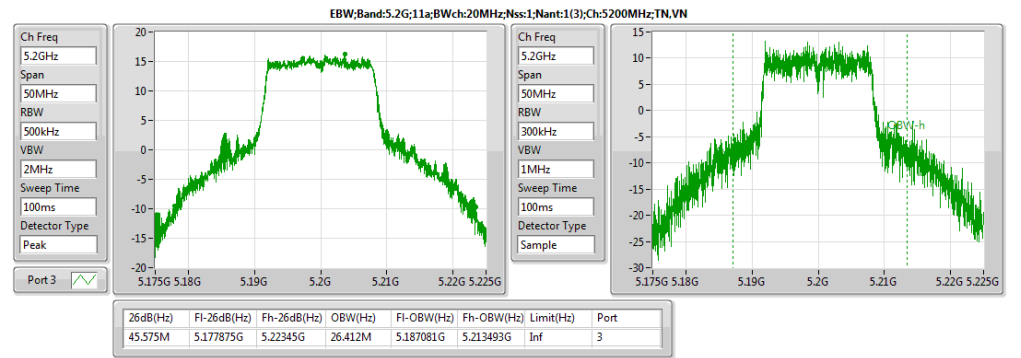
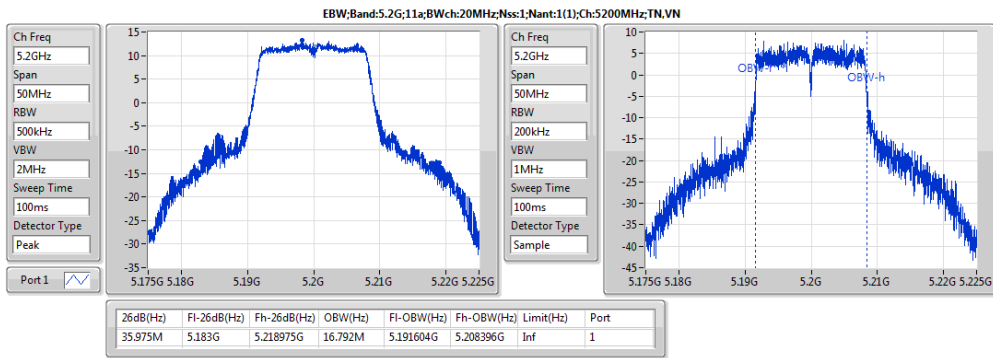
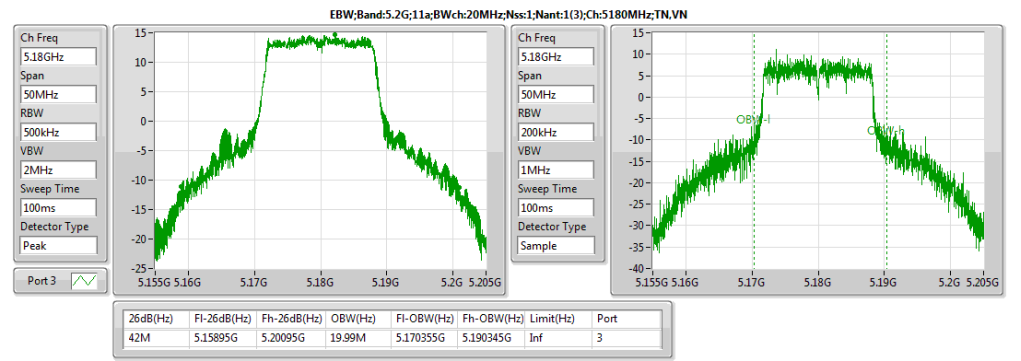
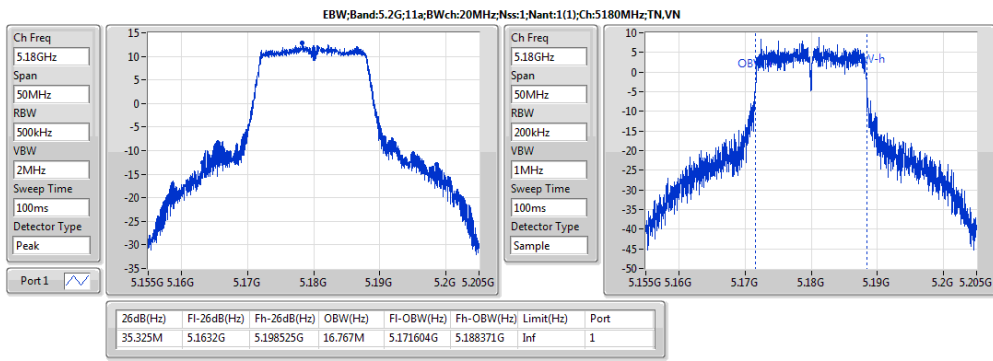
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5.2G;11a;20;1;1(2)	45.35M	25.912M	25M9D1D	29.225M	16.667M
5.2G;11a;20;1;1(3)	47.975M	27.211M	27M2D1D	42M	19.99M
5.8G;11a;20;1;1(1)	16.325M	16.842M	16M8D1D	16.3M	16.742M
5.8G;11a;20;1;1(2)	16.35M	32.059M	32M1D1D	16.3M	30.735M
5.8G;11a;20;1;1(3)	16.325M	16.742M	16M7D1D	16.3M	16.542M
5.2G;VHT20;20;1,(M0-8);3	37.325M	17.841M	17M8D1D	20.425M	17.666M
5.8G;VHT20;20;1,(M0-8);3	17.6M	17.841M	17M8D1D	17.525M	17.741M
5.2G;VHT40;40;1,(M0-9);3	70.85M	36.382M	36M4D1D	39.45M	36.182M
5.8G;VHT40;40;1,(M0-9);3	36.35M	36.432M	36M4D1D	36.25M	36.332M
5.2G;VHT80;80;1,(M0-9);3	82.8M	75.762M	75M8D1D	82.2M	75.562M
5.8G;VHT80;80;1,(M0-9);3	75.8M	75.962M	76M0D1D	75.1M	75.862M

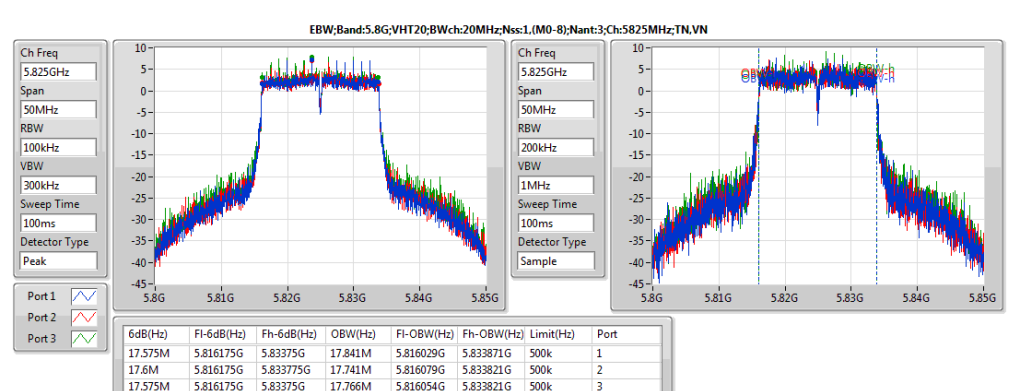
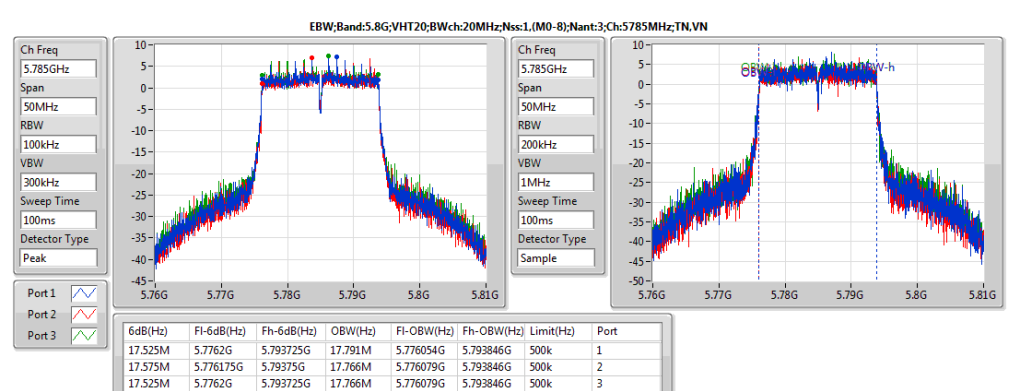
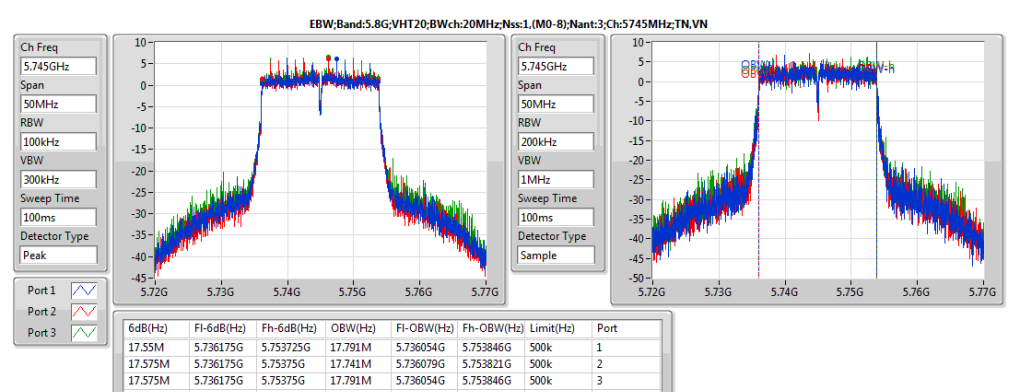
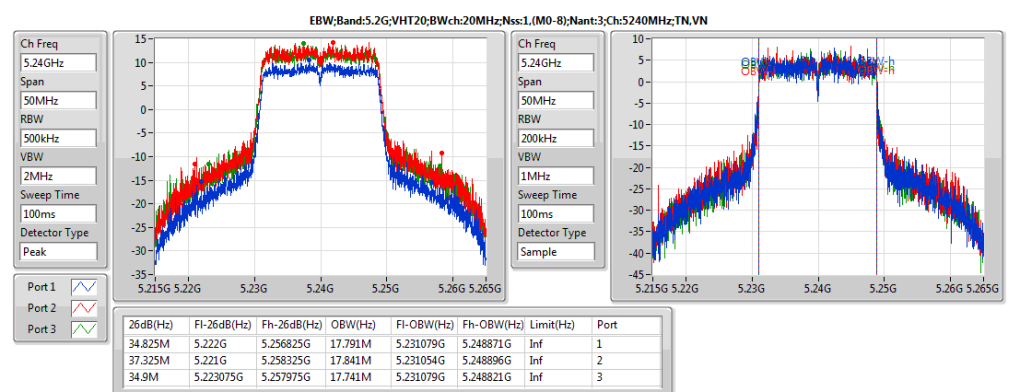
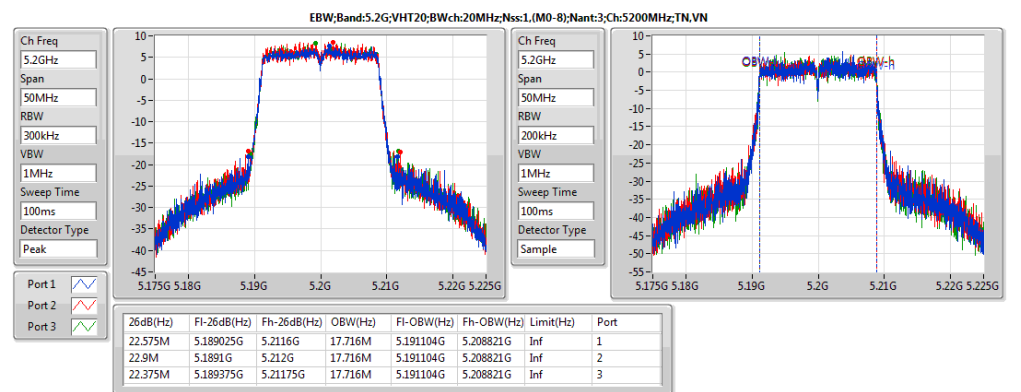
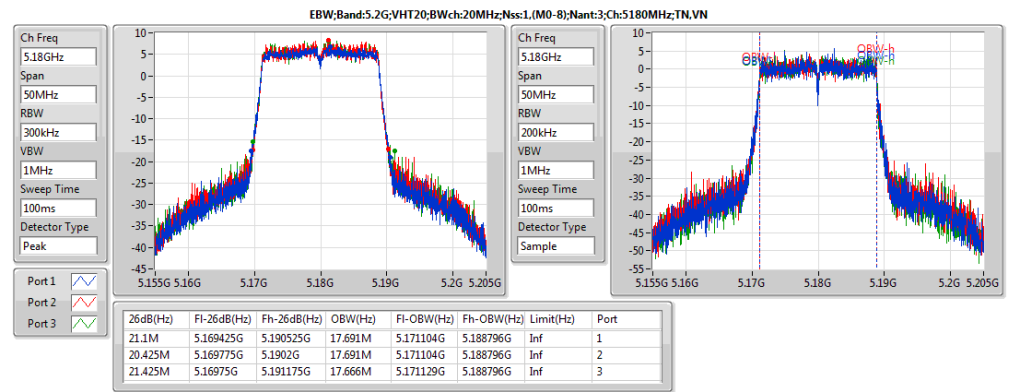
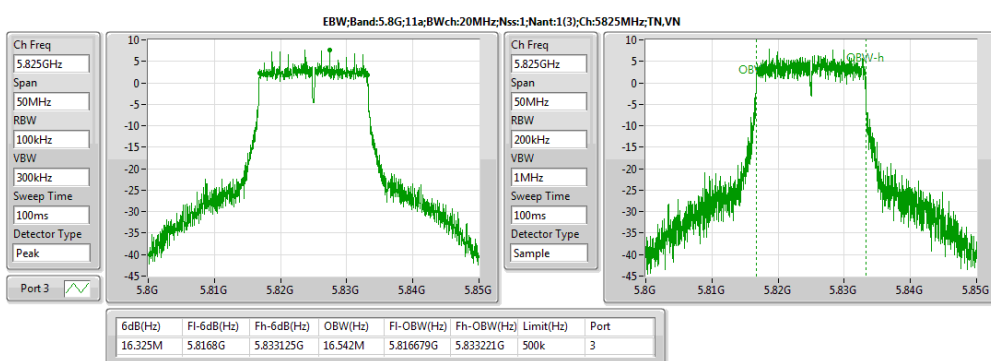
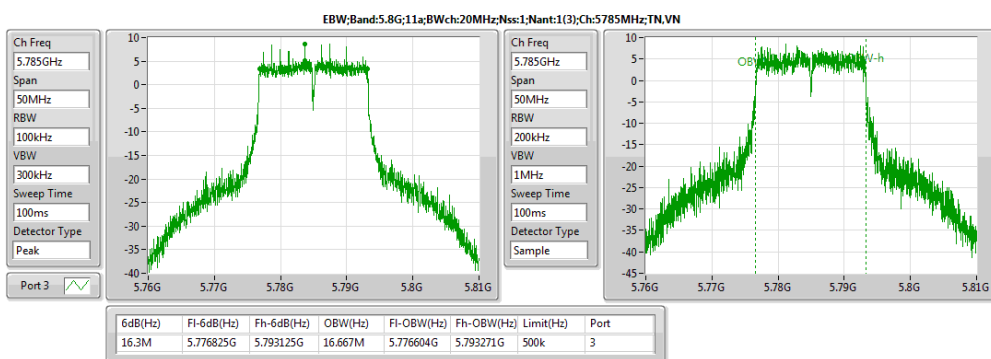
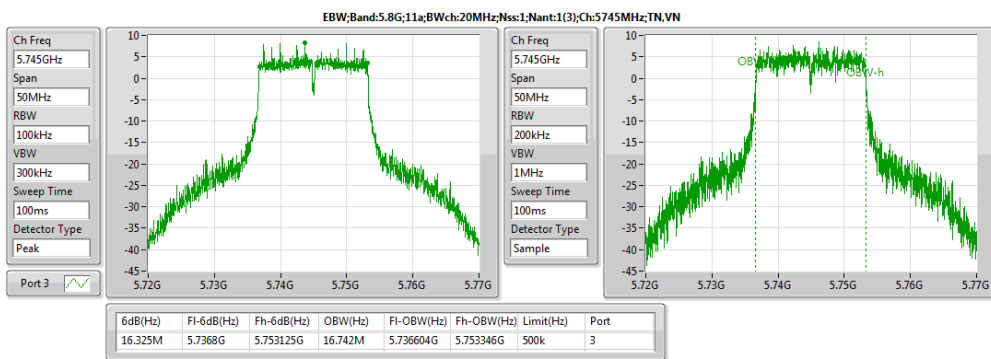
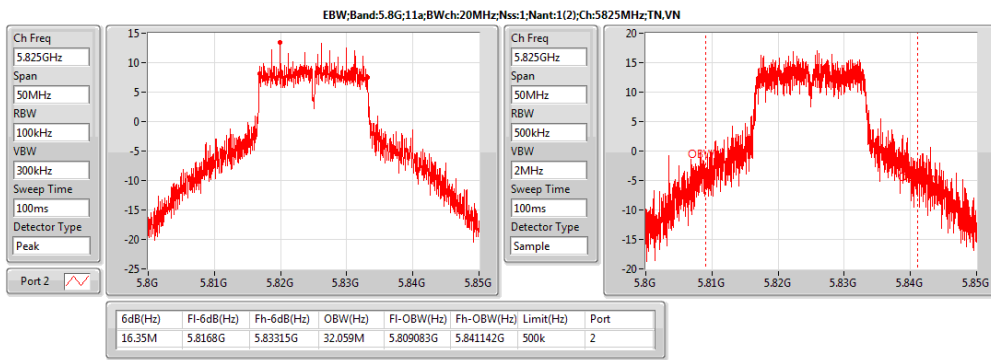
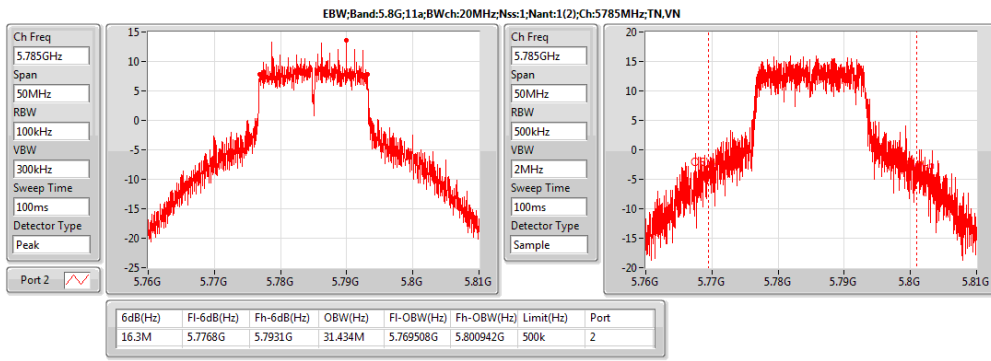
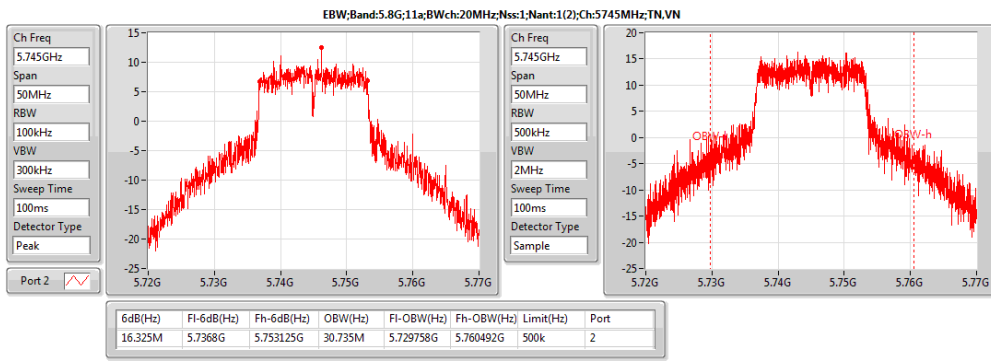
**Result**

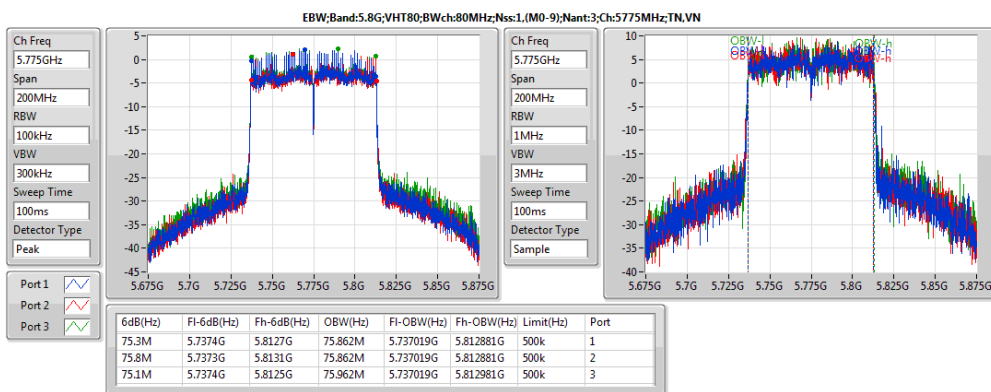
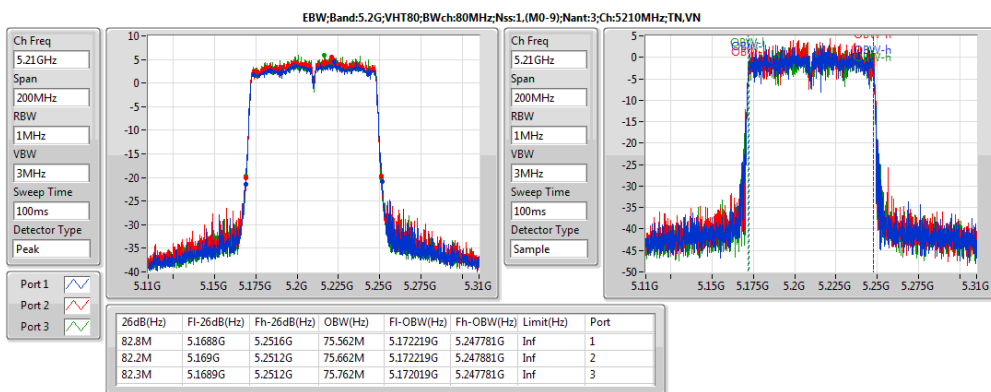
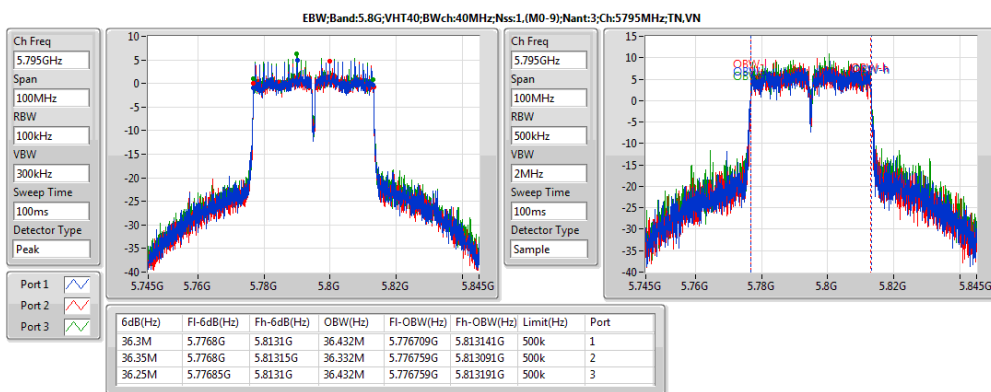
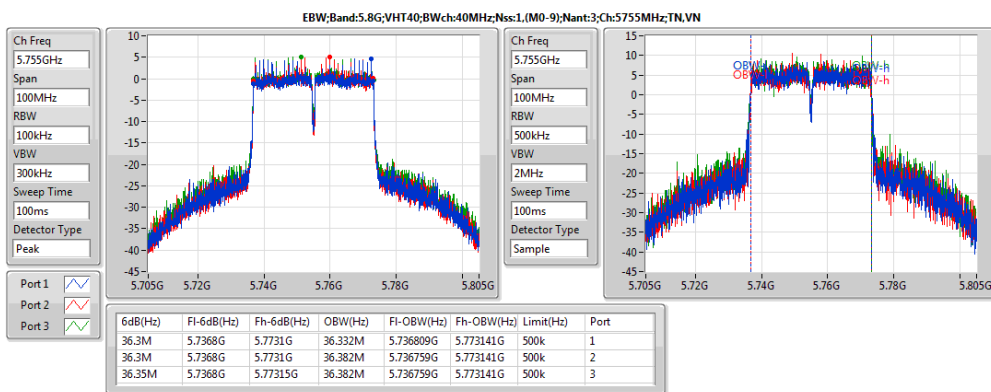
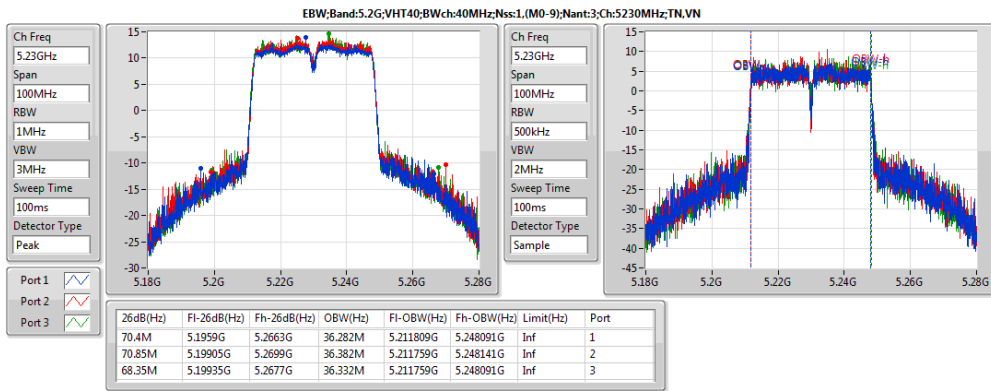
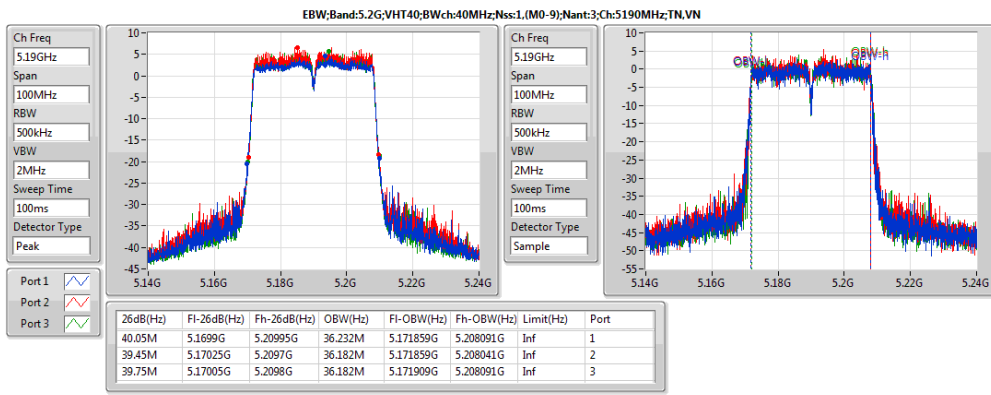
Mode	Result	Limit	P1-N dB (Hz)	P1-OBW (Hz)	P2-N dB (Hz)	P2-OBW (Hz)	P3-N dB (Hz)	P3-OBW (Hz)
5.2G:11a:20:1:1(1):5180:L:TN,VN	Pass	Inf	35.325M	16.767M	-	-	-	-
5.2G:11a:20:1:1(1):5200:M:TN,VN	Pass	Inf	35.975M	16.792M	-	-	-	-
5.2G:11a:20:1:1(1):5240:H:TN,VN	Pass	Inf	47.9M	27.636M	-	-	-	-
5.2G:11a:20:1:1(2):5180:L:TN,VN	Pass	Inf	-	-	29.225M	16.667M	-	-
5.2G:11a:20:1:1(2):5200:M:TN,VN	Pass	Inf	-	-	31.325M	16.667M	-	-
5.2G:11a:20:1:1(2):5240:H:TN,VN	Pass	Inf	-	-	45.35M	25.912M	-	-
5.2G:11a:20:1:1(3):5180:L:TN,VN	Pass	Inf	-	-	-	-	42M	19.99M
5.2G:11a:20:1:1(3):5200:M:TN,VN	Pass	Inf	-	-	-	-	45.575M	26.412M
5.2G:11a:20:1:1(3):5240:H:TN,VN	Pass	Inf	-	-	-	-	47.975M	27.211M
5.8G:11a:20:1:1(1):5745:L:TN,VN	Pass	500k	16.3M	16.742M	-	-	-	-
5.8G:11a:20:1:1(1):5785:M:TN,VN	Pass	500k	16.325M	16.742M	-	-	-	-
5.8G:11a:20:1:1(1):5825:H:TN,VN	Pass	500k	16.3M	16.842M	-	-	-	-
5.8G:11a:20:1:1(2):5745:L:TN,VN	Pass	500k	-	-	16.325M	30.735M	-	-
5.8G:11a:20:1:1(2):5785:M:TN,VN	Pass	500k	-	-	16.3M	31.434M	-	-
5.8G:11a:20:1:1(2):5825:H:TN,VN	Pass	500k	-	-	16.35M	32.059M	-	-
5.8G:11a:20:1:1(3):5745:L:TN,VN	Pass	500k	-	-	-	-	16.325M	16.742M
5.8G:11a:20:1:1(3):5785:M:TN,VN	Pass	500k	-	-	-	-	16.3M	16.667M
5.8G:11a:20:1:1(3):5825:H:TN,VN	Pass	500k	-	-	-	-	16.325M	16.542M
5.2G:VHT20:20:1,(M0-8):3:5180:L:TN,VN	Pass	Inf	21.1M	17.691M	20.425M	17.691M	21.425M	17.666M
5.2G:VHT20:20:1,(M0-8):3:5200:M:TN,VN	Pass	Inf	22.575M	17.716M	22.9M	17.716M	22.375M	17.716M
5.2G:VHT20:20:1,(M0-8):3:5240:H:TN,VN	Pass	Inf	34.825M	17.791M	37.325M	17.841M	34.9M	17.741M
5.8G:VHT20:20:1,(M0-8):3:5745:L:TN,VN	Pass	500k	17.55M	17.791M	17.575M	17.741M	17.575M	17.791M
5.8G:VHT20:20:1,(M0-8):3:5785:M:TN,VN	Pass	500k	17.525M	17.791M	17.575M	17.766M	17.525M	17.766M
5.8G:VHT20:20:1,(M0-8):3:5825:H:TN,VN	Pass	500k	17.575M	17.841M	17.6M	17.741M	17.575M	17.766M
5.2G:VHT40:40:1,(M0-9):3:5190:L:TN,VN	Pass	Inf	40.05M	36.232M	39.45M	36.182M	39.75M	36.182M
5.2G:VHT40:40:1,(M0-9):3:5230:H:TN,VN	Pass	Inf	70.4M	36.282M	70.85M	36.382M	68.35M	36.332M
5.8G:VHT40:40:1,(M0-9):3:5755:L:TN,VN	Pass	500k	36.3M	36.332M	36.3M	36.382M	36.35M	36.382M
5.8G:VHT40:40:1,(M0-9):3:5795:H:TN,VN	Pass	500k	36.3M	36.432M	36.35M	36.332M	36.25M	36.432M
5.2G:VHT80:80:1,(M0-9):3:5210:S:TN,VN	Pass	Inf	82.8M	75.562M	82.2M	75.662M	82.3M	75.762M
5.8G:VHT80:80:1,(M0-9):3:5775:S:TN,VN	Pass	500k	75.3M	75.862M	75.8M	75.862M	75.1M	75.962M



# EBW Result









Emission Bandwidth for TxBF  
Summary

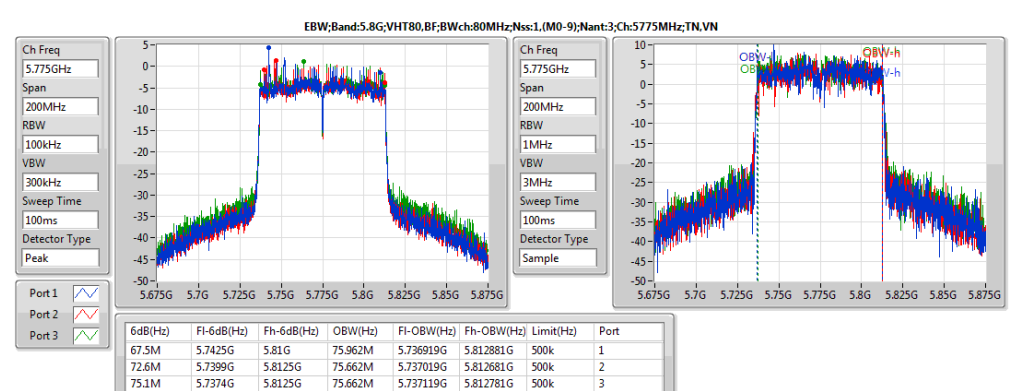
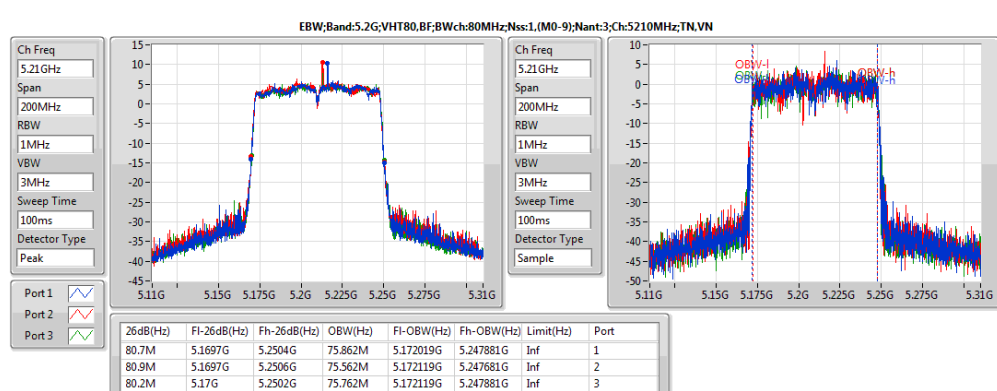
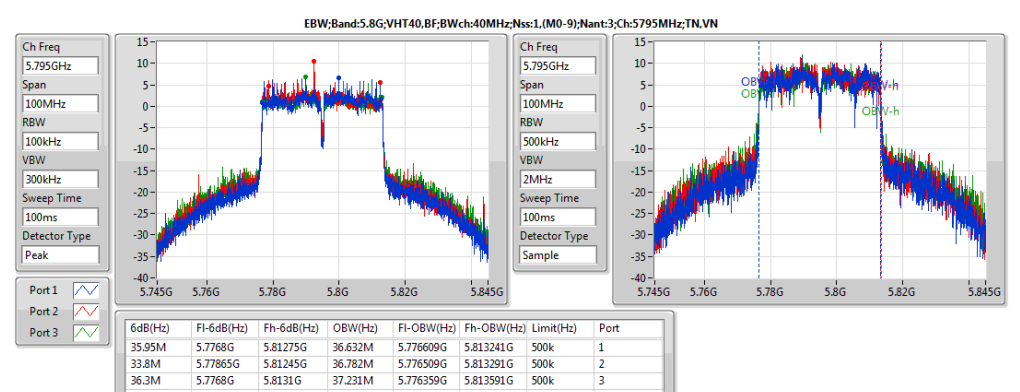
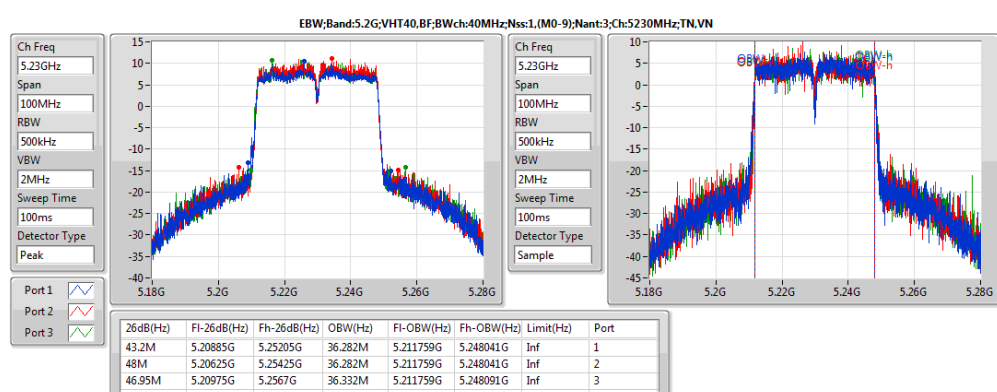
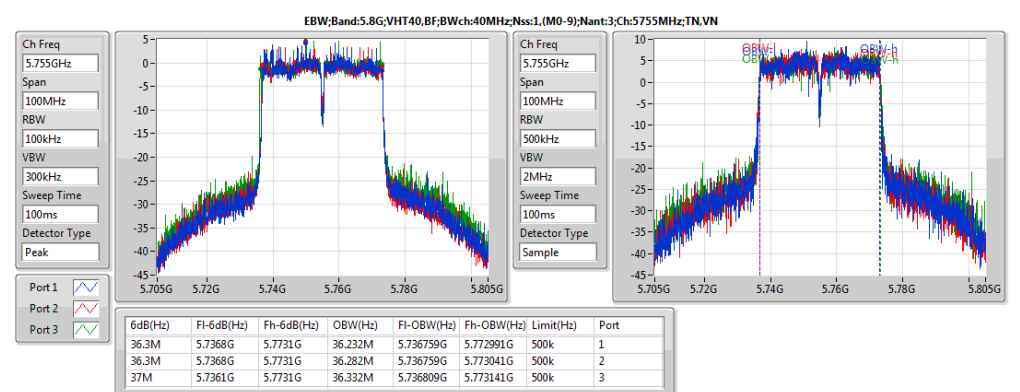
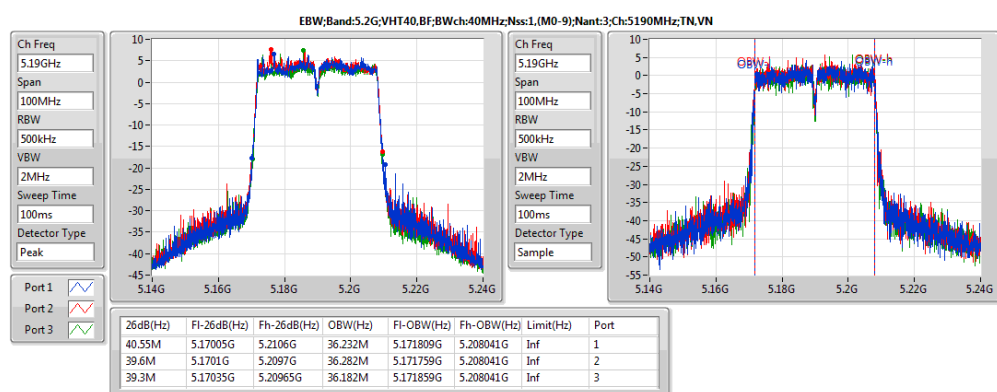
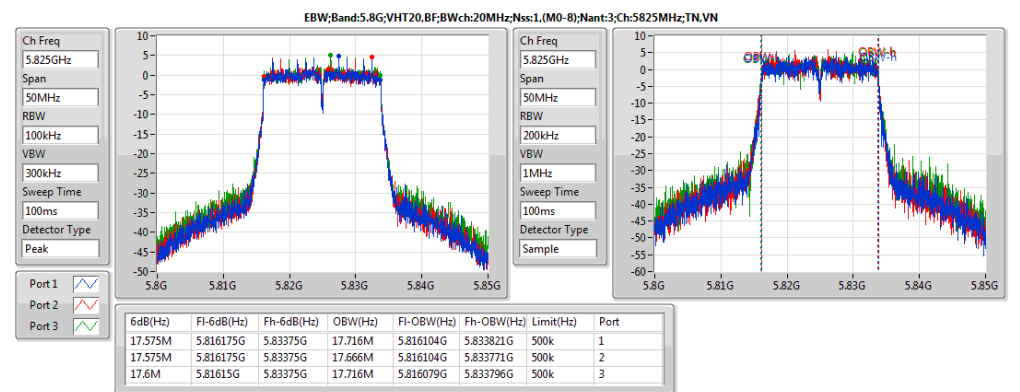
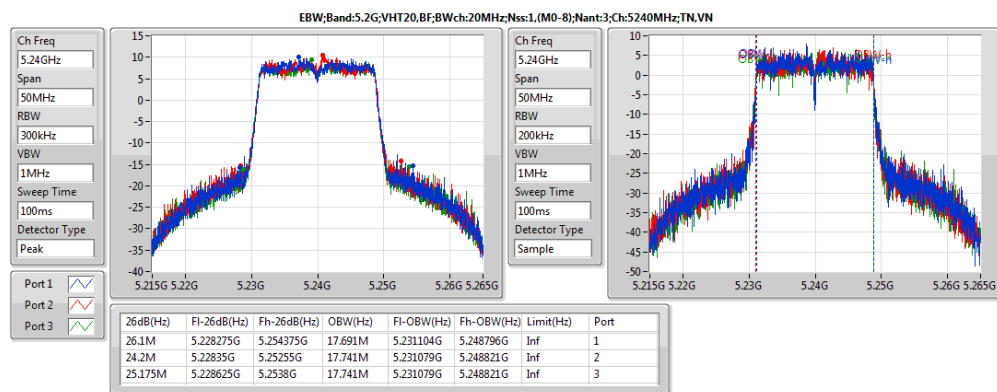
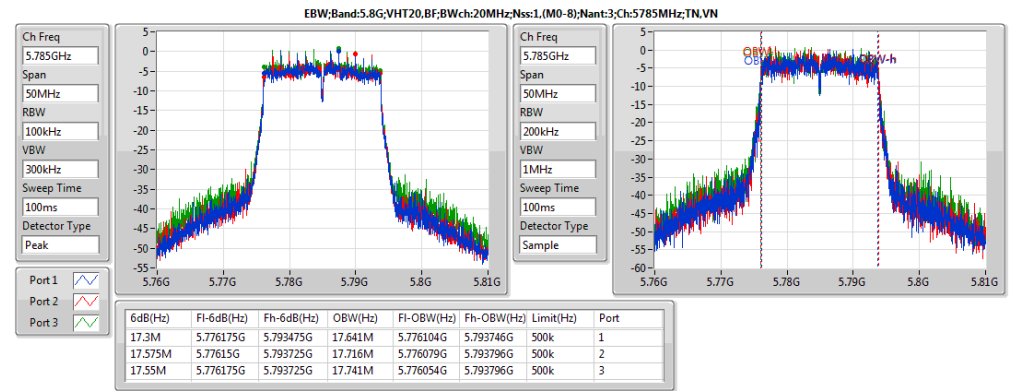
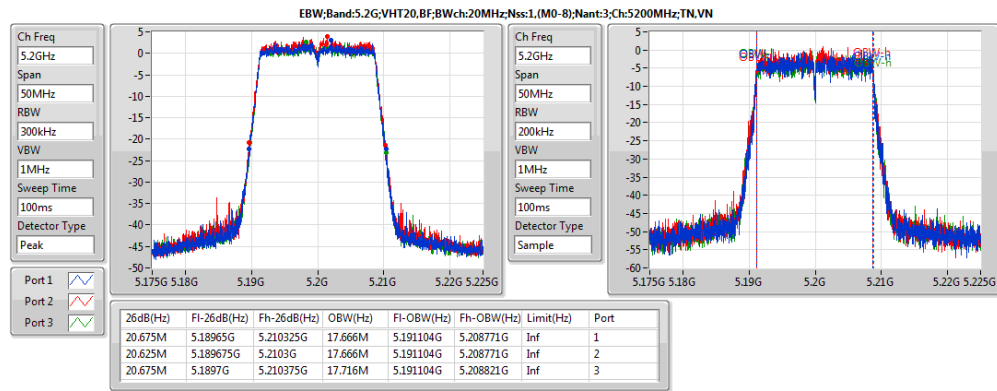
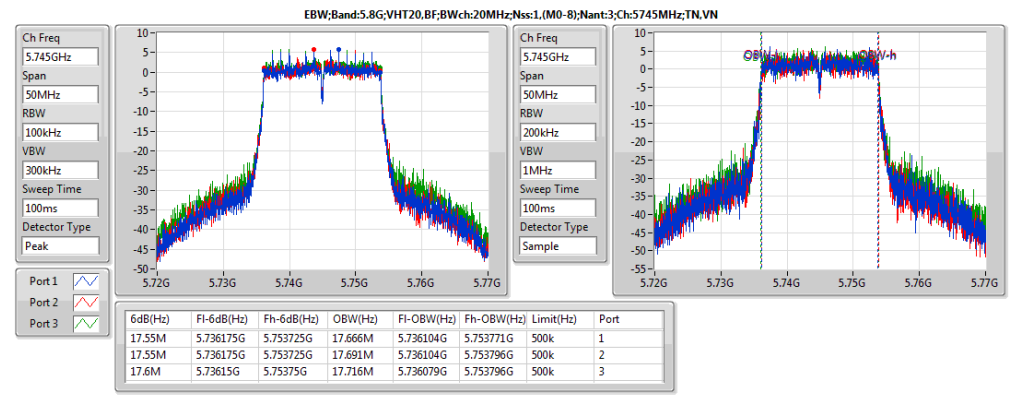
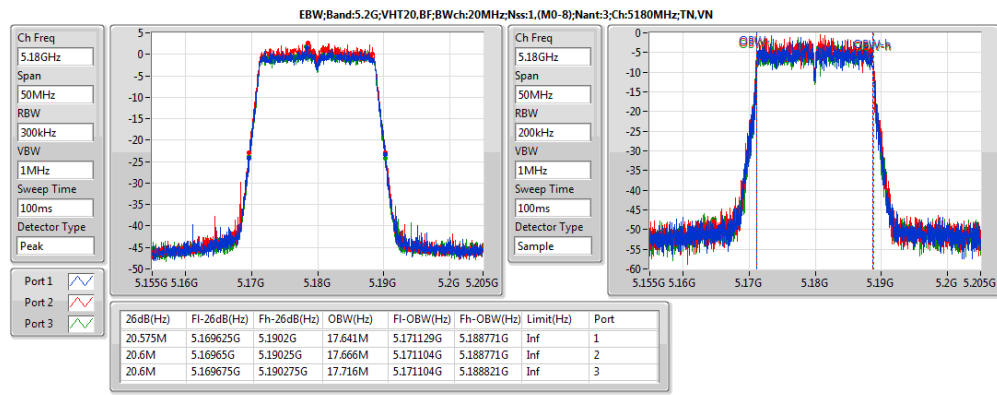
Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.2G:VHT20,BF:20:1,(M0-8):3	26.1M	17.741M	17M7D1D	20.575M	17.641M
5.2G:VHT40,BF:40:1,(M0-9):3	48M	36.332M	36M3D1D	39.3M	36.182M
5.2G:VHT80,BF:80:1,(M0-9):3	80.9M	75.862M	75M9D1D	80.2M	75.562M
5.8G:VHT20,BF:20:1,(M0-8):3	17.6M	17.741M	17M7D1D	17.3M	17.641M
5.8G:VHT40,BF:40:1,(M0-9):3	37M	37.231M	37M2D1D	33.8M	36.232M
5.8G:VHT80,BF:80:1,(M0-9):3	75.1M	75.962M	76M0D1D	67.5M	75.662M





Result

Mode	Result	Limit	P1-N dB (Hz)	P1-OBW (Hz)	P2-N dB (Hz)	P2-OBW (Hz)	P3-N dB (Hz)	P3-OBW (Hz)
5.2G:VHT20,BF:20:1,(M0-8);3:5180:L:TN,VN	Pass	Inf	20.575M	17.641M	20.6M	17.666M	20.6M	17.716M
5.2G:VHT20,BF:20:1,(M0-8);3:5200:M:TN,VN	Pass	Inf	20.675M	17.666M	20.625M	17.666M	20.675M	17.716M
5.2G:VHT20,BF:20:1,(M0-8);3:5240:H:TN,VN	Pass	Inf	26.1M	17.691M	24.2M	17.741M	25.175M	17.741M
5.2G:VHT40,BF:40:1,(M0-9);3:5190:L:TN,VN	Pass	Inf	40.55M	36.232M	39.6M	36.282M	39.3M	36.182M
5.2G:VHT40,BF:40:1,(M0-9);3:5230:H:TN,VN	Pass	Inf	43.2M	36.282M	48M	36.282M	46.95M	36.332M
5.2G:VHT80,BF:80:1,(M0-9);3:5210:S:TN,VN	Pass	Inf	80.7M	75.862M	80.9M	75.562M	80.2M	75.762M
5.8G:VHT20,BF:20:1,(M0-8);3:5745:L:TN,VN	Pass	500k	17.55M	17.666M	17.55M	17.691M	17.6M	17.716M
5.8G:VHT20,BF:20:1,(M0-8);3:5785:M:TN,VN	Pass	500k	17.3M	17.641M	17.575M	17.716M	17.55M	17.741M
5.8G:VHT20,BF:20:1,(M0-8);3:5825:H:TN,VN	Pass	500k	17.575M	17.716M	17.575M	17.666M	17.6M	17.716M
5.8G:VHT40,BF:40:1,(M0-9);3:5755:L:TN,VN	Pass	500k	36.3M	36.232M	36.3M	36.282M	37M	36.332M
5.8G:VHT40,BF:40:1,(M0-9);3:5795:H:TN,VN	Pass	500k	35.95M	36.632M	33.8M	36.782M	36.3M	37.231M
5.8G:VHT80,BF:80:1,(M0-9);3:5775:S:TN,VN	Pass	500k	67.5M	75.962M	72.6M	75.662M	75.1M	75.662M





Maximum Conducted Output Power Summary

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
5.2G:11a:20:1;1(1)	22.52	0.17865	26.22	0.41879
5.2G:11a:20:1;1(2)	22.36	0.17219	26.06	0.40365
5.2G:11a:20:1;1(3)	22.73	0.1875	26.43	0.43954
5.8G:11a:20:1;1(1)	20.09	0.10209	23.79	0.23933
5.8G:11a:20:1;1(2)	23.92	0.2466	27.62	0.5781
5.8G:11a:20:1;1(3)	19.73	0.09397	23.43	0.22029
5.2G:HT20:20:1,(M0-23):3	23.55	0.22646	27.25	0.53088
5.8G:HT20:20:1,(M0-23):3	23.42	0.21979	27.12	0.51523
5.2G:HT40:40:1,(M0-23):3	23.41	0.21928	27.11	0.51404
5.8G:HT40:40:1,(M0-23):3	24.25	0.26607	27.95	0.62373
5.2G:VHT20:20:1,(M0-8):3	23.69	0.23388	27.39	0.54828
5.8G:VHT20:20:1,(M0-8):3	23.56	0.22699	27.26	0.53211
5.2G:VHT40:40:1,(M0-9):3	23.48	0.22284	27.18	0.5224
5.8G:VHT40:40:1,(M0-9):3	24.39	0.27479	28.09	0.64417
5.2G:VHT80:80:1,(M0-9):3	18.18	0.06577	21.88	0.15417
5.8G:VHT80:80:1,(M0-9):3	23.76	0.23768	27.46	0.55719



Result

Mode	Result	DG (dBi)	EIRP (dBm)	EIRP Lim. (dBm)	Sum (dBm)	Sum Lim. (dBm)	P1 (dBm)	P2 (dBm)	P3 (dBm)
5.2G:11a:20:1:1(1):5180:L:TN,VN	Pass	3.70	22.81	36.00	19.11	30.00	19.11	-	-
5.2G:11a:20:1:1(1):5200:M:TN,VN	Pass	3.70	23.28	36.00	19.58	30.00	19.58	-	-
5.2G:11a:20:1:1(1):5240:H:TN,VN	Pass	3.70	26.22	36.00	22.52	30.00	22.52	-	-
5.2G:11a:20:1:1(2):5180:L:TN,VN	Pass	3.70	22.63	36.00	18.93	30.00	-	18.93	-
5.2G:11a:20:1:1(2):5200:M:TN,VN	Pass	3.70	22.59	36.00	18.89	30.00	-	18.89	-
5.2G:11a:20:1:1(2):5240:H:TN,VN	Pass	3.70	26.06	36.00	22.36	30.00	-	22.36	-
5.2G:11a:20:1:1(3):5180:L:TN,VN	Pass	3.70	25.25	36.00	21.55	30.00	-	-	21.55
5.2G:11a:20:1:1(3):5200:M:TN,VN	Pass	3.70	26.33	36.00	22.63	30.00	-	-	22.63
5.2G:11a:20:1:1(3):5240:H:TN,VN	Pass	3.70	26.43	36.00	22.73	30.00	-	-	22.73
5.8G:11a:20:1:1(1):5745:L:TN,VN	Pass	3.70	22.98	36.00	19.28	30.00	19.28	-	-
5.8G:11a:20:1:1(1):5785:M:TN,VN	Pass	3.70	23.42	36.00	19.72	30.00	19.72	-	-
5.8G:11a:20:1:1(1):5825:H:TN,VN	Pass	3.70	23.79	36.00	20.09	30.00	20.09	-	-
5.8G:11a:20:1:1(2):5745:L:TN,VN	Pass	3.70	27.22	36.00	23.52	30.00	-	23.52	-
5.8G:11a:20:1:1(2):5785:M:TN,VN	Pass	3.70	27.51	36.00	23.81	30.00	-	23.81	-
5.8G:11a:20:1:1(2):5825:H:TN,VN	Pass	3.70	27.62	36.00	23.92	30.00	-	23.92	-
5.8G:11a:20:1:1(3):5745:L:TN,VN	Pass	3.70	23.21	36.00	19.51	30.00	-	-	19.51
5.8G:11a:20:1:1(3):5785:M:TN,VN	Pass	3.70	23.43	36.00	19.73	30.00	-	-	19.73
5.8G:11a:20:1:1(3):5825:H:TN,VN	Pass	3.70	22.46	36.00	18.76	30.00	-	-	18.76
5.2G:HT20:20:1,(M0-23):3:5180:L:TN,VN	Pass	3.70	24.44	36.00	20.74	30.00	15.81	16.15	15.93
5.2G:HT20:20:1,(M0-23):3:5200:M:TN,VN	Pass	3.70	24.62	36.00	20.92	30.00	15.96	16.31	16.18
5.2G:HT20:20:1,(M0-23):3:5240:H:TN,VN	Pass	3.70	27.25	36.00	23.55	30.00	18.63	18.84	18.87
5.8G:HT20:20:1,(M0-23):3:5745:L:TN,VN	Pass	3.70	26.00	36.00	22.30	30.00	17.55	17.24	17.79
5.8G:HT20:20:1,(M0-23):3:5785:M:TN,VN	Pass	3.70	26.72	36.00	23.02	30.00	18.20	17.99	18.55
5.8G:HT20:20:1,(M0-23):3:5825:H:TN,VN	Pass	3.70	27.12	36.00	23.42	30.00	18.56	18.36	18.99
5.2G:HT40:40:1,(M0-23):3:5190:L:TN,VN	Pass	3.70	22.16	36.00	18.46	30.00	13.48	13.95	13.61
5.2G:HT40:40:1,(M0-23):3:5230:H:TN,VN	Pass	3.70	27.11	36.00	23.41	30.00	18.47	18.70	18.74
5.8G:HT40:40:1,(M0-23):3:5755:L:TN,VN	Pass	3.70	27.52	36.00	23.82	30.00	18.86	18.92	19.34
5.8G:HT40:40:1,(M0-23):3:5795:H:TN,VN	Pass	3.70	27.95	36.00	24.25	30.00	19.29	19.33	19.81
5.2G:VHT20:20:1,(M0-8):3:5180:L:TN,VN	Pass	3.70	24.48	36.00	20.78	30.00	16.00	16.04	15.98
5.2G:VHT20:20:1,(M0-8):3:5200:M:TN,VN	Pass	3.70	24.86	36.00	21.16	30.00	16.30	16.42	16.45
5.2G:VHT20:20:1,(M0-8):3:5240:H:TN,VN	Pass	3.70	27.39	36.00	23.69	30.00	18.78	19.02	18.96
5.8G:VHT20:20:1,(M0-8):3:5745:L:TN,VN	Pass	3.70	26.13	36.00	22.43	30.00	17.55	17.38	18.02
5.8G:VHT20:20:1,(M0-8):3:5785:M:TN,VN	Pass	3.70	26.81	36.00	23.11	30.00	18.25	18.11	18.63
5.8G:VHT20:20:1,(M0-8):3:5825:H:TN,VN	Pass	3.70	27.26	36.00	23.56	30.00	18.67	18.61	19.07
5.2G:VHT40:40:1,(M0-9):3:5190:L:TN,VN	Pass	3.70	22.26	36.00	18.56	30.00	13.58	14.04	13.73
5.2G:VHT40:40:1,(M0-9):3:5230:H:TN,VN	Pass	3.70	27.18	36.00	23.48	30.00	18.63	18.80	18.70
5.8G:VHT40:40:1,(M0-9):3:5755:L:TN,VN	Pass	3.70	27.60	36.00	23.90	30.00	19.04	18.88	19.44
5.8G:VHT40:40:1,(M0-9):3:5795:H:TN,VN	Pass	3.70	28.09	36.00	24.39	30.00	19.51	19.39	19.93
5.2G:VHT80:80:1,(M0-9):3:5210:S:TN,VN	Pass	3.70	21.88	36.00	18.18	30.00	13.25	13.64	13.34
5.8G:VHT80:80:1,(M0-9):3:5775:S:TN,VN	Pass	3.70	27.46	36.00	23.76	30.00	18.88	18.73	19.33



**Maximum Conducted Output Power for TxBF  
Summary**

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
5.2G;VHT20,BF;20;1,(M0-8);3	20.60	0.11482	29.08	0.8091
5.2G;VHT40,BF;40;1,(M0-9);3	20.66	0.11641	29.13	0.81846
5.2G;VHT80,BF;80;1,(M0-9);3	16.39	0.04355	24.86	0.3062
5.8G;VHT20,BF;20;1,(M0-8);3	19.76	0.09462	28.23	0.66527
5.8G;VHT40,BF;40;1,(M0-9);3	22.99	0.19907	31.46	1.39959
5.8G;VHT80,BF;80;1,(M0-9);3	19.41	0.0873	27.88	0.61376



Result

Mode	Result	DG (dBi)	EIRP (dBm)	EIRP Lim. (dBm)	Sum (dBm)	Sum Lim. (dBm)	P1 (dBm)	P2 (dBm)	P3 (dBm)
5.2G:VHT20,BF:20:1,(M0-8);3:5180:L:TN,VN	Pass	8.47	21.87	36.00	13.40	27.53	8.08	9.17	8.55
5.2G:VHT20,BF:20:1,(M0-8);3:5200:M:TN,VN	Pass	8.47	22.97	36.00	14.50	27.53	9.12	10.76	9.09
5.2G:VHT20,BF:20:1,(M0-8);3:5240:H:TN,VN	Pass	8.47	29.08	36.00	20.60	27.53	15.95	15.72	15.82
5.2G:VHT40,BF:40:1,(M0-9);3:5190:L:TN,VN	Pass	8.47	26.07	36.00	17.60	27.53	12.71	13.21	12.53
5.2G:VHT40,BF:40:1,(M0-9);3:5230:H:TN,VN	Pass	8.47	29.13	36.00	20.66	27.53	16.04	16.06	15.55
5.2G:VHT80,BF:80:1,(M0-9);3:5210:S:TN,VN	Pass	8.47	24.86	36.00	16.39	27.53	11.53	11.83	11.50
5.8G:VHT20,BF:20:1,(M0-8);3:5745:L:TN,VN	Pass	8.47	28.23	36.00	19.76	27.53	14.91	14.71	15.33
5.8G:VHT20,BF:20:1,(M0-8);3:5785:M:TN,VN	Pass	8.47	26.97	36.00	18.50	27.53	13.56	13.78	13.84
5.8G:VHT20,BF:20:1,(M0-9);3:5825:H:TN,VN	Pass	8.47	27.31	36.00	18.84	27.53	14.06	13.79	14.34
5.8G:VHT40,BF:40:1,(M0-9);3:5755:L:TN,VN	Pass	8.47	29.03	36.00	20.56	27.53	16.04	15.71	15.60
5.8G:VHT40,BF:40:1,(M0-9);3:5795:H:TN,VN	Pass	8.47	31.46	36.00	22.99	27.53	18.34	18.30	18.00
5.8G:VHT80,BF:80:1,(M0-9);3:5775:S:TN,VN	Pass	8.47	27.88	36.00	19.41	27.53	14.39	14.95	14.55



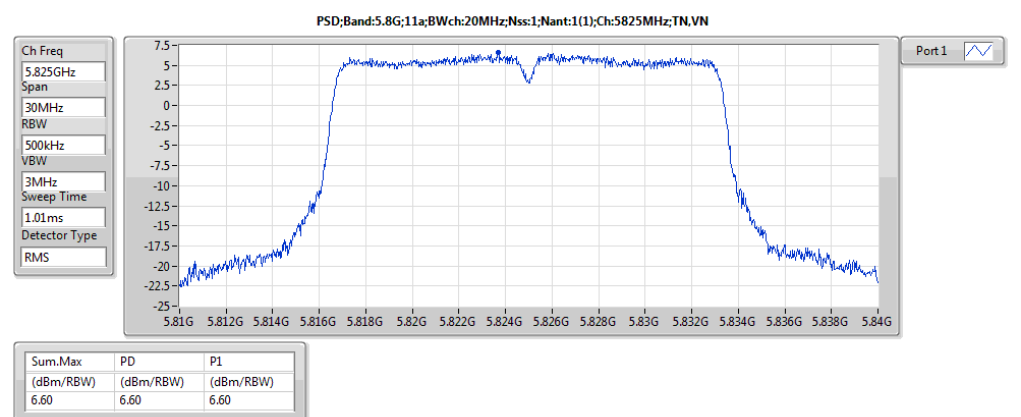
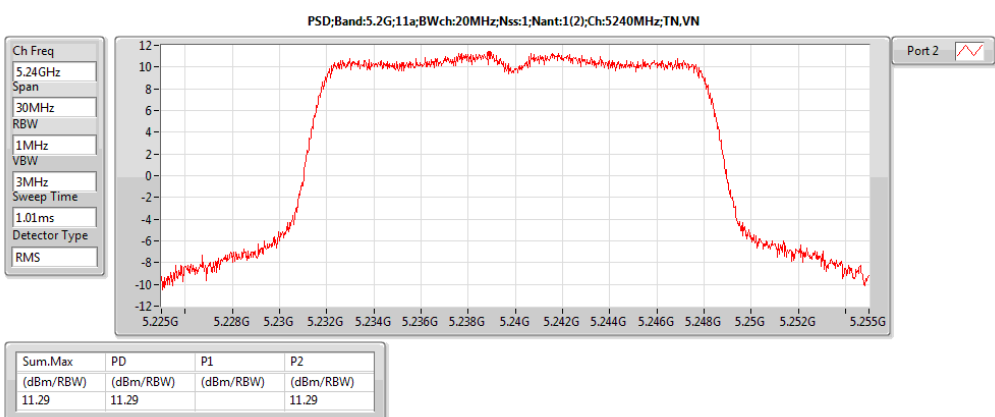
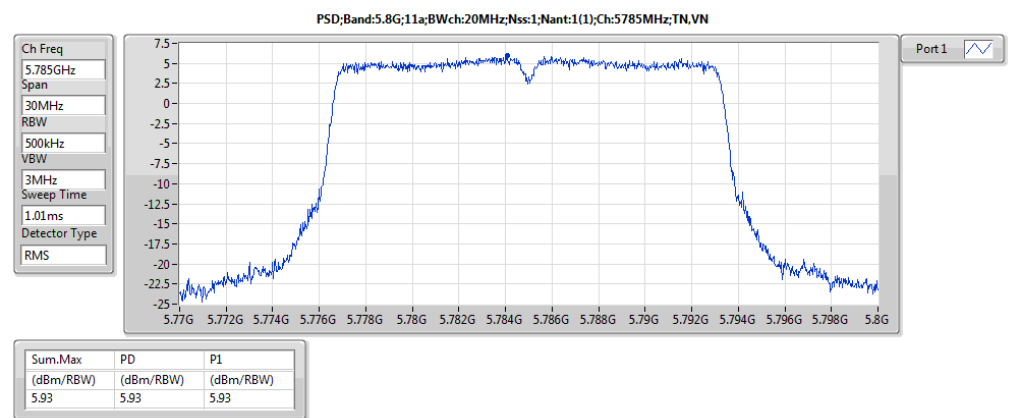
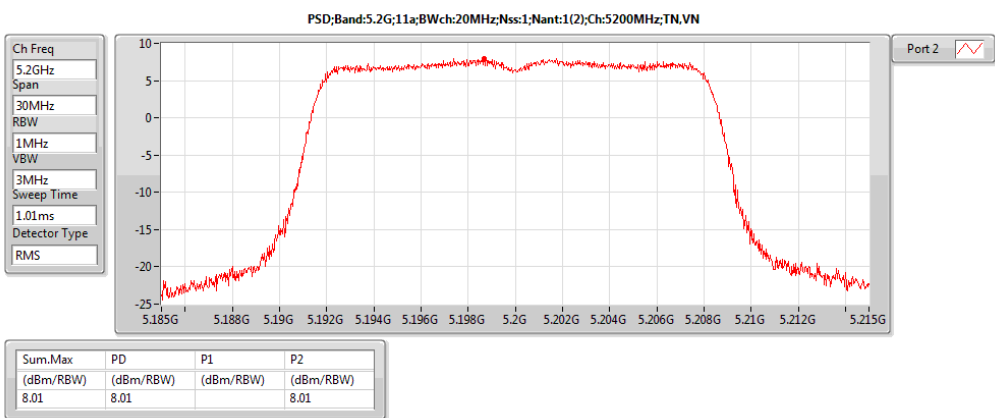
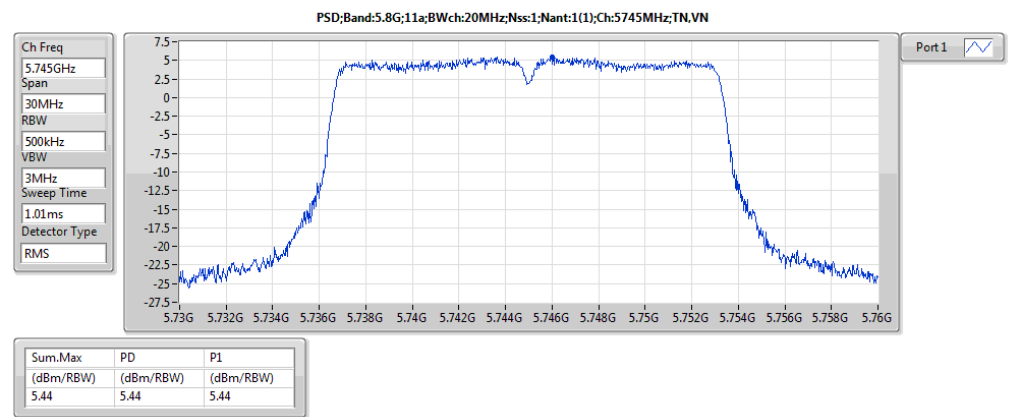
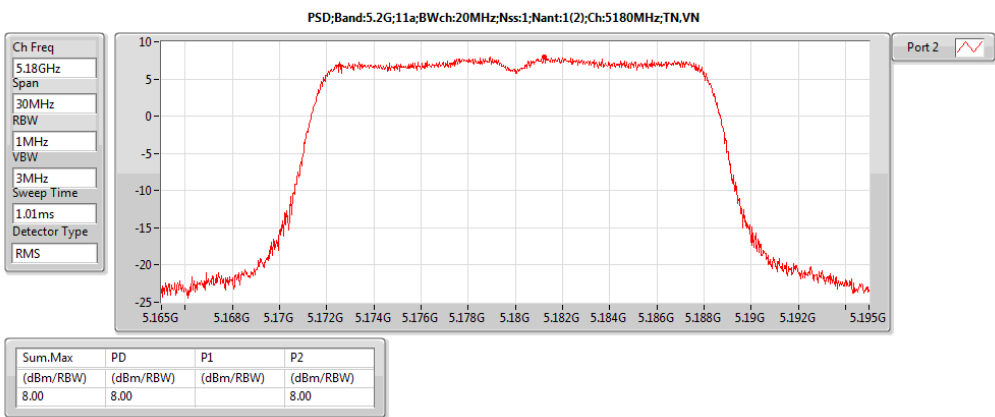
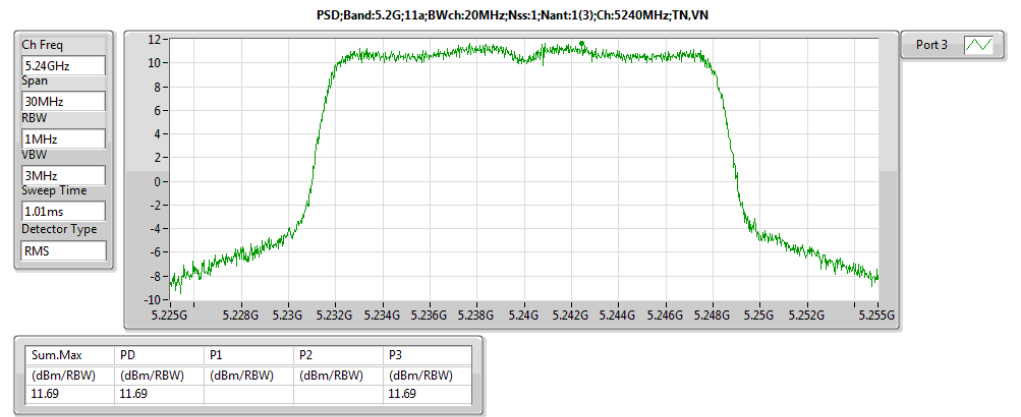
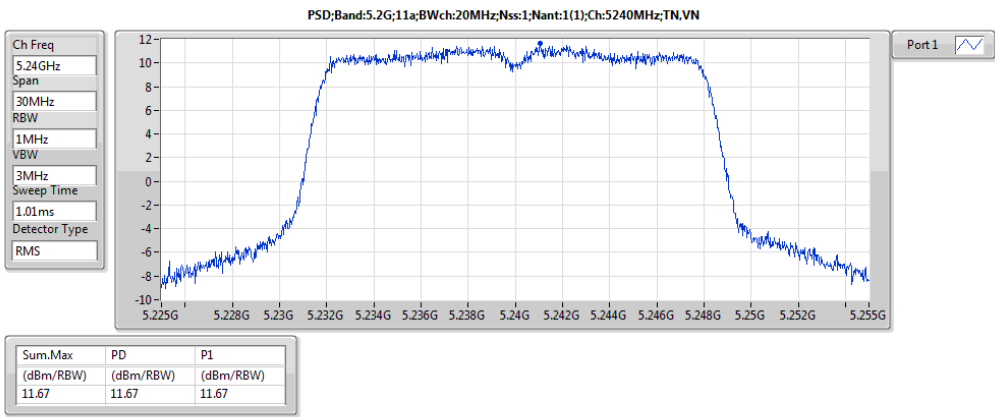
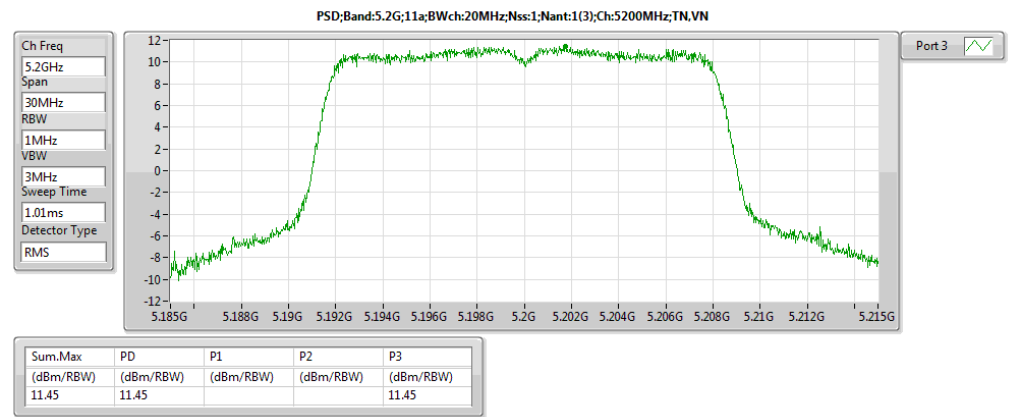
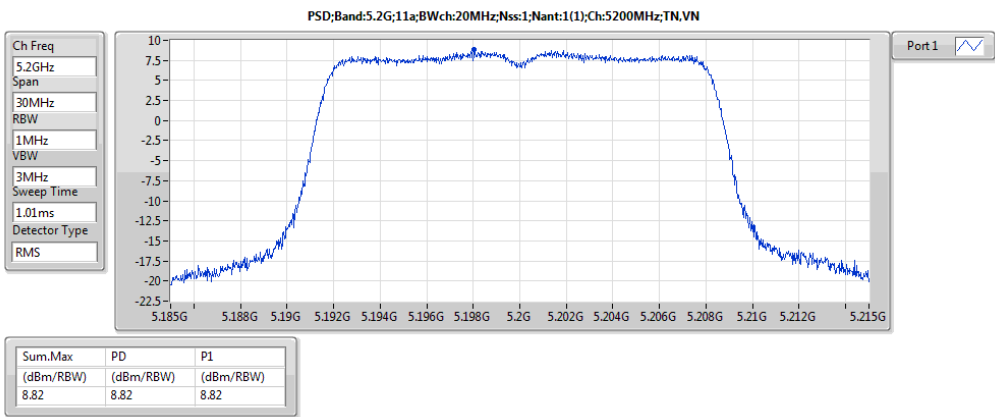
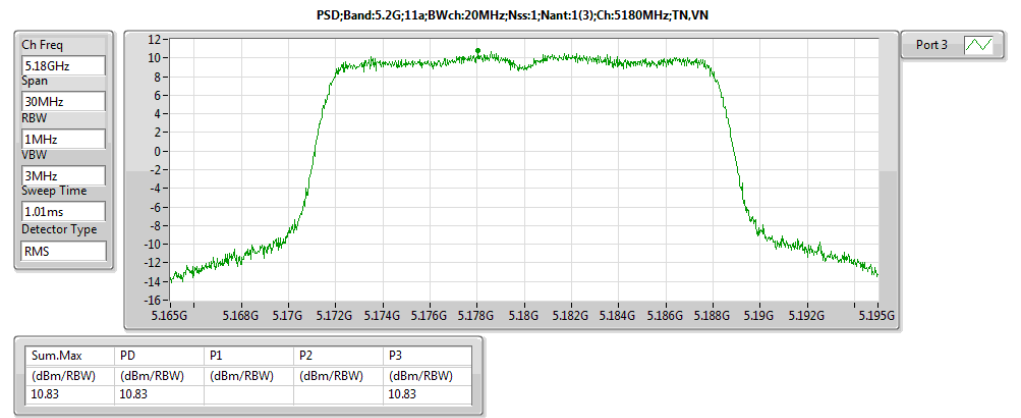
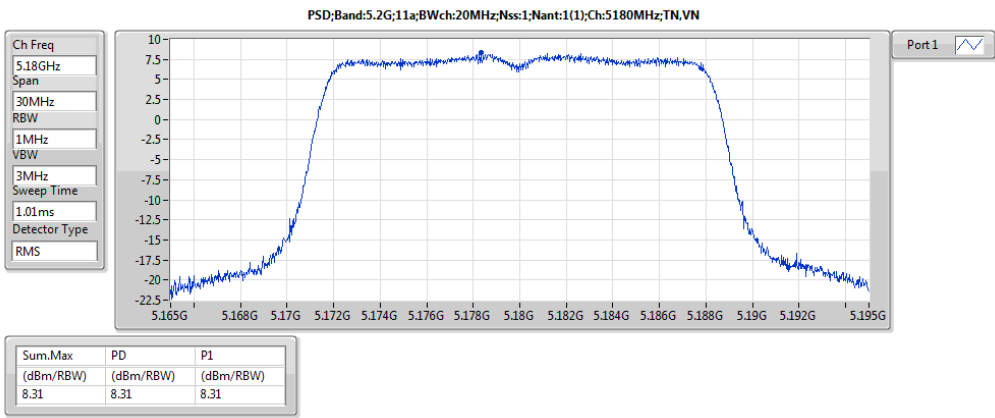
**Power Spectral Density  
Summary**

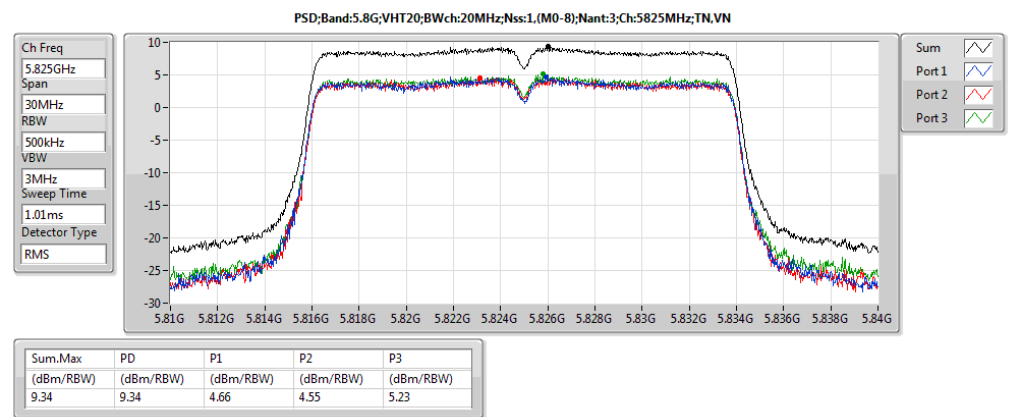
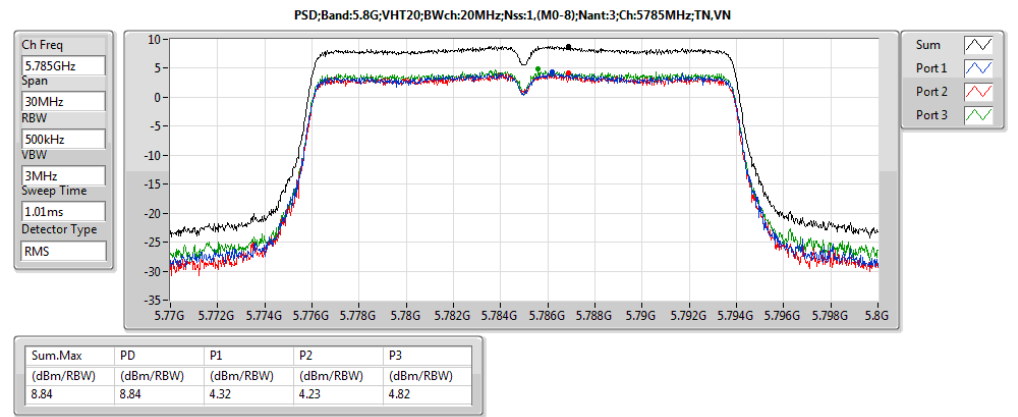
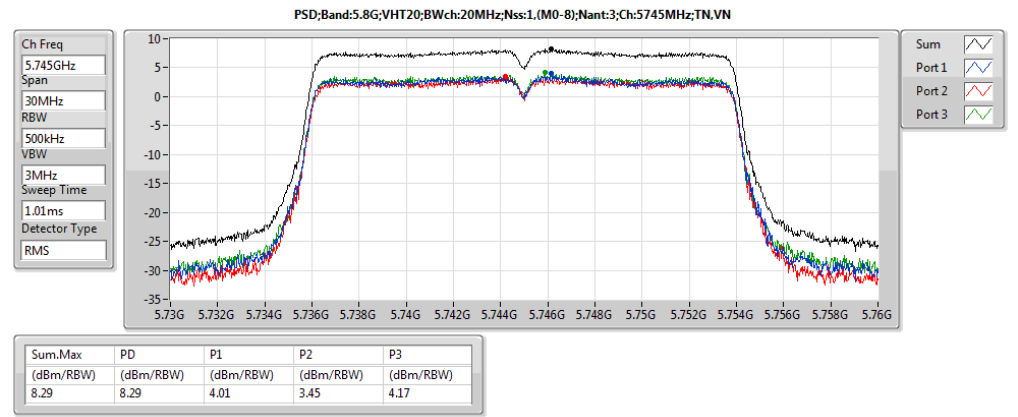
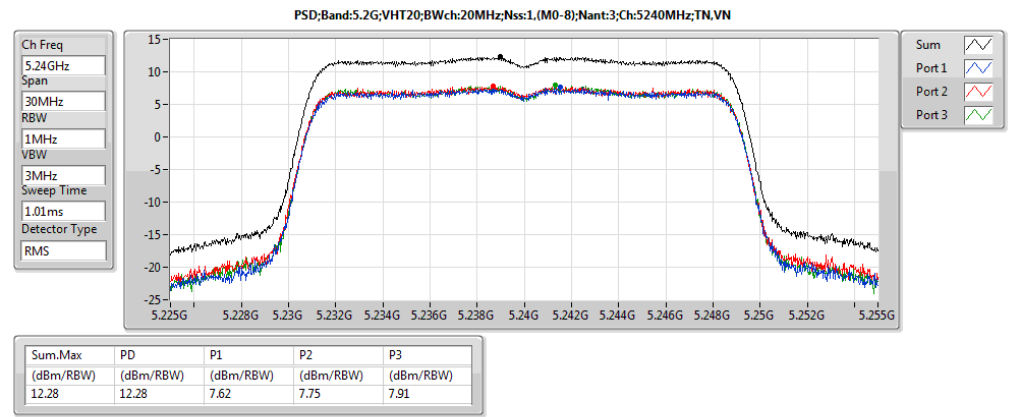
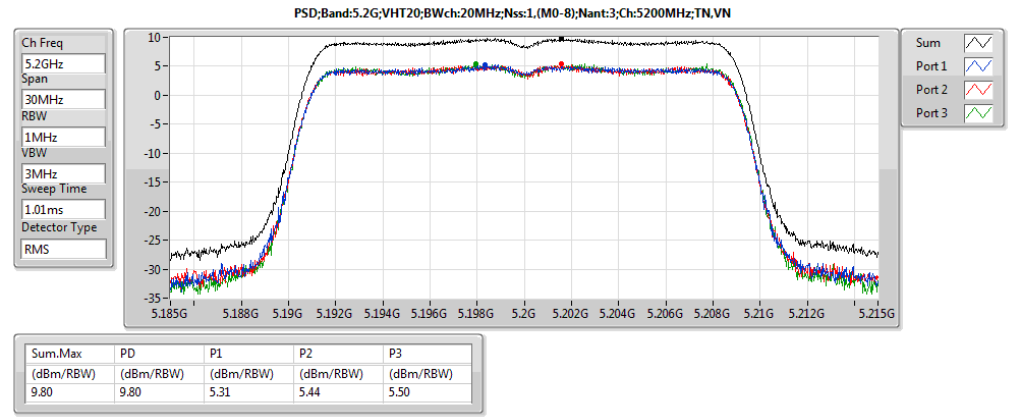
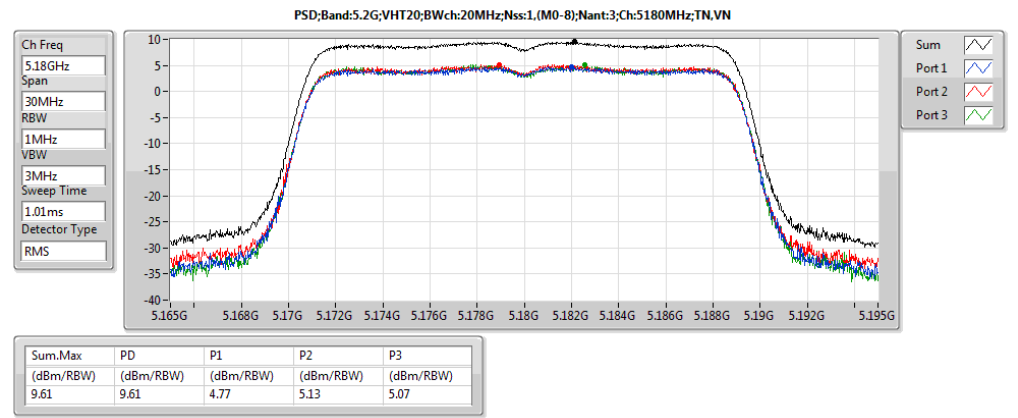
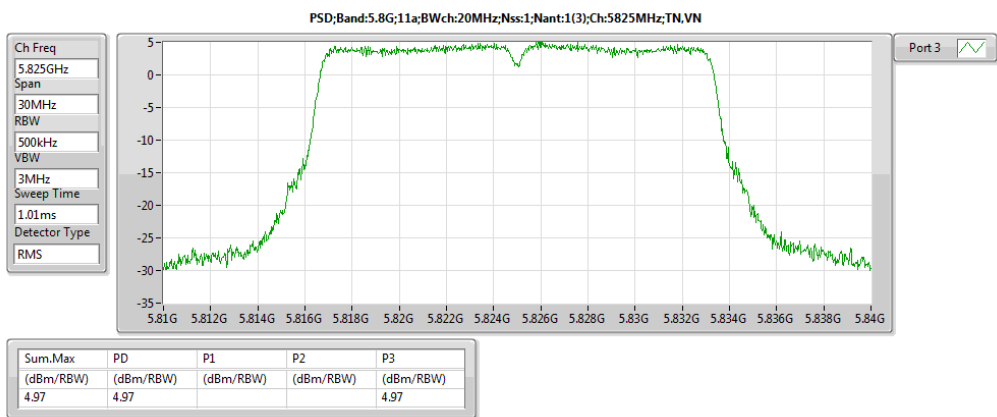
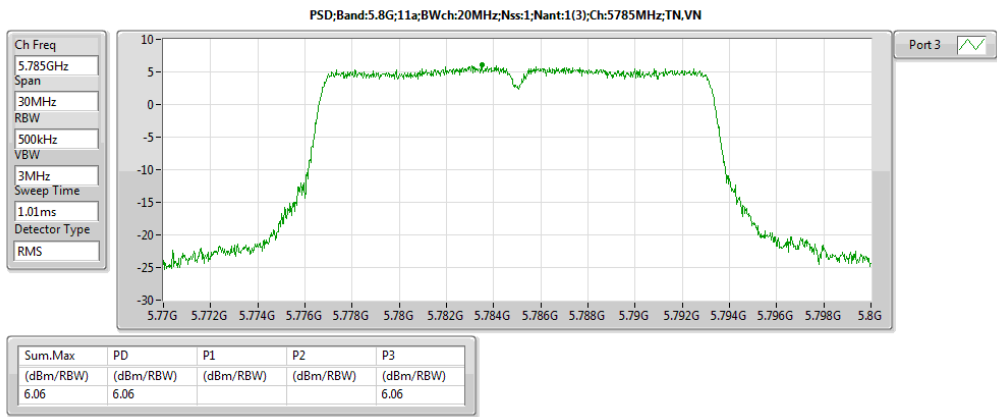
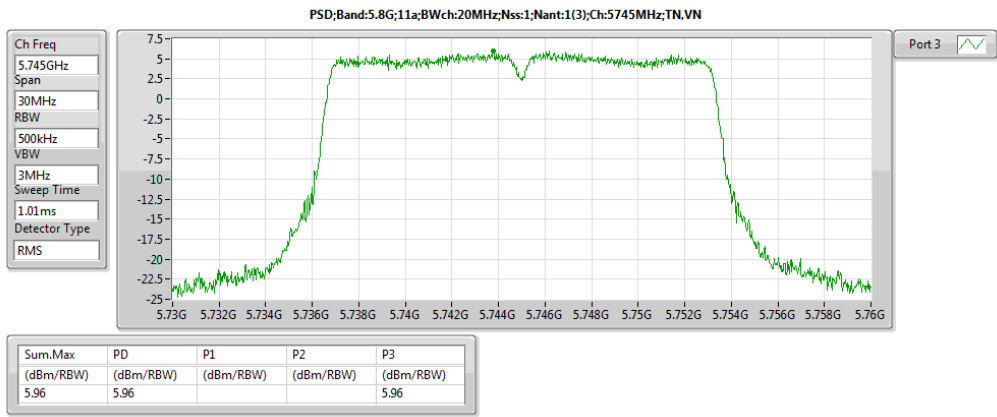
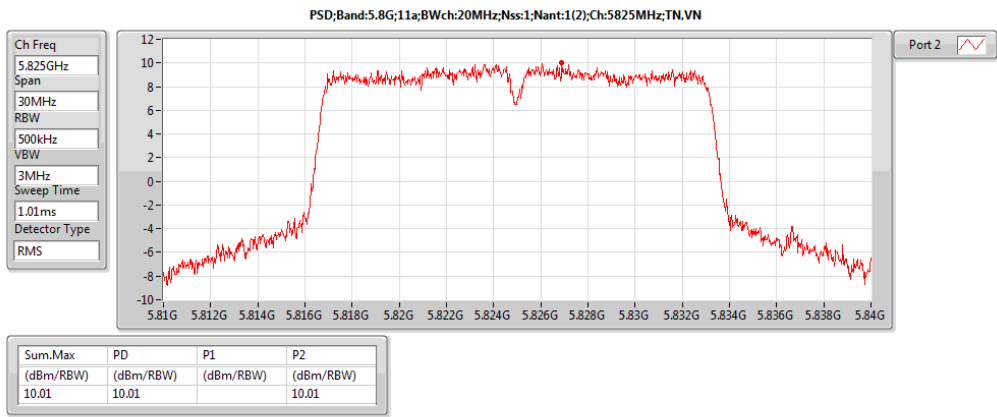
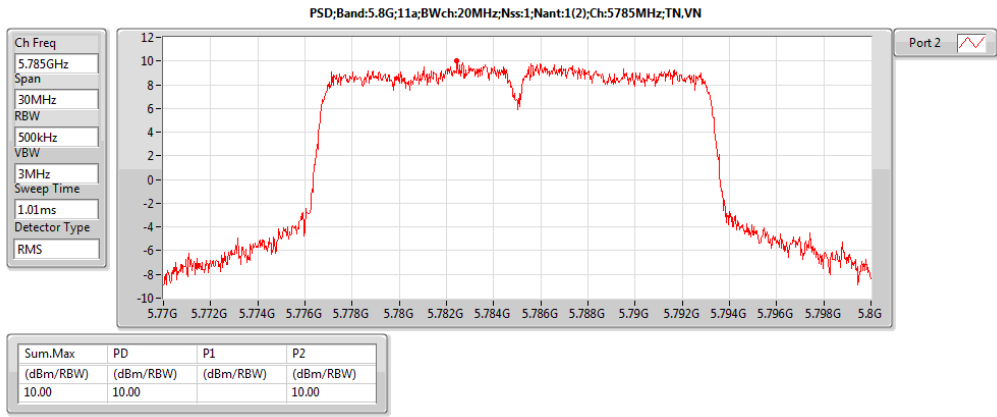
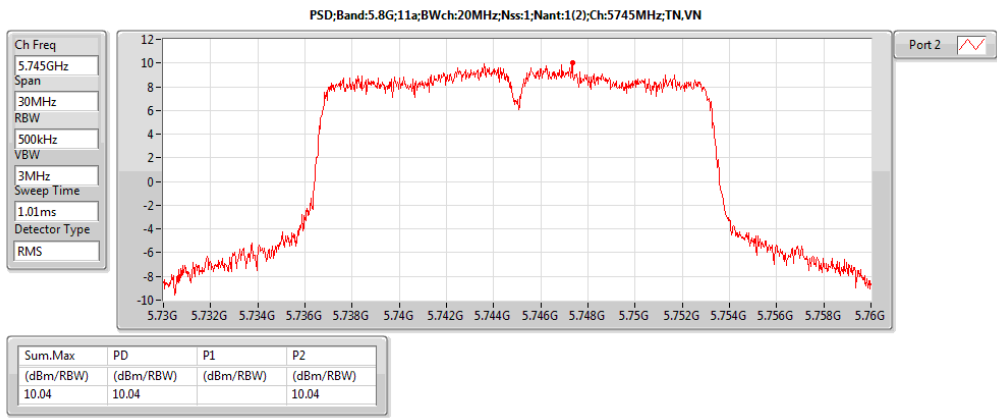
Mode	PD (dBm/RBW)	EIRP.PD (dBm/RBW)
5.2G:11a:20:1;1(1)	11.67	15.37
5.2G:11a:20:1;1(2)	11.29	14.99
5.2G:11a:20:1;1(3)	11.69	15.39
5.8G:11a:20:1;1(1)	6.60	10.30
5.8G:11a:20:1;1(2)	10.04	13.74
5.8G:11a:20:1;1(3)	6.06	9.76
5.2G:VHT20:20:1,(M0-8);3	12.28	20.75
5.8G:VHT20:20:1,(M0-8);3	9.34	17.81
5.2G:VHT40:40:1,(M0-9);3	8.98	17.45
5.8G:VHT40:40:1,(M0-9);3	6.93	15.40
5.2G:VHT80:80:1,(M0-9);3	0.54	9.01
5.8G:VHT80:80:1,(M0-9);3	3.19	11.66

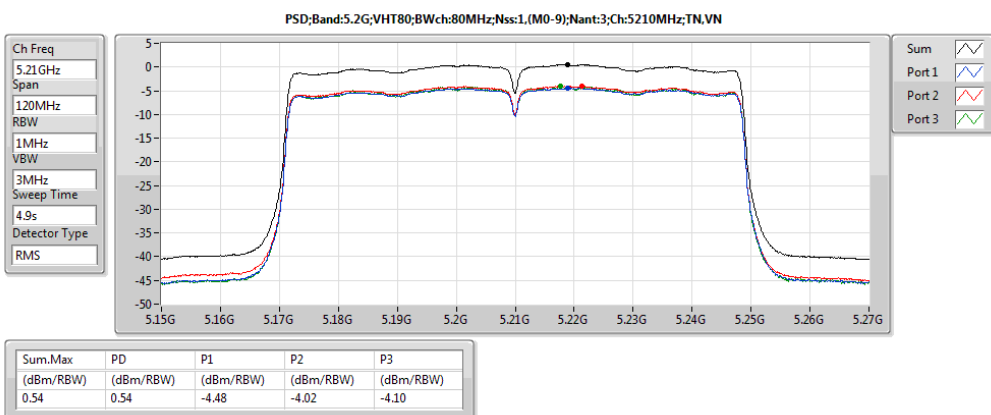
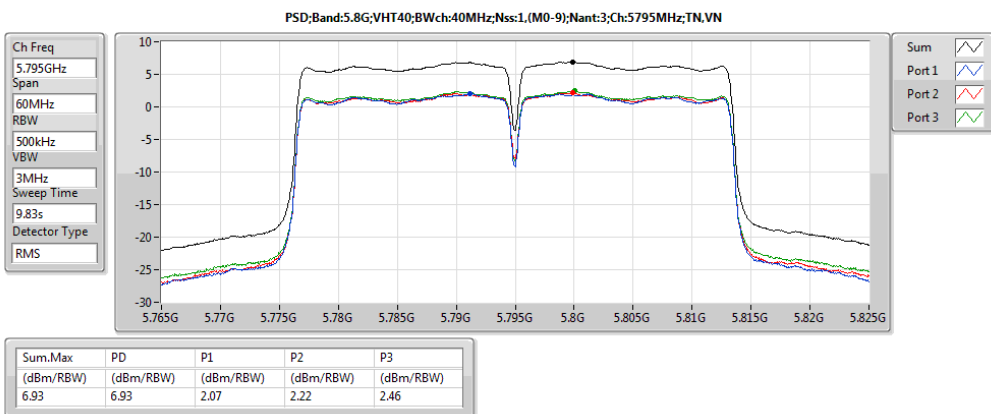
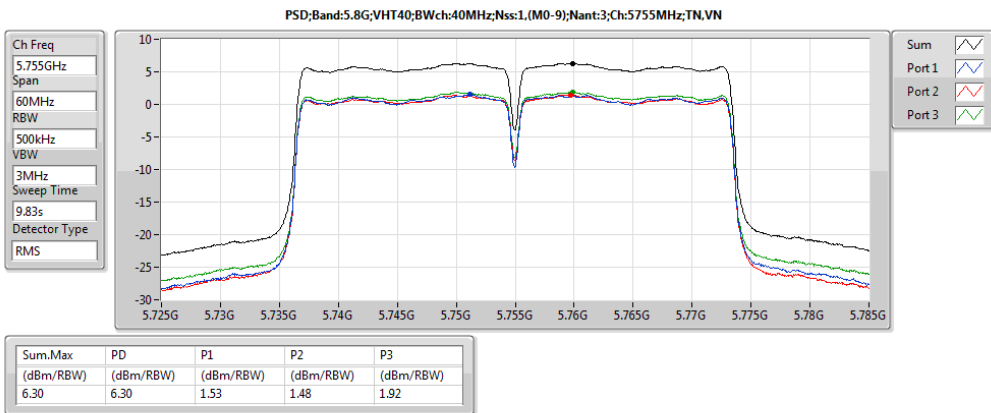
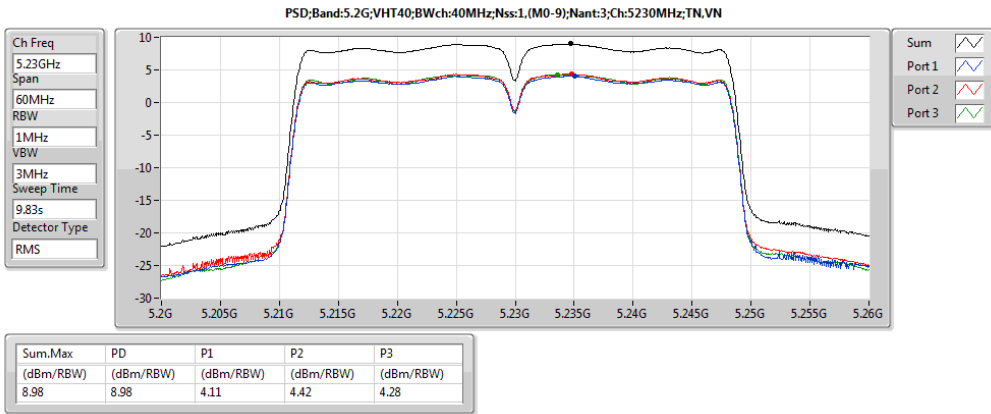
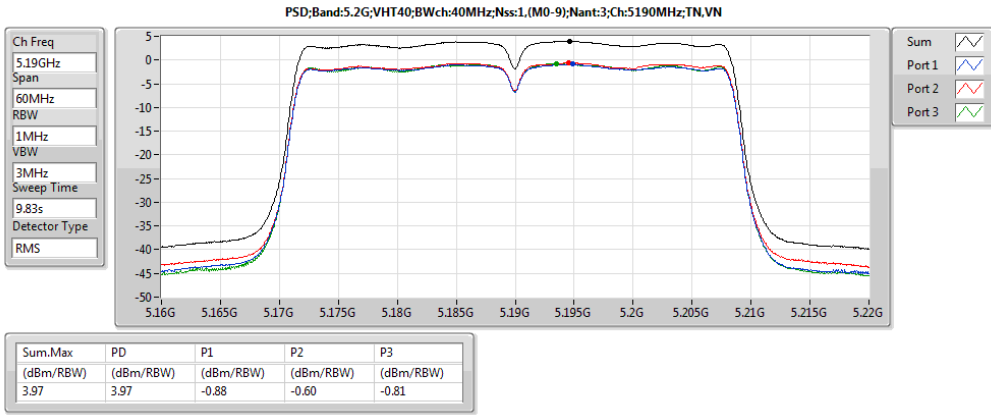
Result

Mode	Result	Meas.RBW (Hz)	Lim.RBW (Hz)	BWCF (dB)	DG (dBi)	Sum.Max (dBm/RBW)	PD (dBm/RBW)	PD.Limit (dBm/RBW)	EIRP.PD (dBm/RBW)	EIRP.PD.Li m (dBm/RBW)	P1 (dBm/RBW)	P2 (dBm/RBW)	P3 (dBm/RBW)
5.2G;11a;20;1;1(1);5180;L;TN,VN	Pass	1M	1M	0.00	3.70	8.31	8.31	17.00	12.01	Inf	8.31	-	-
5.2G;11a;20;1;1(1);5200;M;TN,VN	Pass	1M	1M	0.00	3.70	8.82	8.82	17.00	12.52	Inf	8.82	-	-
5.2G;11a;20;1;1(1);5240;H;TN,VN	Pass	1M	1M	0.00	3.70	11.67	11.67	17.00	15.37	Inf	11.67	-	-
5.2G;11a;20;1;1(2);5180;L;TN,VN	Pass	1M	1M	0.00	3.70	8.00	8.00	17.00	11.70	Inf	-	8.00	-
5.2G;11a;20;1;1(2);5200;M;TN,VN	Pass	1M	1M	0.00	3.70	8.01	8.01	17.00	11.71	Inf	-	8.01	-
5.2G;11a;20;1;1(2);5240;H;TN,VN	Pass	1M	1M	0.00	3.70	11.29	11.29	17.00	14.99	Inf	-	11.29	-
5.2G;11a;20;1;1(3);5180;L;TN,VN	Pass	1M	1M	0.00	3.70	10.83	10.83	17.00	14.53	Inf	-	-	10.83
5.2G;11a;20;1;1(3);5200;M;TN,VN	Pass	1M	1M	0.00	3.70	11.45	11.45	17.00	15.15	Inf	-	-	11.45
5.2G;11a;20;1;1(3);5240;H;TN,VN	Pass	1M	1M	0.00	3.70	11.69	11.69	17.00	15.39	Inf	-	-	11.69
5.8G;11a;20;1;1(1);5745;L;TN,VN	Pass	500k	500k	0.00	3.70	5.44	5.44	30.00	9.14	36.00	5.44	-	-
5.8G;11a;20;1;1(1);5785;M;TN,VN	Pass	500k	500k	0.00	3.70	5.93	5.93	30.00	9.63	36.00	5.93	-	-
5.8G;11a;20;1;1(1);5825;H;TN,VN	Pass	500k	500k	0.00	3.70	6.60	6.60	30.00	10.30	36.00	6.60	-	-
5.8G;11a;20;1;1(2);5745;L;TN,VN	Pass	500k	500k	0.00	3.70	10.04	10.04	30.00	13.74	36.00	-	10.04	-
5.8G;11a;20;1;1(2);5785;M;TN,VN	Pass	500k	500k	0.00	3.70	10.00	10.00	30.00	13.70	36.00	-	10.00	-
5.8G;11a;20;1;1(2);5825;H;TN,VN	Pass	500k	500k	0.00	3.70	10.01	10.01	30.00	13.71	36.00	-	10.01	-
5.8G;11a;20;1;1(3);5745;L;TN,VN	Pass	500k	500k	0.00	3.70	5.96	5.96	30.00	9.66	36.00	-	-	5.96
5.8G;11a;20;1;1(3);5785;M;TN,VN	Pass	500k	500k	0.00	3.70	6.06	6.06	30.00	9.76	36.00	-	-	6.06
5.8G;11a;20;1;1(3);5825;H;TN,VN	Pass	500k	500k	0.00	3.70	4.97	4.97	30.00	8.67	36.00	-	-	4.97
5.2G;VHT20;20;1;(M0-8);3;5180;L;TN,VN	Pass	1M	1M	0.00	8.47	9.61	9.61	14.53	18.08	Inf	4.77	5.13	5.07
5.2G;VHT20;20;1;(M0-8);3;5200;M;TN,VN	Pass	1M	1M	0.00	8.47	9.80	9.80	14.53	18.27	Inf	5.31	5.44	5.50
5.2G;VHT20;20;1;(M0-8);3;5240;H;TN,VN	Pass	1M	1M	0.00	8.47	12.28	12.28	14.53	20.75	Inf	7.62	7.75	7.91
5.8G;VHT20;20;1;(M0-8);3;5745;L;TN,VN	Pass	500k	500k	0.00	8.47	8.29	8.29	27.53	16.76	33.53	4.01	3.45	4.17
5.8G;VHT20;20;1;(M0-8);3;5785;M;TN,VN	Pass	500k	500k	0.00	8.47	8.84	8.84	27.53	17.31	33.53	4.32	4.23	4.82
5.8G;VHT20;20;1;(M0-8);3;5825;H;TN,VN	Pass	500k	500k	0.00	8.47	9.34	9.34	27.53	17.81	33.53	4.66	4.55	5.23
5.2G;VHT40;40;1;(M0-9);3;5190;L;TN,VN	Pass	1M	1M	0.00	8.47	3.97	3.97	14.53	12.44	Inf	-0.88	-0.60	-0.81
5.2G;VHT40;40;1;(M0-9);3;5230;H;TN,VN	Pass	1M	1M	0.00	8.47	8.98	8.98	14.53	17.45	Inf	4.11	4.42	4.28
5.8G;VHT40;40;1;(M0-9);3;5755;L;TN,VN	Pass	500k	500k	0.00	8.47	6.30	6.30	27.53	14.77	33.53	1.53	1.48	1.92
5.8G;VHT40;40;1;(M0-9);3;5795;H;TN,VN	Pass	500k	500k	0.00	8.47	6.93	6.93	27.53	15.40	33.53	2.07	2.22	2.46
5.2G;VHT80;80;1;(M0-9);3;5210;S;TN,VN	Pass	1M	1M	0.00	8.47	0.54	0.54	14.53	9.01	Inf	-4.48	-4.02	-4.10
5.8G;VHT80;80;1;(M0-9);3;5775;S;TN,VN	Pass	500k	500k	0.00	8.47	3.19	3.19	27.53	11.66	33.53	-1.62	-1.77	-1.28









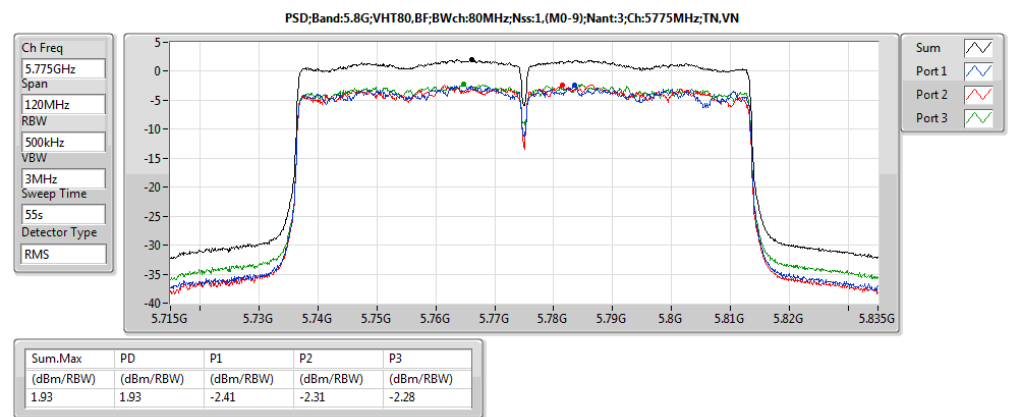
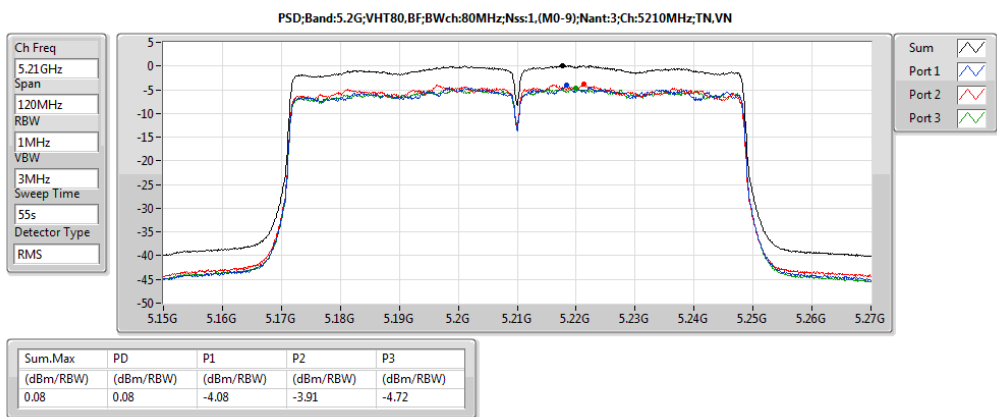
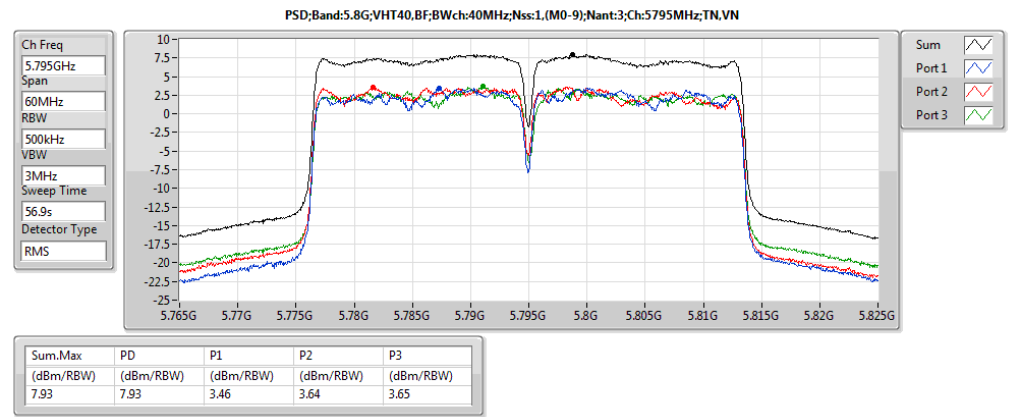
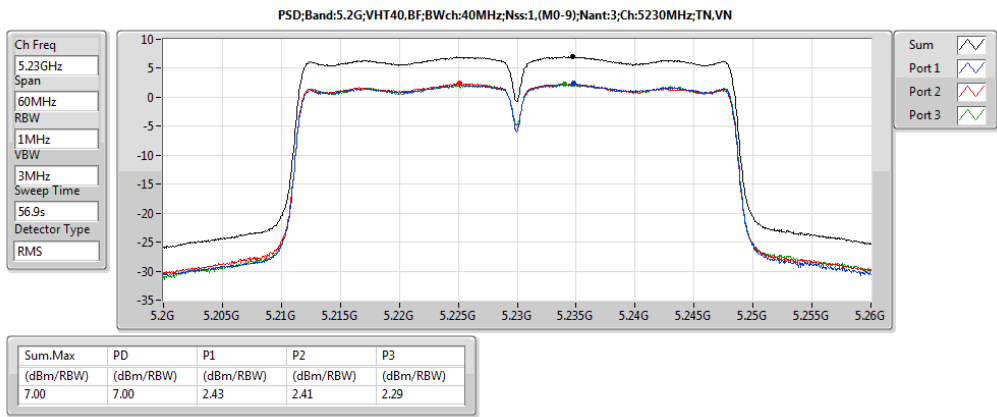
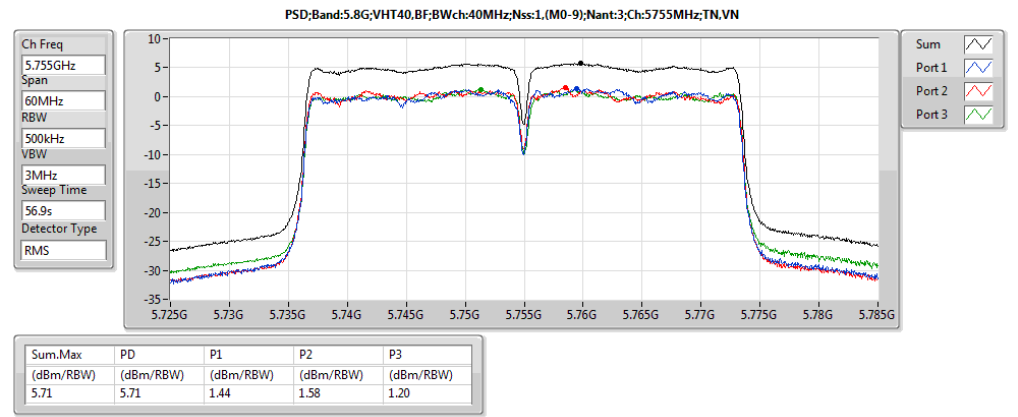
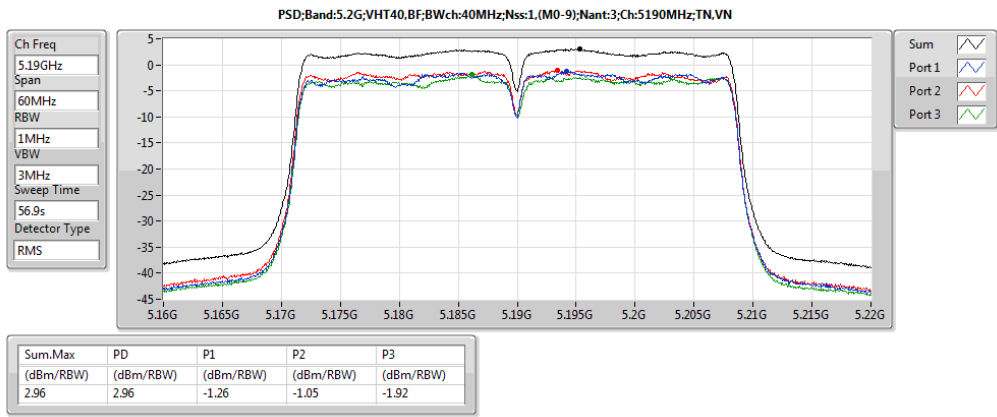
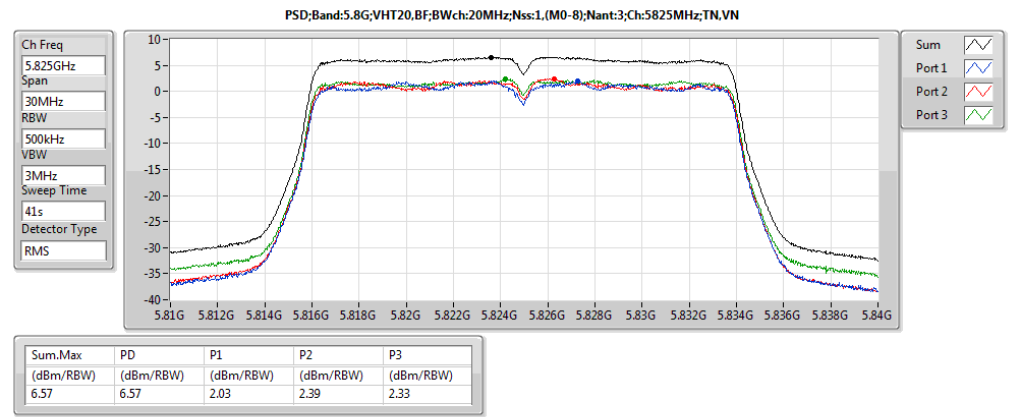
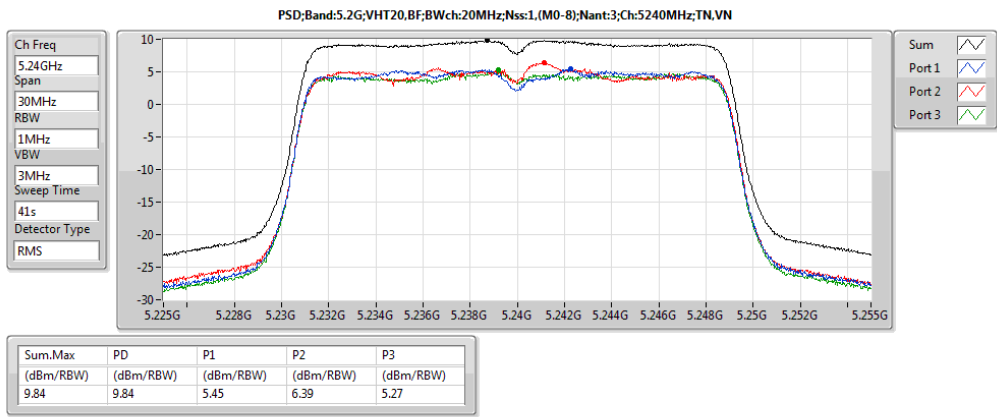
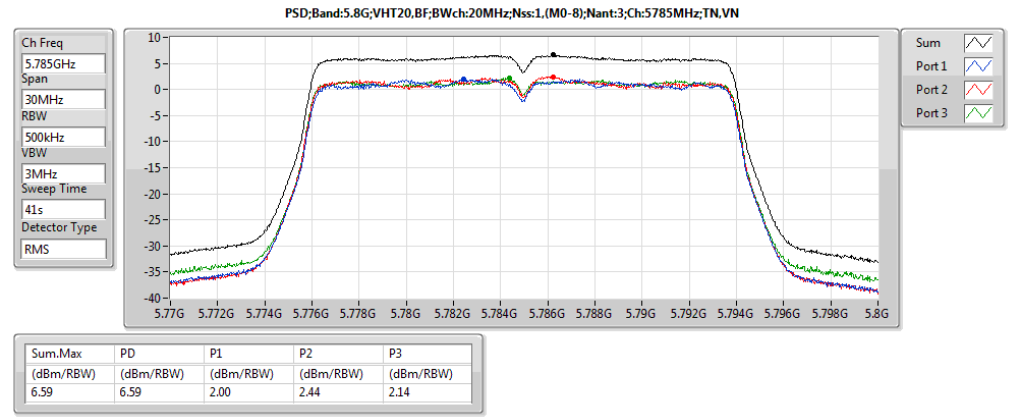
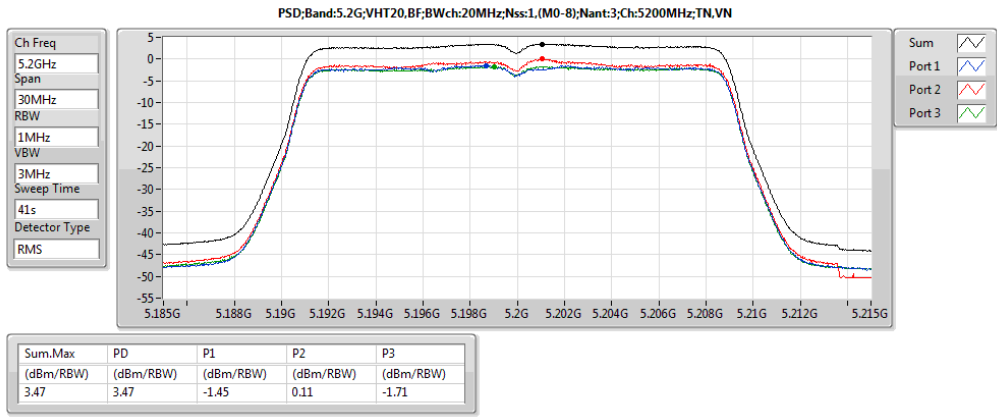
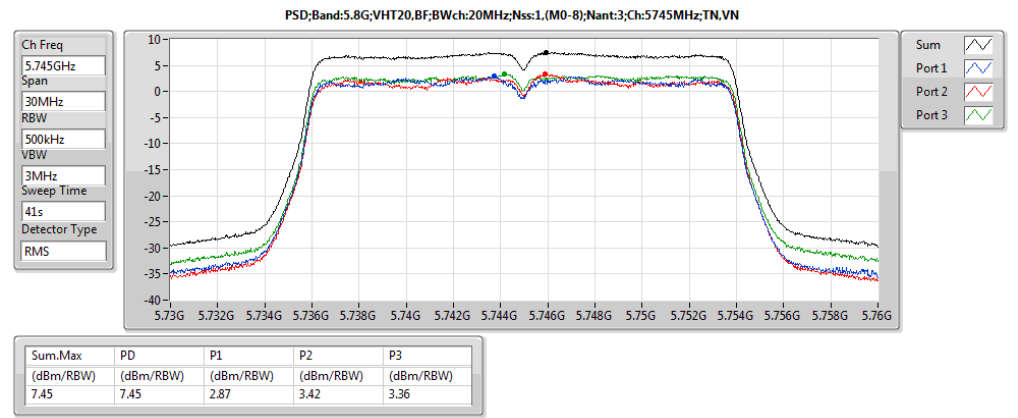
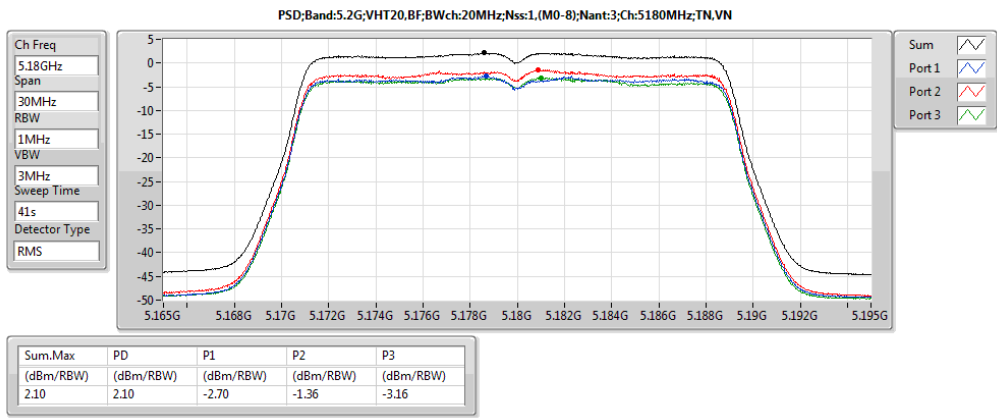


**Power Spectral Density for TxBF  
Summary**

Mode	PD (dBm/RBW)	EIRP.PD (dBm/RBW)
5.2G:VHT20,BF:20:1,(M0-8):3	9.84	18.31
5.2G:VHT40,BF:40:1,(M0-9):3	7.00	15.47
5.2G:VHT80,BF:80:1,(M0-9):3	0.08	8.55
5.8G:VHT20,BF:20:1,(M0-8):3	7.45	15.92
5.8G:VHT40,BF:40:1,(M0-9):3	7.93	16.40
5.8G:VHT80,BF:80:1,(M0-9):3	1.93	10.41

Result

Mode	Result	Meas.RBW (Hz)	Lim.RBW (Hz)	BWCF (dB)	DG (dBi)	Sum.Max (dBm/RBW)	PD (dBm/RBW)	PD.Limit (dBm/RBW)	EIRP.PD (dBm/RBW)	EIRP.PD.Li m (dBm/RBW)	P1 (dBm/RBW)	P2 (dBm/RBW)	P3 (dBm/RBW)
5.2G;VHT20,BF;20;1,(M0-8);3;5180;L;TN,VN	Pass	1M	1M	0.00	8.47	2.10	2.10	14.53	10.57	Inf	-2.70	-1.36	-3.16
5.2G;VHT20,BF;20;1,(M0-8);3;5200;M;TN,VN	Pass	1M	1M	0.00	8.47	3.47	3.47	14.53	11.94	Inf	-1.45	0.11	-1.71
5.2G;VHT20,BF;20;1,(M0-8);3;5240;H;TN,VN	Pass	1M	1M	0.00	8.47	9.84	9.84	14.53	18.31	Inf	5.45	6.39	5.27
5.2G;VHT40,BF;40;1,(M0-9);3;5190;L;TN,VN	Pass	1M	1M	0.00	8.47	2.96	2.96	14.53	11.43	Inf	-1.26	-1.05	-1.92
5.2G;VHT40,BF;40;1,(M0-9);3;5230;H;TN,VN	Pass	1M	1M	0.00	8.47	7.00	7.00	14.53	15.47	Inf	2.43	2.41	2.29
5.2G;VHT80,BF;80;1,(M0-9);3;5210;S;TN,VN	Pass	1M	1M	0.00	8.47	0.08	0.08	14.53	8.55	Inf	-4.08	-3.91	-4.72
5.8G;VHT20,BF;20;1,(M0-8);3;5745;L;TN,VN	Pass	500k	500k	0.00	8.47	7.45	7.45	27.53	15.92	33.53	2.87	3.42	3.36
5.8G;VHT20,BF;20;1,(M0-8);3;5785;M;TN,VN	Pass	500k	500k	0.00	8.47	6.59	6.59	27.53	15.06	33.53	2.00	2.44	2.14
5.8G;VHT20,BF;20;1,(M0-8);3;5825;H;TN,VN	Pass	500k	500k	0.00	8.47	6.57	6.57	27.53	15.04	33.53	2.03	2.39	2.33
5.8G;VHT40,BF;40;1,(M0-9);3;5755;L;TN,VN	Pass	500k	500k	0.00	8.47	5.71	5.71	27.53	14.18	33.53	1.44	1.58	1.20
5.8G;VHT40,BF;40;1,(M0-9);3;5795;H;TN,VN	Pass	500k	500k	0.00	8.47	7.93	7.93	27.53	16.40	33.53	3.46	3.64	3.65
5.8G;VHT80,BF;80;1,(M0-9);3;5775;S;TN,VN	Pass	500k	500k	0.00	8.47	1.93	1.93	27.53	10.41	33.53	-2.41	-2.31	-2.28





**Transmitter Radiated Bandedge Emissions (with Antenna)**

U-NII 5150-5250MHz Transmitter Radiated Bandedge (with Antenna)										
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
11a (Ant A)	1	5180	3	5149.200	70.10	74	5101.200	52.64	54	V
11a (Ant A)	1	5240	3	5399.280	62.76	74	5399.280	50.48	54	V
11a (Ant B)	1	5180	3	5146.800	70.83	74	5099.200	52.82	54	V
11a (Ant B)	1	5240	3	5403.880	62.44	74	5402.040	50.24	54	V
11a (Ant C)	1	5180	3	5149.900	70.28	74	5150.000	51.30	54	V
11a (Ant C)	1	5240	3	5121.440	59.26	74	5088.320	46.01	54	V
VHT20	3	5180	3	5146.800	65.29	74	5101.600	52.98	54	V
VHT20	3	5240	3	5398.000	64.46	74	5398.000	52.99	54	V
VHT40	3	5190	3	5147.420	70.61	74	5149.940	52.27	54	V
VHT40	3	5230	3	5135.600	66.08	74	5146.400	52.84	54	V
VHT80	3	5210	3	5145.000	67.74	74	5150.000	52.98	54	V

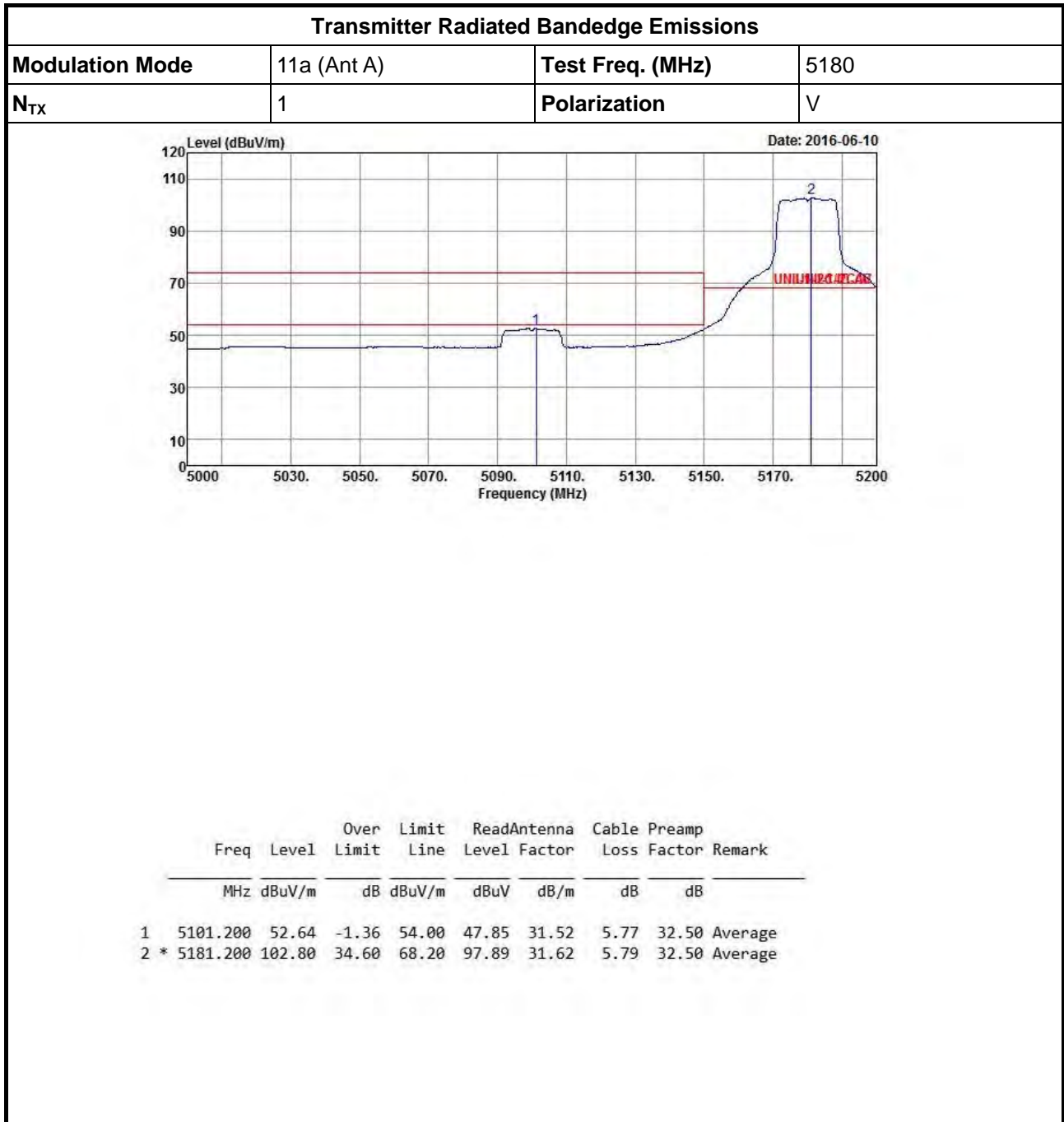
Note 1: Measurement worst emissions of receive antenna polarization.

U-NII 5725-5850MHz Transmitter Radiated Bandedge (with Antenna)							
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Pol.
11a (Ant A)	1	5745	3	5579.200	60.37	68.2	V
11a (Ant A)	1	5825	3	5982.000	63.56	68.2	V
11a (Ant B)	1	5745	3	5582.800	64.29	68.2	V
11a (Ant B)	1	5825	3	5981.000	64.87	68.2	V
11a (Ant C)	1	5745	3	5583.700	59.59	68.2	V
11a (Ant C)	1	5825	3	5985.000	60.12	68.2	V
VHT20	3	5745	3	5984.800	61.72	68.2	V
VHT20	3	5825	3	5984.300	65.40	68.2	V
VHT40	3	5755	3	5926.000	63.04	68.2	V
VHT40	3	5795	3	5961.000	64.01	68.2	V
VHT80	3	5775	3	5634.000	66.30	68.2	V

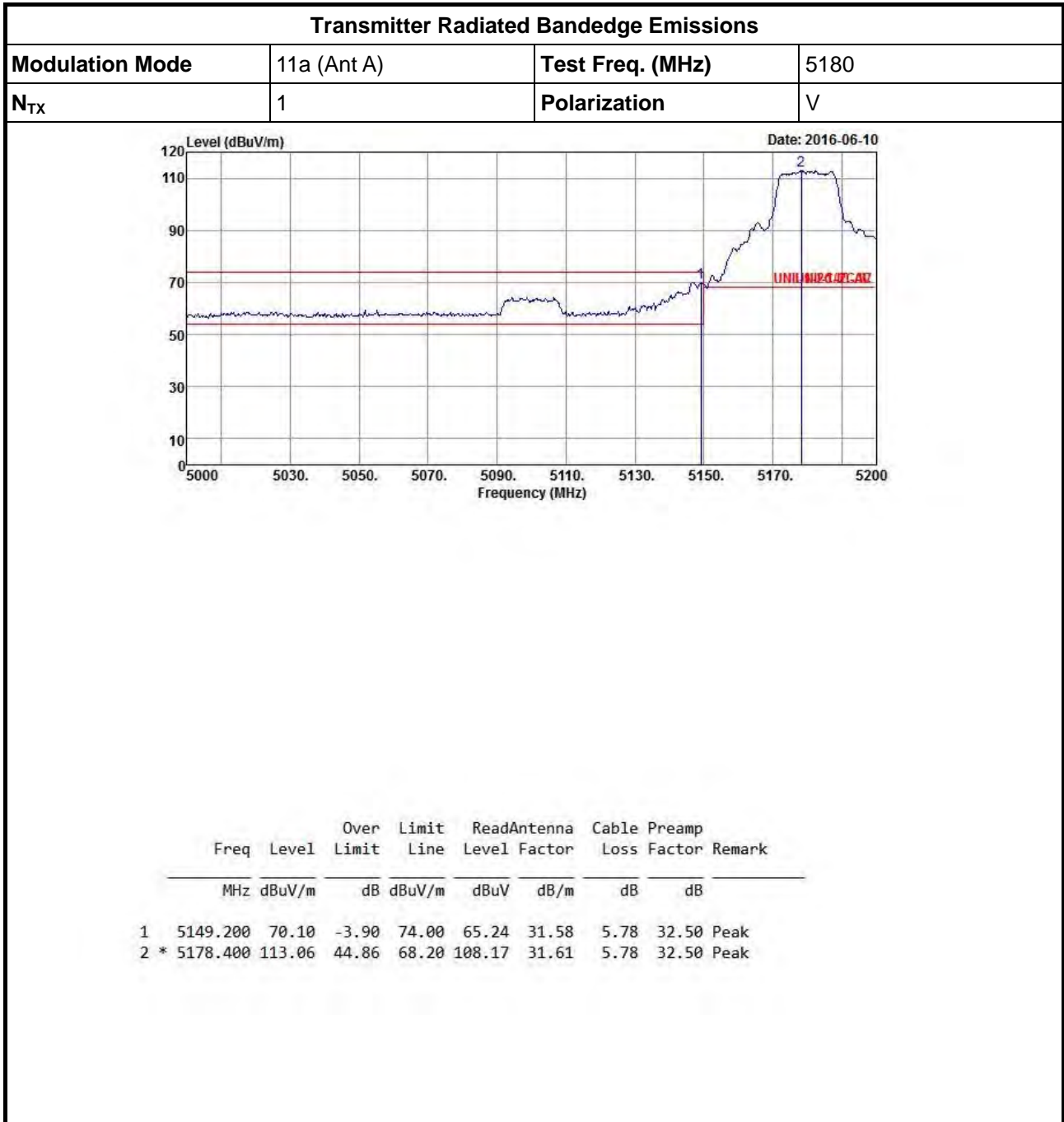
Note 1: Measurement worst emissions of receive antenna polarization.

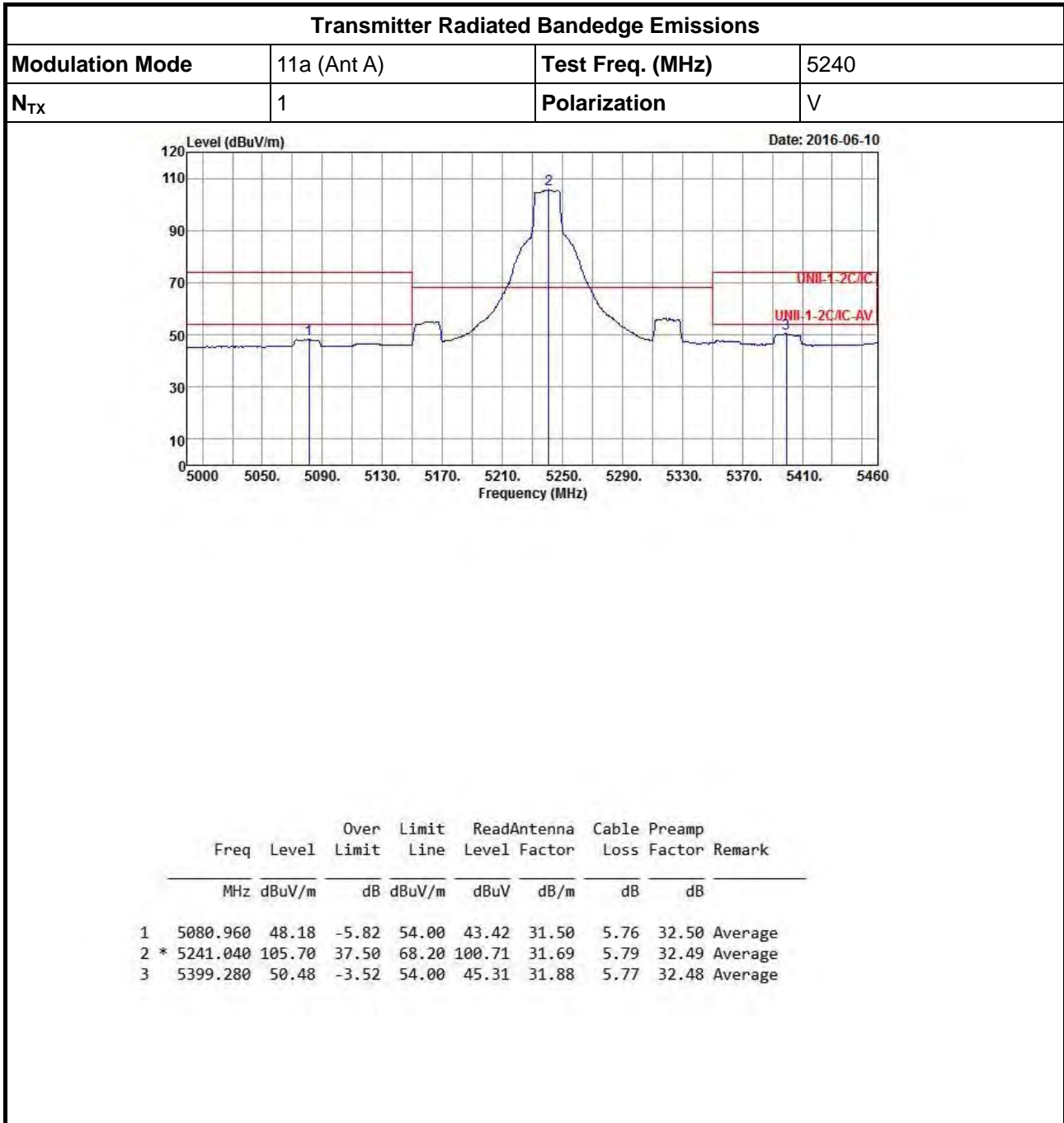


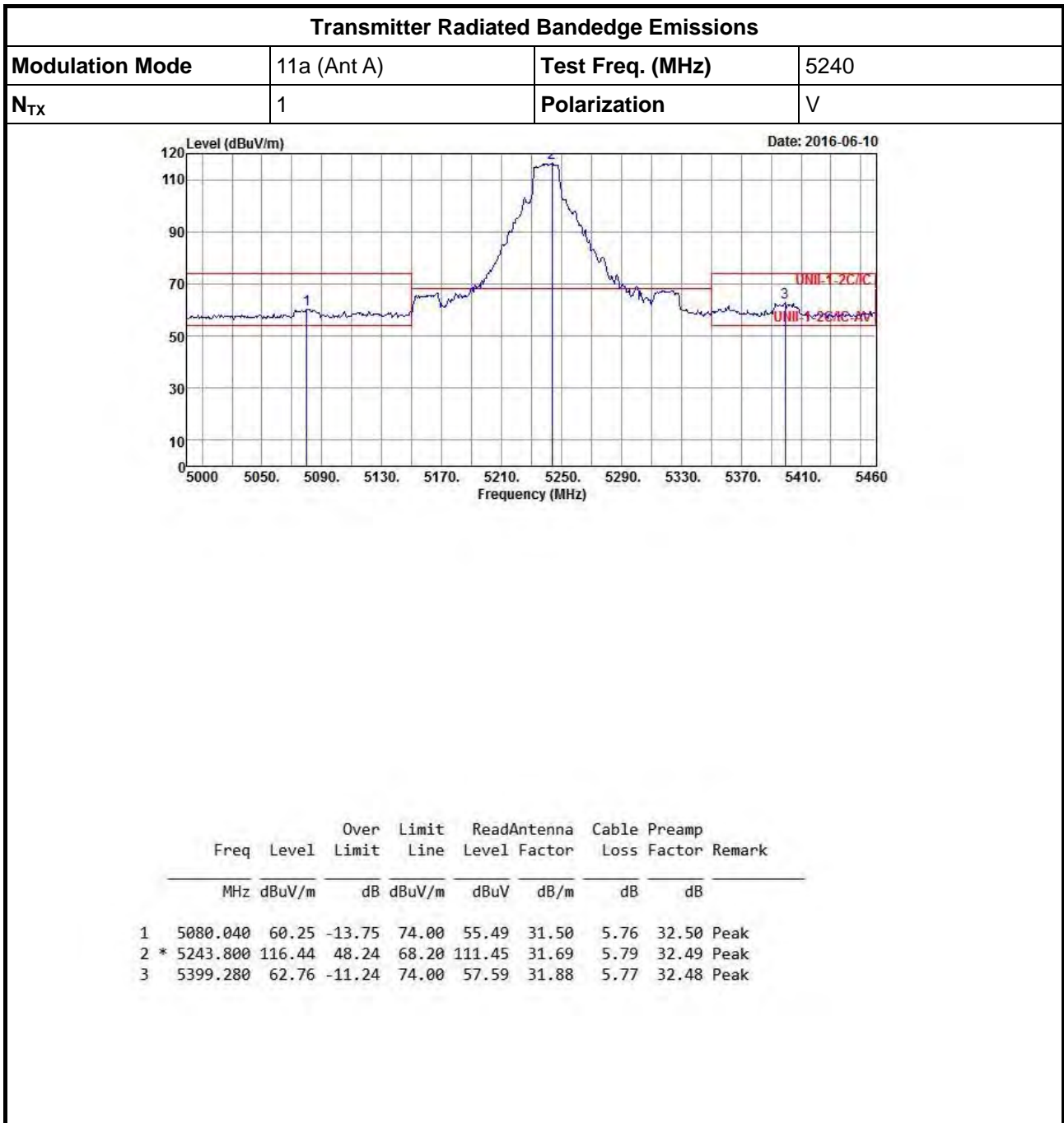
Transmitter Radiated Bandedge Emissions (with Antenna)

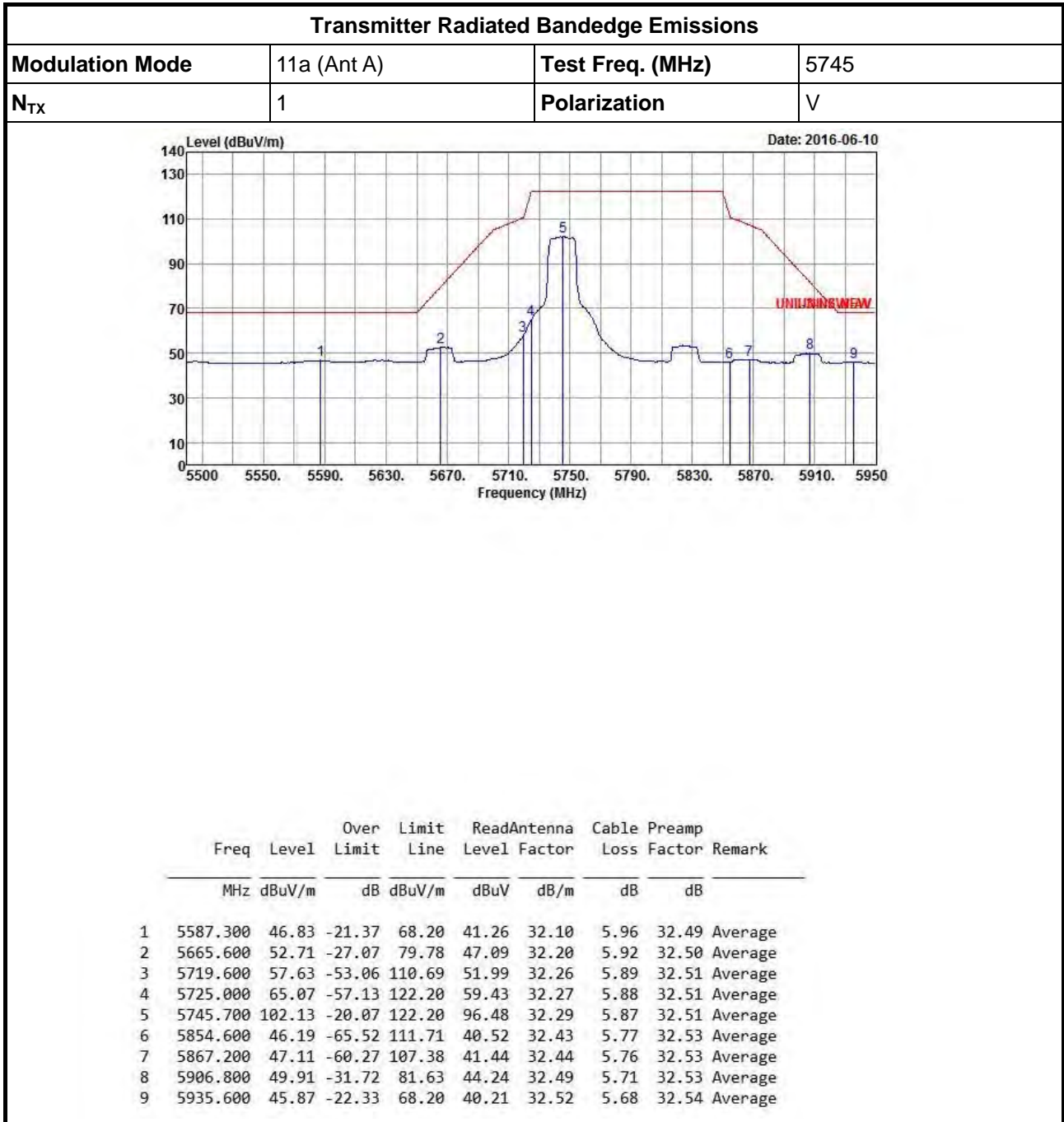


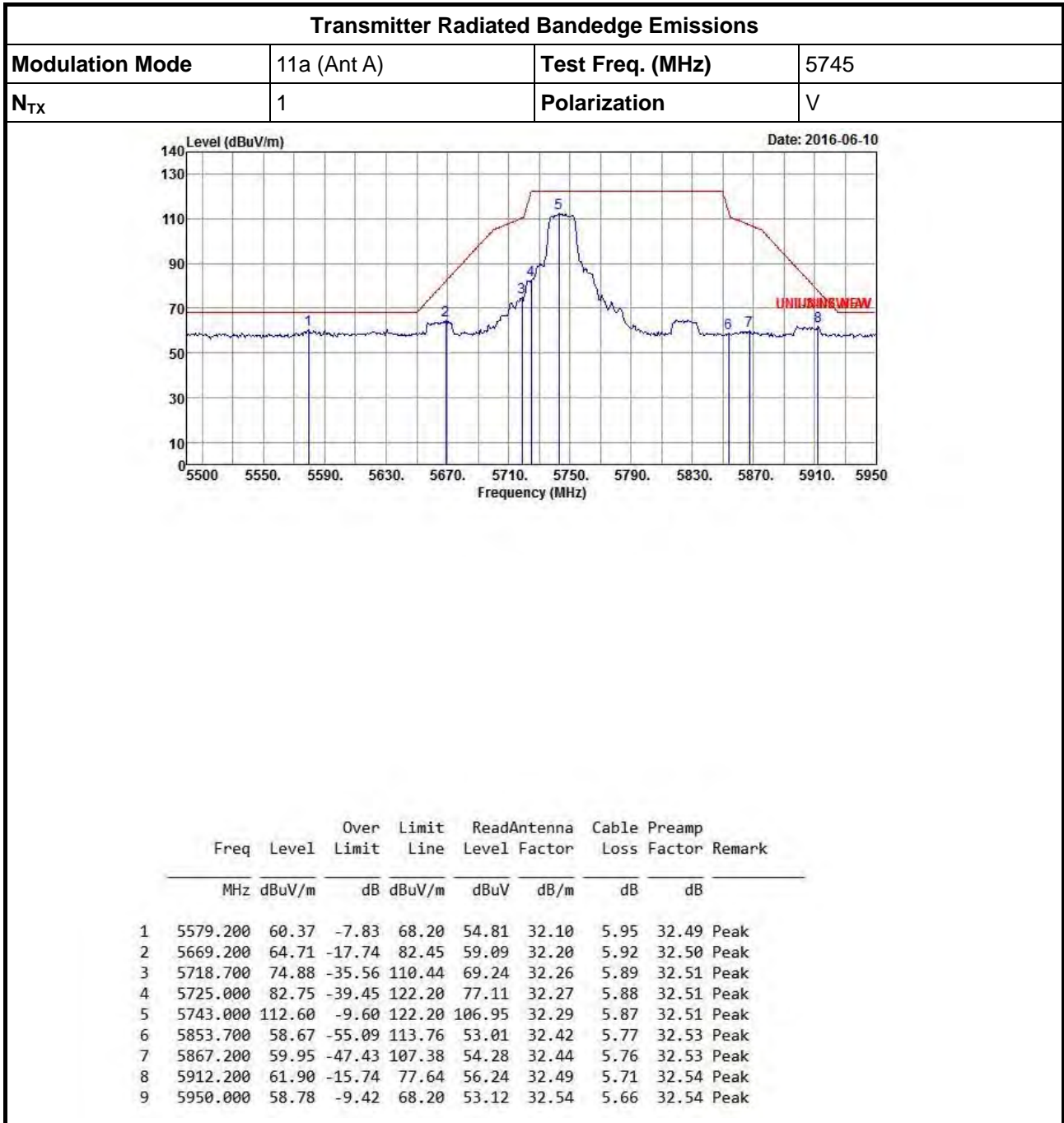


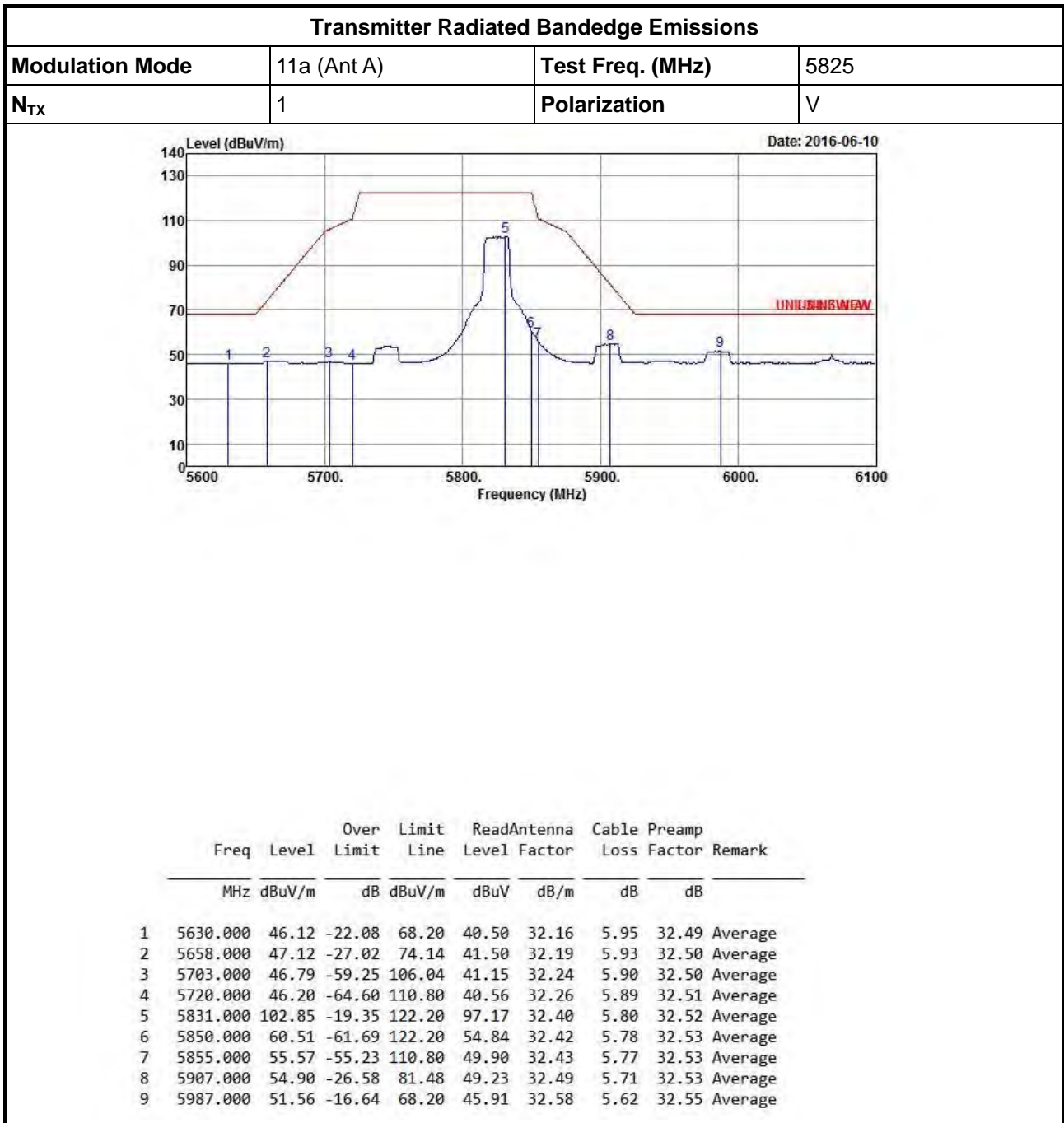


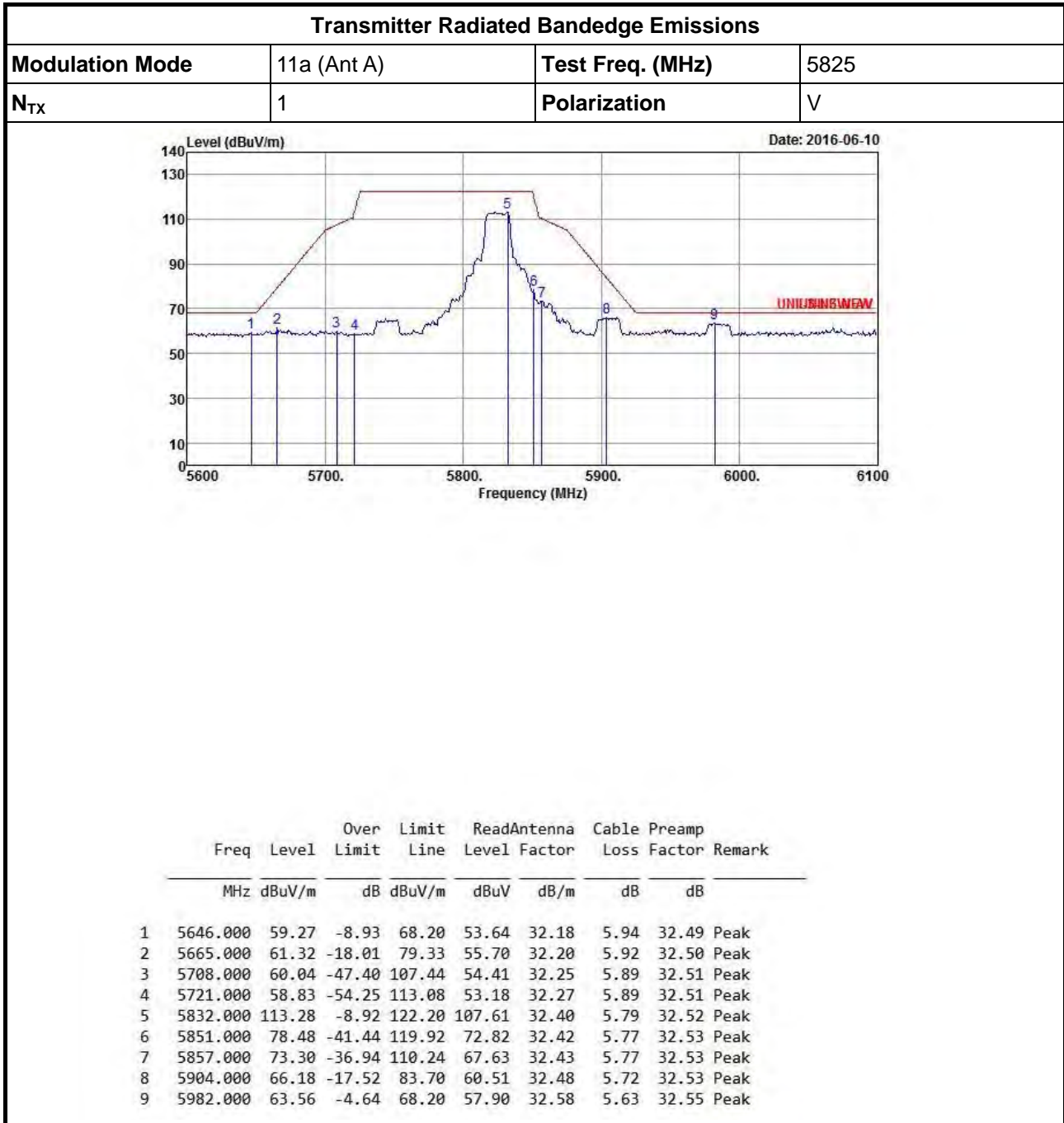


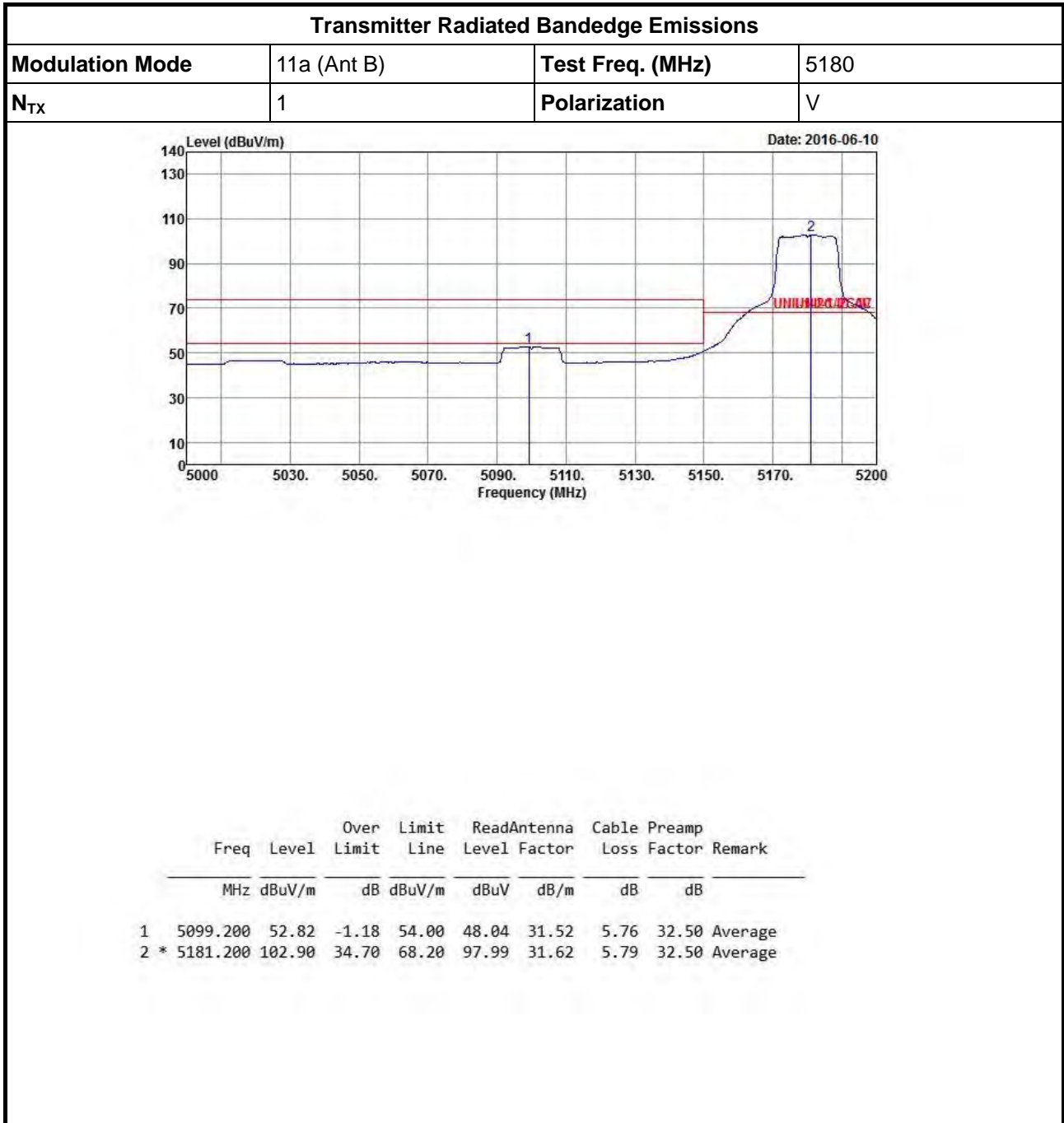




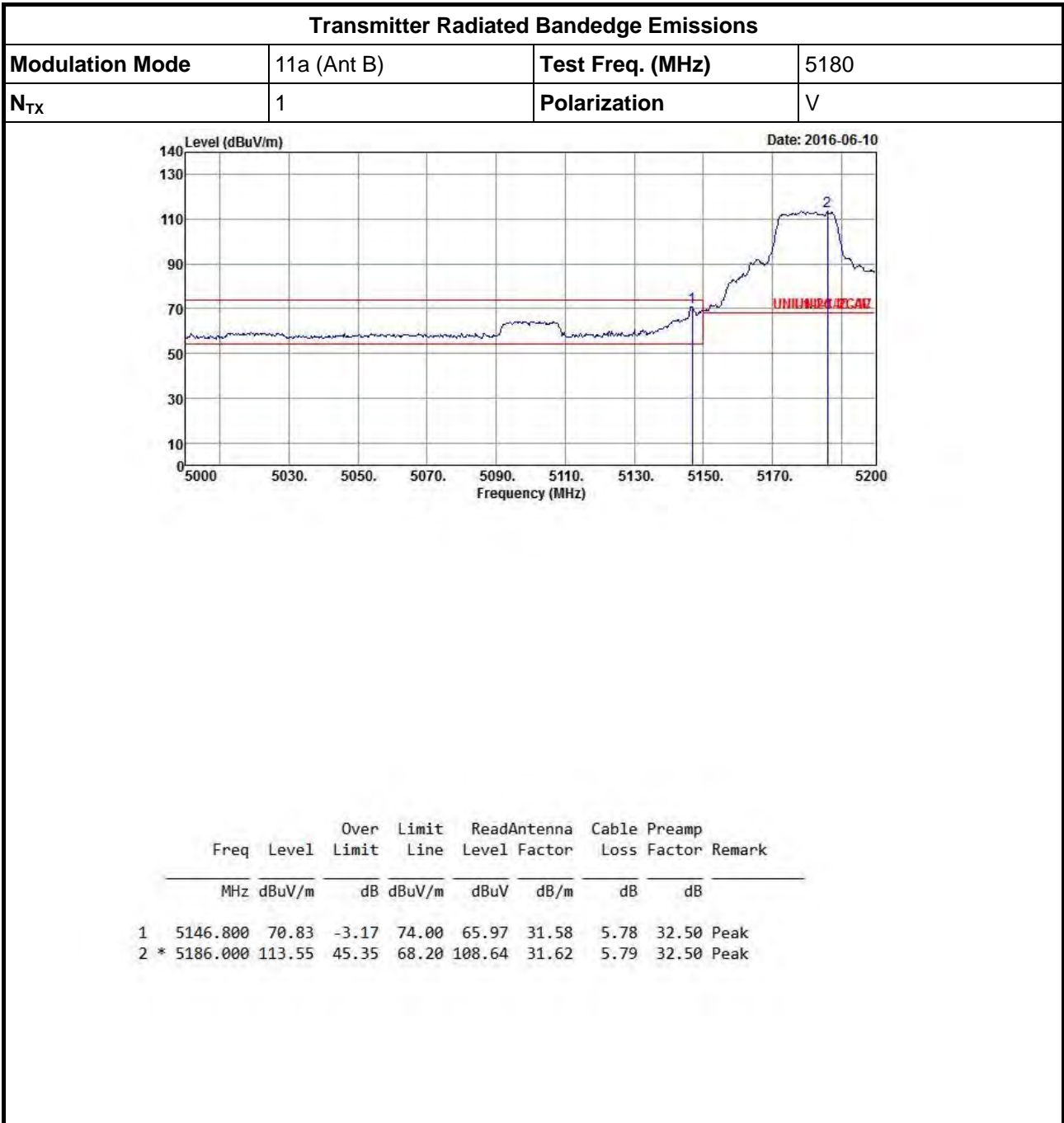


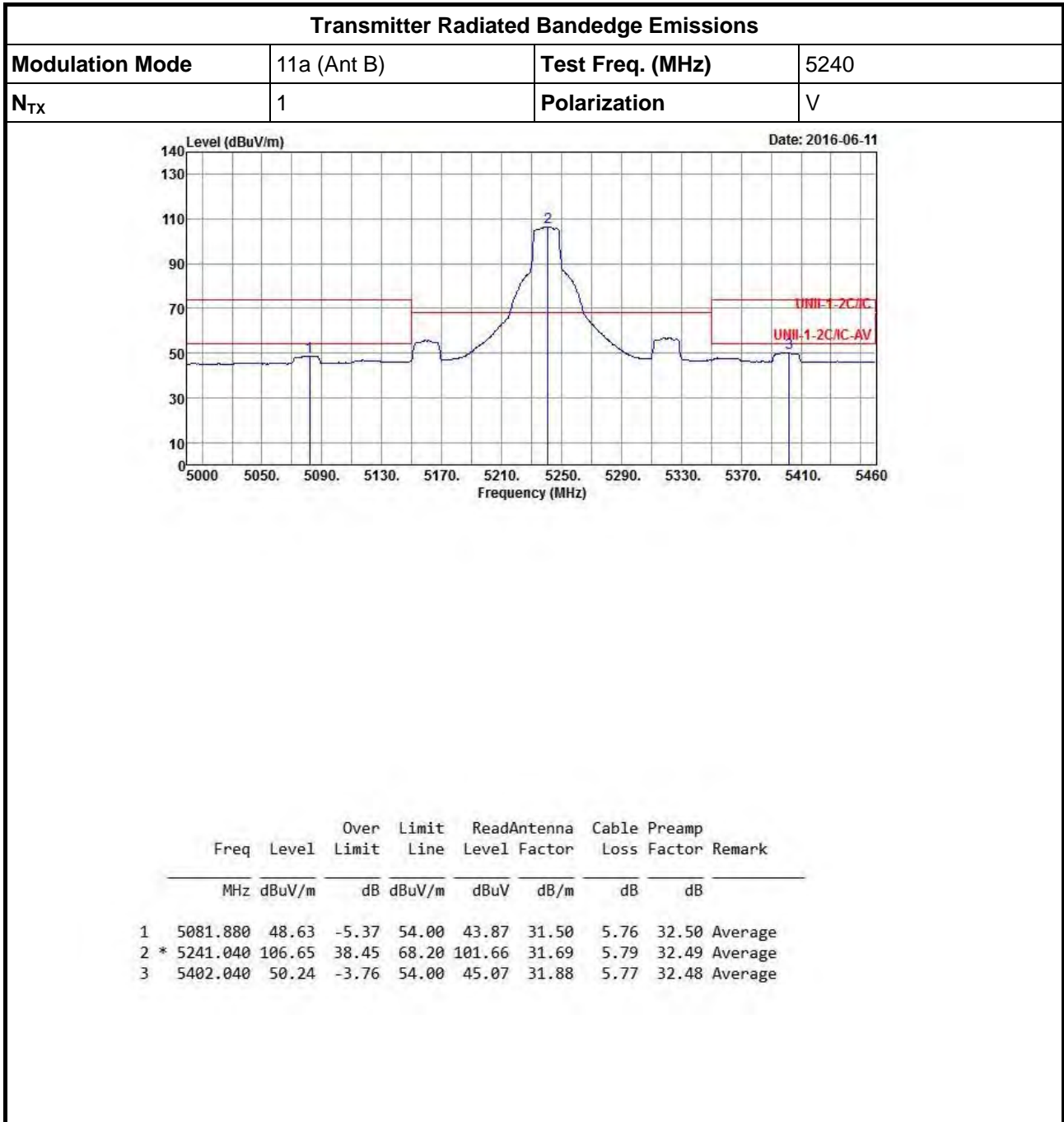


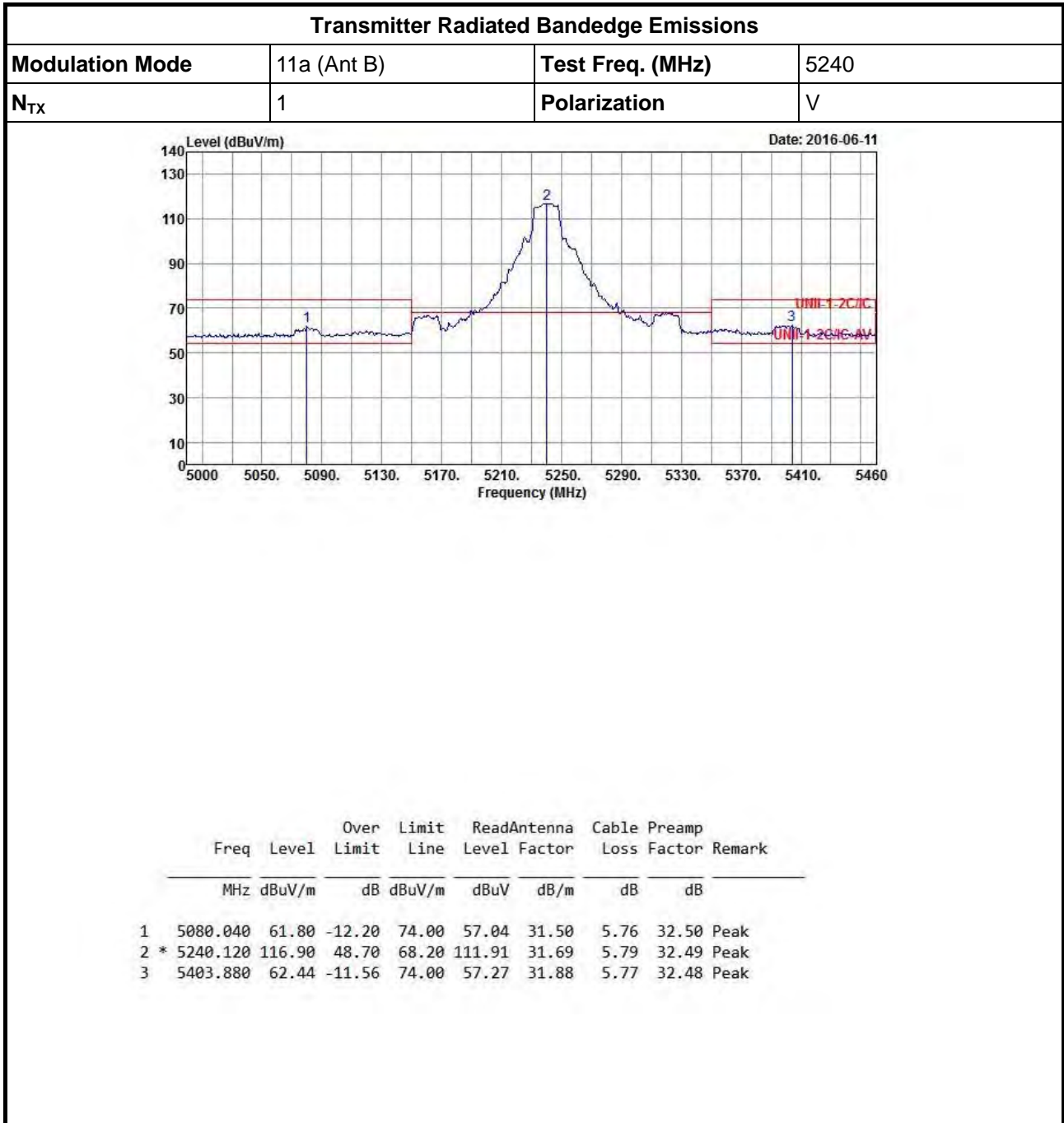


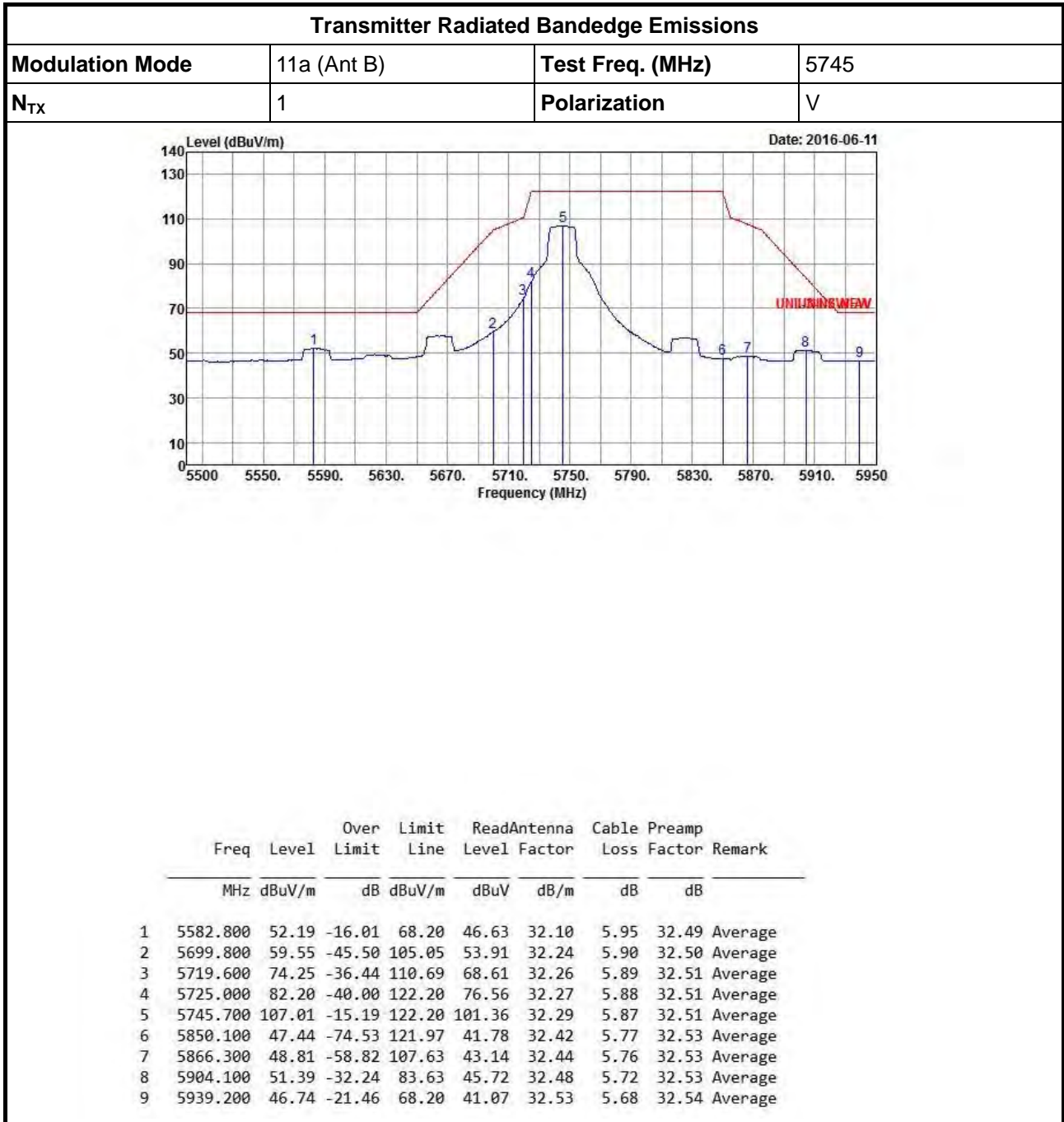


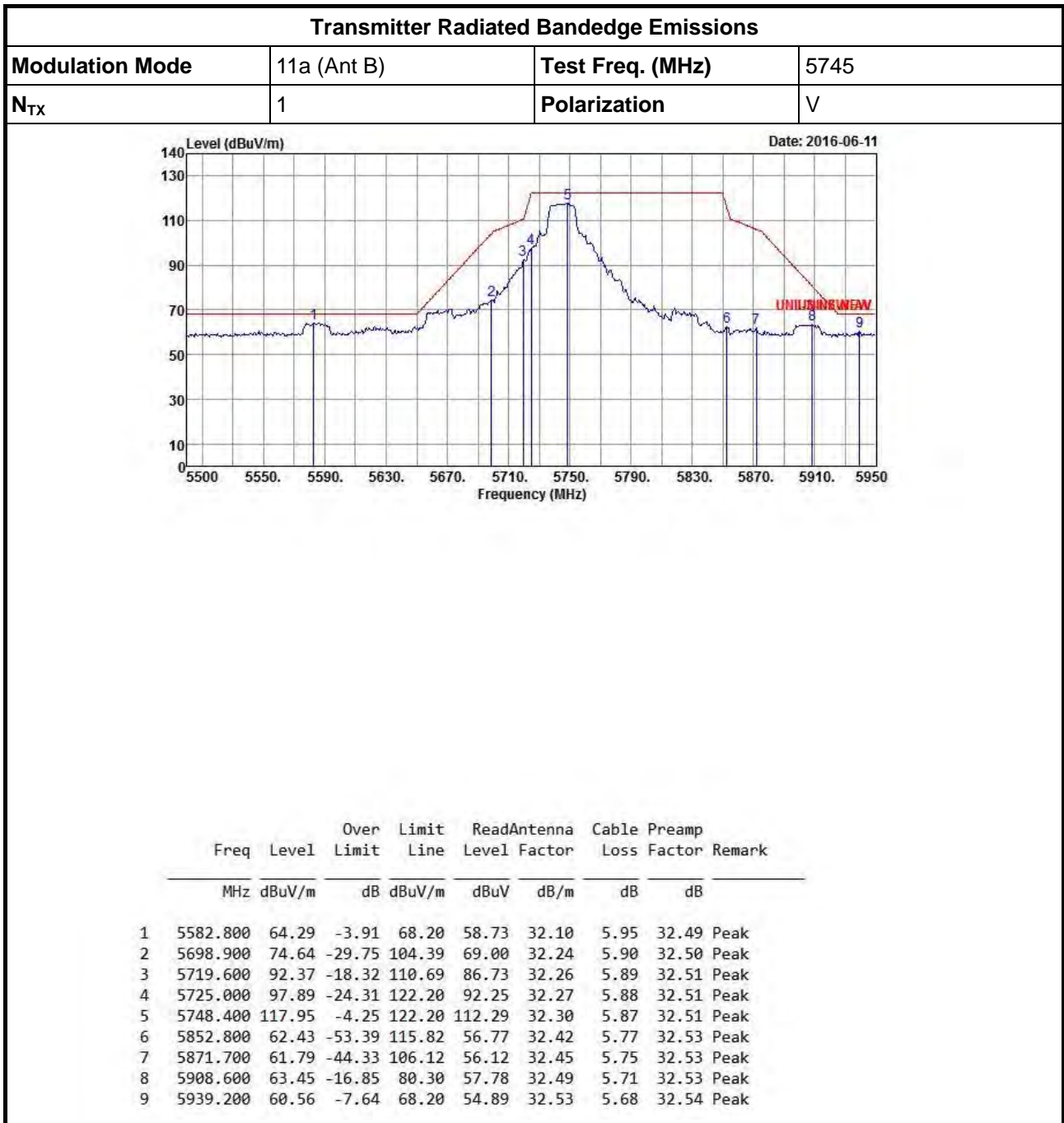


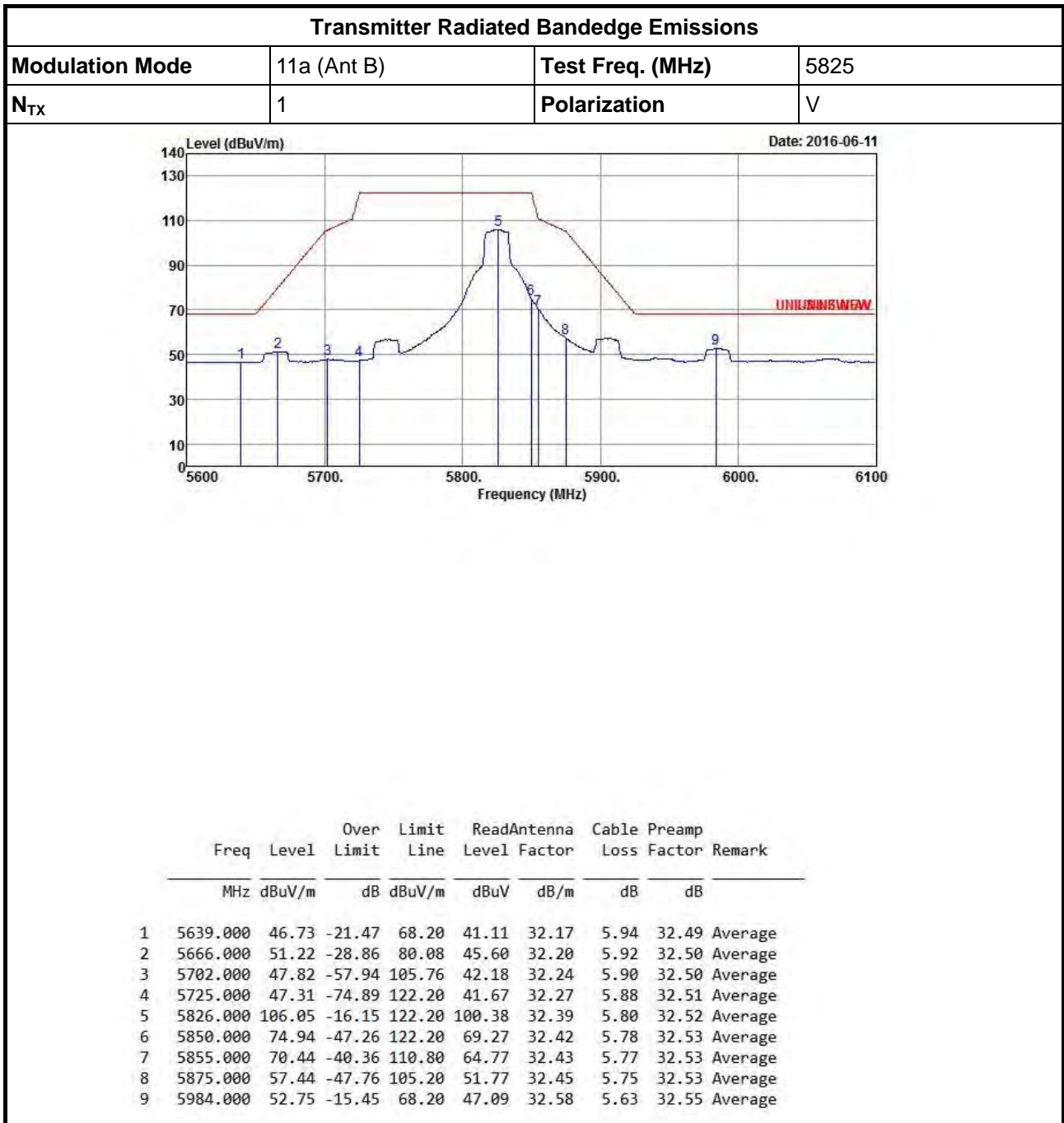


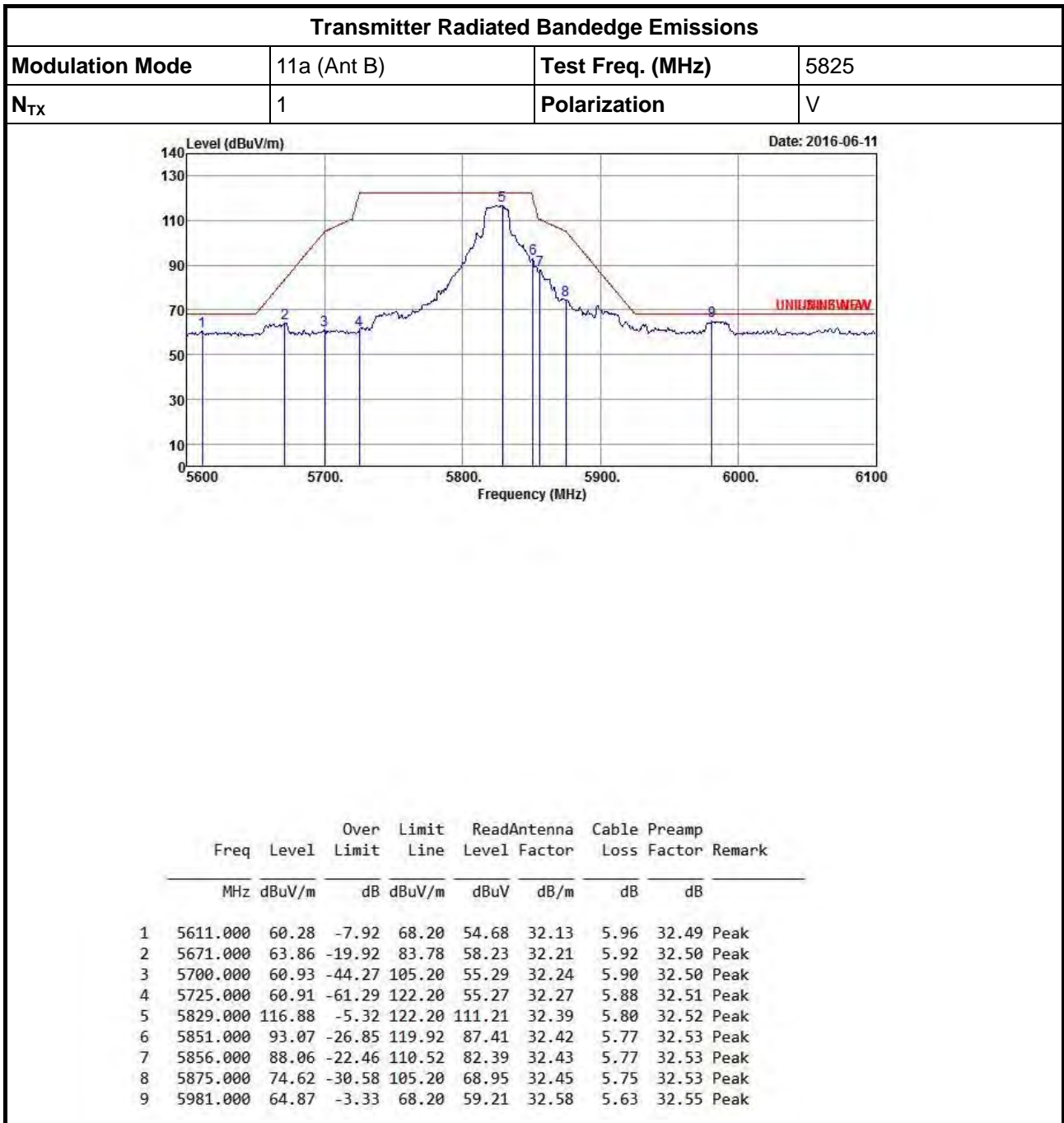


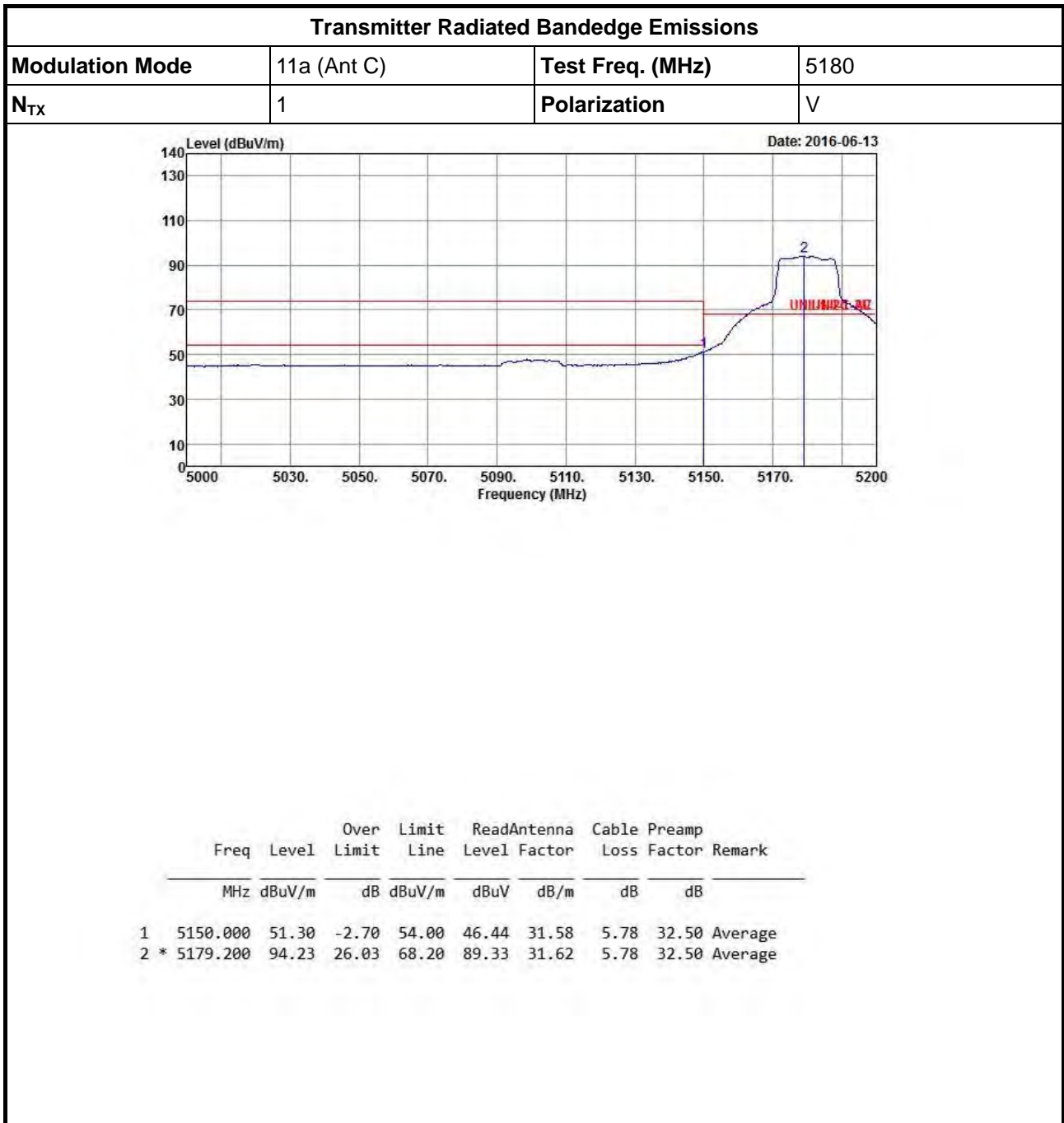




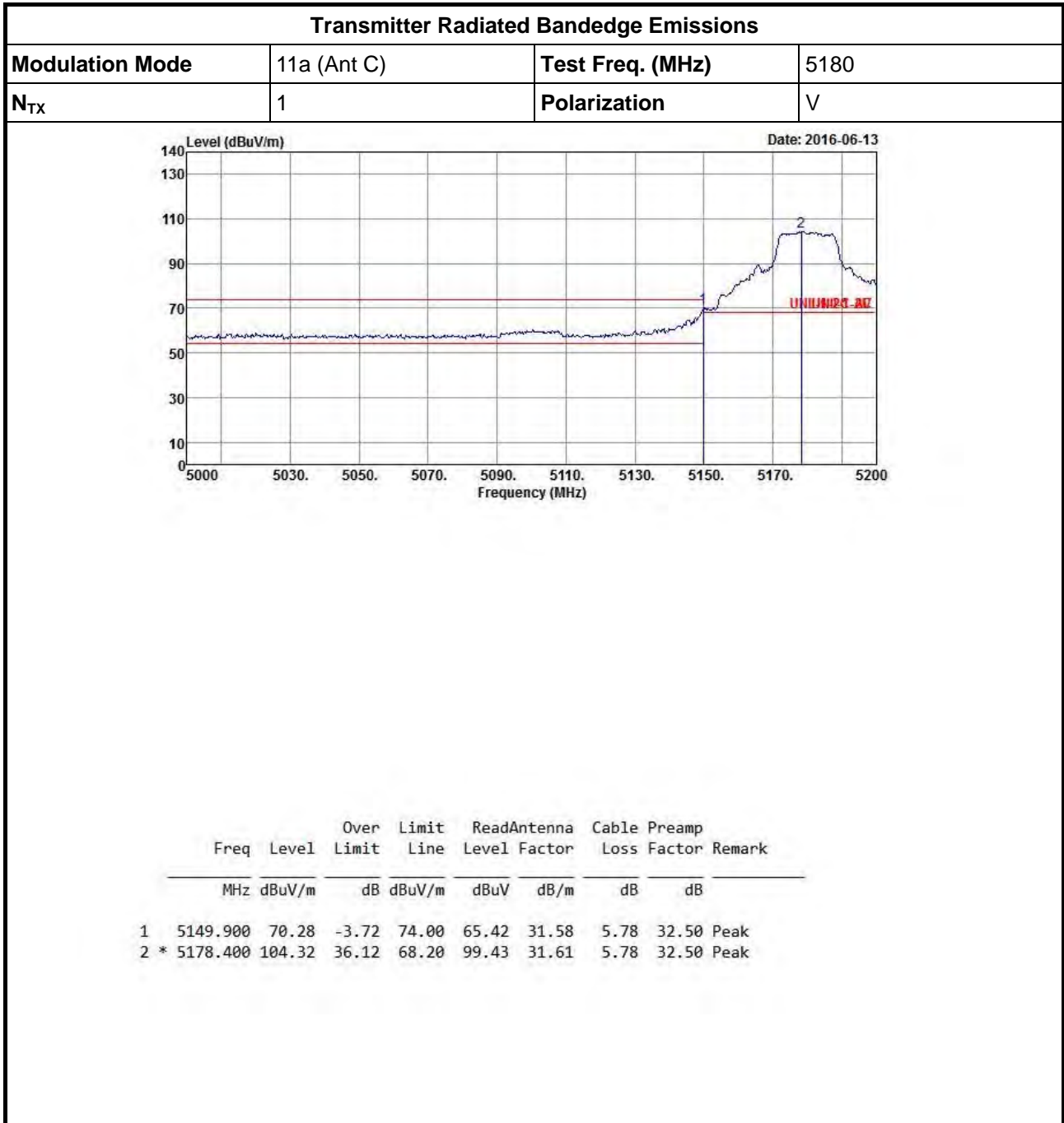


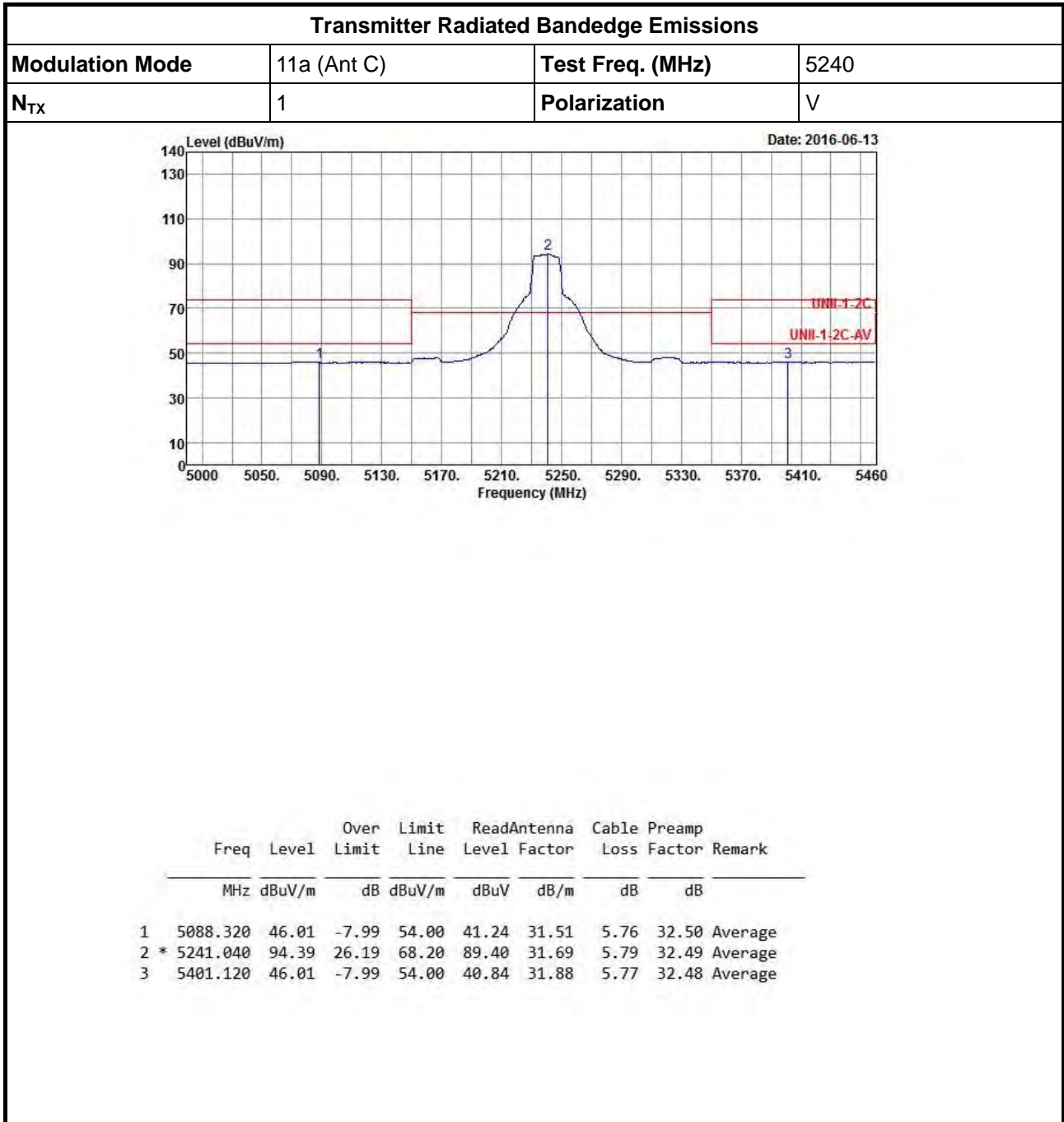


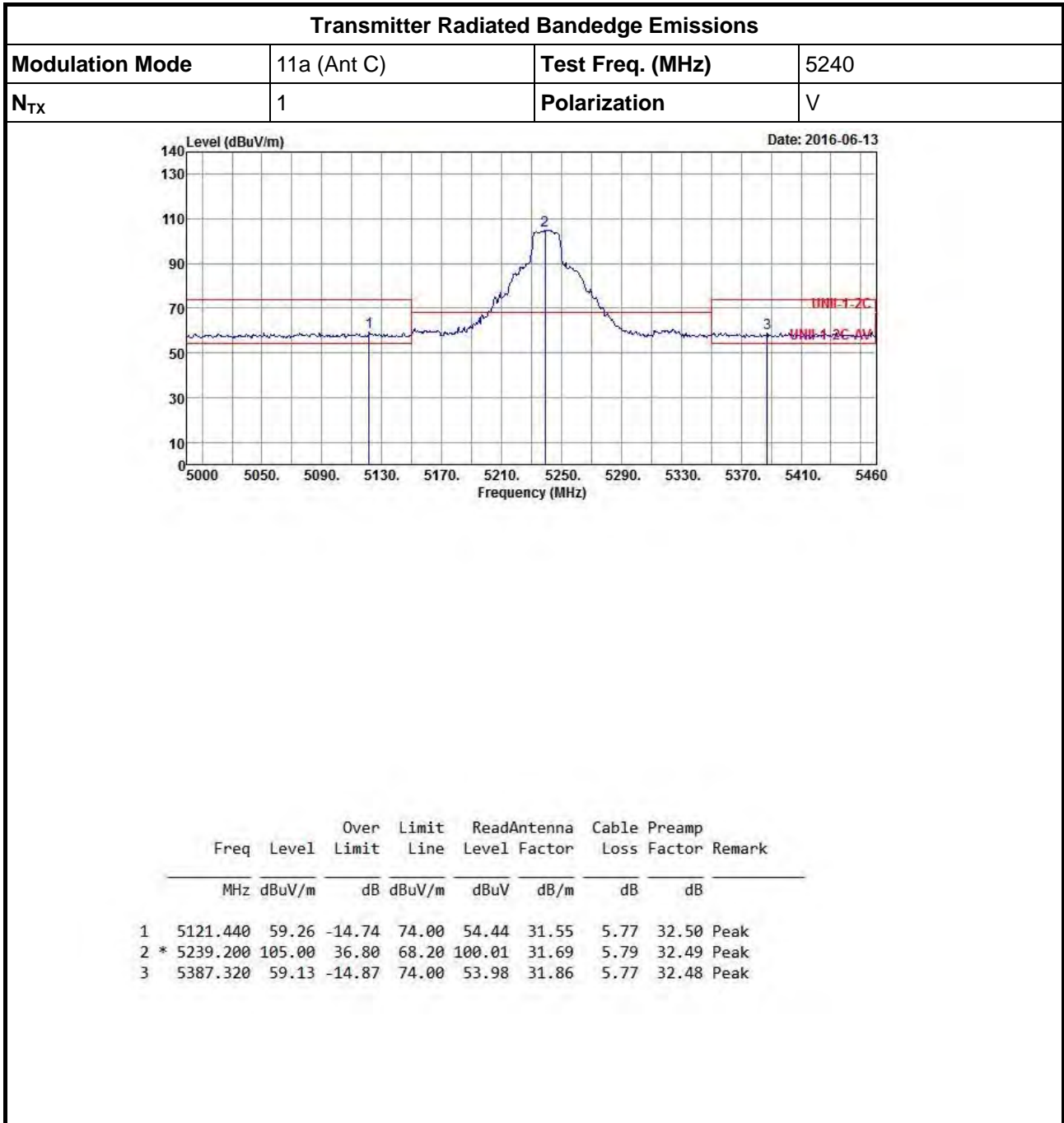


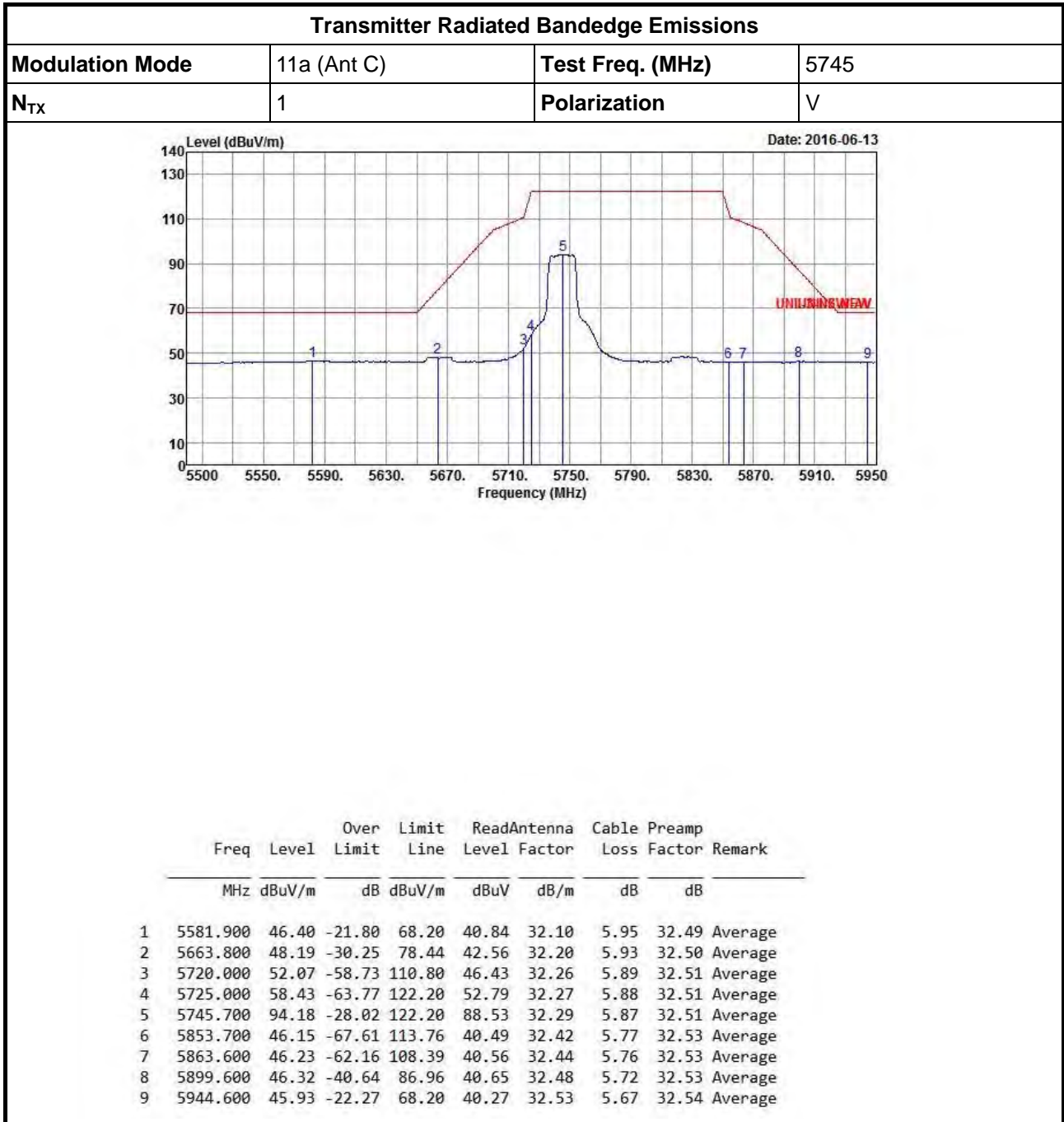


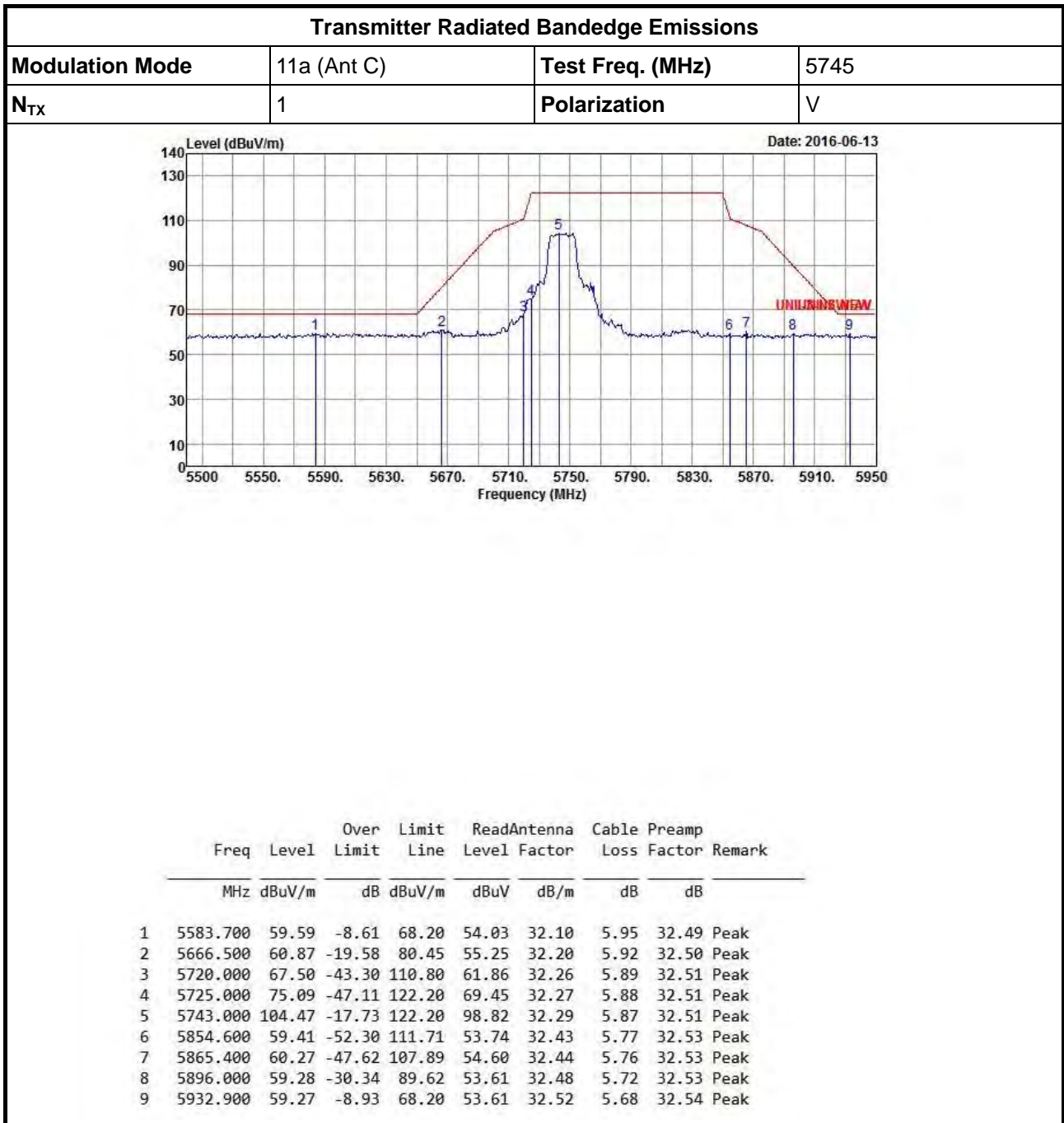


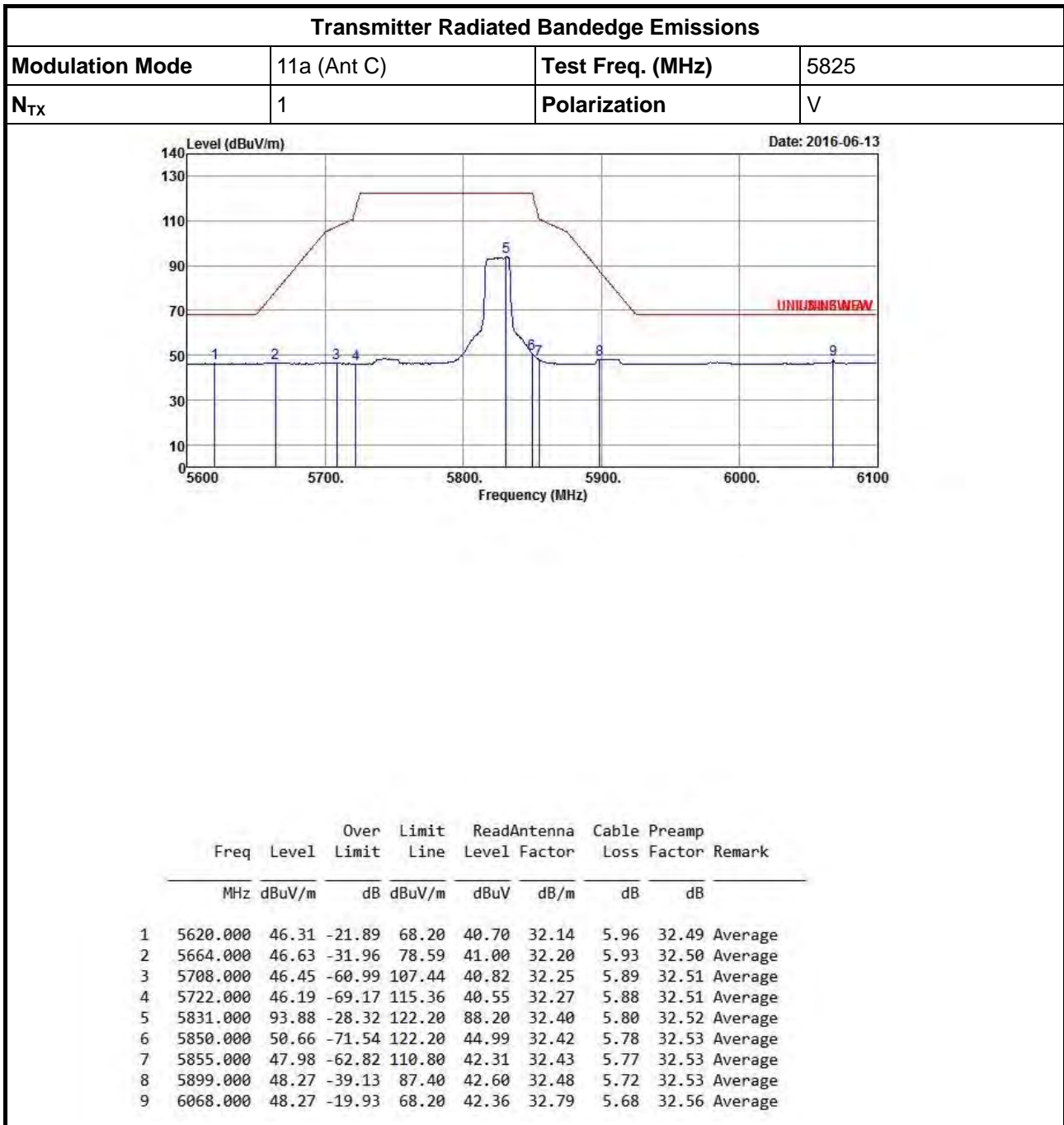


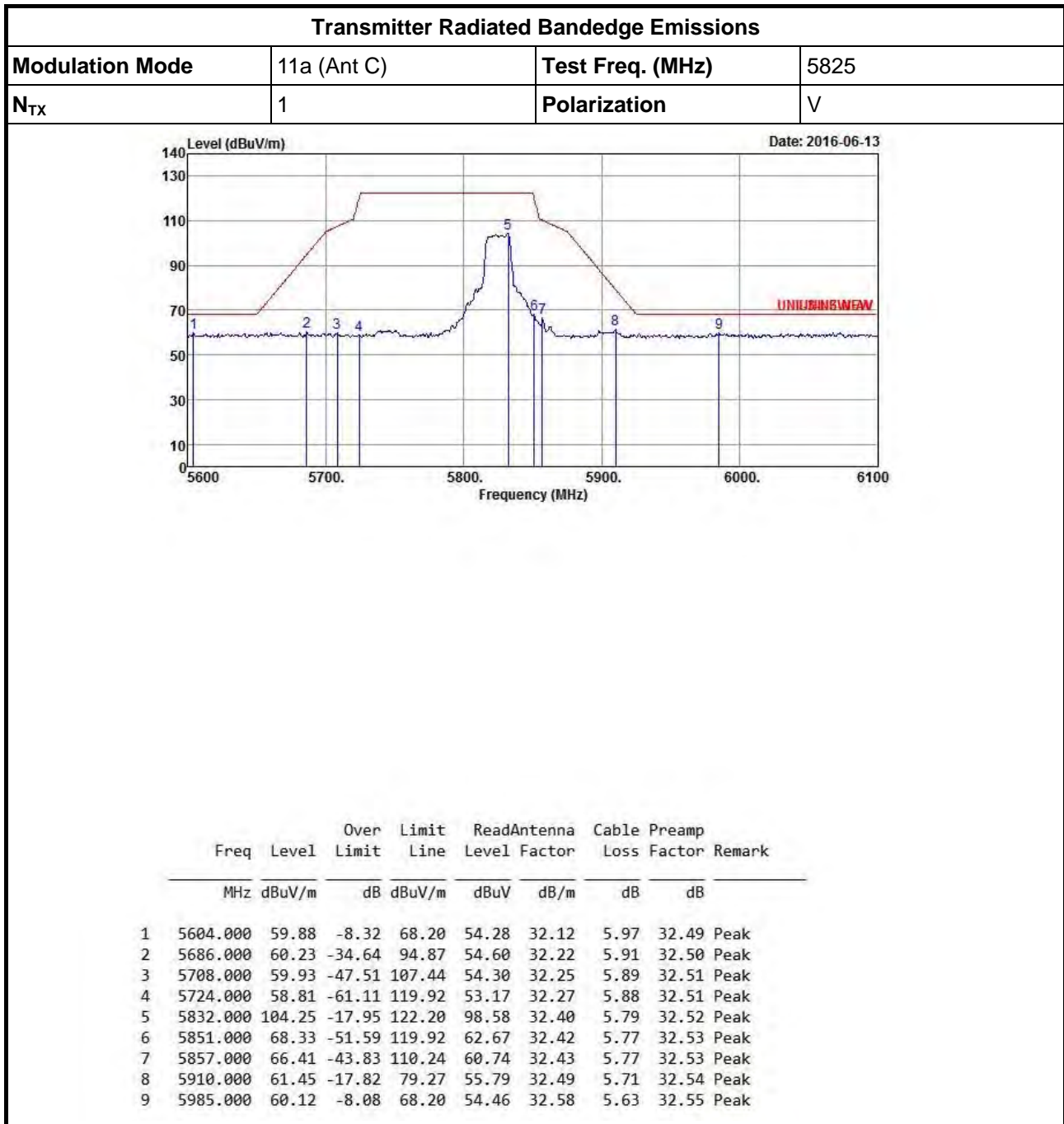


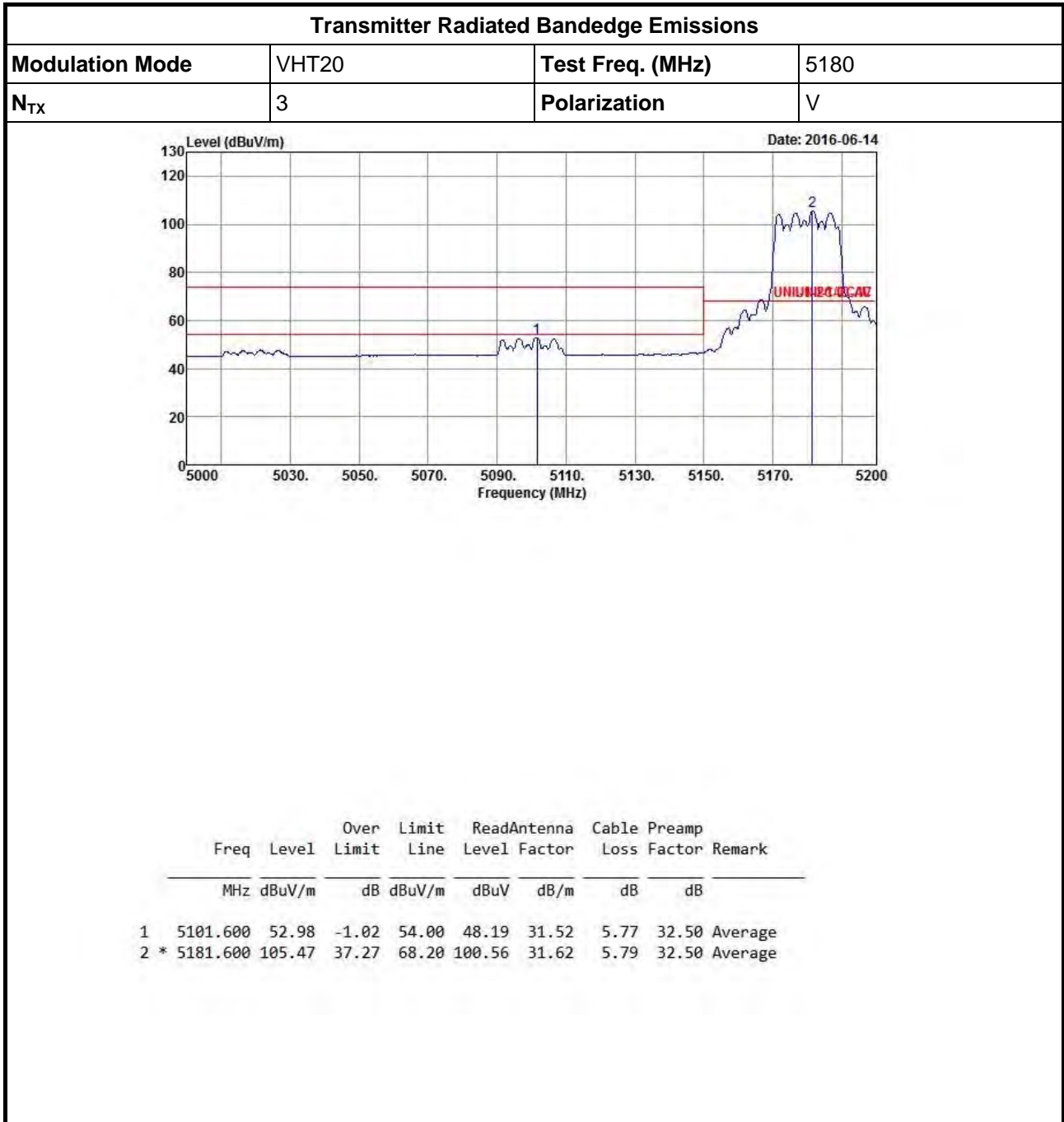




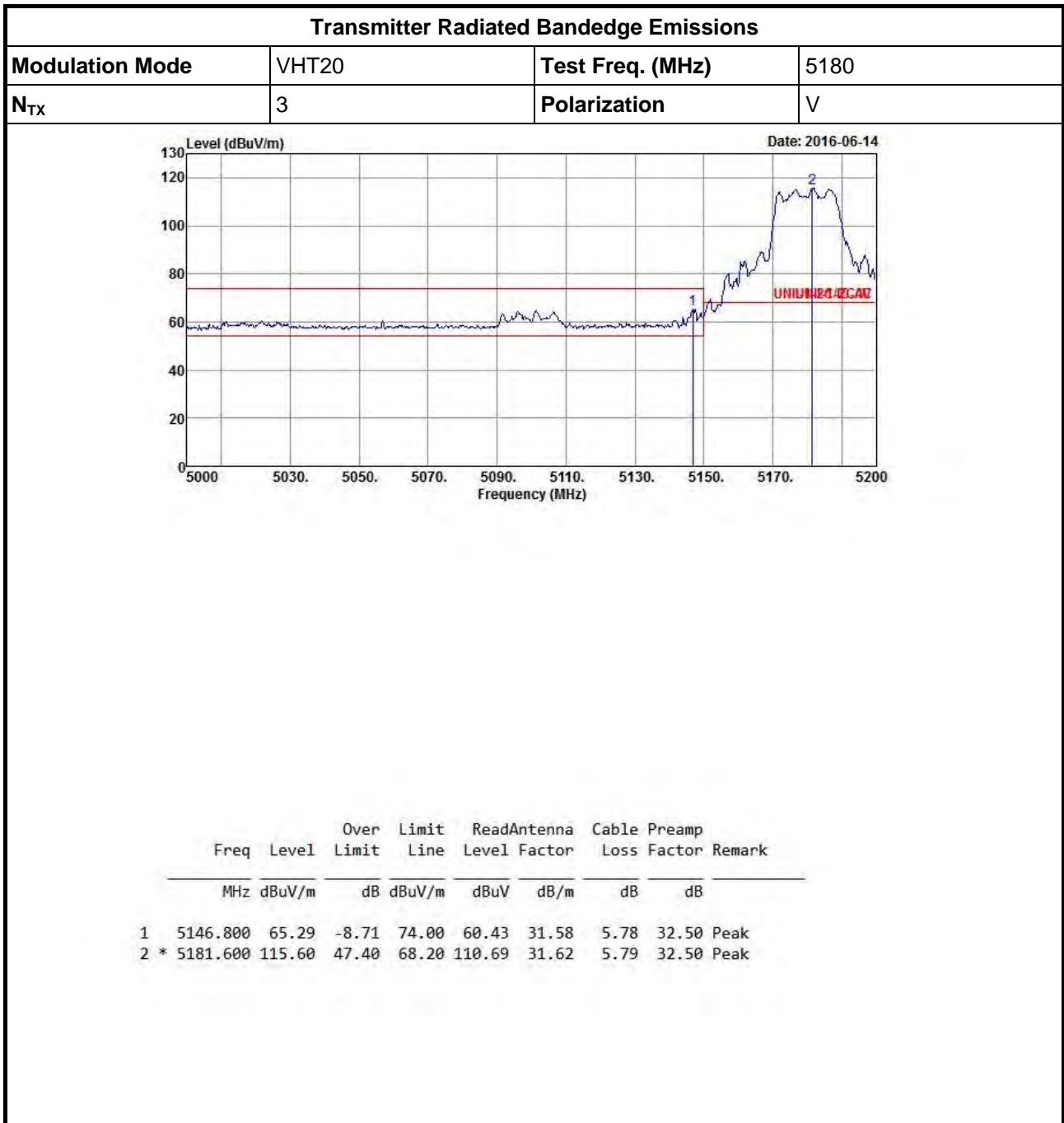




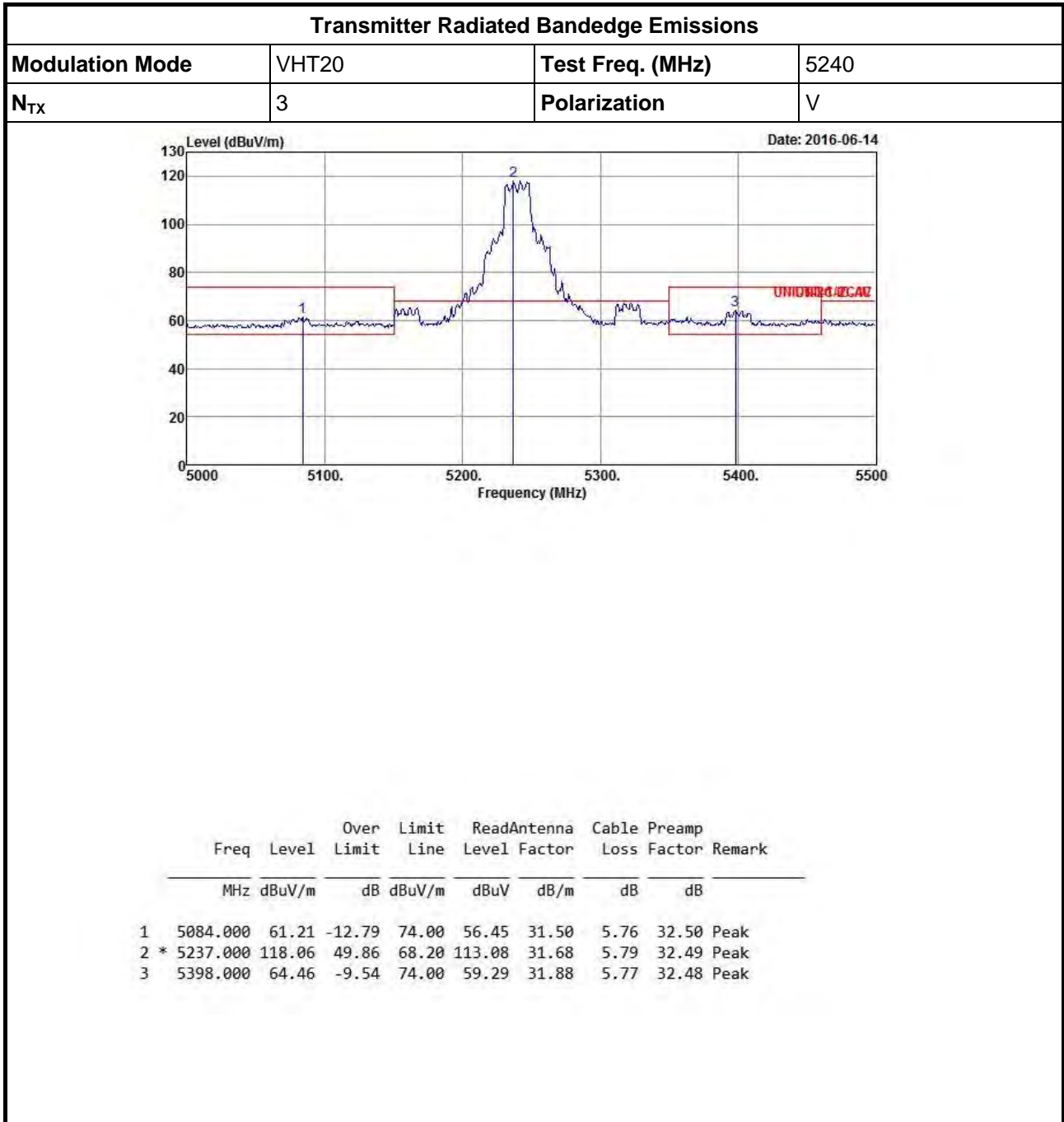


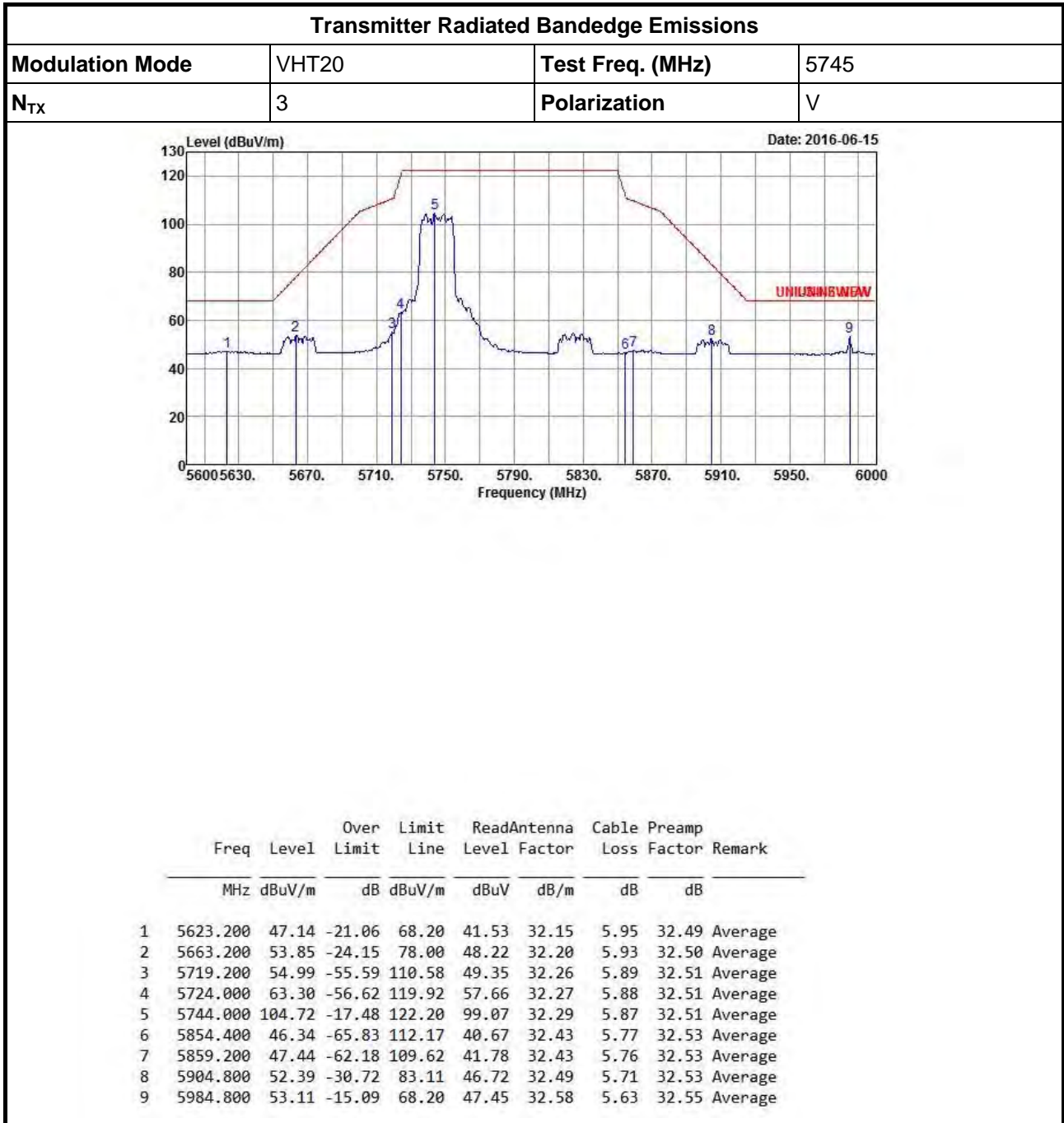


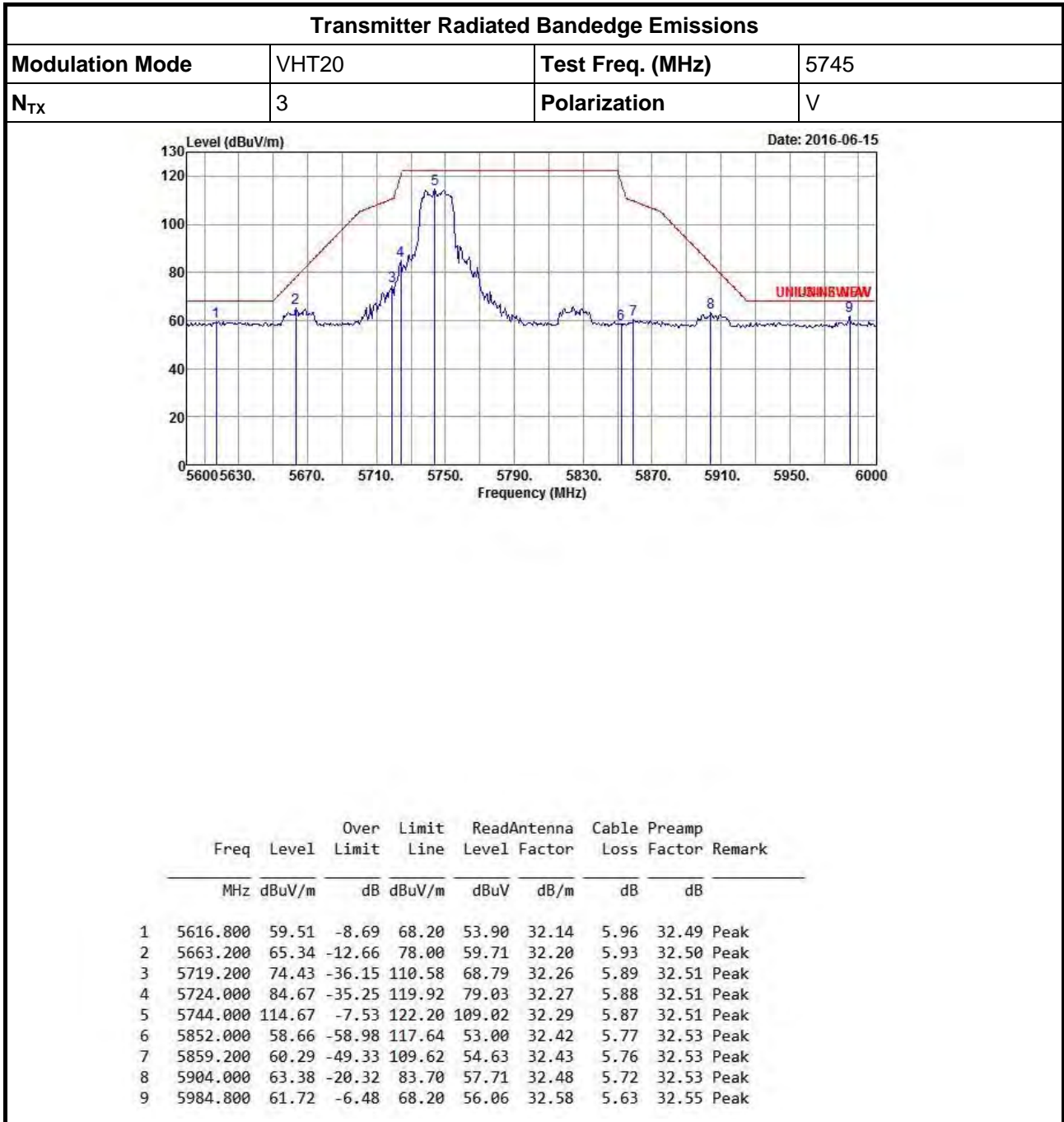


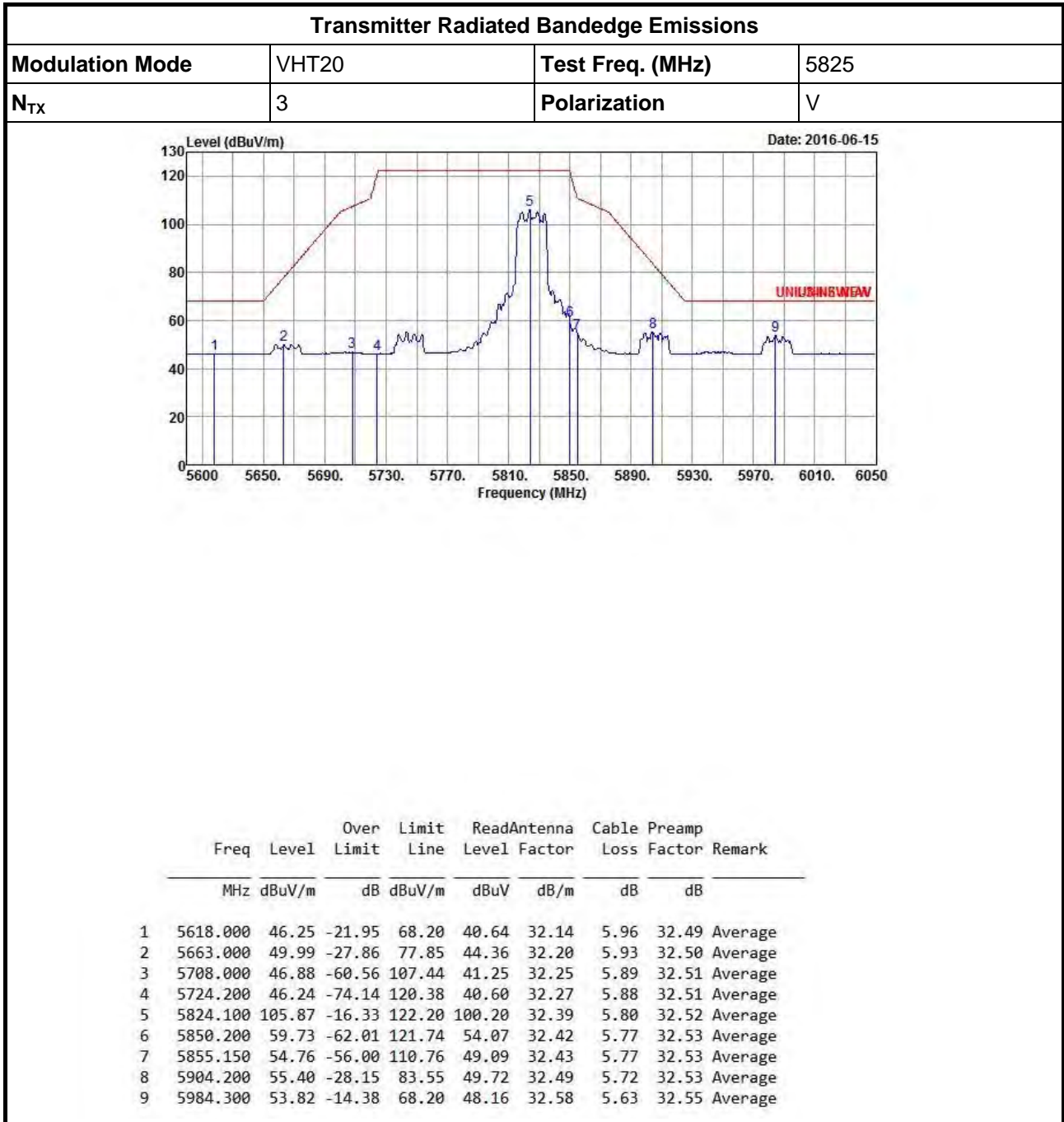


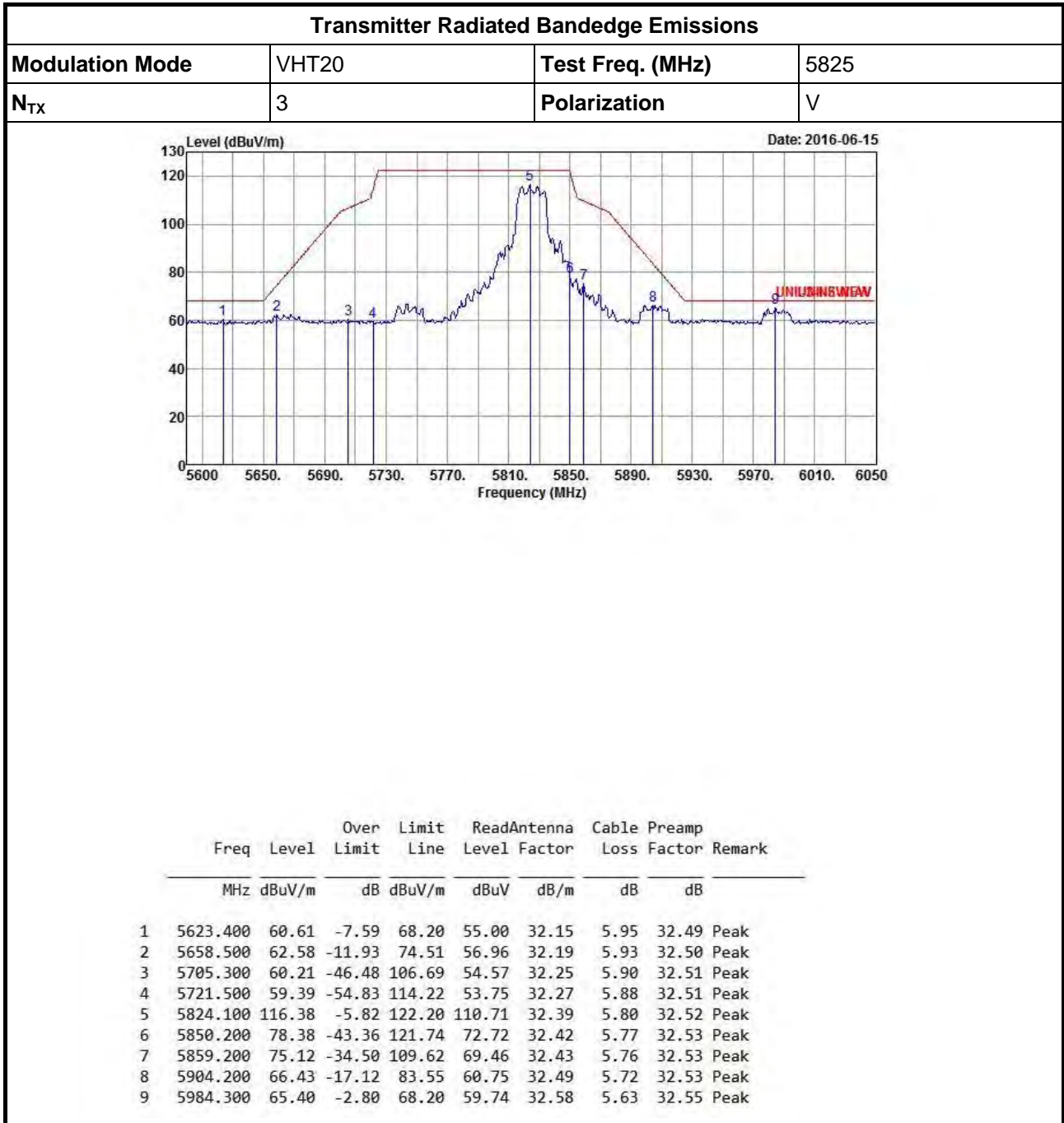


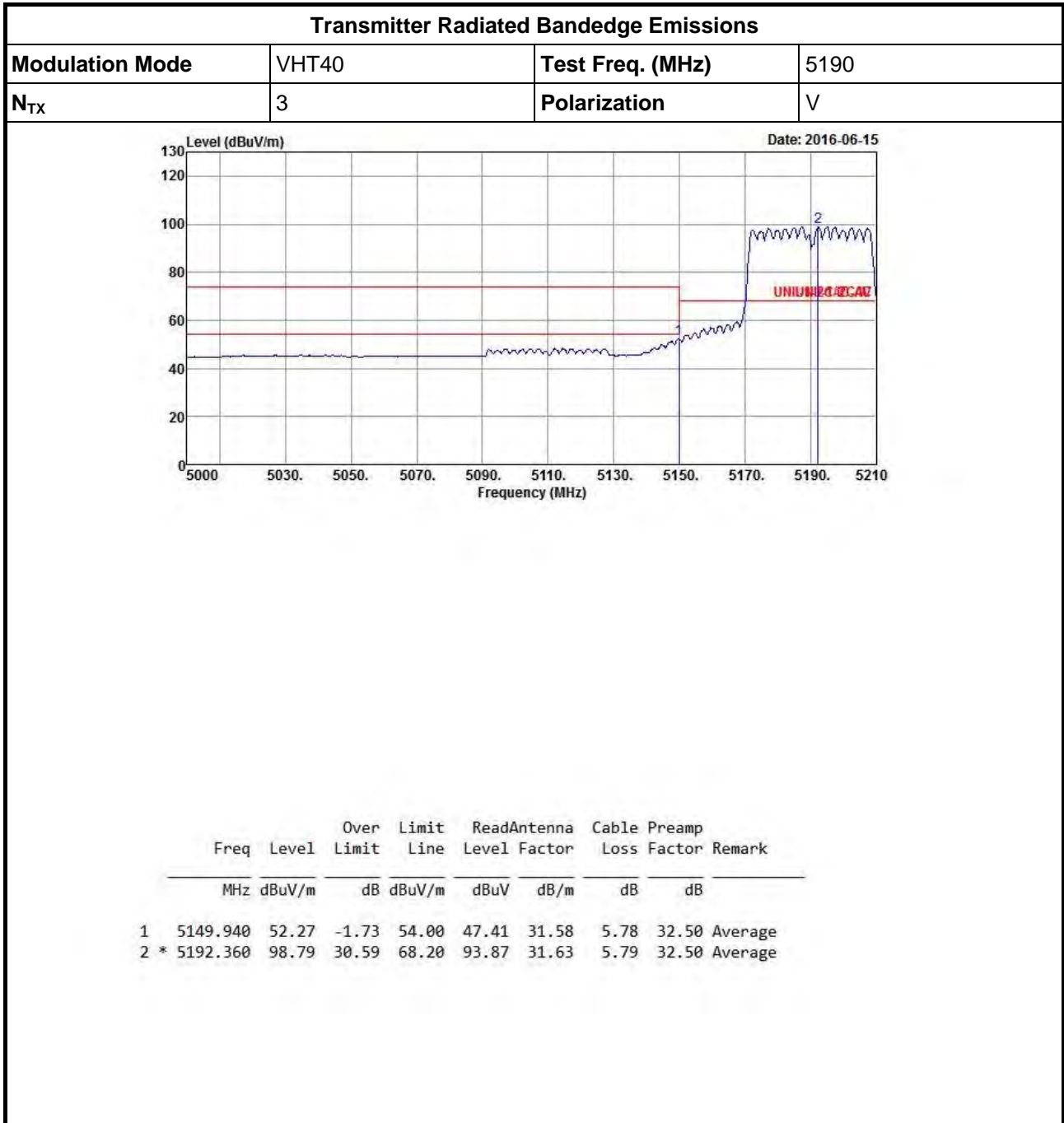




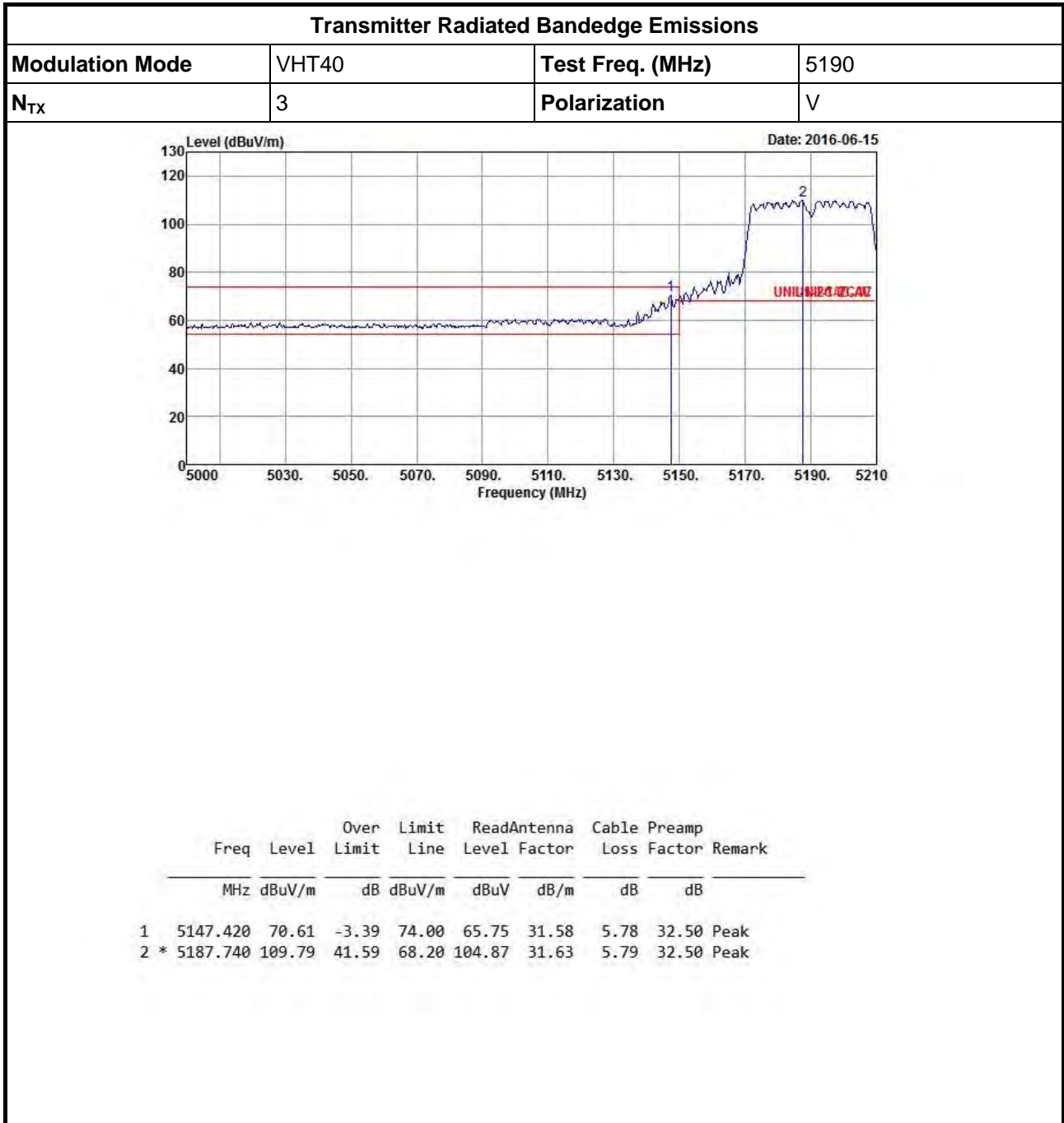


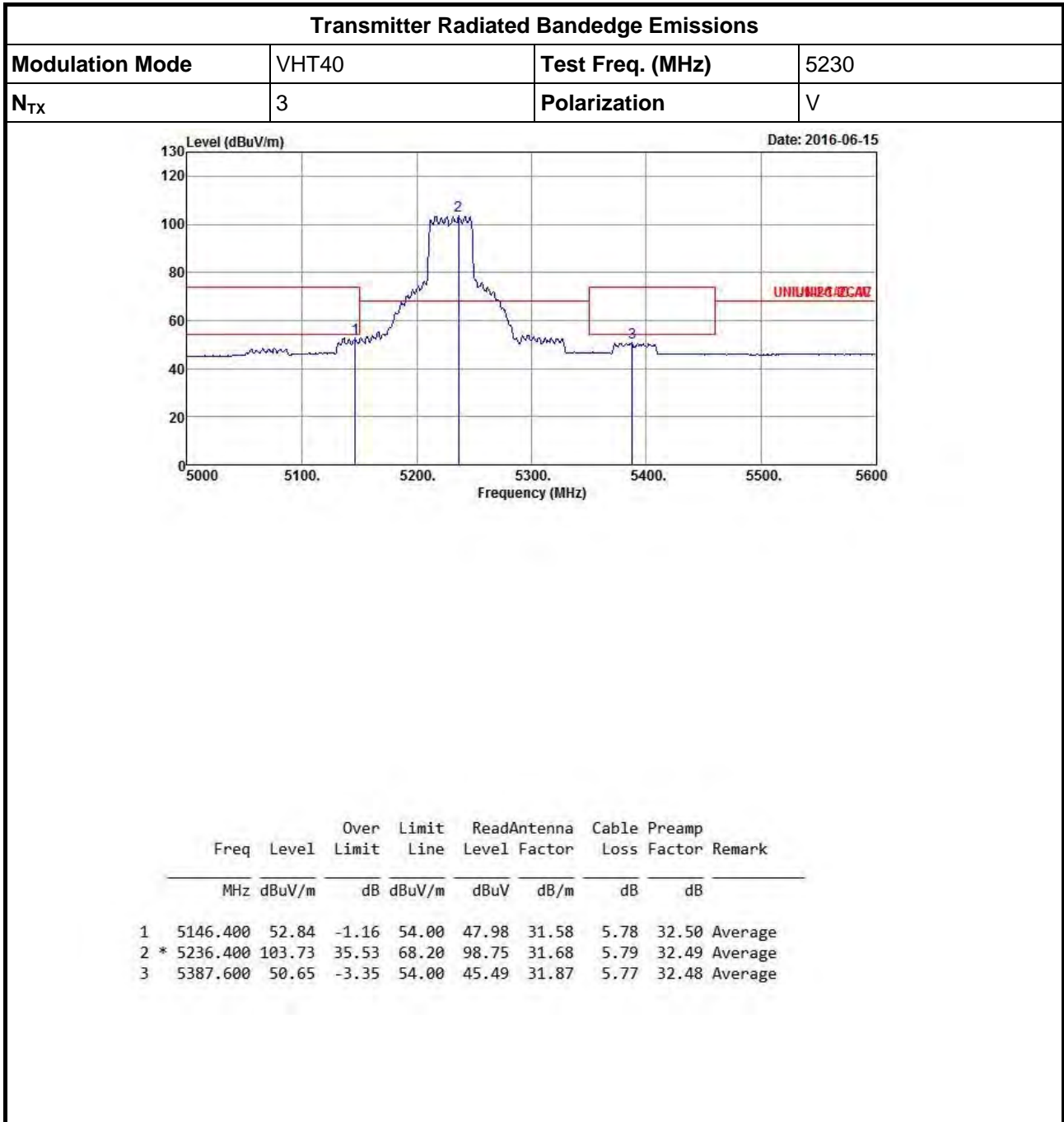


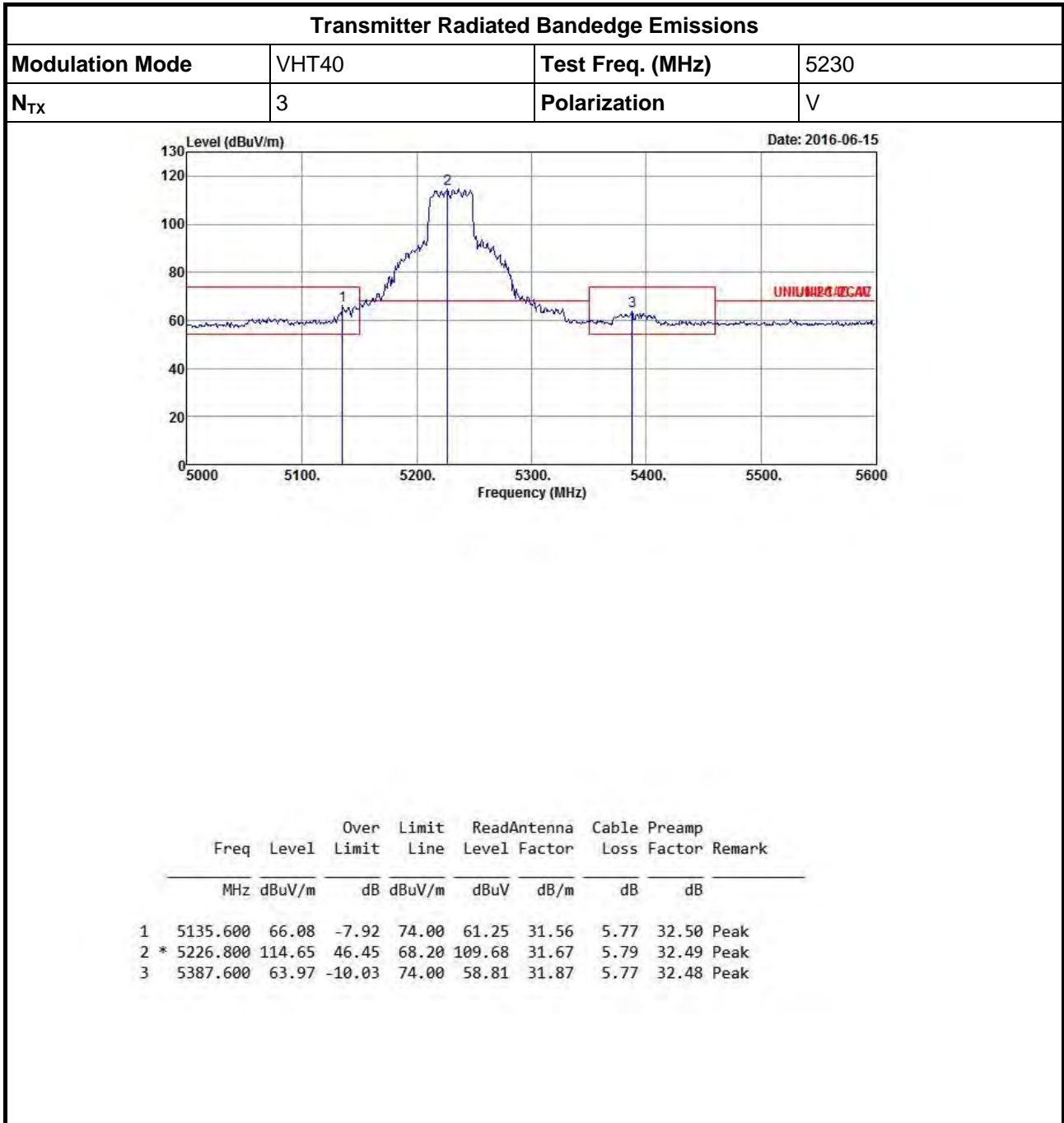


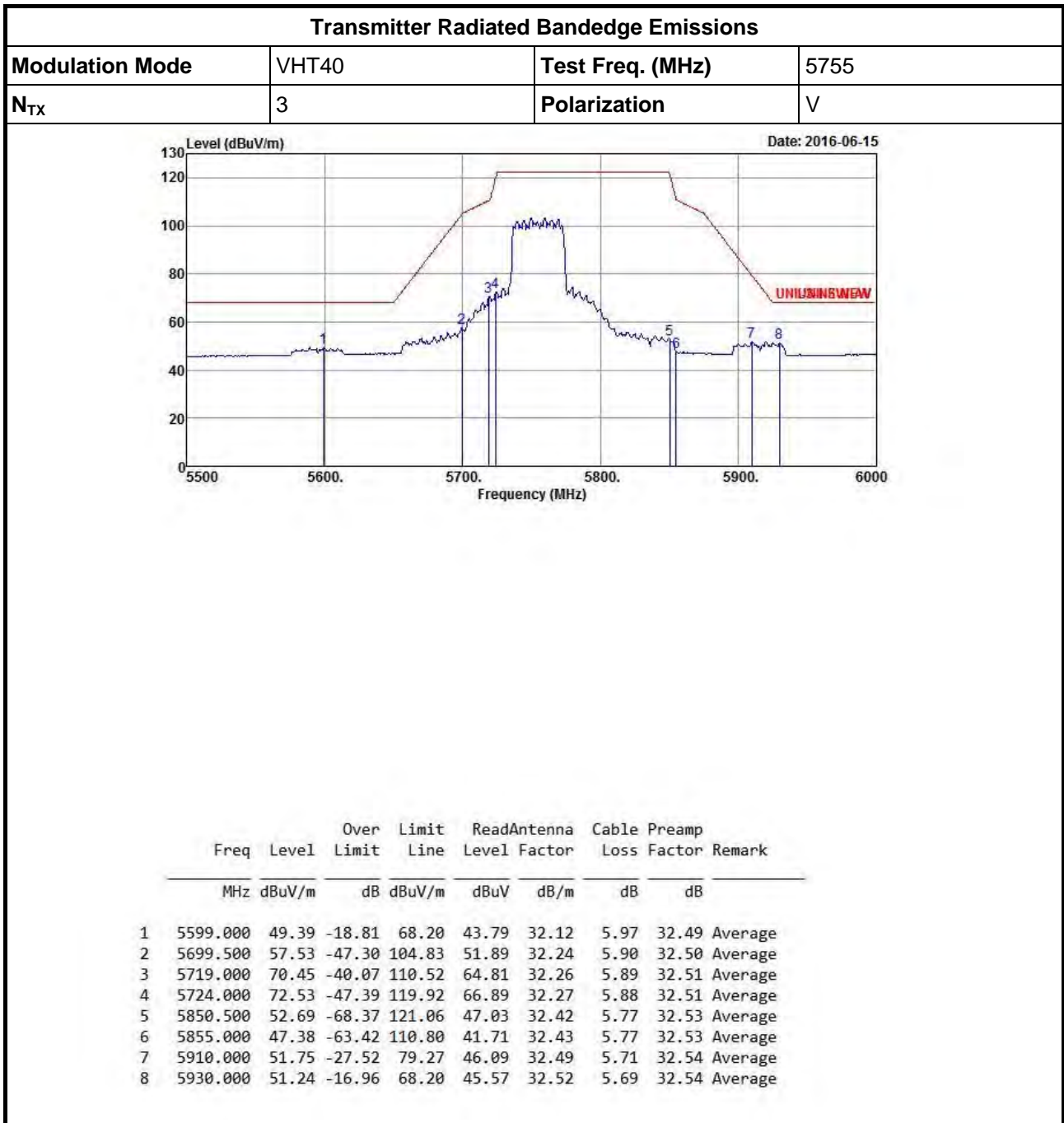


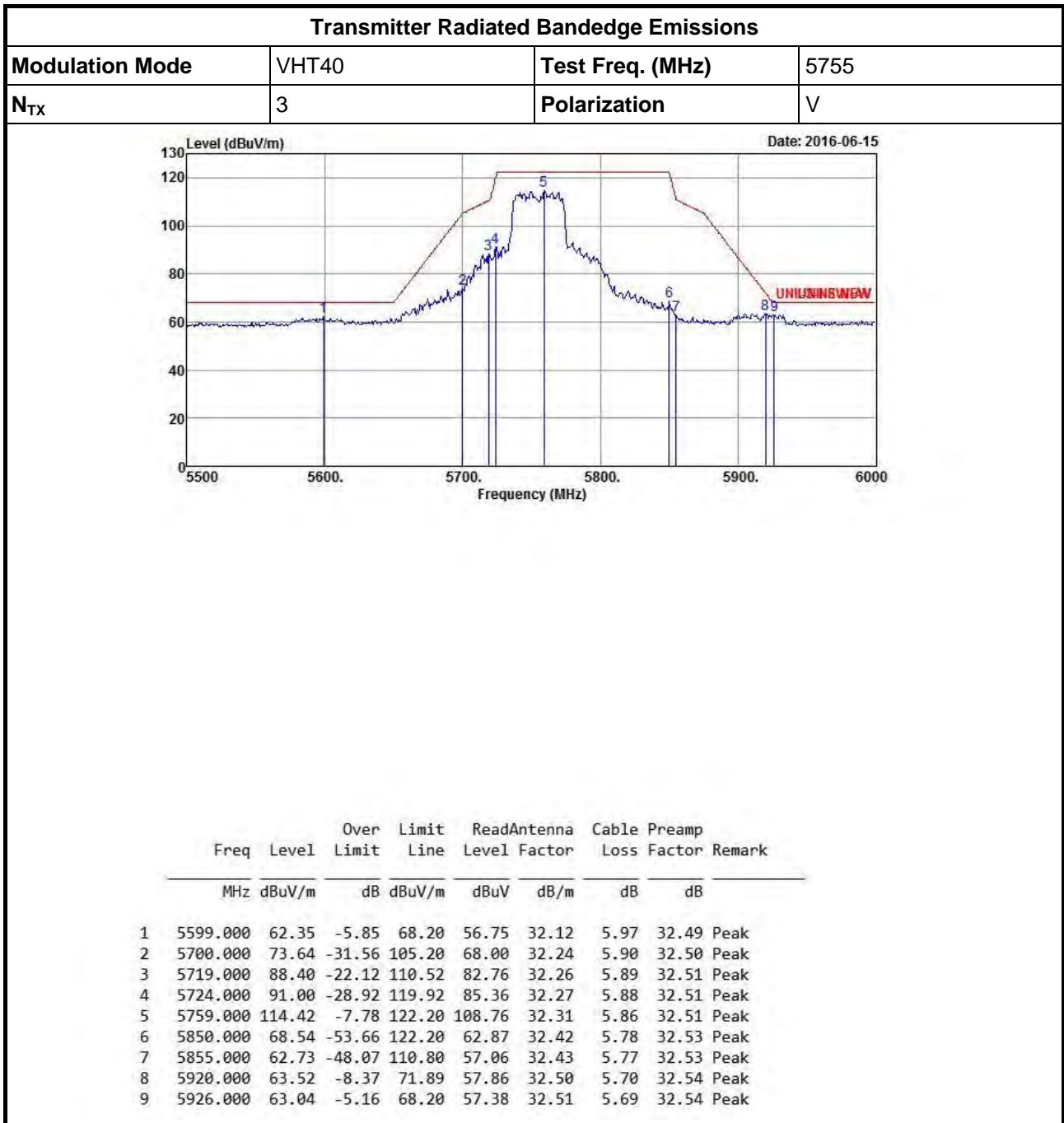


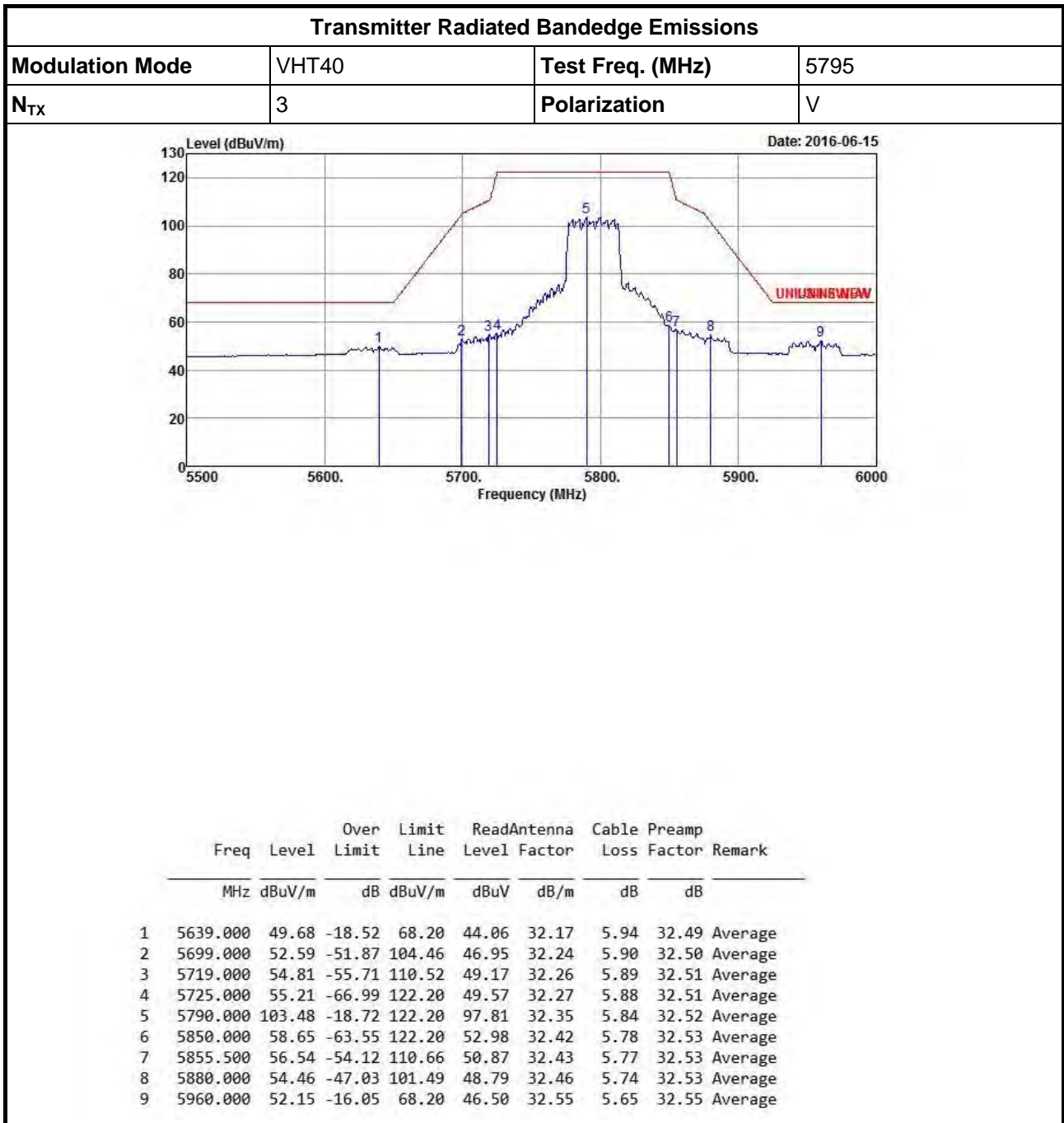


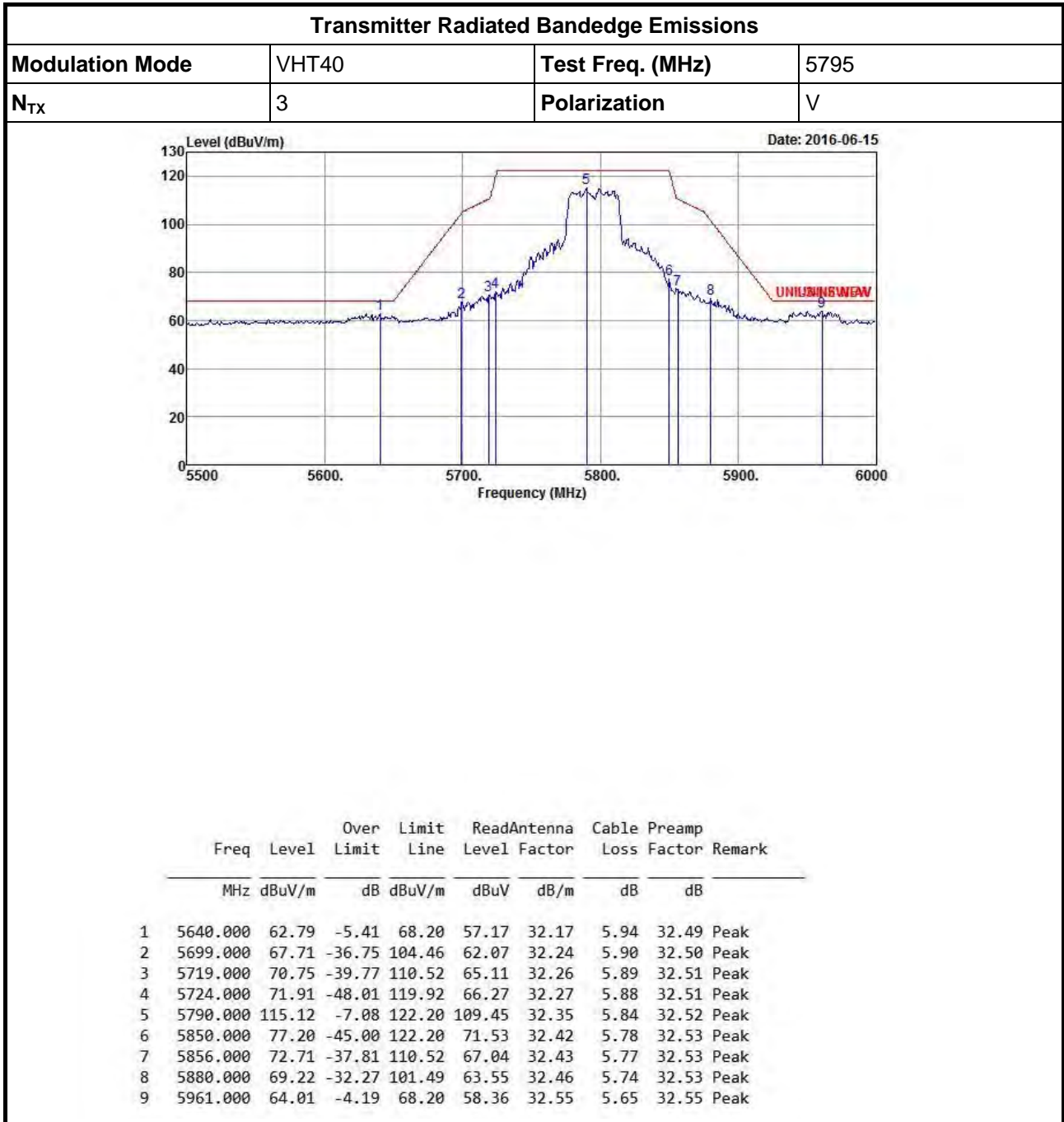


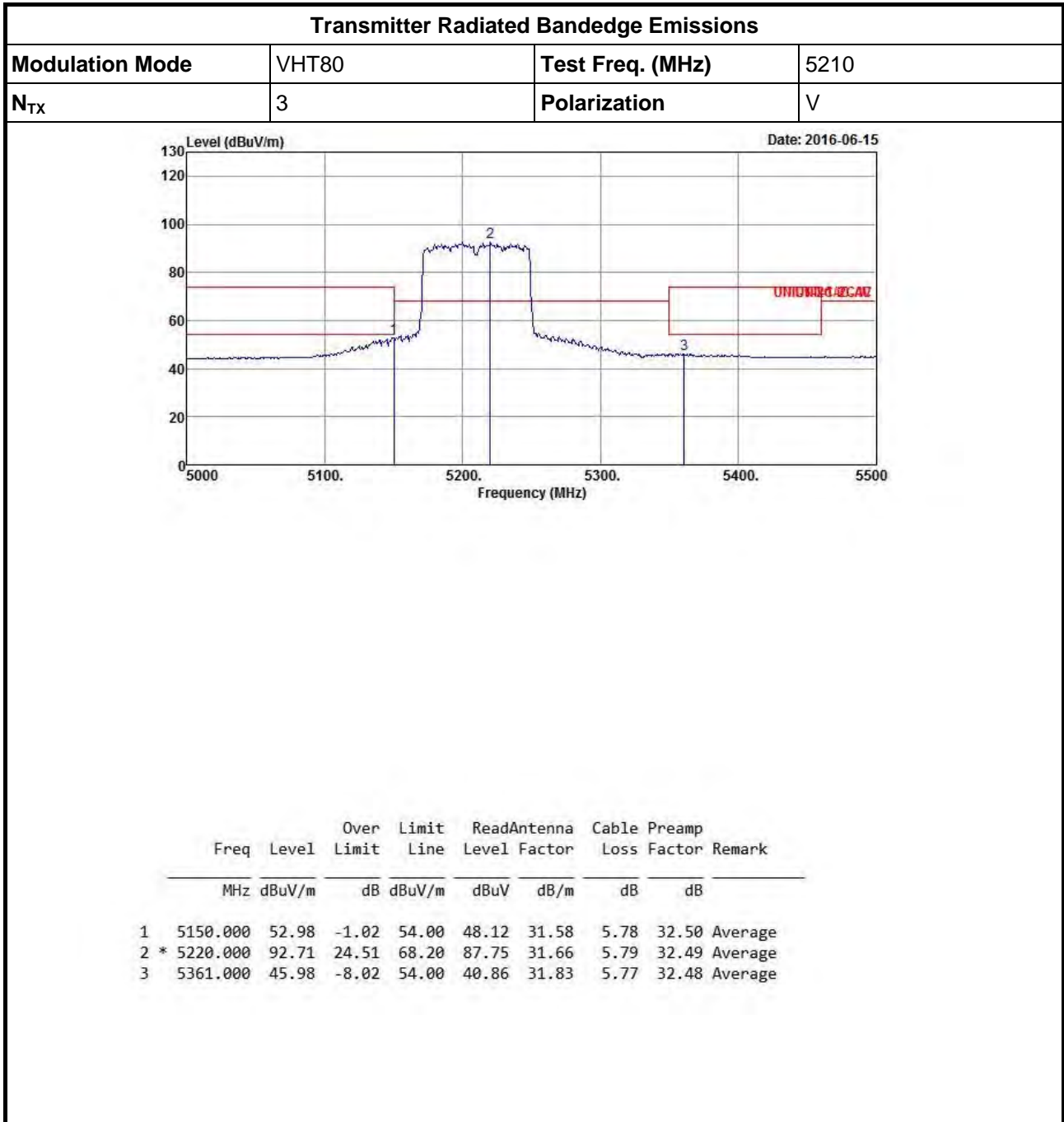




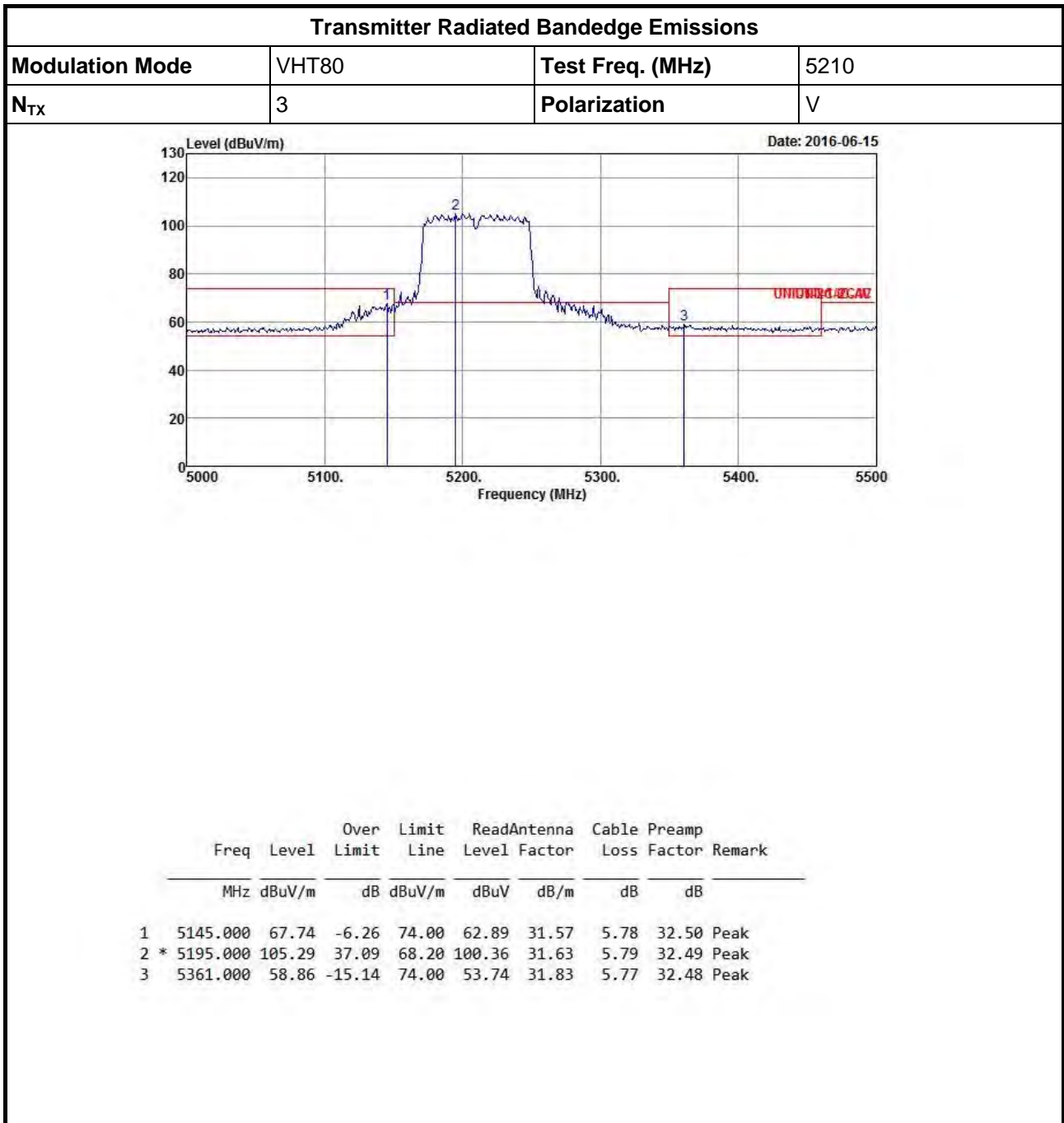


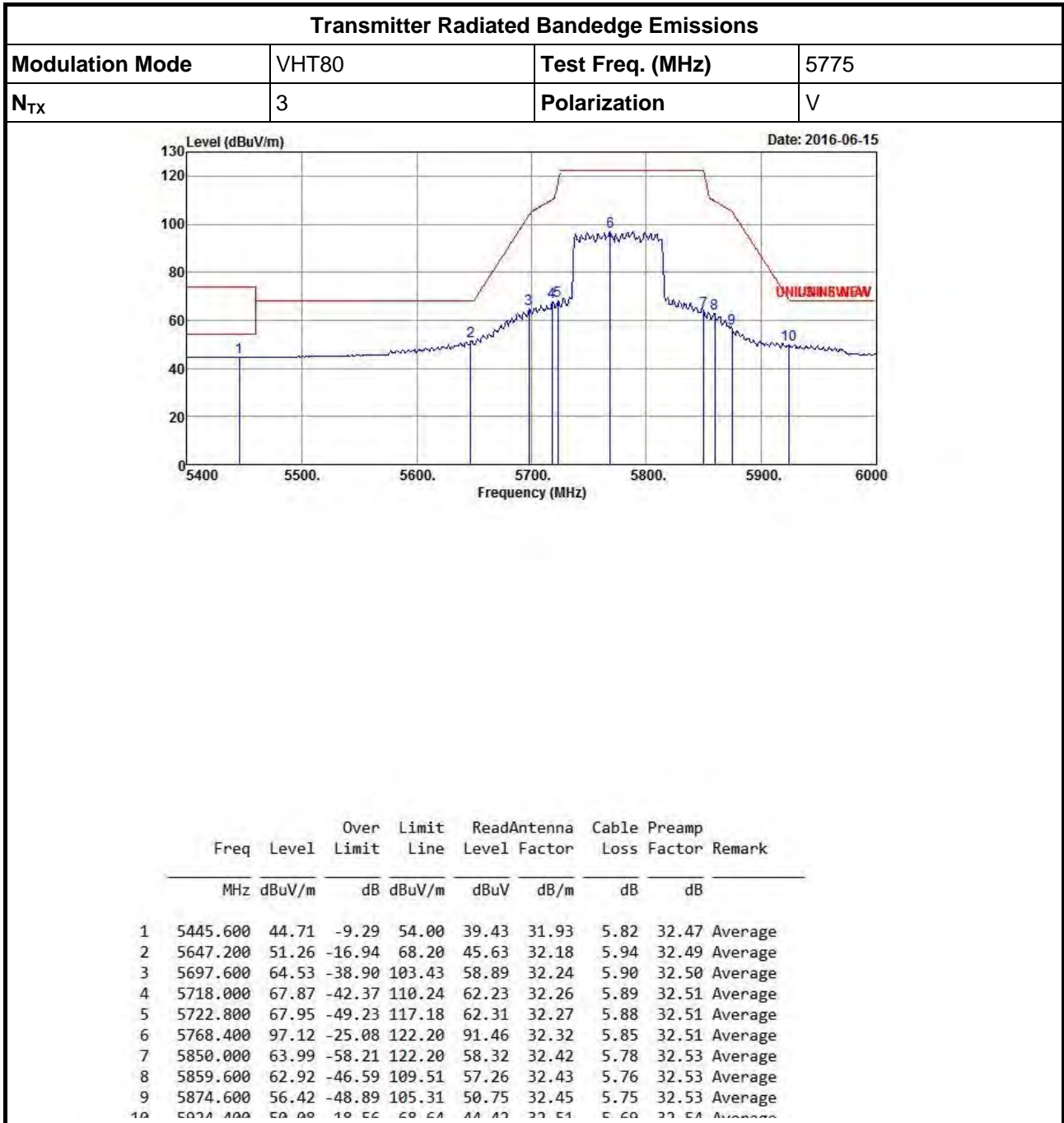


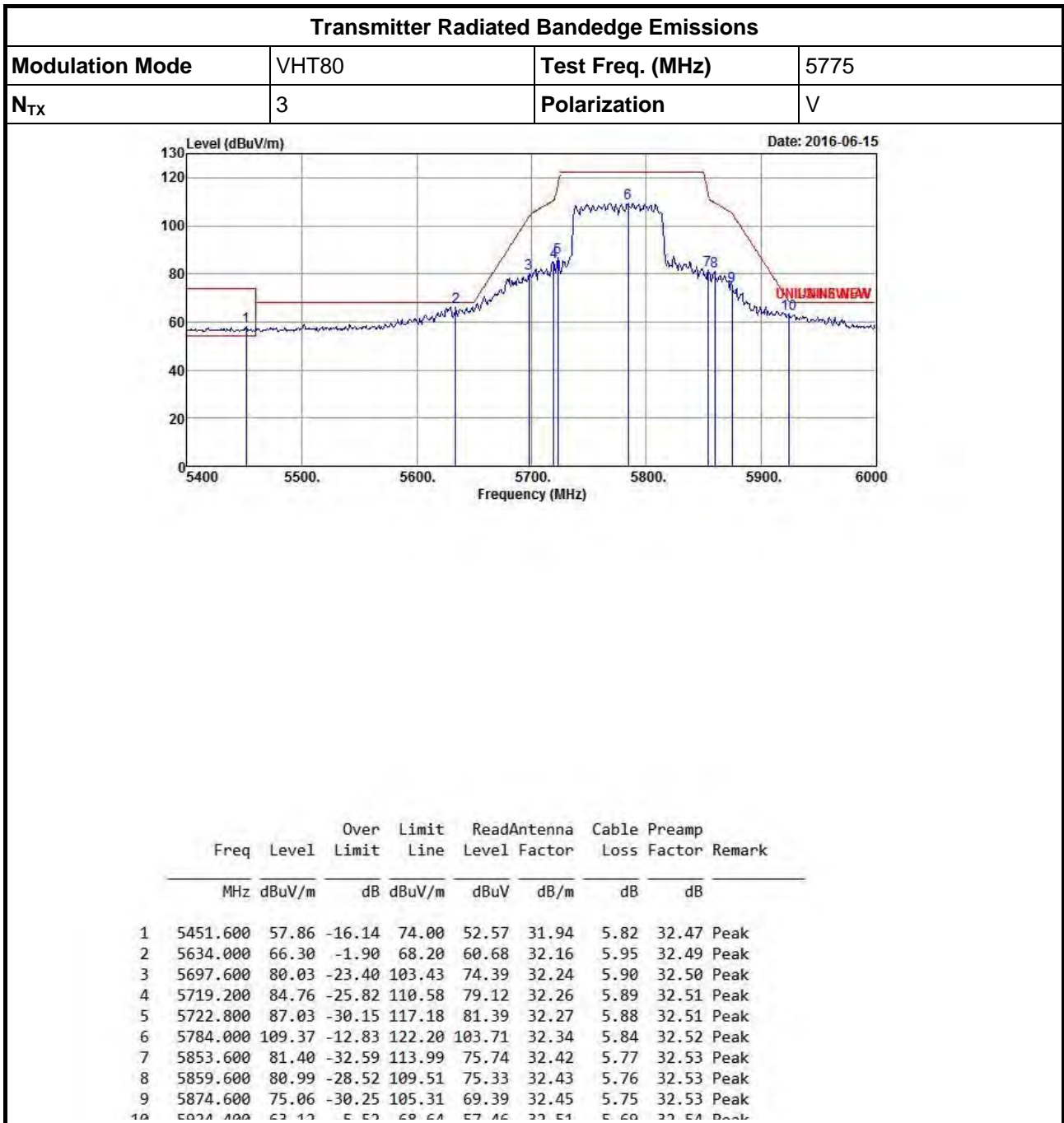














**Transmitter Radiated Bandedge Emissions (TxBF)**

U-NII 5150-5250MHz Transmitter Radiated Bandedge (TxBF)										
Modulation Mode	N <sub>Tx</sub>	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
VHT20(TxBF)	3	5180	3	5,092.600	64.42	74	5,091.200	52.96	54	V
VHT20(TxBF)	3	5240	3	5,403.400	63.82	74	5,399.200	52.76	54	V
VHT40(TxBF)	3	5190	3	5,146.000	67.65	74	5,150.000	52.81	54	V
VHT40(TxBF)	3	5230	3	5,145.000	64.08	74	5,386.000	51.30	54	V
VHT80(TxBF)	3	5210	3	5,142.000	70.64	74	5,142.000	52.83	54	V

Note 1: Measurement worst emissions of receive antenna polarization.

U-NII 5725-5850MHz Transmitter Radiated Bandedge (TxBF)							
Modulation Mode	N <sub>Tx</sub>	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Pol.
VHT20(TxBF)	3	5745	3	5,587.600	62.90	68.2	V
VHT20(TxBF)	3	5825	3	5,560.300	61.11	68.2	V
VHT40(TxBF)	3	5755	3	5,649.600	64.70	68.2	V
VHT40(TxBF)	3	5795	3	5,962.800	64.56	68.2	V
VHT80(TxBF)	3	5775	3	5,642.800	67.04	68.2	V

Note 1: Measurement worst emissions of receive antenna polarization.



Transmitter Radiated Bandedge Emissions (TxBF)

