



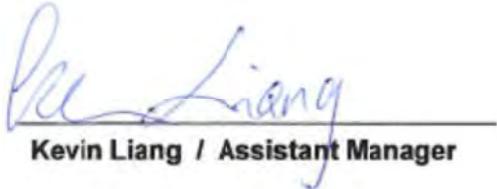
# FCC Test Report

**Equipment** : 802.11ac Wireless Router  
**Brand Name** : Synology  
**Model No.** : RT2600ac  
**FCC ID** : YOR-RT2600AC  
**Standard** : 47 CFR FCC Part 15.247  
**Frequency** : 2400 MHz – 2483.5 MHz  
**FCC Classification** : DTS  
**Applicant** : **Synology Incorporated**  
3F-3, No.106, Chang An W. Rd., Taipei 103, Taiwan  
**Manufacturer** : **ASKEY TECHNOLOGY (JIANG SU) LTD.**  
NO.1388, Jiao Tong Road, Wu Jiang  
Economic-Technological Development Area, Jiangsu  
Province 215200, P.R.C

The product sample received on Jun. 03, 2016 and completely tested on Aug. 12, 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





## Table of Contents

<b>1</b>	<b>GENERAL DESCRIPTION .....</b>	<b>5</b>
1.1	Information.....	5
1.2	Testing Applied Standards .....	7
1.3	Testing Location Information.....	7
1.4	Measurement Uncertainty .....	8
<b>2</b>	<b>TEST CONFIGURATION OF EUT .....</b>	<b>9</b>
2.1	The Worst Case Modulation Configuration .....	9
2.2	Test Channel Mode .....	9
2.3	The Worst Case Measurement Configuration.....	10
2.4	Accessories and Support Equipment .....	11
2.6	Test Setup Diagram .....	12
<b>3</b>	<b>TRANSMITTER TEST RESULT .....</b>	<b>13</b>
3.1	AC Power-line Conducted Emissions .....	13
3.2	DTS Bandwidth .....	14
3.3	Fundamental Emission Output Power.....	15
3.4	Power Spectral Density .....	17
3.5	Transmitter Radiated Bandedge Emissions.....	19
3.6	Transmitter Radiated Unwanted Emissions .....	22
<b>4</b>	<b>TEST EQUIPMENT AND CALIBRATION DATA .....</b>	<b>26</b>

**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. Test Result of Transmitter Radiated Bandedge Emissions****Appendix E. Transmitter Radiated Unwanted Emissions****Appendix F. Test Photos****Appendix G. Photographs of EUT**



## Summary of Test Result

Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]: 0.370119MHz 43.34 (Margin 15.16dB) - QP 37.59 (Margin 10.91dB) - AV	FCC 15.207	Complied
3.2	15.247(a)	DTS Bandwidth	Refer as Appendix A	$\geq 500\text{kHz}$	Complied
3.3	15.247(b)	Fundamental Emission Output Power	Refer as Appendix B	Power [dBm]:30	Complied
3.4	15.247(e)	Power Spectral Density	Refer as Appendix C	PSD [dBm/3kHz]:8	Complied
3.5	15.247(d)	Test Result of Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 2399.936 MHz: 48.81dB Restricted Bands [dBuV/m at 3m]: 2483.60MHz 65.68 (Margin 8.32dB) - PK 53.76 (Margin 0.24dB) - AV	Non-Restricted Bands:> 30 dBc Bands: FCC 15.209	Complied
3.6	15.247(d)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]: 875.84MHz 42.62 (Margin 3.38dB) - PK	Non-Restricted Bands:> 30 dBc Restricted Bands: FCC 15.209	Complied



## Revision History



## 1 General Description

### 1.1 Information

#### 1.1.1 RF General Information

Band	Mode	BWch (MHz)	CH. Number	Nss-Min	Nant
2.4G	11b	20	1-11 [11]	1	4
2.4G	11g	20	1-11 [11]	1	4
2.4G	HT20	20	1-11 [11]	1,(M0-31)	4
2.4G	HT40	40	3-9 [7]	1,(M0-31)	4

Note:

- 2.4G is the 2.4GHz Band (2.4-2.4835GHz).
- 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- 11g, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM 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 type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	<input type="checkbox"/> Temporary RF connector provided
<input type="checkbox"/>	<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 checked="" type="checkbox"/>	External antenna (dedicated antennas)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Single power level with corresponding antenna(s).
<input checked="" type="checkbox"/>	<input type="checkbox"/> Multiple power level and corresponding antenna(s).

No.	Ant. Cat.	Ant. Type	Gain (dBi)
1	External	Dipole	4.5
2	External	Dipole	4.5
3	External	Dipole	4.5
4	External	Dipole	4.5



### 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"/> 99.7% - IEEE 802.11b	0.01
<input checked="" type="checkbox"/> 96.7%- IEEE 802.11g	0.15
<input checked="" type="checkbox"/> 98.7%- IEEE 802.11n (HT20)	0.06
<input checked="" type="checkbox"/> 97.4%- IEEE 802.11n (HT40)	0.11

### 1.1.5 EUT Operational Condition

Supply Voltage	<input checked="" type="checkbox"/> AC mains	<input type="checkbox"/> DC	
Type of DC Source	<input checked="" type="checkbox"/> External AC adapter	<input type="checkbox"/> From Host System	<input type="checkbox"/> Battery

### 1.1.6 EUT Operate Information

Items	Description		
Communication Mode	<input checked="" type="checkbox"/>	IP Based (Load Based)	<input type="checkbox"/> Frame Based
Beamforming Function	<input checked="" type="checkbox"/>	With beamforming	<input type="checkbox"/> Without beamforming
Operate Condition	<input checked="" type="checkbox"/>	Indoor	<input type="checkbox"/> Outdoor
	<input type="checkbox"/>	Fixed P2P	<input type="checkbox"/> Portable Client
Operate Mode	<input checked="" type="checkbox"/>	Master	



## 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
- ♦ KDB 558074 D01 v03r05
- ♦ KDB 662911 D01 v02r01

## 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
AC Conduction		CO04-HY	Ryan	22.2°C / 54%
RF Conducted		TH01-HY	Ryan	24.8°C / 65%
Radiated Emission		03CH09-HY	Thor	22.2C / 51.8%
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)

Measurement Uncertainty		
Test Item	Uncertainty	
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	
Humidity	±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
11b	4	1-11 Mbps	1 Mbps
11g	4	6-54 Mbps	6 Mbps
HT20	4	MCS 0-31	MCS 0
HT40	4	MCS 0-31	MCS 0

Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). The EUT support HT20 and HT40. Worst modulation mode of Guard Interval (GI) is 800ns.

Note 2: Modulation modes consist below configuration:  
11b: IEEE 802.11b, 11g: IEEE 802.11g, HT20/HT40: IEEE 802.11n

Note 3: RF output power specifies that Maximum Peak Conducted Output Power.

### 2.2 Test Channel Mode

Test Software Version	QRCT V3.0.174.0
-----------------------	-----------------

Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Power Setting
2.4G	11b	20	1	4	2412	L	16.5
2.4G	11b	20	1	4	2437	M	19.5
2.4G	11b	20	1	4	2462	H	16
2.4G	11g	20	1	4	2412	L	16
2.4G	11g	20	1	4	2437	M	20
2.4G	11g	20	1	4	2462	H	16.5
2.4G	HT20	20	1	4	2412	L	15
2.4G	HT20	20	1	4	2437	M	20
2.4G	HT20	20	1	4	2462	H	15.5
2.4G	HT40	40	1	4	2422	L	11
2.4G	HT40	40	1	4	2437	M	15
2.4G	HT40	40	1	4	2452	H	12.5

#### Abbreviation Explanation

Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Test Cond.	Abbreviation
2.4G	HT20	20	1,(M0-15)	2	2412	L	TN,VN	2.4G;HT20;20;1,(M0-15);2;2412;L;TN,VN
2.4G	HT40	40	1,(M0-15)	2	2437	M	TN,VN	2.4G;HT40;40;1,(M0-15);2;2437;M;TN,VN

#### Note:

- Test range channel consist of L (Low Ch.), M (Middle Ch.), H (High Ch.), S (Single 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

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth, Fundamental Emission Output Power, Power Spectral Density, Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests							
Tests Item	Emissions in Restricted Frequency Bands						
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 type="checkbox"/> EUT will be placed in fixed position. <input checked="" 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						
Orthogonal Planes of EUT	<table><thead><tr><th>X Plane</th><th>Y Plane</th><th>Z Plane</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr></tbody></table>	X Plane	Y Plane	Z Plane			
X Plane	Y Plane	Z Plane					
Worst Planes of EUT	V						
Worst Planes of Ant	V						



## 2.4 Accessories and Support Equipment

Accessories Information					
AC Adapter	Brand Name	CWT	Model Name	2ABN042F	
		Power Rating I/P:100 - 240Vac, 1.3A, O/P: 12Vdc, 3.5A			
		Power Cord 1.45 meter, non-shielded cable, w/o ferrite core			
RJ45 Cable	Power Cord	1.5 meter, non-shielded cable			

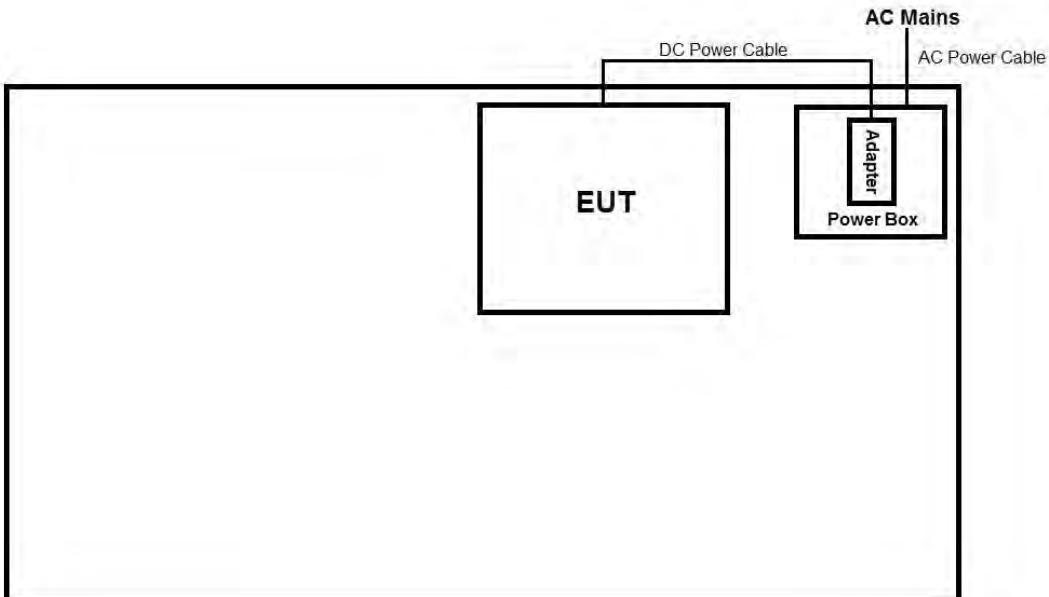
Note: Regarding to more detail and other information, please refer to user manual.

Support Equipment - RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E6400	R33002 / DOC
2	Adapter for NB	DELL	HA65NM130	R35737 / DOC

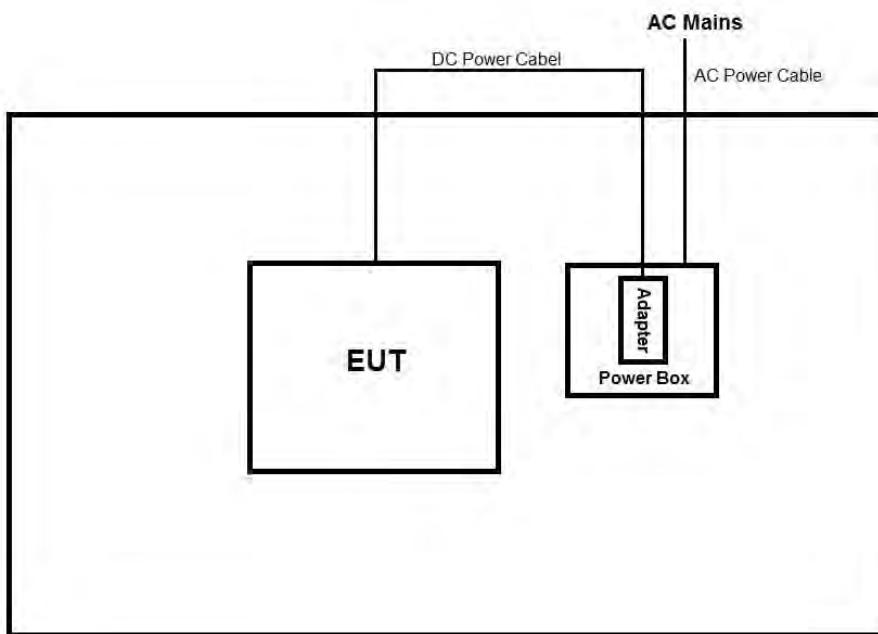
Support Equipment - AC Conduction and Radiated Emission			
No.	Equipment	Brand Name	Model Name
1	-	-	-

## 2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Test Setup Diagram - Radiated Test



### 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.

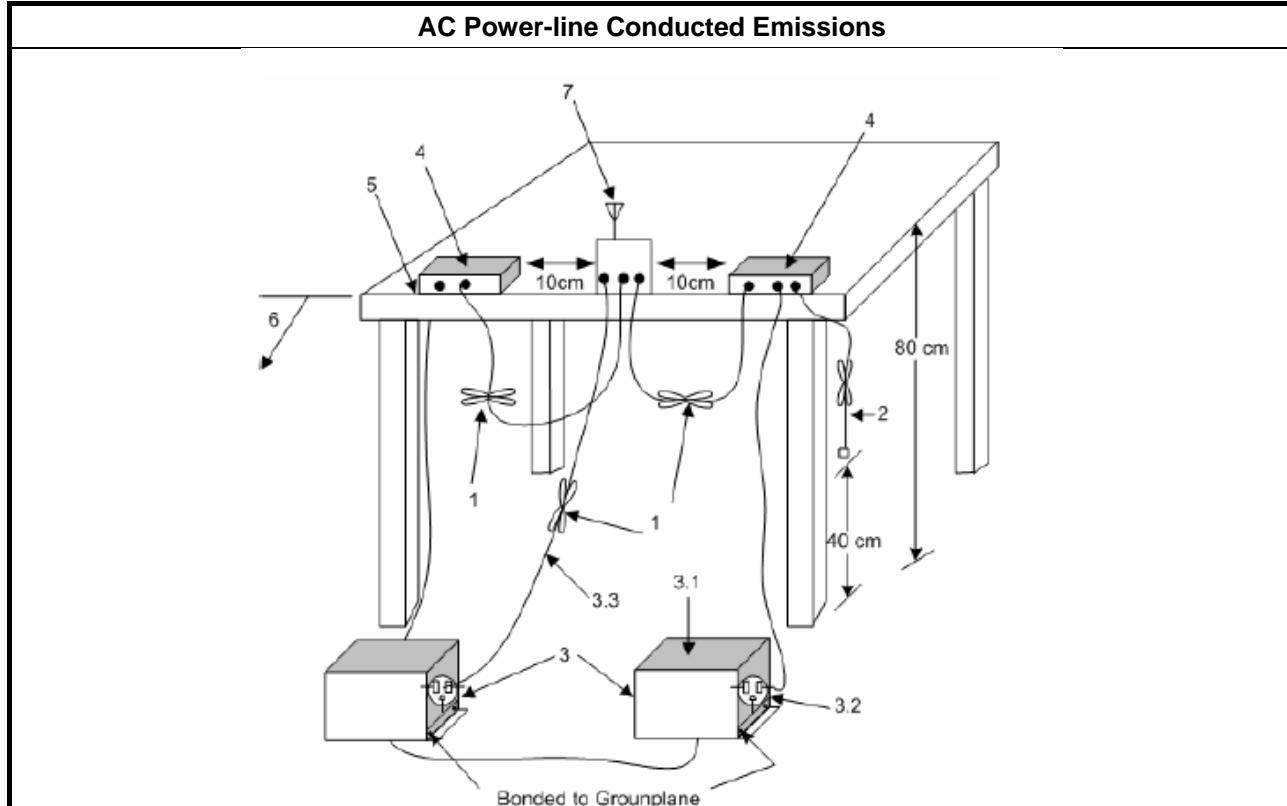
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

Test Method
▪ 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 DTS Bandwidth

### 3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
<b>Systems using digital modulation techniques:</b>
▪ 6 dB bandwidth $\geq$ 500 kHz.

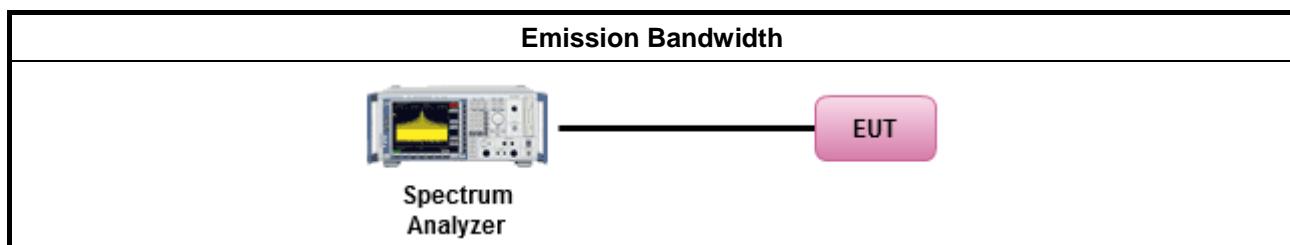
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

Test Method
▪ For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix A



### 3.3 Fundamental Emission Output Power

#### 3.3.1 Fundamental Emission Output Power Limit

<b>Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit</b>	
▪ 2400-2483.5 MHz Band:	
	▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	▪ Smart antenna system (SAS):
	- Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	- Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	- Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
<b>e.i.r.p. Power Limit:</b>	
▪ 2400-2483.5 MHz Band	
	▪ Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
	▪ Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	▪ Smart antenna system (SAS)
	- Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	- Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	- Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
<b><math>P_{Out}</math> = maximum peak conducted output power or maximum conducted output power in dBm, <math>G_{TX}</math> = the maximum transmitting antenna directional gain in dBi. <math>P_{eirp}</math> = e.i.r.p. Power in dBm.</b>	

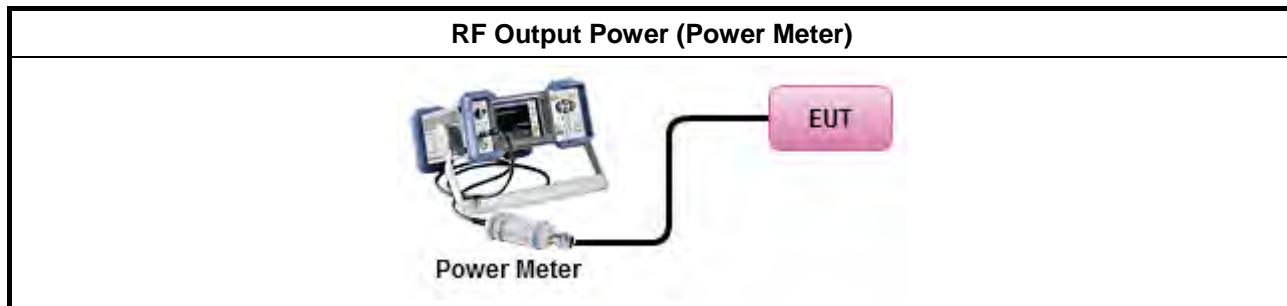
#### 3.3.2 Measuring Instruments

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

### 3.3.3 Test Procedures

Test Method	
▪ Maximum Peak Conducted Output Power	<input type="checkbox"/> Refer as KDB 558074, clause 9.1.1 Option 1 (RBW $\geq$ EBW method). <input type="checkbox"/> Refer as KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW $\geq$ DTS BW)
▪ Maximum Conducted Output Power	<p>[duty cycle <math>\geq</math> 98% or external video / power trigger]</p> <input checked="" type="checkbox"/> Refer as KDB 558074, clause 9.2.2.2 Method AVGSA-2 (spectral trace averaging). <input type="checkbox"/> Refer as KDB 558074, clause 9.2.2.3 Method AVGSA-2 Alt. (slow sweep speed) duty cycle $<$ 98% and average over on/off periods with duty factor <input checked="" type="checkbox"/> Refer as KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging). <input type="checkbox"/> Refer as KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed) RF power meter and average over on/off periods with duty factor or gated trigger <input checked="" type="checkbox"/> Refer as KDB 558074, clause 9.2.3 Method AVGPM (using an RF average power meter).
▪ For conducted measurement.	<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><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 Average Conducted Output Power

Refer as Appendix B



## 3.4 Power Spectral Density

### 3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
▪ Power Spectral Density (PSD) $\leq 8 \text{ dBm/3kHz}$

### 3.4.2 Measuring Instruments

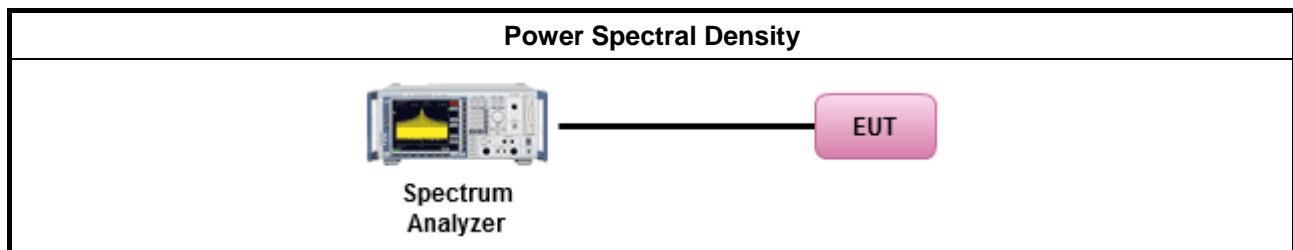
Refer a test equipment and calibration data table in this test report.

### 3.4.3 Test Procedures

Test Method
▪ Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak). [duty cycle $\geq 98\%$ or external video / power trigger]
<input type="checkbox"/> Refer as KDB 558074, clause 10.3 Method AVGPSD-2 (spectral trace averaging).
<input type="checkbox"/> Refer as KDB 558074, clause 10.4 Method AVGPSD-2 (slow sweep speed)
duty cycle $< 98\%$ and average over on/off periods with duty factor
<input type="checkbox"/> Refer as KDB 558074, clause 10.5 Method AVGPSD-2 Alt (spectral trace averaging).
<input type="checkbox"/> Refer as KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)
▪ For conducted measurement.
▪ If The EUT supports multiple transmit chains using options given below:
<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 $N_{TX}$ 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 $10 \log(N) \text{ dB}$ , 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.



### 3.4.4 Test Setup

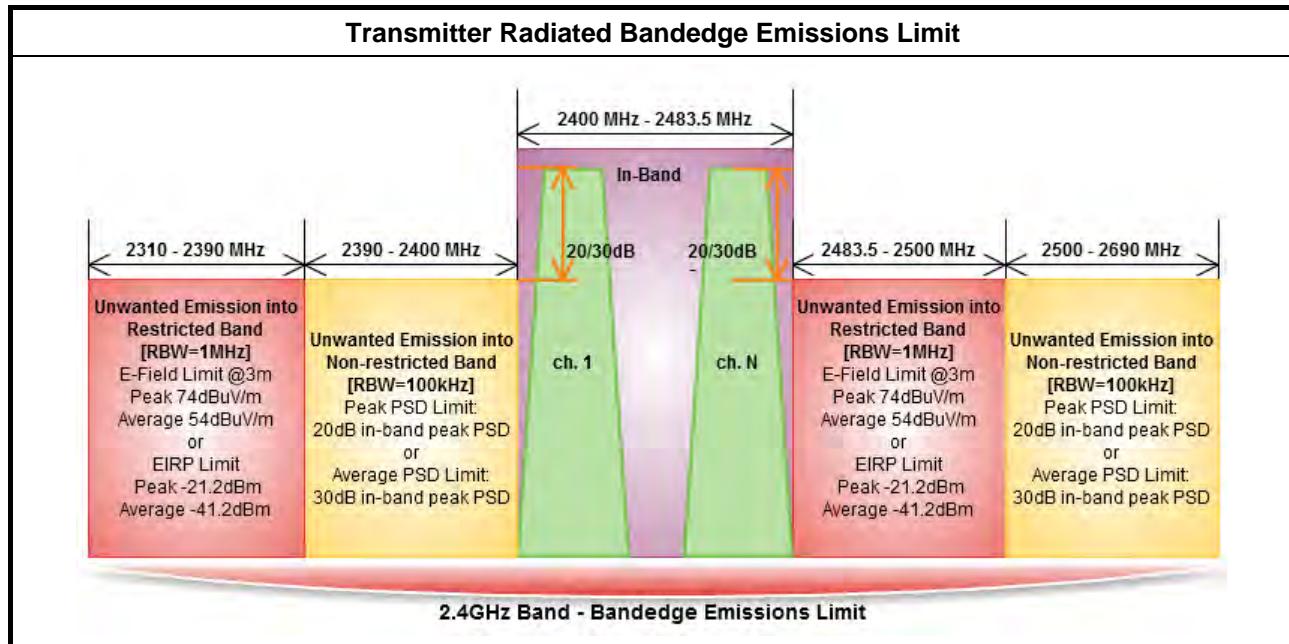


### 3.4.5 Test Result of Power Spectral Density

Refer as Appendix C

### 3.5 Transmitter Radiated Bandedge Emissions

#### 3.5.1 Transmitter Radiated Bandedge Emissions Limit



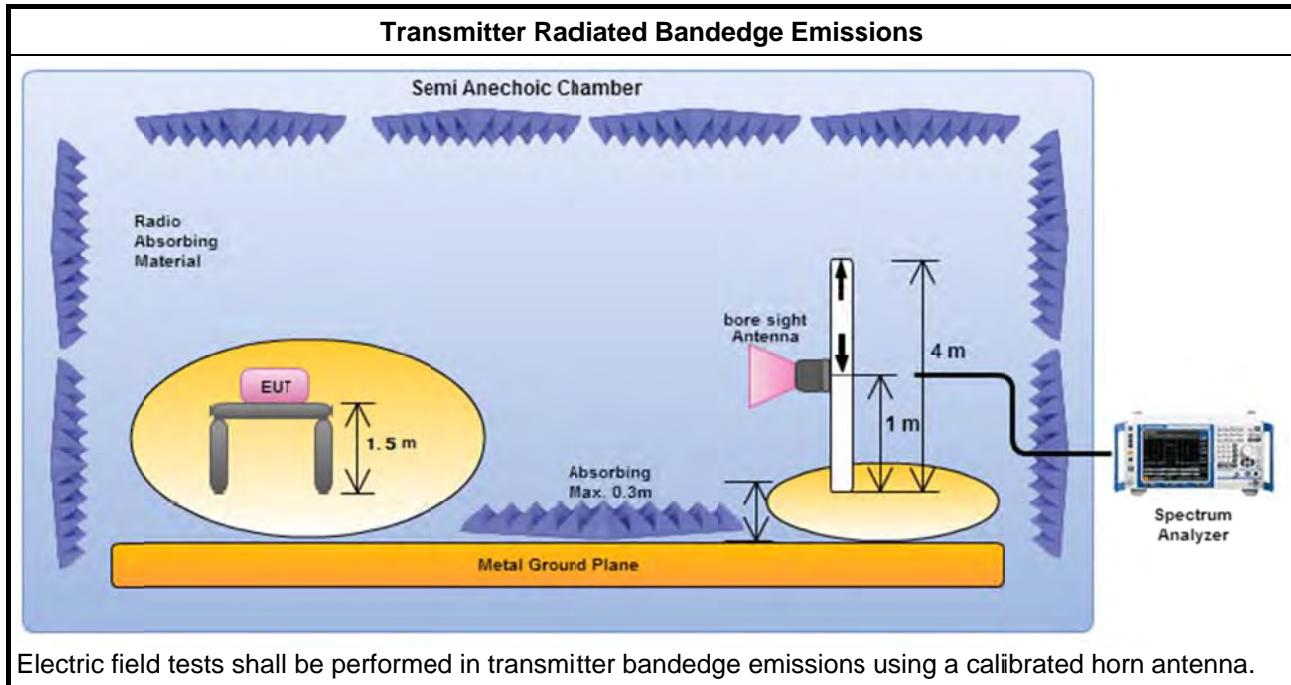
#### 3.5.2 Measuring Instruments

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 checked="" type="checkbox"/> For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 11 for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 12 for unwanted emissions into restricted bands.
<input type="checkbox"/> Refer as KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$ )
<input type="checkbox"/> Refer as KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$ ).
<input 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 KDB 558074, clause 11.3 and 12.2.4 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 KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.10 for band-edge testing.
<input checked="" 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 KDB 558074, clause 12.2.7 and ANSI C63.10, clause 6.6. Test distance is 3m.

### 3.5.4 Test Setup





### **3.5.5 Test Result of Emissions in Non-restricted Frequency Bands**

Refer as Appendix D



## 3.6 Transmitter Radiated Unwanted Emissions

### 3.6.1 Transmitter in Radiated Unwanted Emissions Limit

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

Note 1: 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 Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

### 3.6.2 Measuring Instruments

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

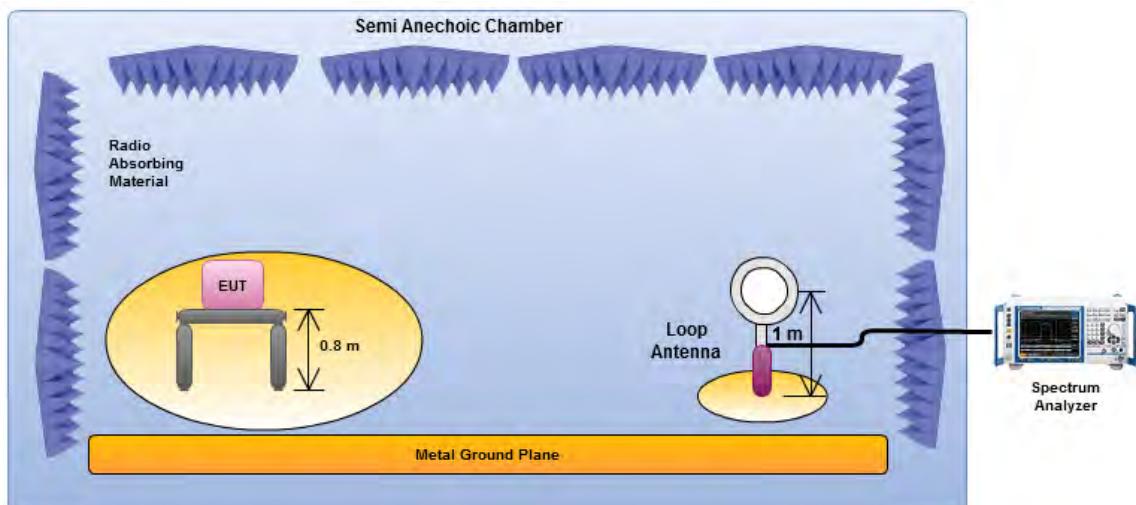


### 3.6.3 Test Procedures

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. 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 KDB 558074, clause 11 for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 12 for unwanted emissions into restricted bands.
<input type="checkbox"/> Refer as KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$ )
<input type="checkbox"/> Refer as KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$ ).
<input 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 KDB 558074, clause 11.3 and 12.2.4 measurement procedure peak limit.
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 12.2.3 measurement procedure Quasi-Peak limit.
<input checked="" type="checkbox"/> For radiated measurement, refer as KDB 558074, clause 12.2.7.
<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 1 GHz and 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 30 dB below the permissible value has no need to be reported.

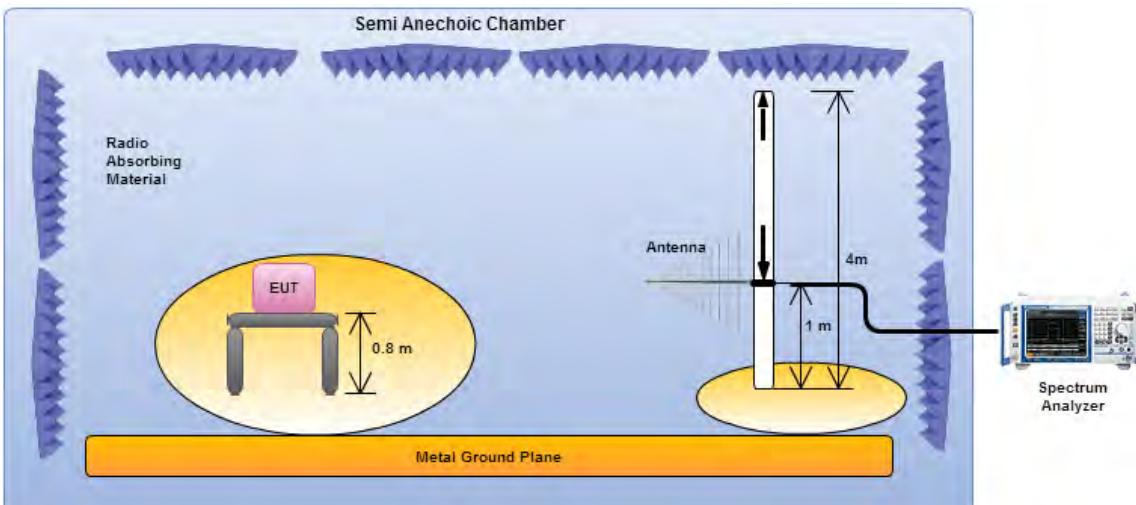
### 3.6.4 Test Setup

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

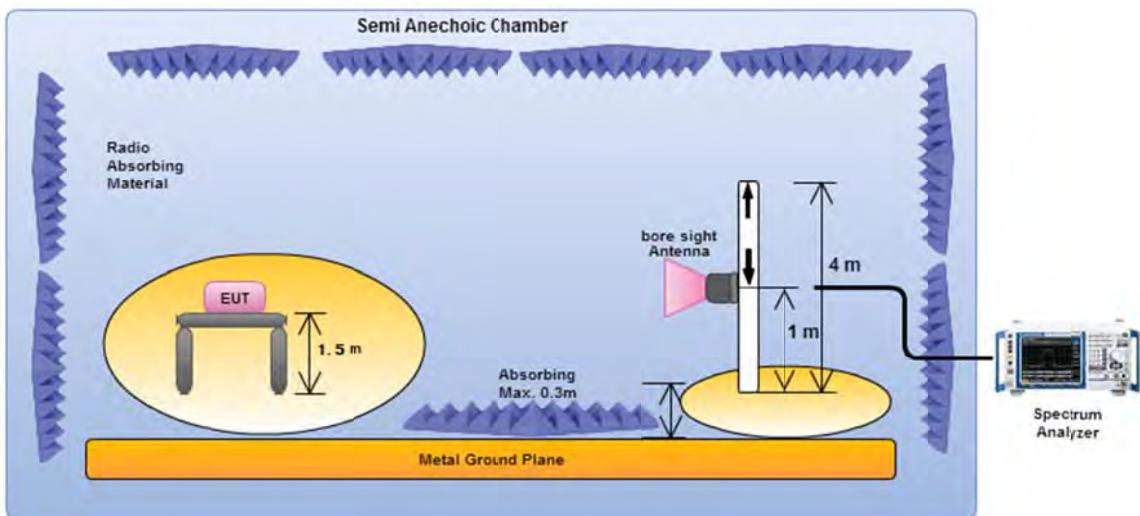


Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna.

#### 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.

**Transmitter Radiated Unwanted Emissions (above 1GHz)**

Electric field tests shall be performed in the frequency range of 1 GHz to 10th harmonic of highest fundamental frequency or 40 GHz using a calibrated horn antenna.

**3.6.5 Transmitter Radiated Unwanted Emissions (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 Transmitter Radiated Unwanted Emissions**

Refer as Appendix E



## 4 Test Equipment and Calibration Data

### Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
EMC Receiver	KEYSIGHT	N9038A	MY54130031	20Hz ~ 8.4GHz	14/04/2016	13/04/2017
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	26/01/2016	25/01/2017
LISN (Support Unit)	R&S	ENV216	101295	9kHz ~ 30MHz	04/11/2015	03/11/2016
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	NCR	NCR

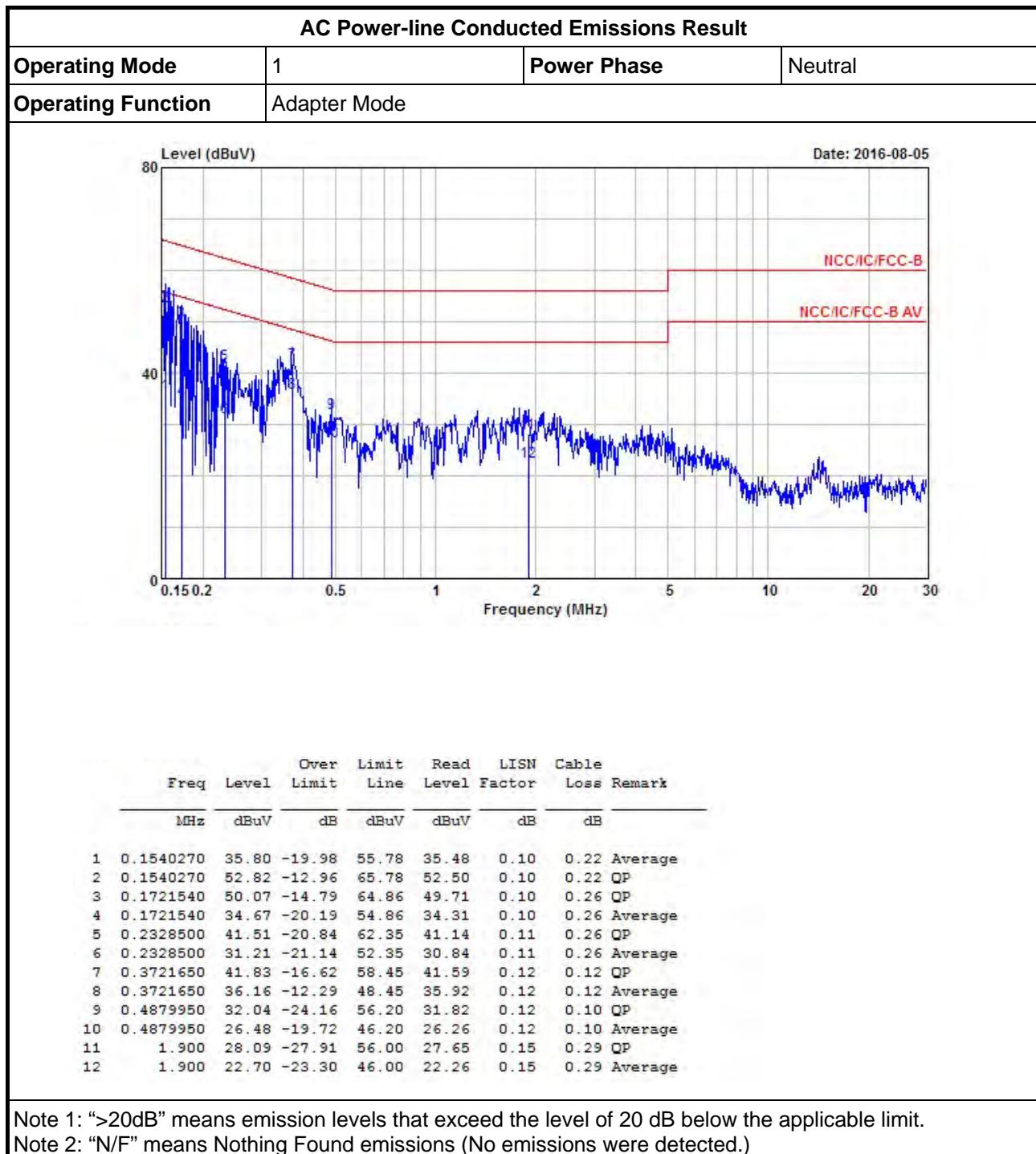
NCR: Non-Calibration required.

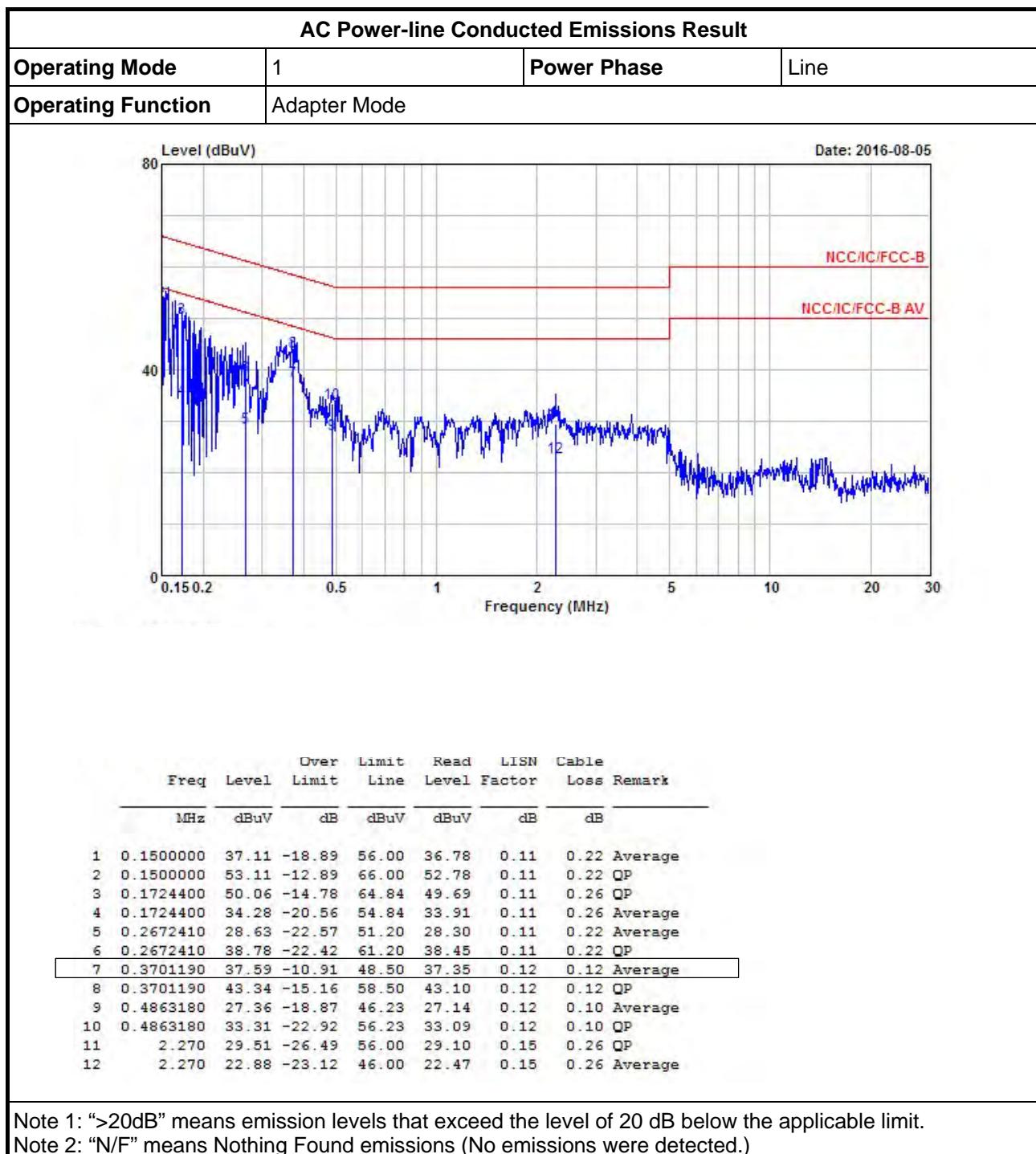
### Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101500	9KHz~40GHz	12/05/2016	11/05/ 2017
Power Sensor	Anritsu	MA2411B	917017	300MHz ~ 40GHz	04/02/2016	03/02/2017
Power Meter	Anritsu	ML2495A	949003	300MHz ~ 40GHz	04/02/2016	03/02/2017
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	28/07/2015	27/07/2016

### Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz 3m	25/04/2016	24/04/2017
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz 3m	30/06/2016	29/06/2017
Amplifier	EMC	EMC9135	980232	9kHz ~ 1.0GHz	29/01/2016	28/01/2017
Amplifier	Agilent	8449B	3008A02096	1GHz ~ 26.5GHz	11/04/2016	10/04/2017
Spectrum	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	04/07/2016	03/07/2017
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL 6111D & MTJ6102	35418	30MHz ~ 1GHz	31/03/2016	30/03/2017
Horn Antenna	SCHWARZBECK	BBHA 9120D	BBHA 9120D 1534	1GHz ~ 18GHz	22/04/2016	21/04/2017
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170614	18GHz ~ 40GHz	04/01/2016	03/01/2017
Loop Antenna	ROHDE&SCHWARZ	HFH2-Z2	100330	9 kHz~30 MHz	10/11/2014	09/11/2016



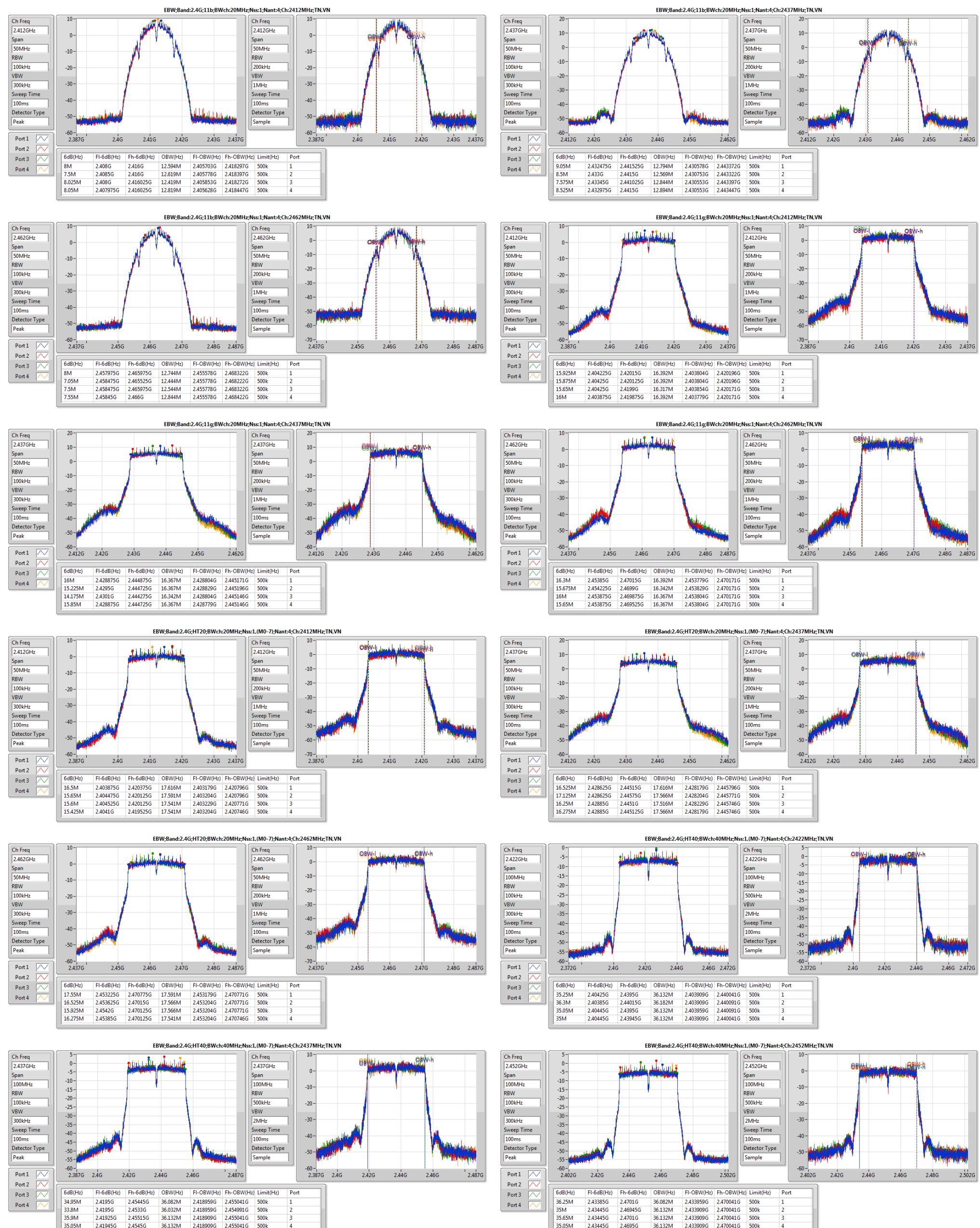


**Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4G;11b;20;1;4	9.05M	12.894M	12M9G1D	7.05M	12.419M
2.4G;11g;20;1;4	16.3M	16.392M	16M4D1D	14.175M	16.317M
2.4G;HT20;20;1,(M0-31);4	17.55M	17.616M	17M6D1D	15.425M	17.516M
2.4G;HT40;40;1,(M0-31);4	36.3M	36.182M	36M2D1D	33.8M	36.032M

**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)	P4-N dB (Hz)	P4-OBW (Hz)
2.4G;11b;20;1;4;2412;L;TN,VN	Pass	500k	8M	12.594M	7.5M	12.619M	8.025M	12.419M	8.05M	12.819M
2.4G;11b;20;1;4;2437;M;TN,VN	Pass	500k	9.05M	12.794M	8.5M	12.569M	7.575M	12.844M	8.525M	12.894M
2.4G;11b;20;1;4;2462;H;TN,VN	Pass	500k	8M	12.744M	7.05M	12.444M	7.5M	12.544M	7.55M	12.844M
2.4G;11g;20;1;4;2412;L;TN,VN	Pass	500k	15.925M	16.392M	15.875M	16.392M	15.65M	16.317M	16M	16.392M
2.4G;11g;20;1;4;2437;M;TN,VN	Pass	500k	16M	16.367M	15.225M	16.367M	14.175M	16.342M	15.85M	16.367M
2.4G;11g;20;1;4;2462;H;TN,VN	Pass	500k	16.3M	16.392M	15.675M	16.342M	16M	16.367M	15.65M	16.367M
2.4G;HT20;20;1,(M0-31);4;2412;L;TN,VN	Pass	500k	16.5M	17.616M	15.65M	17.591M	15.6M	17.541M	15.425M	17.541M
2.4G;HT20;20;1,(M0-31);4;2437;M;TN,VN	Pass	500k	16.525M	17.616M	17.125M	17.566M	16.25M	17.516M	16.275M	17.566M
2.4G;HT20;20;1,(M0-31);4;2462;H;TN,VN	Pass	500k	17.55M	17.591M	16.525M	17.566M	15.925M	17.566M	16.275M	17.541M
2.4G;HT40;40;1,(M0-31);4;2422;L;TN,VN	Pass	500k	35.25M	36.132M	36.3M	36.182M	35.05M	36.132M	35M	36.132M
2.4G;HT40;40;1,(M0-31);4;2437;M;TN,VN	Pass	500k	34.95M	36.082M	33.8M	36.032M	35.9M	36.132M	35.05M	36.132M
2.4G;HT40;40;1,(M0-31);4;2452;H;TN,VN	Pass	500k	36.25M	36.082M	35M	36.132M	35.65M	36.132M	35.05M	36.132M



**Summary**

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
2.4G;11b;20;1;4	26.13	0.4102	30.63	1.15611
2.4G;11g;20;1;4	26.75	0.47315	31.25	1.33352
2.4G;HT20;20;1,(M0-31);4	26.57	0.45394	31.07	1.27938
2.4G;HT40;40;1,(M0-31);4	21.66	0.14655	26.16	0.41305

**Result**

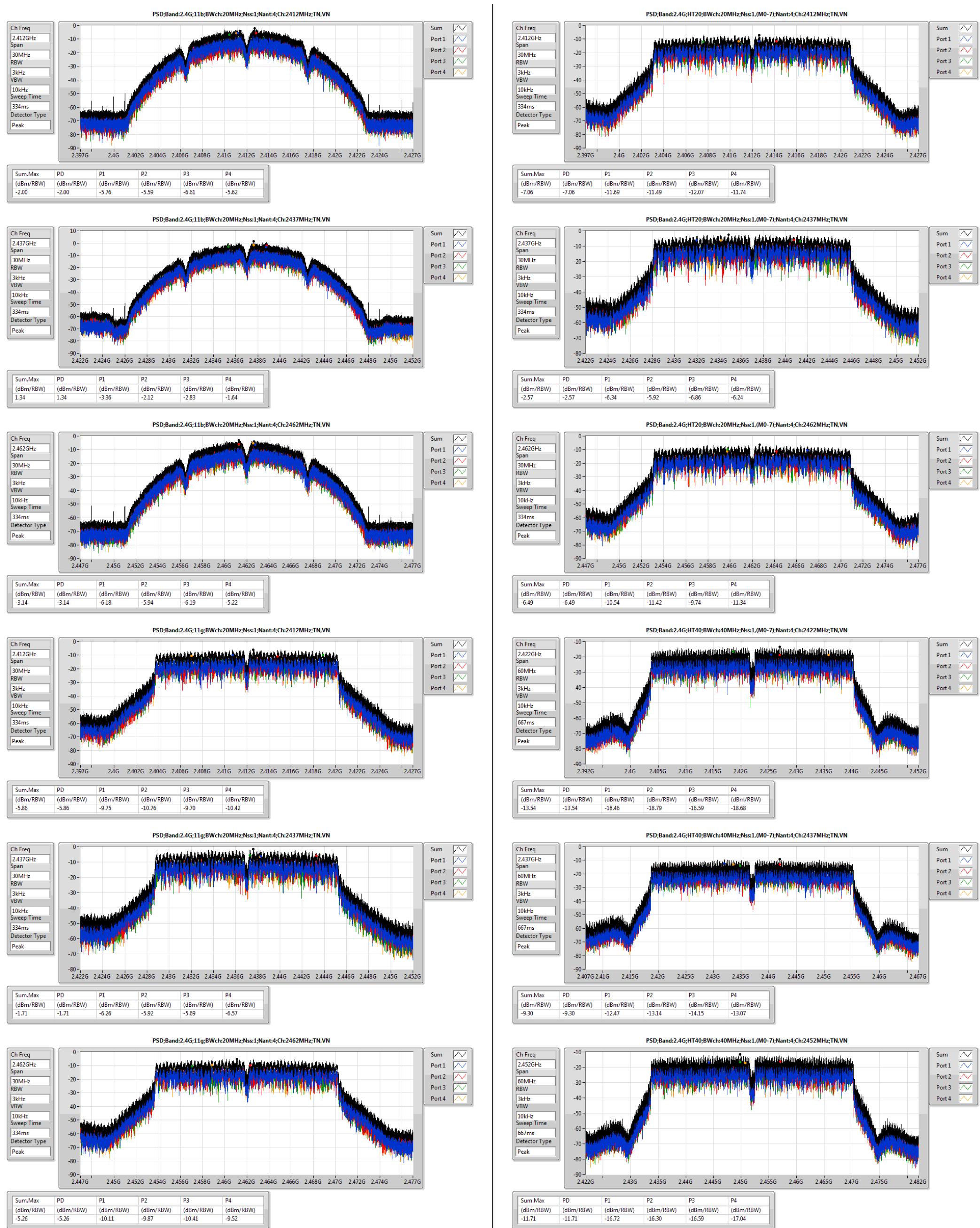
Mode	Result	DG (dBi)	EIRP (dBm)	EIRP Lim. (dBm)	Sum (dBm)	Sum Lim. (dBm)	P1 (dBm)	P2 (dBm)	P3 (dBm)	P4 (dBm)
2.4G;11b;20;1;4;2412;L;TN,VN	Pass	4.50	27.59	36.00	23.09	30.00	17.33	16.80	17.00	17.15
2.4G;11b;20;1;4;2437;M;TN,VN	Pass	4.50	30.63	36.00	26.13	30.00	20.35	20.04	20.08	19.97
2.4G;11b;20;1;4;2462;H;TN,VN	Pass	4.50	27.07	36.00	22.57	30.00	16.64	16.62	16.55	16.39
2.4G;11g;20;1;4;2412;L;TN,VN	Pass	4.50	27.40	36.00	22.90	30.00	17.11	16.58	16.79	17.01
2.4G;11g;20;1;4;2437;M;TN,VN	Pass	4.50	31.25	36.00	26.75	30.00	20.83	20.81	20.64	20.62
2.4G;11g;20;1;4;2462;H;TN,VN	Pass	4.50	27.90	36.00	23.40	30.00	17.46	17.46	17.25	17.35
2.4G;HT20;20;1,(M0-31);4;2412;L;TN,VN	Pass	4.50	26.17	36.00	21.67	30.00	15.81	15.41	15.53	15.81
2.4G;HT20;20;1,(M0-31);4;2437;M;TN,VN	Pass	4.50	31.07	36.00	26.57	30.00	20.64	20.59	20.42	20.53
2.4G;HT20;20;1,(M0-31);4;2462;H;TN,VN	Pass	4.50	26.59	36.00	22.09	30.00	16.09	16.15	15.97	16.07
2.4G;HT40;40;1,(M0-31);4;2422;L;TN,VN	Pass	4.50	22.23	36.00	17.73	30.00	11.66	11.65	11.81	11.70
2.4G;HT40;40;1,(M0-31);4;2437;M;TN,VN	Pass	4.50	26.16	36.00	21.66	30.00	15.65	15.55	15.62	15.73
2.4G;HT40;40;1,(M0-31);4;2452;H;TN,VN	Pass	4.50	23.59	36.00	19.09	30.00	13.10	13.19	12.86	13.13

**Summary**

Mode	PD (dBm/RBW)	EIRP.PD (dBm/RBW)
2.4G;11b;20;1;4	1.34	11.86
2.4G;11g;20;1;4	-1.71	8.81
2.4G;HT20;20;1,(M0-31);4	-2.57	7.95
2.4G;HT40;40;1,(M0-31);4	-9.30	1.22

**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)	P4 (dBm/RBW)
2.4G;11b;20;1;4;2412;L;TN,VN	Pass	3k	3k	0.00	10.52	-2.00	-2.00	8.00	8.52	Inf	-5.76	-5.59	-6.61	-5.62
2.4G;11b;20;1;4;2437;M;TN,VN	Pass	3k	3k	0.00	10.52	1.34	1.34	8.00	11.86	Inf	-3.36	-2.12	-2.83	-1.64
2.4G;11b;20;1;4;2462;H;TN,VN	Pass	3k	3k	0.00	10.52	-3.14	-3.14	8.00	7.38	Inf	-6.18	-5.94	-6.19	-5.22
2.4G;11g;20;1;4;2412;L;TN,VN	Pass	3k	3k	0.00	10.52	-5.86	-5.86	8.00	4.66	Inf	-9.75	-10.76	-9.70	-10.42
2.4G;11g;20;1;4;2437;M;TN,VN	Pass	3k	3k	0.00	10.52	-1.71	-1.71	8.00	8.81	Inf	-6.26	-5.92	-5.69	-6.57
2.4G;11g;20;1;4;2462;H;TN,VN	Pass	3k	3k	0.00	10.52	-5.26	-5.26	8.00	5.26	Inf	-10.11	-9.87	-10.41	-9.52
2.4G;HT20;20;1,(M0-31);4;2412;L;TN,VN	Pass	3k	3k	0.00	10.52	-7.06	-7.06	8.00	3.46	Inf	-11.69	-11.49	-12.07	-11.74
2.4G;HT20;20;1,(M0-31);4;2437;M;TN,VN	Pass	3k	3k	0.00	10.52	-2.57	-2.57	8.00	7.95	Inf	-6.34	-5.92	-6.86	-6.24
2.4G;HT20;20;1,(M0-31);4;2462;H;TN,VN	Pass	3k	3k	0.00	10.52	-6.49	-6.49	8.00	4.03	Inf	-10.54	-11.42	-9.74	-11.34
2.4G;HT40;40;1,(M0-31);4;2422;L;TN,VN	Pass	3k	3k	0.00	10.52	-13.54	-13.54	8.00	-3.02	Inf	-18.46	-18.79	-16.59	-18.68
2.4G;HT40;40;1,(M0-31);4;2437;M;TN,VN	Pass	3k	3k	0.00	10.52	-9.30	-9.30	8.00	1.22	Inf	-12.47	-13.14	-14.15	-13.07
2.4G;HT40;40;1,(M0-31);4;2452;H;TN,VN	Pass	3k	3k	0.00	10.52	-11.71	-11.71	8.00	-1.19	Inf	-16.72	-16.30	-16.59	-17.04





## Transmitter Radiated Bandedge Emissions

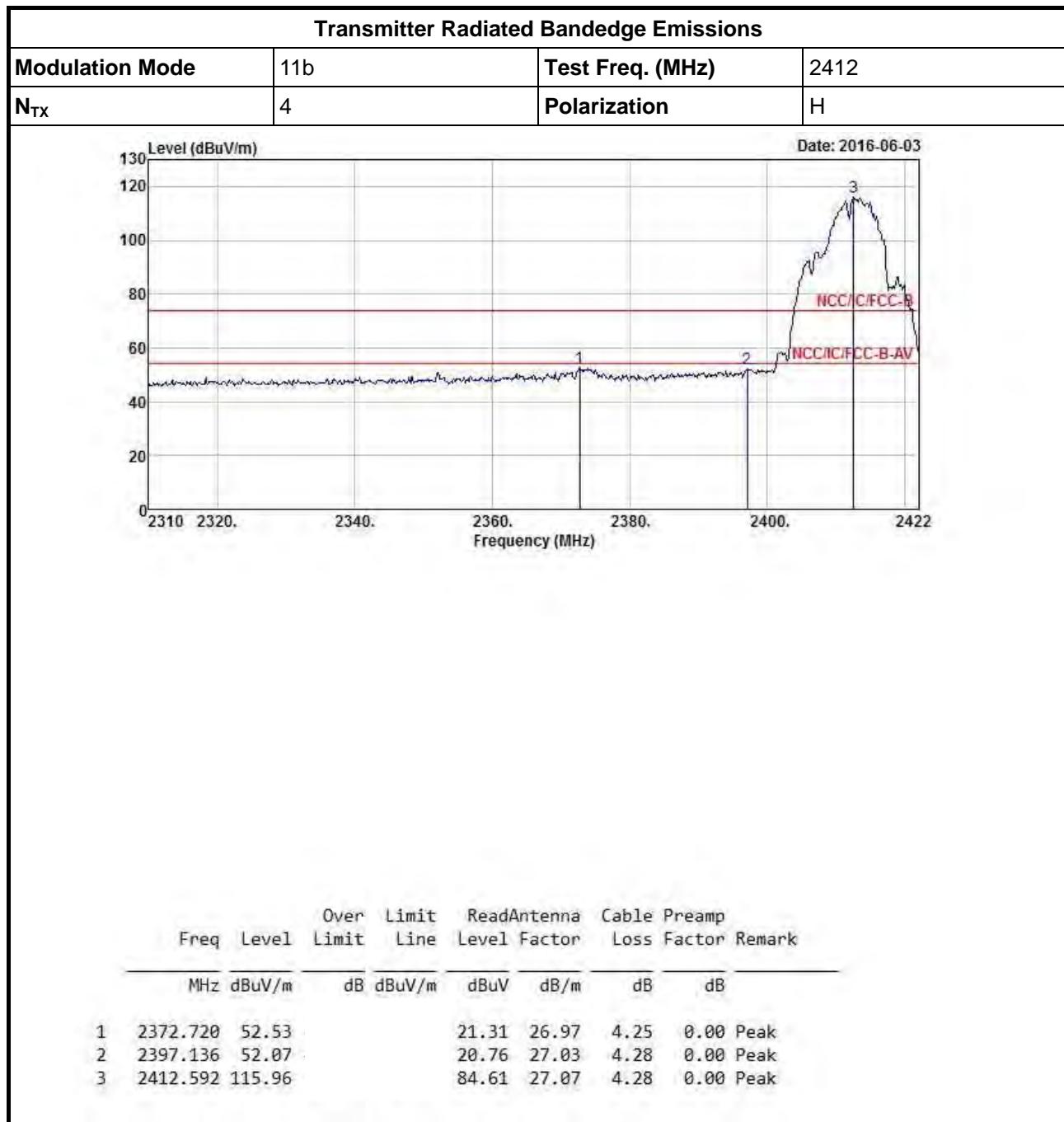
## Appendix D

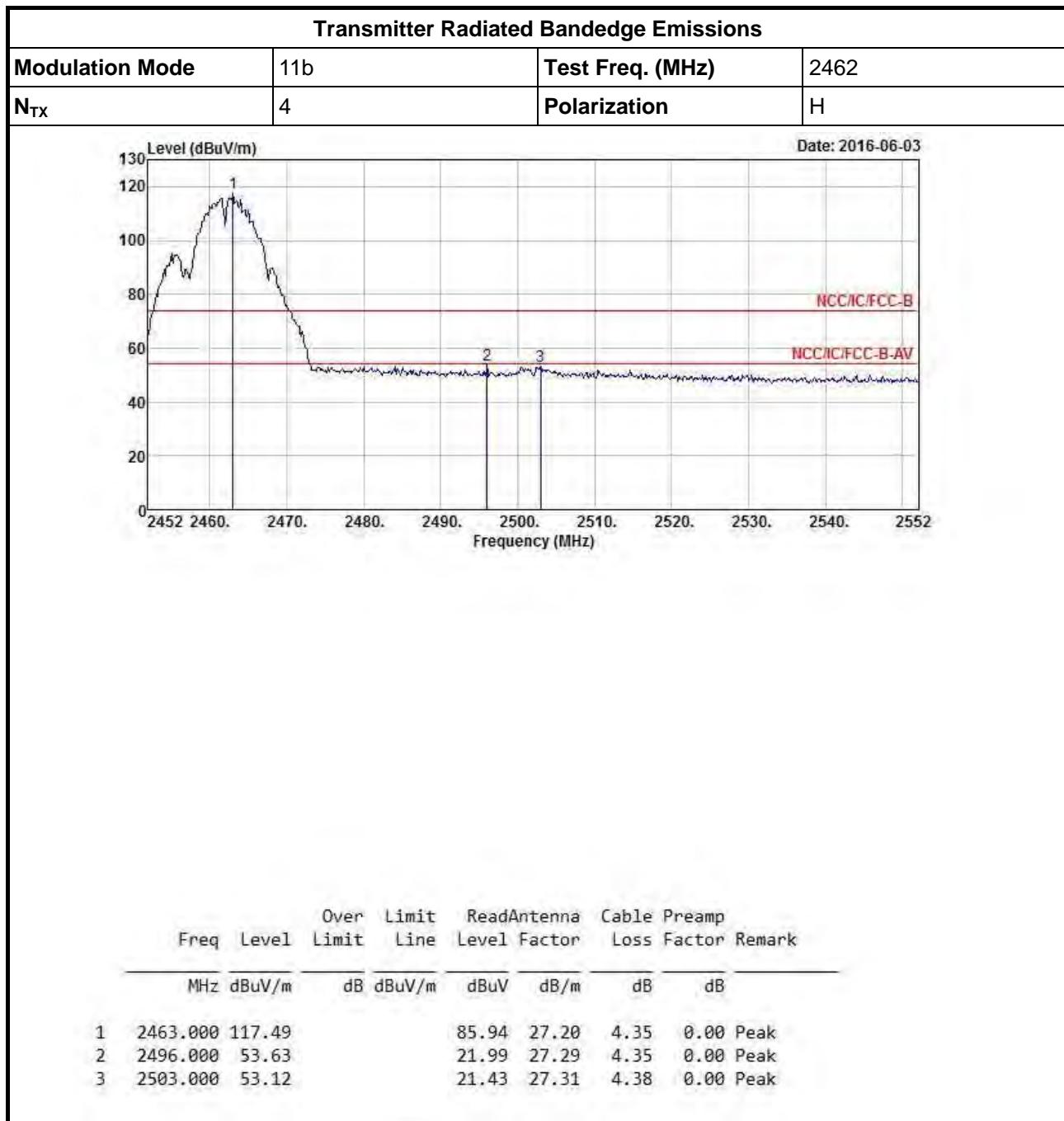
2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Non-restricted Band)								
Modulation	N <sub>TX</sub>	Test Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Pol.
11b	4	2412	115.96	2397.136	52.07	63.89	30	V
11b	4	2462	117.49	2503.000	53.12	64.37	30	V
11g	4	2412	111.65	2399.936	59.16	52.49	30	V
11g	4	2462	112.59	2502.200	50.49	62.10	30	V
HT20	4	2412	110.97	2399.936	62.16	48.81	30	V
HT20	4	2462	110.64	2504.800	50.15	60.49	30	V
HT40	4	2422	105.99	2391.312	55.01	50.98	30	V
HT40	4	2452	106.46	2504.480	50.03	56.43	30	V

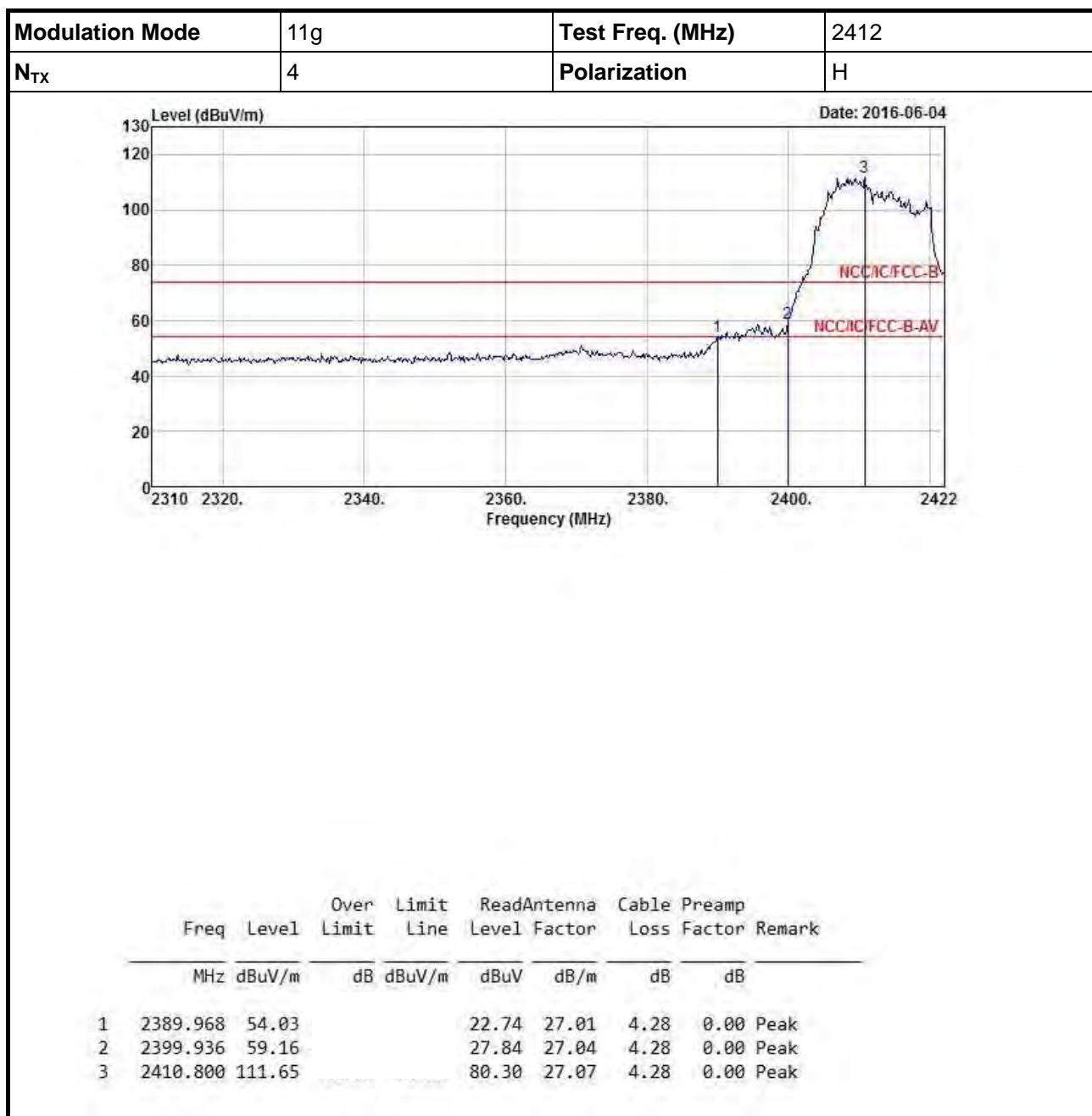
Note 1: Measurement worst emissions of receive antenna polarization

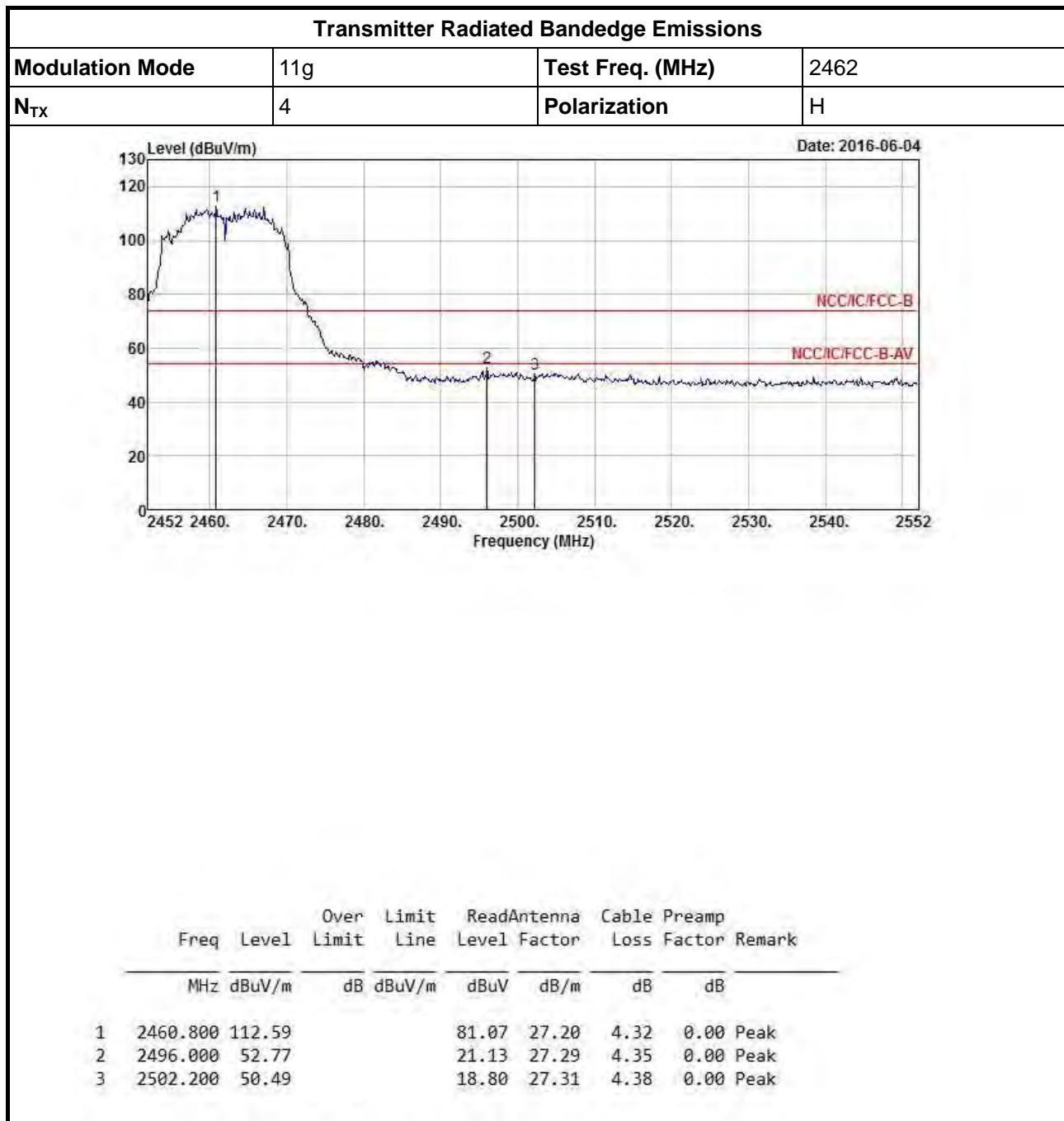
2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)										
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
11b	4	2412	3	233.616	63.00	74	2373.168	53.35	54	V
11b	4	2462	3	2484.400	64.98	74	2495.800	53.19	54	V
11g	4	2412	3	2389.968	65.08	74	2389.968	53.49	54	V
11g	4	2462	3	2485.400	64.16	74	2483.600	53.65	54	V
HT20	4	2412	3	2389.968	63.88	74	2389.968	53.58	54	V
HT20	4	2462	3	2483.600	65.68	74	2483.600	53.76	54	V
HT40	4	2422	3	2389.992	65.30	74	2389.992	53.30	54	V
HT40	4	2452	3	2484.080	67.13	74	2484.080	53.69	54	V

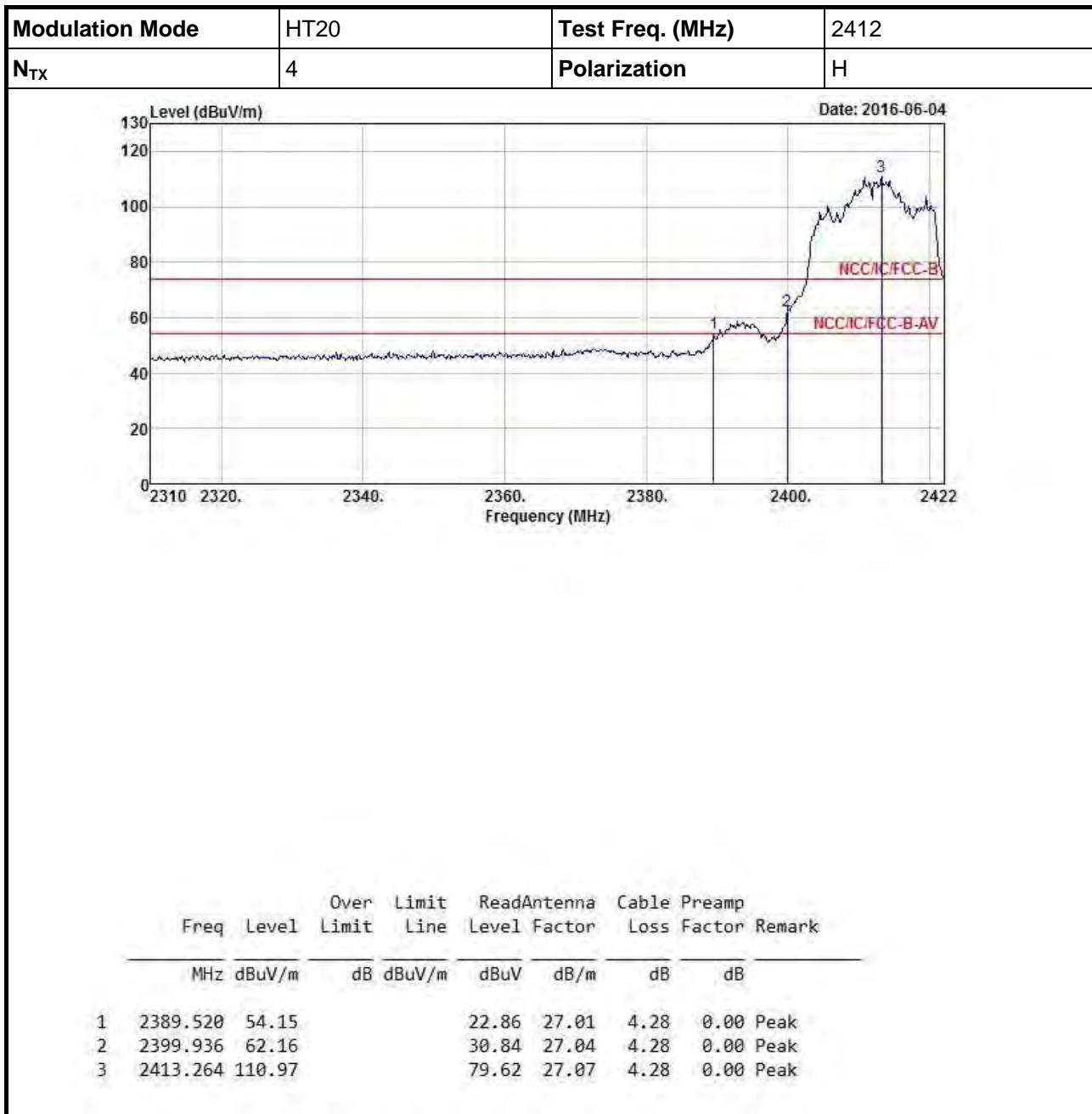
Note 1: Measurement worst emissions of receive antenna polarization.

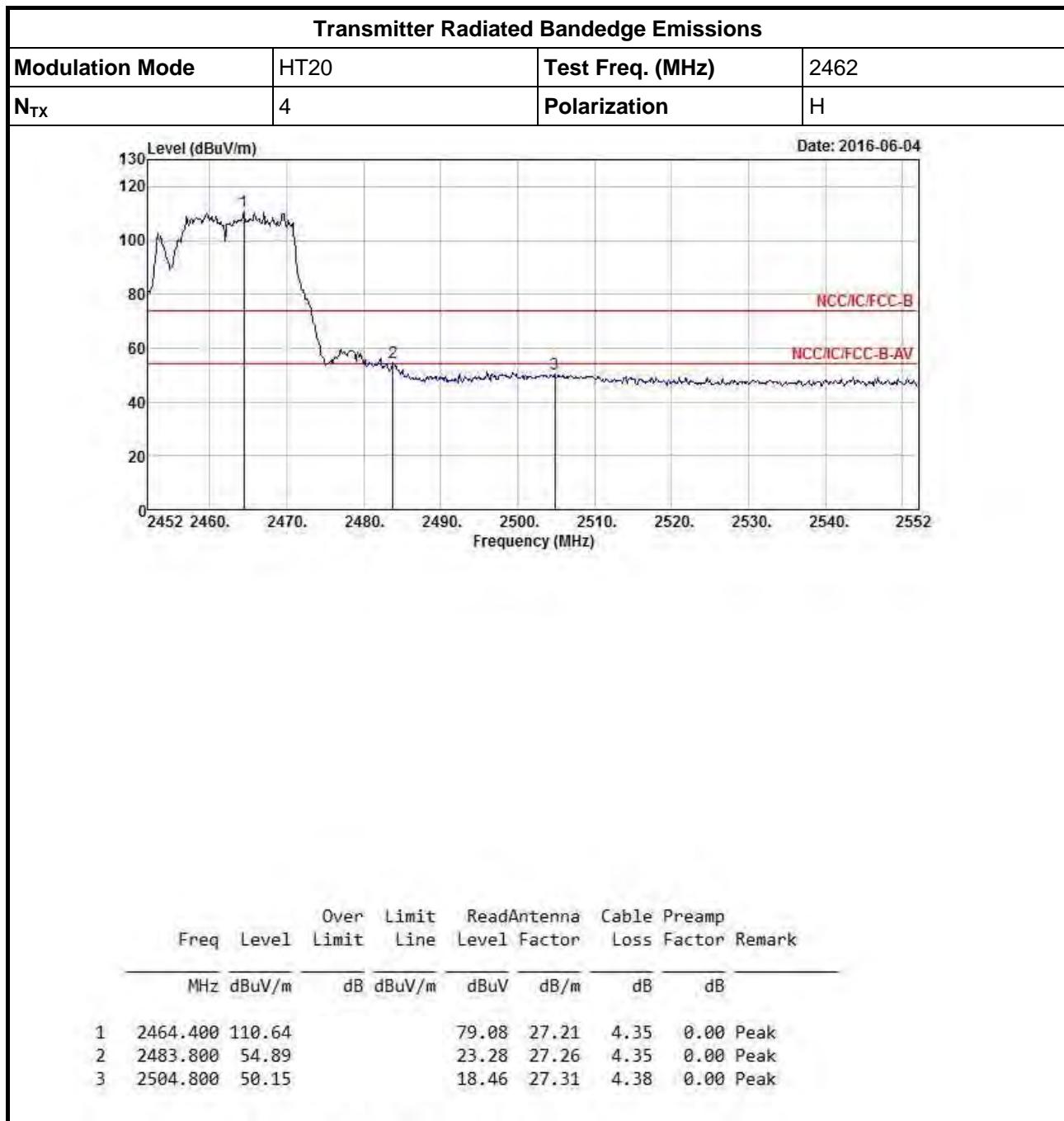
**Transmitter Radiated Bandedge Emissions (Non-restricted Band)**


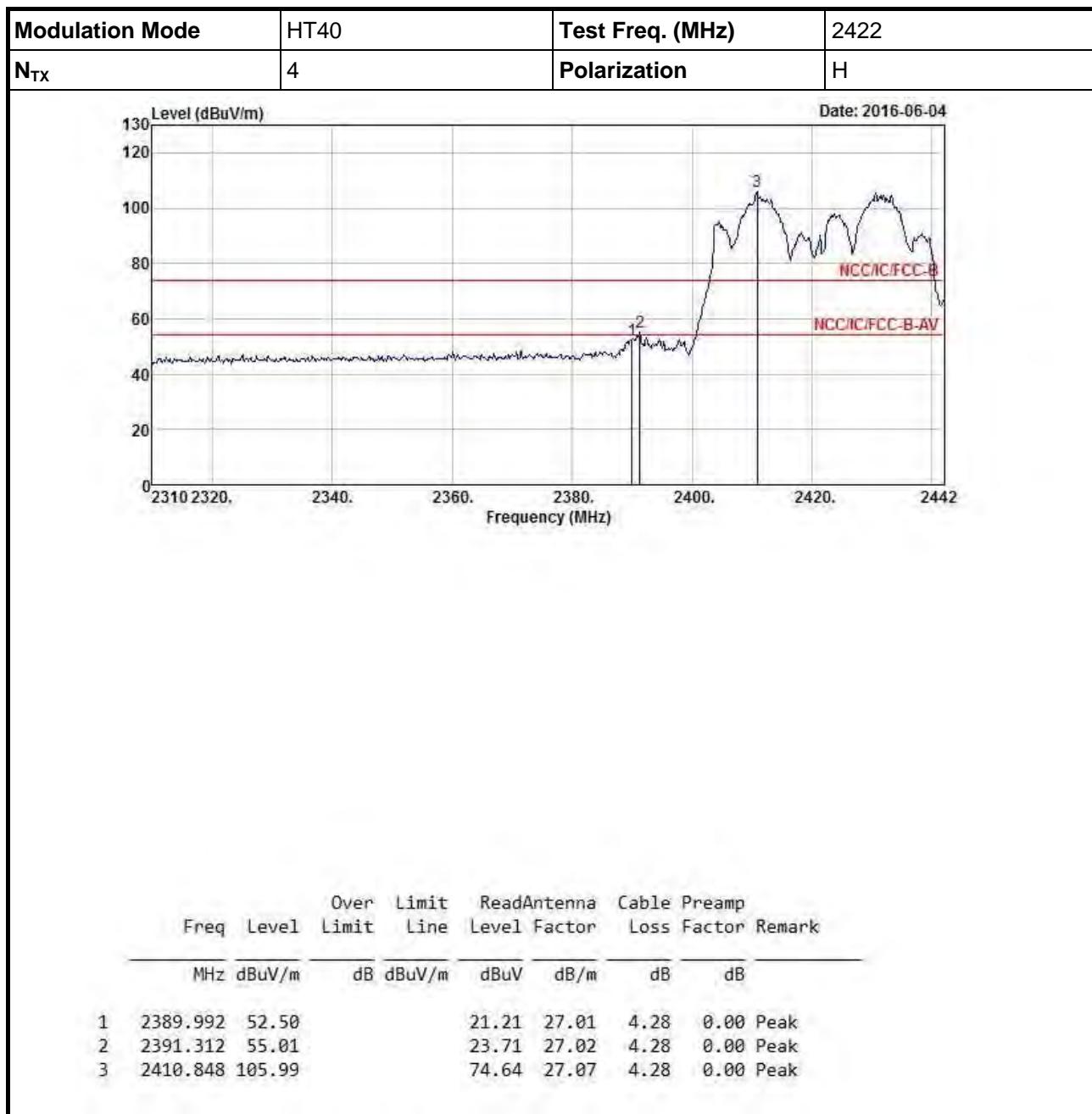










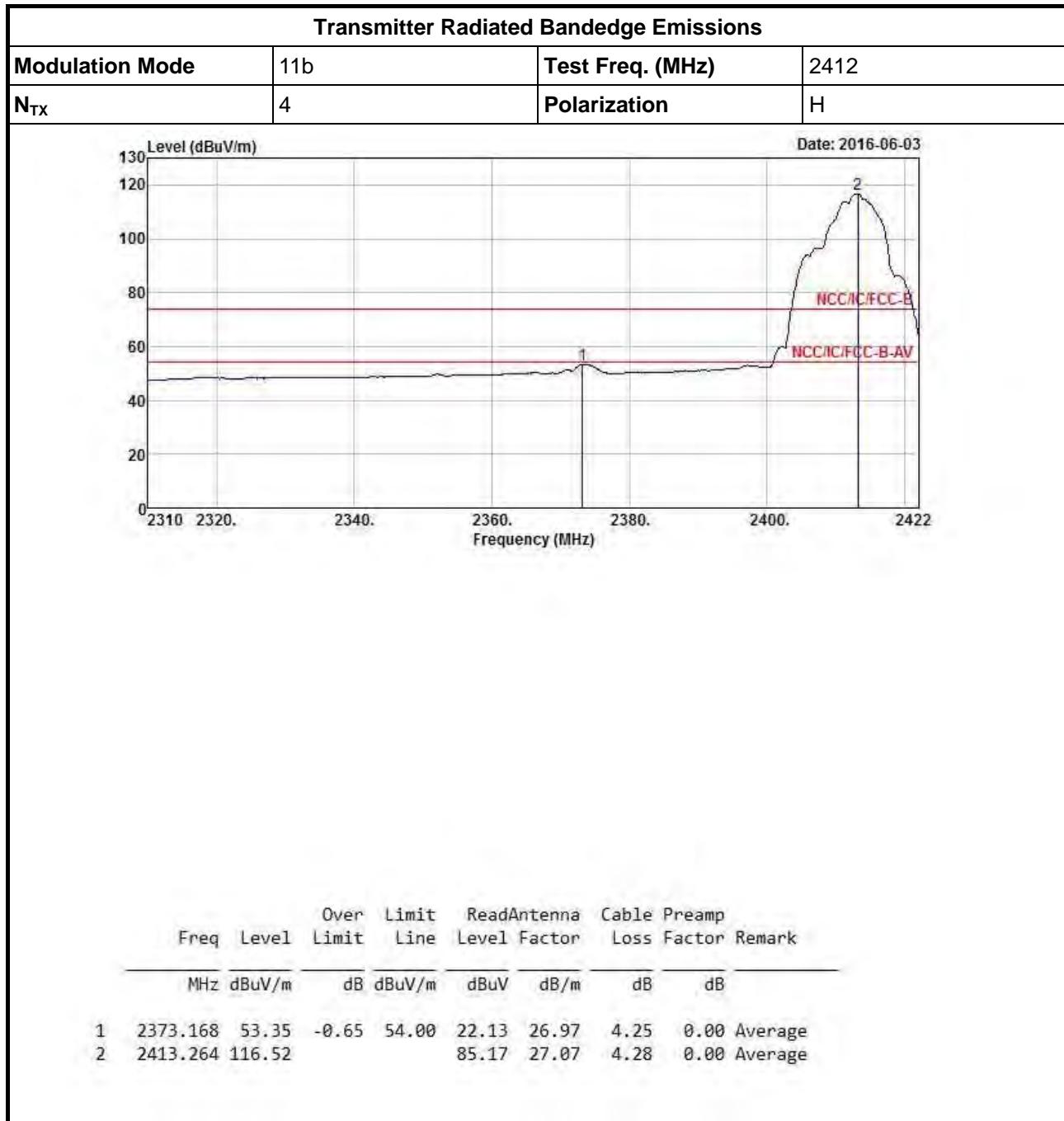


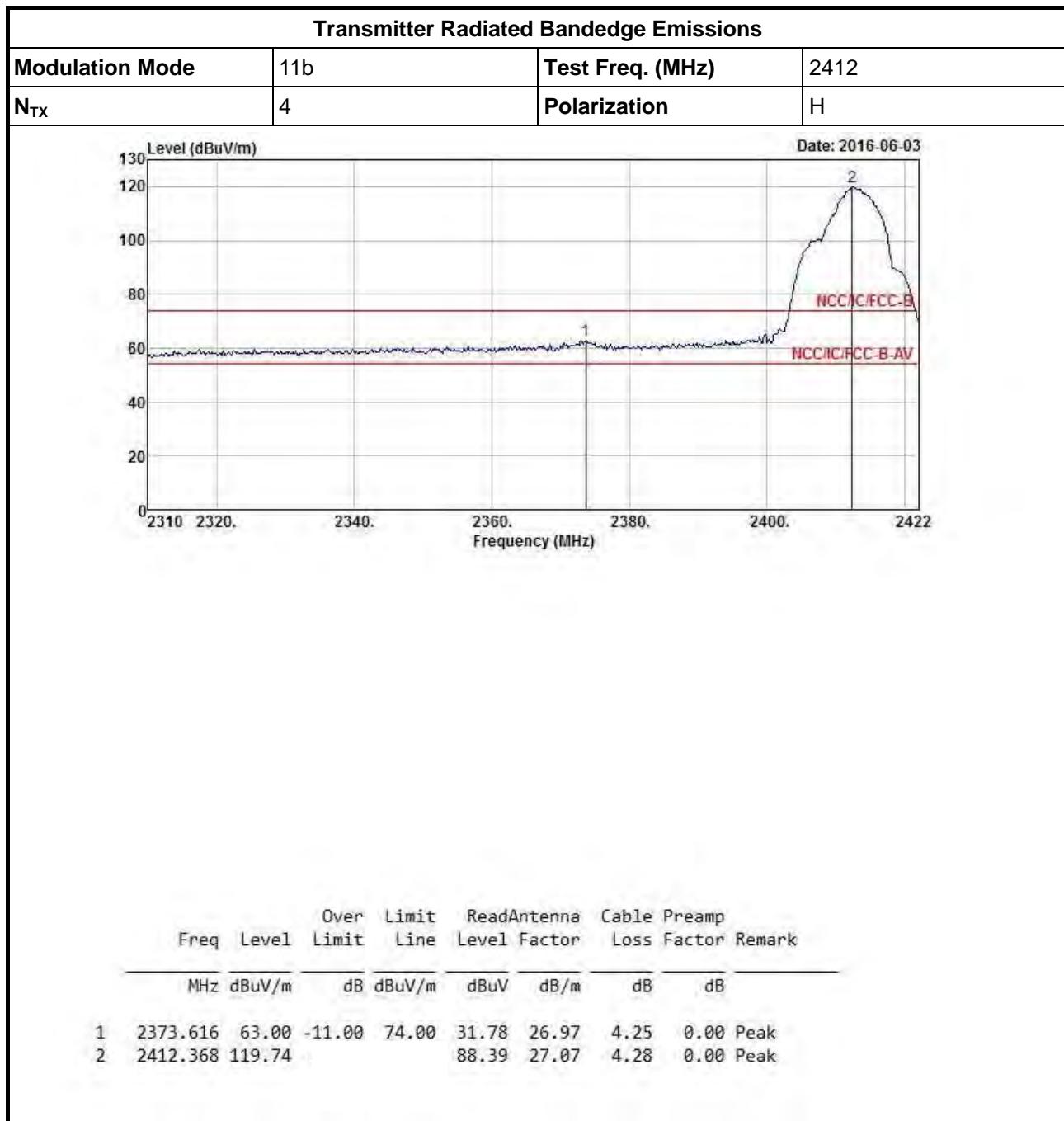


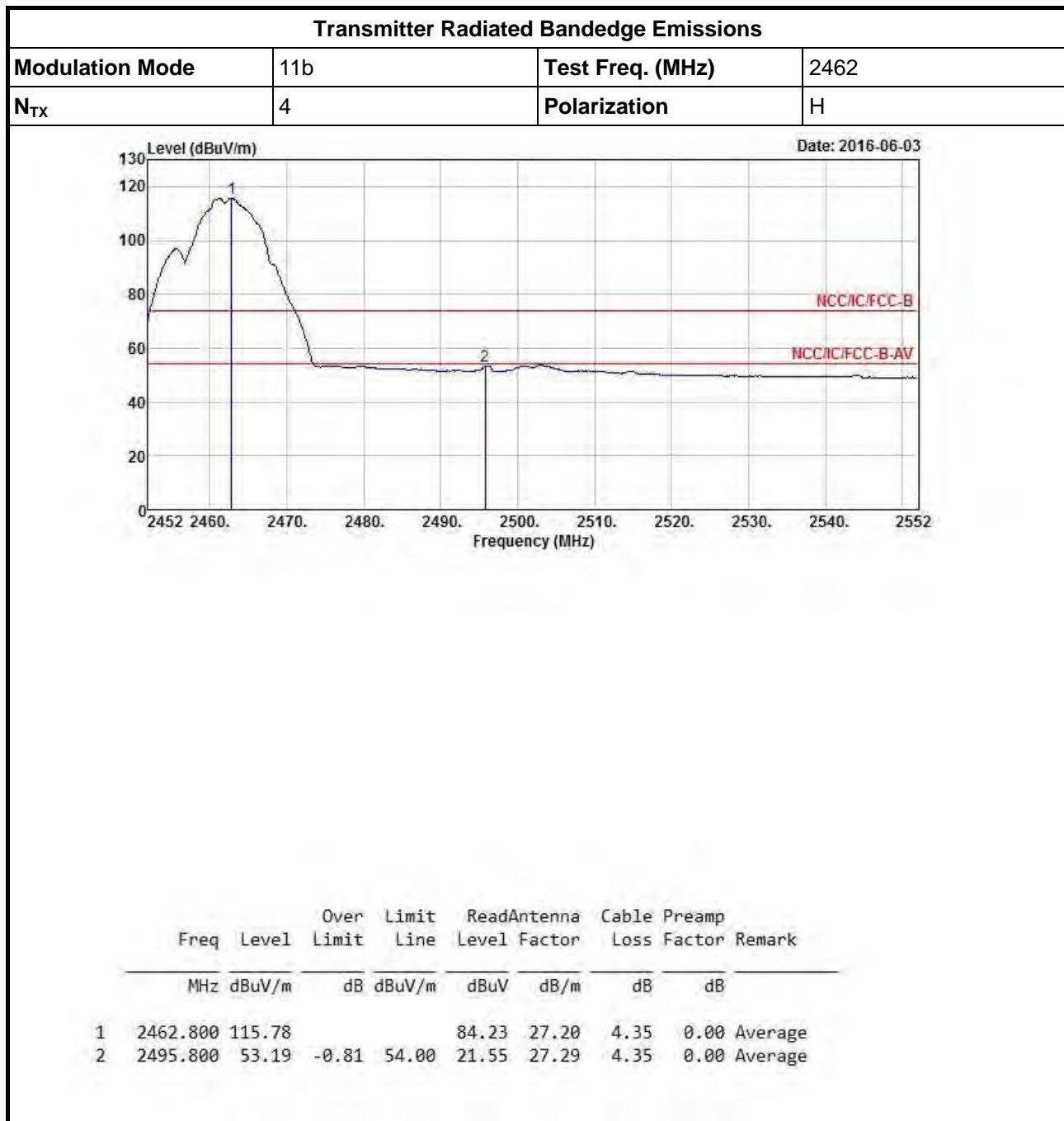
## Transmitter Radiated Bandedge Emissions

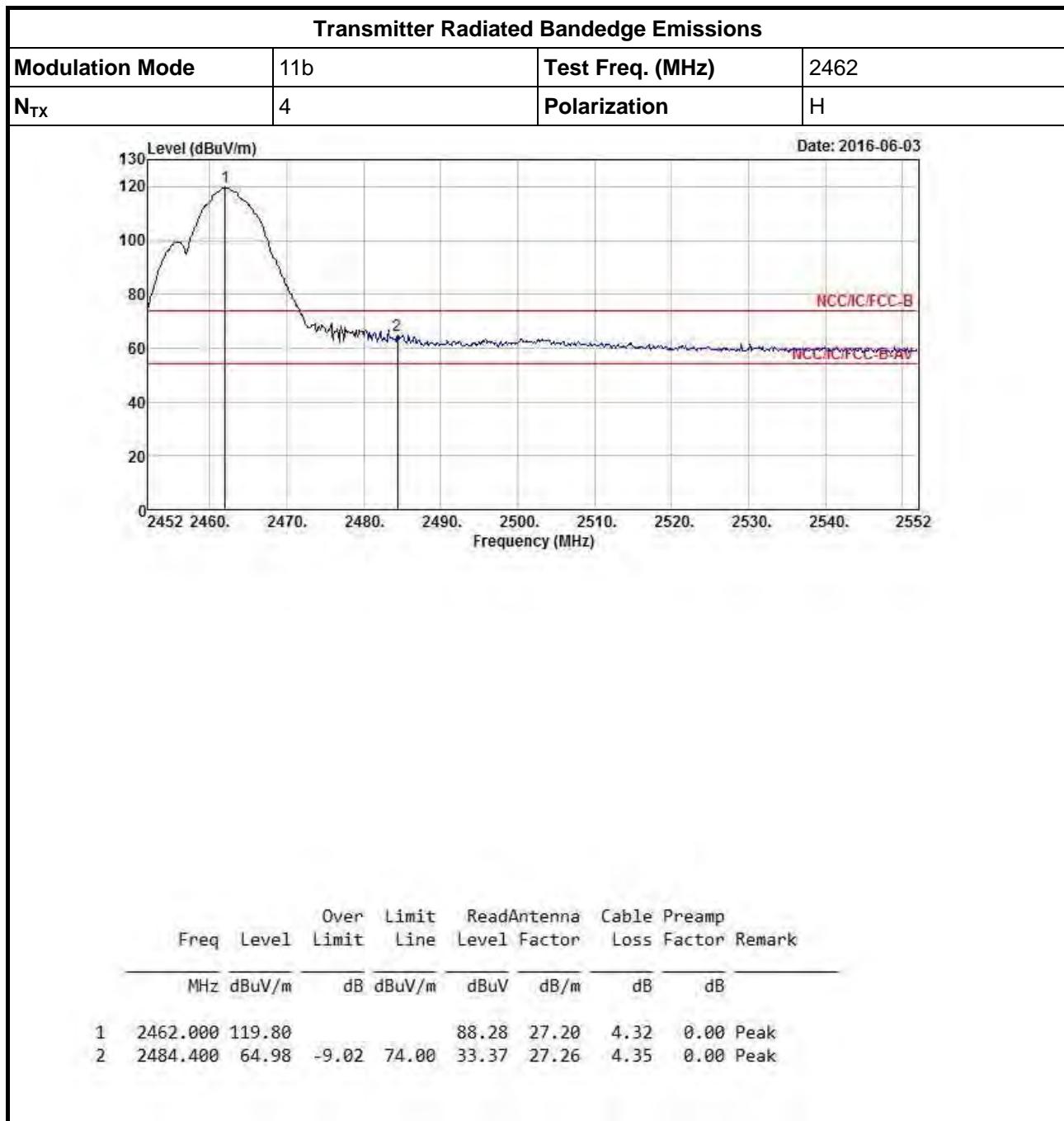
Appendix D

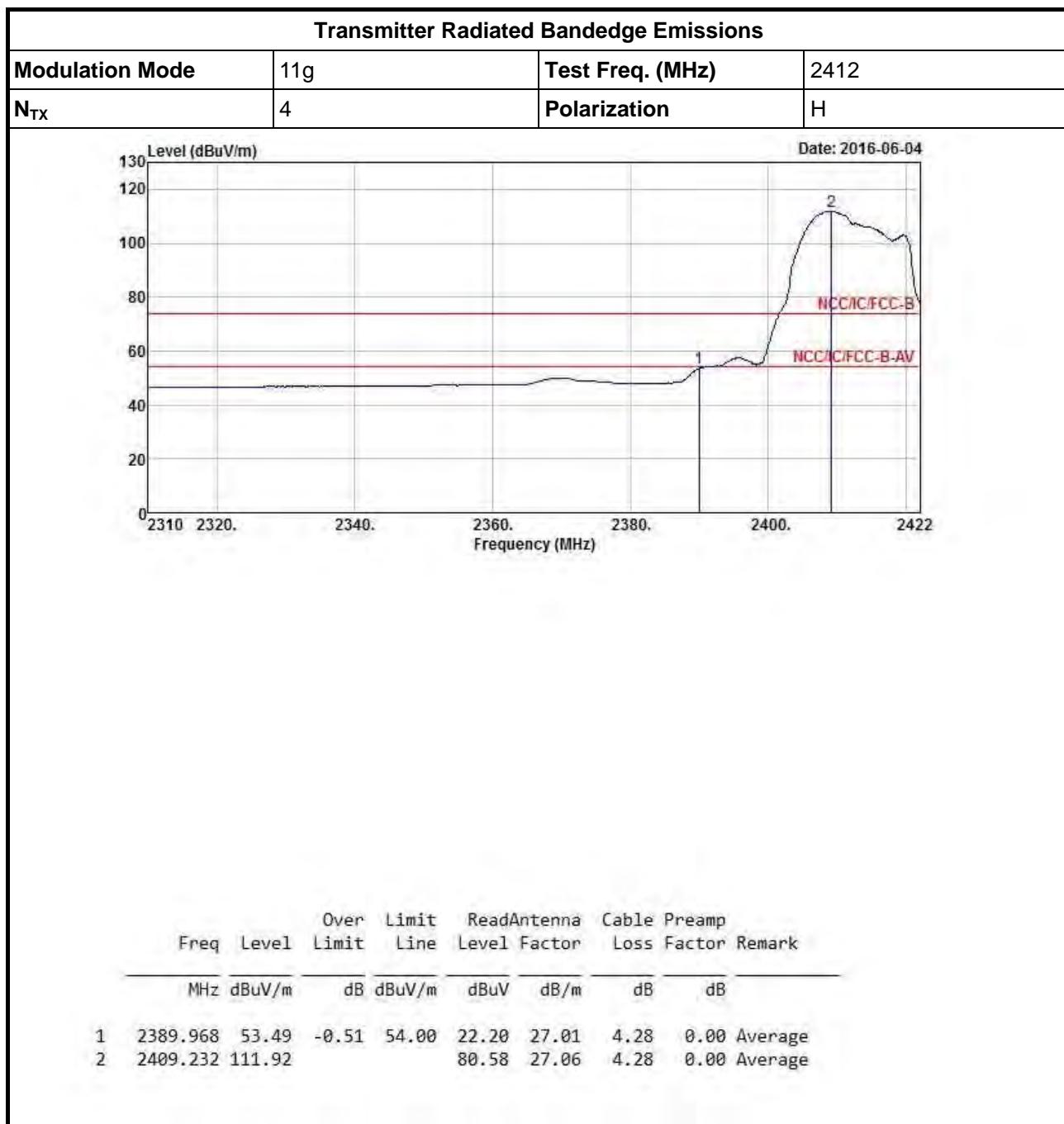


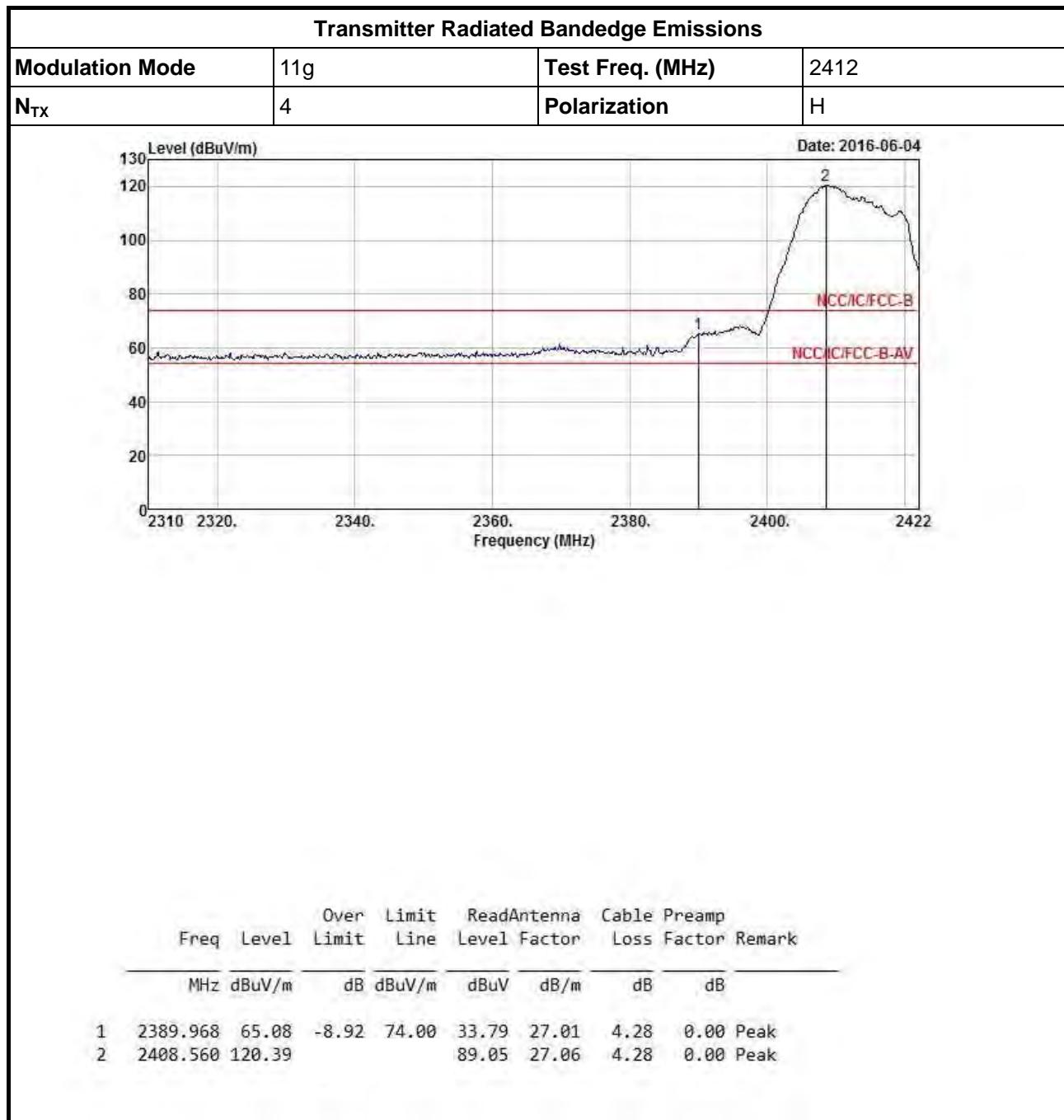
**1.1.1 Transmitter Radiated Bandedge Emissions (Restricted Band)**








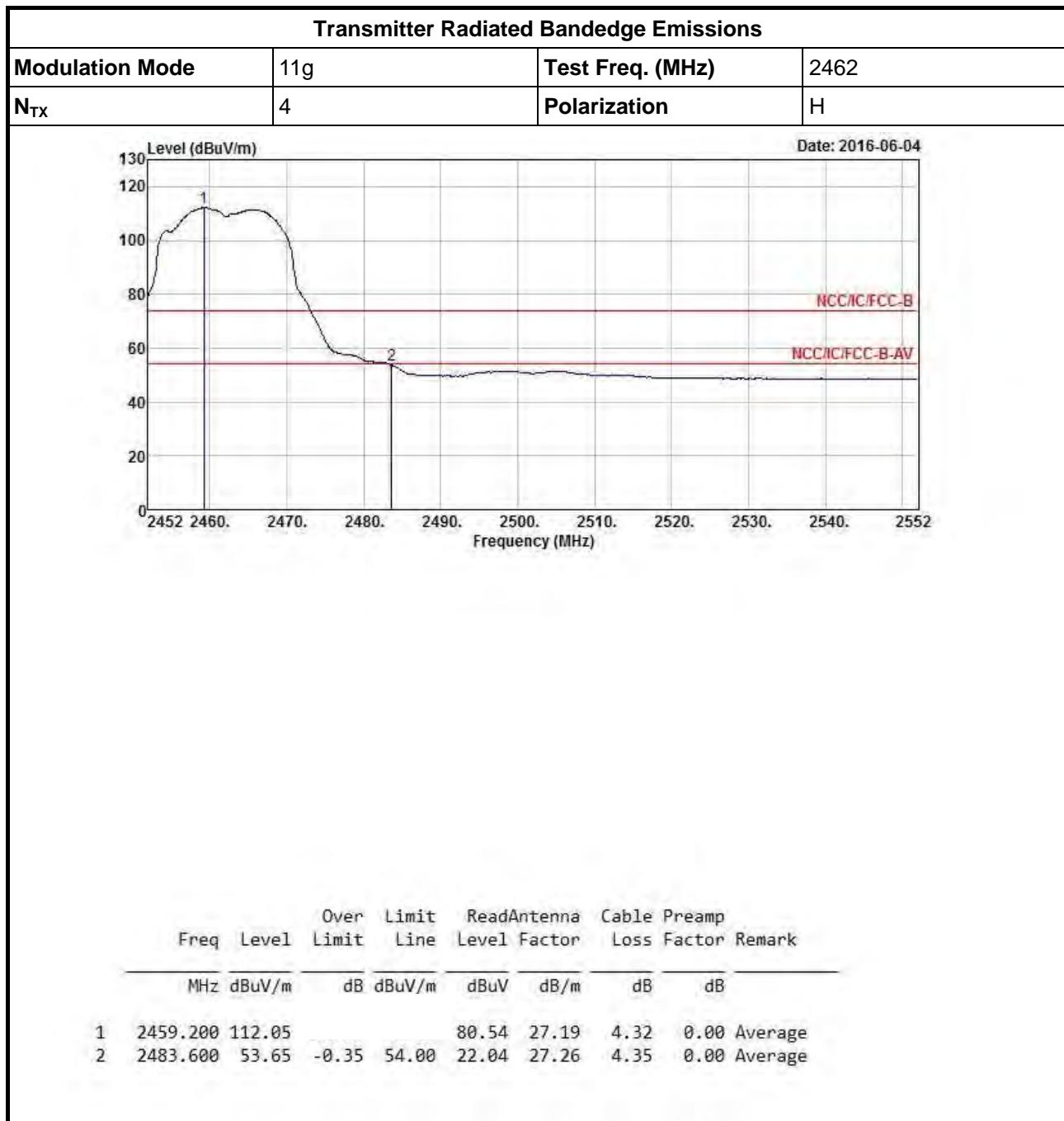


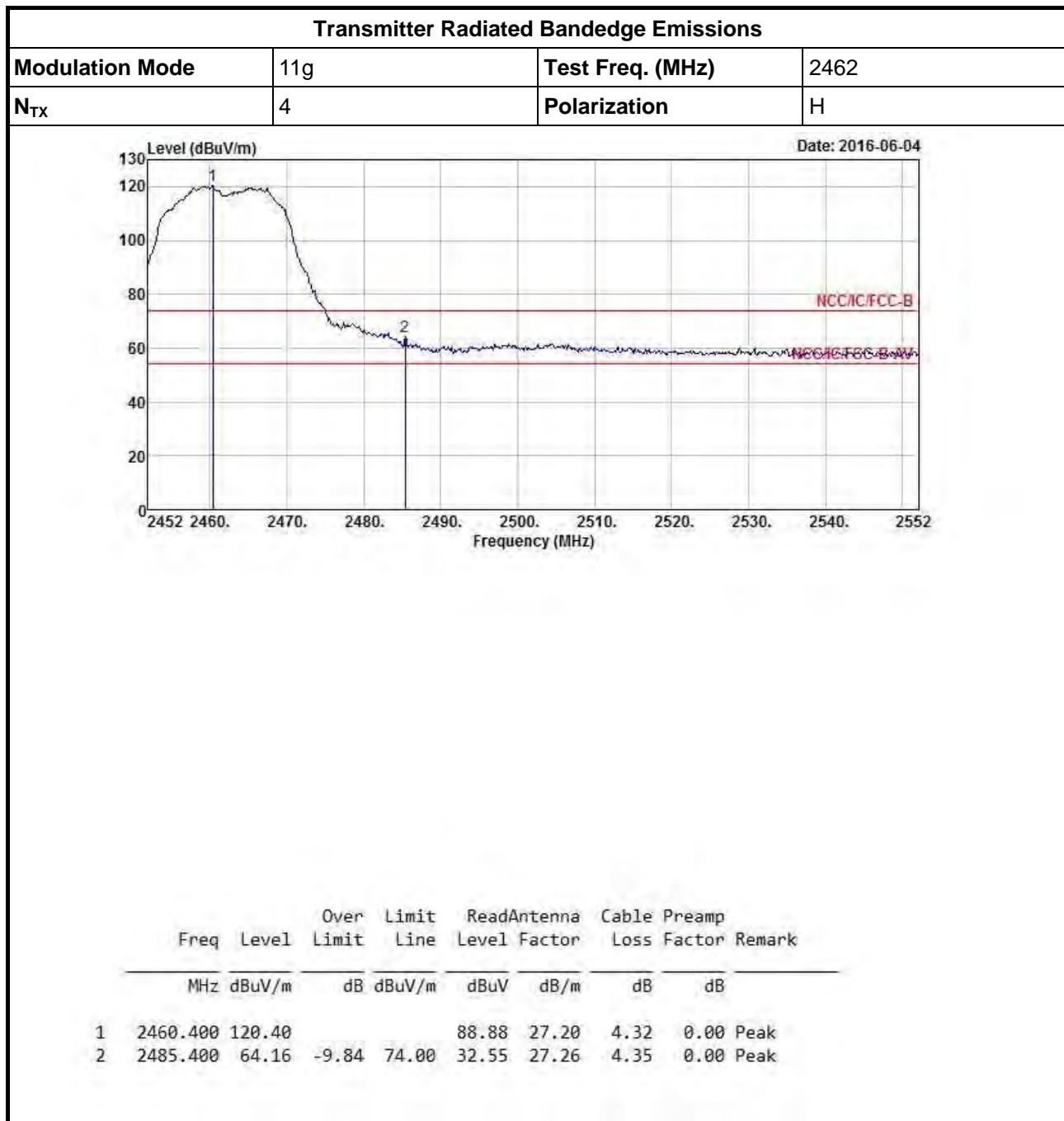


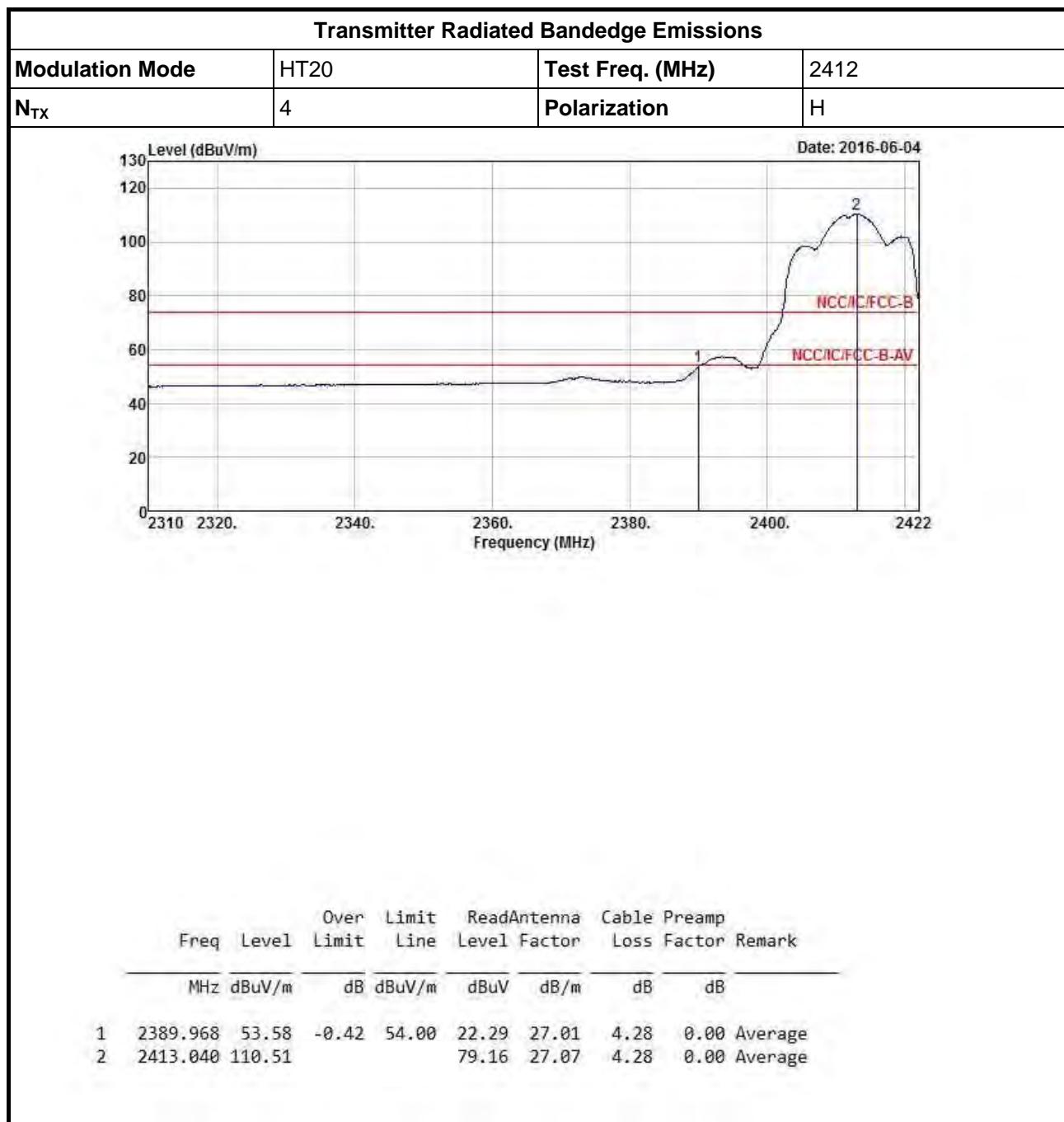


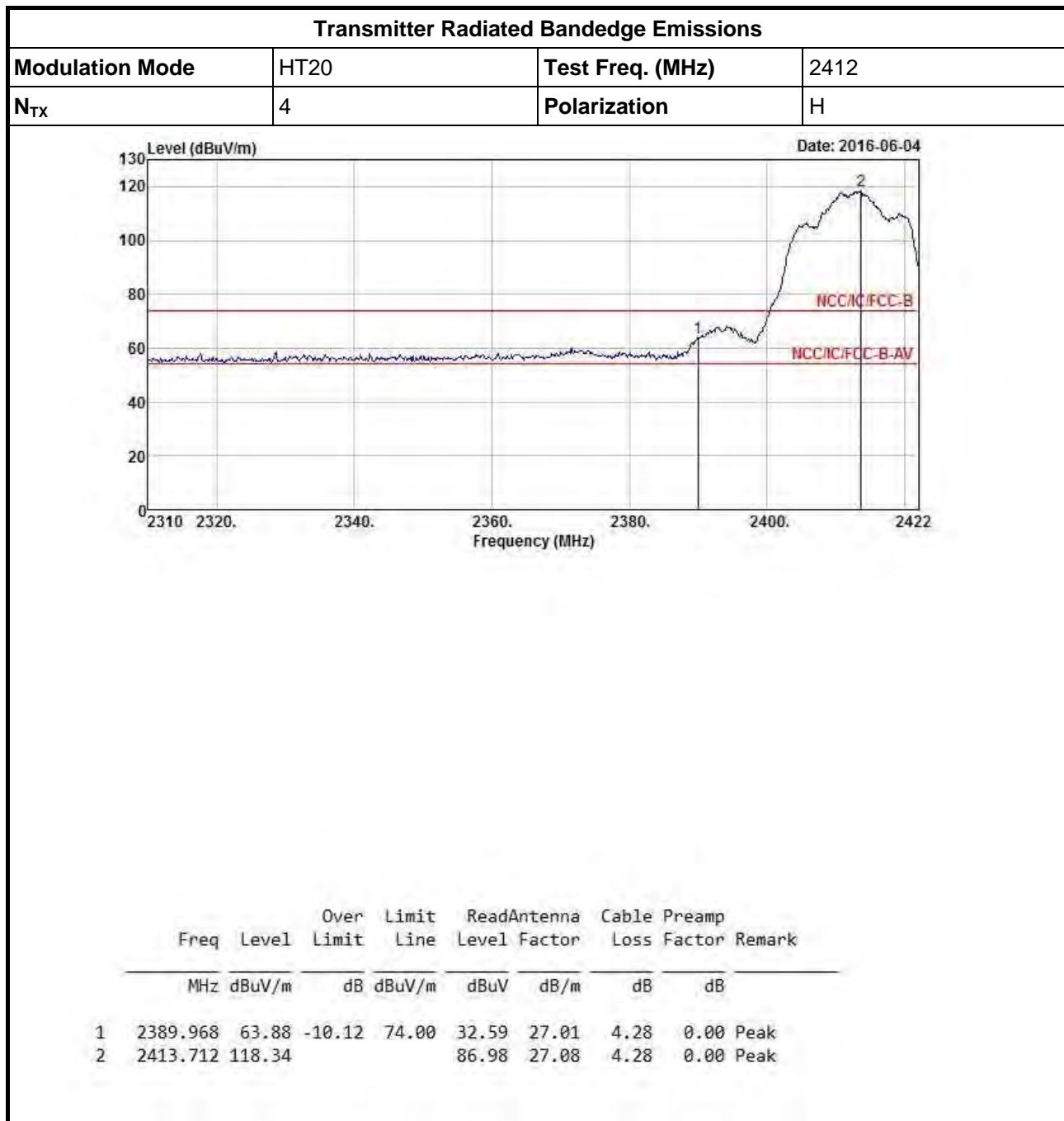
## Transmitter Radiated Bandedge Emissions

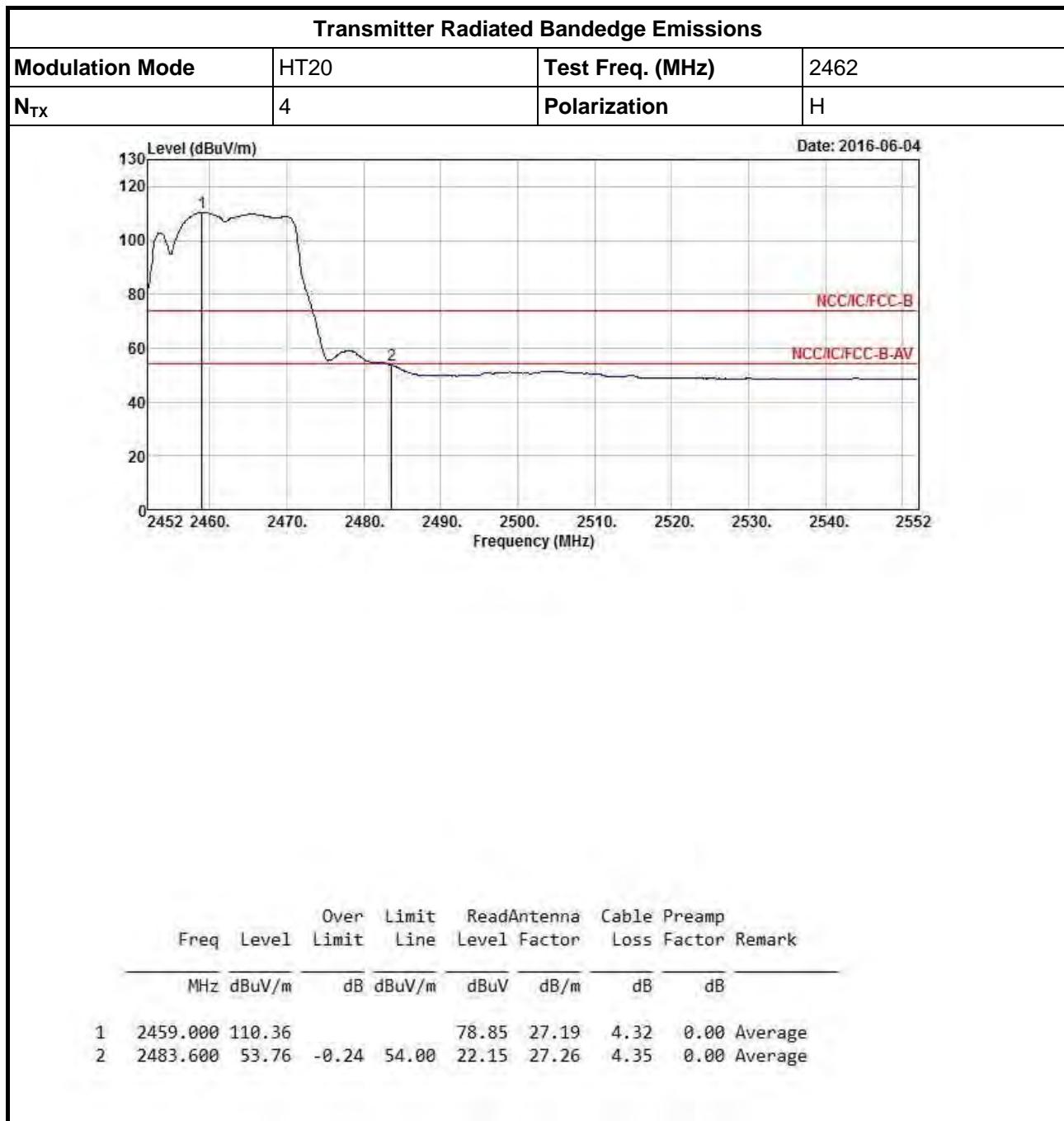
Appendix D

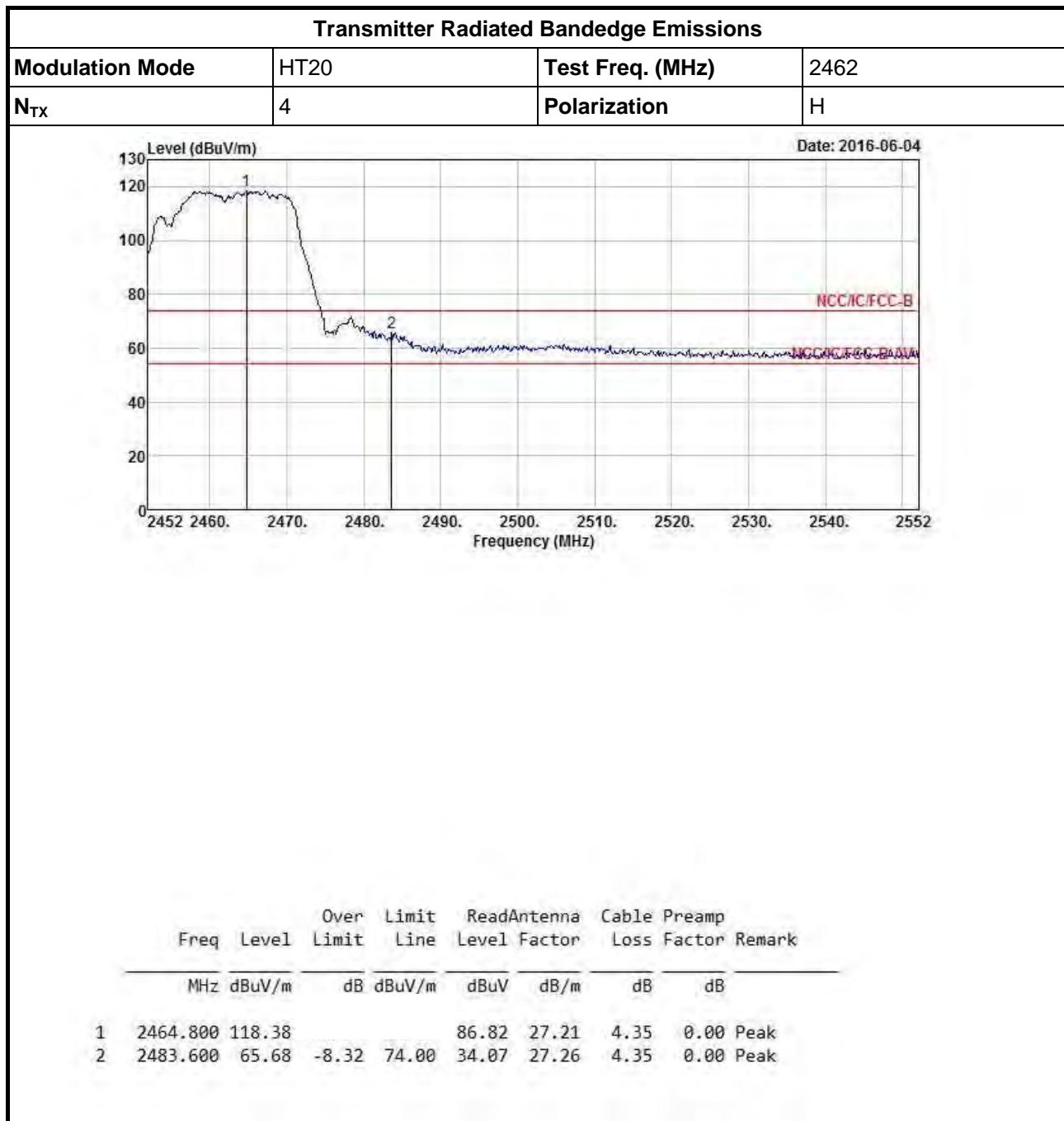


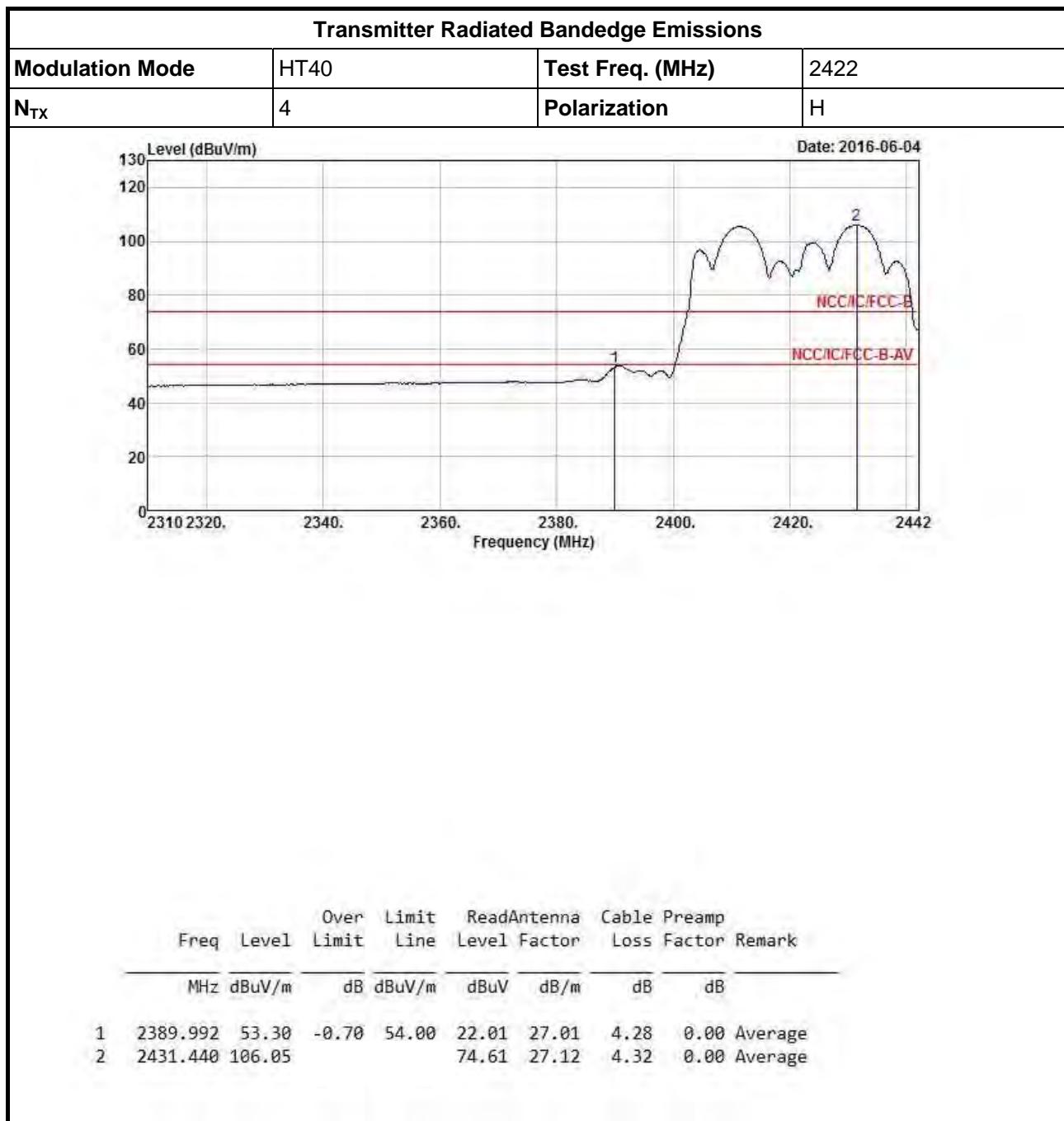


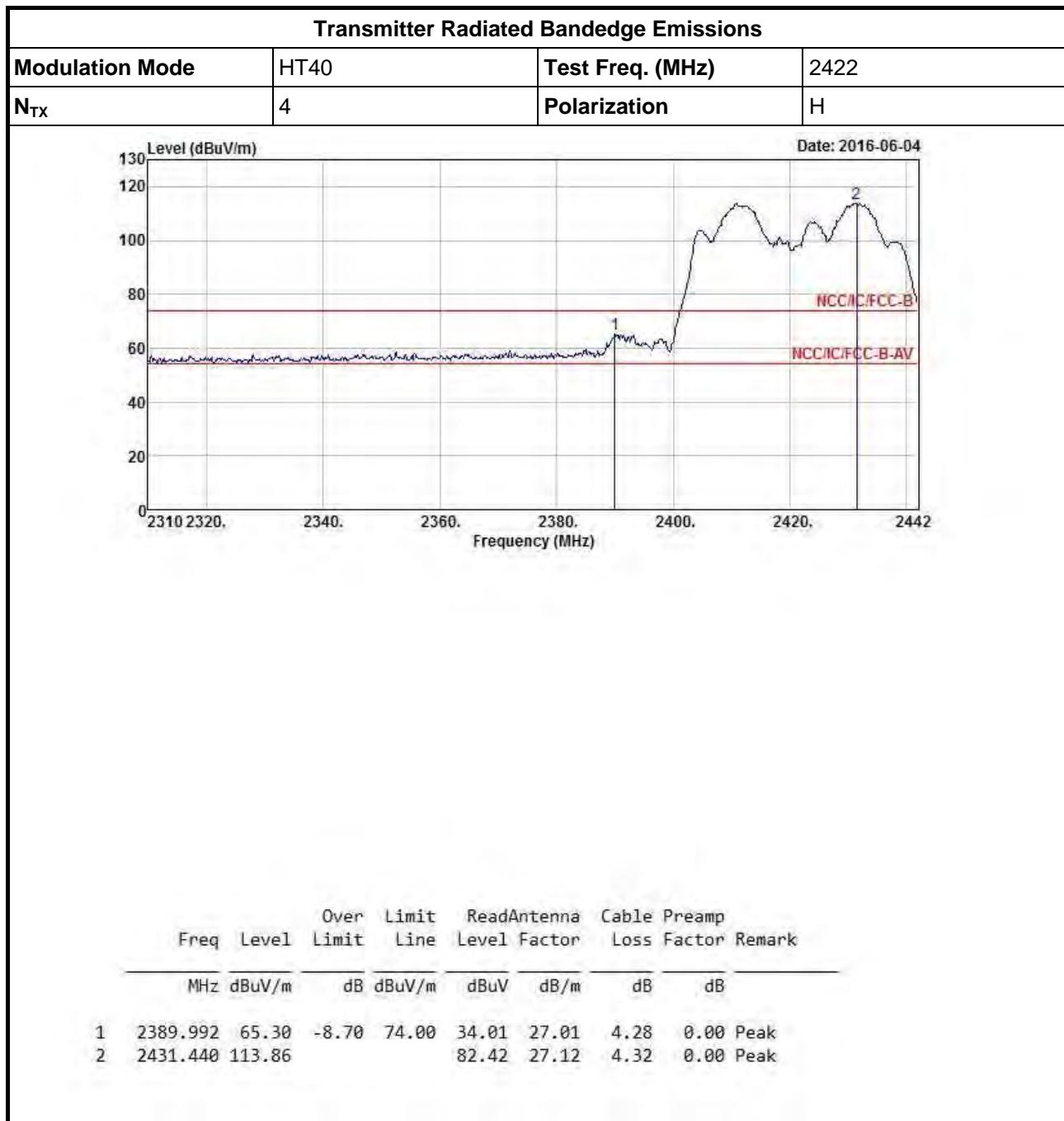


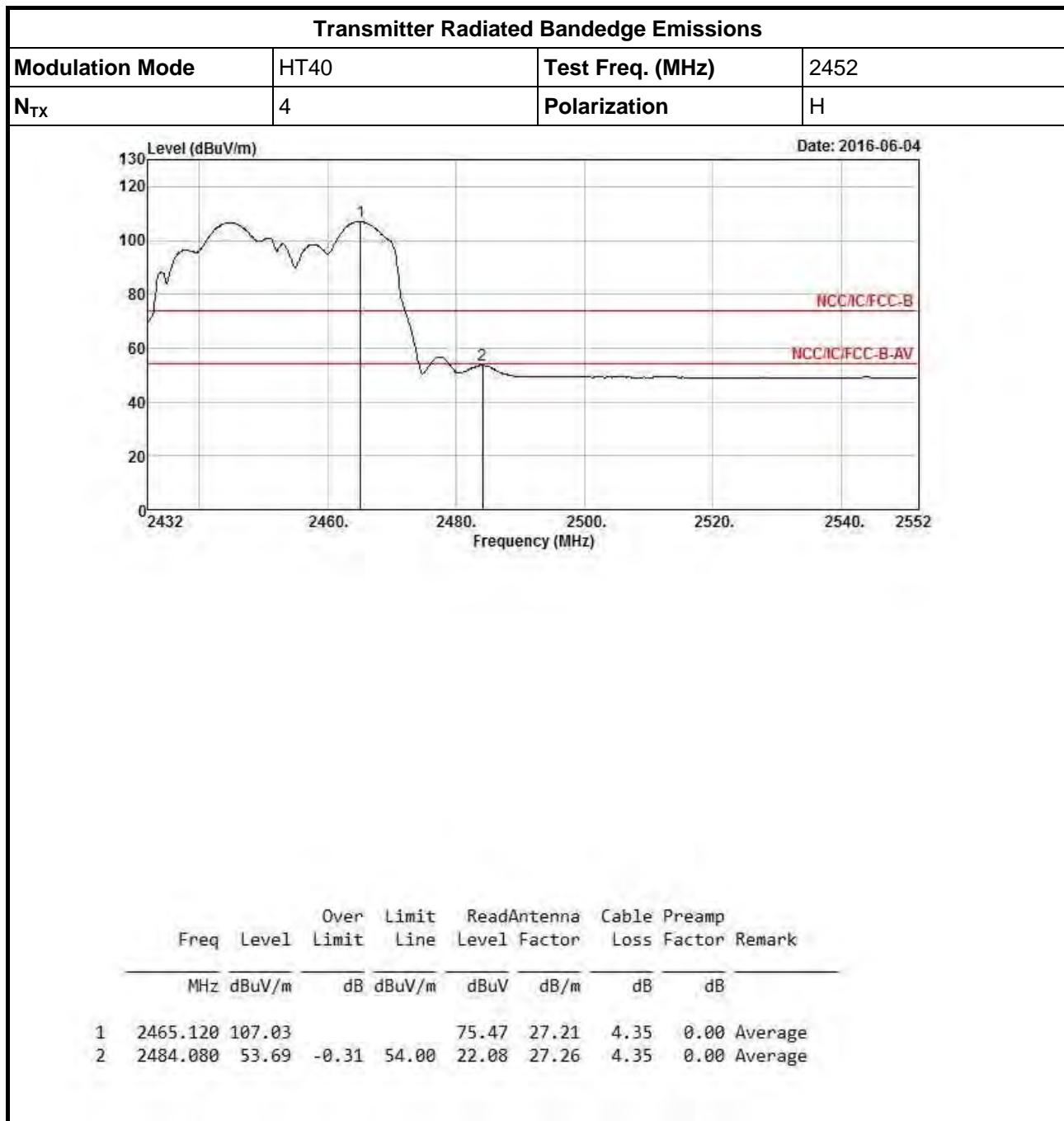


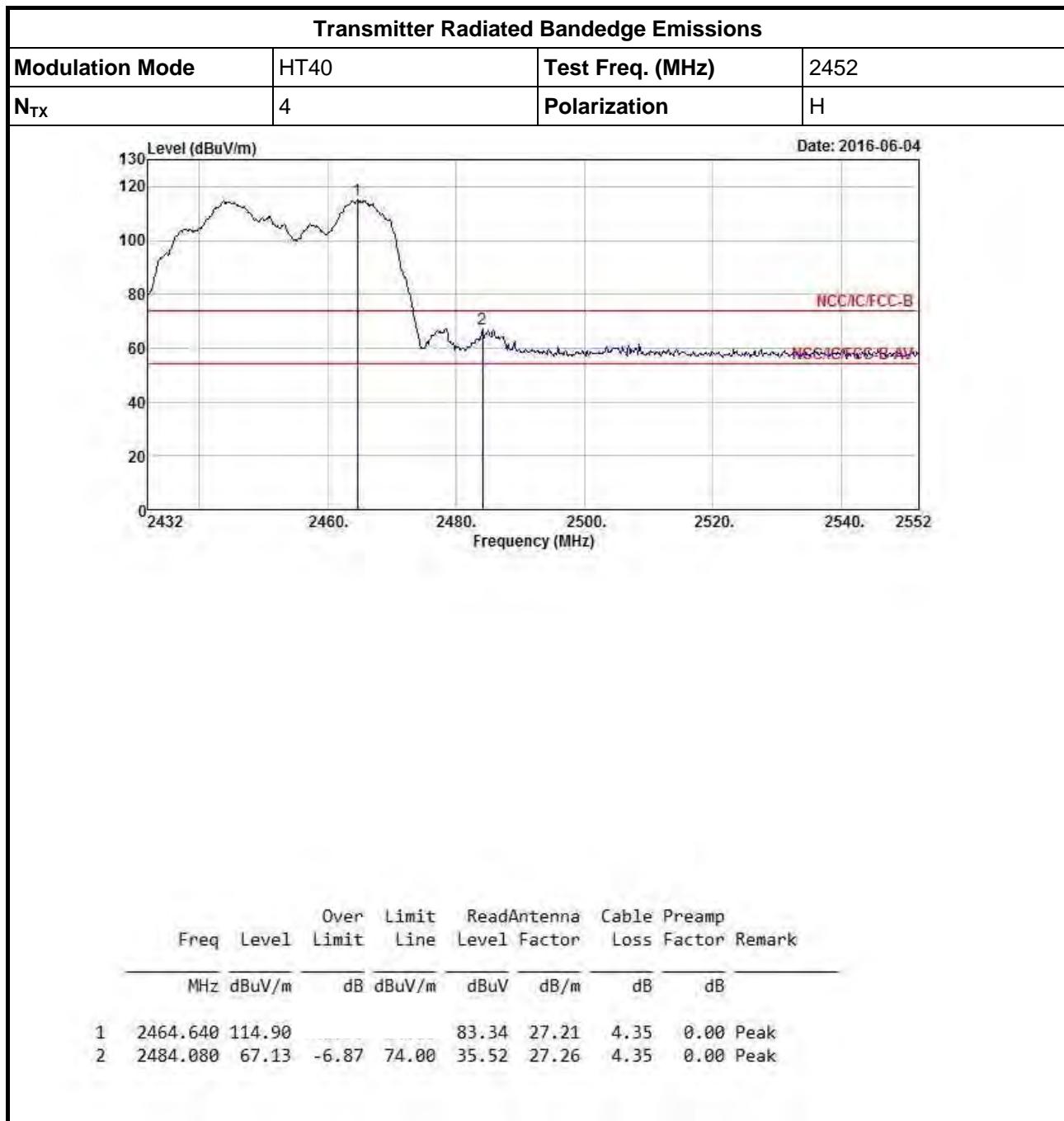




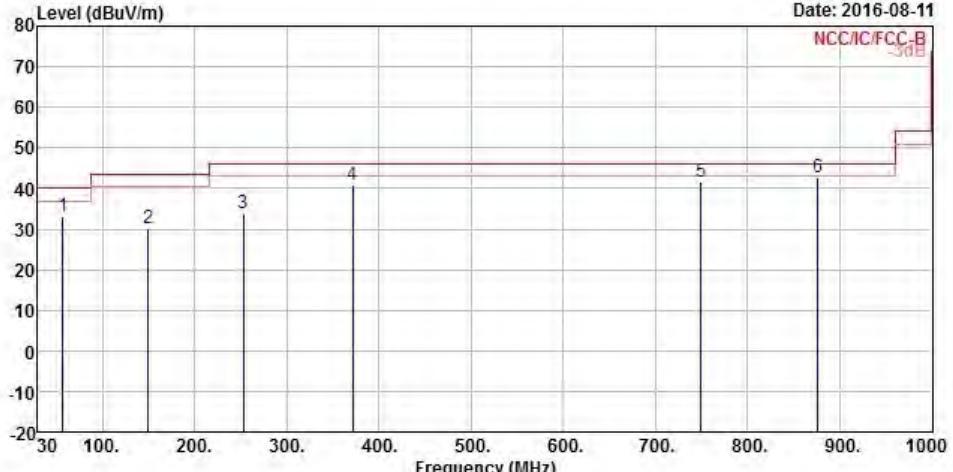


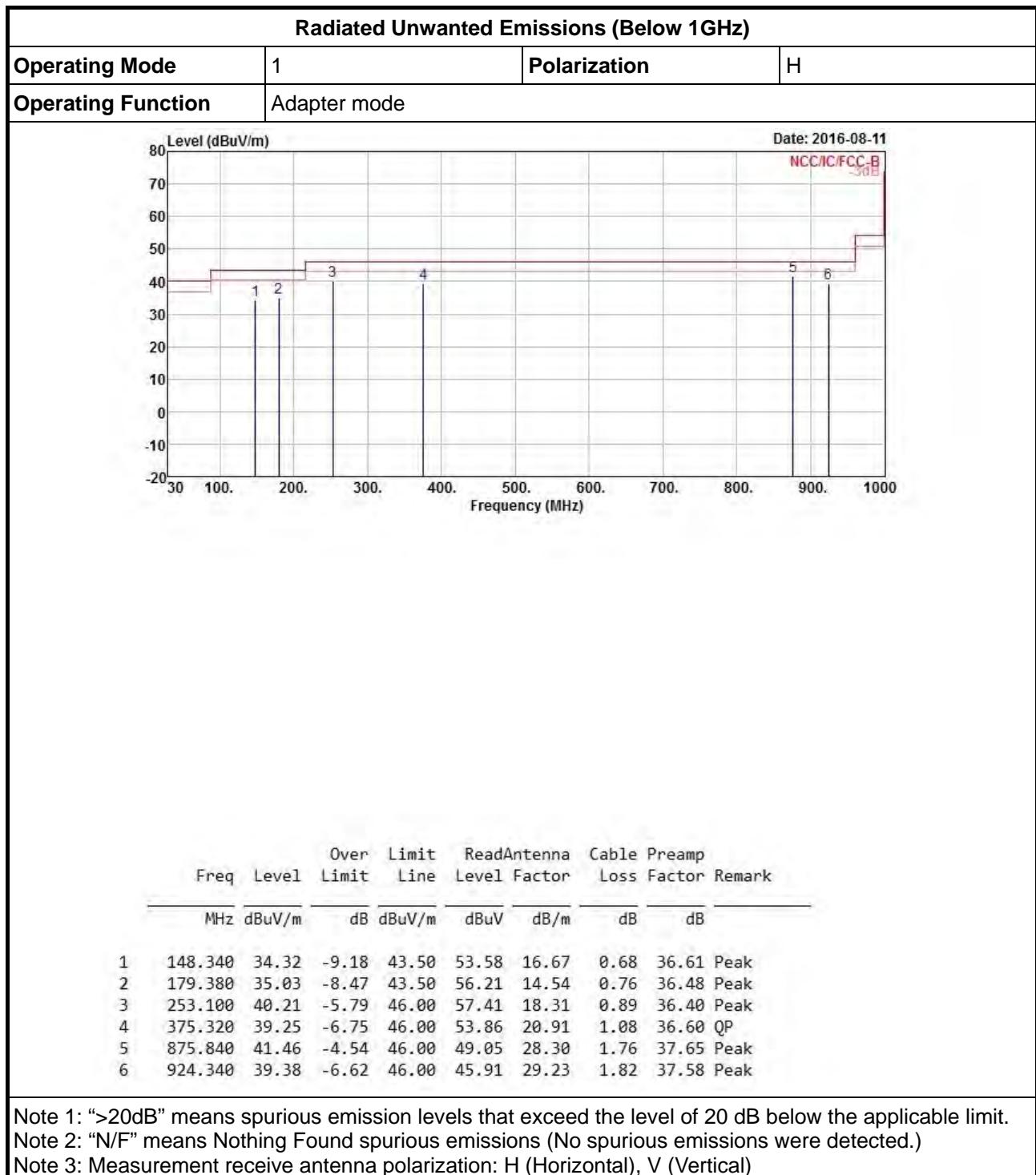




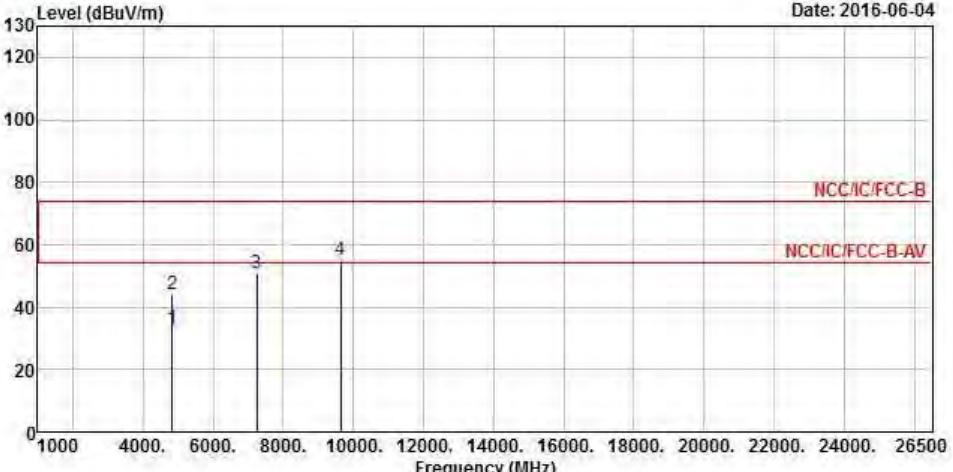


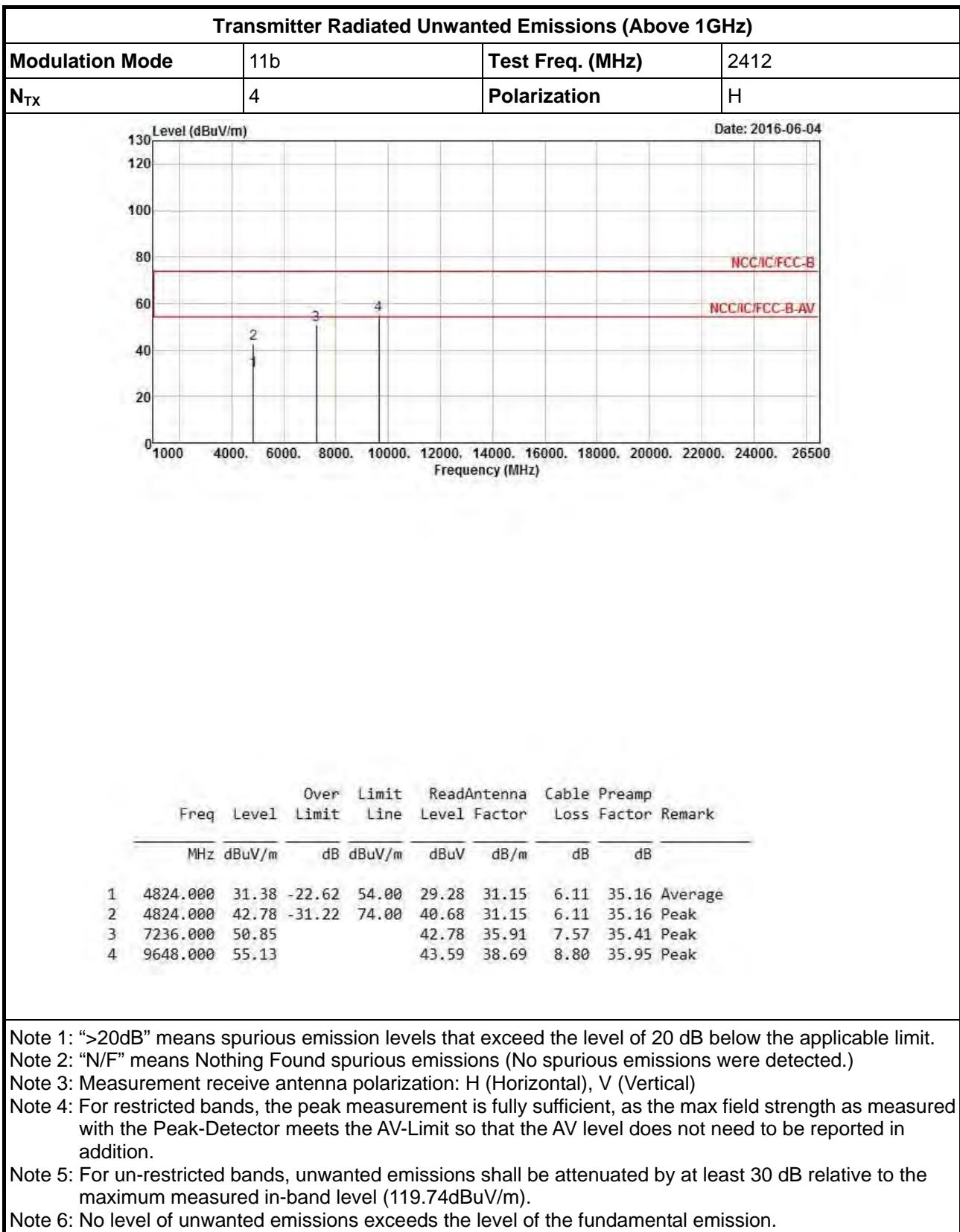
**Transmitter Radiated Unwanted Emissions (Below 1GHz)**

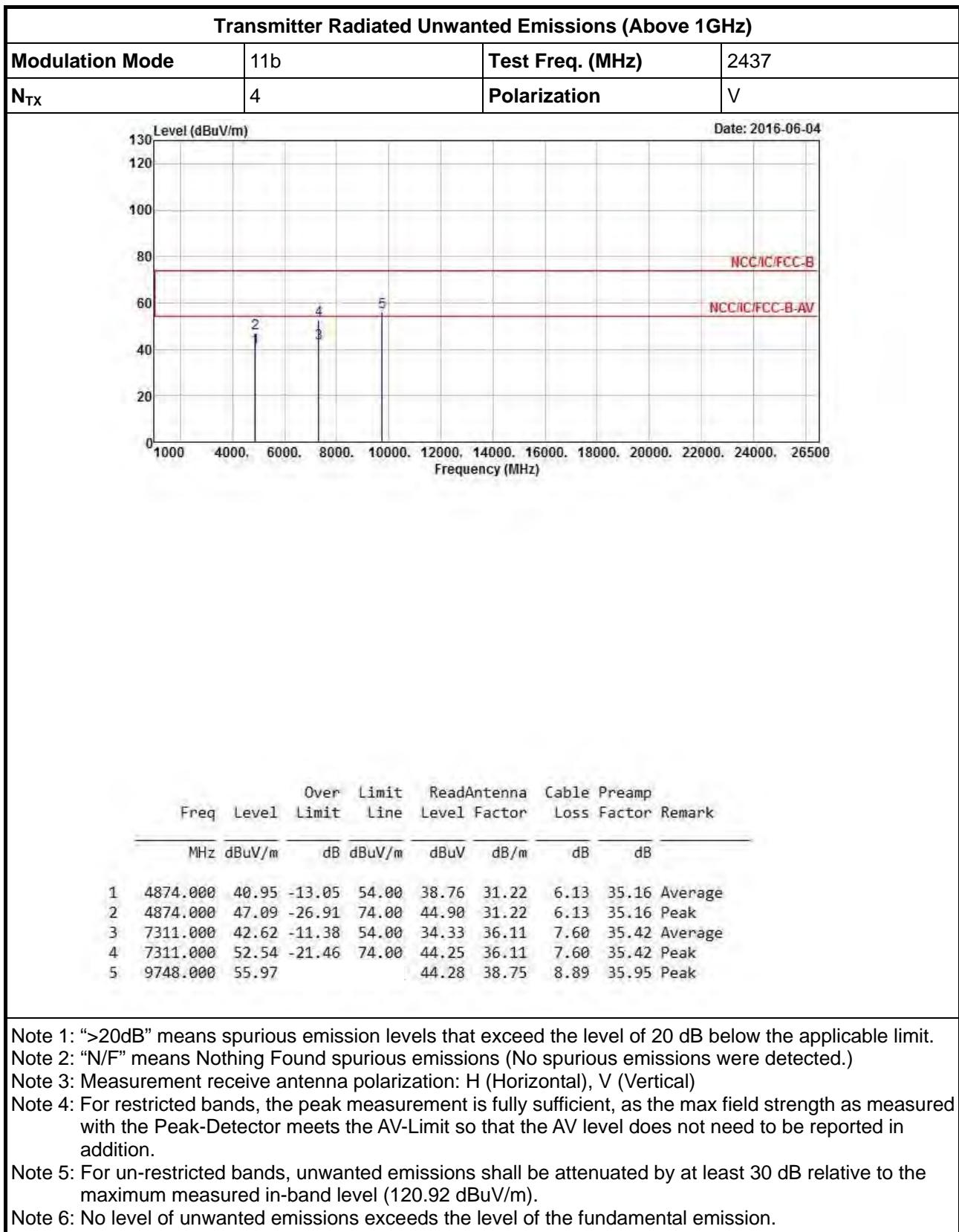
Radiated Unwanted Emissions (Below 1GHz)																																																																																																		
Operating Mode		1		Polarization		V																																																																																												
Operating Function		Adapter mode																																																																																																
																																																																																																		
<table border="1"> <thead> <tr> <th rowspan="2">Freq</th> <th rowspan="2">Level</th> <th>Over</th> <th>Limit</th> <th>Read</th> <th>Antenna</th> <th>Cable</th> <th>Preamp</th> <th colspan="2" style="text-align: center;">Remark</th> </tr> <tr> <th>Limit</th> <th>Line</th> <th>Level</th> <th>Factor</th> <th>dB/m</th> <th>dB</th> <th>dB</th> <th colspan="2"></th> </tr> <tr> <th>MHz</th> <th>dBuV/m</th> <th>dB</th> <th>dBuV/m</th> <th>dBuV</th> <th>dB/m</th> <th>dB</th> <th>dB</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>57.160</td> <td>33.30</td> <td>-6.70</td> <td>40.00</td> <td>58.10</td> <td>11.88</td> <td>0.46</td> <td>37.14</td> <td>Peak</td> </tr> <tr> <td>2</td> <td>149.310</td> <td>30.07</td> <td>-13.43</td> <td>43.50</td> <td>49.36</td> <td>16.63</td> <td>0.69</td> <td>36.61</td> <td>Peak</td> </tr> <tr> <td>3</td> <td>253.100</td> <td>33.97</td> <td>-12.03</td> <td>46.00</td> <td>51.17</td> <td>18.31</td> <td>0.89</td> <td>36.40</td> <td>Peak</td> </tr> <tr> <td>4</td> <td>371.440</td> <td>40.99</td> <td>-5.01</td> <td>46.00</td> <td>55.68</td> <td>20.81</td> <td>1.08</td> <td>36.58</td> <td>Peak</td> </tr> <tr> <td>5</td> <td>749.740</td> <td>41.68</td> <td>-4.32</td> <td>46.00</td> <td>50.70</td> <td>26.90</td> <td>1.60</td> <td>37.52</td> <td>Peak</td> </tr> <tr> <td>6</td> <td>875.840</td> <td>42.62</td> <td>-3.38</td> <td>46.00</td> <td>50.21</td> <td>28.30</td> <td>1.76</td> <td>37.65</td> <td>Peak</td> </tr> </tbody> </table>										Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark		Limit	Line	Level	Factor	dB/m	dB	dB			MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			1	57.160	33.30	-6.70	40.00	58.10	11.88	0.46	37.14	Peak	2	149.310	30.07	-13.43	43.50	49.36	16.63	0.69	36.61	Peak	3	253.100	33.97	-12.03	46.00	51.17	18.31	0.89	36.40	Peak	4	371.440	40.99	-5.01	46.00	55.68	20.81	1.08	36.58	Peak	5	749.740	41.68	-4.32	46.00	50.70	26.90	1.60	37.52	Peak	6	875.840	42.62	-3.38	46.00	50.21	28.30	1.76	37.65	Peak
Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark																																																																																										
		Limit	Line	Level	Factor	dB/m	dB	dB																																																																																										
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB																																																																																											
1	57.160	33.30	-6.70	40.00	58.10	11.88	0.46	37.14	Peak																																																																																									
2	149.310	30.07	-13.43	43.50	49.36	16.63	0.69	36.61	Peak																																																																																									
3	253.100	33.97	-12.03	46.00	51.17	18.31	0.89	36.40	Peak																																																																																									
4	371.440	40.99	-5.01	46.00	55.68	20.81	1.08	36.58	Peak																																																																																									
5	749.740	41.68	-4.32	46.00	50.70	26.90	1.60	37.52	Peak																																																																																									
6	875.840	42.62	-3.38	46.00	50.21	28.30	1.76	37.65	Peak																																																																																									
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.) Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)																																																																																																		

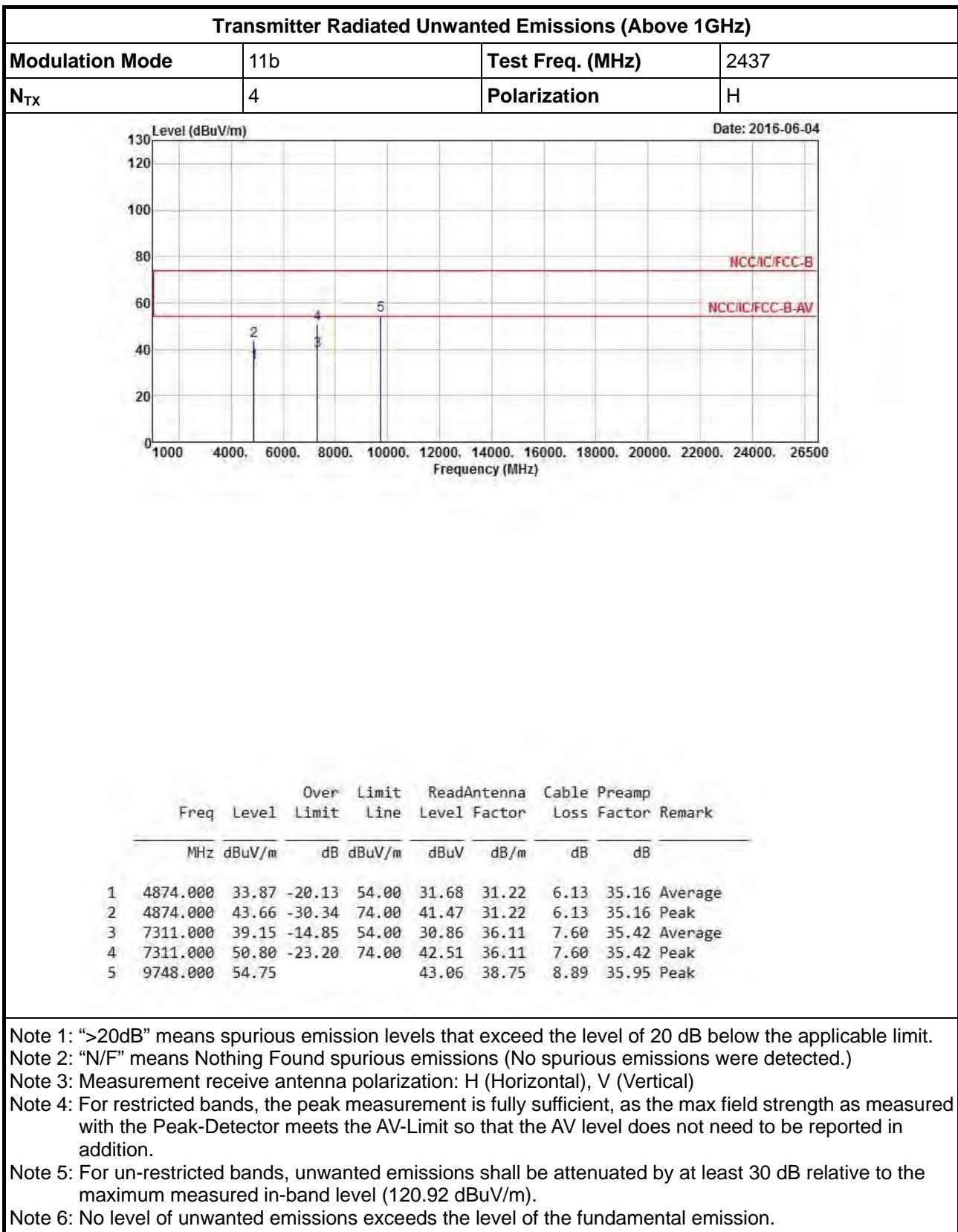


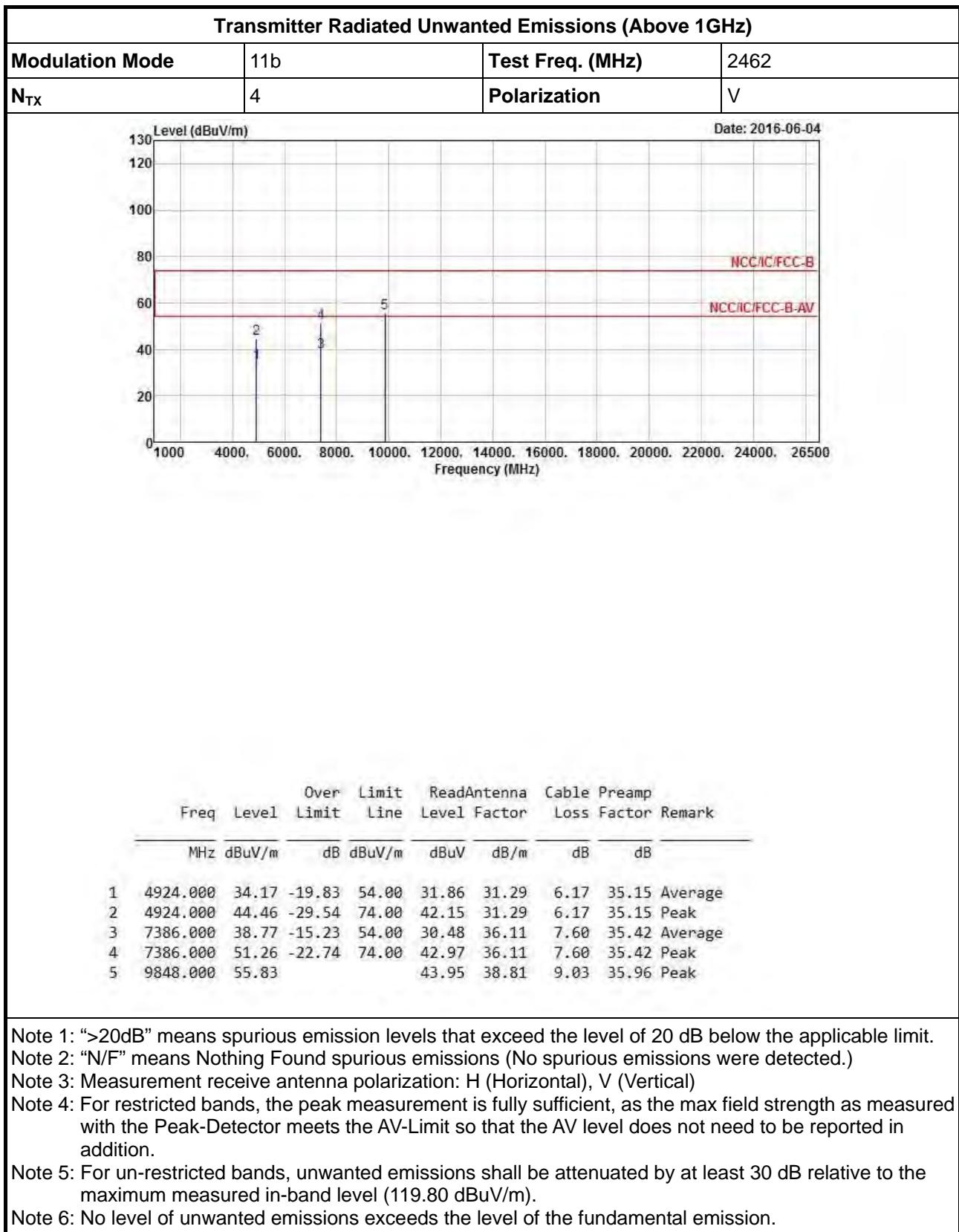
**Transmitter Radiated Unwanted Emissions (Above 1GHz)**

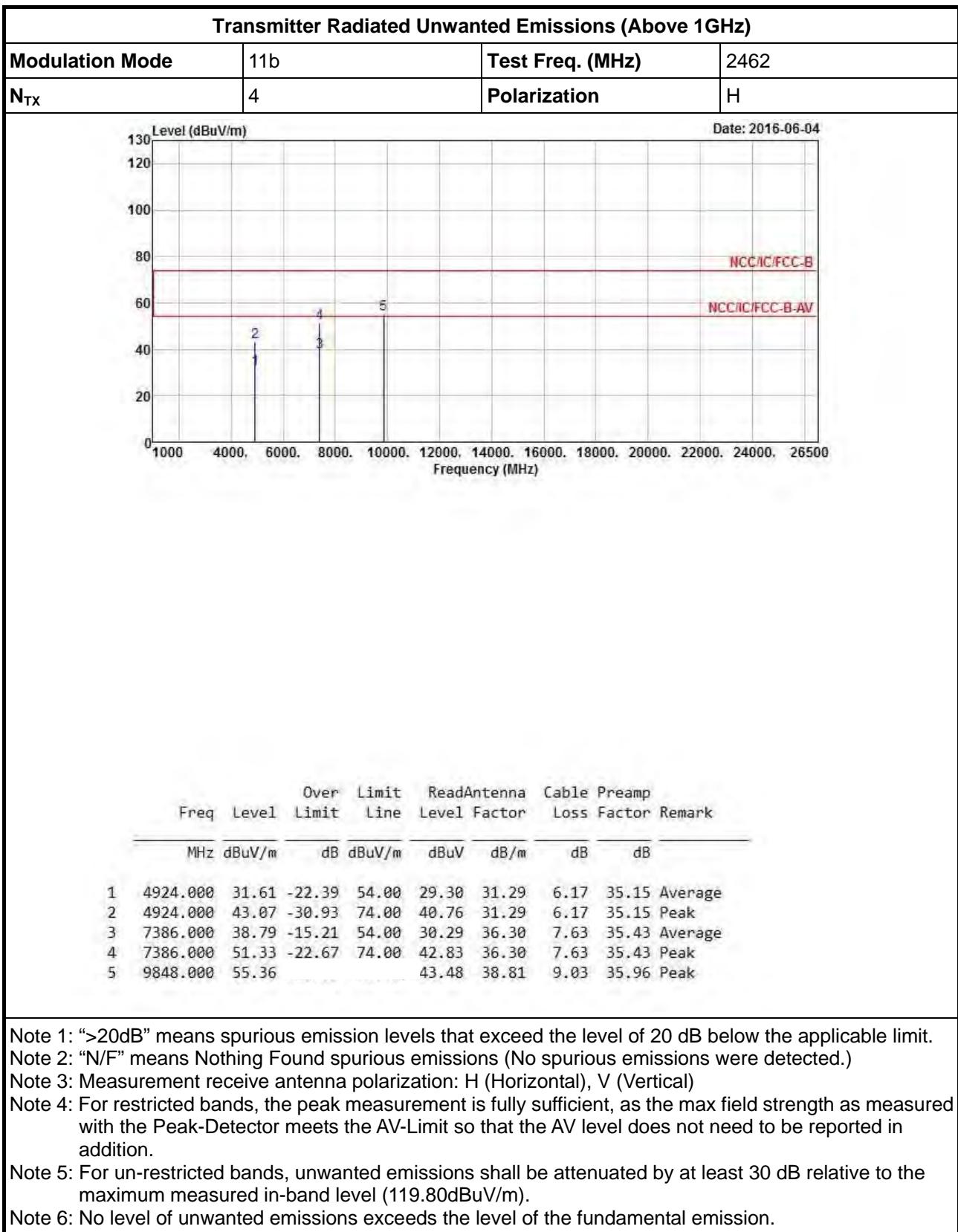
Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																					
Modulation Mode	11b		Test Freq. (MHz)		2412																																																																
N <sub>TX</sub>	4		Polarization		V																																																																
																																																																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Freq</th> <th style="text-align: center;">Level</th> <th style="text-align: center;">Over Limit</th> <th style="text-align: center;">Limit Line</th> <th style="text-align: center;">Read</th> <th style="text-align: center;">Antenna</th> <th style="text-align: center;">Cable</th> <th style="text-align: center;">Preamp</th> <th></th> <th></th> </tr> <tr> <th style="text-align: center;">MHz</th> <th style="text-align: center;">dBuV/m</th> <th style="text-align: center;">dB</th> <th style="text-align: center;">dBuV/m</th> <th style="text-align: center;">dBuV</th> <th style="text-align: center;">dB/m</th> <th style="text-align: center;">dB</th> <th style="text-align: center;">dB</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">4824.000</td> <td style="text-align: center;">33.08</td> <td style="text-align: center;">-20.92</td> <td style="text-align: center;">54.00</td> <td style="text-align: center;">30.98</td> <td style="text-align: center;">31.15</td> <td style="text-align: center;">6.11</td> <td style="text-align: center;">35.16</td> <td>Average</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">4824.000</td> <td style="text-align: center;">43.95</td> <td style="text-align: center;">-30.05</td> <td style="text-align: center;">74.00</td> <td style="text-align: center;">41.85</td> <td style="text-align: center;">31.15</td> <td style="text-align: center;">6.11</td> <td style="text-align: center;">35.16</td> <td>Peak</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">7236.000</td> <td style="text-align: center;">50.77</td> <td></td> <td></td> <td style="text-align: center;">42.70</td> <td style="text-align: center;">35.91</td> <td style="text-align: center;">7.57</td> <td style="text-align: center;">35.41</td> <td>Peak</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">9648.000</td> <td style="text-align: center;">55.03</td> <td></td> <td></td> <td style="text-align: center;">43.49</td> <td style="text-align: center;">38.69</td> <td style="text-align: center;">8.80</td> <td style="text-align: center;">35.95</td> <td>Peak</td> </tr> </tbody> </table>										Freq	Level	Over Limit	Limit Line	Read	Antenna	Cable	Preamp			MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			1	4824.000	33.08	-20.92	54.00	30.98	31.15	6.11	35.16	Average	2	4824.000	43.95	-30.05	74.00	41.85	31.15	6.11	35.16	Peak	3	7236.000	50.77			42.70	35.91	7.57	35.41	Peak	4	9648.000	55.03			43.49	38.69	8.80	35.95	Peak
Freq	Level	Over Limit	Limit Line	Read	Antenna	Cable	Preamp																																																														
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB																																																														
1	4824.000	33.08	-20.92	54.00	30.98	31.15	6.11	35.16	Average																																																												
2	4824.000	43.95	-30.05	74.00	41.85	31.15	6.11	35.16	Peak																																																												
3	7236.000	50.77			42.70	35.91	7.57	35.41	Peak																																																												
4	9648.000	55.03			43.49	38.69	8.80	35.95	Peak																																																												
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.) Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical) Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition. Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level (119.74 dBuV/m). Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.																																																																					

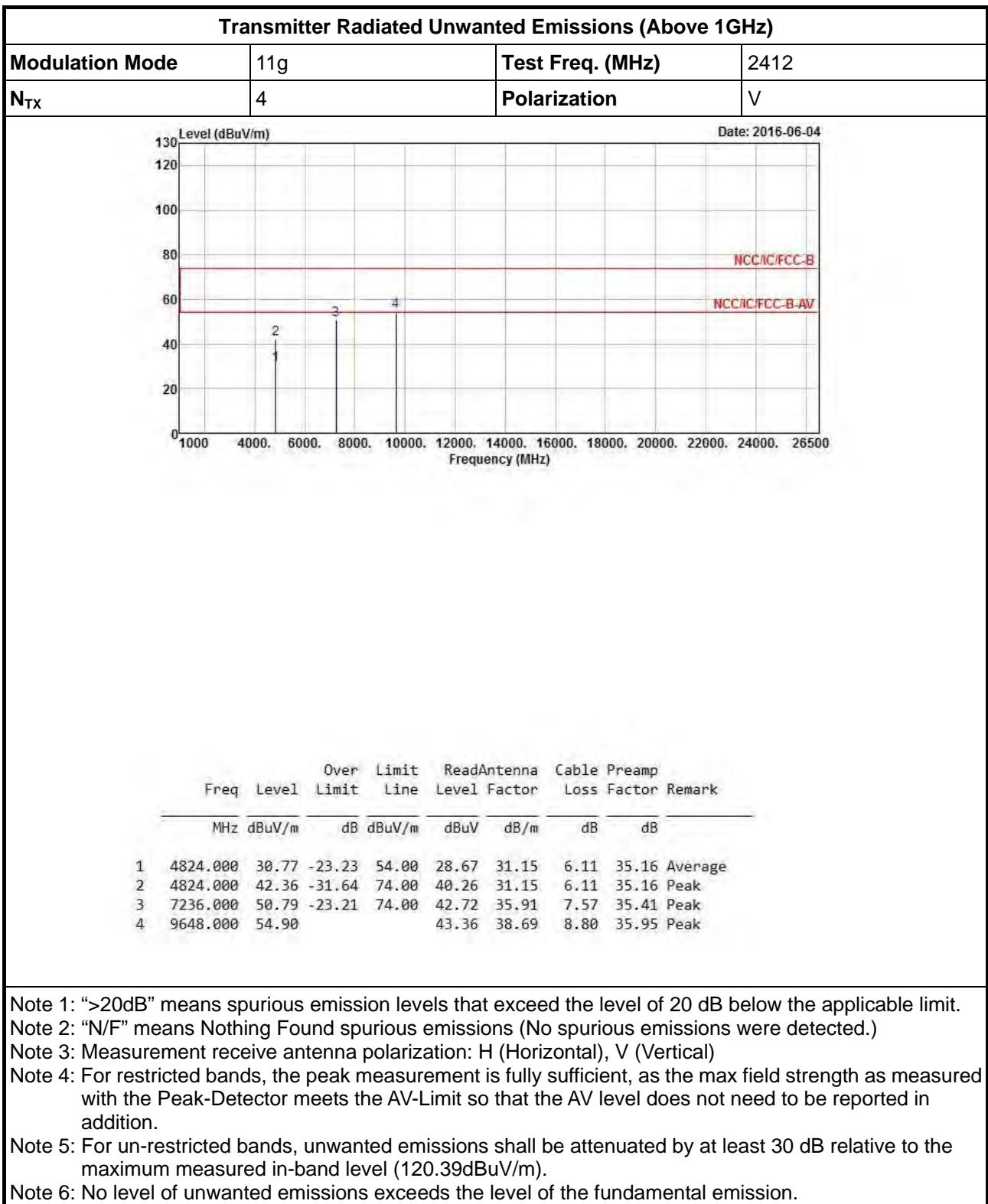


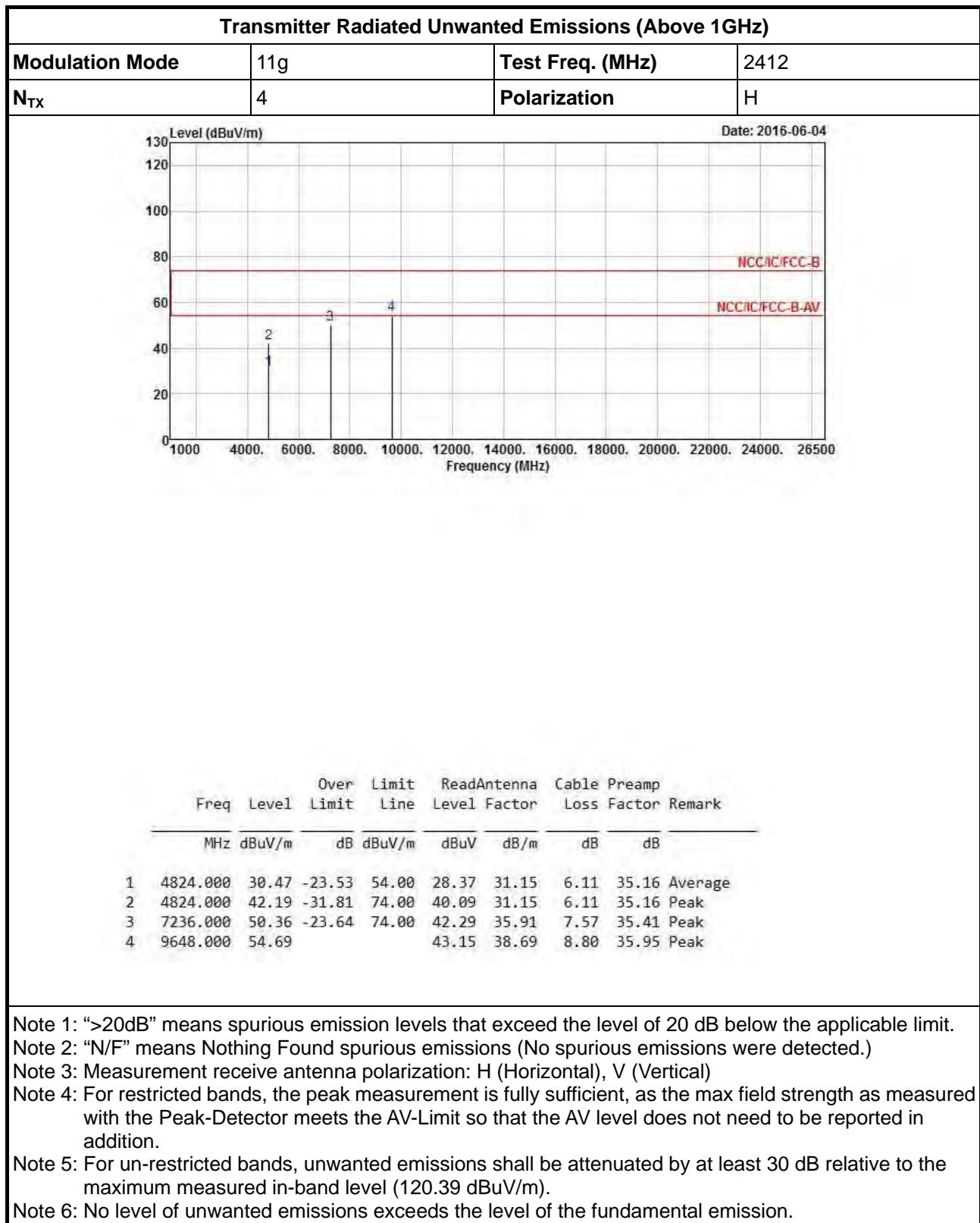














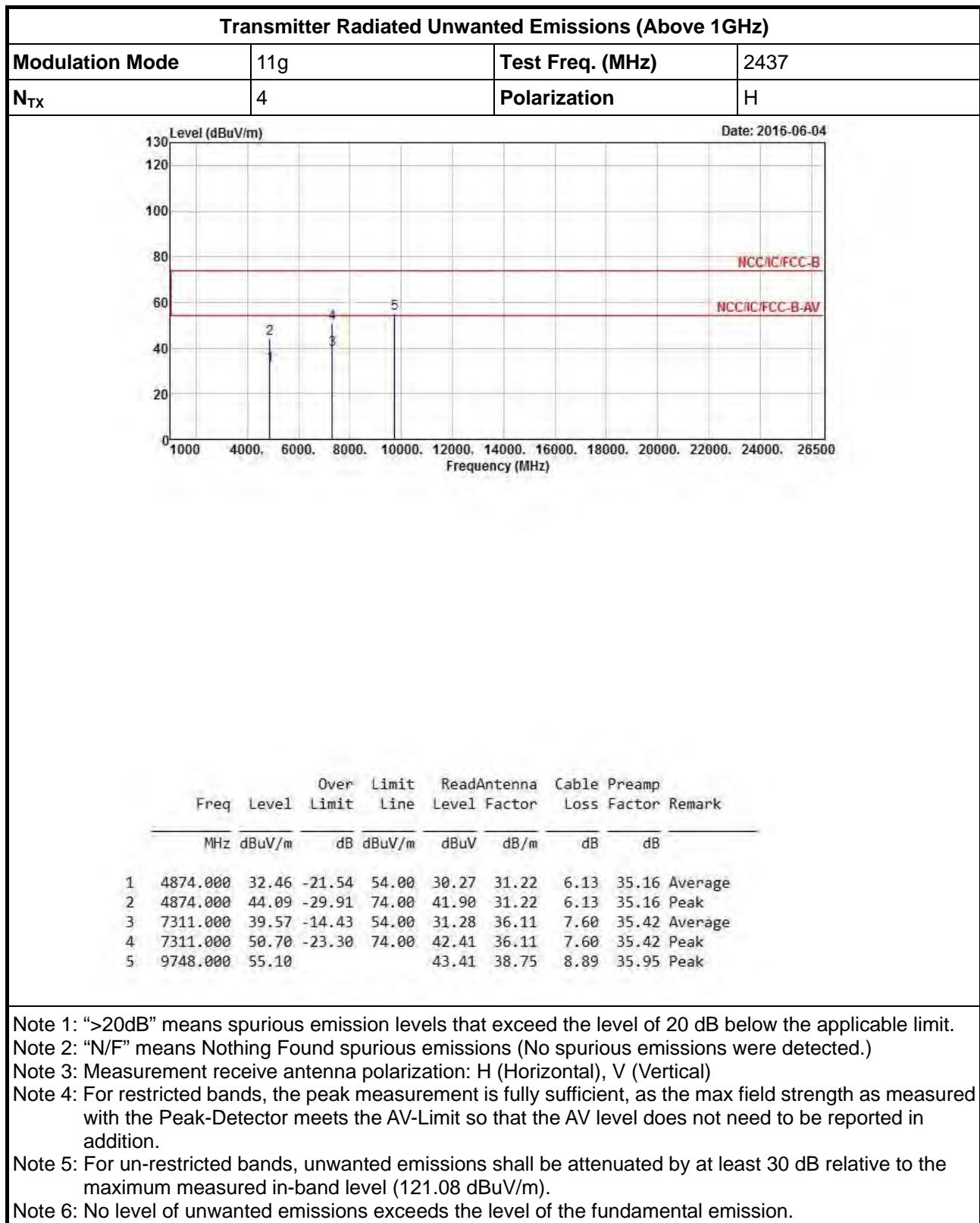
**Transmitter Radiated Unwanted Emissions (Above 1GHz)**

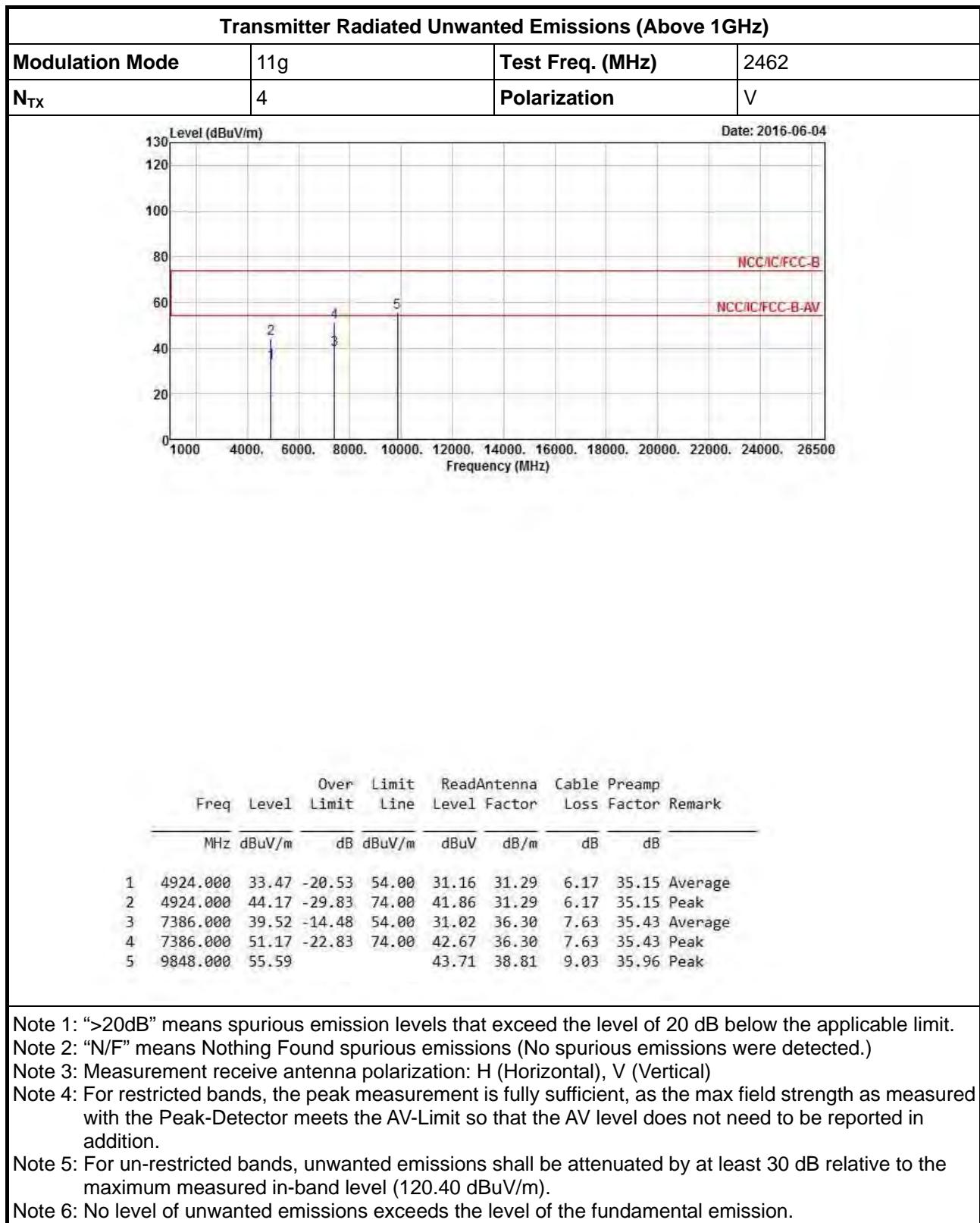
<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2437
<b>N<sub>TX</sub></b>	4	<b>Polarization</b>	V

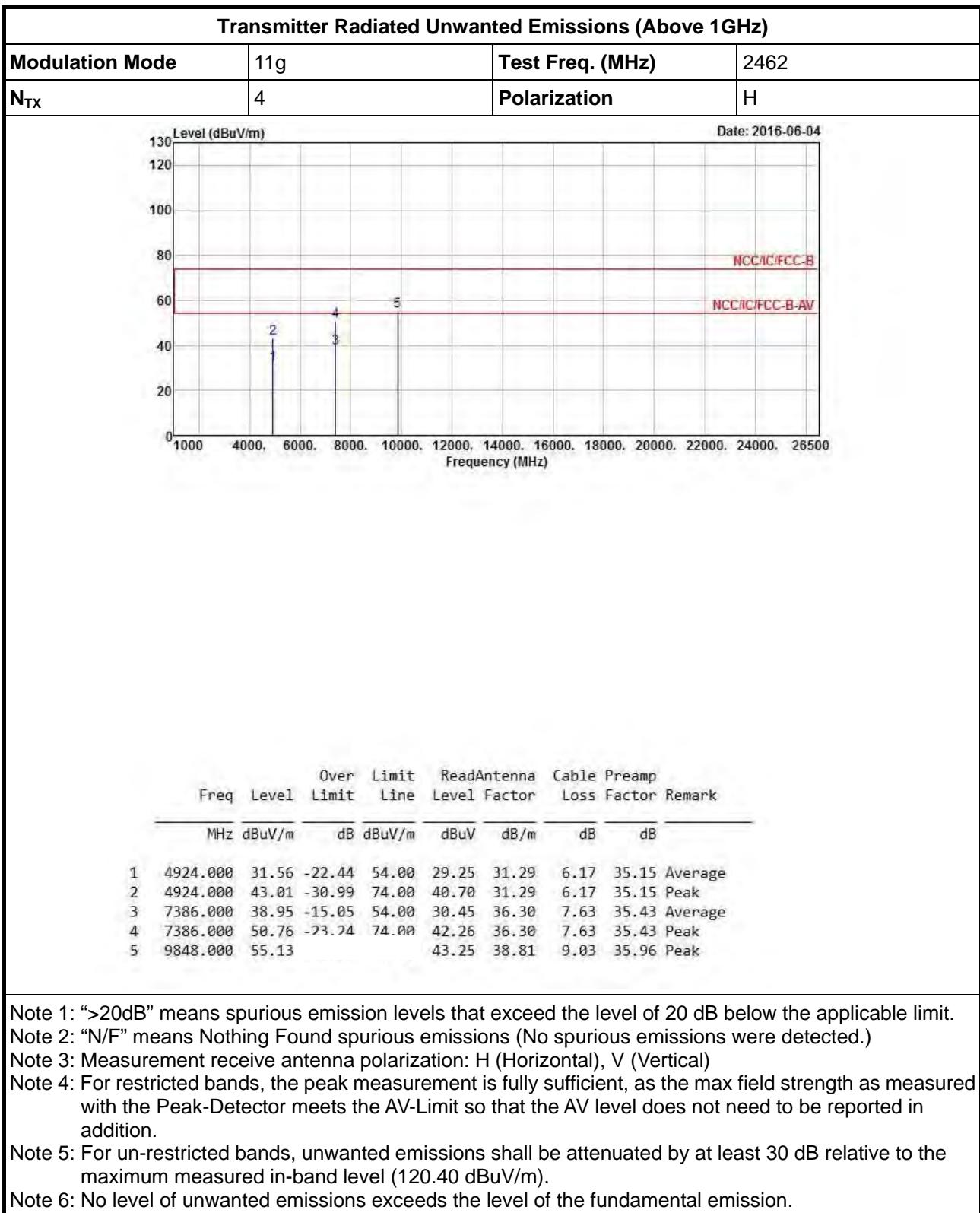
Date: 2016-06-04

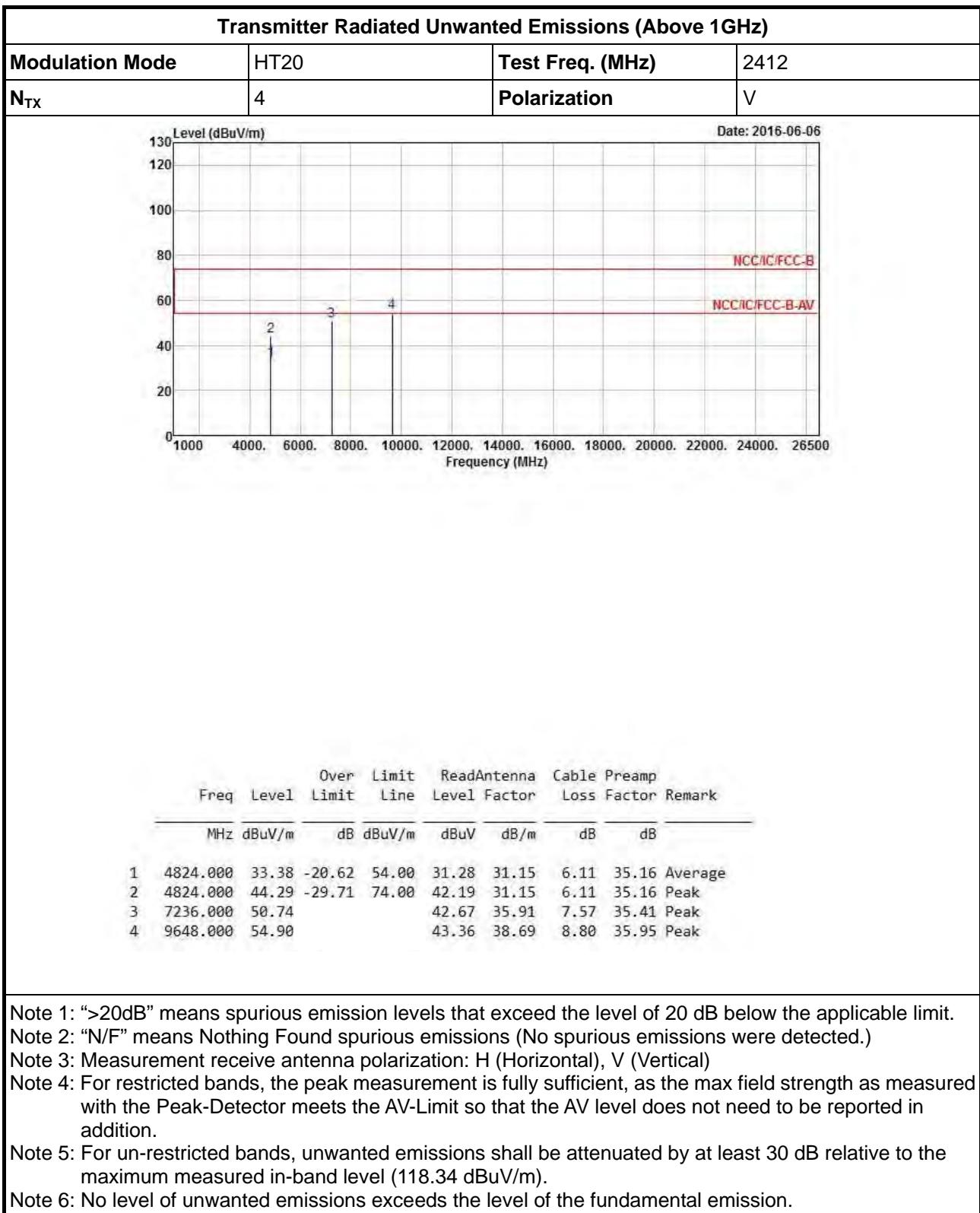
Freq	Over Limit	Line	Read	Antenna	Cable	Preamp	Remark	
Freq	Level	Limit	Line	Level	Factor	Loss	Factor	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	35.88	-18.12	54.00	33.69	31.22	6.13	35.16 Average
2	4874.000	48.42	-25.58	74.00	46.23	31.22	6.13	35.16 Peak
3	7311.000	41.37	-12.63	54.00	33.08	36.11	7.60	35.42 Average
4	7311.000	52.13	-21.87	74.00	43.84	36.11	7.60	35.42 Peak
5	9748.000	54.98			43.29	38.75	8.89	35.95 Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)  
 Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.  
 Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level (121.08 dBuV/m).  
 Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.









Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

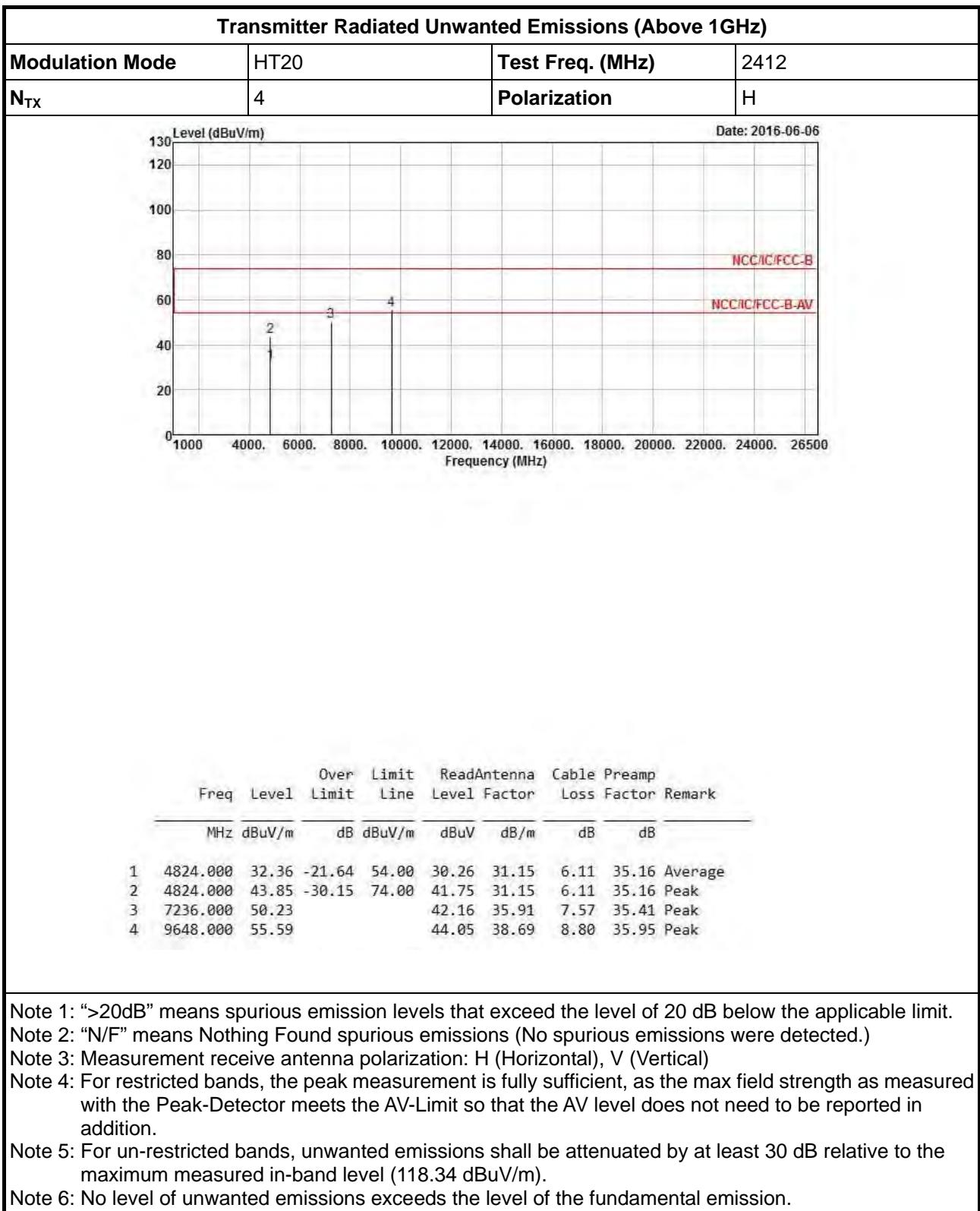
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level (118.34 dBuV/m).

Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level (118.34 dBuV/m).

Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

