

FCC Test Report

Equipment : AC1350 Wireless Dual Band Router
Brand Name : TP-LINK
Model No. : Archer C60
FCC ID : TE7C60
Standard : 47 CFR FCC Part 15.247
RF Specification : Wi-Fi
Frequency : 2400 MHz – 2483.5 MHz
FCC Classification : DTS
Applicant / Manufacturer : TP-LINK TECHNOLOGIES CO., LTD.
Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central
Science and Technology Park, Shennan Rd, Nanshan,
Shenzhen,China

The product sample received on Jun. 23, 2016 and completely tested on Oct. 05, 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

- 1 GENERAL DESCRIPTION5**
- 1.1 Information.....5
- 1.2 Testing Applied Standards7
- 1.3 Testing Location Information7
- 1.4 Measurement Uncertainty8
- 2 TEST CONFIGURATION OF EUT9**
- 2.1 The Worst Case Modulation Configuration9
- 2.2 Test Channel Mode9
- 2.3 The Worst Case Measurement Configuration.....10
- 2.4 Accessories and Support Equipment11
- 2.5 Test Setup Diagram12
- 3 TRANSMITTER TEST RESULT13**
- 3.1 AC Power-line Conducted Emissions13
- 3.2 DTS Bandwidth14
- 3.3 Fundamental Emission Output Power.....15
- 3.4 Power Spectral Density17
- 3.5 Transmitter Radiated Bandedge Emissions.....19
- 3.6 Transmitter Radiated Unwanted Emissions22
- 4 TEST EQUIPMENT AND CALIBRATION DATA26**

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 EP. Photographs of EUT v01



Summary of Test Result

Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
1.1.3	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]: 0.3681900 MHz 40.63 (Margin 7.91 dB) - AV 44.28 (Margin 14.26 dB) - QP	FCC 15.207	Complied
3.2	15.247(a)	DTS Bandwidth	Refer as Appendix A	≥500kHz	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: 2399.552 MHz: 34.76 dB Restricted Bands [dBuV/m at 3m]: 2389.992 MHz 69.45 (Margin 4.55 dB) - PK 53.89 (Margin 0.11 dB) - AV	Non-Restricted Bands:> 20 dBc Restricted Bands: FCC 15.209	Complied
3.6	15.247(d)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]: 4874.000 MHz 53.71 (Margin 0.29 dB) - AV 55.77 (Margin 18.23 dB) - PK	Non-Restricted Bands:> 20 dBc Restricted Bands: FCC 15.209	Complied

Revision History

Report No.	Version	Description	Issued Date
FR642212-02AC	Rev. 01	Initial issue of report	Nov. 17, 2016



1 General Description

1.1 Information

1.1.1 Product Details

The difference between the report no. : N/A	
The Difference	N/A

Evaluated Test Items	N/A
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1.1.2 RF General Information

Band	Mode	BWch (MHz)	Channel Number	Nss-Min	Nant
2.4G	11b	20	1-11[11]	1	3
2.4G	11g	20	1-11[11]	1	3
2.4G	HT20	20	1-11[11]	1,(M0-23)	3
2.4G	HT40	40	3-9[7]	1,(M0-23)	3

Note: <ul style="list-style-type: none">♦ 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.

1.1.3 Antenna Information

Antenna Category	
<input type="checkbox"/>	Integral antenna (antenna permanently attached)
<input 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 checked="" type="checkbox"/>	External antenna (dedicated antennas)
<input checked="" type="checkbox"/>	Single power level with corresponding antenna(s).
<input type="checkbox"/>	Multiple power level and corresponding antenna(s).

No.	Ant. Cat.	Ant. Type	Gain (dBi)
1	External	Dipole	2.54
2	External	Dipole	2.32
3	External	Dipole	2.25

1.1.4 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input checked="" type="checkbox"/> Production ; <input 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:

1.1.5 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"/> 99.6% - IEEE 802.11b	0.02
<input checked="" type="checkbox"/> 97.8%- IEEE 802.11g	0.10
<input checked="" type="checkbox"/> 97.5%- IEEE 802.11n (HT20)	0.11
<input checked="" type="checkbox"/> 96.1%- IEEE 802.11n (HT40)	0.17



1.1.6 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

1.1.7 EUT Operate Information

Items	Description			
Beamforming Function	<input type="checkbox"/>	With beamforming	<input checked="" type="checkbox"/>	Without beamforming
Operate Condition	<input checked="" type="checkbox"/>	Point-to-multipoint (P2M)	<input type="checkbox"/>	Point-to-point (P2P)

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	Test Date
AC Conduction	CO04-HY	Ryan	25°C / 53%	01/07/2016
RF Conducted	TH01-HY	Lisa	23.5°C / 63%	05/10/2016
Radiated Emission	03CH02-HY	Daniel	22.6°C / 54.8%	05/10/2016

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))

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 _{TX})	Data Rate / MCS	Worst Data Rate / MCS
11b	3	1-11 Mbps	1 Mbps
11g	3	6-54 Mbps	6 Mbps
HT20	3	MCS 0-23	MCS 0
HT40	3	MCS 0-23	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

2.2 Test Channel Mode

Test Software Version	art2/v4.9.844_1.0.1
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Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Power Setting
2.4G	11b	20	1	3	2412	L	14.5
2.4G	11b	20	1	3	2437	M	16.5
2.4G	11b	20	1	3	2462	H	16
2.4G	11g	20	1	3	2412	L	14.5
2.4G	11g	20	1	3	2437	M	16
2.4G	11g	20	1	3	2462	H	14.5
2.4G	HT20	20	1	3	2412	L	14
2.4G	HT20	20	1	3	2437	M	16
2.4G	HT20	20	1	3	2462	H	13.5
2.4G	HT40	40	1	3	2422	L	10
2.4G	HT40	40	1	3	2437	M	14.5
2.4G	HT40	40	1	3	2452	H	9.5

Abbreviation Explanation




Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Test Cond.	Abbreviation
2.4G	HT20	20	1,(M0-23)	2	2412	L	TN,VN	2.4G;HT20;20;1,(M0-23);2;2412;L;TN,VN
2.4G	HT40	40	1,(M0-23)	2	2437	M	TN,VN	2.4G;HT40;40;1,(M0-23);2;2437;M;TN,VN

Note:
 ♦ Test range channel consist of L (Low Ch.), M (Middle Ch.), H (High 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
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests		
Tests Item	Emissions in Restricted Frequency Bands, Emissions in Non-restricted Frequency Bands, Transmitter Radiated 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	Transmitter <input checked="" type="checkbox"/> 1. Adapter Mode	
Orthogonal Planes of EUT	X Plane 	
Worst Planes of EUT	V	
Orthogonal Planes of EUT	X Plane 	Z Plane 
	V	
Worst Planes of Ant.	V	



2.4 Accessories and Support Equipment

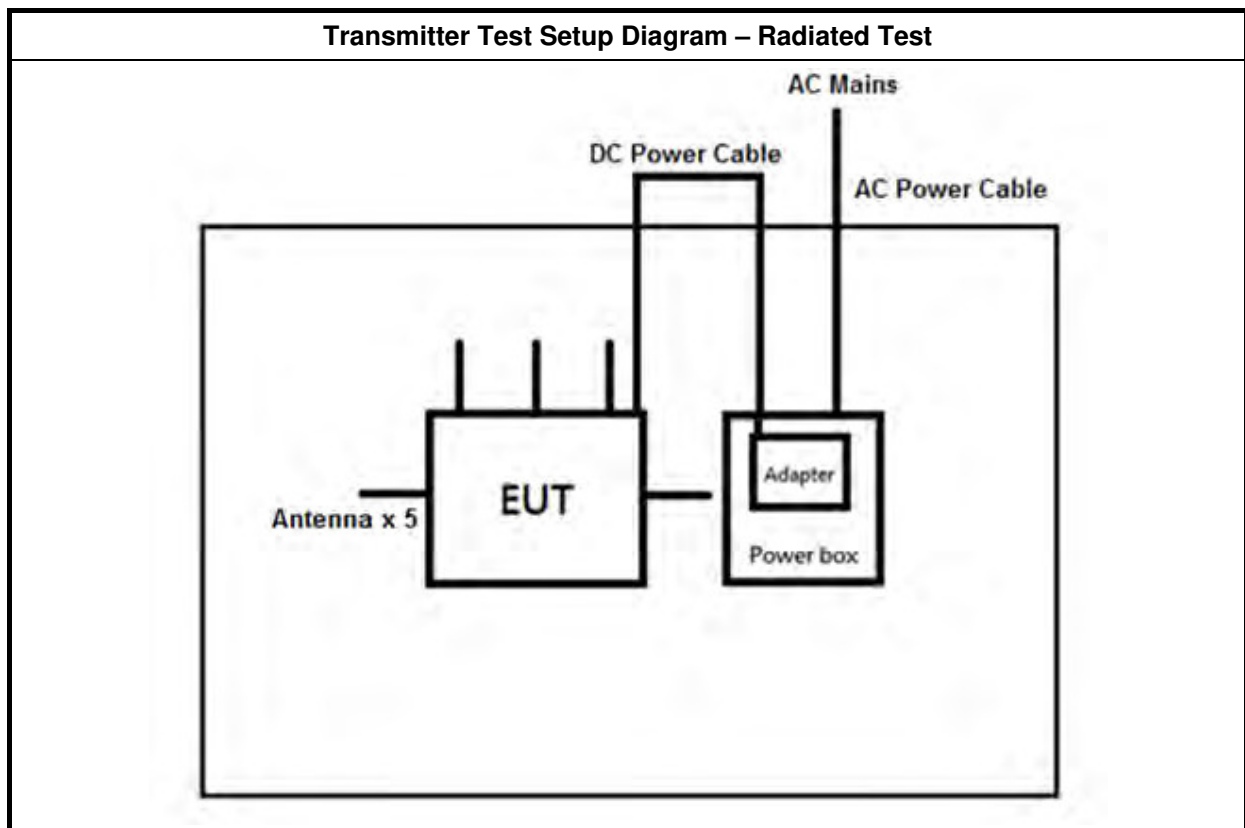
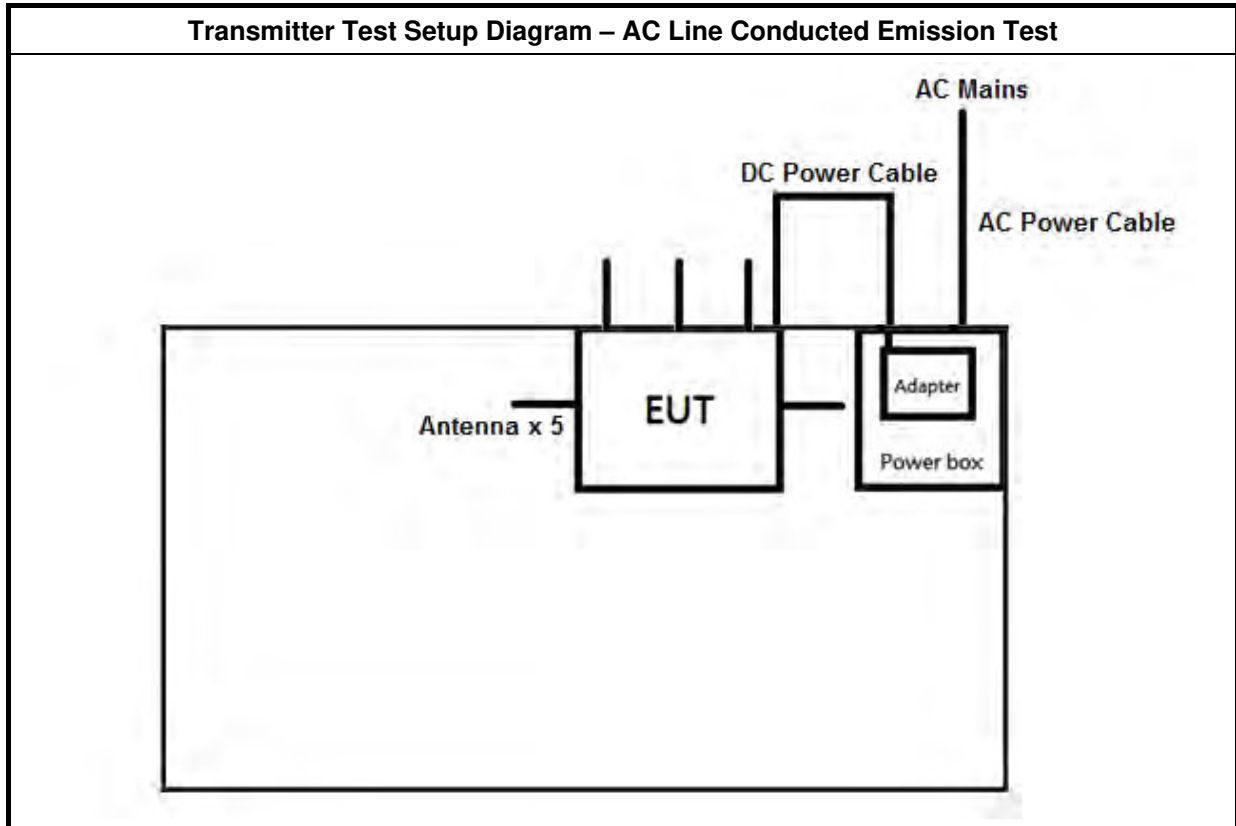
Accessories				
AC Adapter	Brand Name	TP-LINK	Model Name	T120100-2B1
	Power Rating	I/P: 100 - 240Vac, 300mA, O/P: 12Vdc, 1000mA		
	Power Cord	1.5 meter, non-shielded cable, w/o ferrite core		

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

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

Support Equipment – RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5540	DoC
2	AC Adapter for Notebook	DELL	HA65NM130	DoC

2.5 Test Setup Diagram



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.

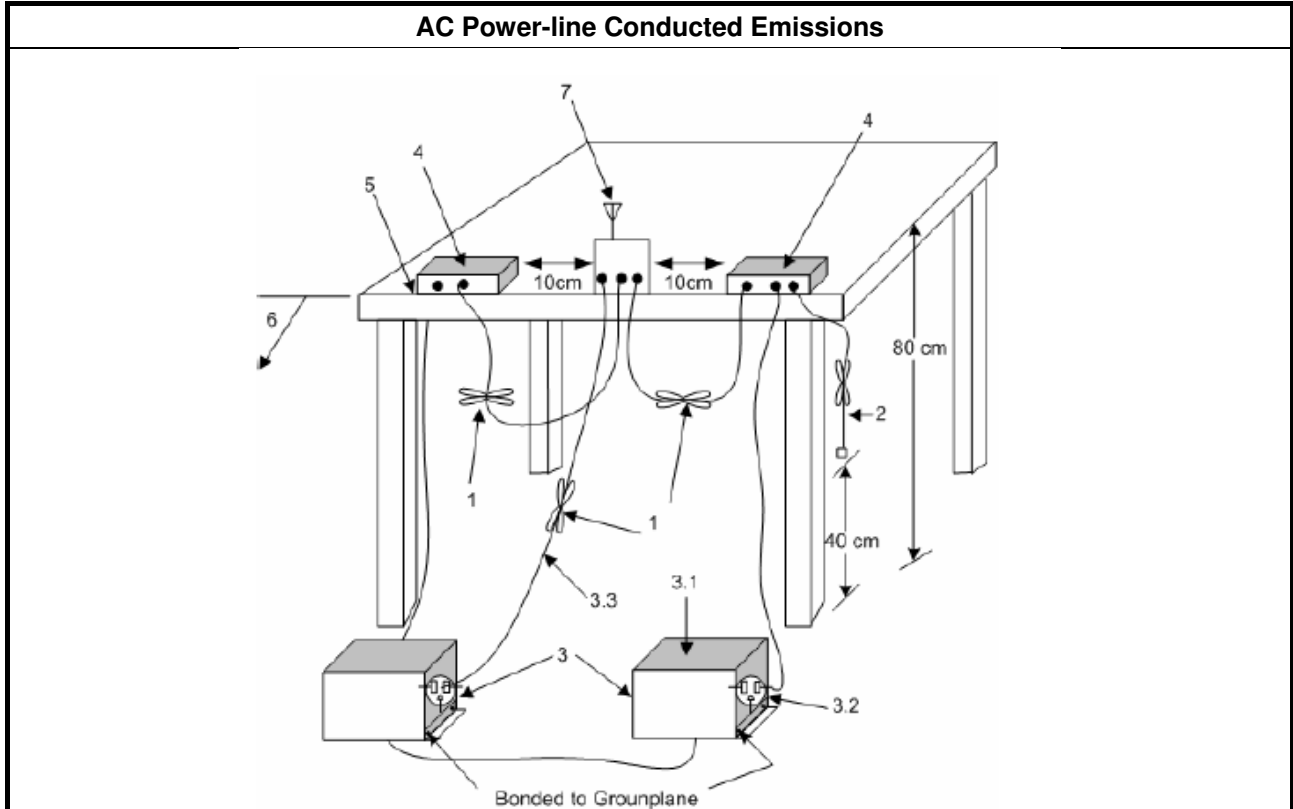
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
<ul style="list-style-type: none"> 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
Systems using digital modulation techniques:
<ul style="list-style-type: none"> ▪ 6 dB bandwidth \geq 500 kHz.

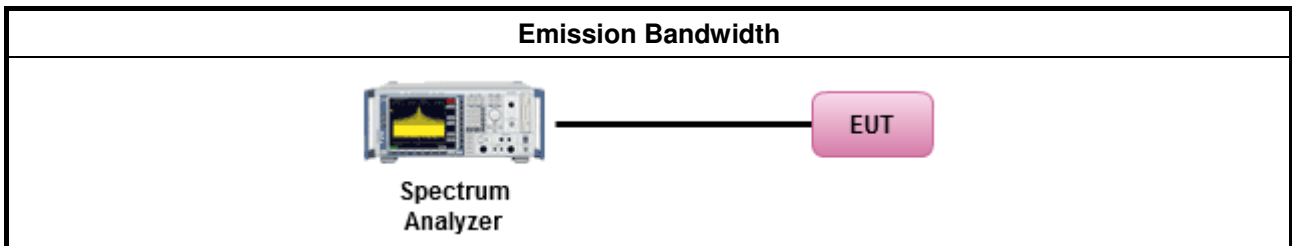
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method
<ul style="list-style-type: none"> ▪ 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 6.9.3 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

Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit	
<ul style="list-style-type: none"> ▪ 2400-2483.5 MHz Band: 	
	<ul style="list-style-type: none"> ▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	<ul style="list-style-type: none"> ▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	<ul style="list-style-type: none"> ▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> ▪ Smart antenna system (SAS):
	<ul style="list-style-type: none"> - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
e.i.r.p. Power Limit:	
<ul style="list-style-type: none"> ▪ 2400-2483.5 MHz Band 	
	<ul style="list-style-type: none"> ▪ Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
	<ul style="list-style-type: none"> ▪ Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	<ul style="list-style-type: none"> ▪ Smart antenna system (SAS)
	<ul style="list-style-type: none"> - Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
<p>P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi. P_{eirp} = e.i.r.p. Power in dBm.</p>	

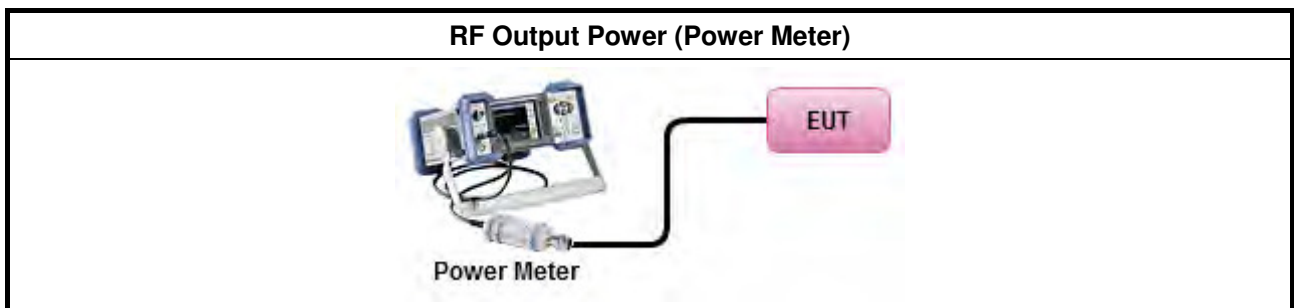
3.3.2 Measuring Instruments

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"> Maximum Peak Conducted Output Power 	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW ≥ DTS BW)
<ul style="list-style-type: none"> Maximum Average Conducted Output Power 	
Duty cycle ≥ 98%	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.2.2.4 Method AVGSA-2. (spectral trace averaging)
Duty cycle < 98%	
<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)
<ul style="list-style-type: none"> For conducted measurement. 	
<ul style="list-style-type: none"> If the EUT supports multiple transmit chains using options given below: Refer as 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. 	
<ul style="list-style-type: none"> If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$ 	

3.3.4 Test Setup



3.3.5 Test Result of Maximum Peak Conducted Output Power

Refer as Appendix B

3.3.6 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
<ul style="list-style-type: none"> ▪ Power Spectral Density (PSD) \leq 8 dBm/3kHz

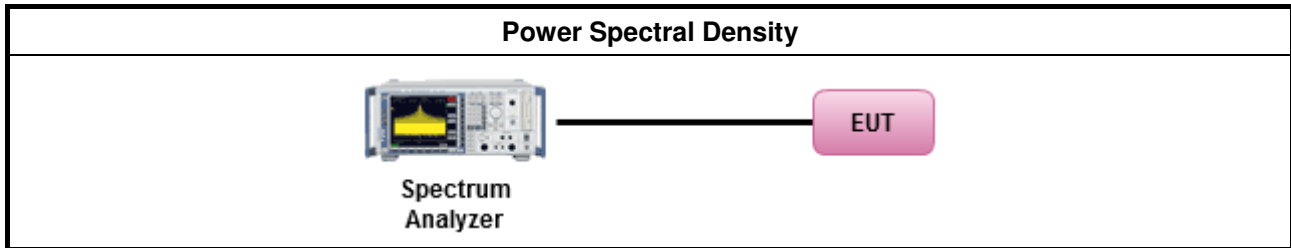
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ 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%	
<input type="checkbox"/>	Refer as KDB 558074, clause 10.5 Method AVGPSD-2. (spectral trace averaging)
Duty cycle $<$ 98%	
<input type="checkbox"/>	Refer as KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)
<ul style="list-style-type: none"> ▪ For conducted measurement. 	
<ul style="list-style-type: none"> ▪ 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 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) dB, where N is the number of transmit chains. Refer as 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

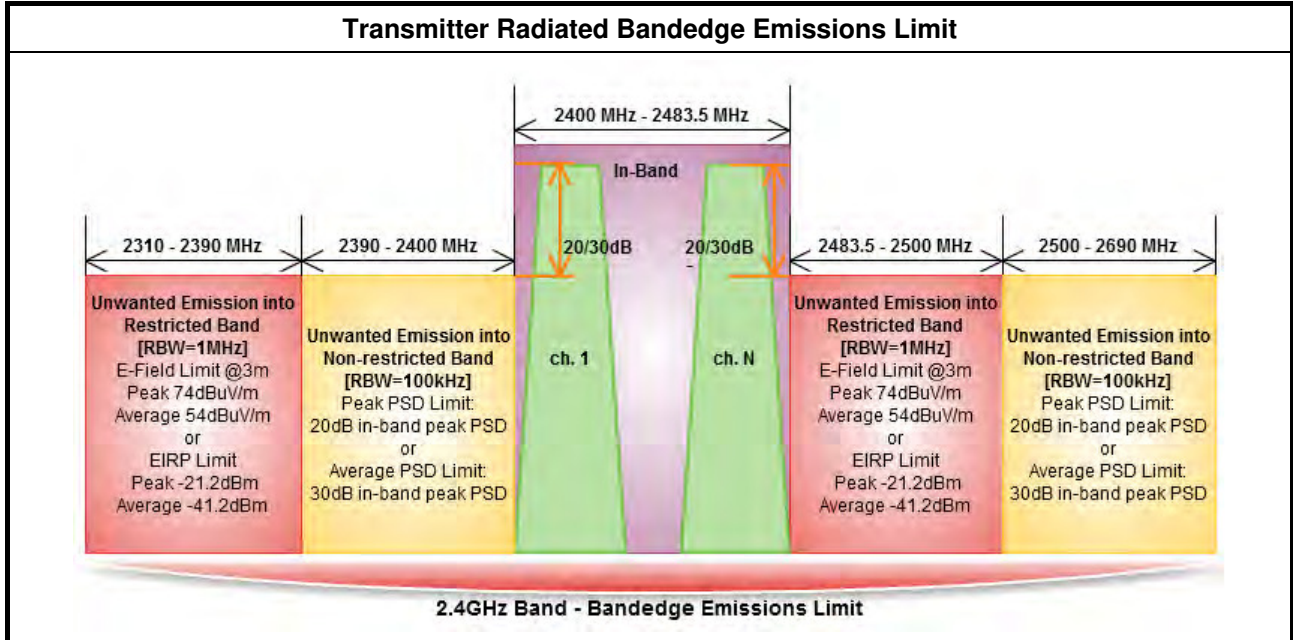


3.4.5 Test Result of Power Spectral Density

Refer as Appendix C

3.5 Transmitter Radiated Bandedge Emissions

3.5.1 Transmitter Radiated Bandedge Emissions Limit



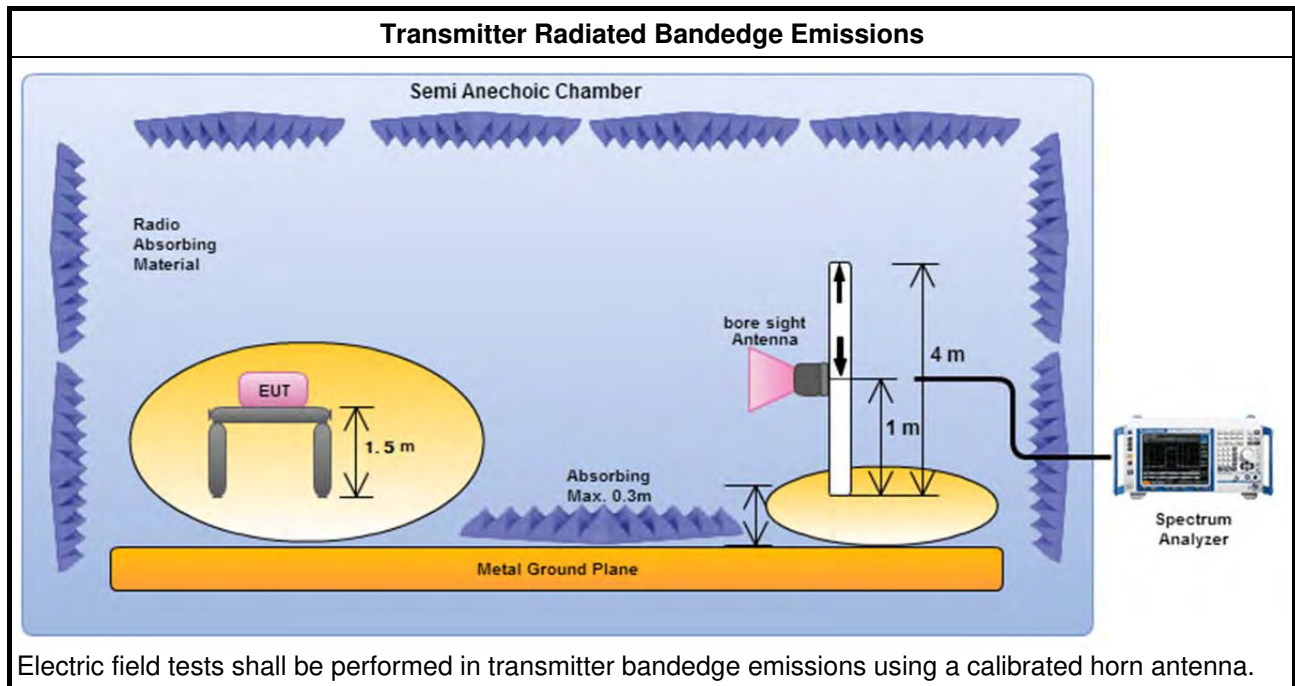
3.5.2 Measuring Instruments

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 6.10.3 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 13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
<input type="checkbox"/>	Refer as KDB 558074, clause 13.2 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
<input checked="" 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 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.
<input type="checkbox"/>	For conducted and cabinet radiation measurement, refer as KDB 558074, clause 12.2.2.
<input type="checkbox"/>	For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB
<input type="checkbox"/>	For KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.

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.

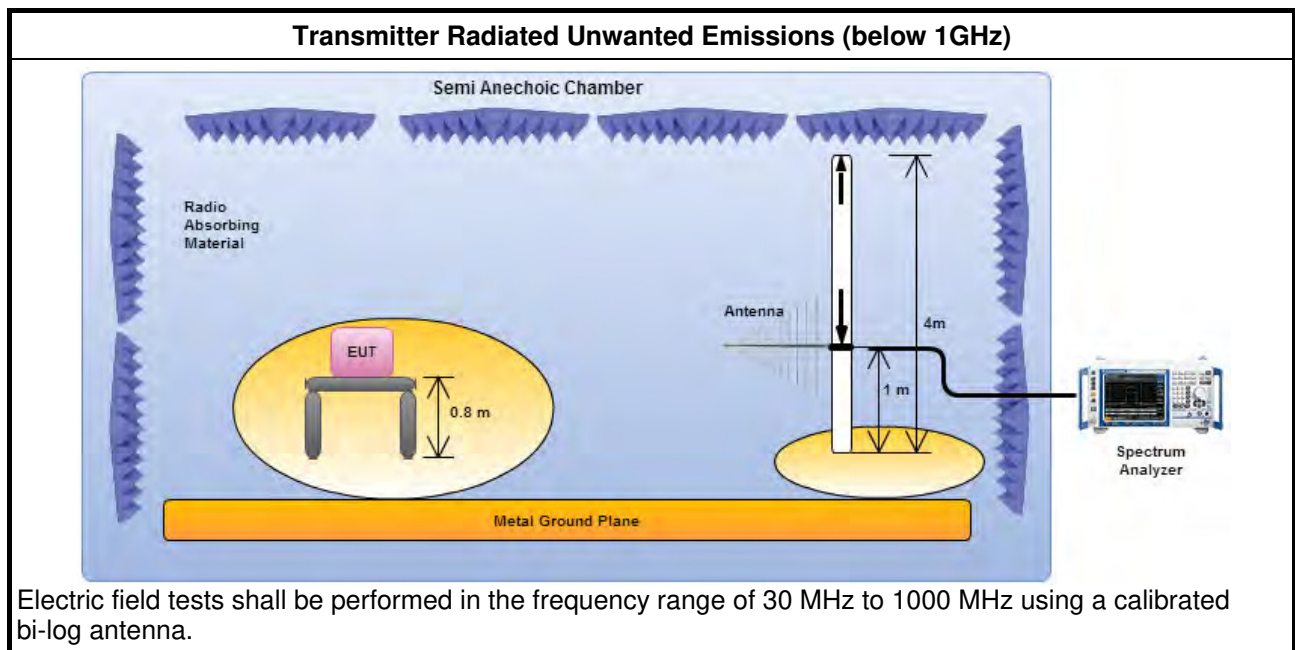
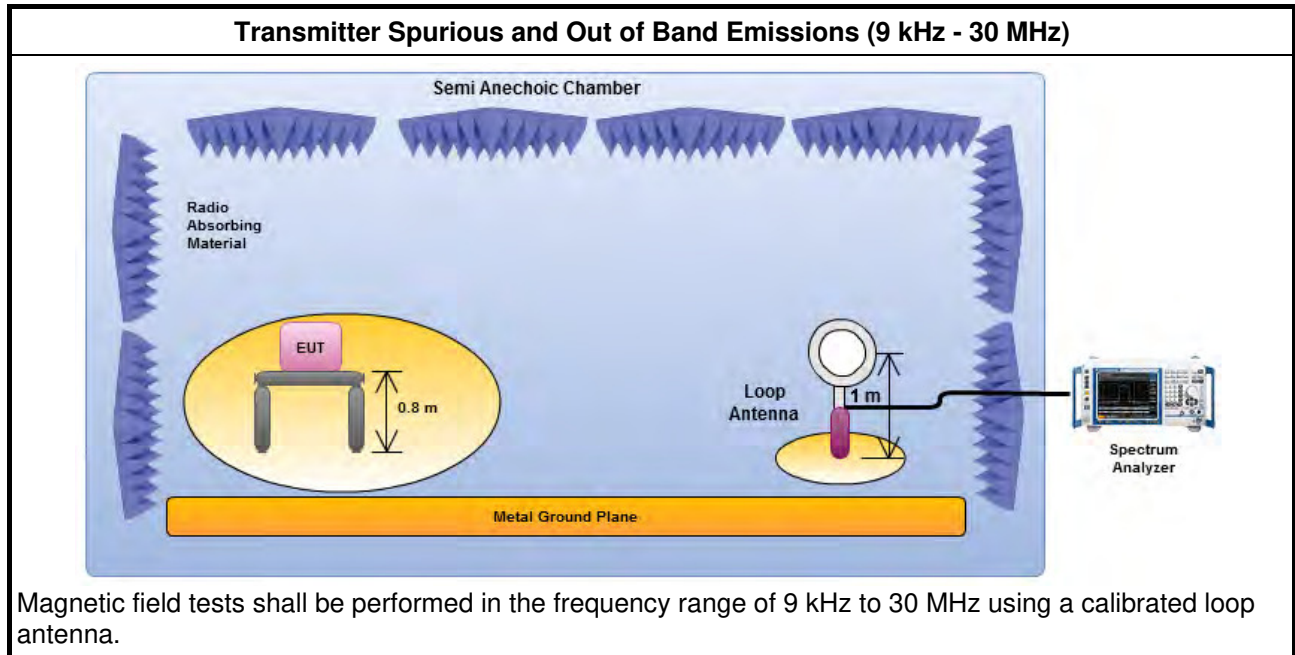
3.6.2 Measuring Instruments

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

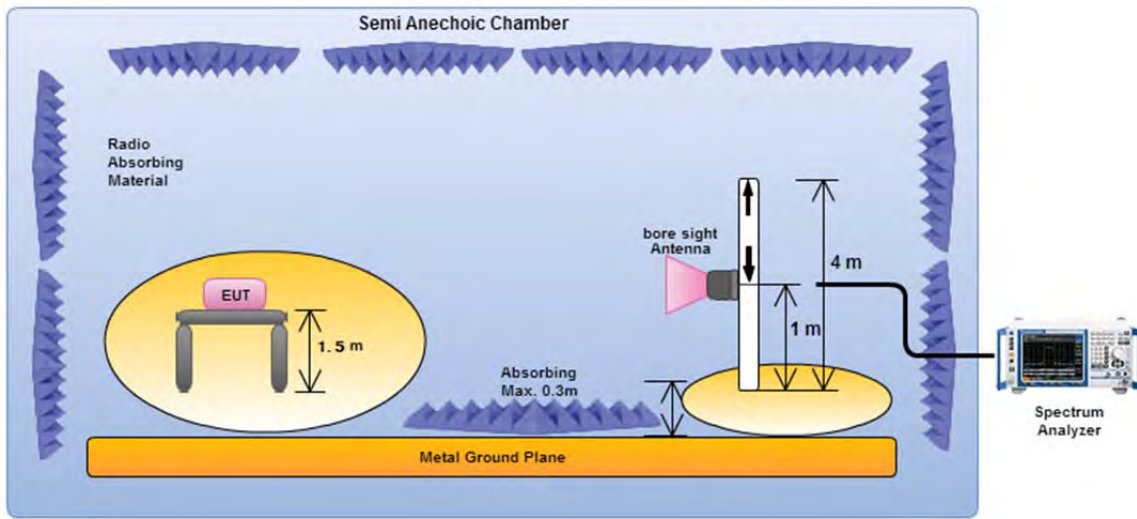
3.6.3 Test Procedures

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 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

AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR-3	102051	9kHz~3.6GHz	19/04/2016	18/04/2017
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
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz~30MHz	30/10/2015	29/10/2016

Conducted

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	21/07/2016	20/07/2017

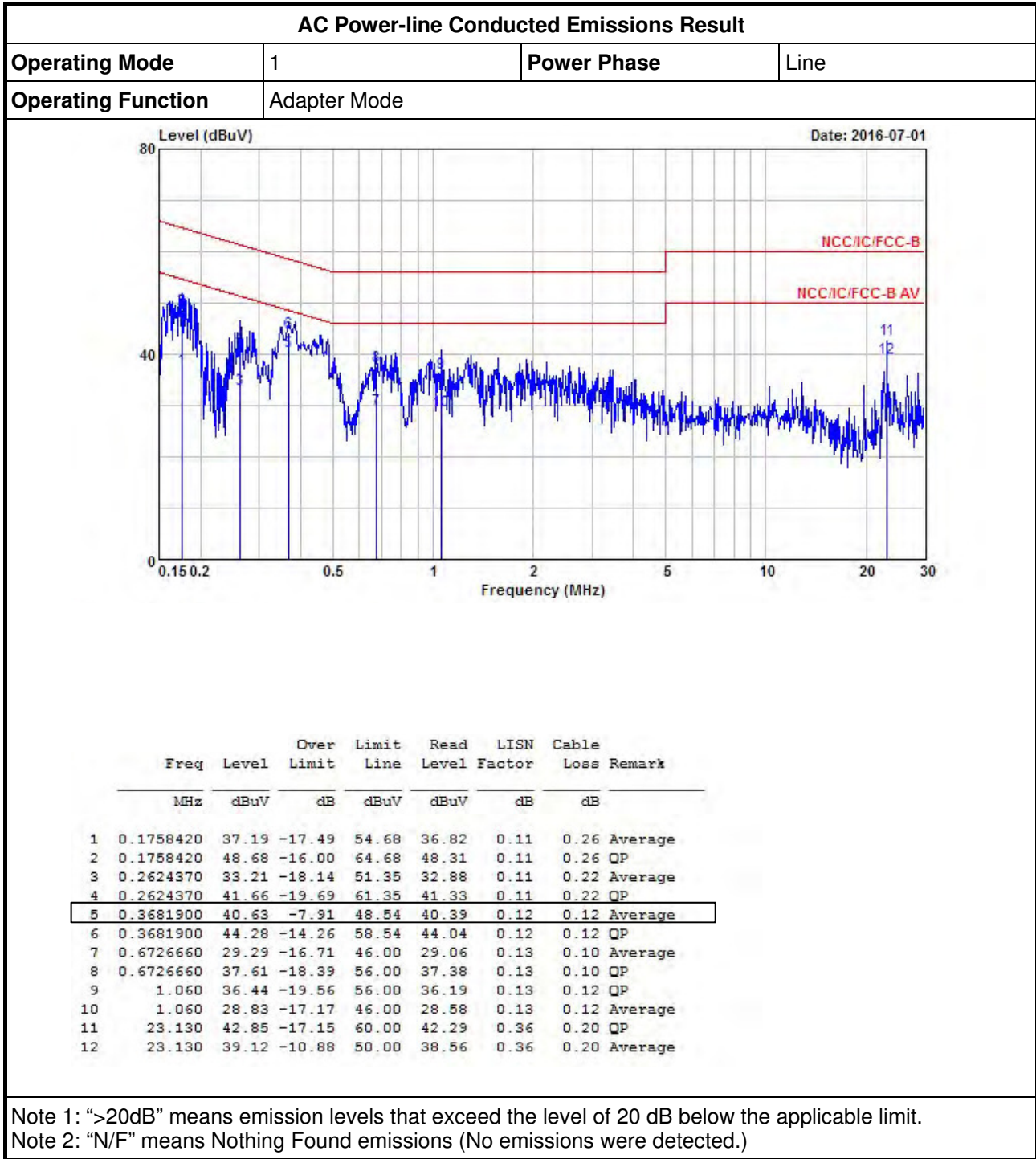
Radiated

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSP 40	100593	9kHz~40GHz	19/10/2015	18/10/2016
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz~1GHz 3m	03/06/2016	02/06/2017
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz~18GHz 3m	03/06/2016	02/06/2017
Amplifier	Agilent	8447D	2944A11149	100kHz~1.3GHz	01/07/2016	30/06/2017
Amplifier	Agilent	8449B	3008A02602	1GHz~26.5GHz	04/11/2015	03/11/2016
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 01543	1GHz~18GHz	22/04/2016	21/04/2017
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz~40GHz	29/01/2016	28/01/2017
Bilog Antenna	SCHAFFNER	CBL 6112B	2723	30MHz~1GHz	05/10/2015	04/10/2016
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	02/02/2015	01/02/2017



AC Power-line Conducted Emissions Result							
Operating Mode	1	Power Phase	Neutral				
Operating Function	Adapter Mode						
<div style="text-align: right;">Date: 2016-07-01</div>							
Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1759130	47.57	-17.11	64.68	47.20	0.11	0.26 QP
2	0.1759130	32.02	-22.66	54.68	31.65	0.11	0.26 Average
3	0.2748290	39.79	-21.18	60.97	39.47	0.11	0.21 QP
4	0.2748290	27.26	-23.71	50.97	26.94	0.11	0.21 Average
5	0.3872360	28.88	-19.24	48.12	28.65	0.12	0.11 Average
6	0.3872360	38.99	-19.13	58.12	38.76	0.12	0.11 QP
7	0.4563600	26.43	-20.33	46.76	26.21	0.12	0.10 Average
8	0.4563600	35.21	-21.55	56.76	34.99	0.12	0.10 QP
9	0.7255980	28.98	-27.02	56.00	28.75	0.13	0.10 QP
10	0.7255980	19.11	-26.89	46.00	18.88	0.13	0.10 Average
11	23.127	41.94	-18.06	60.00	41.33	0.41	0.20 QP
12	23.127	38.73	-11.27	50.00	38.12	0.41	0.20 Average

Note 1: ">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.)





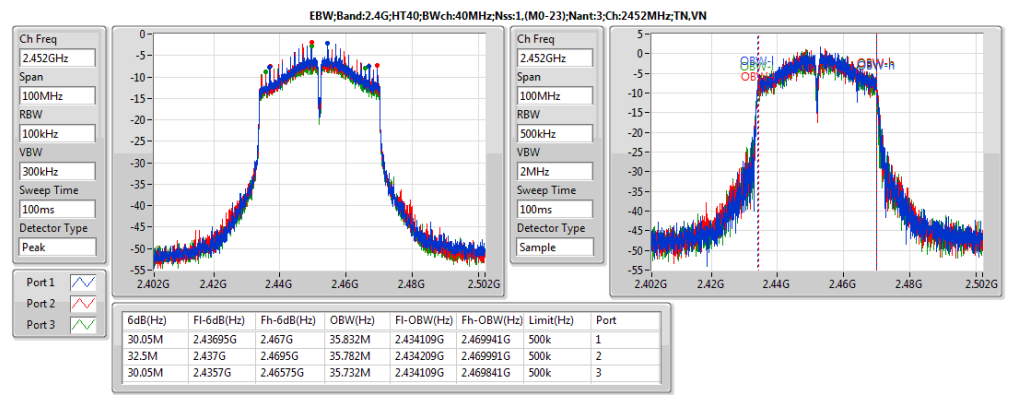
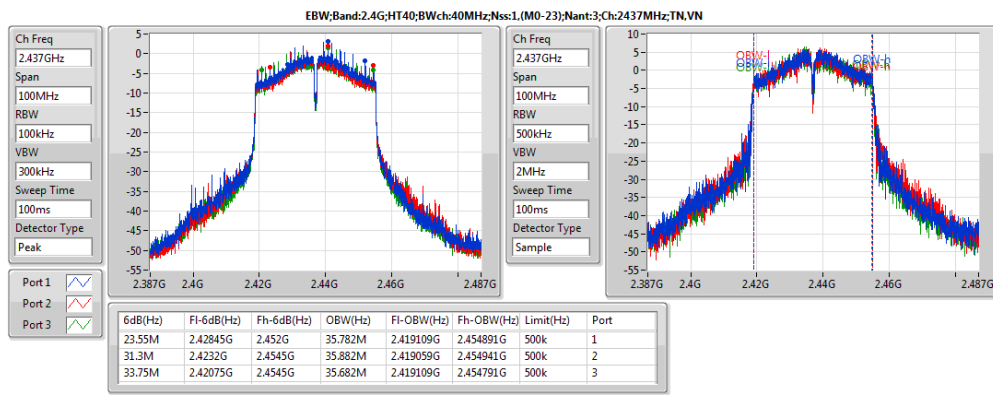
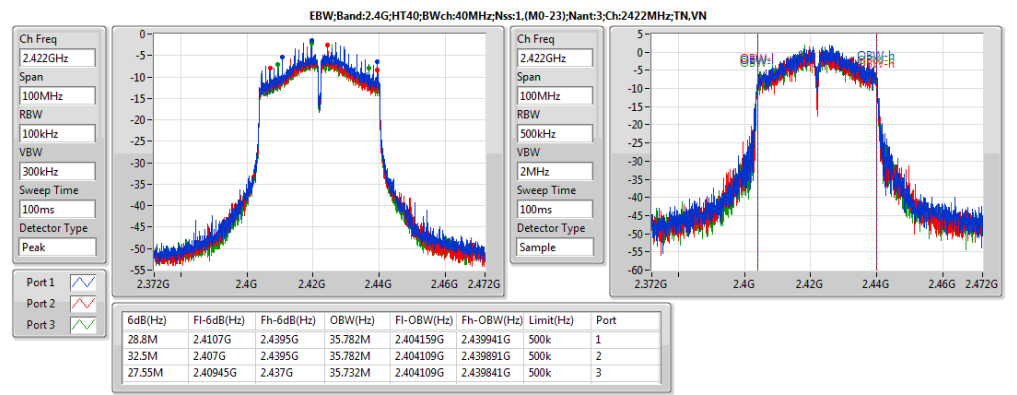
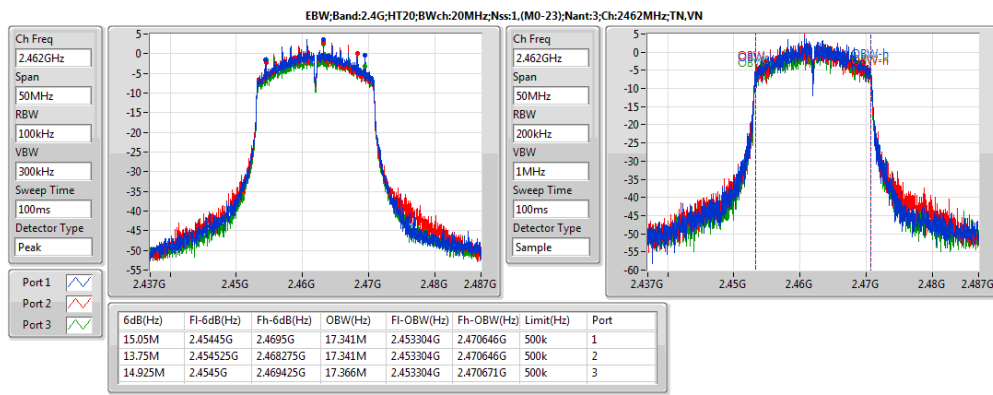
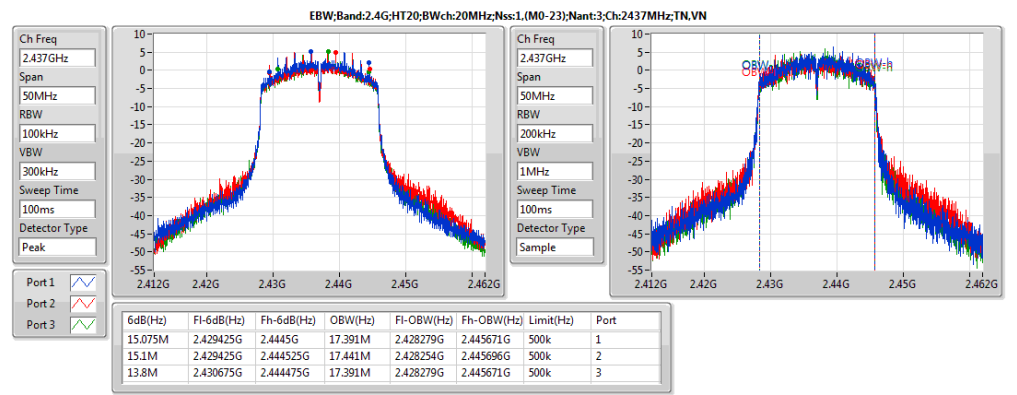
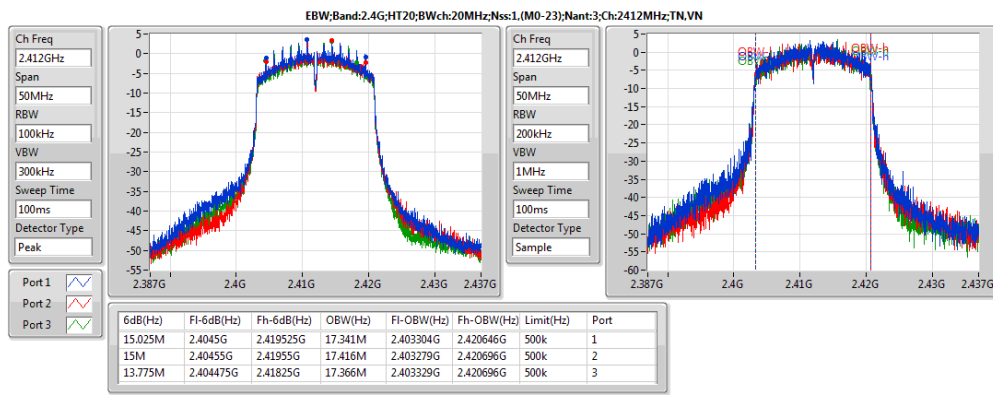
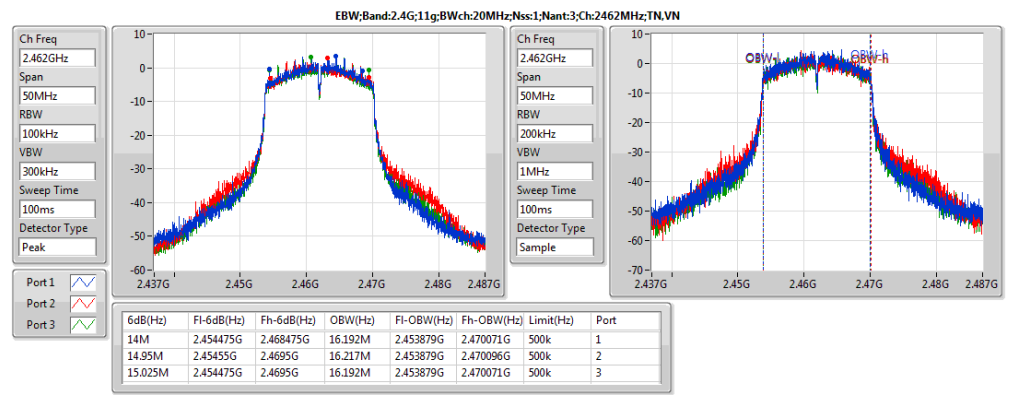
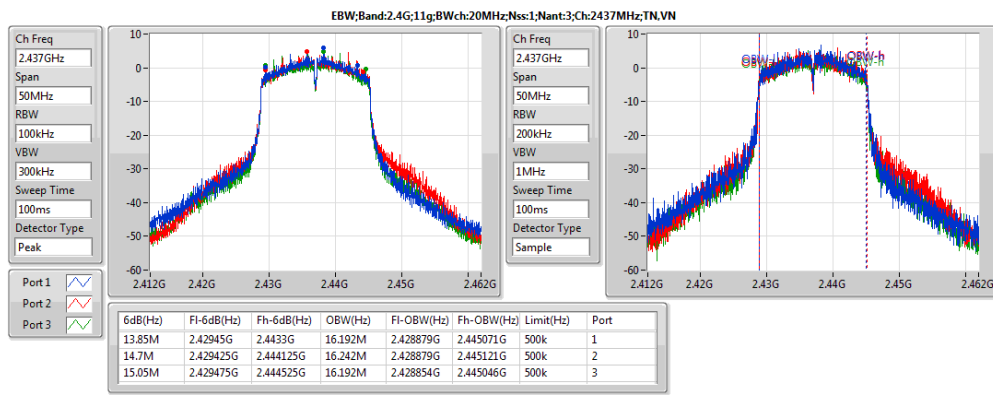
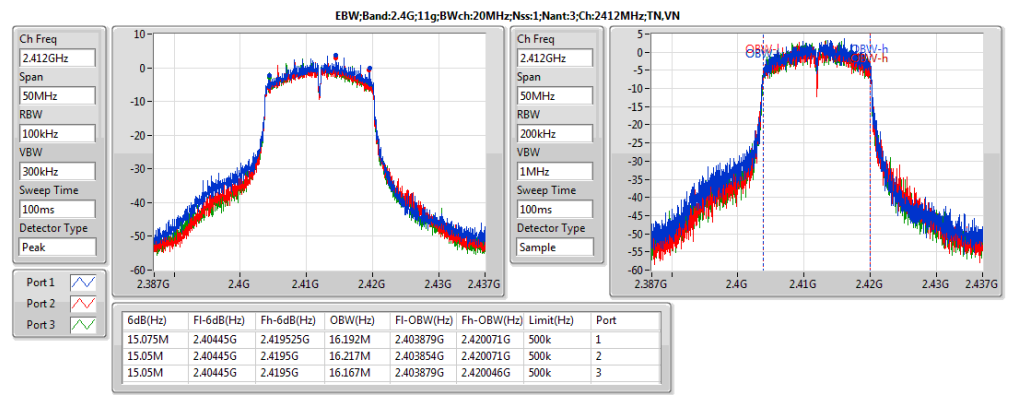
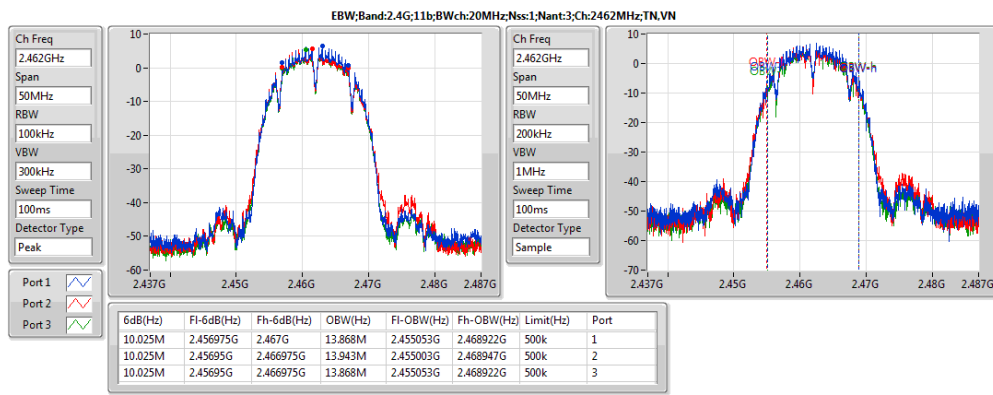
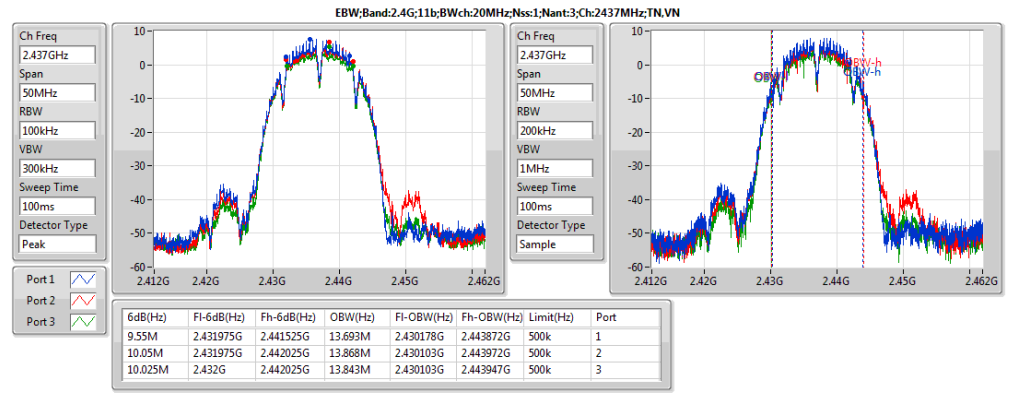
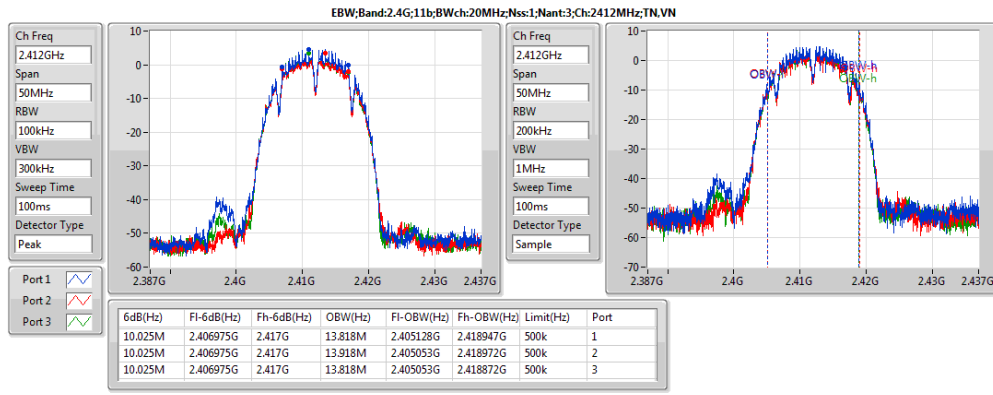
Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4G;11b;20;1;3	10.05M	13.943M	13M9G1D	9.55M	13.693M
2.4G;11g;20;1;3	15.075M	16.242M	16M2D1D	13.85M	16.167M
2.4G;HT20;20;1;(M0-23);3	15.1M	17.441M	17M4D1D	13.75M	17.341M
2.4G;HT40;40;1;(M0-23);3	33.75M	35.882M	35M9D1D	23.55M	35.682M



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)
2.4G;11b;20;1;3;2412;L;TN,VN	Pass	500k	10.025M	13.818M	10.025M	13.918M	10.025M	13.818M
2.4G;11b;20;1;3;2437;M;TN,VN	Pass	500k	9.55M	13.693M	10.05M	13.868M	10.025M	13.843M
2.4G;11b;20;1;3;2462;H;TN,VN	Pass	500k	10.025M	13.868M	10.025M	13.943M	10.025M	13.868M
2.4G;11g;20;1;3;2412;L;TN,VN	Pass	500k	15.075M	16.192M	15.05M	16.217M	15.05M	16.167M
2.4G;11g;20;1;3;2437;M;TN,VN	Pass	500k	13.85M	16.192M	14.7M	16.242M	15.05M	16.192M
2.4G;11g;20;1;3;2462;H;TN,VN	Pass	500k	14M	16.192M	14.95M	16.217M	15.025M	16.192M
2.4G;HT20;20;1;(M0-23);3;2412;L;TN,VN	Pass	500k	15.025M	17.341M	15M	17.416M	13.775M	17.366M
2.4G;HT20;20;1;(M0-23);3;2437;M;TN,VN	Pass	500k	15.075M	17.391M	15.1M	17.441M	13.8M	17.391M
2.4G;HT20;20;1;(M0-23);3;2462;H;TN,VN	Pass	500k	15.05M	17.341M	13.75M	17.341M	14.925M	17.366M
2.4G;HT40;40;1;(M0-23);3;2422;L;TN,VN	Pass	500k	28.8M	35.782M	32.5M	35.782M	27.55M	35.732M
2.4G;HT40;40;1;(M0-23);3;2437;M;TN,VN	Pass	500k	23.55M	35.782M	31.3M	35.882M	33.75M	35.682M
2.4G;HT40;40;1;(M0-23);3;2452;H;TN,VN	Pass	500k	30.05M	35.832M	32.5M	35.782M	30.05M	35.732M





Summary

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
2.4G;11b;20;1;3	23.43	0.22029	25.97	0.39537
2.4G;11g;20;1;3	28.67	0.73621	31.21	1.3213
2.4G;HT20;20;1;(M0-23);3	28.52	0.71121	31.06	1.27644
2.4G;HT40;40;1;(M0-23);3	27.54	0.56754	30.08	1.01859



Result

Mode	Result	DG (dBi)	EIRP (dBm)	EIRP Lim. (dBm)	Sum (dBm)	Sum Lim. (dBm)	P1 (dBm)	P2 (dBm)	P3 (dBm)
2.4G;11b;20;1;3;2412;L;TN,VN	Pass	2.54	23.19	Inf	20.65	30.00	16.48	15.37	15.71
2.4G;11b;20;1;3;2437;M;TN,VN	Pass	2.54	25.97	Inf	23.43	30.00	19.42	18.70	17.68
2.4G;11b;20;1;3;2462;H;TN,VN	Pass	2.54	25.11	Inf	22.57	30.00	18.28	17.65	17.43
2.4G;11g;20;1;3;2412;L;TN,VN	Pass	2.54	30.30	Inf	27.76	30.00	23.99	22.15	22.61
2.4G;11g;20;1;3;2437;M;TN,VN	Pass	2.54	31.21	Inf	28.67	30.00	24.65	23.50	23.45
2.4G;11g;20;1;3;2462;H;TN,VN	Pass	2.54	30.18	Inf	27.64	30.00	23.67	22.20	22.60
2.4G;HT20;20;1;(M0-23);3;2412;L;TN,VN	Pass	2.54	30.05	Inf	27.51	30.00	23.46	22.27	22.39
2.4G;HT20;20;1;(M0-23);3;2437;M;TN,VN	Pass	2.54	31.06	Inf	28.52	30.00	24.55	23.24	23.33
2.4G;HT20;20;1;(M0-23);3;2462;H;TN,VN	Pass	2.54	29.45	Inf	26.91	30.00	22.84	21.92	21.55
2.4G;HT40;40;1;(M0-23);3;2422;L;TN,VN	Pass	2.54	25.81	Inf	23.27	30.00	19.13	18.13	18.15
2.4G;HT40;40;1;(M0-23);3;2437;M;TN,VN	Pass	2.54	30.08	Inf	27.54	30.00	23.68	22.32	22.14
2.4G;HT40;40;1;(M0-23);3;2452;H;TN,VN	Pass	2.54	25.59	Inf	23.05	30.00	18.98	18.13	17.60



Summary

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
2.4G;11b;20;1;3	21.14	0.13002	23.68	0.23335
2.4G;11g;20;1;3	20.44	0.11066	22.98	0.19861
2.4G;HT20;20;1;(M0-23);3	20.28	0.10666	22.82	0.19143
2.4G;HT40;40;1;(M0-23);3	19.62	0.09162	22.16	0.16444



Result

Mode	Result	DG (dBi)	EIRP (dBm)	EIRP Lim. (dBm)	Sum (dBm)	Sum Lim. (dBm)	P1 (dBm)	P2 (dBm)	P3 (dBm)
2.4G;11b;20;1;3;2412;L;TN,VN	Pass	2.54	21.01	Inf	18.47	30.00	14.19	13.12	13.71
2.4G;11b;20;1;3;2437;M;TN,VN	Pass	2.54	23.68	Inf	21.14	30.00	17.02	16.51	15.42
2.4G;11b;20;1;3;2462;H;TN,VN	Pass	2.54	22.89	Inf	20.35	30.00	16.03	15.45	15.20
2.4G;11g;20;1;3;2412;L;TN,VN	Pass	2.54	21.34	Inf	18.80	30.00	14.59	13.73	13.71
2.4G;11g;20;1;3;2437;M;TN,VN	Pass	2.54	22.98	Inf	20.44	30.00	15.81	15.72	15.47
2.4G;11g;20;1;3;2462;H;TN,VN	Pass	2.54	21.77	Inf	19.23	30.00	14.80	14.49	14.04
2.4G;HT20;20;1;(M0-23);3;2412;L;TN,VN	Pass	2.54	20.84	Inf	18.30	30.00	13.86	13.48	13.23
2.4G;HT20;20;1;(M0-23);3;2437;M;TN,VN	Pass	2.54	22.82	Inf	20.28	30.00	16.06	15.36	15.05
2.4G;HT20;20;1;(M0-23);3;2462;H;TN,VN	Pass	2.54	20.40	Inf	17.86	30.00	13.47	13.28	12.47
2.4G;HT40;40;1;(M0-23);3;2422;L;TN,VN	Pass	2.54	17.43	Inf	14.89	30.00	10.65	9.89	9.75
2.4G;HT40;40;1;(M0-23);3;2437;M;TN,VN	Pass	2.54	22.16	Inf	19.62	30.00	15.52	14.77	14.16
2.4G;HT40;40;1;(M0-23);3;2452;H;TN,VN	Pass	2.54	17.37	Inf	14.83	30.00	10.51	10.20	9.40

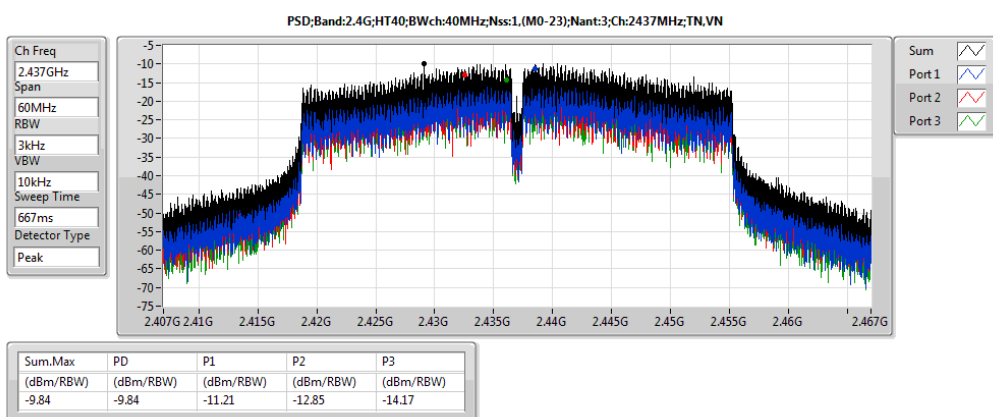
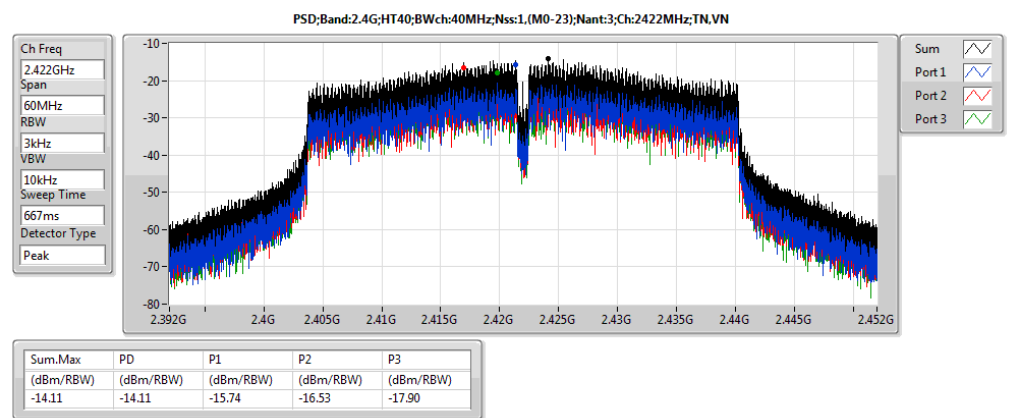
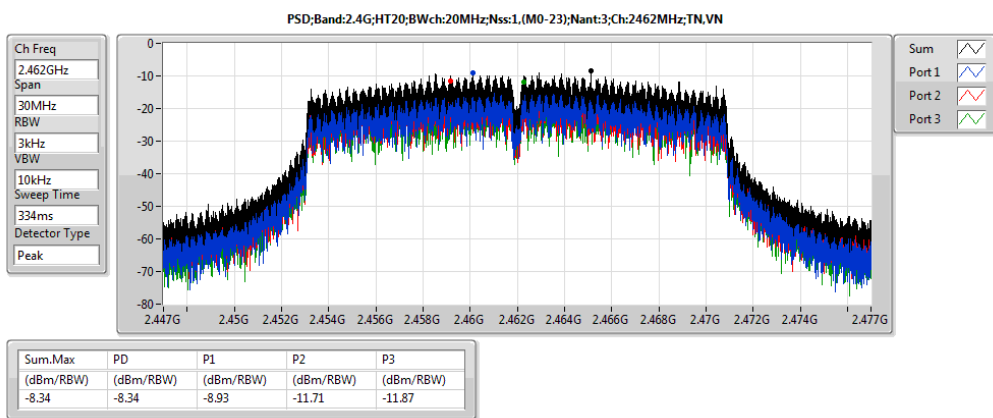
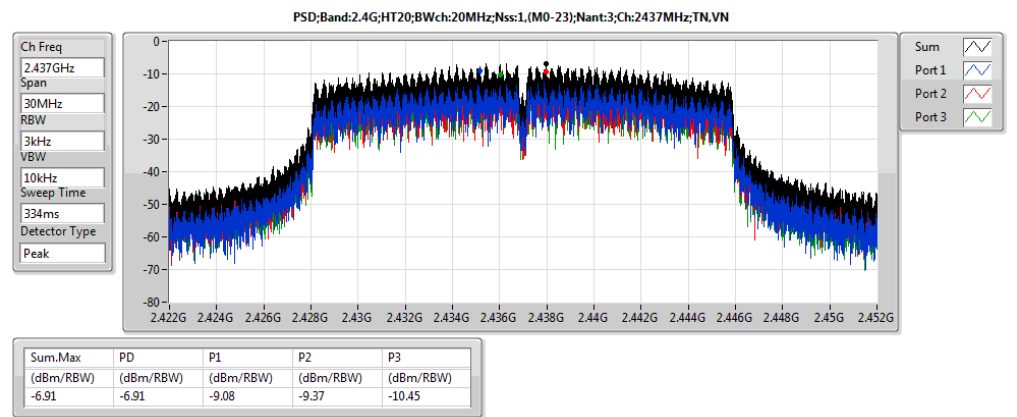
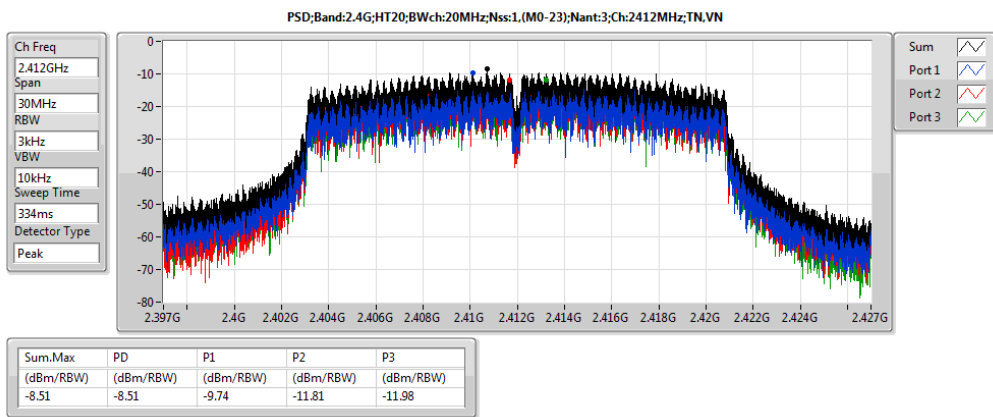
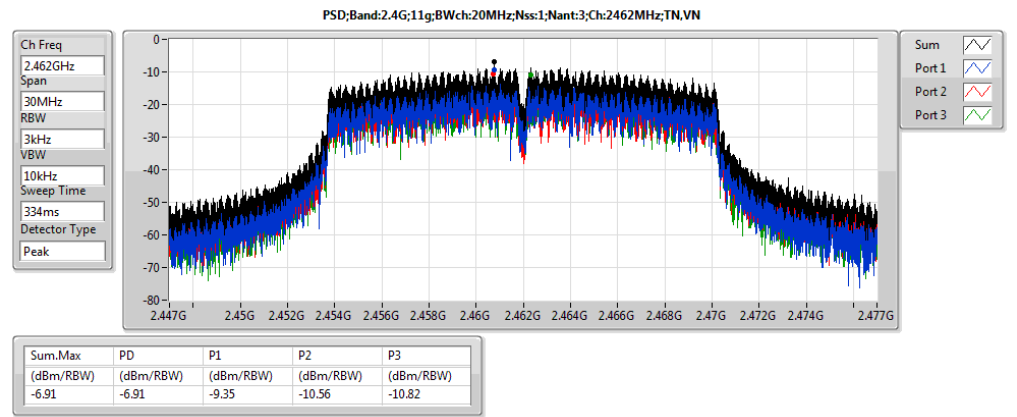
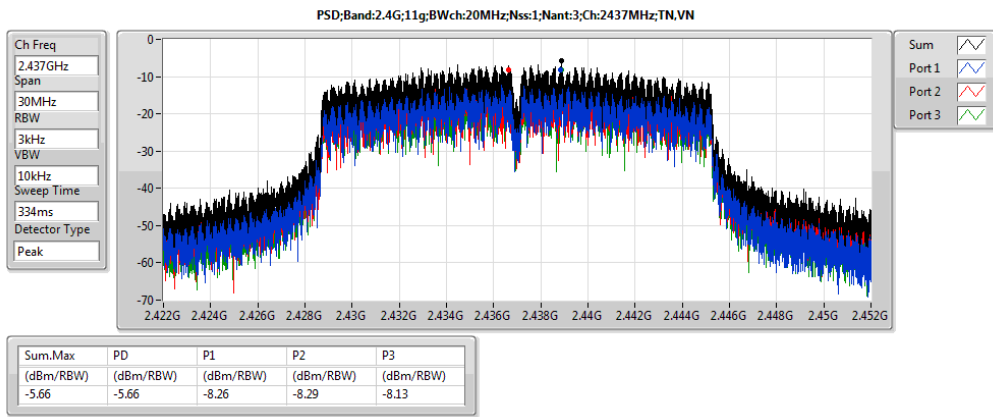
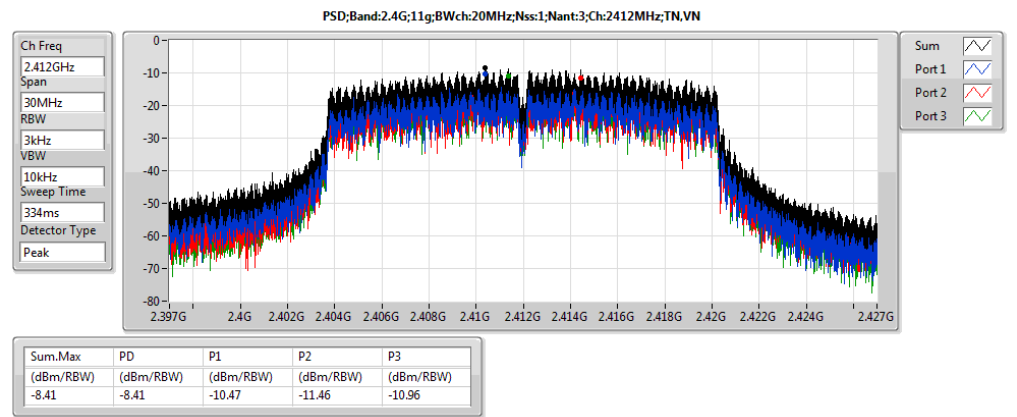
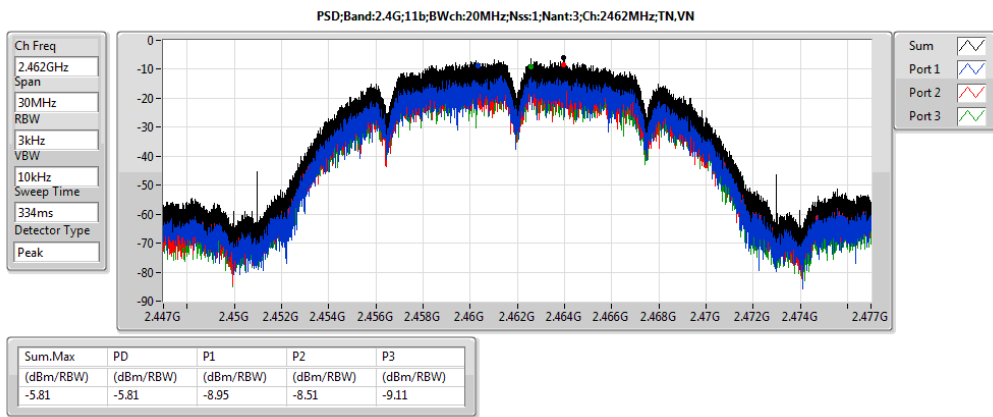
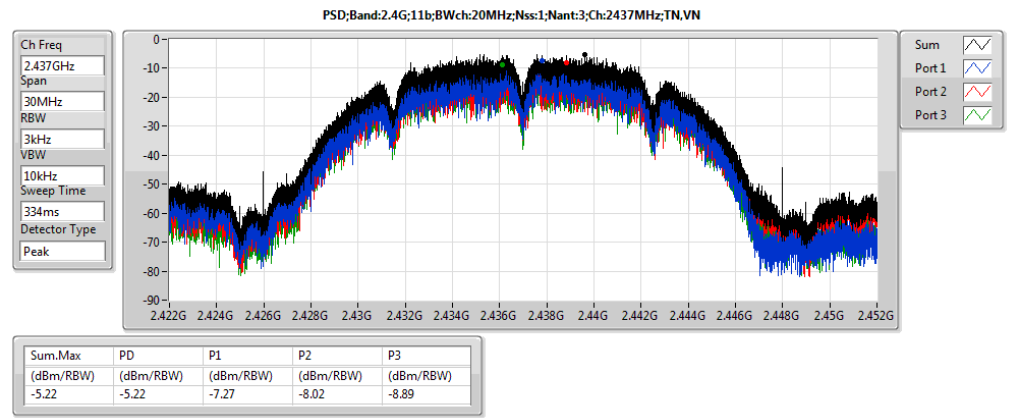
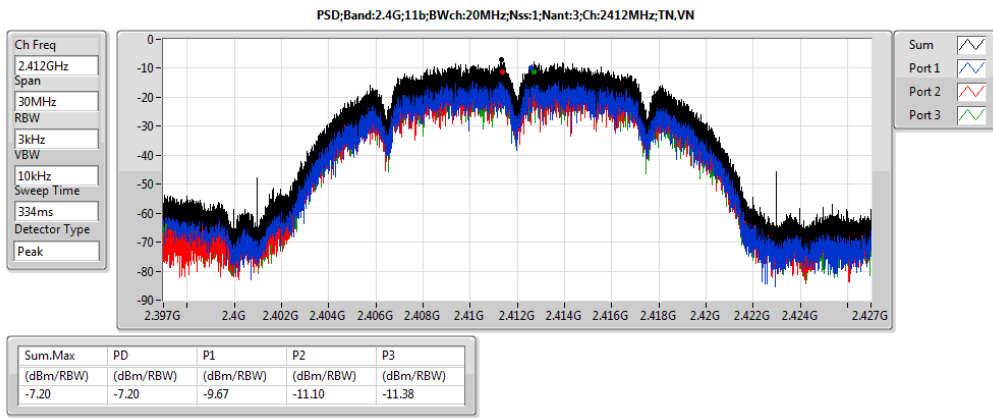


Summary

Mode	PD (dBm/RBW)	EIRP.PD (dBm/RBW)
2.4G;11b;20;1;3	-5.22	1.92
2.4G;11g;20;1;3	-5.66	1.48
2.4G;HT20;20;1;(M0-23);3	-6.91	0.23
2.4G;HT40;40;1;(M0-23);3	-9.84	-2.70

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)
2.4G;11b;20;1;3;2412;L;TN,VN	Pass	3k	3k	0.00	7.14	-7.20	-7.20	8.00	-0.06	Inf	-9.67	-11.10	-11.38
2.4G;11b;20;1;3;2437;M;TN,VN	Pass	3k	3k	0.00	7.14	-5.22	-5.22	8.00	1.92	Inf	-7.27	-8.02	-8.89
2.4G;11b;20;1;3;2462;H;TN,VN	Pass	3k	3k	0.00	7.14	-5.81	-5.81	8.00	1.33	Inf	-8.95	-8.51	-9.11
2.4G;11g;20;1;3;2412;L;TN,VN	Pass	3k	3k	0.00	7.14	-8.41	-8.41	8.00	-1.27	Inf	-10.47	-11.46	-10.96
2.4G;11g;20;1;3;2437;M;TN,VN	Pass	3k	3k	0.00	7.14	-5.66	-5.66	8.00	1.48	Inf	-8.26	-8.29	-8.13
2.4G;11g;20;1;3;2462;H;TN,VN	Pass	3k	3k	0.00	7.14	-6.91	-6.91	8.00	0.23	Inf	-9.35	-10.56	-10.82
2.4G;HT20;20;1;(M0-23);3;2412;L;TN,VN	Pass	3k	3k	0.00	7.14	-8.51	-8.51	8.00	-1.37	Inf	-9.74	-11.81	-11.98
2.4G;HT20;20;1;(M0-23);3;2437;M;TN,VN	Pass	3k	3k	0.00	7.14	-6.91	-6.91	8.00	0.23	Inf	-9.08	-9.37	-10.45
2.4G;HT20;20;1;(M0-23);3;2462;H;TN,VN	Pass	3k	3k	0.00	7.14	-8.34	-8.34	8.00	-1.20	Inf	-8.93	-11.71	-11.87
2.4G;HT40;40;1;(M0-23);3;2422;L;TN,VN	Pass	3k	3k	0.00	7.14	-14.11	-14.11	8.00	-6.97	Inf	-15.74	-16.53	-17.90
2.4G;HT40;40;1;(M0-23);3;2437;M;TN,VN	Pass	3k	3k	0.00	7.14	-9.84	-9.84	8.00	-2.70	Inf	-11.21	-12.85	-14.17
2.4G;HT40;40;1;(M0-23);3;2452;H;TN,VN	Pass	3k	3k	0.00	7.14	-13.73	-13.73	8.00	-6.59	Inf	-16.26	-16.64	-17.74





Transmitter Radiated Bandedge Emissions

Appendix D

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Non-restricted Band)								
Modulation Mode	N _{TX}	Test Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Pol.
11b	3	2412	109.91	2397.112	61.16	48.75	20	V
11b	3	2462	112.57	2501.000	59.89	52.68	20	V
11g	3	2412	108.67	2399.552	73.91	34.76	20	V
11g	3	2462	107.73	2513.200	59.74	47.99	20	V
HT20	3	2412	107.90	2399.936	68.07	39.83	20	V
HT20	3	2462	109.00	2507.200	59.46	49.54	20	V
HT40	3	2422	104.01	2395.800	67.68	36.33	20	V
HT40	3	2452	102.11	2520.080	59.35	42.76	20	V

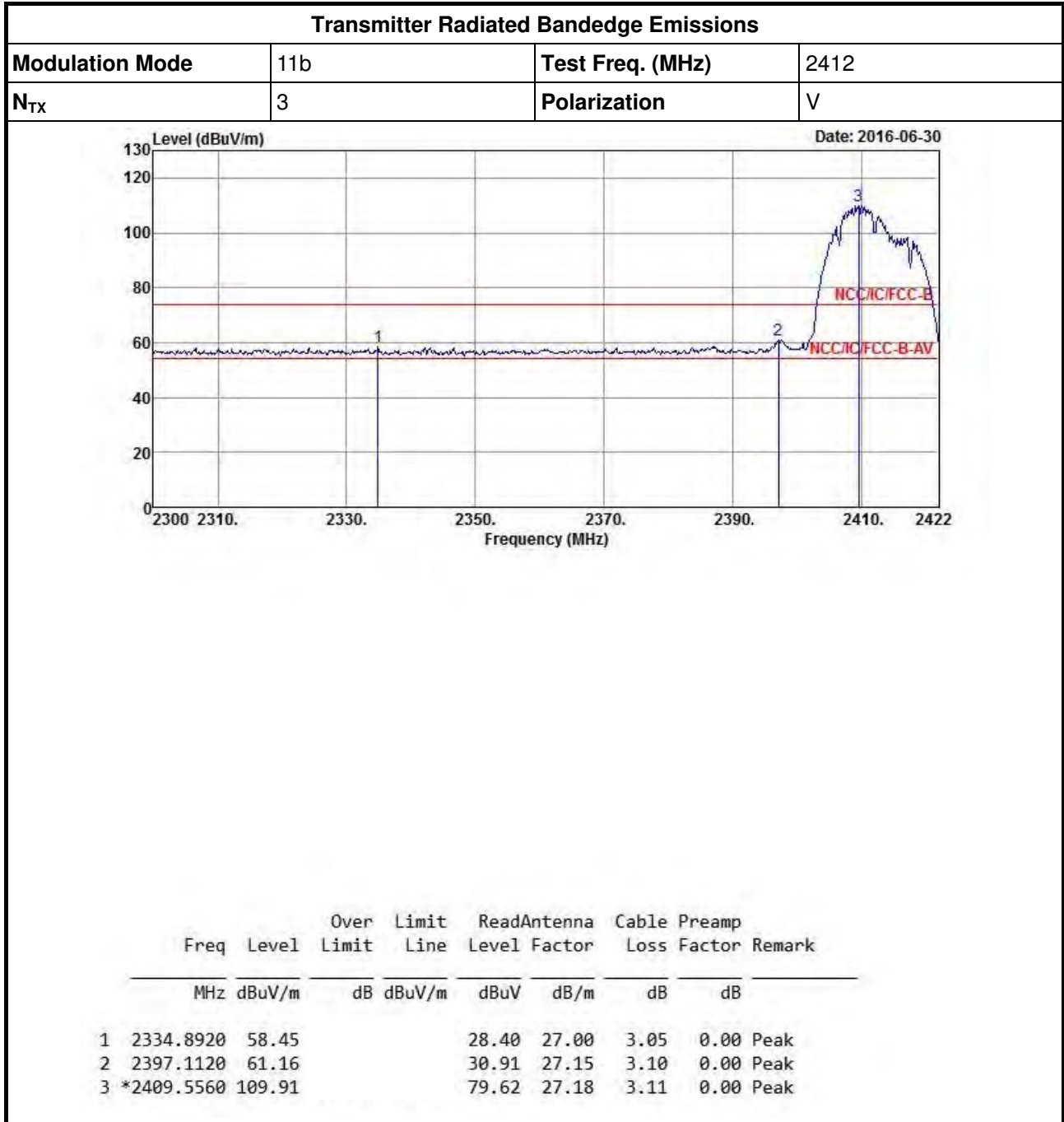
Note 1: Measurement worst emissions of receive antenna polarization

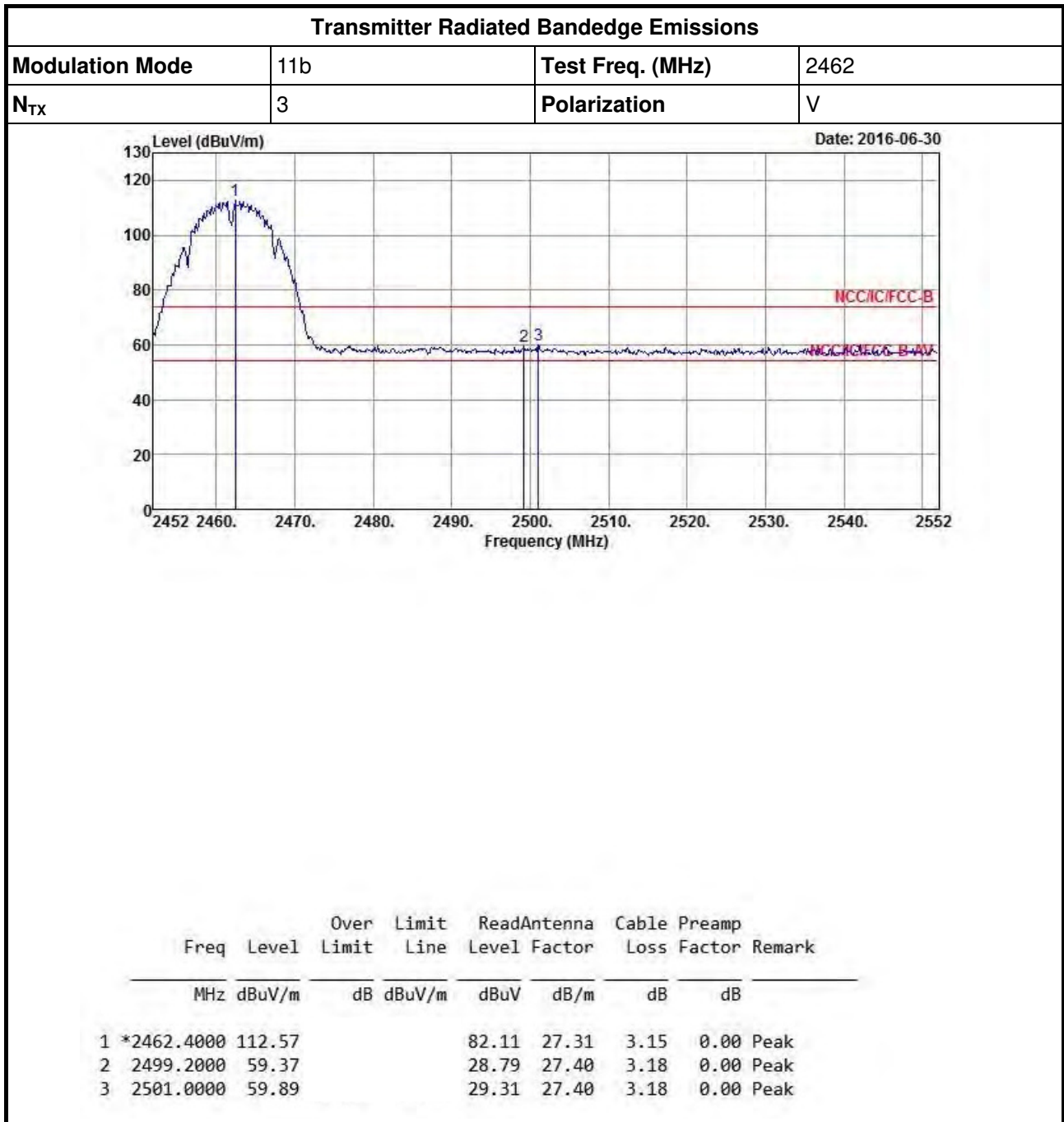
2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)										
Modulation Mode	N _{TX}	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
11b	3	2412	3	2385.880	60.07	74	2386.376	50.09	54	V
11b	3	2462	3	2487.400	62.05	74	2487.800	53.35	54	V
11g	3	2412	3	2389.792	69.84	74	2390.036	53.63	54	V
11g	3	2462	3	2483.500	72.03	74	2483.500	53.88	54	V
HT20	3	2412	3	2389.520	70.35	74	2389.968	53.82	54	V
HT20	3	2462	3	2483.500	70.82	74	2483.500	53.66	54	V
HT40	3	2422	3	2389.992	69.45	74	2389.992	53.89	54	V
HT40	3	2452	3	2486.720	69.19	74	2483.600	53.75	54	V

Note 1: Measurement worst emissions of receive antenna polarization.



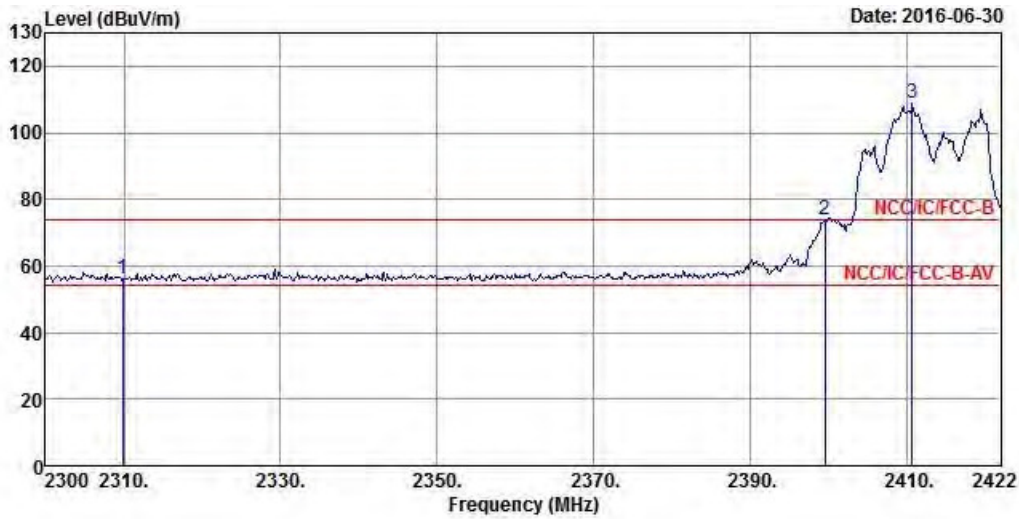
Transmitter Radiated Bandedge Emissions (Non-restricted Band)



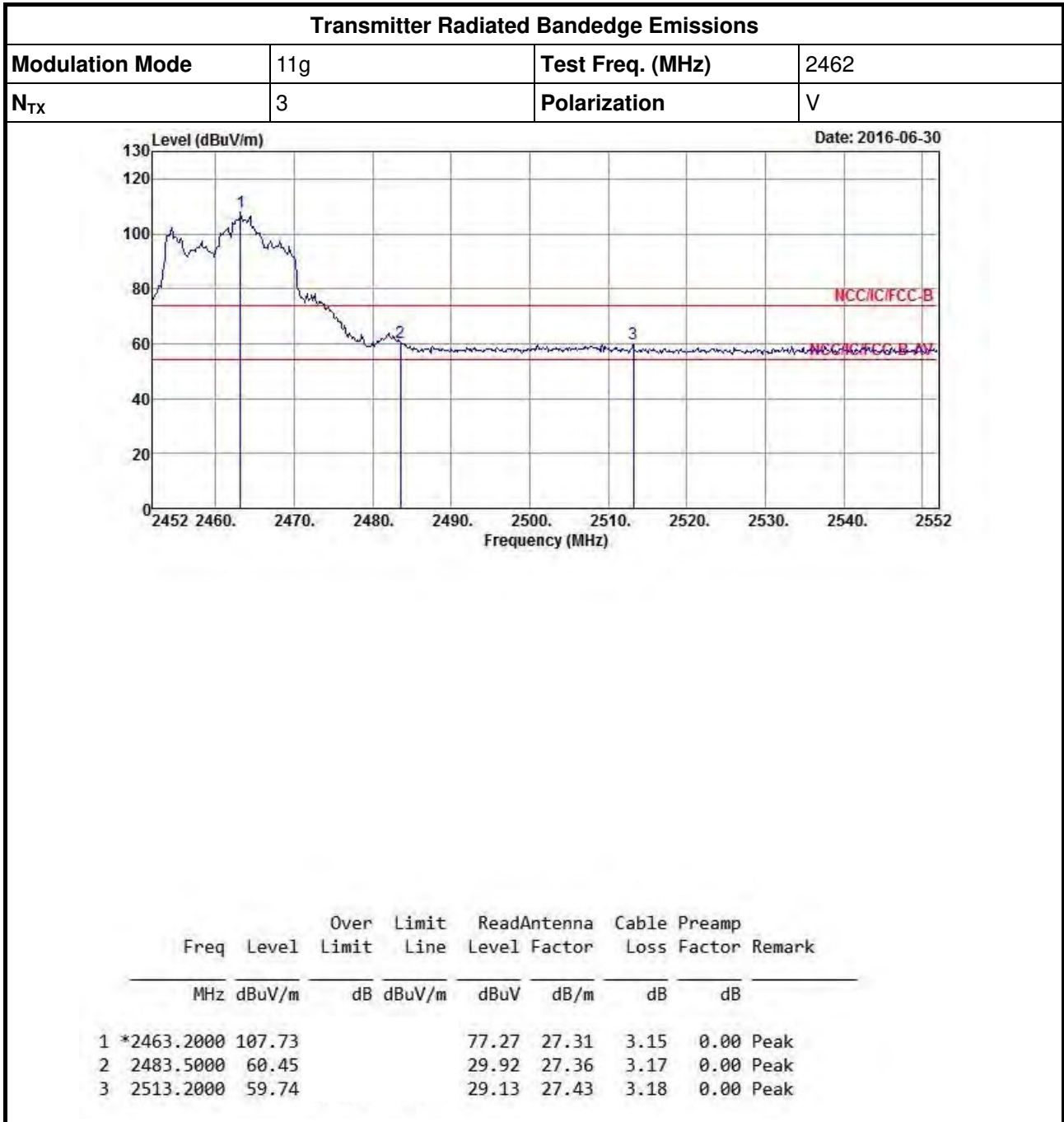




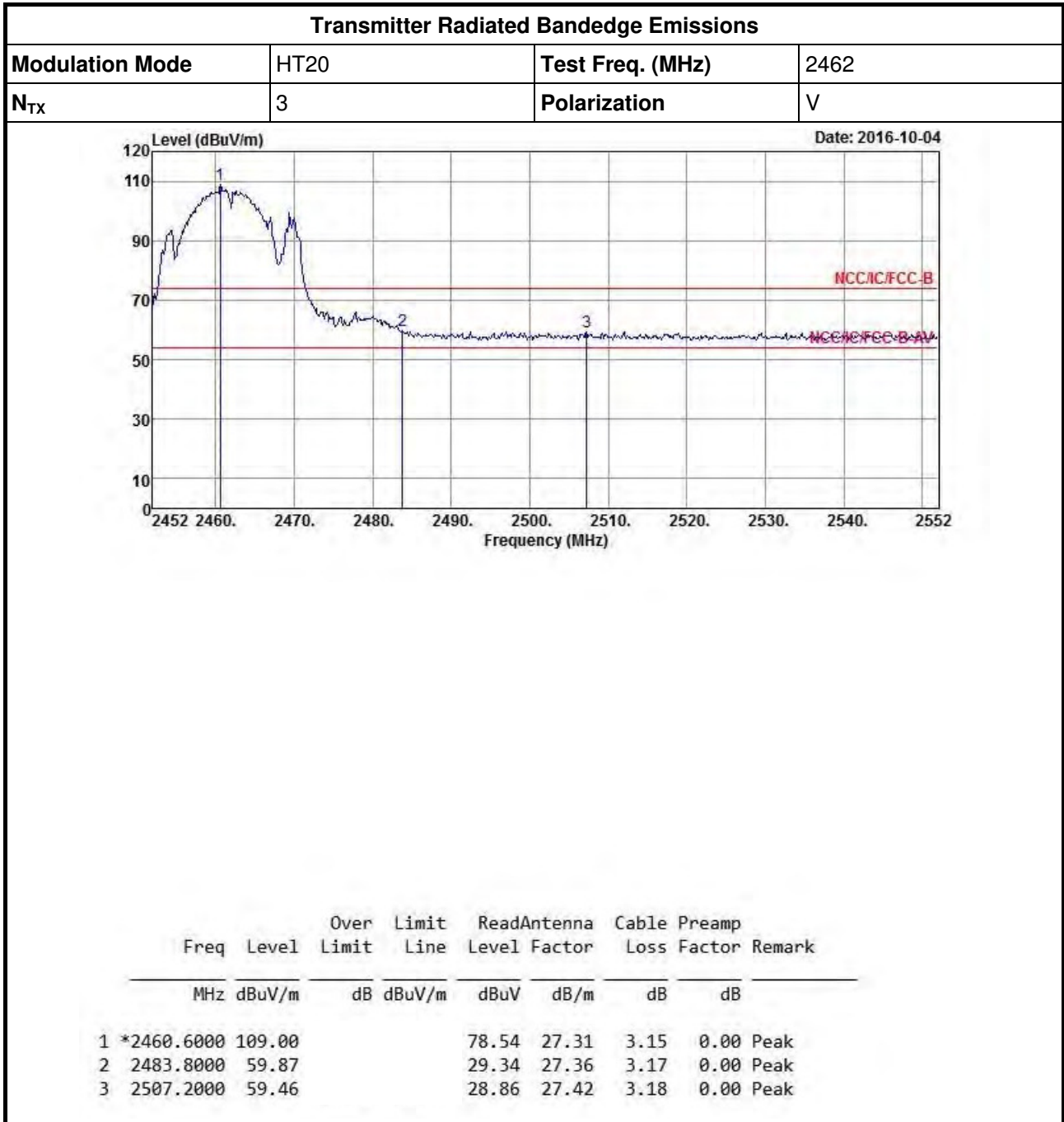
Modulation Mode	11g	Test Freq. (MHz)	2412
N _{TX}	3	Polarization	V



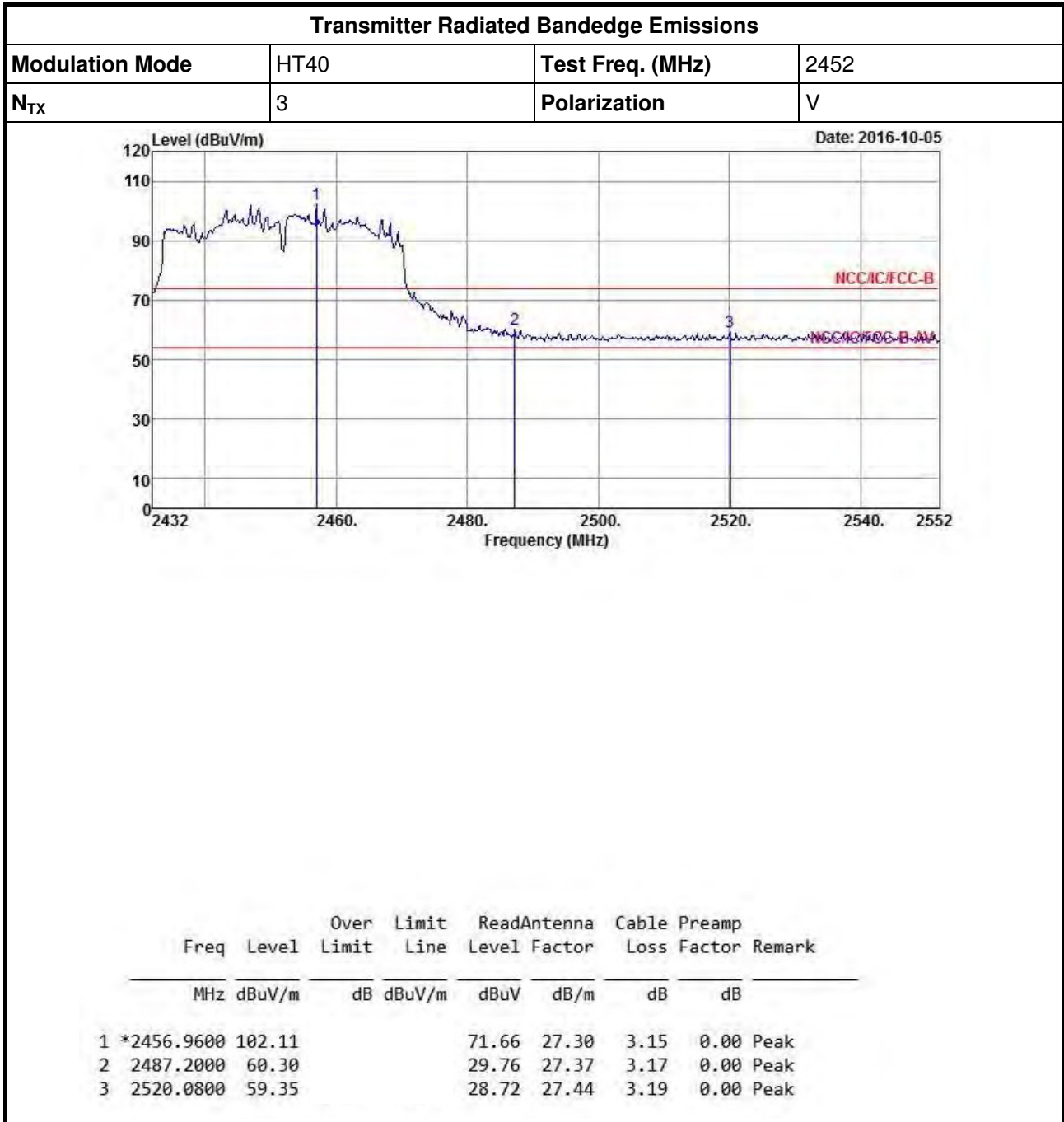
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2309.8820	55.91			25.93	26.94	3.04	0.00	Peak
2	2399.5520	73.91			43.65	27.16	3.10	0.00	Peak
3	*2410.7760	108.67			78.37	27.19	3.11	0.00	Peak





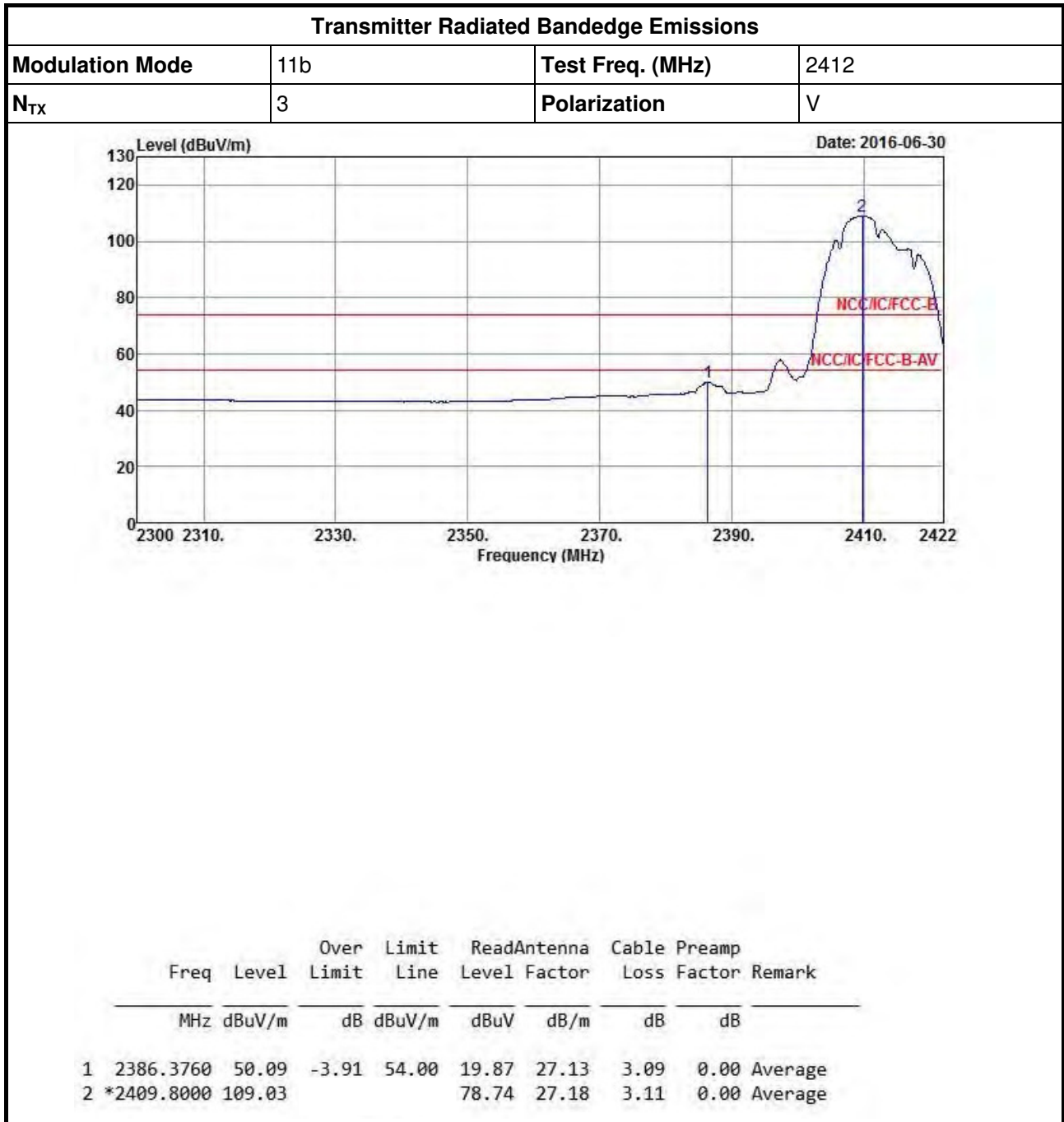


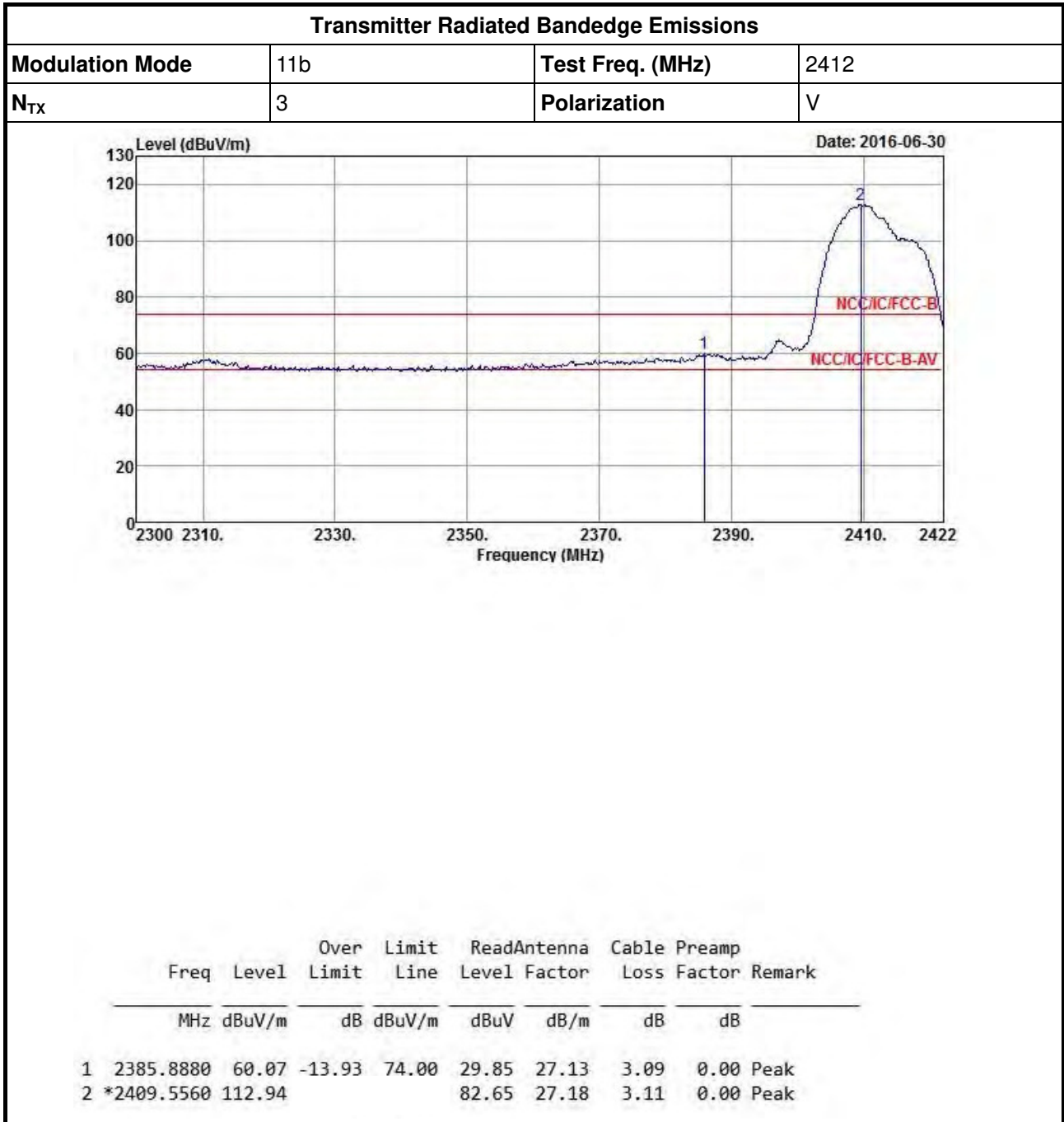


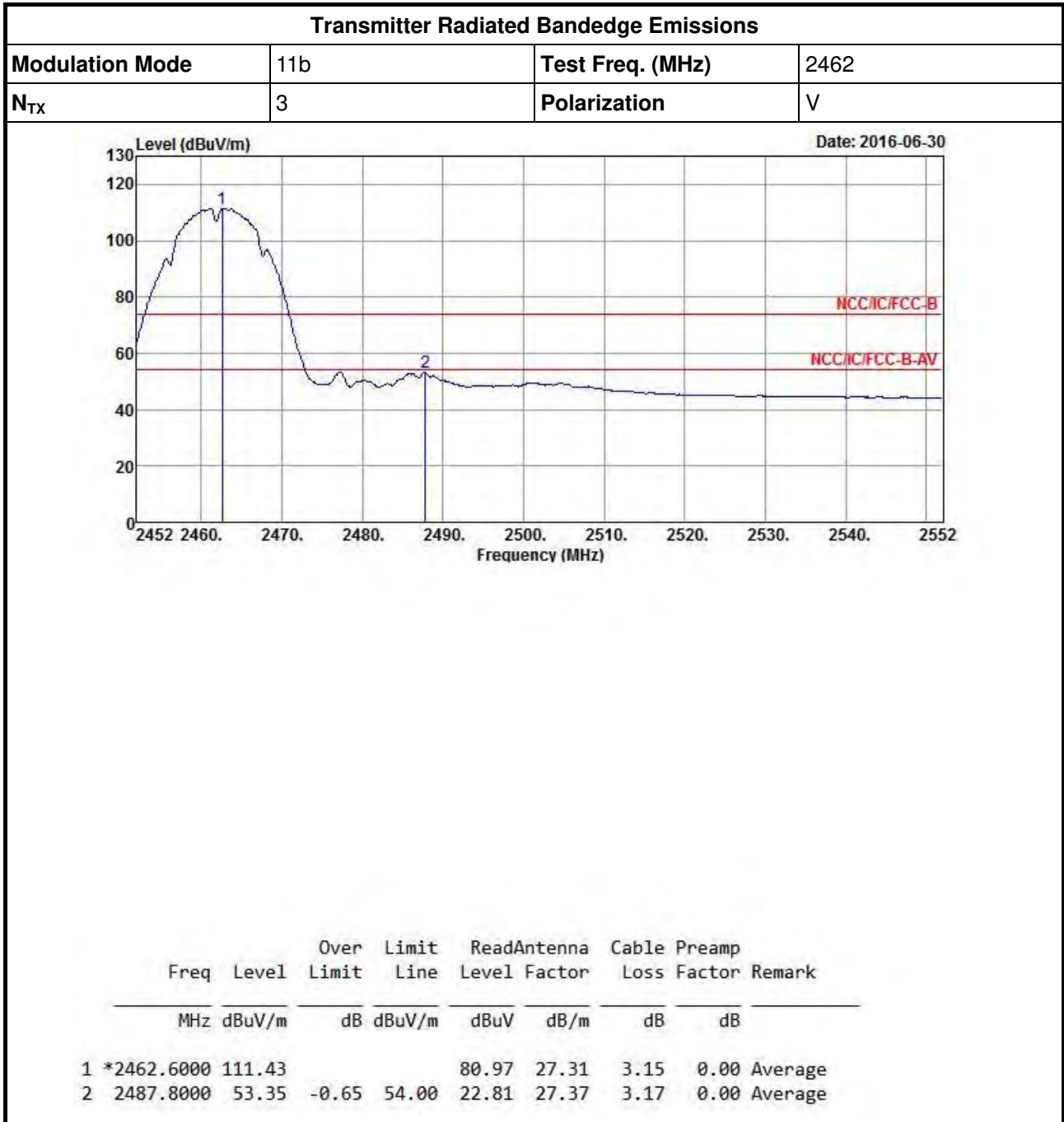


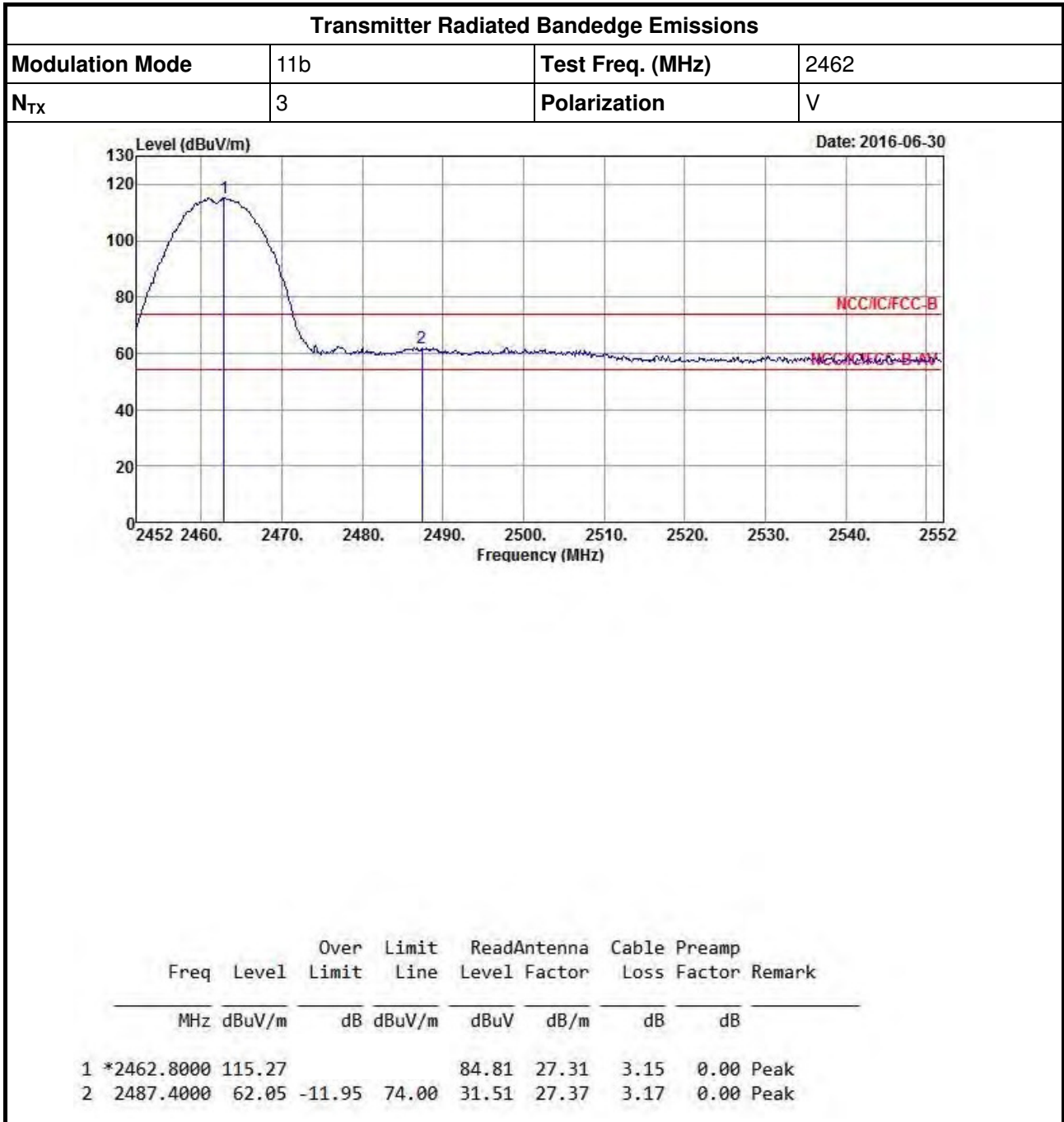


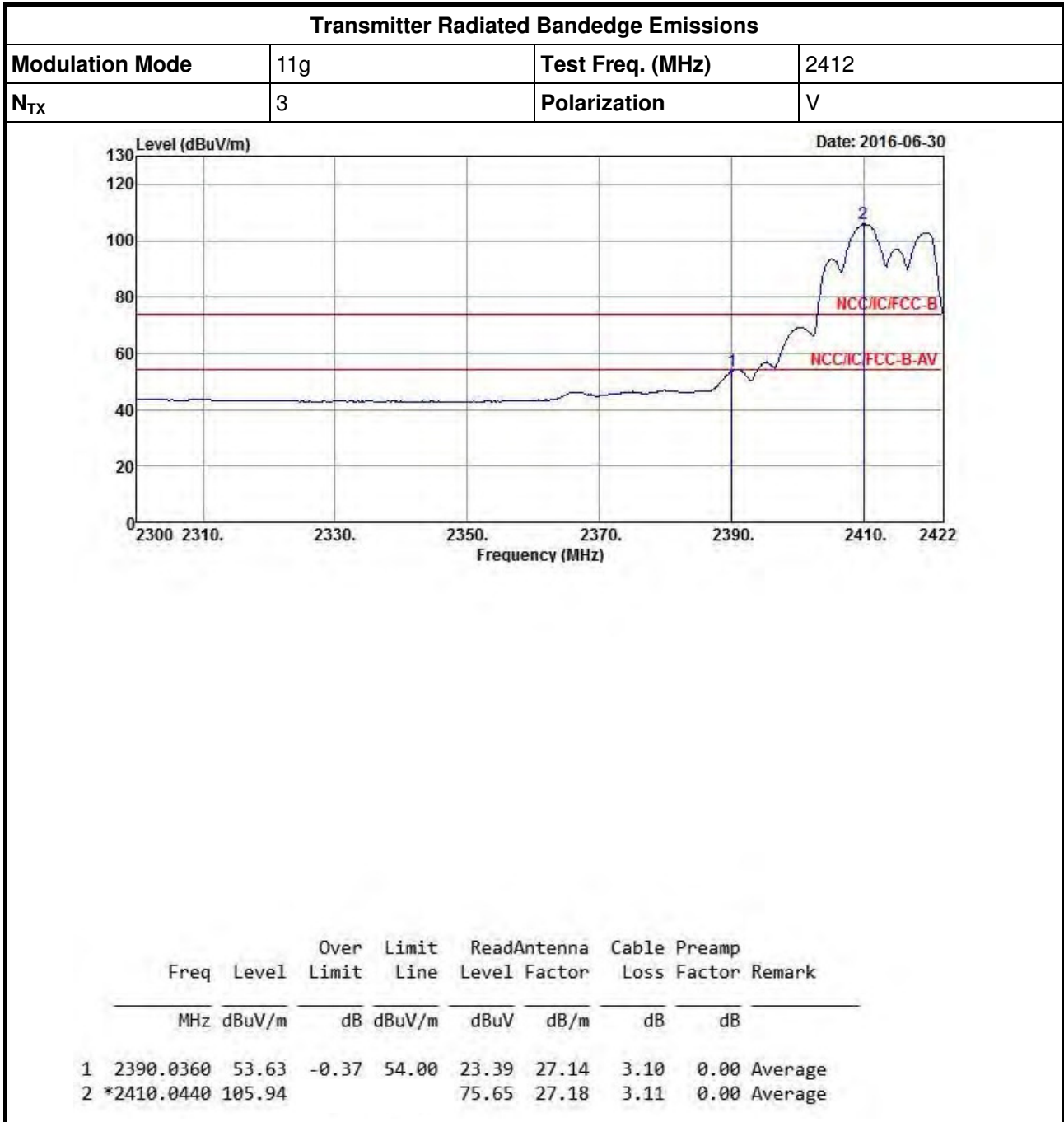
Transmitter Radiated Bandedge Emissions (Restricted Band)

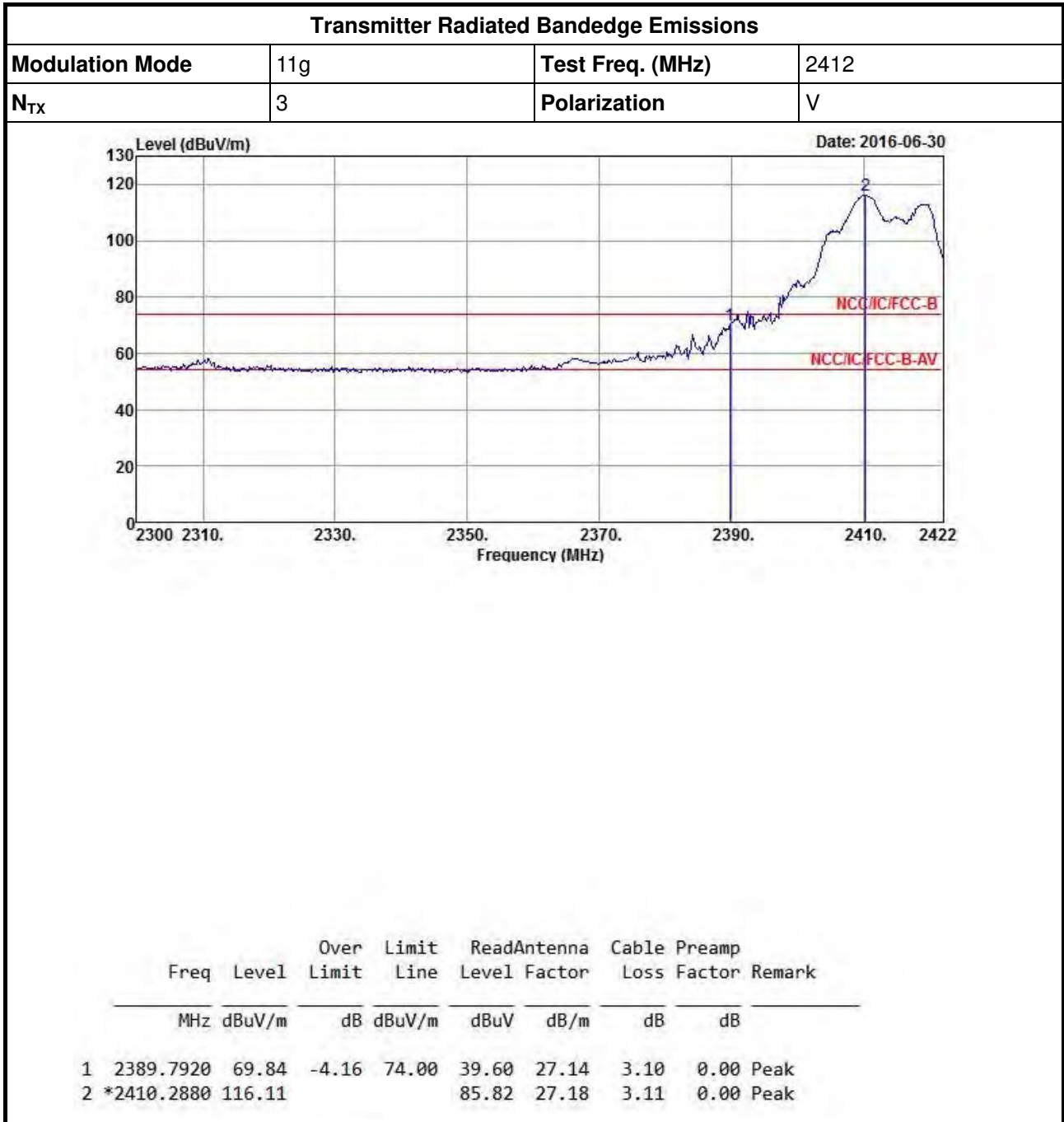


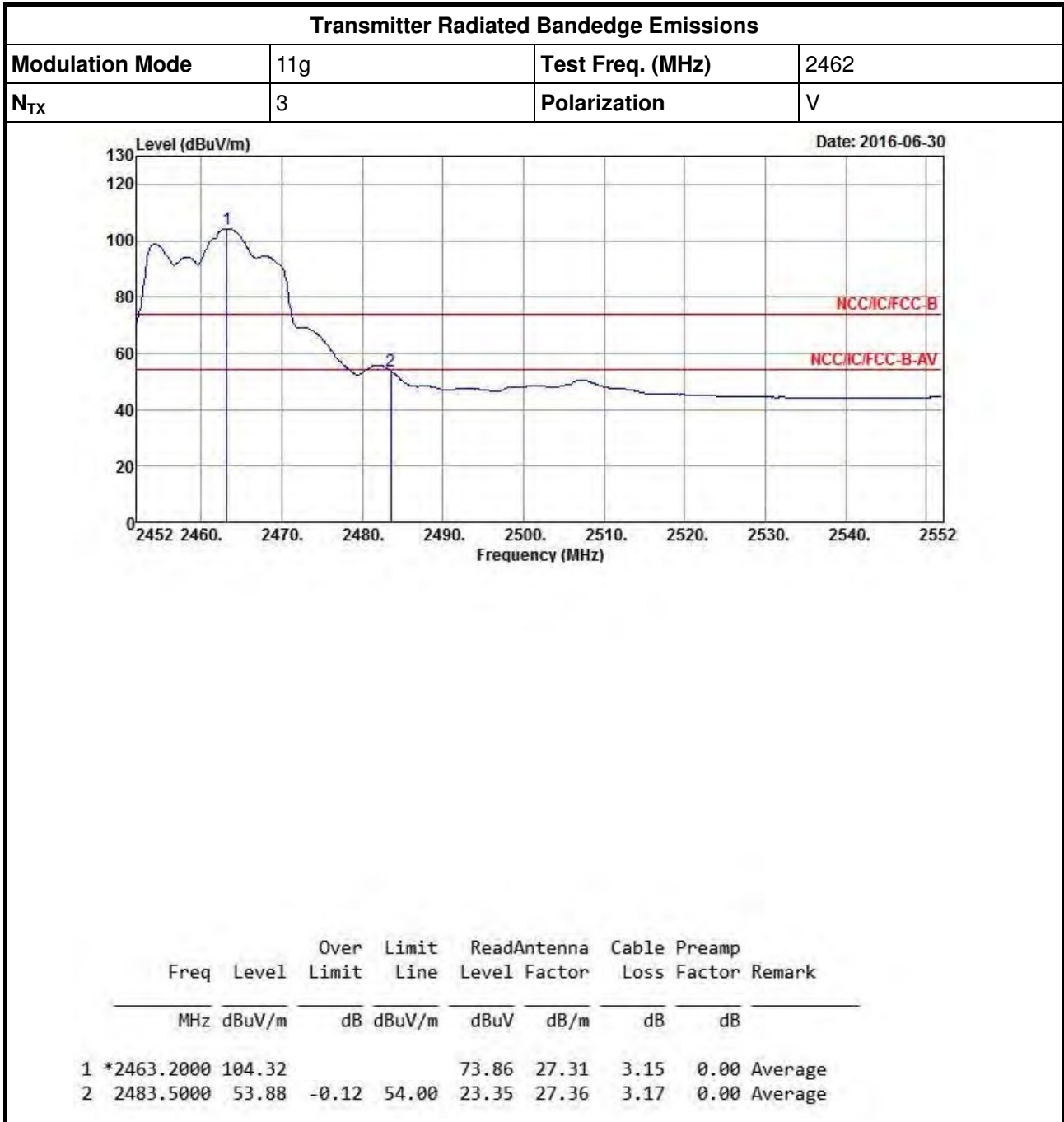


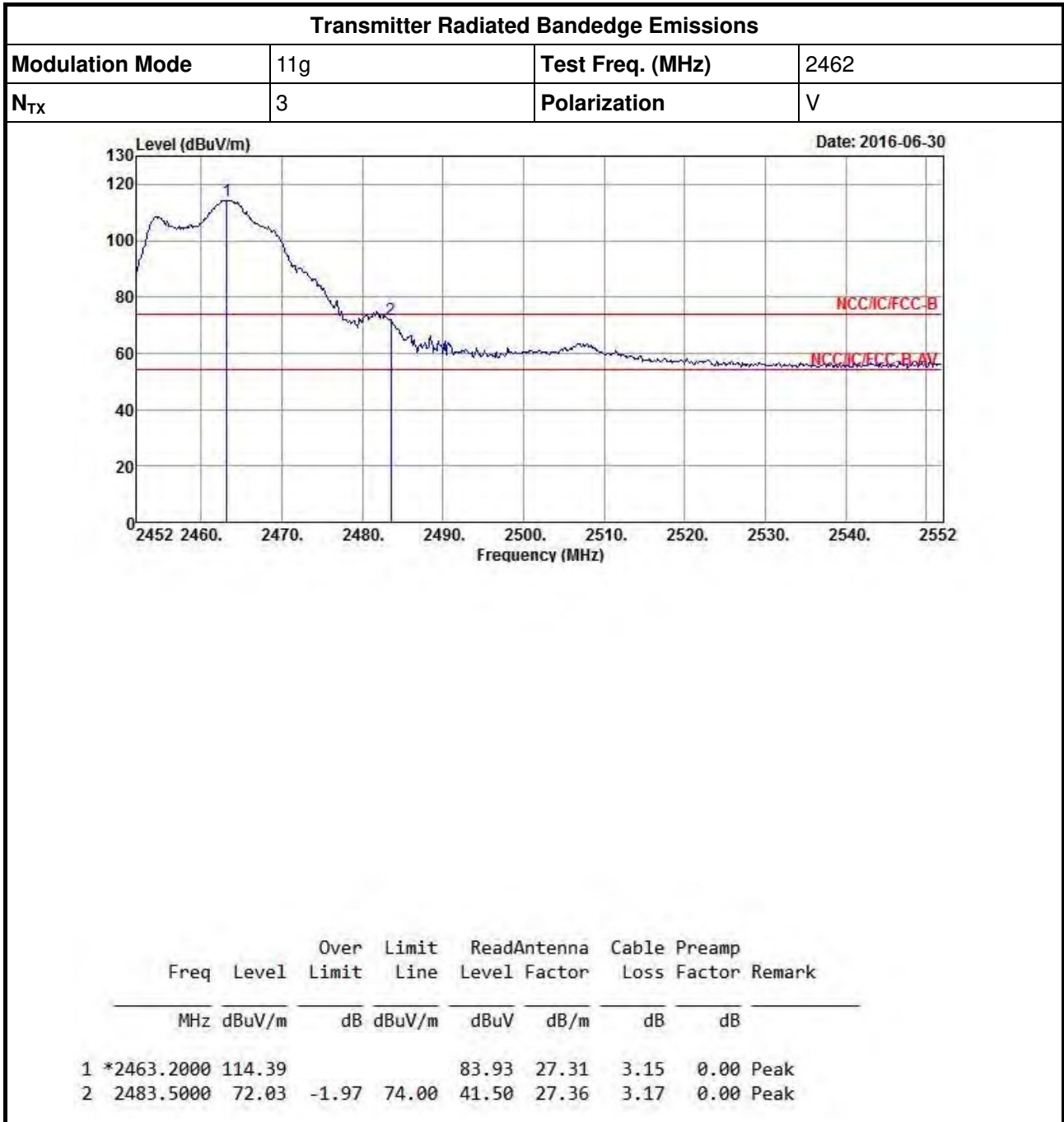


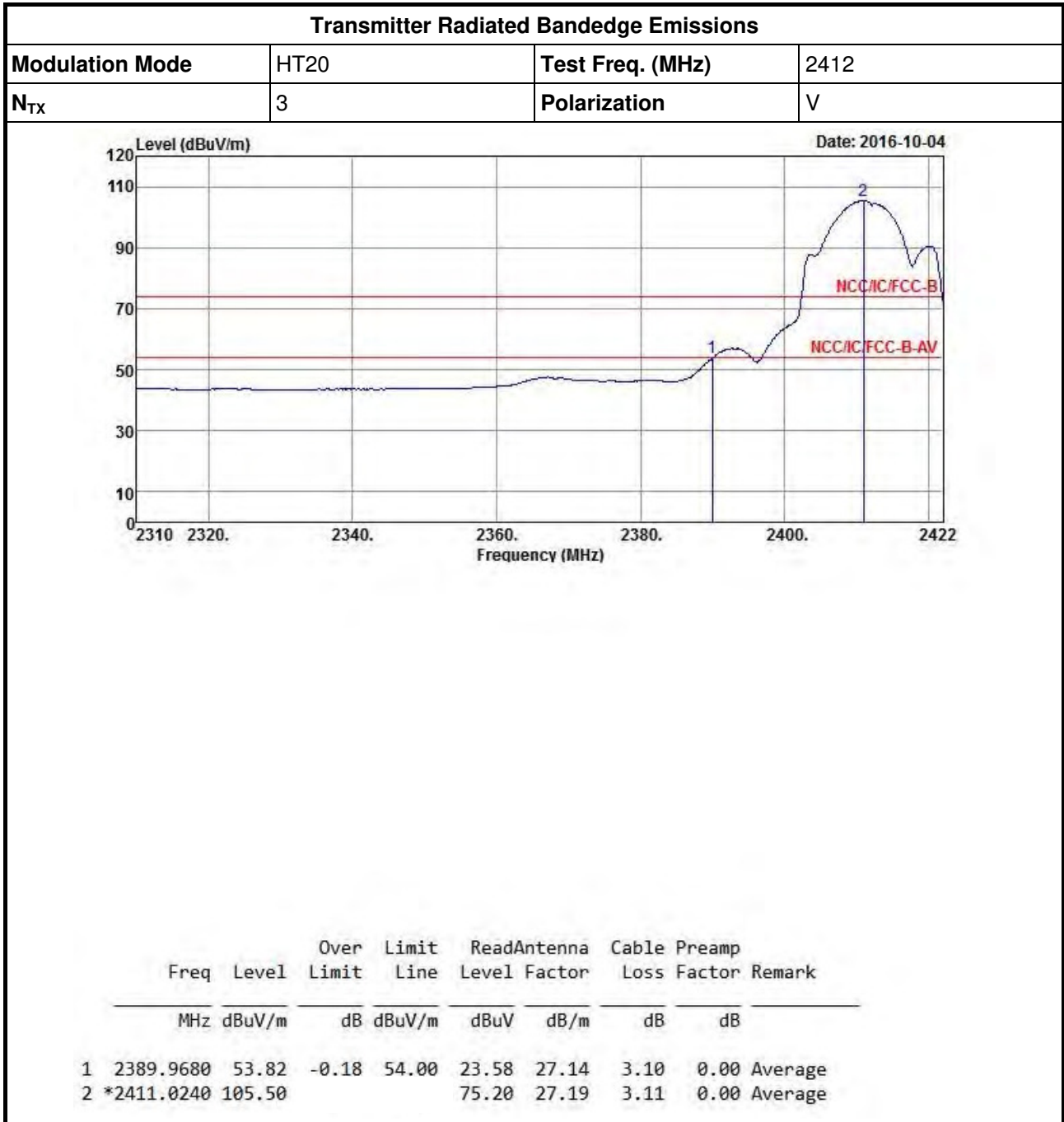


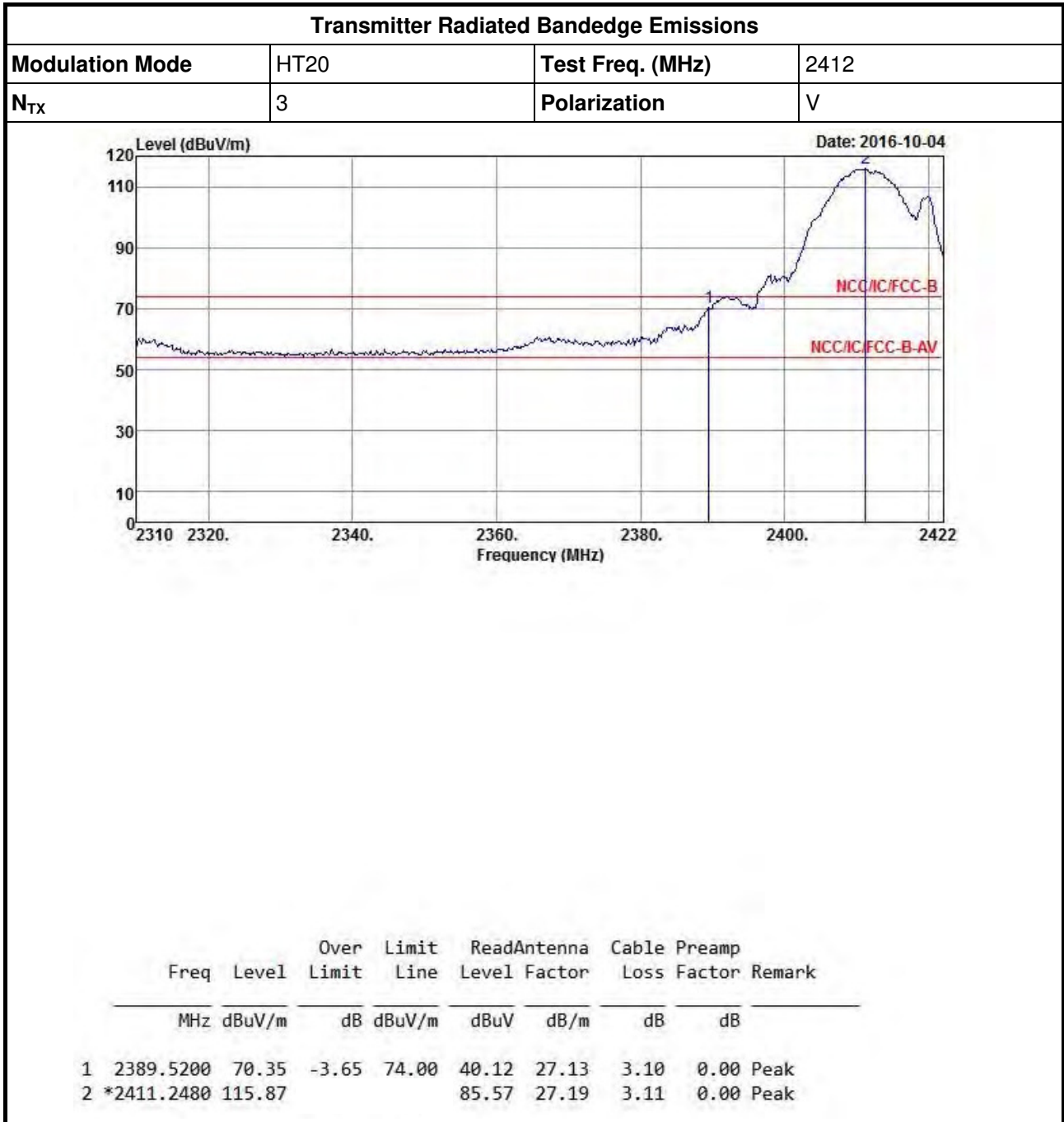


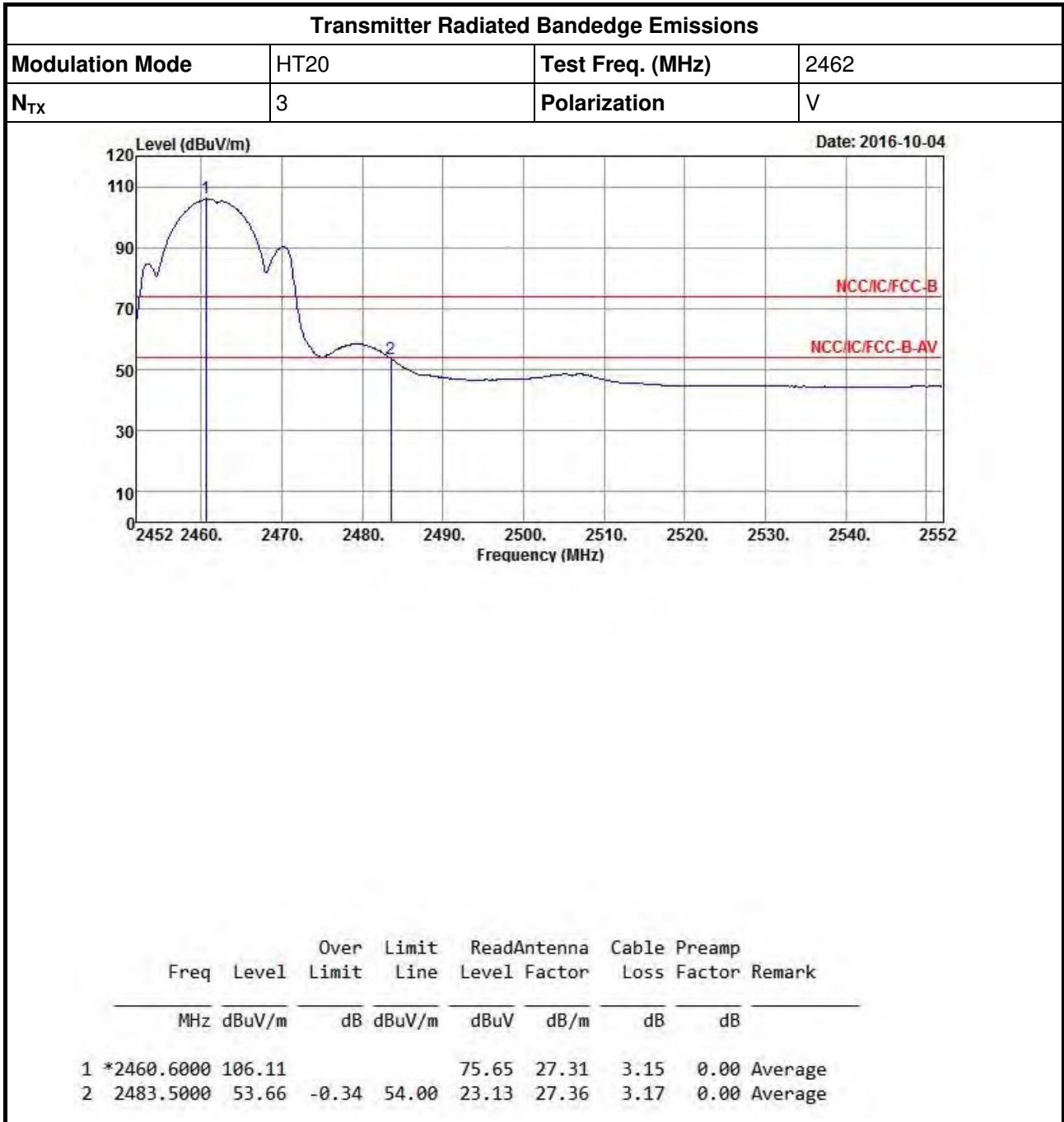


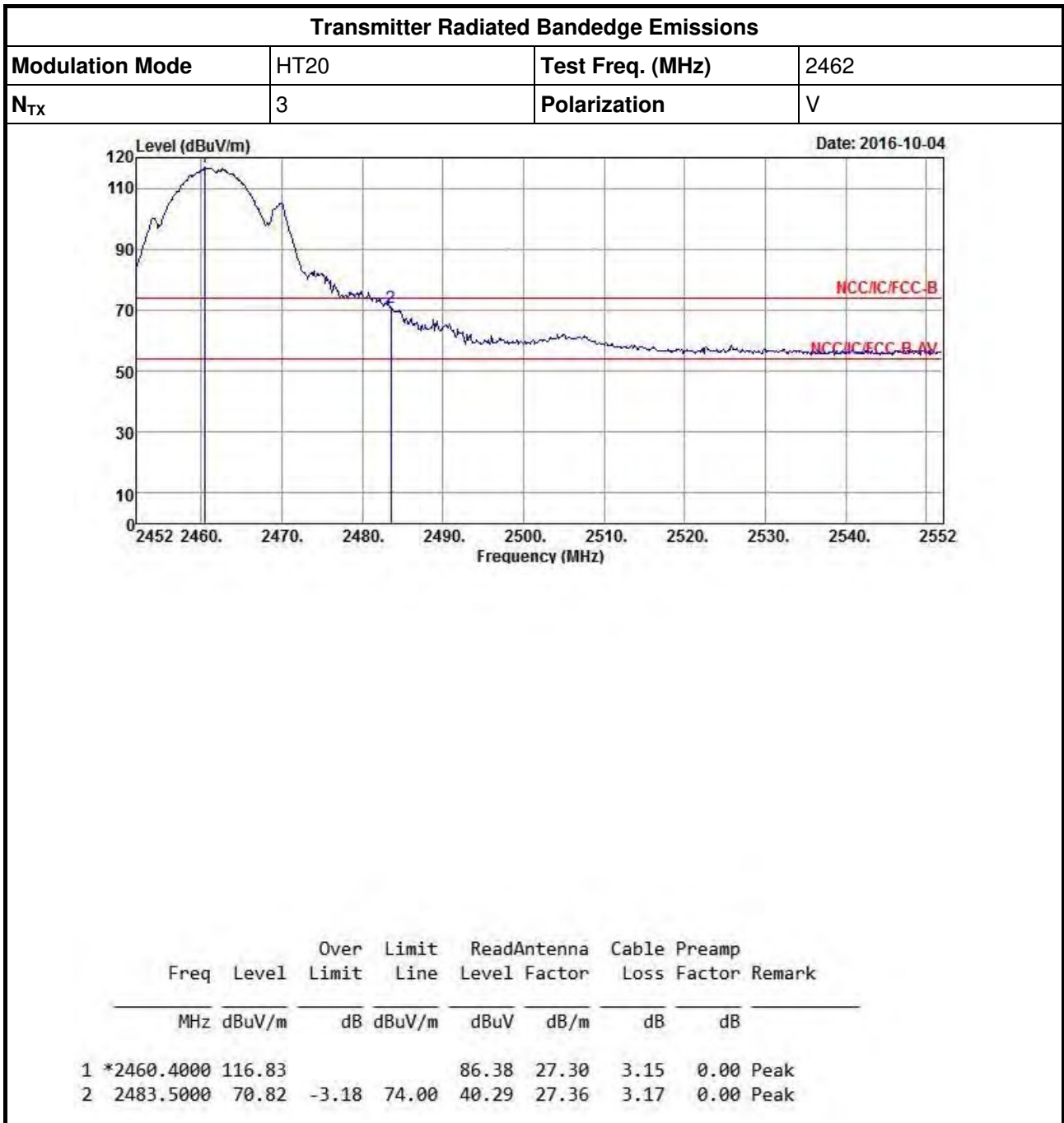


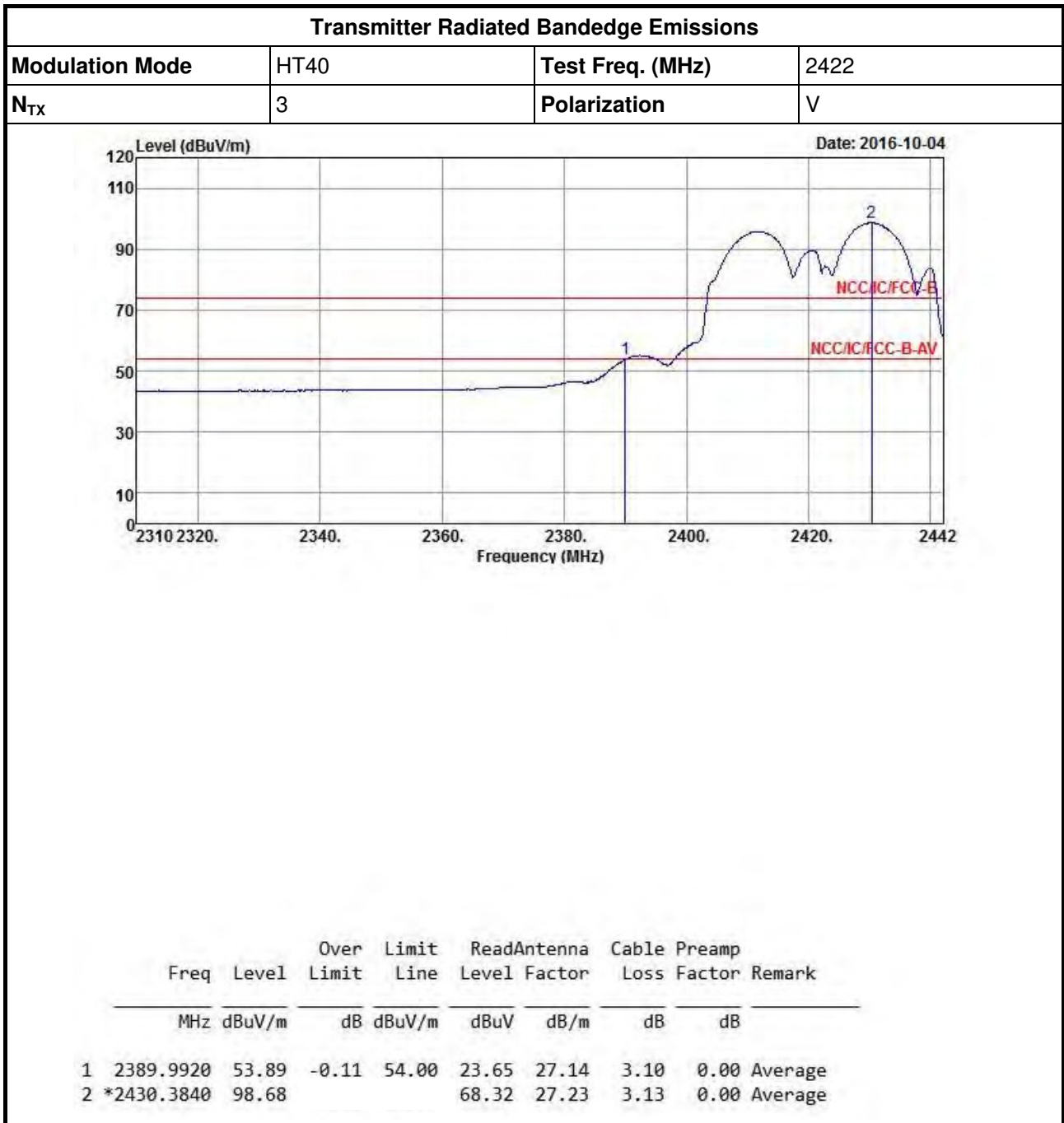


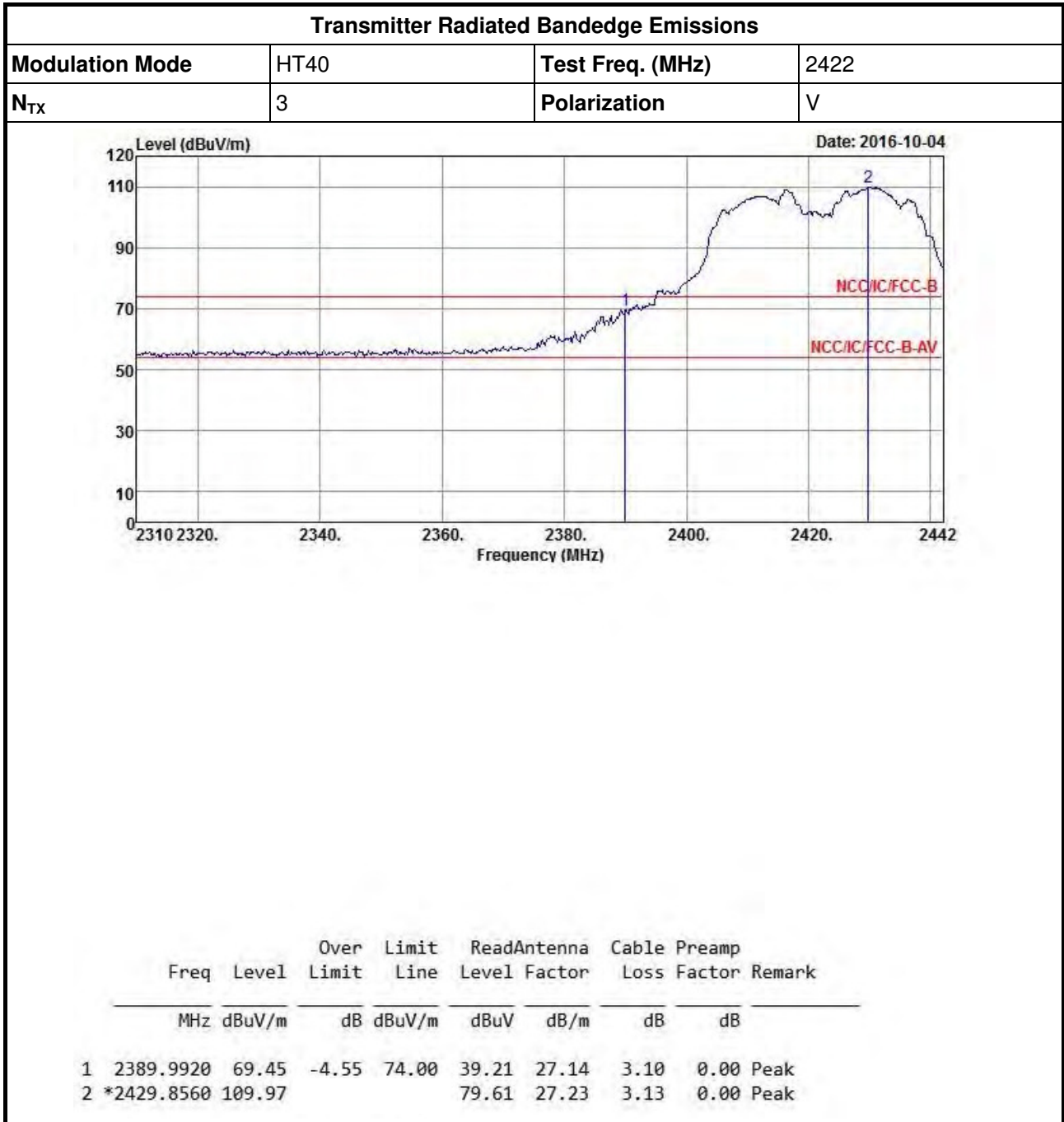


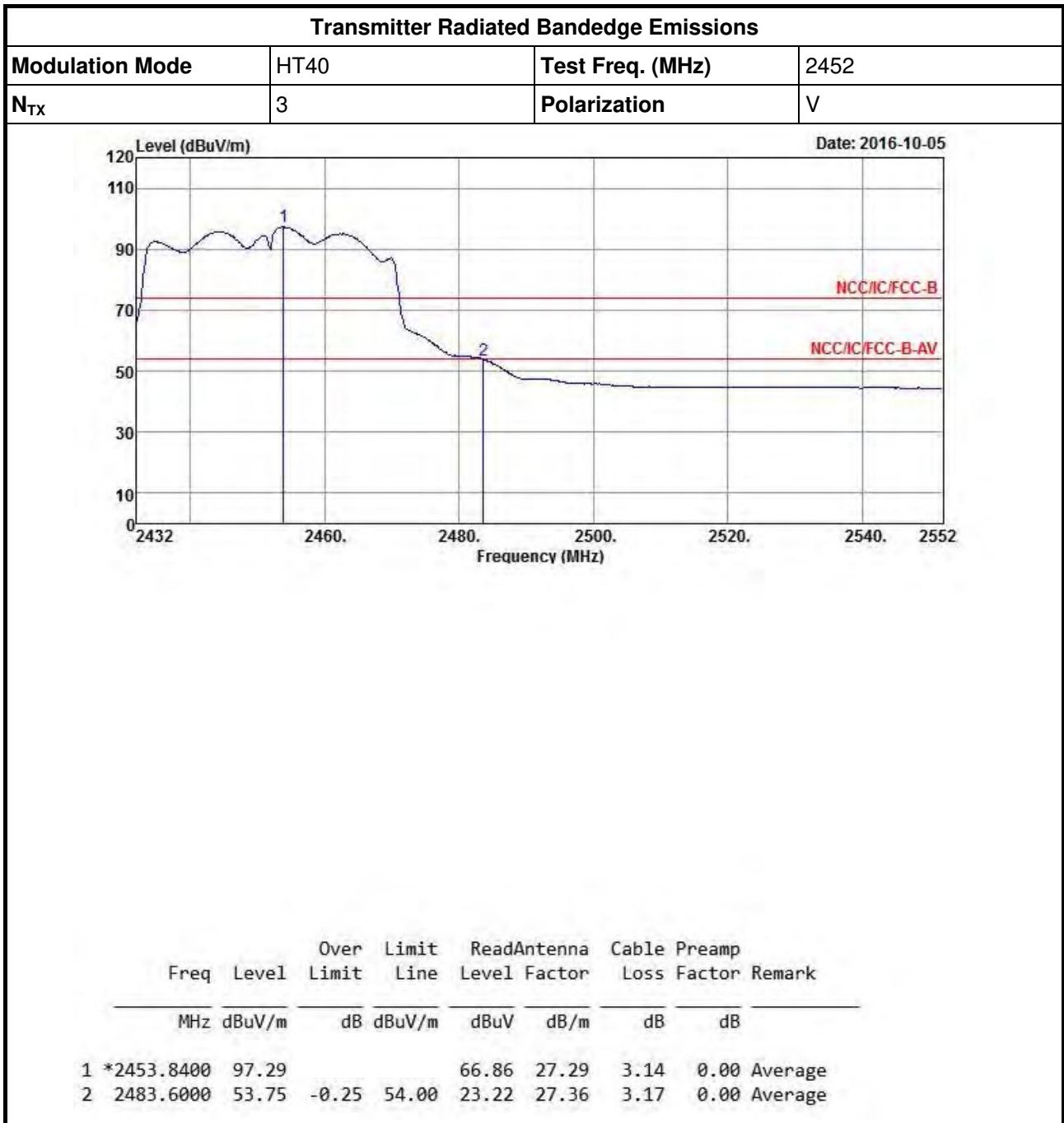


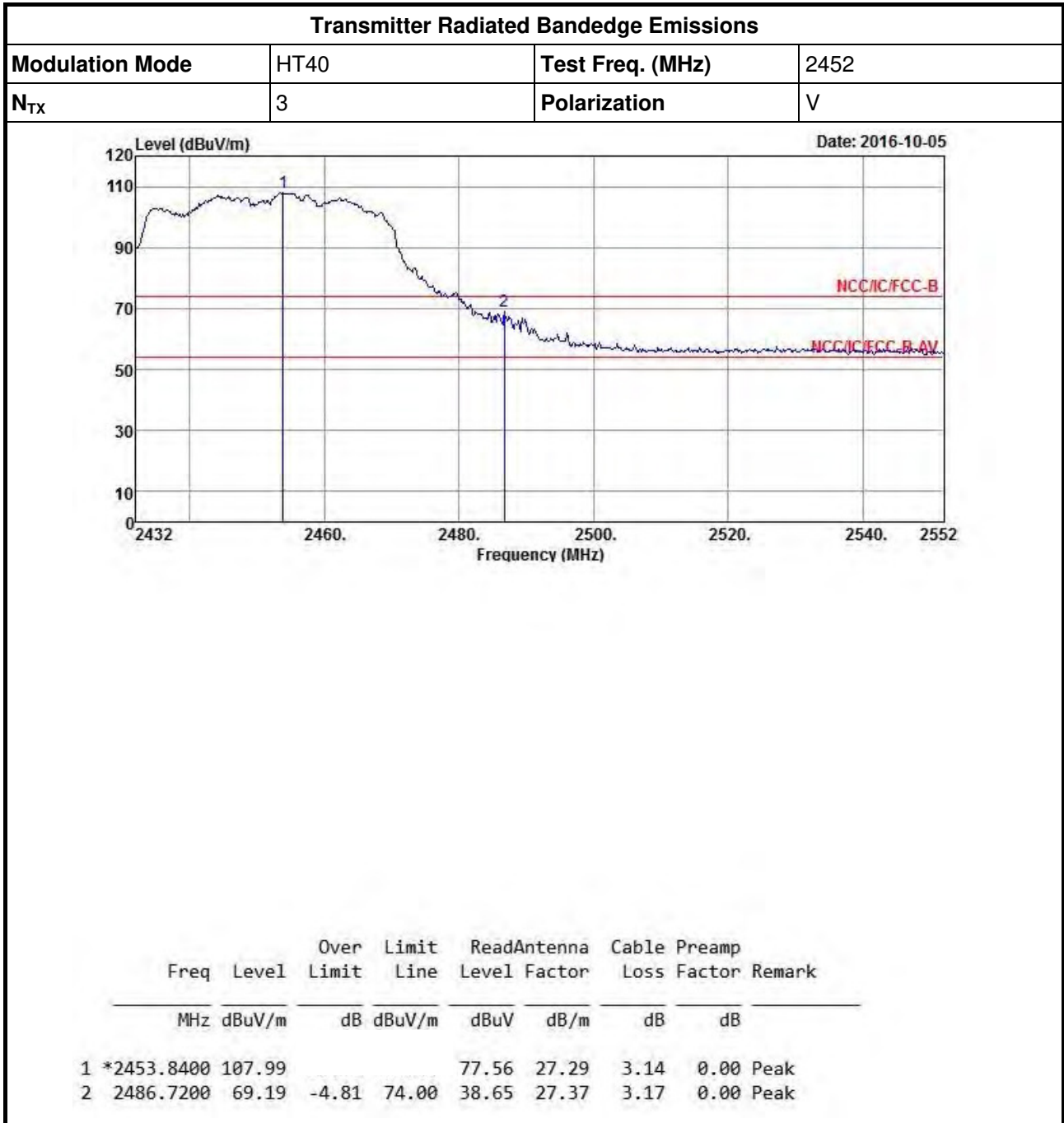








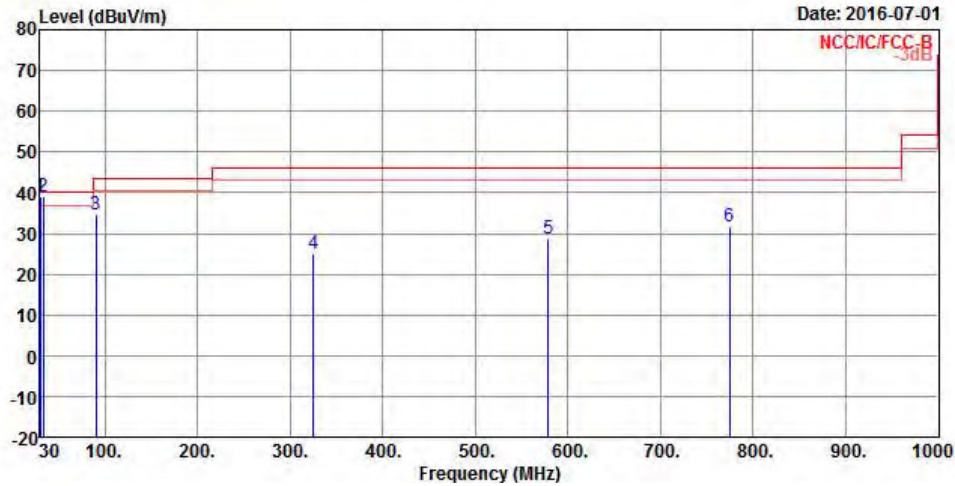






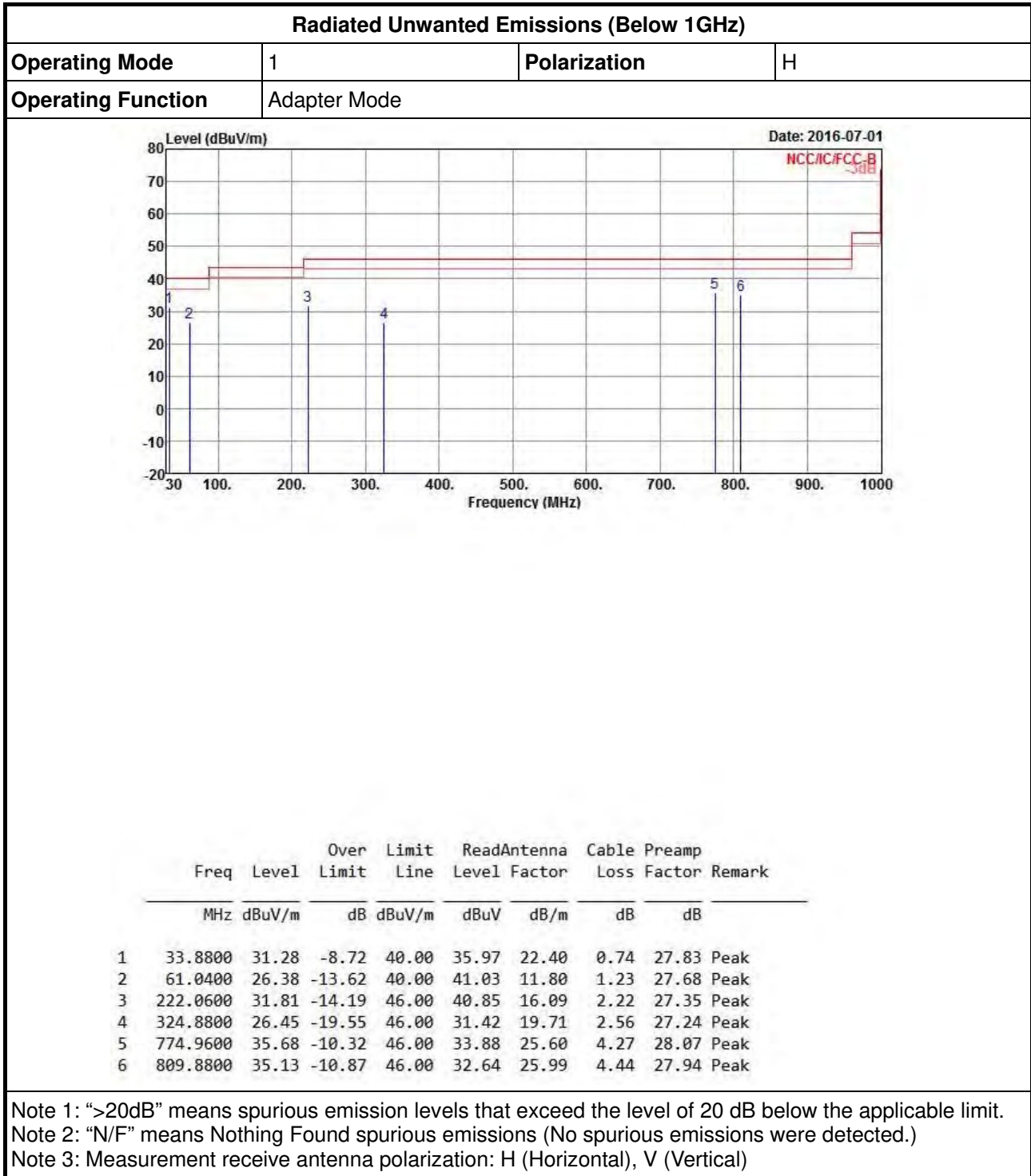
Transmitter Radiated Unwanted Emissions (Below 1GHz)

Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	1	Polarization	V
Operating Function	Adapter Mode		



	Freq	Level	Over Limit	Limit	ReadAntenna	Cable	Preamp	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	Loss	Factor	
					dB/m	dB	dB	
1 !	30.0000	38.94	-1.06	40.00	41.19	24.95	0.68	27.88 QP
2 !	33.8800	38.98	-1.02	40.00	43.67	22.40	0.74	27.83 QP
3	90.1400	34.58	-8.92	43.50	46.71	14.26	1.35	27.74 Peak
4	324.8800	25.07	-20.93	46.00	30.04	19.71	2.56	27.24 Peak
5	579.0200	28.69	-17.31	46.00	29.39	24.09	3.63	28.42 Peak
6	774.9600	31.75	-14.25	46.00	29.95	25.60	4.27	28.07 Peak

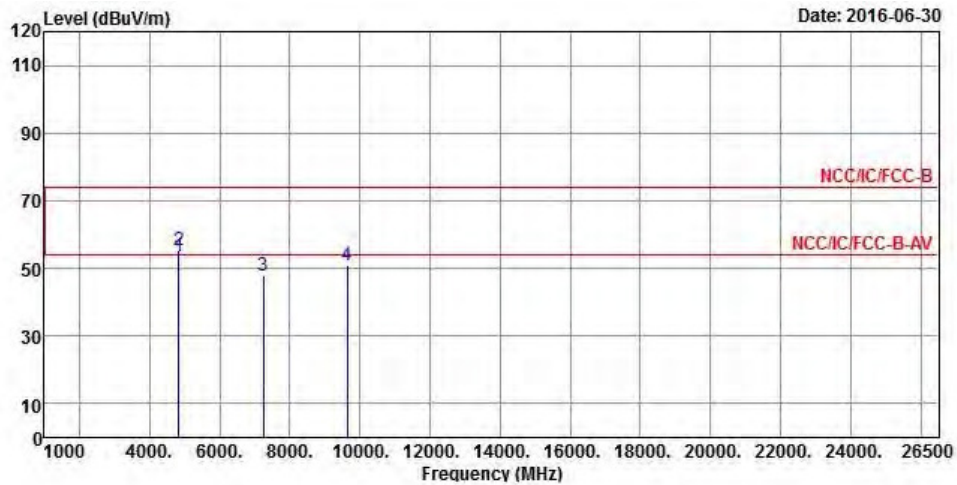
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)





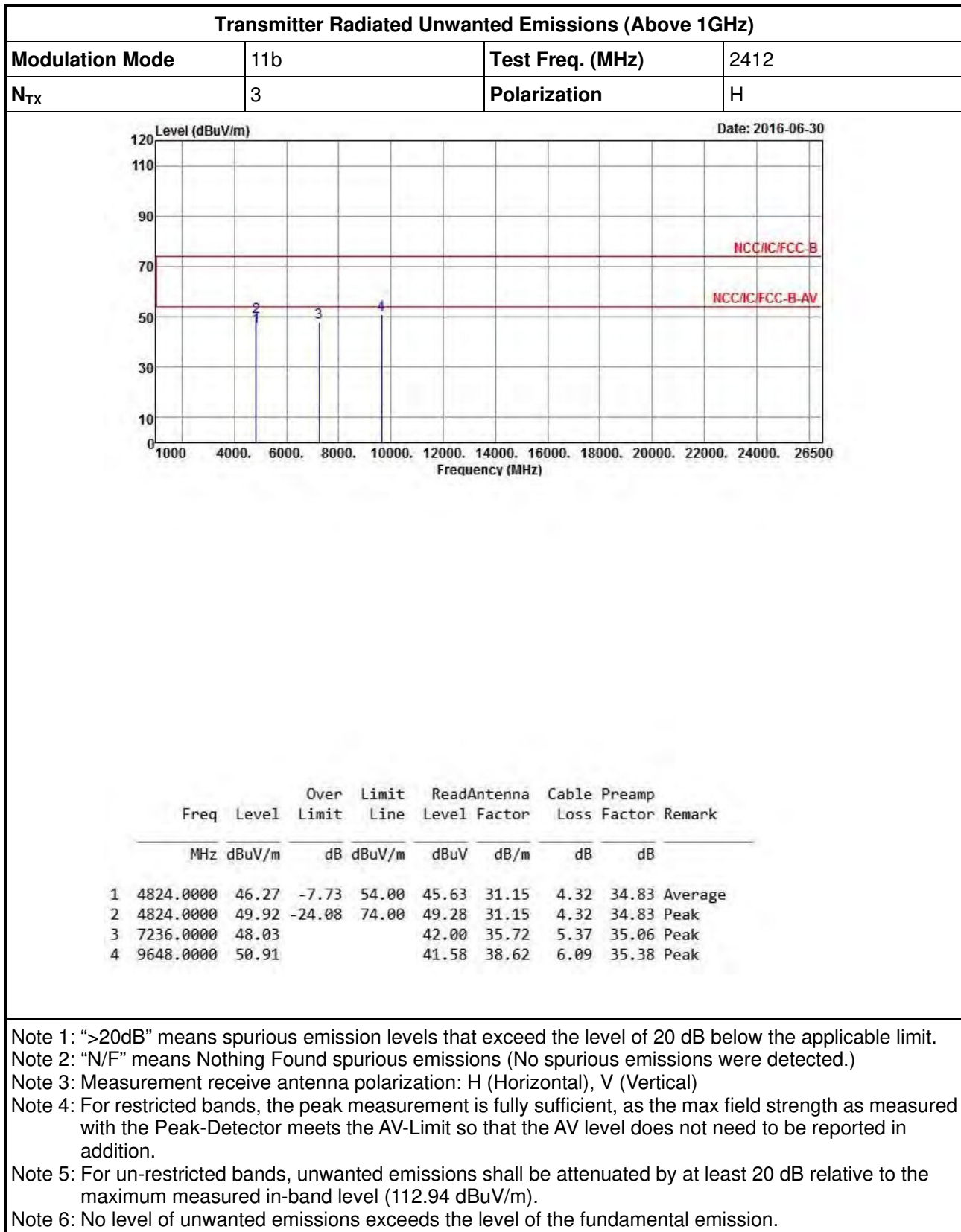
Transmitter Radiated Unwanted Emissions (Above 1GHz)

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	Test Freq. (MHz)	2412
N _{TX}	3	Polarization	V



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	
			dB	dBuV/m	dBuV	dB/m	dB	dB
1	4824.0000	53.53	-0.47	54.00	52.89	31.15	4.32	34.83 Average
2	4824.0000	55.52	-18.48	74.00	54.88	31.15	4.32	34.83 Peak
3	7236.0000	47.79			41.76	35.72	5.37	35.06 Peak
4	9648.0000	50.98			41.65	38.62	6.09	35.38 Peak

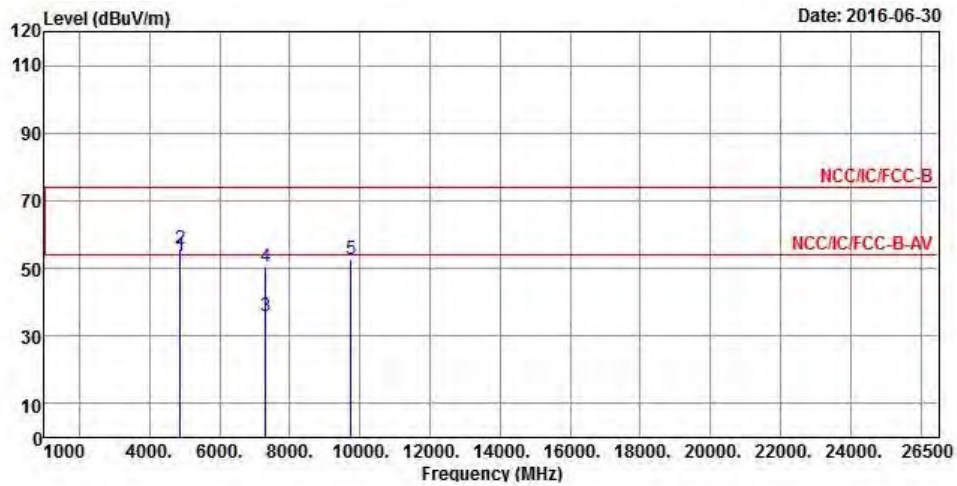
- Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
- Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
- Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
- Note 4: For restricted 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 20 dB relative to the maximum measured in-band level (112.94 dBuV/m).
- Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.





Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11b	Test Freq. (MHz)	2437
N _{TX}	3	Polarization	V

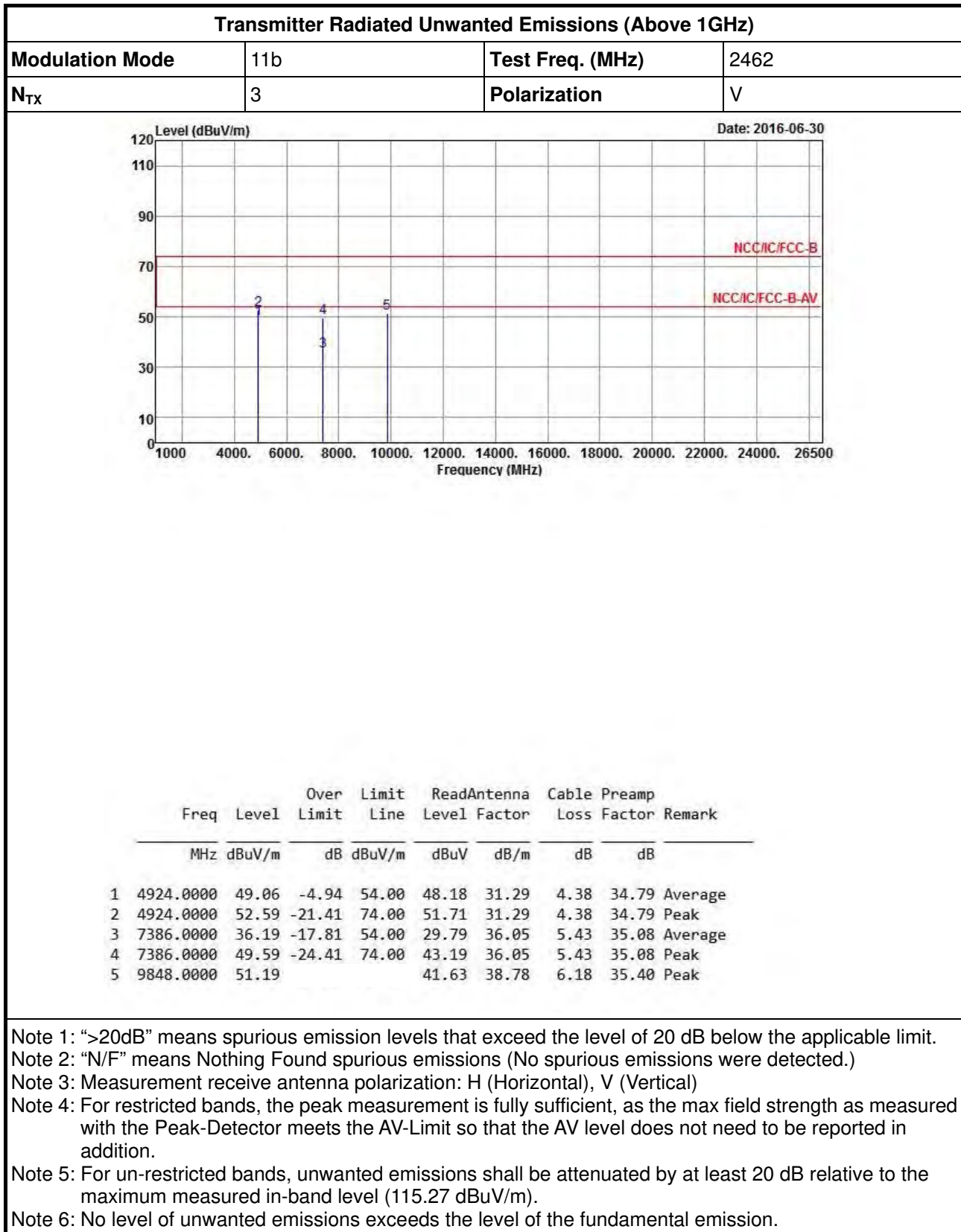


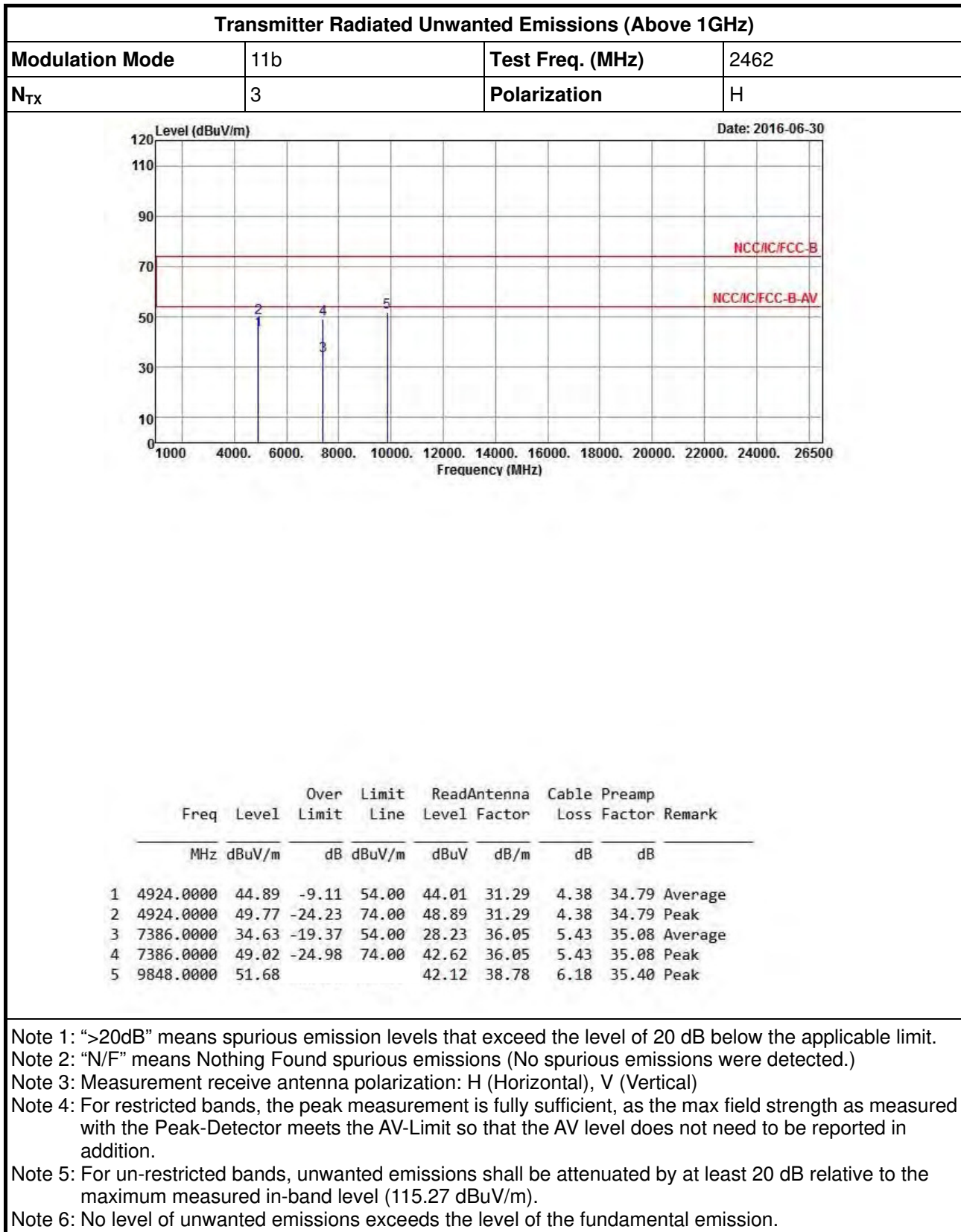
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Remark
			dB	dBuV/m	dBuV	dB	dB	
1	4874.0000	53.71	-0.29	54.00	52.95	31.22	4.35	34.81 Average
2	4874.0000	55.77	-18.23	74.00	55.01	31.22	4.35	34.81 Peak
3	7311.0000	35.71	-18.29	54.00	29.50	35.88	5.40	35.07 Average
4	7311.0000	50.29	-23.71	74.00	44.08	35.88	5.40	35.07 Peak
5	9748.0000	52.63			43.19	38.70	6.13	35.39 Peak

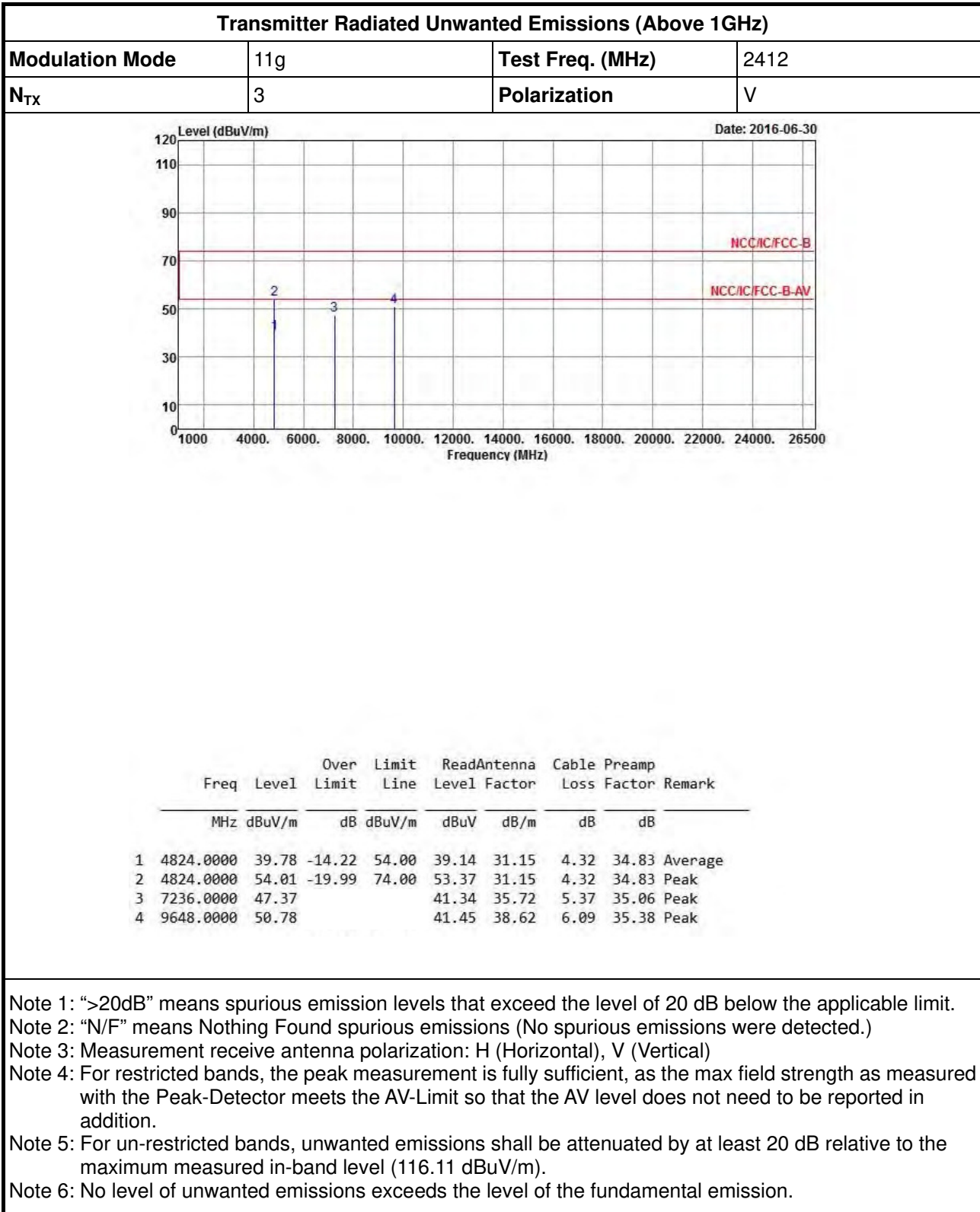
- Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
- Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
- Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
- Note 4: For restricted 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 20 dB relative to the maximum measured in-band level (116.53 dBuV/m).
- Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

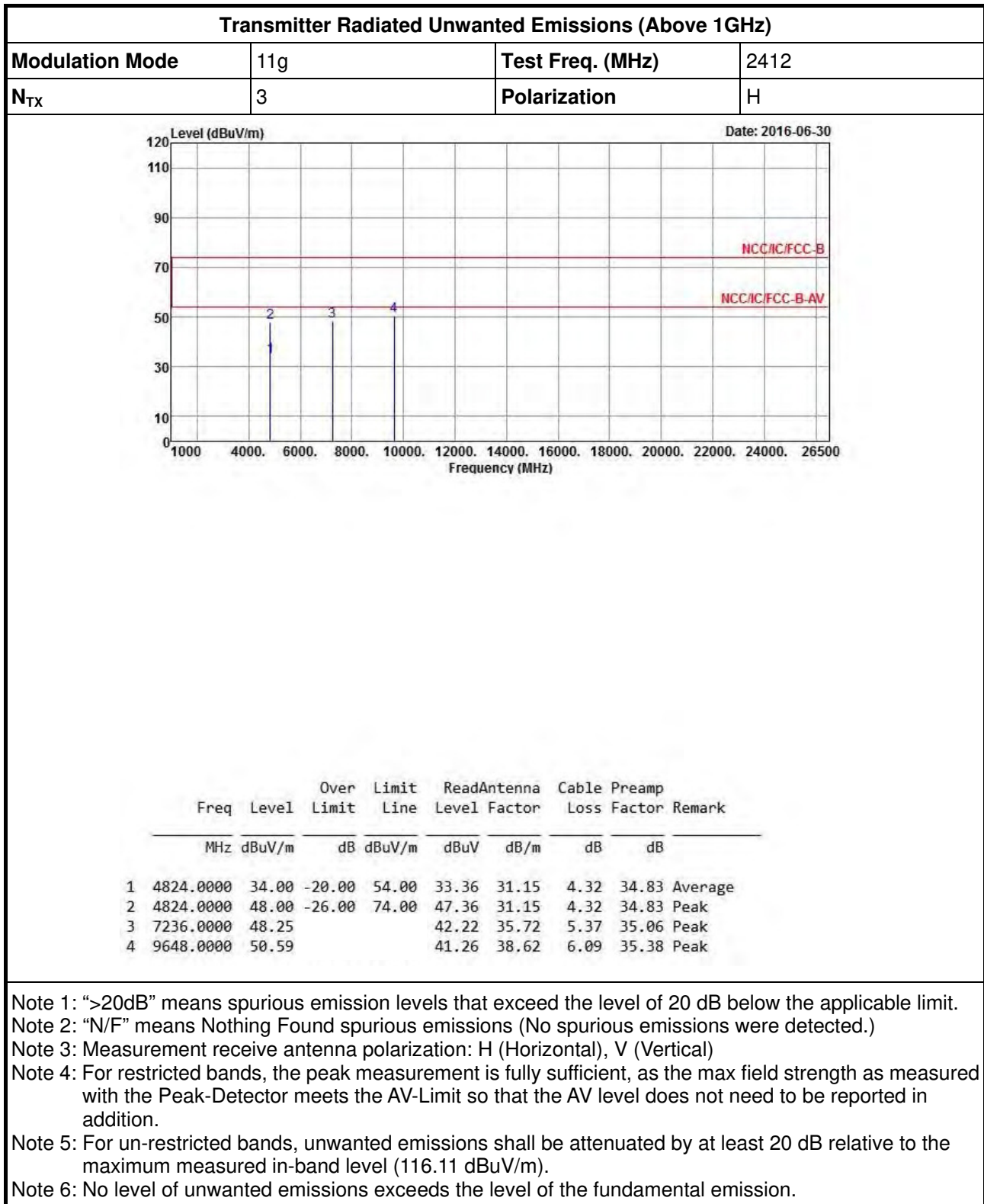


Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																		
Modulation Mode	11b	Test Freq. (MHz)	2437																																																															
N _{TX}	3	Polarization	H																																																															
<div style="display: flex; justify-content: space-between;"> Level (dBuV/m) Date: 2016-06-30 </div>																																																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Freq</th> <th>Level</th> <th>Over Limit</th> <th>Limit Line</th> <th>ReadAntenna Level</th> <th>Cable Loss</th> <th>Preamp Factor</th> <th>Remark</th> </tr> <tr> <th></th> <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> </tr> </thead> <tbody> <tr> <td>1</td> <td>4874.0000</td> <td>43.75</td> <td>-10.25</td> <td>54.00</td> <td>42.99</td> <td>31.22</td> <td>4.35</td> <td>34.81 Average</td> </tr> <tr> <td>2</td> <td>4874.0000</td> <td>49.89</td> <td>-24.11</td> <td>74.00</td> <td>49.13</td> <td>31.22</td> <td>4.35</td> <td>34.81 Peak</td> </tr> <tr> <td>3</td> <td>7311.0000</td> <td>35.10</td> <td>-18.90</td> <td>54.00</td> <td>28.89</td> <td>35.88</td> <td>5.40</td> <td>35.07 Average</td> </tr> <tr> <td>4</td> <td>7311.0000</td> <td>48.80</td> <td>-25.20</td> <td>74.00</td> <td>42.59</td> <td>35.88</td> <td>5.40</td> <td>35.07 Peak</td> </tr> <tr> <td>5</td> <td>9748.0000</td> <td>52.23</td> <td></td> <td></td> <td>42.79</td> <td>38.70</td> <td>6.13</td> <td>35.39 Peak</td> </tr> </tbody> </table>					Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Loss	Preamp Factor	Remark		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	1	4874.0000	43.75	-10.25	54.00	42.99	31.22	4.35	34.81 Average	2	4874.0000	49.89	-24.11	74.00	49.13	31.22	4.35	34.81 Peak	3	7311.0000	35.10	-18.90	54.00	28.89	35.88	5.40	35.07 Average	4	7311.0000	48.80	-25.20	74.00	42.59	35.88	5.40	35.07 Peak	5	9748.0000	52.23			42.79	38.70	6.13	35.39 Peak
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Loss	Preamp Factor	Remark																																																										
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB																																																										
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<p>Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.</p> <p>Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)</p> <p>Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)</p> <p>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.</p> <p>Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (116.53 dBuV/m).</p> <p>Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.</p>																																																																		











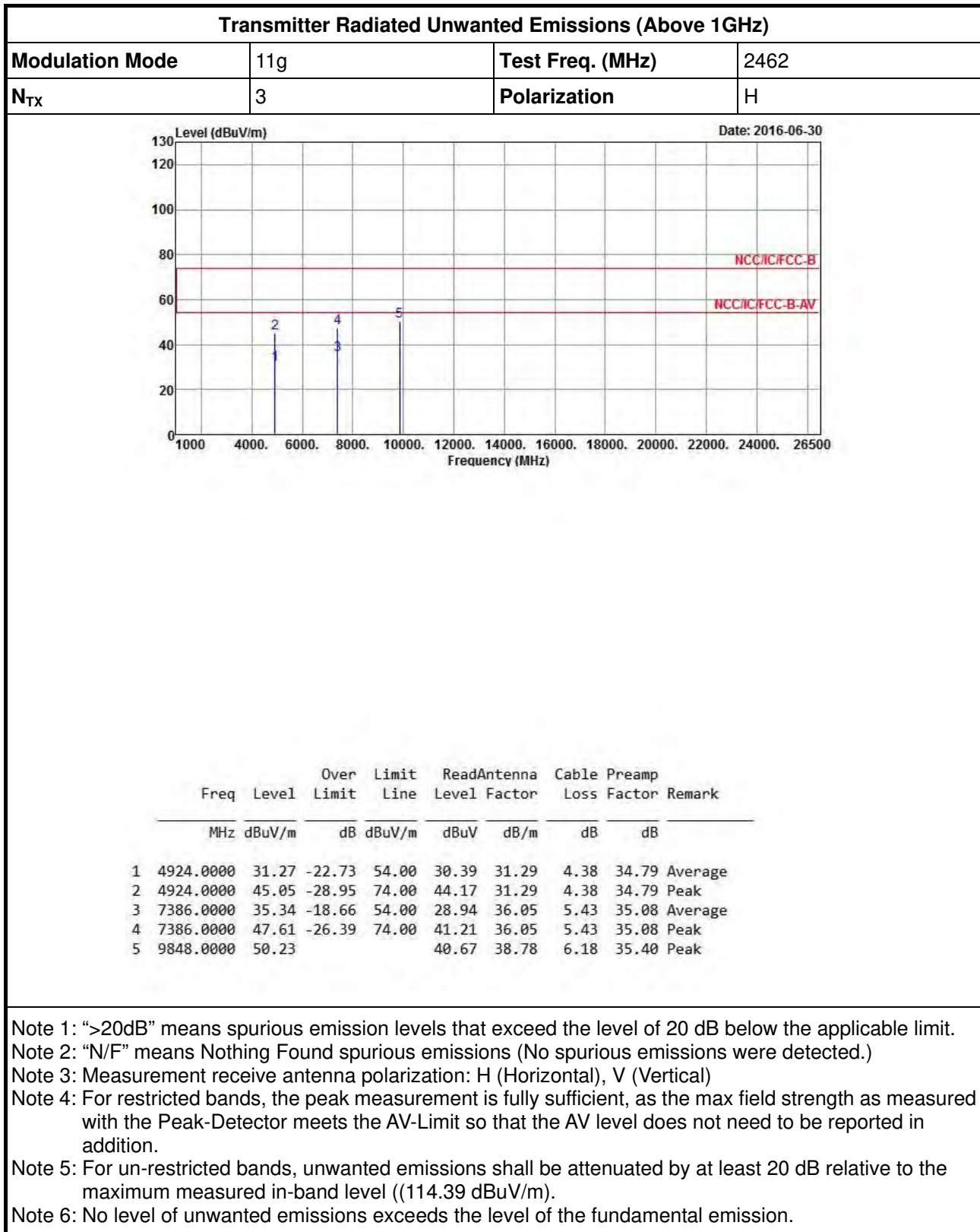
Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																										
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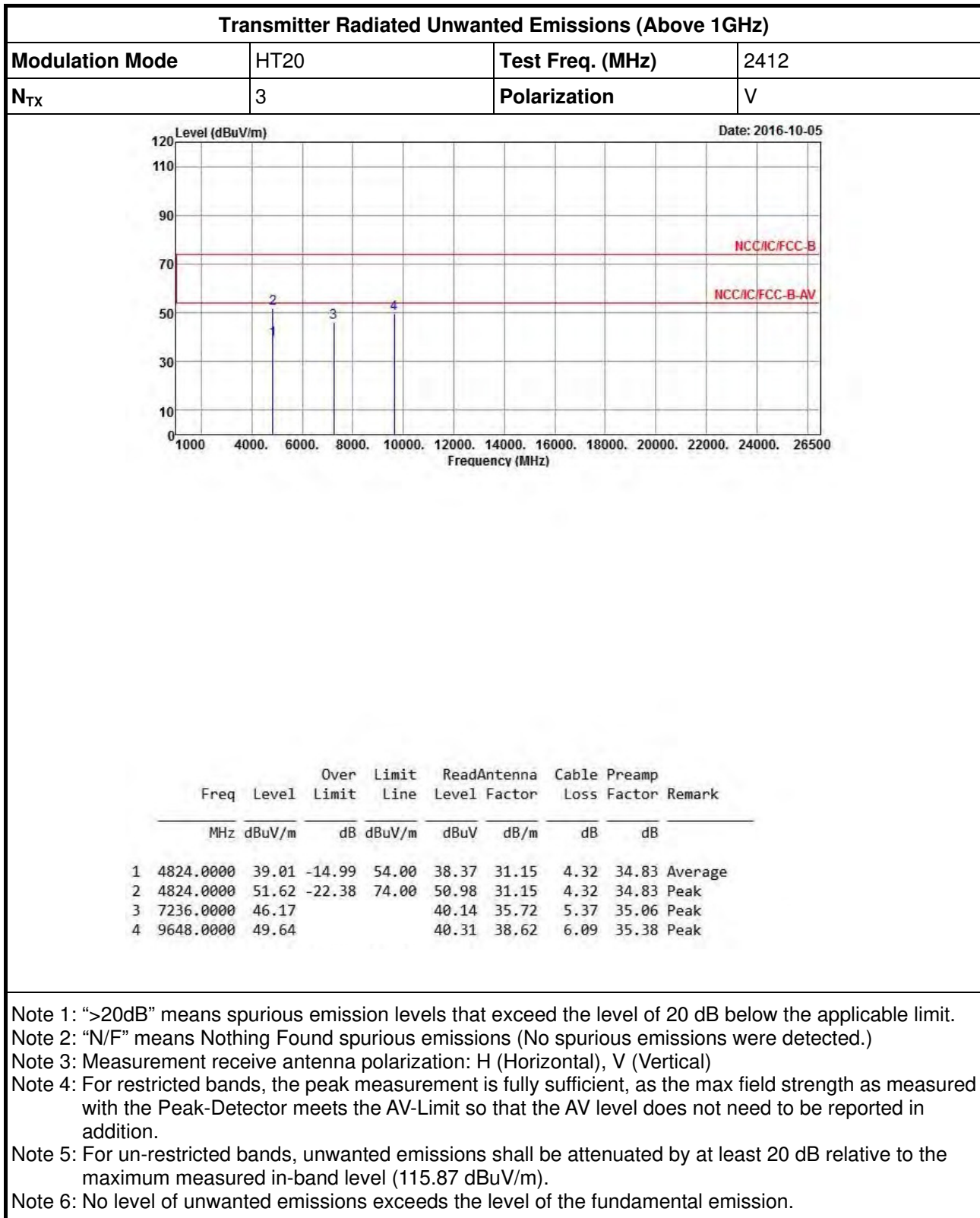


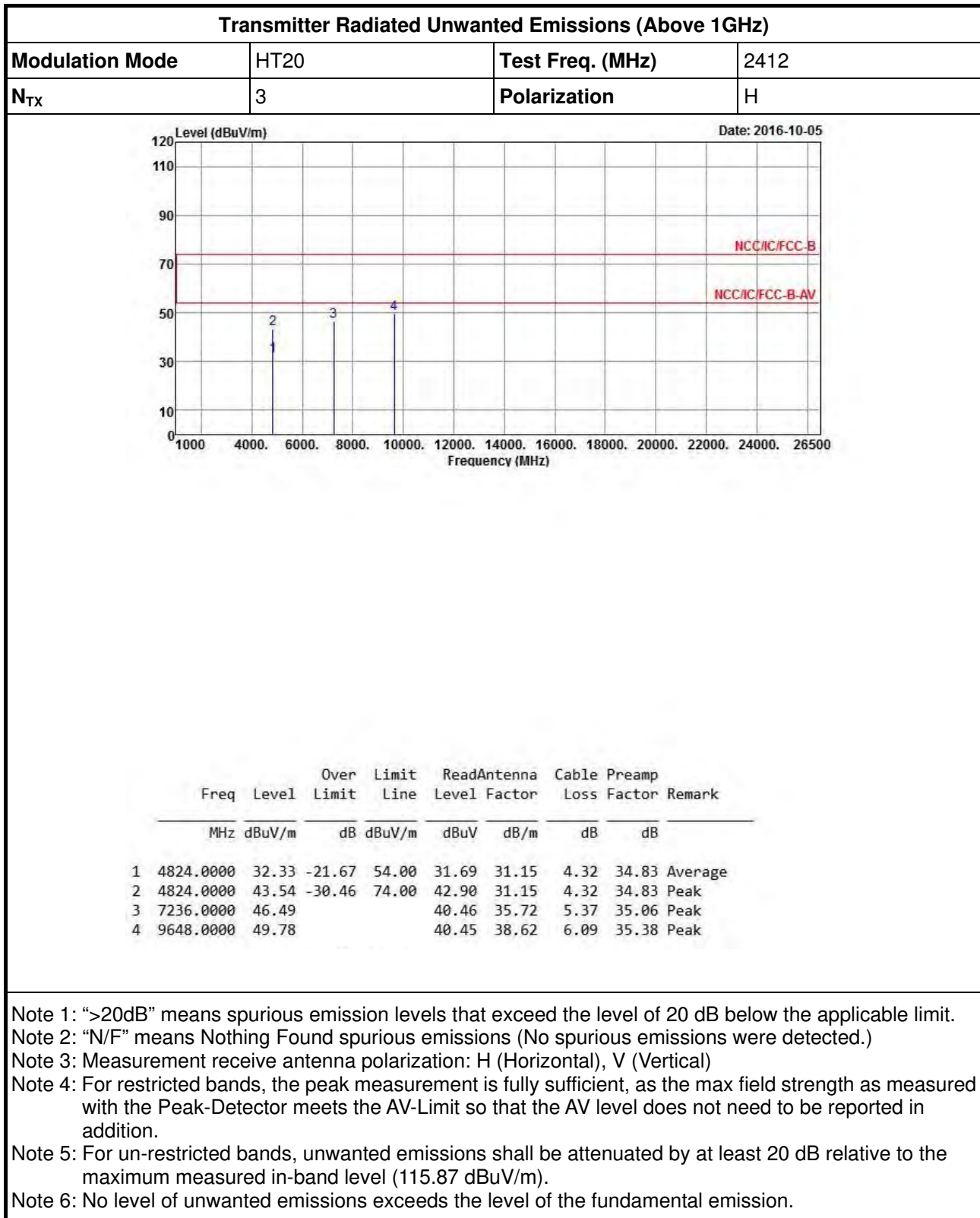
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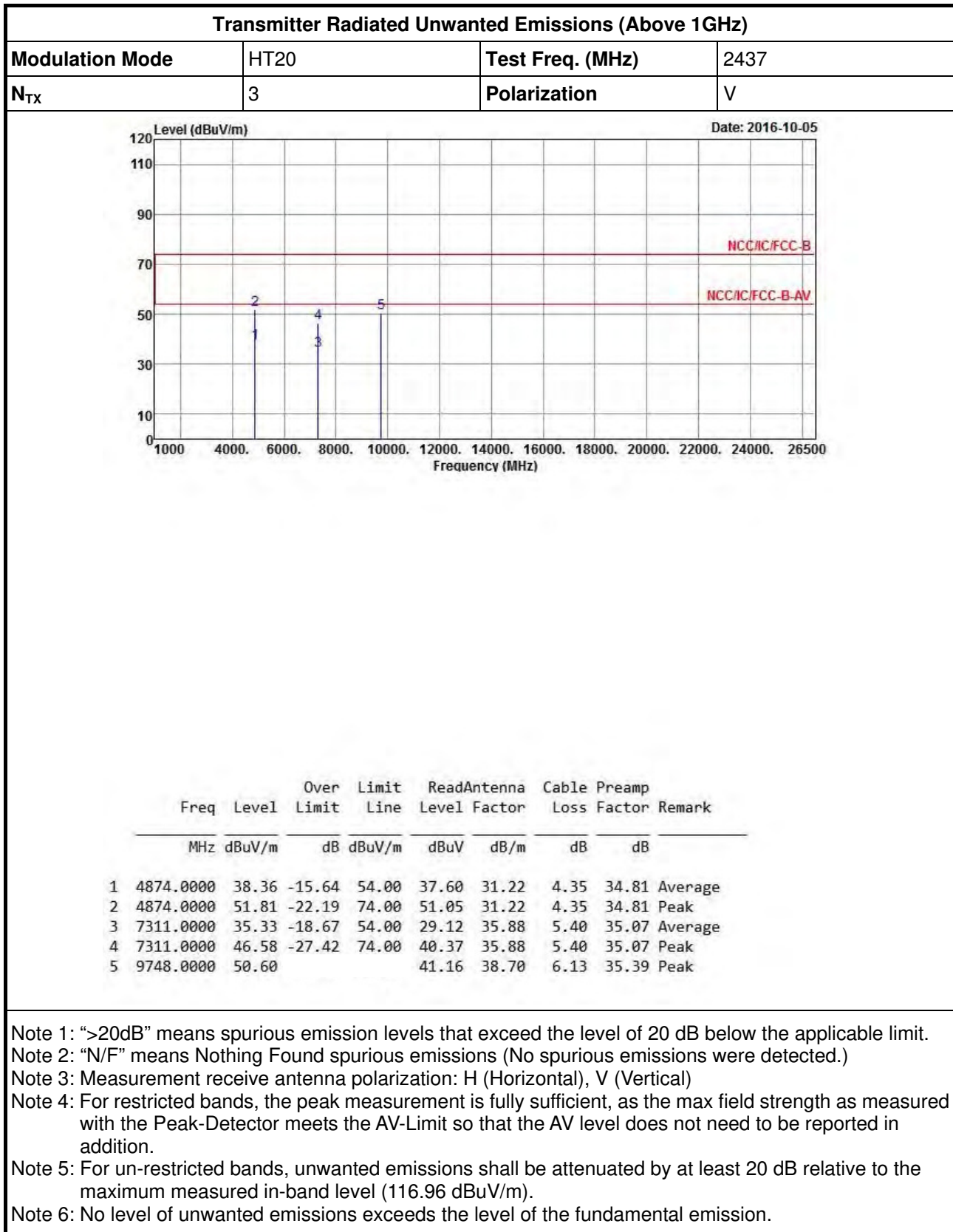


Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																		
Modulation Mode	11g	Test Freq. (MHz)	2462																																																															
N _{TX}	3	Polarization	V																																																															
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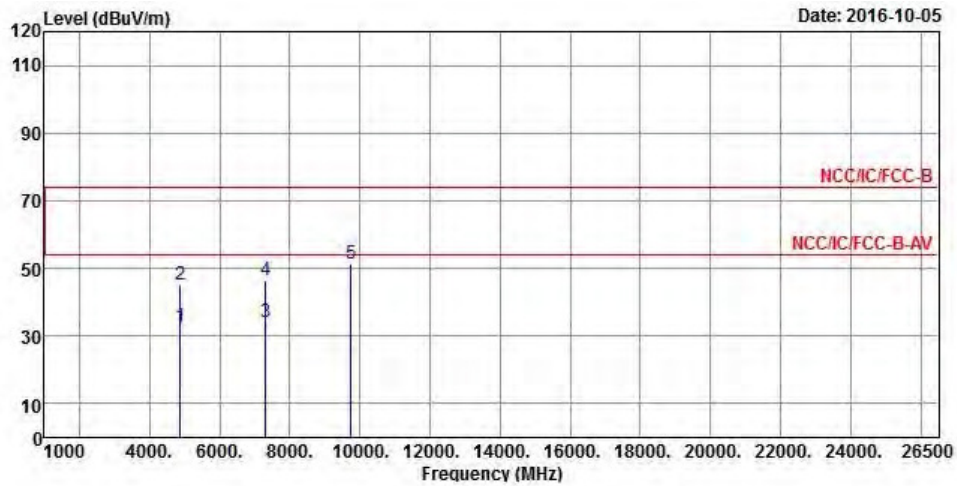






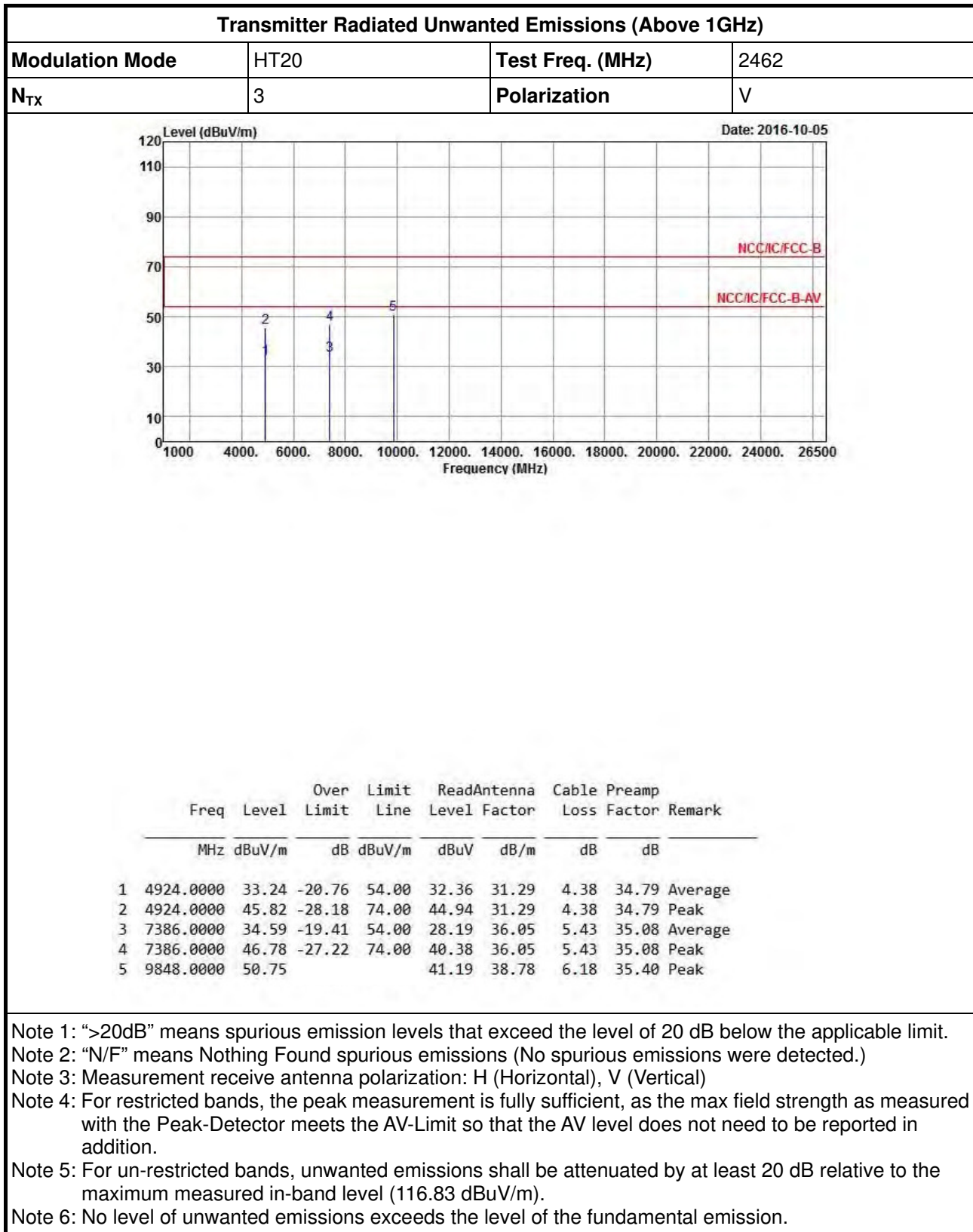
Transmitter Radiated Unwanted Emissions (Above 1GHz)

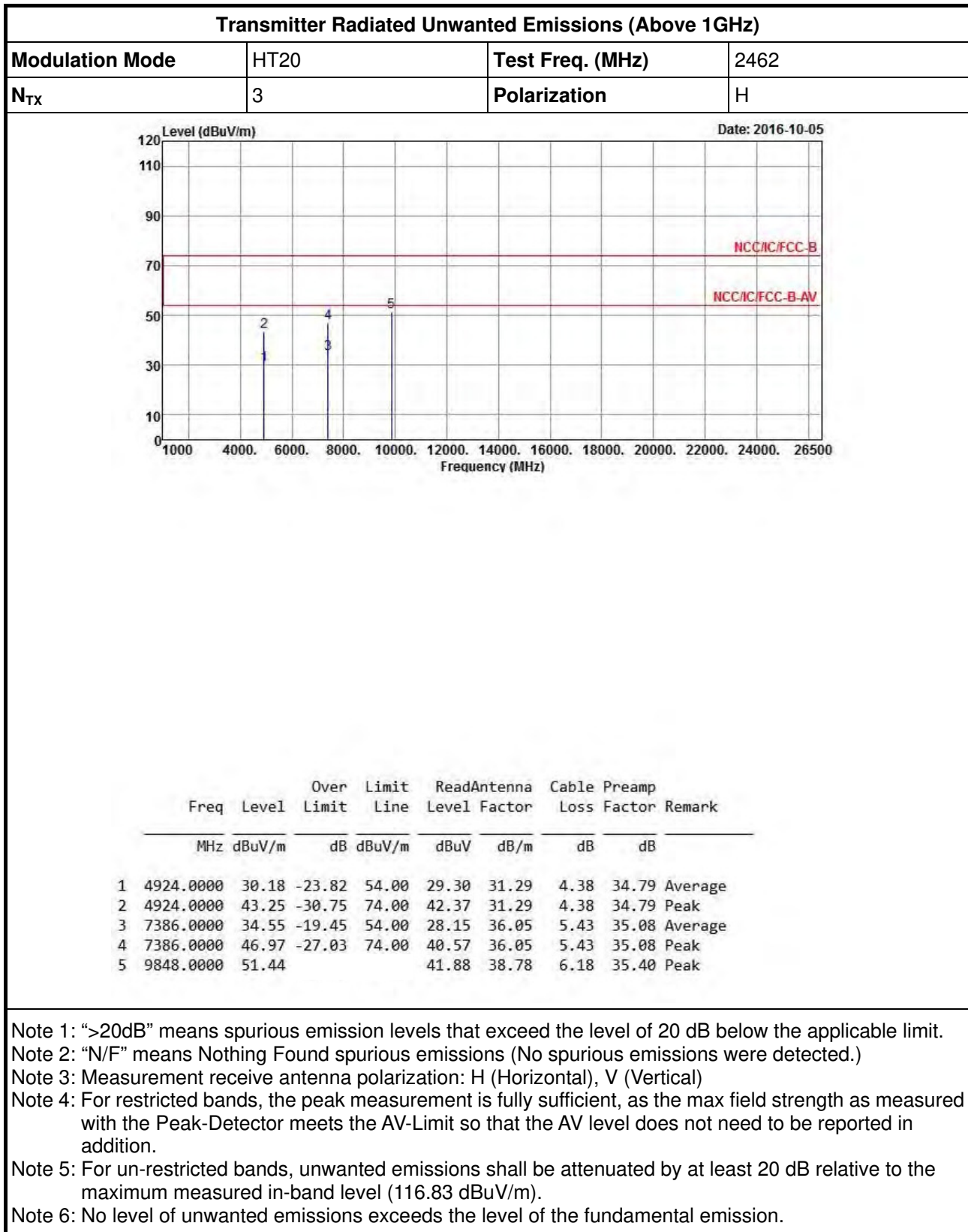
Modulation Mode	HT20	Test Freq. (MHz)	2437
N _{TX}	3	Polarization	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	4874.0000	32.96	-21.04	54.00	32.20	31.22	4.35	34.81 Average
2	4874.0000	45.20	-28.80	74.00	44.44	31.22	4.35	34.81 Peak
3	7311.0000	34.29	-19.71	54.00	28.08	35.88	5.40	35.07 Average
4	7311.0000	46.57	-27.43	74.00	40.36	35.88	5.40	35.07 Peak
5	9748.0000	51.30			41.86	38.70	6.13	35.39 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 20 dB relative to the maximum measured in-band level (116.96 dBuV/m).
- Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.







Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																		
Modulation Mode	HT40	Test Freq. (MHz)	2422																																																															
N _{TX}	3	Polarization	V																																																															
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Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																							
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2	4844.0000	43.03	-30.97	74.00	42.34	31.18	4.33	34.82	Peak																																																														
3	7266.0000	34.37	-19.63	54.00	28.27	35.79	5.38	35.07	Average																																																														
4	7266.0000	47.36	-26.64	74.00	41.26	35.79	5.38	35.07	Peak																																																														
5	9688.0000	49.82			40.45	38.65	6.11	35.39	Peak																																																														
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Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																		
Modulation Mode	HT40	Test Freq. (MHz)	2437																																																															
N _{TX}	3	Polarization	V																																																															
<div style="display: flex; justify-content: space-between;"> Level (dBuV/m) Date: 2016-10-05 </div>																																																																		
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