



FCC Test Report

Equipment : Portable Computer-Tablet
Brand Name : DELL
Model No. : T13G,T13G001
FCC ID : E2K-T13G001
Standard : 47 CFR FCC Part 15.407
Operating Band : 5150 MHz – 5250 MHz
5250 MHz – 5350 MHz
5470 MHz – 5725 MHz
5725 MHz – 5850 MHz
FCC Classification : UNII
Applicant : Dell Inc.
Manufacturer : One Dell Way, Round Rock, Texas 78682, USA
Function : Outdoor AP; Indoor AP; Fixed P2P AP
 Portable Client

The product sample received on Oct. 07, 2014 and completely tested on Nov. 11, 2014. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 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:



Vic Hsiao / Supervisor





Table of Contents

1	GENERAL DESCRIPTION	5
1.1	Information.....	5
1.2	Accessories and Support Equipment.....	8
1.3	Testing Applied Standards	8
1.4	Testing Location Information	9
1.5	Measurement Uncertainty	9
2	TEST CONFIGURATION OF EUT	10
2.1	The Worst Case Modulation Configuration	10
2.2	The Worst Case Power Setting Parameter.....	10
2.3	The Worst Case Measurement Configuration.....	12
2.4	Test Setup Diagram	14
3	TRANSMITTER TEST RESULT	16
3.1	AC Power-line Conducted Emissions	16
3.2	Emission Bandwidth	19
3.3	RF Output Power.....	25
3.4	Peak Power Spectral Density.....	31
3.5	Transmitter Bandedge Emissions	37
3.6	Transmitter Unwanted Emissions.....	43
3.7	Frequency Stability	164
4	TEST EQUIPMENT AND CALIBRATION DATA	166

APPENDIX A. TEST PHOTOS

APPENDIX B. PHOTOGRAPHS OF EUT



Summary of Test Result

Conformance Test Specifications			
Report Clause	Ref. Std. Clause	Description	Result
1.1.2	15.203	Antenna Requirement	Complied
3.1	15.207	AC Power-line Conducted Emissions	Complied
3.2	15.407(a)	Emission Bandwidth	Complied
3.3	15.407(a)	RF Output Power (Maximum Conducted Output Power)	Complied
3.4	15.407(a)	Peak Power Spectral Density	Complied
3.5	15.407(b)	Transmitter Bandedge Emissions	Complied
3.6	15.407(b)	Transmitter Unwanted Emissions	Complied
3.7	15.407(g)	Frequency Stability	Complied



Revision History



1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	RF Output Power (dBm)
5150-5250	a	5180-5240	36-48 [4]	1	11.18
5250-5350		5260-5320	52-64 [4]	1	11.10
5470-5725		5500-5700	100-140 [8]	1	10.59
5725-5850		5745-5825	149-165 [5]	1	11.13
5150-5250	n (HT20) ac (VHT20)	5180-5240	36-48 [4]	1 / 1	11.05/11.36
5250-5350		5260-5320	52-64 [4]	1 / 1	11.02/11.35
5470-5725		5500-5700	100-140 [8]	1 / 1	10.57/10.62
5725-5850		5745-5825	149-165 [5]	1 / 1	11.04/11.34
5150-5250	n (HT40) ac (VHT40)	5190-5230	38-46 [2]	1 / 1	10.76/10.74
5250-5350		5270-5310	54-62 [2]	1 / 1	11.39/10.83
5470-5725		5510-5670	102-134 [3]	1 / 1	10.62/10.62
5725-5850		5755-5795	151-159 [2]	1 / 1	11.20/11.34
5150-5250	ac (VHT80)	5210	48 [1]	1	10.40
5250-5350		5290	58 [1]	1	11.36
5470-5725		5530	106 [1]	1	11.31
5725-5850		5775	155 [1]	1	10.89

Note 1: RF output power specifies that Maximum Conducted Output Power.
Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
Note 3: 802.11ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.



1.1.2 Antenna Information

Antenna Category	
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Temporary RF connector provided
<input type="checkbox"/>	<input checked="" 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.

Antenna General Information		
Ant. Cat.	Ant. Type	Gain (dBi)
Integral	PIFA	2.32

1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input type="checkbox"/> Production ; <input type="checkbox"/> Pre-Production ; <input checked="" 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 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
<input type="checkbox"/>	Operated normally mode for worst duty cycle
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)
<input checked="" type="checkbox"/> 100% - IEEE 802.11a	0
<input checked="" type="checkbox"/> 100% - IEEE 802.11n (HT20)	0
<input checked="" type="checkbox"/> 100% - IEEE 802.11n (HT40)	0
<input checked="" type="checkbox"/> 100% - IEEE 802.11ac (VHT20)	0
<input checked="" type="checkbox"/> 100% - IEEE 802.11ac (VHT40)	0
<input checked="" type="checkbox"/> 100% - IEEE 802.11ac (VHT80)	0



1.1.5 EUT Operational Condition

Supply Voltage	<input checked="" type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	
Type of DC Source	<input checked="" type="checkbox"/> Internal DC supply	<input checked="" type="checkbox"/> External DC adapter	<input checked="" type="checkbox"/> From Host System
Test Voltage	<input checked="" type="checkbox"/> V _{nom} (110 V)	<input checked="" type="checkbox"/> V _{max} (126.5 V)	<input checked="" type="checkbox"/> V _{min} (93.5 V)
Test Climatic	<input checked="" type="checkbox"/> T _{nom} (20°C)	<input checked="" type="checkbox"/> T _{max} (50°C)	<input checked="" type="checkbox"/> T _{min} (-20°C)

1.1.6 DFS and TPC Information

The DFS Related Operating Mode(s) of the Equipment				
<input type="checkbox"/> Master				
<input type="checkbox"/> Slave with radar detection				
<input checked="" type="checkbox"/> Slave without radar detection				
Software / Firmware Version		Eaglespeak_wifi_qs-userdebug 4.4.4 KTU84P eng.EPP101T124030.20140922.225950 dev-keys		
Communication Mode		<input checked="" type="checkbox"/> IP Based	<input type="checkbox"/> Frame Based	
IEEE Std. 802.11	Frequency Range (MHz)	TPC (Transmit Power Control)	Passive Scan	
a / n (HT20) / ac (VHT20) n (HT40) / ac (VHT40) ac (VHT80)	<input checked="" type="checkbox"/> 5250-5350	No	Yes	
	<input checked="" type="checkbox"/> 5470-5725	No	Yes	
	<input type="checkbox"/> 5600-5650	-	-	



1.2 Accessories and Support Equipment

Accessories Information				
AC Adapter 1	Brand Name	DELL	Model Name	HA10USNM130
	Vendor	Chicony		
	Power Rating	I/P: 100-240V~50/60Hz 0.3A ; O/P: 5V 2A		
Li-ion Battery 1	Brand Name	DELL	Model Name	0DWD6
	Power Rating	3.7V		
Li-ion Battery 2	Brand Name	DELL	Model Name	H6PR0
	Power Rating	3.7V		
USB Cable	Brand Name	--	Model Name	--
WLAN/ BT	Brand Name	Broadcom	Model Name	BCM4339
GPS	Brand Name	Broadcom	Model Name	BCM47521
BT KB	Brand Name	DELL	Model Name	KW14M02

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

Support Equipment – For AC Conduction and Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5530	DoC
2	Keyboard	DELL	KW14M02	E2K-KW14M02

Support Equipment - RF Conducted			
Equipment	Brand Name	Model Name	FCC ID
Notebook	DELL	E5540	DoC

Support Equipment - DFS Site				
No.	Equipment	Brand Name	Model Name	FCC ID
1	AP (Master)	NETGEAR	R6100	DOC
2	NoteBook	Dell	Latitude E5510	DOC

1.3 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 C63.10-2009
- ♦ FCC KDB 789033 D02 v01
- ♦ FCC KDB 644545 D03 v01
- ♦ FCC KDB 662911 v02r01
- ♦ FCC-14-30A1-UNII



1.4 Testing Location Information

Testing Location			
	HWA YA	ADD : No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, 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	Zeus	23°C / 51%
RF Conducted	TH01-HY	Leo	25.9°C / 61%
Radiated Emission	03CH03-HY	Hunter	26.2°C / 54%

1.5 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, 26dB bandwidth	±1.4 %	
RF output power, conducted	±0.6 dB	
Power density, conducted	±0.8 dB	
Unwanted emissions, conducted		
9 – 150 kHz	±0.4 dB	
0.15 – 30 MHz	±0.4 dB	
30 – 1000 MHz	±0.5 dB	
1 – 18 GHz	±0.7 dB	
18 – 40 GHz	±0.8 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	±3 %	
DC and low frequency voltages	±3 %	
Time	±1.4 %	
Duty Cycle	±1.4 %	



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
11a	1	6-54Mbps	6 Mbps
HT20	1	MCS 0-7	MCS 0
HT40	1	MCS 0-7	MCS 0
VHT20	1	MCS 0-8	MCS 0
VHT40	1	MCS 0-9	MCS 0
VHT80	1	MCS 0-9	MCS 0

2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (5150-5250MHz band)							
Test Software Version	N/A						
Modulation Mode	N _{TX}	Test Frequency (MHz)					
		NCB: 20MHz		NCB: 40MHz		NCB: 80MHz	
		5180	5200	5240	5190	5230	5210
11a	1	10	10	10	-	-	-
HT20	1	10	10	10	-	-	-
HT40	1	-	-	-	10	10	-
VHT20	1	10	10	10	-	-	-
VHT40	1	-	-	-	10	10	-
VHT80	1	-	-	-	-	-	10

The Worst Case Power Setting Parameter (5250-5350MHz band)							
Test Software Version	N/A						
Modulation Mode	N _{TX}	Test Frequency (MHz)					
		NCB: 20MHz		NCB: 40MHz		NCB: 80MHz	
		5260	5300	5320	5270	5310	5290
11a	1	9	9	9	-	-	-
HT20	1	9	9	9	-	-	-
HT40	1	-	-	-	10	11	-
VHT20	1	9	9	9	-	-	-
VHT40	1	-	-	-	10	10	-
VHT80	1	-	-	-	-	-	11



The Worst Case Power Setting Parameter (5470-5725MHz band)								
Test Software Version	N/A							
Modulation Mode	N _{TX}	Test Frequency (MHz)						
		NCB: 20MHz			NCB: 40MHz			NCB: 80MHz
		5500	5580	5700	5510	5550	5670	5530
11a	1	10	10	10	-	-	-	-
HT20	1	10	10	10	-	-	-	-
HT40	1	-	-	-	10	10	10	-
VHT20	1	10	10	10	-	-	-	-
VHT40	1	-	-	-	10	10	10	-
VHT80	1	-	-	-	-	-	-	11

The Worst Case Power Setting Parameter (5725-5850MHz band)								
Test Software Version	N/A							
Modulation Mode	N _{TX}	Test Frequency (MHz)						
		NCB: 20MHz			NCB: 40MHz		NCB: 80MHz	
		5745	5785	5825	5755	5795	5775	
11a	1	10	11	11	-	-	-	-
HT20	1	10	11	11	-	-	-	-
HT40	1	-	-	-	11	11	-	-
VHT20	1	10	11	11	-	-	-	-
VHT40	1	-	-	-	11	11	-	-
VHT80	1	-	-	-	-	-	-	12



2.3 The Worst Case Measurement Configuration

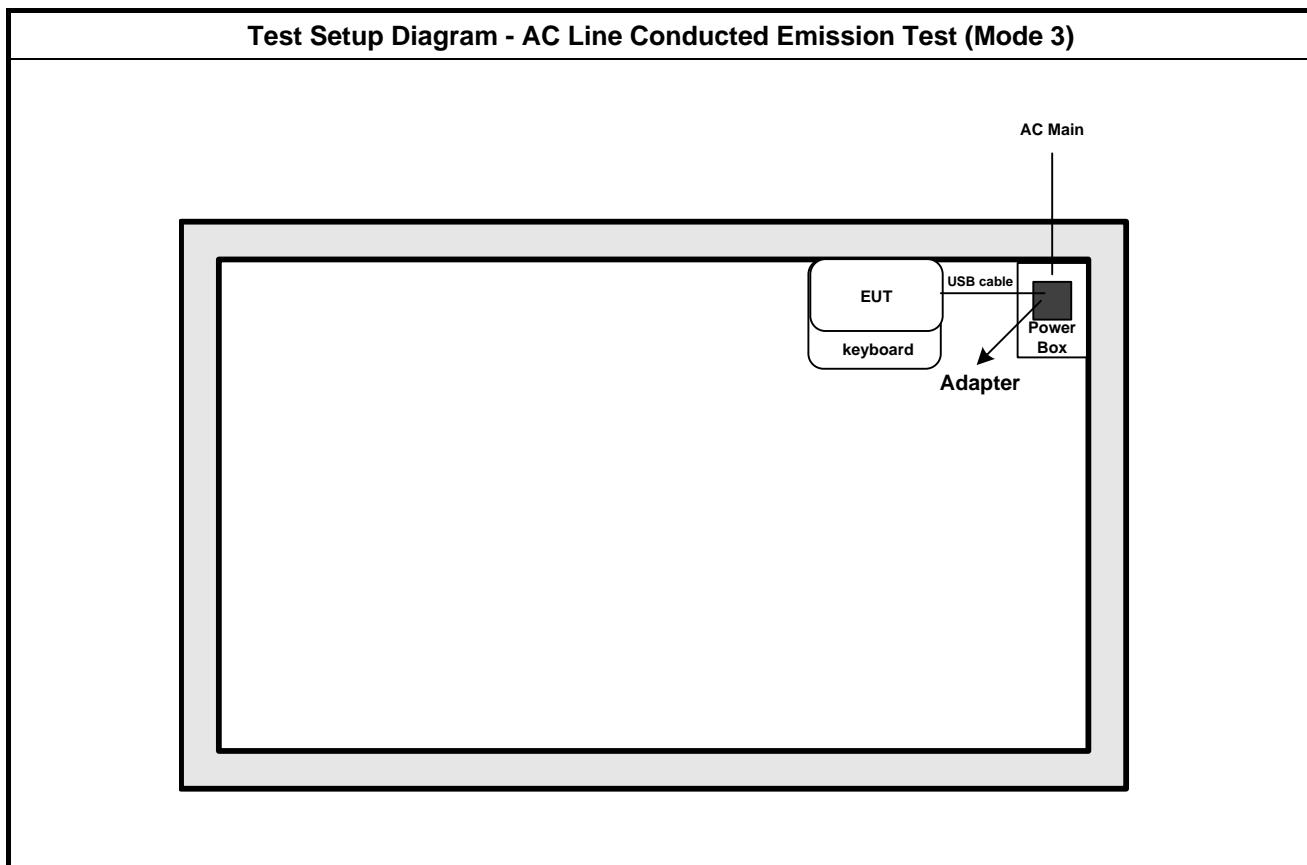
The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	Adapter mode and transmit
2	USB mode and transmit
3	Adapter mode and transmit with keyboard
4	USB mode and transmit with keyboard
For operating mode 3 is the worst case and it was record in this test report.	

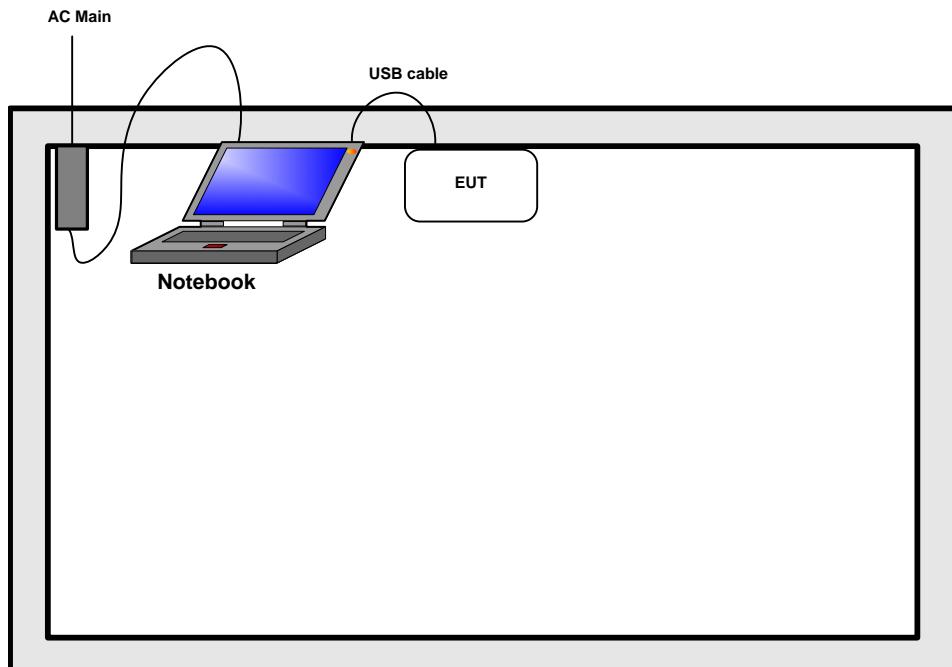
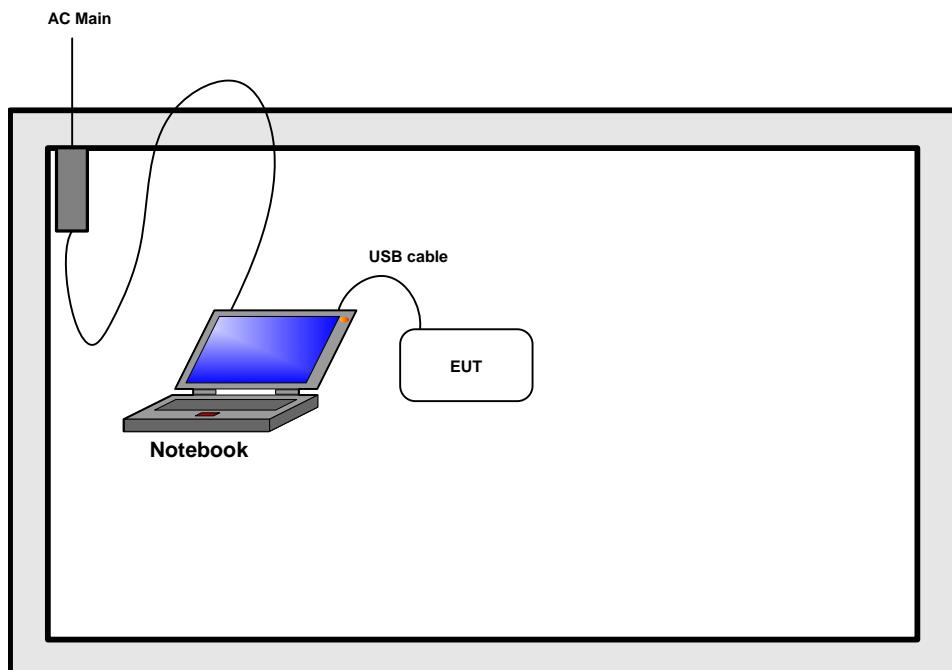
The Worst Case Mode for Following Conformance Tests	
Tests Item	RF Output Power, Peak Power Spectral Density, Emission Bandwidth, Peak Excursion, Transmitter Conducted Unwanted Emissions Transmitter Conducted Bandedge Emissions
Test Condition	Conducted measurement at transmit chains
Modulation Mode	11a, HT20, HT40, VHT20, VHT40, VHT80



The Worst Case Mode for Following Conformance Tests							
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge 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 type="checkbox"/> EUT will be placed in fixed position. <input type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. <input checked="" type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed three orthogonal planes. The worst planes is Y.						
Operating Mode < 1GHz	Operating Mode Description						
1	Adapter mode and transmit						
2	USB mode and transmit						
3	Adapter mode and transmit with keyboard						
4	USB mode and transmit with keyboard						
For operating mode 2 is the worst case and it was record in this test report.							
Operating Mode > 1GHz	USB mode and transmit						
Modulation Mode	11a, HT20, HT40, VHT20, VHT40, VHT80						
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					

2.4 Test Setup Diagram



Test Setup Diagram - Radiated Below 1GHz Test (Mode 2)**Test Setup Diagram - Radiated Above 1GHz 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.

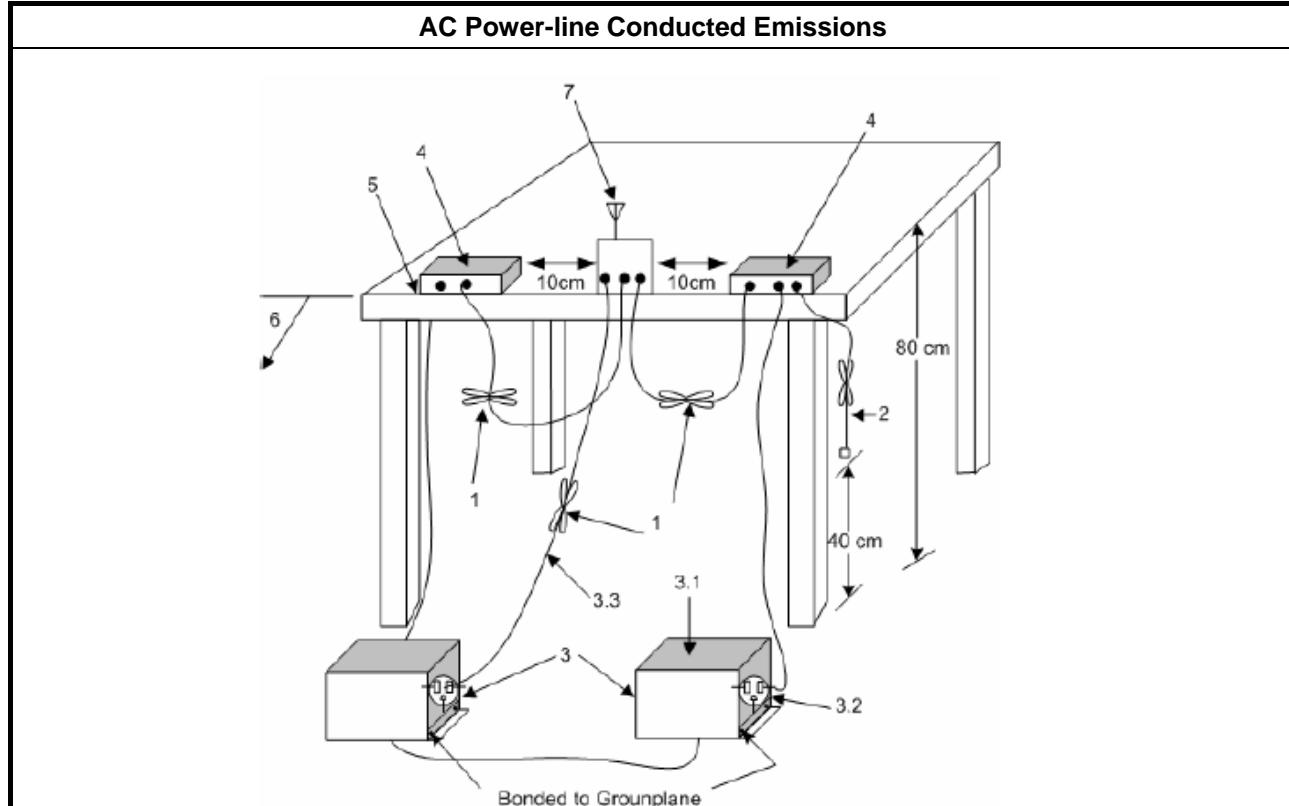
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

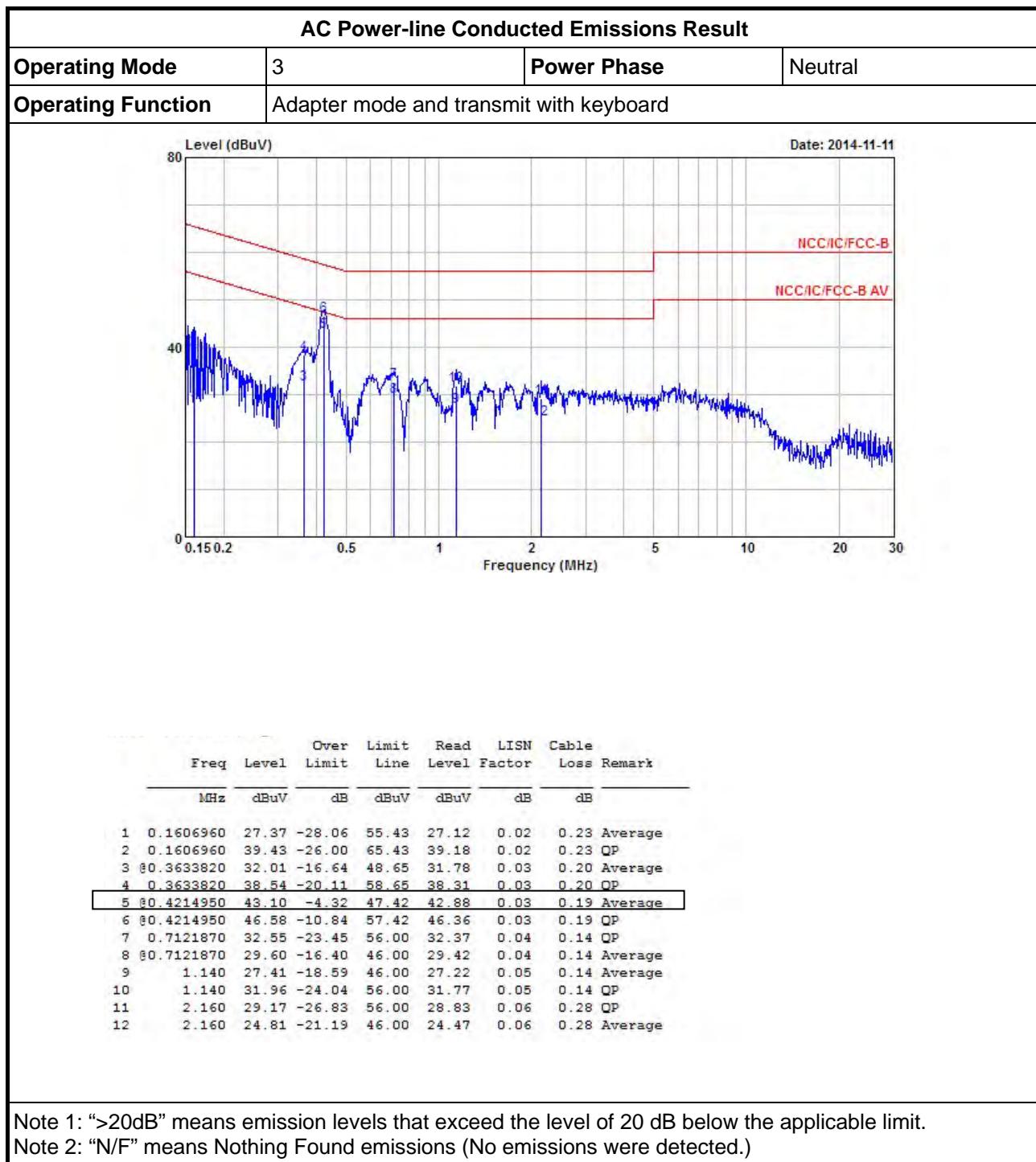
Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions.

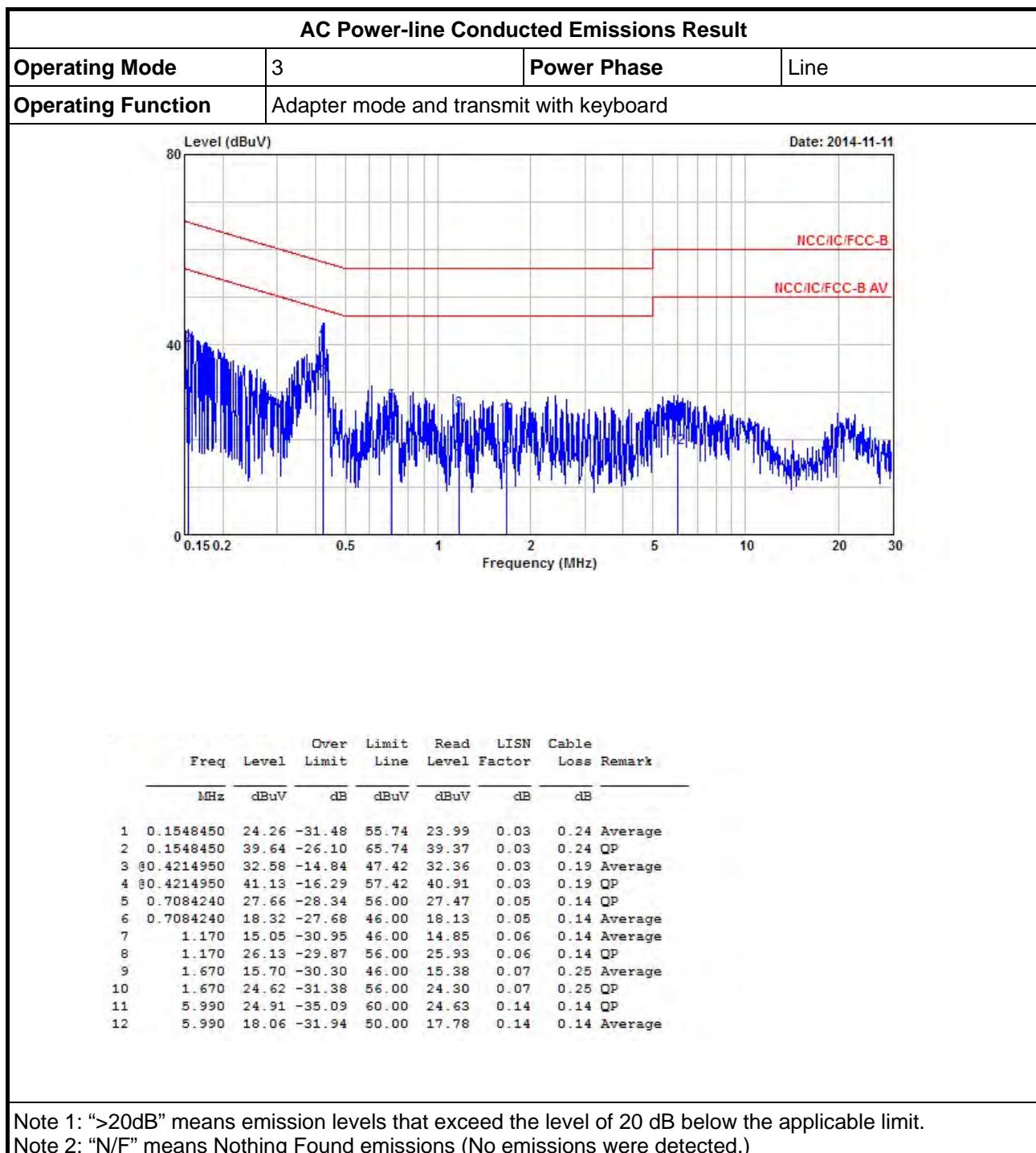
3.1.4 Test Setup





3.1.5 Test Result of AC Power-line Conducted Emissions







3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit	
UNII Devices	
<input checked="" type="checkbox"/>	For the 5.15-5.25 GHz band, N/A
<input checked="" type="checkbox"/>	For the 5.25-5.35 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.
<input checked="" type="checkbox"/>	For the 5.47-5.725 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.
<input checked="" type="checkbox"/>	For the 5.725-5.85 GHz band, 6 dB emission bandwidth \geq 500kHz.

3.2.2 Measuring Instruments

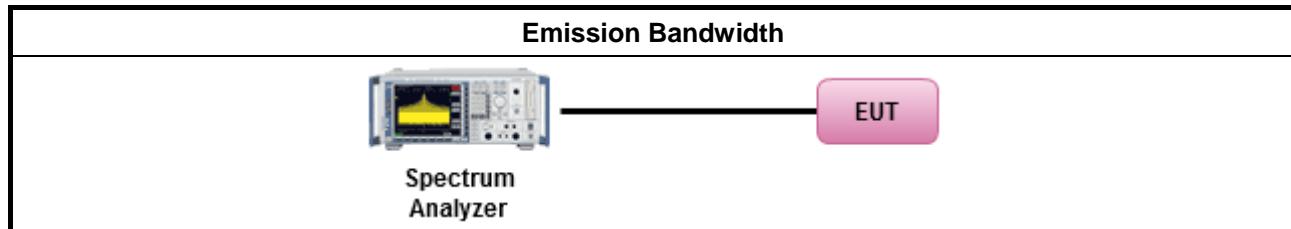
Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	For the emission bandwidth shall be measured using one of the options below:
	<input checked="" type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause C for EBW and clause D for OBW measurement.
	<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
	<input type="checkbox"/> Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.
<input checked="" type="checkbox"/>	For conducted measurement.
	<input checked="" type="checkbox"/> The EUT supports single transmit chain and measurements performed on this transmit chain.
	<input type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
	<input type="checkbox"/> The EUT supports multiple transmit chains using options given below:
	<input type="checkbox"/> Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1.
	<input type="checkbox"/> Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains.



3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

UNII Emission Bandwidth Result (5150-5250MHz band)				
Condition			Emission Bandwidth (MHz)	
Modulation Mode	N _{TX}	Freq. (MHz)	99% Bandwidth	26dB Bandwidth
11a	1	5180	16.76	21.07
11a	1	5200	16.81	20.50
11a	1	5240	16.86	20.85
HT20	1	5180	17.84	20.97
HT20	1	5200	17.91	20.90
HT20	1	5240	17.86	21.07
HT40	1	5190	36.58	40.60
HT40	1	5230	36.50	40.84
VHT20	1	5180	17.81	21.02
VHT20	1	5200	17.86	21.00
VHT20	1	5240	17.69	20.30
VHT40	1	5190	36.54	40.72
VHT40	1	5230	36.50	40.68
VHT80	1	5210	75.80	81.04
Result			Complied	



UNII Emission Bandwidth Result (5250-5350MHz band)				
Condition			Emission Bandwidth (MHz)	
Modulation Mode	N _{TX}	Freq. (MHz)	99% Bandwidth	26dB Bandwidth
11a	1	5260	16.84	20.95
11a	1	5300	16.89	20.82
11a	1	5320	16.64	20.97
HT20	1	5260	17.86	21.10
HT20	1	5300	17.89	21.60
HT20	1	5320	17.86	20.75
HT40	1	5270	36.46	40.52
HT40	1	5310	36.50	40.60
VHT20	1	5260	17.99	20.95
VHT20	1	5300	17.96	21.30
VHT20	1	5320	17.79	21.10
VHT40	1	5270	36.54	40.92
VHT40	1	5310	36.50	40.80
VHT80	1	5290	75.72	81.28
Result			Complied	

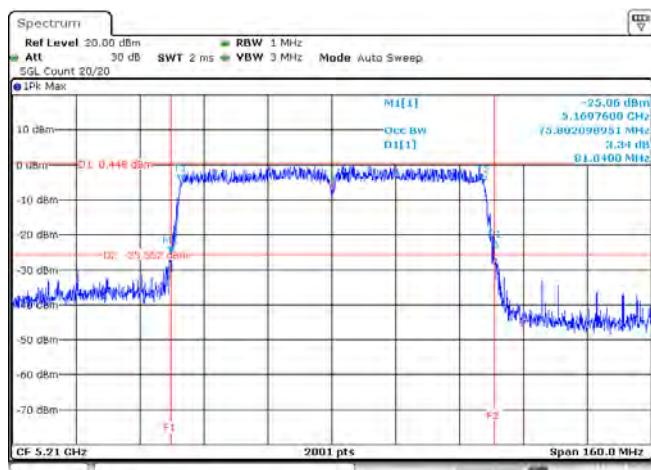
UNII Emission Bandwidth Result (5470-5725MHz band)				
Condition			Emission Bandwidth (MHz)	
Modulation Mode	N _{TX}	Freq. (MHz)	99% Bandwidth	26dB Bandwidth
11a	1	5500	16.96	21.12
11a	1	5580	16.79	20.90
11a	1	5700	16.69	20.70
HT20	1	5500	17.86	21.27
HT20	1	5580	17.96	21.20
HT20	1	5700	17.81	20.92
HT40	1	5510	36.54	40.24
HT40	1	5550	36.50	40.64
HT40	1	5670	36.50	40.60
VHT20	1	5500	17.91	20.90
VHT20	1	5580	17.84	20.80
VHT20	1	5700	17.84	20.60
VHT40	1	5510	36.50	40.40
VHT40	1	5550	36.50	40.16
VHT40	1	5670	36.50	40.40
VHT80	1	5530	75.72	80.80
Result			Complied	



UNII Emission Bandwidth Result (5725-5850MHz band)				
Condition			Emission Bandwidth (MHz)	
Modulation Mode	N _{TX}	Freq. (MHz)	99% Bandwidth	6dB Bandwidth
11a	1	5745	16.52	16.44
11a	1	5785	16.50	16.54
11a	1	5825	16.49	16.54
HT20	1	5745	17.67	17.55
HT20	1	5785	17.70	17.56
HT20	1	5825	17.72	17.80
HT40	1	5755	36.18	36.28
HT40	1	5795	36.22	36.36
VHT20	1	5745	17.66	17.58
VHT20	1	5785	17.64	17.74
VHT20	1	5825	17.69	17.79
VHT40	1	5755	36.18	36.16
VHT40	1	5795	36.14	35.80
VHT80	1	5775	75.48	76.40
Limit		-	≥ 500 kHz	
Result			Complied	

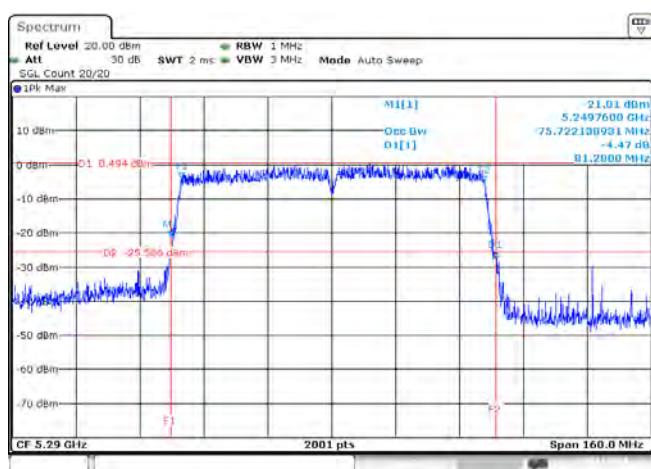


5150-5250MHz - Worst Emission 26Bandwidth Plots



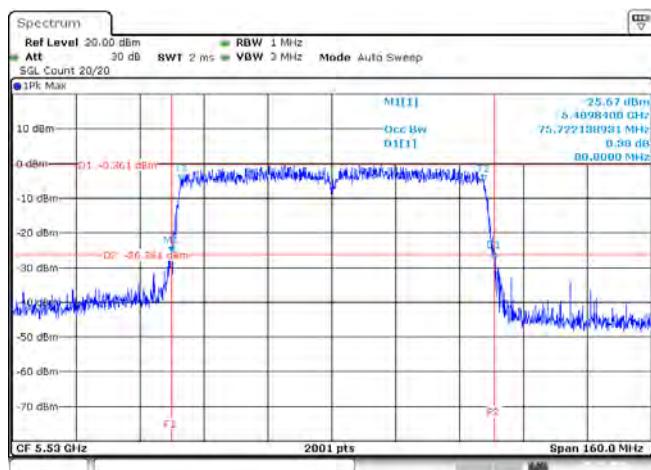
Date: 5.NOV.2014 02:54:38

5250-5350MHz - Worst Emission 26Bandwidth Plots

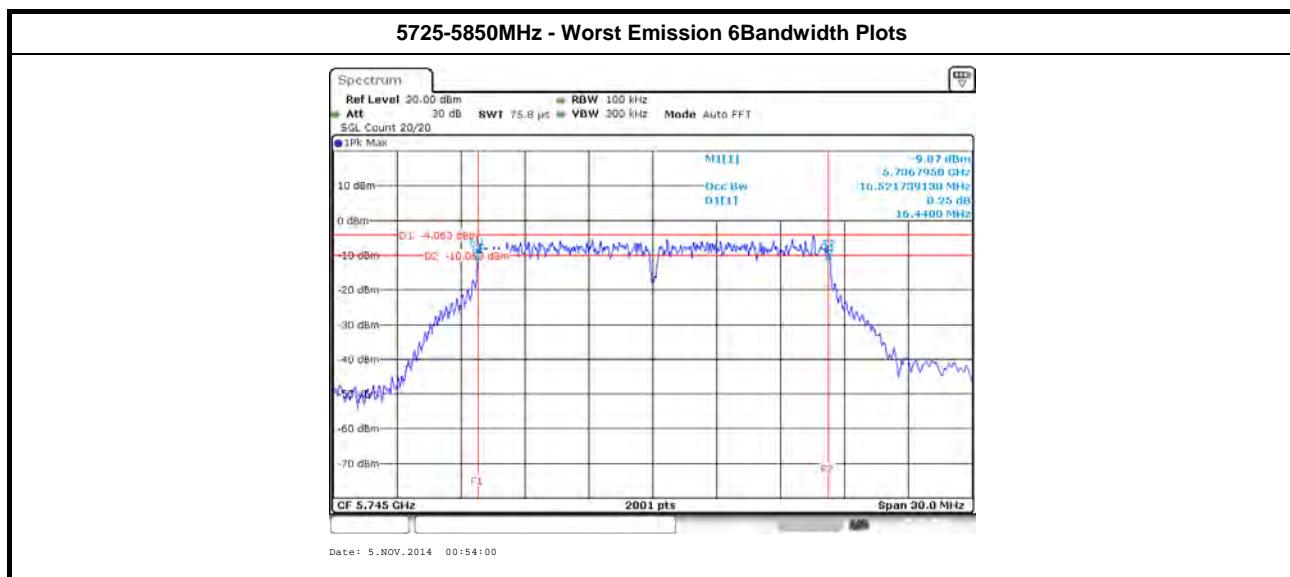


Date: 5.NOV.2014 02:57:58

5470-5725MHz - Worst Emission 26Bandwidth Plots



Date: 5.NOV.2014 03:00:41





3.3 RF Output Power

3.3.1 RF Output Power Limit

Maximum Conducted Output Power Limit	
UNII Devices	
<input checked="" type="checkbox"/> For the 5.15-5.25 GHz band:	
<input type="checkbox"/> Outdoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$. e.i.r.p. at any elevation angle above 30 degrees ≤ 125 mW [21dBm]	
<input type="checkbox"/> Indoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$	
<input type="checkbox"/> Point-to-point AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W If $G_{TX} > 23$ dBi, then $P_{Out} = 30 - (G_{TX} - 23)$.	
<input checked="" type="checkbox"/> Mobile or Portable Client: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.	
<input checked="" type="checkbox"/> For the 5.25-5.35 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + $10 \log B$, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.	
<input checked="" type="checkbox"/> For the 5.47-5.725 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + $10 \log B$, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.	
<input checked="" type="checkbox"/> For the 5.725-5.85 GHz band:	
<input checked="" type="checkbox"/> Point-to-multipoint systems (P2M): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$.	
<input type="checkbox"/> Point-to-point systems (P2P): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W.	
P_{Out} = maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

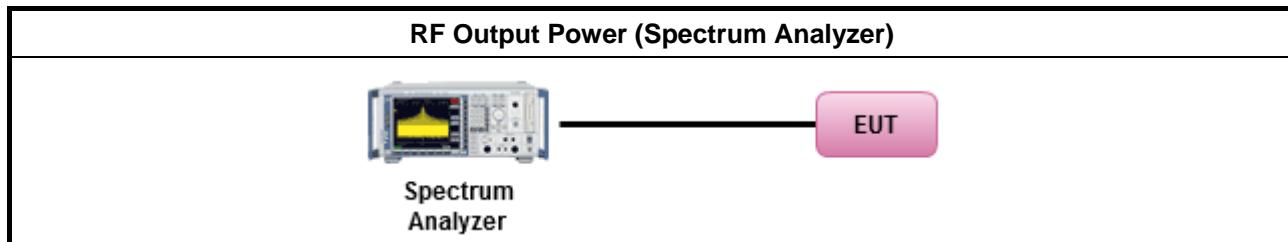
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/> Maximum Conducted Output Power	
	[duty cycle \geq 98% or external video / power trigger]
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)
	duty cycle $<$ 98% and average over on/off periods with duty factor
<input type="checkbox"/>	Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
	Wideband RF power meter and average over on/off periods with duty factor
<input type="checkbox"/>	Refer as FCC KDB 789033 D02 v01, clause E Method PM (using an RF average power meter).
<input checked="" type="checkbox"/> For conducted measurement.	
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/>	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.
<input type="checkbox"/>	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 Conducted Output Power

Maximum Conducted Output Power (5150-5250MHz band)					
Modulation Mode	N _{TX}	Freq. (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Power Limit
11a	1	5180	11.16	2.32	24.00
11a	1	5200	11.12	2.32	24.00
11a	1	5240	11.18	2.32	24.00
HT20	1	5180	10.88	2.32	24.00
HT20	1	5200	11.05	2.32	24.00
HT20	1	5240	10.99	2.32	24.00
HT40	1	5190	10.58	2.32	24.00
HT40	1	5230	10.76	2.32	24.00
VHT20	1	5180	11.28	2.32	24.00
VHT20	1	5200	11.36	2.32	24.00
VHT20	1	5240	11.30	2.32	24.00
VHT40	1	5190	10.62	2.32	24.00
VHT40	1	5230	10.74	2.32	24.00
VHT80	1	5210	10.40	2.32	24.00
Result		Complied			

Maximum Conducted Output Power (5250-5350MHz band)					
Modulation Mode	N _{TX}	Freq. (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Power Limit
11a	1	5260	11.10	2.32	21.21
11a	1	5300	10.88	2.32	21.18
11a	1	5320	10.84	2.32	21.22
HT20	1	5260	11.02	2.32	21.24
HT20	1	5300	10.79	2.32	21.34
HT20	1	5320	10.61	2.32	21.17
HT40	1	5270	10.78	2.32	24.00
HT40	1	5310	11.39	2.32	24.00
VHT20	1	5260	11.35	2.32	21.21
VHT20	1	5300	11.06	2.32	21.28
VHT20	1	5320	10.98	2.32	21.24
VHT40	1	5270	10.83	2.32	24.00
VHT40	1	5310	10.63	2.32	24.00
VHT80	1	5290	11.36	2.32	24.00
Result		Complied			

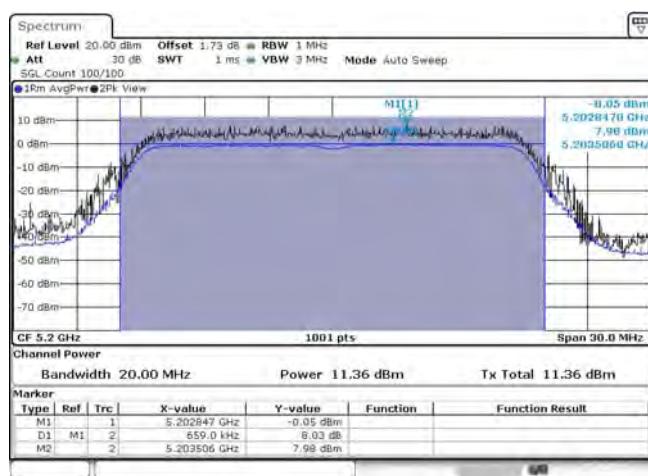


Maximum Conducted Output Power (5470-5725MHz band)					
Modulation Mode	N _{TX}	Freq. (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Power Limit
11a	1	5500	10.59	2.32	21.00
11a	1	5580	10.53	2.32	21.00
11a	1	5700	10.55	2.32	21.00
HT20	1	5500	10.57	2.32	21.00
HT20	1	5580	10.43	2.32	21.00
HT20	1	5700	10.36	2.32	21.00
HT40	1	5510	10.62	2.32	21.00
HT40	1	5550	10.55	2.32	21.00
HT40	1	5670	10.44	2.32	21.00
VHT20	1	5500	10.47	2.32	21.00
VHT20	1	5580	10.62	2.32	21.00
VHT20	1	5700	10.62	2.32	21.00
VHT40	1	5510	10.62	2.32	21.00
VHT40	1	5550	10.56	2.32	21.00
VHT40	1	5670	10.54	2.32	21.00
VHT80	1	5530	11.31	2.32	21.00
Result		Complied			

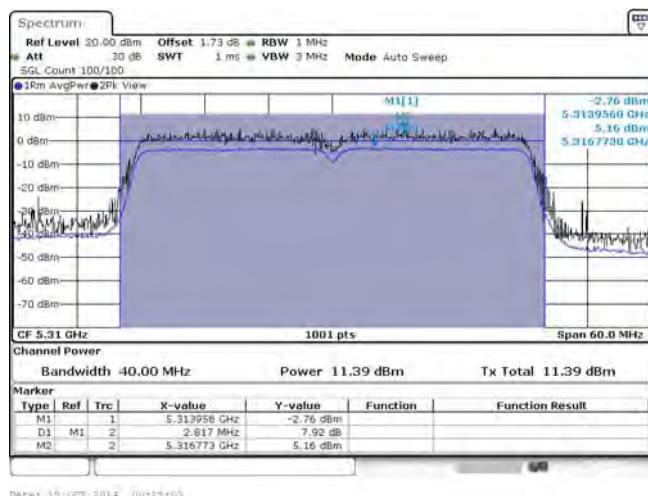
Maximum Conducted Output Power (5725-5850MHz band)					
Modulation Mode	N _{TX}	Freq. (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Power Limit
11a	1	5745	10.46	2.32	30.00
11a	1	5785	11.13	2.32	30.00
11a	1	5825	10.73	2.32	30.00
HT20	1	5745	10.42	2.32	30.00
HT20	1	5785	11.04	2.32	30.00
HT20	1	5825	10.55	2.32	30.00
HT40	1	5755	11.20	2.32	30.00
HT40	1	5795	10.64	2.32	30.00
VHT20	1	5745	10.75	2.32	30.00
VHT20	1	5785	11.34	2.32	30.00
VHT20	1	5825	10.84	2.32	30.00
VHT40	1	5755	11.34	2.32	30.00
VHT40	1	5795	10.76	2.32	30.00
VHT80	1	5775	10.89	2.32	30.00
Result		Complied			



5150-5250MHz - Worst RF Output Power Plots

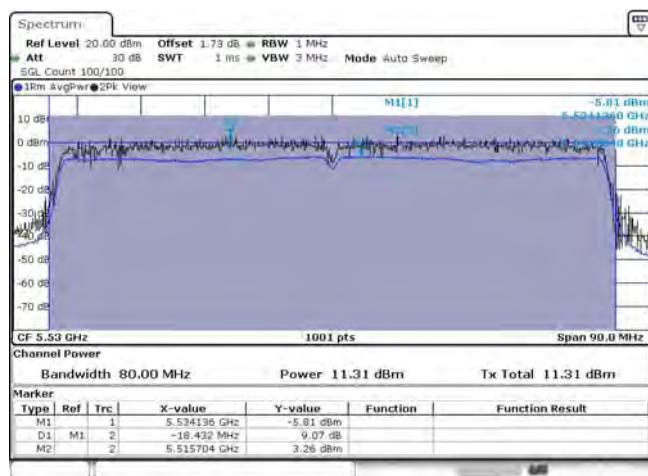


5250-5350MHz - Worst RF Output Power Plots

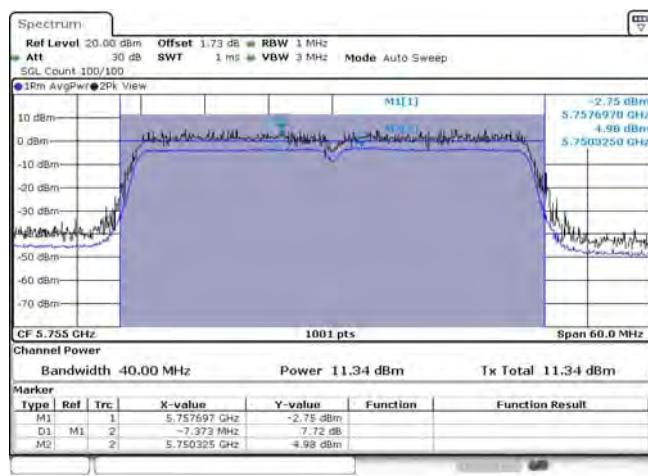




5470-5725MHz - Worst RF Output Power Plots



5725-5850MHz - Worst RF Output Power Plots





3.4 Peak Power Spectral Density

3.4.1 Peak Power Spectral Density Limit

Peak Power Spectral Density Limit	
UNII Devices	
<input checked="" type="checkbox"/> For the 5.15-5.25 GHz band:	
<input type="checkbox"/> Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$.	
<input type="checkbox"/> Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$.	
<input type="checkbox"/> Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 23$ dBi, then $P_{Out} = 17 - (G_{TX} - 23)$.	
<input checked="" type="checkbox"/> Mobile or Portable Client: the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$.	
<input checked="" type="checkbox"/> For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$.	
<input checked="" type="checkbox"/> For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$.	
<input checked="" type="checkbox"/> For the 5.725-5.85 GHz band:	
<input checked="" type="checkbox"/> Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then $PPSD = 30 - (G_{TX} - 6)$.	
<input type="checkbox"/> Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.	
PPSD = peak power spectral density that the same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz G_{TX} = the maximum transmitting antenna directional gain in dBi.	

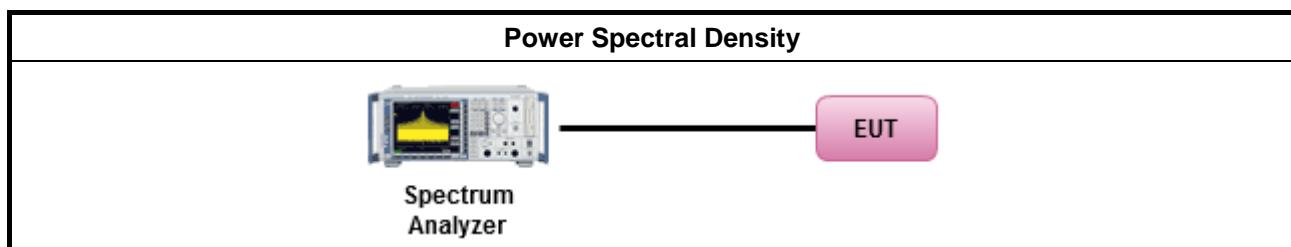
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/> Peak power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the peak power spectral density and use the peak search function on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density shall be measured using below options:	
<input type="checkbox"/> Refer as FCC KDB 789033 D02 v01, F5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth [duty cycle \geq 98% or external video / power trigger]	
<input checked="" type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 (spectral trace averaging).	
<input type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)	
duty cycle $<$ 98% and average over on/off periods with duty factor	
<input type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 (spectral trace averaging).	
<input type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)	
<input checked="" type="checkbox"/> For conducted measurement.	
<input checked="" type="checkbox"/> The EUT supports single transmit chain and measurements performed on this transmit chain.	
<input type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.	
<input type="checkbox"/> The EUT supports multiple transmit chains using options given below:	
<input type="checkbox"/> Option 1: Measure and sum the spectra across the outputs. 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.	
<input type="checkbox"/> Option 2: Measure and add $10 \log(N)$ dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with $10 \log(N)$. Or each transmit chains shall be add $10 \log(N)$ to compared with the limit.	
<input type="checkbox"/> If multiple transmit chains, EIRP PPSD calculation could be following as methods: $PPSD_{total} = PPSD_1 + PPSD_2 + \dots + PPSD_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = PPSD_{total} + DG$	
<input type="checkbox"/> Each individually PPSD plots refer as test report clause 3.3.5 with each individually PPSD plots.	

3.4.4 Test Setup





3.4.5 Test Result of Peak Power Spectral Density

Peak Power Spectral Density Result (5150-5250MHz band)					
Modulation Mode	N _{TX}	Freq. (MHz)	Peak Power Spectral Density (dBm)	PSD Limit	Antenna Gain (dBi)
11a	1	5180	0.18	11.00	2.32
11a	1	5200	0.09	11.00	2.32
11a	1	5240	0.22	11.00	2.32
HT20	1	5180	-0.25	11.00	2.32
HT20	1	5200	-0.12	11.00	2.32
HT20	1	5240	-0.16	11.00	2.32
HT40	1	5190	-3.60	11.00	2.32
HT40	1	5230	-3.63	11.00	2.32
VHT20	1	5180	-0.26	11.00	2.32
VHT20	1	5200	-0.14	11.00	2.32
VHT20	1	5240	-0.20	11.00	2.32
VHT40	1	5190	-3.63	11.00	2.32
VHT40	1	5230	-3.68	11.00	2.32
VHT80	1	5210	-6.85	11.00	2.32
Result		Complied			

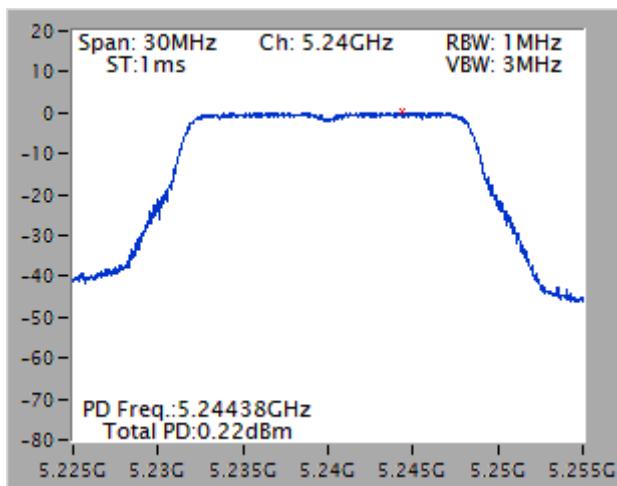
Peak Power Spectral Density Result (5250-5350MHz band)					
Modulation Mode	N _{TX}	Freq. (MHz)	Peak Power Spectral Density (dBm)	PSD Limit	Antenna Gain (dBi)
11a	1	5260	0.17	11.00	2.32
11a	1	5300	0.47	11.00	2.32
11a	1	5320	0.06	11.00	2.32
HT20	1	5260	-0.28	11.00	2.32
HT20	1	5300	-0.86	11.00	2.32
HT20	1	5320	-0.29	11.00	2.32
HT40	1	5270	-3.62	11.00	2.32
HT40	1	5310	-3.80	11.00	2.32
VHT20	1	5260	-0.08	11.00	2.32
VHT20	1	5300	-1.32	11.00	2.32
VHT20	1	5320	-0.12	11.00	2.32
VHT40	1	5270	-3.68	11.00	2.32
VHT40	1	5310	-3.77	11.00	2.32
VHT80	1	5290	-7.05	11.00	2.32
Result		Complied			



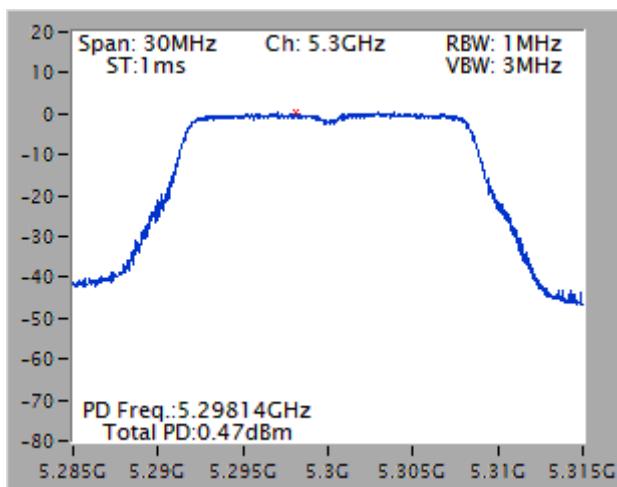
Peak Power Spectral Density Result (5470-5725MHz band)					
Modulation Mode	N _{TX}	Freq. (MHz)	Peak Power Spectral Density (dBm)	PSD Limit	Antenna Gain (dBi)
11a	1	5500	-0.39	11.00	2.32
11a	1	5580	-0.74	11.00	2.32
11a	1	5700	0.02	11.00	2.32
HT20	1	5500	-1.09	11.00	2.32
HT20	1	5580	-0.98	11.00	2.32
HT20	1	5700	-0.31	11.00	2.32
HT40	1	5510	-4.22	11.00	2.32
HT40	1	5550	-4.29	11.00	2.32
HT40	1	5670	-3.73	11.00	2.32
VHT20	1	5500	-0.78	11.00	2.32
VHT20	1	5580	-0.89	11.00	2.32
VHT20	1	5700	-0.67	11.00	2.32
VHT40	1	5510	-4.18	11.00	2.32
VHT40	1	5550	-4.29	11.00	2.32
VHT40	1	5670	-3.52	11.00	2.32
VHT80	1	5530	-7.31	11.00	2.32
Result		Complied			

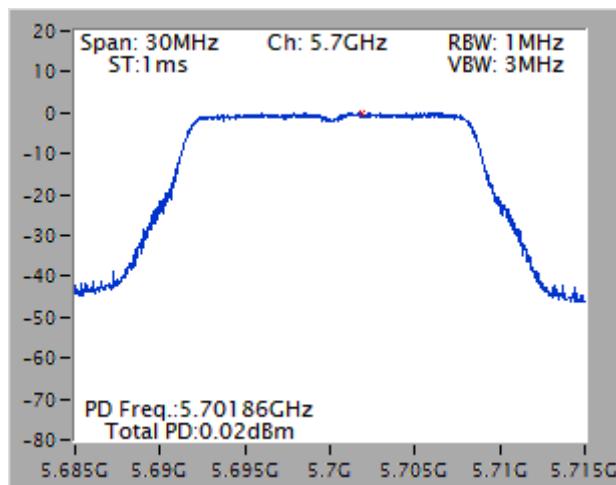
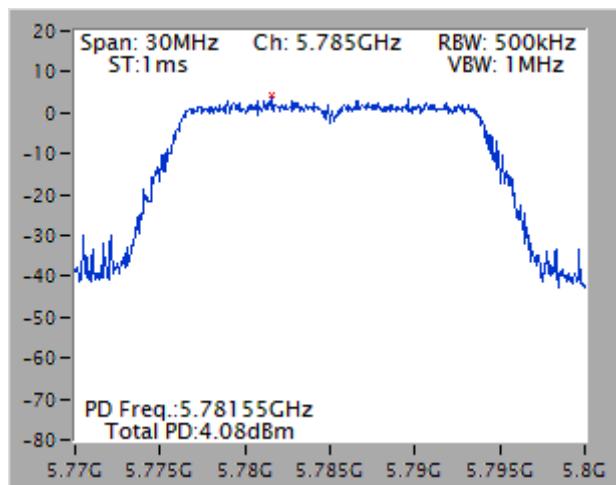
Peak Power Spectral Density Result (5725-5850MHz band)					
Modulation Mode	N _{TX}	Freq. (MHz)	Peak Power Spectral Density (dBm)	PSD Limit (500kHz)	Antenna Gain (dBi)
11a	1	5745	3.44	30.00	2.32
11a	1	5785	3.50	30.00	2.32
11a	1	5825	3.54	30.00	2.32
HT20	1	5745	3.01	30.00	2.32
HT20	1	5785	3.62	30.00	2.32
HT20	1	5825	3.28	30.00	2.32
HT40	1	5755	0.51	30.00	2.32
HT40	1	5795	1.01	30.00	2.32
VHT20	1	5745	3.02	30.00	2.32
VHT20	1	5785	4.08	30.00	2.32
VHT20	1	5825	3.98	30.00	2.32
VHT40	1	5755	0.61	30.00	2.32
VHT40	1	5795	0.89	30.00	2.32
VHT80	1	5775	-2.58	30.00	2.32
Result		Complied			

5150-5250MHz - Worst Power Spectral Density Plots



5250-5350MHz - Worst Power Spectral Density Plots

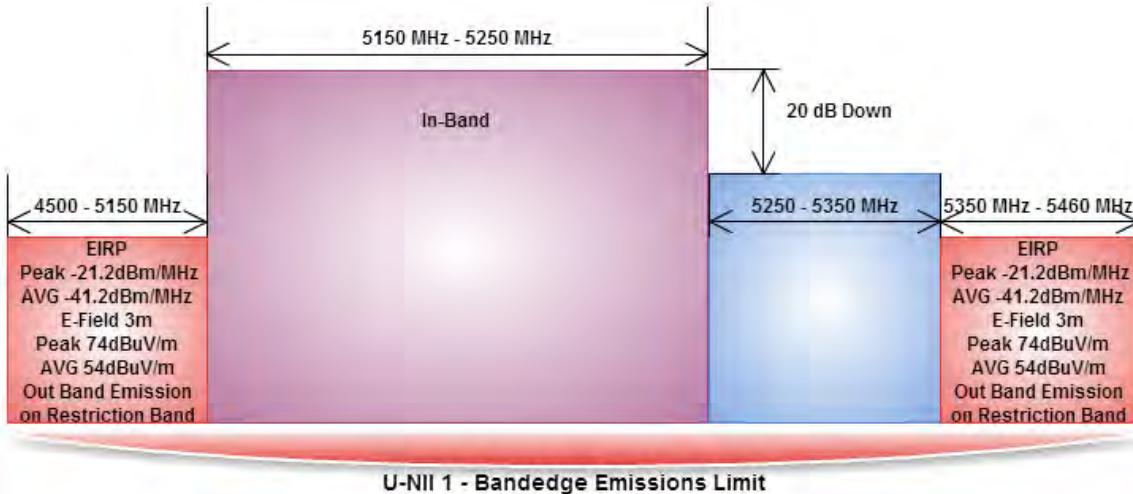


**5470-5725MHz - Worst Power Spectral Density Plots****5725-5850MHz - Worst Power Spectral Density Plots**

3.5 Transmitter Bandedge Emissions

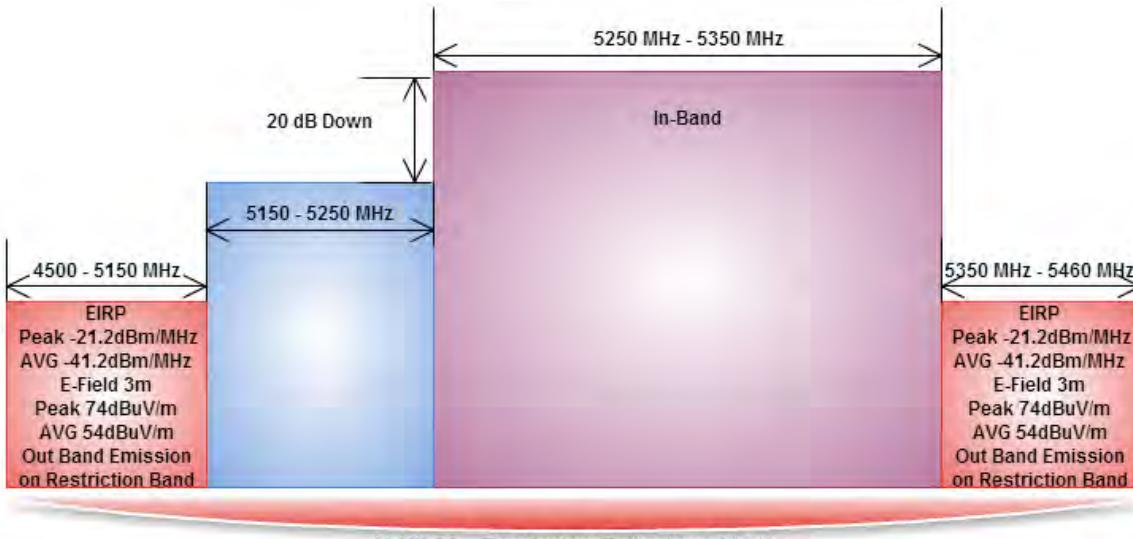
3.5.1 Transmitter Radiated Bandedge Emissions Limit

Transmitter Radiated Bandedge Emissions Limit: 5.15-5.25 GHz band



Refer as FCC KDB 789033 D02 v01, G)2)c)(i) specifying that if a non-restricted-band out-of-band emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm or -17 dBm peak emission limit. Reason for change: to ensure that emission requirements in the non-restricted bands are not more stringent than those in the restricted bands.

Transmitter Radiated Bandedge Emissions Limit: 5.25-5.35 GHz band

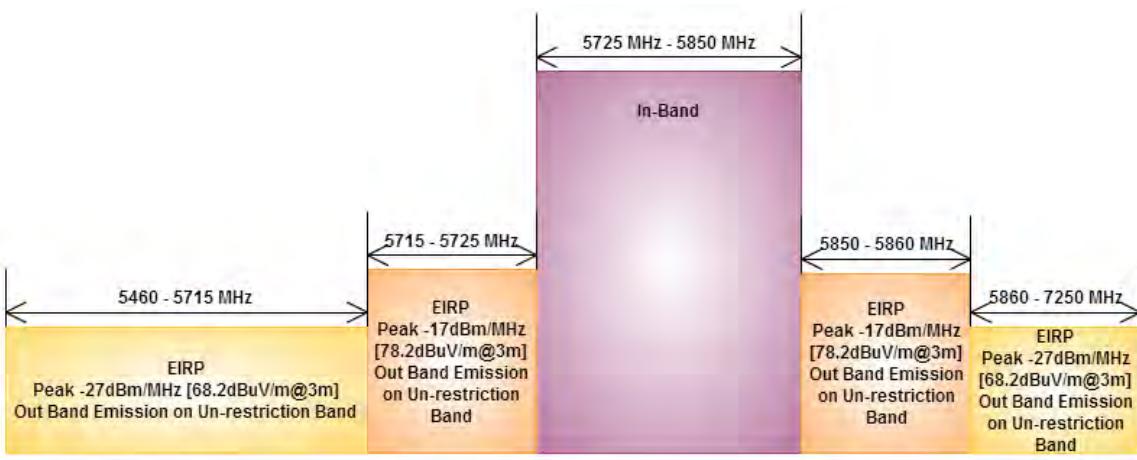


Refer as FCC KDB 789033 D02 v01, G)2)c)(i) specifying that if a non-restricted-band out-of-band emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm or -17 dBm peak emission limit. Reason for change: to ensure that emission requirements in the non-restricted bands are not more stringent than those in the restricted bands.

Transmitter Radiated Bandedge Emissions Limit: 5.47-5.725 GHz band

U-NII 2C - Bandedge Emissions Limit

Refer as FCC KDB 789033 D02 v01, G)2)c(i) specifying that if a non-restricted-band out-of-band emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm or -17 dBm peak emission limit. Reason for change: to ensure that emission requirements in the non-restricted bands are not more stringent than those in the restricted bands.

Transmitter Radiated Bandedge Emissions Limit for 5.8GHz band: 5.725-5.85 GHz band

U-NII 3 - Bandedge Emissions Limit

Refer as FCC KDB 789033 D02 v01, G)2)c(i) specifying that if a non-restricted-band out-of-band emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm or -17 dBm peak emission limit. Reason for change: to ensure that emission requirements in the non-restricted bands are not more stringent than those in the restricted bands.

3.5.2 Measuring Instruments

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

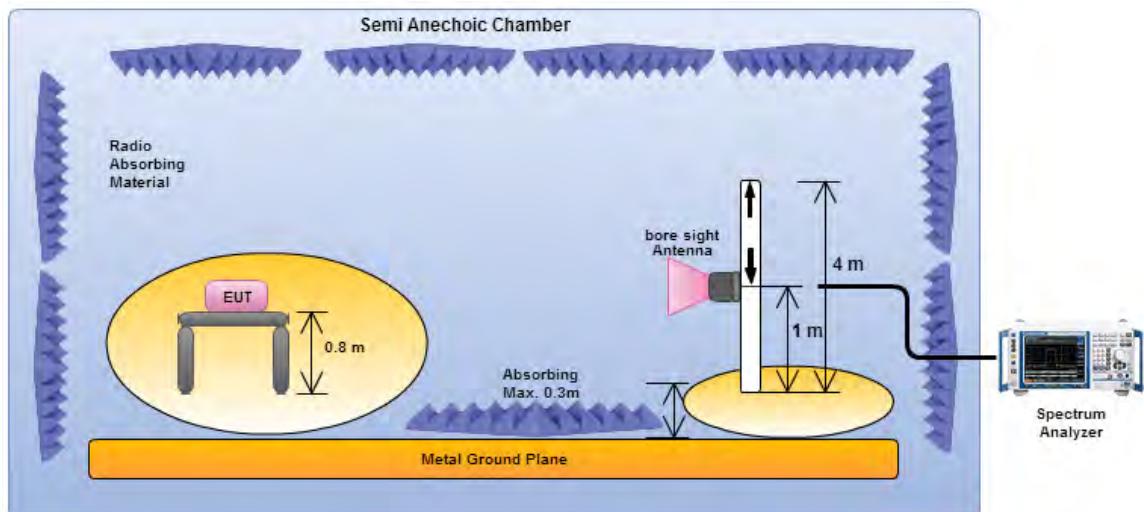


3.5.3 Test Procedures

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 6.9.2.2 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
<input type="checkbox"/> If EUT operate in adjacent contiguous bands, bandedge testing performed at the lowest frequency channel at lower-band and highest frequency channel at higher-band. Transmitter in-band emissions will consist of adjacent contiguous bands (e.g., IEEE 802.11ac VHT160 The lowest frequency channel at lower-band and highest frequency channel at higher-band in-band emissions will consist of two adjacent contiguous bands.) <ul style="list-style-type: none"><input type="checkbox"/> Operating in 5.15-5.25 GHz band (lower-band) and 5.25-5.35 GHz band (higher-band).<input type="checkbox"/> Operating in 5.47-5.725 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band).
<input type="checkbox"/> If EUT operate in individual non-contiguous bands, bandedge testing performed at the lowest frequency channel and highest frequency channel within lower-band and higher-band. (e.g., (e.g., IEEE 802.11ac VHT160) <ul style="list-style-type: none"><input type="checkbox"/> Operating in 5.25-5.35 GHz band (lower-band) and 5.47-5.725 GHz band (higher-band).<input type="checkbox"/> Operating in 5.15-5.25 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band).
<input checked="" type="checkbox"/> For the transmitter unwanted emissions shall be measured using following options below: <ul style="list-style-type: none"><input checked="" type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause H)2) for unwanted emissions into non-restricted bands.<input checked="" type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause H)1) for unwanted emissions into restricted bands.<ul style="list-style-type: none"><input type="checkbox"/> Refer as FCC KDB 789033 D02 v01, H)6) Method AD (Trace Averaging).<input type="checkbox"/> Refer as FCC KDB 789033 D02 v01, H)6) Method VB (Reduced VBW).<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). $VBW \geq 1/T$, where T is pulse time.<input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.<input checked="" type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause H)5) measurement procedure peak limit.<input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/> For the transmitter bandedge emissions shall be measured using following options below: <ul style="list-style-type: none"><input type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause H)3)d) for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.9.2 for band-edge testing.<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.3 for marker-delta method for band-edge measurements.
<input checked="" type="checkbox"/> For radiated measurement, refer as ANSI C63.10, clause 6.6. Test distance is 3m.
<input checked="" type="checkbox"/> Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements). Measurements in the bandedge are typically made at a closer distance 3m, because the instrumentation noise floor is typically close to the radiated emission limit.

3.5.4 Test Setup

Transmitter Radiated Bandedge Emissions



Electric field tests shall be performed in transmitter bandedge emissions using a calibrated horn antenna.



3.5.5 Transmitter Radiated Bandedge Emissions (with Antenna)

U-NII 5150-5250MHz Transmitter Radiated Bandedge (with Antenna)										
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.
11a	1	5180	3	5119.00	61.02	74	5145.60	47.26	54	V
11a	1	5240	3	5382.00	63.23	74	5386.20	48.72	54	V
HT20	1	5180	3	5146.00	61.47	74	5143.80	47.11	54	V
HT20	1	5240	3	5350.80	63.22	74	5386.80	48.74	54	V
HT40	1	5190	3	5149.94	62.25	74	5147.52	47.44	54	V
HT40	1	5230	3	5363.40	62.84	74	5371.20	48.80	54	V
VHT20	1	5180	3	5132.20	61.40	74	5143.80	46.84	54	V
VHT20	1	5240	3	5370.60	63.03	74	5356.80	48.38	54	V
VHT40	1	5190	3	5149.28	61.45	74	5145.98	47.02	54	V
VHT40	1	5230	3	5370.00	62.80	74	5371.80	48.42	54	V
VHT80	1	5210	3	5350.20	62.35	74	5376.00	48.36	54	V

Note 1: Measurement worst emissions of receive antenna polarization.

U-NII 5250-5350MHz Transmitter Radiated Bandedge (with Antenna)										
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.
11a	1	5260	3	5380.80	62.69	74	5386.20	48.66	54	V
11a	1	5320	3	5373.98	63.41	74	5357.18	48.77	54	V
HT20	1	5260	3	5351.40	63.34	74	5371.20	48.92	54	V
HT20	1	5320	3	5363.76	62.84	74	5369.08	48.69	54	V
HT40	1	5270	3	5384.40	63.26	74	5359.80	48.61	54	V
HT40	1	5310	3	5350.03	64.17	74	5365.96	48.69	54	V
VHT20	1	5260	3	5382.00	62.62	74	5358.00	48.46	54	V
VHT20	1	5320	3	5365.86	62.91	74	5352.70	48.35	54	V
VHT40	1	5270	3	5367.00	62.36	74	5386.20	48.44	54	V
VHT40	1	5310	3	5377.66	62.25	74	5365.96	48.52	54	V
VHT80	1	5290	3	5350.80	62.69	74	5371.20	48.50	54	V

Note 1: Measurement worst emissions of receive antenna polarization.



U-NII 5470-5725MHz Transmitter Radiated Bandedge (with Antenna)							
Modulation Mode	N _{TX}	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Pol.
11a	1	5500	3	5442.32	62.97	74.0	V
11a	1	5700	3	5725.40	64.09	68.2	V
HT20	1	5500	3	5438.00	62.94	74.0	V
HT20	1	5700	3	5725.28	62.90	68.2	V
HT40	1	5510	3	5455.20	62.40	74.0	V
HT40	1	5670	3	5745.40	62.74	68.2	V
VHT20	1	5500	3	5452.88	63.20	74.0	V
VHT20	1	5700	3	5747.12	63.22	68.2	V
VHT40	1	5510	3	5434.80	61.97	74.0	V
VHT40	1	5670	3	5728.40	62.87	68.2	V
VHT80	1	5530	3	5432.56	62.70	74.0	V

Note 1: Measurement worst emissions of receive antenna polarization.

U-NII 5725-5850MHz Transmitter Radiated Bandedge (with Antenna)							
Modulation Mode	N _{TX}	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Pol.
11a	1	5745	3	5724.55	64.26	78.2	V
11a	1	5825	3	5850.07	64.36	78.2	V
HT20	1	5745	3	5724.76	67.32	78.2	V
HT20	1	5825	3	5850.91	64.40	78.2	V
HT40	1	5755	3	5724.36	68.45	78.2	V
HT40	1	5795	3	5850.40	63.22	78.2	V
VHT20	1	5745	3	5724.97	67.81	78.2	V
VHT20	1	5825	3	5851.12	65.50	78.2	V
VHT40	1	5755	3	5723.06	64.97	78.2	V
VHT40	1	5795	3	5856.10	63.09	78.2	V
VHT80	1	5775	3	5723.98	68.53	78.2	V

Note 1: Measurement worst emissions of receive antenna polarization.



3.6 Transmitter Unwanted Emissions

3.6.1 Transmitter Radiated Unwanted Emissions Limit

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

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

Un-restricted band emissions above 1GHz Limit	
Operating Band	Limit
5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.25 - 5.35 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.47 - 5.725 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.725 - 5.85 GHz	5.715 5.725 GHz: e.i.r.p. -17 dBm [78.2 dBuV/m@3m] 5.85 5.86 GHz: e.i.r.p. -17 dBm [78.2 dBuV/m@3m] Other un-restricted band: e.i.r.p. -27 dBm [68.2 dBuV/m@3m]

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

3.6.2 Measuring Instruments

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

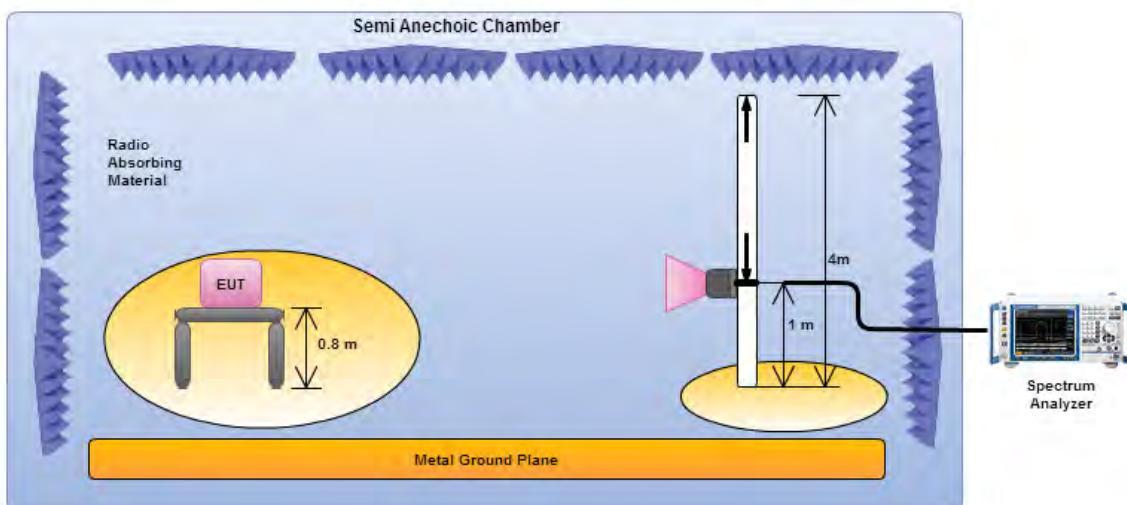


3.6.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
<input checked="" type="checkbox"/> The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
<input checked="" type="checkbox"/> For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause G2) for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause G1) for unwanted emissions into restricted bands.
<input type="checkbox"/> Refer as FCC KDB 789033 D02 v01, G6) Method AD (Trace Averaging).
<input type="checkbox"/> Refer as FCC KDB 789033 D02 v01, G6) Method VB (Reduced VBW).
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). $VBW \geq 1/T$, where T is pulse time.
<input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
<input checked="" type="checkbox"/> Refer as FCC KDB 789033 D02 v01, clause G5) measurement procedure peak limit.
<input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/> For radiated measurement.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz. For 1 GHz to 5 GHz, test distance is 3m; For 5 GHz to 40 GHz, test distance is 3m.
<input checked="" type="checkbox"/> The any unwanted emissions level shall not exceed the fundamental emission level.
<input checked="" type="checkbox"/> All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

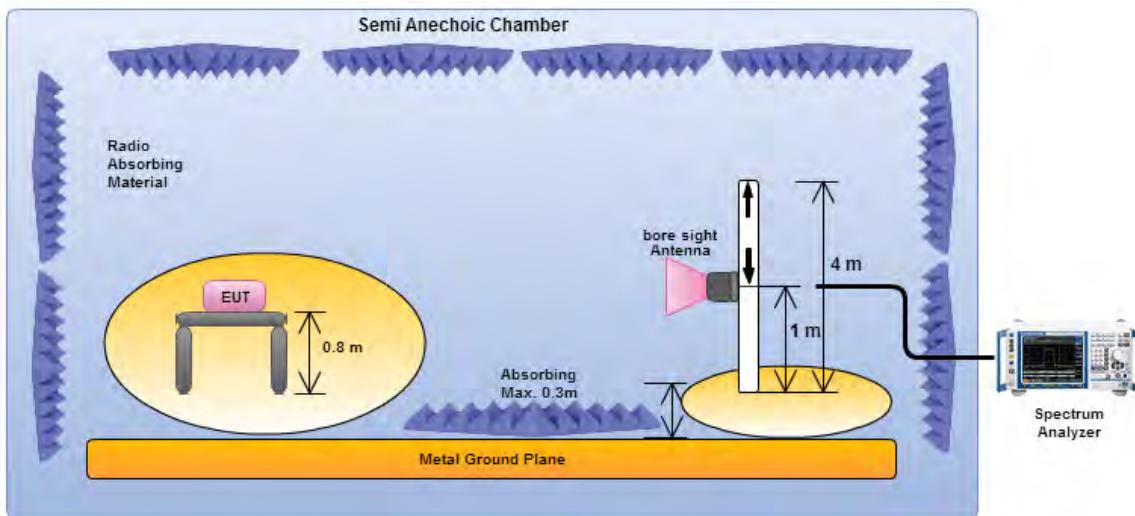
3.6.4 Test Setup

Transmitter Radiated Unwanted Emissions Below 1GHz



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

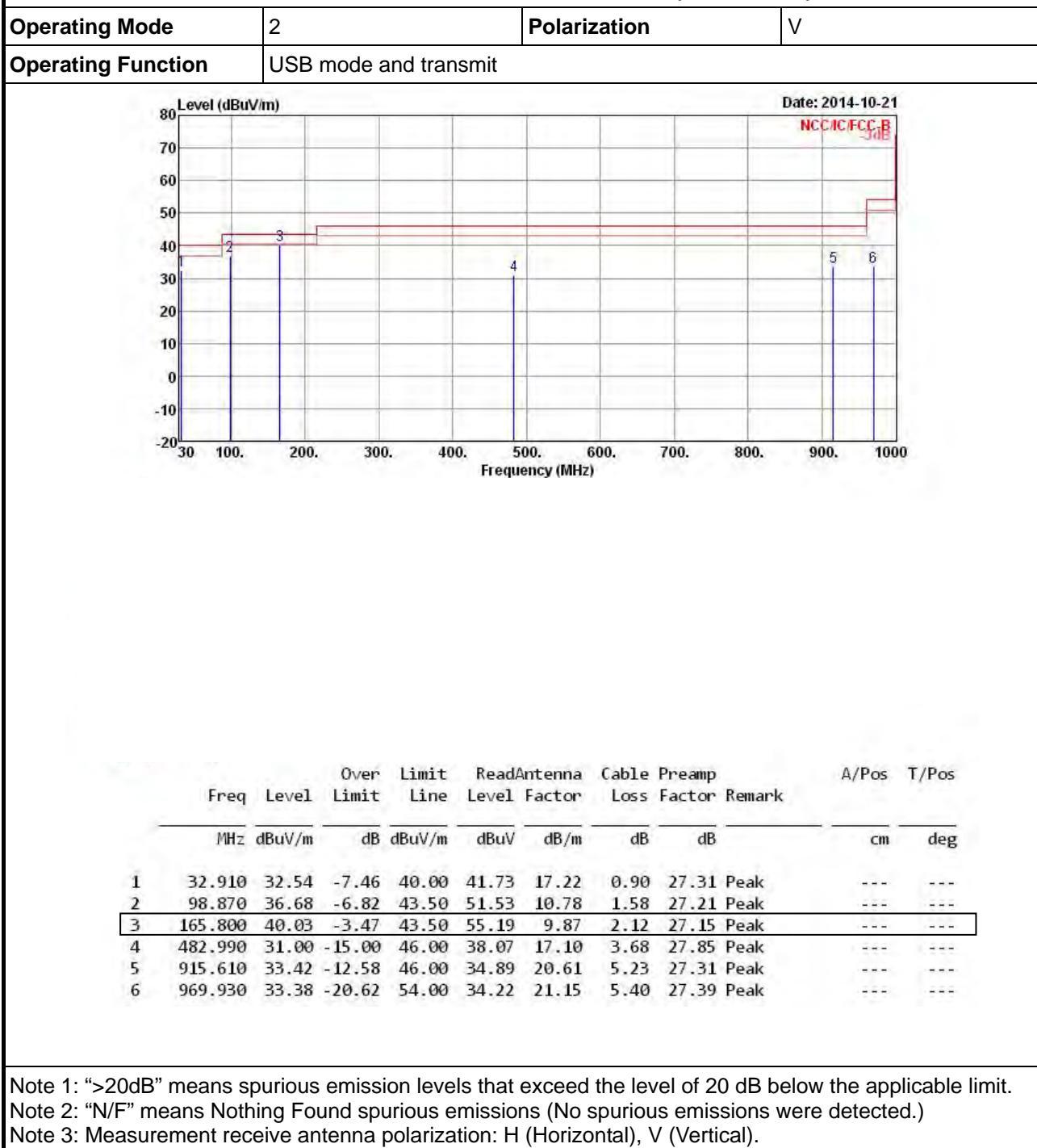
3.6.5 Transmitter Radiated Unwanted Emissions-with Antenna (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.



3.6.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

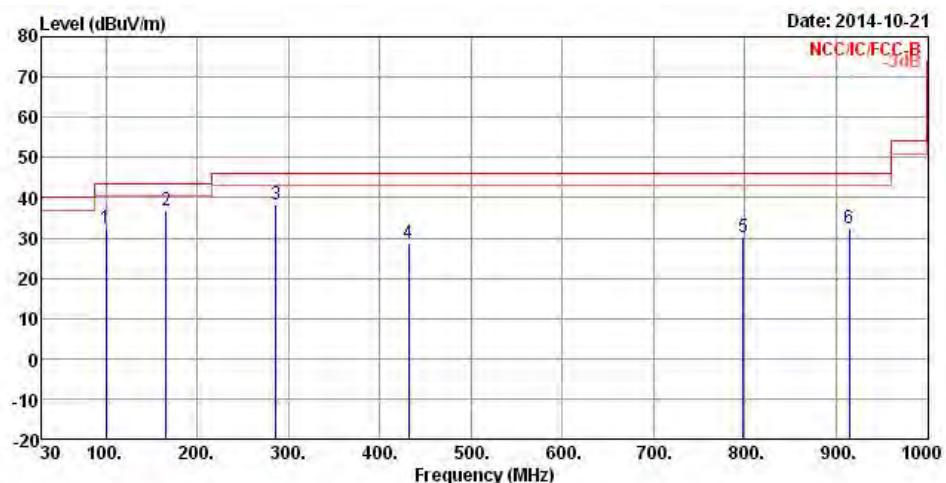
Transmitter Radiated Unwanted Emissions (Below 1GHz)





Transmitter Radiated Unwanted Emissions (Below 1GHz)

Operating Mode	2	Polarization	H
Operating Function	USB mode and transmit		



Freq	Level	Over Limit	Limit Line	ReadAntenna		Cable Loss	Preamp Factor	Remark	A/Pos	T/Pos
				MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	deg
1	99.840	32.36	-11.14	43.50	47.08	10.88	1.59	27.19	Peak	---
2	165.800	36.88	-6.62	43.50	52.04	9.87	2.12	27.15	Peak	---
3	286.080	38.45	-7.55	46.00	49.42	12.95	2.82	26.74	Peak	---
4	431.580	28.66	-17.34	46.00	36.42	16.32	3.44	27.52	Peak	---
5	798.240	30.02	-15.98	46.00	33.09	19.65	4.91	27.63	Peak	---
6	914.640	32.29	-13.71	46.00	33.77	20.60	5.23	27.31	Peak	---

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

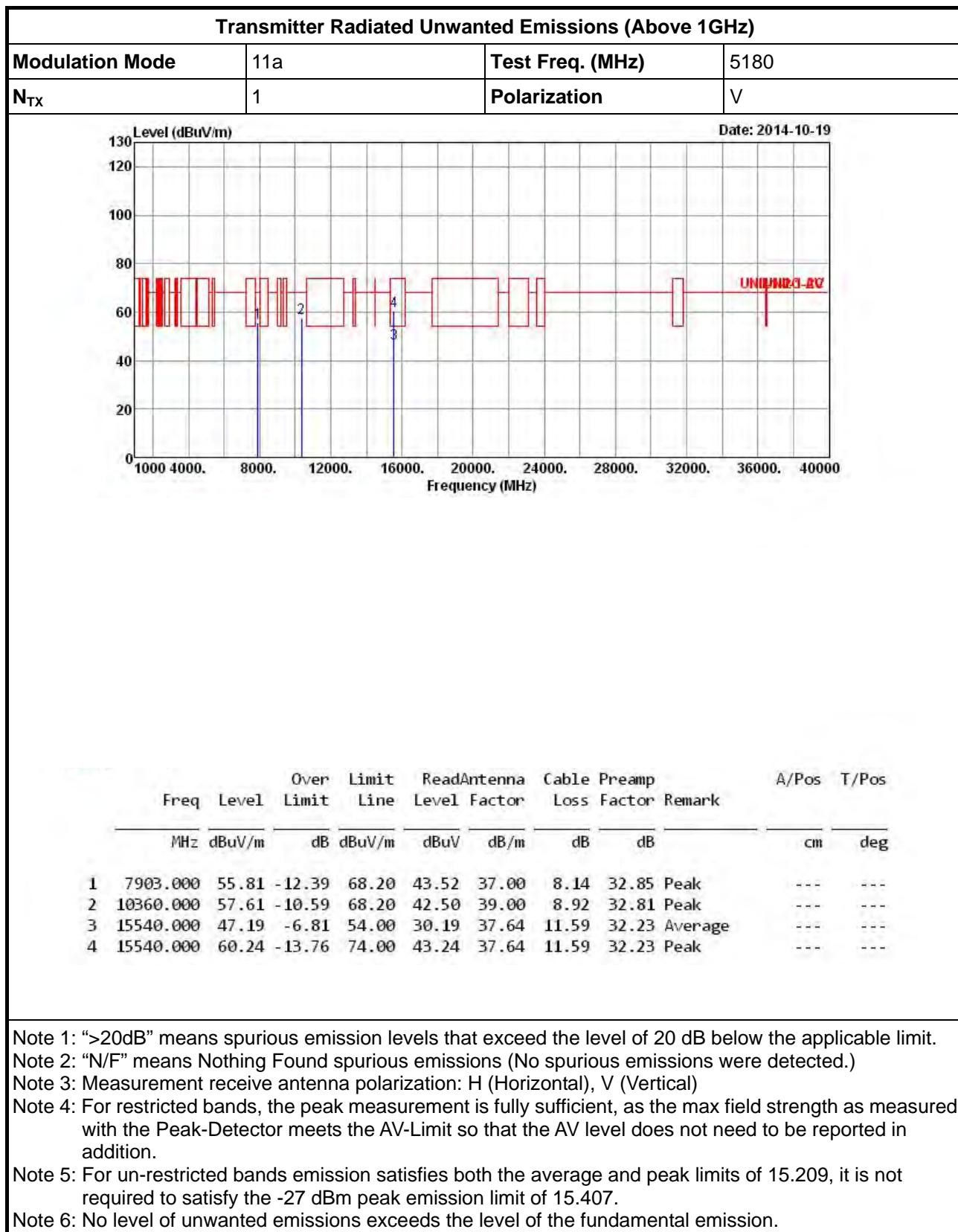
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

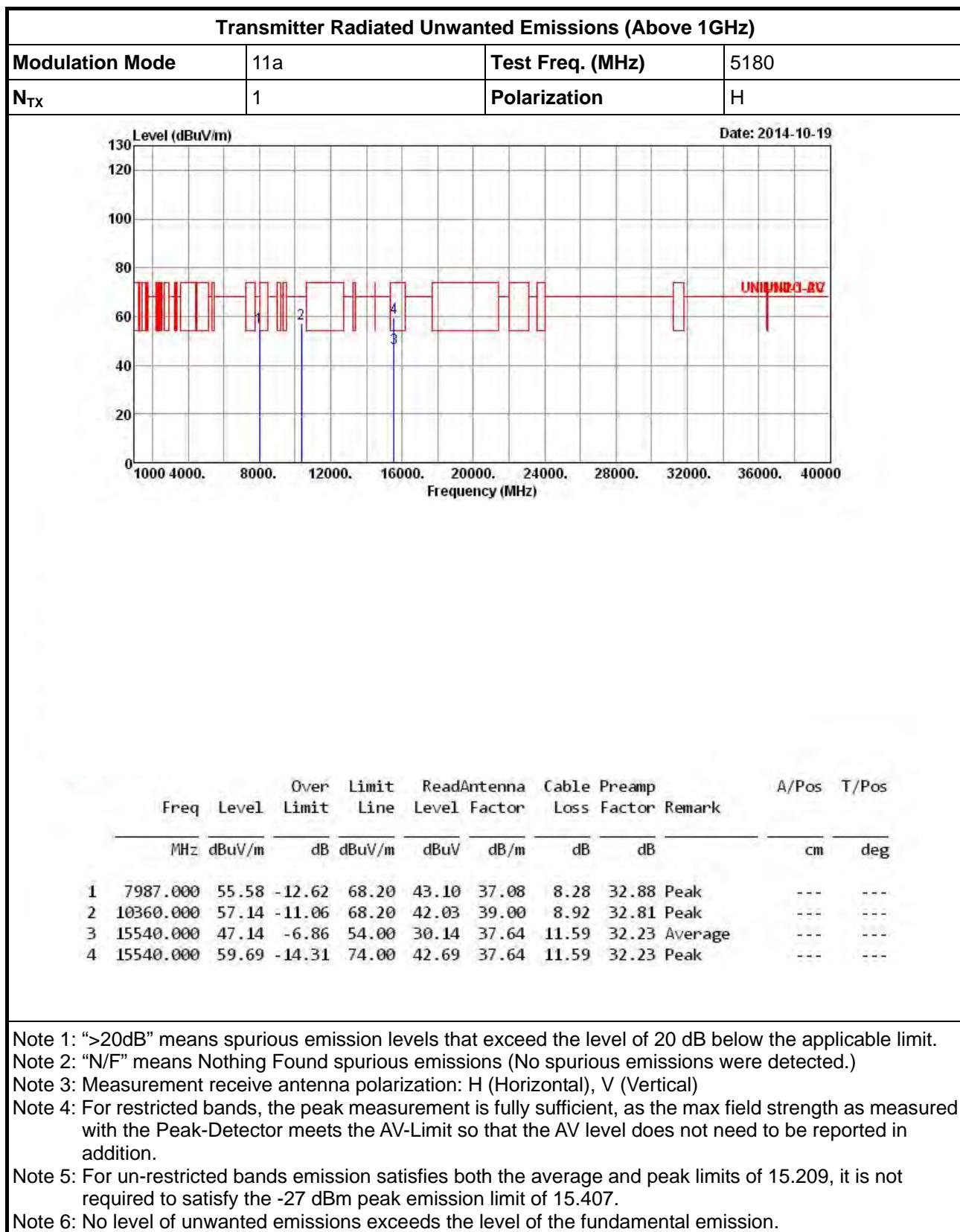
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical).

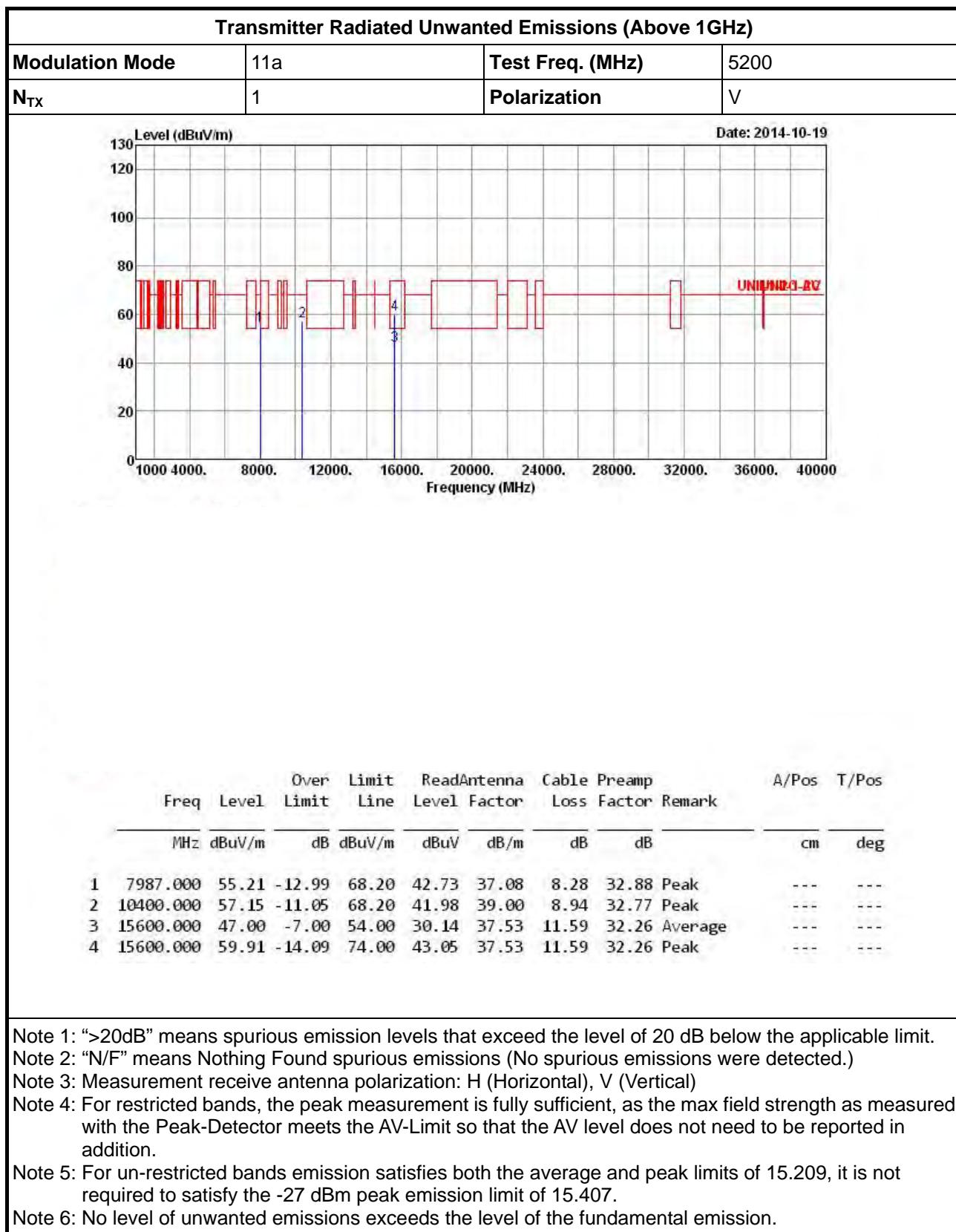
Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

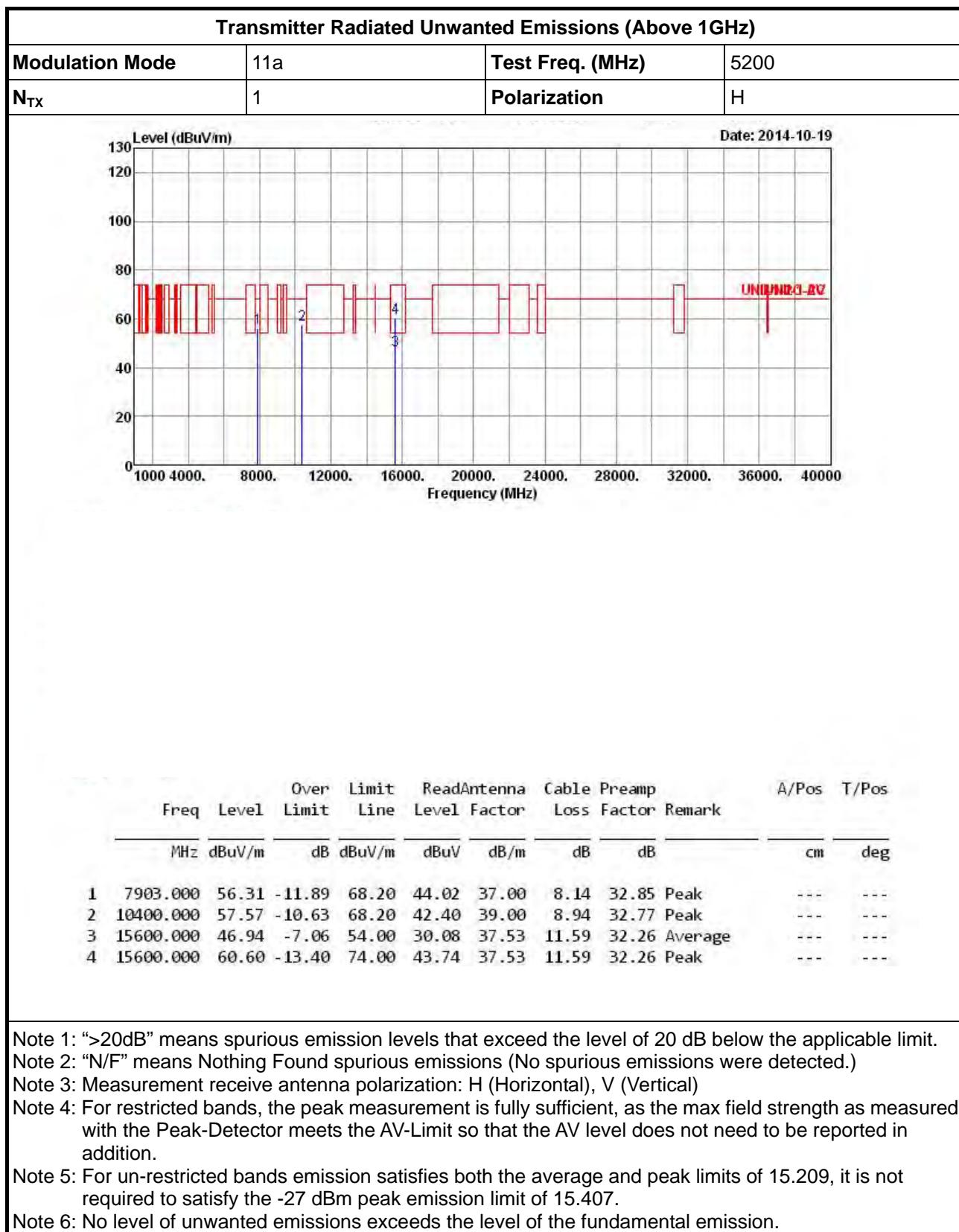


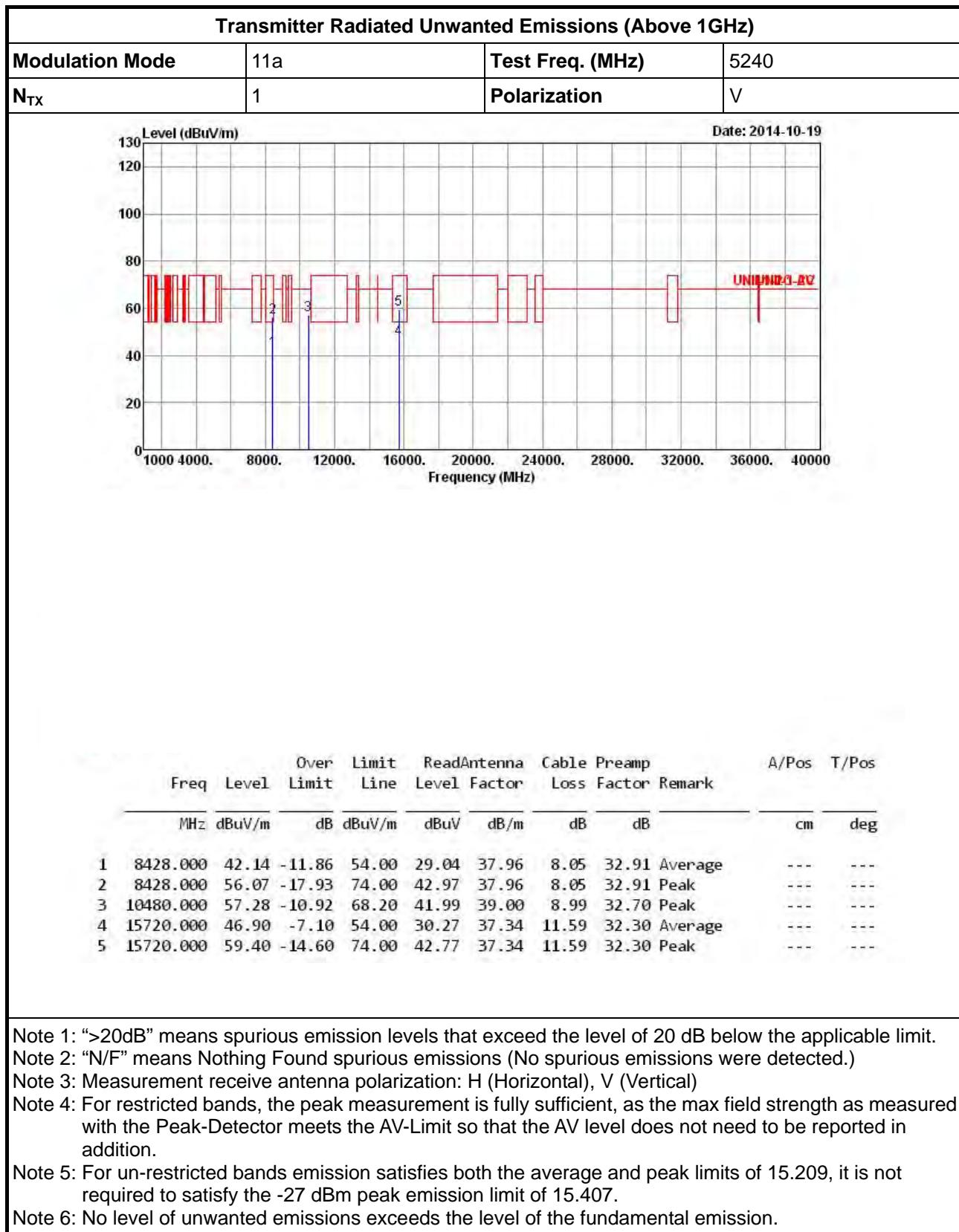
3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5150-5250MHz

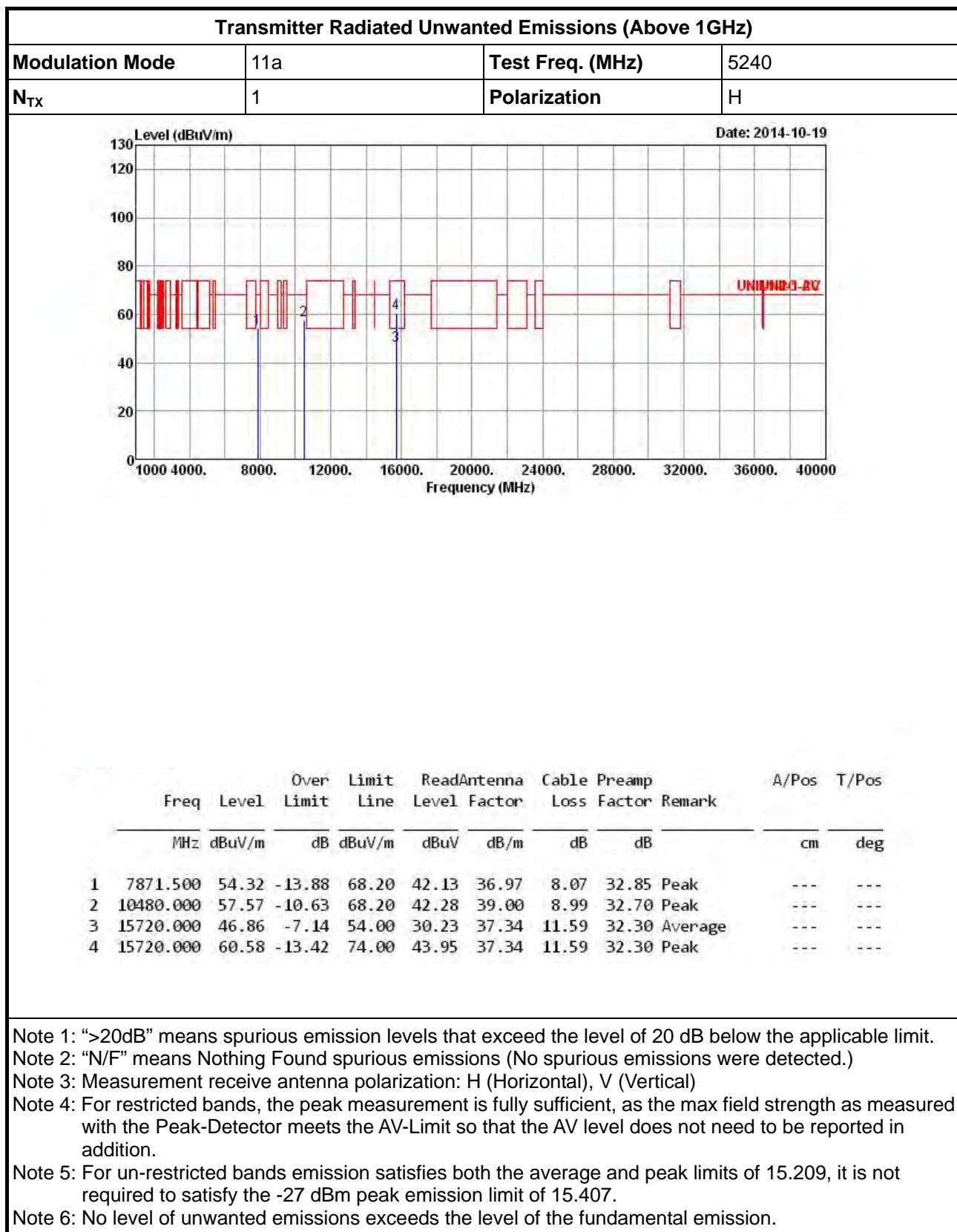


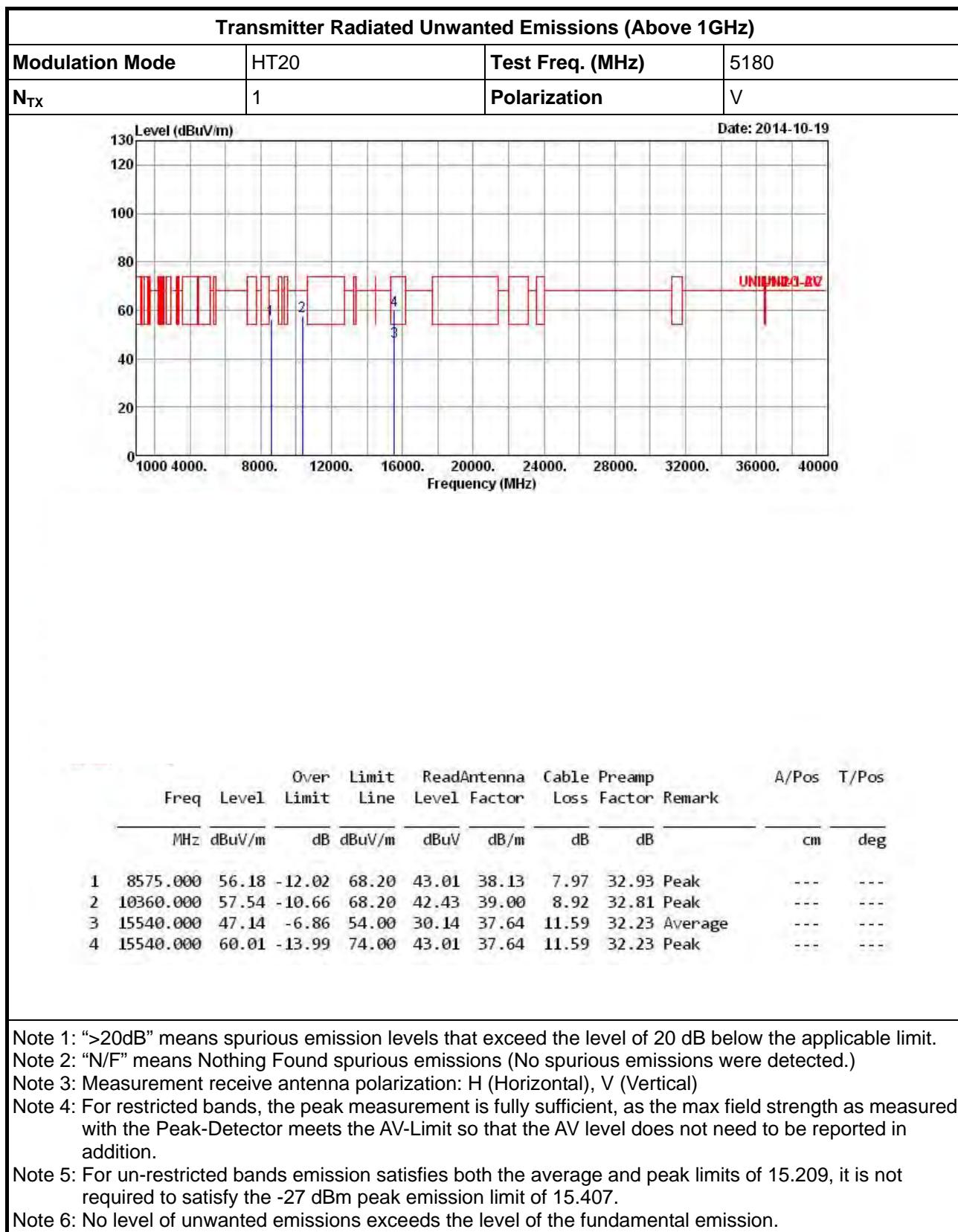


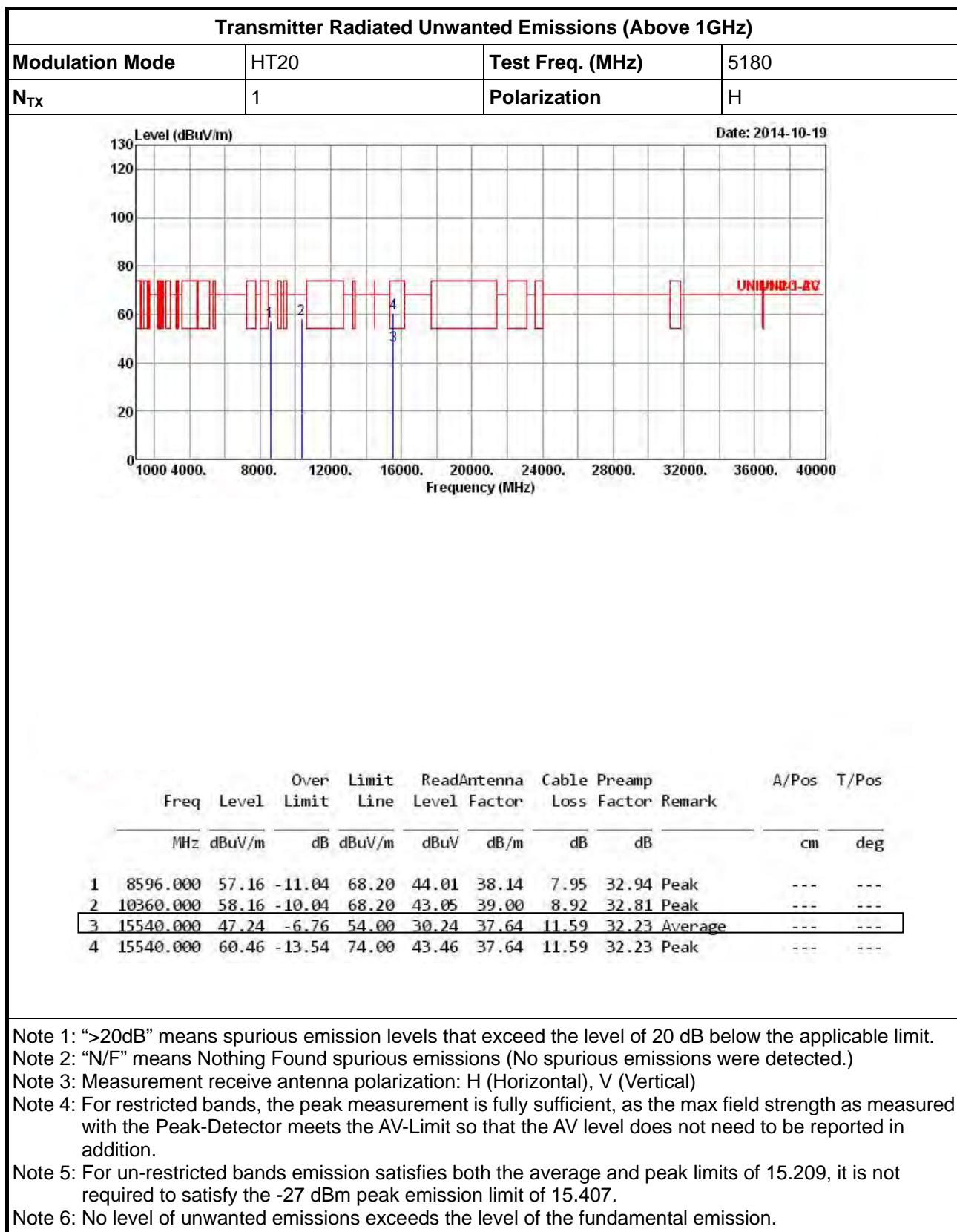


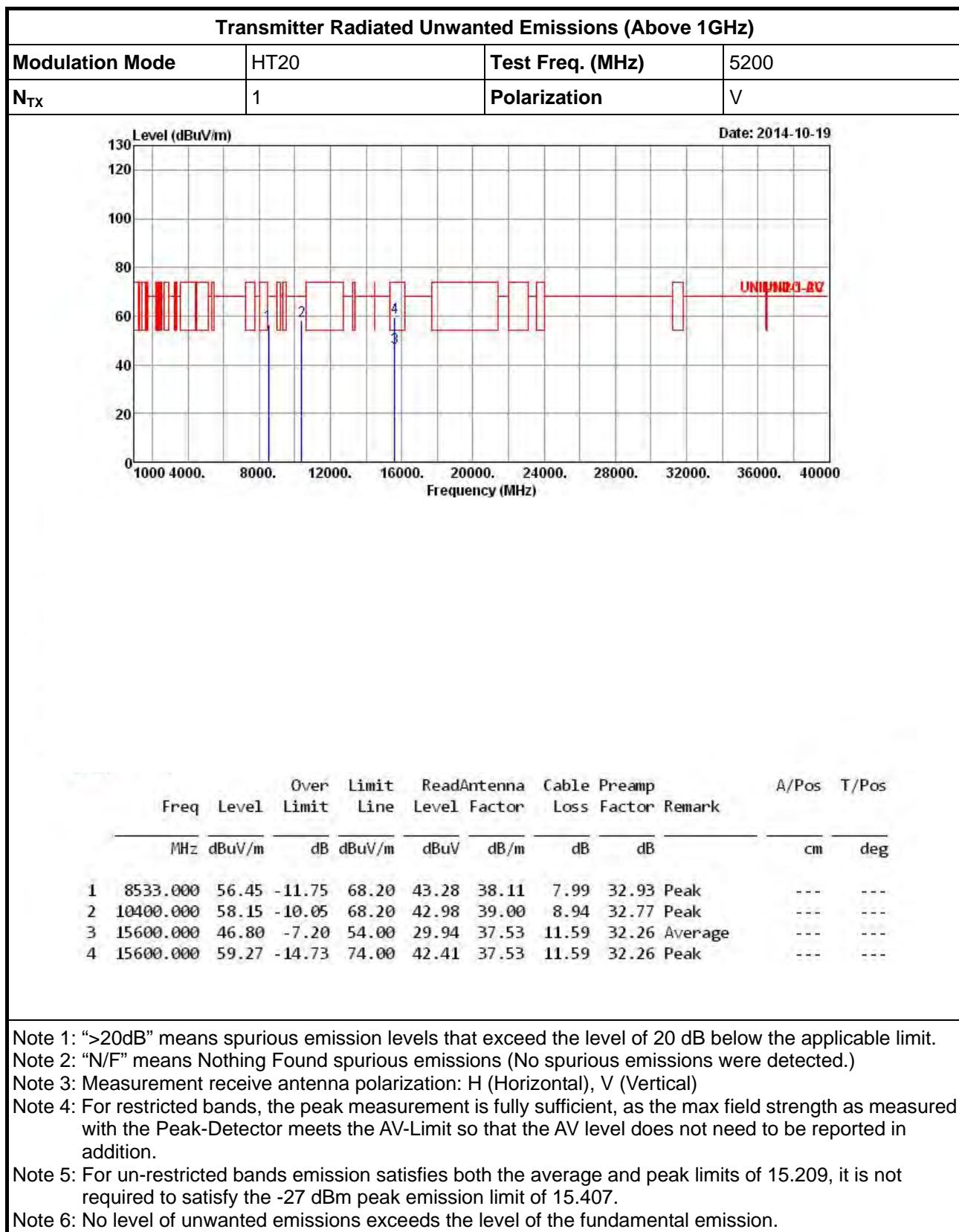


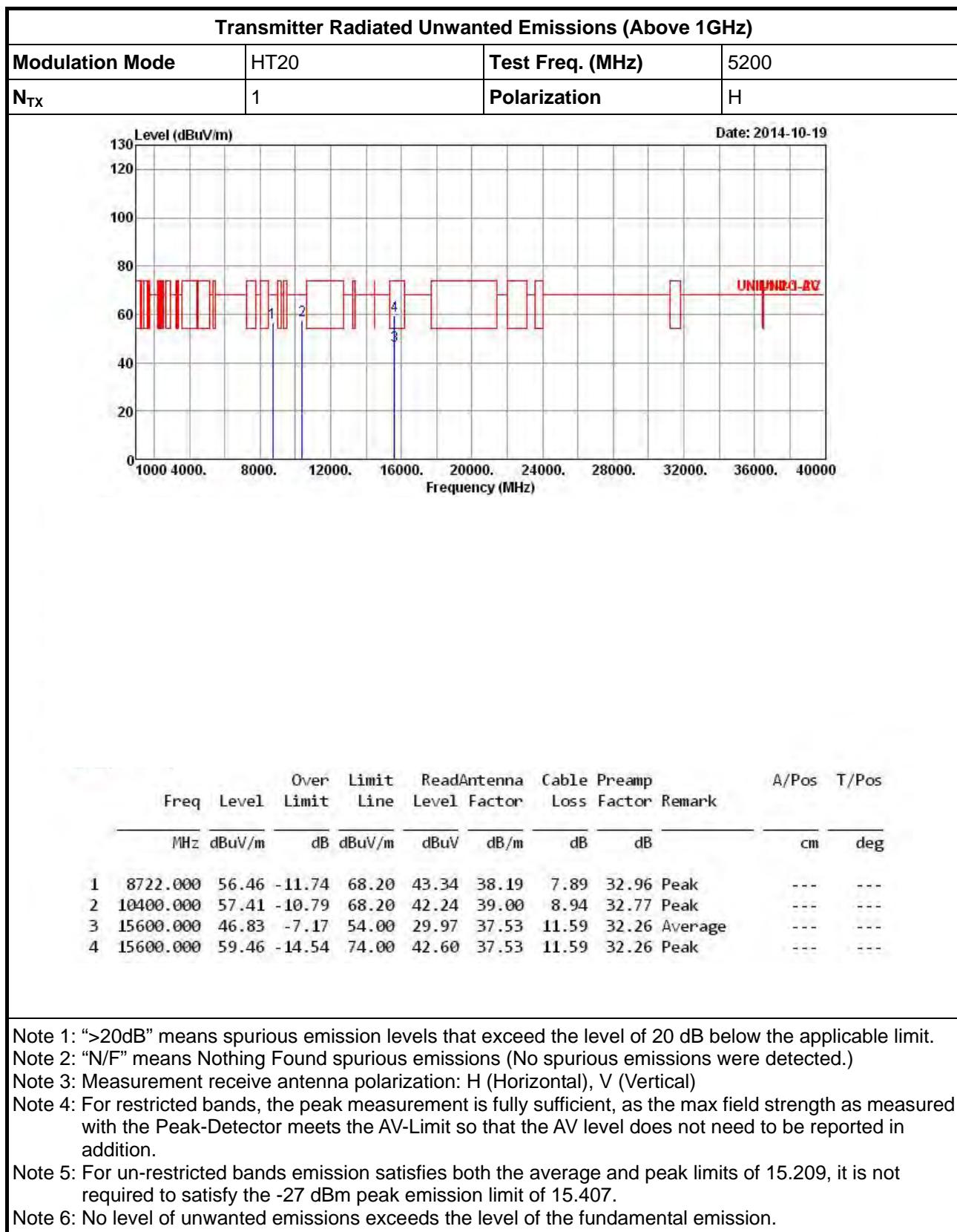












Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

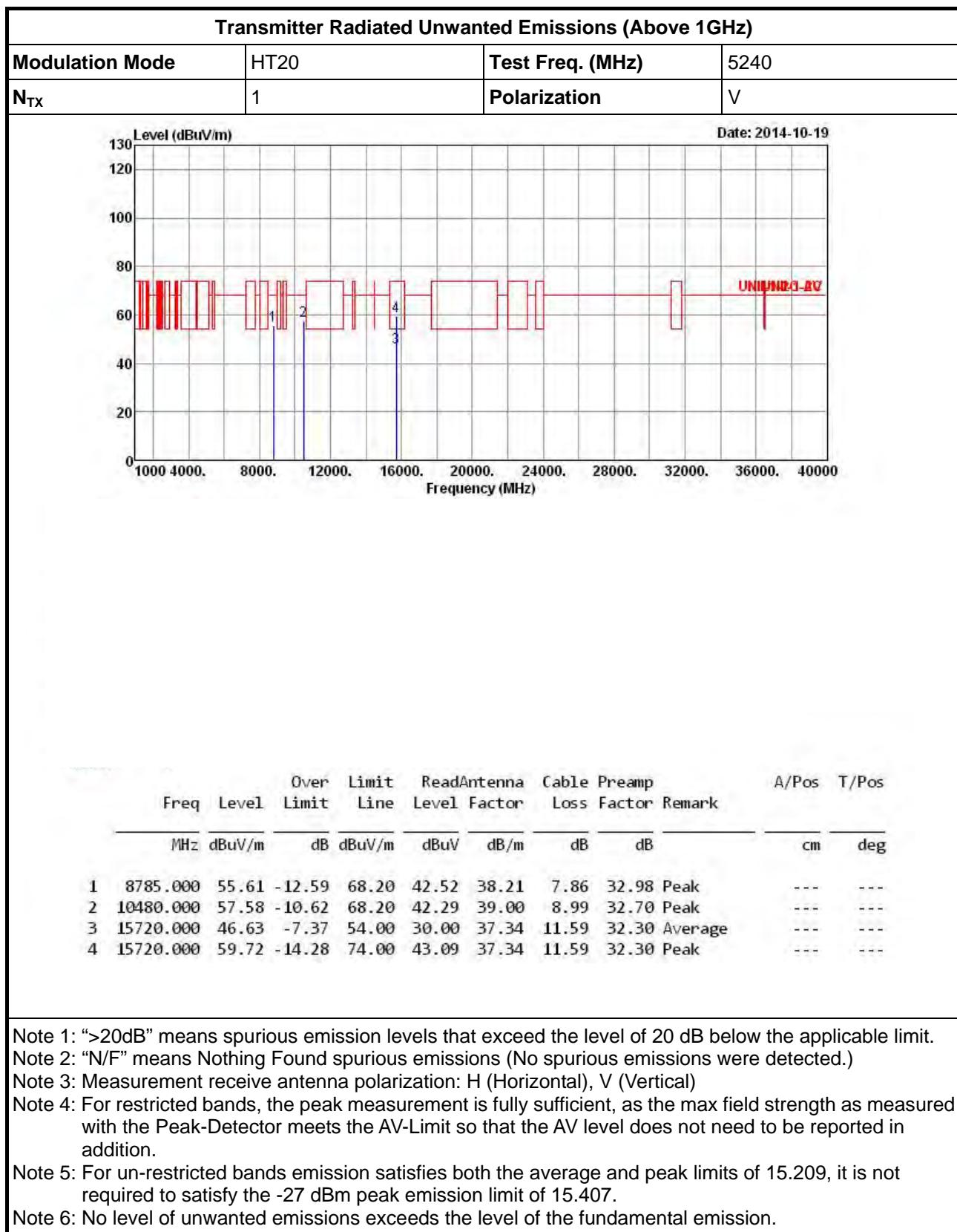
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

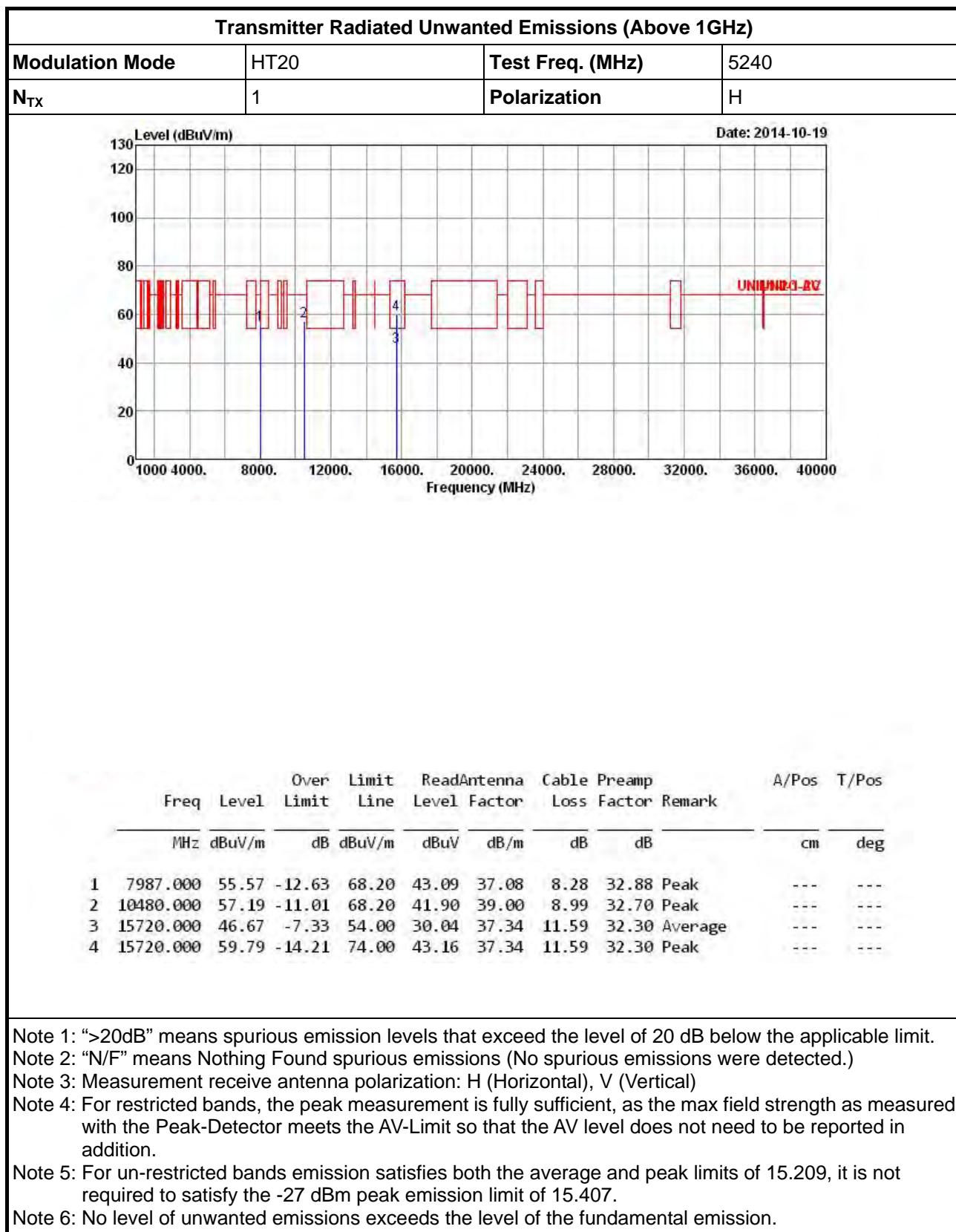
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

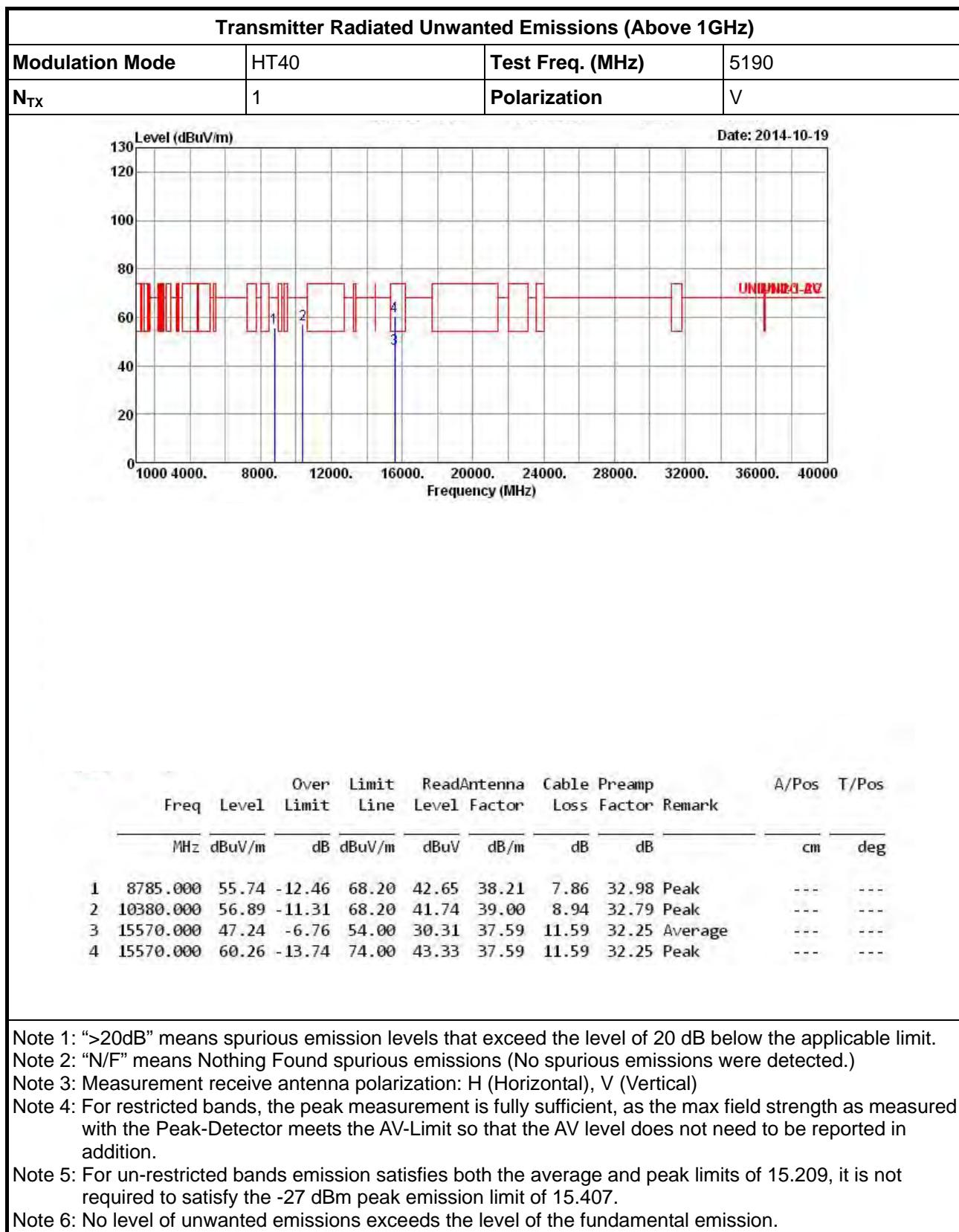
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

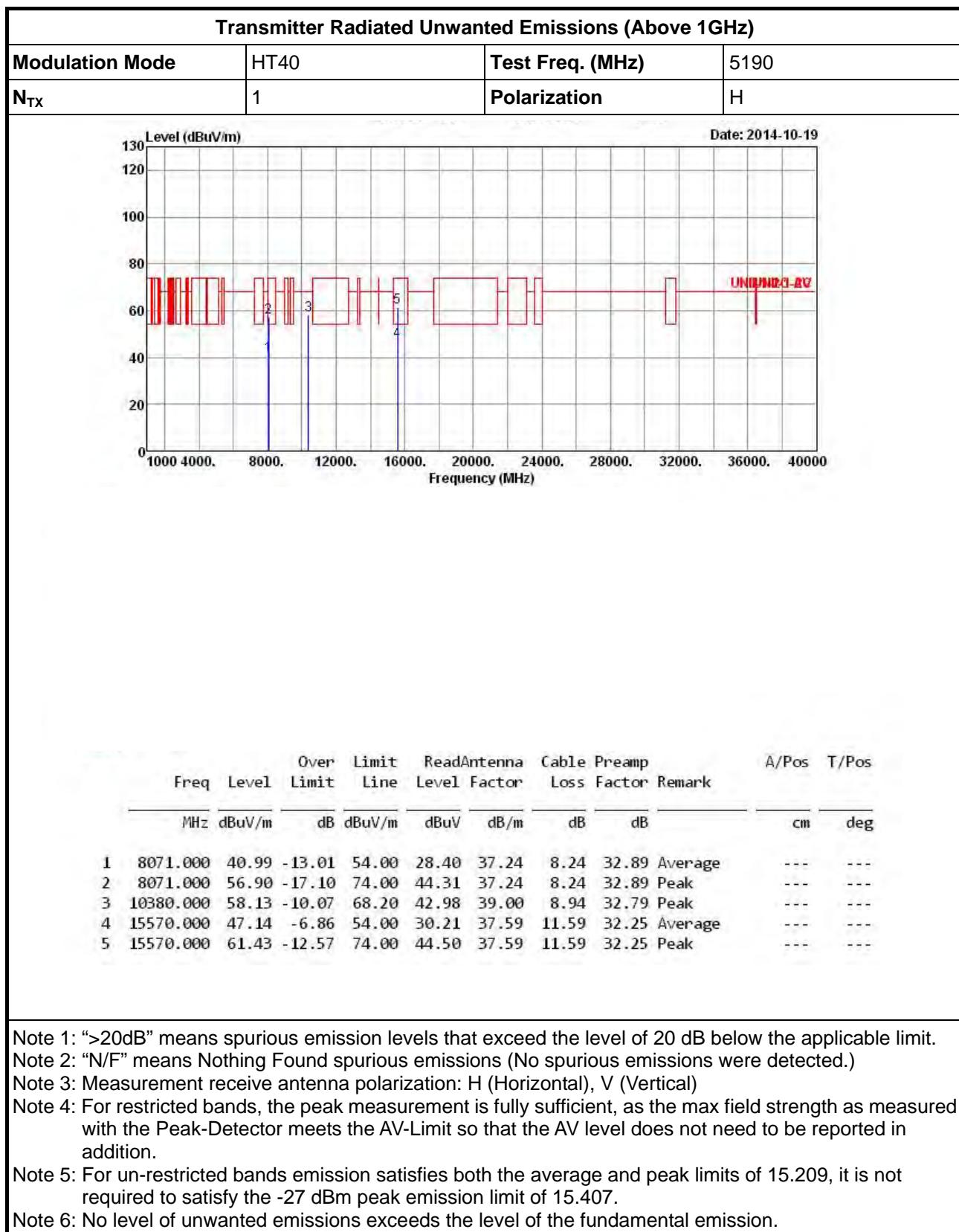
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

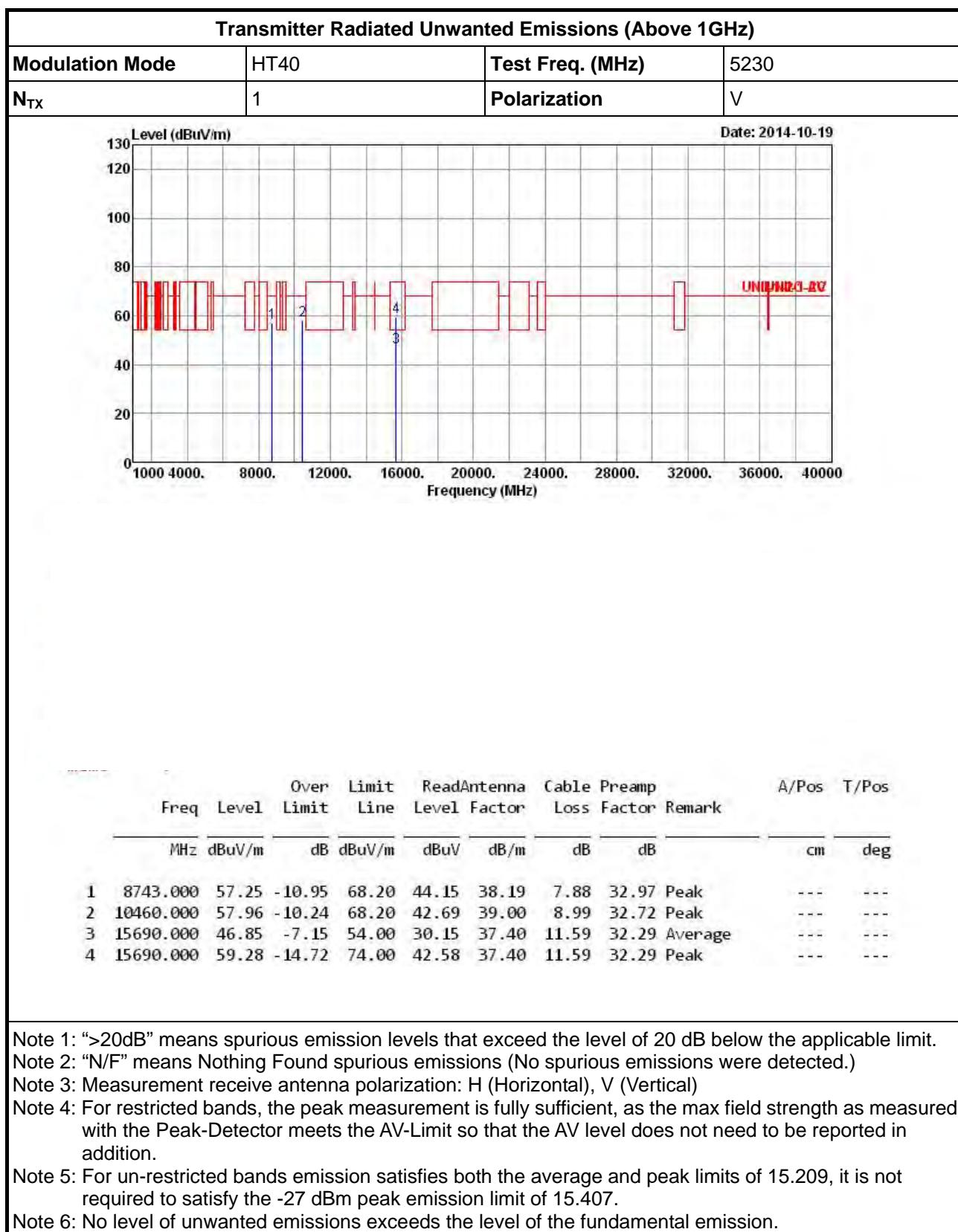
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.







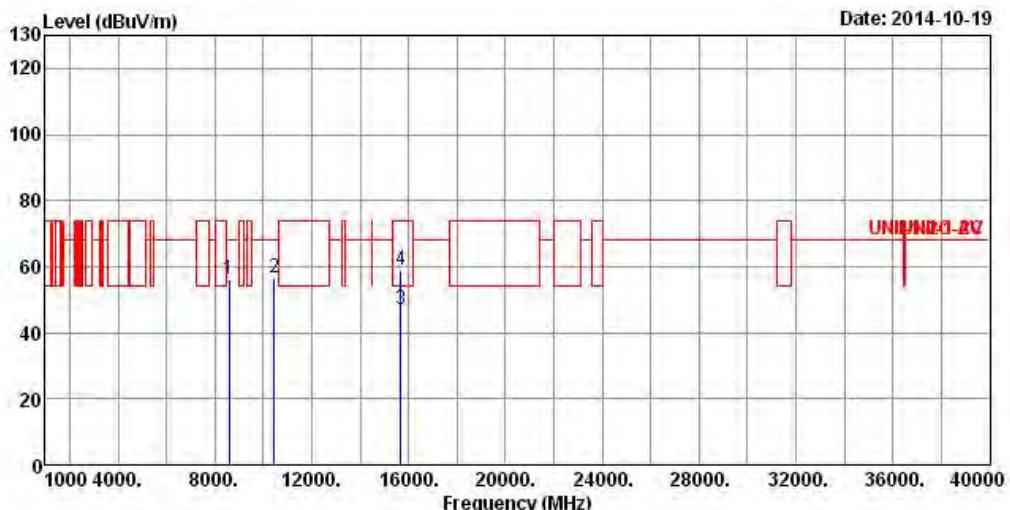






Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	HT40	Test Freq. (MHz)	5230
N _{TX}	1	Polarization	H



Freq	Level	Over Limit	Line	ReadAntenna	Cable	Preamp	A/Pos		T/Pos		
							Factor	Loss	Factor	Remark	cm
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	dB			
1 8596.000	56.08	-12.12	68.20	42.93	38.14	7.95	32.94	Peak	---	---	---
2 10460.000	56.44	-11.76	68.20	41.17	39.00	8.99	32.72	Peak	---	---	---
3 15690.000	46.90	-7.10	54.00	30.20	37.40	11.59	32.29	Average	---	---	---
4 15690.000	59.19	-14.81	74.00	42.49	37.40	11.59	32.29	Peak	---	---	---

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

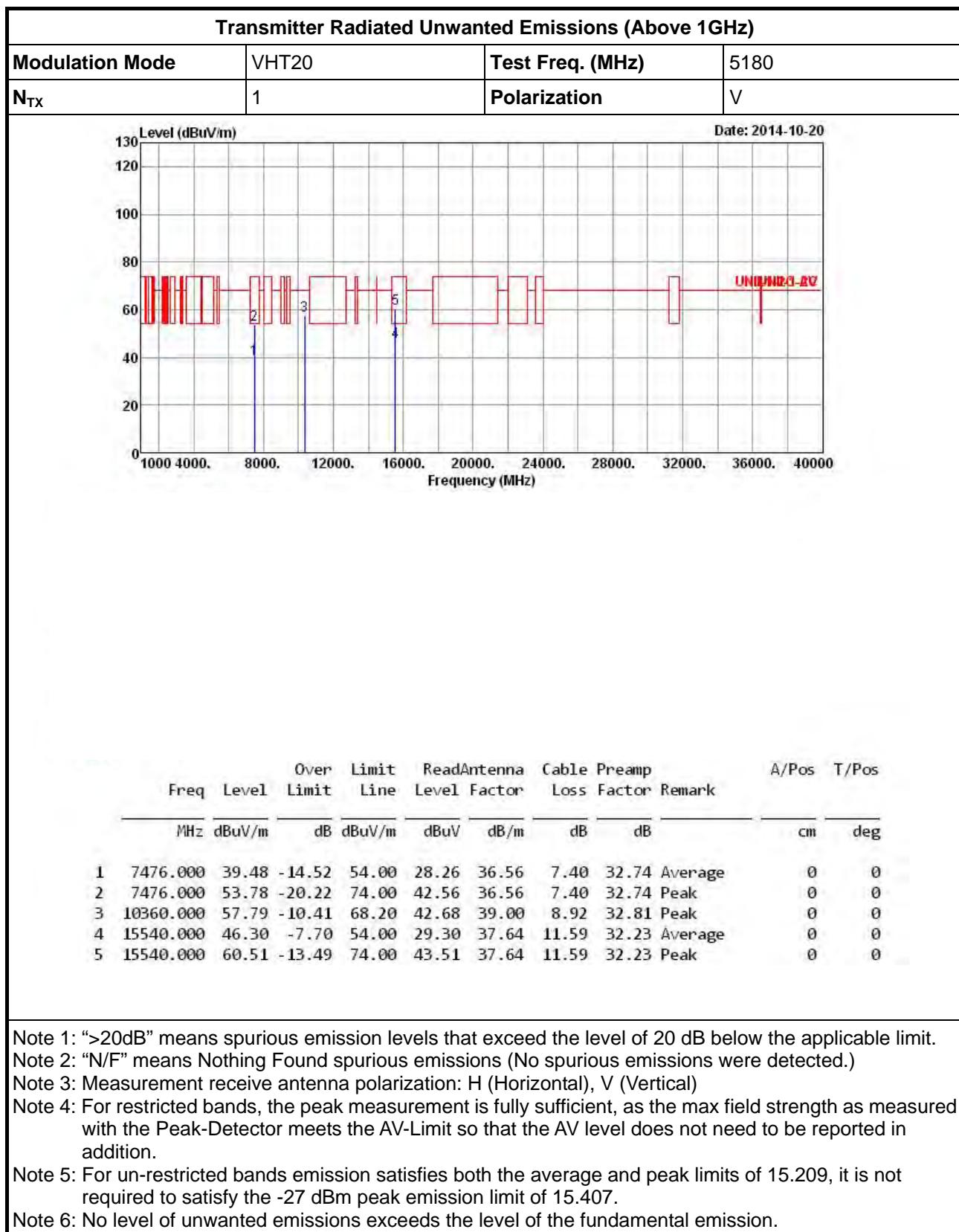
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

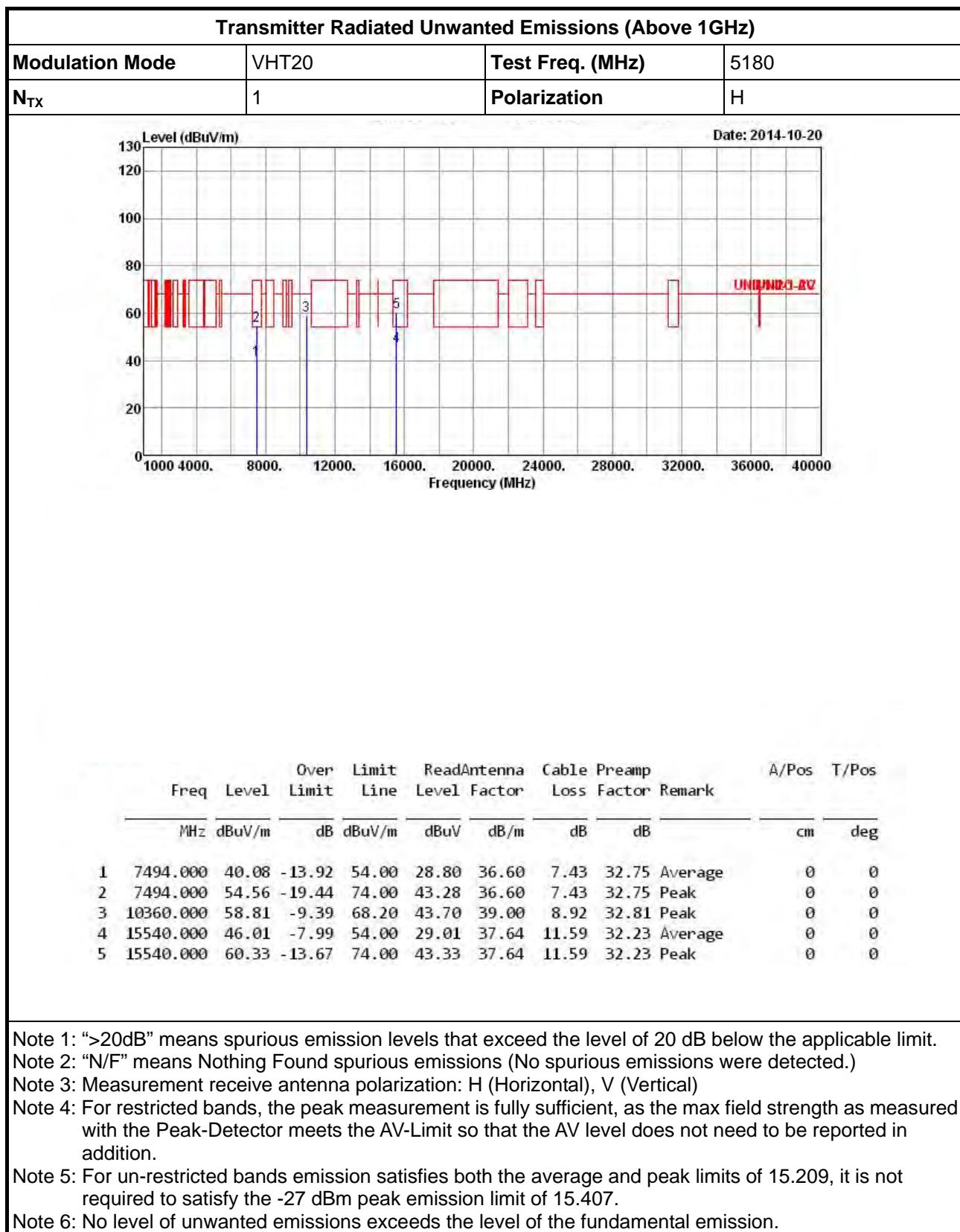
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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 emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

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.

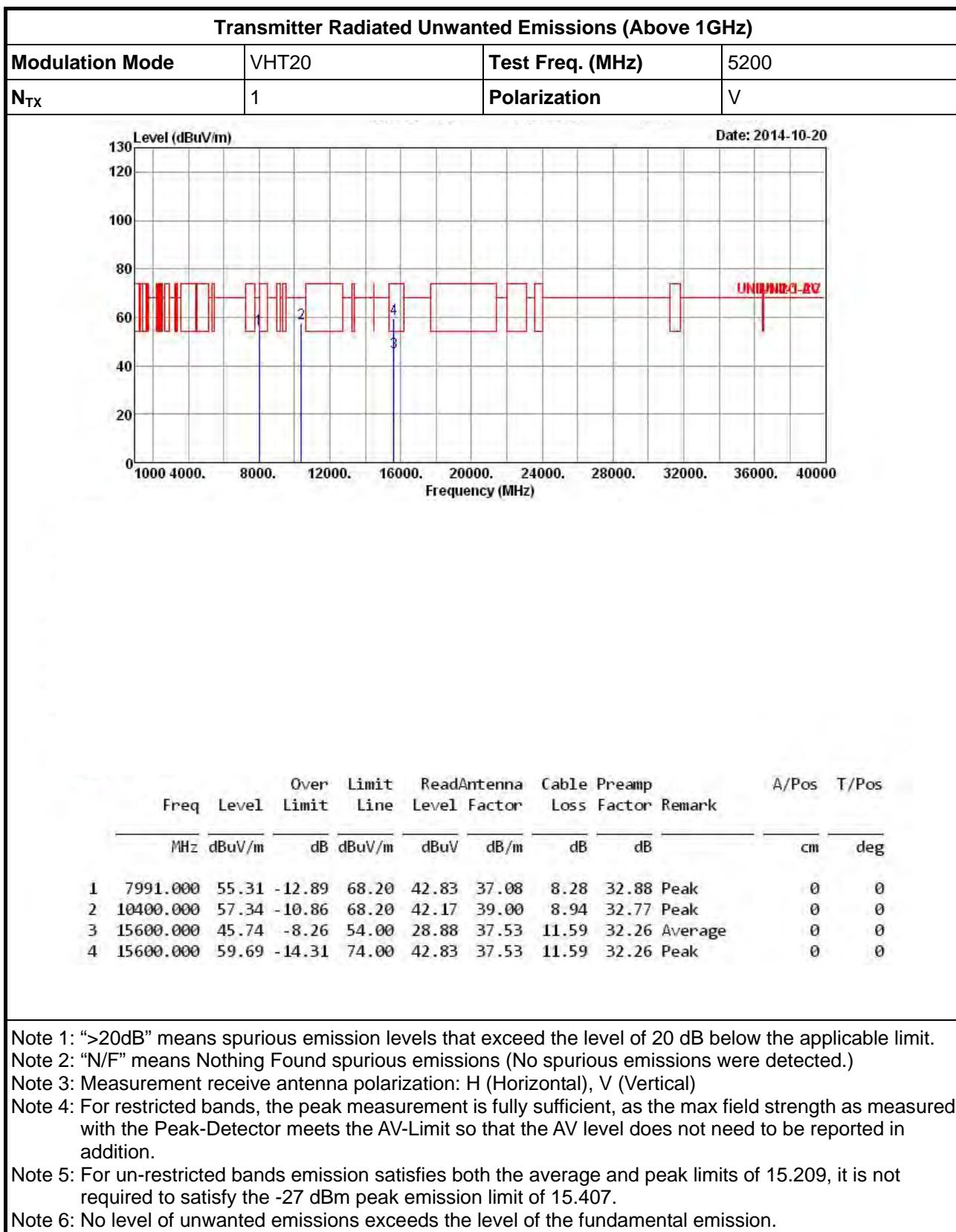
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

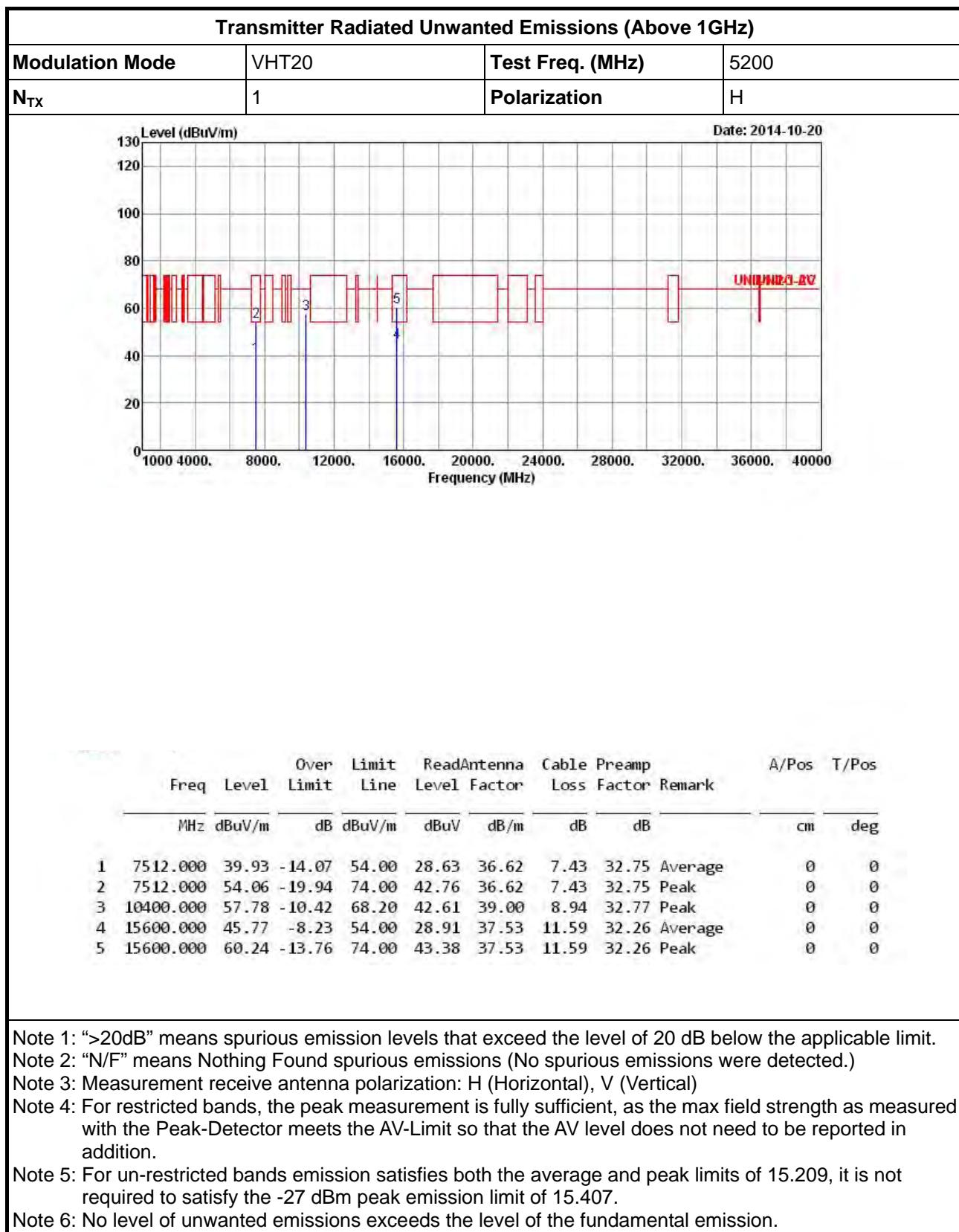
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

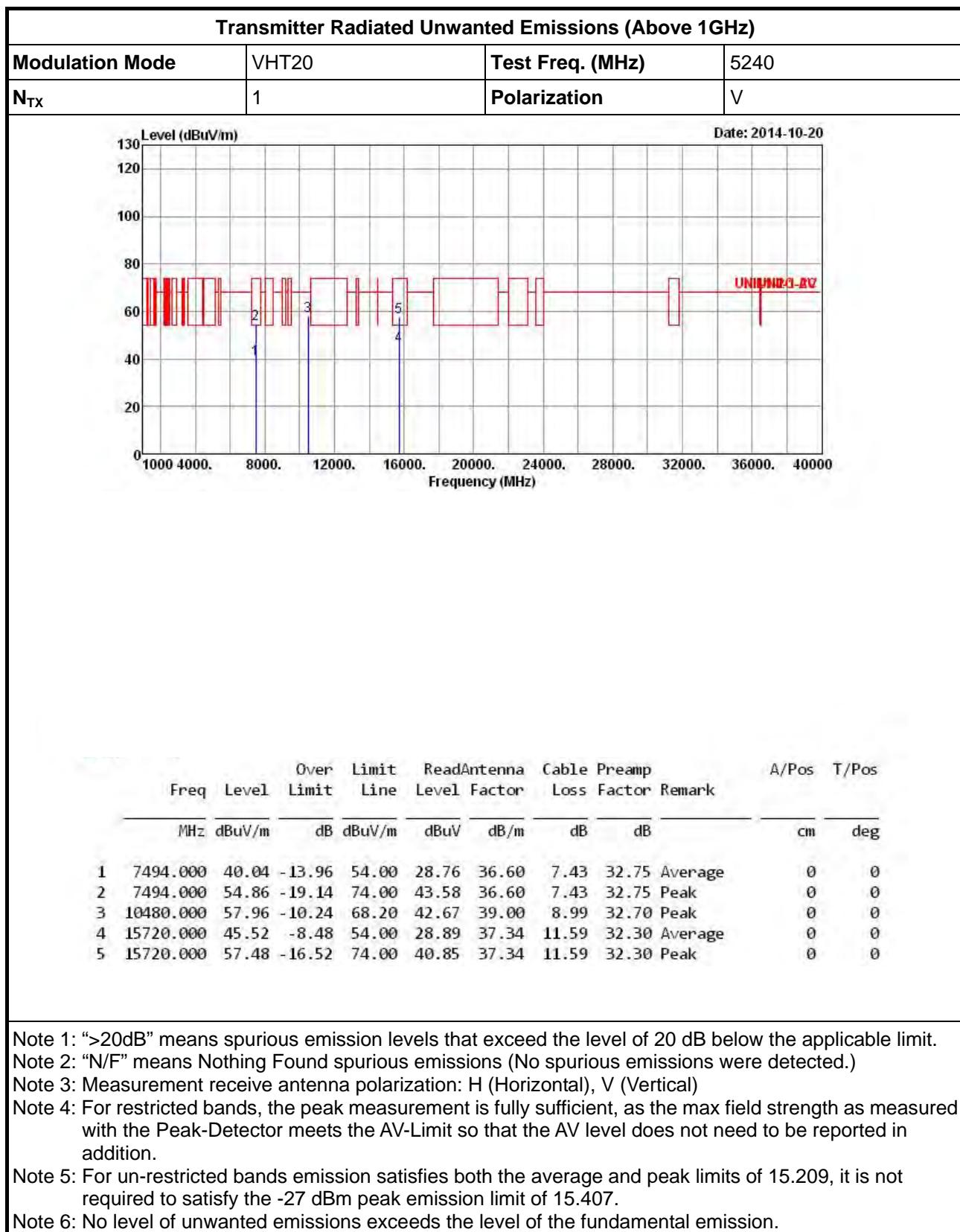
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

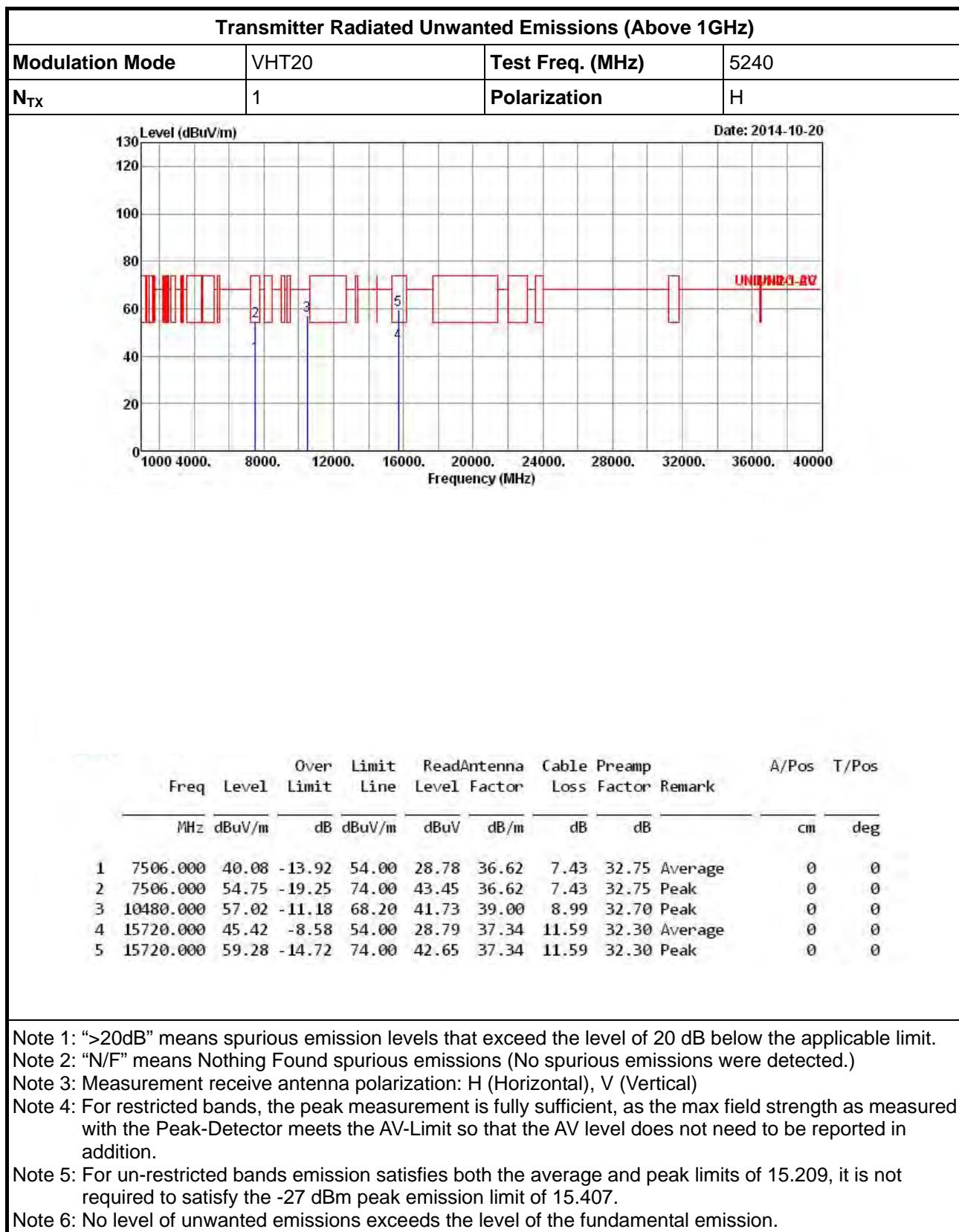
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

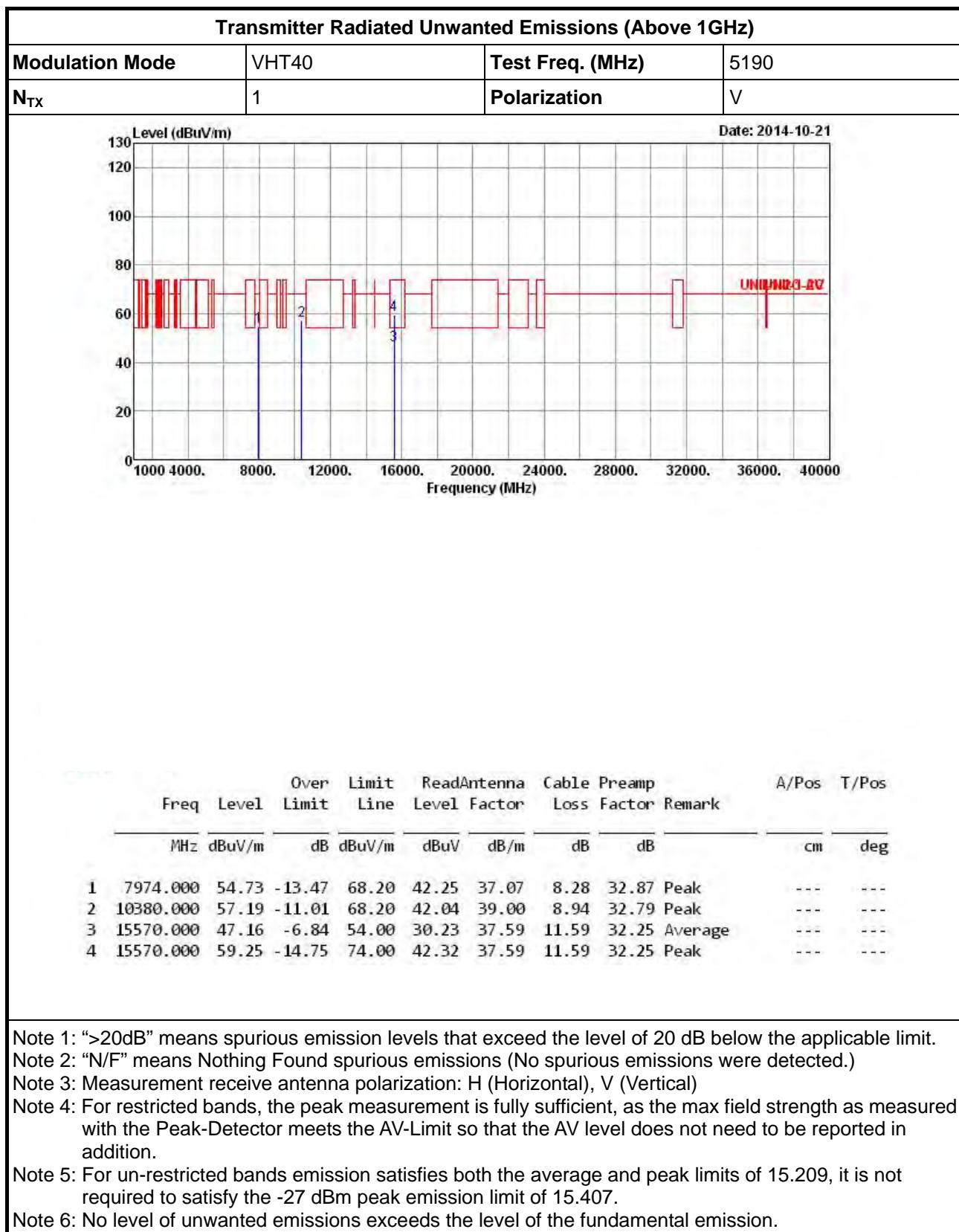
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.











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

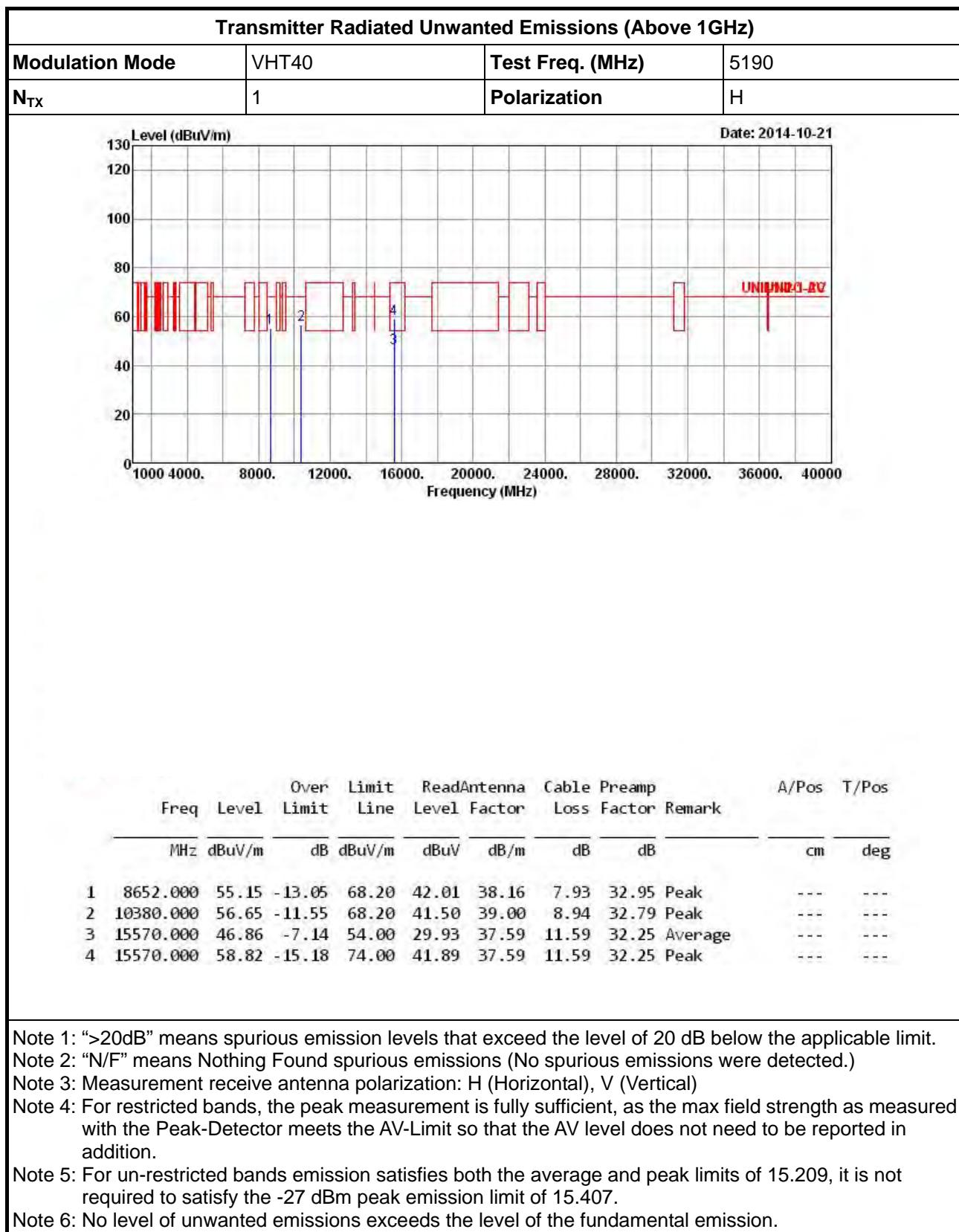
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

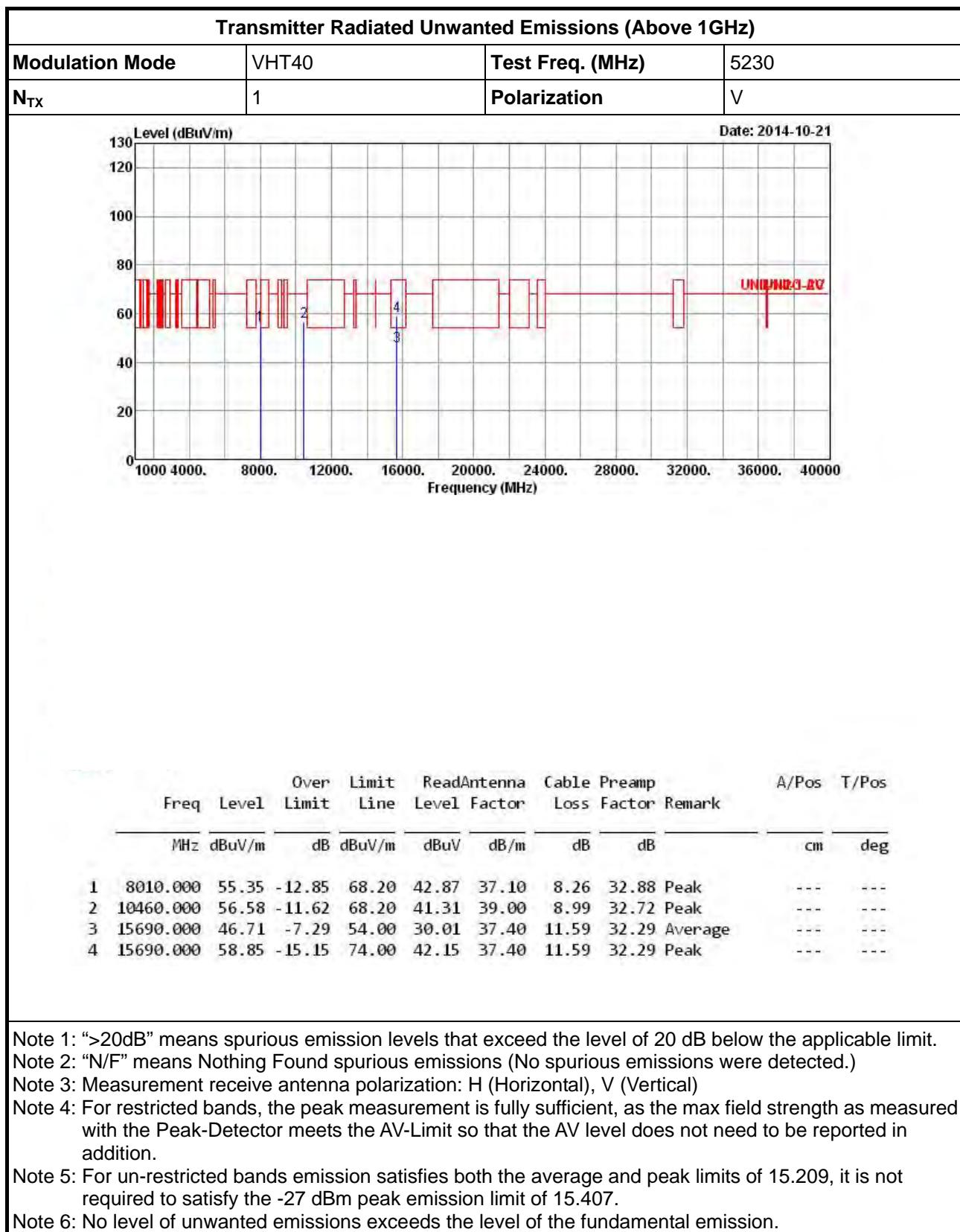
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

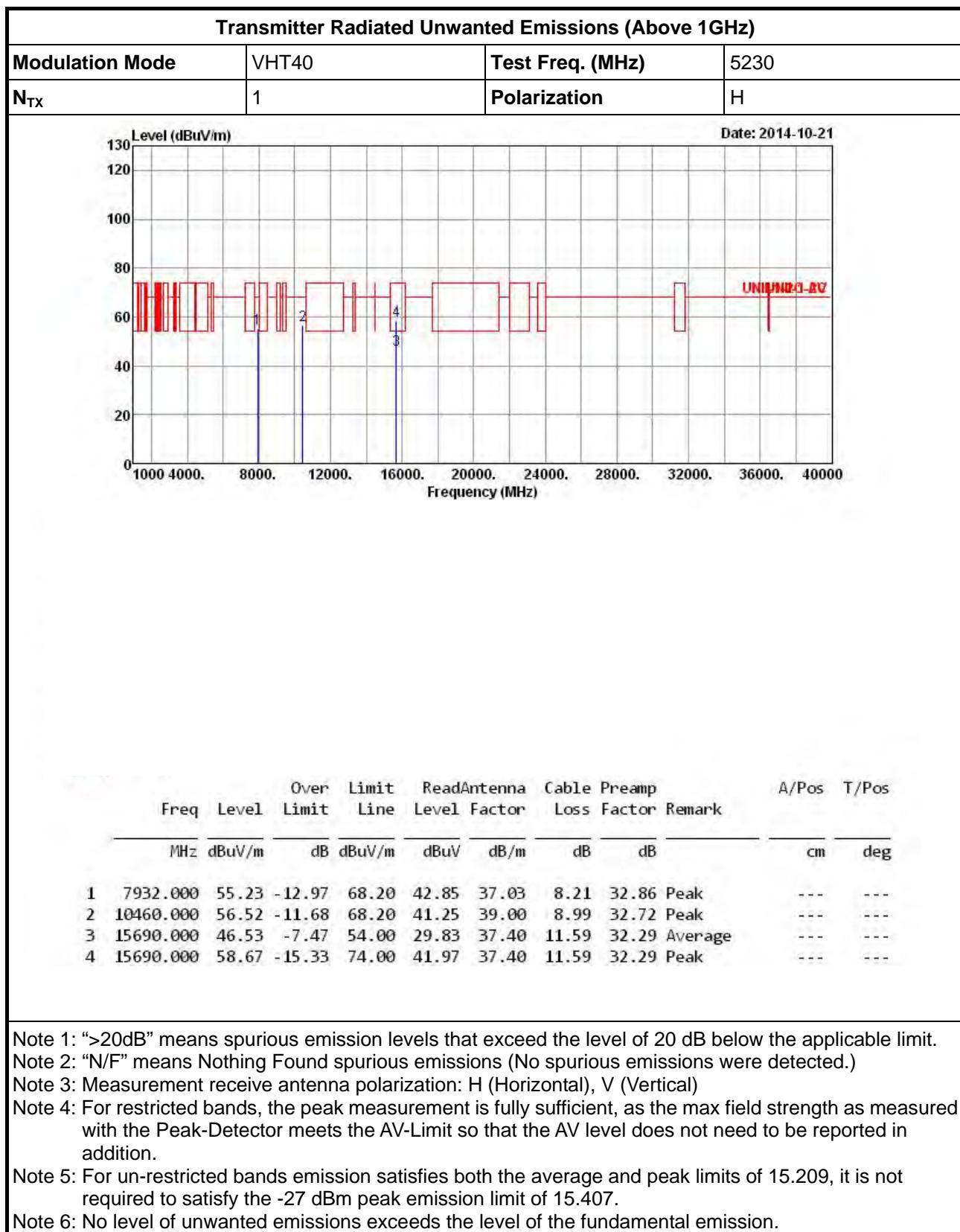
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

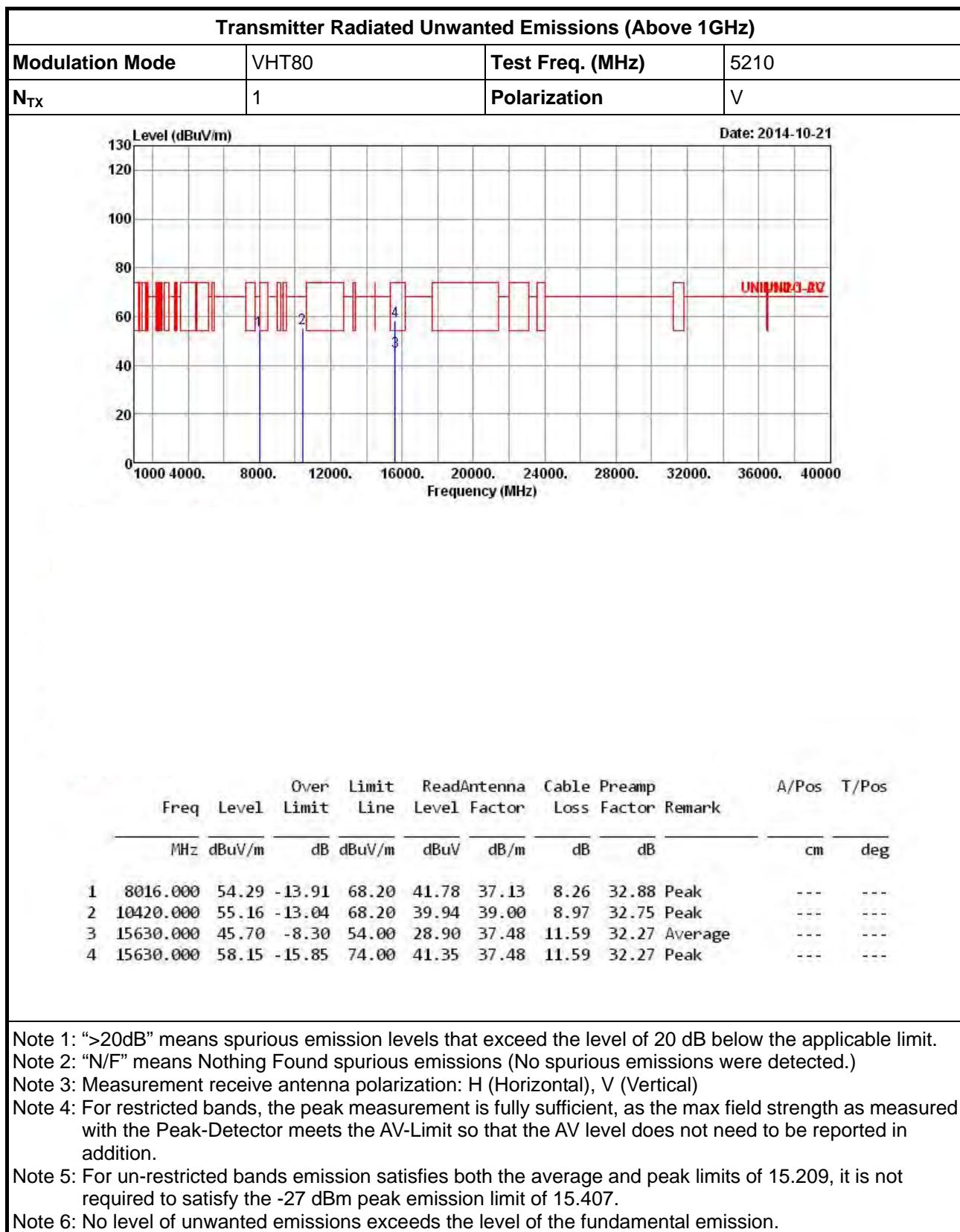
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

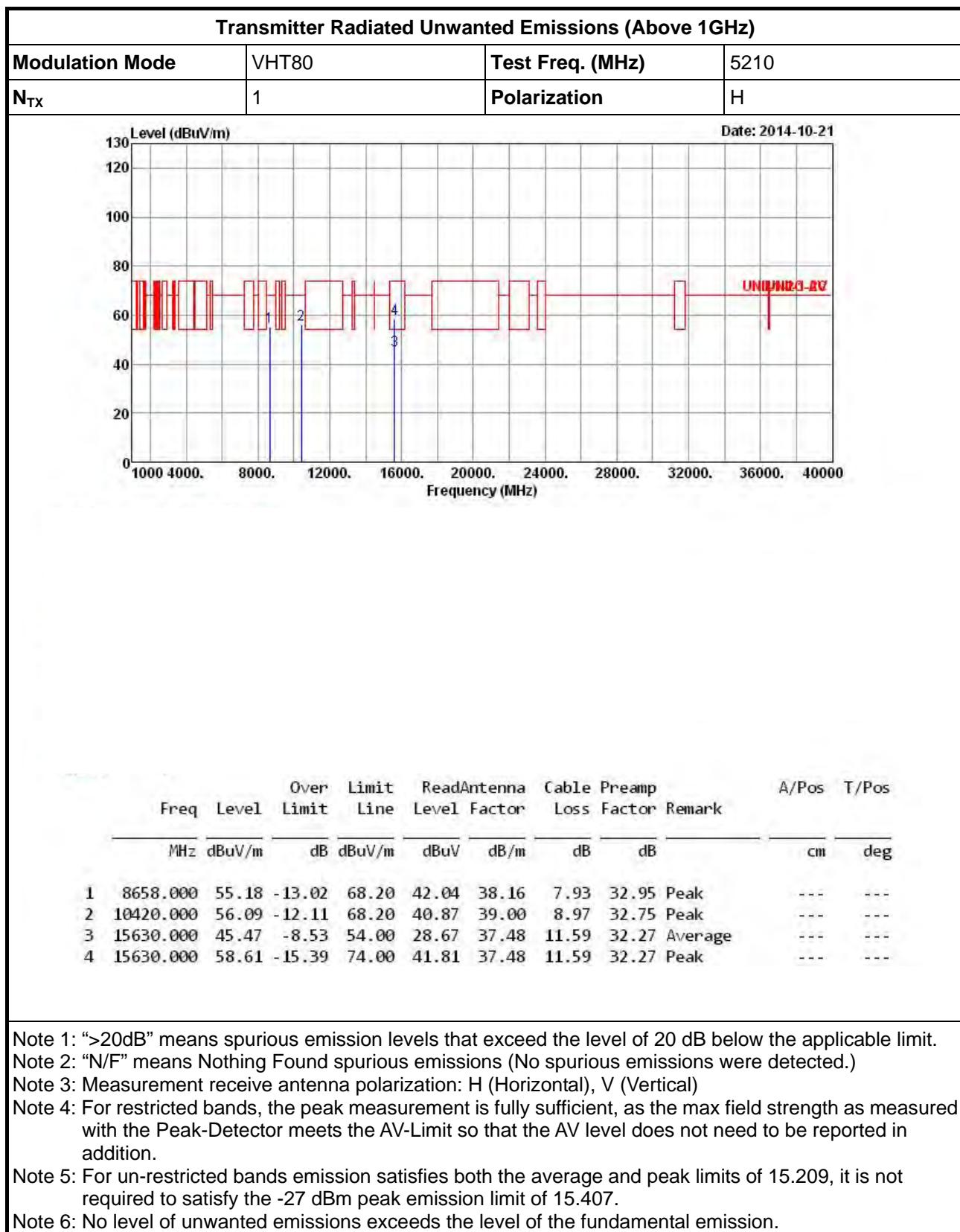
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.





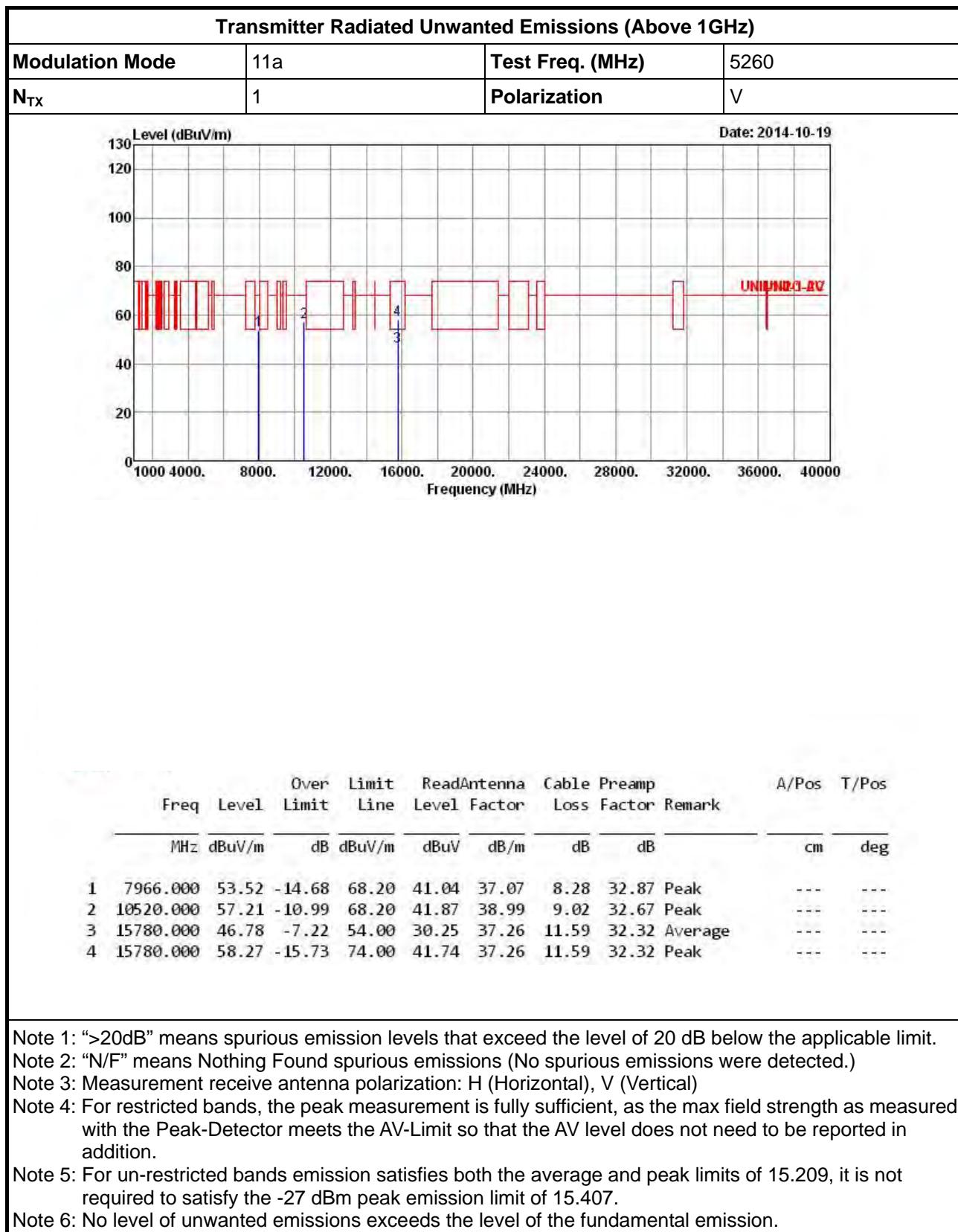


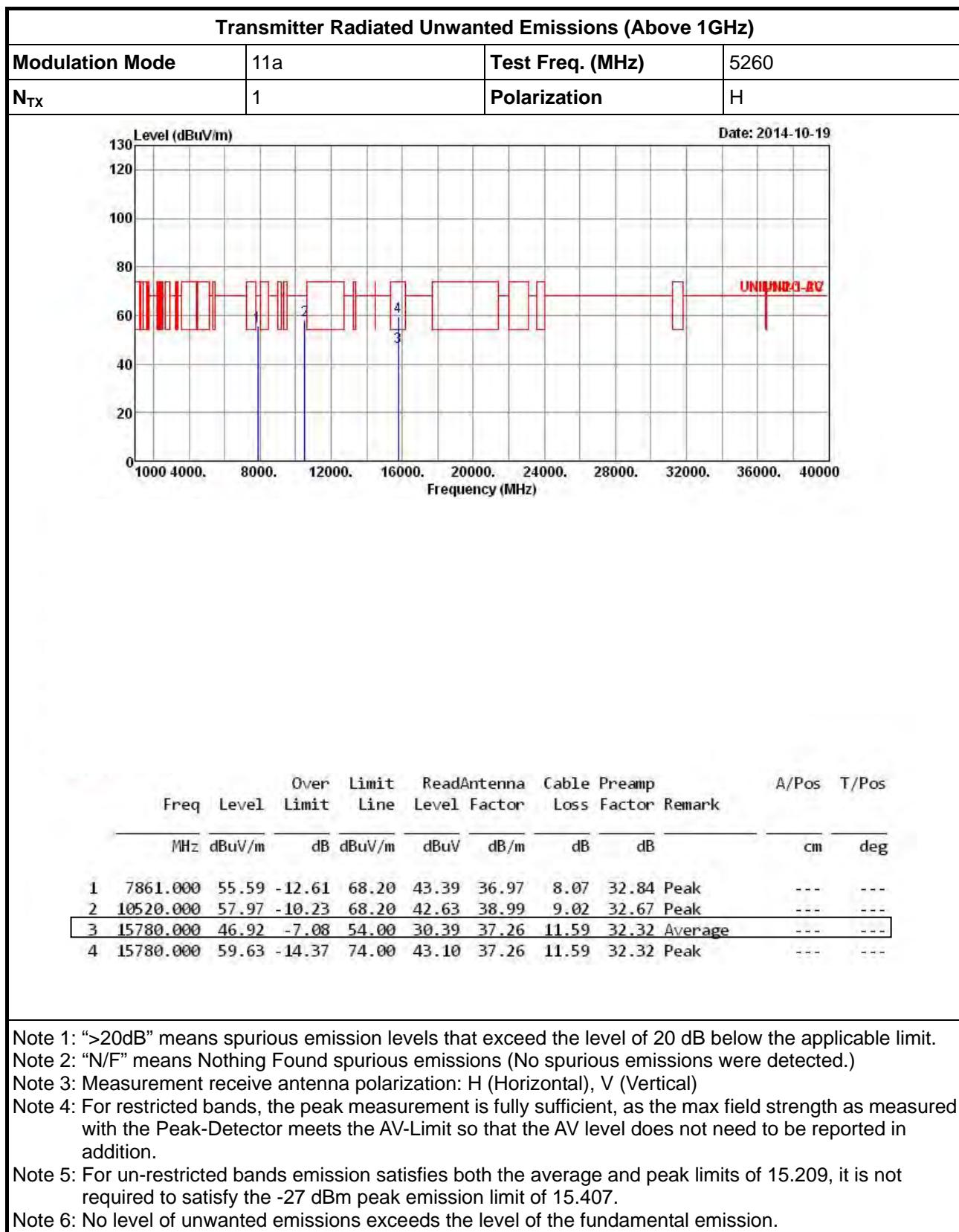


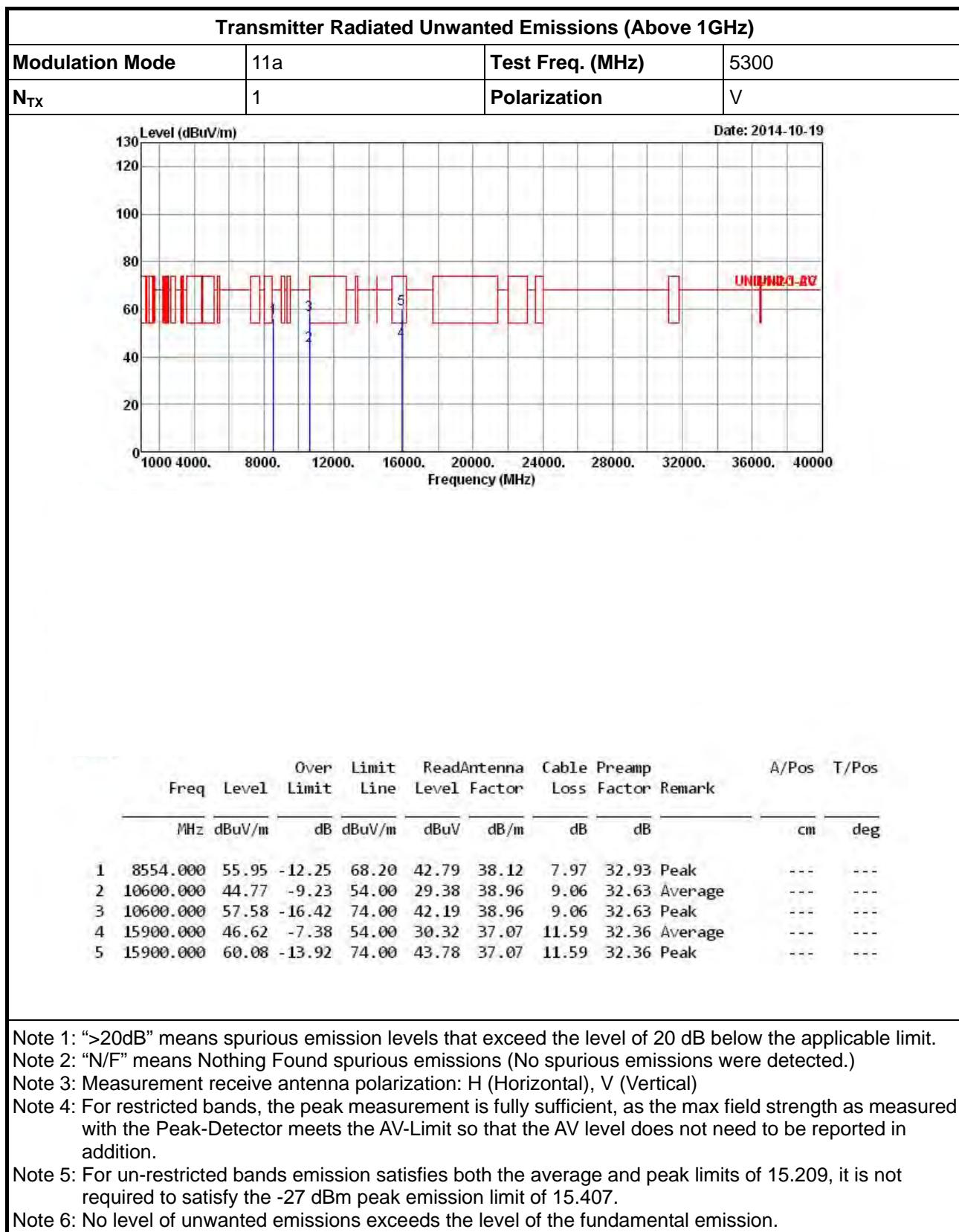


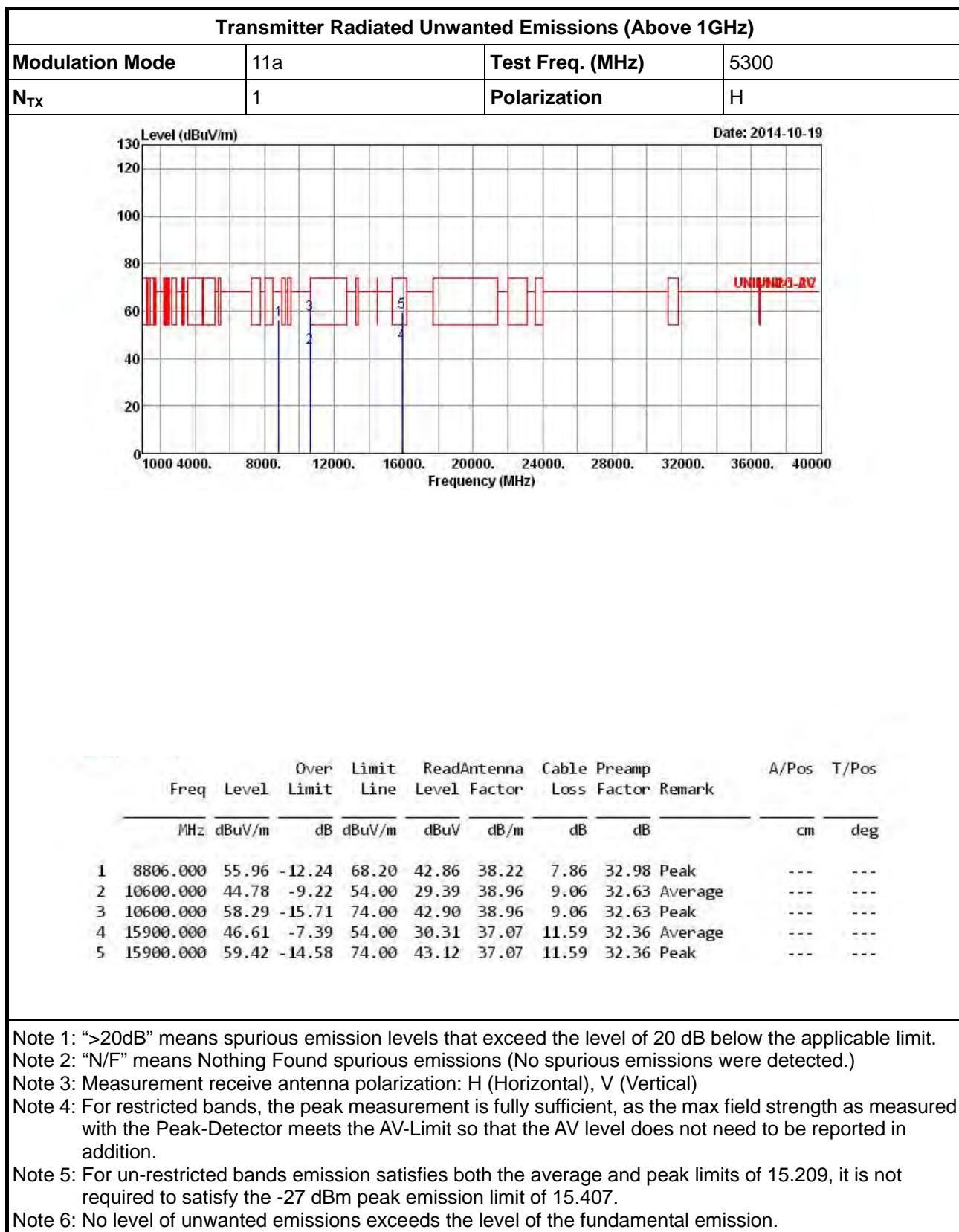


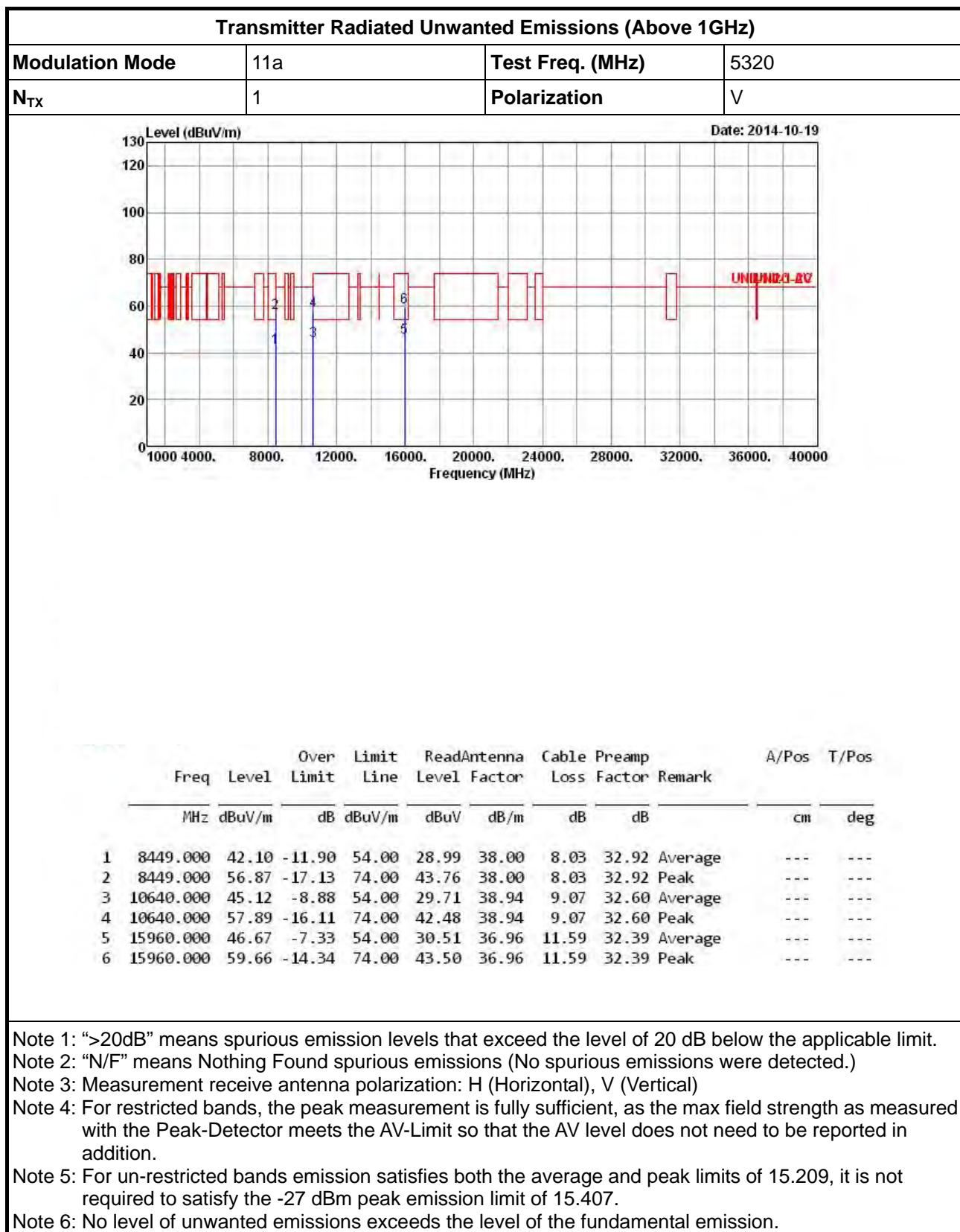
3.6.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5250-5350MHz

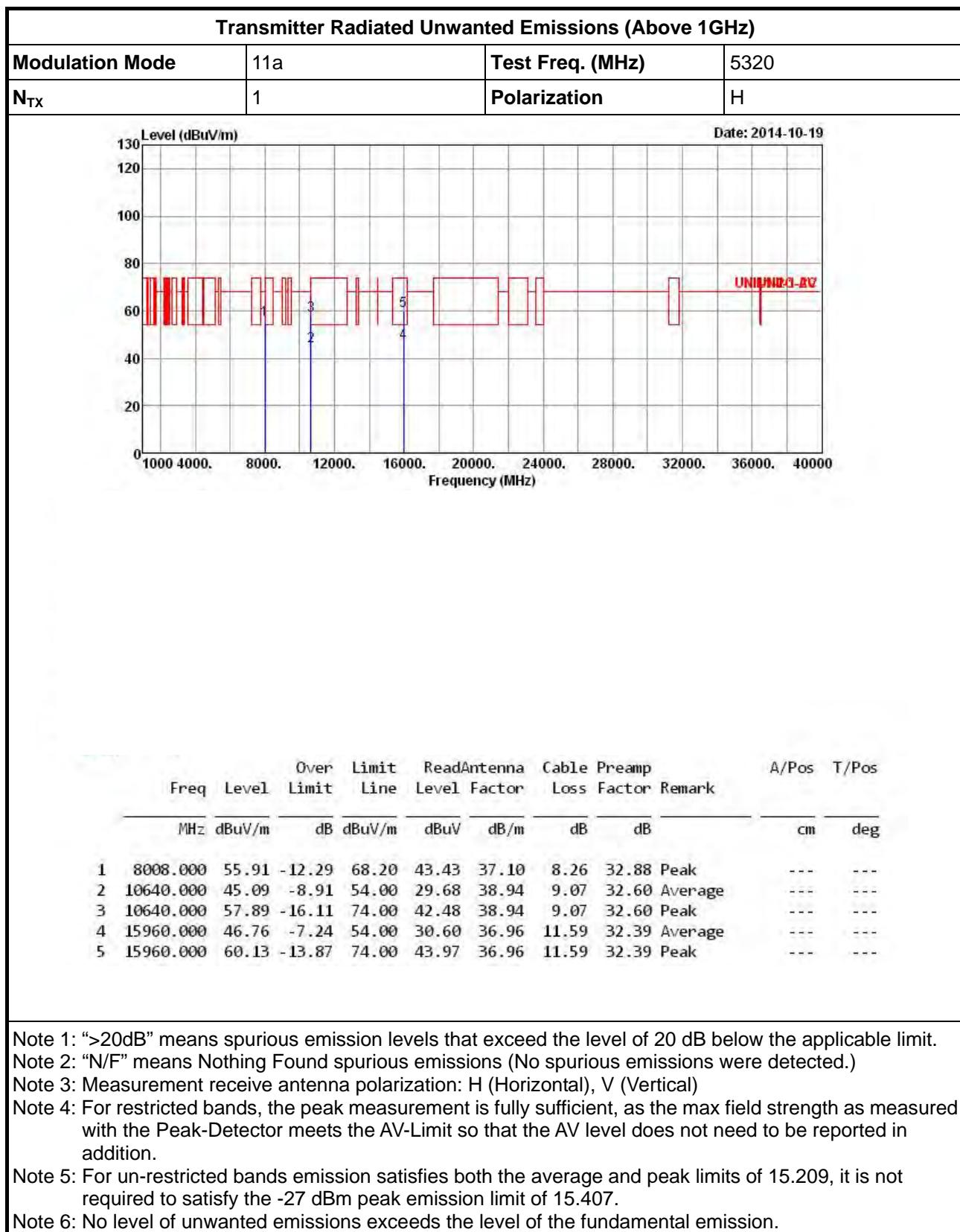


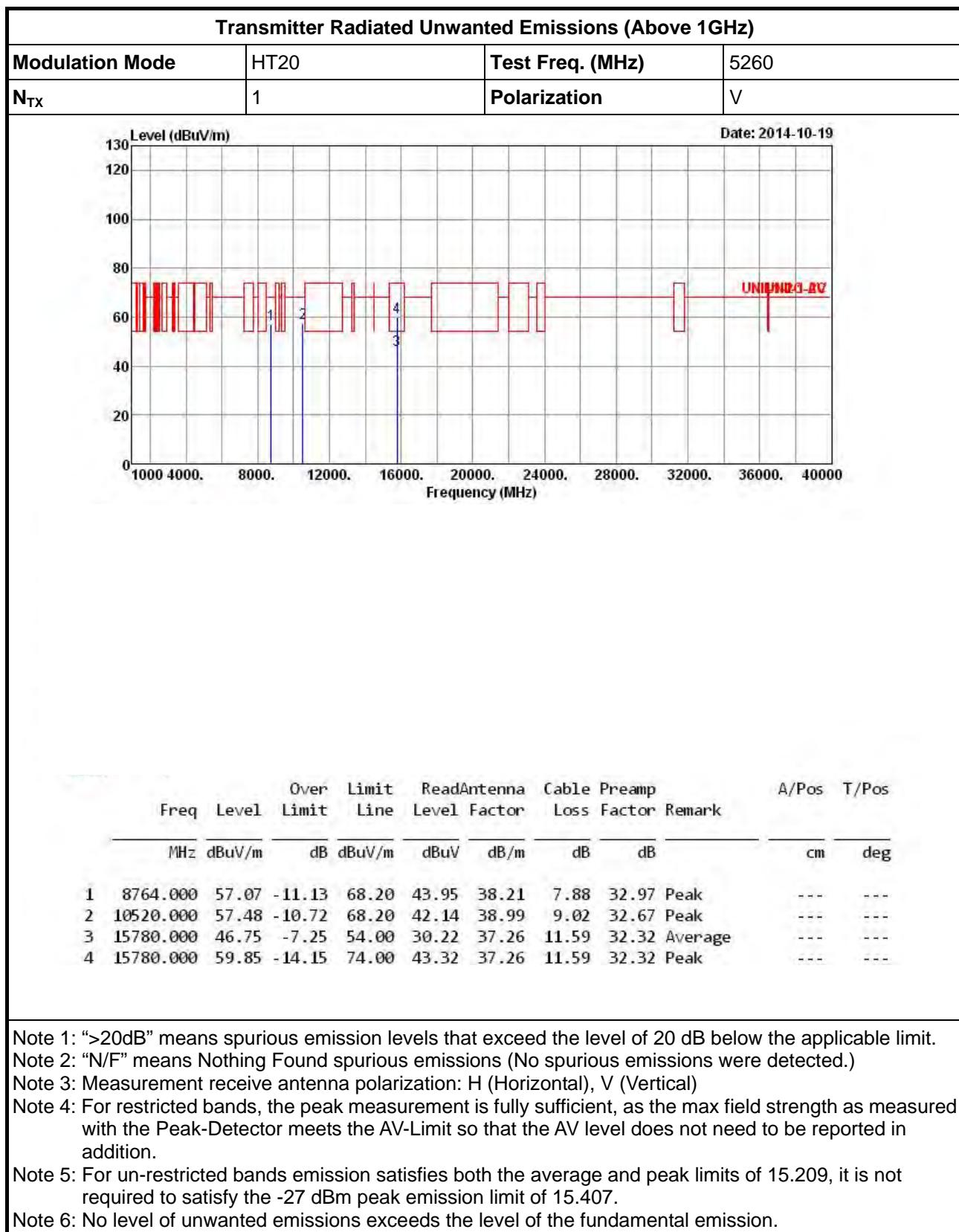


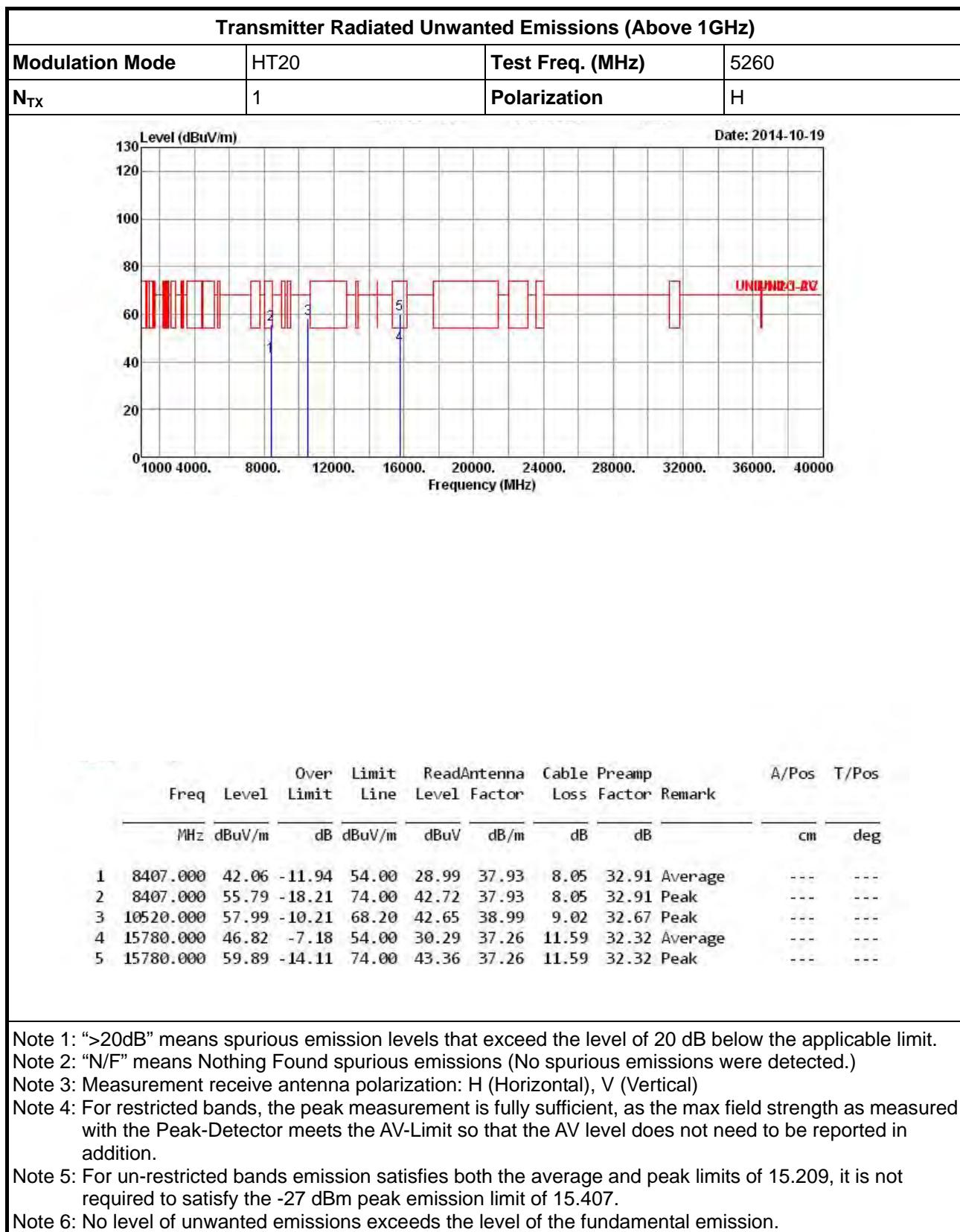


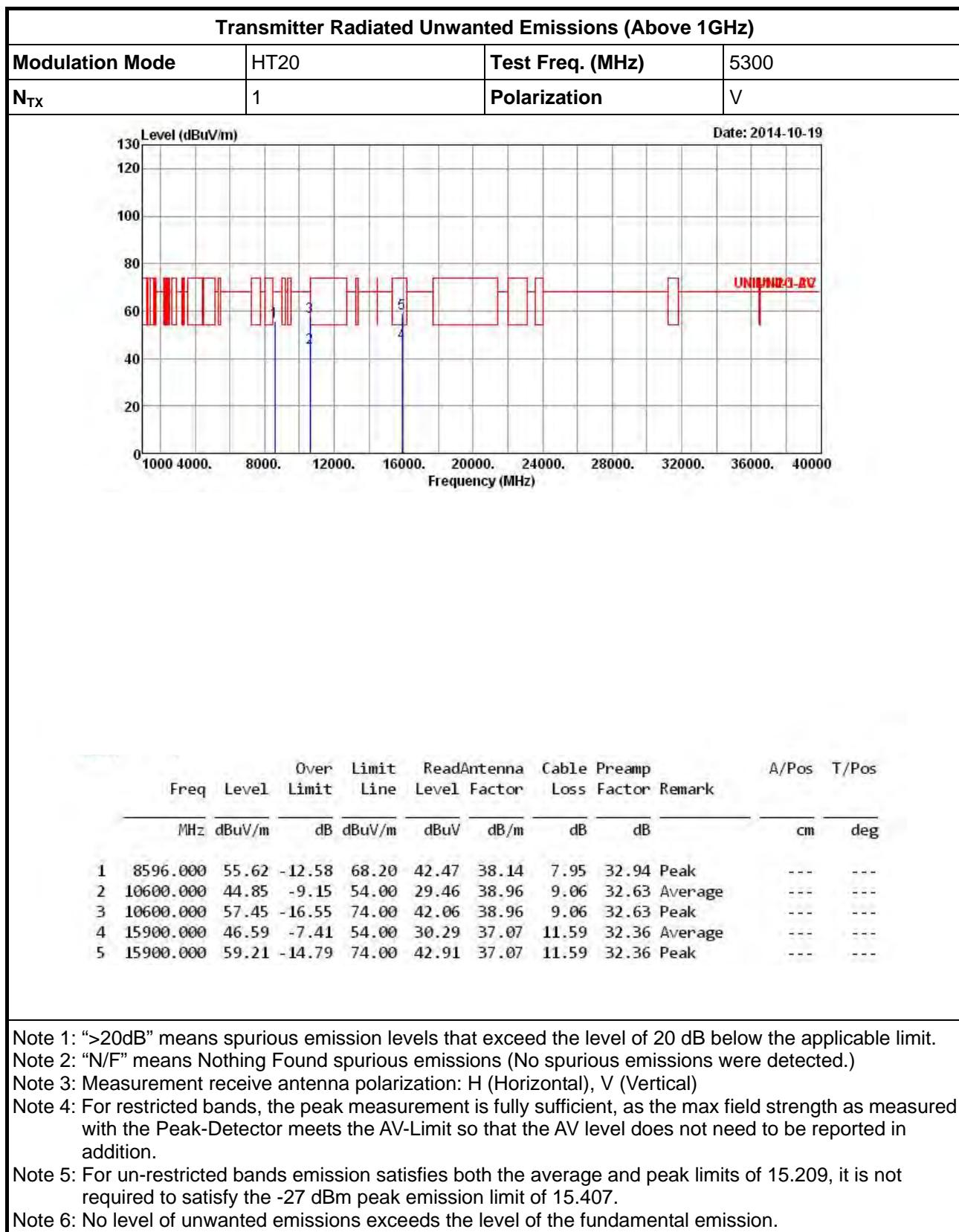


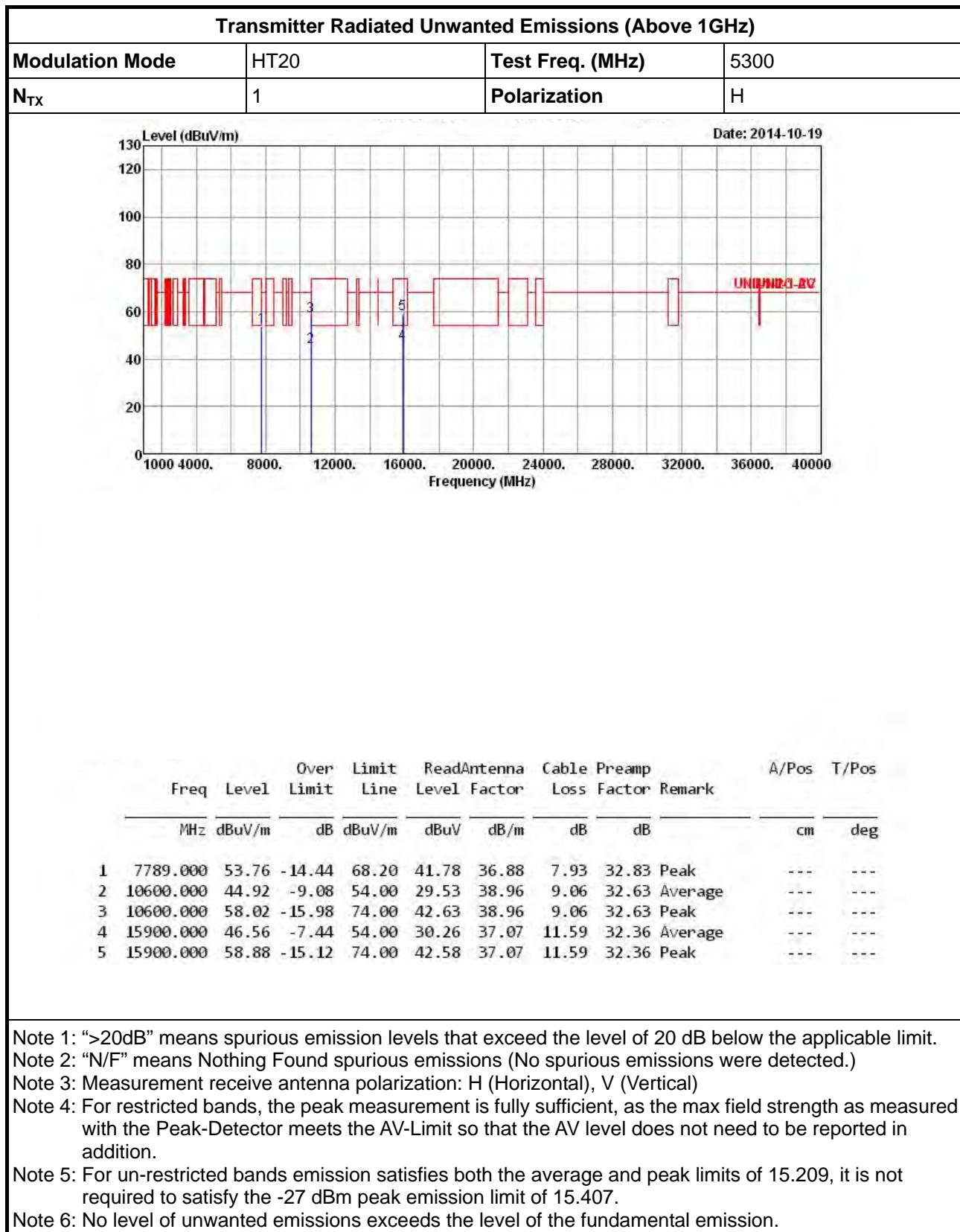












Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

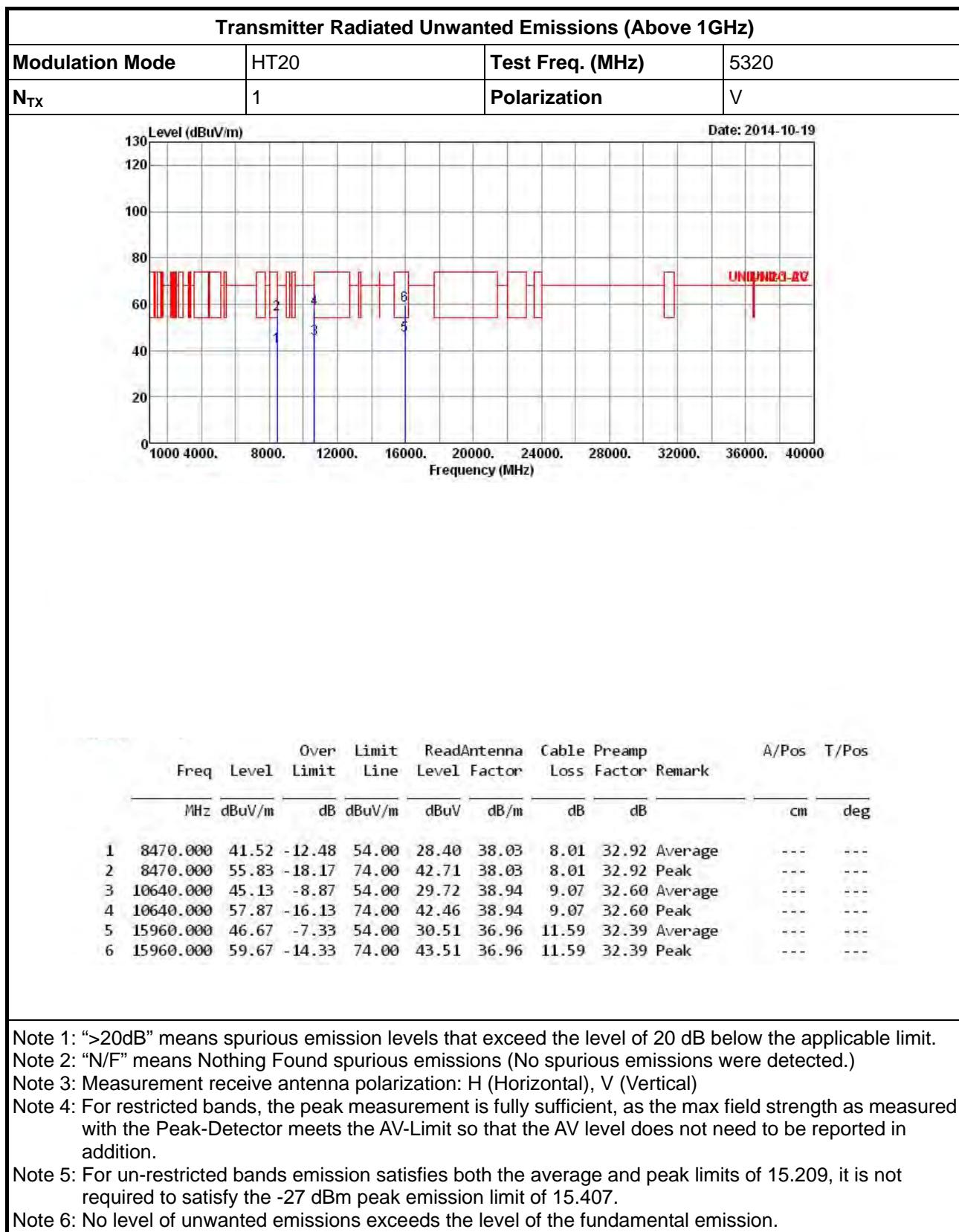
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

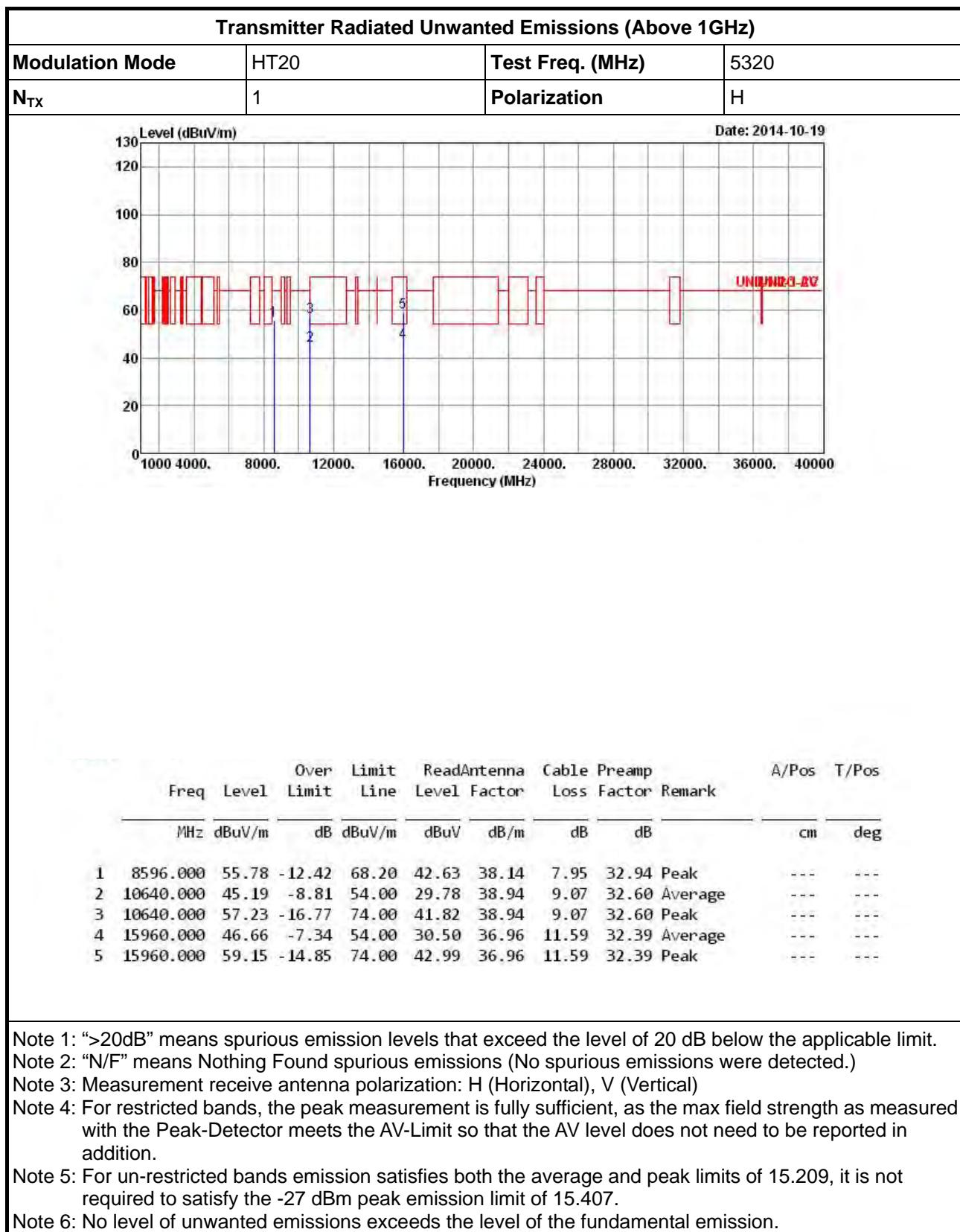
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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 emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

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.

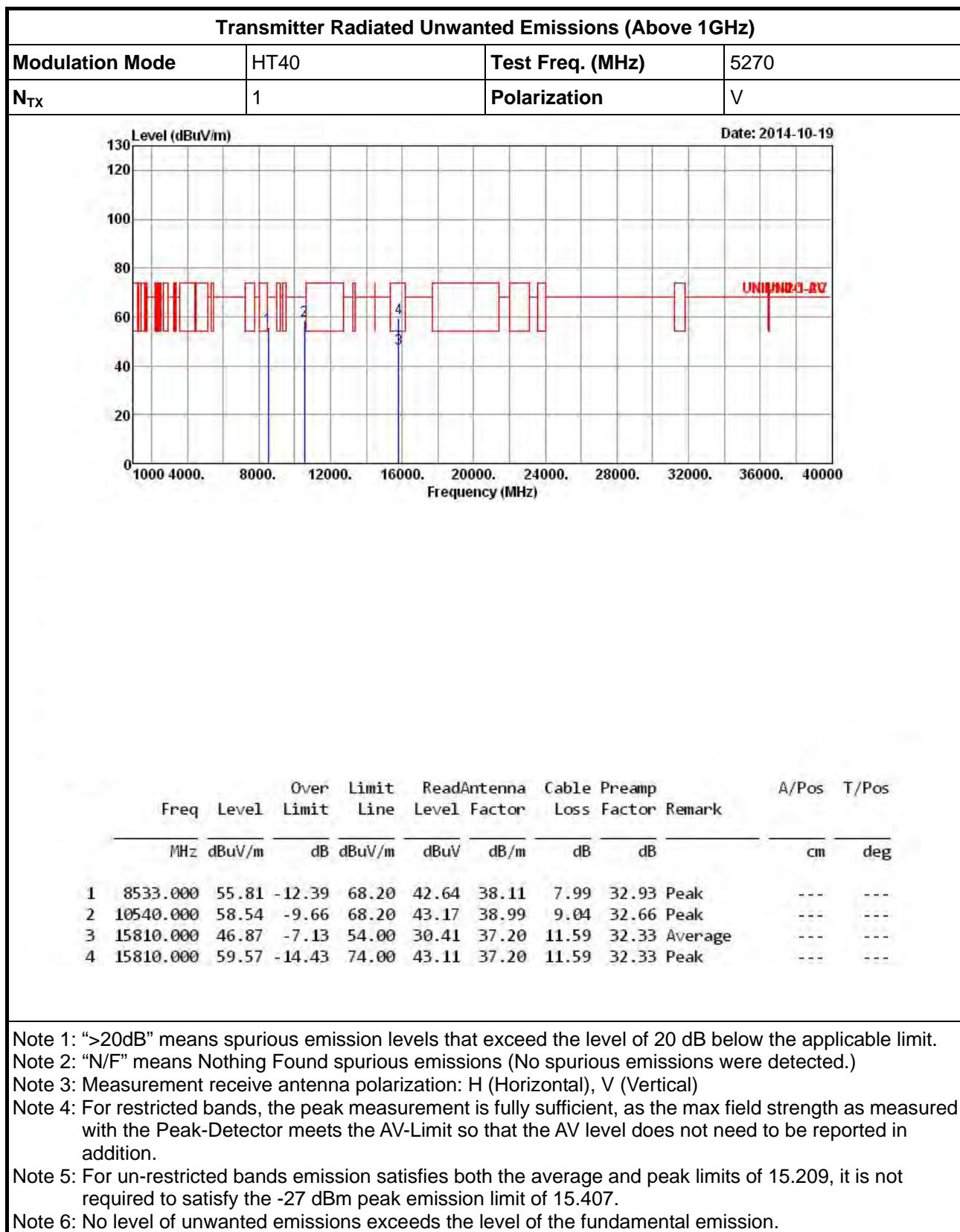
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

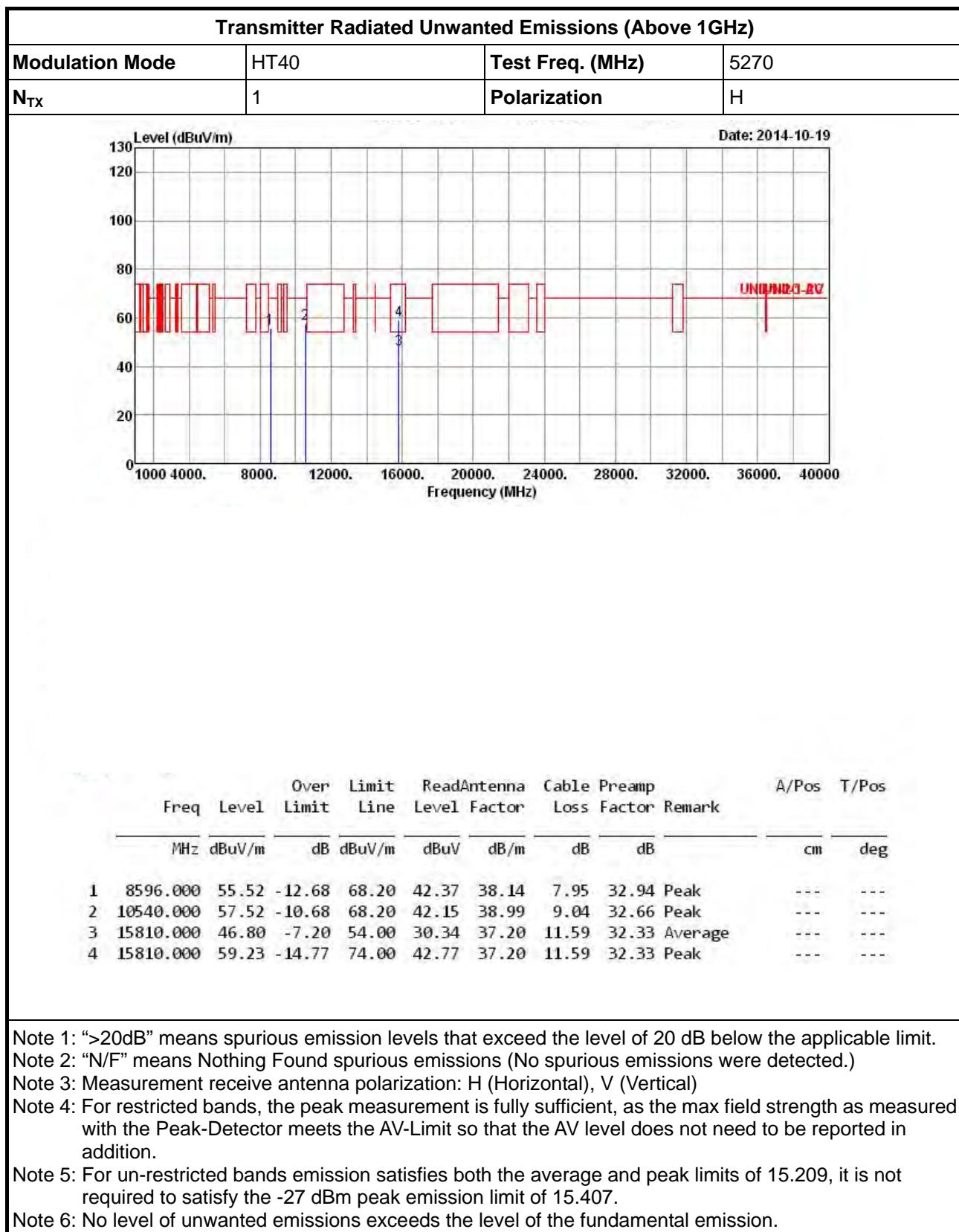
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

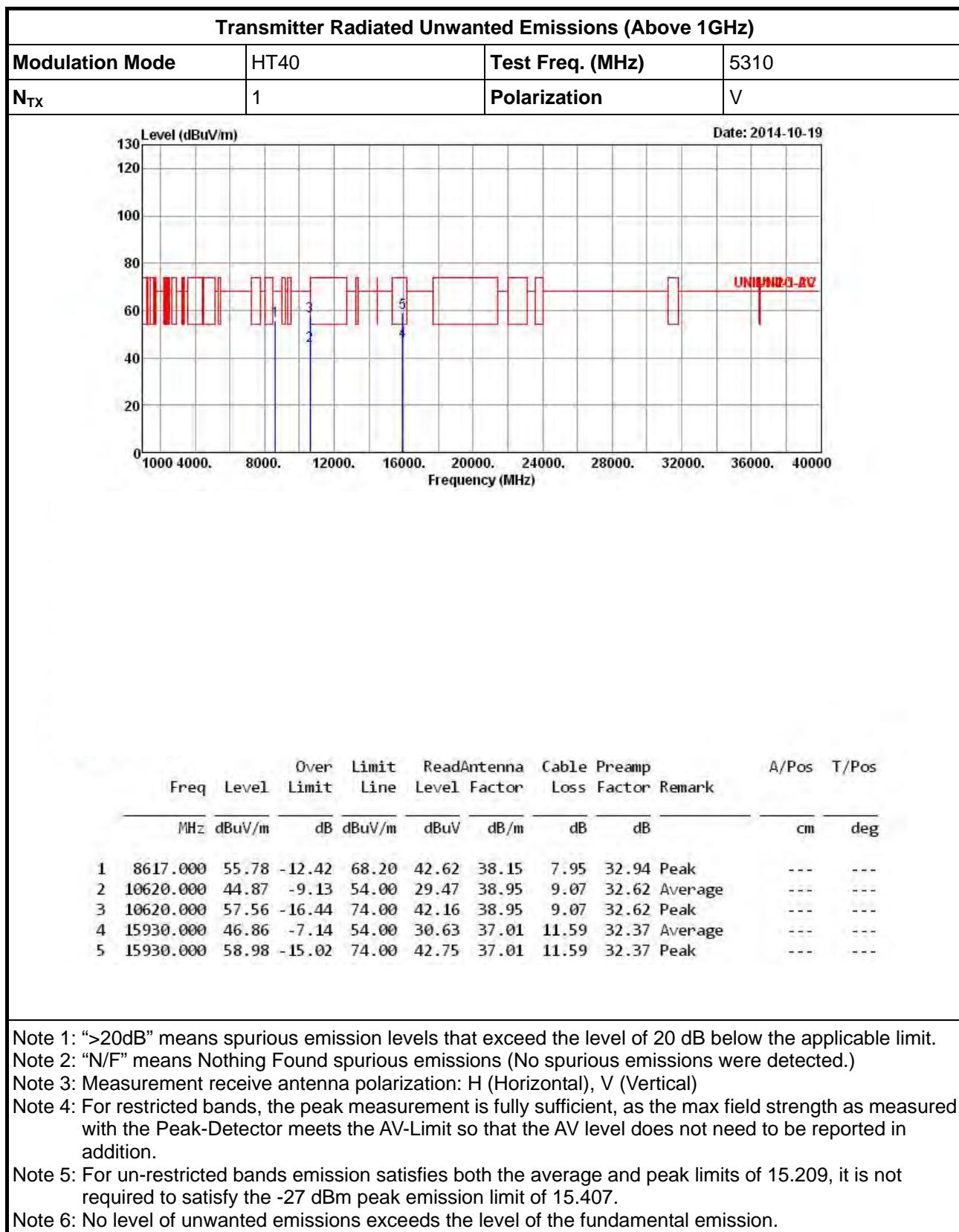
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

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.

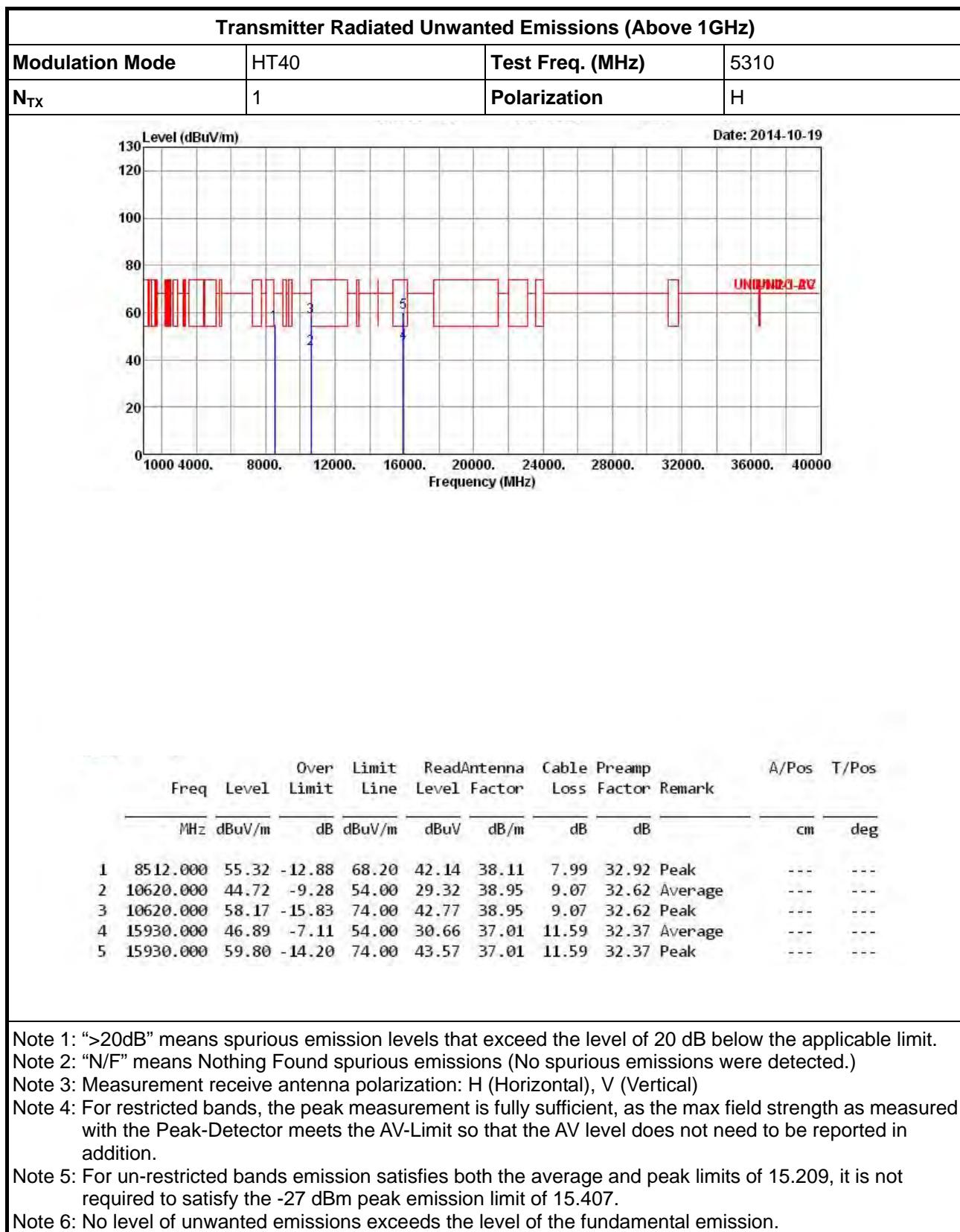
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

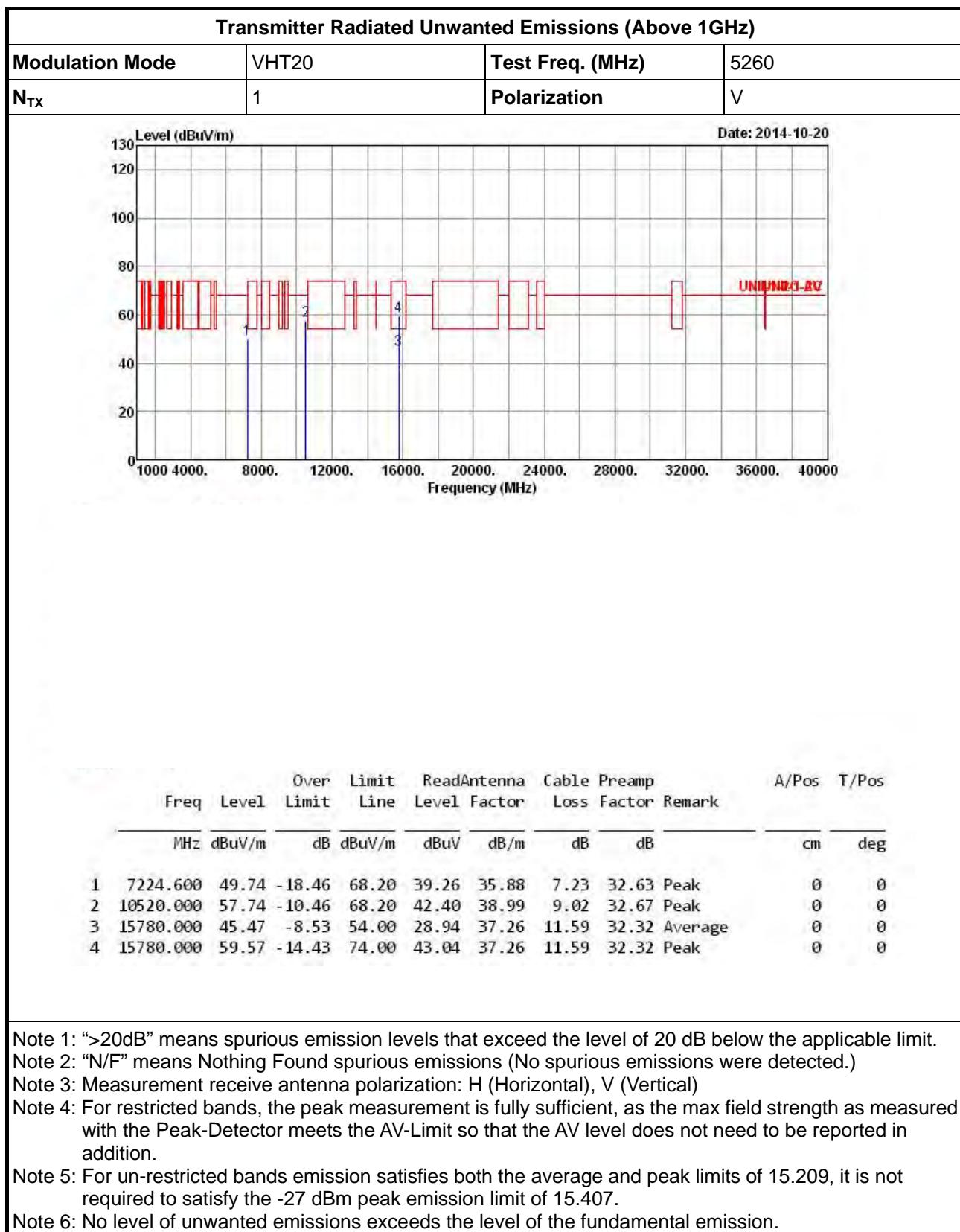
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

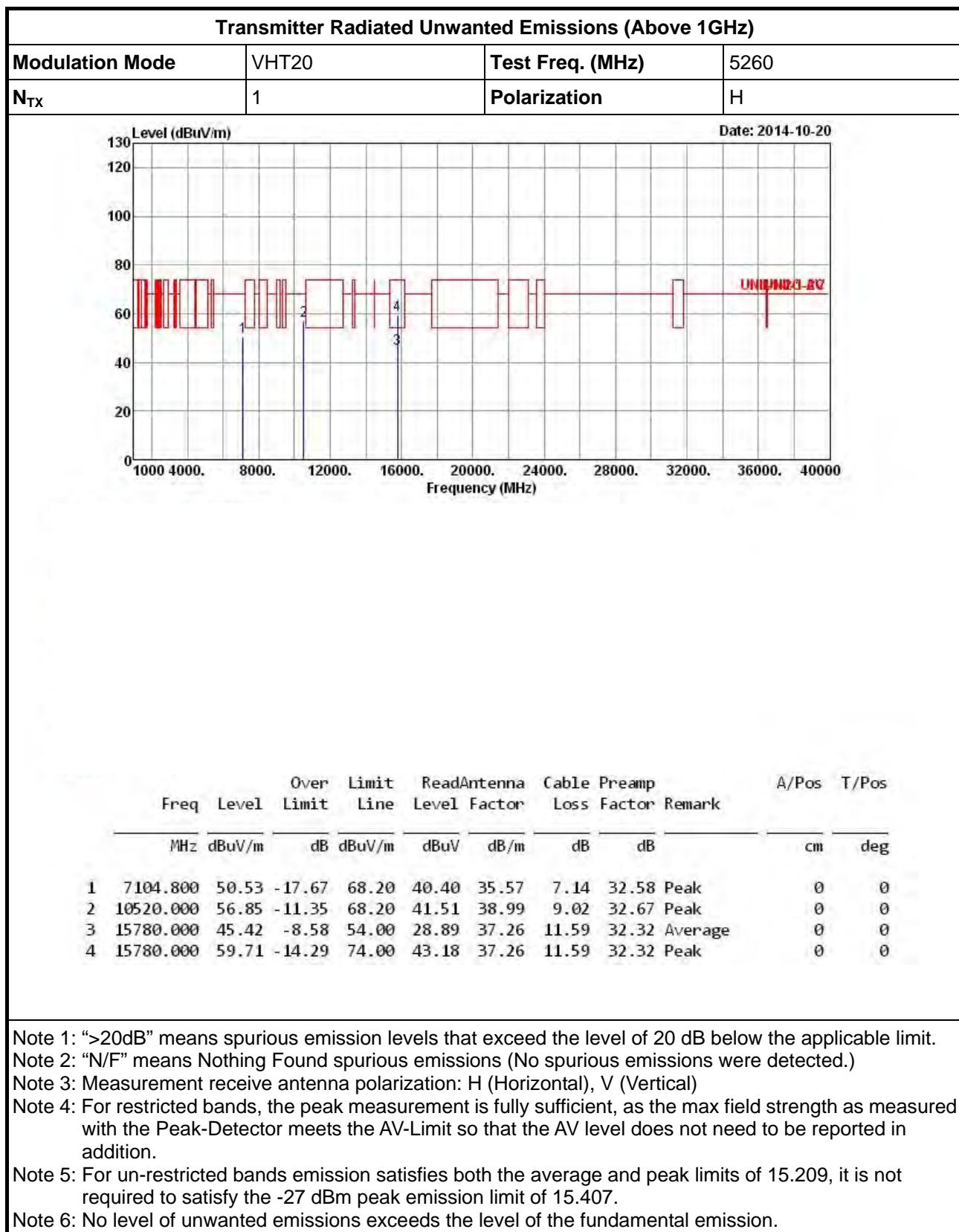
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

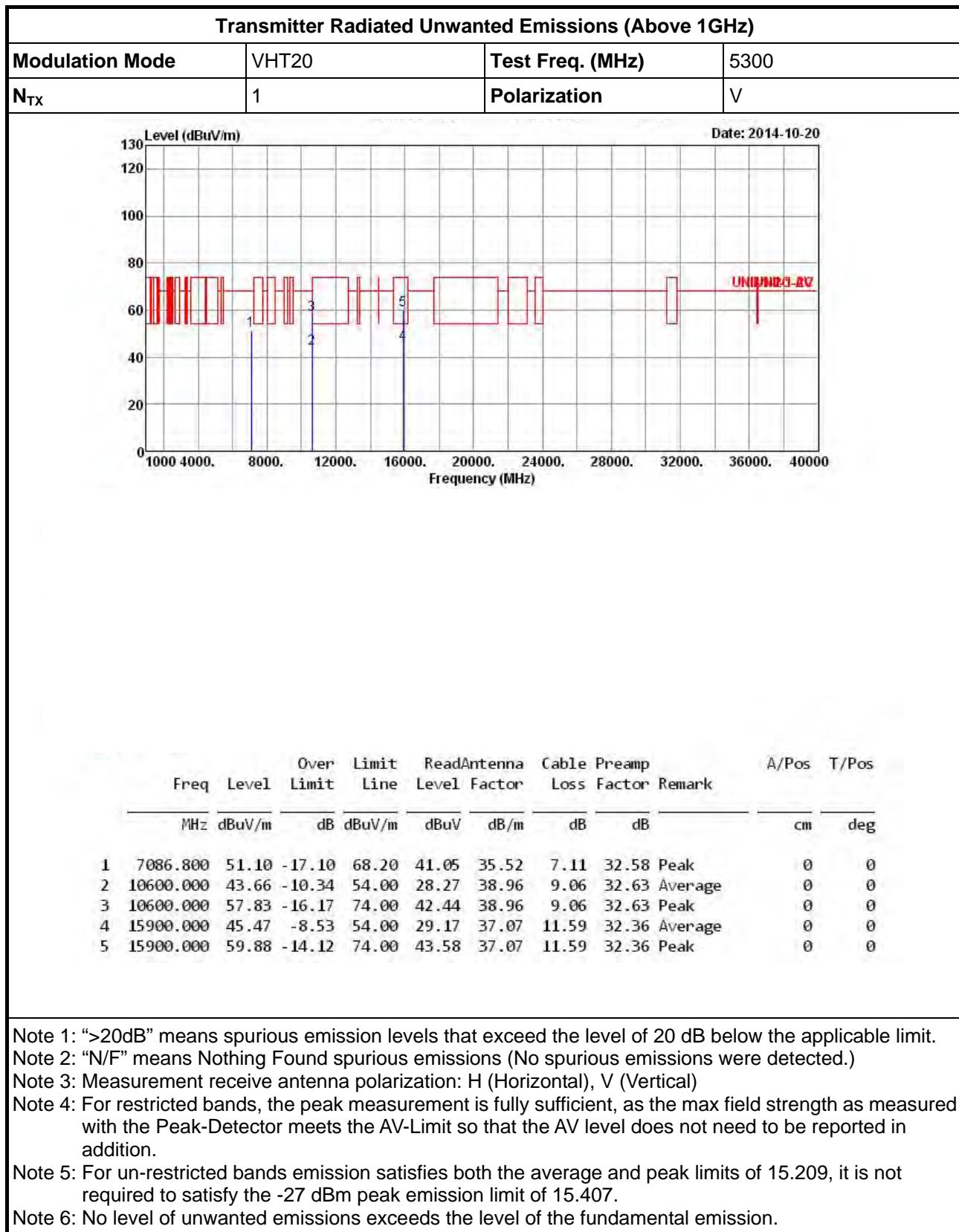
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

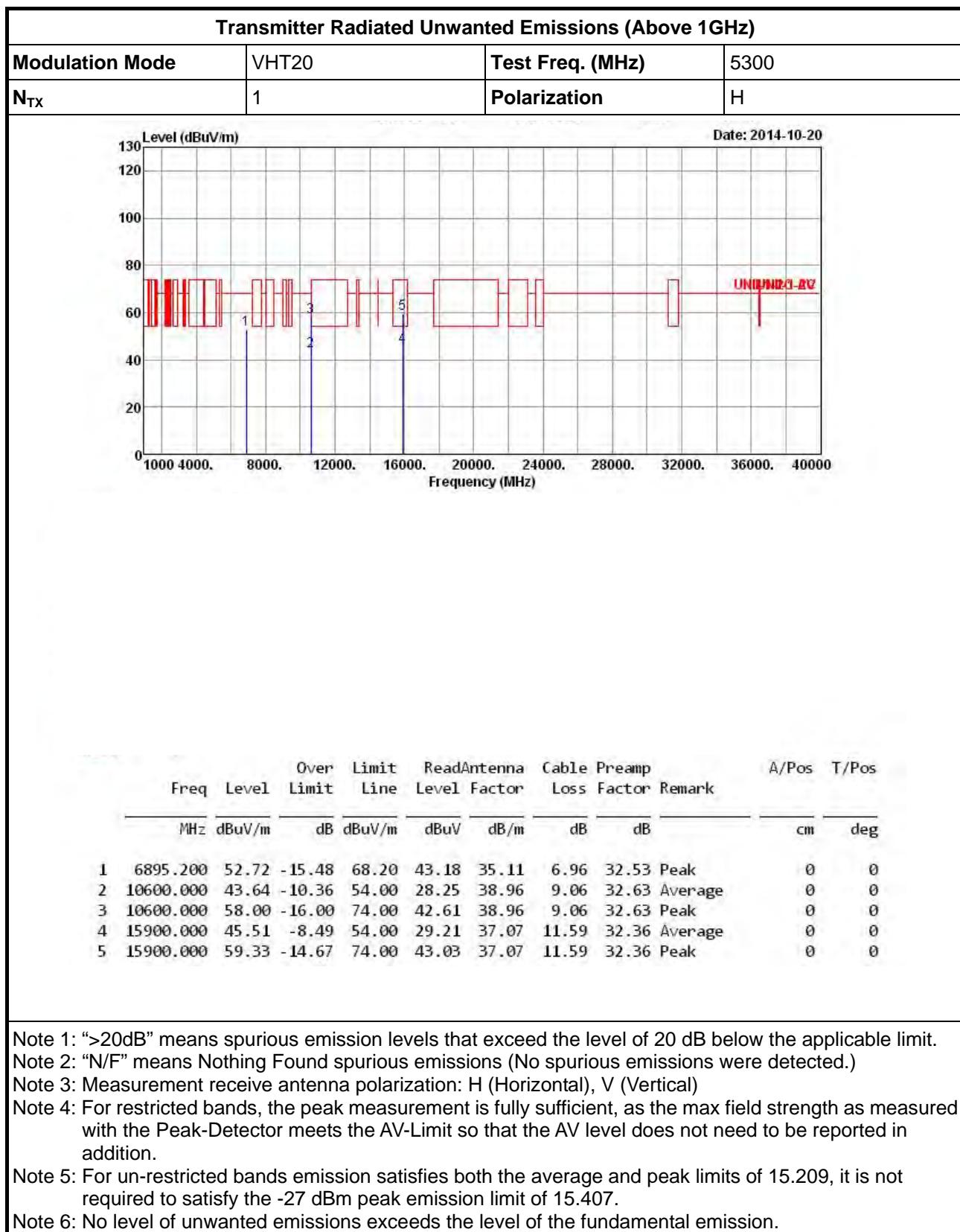
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

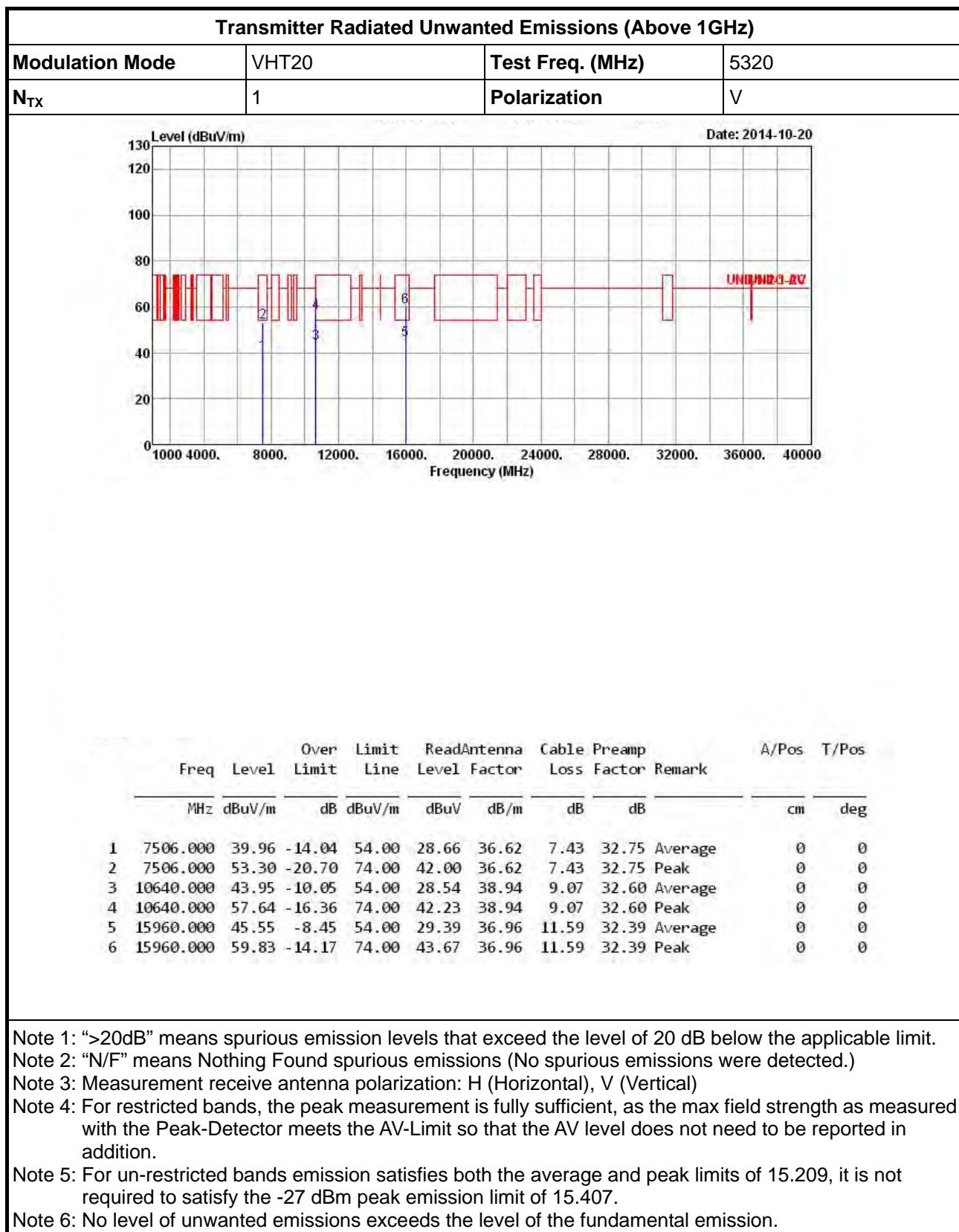


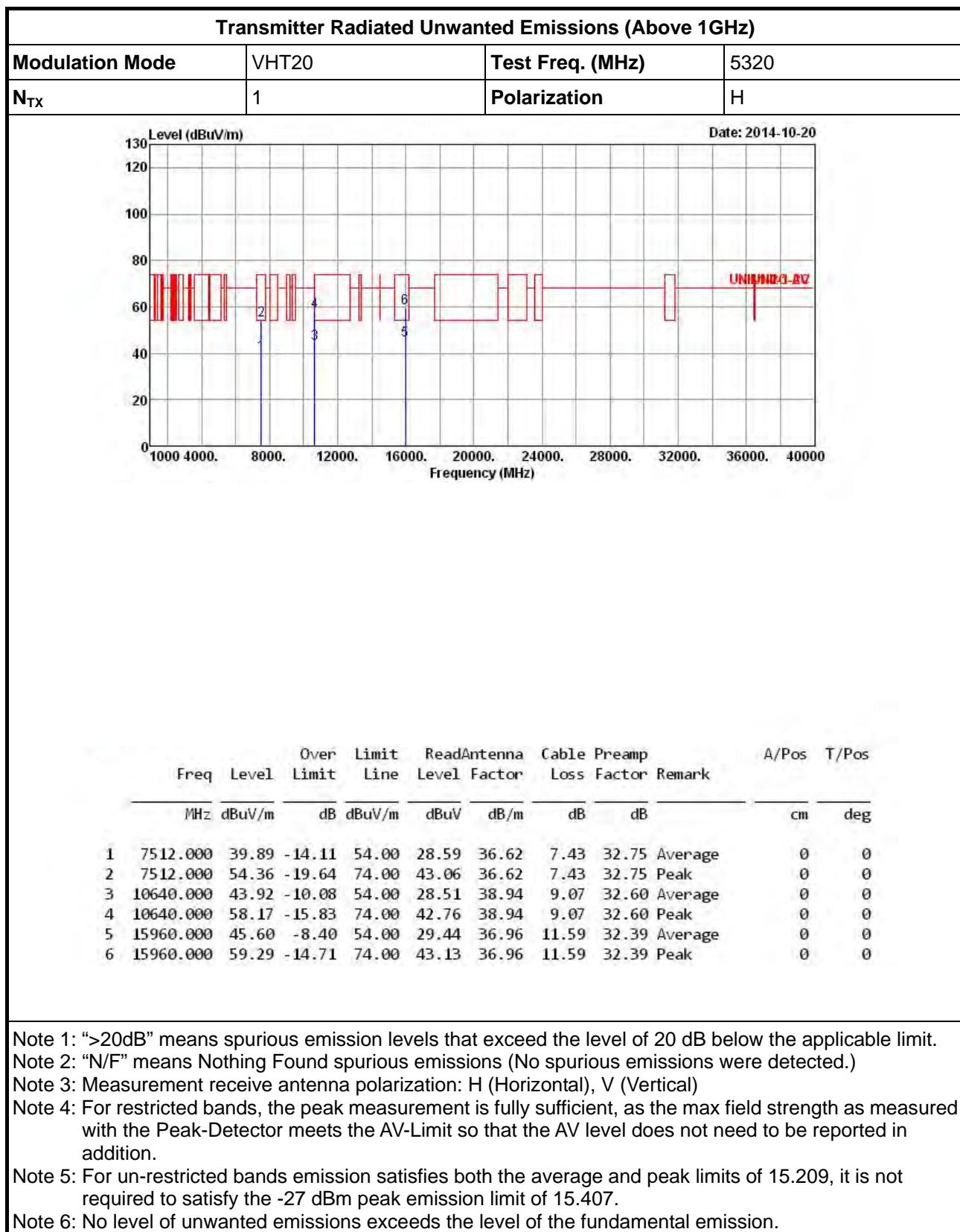


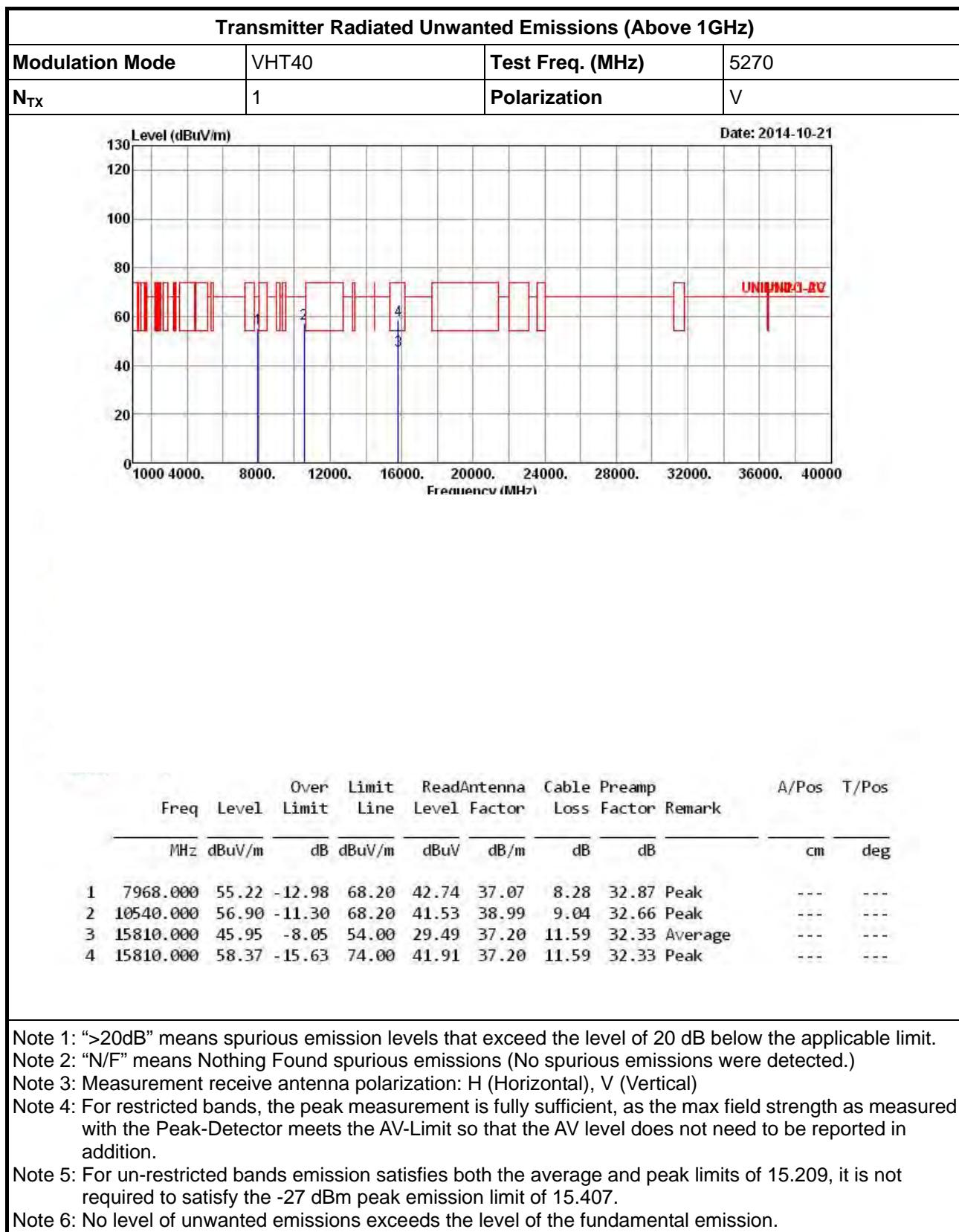


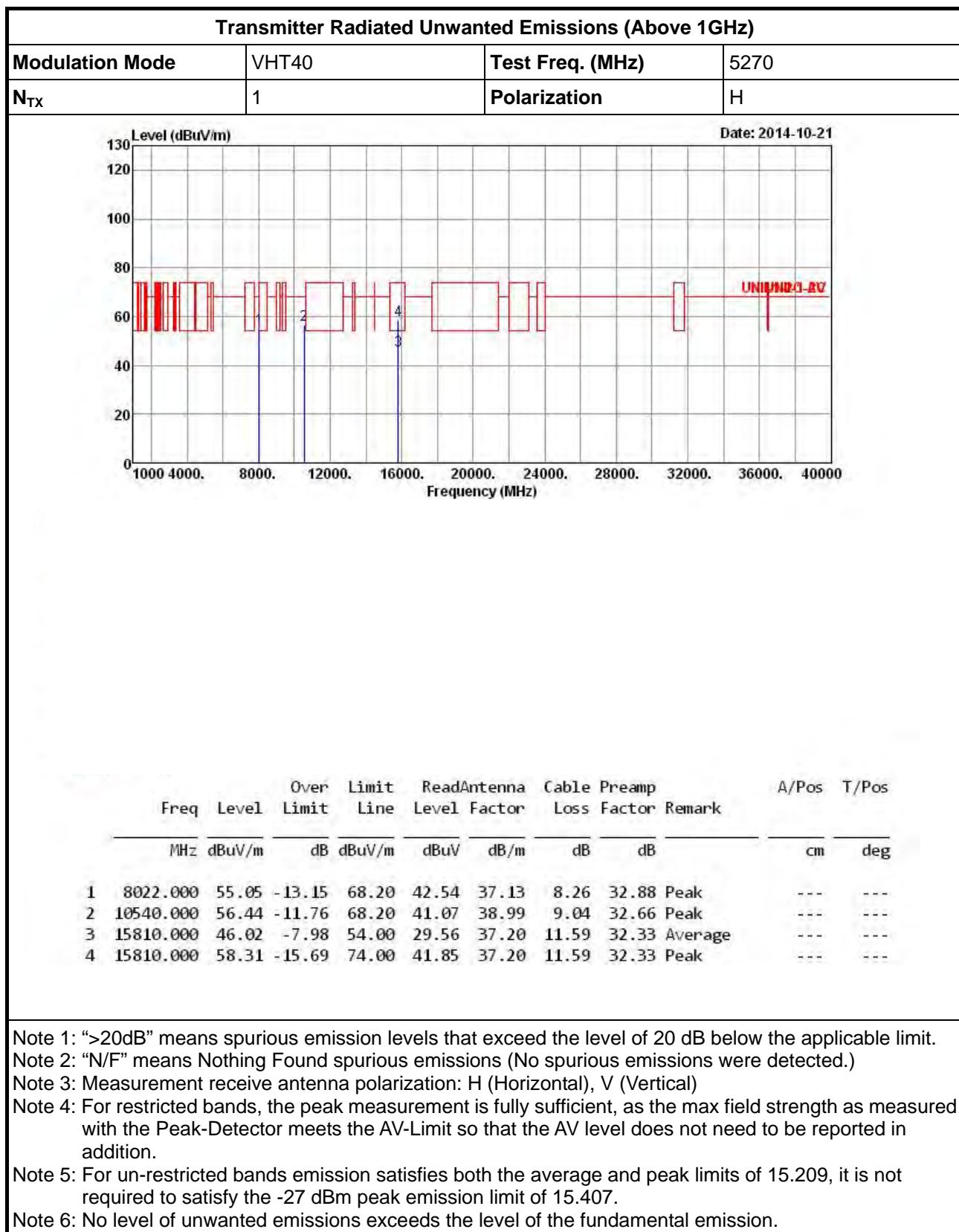


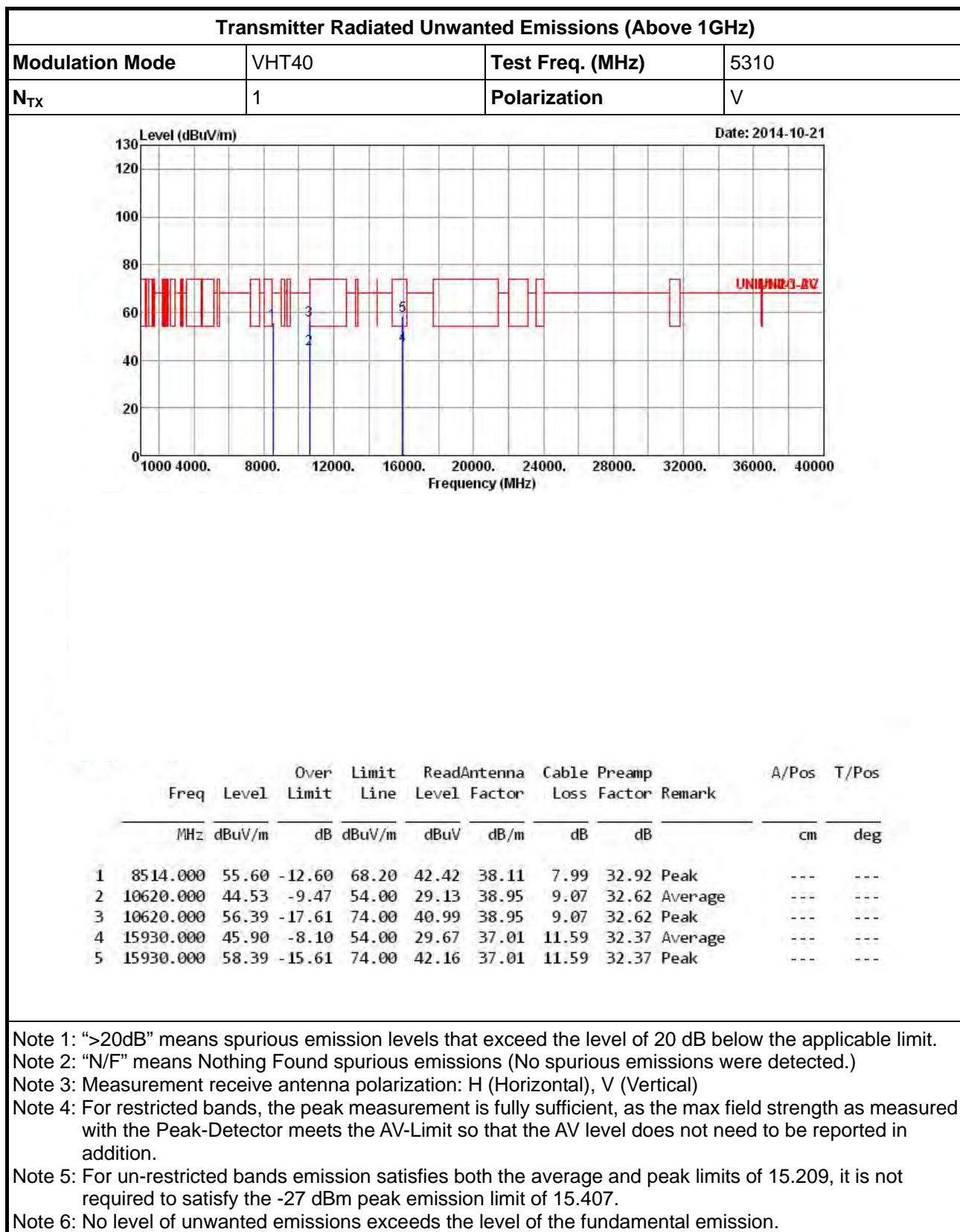


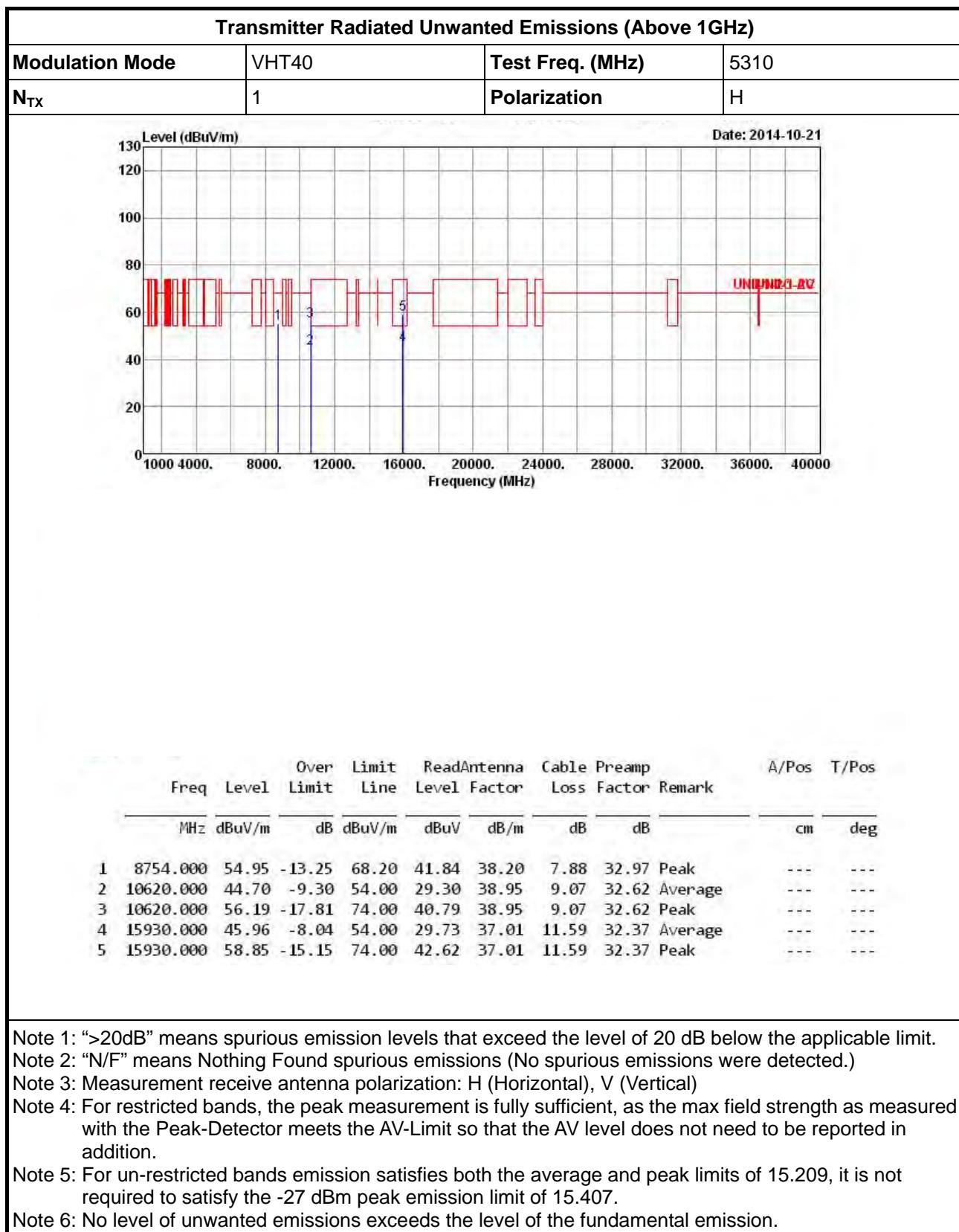


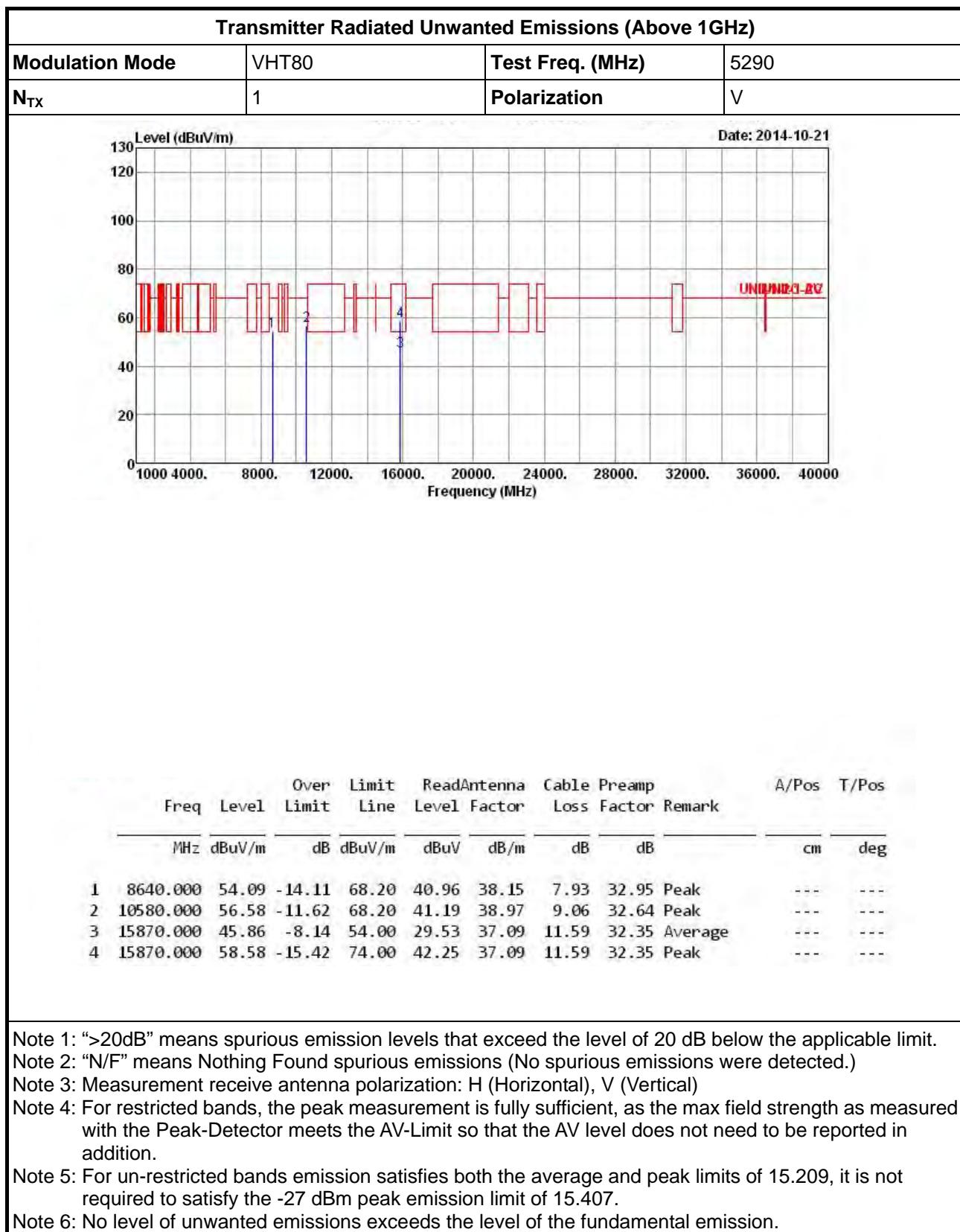


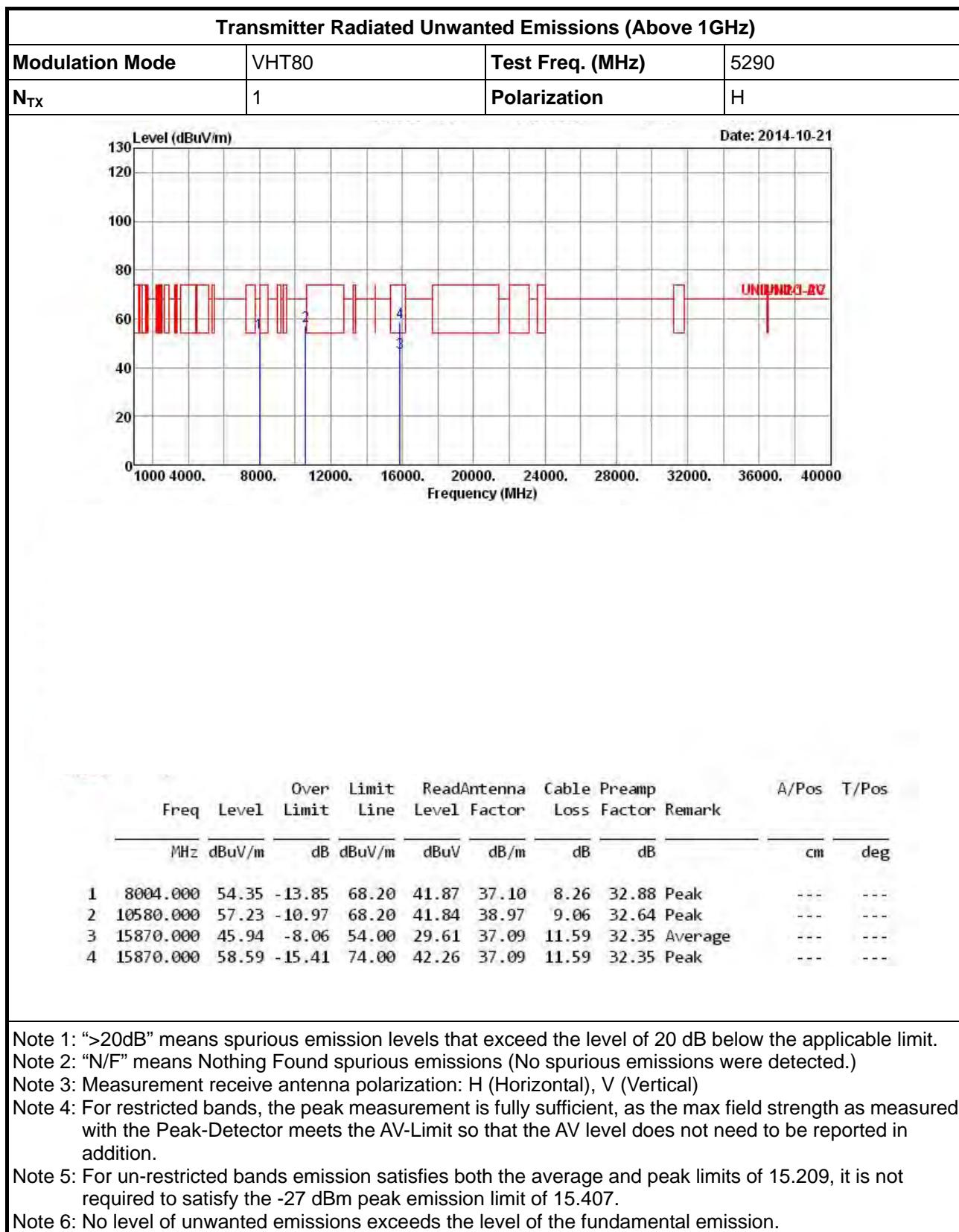






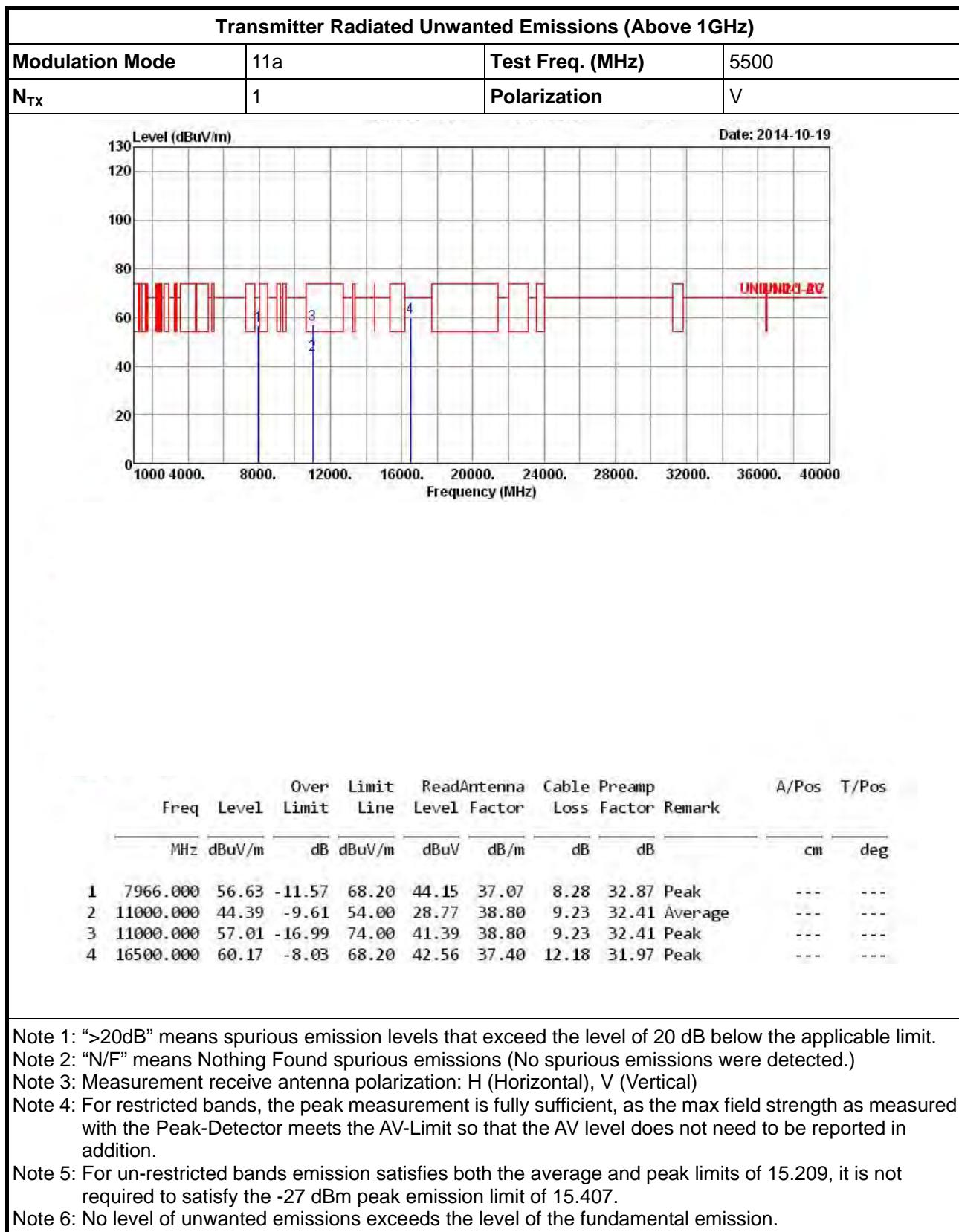








3.6.9 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5470-5725MHz





Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11a	Test Freq. (MHz)	5500
N _{TX}	1	Polarization	H
Level (dB _{UV} /m)			Date: 2014-10-19

Freq	Level	Over Limit	Limit	Read	Antenna	Cable	Preamp	A/Pos	T/Pos
MHz	dB _{UV} /m	dB	dB _{UV} /m	Level	Factor	Loss	Factor		
1	7672.000	40.89	-13.11	54.00	29.20	36.77	7.71	32.79	Average
2	7672.000	56.17	-17.83	74.00	44.48	36.77	7.71	32.79	Peak
3	11000.000	44.37	-9.63	54.00	28.75	38.80	9.23	32.41	Average
4	11000.000	57.07	-16.93	74.00	41.45	38.80	9.23	32.41	Peak
5	16500.000	60.44	-7.76	68.20	42.83	37.40	12.18	31.97	Peak

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

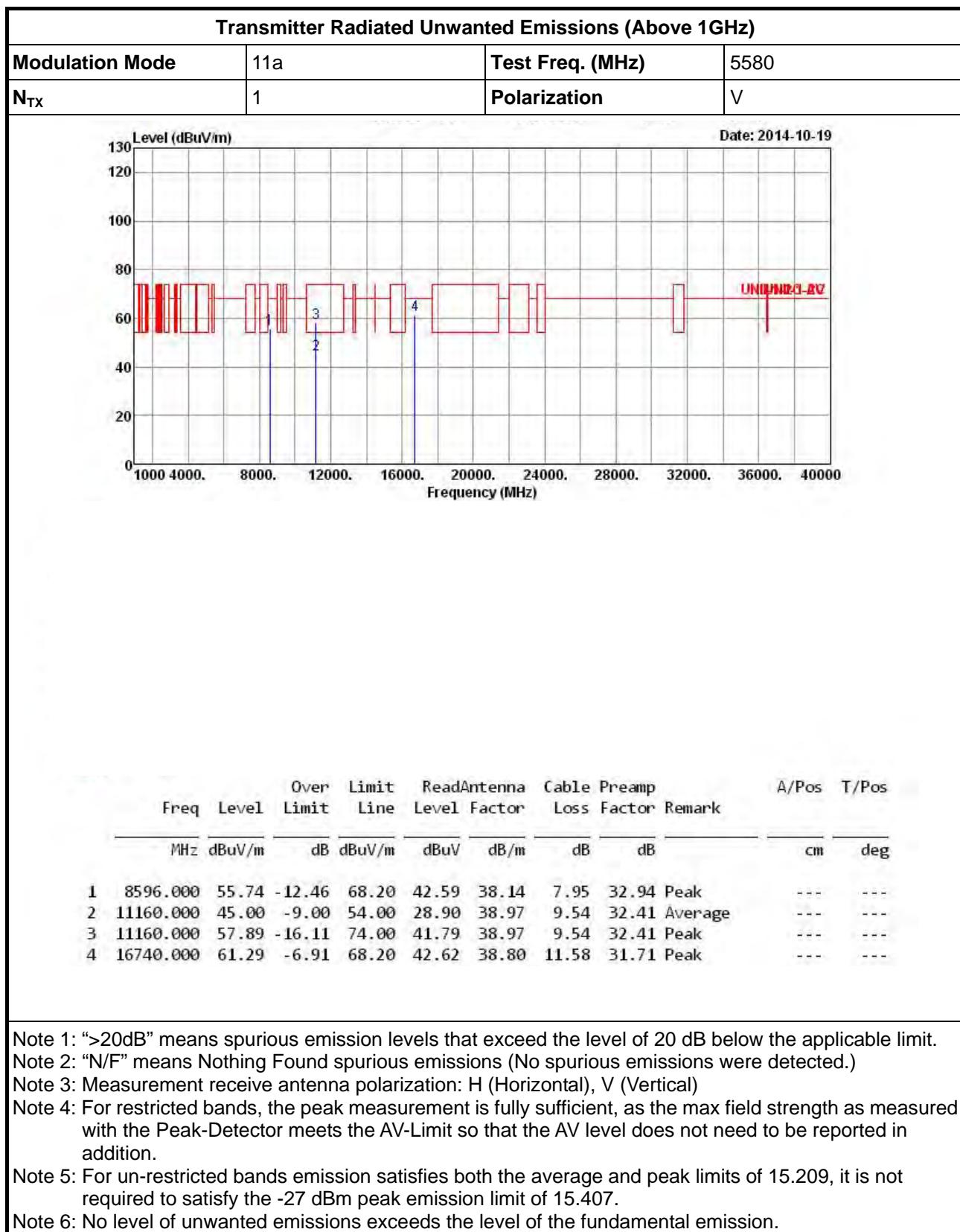
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

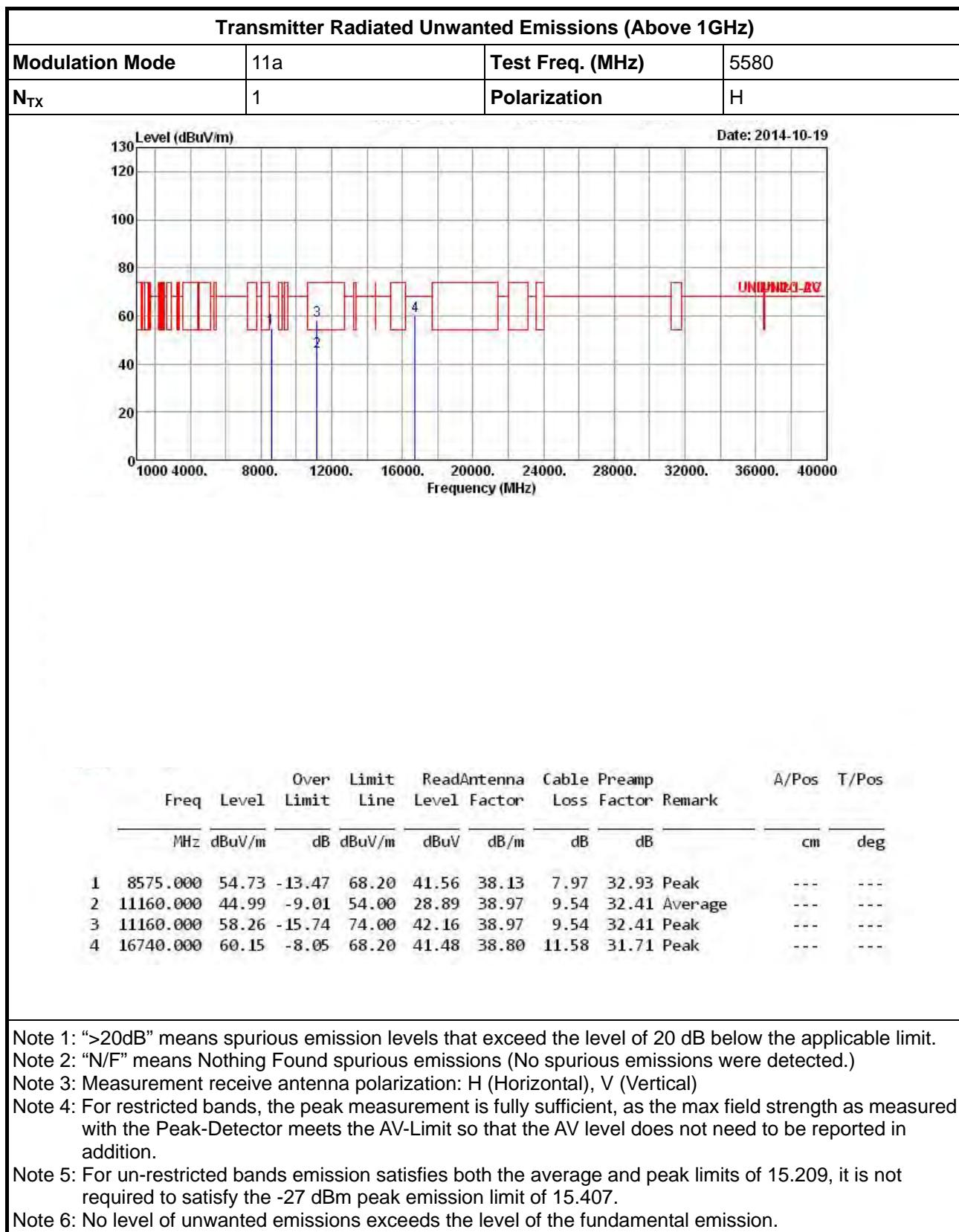
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

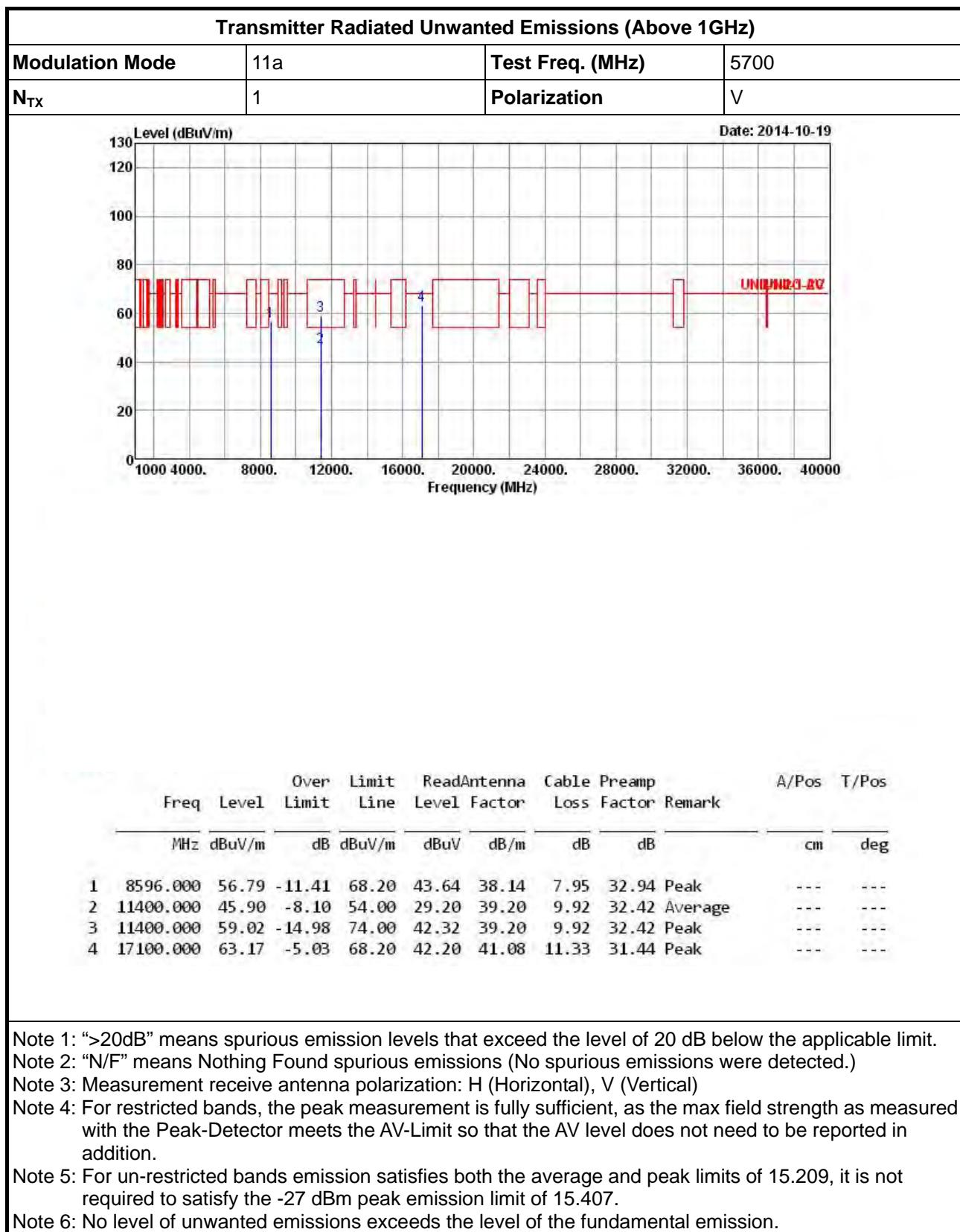
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

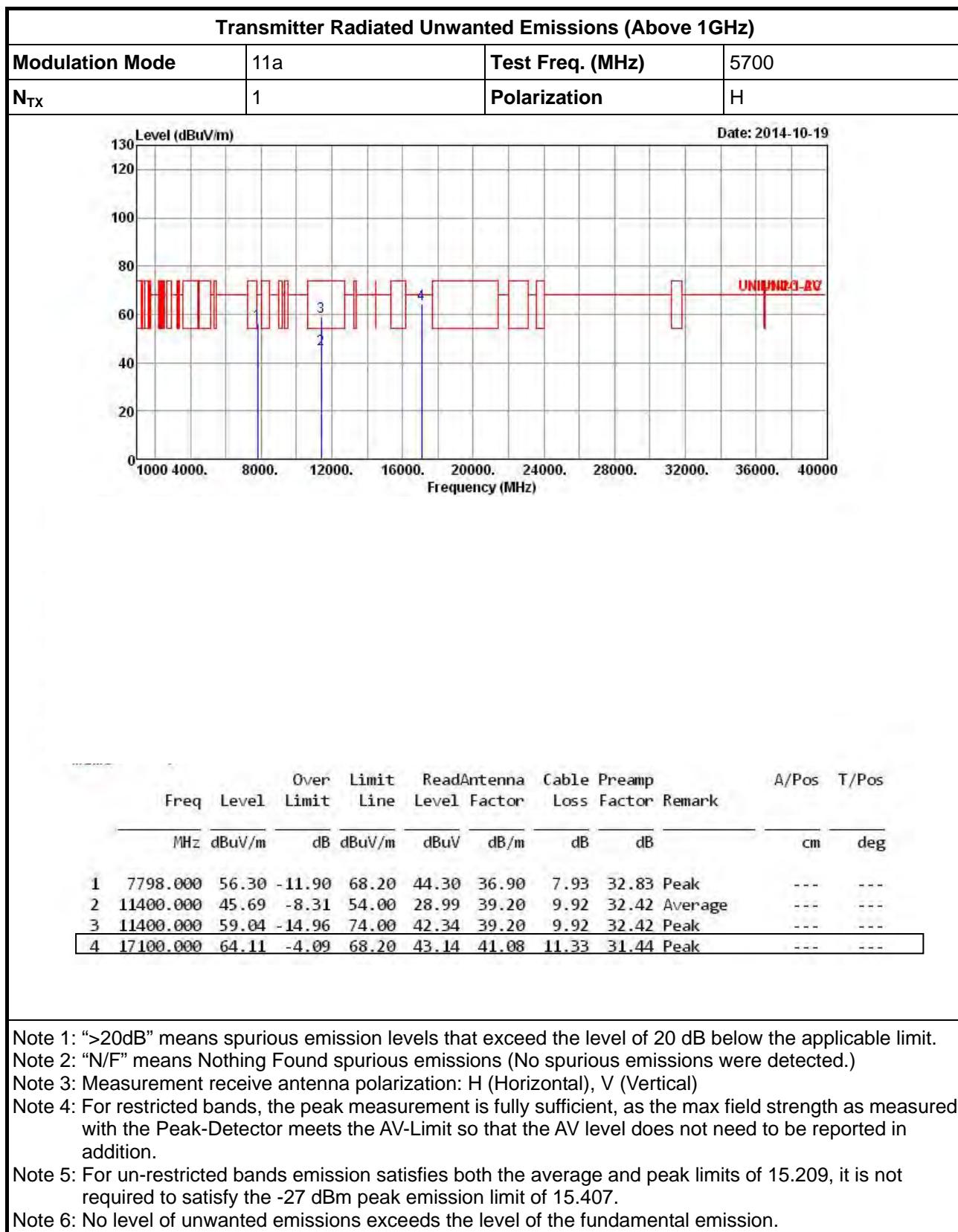
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

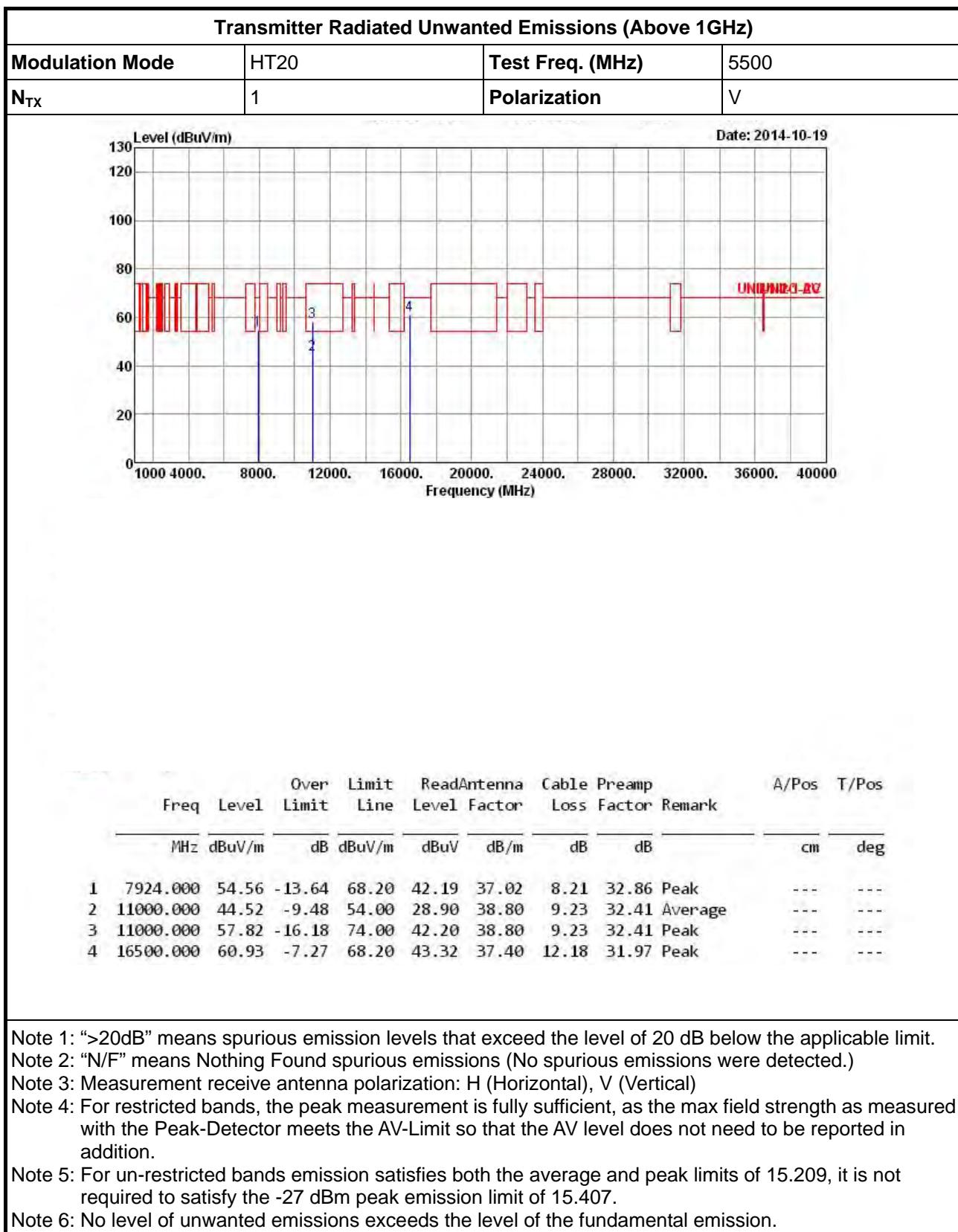
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

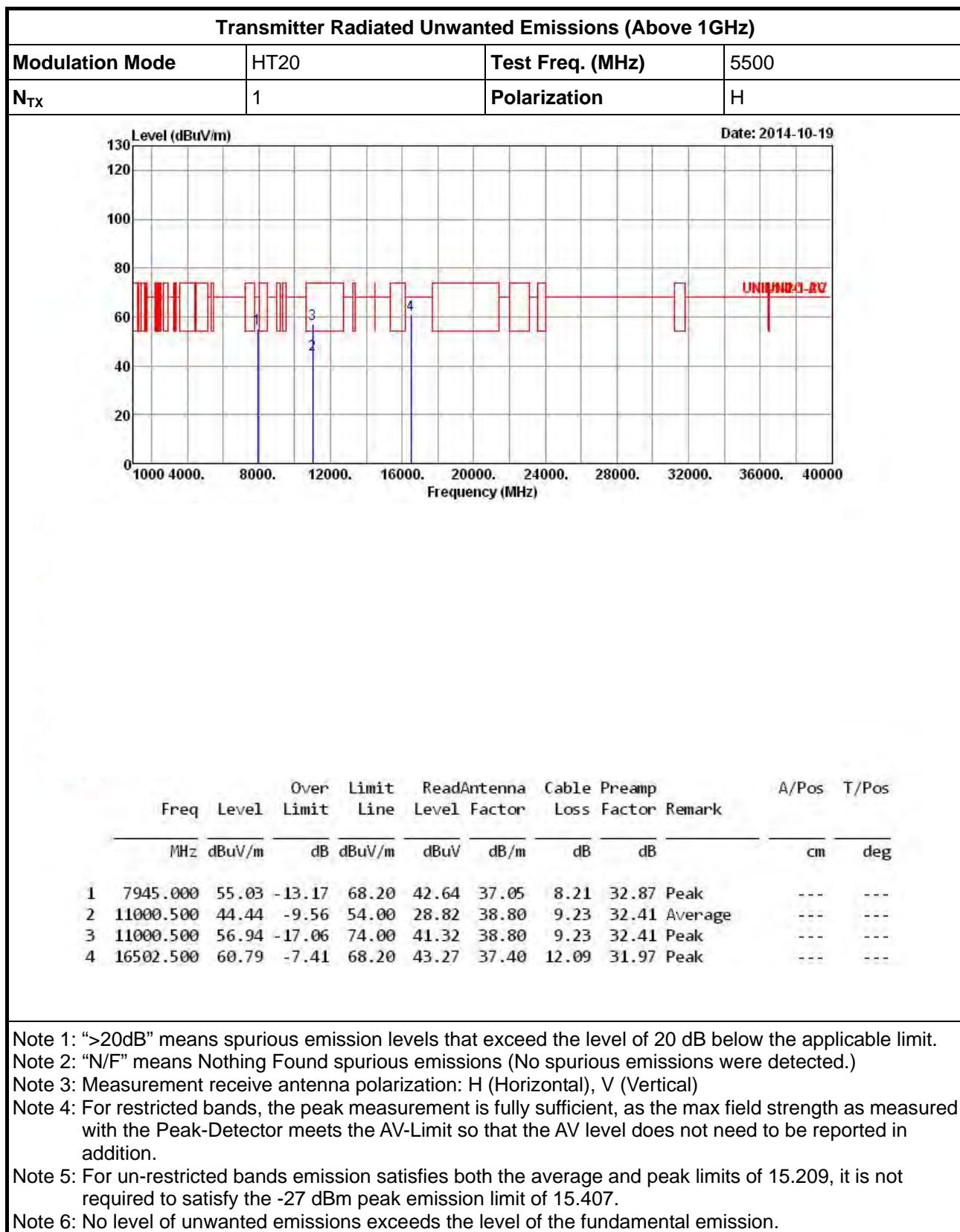


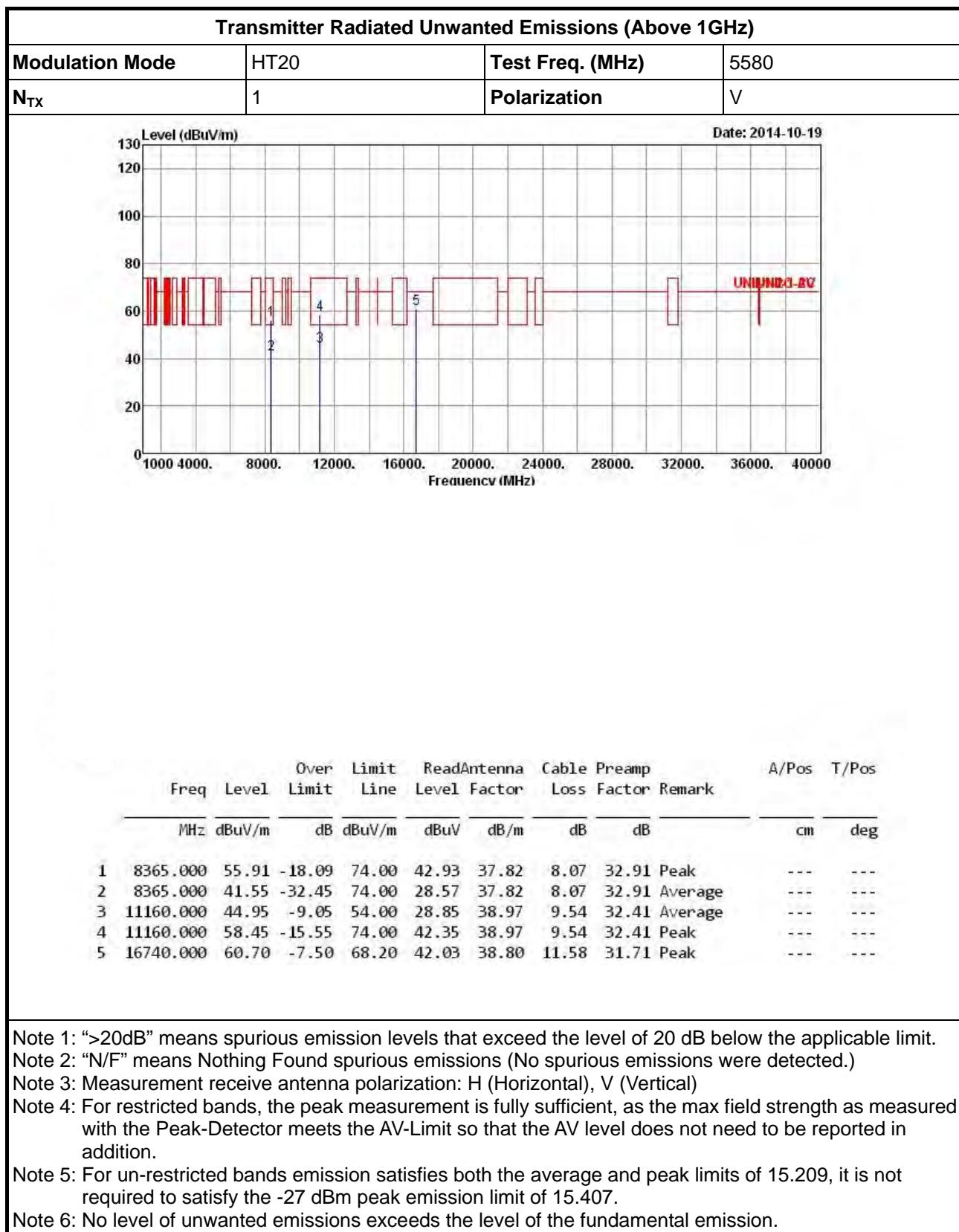


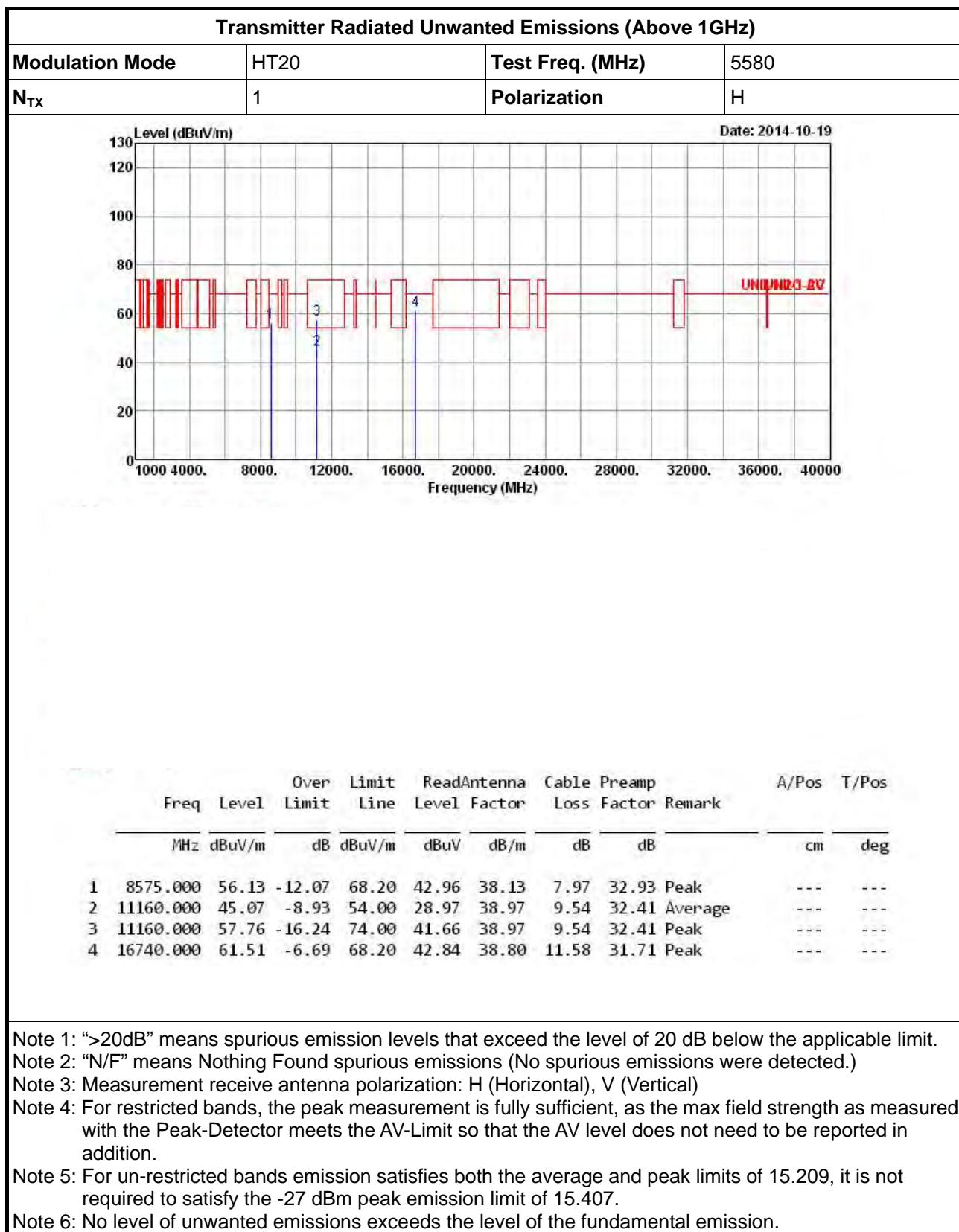


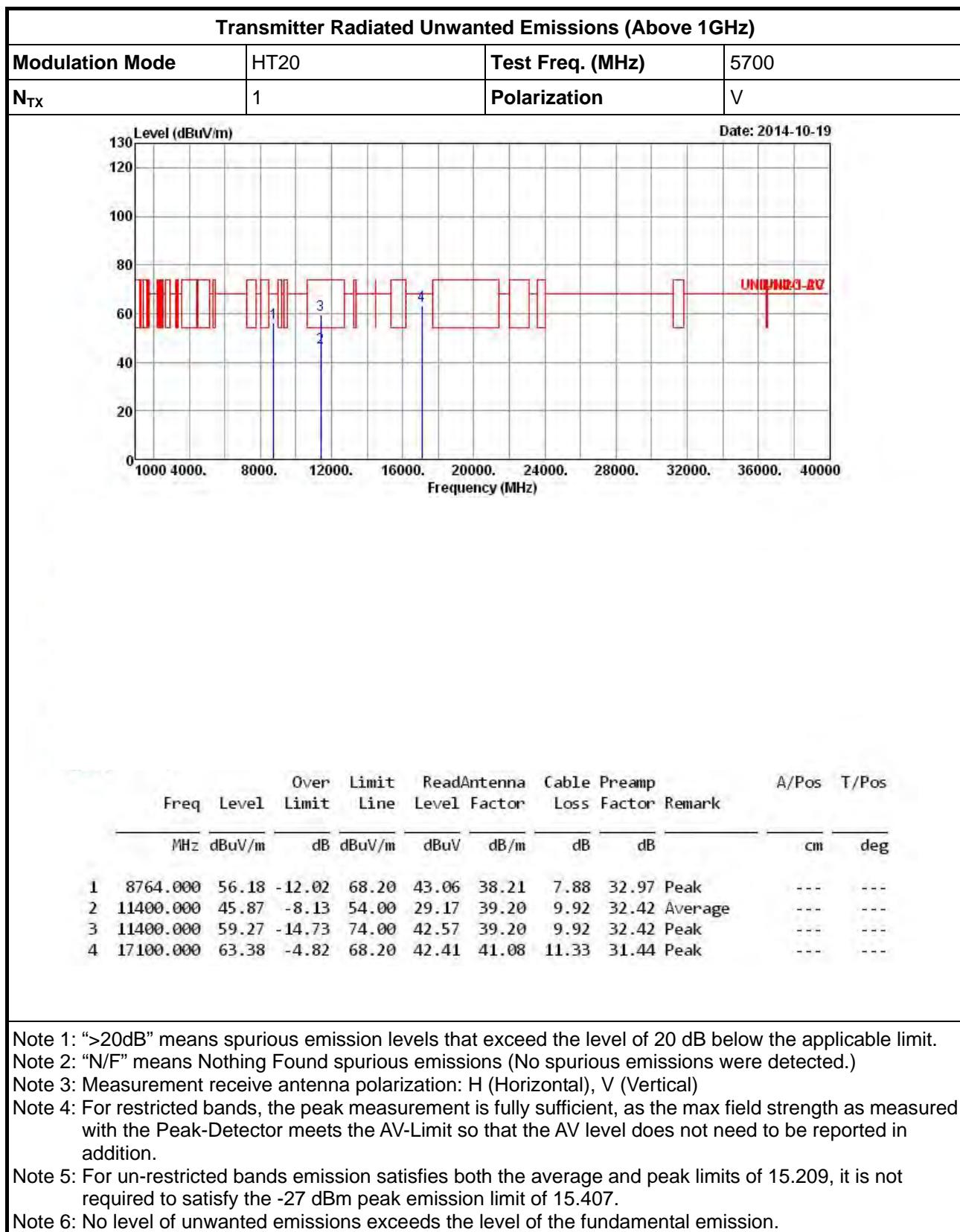


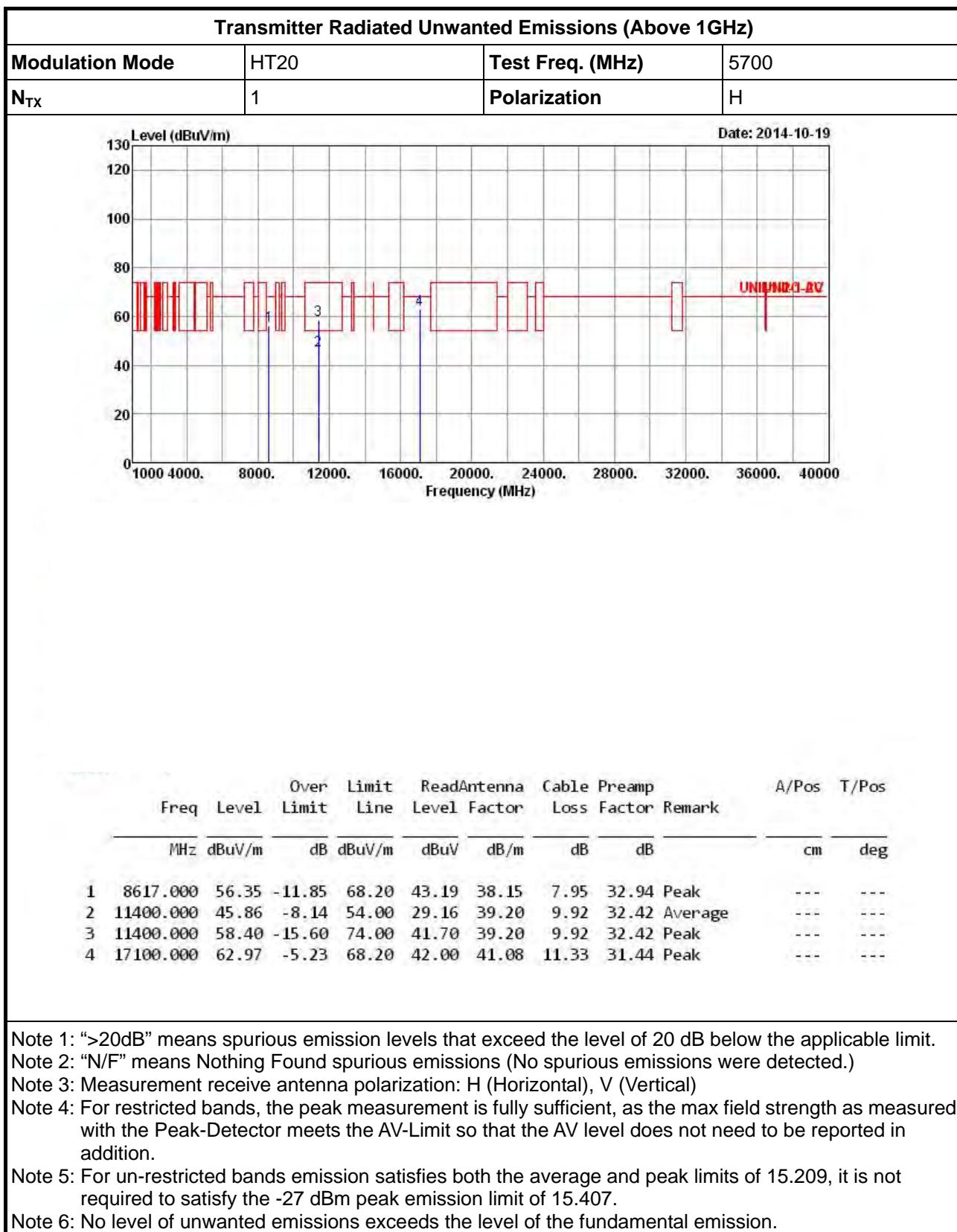


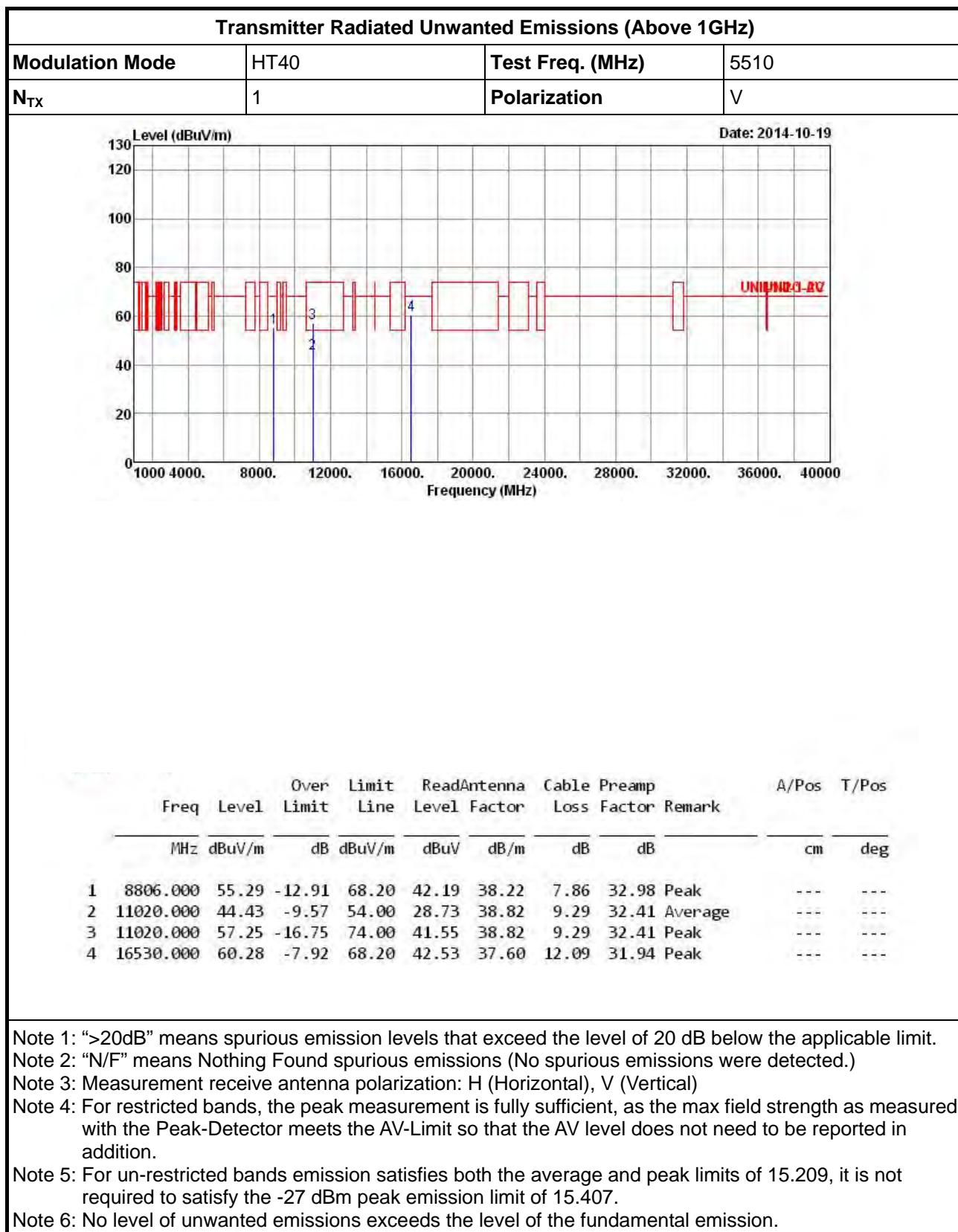


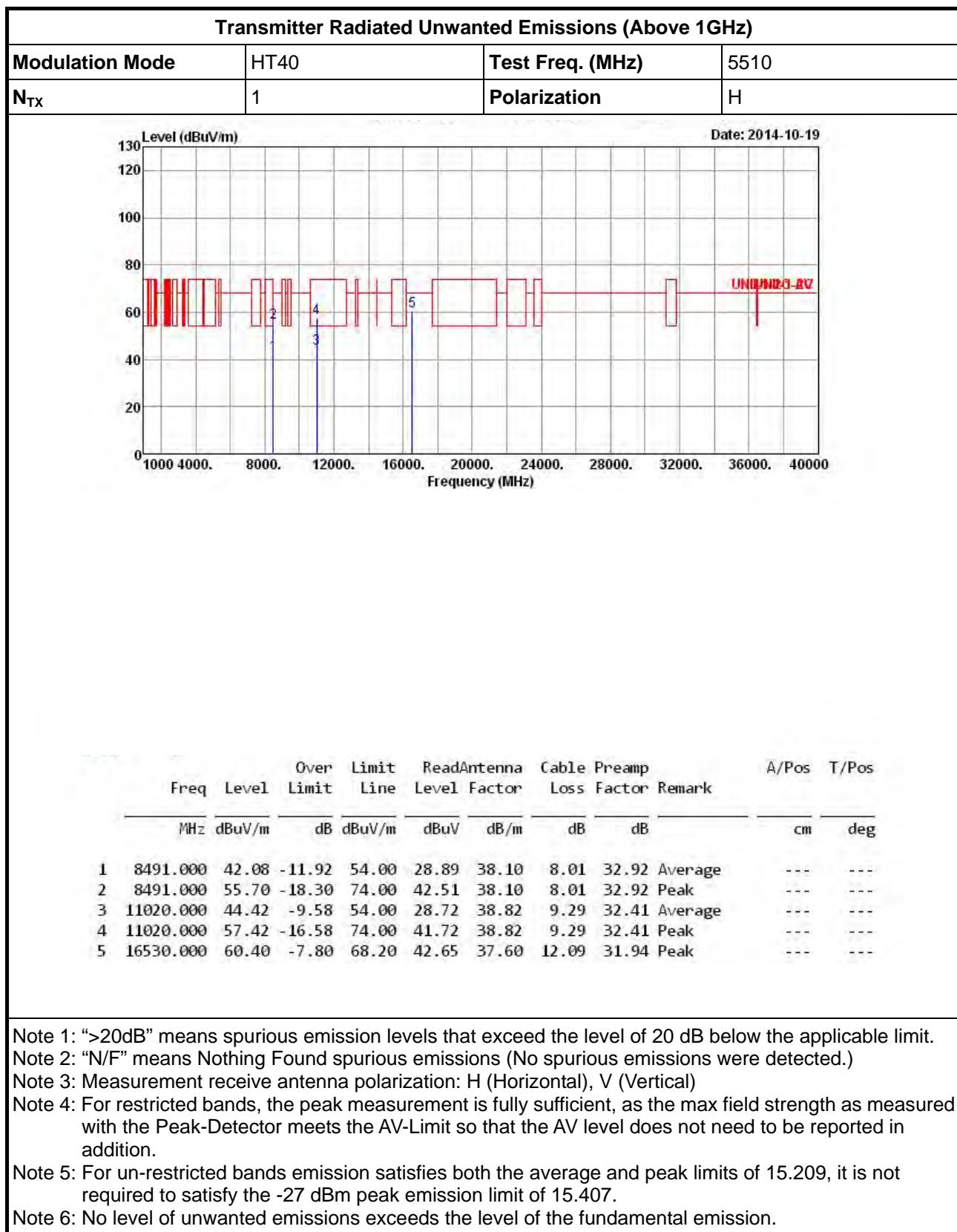


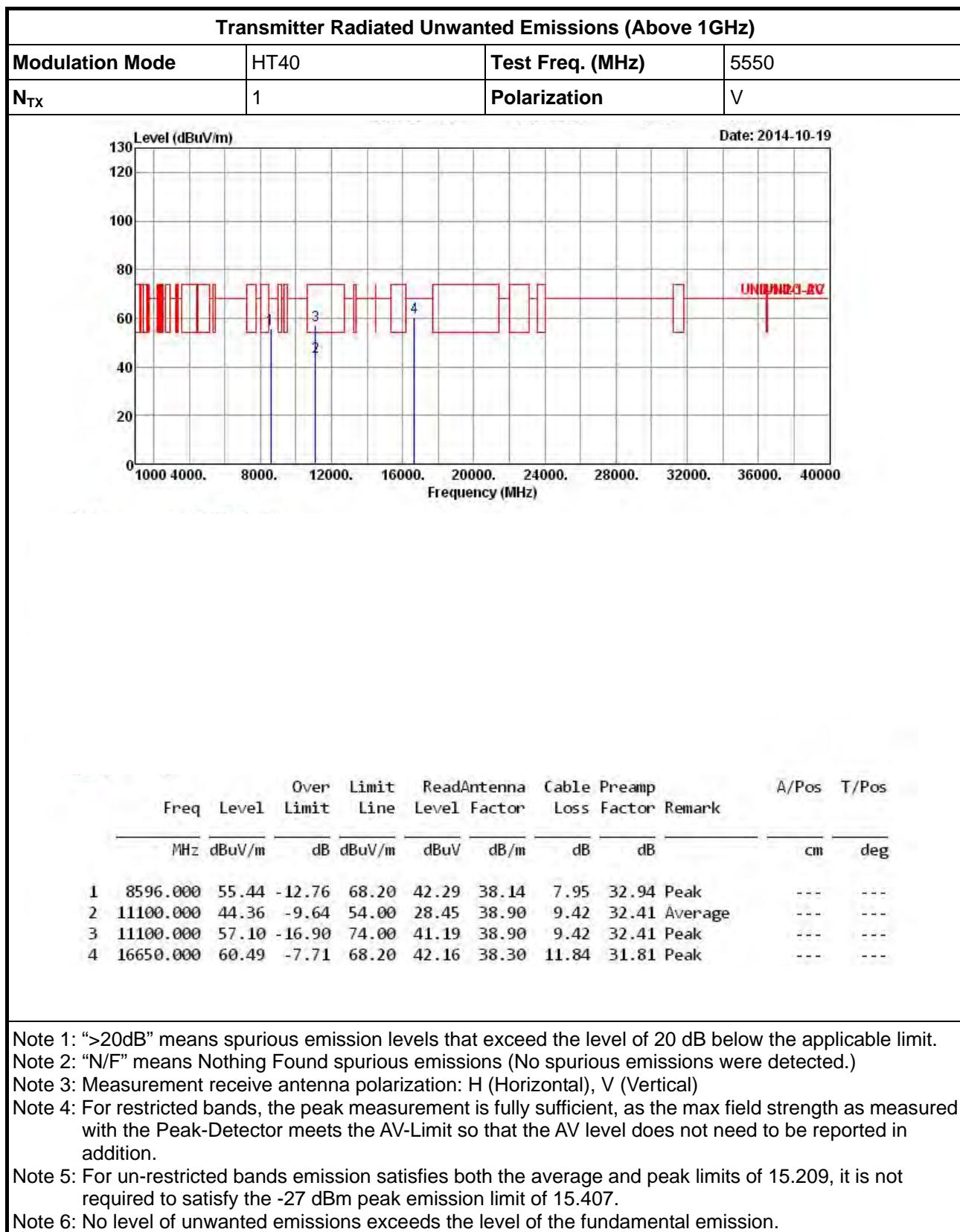


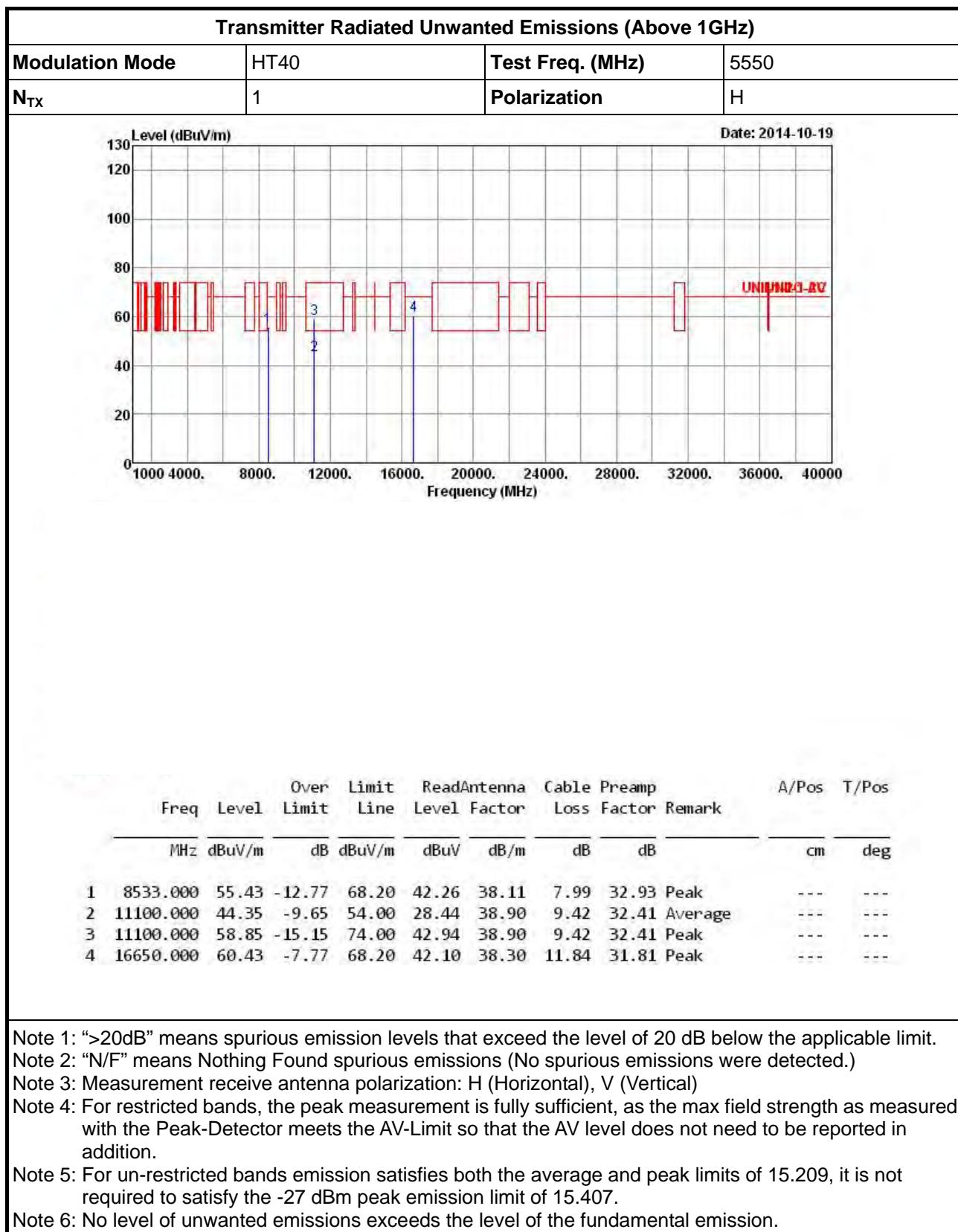


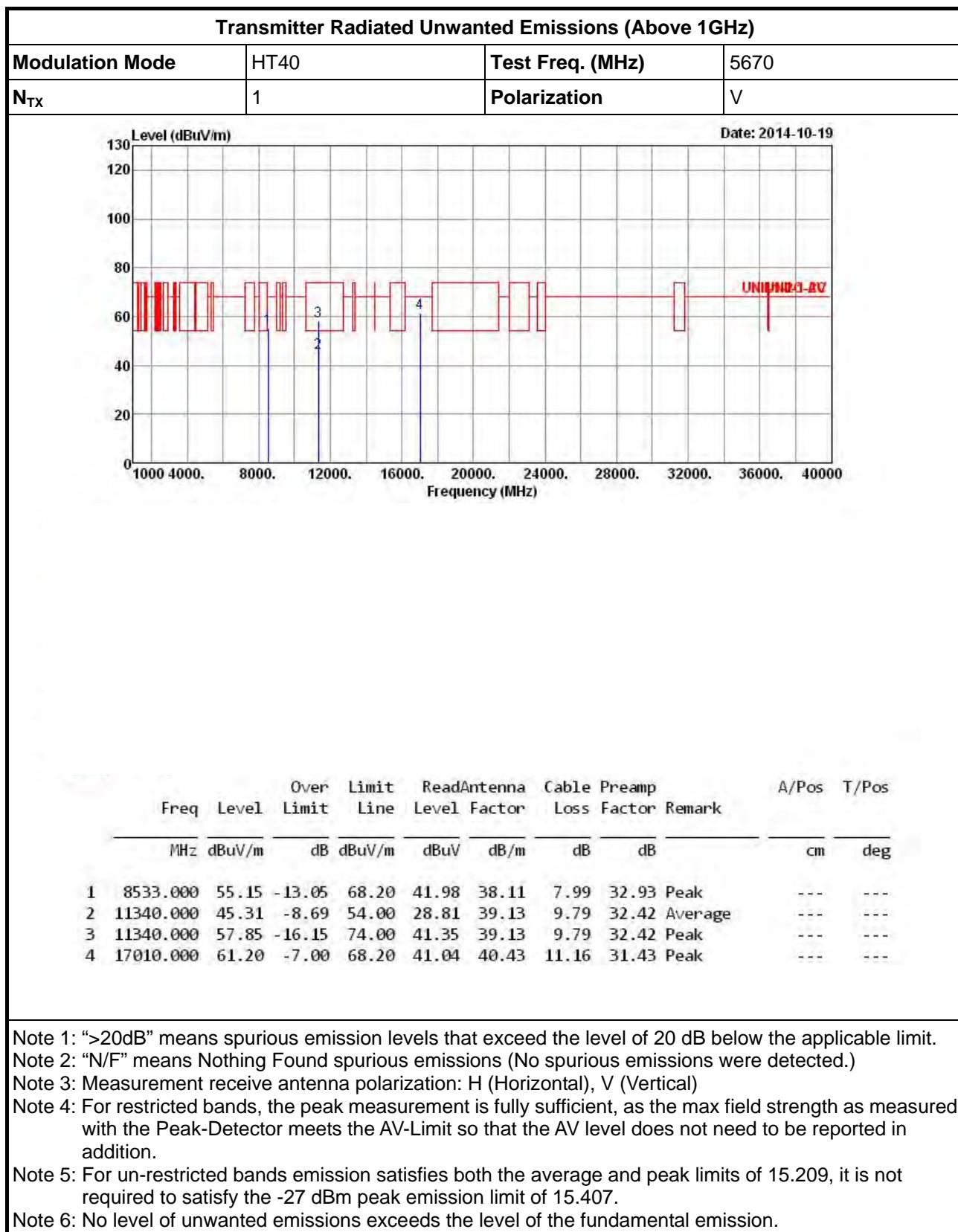


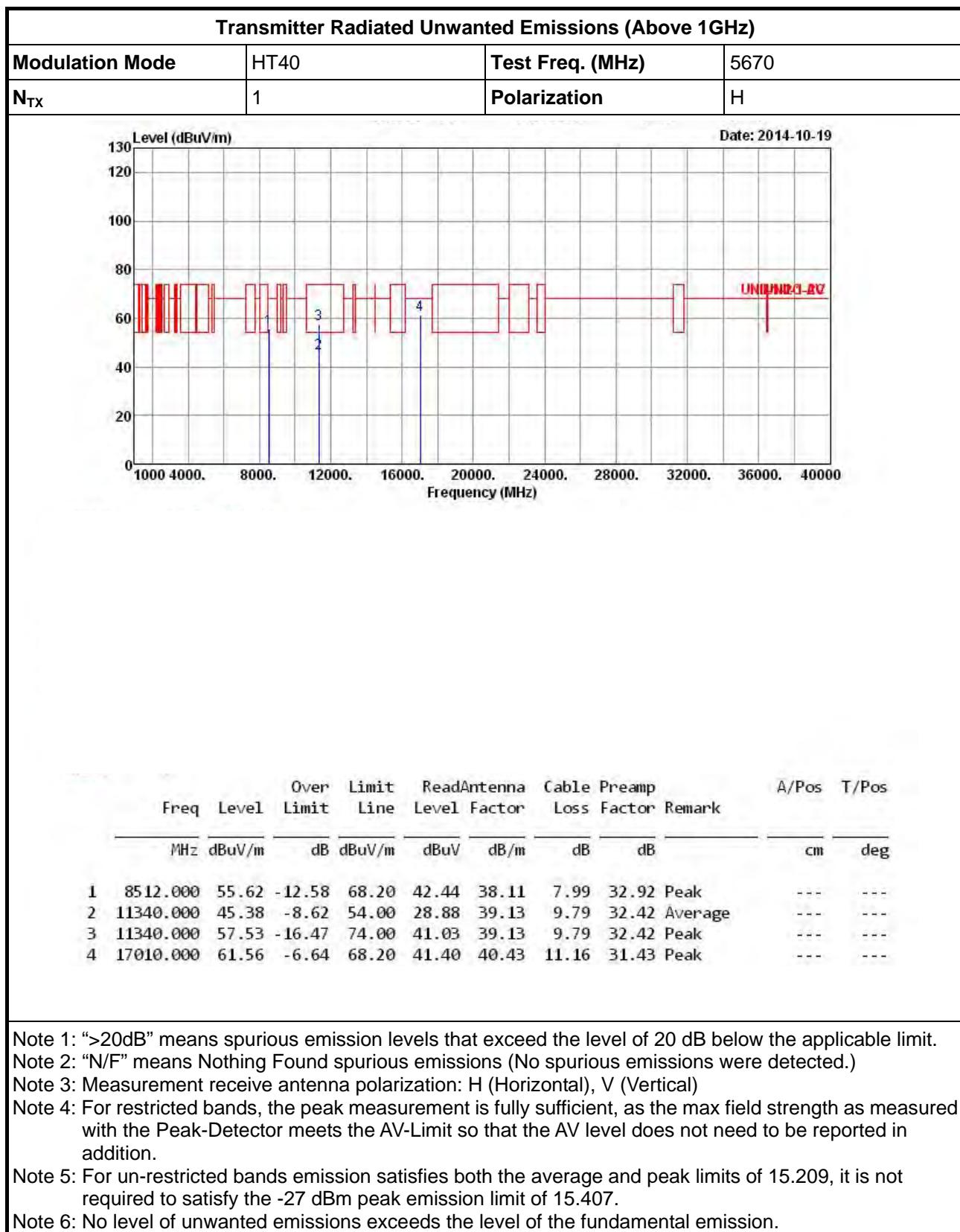


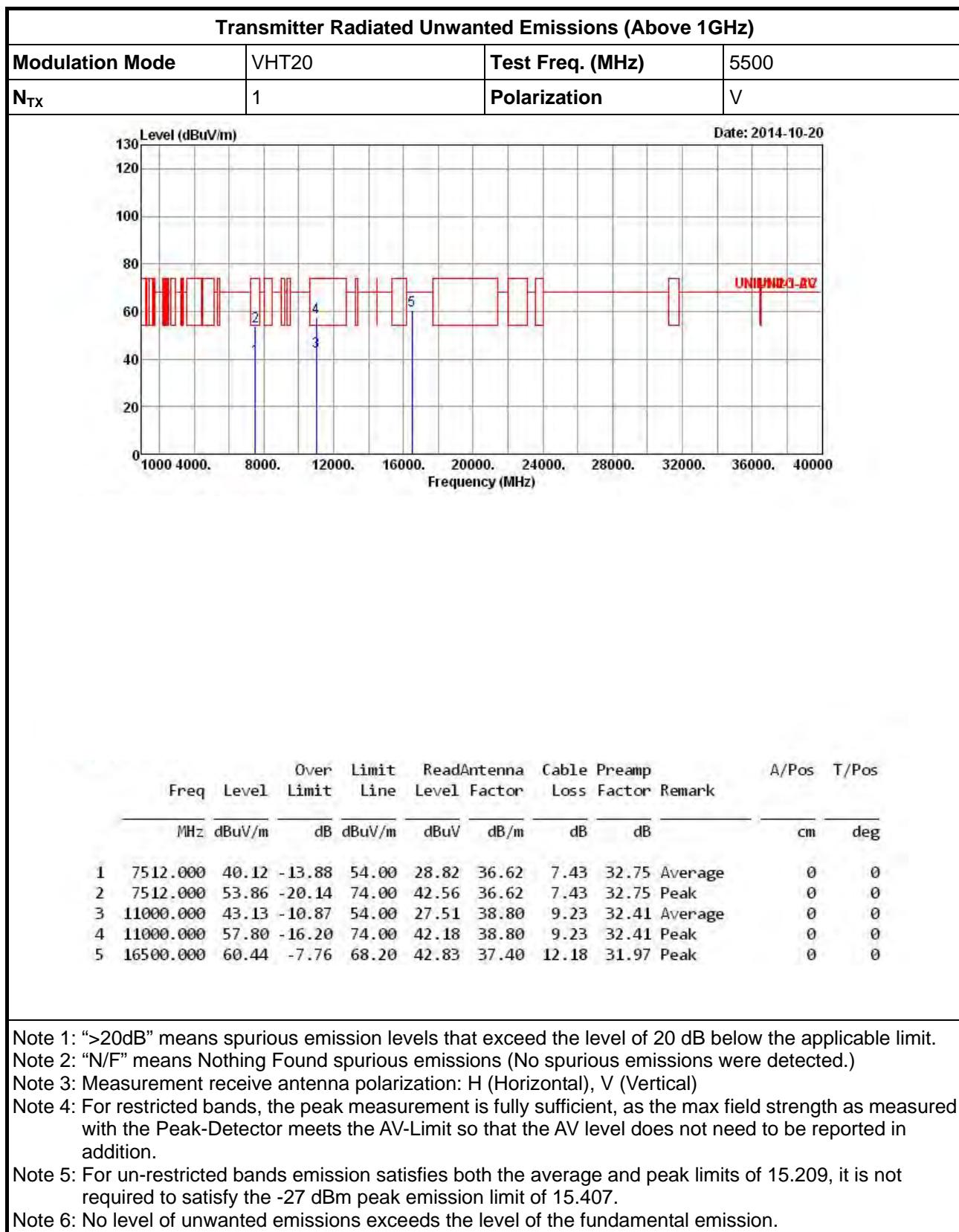


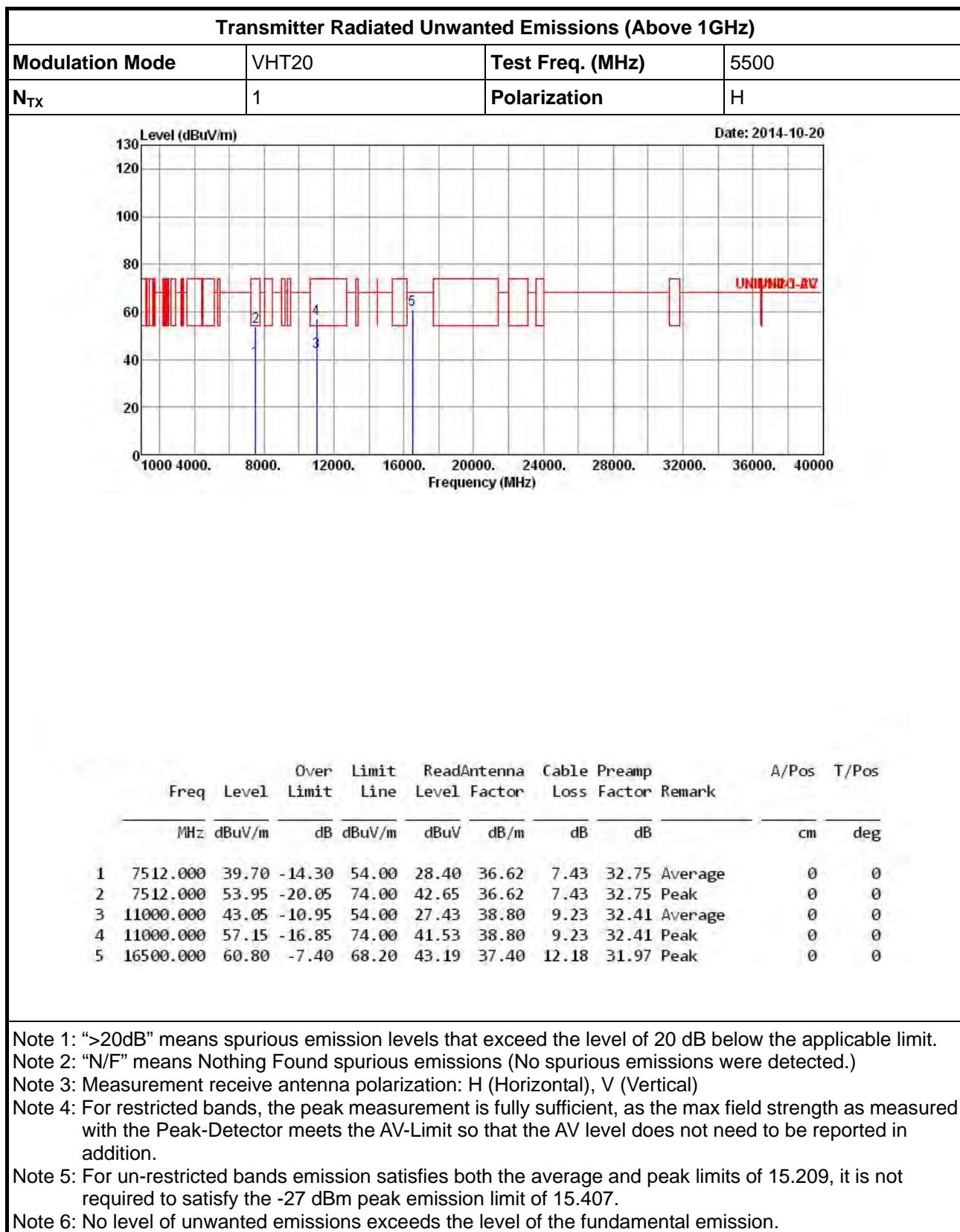


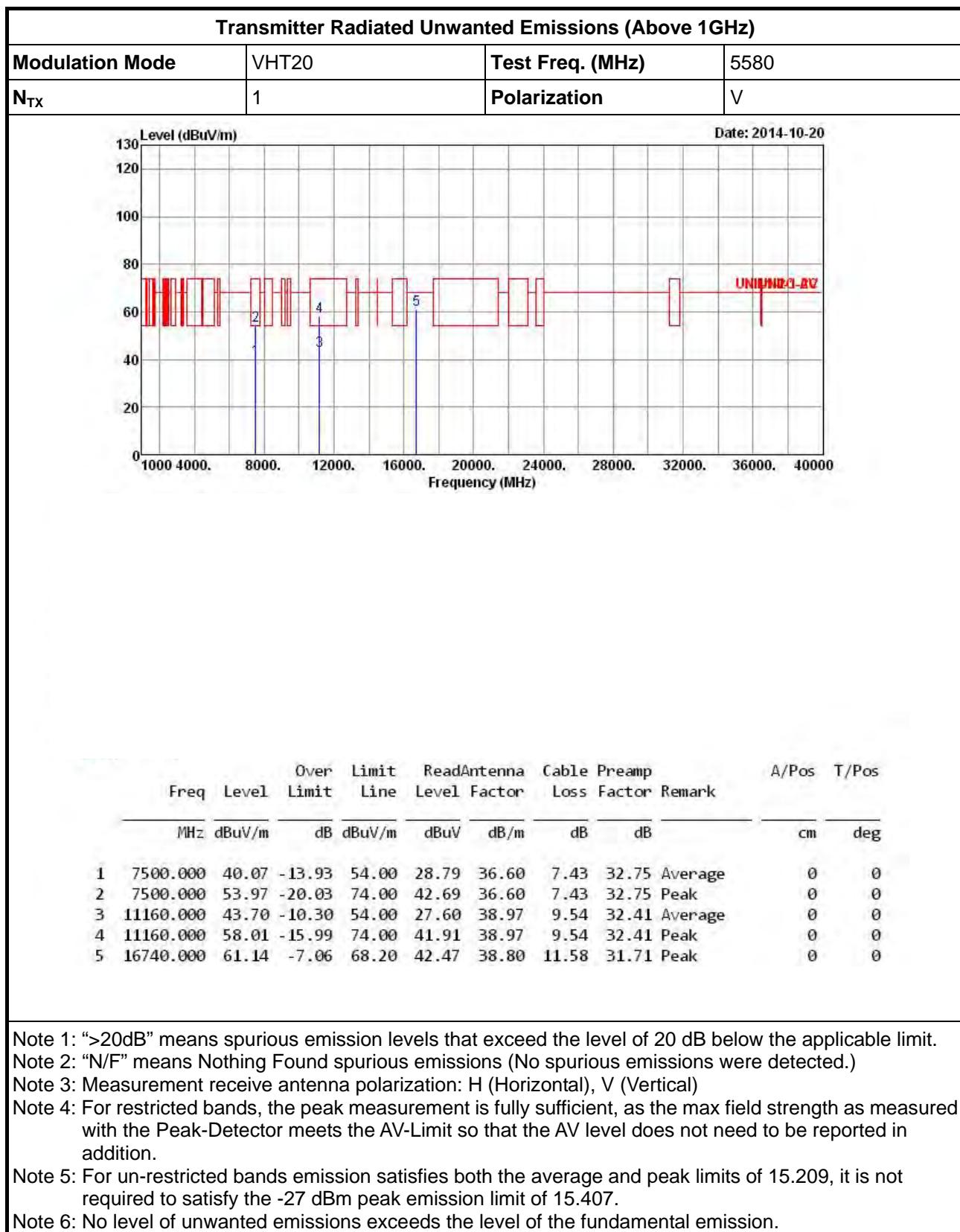


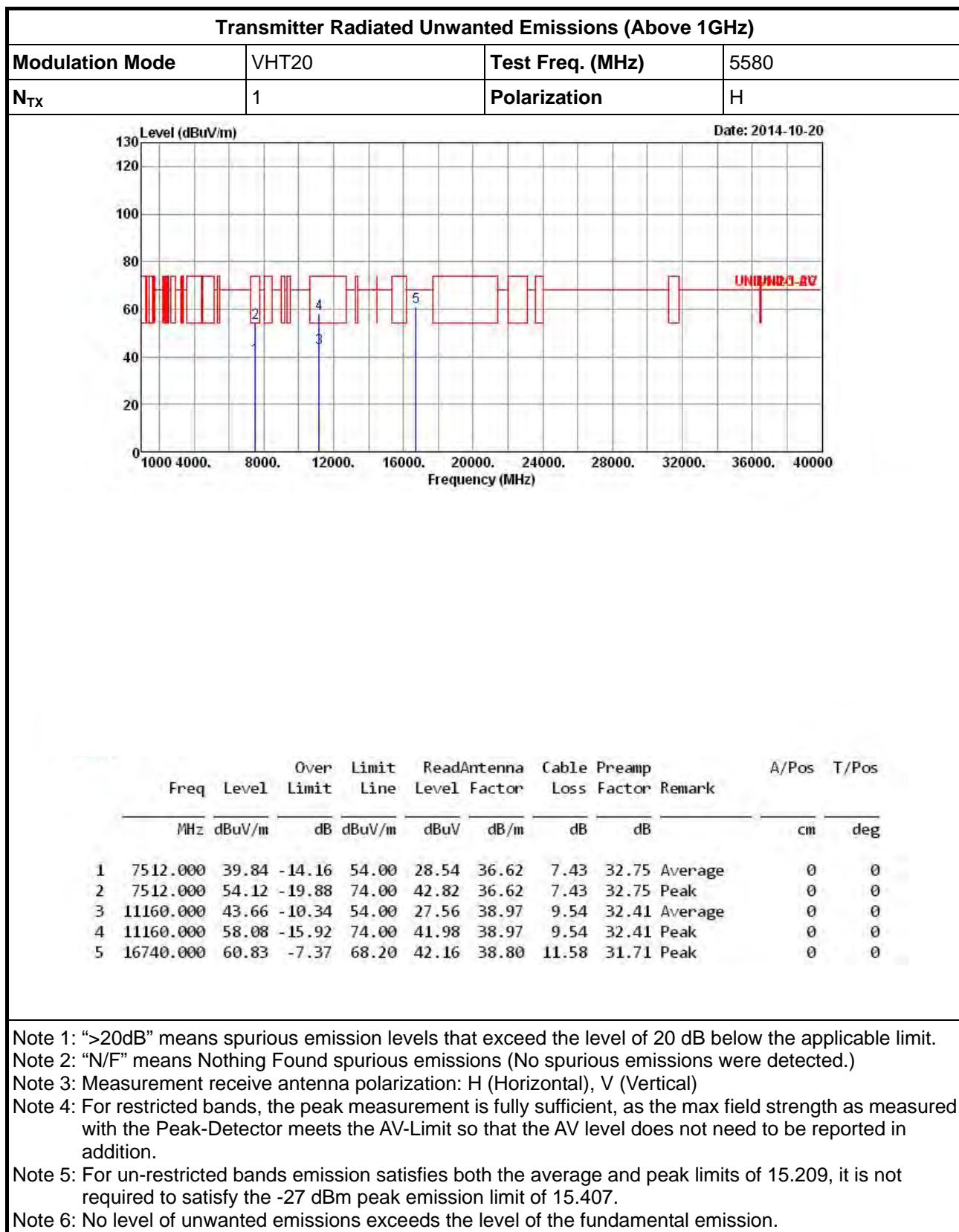


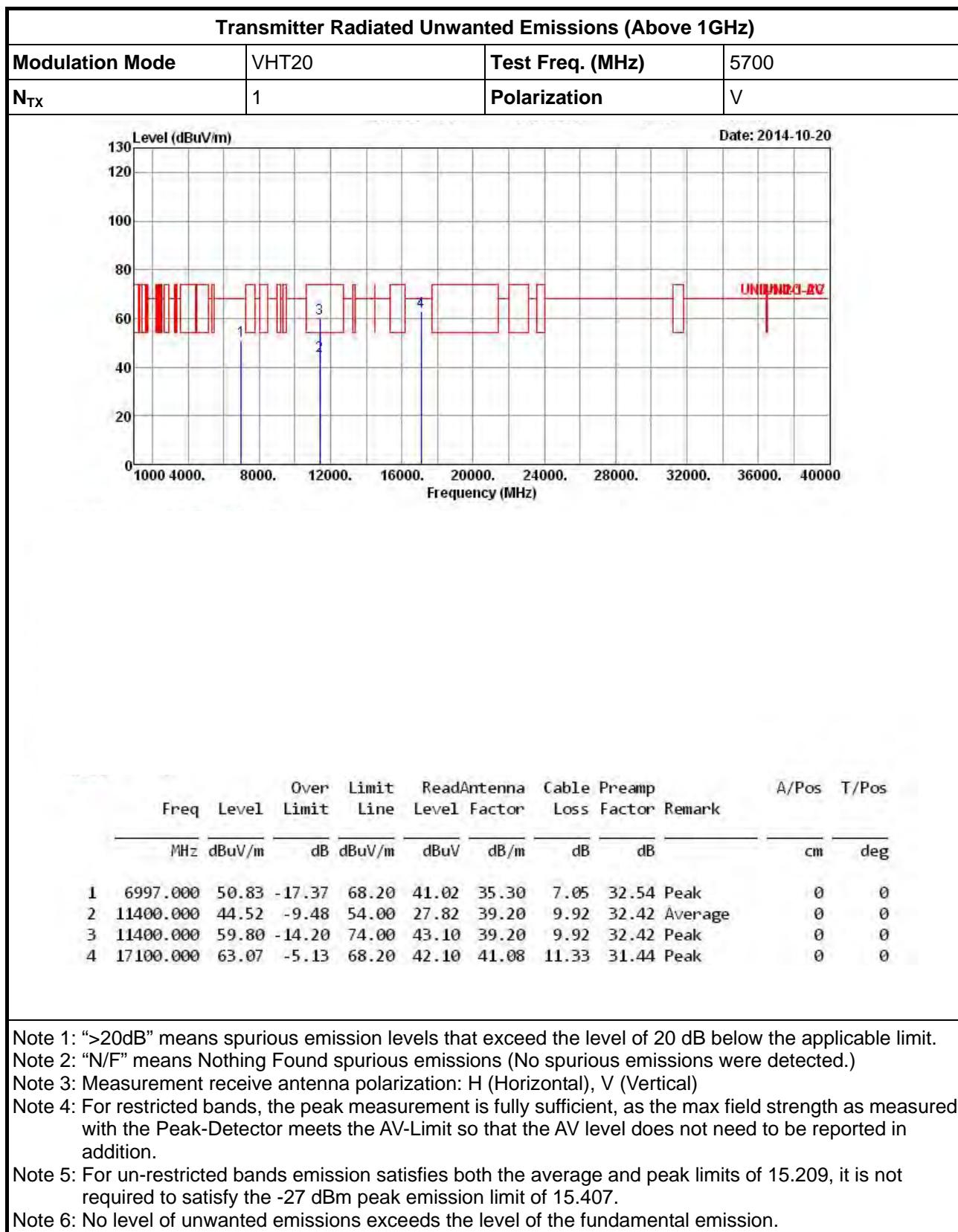


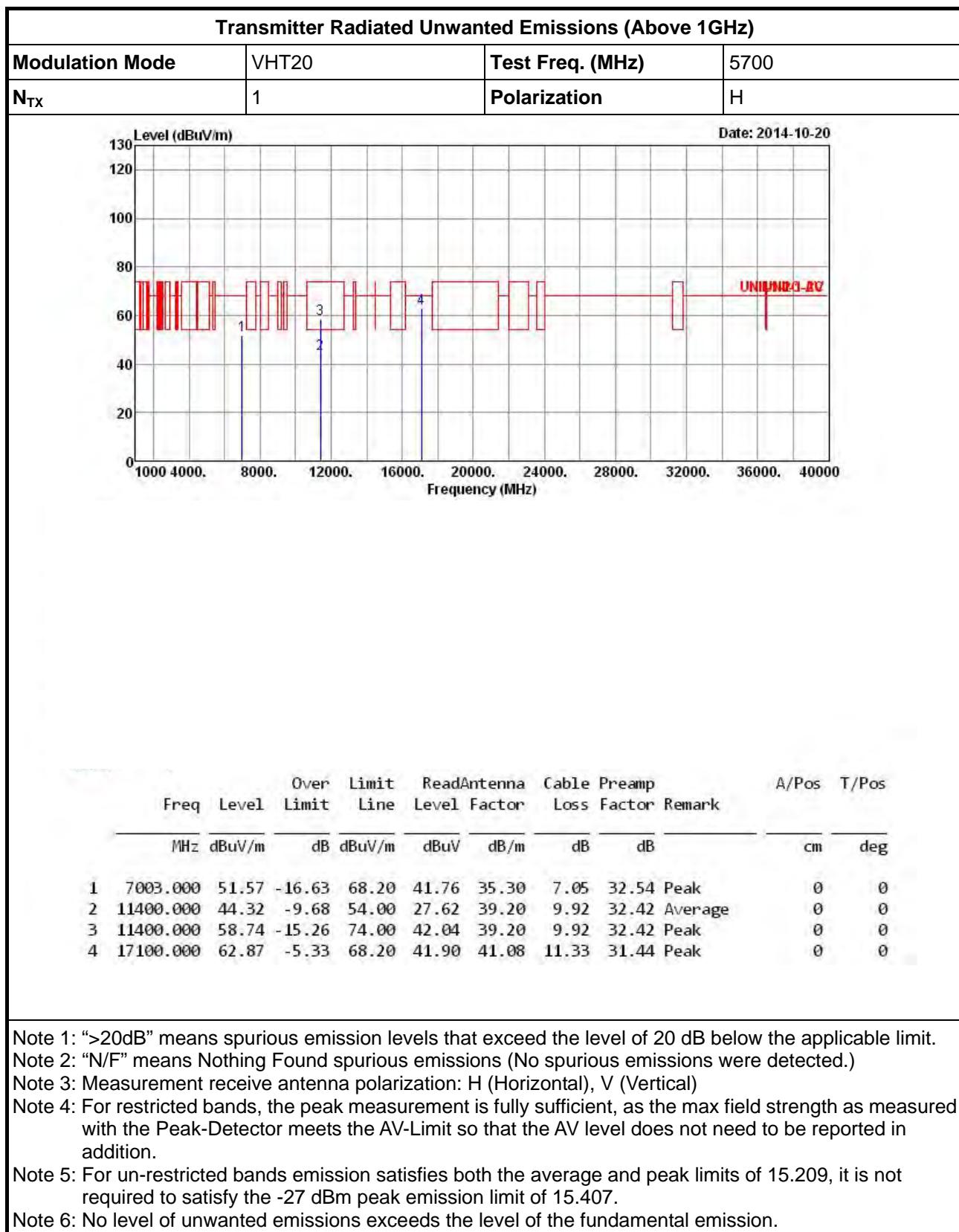


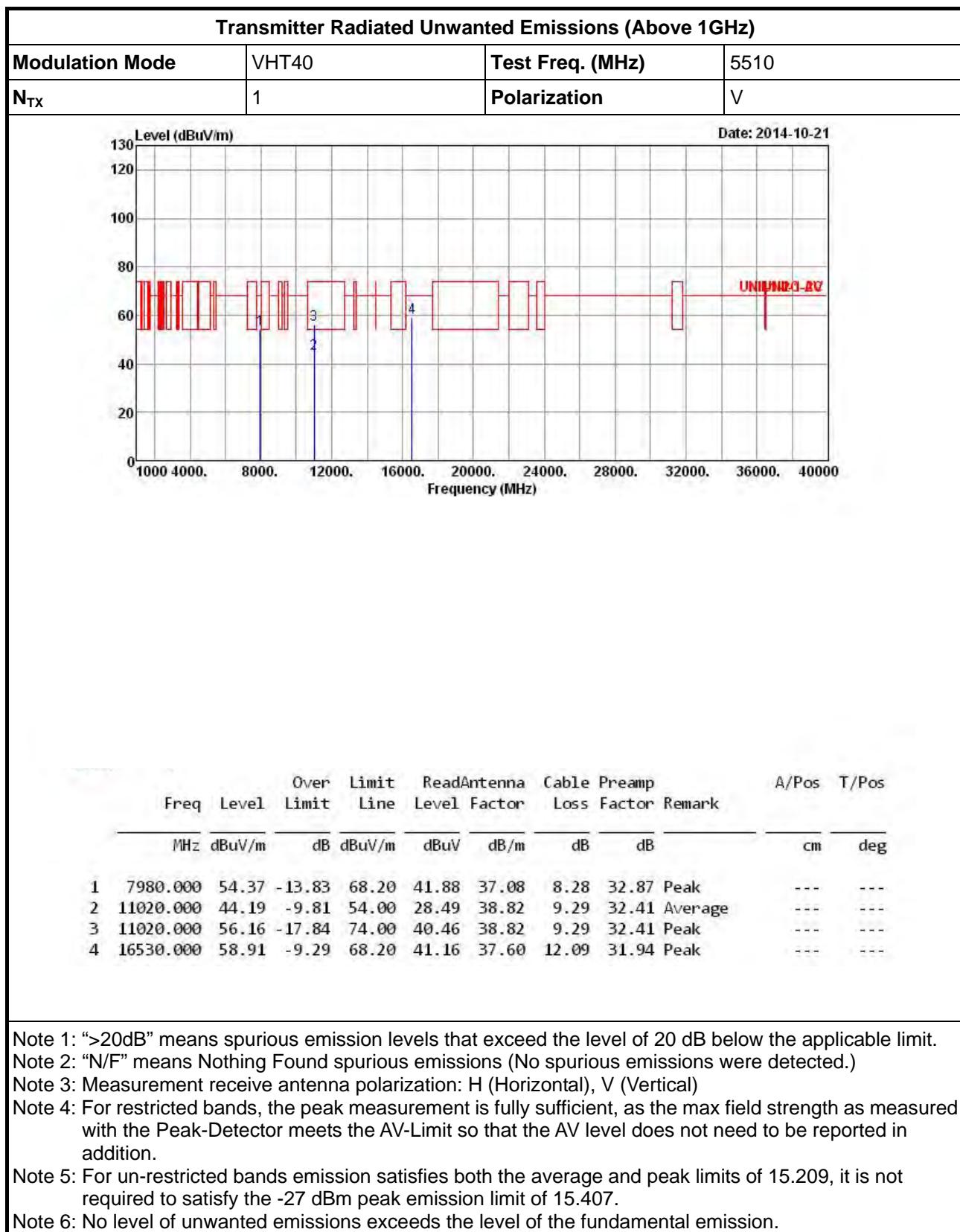


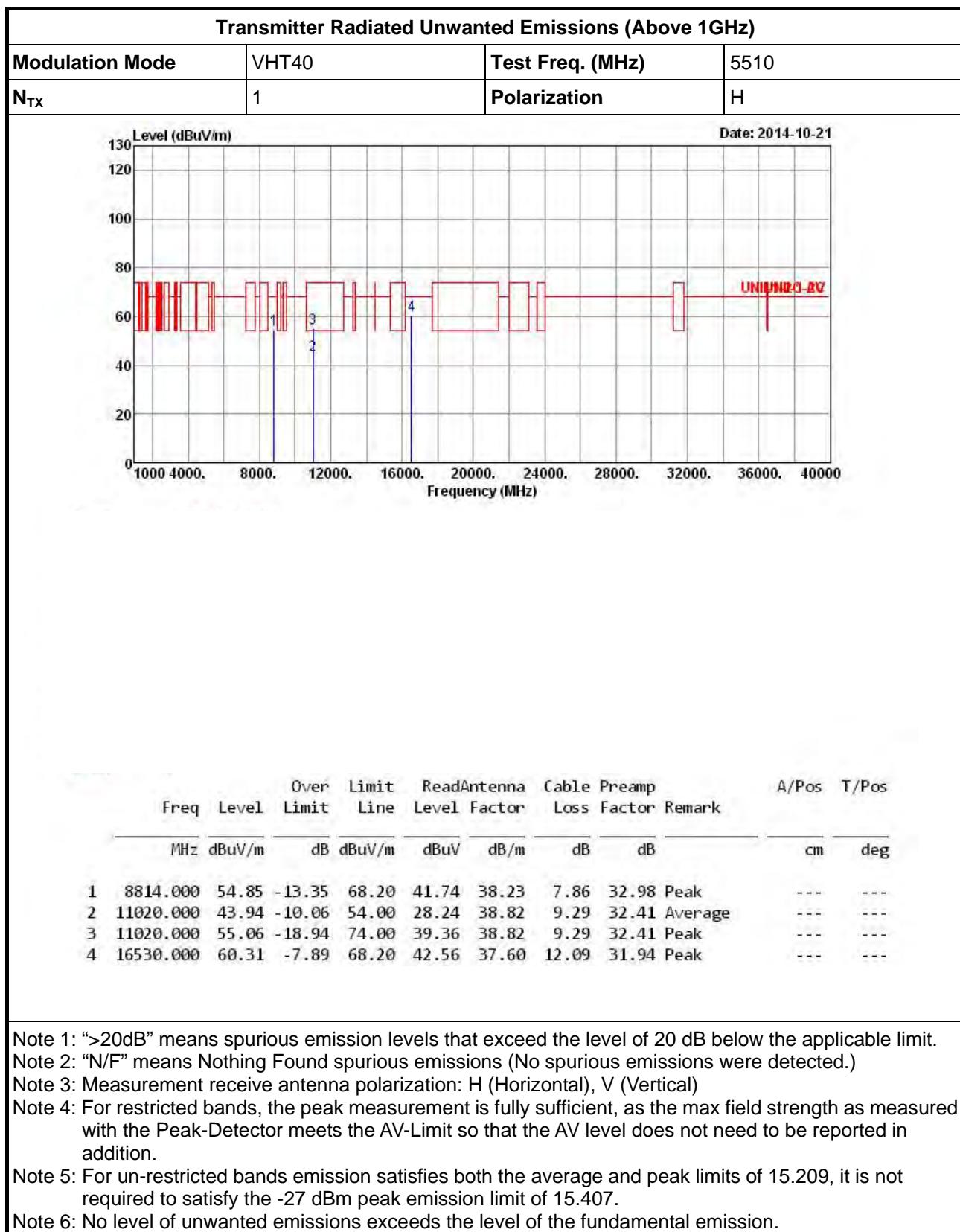


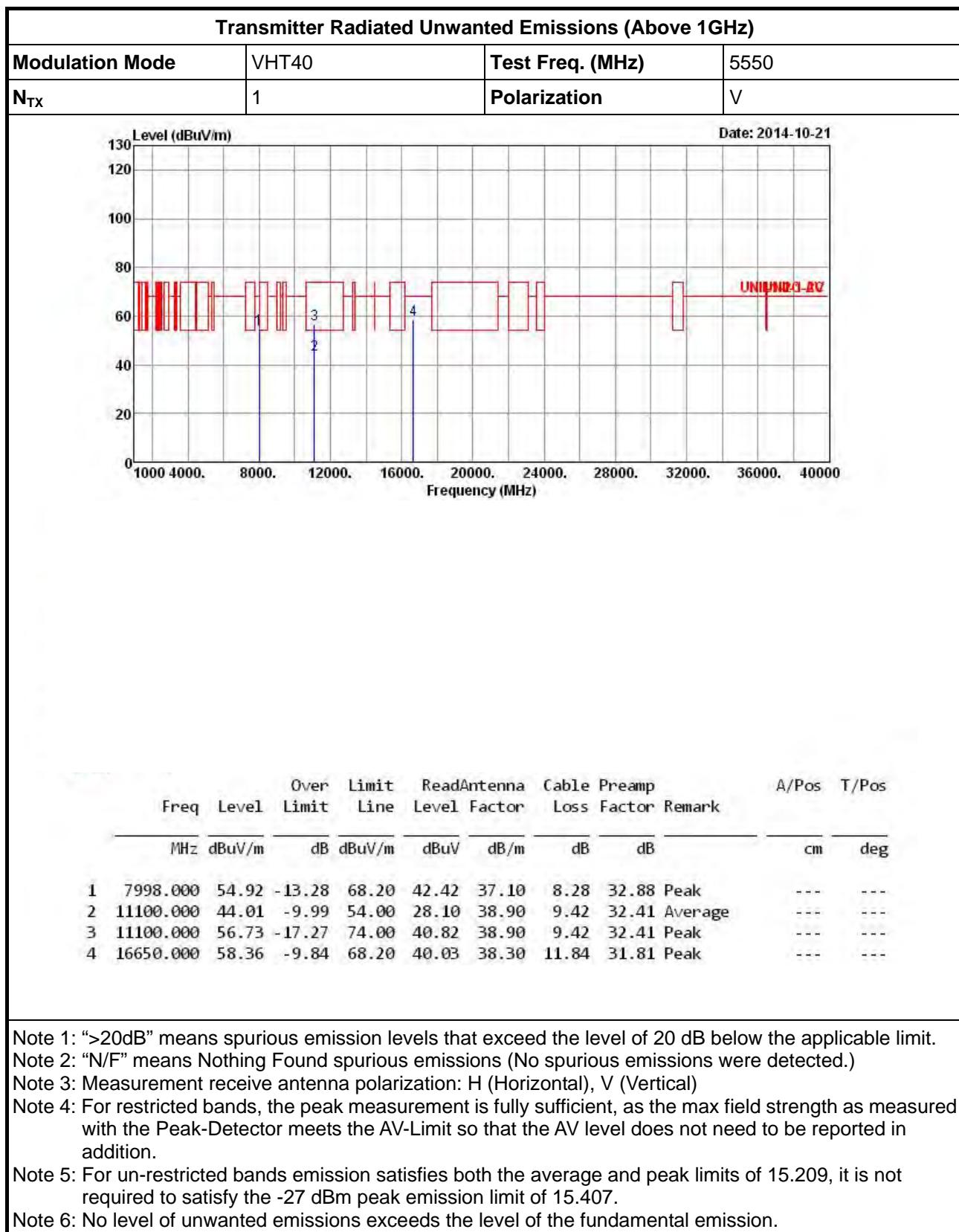


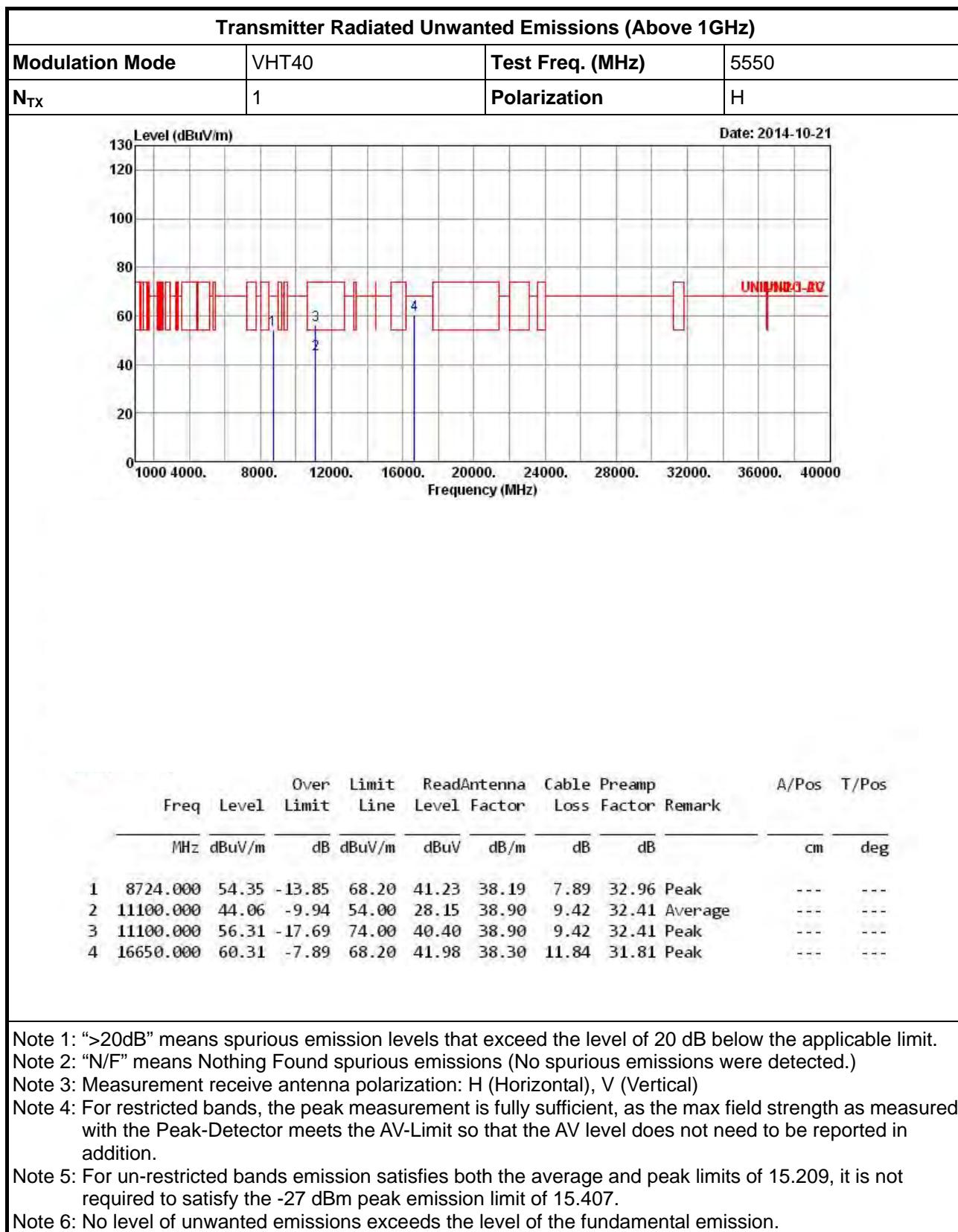


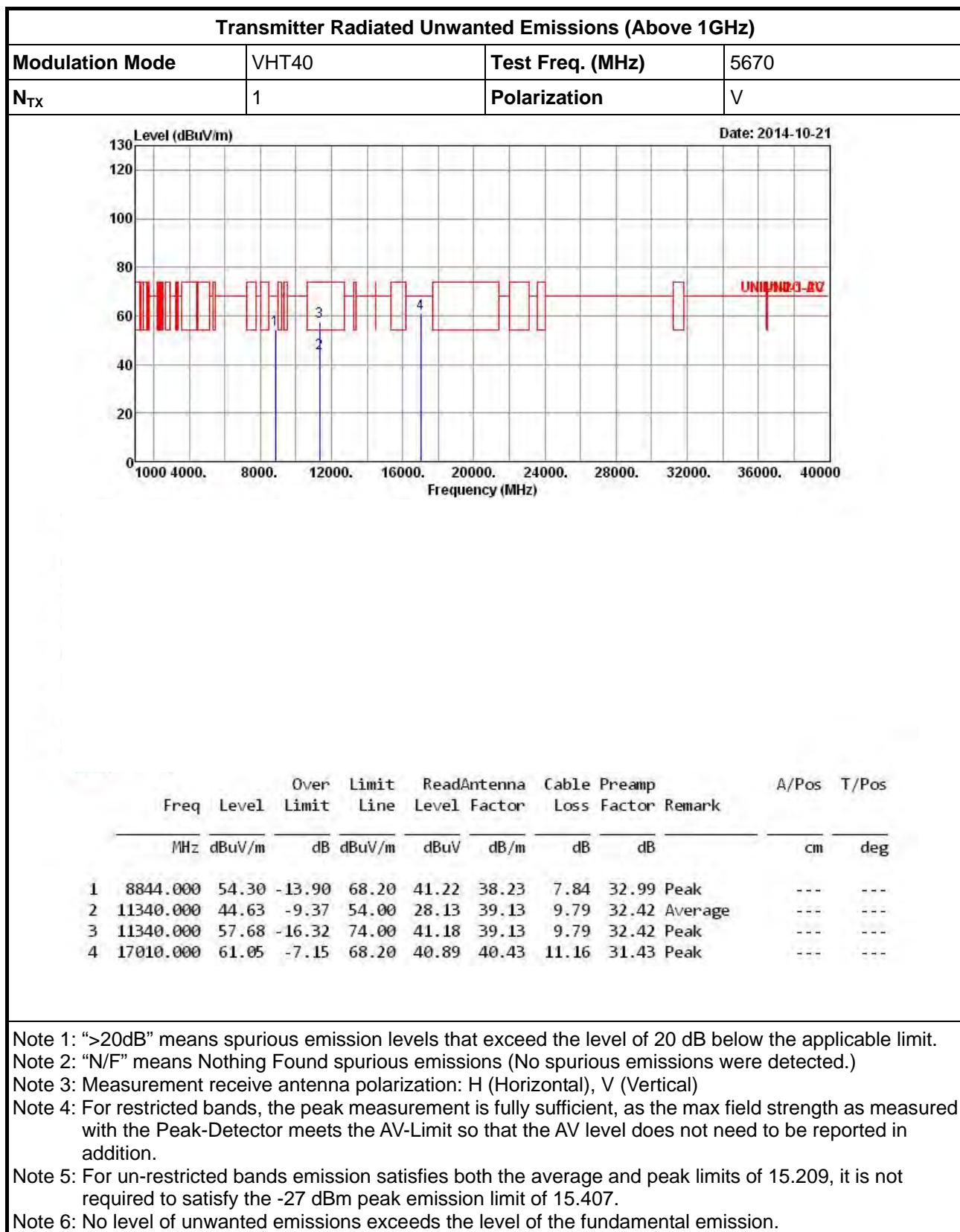


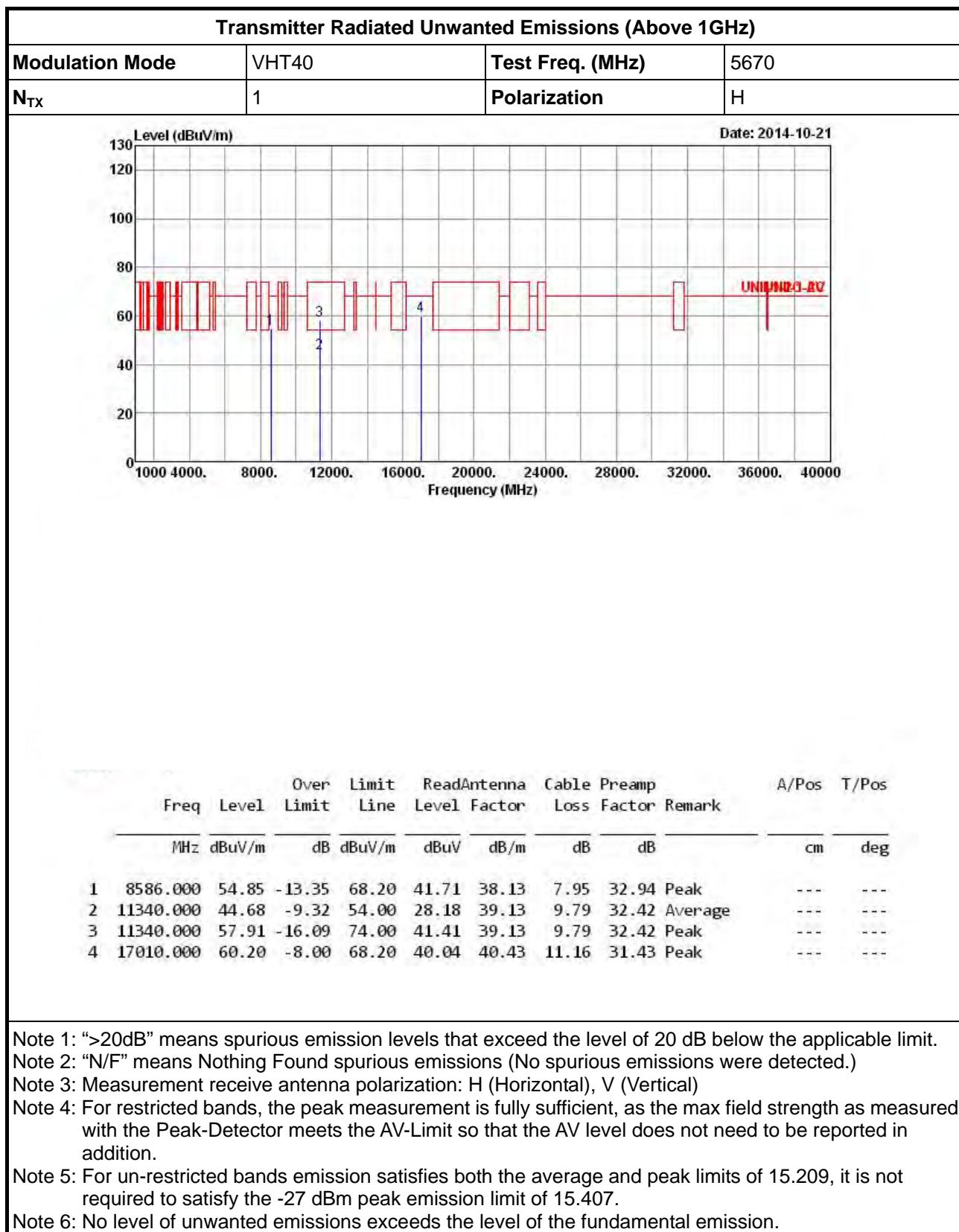


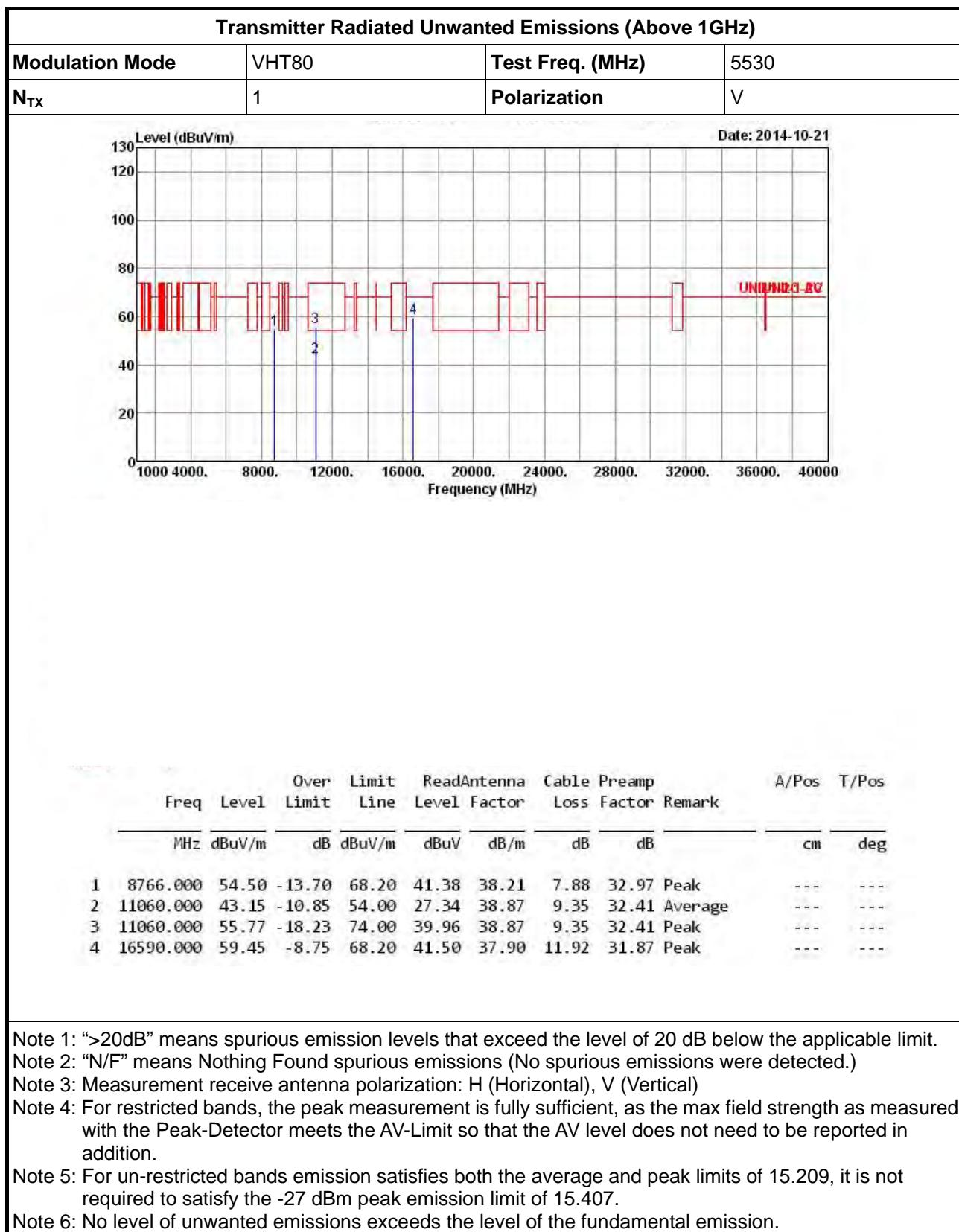


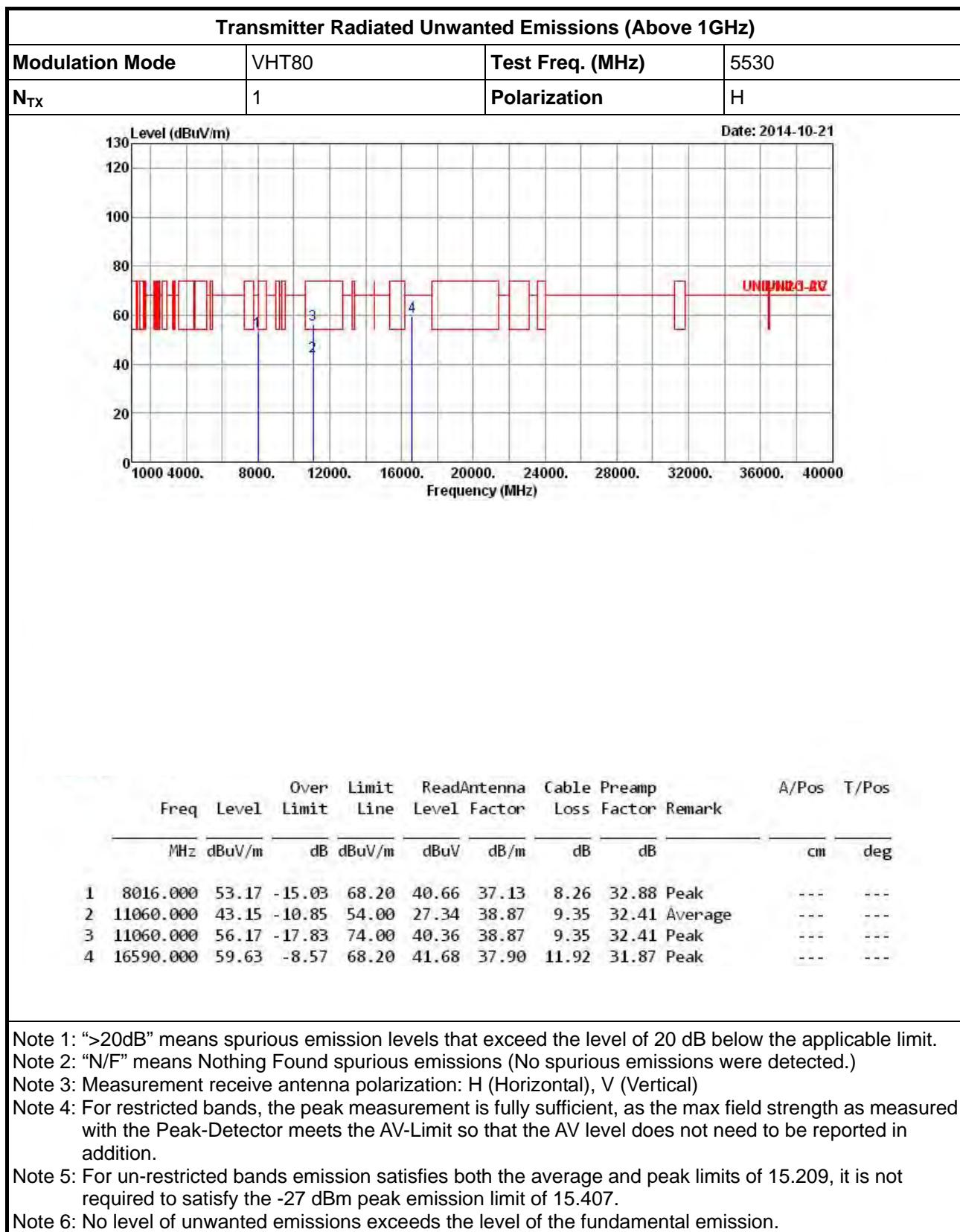






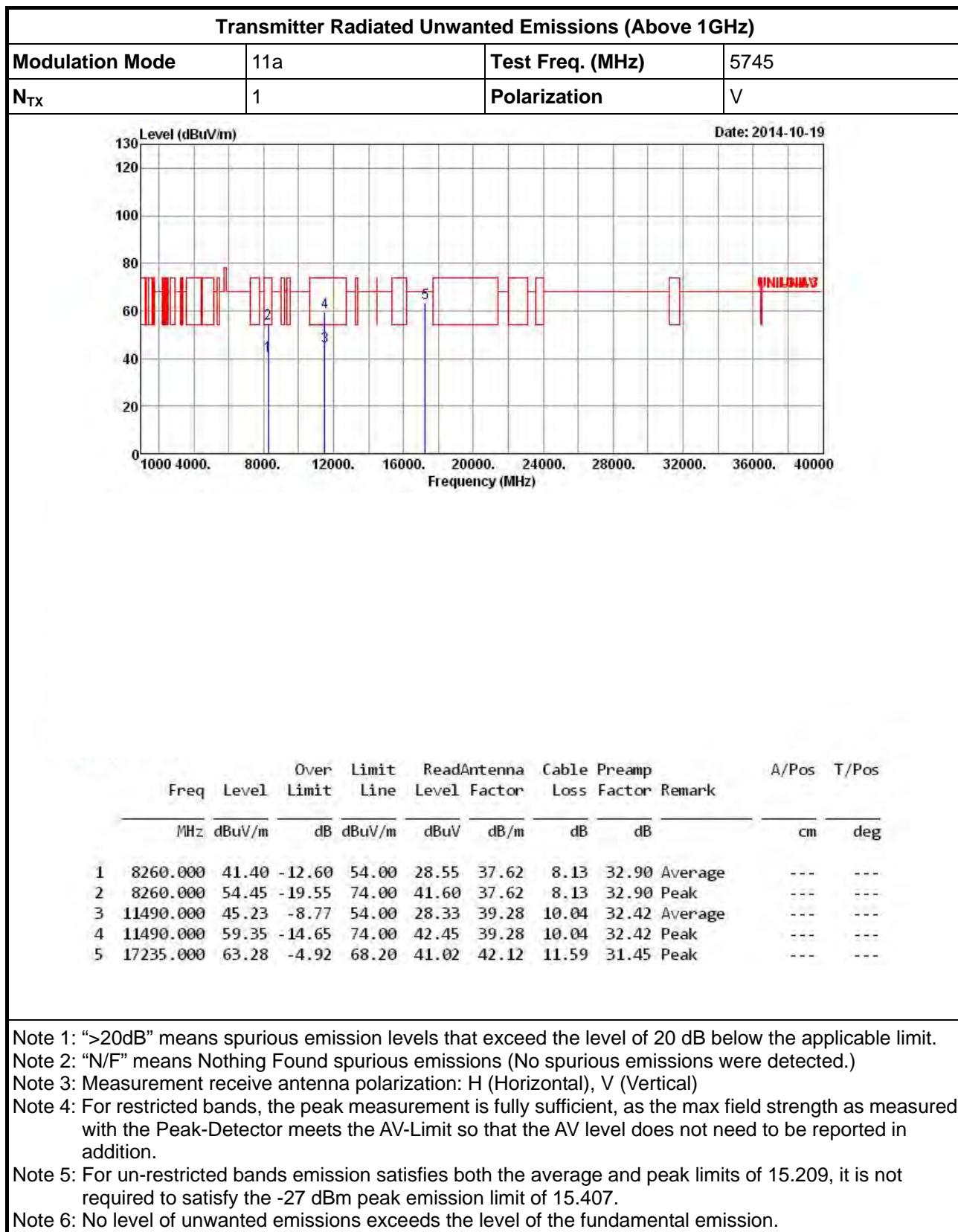








3.6.10 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5725-5850MHz





Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11a	Test Freq. (MHz)	5745																																																																			
N _{TX}	1	Polarization	H																																																																			
Level (dBuV/m)			Date: 2014-10-19																																																																			
Frequency (MHz)																																																																						
<table border="1"> <thead> <tr> <th>Freq</th> <th>Level</th> <th>Over Limit</th> <th>Line</th> <th>ReadAntenna</th> <th>Cable</th> <th>Preamp</th> <th>A/Pos</th> <th>T/Pos</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>cm</th> <th>deg</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>7945.000</td> <td>55.81</td> <td>-12.39</td> <td>68.20</td> <td>43.42</td> <td>37.05</td> <td>8.21</td> <td>32.87</td> <td>Peak</td> <td>---</td> <td>---</td> </tr> <tr> <td>2</td> <td>11490.000</td> <td>45.26</td> <td>-8.74</td> <td>54.00</td> <td>28.36</td> <td>39.28</td> <td>10.04</td> <td>32.42</td> <td>Average</td> <td>---</td> <td>---</td> </tr> <tr> <td>3</td> <td>11490.000</td> <td>58.85</td> <td>-15.15</td> <td>74.00</td> <td>41.95</td> <td>39.28</td> <td>10.04</td> <td>32.42</td> <td>Peak</td> <td>---</td> <td>---</td> </tr> <tr> <td>4</td> <td>17235.000</td> <td>63.39</td> <td>-4.81</td> <td>68.20</td> <td>41.13</td> <td>42.12</td> <td>11.59</td> <td>31.45</td> <td>Peak</td> <td>---</td> <td>---</td> </tr> </tbody> </table>			Freq	Level	Over Limit	Line	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	1	7945.000	55.81	-12.39	68.20	43.42	37.05	8.21	32.87	Peak	---	---	2	11490.000	45.26	-8.74	54.00	28.36	39.28	10.04	32.42	Average	---	---	3	11490.000	58.85	-15.15	74.00	41.95	39.28	10.04	32.42	Peak	---	---	4	17235.000	63.39	-4.81	68.20	41.13	42.12	11.59	31.45	Peak	---	---	
Freq	Level	Over Limit	Line	ReadAntenna	Cable	Preamp	A/Pos	T/Pos																																																														
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg																																																													
1	7945.000	55.81	-12.39	68.20	43.42	37.05	8.21	32.87	Peak	---	---																																																											
2	11490.000	45.26	-8.74	54.00	28.36	39.28	10.04	32.42	Average	---	---																																																											
3	11490.000	58.85	-15.15	74.00	41.95	39.28	10.04	32.42	Peak	---	---																																																											
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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

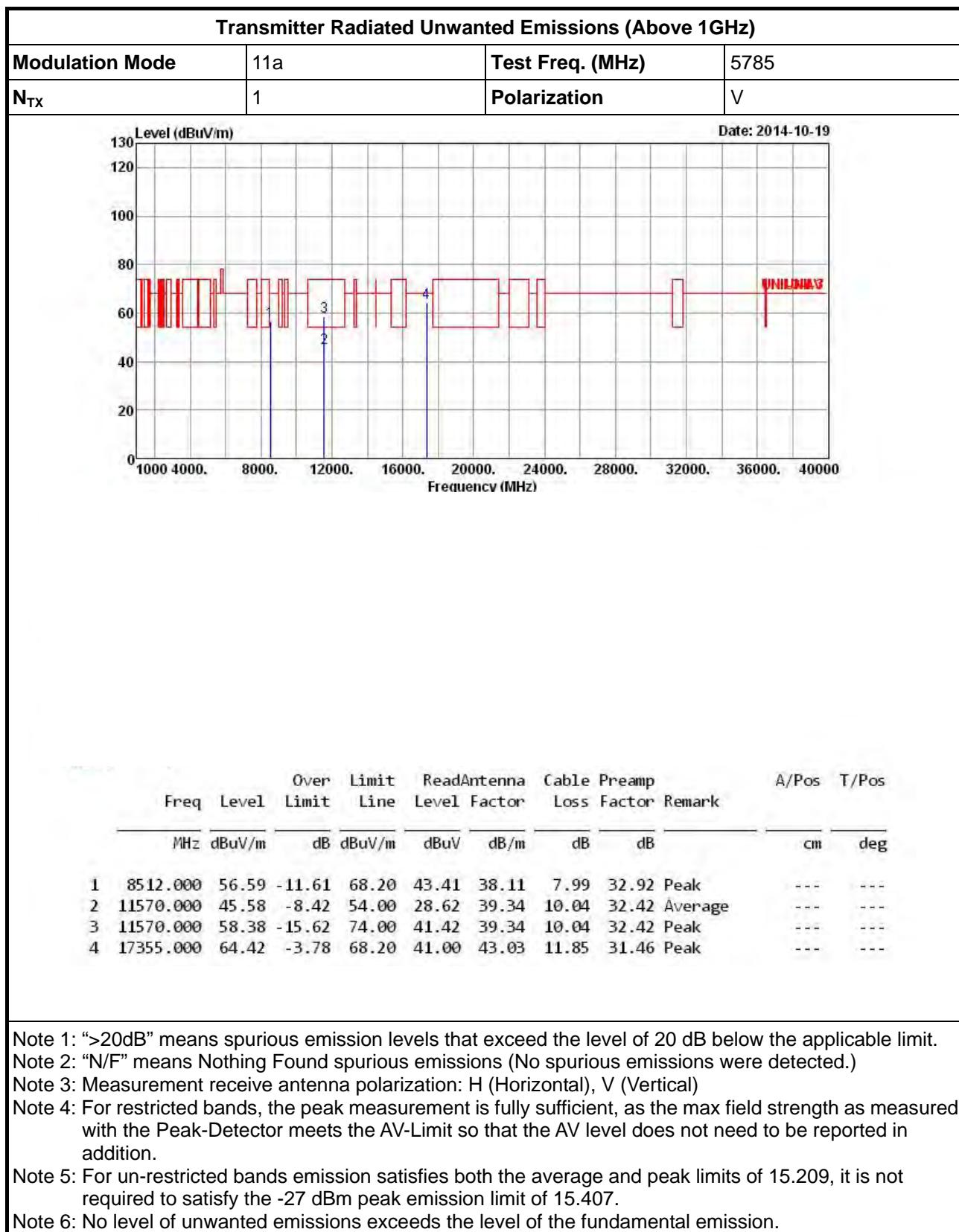
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

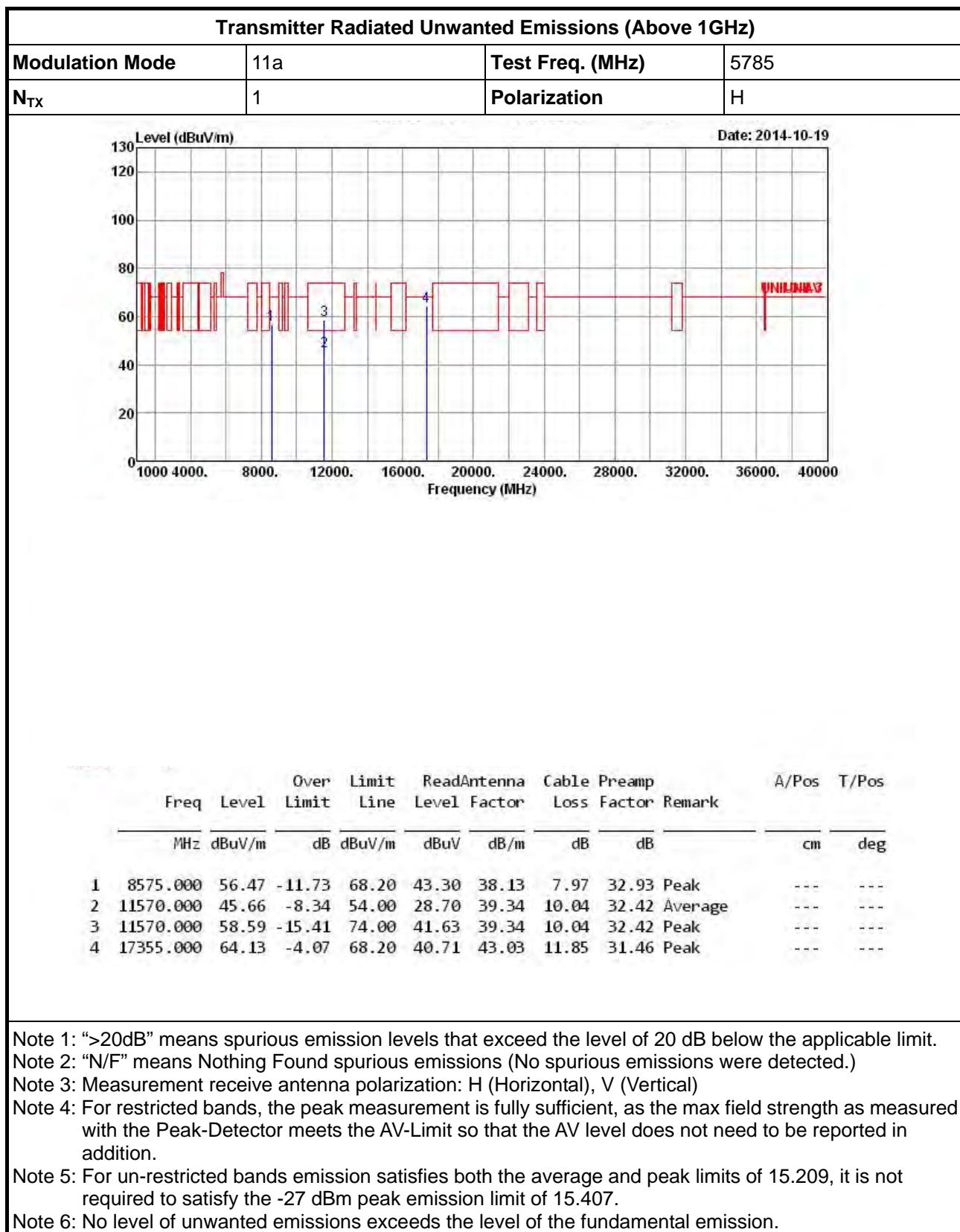
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

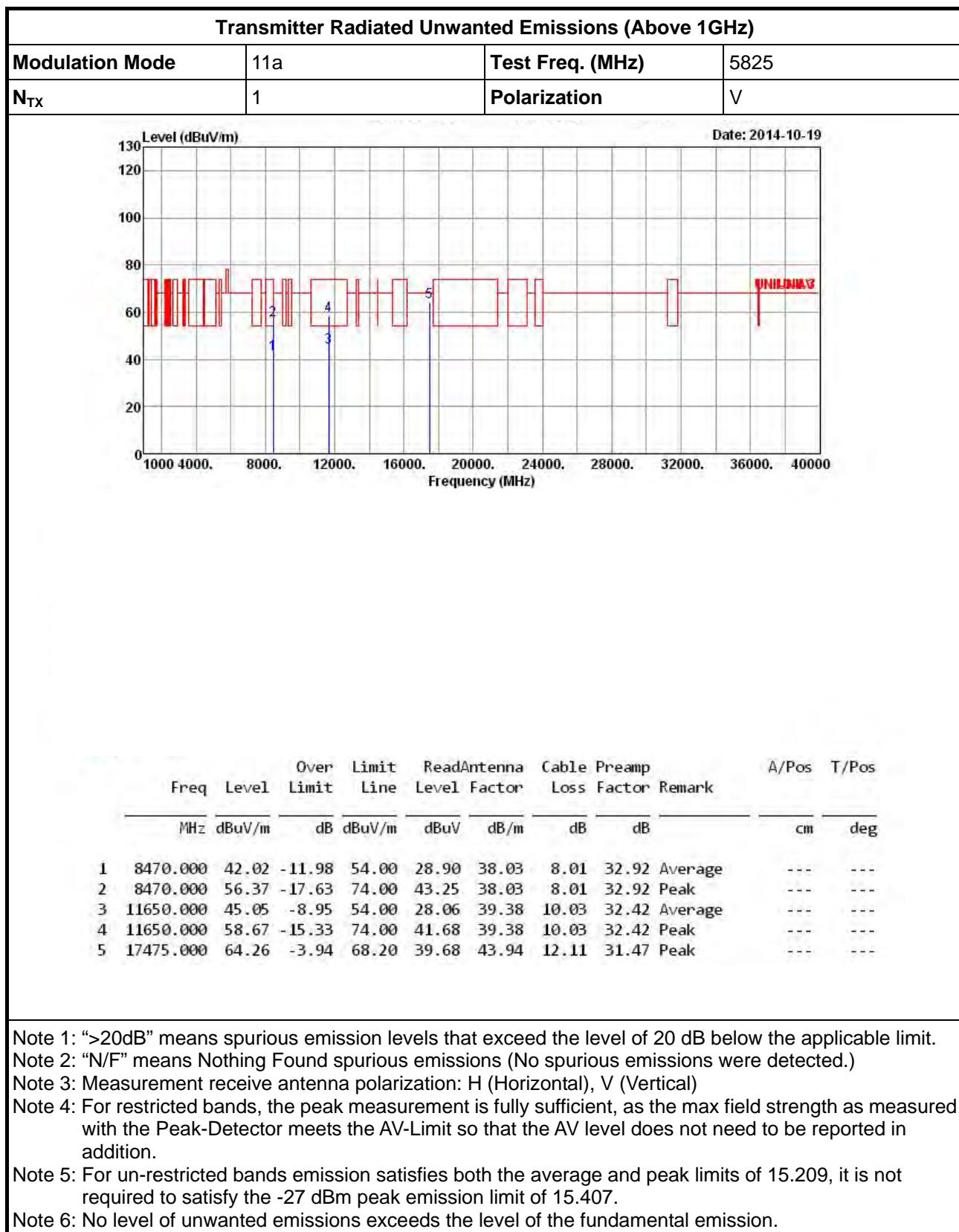
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

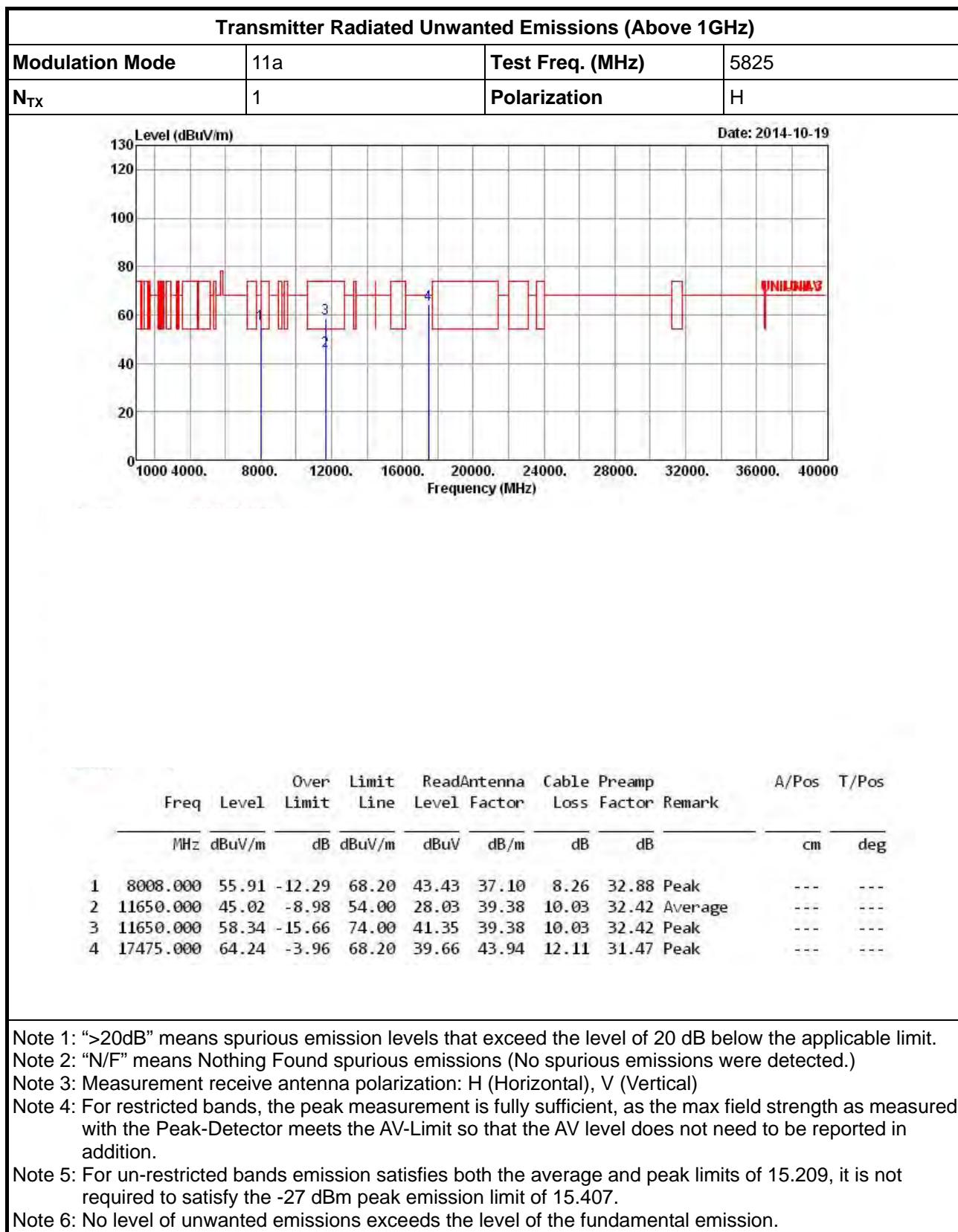
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

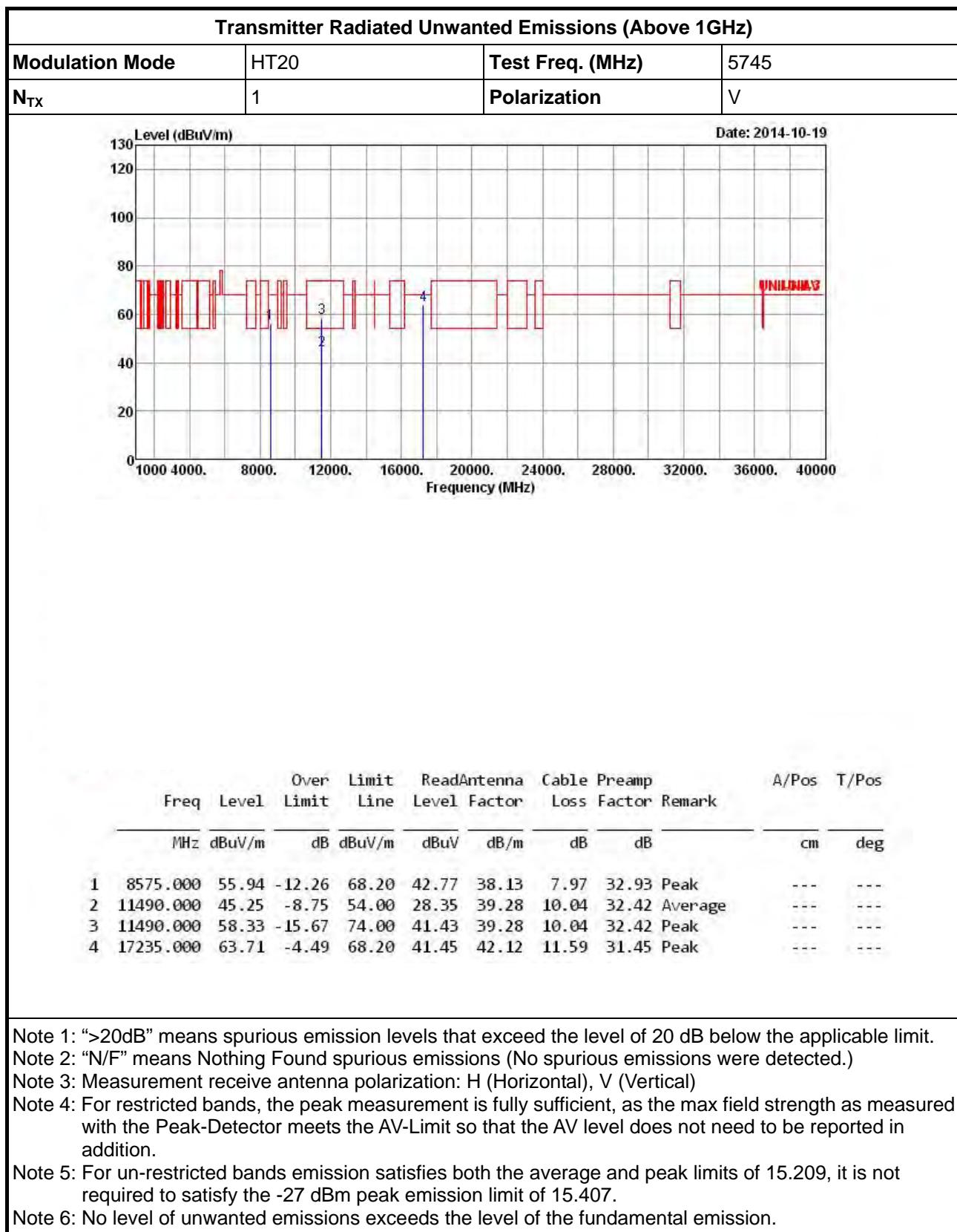
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

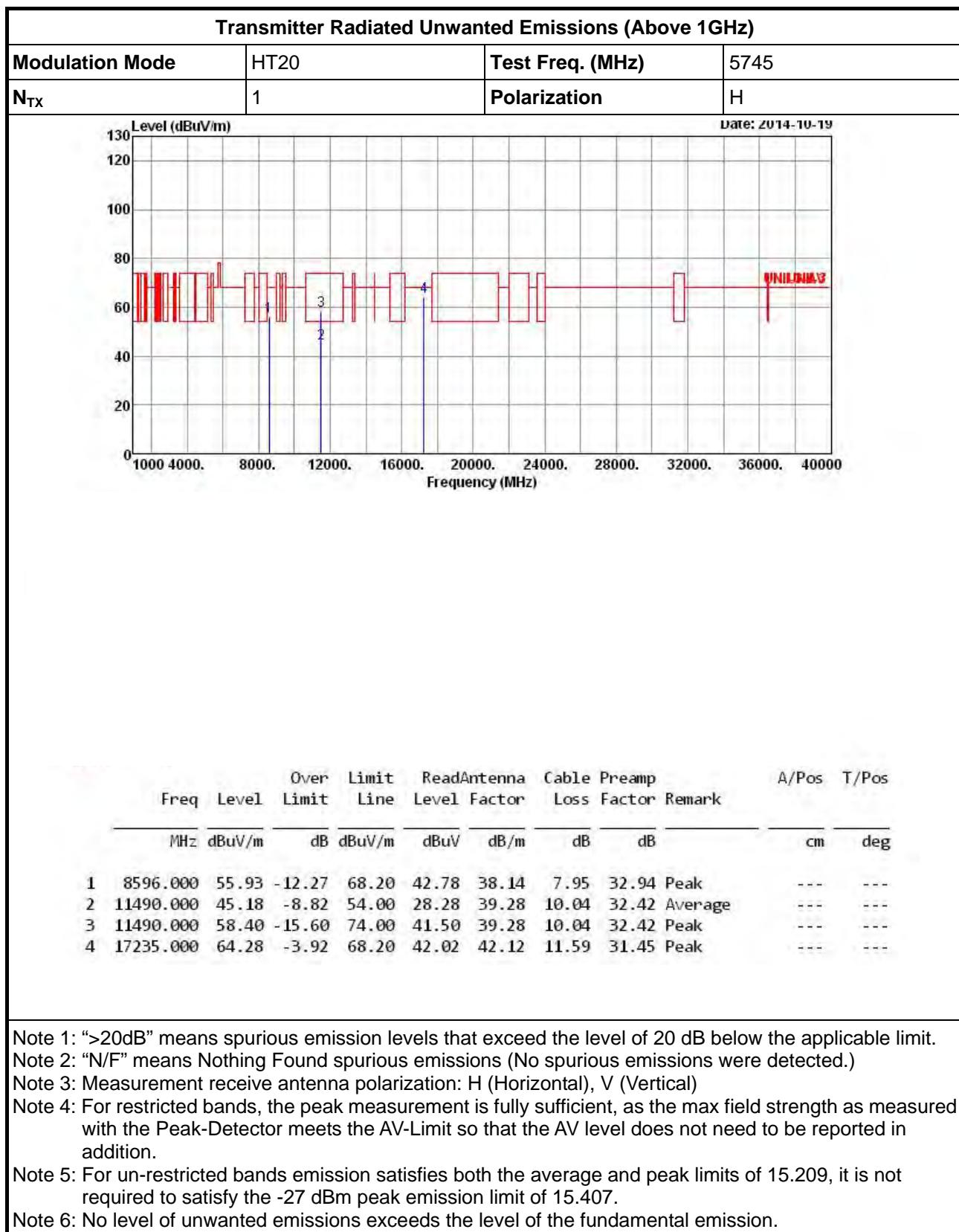


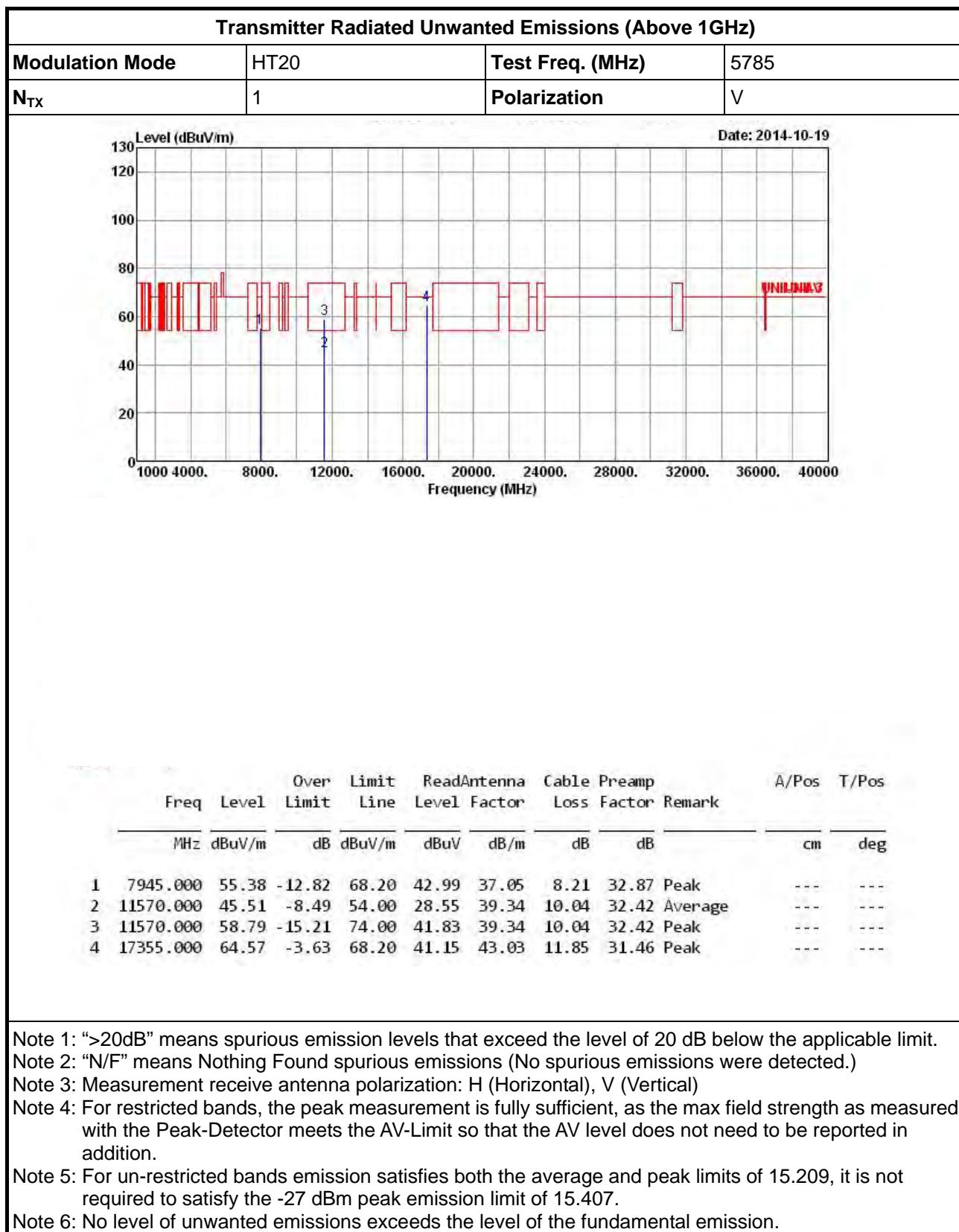


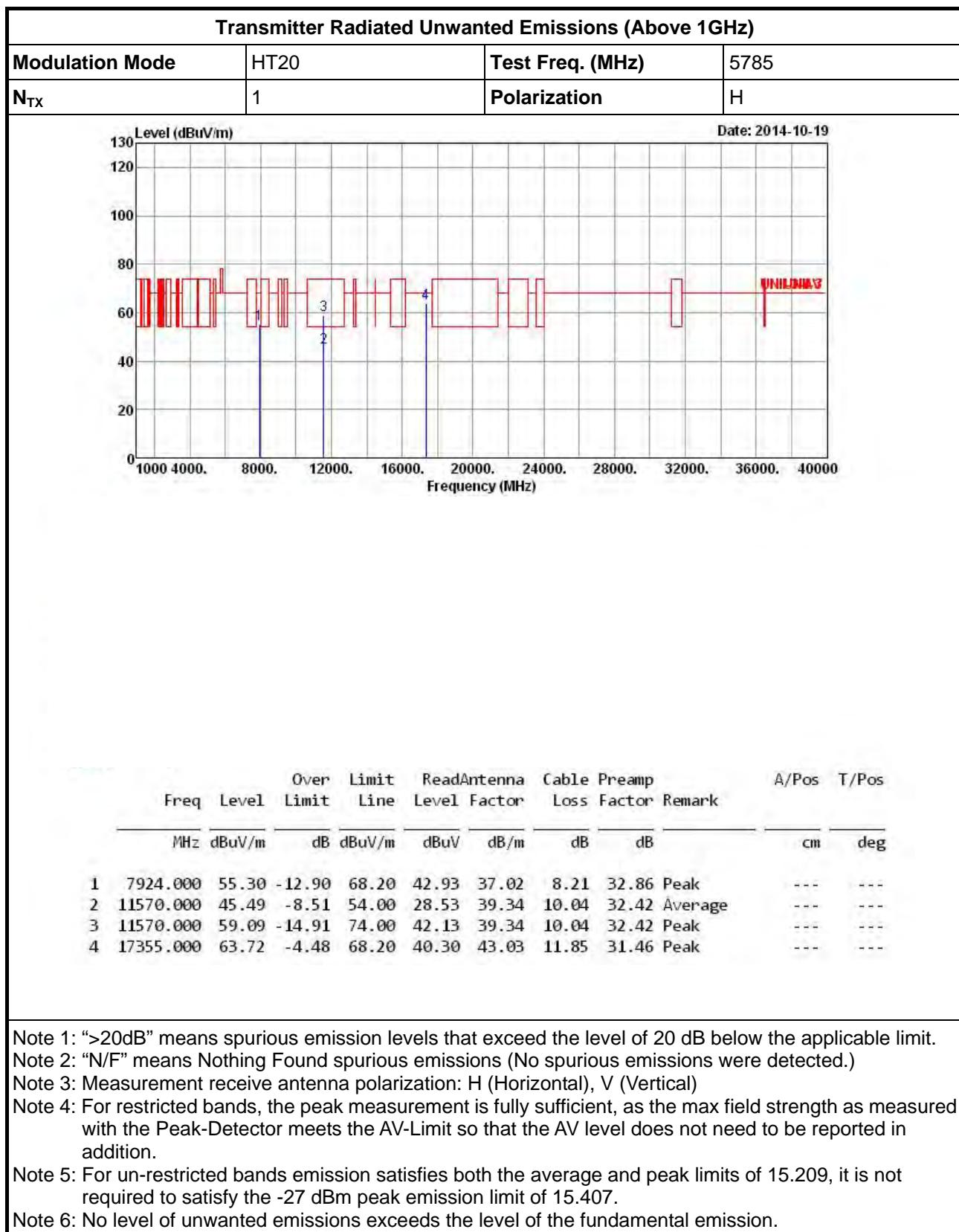


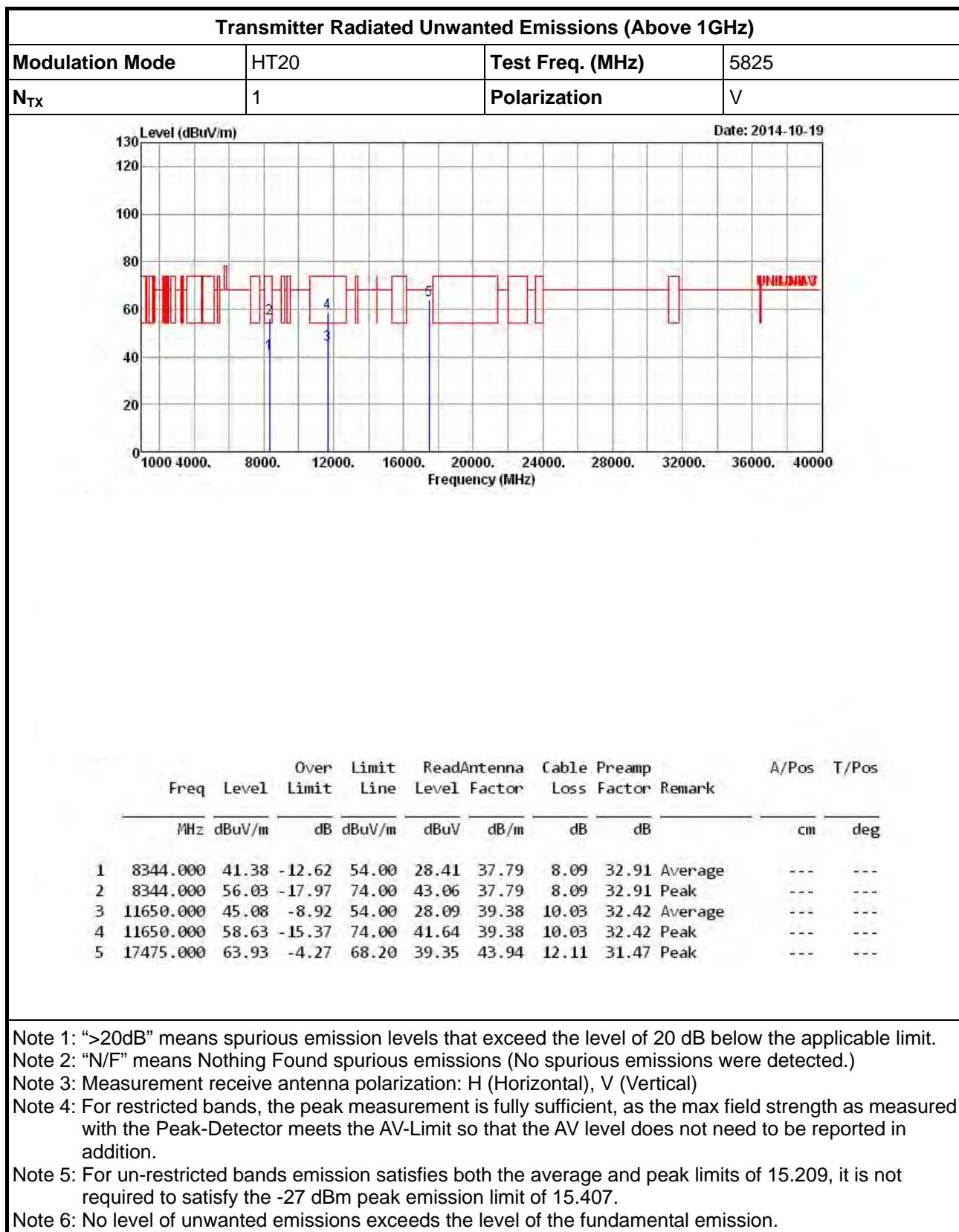


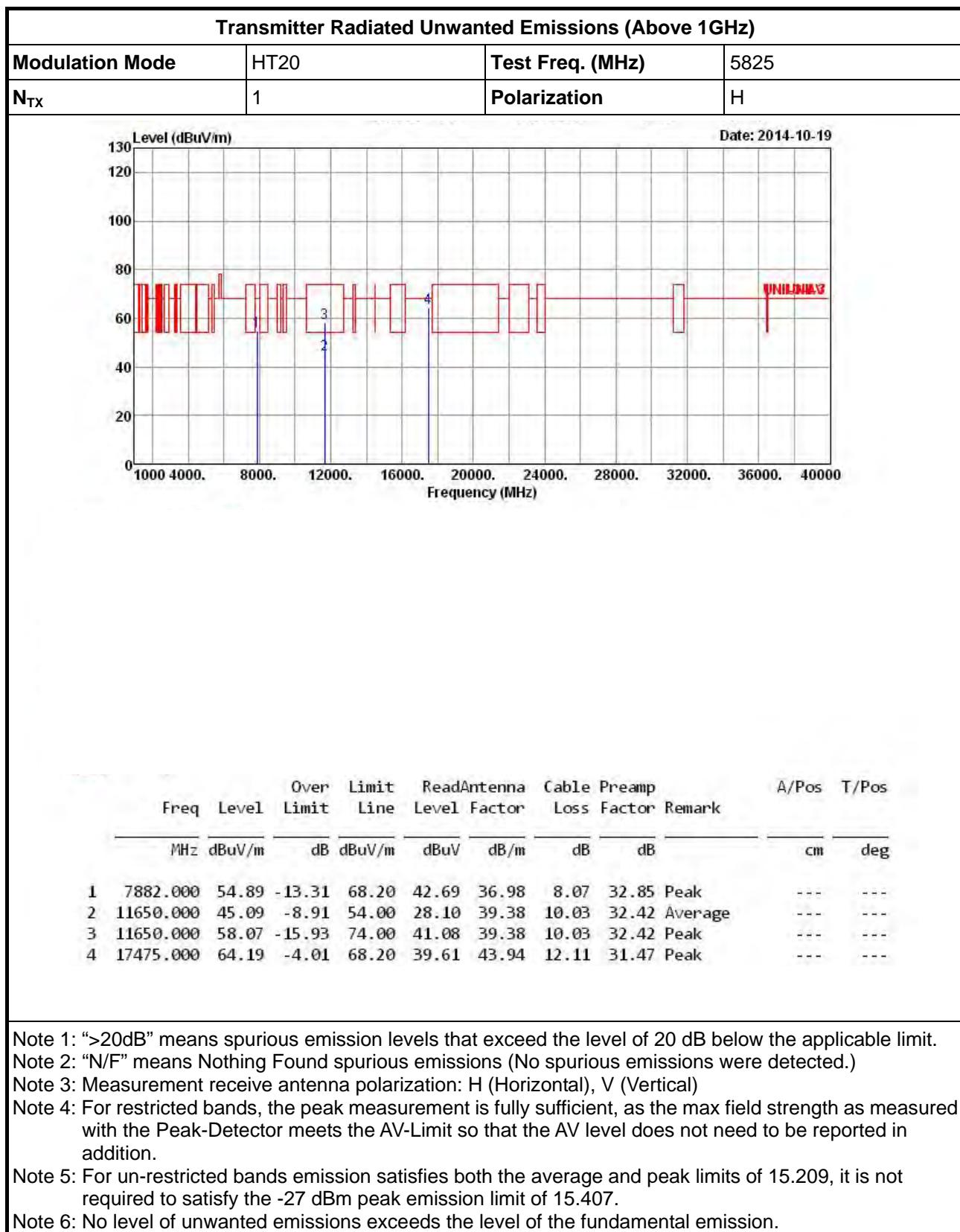


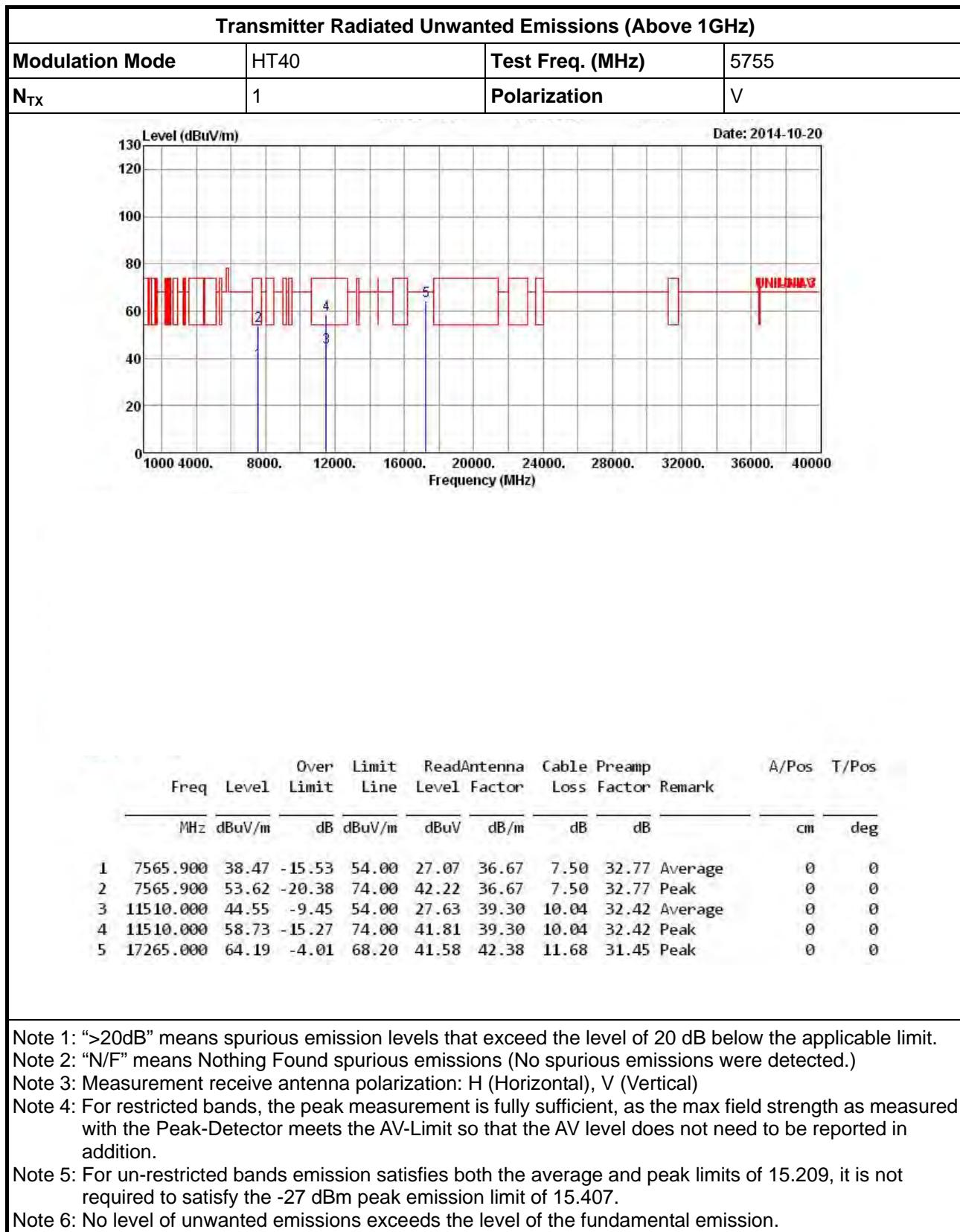


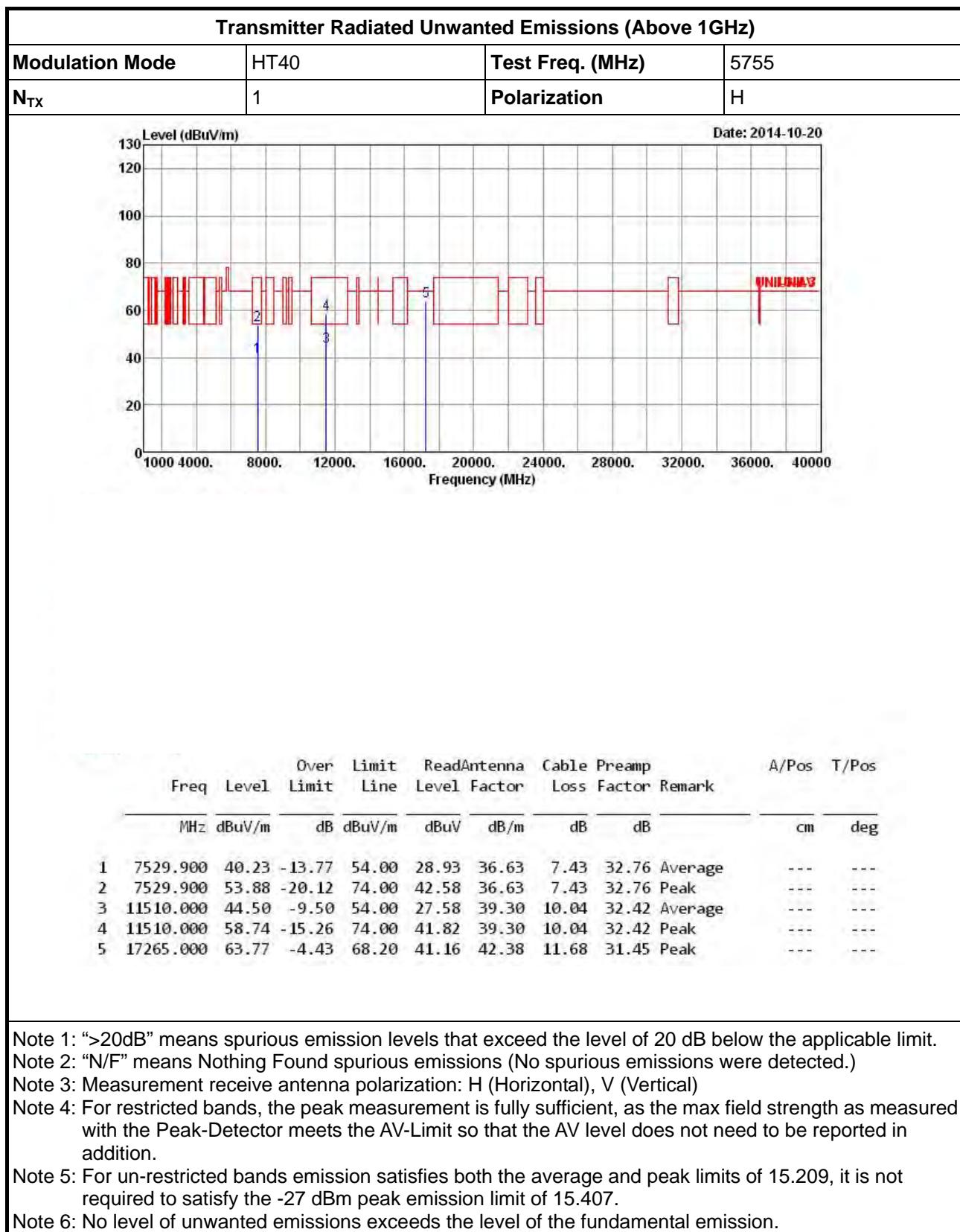


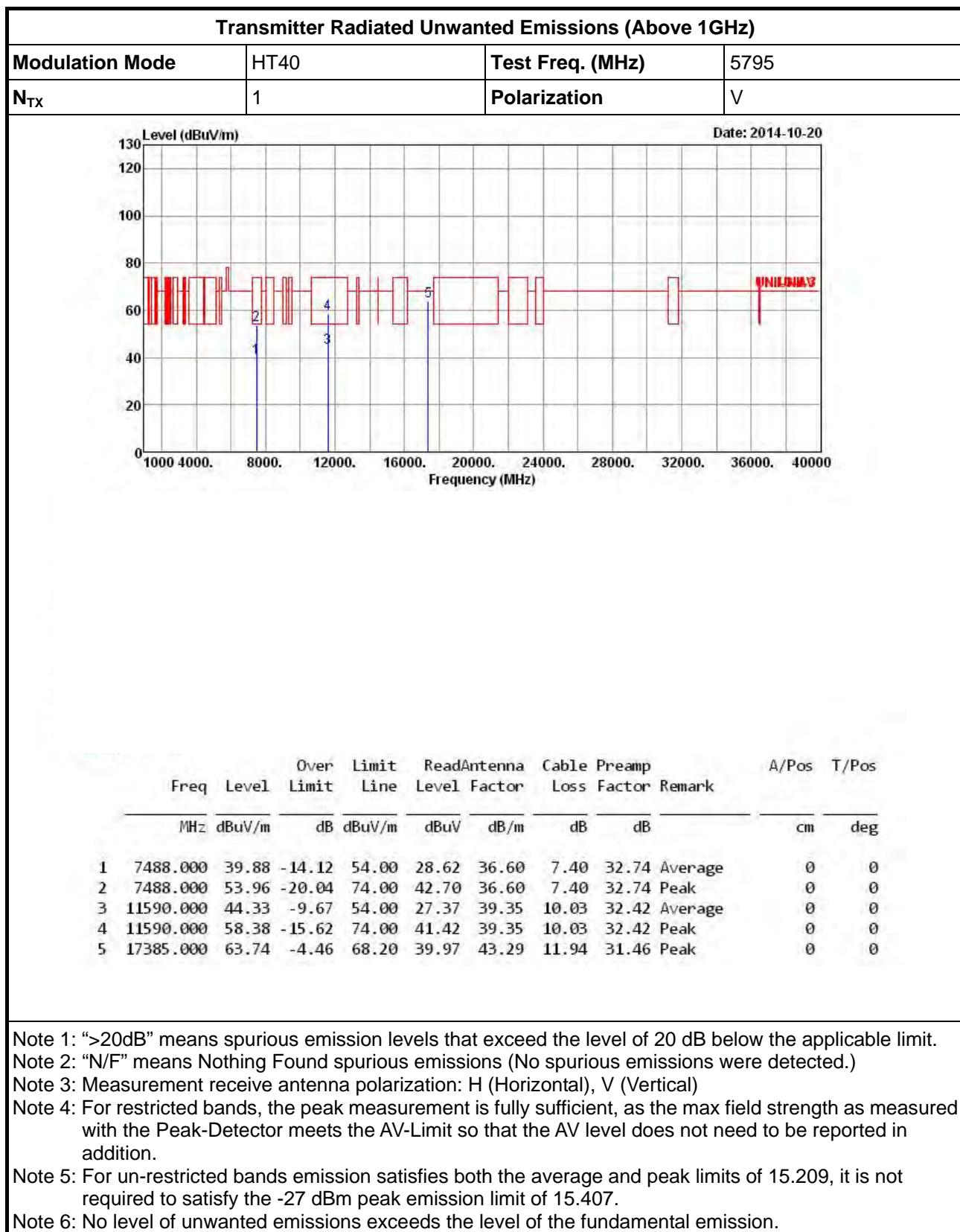


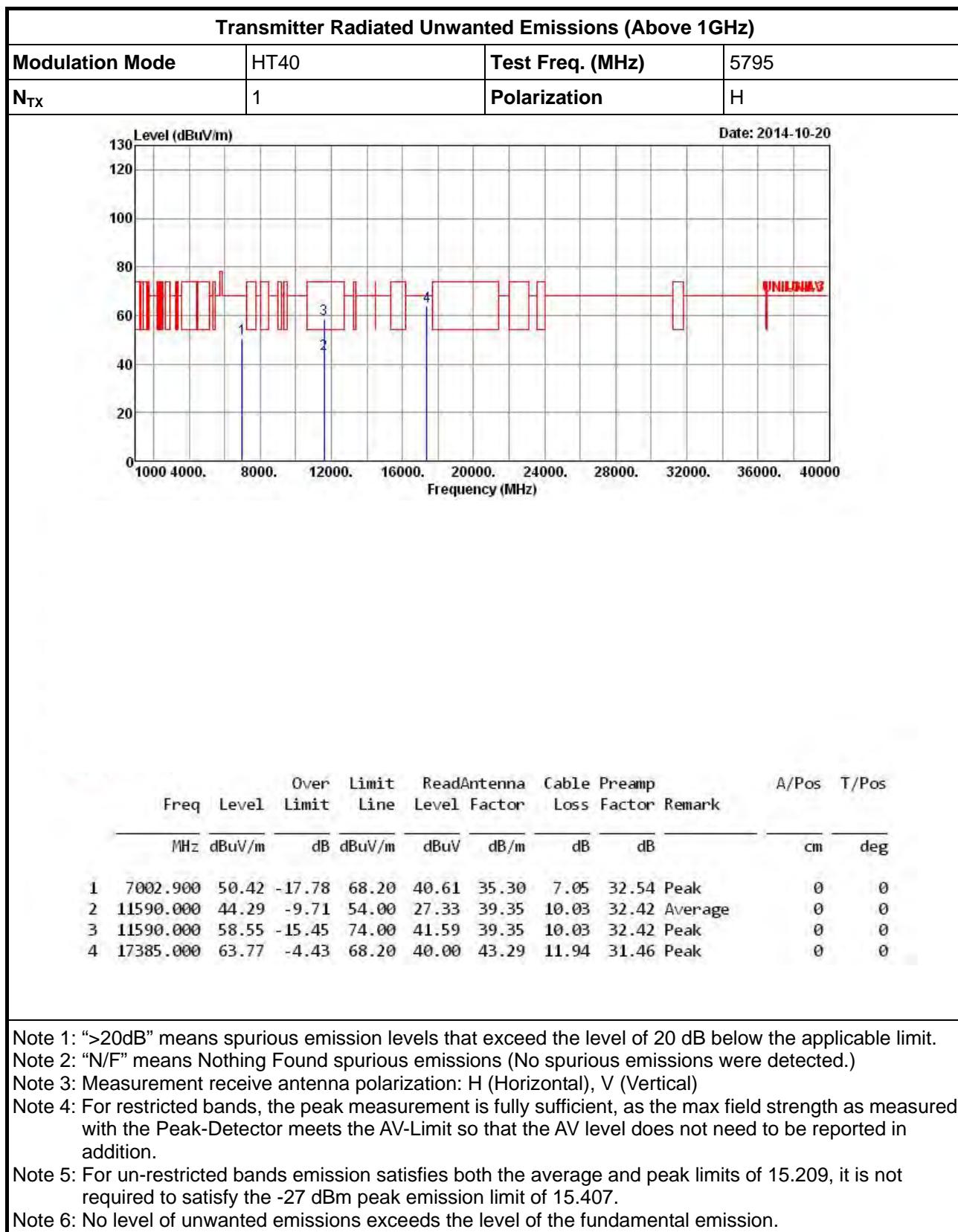








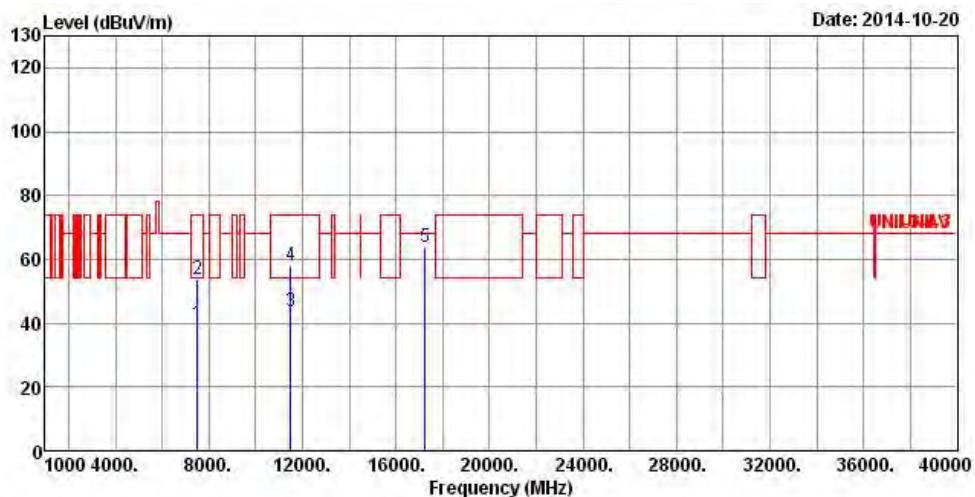






Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	VHT20	Test Freq. (MHz)	5745
N_{TX}	1	Polarization	V



Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark	A/Pos	T/Pos
		Limit	Line	Level	Factor	Loss	Factor		cm	deg
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			
500.000	39.87	-14.13	54.00	28.59	36.60	7.43	32.75	Average	0	0
500.000	53.68	-20.32	74.00	42.40	36.60	7.43	32.75	Peak	0	0
490.000	43.77	-10.23	54.00	26.87	39.28	10.04	32.42	Average	0	0
490.000	58.04	-15.96	74.00	41.14	39.28	10.04	32.42	Peak	0	0
235.000	63.96	-4.24	68.20	41.70	42.12	11.59	31.45	Peak	0	0

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

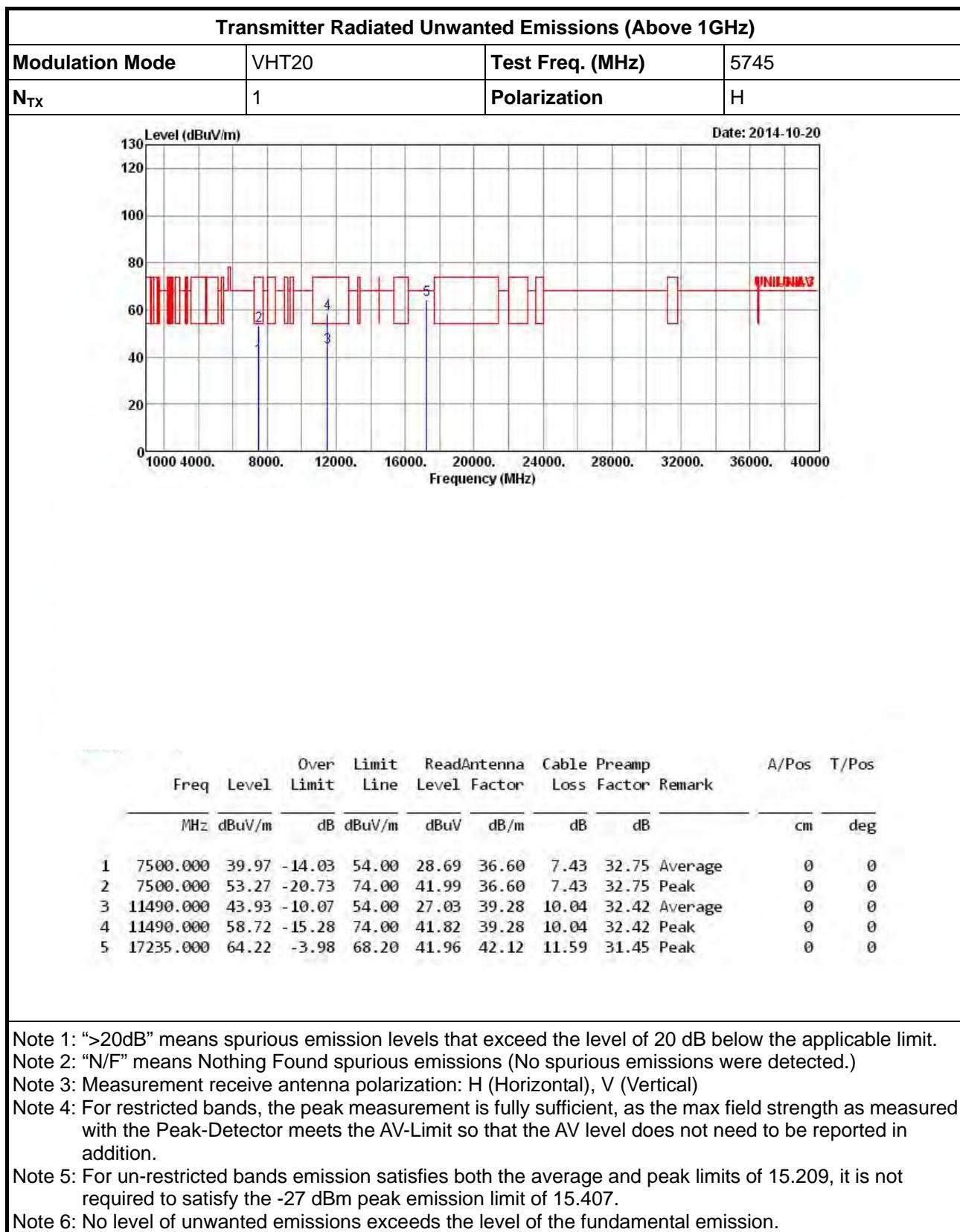
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

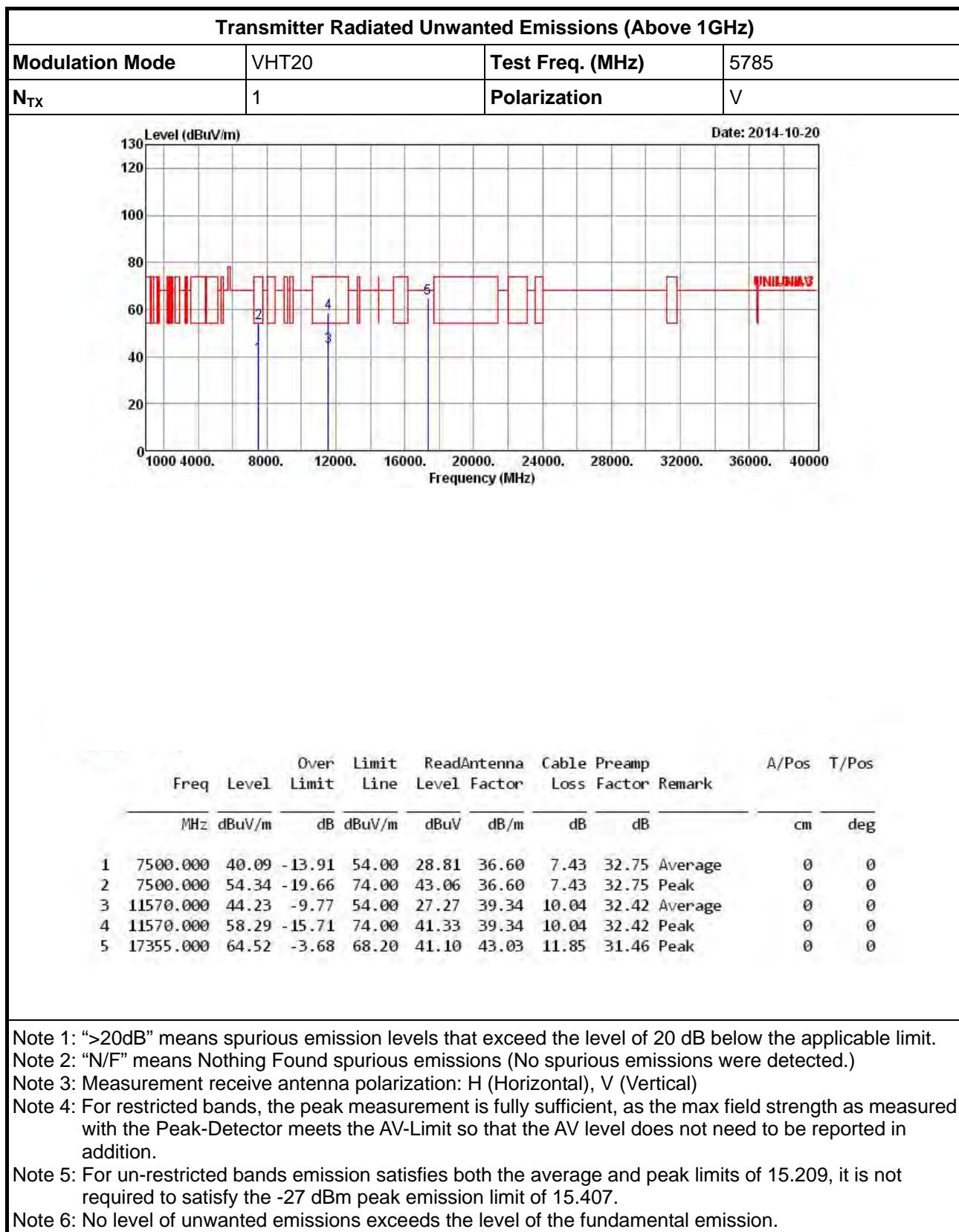
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

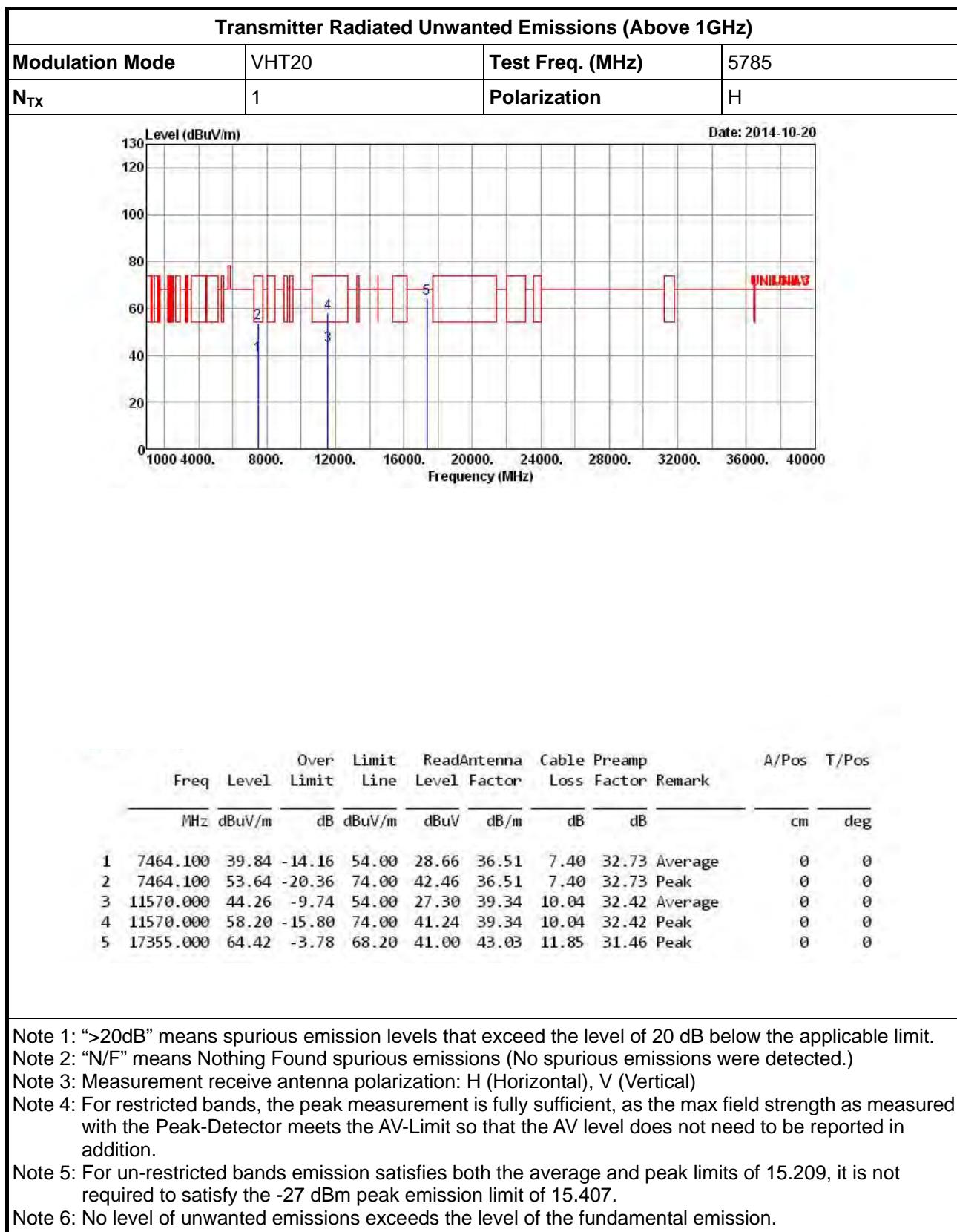
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

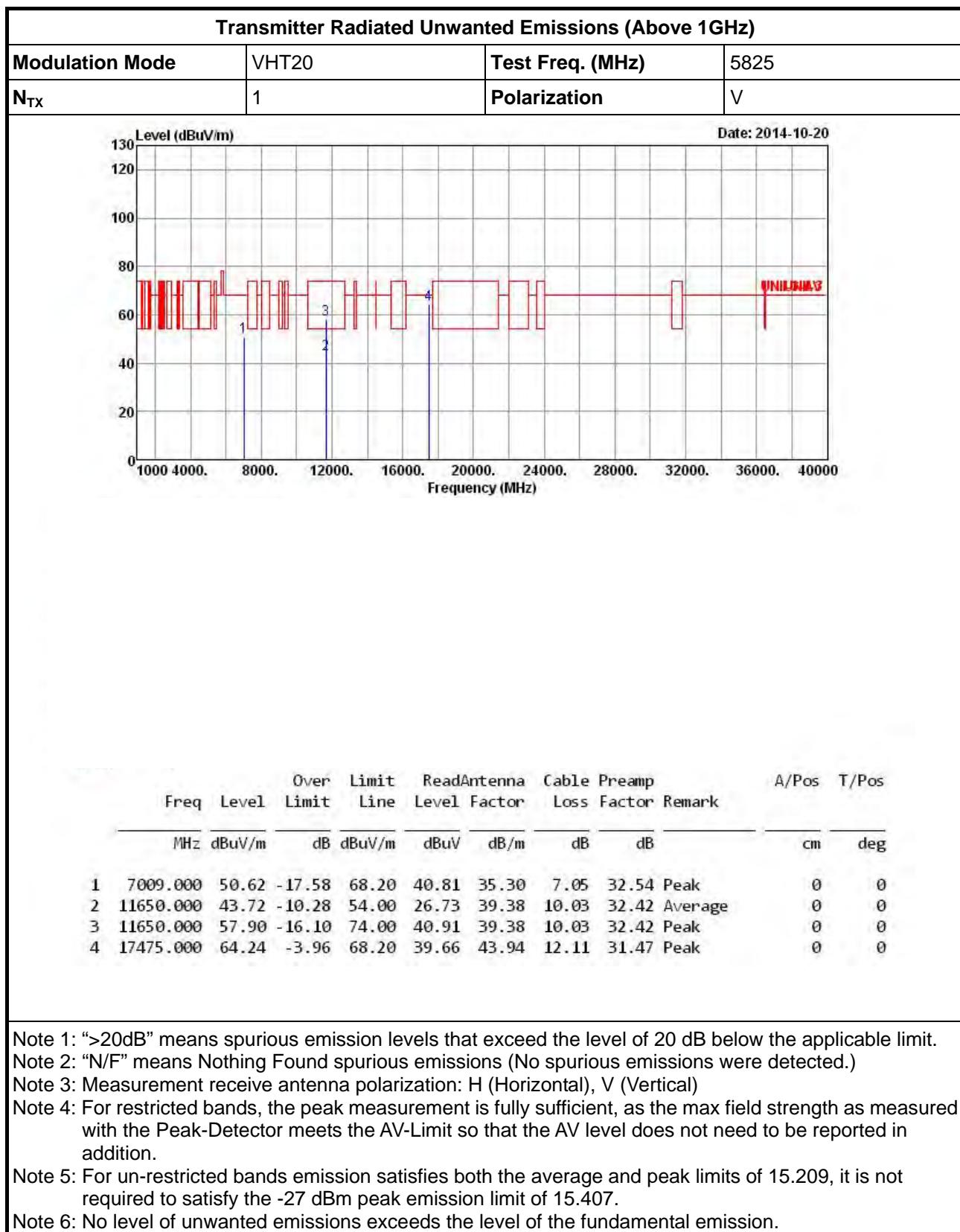
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

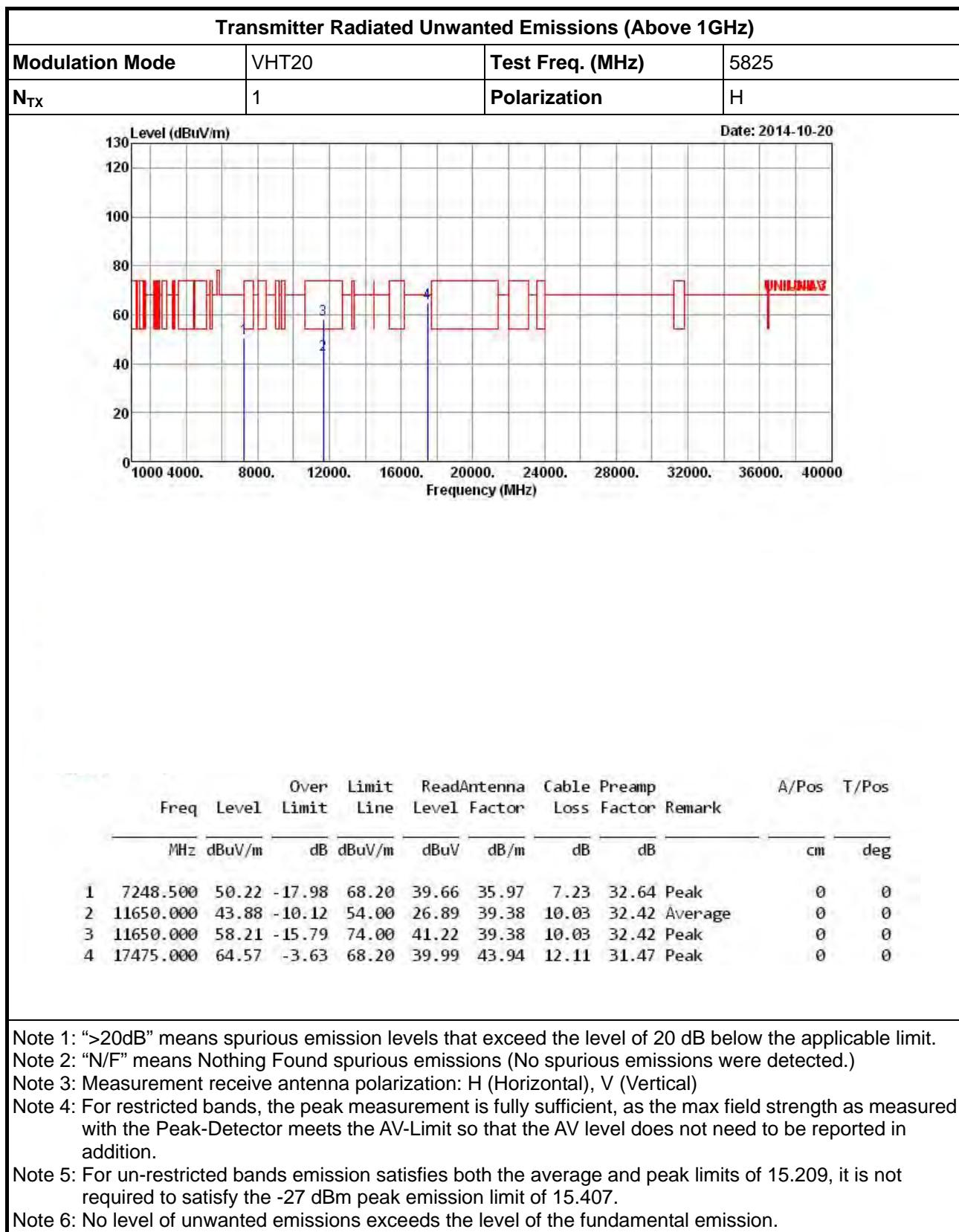
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

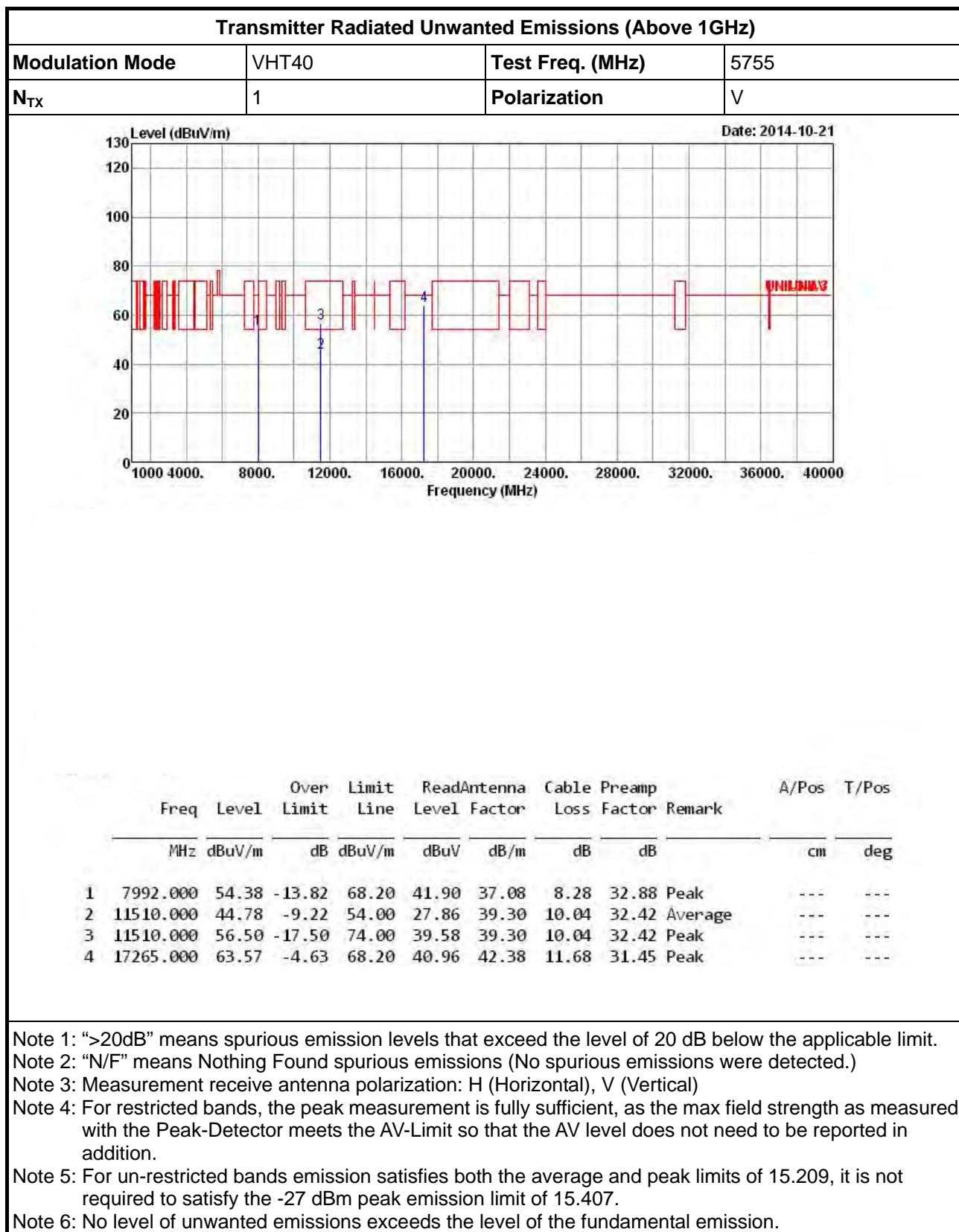


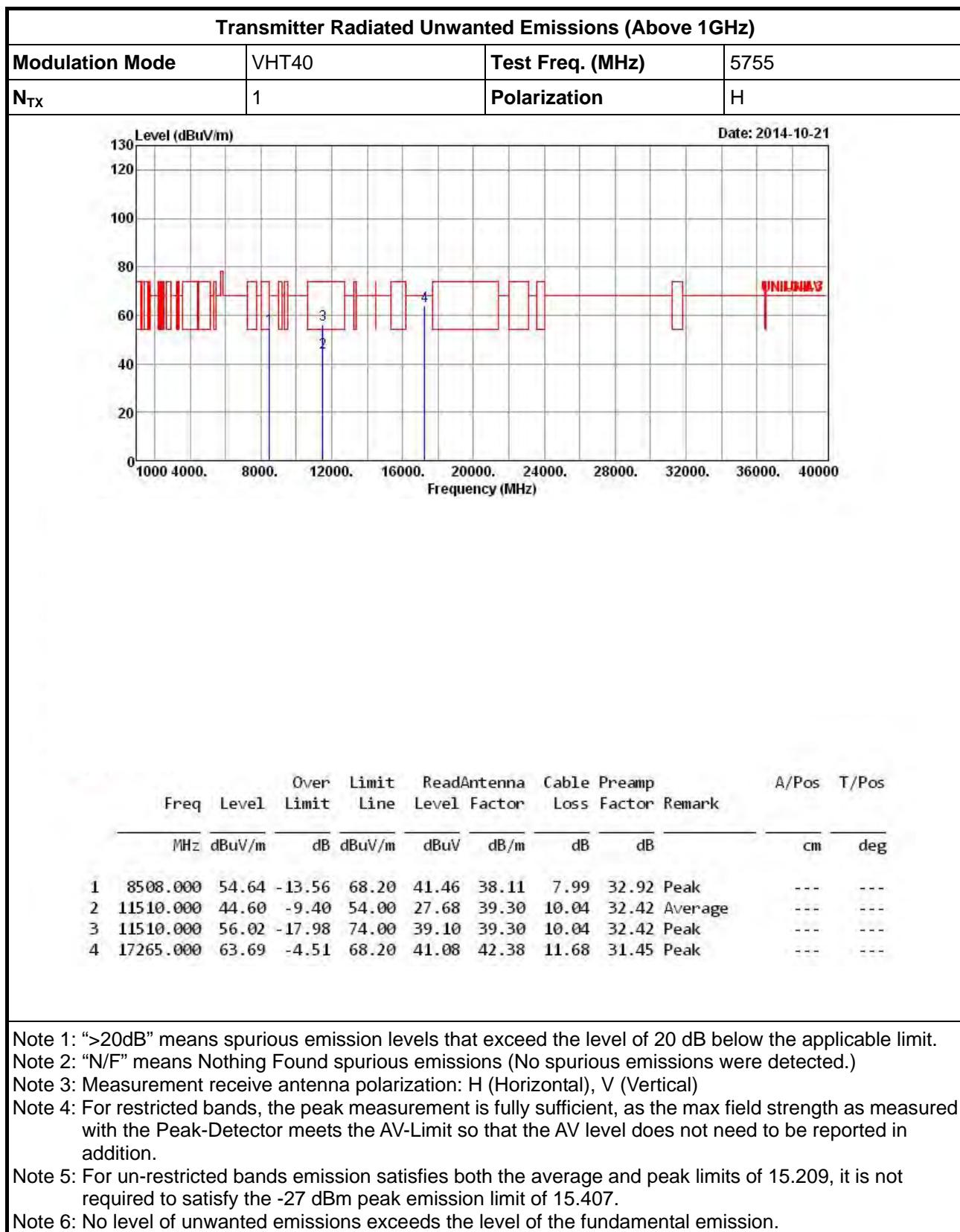


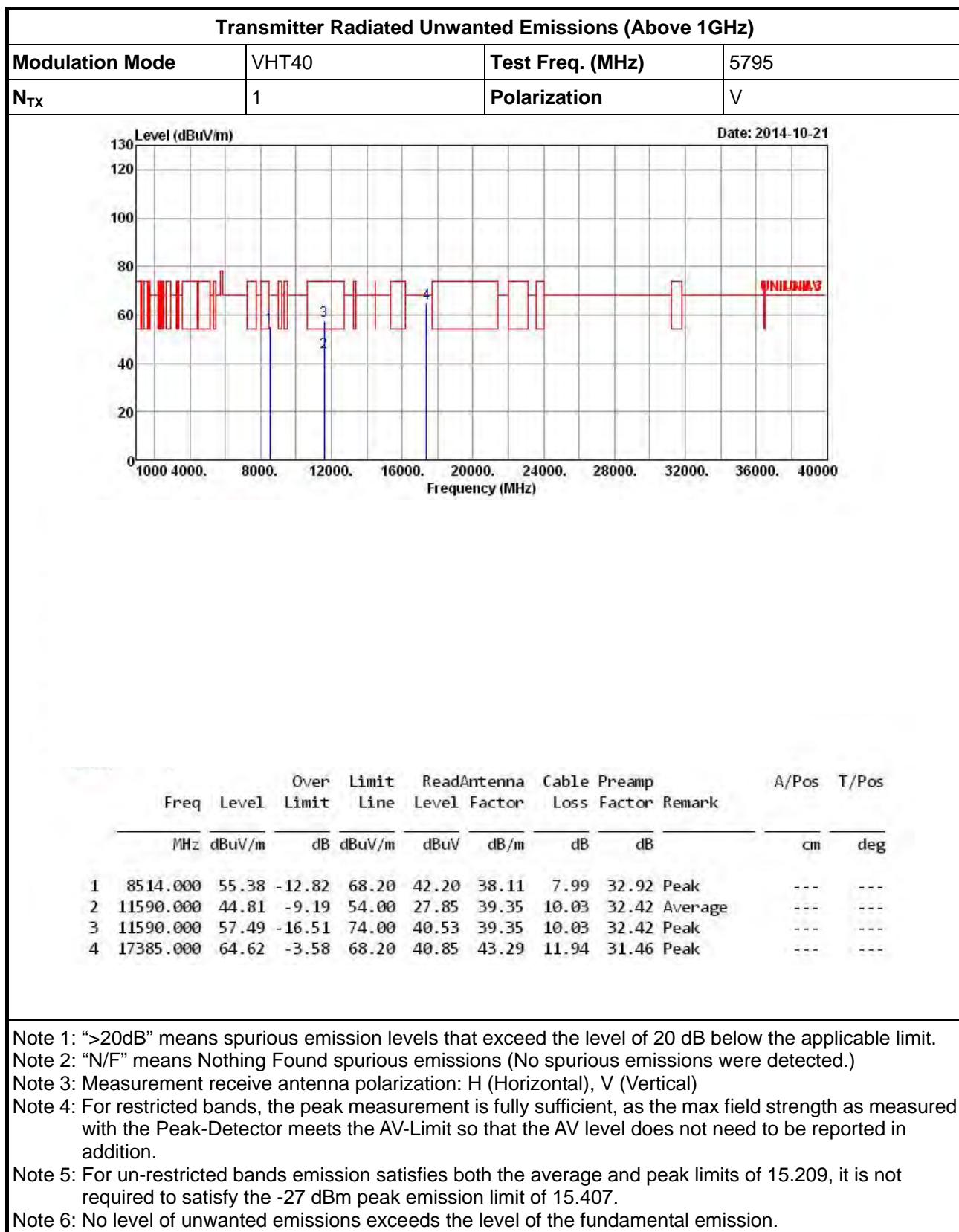


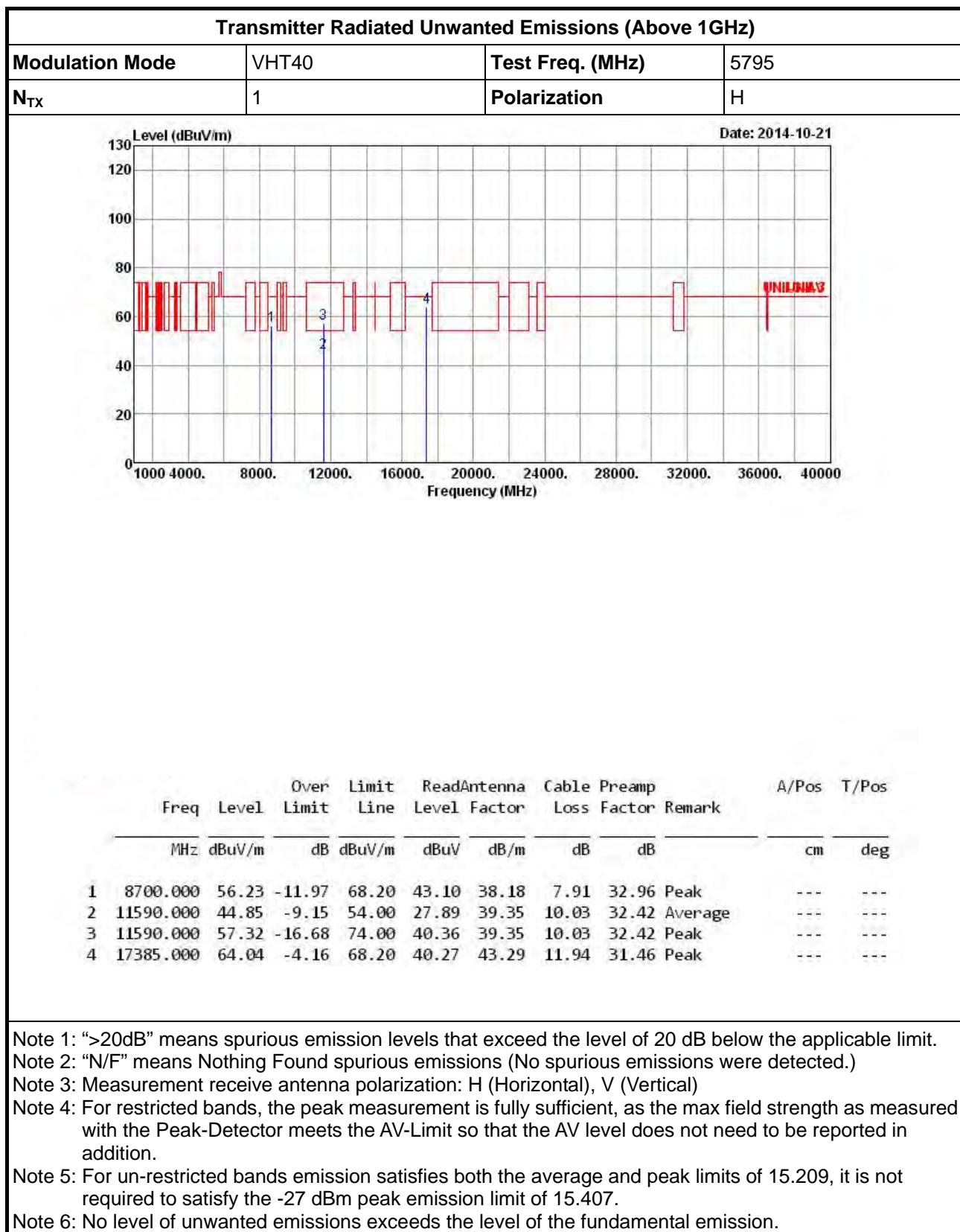


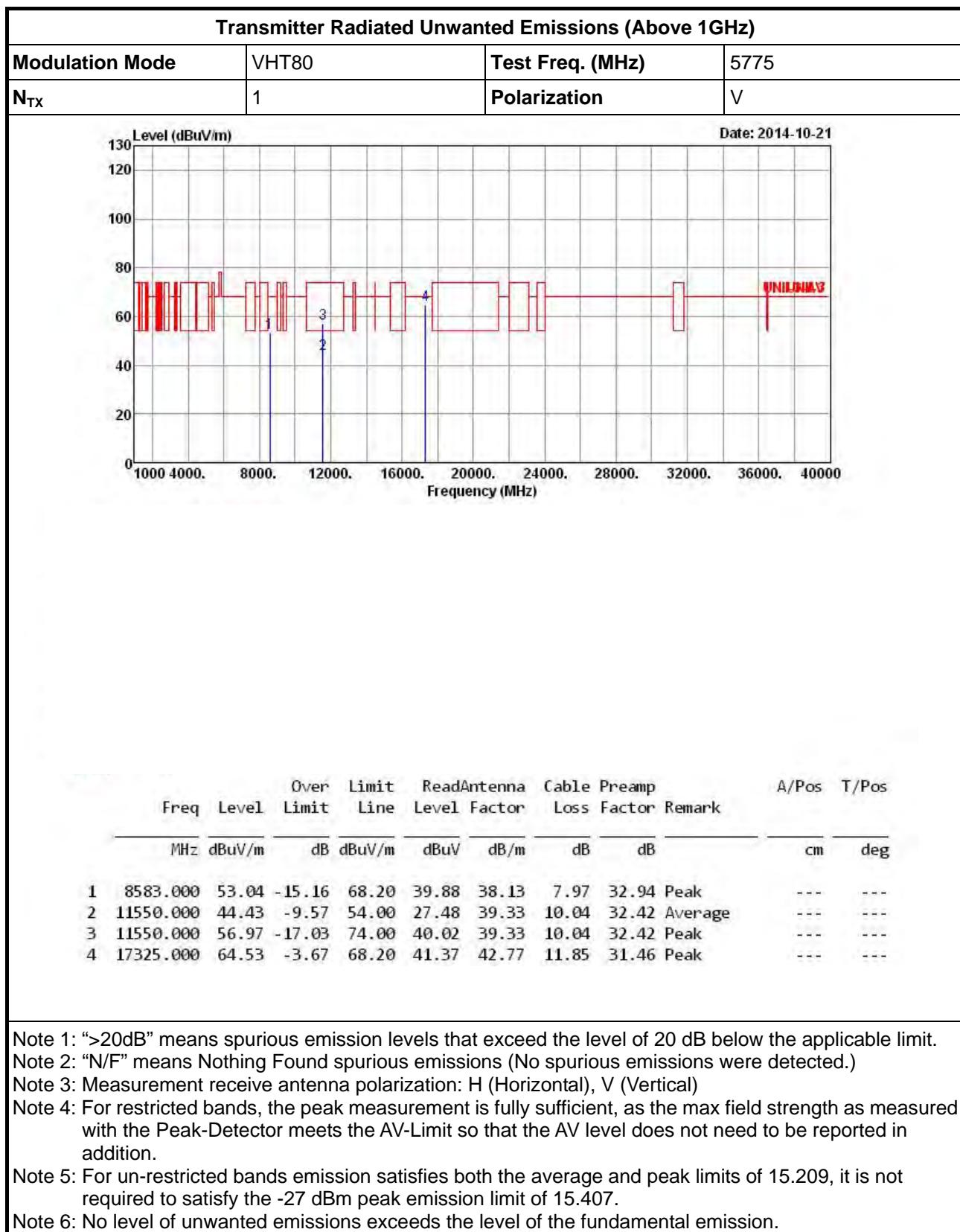


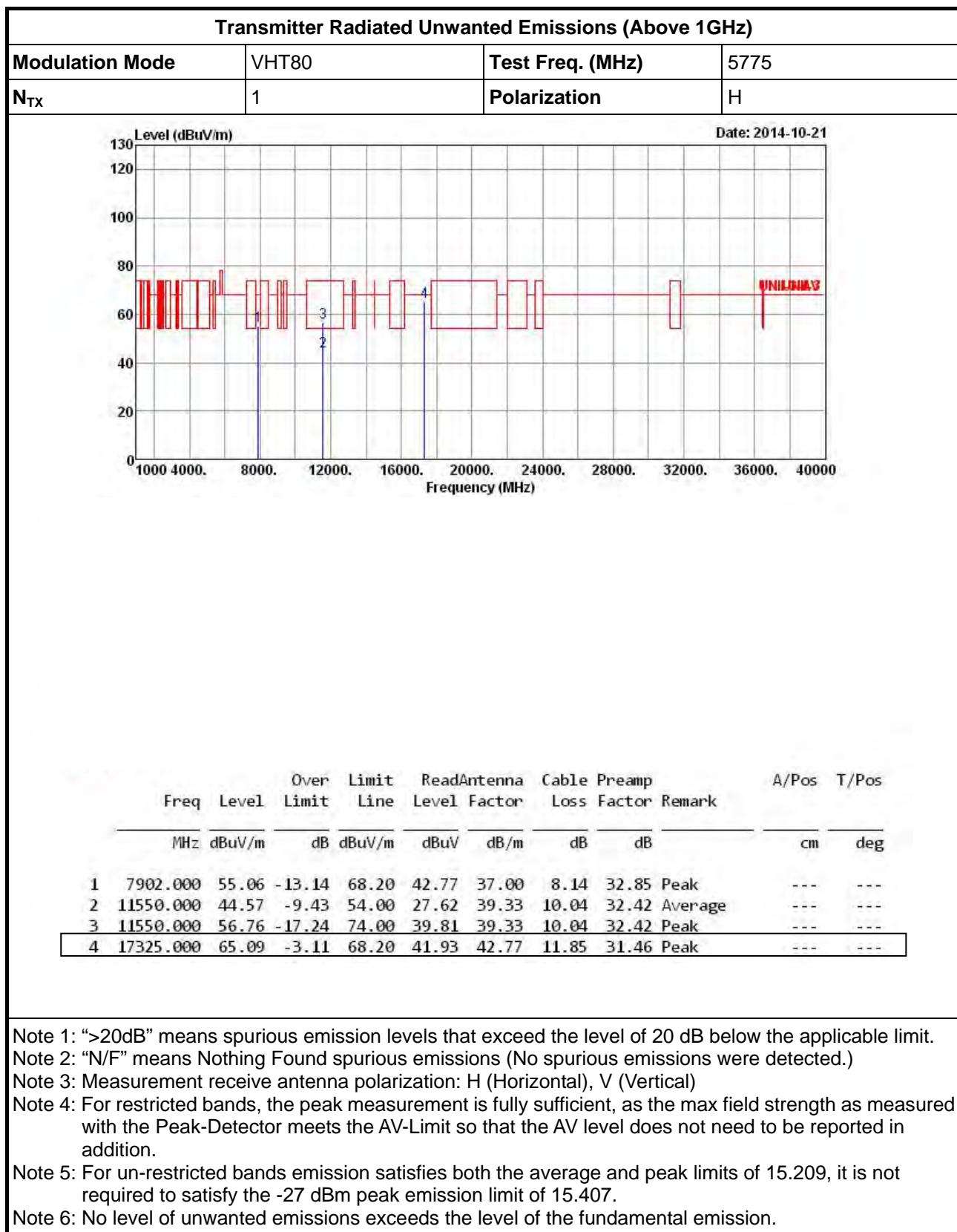












3.7 Frequency Stability

3.7.1 Frequency Stability Limit

Frequency Stability Limit	
UNII Devices	
<input checked="" type="checkbox"/> In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.	
IEEE Std. 802.11n-2009	
<input checked="" type="checkbox"/> The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band and ± 25 ppm maximum for the 2.4 GHz band.	

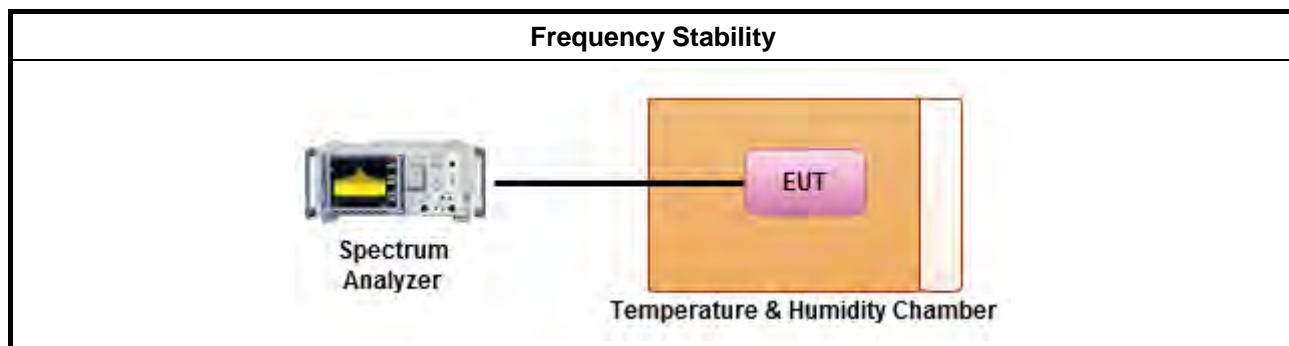
3.7.2 Measuring Instruments

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

3.7.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.8 for frequency stability tests
<input checked="" type="checkbox"/>	Frequency stability with respect to ambient temperature
<input checked="" type="checkbox"/>	Frequency stability when varying supply voltage
<input checked="" type="checkbox"/>	For conducted measurement.
<input checked="" type="checkbox"/>	For conducted measurements on devices with multiple transmit chains: Measurements need only to be performed on one of the active transmit chains (antenna outputs)
<input type="checkbox"/>	For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level.

3.7.4 Test Setup





3.7.5 Test Result of Frequency Stability

Frequency Stability Result			
Mode		Frequency Stability (ppm)	
Condition	Freq. (MHz)	Test Frequency (MHz)	Frequency Stability (ppm)
T _{20°C} Vmax	5300	5300.01259	2.3755
T _{20°C} Vmin	5300	5300.01216	2.2943
T _{50°C} Vnom	5300	5299.99436	-1.0642
T _{40°C} Vnom	5300	5299.99870	-0.2453
T _{30°C} Vnom	5300	5300.00999	1.8849
T _{20°C} Vnom	5300	5300.02431	4.5868
T _{10°C} Vnom	5300	5300.03647	6.8811
T _{0°C} Vnom	5300	5300.04645	8.7642
T _{-10°C} Vnom	5300	5300.02909	5.4887
T _{-20°C} Vnom	5300	5300.03300	6.2264
Limit (ppm)		-	20
Result		Complied	

Note 1: Measure at 85 % [Vmin] and 115 % [Vmax] of the nominal voltage [Vnom].
Note 2: The nominal voltage refer test report clause 1.1.5 for EUT operational condition.



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Apr. 14. 2014	AC Conduction
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 22, 2014	AC Conduction
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	Oct. 31, 2014	AC Conduction
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	AC Conduction

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101013	9kHz ~ 40GHz	Jan. 25, 2014	RF Conducted
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100°C	Nov. 20, 2013	RF Conducted
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 31, 2014	RF Conducted
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Jan. 28, 2014	RF Conducted
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Jan. 28, 2014	RF Conducted
DC Power Source	G.W.	GPS-3030D	GEN865896	DC 0V ~ 30V	Jul. 26, 2014	RF Conducted

Note: Calibration Interval of instruments listed above is one year.

Radiated Emission (Below 1GHz)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Nov. 30, 2013	Radiation
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 05, 2014	Radiation
Spectrum	R&S	FSP40	100004	9kHz ~ 40GHz	Mar. 27, 2014	Radiation
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 20, 2014	Radiation
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Nov. 16, 2013	Radiation
Turn Table	EM Electronics	EM Electronics	060615	0 ~ 360 degree	N/A	Radiation
Antenna Mast	MF	MF-7802	MF780208179	1 ~ 4 m	N/A	Radiation

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Loop Antenna	TESEQ	HLA 6120	31244	9kHz ~ 30MHz	Dec. 02, 2012	Radiation

Note: Calibration Interval of instruments listed above is two years.

**Radiated Emission (Above 1GHz)**

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Nov. 30, 2013	Radiation
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Sep. 01, 2014	Radiation
Spectrum	R&S	FSP40	100004	9kHz ~ 40GHz	Mar. 27, 2014	Radiation
Horn Antenna	ETS • LINDGREN	3115	6741	1GHz ~ 18GHz	Jun. 11, 2014	Radiation
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jan. 10, 2014	Radiation
RF Cable-high	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Dec. 11, 2013	Radiation
Turn Table	EM Electronics	EM Electronics	060615	0 ~ 360 degree	N/A	Radiation
Antenna Mast	MF	MF-7802	MF780208179	1 ~ 4 m	N/A	Radiation

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Amplifier	EM	EM18G40G	060604	18GHz ~ 40GHz	Oct. 17, 2013	Radiation

Note: Calibration Interval of instruments listed above is two years.