



# FCC Test Report

**Equipment** : 11ac Wireless Dual-Band USB Adapter  
**Brand Name** : EDIMAX  
**Model No.** : EW-7811USC  
**FCC ID** : NDD9578111407  
**Standard** : 47 CFR FCC Part 15.407  
**Operating Band** : 5725 MHz – 5850 MHz  
**FCC Classification** : UNII  
**Applicant** : EDIMAX TECHNOLOGY CO., LTD.  
**Manufacturer** : No.3,Wu-Chuan 3rd Road,Wu-Ku Industrial Park,  
New Taipei City, Taiwan  
**Function** :  Outdoor AP;  Indoor AP;  
 Fixed P2P AP  Portable Client

The product sample received on May 21, 2014 and completely tested on Apr. 14, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

Reviewed by:

  
Kevin Liang / Assistant Manager





## Table of Contents

<b>1</b>	<b>GENERAL DESCRIPTION .....</b>	<b>5</b>
1.1	Information.....	5
1.2	Support Equipment.....	8
1.3	Testing Applied Standards .....	8
1.4	Testing Location Information .....	9
1.5	Measurement Uncertainty .....	10
<b>2</b>	<b>TEST CONFIGURATION OF EUT .....</b>	<b>11</b>
2.1	The Worst Case Modulation Configuration .....	11
2.2	The Worst Case Power Setting Parameter.....	11
2.3	The Worst Case Measurement Configuration.....	12
2.4	Test Setup Diagram .....	14
<b>3</b>	<b>TRANSMITTER TEST RESULT.....</b>	<b>16</b>
3.1	AC Power-line Conducted Emissions .....	16
3.2	Emission Bandwidth .....	19
3.3	RF Output Power.....	21
3.4	Peak Power Spectral Density.....	24
3.5	Transmitter Bandedge Emissions .....	27
3.6	Transmitter Unwanted Emissions.....	31
3.7	Frequency Stability .....	64
<b>4</b>	<b>TEST EQUIPMENT AND CALIBRATION DATA.....</b>	<b>66</b>

### 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 (5725-5850MHz band)					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N <sub>TX</sub> )	RF Output Power (dBm)
5725-5850	a	5745-5825	149-165 [5]	1	19.33
5725-5850	n (HT20)	5745-5825	149-165 [5]	1	18.83
5725-5850	n (HT40)	5755-5795	151-159 [2]	1	18.46
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	1	18.92
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	1	19.19
5725-5850	ac (VHT80)	5775	155 [1]	1	15.96

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 type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	<input type="checkbox"/> Temporary RF connector provided
<input type="checkbox"/>	<input type="checkbox"/> No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.
<input checked="" type="checkbox"/>	External antenna (dedicated antennas)

Antenna General Information			
No.	Ant. Cat.	Ant. Type	Gain (dBi)
1	External	Dipole	3.59



### 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	
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)
<input type="checkbox"/> Operated normally mode for worst duty cycle	
<input checked="" type="checkbox"/> Operated test mode for worst duty cycle	
<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 type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	
Type of DC Source	<input type="checkbox"/> Internal DC supply	<input checked="" type="checkbox"/> From System	<input type="checkbox"/> Battery



## 1.2 Support Equipment

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5540	R33002
2	AC Adapter for Notebook	DELL	LA65NS2-01	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 C63.10-2013
- ♦ KDB 789033 D02 v01r02
- ♦ FCC KDB 644545 D03 v01
- ♦ FCC-14-30A1-UNII



## 1.4 Testing Location Information

Testing Location			
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.	
	TEL : 886-3-327-3456	FAX : 886-3-327-0973	
Test site registered number [553509] FCC.			
Test Condition	Test Site No.	Test Engineer	Test Environment
AC Conduction	CO04-HY	Zeus	24°C / 51%
(For update 5725~5850 MHz)			
RF Conducted	TH07-HY	Candy	22.8°C / 62.2%
Radiated Emission	03CH03-HY	Jeff	22.1°C / 53%



## 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	±0.6 %	
RF output power, conducted	±0.1 dB	
Power density, conducted	±0.6 dB	
Unwanted emissions, conducted	9 – 150 kHz	±0.4 dB
	0.15 – 30 MHz	±0.4 dB
	30 – 1000 MHz	±0.6 dB
	1 – 18 GHz	±0.5 dB
	18 – 40 GHz	±0.5 dB
	40 – 200 GHz	N/A
All emissions, radiated	9 – 150 kHz	±2.5 dB
	0.15 – 30 MHz	±2.3 dB
	30 – 1000 MHz	±2.6 dB
	1 – 18 GHz	±3.6 dB
	18 – 40 GHz	±3.8 dB
	40 – 200 GHz	N/A
Temperature	±0.8 °C	
Humidity	±5 %	
DC and low frequency voltages	±0.9%	
Time	±1.4 %	
Duty Cycle	±0.6 %	



## 2 Test Configuration of EUT

### 2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing			
Modulation Mode	Transmit Chains (N <sub>TX</sub> )	Data Rate / MCS	Worst Data Rate / MCS
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 (5725-5850MHz band)							
Test Software Version	Realtek 11ac 8811A USB WLAN MP_0.0033.20130401						
Modulation Mode	N <sub>TX</sub>	Test Frequency (MHz)					
		NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
		5745	5785	5825	5755	5795	5775
11a	1	58	58	53	-	-	-
HT20	1	58	53	52	-	-	-
HT40	1	-	-	-	59	54	-
VHT20	1	59	53	52	-	-	-
VHT40	1	-	-	-	60	54	-
VHT80	1	-	-	-	-	-	51



## 2.3 The Worst Case Measurement Configuration

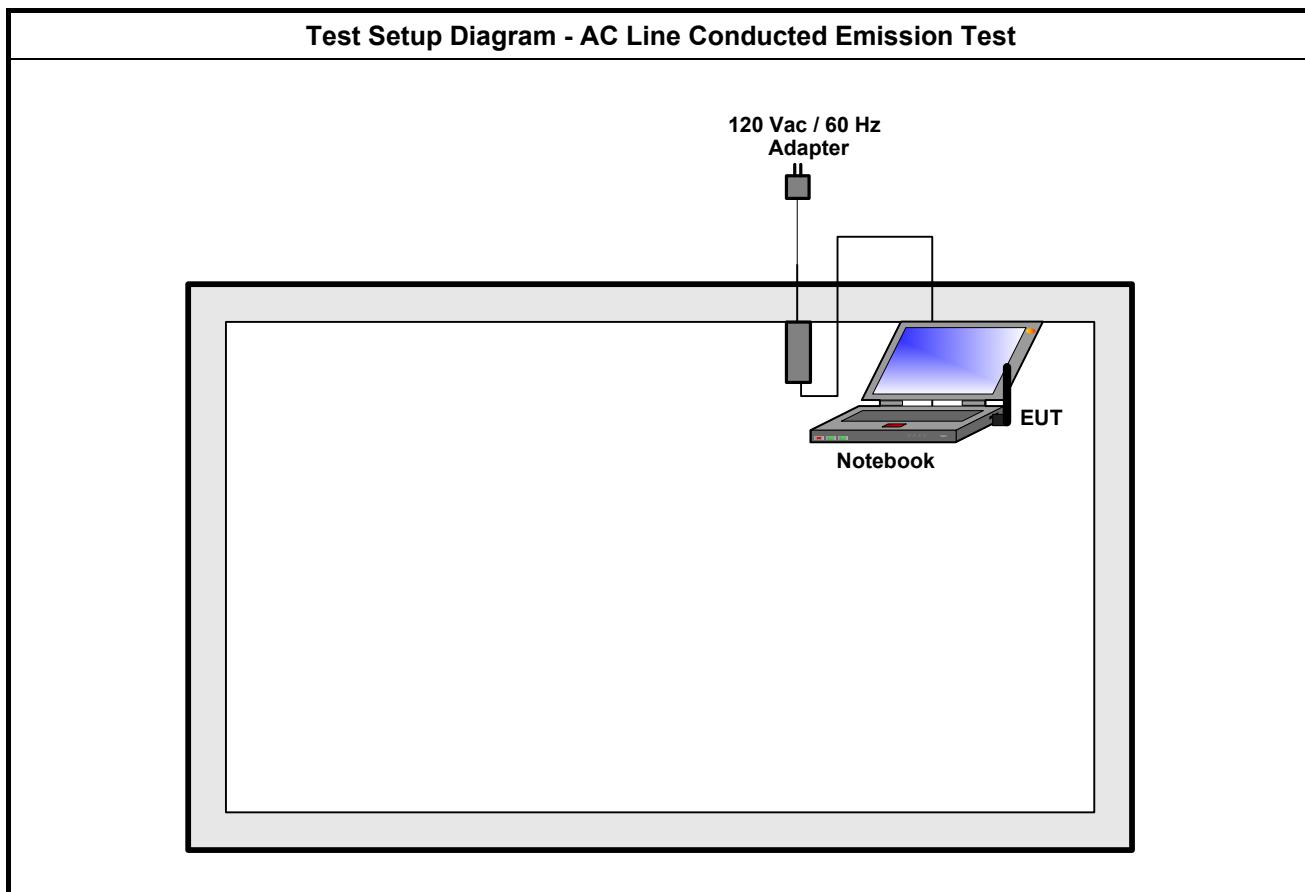
The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	AC power-line conducted emissions
<b>Condition</b>	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
<b>Operating Mode</b>	Operating Mode Description
1	Transmitting

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



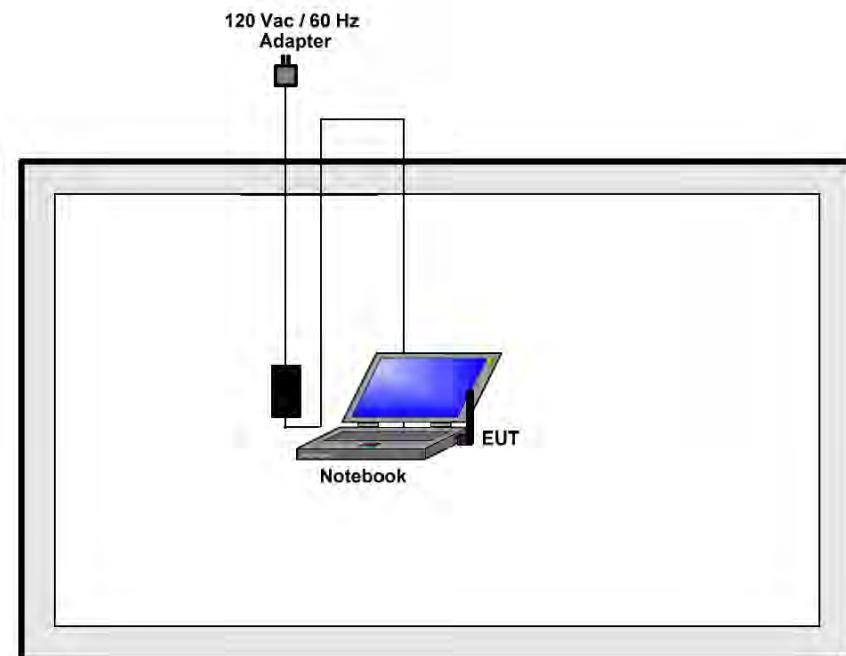
The Worst Case Mode for Following Conformance Tests							
<b>Tests Item</b>	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions						
<b>Test Condition</b>	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.						
<b>User Position</b>	<input type="checkbox"/> EUT will be placed in fixed position. <input checked="" type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed three orthogonal planes. <input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes.						
<b>Operating Mode</b>	Transmitting						
<b>Modulation Mode</b>	11a, HT20, HT40, VHT20, VHT40, VHT80						
<b>Orthogonal Planes of EUT</b>	<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					
<b>Worst Planes of EUT</b>	V						
<b>Worst Planes of Antenna</b>	V						

## 2.4 Test Setup Diagram



(For 5725~5850 MHz)

## Test Setup Diagram - Radiated Test



### 3 Transmitter Test Result

#### 3.1 AC Power-line Conducted Emissions

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

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

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

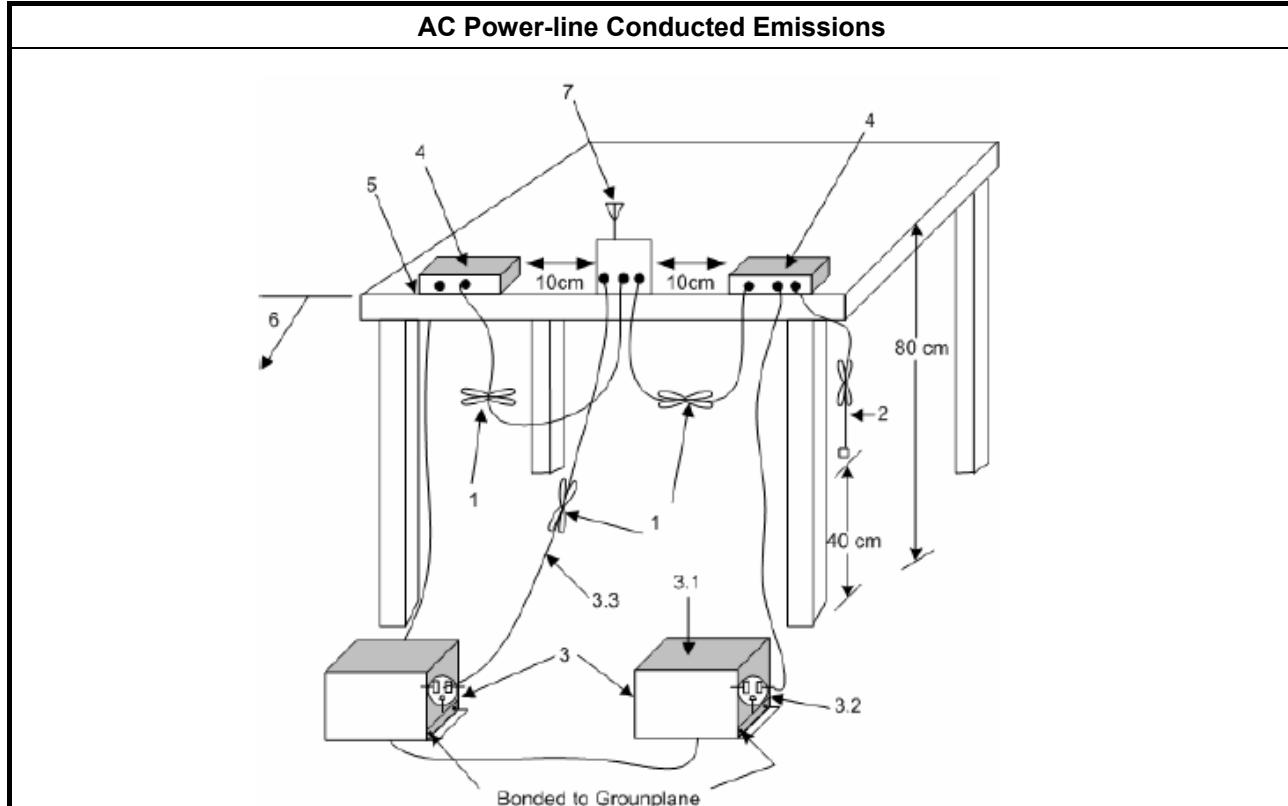
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

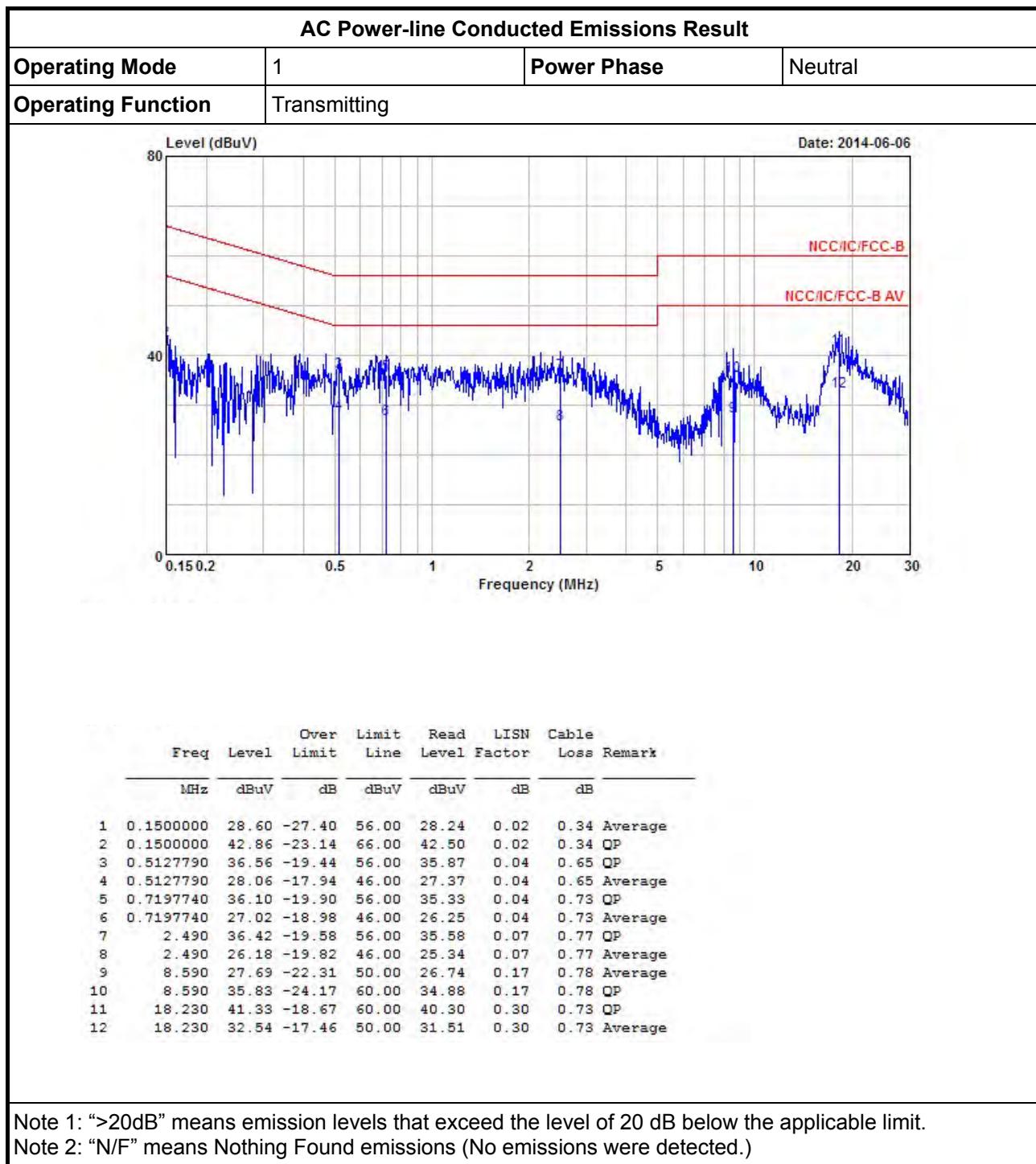
Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

##### 3.1.4 Test Setup



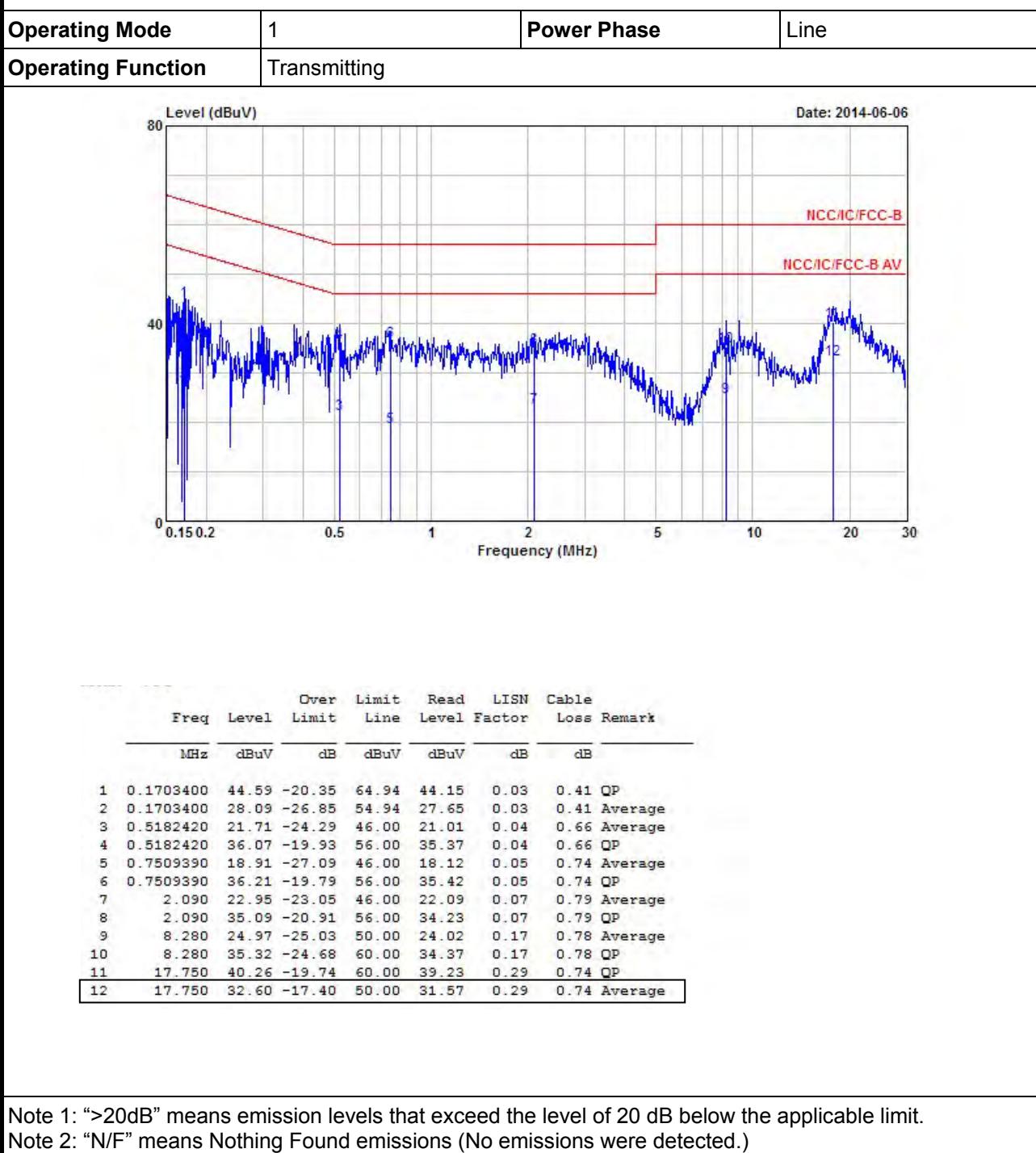


## 3.1.5 Test Result of AC Power-line Conducted Emissions





## AC Power-line Conducted Emissions Result





## 3.2 Emission Bandwidth

### 3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit	
<b>UNII Devices</b>	
<input type="checkbox"/>	For the 5.15-5.25 GHz band, N/A
<input 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 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.

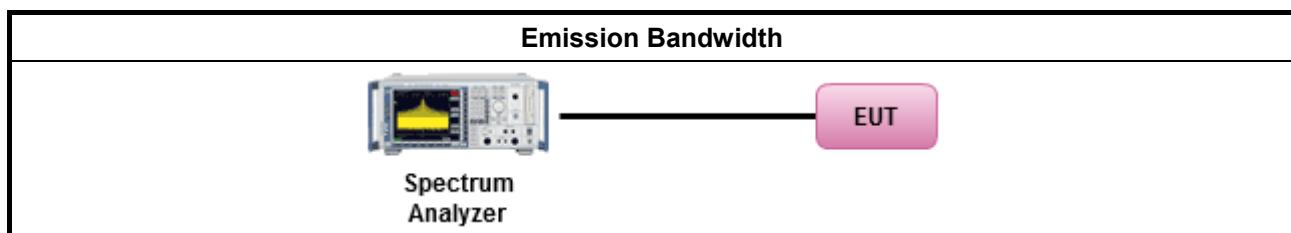
### 3.2.2 Measuring Instruments

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 KDB 789033 D02 v01r02, 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 6.6 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.

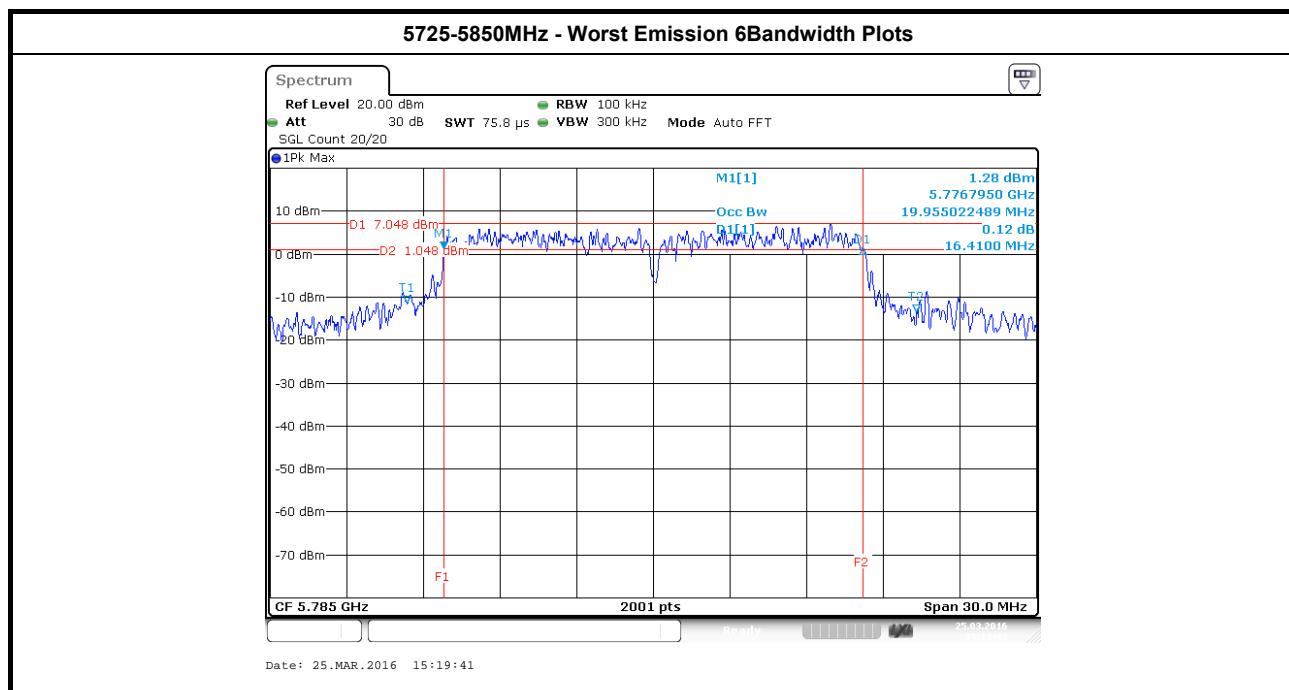
### 3.2.4 Test Setup





## 3.2.5 Test Result of Emission Bandwidth

UNII Emission Bandwidth Result (5725-5850MHz band)					
Condition			Emission Bandwidth (MHz)		
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	99% Bandwidth	6dB Bandwidth	
11a	1	5745	20.35	16.45	
11a	1	5785	19.95	16.41	
11a	1	5825	21.16	16.50	
HT20	1	5745	21.94	17.73	
HT20	1	5785	18.51	17.64	
HT20	1	5825	20.98	17.68	
HT40	1	5755	52.09	36.36	
HT40	1	5795	51.21	36.48	
VHT20	1	5745	20.00	17.53	
VHT20	1	5785	20.52	17.61	
VHT20	1	5825	20.29	17.71	
VHT40	1	5755	52.77	36.48	
VHT40	1	5795	49.65	36.44	
VHT80	1	5775	108.26	76.40	
Limit			-	≥ 500 kHz	
Result			Complied		





### 3.3 RF Output Power

#### 3.3.1 RF Output Power Limit

Maximum Conducted Output Power Limit	
<b>UNII Devices</b>	
<input 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 $\leq 125$ 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 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 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 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.	

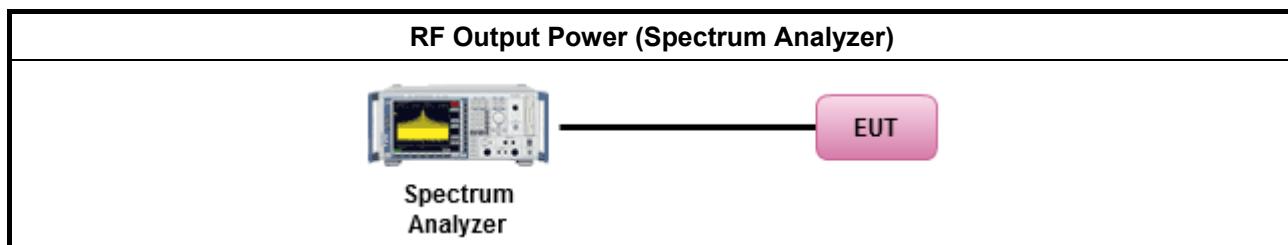
#### 3.3.2 Measuring Instruments

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 KDB 789033 D02 v01r02, clause E Method SA-1 (spectral trace averaging).
<input type="checkbox"/>	Refer as KDB 789033 D02 v01r02, 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 KDB 789033 D02 v01r02, clause E Method SA-2 (spectral trace averaging).
<input type="checkbox"/>	Refer as KDB 789033 D02 v01r02, 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 KDB 789033 D02 v01r02, 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]) $EIRP_{total} = P_{total} + DG$

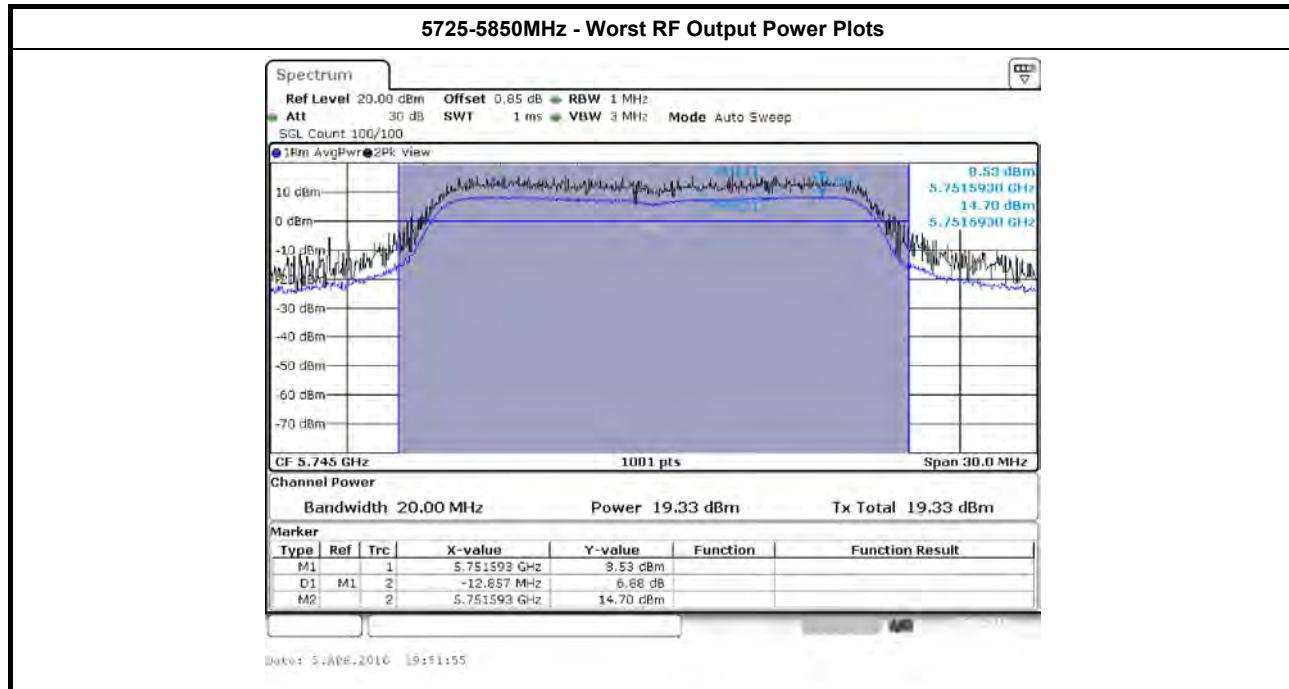
### 3.3.4 Test Setup





### 3.3.5 Test Result of Maximum Conducted Output Power

Maximum Conducted Output Power (5725-5850MHz band)					
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Output Power (dBm)	Antenna Gain (dBi)	Power Limit
11a	1	5745	19.33	3.59	30.00
11a	1	5785	18.89	3.59	30.00
11a	1	5825	17.35	3.59	30.00
HT20	1	5745	18.83	3.59	30.00
HT20	1	5785	17.50	3.59	30.00
HT20	1	5825	16.99	3.59	30.00
HT40	1	5755	18.46	3.59	30.00
HT40	1	5795	17.25	3.59	30.00
VHT20	1	5745	18.92	3.59	30.00
VHT20	1	5785	17.17	3.59	30.00
VHT20	1	5825	17.07	3.59	30.00
VHT40	1	5755	19.19	3.59	30.00
VHT40	1	5795	18.01	3.59	30.00
VHT80	1	5775	15.96	3.59	30.00
Result		Complied			





## 3.4 Peak Power Spectral Density

### 3.4.1 Peak Power Spectral Density Limit

Peak Power Spectral Density Limit	
<b>UNII Devices</b>	
<input 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 type="checkbox"/> Mobile or Portable Client: the peak power spectral density (PPSD) $\leq 11$ dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$ .	
<input type="checkbox"/> For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) $\leq 11$ dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$ .	
<input type="checkbox"/> For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) $\leq 11$ 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) $\leq 30$ 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) $\leq 30$ dBm/500kHz.	
<b>PPSD</b> = 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 <b>G<sub>TX</sub></b> = the maximum transmitting antenna directional gain in dBi.	

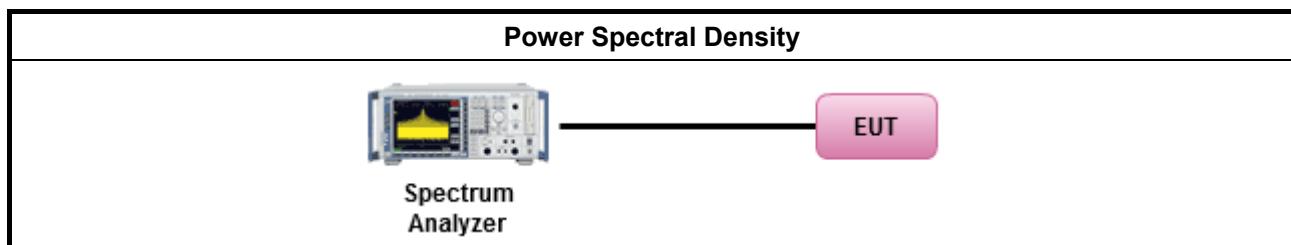
### 3.4.2 Measuring Instruments

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 checked="" type="checkbox"/> Refer as KDB 789033 D02 v01r02, F)5) 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 KDB 789033 D02 v01r02, clause F Method SA-1 (spectral trace averaging).	
<input type="checkbox"/> Refer as KDB 789033 D02 v01r02, clause F 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 KDB 789033 D02 v01r02, clause F Method SA-2 (spectral trace averaging).	
<input type="checkbox"/> Refer as KDB 789033 D02 v01r02, clause F 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.	

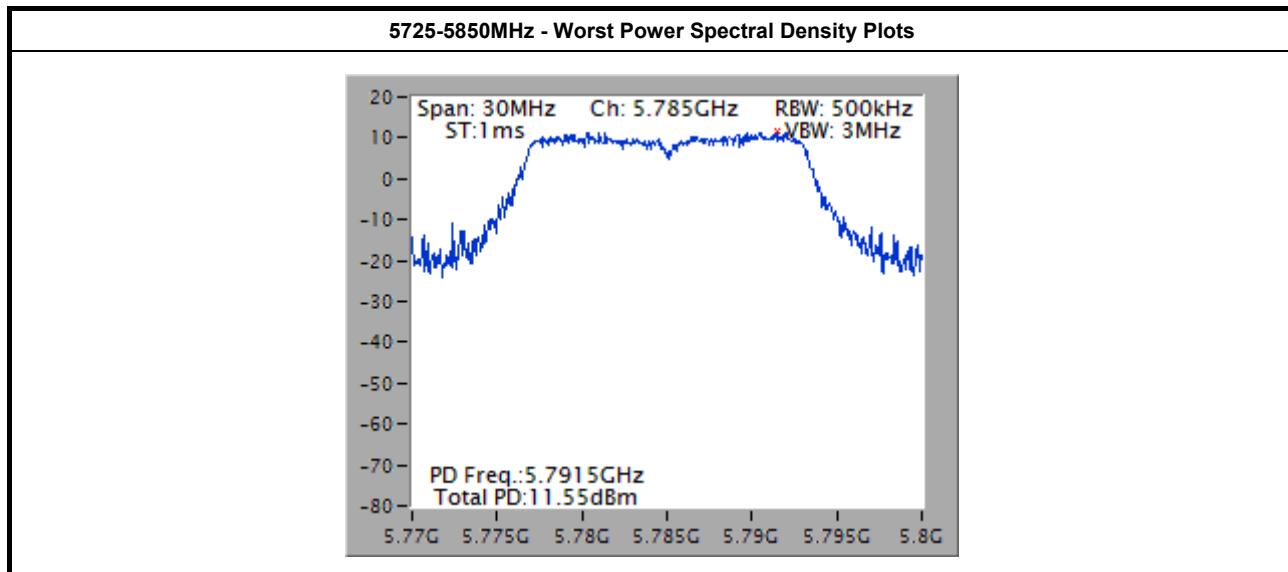
### 3.4.4 Test Setup





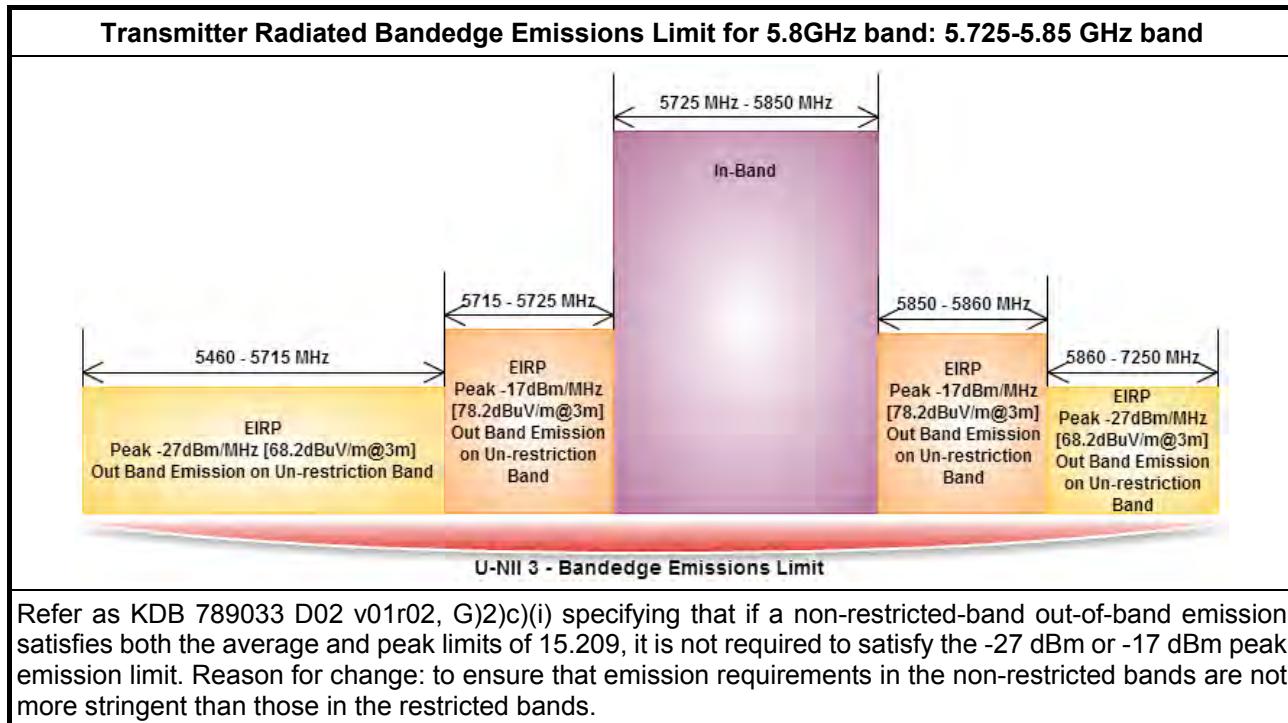
### 3.4.5 Test Result of Peak Power Spectral Density

Peak Power Spectral Density Result (5725-5850MHz band)					
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Peak Power Spectral Density (dBm)	PSD Limit (500kHz)	Antenna Gain (dBi)
11a	1	5745	10.89	30.00	3.59
11a	1	5785	11.55	30.00	3.59
11a	1	5825	9.97	30.00	3.59
HT20	1	5745	10.89	30.00	3.59
HT20	1	5785	10.04	30.00	3.59
HT20	1	5825	9.68	30.00	3.59
HT40	1	5755	8.69	30.00	3.59
HT40	1	5795	7.41	30.00	3.59
VHT20	1	5745	10.76	30.00	3.59
VHT20	1	5785	9.53	30.00	3.59
VHT20	1	5825	9.50	30.00	3.59
VHT40	1	5755	8.92	30.00	3.59
VHT40	1	5795	8.07	30.00	3.59
VHT80	1	5775	3.08	30.00	3.59
Result		Complied			



### 3.5 Transmitter Bandedge Emissions

#### 3.5.1 Transmitter Radiated Bandedge Emissions Limit



#### 3.5.2 Measuring Instruments

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

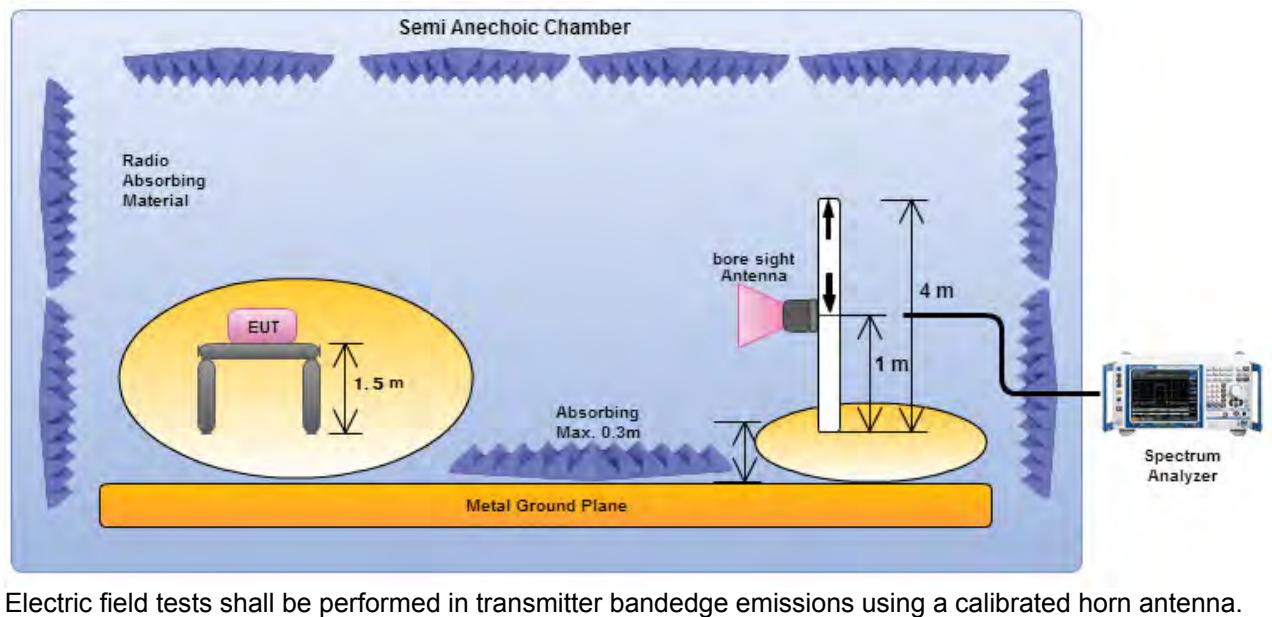


### 3.5.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.10 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
<input type="checkbox"/> If EUT operate in adjacent contiguous bands, bandedge testing performed at the lowest frequency channel at lower-band and highest frequency channel at higher-band. Transmitter in-band emissions will consist of adjacent contiguous bands (e.g., IEEE 802.11ac VHT160 The lowest frequency channel at lower-band and highest frequency channel at higher-band in-band emissions will consist of two adjacent contiguous bands.) <input type="checkbox"/> Operating in 5.15-5.25 GHz band (lower-band) and 5.25-5.35 GHz band (higher-band). <input type="checkbox"/> Operating in 5.47-5.725 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band).
<input type="checkbox"/> If EUT operate in individual non-contiguous bands, bandedge testing performed at the lowest frequency channel and highest frequency channel within lower-band and higher-band. (e.g., (e.g., IEEE 802.11ac VHT160) <input type="checkbox"/> Operating in 5.25-5.35 GHz band (lower-band) and 5.47-5.725 GHz band (higher-band). <input type="checkbox"/> Operating in 5.15-5.25 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band).
<input checked="" type="checkbox"/> For the transmitter unwanted emissions shall be measured using following options below: <input checked="" type="checkbox"/> Refer as KDB 789033 D02 v01r02, clause H2) for unwanted emissions into non-restricted bands. <input checked="" type="checkbox"/> Refer as KDB 789033 D02 v01r02, clause H1) for unwanted emissions into restricted bands. <input type="checkbox"/> Refer as KDB 789033 D02 v01r02, H)6) Method AD (Trace Averaging). <input type="checkbox"/> Refer as KDB 789033 D02 v01r02, H)6) Method VB (Reduced VBW). <input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). $VBW \geq 1/T$ , where T is pulse time. <input type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions. <input checked="" type="checkbox"/> Refer as KDB 789033 D02 v01r02, clause H)5) measurement procedure peak limit. <input type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/> For the transmitter bandedge emissions shall be measured using following options below: <input type="checkbox"/> Refer as KDB 789033 D02 v01r02, 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 6.10 for band-edge testing. <input type="checkbox"/> Refer as ANSI C63.10, clause 6.10.6.2 for marker-delta method for band-edge measurements.
<input checked="" type="checkbox"/> For radiated measurement, refer as ANSI C63.10, clause 6.6. Test distance is 3m.
<input checked="" type="checkbox"/> Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements). Measurements in the bandedge are typically made at a closer distance 3m, because the instrumentation noise floor is typically close to the radiated emission limit.

### 3.5.4 Test Setup

#### 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)

5725-5850MHz Transmitter Radiated Bandedge (with Antenna)							
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Pol.
11a	1	5745	3	5713.21	62.71	68.2	H
11a	1	5745	3	5723.92	63.24	78.2	H
11a	1	5825	3	5853.85	62.91	78.2	H
11a	1	5825	3	5871.49	63.38	68.2	H
HT20	1	5745	3	5711.11	63.05	68.2	H
HT20	1	5745	3	5724.34	63.93	78.2	H
HT20	1	5825	3	5858.47	63.02	78.2	H
HT20	1	5825	3	5864.14	63.42	68.2	H
HT40	1	5755	3	5712.14	63.27	68.2	H
HT40	1	5755	3	5717.08	63.84	78.2	H
HT40	1	5795	3	5851.3	62.49	78.2	H
HT40	1	5795	3	5909.8	62.87	68.2	H
VHT20	1	5745	3	5703.76	63.2	68.2	H
VHT20	1	5745	3	5724.13	65	78.2	H
VHT20	1	5825	3	5855.11	62.55	78.2	H
VHT20	1	5825	3	5910.97	63.24	68.2	H
VHT40	1	5755	3	5707.98	62.62	68.2	H
VHT40	1	5755	3	5723.58	64.18	78.2	H
VHT40	1	5795	3	5854.6	62.44	78.2	H
VHT40	1	5795	3	5865.4	63.56	68.2	H
VHT80	1	5775	3	5706.7	63.44	68.2	H
VHT80	1	5775	3	5721.28	63.73	78.2	H
VHT80	1	5775	3	5851.42	62.65	78.2	H
VHT80	1	5775	3	5874.64	63.92	68.2	H

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

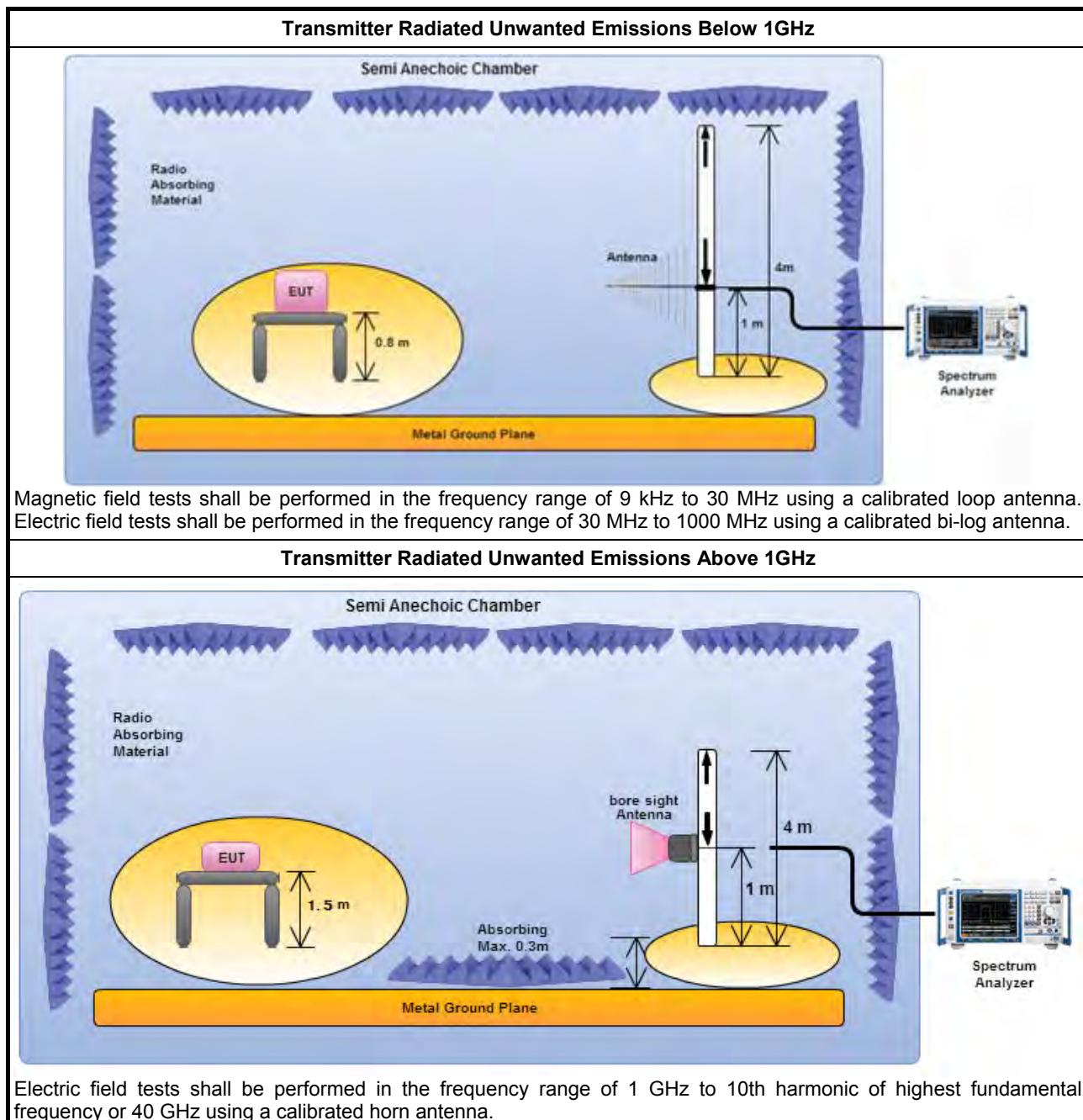
Refer a test equipment and calibration data table in this test report.



### 3.6.3 Test Procedures (For 5725-5850MHz)

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 KDB 789033 D02 v01r02, clause G)2) for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/> Refer as KDB 789033 D02 v01r02, clause G)1) for unwanted emissions into restricted bands.
<input type="checkbox"/> Refer as KDB 789033 D02 v01r02, G)6) Method AD (Trace Averaging).
<input type="checkbox"/> Refer as KDB 789033 D02 v01r02, G)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 KDB 789033 D02 v01r02, clause G)5) measurement procedure peak limit.
<input type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/> For radiated measurement.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz. For 1 GHz to 5 GHz, test distance is 3m; For 5 GHz to 40 GHz, test distance is 3m.
<input checked="" type="checkbox"/> The any unwanted emissions level shall not exceed the fundamental emission level.
<input checked="" type="checkbox"/> All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

### 3.6.4 Test Setup

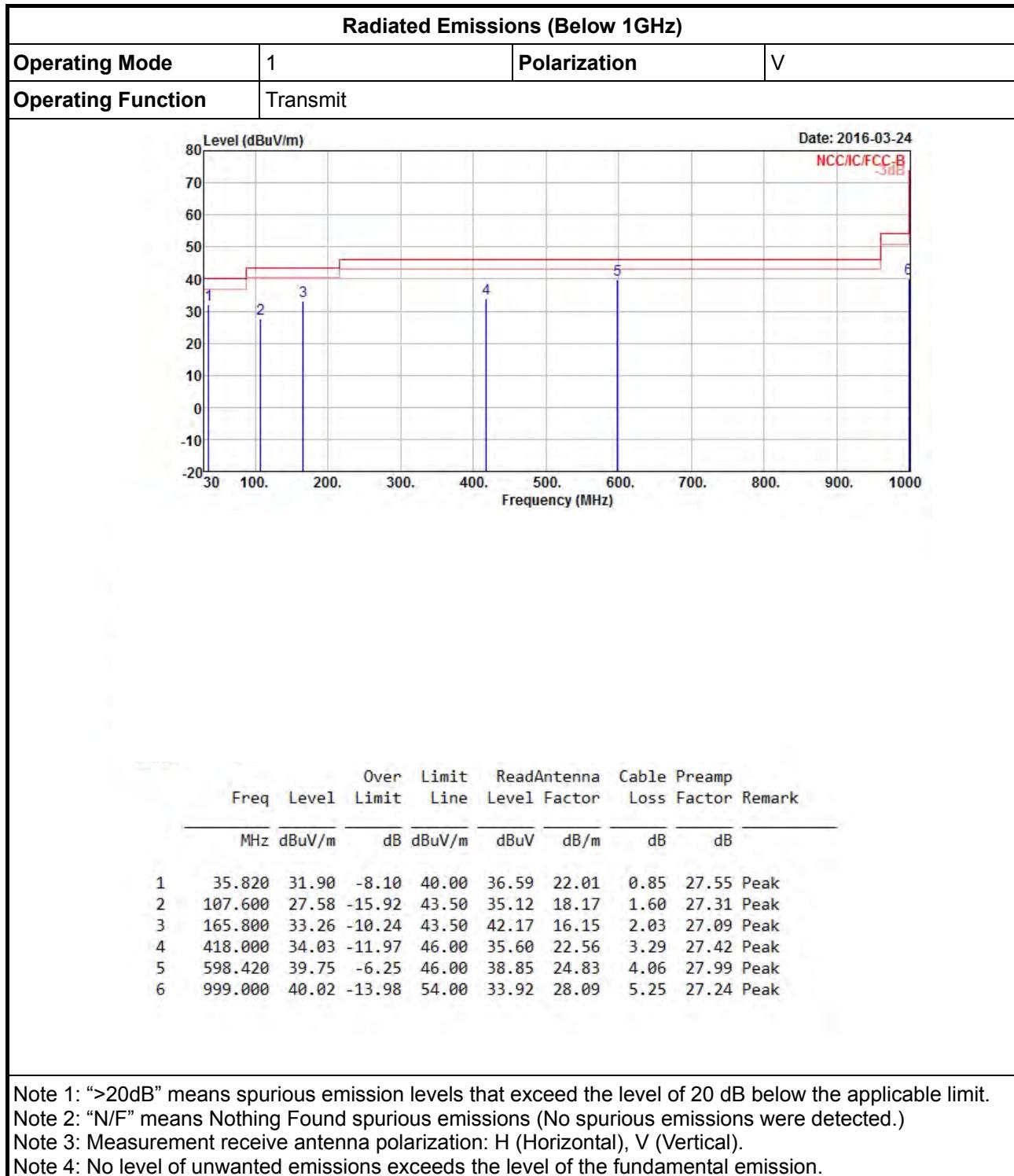


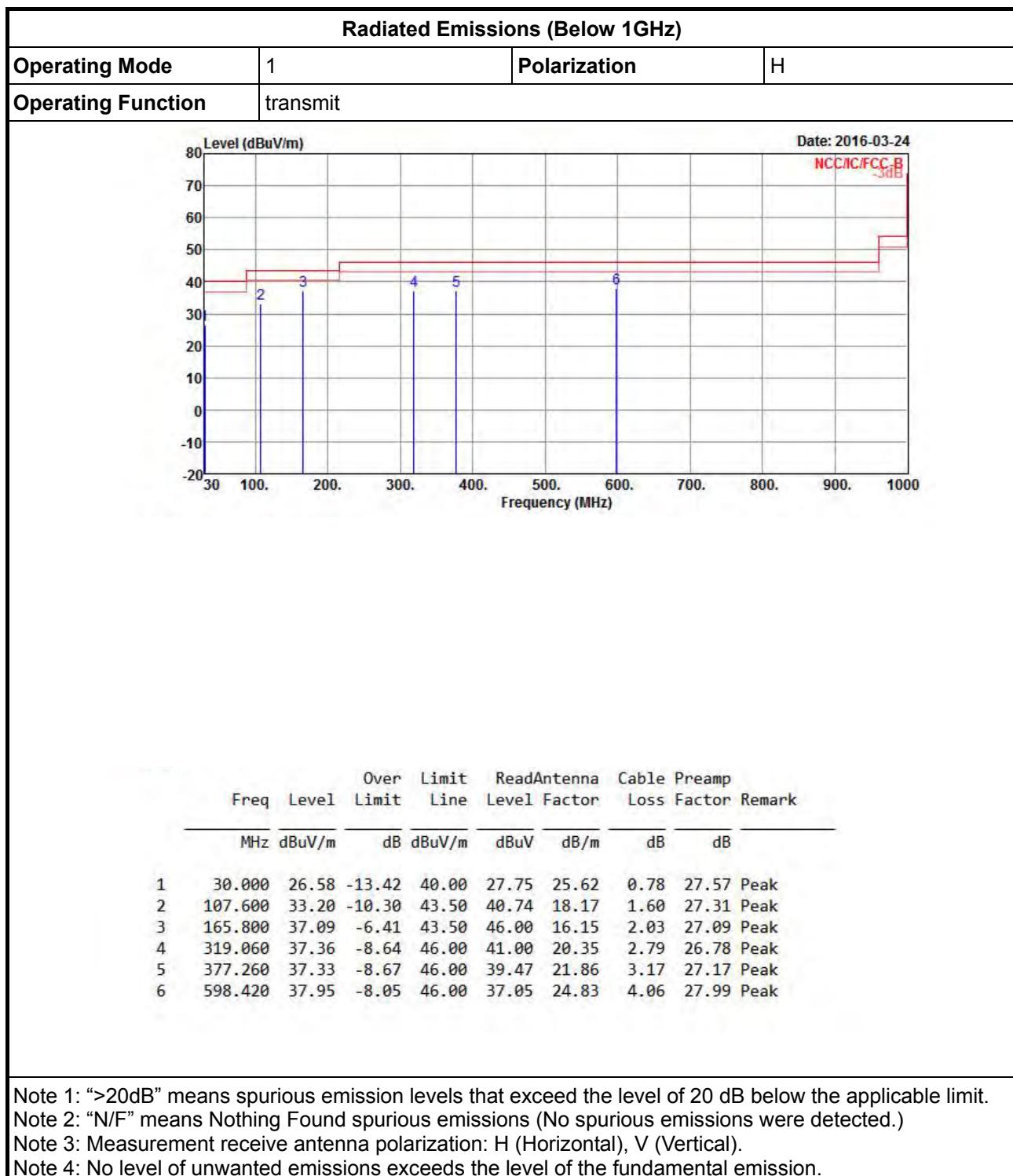
### 3.6.5 Transmitter Radiated Unwanted Emissions-with Antenna (Below 30MHz)

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)







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

Transmitter Radiated Unwanted Emissions (Above 1GHz)																		
Modulation Mode	11a (Mode 1)			Test Freq. (MHz)		5745												
N <sub>TX</sub>	1			Polarization		V												
Level (dB <sub>uV/m</sub> )																		
Date: 2016-03-24																		
1	8279.000	39.54	-14.46	54.00	29.05	37.43	6.00	32.94	Average									
2	8279.000	54.99	-19.01	74.00	44.50	37.43	6.00	32.94	Peak									
3	11490.000	44.37	-9.63	54.00	30.87	39.18	6.78	32.46	Average									
4	11490.000	57.03	-16.97	74.00	43.53	39.18	6.78	32.46	Peak									
5	17235.000	63.84	-4.36	68.20	45.13	41.72	8.53	31.54	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.



## Transmitter Radiated Unwanted Emissions (Above 1GHz)

<b>Modulation Mode</b>	11a (Mode 1)		<b>Test Freq. (MHz)</b>	5745																																																															
<b>N<sub>TX</sub></b>	1		<b>Polarization</b>	H																																																															
Level (dBuV/m)							Date: 2016-03-24																																																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Freq MHz</th> <th rowspan="2">Level dBuV/m</th> <th>Over</th> <th>Limit</th> <th>Read</th> <th>Antenna</th> <th>Cable</th> <th>Preamp</th> <th rowspan="2">Remark</th> </tr> <tr> <th>Limit dB</th> <th>Line dBuV/m</th> <th>Antenna Level dBuV</th> <th>Antenna Factor dB/m</th> <th>Cable Loss dB</th> <th>Preamp Factor dB</th> </tr> </thead> <tbody> <tr> <td>1 7676.000</td> <td>39.40</td> <td>-14.60</td> <td>54.00</td> <td>29.83</td> <td>36.72</td> <td>5.74</td> <td>32.89</td> <td>Average</td> </tr> <tr> <td>2 7676.000</td> <td>53.53</td> <td>-20.47</td> <td>74.00</td> <td>43.96</td> <td>36.72</td> <td>5.74</td> <td>32.89</td> <td>Peak</td> </tr> <tr> <td>3 11490.000</td> <td>41.99</td> <td>-12.01</td> <td>54.00</td> <td>28.49</td> <td>39.18</td> <td>6.78</td> <td>32.46</td> <td>Average</td> </tr> <tr> <td>4 11490.000</td> <td>56.57</td> <td>-17.43</td> <td>74.00</td> <td>43.07</td> <td>39.18</td> <td>6.78</td> <td>32.46</td> <td>Peak</td> </tr> <tr> <td>5 17235.000</td> <td>63.67</td> <td>-4.53</td> <td>68.20</td> <td>44.96</td> <td>41.72</td> <td>8.53</td> <td>31.54</td> <td>Peak</td> </tr> </tbody> </table>								Freq MHz	Level dBuV/m	Over	Limit	Read	Antenna	Cable	Preamp	Remark	Limit dB	Line dBuV/m	Antenna Level dBuV	Antenna Factor dB/m	Cable Loss dB	Preamp Factor dB	1 7676.000	39.40	-14.60	54.00	29.83	36.72	5.74	32.89	Average	2 7676.000	53.53	-20.47	74.00	43.96	36.72	5.74	32.89	Peak	3 11490.000	41.99	-12.01	54.00	28.49	39.18	6.78	32.46	Average	4 11490.000	56.57	-17.43	74.00	43.07	39.18	6.78	32.46	Peak	5 17235.000	63.67	-4.53	68.20	44.96	41.72	8.53	31.54	Peak
Freq MHz	Level dBuV/m	Over	Limit	Read	Antenna	Cable	Preamp			Remark																																																									
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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

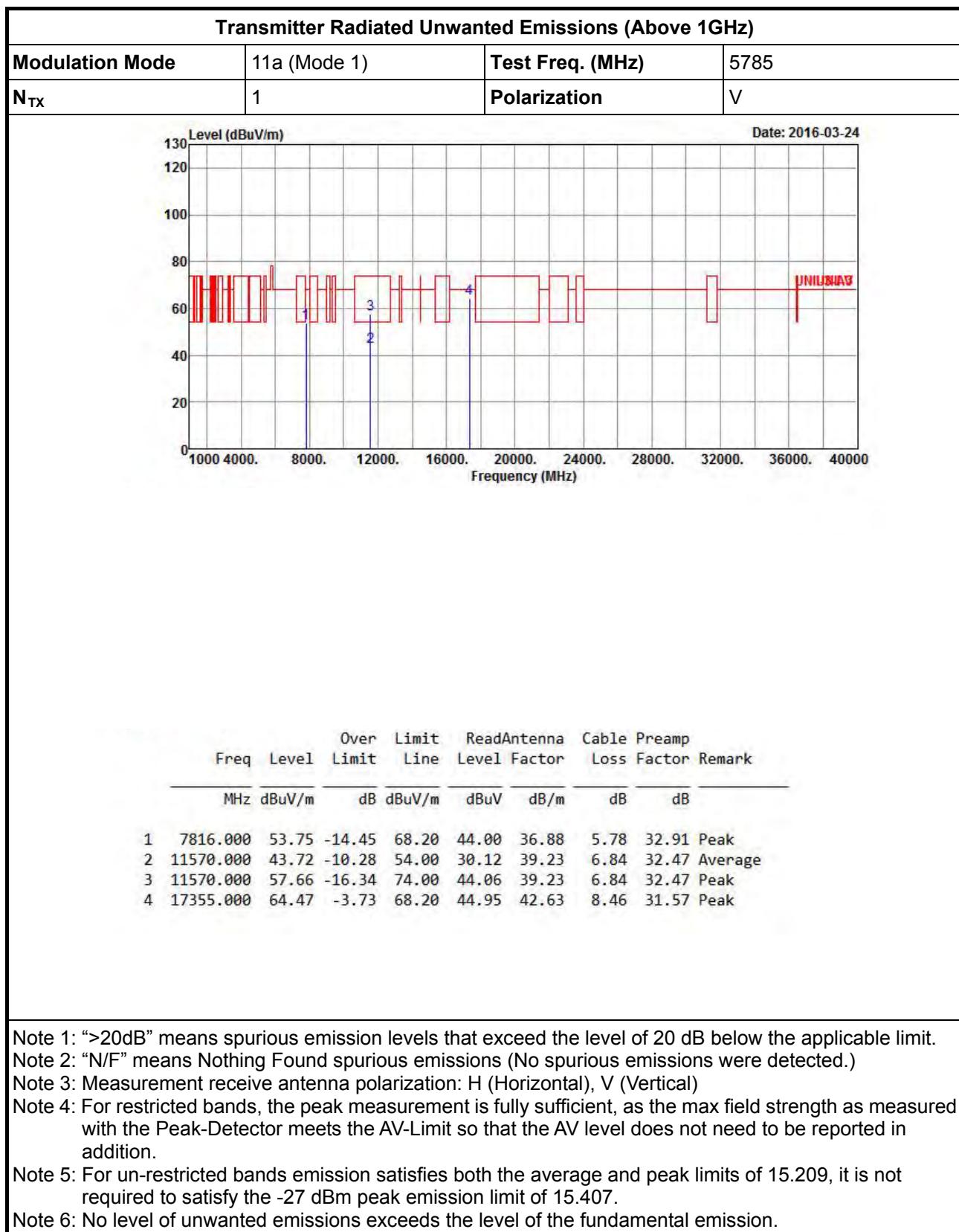
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

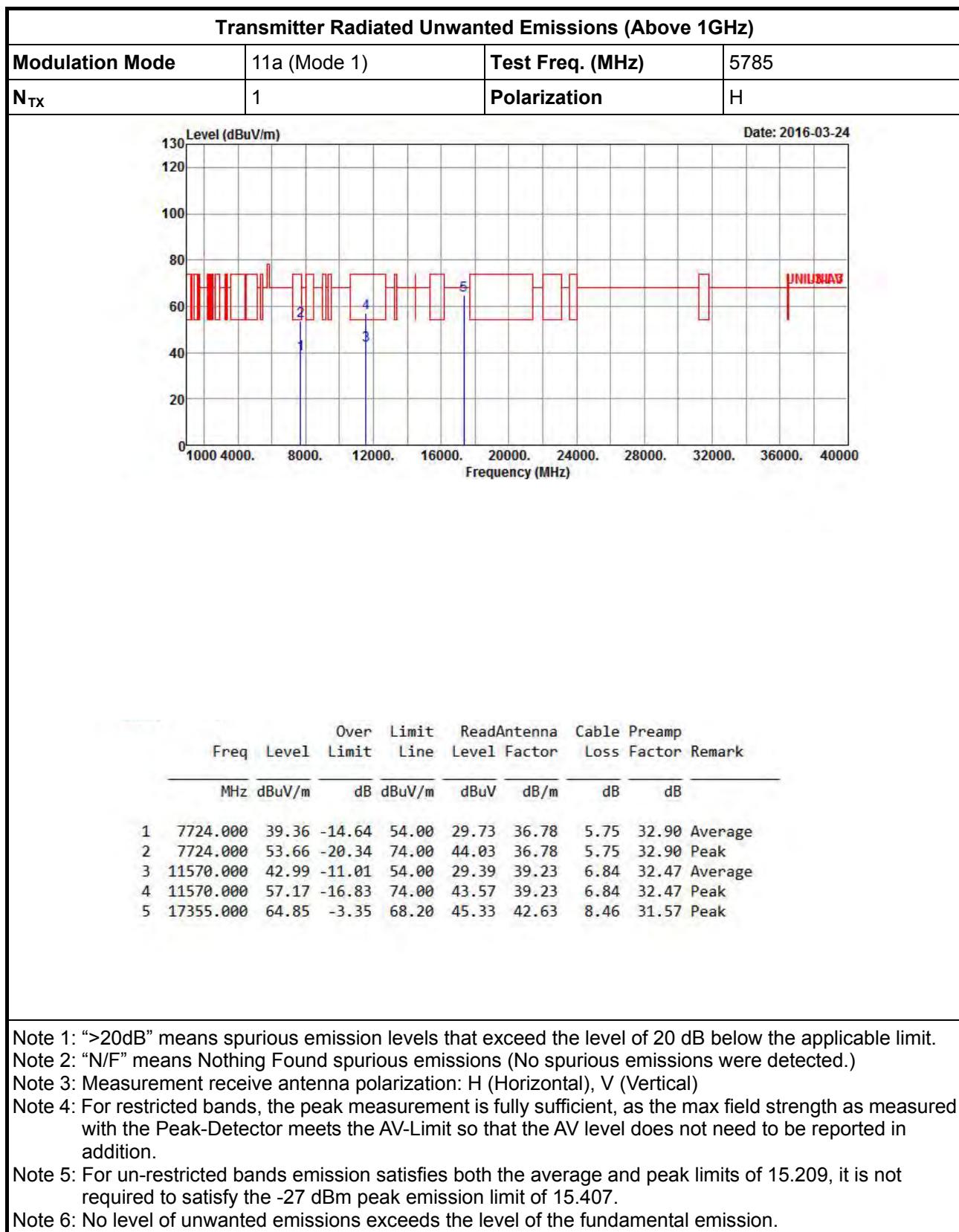
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

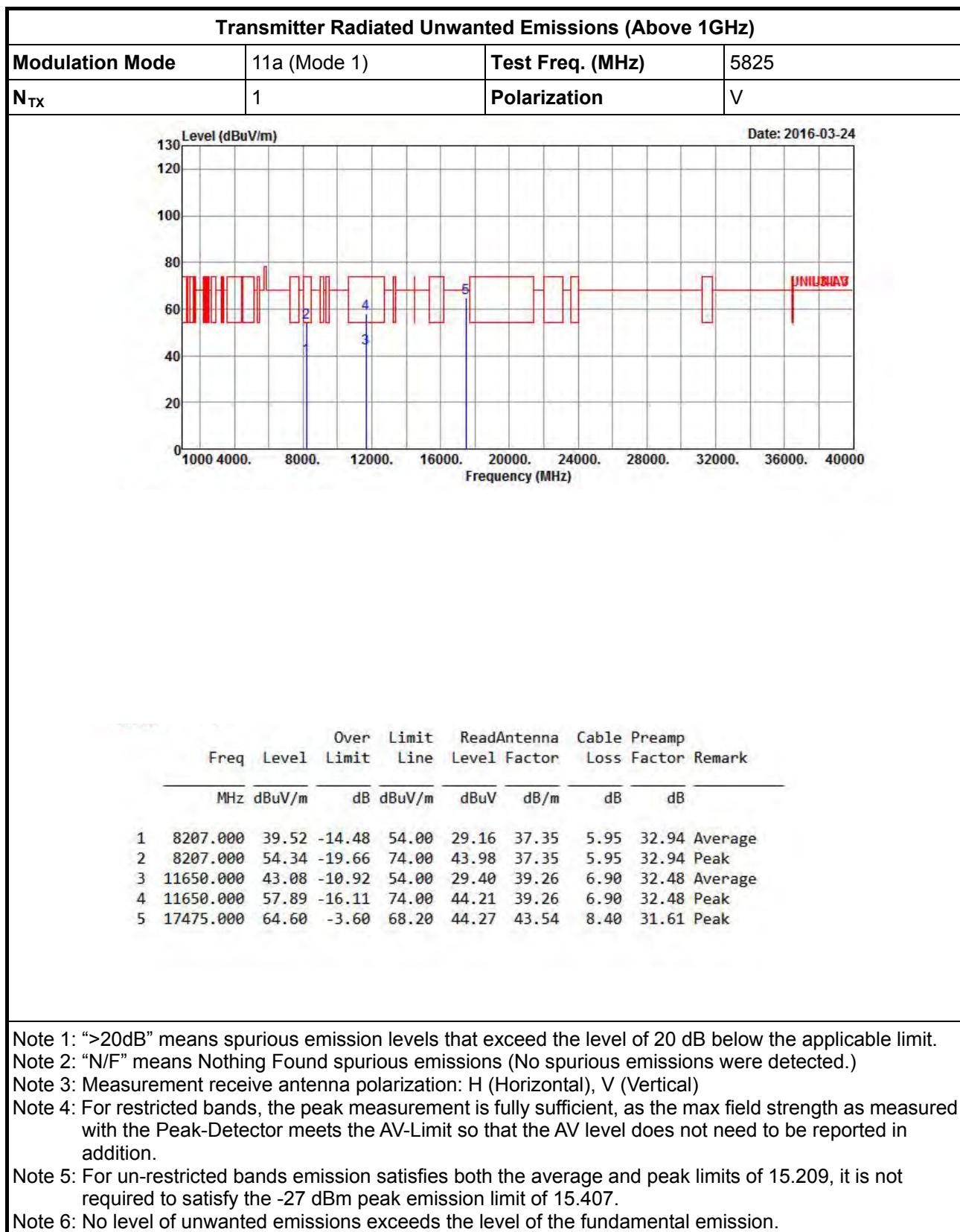
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

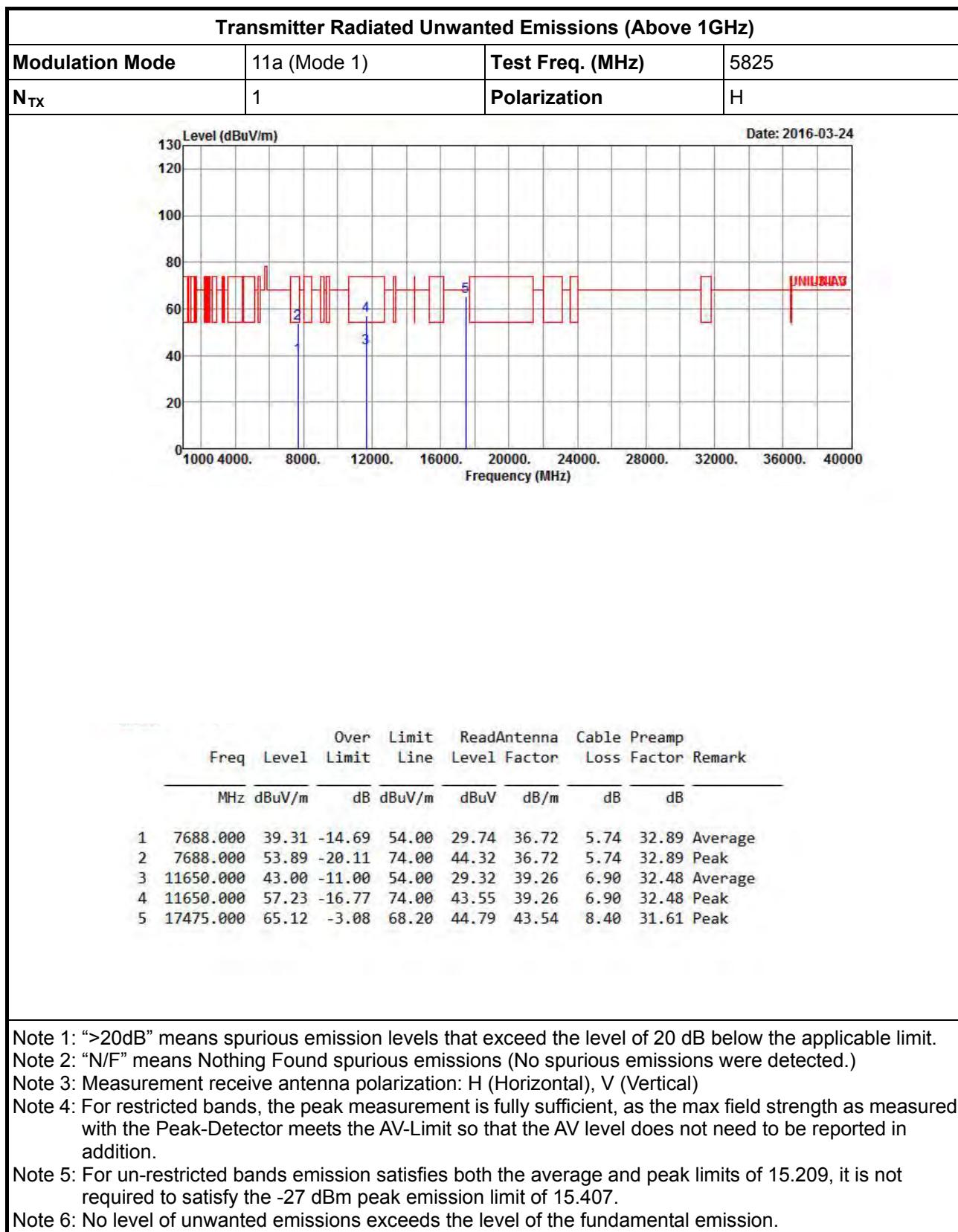
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

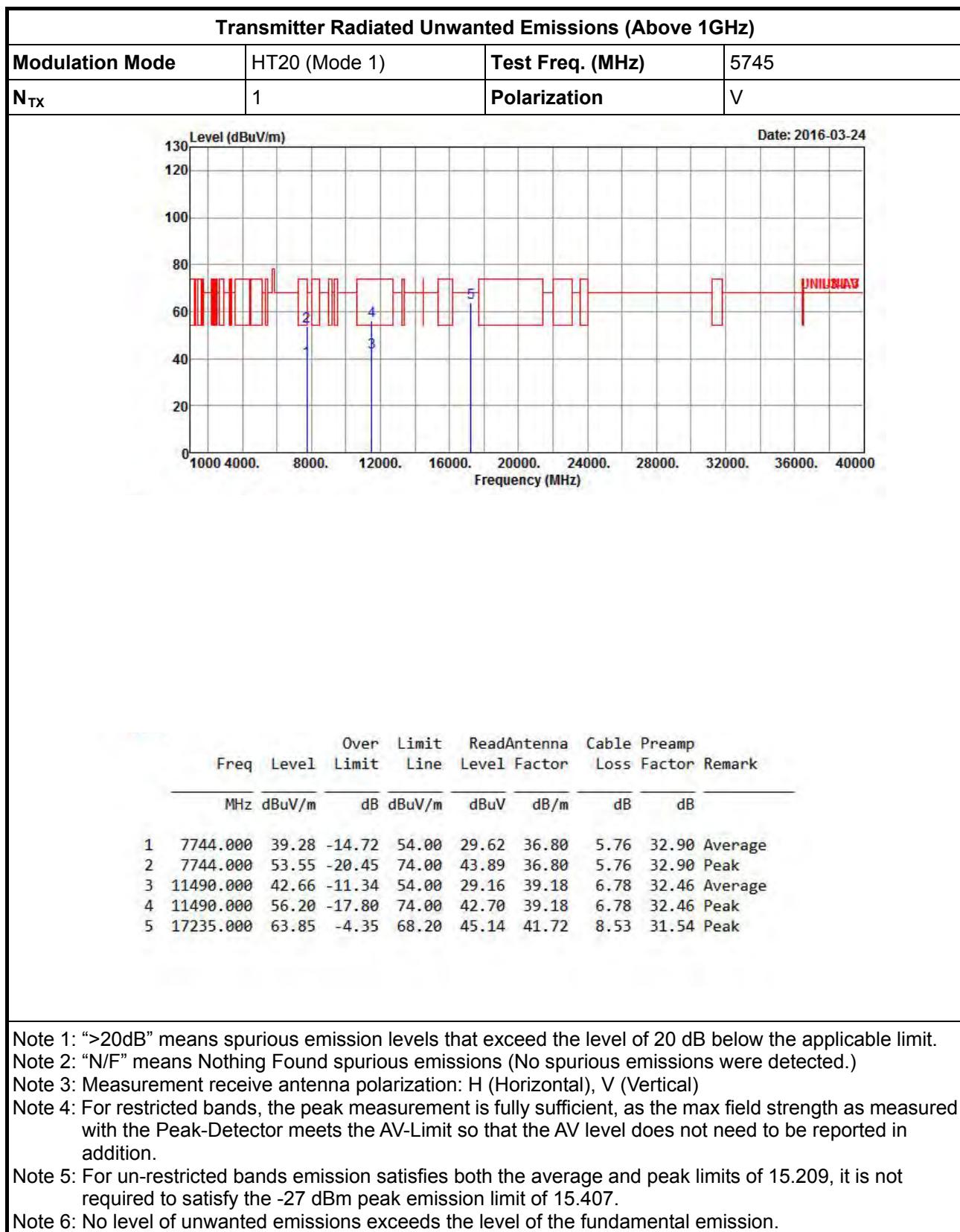
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

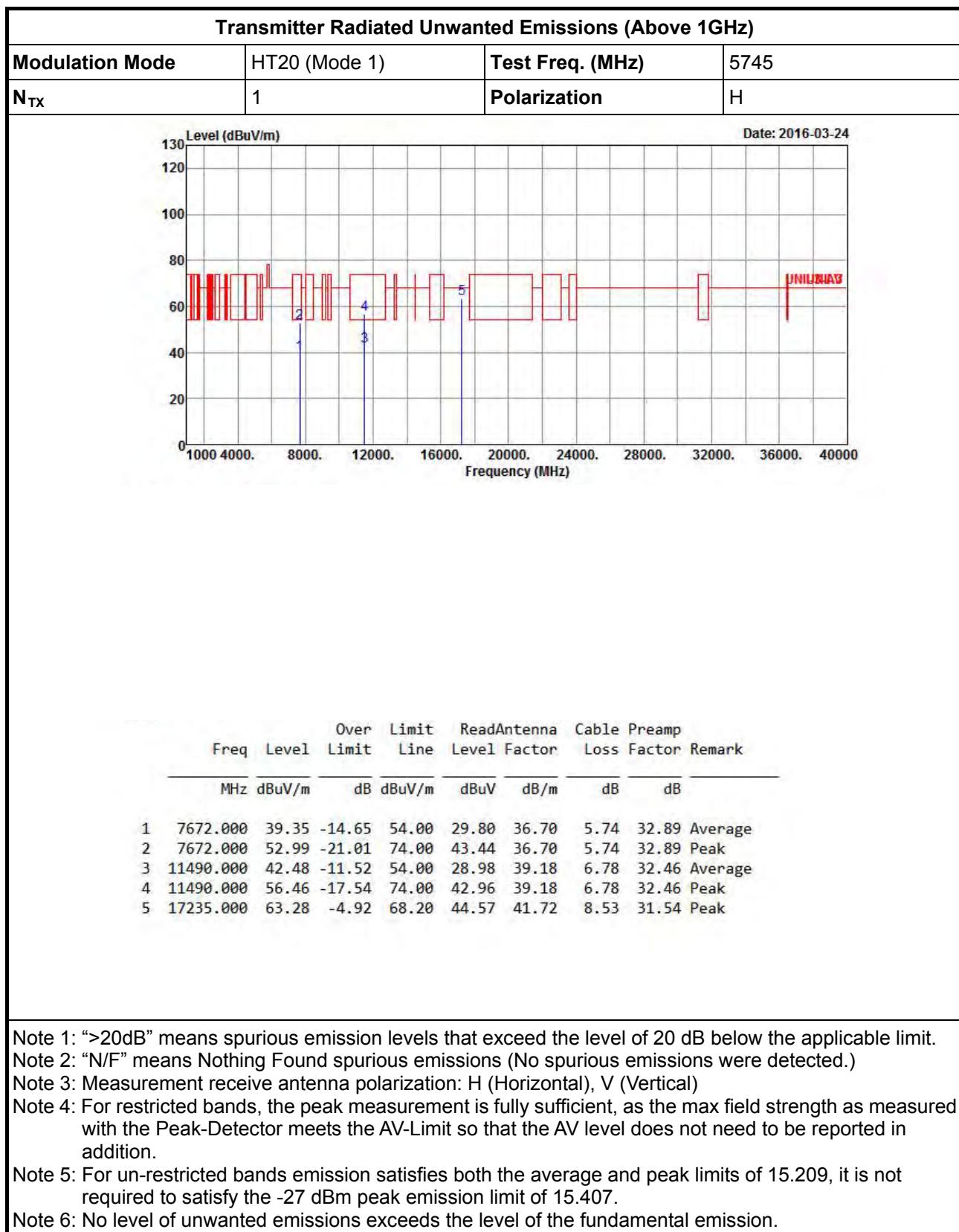


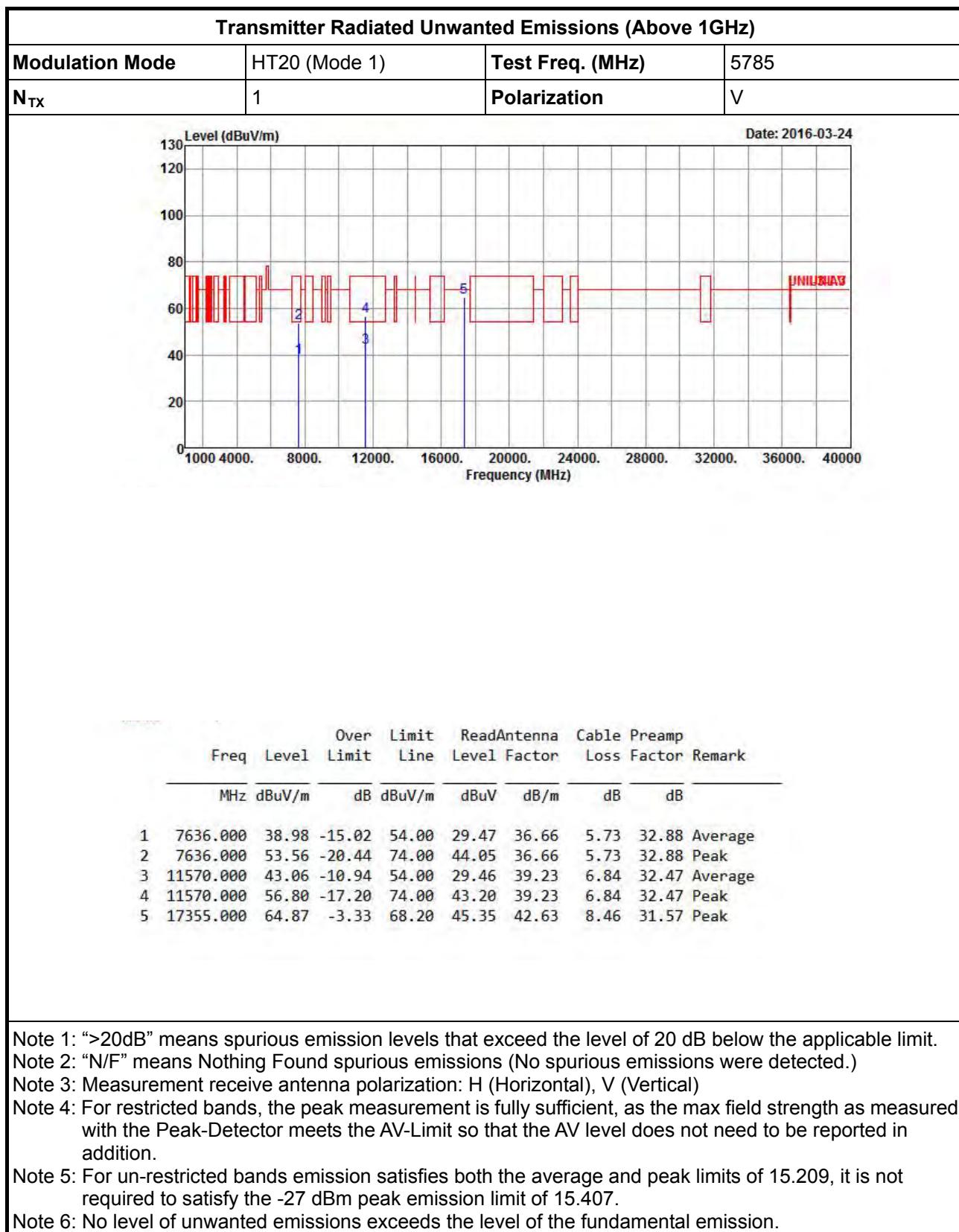


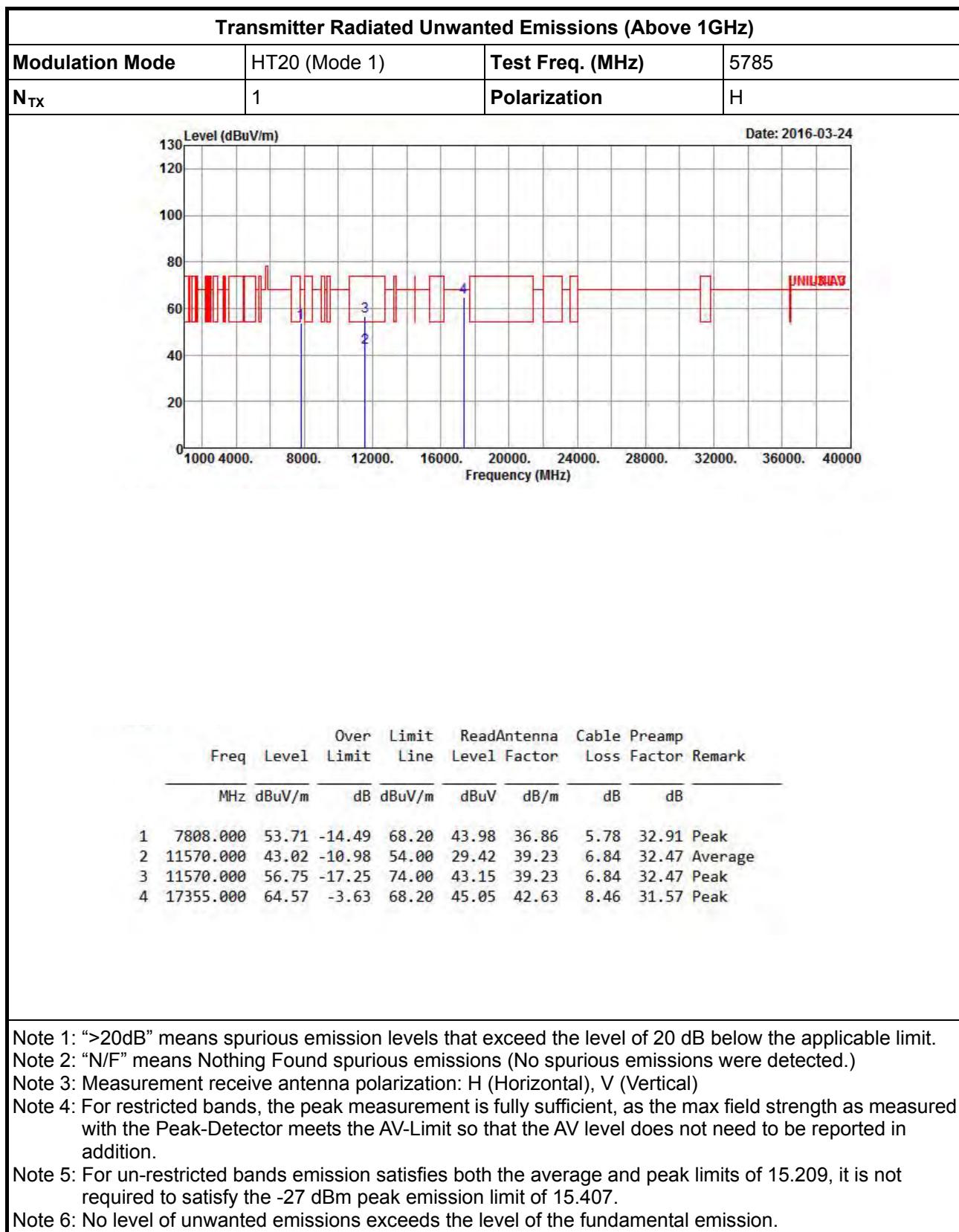


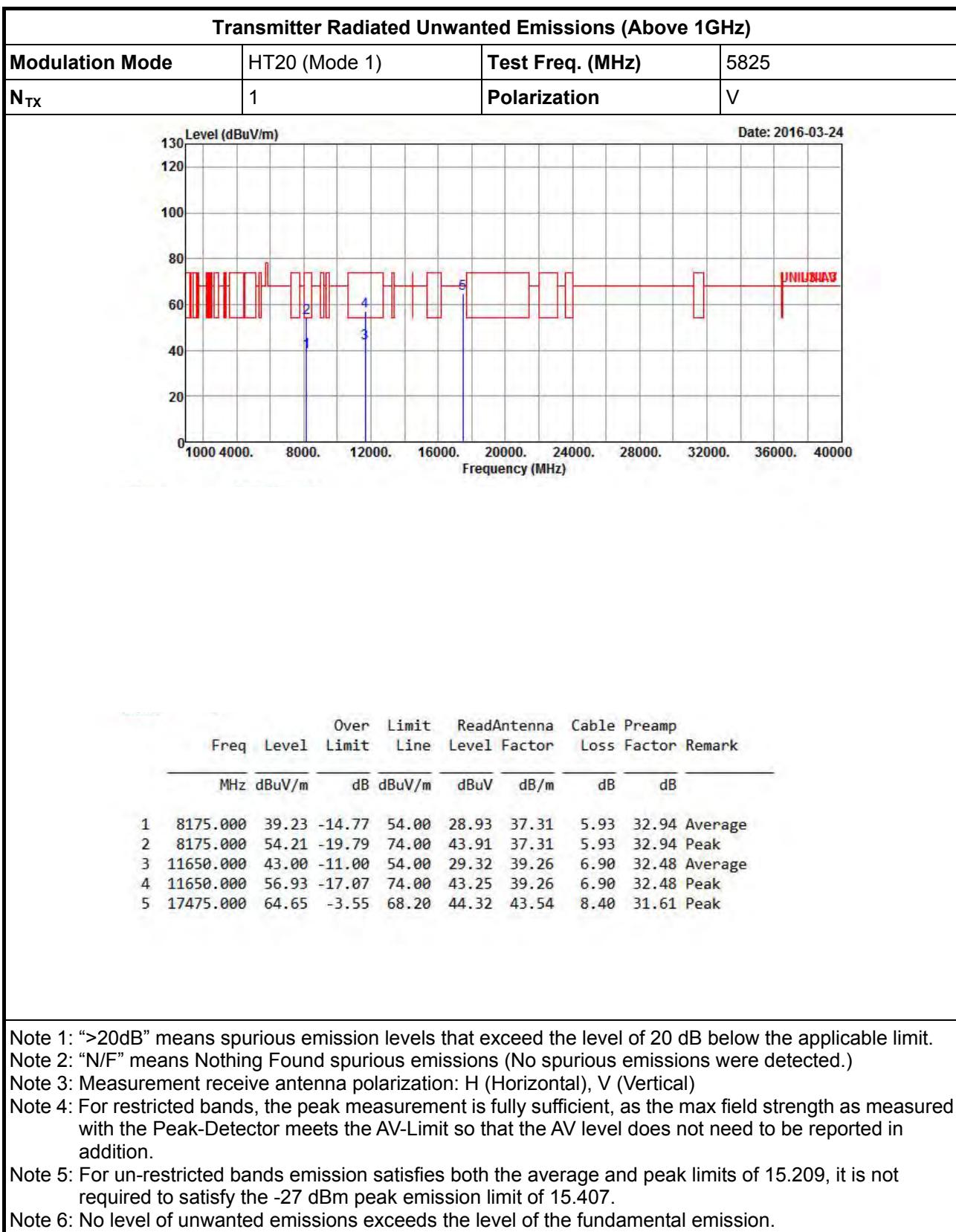


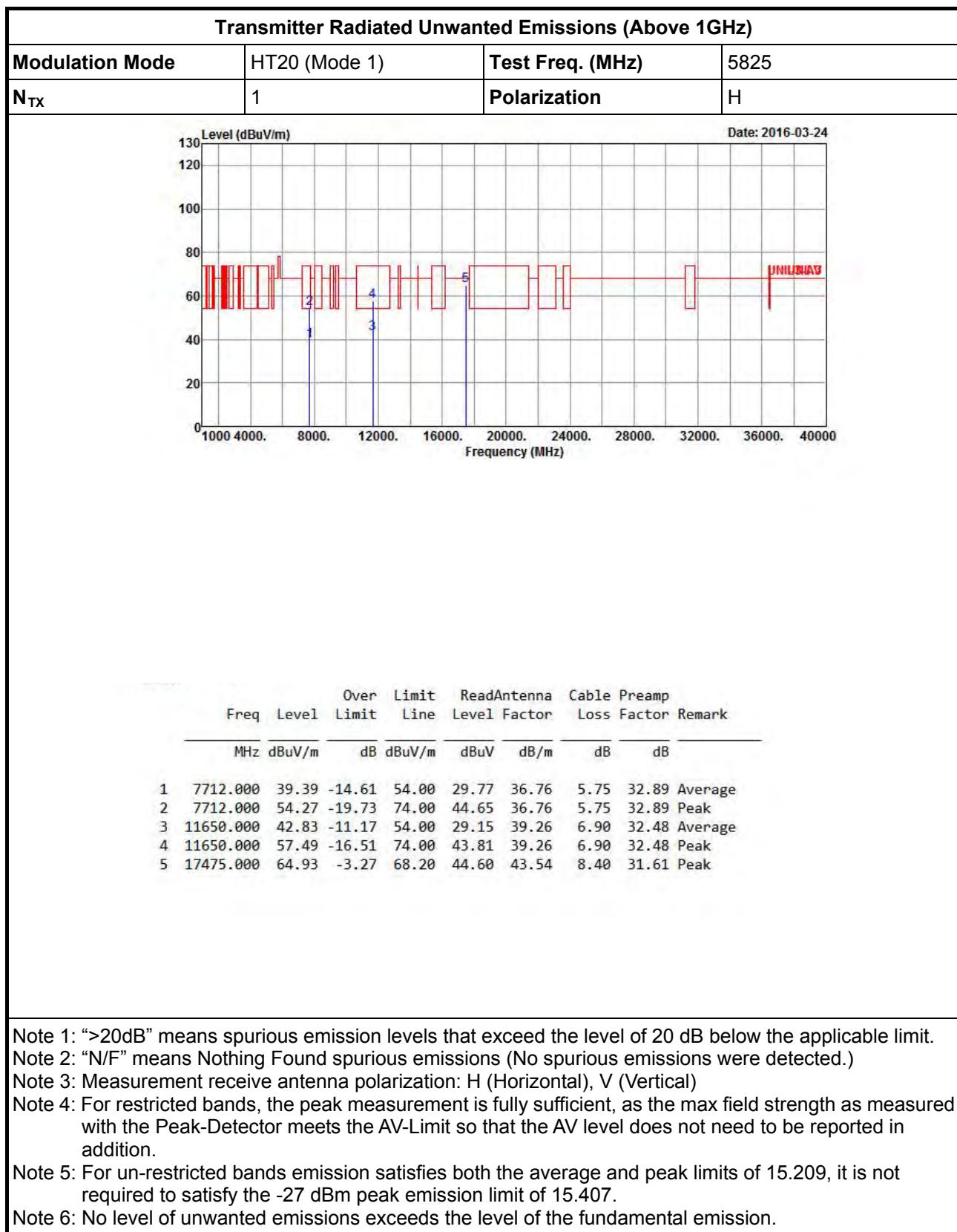


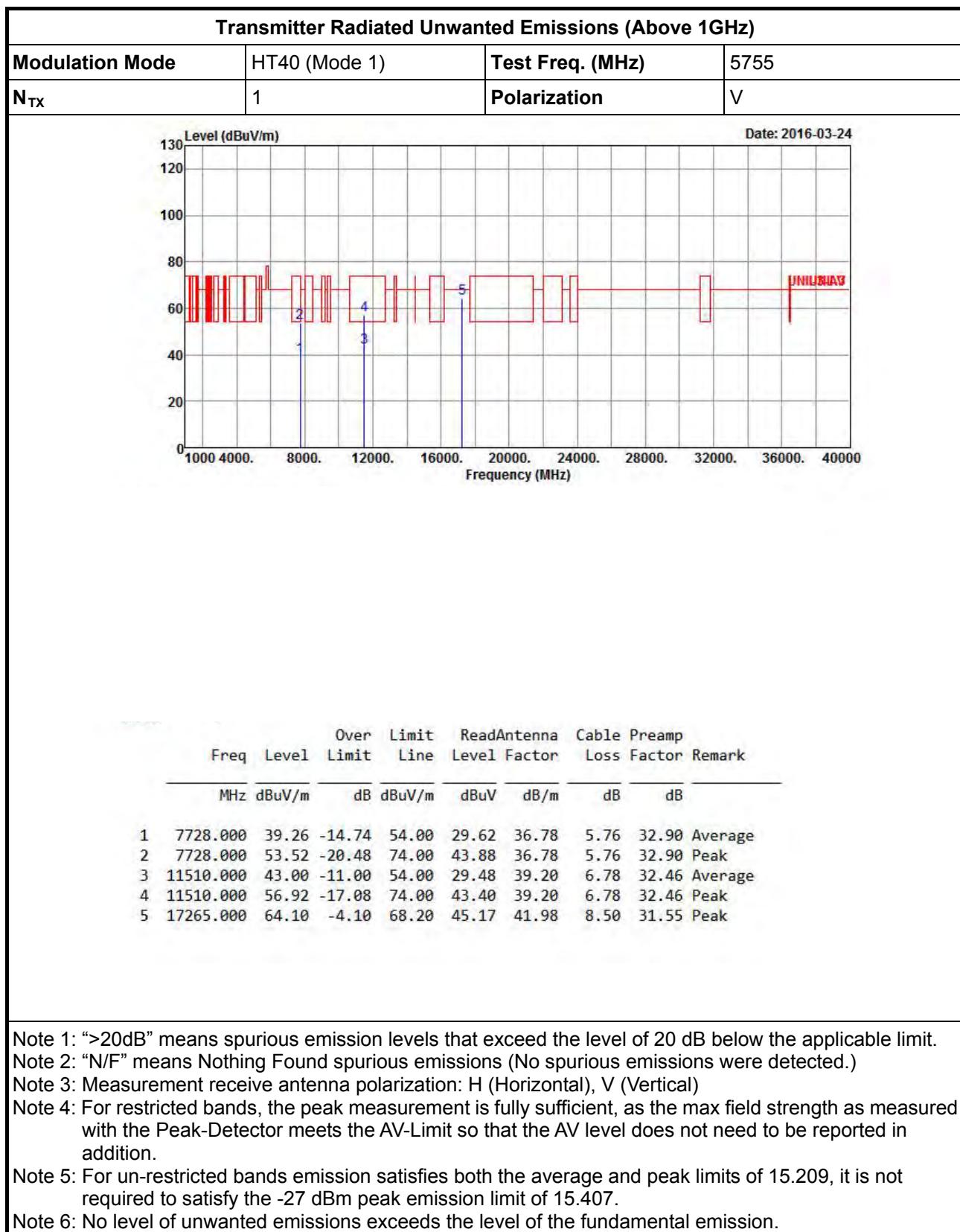


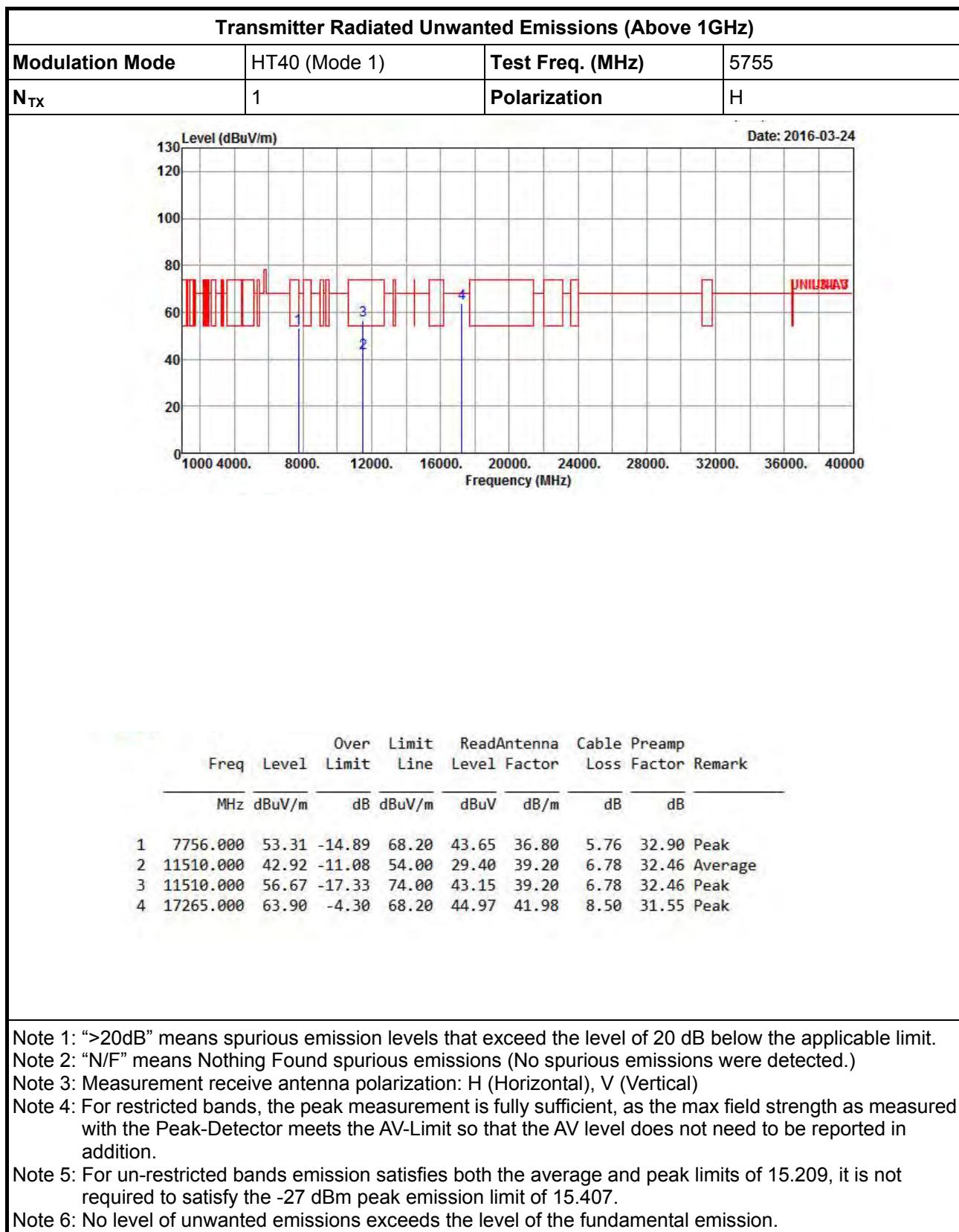












Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

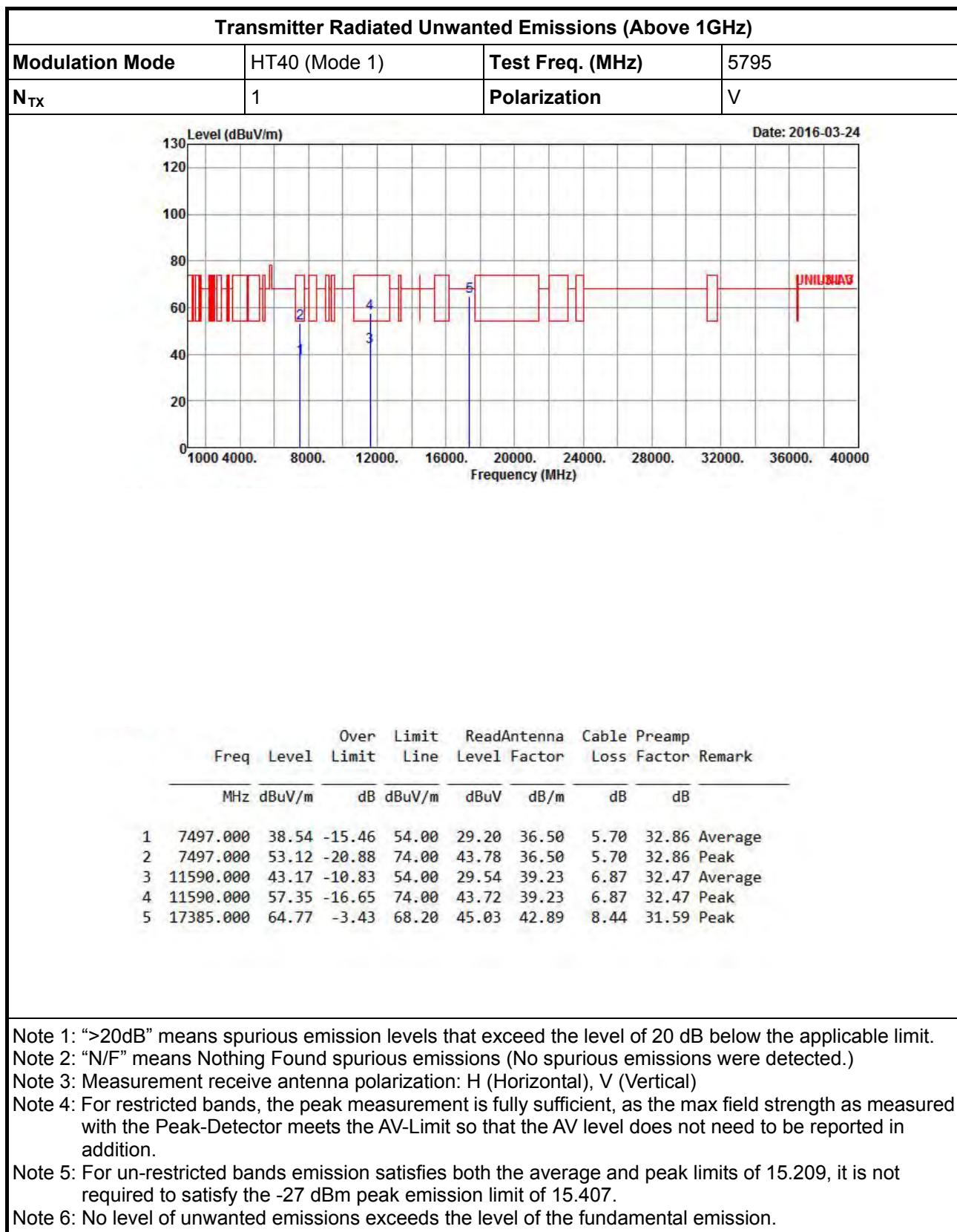
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

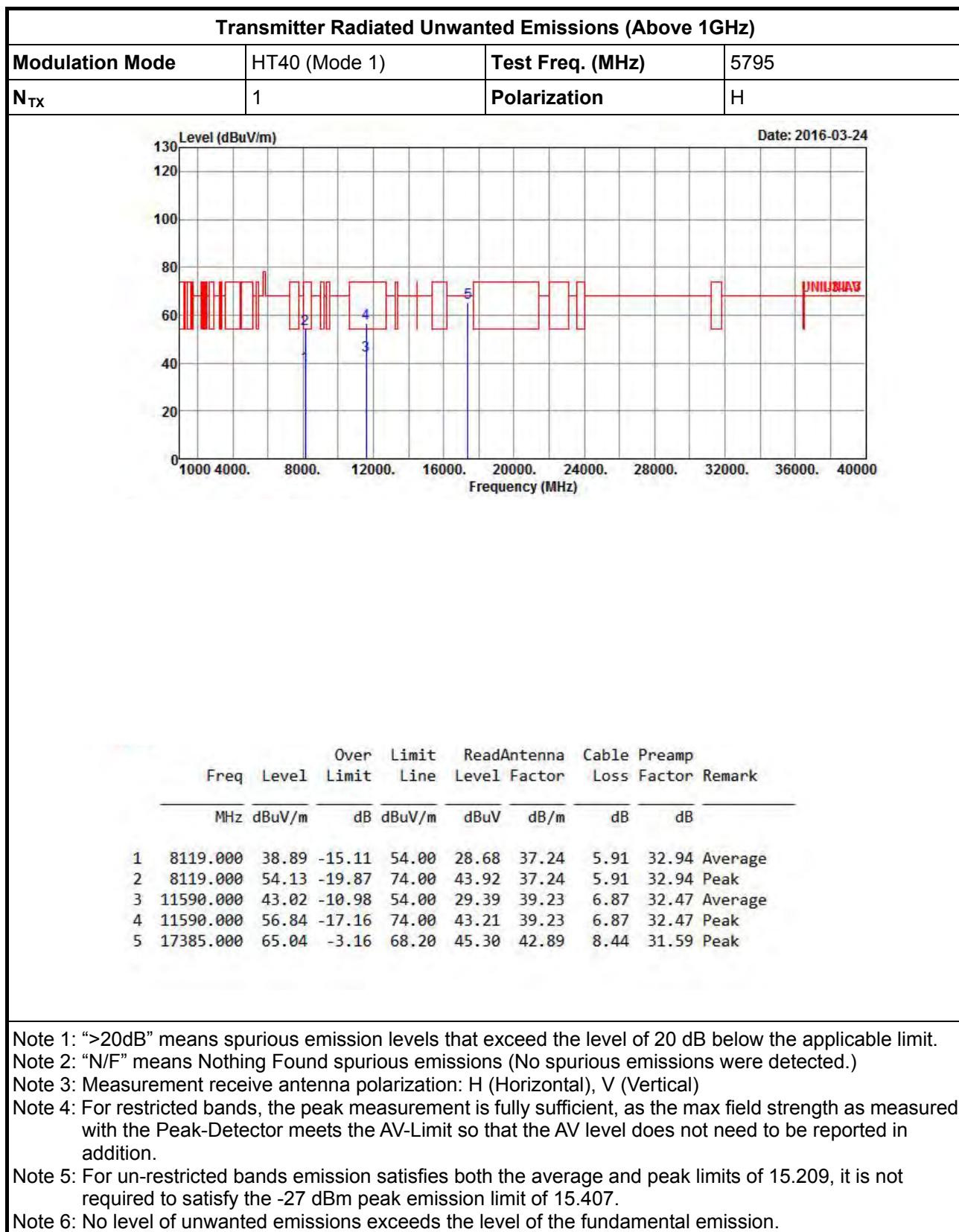
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

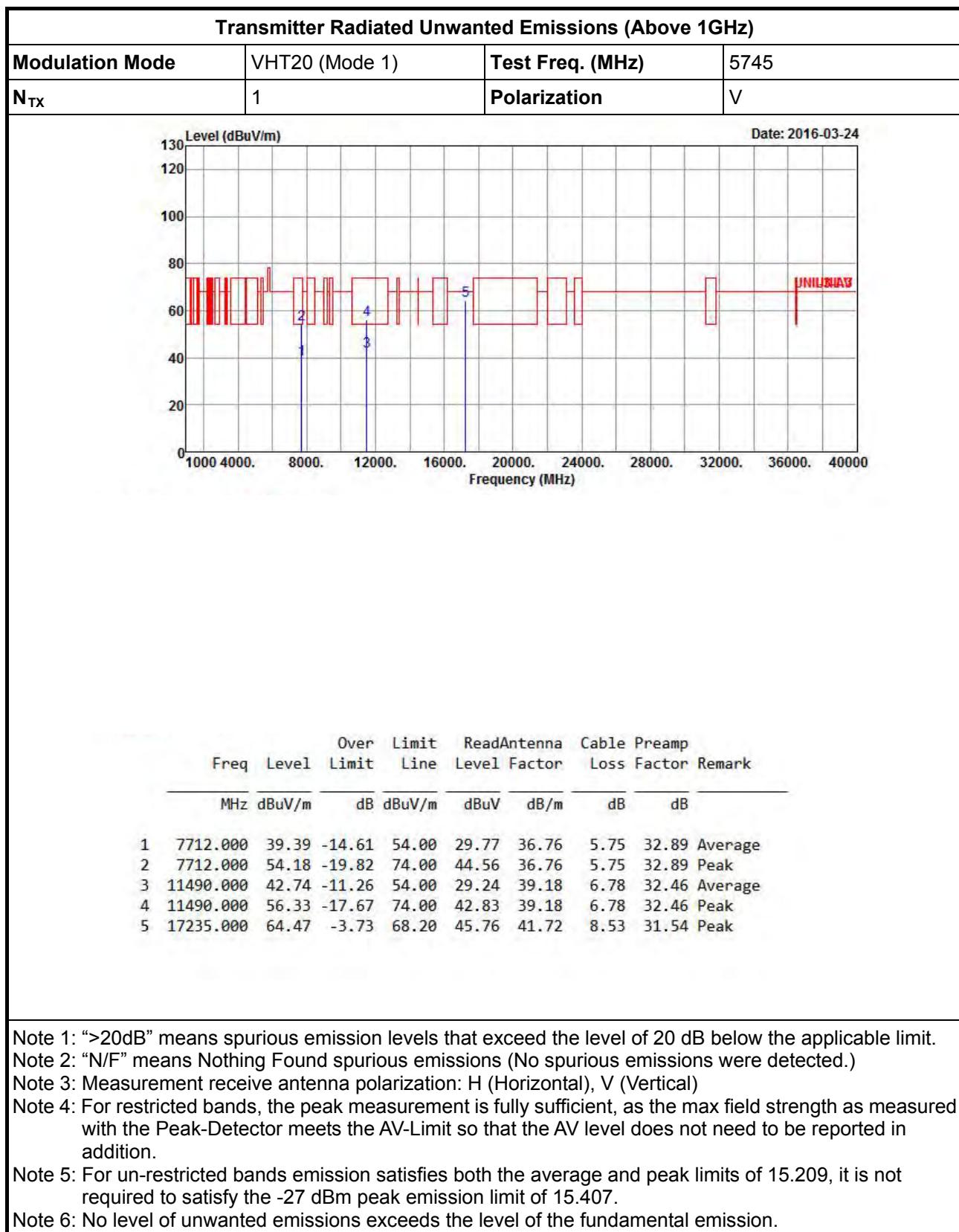
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

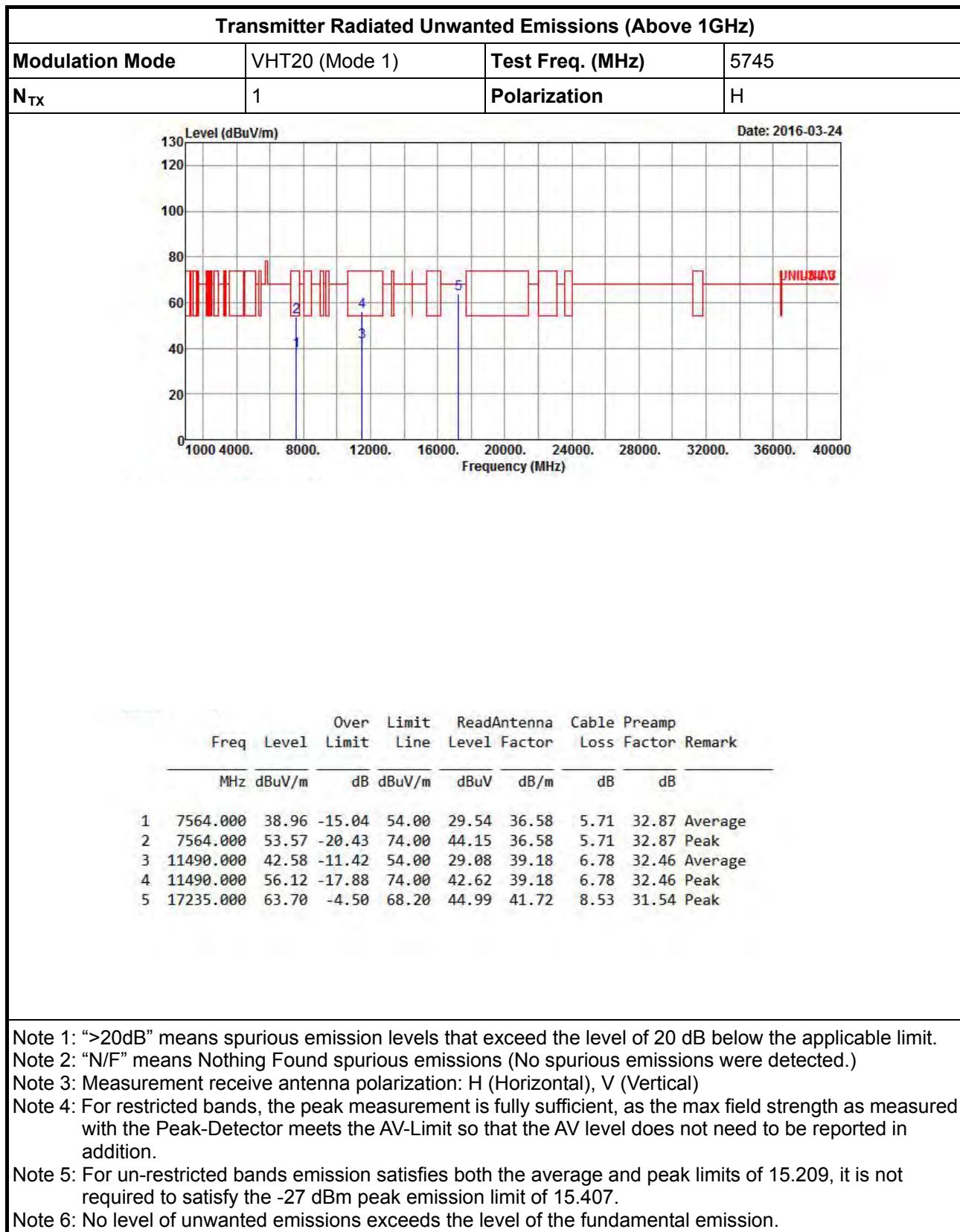
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

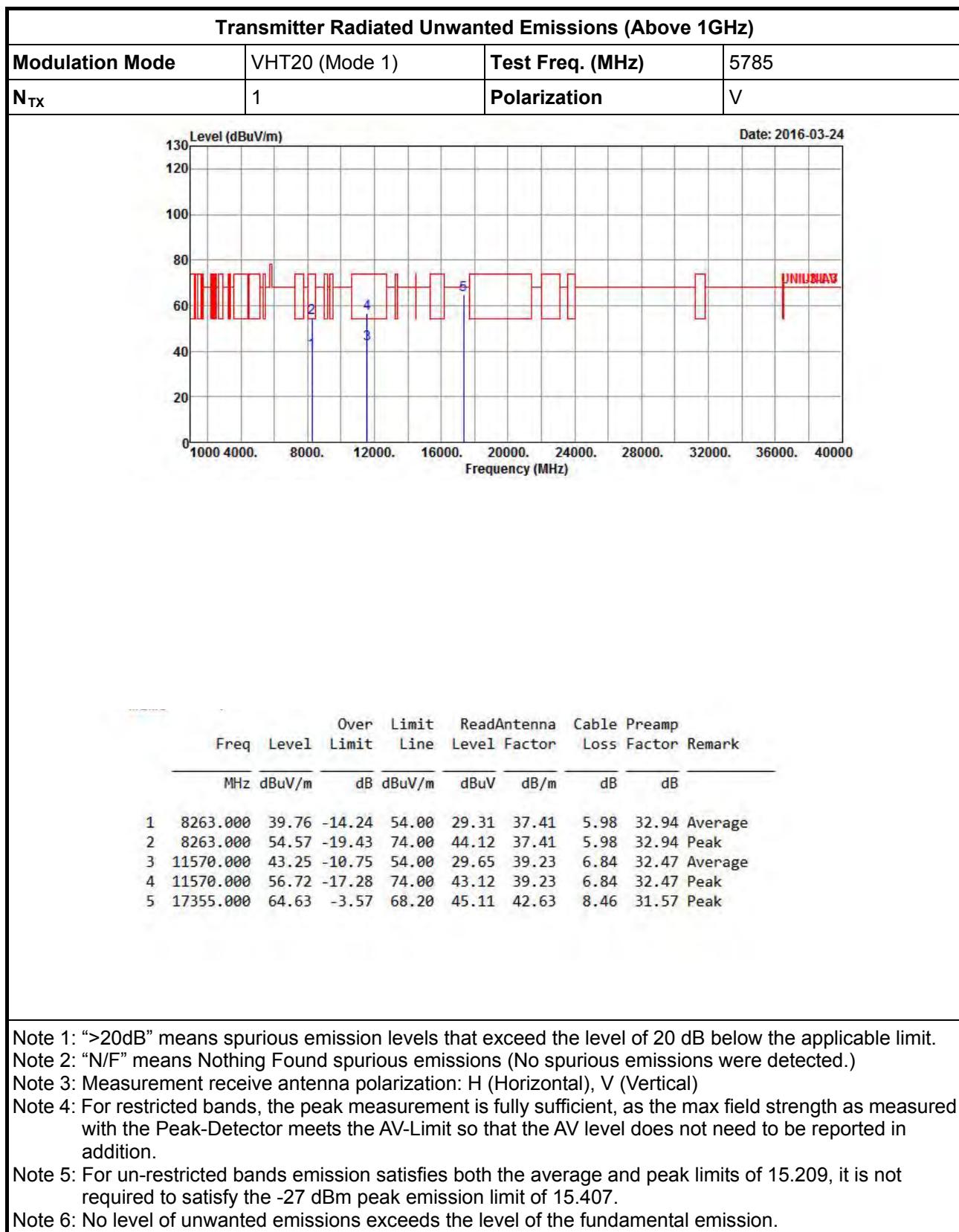
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

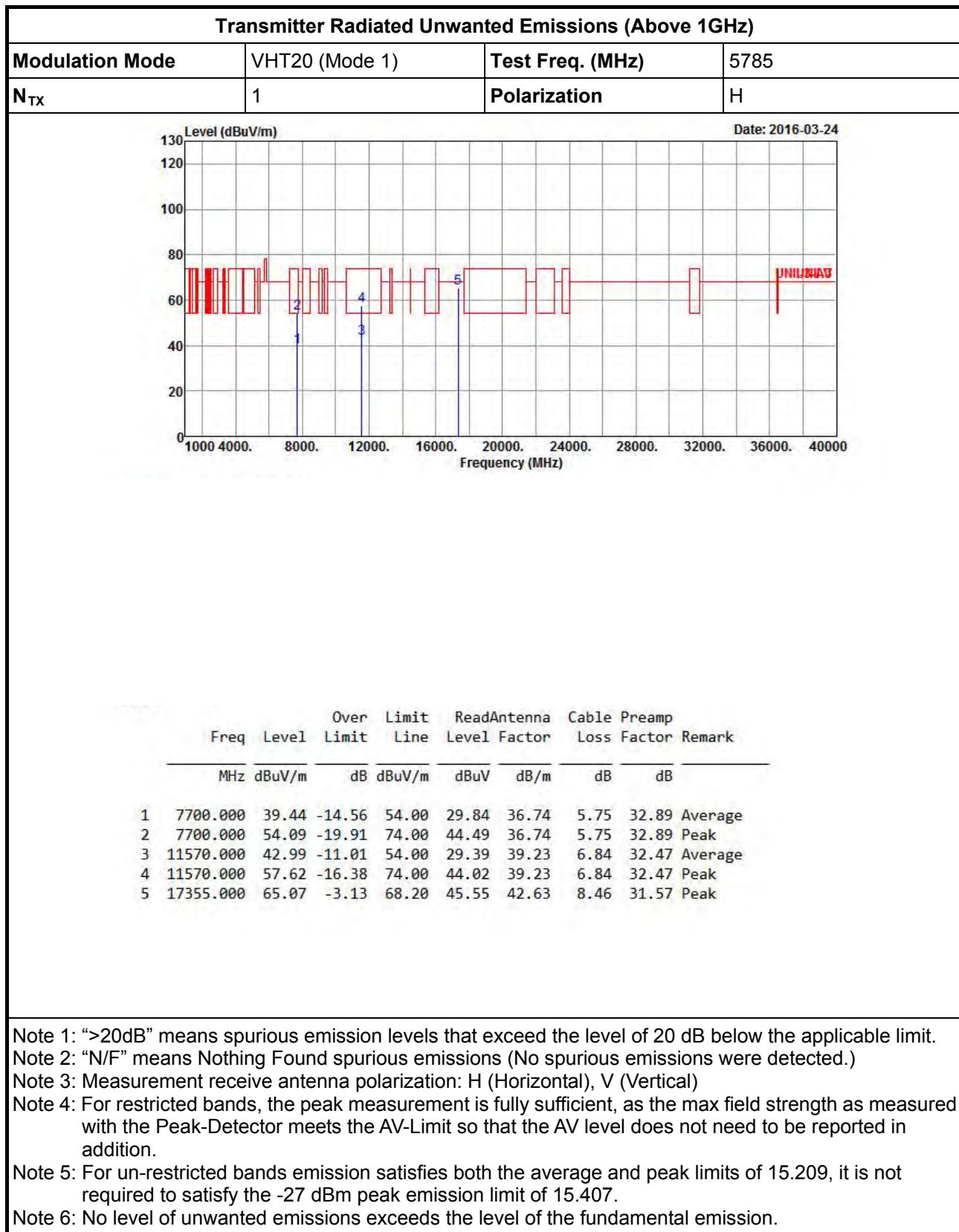


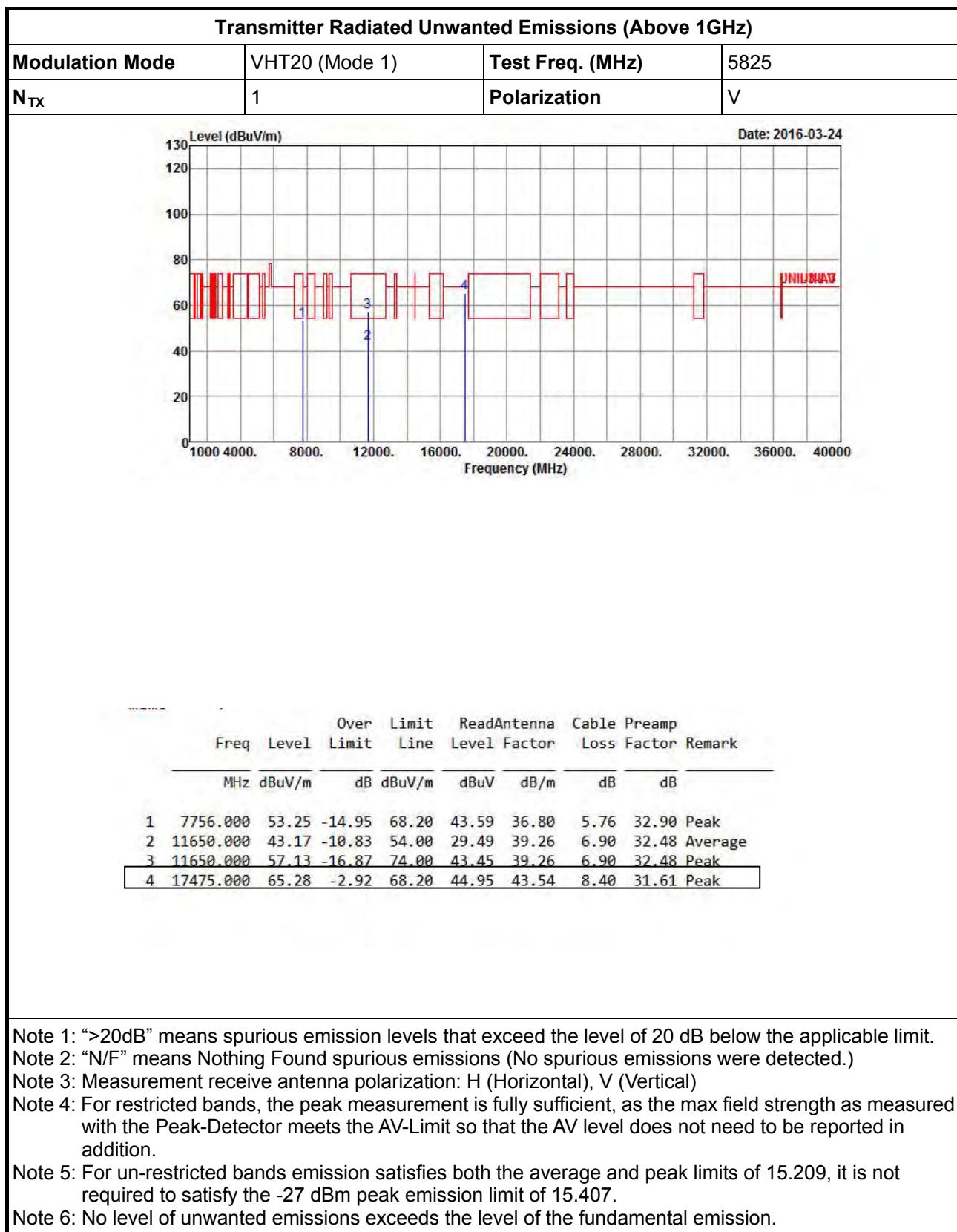


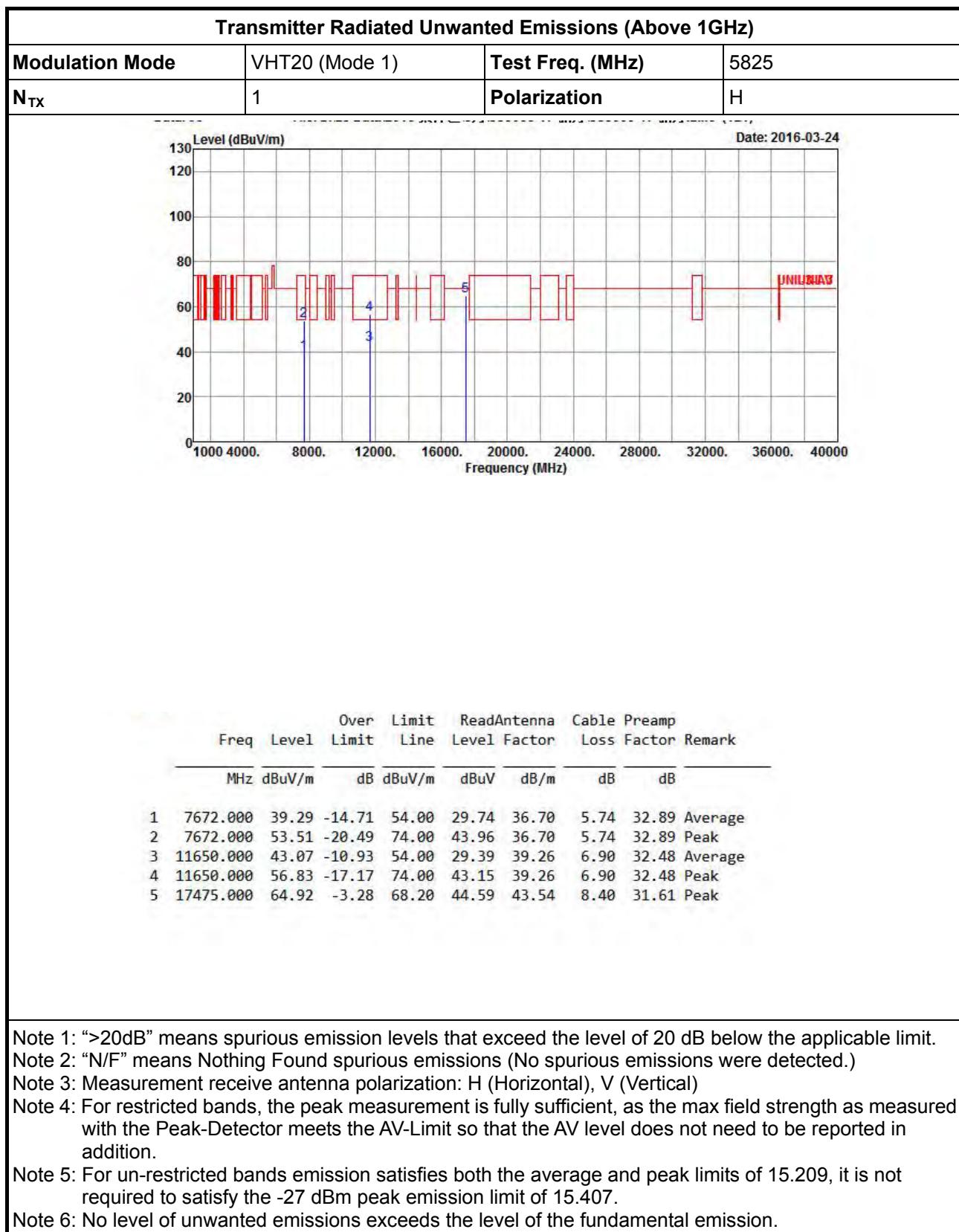


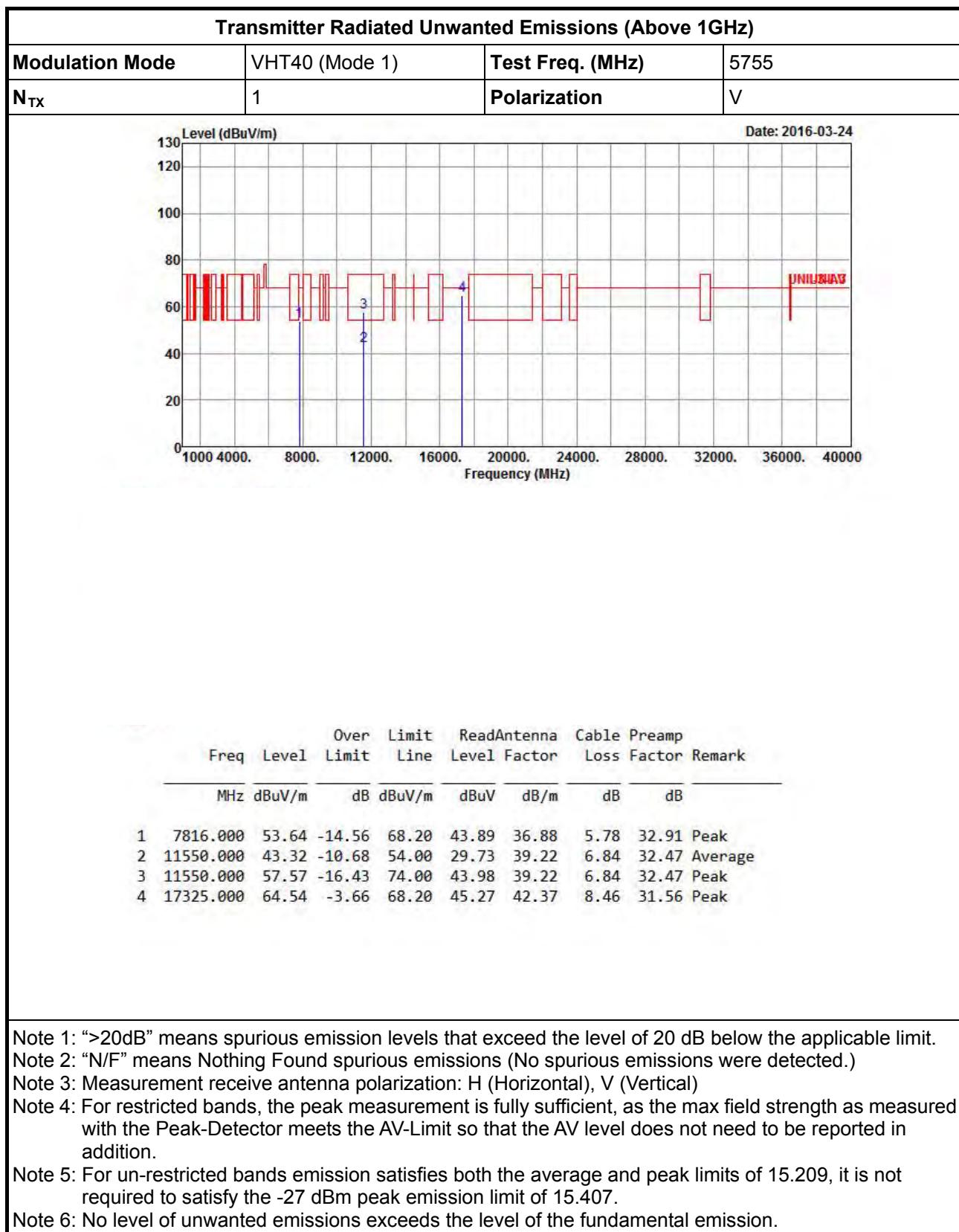


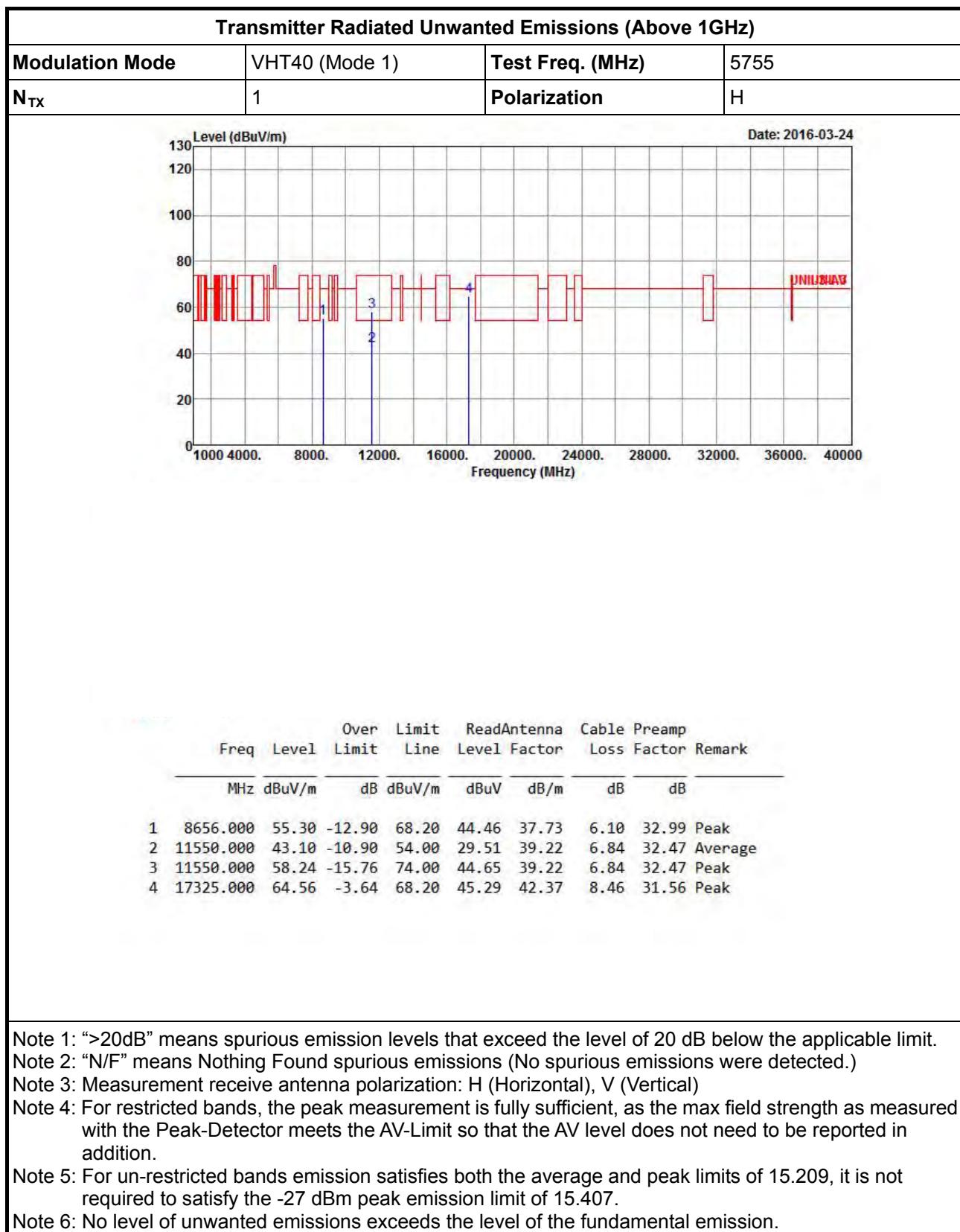


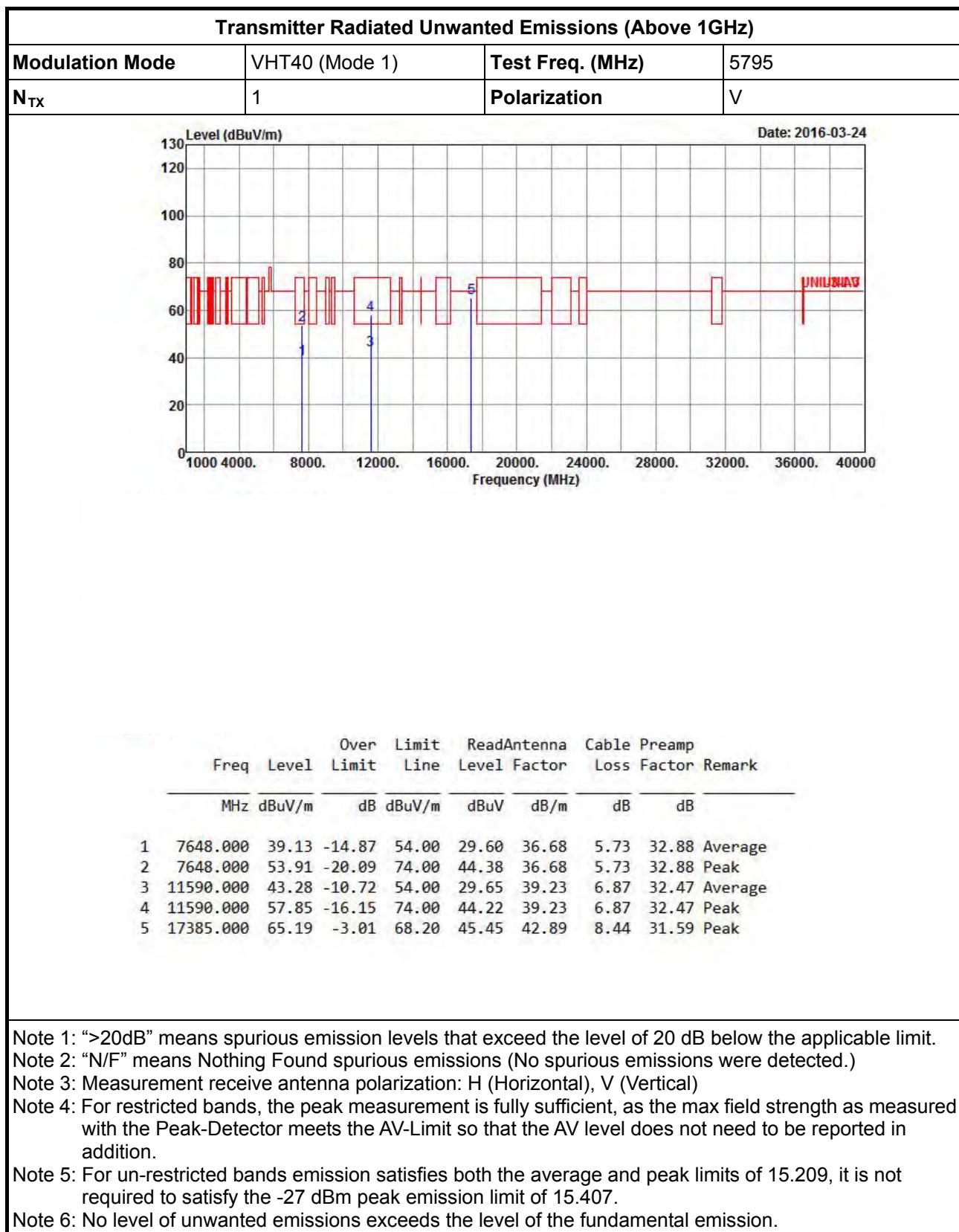


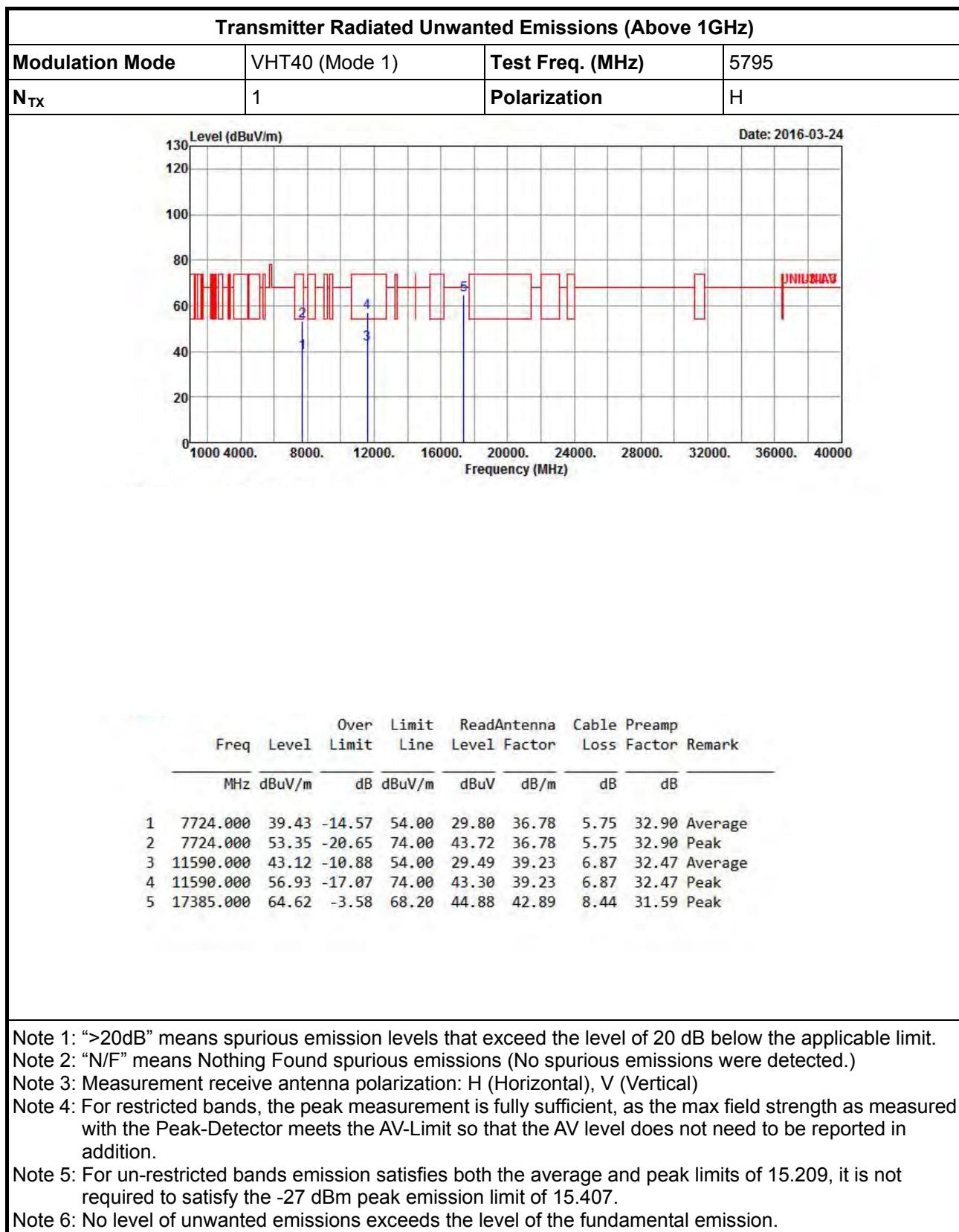


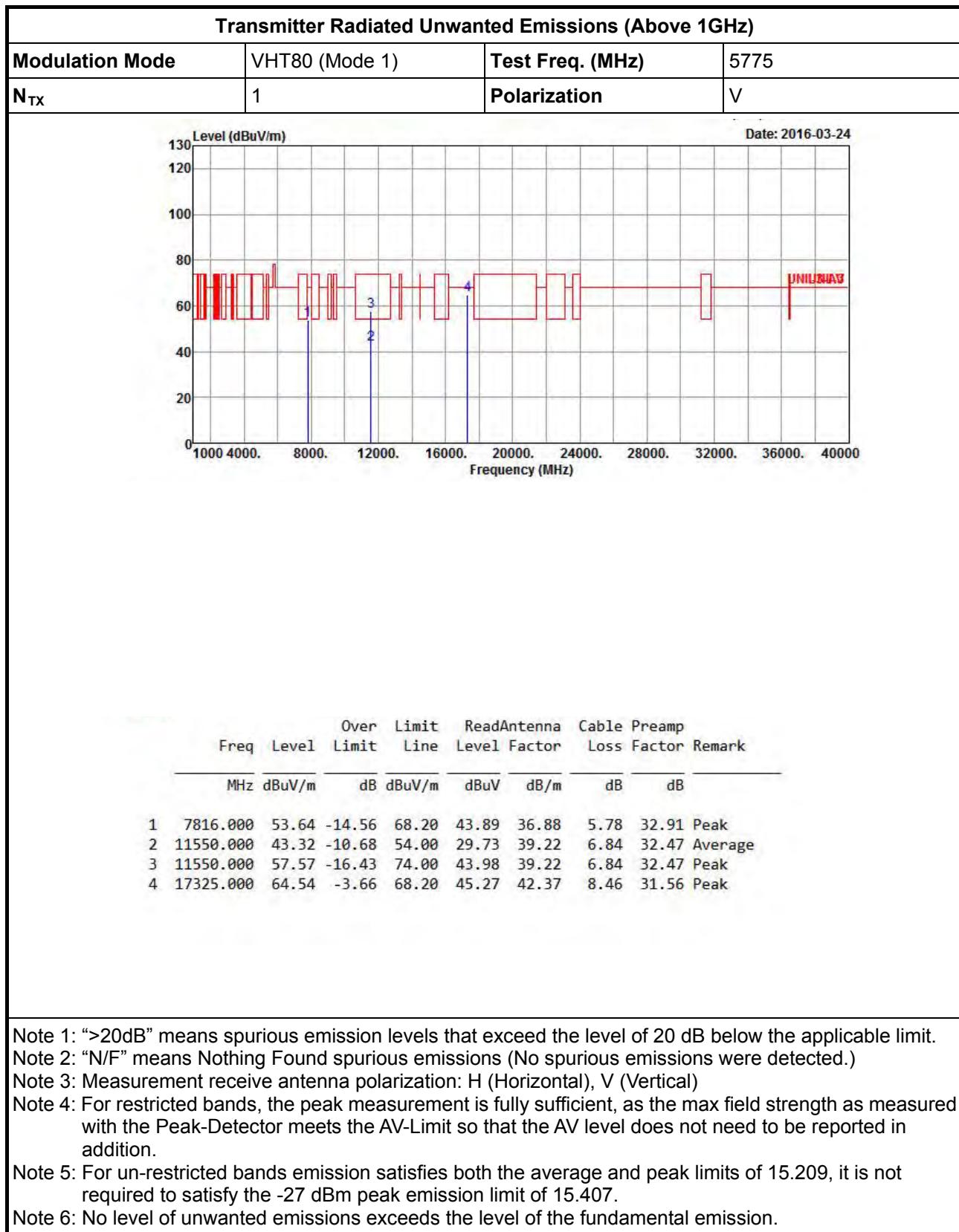


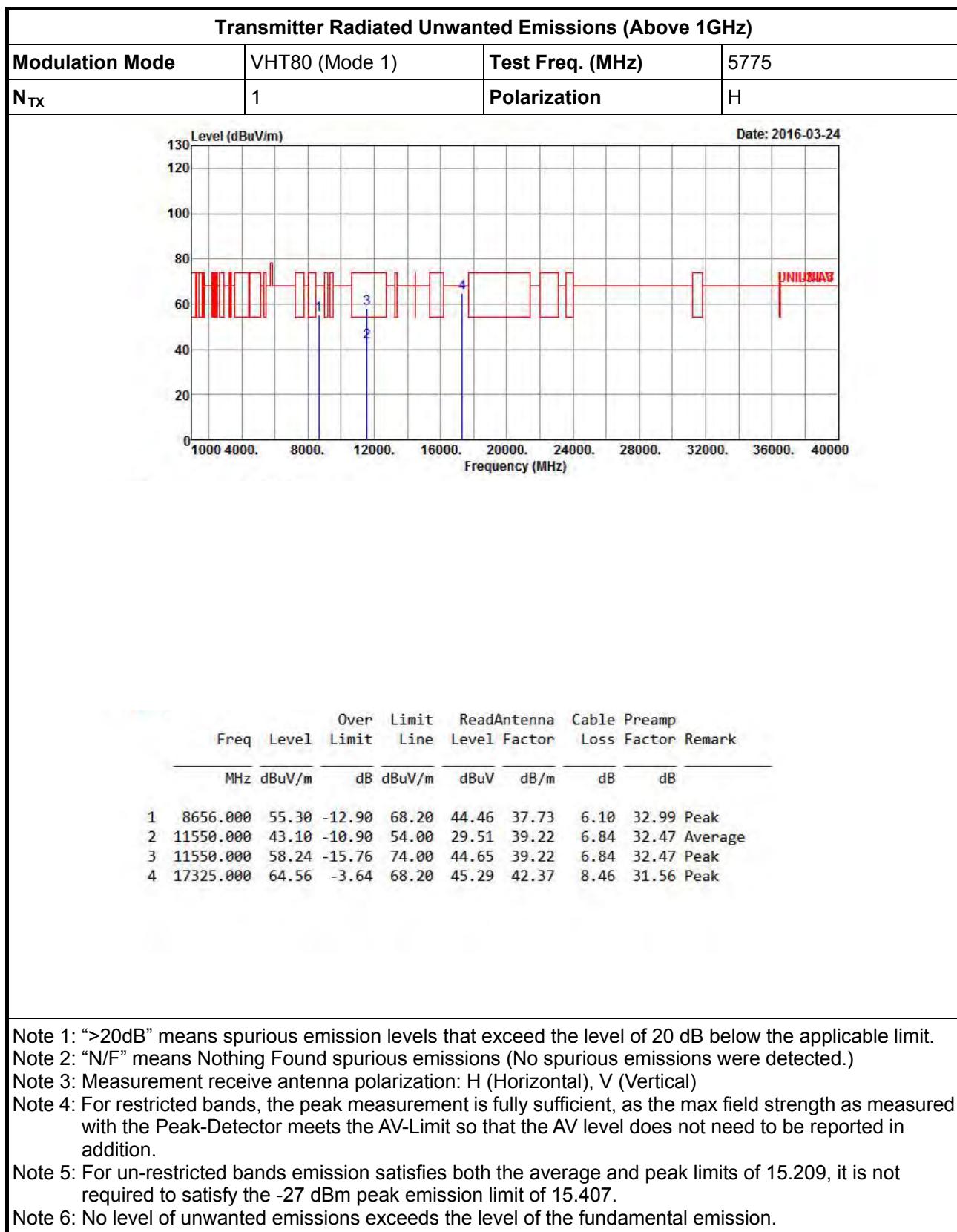












Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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.

## 3.7 Frequency Stability

### 3.7.1 Frequency Stability Limit

Frequency Stability Limit	
<b>UNII Devices</b>	
<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.	
<b>IEEE Std. 802.11n-2009</b>	
<input checked="" type="checkbox"/> The transmitter center frequency tolerance shall be $\pm 20$ ppm maximum for the 5 GHz band.	

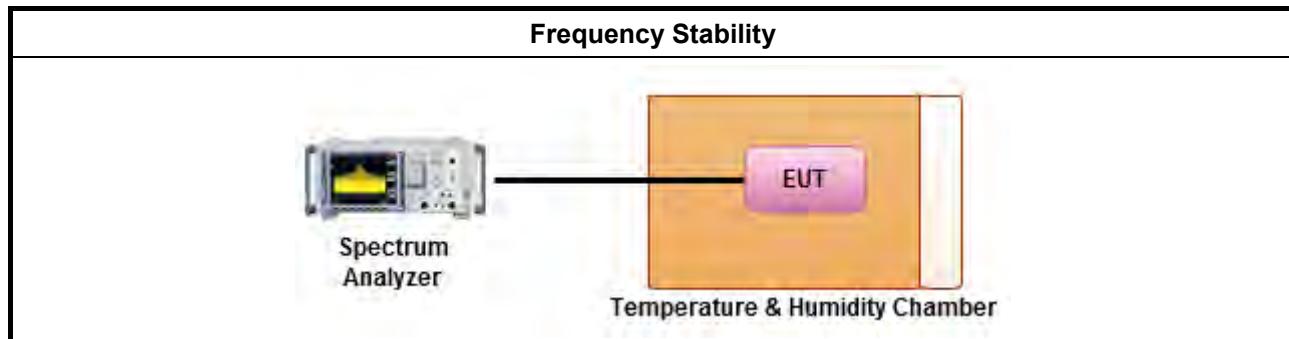
### 3.7.2 Measuring Instruments

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)			
		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min
T20°C Vmax	5745	5744.98090	5744.98090	5744.98133	5744.98133	-3.3246	-3.3246	-3.2498	-3.2498
T20°C Vmin	5745	5744.98003	5744.98003	5744.98046	5744.98046	-3.4761	-3.4761	-3.4012	-3.4012
T50°C Vnom	5745	5745.00174	5745.00304	5745.00374	5745.00374	0.3029	0.5292	0.6510	0.6510
T40°C Vnom	5745	5744.98437	5744.98437	5744.98567	5744.98567	-2.7206	-2.7206	-2.4943	-2.4943
T30°C Vnom	5745	5744.98090	5744.98090	5744.98046	5744.98046	-3.3246	-3.3246	-3.4012	-3.4012
T20°C Vnom	5745	5744.98046	5744.98046	5744.98090	5744.98090	-3.4012	-3.4012	-3.3246	-3.3246
T10°C Vnom	5745	5744.98958	5744.98958	5744.98915	5744.98915	-1.8138	-1.8138	-1.8886	-1.8886
T0°C Vnom	5745	5745.00130	5745.00043	5745.00043	5745.00043	0.2263	0.0748	0.0748	0.0748
T-10°C Vnom	5745	5745.01085	5745.01085	5745.01042	5745.01042	1.8886	1.8886	1.8138	1.8138
T-20°C Vnom	5745	5745.01693	5745.01737	5745.01823	5745.01823	2.9469	3.0235	3.1732	3.1732
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

&lt; AC Conduction &gt;

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Mar. 26, 2013	Mar. 25, 2014
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 21, 2013	Jan. 20, 2014
RF Cable-CON	HUBER+SUHNER	RG213/U	7.61183201e+012	9kHz ~ 30MHz	Oct. 30, 2013	Oct. 29, 2014
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	N/A

For update 5725~5850 MHz

&lt;RF Conducted&gt;

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101500	9KHz~40GHz	May 06, 2015	May 05, 2016
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 28, 2015	Jul. 27, 2016
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-001	-20 ~ 100°C	Jun. 12, 2015	Jun. 11, 2016

&lt;Radiation Emissions &gt;

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Nov. 28, 2015	Nov. 27, 2016
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz ~ 18GHz 3m	Dec. 16, 2015	Dec. 15, 2016
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 11, 2015	May 10, 2016
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Sep. 02, 2015	Sep. 01, 2016
Spectrum	R&S	FSV40	101513	9kHz ~ 40GHz	Feb. 16, 2016	Feb. 15, 2017
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 18, 2015	Sep. 17, 2016
Horn Antenna	ETS • LINDGREN	3115	6741	1GHz ~ 18GHz	Jul. 15, 2015	Jul. 14, 2016
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz ~ 40GHz	Jan. 29, 2016	Jan. 28, 2017

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Amplifier	MITEQ	JS44-18004000-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	Jun. 01, 2017
Loop Antenna	R&S	HFH2-Z2	100330	9 kHz~30 MHz	Nov.16, 2015	Nov.15, 2017