

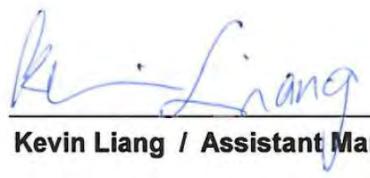


# FCC Test Report

**Equipment** : 11ac Dual Band Concurrent Wall-mount AP  
**Brand Name** : EDIMAX  
**Model No.** : EW-7679WIC, GAP-679WIC, WAP1752, WAP1750  
**FCC ID** : NDD9576791401  
**Standard** : 47 CFR FCC Part 15.407  
**Operating Band** : 5150 MHz – 5250 MHz  
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 Sep. 04, 2014 and completely tested on Mar. 21, 2016.  
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



Testing Laboratory  
1190



## Table of Contents

<b>1</b>	<b>GENERAL DESCRIPTION .....</b>	<b>5</b>
1.1	Information.....	5
1.2	Accessories and Support Equipment.....	8
1.3	Testing Applied Standards .....	9
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>17</b>
3.1	AC Power-line Conducted Emissions .....	17
3.2	Emission Bandwidth .....	20
3.3	RF Output Power.....	23
3.4	Peak Power Spectral Density.....	27
3.5	Transmitter Bandedge Emissions .....	31
3.6	Transmitter Unwanted Emissions.....	38
3.7	Frequency Stability .....	101
<b>4</b>	<b>TEST EQUIPMENT AND CALIBRATION DATA.....</b>	<b>103</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 (5150-5250MHz band)						
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N <sub>TX</sub> )	RF Output Power (dBm)	Co-location
5150-5250	a	5180-5240	36-48 [4]	1	24.35	Yes
5150-5250	n (HT20)	5180-5240	36-48 [4]	3	25.97	Yes
5150-5250	n (HT40)	5190-5230	38-46 [2]	3	27.09	Yes
5150-5250	ac (VHT20)	5180-5240	36-48 [4]	3	25.88	Yes
5150-5250	ac (VHT40)	5190-5230	38-46 [2]	3	27.03	Yes
5150-5250	ac (VHT80)	5210	42 [1]	3	17.87	Yes

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.  
Note 4: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)

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)	Co-location
5725-5850	a	5745-5825	149-165 [5]	1	24.76	Yes
5725-5850	n (HT20)	5745-5825	149-165 [5]	3	23.11	Yes
5725-5850	n (HT40)	5755-5795	151-159 [2]	3	24.54	Yes
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	3	23.17	Yes
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	3	24.09	Yes
5725-5850	ac (VHT80)	5775	155 [1]	3	18.07	Yes

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.  
Note 4: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)



### 1.1.2 Antenna Information

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

Antenna General Information			
Port No.	Ant. Cat.	Ant. Type	Gain (dBi)
1	Integral	PIFA	3.84
2			3.49
3			3.64

Remark:

1. 802.11a only include 1TX and Port1 for emission.
2. 802.11n/ac only includes 3TX and CDD function.

### 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	0.00
<input checked="" type="checkbox"/> 100% - IEEE 802.11n (HT20)	0.00
<input checked="" type="checkbox"/> 100% - IEEE 802.11n (HT40)	0.00
<input checked="" type="checkbox"/> 100% - IEEE 802.11ac (VHT20)	0.00
<input checked="" type="checkbox"/> 100% - IEEE 802.11ac (VHT40)	0.00
<input checked="" type="checkbox"/> 100% - IEEE 802.11ac (VHT80)	0.00

### 1.1.5 EUT Operational Condition

Supply Voltage	<input checked="" type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	<input type="checkbox"/> System
Type of DC Source	<input type="checkbox"/> Internal DC supply	<input checked="" type="checkbox"/> External DC from PoE	<input checked="" type="checkbox"/> External DC adapter



## 1.2 Accessories and Support Equipment

Accessories				
AC Adapter 1	Brand Name	APD	Model Name	DA-48T12
	Power Rating	I/P: 100-240Vac~50-60Hz, 1.4A Max	O/P: 12V	4A
	Remark	Level 6		
AC Adapter 2	Brand Name	APD	Model Name	WA-30J12R
	Power Rating	I/P: 100-240Vac~50-60Hz, 0.9A Max	O/P: 12V	2.5A
	Remark	Level 6		

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

Support Equipment - AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	PoE	Acelink	PI-1000PT	DoC
2	AC Adapter for PoE	UNIFIVE	UIB336-4875	DoC

The PoE and AC Adapter for PoE provided by the customer.

Support Equipment - Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	PoE (Remote)	Acelink	PI-1000PT	DoC
2	AC Adapter for PoE (Remote)	UNIFIVE	UIB336-4875	DoC

The PoE and AC Adapter for PoE provided by the customer.

(For 5150~5250 MHz)

Support Equipment - RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5500	DoC
2	AC Adapter for Notebook	DELL	HA65NM130	DoC

(For 5725~5850 MHz)

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



### 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(UNII - band1)
- ANSI C63.10-2013 (UNII - band3)
- FCC KDB 789033 D02 v01r02
- FCC KDB 644545 D03 v01
- FCC-14-30A1-UNII
- FCC KDB 662911 D01 v02r01

### 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, Taoyuan City, Taiwan, R.O.C.	TEL : 886-3-327-3456 FAX : 886-3-327-0973
Test site registered number [636805] with FCC.			
Test Condition	Test Site No.	Test Engineer	Test Environment
AC Conduction	CO04-HY	Ryan	25°C / 58%
Radiated Emission (Below 1GHz)	03CH03-HY	Jeff	21.9°C / 50%
(For 5150~5250 MHz)			
RF Conducted	TH01-HY	Ian	22.8°C / 66%
Radiated Emission (Above 1GHz)	03CH03-HY	Hunter	25.7°C / 51%
(For 5725~5850 MHz)			
RF Conducted	TH01-HY	Jeremy	26°C / 66%
Radiated Emission (Above 1GHz)	03CH03-HY	Jeff	21.9°C / 50%



## 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 <sub>TX</sub> )	Data Rate / MCS	Worst Data Rate / MCS
11a	1	6-54Mbps	6 Mbps
HT20	3	MCS 0-23	MCS 0
HT40	3	MCS 0-23	MCS 0
VHT20	3	MCS 0-8	MCS 0
VHT40	3	MCS 0-9	MCS 0
VHT80	3	MCS 0-9	MCS 0

### 2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (5150-5250MHz band)							
Test Software	DOS						
Modulation Mode	N <sub>TX</sub>	Test Frequency (MHz)					
		NCB: 20MHz		NCB: 40MHz		NCB: 80MHz	
		5180	5200	5240	5190	5230	5210
11a	1	21	25	25	-	-	-
HT20	3	17	21	21	-	-	-
HT40	3	-	-	-	16	23	-
VHT20	3	20	21	21	-	-	-
VHT40	3	-	-	-	15.5	23	-
VHT80	3	-	-	-	-	-	14

The Worst Case Power Setting Parameter (5725-5850MHz band)							
Test Software	DOS						
Modulation Mode	N <sub>TX</sub>	Test Frequency (MHz)					
		NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
		5745	5785	5825	5755	5795	5775
11a	1	19	26	21	-	-	-
HT20	3	17	18	17.5	-	-	-
HT40	3	-	-	-	16	19.5	-
VHT20	3	17	18	17.5	-	-	-
VHT40	3	-	-	-	16	19	-
VHT80	3	-	-	-	-	-	13



## 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	EUT with adapter 1
2	EUT with adatper 2
3	EUT with PoE

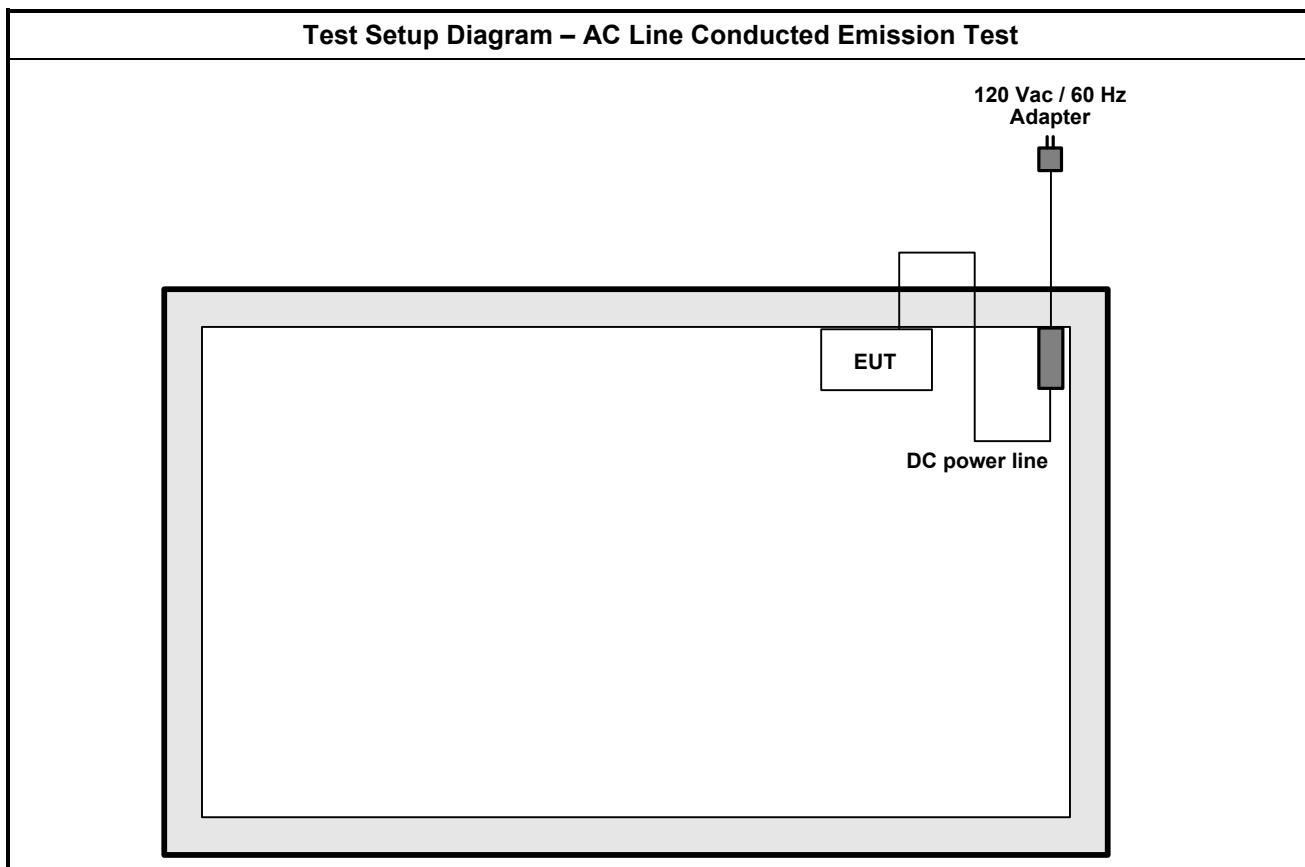
For operating mode 2 is the worst case and it was record in this test report.

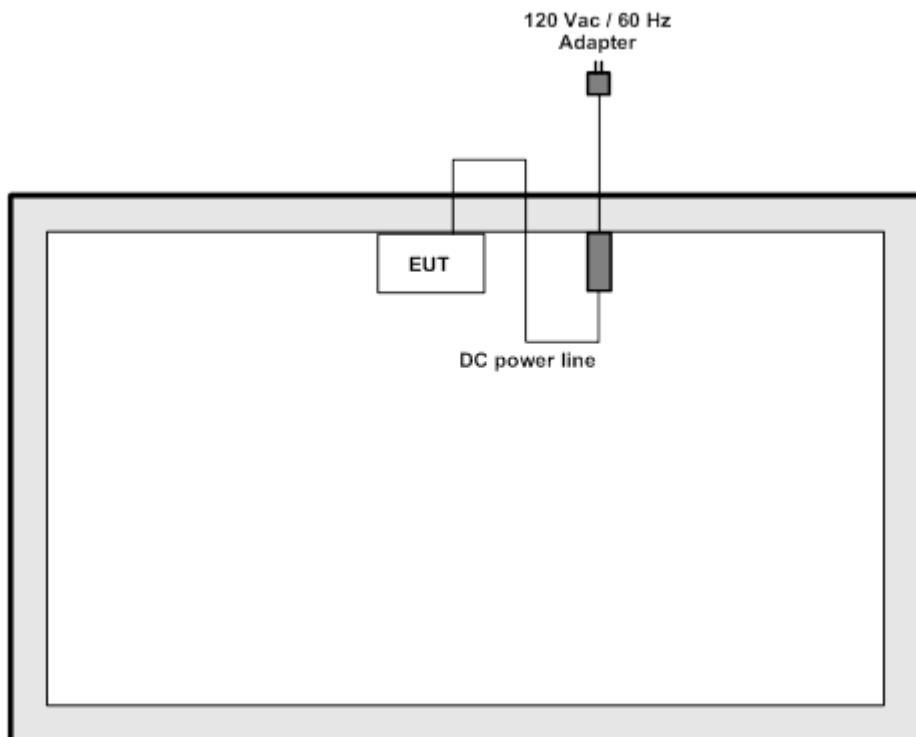
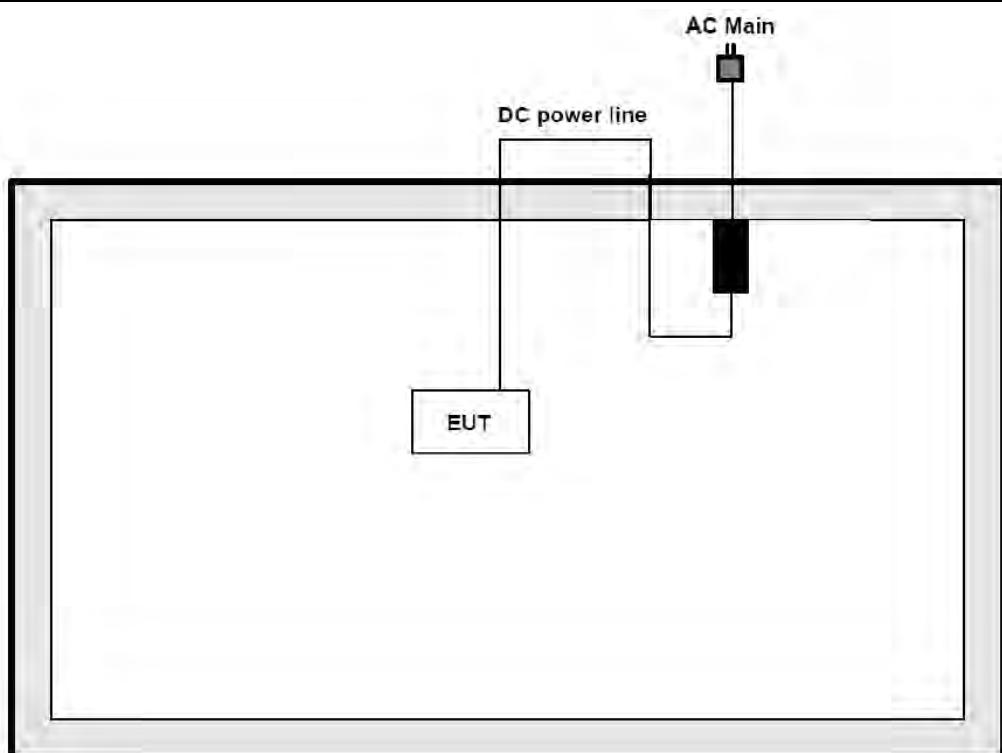
The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	RF Output Power, Peak Power Spectral Density, Emission Bandwidth, Transmitter Conducted Unwanted Emissions, Transmitter Conducted Bandedge Emissions
<b>Test Condition</b>	Conducted measurement at transmit chains
<b>Modulation Mode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

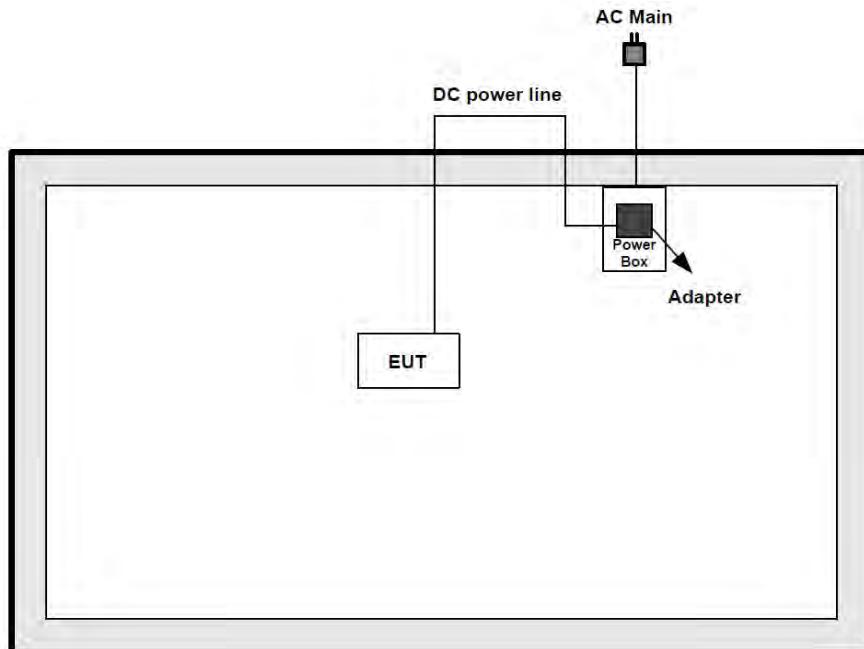
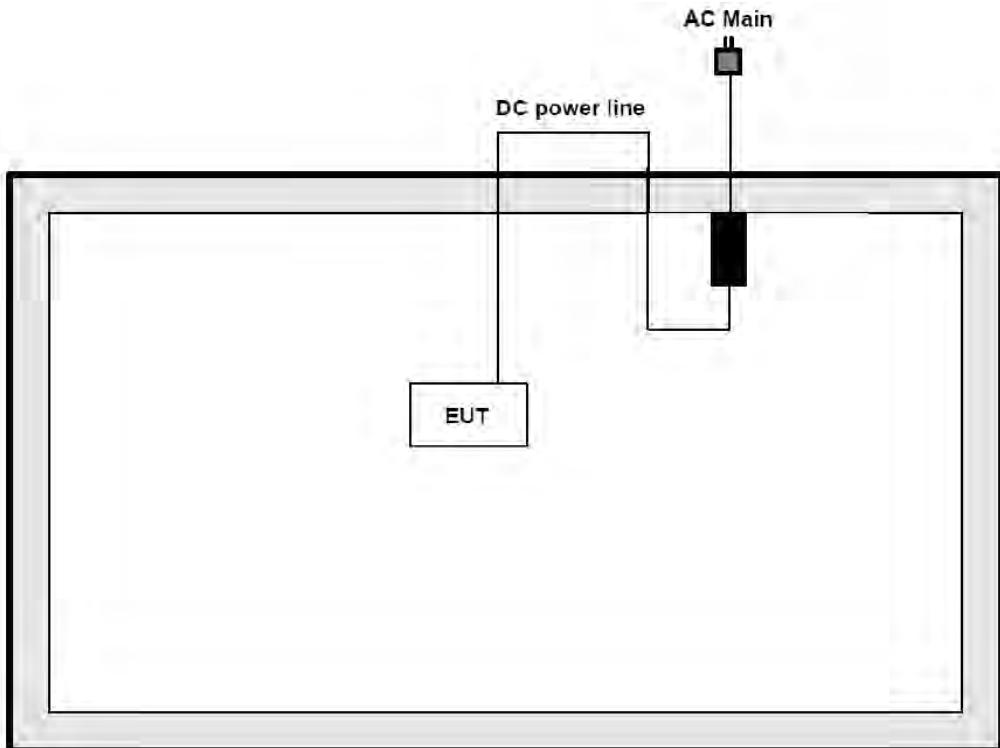


The Worst Case Mode for Following Conformance Tests							
<b>Tests Item</b>	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions						
<b>Test Condition</b>	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial 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.						
<b>Operating Mode &lt; 1GHz</b>	Operating Mode Description 1. EUT with adapter 1 2. EUT with adapter 2 3. EUT with PoE For operating mode 1 is the worst case and it was record in this test report.						
<b>Operating Mode &gt; 1GHz</b>	1. EUT with adapter 1						
<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						

## 2.4 Test Setup Diagram



**Test Setup Diagram - Radiated Emission Below 1GHz (For 5150~5250 MHz)****Test Setup Diagram - Radiated Emission Below 1GHz (For 5725~5850 MHz)**

**Test Setup Diagram - Radiated Emission Above 1GHz\_ (For 5150~5250 MHz)****Test Setup Diagram - Radiated Emission Above 1GHz\_ (For 5725~5850 MHz)**

### 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.

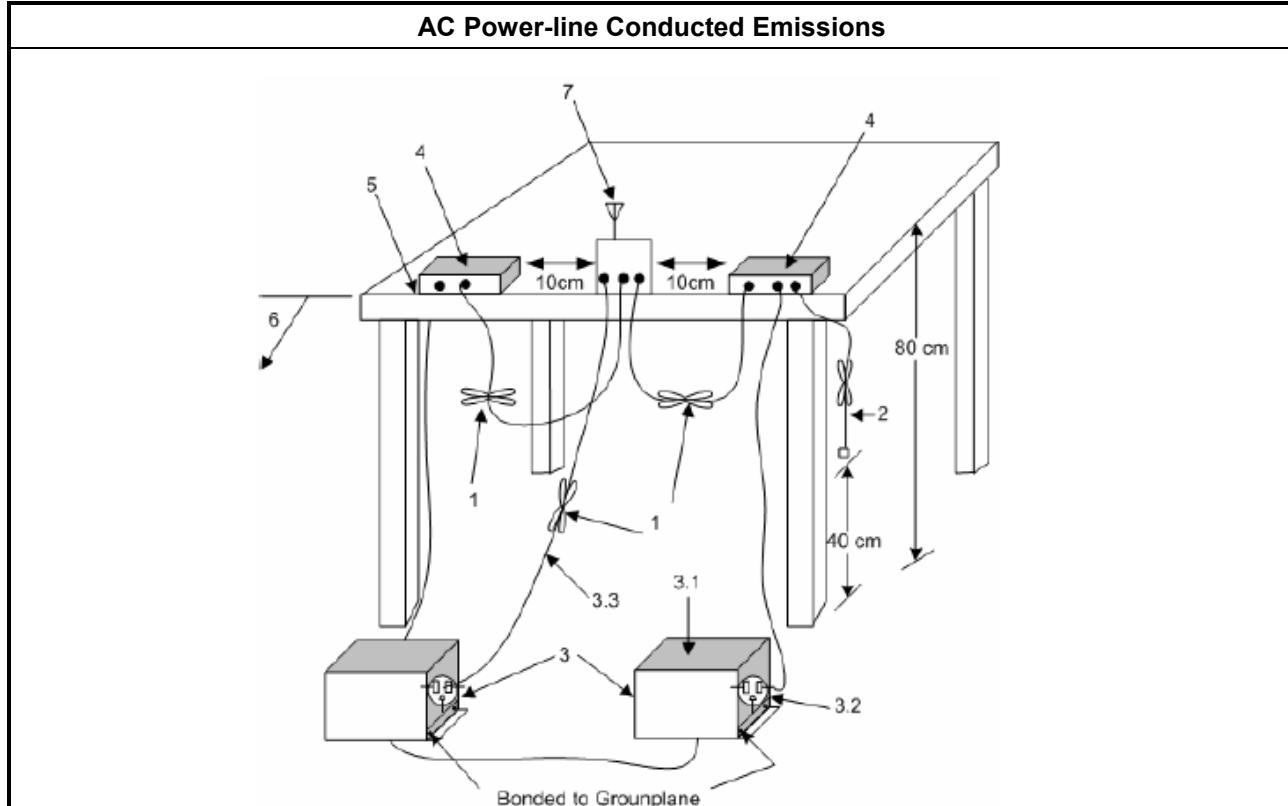
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

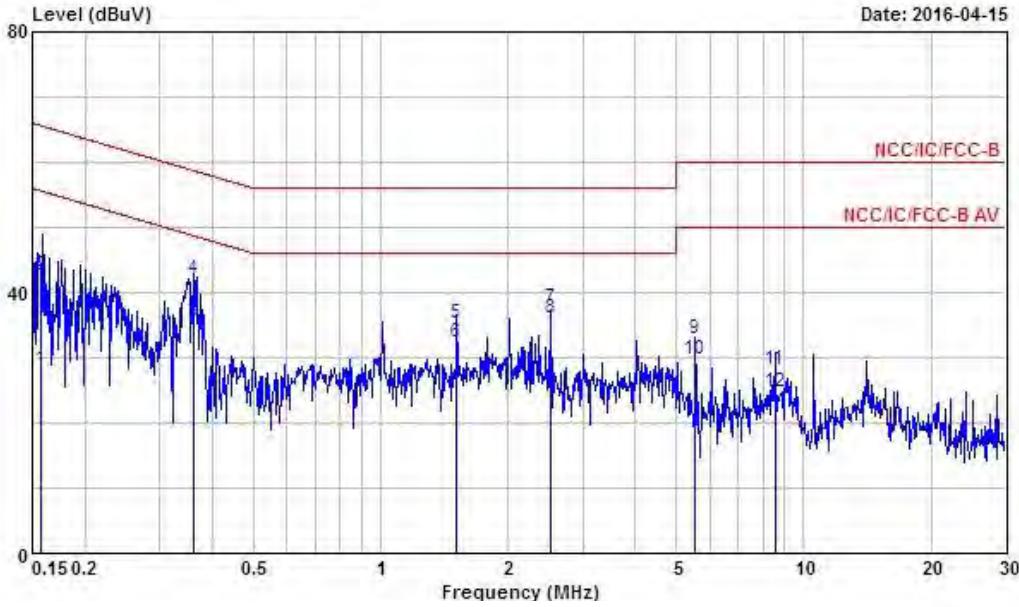
Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

##### 3.1.4 Test Setup



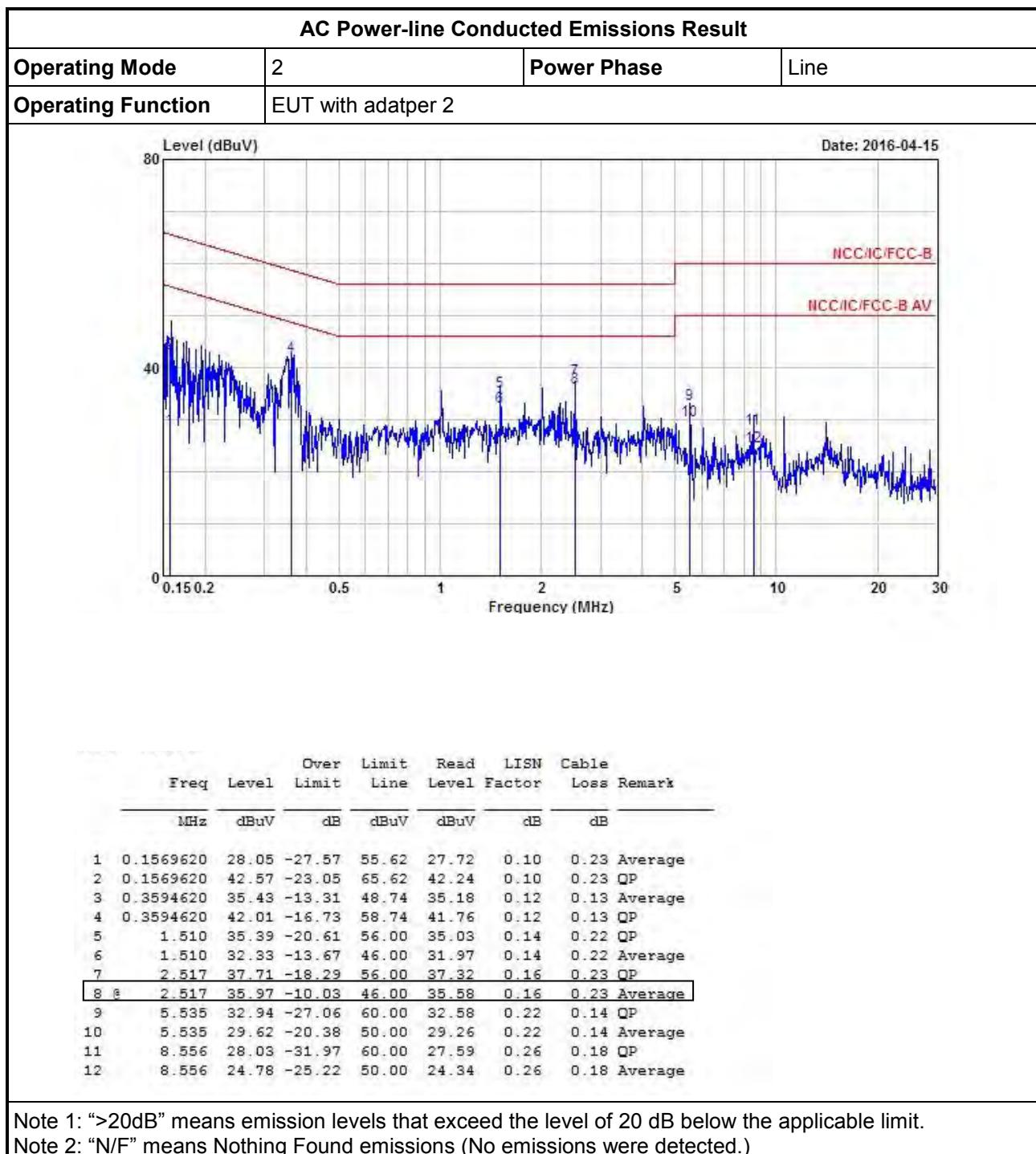


## 3.1.5 Test Result of AC Power-line Conducted Emissions

AC Power-line Conducted Emissions Result							
Operating Mode	2	Power Phase	Neutral				
Operating Function	EUT with adatper 2						
Date: 2016-04-15							
							
Emissions Data (dBuV)							
Freq	Level	Over Limit	Line	Read Level	LISN Factor	Cable Loss	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1569620	28.05	-27.57	55.62	27.72	0.10	0.23 Average
2	0.1569620	42.57	-23.05	65.62	42.24	0.10	0.23 QP
3	0.3594620	35.43	-13.31	48.74	35.18	0.12	0.13 Average
4	0.3594620	42.01	-16.73	58.74	41.76	0.12	0.13 QP
5	1.510	35.39	-20.61	56.00	35.03	0.14	0.22 QP
6	1.510	32.33	-13.67	46.00	31.97	0.14	0.22 Average
7	2.517	37.71	-18.29	56.00	37.32	0.16	0.23 QP
8	2.517	35.97	-10.03	46.00	35.58	0.16	0.23 Average
9	5.535	32.94	-27.06	60.00	32.58	0.22	0.14 QP
10	5.535	29.62	-20.38	50.00	29.26	0.22	0.14 Average
11	8.556	28.03	-31.97	60.00	27.59	0.26	0.18 QP
12	8.556	24.78	-25.22	50.00	24.34	0.26	0.18 Average

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

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



## 3.2 Emission Bandwidth

### 3.2.1 Emission Bandwidth Limit

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

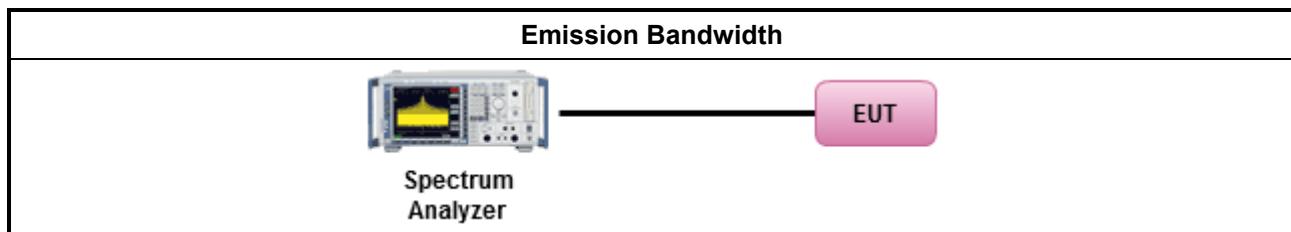
### 3.2.2 Measuring Instruments

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 FCC KDB 789033, clause C for EBW and clause D for OBW measurement.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
<input type="checkbox"/>	Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.
<input checked="" type="checkbox"/>	For conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain. The chain is port 1.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input checked="" 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 checked="" 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.

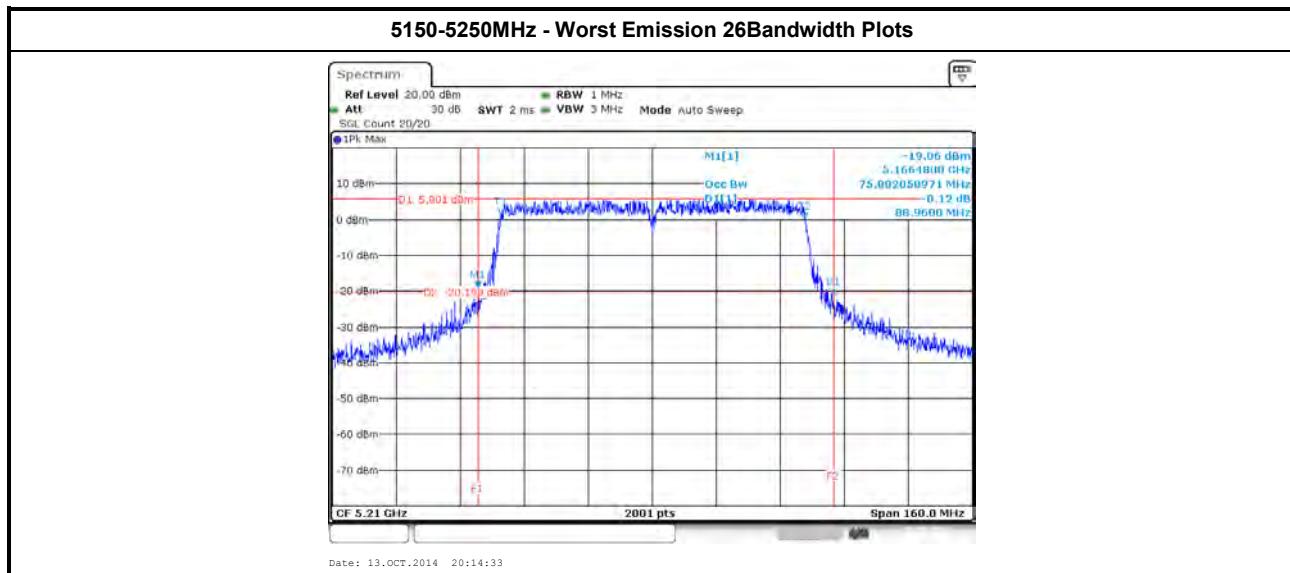
### 3.2.4 Test Setup





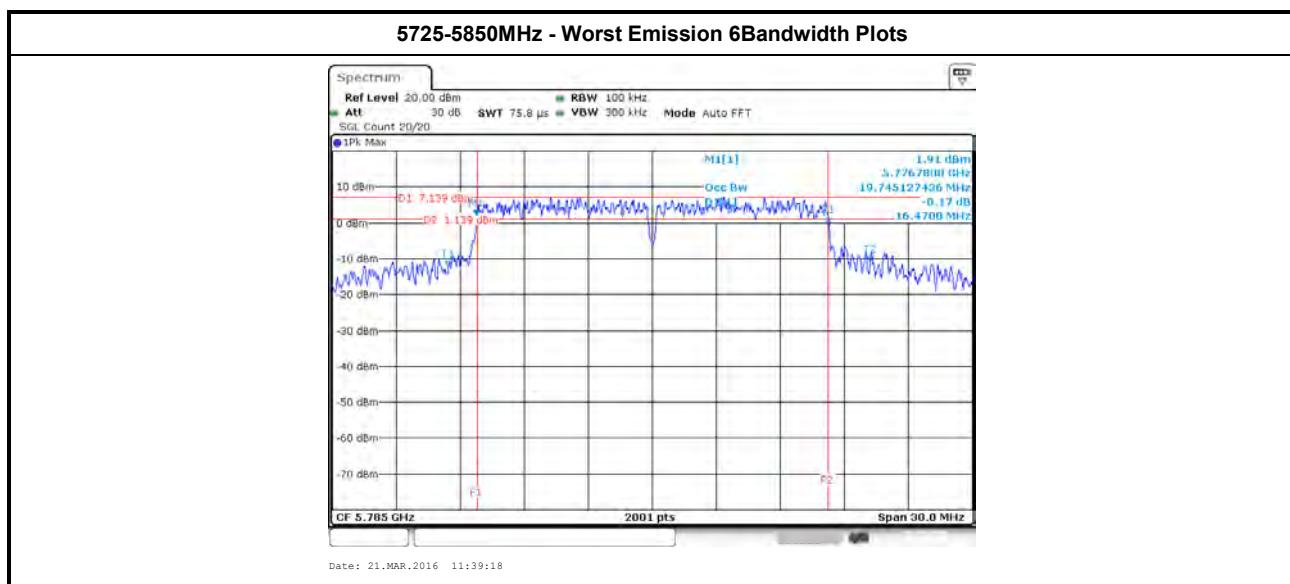
## 3.2.5 Test Result of Emission Bandwidth

UNII Emission Bandwidth Result (5150-5250MHz band)								
Condition			Emission Bandwidth (MHz)					
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	99% Bandwidth			26dB Bandwidth		
			Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 1	Chain Port 2	Chain Port 3
11a	1	5180	16.84	-	-	20.45	-	-
11a	1	5200	17.21	-	-	32.30	-	-
11a	1	5240	20.18	-	-	37.02	-	-
HT20	3	5180	17.81	17.76	17.91	21.10	20.42	21.17
HT20	3	5200	17.81	17.69	17.81	21.10	20.17	21.40
HT20	3	5240	17.94	17.81	17.89	21.05	20.75	21.12
HT40	3	5190	36.70	36.74	36.66	45.52	45.32	45.72
HT40	3	5230	36.86	36.66	36.90	47.64	44.64	47.64
VHT20	3	5180	17.76	17.79	17.89	21.00	20.82	21.15
VHT20	3	5200	17.81	17.79	17.89	21.20	20.75	21.17
VHT20	3	5240	17.81	17.69	17.74	21.50	20.42	21.15
VHT40	3	5190	36.70	36.62	36.58	44.68	44.68	44.56
VHT40	3	5230	36.82	36.58	36.82	51.80	45.32	49.32
VHT80	3	5210	75.88	75.88	75.88	88.96	85.36	88.48
Result			Complied					





UNII Emission Bandwidth Result (5725-5850MHz band)								
Condition			Emission Bandwidth (MHz)					
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	99% Bandwidth			6dB Bandwidth		
			Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 1	Chain Port 2	Chain Port 3
11a	1	5745	16.47	-	-	16.48	-	-
11a	1	5785	19.74	-	-	16.47	-	-
11a	1	5825	16.43	-	-	16.48	-	-
HT20	3	5745	17.66	17.61	17.63	17.76	17.62	17.67
HT20	3	5785	17.70	17.61	17.66	17.80	17.59	17.70
HT20	3	5825	17.63	17.69	17.73	17.67	17.73	17.82
HT40	3	5755	36.18	36.18	36.22	36.48	36.32	36.68
HT40	3	5795	36.22	36.22	36.18	36.52	36.36	36.36
VHT20	3	5745	17.66	17.63	17.69	17.67	17.71	17.74
VHT20	3	5785	17.70	17.66	17.67	17.76	17.71	17.73
VHT20	3	5825	17.73	17.76	17.63	17.79	17.77	17.67
VHT40	3	5755	36.22	36.22	36.18	36.48	36.48	36.36
VHT40	3	5795	36.18	36.26	36.22	36.44	36.48	36.48
VHT80	3	5775	75.56	75.32	75.32	75.84	75.68	75.60
Result			Complied					





### 3.3 RF Output Power

#### 3.3.1 RF Output Power Limit

Maximum Conducted Output Power Limit	
<b>UNII Devices</b>	
<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 $\leq 125$ mW [21dBm]	
<input checked="" 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

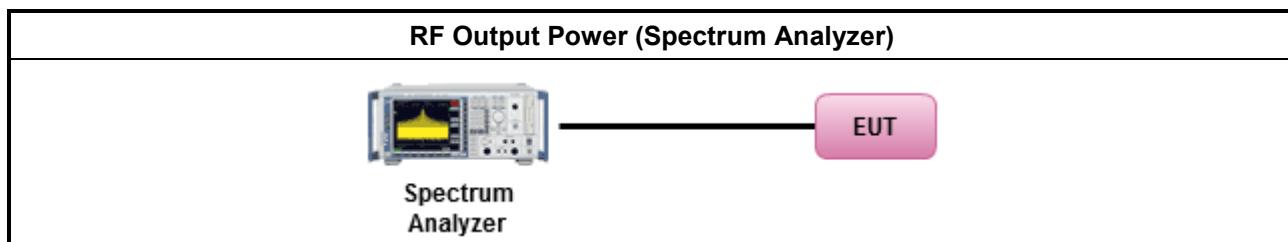
Refer a test equipment and calibration data table in this test report.



### 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 FCC KDB 789033, clause E Method SA-1 (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 789033, 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, clause E Method SA-2 (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
	Wideband RF power meter and average over on/off periods with duty factor
<input type="checkbox"/>	Refer as FCC KDB 789033, clause E Method PM (using an RF average power meter).
<input checked="" type="checkbox"/> For conducted measurement.	
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain. The chain is port 1.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input checked="" 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 checked="" 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]) $EIRP_{total} = P_{total} + DG$

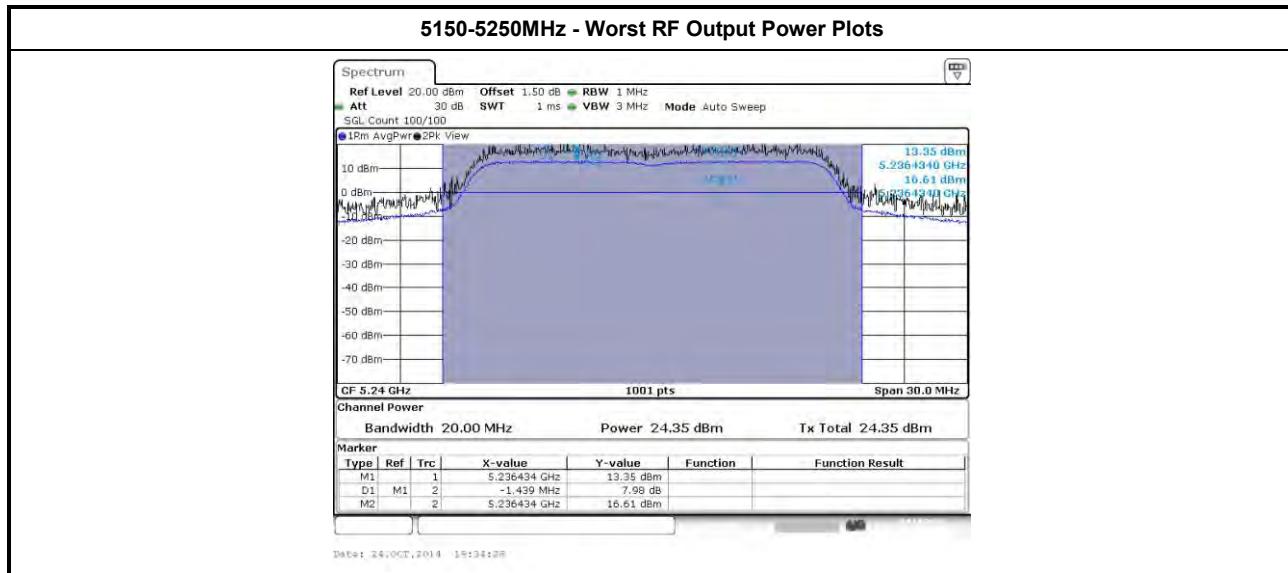
### 3.3.4 Test Setup





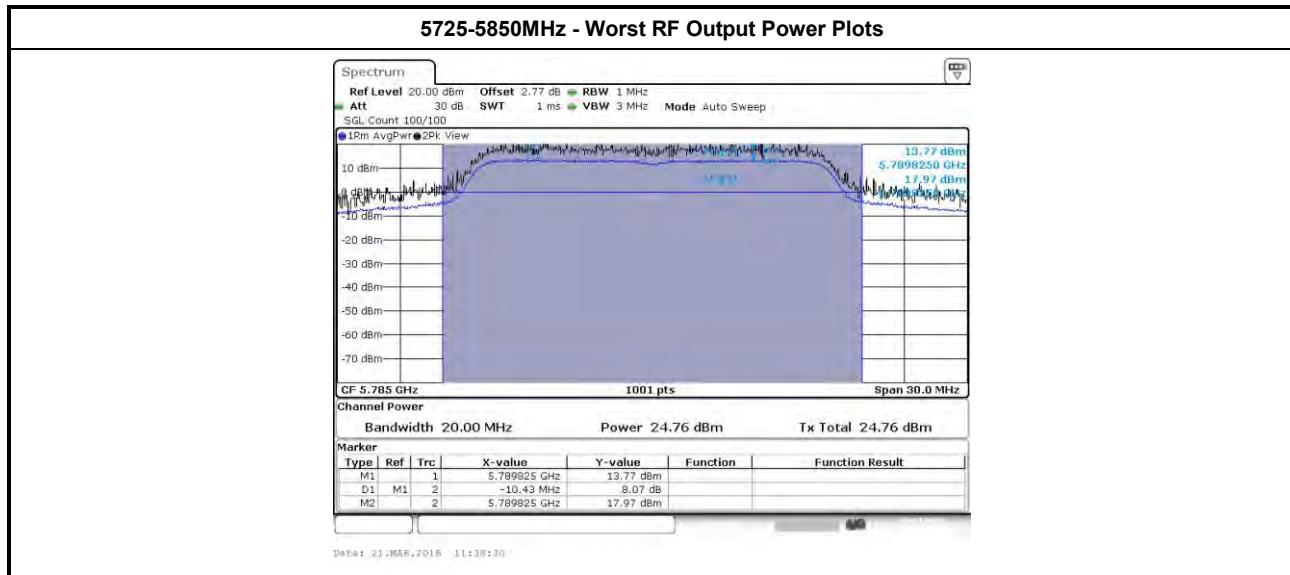
## 3.3.5 Test Result of Maximum Conducted Output Power

Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Output Power (dBm)				Antenna Gain (dBi)	Power Limit
			Chain Port 1	Chain Port 2	Chain Port 3	Sum Chain		
11a	1	5180	21.07	-	-	21.07	3.84	30.00
11a	1	5200	24.27	-	-	24.27	3.84	30.00
11a	1	5240	24.35	-	-	24.35	3.84	30.00
HT20	3	5180	16.79	16.80	16.79	21.56	3.66	30.00
HT20	3	5200	21.20	21.21	21.19	25.97	3.66	30.00
HT20	3	5240	21.01	20.99	20.98	25.76	3.66	30.00
HT40	3	5190	14.87	14.87	14.88	19.64	3.66	30.00
HT40	3	5230	22.33	22.31	22.32	27.09	3.66	30.00
VHT20	3	5180	20.19	20.17	20.16	24.94	3.66	30.00
VHT20	3	5200	21.11	21.11	21.11	25.88	3.66	30.00
VHT20	3	5240	21.02	20.98	21.01	25.77	3.66	30.00
VHT40	3	5190	14.35	14.36	14.35	19.12	3.66	30.00
VHT40	3	5230	22.31	22.20	22.27	27.03	3.66	30.00
VHT80	3	5210	13.10	13.11	13.10	17.87	3.66	30.00
<b>Result</b>			<b>Complied</b>					





Maximum Conducted Output Power (5725-5850MHz band)								
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Output Power (dBm)				Antenna Gain (dBi)	Power Limit
			Chain Port 1	Chain Port 2	Chain Port 3	Sum Chain		
11a	1	5745	19.55	-	-	19.55	3.84	30.00
11a	1	5785	24.76	-	-	24.76	3.84	30.00
11a	1	5825	21.24	-	-	21.24	3.84	30.00
HT20	3	5745	17.24	18.86	16.42	22.40	3.66	30.00
HT20	3	5785	17.80	19.43	17.54	23.11	3.66	30.00
HT20	3	5825	18.00	19.29	16.76	22.91	3.66	30.00
HT40	3	5755	15.89	16.92	15.27	20.85	3.66	30.00
HT40	3	5795	19.51	20.43	19.29	24.54	3.66	30.00
VHT20	3	5745	17.48	18.54	16.59	22.38	3.66	30.00
VHT20	3	5785	17.86	19.40	17.74	23.17	3.66	30.00
VHT20	3	5825	17.69	19.15	16.81	22.76	3.66	30.00
VHT40	3	5755	16.06	17.11	15.26	20.98	3.66	30.00
VHT40	3	5795	19.06	20.00	18.80	24.09	3.66	30.00
VHT80	3	5775	12.75	14.38	12.52	18.07	3.66	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 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 checked="" 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.	

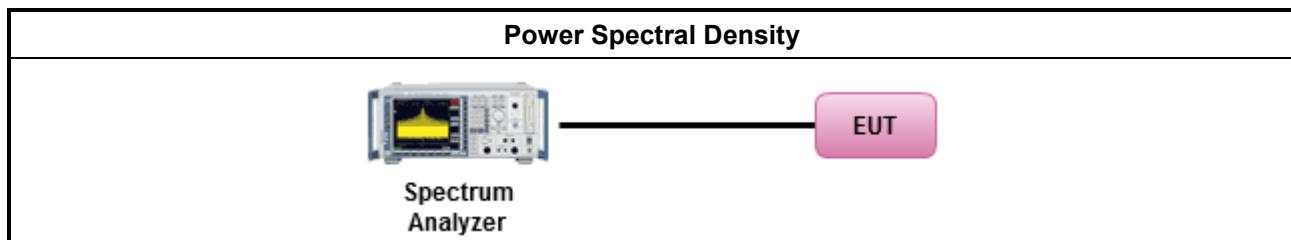
### 3.4.2 Measuring Instruments

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

### 3.4.3 Test Procedures

<b>Test Method</b>	
<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, 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 FCC KDB 789033, clause E Method SA-1 (spectral trace averaging).	
<input type="checkbox"/> Refer as FCC KDB 789033, 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, clause E Method SA-2 (spectral trace averaging).	
<input type="checkbox"/> Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)	
<input checked="" type="checkbox"/> For conducted measurement.	
<input checked="" type="checkbox"/> The EUT supports single transmit chain and measurements performed on this transmit chain. The chain is port 1.	
<input type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.	
<input checked="" 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 checked="" 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 checked="" 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.

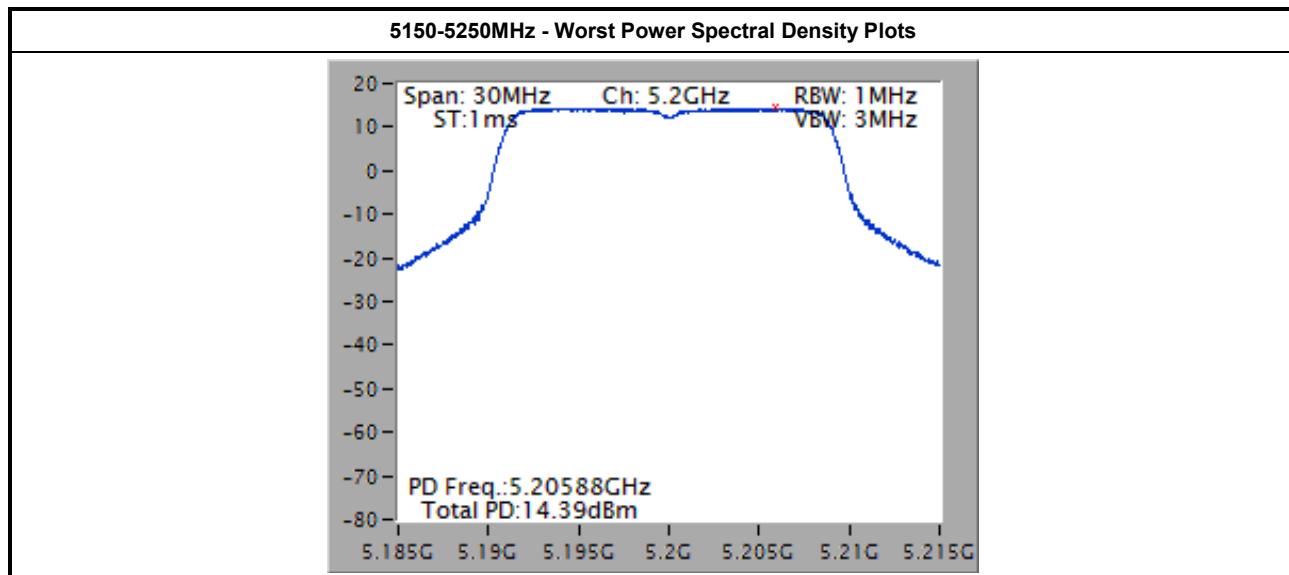
### 3.4.4 Test Setup





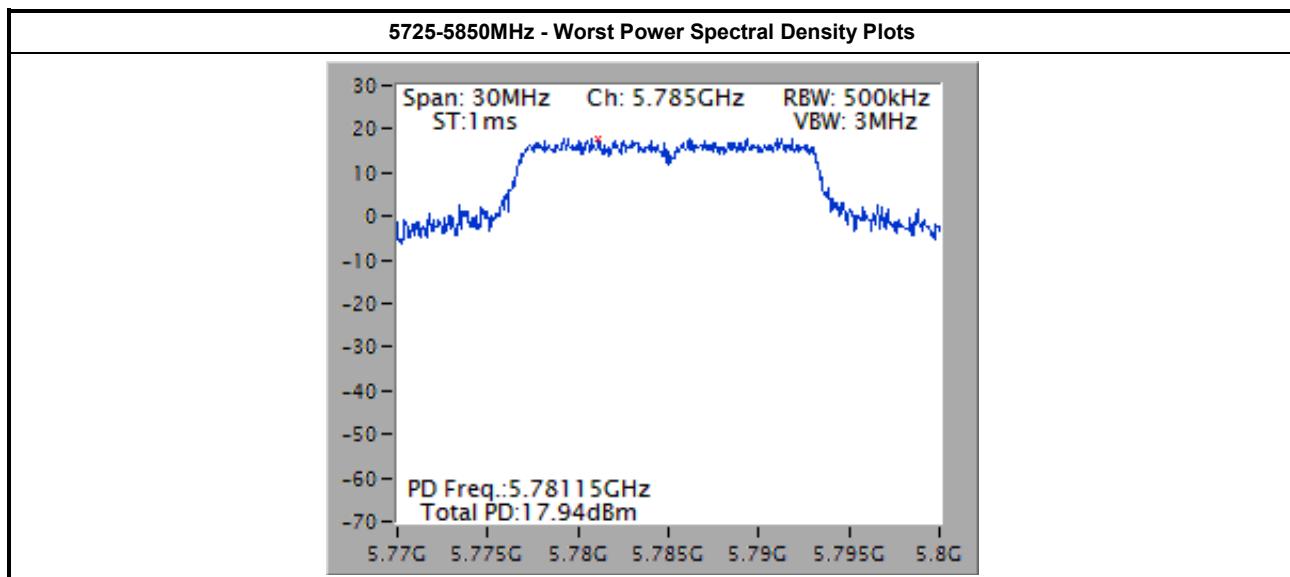
### 3.4.5 Test Result of Peak Power Spectral Density

Peak Power Spectral Density Result (5150-5250MHz band)					
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Peak Power Spectral Density (dBm)	PSD Limit	Antenna Gain (dBi)
11a	1	5180	10.02	17.00	3.84
11a	1	5200	13.33	17.00	3.84
11a	1	5240	13.35	17.00	3.84
HT20	3	5180	9.86	14.57	8.43
HT20	3	5200	14.39	14.57	8.43
HT20	3	5240	14.22	14.57	8.43
HT40	3	5190	5.04	14.57	8.43
HT40	3	5230	12.49	14.57	8.43
VHT20	3	5180	13.39	14.57	8.43
VHT20	3	5200	14.27	14.57	8.43
VHT20	3	5240	14.16	14.57	8.43
VHT40	3	5190	4.55	14.57	8.43
VHT40	3	5230	12.92	14.57	8.43
VHT80	3	5210	0.08	14.57	8.43
Result		Complied			



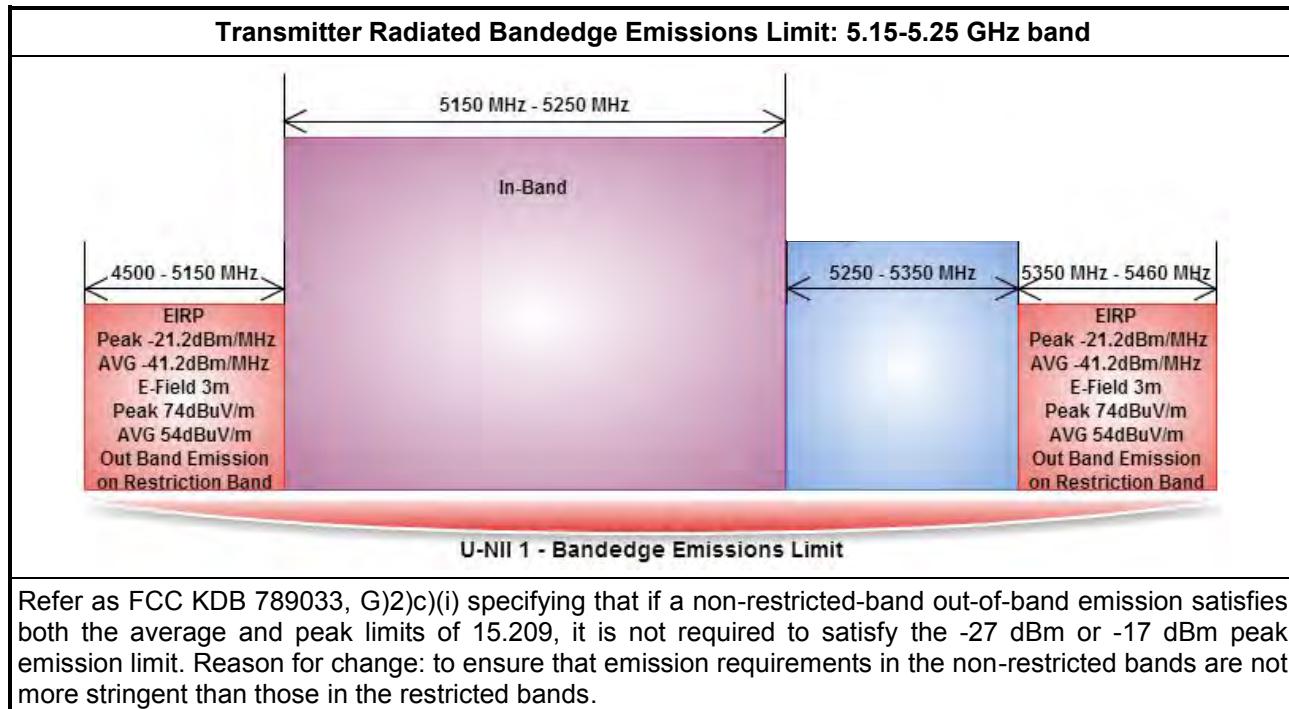


Peak Power Spectral Density Result (5725-5850MHz band)					
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Peak Power Spectral Density (dBm)	PSD Limit (500kHz)	Antenna Gain (dBi)
11a	1	5745	11.37	30.00	3.84
11a	1	5785	17.94	30.00	3.84
11a	1	5825	14.57	30.00	3.84
HT20	3	5745	14.94	27.57	8.43
HT20	3	5785	15.93	27.57	8.43
HT20	3	5825	15.69	27.57	8.43
HT40	3	5755	10.04	27.57	8.43
HT40	3	5795	14.49	27.57	8.43
VHT20	3	5745	15.14	27.57	8.43
VHT20	3	5785	16.14	27.57	8.43
VHT20	3	5825	16.01	27.57	8.43
VHT40	3	5755	10.57	27.57	8.43
VHT40	3	5795	13.27	27.57	8.43
VHT80	3	5775	3.97	27.57	8.43
Result		Complied			



## 3.5 Transmitter Bandedge Emissions

### 3.5.1 Transmitter Radiated Bandedge Emissions Limit



### 3.5.2 Measuring Instruments

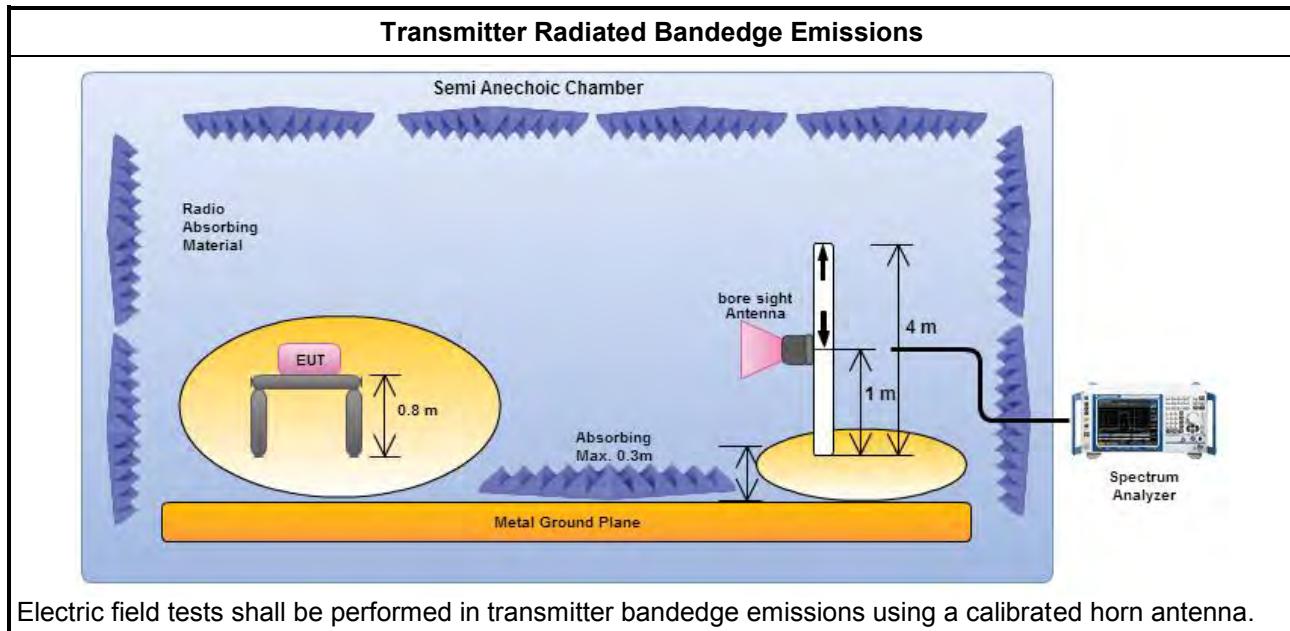
Refer a test equipment and calibration data table in this test report.



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

### 3.5.4 Test Setup



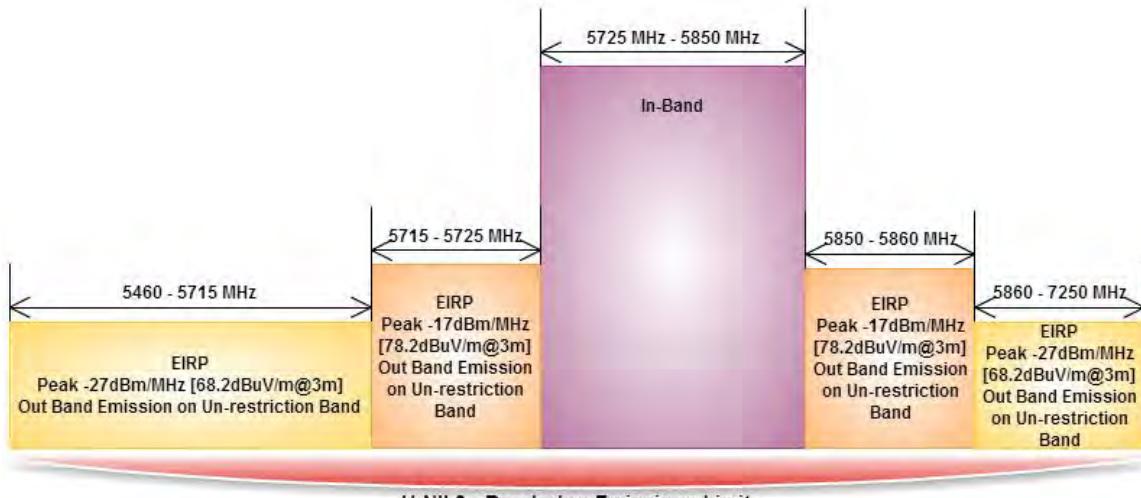
### 3.5.5 Transmitter Radiated Bandedge Emissions (with Antenna)

U-NII 5150-5250MHz Transmitter Radiated Bandedge (with Antenna)										
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
11a	1	5180	3	5148.80	69.85	74	5150.00	52.46	54	V
11a	1	5240	3	5368.20	61.55	74	5398.20	48.73	54	V
HT20	3	5180	3	5148.00	68.81	74	5148.20	52.90	54	V
HT20	3	5240	3	5384.40	61.63	74	5399.40	48.34	54	V
HT40	3	5190	3	5149.94	66.66	74	5149.94	52.76	54	V
HT40	3	5230	3	5372.40	61.02	74	5392.80	47.49	54	V
VHT20	3	5180	3	5148.00	68.73	74	5147.80	52.30	54	V
VHT20	3	5240	3	5385.60	61.75	74	5395.80	48.31	54	V
VHT40	3	5190	3	5149.94	65.31	74	5149.94	51.07	54	V
VHT40	3	5230	3	5389.80	60.88	74	5355.00	47.80	54	V
VHT80	3	5210	3	5142.00	66.89	74	5142.60	52.44	54	V
VHT80	3	5210	3	5353.20	61.33	74	5380.80	47.40	54	V

Note 1: Measurement worst emissions of receive antenna polarization.

### 3.5.6 Transmitter Radiated Bandedge Emissions Limit

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



Refer as FCC KDB 789033, 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.

### 3.5.7 Measuring Instruments

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

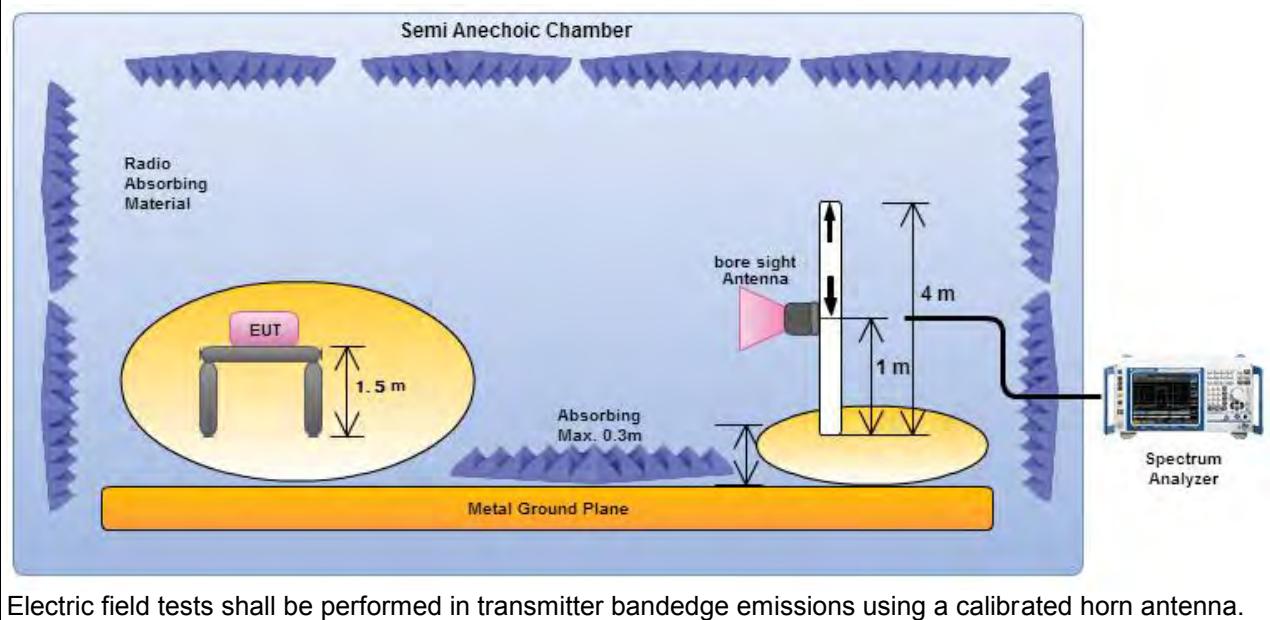


### 3.5.8 Test Procedures

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.) <ul style="list-style-type: none"><li><input type="checkbox"/> Operating in 5.15-5.25 GHz band (lower-band) and 5.25-5.35 GHz band (higher-band).</li><li><input type="checkbox"/> Operating in 5.47-5.725 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band).</li></ul>
<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"><li><input type="checkbox"/> Operating in 5.25-5.35 GHz band (lower-band) and 5.47-5.725 GHz band (higher-band).</li><li><input type="checkbox"/> Operating in 5.15-5.25 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band).</li></ul>
<input checked="" type="checkbox"/> For the transmitter unwanted emissions shall be measured using following options below: <ul style="list-style-type: none"><li><input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause H)2) for unwanted emissions into non-restricted bands.</li><li><input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause H)1) for unwanted emissions into restricted bands.<ul style="list-style-type: none"><li><input type="checkbox"/> Refer as FCC KDB 789033, H)6) Method AD (Trace Averaging).</li><li><input type="checkbox"/> Refer as FCC KDB 789033, H)6) Method VB (Reduced VBW).</li><li><input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). <math>VBW \geq 1/T</math>, where T is pulse time.</li><li><input type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.</li><li><input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause H)5) measurement procedure peak limit.</li><li><input type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.</li></ul></li></ul>
<input checked="" type="checkbox"/> For the transmitter bandedge emissions shall be measured using following options below: <ul style="list-style-type: none"><li><input type="checkbox"/> Refer as FCC KDB 789033, clause H)3)d) for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).</li><li><input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.10 for band-edge testing.</li><li><input type="checkbox"/> Refer as ANSI C63.10, clause 6.10.6.2 for marker-delta method for band-edge measurements.</li></ul>
<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.

### 3.5.9 Test Setup

#### Transmitter Radiated Bandedge Emissions



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



### 3.5.10 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	5714.680	67.05	68.2	V
11a	1	5745	3	5724.550	73.93	78.2	V
11a	1	5825	3	5862.880	67.15	68.2	V
11a	1	5825	3	5850.280	70.01	78.2	V
HT20	3	5745	3	5714.680	66.89	68.2	V
HT20	3	5745	3	5724.760	74.07	78.2	V
HT20	3	5825	3	5864.140	67.11	68.2	V
HT20	3	5825	3	5853.220	71.17	78.2	V
HT40	3	5755	3	5707.980	66.17	68.2	V
HT40	3	5755	3	5724.620	75.59	78.2	V
HT40	3	5795	3	5860.300	64.62	68.2	V
HT40	3	5795	3	5855.500	67.12	78.2	V
VHT20	3	5745	3	5714.890	66.65	68.2	V
VHT20	3	5745	3	5724.970	71.83	78.2	V
VHT20	3	5825	3	5864.140	66.58	68.2	V
VHT20	3	5825	3	5852.800	70.45	78.2	V
VHT40	3	5755	3	5705.640	66.07	68.2	V
VHT40	3	5755	3	5724.880	72.17	78.2	V
VHT40	3	5795	3	5866.300	65.47	68.2	V
VHT40	3	5795	3	5851.600	67.65	78.2	V
VHT80	3	5775	3	5714.800	66.91	68.2	V
VHT80	3	5775	3	5725.060	71.99	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]

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.

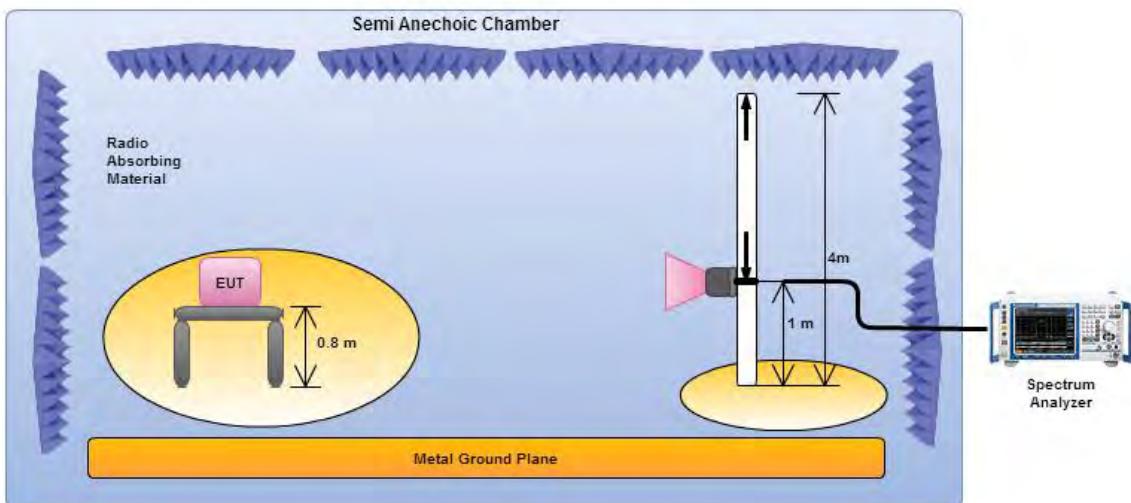


### 3.6.3 Test Procedures(For 5150-5250MHz)

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:								
<table border="1"><tr><td><input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.</td></tr><tr><td><input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.</td></tr><tr><td><input type="checkbox"/> Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).</td></tr><tr><td><input type="checkbox"/> Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).</td></tr><tr><td><input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW <math>\geq</math> 1/T, where T is pulse time.</td></tr><tr><td><input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.</td></tr><tr><td><input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause G)5) measurement procedure peak limit.</td></tr><tr><td><input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.</td></tr></table>	<input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.	<input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.	<input type="checkbox"/> Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).	<input type="checkbox"/> Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).	<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (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, clause G)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"/> Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.								
<input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.								
<input type="checkbox"/> Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).								
<input type="checkbox"/> Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).								
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (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, clause G)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 radiated measurement.								
<table border="1"><tr><td><input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.</td></tr><tr><td><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.</td></tr><tr><td><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.</td></tr></table>	<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"/> 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.								

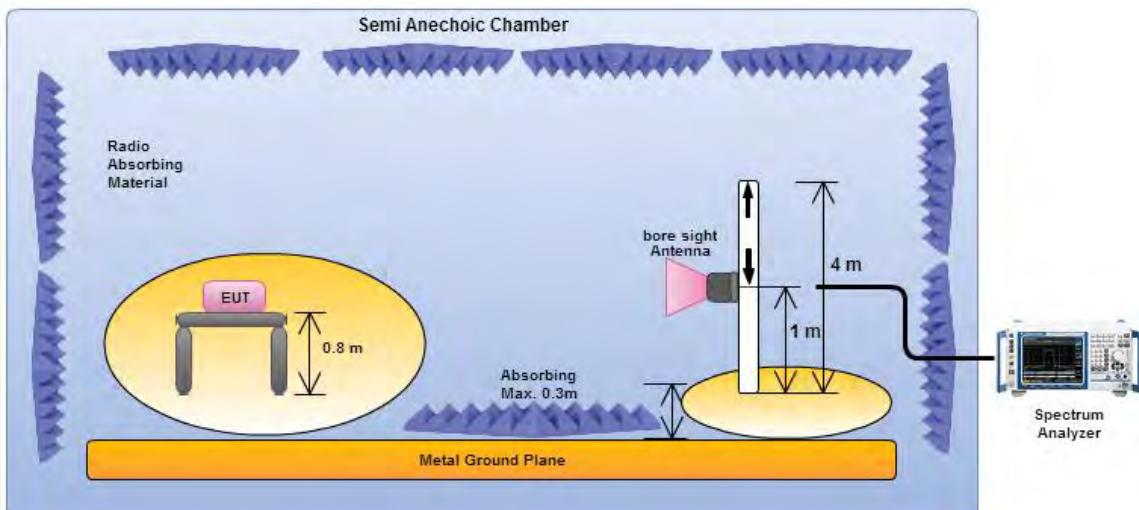
### 3.6.4 Test Setup

#### 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



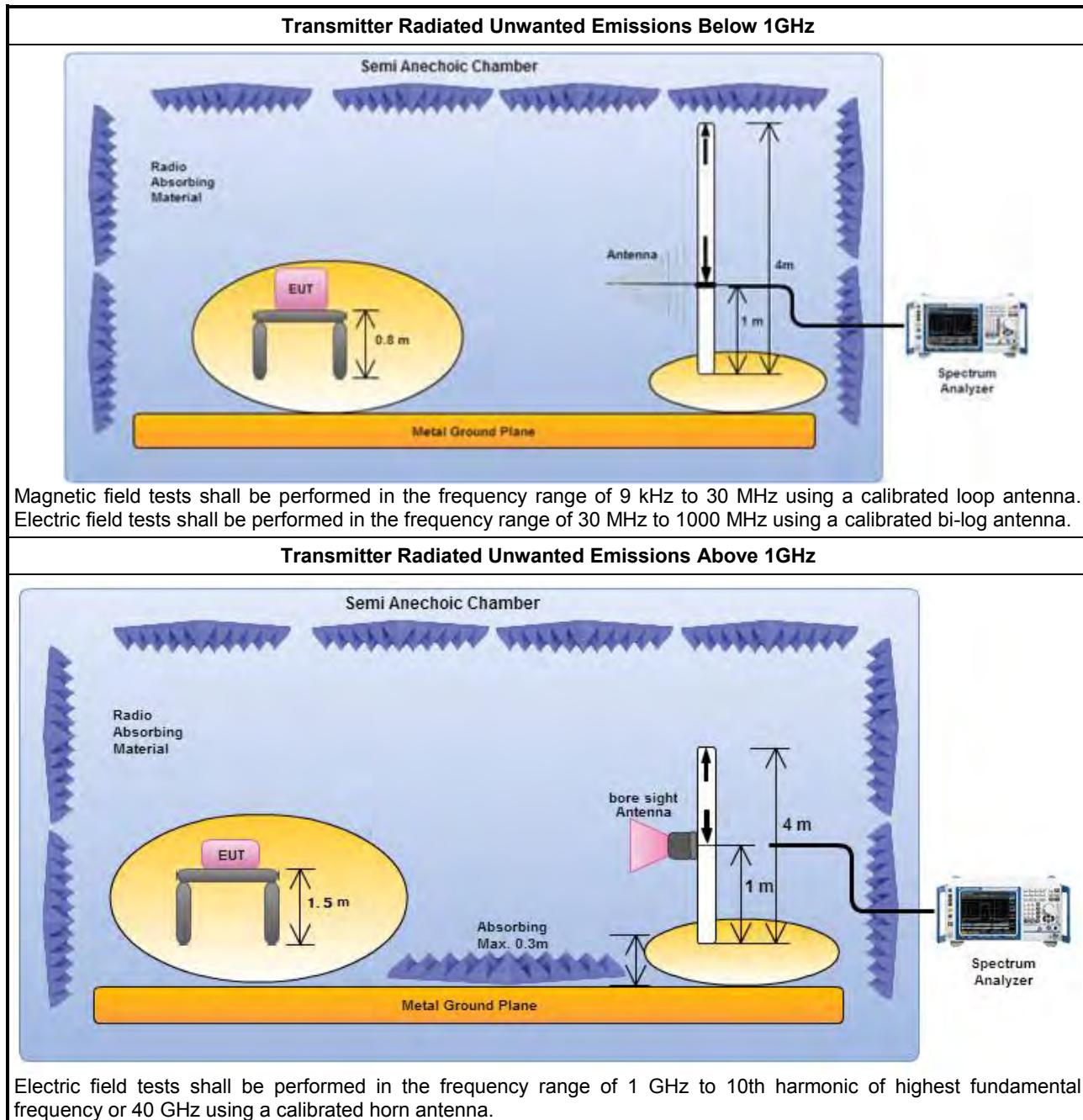
Electric field tests shall be performed in the frequency range of 1 GHz to 10th harmonic of highest fundamental frequency or 40 GHz using a calibrated horn antenna.



### 3.6.5 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 FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/>	Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.
	<input type="checkbox"/> Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).
	<input type="checkbox"/> Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).
	<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (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, 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.

### 3.6.6 Test Setup



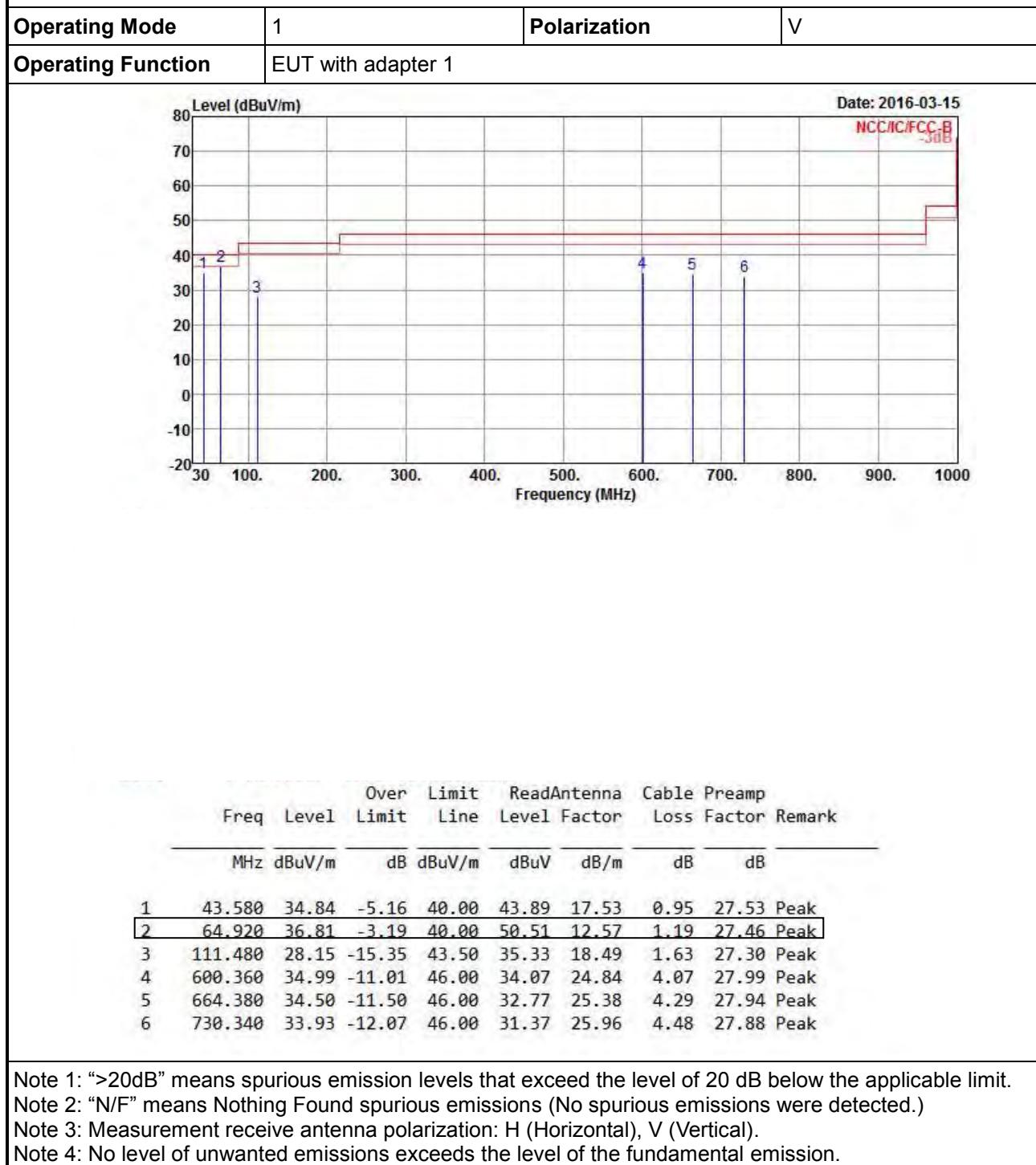
### 3.6.7 Transmitter Radiated Unwanted Emissions-with Antenna (Below 30MHz)

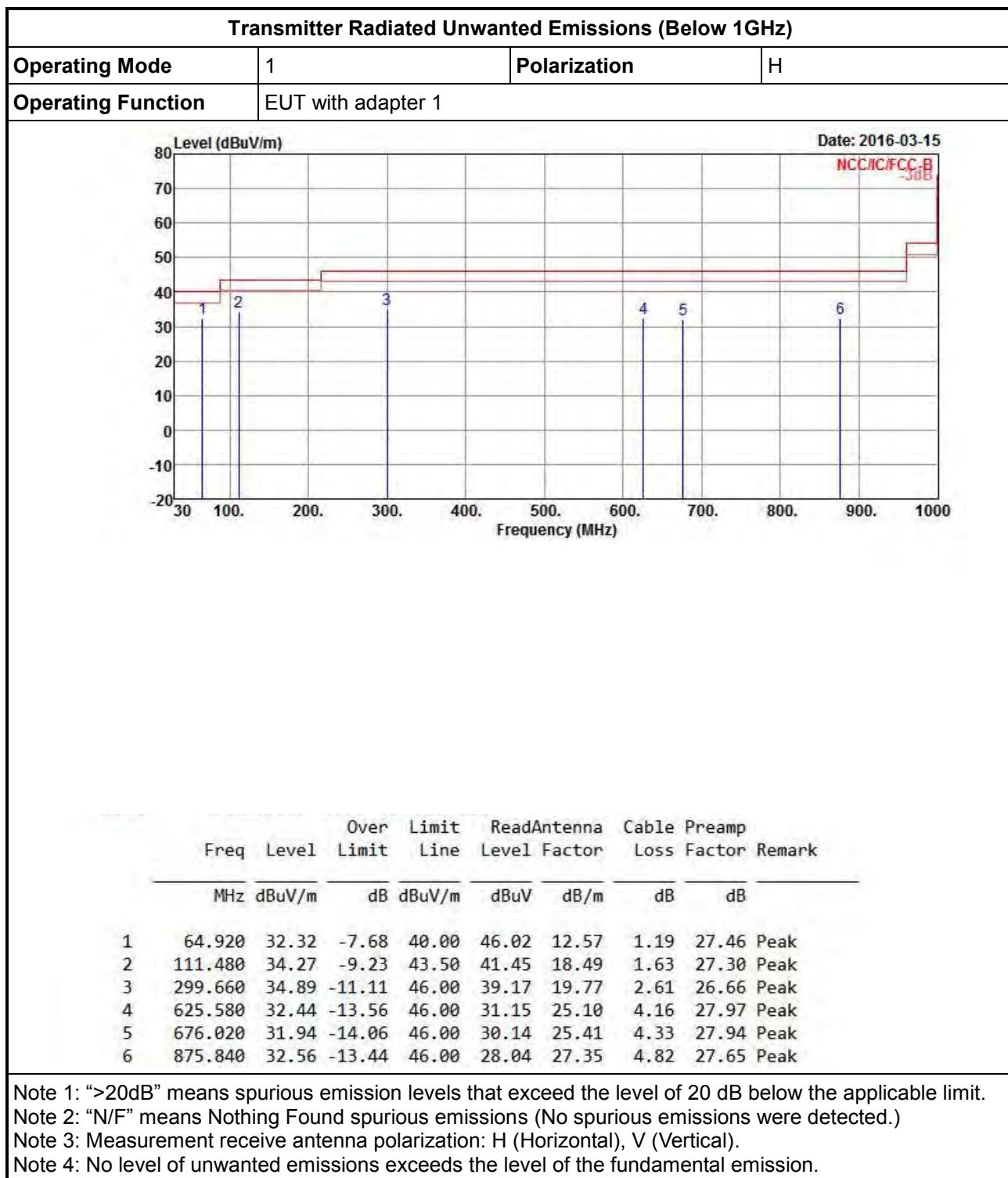
All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.



## 3.6.8 Transmitter Radiated Unwanted Emissions (Below 1GHz)

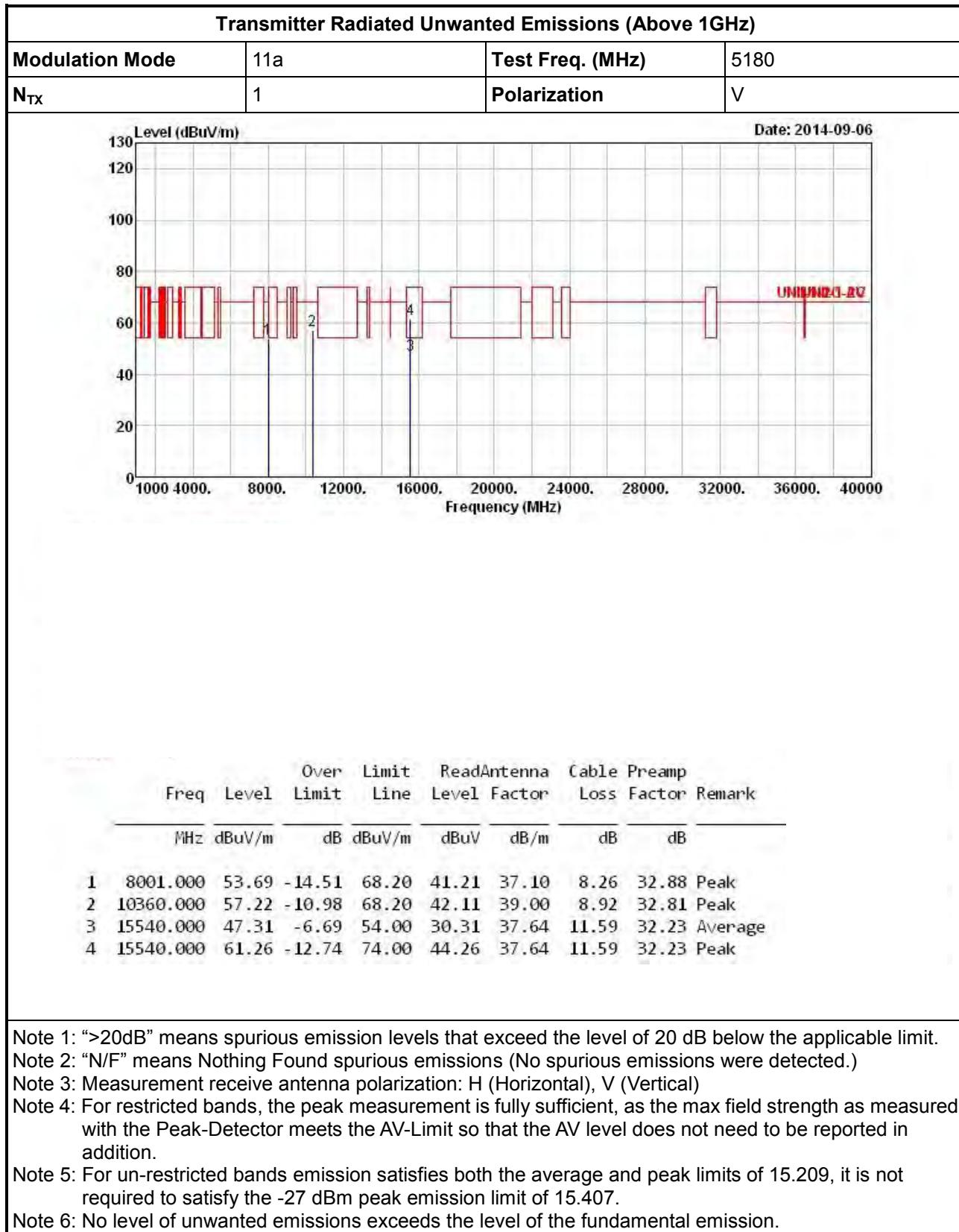
## Transmitter Radiated Unwanted Emissions (Below 1GHz)

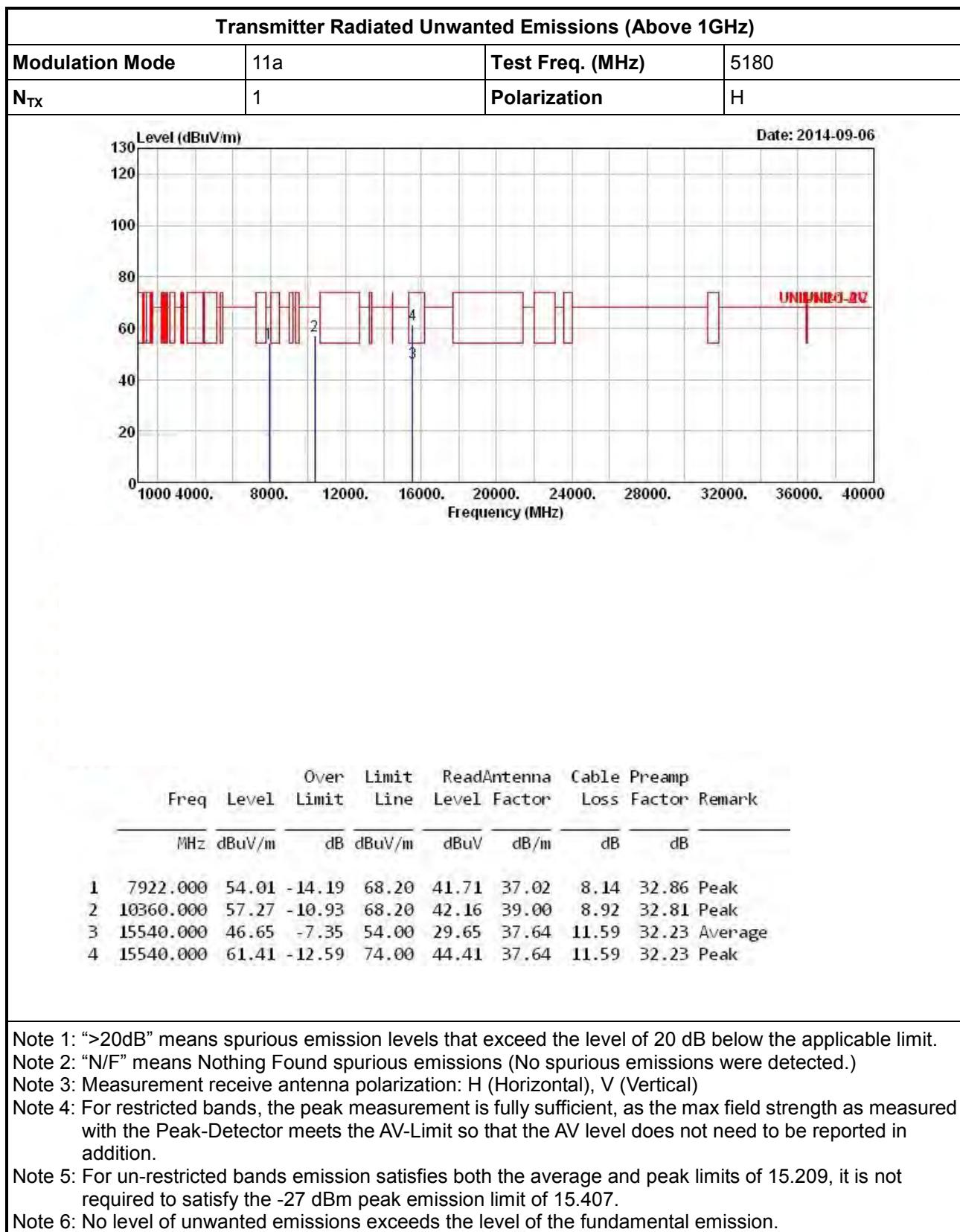


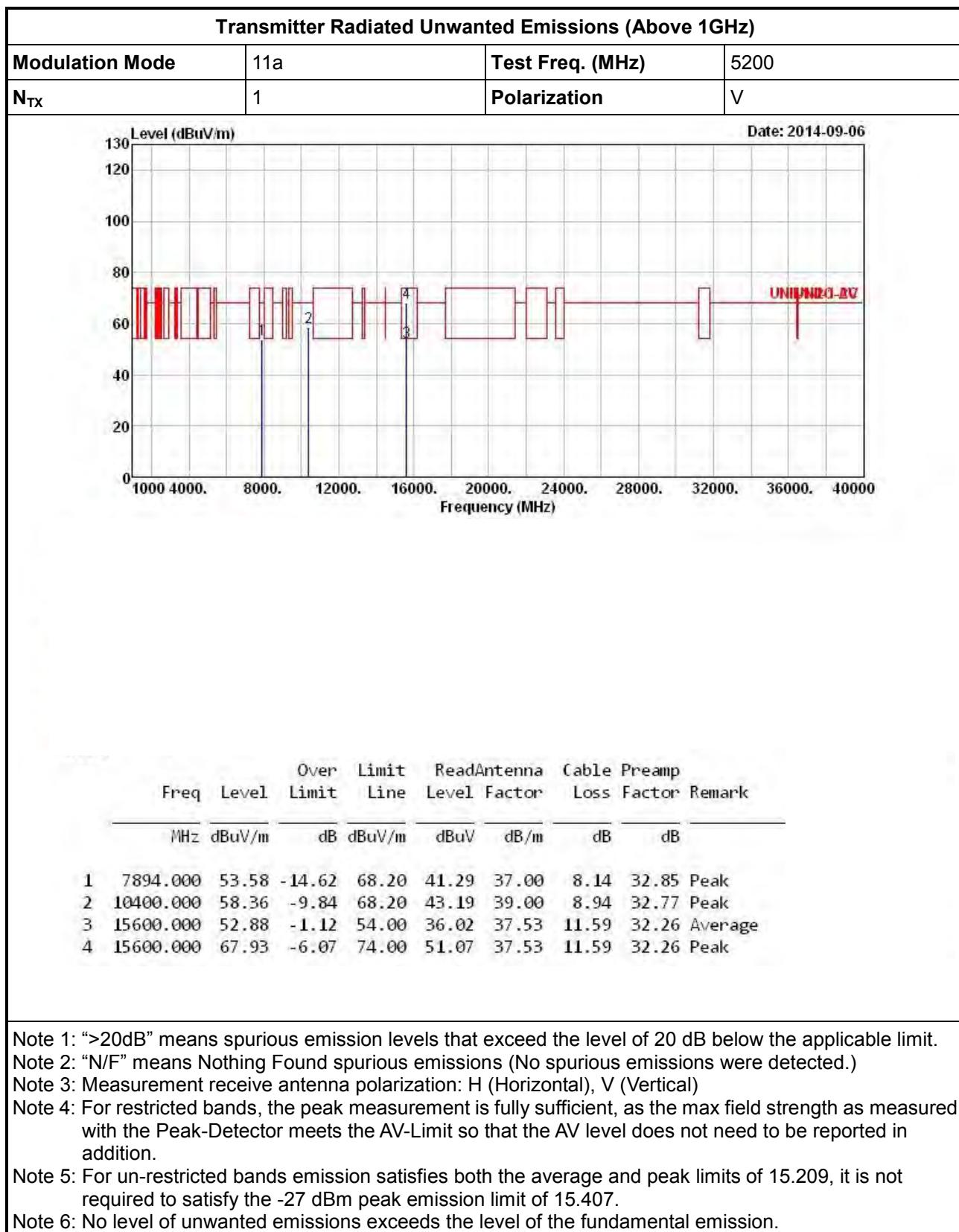


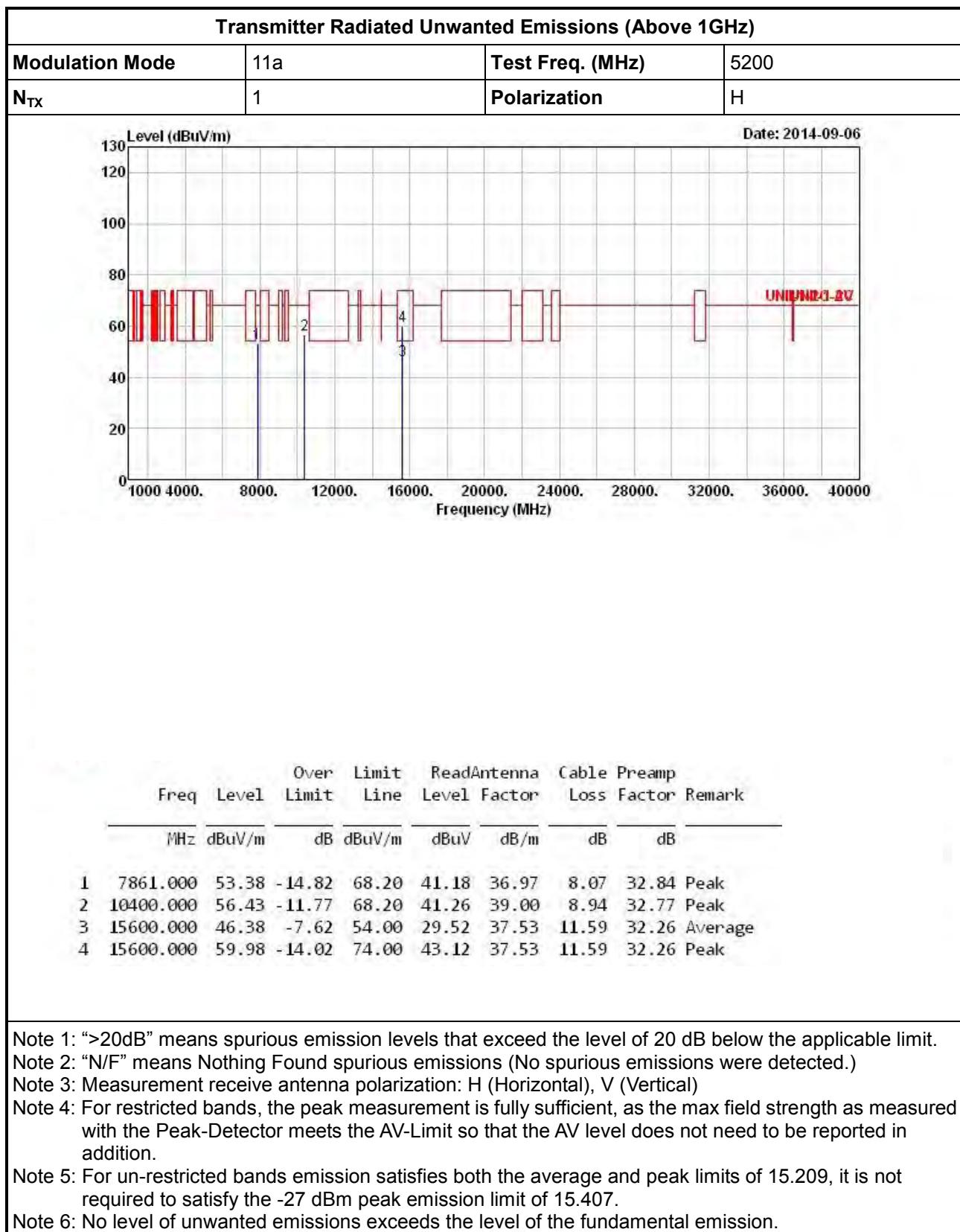


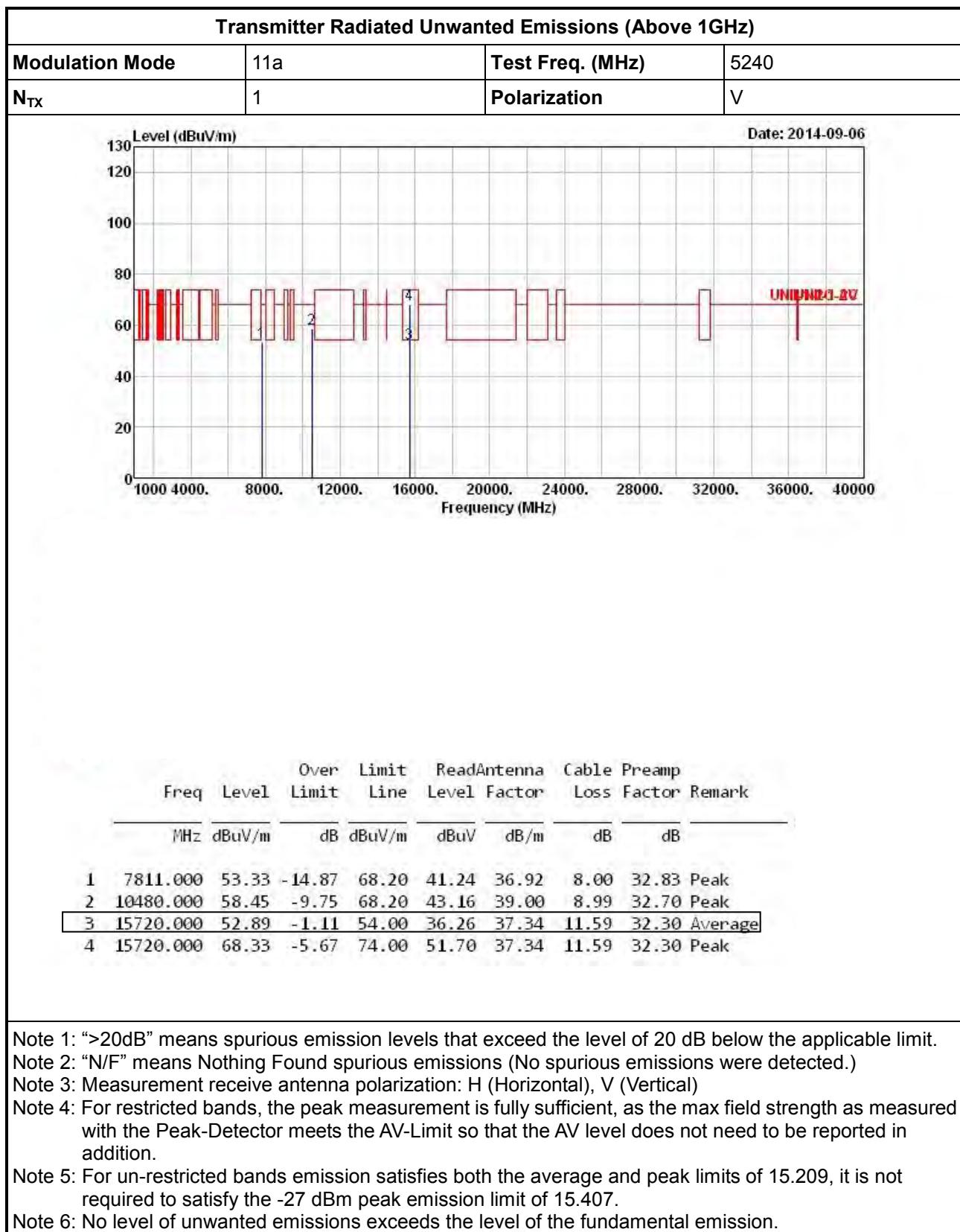
## 3.6.9 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5150-5250MHz

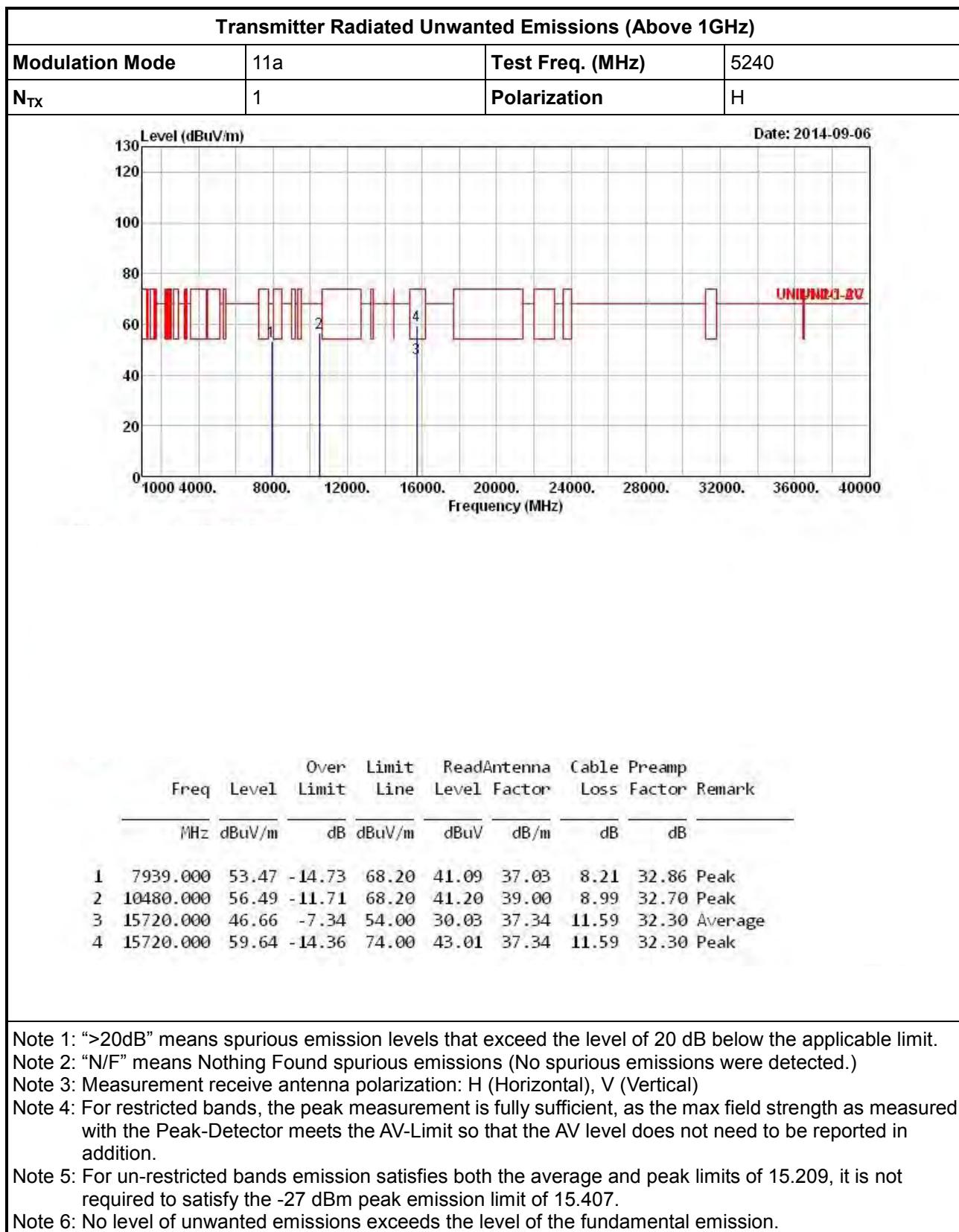


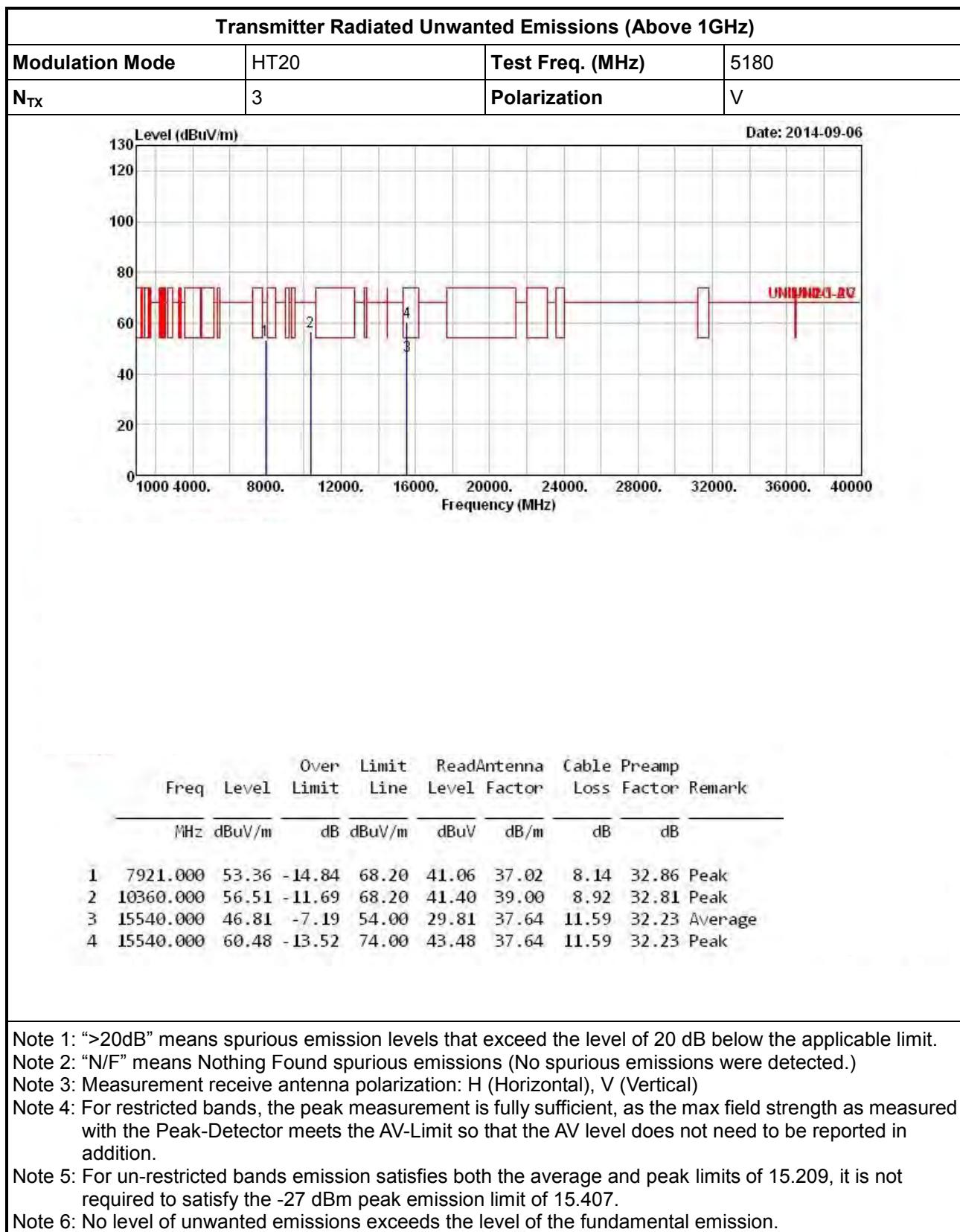


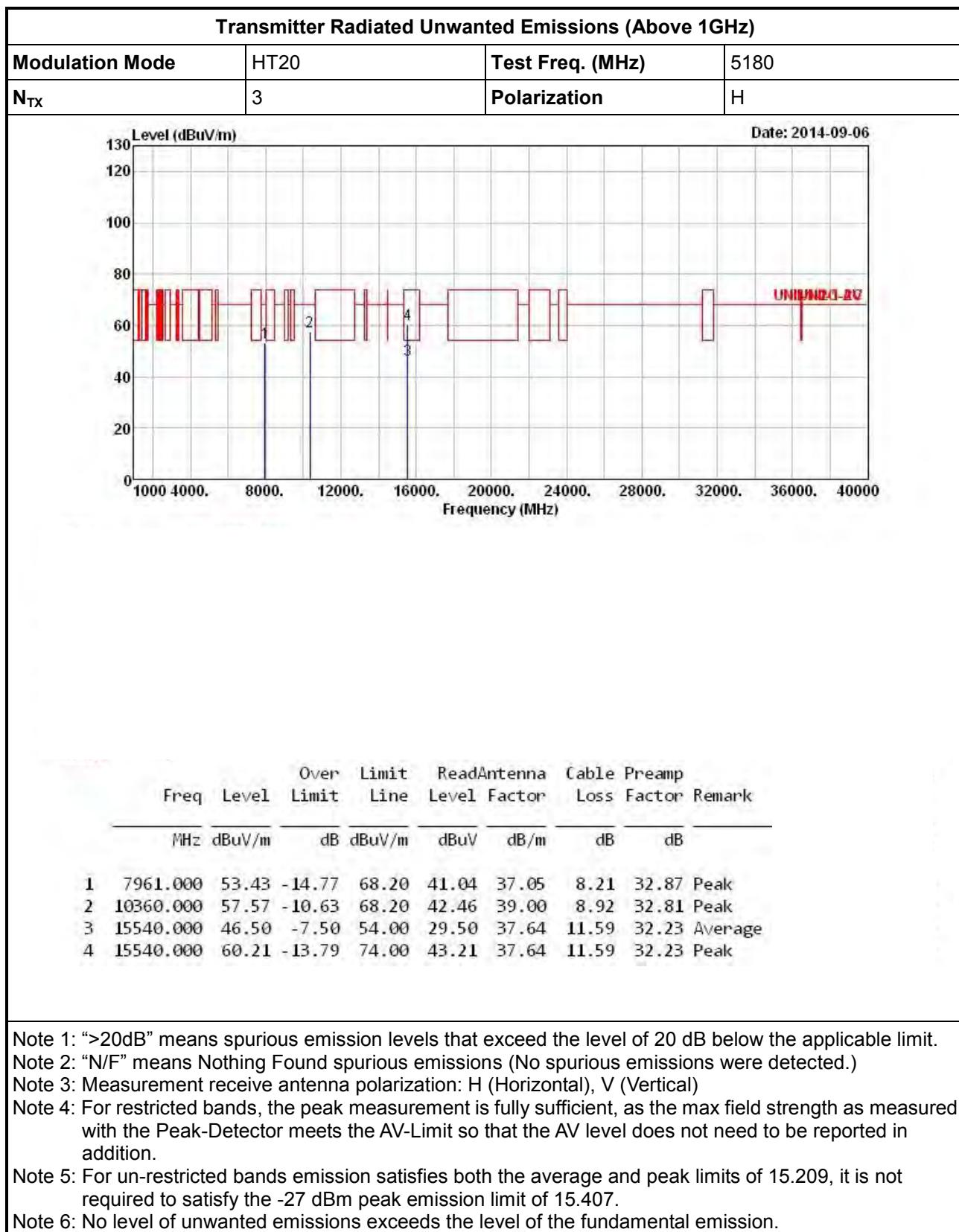


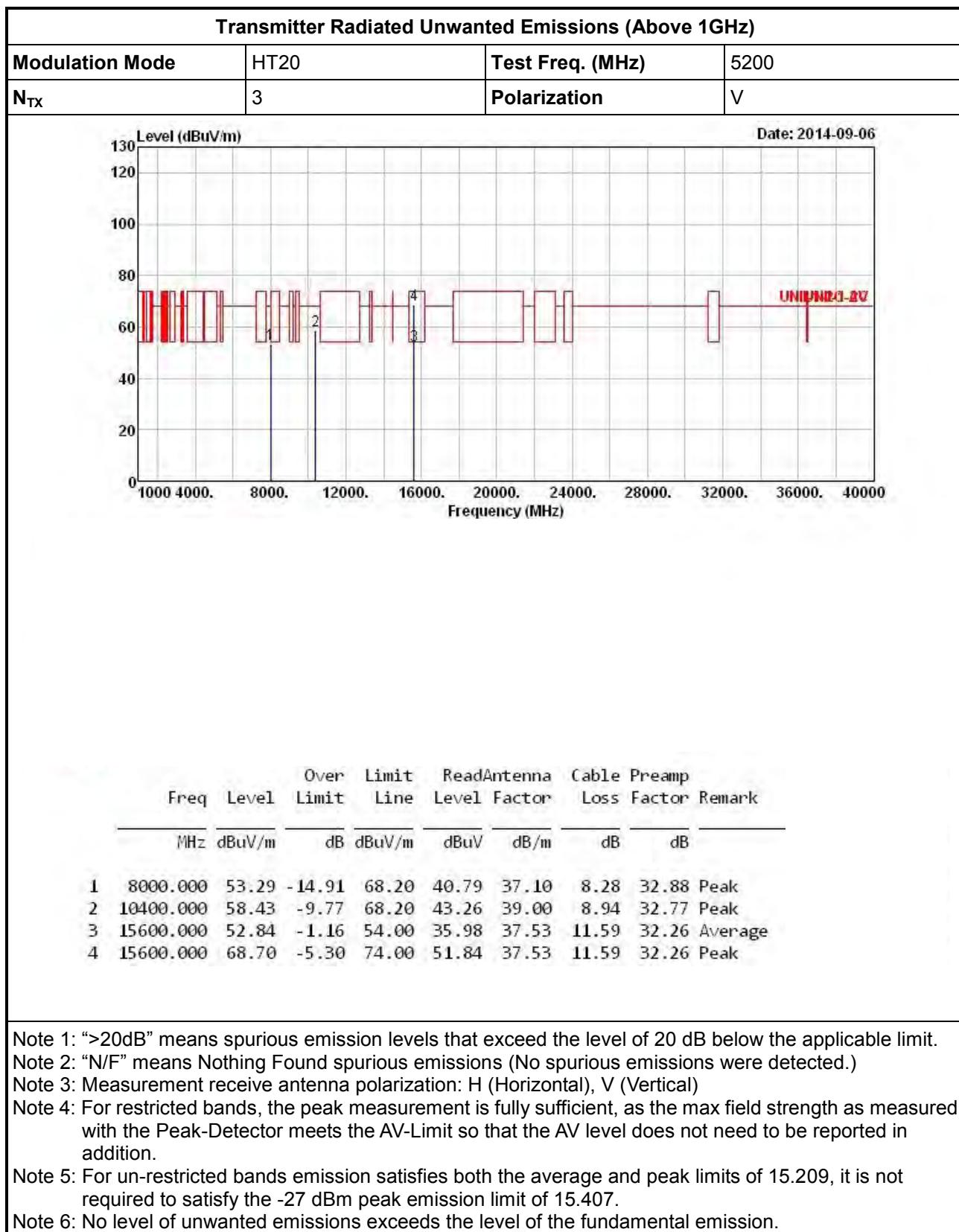


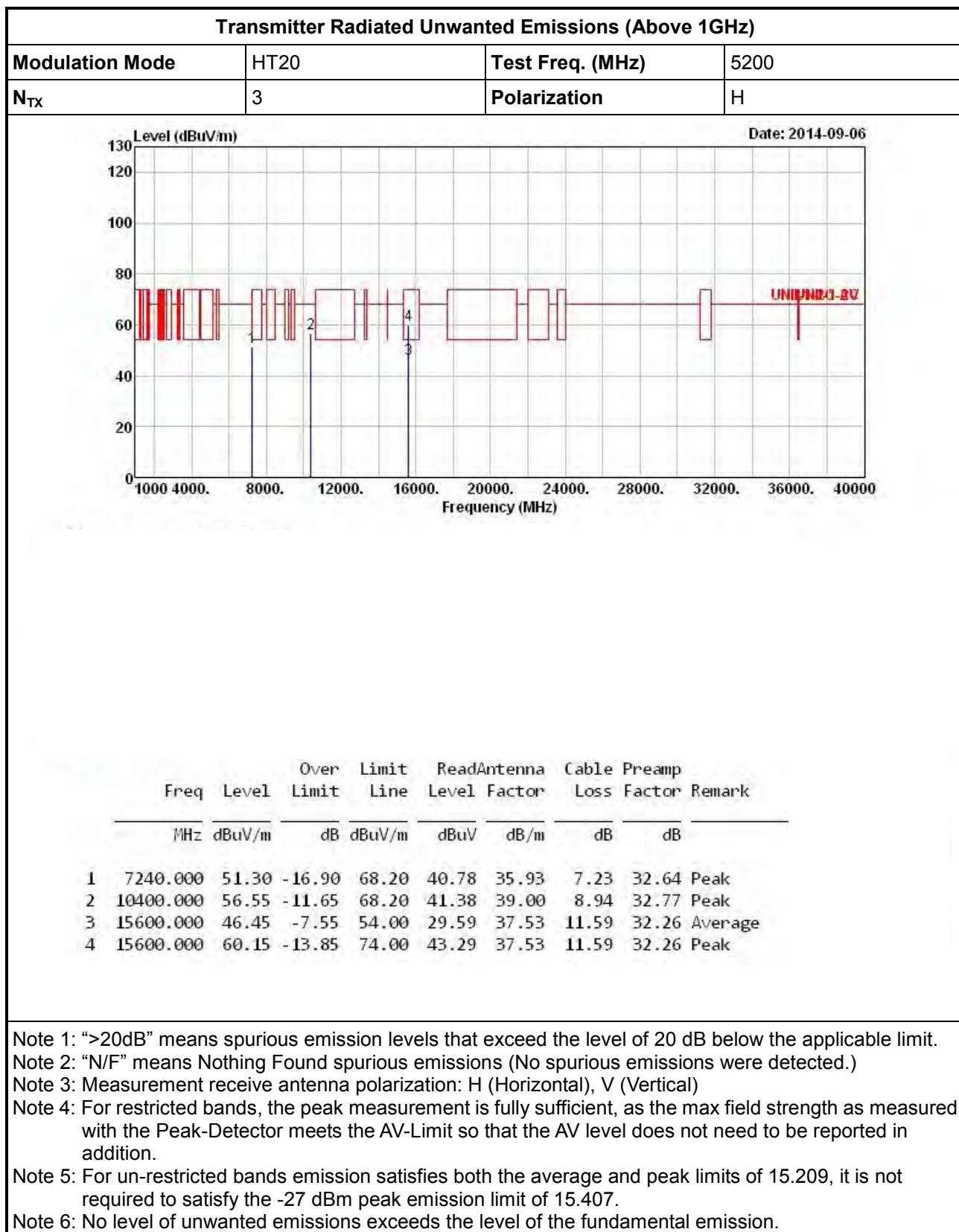


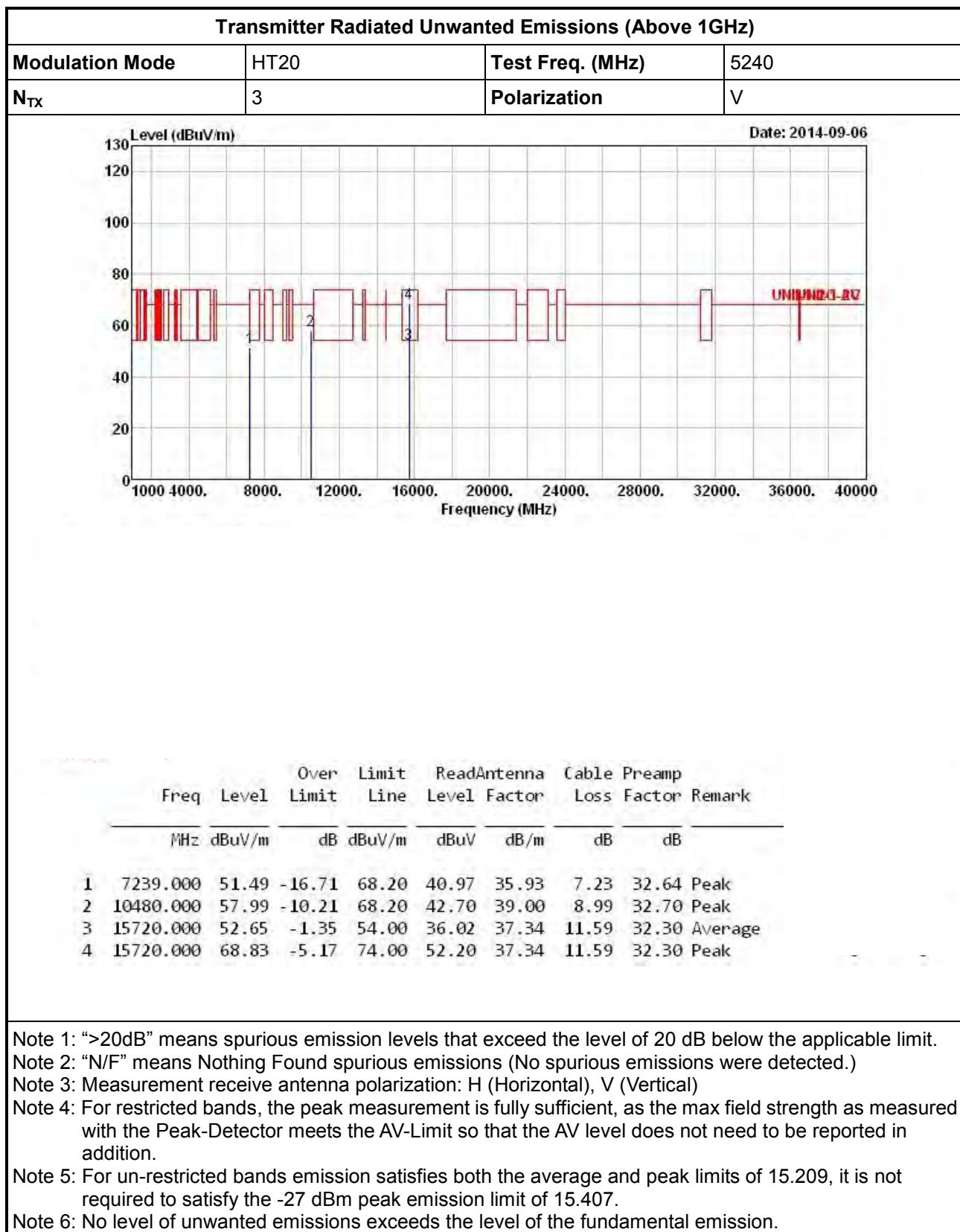


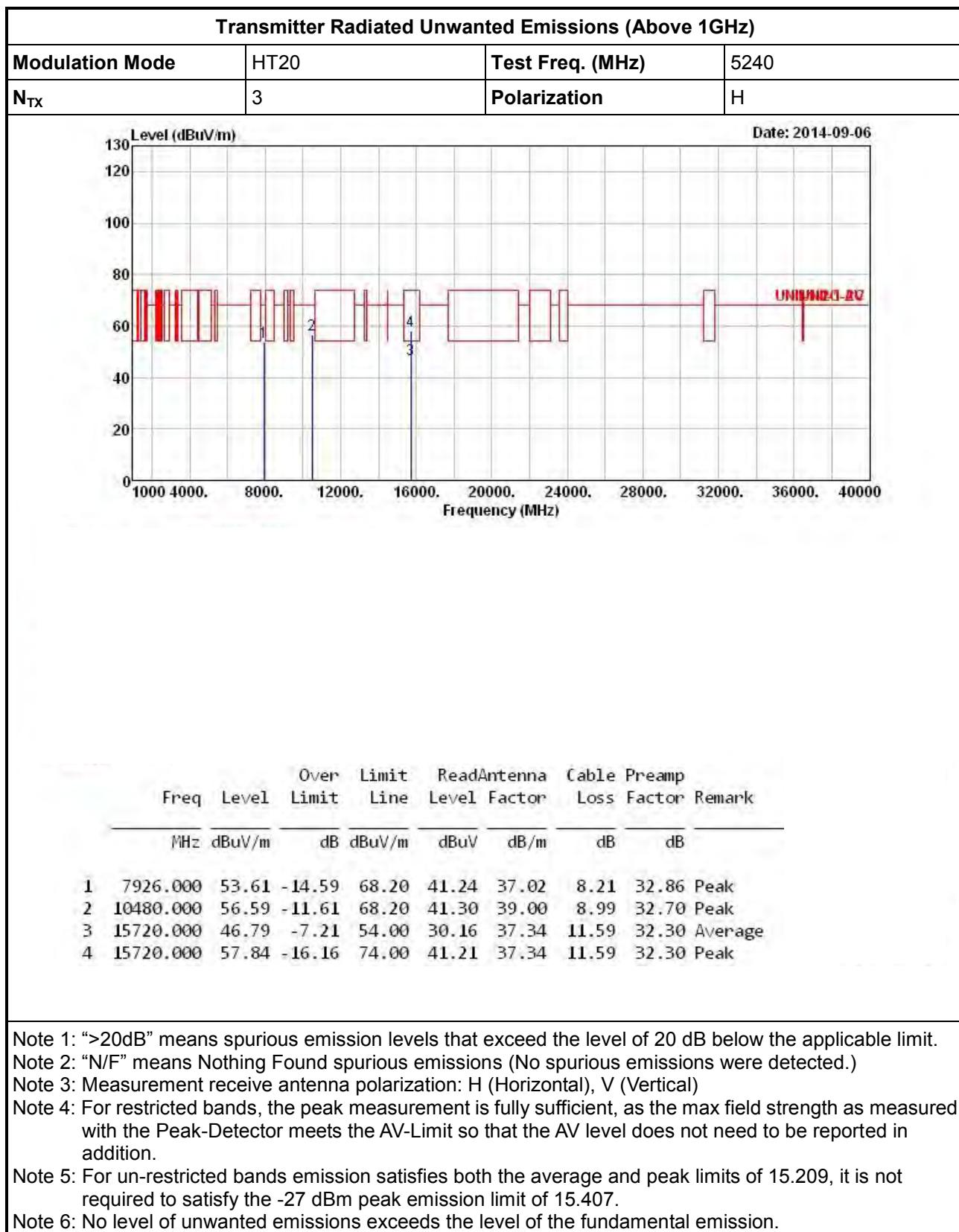


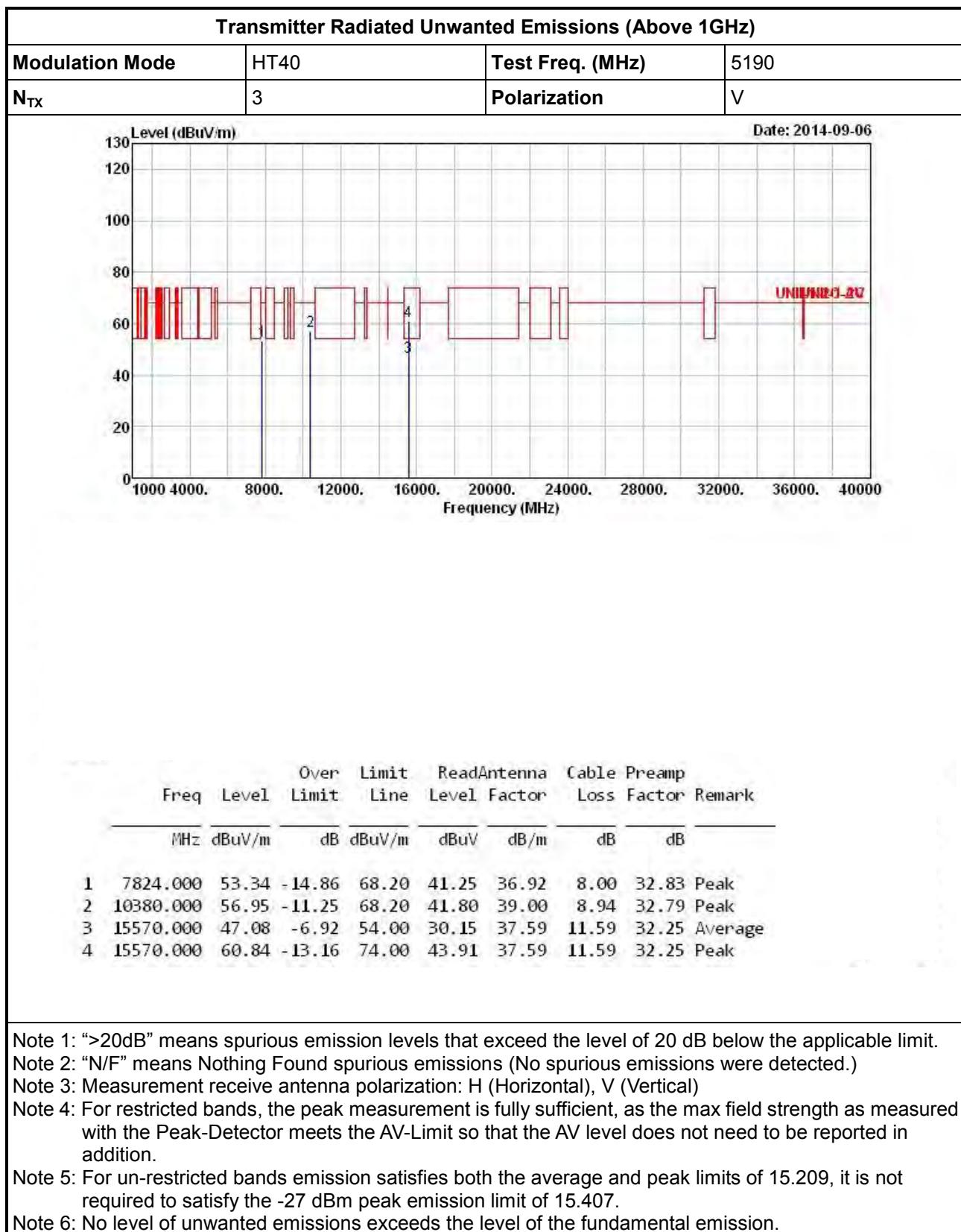


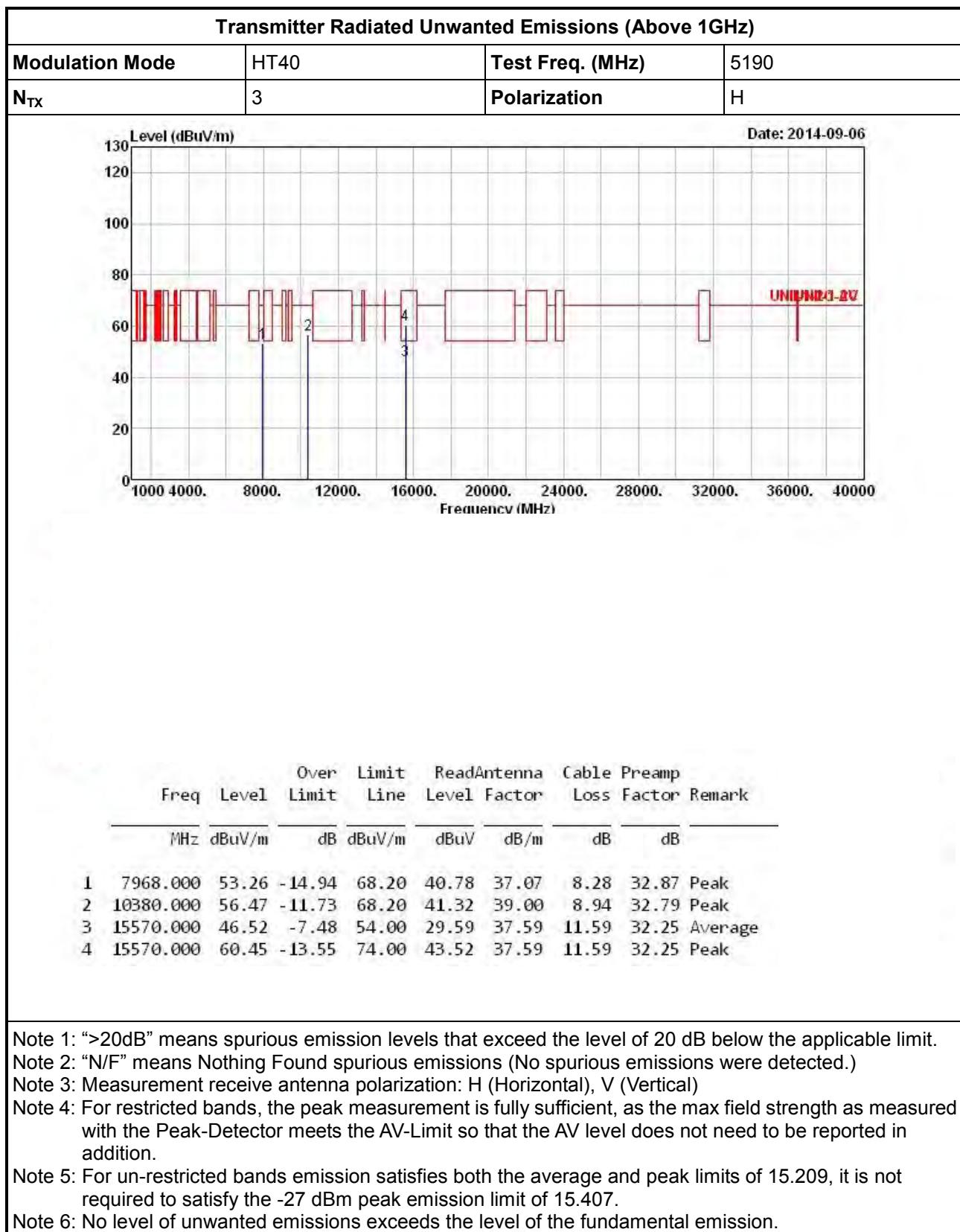


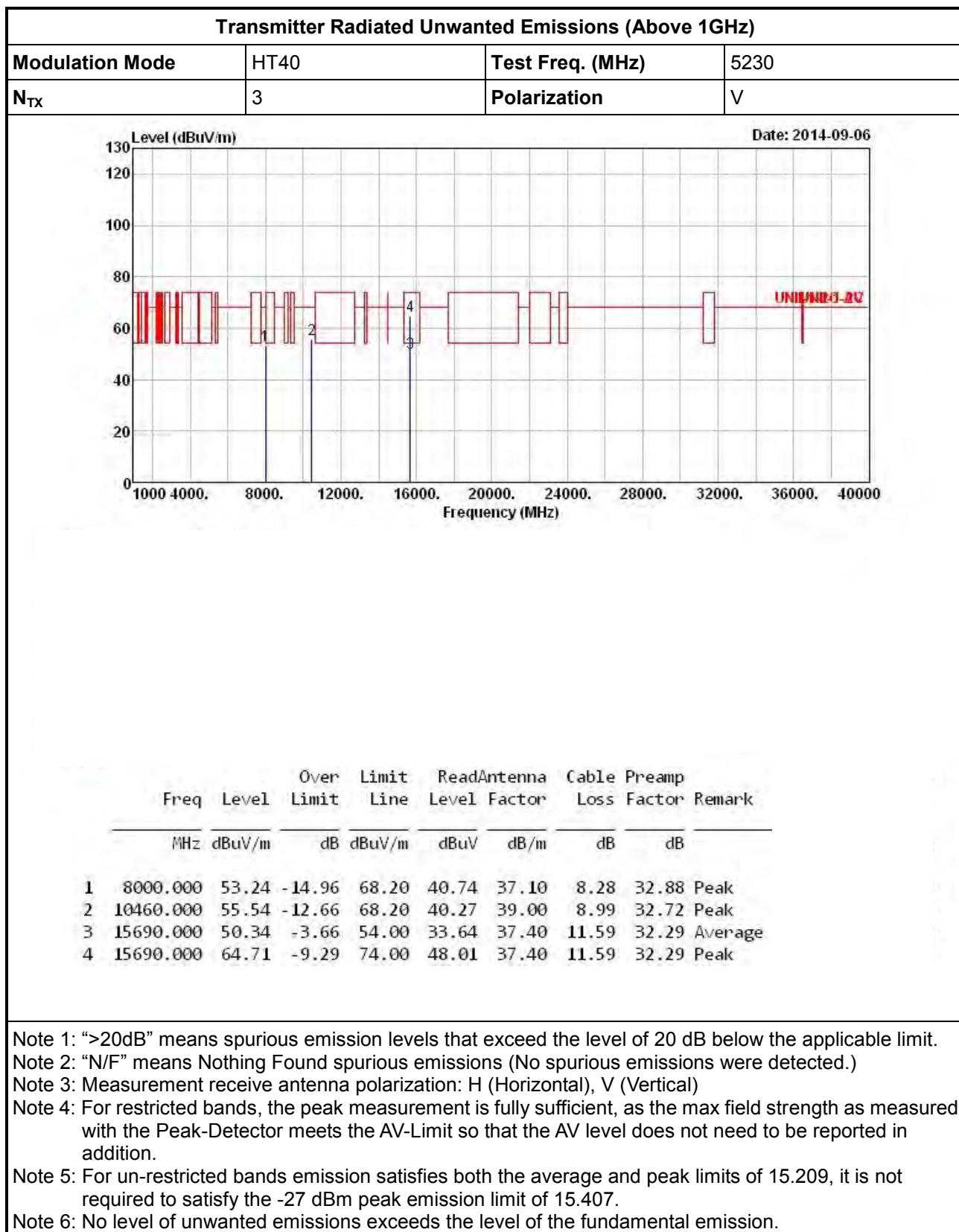


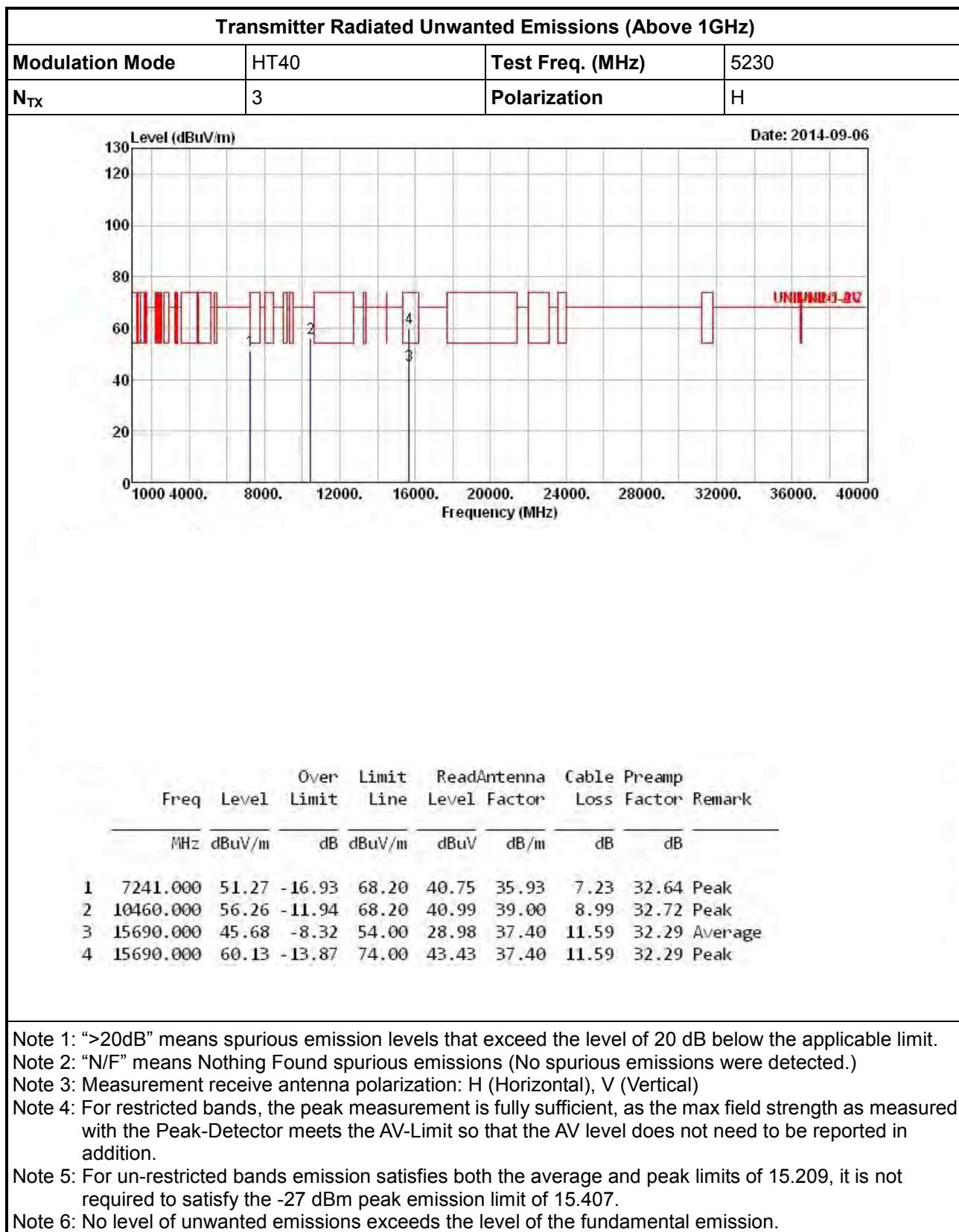


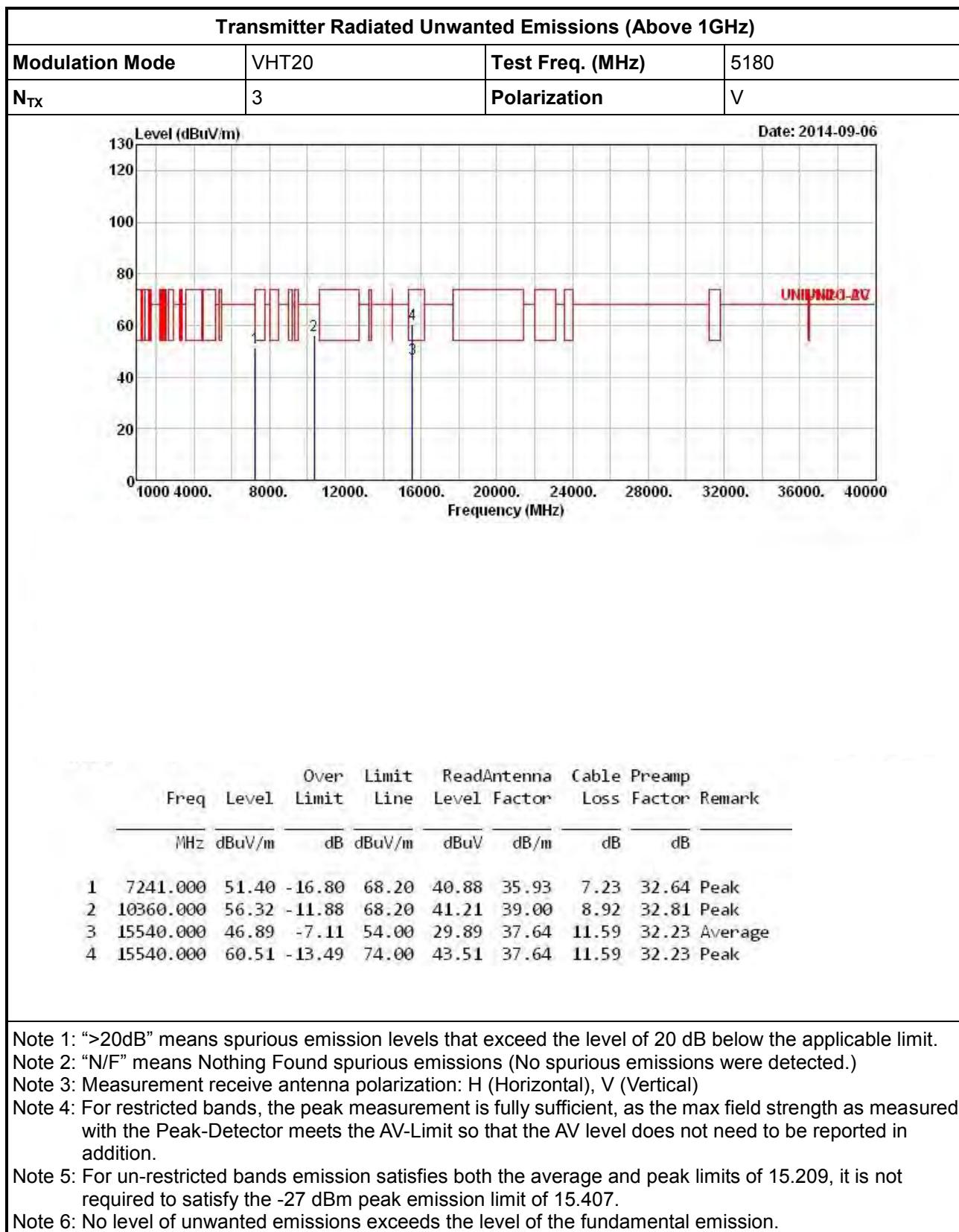


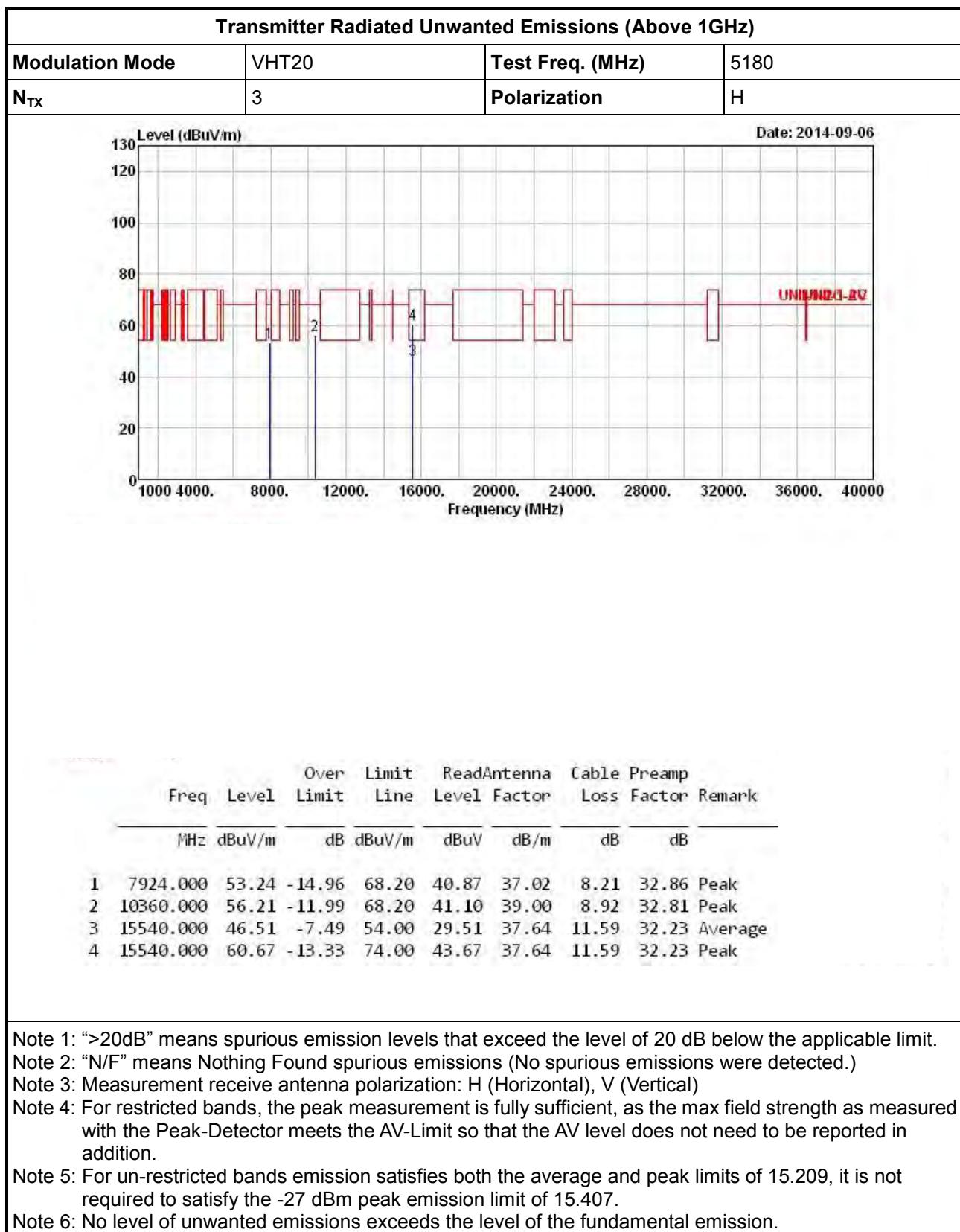


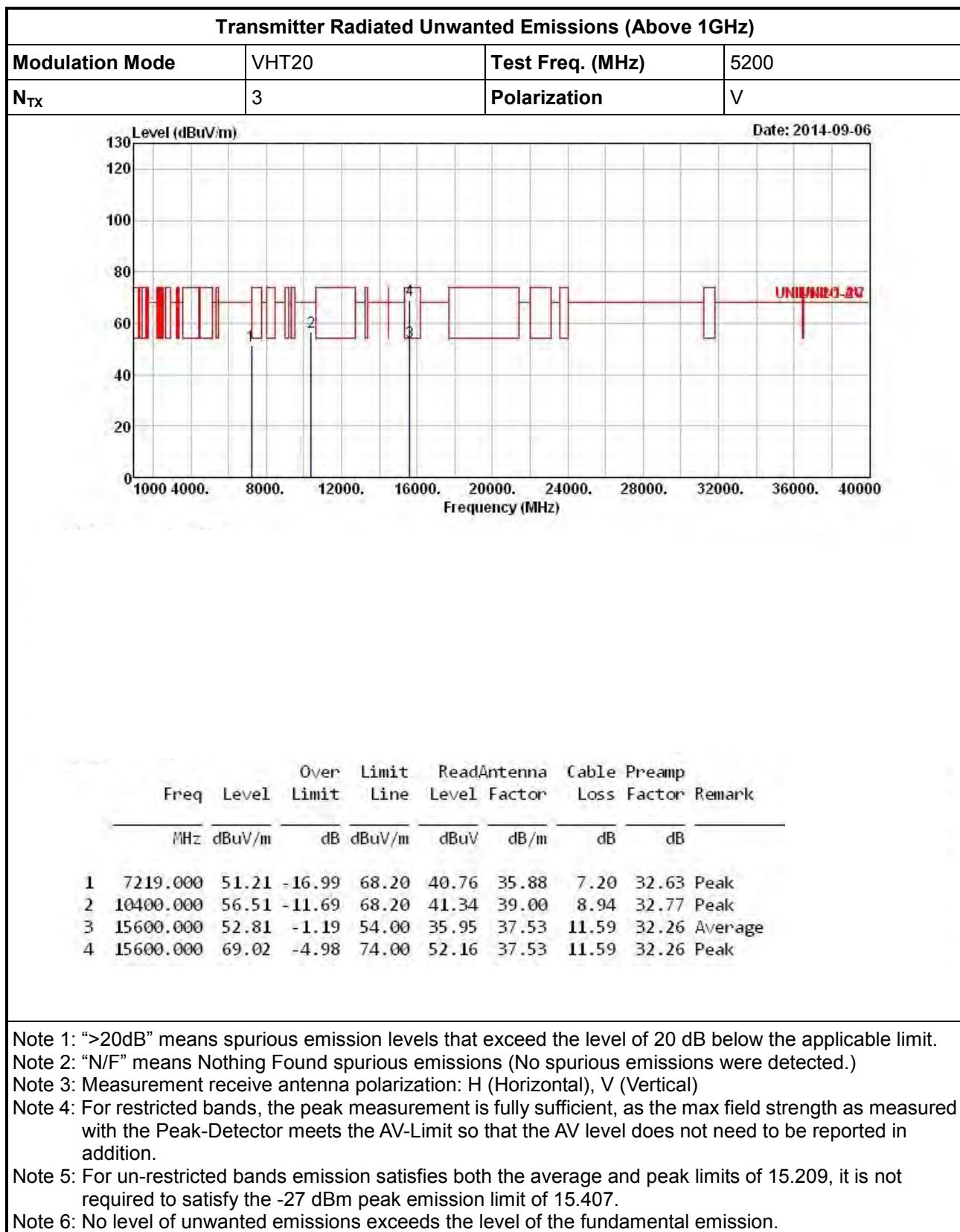


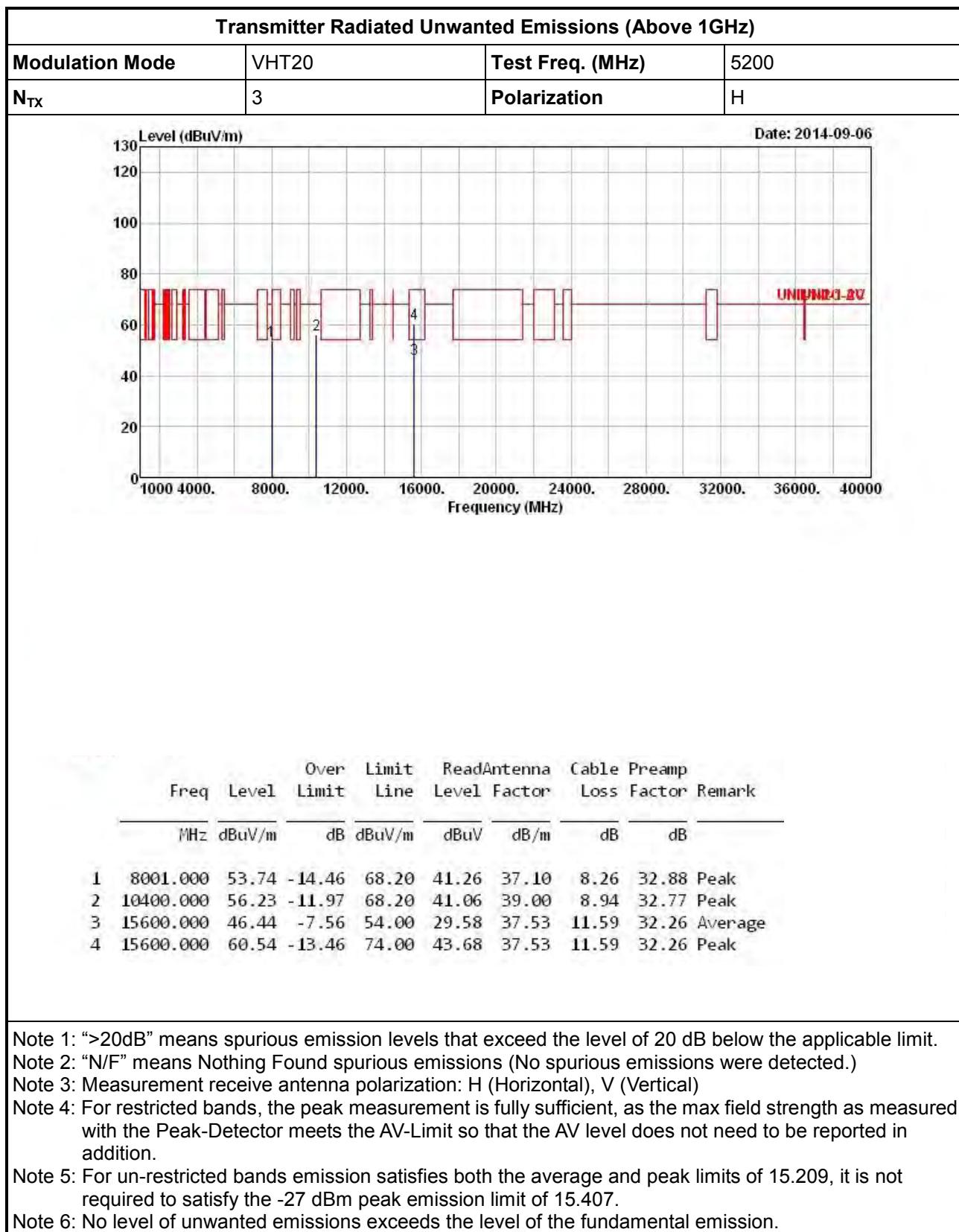


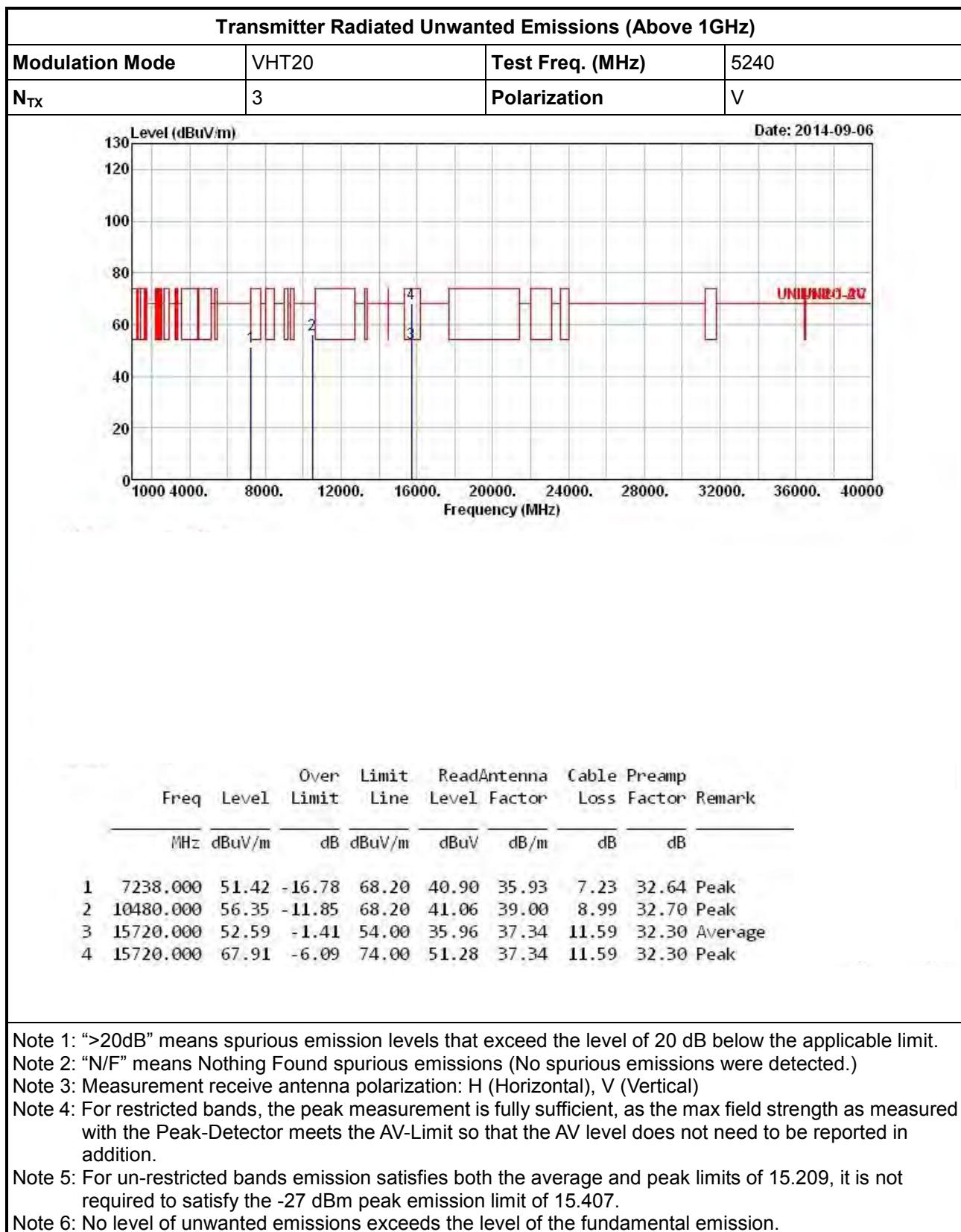


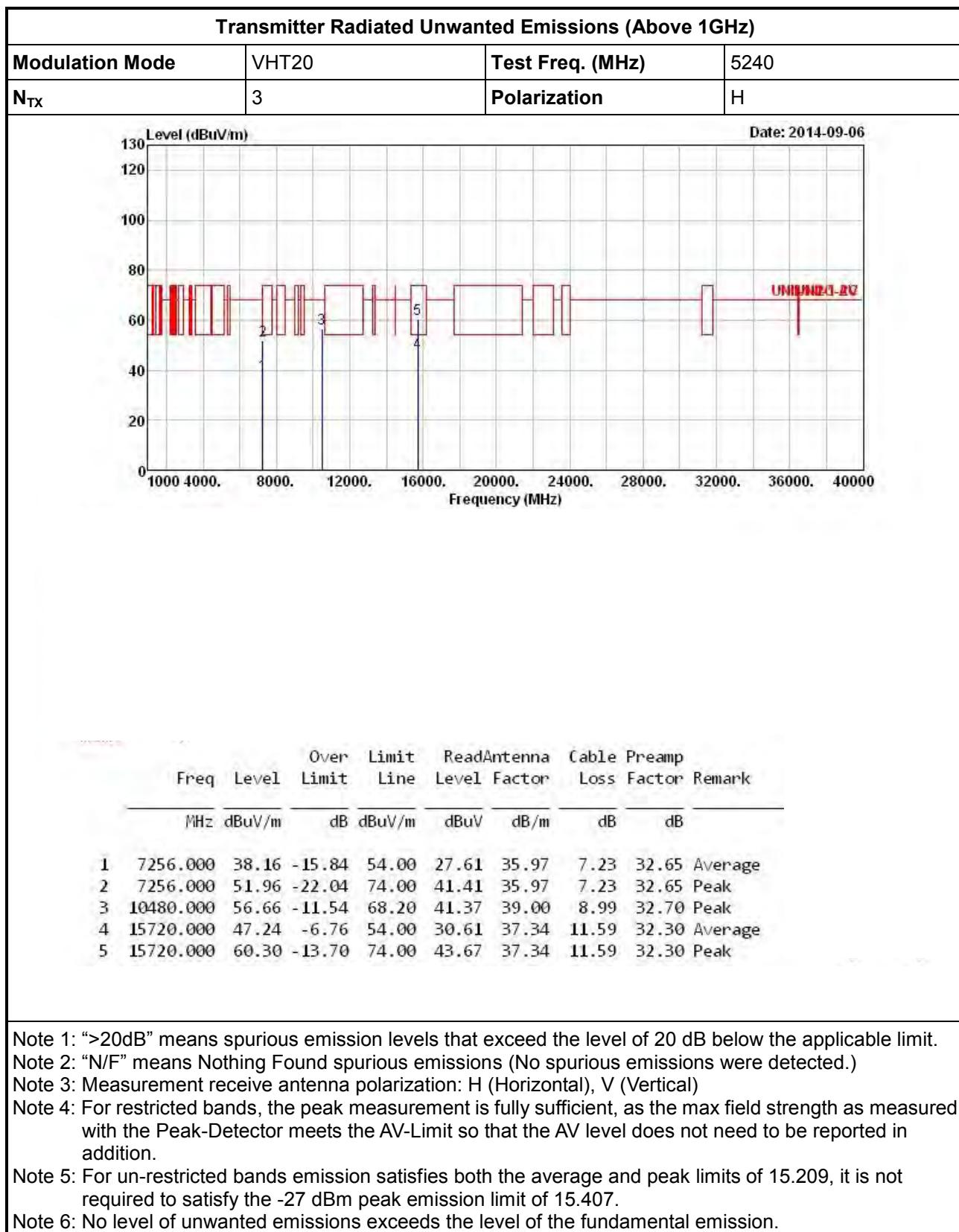












Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

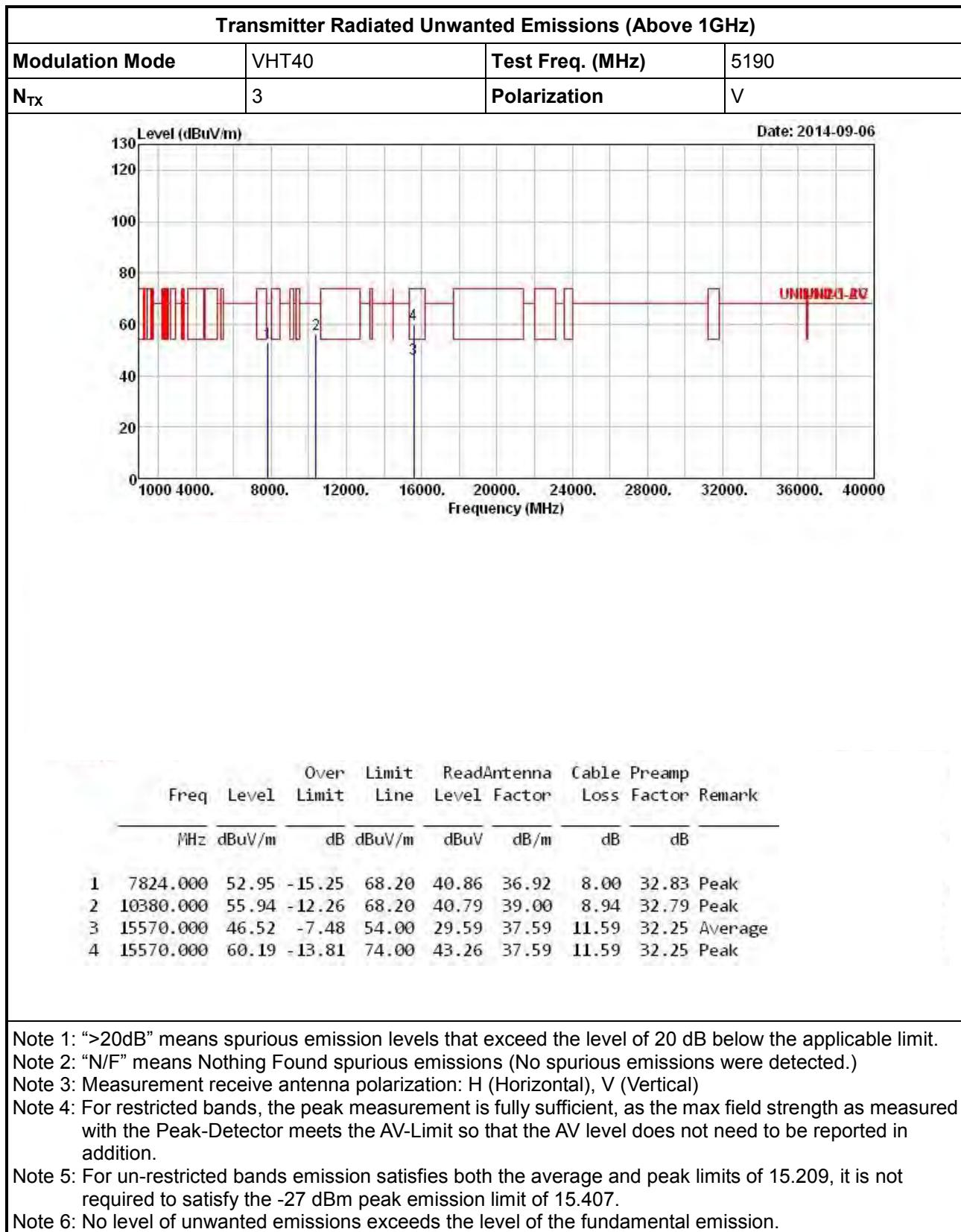
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.





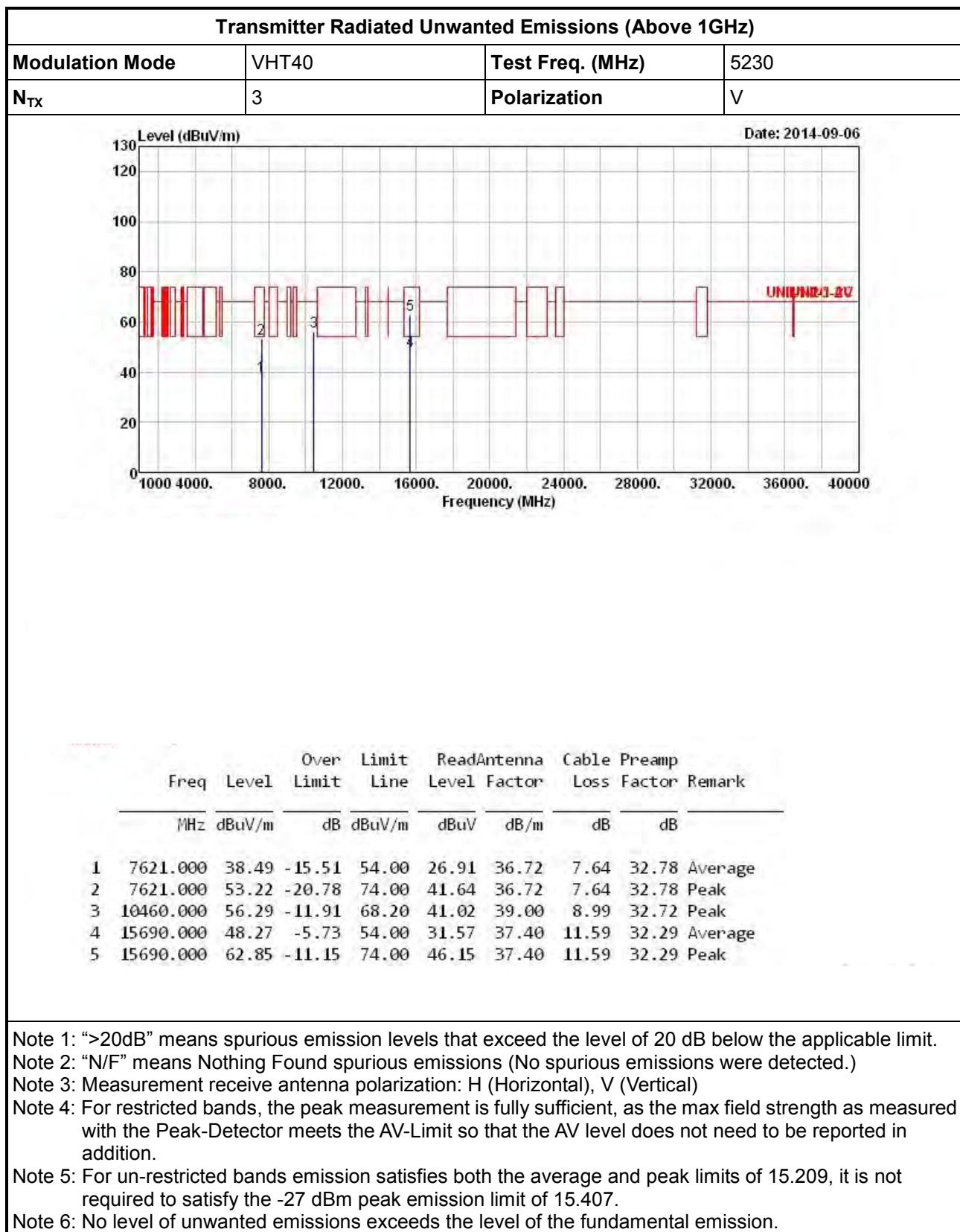
**Transmitter Radiated Unwanted Emissions (Above 1GHz)**

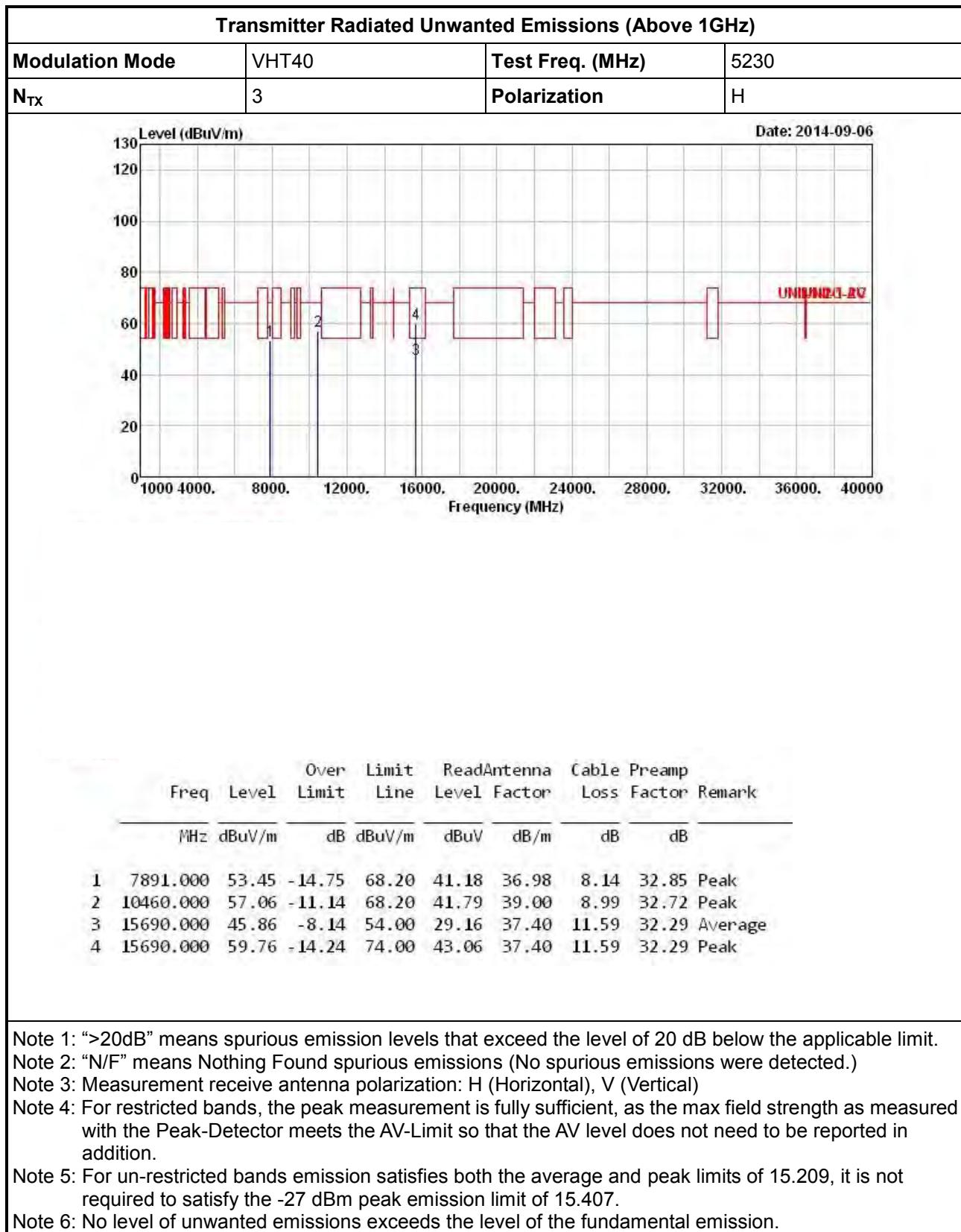
Modulation Mode	VHT40	Test Freq. (MHz)	5190
N <sub>TX</sub>	3	Polarization	H

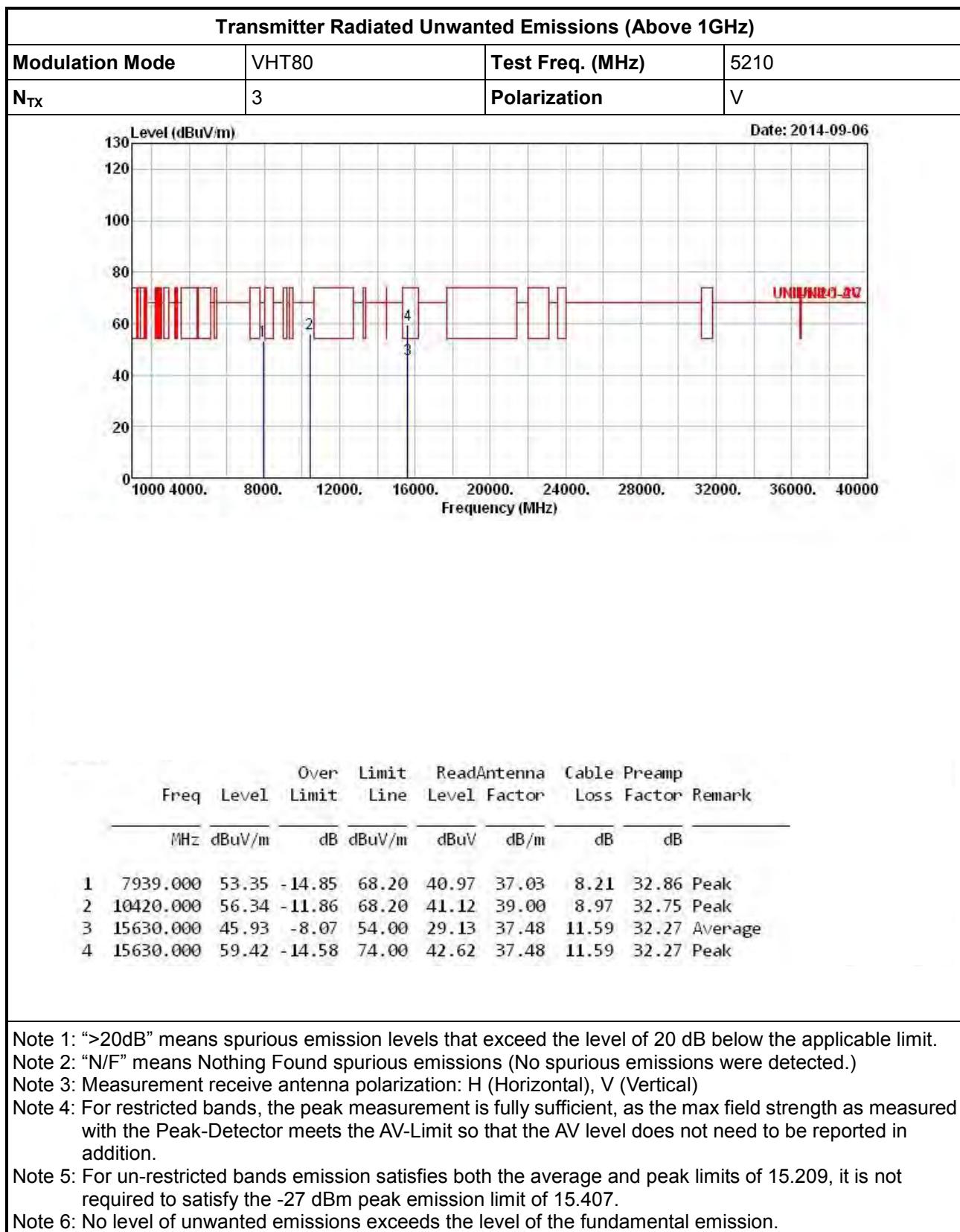
Level (dBuV/m)      Date: 2014-09-06

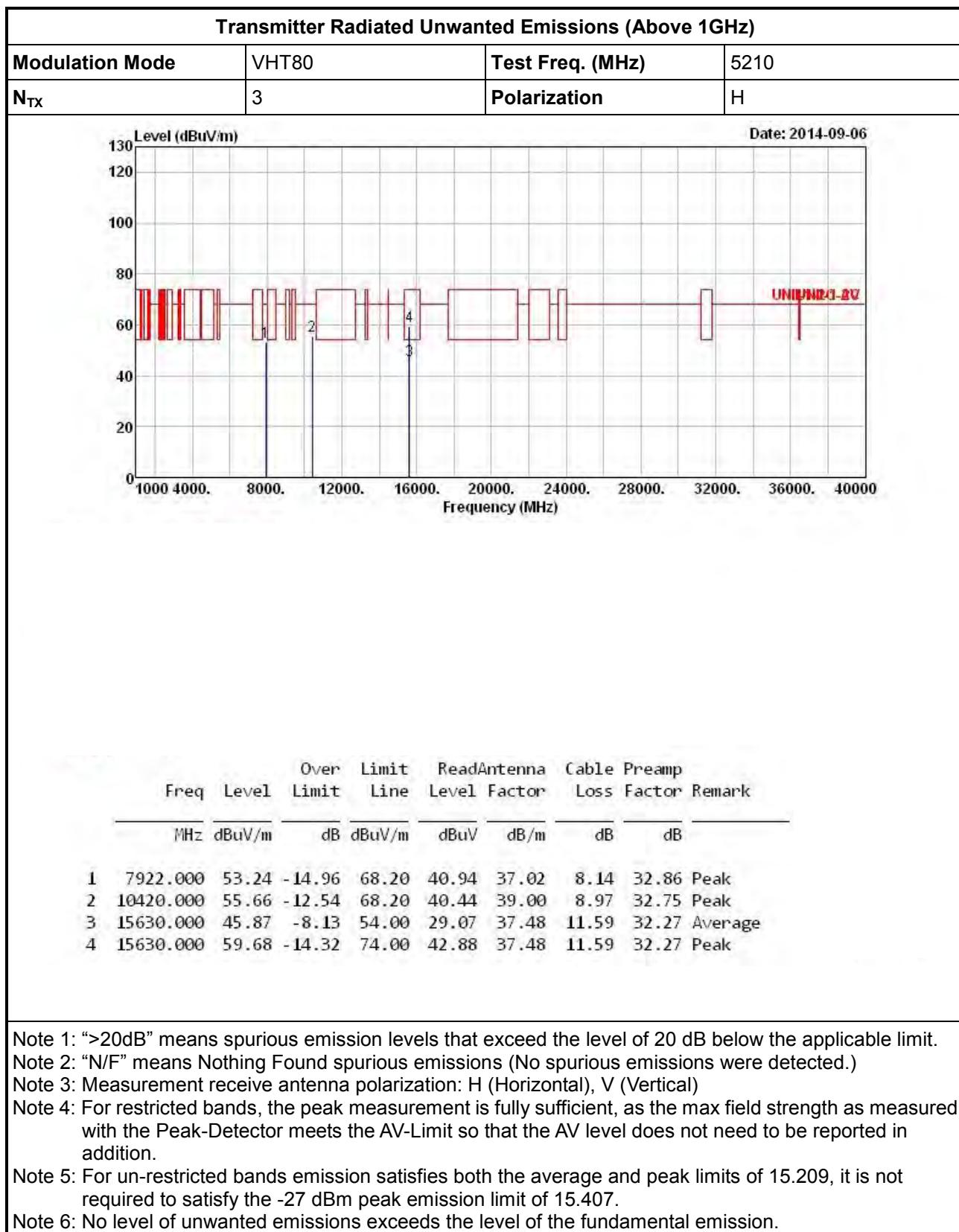
Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark
		Limit	Line	Level	Factor	Loss	Factor	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	8002.000	53.58	-14.62	68.20	41.10	37.10	8.26	32.88 Peak
2	10380.000	56.06	-12.14	68.20	40.91	39.00	8.94	32.79 Peak
3	15570.000	46.44	-7.56	54.00	29.51	37.59	11.59	32.25 Average
4	15570.000	60.24	-13.76	74.00	43.31	37.59	11.59	32.25 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 <sub>TX</sub>	1		Polarization		V				
Level (dBuV/m)									Date: 2016-03-15
1	2	3	4						
1000	4000.	8000.	12000.	16000.	20000.	24000.	28000.	32000.	36000. 40000
Frequency (MHz)									
1	8619.000	54.80	-13.40	68.20	43.96	37.72	6.10	32.98	Peak
2	11490.000	43.43	-10.57	54.00	29.93	39.18	6.78	32.46	Average
3	11490.000	58.00	-16.00	74.00	44.50	39.18	6.78	32.46	Peak
4	17235.000	62.97	-5.23	68.20	44.26	41.72	8.53	31.54	Peak

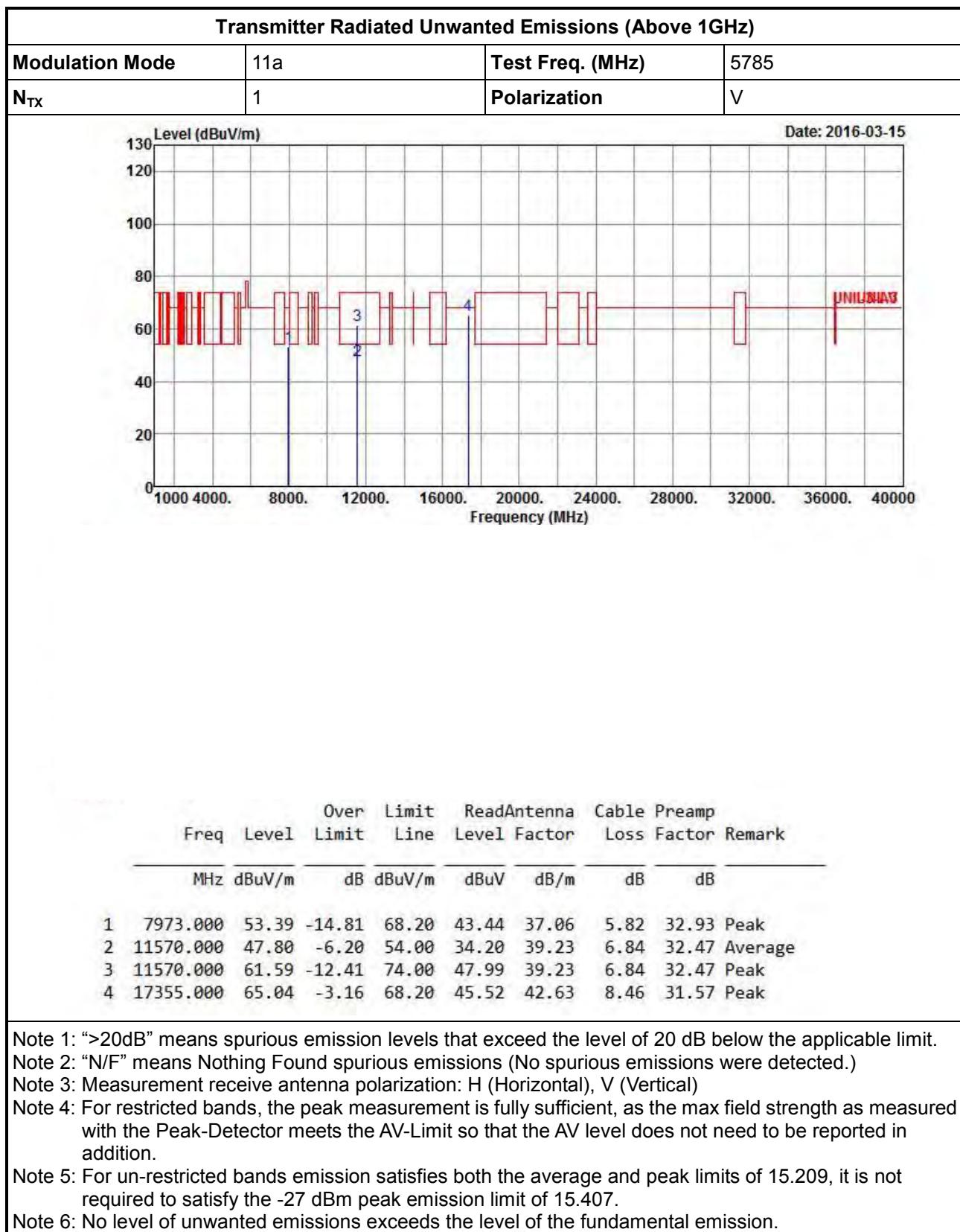
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)  
 Note 4: For restricted 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.

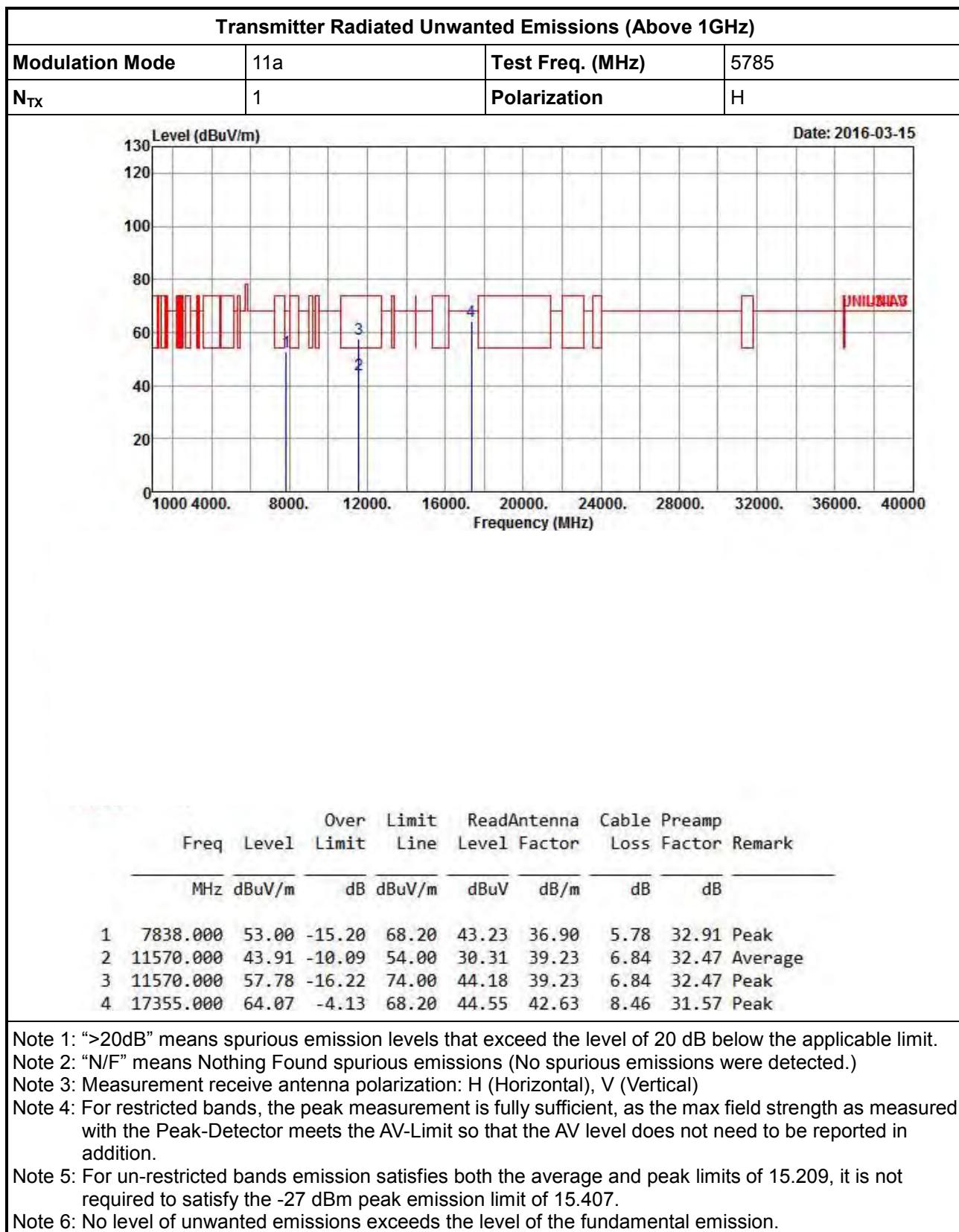


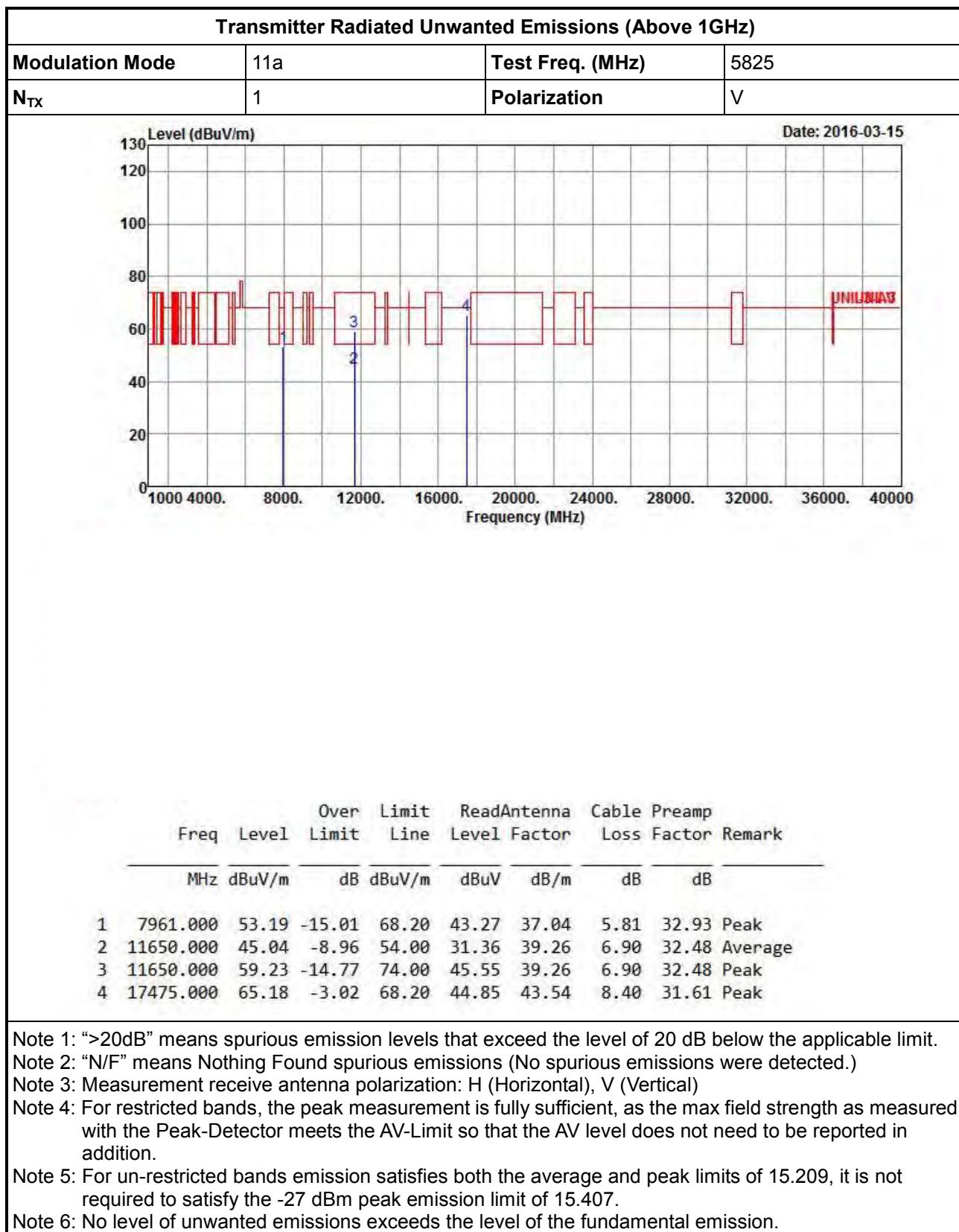
## Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11a	Test Freq. (MHz)	5745																											
N <sub>TX</sub>	1	Polarization	H																											
Level (dBuV/m)			Date: 2016-03-15																											
Frequency (MHz)																														
<table border="1"> <thead> <tr> <th rowspan="2">Freq</th> <th rowspan="2">Level</th> <th>Over</th> <th>Limit</th> <th>Read</th> <th>Antenna</th> <th>Cable</th> <th>Preamp</th> </tr> <tr> <th>Line</th> <th>Limit</th> <th>Antenna</th> <th>Level</th> <th>Factor</th> <th>Loss</th> <th>Factor</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>MHz</td> <td>dBuV/m</td> <td>dB</td> <td>dBuV/m</td> <td>dBuV</td> <td>dB/m</td> <td>dB</td> <td>dB</td> <td></td> </tr> </tbody> </table>						Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Line	Limit	Antenna	Level	Factor	Loss	Factor	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
Freq	Level	Over	Limit	Read	Antenna			Cable	Preamp																					
		Line	Limit	Antenna	Level	Factor	Loss	Factor	Remark																					
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB																							
1	8796.000	54.06	-14.14	68.20	43.25	37.76	6.09	33.04 Peak																						
2	11490.000	43.12	-10.88	54.00	29.62	39.18	6.78	32.46 Average																						
3	11490.000	57.15	-16.85	74.00	43.65	39.18	6.78	32.46 Peak																						
4	17235.000	63.24	-4.96	68.20	44.53	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.





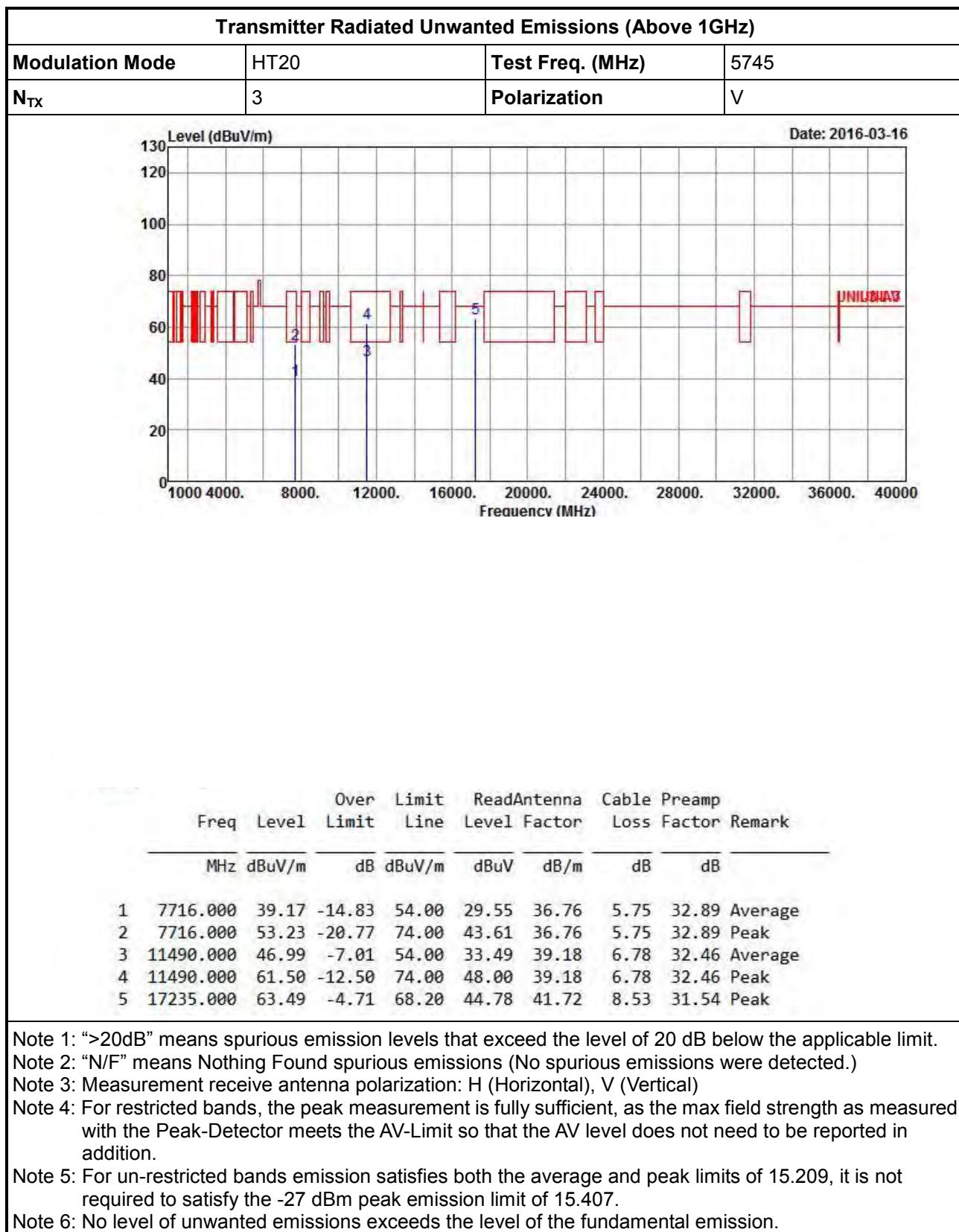


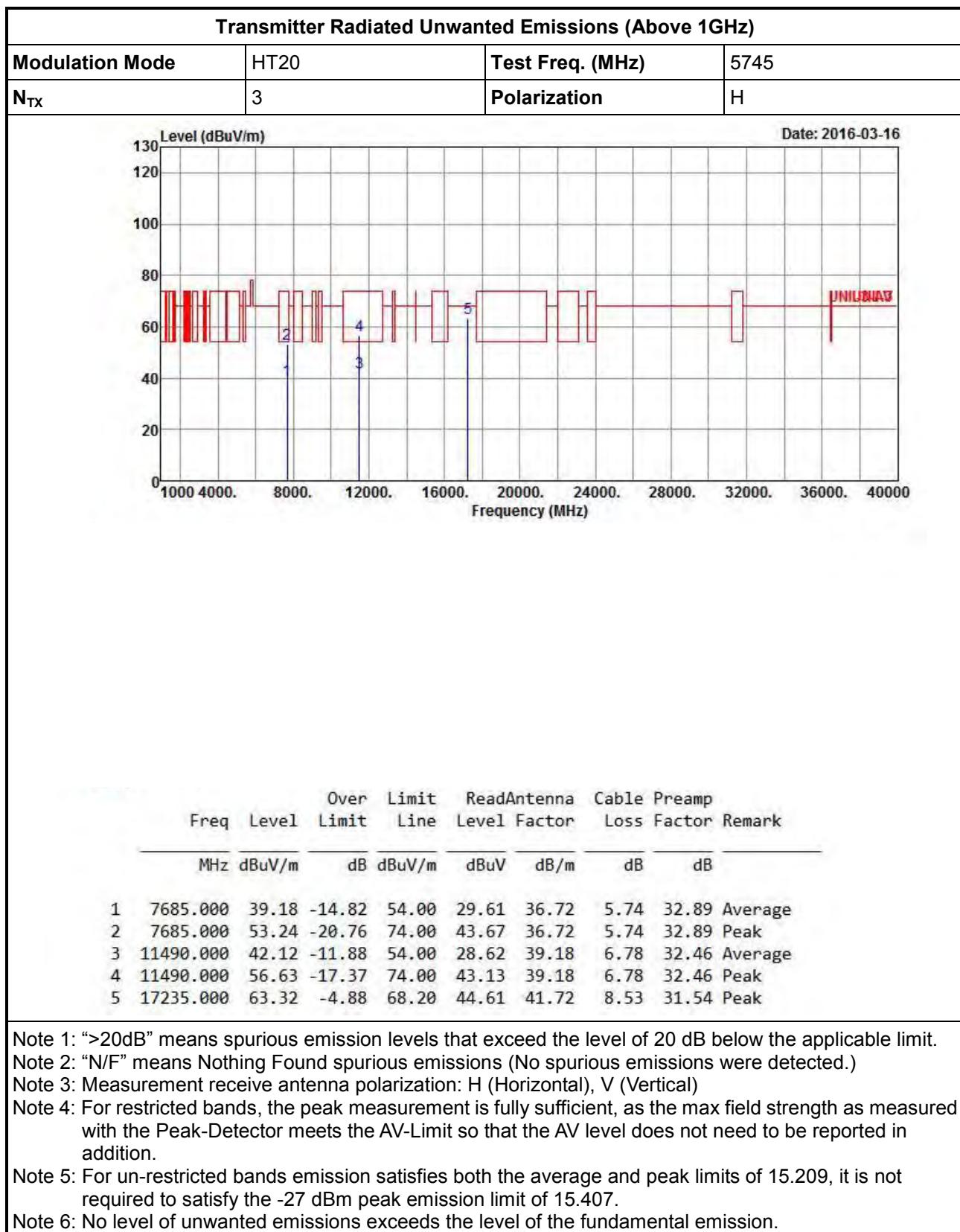


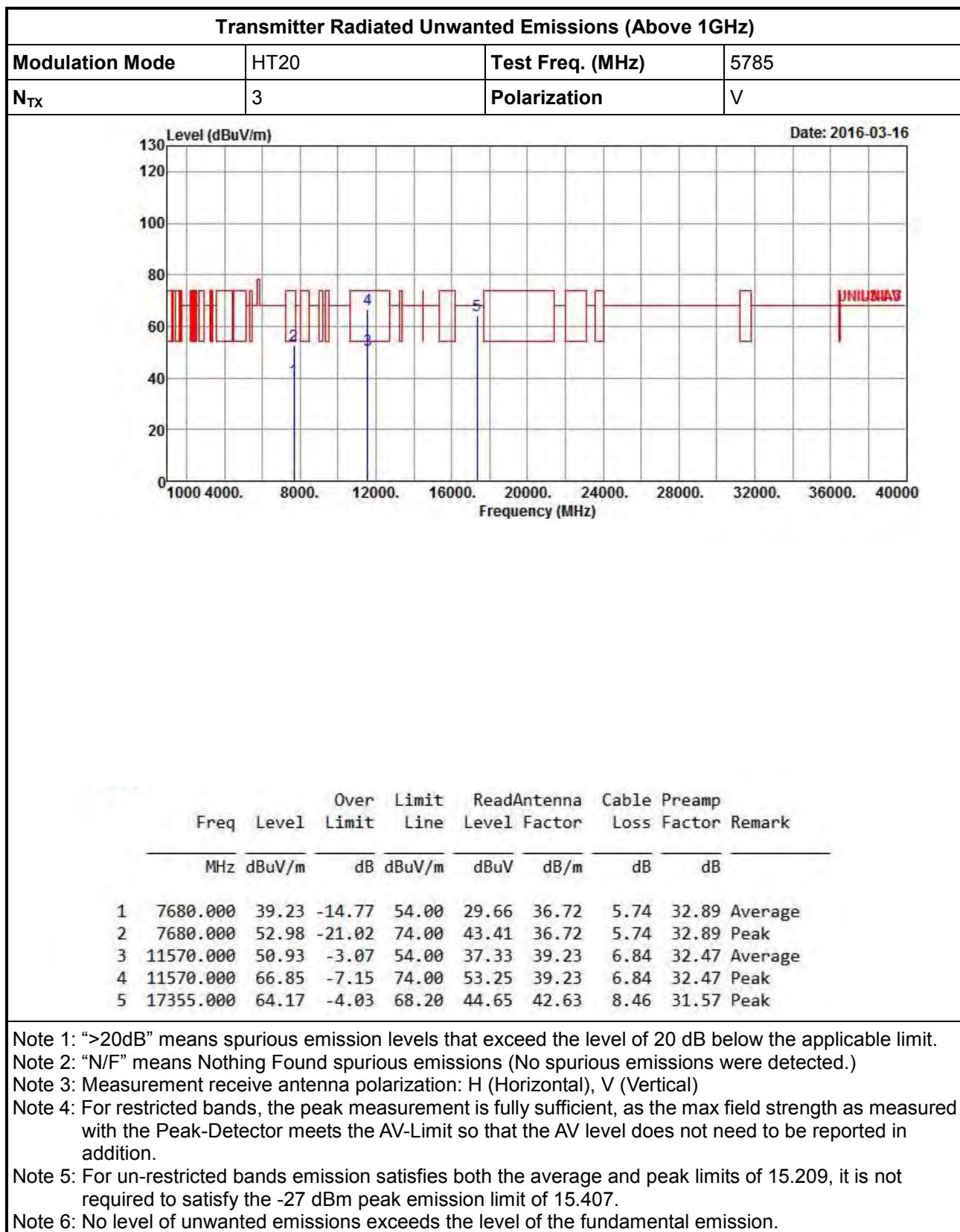
## Transmitter Radiated Unwanted Emissions (Above 1GHz)

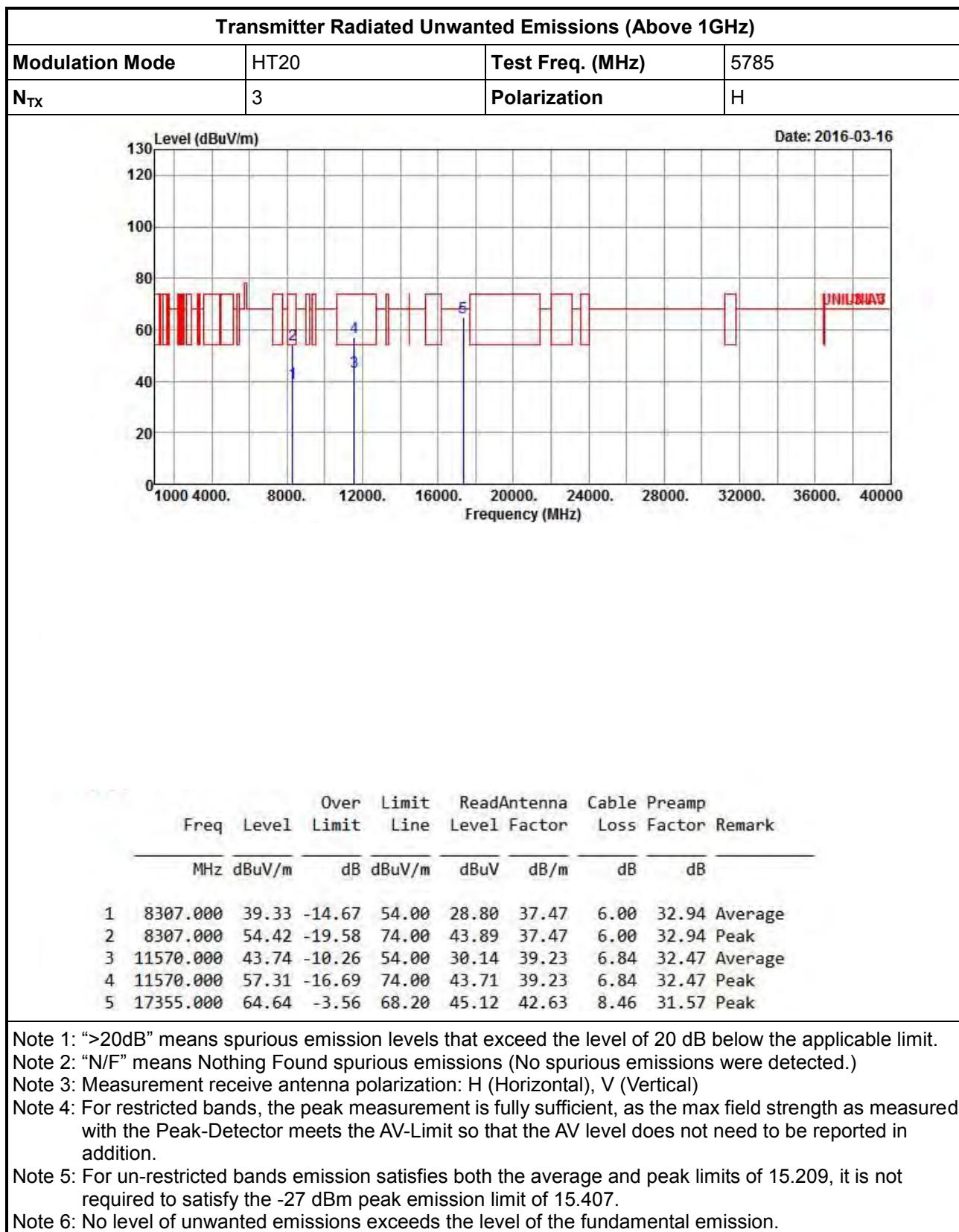
Modulation Mode	11a	Test Freq. (MHz)	5825			
N <sub>TX</sub>	1	Polarization	H			
Level (dBuV/m)			Date: 2016-03-15			
Freq	Over Limit	Read	Antenna	Cable	Preamp	
Line	Line	Antenna	Level	Loss	Factor	Remark
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB
1 8747.000	54.01	-14.19	68.20	43.20	37.75	6.09 33.03 Peak
2 11650.000	43.50	-10.50	54.00	29.82	39.26	6.90 32.48 Average
3 11650.000	57.95	-16.05	74.00	44.27	39.26	6.90 32.48 Peak
4 17475.000	65.87	-2.33	68.20	45.54	43.54	8.40 31.61 Peak

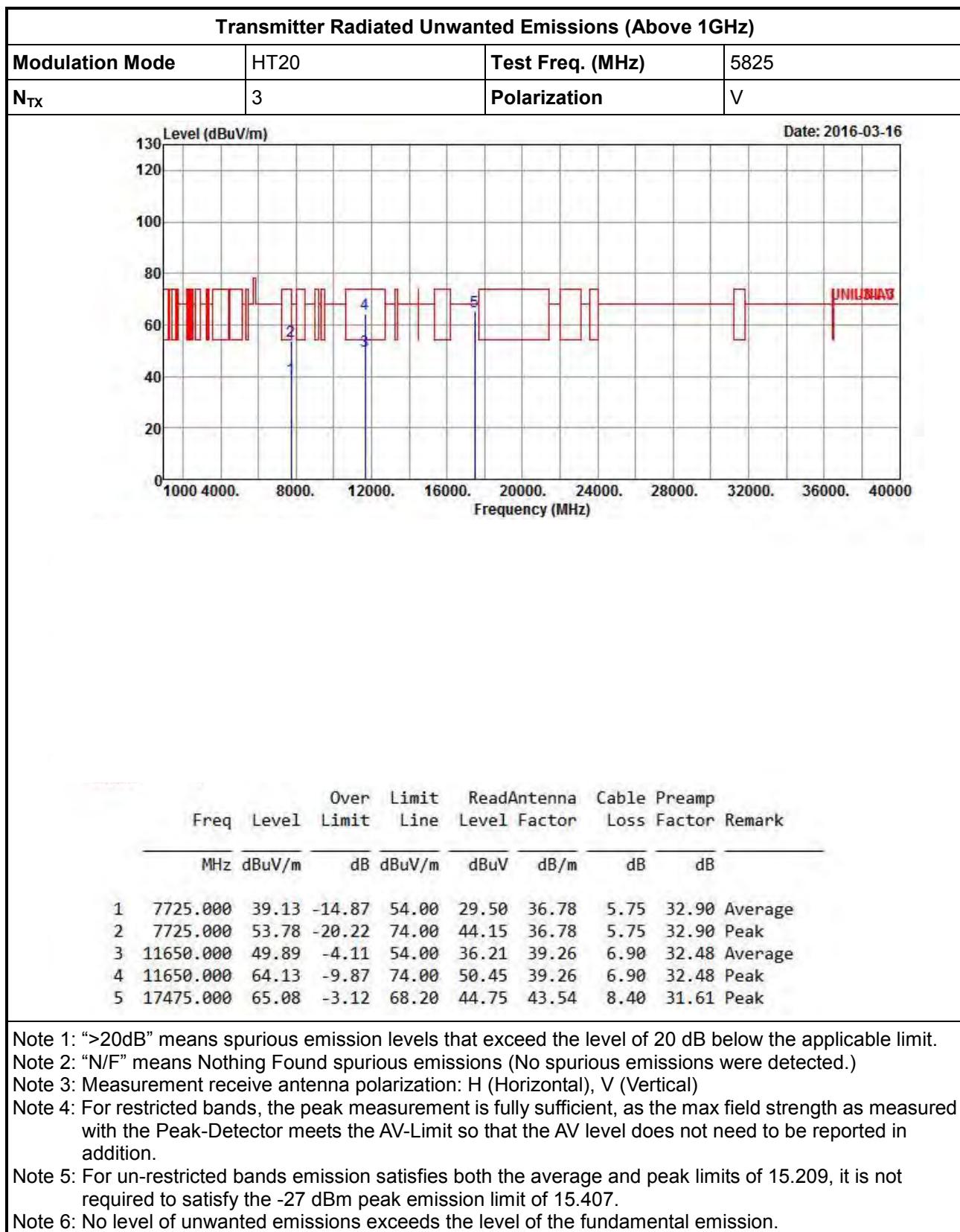
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)  
 Note 4: For restricted 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.

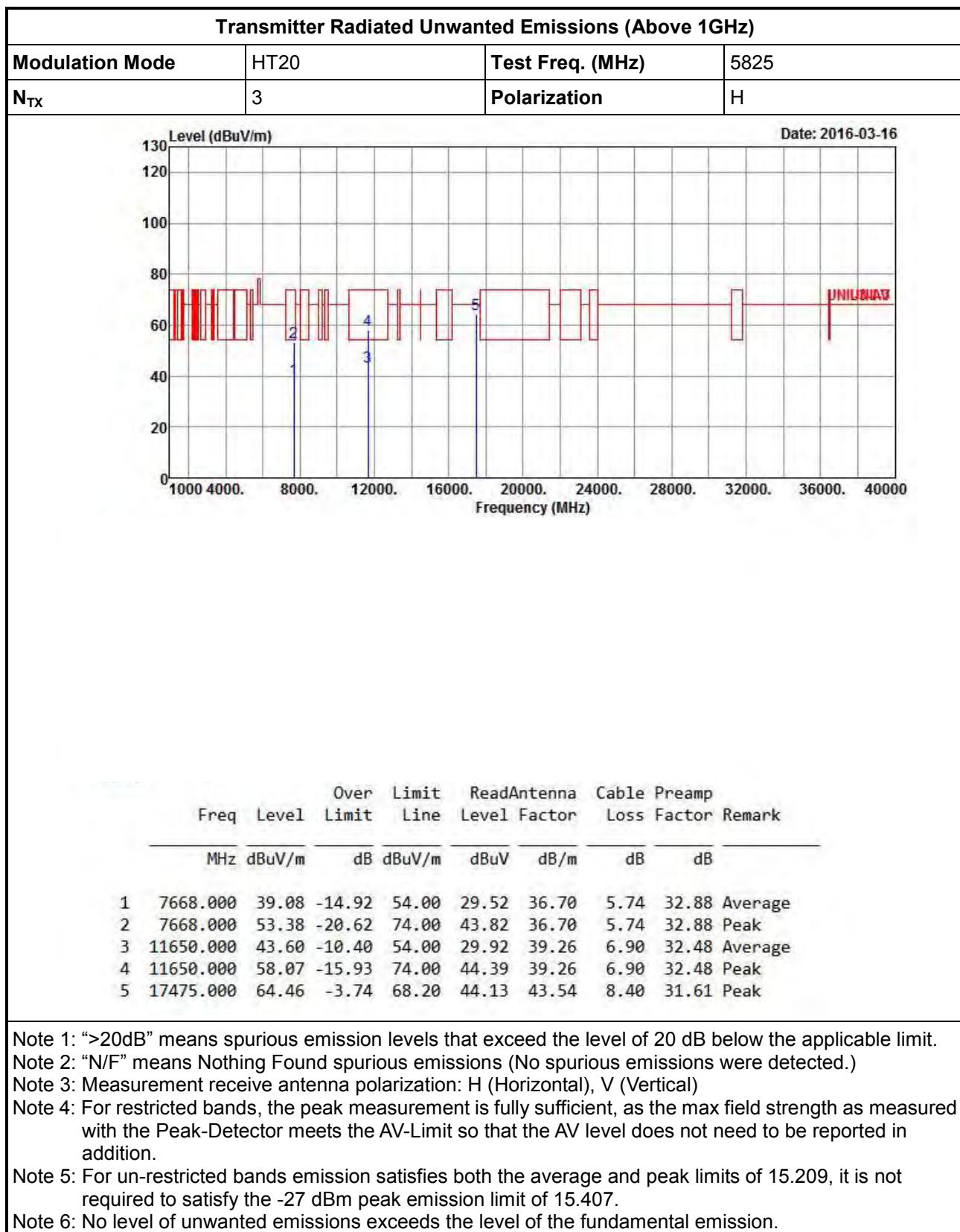


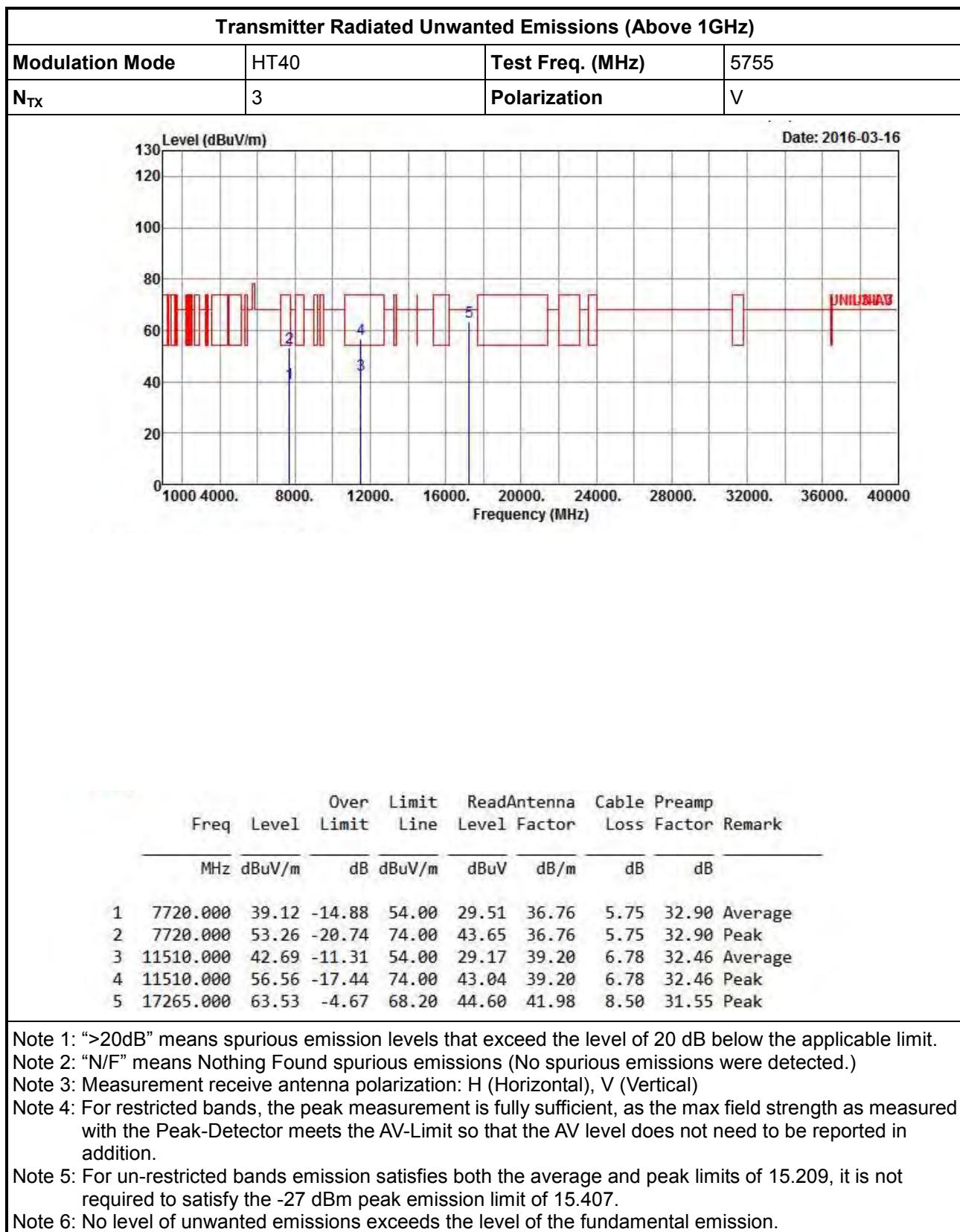


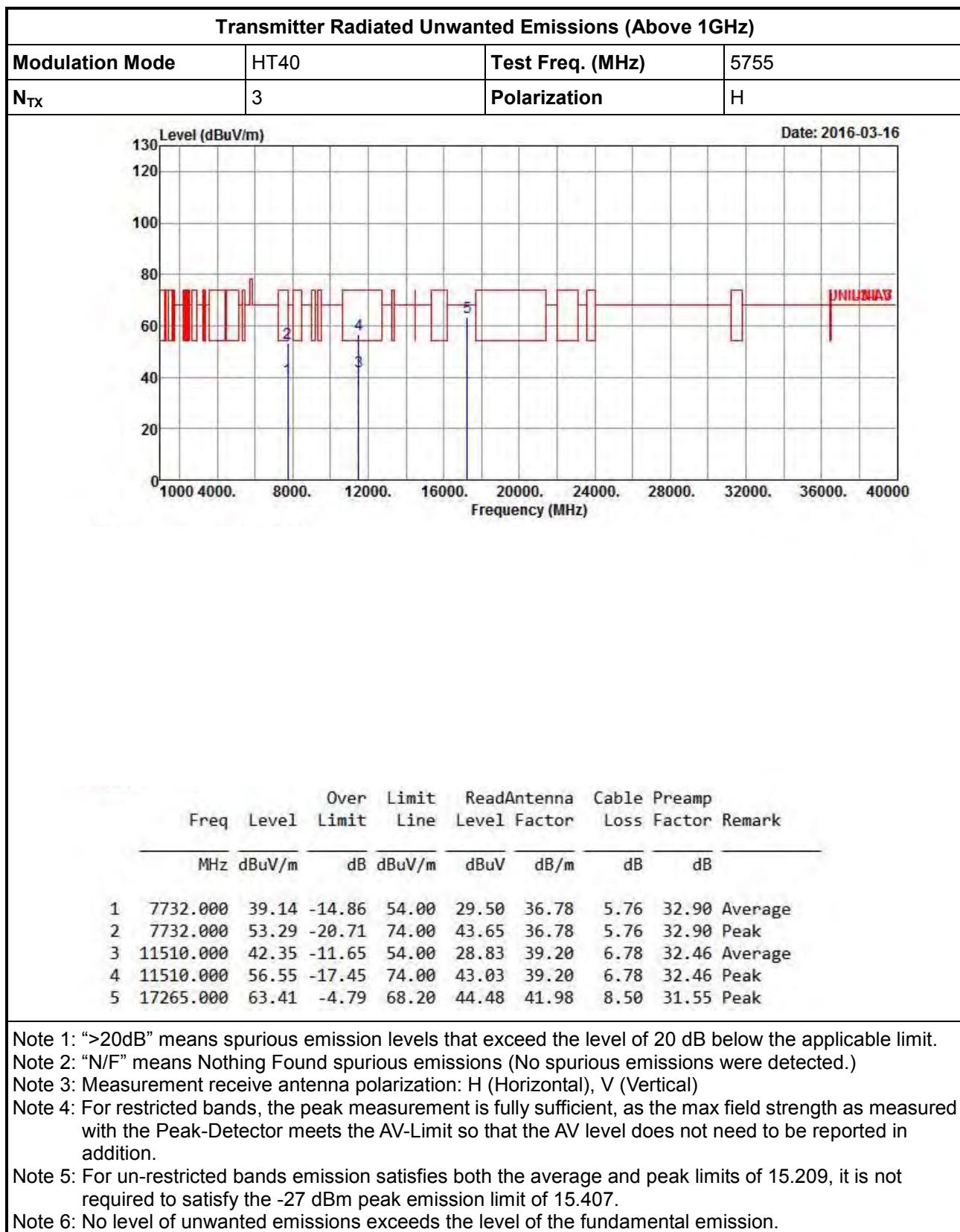


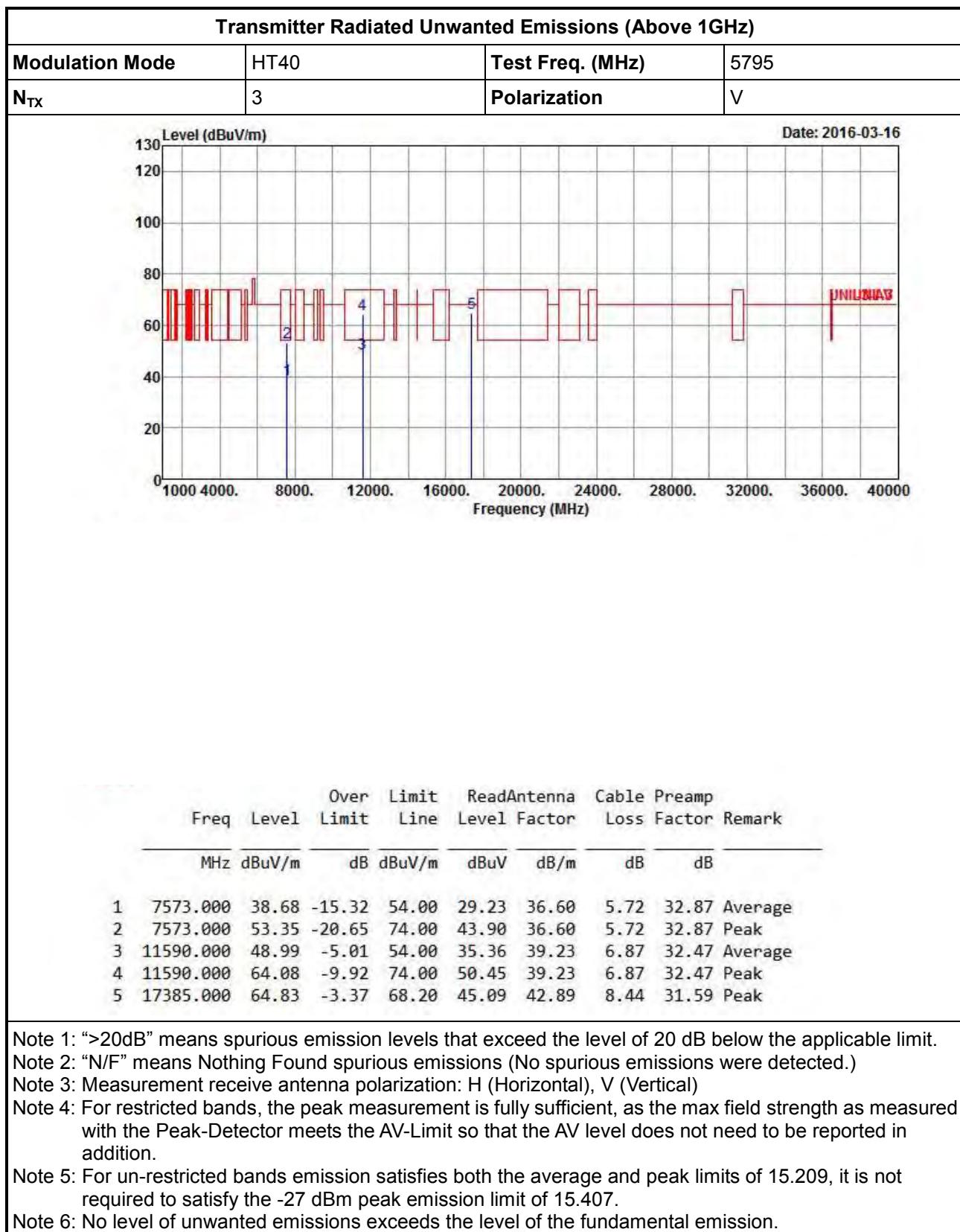


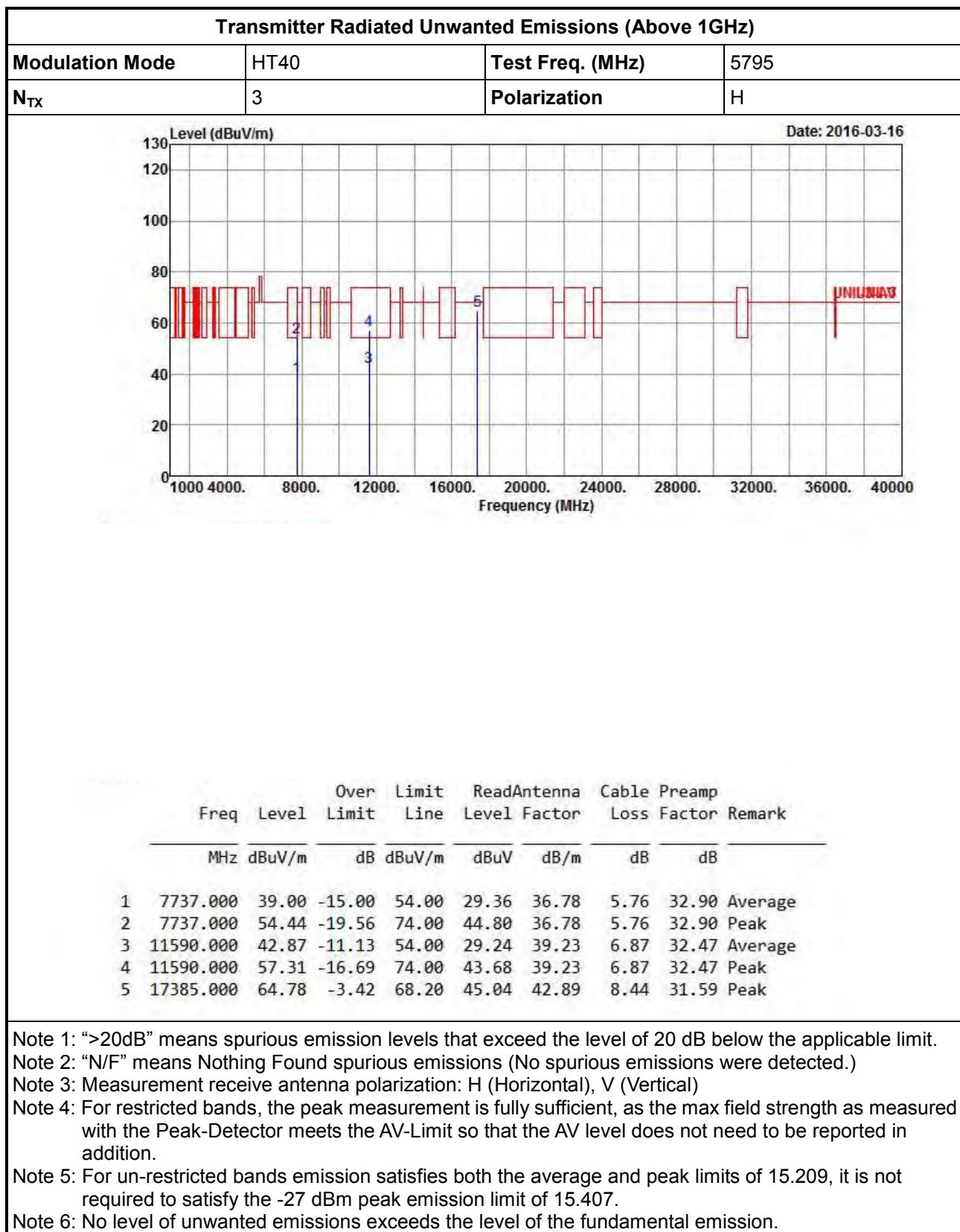


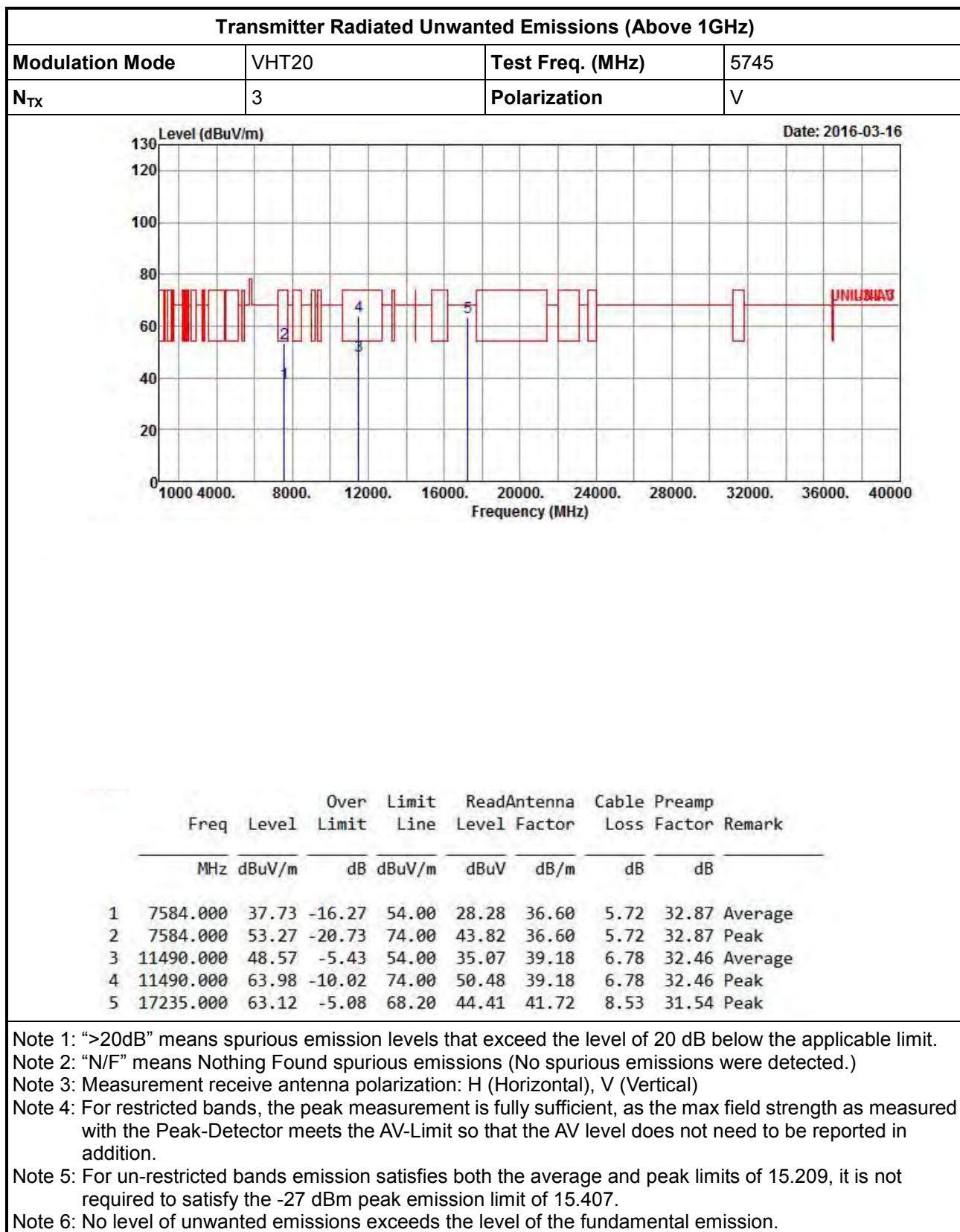


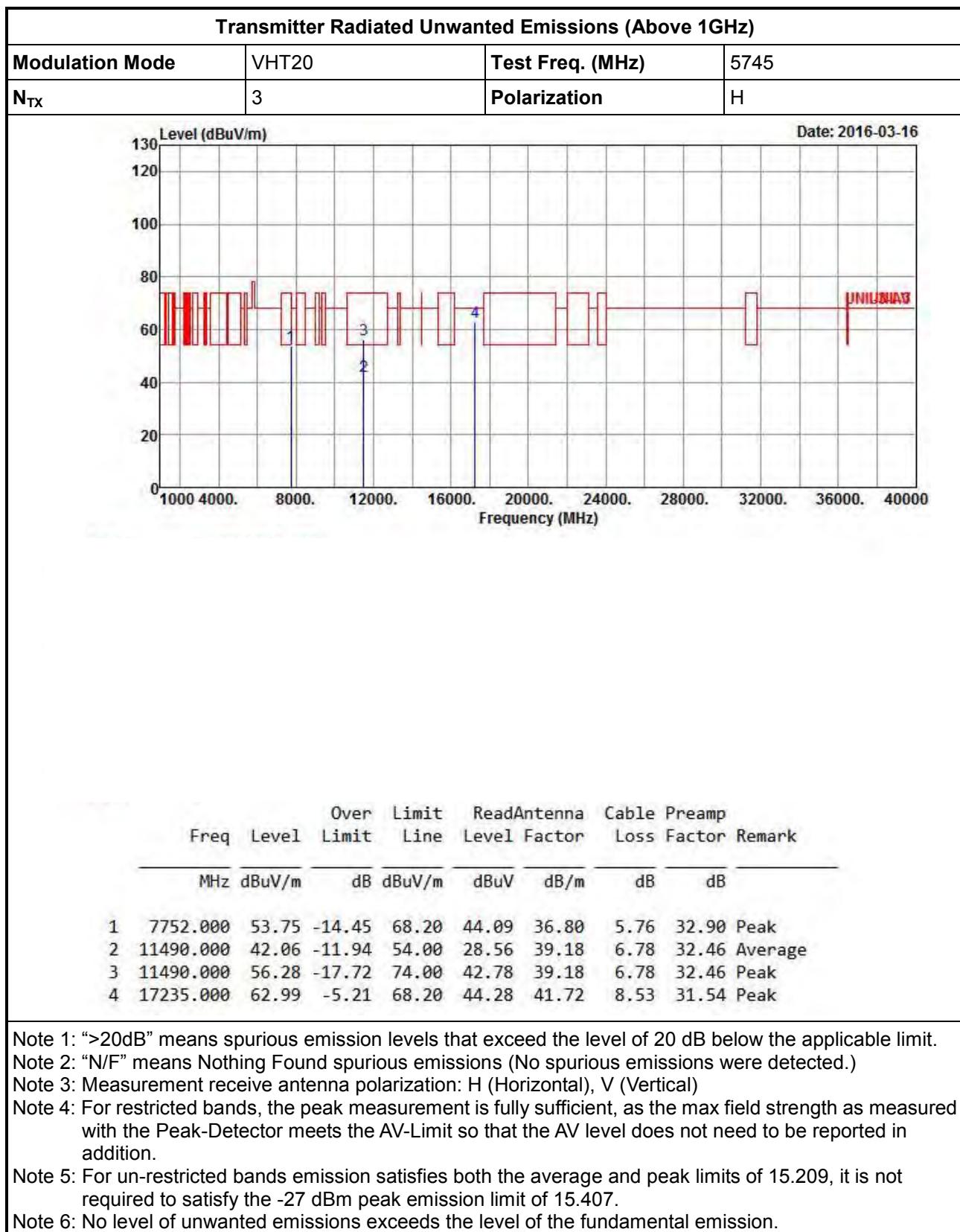


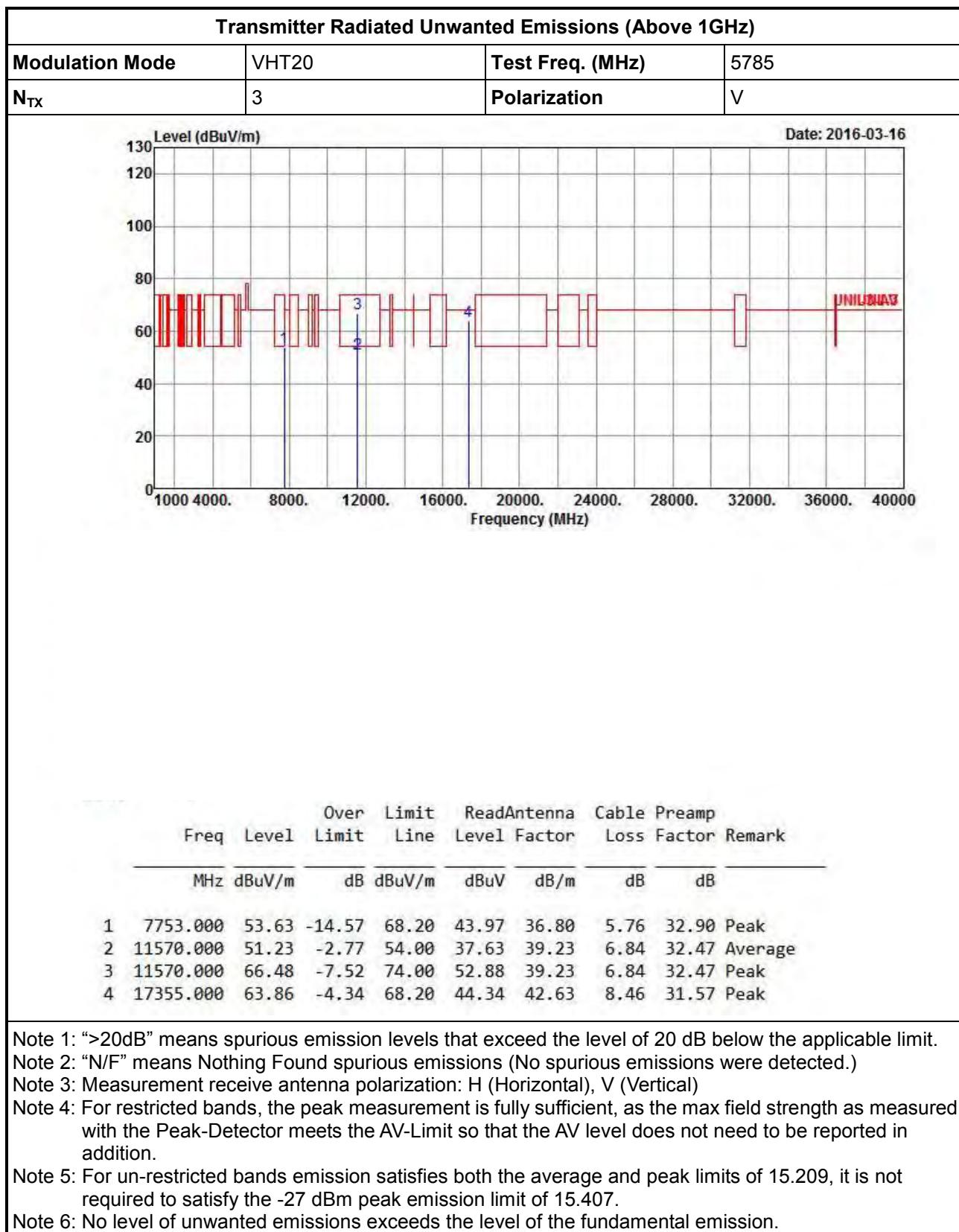


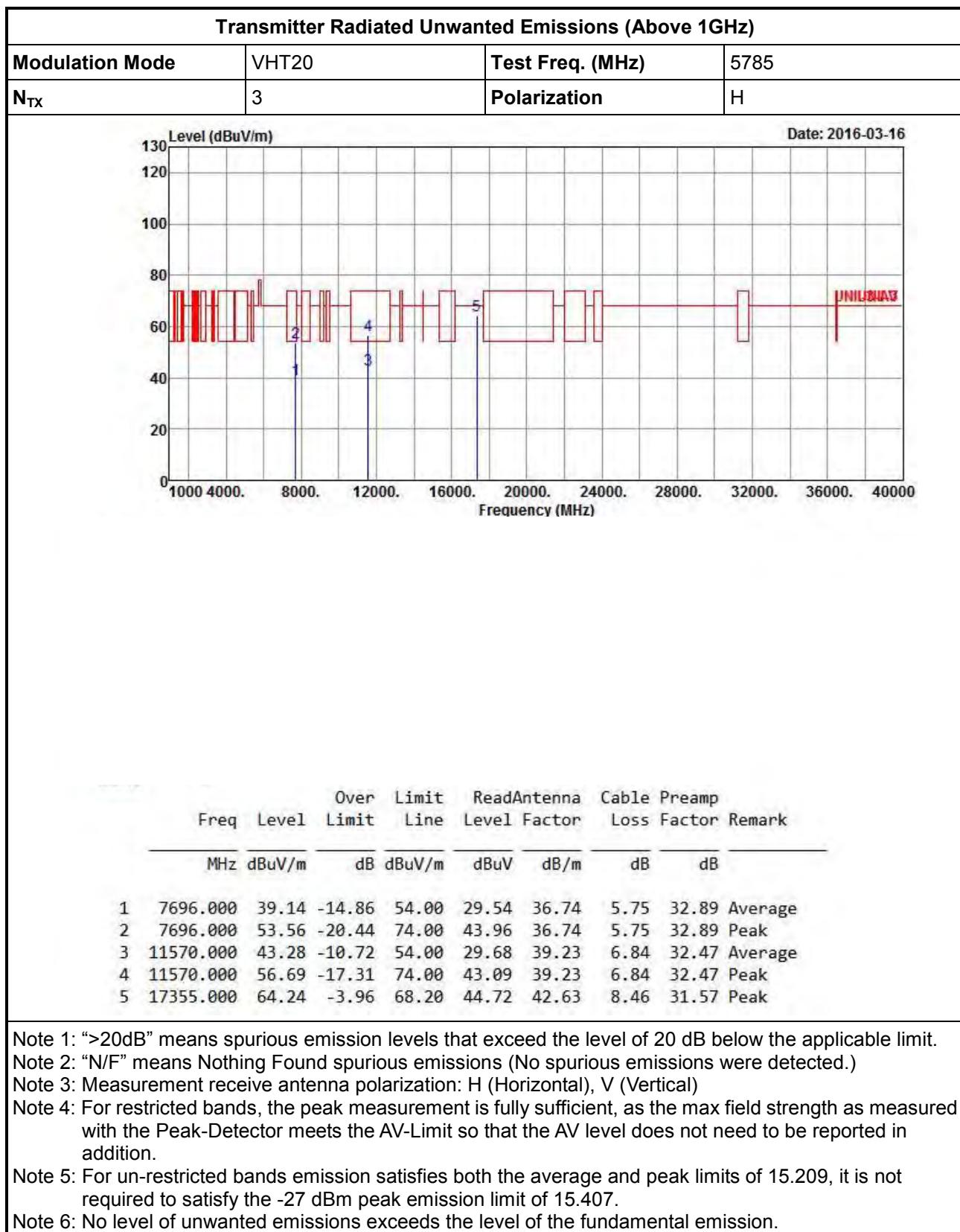












Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

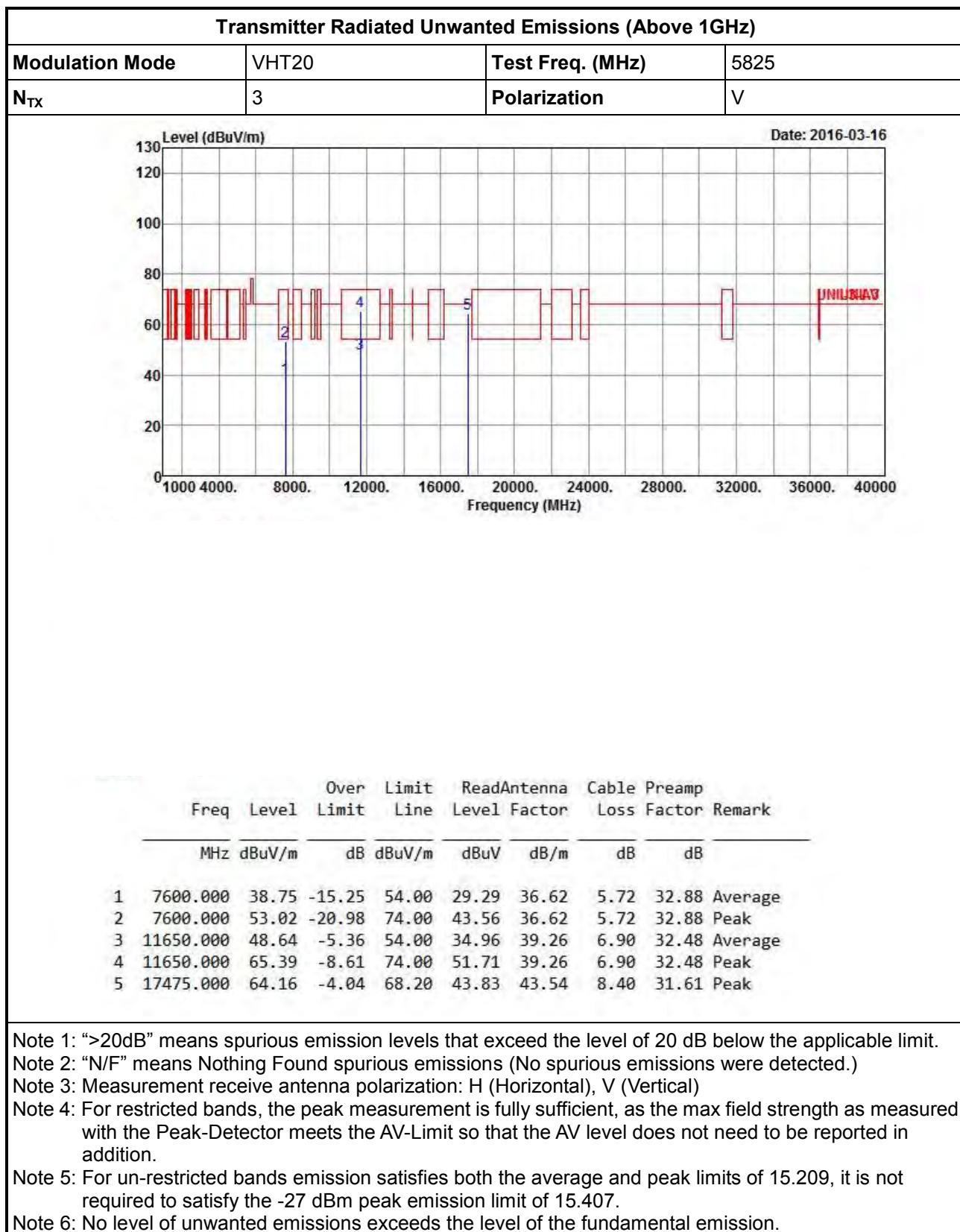
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

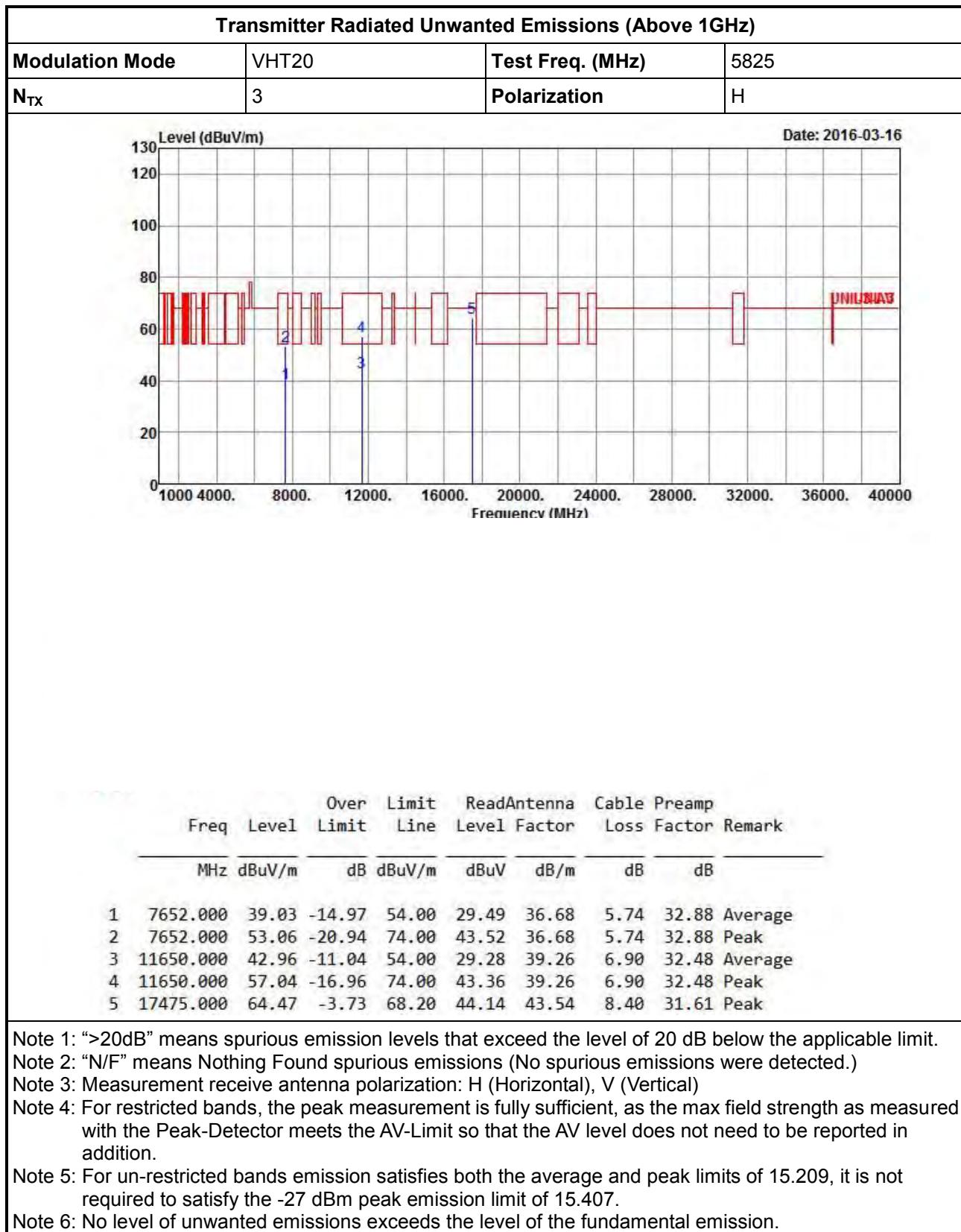
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

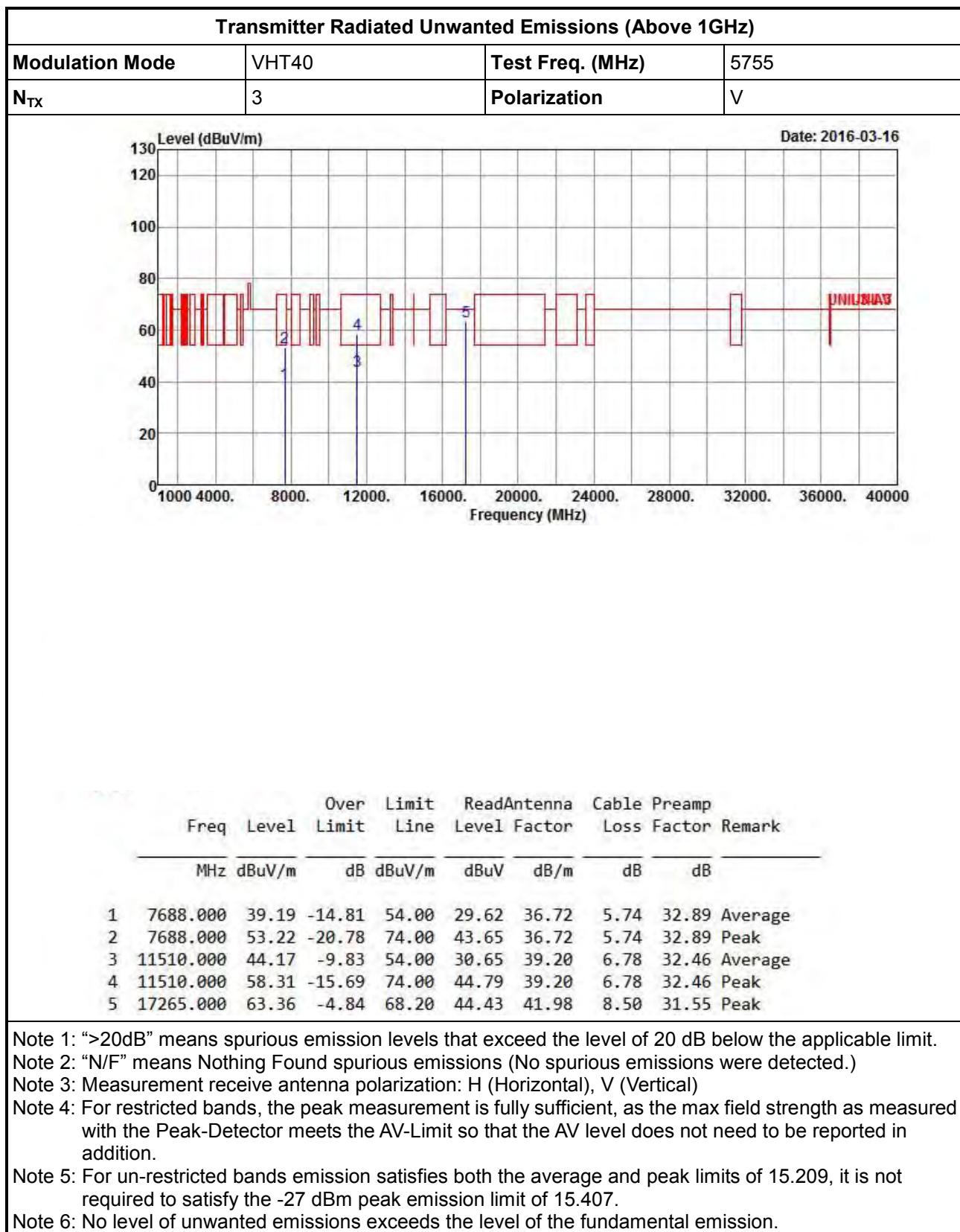
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

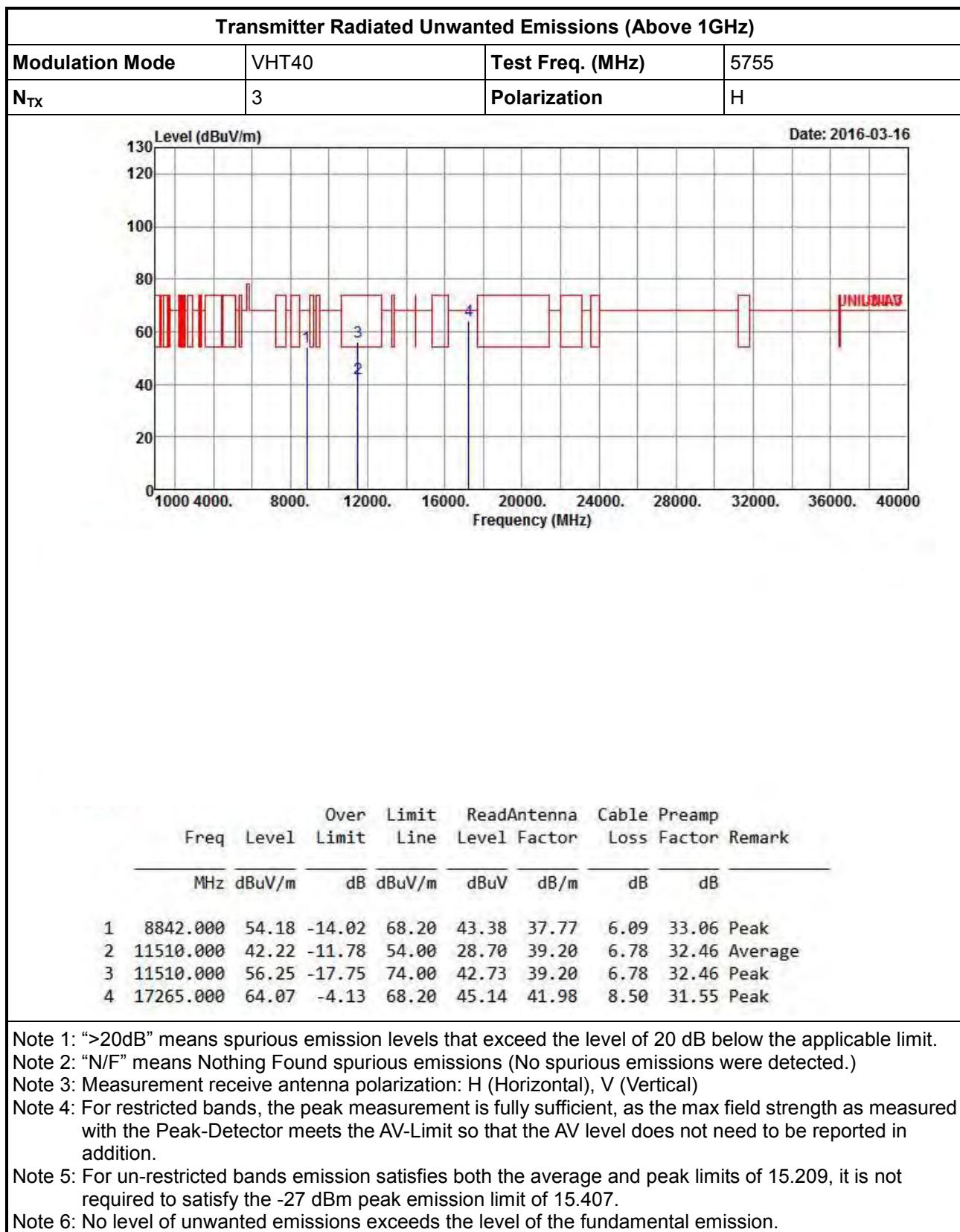
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

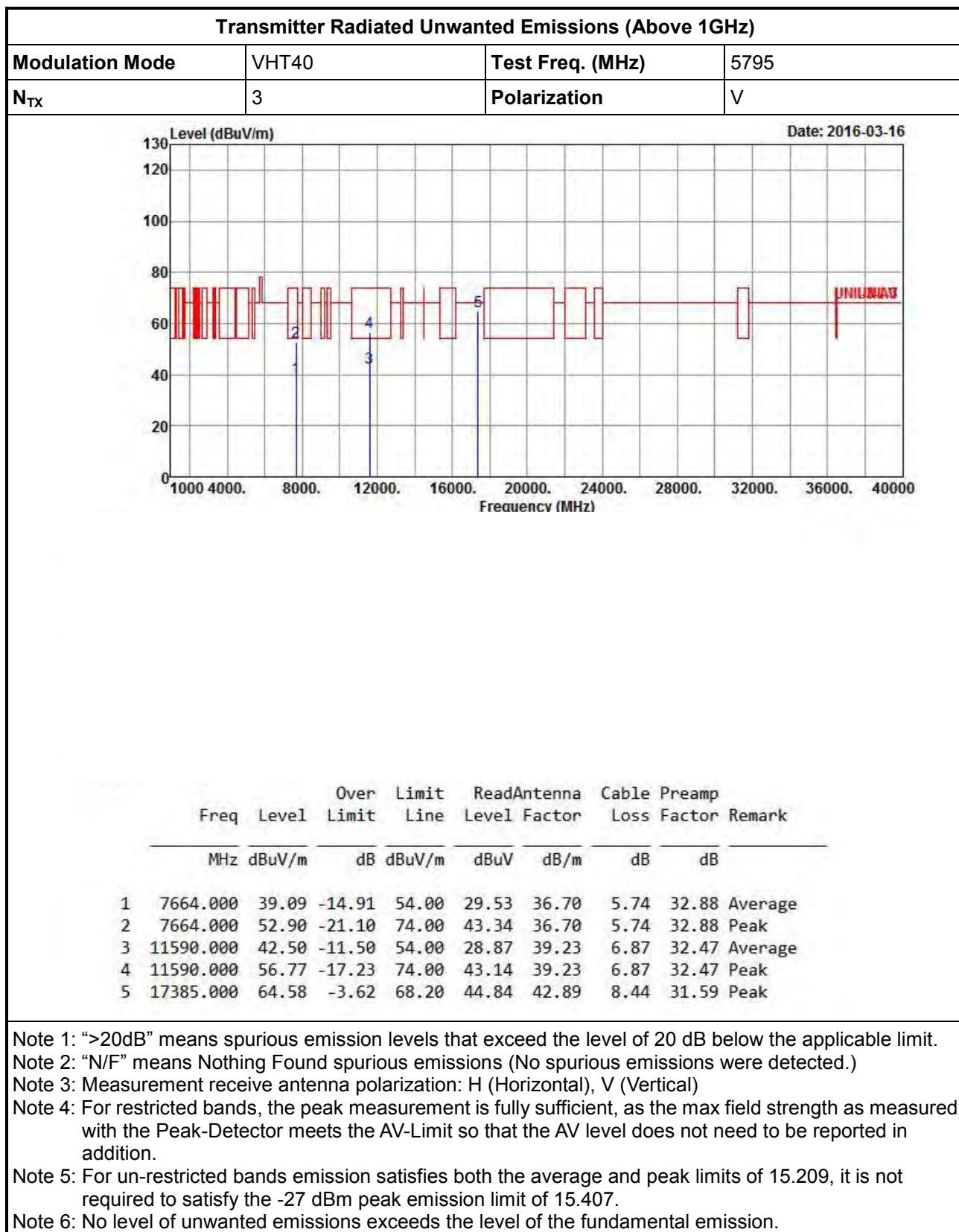
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

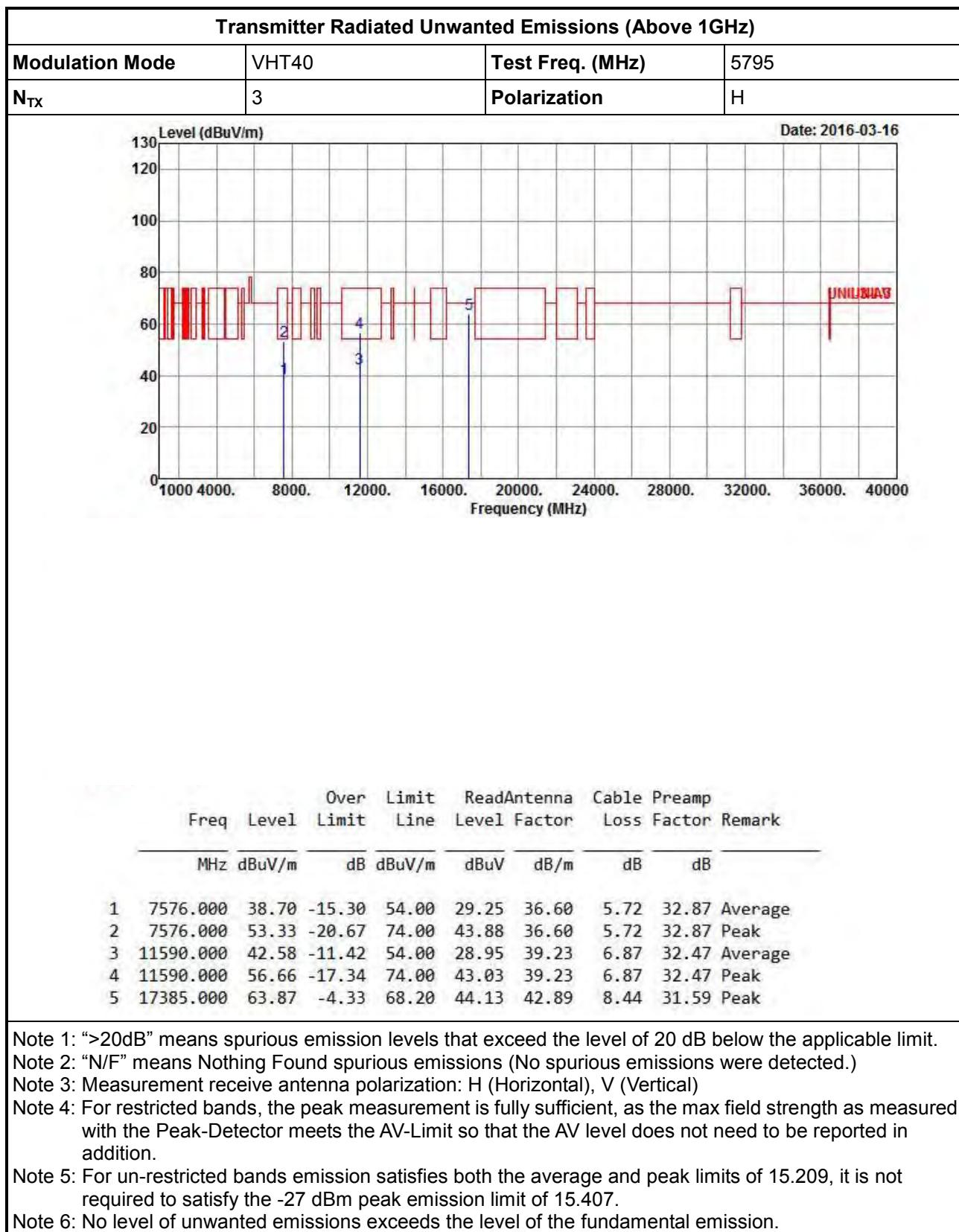


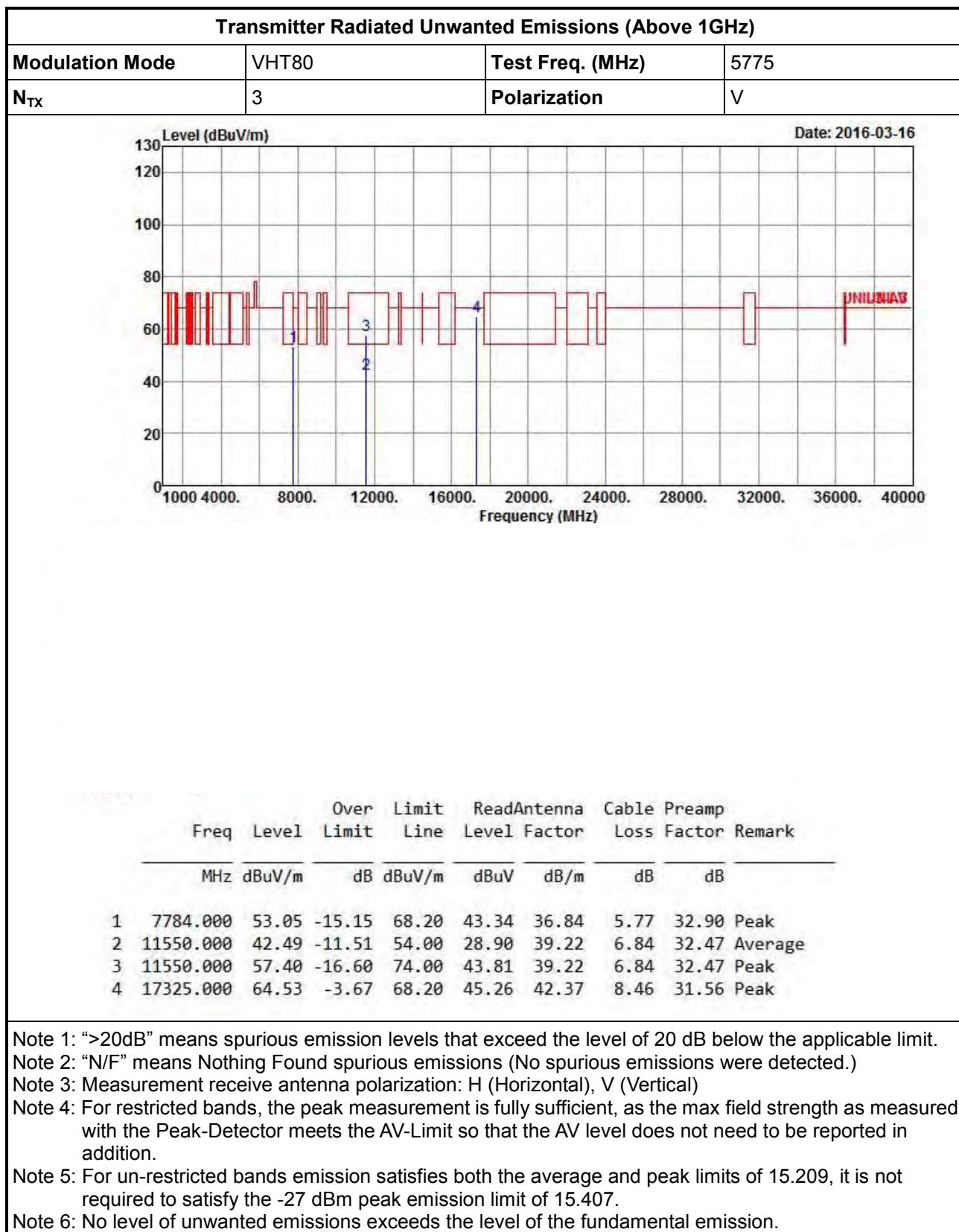


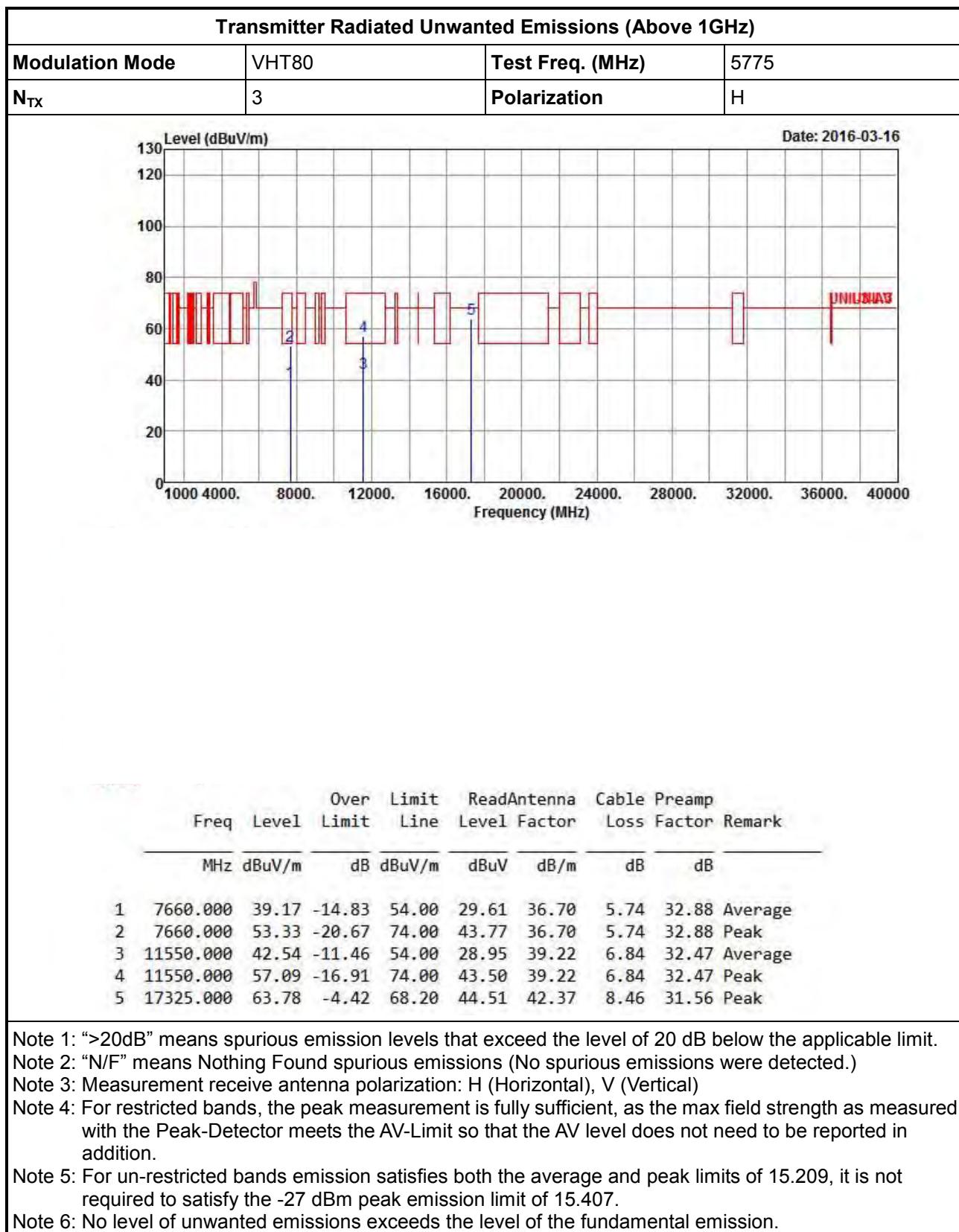












### 3.7 Frequency Stability

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.	

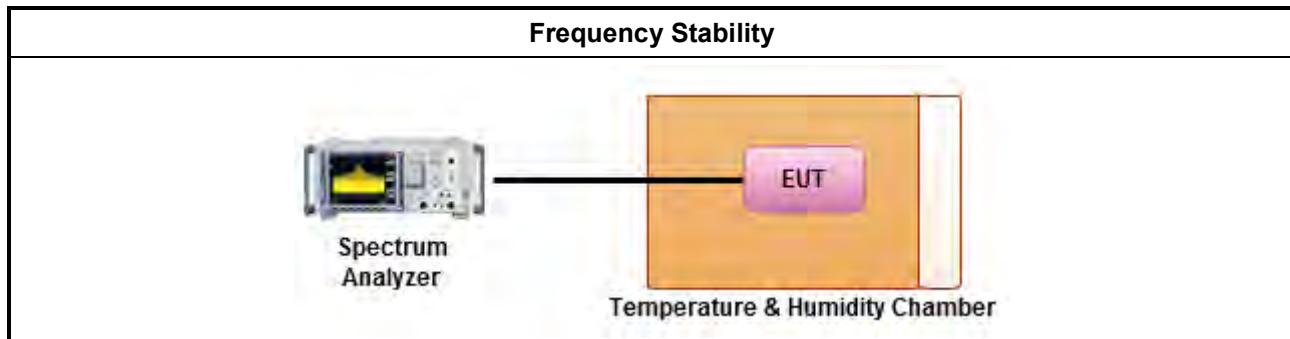
#### 3.7.1 Measuring Instruments

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

#### 3.7.2 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.

#### 3.7.3 Test Setup





### 3.7.4 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	5744.98177	5744.98220	5744.98046	5744.98177	-3.1732	-3.0983	-3.4012	-3.1732
T20°C Vmin	5745	5744.98220	5744.98263	5744.98133	5744.98009	-3.0983	-3.0235	-3.2498	-3.4656
T50°C Vnom	5745	5744.97438	5744.97482	5744.97525	5744.97569	-4.4595	-4.3829	-4.3081	-4.2315
T40°C Vnom	5745	5744.97091	5744.97048	5744.97004	5744.97004	-5.0635	-5.1384	-5.2150	-5.2150
T30°C Vnom	5745	5744.97438	5744.97395	5744.97352	5744.97352	-4.4595	-4.5344	-4.6092	-4.6092
T20°C Vnom	5745	5744.98220	5744.98263	5744.98177	5744.98009	-3.0983	-3.0235	-3.1732	-3.4656
T10°C Vnom	5745	5744.99305	5744.99262	5744.99219	5744.99175	-1.2097	-1.2846	-1.3594	-1.4360
T0°C Vnom	5745	5745.00217	5745.00174	5745.00130	5745.00087	0.3777	0.3029	0.2263	0.1514
T-10°C Vnom	5745	5745.01710	5745.01693	5745.01650	5745.01606	2.9765	2.9469	2.8721	2.7955
T-20°C Vnom	5745	5745.01997	5745.02041	5745.02084	5745.02171	3.4761	3.5527	3.6275	3.7789
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

### AC Power-line Conducted Emissions

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Apr. 15. 2015	Apr. 14. 2016
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 22, 2015	Jan. 21, 2016
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	Oct. 30, 2015	Oct. 29, 2016
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	N/A

### For 5150-5250 MHz

<RF Conducted>

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	9kHz ~ 40GHz	Jan. 25, 2014	Jan. 24, 2015
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jul. 15, 2014	Jul. 14, 2015
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100°C	Nov. 20, 2013	Nov. 19, 2014
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 31, 2014	Jul. 30, 2015

### For 5725~5850 MHz

<RF Conducted>

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
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-001	-20 ~ 100°C	Jun. 12, 2015	Jun. 11, 2016
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 28, 2015	Jul. 27, 2016
Power Sensor	Anritsu	MA2411B	1027452	300MHz ~ 40GHz	Feb. 22, 2016	Feb. 21, 2017
Power Meter	Anritsu	ML2495A	1124009	300MHz ~ 40GHz	Feb. 22, 2016	Feb. 21, 2017
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jun. 25, 2015	Jun. 24, 2016



## For 5150-5250 MHz

Radiated Emission (Below 1GHz)

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. 30, 2013	Nov. 29, 2014
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May. 05, 2014	May. 04, 2015
Spectrum	R&S	FSP40	100004	9kHz ~ 40GHz	Mar. 27, 2014	Mar. 26, 2015
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 21, 2013	Sep. 20, 2014
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Nov. 16, 2013	Nov. 15, 2014
Turn Table	EM Electronics	EM Electronics	060615	0 ~ 360 degree	N/A	N/A
Antenna Mast	MF	MF-7802	MF780208179	1 ~ 4 m	N/A	N/A

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Loop Antenna	TESEQ	HLA 6120	31244	9kHz ~ 30MHz	Dec. 02, 2012	Dec. 01, 2014

## For 5725~5850 MHz

Radiated Emission (Below 1GHz)

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
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 11, 2015	May 10, 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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Loop Antenna	R&S	HFH2-Z2	100330	9 kHz~30 MHz	Nov.16, 2015	Nov.15, 2017



## For 5150-5250 MHz

Radiated Emission (Above 1GHz)

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. 30, 2013	Nov. 29, 2014
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Sep. 01, 2014	Aug. 31, 2015
Spectrum	R&S	FSP40	100004	9kHz ~ 40GHz	Mar. 27, 2014	Mar. 26, 2015
Horn Antenna	ETS • LINDGREN	3115	6741	1GHz ~ 18GHz	Jun. 11, 2014	Jun. 10, 2015
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jan. 10, 2014	Jan. 09, 2015
RF Cable-high	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Dec. 11, 2013	Dec. 10, 2014
Turn Table	EM Electronics	EM Electronics	060615	0 ~ 360 degree	N/A	N/A
Antenna Mast	MF	MF-7802	MF780208179	1 ~ 4 m	N/A	N/A

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Amplifier	EM	EM18G40G	060604	18GHz ~ 40GHz	Oct. 17, 2013	Oct. 16, 2014

## For 5725~5850 MHz

Radiated Emission (Above 1GHz)

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	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
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