



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

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

Modulation Mode	11a	Test Freq. (MHz)	5500
N <sub>TX</sub>	3	Polarization	V

Date: 2015-11-07

Frequency (MHz)

Level (dBuV/m)

Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp
		Line	Line	Antenna	Factor	Loss	Factor
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1 7904.000	50.03	-18.17	68.20	40.10	36.98	5.87	32.92 Peak
2 11000.000	43.54	-10.46	54.00	30.48	38.50	7.06	32.50 Average
3 11000.000	54.06	-19.94	74.00	41.00	38.50	7.06	32.50 Peak
4 16500.000	55.48	-12.72	68.20	41.31	37.90	8.36	32.09 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.

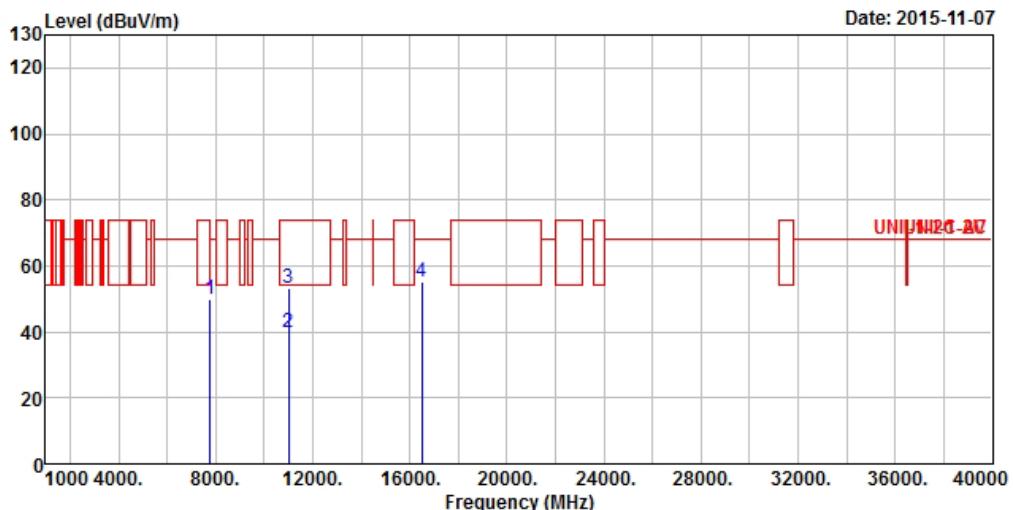
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

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



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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	
0.000	49.68	-18.52	68.20	39.92	36.82	5.84	32.90	Peak
0.000	39.98	-14.02	54.00	26.92	38.50	7.06	32.50	Average
0.000	53.15	-20.85	74.00	40.09	38.50	7.06	32.50	Peak
0.000	55.34	-12.86	68.20	41.17	37.90	8.36	32.09	Peak

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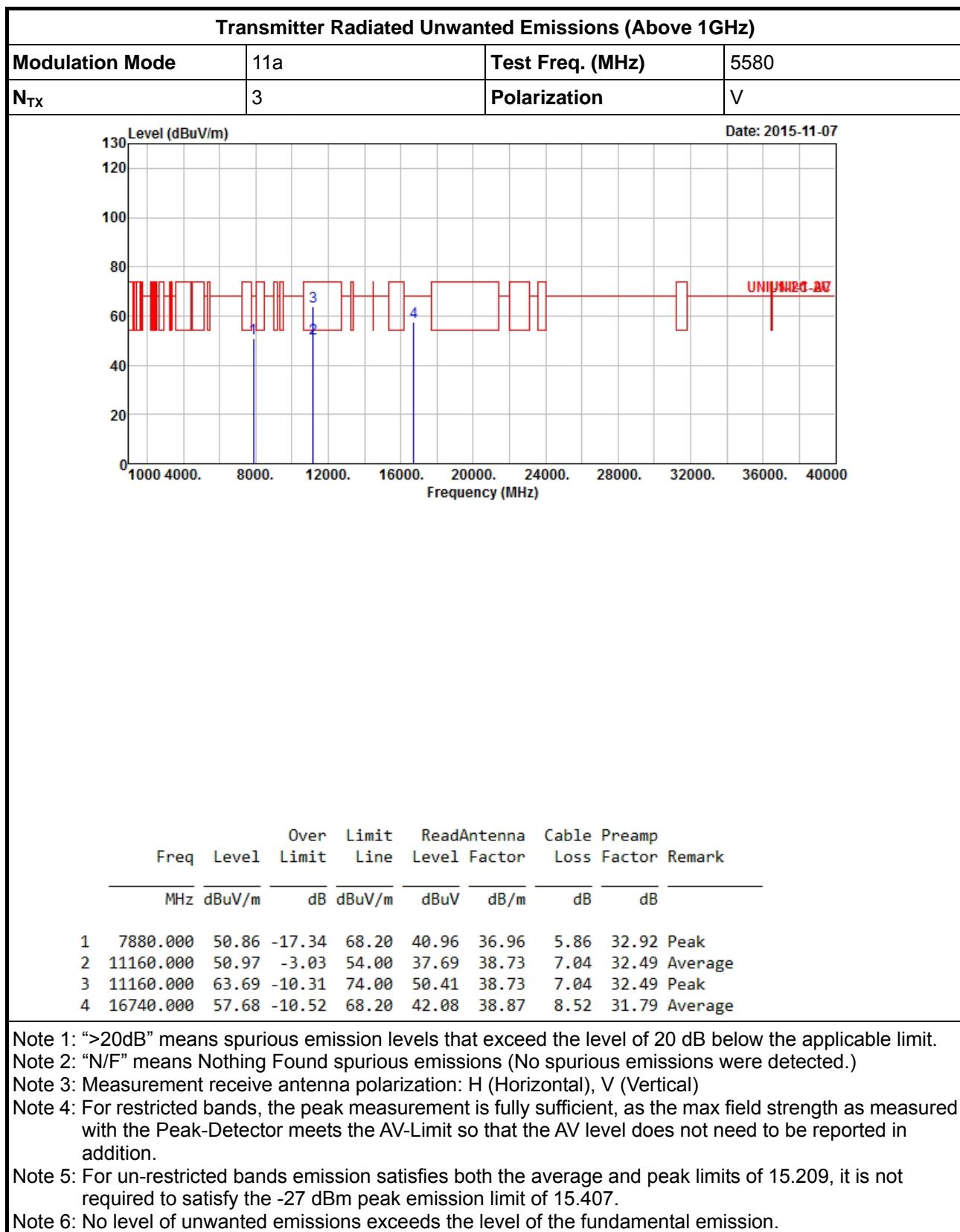
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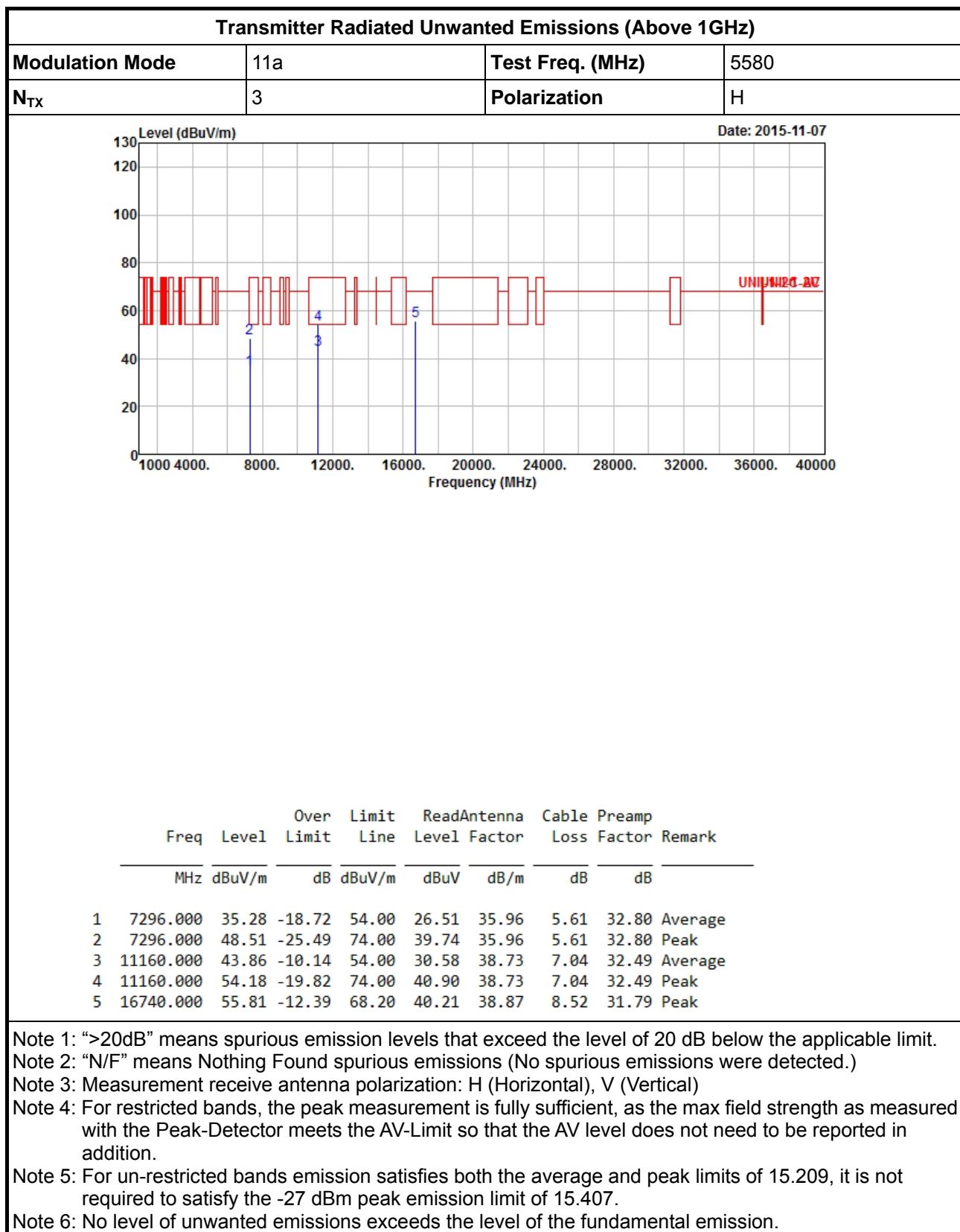
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

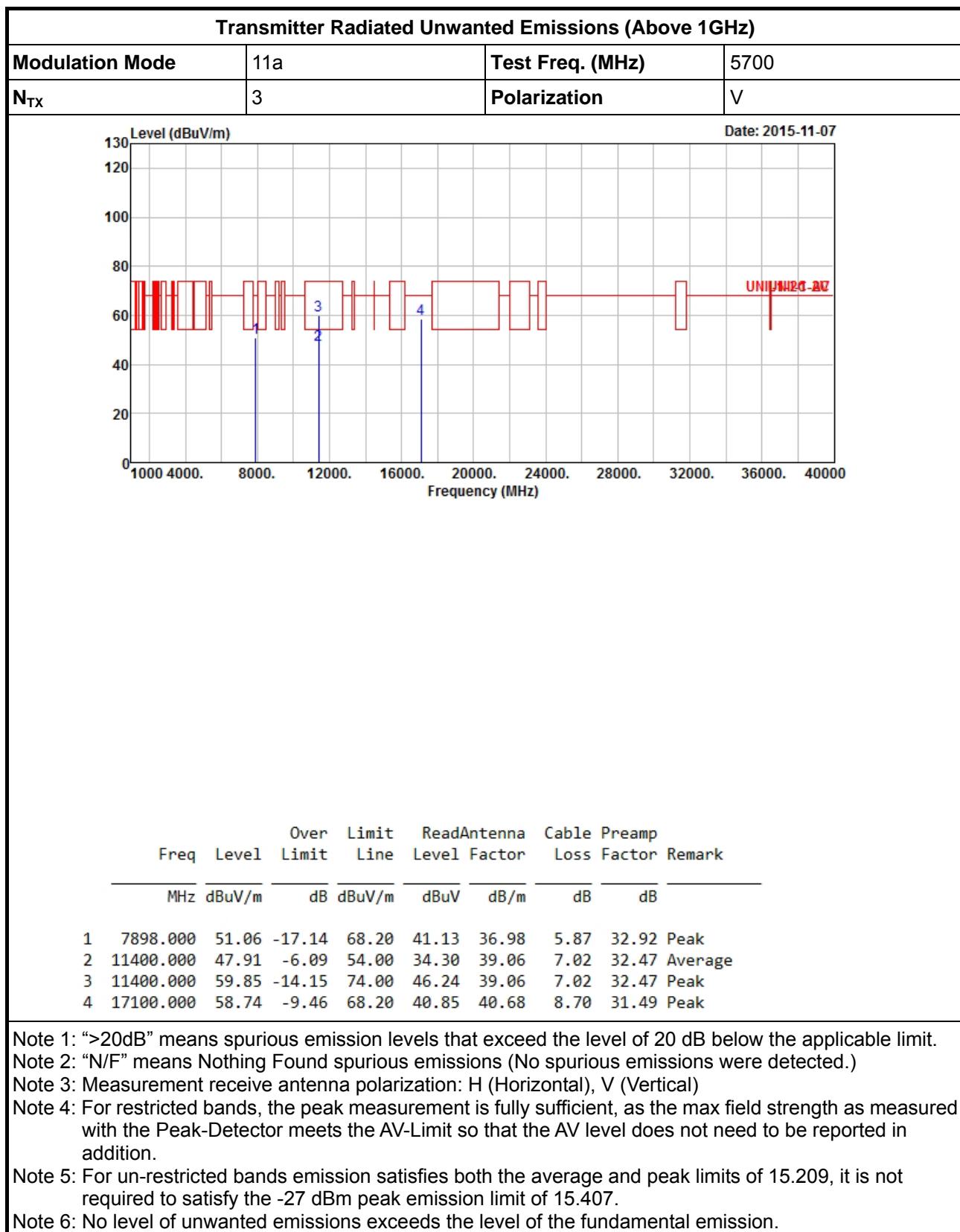
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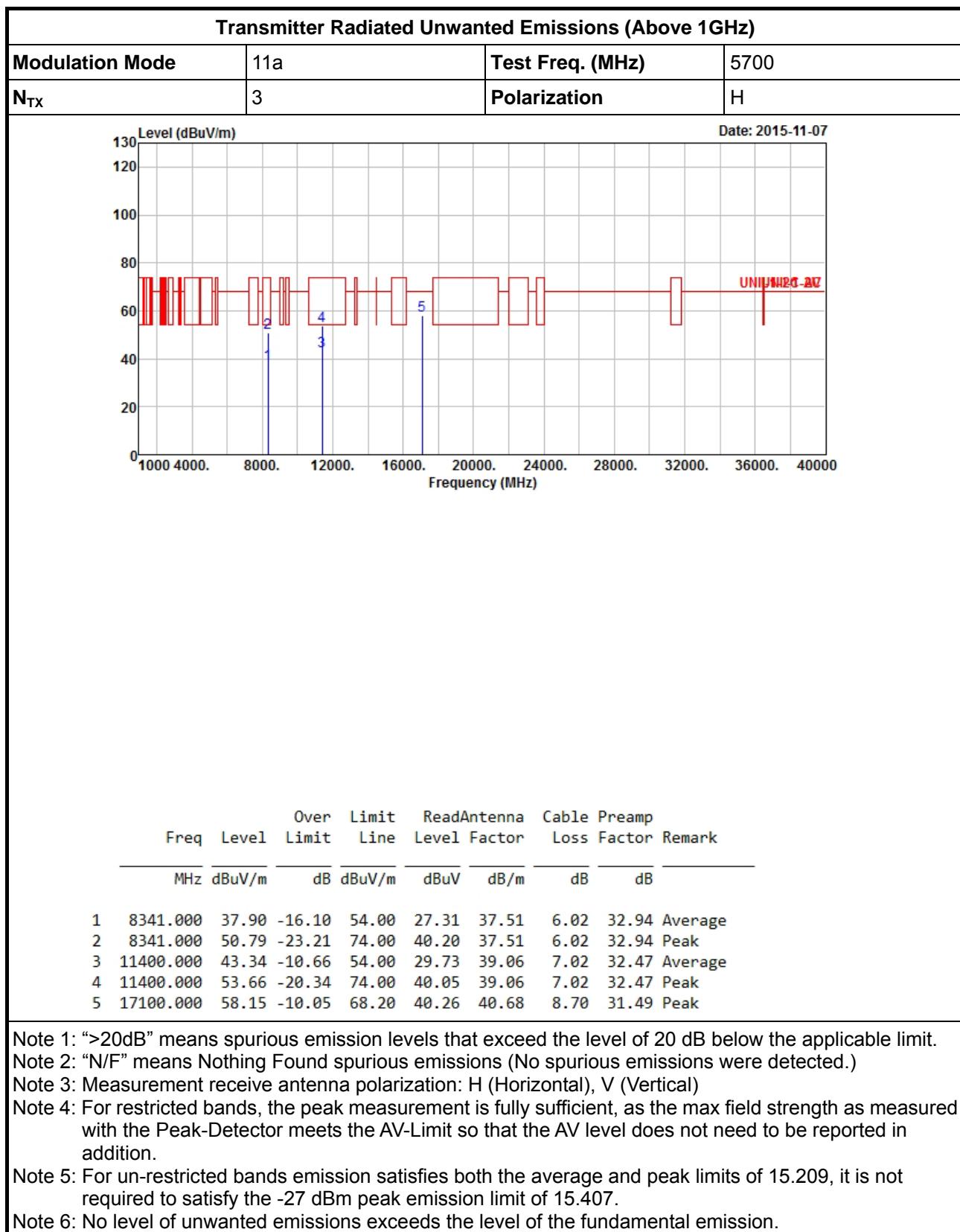
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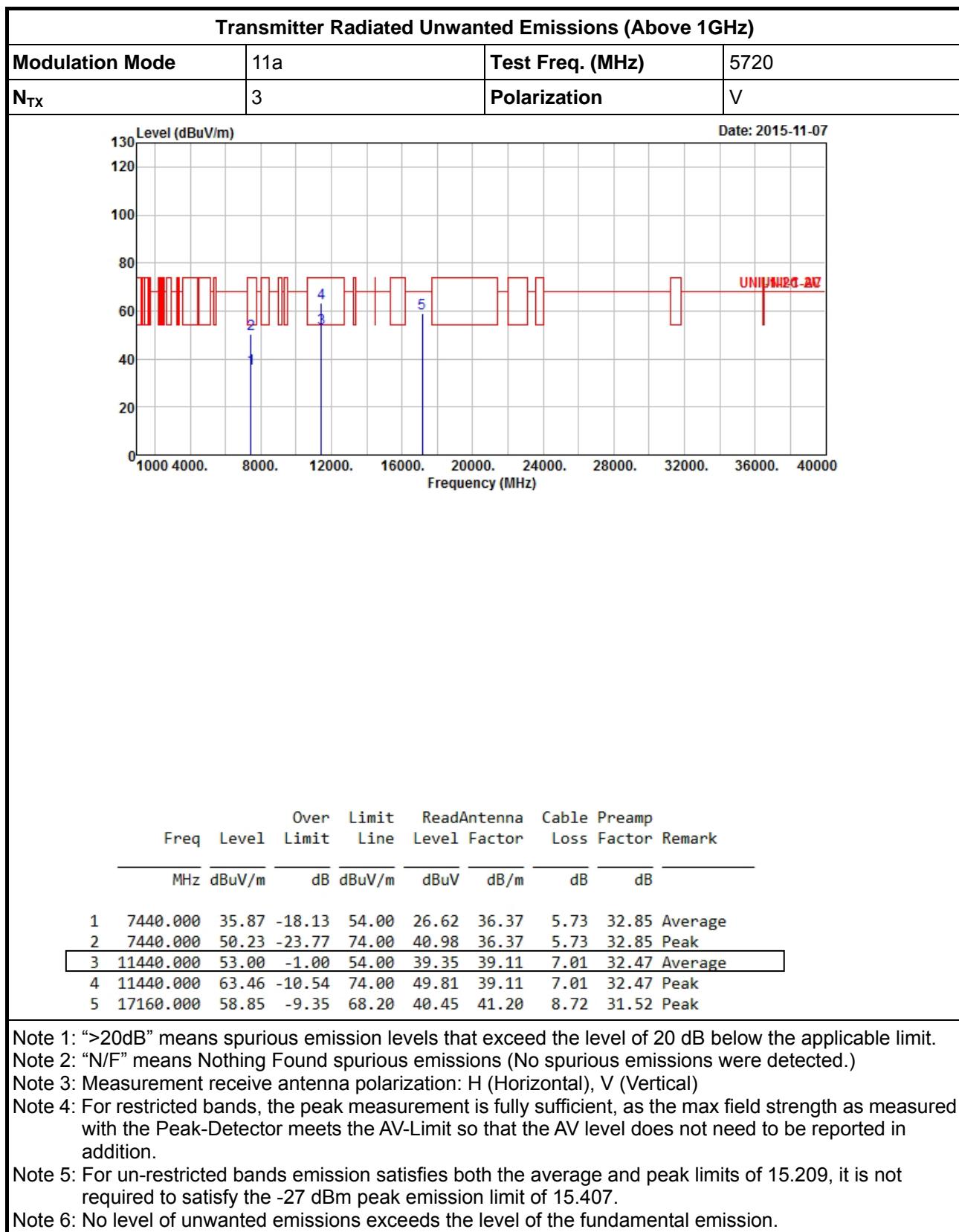
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

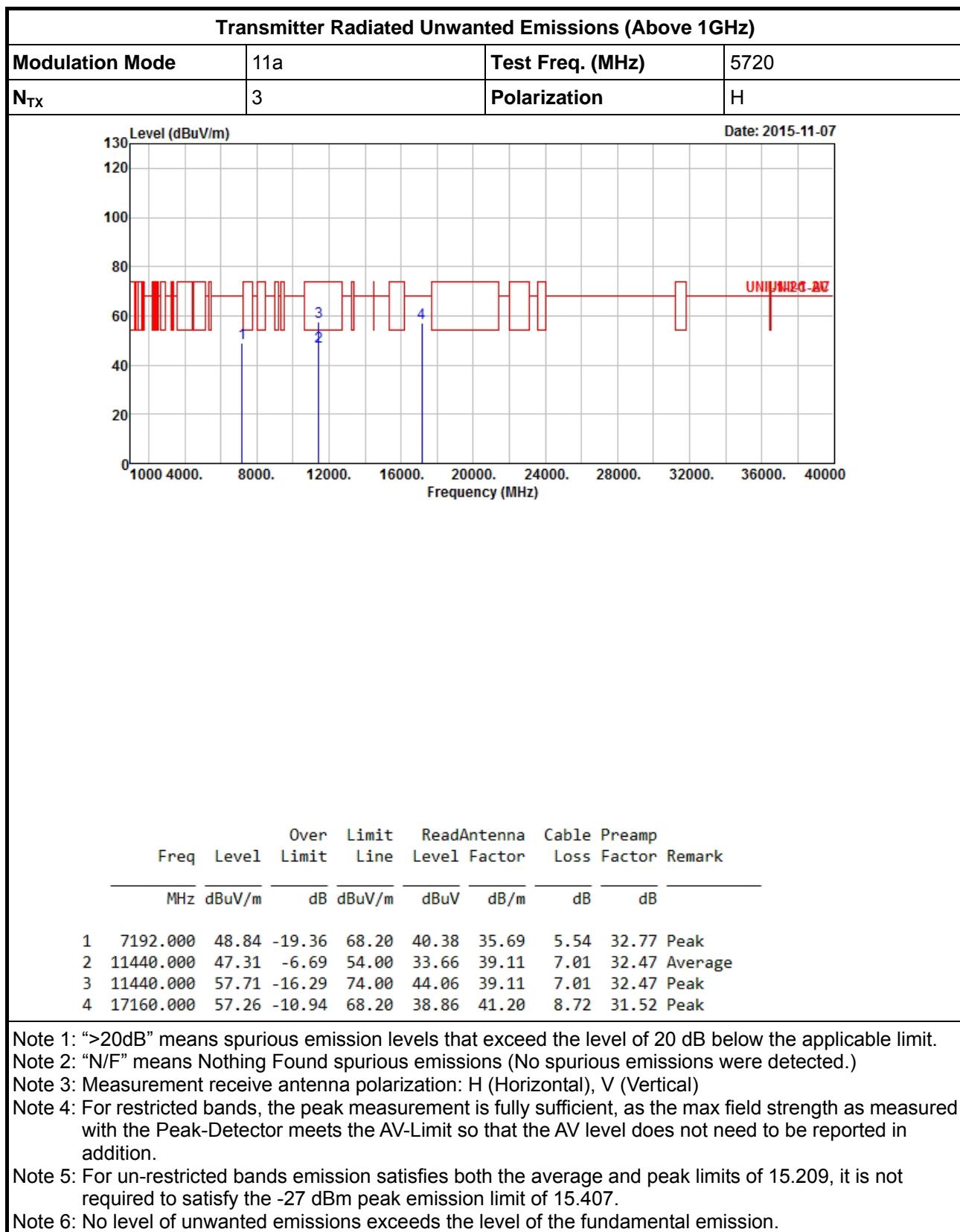


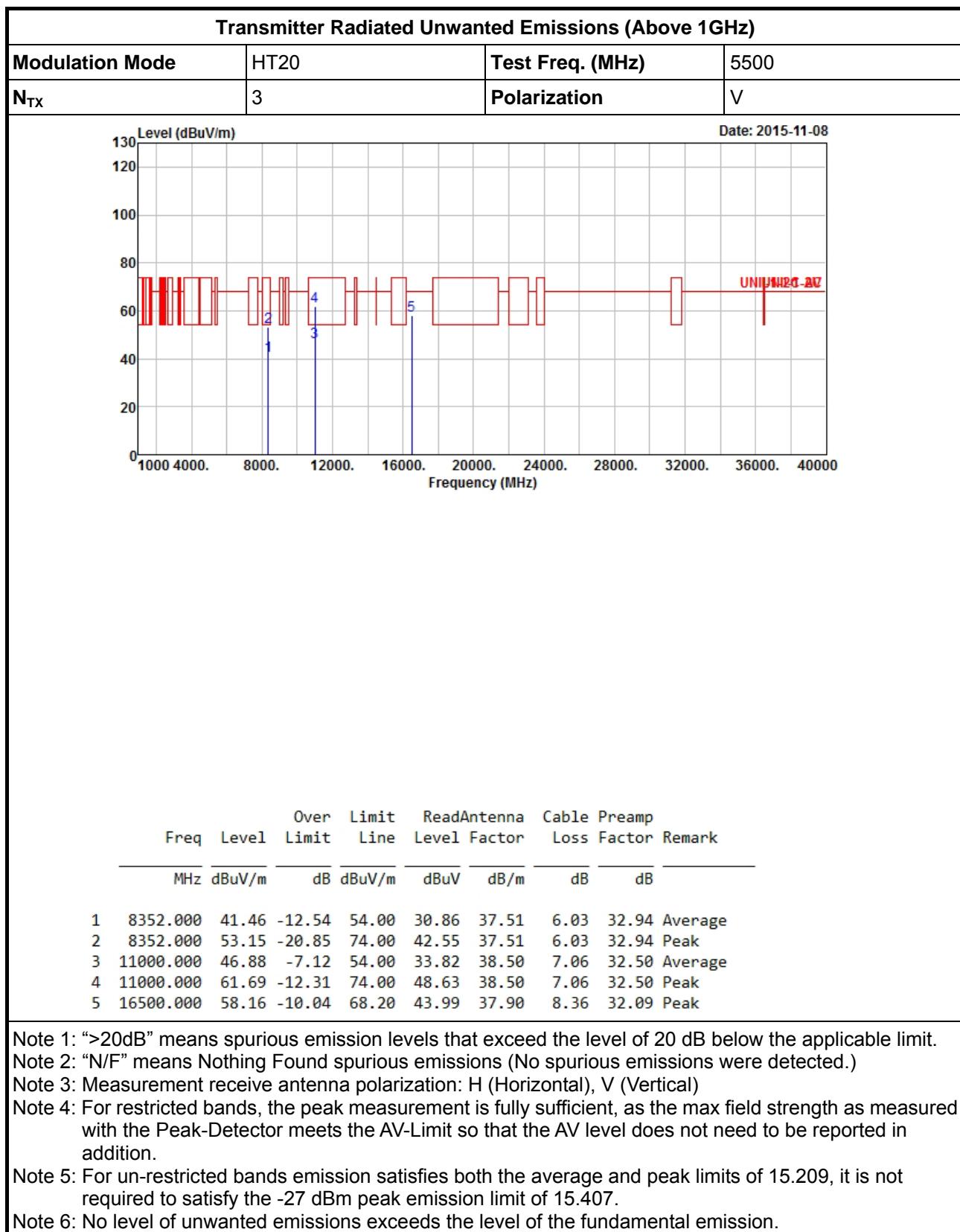


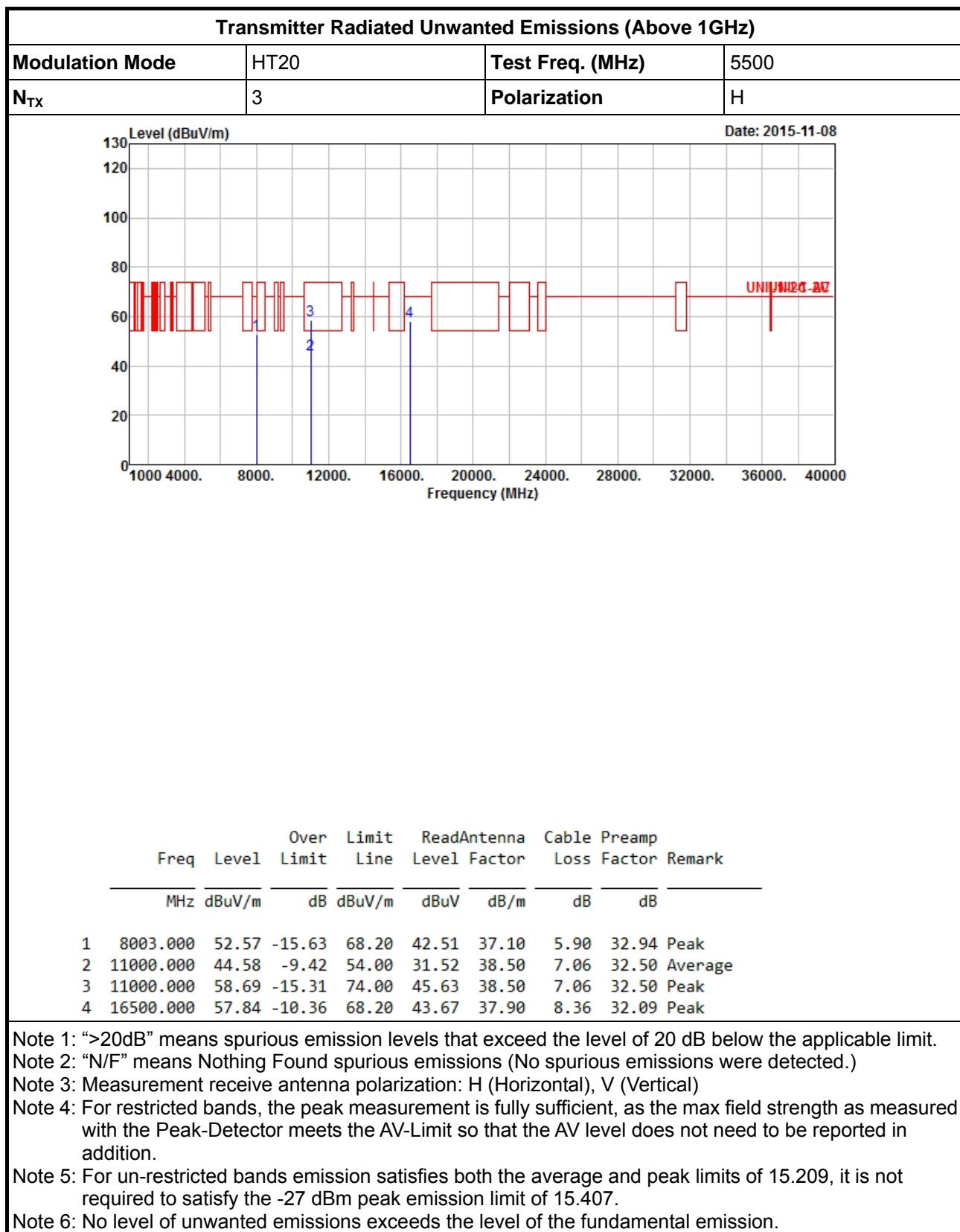


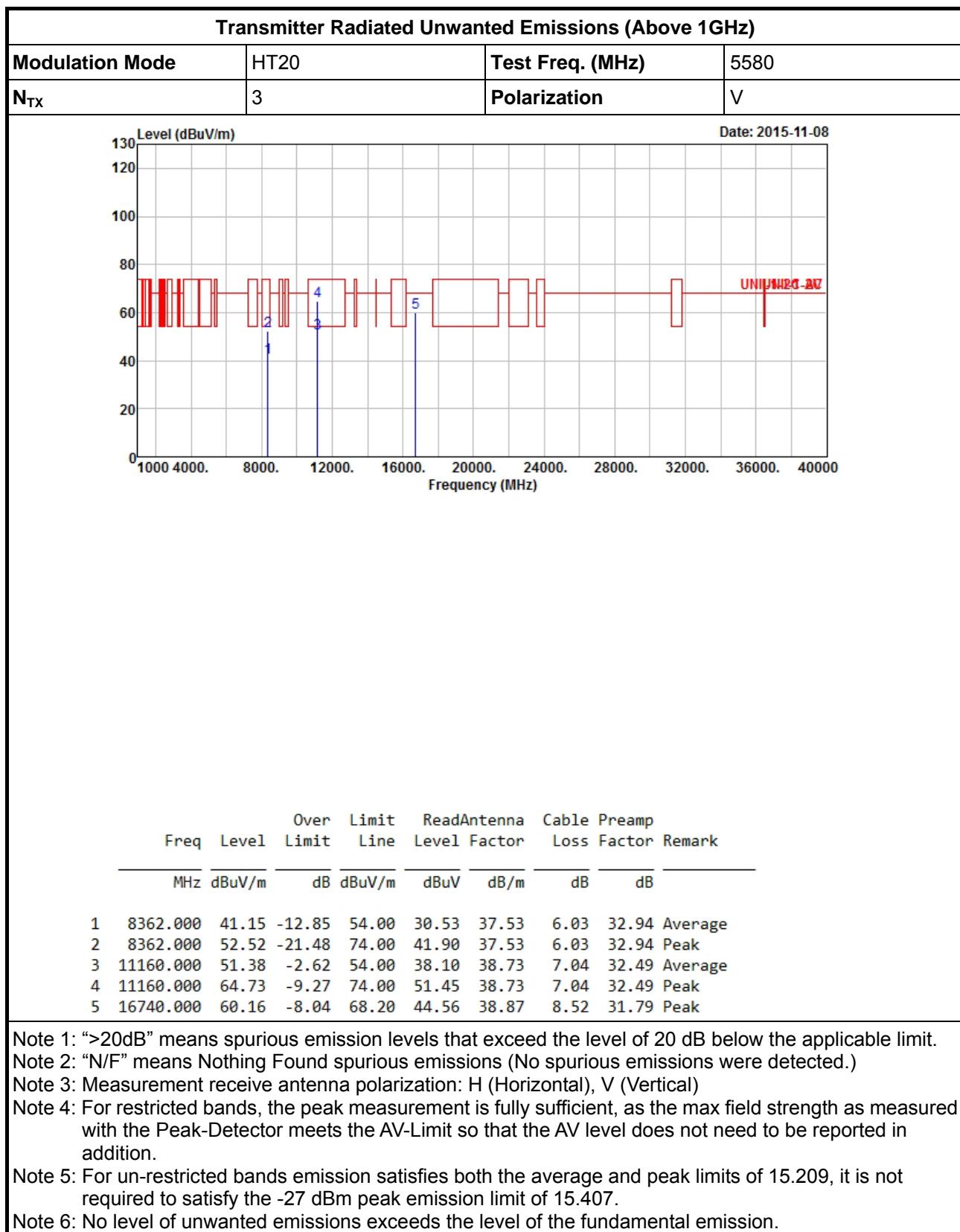


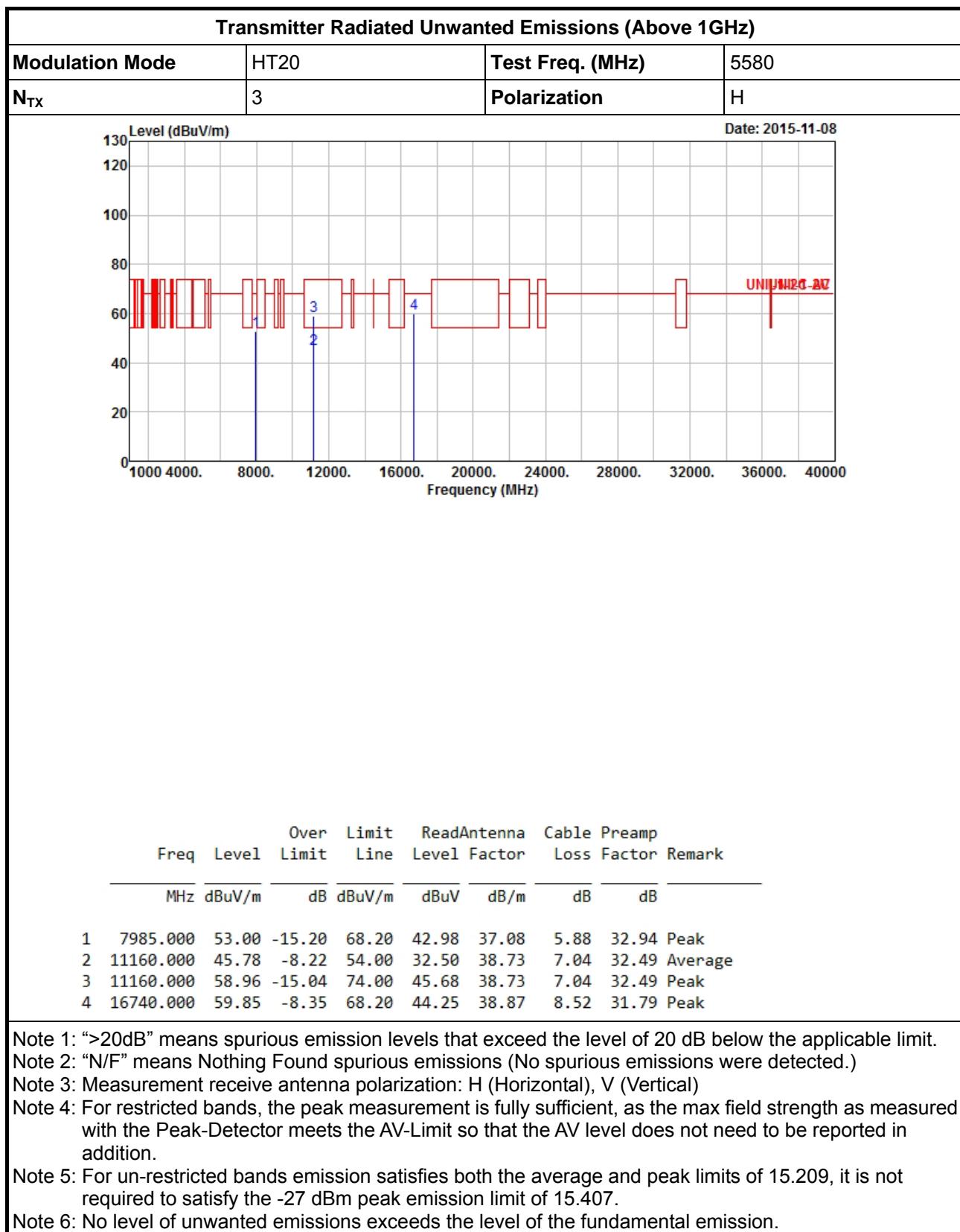












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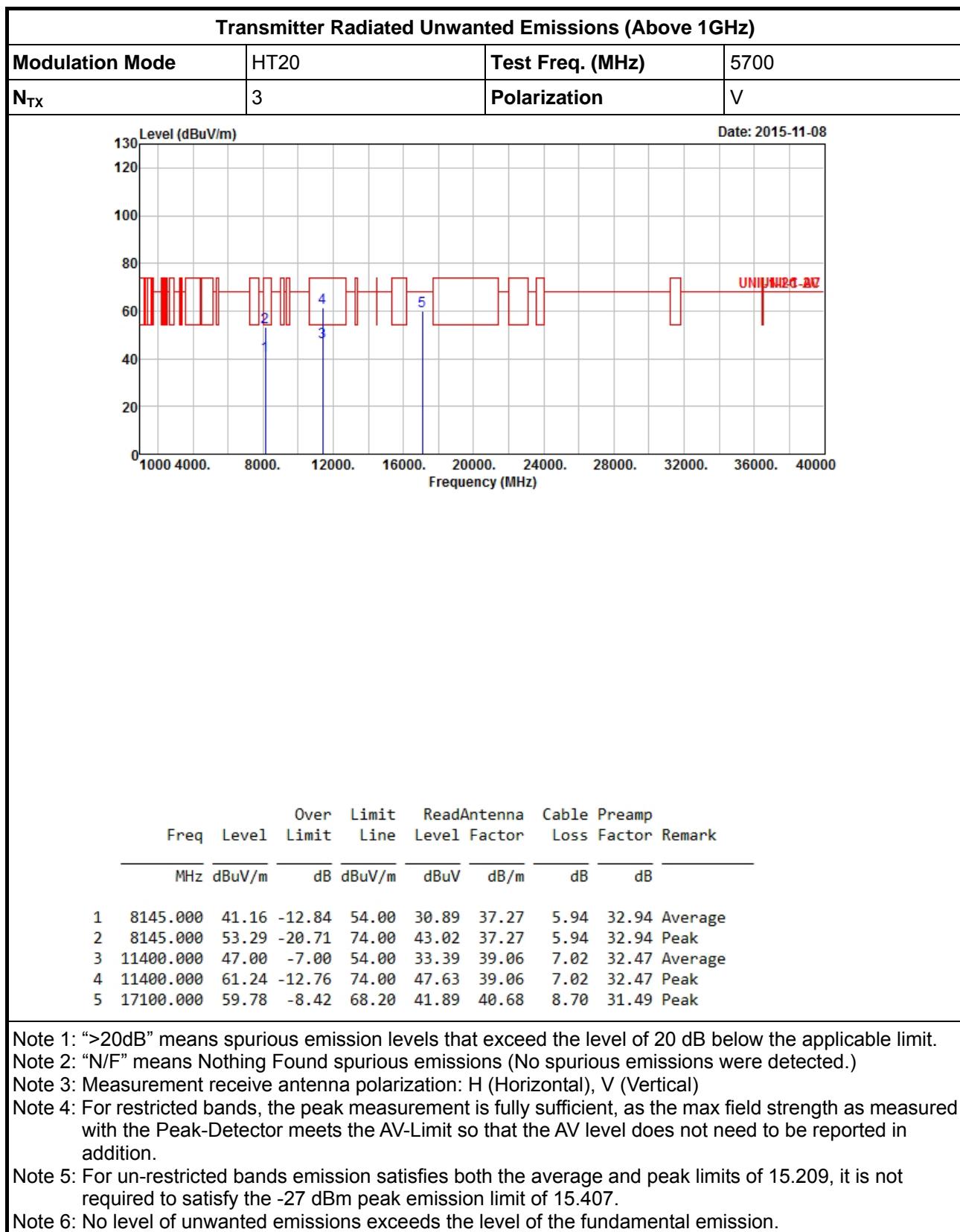
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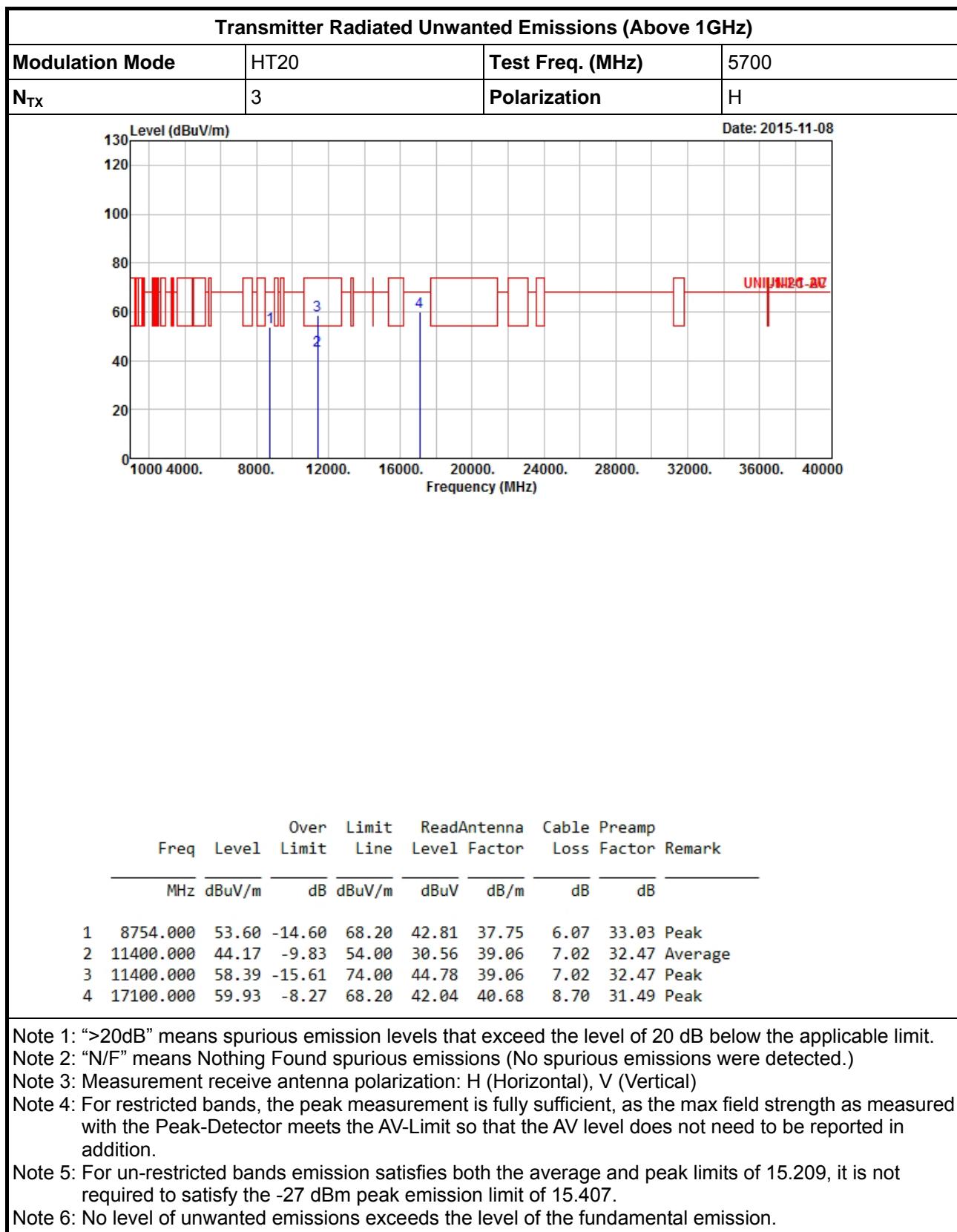
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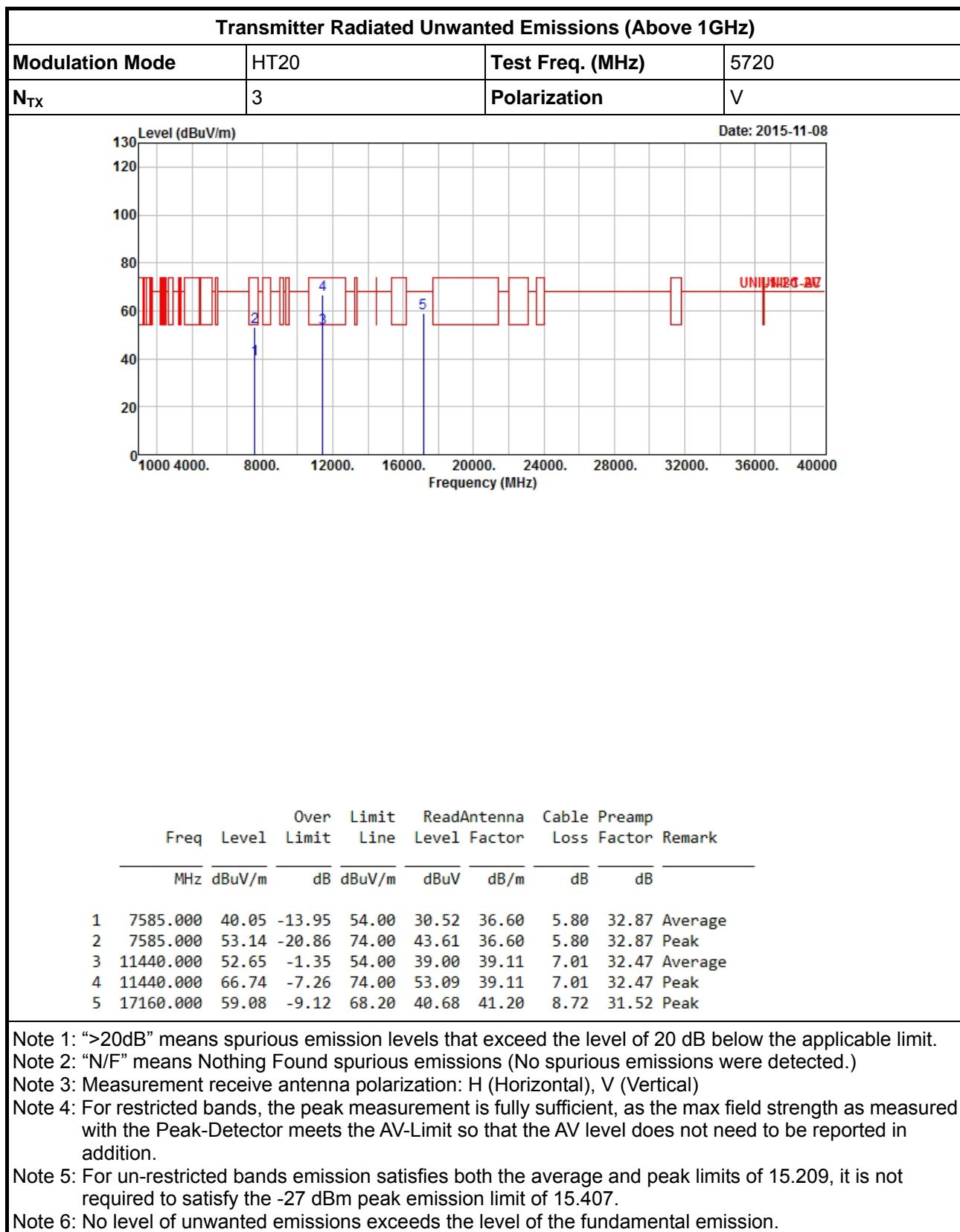
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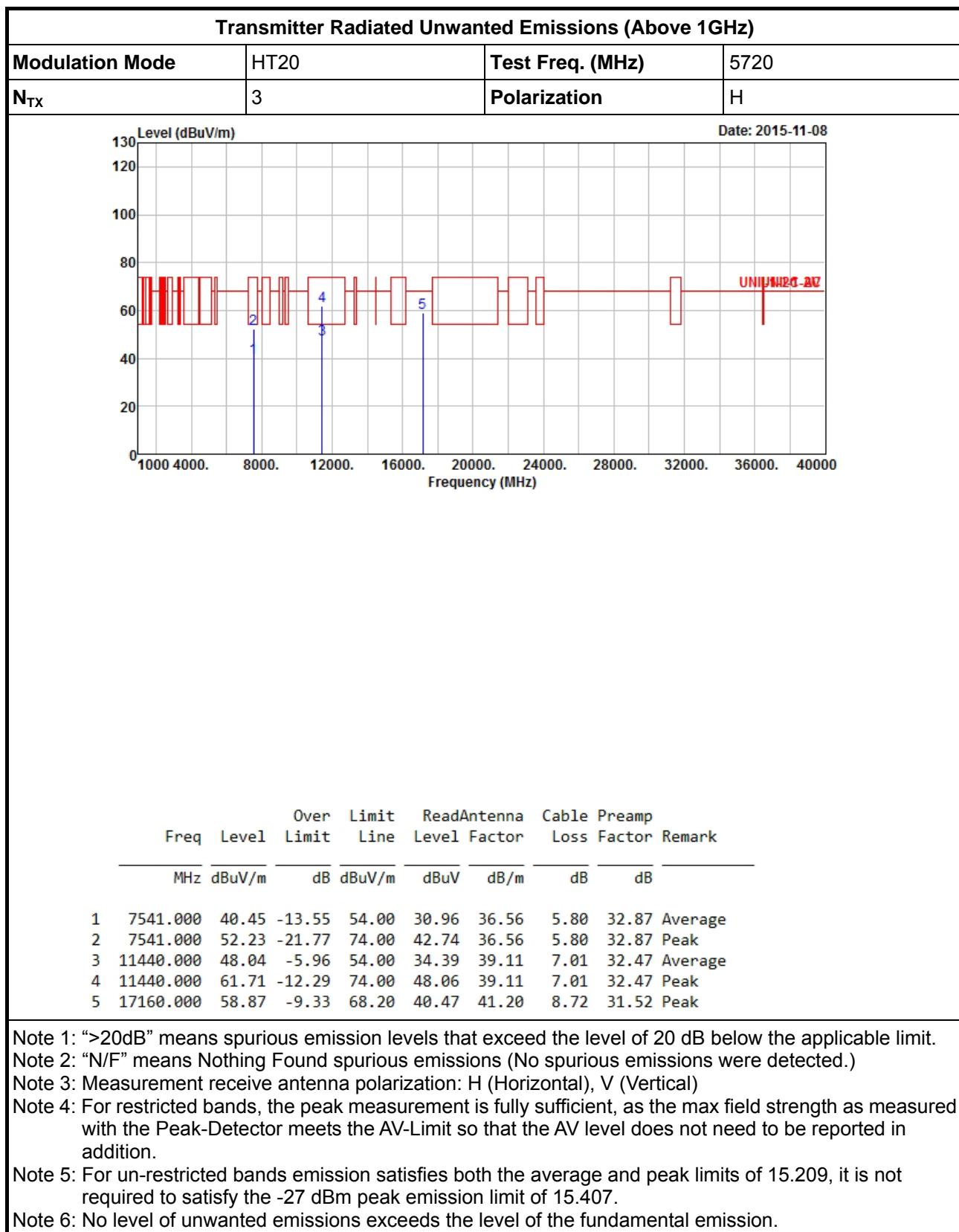
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.

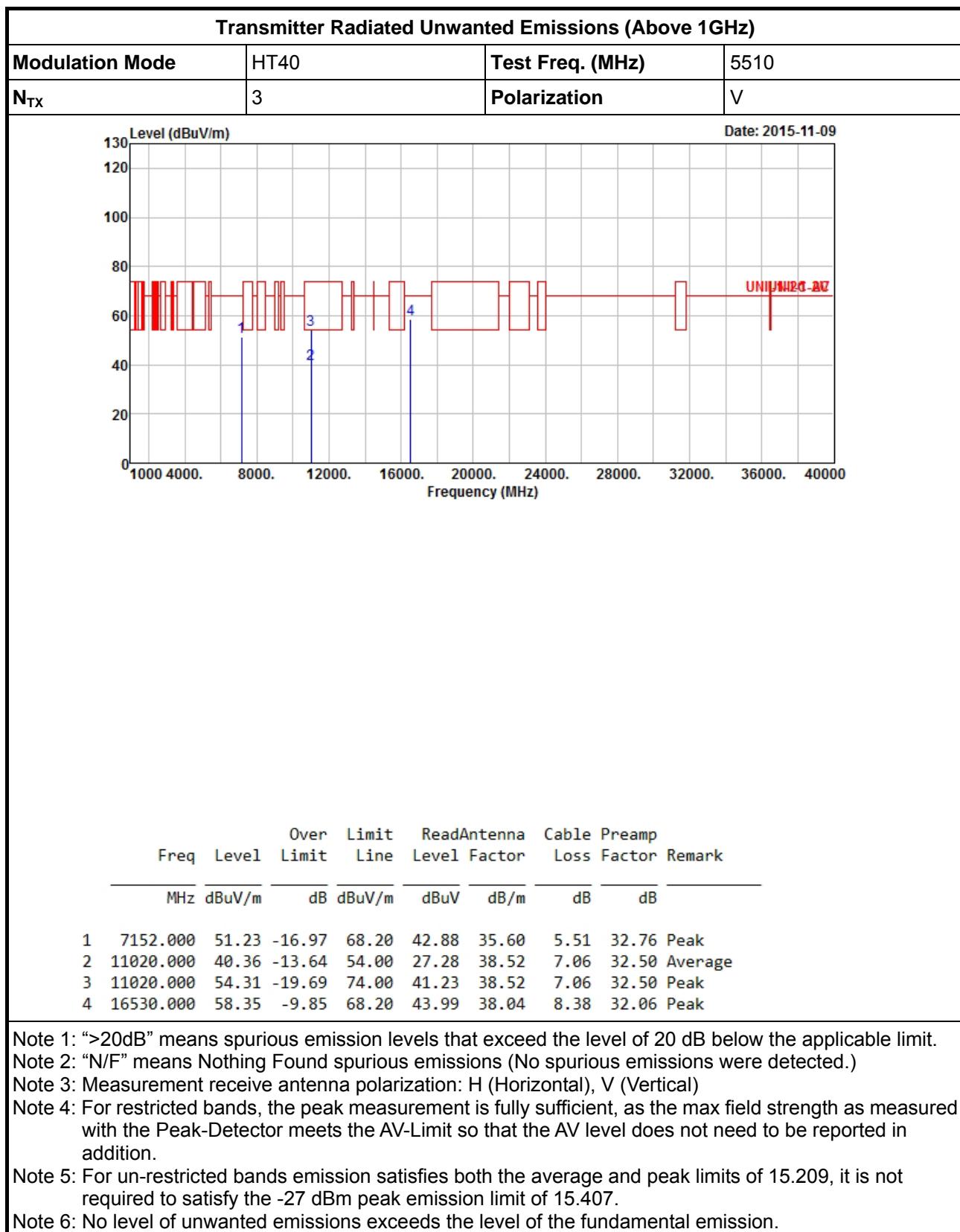
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

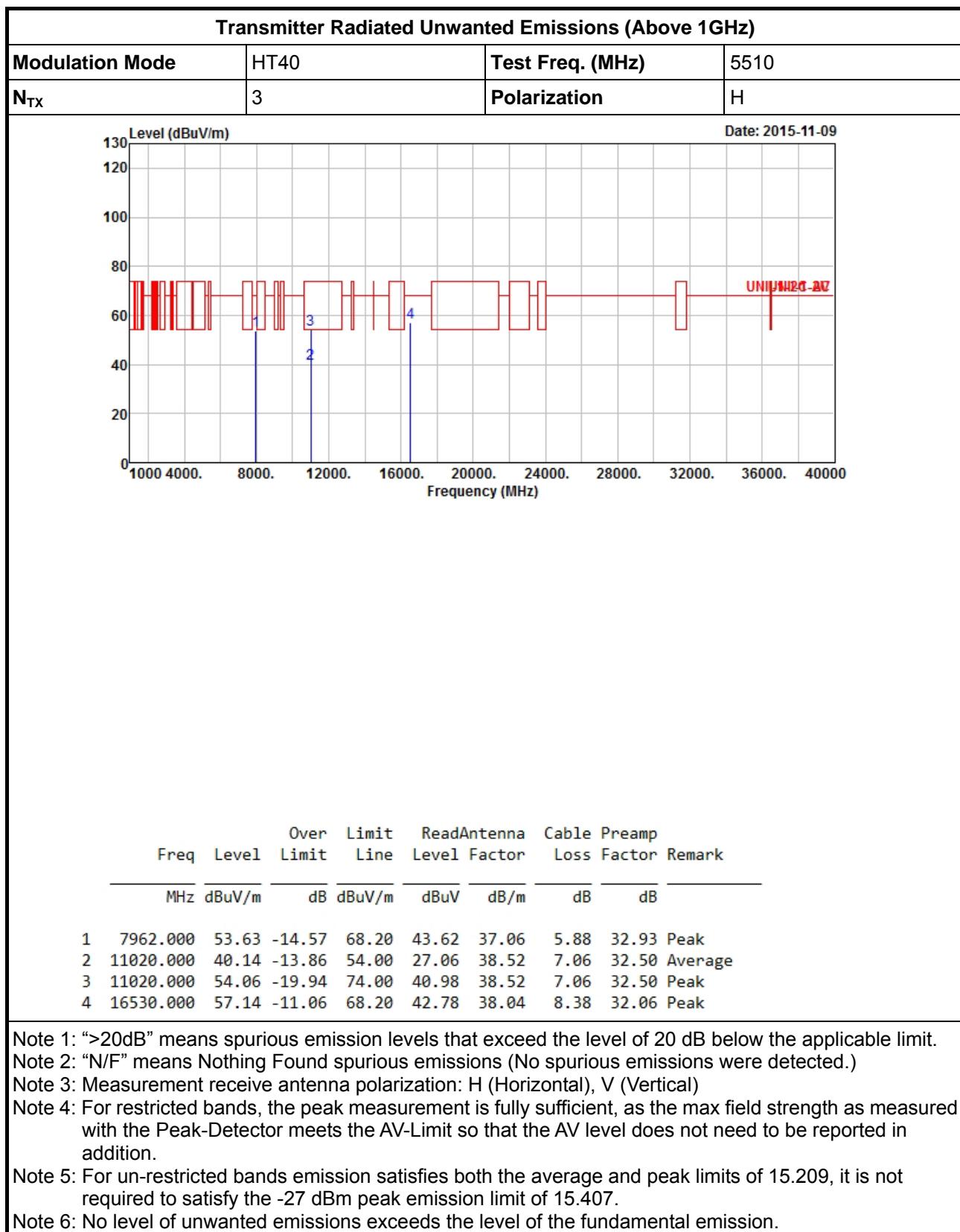


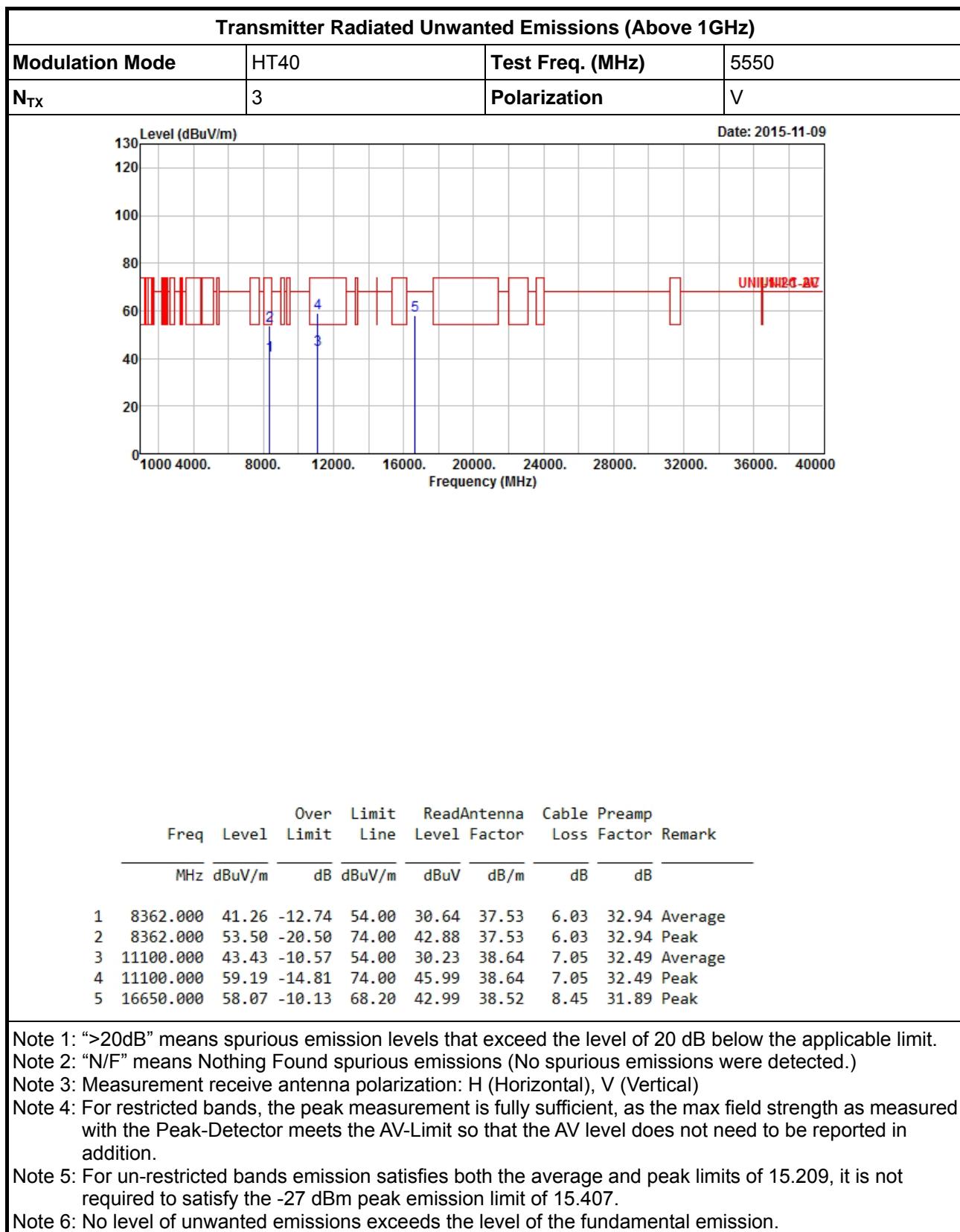


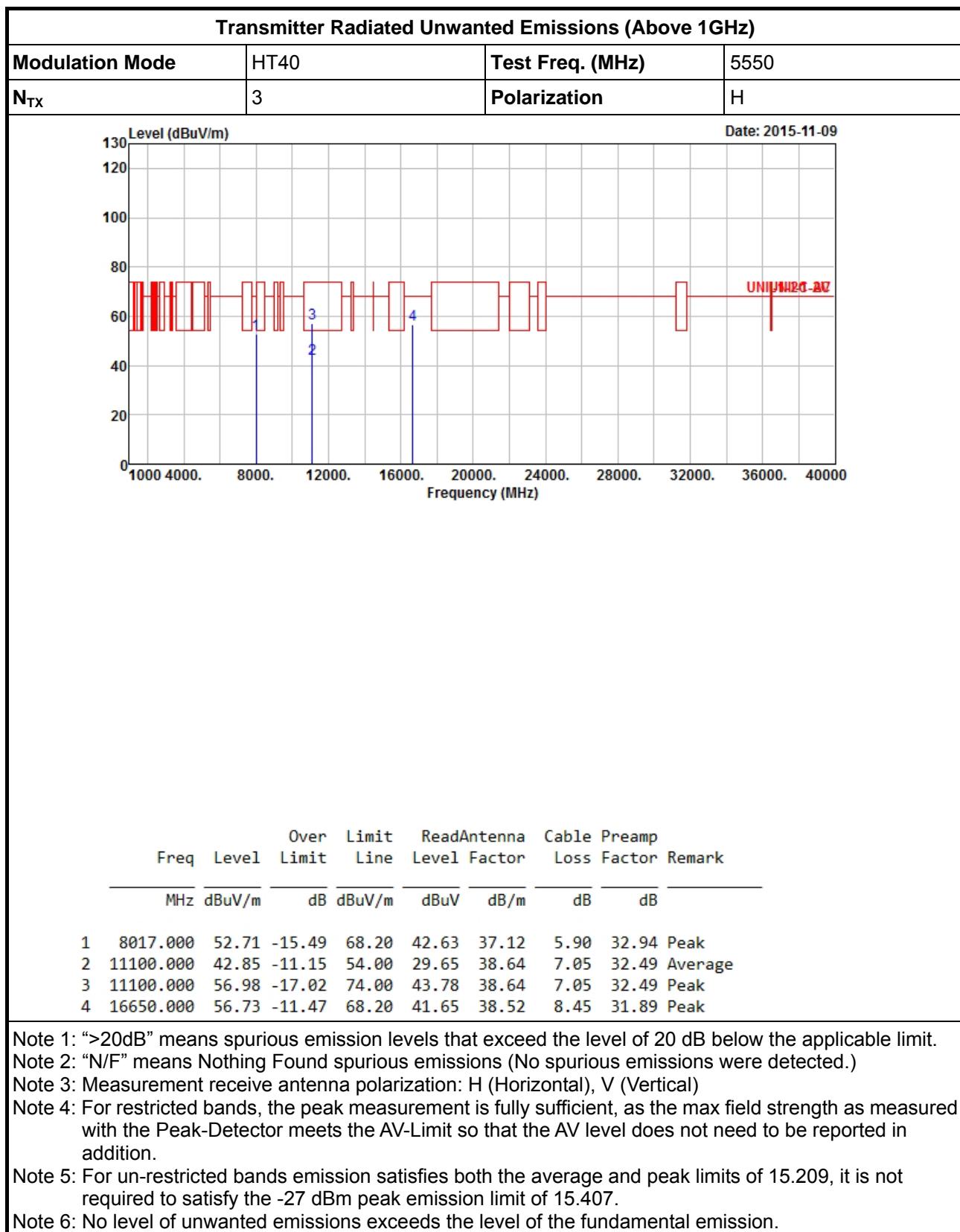


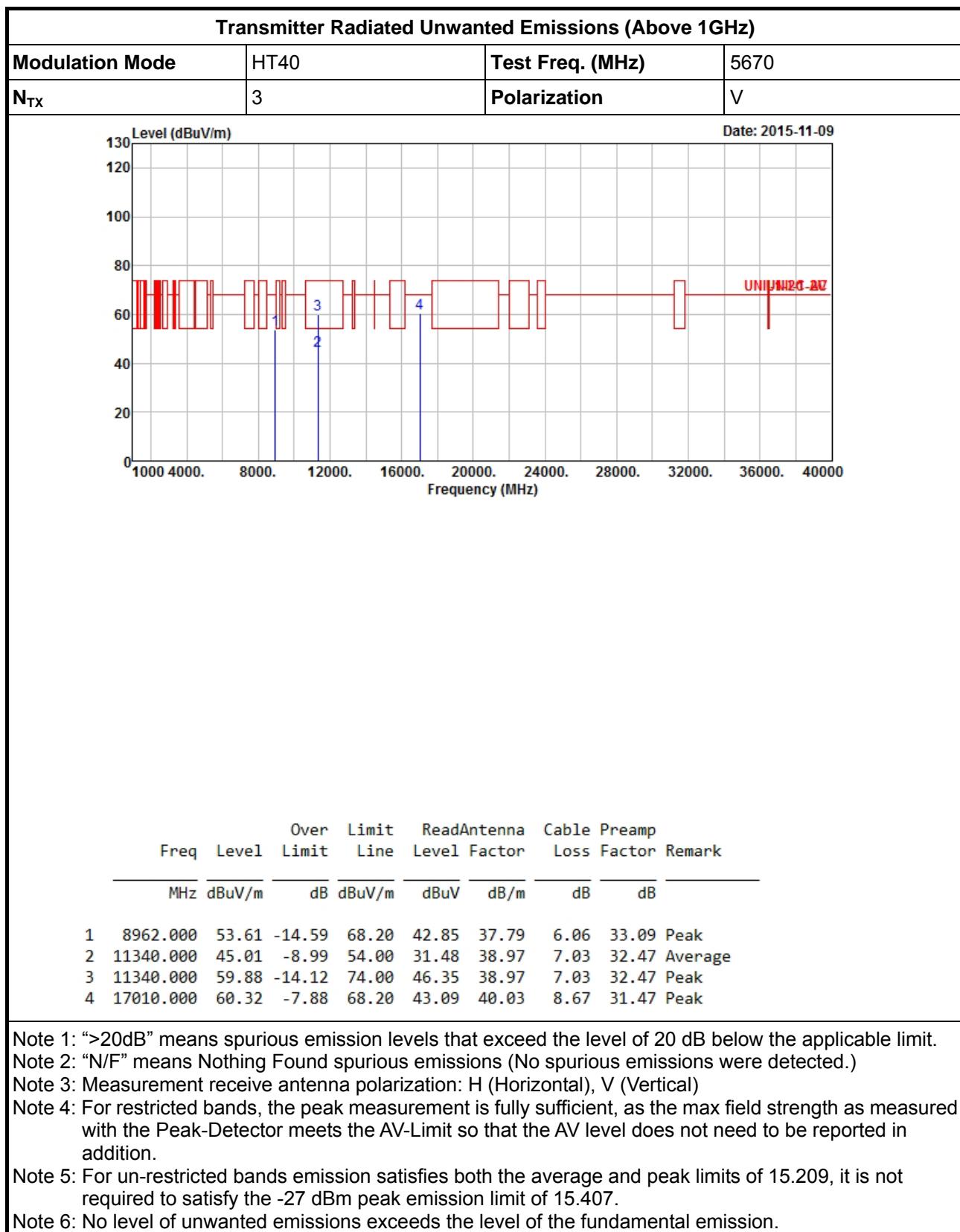


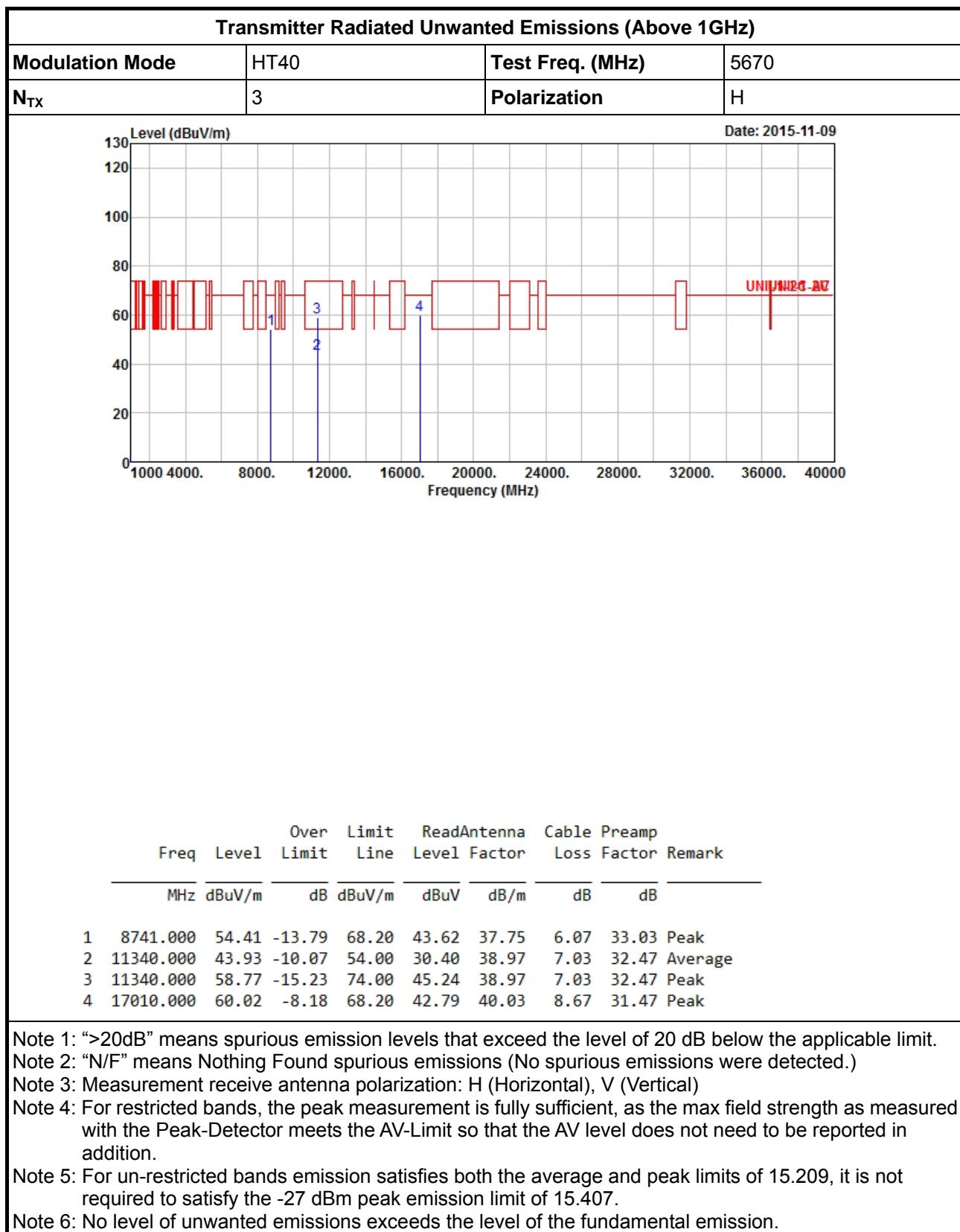


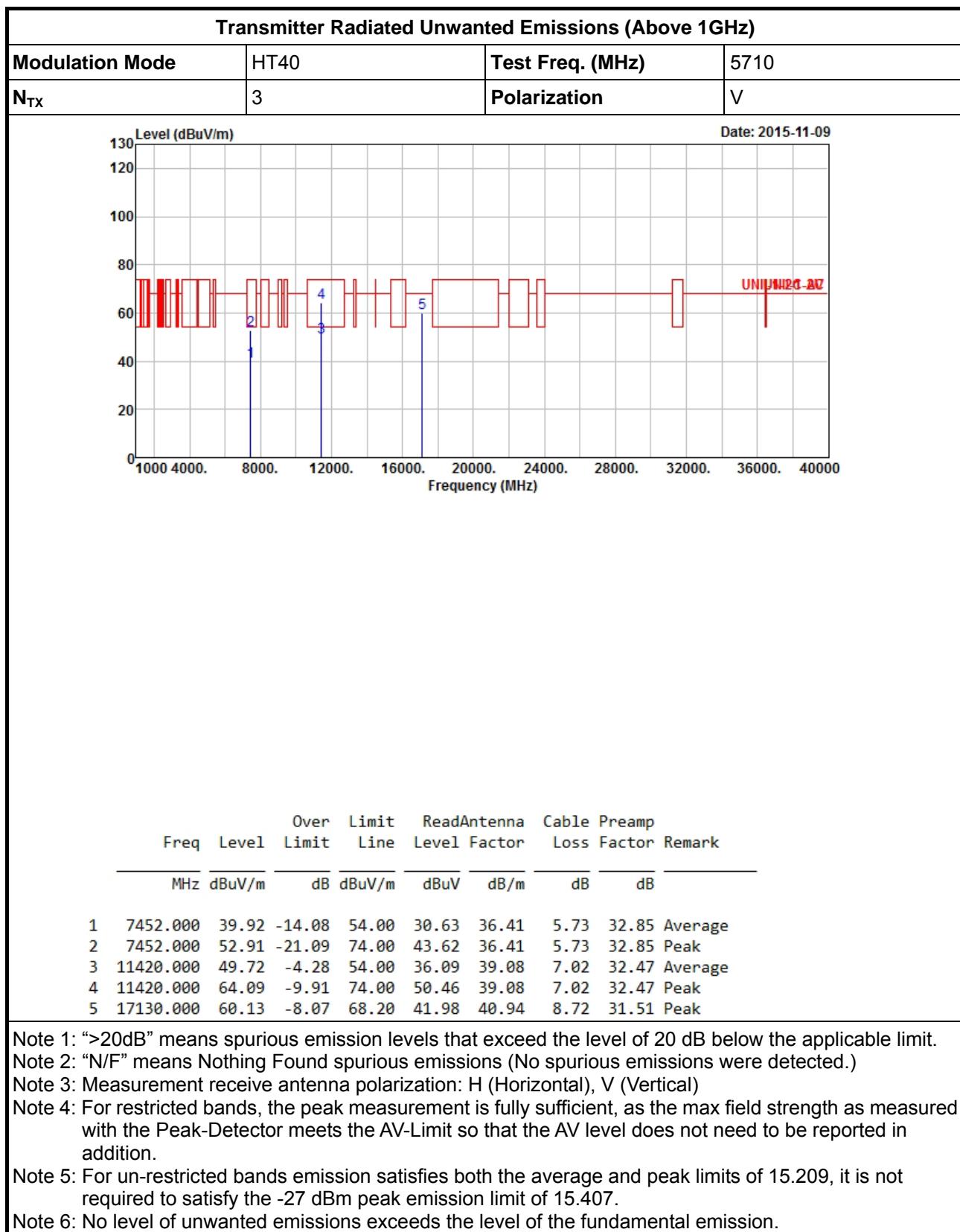


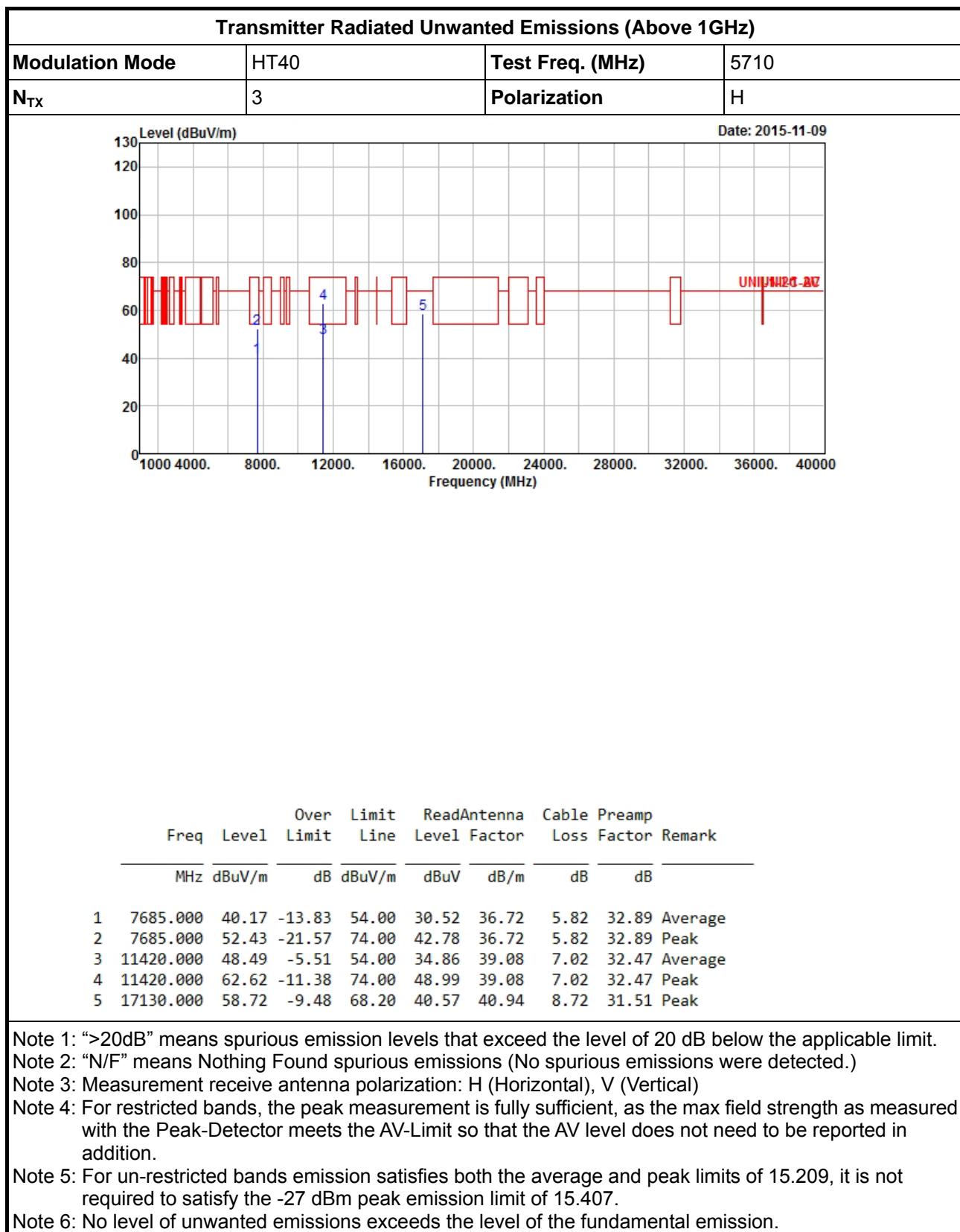


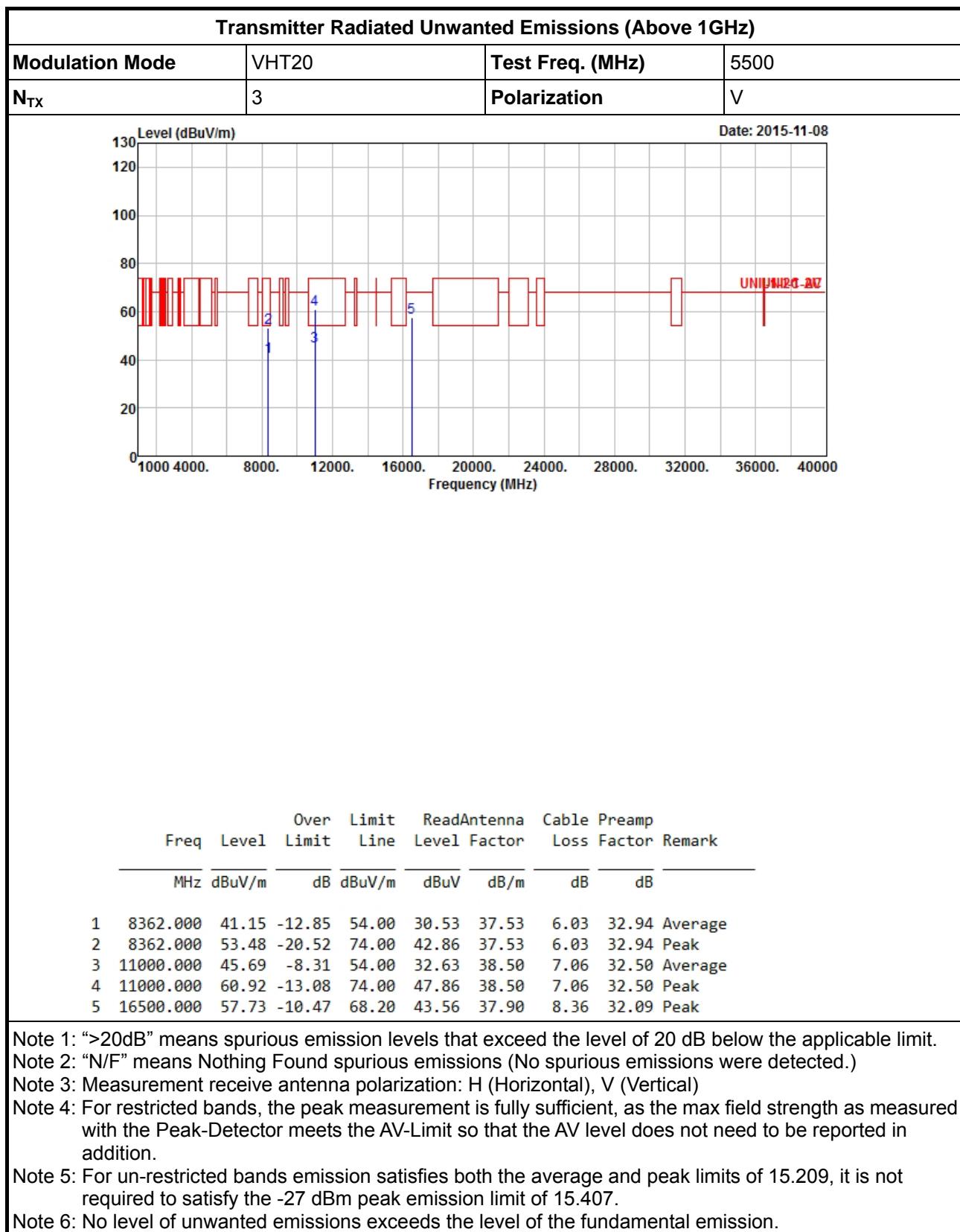


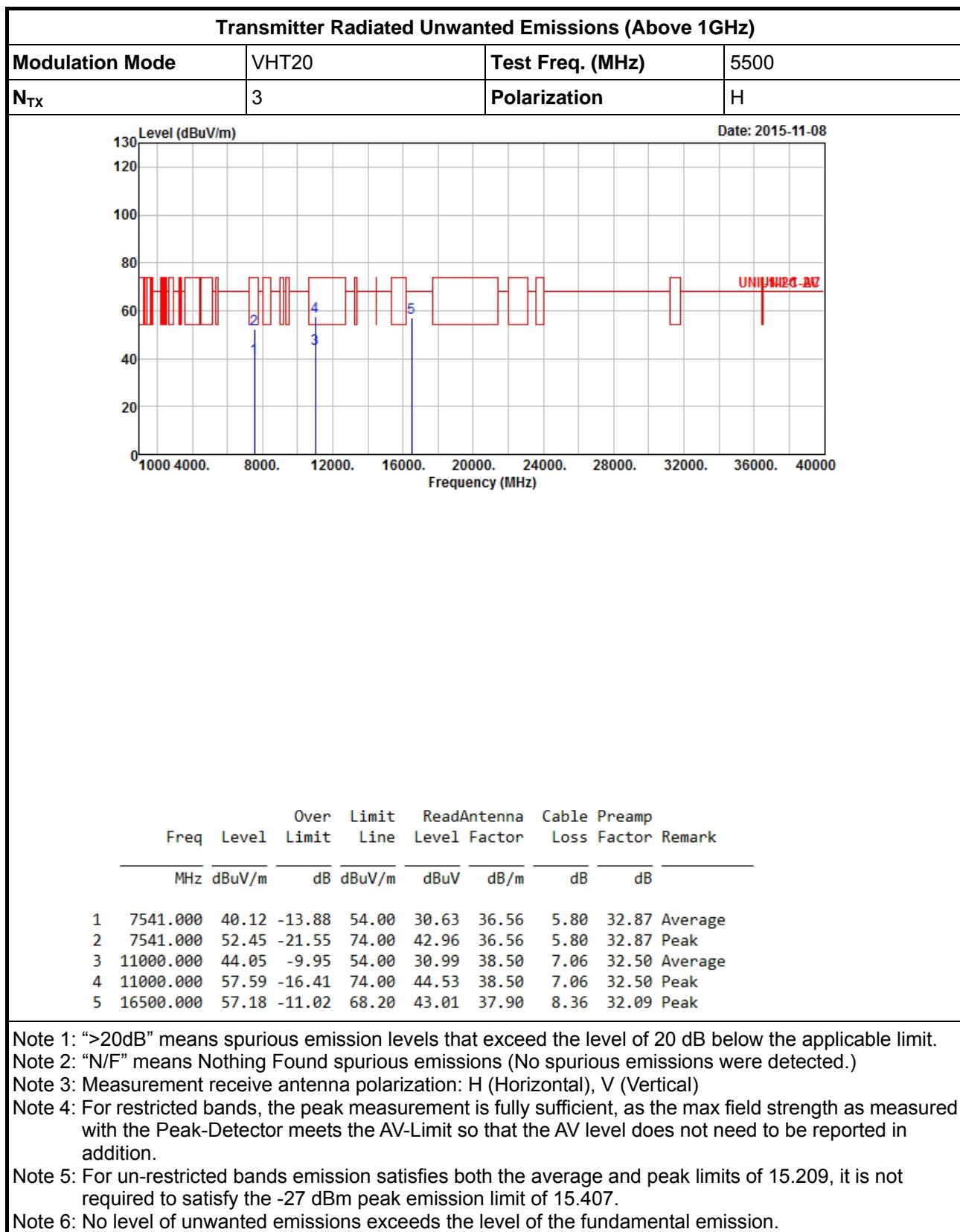


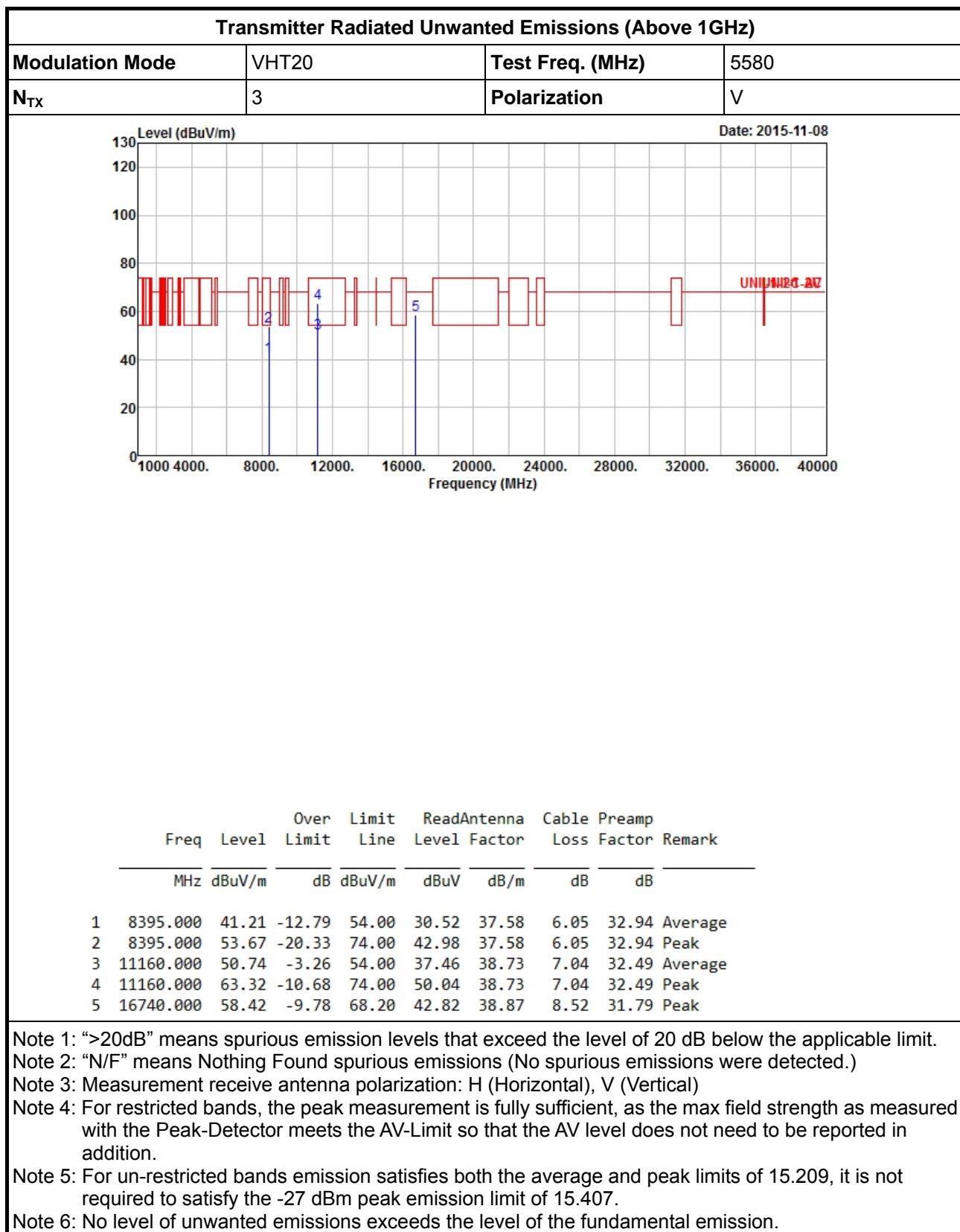


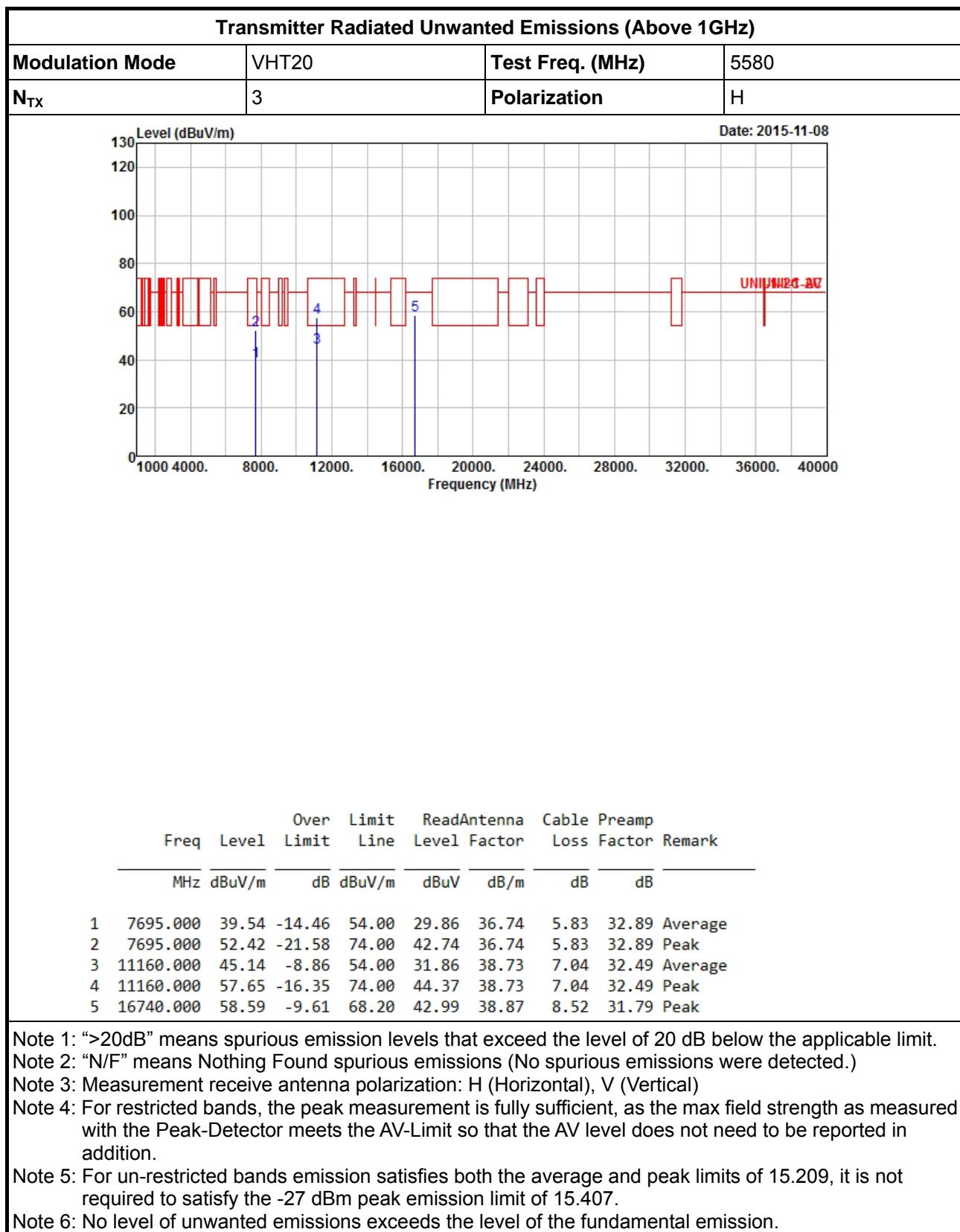


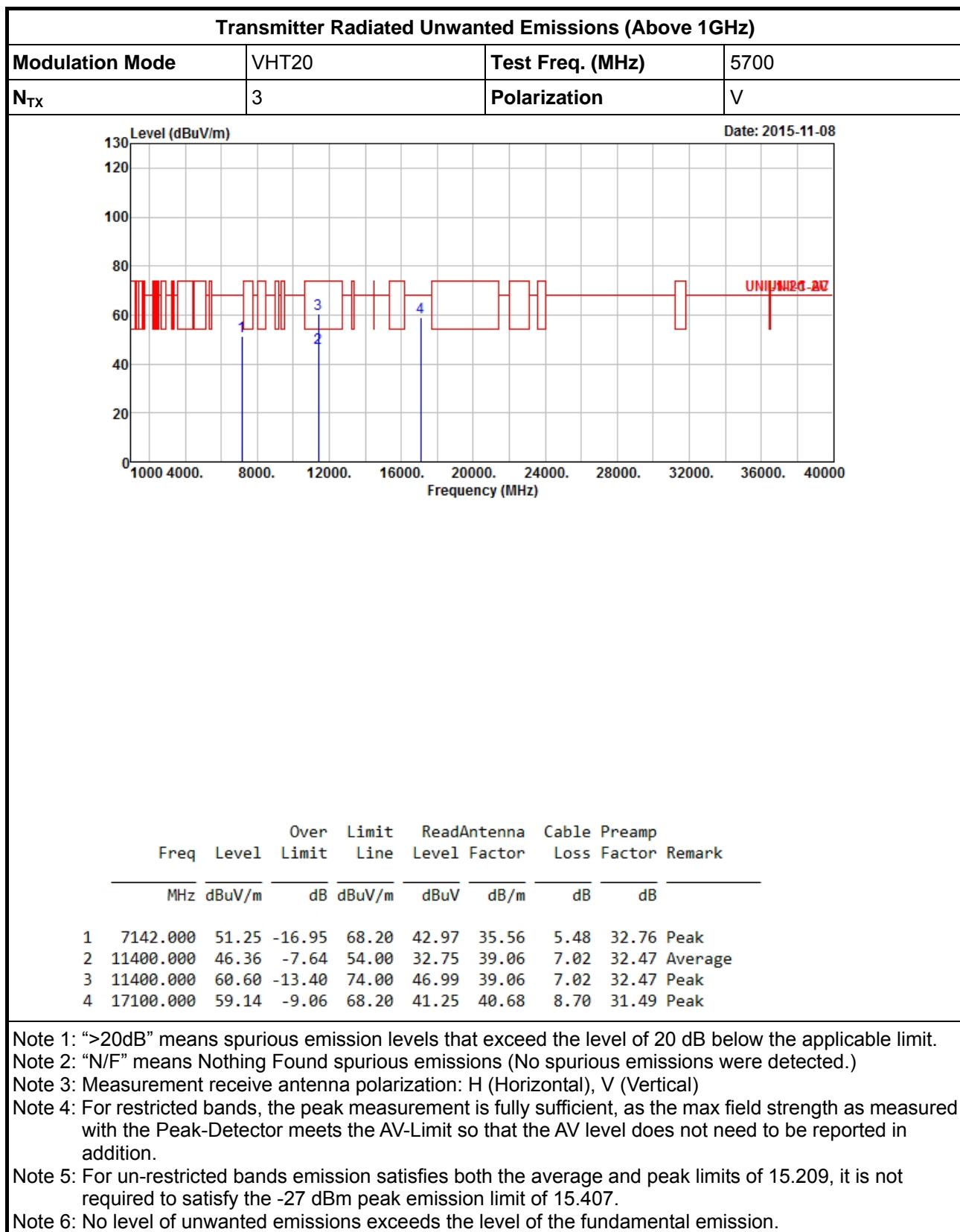


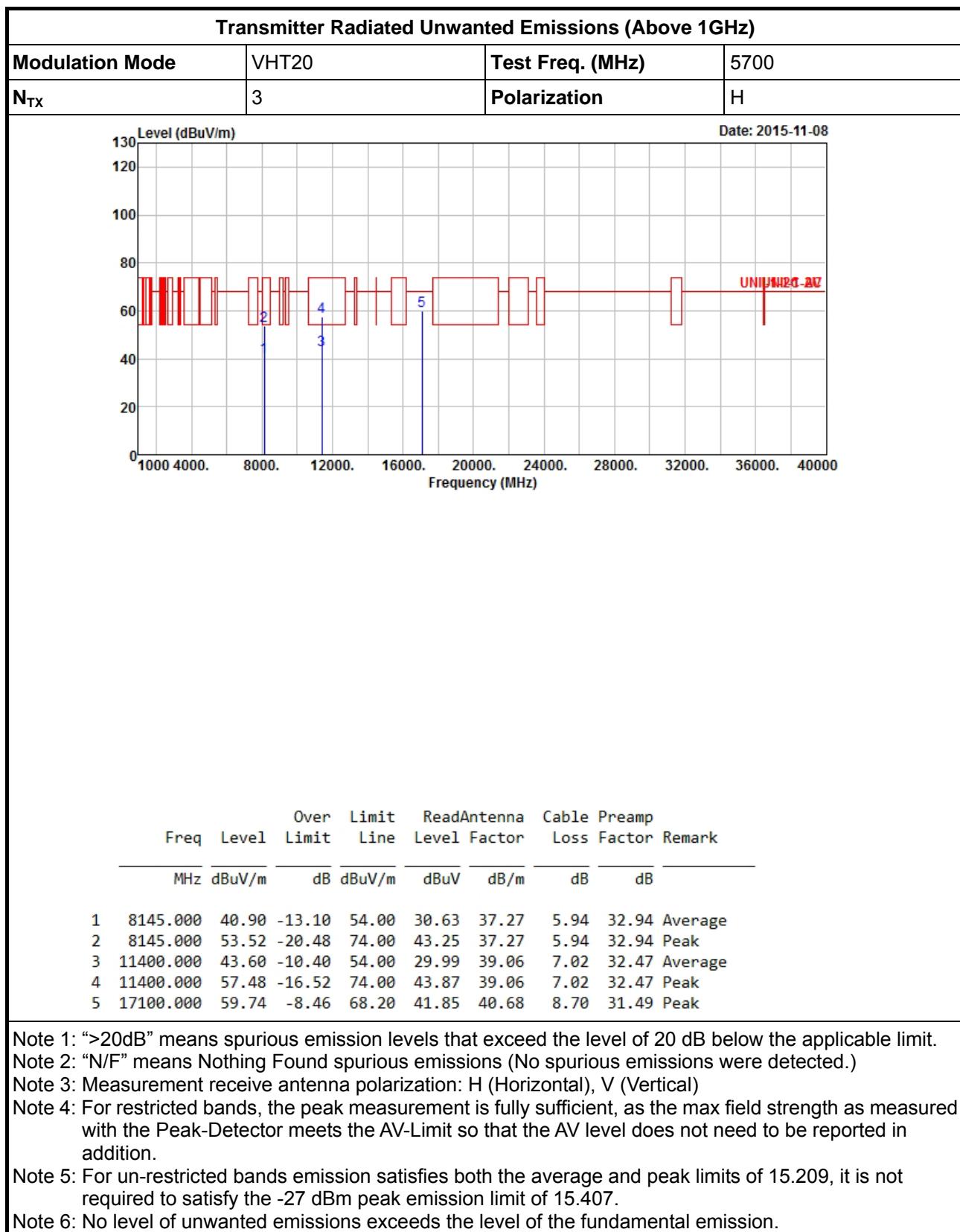


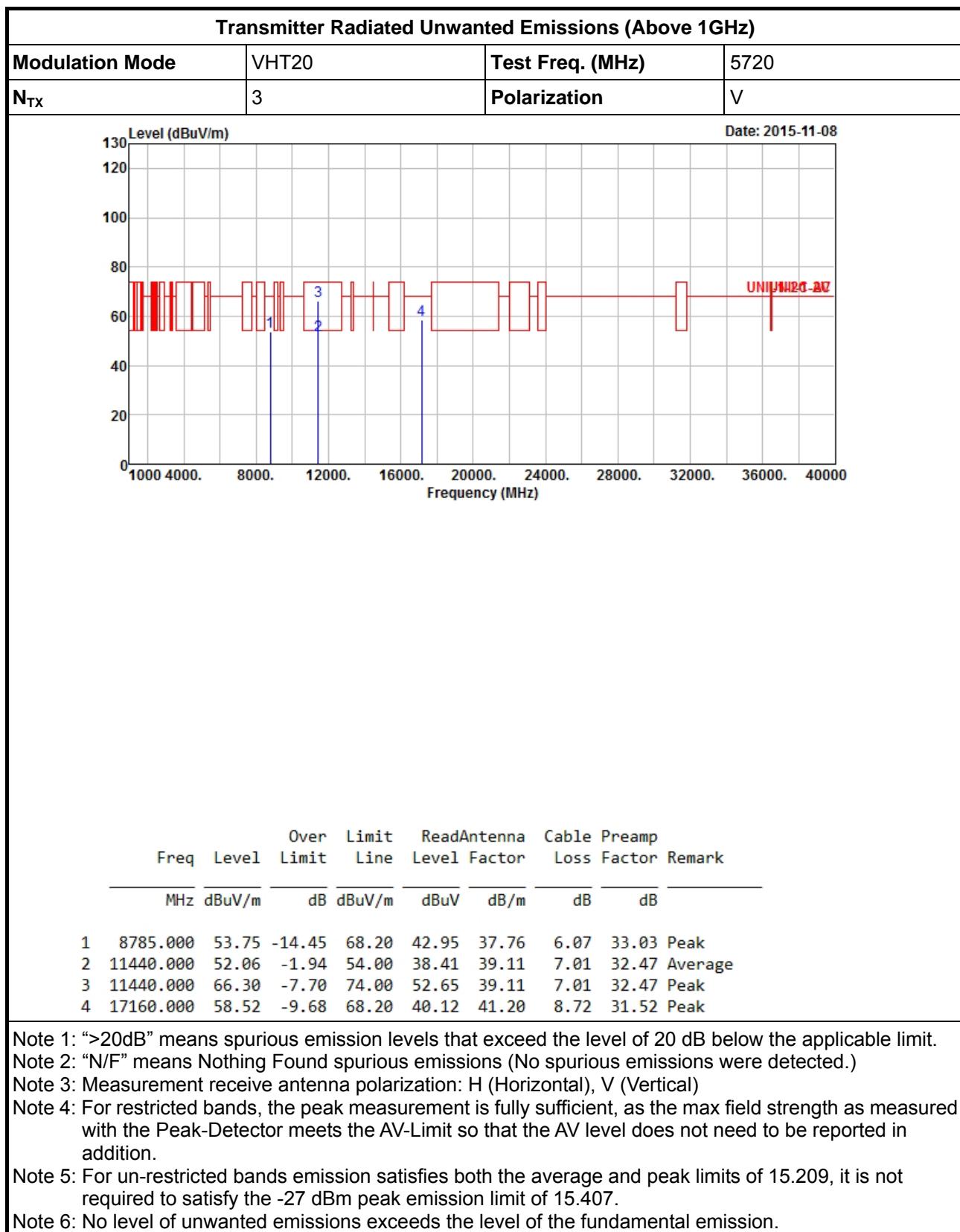


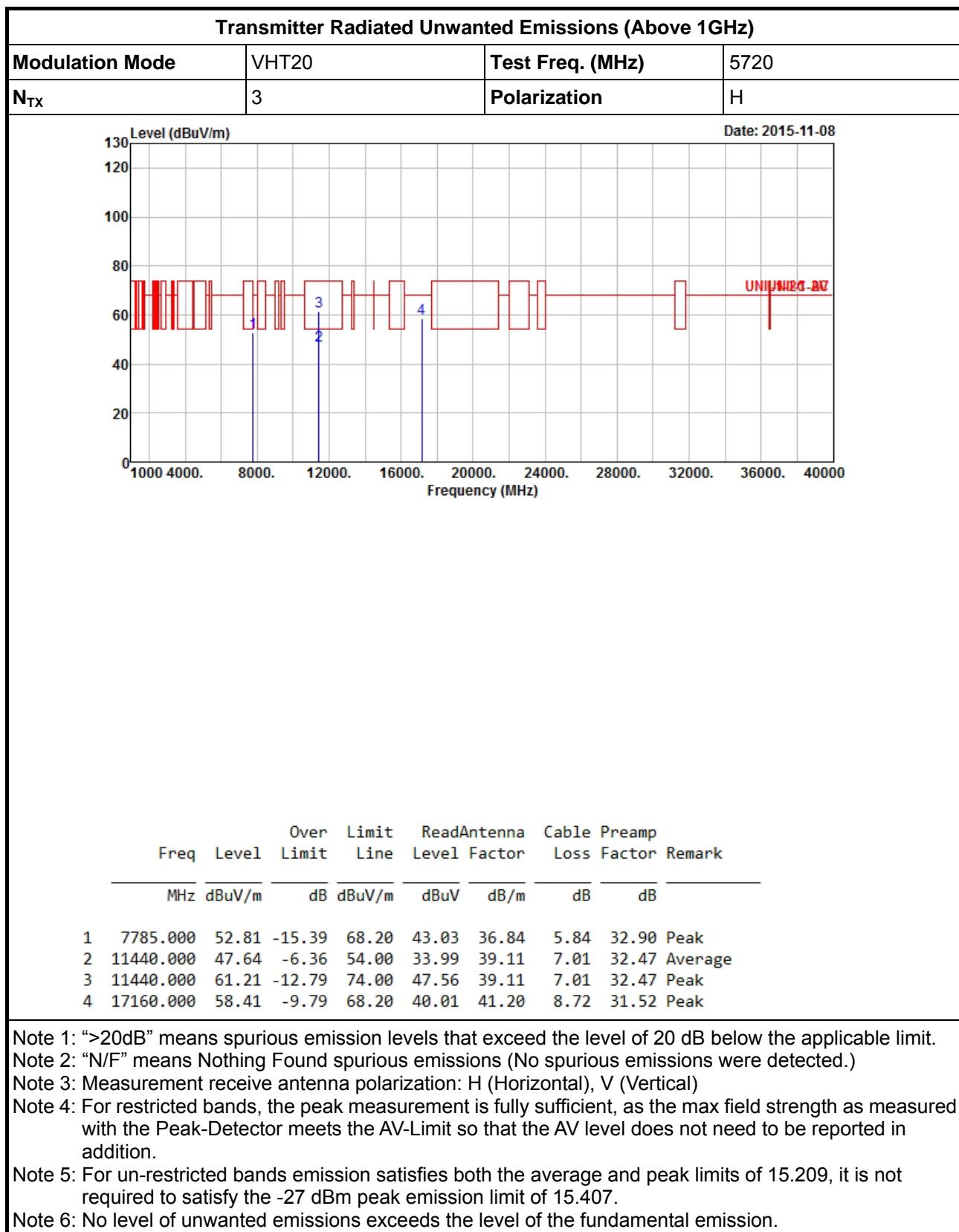


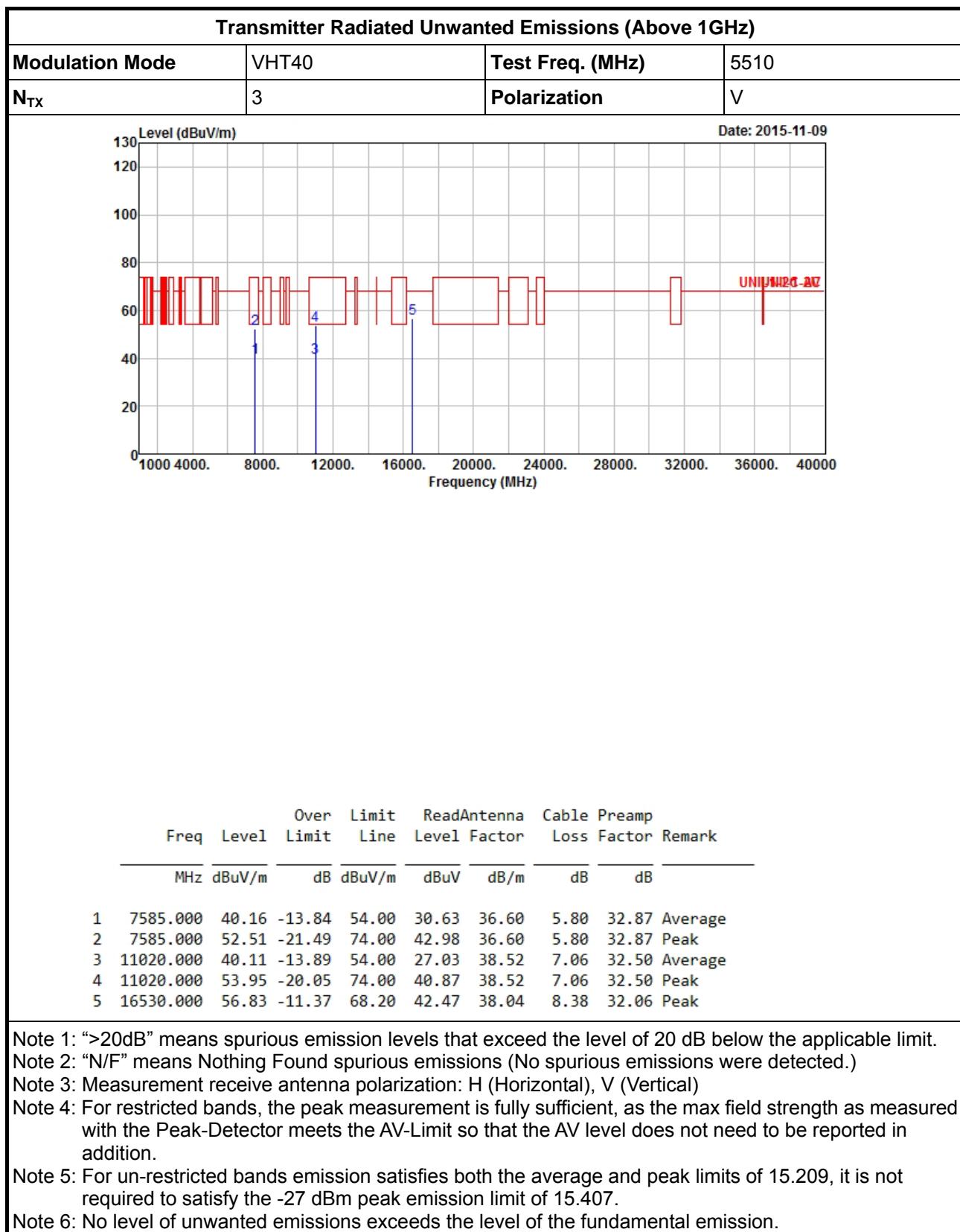


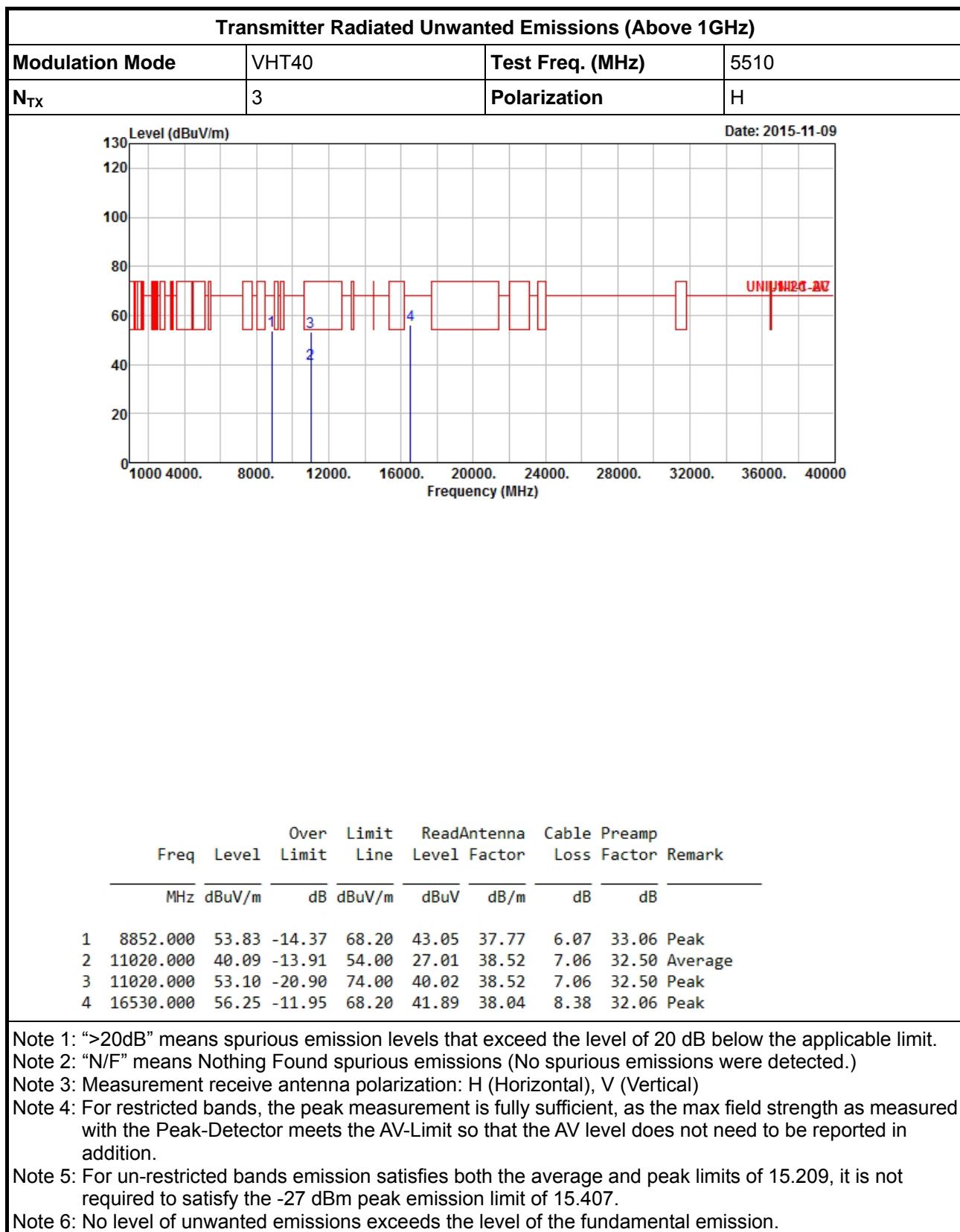


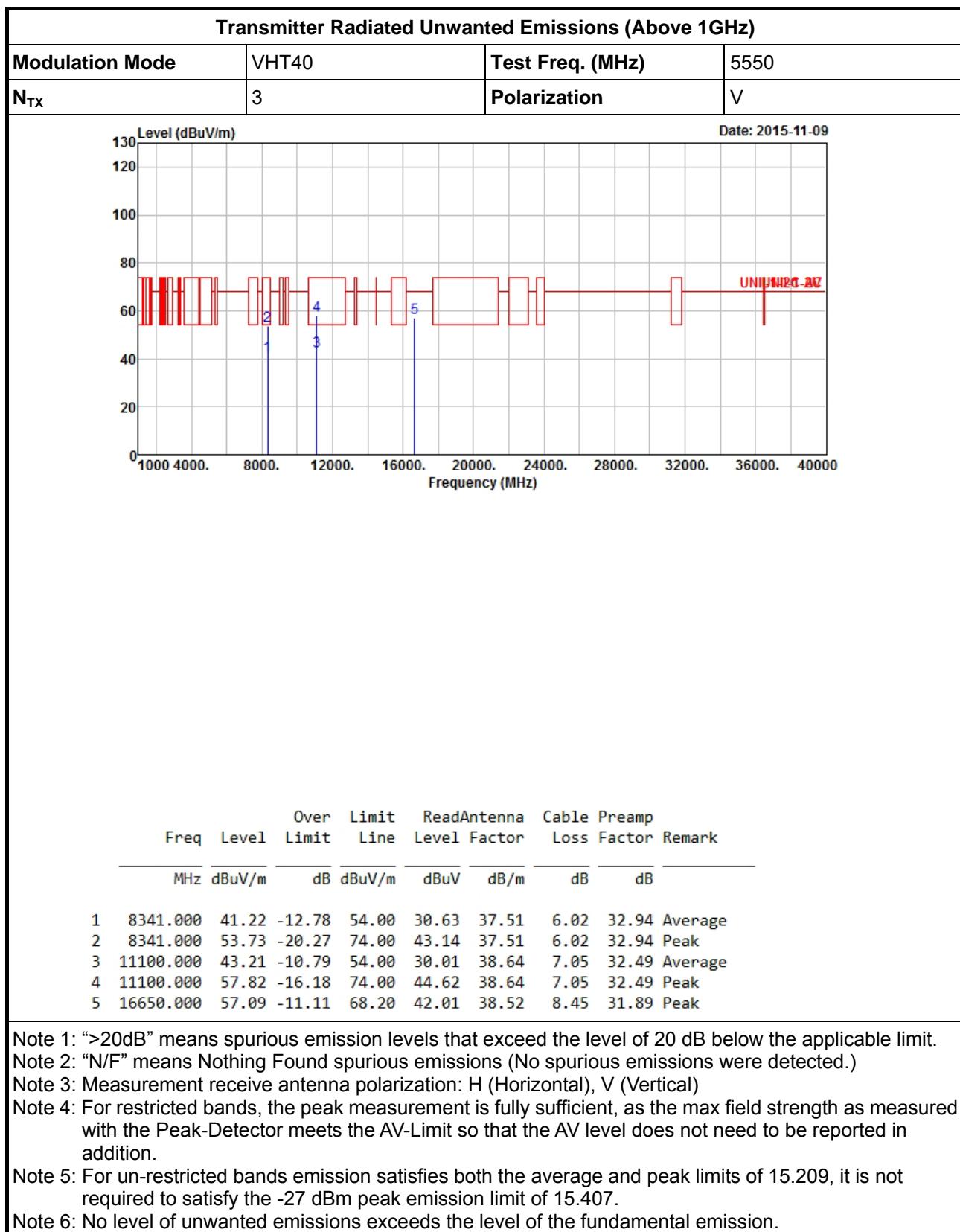


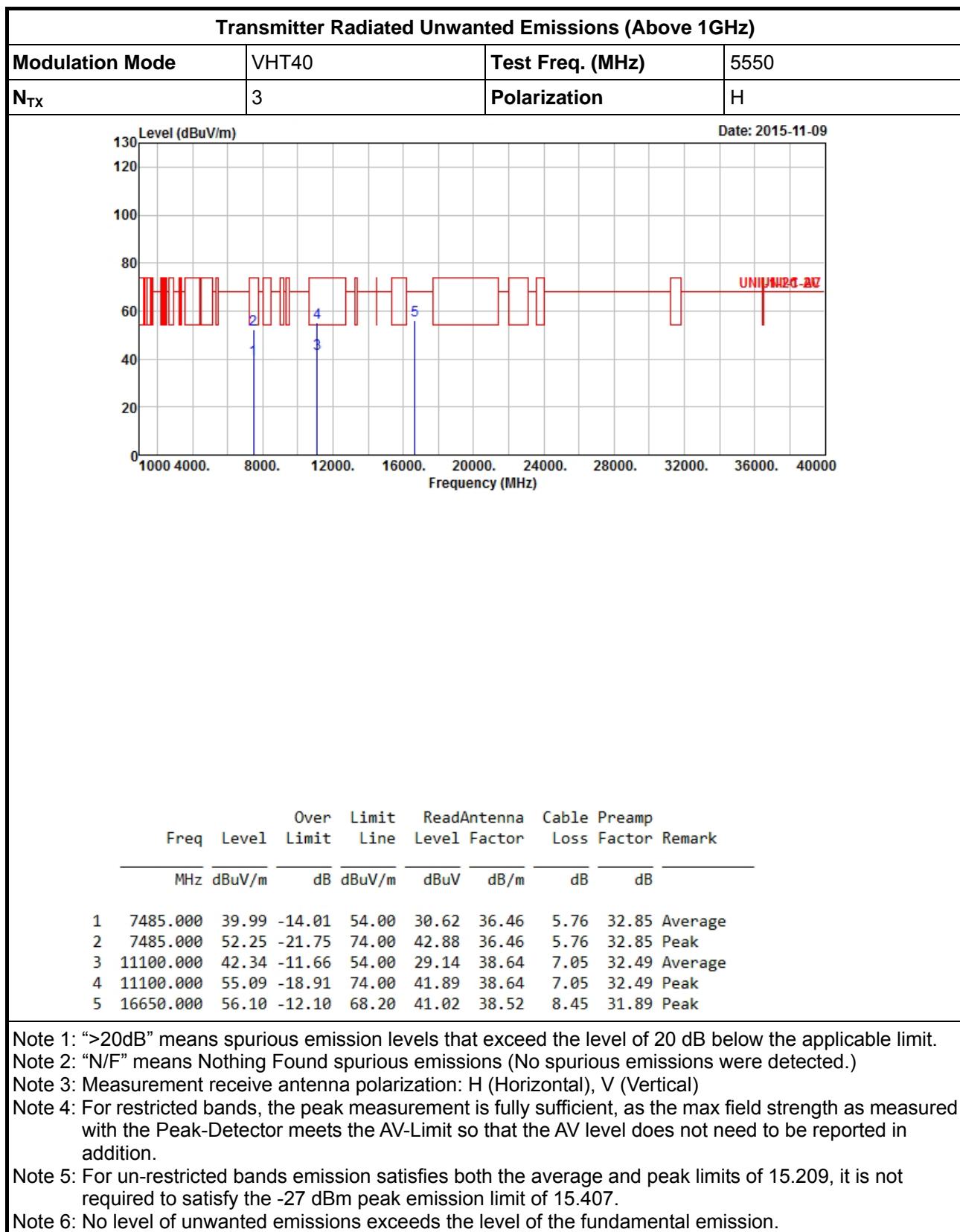


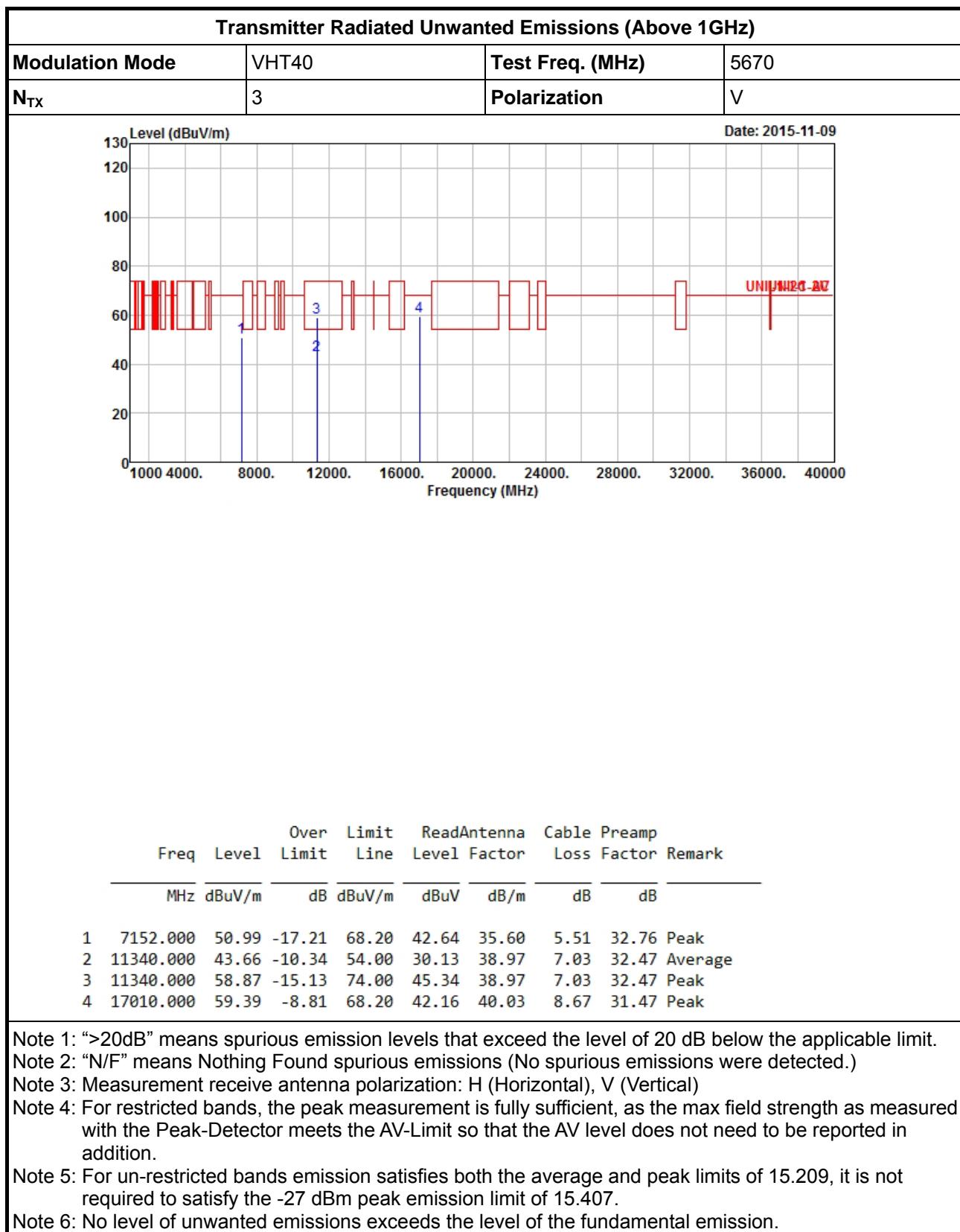












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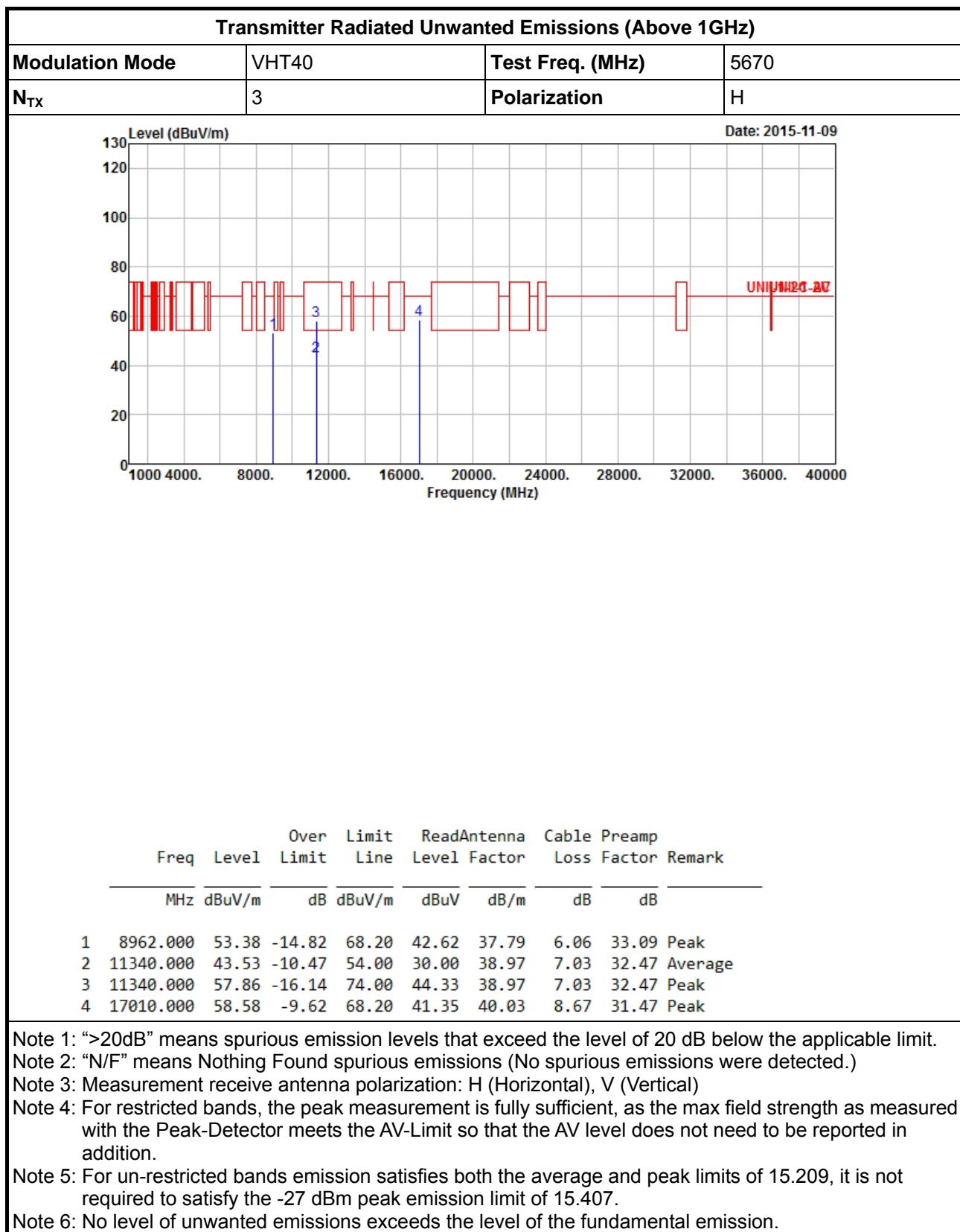
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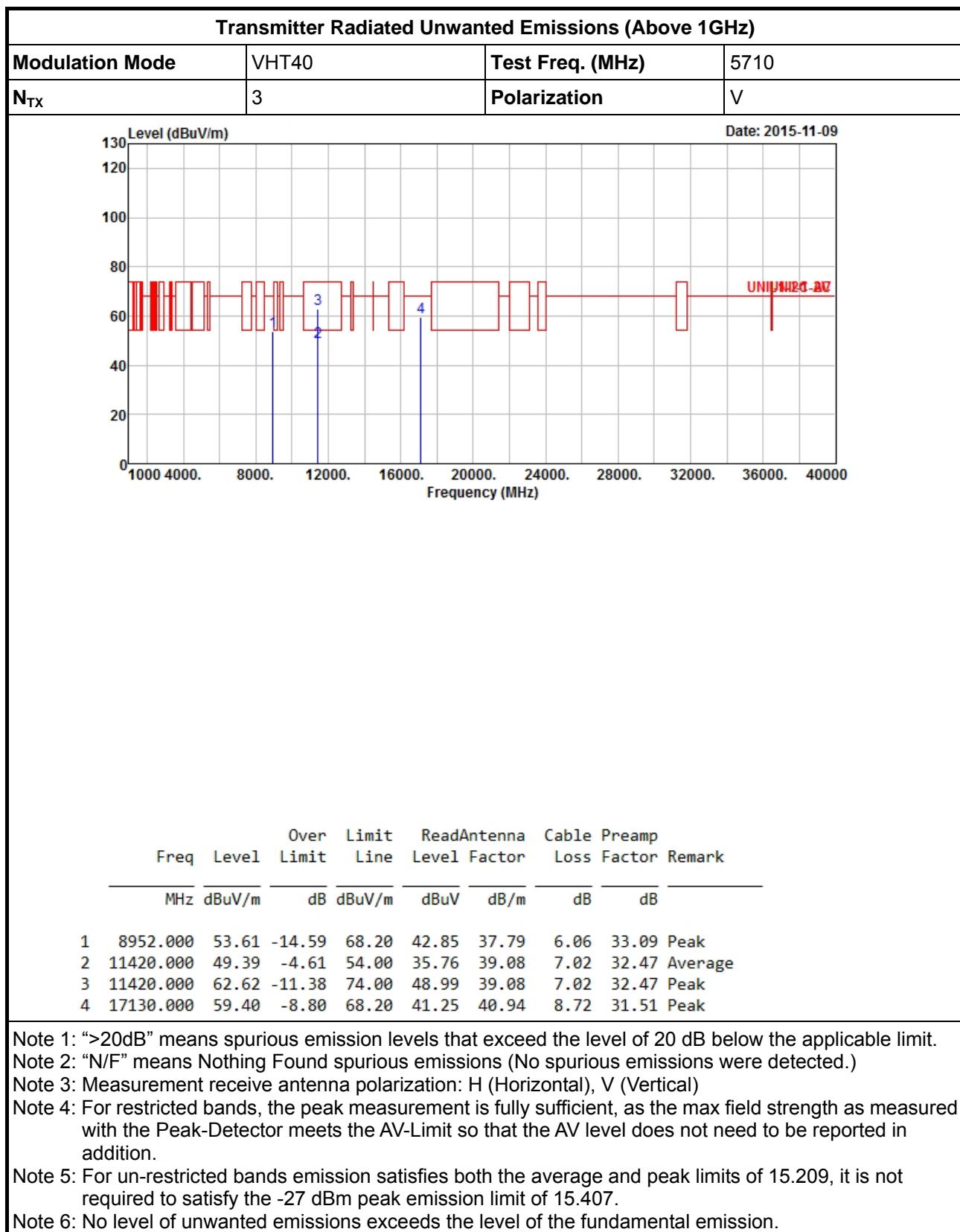
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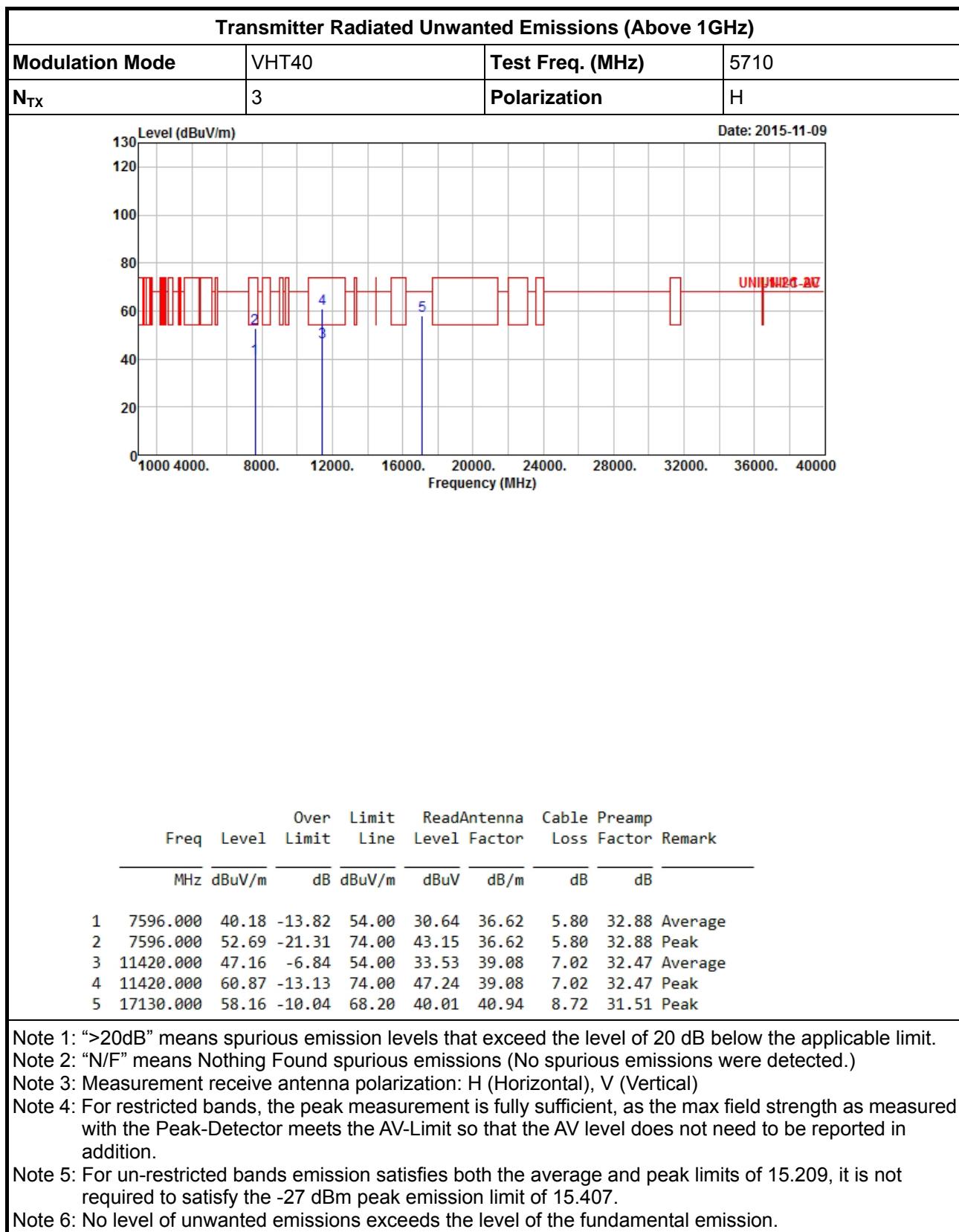
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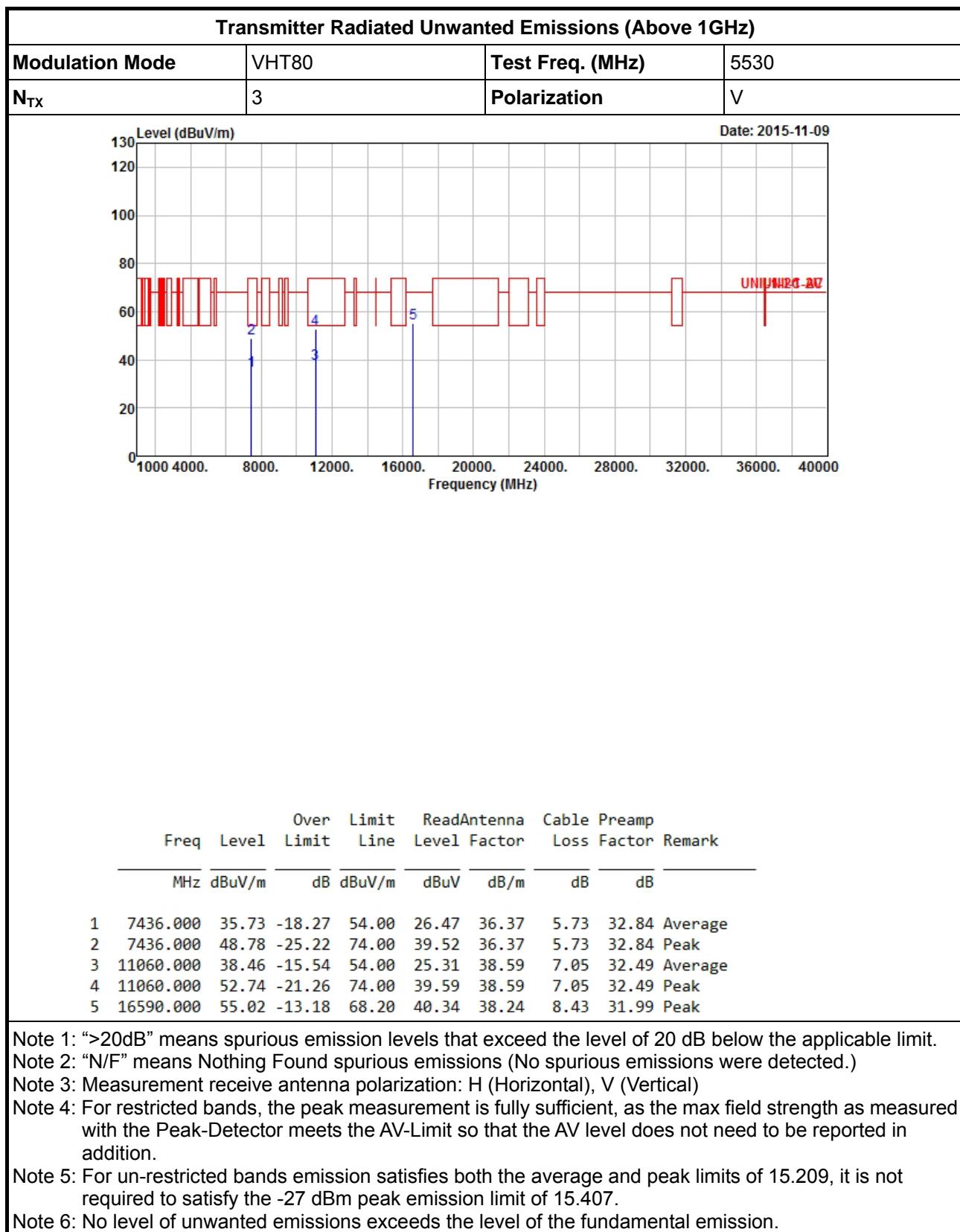
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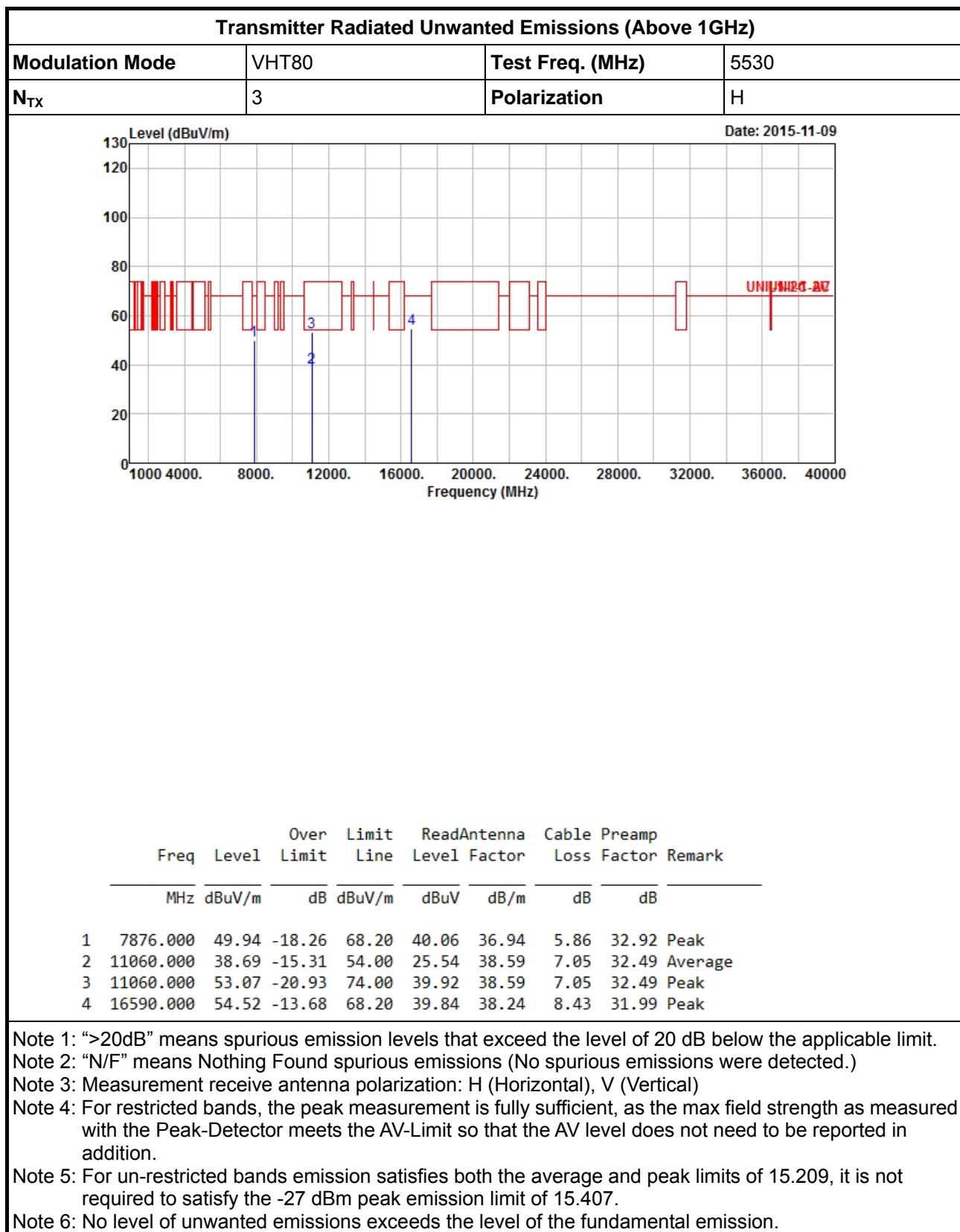
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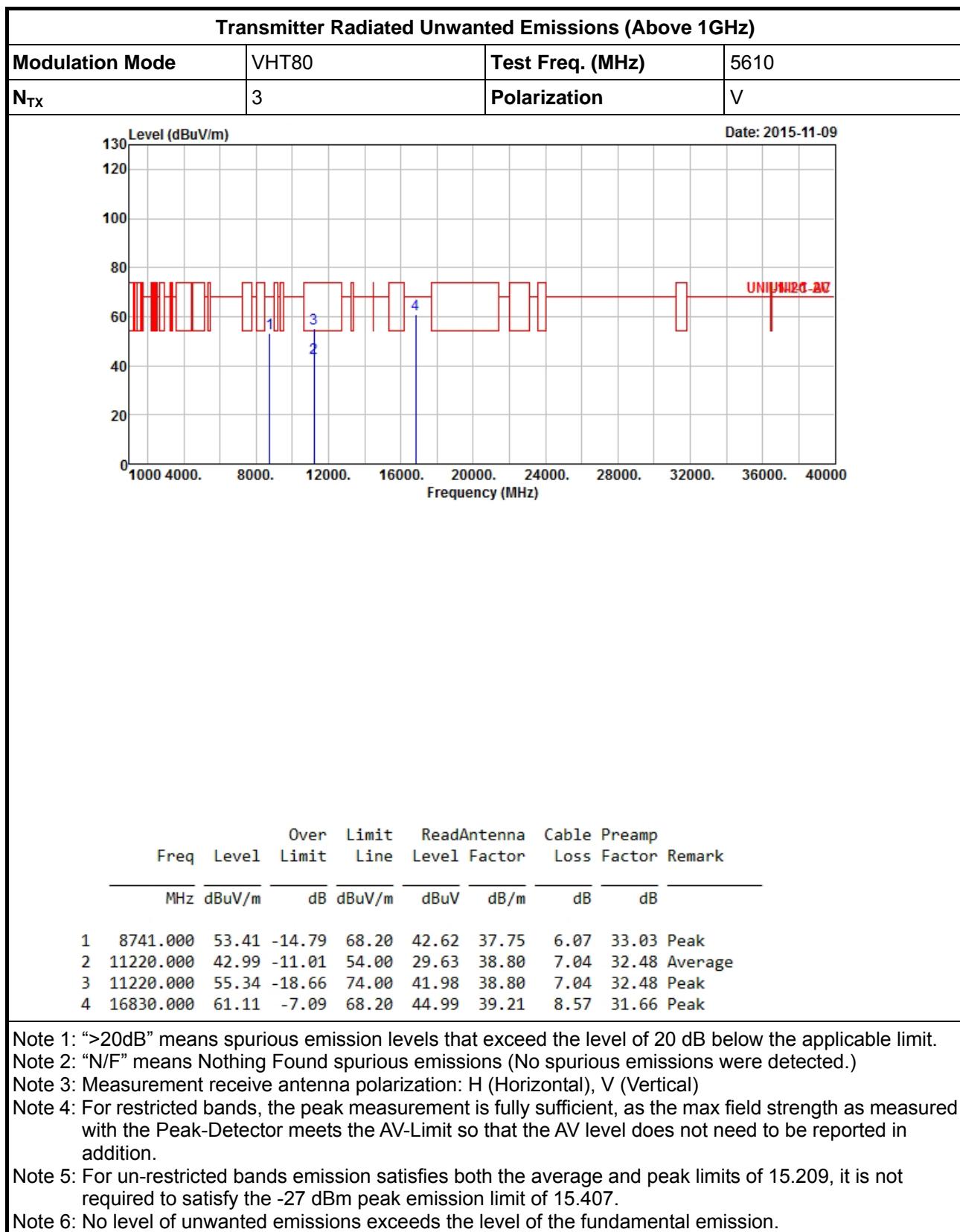


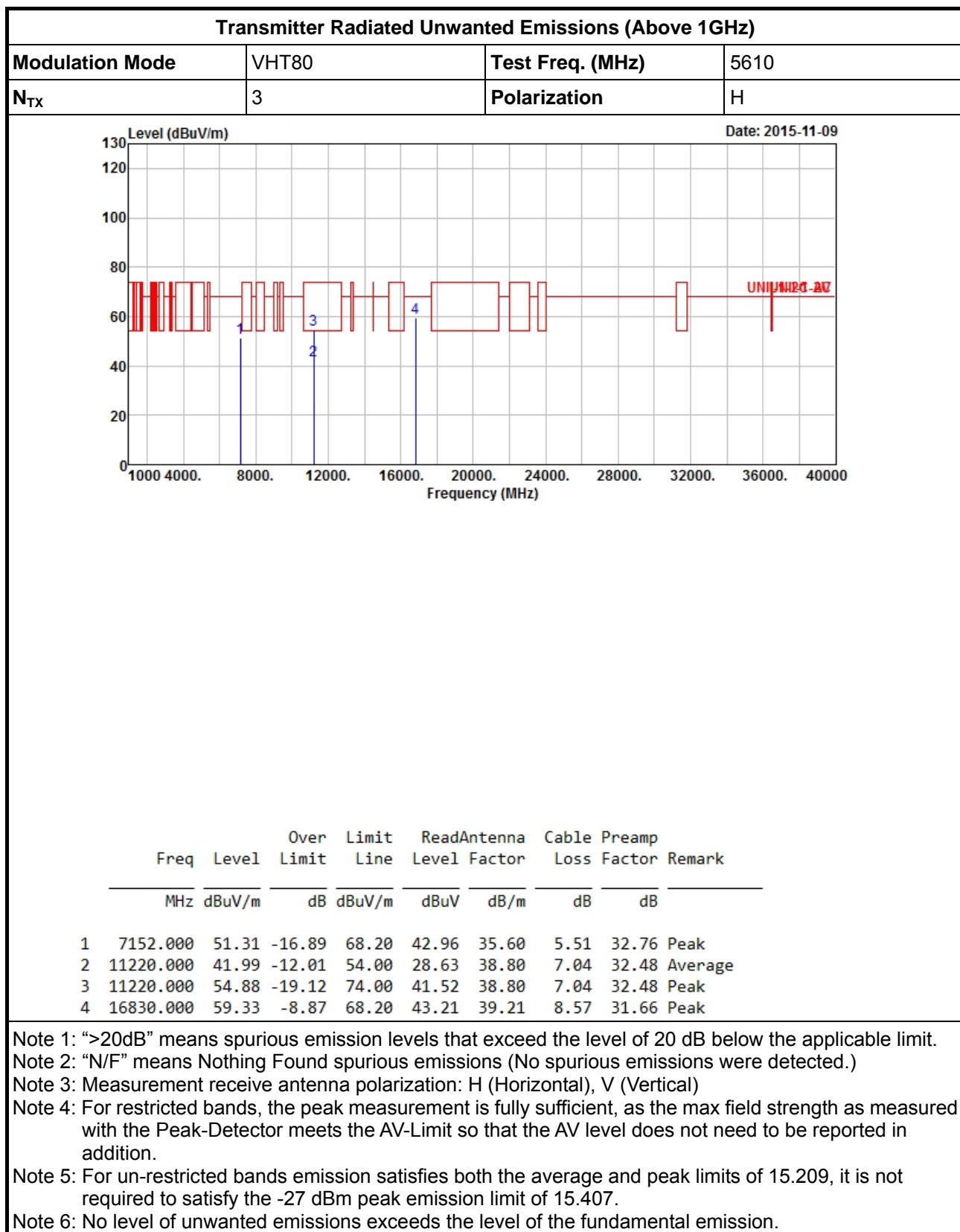












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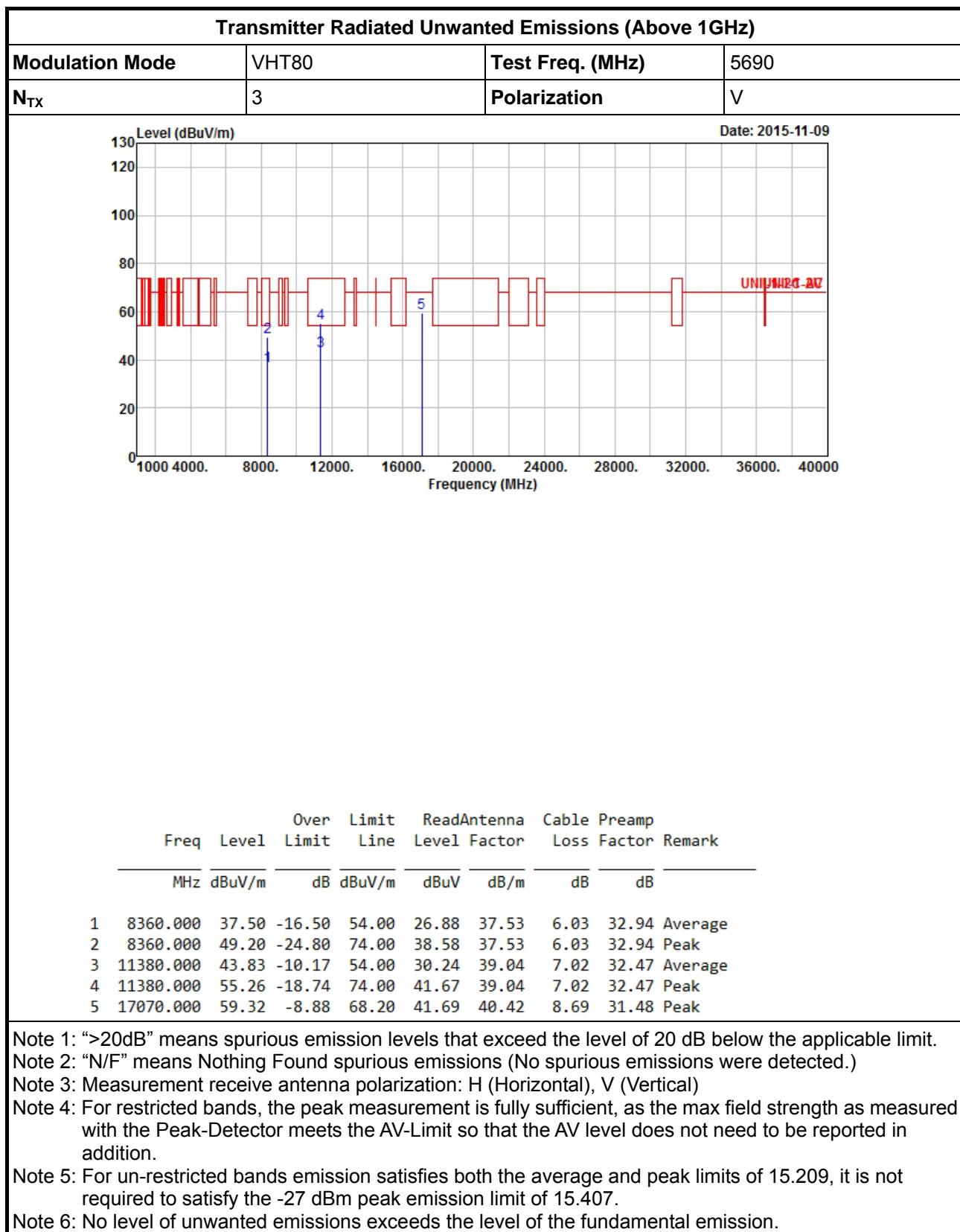
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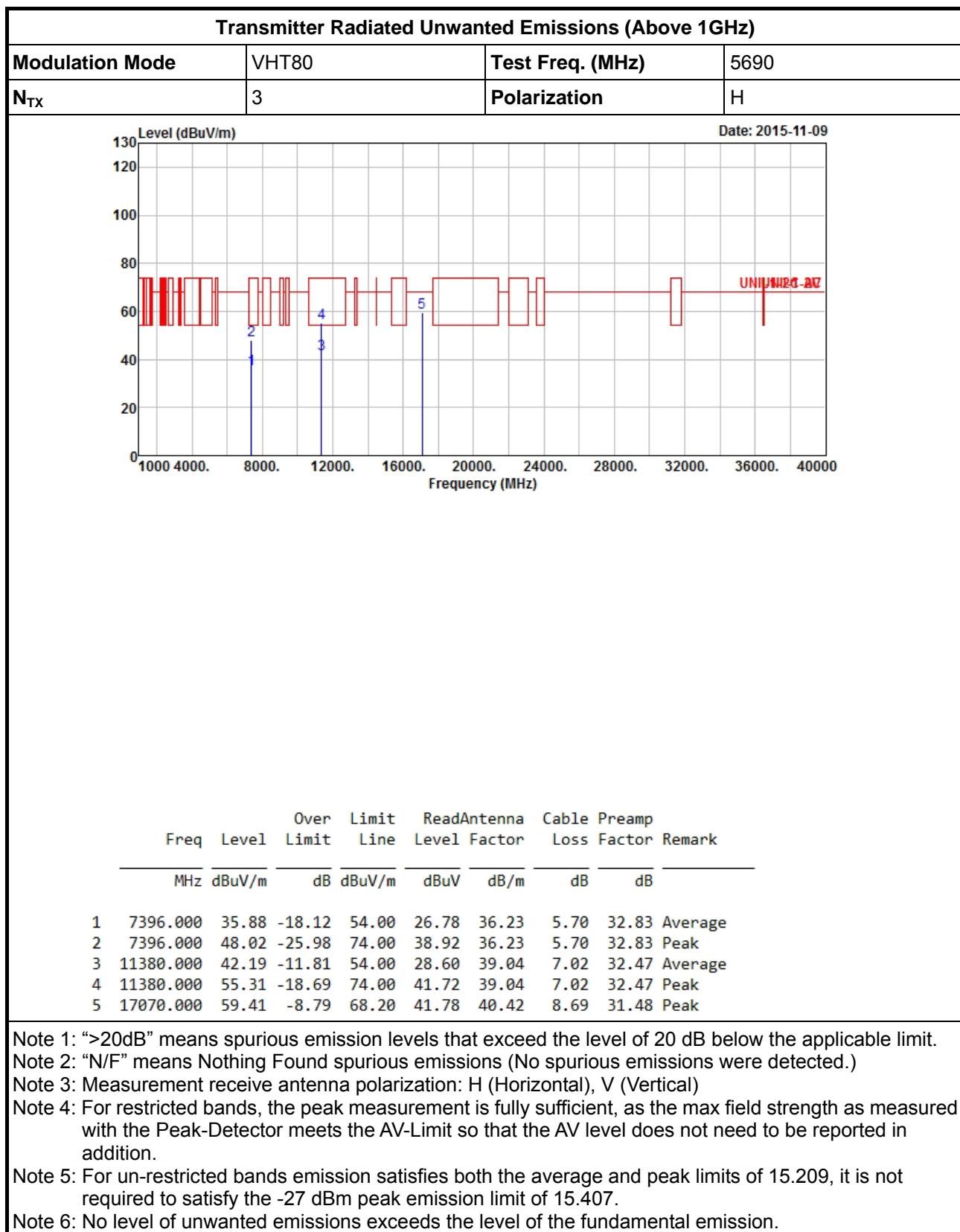
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## 3.7 Frequency Stability

### 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>LE-LAN Devices</b>	
<input checked="" type="checkbox"/> N/A	
<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 and $\pm 25$ ppm maximum for the 2.4 GHz band.	

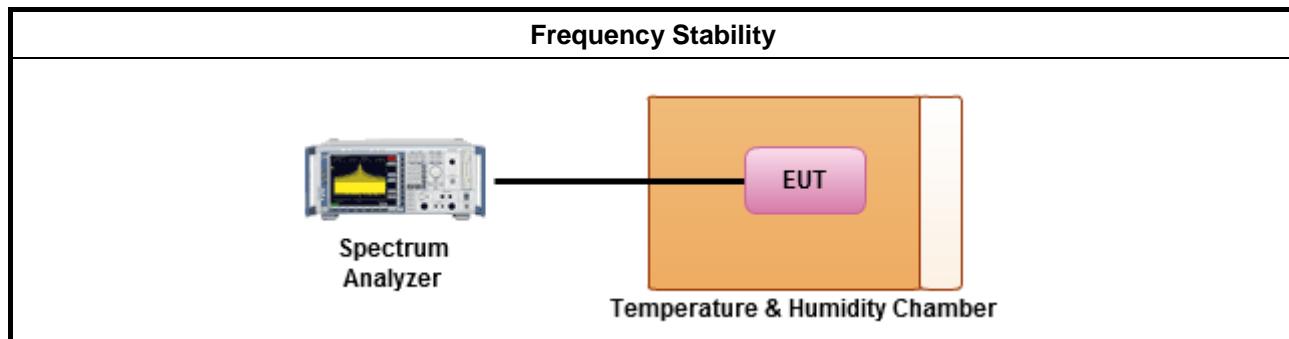
### 3.7.2 Measuring Instruments

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

### 3.7.3 Test Procedures

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

### 3.7.4 Test Setup





### 3.7.5 Test Result of Frequency Stability

Frequency Stability Result					
Mode		Frequency Stability (ppm)			
Condition	Freq. (MHz)	0 min	2 min	5 min	10 min
T <sub>20°C</sub> Vmax	5300	5300.00347	5300.00391	5300.00478	5300.00564
T <sub>20°C</sub> Vmin	5300	5300.00260	5300.00304	5300.00391	5300.00478
T <sub>50°C</sub> Vnom	5300	5300.02822	5300.03039	5300.03300	5300.03864
T <sub>40°C</sub> Vnom	5300	5300.00347	5300.00260	5300.00217	5300.00130
T <sub>30°C</sub> Vnom	5300	5300.01520	5300.01606	5300.01650	5300.01737
T <sub>20°C</sub> Vnom	5300	5300.00391	5300.00434	5300.00478	5300.00521
T <sub>10°C</sub> Vnom	5300	5299.99957	5299.99913	5299.99870	5299.99826
T <sub>0°C</sub> Vnom	5300	5300.00217	5300.00130	5300.00043	5300.00000
T <sub>-10°C</sub> Vnom	5300	5300.02388	5300.02344	5300.02214	5300.01867
T <sub>-20°C</sub> Vnom	5300	5300.03300	5300.03386	5300.03430	5300.03517
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 Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Apr. 15. 2015	AC Conduction
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 22, 2015	AC Conduction
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	Oct. 30, 2015	AC Conduction
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	NCR	AC Conduction

Note: Calibration Interval of instruments listed above is one year. NCR: No calibration request.

### RF Conducted

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101500	9kHz ~ 40GHz	May 05, 2015	RF Conducted
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100°C	Apr. 07, 2015	RF Conducted
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Feb. 17, 2015	RF Conducted
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Feb. 17, 2015	RF Conducted
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 28, 2015	RF Conducted
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jun. 22, 2015	RF Conducted

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

### Radiated Emission

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Nov. 29, 2014	Radiated Emission
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz ~ 18GHz 3m	Dec. 17, 2014	Radiated Emission
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 11, 2015	Radiated Emission
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Sep. 02, 2015	Radiated Emission
Spectrum	R&S	FSP40	100004	9kHz ~ 40GHz	Apr. 02, 2015	Radiated Emission
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 18, 2015	Radiated Emission
Horn Antenna	ETS • LINDGREN	3115	6741	1GHz ~ 18GHz	Jul. 15, 2015	Radiated Emission
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz ~ 40GHz	Jan. 27, 2015	Radiated Emission
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Oct. 28, 2015	Radiated Emission
RF Cable-high	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Dec. 12, 2014	Radiated Emission
Turn Table	EM Electronics	EM Electronics	060615	0 ~ 360 degree	N/A	Radiated Emission
Antenna Mast	MF	MF-7802	MF780208179	1 ~ 4 m	N/A	Radiated Emission

Note: Calibration Interval of instruments listed above is one year. NCR: No calibration request.



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Amplifier	MITEQ	JS44-18004000-33-8P	1840917	18GHz ~ 40GHz	Jun. 02, 2015	Radiated Emission
Loop Antenna	R&S	HFH2-Z2	100330	9kHz ~ 30MHz	Nov. 10, 2014	Radiated Emission

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