



FCC Test Report

Equipment : 11bgn USB module,2T2R
Brand Name : CC&C
Model No. : WM-8192EU
FCC ID : PANWM8192EU
Standard : 47 CFR FCC Part 15.247
Operating Band : 2400 MHz – 2483.5 MHz
FCC Classification : DTS
Applicant : CC&C Technologies, Inc.
8F, No.150, Jian Yi Rd, Zhonghe District, New
Taipei City, 235, Taiwan
Manufacturer : Kunshan CC&C Technologies,Co.,LTD.
No.9 Building, 3rd Main Street, Kunshan Free
Trade Zone,Jiangsu Province,P.R. China

The product sample received on Jan. 11, 2016 and completely tested on Feb. 22, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

Reviewed by:



Kevin Liang / Assistant Manager





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APPENDIX A. TEST PHOTOS**APPENDIX B. PHOTOGRAPHS OF EUT**



Summary of Test Result

Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
0	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]: 0.1500000MHz 50.40 (Margin 15.60dB) - QP 29.66 (Margin 26.34dB) - AV	FCC 15.207	Complied
3.2	15.247(c)	Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 2391.840MHz: 25.38dB Restricted Bands [dBuV/m at 3m]: 2389.992MHz 64.21 (Margin 9.79dB) - PK 50.88 (Margin 3.12dB) - AV	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied
3.3	15.247(c)	Transmitter Radiated Unwanted Emissions	[dBuV/m at 3m]: 34.8500MHz 36.83 (Margin 3.17dB) – QP	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied



Revision History



1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	RF Output Power (dBm)
2400-2483.5	b	2412-2462	1-11 [11]	1	19.87
2400-2483.5	g	2412-2462	1-11 [11]	1	20.14
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	18.65
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	17.29

Note 1: RF output power specifies that Maximum Peak Conducted Output Power.

Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.

Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

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.

<Add Ant.>

Antenna General Information					
Ant.	Port.	Ant. Cat.	Ant. Type	Model Name	Gain (dBi)
D	1	External	Print	ALC160-051020-000000	3.33
	2			ALC160-051021-000000	3.76
E	1	External	Print	GY196HT625-001	1.73
	2			GY196HT625-002	1.84
F	1	External	PIFA	ALO160-052030-A	3.54
	2			ALO160-052030-A	3.41

1.1.3 EUT Operational Condition

Supply Voltage	<input type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	
Type of DC Source	<input type="checkbox"/> External DC adapter	<input checked="" type="checkbox"/> From system	<input type="checkbox"/> Li-ion Battery



1.2 Support Equipment

Support Equipment - Radiated Emission & AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5530	DoC
2	AC Adapter for Notebook	DELL	LA65NS2-01	DoC
3	Test Fixture	---	---	---

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 558074 D01 v03r03

1.4 Testing Location Information

Testing Location				
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan City, Taiwan, R.O.C.		
TEL : 886-3-327-3456 FAX : 886-3-327-0973				
Test Site Registration Number: 636805				
Test Condition	Test Site No.	Test Engineer	Test Environment	
AC Conduction	CO04-HY	Ryan	22°C / 50%	
Radiated Emission	03CH03-HY	Joe	21°C / 62%	



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	
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	± 5 %	
DC and low frequency voltages	± 0.9 %	
Time	± 1.4 %	
Duty Cycle	± 0.6 %	

2 Test Configuration of EUT

2.1 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	Ant. D & E: EUT with Notebook via Test Fixture and transmit
2	Ant. F: EUT with Notebook via Test Fixture and transmit

The Worst Case Mode for Following Conformance Tests			
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions		
Test Condition	Radiated measurement		
User Position	<input type="checkbox"/> EUT will be placed in fixed position. <input checked="" type="checkbox"/> EUT and Antenna will be placed in mobile position and operating multiple positions. EUT shall be performed three orthogonal planes. <input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes.		
Operating Mode <1GHz	Operating Mode Description		
1	Ant. D & E: EUT with Notebook via Test Fixture and transmit		
2	Ant. F: EUT with Notebook via Test Fixture and transmit		
Operating Mode >1GHz	Operating Mode Description		
1	Ant. D & E: EUT with Notebook via Test Fixture and transmit		
2	Ant. F: EUT with Notebook via Test Fixture and transmit		
Modulation Mode	11b, 11g, HT20, HT40		
Orthogonal Planes of EUT	X Plane 	Y Plane 	Z Plane 
Worst Planes of EUT	V		
Orthogonal Planes of Antenna	X Plane 	Y Plane 	Z Plane 
Worst Planes of Antenna	V (PIFA)		V (Print)

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.

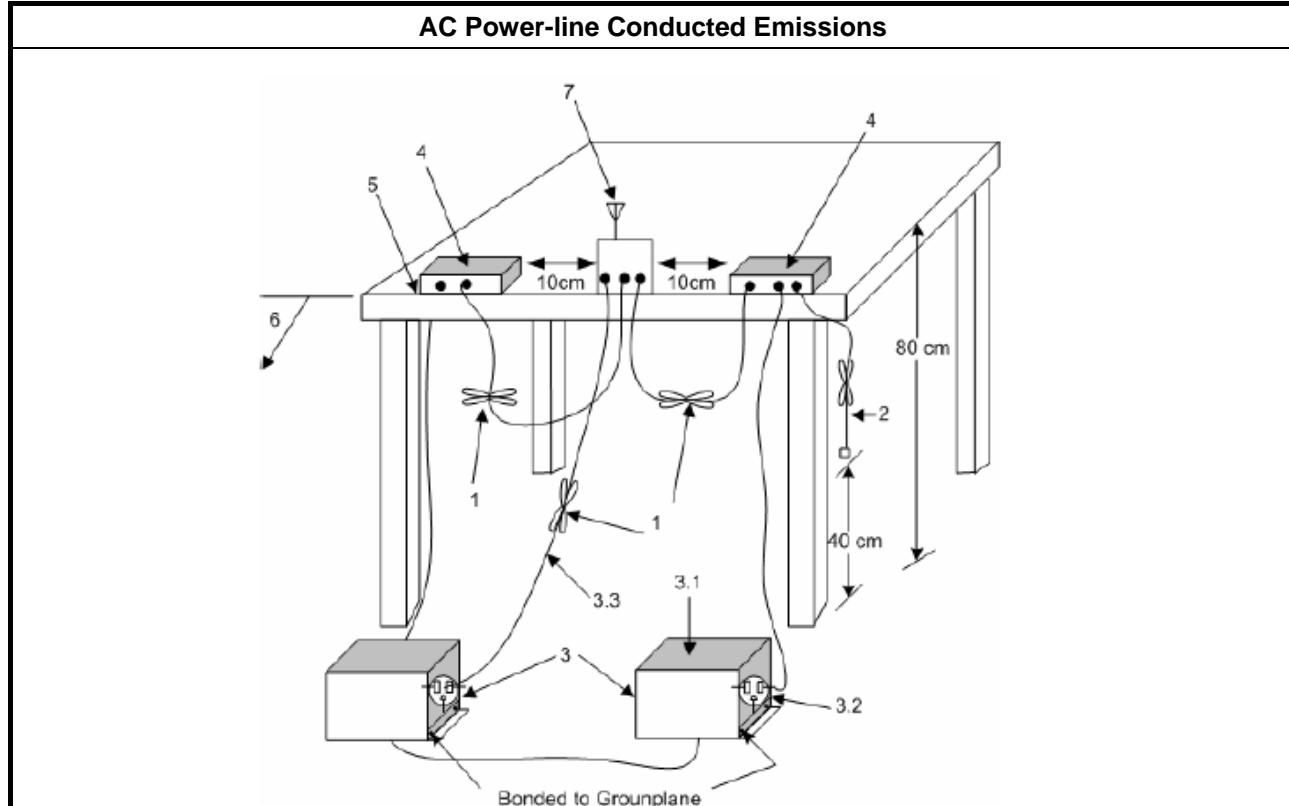
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

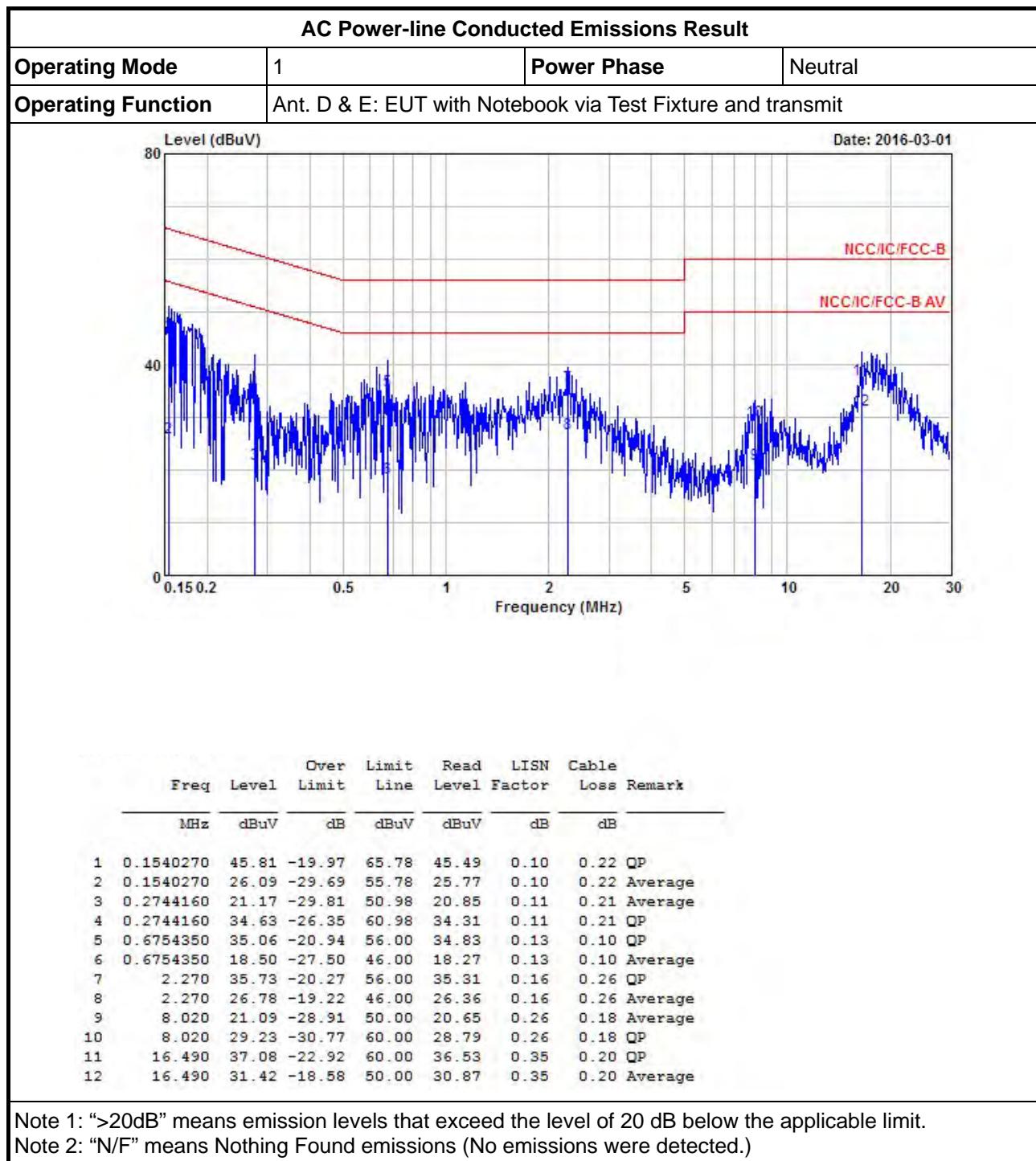
Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup





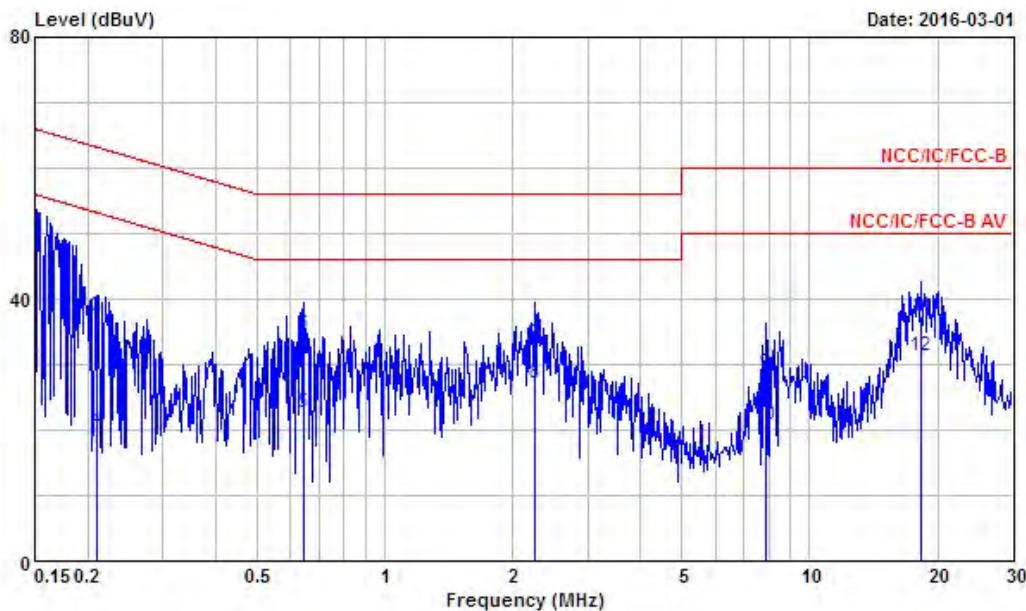
3.1.5 Test Result of AC Power-line Conducted Emissions





AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	Ant. D & E: EUT with Notebook via Test Fixture and transmit		



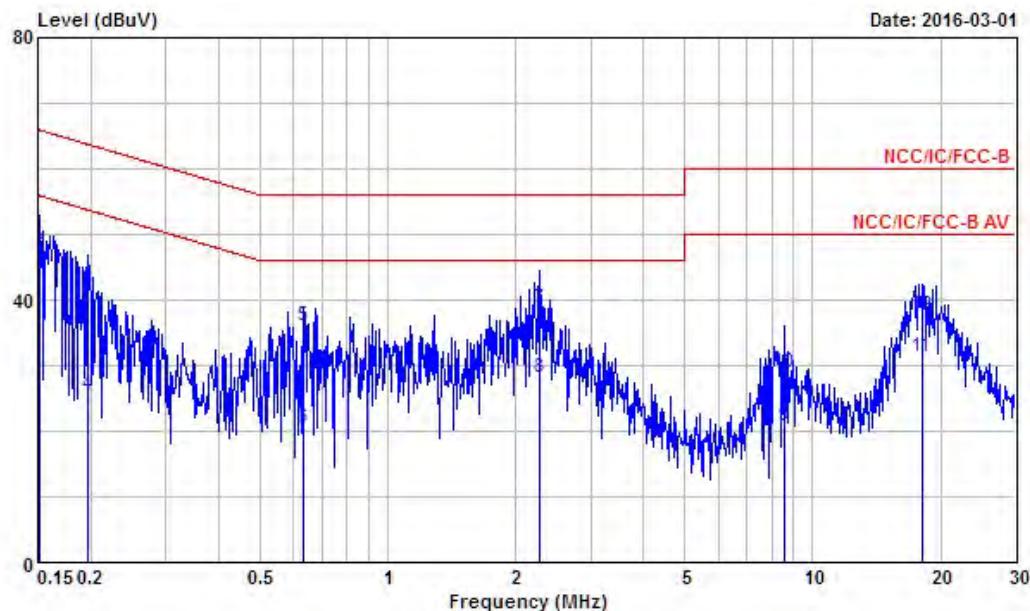
	Freq	Level	Over Limit	Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	80.1500000	50.40	-15.60	66.00	50.07	0.11	0.22	QP
2	0.1500000	29.66	-26.34	56.00	29.33	0.11	0.22	Average
3	0.2094380	37.27	-25.96	63.23	36.87	0.11	0.29	QP
4	0.2094380	20.09	-33.14	53.23	19.69	0.11	0.29	Average
5	0.6439830	22.54	-23.46	46.00	22.31	0.13	0.10	Average
6	0.6439830	34.76	-21.24	56.00	34.53	0.13	0.10	QP
7	2.260	33.17	-22.83	56.00	32.75	0.15	0.27	QP
8	2.260	27.15	-18.85	46.00	26.73	0.15	0.27	Average
9	7.890	28.67	-31.33	60.00	28.26	0.24	0.17	QP
10	7.890	20.81	-29.19	50.00	20.40	0.24	0.17	Average
11	18.330	37.39	-22.61	60.00	36.85	0.34	0.20	QP
12	18.330	31.31	-18.69	50.00	30.77	0.34	0.20	Average

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)



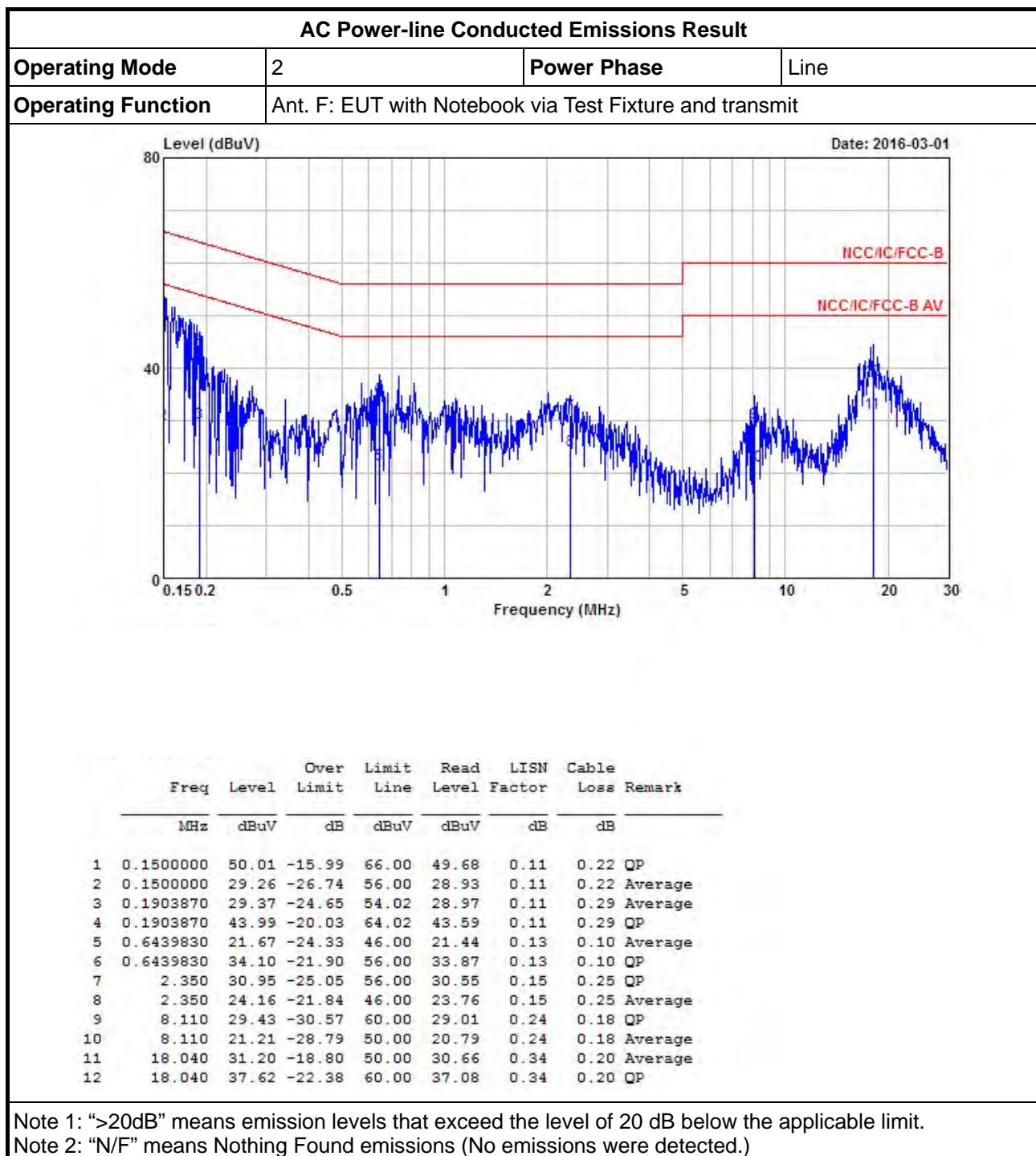
AC Power-line Conducted Emissions Result

Operating Mode	2	Power Phase	Neutral
Operating Function	Ant. F: EUT with Notebook via Test Fixture and transmit		



Freq	Level	Over	Limit	Read	LISN	Cable	
		Limit	Line	Level	Factor	Loss	
MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1515980	27.59	-28.32	55.91	27.27	0.10	0.22 Average
2	0.1515980	47.29	-18.62	65.91	46.97	0.10	0.22 QP
3	0.1975810	41.58	-22.13	63.71	41.17	0.11	0.30 QP
4	0.1975810	25.61	-28.10	53.71	25.20	0.11	0.30 Average
5	0.6304790	36.08	-19.92	56.00	35.86	0.12	0.10 QP
6	0.6304790	20.40	-25.60	46.00	20.18	0.12	0.10 Average
7	2.270	38.78	-17.22	56.00	38.36	0.16	0.26 QP
8	2.270	28.07	-17.93	46.00	27.65	0.16	0.26 Average
9	8.550	20.88	-29.12	50.00	20.44	0.26	0.18 Average
10	8.550	28.98	-31.02	60.00	28.54	0.26	0.18 QP
11	18.040	31.30	-18.70	50.00	30.74	0.36	0.20 Average
12	18.040	37.69	-22.31	60.00	37.13	0.36	0.20 QP

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.)



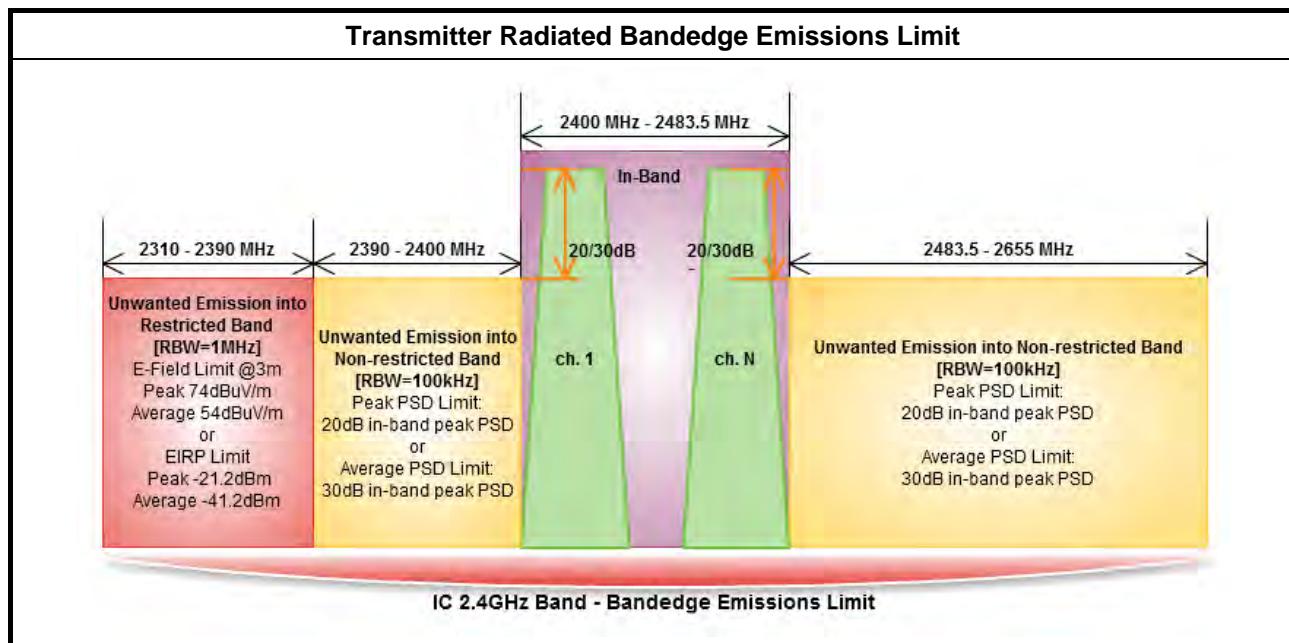
Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

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

3.2 Transmitter Test Result

3.2.1 Transmitter Radiated Bandedge Emissions

3.2.2 Transmitter Radiated Bandedge Emissions Limit



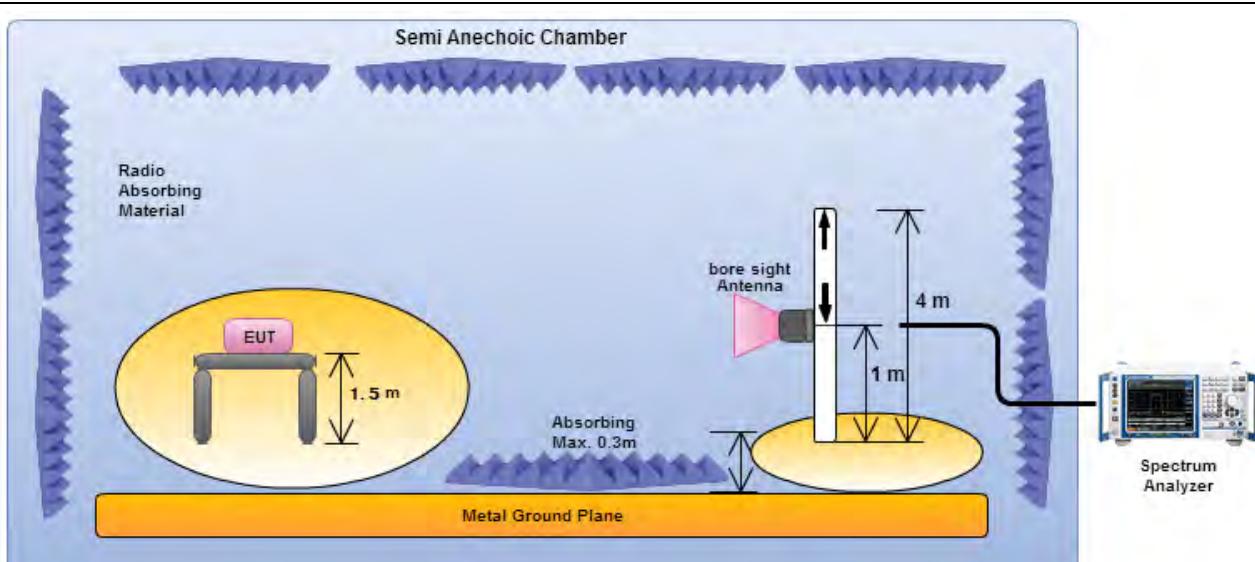
3.2.3 Measuring Instruments

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

3.2.4 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 checked="" type="checkbox"/> For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.
<input type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$)
<input type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$).
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). VBW $\geq 1/T$, where T is pulse time.
<input type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 11.3 and 12.2.4 measurement procedure peak limit.
<input checked="" type="checkbox"/> For the transmitter bandedge emissions shall be measured using following options below:
<input type="checkbox"/> Refer as FCC KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.10 for band-edge testing.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.10.6.2 for marker-delta method for band-edge measurements.
<input checked="" type="checkbox"/> For radiated measurement, refer as FCC KDB 558074, clause 12.2.7 and ANSI C63.10, clause 6.6. Test distance is 3m.

3.2.5 Test Setup

Transmitter Radiated Bandedge Emissions
 <p>Electric field tests shall be performed in transmitter bandedge emissions using a calibrated horn antenna.</p>



3.2.6 Test Result of Transmitter Radiated Bandedge Emissions - print

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Non-restricted Band)								
Modulation	N _{TX}	Test Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Pol.
11b	1	2412	103.90	2399.620	66.38	37.52	20	V
11b	1	2462	105.95	2530.600	63.74	42.21	20	V
11g	1	2412	97.67	2399.824	67.24	30.43	20	V
11g	1	2462	96.42	2530.400	63.61	32.81	20	V
HT20	2	2412	94.22	2396.688	64.07	30.15	20	V
HT20	2	2462	92.92	2545.400	65.10	27.82	20	V
HT40	2	2422	89.16	2391.840	63.78	25.38	20	V
HT40	2	2452	90.23	2504.720	64.18	26.05	20	V

Note 1: Measurement worst emissions of receive antenna polarization

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)										
Modulation Mode	N _{TX}	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
11b	1	2412	3	2387.504	61.01	74	2386.832	49.39	54	V
11b	1	2462	3	2483.540	59.87	74	2487.400	48.42	54	V
11g	1	2412	3	2389.744	63.61	74	2389.968	50.32	54	V
11g	1	2462	3	2483.600	66.00	74	2483.500	50.51	54	V
HT20	2	2412	3	2389.968	63.20	74	2389.968	48.75	54	V
HT20	2	2462	3	2484.600	62.92	74	2483.600	48.97	54	V
HT40	2	2422	3	2389.200	64.21	74	2389.992	50.88	54	V
HT40	2	2452	3	2438.320	63.32	74	2483.600	50.70	54	V

Note 1: Measurement worst emissions of receive antenna polarization.



3.2.7 Test Result of Transmitter Radiated Bandedge Emissions – PIFA

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Non-restricted Band)								
Modulation	N _{TX}	Test Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Pol.
11b	1	2412	86.57	2399.376	50.97	35.60	20	V
11b	1	2462	93.10	2509.200	50.55	42.55	20	V
11g	1	2412	81.45	2399.376	51.23	30.22	20	V
11g	1	2462	84.57	2512.800	50.71	33.86	20	V
HT20	2	2412	79.84	2400.000	50.98	28.06	20	V
HT20	2	2462	85.08	2529.400	50.95	34.13	20	V
HT40	2	2422	78.34	2393.688	50.05	28.29	20	V
HT40	2	2452	80.25	2521.040	50.47	29.78	20	V

Note 1: Measurement worst emissions of receive antenna polarization

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)										
Modulation Mode	N _{TX}	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
11b	1	2412	3	2371.152	54.76	74	2385.936	41.53	54	V
11b	1	2462	3	2488.800	54.68	74	2488.600	42.58	54	V
11g	1	2412	3	2385.264	54.53	74	2389.072	41.43	54	V
11g	1	2462	3	2483.600	57.85	74	2483.500	43.55	54	V
HT20	2	2412	3	2329.712	54.50	74	2387.280	41.61	54	V
HT20	2	2462	3	2484.200	57.96	74	2483.500	42.74	54	V
HT40	2	2422	3	2386.560	54.36	74	2389.200	41.75	54	V
HT40	2	2452	3	2484.800	56.33	74	2483.600	43.65	54	V

Note 1: Measurement worst emissions of receive antenna polarization.



3.3 Transmitter Radiated Unwanted Emissions

3.3.1 Transmitter Radiated Unwanted Emissions Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

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

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

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

3.3.2 Measuring Instruments

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

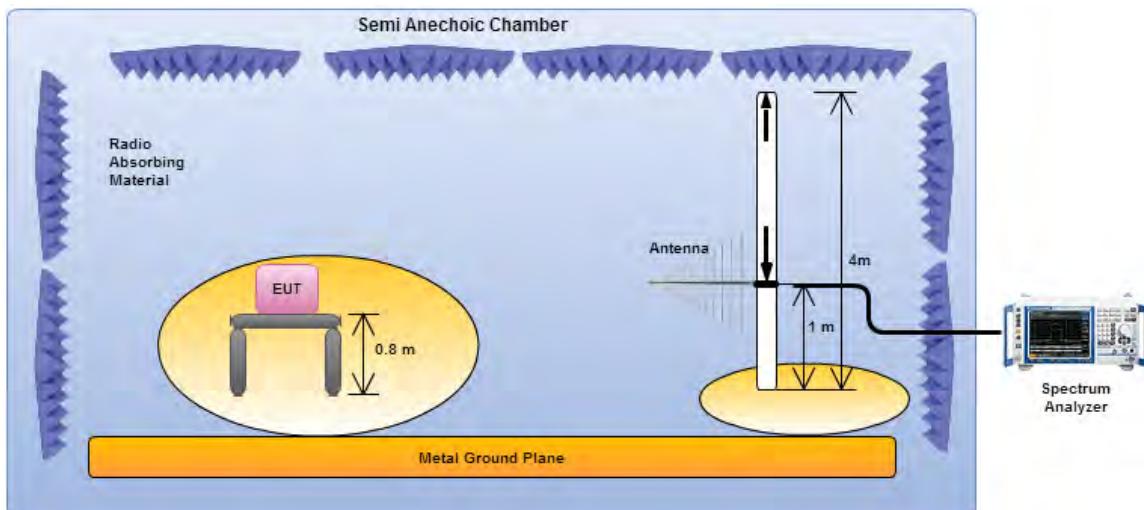


3.3.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
<input checked="" type="checkbox"/> The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
<input checked="" type="checkbox"/> For the transmitter unwanted emissions shall be measured using following options below:
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.
<input type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced $VBW \geq 1/T$).
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). $VBW \geq 1/T$, where T is pulse time.
<input type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 11.3 and 12.2.4 measurement procedure peak limit.
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.3 measurement procedure Quasi-Peak limit.
<input checked="" type="checkbox"/> For radiated measurement, refer as FCC KDB 558074, clause 12.2.7.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1 GHz and test distance is 3m.
<input checked="" type="checkbox"/> The any unwanted emissions level shall not exceed the fundamental emission level.
<input checked="" type="checkbox"/> All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

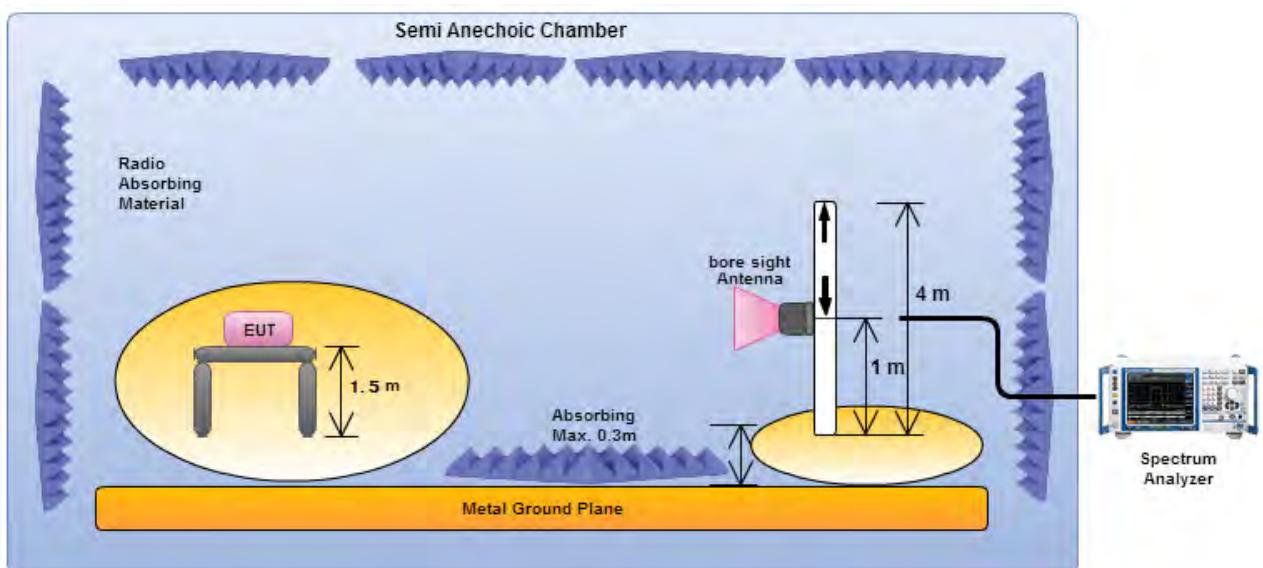
3.3.4 Test Setup

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)



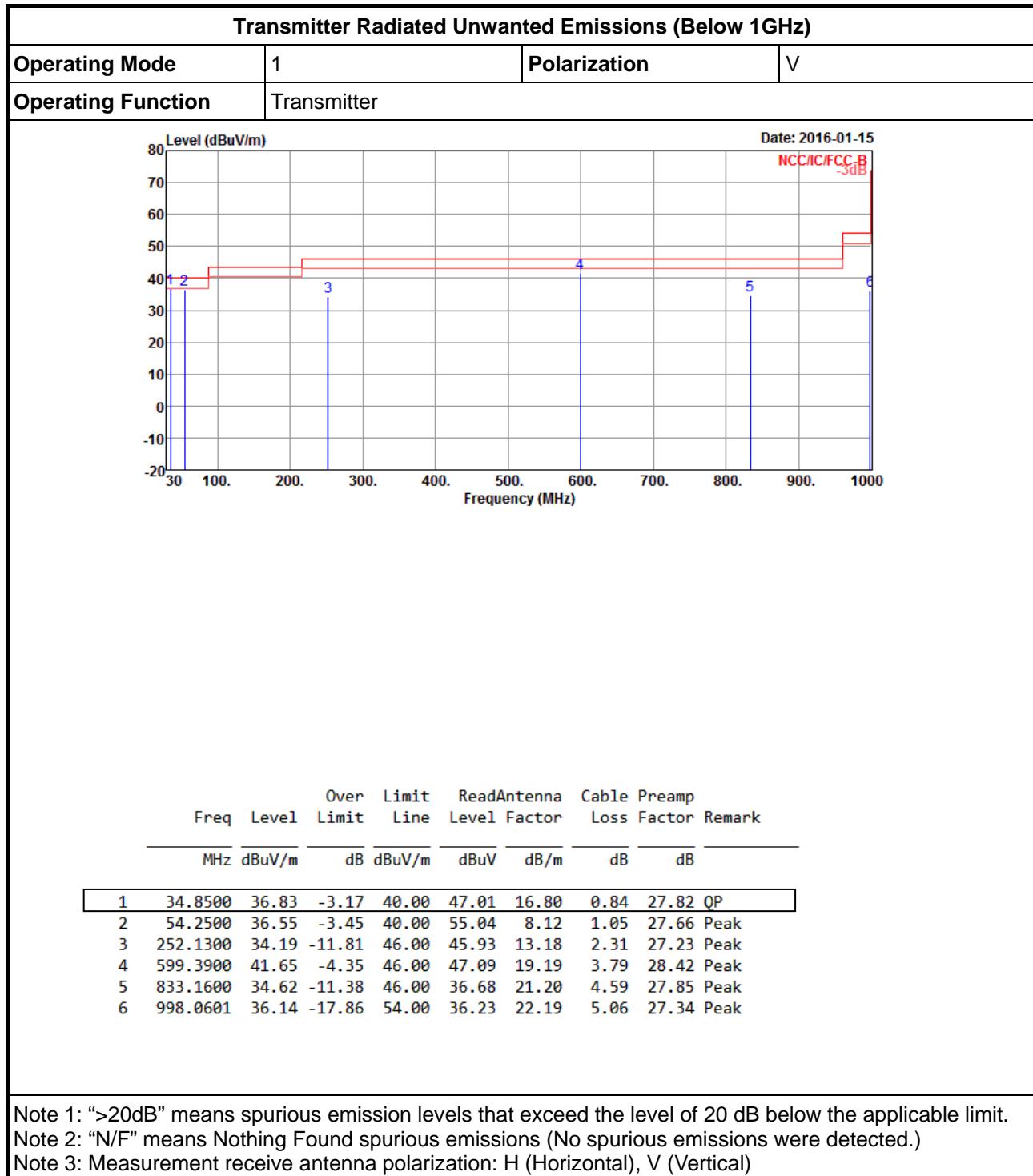
Electric field tests shall be performed in the frequency range of 1 GHz to 10th harmonic of highest fundamental frequency or 40 GHz using a calibrated horn antenna.

3.3.5 Transmitter Radiated Unwanted Emissions (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.

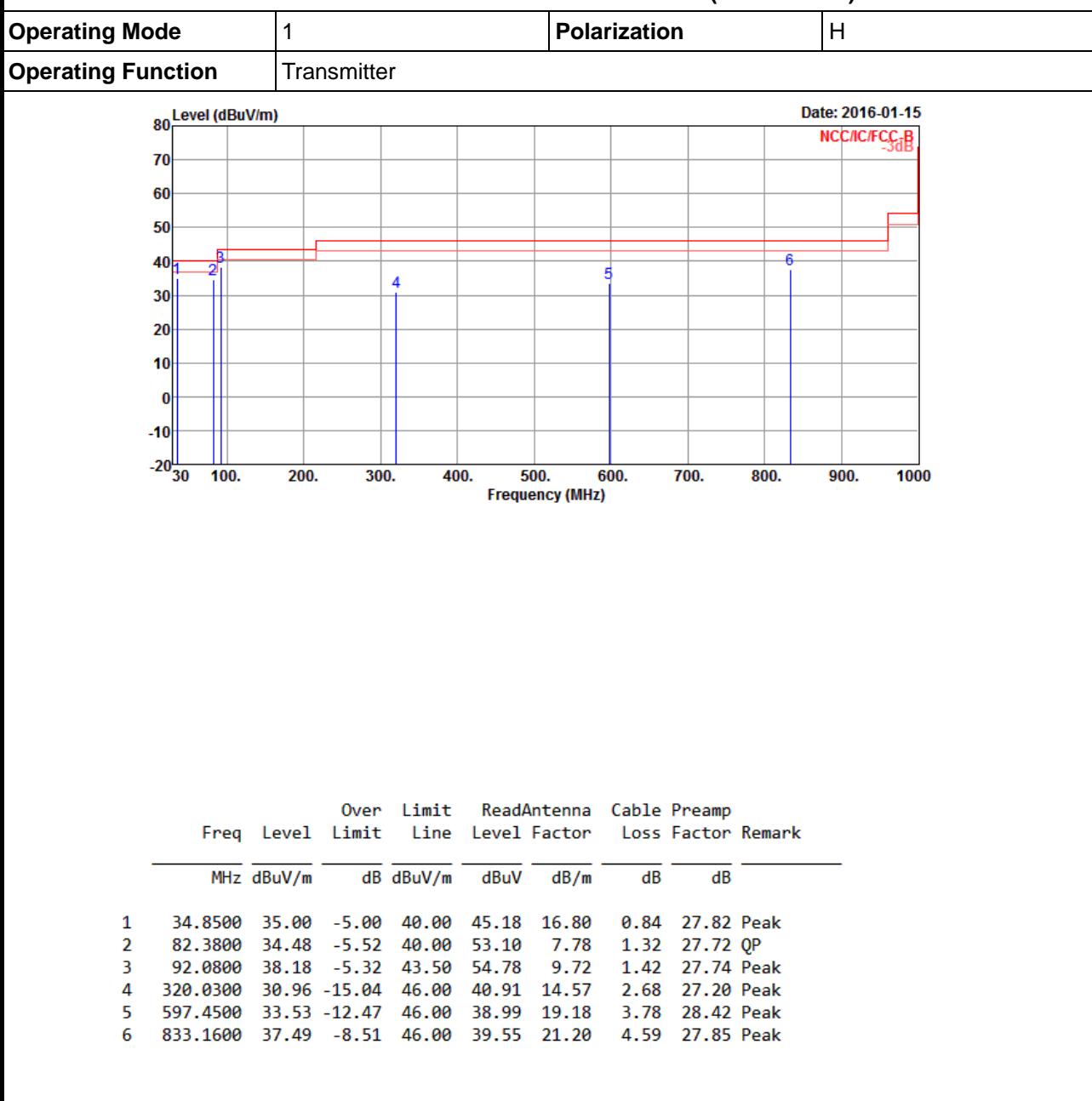


3.3.6 Transmitter Radiated Unwanted Emissions (Below 1GHz) - Print





Transmitter Radiated Unwanted Emissions (Below 1GHz)



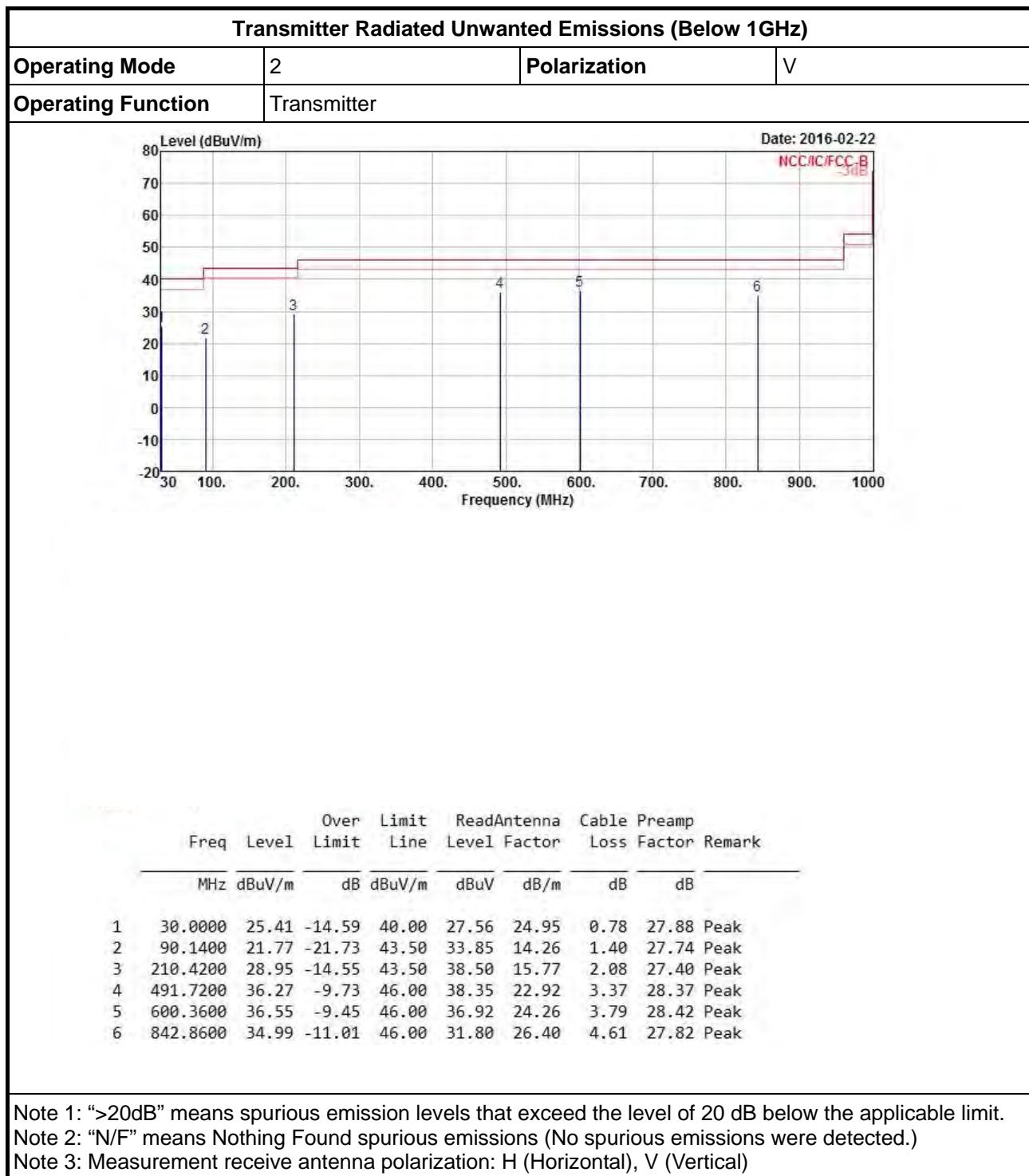
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

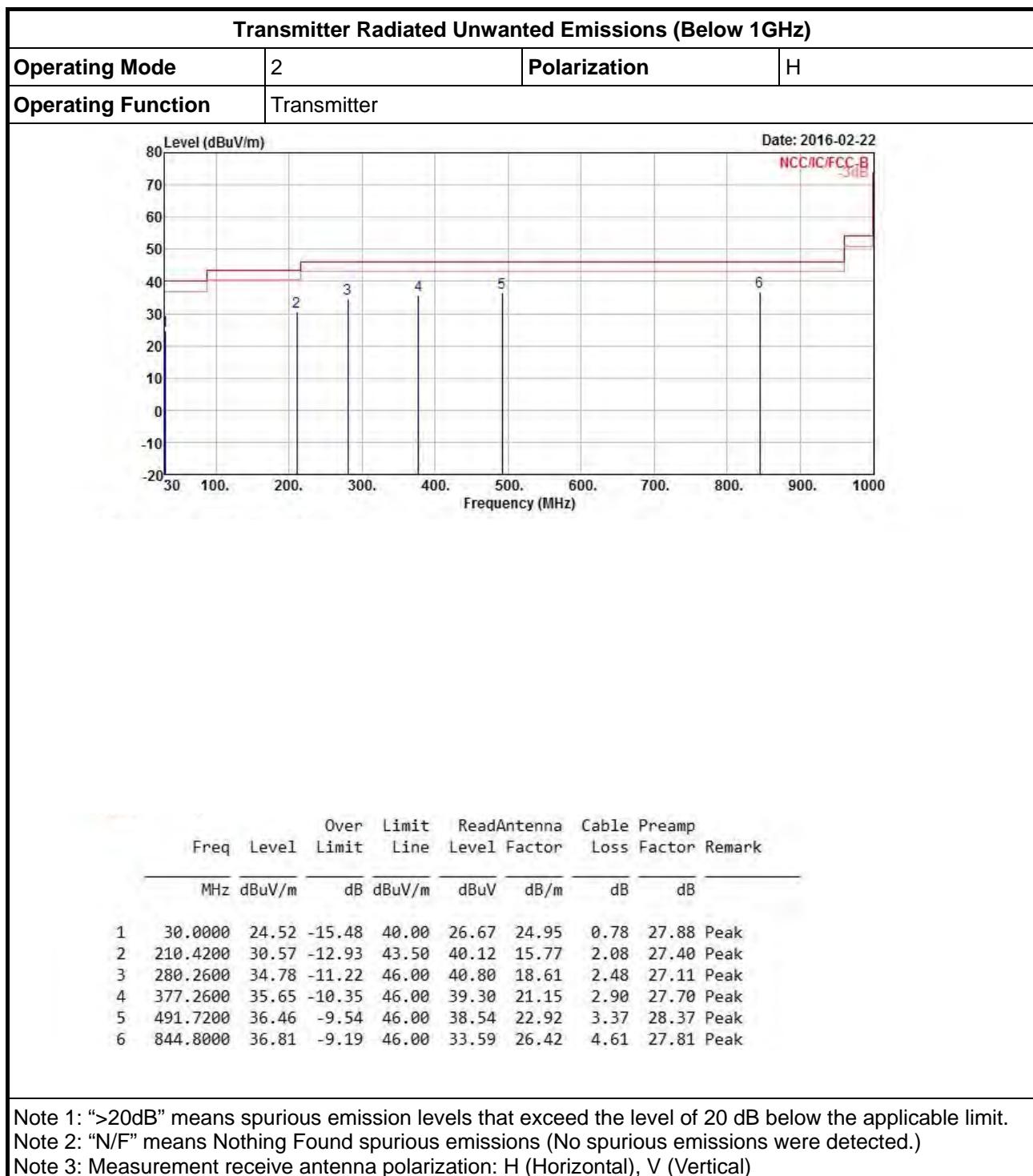
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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



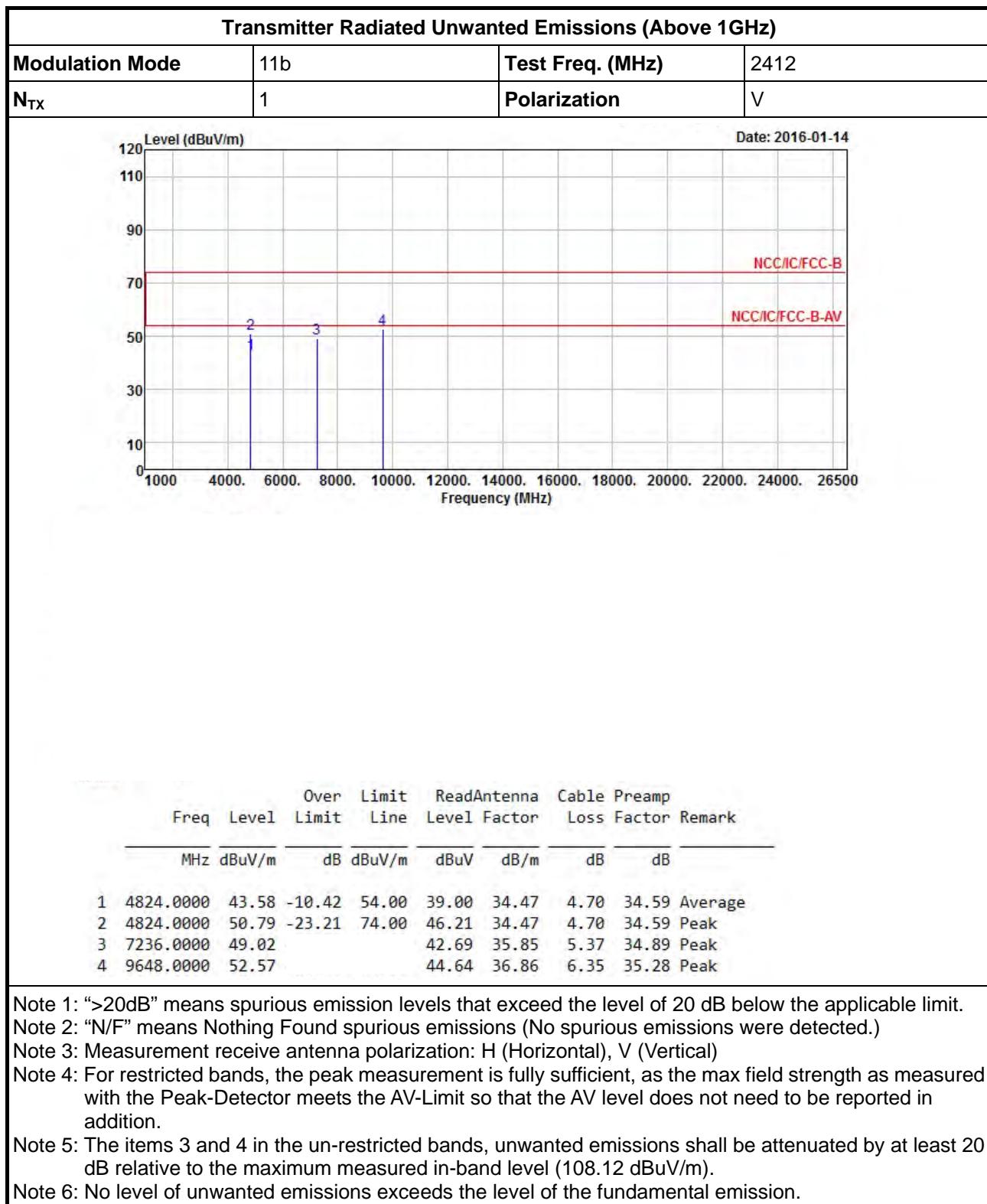
3.3.7 Transmitter Radiated Unwanted Emissions (Below 1GHz) – PIFA

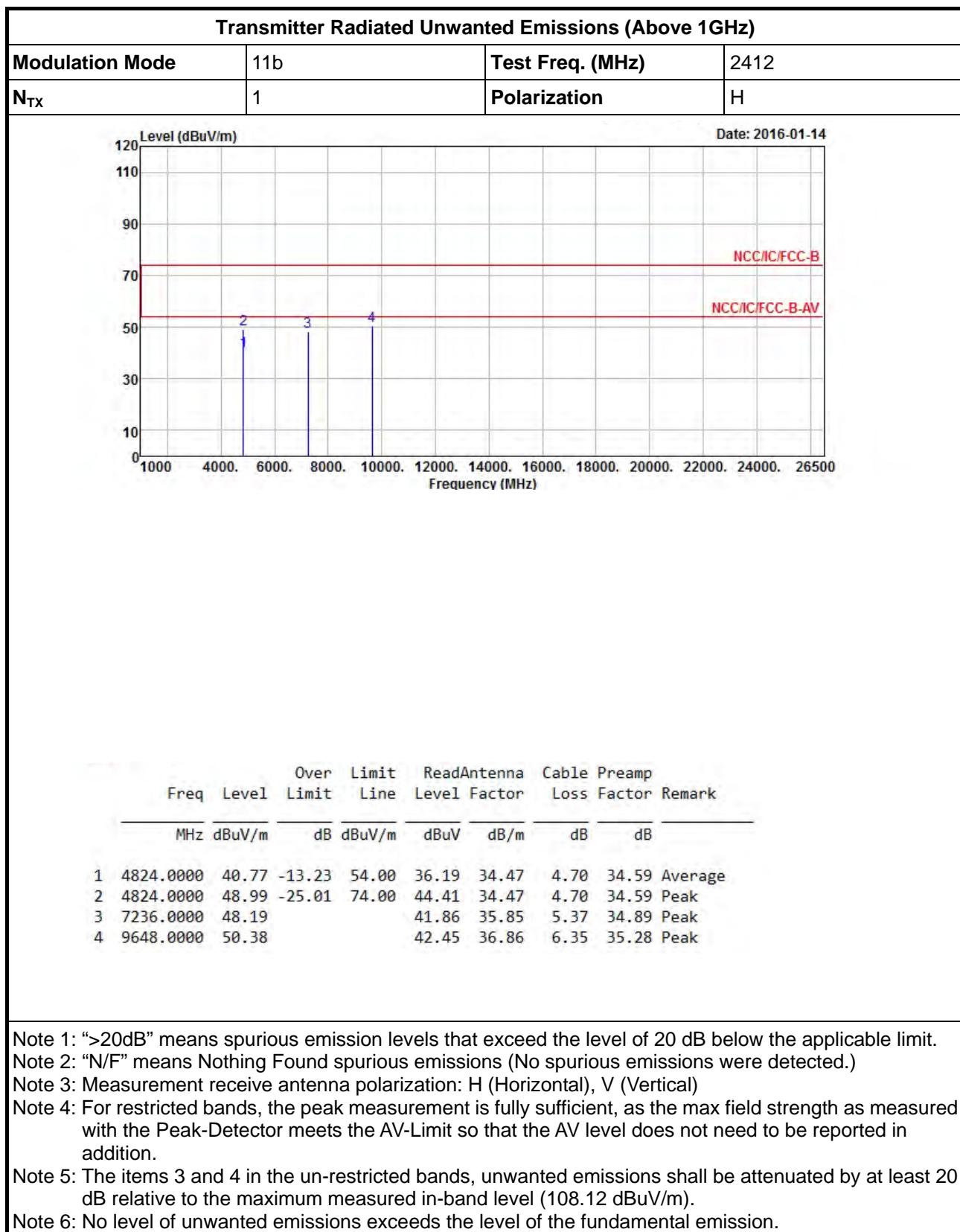


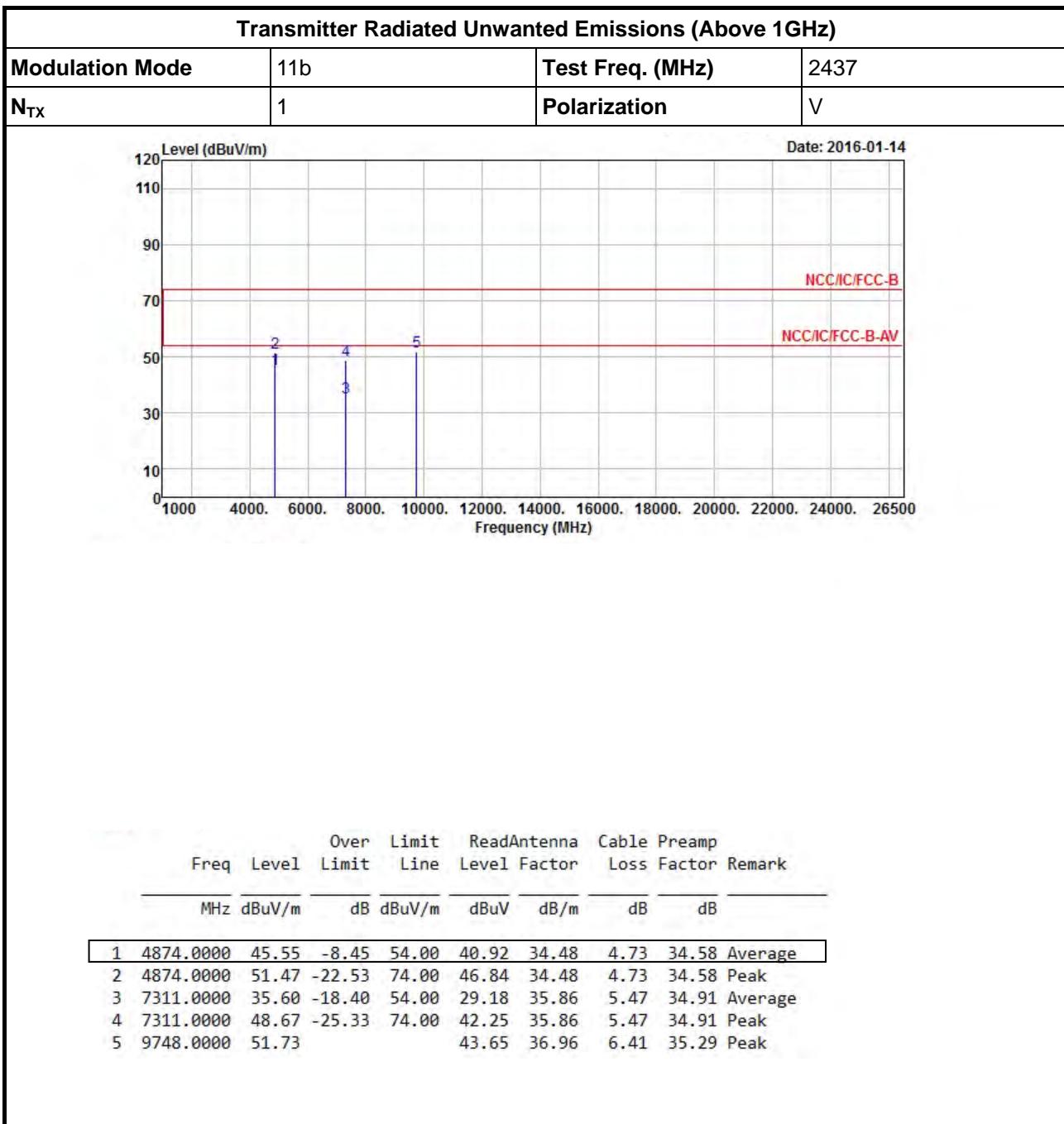




3.3.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) - Print







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

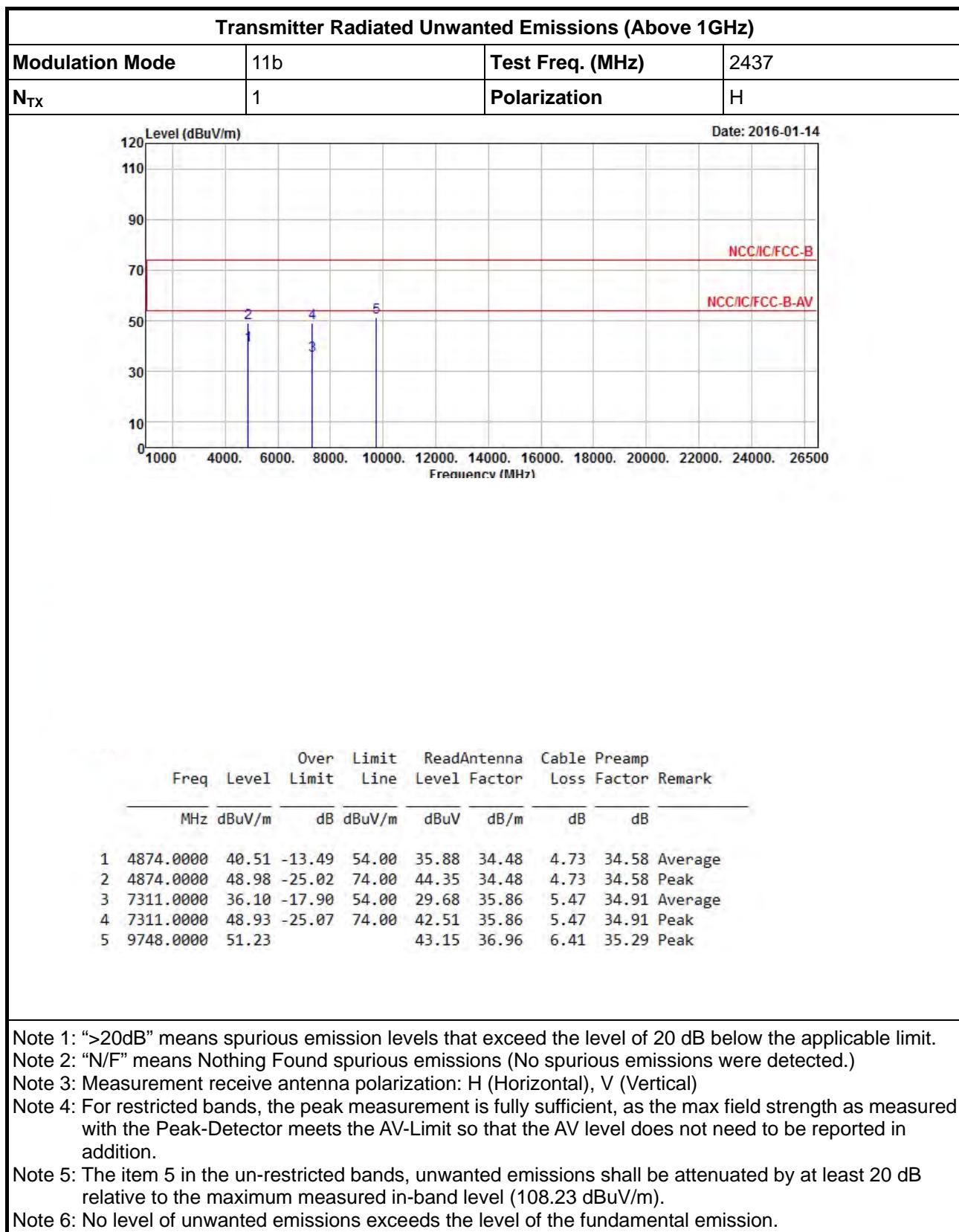
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

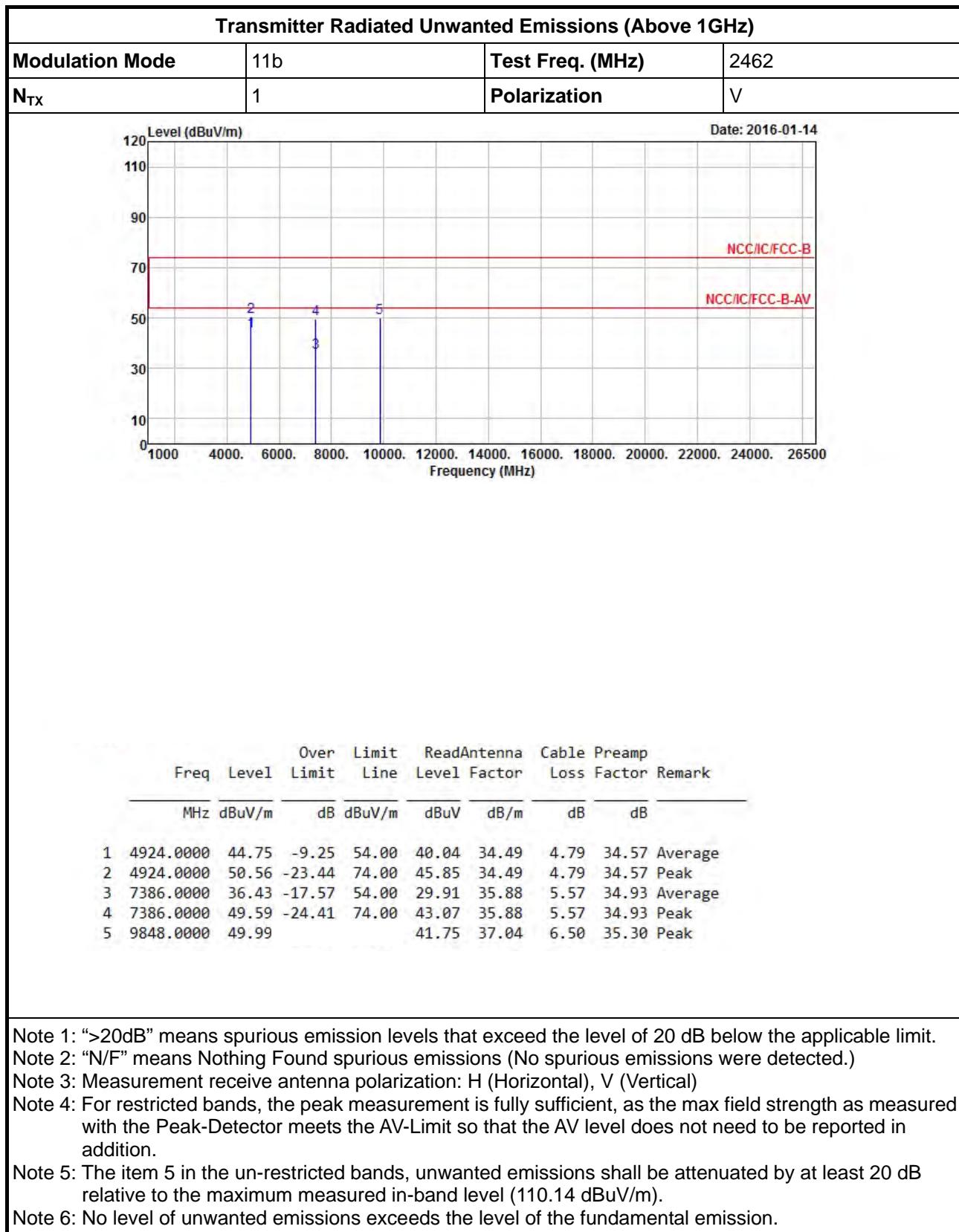
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

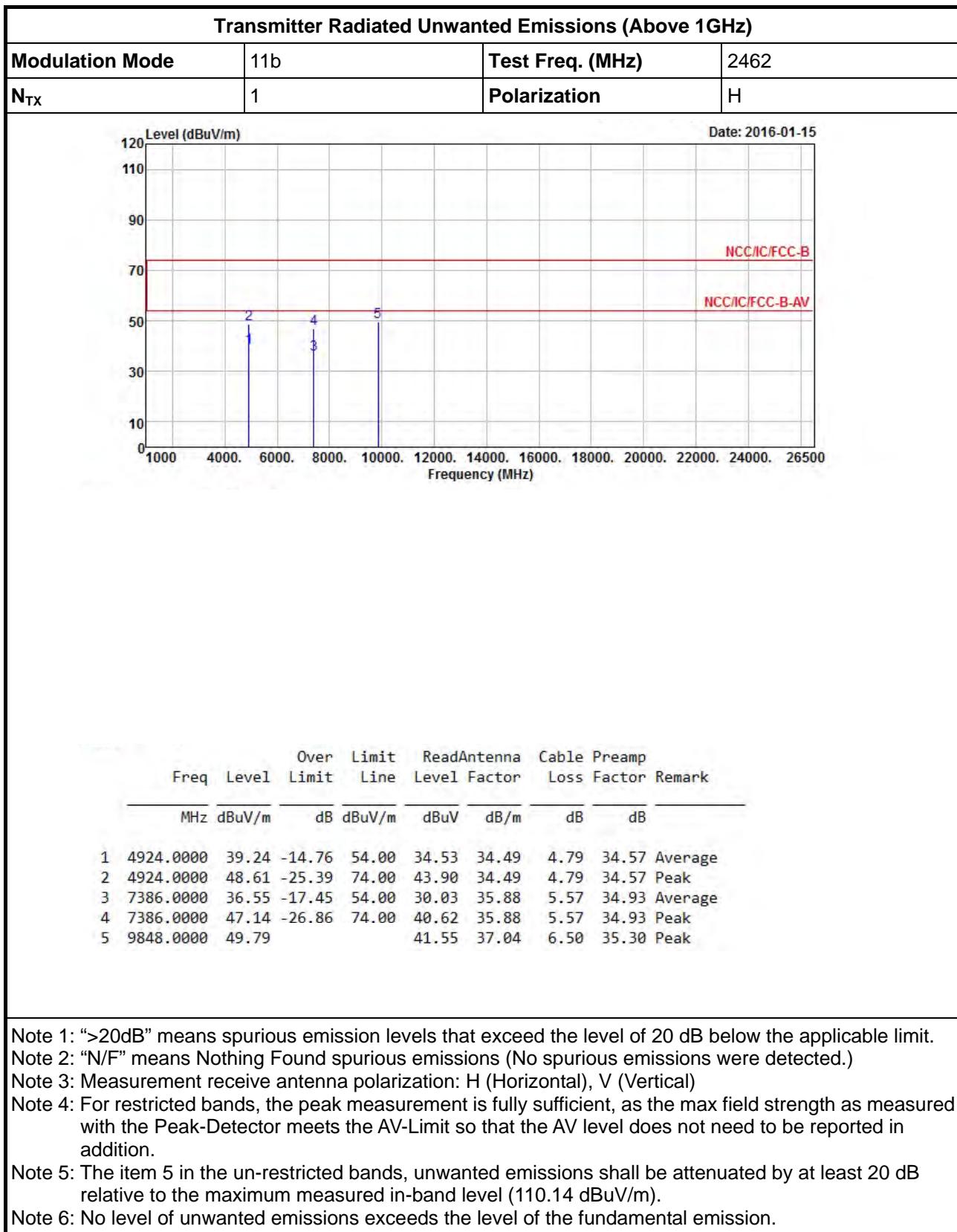
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

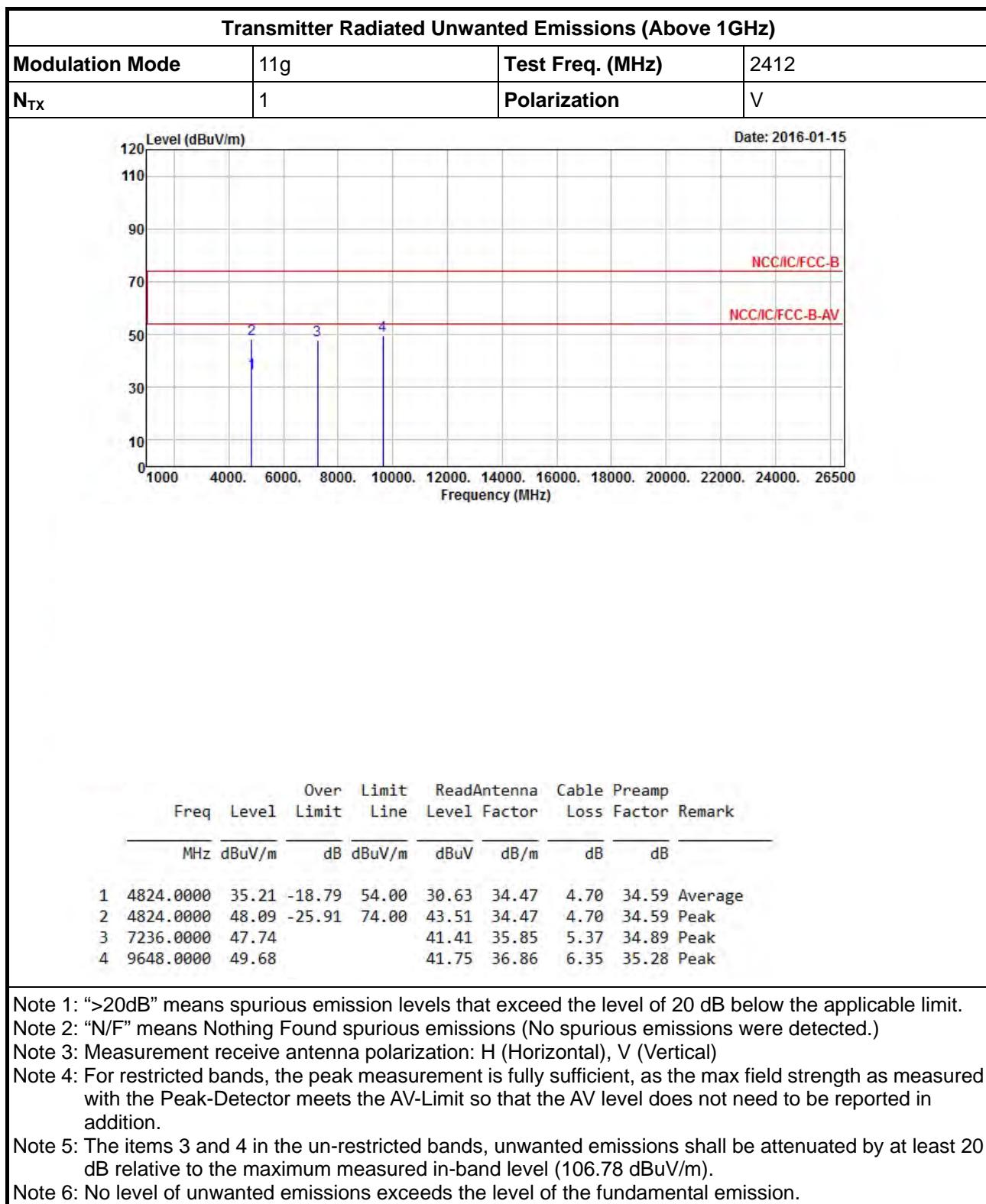
Note 5: The item 5 in the un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (108.23 dBuV/m).

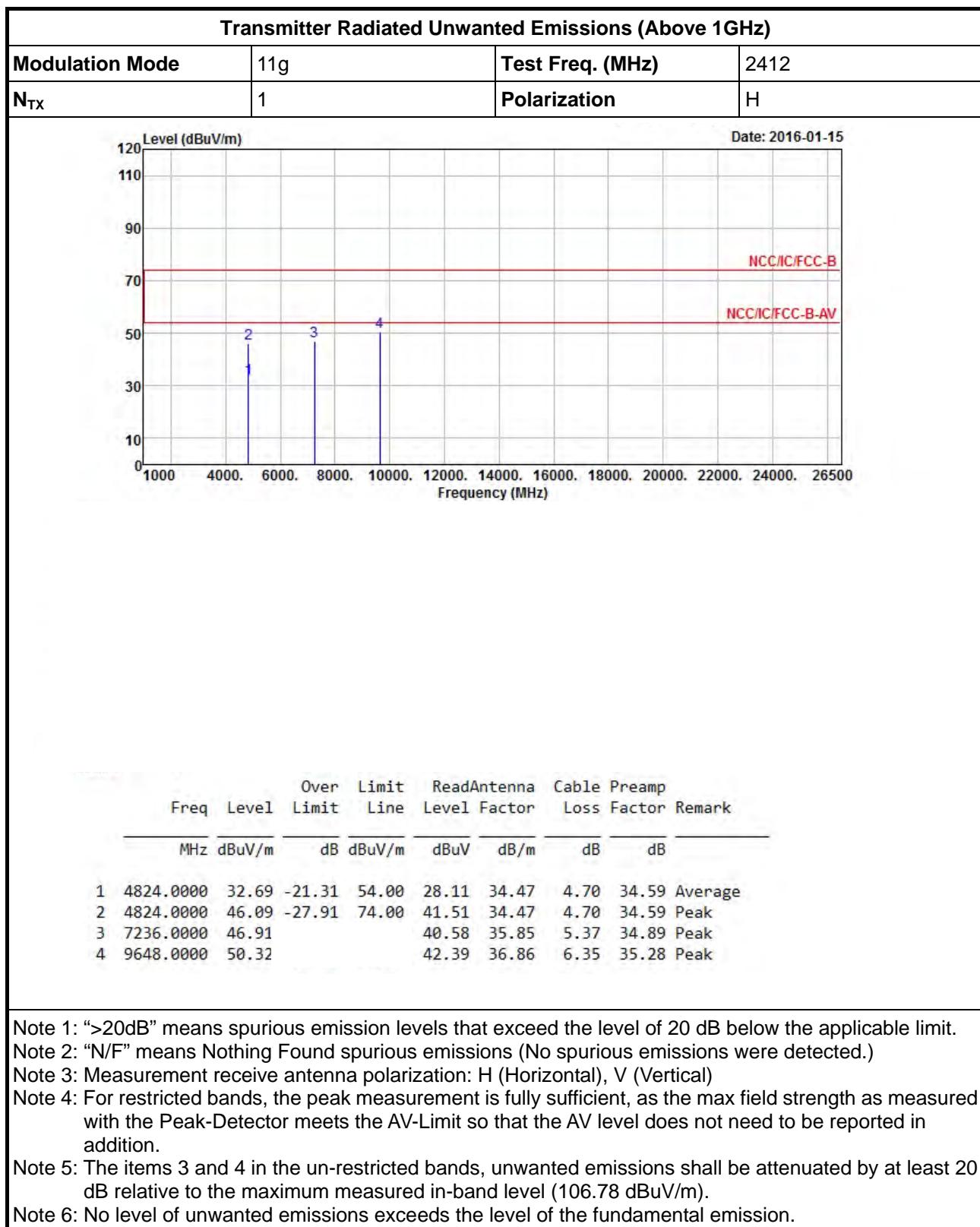
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

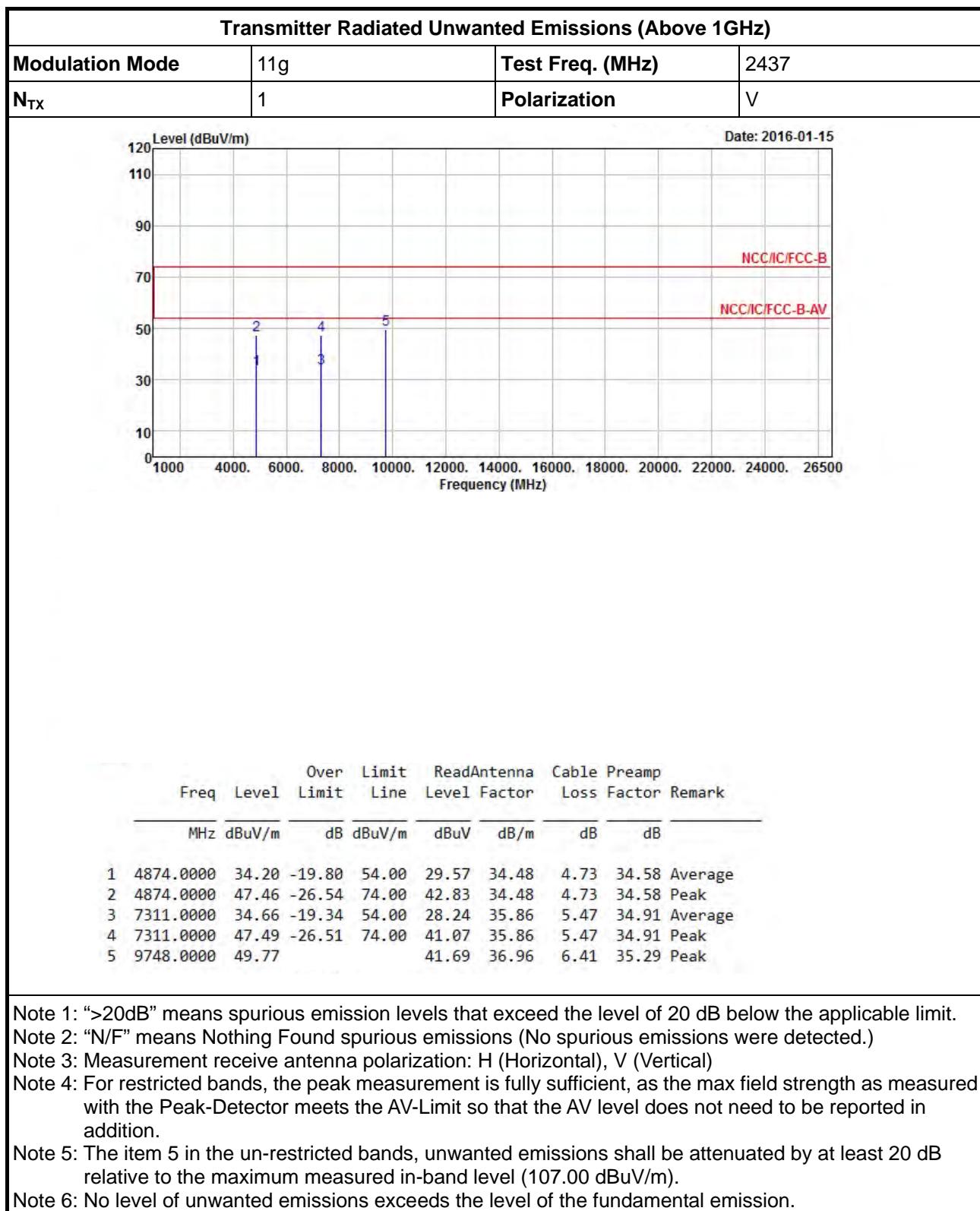


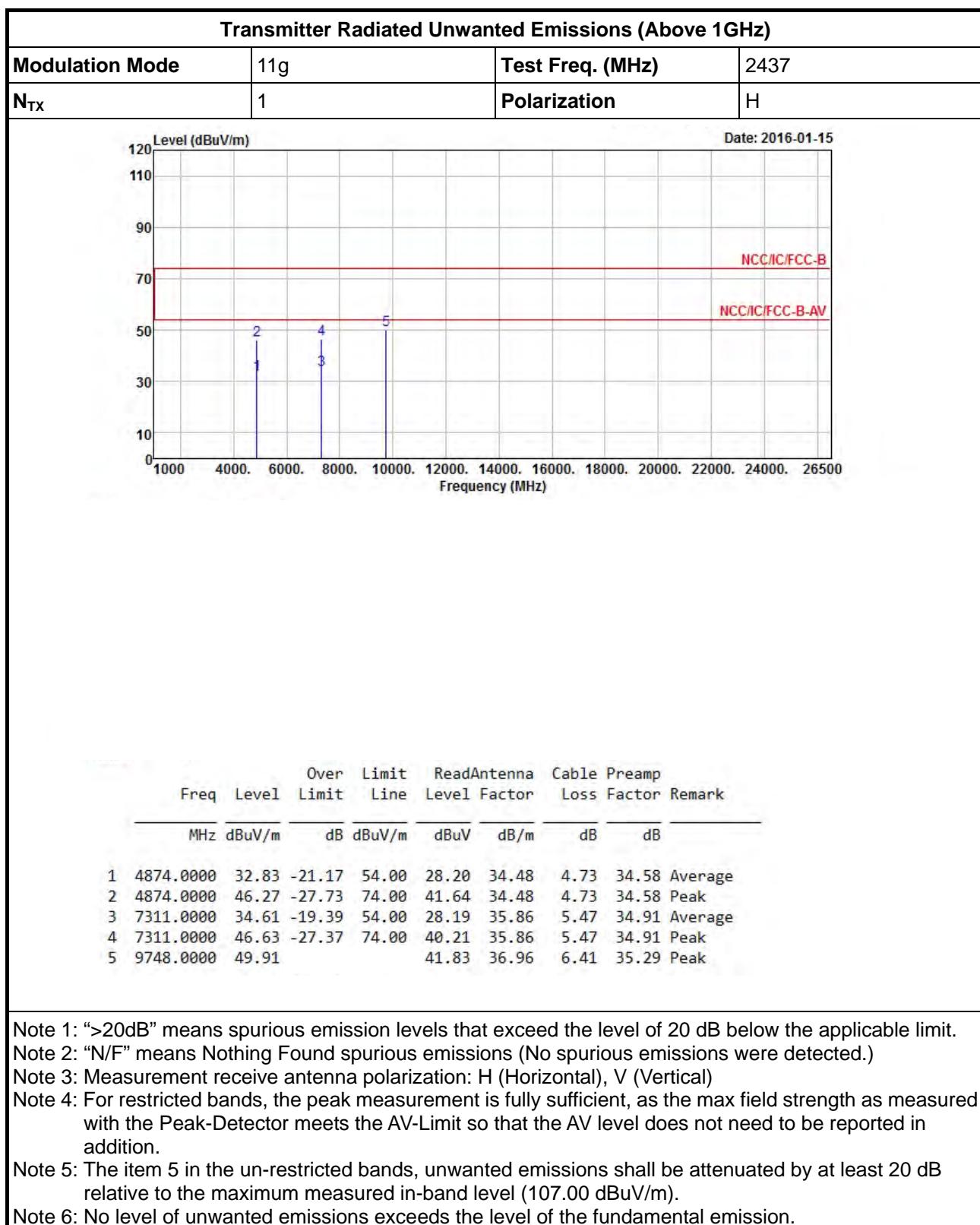


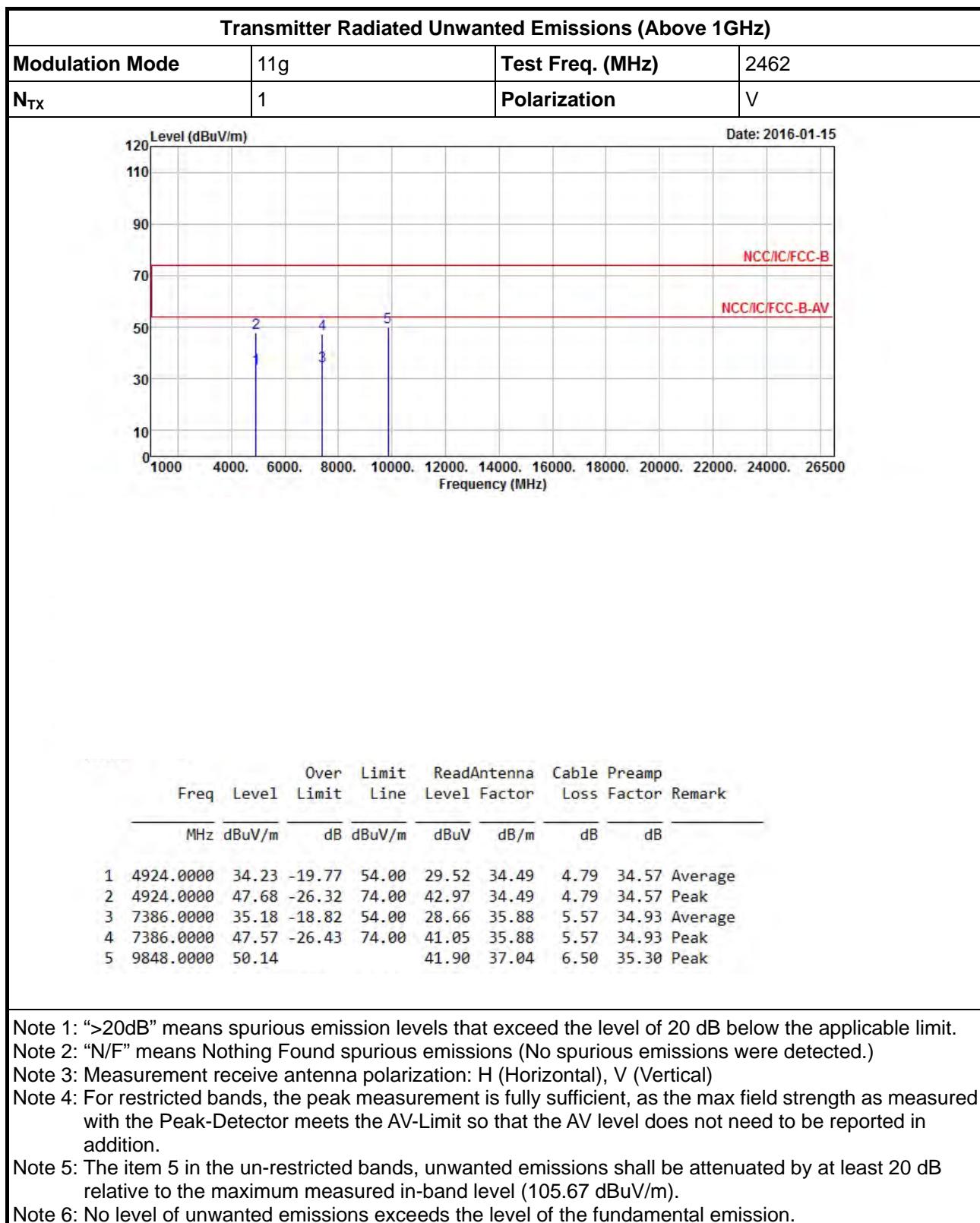


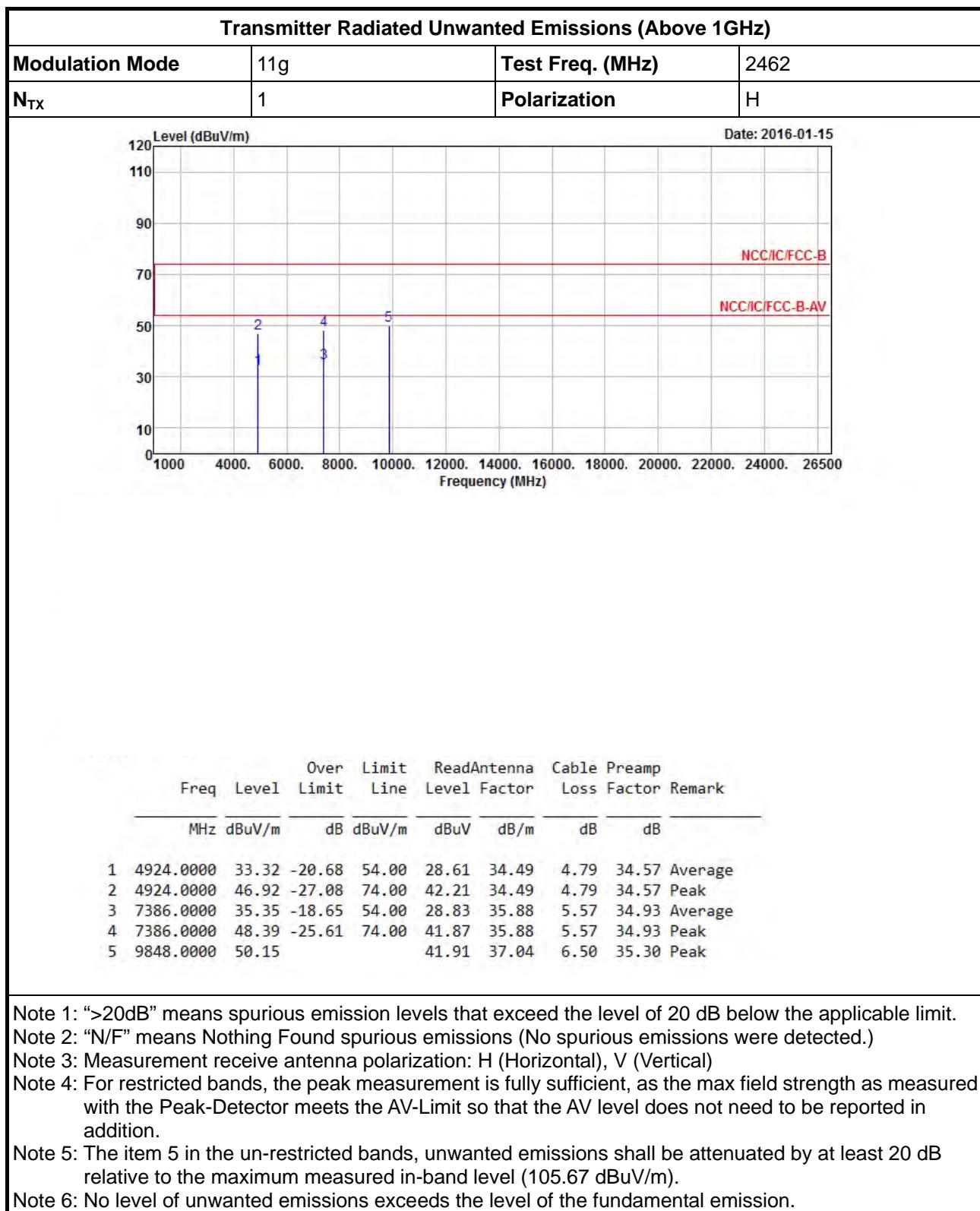


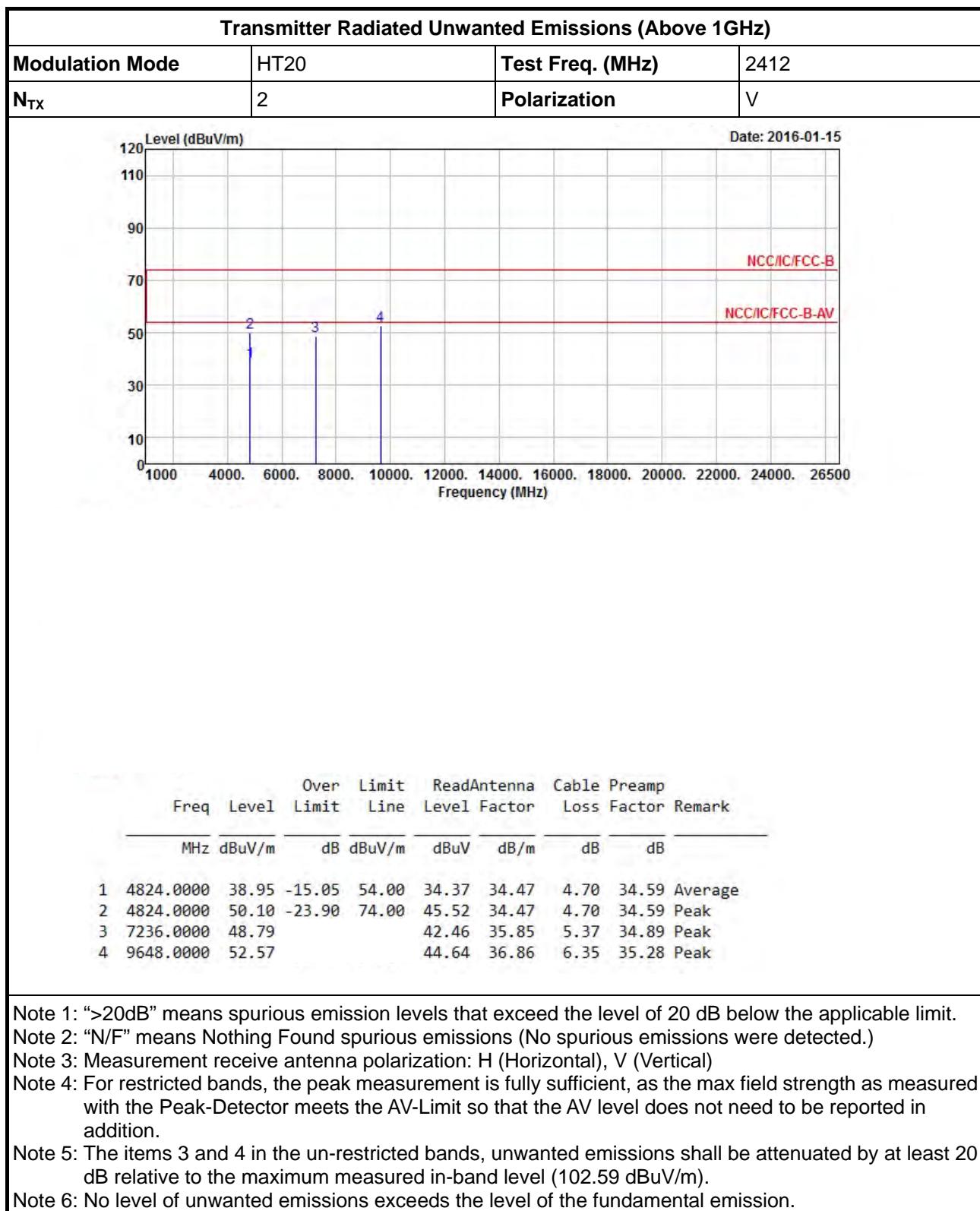


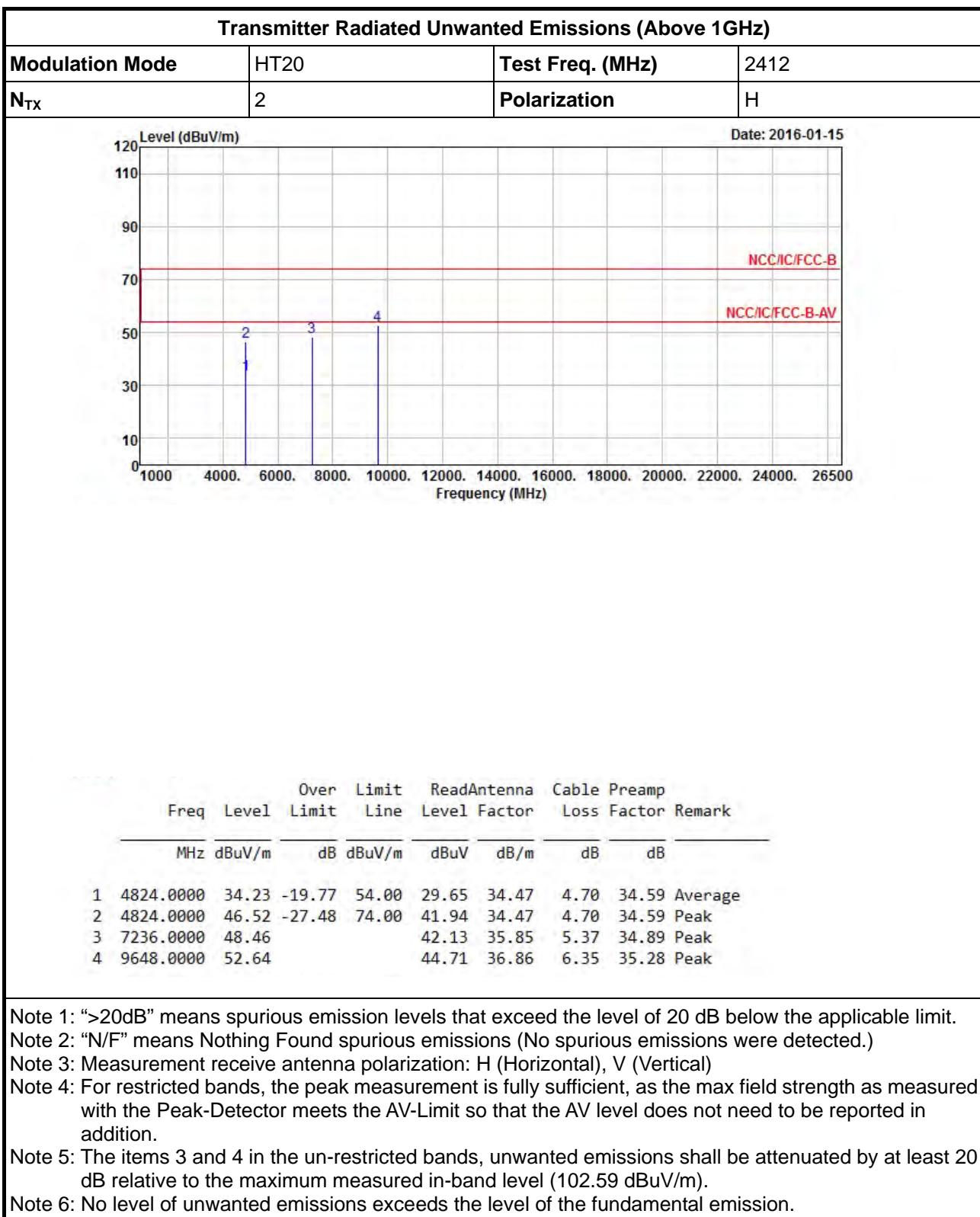


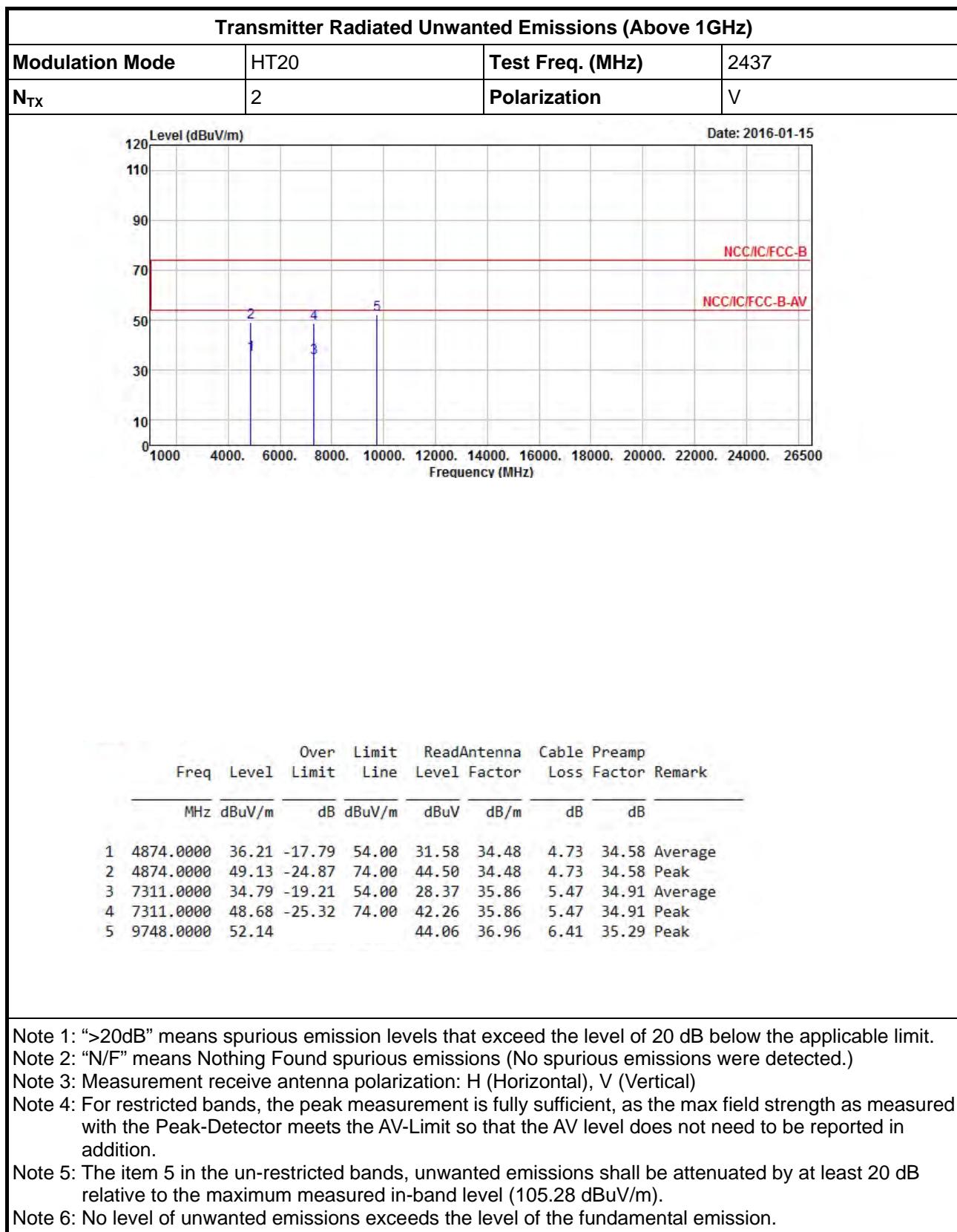


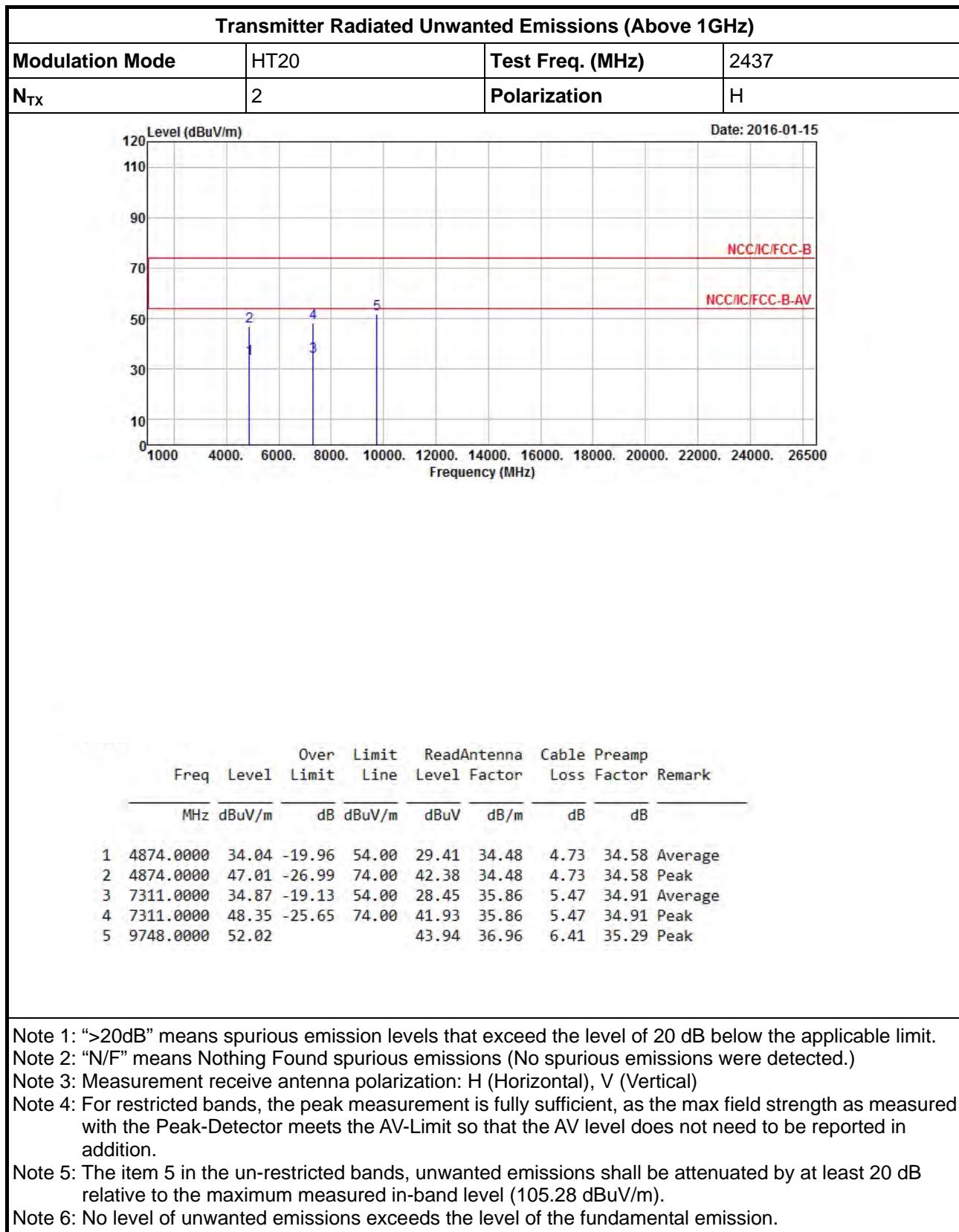


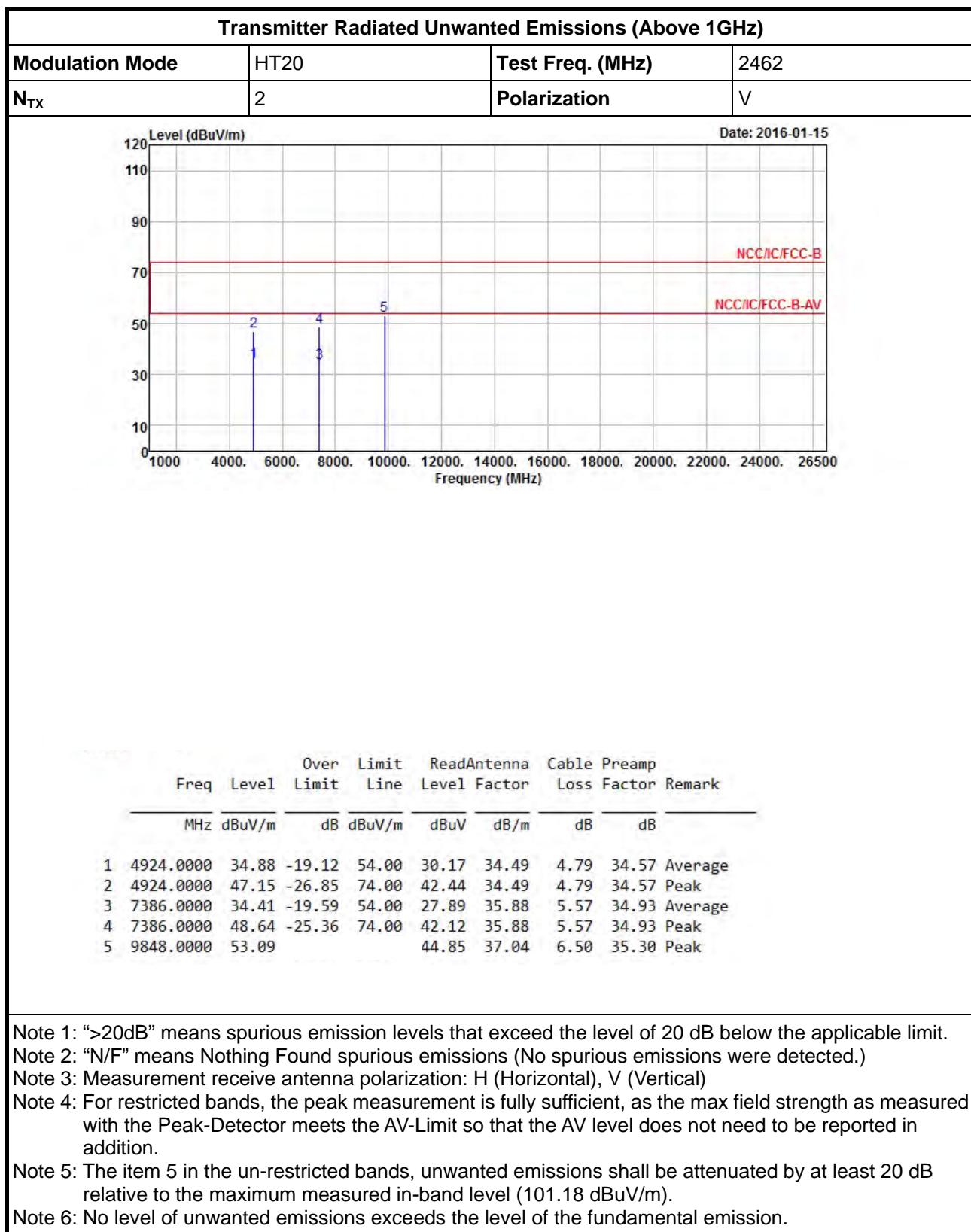


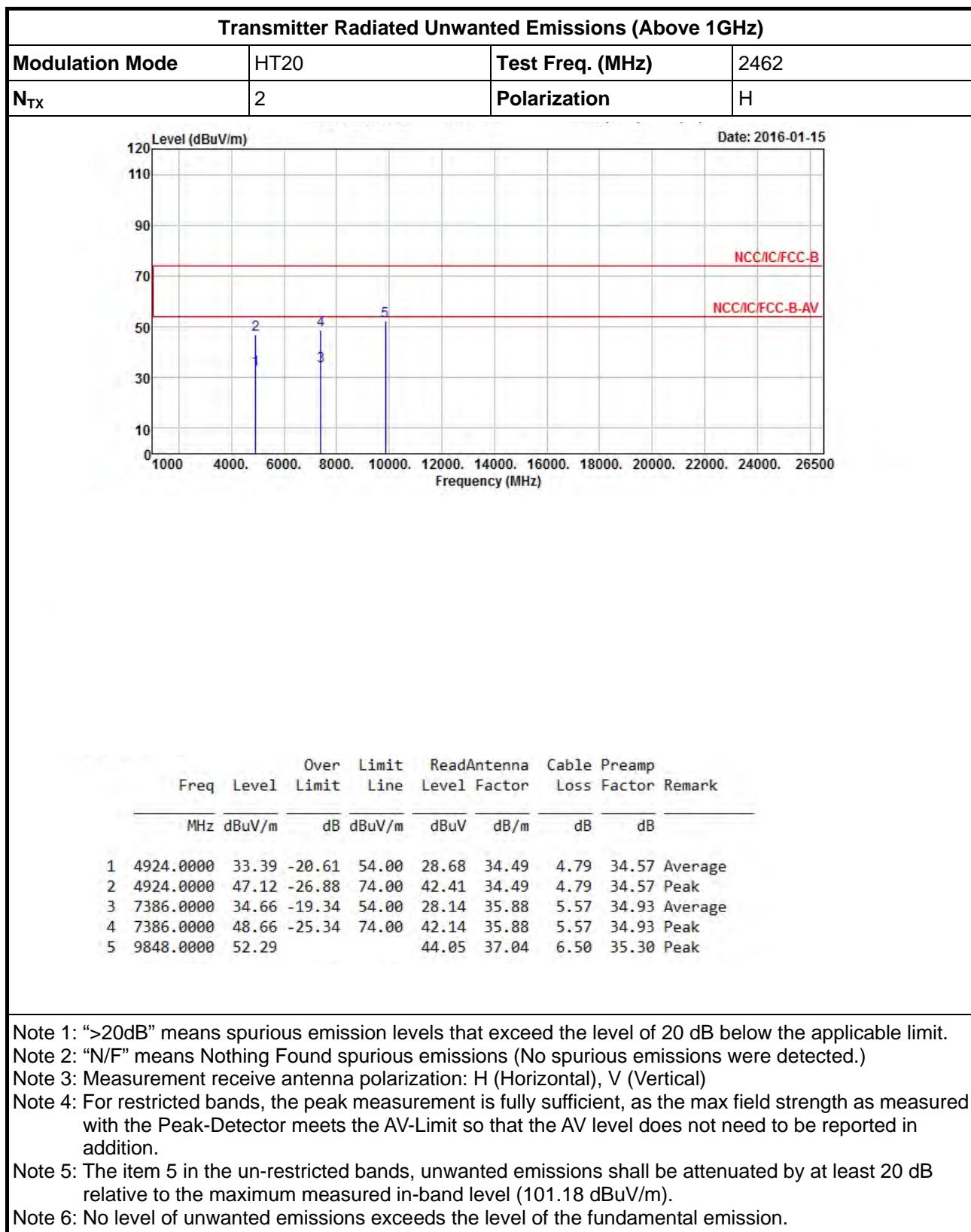


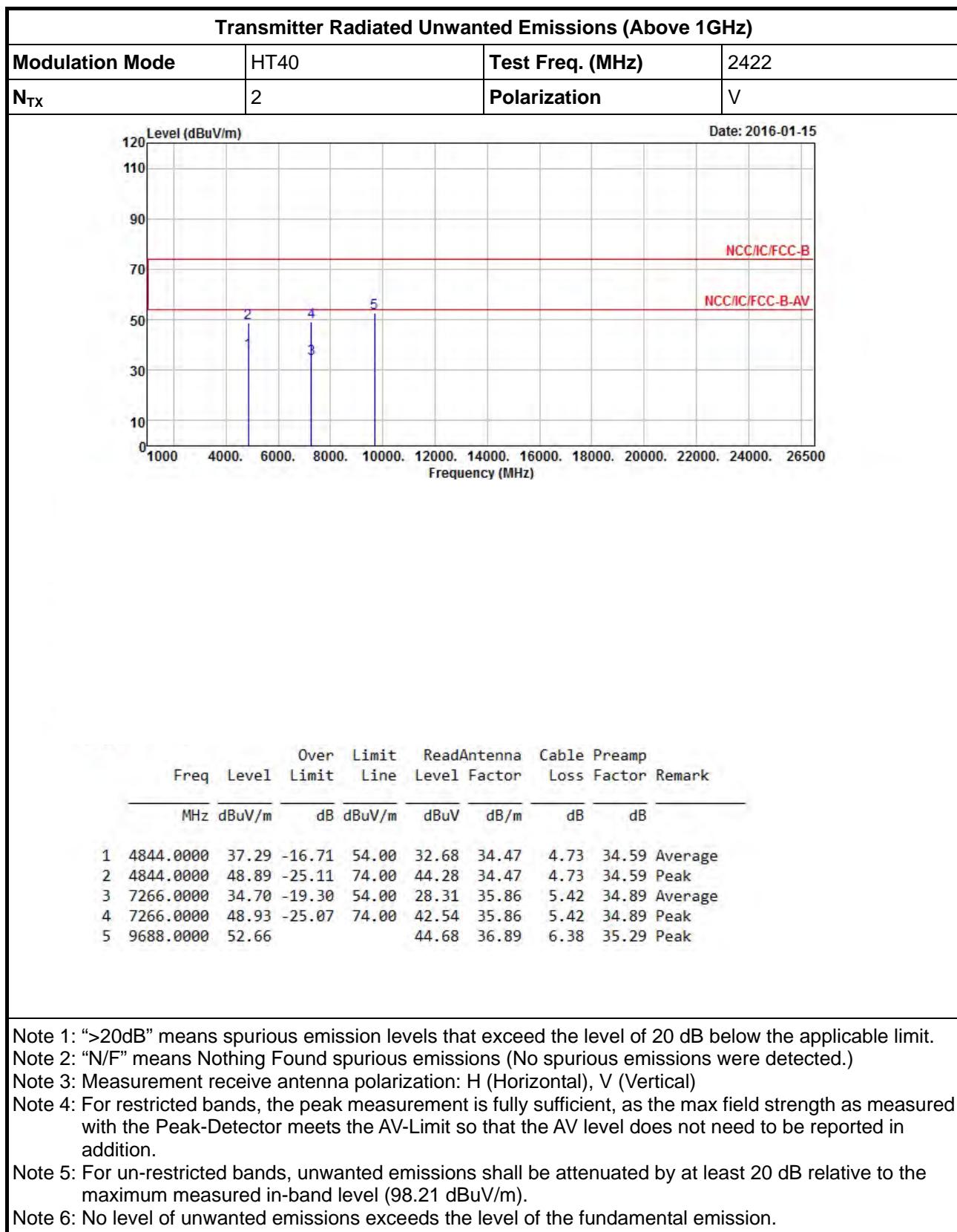


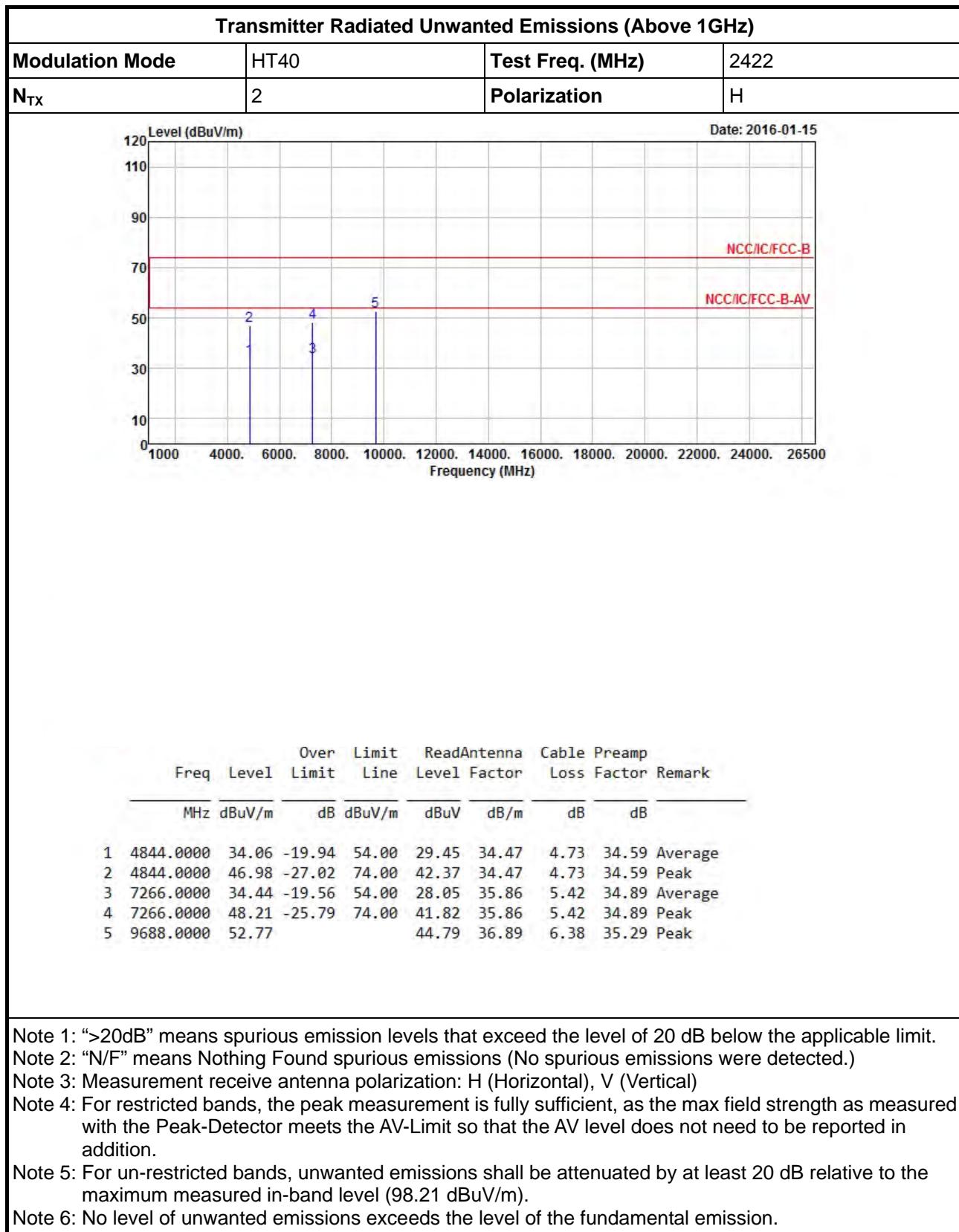


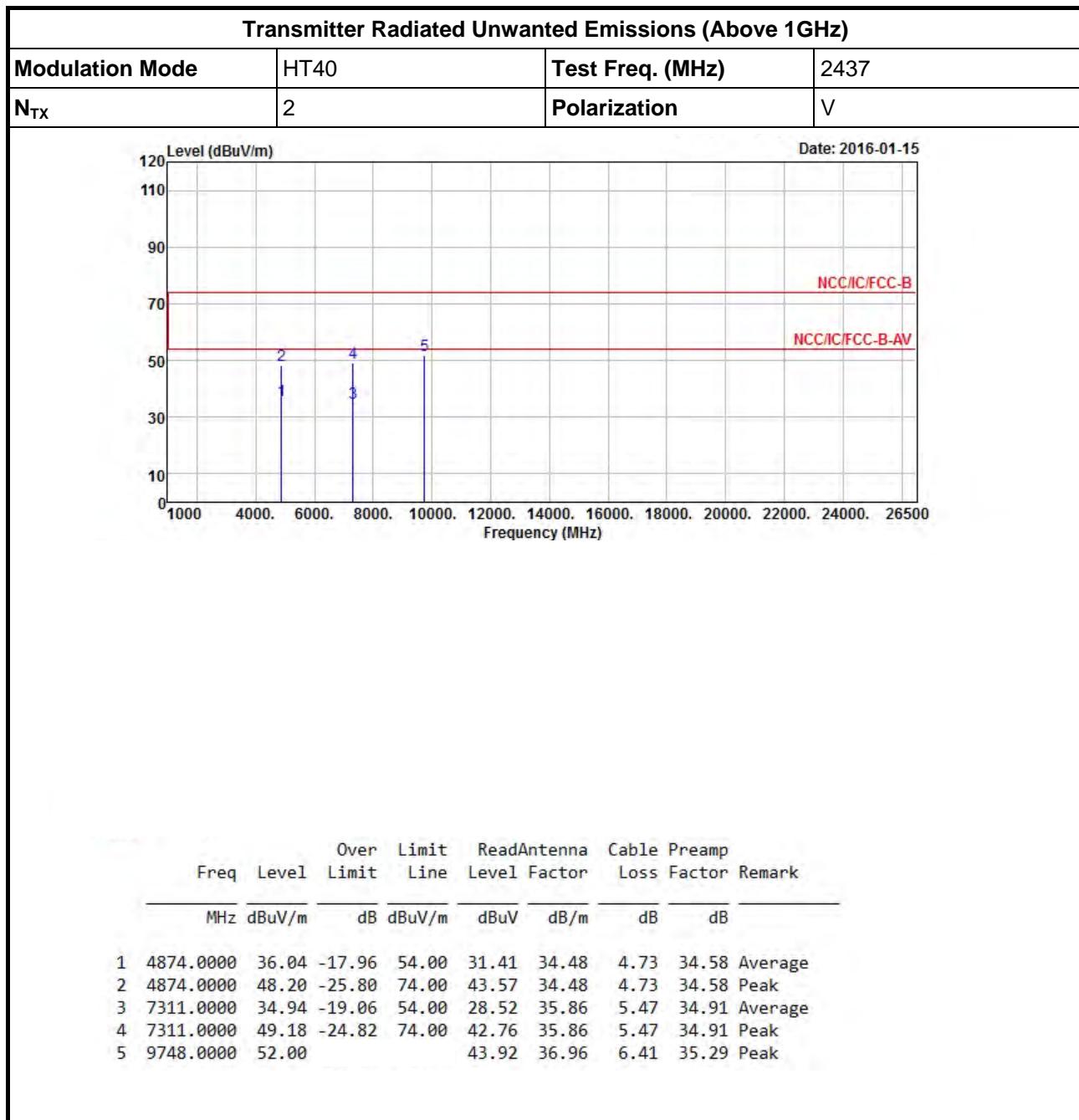












Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

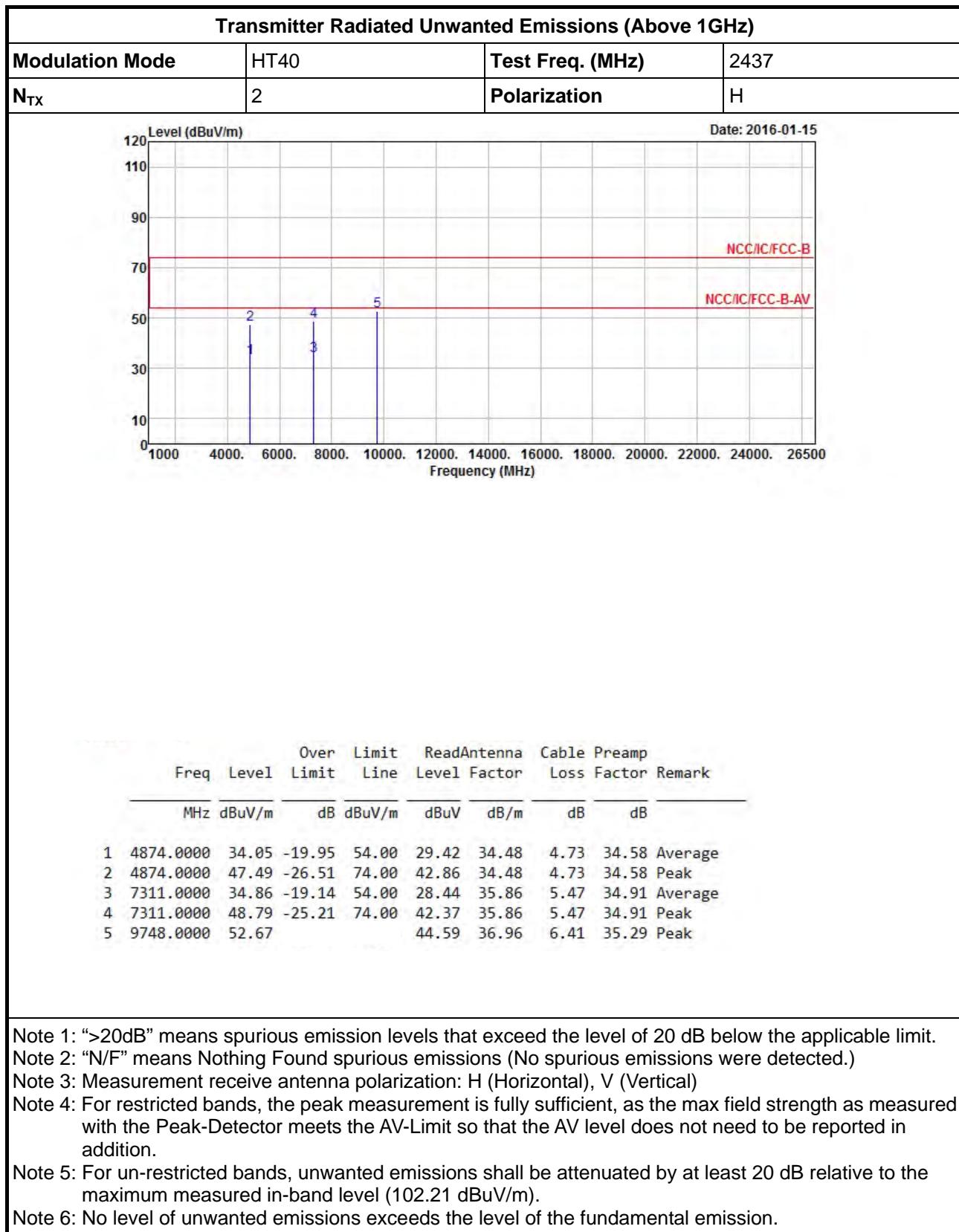
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

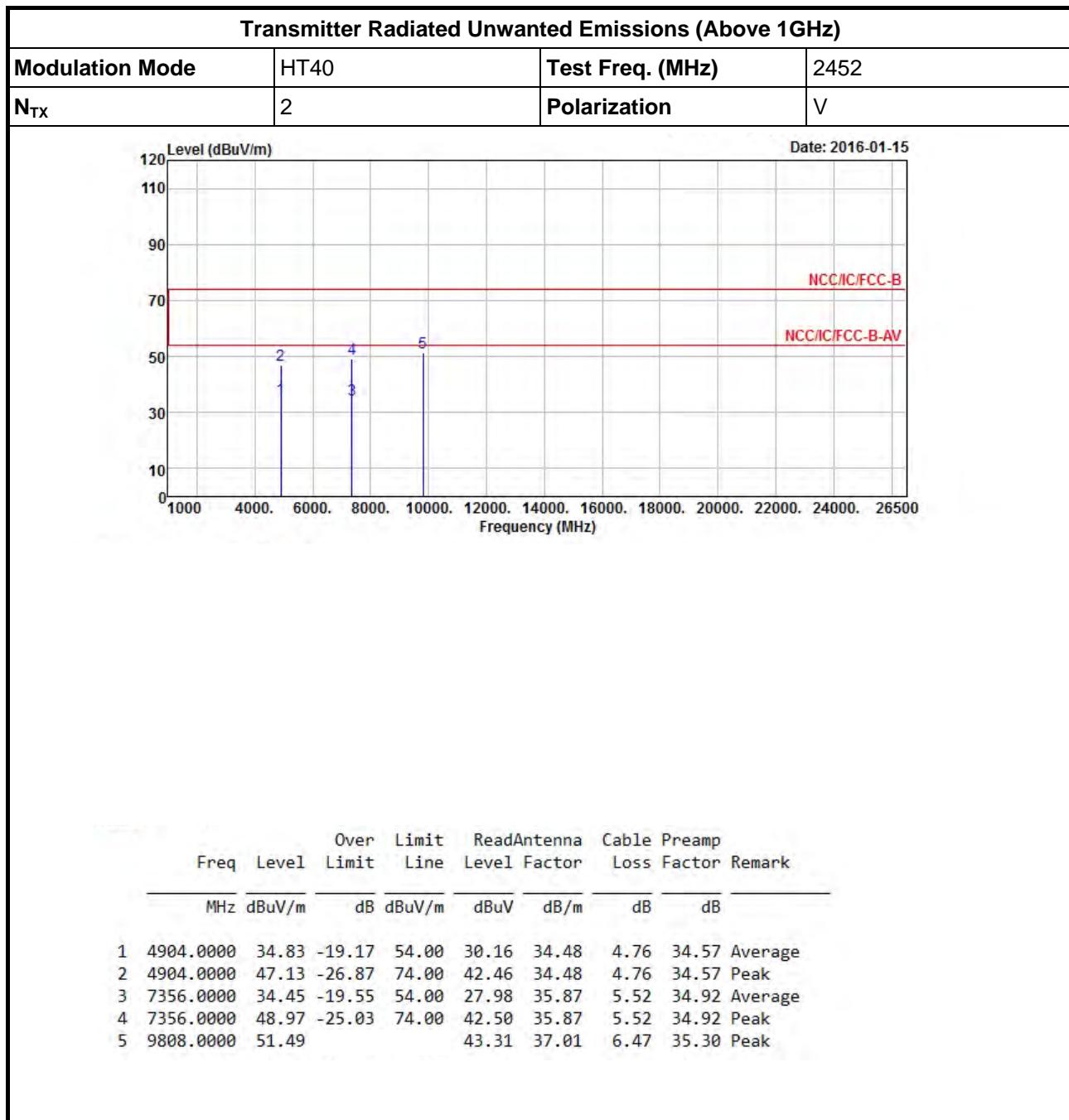
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (102.21 dBuV/m).

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.

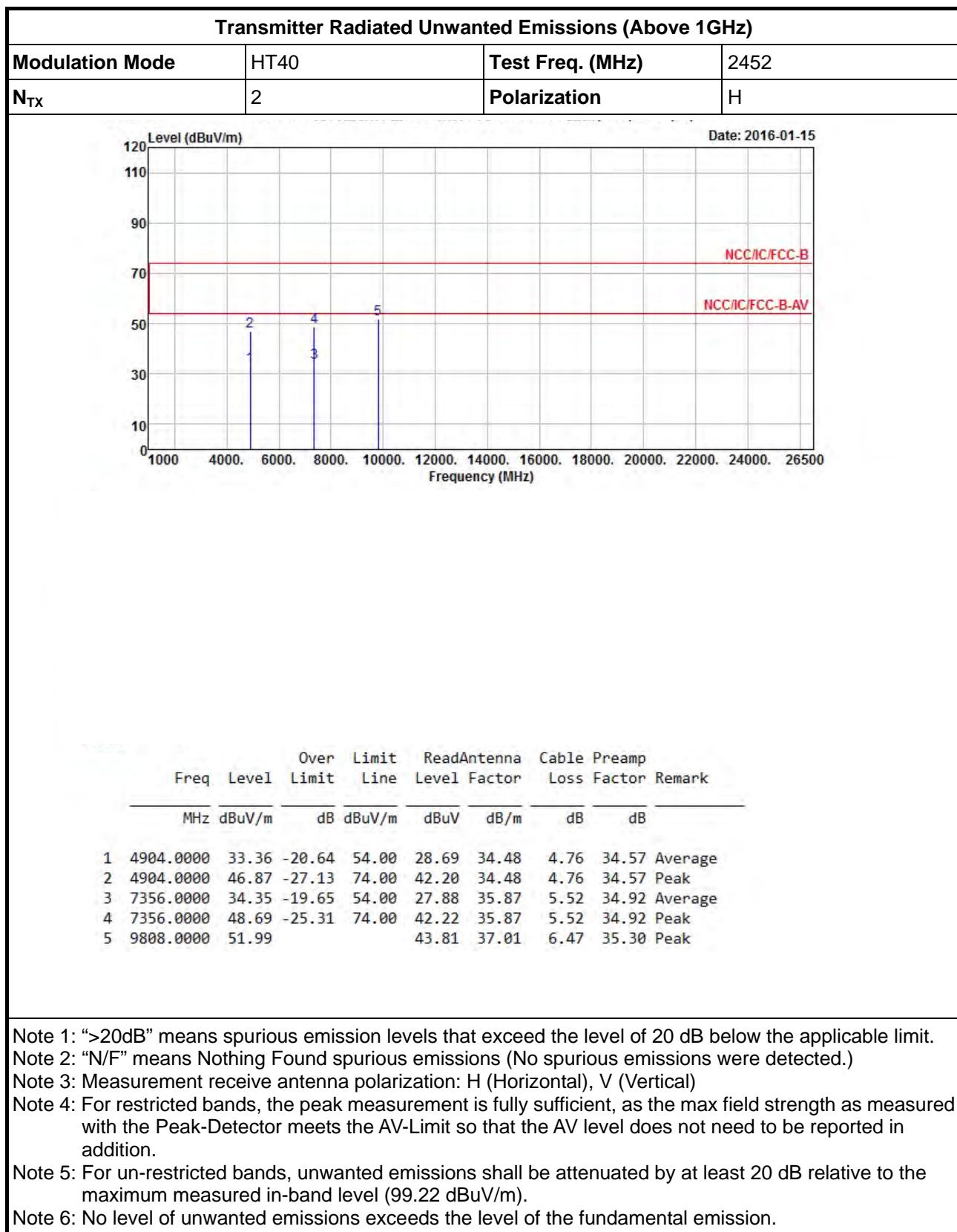
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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.

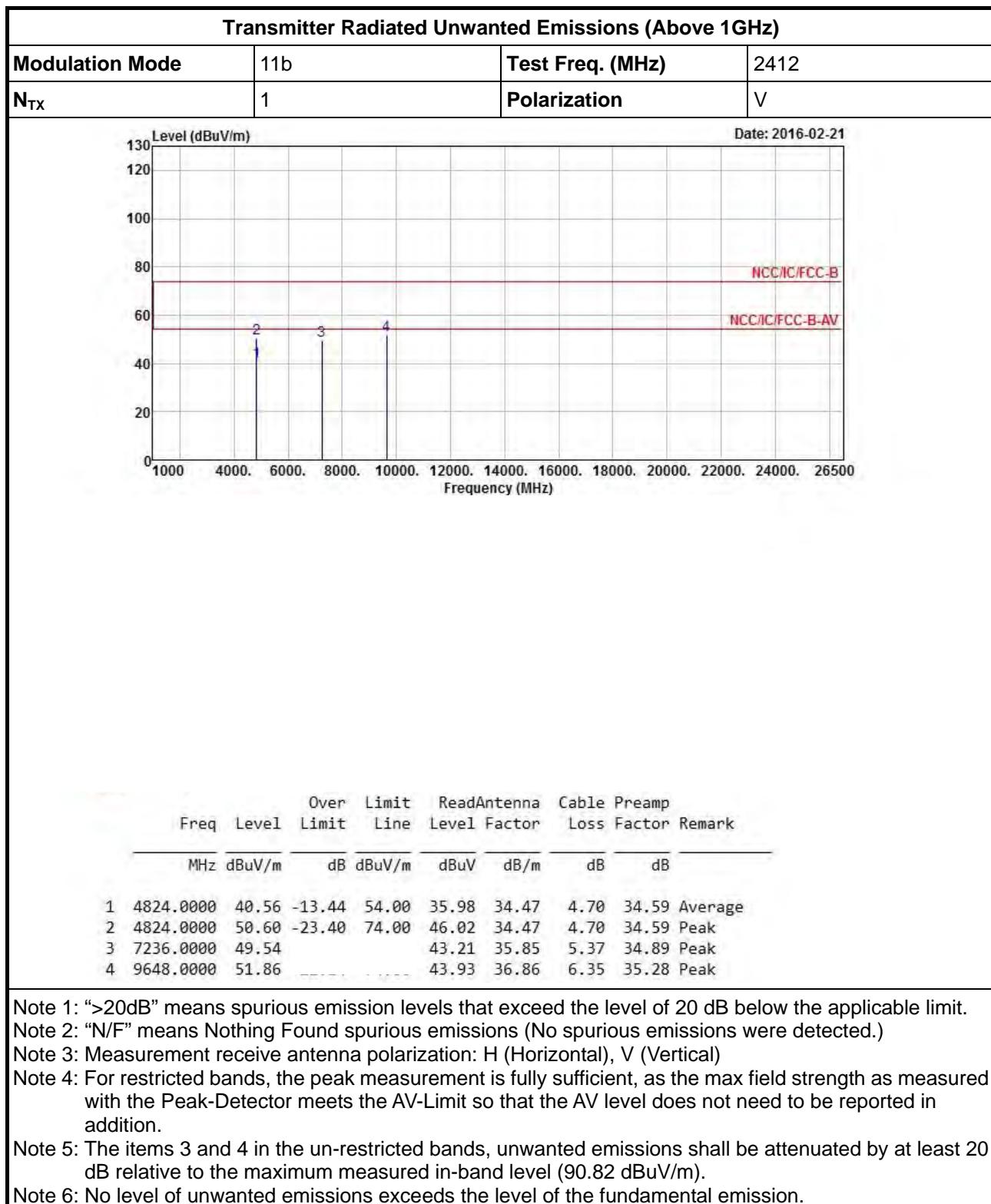
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (99.22 dB_{BuV/m}).

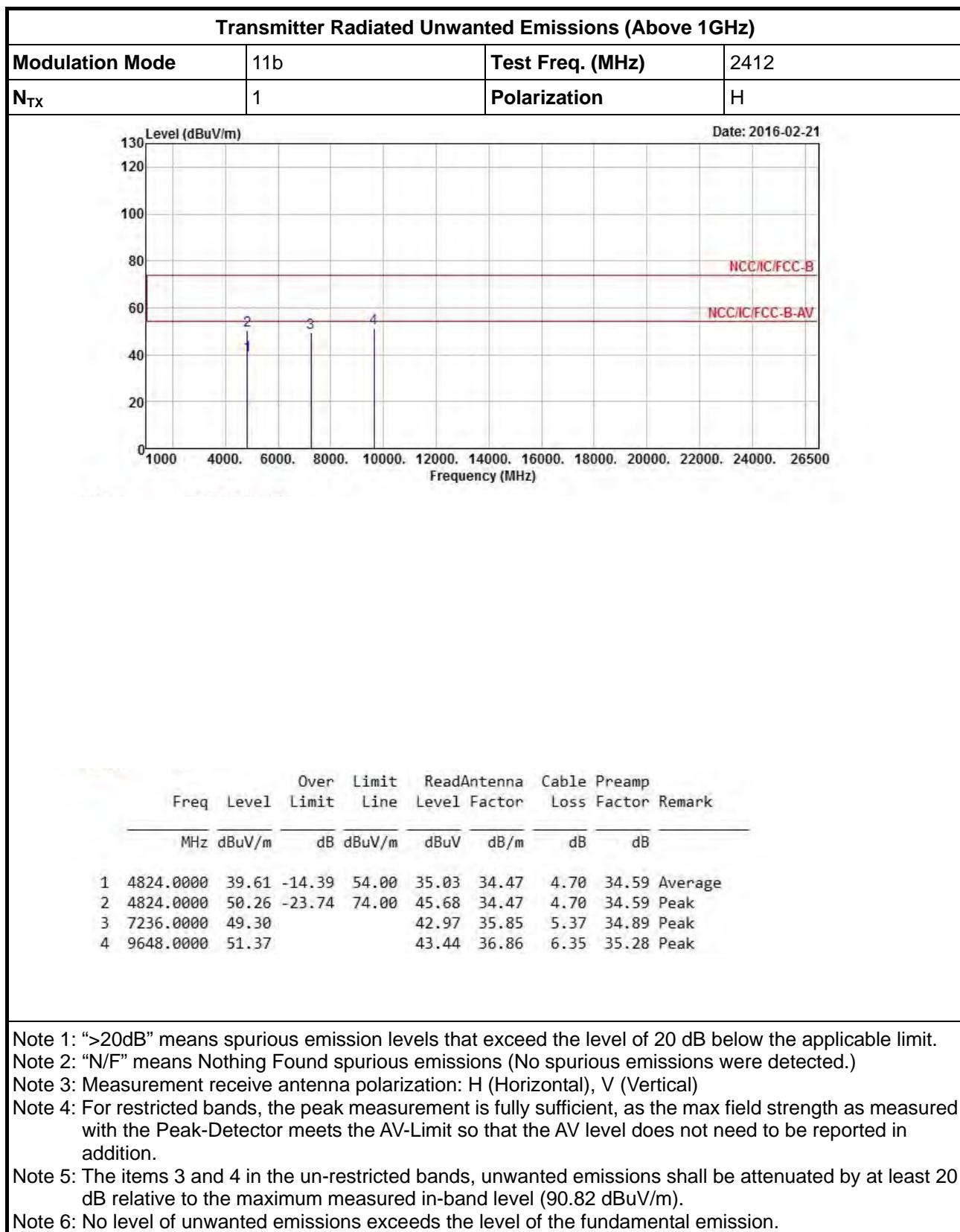
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

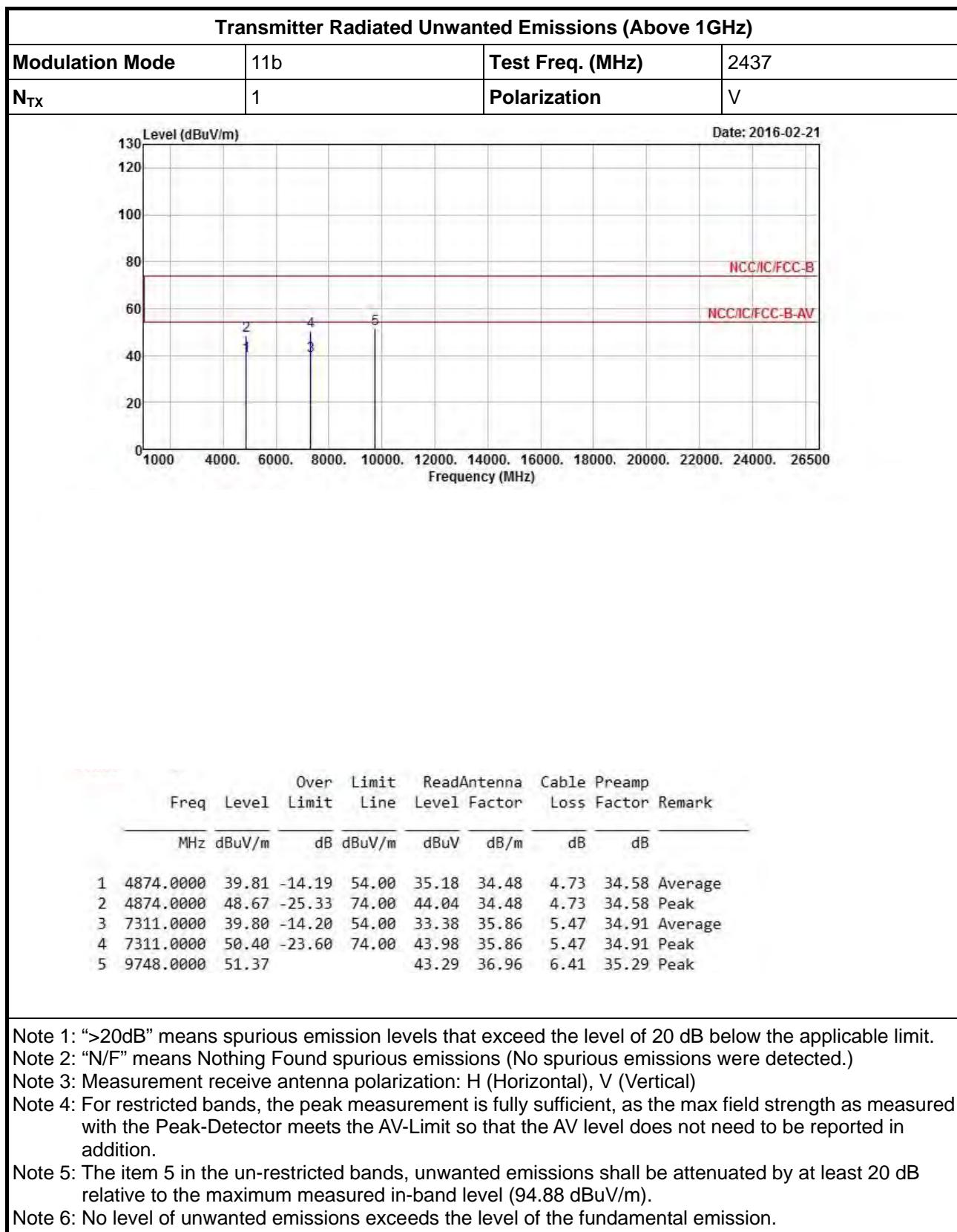


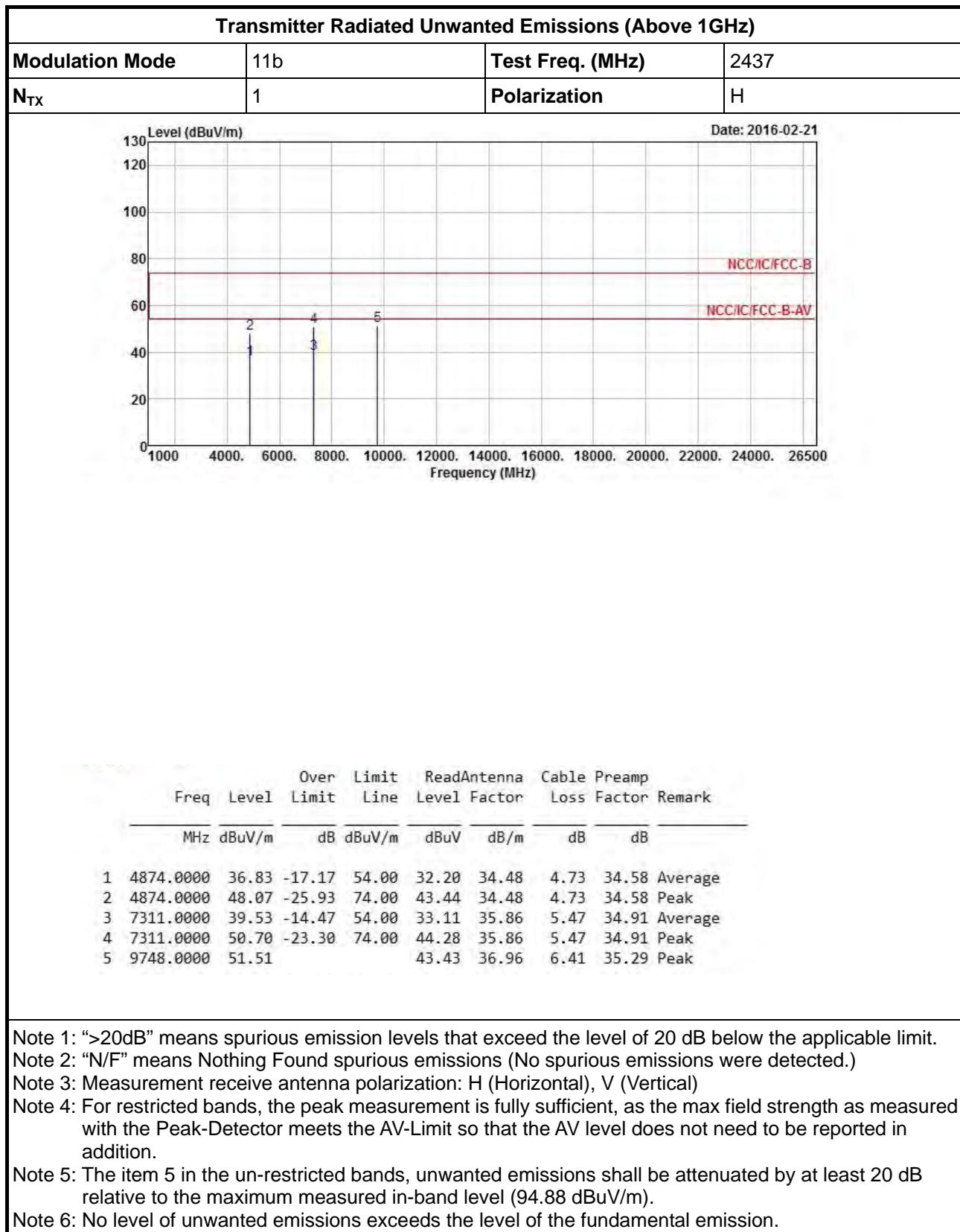


3.3.9 Transmitter Radiated Unwanted Emissions (Above 1GHz) - PIFA









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

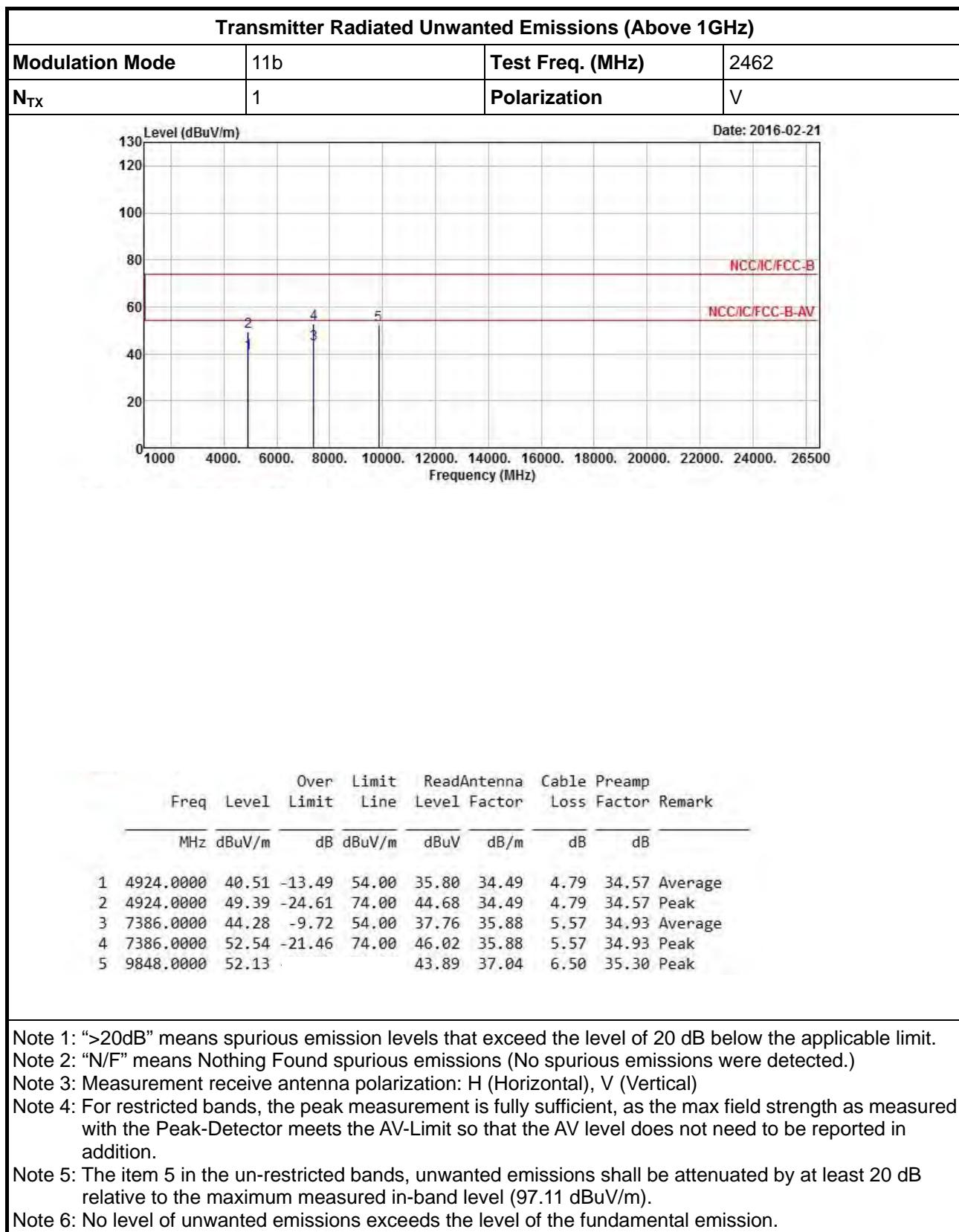
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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: The item 5 in the un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (94.88 dBuV/m).

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.

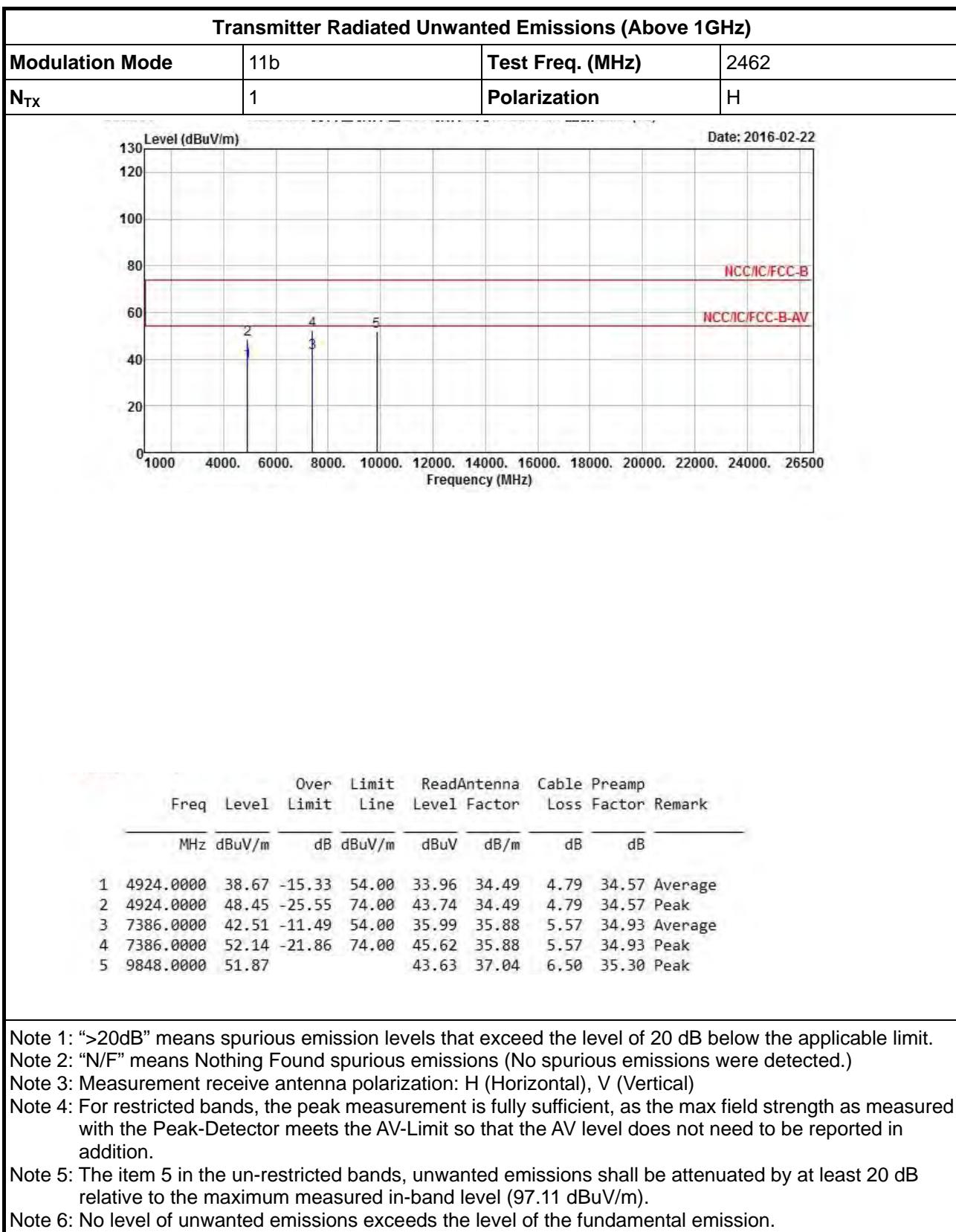
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

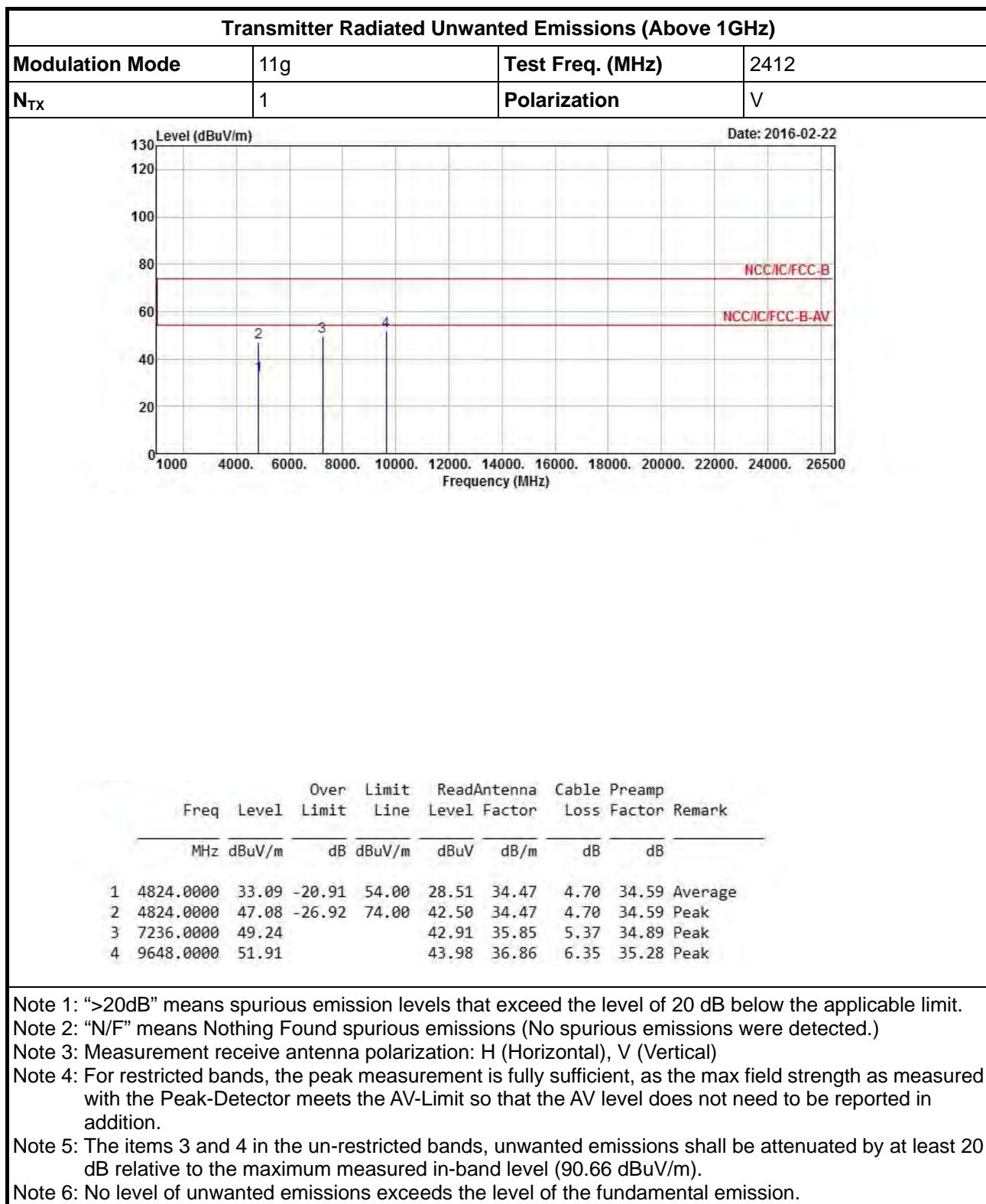
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

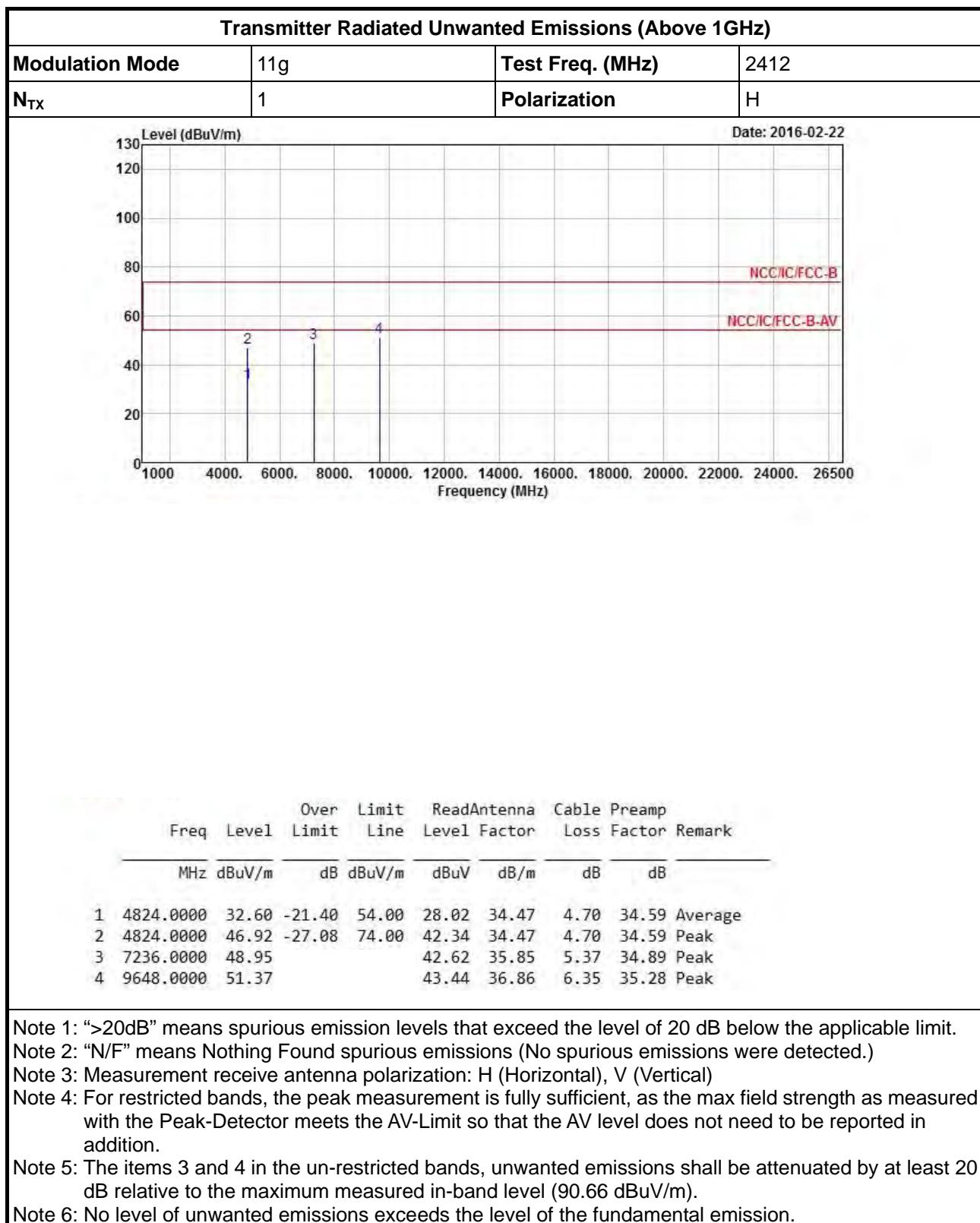
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

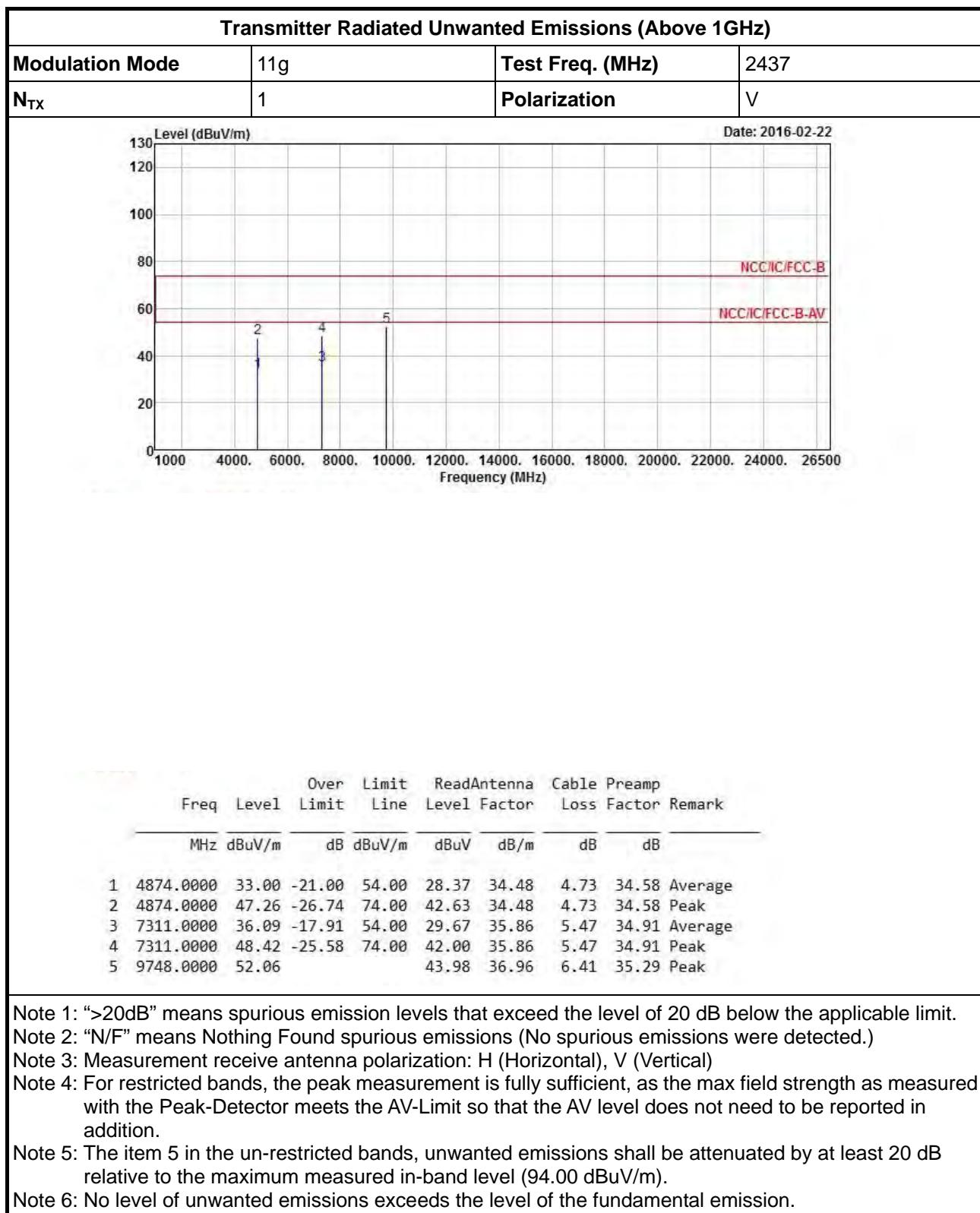
Note 5: The item 5 in the un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (97.11 dBuV/m).

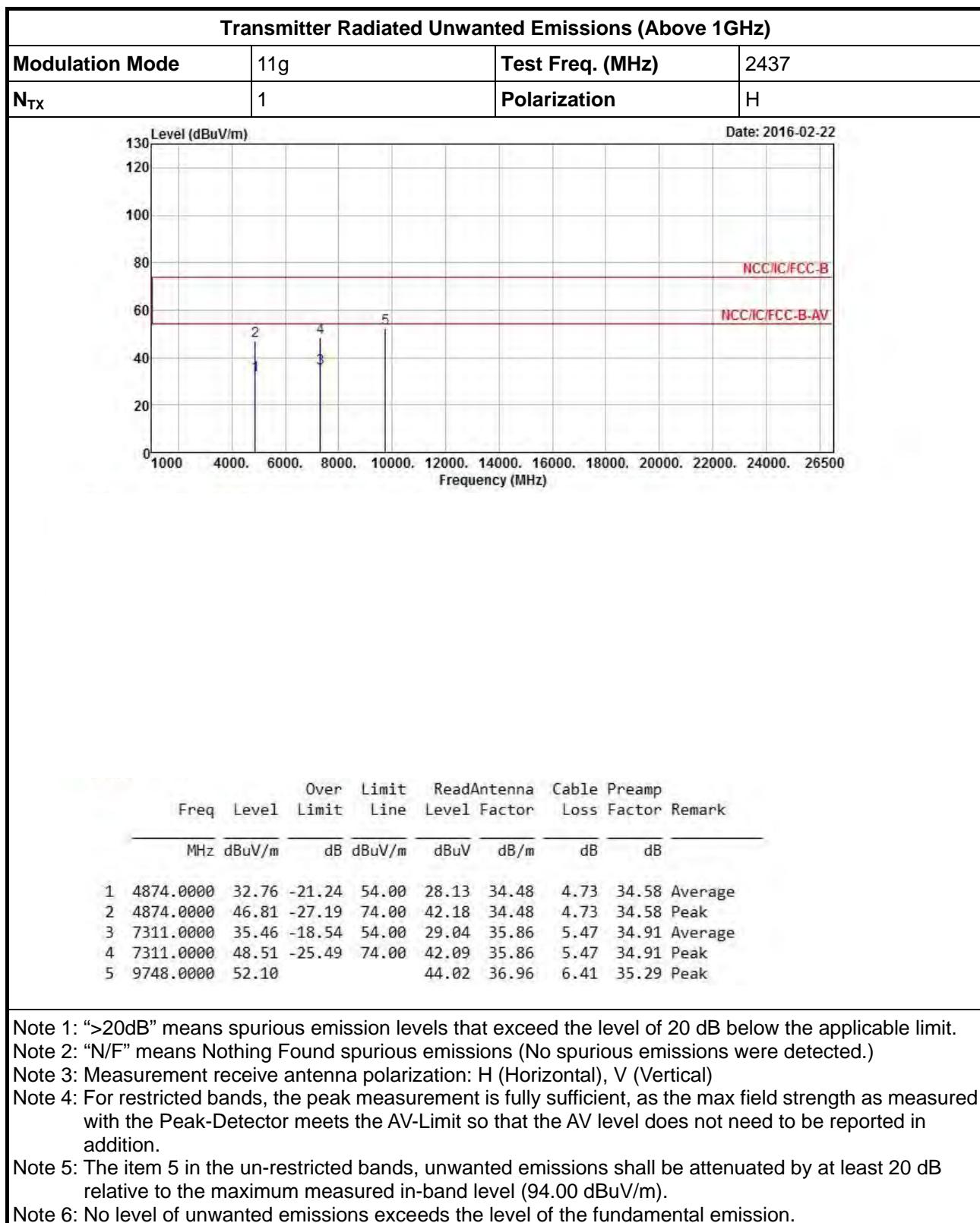
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

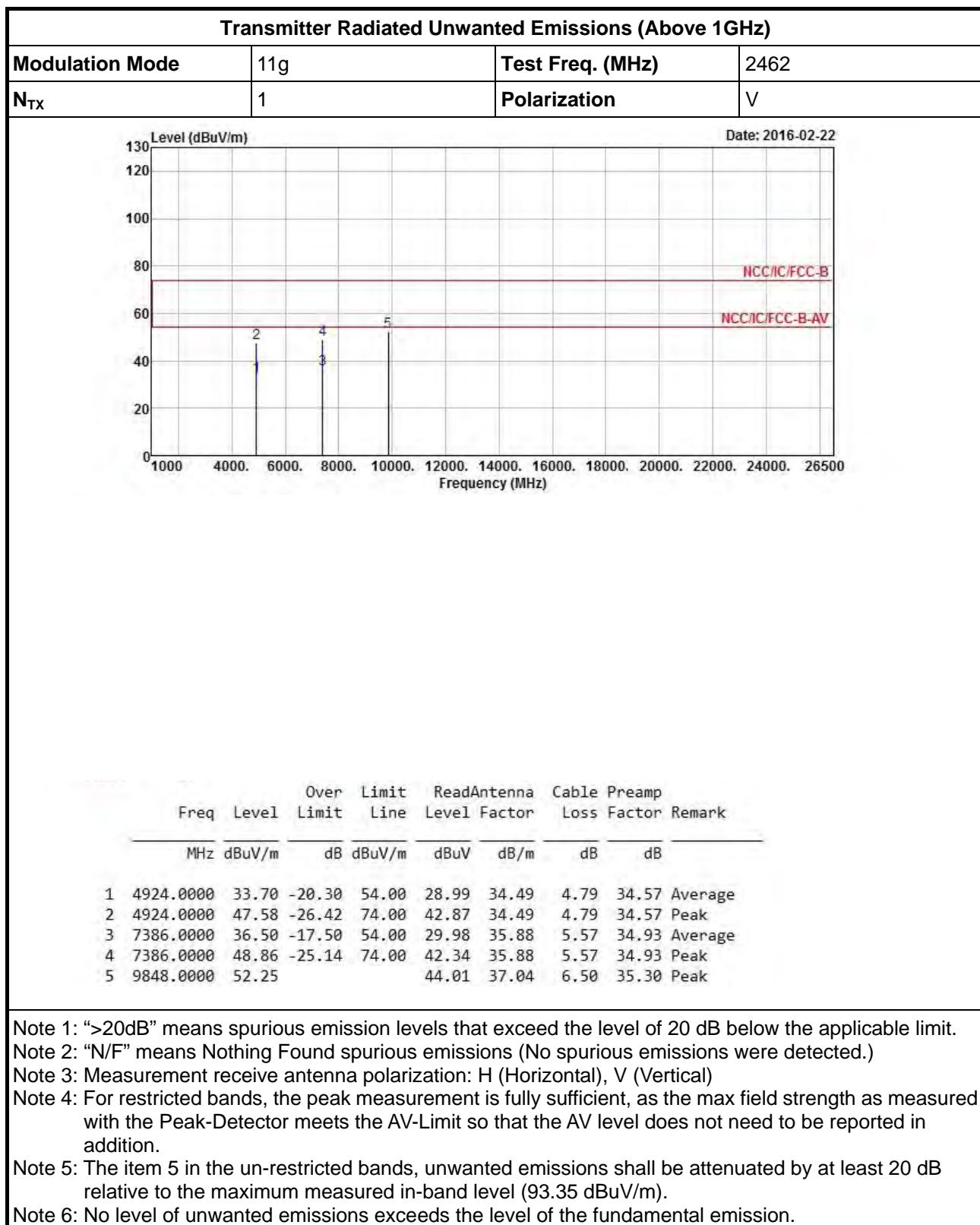


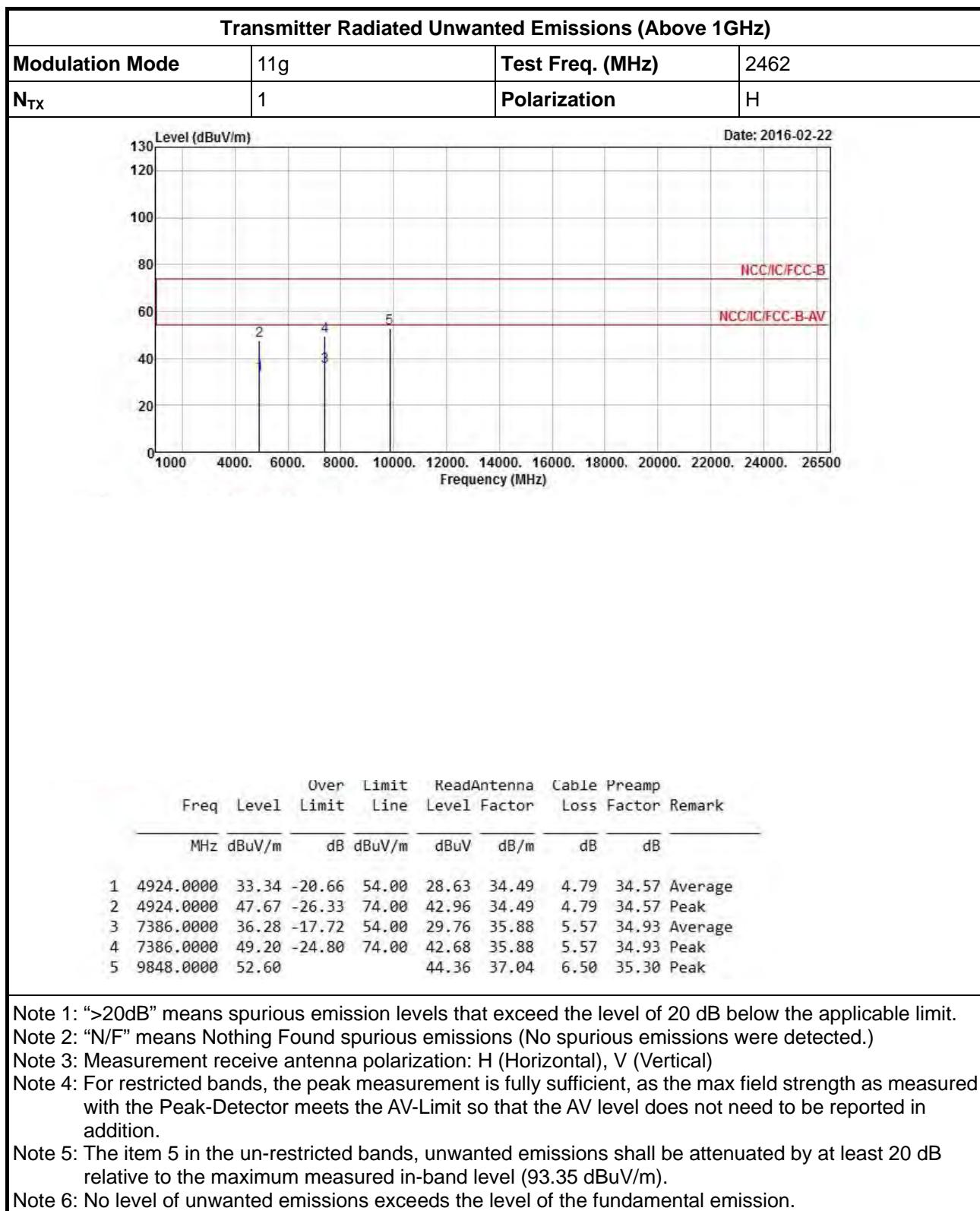


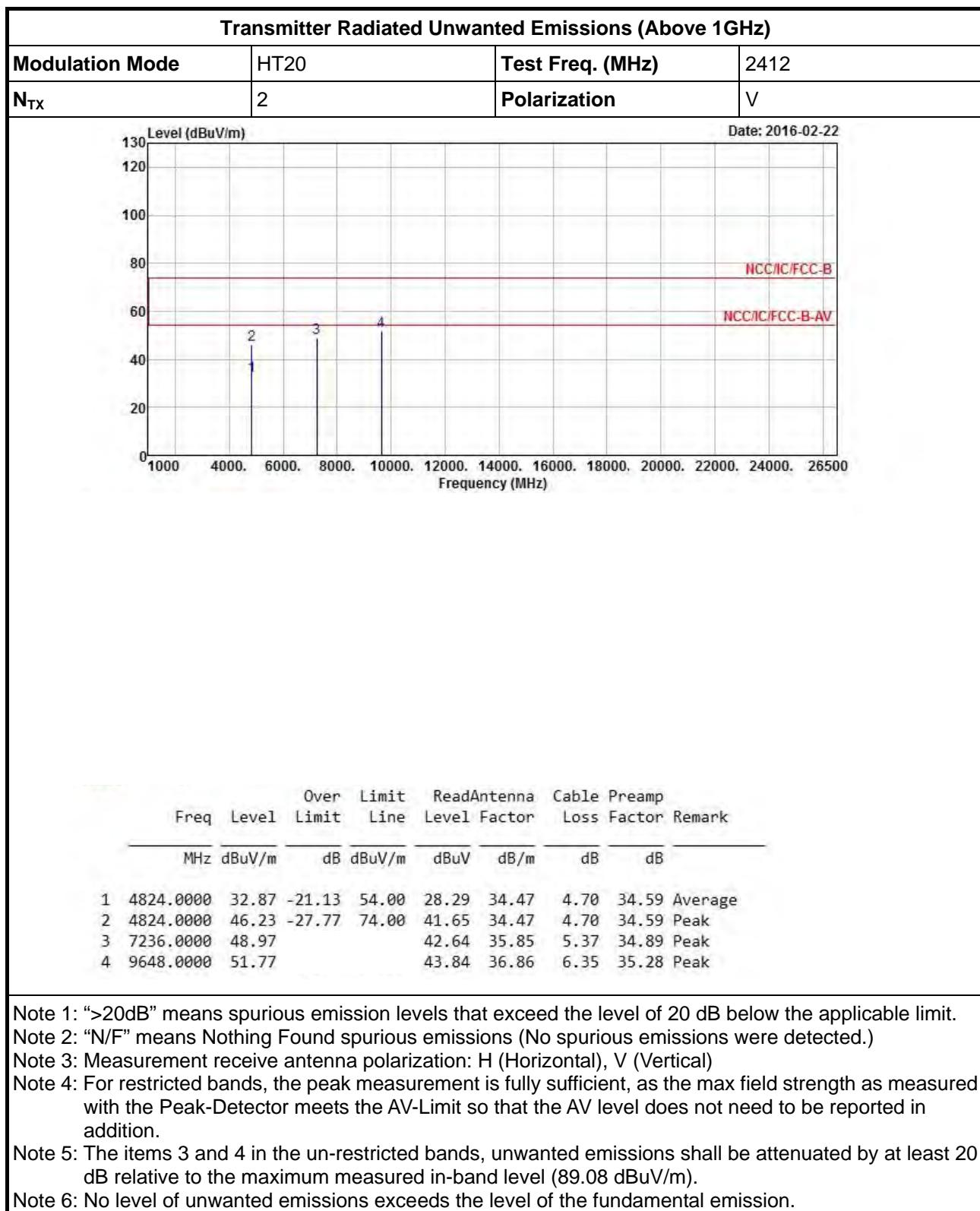


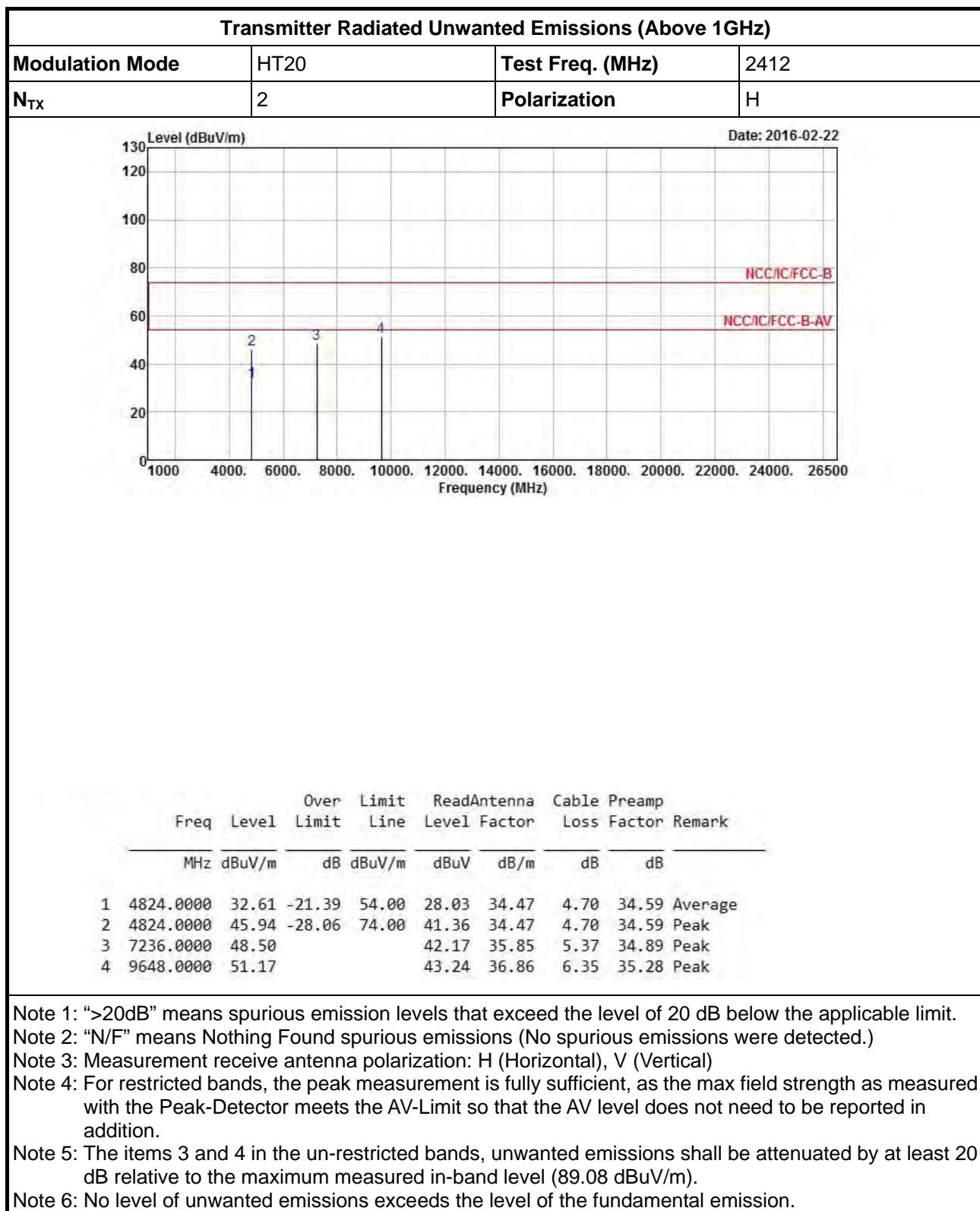


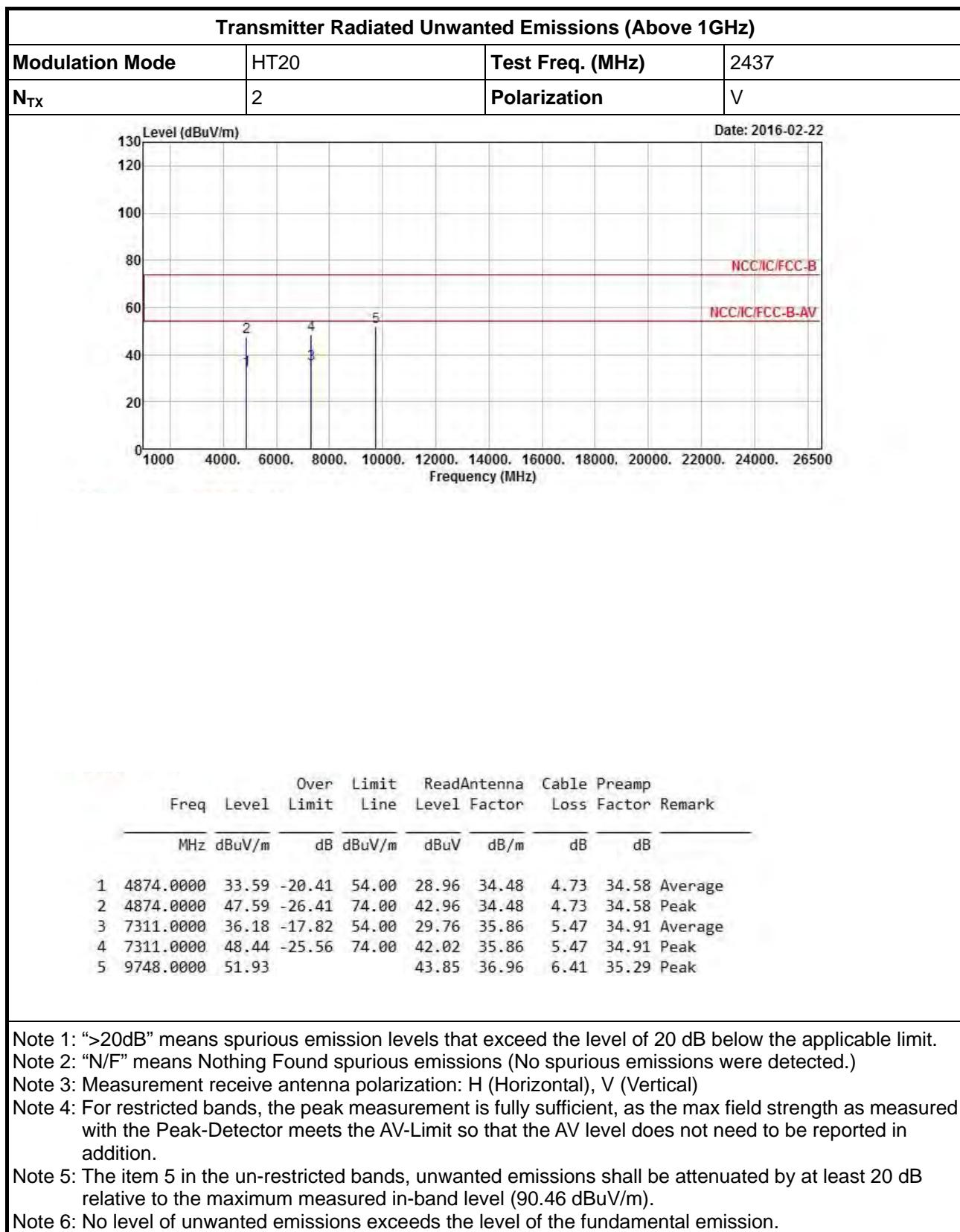


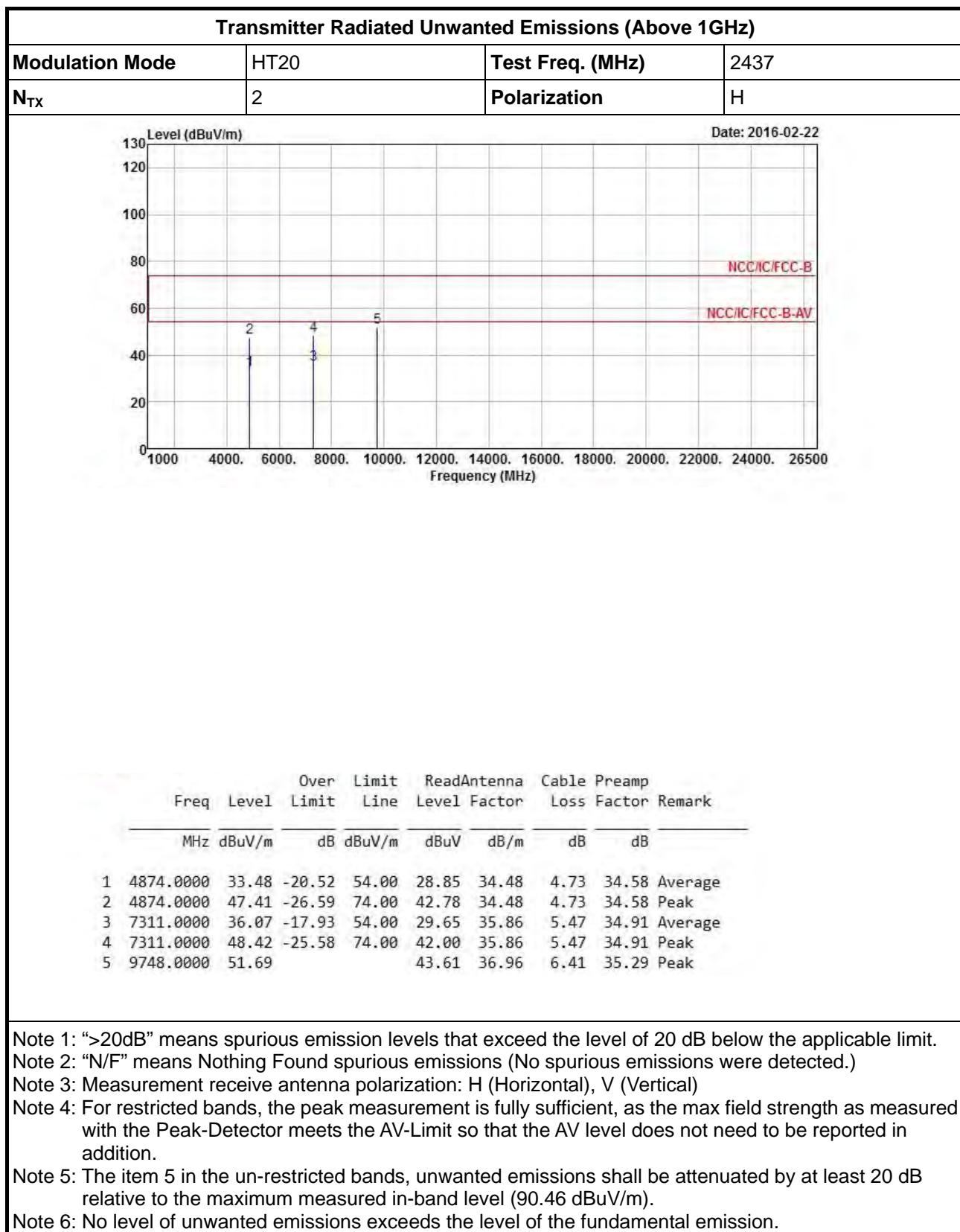












Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

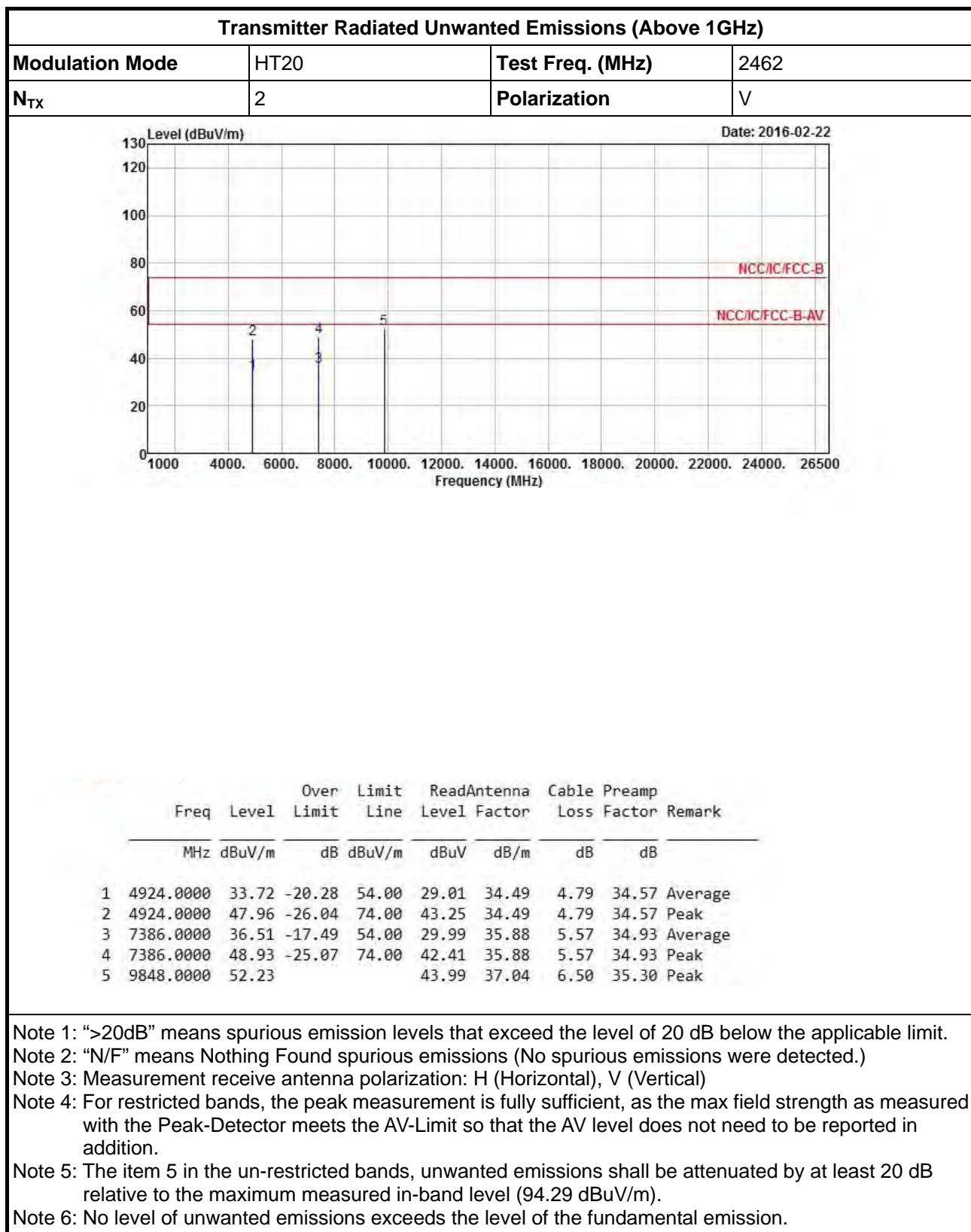
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

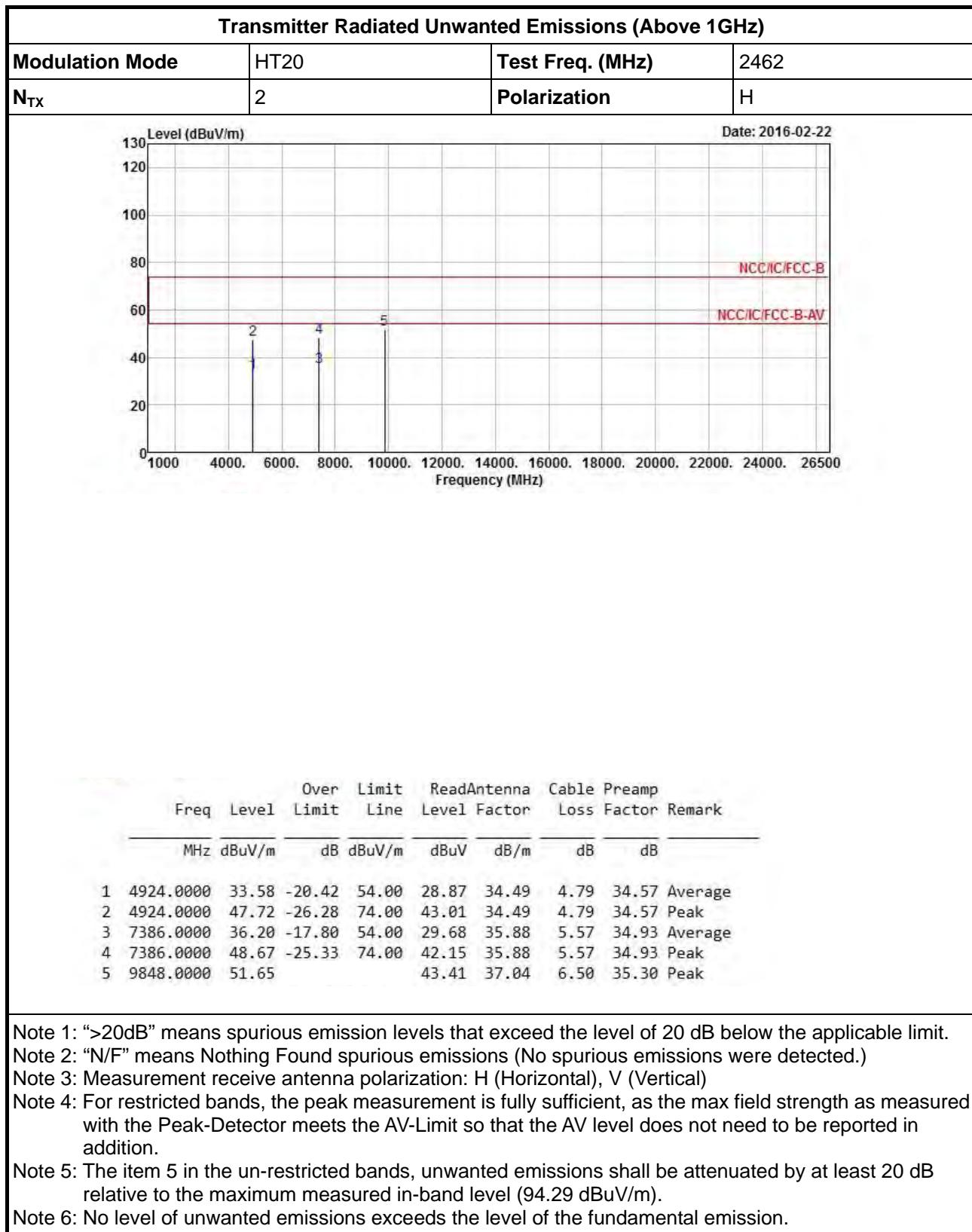
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

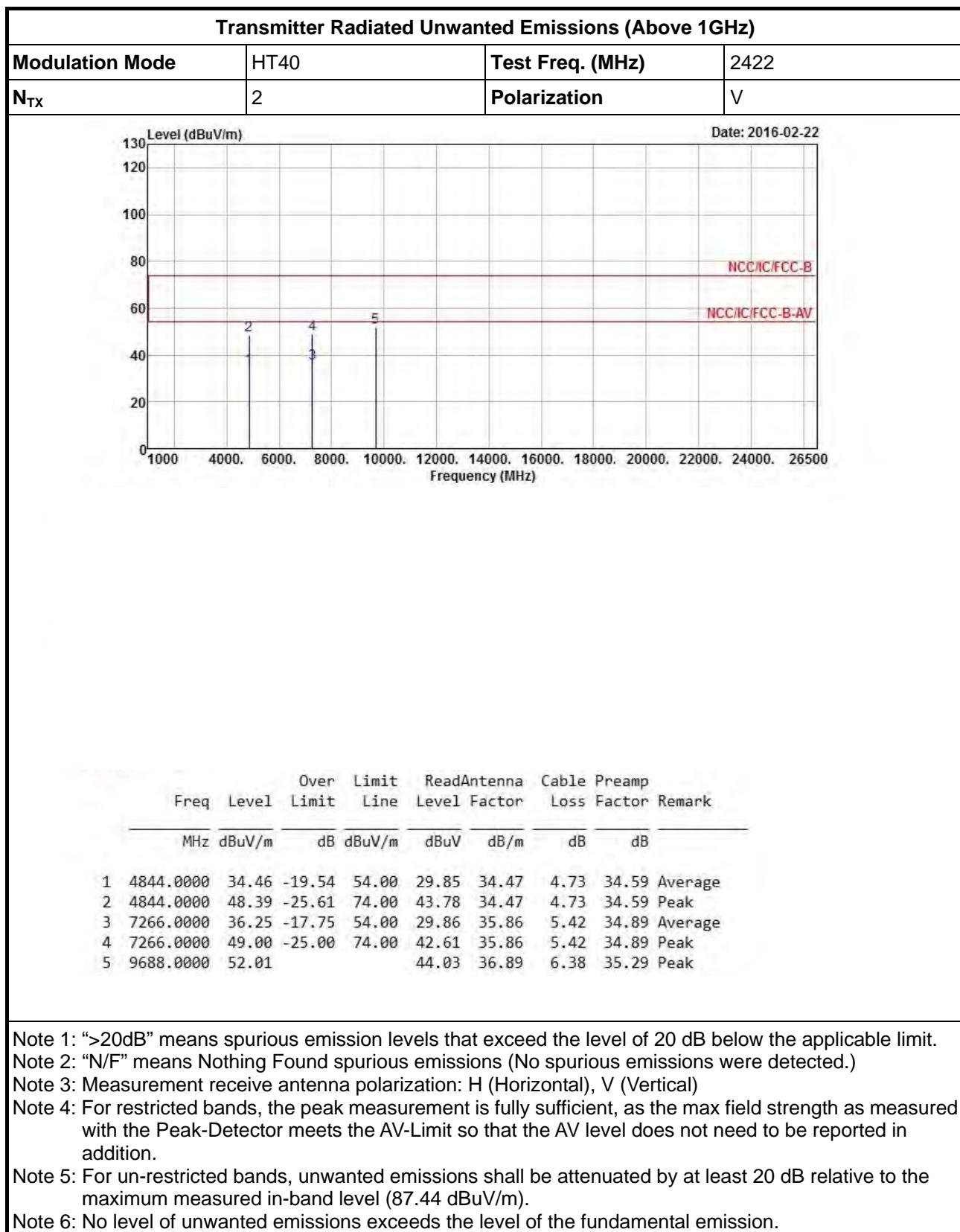
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

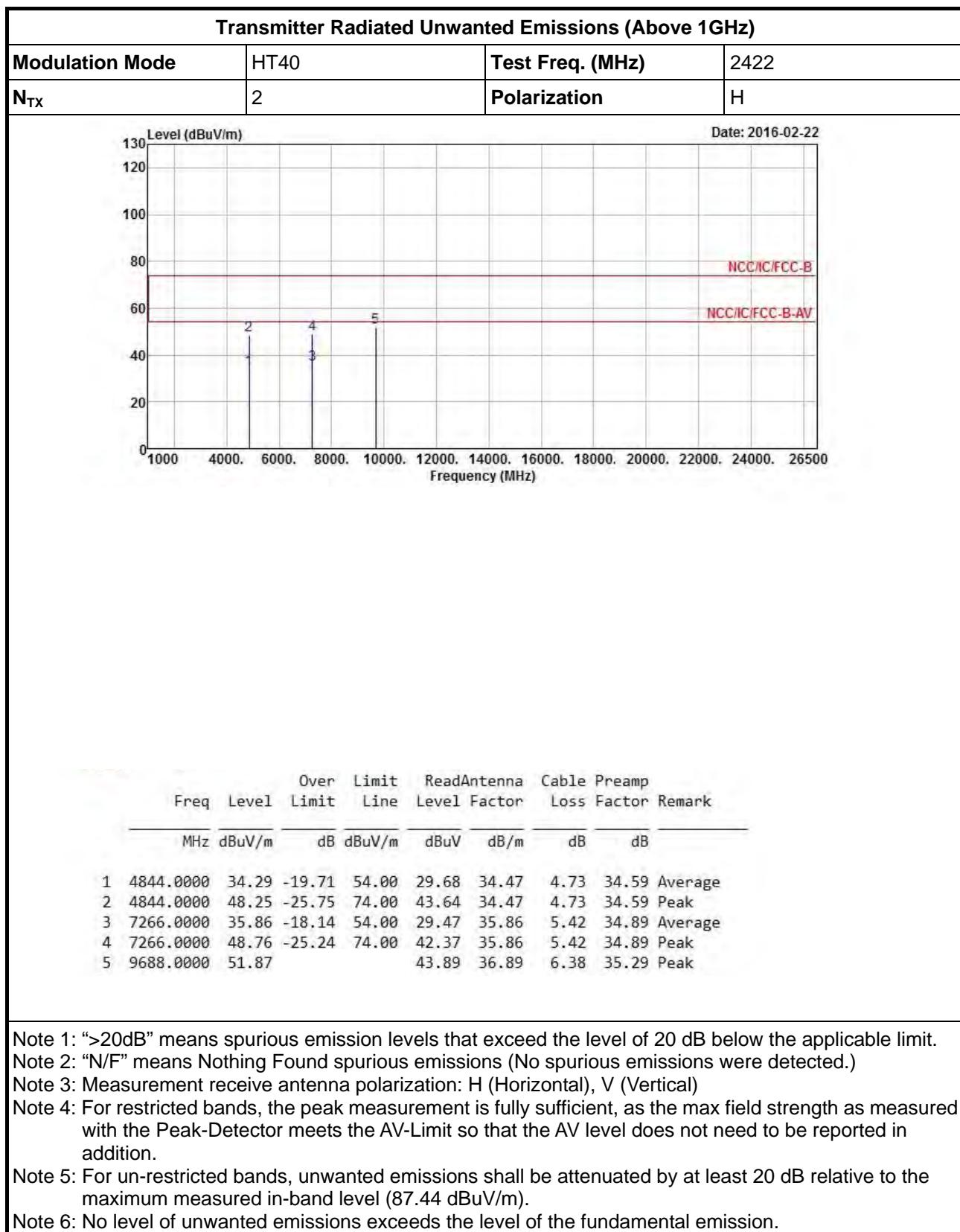
Note 5: The item 5 in the un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (90.46 dBuV/m).

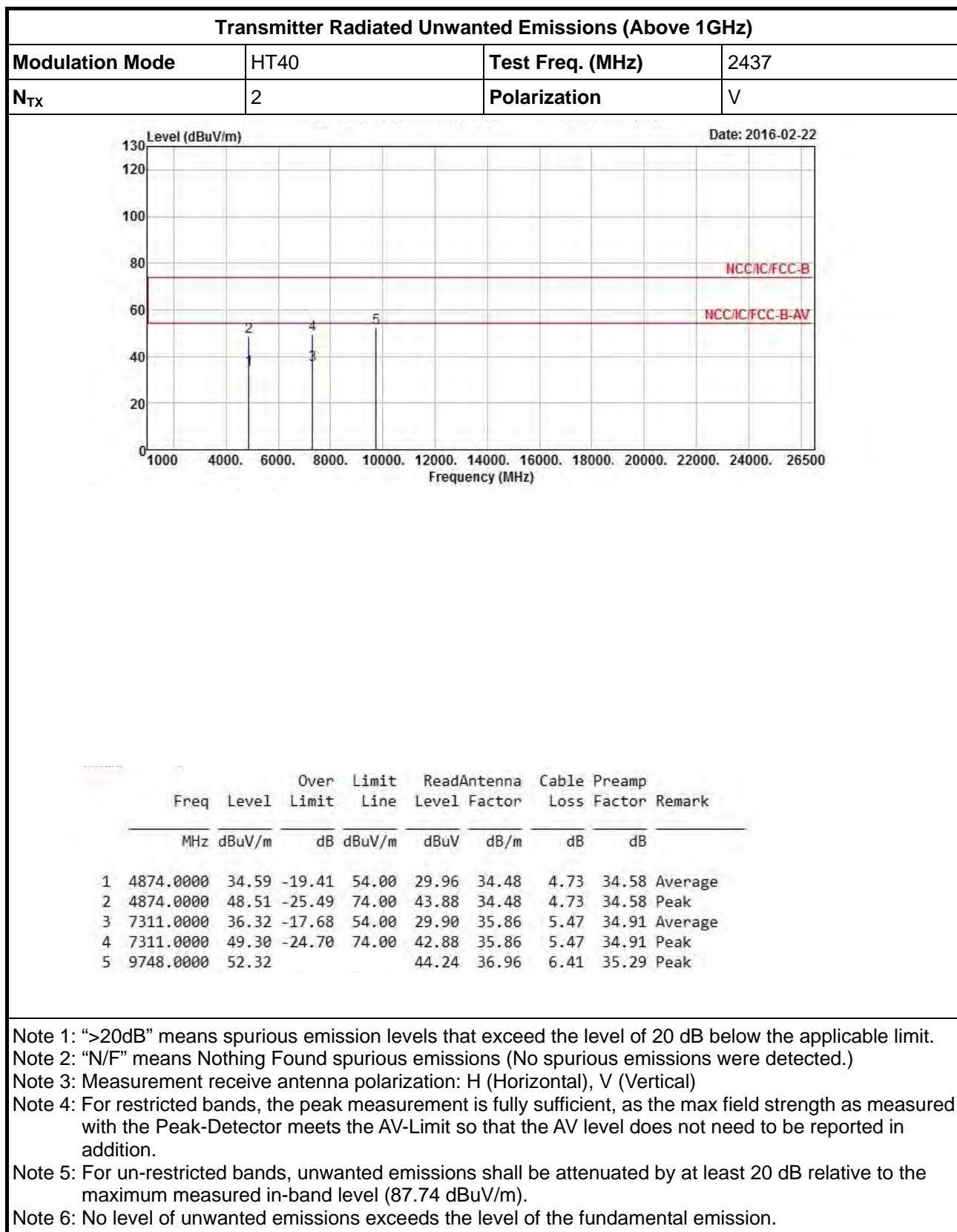
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.











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

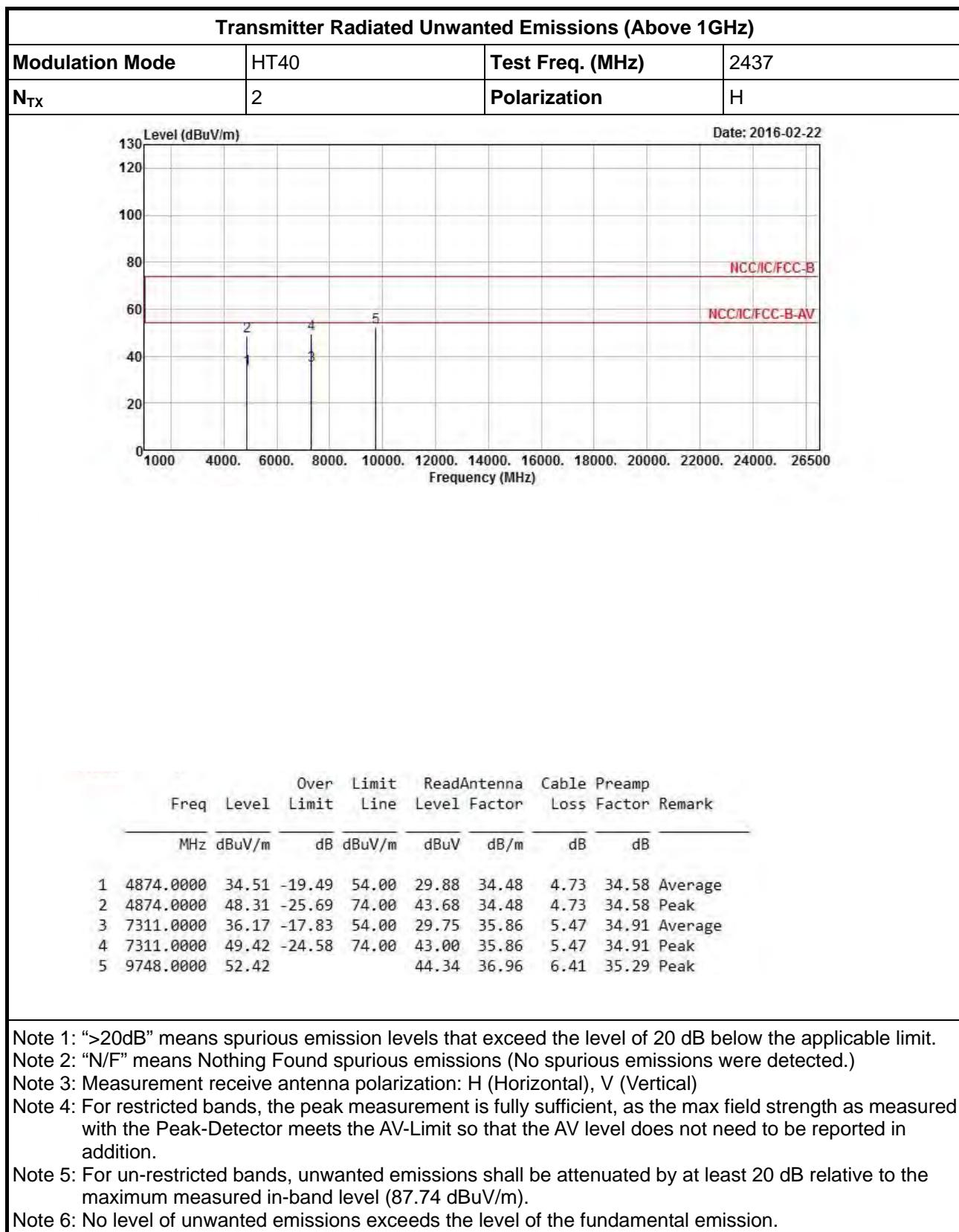
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

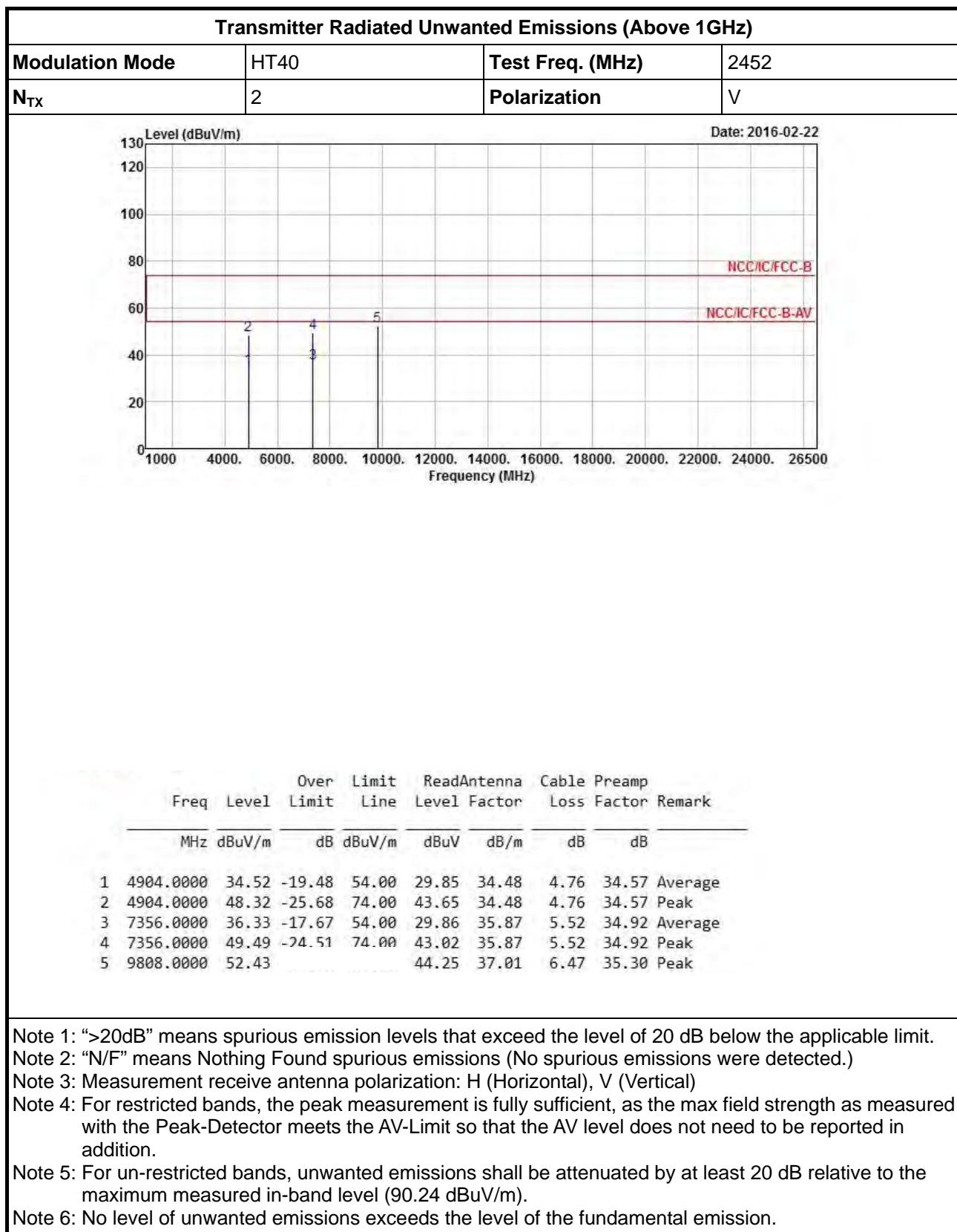
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

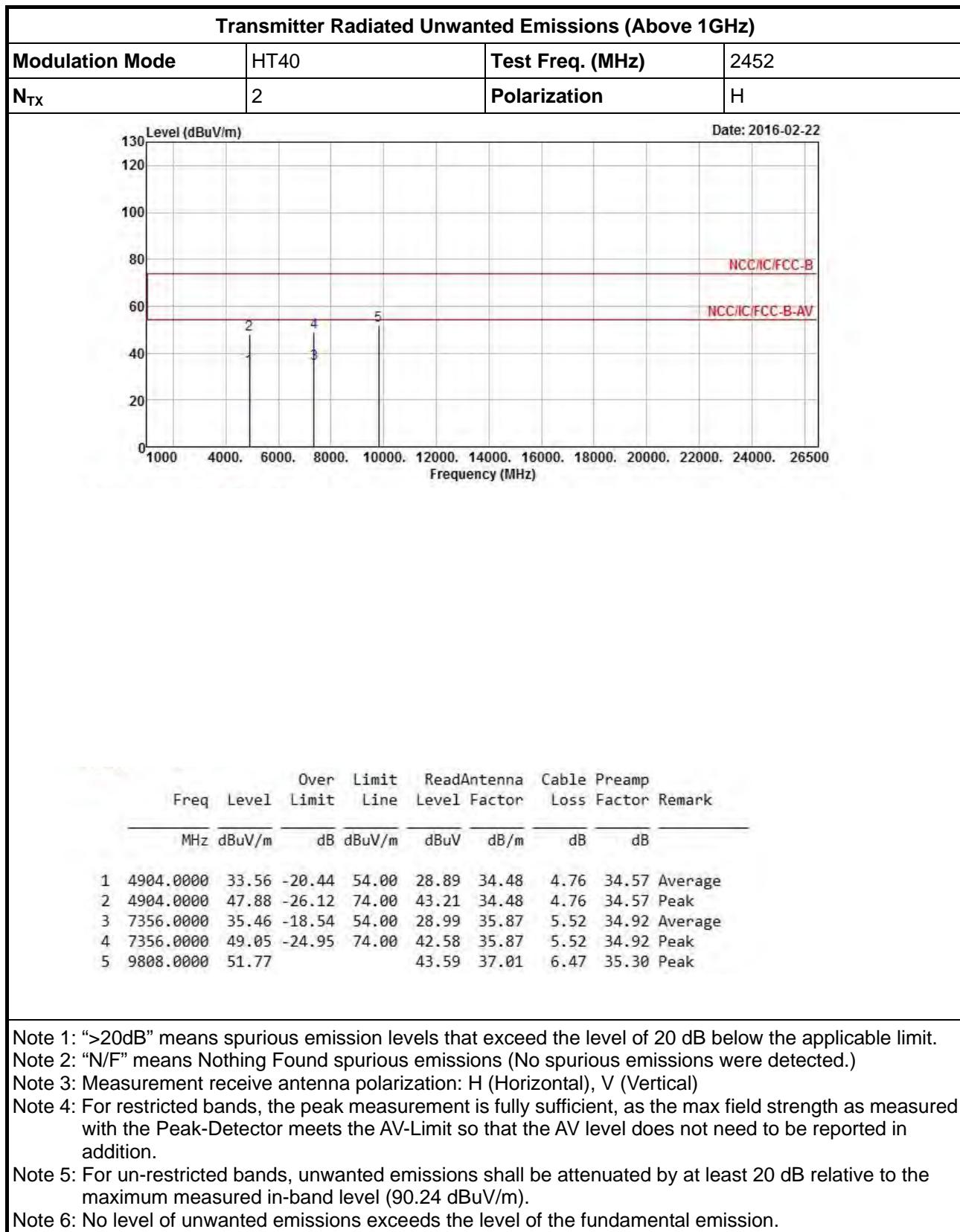
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (87.74 dBuV/m).

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









4 Test Equipment and Calibration Data

AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Next Calibration Date
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Apr. 15, 2015	Apr. 14, 2016
LISN	SCHWARZBECK MESS-ELEKT RONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 26, 2016	Jan. 25, 2017
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020 001	9kHz ~ 30MHz	Oct. 30, 2015	Oct. 29, 2016
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	NCR	NCR

Radiated Emission

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

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