



FCC Test Report

Equipment : KCodes 9 Series USB AirPrint Server
Brand Name : KCodes
Model No. : KC901i
KC901n
FCC ID : U9XKCODES-901
Standard : 47 CFR FCC Part 15.247
Operating Band : 2400 MHz – 2483.5 MHz
FCC Classification : DTS
Applicant : KCodes Corporation
Manufacturer : 7F., No.252 Sec.1, Neihu Dist., Taipei 11493,
Taiwan

The product sample received on Jul. 16, 2014 and completely tested on Sep. 10, 2014. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 and shown compliance with the applicable technical standards.

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

Reviewed by:

Vic Hsiao / Supervisor





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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]: 0.339195MHz 45.55 (Margin 3.67dB) - AV 49.50 (Margin 9.72dB) - QP	FCC 15.207	Complied
3.2	15.247(a)	6dB Bandwidth	6dB Bandwidth Unit [MHz] 20M: 9.00 / 40M: 36.32	≥500kHz	Complied
3.3	15.247(b)	RF Output Power (Maximum Peak Conducted Output Power)	Power [dBm]: 24.19	Power [dBm]:30	Complied
3.4	15.247(d)	Power Spectral Density	PSD [dBm/100kHz]: -5.10	PSD [dBm/3kHz]:8	Complied
3.5	15.247(c)	Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 2543.72MHz: 21.36dB Restricted Bands [dBuV/m at 3m]: 2483.50MHz 69.57 (Margin 4.43dB) - PK 52.95 (Margin 1.05dB) - AV	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied
3.6	15.247(c)	Transmitter Radiated Unwanted Emissions	[dBuV/m at 3m]: 4824.00MHz 55.97 (Margin 18.03dB) – PK 52.99 (Margin 1.01dB) – AV	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	24.19
2400-2483.5	g	2412-2462	1-11 [11]	1	22.35
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	1	22.66
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	1	20.60

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.
<input checked="" type="checkbox"/>	External antenna (dedicated antennas)

Antenna General Information					
No.	Ant. Cat.	Ant. Type	Part No.	Gain (dBi)	Model Name
1	External	Dipole	EDA-6413-2G4C1-A5	2.00	KC901n
2	Integral	PIFA	IBF-D001MPAX-307	2.00	KC901i



1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input type="checkbox"/> Production ; <input type="checkbox"/> Pre-Production ; <input checked="" type="checkbox"/> Prototype
Type of EUT	
<input checked="" type="checkbox"/> Stand-alone	
<input type="checkbox"/> Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.:	
<input type="checkbox"/> Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.:	
<input type="checkbox"/> Other:	

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
<input type="checkbox"/> Operated normally mode for worst duty cycle	
<input checked="" type="checkbox"/> Operated test mode for worst duty cycle	
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)
<input checked="" type="checkbox"/> 100% - IEEE 802.11b	0.00
<input checked="" type="checkbox"/> 100% - IEEE 802.11g	0.00
<input checked="" type="checkbox"/> 100% - IEEE 802.11n (HT20)	0.00
<input checked="" type="checkbox"/> 100% - IEEE 802.11n (HT40)	0.00

1.1.5 EUT Operational Condition

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



1.2 Accessories and Support Equipment

Accessories Information				
AC Adapter 1	Brand Name	DEE VAN ENTERPRISE CO.,LTD.	Model Name	DSC-5CA-05
	Power Rating	I/P: 100-240V~50/60Hz 0.2A; O/P: 5V---1A		
AC Adapter 2	Brand Name	JENTEK TECHNOLOGY CO.,LTD.	Model Name	CF0605-B
	Power Rating	I/P: 100-240V~50/60Hz 0.18A; O/P: 5V---1A		

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

Support Equipment - RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5520	DoC

Support Equipment - AC Conduction and Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5520	DoC

1.3 Testing Applied Standards

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

- 47 CFR FCC Part 15
- ANSI C63.10-2009
- FCC KDB 558074 D01 v03r02
- FCC KDB 662911 D01 v02r01

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 Hsien, Taiwan, R.O.C.		
Test Condition	Test Site No.	Test Engineer	Test Environment	
AC Conduction	CO04-HY	Zeus	25°C / 43%	
RF Conducted	TH01-HY	Leo	23.2°C / 62%	
Radiated Emission	03CH02-HY	Daniel	25.3°C / 59%	



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, 6dB bandwidth	± 1.4 %	
RF output power, conducted	± 0.6 dB	
Power density, conducted	± 0.8 dB	
Unwanted emissions, conducted	9 – 150 kHz	± 0.4 dB
	0.15 – 30 MHz	± 0.4 dB
	30 – 1000 MHz	± 0.5 dB
	1 – 18 GHz	± 0.7 dB
	18 – 40 GHz	± 0.8 dB
	40 – 200 GHz	N/A
All emissions, radiated	9 – 150 kHz	± 2.5 dB
	0.15 – 30 MHz	± 2.3 dB
	30 – 1000 MHz	± 2.6 dB
	1 – 18 GHz	± 3.6 dB
	18 – 40 GHz	± 3.8 dB
	40 – 200 GHz	N/A
Temperature	± 0.8 °C	
Humidity	± 3 %	
DC and low frequency voltages	± 3 %	
Time	± 1.4 %	
Duty Cycle	± 1.4 %	



2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing			
Modulation Mode	Transmit Chains (N _{TX})	Data Rate / MCS	Worst Data Rate / MCS
11b	1	1-11 Mbps	1 Mbps
11g	1	6-54 Mbps	6 Mbps
HT20	1	MCS 0-7	MCS 0
HT40	1	MCS 0-7	MCS 0

2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (2400-2483.5MHz band)							
Test Software	RTL819x 2.3 - 13/09/16						
Modulation Mode	N _{TX}	Test Frequency (MHz)					
		NCB: 20MHz			NCB: 40MHz		
		2412	2437	2462	2422	2437	2452
11b	1	59	60	55	-	-	-
11g	1	62	63	58	-	-	-
HT-20	1	61	63	58	-	-	-
HT-40	1	-	-	-	60	60	57



2.3 The Worst Case Measurement Configuration

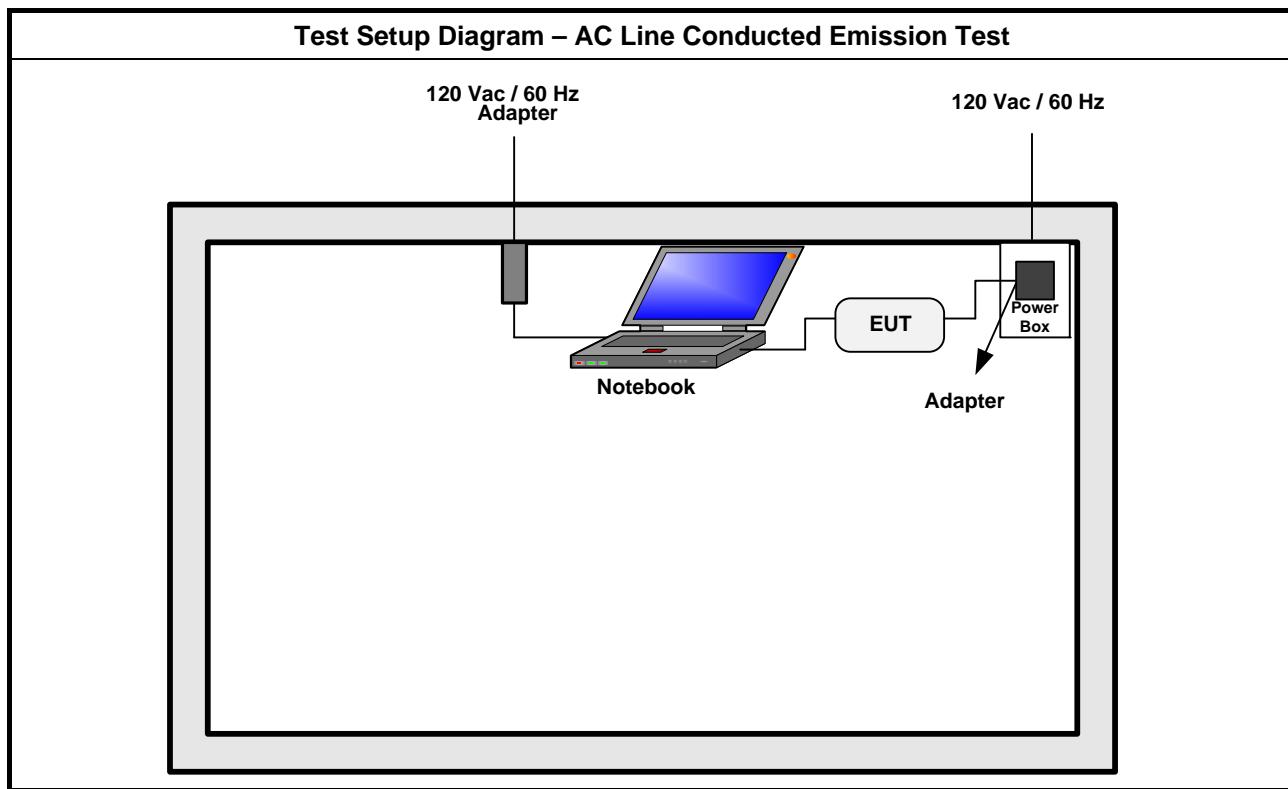
The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	Model Name: 901i with adapter 1 and WiFi transmit
2	Model Name: 901i with adapter 2 and WiFi transmit
The Model Name: 901i for operating mode 1 is the worst case and it was record in this test report.	
3	Model Name: 901n with adapter 1 and WiFi transmit
4	Model Name: 901n with adapter 2 and WiFi transmit
The Model Name: 901n for operating mode 3 is the worst case and it was record in this test report.	

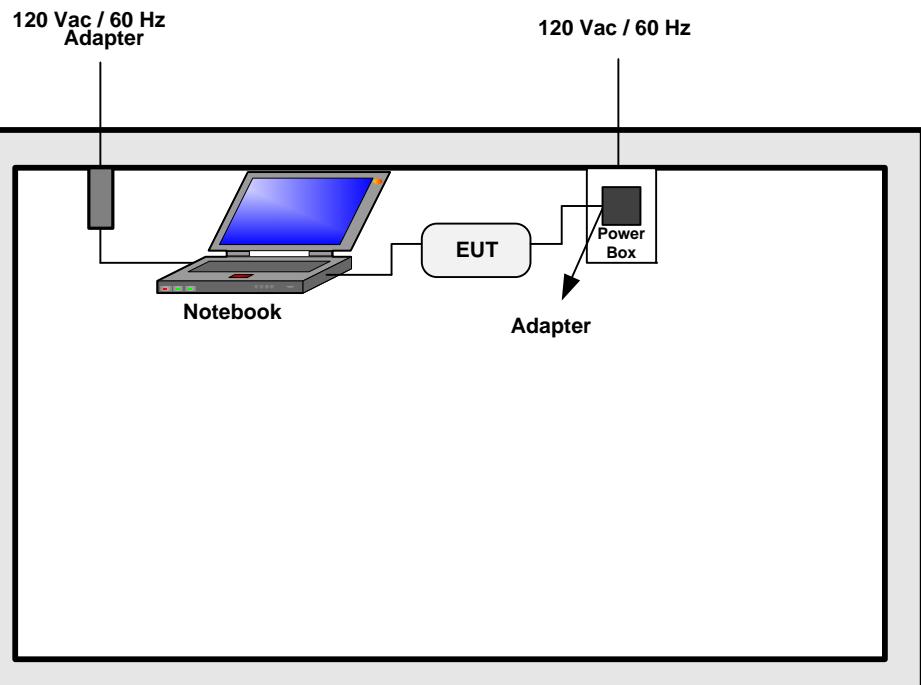
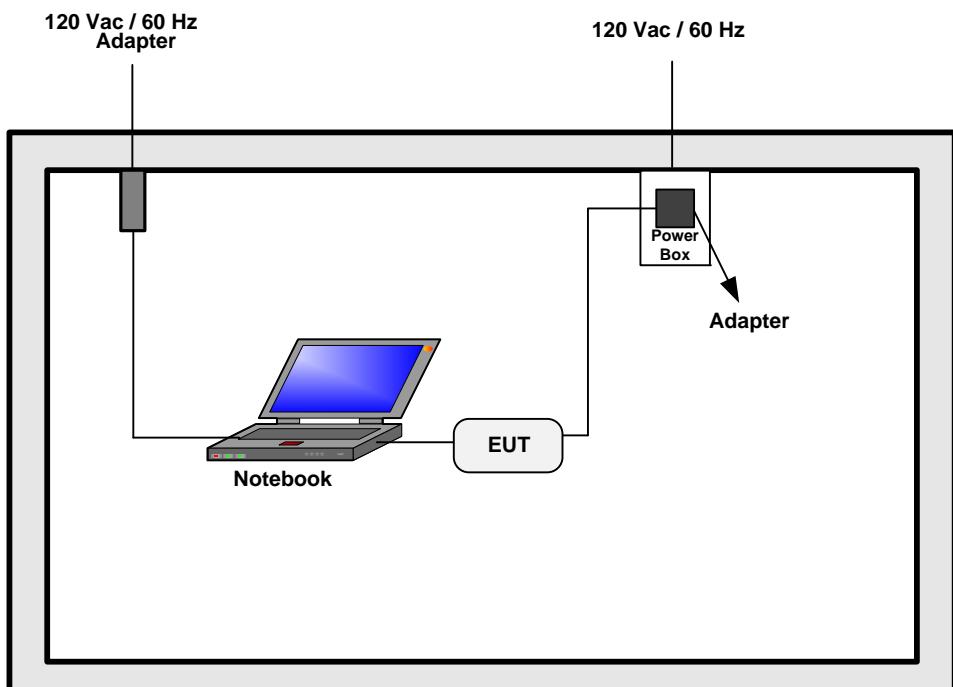
The Worst Case Mode for Following Conformance Tests	
Tests Item	RF Output Power, Power Spectral Density, 6 dB Bandwidth
Test Condition	Conducted measurement at transmit chains
Modulation Mode	11b, 11g, HT20, HT40



The Worst Case Mode for Following Conformance Tests	
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
User Position	<input checked="" type="checkbox"/> EUT will be placed in fixed position. The worst plane is X. <input type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed one 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 one orthogonal planes.
Operating Mode (Below 1GHz)	1. Model Name: 901i with adapter 1 and WiFi transmit 2. Model Name: 901i with adapter 2 and WiFi transmit For operating mode 1 is the worst case and it was record in this test report. 3. Model Name: 901n with adapter 1 and WiFi transmit 4. Model Name: 901n with adapter 2 and WiFi transmit For operating mode 4 is the worst case and it was record in this test report.
Operating Mode (Above 1GHz)	1. Model Name: 901i with adapter 1 and WiFi transmit 4. Model Name: 901n with adapter 2 and WiFi transmit
Modulation Mode	11b, 11g, HT20, HT40
Orthogonal Planes of EUT	X Plane

2.4 Test Setup Diagram



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

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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

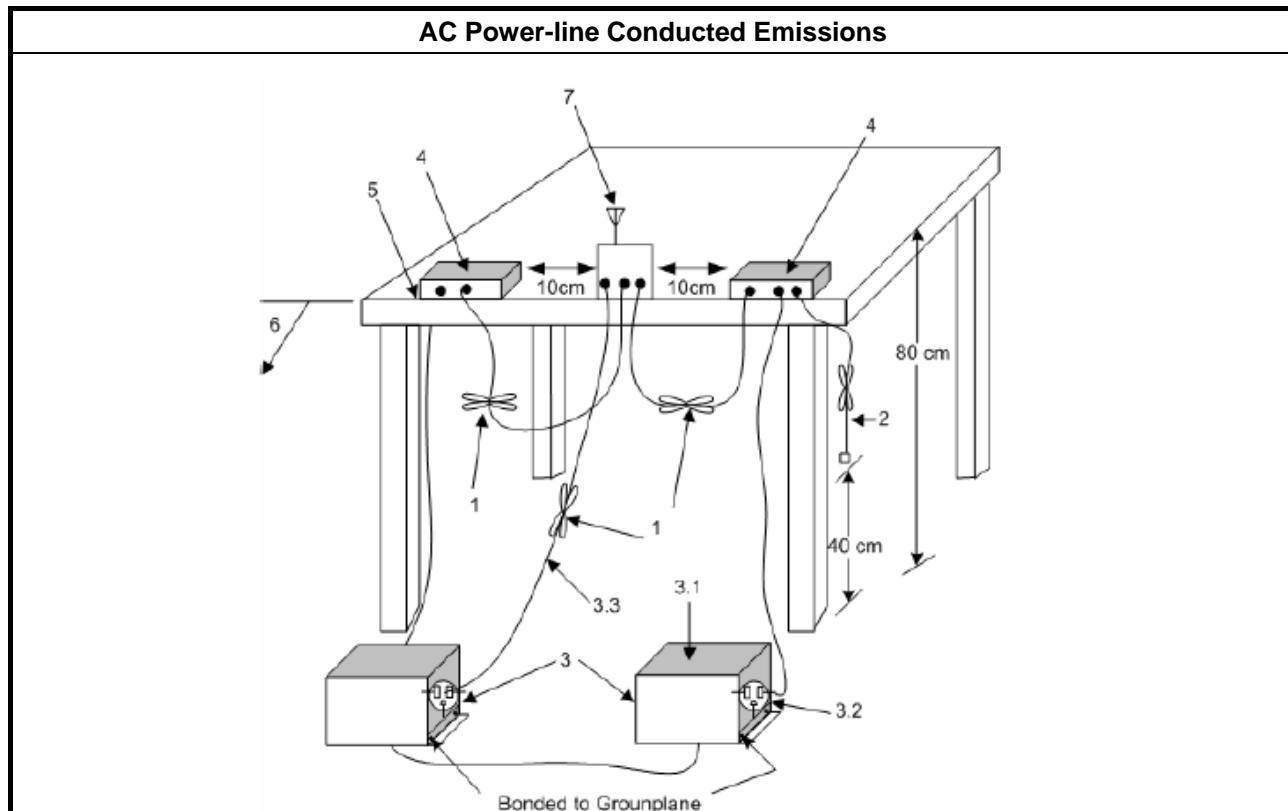
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

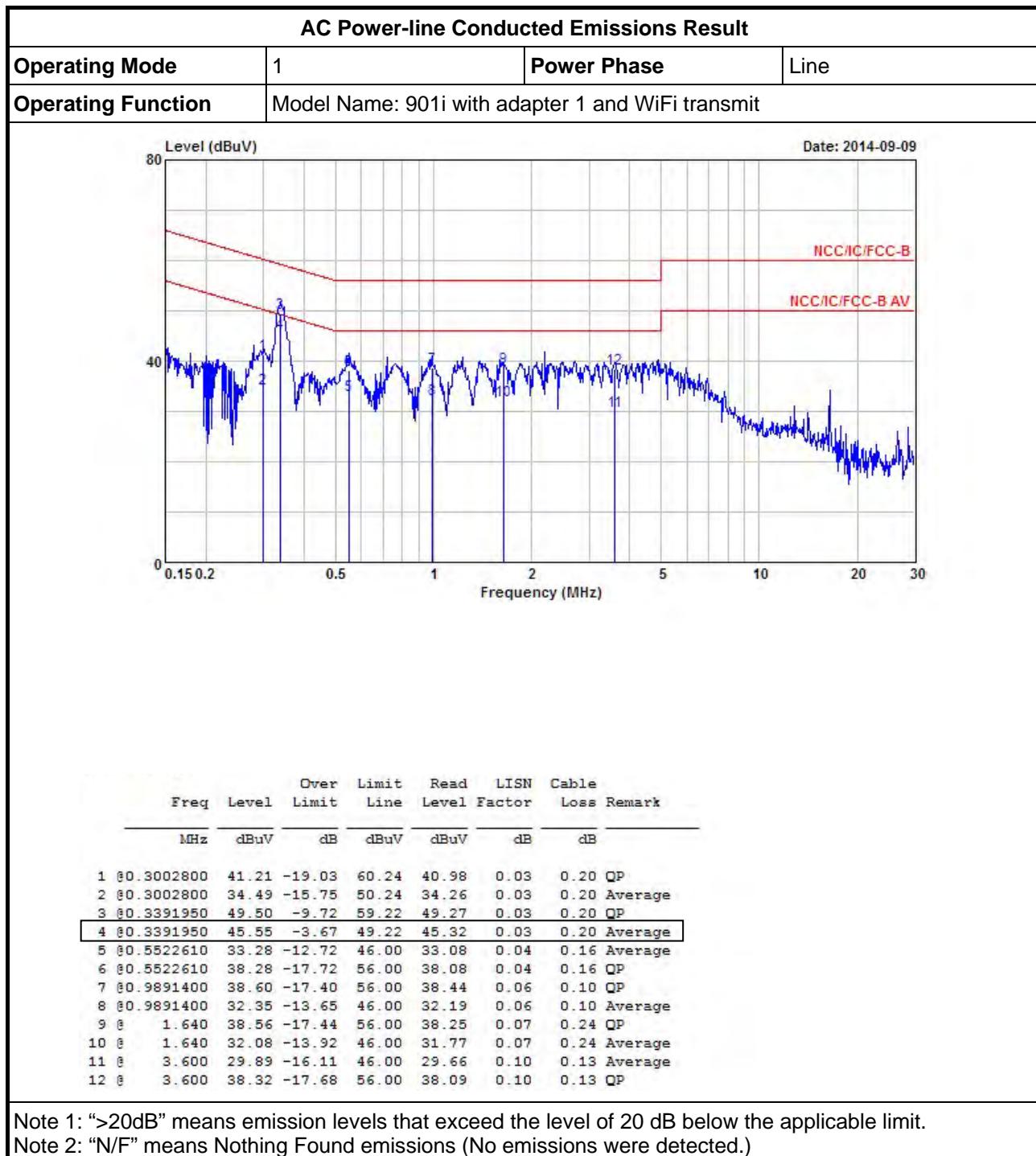
3.1.4 Test Setup





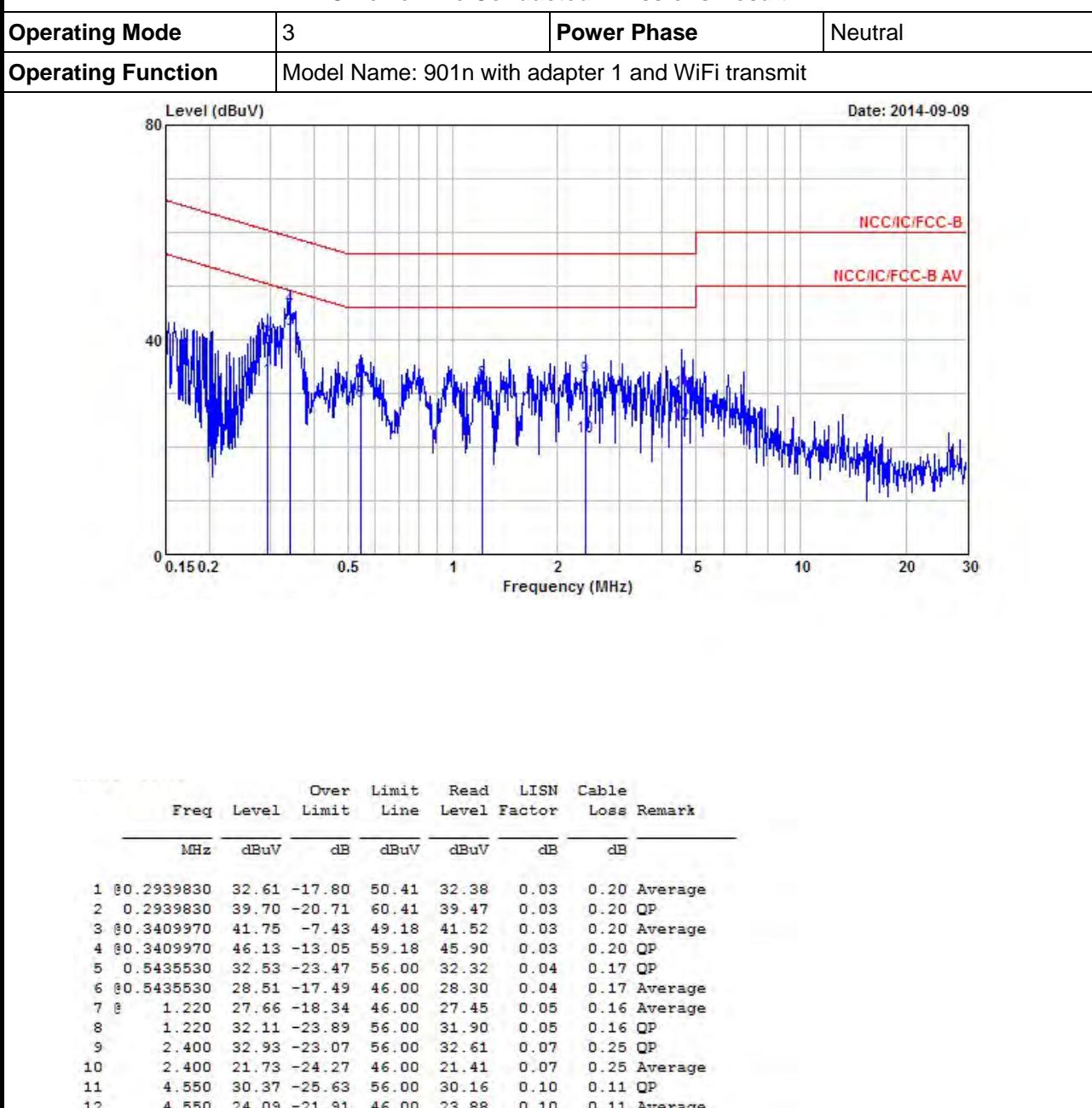
3.1.5 Test Result of AC Power-line Conducted Emissions

AC Power-line Conducted Emissions Result																																																																																																																							
Operating Mode	1	Power Phase	Neutral																																																																																																																				
Operating Function	Model Name: 901i with adapter 1 and WiFi transmit																																																																																																																						
<table><thead><tr><th>Freq</th><th>Level</th><th>Over Limit</th><th>Limit</th><th>Read Line</th><th>LISN</th><th>Cable</th><th></th></tr><tr><th>MHz</th><th>dBuV</th><th>dB</th><th>dBuV</th><th>dBuV</th><th>Factor</th><th>Loss</th><th>Remark</th></tr></thead><tbody><tr><td>1</td><td>0.1694400</td><td>26.17</td><td>-28.82</td><td>54.99</td><td>25.93</td><td>0.02</td><td>0.22 Average</td></tr><tr><td>2</td><td>0.1694400</td><td>37.70</td><td>-27.29</td><td>64.99</td><td>37.46</td><td>0.02</td><td>0.22 QP</td></tr><tr><td>3</td><td>0.3002800</td><td>32.27</td><td>-17.97</td><td>50.24</td><td>32.04</td><td>0.03</td><td>0.20 Average</td></tr><tr><td>4</td><td>0.3002800</td><td>39.83</td><td>-20.41</td><td>60.24</td><td>39.60</td><td>0.03</td><td>0.20 QP</td></tr><tr><td>5</td><td>0.3428090</td><td>40.69</td><td>-8.44</td><td>49.13</td><td>40.46</td><td>0.03</td><td>0.20 Average</td></tr><tr><td>6</td><td>0.3428090</td><td>45.61</td><td>-13.52</td><td>59.13</td><td>45.38</td><td>0.03</td><td>0.20 QP</td></tr><tr><td>7</td><td>0.5551950</td><td>32.85</td><td>-23.15</td><td>56.00</td><td>32.65</td><td>0.04</td><td>0.16 QP</td></tr><tr><td>8</td><td>0.5551950</td><td>28.51</td><td>-17.49</td><td>46.00</td><td>28.31</td><td>0.04</td><td>0.16 Average</td></tr><tr><td>9</td><td>1.220</td><td>32.23</td><td>-23.77</td><td>56.00</td><td>32.02</td><td>0.05</td><td>0.16 QP</td></tr><tr><td>10</td><td>1.220</td><td>27.42</td><td>-18.58</td><td>46.00</td><td>27.21</td><td>0.05</td><td>0.16 Average</td></tr><tr><td>11</td><td>3.240</td><td>31.23</td><td>-24.77</td><td>56.00</td><td>30.99</td><td>0.08</td><td>0.16 QP</td></tr><tr><td>12</td><td>3.240</td><td>24.01</td><td>-21.99</td><td>46.00</td><td>23.77</td><td>0.08</td><td>0.16 Average</td></tr></tbody></table>								Freq	Level	Over Limit	Limit	Read Line	LISN	Cable		MHz	dBuV	dB	dBuV	dBuV	Factor	Loss	Remark	1	0.1694400	26.17	-28.82	54.99	25.93	0.02	0.22 Average	2	0.1694400	37.70	-27.29	64.99	37.46	0.02	0.22 QP	3	0.3002800	32.27	-17.97	50.24	32.04	0.03	0.20 Average	4	0.3002800	39.83	-20.41	60.24	39.60	0.03	0.20 QP	5	0.3428090	40.69	-8.44	49.13	40.46	0.03	0.20 Average	6	0.3428090	45.61	-13.52	59.13	45.38	0.03	0.20 QP	7	0.5551950	32.85	-23.15	56.00	32.65	0.04	0.16 QP	8	0.5551950	28.51	-17.49	46.00	28.31	0.04	0.16 Average	9	1.220	32.23	-23.77	56.00	32.02	0.05	0.16 QP	10	1.220	27.42	-18.58	46.00	27.21	0.05	0.16 Average	11	3.240	31.23	-24.77	56.00	30.99	0.08	0.16 QP	12	3.240	24.01	-21.99	46.00	23.77	0.08	0.16 Average
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Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)																																																																																																																							



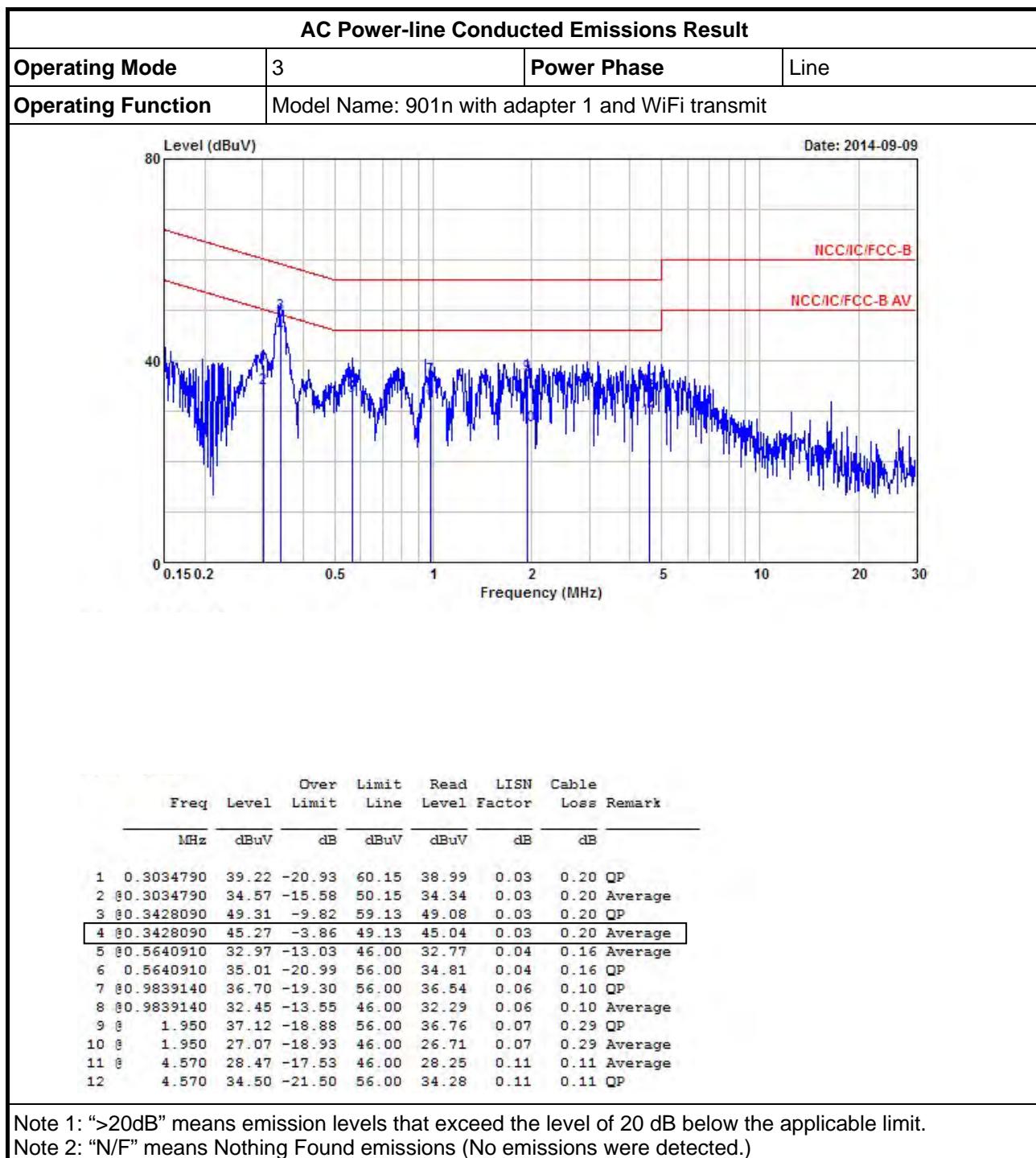


AC Power-line Conducted Emissions Result



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 6dB Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
<input checked="" type="checkbox"/> 6 dB bandwidth \geq 500 kHz.

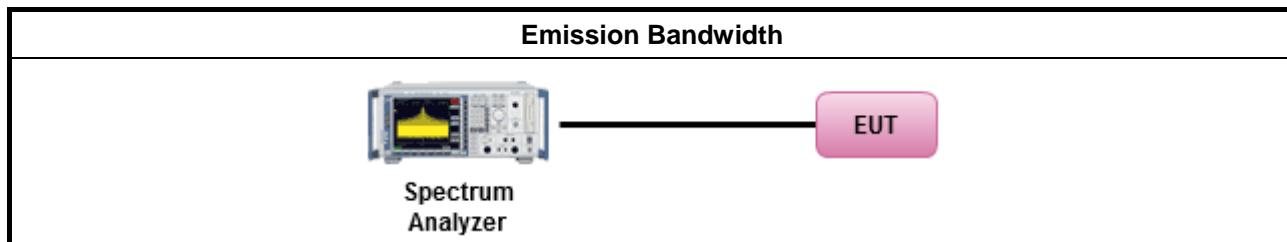
3.2.2 Measuring Instruments

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 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
<input checked="" type="checkbox"/> For conducted measurement.
<input checked="" type="checkbox"/> The EUT supports single transmit chain and measurements performance of this transmit chain port 1.
<input type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/> The EUT supports multiple transmit chains using options given below:
<input type="checkbox"/> Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1.
<input type="checkbox"/> Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains.

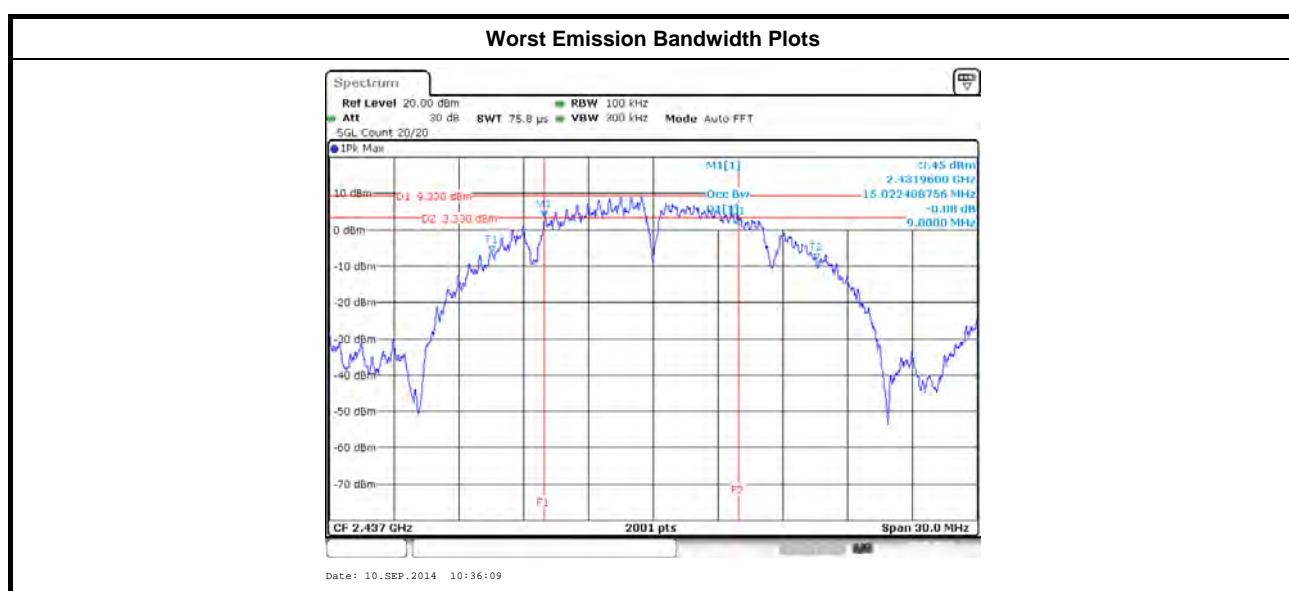
3.2.4 Test Setup





3.2.5 Test Result of Emission Bandwidth

Emission Bandwidth Result					
Condition			Emission Bandwidth (MHz)		
Modulation Mode	N _{TX}	Freq. (MHz)	99% Bandwidth	6dB Bandwidth	
11b	1	2412	15.08	10.05	
11b	1	2437	15.02	9.00	
11b	1	2462	14.97	9.55	
11g	1	2412	16.44	16.53	
11g	1	2437	16.44	16.47	
11g	1	2462	16.49	16.54	
HT20	1	2412	17.70	17.76	
HT20	1	2437	17.69	17.76	
HT20	1	2462	17.72	17.79	
HT40	1	2422	35.94	36.32	
HT40	1	2437	35.94	36.32	
HT40	1	2452	36.02	36.36	
Limit			N/A	≥500 kHz	
Result			Complied		

Note 1: N_{TX} = Number of Transmit Chains



3.3 RF Output Power

3.3.1 RF Output Power Limit

RF Output Power Limit	
Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit	
<input checked="" type="checkbox"/> 2400-2483.5 MHz Band:	
<input checked="" type="checkbox"/> If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)	
<input checked="" type="checkbox"/> Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm	
<input type="checkbox"/> Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm	
<input type="checkbox"/> Smart antenna system (SAS):	
	<input type="checkbox"/> Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<input type="checkbox"/> Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<input type="checkbox"/> Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
e.i.r.p. Power Limit:	
<input checked="" type="checkbox"/> 2400-2483.5 MHz Band	
<input checked="" type="checkbox"/> Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)	
<input type="checkbox"/> Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm	
<input type="checkbox"/> Smart antenna system (SAS)	
	<input type="checkbox"/> Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<input type="checkbox"/> Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<input type="checkbox"/> Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi. P_{eirp} = e.i.r.p. Power in dBm.	

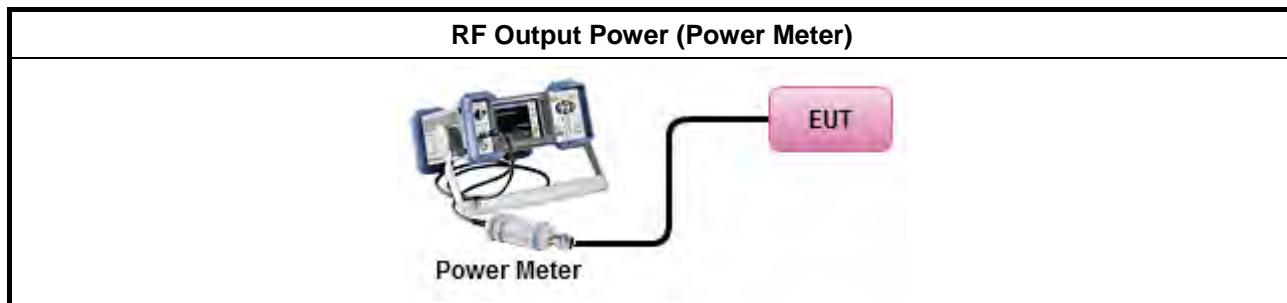
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/> Maximum Peak Conducted Output Power	<input type="checkbox"/> Refer as FCC KDB 558074, clause 9.1.1 (RBW \geq EBW method). <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 9.1.2 (peak power meter for VBW \geq DTS BW).
<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 558074, clause 9.2.2.2 Method AVGSA-1 (spectral trace averaging). <input type="checkbox"/> Refer as FCC KDB 558074, clause 9.2.2.3 Method AVGSA-1 Alt. (slow sweep speed) duty cycle < 98% and average over on/off periods with duty factor <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging). <input type="checkbox"/> Refer as FCC KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed) RF power meter and average over on/off periods with duty factor or gated trigger <input type="checkbox"/> Refer as FCC KDB 558074, clause 9.2.3 Method AVGPM (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 performance on this transmit chain port 1. <input type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case. <input type="checkbox"/> The EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them. <input type="checkbox"/> If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup





3.3.5 Directional Gain for Power Measurement

Directional Gain (DG) Result					
Transmit Chains No.		1			-
Maximum G_{ANT} (dBi)		2.00			-
Modulation Mode	DG (dBi)	N_{TX}	N_{SS} (Min.)	STBC	Array Gain (dB)
11b,1-11Mbps	2.00	1	1	-	-
11g,6-54Mbps	2.00	1	1	-	-
HT20,M 0-7	2.00	1	1	-	-
HT40,M 0-7	2.00	1	1	-	-

Note 1: For all transmitter outputs with equal antenna gains, directional gain is to be computed as follows:
Any transmit signals are correlated, Directional Gain = $G_{ANT} + 10 \log(N_{TX})$
All transmit signals are completely uncorrelated, Directional Gain = G_{ANT}

Note 2: For all transmitter outputs with unequal antenna gains, directional gain is to be computed as follows:
Any transmit signals are correlated, Directional Gain = $10 \log[(10^{G1/20} + \dots + 10^{GN/20})^2 / N_{TX}]$
All transmit signals are completely uncorrelated, Directional Gain = $10 \log[(10^{G1/10} + \dots + 10^{GN/10}) / N_{TX}]$

Note 3: For Spatial Multiplexing, Directional Gain (DG) = $G_{ANT} + 10 \log(N_{TX}/N_{SS})$,
where N_{SS} = the number of independent spatial streams data.

Note 4: For CDD transmissions, directional gain is calculated as power measurements:
Directional Gain (DG) = $G_{ANT} + \text{Array Gain}$, where Array Gain is as follows:
Array Gain = 0 dB (i.e., no array gain) for $N_{TX} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{TX} ;



3.3.6 Test Result of Maximum Peak Conducted Output Power

Maximum Peak Conducted Output Power Result							
Condition			RF Output Power (dBm)				
Modulation Mode	N _{TX}	Freq. (MHz)	Output Power	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11b	1	2412	23.36	30.00	2.00	25.36	36.00
11b	1	2437	24.19	30.00	2.00	26.19	36.00
11b	1	2462	22.36	30.00	2.00	24.36	36.00
11g	1	2412	21.66	30.00	2.00	23.66	36.00
11g	1	2437	22.35	30.00	2.00	24.35	36.00
11g	1	2462	20.01	30.00	2.00	22.01	36.00
HT20	1	2412	21.39	30.00	2.00	23.39	36.00
HT20	1	2437	22.66	30.00	2.00	24.66	36.00
HT20	1	2462	20.28	30.00	2.00	22.28	36.00
HT40	1	2422	20.55	30.00	2.00	22.55	36.00
HT40	1	2437	20.60	30.00	2.00	22.60	36.00
HT40	1	2452	19.18	30.00	2.00	21.18	36.00
Result			Complied				

3.3.7 Test Result of Maximum Conducted Output Power

Maximum Conducted Output Power Result							
Condition			RF Output Power (dBm)				
Modulation Mode	N _{TX}	Freq. (MHz)	Output Power	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11b	1	2412	20.37	30.00	2.00	22.37	36.00
11b	1	2437	21.23	30.00	2.00	23.23	36.00
11b	1	2462	19.38	30.00	2.00	21.38	36.00
11g	1	2412	16.74	30.00	2.00	18.74	36.00
11g	1	2437	17.46	30.00	2.00	19.46	36.00
11g	1	2462	15.13	30.00	2.00	17.13	36.00
HT20	1	2412	16.35	30.00	2.00	18.35	36.00
HT20	1	2437	17.50	30.00	2.00	19.50	36.00
HT20	1	2462	15.11	30.00	2.00	17.11	36.00
HT40	1	2422	15.53	30.00	2.00	17.53	36.00
HT40	1	2437	15.74	30.00	2.00	17.74	36.00
HT40	1	2452	14.27	30.00	2.00	16.27	36.00
Result			Complied				



3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
<input checked="" type="checkbox"/> Power Spectral Density (PSD) $\leq 8 \text{ dBm/3kHz}$

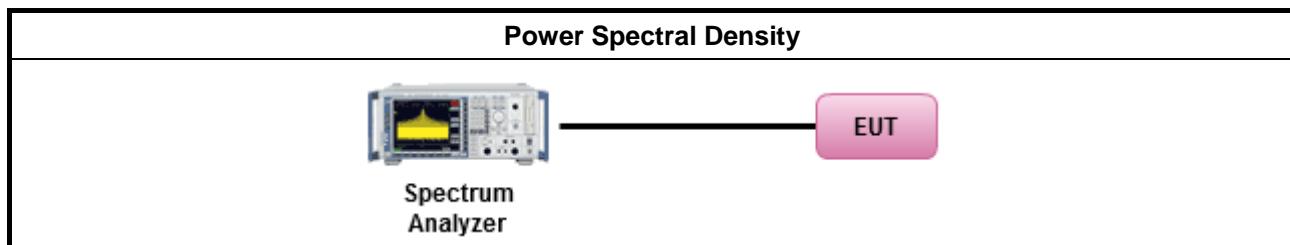
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

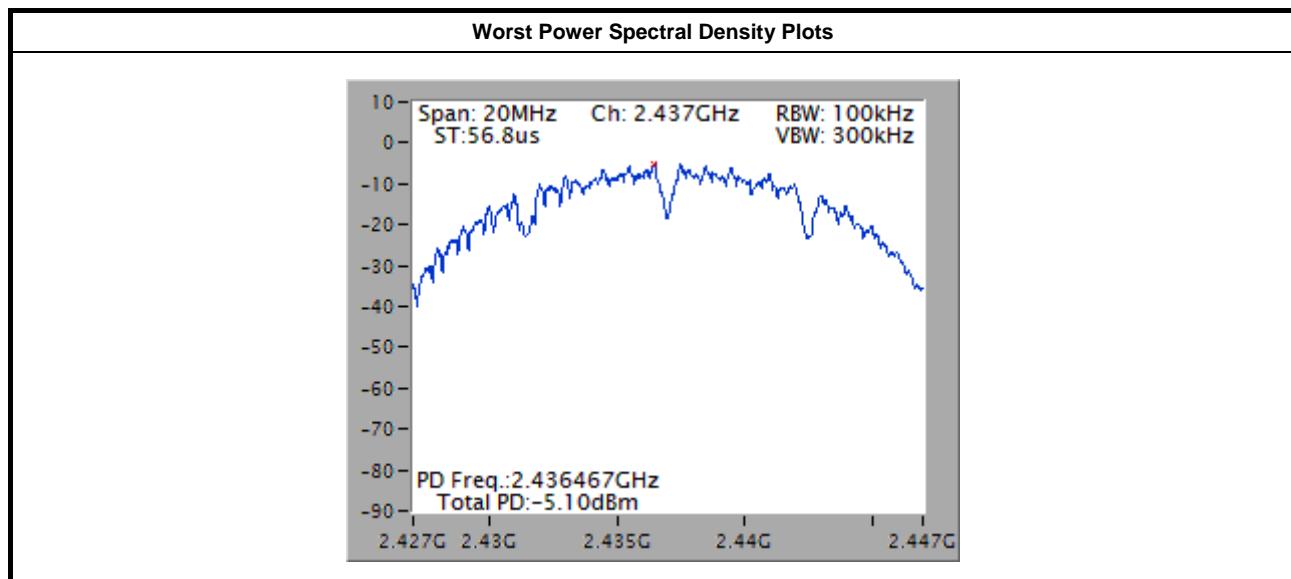
Test Method
<input checked="" type="checkbox"/> Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz;detector=peak).. [duty cycle $\geq 98\%$ or external video / power trigger]
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 10.3 Method AVGPSD-1 (spectral trace averaging).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.4 Method AVGPSD-1 Alt. (slow sweep speed) duty cycle $< 98\%$ and average over on/off periods with duty factor
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.5 Method AVGPSD-2 (spectral trace averaging).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (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 port 1.
<input type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/> The EUT supports multiple transmit chains using options given below:
<input type="checkbox"/> Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the N_{TX} output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
<input type="checkbox"/> Option 2: Measure and add $10 \log(N)$ dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with $10 \log(N)$. Or each transmit chains shall be add $10 \log(N)$ to compared with the limit.

3.4.4 Test Setup



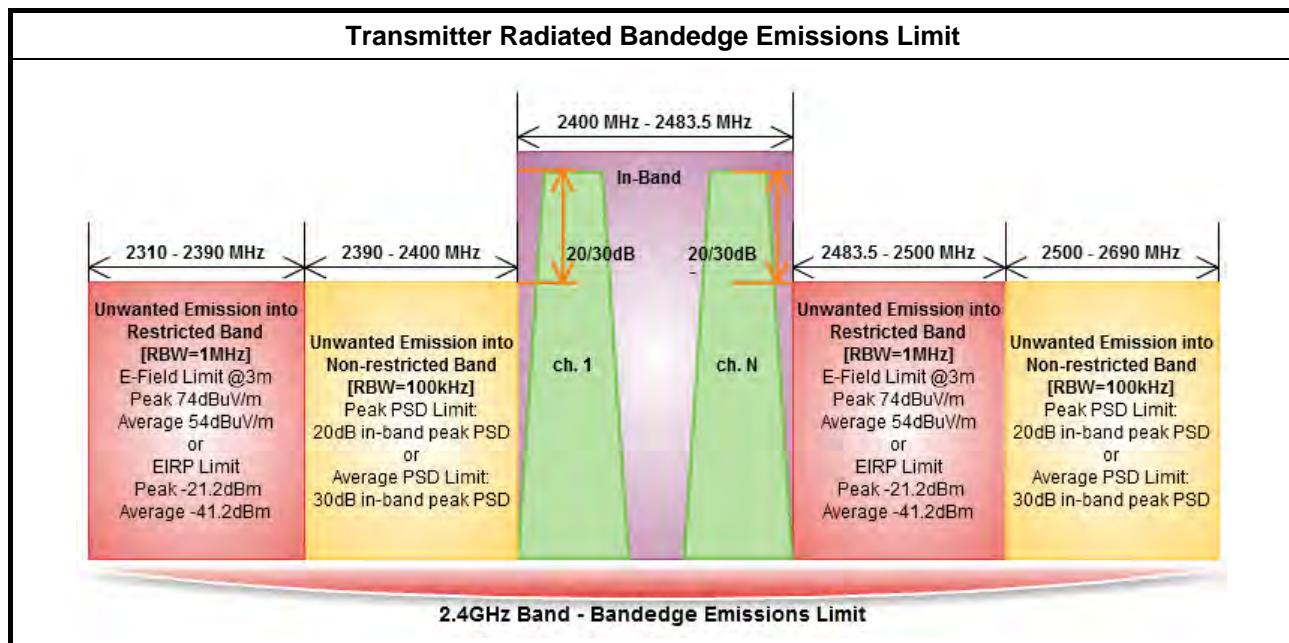
3.4.5 Test Result of Power Spectral Density

Condition			Power Spectral Density	
Modulation Mode	N _{TX}	Freq. (MHz)	Sum Chain (dBm/100kHz)	PSD Limit (dBm/3kHz)
11b	1	2412	-5.16	8
11b	1	2437	-5.10	8
11b	1	2462	-5.91	8
11g	1	2412	-13.50	8
11g	1	2437	-13.00	8
11g	1	2462	-14.76	8
HT20	1	2412	-13.99	8
HT20	1	2437	-12.78	8
HT20	1	2462	-15.02	8
HT40	1	2422	-17.19	8
HT40	1	2437	-17.39	8
HT40	1	2452	-19.10	8
Result		Complied		



3.5 Transmitter Bandedge Emissions

3.5.1 Transmitter Radiated Bandedge Emissions Limit



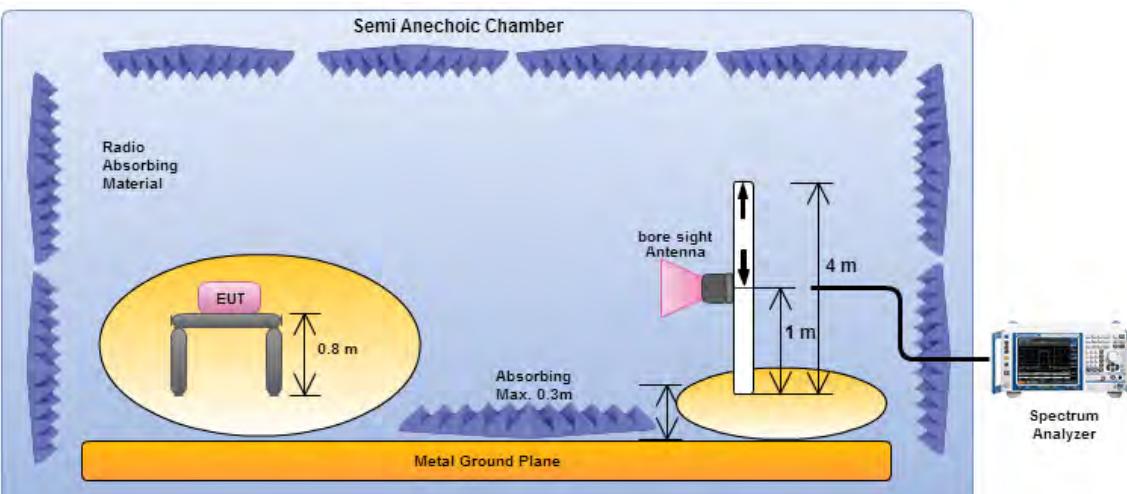
3.5.2 Measuring Instruments

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 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 checked="" 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 4.2.3.2.3 (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 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 6.9.2 for band-edge testing and the test distance is 3m.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.3 for marker-delta method for band-edge measurements.
<input checked="" type="checkbox"/> For radiated measurement, refer as FCC KDB 558074, clause 12.2.7.

3.5.4 Test Setup

Transmitter Radiated Bandedge Emissions


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



3.5.5 Transmitter Radiated Bandedge Emissions

< 901i >

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	95.45	2395.10	63.60	31.85	20	V
11b	1	2462	92.47	2507.50	64.50	27.97	20	V
11g	1	2412	87.10	2395.46	63.41	23.69	20	V
11g	1	2462	85.91	2526.70	63.40	22.51	20	V
HT20	1	2412	86.62	2394.90	63.60	23.02	20	V
HT20	1	2462	87.33	2538.30	64.09	23.24	20	V
HT40	1	2422	85.33	2394.74	63.44	21.89	20	V
HT40	1	2452	85.04	2543.72	63.68	21.36	20	V

Note 1: Measurement worst emissions of receive antenna polarization

< 901n >

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	98.14	2396.24	63.15	34.99	20	V
11b	1	2462	100.61	2550.60	63.77	36.84	20	V
11g	1	2412	94.68	2399.94	67.72	26.96	20	V
11g	1	2462	95.29	2518.20	63.38	31.91	20	V
HT20	1	2412	95.15	2399.49	66.64	28.51	20	V
HT20	1	2462	95.97	2544.60	63.91	32.06	20	V
HT40	1	2422	90.27	2397.91	64.83	25.44	20	V
HT40	1	2452	90.40	2505.80	63.43	26.97	20	V

Note 1: Measurement worst emissions of receive antenna polarization



< 901i >

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	2350.99	60.27	74	2385.49	47.69	54	V
11b	1	2462	3	2499.40	59.64	74	2487.90	47.75	54	V
11g	1	2412	3	2389.63	60.57	74	2389.97	47.80	54	V
11g	1	2462	3	2485.00	63.25	74	2483.50	49.17	54	V
HT20	1	2412	3	2389.97	62.63	74	2389.86	47.94	54	V
HT20	1	2462	3	2483.80	64.48	74	2483.50	49.17	54	V
HT40	1	2422	3	2385.77	63.48	74	2390.00	48.95	54	V
HT40	1	2452	3	2487.92	63.88	74	2483.72	50.15	54	V

Note 1: Measurement worst emissions of receive antenna polarization.

< 901n >

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	2386.83	62.43	74	2383.81	52.29	54	V
11b	1	2462	3	2487.90	62.82	74	2487.90	52.72	54	V
11g	1	2412	3	2389.07	72.84	74	2390.00	52.18	54	V
11g	1	2462	3	2483.50	71.31	74	2483.50	52.13	54	V
HT20	1	2412	3	2390.00	72.51	74	2390.00	51.28	54	V
HT20	1	2462	3	2483.90	69.66	74	2483.50	52.32	54	V
HT40	1	2422	3	2385.90	72.82	74	2388.94	52.75	54	V
HT40	1	2452	3	2486.00	69.57	74	2483.50	52.95	54	V

Note 1: Measurement worst emissions of receive antenna polarization.



3.6 Transmitter Unwanted Emissions

3.6.1 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.

3.6.2 Measuring Instruments

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

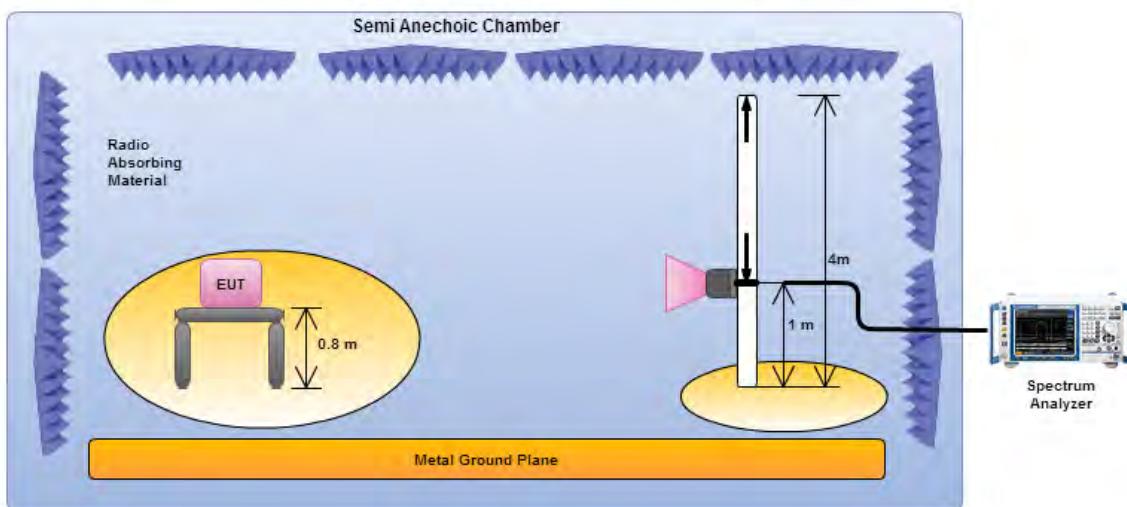


3.6.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. 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 type="checkbox"/>	Measurements in the frequency range 10 GHz - 18GHz are typically made at a closer distance 1m, because the instrumentation noise floor is typically close to the radiated emission limit.
<input type="checkbox"/>	Measurements in the frequency range above 18 GHz - 25GHz are typically made at a closer distance 0.5m, because the instrumentation noise floor is typically close to the radiated emission limit.
<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 checked="" 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 4.2.3.2.3 (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 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.

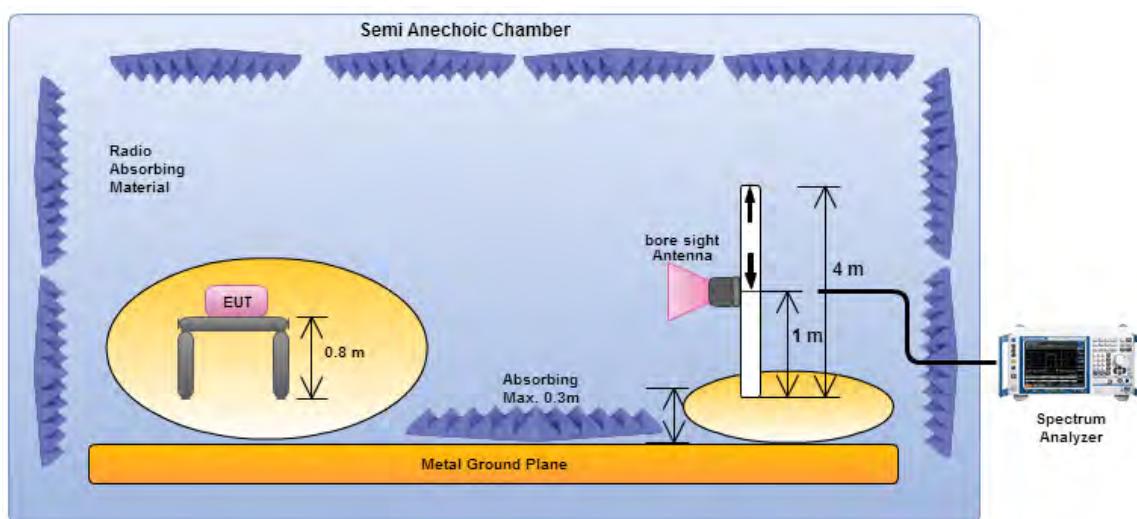
3.6.4 Test Setup

Transmitter Radiated Unwanted Emissions Below 1GHz



Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna.

Transmitter Radiated Unwanted Emissions Above 1GHz



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

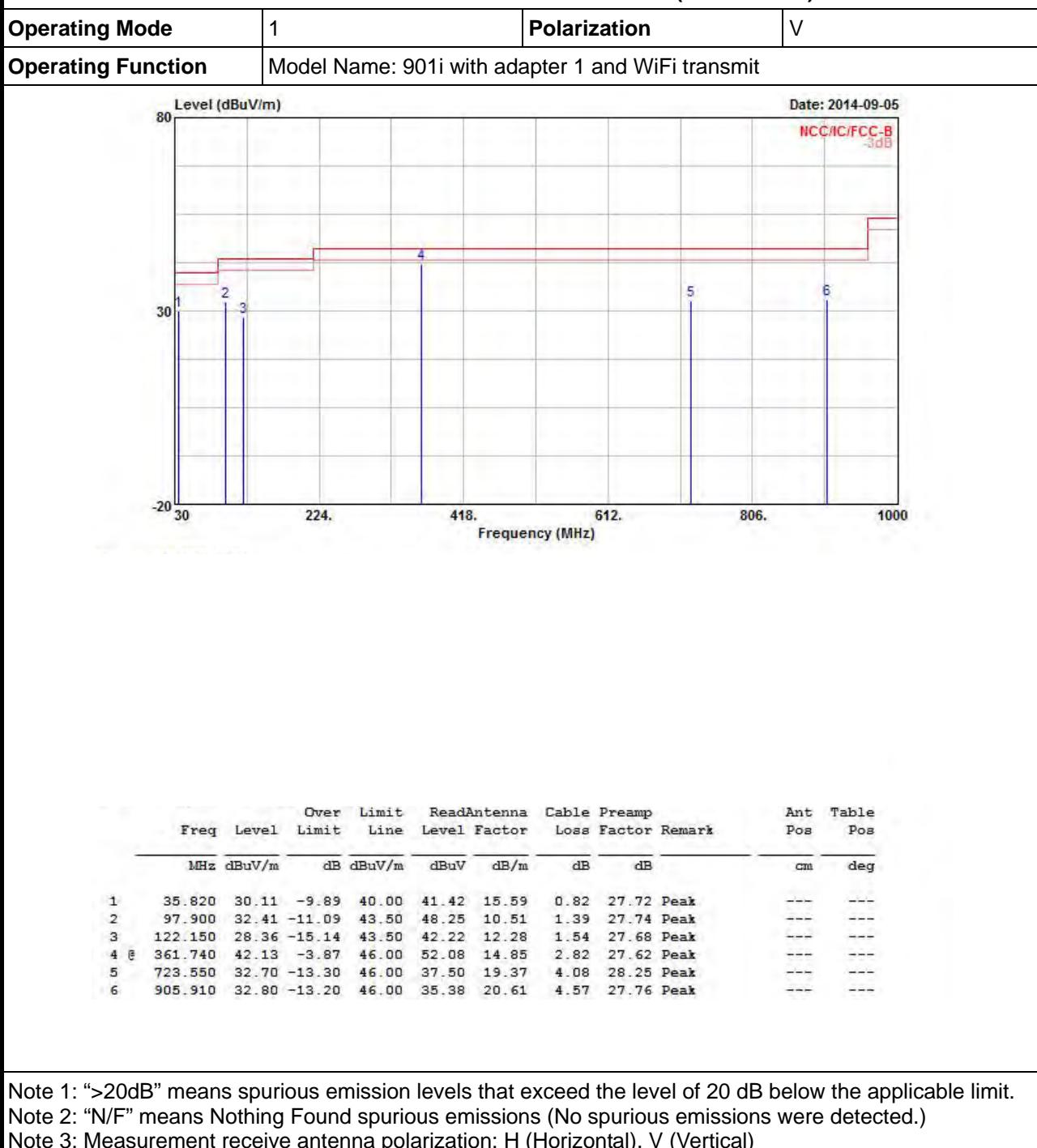
3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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



3.6.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Transmitter Radiated Unwanted Emissions (Below 1GHz)





Transmitter Radiated Unwanted Emissions (Below 1GHz)

Operating Mode	1	Polarization	H
Operating Function	Model Name: 901i with adapter 1 and WiFi transmit		
Level (dBuV/m)		Date: 2014-09-04	
80		NCC/IC/FCC-B -3dB	
30			
-20			
30	224.	418.	612.
418.	806.	1000	
Frequency (MHz)			

Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table
		Line	Limit	Antenna	Level	Loss	Factor		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	141.550	24.84	-18.66	43.50	39.76	10.98	1.72	27.62	Peak
2	164.830	27.17	-16.33	43.50	42.91	9.95	1.85	27.54	Peak
3	230.790	29.22	-16.78	46.00	43.98	10.36	2.22	27.34	Peak
4	361.740	44.34	-1.66	46.00	54.29	14.85	2.82	27.62	QP
5	723.550	28.91	-17.09	46.00	33.71	19.37	4.08	28.25	Peak
6	905.910	35.44	-10.56	46.00	38.02	20.61	4.57	27.76	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)



Transmitter Radiated Unwanted Emissions (Below 1GHz)

Operating Mode	4	Polarization	V
Operating Function	Model Name: 901n with adapter 2 and WiFi transmit		
Level (dBuV/m)		Date: 2014-07-26	
80		NCC/IC/FCC-B -3dB	
30			
-20			
30	2	224.	418.
224.	3	612.	806.
418.	4	806.	905.
612.	5	905.	1000
806.	6		
Frequency (MHz)			

Freq	Level	Over Limit		ReadAntenna Line	Cable Factor	Preamp	Ant	Table	
		MHz	dBuV/m	dB	dBuV/m	dB	Pos	Pos	
		dB	dBuV/m	dBuV	dB/m			cm	deg
1	32.910	36.70	-3.30	40.00	46.56	17.11	0.78	27.75	QP
2	74.620	30.57	-9.43	40.00	50.54	6.46	1.20	27.63	Peak
3	141.550	32.46	-11.04	43.50	47.38	10.98	1.72	27.62	Peak
4	497.540	30.41	-15.59	46.00	38.02	17.59	3.23	28.43	Peak
5	723.550	33.72	-12.28	46.00	38.52	19.37	4.08	28.25	Peak
6	905.910	33.03	-12.97	46.00	35.61	20.61	4.57	27.76	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)



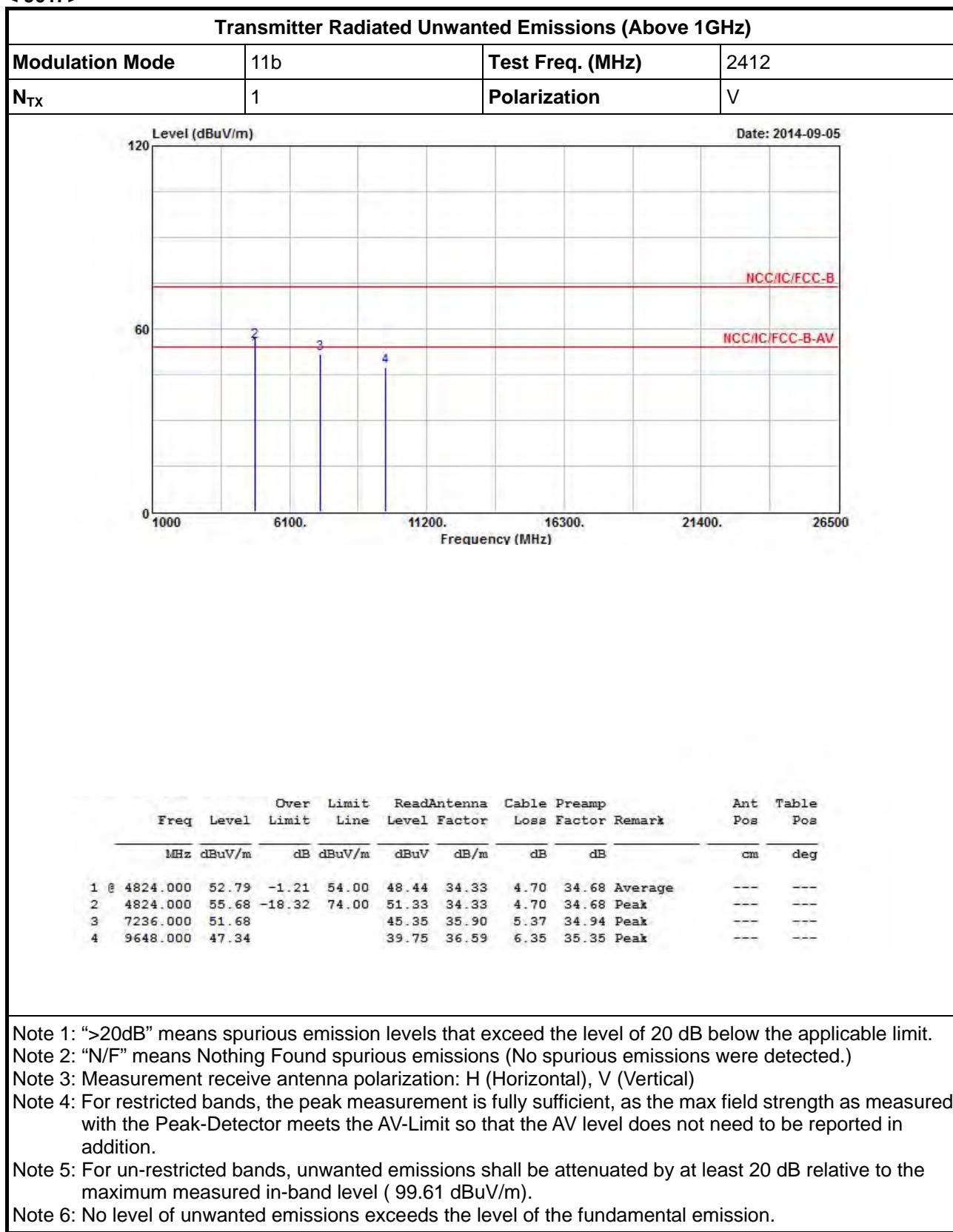
Transmitter Radiated Unwanted Emissions (Below 1GHz)

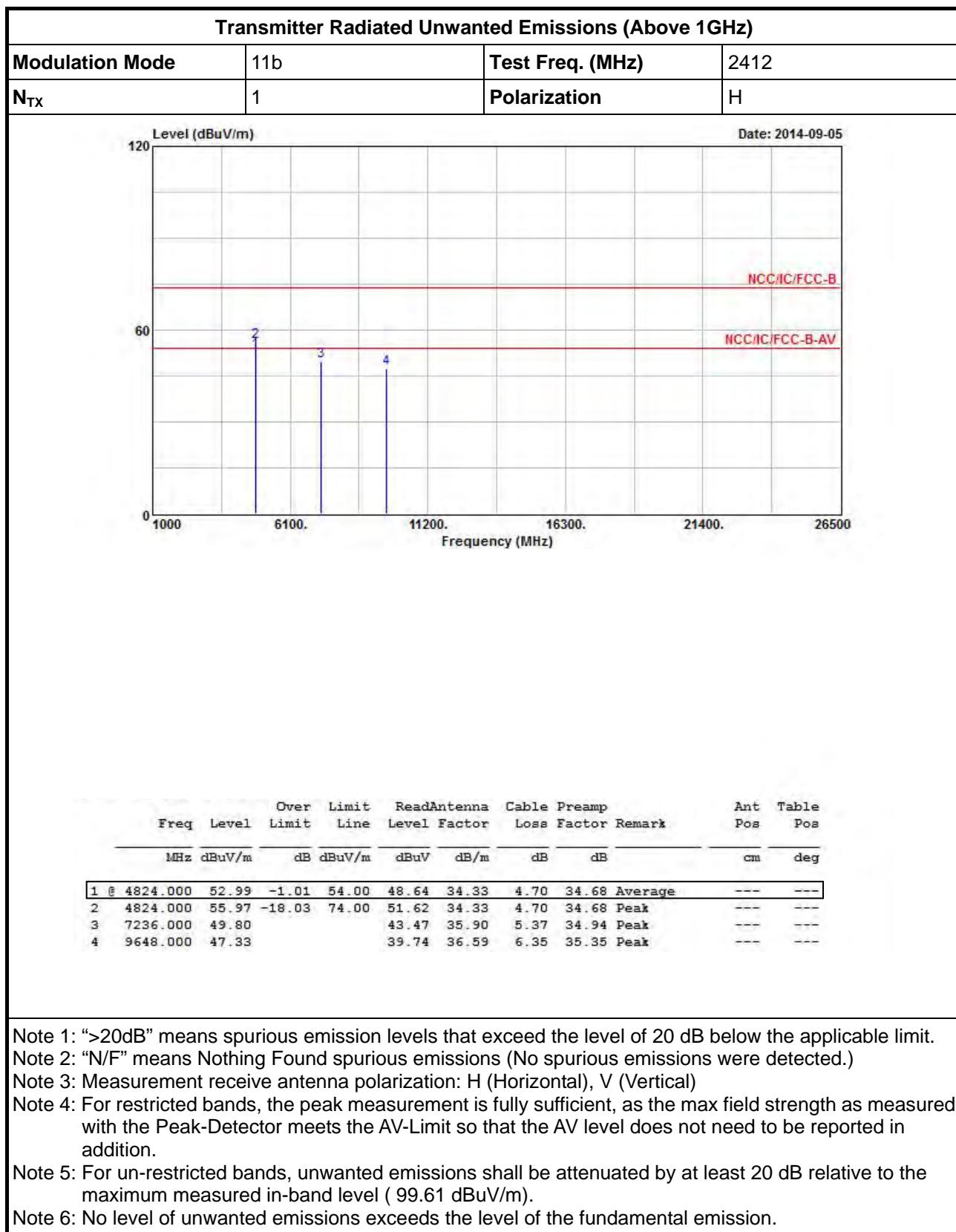
Operating Mode	4	Polarization	H
Operating Function	Model Name: 901n with adapter 2 and WiFi transmit		
Level (dBuV/m)		Date: 2014-07-26	
80		NCC/IC/FCC-B -3dB	
30			
-20			
30	224.	418.	612.
2	3	4	5
905.910	906.910	907.910	908.910
909.910	910.910	911.910	912.910
913.910	914.910	915.910	916.910
917.910	918.910	919.910	920.910
921.910	922.910	923.910	924.910
925.910	926.910	927.910	928.910
929.910	930.910	931.910	932.910
933.910	934.910	935.910	936.910
937.910	938.910	939.910	940.910
941.910	942.910	943.910	944.910
945.910	946.910	947.910	948.910
949.910	950.910	951.910	952.910
953.910	954.910	955.910	956.910
957.910	958.910	959.910	960.910
961.910	962.910	963.910	964.910
965.910	966.910	967.910	968.910
969.910	970.910	971.910	972.910
973.910	974.910	975.910	976.910
977.910	978.910	979.910	980.910
981.910	982.910	983.910	984.910
985.910	986.910	987.910	988.910
989.910	990.910	991.910	992.910
993.910	994.910	995.910	996.910
997.910	998.910	999.910	1000.910
1001.910	1002.910	1003.910	1004.910
1005.910	1006.910	1007.910	1008.910
1009.910	1010.910	1011.910	1012.910
1013.910	1014.910	1015.910	1016.910
1017.910	1018.910	1019.910	1020.910
1021.910	1022.910	1023.910	1024.910
1025.910	1026.910	1027.910	1028.910
1029.910	1030.910	1031.910	1032.910
1033.910	1034.910	1035.910	1036.910
1037.910	1038.910	1039.910	1040.910
1041.910	1042.910	1043.910	1044.910
1045.910	1046.910	1047.910	1048.910
1049.910	1050.910	1051.910	1052.910
1053.910	1054.910	1055.910	1056.910
1057.910	1058.910	1059.910	1060.910
1061.910	1062.910	1063.910	1064.910
1065.910	1066.910	1067.910	1068.910
1069.910	1070.910	1071.910	1072.910
1073.910	1074.910	1075.910	1076.910
1077.910	1078.910	1079.910	1080.910
1081.910	1082.910	1083.910	1084.910
1085.910	1086.910	1087.910	1088.910
1089.910	1090.910	1091.910	1092.910
1093.910	1094.910	1095.910	1096.910
1097.910	1098.910	1099.910	1100.910
1101.910	1102.910	1103.910	1104.910
1105.910	1106.910	1107.910	1108.910
1109.910	1110.910	1111.910	1112.910
1113.910	1114.910	1115.910	1116.910
1117.910	1118.910	1119.910	1120.910
1121.910	1122.910	1123.910	1124.910
1125.910	1126.910	1127.910	1128.910
1129.910	1130.910	1131.910	1132.910
1133.910	1134.910	1135.910	1136.910
1137.910	1138.910	1139.910	1140.910
1141.910	1142.910	1143.910	1144.910
1145.910	1146.910	1147.910	1148.910
1149.910	1150.910	1151.910	1152.910
1153.910	1154.910	1155.910	1156.910
1157.910	1158.910	1159.910	1160.910
1161.910	1162.910	1163.910	1164.910
1165.910	1166.910	1167.910	1168.910
1169.910	1170.910	1171.910	1172.910
1173.910	1174.910	1175.910	1176.910
1177.910	1178.910	1179.910	1180.910
1181.910	1182.910	1183.910	1184.910
1185.910	1186.910	1187.910	1188.910
1189.910	1190.910	1191.910	1192.910
1193.910	1194.910	1195.910	1196.910
1197.910	1198.910	1199.910	1200.910
1201.910	1202.910	1203.910	1204.910
1205.910	1206.910	1207.910	1208.910
1209.910	1210.910	1211.910	1212.910
1213.910	1214.910	1215.910	1216.910
1217.910	1218.910	1219.910	1220.910
1221.910	1222.910	1223.910	1224.910
1225.910	1226.910	1227.910	1228.910
1229.910	1230.910	1231.910	1232.910
1233.910	1234.910	1235.910	1236.910
1237.910	1238.910	1239.910	1240.910
1241.910	1242.910	1243.910	1244.910
1245.910	1246.910	1247.910	1248.910
1249.910	1250.910	1251.910	1252.910
1253.910	1254.910	1255.910	1256.910
1257.910	1258.910	1259.910	1260.910
1261.910	1262.910	1263.910	1264.910
1265.910	1266.910	1267.910	1268.910
1269.910	1270.910	1271.910	1272.910
1273.910	1274.910	1275.910	1276.910
1277.910	1278.910	1279.910	1280.910
1281.910	1282.910	1283.910	1284.910
1285.910	1286.910	1287.910	1288.910
1289.910	1290.910	1291.910	1292.910
1293.910	1294.910	1295.910	1296.910
1297.910	1298.910	1299.910	1300.910
1301.910	1302.910	1303.910	1304.910
1305.910	1306.910	1307.910	1308.910
1309.910	1310.910	1311.910	1312.910
1313.910	1314.910	1315.910	1316.910
1317.910	1318.910	1319.910	1320.910
1321.910	1322.910	1323.910	1324.910
1325.910	1326.910	1327.910	1328.910
1329.910	1330.910	1331.910	1332.910
1333.910	1334.910	1335.910	1336.910
1337.910	1338.910	1339.910	1340.910
1341.910	1342.910	1343.910	1344.910
1345.910	1346.910	1347.910	1348.910
1349.910	1350.910	1351.910	1352.910
1353.910	1354.910	1355.910	1356.910
1357.910	1358.910	1359.910	1360.910
1361.910	1362.910	1363.910	1364.910
1365.910	1366.910	1367.910	1368.910
1369.910	1370.910	1371.910	1372.910
1373.910	1374.910	1375.910	1376.910
1377.910	1378.910	1379.910	1380.910
1381.910	1382.910	1383.910	1384.910
1385.910	1386.910	1387.910	1388.910
1389.910	1390.910	1391.910	1392.910
1393.910	1394.910	1395.910	1396.910
1397.910	1398.910	1399.910	1400.910
1401.910	1402.910	1403.910	1404.910
1405.910	1406.910	1407.910	1408.910
1409.910	1410.910	1411.910	1412.910
1413.910	1414.910	1415.910	1416.910
1417.910	1418.910	1419.910	1420.910
1421.910	1422.910	1423.910	1424.910
1425.910	1426.910	1427.910	1428.910
1429.910	1430.910	1431.910	1432.910
1433.910	1434.910	1435.910	1436.910
1437.910	1438.910	1439.910	1440.910
1441.910	1442.910	1443.910	1444.910
1445.910	1446.910	1447.910	1448.910
1449.910	1450.910	1451.910	1452.910
1453.910	1454.910	1455.910	1456.910
1457.910	1458.910	1459.910	1460.910
1461.910	1462.910	1463.910	1464.910
1465.910	1466.910	1467.910	1468.910
1469.910	1470.910	1471.910	1472.910
1473.910	1474.910	1475.910	1476.910
1477.910	1478.910	1479.910	1480.910
1481.910	1482.910	1483.910	1484.910
1485.910	1486.910	1487.910	1488.910
1489.910	1490.910	1491.910	1492.910
1493.910	1494.910	1495.910	1496.910
1497.910	1498.910	1499.910	1500.910
1501.910	1502.910	1503.910	1504.910
1505.910	1506.910	1507.910	1508.910
1509.910	1510.910	1511.910	1512.910
1513.910	1514.910	1515.910	1516.910
1517.910	1518.910	1519.910	1520.910
1521.910	1522.910	1523.910	1524.910
1525.910	1526.910	1527.910	1528.910
1529.910	1530.910	1531.910	1532.910
1533.910	1534.910	1535.910	1536.910
1537.910	1538.910	1539.910	1540.910
1541.910	1542.910	1543.910	1544.910
1545.910	1546.910	1547.910	1548.910
1549.910	1550.910	1551.910	1552.910
1553.910	1554.910	1555.910	1556.910
1557.910	1558.910	1559.910	1560.910
1561.910	1562.910	1563.910	1564.910
1565.910	1566.910	1567.910	1568.910
1569.910	1570.910	1571.910	1572.910
1573.910	1574.910	1575.910	1576.910
1577.910	1578.910	1579.910	1580.910
1581.910	1582.910	1583.910	1584.910
1585.910	1586.910	1587.910	1588.910
1589.910	1590.910	1591.910	1592.910
1593.910	1594.910	1595.910	1596.910
1597.910	1598.910	1599.910	1600.910
1601.910	1602.910	1603.910	1604.910
1605.910	1606.910	1607.910	1608.910
1609.910	1610.910	1611.910	1612.910
1613.910	1614.910	1615.910	1616.910
1617.910	1618.910	1619.910	1620.910
1621.910	1622.910	1623.910	1624.910
1625.910	1626.910	1627.910	1628.910
1629.910	1630.910	1631.910	1632.910
1633.910	1634.910	1635.910	1636.910
1637.910	1638.910	1639.910	1640.910
1641.910	1642.910	1643.910	1644.910
1645.910	1646.910	1647.910	1648.910
1649.910	1650.910	1651.910	1652.910
1653.910	1654.910	1655.910	1656.910
1657.910	1658.910	1659.910	1660.910
1661.910	1662.910	1663.910	1664.910
1665.			

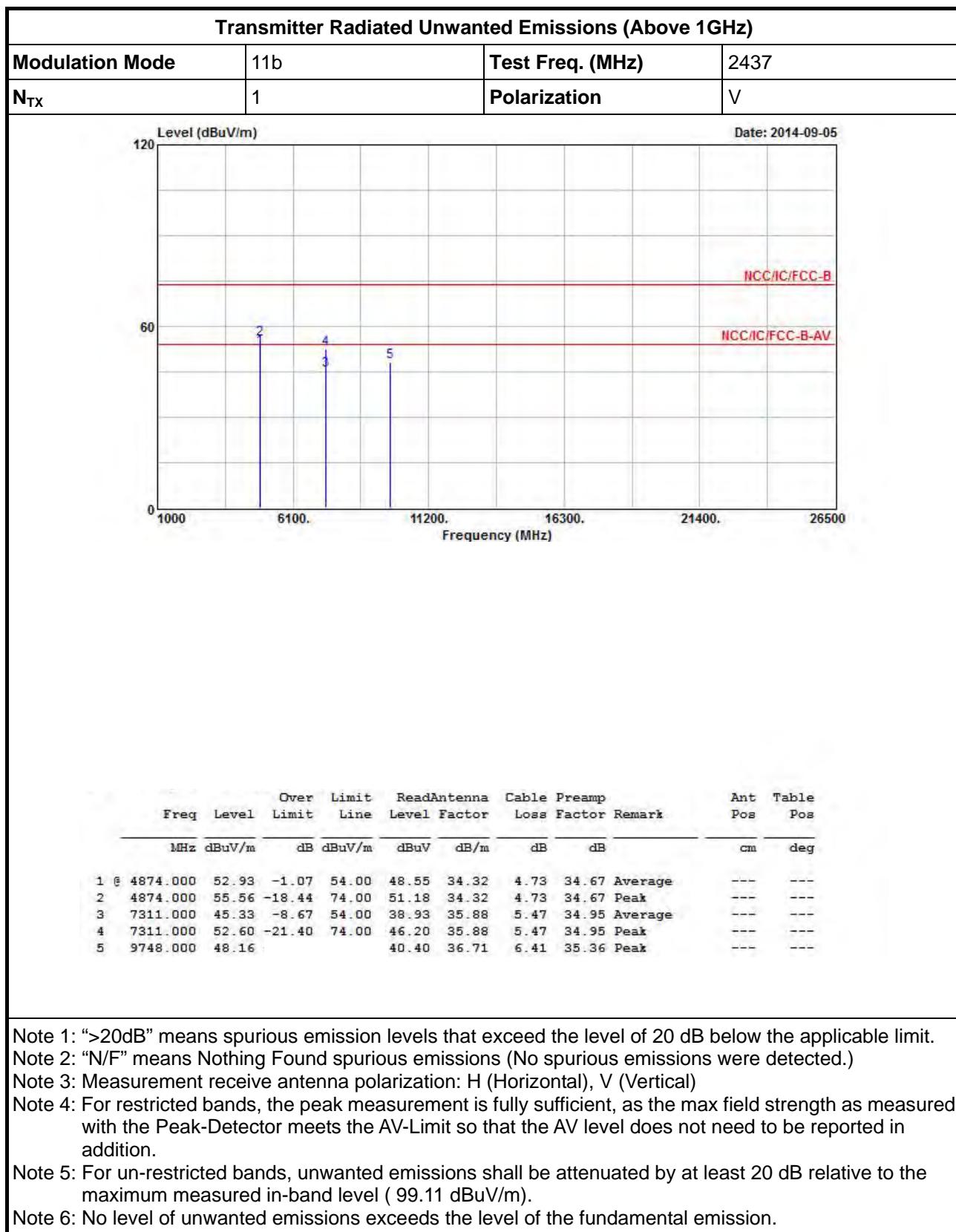


3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

<901i>









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 (99.11 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.

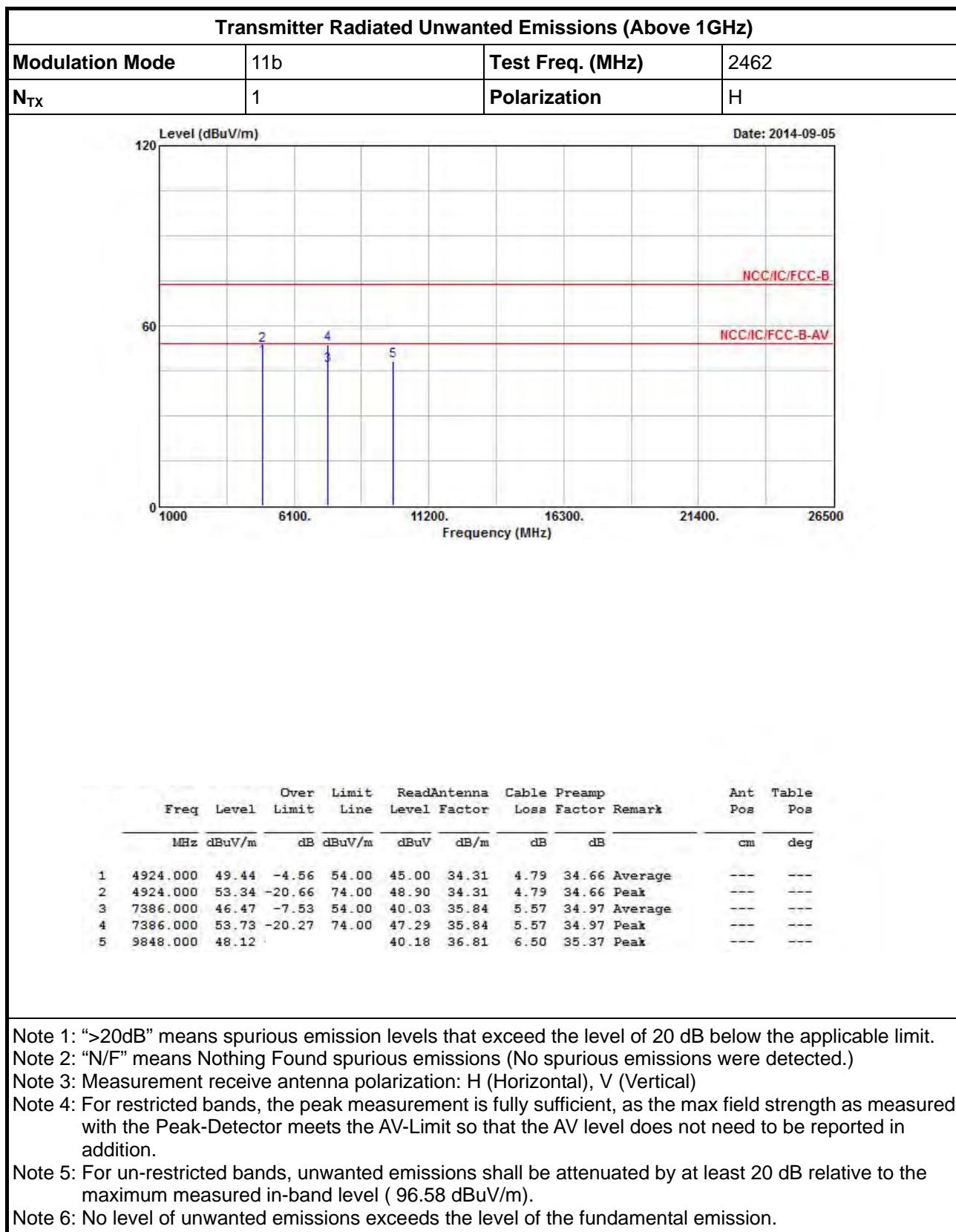
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

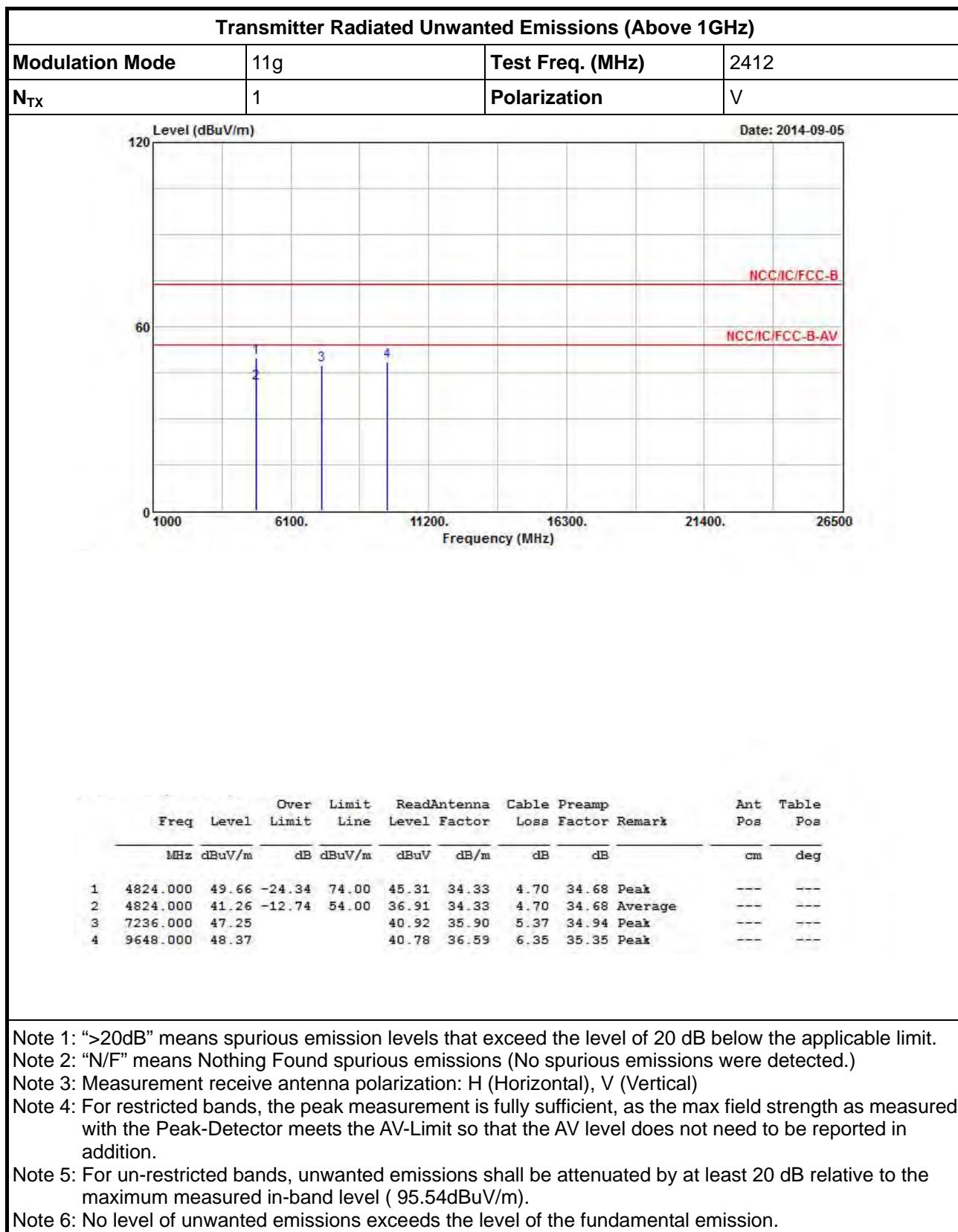
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

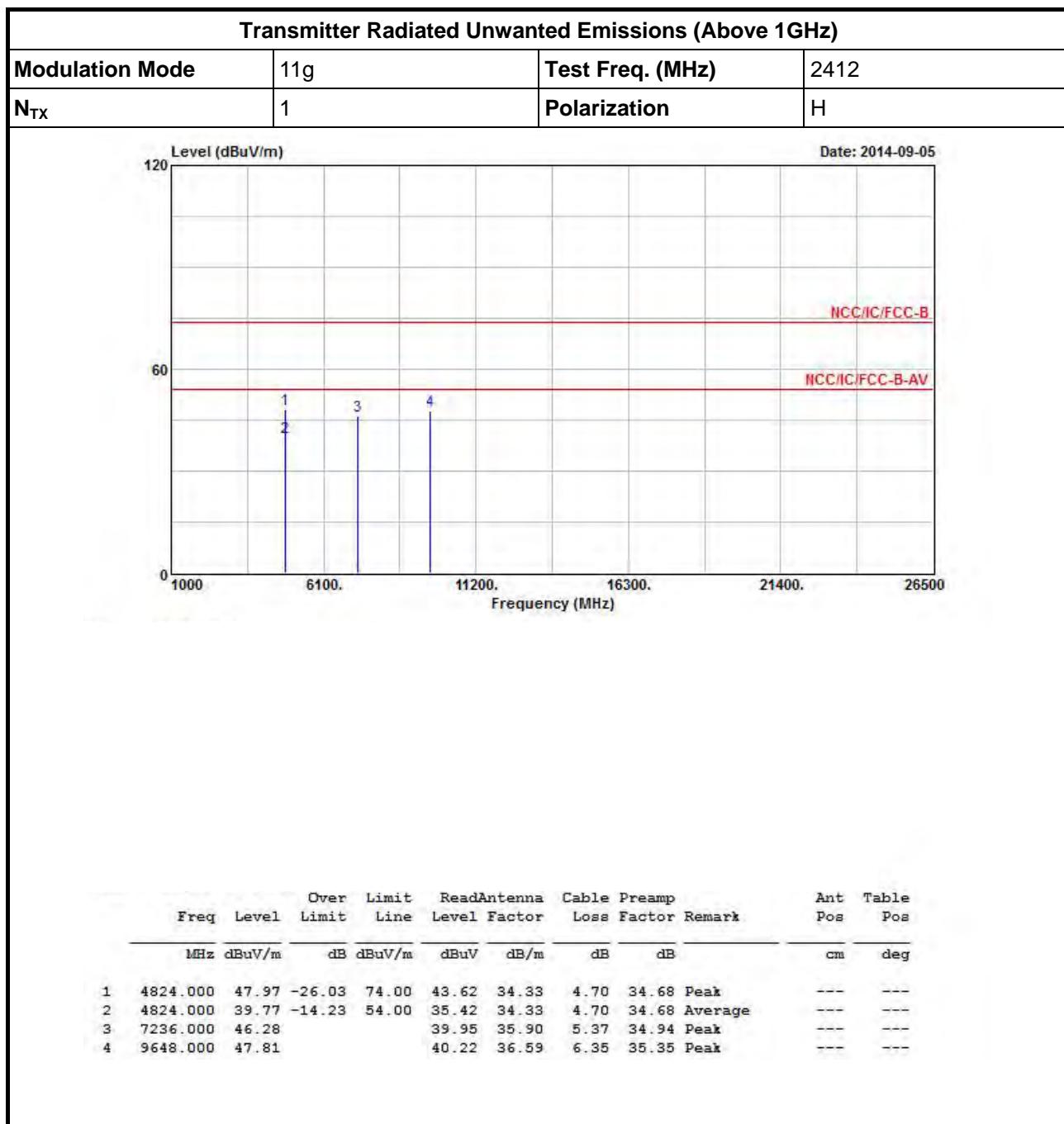
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (96.58 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.

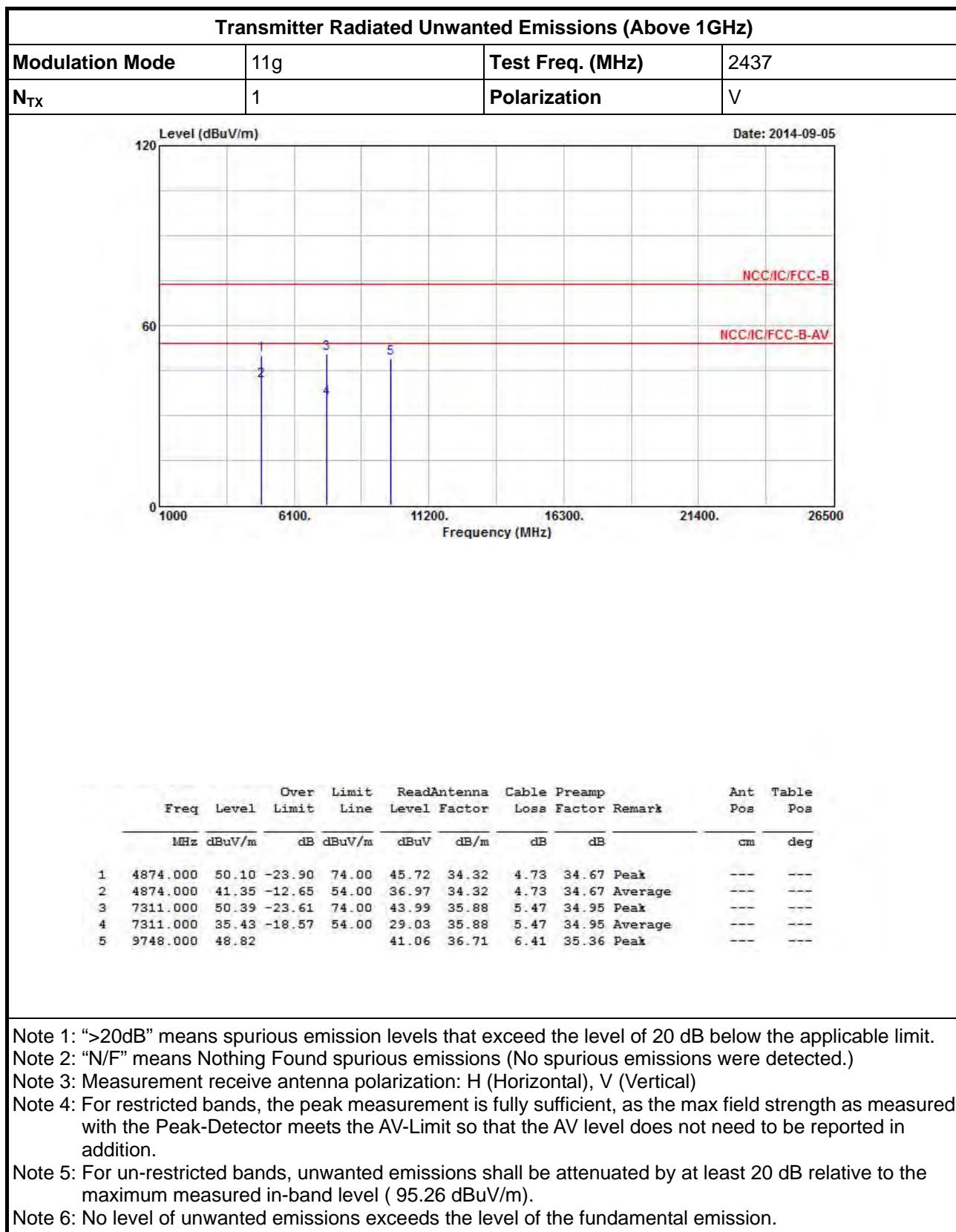
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

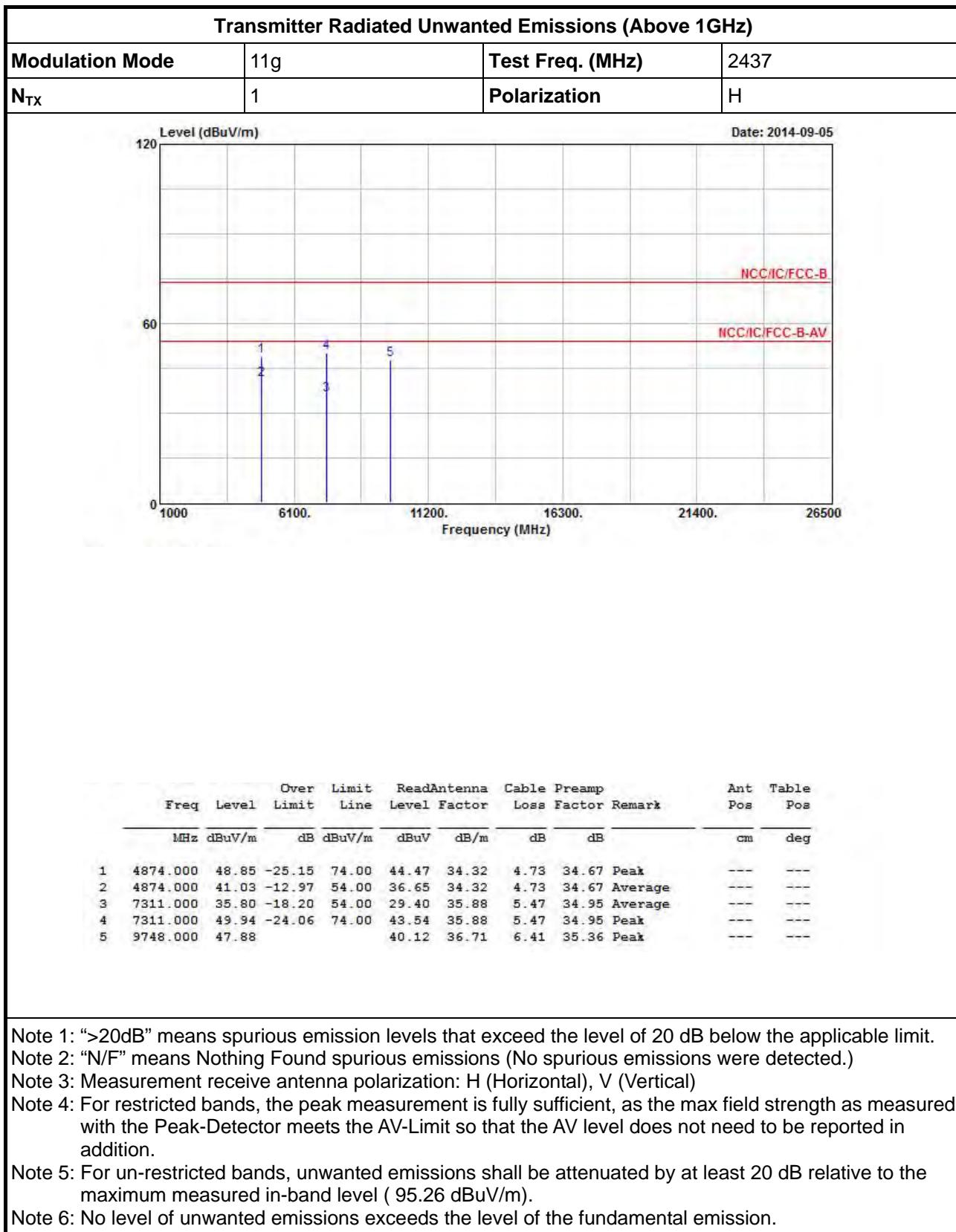
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

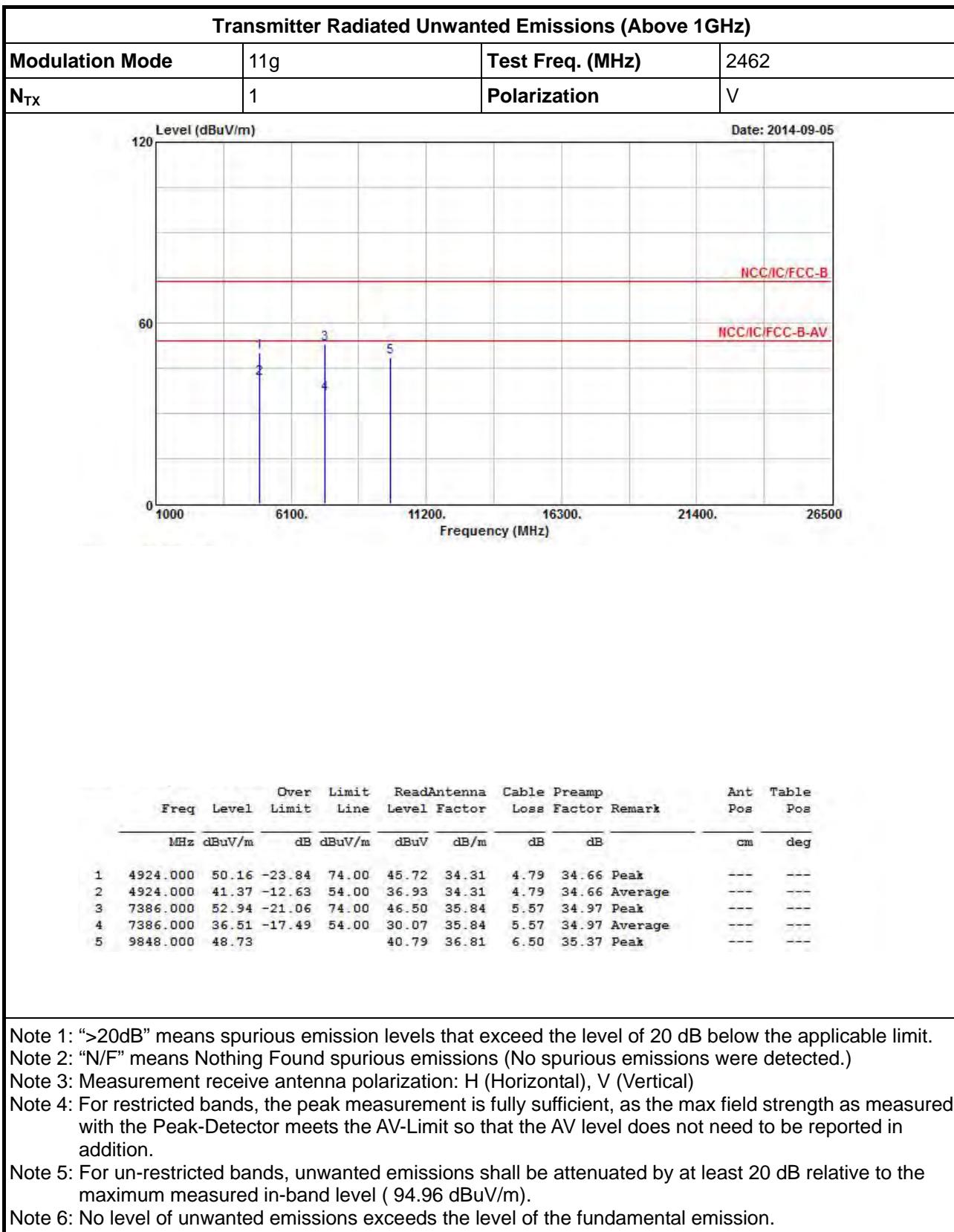
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (95.54 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.

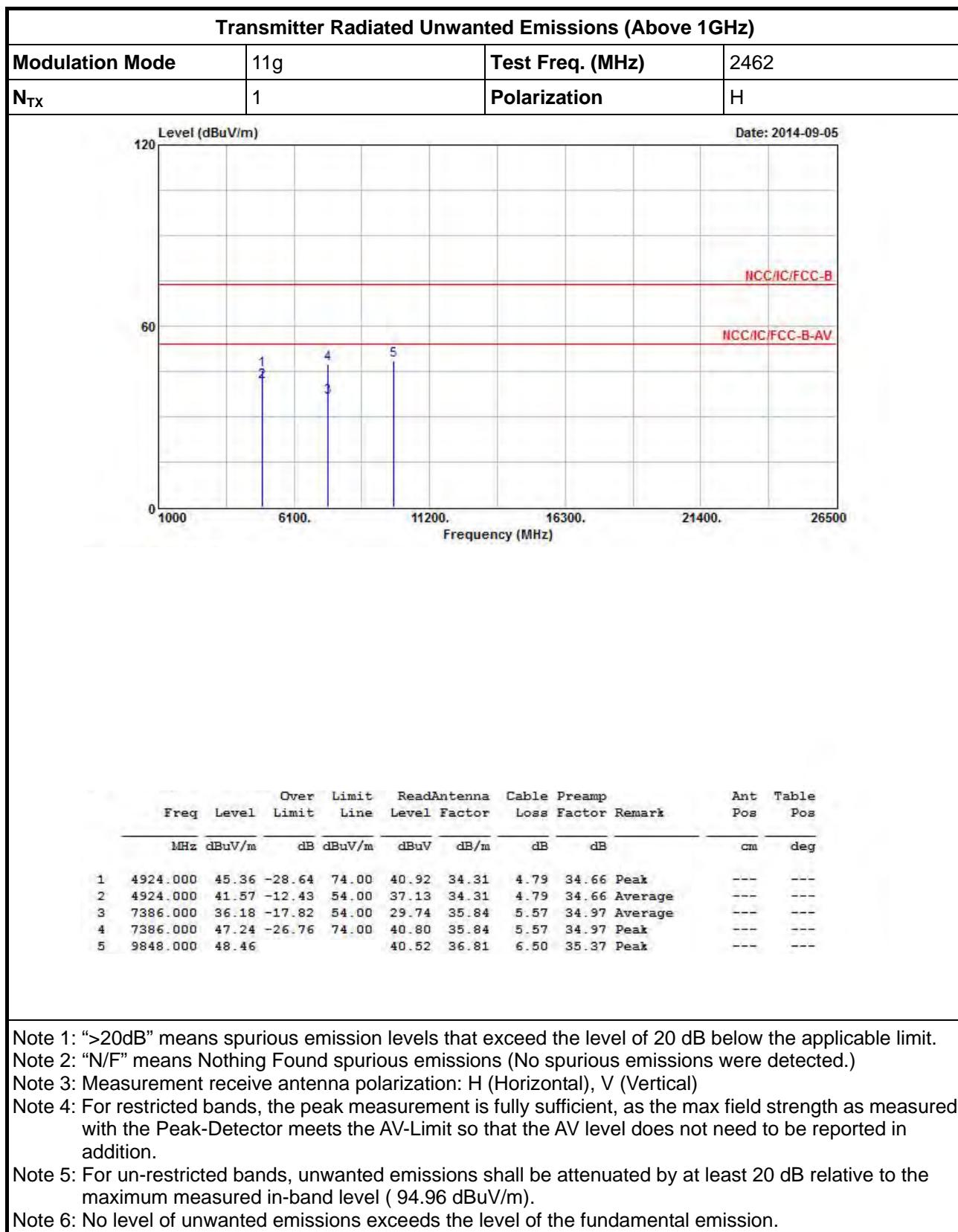
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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 (94.96 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 (94.96 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.

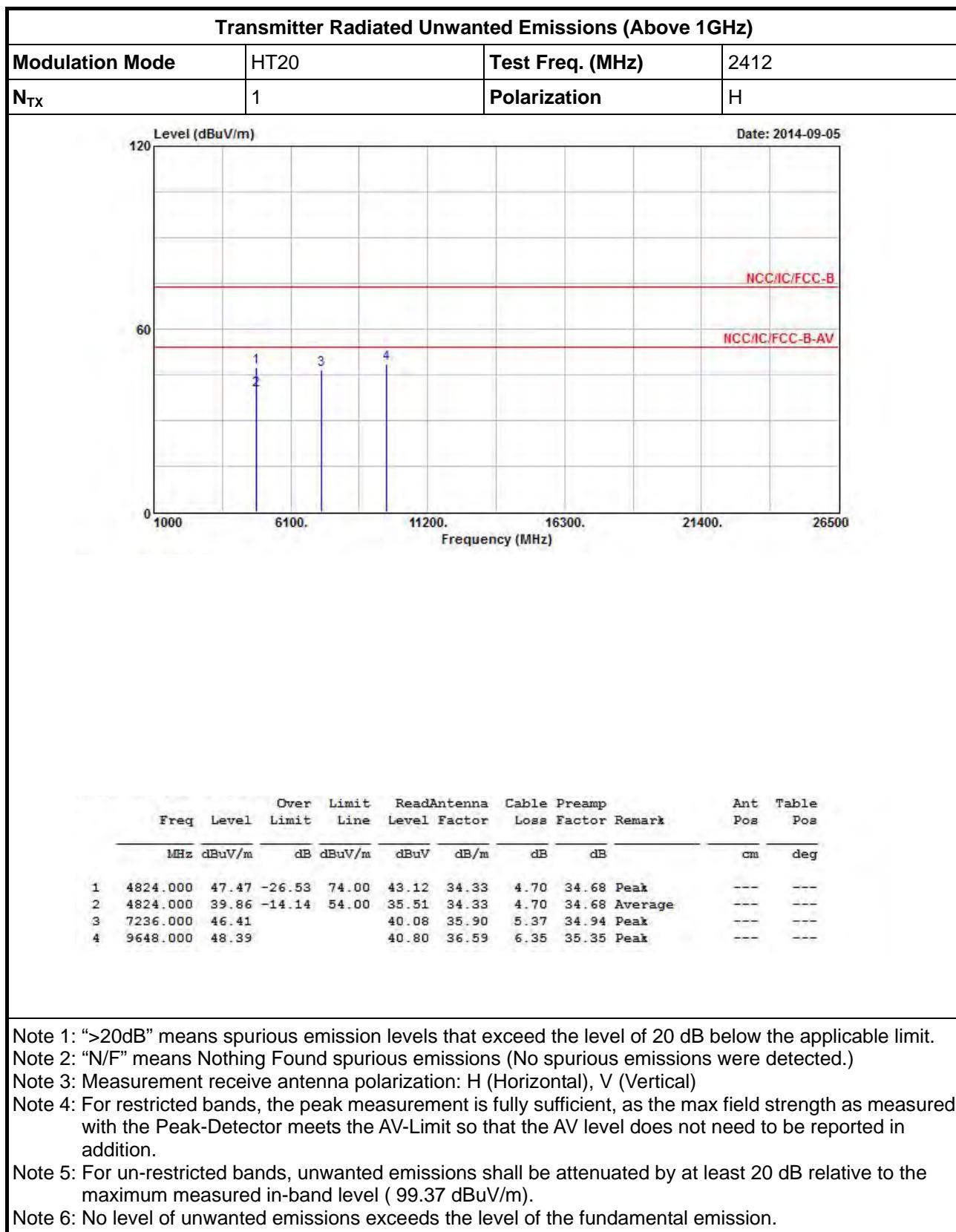
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

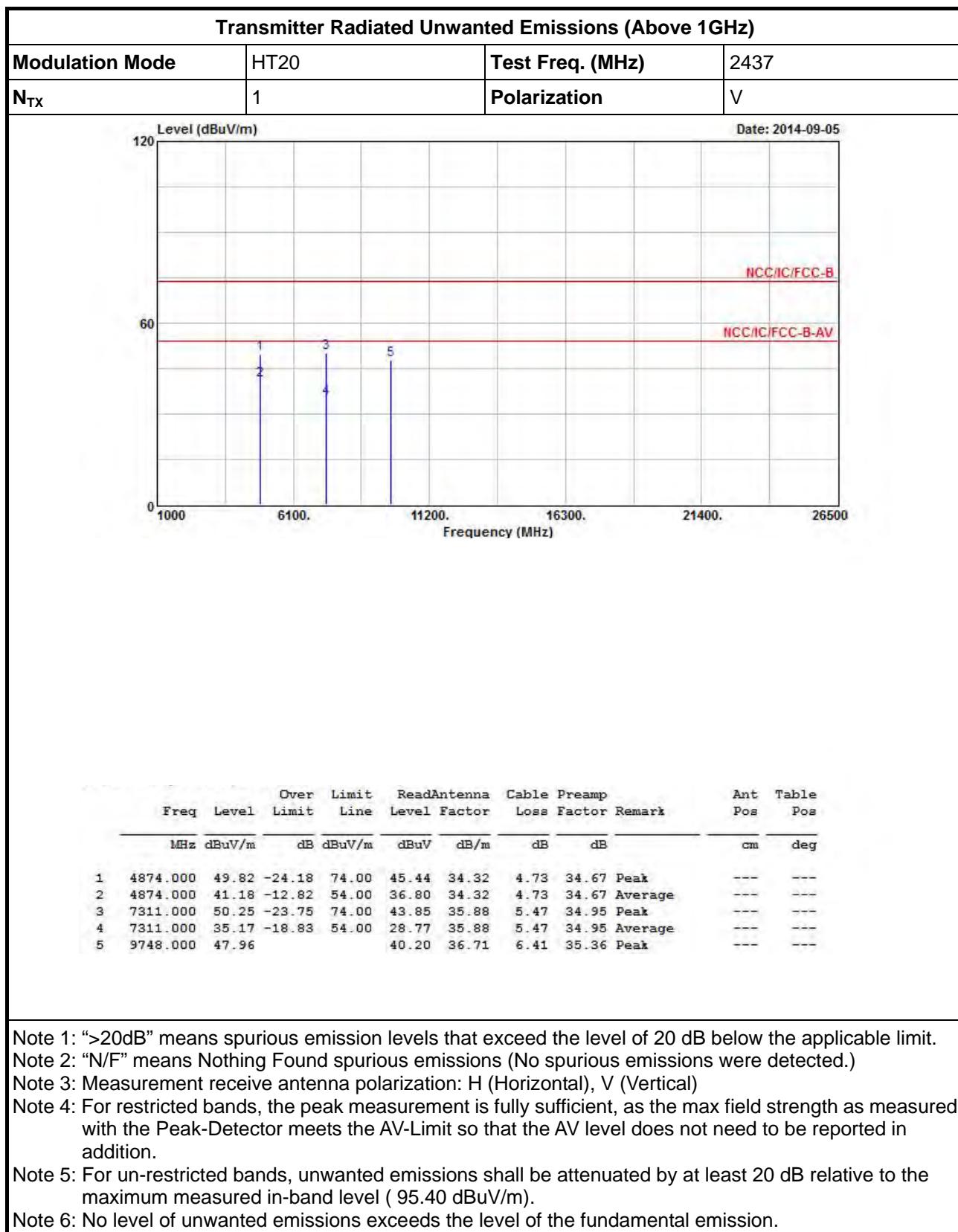
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

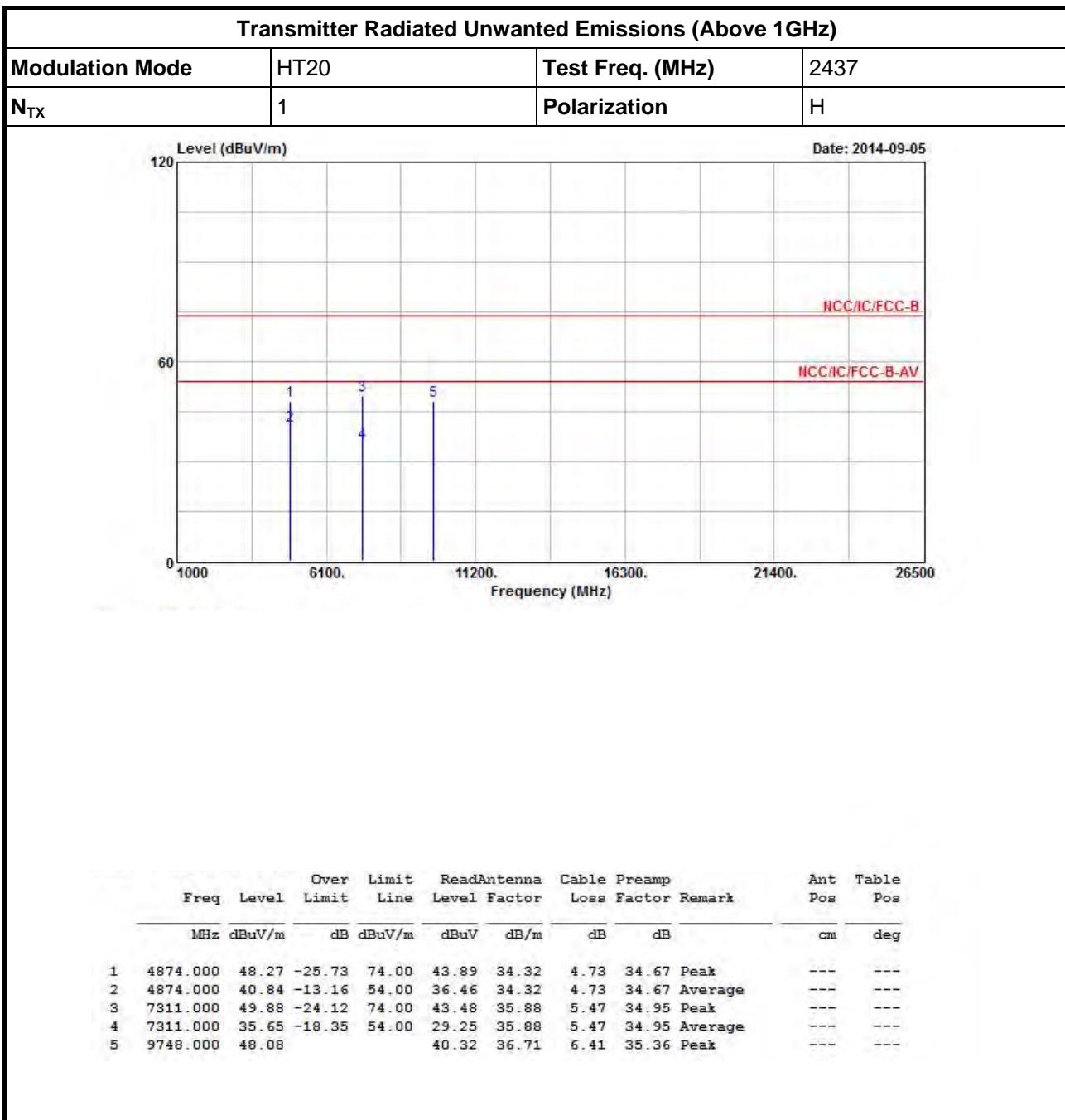
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (99.37 dB_{UV}/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.

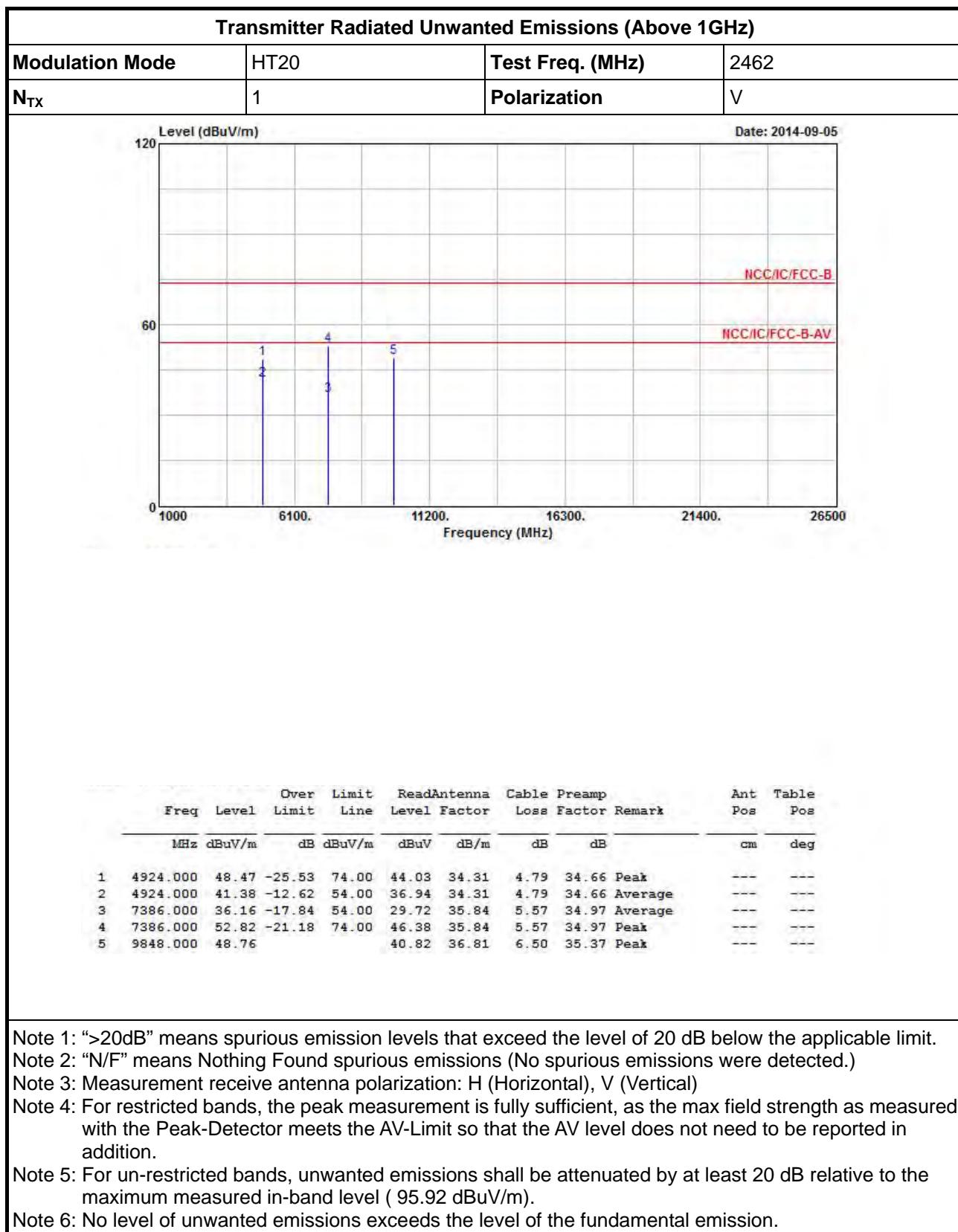
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

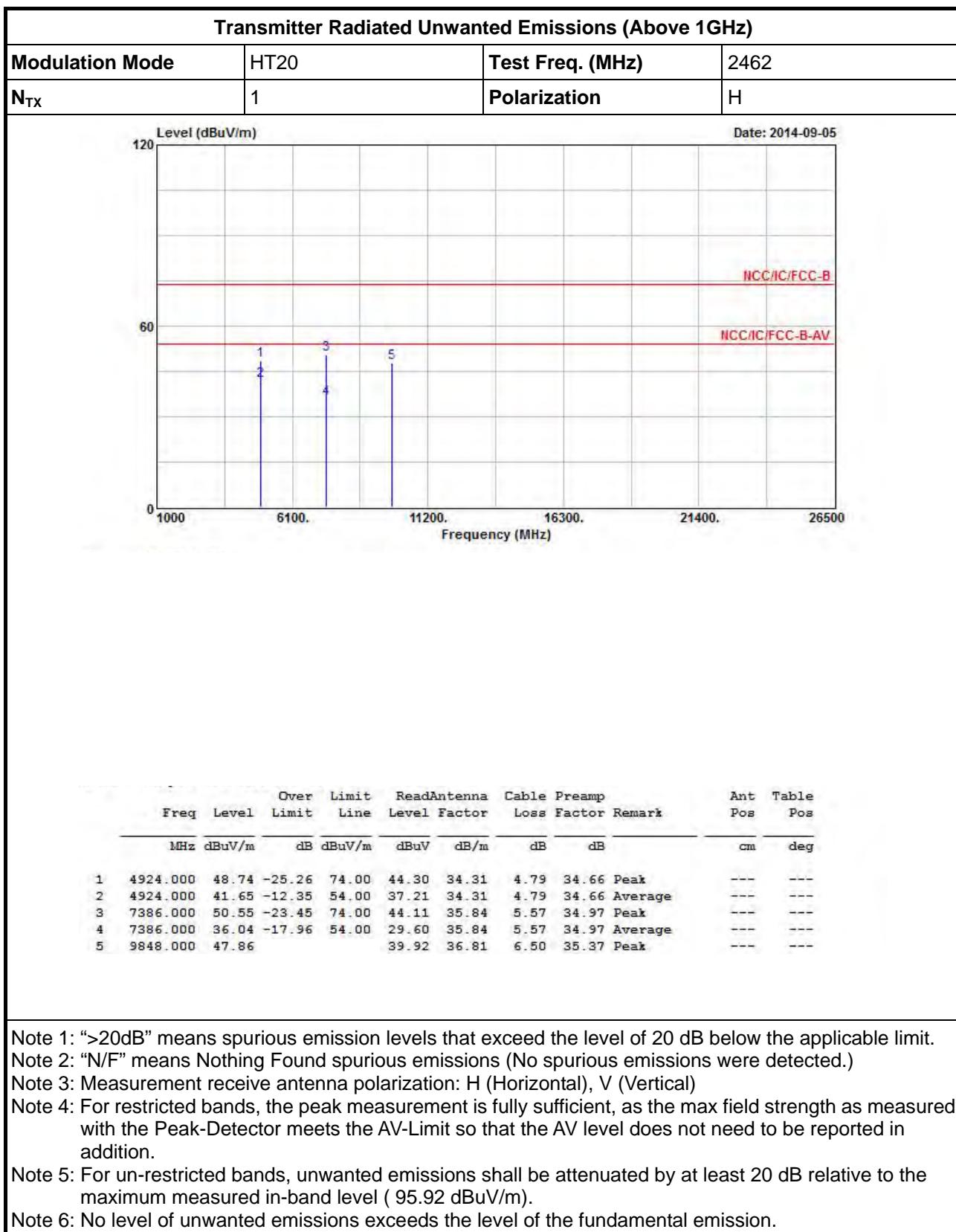
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

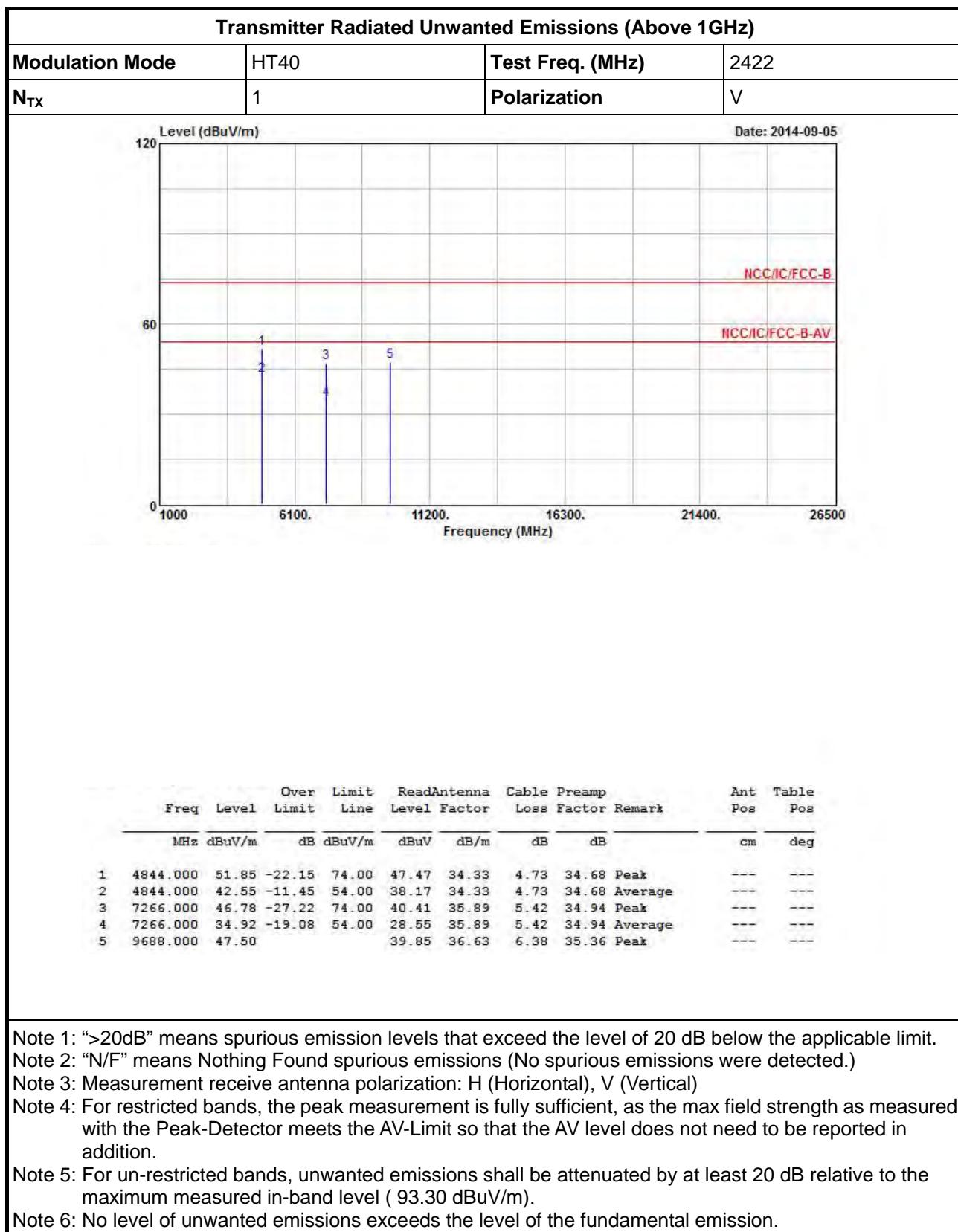
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

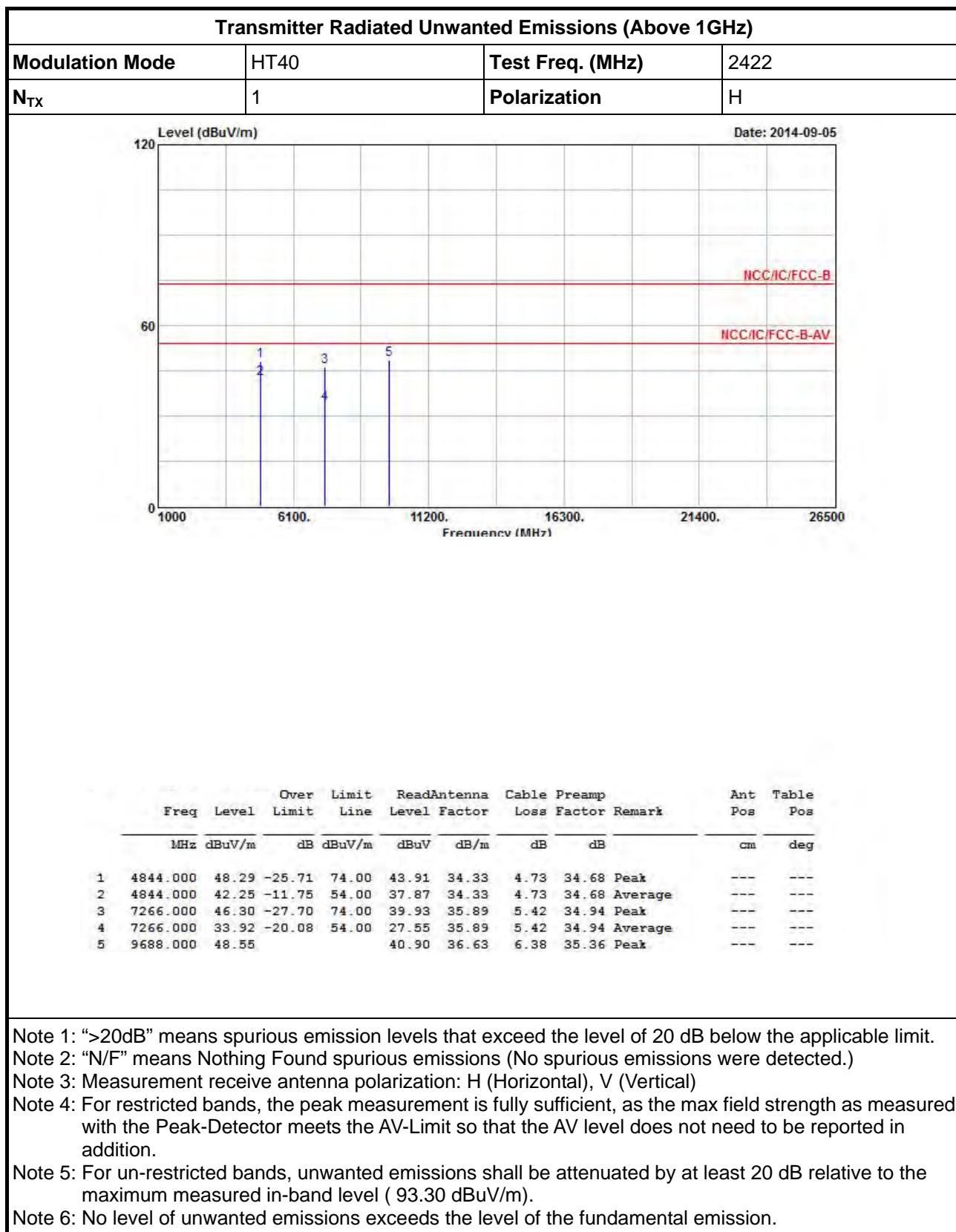
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (95.40 dBuV/m).

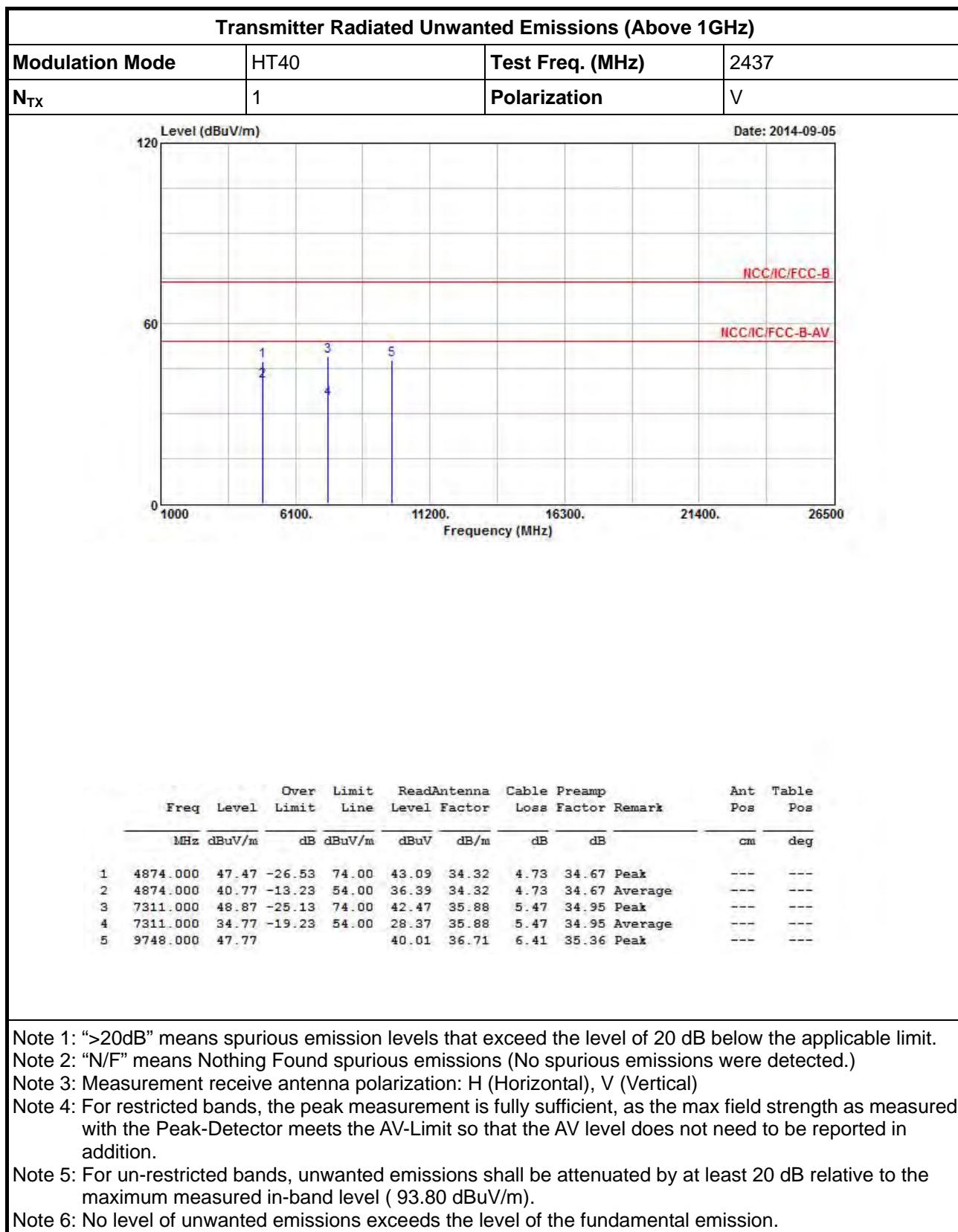
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

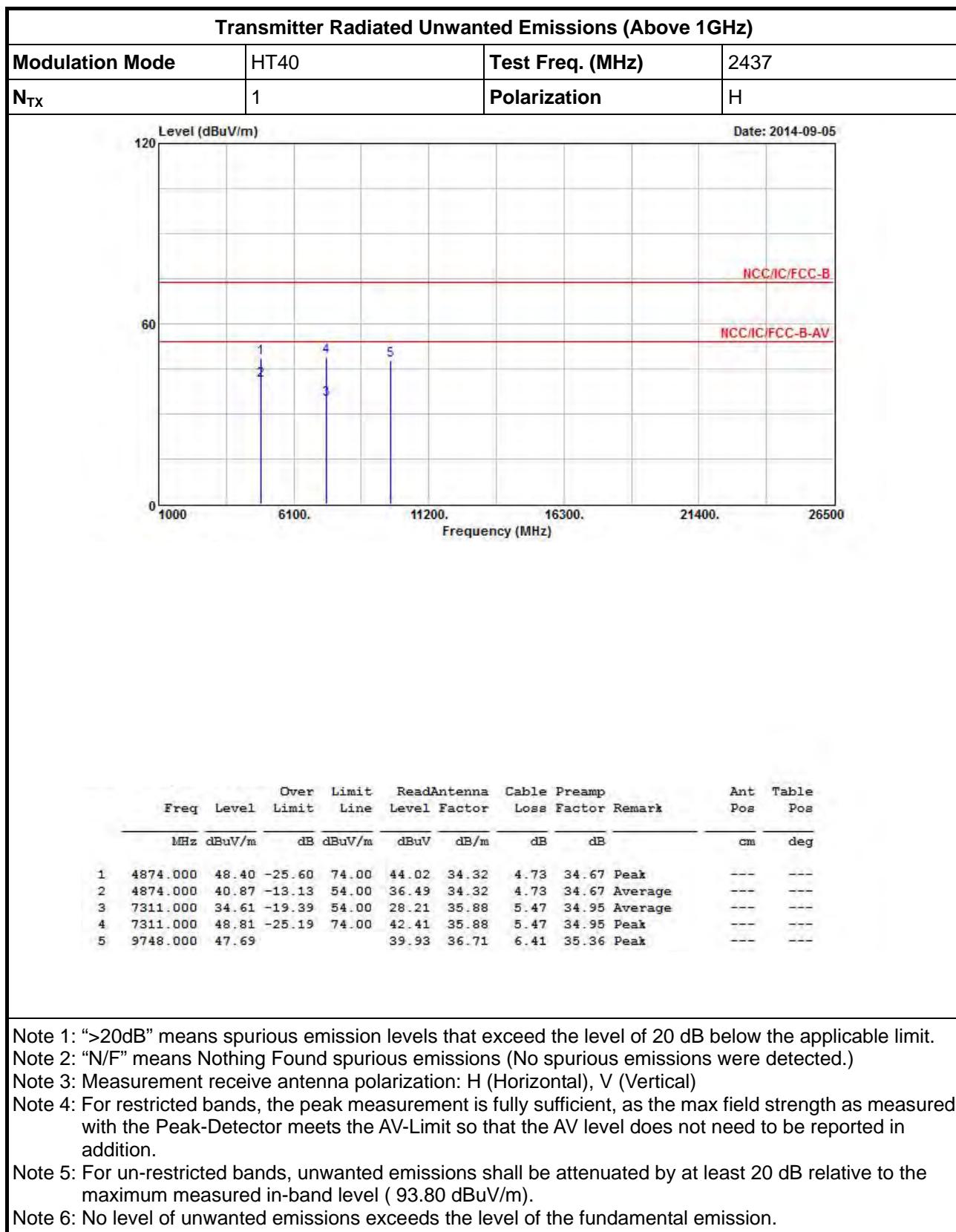


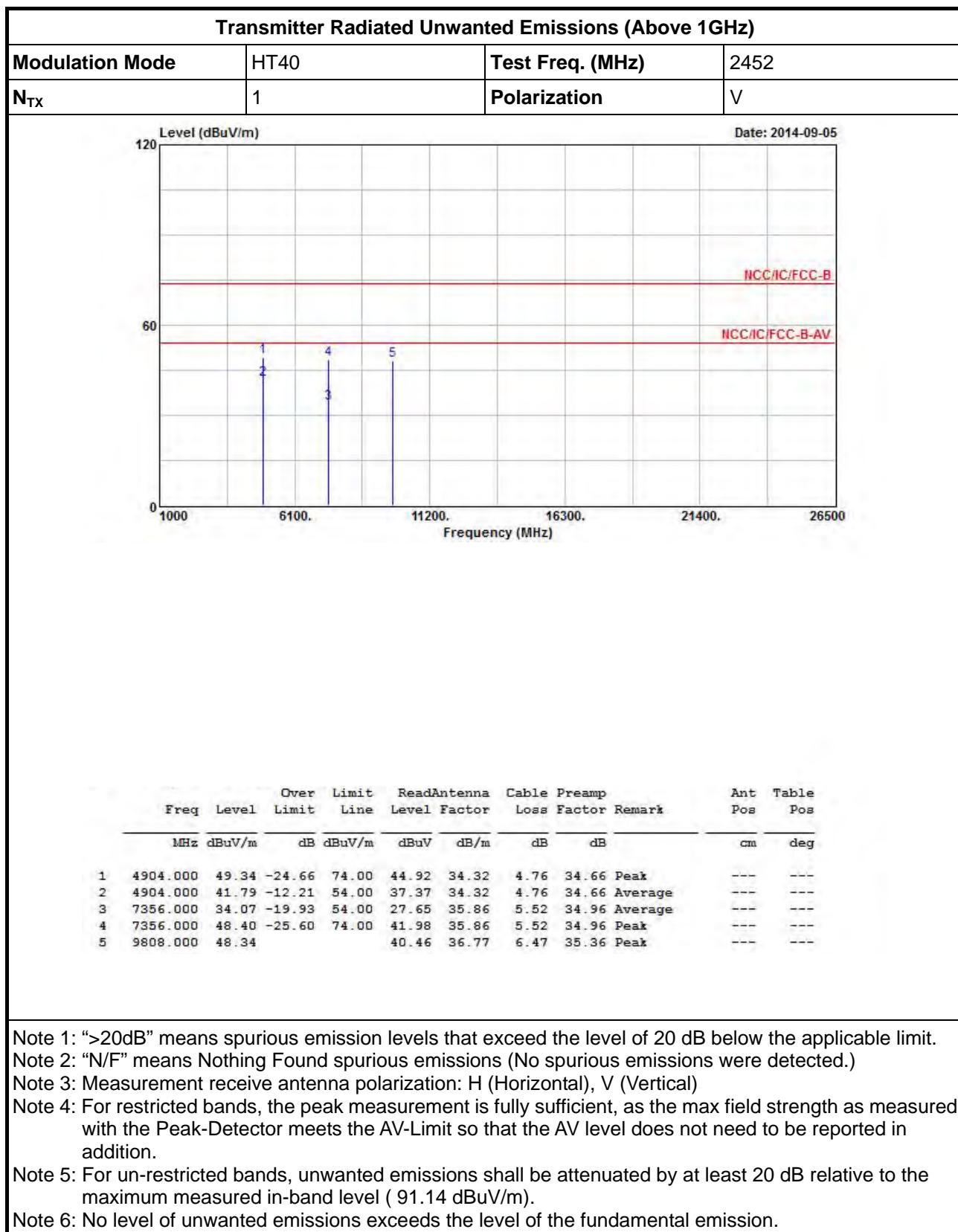


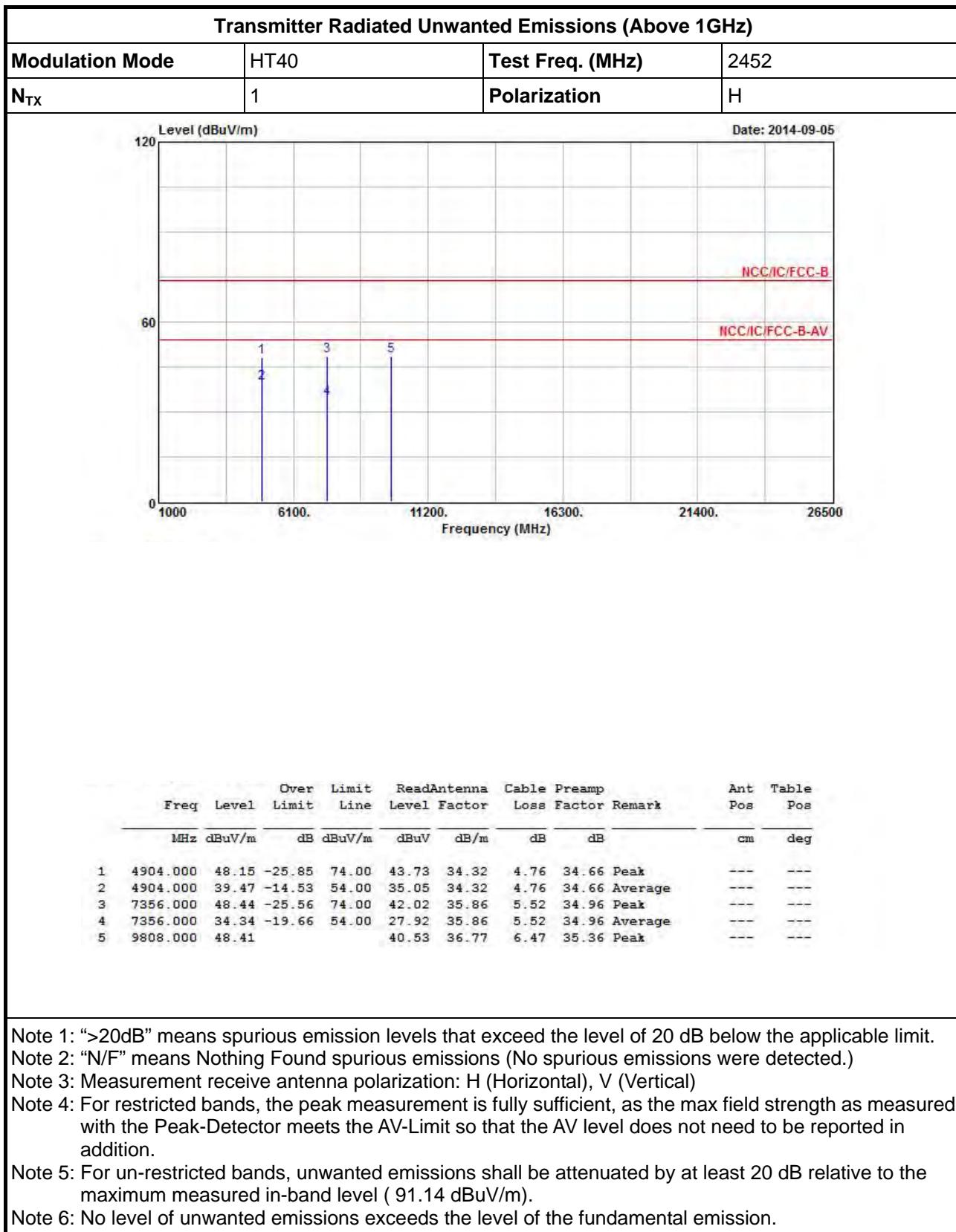






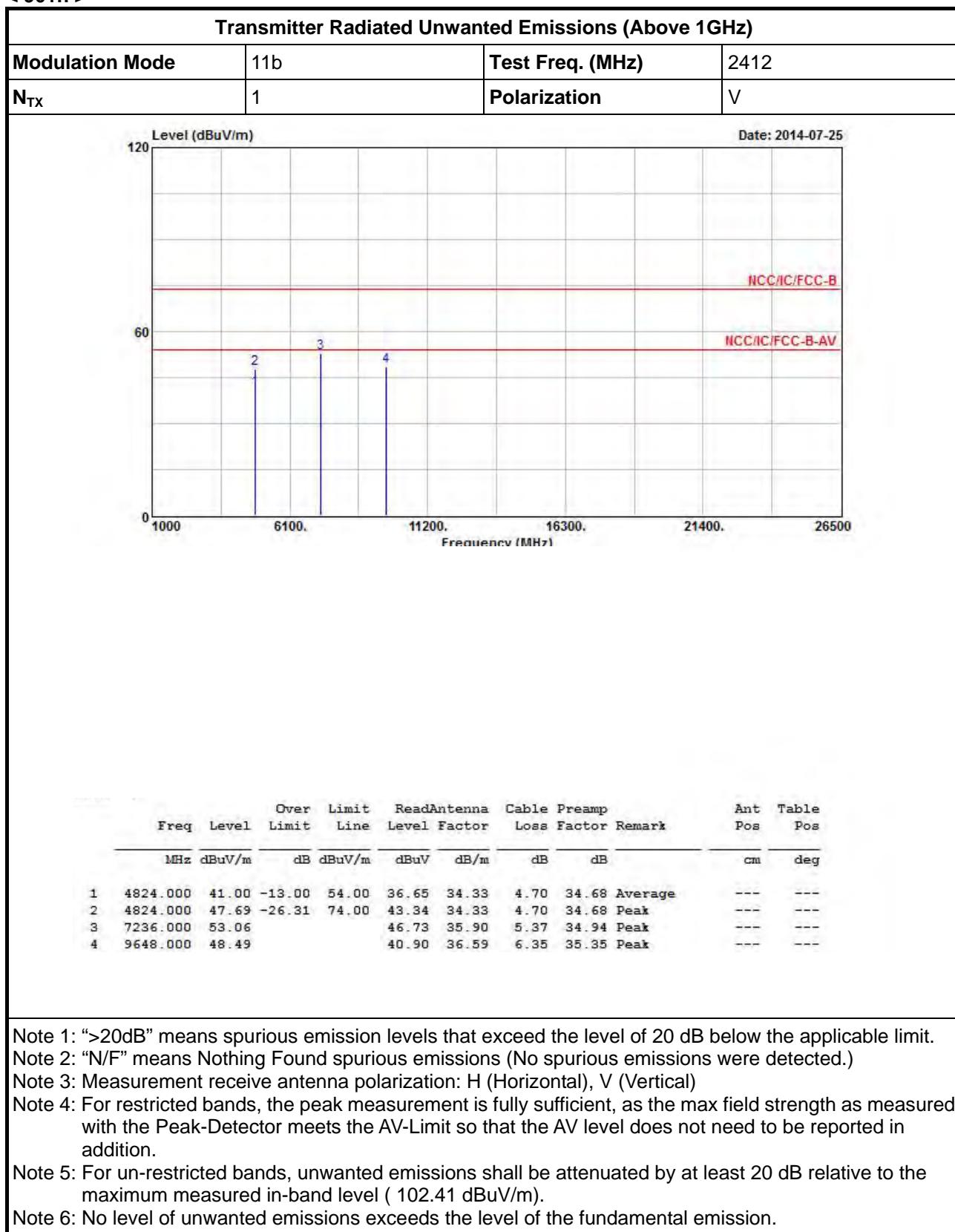








< 901n >



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

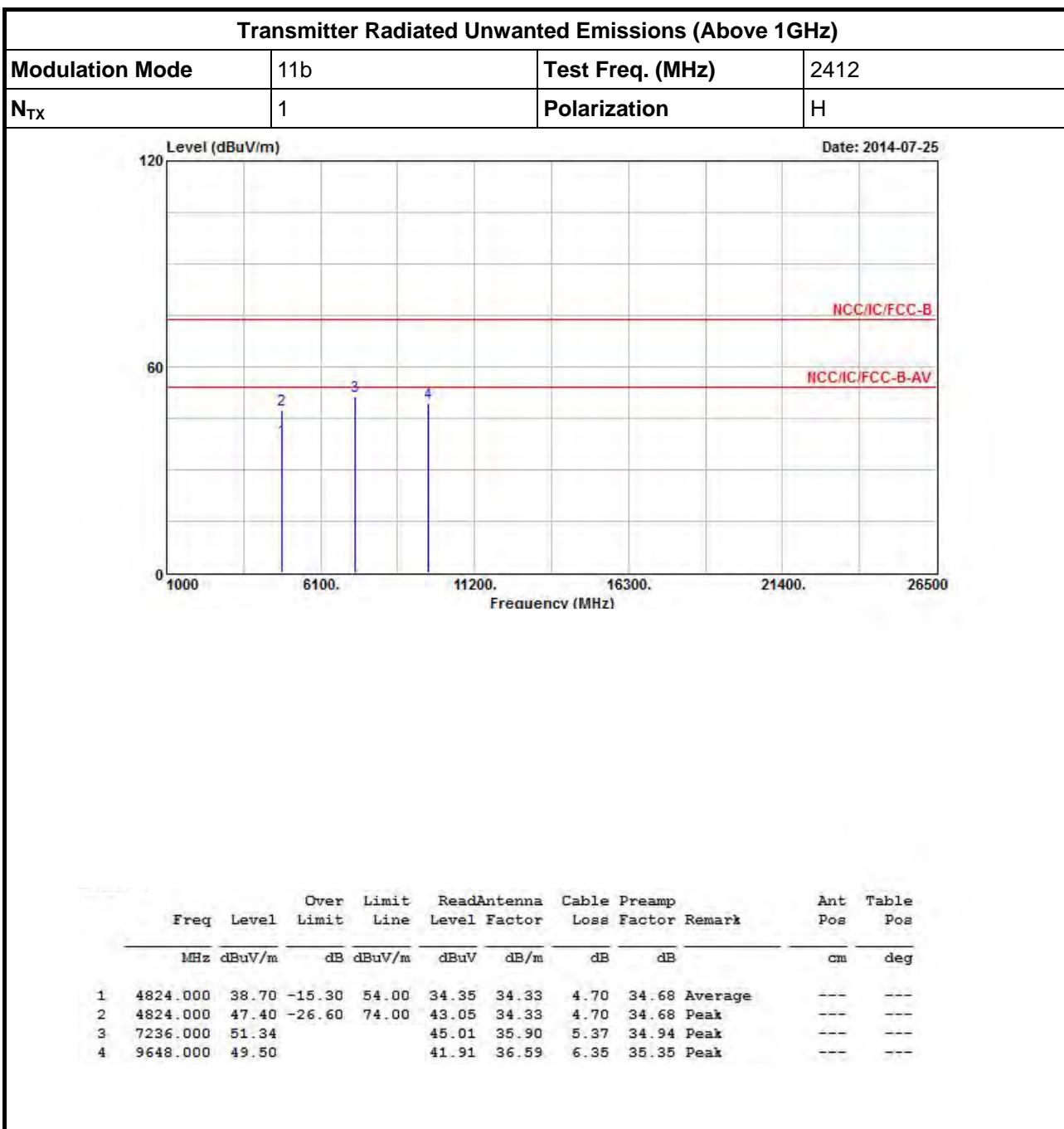
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

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 (102.41 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.

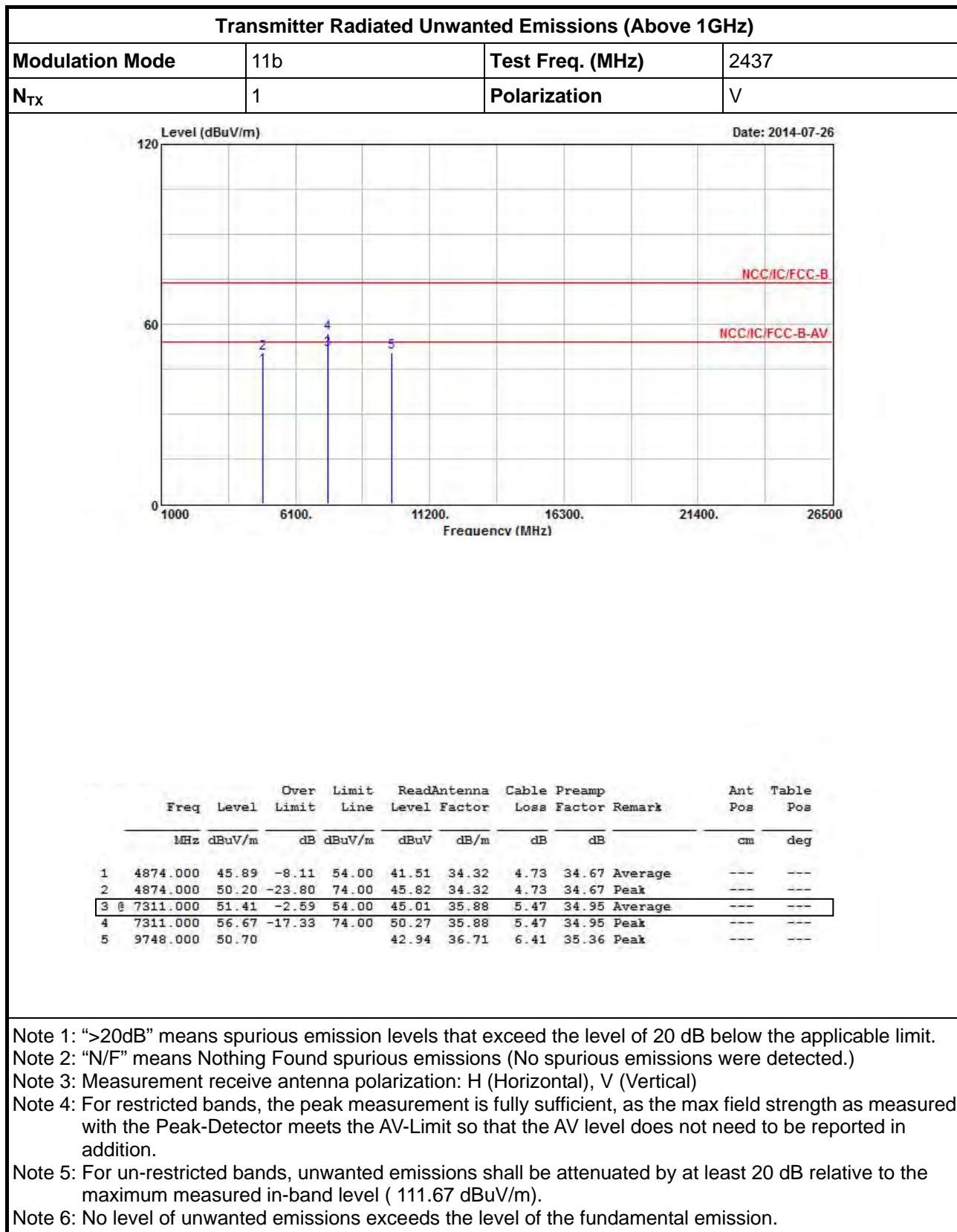
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

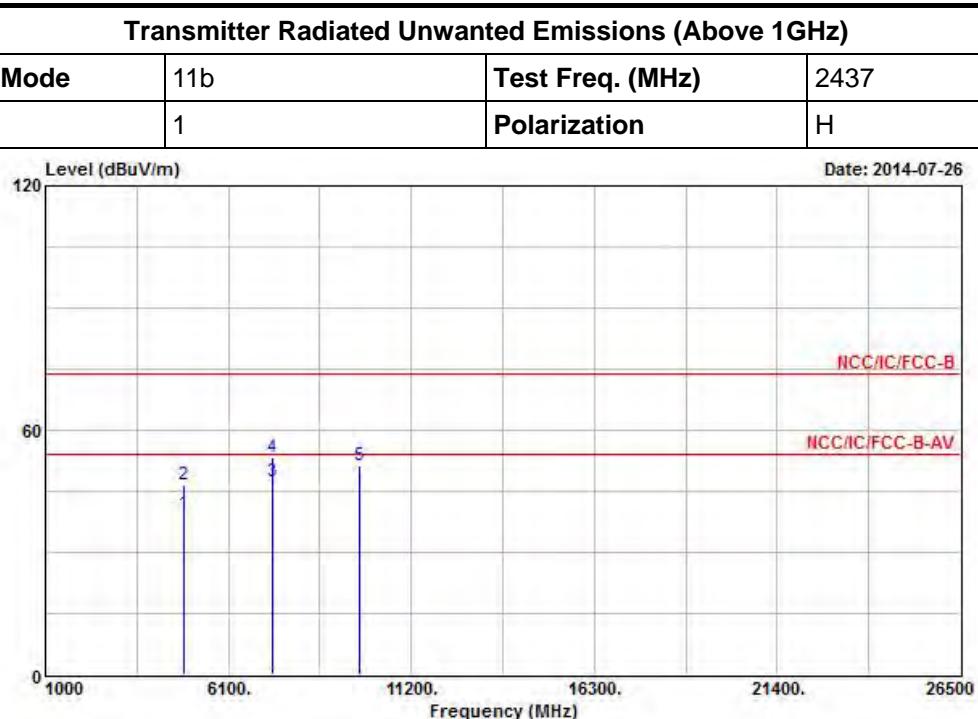
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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 (102.41 dBuV/m).

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





Freq	Level	Over	Limit	ReadAntenna		Cable		Preamp	Remark	Ant	Table		
		Limit	Line	Level	Factor	Loss	Factor	Pos		Pos	Pos		
	MHz	dBuV/m		dB	dBuV/m		dBuV	dB/m		dB	dB	cm	deg
1	4874.000	39.63	-14.37	54.00	35.25	34.32	4.73	34.67	Average	---	---		
2	4874.000	46.39	-27.61	74.00	42.01	34.32	4.73	34.67	Peak	---	---		
3	7311.000	47.27	-6.73	54.00	40.87	35.88	5.47	34.95	Average	---	---		
4	7311.000	53.36	-20.64	74.00	46.96	35.88	5.47	34.95	Peak	---	---		
5	9748.000	51.22			43.46	36.71	6.41	35.36	Peak	---	---		

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

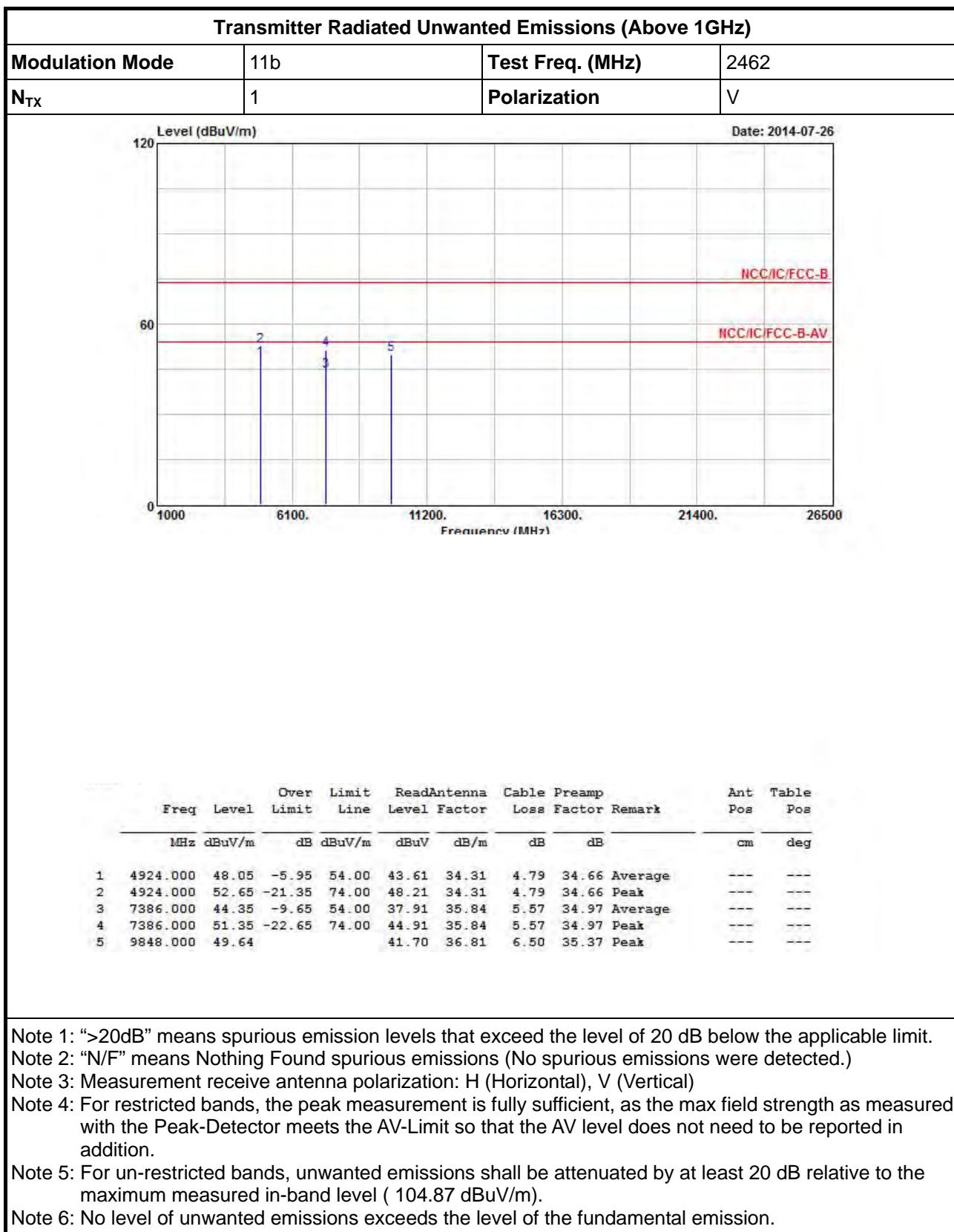
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

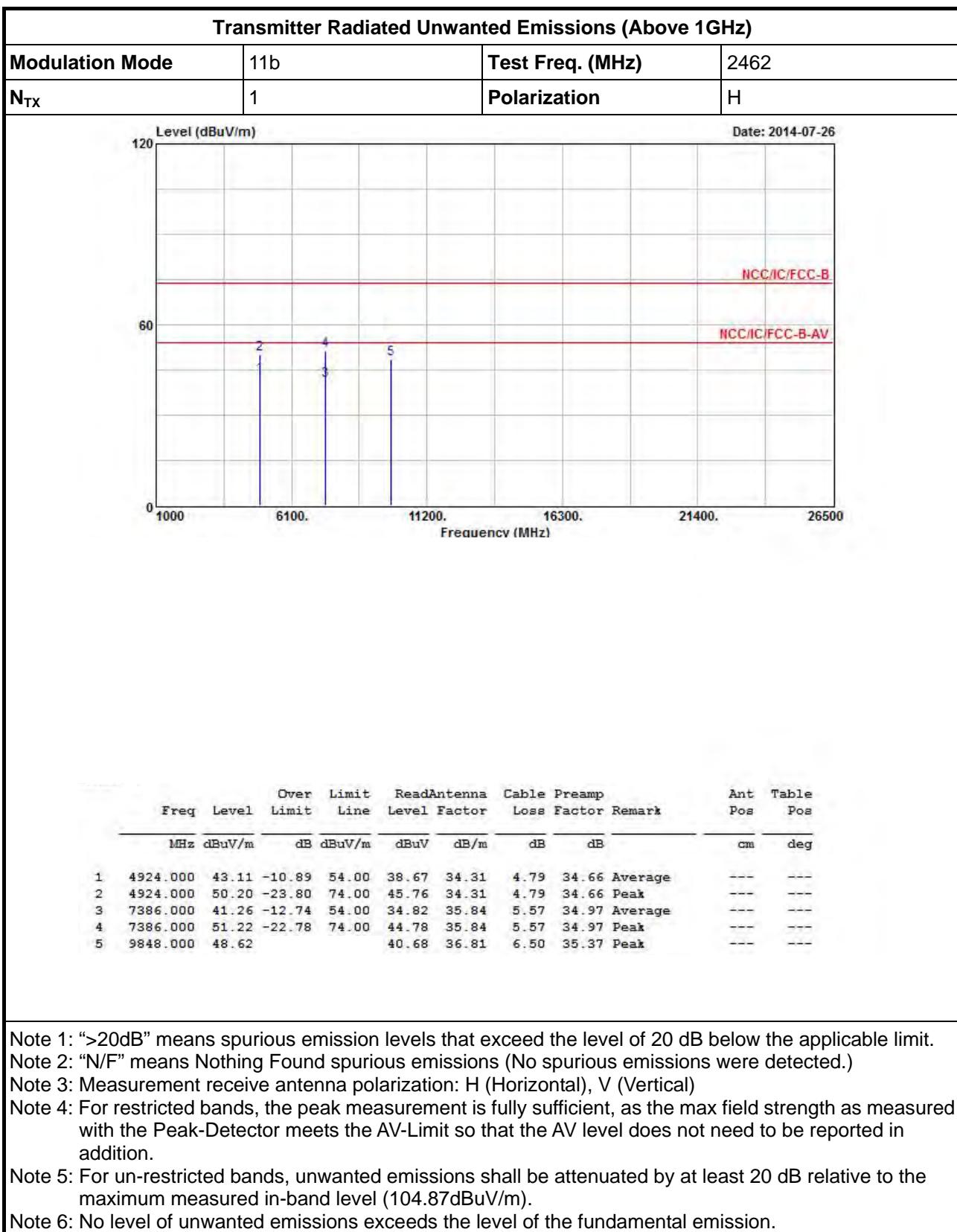
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

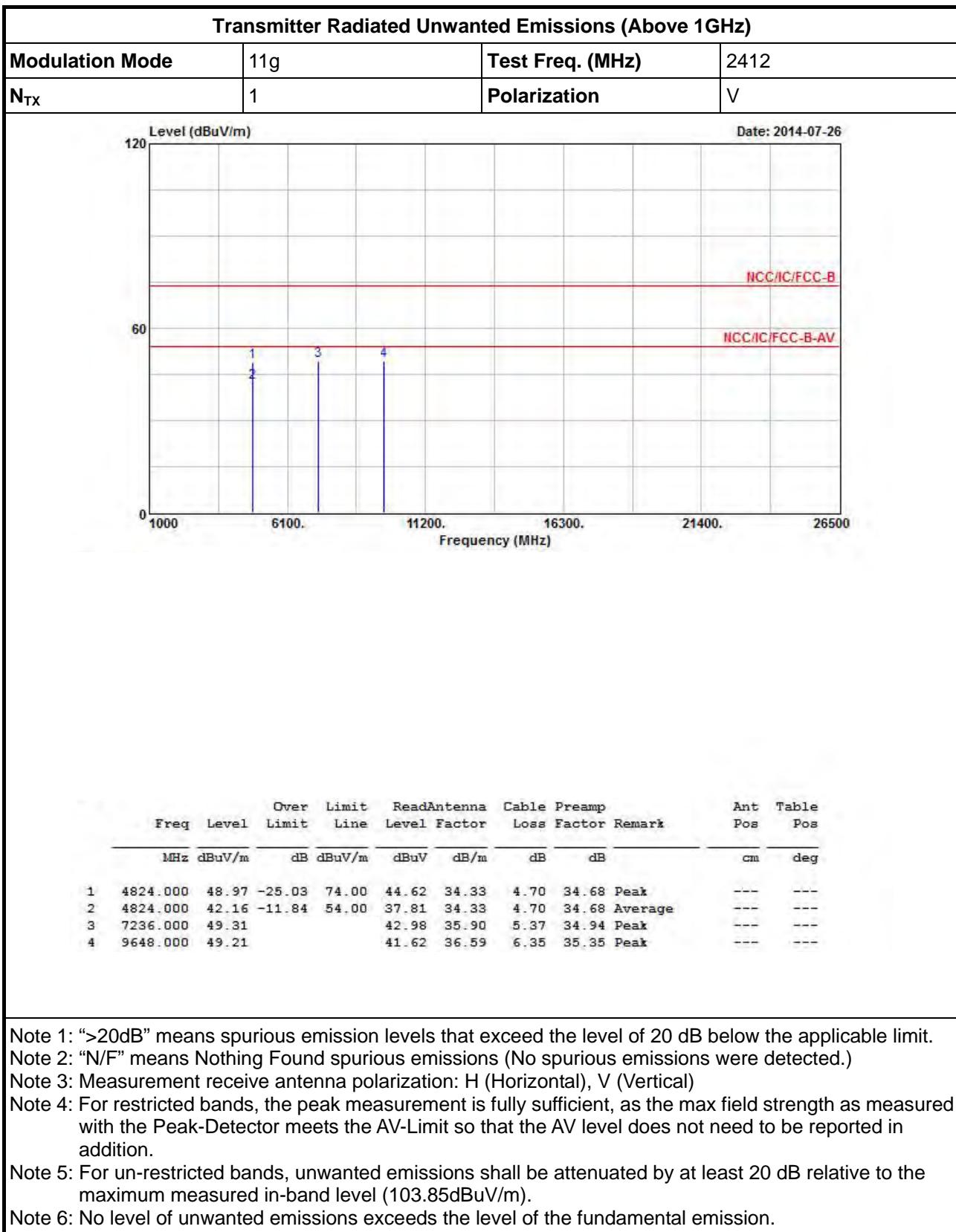
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

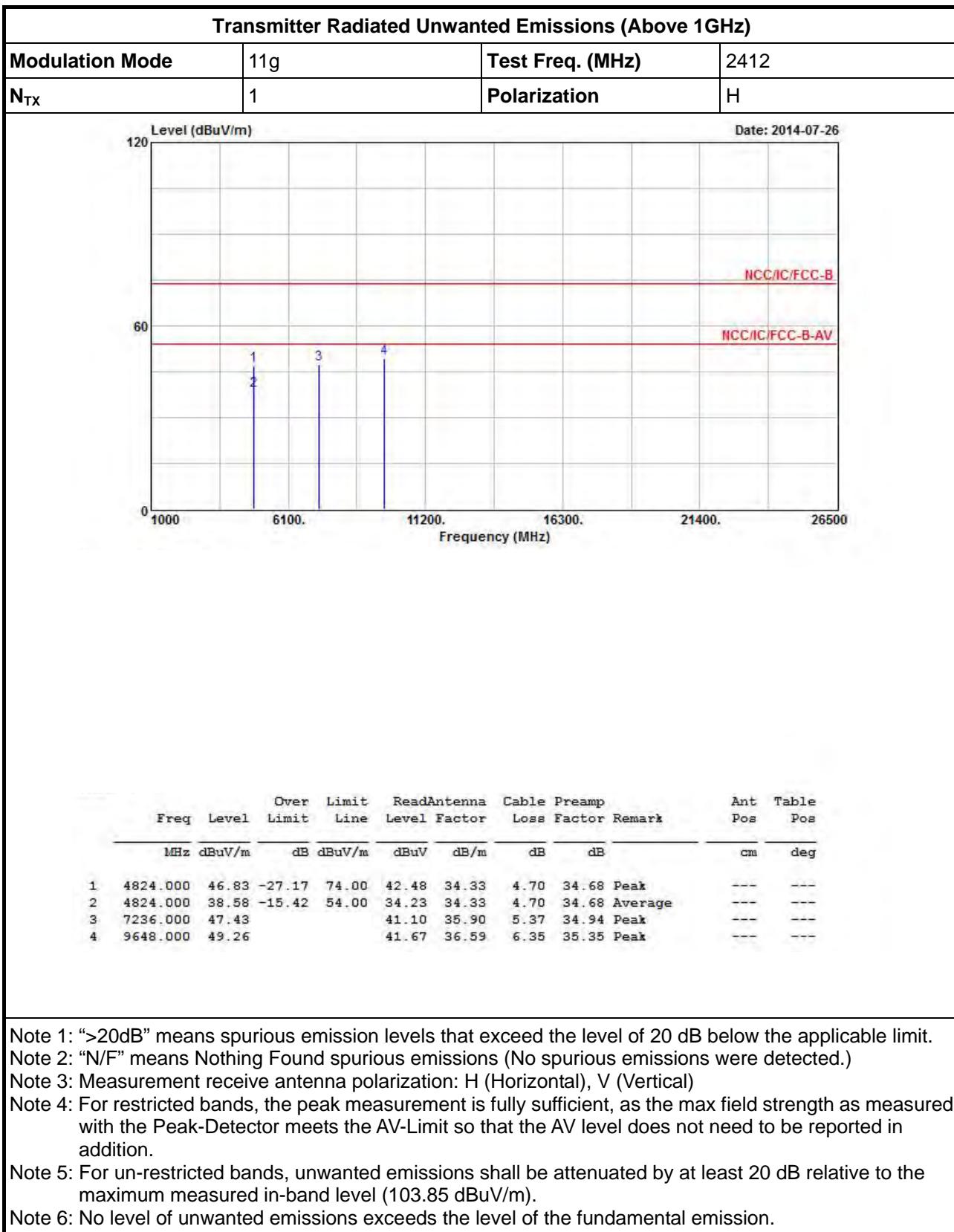
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (111.67 dBuV/m).

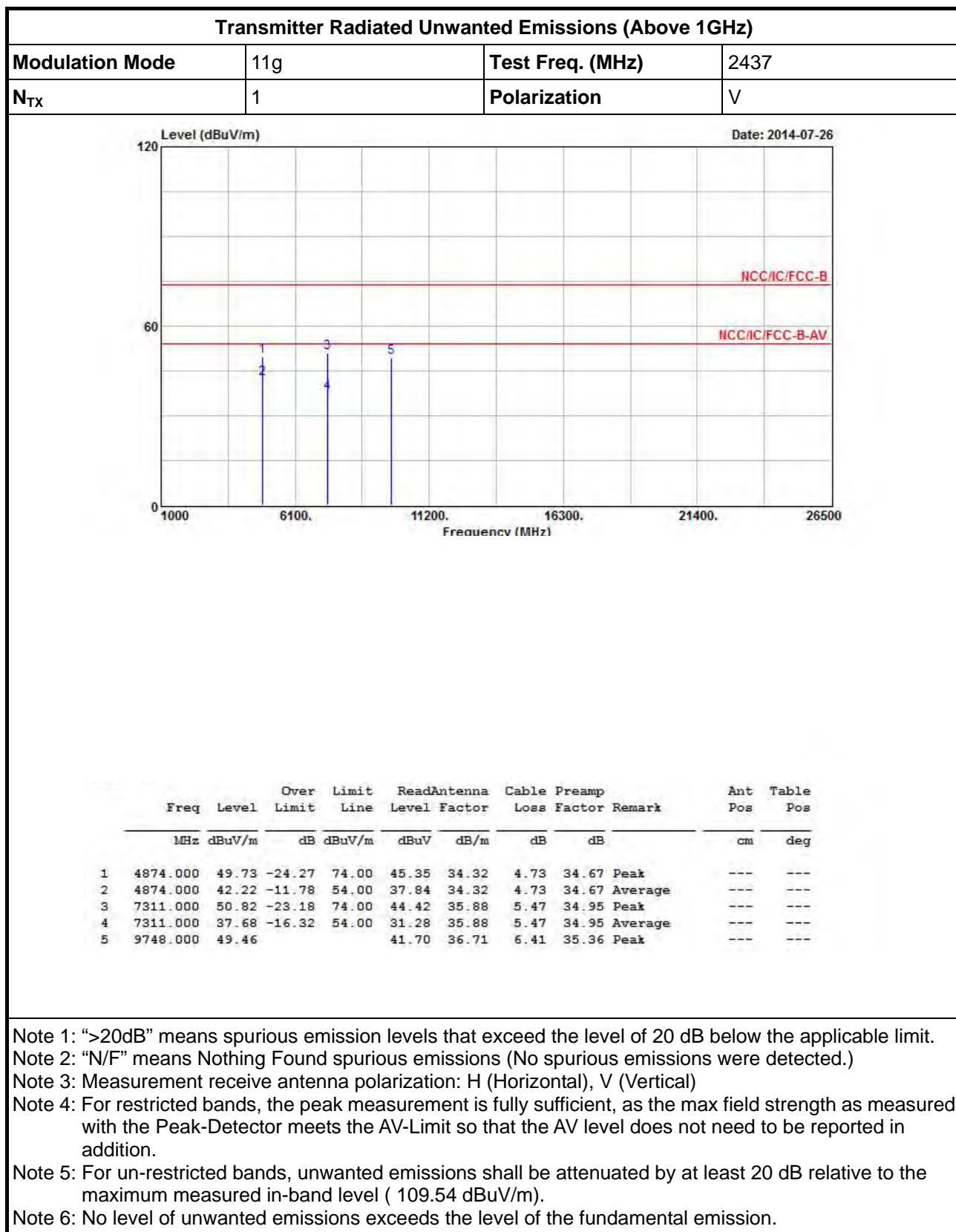
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

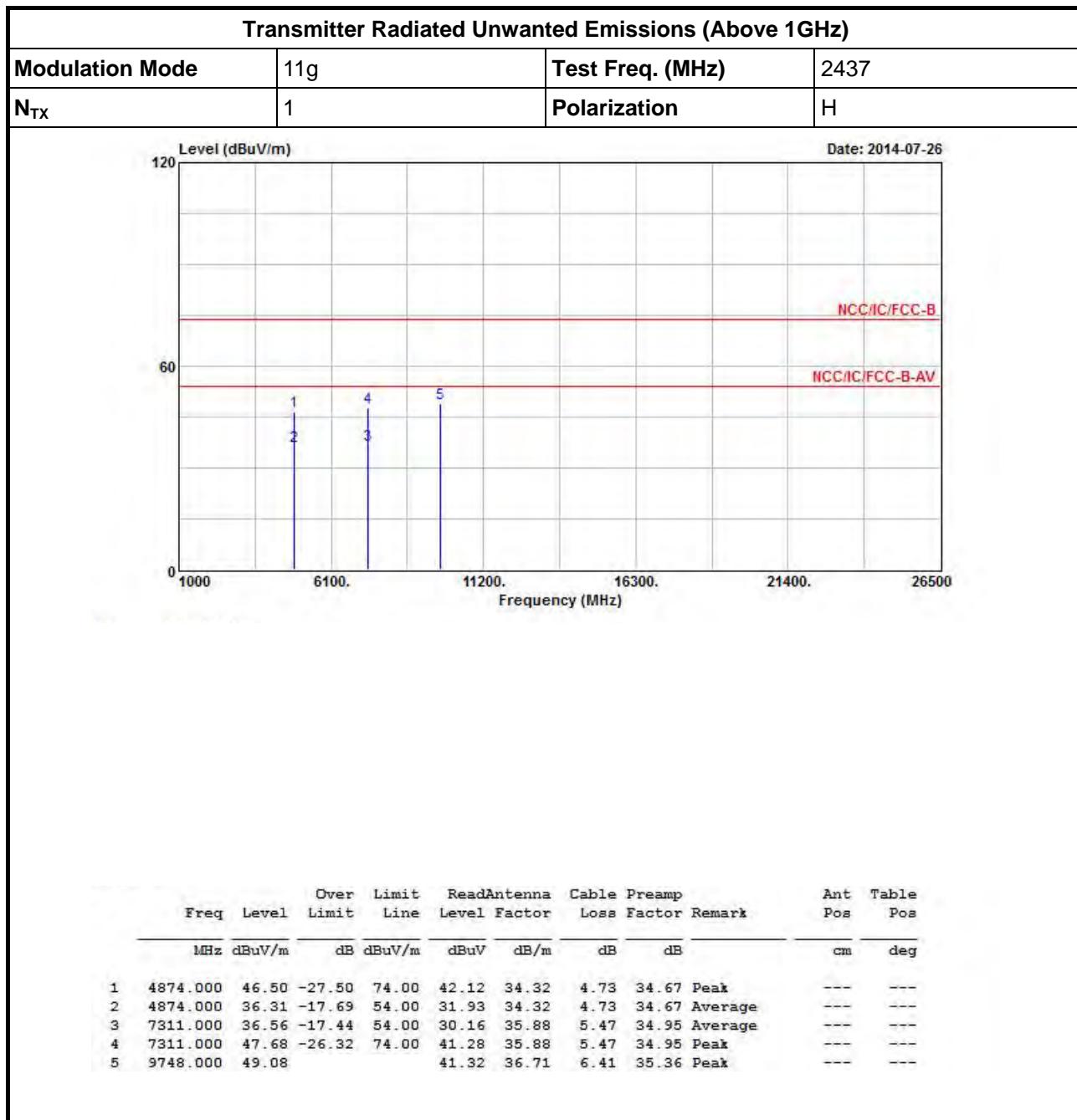












Note 1: >20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

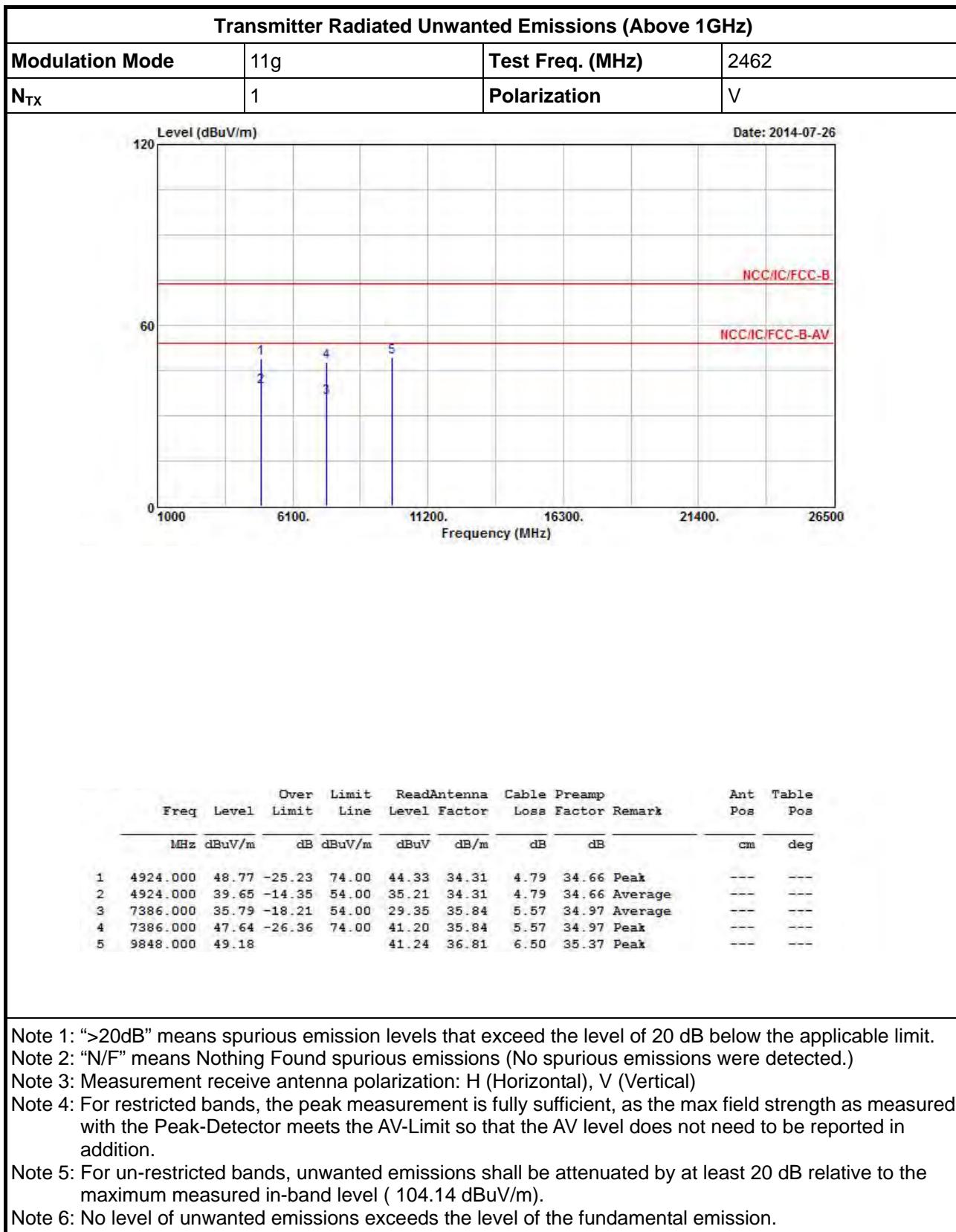
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

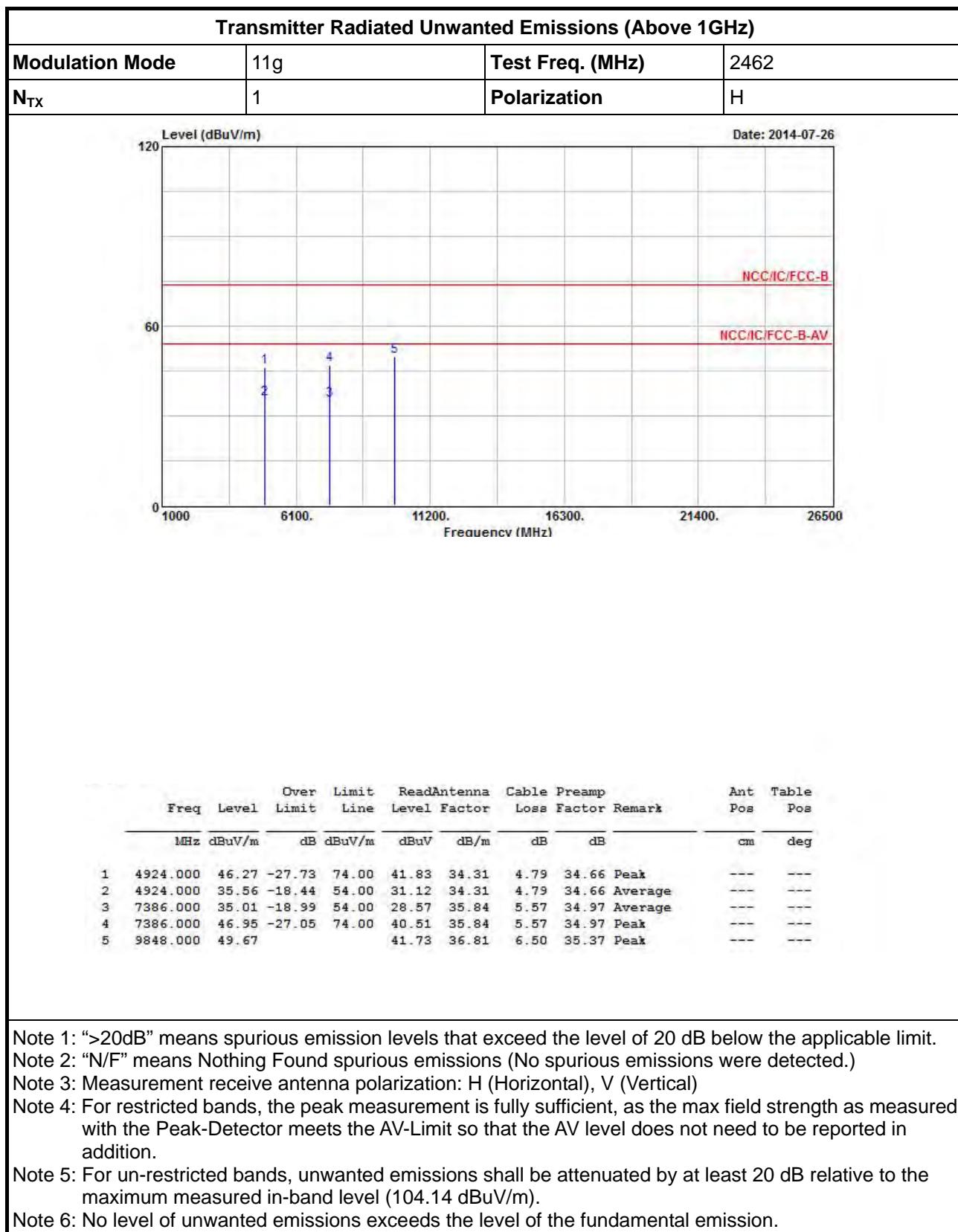
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

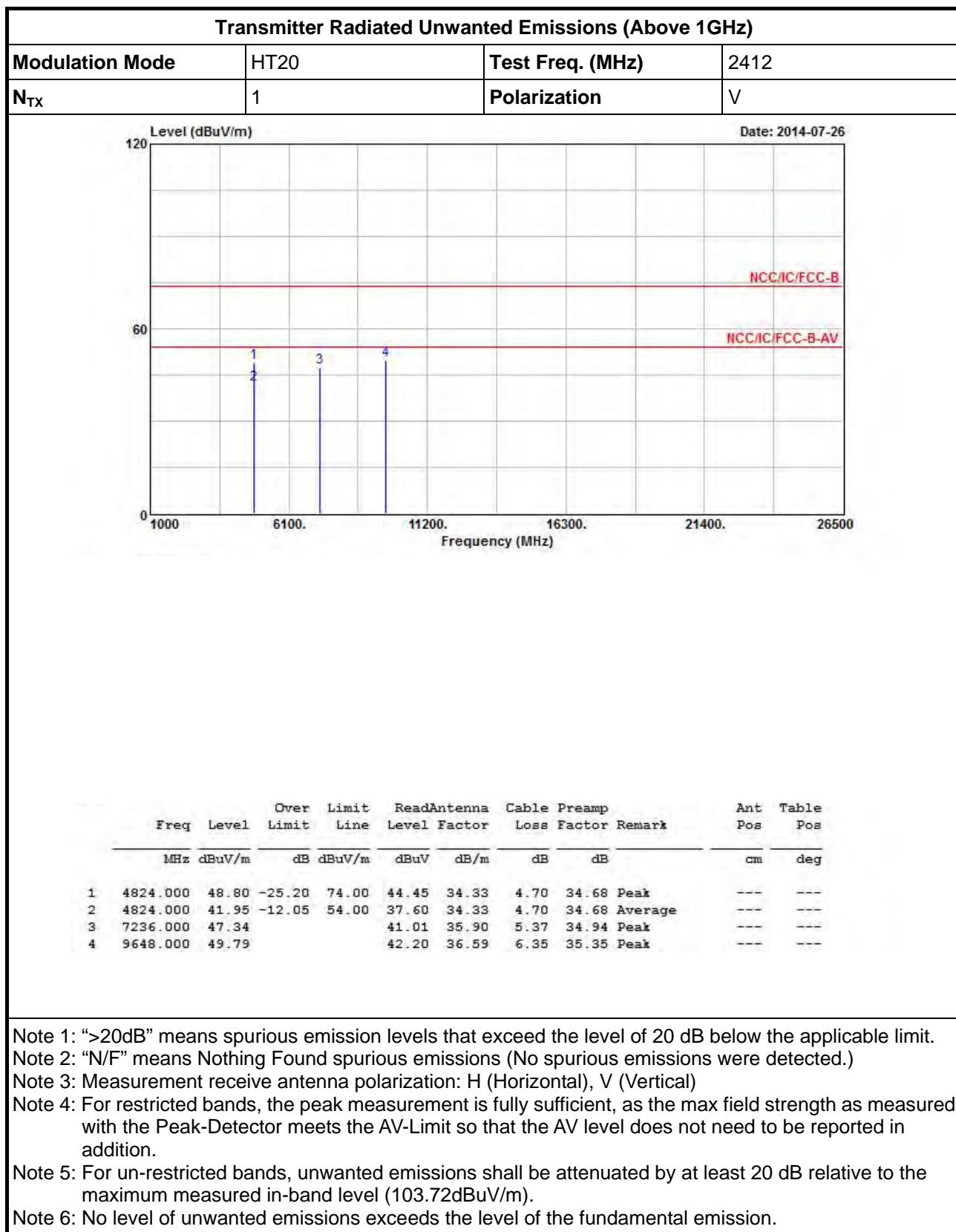
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

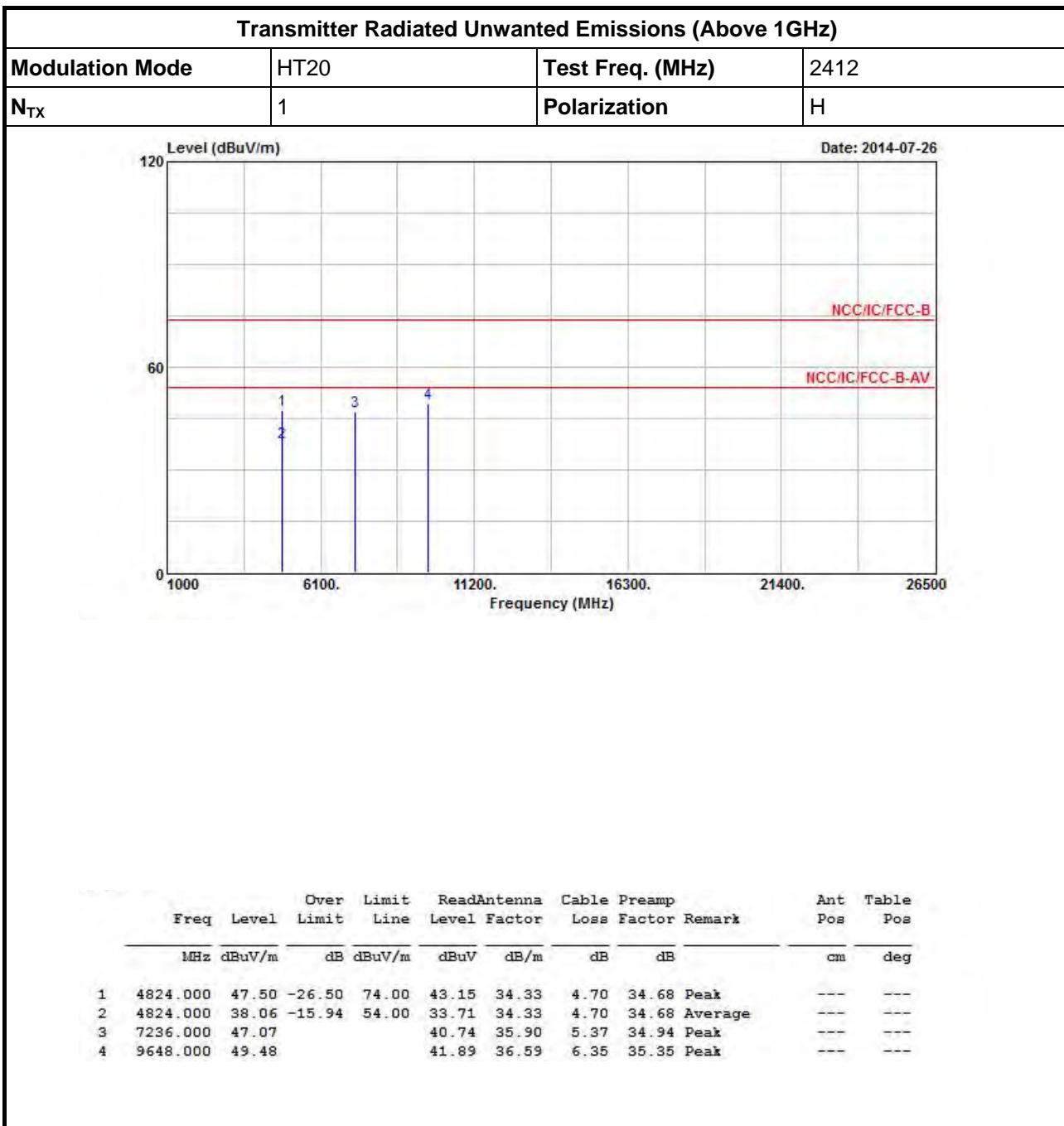
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (109.54dB_{UV}/m).

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.

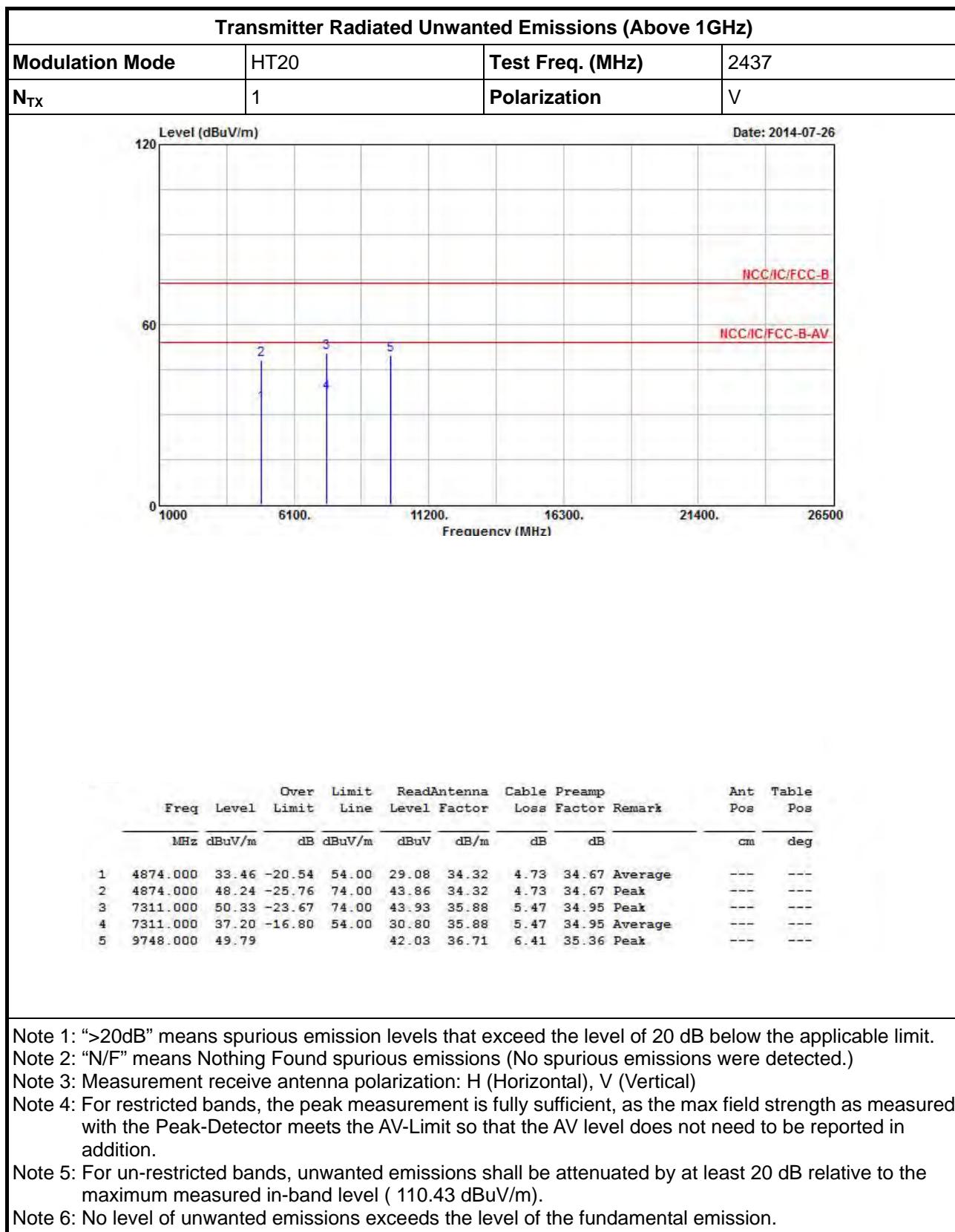
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

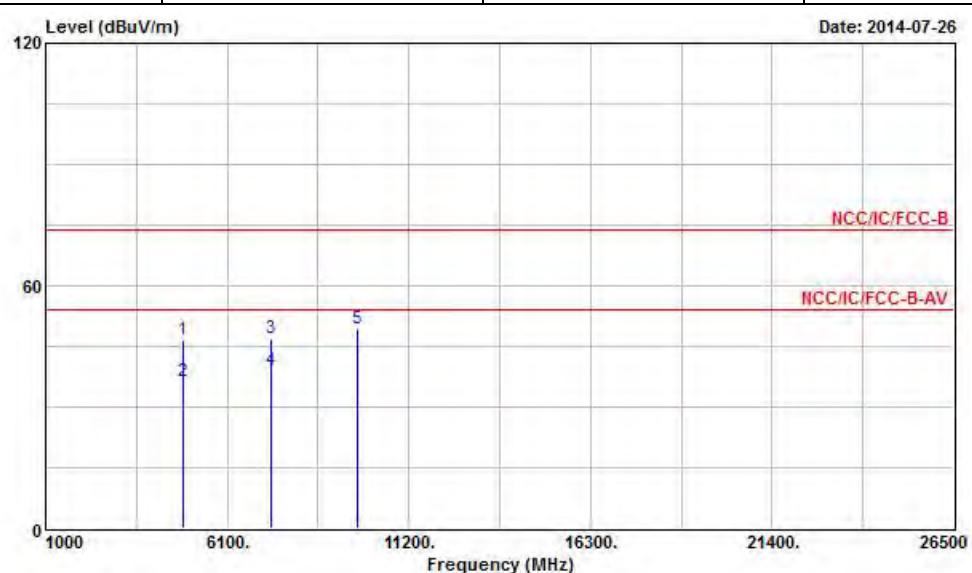
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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 (103.72 dBuV/m).

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





Freq	Level	Over	Limit	ReadAntenna		Cable		Preamp	Ant Pos	Table Pos
		Limit	Line	Level	Factor	Loss	Factor	Remark		
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 4874.000	46.58	-27.42	74.00	42.20	34.32	4.73	34.67	Peak	---	---
2 4874.000	36.21	-17.79	54.00	31.83	34.32	4.73	34.67	Average	---	---
3 7311.000	47.03	-26.97	74.00	40.63	35.88	5.47	34.95	Peak	---	---
4 7311.000	39.20	-14.80	54.00	32.80	35.88	5.47	34.95	Average	---	---
5 9748.000	49.30			41.54	36.71	6.41	35.36	Peak	---	---

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

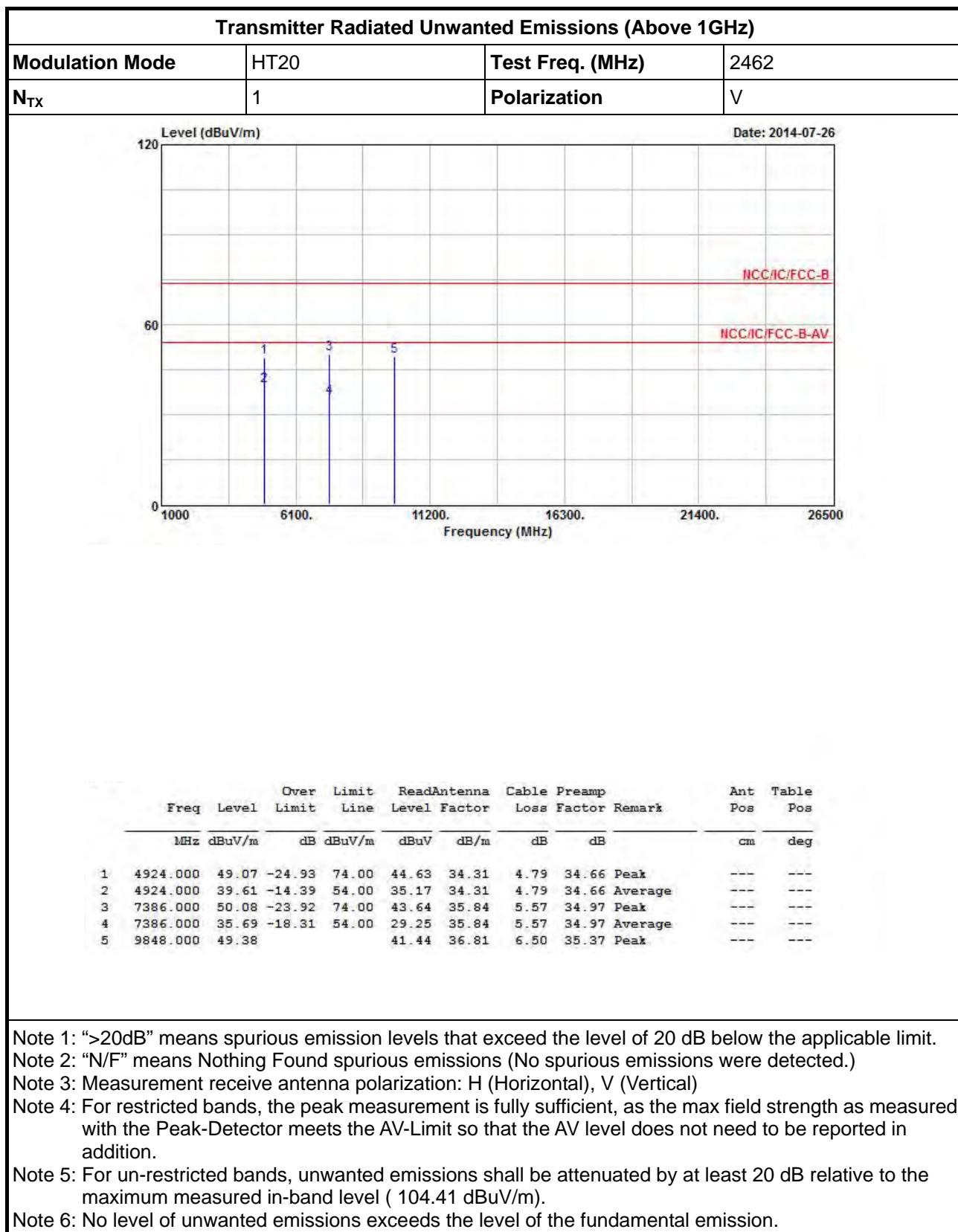
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

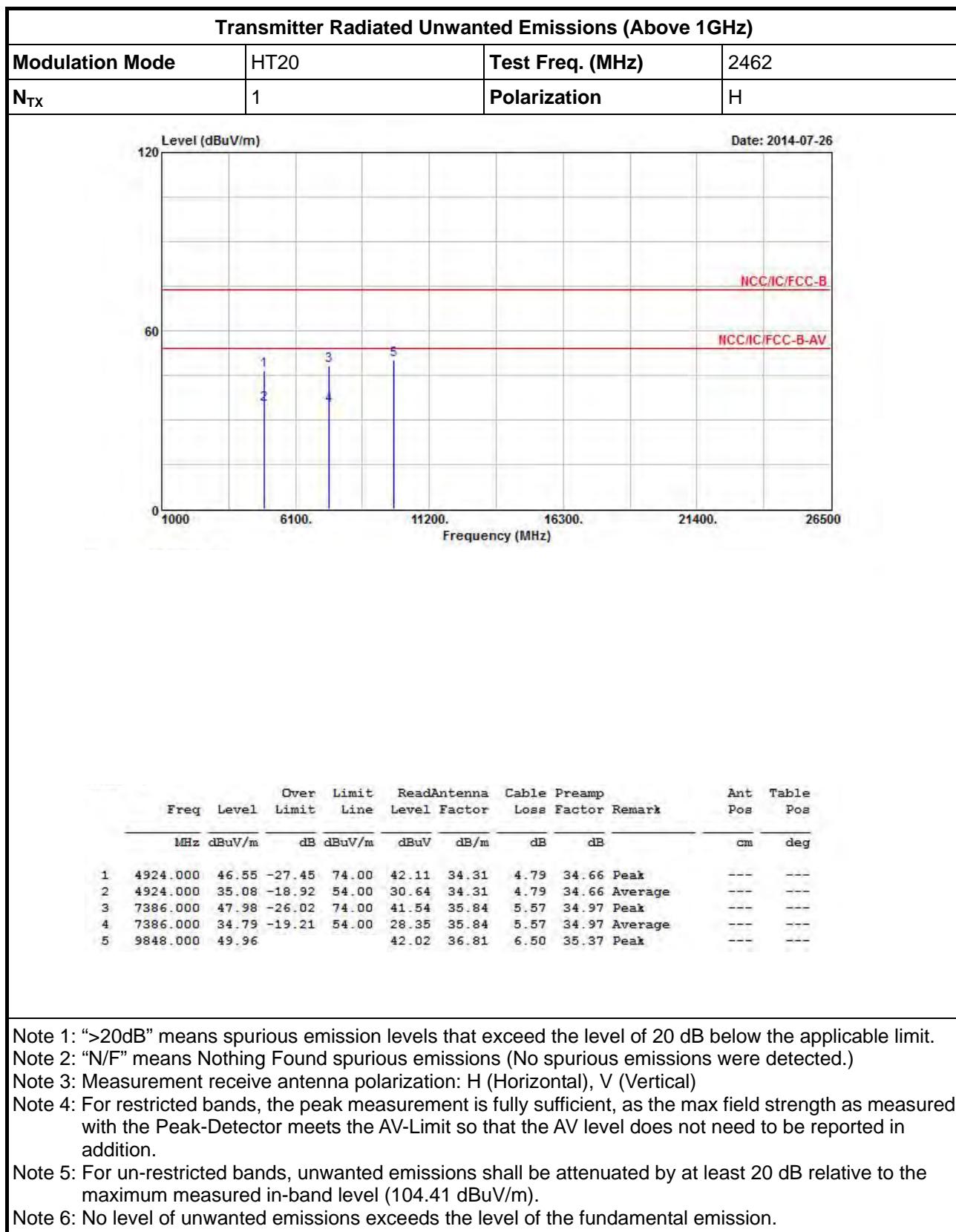
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

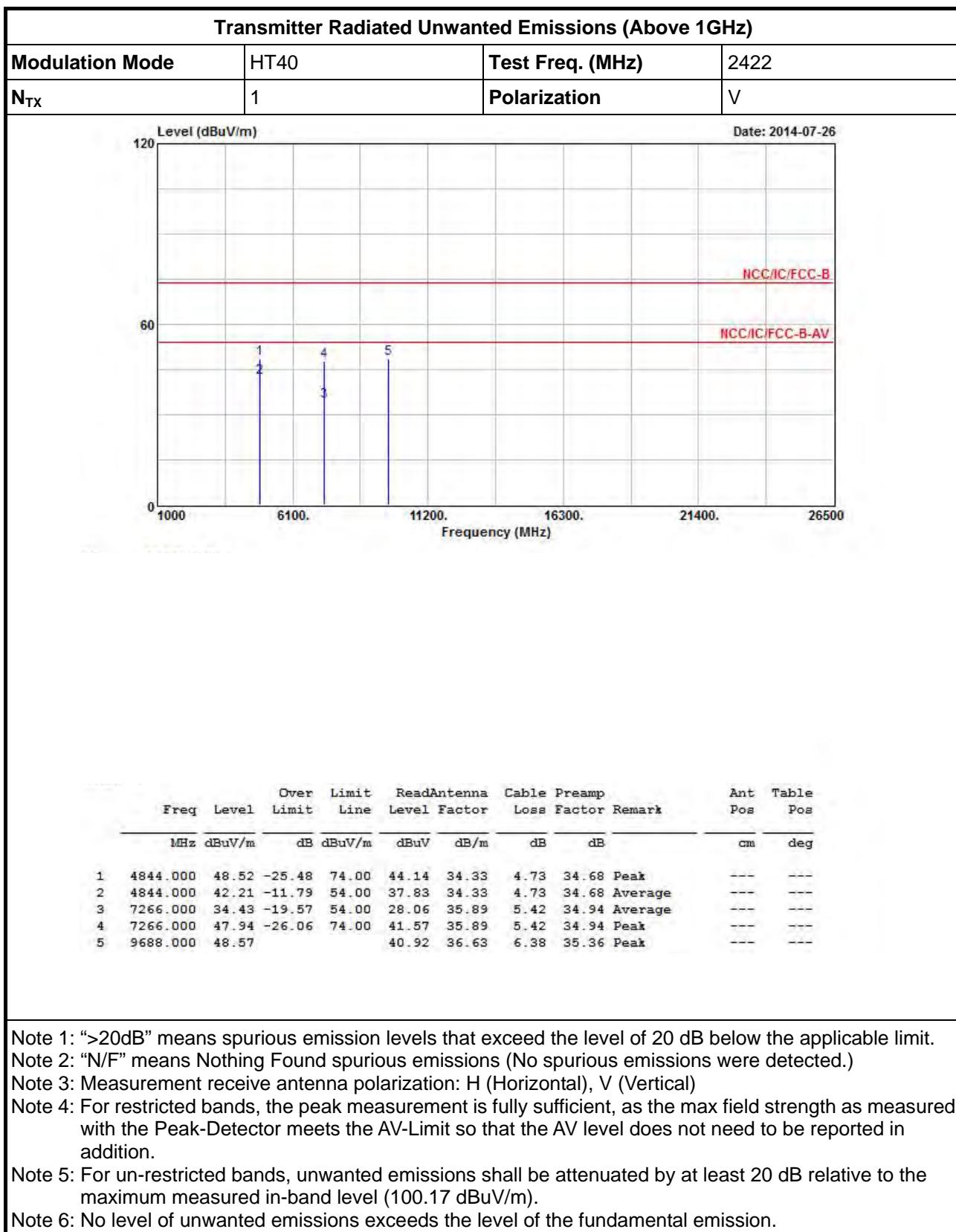
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

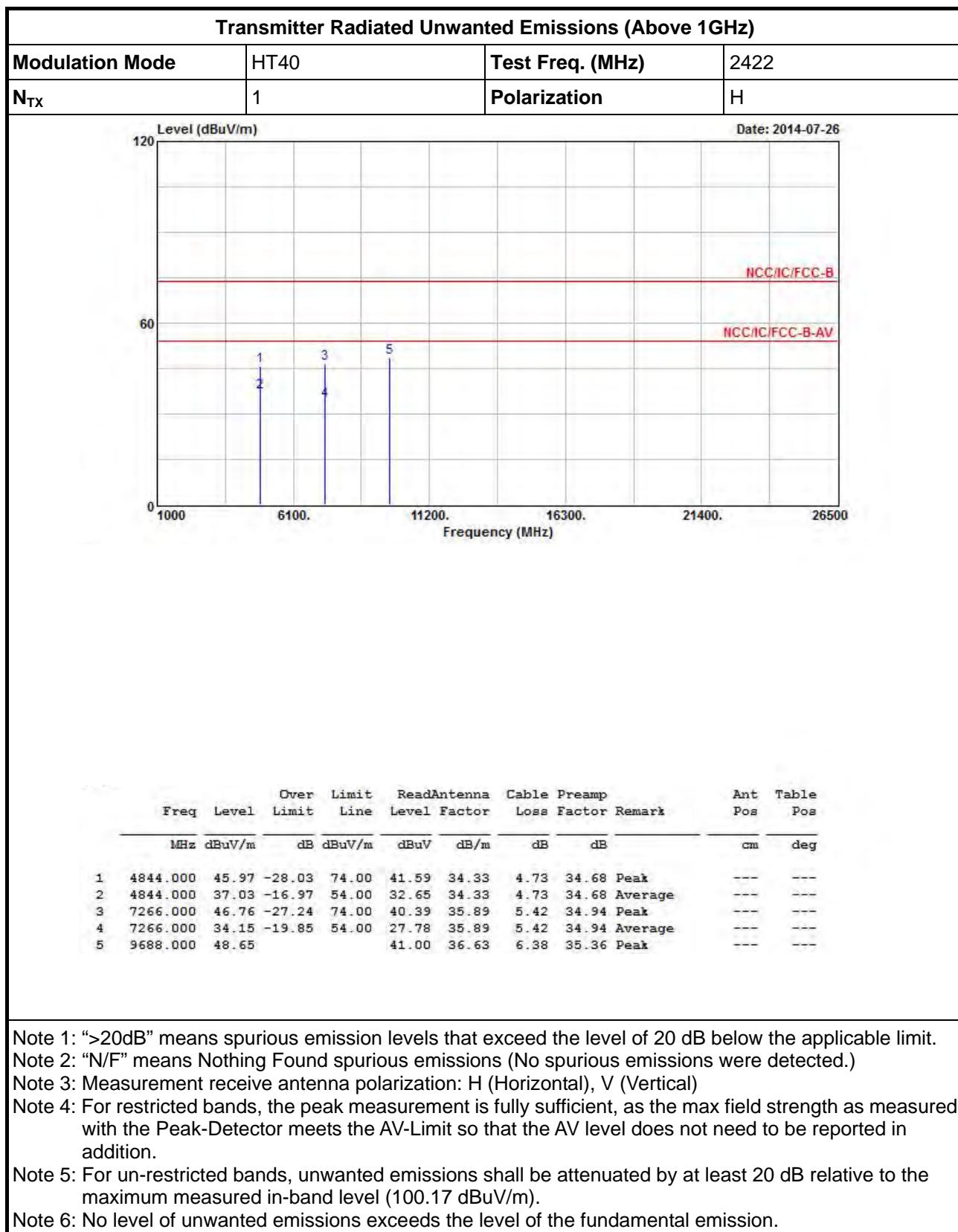
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (110.43 dBuV/m).

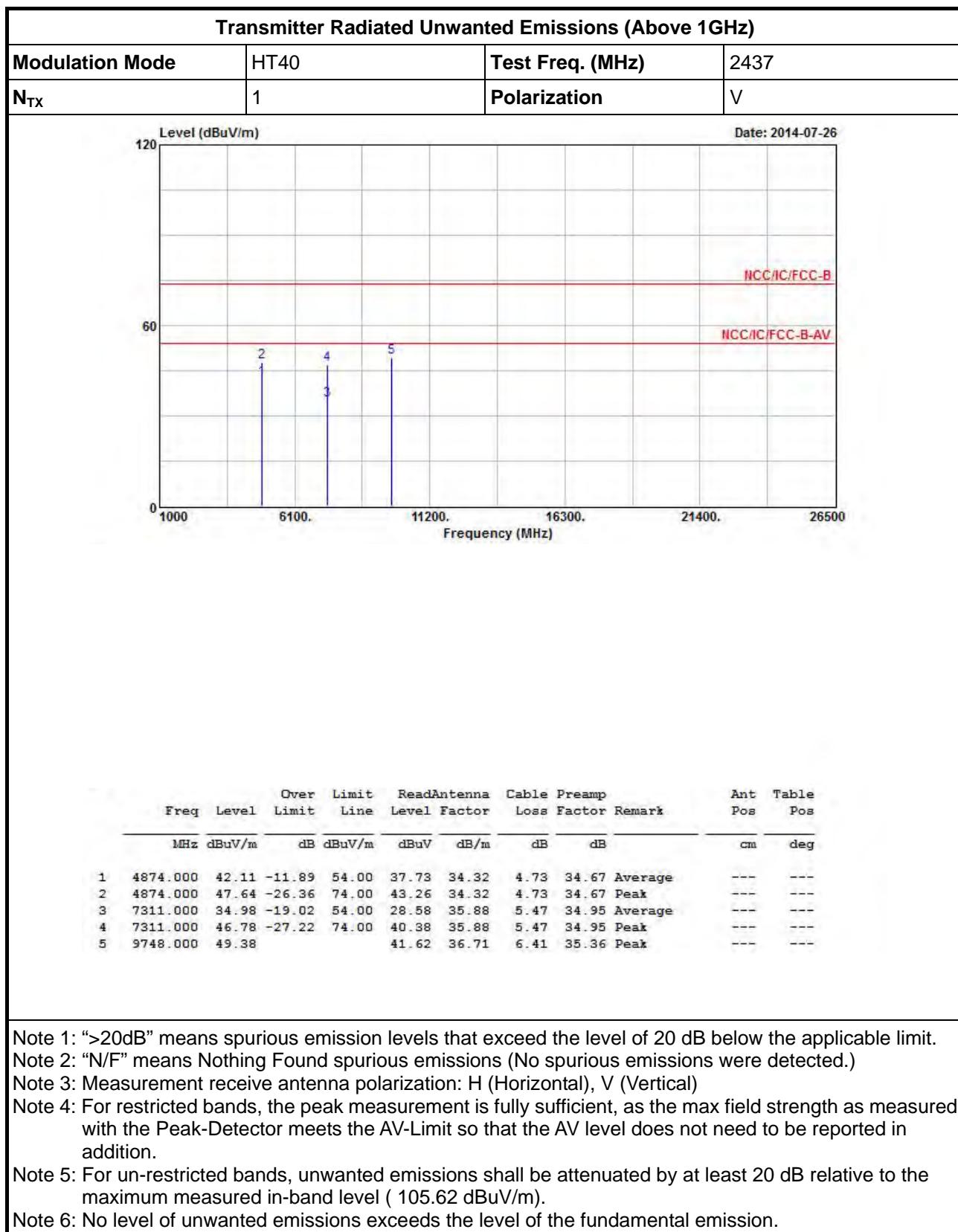
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

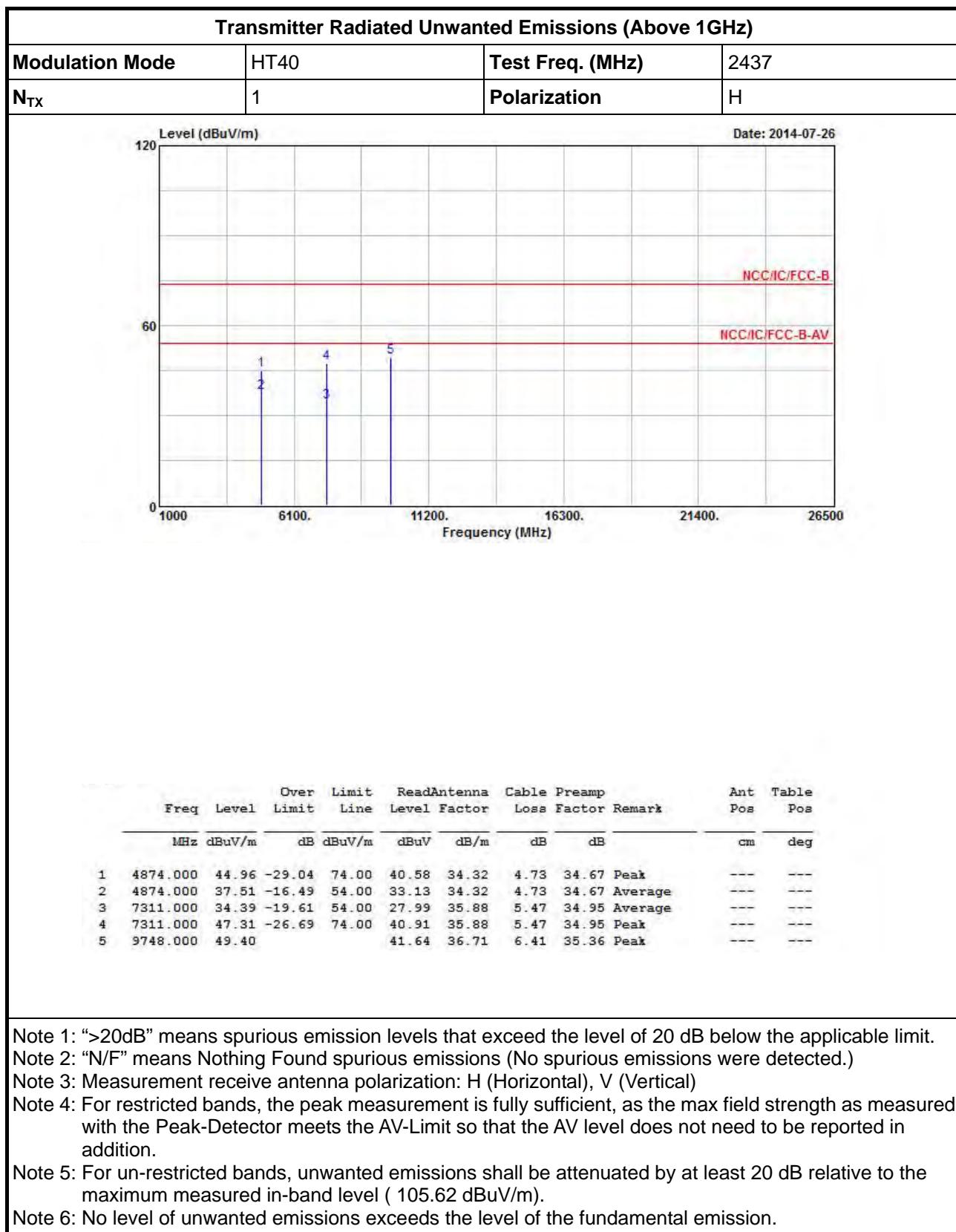












Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

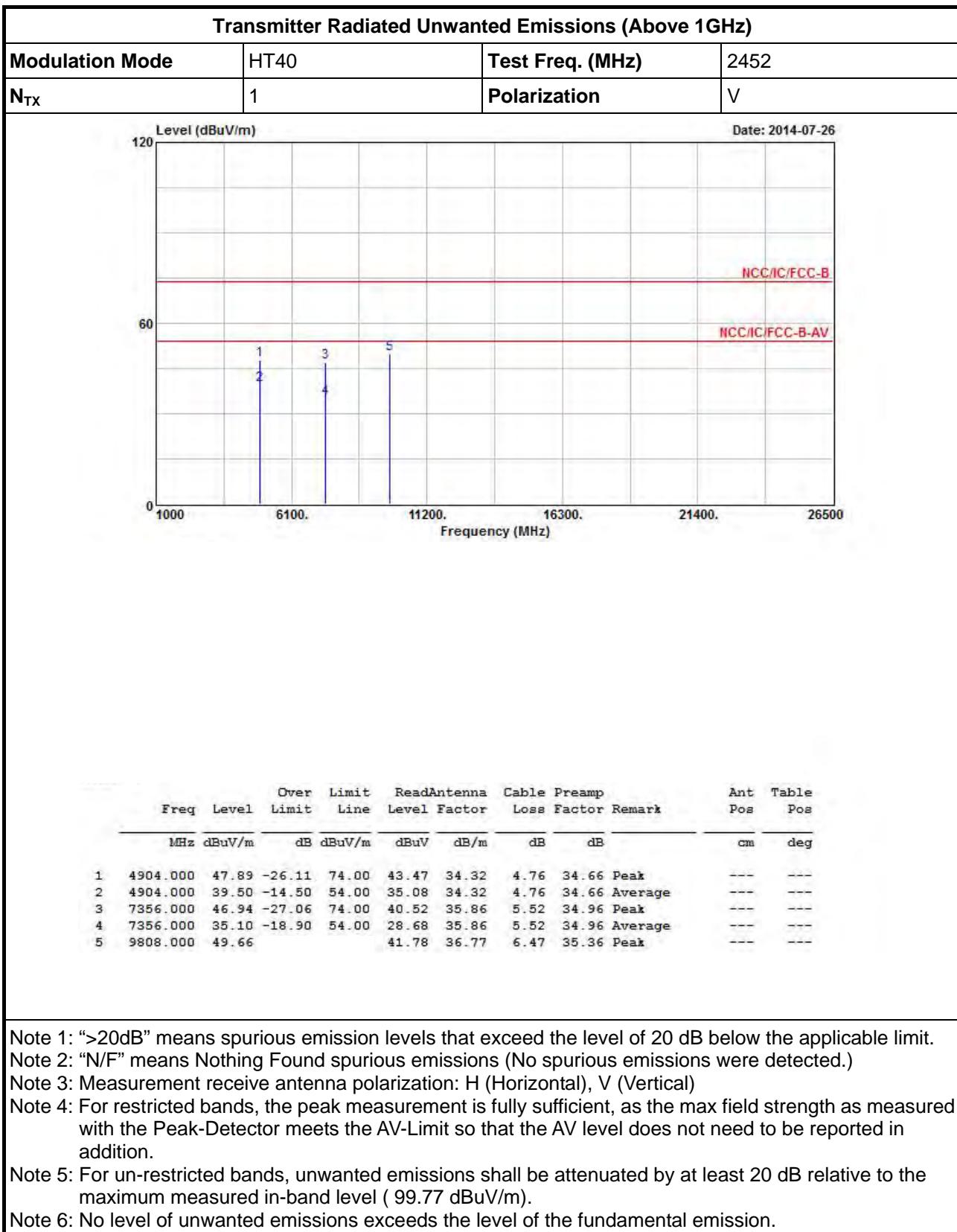
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

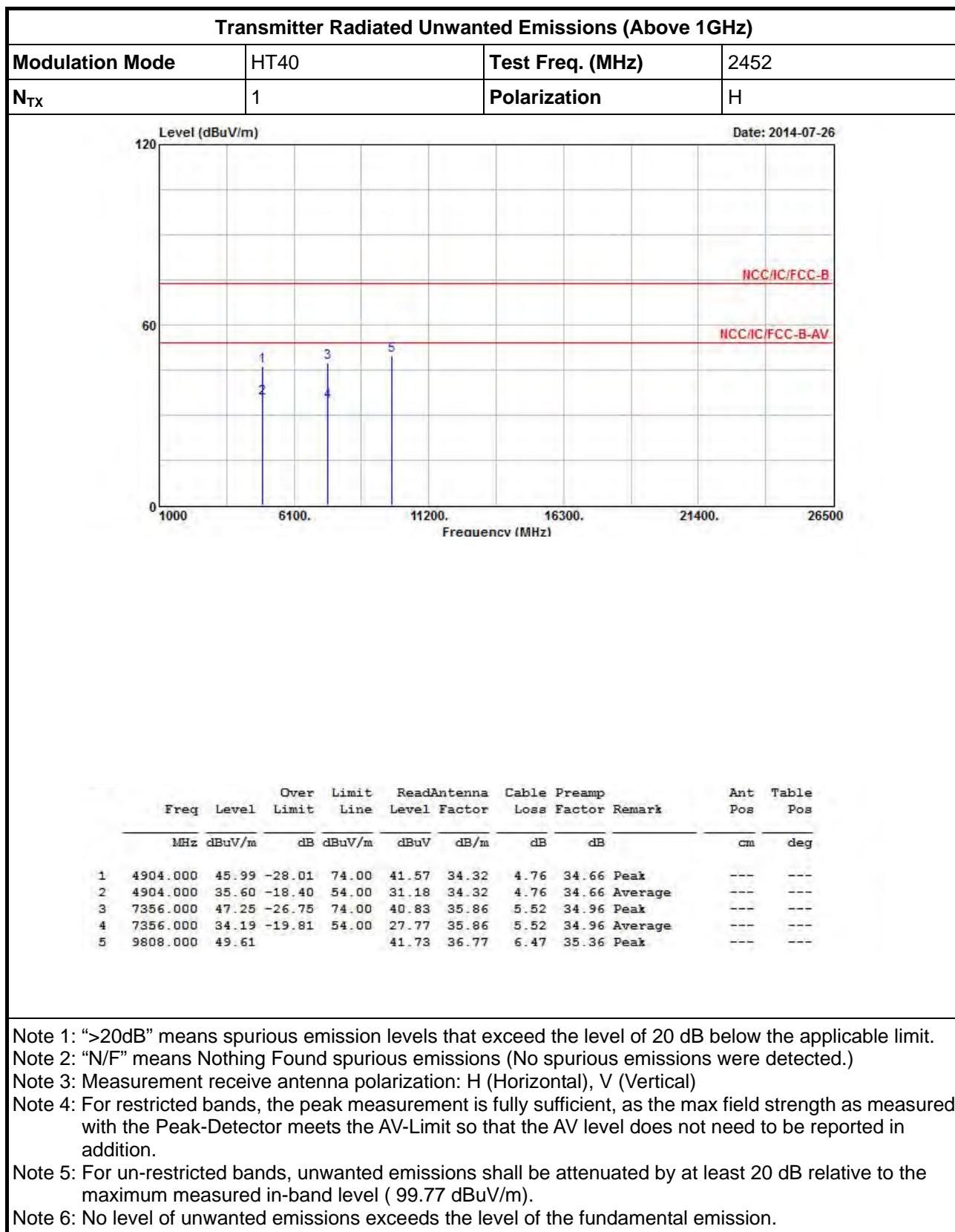
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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 (105.62 dBuV/m).

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







4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Mar. 26, 2014	AC Conduction
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 21, 2014	AC Conduction
RF Cable-CON	HUBER+SUHNER	RG213/U	0-7611832020001	9kHz ~ 30MHz	Oct. 30, 2013	AC Conduction
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	AC Conduction

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101013	9KHz~40GHz	Jan. 25, 2014	RF Conducted
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 31, 2014	RF Conducted
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Jan. 28, 2014	RF Conducted
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Jan. 28, 2014	RF Conducted
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jul. 15, 2014	RF Conducted

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



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	May 11, 2014	Radiated Emission
Spectrum Analyzer	R&S	FSP40	100593	9kHz ~ 40GHz	Oct. 03, 2013	Radiated Emission
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	Jul. 22, 2014	Radiated Emission
Amplifier	Agilent	8449B	3008A02326	1GHz ~ 26.5GHz	May. 22, 2014	Radiated Emission
Horn Antenna	ETS-LINDGREN	3117	00091920	1GHz ~ 18GHz	Nov. 25, 2013	Radiated Emission
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jan. 10, 2014	Radiated Emission
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Nov. 09, 2013	Radiated Emission
RF Cable-high	SUHNER	SUCOFLEX106	03CH02-HY	1GHz ~ 40GHz	Mar. 05, 2014	Radiated Emission
Bilog Antenna	SCHAFFNER	CBL61128	2723	30MHz ~ 2GHz	Oct. 10, 2013	Radiated Emission
Turn Table	Chaintek Instruments	3000	MF7802058	0~ 360 degree	N/A	Radiated Emission
Antenna Mast	MF	MF7802	MF780208205	1 ~ 4 m	N/A	Radiated Emission

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

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

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