



FCC Test Report

Equipment : High Power Plug-In AC2600 Wi-Fi Range Extender
Brand Name : AMPED WIRELESS
Model No. : REC44M
FCC ID : ZTT-REC44M
Standard : 47 CFR FCC Part 15.247
Operating Band : 2400 MHz – 2483.5 MHz
Equipment Class : DTS
Applicant : AMPED WIRELESS
13089 Peyton Dr. #C307, Chino Hills, CA 91709
Manufacturer : EDIMAX TECHNOLOGY CO., LTD.
1F., No.3, Wu-Guan 3rd Rd., Wu-Gu,
New Taipei City, Taiwan 24891

The product sample received on Mar. 22, 2016 and completely tested on May 14, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

Reviewed by:



Kevin Liang / Assistant Manager

Testing Laboratory
1190



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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
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]: 0.451130MHz 27.29 (Margin 19.56dB) - AV 33.56 (Margin 23.29dB) - QP	FCC 15.207	Complied
3.2	15.247(a)	6dB Bandwidth	6dB Bandwidth Unit [MHz] 20M: 8.53 / 40M:30.68	≥500kHz	Complied
3.3	15.247(b)	RF Output Power (Maximum Average Conducted Output Power)	Power [dBm]:26.68	Power [dBm]:30	Complied
3.4	15.247(d)	Power Spectral Density	PSD [dBm/3kHz]: 0.63	PSD [dBm/3kHz]:8	Complied
3.5	15.247(c)	Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 2399.824MHz: 31.65dB Restricted Bands [dBuV/m at 3m]: 2389.968MHz 70.10 (Margin 3.90dB) - PK 52.95 (Margin 1.05dB) - AV	Non-Restricted Bands: > 30 dBc Restricted Bands: FCC 15.209	Complied
3.6	15.247(c)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]: 4924MHz 52.65 (Margin 1.35dB) - AV 55.73 (Margin18.27dB) - PK	Non-Restricted Bands: > 30 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)	Co-location
2400-2483.5	b	2412-2462	1-11 [11]	2	24.66	Yes
2400-2483.5	g	2412-2462	1-11 [11]	2	24.45	Yes
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	4	26.68	Yes
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	4	20.73	Yes

Note 1: RF output power specifies that Maximum Average 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.
 Note 4: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)

1.1.2 Antenna Information

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

Antenna General Information					
No.	Ant. Cat.	Ant. Type	Connector Type	Ant. Model	Gain (dBi)
1	External	Dipole	I-Pex	98619PRSX009	3.26
2	External	Dipole	I-Pex	98619PRSX009	3.26
3	Integral	PCB	I-Pex	ALA160-222031-000000	2.39
4	Integral	PAB	I-Pex	ALA160-222032-000000	1.65



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"/> 97.02% - IEEE 802.11b	0.13
<input checked="" type="checkbox"/> 84.61% - IEEE 802.11g	0.73
<input checked="" type="checkbox"/> 81.41% - IEEE 802.11n (HT20)	0.89
<input checked="" type="checkbox"/> 71.22% - IEEE 802.11n (HT40)	1.47

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"/> From Switching Power Supply	<input type="checkbox"/> From PoE	<input type="checkbox"/> From Battery



1.2 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 v03r05
- ♦ FCC KDB 662911 D01 v02r01

1.3 Testing Location Information

Testing Location			
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.	
TEL : 886-3-327-3456 FAX : 886-3-327-0973			
Test Site Registration Number: 553509			
Test Condition	Test Site No.	Test Engineer	Test Environment
AC Conduction	CO04-HY	Ryan	23°C / 58%
RF Conducted	TH01-HY	Howard	23.5°C / 63%
Radiated Emission	03CH03-HY	Jeff	21.2°C / 60%



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



2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing			
Modulation Mode	Transmit Chains (N _{TX})	Data Rate / MCS	Worst Data Rate / MCS
11b	2	1-11 Mbps	1 Mbps
11g	2	6-54 Mbps	6 Mbps
HT20	4	MCS 0-31	MCS 0
HT40	4	MCS 0-31	MCS 0

2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (2400-2483.5MHz band)							
Test Software Version	MT615QA_0.0.1.67						
Modulation Mode	N _{TX}	Test Frequency (MHz)					
		NCB: 20MHz			NCB: 40MHz		
		2412	2437	2462	2422	2437	2452
11b	2	22	27	21	-	-	-
11g	2	1E	2A	1D	-	-	-
HT20	4	1A	2A	19	-	-	-
HT40	4	-	-	-	13	1D	16



2.3 The Worst Case Measurement Configuration

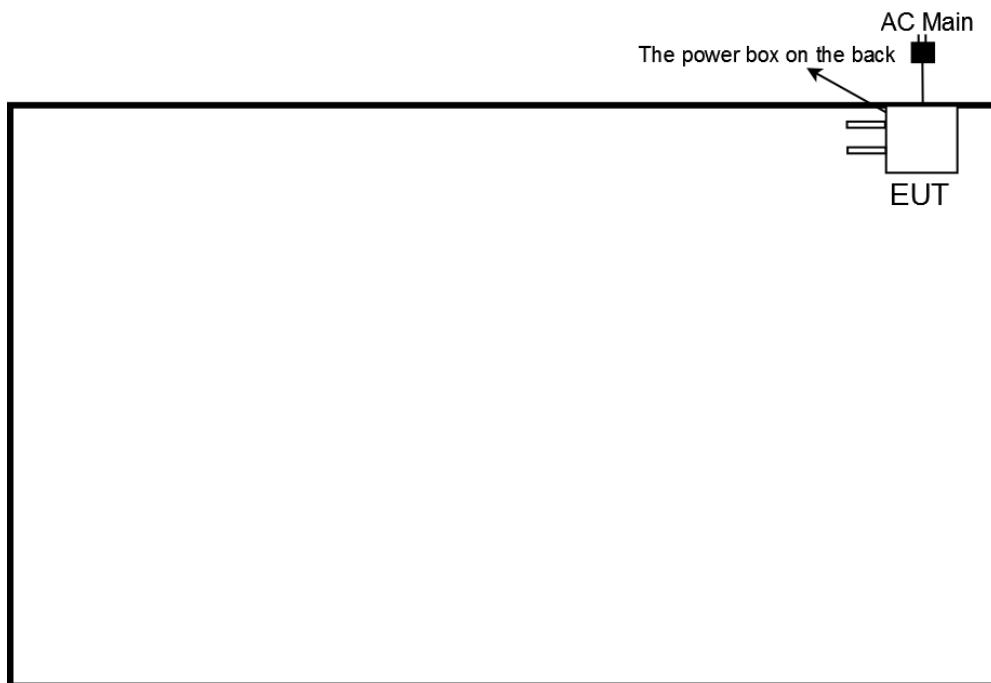
The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	Transmit Mode

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

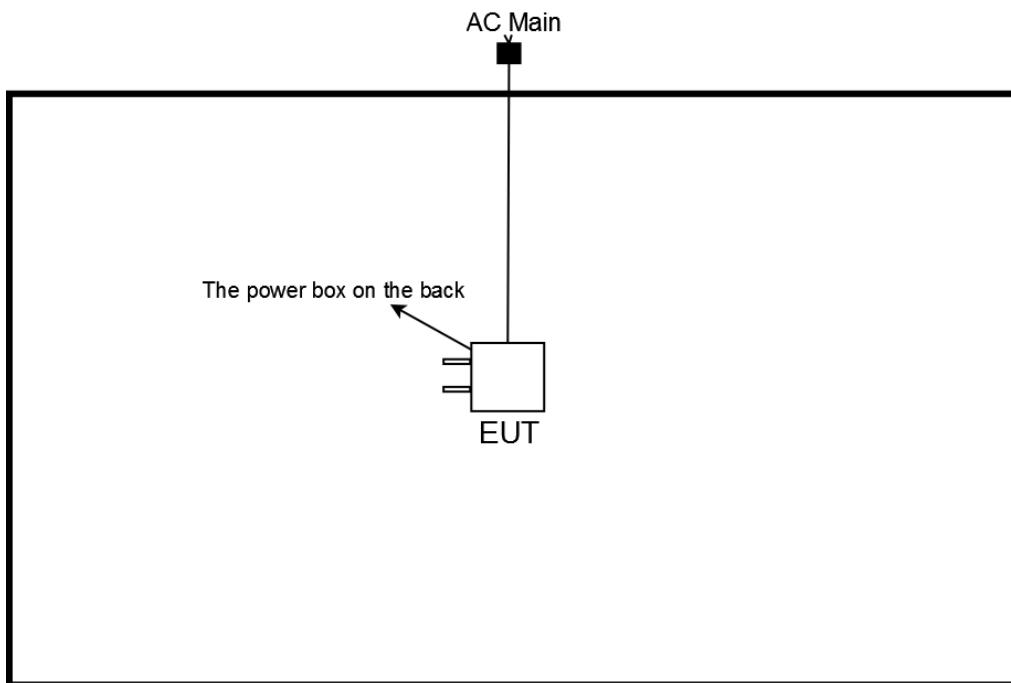
The Worst Case Mode for Following Conformance Tests							
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions						
Test Condition	Radiated measurement						
User Position	<input type="checkbox"/> EUT will be placed in fixed position. <input checked="" type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed three orthogonal planes. <input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes.						
Operating Mode	Operating Mode Description						
1	Transmit Mode						
Modulation Mode	11b, 11g, HT20, HT40						
Orthogonal Planes of EUT	<table><thead><tr><th>X Plane</th><th>Y Plane</th><th>Z Plane</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr></tbody></table>	X Plane	Y Plane	Z Plane			
X Plane	Y Plane	Z Plane					
Worst Planes of EUT	V						
Worst Planes of Antenna	V						

2.4 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Test Setup Diagram - Radiated Emission Test



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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

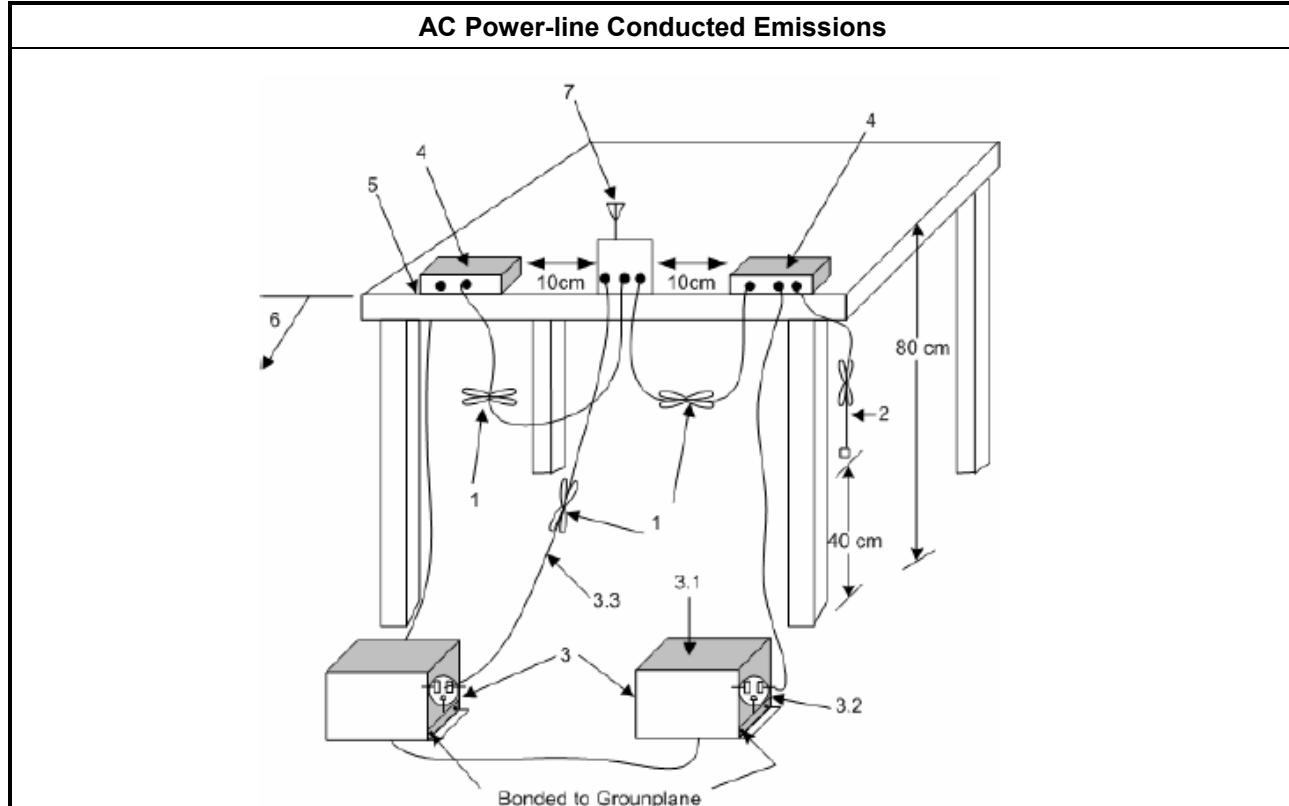
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

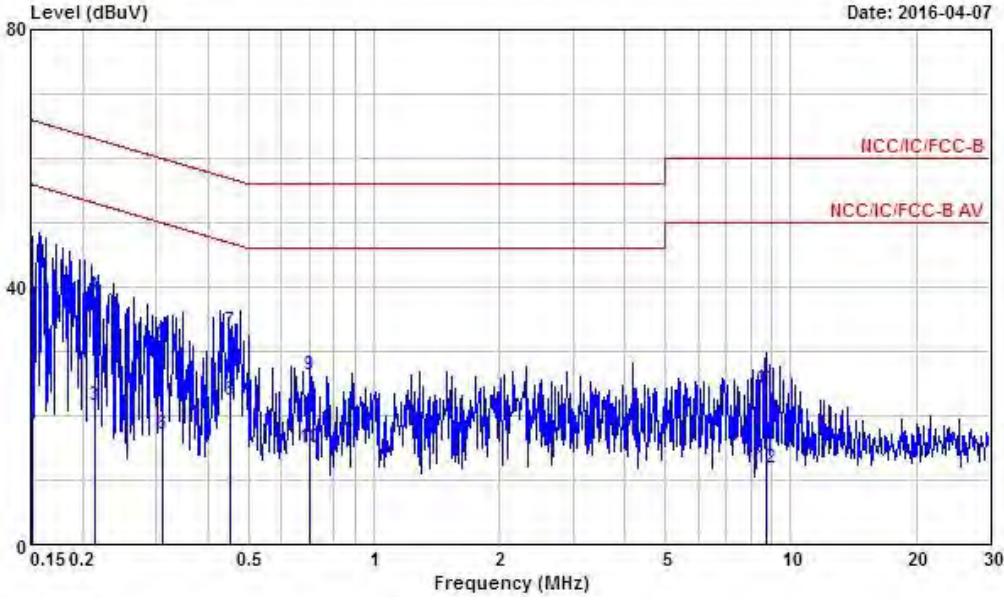
Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

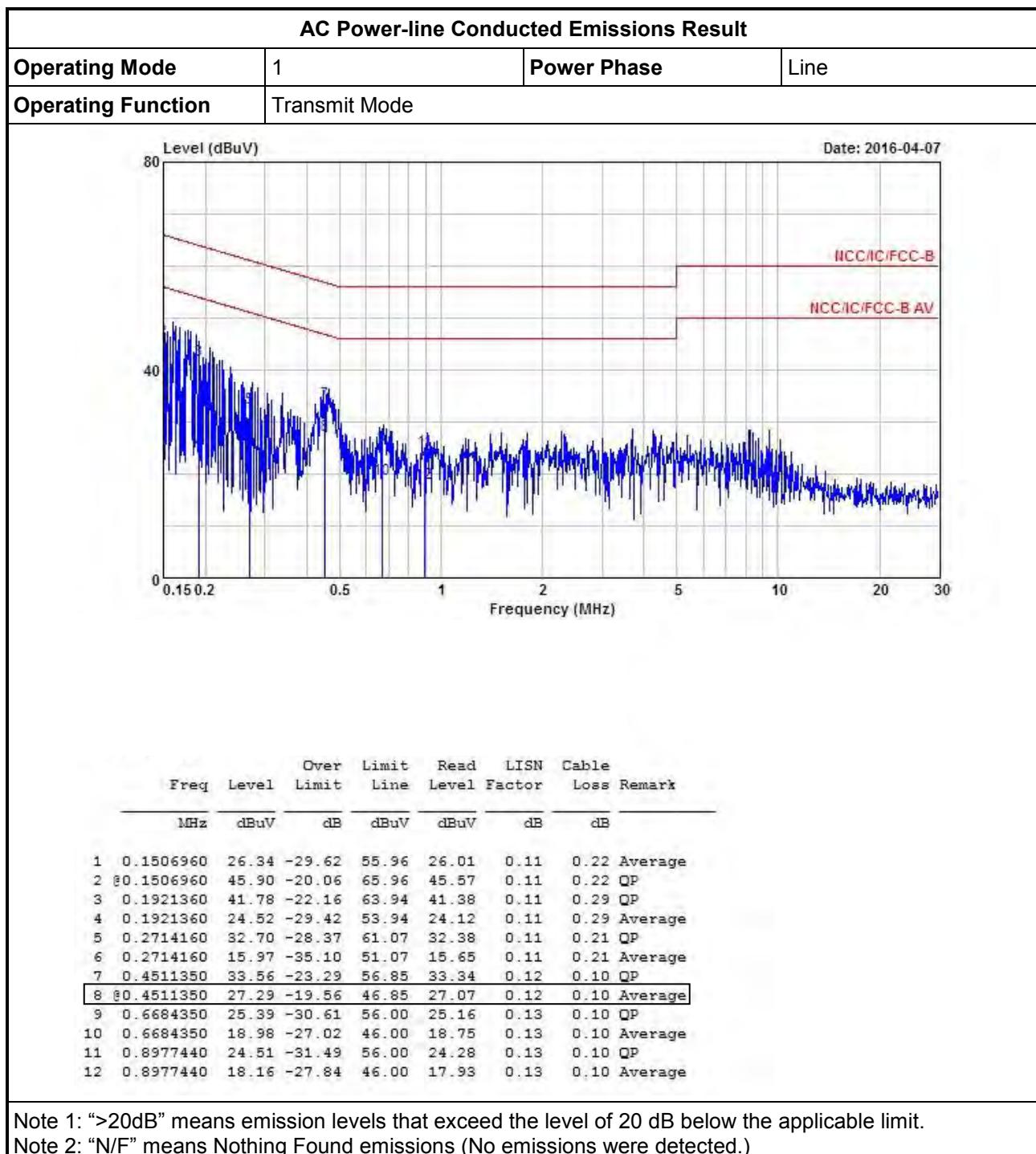
3.1.4 Test Setup





3.1.5 Test Result of AC Power-line Conducted Emissions

AC Power-line Conducted Emissions Result																																																																																																																							
Operating Mode	1	Power Phase	Neutral																																																																																																																				
Operating Function	Transmit Mode																																																																																																																						
							Date: 2016-04-07																																																																																																																
<table><thead><tr><th>Freq</th><th>Level</th><th>Over Limit</th><th>Line</th><th>Read Level</th><th>LISN Factor</th><th>Cable Loss</th><th>Remark</th></tr><tr><th>MHz</th><th>dBuV</th><th>dB</th><th>dBuV</th><th>dBuV</th><th>dB</th><th>dB</th><th></th></tr></thead><tbody><tr><td>1</td><td>0.1514950</td><td>44.24</td><td>-21.68</td><td>65.92</td><td>43.92</td><td>0.10</td><td>0.22 QP</td></tr><tr><td>2</td><td>0.1514950</td><td>25.51</td><td>-30.41</td><td>55.92</td><td>25.19</td><td>0.10</td><td>0.22 Average</td></tr><tr><td>3</td><td>0.2135510</td><td>21.57</td><td>-31.50</td><td>53.07</td><td>21.18</td><td>0.11</td><td>0.28 Average</td></tr><tr><td>4</td><td>0.2135510</td><td>38.70</td><td>-24.37</td><td>63.07</td><td>38.31</td><td>0.11</td><td>0.28 QP</td></tr><tr><td>5</td><td>0.3109830</td><td>31.42</td><td>-28.52</td><td>59.94</td><td>31.13</td><td>0.12</td><td>0.17 QP</td></tr><tr><td>6</td><td>0.3109830</td><td>16.99</td><td>-32.95</td><td>49.94</td><td>16.70</td><td>0.12</td><td>0.17 Average</td></tr><tr><td>7</td><td>0.4533990</td><td>33.16</td><td>-23.65</td><td>56.81</td><td>32.94</td><td>0.12</td><td>0.10 QP</td></tr><tr><td>8</td><td>0.4533990</td><td>22.40</td><td>-24.41</td><td>46.81</td><td>22.18</td><td>0.12</td><td>0.10 Average</td></tr><tr><td>9</td><td>0.7029560</td><td>26.19</td><td>-29.81</td><td>56.00</td><td>25.96</td><td>0.13</td><td>0.10 QP</td></tr><tr><td>10</td><td>0.7029560</td><td>14.95</td><td>-31.05</td><td>46.00</td><td>14.72</td><td>0.13</td><td>0.10 Average</td></tr><tr><td>11</td><td>8.733</td><td>24.31</td><td>-35.69</td><td>60.00</td><td>23.87</td><td>0.26</td><td>0.18 QP</td></tr><tr><td>12</td><td>8.733</td><td>11.74</td><td>-38.26</td><td>50.00</td><td>11.30</td><td>0.26</td><td>0.18 Average</td></tr></tbody></table>								Freq	Level	Over Limit	Line	Read Level	LISN Factor	Cable Loss	Remark	MHz	dBuV	dB	dBuV	dBuV	dB	dB		1	0.1514950	44.24	-21.68	65.92	43.92	0.10	0.22 QP	2	0.1514950	25.51	-30.41	55.92	25.19	0.10	0.22 Average	3	0.2135510	21.57	-31.50	53.07	21.18	0.11	0.28 Average	4	0.2135510	38.70	-24.37	63.07	38.31	0.11	0.28 QP	5	0.3109830	31.42	-28.52	59.94	31.13	0.12	0.17 QP	6	0.3109830	16.99	-32.95	49.94	16.70	0.12	0.17 Average	7	0.4533990	33.16	-23.65	56.81	32.94	0.12	0.10 QP	8	0.4533990	22.40	-24.41	46.81	22.18	0.12	0.10 Average	9	0.7029560	26.19	-29.81	56.00	25.96	0.13	0.10 QP	10	0.7029560	14.95	-31.05	46.00	14.72	0.13	0.10 Average	11	8.733	24.31	-35.69	60.00	23.87	0.26	0.18 QP	12	8.733	11.74	-38.26	50.00	11.30	0.26	0.18 Average
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Note 1: ">30dB" 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.

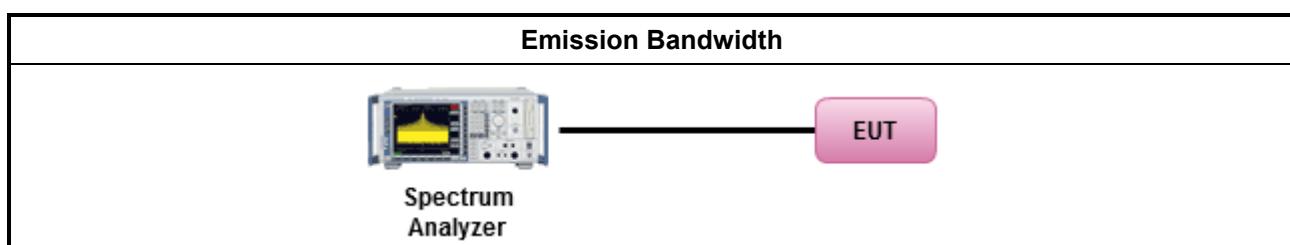
3.2.2 Measuring Instruments

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 type="checkbox"/> The EUT supports single transmit chain and measurements performed on this transmit chain 1.
<input type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input checked="" type="checkbox"/> The EUT supports multiple transmit chains using options given below:
<input type="checkbox"/> Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1.
<input checked="" type="checkbox"/> Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains.

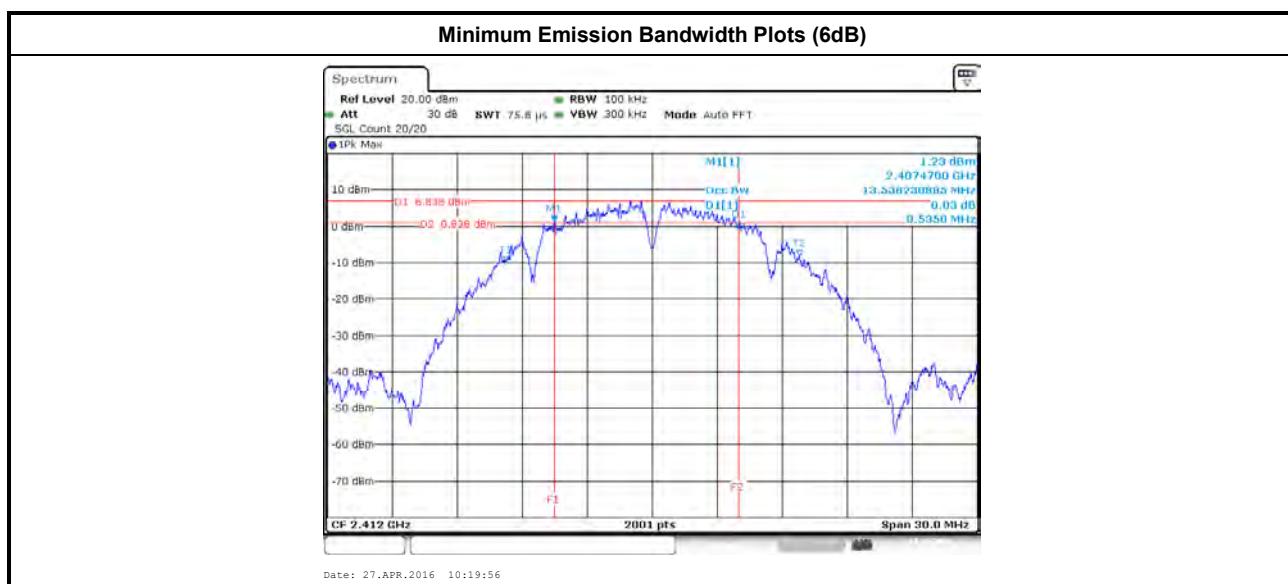
3.2.4 Test Setup





3.2.5 Test Result of Emission Bandwidth

Emission Bandwidth Result											
Condition			Emission Bandwidth (MHz)								
Modulation Mode	N _{TX}	Freq. (MHz)	99% Bandwidth				6dB Bandwidth				Chain Port 4
			Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 4	Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 4	
11b	2	2412	13.85	13.53	-	-	9.52	8.53	-	-	
11b	2	2437	15.12	14.31	-	-	9.06	9.07	-	-	
11b	2	2462	13.71	13.40	-	-	8.62	8.56	-	-	
11g	2	2412	16.38	16.37	-	-	16.02	16.32	-	-	
11g	2	2437	17.67	17.52	-	-	16.33	16.32	-	-	
11g	2	2462	16.28	16.29	-	-	16.02	16.30	-	-	
HT20	4	2412	17.52	17.51	17.52	17.54	16.56	16.66	17.55	17.56	
HT20	4	2437	17.82	17.75	17.79	17.87	17.17	17.32	17.59	17.11	
HT20	4	2462	17.54	17.48	17.40	17.52	17.56	17.55	16.69	16.33	
HT40	4	2422	35.66	35.82	35.82	35.50	31.36	35.72	34.40	31.96	
HT40	4	2437	35.82	35.86	35.90	35.82	35.12	30.68	31.32	30.72	
HT40	4	2452	35.78	35.82	35.82	35.70	32.56	35.60	35.04	32.52	
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.	

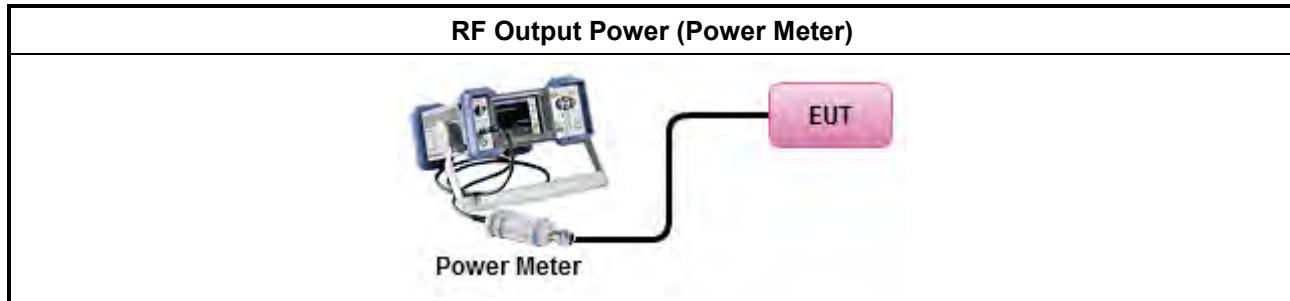
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<input type="checkbox"/> Maximum Peak Conducted Output Power	
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 9.1.1 (RBW \geq EBW method).
	<input 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 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 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 checked="" 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 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 checked="" type="checkbox"/> The EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	<input checked="" type="checkbox"/> If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup





3.3.5 Test Result of Maximum Average Conducted Output Power

Maximum Average Conducted Output Power Result												
Condition			RF Output Power (dBm)									
Modulation Mode	N _{TX}	Freq. (MHz)	Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 4	Sum Chain	Power Limit	DG (dBi)	EIRP Power	EIRP Limit	
11b	2	2412	18.91	19.46	-	-	22.21	30.00	3.26	25.47	36.00	
11b	2	2437	21.41	21.87	-	-	24.66	30.00	3.26	27.92	36.00	
11b	2	2462	18.52	19.01	-	-	21.78	30.00	3.26	25.04	36.00	
11g	2	2412	15.49	16.07	-	-	18.80	30.00	3.26	22.06	36.00	
11g	2	2437	21.54	21.34	-	-	24.45	30.00	3.26	27.71	36.00	
11g	2	2462	15.40	15.57	-	-	18.49	30.00	3.26	21.75	36.00	
HT20	4	2412	13.22	13.21	13.22	13.41	19.29	30.00	2.69	21.98	36.00	
HT20	4	2437	20.68	20.67	20.67	20.61	26.68	30.00	2.69	29.37	36.00	
HT20	4	2462	12.89	12.94	13.04	12.84	18.95	30.00	2.69	21.64	36.00	
HT40	4	2422	10.16	10.20	10.20	10.20	16.21	30.00	2.69	18.91	36.00	
HT40	4	2437	14.74	14.69	14.72	14.69	20.73	30.00	2.69	23.43	36.00	
HT40	4	2452	11.43	11.42	11.37	11.33	17.41	30.00	2.69	20.10	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) $\leq 8 \text{ dBm/3kHz}$

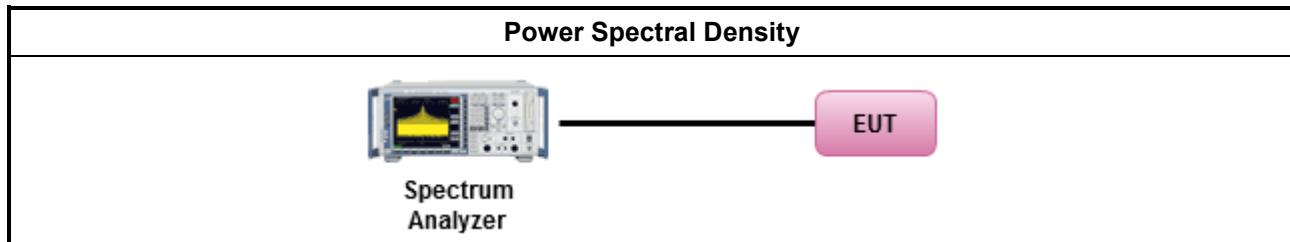
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

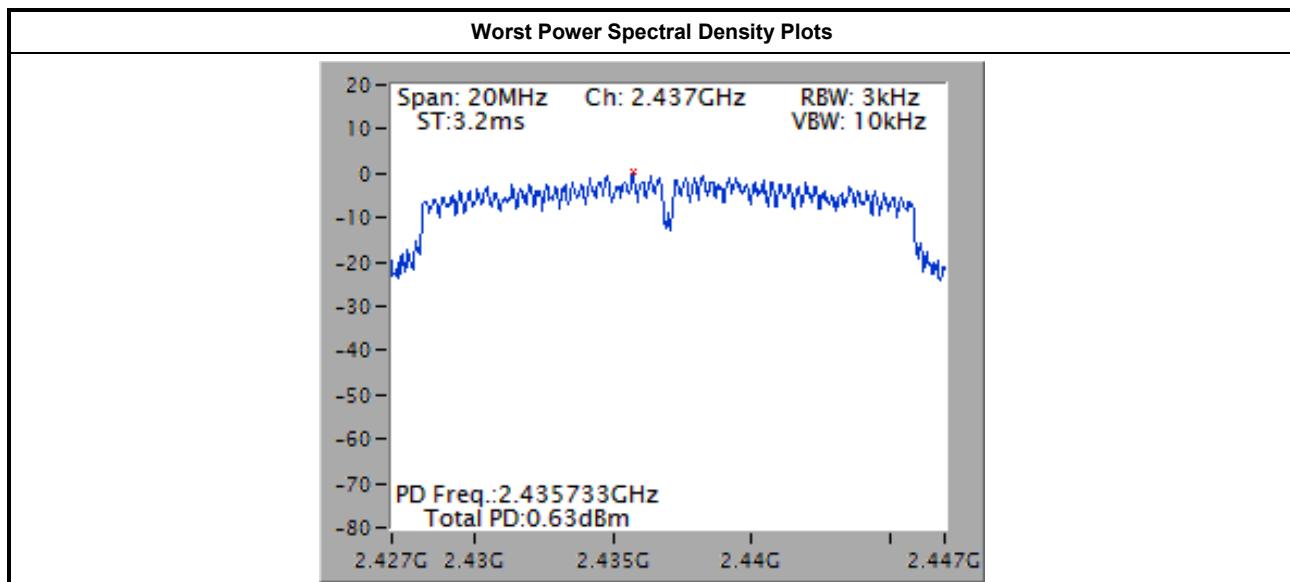
Test Method
<input checked="" type="checkbox"/> Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method 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 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 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 checked="" type="checkbox"/> The EUT supports multiple transmit chains using options given below:
<input checked="" 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 $10 \log(N) \text{ dB}$, 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



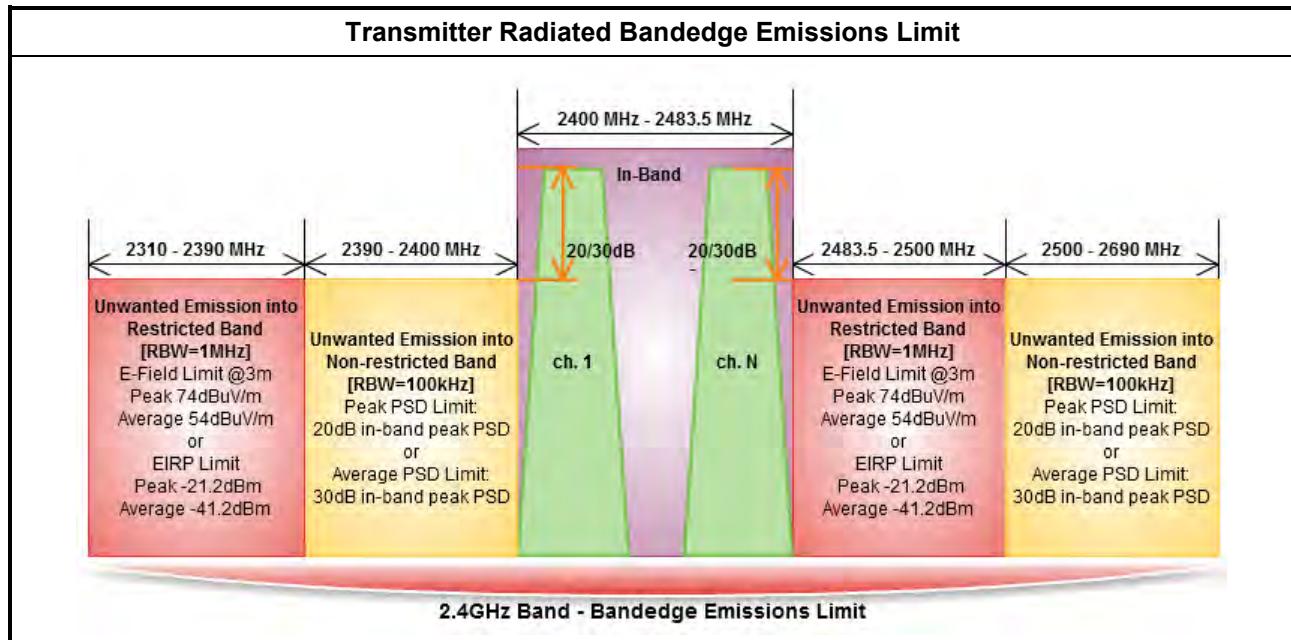
3.4.5 Test Result of Power Spectral Density

Condition			Power Spectral Density	
Modulation Mode	N _{TX}	Freq. (MHz)	Sum Chain (dBm/3kHz)	PSD Limit (dBm/3kHz)
11b	2	2412	-2.18	8.00
11b	2	2437	-2.79	8.00
11b	2	2462	-3.69	8.00
11g	2	2412	-8.05	8.00
11g	2	2437	-1.84	8.00
11g	2	2462	-6.71	8.00
HT20	4	2412	-7.57	8.00
HT20	4	2437	0.63	8.00
HT20	4	2462	-8.07	8.00
HT40	4	2422	-12.56	8.00
HT40	4	2437	-8.68	8.00
HT40	4	2452	-11.34	8.00
Result		Complied		



3.5 Transmitter Radiated Bandedge Emissions

3.5.1 Transmitter Radiated Bandedge Emissions Limit



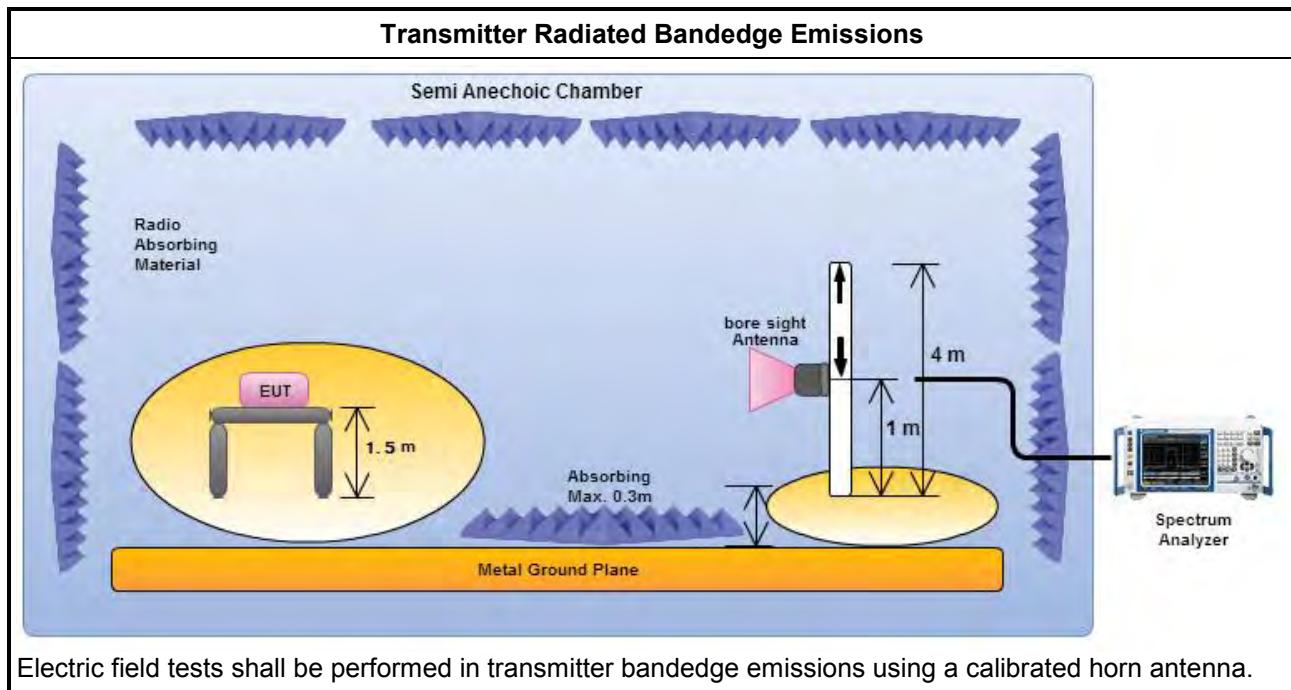
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.10 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
<input 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 checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$).
<input 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 type="checkbox"/> Refer as ANSI C63.10, clause 6.10 for band-edge testing.
<input checked="" 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.

3.5.4 Test Setup





3.5.5 Test Result of Transmitter Radiated Bandedge Emissions

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	2	2412	107.36	2399.152	62.81	44.55	30	H
11b	2	2462	106.23	2524.000	54.01	52.22	30	H
11g	2	2412	104.10	2399.824	72.45	31.65	30	H
11g	2	2462	103.69	2500.400	54.27	49.42	30	H
HT20	4	2412	109.47	2399.376	71.70	37.77	30	H
HT20	4	2462	106.73	2505.800	53.75	52.98	30	H
HT40	4	2422	103.75	2399.232	61.60	42.15	30	H
HT40	4	2452	105.23	2549.600	53.78	51.45	30	H

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	2	2412	3	2386.160	64.54	74	2386.160	52.38	54	H
11b	2	2462	3	2487.000	64.64	74	2487.600	52.12	54	H
11g	2	2412	3	2389.744	70.10	74	2389.968	52.95	54	H
11g	2	2462	3	2484.200	68.36	74	2483.500	52.67	54	H
HT20	4	2412	3	2389.296	70.99	74	2388.848	52.80	54	H
HT20	4	2462	3	2483.800	67.24	74	2483.600	52.42	54	H
HT40	4	2422	3	2389.728	68.58	74	2388.936	52.41	54	H
HT40	4	2452	3	2484.800	68.94	74	2483.600	52.87	54	H

Note 1: Measurement worst emissions of receive antenna polarization.



3.6 Transmitter Radiated 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 30 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 30 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.

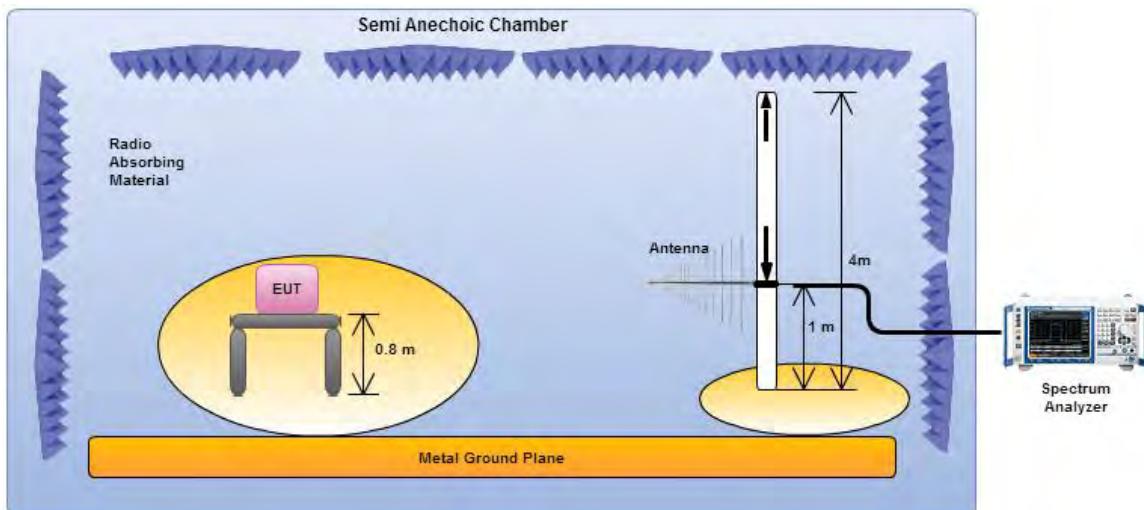


3.6.3 Test Procedures

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 30 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 checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced $VBW \geq 1/T$).
<input 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 30 dB below the permissible value has no need to be reported.

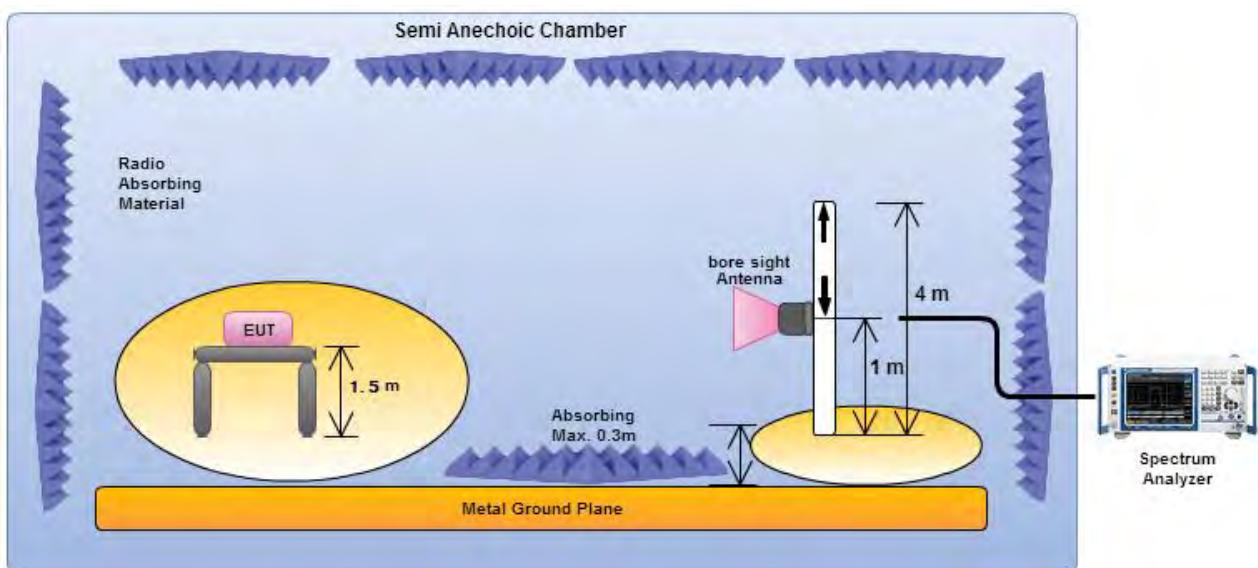
3.6.4 Test Setup

Transmitter Radiated Unwanted Emissions (below 1GHz)



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

Transmitter Radiated Unwanted Emissions (Above 1GHz)



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

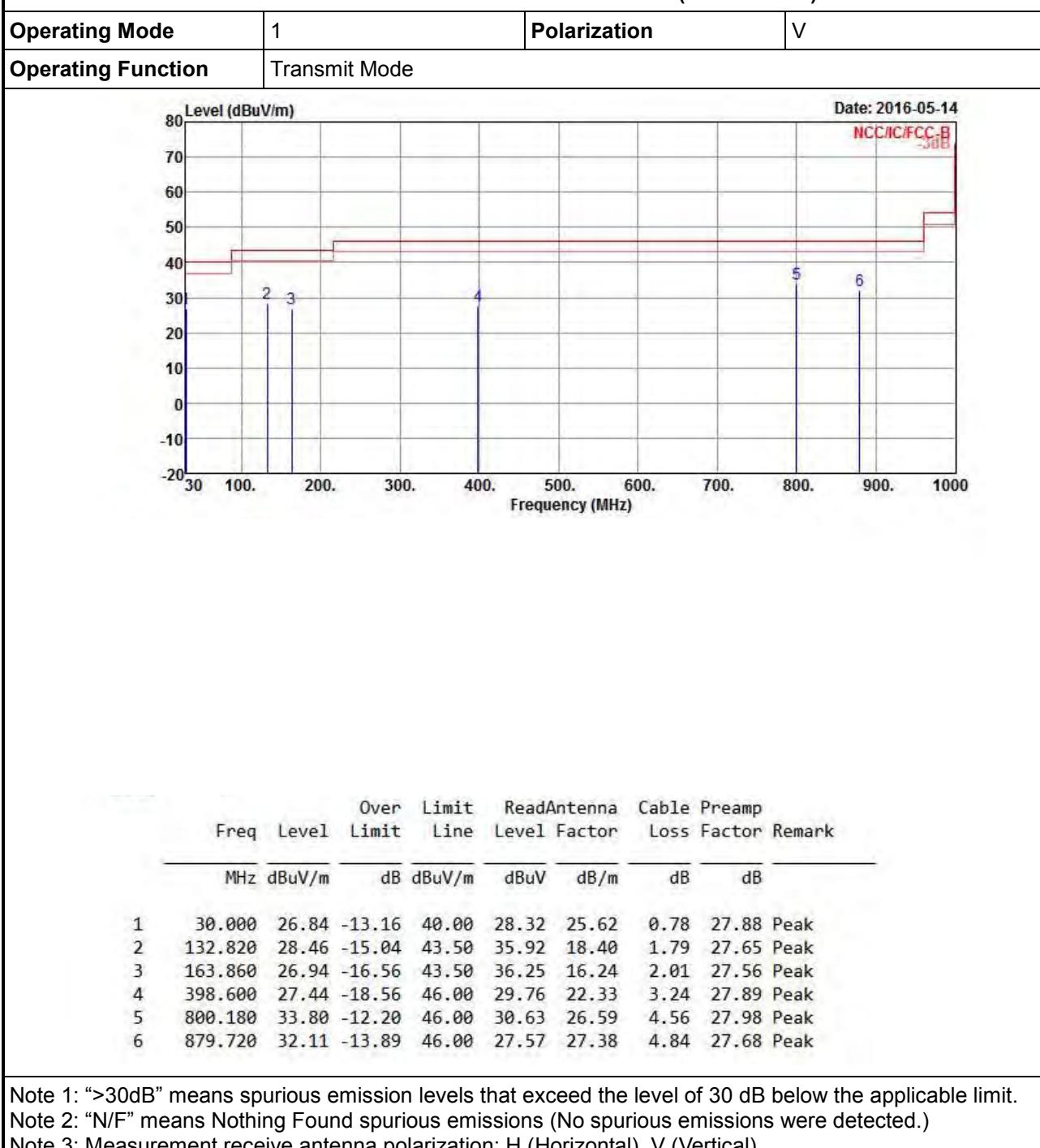
3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

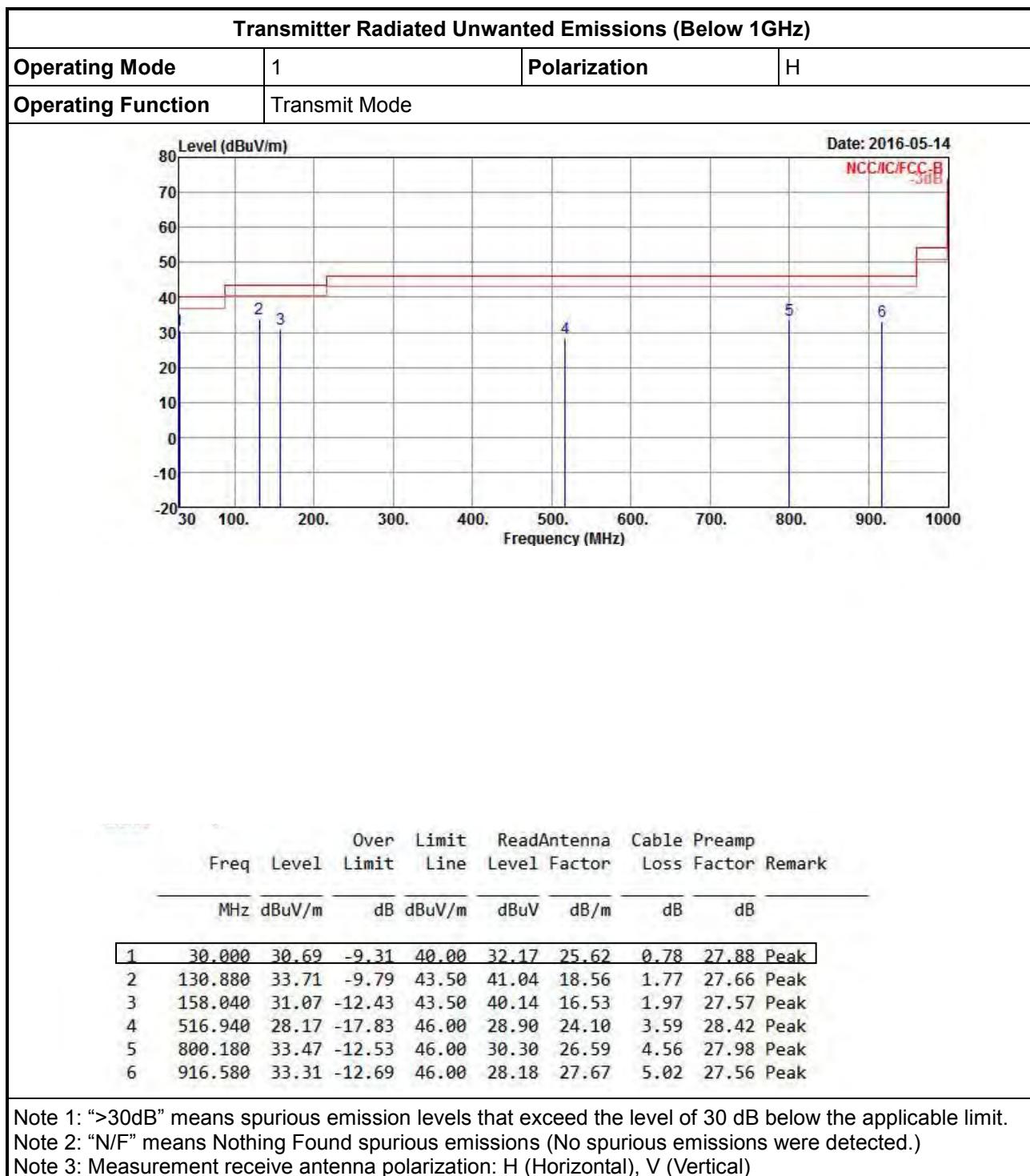
All amplitude of spurious emissions that are attenuated by more than 30 dB below the permissible value has no need to be reported.



3.6.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Transmitter Radiated Unwanted Emissions (Below 1GHz)







3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11b	Test Freq. (MHz)	2412
N_{TX}	2	Polarization	V

Level (dBuV/m)

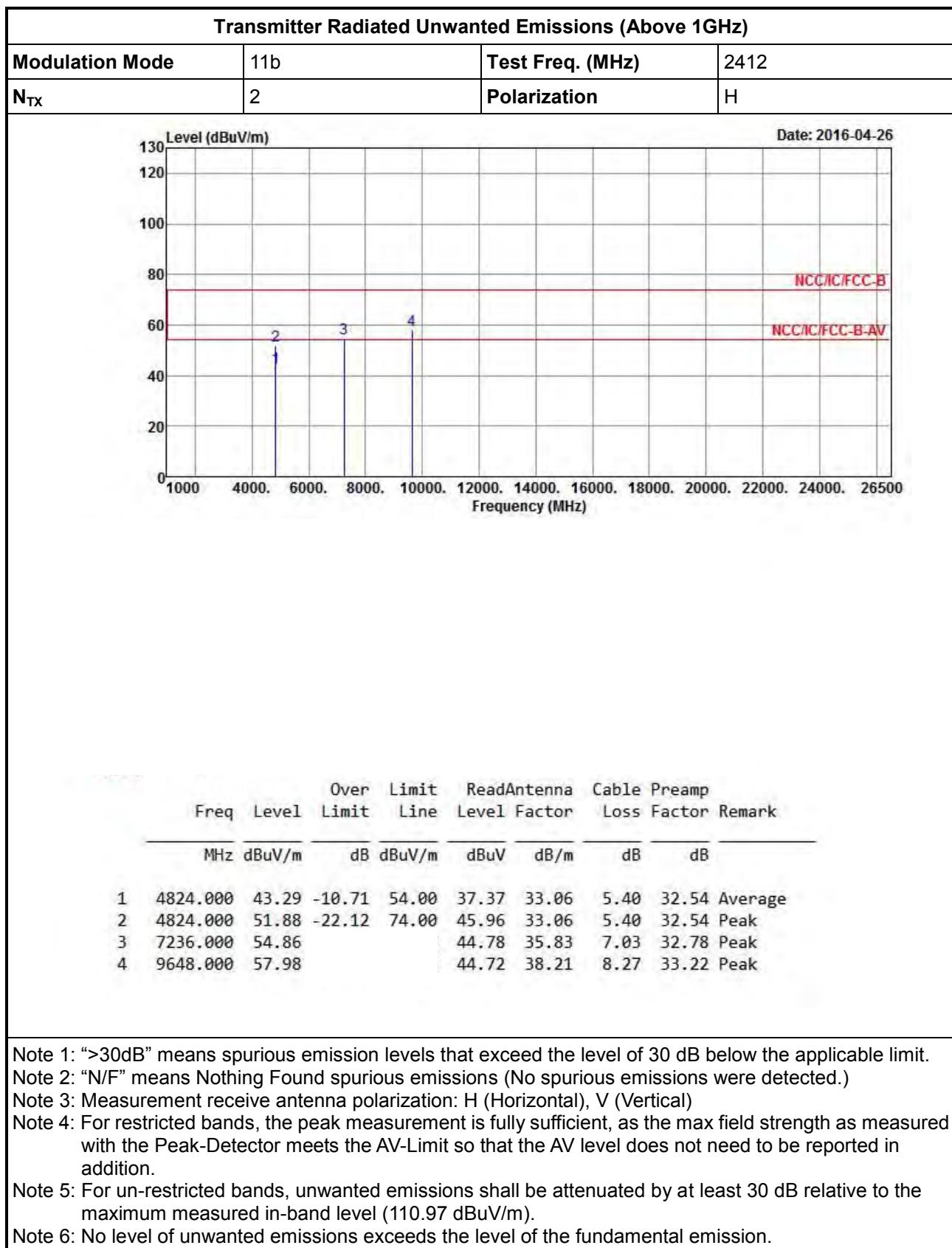
Date: 2016-04-26

NCC/IC/FCC-B

NCC/IC/FCC-B-AV

Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark
		Limit	Line	Level	Factor	Loss	Factor	
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	
1	4824.000	38.78	-15.22	54.00	32.86	33.06	5.40	32.54 Average
2	4824.000	49.60	-24.40	74.00	43.68	33.06	5.40	32.54 Peak
3	7236.000	54.11			44.03	35.83	7.03	32.78 Peak
4	9648.000	57.58			44.32	38.21	8.27	33.22 Peak

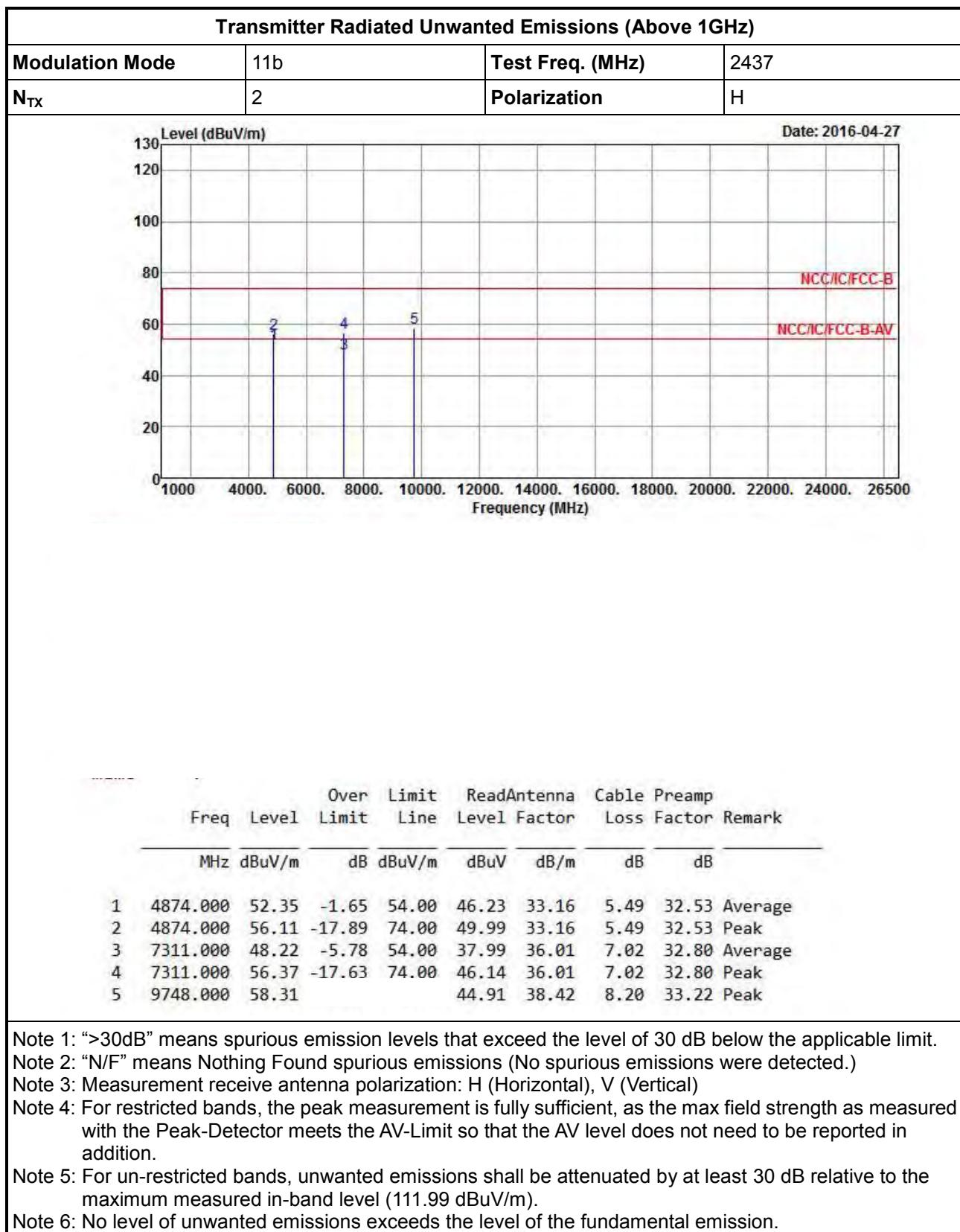
Note 1: ">30dB" means spurious emission levels that exceed the level of 30 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted 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 30 dB relative to the maximum measured in-band level (110.97 dBuV/m).
 Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

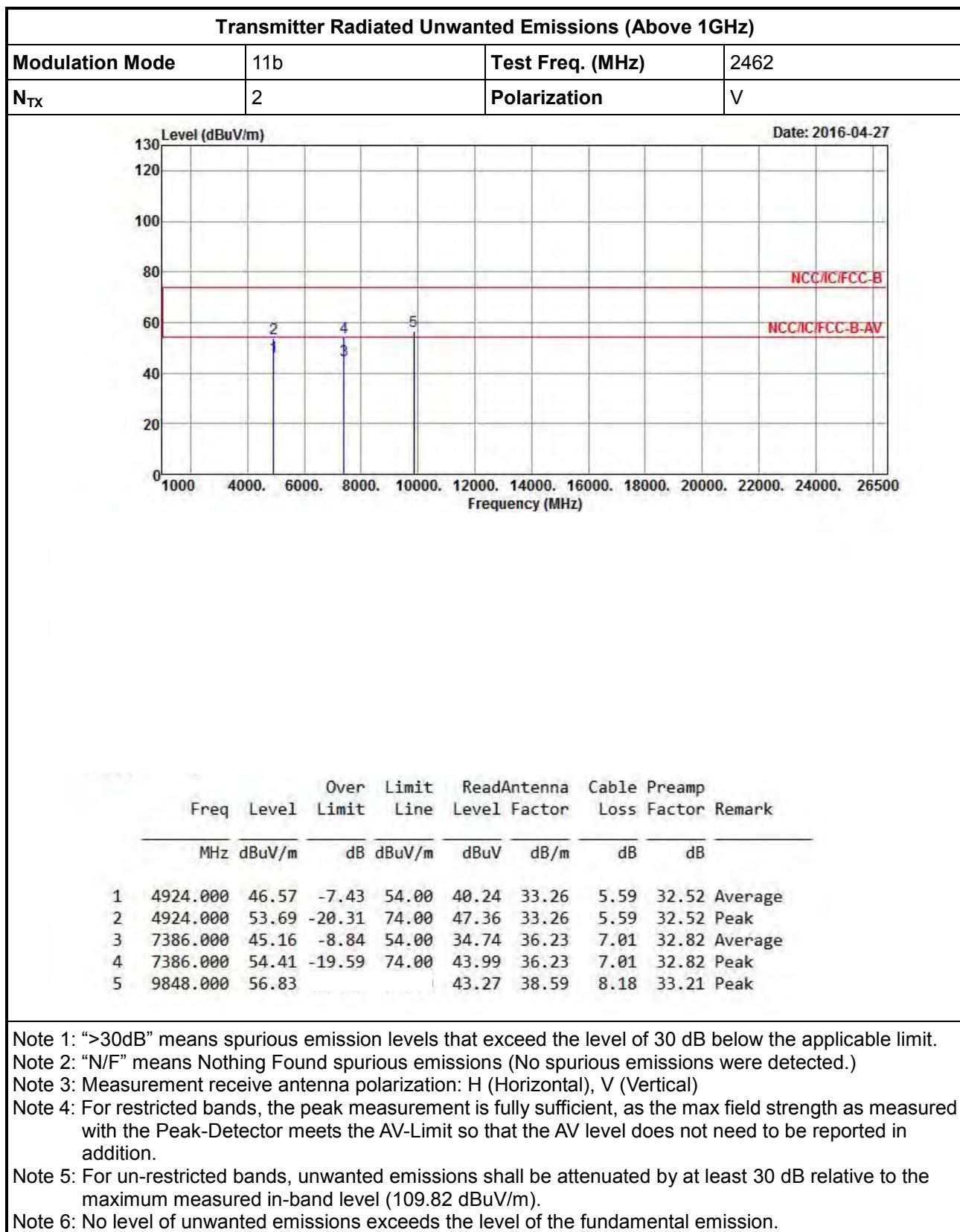


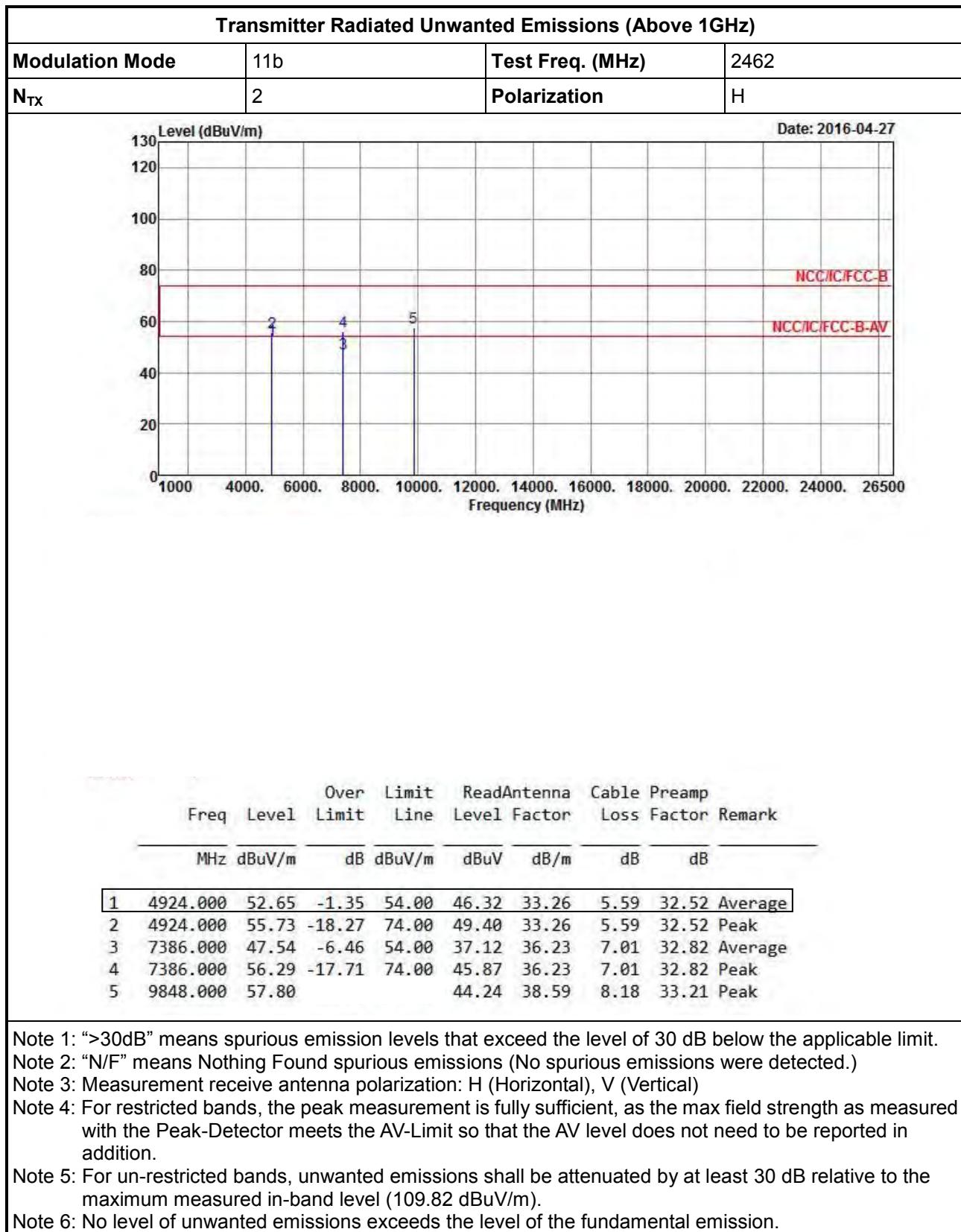


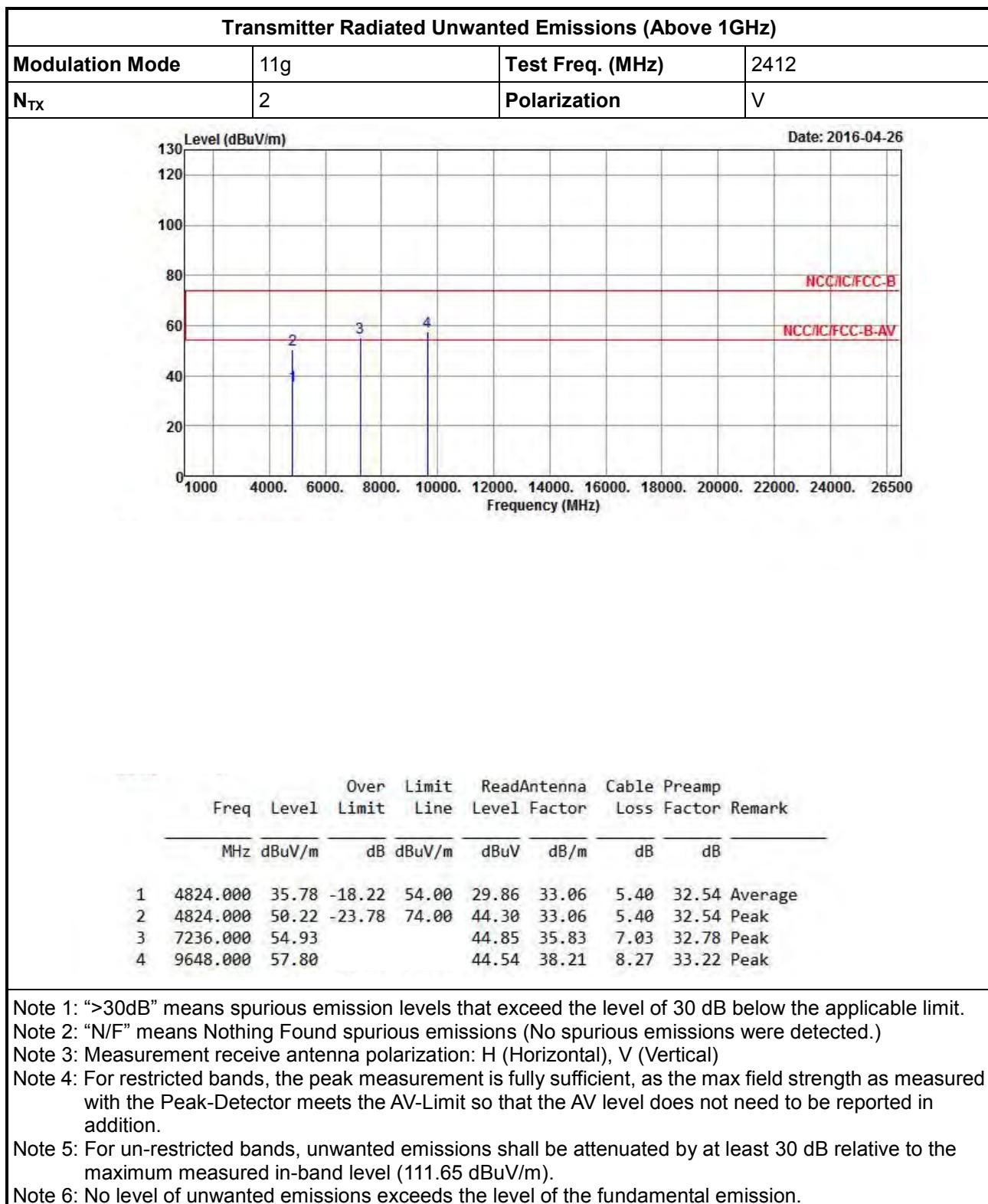
Transmitter Radiated Unwanted Emissions (Above 1GHz)																																																																							
Modulation Mode	11b	Test Freq. (MHz)		2437																																																																			
N _{TX}	2	Polarization		V																																																																			
Date: 2016-04-27																																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Freq</th> <th style="text-align: center;">Over Limit</th> <th style="text-align: center;">Read</th> <th style="text-align: center;">Antenna</th> <th style="text-align: center;">Cable</th> <th style="text-align: center;">Preamp</th> <th style="text-align: center;">Loss</th> <th style="text-align: center;">Factor</th> <th style="text-align: center;">Remark</th> </tr> <tr> <th style="text-align: center;">MHz</th> <th style="text-align: center;">dBuV/m</th> <th style="text-align: center;">dB</th> <th style="text-align: center;">dBuV/m</th> <th style="text-align: center;">dBuV</th> <th style="text-align: center;">dB/m</th> <th style="text-align: center;">dB</th> <th style="text-align: center;">dB</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">4874.000</td> <td style="text-align: center;">46.24</td> <td style="text-align: center;">-7.76</td> <td style="text-align: center;">54.00</td> <td style="text-align: center;">40.12</td> <td style="text-align: center;">33.16</td> <td style="text-align: center;">5.49</td> <td style="text-align: center;">32.53 Average</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">4874.000</td> <td style="text-align: center;">52.65</td> <td style="text-align: center;">-21.35</td> <td style="text-align: center;">74.00</td> <td style="text-align: center;">46.53</td> <td style="text-align: center;">33.16</td> <td style="text-align: center;">5.49</td> <td style="text-align: center;">32.53 Peak</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">7311.000</td> <td style="text-align: center;">45.86</td> <td style="text-align: center;">-8.14</td> <td style="text-align: center;">54.00</td> <td style="text-align: center;">35.63</td> <td style="text-align: center;">36.01</td> <td style="text-align: center;">7.02</td> <td style="text-align: center;">32.80 Average</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">7311.000</td> <td style="text-align: center;">55.49</td> <td style="text-align: center;">-18.51</td> <td style="text-align: center;">74.00</td> <td style="text-align: center;">45.26</td> <td style="text-align: center;">36.01</td> <td style="text-align: center;">7.02</td> <td style="text-align: center;">32.80 Peak</td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">9748.000</td> <td style="text-align: center;">57.03</td> <td></td> <td></td> <td style="text-align: center;">43.63</td> <td style="text-align: center;">38.42</td> <td style="text-align: center;">8.20</td> <td style="text-align: center;">33.22 Peak</td> </tr> </tbody> </table>									Freq	Over Limit	Read	Antenna	Cable	Preamp	Loss	Factor	Remark	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		1	4874.000	46.24	-7.76	54.00	40.12	33.16	5.49	32.53 Average	2	4874.000	52.65	-21.35	74.00	46.53	33.16	5.49	32.53 Peak	3	7311.000	45.86	-8.14	54.00	35.63	36.01	7.02	32.80 Average	4	7311.000	55.49	-18.51	74.00	45.26	36.01	7.02	32.80 Peak	5	9748.000	57.03			43.63	38.42	8.20	33.22 Peak
Freq	Over Limit	Read	Antenna	Cable	Preamp	Loss	Factor	Remark																																																															
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB																																																																
1	4874.000	46.24	-7.76	54.00	40.12	33.16	5.49	32.53 Average																																																															
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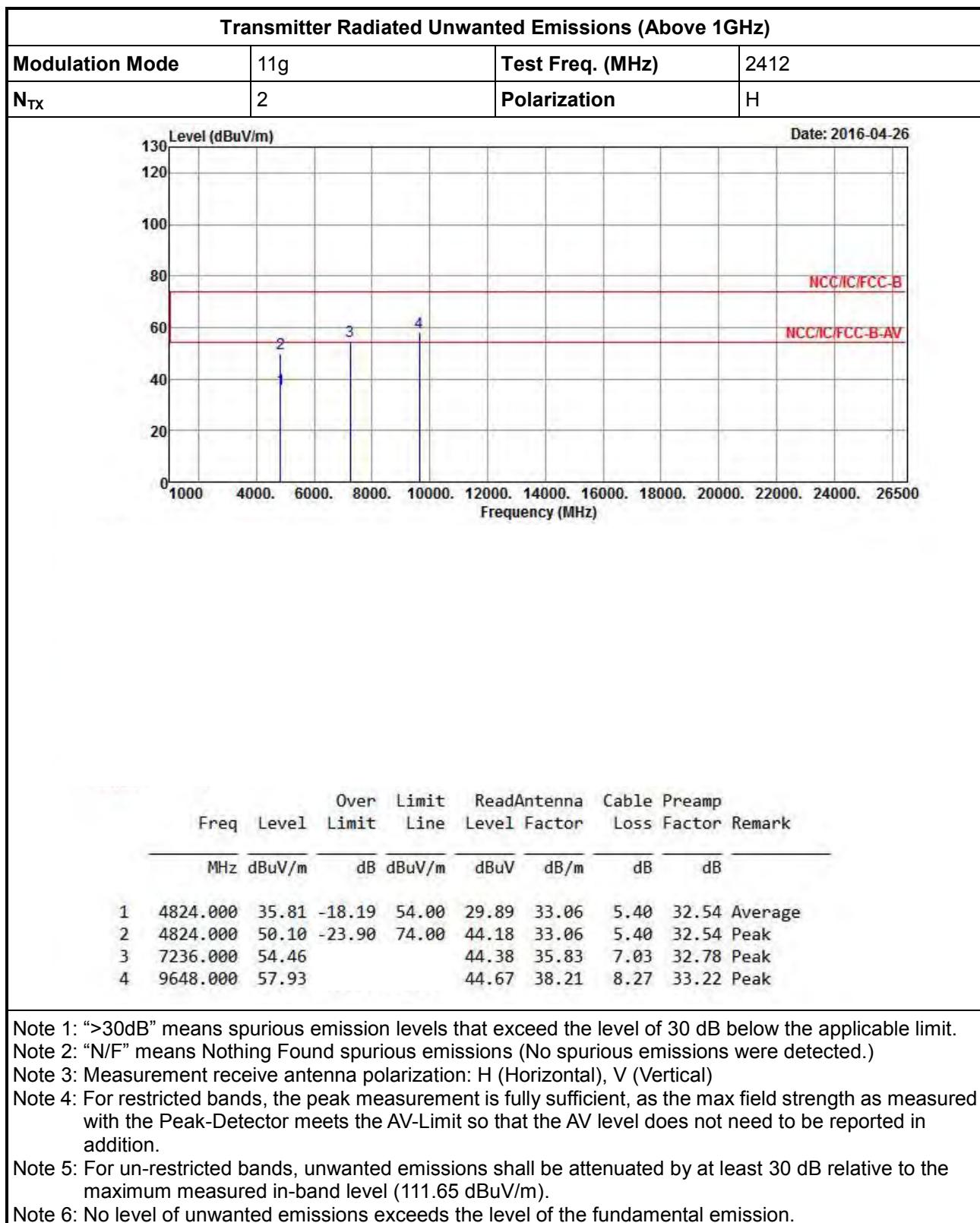
Note 1: ">30dB" means spurious emission levels that exceed the level of 30 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted 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 30 dB relative to the maximum measured in-band level (111.99 dBuV/m).
 Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

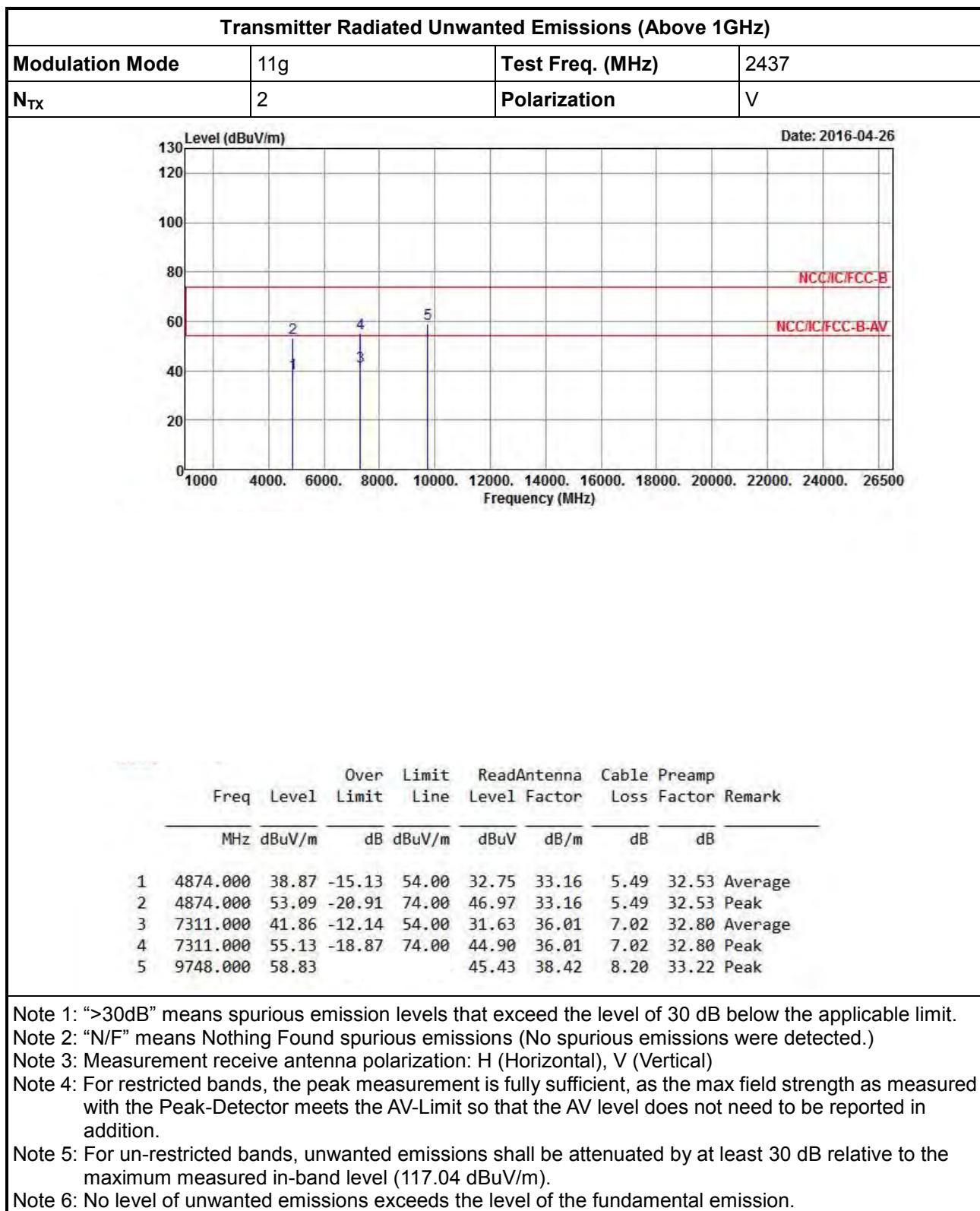


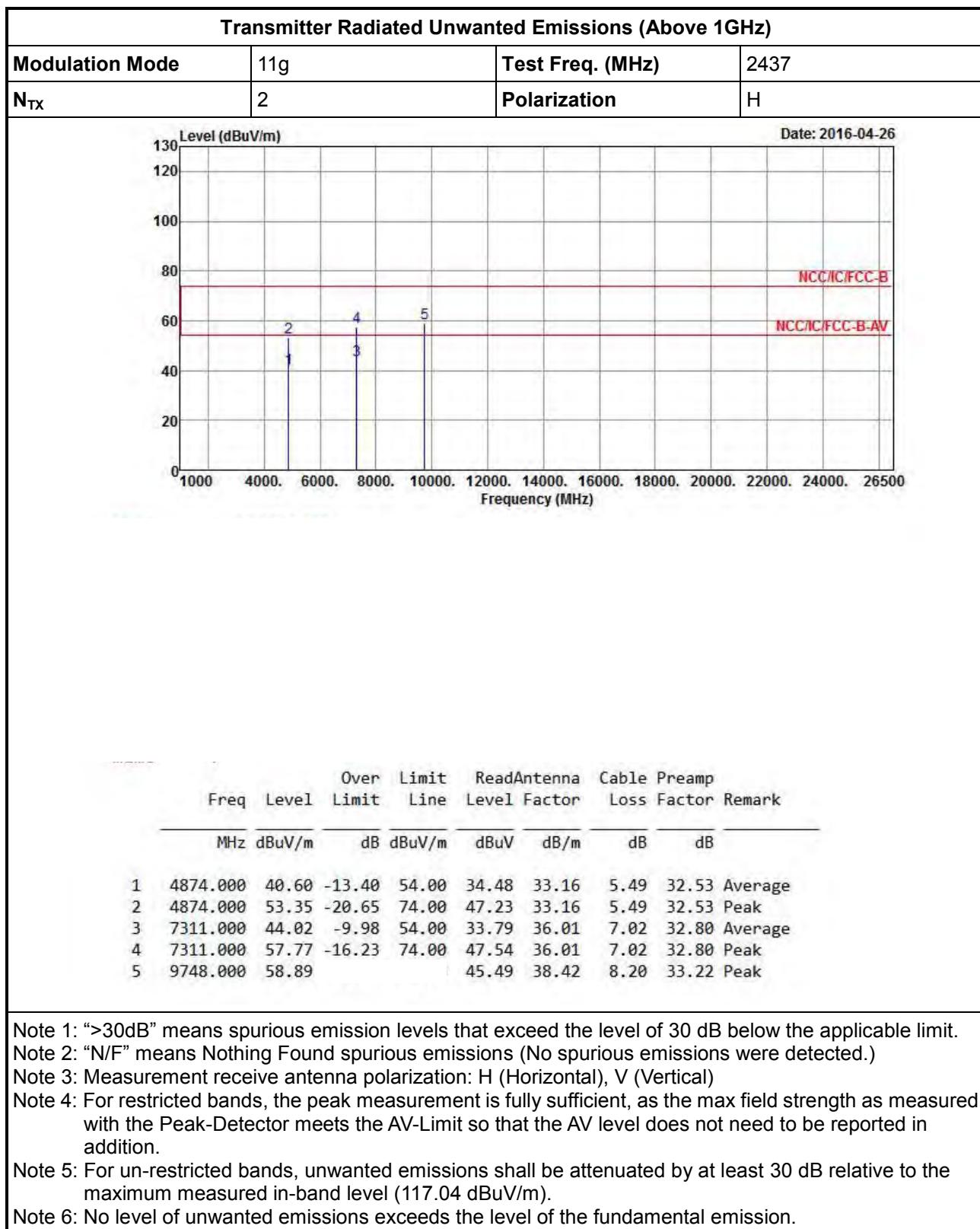








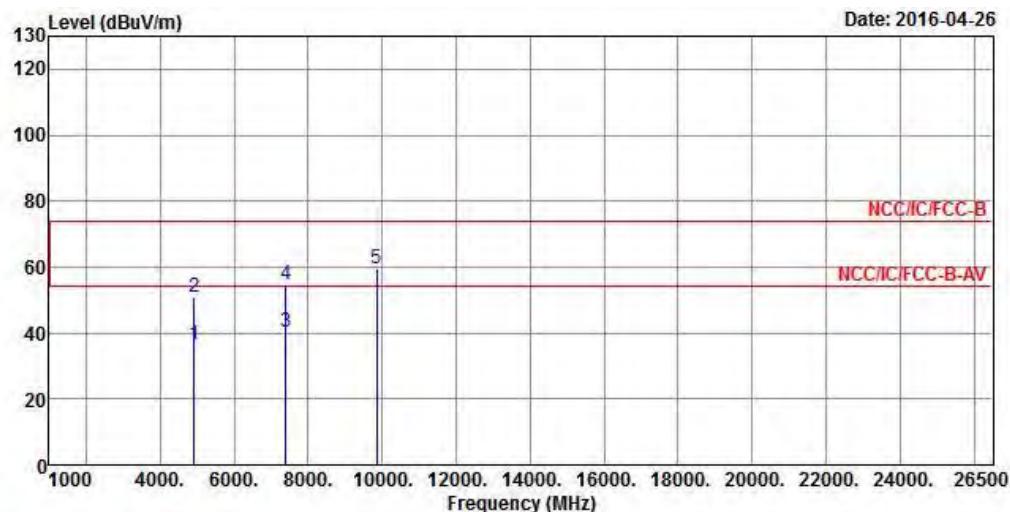






Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	11g	Test Freq. (MHz)	2462
N _{TX}	2	Polarization	V



Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark
		Limit	Line	Antenna	Level	Factor	Loss	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	4924.000	36.50	-17.50	54.00	30.17	33.26	5.59	32.52 Average
2	4924.000	50.99	-23.01	74.00	44.66	33.26	5.59	32.52 Peak
3	7386.000	40.50	-13.50	54.00	30.08	36.23	7.01	32.82 Average
4	7386.000	54.77	-19.23	74.00	44.35	36.23	7.01	32.82 Peak
5	9848.000	59.28			45.72	38.59	8.18	33.21 Peak

Note 1: ">30dB" means spurious emission levels that exceed the level of 30 dB below the applicable limit.

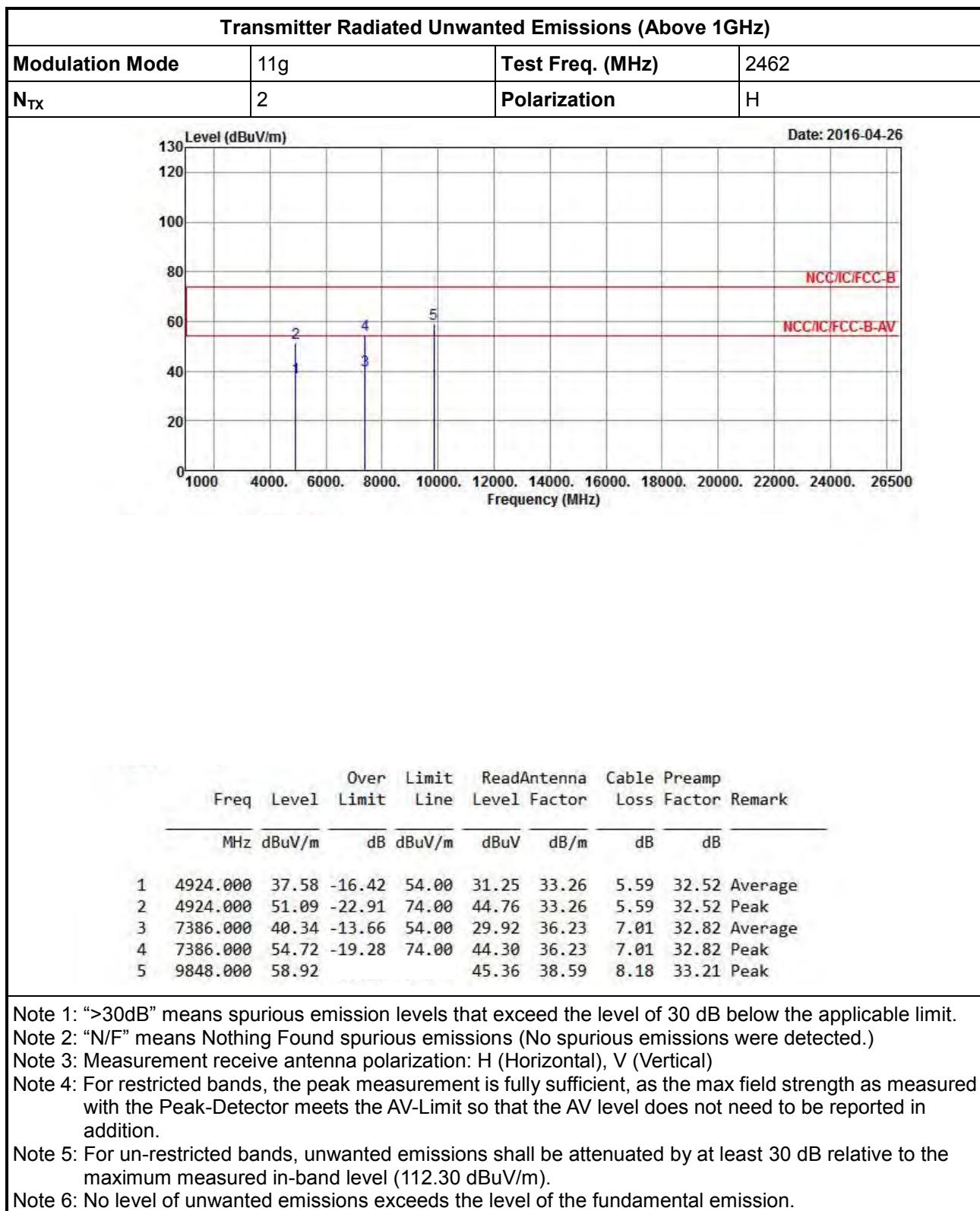
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

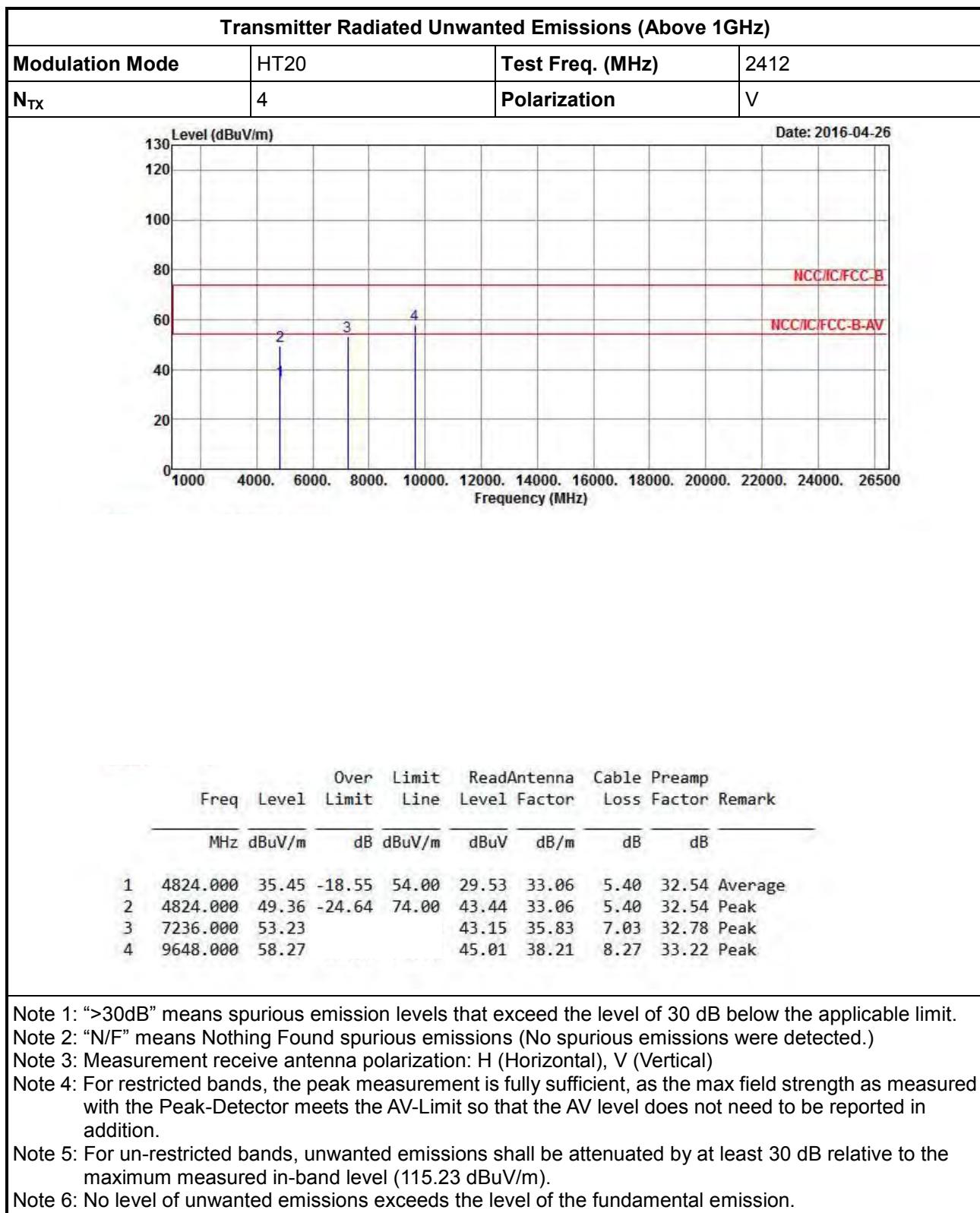
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

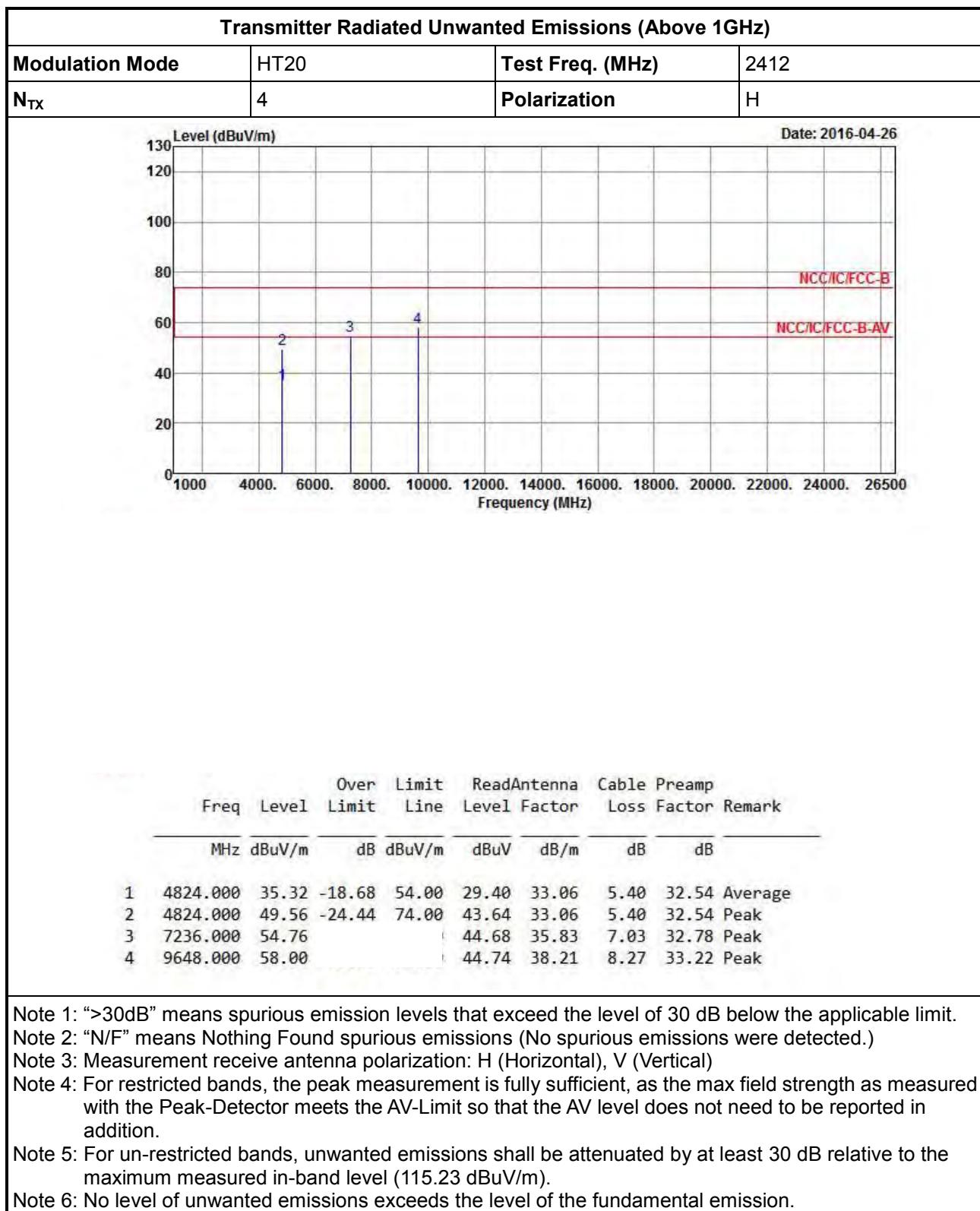
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

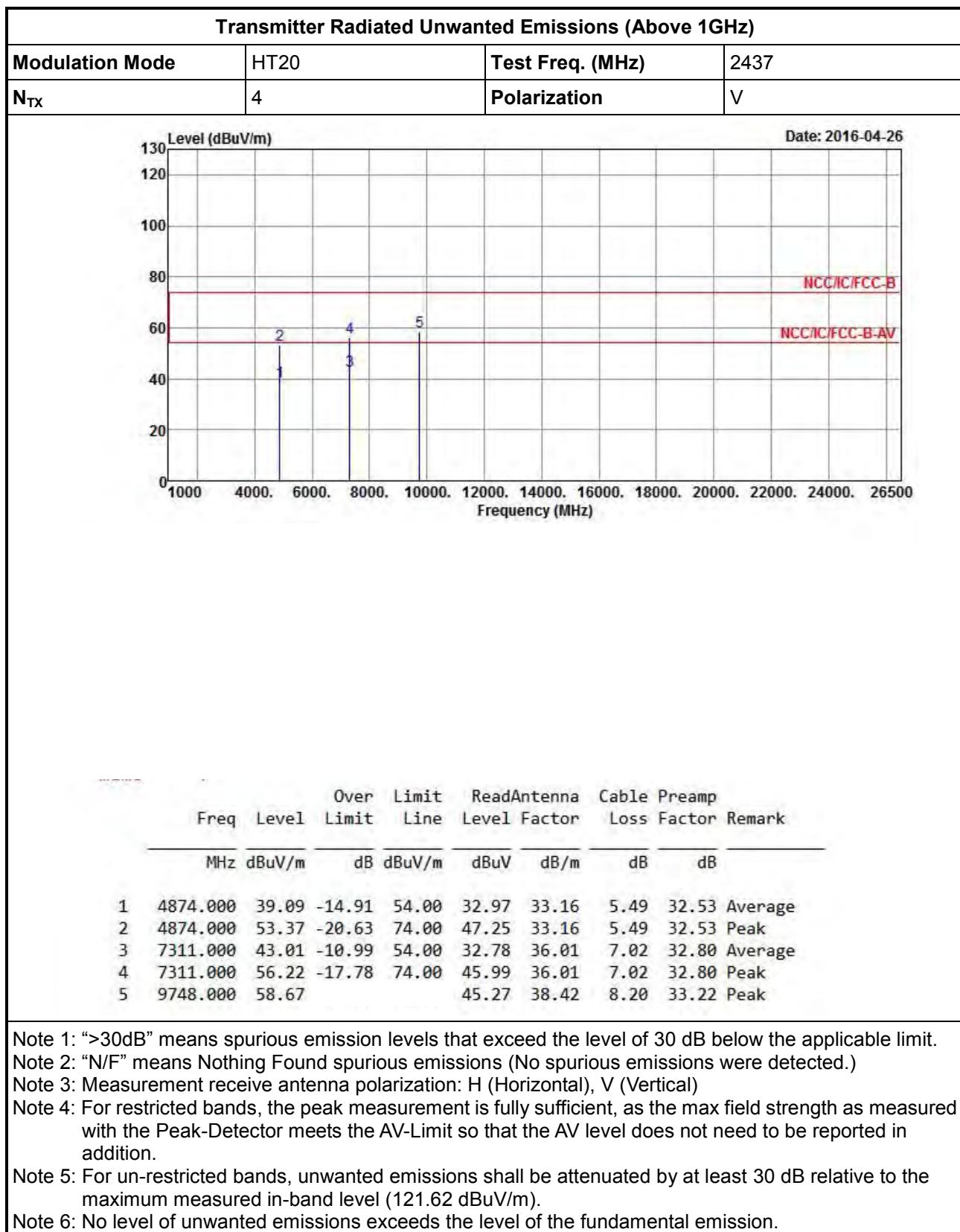
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 30 dB relative to the maximum measured in-band level (112.30 dBuV/m).

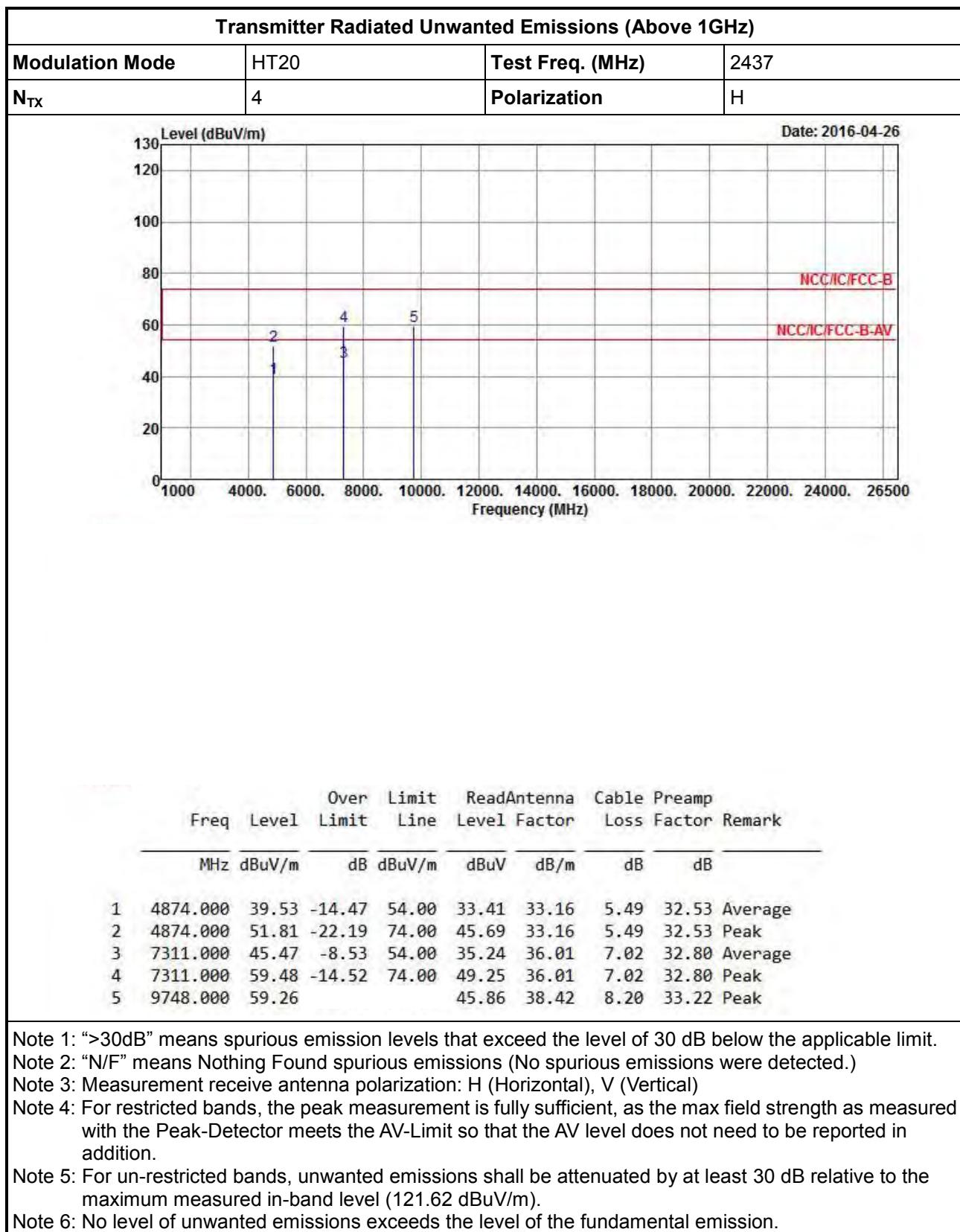
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.







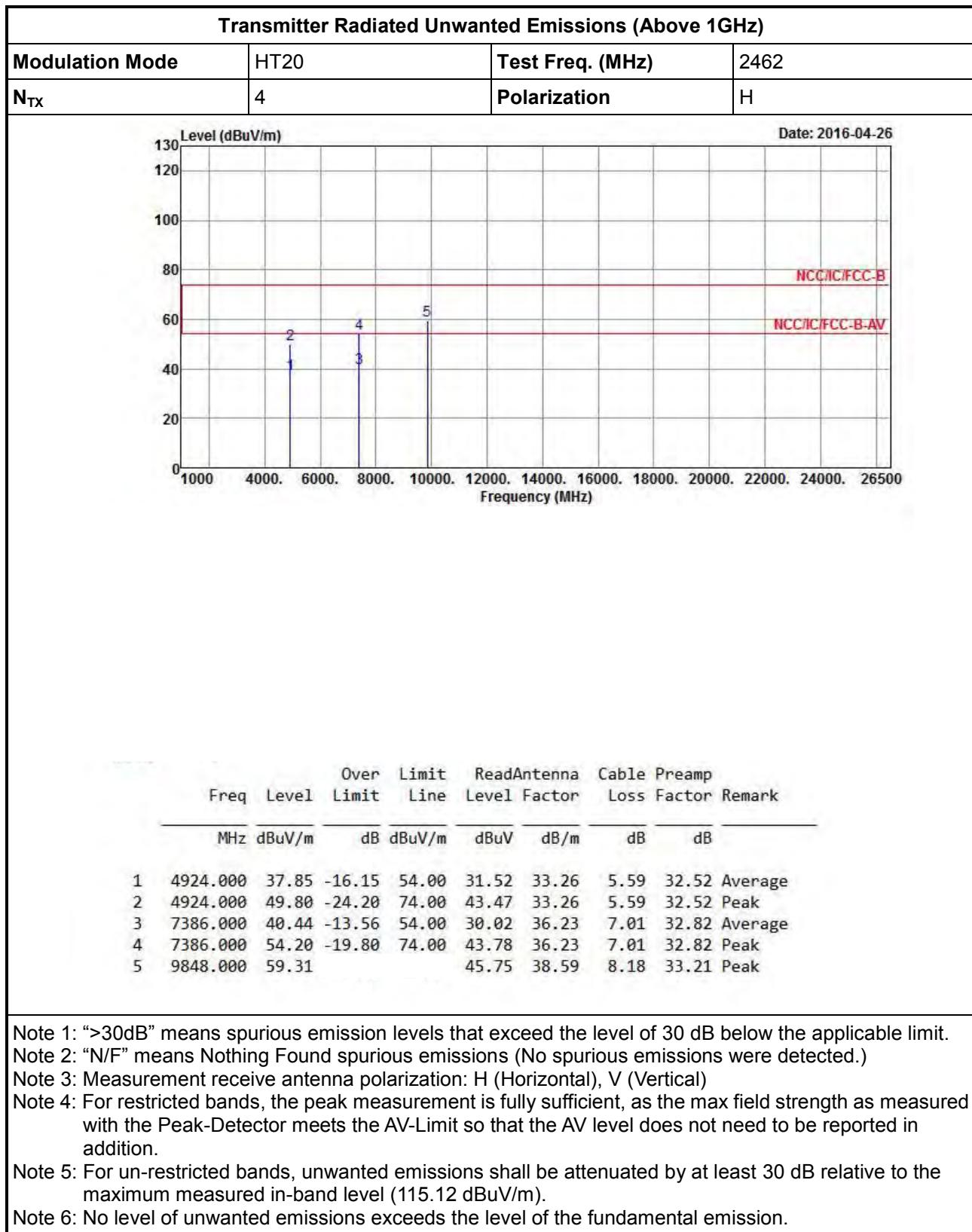






Transmitter Radiated Unwanted Emissions (Above 1GHz)												
Modulation Mode	HT20		Test Freq. (MHz)		2462							
N _{TX}	4		Polarization		V							
Date: 2016-05-20												
Emissions Data (dBuV/m)												
Freq	Level	Over Limit	Line	Read	Antenna	Cable	Preamp	Remark				
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB					
1	4924.000	37.41	-16.59	54.00	31.08	33.26	5.59	32.52 Average				
2	4924.000	49.08	-24.92	74.00	42.75	33.26	5.59	32.52 Peak				
3	7386.000	40.38	-13.62	54.00	29.96	36.23	7.01	32.82 Average				
4	7386.000	53.67	-20.33	74.00	43.25	36.23	7.01	32.82 Peak				
5	9848.000	57.82			44.26	38.59	8.18	33.21 Peak				

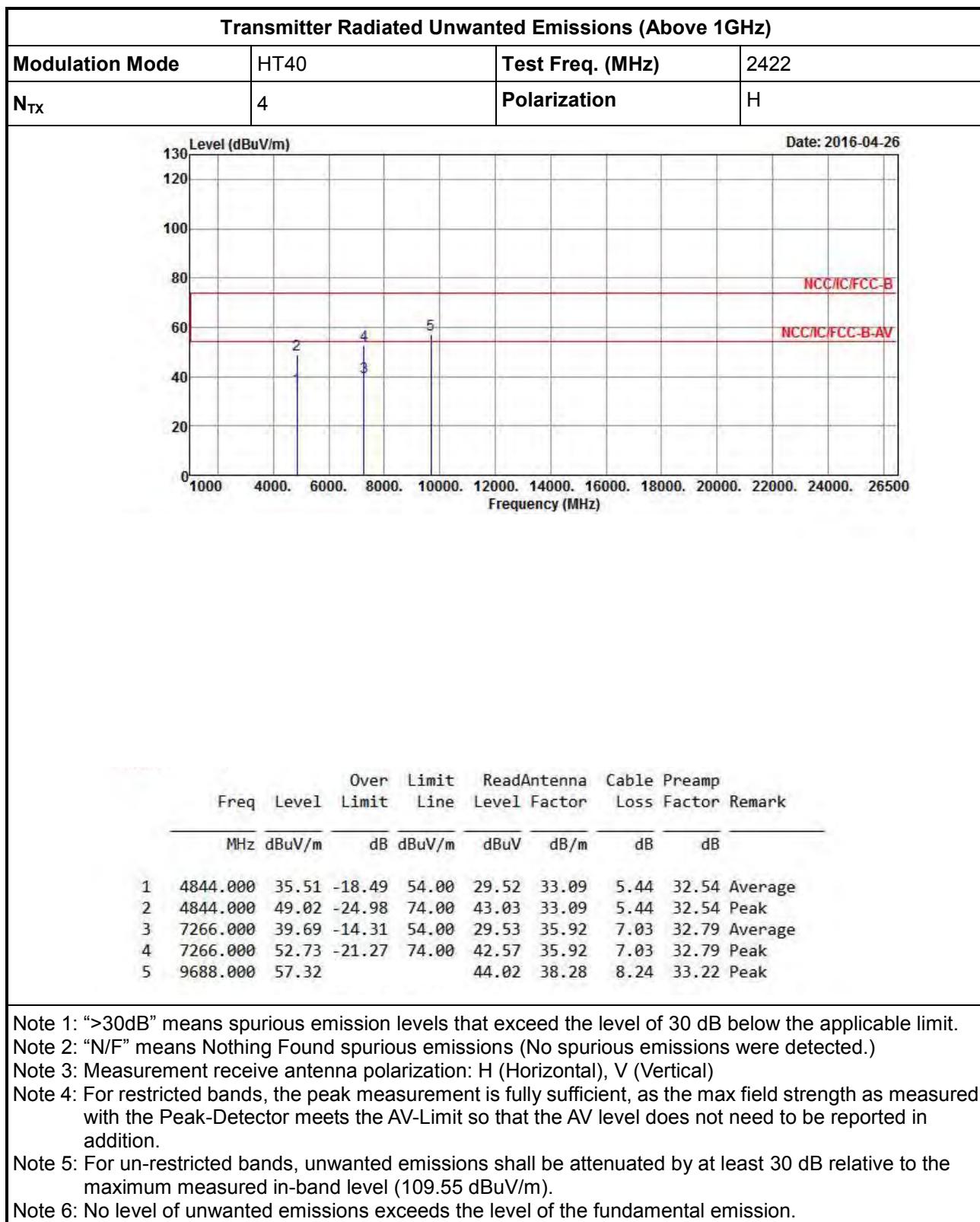
Note 1: ">30dB" means spurious emission levels that exceed the level of 30 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 4: For restricted 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 30 dB relative to the maximum measured in-band level (115.12 dBuV/m).
 Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

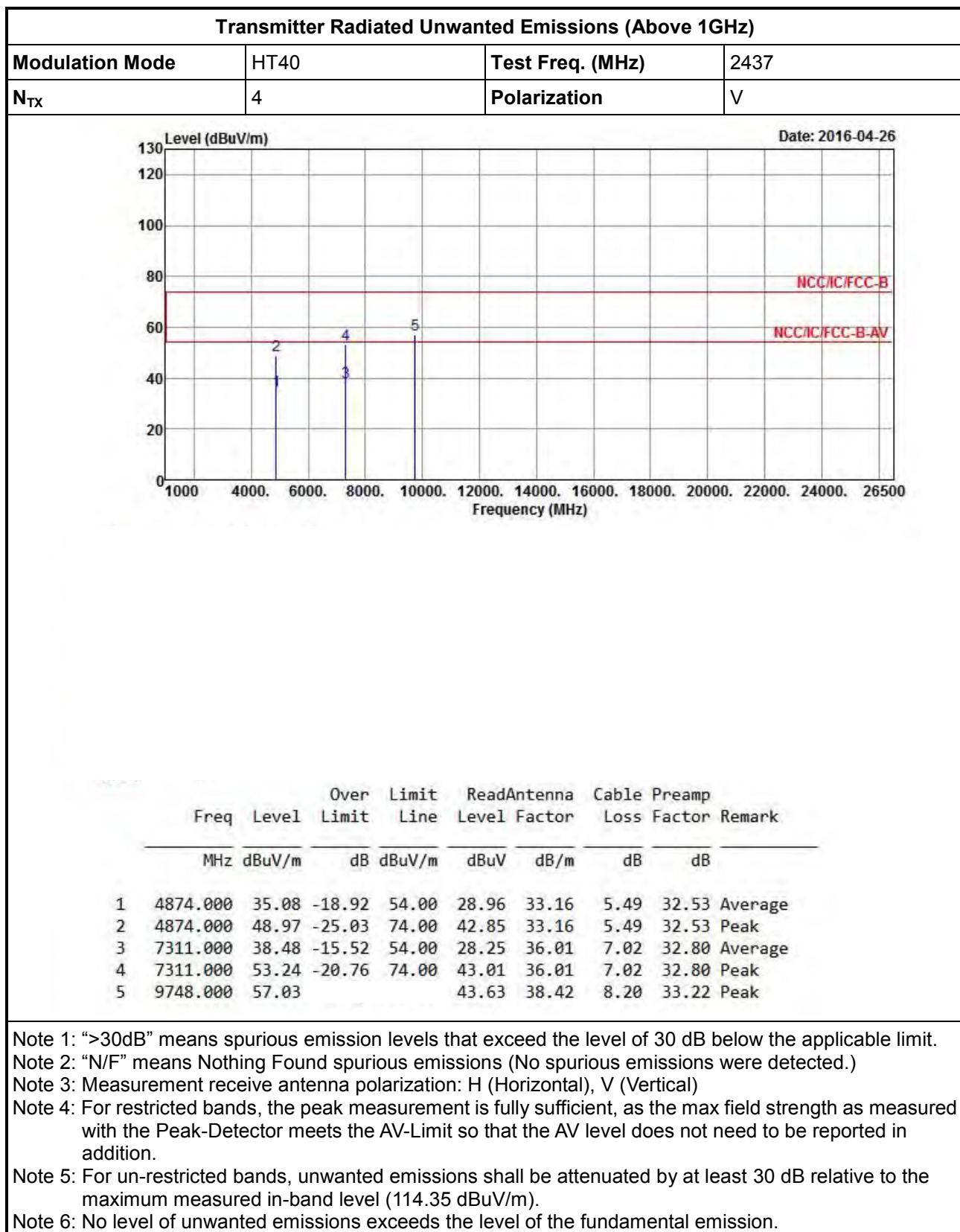


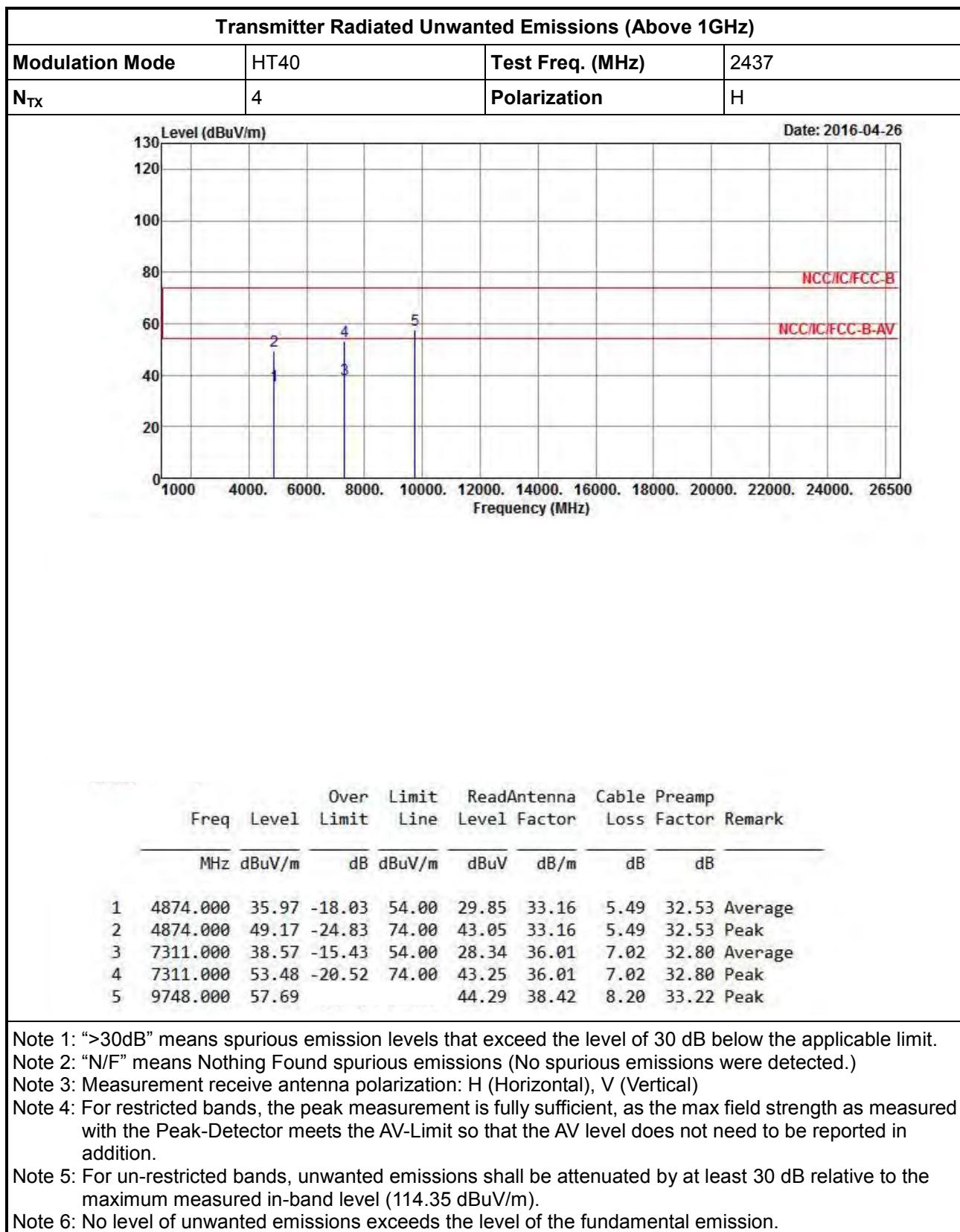


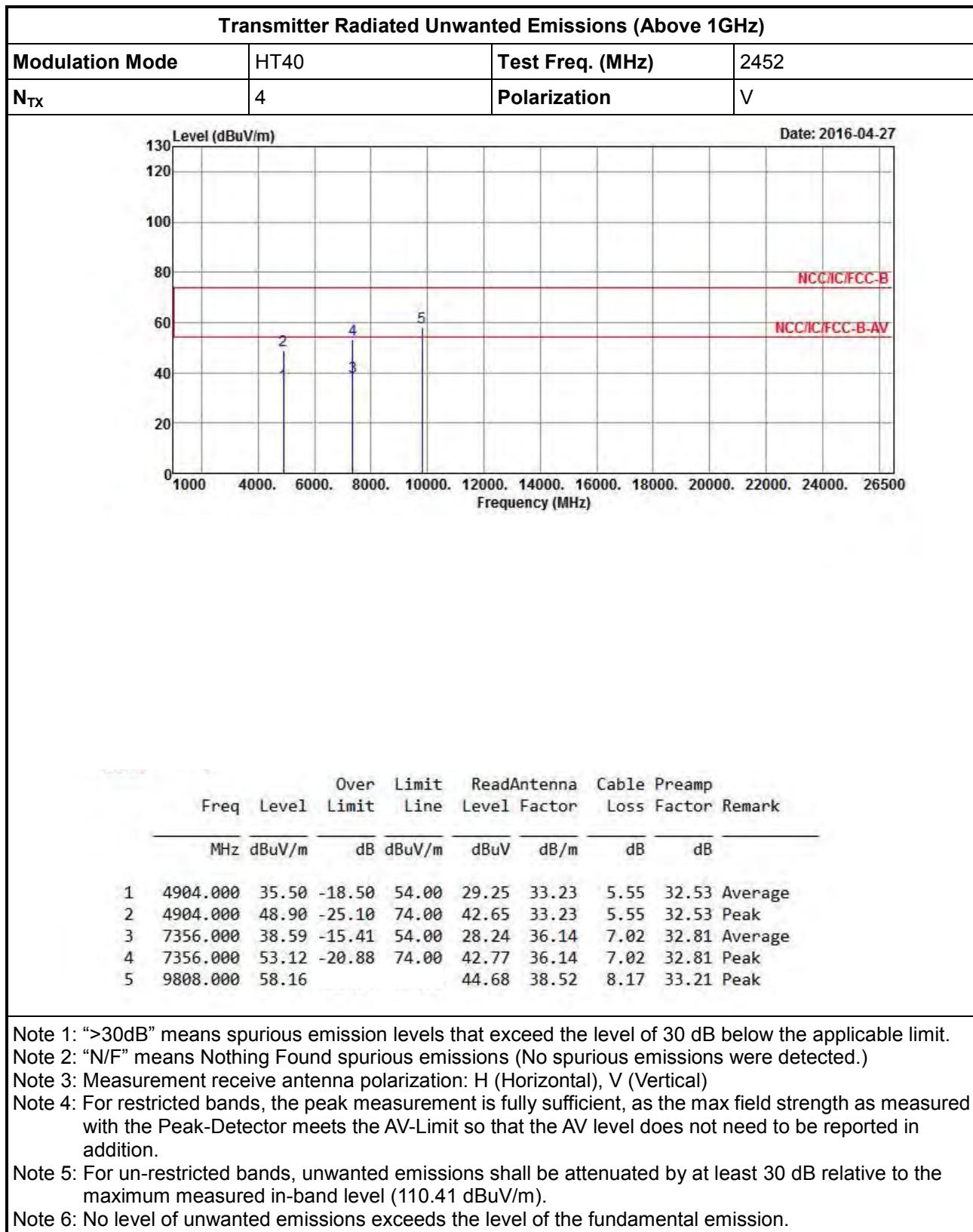
Transmitter Radiated Unwanted Emissions (Above 1GHz)																																											
Modulation Mode		HT40		Test Freq. (MHz)		2422																																					
N _{TX}	4			Polarization		V																																					
Level (dBuV/m)									Date: 2016-04-26																																		
									NCC/IC/FCC-B																																		
									NCC/IC/FCC-B-AV																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Freq</th> <th rowspan="2">Level</th> <th>Over</th> <th>Limit</th> <th>Read</th> <th>Antenna</th> <th>Cable</th> <th>Preamp</th> <th rowspan="2">Remark</th> </tr> <tr> <th>Limit</th> <th>Line</th> <th>Level</th> <th>Factor</th> <th>Loss</th> <th>Factor</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>MHz</td> <td>dBuV/m</td> <td>dB</td> <td>dBuV/m</td> <td>dBuV</td> <td>dB/m</td> <td>dB</td> <td>dB</td> </tr> </tbody> </table>										Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark	Limit	Line	Level	Factor	Loss	Factor												MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark																																			
		Limit	Line	Level	Factor	Loss	Factor																																				
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB																																		
1	4844.000	34.62	-19.38	54.00	28.63	33.09	5.44	32.54	Average																																		
2	4844.000	48.13	-25.87	74.00	42.14	33.09	5.44	32.54	Peak																																		
3	7266.000	38.78	-15.22	54.00	28.62	35.92	7.03	32.79	Average																																		
4	7266.000	52.27	-21.73	74.00	42.11	35.92	7.03	32.79	Peak																																		
5	9688.000	54.87			41.57	38.28	8.24	33.22	Peak																																		

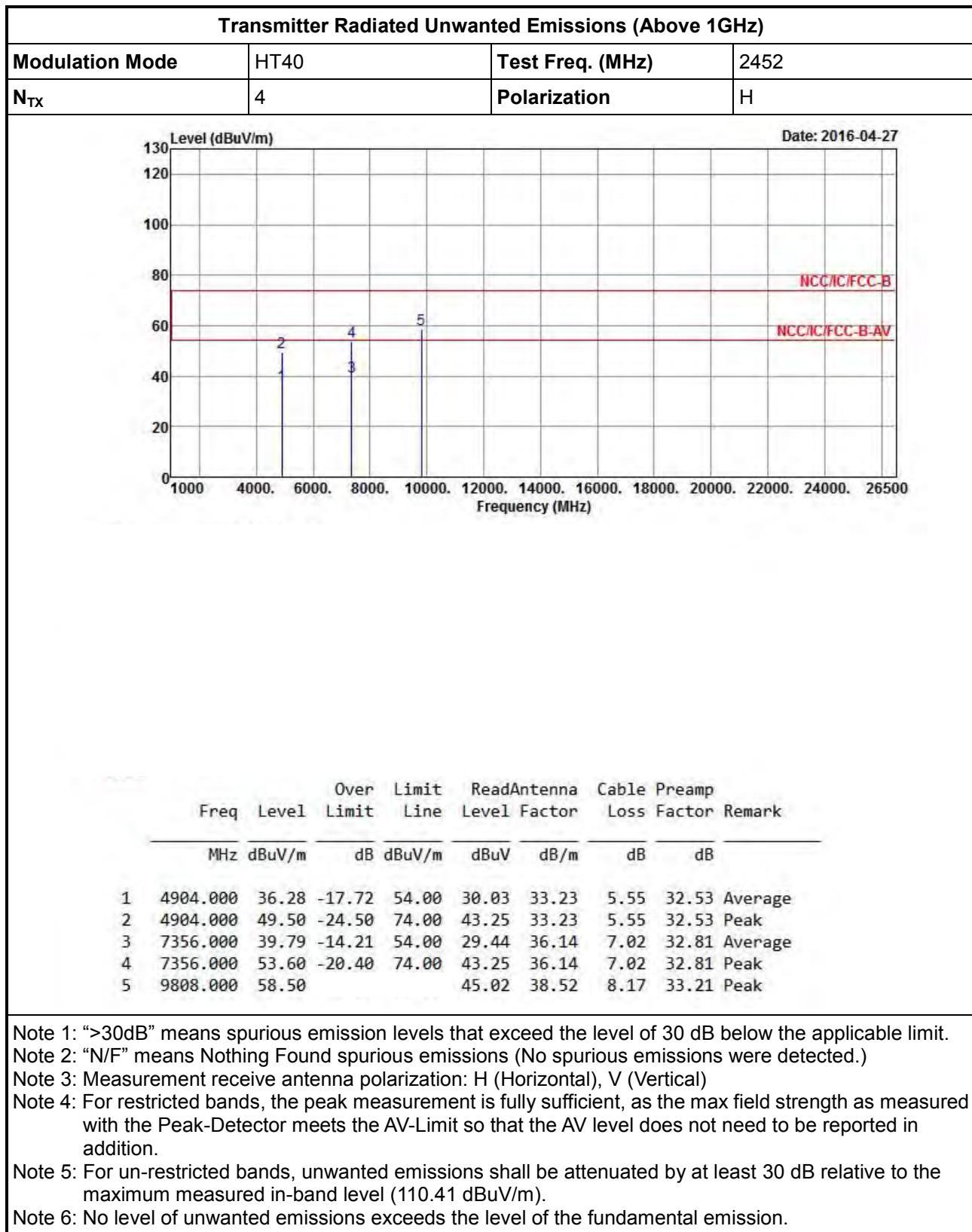
 | | | | | | | | || Note 1: ">30dB" means spurious emission levels that exceed the level of 30 dB below the applicable limit. Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.) Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical) Note 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 30 dB relative to the maximum measured in-band level (109.55 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 Last Cal.	Calibration Due Date
EMC Receiver	KETSIGHT	N9038A	MY54130031	20Hz ~ 8.4GHz	Apr. 08, 2015	Apr. 07, 2016
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 26, 2016	Jan. 25, 2017
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	Oct. 30, 2015	Oct. 29, 2016
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	N/A

< RF Conducted >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	9KHz~40GHz	Feb 16, 2016	Feb 15, 2017
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 28, 2015	Jul. 27, 2016
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Feb. 04 ,2016	Feb. 03 ,2017
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Feb. 04, 2016	Feb. 03, 2017
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 28, 2015	Jul. 27, 2016

< Radiated Emission >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Nov. 28, 2015	Nov. 27, 2016
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz ~ 18GHz 3m	Dec. 16, 2015	Dec. 15, 2016
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 10, 2016	May 09, 2017
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	SCHWARZBECK	BBHA9120D	1531	1GHz ~ 18GHz	Apr. 22, 2016	Apr. 21, 2017
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz ~ 40GHz	Jan. 29, 2016	Jan. 28, 2017

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Loop Antenna	TESEQ	HLA 6120	31244	9 kHz~30 MHz	Feb. 02, 2015	Feb. 01, 2017