

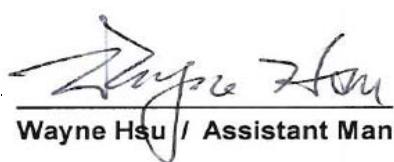
FCC Test Report

Equipment : 150N Wireless LAN Travel Router
Brand Name : EDIMAX
Model No. : BR-6258GNL / GR-258GNL / BR-6258nL
FCC ID : NDD9562581206
Standard : 47 CFR FCC Part 15.247
Applicant : EDIMAX TECHNOLOGY CO., LTD.
Manufacturer : No. 3, Wu-Chuan 3rd Road, Wu-Ku
Industrial Park, New Taipei City, Taiwan
Multiple Listing : Please refer to section 1.2

The product sample received on Apr. 20, 2012 and completely tested on Aug. 23, 2012. 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:



Wayne Hsu / Assistant Manager



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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 | 0.16155MHz: 37.81dBuV (17.57dB) - AV 52.45dBuV (12.93dB) - QP | FCC 15.207 | Complied |
| 3.2 | 15.247(a) | 6dB Bandwidth | 6dB Bandwidth Unit [MHz] 2412-2462MHz: 10.18-DSSS 2412-2462MHz: 17.62-OFDM 2422-2452MHz: 35.96-OFDM | ≥500kHz | Complied |
| 3.3 | 15.247(b) | RF Output Power (Maximum Peak Conducted Output Power) | Power [dBm] 2412-2462MHz: 21.00-DSSS 2412-2462MHz: 23.87-OFDM 2422-2452MHz: 22.45-OFDM | Power [dBm] 2412-2462MHz: 30 2422-2452MHz: 30 | Complied |
| 3.4 | 15.247(d) | Power Spectral Density | PSD [dBm/3kHz] 2412-2462MHz: -7.82-DSSS 2412-2462MHz: -13.64-OFDM 2422-2452MHz: -18.57-OFDM | PSD [dBm/3kHz] 2412-2462MHz: 8 2422-2452MHz: 8 | Complied |
| 3.5 | 15.247(c) | Transmitter Radiated Bandedge Emissions | Non-Restricted Bands: 2398.44MHz: 27.27dB Restricted Bands [dBuV/m at 3m]: 2386.57MHz: 61.99 (Margin 12.01dB) - PK 49.90 (Margin 4.10dB) - AV | Non-Restricted Bands: > 20 dB Restricted Bands: FCC 15.209 | Complied |
| 3.6 | 15.247(c) | Transmitter Radiated Unwanted Emissions | Restricted Bands [dBuV/m at 3m]: 4874.00MHz: 57.20 (Margin 16.80dB) - PK 52.95 (Margin 1.05dB) - AV | Non-Restricted Bands: > 20 dB 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 Protocol | Ch. Frequency (MHz) | Channel Number | RF Output Power (dBm) |
| 2400-2483.5 | b | 2412-2462 | 1-11 [11] | 21.00 |
| 2400-2483.5 | g | 2412-2462 | 1-11 [11] | 23.87 |
| 2400-2483.5 | n (HT20) | 2412-2462 | 1-11 [11] | 23.07 |
| 2400-2483.5 | n (HT40) | 2422-2452 | 3-9 [7] | 22.45 |

Note 1: IEEE Std. 802.11-2007 modulation consists of IEEE Std. 802.11g-2003 and IEEE Std. 802.11b-1999.
 Note 2: IEEE Std. 802.11n-2009 modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40.
 Note 3: RF output power specifies that Maximum Peak Conducted Output Power.

| Transmitter Chains & Receiver Chains Information | | | | | |
|--|--|---------------------------------------|--|------------------------------|-------------|
| IEEE Std. 802.11 Protocol | Number of Transmit Chains (N_{TX}) | Number of Receive Chains (N_{RX}) | Correlation Signals with Multiple N_{TX} | 99% Emission Bandwidth (MHz) | Co-location |
| b | 1 | 1 | N/A | 14.99 | N/A |
| g | 1 | 1 | N/A | 16.87 | N/A |
| n (HT20) | 1 | 1 | N/A | 18.01 | N/A |
| n (HT40) | 1 | 1 | N/A | 36.54 | N/A |

Note 1: 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 type="checkbox"/> | Equipment placed on the market without antennas |
| <input checked="" type="checkbox"/> | Integral antenna (antenna permanently attached) |
| | <input type="checkbox"/> Temporary RF connector provided |
| | <input checked="" type="checkbox"/> No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path. |

| Antenna General Information | | | | | | | |
|------------------------------------|----|---|-----------|-----------------------------|-----------------|--|--|
| Transmit Chains Power Distribution | | | | Antenna General Information | | | |
| Ant. No. | PL | Ant. Port [Ant No. X connect to Ant. Port Y] | Ant. Cat. | Ant. Type | G_{ANT} (dBi) | DG (dBi) [correlated] $N_{TX} = 1$ | DG (dBi) [uncorrelated] $N_{TX} = 1$ |
| 1 | 1 | 1,2 | Integral | PIFA | 2.15 | N/A | N/A |

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 (DG) = $G_{ANT} + 10 \log(N)$ dBi
All transmit signals are completely uncorrelated, Directional Gain (DG) = 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 (DG) =
 $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$ dBi
All transmit signals are completely uncorrelated, Directional Gain (DG) =
 $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N]$ dBi

1.1.3 Type of EUT

| Identify EUT | |
|--|---|
| EUT Serial Number | |
| Presentation of Equipment | <input type="checkbox"/> Production ; <input checked="" type="checkbox"/> Pre-Production ; <input 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) | Voltage Duty Factor [dB] – (20 log 1/x) |
| <input checked="" type="checkbox"/> 100% - IEEE 802.11b | 0 | 0 |
| <input checked="" type="checkbox"/> 100% - IEEE 802.11g | 0 | 0 |
| <input checked="" type="checkbox"/> 100% - IEEE 802.11n (HT20) | 0 | 0 |
| <input checked="" type="checkbox"/> 94 - IEEE 802.11n (HT40) | 0.27 | 0.54 |

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"/> Internal DC supply | <input type="checkbox"/> External DC adapter | <input type="checkbox"/> Battery |

1.2 Table for Multiple Listing

The models are exactly same in both physical and electrical. The different in model number for marketing purpose.

| No. | Brand Name | Model Name |
|-----|------------|------------------------------------|
| 1 | Edimax | BR-6258GNL / GR-258GNL / BR-6258nL |

1.3 Accessories and Support Equipment

| Support Equipment - Conducted Emissions | | | | |
|---|----------------------------------|------------|---------------|------------|
| No. | Equipment | Brand Name | Model Name | Serial No. |
| 1 | Notebook | DELL | VOSTRO 3350 | DoC |
| 2 | iPod Nano | Apple | A1320 | DoC |
| 3 | (USB) Mouse | Microsoft | 1004 | DoC |
| 4 | Notebook (Remote Workstation) | DELL | INSPIRON 6400 | DoC |
| 5 | AP (Remote Workstation) | D-LINK | DNS-G120 | - |

| Support Equipment - Radiated Emissions | | | | |
|--|----------------------------|------------|------------|------------|
| No. | Equipment | Brand Name | Model Name | Serial No. |
| 1 | (USB) Mouse | Microsoft | 1004 | DoC |
| 2 | Notebook | DELL | E5520 | DoC |
| 3 | iPod Nano | Apple | A1199 | DoC |
| 4 | AP (Remote Workstation) | D-LINK | DNS-G120 | - |

1.4 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
- ◆ FCC KDB 662911
- ◆ FCC KDB 412172

1.5 Testing Location Information

| Testing Location | | | | |
|-------------------------------------|---------------|--|----------------------|------------|
| <input checked="" type="checkbox"/> | HWA YA | ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. | | |
| | TEL | 886-3-327-3456 | FAX : 886-3-327-0973 | |
| Test Condition | Test Site No. | Test Engineer | Test Environment | Test Date |
| Conducted Emission | CO04-HY | Sam | 24°C / 49% | 08-Jun -12 |
| RF Conducted | TH01-HY | Ian | 24.6°C / 44% | 23-Aug-12 |
| Radiated Emission | 03CH02-HY | Hsiao | 26.1°C / 71% | 13-Jul-12 |

1.6 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 | Limit |
| AC power-line conducted emissions | | ±2.26 dB | N/A |
| Emission bandwidth, 6dB bandwidth | | ±1.42 % | N/A |
| RF output power, conducted | | ±0.63 dB | N/A |
| Power density, conducted | | ±0.81 dB | N/A |
| Unwanted emissions, conducted | 30 – 1000 MHz | ±0.51 dB | N/A |
| | 1 – 18 GHz | ±0.67 dB | N/A |
| | 18 – 40 GHz | ±0.83 dB | N/A |
| | 40 – 200 GHz | N/A | N/A |
| All emissions, radiated | 30 – 1000 MHz | ± 2.54 dB | N/A |
| | 1 – 18 GHz | ±3.59 dB | N/A |
| | 18 – 40 GHz | ±3.82 dB | N/A |
| | 40 – 200 GHz | N/A | N/A |
| Temperature | | ±0.8 °C | N/A |
| Humidity | | ±3 % | N/A |
| DC and low frequency voltages | | ±3 % | N/A |
| Time | | ±1.42 % | N/A |
| Duty Cycle | | ±1.42 % | N/A |

2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

| Worst Modulation Used for Conformance Testing | | | | | | |
|---|--|-----------------|-----------------------|-----------------------|-----------------------|-----------------------------------|
| Power Level | | 1 | | | | |
| IEEE 802.11 Protocol | Number of Transmit Chains (N_{TX}) | Data Rate / MCS | Worst Data Rate / MCS | Worst Modulation Mode | RF Output Power (dBm) | Power Spectral Density (dBm/3kHz) |
| b | 1 | 1-11 Mbps | 11 Mbps | 11B-20M | 21.00 | -7.82 |
| g | 1 | 6-54 Mbps | 6 Mbps | 11G-20M | 23.87 | -13.64 |
| n (HT20) | 1 | MCS 0-15 | MCS 0 | 11N2.4G-20M | 23.07 | -14.77 |
| n (HT40) | 1 | MCS 0-15 | MCS 0 | 11N2.4G-40M | 22.45 | -18.57 |

Note 1: IEEE Std. 802.11n-2009 modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40. Worst modulation mode of Guard Interval (GI) is 400ns.

Note 2: Modulation modes consist of 11B-20M, 11G-20M, 11N2.4G-20M, 11N2.4G-40M:
 11B: IEEE 802.11b, 11G: IEEE 802.11g, 11N2.4G: IEEE 802.11n (2.4GHz Band)
 20M/40M: Channel Bandwidth 20MHz/40MHz

Note 3: RF output power specifies that Maximum Peak Conducted Output Power.

Note 4: EUT operating mode that using same power level between 1 transmit chains and 1 transmit chain.
 Then EUT with 1 transmit chains which does not change its (per transmit chain) RF output power based on the number of active chains, need not undergo repeat testing for all the transmit chains.

2.2 Test Channel Frequencies Configuration

| Test Channel Frequencies Configuration | | |
|--|-----------------------|---|
| IEEE 802.11 Protocol | Worst Modulation Mode | Test Channel Frequencies (MHz) – FX (Frequencies Abbreviations) |
| b | 11B-20M | 2412-(F1), 2437-(F2), 2462-(F3) |
| g | 11G-20M | 2412-(F1), 2437-(F2), 2462-(F3) |
| n (HT20) | 11N2.4G-20M | 2412-(F1), 2437-(F2), 2462-(F3) |
| n (HT40) | 11N2.4G-40M | 2422-(F4), 2437-(F5), 2452-(F6) |

2.3 The Worst Case Power Setting Parameter

| The Worst Case Power Setting Parameter | | | | | |
|--|--|-----------------|---------------|-----------------------|-----------------------|
| Power Level | | 1 | | | |
| Test Software Version | | RTL819x_2.2.4 | | | |
| Worst Modulation Mode | Number of Transmit Chains (N_{TX}) | Frequency (MHz) | Power Setting | Worst Data Rate / MCS | RF Output Power (dBm) |
| 11B-20M | 1 | 2412 | 43 | 11 Mbps | 21.00 |
| 11B-20M | 1 | 2437 | 42 | 11 Mbps | 19.98 |
| 11B-20M | 1 | 2462 | 39 | 11 Mbps | 17.92 |
| 11G-20M | 1 | 2412 | 48 | 6 Mbps | 23.24 |
| 11G-20M | 1 | 2437 | 50 | 6 Mbps | 23.87 |
| 11G-20M | 1 | 2462 | 42 | 6 Mbps | 19.86 |
| 11N2.4G-20M | 1 | 2412 | 44 | MCS 0 | 21.89 |
| 11N2.4G-20M | 1 | 2437 | 47 | MCS 0 | 23.07 |
| 11N2.4G-20M | 1 | 2462 | 42 | MCS 0 | 20.54 |
| 11N2.4G-40M | 1 | 2422 | 44 | MCS 0 | 21.33 |
| 11N2.4G-40M | 1 | 2437 | 47 | MCS 0 | 22.45 |
| 11N2.4G-40M | 1 | 2452 | 41 | MCS 0 | 19.33 |

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

2.4 The Worst Case Measurement Configuration

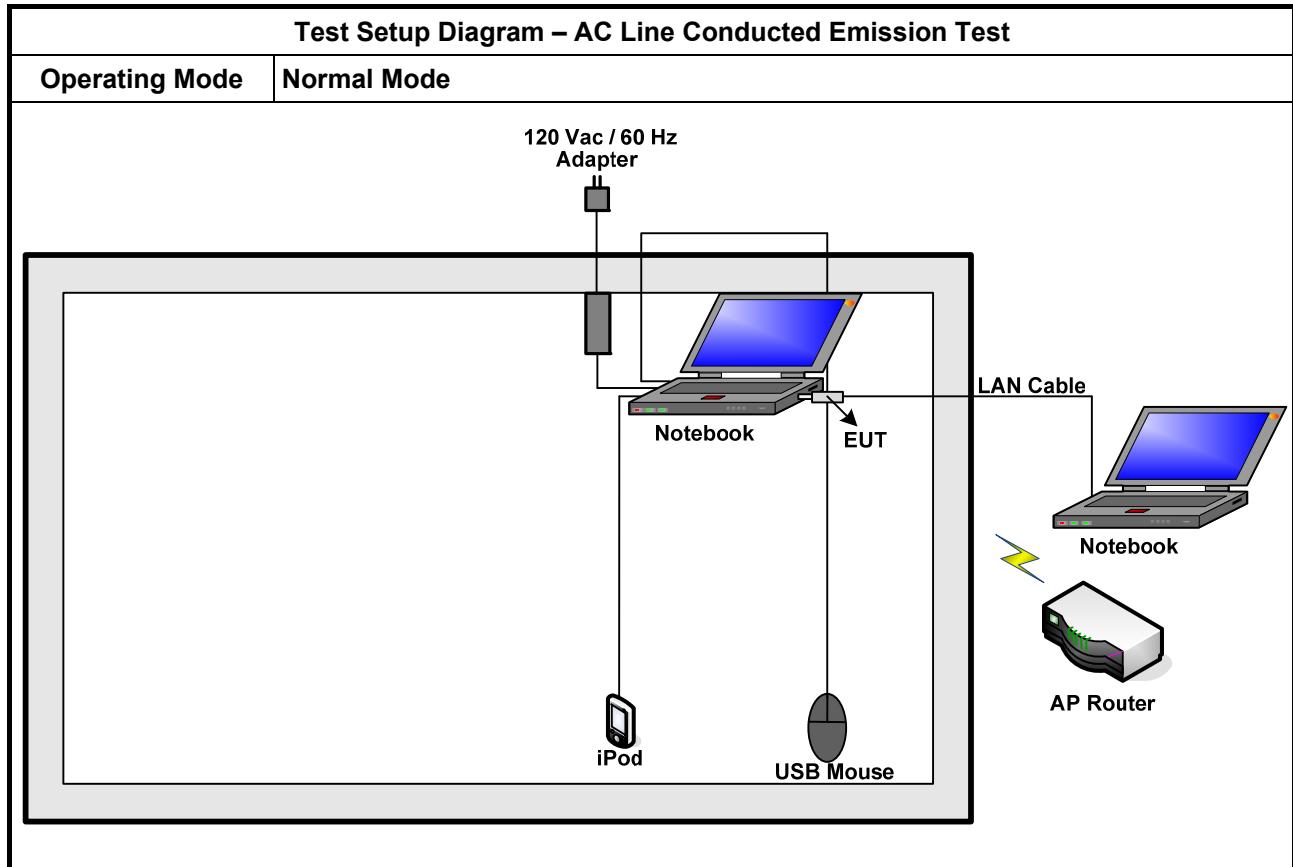
| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| Tests Item | AC power-line conducted emissions |
| Condition | AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz |
| Operating Mode | Operating Mode Description |
| 1 | Normal Link |

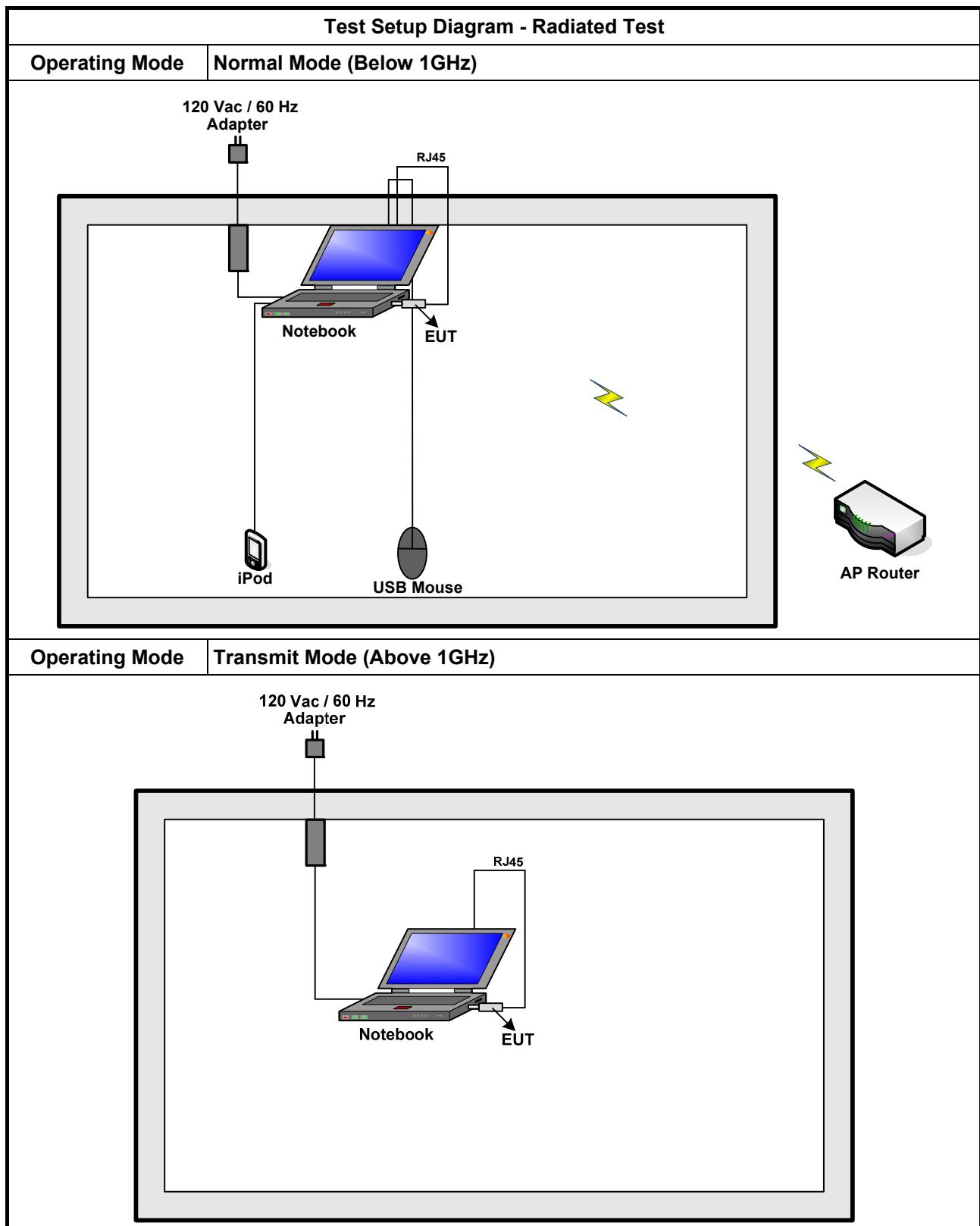
| The Worst Case Mode for Following Conformance Tests | | | | |
|---|---|------------------------------|-----------------------|--------------------|
| Tests Item | RF Output Power Power Spectral Density 6 dB Bandwidth | | | |
| Test Condition | Conducted measurement at transmit chains | | | |
| Worst Modulation Mode | Number of Transmit Chains (N_{TX}) | Worst Data Rate / MCS | Test Frequency | Power Level |
| 11B-20M | 1 | 11 Mbps | F1, F2, F3 | 1 |
| 11G-20M | 1 | 6 Mbps | F1, F2, F3 | 1 |
| 11N2.4G-20M | 1 | MCS 0 | F1, F2, F3 | 1 |
| 11N2.4G-40M | 1 | MCS 0 | F4, F5, F6 | 1 |

| The Worst Case Mode for Following Conformance Tests | | | | |
|---|---|------------------------------|-----------------------|--------------------|
| Tests Item | Transmitter Radiated Bandedge Emissions | | | |
| Test Condition | Radiated measurement | | | |
| Worst Modulation Mode | Number of Transmit Chains (N_{TX}) | Worst Data Rate / MCS | Test Frequency | Power Level |
| 11B-20M | 1 | 11 Mbps | F1, F3 | 1 |
| 11G-20M | 1 | 6 Mbps | F1, F3 | 1 |
| 11N2.4G-20M | 1 | MCS 0 | F1, F3 | 1 |
| 11N2.4G-40M | 1 | MCS 0 | F4, F6 | 1 |

| The Worst Case Mode for Following Conformance Tests | | | | | | |
|---|--|-----------------------|---|-------------|---|--------------------------------|
| Tests Item | Transmitter Radiated Unwanted Emissions | | | | | |
| Test Condition | Radiated measurement | | | | | |
| User Position | <input checked="" type="checkbox"/> EUT will be placed in fixed position. <input type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two or three orthogonal planes. <input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes. | | | | | |
| Operating Mode < 1GHz | <input checked="" type="checkbox"/> 1. Transmit Mode | | | | | |
| Worst Modulation Mode | Number of Transmit Chains (N_{TX}) | Worst Data Rate / MCS | Test Frequency | Power Level | Ant No. | Worst Orthogonal Planes of EUT |
| 11B-20M | 1 | 11 Mbps | F1, F2, F3 | 1 | 1 | X Plane |
| 11G-20M | 1 | 6 Mbps | F1, F2, F3 | 1 | 1 | X Plane |
| 11N2.4G-20M | 1 | MCS 0 | F1, F2, F3 | 1 | 1 | X Plane |
| 11N2.4G-40M | 1 | MCS 0 | F4, F5, F6 | 1 | 1 | X Plane |
| Orthogonal Planes of EUT | X Plane | | Y Plane | | Z Plane | |
| |  | |  | |  | |

2.5 Test Setup Diagram





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.

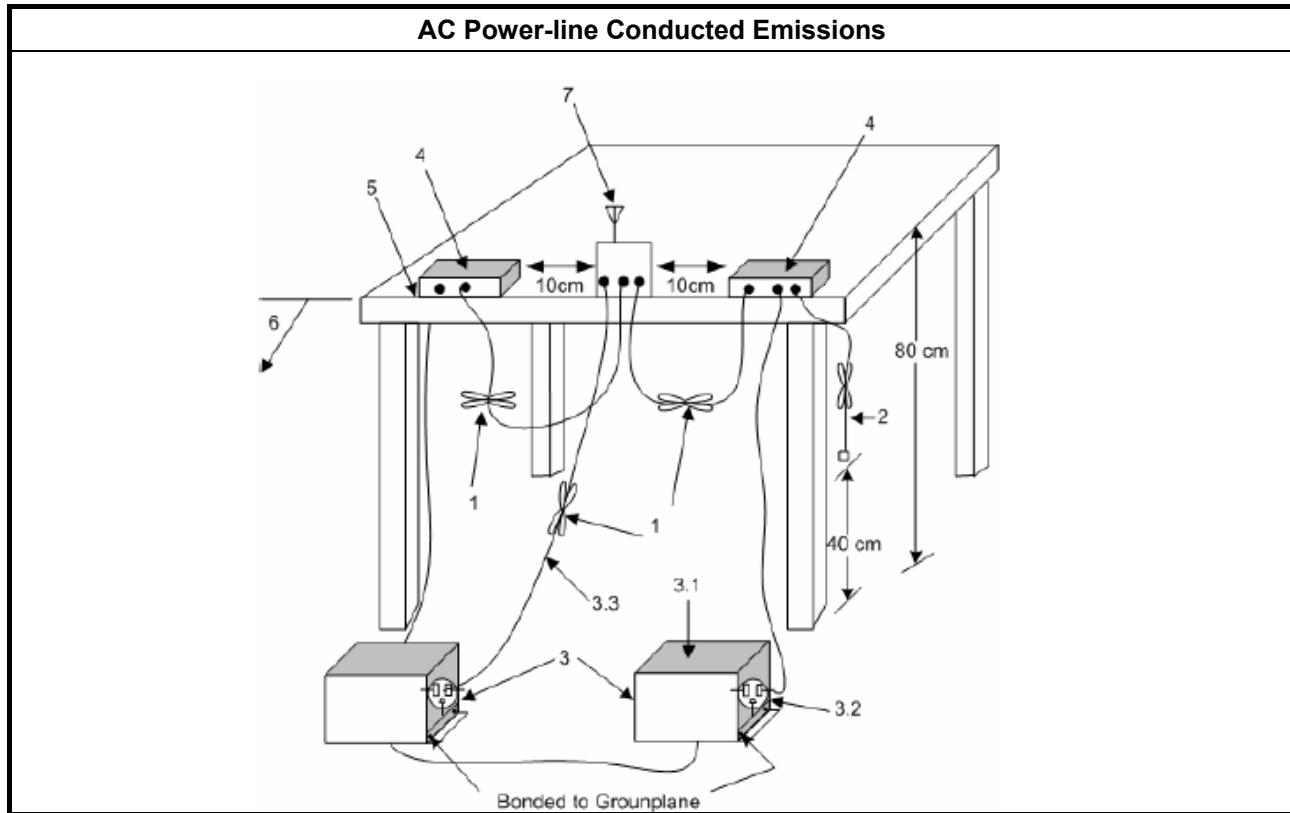
3.1.2 Measuring Instruments

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

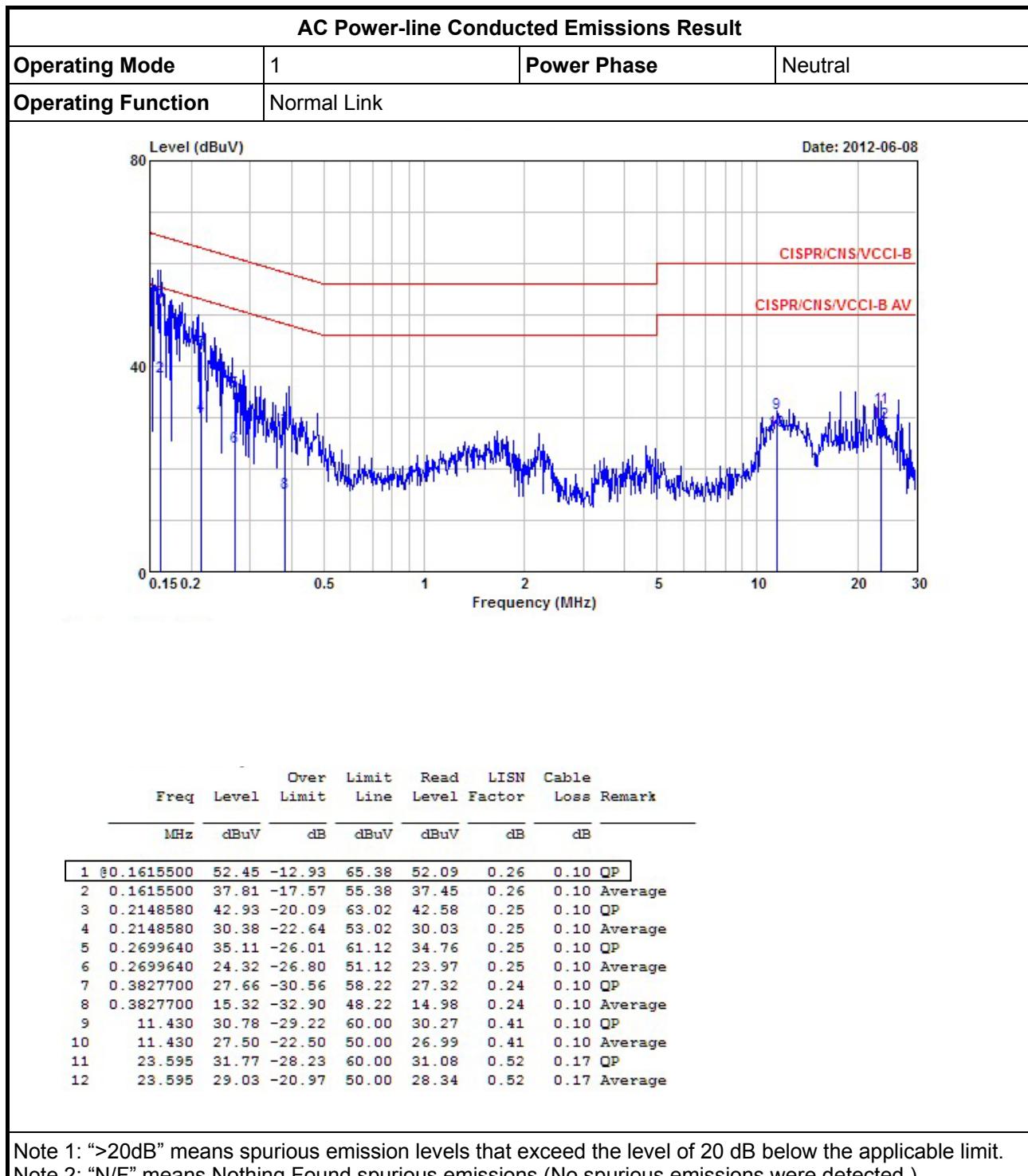
3.1.3 Test Procedures

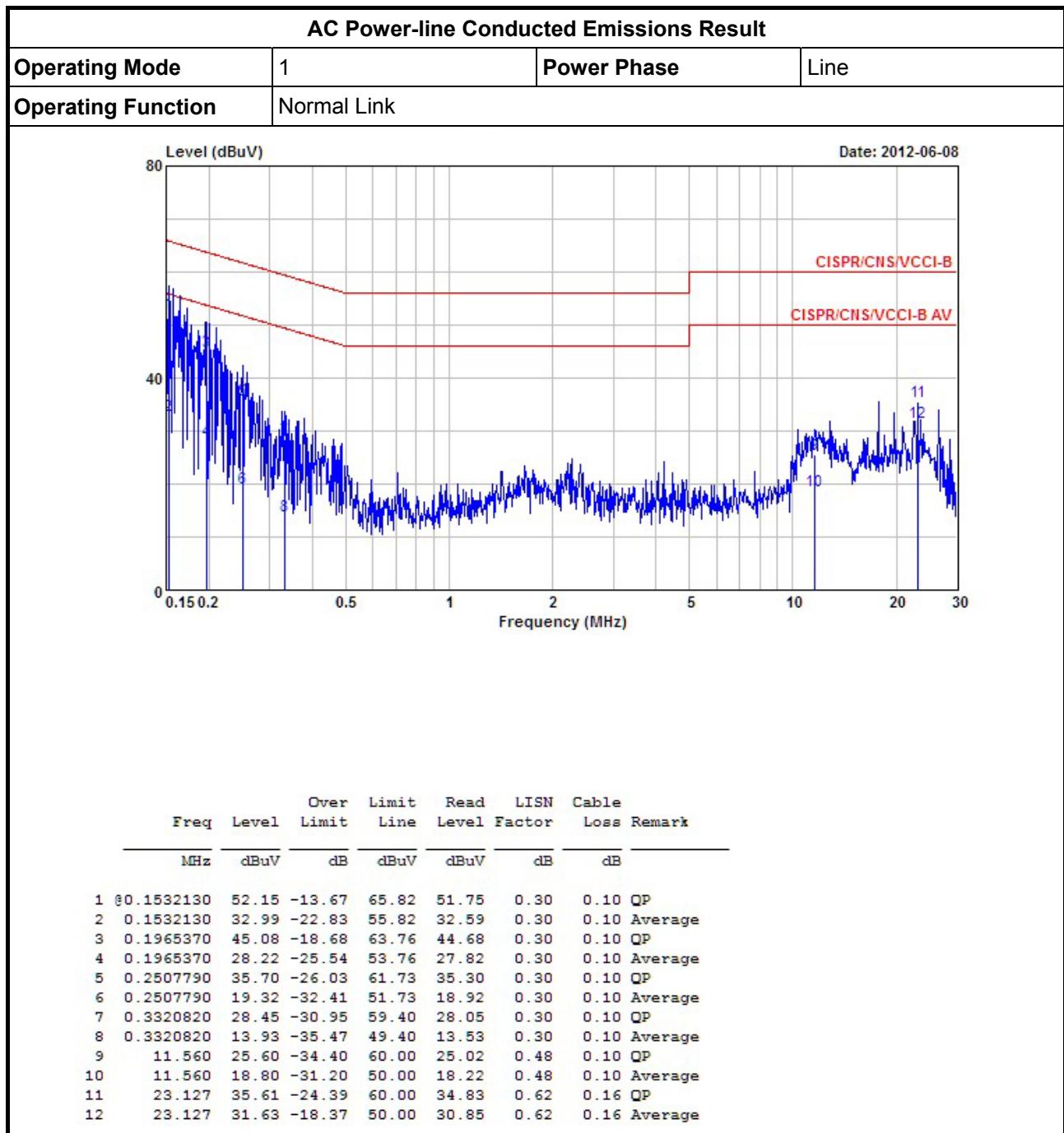
| Test Method |
|--|
| <input checked="" type="checkbox"/> Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions. |

3.1.4 Test Setup



3.1.5 Test Result of AC Power-line Conducted Emissions





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.)

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. | |

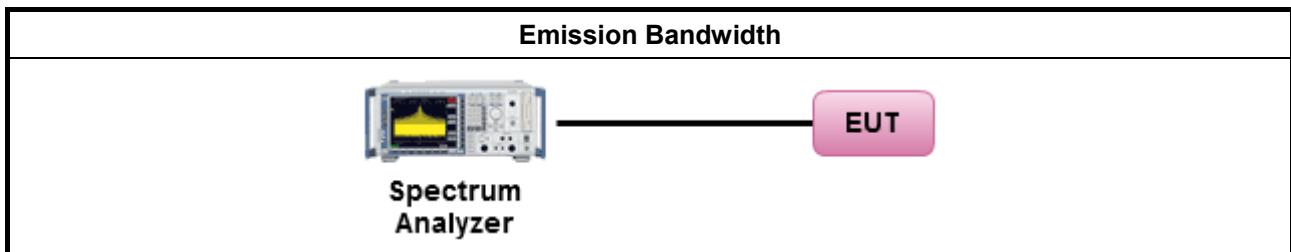
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

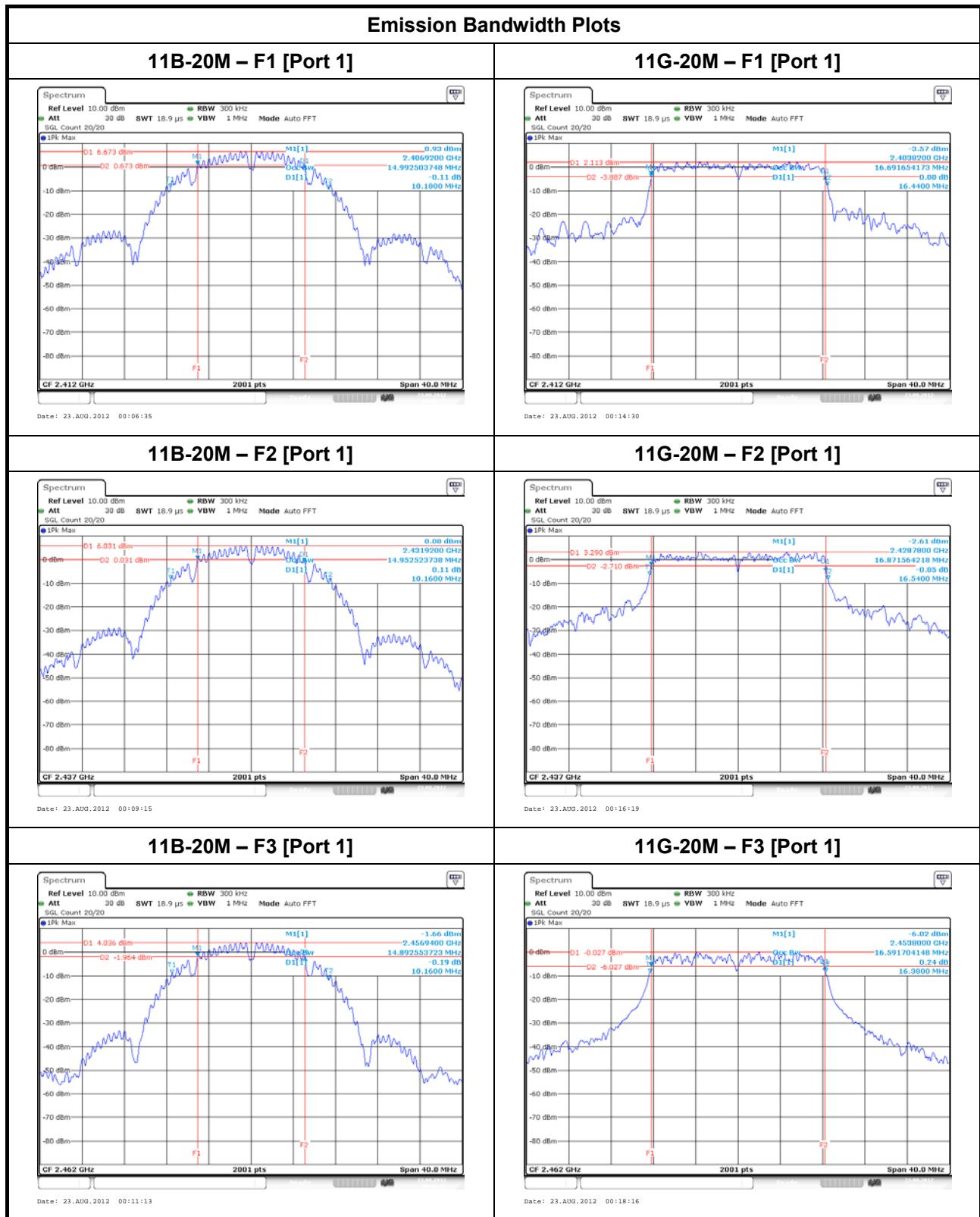
| Test Method | |
|---|--|
| <input checked="" type="checkbox"/> For the emission bandwidth shall be measured using one of the options below: | |
| <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 5.1.1 Option 1 for 6 dB bandwidth measurement. | |
| <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.1.2 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"/> For conducted measurements on devices with 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. | |
| <input type="checkbox"/> Option 3: A power splitter/combiner shall be used to combine all the transmit chains (antenna outputs) into a single test point and record a single test point EBW. | |
| <input type="checkbox"/> For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level. | |

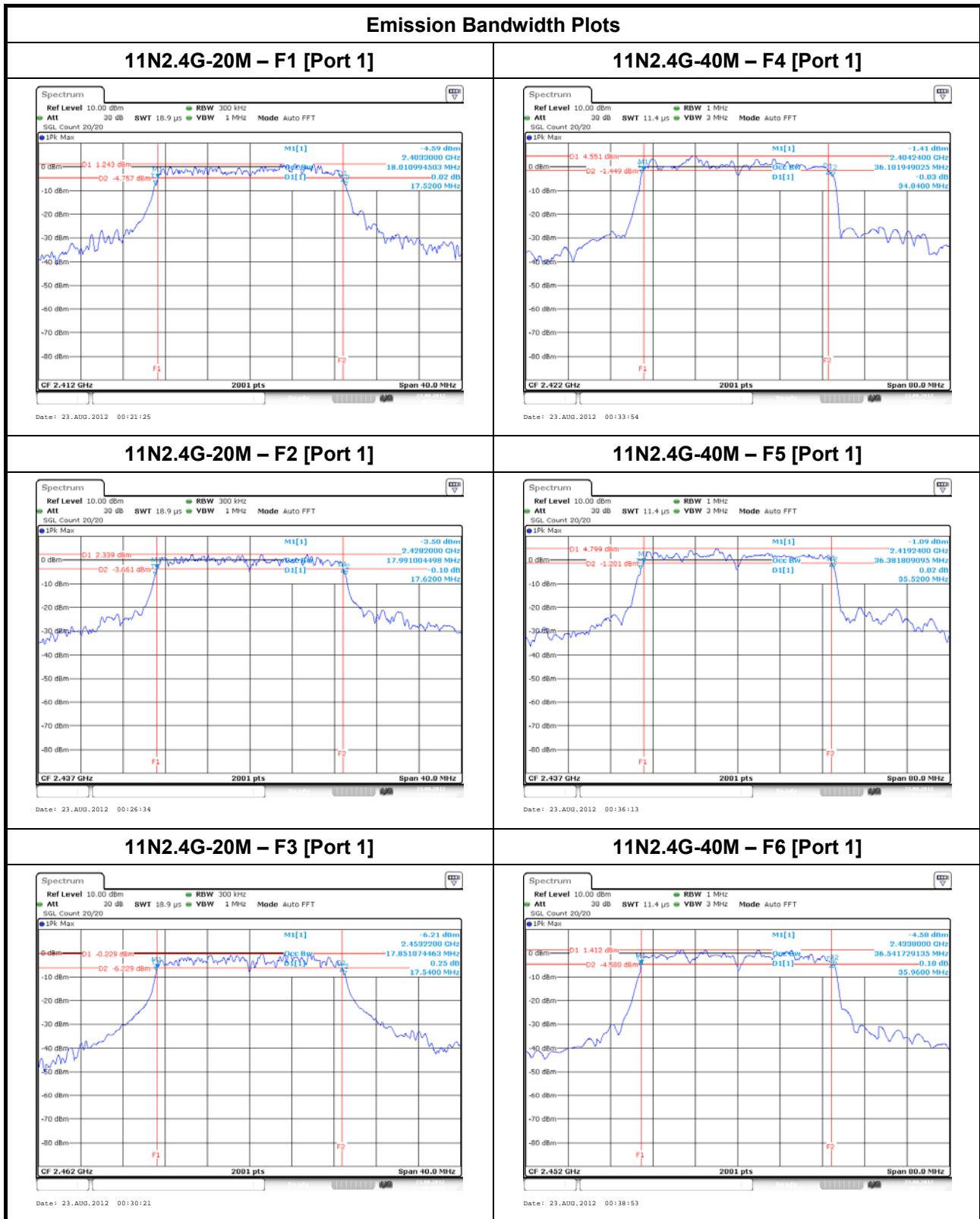
3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

| Emission Bandwidth Result | | | | | | | | | | | | | | |
|---|-----------------|-------------|--------------------------|---|---|---|---------------|---|---|---|--|--|--|--|
| Power Level | 1 | | Emission Bandwidth (MHz) | | | | | | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | 99% Bandwidth | | | | 6dB Bandwidth | | | | | | | |
| | | | Chain-Port 1 | - | - | - | Chain-Port 1 | - | - | - | | | | |
| 11B-20M | 1 | 2412 | 14.99 | - | - | - | 10.18 | - | - | - | | | | |
| 11B-20M | 1 | 2437 | 14.95 | - | - | - | 10.16 | - | - | - | | | | |
| 11B-20M | 1 | 2462 | 14.89 | - | - | - | 10.16 | - | - | - | | | | |
| 11G-20M | 1 | 2412 | 16.69 | - | - | - | 16.44 | - | - | - | | | | |
| 11G-20M | 1 | 2437 | 16.87 | - | - | - | 16.54 | - | - | - | | | | |
| 11G-20M | 1 | 2462 | 16.59 | - | - | - | 16.38 | - | - | - | | | | |
| 11N2.4G-20M | 1 | 2412 | 18.01 | - | - | - | 17.52 | - | - | - | | | | |
| 11N2.4G-20M | 1 | 2437 | 17.99 | - | - | - | 17.62 | - | - | - | | | | |
| 11N2.4G-20M | 1 | 2462 | 17.85 | - | - | - | 17.54 | - | - | - | | | | |
| 11N2.4G-40M | 1 | 2412 | 36.10 | - | - | - | 34.84 | - | - | - | | | | |
| 11N2.4G-40M | 1 | 2437 | 36.38 | - | - | - | 35.52 | - | - | - | | | | |
| 11N2.4G-40M | 1 | 2462 | 36.54 | - | - | - | 35.96 | - | - | - | | | | |
| 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 type="checkbox"/> 902-928 MHz Band: | |
| | <input type="checkbox"/> If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W) |
| | <input type="checkbox"/> If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm |
| <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 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 $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dBm |
| <input type="checkbox"/> 5725-5850 MHz Band: | |
| | <input type="checkbox"/> If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W) |
| | <input 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 $P_{Out} = 30$ dBm |
| e.i.r.p. Power Limit: | |
| <input type="checkbox"/> 902-928 MHz Band: $P_{eirp} \leq 36$ dBm (4 W) | |
| <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 |
| <input type="checkbox"/> 5725-5850 MHz Band | |
| | <input type="checkbox"/> Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W) |
| | <input type="checkbox"/> Point-to-point systems (P2P): N/A |
| <p>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.</p> | |

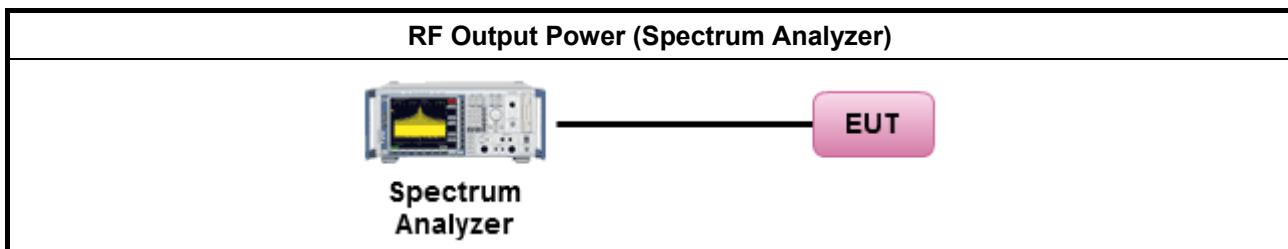
3.3.2 Measuring Instruments

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 5.2.1.1 Option 1 (RBW \geq EBW method). <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 5.2.1.2 Option 2 (integrated band power method). <input type="checkbox"/> Refer as ANSI C63.10, clause 6.10.2.1 a) for peak power meter. <input type="checkbox"/> Refer as ANSI C63.10, clause 6.10.2.1 a) for spectrum analyzer - (RBW \geq EBW). <input type="checkbox"/> Refer as ANSI C63.10, clause 6.10.2.1 b) for spectrum analyzer - BW correction factor. |
| <input checked="" type="checkbox"/> Maximum Conducted (Average) Output Power | <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.2.2.1 Option 1 (RMS detection with slow sweep speed). <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 5.2.2.2 Option 2 (spectral trace averaging). <input type="checkbox"/> Refer as ANSI C63.10, clause 6.10.3.1 for spectrum analyzer - Method 1 (trace averaging). <input type="checkbox"/> Refer as ANSI C63.10, clause 6.10.3.2 for spectrum analyzer - Method 2 (zero-span averaging). <input type="checkbox"/> Refer as ANSI C63.10, clause 6.10.3.2 for spectrum analyzer - Method 3 (band power max-hold). |
| <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 2 for conducted measurement. | <input checked="" type="checkbox"/> For conducted measurements on devices with multiple transmit chains: 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: | <input type="checkbox"/> Method 1: $EIRP_1 = P_1 + G_{ANT1}$; $EIRP_2 = P_2 + G_{ANT2}$; ... $EIRP_n = P_n + G_{ANTn}$ $EIRP_{total} = EIRP_1 + EIRP_2 + \dots + EIRP_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) <input checked="" type="checkbox"/> Method 2: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$ |
| <input type="checkbox"/> Refer as FCC KDB 558074, clause 2 for radiated measurement. | |

3.3.4 Test Setup



3.3.5 Test Result of Maximum Peak Conducted Output Power

| Maximum Peak Conducted Output Power Result | | | | | | | | | | |
|--|-----------------|-------------|-----------------------|---|---|---|-----------|-------------|------------|------------|
| Power Level | | 1 | RF Output Power (dBm) | | | | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | Sum Chain | Power Limit | EIRP Power | EIRP Limit |
| 11B-20M | 1 | 2412 | 21.00 | - | - | - | 21.00 | 30.0 | 23.15 | 36.0 |
| 11B-20M | 1 | 2437 | 19.98 | - | - | - | 19.98 | 30.0 | 22.13 | 36.0 |
| 11B-20M | 1 | 2462 | 17.92 | - | - | - | 17.92 | 30.0 | 20.07 | 36.0 |
| Result | | | Complied | | | | | | | |

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

Note 2: The EUT supports diversity transmitting, and the results on antenna port 3 is the worst case.

| Maximum Peak Conducted Output Power Result | | | | | | | | | | |
|--|-----------------|-------------|-----------------------|---|---|---|-----------|-------------|------------|------------|
| Power Level | | 1 | RF Output Power (dBm) | | | | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | Sum Chain | Power Limit | EIRP Power | EIRP Limit |
| 11G-20M | 1 | 2412 | 23.24 | - | - | - | 23.24 | 30.0 | 25.39 | 36.0 |
| 11G-20M | 1 | 2437 | 23.87 | - | - | - | 23.87 | 30.0 | 26.02 | 36.0 |
| 11G-20M | 1 | 2462 | 19.86 | - | - | - | 19.86 | 30.0 | 22.01 | 36.0 |
| Result | | | Complied | | | | | | | |

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

Note 2: The EUT supports diversity transmitting, and the results on antenna port 3 is the worst case.

| Maximum Peak Conducted Output Power Result | | | | | | | | | | |
|--|-----------------|-------------|-----------------------|---|---|---|-----------|-------------|------------|------------|
| Power Level | | 1 | RF Output Power (dBm) | | | | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | Sum Chain | Power Limit | EIRP Power | EIRP Limit |
| 11N2.4G-20M | 1 | 2412 | 21.89 | - | - | - | 21.89 | 30.0 | 24.04 | 36.0 |
| 11N2.4G-20M | 1 | 2437 | 23.07 | - | - | - | 23.07 | 30.0 | 25.22 | 36.0 |
| 11N2.4G-20M | 1 | 2462 | 20.54 | - | - | - | 20.54 | 30.0 | 22.69 | 36.0 |
| Result | | | Complied | | | | | | | |

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

| Maximum Peak Conducted Output Power Result | | | | | | | | | | |
|--|-----------------|-------------|-----------------------|---|---|---|-----------|-------------|------------|------------|
| Power Level | | 1 | RF Output Power (dBm) | | | | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | Sum Chain | Power Limit | EIRP Power | EIRP Limit |
| 11N2.4G-40M | 1 | 2422 | 21.33 | - | - | - | 21.33 | 30.0 | 23.48 | 36.0 |
| 11N2.4G-40M | 1 | 2437 | 22.45 | - | - | - | 22.45 | 30.0 | 24.60 | 36.0 |
| 11N2.4G-40M | 1 | 2452 | 19.33 | - | - | - | 19.33 | 30.0 | 21.48 | 36.0 |
| Result | | | Complied | | | | | | | |

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

3.3.6 Test Result of Maximum Conducted (Average) Output Power

| Maximum Conducted (Average) Output Power Result | | | | | | | | | | |
|---|-----------------|-------------|-----------------------|---|---|---|-----------|-------------|------------|------------|
| Power Level | | 1 | RF Output Power (dBm) | | | | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | Sum Chain | Power Limit | EIRP Power | EIRP Limit |
| 11B-20M | 1 | 2412 | 17.83 | - | - | - | 17.83 | 30.0 | 19.98 | 36.0 |
| 11B-20M | 1 | 2437 | 16.80 | - | - | - | 16.80 | 30.0 | 18.95 | 36.0 |
| 11B-20M | 1 | 2462 | 14.79 | - | - | - | 14.79 | 30.0 | 16.94 | 36.0 |
| Result | | | Complied | | | | | | | |

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

Note 2: EUT support diversity transmit and transmit chains port 1 is the worst than other transmit chains.

| Maximum Conducted (Average) Output Power Result | | | | | | | | | | |
|---|-----------------|-------------|-----------------------|---|---|---|-----------|-------------|------------|------------|
| Power Level | | 1 | RF Output Power (dBm) | | | | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | Sum Chain | Power Limit | EIRP Power | EIRP Limit |
| 11G-20M | 1 | 2412 | 15.52 | - | - | - | 15.52 | 30.0 | 17.67 | 36.0 |
| 11G-20M | 1 | 2437 | 16.16 | - | - | - | 16.16 | 30.0 | 18.31 | 36.0 |
| 11G-20M | 1 | 2462 | 12.11 | - | - | - | 12.11 | 30.0 | 14.26 | 36.0 |
| Result | | | Complied | | | | | | | |

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

Note 2: EUT support diversity transmit and transmit chains port 1 is the worst than other transmit chains.

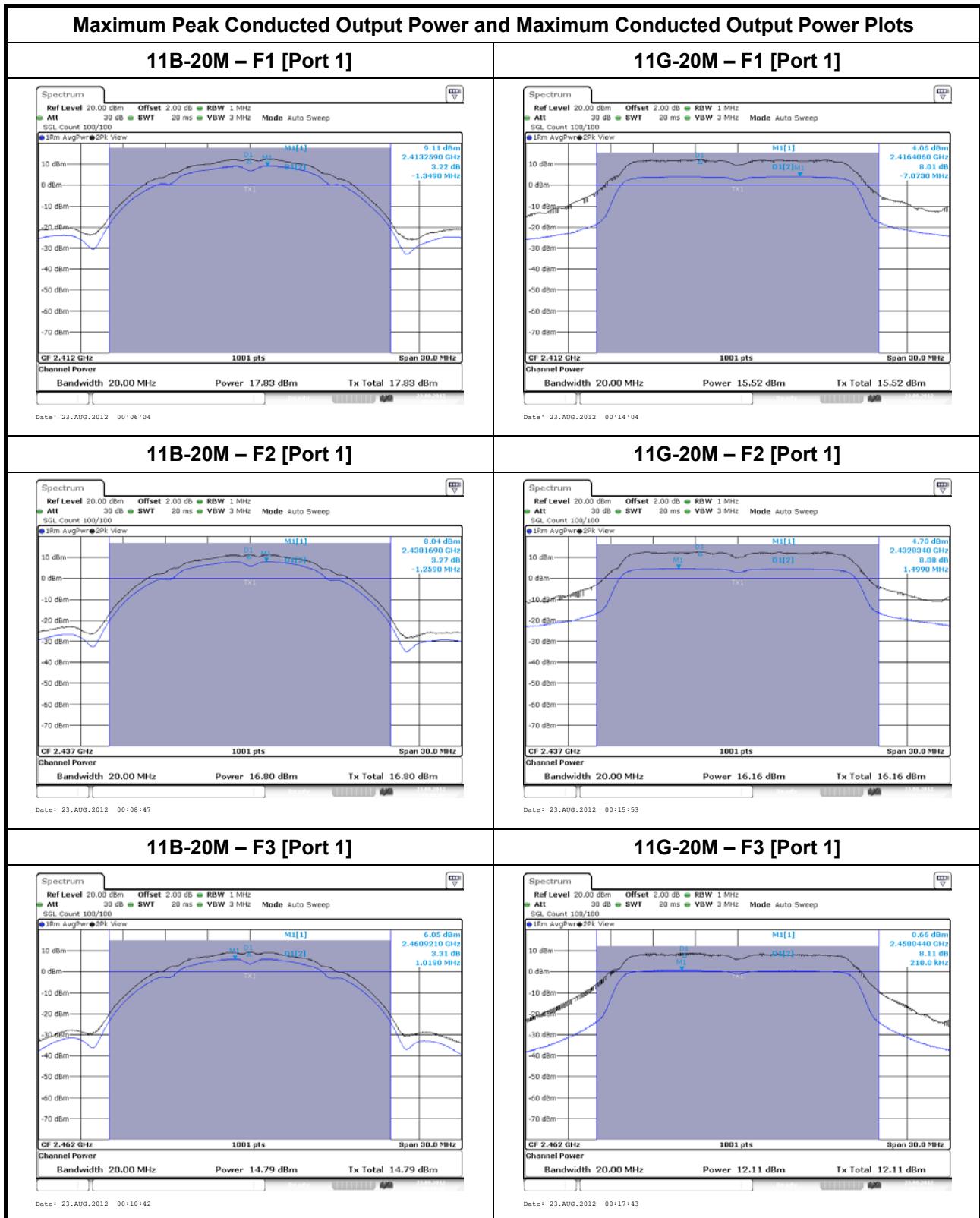
| Maximum Conducted (Average) Output Power Result | | | | | | | | | | |
|---|-----------------|-------------|-----------------------|---|---|---|-----------|-------------|------------|------------|
| Power Level | | 1 | RF Output Power (dBm) | | | | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | Sum Chain | Power Limit | EIRP Power | EIRP Limit |
| 11N2.4G-20M | 1 | 2412 | 14.03 | - | - | - | 14.03 | 30.0 | 16.18 | 36.0 |
| 11N2.4G-20M | 1 | 2437 | 15.26 | - | - | - | 15.26 | 30.0 | 17.41 | 36.0 |
| 11N2.4G-20M | 1 | 2462 | 12.66 | - | - | - | 12.66 | 30.0 | 14.81 | 36.0 |
| Result | | | Complied | | | | | | | |

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

Note 2: EUT support diversity transmit and transmit chains port 1 is the worst than other transmit chains.

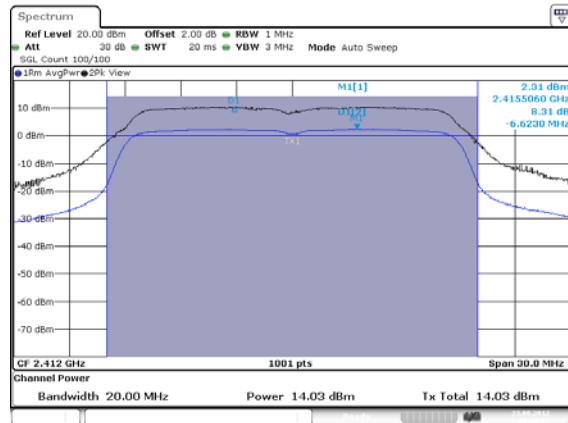
| Maximum Conducted (Average) Output Power Result | | | | | | | | | | |
|---|-----------------|-------------|-----------------------|---|---|---|-----------|-------------|------------|------------|
| Power Level | | 1 | RF Output Power (dBm) | | | | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | Sum Chain | Power Limit | EIRP Power | EIRP Limit |
| 11N2.4G-40M | 1 | 2422 | 13.62 | - | - | - | 13.62 | 30.0 | 15.77 | 36.0 |
| 11N2.4G-40M | 1 | 2437 | 14.63 | - | - | - | 14.63 | 30.0 | 16.78 | 36.0 |
| 11N2.4G-40M | 1 | 2452 | 11.64 | - | - | - | 11.64 | 30.0 | 13.79 | 36.0 |
| Result | | | Complied | | | | | | | |

Note 1: N_{TX} = Number of Transmit Chains
 Note 2: EUT support diversity transmit and transmit chains port 1 is the worst than other transmit chains.

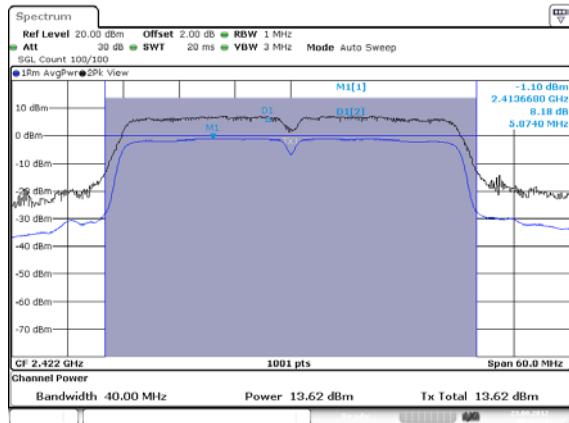


Maximum Peak Conducted Output Power and Maximum Conducted Output Power Plots

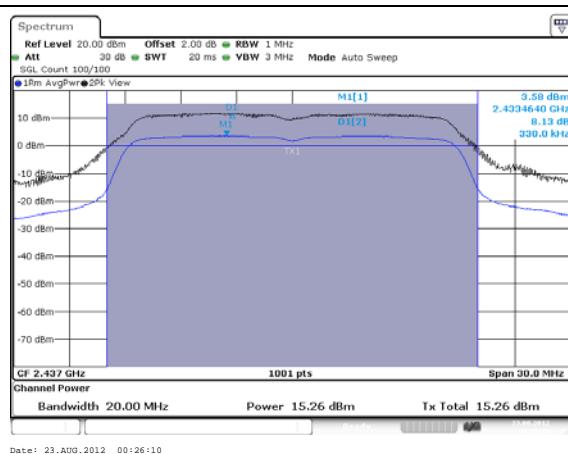
11N2.4G-20M – F1 [Port 1]



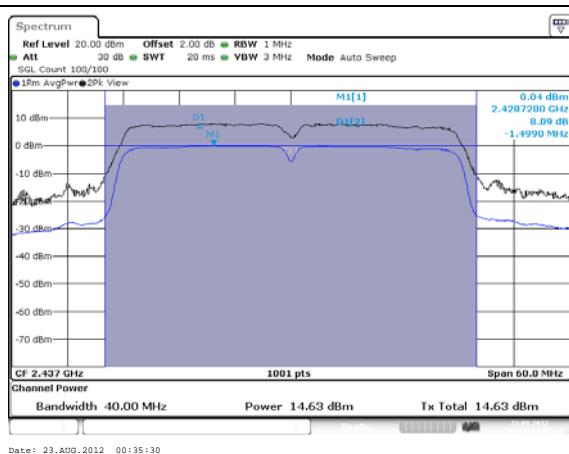
11N2.4G-40M – F1 [Port 1]



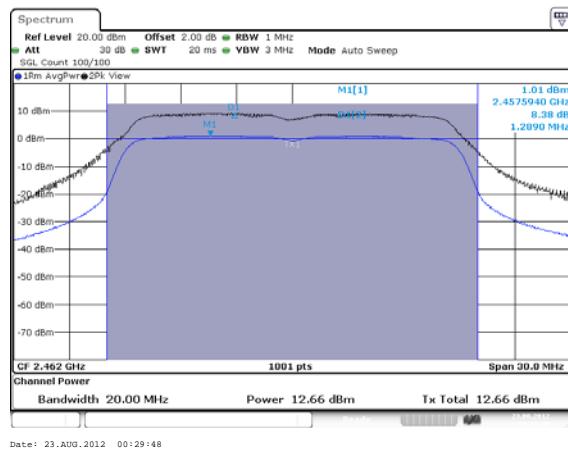
11N2.4G-20M – F2 [Port 1]



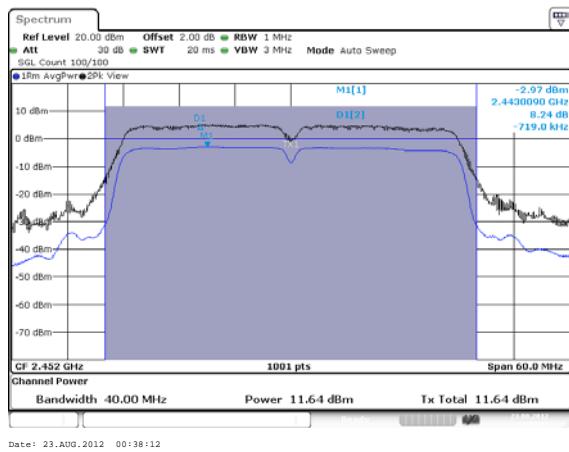
11N2.4G-40M – F2 [Port 1]



11N2.4G-20M – F3 [Port 1]



11N2.4G-40M – F3 [Port 1]



3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

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

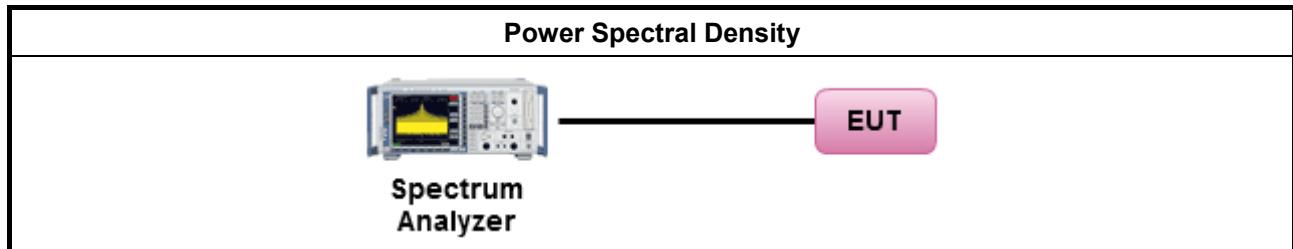
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

| Test Method | |
|--|--|
| <input checked="" type="checkbox"/> Power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the power spectral density. In addition, the use of a peak PSD procedure will always result in a "worst-case" measured level for comparison to the limit. Therefore, whenever the DTS bandwidth exceeds 500 kHz, it is acceptable to utilize the peak PSD procedure to demonstrate compliance to the PSD limit, regardless of how the fundamental output power was measured. For the power spectral density shall be measured using below options: | |
| <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 5.3.1 Option 1 (peak PSD; BWCF=-15.2dB). | |
| <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.3.2 Option 2 (average PSD; BWCF=-15.2dB). | |
| <input type="checkbox"/> Refer as ANSI C63.10, clause 6.11.2.3 for PSD for DTS - (RBW=3kHz; sweep=100s). | |
| <input type="checkbox"/> Refer as ANSI C63.10, clause 6.11.2.4 for Alternative PSD for DTS - (RBW=3kHz; average=100) | |
| <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 2 for conducted measurement. | |
| <input checked="" type="checkbox"/> For conducted measurements on devices with 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. The new data trace samples added 100 kHz segment and found the highest value of each 100 kHz segments. Add the bandwidth correction factor (BWCF) [-15.2 dB] adjusting in power spectral density per 3kHz. |
| | <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. |
| <input type="checkbox"/> Refer as FCC KDB 558074, clause 2 for radiated measurement. | |

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

| Power Spectral Density Result | | | | | | | | |
|-------------------------------|-----------------|-------------|-----------------------------------|---|---|---|---|-----------|
| Power Level | | 1 | Power Spectral Density (dBm/3kHz) | | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | - | PSD Limit |
| 11B-20M | 1 | 2412 | -7.82 | - | - | - | - | 8 |
| 11B-20M | 1 | 2437 | -8.56 | - | - | - | - | 8 |
| 11B-20M | 1 | 2462 | -10.81 | - | - | - | - | 8 |
| Result | | | Complied | | | | | |

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

| Power Spectral Density Result | | | | | | | | |
|-------------------------------|-----------------|-------------|-----------------------------------|---|---|---|---|-----------|
| Power Level | | 1 | Power Spectral Density (dBm/3kHz) | | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | - | PSD Limit |
| 11G-20M | 1 | 2412 | -14.34 | - | - | - | - | 8 |
| 11G-20M | 1 | 2437 | -13.64 | - | - | - | - | 8 |
| 11G-20M | 1 | 2462 | -17.58 | - | - | - | - | 8 |
| Result | | | Complied | | | | | |

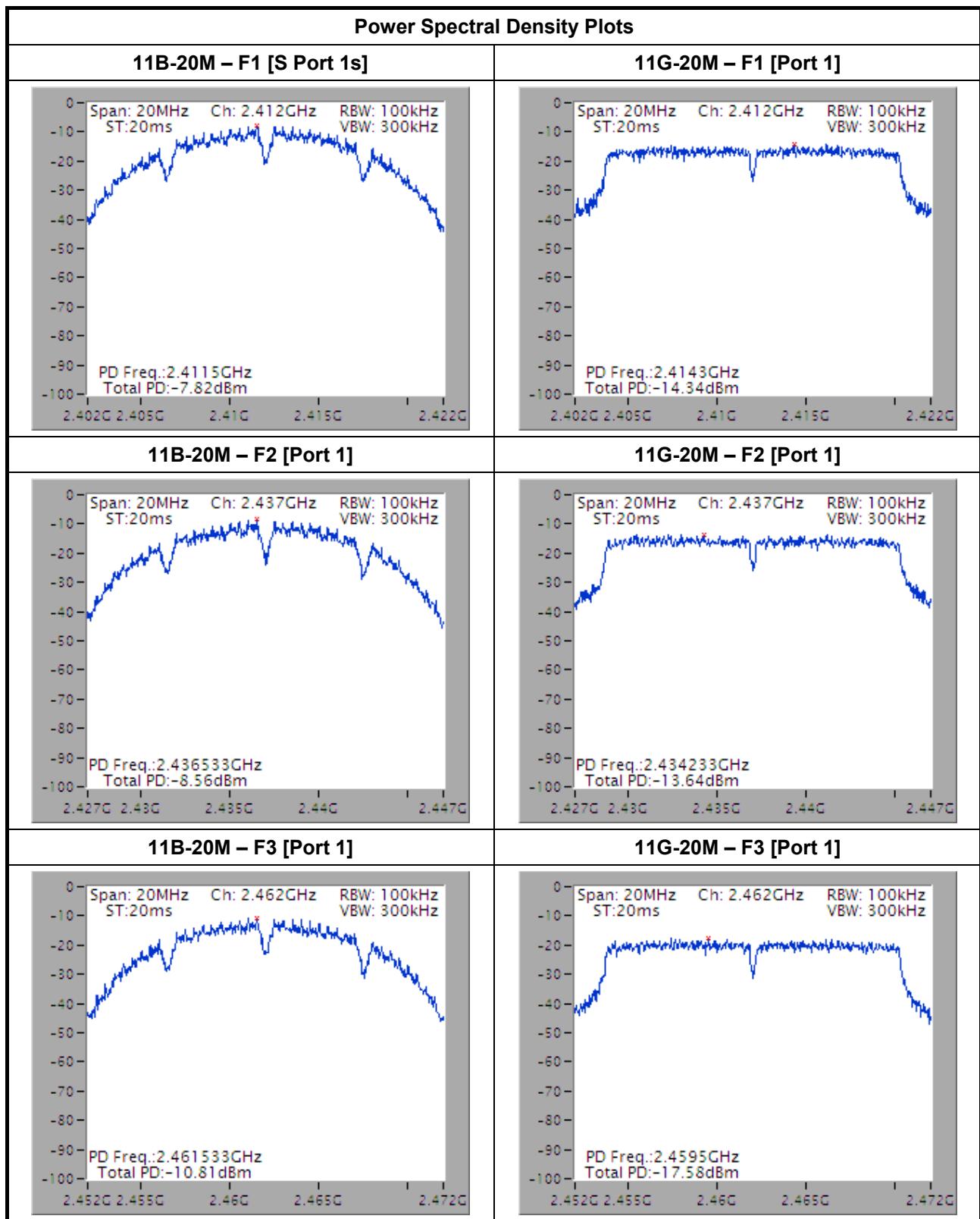
Note 1: N_{TX} = Number of Transmit Chains

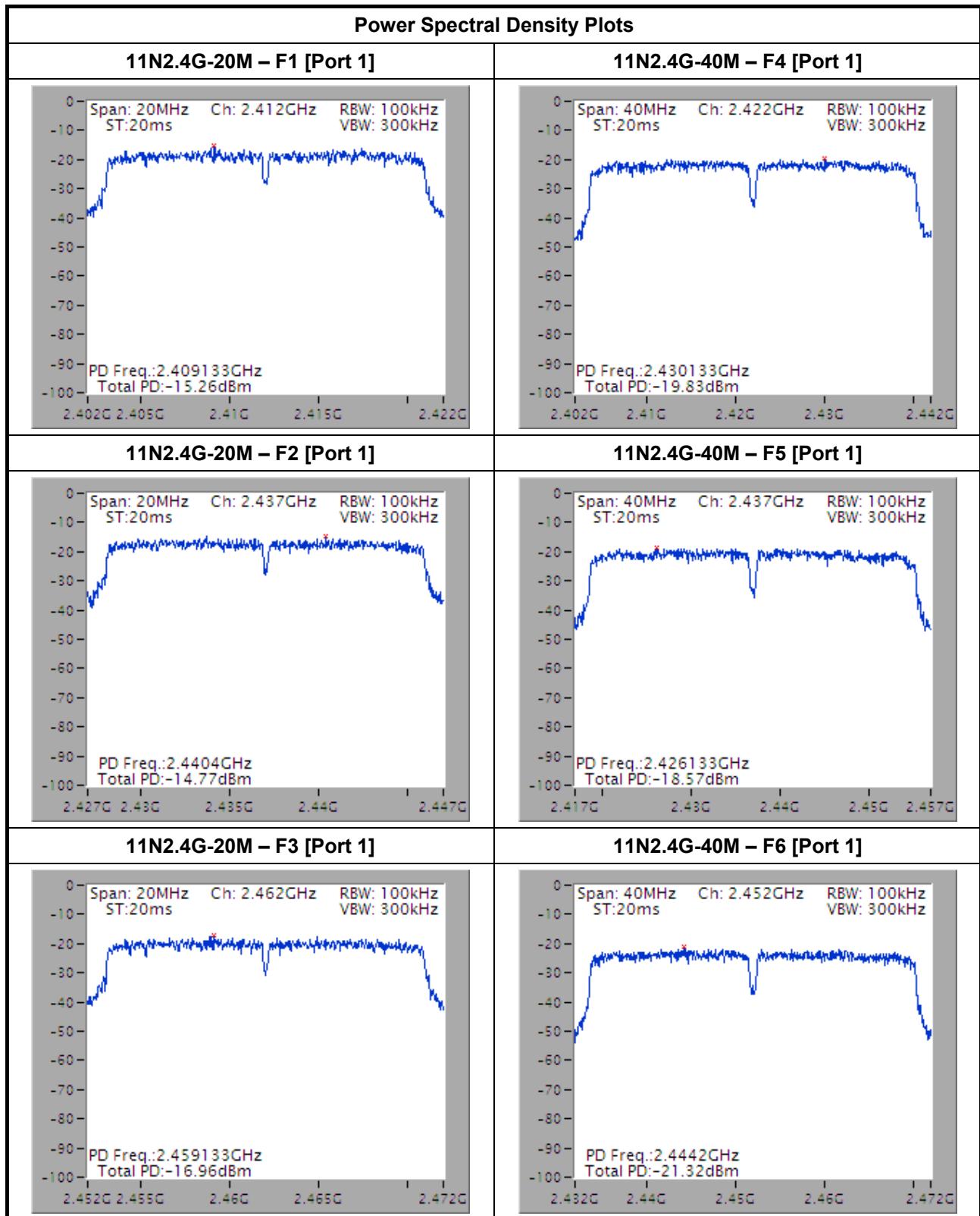
| Power Spectral Density Result | | | | | | | |
|-------------------------------|-----------------|-------------|-----------------------------------|---|---|---|-----------|
| Power Level | | 1 | Power Spectral Density (dBm/3kHz) | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | PSD Limit |
| 11N2.4G-20M | 1 | 2412 | -15.26 | - | - | - | 8 |
| 11N2.4G-20M | 1 | 2437 | -14.77 | - | - | - | 8 |
| 11N2.4G-20M | 1 | 2462 | -16.96 | - | - | - | 8 |
| Result | | Complied | | | | | |

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

| Power Spectral Density Result | | | | | | | |
|-------------------------------|-----------------|-------------|-----------------------------------|---|---|---|-----------|
| Power Level | | 1 | Power Spectral Density (dBm/3kHz) | | | | |
| Directional Gain (dBi) | | 2.15 | | | | | |
| Modulation Mode | N _{TX} | Freq. (MHz) | Chain-Port 1 | - | - | - | PSD Limit |
| 11N2.4G-40M | 1 | 2422 | -19.83 | - | - | - | 8 |
| 11N2.4G-40M | 1 | 2437 | -18.57 | - | - | - | 8 |
| 11N2.4G-40M | 1 | 2452 | -21.32 | - | - | - | 8 |
| Result | | Complied | | | | | |

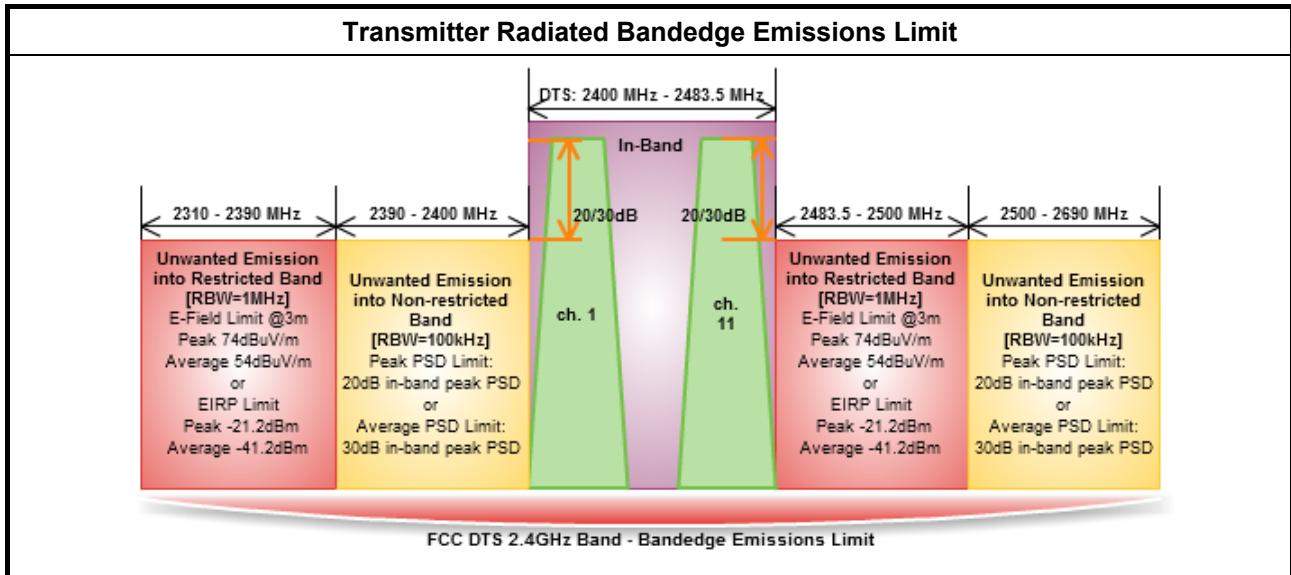
Note 1: N_{TX} = Number of Transmit Chains





3.5 Transmitter Radiated Bandedge Emissions

3.5.1 Transmitter Radiated Bandedge Emissions Limit



3.5.2 Measuring Instruments

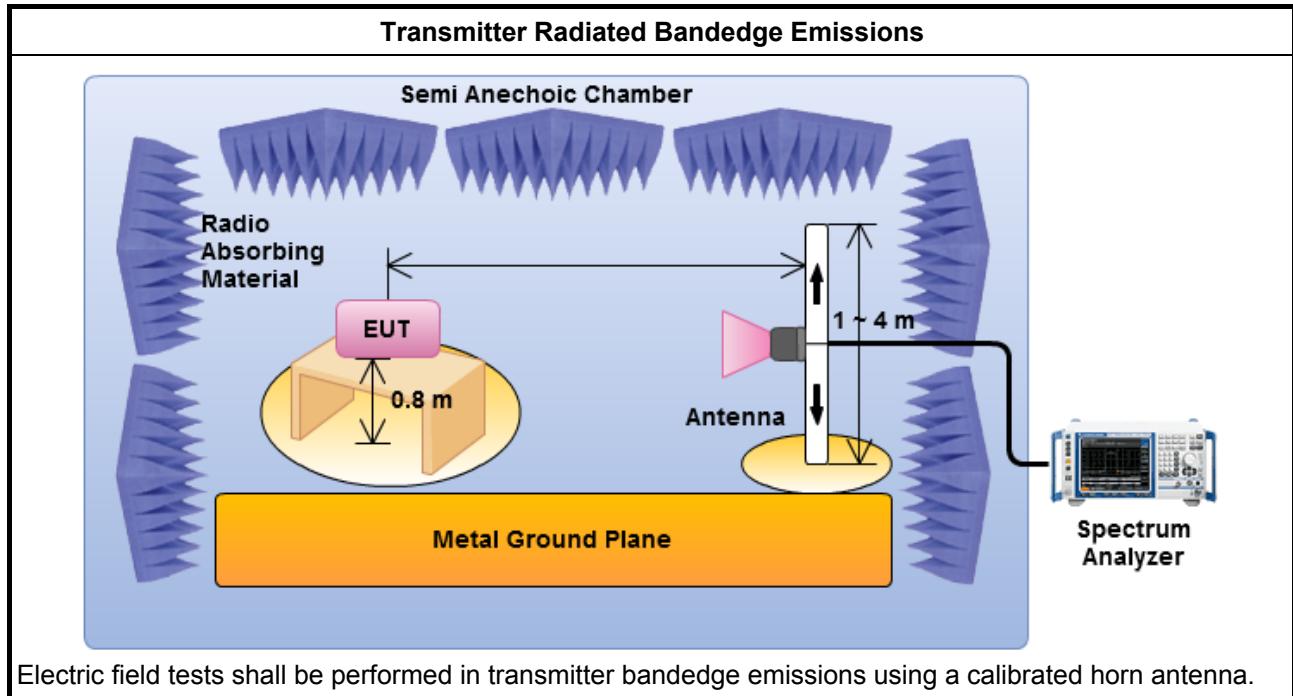
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

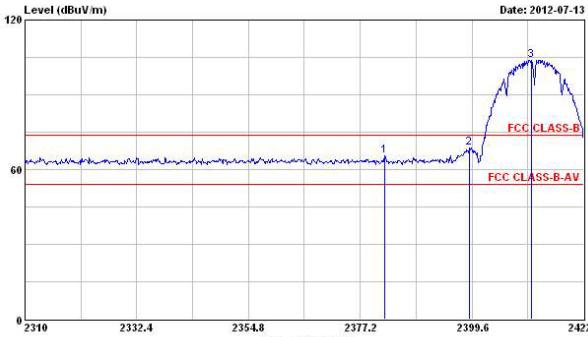
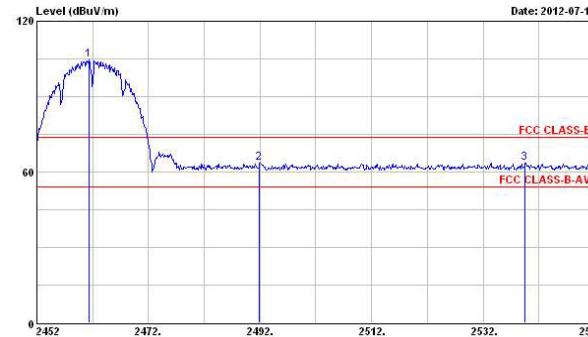
| Test Method – General Information | |
|--|---|
| <input checked="" type="checkbox"/> | The average emission levels shall be measured in [duty cycle \geq 98 or duty factor]. |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.9.2.2 bandedge testing shall be performed at the lowest 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 5.4.1 for unwanted emissions into non-restricted bands. |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 5.4.2 for unwanted emissions into restricted bands. |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.4.2.2.1 Option 1 (Power Averaging). |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.4.2.2.2 Option 2 (Trace Averaging). |
| | <input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). – Duty cycle \geq 98%. |
| | <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 5.4.2.2.1.1 measurement procedure peak limit. |
| | <input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit. |
| <input checked="" type="checkbox"/> | For the transmitter bandedge emissions shall be measured using following options below: |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.4.2.2.4 for narrower resolution bandwidth using the band power and summing the spectral levels (i.e., 100 kHz or 1 MHz). |
| | <input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.9.2 for band-edge testing. |
| | <input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.3 for marker-delta method for band-edge measurements. |

| Test Method | |
|---|--|
| <input type="checkbox"/> Refer as FCC KDB 558074, clause 2 for conducted measurement. | |
| | <input type="checkbox"/> For unwanted emissions into non-restricted bands (relative emission limits). |
| | <input type="checkbox"/> For conducted measurements on devices with multiple transmit chains: Refer as FCC KDB 662911, when testing out-of-band and spurious emissions against relative emission limits, tests may be performed on each output individually without summing or adding 10 log(N) if the measurements are made relative to the in-band emissions on the individual outputs. |
| | <input type="checkbox"/> For unwanted emissions into restricted bands. Test conducted spurious emissions and radiated by the cabinet with the antenna connector(s) terminated by a specified load (cabinet radiation). |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.4.2.2.1 unwanted emissions in restricted bands on frequencies \leq 1000 MHz |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.4.2.2.2 unwanted emissions in restricted bands on frequencies $>$ 1000 MHz |
| | <input type="checkbox"/> For conducted measurements on devices with 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, out-of-band and spurious emission measurement. The trace data for each transmit chain has to be individually recorded and each transmit chain trace data shall be added and compared with the limit. |
| | <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. |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 2 for radiated measurement. |
| | <input type="checkbox"/> Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz. |
| | <input type="checkbox"/> Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz. |
| | <input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.5 for radiated emissions from above 1 GHz. |

3.5.4 Test Setup



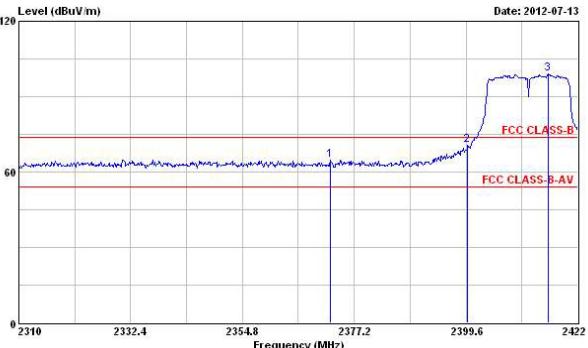
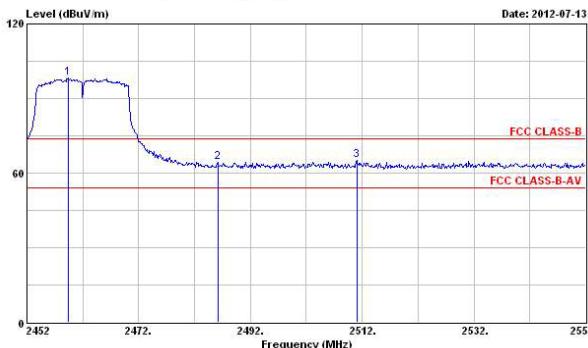
3.5.5 Test Result of Transmitter Radiated Bandedge Emissions

| Transmitter Radiated Bandedge Emissions Result | | | | | | | | | |
|--|-----------------|----------------------|-------------------------------|-------------------------------|---|----------------|------------|------------|-------------|
| Power Level | 1 | Gain (dBi) | 2.15 | Non-restricted Band Emissions | | | | | |
| Modulation | 11B-20M | | | | | | | | |
| Non-restricted Band (MHz) | N _{TX} | Test Ch. Freq. (MHz) | In-band PSD [i] (dBuV/100kHz) | NBE Freq. (MHz) | Out-band PSD [o] (dBuV/100kHz) | [i] – [o] (dB) | Limit (dB) | Level Type | Pol. note 1 |
| 2390-2400 | 1 | 2412 | 103.94 | 2399.04 | 68.74 | 35.20 | 20 | PK | V |
| 2500-2690 | 1 | 2462 | 104.41 | 2539.50 | 63.62 | 40.79 | 20 | PK | V |
| Low Band | | | | | Up Band | | | | |
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Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

| Transmitter Radiated Bandedge Emissions Result | | | | | | | | | |
|--|-----------------|----------------------|-----------------------------|---------------------------|----------------------|-------------------------|----------------|------------|-------------|
| Power Level | 1 | Gain (dBi) | 2.15 | Restricted Band Emissions | | | | | |
| Modulation | 11B-20M | | | | | | | | |
| Restricted Band (MHz) | N _{TX} | Test Ch. Freq. (MHz) | In-band PSD [i] (dBuV/1MHz) | RBE Freq. (MHz) | Measure Distance (m) | Out-Band Level (dBuV/m) | Limit (dBuV/m) | Level Type | Pol. note 1 |
| 2310-2390 | 1 | 2412 | 112.78 | 2390.00 | 3 | 61.99 | 74 | PK | V |
| 2310-2390 | 1 | 2412 | 107.98 | 2386.57 | 3 | 49.90 | 54 | AV | V |
| 2483.5-2500 | 1 | 2462 | 110.91 | 2484.61 | 3 | 63.07 | 74 | PK | V |
| 2483.5-2500 | 1 | 2462 | 106.24 | 2483.50 | 3 | 51.65 | 54 | AV | V |

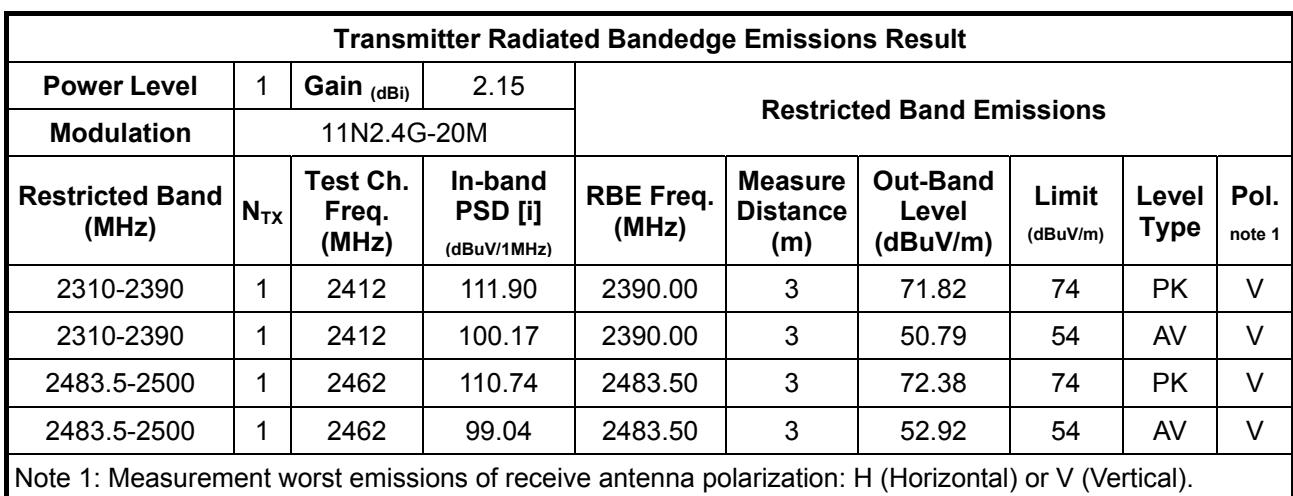
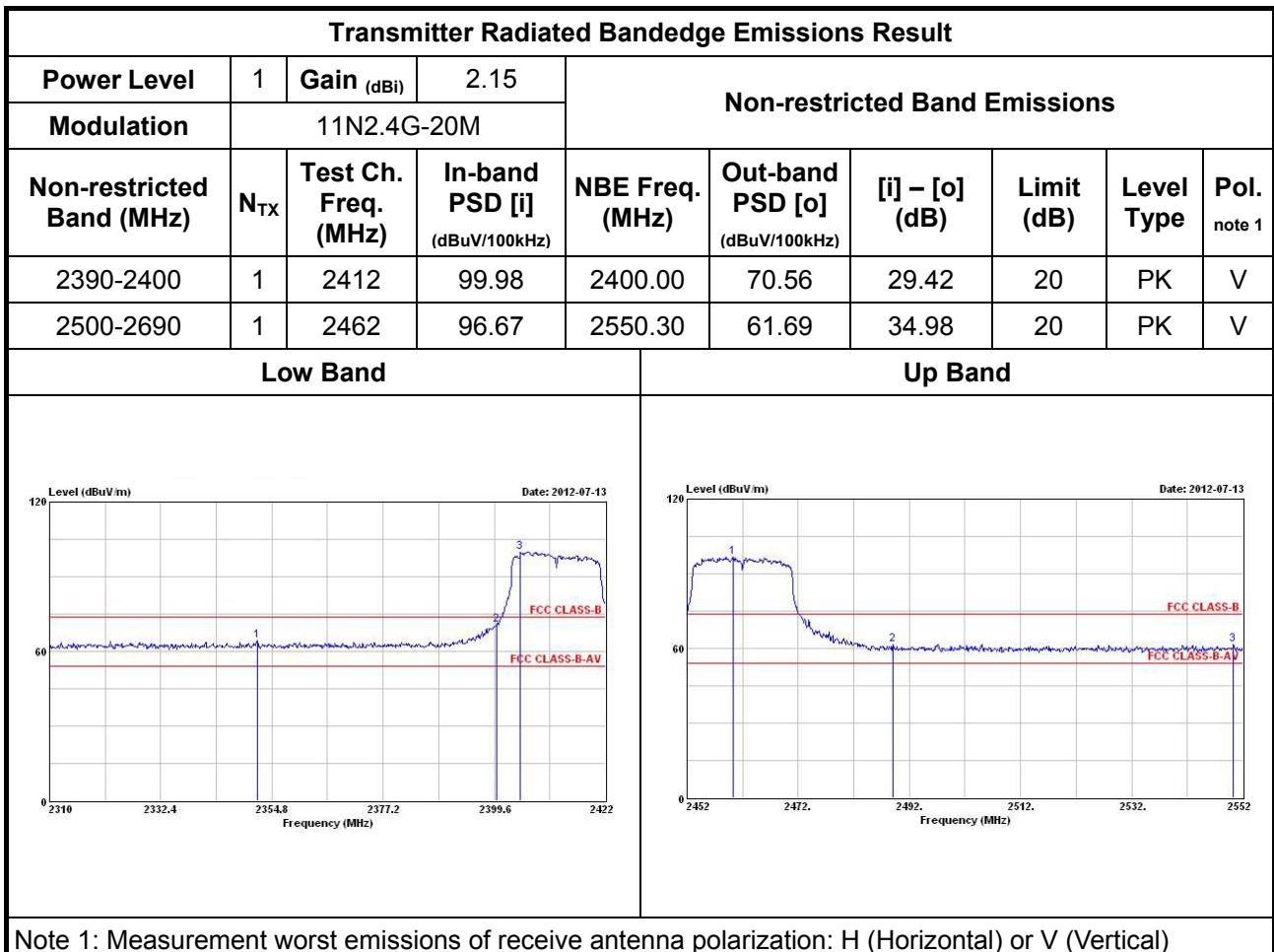
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).

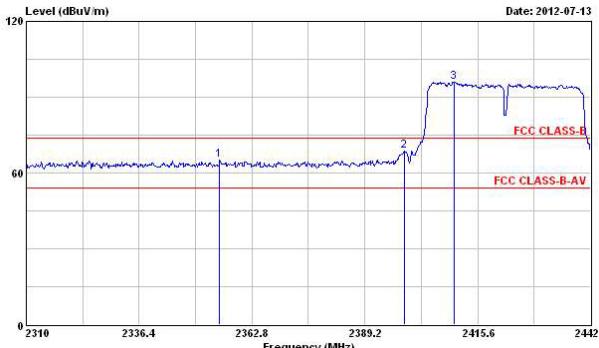
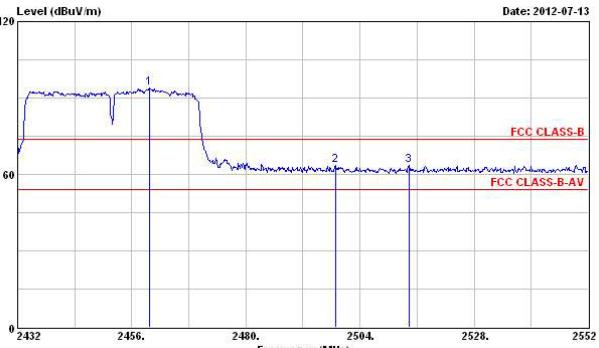
| Transmitter Radiated Bandedge Emissions Result | | | | | | | | | | |
|--|-----------------|----------------------|-------------------------------|-------------------------------|---|----------------|------------|------------|-------------|--|
| Power Level | 1 | Gain (dBi) | 2.15 | Non-restricted Band Emissions | | | | | | |
| Modulation | 11G-20M | | | | | | | | | |
| Non-restricted Band (MHz) | N _{TX} | Test Ch. Freq. (MHz) | In-band PSD [i] (dBuV/100kHz) | NBE Freq. (MHz) | Out-band PSD [o] (dBuV/100kHz) | [i] – [o] (dB) | Limit (dB) | Level Type | Pol. note 1 | |
| 2390-2400 | 1 | 2412 | 98.95 | 2399.94 | 70.47 | 28.48 | 20 | PK | V | |
| 2500-2690 | 1 | 2462 | 98.16 | 2511.00 | 65.11 | 33.05 | 20 | PK | V | |
| Low Band | | | | | Up Band | | | | | |
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Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

| Transmitter Radiated Bandedge Emissions Result | | | | | | | | | |
|--|-----------------|----------------------|-----------------------------|---------------------------|----------------------|-------------------------|----------------|------------|-------------|
| Power Level | 1 | Gain (dBi) | 2.15 | Restricted Band Emissions | | | | | |
| Modulation | 11G-20M | | | | | | | | |
| Restricted Band (MHz) | N _{TX} | Test Ch. Freq. (MHz) | In-band PSD [i] (dBuV/1MHz) | RBE Freq. (MHz) | Measure Distance (m) | Out-Band Level (dBuV/m) | Limit (dBuV/m) | Level Type | Pol. note 1 |
| 2310-2390 | 1 | 2412 | 112.53 | 2390.00 | 3 | 71.18 | 74 | PK | V |
| 2310-2390 | 1 | 2412 | 102.11 | 2390.00 | 3 | 52.84 | 54 | AV | V |
| 2483.5-2500 | 1 | 2462 | 109.77 | 2483.50 | 3 | 68.19 | 74 | PK | V |
| 2483.5-2500 | 1 | 2462 | 99.31 | 2483.50 | 3 | 52.69 | 54 | AV | V |

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).



| Transmitter Radiated Bandedge Emissions Result | | | | | | | | | | |
|--|-----------------|----------------------|-------------------------------|-------------------------------|---|----------------|------------|------------|-------------|--|
| Power Level | 1 | Gain (dBi) | 2.15 | Non-restricted Band Emissions | | | | | | |
| Modulation | 11N2.4G-40M | | | | | | | | | |
| Non-restricted Band (MHz) | N _{TX} | Test Ch. Freq. (MHz) | In-band PSD [i] (dBuV/100kHz) | NBE Freq. (MHz) | Out-band PSD [o] (dBuV/100kHz) | [i] – [o] (dB) | Limit (dB) | Level Type | Pol. note 1 | |
| 2390-2400 | 1 | 2422 | 96.04 | 2398.44 | 68.77 | 27.27 | 20 | PK | V | |
| 2500-2690 | 1 | 2452 | 93.79 | 2514.32 | 63.63 | 30.16 | 20 | PK | V | |
| Low Band | | | | | Up Band | | | | | |
|  | | | | |  | | | | | |

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

| Transmitter Radiated Bandedge Emissions Result | | | | | | | | | |
|--|-----------------|----------------------|-----------------------------|---------------------------|----------------------|-------------------------|----------------|------------|-------------|
| Power Level | 1 | Gain (dBi) | 2.15 | Restricted Band Emissions | | | | | |
| Modulation | 11N2.4G-40M | | | | | | | | |
| Restricted Band (MHz) | N _{TX} | Test Ch. Freq. (MHz) | In-band PSD [i] (dBuV/1MHz) | RBE Freq. (MHz) | Measure Distance (m) | Out-Band Level (dBuV/m) | Limit (dBuV/m) | Level Type | Pol. note 1 |
| 2310-2390 | 1 | 2422 | 107.69 | 2390.00 | 3 | 69.62 | 74 | PK | V |
| 2310-2390 | 1 | 2422 | 96.59 | 2390.00 | 3 | 52.80 | 54 | AV | V |
| 2483.5-2500 | 1 | 2452 | 105.79 | 2485.37 | 3 | 71.08 | 74 | PK | V |
| 2483.5-2500 | 1 | 2452 | 94.89 | 2483.50 | 3 | 52.99 | 54 | AV | V |

Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical).

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 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

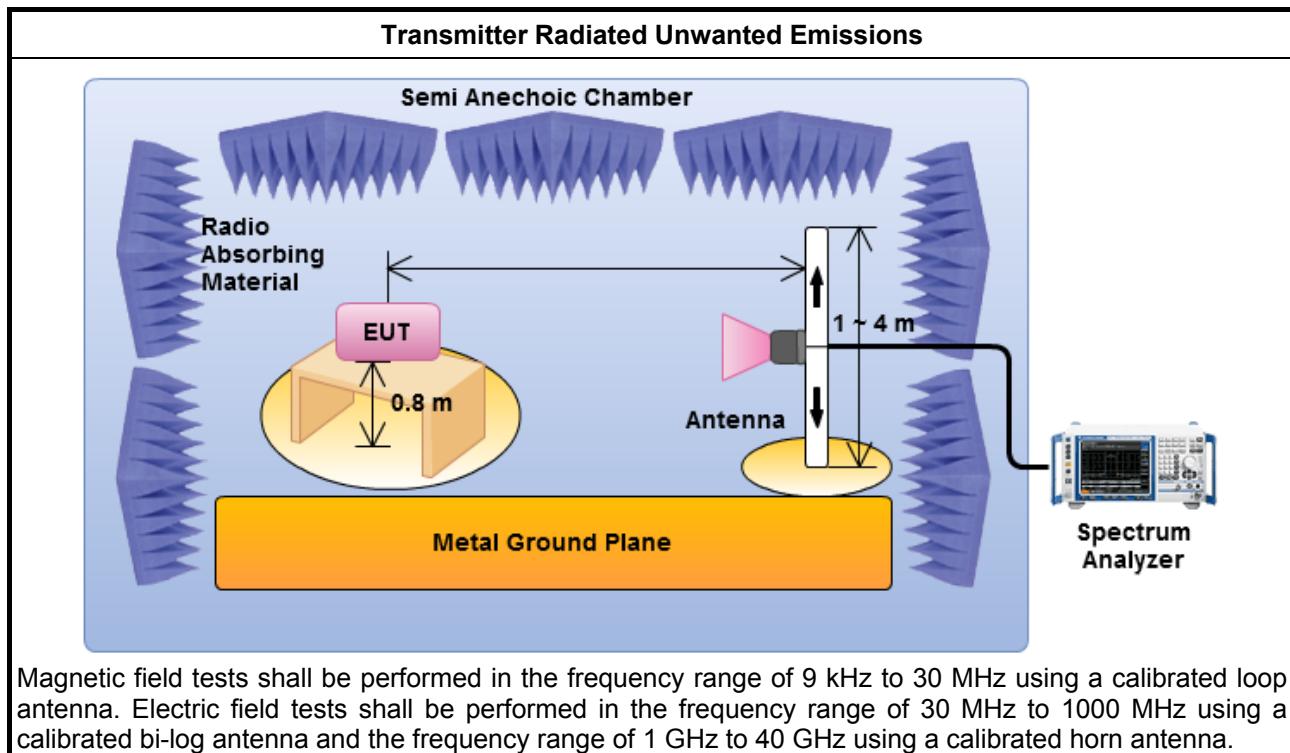
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

| Test Method – General Information | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements). |
| <input checked="" type="checkbox"/> | 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 checked="" 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 5.4.1 for unwanted emissions into non-restricted bands. |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 5.4.2 for unwanted emissions into restricted bands. |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.4.2.2.1 Option 1 (Power Averaging). |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.4.2.2.2 Option 2 (Trace Averaging). |
| | <input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW) – Duty cycle \geq 98%. |
| | <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 5.4.2.2.1.1 measurement procedure peak limit. |
| | <input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit. |

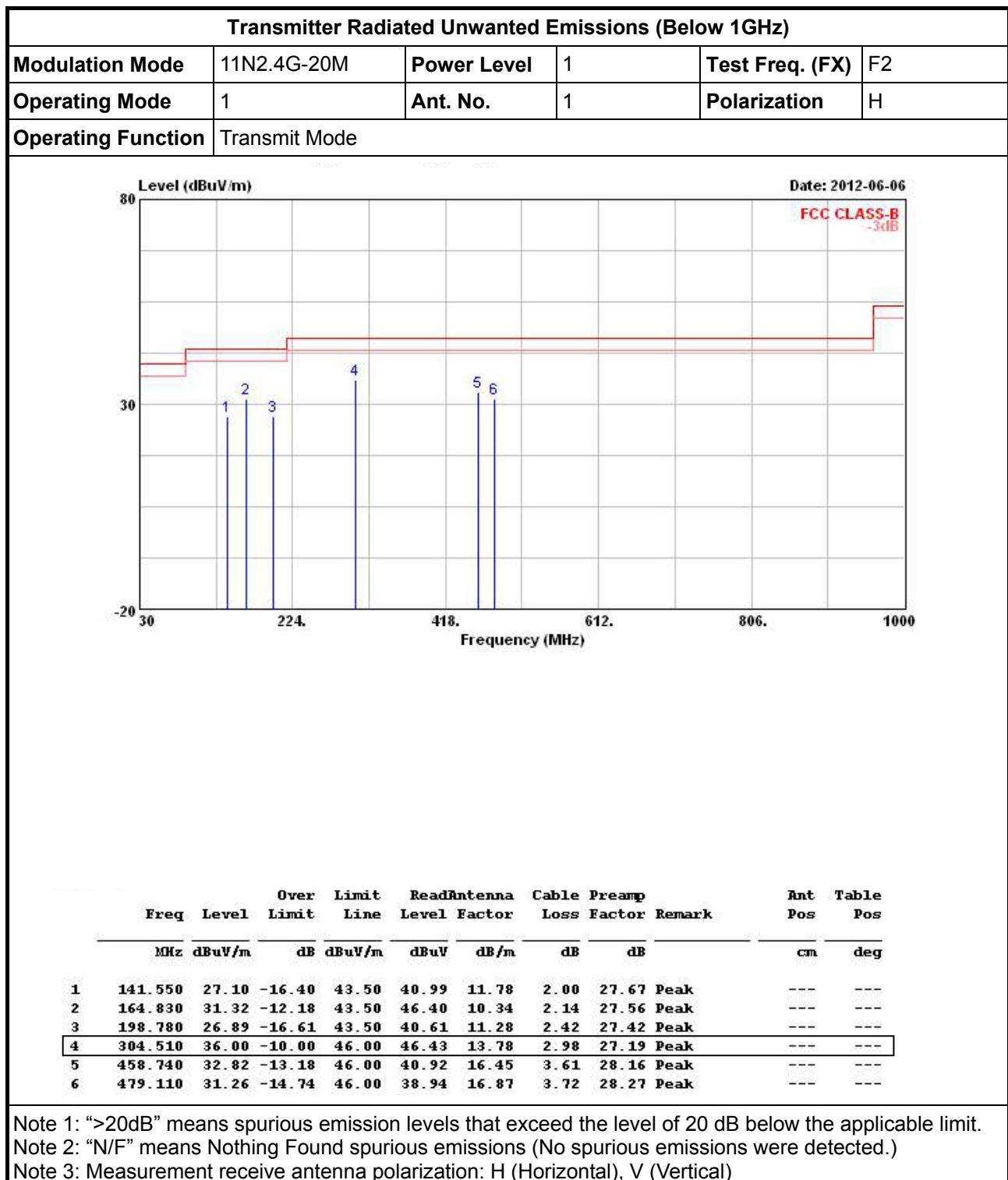
| Test Method | |
|---|--|
| <input type="checkbox"/> Refer as FCC KDB 558074, clause 2 for conducted measurement. | |
| | <input type="checkbox"/> For unwanted emissions into non-restricted bands (relative emission limits). |
| | <input type="checkbox"/> For conducted measurements on devices with multiple transmit chains: Refer as FCC KDB 662911, when testing out-of-band and spurious emissions against relative emission limits, tests may be performed on each output individually without summing or adding 10 log(N) if the measurements are made relative to the in-band emissions on the individual outputs. |
| | <input type="checkbox"/> For unwanted emissions into restricted bands. Test conducted spurious emissions and radiated by the cabinet with the antenna connector(s) terminated by a specified load (cabinet radiation). |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.4.2.2.1 unwanted emissions in restricted bands on frequencies \leq 1000 MHz |
| | <input type="checkbox"/> Refer as FCC KDB 558074, clause 5.4.2.2.2 unwanted emissions in restricted bands on frequencies $>$ 1000 MHz |
| | <input type="checkbox"/> For conducted measurements on devices with 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, out-of-band and spurious emission measurement. The trace data for each transmit chain has to be individually recorded and each transmit chain trace data shall be added and compared with the limit. |
| | <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. |
| <input checked="" type="checkbox"/> | For radiated measurement. |
| | <input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz. |
| | <input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz. |
| | <input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.5 for radiated emissions from above 1 GHz. |

3.6.4 Test Setup

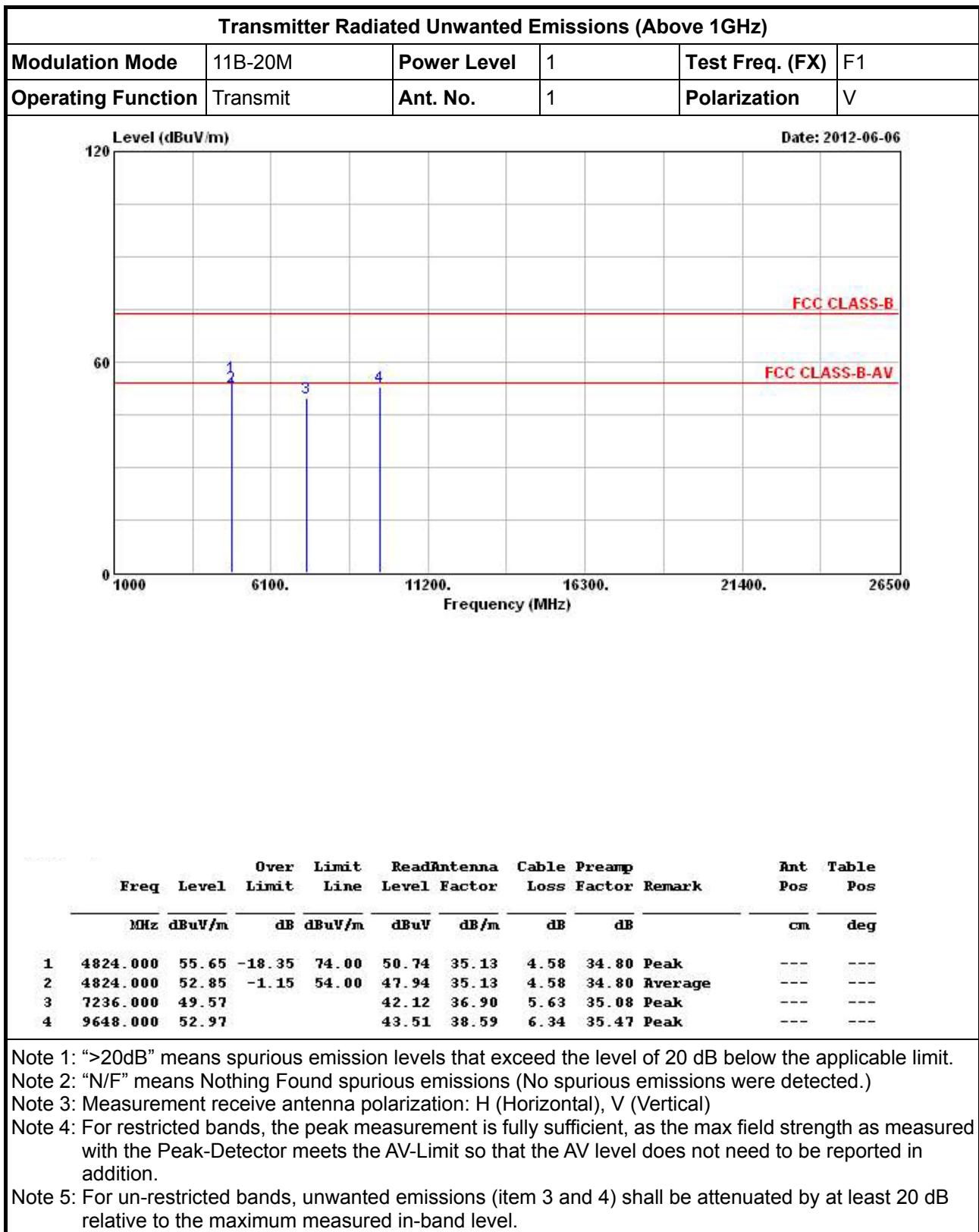


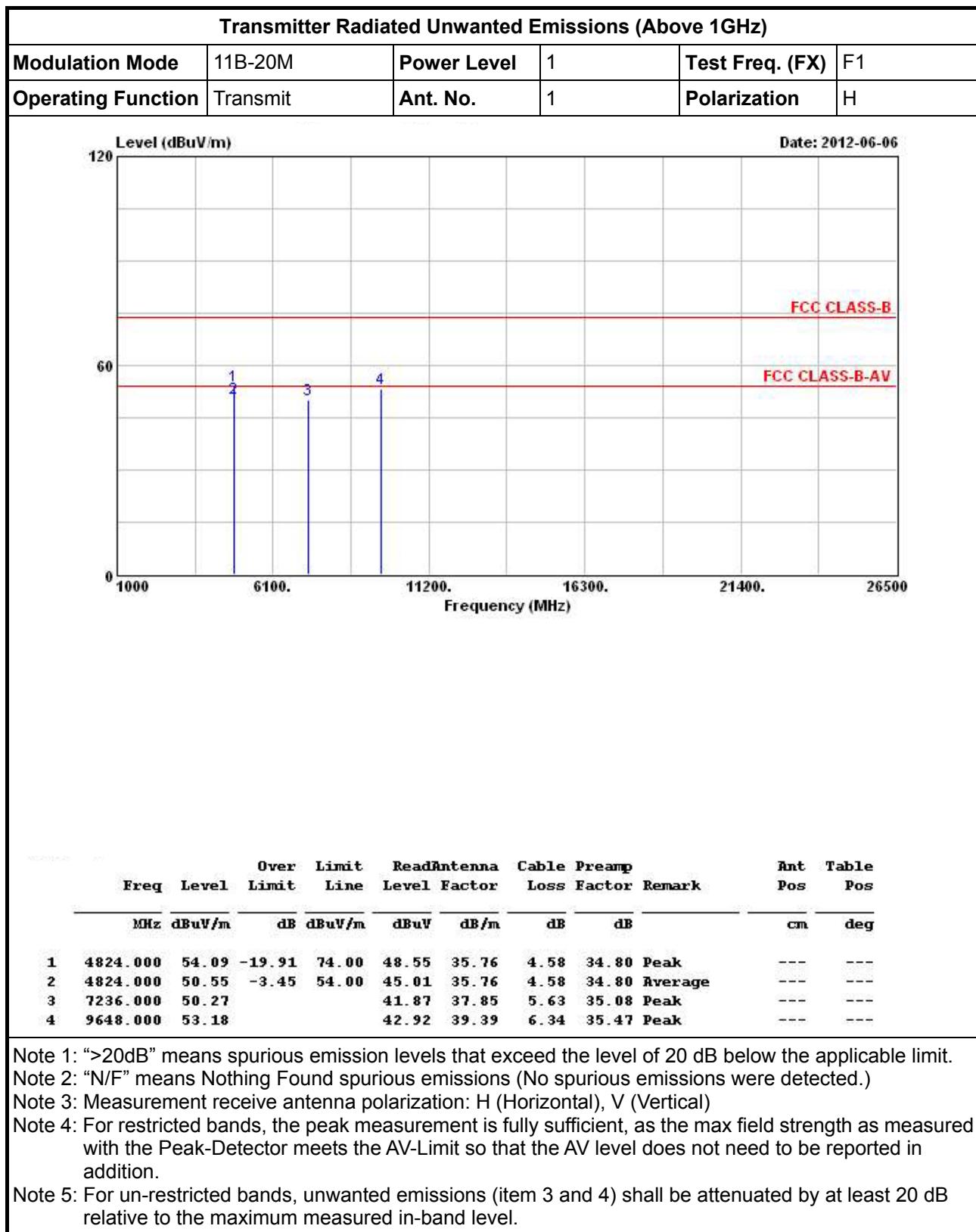
3.6.5 Test Result of Transmitter Radiated Unwanted Emissions (Below 1GHz)

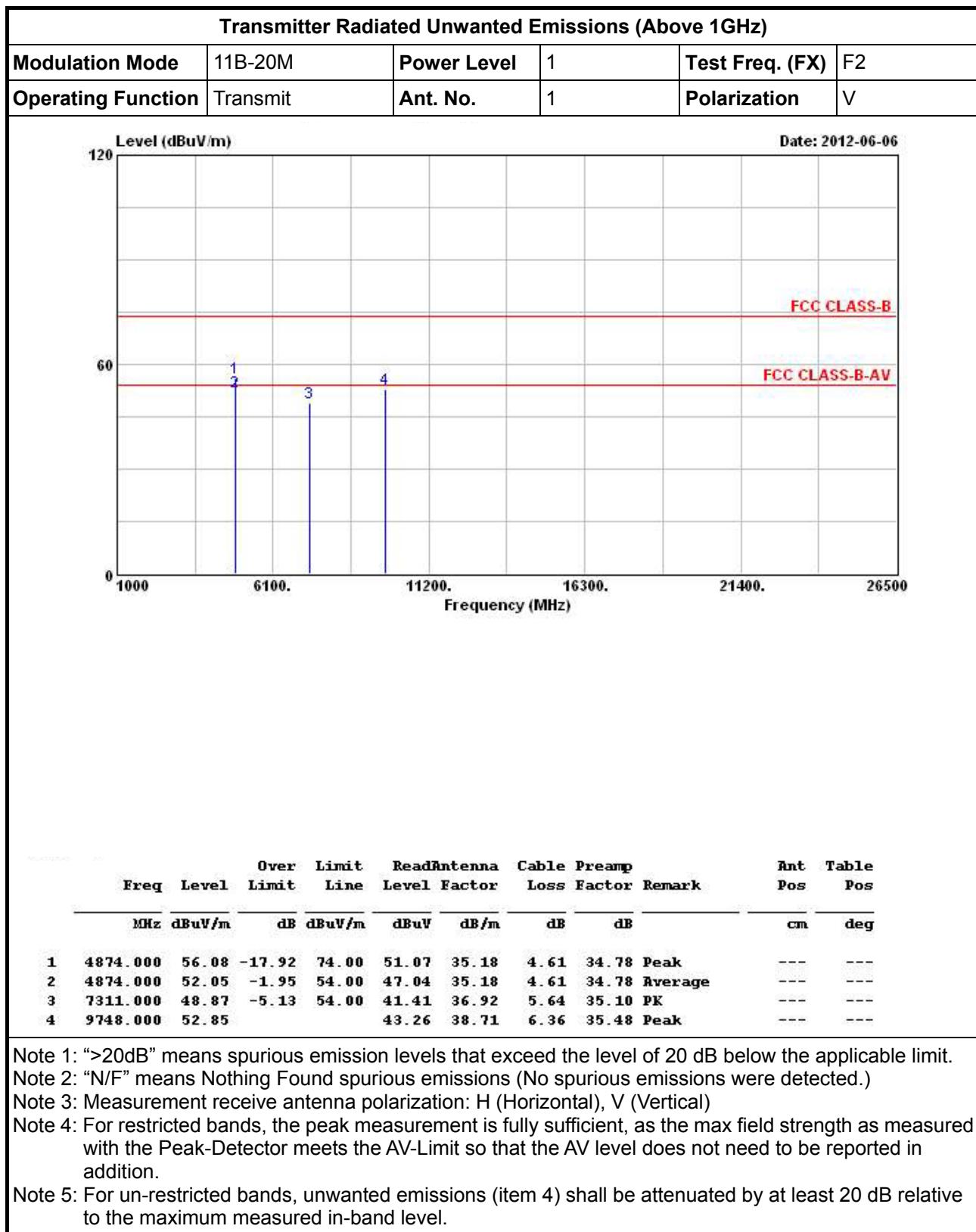
| Transmitter Radiated Unwanted Emissions (Below 1GHz) | | | | | | | | | | | | | | | | | |
|--|---------------------|--|--|-------------|---|--|-----------------|----|--|--|--|--|--|--|--|--|--|
| Modulation Mode | 11N2.4G-20M | | | Power Level | 1 | | Test Freq. (FX) | F2 | | | | | | | | | |
| Operating Mode | 1 | | | Ant. No. | 1 | | Polarization | V | | | | | | | | | |
| Operating Function | Transmit Mode | | | | | | | | | | | | | | | | |
| Level (dBuV/m) | Date: 2012-06-06 | | | | | | | | | | | | | | | | |
| 80 | FCC CLASS-B -3dB | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |
| -20 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |
| 224. | | | | | | | | | | | | | | | | | |
| 418. | | | | | | | | | | | | | | | | | |
| 612. | | | | | | | | | | | | | | | | | |
| 806. | | | | | | | | | | | | | | | | | |
| 1000 | | | | | | | | | | | | | | | | | |
| | Frequency (MHz) | | | | | | | | | | | | | | | | |
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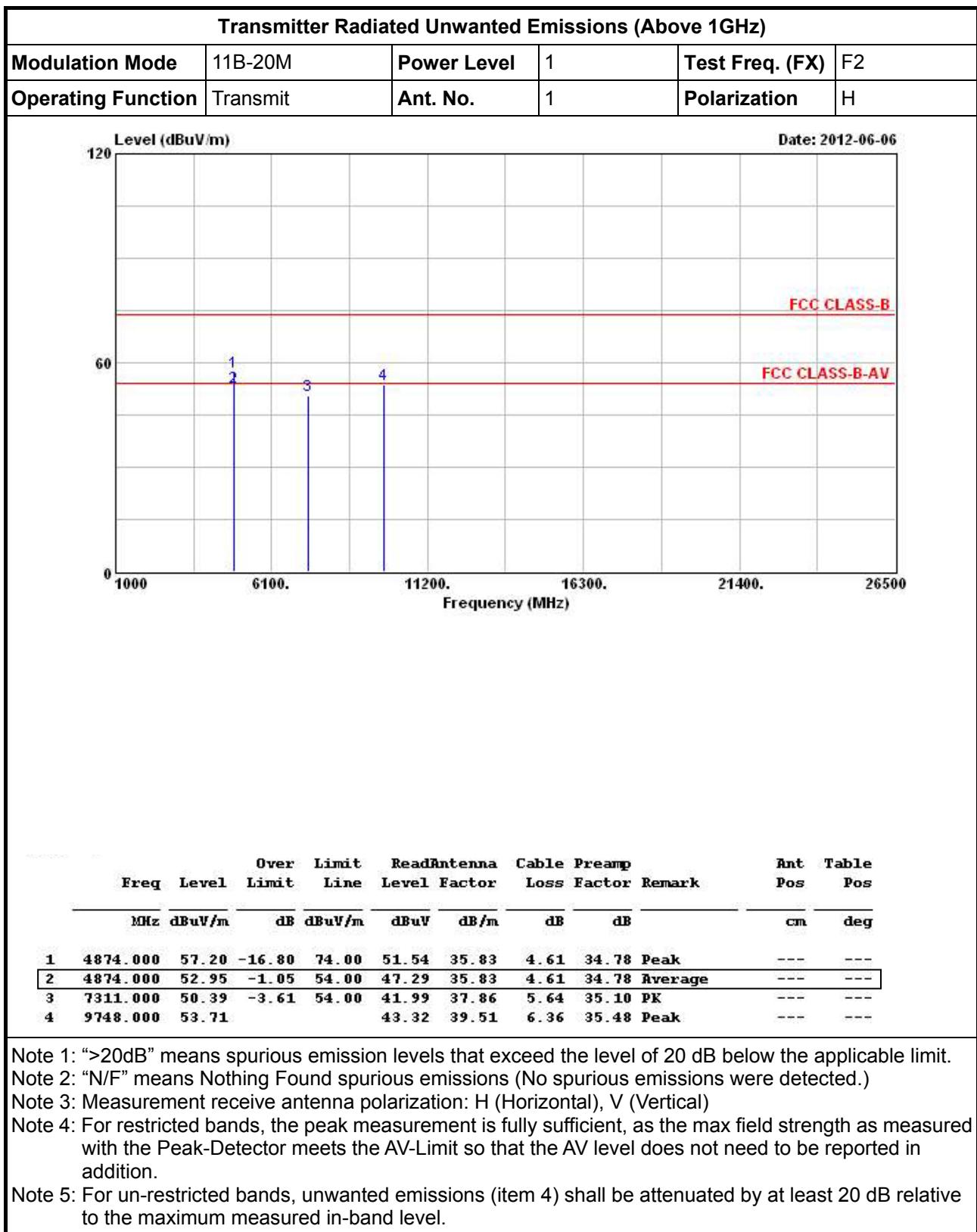


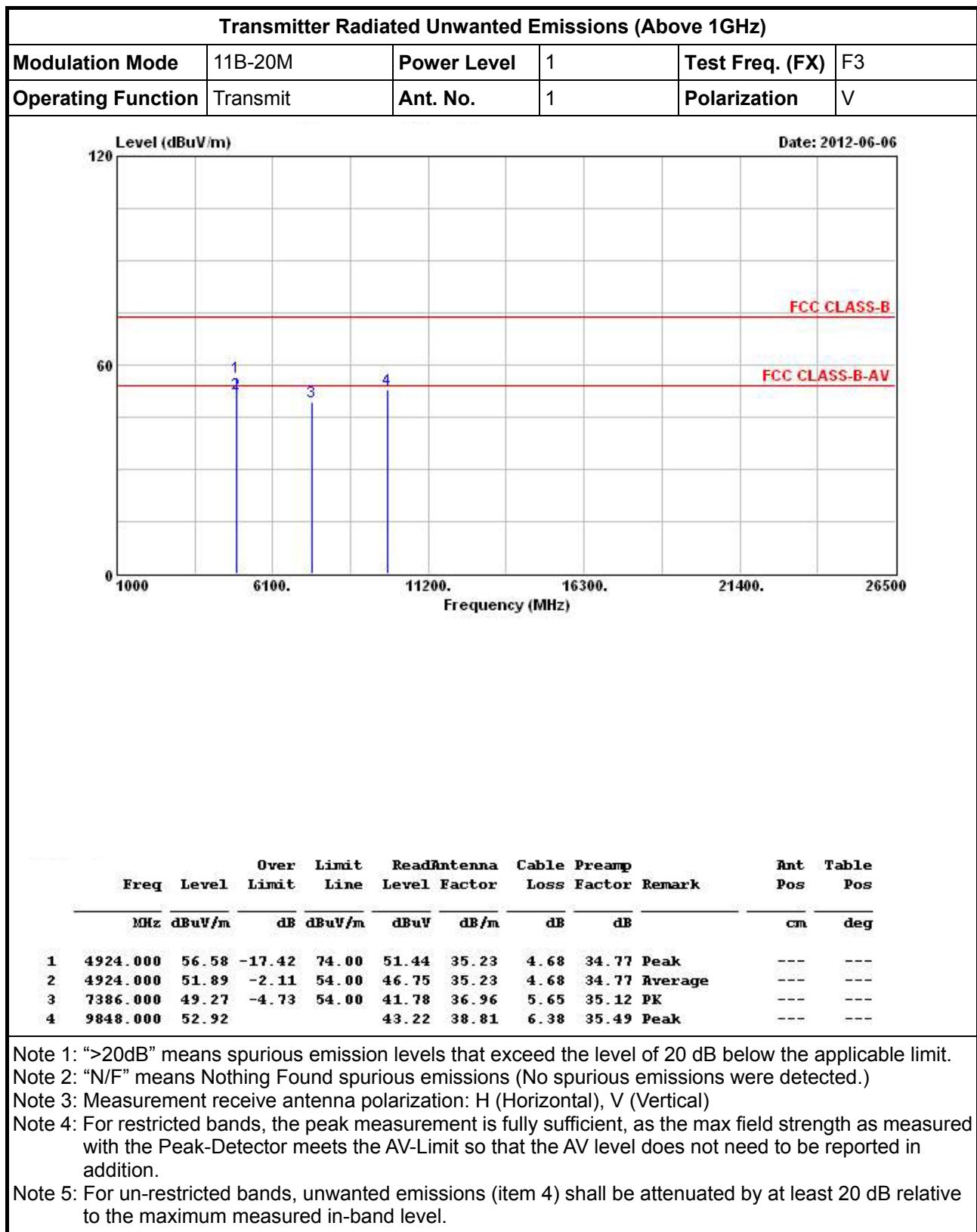
3.6.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11B-20M

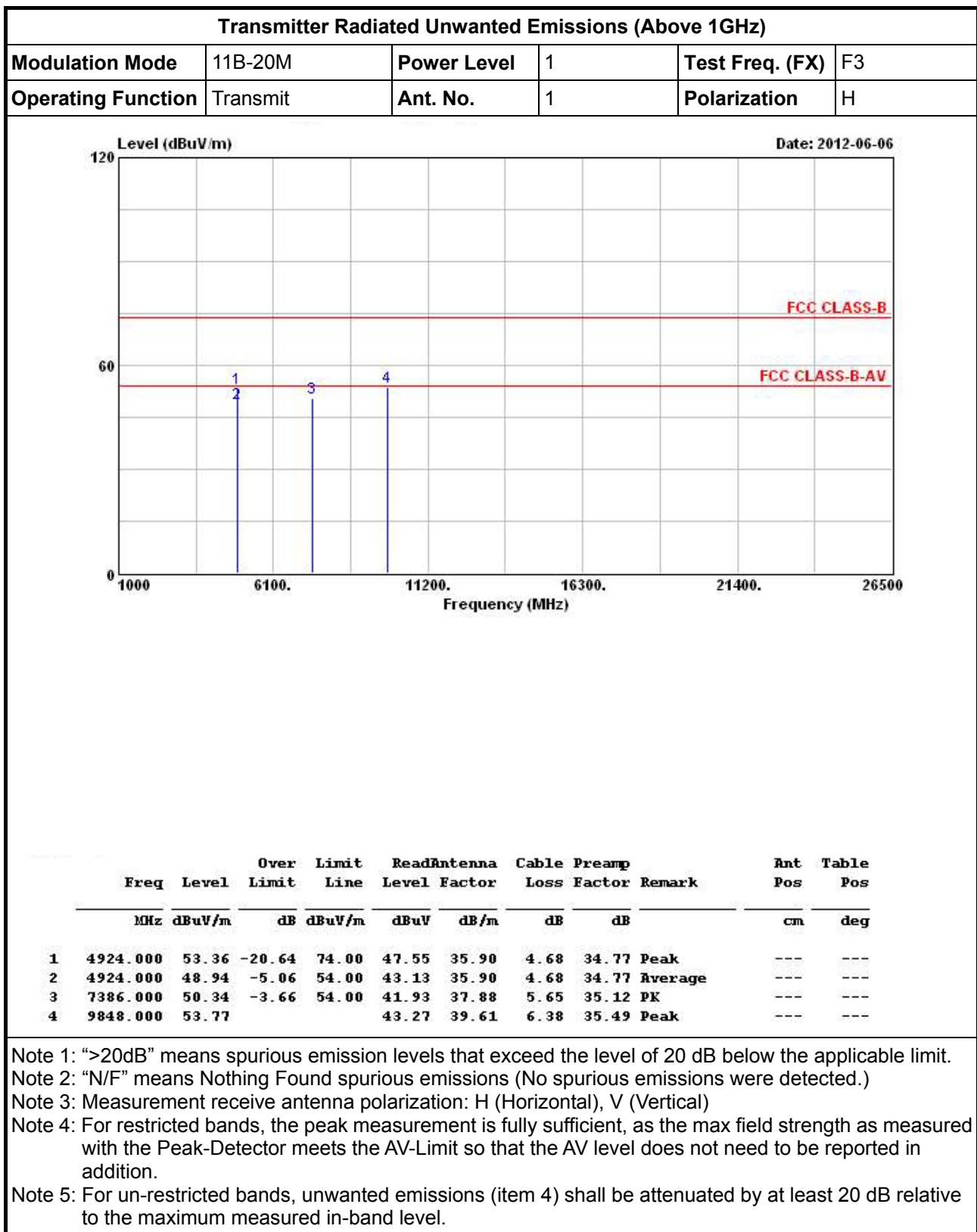




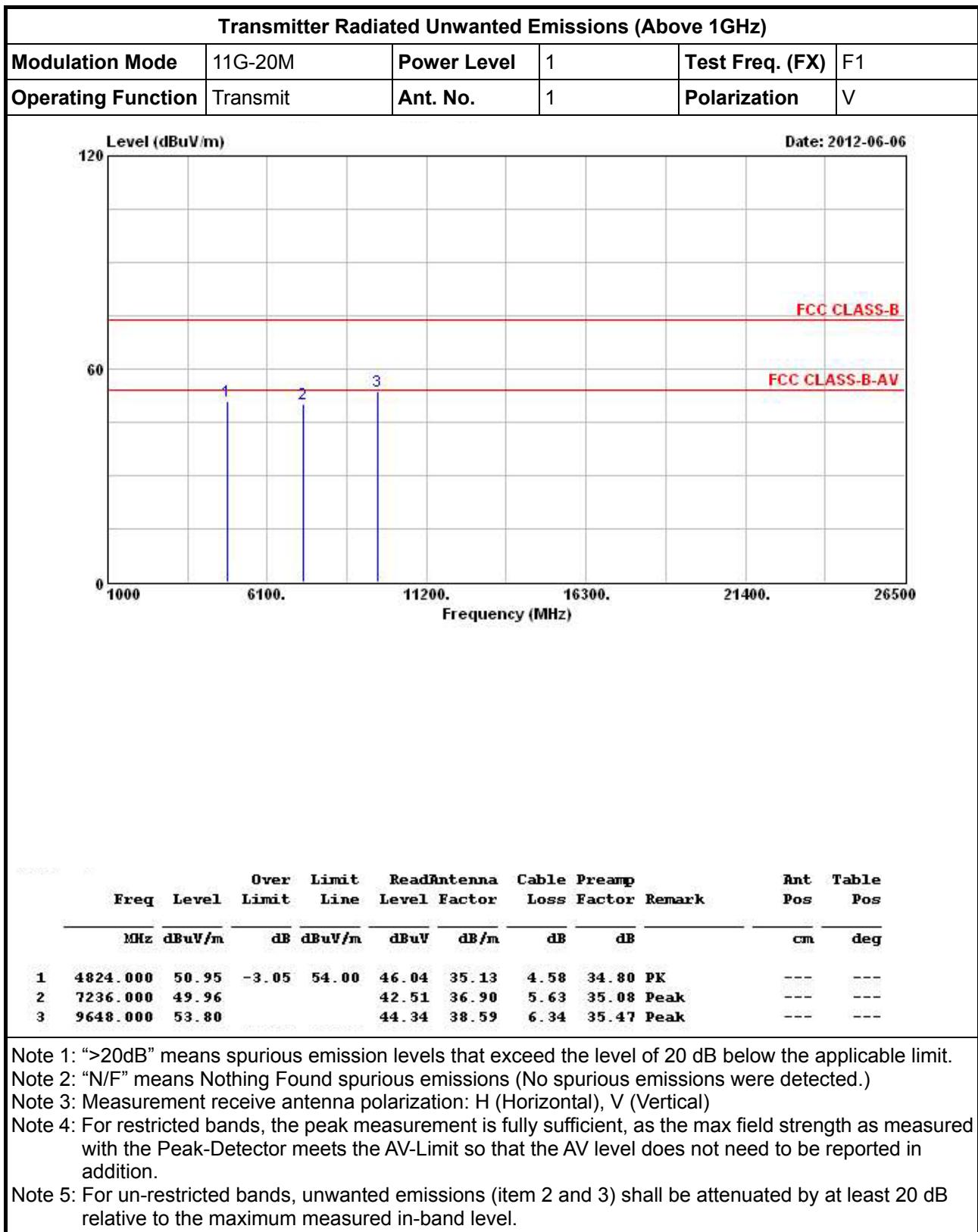


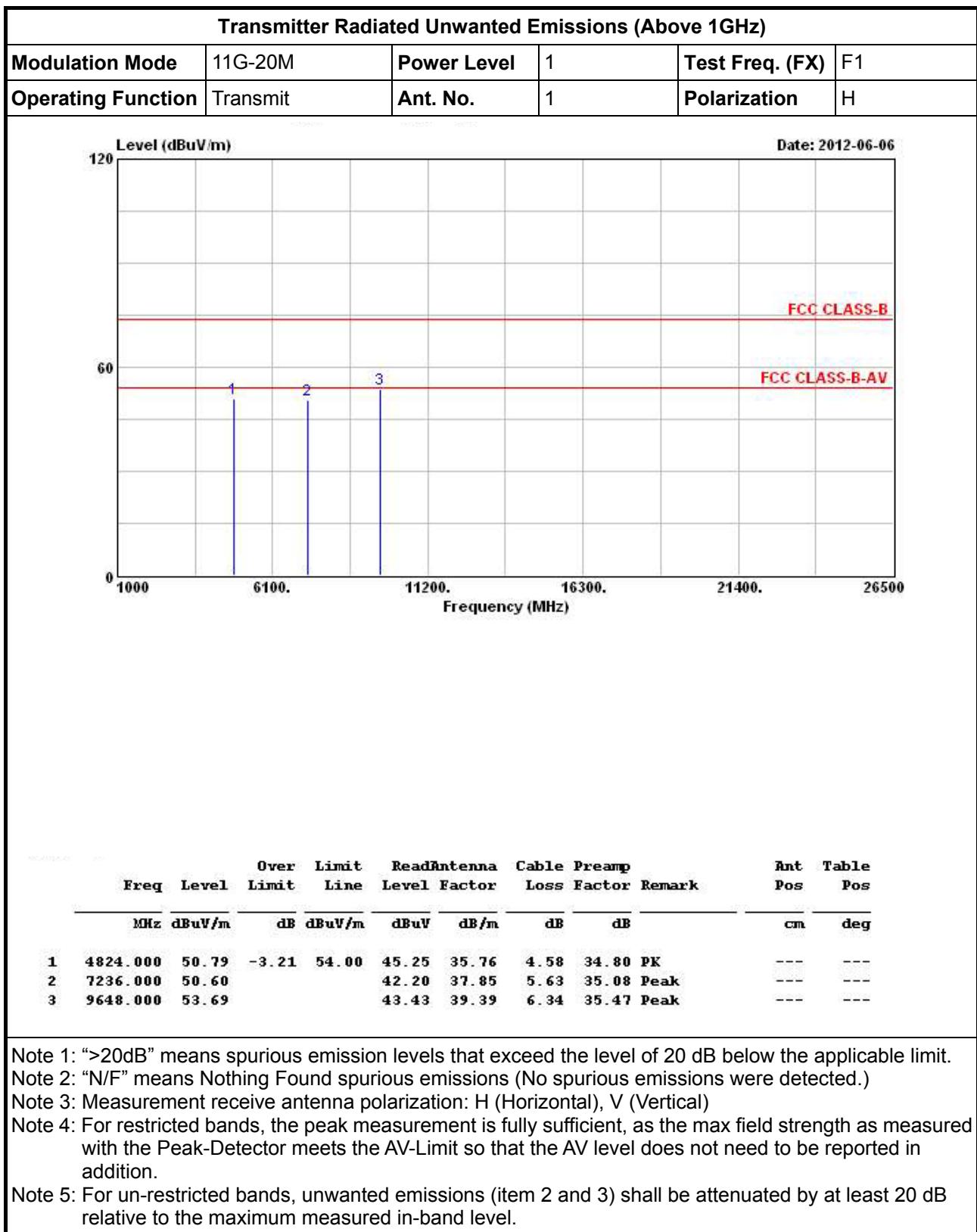


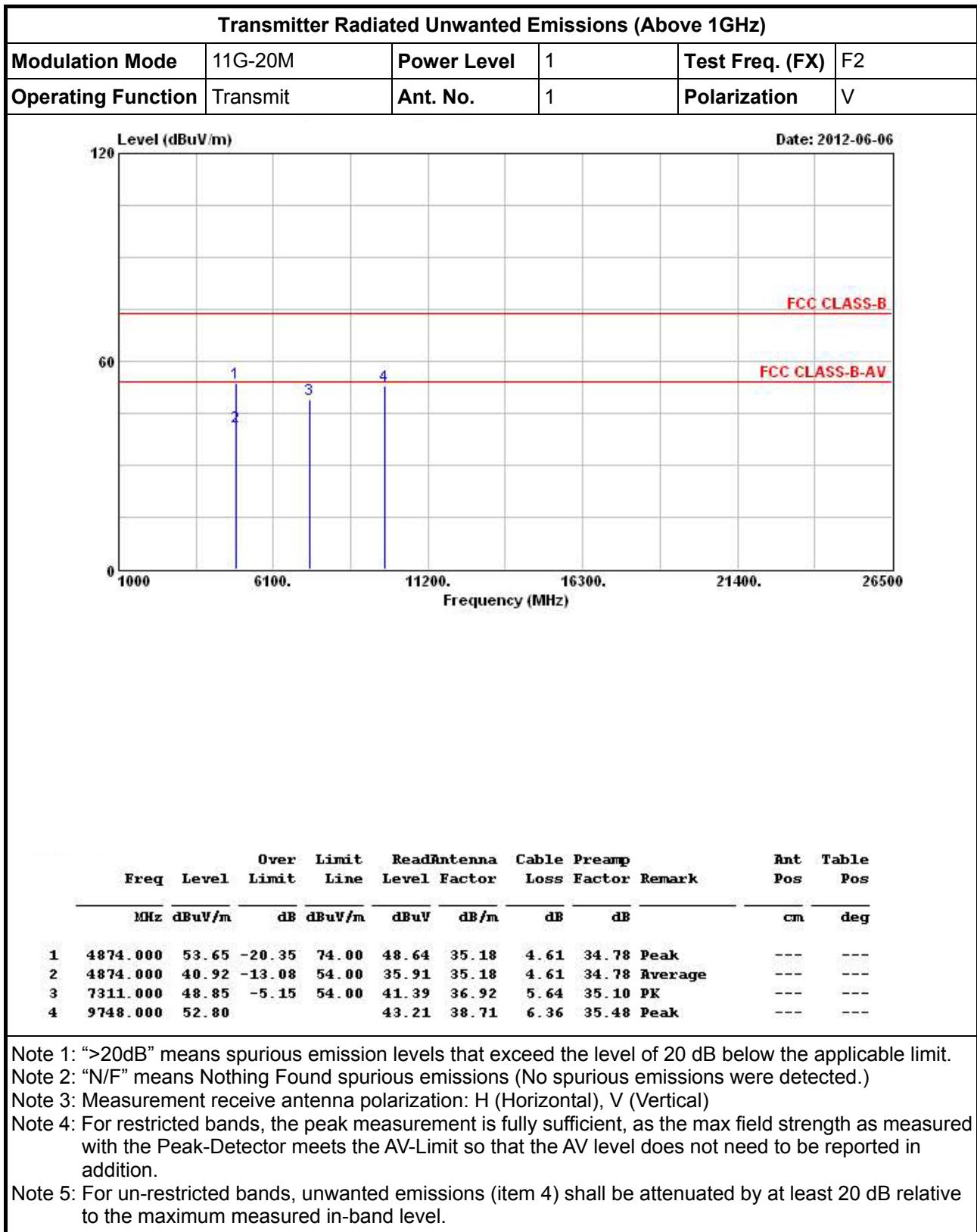


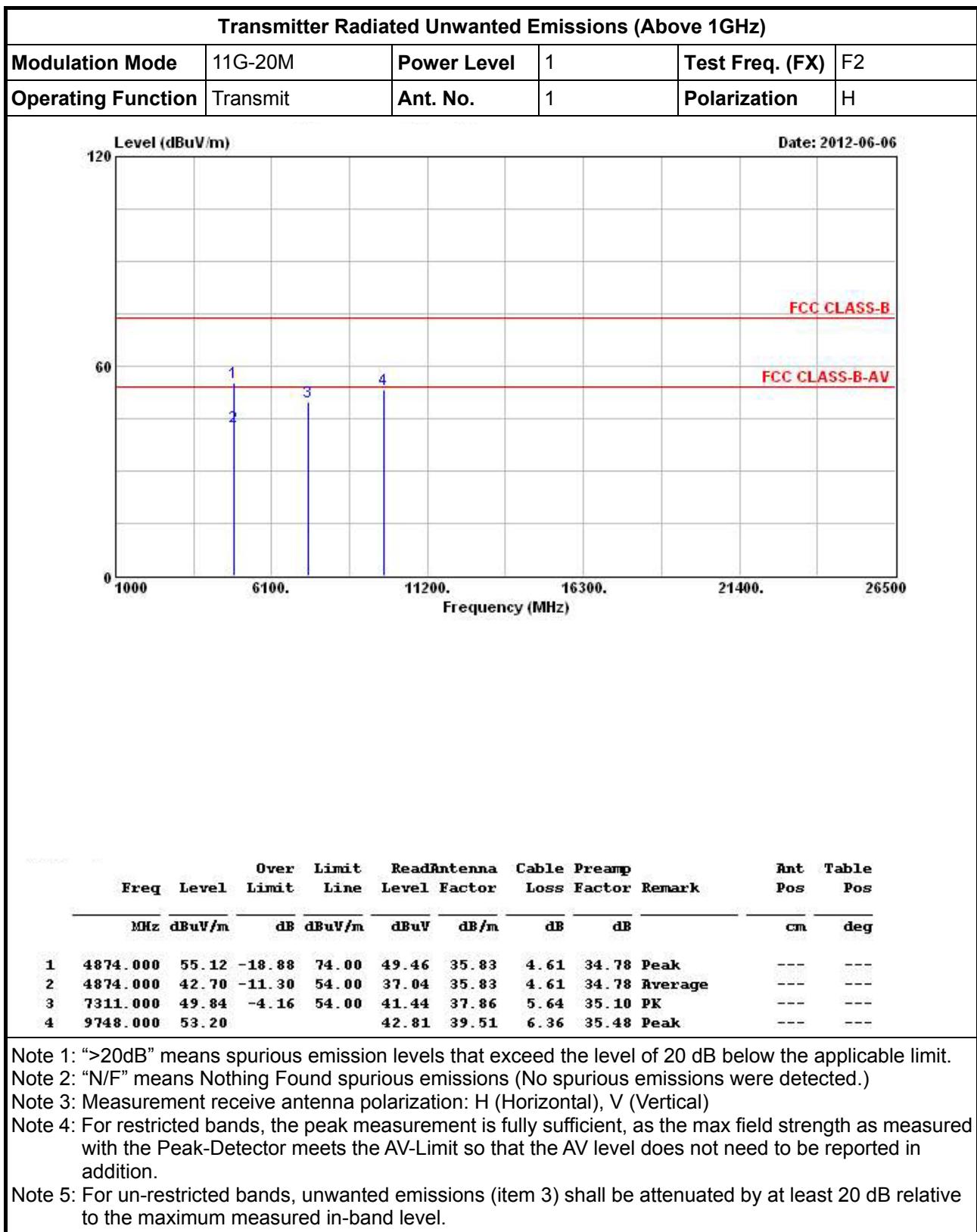


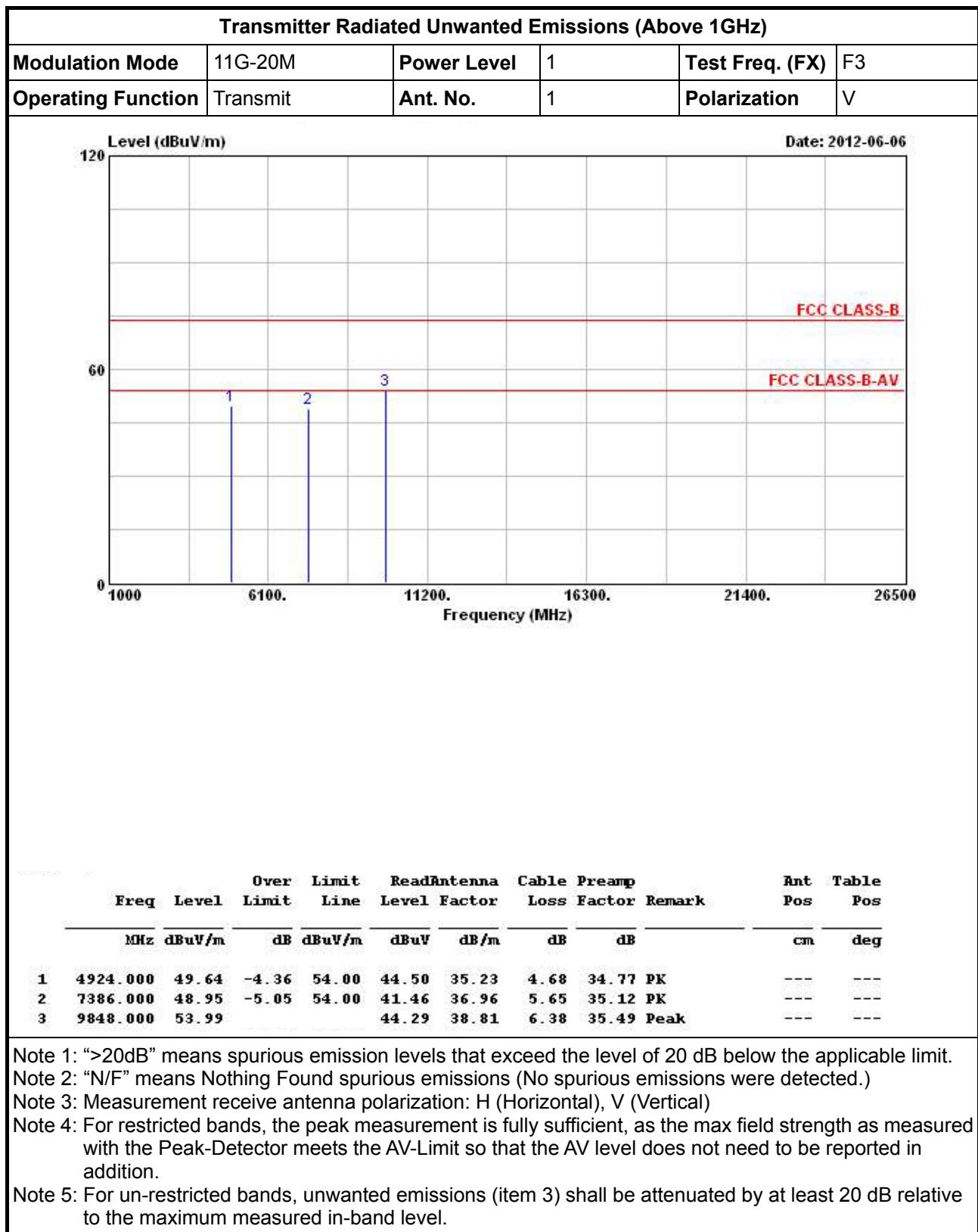
3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11G-20M

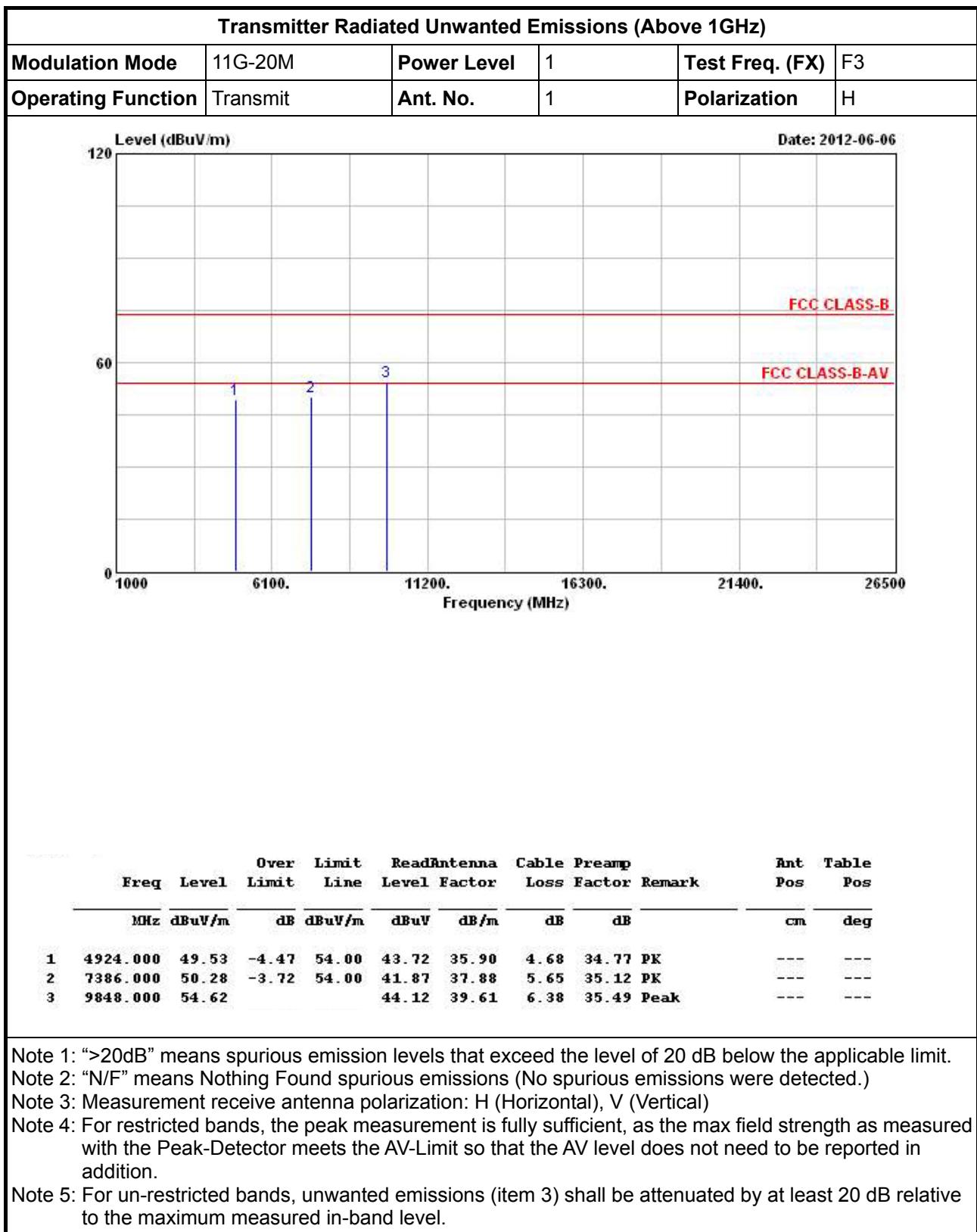




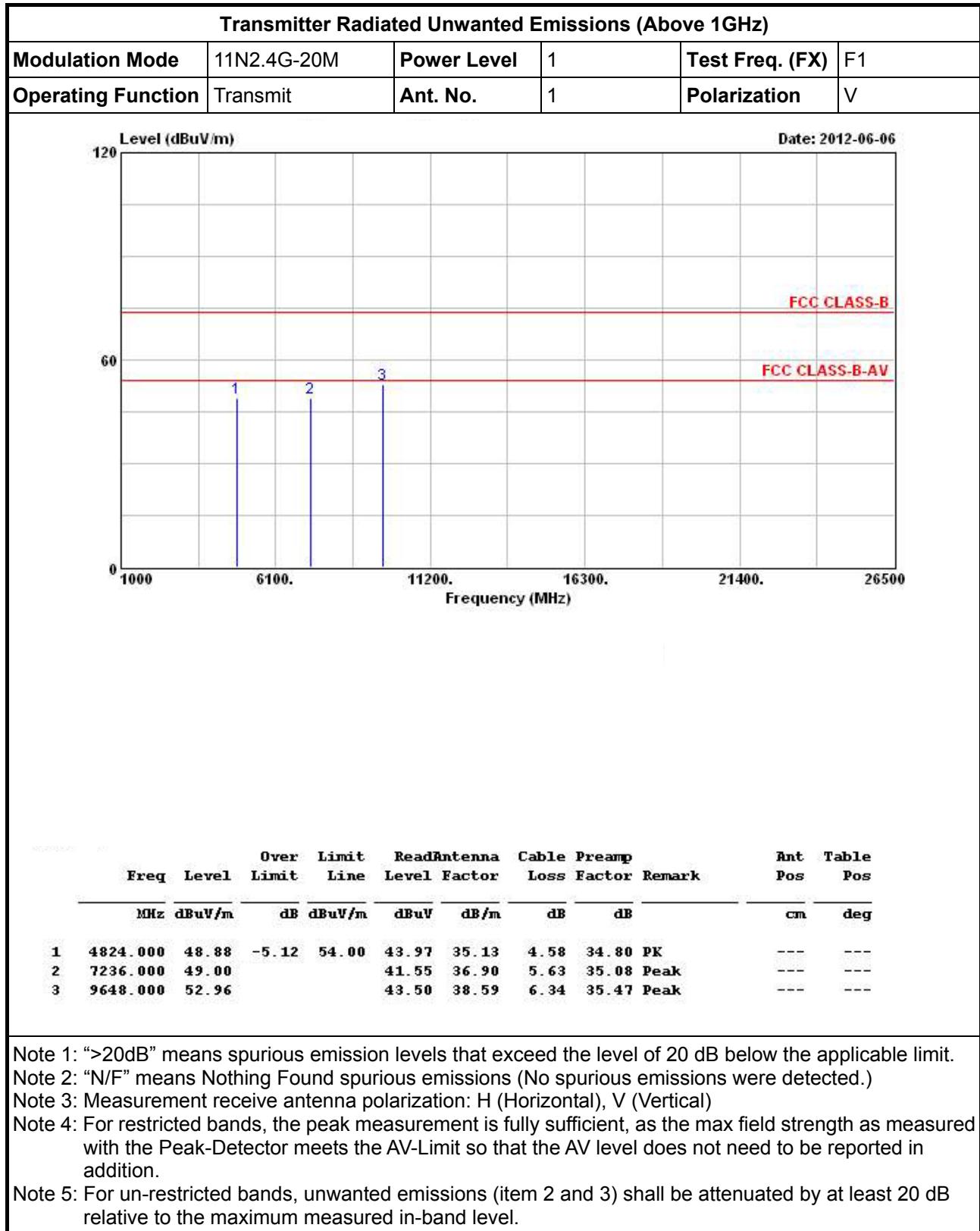


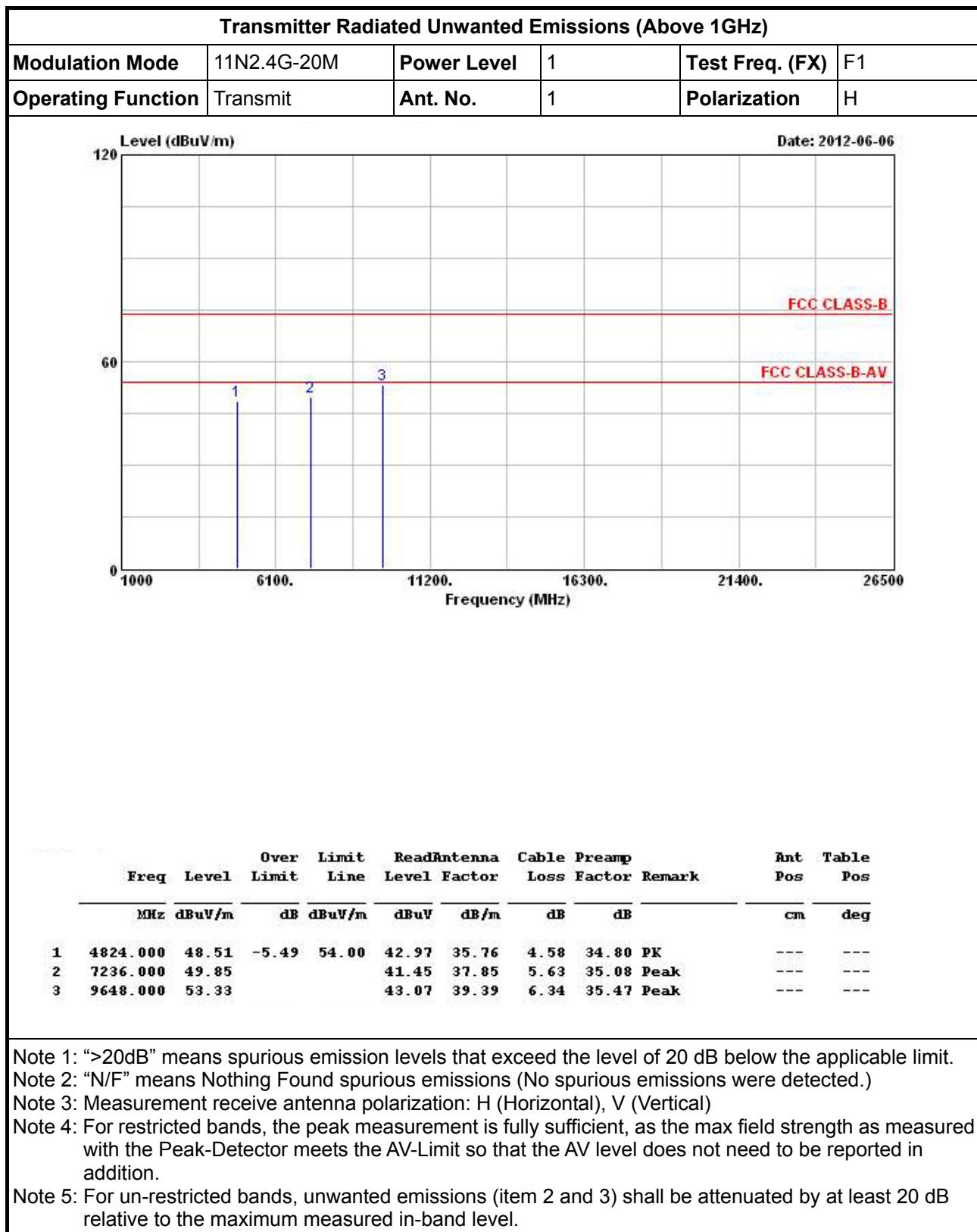


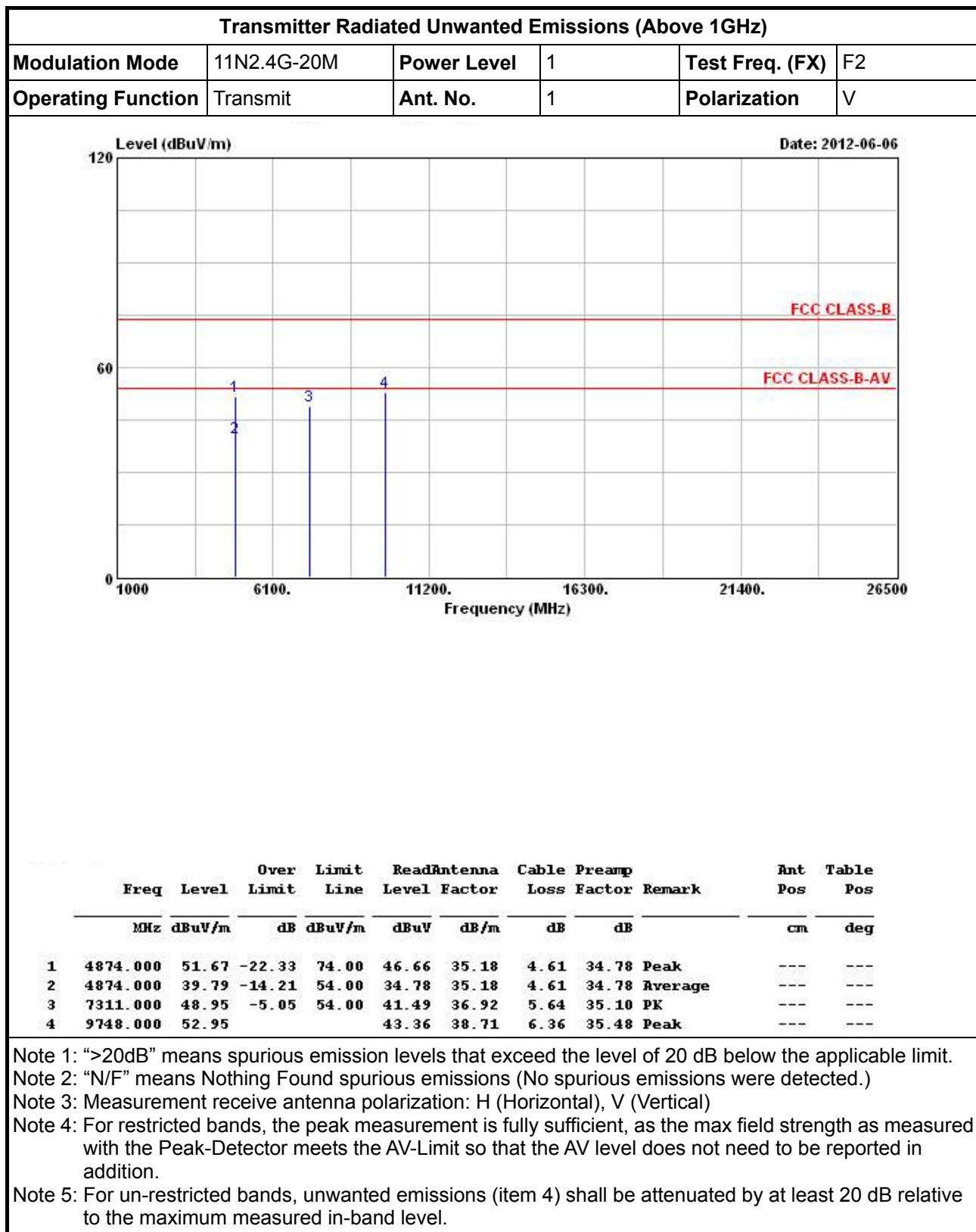




3.6.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11N2.4G-20M







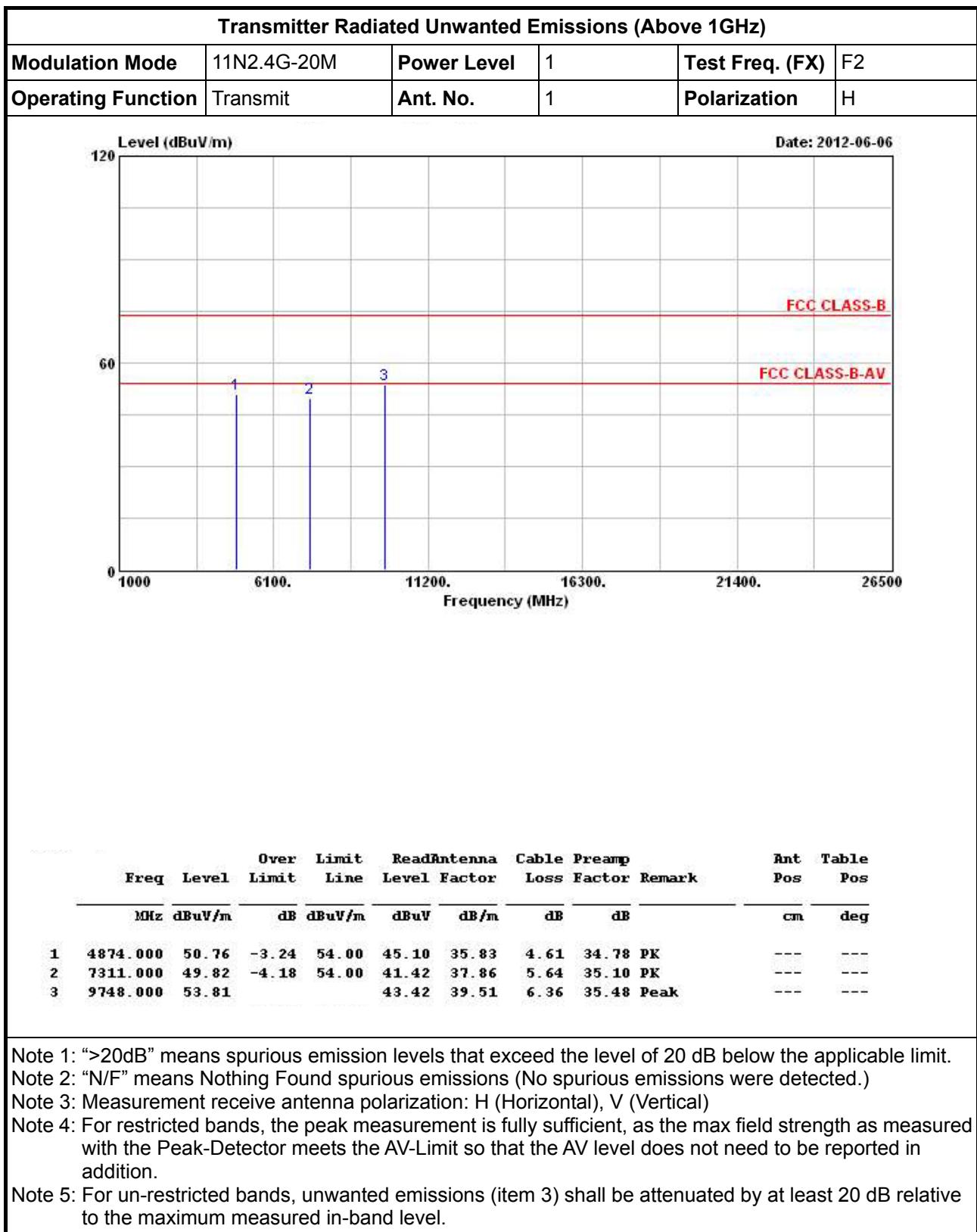
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

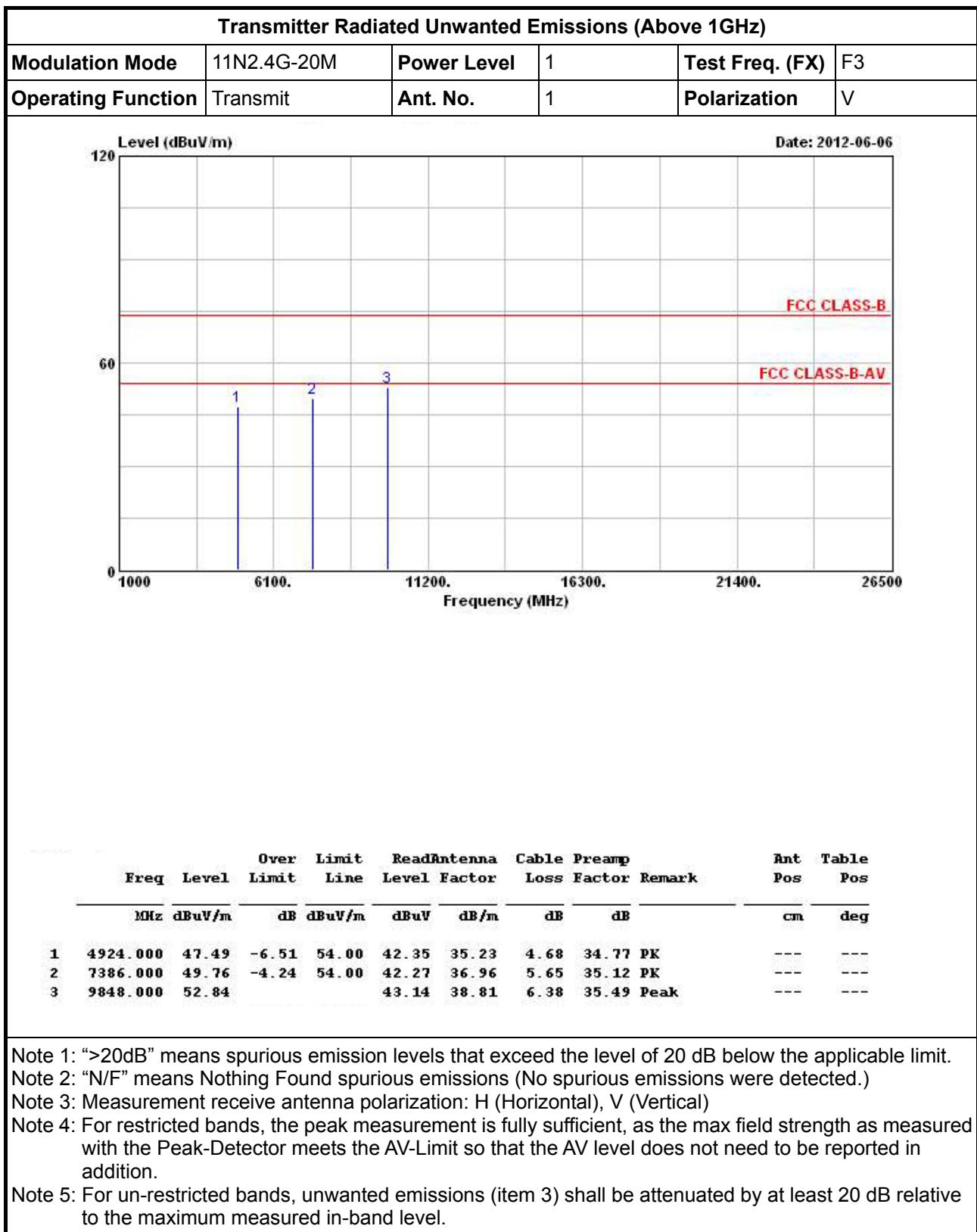
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

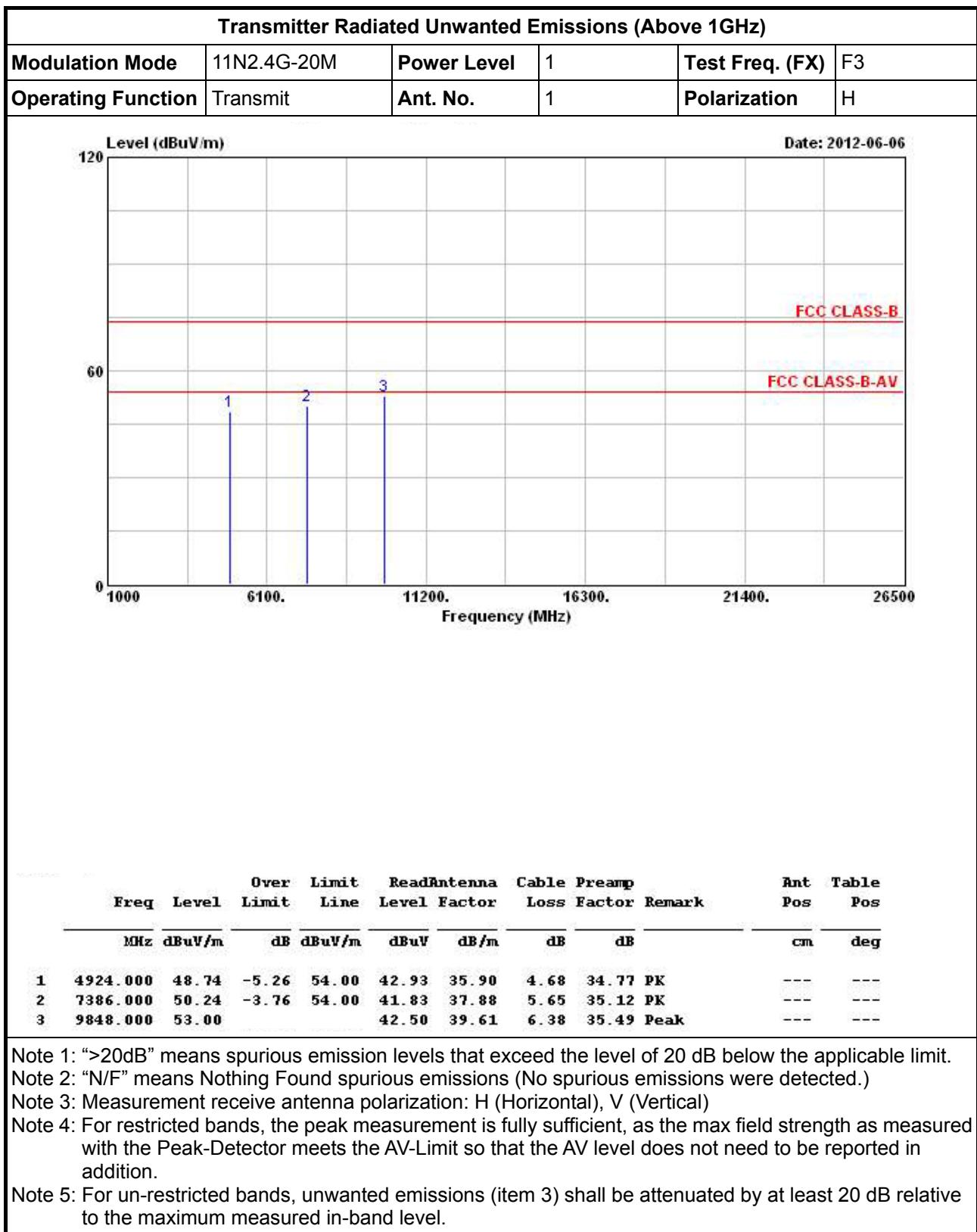
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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.

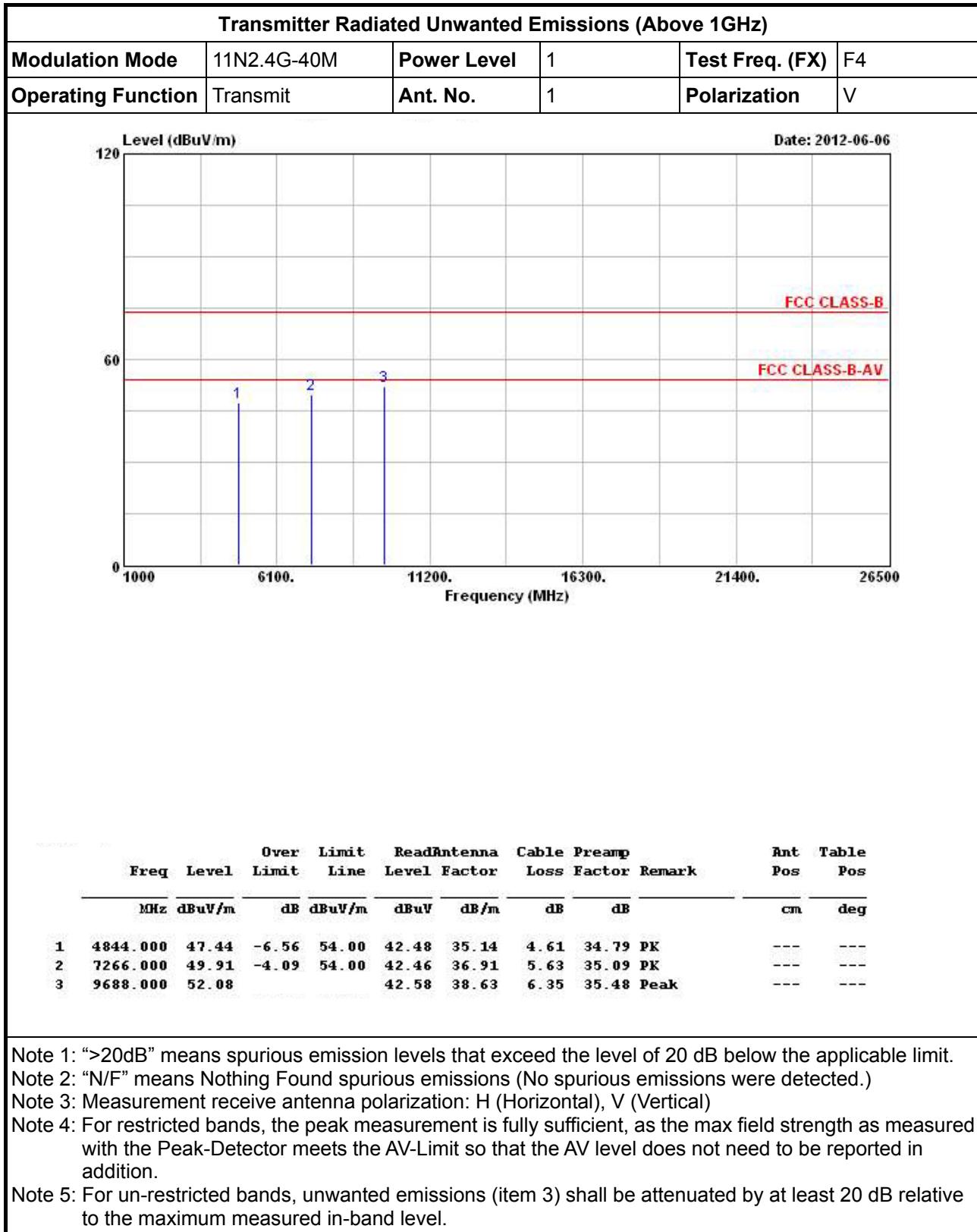
Note 5: For un-restricted bands, unwanted emissions (item 4) shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

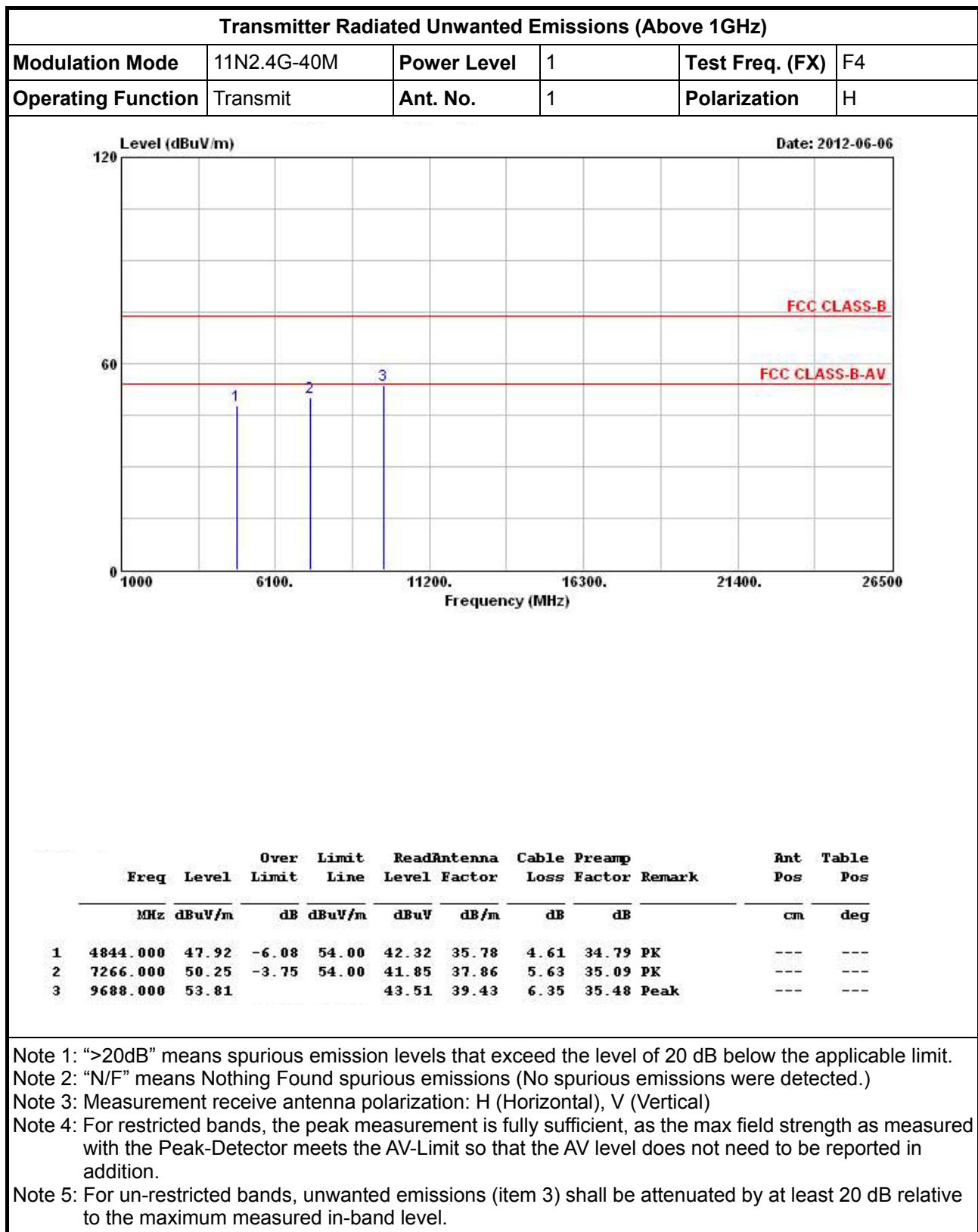


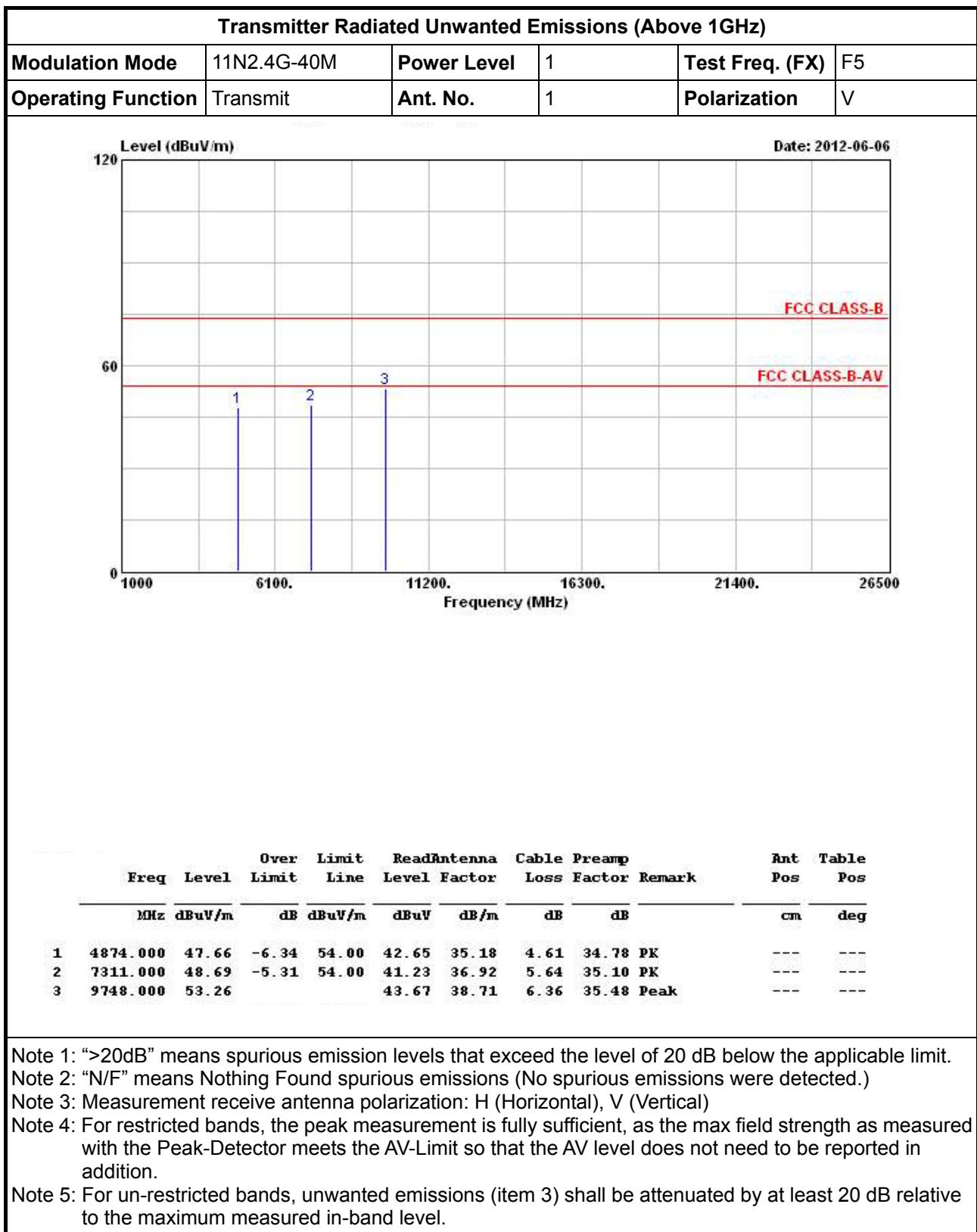


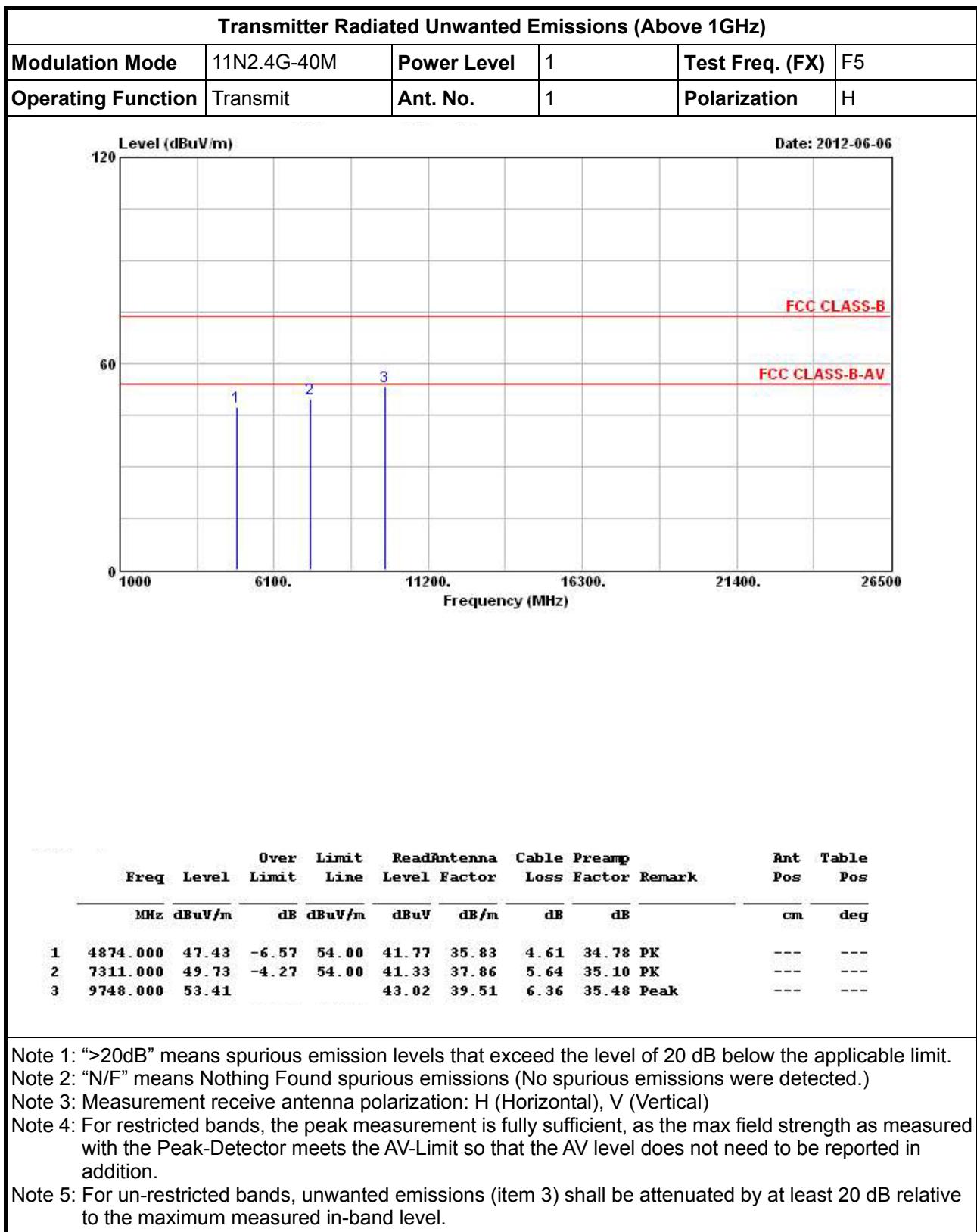


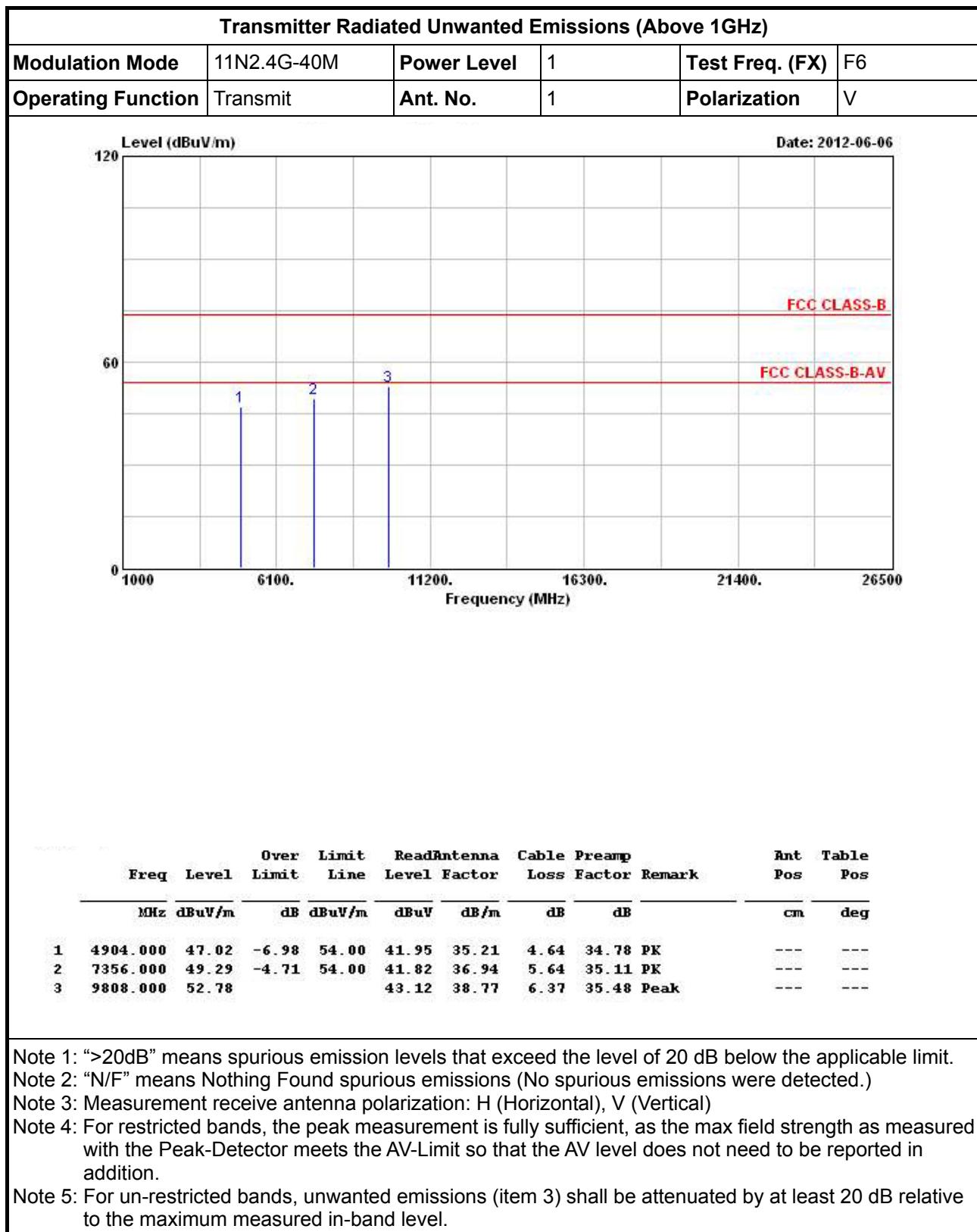
3.6.9 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11N2.4G-40M

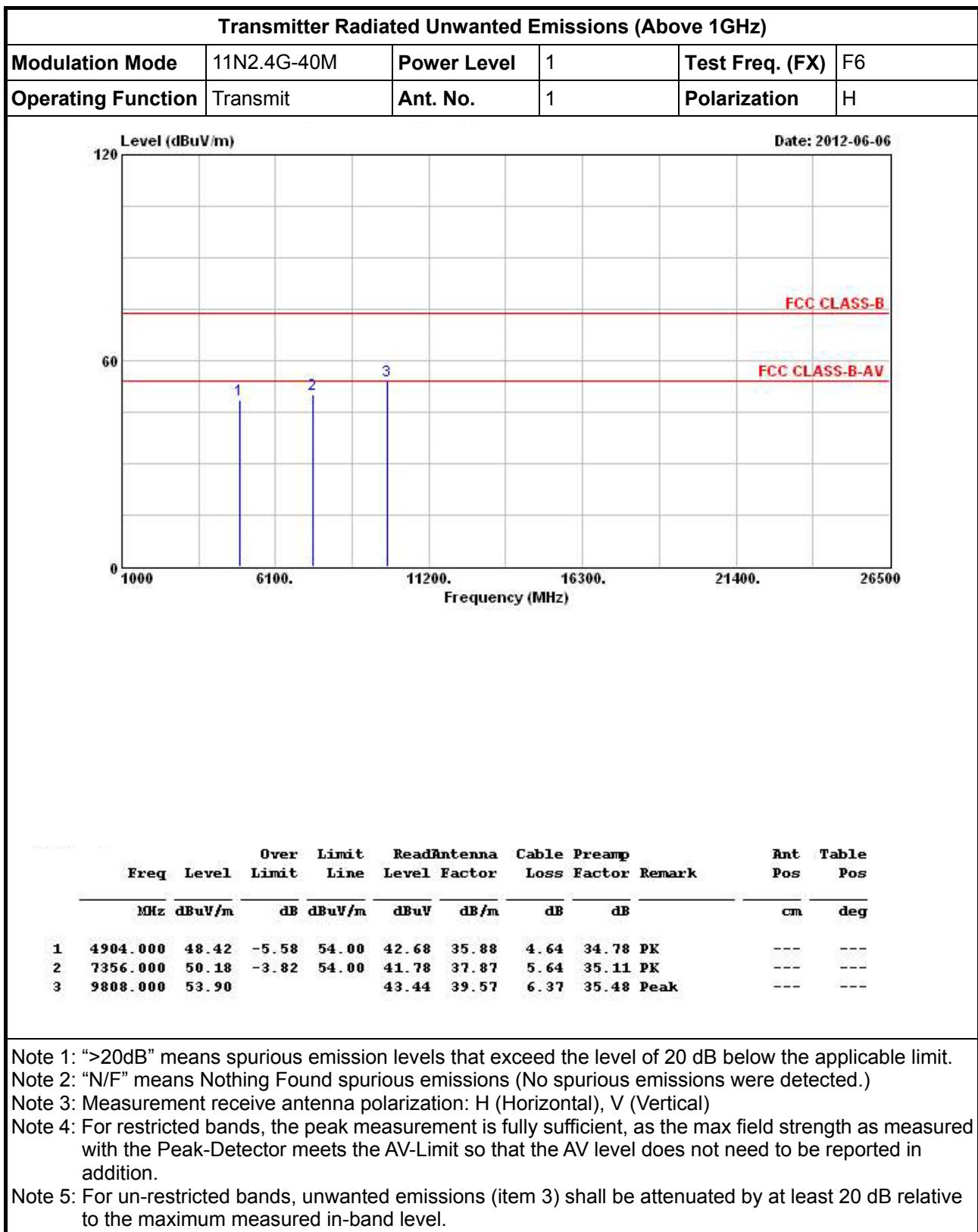












4 Test Equipment and Calibration Data

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|---------------------|------------------------------|-----------|------------|------------------|------------------|----------------------|
| EMC Receiver | R&S | ESCS 30 | 100174 | 9 kHz ~ 2.75 GHz | Mar. 23, 2012 | Conduction (CO04-HY) |
| LISN | SCHWARZBECK MESS-ELEKTRO NIK | NSLK 8127 | 8127-477 | 9kHz – 30MHz | Feb. 08, 2012 | Conduction (CO04-HY) |
| LISN (Support Unit) | EMCO | 3810/2NM | 9703-1839 | 9 kHz ~ 30 MHz | Apr. 20, 2012 | Conduction (CO04-HY) |
| RF Cable-CON | HUBER+SUHNE R | RG213/U | CB049 | 9 kHz ~ 30 MHz | Apr. 25, 2012 | Conduction (CO04-HY) |

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

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|----------------------------|---------------|------------------|-------------|-----------------|------------------|---------------------|
| Spectrum Analyzer | R&S | FSP 40 | 100305 | 9KHz~40GHz | Feb. 21, 2012 | Conducted (TH01-HY) |
| Spectrum Analyzer | R&S | FSV 40 | 15195-01-00 | 9KHz~40GHz | Jan. 06, 2012 | Conducted (TH01-HY) |
| DC Power Source | G.W. | GPC-6030D | C671845 | DC 1V ~ 60V | Jun. 19, 2012 | Conducted (TH01-HY) |
| AC Power Source | G.W | APS-9102 | EL920581 | AC 0V ~ 300V | Jul. 02, 2012 | Conducted (TH01-HY) |
| Temp. and Humidity Chamber | Giant Force | GTH-225-20-SP-SD | MAA1112-007 | -20 ~ 100°C | Dec. 07, 2011 | Conducted (TH01-HY) |
| Signal Generator | R&S | SMR40 | 100302 | 10MHz ~ 40GHz | Nov. 22, 2011 | Conducted (TH01-HY) |
| Power Sensor | Anritsu | MA2411B | 1027452 | 300MHz ~ 40GHz | Jan. 12, 2012 | Conducted (TH01-HY) |
| Power Meter | Anritsu | ML2495A | 1124009 | 300MHz ~ 40GHz | Jan. 12, 2012 | Conducted (TH01-HY) |
| RF Cable-2m | HUBER+SUHNE R | SUCOFLEX_104 | SN 345672/4 | 1GHz ~ 26.5GHz | Dec. 03, 2011 | Conducted (TH01-HY) |
| RF Cable-3m | HUBER+SUHNE R | SUCOFLEX_104 | SN 345668/4 | 1GHz ~ 26.5GHz | Dec. 03, 2011 | Conducted (TH01-HY) |

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

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|-----------------|--------------|-----------|-------------|-----------------|------------------|---------------------|
| AC Power Source | HPC | HPA-500W | HPA-9100024 | AC 0 ~ 300V | Jun. 09, 2011* | Conducted (TH01-HY) |

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

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|--------------------------|----------------|--------------|------------|----------------------|------------------|-----------------------|
| Spectrum Analyzer | R&S | FSP40 | 100593 | 9 kHz ~ 40 GHz | Aug. 08, 2011 | Radiation (03CH02-HY) |
| 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH02-HY | 30 MHz ~ 1 GHz 3m | May 10, 2012 | Radiation (03CH02-HY) |
| Amplifier | Agilent | 8447D | 2944A11146 | 100 kHz ~ 1.3 GHz | Jul. 25, 2011 | Radiation (03CH02-HY) |
| Amplifier | Agilent | 8449B | 3008A02373 | 1 GHz ~ 26.5 GHz | Jul. 25, 2011 | Radiation (03CH02-HY) |
| Horn Antenna | ETS-LINDGREN | 3117 | 00091920 | 1 GHz ~ 18 GHz | Nov. 15, 2011 | Radiation (03CH02-HY) |
| RF Cable-R03m | Jye Bao | RG142 | CB021 | 30 MHz ~ 1 GHz | Nov. 11, 2011 | Radiation (03CH02-HY) |
| RF Cable-high | SUHNER | SUCOFLEX 106 | 03CH03-HY | 1 GHz ~ 40 GHz | Jan. 18, 2012 | Radiation (03CH02-HY) |
| Bilog Antenna | SCHAFFNER | CBL61128 | 2723 | 30 MHz ~ 2 GHz | Oct. 22, 2011 | Radiation (03CH02-HY) |
| Turn Table | HD | DS 420 | 420/649/00 | 0 - 360 degree | N/A | Radiation (03CH02-HY) |
| Antenna Mast | HD | MA 240 | 240/559/00 | 1 m - 4 m | N/A | Radiation (03CH02-HY) |

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

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|--------------|--------------|-----------|------------|-----------------|------------------|-----------------------|
| Loop Antenna | R&S | HFH2-Z2 | 860004/001 | 9 kHz - 30 MHz | Jul. 29, 2010* | Radiation (03CH02-HY) |

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

5 Certification of TAF Accreditation



Certificate No. : L1190-120405

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria : ISO/IEC 17025:2005
Accreditation Number : 1190
Originally Accredited : December 15, 2003
Effective Period : January 10, 2010 to January 09, 2013
Accredited Scope : Testing Field, see described in the Appendix
Specific Accreditation Program : Accreditation Program for Designated Testing Laboratory
for Commodities Inspection
Accreditation Program for Telecommunication Equipment
Testing Laboratory
Accreditation Program for BSMI Mutual Recognition
Arrangement with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date: April 05, 2012

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