

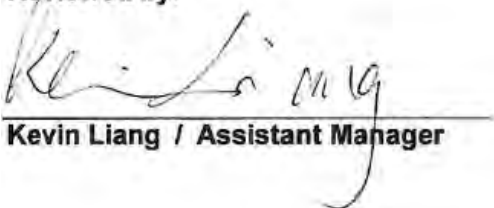
# FCC Test Report

**Equipment** : IP Wireless Camera  
**Brand Name** : FLIR SECURE  
**Model No.** : Fxx2xxx ( x= 0-9, A-Z)  
**FCC ID** : UCZFXC21  
**Standard** : 47 CFR FCC Part 15.247  
**Frequency** : 2400 MHz – 2483.5 MHz  
**FCC Classification** : DTS  
**Function** : ☒ Point-to-multipoint; ☐ Point-to-point  
**Applicant** : Lorex Technology Inc  
250 Royal Crest Court, Markham, Ontario, L3R  
**Manufacturer** : Chicony Electronics (Dong Guan ) Co.,Ltd.  
San Zhong Guan Li Qu, Qingxi Town, Dongguan City  
Guangdong 523651 China

The product sample received on Apr. 14, 2016 and completely tested on May 26, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

Reviewed by:

  
Kevin Liang / Assistant Manager

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**Appendix I. Test Result of AC Power-line Conducted Emissions**

**Appendix A. Test Result of Emission Bandwidth**

**Appendix B. Test Result of Maximum Conducted Output Power**

**Appendix C. Test Result of Power Spectral Density**

**Appendix D. Test Result of Transmitter Radiated Bandedge Emissions**

**Appendix E. Transmitter Radiated Unwanted Emissions**

**Appendix F. Test Photos**

**Appendix G. 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]: 0.3295470MHz 48.34(Margin 11.12dB) - QP 36.09(Margin 13.37dB) - AV	FCC 15.207	Complied
3.2	15.247(a)	DTS Bandwidth	Refer as Appendix A	≥500kHz	Complied
3.3	15.247(b)	Fundamental Emission Output Power	Refer as Appendix B	Power [dBm]:30	Complied
3.4	15.247(e)	Power Spectral Density	Refer as Appendix C	PSD [dBm/3kHz]:8	Complied
3.5	15.247(d)	Test Result of Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 2399.824 MHz: 29.17 dB Restricted Bands [dBuV/m at 3m]:2387.28 MHz 71.22 (Margin 2.78dB) – PK [dBuV/m at 3m]:2483.6 MHz 52.42 (Margin 1.58dB) - AV	Non-Restricted Bands:> 20 dBc Bands: FCC 15.209	Complied
3.6	15.247(d)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]: 400.54 MHz 42.54 (Margin 3.46dB) - QP	Non-Restricted Bands:> 20 dBc Restricted Bands: FCC 15.209	Complied

## Revision History

[illegible]

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

Band	Mode	BWch (MHz)	Nss-Min	Nant	Worst Data Rate / MCS
2.4G	11b	20	1	1	1 Mbps
2.4G	11g	20	1	1	6 Mbps

**Note:**

- 2.4G is the 2.4GHz Band (2.4-2.4835GHz).
- 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- 11g, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40 and VHT80 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

### 1.1.2 Antenna Information

Antenna Category				
<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.			
<input type="checkbox"/>	External antenna (dedicated antennas)			
<input type="checkbox"/>	Single power level with corresponding antenna(s).			
<input type="checkbox"/>	Multiple power level and corresponding antenna(s).			
<input type="checkbox"/>	RF connector provided			
<input type="checkbox"/>	Unique antenna connector. (e.g., MMCX, U.FL, IPX, and RP-SMA, RP-N type...)			
<input type="checkbox"/>	Standard antenna connector. (e.g., SMA, N, BNC, and TNC type...)			
Antenna General Information				
No.	Ant. Cat.	Ant. Type	Model	Gain (dBi)
1	Integral	PIFA	FX_C	0.61

**1.1.3 Type of EUT**

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input checked="" type="checkbox"/> Production ; <input 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 Mode Test Duty Cycle**

Operated Mode for Worst Duty Cycle	
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)
<input checked="" type="checkbox"/> 99.5% - IEEE 802.11b	0.02
<input checked="" type="checkbox"/> 95%- IEEE 802.11g	0.22

**1.1.5 EUT Operational Condition**

<b>Supply Voltage</b>	<input type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	
<b>Type of DC Source</b>	<input checked="" type="checkbox"/> From Host System	<input checked="" type="checkbox"/> External DC adapter	<input type="checkbox"/> 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

## 1.3 Testing Location Information

Testing Location			
<input checked="" type="checkbox"/>	<b>HWA YA</b>	<b>ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.</b>	
		<b>TEL : 886-3-327-3456</b>	<b>FAX : 886-3-318-0055</b>
Test Condition		Test Site No.	Test Engineer
AC Conduction		CO04-HY	Ryan Hong
RF Conducted		TH01-HY	Jeremy Lin
Radiated		03CH03-HY	Joe Wang
			22.2°C / 51.8%

Test site registered number [ 553509 ] with FCC.

## 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 <sub>TX</sub> )	Data Rate / MCS	Worst Data Rate / MCS
11b	1	1-11 Mbps	1 Mbps
11g	1	6-54 Mbps	6 Mbps

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

### 2.2 Test Channel Mode

Test Software		Putty					
Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Power Setting
2.4G	11b	20	1	1	2412	L	18
2.4G	11b	20	1	1	2437	M	19
2.4G	11b	20	1	1	2462	H	18
2.4G	11g	20	1	1	2412	L	14
2.4G	11g	20	1	1	2437	M	19
2.4G	11g	20	1	1	2462	H	15




## 2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	AC power-line conducted emissions
<b>Condition</b>	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
<b>Operating Mode</b>	Operating Mode Description
1	Adapter Mode
2	USB Mode
For operating mode 1 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	DTS Bandwidth, Fundamental Emission Output Power, Power Spectral Density, Emissions in Non-restricted Frequency Bands
<b>Test Condition</b>	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	Emissions in Restricted Frequency Bands
<b>Test Condition</b>	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
<b>User Position</b>	<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 three orthogonal planes.
<b>Operating Mode &lt; 1GHz</b>	<input checked="" type="checkbox"/> 1. Adapter Mode <input checked="" type="checkbox"/> 2. USB Mode

For operating mode 1 is the worst case and it was record in this test report.

	X Plane	Y Plane	Z Plane
<b>Orthogonal Planes of EUT</b>			
<b>Worst Planes of EUT</b>	V		
<b>Worst Planes of Ant</b>	V		

## 2.4 Accessories and Support Equipment

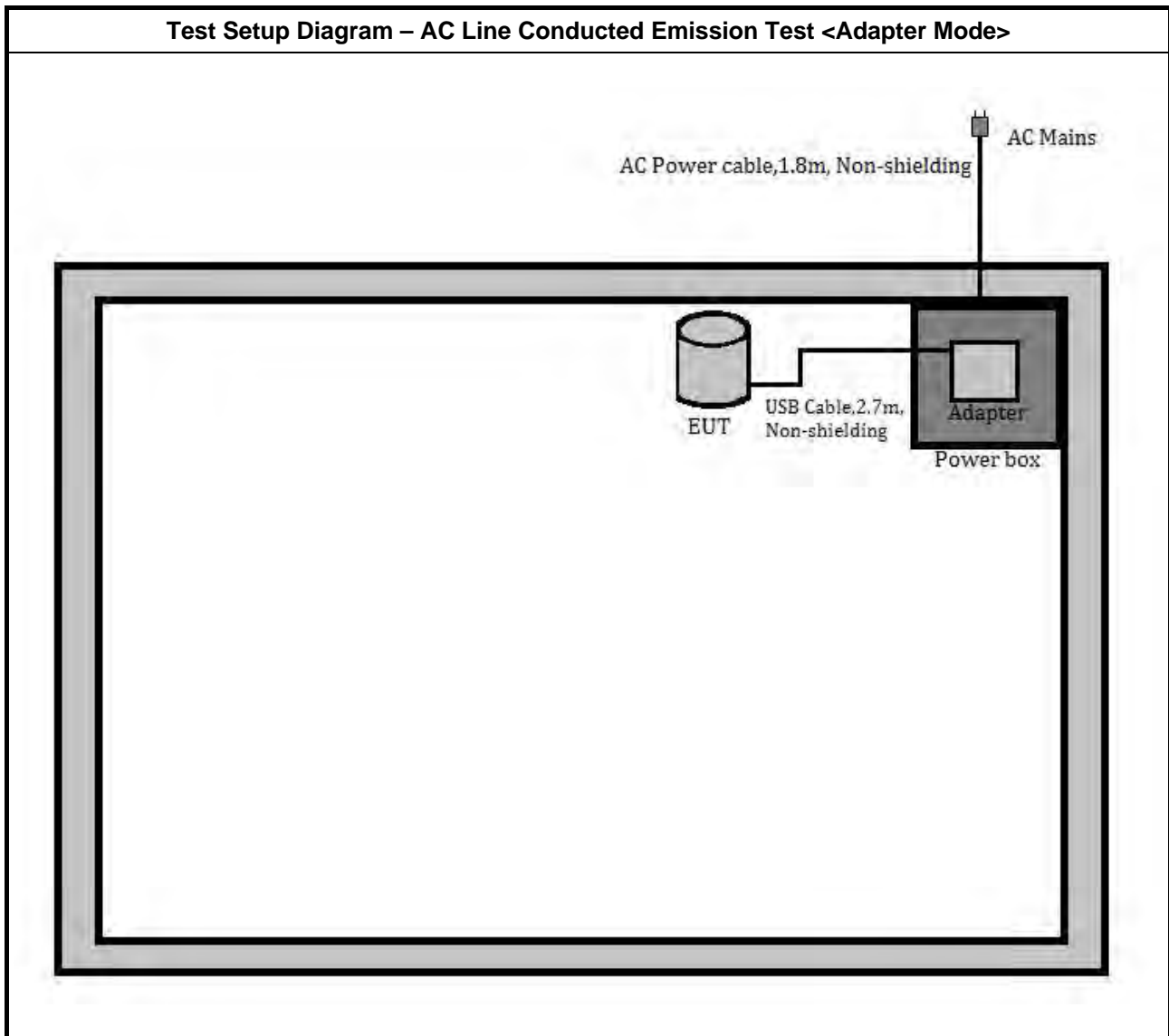
Specification of Accessory				
AC Adapter	Brand Name	SPPS	Model Name	SC/10WA050200US
	Power Rating	I/P:100 - 240 Vac, 0.5 mA, O/P: 5 Vdc, 2 A		
USB Cable	Signal Line	2.7 meter, shielded cable, with ferrite core		

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

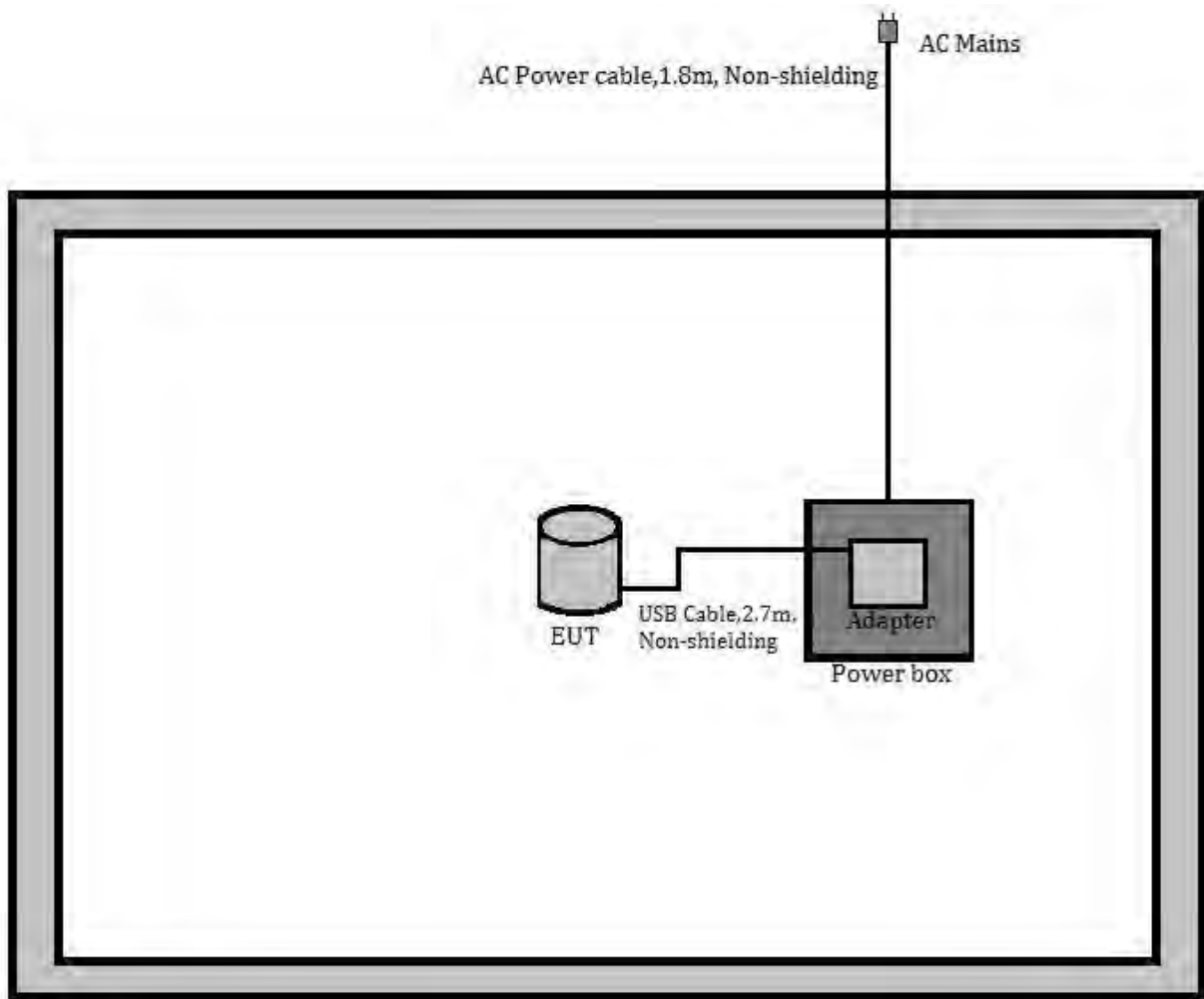
Support Equipment- Conduction				
No.	Equipment	Brand Name	Model Name	BSMI / FCC ID
1	Notebook	DELL	E5530	R33002/DOC
2	AC adapter for NB	DELL	LA65NS2-01	R35737/DOC

Support Equipment- Radiated				
No.	Equipment	Brand Name	Model Name	BSMI / FCC ID
1	Notebook	DELL	E5530	R33002/DOC
2	AC adapter for NB	DELL	LA65NS2-01	R35737/DOC

## 2.5 Test Setup Diagram



**Test Setup Diagram - Radiated Test <Adapter Mode>**



### 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.

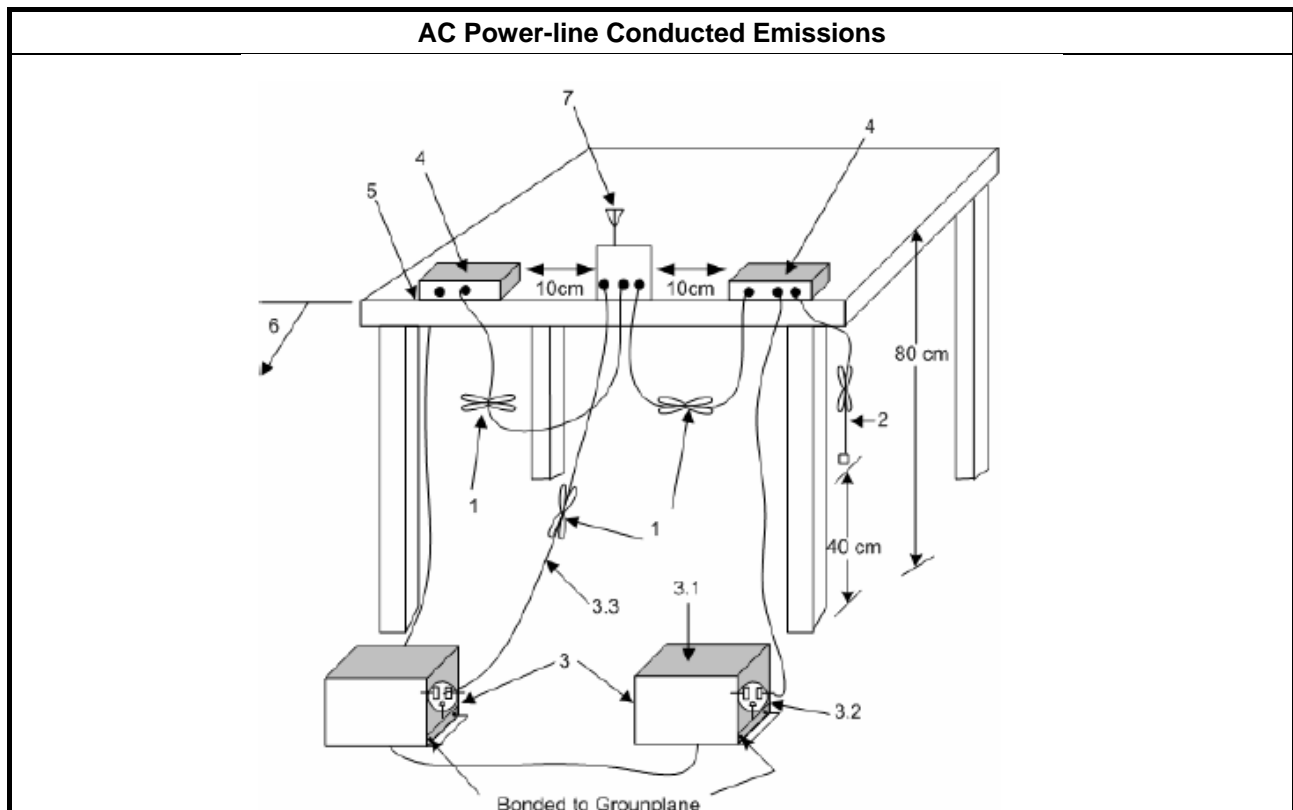
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

Test Method
<ul style="list-style-type: none"> <li>Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.</li> </ul>

##### 3.1.4 Test Setup





### **3.1.5 Test Result of AC Power-line Conducted Emissions**

Refer as Appendix I

## 3.2 DTS Bandwidth

### 3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit	
<b>Systems using digital modulation techniques:</b>	
▪	6 dB bandwidth $\geq$ 500 kHz.

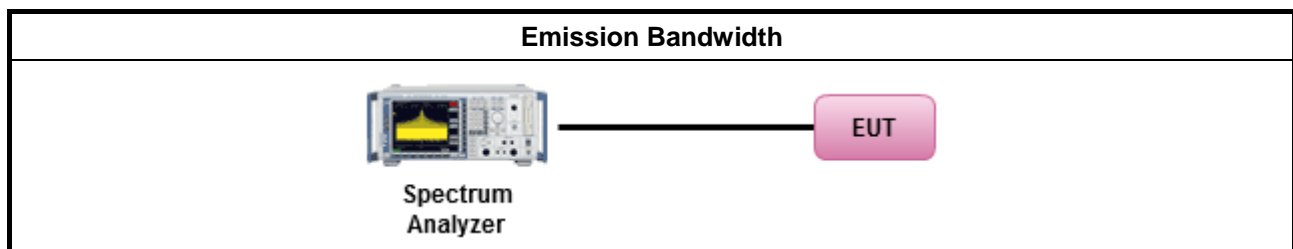
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

Test Method	
▪	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 checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix A



### 3.3 Fundamental Emission Output Power

#### 3.3.1 Fundamental Emission Output Power Limit

Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit		
<ul style="list-style-type: none"> <li>2400-2483.5 MHz Band:</li> </ul>		
	<ul style="list-style-type: none"> <li>If <math>G_{TX} \leq 6</math> dBi, then <math>P_{Out} \leq 30</math> dBm (1 W)</li> </ul>	
	<ul style="list-style-type: none"> <li>Point-to-multipoint systems (P2M): If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math> dBm</li> </ul>	
	<ul style="list-style-type: none"> <li>Point-to-point systems (P2P): If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)/3</math> dBm</li> </ul>	
	<ul style="list-style-type: none"> <li>Smart antenna system (SAS):</li> </ul>	
	<ul style="list-style-type: none"> <li>- Single beam: If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)/3</math> dBm</li> </ul>	
	<ul style="list-style-type: none"> <li>- Overlap beam: If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)/3</math> dBm</li> </ul>	
	<ul style="list-style-type: none"> <li>- Aggregate power on all beams: If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)/3 + 8</math> dBm</li> </ul>	
<b>e.i.r.p. Power Limit:</b>		
<ul style="list-style-type: none"> <li>2400-2483.5 MHz Band</li> </ul>		
	<ul style="list-style-type: none"> <li>Point-to-multipoint systems (P2M): <math>P_{eirp} \leq 36</math> dBm (4 W)</li> </ul>	
	<ul style="list-style-type: none"> <li>Point-to-point systems (P2P): <math>P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])</math> dBm</li> </ul>	
	<ul style="list-style-type: none"> <li>Smart antenna system (SAS)</li> </ul>	
	<ul style="list-style-type: none"> <li>- Single beam: <math>P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})</math> dBm</li> </ul>	
	<ul style="list-style-type: none"> <li>- Overlap beam: <math>P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})</math> dBm</li> </ul>	
	<ul style="list-style-type: none"> <li>- Aggregate power on all beams: <math>P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])</math> dBm</li> </ul>	
$P_{Out}$ = 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.		

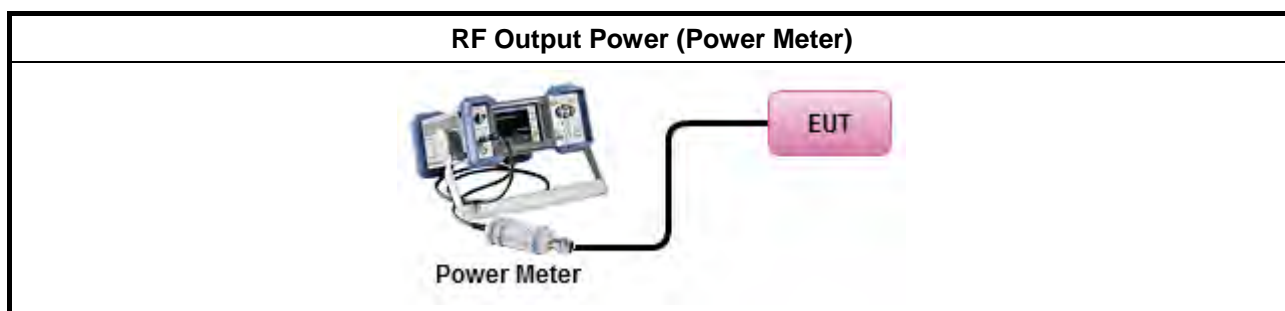
#### 3.3.2 Measuring Instruments

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

### 3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>Maximum Peak Conducted Output Power</li> </ul>	
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW ≥ DTS BW)
<ul style="list-style-type: none"> <li>Maximum Conducted Output Power</li> </ul>	
[duty cycle ≥ 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).
<ul style="list-style-type: none"> <li>For conducted measurement.</li> </ul>	
<ul style="list-style-type: none"> <li>If 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.</li> </ul>	
<ul style="list-style-type: none"> <li>If multiple transmit chains, EIRP calculation could be following as methods:  <math display="block">P_{total} = P_1 + P_2 + \dots + P_n</math> (calculated in linear unit [mW] and transfer to log unit [dBm])  <math display="block">EIRP_{total} = P_{total} + DG</math> </li> </ul>	

### 3.3.4 Test Setup



### 3.3.5 Test Result of Maximum Peak Conducted Output Power

Refer as Appendix B

### 3.3.6 Test Result of Maximum Average Conducted Output Power

Refer as Appendix B

### 3.4 Power Spectral Density

#### 3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
<ul style="list-style-type: none"> <li>Power Spectral Density (PSD) <math>\leq 8</math> dBm/3kHz</li> </ul>

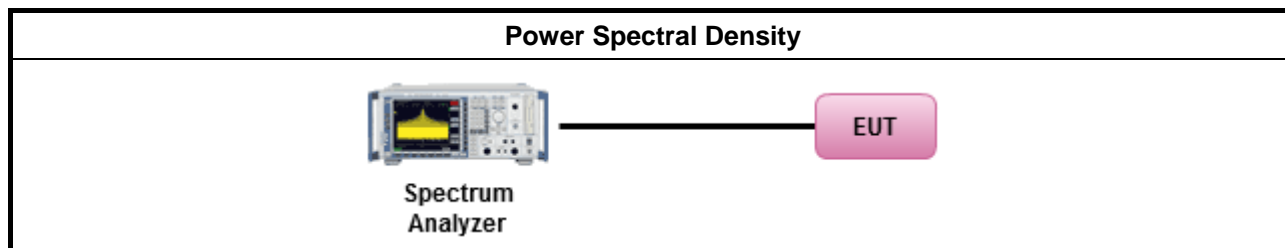
#### 3.4.2 Measuring Instruments

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

#### 3.4.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>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).</li> </ul>	
<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-2 (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-1 Alt (spectral trace averaging).
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)
<ul style="list-style-type: none"> <li>For conducted measurement.</li> </ul>	
<ul style="list-style-type: none"> <li>If The EUT supports multiple transmit chains using options given below:</li> </ul>	
<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 sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
<input type="checkbox"/>	Option 3: Measure and add $10 \log(N)$ dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with $10 \log(N)$ . Or each transmit chains shall be add $10 \log(N)$ to compared with the limit.

### 3.4.4 Test Setup

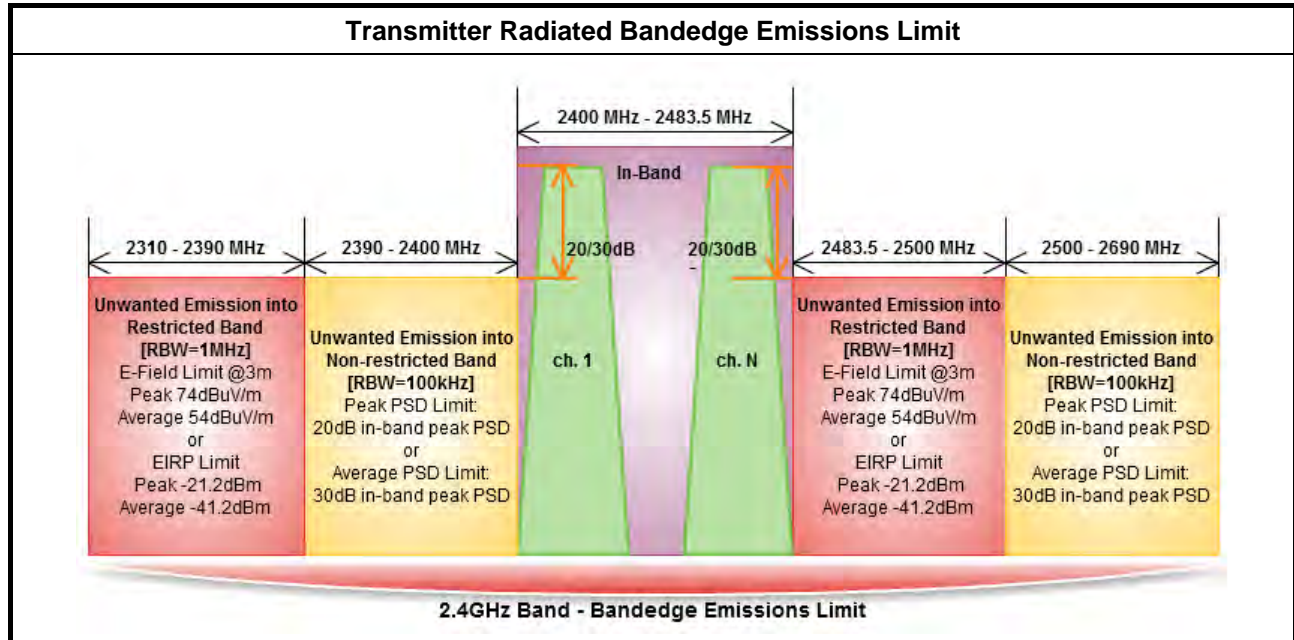


### 3.4.5 Test Result of Power Spectral Density

Refer as Appendix C

### 3.5 Transmitter Radiated Bandedge Emissions

#### 3.5.1 Transmitter Radiated Bandedge Emissions Limit



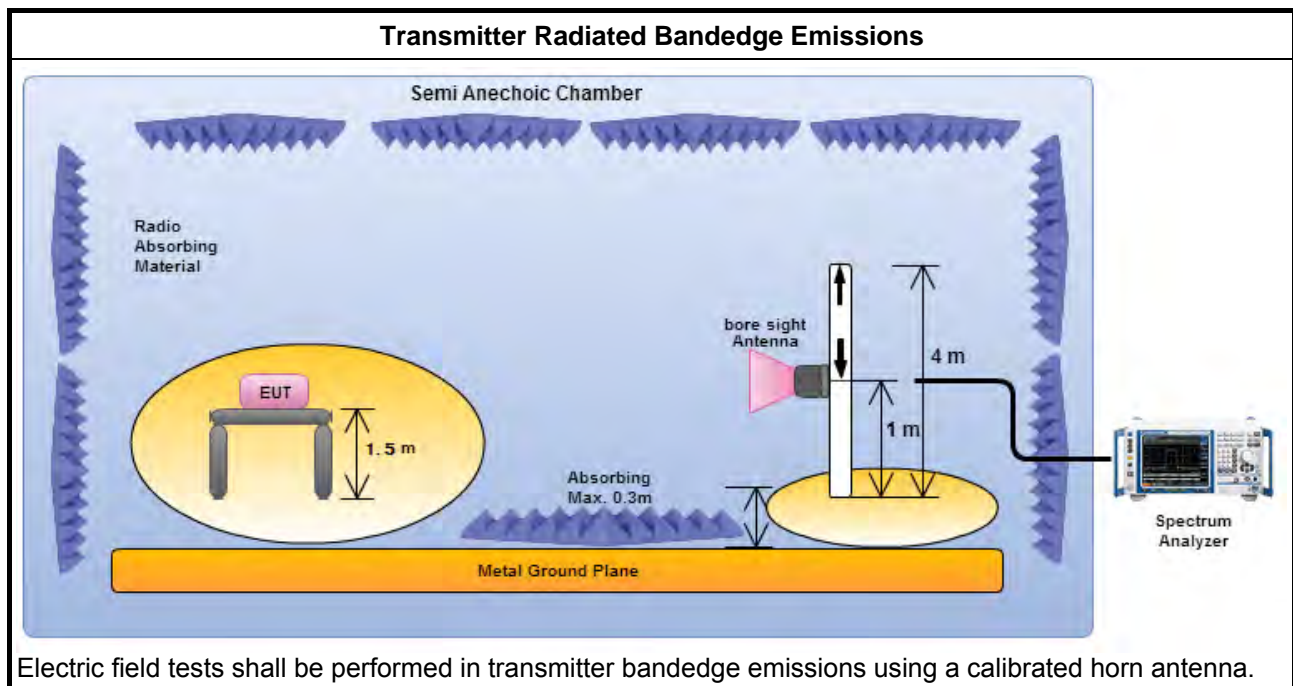
#### 3.5.2 Measuring Instruments

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 Emissions in Non-restricted Frequency Bands**

Refer as Appendix D

### 3.6 Transmitter Radiated Unwanted Emissions

#### 3.6.1 Transmitter in Radiated Unwanted Emissions Limit

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

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

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

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

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

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

#### 3.6.2 Measuring Instruments

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

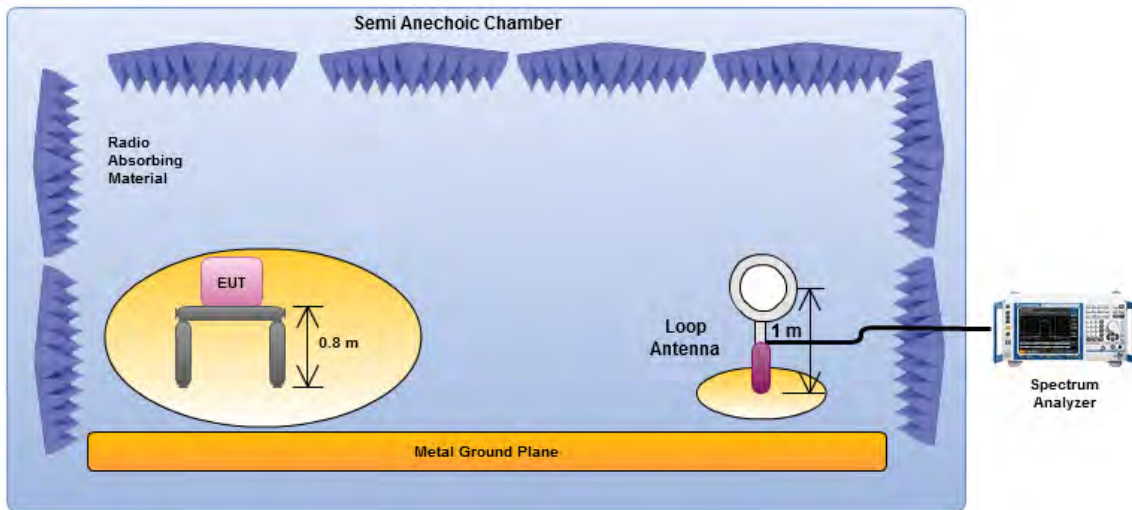


### 3.6.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
<input 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.

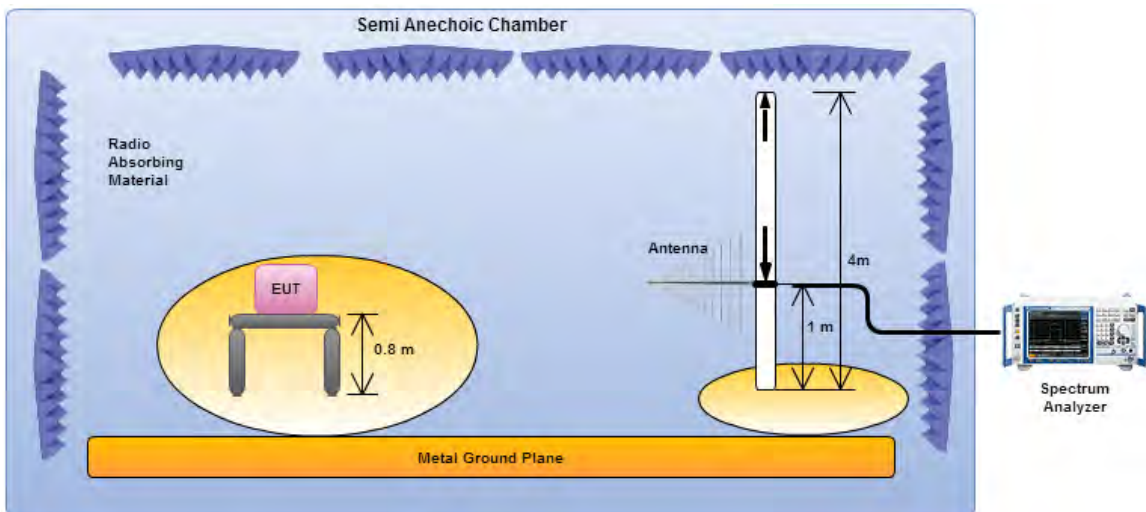
### 3.6.5 Test Setup

#### Transmitter Spurious and Out of Band Emissions (9 kHz - 30 MHz)

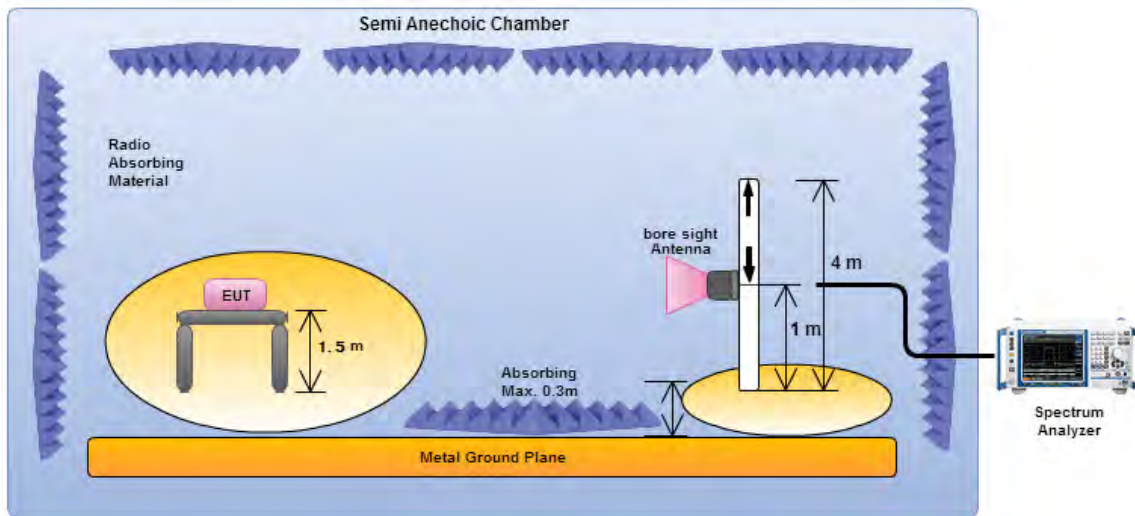


Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna.

#### Transmitter Radiated Unwanted Emissions (below 1GHz)



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.

**3.6.6 Transmitter Radiated Unwanted Emissions (Below 30MHz)**

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. Any spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.

**3.6.7 Transmitter Radiated Unwanted Emissions**

Refer as Appendix E

## 4 Test Equipment and Calibration Data

### Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
EMC Receiver	KETSIGHT	N9038A	MY54130031	20Hz ~ 8.4GHz	Apr. 14, 2016	Apr. 13, 2017
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	NCR	NCR

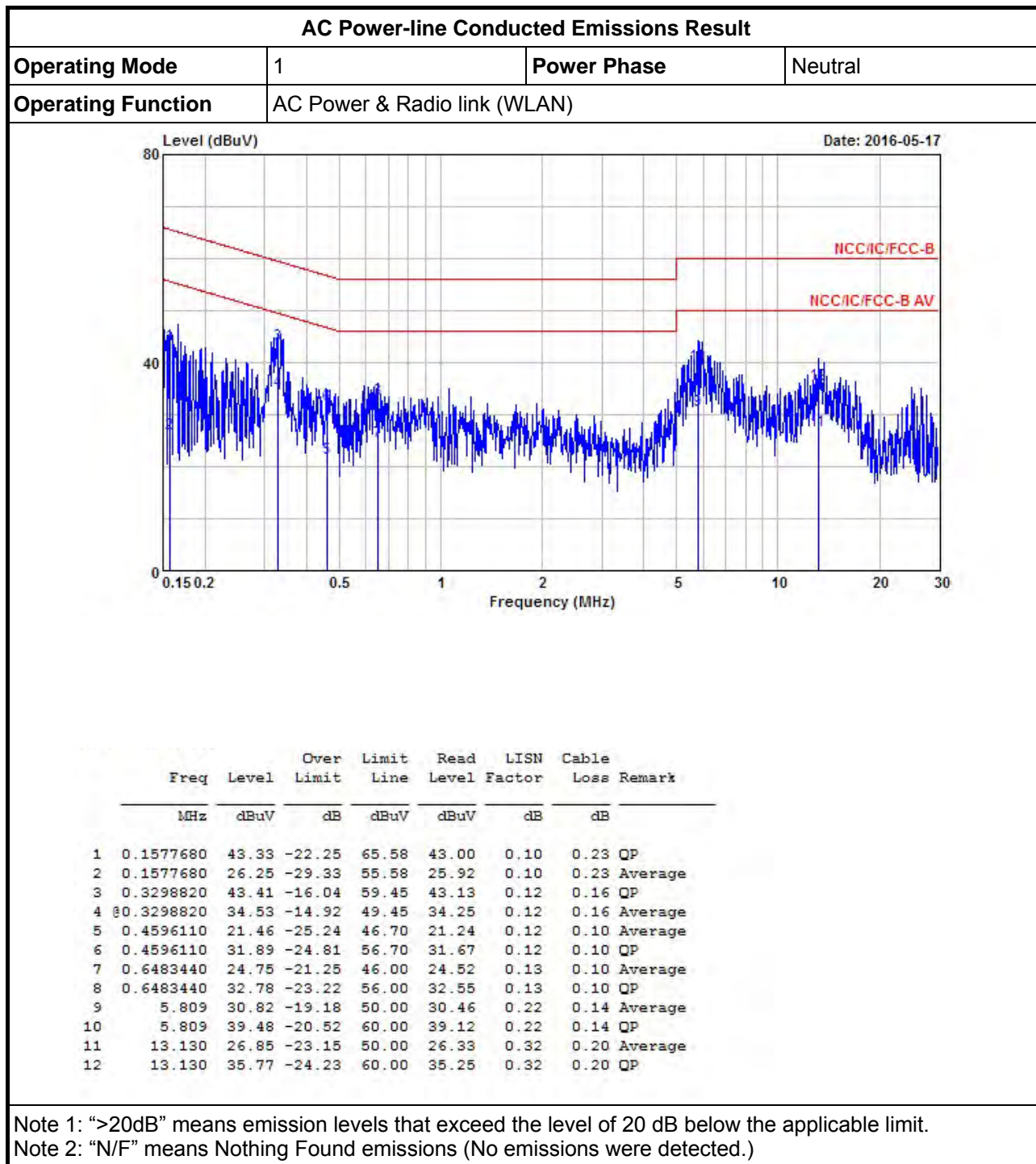
### Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101500	9KHz~40GHz	May 12, 2016	May 11, 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

### Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz 3m	Jul. 01, 2015	Jun. 30, 2016
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz 3m	Jul. 01, 2015	Jun. 30, 2016
Amplifier	EMC	EMC9135	980232	9kHz ~ 1.0GHz	Jan. 29, 2016	Jan. 28, 2017
Amplifier	Agilent	8449B	3008A02096	1GHz ~ 26.5GHz	Apr.11.2016	Apr.10.2017
Spectrum	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	Jul. 15, 2015	Jul. 14, 2016
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL 6111D & MTJ6102	35418	30MHz ~ 1GHz	Mar. 31, 2016	Mar. 30, 2017
Horn Antenna	SCHWARZBECK	BBHA 9120D	BBHA 9120D 1534	1GHz ~ 18GHz	Apr. 22, 2016	Apr. 21, 2017
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170614	18GHz ~ 40GHz	Jan. 04, 2016	Jan. 03, 2017
Loop Antenna	ROHDE&SCHWARZ	HFH2-Z2	100330	9 kHz~30 MHz	Nov. 10, 2014	Nov. 09, 2016

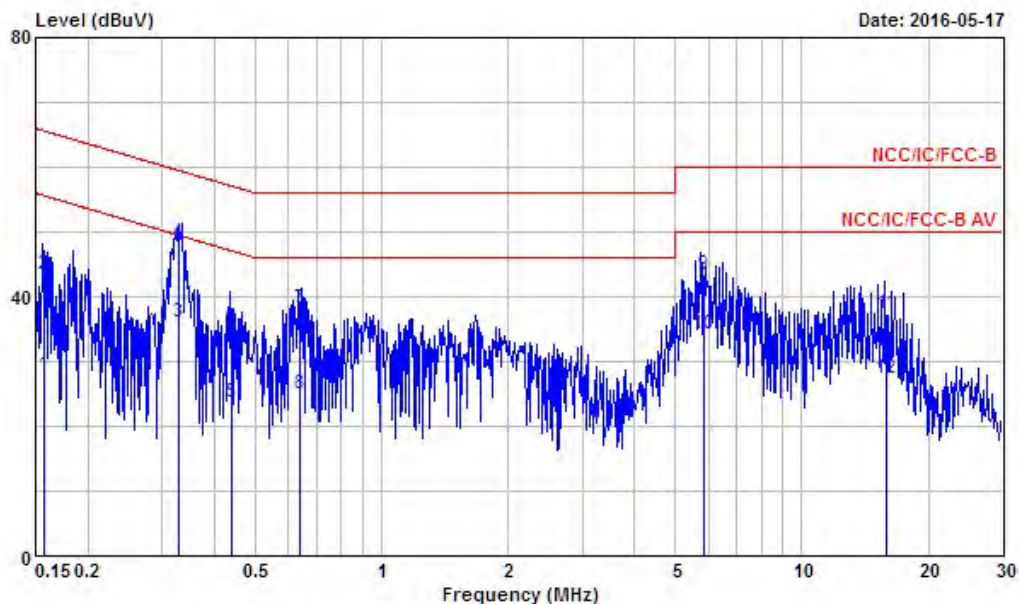
## Appendix I. Test Result of AC Power-line Conducted Emissions





**AC Power-line Conducted Emissions Result**

Operating Mode	1	Power Phase	Line
Operating Function	AC Power & Radio link (WLAN)		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1576680	27.94	-27.65	55.59	27.60	0.11	0.23	Average
2	0.1576680	43.36	-22.23	65.59	43.02	0.11	0.23	QP
3	0.3295470	36.09	-13.37	49.46	35.81	0.12	0.16	Average
4	0.3295470	48.34	-11.12	59.46	48.06	0.12	0.16	QP
5	0.4381090	23.58	-23.52	47.10	23.36	0.12	0.10	Average
6	0.4381090	35.20	-21.90	57.10	34.98	0.12	0.10	QP
7	0.6409040	38.28	-17.72	56.00	38.05	0.13	0.10	QP
8	0.6409040	25.13	-20.87	46.00	24.90	0.13	0.10	Average
9	5.854	43.38	-16.62	60.00	43.03	0.21	0.14	QP
10	5.854	34.28	-15.72	50.00	33.93	0.21	0.14	Average
11	15.904	37.37	-22.63	60.00	36.85	0.32	0.20	QP
12	15.904	27.39	-22.61	50.00	26.87	0.32	0.20	Average

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

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

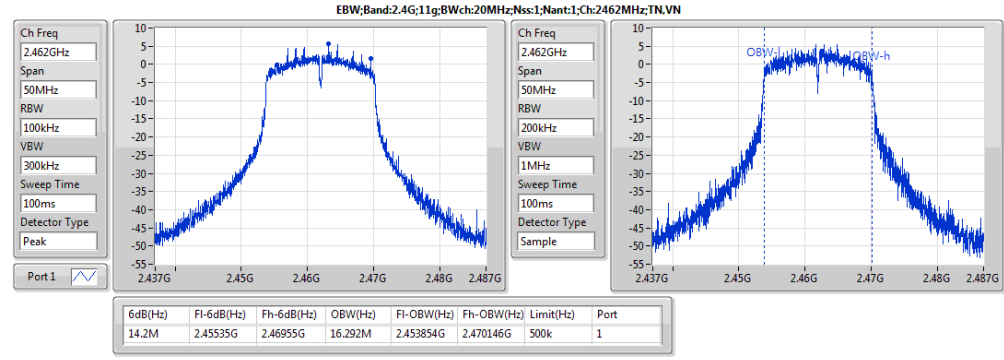
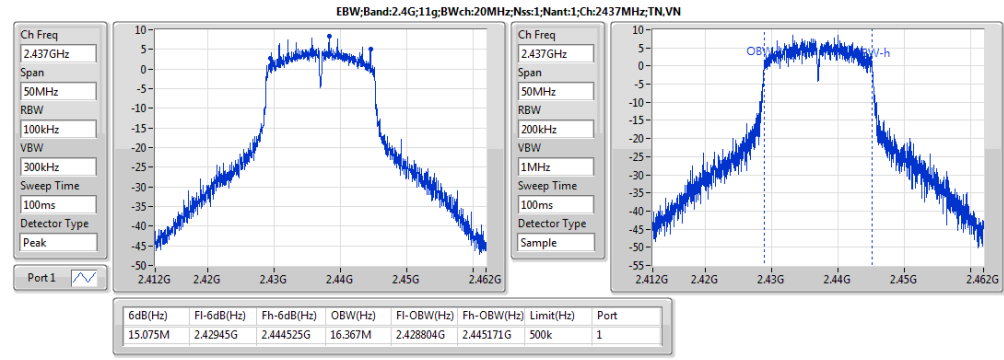
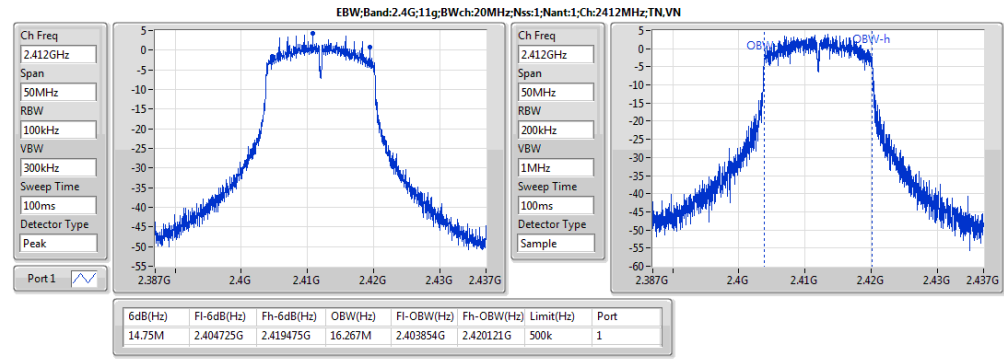
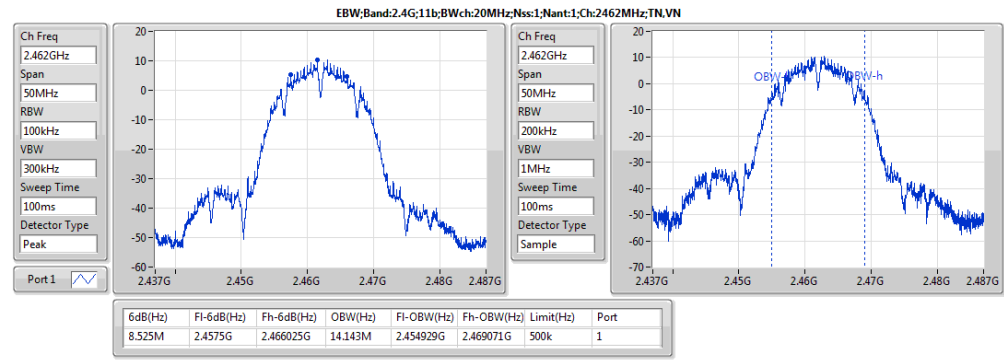
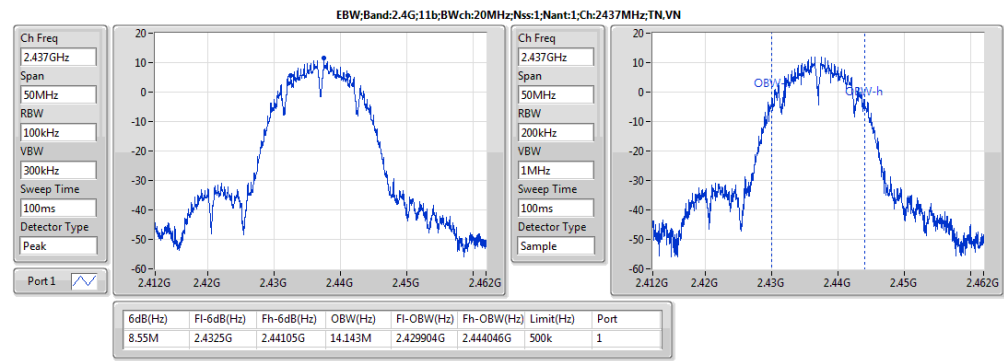
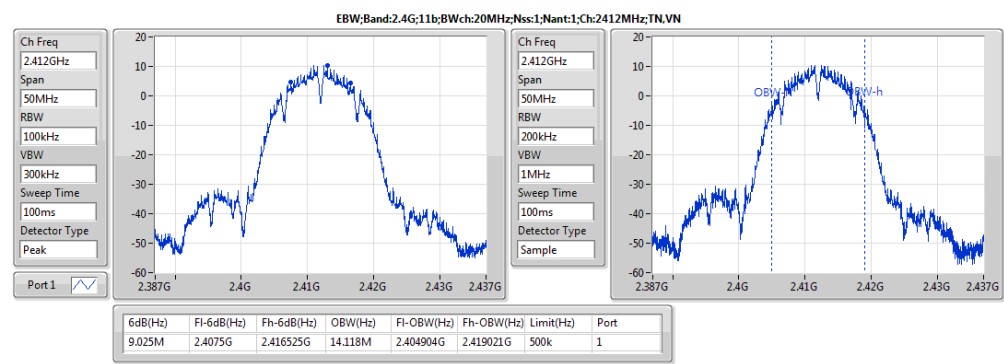


Appendix A. Test Result of Emission Bandwidth  
Summary

Mode	N dB (Hz)	OBW (Hz)	ITU-Code
2.4G;11b;20;1;1	9.025M	14.143M	14M1G1D
2.4G;11g;20;1;1	15.075M	16.367M	16M4D1D

Result

Mode	Result	Limit	P1-N dB (Hz)	P1-OBW (Hz)
2.4G;11b;20;1;1;2412;L;TN,VN	Pass	500k	9.025M	14.118M
2.4G;11b;20;1;1;2437;M;TN,VN	Pass	500k	8.55M	14.143M
2.4G;11b;20;1;1;2462;H;TN,VN	Pass	500k	8.525M	14.143M
2.4G;11g;20;1;1;2412;L;TN,VN	Pass	500k	14.75M	16.267M
2.4G;11g;20;1;1;2437;M;TN,VN	Pass	500k	15.075M	16.367M
2.4G;11g;20;1;1;2462;H;TN,VN	Pass	500k	14.2M	16.292M







Summary (For PK)

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
2.4G;11b;20;1;1	21.66	0.14655	22.27	0.16866
2.4G;11g;20;1;1	25.47	0.35237	26.08	0.40551

Result (For PK)

Mode	Result	DG (dBi)	EIRP (dBm)	EIRP Lim. (dBm)	Sum (dBm)	Sum Lim. (dBm)	P1 (dBm)
2.4G;11b;20;1;1;2412;L;TN,VN	Pass	0.61	21.43	36.00	20.82	30.00	20.82
2.4G;11b;20;1;1;2437;M;TN,VN	Pass	0.61	22.27	36.00	21.66	30.00	21.66
2.4G;11b;20;1;1;2462;H;TN,VN	Pass	0.61	21.01	36.00	20.40	30.00	20.40
2.4G;11g;20;1;1;2412;L;TN,VN	Pass	0.61	24.60	36.00	23.99	30.00	23.99
2.4G;11g;20;1;1;2437;M;TN,VN	Pass	0.61	26.08	36.00	25.47	30.00	25.47
2.4G;11g;20;1;1;2462;H;TN,VN	Pass	0.61	24.96	36.00	24.35	30.00	24.35



Appendix B. Test Result of Maximum Conducted Output Power  
Summary (For AV)

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
2.4G;11b;20;1;1	19.26	0.08433	19.87	0.09705
2.4G;11g;20;1;1	18.00	0.0631	18.61	0.07261

Result (For AV)

Mode	Result	DG (dBi)	EIRP (dBm)	EIRP Lim. (dBm)	Sum (dBm)	Sum Lim. (dBm)	P1 (dBm)
2.4G;11b;20;1;1;2412;L;TN,VN	Pass	0.61	19.08	36.00	18.47	30.00	18.47
2.4G;11b;20;1;1;2437;M;TN,VN	Pass	0.61	19.87	36.00	19.26	30.00	19.26
2.4G;11b;20;1;1;2462;H;TN,VN	Pass	0.61	18.60	36.00	17.99	30.00	17.99
2.4G;11g;20;1;1;2412;L;TN,VN	Pass	0.61	15.15	36.00	14.54	30.00	14.54
2.4G;11g;20;1;1;2437;M;TN,VN	Pass	0.61	18.61	36.00	18.00	30.00	18.00
2.4G;11g;20;1;1;2462;H;TN,VN	Pass	0.61	15.90	36.00	15.29	30.00	15.29

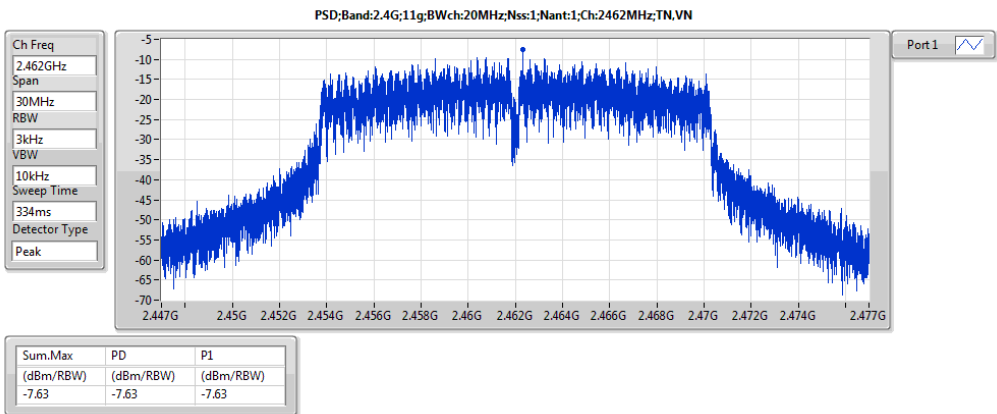
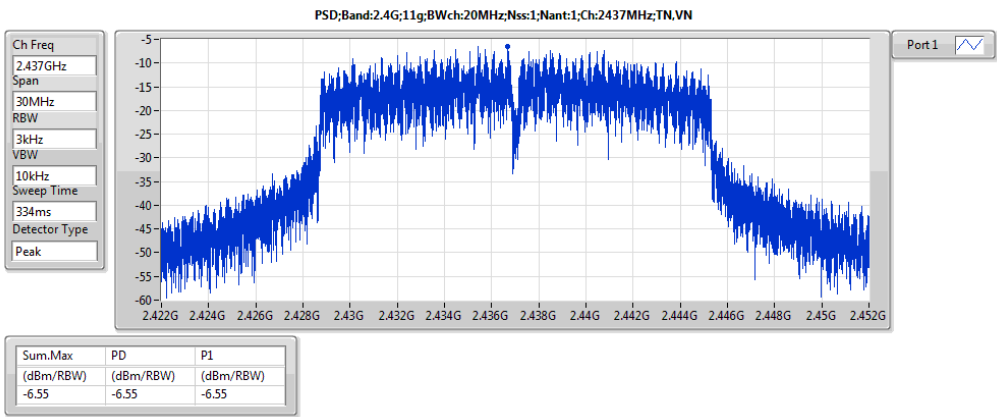
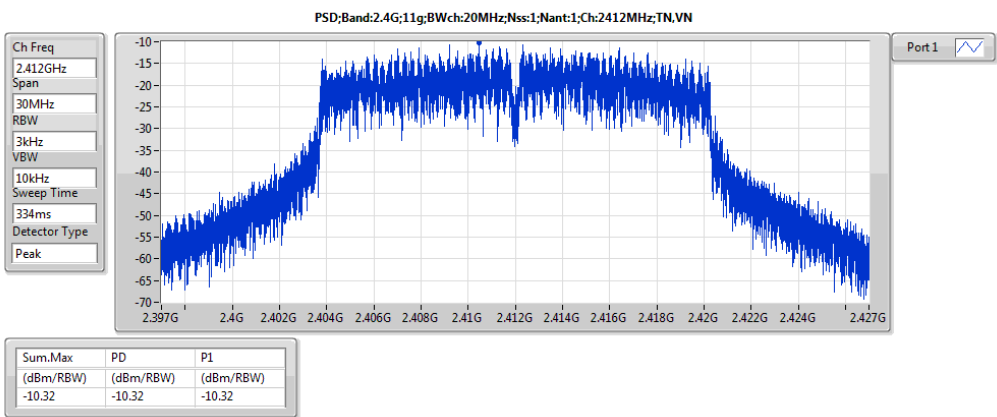
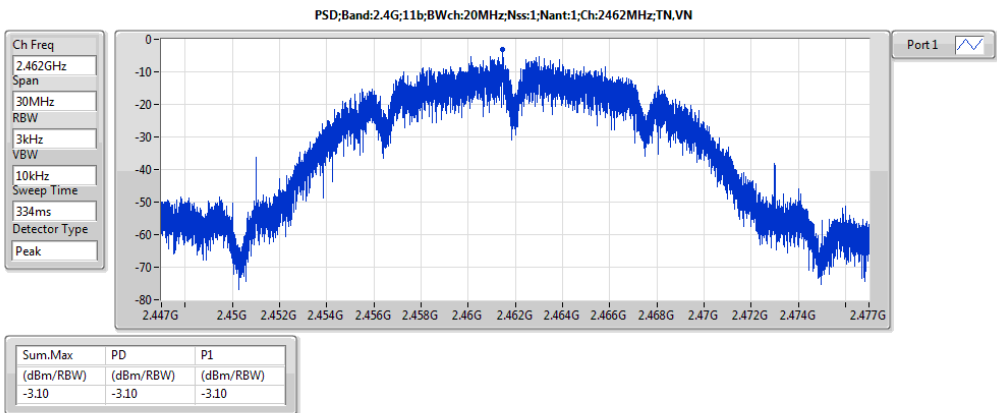
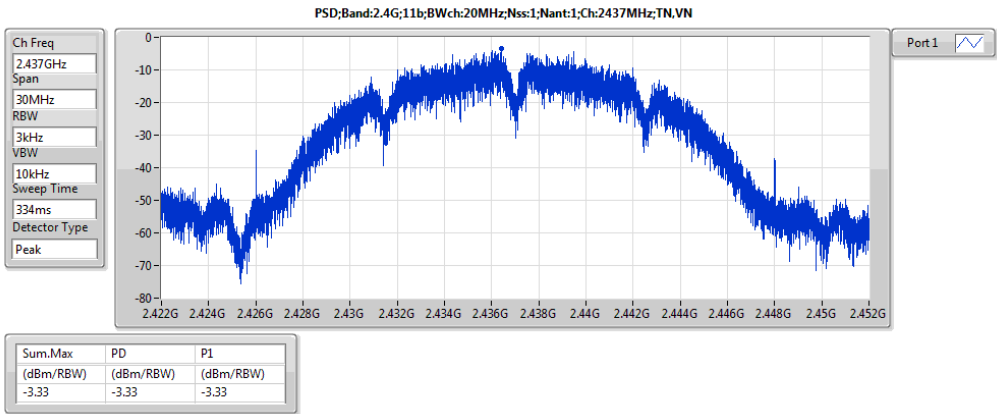
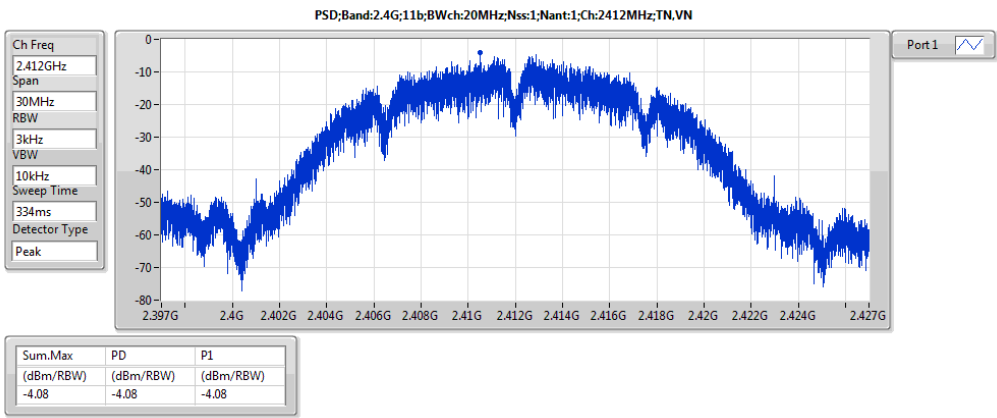


Appendix C. Test Result of Power Spectral Density  
Summary

Mode	PD (dBm/RBW)	EIRP.PD (dBm/RBW)
2.4G;11b;20;1;1	-3.10	-2.49
2.4G;11g;20;1;1	-6.55	-5.94

Result

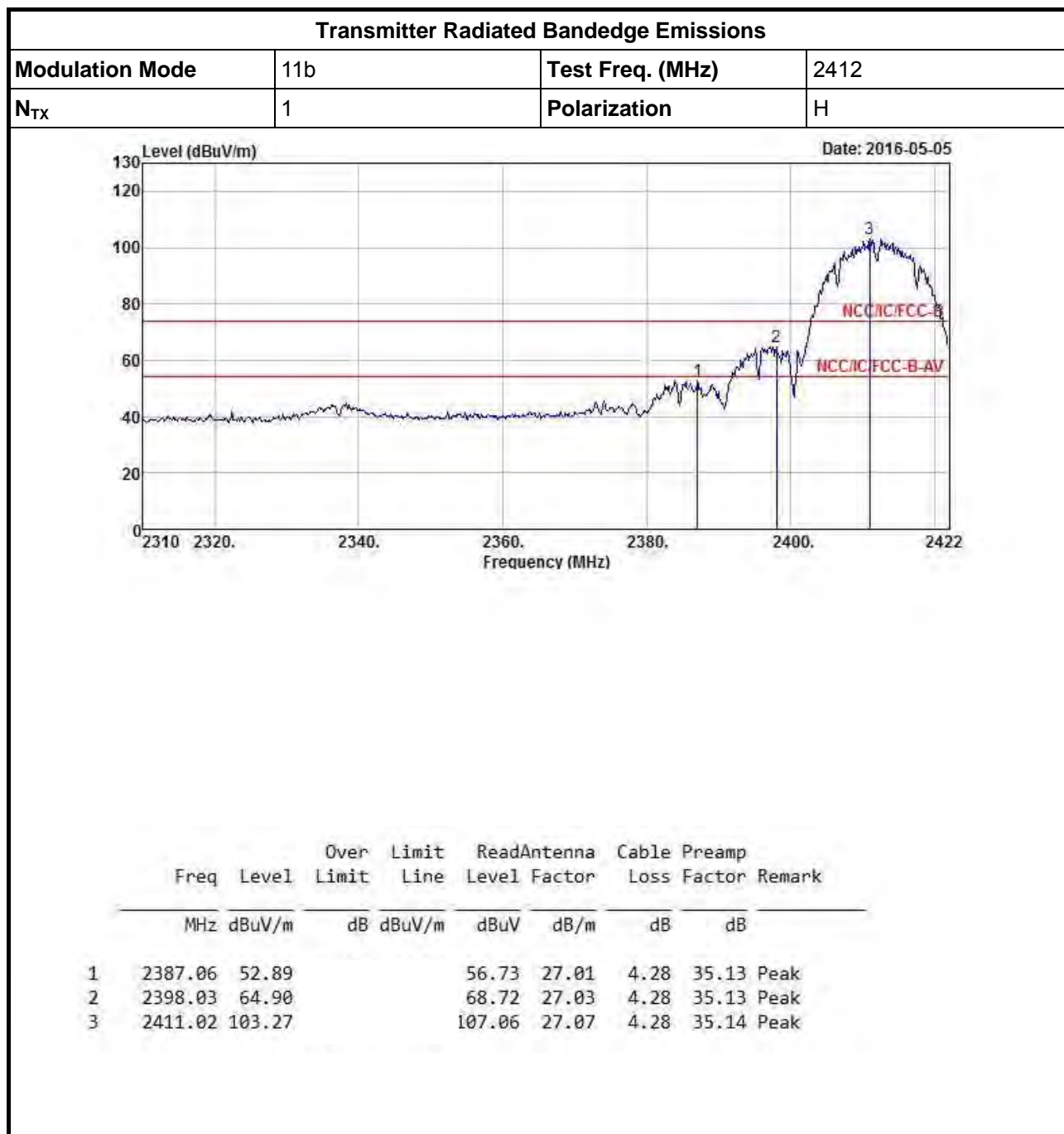
Mode	Result	Meas.RBW (Hz)	Lim.RBW (Hz)	BWCF (dB)	DG (dBi)	Sum.Max (dBm/RBW)	PD (dBm/RBW)	PD.Limit (dBm/RBW)	EIRP.PD (dBm/RBW)	EIRP.PD.Li m (dBm/RBW)	P1 (dBm/RBW)
2.4G;11b;20;1;1;2412;L;TN,VN	Pass	3k	3k	0.00	0.61	-4.08	-4.08	8.00	-3.47	Inf	-4.08
2.4G;11b;20;1;1;2437;M;TN,VN	Pass	3k	3k	0.00	0.61	-3.33	-3.33	8.00	-2.72	Inf	-3.33
2.4G;11b;20;1;1;2462;H;TN,VN	Pass	3k	3k	0.00	0.61	-3.10	-3.10	8.00	-2.49	Inf	-3.10
2.4G;11g;20;1;1;2412;L;TN,VN	Pass	3k	3k	0.00	0.61	-10.32	-10.32	8.00	-9.71	Inf	-10.32
2.4G;11g;20;1;1;2437;M;TN,VN	Pass	3k	3k	0.00	0.61	-6.55	-6.55	8.00	-5.94	Inf	-6.55
2.4G;11g;20;1;1;2462;H;TN,VN	Pass	3k	3k	0.00	0.61	-7.63	-7.63	8.00	-7.02	Inf	-7.63



## Appendix D. Test Result of Transmitter Radiated Bandedge Emissions

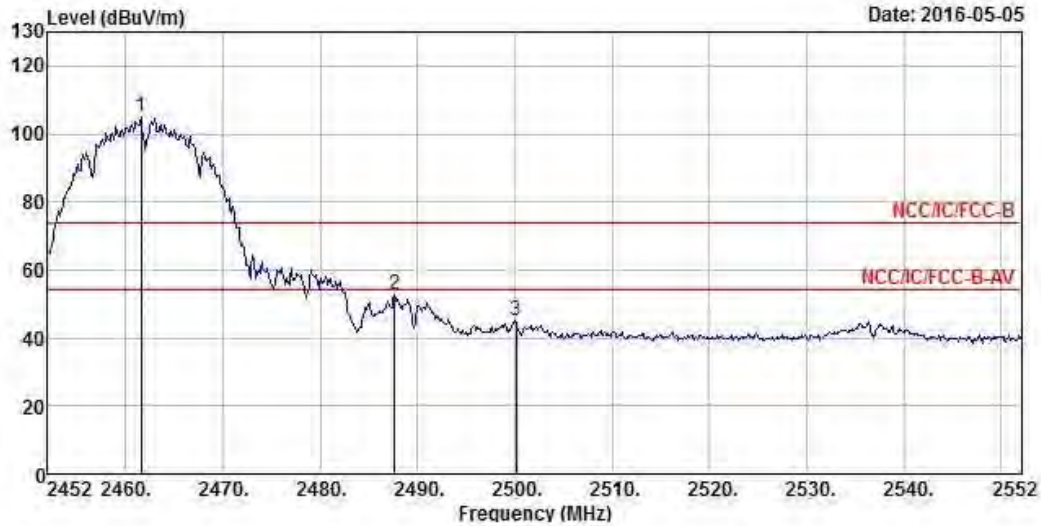
2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Non-restricted Band)								
Modulation	N <sub>TX</sub>	Test Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Pol.
11b	1	2412	103.27	2398.032	64.90	38.37	20	V
11b	1	2462	105.00	2500.100	45.08	59.92	20	V
11g	1	2412	96.25	2399.824	67.08	29.17	20	V
11g	1	2462	97.69	2500.200	44.87	52.82	20	V
Note 1: Measurement worst emissions of receive antenna polarization								

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)										
Modulation Mode	N <sub>TX</sub>	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
11b	1	2412	3	2383.69	58.69	74	2385.48	52.30	54	V
11b	1	2462	3	2487.60	58.63	74	2487.80	51.85	54	V
11g	1	2412	3	2387.28	71.22	74	2389.96	51.88	54	V
11g	1	2462	3	2487.80	70.57	74	2483.60	52.42	54	V
Note 1: Measurement worst emissions of receive antenna polarization.										

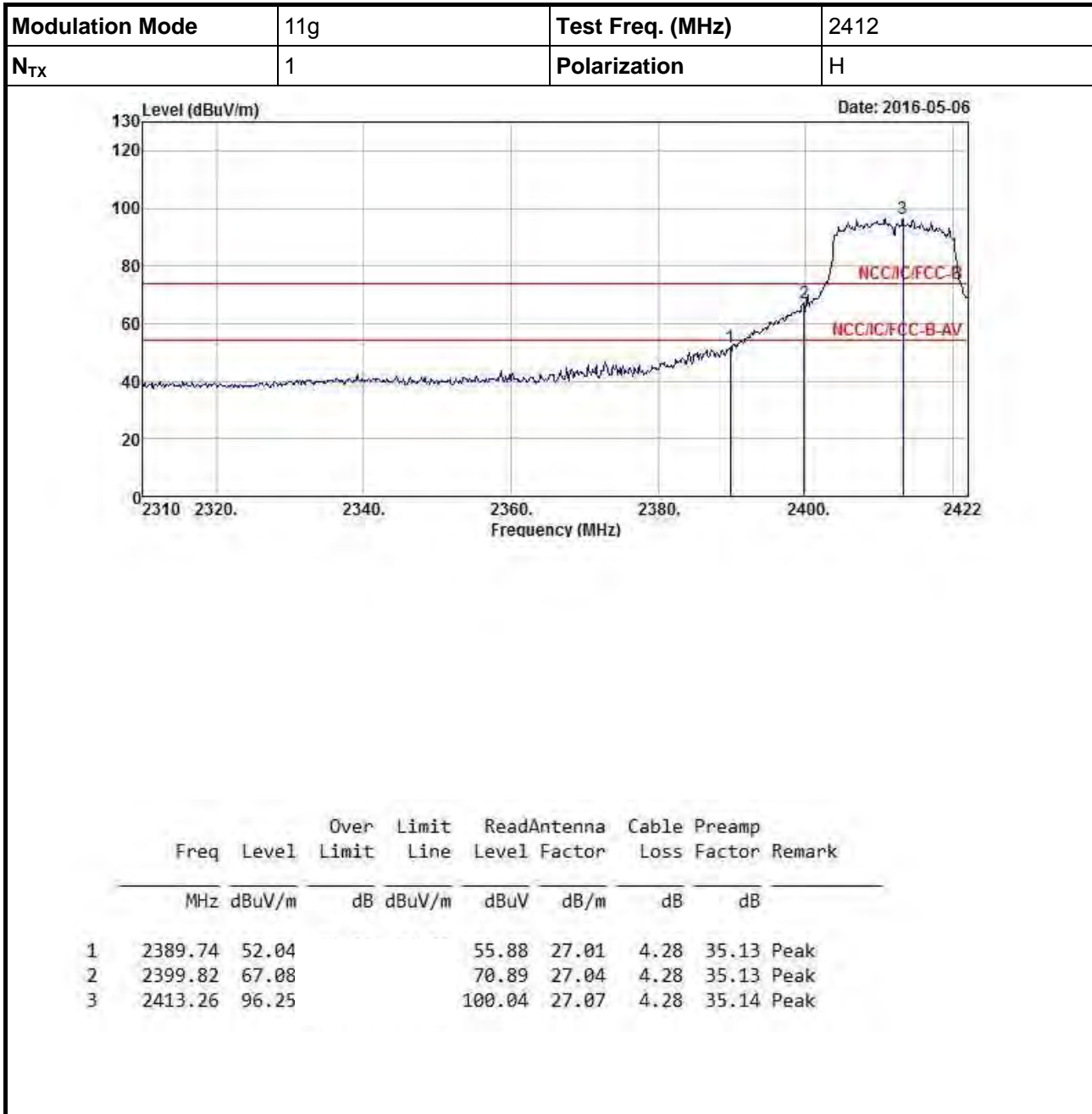
**Transmitter Radiated Bandedge Emissions (Non-restricted Band)**


**Transmitter Radiated Bandedge Emissions**

<b>Modulation Mode</b>	11b	<b>Test Freq. (MHz)</b>	2462
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



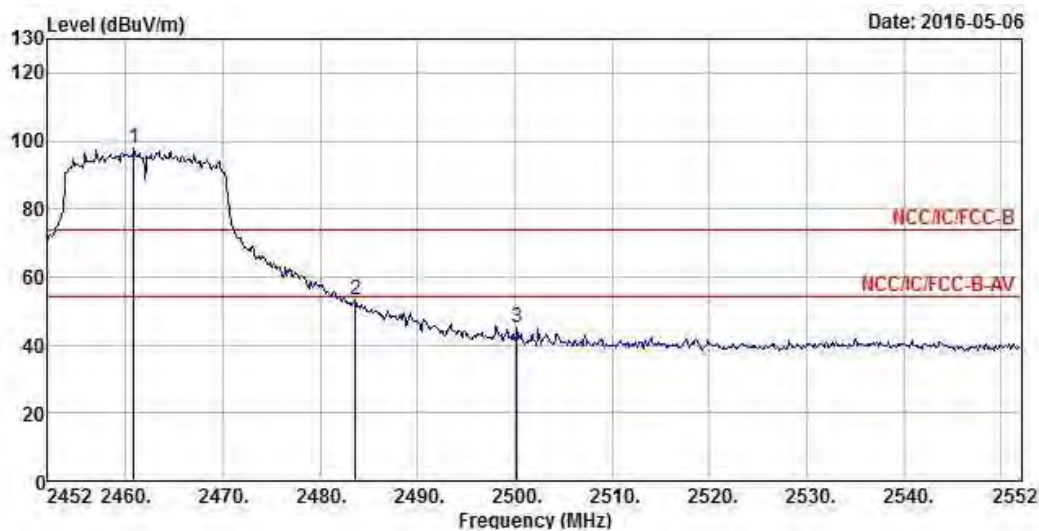
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Loss	Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	2461.60	105.00			108.64	27.20	4.32	35.16 Peak
2	2487.60	52.55			56.10	27.27	4.35	35.17 Peak
3	2500.10	45.08			48.60	27.30	4.35	35.17 Peak



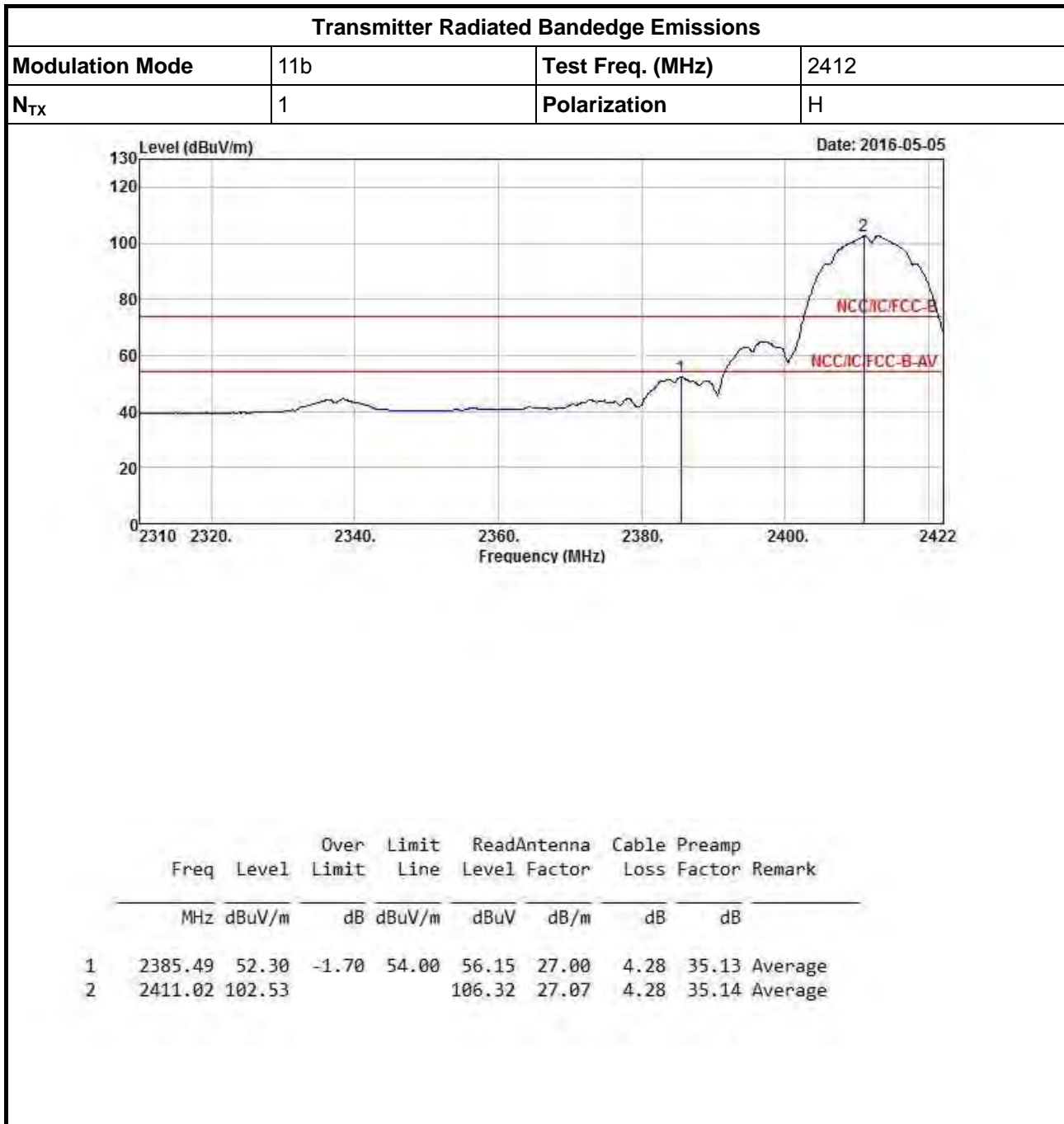


**Transmitter Radiated Bandedge Emissions**

<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2462
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H

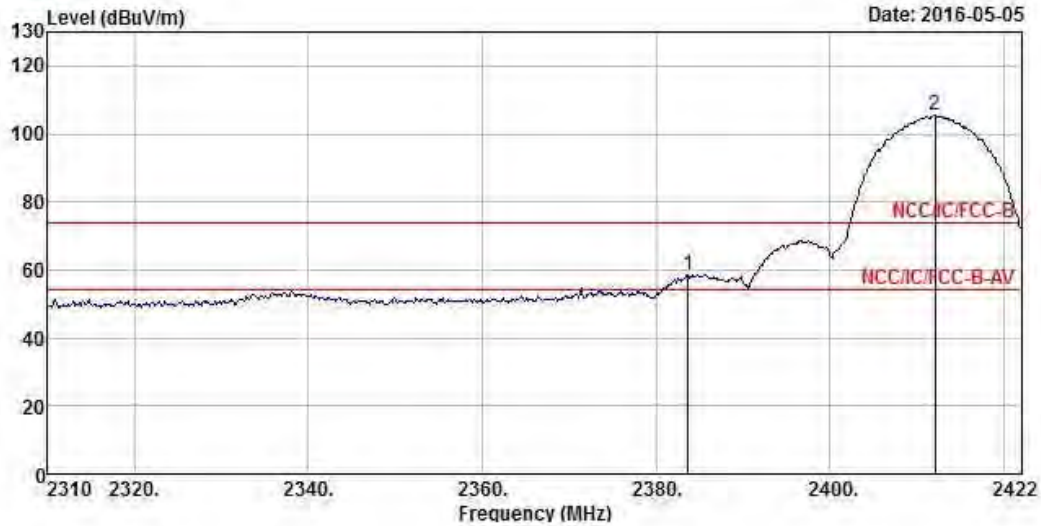


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Factor	Loss	Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2460.80	97.69			101.33	27.20	4.32	35.16	Peak
2	2483.60	53.39			56.94	27.26	4.35	35.16	Peak
3	2500.20	44.87			48.39	27.30	4.35	35.17	Peak

**Transmitter Radiated Bandedge Emissions (Restricted Band)**


**Transmitter Radiated Bandedge Emissions**

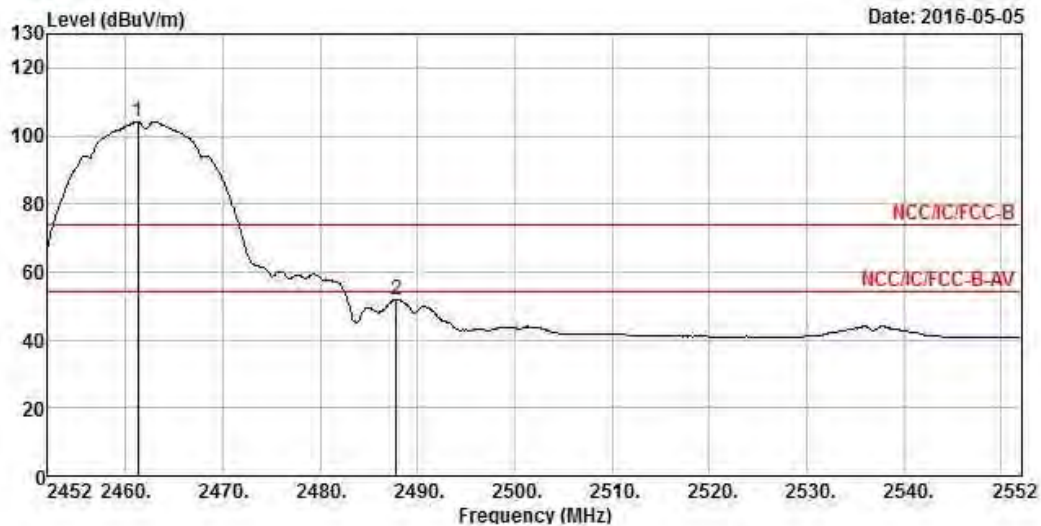
<b>Modulation Mode</b>	11b	<b>Test Freq. (MHz)</b>	2412
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Factor	Loss	Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2383.70	58.69	-15.31	74.00	62.57	27.00	4.25	35.13	Peak
2	2412.14	105.53			109.32	27.07	4.28	35.14	Peak

**Transmitter Radiated Bandedge Emissions**

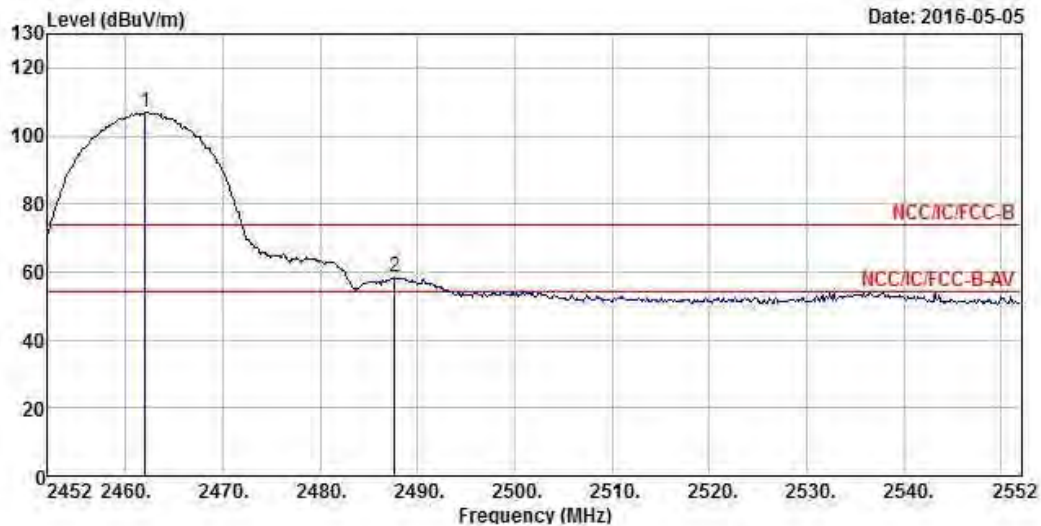
<b>Modulation Mode</b>	11b	<b>Test Freq. (MHz)</b>	2462
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	2461.20	104.15			107.79	27.20	4.32	35.16 Average
2	2487.80	51.85	-2.15	54.00	55.40	27.27	4.35	35.17 Average

**Transmitter Radiated Bandedge Emissions**

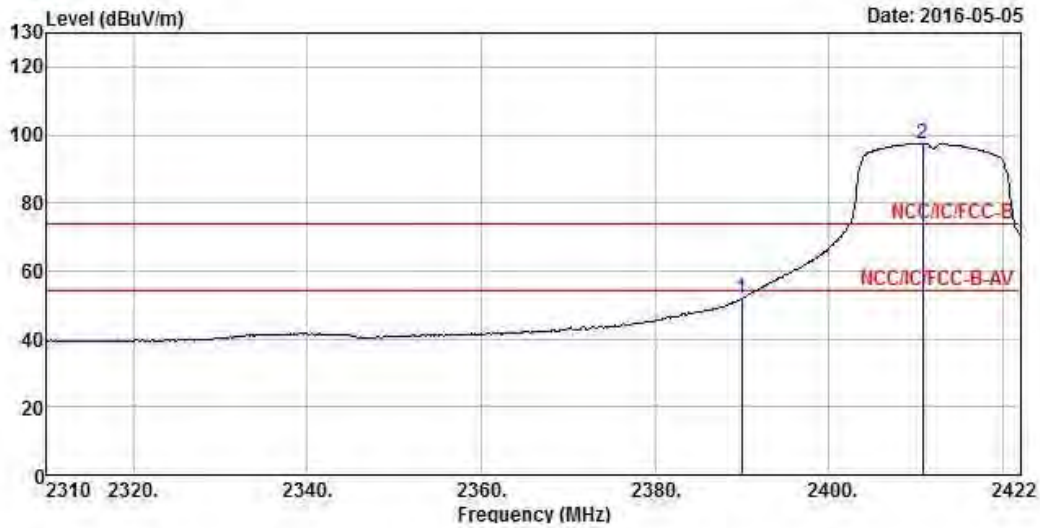
<b>Modulation Mode</b>	11b	<b>Test Freq. (MHz)</b>	2462
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	2462.00	107.19			110.83	27.20	4.32	35.16 Peak
2	2487.60	58.63	-15.37	74.00	62.18	27.27	4.35	35.17 Peak

**Transmitter Radiated Bandedge Emissions**

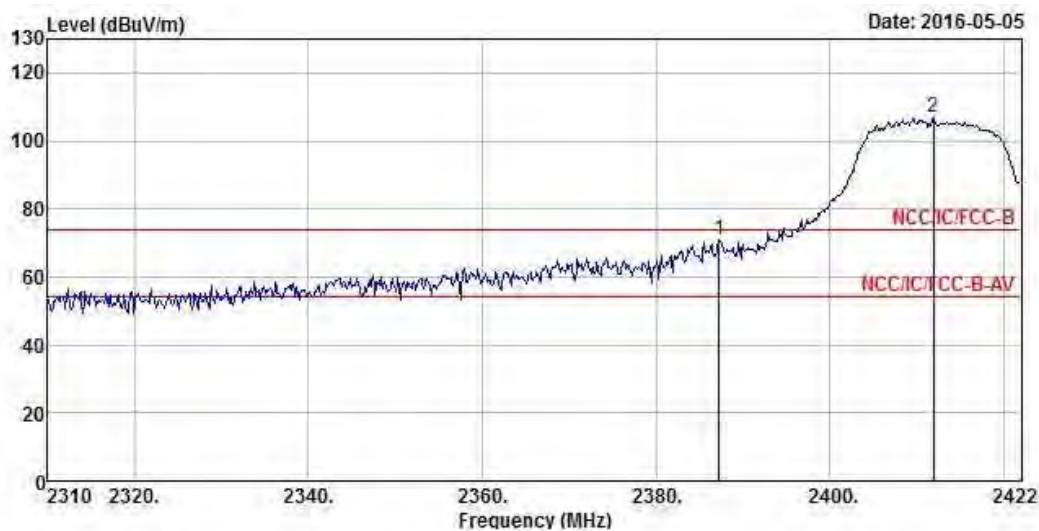
<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2412
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	2389.97	51.88	-2.12	54.00	55.72	27.01	4.28	35.13 Average
2	2410.80	97.58			101.37	27.07	4.28	35.14 Average

**Transmitter Radiated Bandedge Emissions**

<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2412
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H

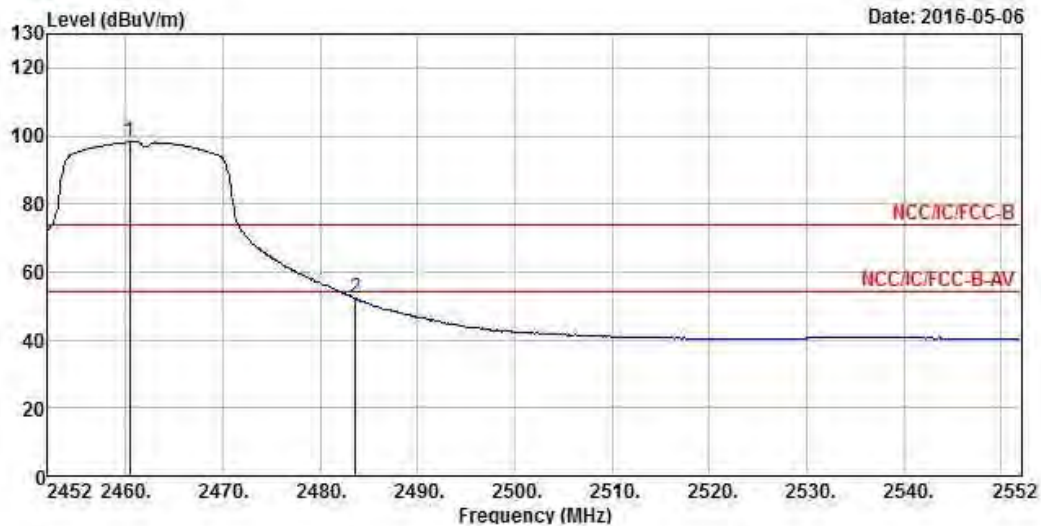


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	2387.28	71.22	-2.78	74.00	75.06	27.01	4.28	35.13 Peak
2	2411.92	106.86			110.65	27.07	4.28	35.14 Peak



**Transmitter Radiated Bandedge Emissions**

<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2462
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H

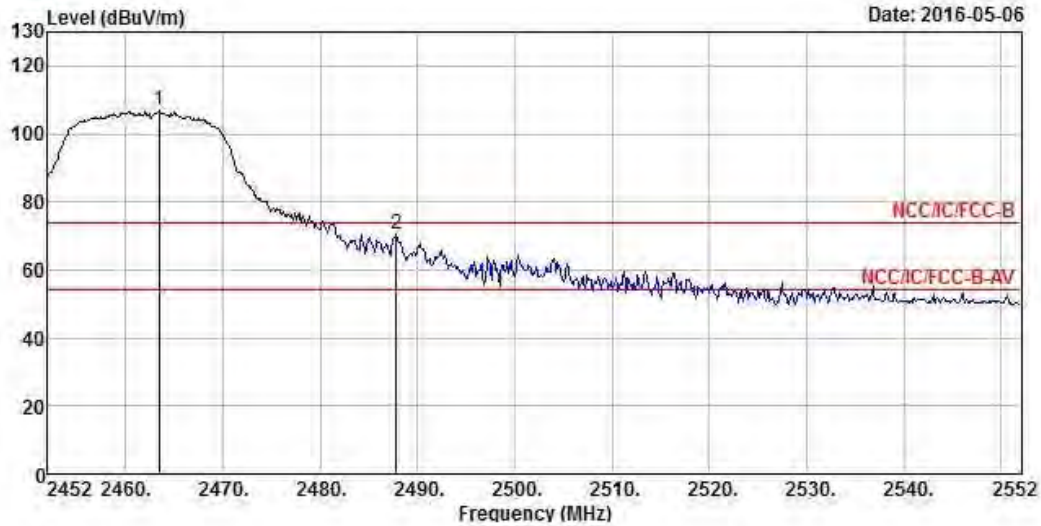


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Loss	Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	2460.40	98.24			101.87	27.20	4.32	35.15 Average
2	2483.60	52.42	-1.58	54.00	55.97	27.26	4.35	35.16 Average



**Transmitter Radiated Bandedge Emissions**

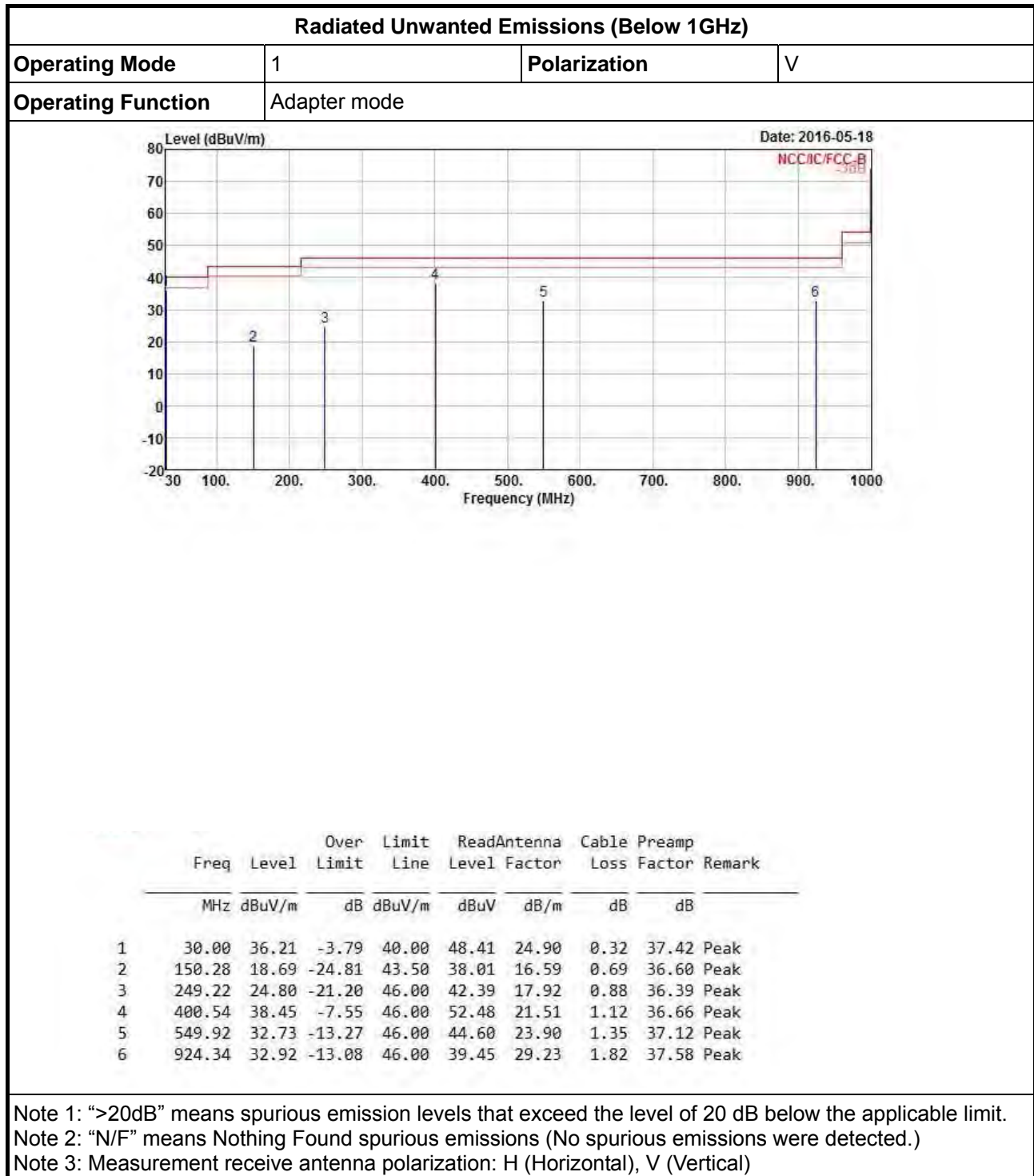
<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2462
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Loss	Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	2463.40	107.05			110.66	27.20	4.35	35.16 Peak
2	2487.80	70.57	-3.43	74.00	74.12	27.27	4.35	35.17 Peak

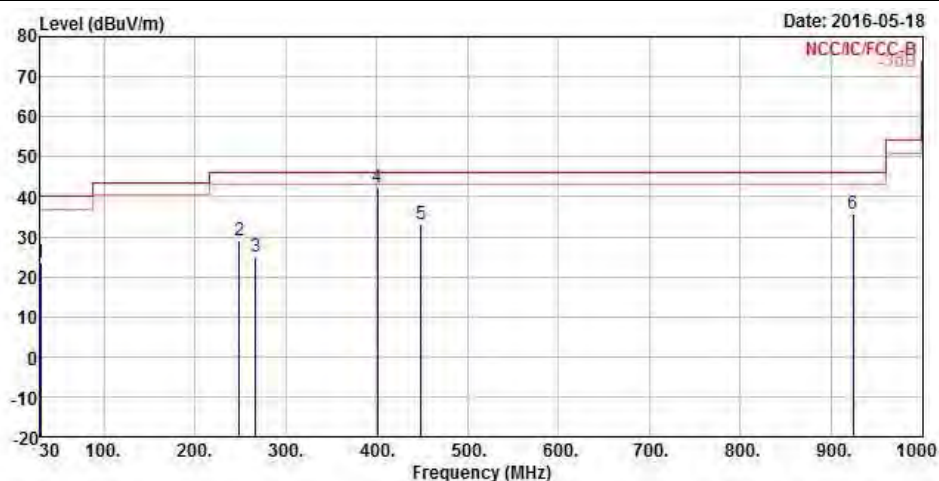
## Appendix E. Transmitter Radiated Unwanted Emissions

### Transmitter Radiated Unwanted Emissions (Below 1GHz)



**Radiated Unwanted Emissions (Below 1GHz)**

Operating Mode	1	Polarization	H
Operating Function	Adapter mode		



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	30.00	23.58	-16.42	40.00	35.78	24.90	0.32	37.42 Peak
2	249.22	29.23	-16.77	46.00	46.82	17.92	0.88	36.39 Peak
3	266.68	25.13	-20.87	46.00	41.89	18.73	0.91	36.40 Peak
4	400.54	42.54	-3.46	46.00	56.57	21.51	1.12	36.66 QP
5	449.04	33.03	-12.97	46.00	46.27	22.38	1.20	36.82 Peak
6	924.34	35.63	-10.37	46.00	42.16	29.23	1.82	37.58 Peak

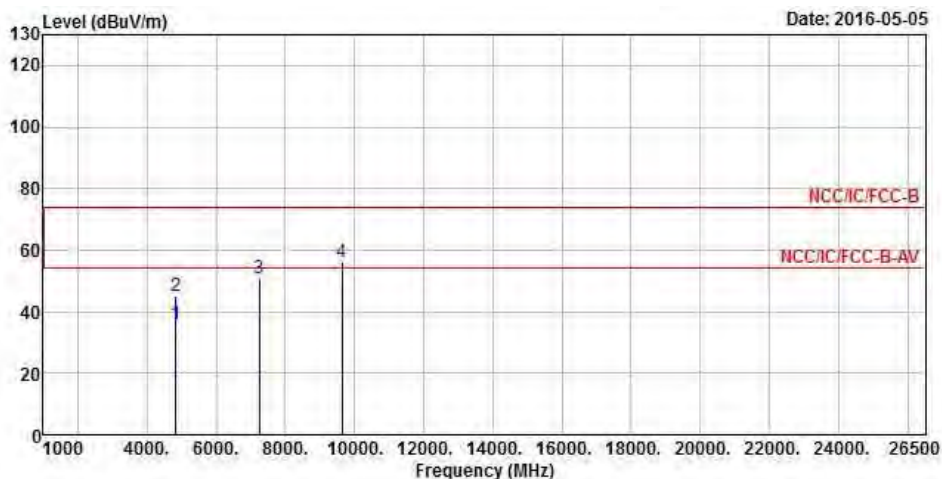
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

Transmitter Radiated Unwanted Emissions (Above 1GHz)									
Modulation Mode		11b				Test Freq. (MHz)		2412	
N <sub>TX</sub>		1				Polarization		V	
<div><div><div>Level (dBuV/m)</div><div><div><div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div>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**Transmitter Radiated Unwanted Emissions (Above 1GHz)**

<b>Modulation Mode</b>	11b	<b>Test Freq. (MHz)</b>	2412
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	4824.00	35.96	-18.04	54.00	33.86	31.15	6.11	35.16 Average
2	4824.00	45.00	-29.00	74.00	42.90	31.15	6.11	35.16 Peak
3	7236.00	50.82	.		42.75	35.91	7.57	35.41 Peak
4	9648.00	56.14	.		44.60	38.69	8.80	35.95 Peak

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

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

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

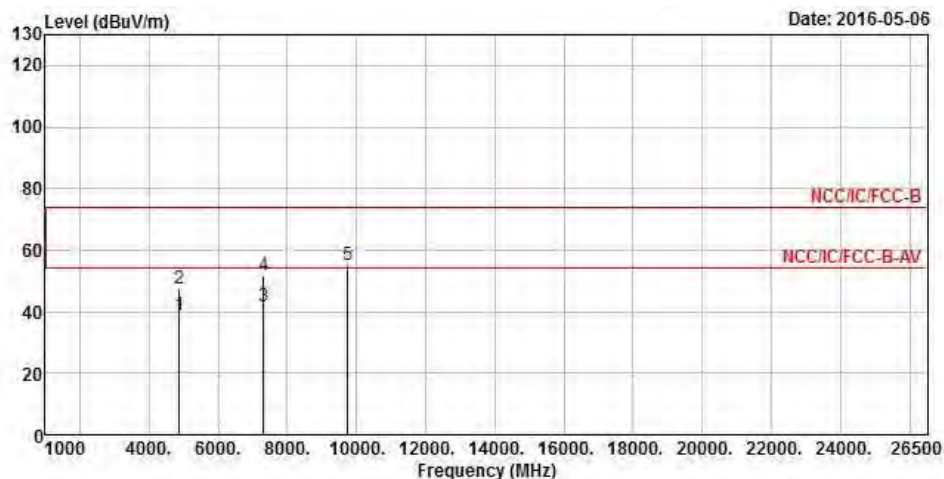
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (105.53dBuV/m).

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

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

<b>Modulation Mode</b>	11b	<b>Test Freq. (MHz)</b>	2437
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	V



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor
			dB	dBuV/m	dBuV	dB/m	dB	dB
1	4874.00	39.00	-15.00	54.00	36.81	31.22	6.13	35.16
2	4874.00	47.51	-26.49	74.00	45.32	31.22	6.13	35.16
3	7311.00	41.59	-12.41	54.00	33.30	36.11	7.60	35.42
4	7311.00	51.79	-22.21	74.00	43.50	36.11	7.60	35.42
5	9748.00	55.40			43.71	38.75	8.89	35.95

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

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

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

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

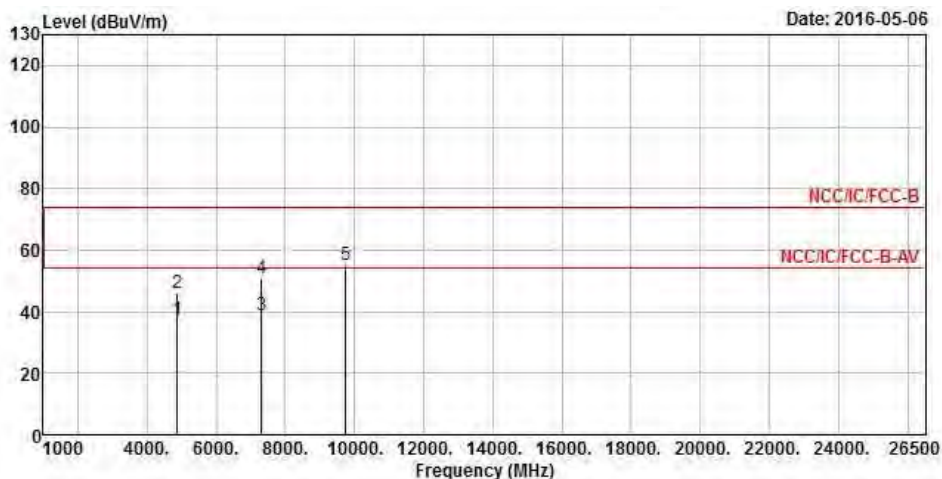
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (103.17 dBuV/m).

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



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

<b>Modulation Mode</b>	11b	<b>Test Freq. (MHz)</b>	2437
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor
			dB	dBuV/m	dBuV	dB/m	dB	dB
1	4874.00	37.60	-16.40	54.00	35.41	31.22	6.13	35.16
2	4874.00	45.90	-28.10	74.00	43.71	31.22	6.13	35.16
3	7311.00	39.00	-15.00	54.00	30.71	36.11	7.60	35.42
4	7311.00	51.09	-22.91	74.00	42.80	36.11	7.60	35.42
5	9748.00	55.19			43.50	38.75	8.89	35.95

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

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

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

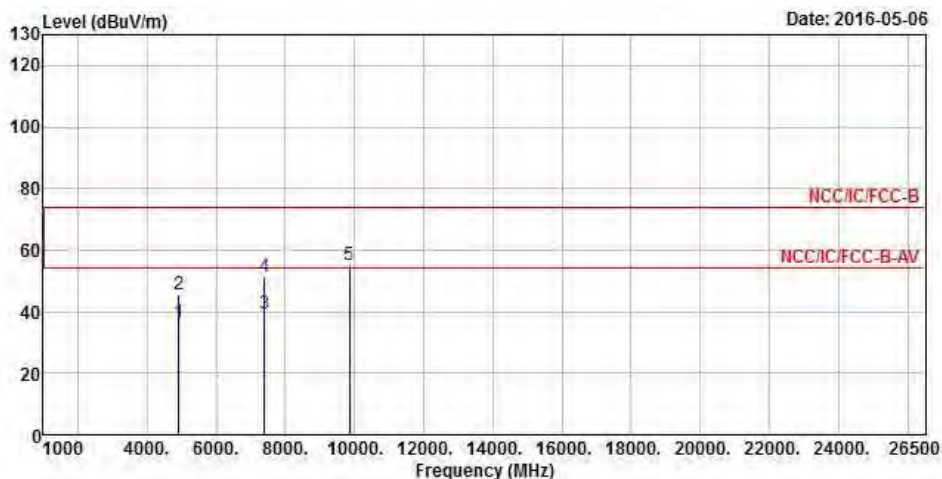
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (103.17 dBuV/m).

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

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

<b>Modulation Mode</b>	11b	<b>Test Freq. (MHz)</b>	2462
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	V



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor
			dB	dBuV/m	dBuV	dB/m	dB	dB
1	4924.00	36.36	-17.64	54.00	34.05	31.29	6.17	35.15
2	4924.00	45.62	-28.38	74.00	43.31	31.29	6.17	35.15
3	7386.00	39.44	-14.56	54.00	30.94	36.30	7.63	35.43
4	7386.00	51.26	-22.74	74.00	42.76	36.30	7.63	35.43
5	9848.00	55.25			43.37	38.81	9.03	35.96

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

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

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

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

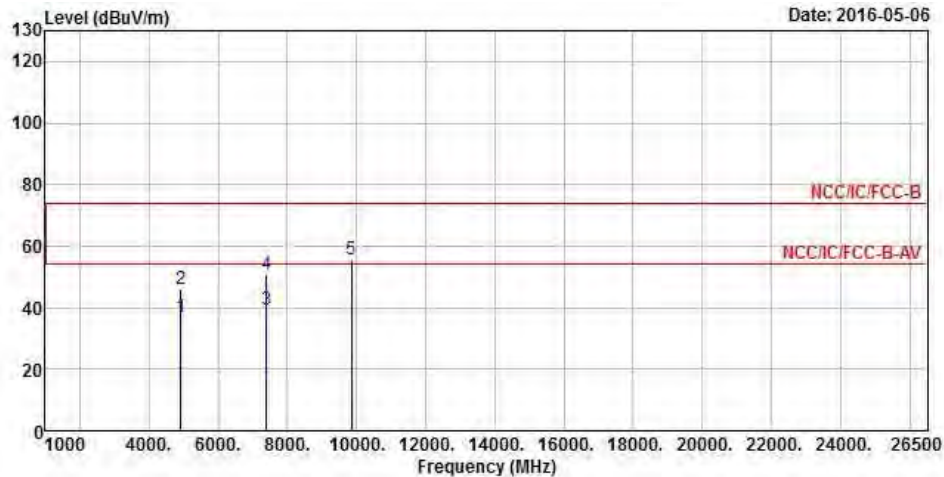
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least **20** dB relative to the maximum measured in-band level (107.19 dBuV/m).

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



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

<b>Modulation Mode</b>	11b	<b>Test Freq. (MHz)</b>	2462
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.00	37.02	-16.98	54.00	34.71	31.29	6.17	35.15	Average
2	4924.00	45.82	-28.18	74.00	43.51	31.29	6.17	35.15	Peak
3	7386.00	39.12	-14.88	54.00	30.62	36.30	7.63	35.43	Average
4	7386.00	50.83	-23.17	74.00	42.33	36.30	7.63	35.43	Peak
5	9848.00	55.68			43.80	38.81	9.03	35.96	Peak

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

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

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

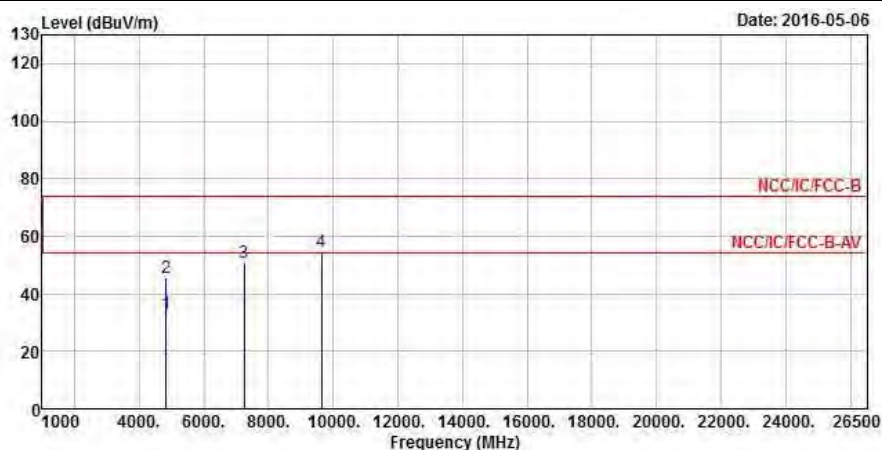
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (107.19dBuV/m).

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

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

<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2412
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	V



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB
1	4824.00	33.30	-20.70	54.00	31.20	31.15	6.11	35.16 Average
2	4824.00	45.38	-28.62	74.00	43.28	31.15	6.11	35.16 Peak
3	7236.00	50.62			42.55	35.91	7.57	35.41 Peak
4	9648.00	54.90			43.36	38.69	8.80	35.95 Peak

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

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

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

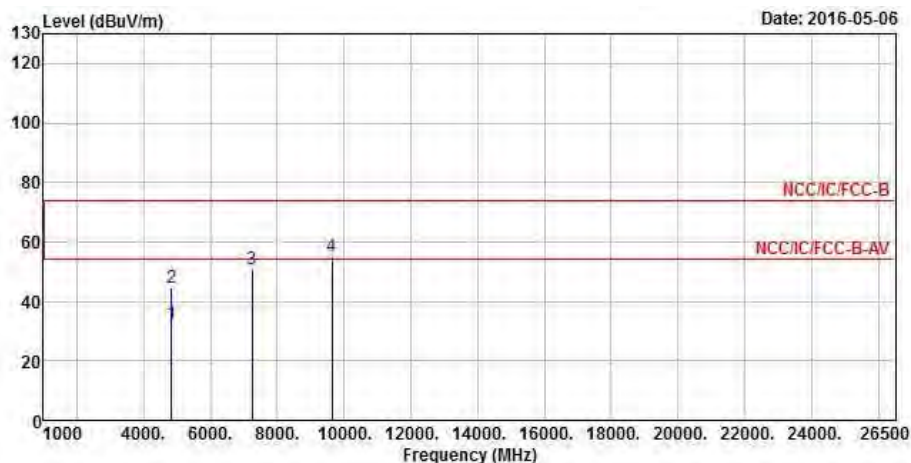
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (106.86dBuV/m).

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

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

<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2412
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp	Loss Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	4824.00	32.82	-21.18	54.00	30.72	31.15	6.11	35.16 Average
2	4824.00	44.50	-29.50	74.00	42.40	31.15	6.11	35.16 Peak
3	7236.00	50.97			42.90	35.91	7.57	35.41 Peak
4	9648.00	54.98			43.44	38.69	8.80	35.95 Peak

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

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

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

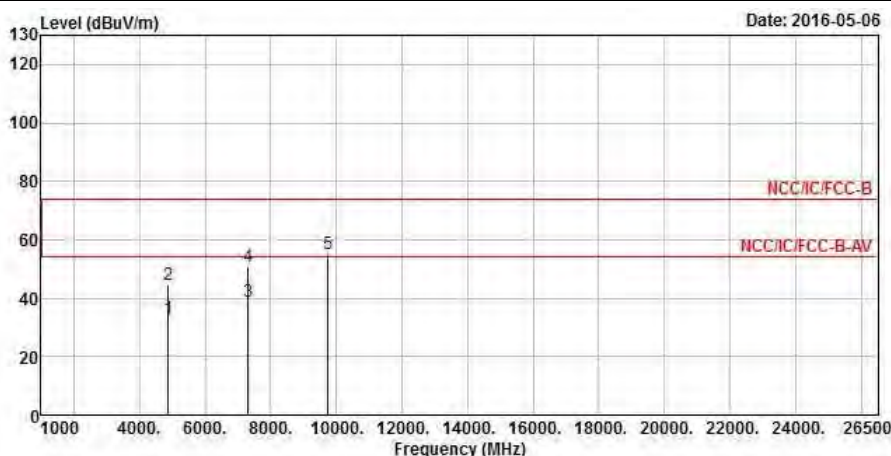
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (106.86 dBuV/m).

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

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

<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2437
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	V



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	4874.00	32.98	-21.02	54.00	30.79	31.22	6.13	35.16
2	4874.00	44.70	-29.30	74.00	42.51	31.22	6.13	35.16
3	7311.00	39.01	-14.99	54.00	30.72	36.11	7.60	35.42
4	7311.00	51.09	-22.91	74.00	42.80	36.11	7.60	35.42
5	9748.00	55.10			43.41	38.75	8.89	35.95

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

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

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

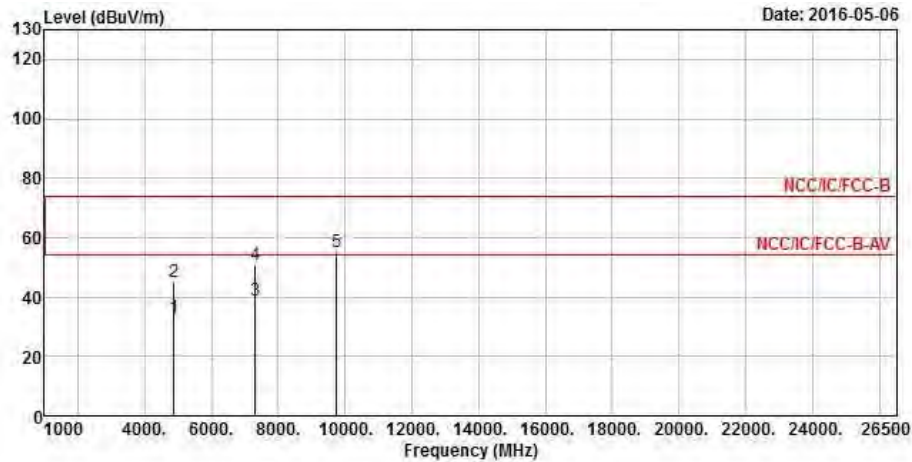
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (105.95 dBuV/m).

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

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

<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2437
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB
1	4874.00	32.90	-21.10	54.00	30.71	31.22	6.13	35.16 Average
2	4874.00	45.06	-28.94	74.00	42.87	31.22	6.13	35.16 Peak
3	7311.00	38.89	-15.11	54.00	30.60	36.11	7.60	35.42 Average
4	7311.00	50.97	-23.03	74.00	42.68	36.11	7.60	35.42 Peak
5	9748.00	55.09			43.40	38.75	8.89	35.95 Peak

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

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

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

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

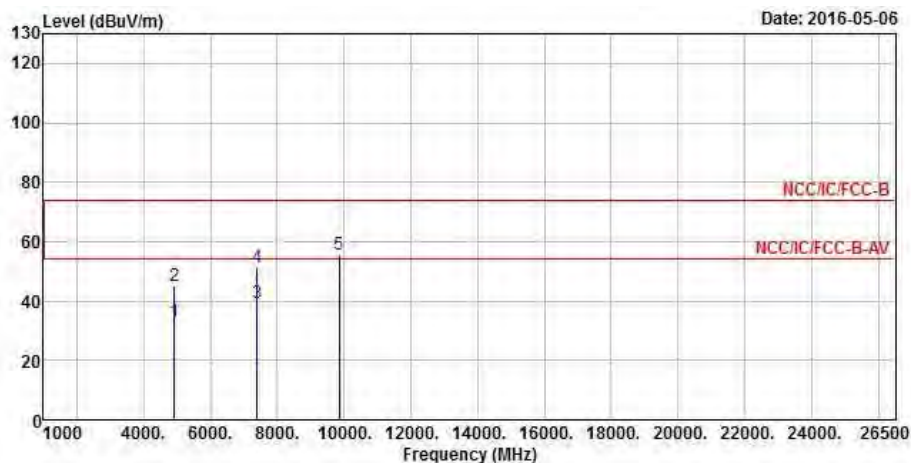
Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (105.95 dBuV/m).

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



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

<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2462
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	V



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB
1	4924.00	33.08	-20.92	54.00	30.77	31.29	6.17	35.15 Average
2	4924.00	45.16	-28.84	74.00	42.85	31.29	6.17	35.15 Peak
3	7386.00	39.25	-14.75	54.00	30.75	36.30	7.63	35.43 Average
4	7386.00	51.27	-22.73	74.00	42.77	36.30	7.63	35.43 Peak
5	9848.00	55.58			43.70	38.81	9.03	35.96 Peak

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

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

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

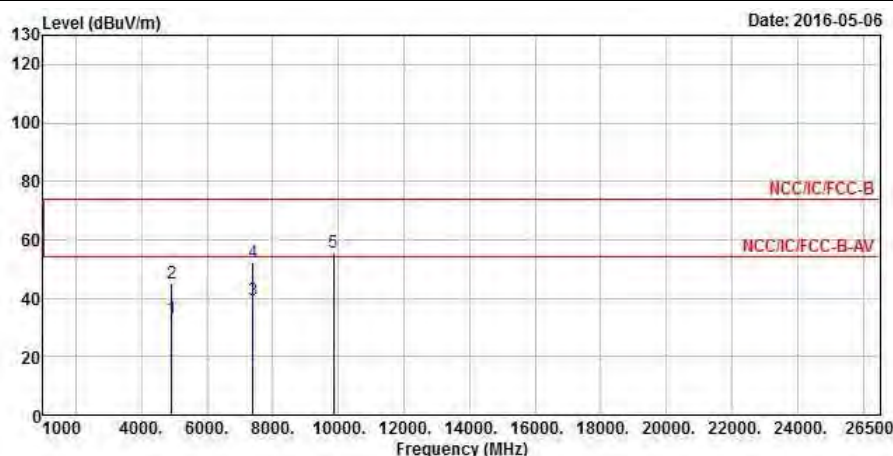
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (107.05 dBuV/m).

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

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

<b>Modulation Mode</b>	11g	<b>Test Freq. (MHz)</b>	2462
<b>N<sub>TX</sub></b>	1	<b>Polarization</b>	H



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	4924.00	32.91	-21.09	54.00	30.60	31.29	6.17	35.15 Average
2	4924.00	44.86	-29.14	74.00	42.55	31.29	6.17	35.15 Peak
3	7386.00	39.10	-14.90	54.00	30.60	36.30	7.63	35.43 Average
4	7386.00	52.05	-21.95	74.00	43.55	36.30	7.63	35.43 Peak
5	9848.00	55.42			43.54	38.81	9.03	35.96 Peak

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

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

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

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

Note 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level ((107.05 dBuV/m).

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