

**FCC 15.247**  
**2.4 GHz Report**  
**for**

**Fortress Auto Int'l Ltd**

**No.3, Ln. 190, Danyan Rd., Yangmei Dist.,**  
**Taoyuan City 32661, Taiwan**

**Product Name : The Multi-Angle Digital**  
**Wireless Parking Camera**  
**Brand : N/A**  
**Model Name : EB937**  
**FCC ID : 2AJNIEB937**

**Prepared by: : AUDIX Technology Corporation,**  
**EMC Department**



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APPENDIX A TEST PHOTOGRAPHS  
APPENDIX B TEST PLOTS

## TEST REPORT CERTIFICATION

Applicant : Fortress Auto Int'l Ltd  
Product Name : The Multi-Angle Digital Wireless Parking Camera  
Model No. : EB937  
Serial No. : N/A  
Brand Name : N/A

Applicable Standards:

47 CFR FCC Part 15 Subpart C: 2015  
ANSI C63.10:2013  
KDB 558074 D01 DTS Meas Guidance v03r05

**AUDIX Technology Corp.** tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report. **AUDIX Technology Corp.** does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Date of Test: 2016. 09. 21 ~ 10. 12

Date of Report: 2016. 10. 17

Producer: Sabrina Wang  
(Sabrina Wang/Administrator)

Signatory: Ben Cheng  
(Ben Cheng/Manager)

## 1. REPORT HISTORY

| Revision | Date         | Revision Summary | Report Number |
|----------|--------------|------------------|---------------|
| 0        | 2016. 10. 17 | Original Report. | EM-F160620    |

## 2. SUMMARY OF TEST RESULTS

| Rule                                                                                  | Description                                          | Results   |
|---------------------------------------------------------------------------------------|------------------------------------------------------|-----------|
| 15.207                                                                                | Conducted Emission                                   | N/A, Note |
| 15.247(d)/15.205                                                                      | Radiated Band Edge and Radiated Spurious Emission    | PASS      |
| 15.247(a)(2)                                                                          | 6dB Bandwidth                                        | PASS      |
| 15.247(b)(3)                                                                          | Maximum Peak Output                                  | PASS      |
| 15.247(d)                                                                             | Conducted Band Edges and Conducted Spurious Emission | PASS      |
| 15.247 (e)                                                                            | Peak Power Spectral Density                          | PASS      |
| 15.203                                                                                | Antenna Requirement                                  | PASS      |
| Note: The EUT only employs battery power for operation, so it is unnecessary to test. |                                                      |           |

### 3. GENERAL INFORMATION

#### 3.1. Description of EUT

|                           |                                                                                                     |      |  |
|---------------------------|-----------------------------------------------------------------------------------------------------|------|--|
| Product                   | The Multi-Angle Digital Wireless Parking Camera                                                     |      |  |
| Model Number              | EB937                                                                                               |      |  |
| Serial Number             | N/A                                                                                                 |      |  |
| Brand                     | N/A                                                                                                 |      |  |
| Applicant                 | Fortress Auto Int'l Ltd<br>No.3, Ln. 190, Dianyan Rd., Yangmei Dist., Taoyuan City<br>32661, Taiwan |      |  |
| RF Features               | 802.11 b/g                                                                                          |      |  |
| Transmit Type             | 802.11b                                                                                             | 1T1R |  |
|                           | 802.11g                                                                                             | 1T1R |  |
| Power Wire                | Unshielded, Undetachable, 2.0m                                                                      |      |  |
| Date of Receipt of Sample | 2016. 08. 28                                                                                        |      |  |

#### 3.2. Antenna Information

| Antenna Part Number          | Brand | Antenna Type | Frequency    | Max Gain |
|------------------------------|-------|--------------|--------------|----------|
| RA09LMSA00UA000S<br>(Type B) | RIFO  | PIFA Antenna | 2400-2500MHz | 4.14dBi  |

### 3.3. EUT Specifications Assessed in Current Report

| Mode    | Fundamental Range (MHz) | Channel Number | Modulation                      | Data Rate (Mbps) |
|---------|-------------------------|----------------|---------------------------------|------------------|
| 802.11b | 2412-2462               | 11             | DSSS<br>(DBPSK/DQPSK/CCK)       | Up to 11         |
| 802.11g |                         | 11             | OFDM<br>(BPSK/QPSK/16QAM/64QAM) | Up to 54         |

| Channel List   |                 |
|----------------|-----------------|
| 802.11 b/g     |                 |
| Channel Number | Frequency (MHz) |
| 1              | 2412            |
| 2              | 2417            |
| 3              | 2422            |
| 4              | 2427            |
| 5              | 2432            |
| 6              | 2437            |
| 7              | 2442            |
| 8              | 2447            |
| 9              | 2452            |
| 10             | 2457            |
| 11             | 2462            |

### 3.4. Data Rate Relative to Output Power

| 802.11b |            |                  |              |
|---------|------------|------------------|--------------|
| Channel | Modulation | Date Rate (Mbps) | Power (dBm)  |
| 1       | DBPSK      | 1                | <b>14.39</b> |
| 1       | DQPSK      | 2                | <b>14.34</b> |
| 1       | CCK        | 5.5              | <b>14.28</b> |
| 1       | CCK        | 11               | <b>14.21</b> |
| 802.11g |            |                  |              |
| Channel | Modulation | Date Rate (Mbps) | Power (dBm)  |
| 1       | BPSK       | 6                | <b>14.74</b> |
| 1       | BPSK       | 9                | <b>14.71</b> |
| 1       | QPSK       | 12               | <b>14.69</b> |
| 1       | QPSK       | 18               | <b>14.63</b> |
| 1       | 16-QAM     | 24               | <b>14.58</b> |
| 1       | 16-QAM     | 36               | <b>14.52</b> |
| 1       | 64-QAM     | 48               | <b>14.45</b> |
| 1       | 64-QAM     | 54               | <b>14.40</b> |

Note: Above results are assessed in Average power.

### 3.5. Test Configuration

| Mode    | Duty Cycle (x) | T (ms) | Duty Cycle Factor (dB) |
|---------|----------------|--------|------------------------|
| 802.11b | 1.0            | N/A    | N/A                    |
| 802.11g | 1.0            | N/A    | N/A                    |

Note: When duty cycle is less than 98% (0.98) that duty cycle factor  $10\log(1/x)$  is needed to add in conducted test items measured in average detector.

| Item                |                                                            | Mode    | Data Rate | Test Channel |
|---------------------|------------------------------------------------------------|---------|-----------|--------------|
| Radiated Test Case  | Radiated Band Edge<br><small>Note1</small>                 | 802.11b | 1Mbps     | 1/6/11       |
|                     |                                                            | 802.11g | 6Mbps     | 1/11         |
|                     | Radiated Spurious Emission<br><small>Note1 &amp; 2</small> | 802.11b | 1Mbps     | 1/6/11       |
|                     |                                                            | 802.11g | 6Mbps     | 1/6/11       |
| Conducted Test Case | 6dB Bandwidth                                              | 802.11b | 1Mbps     | 1/6/11       |
|                     |                                                            | 802.11g | 6Mbps     | 1/6/11       |
|                     | Peak Power Spectral Density                                | 802.11b | 1Mbps     | 1/6/11       |
|                     |                                                            | 802.11g | 6Mbps     | 1/6/11       |
|                     | Peak Output Power                                          | 802.11b | 1Mbps     | 1/2/10/11    |
|                     |                                                            | 802.11g | 6Mbps     | 1/6/11       |
|                     | Band Edge                                                  | 802.11b | 1Mbps     | 1/11         |
|                     |                                                            | 802.11g | 6Mbps     | 1/11         |
|                     | Spurious Emission                                          | 802.11b | 1Mbps     | 1/6/11       |
|                     |                                                            | 802.11g | 6Mbps     | 1/6/11       |

Note 1:

☒ Mobile Device

☐ Portable Device, and 3 axis were assessed. The worst scenario for Radiated Spurious Emission as follow:

- ☐ Lie
- ☐ Side
- ☐ Stand

Note 2: Low, mid, and high channels were measured, only the worst channel of each modulation was presented in this report.

### 3.6. Tested Supporting System List

#### 3.6.1. Support Peripheral Unit

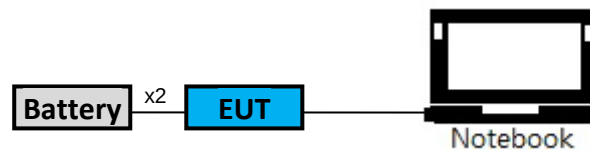
| No. | Product          | Brand | Model No. | Serial No. | FCC ID       |
|-----|------------------|-------|-----------|------------|--------------|
| 1.  | Battery (DC 12V) | N/A   | N/A       | N/A        | N/A          |
| 2.  | Notebook PC      | ASUS  | X5502E    | N/A        | PPD-AAR5B225 |

#### 3.6.2. Cable Lists

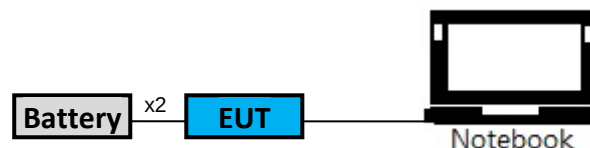
| No. | Cable Description Of The Above Support Units                                                                                                                                                            |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | Power Wire x2: Unshielded, Detachable, 0.2m                                                                                                                                                             |
| 2.  | USB Cable: Unshielded, Detachable, 1.0m<br>Adapter: Enerironix, M/N M/N EXA1208UH,<br>DC Power Cord: Unshielded, Detachable, 1.8m<br>AC Power Cord: Shielded, Undetachable, 1.8m, Bonded a ferrite core |

### 3.7. Setup Configuration

#### 3.7.1. EUT Configuration for Radiated Emission



#### 3.7.2. EUT Configuration for Conducted Test Items



### 3.8. Operating Condition of EUT

Test program “MTT601” is used for enabling EUT WLAN function under continues transmitting and choosing data rate/ channel.

### 3.9. Description of Test Facility

|                          |   |                                                                                                                                  |
|--------------------------|---|----------------------------------------------------------------------------------------------------------------------------------|
| Test Firm Name           | : | <b>AUDIX Technology Corporation</b><br><b>EMC Department</b><br>No. 53-11, Dingfu, Linkou Dist.,<br>New Taipei City 244, Taiwan  |
| Test Location & Facility | : | <b>Semi-Anechoic Chamber</b><br><b>Fully Anechoic Chamber</b><br>No. 53-11, Dingfu, Linkou Dist.,<br>New Taipei City 244, Taiwan |
| NVLAP Lab. Code          | : | 200077-0                                                                                                                         |
| TAF Accreditation No     | : | 1724                                                                                                                             |
| FCC OET Designation      | : | TW1004 & TW1090                                                                                                                  |

### 3.10. Measurement Uncertainty

| Test Item                        | Frequency Range | Uncertainty |
|----------------------------------|-----------------|-------------|
| Radiation Test<br>(Distance: 3m) | 30MHz~1000MHz   | ± 3.68dB    |
|                                  | Above 1GHz      | ± 5.82dB    |

Remark : Uncertainty =  $k_{uc}(y)$

| Test Item                      | Uncertainty |
|--------------------------------|-------------|
| 6dB Bandwidth                  | ± 0.05kHz   |
| Maximum peak output power      | ± 0.33dB    |
| Power spectral density         | ± 0.13dB    |
| Conducted Emission Limitations | ± 0.13dB    |

## 4. MEASUREMENT EQUIPMENT LIST

### 4.1. Radiated Emission Measurement

#### 4.1.1. Frequency Range 9kHz~1000MHz (Semi-Anechoic Chamber)

| Item | Type              | Manufacturer | Model No.  | Serial No. | Cal. Date    | Cal. Interval |
|------|-------------------|--------------|------------|------------|--------------|---------------|
| 1.   | Spectrum Analyzer | Agilent      | N9010A-526 | MY53400071 | 2016. 09. 19 | 1 Year        |
| 2.   | Test Receiver     | R & S        | ESCS30     | 100338     | 2016. 06. 22 | 1 Year        |
| 3.   | Amplifier         | HP           | 8447D      | 2944A06305 | 2016. 02. 23 | 1 Year        |
| 4.   | Bilog Antenna     | CHASE        | CBL6112D   | 33821      | 2016. 01. 30 | 1 Year        |
| 5.   | Loop Antenna      | R&S          | HFH2-Z2    | 891847/27  | 2015. 12. 24 | 1 Year        |
| 6.   | Test Software     | Audix        | e3         | V.6.110601 | N.C.R.       | N.C.R.        |

#### 4.1.2. Frequency Range Above 1GHz (Fully Anechoic Chamber)

| Item | Type                | Manufacturer | Model No.                  | Serial No. | Cal. Date    | Cal. Interval |
|------|---------------------|--------------|----------------------------|------------|--------------|---------------|
| 1.   | Spectrum Analyzer   | Agilent      | E4446A                     | US44300366 | 2016. 08. 19 | 1 Year        |
| 2.   | Amplifier           | Sonoma       | 310N                       | 187161     | 2016. 06. 14 | 1 Year        |
| 3.   | 2.4GHz Notch Filter | K&L          | 7NSL10-2441.<br>5E130.5-00 | 1          | 2016. 07. 28 | 1 Year        |
| 4.   | Horn Antenna        | ETS-Lindgren | 3117                       | 00135902   | 2016. 03. 05 | 1 Year        |
| 5.   | Horn Antenna        | EMCO         | 3116                       | 2653       | 2015. 10. 20 | 1 Year        |
| 6.   | Test Software       | Audix        | e3                         | V.6.110601 | N.C.R.       | N.C.R.        |

### 4.2. RF Conducted Measurement

| Item | Type              | Manufacturer | Model No.  | Serial No. | Cal. Date    | Cal. Interval |
|------|-------------------|--------------|------------|------------|--------------|---------------|
| 1.   | Spectrum Analyzer | Agilent      | N9010A-507 | MY52220264 | 2016. 08. 09 | 1 Year        |
| 2.   | Power Meter       | Anritsu      | ML2495A    | 1145008    | 2015. 10. 23 | 1 Year        |
| 3.   | Power Sensor      | Anritsu      | MA2411B    | 1126096    | 2015. 10. 23 | 1 Year        |

## **5. CONDUCTED EMISSION MEASUREMENT**

【The EUT only employs battery power for operation, no conductive emission limits are required according to FCC Part 15 Section §15.207】

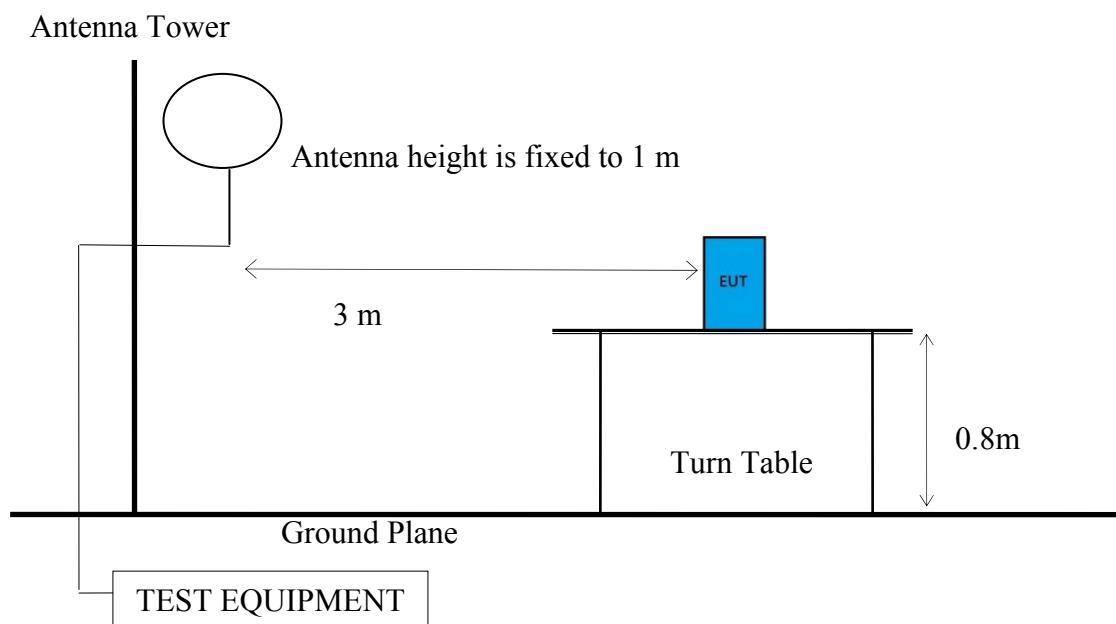
## 6. RADIATED EMISSION MEASUREMENT

### 6.1. Block Diagram of Test Setup

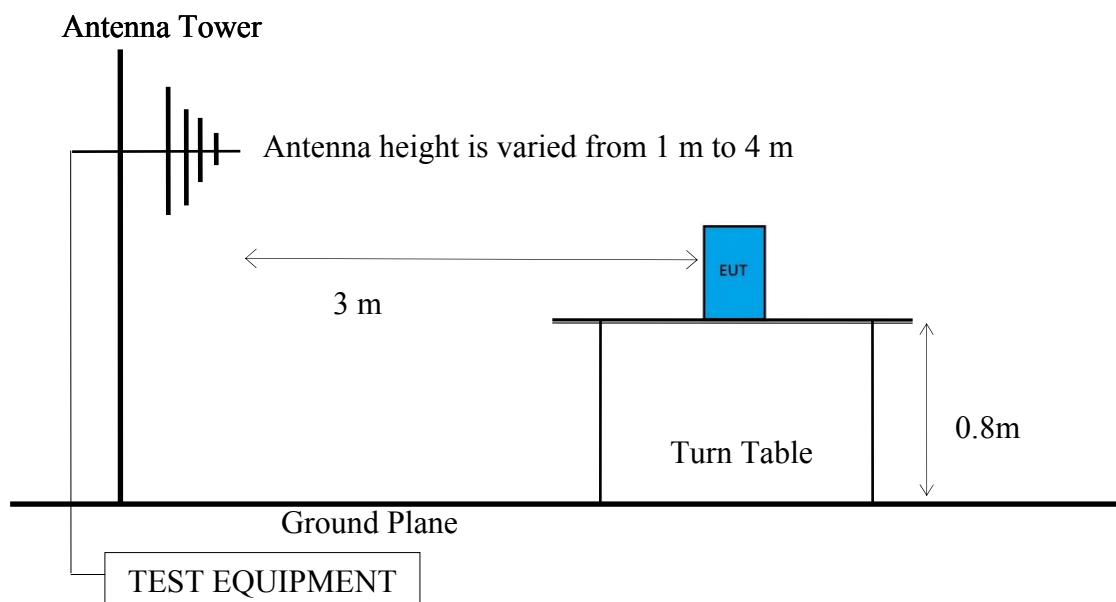
#### 6.1.1. Block Diagram of connection between EUT and simulators

Indicated as section 3.7

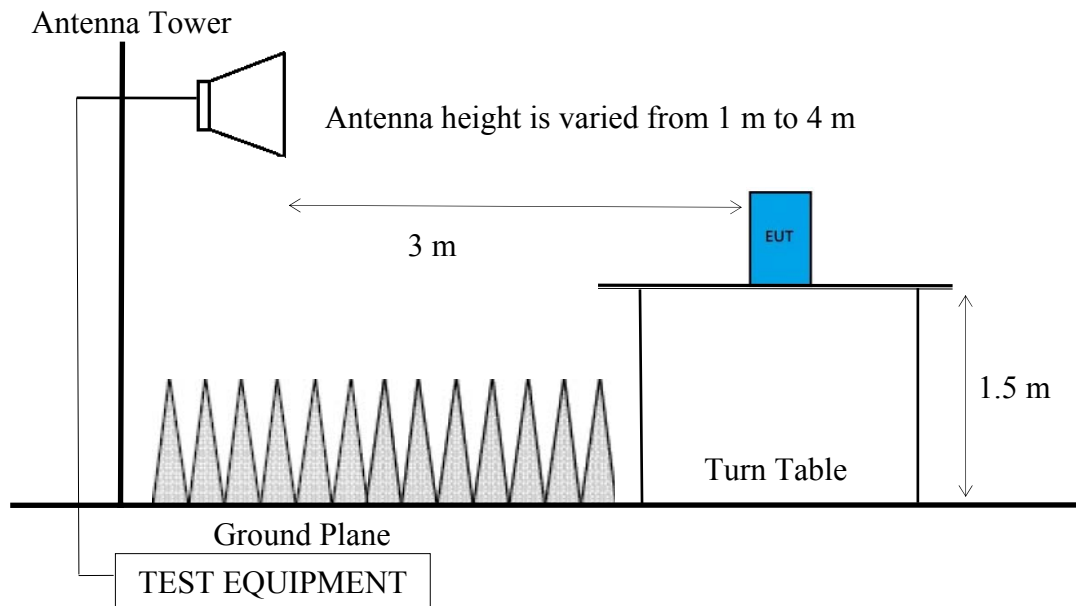
#### 6.1.2. Semi Anechoic Chamber (3m) Setup Diagram for 9kHz-30MHz



#### 6.1.3. Semi Anechoic Chamber (3m) Setup Diagram for 30-1000 MHz



#### 6.1.4. Fully Anechoic Chamber (3m) Setup Diagram for above 1GHz



## 6.2. Radiated Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205/RSS-Gen Section 8.10 table 6, must also comply with the radiated emission limits specified as below.

| Frequency (MHz) | Distance (m) | Limits                                                  |           |
|-----------------|--------------|---------------------------------------------------------|-----------|
|                 |              | dB $\mu$ V/m                                            | $\mu$ V/m |
| 0.009 - 0.490   | 300          | 67.6                                                    | 2400/kHz  |
| 0.490 - 1.705   | 30           | 87.6                                                    | 24000/kHz |
| 1.705 - 30      | 30           | 29.5                                                    | 30        |
| 30 - 88         | 3            | 40.0                                                    | 100       |
| 88- 216         | 3            | 43.5                                                    | 150       |
| 216- 960        | 3            | 46.0                                                    | 200       |
| Above 960       | 3            | 54.0                                                    | 500       |
| Above 1000      | 3            | 74.0 dB $\mu$ V/m (Peak)<br>54.0 dB $\mu$ V/m (Average) |           |

Remark : (1) dB $\mu$ V/m = 20 log ( $\mu$ V/m)

- (2) The tighter limit applies to the edge between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- (4) Fundamental and emission fall within operation band are exempted from this section.
- (5) Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

### 6.3. Test Procedure

#### **Frequency Range 9kHz~30MHz:**

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

- (1) RBW = 9kHz with peak and average detector.
- (2) Detector: average and peak (9kHz-490kHz)  
Q.P. (490kHz-30MHz)

#### **Frequency Range 30MHz ~ 40GHz:**

The EUT setup on the turn find table which has 80 cm (for 30-1000 MHz) and 1.5m (for above 1GHz) height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

#### **Frequency below 1 GHz:**

Spectrum Analyzer is used for pre-testing with following setting:

- (1) RBW = 120KHz
- (2) VBW  $\geq 3 \times$  RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required. Otherwise using Q.P. for finally measurement.

**Frequency above 1GHz to 10th harmonic:****Peak Detector:**

- (1) RBW = 1MHz
- (2) VBW  $\geq 3 \times$  RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the average detector is not required. Otherwise using average for finally measurement.

**Average Detector:****■Option 1:**

- (1) RBW = 1MHz
- (2) VBW  $\geq 1/T$ .

| Modulation Type | T (ms) | 1/ T (kHz) | VBW Setting(kHz) |
|-----------------|--------|------------|------------------|
| 802.11b         | 1      | N/A        | N/A              |
| 802.11g         | 1      | N/A        | N/A              |

N/A: 1/ T is not implemented when duty cycle presented in section 3.5 is  $\geq 98\%$ .

- (1) Detector = Peak.
- (2) Sweep time = auto.
- (3) Trace mode = max hold.
- (4) Allow sweeps to continue until the trace stabilizes.

**□Option 2:**

Average Emission Level= Peak Emission Level+ D.C.C.F.

**6.4. Measurement Result Explanation**

- Peak Emission Level=Antenna Factor + Cable Loss + Meter Reading
- Average Emission Level=Antenna Factor + Cable Loss + Meter Reading
- Average Emission Level= Peak Emission Level+ DCCF  
Duty Cycle Correction Factor (DCCF)=  $20\log(TX_{on}/TX_{on+off})$  presented in section 3.5
- EPR= Peak Emission Level-95.2dB-2.14dB

**6.5. Test Results****PASSED.**

|              |                      |            |          |
|--------------|----------------------|------------|----------|
| Test Date    | 2016/10/12           | Temp./Hum. | 23°C/53% |
| Test Voltage | DC 12V (Via Battery) |            |          |

### 6.5.1. Emissions within Restricted Frequency Bands

#### 6.5.1.1. Frequency 9kHz~30MHz

**The emissions (9kHz~30MHz) not reported for there is no emission be found.**

#### 6.5.1.2. Frequency Below 1 GHz

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11b | Frequency | TX 2437MHz |
|------|---------|-----------|------------|

#### Antenna at Horizontal Polarization

| Emission<br>Frequency<br>(MHz) | Antenna<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Meter<br>Reading<br>(dBμV) | Emission<br>Level<br>(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 86.26                          | 10.16                       | 2.09                  | 15.23                      | 27.48                         | 40.00              | 12.52          | Peak     |
| 234.67                         | 11.83                       | 3.68                  | 26.74                      | 42.25                         | 46.00              | 3.75           | Peak     |
| 359.80                         | 15.13                       | 5.09                  | 12.34                      | 32.56                         | 46.00              | 13.44          | Peak     |
| 497.54                         | 17.11                       | 6.41                  | 7.21                       | 30.73                         | 46.00              | 15.27          | Peak     |

#### Antenna at Vertical Polarization

| Emission<br>Frequency<br>(MHz) | Antenna<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Meter<br>Reading<br>(dBμV) | Emission<br>Level<br>(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 89.17                          | 10.55                       | 2.13                  | 15.53                      | 28.21                         | 43.50              | 15.29          | Peak     |
| 235.64                         | 11.88                       | 3.69                  | 21.61                      | 37.18                         | 46.00              | 8.82           | Peak     |
| 399.57                         | 15.92                       | 5.54                  | 8.45                       | 29.91                         | 46.00              | 16.09          | Peak     |
| 484.93                         | 16.98                       | 6.31                  | 8.66                       | 31.95                         | 46.00              | 14.05          | Peak     |

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11g | Frequency | TX 2437MHz |
|------|---------|-----------|------------|

**Antenna at Horizontal Polarization**

| Emission<br>Frequency<br>(MHz) | Antenna<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Meter<br>Reading<br>(dBμV) | Emission<br>Level<br>(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 86.26                          | 10.16                       | 2.09                  | 15.22                      | 27.47                         | 40.00              | 12.53          | Peak     |
| 234.67                         | 11.83                       | 3.68                  | 28.83                      | 44.34                         | 46.00              | 1.66           | Peak     |
| 359.80                         | 15.13                       | 5.09                  | 12.13                      | 32.35                         | 46.00              | 13.65          | Peak     |
| 497.54                         | 17.11                       | 6.41                  | 6.30                       | 29.82                         | 46.00              | 16.18          | Peak     |

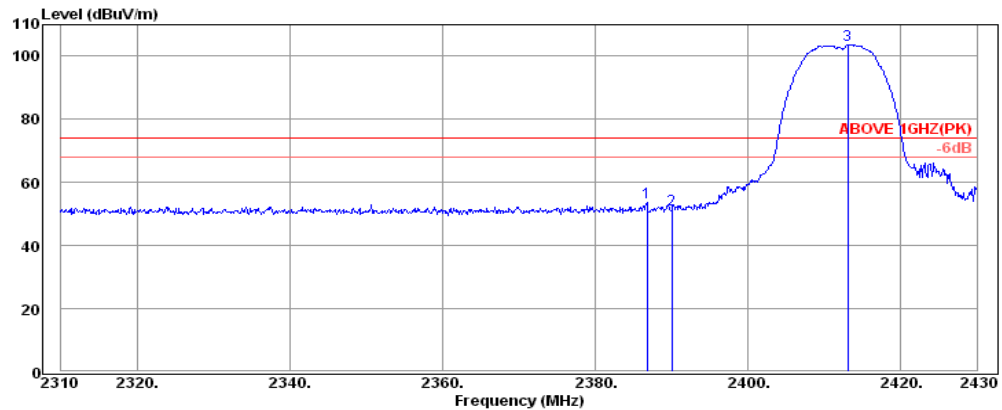
**Antenna at Vertical Polarization**

| Emission<br>Frequency<br>(MHz) | Antenna<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Meter<br>Reading<br>(dBμV) | Emission<br>Level<br>(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 89.17                          | 10.55                       | 2.13                  | 16.59                      | 29.27                         | 43.50              | 14.23          | Peak     |
| 235.64                         | 11.88                       | 3.69                  | 23.61                      | 39.18                         | 46.00              | 6.82           | Peak     |
| 399.57                         | 15.92                       | 5.54                  | 8.34                       | 29.80                         | 46.00              | 16.20          | Peak     |
| 484.93                         | 16.98                       | 6.31                  | 8.75                       | 32.04                         | 46.00              | 13.96          | Peak     |

## 6.5.2. Frequency Above 1 GHz to 10<sup>th</sup> harmonics

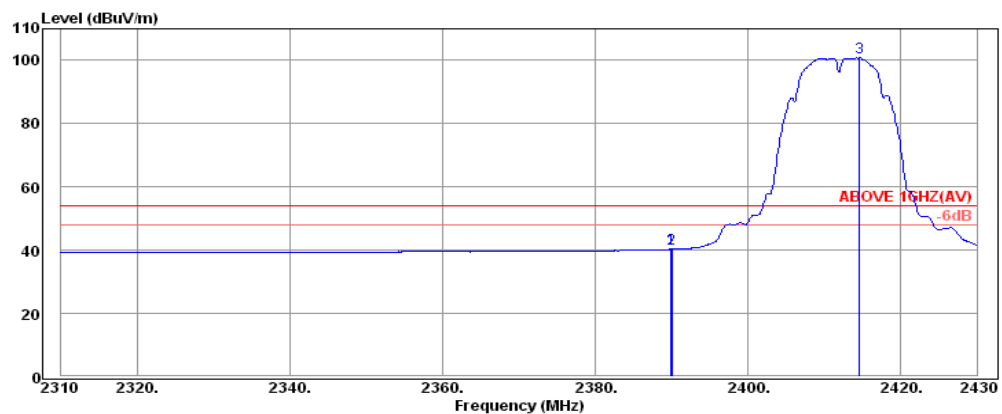
### Band Edge:

| Mode | 802.11b | Frequency | TX 2412MHz |
|------|---------|-----------|------------|
|------|---------|-----------|------------|



### Antenna at Horizontal Polarization

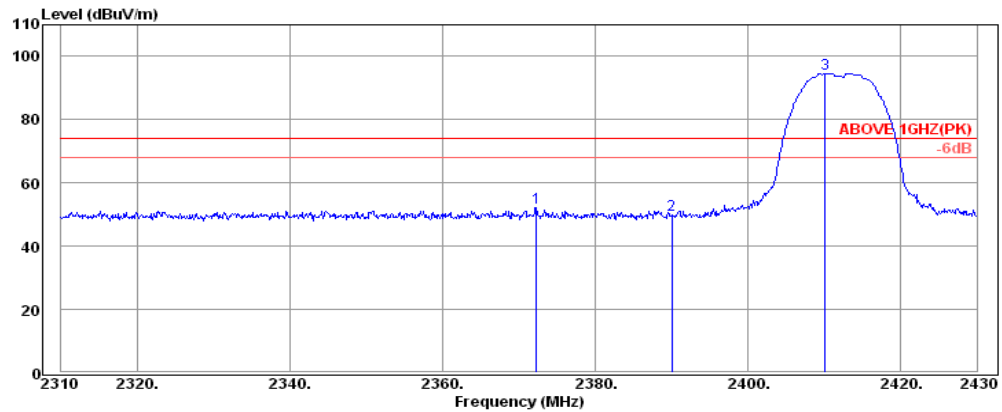
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2386.80                  | 32.16                 | 6.07            | 15.30                | 53.53                   | 74.00           | 20.47       | Peak     |
| 2390.04                  | 32.16                 | 6.08            | 13.30                | 51.54                   | 74.00           | 22.46       | Peak     |
| 2413.08                  | 32.18                 | 6.11            | 65.23                | 103.52                  | ---             | ---         | Peak     |



### Antenna at Horizontal Polarization

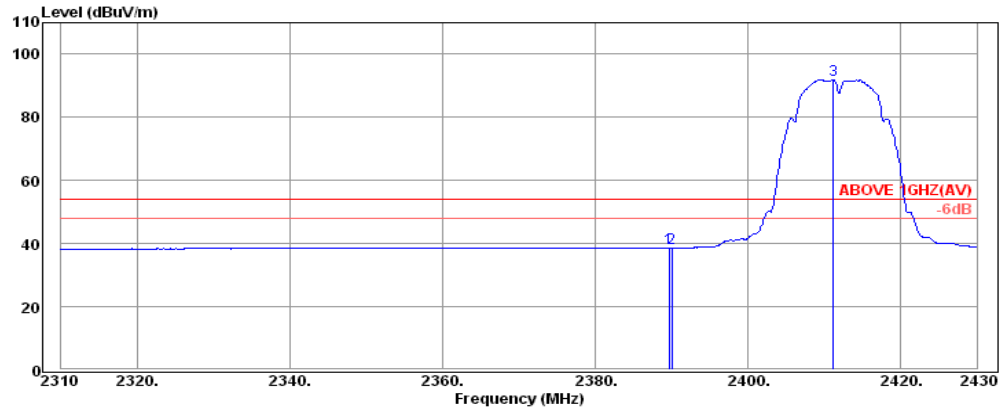
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2389.92                  | 32.16                 | 6.08            | 2.07                 | 40.31                   | 54.00           | 13.69       | Average  |
| 2390.04                  | 32.16                 | 6.08            | 2.07                 | 40.31                   | 54.00           | 13.69       | Average  |
| 2414.64                  | 32.18                 | 6.11            | 62.54                | 100.83                  | ---             | ---         | Average  |

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11b | Frequency | TX 2412MHz |
|------|---------|-----------|------------|



### Antenna at Vertical Polarization

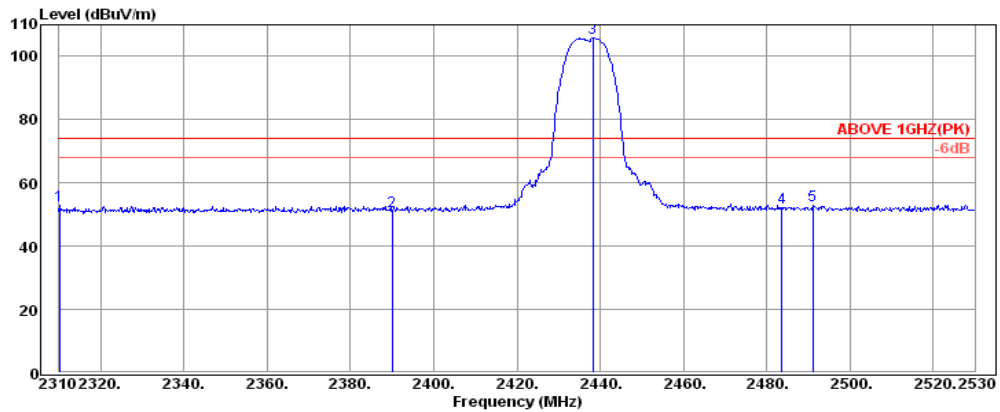
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | imits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|----------------|-------------|----------|
| 2372.28                  | 32.13                 | 6.06            | 14.13                | 52.32                   | 74.00          | 21.68       | Peak     |
| 2390.04                  | 32.16                 | 6.08            | 11.59                | 49.83                   | 74.00          | 24.17       | Peak     |
| 2410.08                  | 32.18                 | 6.10            | 56.27                | 94.55                   | ---            | ---         | Peak     |



### Antenna at Vertical Polarization

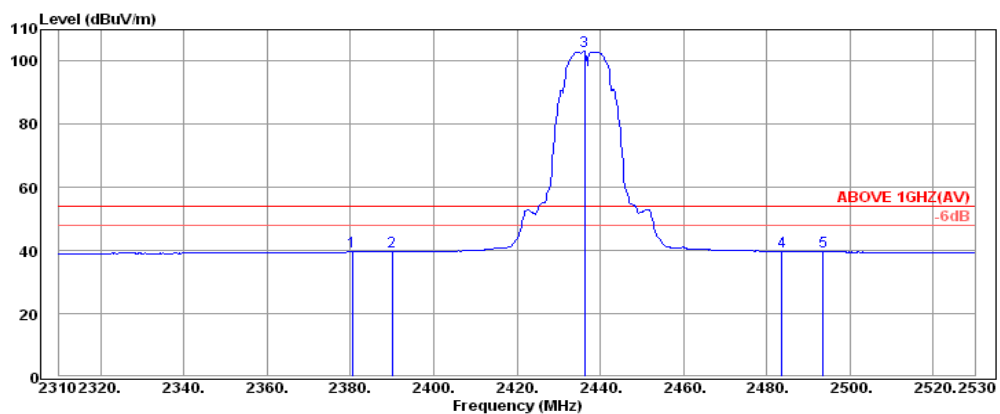
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2389.68                  | 32.16                 | 6.08            | 0.43                 | 38.67                   | 54.00           | 15.33       | Average  |
| 2390.04                  | 32.16                 | 6.08            | 0.46                 | 38.70                   | 54.00           | 15.30       | Average  |
| 2411.16                  | 32.18                 | 6.11            | 53.62                | 91.91                   | ---             | ---         | Average  |

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11b | Frequency | TX 2437MHz |
|------|---------|-----------|------------|



### Antenna at Horizontal Polarization

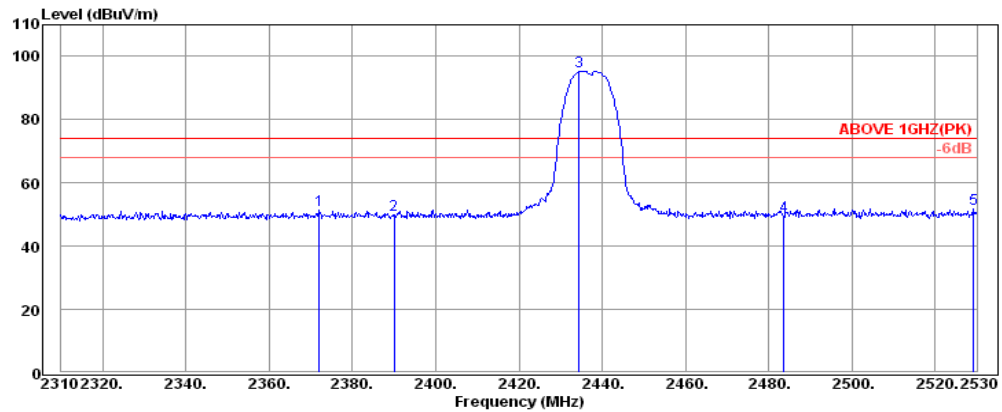
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2310.22                  | 32.03                 | 5.98            | 14.73                | 52.74                   | 74.00           | 21.26       | Peak     |
| 2390.08                  | 32.16                 | 6.08            | 12.94                | 51.18                   | 74.00           | 22.82       | Peak     |
| 2438.26                  | 32.23                 | 6.13            | 67.44                | 105.80                  | ---             | ---         | Peak     |
| 2483.58                  | 32.28                 | 6.19            | 13.51                | 51.98                   | 74.00           | 22.02       | Peak     |
| 2491.06                  | 32.30                 | 6.20            | 14.51                | 53.01                   | 74.00           | 20.99       | Peak     |



### Antenna at Horizontal Polarization

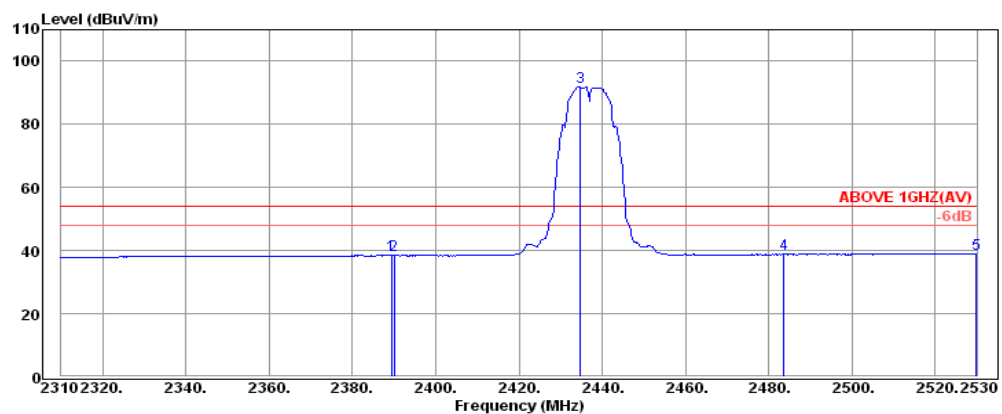
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2380.40                  | 32.13                 | 6.07            | 1.49                 | 39.69                   | 54.00           | 14.31       | Average  |
| 2390.08                  | 32.16                 | 6.08            | 1.34                 | 39.58                   | 54.00           | 14.42       | Average  |
| 2436.28                  | 32.20                 | 6.13            | 64.68                | 103.01                  | ---             | ---         | Average  |
| 2483.58                  | 32.28                 | 6.19            | 1.29                 | 39.76                   | 54.00           | 14.24       | Average  |
| 2493.48                  | 32.30                 | 6.20            | 1.28                 | 39.78                   | 54.00           | 14.22       | Average  |

| Mode | 802.11b | Frequency | TX 2437MHz |
|------|---------|-----------|------------|
|------|---------|-----------|------------|



### Antenna at Vertical Polarization

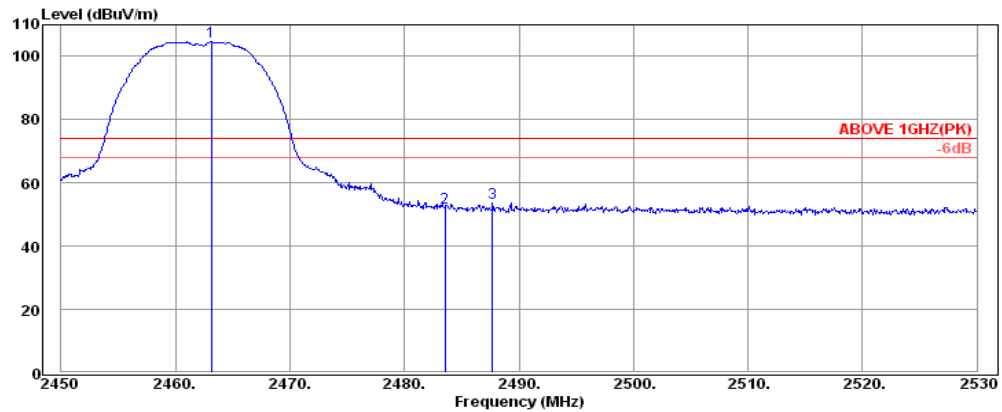
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2372.04                  | 32.13                 | 6.06            | 13.06                | 51.25                   | 74.00           | 22.75       | Peak     |
| 2390.08                  | 32.16                 | 6.08            | 11.80                | 50.04                   | 74.00           | 23.96       | Peak     |
| 2434.52                  | 32.20                 | 6.13            | 57.00                | 95.33                   | ---             | ---         | Peak     |
| 2483.58                  | 32.28                 | 6.19            | 11.12                | 49.59                   | 74.00           | 24.41       | Peak     |
| 2529.12                  | 32.34                 | 6.25            | 13.11                | 51.70                   | 74.00           | 22.30       | Peak     |



### Antenna at Vertical Polarization

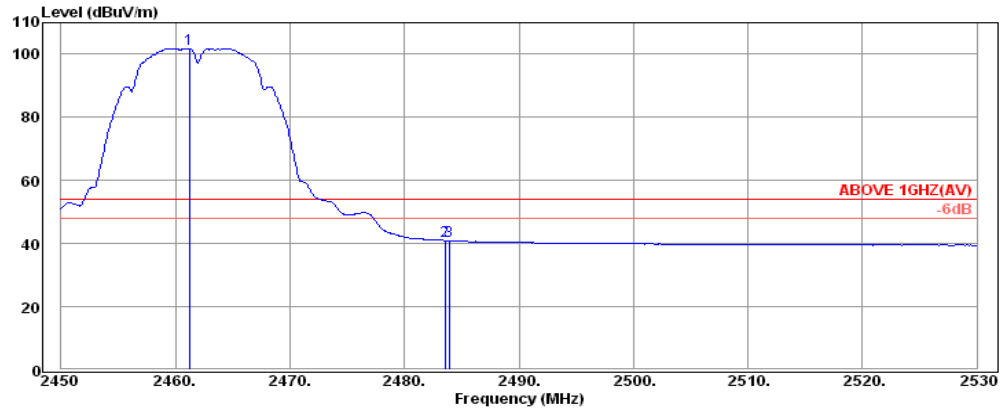
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2389.42                  | 32.16                 | 6.08            | 0.20                 | 38.44                   | 54.00           | 15.56       | Average  |
| 2390.08                  | 32.16                 | 6.08            | 0.15                 | 38.39                   | 54.00           | 15.61       | Average  |
| 2434.74                  | 32.20                 | 6.13            | 53.51                | 91.84                   | ---             | ---         | Average  |
| 2483.58                  | 32.28                 | 6.19            | 0.29                 | 38.76                   | 54.00           | 15.24       | Average  |
| 2529.78                  | 32.34                 | 6.25            | 0.32                 | 38.91                   | 54.00           | 15.09       | Average  |

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11b | Frequency | TX 2462MHz |
|------|---------|-----------|------------|



#### Antenna at Horizontal Polarization

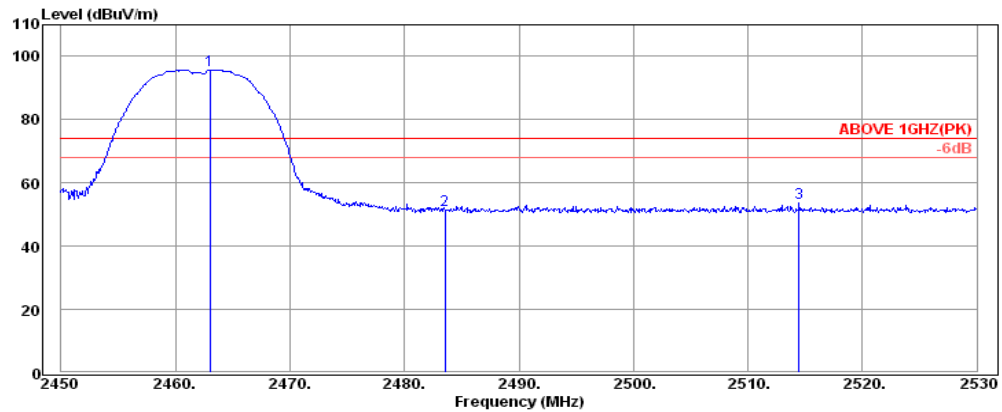
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2463.12                  | 32.25                 | 6.16            | 66.13                | 104.54                  | ---             | ---         | Peak     |
| 2483.52                  | 32.28                 | 6.19            | 13.78                | 52.25                   | 74.00           | 21.75       | Peak     |
| 2487.68                  | 32.30                 | 6.19            | 15.25                | 53.74                   | 74.00           | 20.26       | Peak     |



#### Antenna at Horizontal Polarization

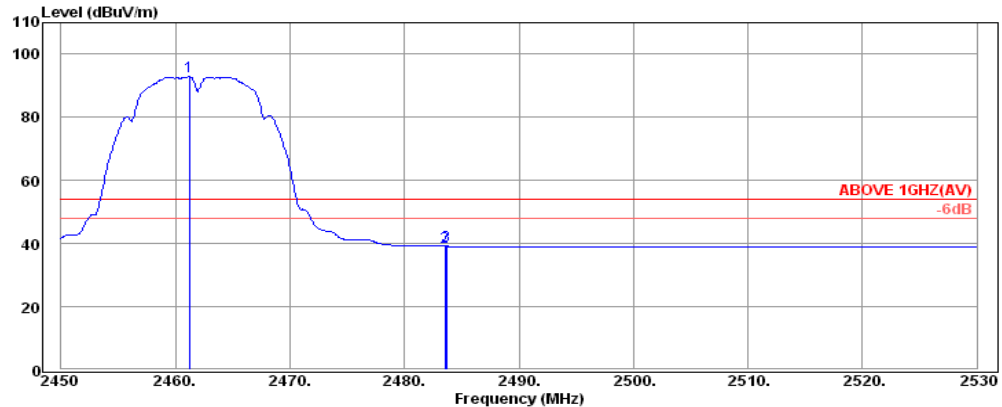
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2461.20                  | 32.25                 | 6.16            | 63.45                | 101.86                  | ---             | ---         | Average  |
| 2483.52                  | 32.28                 | 6.19            | 2.52                 | 40.99                   | 54.00           | 13.01       | Average  |
| 2483.92                  | 32.28                 | 6.19            | 2.43                 | 40.90                   | 54.00           | 13.10       | Average  |

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11b | Frequency | TX 2462MHz |
|------|---------|-----------|------------|



### Antenna at Vertical Polarization

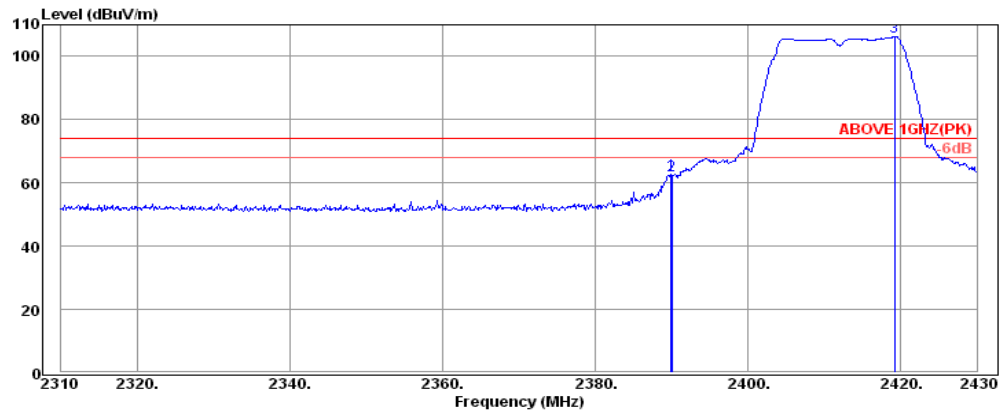
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2463.04                  | 32.25                 | 6.16            | 57.36                | 95.77                   | ---             | ---         | Peak     |
| 2483.52                  | 32.28                 | 6.19            | 12.86                | 51.33                   | 74.00           | 22.67       | Peak     |
| 2514.48                  | 32.32                 | 6.22            | 15.00                | 53.54                   | 74.00           | 20.46       | Peak     |



### Antenna at Vertical Polarization

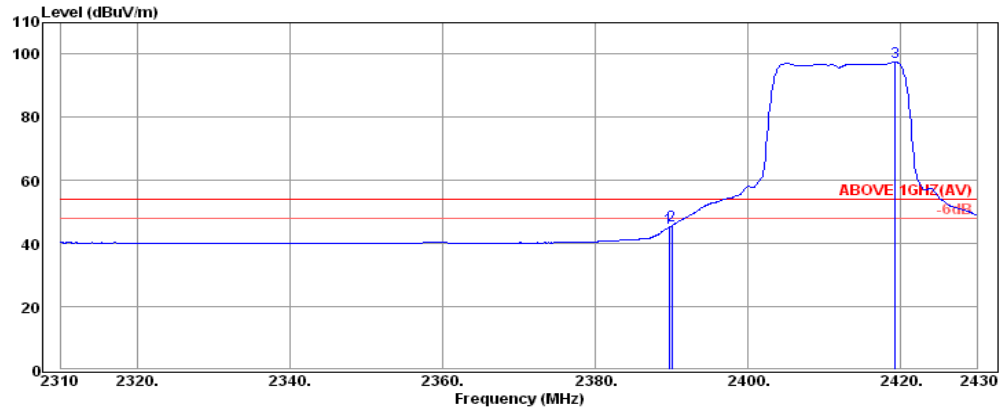
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2461.20                  | 32.25                 | 6.16            | 54.43                | 92.84                   | ---             | ---         | Average  |
| 2483.52                  | 32.28                 | 6.19            | 0.65                 | 39.12                   | 54.00           | 14.88       | Average  |
| 2483.68                  | 32.28                 | 6.19            | 0.67                 | 39.14                   | 54.00           | 14.86       | Average  |

| Mode | 802.11g | Frequency | TX 2412MHz |
|------|---------|-----------|------------|
|------|---------|-----------|------------|



### Antenna at Horizontal Polarization

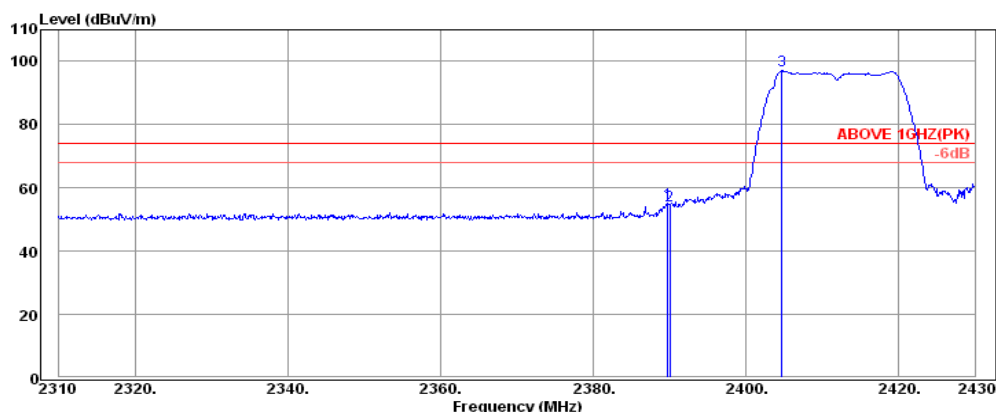
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2389.92                  | 32.16                 | 6.08            | 24.41                | 62.65                   | 74.00           | 11.35       | Peak     |
| 2390.04                  | 32.16                 | 6.08            | 24.20                | 62.44                   | 74.00           | 11.56       | Peak     |
| 2419.20                  | 32.18                 | 6.12            | 67.99                | 106.29                  | ---             | ---         | Peak     |



### Antenna at Horizontal Polarization

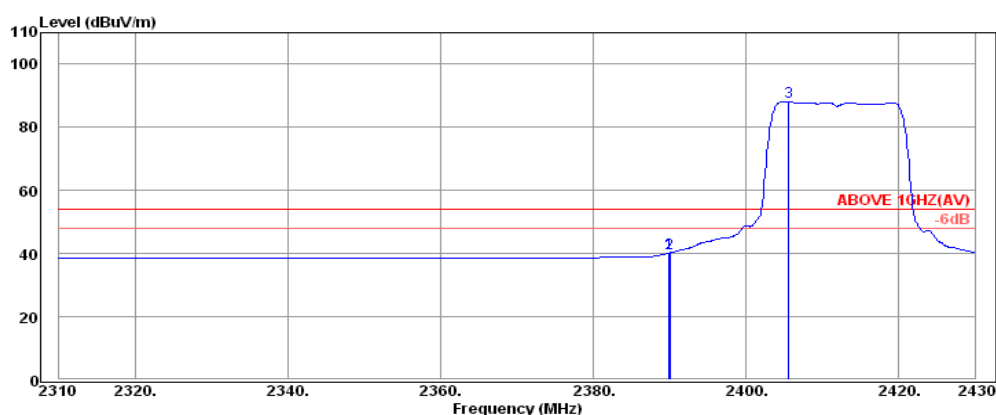
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2389.68                  | 32.16                 | 6.08            | 6.85                 | 45.09                   | 54.00           | 8.91        | Average  |
| 2390.04                  | 32.16                 | 6.08            | 7.50                 | 45.74                   | 54.00           | 8.26        | Average  |
| 2419.32                  | 32.18                 | 6.12            | 59.21                | 97.51                   | ---             | ---         | Average  |

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11g | Frequency | TX 2412MHz |
|------|---------|-----------|------------|



### Antenna at Vertical Polarization

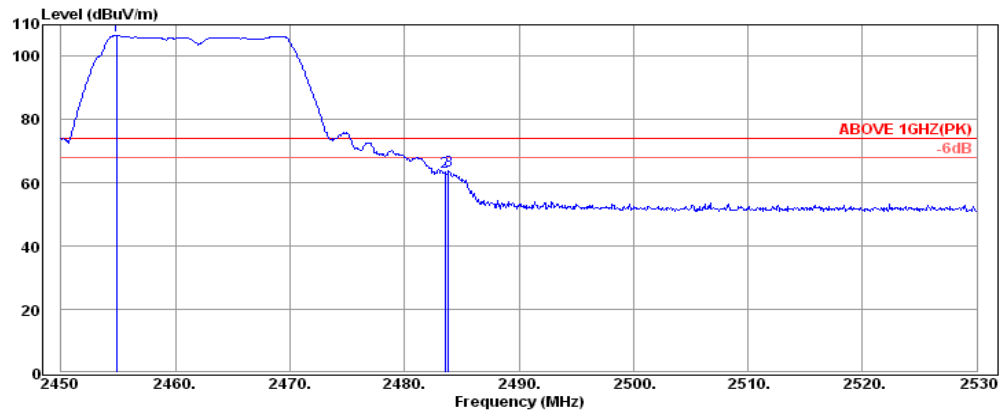
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2389.80                  | 32.16                 | 6.08            | 16.86                | 55.10                   | 74.00           | 18.90       | Peak     |
| 2390.04                  | 32.16                 | 6.08            | 16.27                | 54.51                   | 74.00           | 19.49       | Peak     |
| 2404.68                  | 32.18                 | 6.10            | 58.71                | 96.99                   | ---             | ---         | Peak     |



### Antenna at Vertical Polarization

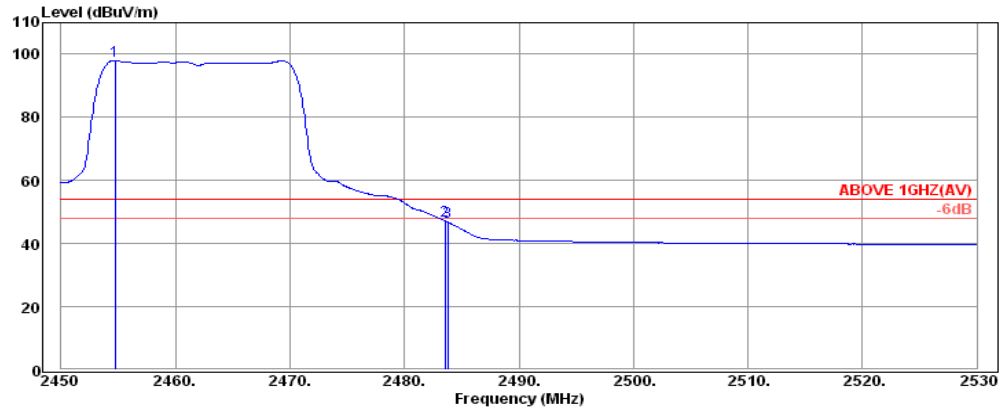
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2389.92                  | 32.16                 | 6.08            | 1.93                 | 40.17                   | 54.00           | 13.83       | Average  |
| 2390.04                  | 32.16                 | 6.08            | 2.01                 | 40.25                   | 54.00           | 13.75       | Average  |
| 2405.64                  | 32.18                 | 6.10            | 49.84                | 88.12                   | ---             | ---         | Average  |

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11g | Frequency | TX 2462MHz |
|------|---------|-----------|------------|



#### Antenna at Horizontal Polarization

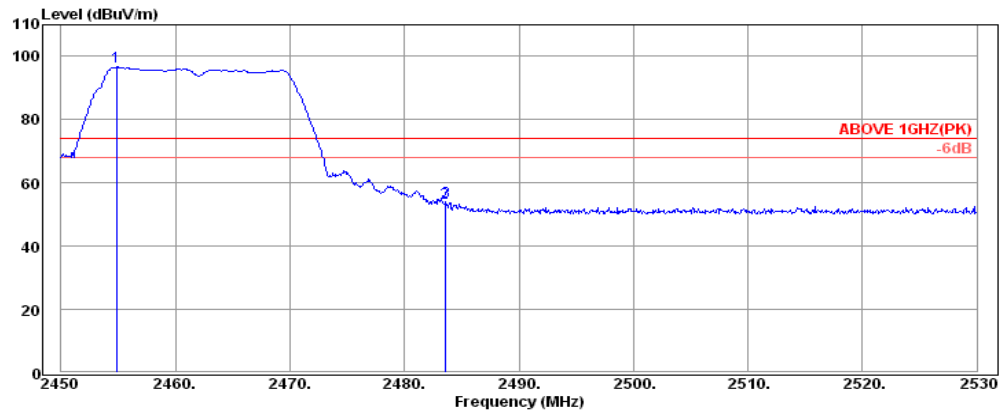
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2454.88                  | 32.25                 | 6.15            | 68.22                | 106.62                  | ---             | ---         | Peak     |
| 2483.52                  | 32.28                 | 6.19            | 24.97                | 63.44                   | 74.00           | 10.56       | Peak     |
| 2483.84                  | 32.28                 | 6.19            | 25.30                | 63.77                   | 74.00           | 10.23       | Peak     |



#### Antenna at Horizontal Polarization

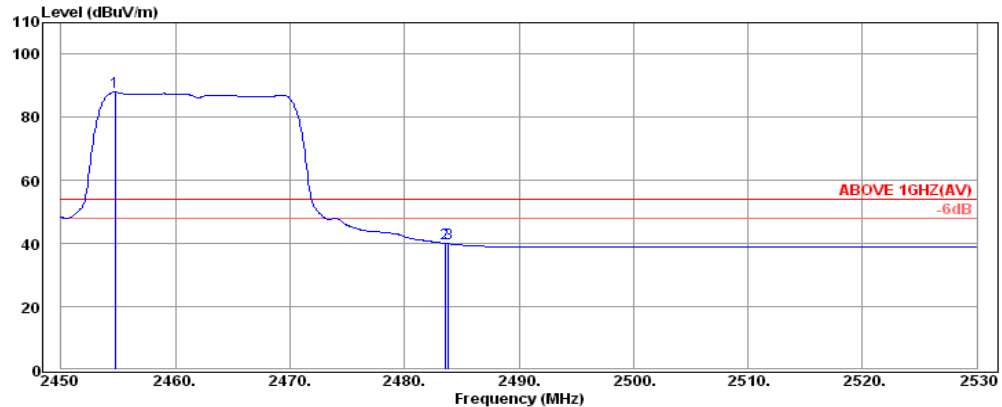
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2454.72                  | 32.25                 | 6.15            | 59.60                | 98.00                   | ---             | ---         | Average  |
| 2483.52                  | 32.28                 | 6.19            | 8.68                 | 47.15                   | 54.00           | 6.85        | Average  |
| 2483.76                  | 32.28                 | 6.19            | 8.30                 | 46.77                   | 54.00           | 7.23        | Average  |

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11g | Frequency | TX 2462MHz |
|------|---------|-----------|------------|



### Antenna at Vertical Polarization

| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2454.88                  | 32.25                 | 6.15            | 58.20                | 96.60                   | ---             | ---         | Peak     |
| 2483.52                  | 32.28                 | 6.19            | 15.21                | 53.68                   | 74.00           | 20.32       | Peak     |
| 2483.60                  | 32.28                 | 6.19            | 15.73                | 54.20                   | 74.00           | 19.80       | Peak     |



### Antenna at Vertical Polarization

| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2454.72                  | 32.25                 | 6.15            | 49.56                | 87.96                   | ---             | ---         | Average  |
| 2483.52                  | 32.28                 | 6.19            | 1.60                 | 40.07                   | 54.00           | 13.93       | Average  |
| 2483.84                  | 32.28                 | 6.19            | 1.45                 | 39.92                   | 54.00           | 14.08       | Average  |

**6.5.3. Emissions outside the frequency band:**

The emissions (up to 25GHz) not reported for there is no emission be found.

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11b | Frequency | TX 2437MHz |
|------|---------|-----------|------------|

**Antenna at Horizontal Polarization**

| Emission<br>Frequency<br>(MHz) | Antenna<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Meter<br>Reading<br>(dBμV) | Emission<br>Level<br>(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 4875.00                        | 34.25                       | 9.09                  | -0.39                      | 42.95                         | 54.00              | 11.05          | Peak     |
| 7310.00                        | 35.80                       | 11.80                 | -1.52                      | 46.08                         | 54.00              | 7.92           | Peak     |

**Antenna at Vertical Polarization**

| Emission<br>Frequency<br>(MHz) | Antenna<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Meter<br>Reading<br>(dBμV) | Emission<br>Level<br>(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 4875.00                        | 34.25                       | 9.09                  | 3.65                       | 46.99                         | 54.00              | 7.01           | Peak     |
| 7310.00                        | 35.80                       | 11.80                 | -2.07                      | 45.53                         | 54.00              | 8.47           | Peak     |

|      |         |           |            |
|------|---------|-----------|------------|
| Mode | 802.11g | Frequency | TX 2437MHz |
|------|---------|-----------|------------|

**Antenna at Horizontal Polarization**

| Emission<br>Frequency<br>(MHz) | Antenna<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Meter<br>Reading<br>(dBμV) | Emission<br>Level<br>(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 4875.00                        | 34.25                       | 9.09                  | 0.14                       | 43.48                         | 54.00              | 10.52          | Peak     |
| 7310.00                        | 35.80                       | 11.80                 | -2.18                      | 45.42                         | 54.00              | 8.58           | Peak     |

**Antenna at Vertical Polarization**

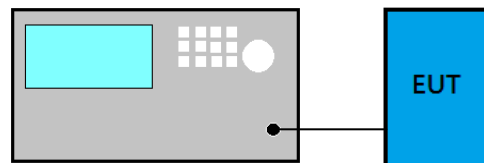
| Emission<br>Frequency<br>(MHz) | Antenna<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Meter<br>Reading<br>(dBμV) | Emission<br>Level<br>(dBμV/m) | Limits<br>(dBμV/m) | Margin<br>(dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 4875.00                        | 34.25                       | 9.09                  | -0.69                      | 42.65                         | 54.00              | 11.35          | Peak     |
| 7310.00                        | 35.80                       | 11.80                 | -1.78                      | 45.82                         | 54.00              | 8.18           | Peak     |

**6.5.4. Emissions in Non-restricted Frequency Bands**

Pursuant to KDB 558074 D01 v03r05 that emission levels below the 15.209 Section 8.9 table 4 general radiated emissions limits is not required.

## 7. 6dB BANDWIDTH MEASUREMENT

### 7.1. Block Diagram of Test Setup



### 7.2. Specification Limits

The minimum 6dB bandwidth shall be at least 500kHz.

### 7.3. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v03r05:

■ Option 2

- (1) Set RBW = 100 kHz.
- (2) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- (3) Detector = Peak.
- (4) Trace mode = max hold.
- (5) Sweep = auto couple.
- (6) Allow the trace to stabilize.
- (7) Setting channel bandwidth function x dB to -6 dB to record the final bandwidth.

### 7.4. Test Results

Please refer to Appendix A

## 8. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

### 8.1. Block Diagram of Test Setup



### 8.2. Specification Limits

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5MHz is : 1Watt. (30dBm)

### 8.3. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v03r05:

☒ **PKPM1 Peak power meter method:**

EUT is connected to power sensor and record the maximum output power.

☐ **Method AVGPM (Measurement using an RF average power meter):**

EUT is connected to power sensor and record the maximum average output power and duty cycle factor is added when duty cycle presented in section 3.5 is < 98%.

☐ **Method AVGSA-2 (Spectrum channel power)**

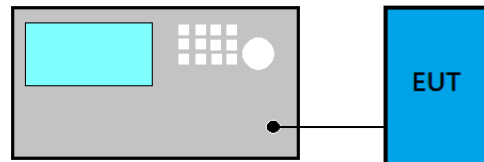
- (1) Set span to at least 1.5 times the OBW
- (2) Set RBW = 1 -5% of OBW
- (3) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- (4) Detector = RMS.
- (5) Trace mode = trace average at least 100 traces
- (6) Sweep = auto couple.
- (7) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges.
- (8) Duty cycle factor is added when duty cycle presented in section 3.5 is < 98%.

### 8.4. Test Results

Please refer to Appendix A

## 9. EMISSION LIMITATIONS MEASUREMENT

### 9.1. Block Diagram of Test Setup



### 9.2. Specification Limits

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) Section 8.9 table 4 is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a) Section 8.10 table 6, must also comply with the radiated emission limits specified in Section 15.209(a) Section 8.9 table 4 (See Section 15.205(c)).

### 9.3. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v03r05:

#### ■ Reference Level

- (1) Set analyzer center frequency to DTS channel center frequency.
- (2) Set the span to 1.5 times the DTS bandwidth.
- (3) Set the RBW to: 100 kHz.
- (4) Set the VBW  $\geq 3 \times$  RBW.
- (5) Detector = peak.
- (6) Sweep time = auto couple.
- (7) Trace mode = max hold.
- (8) Allow trace to fully stabilize to find the max PSD as reference level.

#### ■ Emission Level Measurement

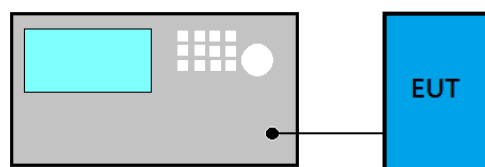
- (1) Set analyzer center frequency to DTS channel center frequency.
- (2) Set the span to 1.5 times the DTS bandwidth.
- (3) Set the RBW to: 100 kHz.
- (4) Set the VBW  $\geq 3 \times$  RBW.
- (5) Detector = peak.
- (6) Sweep time = auto couple.
- (7) Trace mode = max hold.
- (8) Allow trace to fully stabilize to find the max level.

### 9.4. Test Results

Please refer to Appendix A

## 10. POWER SPECTRAL DENSITY

### 10.1. Block Diagram of Test Setup



### 10.2. Specification Limits

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band.

### 10.3. Test Procedure

Following measurement procedure is reference to KDB 558074 D01 DTS Meas Guidance v03r05:

#### ☒ Method PKPSD (peak PSD)

- (1) Set analyzer center frequency to DTS channel center frequency.
- (2) Set the span to 1.5 times the DTS bandwidth.
- (3) Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- (4) Set the VBW  $\geq 3 \times \text{RBW}$ .
- (5) Detector = peak.
- (6) Sweep time = auto couple.
- (7) Trace mode = max hold.
- (8) Allow trace to fully stabilize.
- (9) Use the peak marker function to determine the maximum amplitude level.
- (10) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

#### ☐ Method AVGPSD-2

- (1) Using peak PSD procedure step 1 to step 4.
- (2) Detector = RMS detector
- (3) Sweep time = auto couple
- (4) Trace mode = trace averaging over a minimum of 100 traces
- (5) Use the peak marker function to determine the maximum amplitude level.
- (6) Duty cycle factor is added when duty cycle presented in section 3.5  $< 98\%$ .
- (7) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### 10.4. Test Results

Please refer to Appendix A

## **11.DEVIATION TO TEST SPECIFICATIONS**

**【NONE】**



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# APPENDIX A

## TEST PLOTS

(Model: EB937)

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## A.1 6dB BANDWIDTH MEASUREMENT

|            |            |              |                      |
|------------|------------|--------------|----------------------|
| Test Date  | 2016/09/21 | Temp./Hum.   | 26°C/58%             |
| Cable Loss | ---        | Test Voltage | DC 12V (Via Battery) |

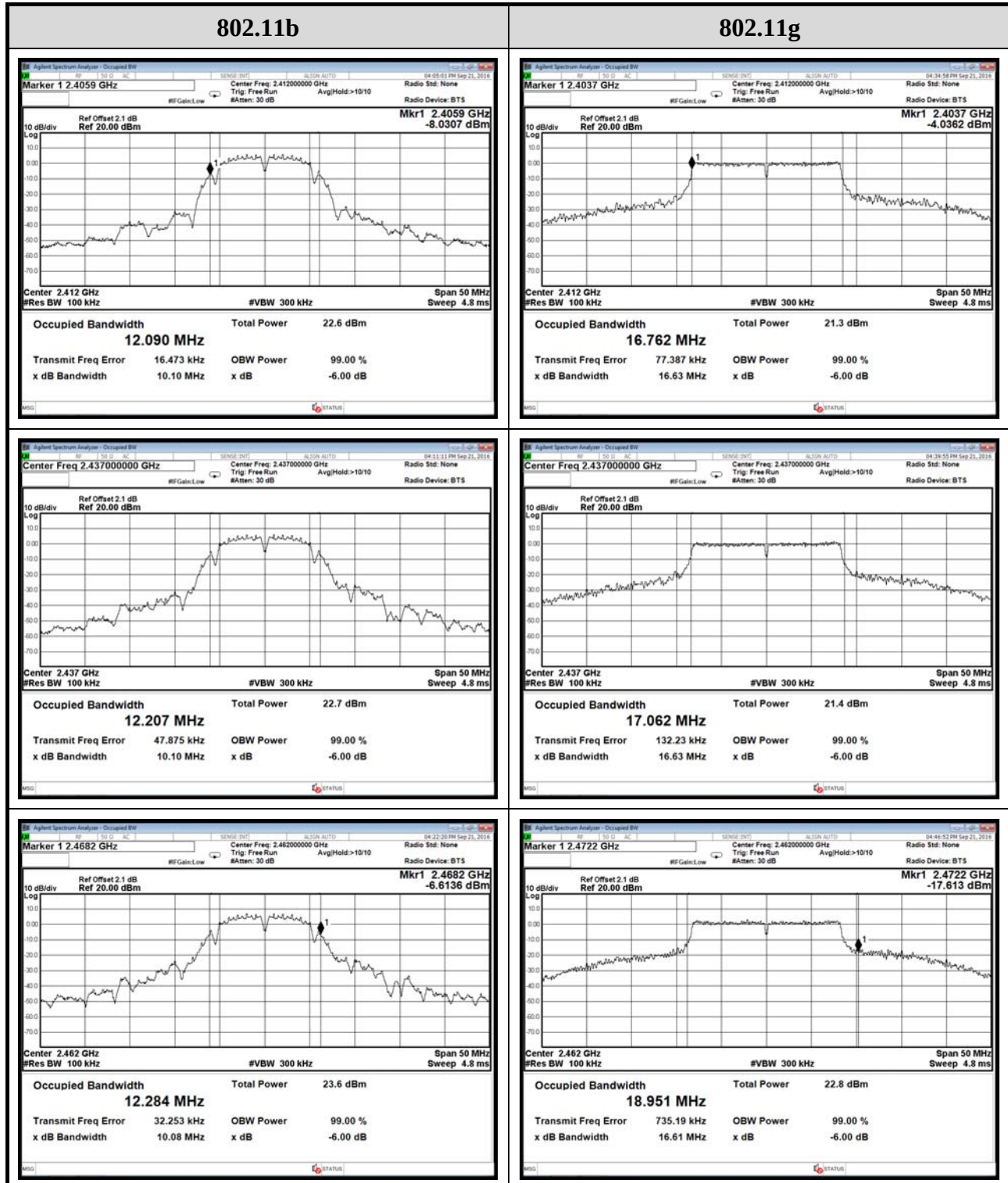
### A.1.1 6dB Bandwidth Result

| Modulation Type | Centre Frequency (MHz) | 6 dB Bandwidth (MHz) | Limit   |
|-----------------|------------------------|----------------------|---------|
| 802.11b         | 2412                   | <b>10.10</b>         | >500kHz |
|                 | 2437                   | <b>10.10</b>         |         |
|                 | 2462                   | <b>10.08</b>         |         |
| 802.11g         | 2412                   | <b>16.63</b>         |         |
|                 | 2437                   | <b>16.63</b>         |         |
|                 | 2462                   | <b>16.61</b>         |         |

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## A.1.2 Measurement Plots



## A.2 MAXIMUM PEAK OUTPUT POWER MEASUREMENT

|            |            |              |                      |
|------------|------------|--------------|----------------------|
| Test Date  | 2016/09/21 | Temp./Hum.   | 26°C/58%             |
| Cable Loss | ---        | Test Voltage | DC 12V (Via Battery) |

### A.2.1 Peak Output Power

| Modulation Type | Centre Frequency (MHz) | Maximum Output Power |          | Limit        |
|-----------------|------------------------|----------------------|----------|--------------|
|                 |                        | (dBm)                | (W)      |              |
| 802.11b         | 2412                   | 18.15                | 0.065313 | < 30dBm (1W) |
|                 | 2417                   | 18.24                | 0.066681 |              |
|                 | 2437                   | 19.67                | 0.092683 |              |
|                 | 2457                   | 18.01                | 0.063241 |              |
|                 | 2462                   | 18.05                | 0.063826 |              |
| 802.11g         | 2412                   | 25.69                | 0.370681 |              |
|                 | 2437                   | 25.86                | 0.385478 |              |
|                 | 2462                   | 25.40                | 0.346737 |              |

Note: The results have been included cable loss.

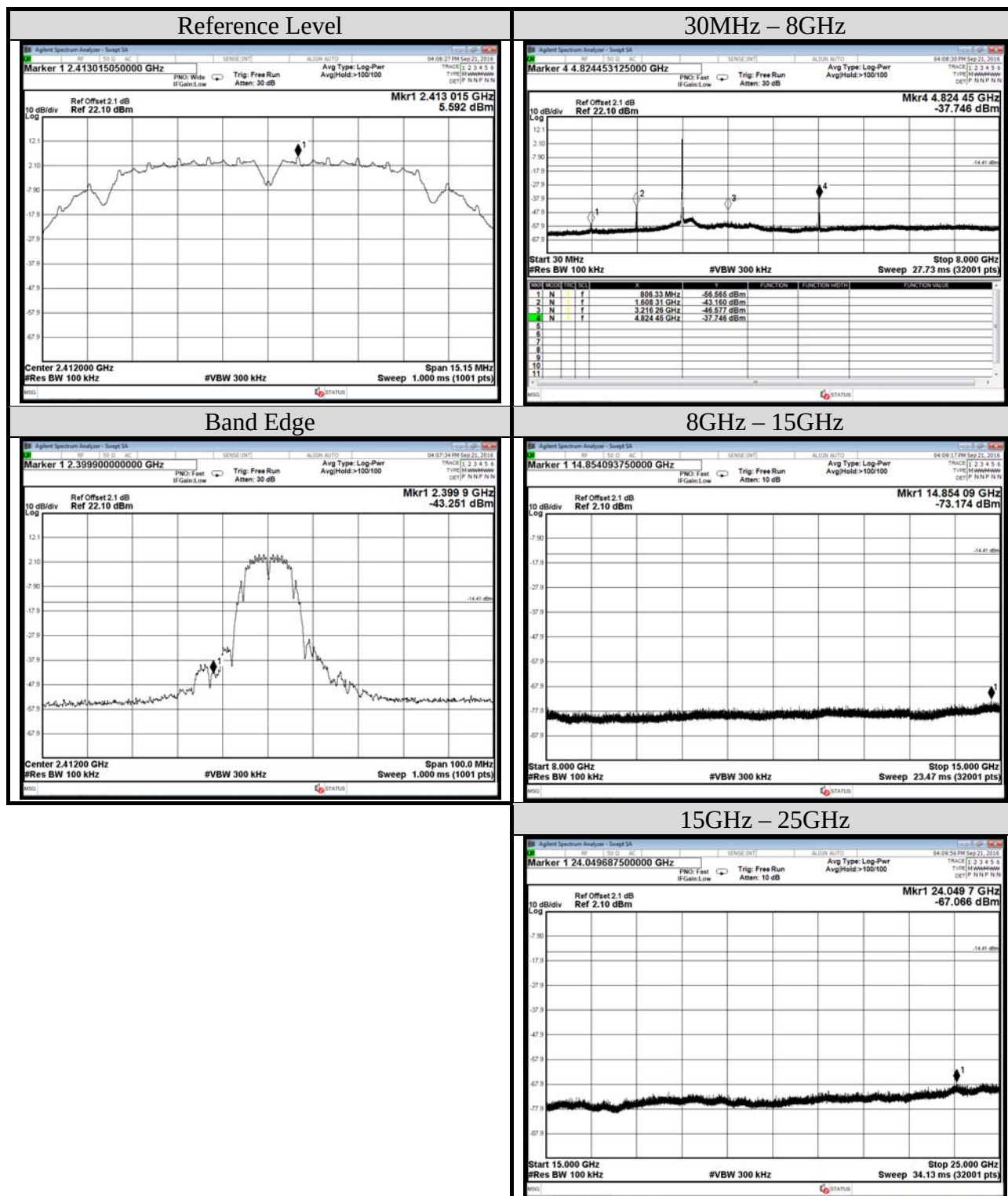
### A.2.2 Average Output Power (Reporting only)

| Modulation Type | Centre Frequency (MHz) | Maximum Output Power |          | Limit        |
|-----------------|------------------------|----------------------|----------|--------------|
|                 |                        | (dBm)                | (W)      |              |
| 802.11b         | 2412                   | 14.39                | 0.027479 | < 30dBm (1W) |
|                 | 2417                   | 14.47                | 0.027990 |              |
|                 | 2437                   | 15.88                | 0.038726 |              |
|                 | 2457                   | 14.22                | 0.026424 |              |
|                 | 2462                   | 14.29                | 0.026853 |              |
| 802.11g         | 2412                   | 14.74                | 0.029785 |              |
|                 | 2437                   | 15.26                | 0.033574 |              |
|                 | 2462                   | 14.65                | 0.029174 |              |

Note: The results have been included cable loss.

## A.3 EMISSION LIMITATIONS MEASUREMENT

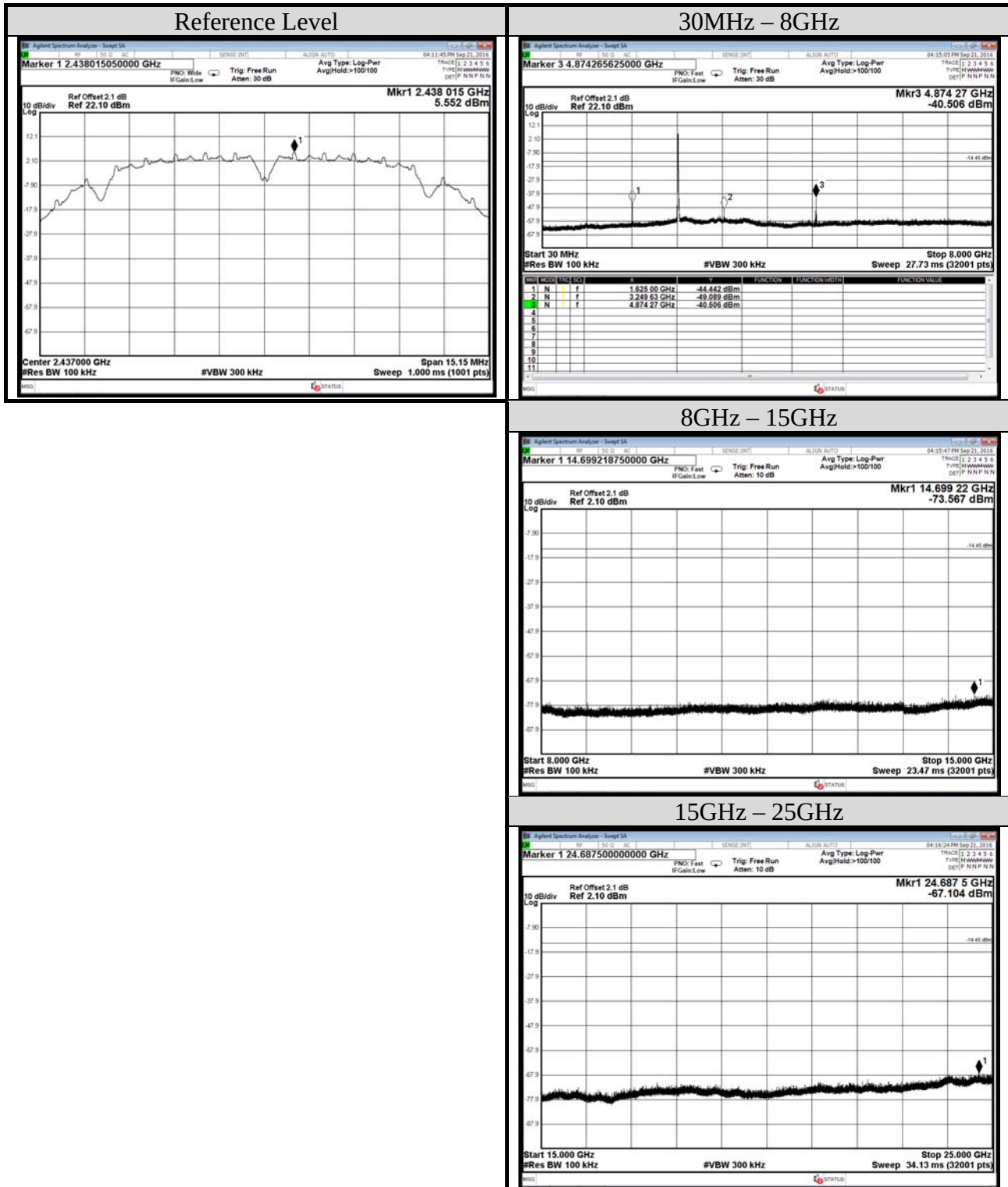
|                                                            |            |              |                      |
|------------------------------------------------------------|------------|--------------|----------------------|
| Test Date                                                  | 2016/07/11 | Temp./Hum.   | 26°C/58%             |
| Cable Loss                                                 | 2.1dB      | Test Voltage | DC 12V (Via Battery) |
| Mode                                                       | 802.11b    | Frequency    | TX 2412MHz           |
| Simultaneous Factor10 log(n) (Note: "n" is antenna number) | N/A        |              |                      |



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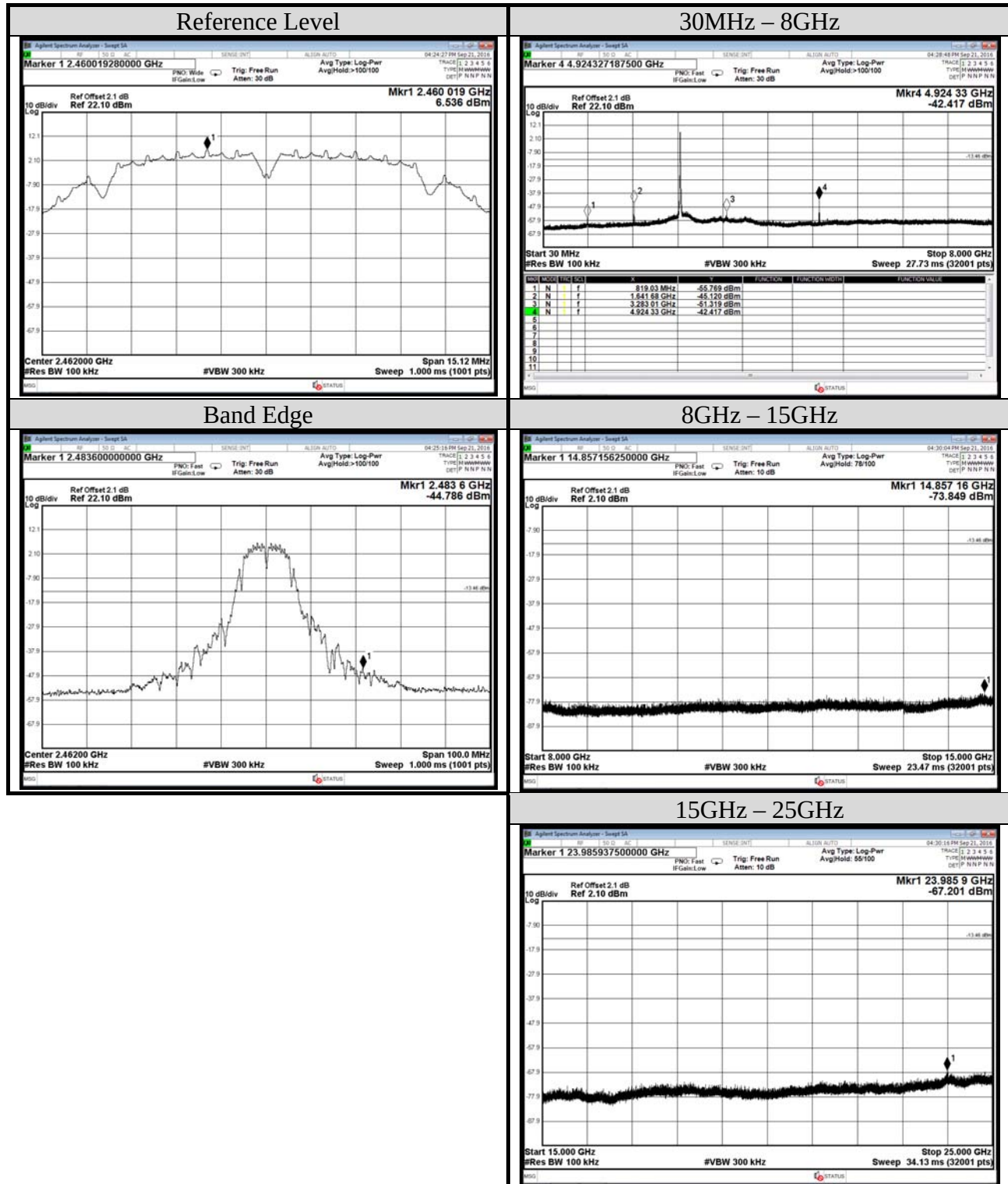
|                                                            |            |              |                      |
|------------------------------------------------------------|------------|--------------|----------------------|
| Test Date                                                  | 2016/07/11 | Temp./Hum.   | 26°C/58%             |
| Cable Loss                                                 | 2.1dB      | Test Voltage | DC 12V (Via Battery) |
| Mode                                                       | 802.11b    | Frequency    | TX 2437MHz           |
| Simultaneous Factor10 log(n) (Note: "n" is antenna number) | N/A        |              |                      |



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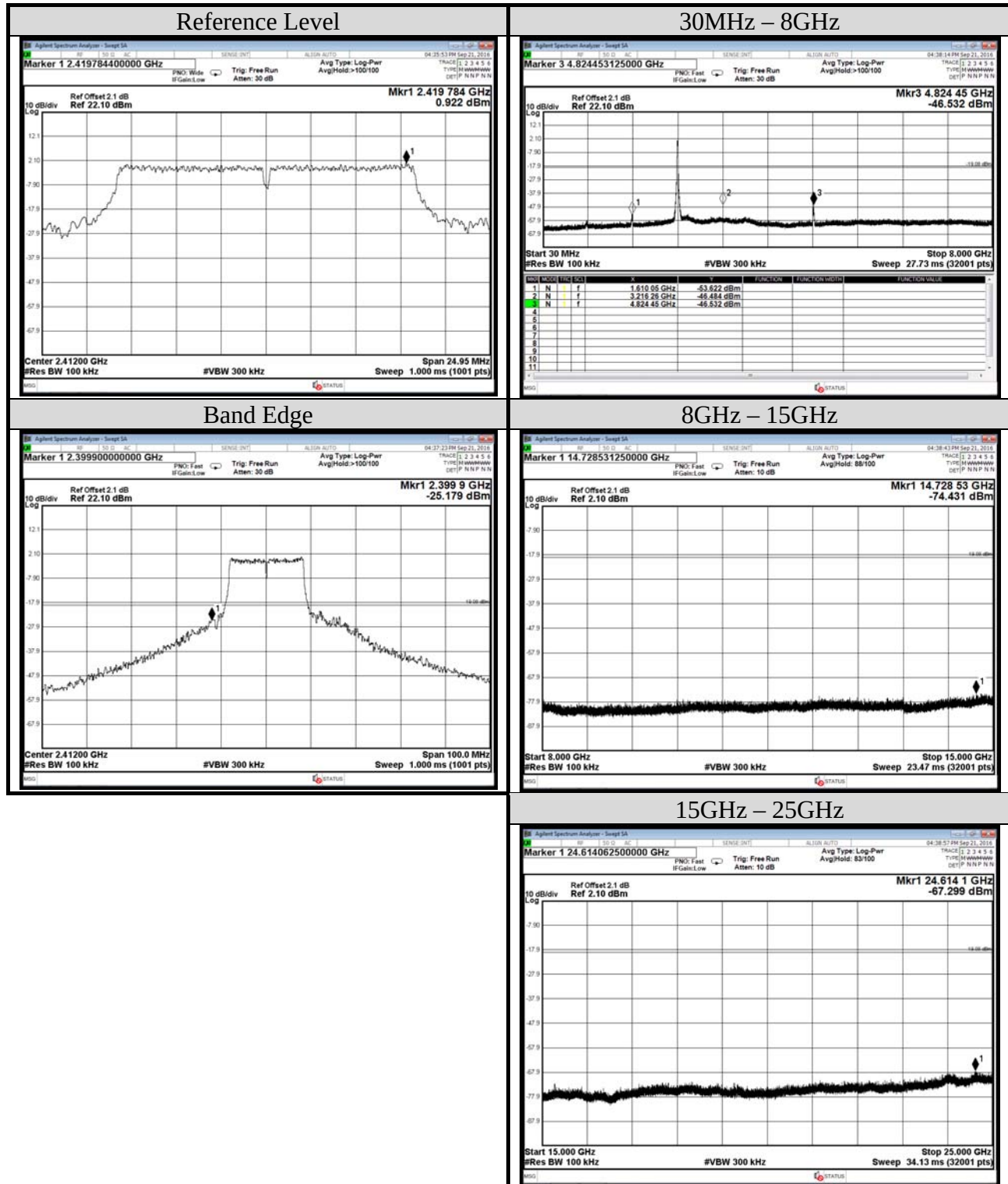
|                     |                                         |              |                      |
|---------------------|-----------------------------------------|--------------|----------------------|
| Test Date           | 2016/07/11                              | Temp./Hum.   | 26°C/58%             |
| Cable Loss          | 2.1dB                                   | Test Voltage | DC 12V (Via Battery) |
| Mode                | 802.11b                                 | Frequency    | TX 2462MHz           |
| Simultaneous Factor | 10 log(n) (Note: “n” is antenna number) |              | N/A                  |



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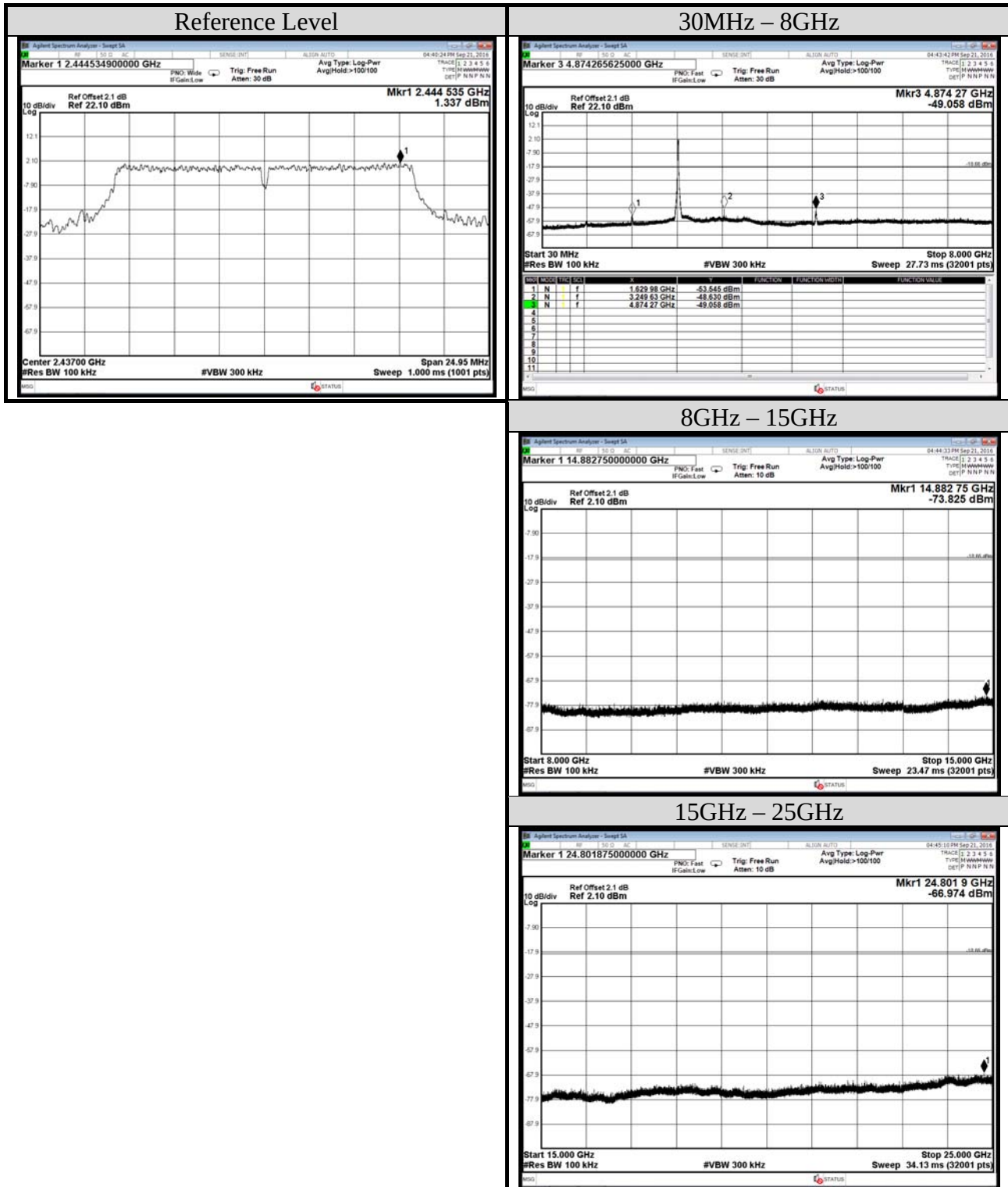
|                     |                                         |              |                      |
|---------------------|-----------------------------------------|--------------|----------------------|
| Test Date           | 2016/07/11                              | Temp./Hum.   | 26°C/58%             |
| Cable Loss          | 2.1dB                                   | Test Voltage | DC 12V (Via Battery) |
| Mode                | 802.11g                                 | Frequency    | TX 2412MHz           |
| Simultaneous Factor | 10 log(n) (Note: "n" is antenna number) |              | N/A                  |



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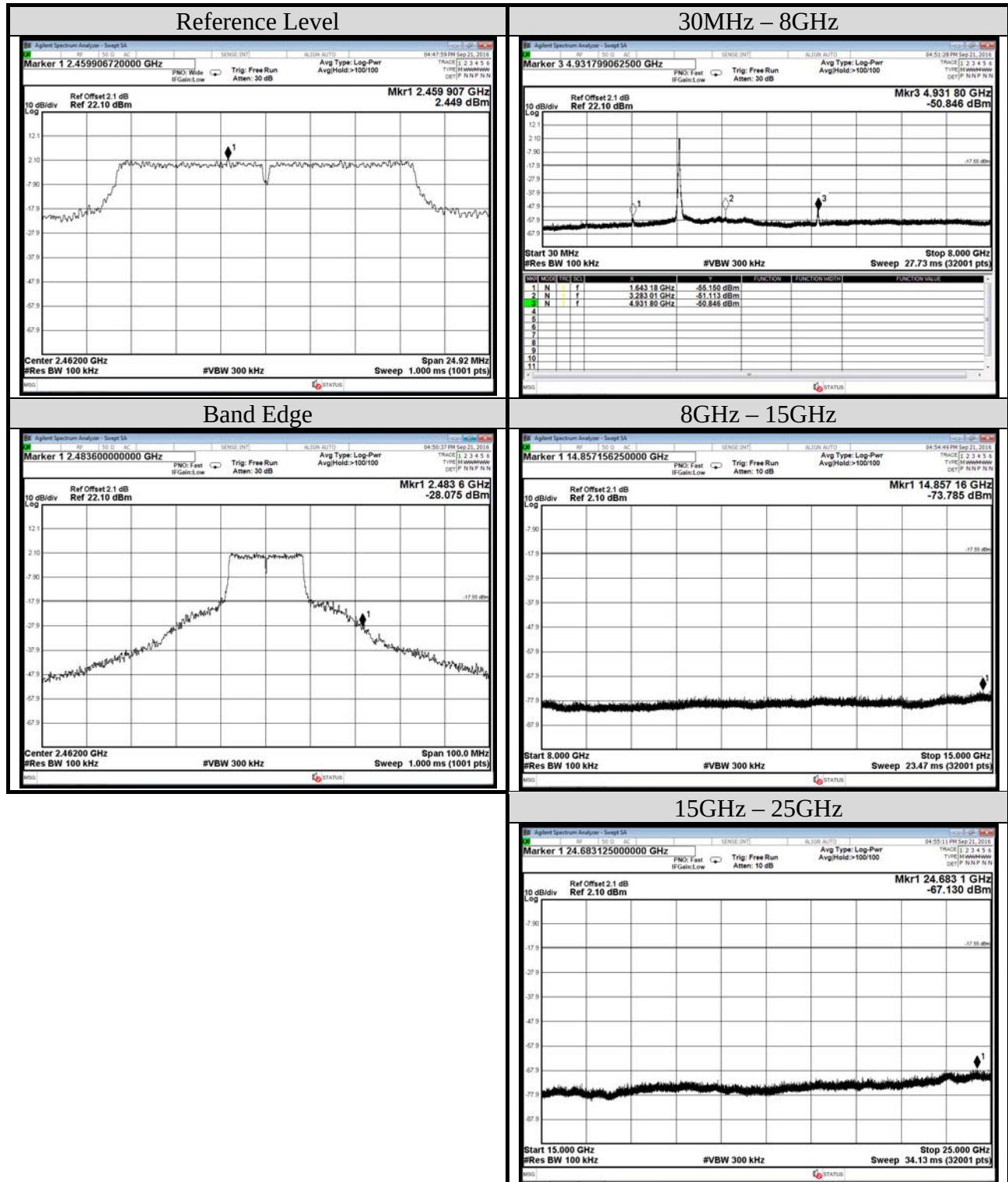
|                                                            |            |              |                      |
|------------------------------------------------------------|------------|--------------|----------------------|
| Test Date                                                  | 2016/06/03 | Temp./Hum.   | 26°C/58%             |
| Cable Loss                                                 | 2.1dB      | Test Voltage | DC 12V (Via Battery) |
| Mode                                                       | 802.11g    | Frequency    | TX 2437MHz           |
| Simultaneous Factor10 log(n) (Note: "n" is antenna number) |            |              | N/A                  |



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|                     |                                         |              |                      |
|---------------------|-----------------------------------------|--------------|----------------------|
| Test Date           | 2016/07/11                              | Temp./Hum.   | 26°C/58%             |
| Cable Loss          | 2.1dB                                   | Test Voltage | DC 12V (Via Battery) |
| Mode                | 802.11g                                 | Frequency    | TX 2462MHz           |
| Simultaneous Factor | 10 log(n) (Note: "n" is antenna number) |              | N/A                  |



## A.4 POWER SPECTRAL DENSITY

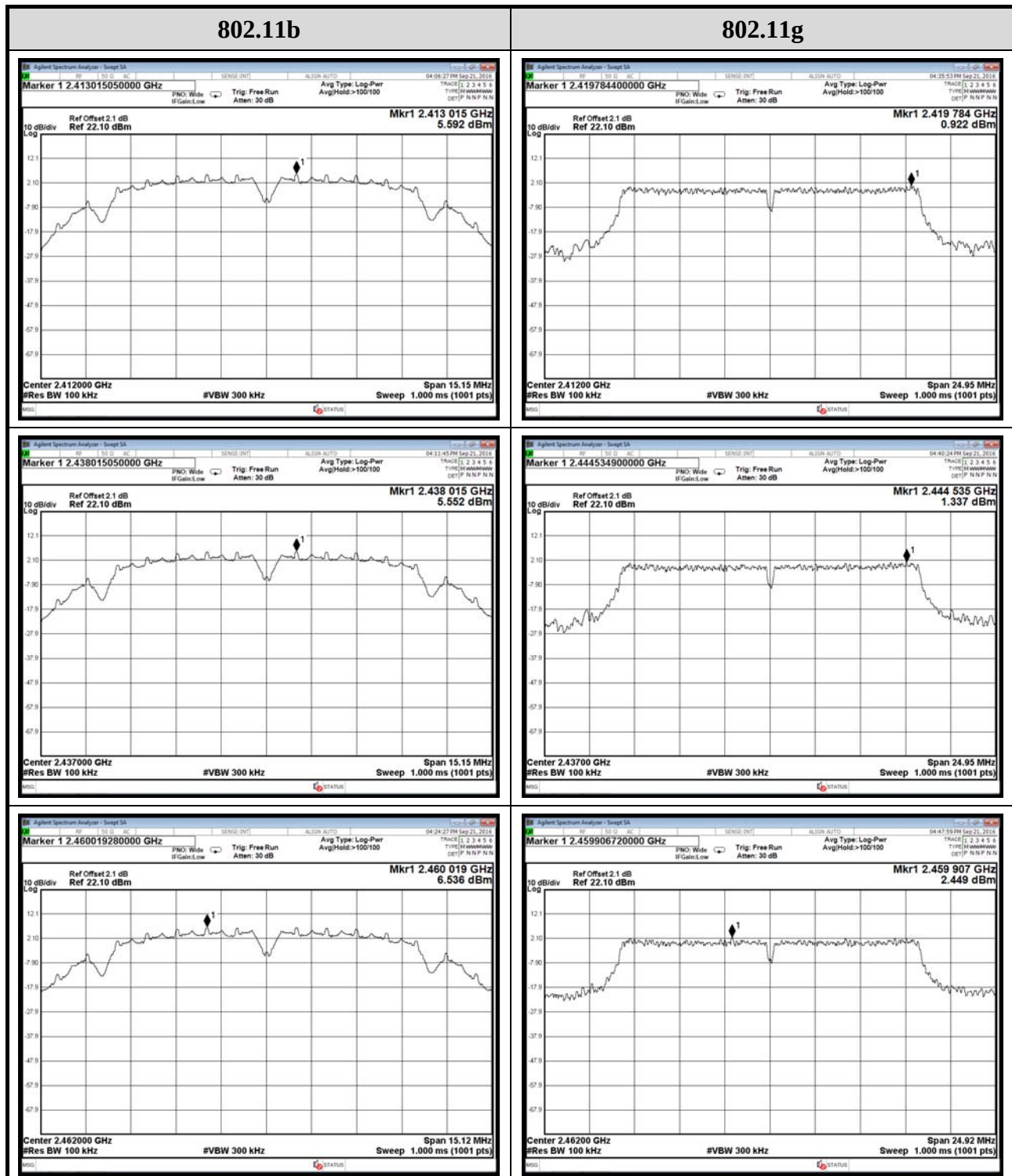
|                                                             |            |              |                      |
|-------------------------------------------------------------|------------|--------------|----------------------|
| Test Date                                                   | 2016/09/21 | Temp./Hum.   | 26°C/58%             |
| Cable Loss                                                  | 2.1dB      | Test Voltage | DC 12V (Via Battery) |
| Simultaneous Factor 10 log(n) (Note: "n" is antenna number) |            |              | N/A                  |

### A.4.1 Power Spectral Density Result

| Modulation Type | Centre Frequency (MHz) | Power Spectral Density (dBm) | Limit        |
|-----------------|------------------------|------------------------------|--------------|
| 802.11b         | 2412                   | <b>5.592</b>                 | < 8 dBm/3kHz |
|                 | 2437                   | <b>5.552</b>                 |              |
|                 | 2462                   | <b>6.536</b>                 |              |
| 802.11g         | 2412                   | <b>0.922</b>                 |              |
|                 | 2437                   | <b>1.337</b>                 |              |
|                 | 2462                   | <b>2.449</b>                 |              |

Note: All results have been included cable loss and Simultaneous Factor.

## A.4.2 Measurement Plots



Note: All results have been included cable loss and Simultaneous Factor.