# FCC Test Report

| | |
|---|---|
| Product Name | Key programming device |
| Model No | KeyReader Plus |
| FCC ID | QLXKRP |

| | |
|---|---|
| Applicant | TeraTron GmbH |
| Address | Bunsenstr. 10, 51647 Gummersbach, Germany |

| | |
|---|---|
| Date of Receipt | Aug. 02, 2016 |
| Issued Date | Jan. 06, 2017 |
| Report No. | 1680089R-RFUSP08V00 |
| Report Version | V1.0 |

Testing Laboratory
3023

# Test Report

Issued Date: Jan. 06, 2017
Report No.: 1680089R-RFUSP08V00

| | |
|---|---|
| Product Name | Key programming device |
| Applicant | TeraTron GmbH |
| Address | Bunsenstr. 10, 51647 Gummersbach, Germany |
| Manufacturer | TeraTron GmbH |
| Model No. | KeyReader Plus |
| FCC ID. | QLXKRP |
| EUT Rated Voltage | DC 3.6V (Power by Battery) |
| EUT Test Voltage | DC 3.6V (Power by Battery) |
| Trade Name | TeraTron |
| Applicable Standard | FCC CFR Title 47 Part 15 Subpart E: 2015<br>ANSI C63.4: 2014, ANSI C63.10: 2013<br>789033 D02 General UNII Test Procedures New Rules v01r03 |
| Test Result | Complied |

Documented By : Leven Huang

(Senior Adm. Specialist / Leven Huang )

Tested By : Ken chen

( Engineer / Ken Chen )

Approved By :

( Director / Vincent Lin )

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# 1. GENERAL INFORMATION

## 1.1. EUT Description

| | |
|---|---|
| Product Name | Key programming device |
| Trade Name | TeraTron |
| Model No. | KeyReader Plus |
| FCC ID. | QLXKRP |
| Frequency Range | 802.11a/n-20MHz: 5180-5320MHz, 5500-5700MHz, 5745-5825MHz |
| Number of Channels | 802.11a/n-20MHz: 24 |
| Data Rate | 802.11a: 6 - 54Mbps<br>802.11n: up to 72.2Mbps |
| Type of Modulation | 802.11a/n: OFDM, BPSK, QPSK, 16QAM, 64QAM |
| Antenna type | Printed on PCB Antenna |
| Antenna Gain | Refer to the table “Antenna List” |
| Channel Control | Auto |
| USB Cable | Shielded, 2m |
| Contain Module | u-blox / ODIN-W160 |

**Antenna List**

| No. | Manufacturer | Part No. | Antenna Type | Peak Gain |
|---|---|---|---|---|
| 1 | PROANT AB | 432 | Printed on PCB Antenna | 3.0dBi For 5.15~5.25GHz<br>3.0dBi For 5.25~5.35GHz<br>3.0dBi For 5.47~5.725GHz<br>3.0dBi For 5.725~5.825GHz |

Note: The antenna of EUT is conform to FCC 15.203.

802.11a/n-20MHz Center Working Frequency of Each Channel:

| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|---|---|
| Channel 36: | 5180 MHz | Channel 40: | 5200 MHz | Channel 44: | 5220 MHz | Channel 48: | 5240 MHz |
| Channel 52: | 5260 MHz | Channel 56: | 5280 MHz | Channel 60: | 5300 MHz | Channel 64: | 5320 MHz |
| Channel 100: | 5500 MHz | Channel 104: | 5520 MHz | Channel 108: | 5540 MHz | Channel 112: | 5560 MHz |
| Channel 116: | 5580 MHz | Channel 120: | 5600 MHz | Channel 124: | 5620 MHz | Channel 128: | 5640 MHz |
| Channel 132: | 5660 MHz | Channel 136: | 5680 MHz | Channel 140: | 5700 MHz | Channel 149: | 5745 MHz |
| Channel 153: | 5765 MHz | Channel 157: | 5785 MHz | Channel 161: | 5805 MHz | Channel 165: | 5825 MHz |

Note:

1. This device is a Key programming device with a built-in 802.11a/n WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
5. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.

| | |
|---|---|
| Test Mode | Mode 1: Transmit (802.11a-6Mbps)<br>Mode 2: Transmit (802.11n-20BW 7.2Mbps) |

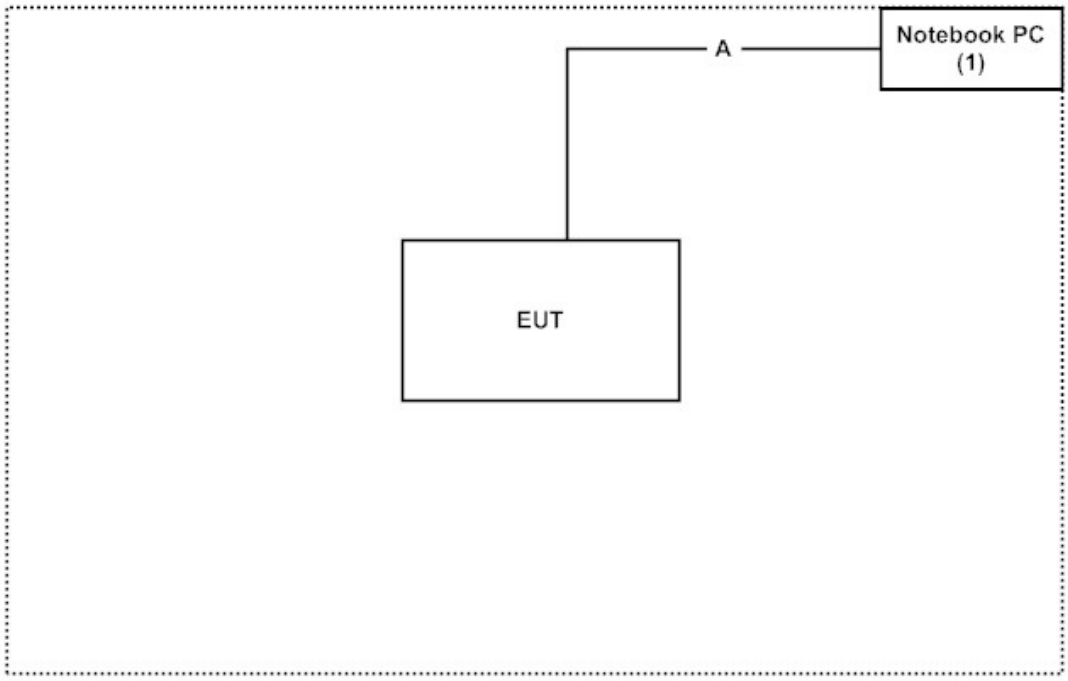
## 1.3. Tested System Datails

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

| Product | | Manufacturer | Model No. | Serial No. | Power Cord |
|---|---|---|---|---|---|
| 1 | Notebook PC | ASUS | X206H | X206HA | Non-Shielded, 1.8m |

| Signal Cable Type | | Signal cable Description |
|---|---|---|
| A | USB Cable | Shielded, 2m |

## 1.4. Configuration of tested System




## 1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “Firefox for keyReaderPlus.lnk (Ver2015.08.1-21C /01.25)” on the EUT.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous Transmit.
5. Verify that the EUT works properly.

## 1.6. Test Facility

Ambient conditions in the laboratory:

| Items | Required (IEC 68-1) | Actual |
|---|---|---|
| Temperature (°C) | 15-35 | 20-35 |
| Humidity (%RH) | 25-75 | 50-65 |
| Barometric pressure (mbar) | 860-1060 | 950-1000 |

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:
http://www.dekra.com.tw/chinese/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http:// www.dekra.com.tw

Site Description: Accredited by TAF
Accredited Number: 3023

Site Name: DEKRA Testing and Certification Co., Ltd
Site Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW1014

## 1.7. List of Test Equipment

**For Conducted measurements /CB3/SR8**

| | Equipment | Manufacturer | Model No. | Serial No. | Cali. Data | Due. Data |
|---|---|---|---|---|---|---|
| | Temperature Chamber | WIT GROUP | TH-1S-B | EQ-201-00146 | 2016/10/1 | 2017/9/29 |
| X | Spectrum Analyzer | Agilent | N9010A | MY48030495 | 2016/7/22 | 2017/7/21 |
| X | Power Meter | Anritsu | ML2495A | 6K00003357 | 2016/6/23 | 2017/6/22 |
| X | Pulse power sensor | Anritsu | MA2411B | 0846193 | 2016/6/23 | 2017/6/22 |
| X | EMI Test Receiver | R&S | ESCS 30 | 100369 | 2016/10/13 | 2017/10/12 |
| X | LISN | R&S | ESH3-Z5 | 836679/017 | 2017/1/7 | 2018/1/6 |
| X | LISN | R&S | ENV216 | 100097 | 2017/1/7 | 2018/1/6 |
| X | Coaxial Cable | QTK(Arnist) | RG 400 | LC018-RG | 2016/6/25 | 2017/6/24 |

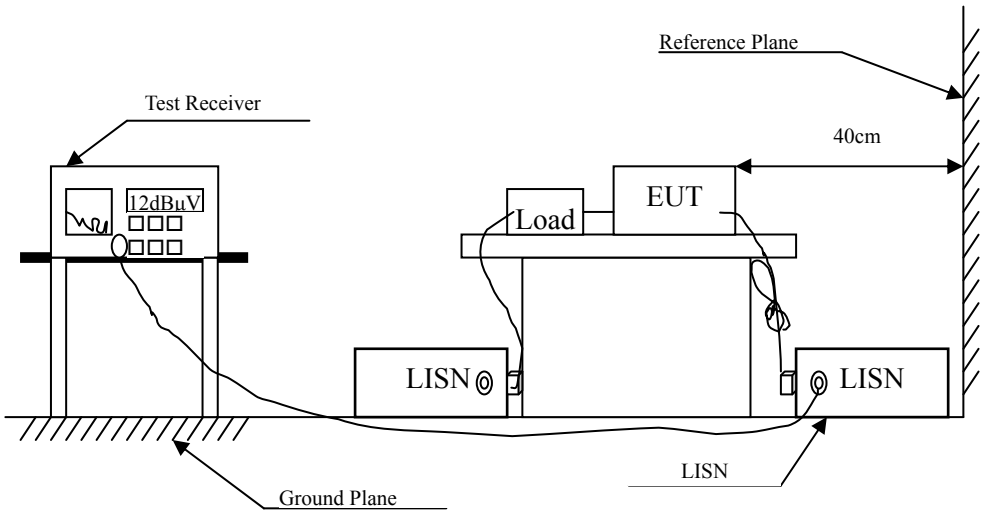
**For Radiated measurements /Site3/CB8**

| | Equipment | Manufacturer | Model No. | Serial No. | Cali. Data | Due. Data |
|---|---|---|---|---|---|---|
| X | Spectrum Analyzer | R&S | FSP40 | 100170 | 2017/1/5 | 2018/1/4 |
| | Loop Antenna | Teseq | HLA6121 | 37133 | 2016/3/18 | 2017/3/17 |
| X | Bi-Log Antenna | Schaffner Chase | CBL6112B | 2707 | 2016/6/11 | 2017/6/10 |
| X | Horn Antenna | ETS-Lindgren | 3117 | 00135205 | 2016/4/6 | 2017/4/5 |
| X | Horn Antenna | Schwarzbeck | BBHA9170 | 9170430 | 2016/1/11 | 2017/1/10 |
| X | Pre-Amplifier | QTK | AP/0100A | CHM/0901069 | 2016/6/23 | 2017/6/22 |
| X | Pre-Amplifier | EMCI | EMC012630SE | 980210 | 2016/1/26 | 2017/1/24 |
| X | Pre-Amplifier | NARDA WE | DBL-1840N506 | 013 | 2016/9/30 | 2017/9/29 |
| X | Filter | MicroTRON | BRM50701 | 019 | 2016/11/2 | 2017/11/1 |
| X | Filter | Microwave Circuits | N0257881 | 36681 | 2016/12/7 | 2017/12/6 |
| X | EMI Test Receiver | R&S | ESR26 | 101385 | 2016/9/29 | 2017/9/28 |
| X | Coaxial Cable | QTK(Arnist) | SUCOFLEX 106 | L1606-015C | 2016/6/23 | 2017/6/22 |
| X | EMI Test Receiver | R&S | ESCS 30 | 838251/001 | 2016/7/21 | 2017/7/20 |
| X | Coaxial Cable | QTK(Arnist) | RG 214 | LC003-RG | 2016/6/16 | 2017/6/15 |
| X | Coaxial signal switch | Anritsu | MP59B | 6201415889 | 2016/6/16 | 2017/6/15 |

Note:
1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : QuieTek EMI 2.0 V2.1.113.

## 2. Conducted Emission

### 2.1. Test Setup



## 2.2. Limits

| FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit | | |
|---|---|---|
| Frequency MHz | Limits | |
| | QP | AV |
| 0.15 - 0.50 | 66-56 | 56-46 |
| 0.50-5.0 | 56 | 46 |
| 5.0 - 30 | 60 | 50 |

Remarks : In the above table, the tighter limit applies at the band edges.

## 2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.10, 2014; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

## 2.4. Uncertainty

± 2.26 dB

## 2.5. Test Result of Conducted Emission

Product : Key programming device
Test Item : Conducted Emission Test
Power Line : Line 1
Test Date : 2016/12/21
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5220MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBµV | dBµV | dB | dBµV |
| **LINE 1** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.154 | 9.783 | 36.880 | 46.663 | -19.223 | 65.886 |
| 0.205 | 9.775 | 23.370 | 33.145 | -31.284 | 64.429 |
| 0.455 | 9.784 | 20.760 | 30.544 | -26.742 | 57.286 |
| 1.150 | 9.848 | 17.710 | 27.558 | -28.442 | 56.000 |
| 2.923 | 9.953 | 9.710 | 19.663 | -36.337 | 56.000 |
| 15.302 | 10.159 | 21.310 | 31.469 | -28.531 | 60.000 |
| **Average** | | | | | |
| 0.154 | 9.783 | 22.660 | 32.443 | -23.443 | 55.886 |
| 0.205 | 9.775 | 6.690 | 16.465 | -37.964 | 54.429 |
| 0.455 | 9.784 | 12.300 | 22.084 | -25.202 | 47.286 |
| 1.150 | 9.848 | 11.130 | 20.978 | -25.022 | 46.000 |
| 2.923 | 9.953 | -0.590 | 9.363 | -36.637 | 46.000 |
| 15.302 | 10.159 | 12.640 | 22.799 | -27.201 | 50.000 |

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Key programming device
Test Item : Conducted Emission Test
Power Line : Line 2
Test Date : 2016/12/21
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5220MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBµV | dBµV | dB | dBµV |
| **LINE 2** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.201 | 9.835 | 22.680 | 32.515 | -32.028 | 64.543 |
| 0.255 | 9.839 | 23.800 | 33.639 | -29.361 | 63.000 |
| 0.451 | 9.854 | 21.250 | 31.104 | -26.296 | 57.400 |
| 1.060 | 9.901 | 15.160 | 25.061 | -30.939 | 56.000 |
| 2.787 | 10.021 | 10.190 | 20.211 | -35.789 | 56.000 |
| 16.298 | 10.318 | 16.340 | 26.658 | -33.342 | 60.000 |
| **Average** | | | | | |
| 0.201 | 9.835 | 8.190 | 18.025 | -36.518 | 54.543 |
| 0.255 | 9.839 | 8.660 | 18.499 | -34.501 | 53.000 |
| 0.451 | 9.854 | 13.620 | 23.474 | -23.926 | 47.400 |
| 1.060 | 9.901 | 8.410 | 18.311 | -27.689 | 46.000 |
| 2.787 | 10.021 | 1.180 | 11.201 | -34.799 | 46.000 |
| 16.298 | 10.318 | 6.960 | 17.278 | -32.722 | 50.000 |

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Key programming device
Test Item : Conducted Emission Test
Power Line : Line 1
Test Date : 2016/12/21
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5300MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBµV | dBµV | dB | dBµV |
| **LINE 1** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.150 | 9.784 | 36.390 | 46.174 | -19.826 | 66.000 |
| 0.193 | 9.774 | 31.420 | 41.194 | -23.577 | 64.771 |
| 0.244 | 9.778 | 25.020 | 34.798 | -28.516 | 63.314 |
| 0.509 | 9.789 | 18.210 | 27.999 | -28.001 | 56.000 |
| 1.150 | 9.848 | 17.870 | 27.718 | -28.282 | 56.000 |
| 15.384 | 10.160 | 21.810 | 31.970 | -28.030 | 60.000 |
| **Average** | | | | | |
| 0.150 | 9.784 | 19.210 | 28.994 | -27.006 | 56.000 |
| 0.193 | 9.774 | 15.520 | 25.294 | -29.477 | 54.771 |
| 0.244 | 9.778 | 11.260 | 21.038 | -32.276 | 53.314 |
| 0.509 | 9.789 | 10.240 | 20.029 | -25.971 | 46.000 |
| 1.150 | 9.848 | 11.330 | 21.178 | -24.822 | 46.000 |
| 15.384 | 10.160 | 13.020 | 23.180 | -26.820 | 50.000 |

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Key programming device
Test Item : Conducted Emission Test
Power Line : Line 2
Test Date : 2016/12/21
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5300MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBµV | dBµV | dB | dBµV |
| **LINE 2** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.154 | 9.831 | 42.760 | 52.591 | -13.295 | 65.886 |
| 0.212 | 9.836 | 28.270 | 38.106 | -26.123 | 64.229 |
| 0.287 | 9.841 | 20.280 | 30.121 | -31.965 | 62.086 |
| 0.463 | 9.855 | 19.100 | 28.955 | -28.102 | 57.057 |
| 1.162 | 9.909 | 16.080 | 25.989 | -30.011 | 56.000 |
| 16.873 | 10.323 | 13.770 | 24.093 | -35.907 | 60.000 |
| **Average** | | | | | |
| 0.154 | 9.831 | 21.680 | 31.511 | -24.375 | 55.886 |
| 0.212 | 9.836 | 10.710 | 20.546 | -33.683 | 54.229 |
| 0.287 | 9.841 | 8.890 | 18.731 | -33.355 | 52.086 |
| 0.463 | 9.855 | 10.260 | 20.115 | -26.942 | 47.057 |
| 1.162 | 9.909 | 9.370 | 19.279 | -26.721 | 46.000 |
| 16.873 | 10.323 | 7.230 | 17.553 | -32.447 | 50.000 |

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Key programming device
Test Item : Conducted Emission Test
Power Line : Line 1
Test Date : 2016/12/21
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5580MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBµV | dBµV | dB | dBµV |
| **LINE 1** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.162 | 9.781 | 35.620 | 45.401 | -20.256 | 65.657 |
| 0.224 | 9.777 | 27.420 | 37.197 | -26.689 | 63.886 |
| 0.560 | 9.793 | 13.810 | 23.603 | -32.397 | 56.000 |
| 1.138 | 9.847 | 17.630 | 27.477 | -28.523 | 56.000 |
| 2.193 | 9.939 | 8.080 | 18.019 | -37.981 | 56.000 |
| 15.306 | 10.159 | 21.370 | 31.529 | -28.471 | 60.000 |
| **Average** | | | | | |
| 0.162 | 9.781 | 19.290 | 29.071 | -26.586 | 55.657 |
| 0.224 | 9.777 | 13.420 | 23.197 | -30.689 | 53.886 |
| 0.560 | 9.793 | 4.610 | 14.403 | -31.597 | 46.000 |
| 1.138 | 9.847 | 11.180 | 21.027 | -24.973 | 46.000 |
| 2.193 | 9.939 | -0.100 | 9.839 | -36.161 | 46.000 |
| 15.306 | 10.159 | 12.900 | 23.059 | -26.941 | 50.000 |

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Key programming device
Test Item : Conducted Emission Test
Power Line : Line 2
Test Date : 2016/12/21
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5580MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBµV | dBµV | dB | dBµV |
| **LINE 2** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.154 | 9.831 | 36.100 | 45.931 | -19.955 | 65.886 |
| 0.193 | 9.834 | 31.160 | 40.994 | -23.777 | 64.771 |
| 0.459 | 9.855 | 20.080 | 29.935 | -27.236 | 57.171 |
| 0.974 | 9.895 | 15.900 | 25.795 | -30.205 | 56.000 |
| 2.451 | 10.004 | 9.560 | 19.564 | -36.436 | 56.000 |
| 16.271 | 10.318 | 16.340 | 26.658 | -33.342 | 60.000 |
| **Average** | | | | | |
| 0.154 | 9.831 | 22.010 | 31.841 | -24.045 | 55.886 |
| 0.193 | 9.834 | 15.810 | 25.644 | -29.127 | 54.771 |
| 0.459 | 9.855 | 11.970 | 21.825 | -25.346 | 47.171 |
| 0.974 | 9.895 | 7.330 | 17.225 | -28.775 | 46.000 |
| 2.451 | 10.004 | 2.030 | 12.034 | -33.966 | 46.000 |
| 16.271 | 10.318 | 6.800 | 17.118 | -32.882 | 50.000 |

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Key programming device
Test Item : Conducted Emission Test
Power Line : Line 1
Test Date : 2016/12/21
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5785MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBµV | dBµV | dB | dBµV |
| **LINE 1** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.150 | 9.784 | 36.000 | 45.784 | -20.216 | 66.000 |
| 0.185 | 9.775 | 31.870 | 41.645 | -23.355 | 65.000 |
| 0.220 | 9.776 | 27.720 | 37.496 | -26.504 | 64.000 |
| 0.455 | 9.784 | 21.030 | 30.814 | -26.472 | 57.286 |
| 1.154 | 9.848 | 17.710 | 27.558 | -28.442 | 56.000 |
| 15.283 | 10.158 | 21.480 | 31.638 | -28.362 | 60.000 |
| **Average** | | | | | |
| 0.150 | 9.784 | 18.970 | 28.754 | -27.246 | 56.000 |
| 0.185 | 9.775 | 17.090 | 26.865 | -28.135 | 55.000 |
| 0.220 | 9.776 | 13.660 | 23.436 | -30.564 | 54.000 |
| 0.455 | 9.784 | 12.390 | 22.174 | -25.112 | 47.286 |
| 1.154 | 9.848 | 11.280 | 21.128 | -24.872 | 46.000 |
| 15.283 | 10.158 | 12.800 | 22.958 | -27.042 | 50.000 |

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "  " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Key programming device
Test Item : Conducted Emission Test
Power Line : Line 2
Test Date : 2016/12/21
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5785MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBµV | dBµV | dB | dBµV |
| **LINE 2** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.162 | 9.832 | 35.340 | 45.172 | -20.485 | 65.657 |
| 0.193 | 9.834 | 31.020 | 40.854 | -23.917 | 64.771 |
| 0.451 | 9.854 | 21.510 | 31.364 | -26.036 | 57.400 |
| 1.158 | 9.909 | 16.590 | 26.499 | -29.501 | 56.000 |
| 2.181 | 9.998 | 9.220 | 19.218 | -36.782 | 56.000 |
| 15.310 | 10.299 | 15.680 | 25.979 | -34.021 | 60.000 |
| **Average** | | | | | |
| 0.162 | 9.832 | 19.290 | 29.122 | -26.535 | 55.657 |
| 0.193 | 9.834 | 15.760 | 25.594 | -29.177 | 54.771 |
| 0.451 | 9.854 | 13.620 | 23.474 | -23.926 | 47.400 |
| 1.158 | 9.909 | 9.890 | 19.799 | -26.201 | 46.000 |
| 2.181 | 9.998 | 2.370 | 12.368 | -33.632 | 46.000 |
| 15.310 | 10.299 | 7.500 | 17.799 | -32.201 | 50.000 |

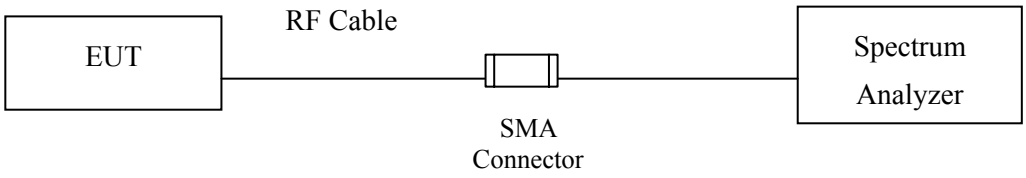
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "  " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

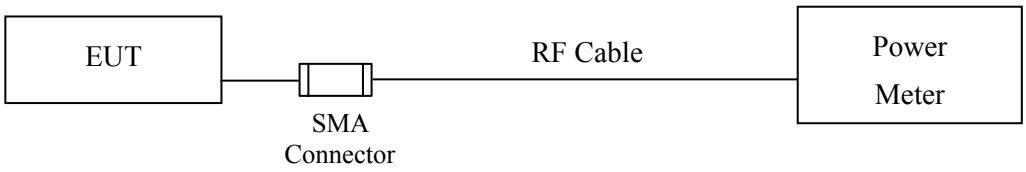
# 3. Maximun conducted output power

## 3.1. Test Setup

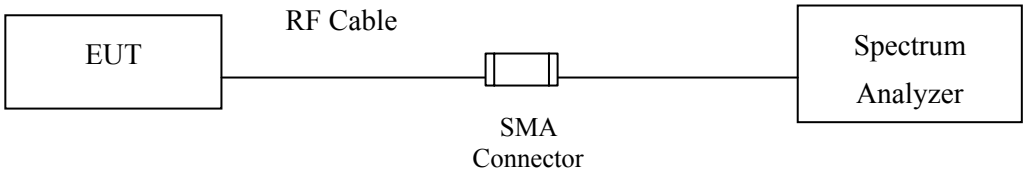
**99& Occupied Bandwidth**




**Conduction Power Measurement (for 802.11an)**




**Conduction Power Measurement (for 802.11ac)**




## 3.2. Limits

3.2.1. For the band 5.15-5.25 GHz,

**(i)** For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

**(ii)** For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output

power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**(iii)** For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

**(iv)** For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.3. For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

## 3.3. Test Procedure

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater the 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates,

and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

802.11an (BW≦40MHz) Maximum conducted output power using KDB 789033 section E)3)b) Method PM-G (Measurement using a gated RF average power meter)
*Note: the power meter have a video bandwidth that is greater than or equal to the measurement bandwidth, (Anritsu/ MA2411B video bandwidth: 65MHz)*

802.11ac (BW=80MHz) Maximum conducted output power using KDB 789033 section E)2)b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

When transmitted signals consist of two or more non-contiguous spectrum segments (e.g., 80+80 MHz mode) or when a single spectrum segment of a transmission crosses the boundary between two adjacent U-NII bands, KDB 644545 D01 section F) procedure is used for measurements.

## 3.4. Uncertainty

± 1.62 dB

## 3.5. Test Result of Maximum conducted output power

Product : Key programming device
Test Item : Maximum conducted output power
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps)

| Cable loss=1dB | | Maximum conducted output power | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Channel No. | Frequency (MHz) | Data Rate (Mbps) | | | | | | | |
| | | 6 | 9 | 12 | 18 | 24 | 36 | 48 | 54 |
| | | Measurement Level (dBm) | | | | | | | |
| 36 | 5180 | 8.95 | -- | -- | -- | -- | -- | -- | -- |
| 44 | 5220 | 9.11 | 9.02 | 8.97 | 8.89 | 8.82 | 8.75 | 8.68 | 8.61 |
| 48 | 5240 | 9.08 | -- | -- | -- | -- | -- | -- | -- |
| 52 | 5260 | 8.85 | -- | -- | -- | -- | -- | -- | -- |
| 60 | 5300 | 9.02 | 8.96 | 8.91 | 8.85 | 8.80 | 8.74 | 8.69 | 8.63 |
| 64 | 5320 | 9.05 | -- | -- | -- | -- | -- | -- | -- |
| 100 | 5500 | 9.48 | -- | -- | -- | -- | -- | -- | -- |
| 116 | 5580 | 9.22 | 9.13 | 9.05 | 8.96 | 8.88 | 8.79 | 8.71 | 8.62 |
| 140 | 5700 | 9.47 | -- | -- | -- | -- | -- | -- | -- |
| 149 | 5745 | 9.39 | -- | -- | -- | -- | -- | -- | -- |
| 157 | 5785 | 9.43 | 9.37 | 9.31 | 9.25 | 9.19 | 9.13 | 9.07 | 9.01 |
| 165 | 5825 | 9.49 | -- | -- | -- | -- | -- | -- | -- |

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

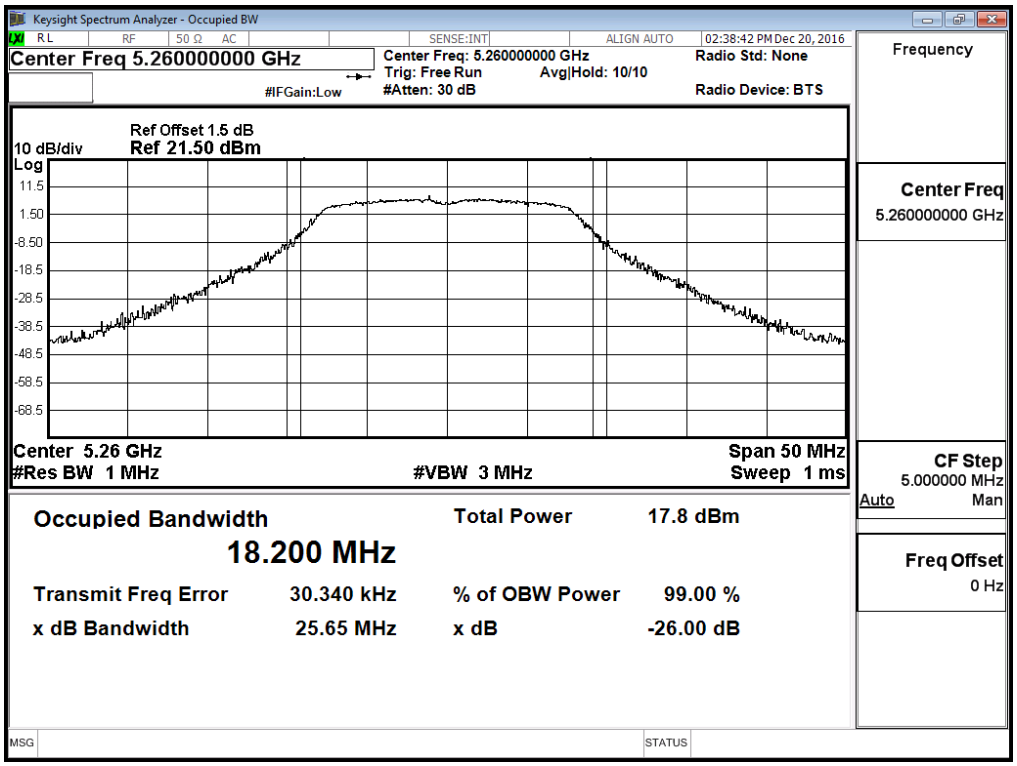
**Maximum conducted output power Measurement:**

| Channel No | Frequency Range (MHz) | 99% Bandwidth (MHz) | Output Power (dBm) | Output Power Limit | |
|---|---|---|---|---|---|
| | | | | (dBm) | dBm+10log(BW) |
| 36 | 5180 | -- | 8.95 | 24 | -- |
| 44 | 5220 | -- | 9.11 | 24 | -- |
| 48 | 5240 | -- | 9.08 | 24 | -- |
| 52 | 5260 | 18.200 | 8.85 | 24 | 23.60 |
| 60 | 5300 | 18.258 | 9.02 | 24 | 23.61 |
| 64 | 5320 | 18.178 | 9.05 | 24 | 23.60 |
| 100 | 5500 | 18.120 | 9.48 | 24 | 23.58 |
| 116 | 5580 | 18.269 | 9.22 | 24 | 23.62 |
| 140 | 5700 | 18.165 | 9.47 | 24 | 23.59 |
| 149 | 5745 | -- | 9.39 | 30 | -- |
| 157 | 5785 | -- | 9.43 | 30 | -- |
| 165 | 5825 | -- | 9.49 | 30 | -- |

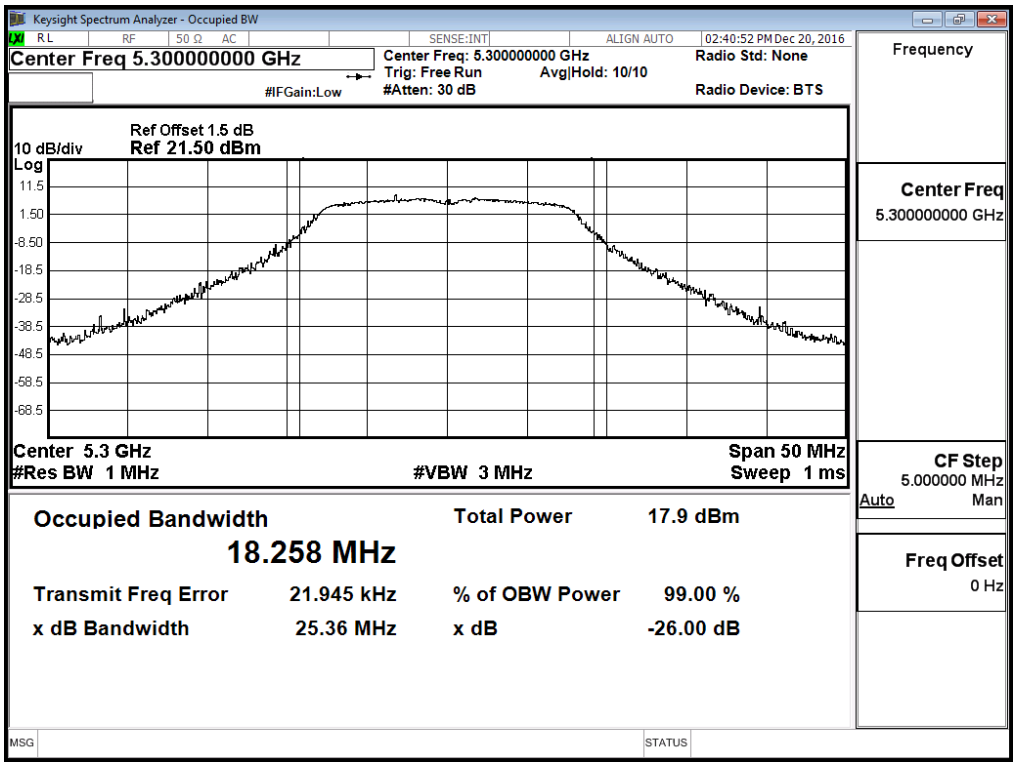
Note: Power Output Value =Reading value on average power meter + cable loss

**99% Occupied Bandwidth:**

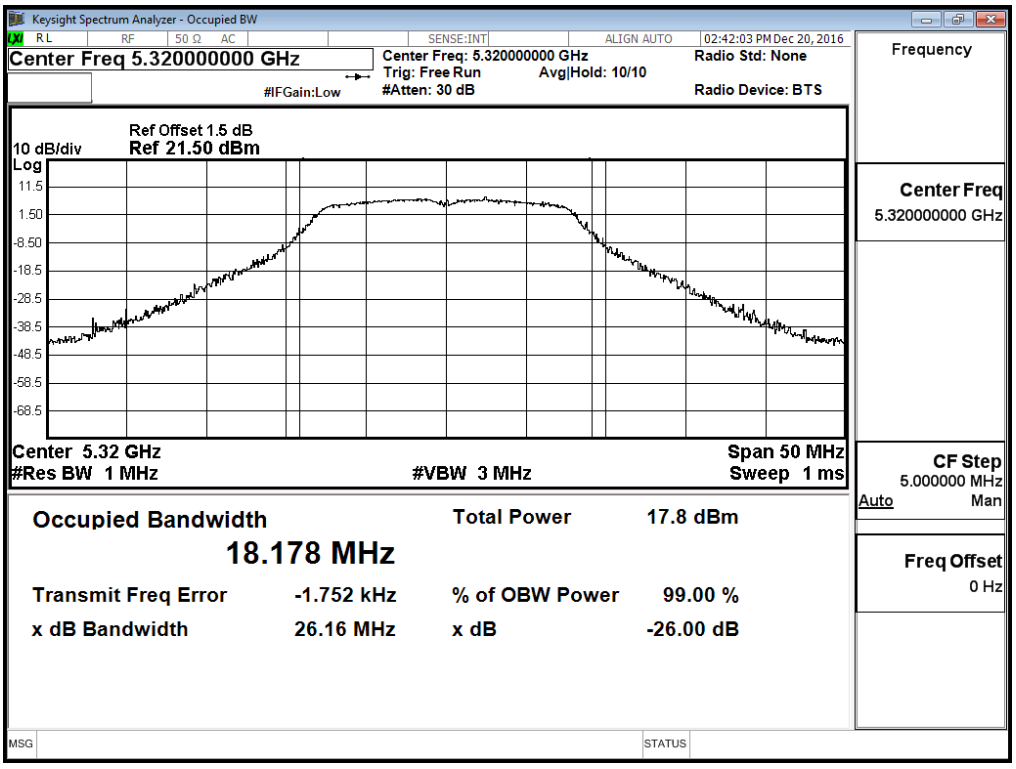
**Channel 52:**



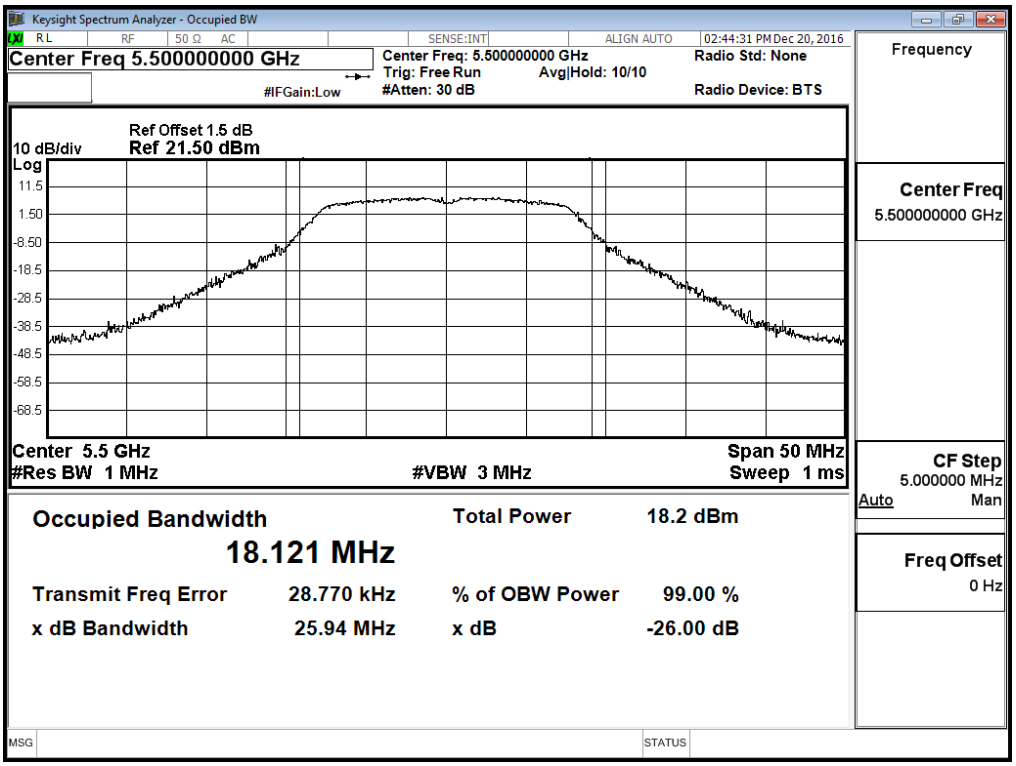

**Channel 60:**



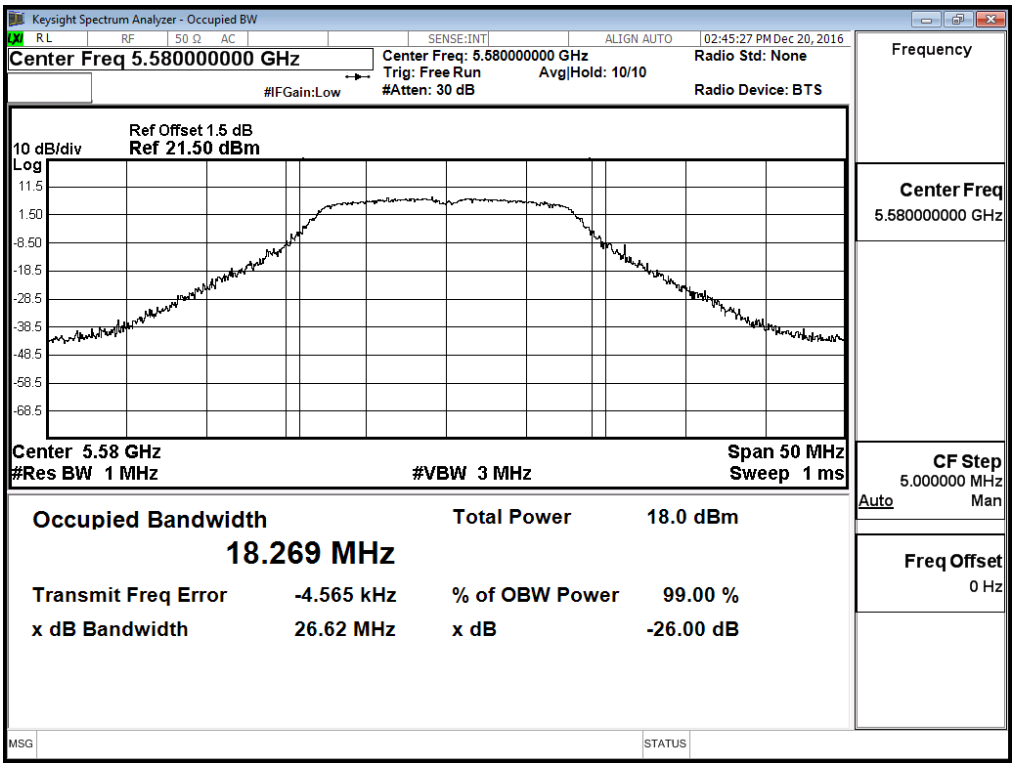
**Channel 64:**



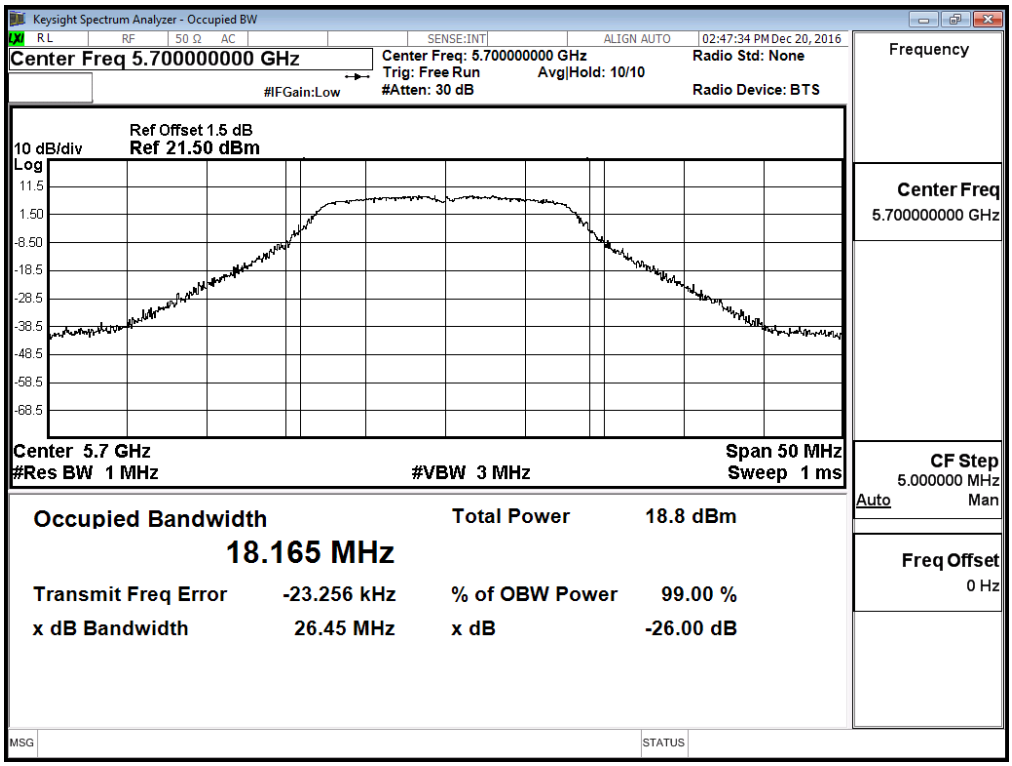

**Channel 100:**



**Channel 116:**




**Channel 140:**



Product : Key programming device
Test Item : Maximum conducted output power
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps)

| Cable loss=1dB | | Maximum conducted output power | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Channel No. | Frequency (MHz) | Data Rate (Mbps) | | | | | | | |
| | | 7.2 | 14.4 | 21.7 | 28.9 | 43.3 | 57.8 | 65 | 72.2 |
| | | Measurement Level (dBm) | | | | | | | |
| 36 | 5180 | 9.17 | -- | -- | -- | -- | -- | -- | -- |
| 44 | 5220 | 9.49 | 9.43 | 9.38 | 9.32 | 9.27 | 9.21 | 9.16 | 9.10 |
| 48 | 5240 | 9.49 | -- | -- | -- | -- | -- | -- | -- |
| 52 | 5260 | 9.35 | -- | -- | -- | -- | -- | -- | -- |
| 60 | 5300 | 9.28 | 9.23 | 9.17 | 9.12 | 9.06 | 9.01 | 8.95 | 8.90 |
| 64 | 5320 | 9.21 | -- | -- | -- | -- | -- | -- | -- |
| 100 | 5500 | 9.43 | -- | -- | -- | -- | -- | -- | -- |
| 116 | 5580 | 9.46 | 9.42 | 9.37 | 9.33 | 9.28 | 9.24 | 9.19 | 9.15 |
| 140 | 5700 | 9.38 | -- | -- | -- | -- | -- | -- | -- |
| 149 | 5745 | 9.40 | -- | -- | -- | -- | -- | -- | -- |
| 157 | 5785 | 9.26 | 9.21 | 9.16 | 9.11 | 9.06 | 9.01 | 8.96 | 8.91 |
| 165 | 5825 | 9.16 | -- | -- | -- | -- | -- | -- | -- |

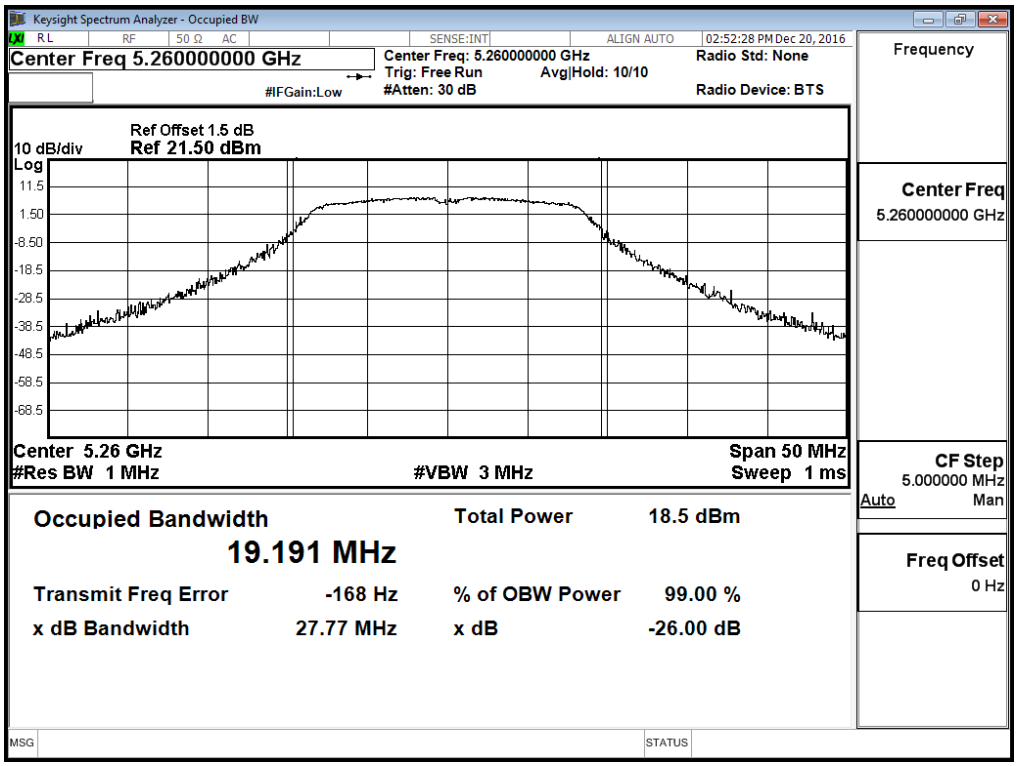
Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

**Maximum conducted output power Measurement:**

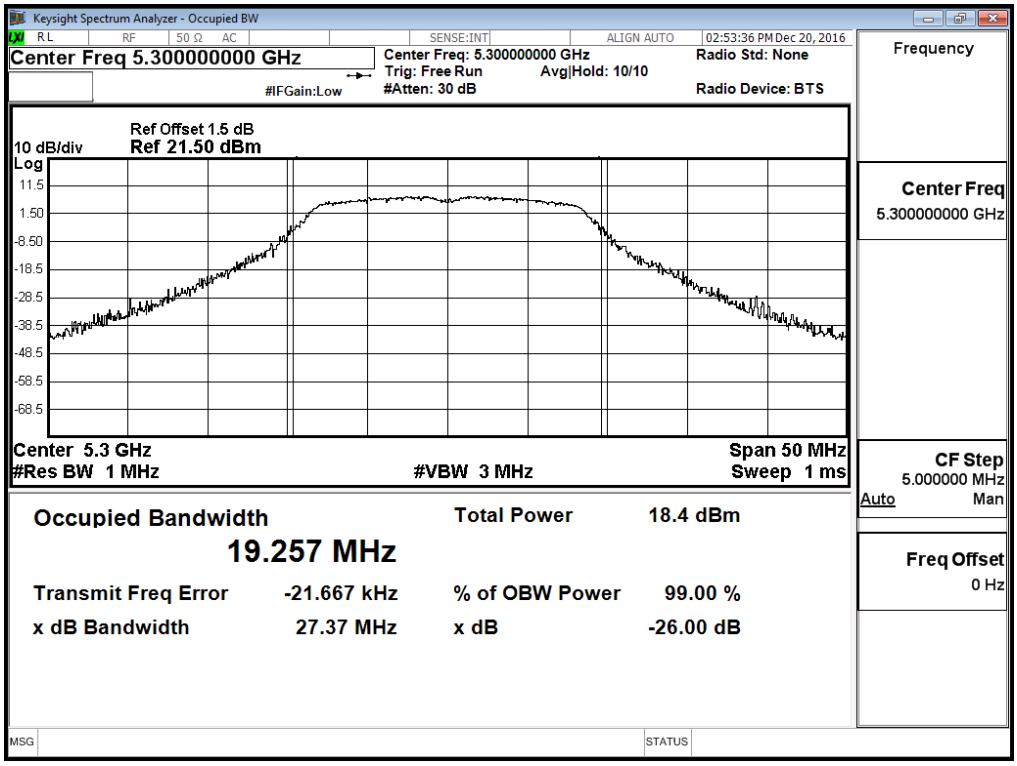
| Channel No | Frequency Range (MHz) | 99% Bandwidth (MHz) | Output Power (dBm) | Output Power Limit | |
|---|---|---|---|---|---|
| | | | | (dBm) | dBm+10log(BW) |
| 36 | 5180 | -- | 9.17 | 24 | -- |
| 44 | 5220 | -- | 9.49 | 24 | -- |
| 48 | 5240 | -- | 9.49 | 24 | -- |
| 52 | 5260 | 19.191 | 9.35 | 24 | 23.83 |
| 60 | 5300 | 19.257 | 9.28 | 24 | 23.85 |
| 64 | 5320 | 19.150 | 9.21 | 24 | 23.82 |
| 100 | 5500 | 19.109 | 9.43 | 24 | 23.81 |
| 116 | 5580 | 19.209 | 9.46 | 24 | 23.84 |
| 140 | 5700 | 19.285 | 9.38 | 24 | 23.85 |
| 149 | 5745 | -- | 9.4 | 30 | -- |
| 157 | 5785 | -- | 9.26 | 30 | -- |
| 165 | 5825 | -- | 9.16 | 30 | -- |

Note: Power Output Value =Reading value on average power meter + cable loss

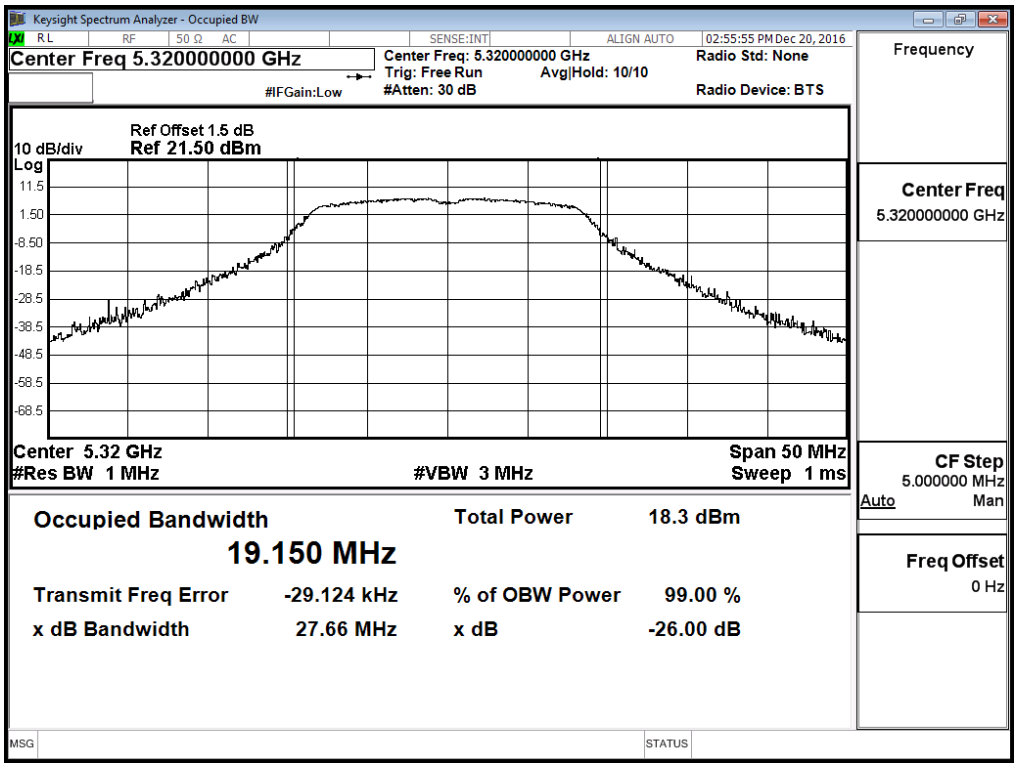
**99% Occupied Bandwidth:**
**Channel 52**



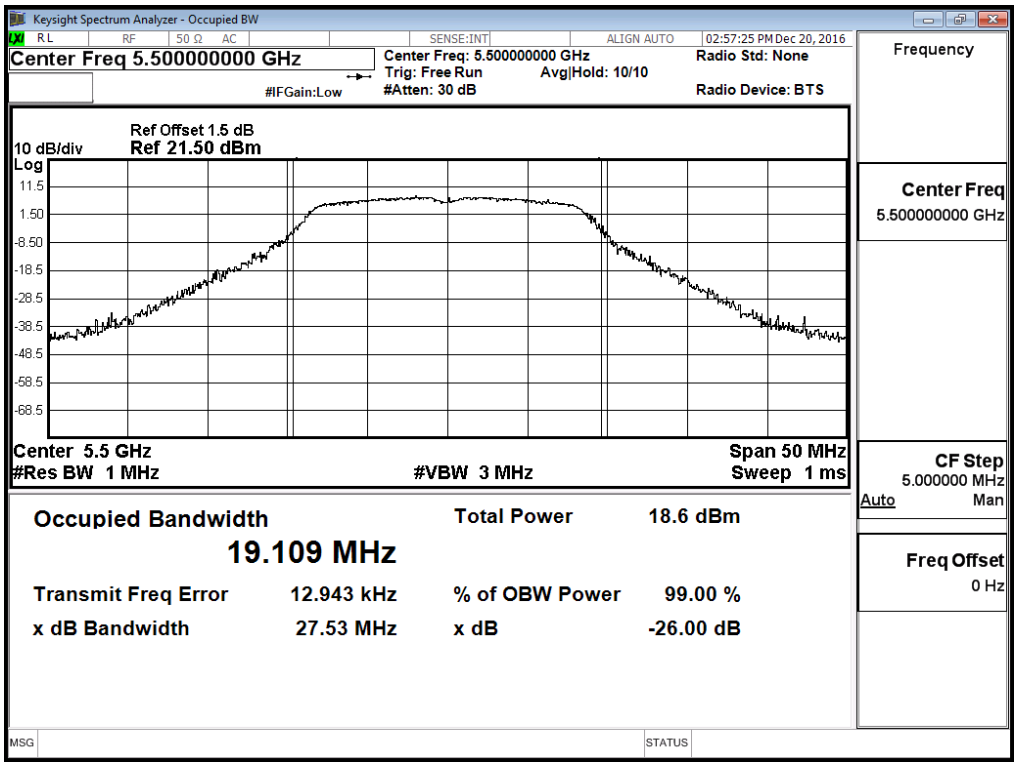

**Channel 60**



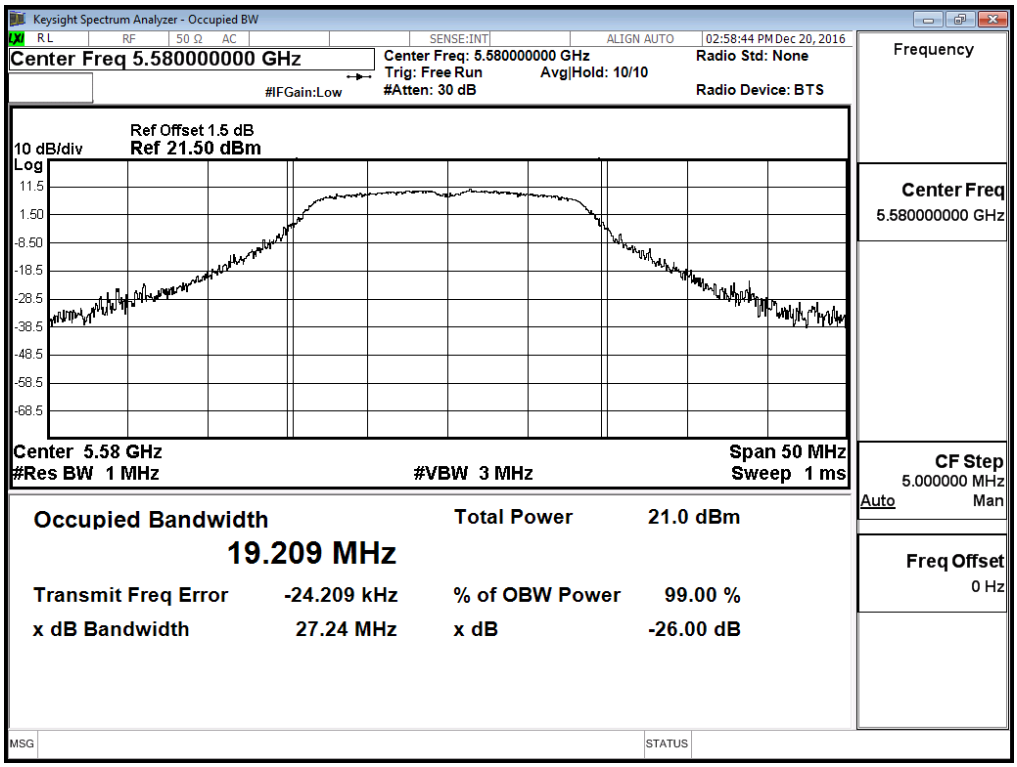
**Channel 64**



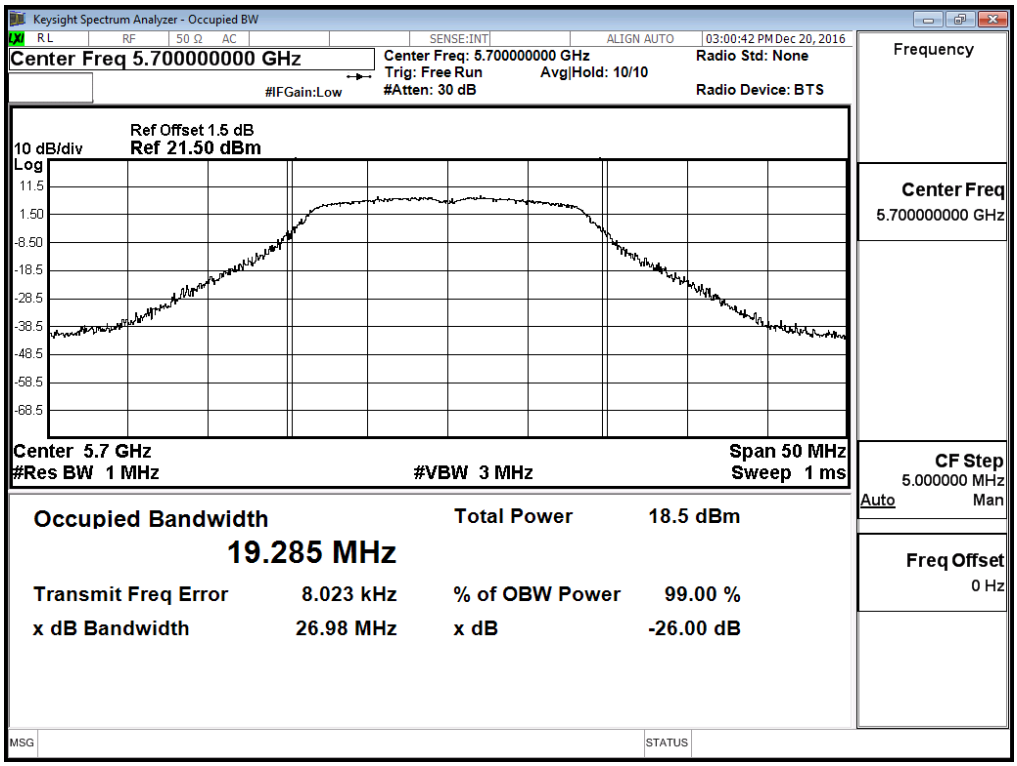

**Channel 100**



## Channel 116

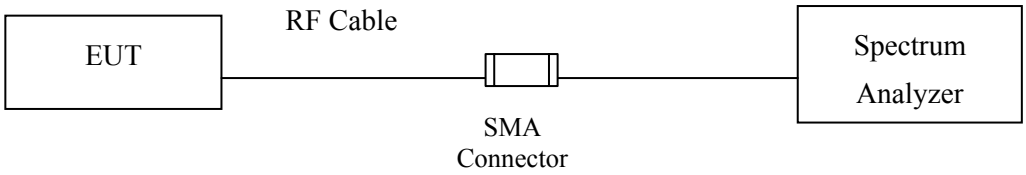



## Channel 140



# 4. Peak Power Spectral Density

## 4.1. Test Setup




## 4.2. Limits

(1) For the band 5.15-5.25 GHz,

**(i)** For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**(ii)** For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**(iii)** For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

**(iv)** For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.+

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the

maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

## 4.3. Test Procedure

The EUT was setup to ANSI C63.10, 2009; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer.

SA-1 method is selected to run the test.

For the band 5.725-5.85 GHz, Scale the observed power level to an equivalent value in 500 kHz by adjusting (increase) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (500 kHz/100 kHz) = 6.98 dB.

## 4.4. Uncertainty

± 1.62 dB

## 4.5. Test Result of Peak Power Spectral Density

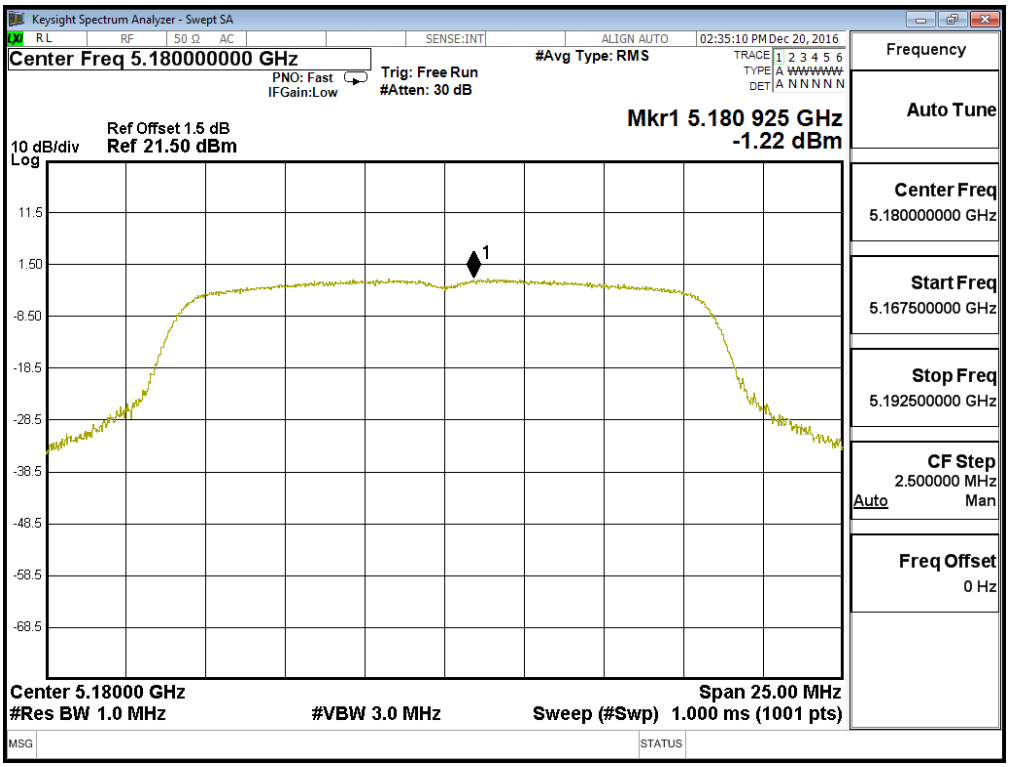
Product : Key programming device
Test Item : Peak Power Spectral Density
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps)

| Channel Number | Frequency (MHz) | Data Rata (Mbps) | Measurement Level (dBm) | Required Limit (dBm) | Result |
|---|---|---|---|---|---|
| 36 | 5180 | 6 | -1.220 | 11 | Pass |
| 44 | 5220 | 6 | -1.650 | 11 | Pass |
| 48 | 5240 | 6 | -1.590 | 11 | Pass |
| 52 | 5260 | 6 | -1.740 | 11 | Pass |
| 60 | 5300 | 6 | -1.480 | 11 | Pass |
| 64 | 5320 | 6 | -1.820 | 11 | Pass |
| 100 | 5500 | 6 | -1.450 | 11 | Pass |
| 116 | 5580 | 6 | -1.570 | 11 | Pass |
| 140 | 5700 | 6 | -1.900 | 11 | Pass |

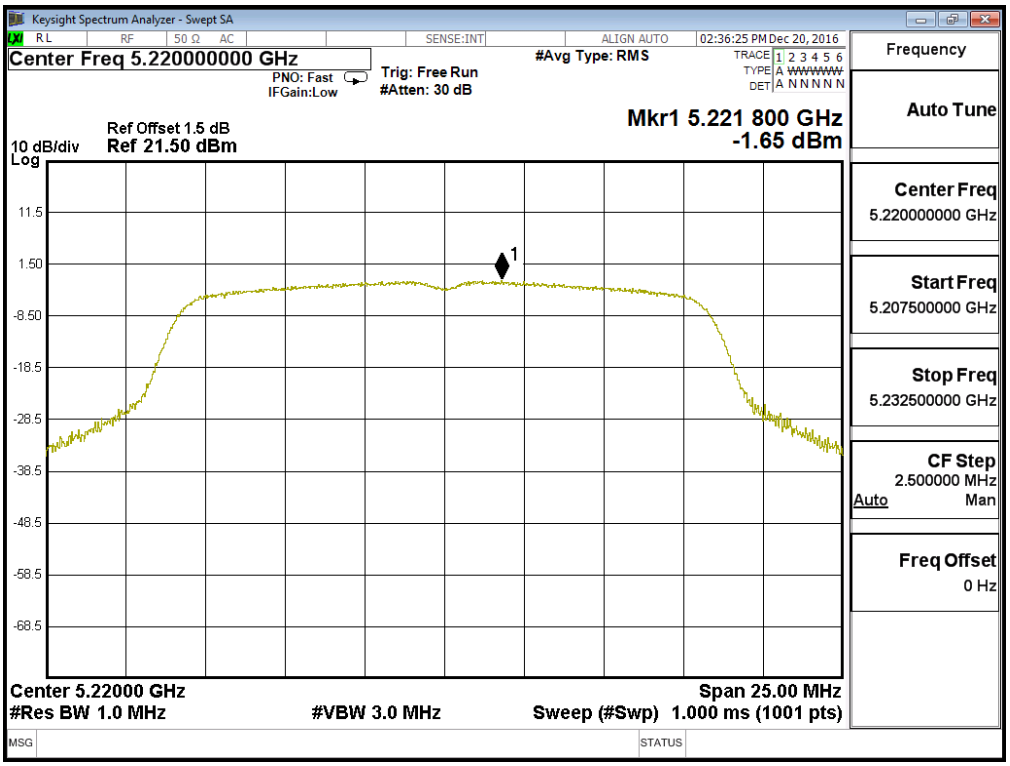
| Channel Number | Frequency (MHz) | Data Rata (Mbps) | PPSD (dBm) | BWCF (dB) | Total PPSD (dBm) | Required Limit (dBm) | Result |
|---|---|---|---|---|---|---|---|
| 149 | 5745 | 6 | -8.450 | 6.98 | -1.47 | <30 | Pass |
| 157 | 5785 | 6 | -8.660 | 6.98 | -1.68 | <30 | Pass |
| 165 | 5825 | 6 | -8.440 | 6.98 | -1.46 | <30 | Pass |

Note: Total PPSD Value = PPSD value + BWCF.

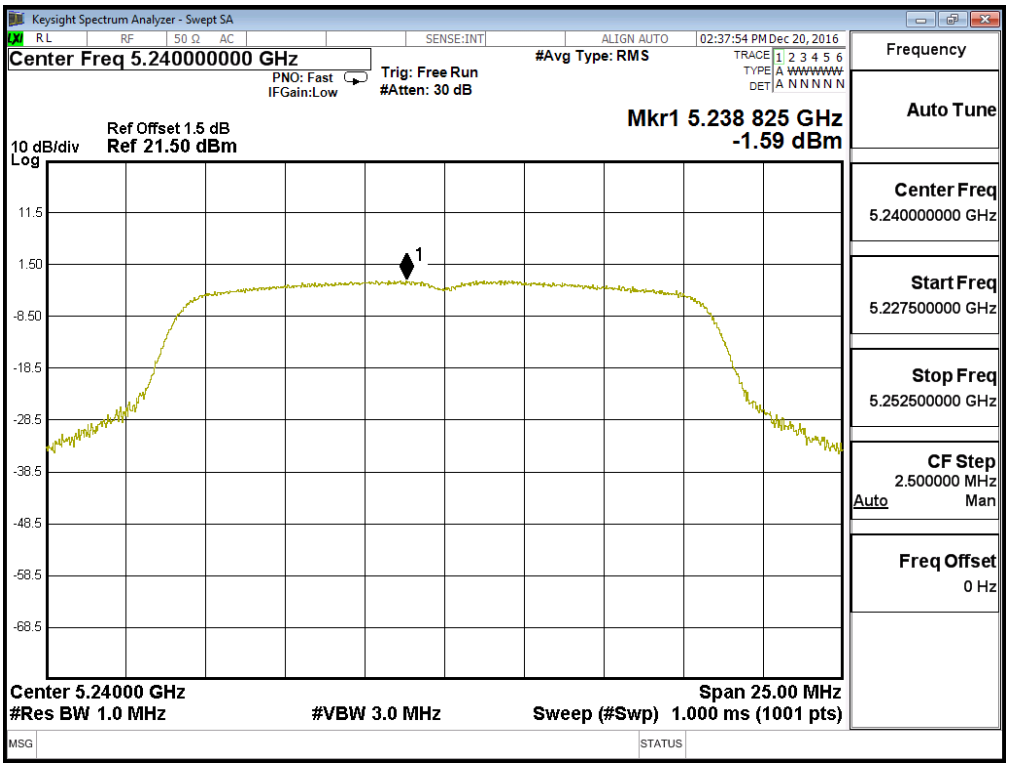
**Channel 36:**



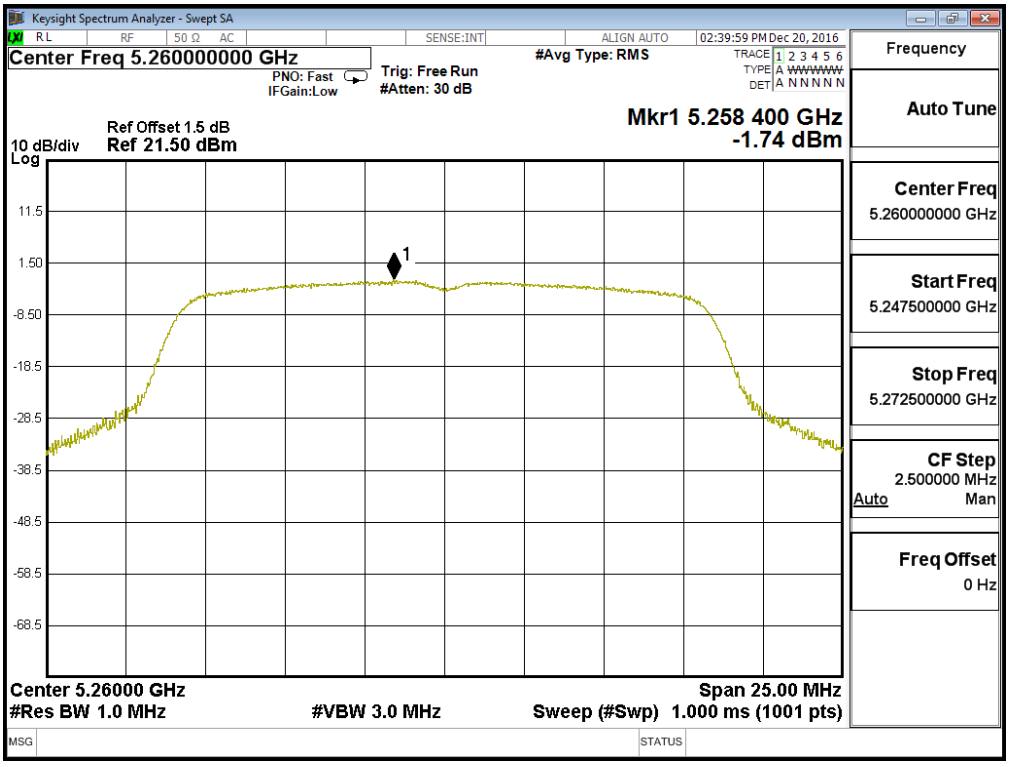

**Channel 44:**



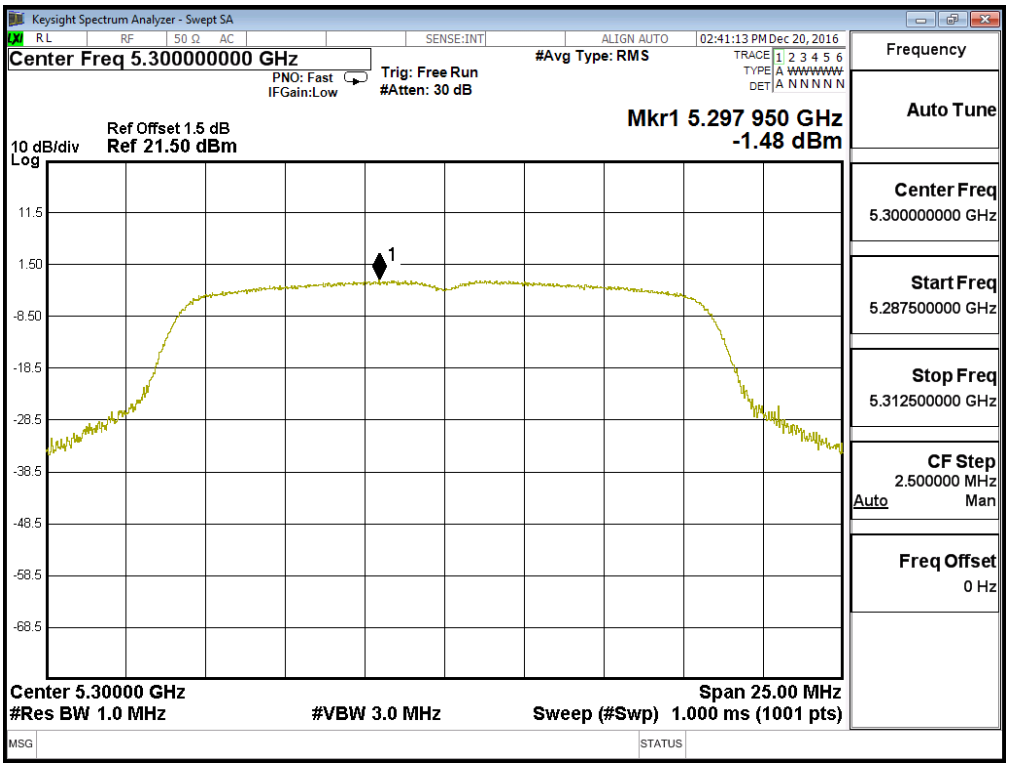
## Channel 48:



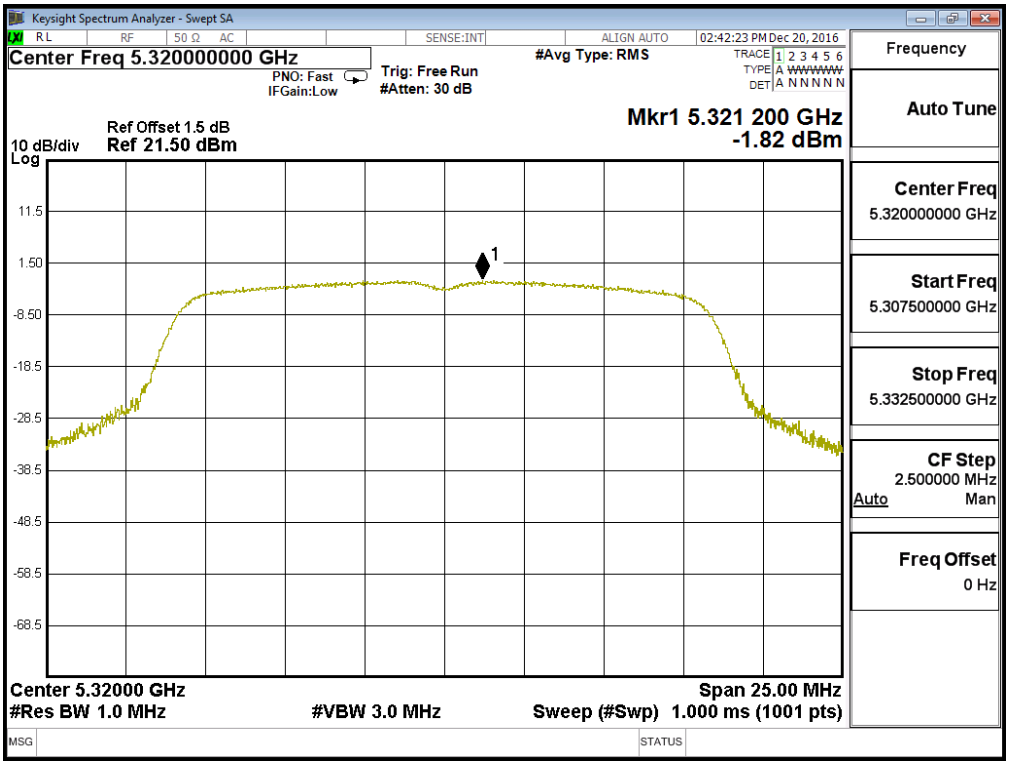

## Channel 52:



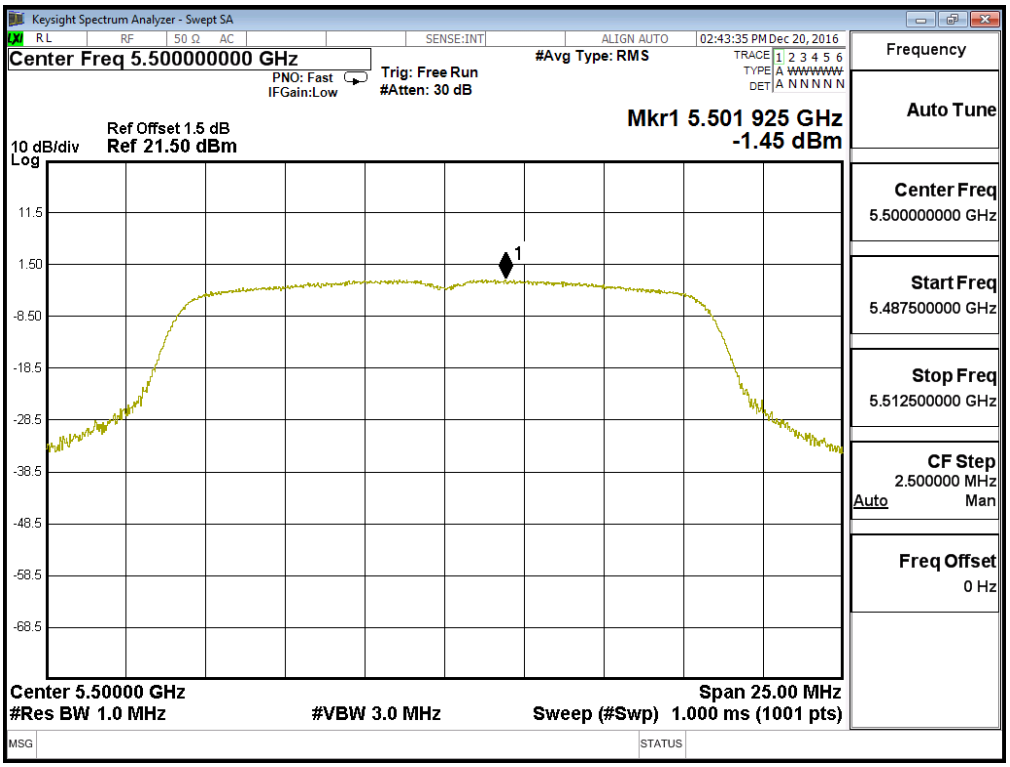
## Channel 60:



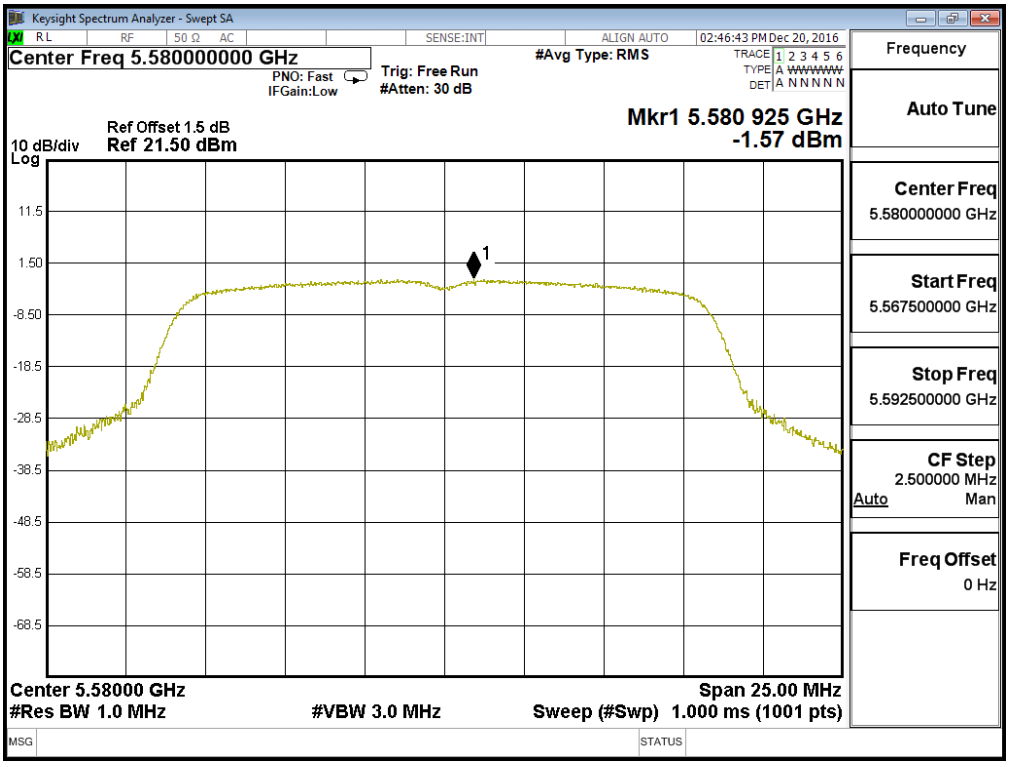

## Channel 64:



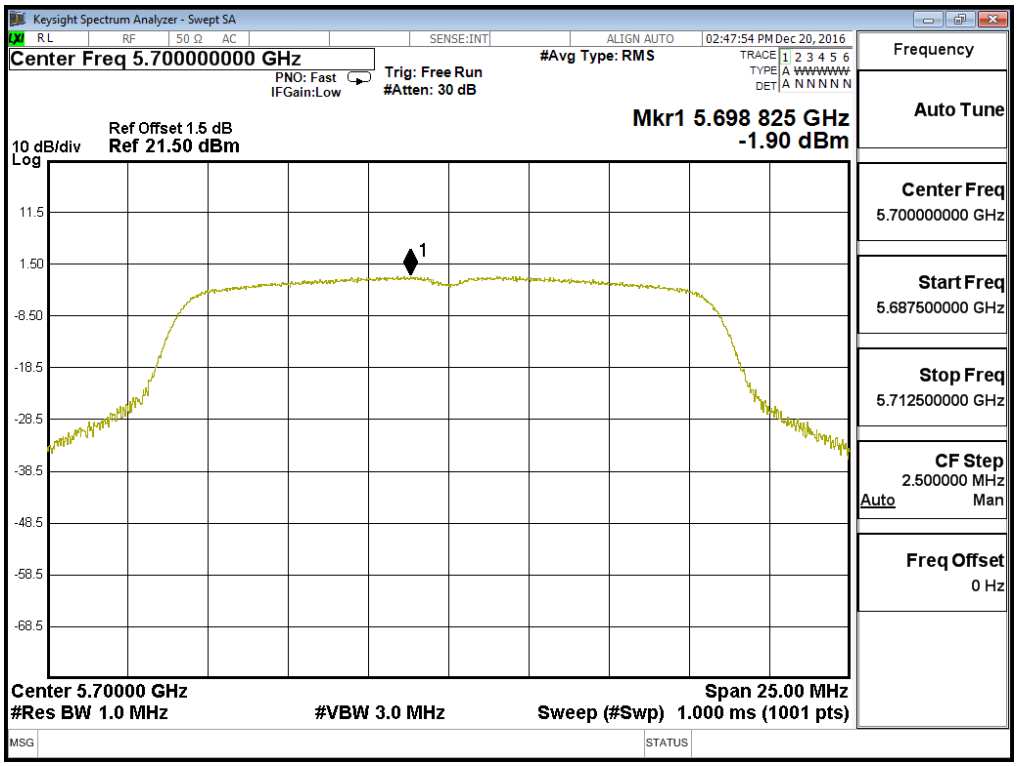
**Channel 100:**



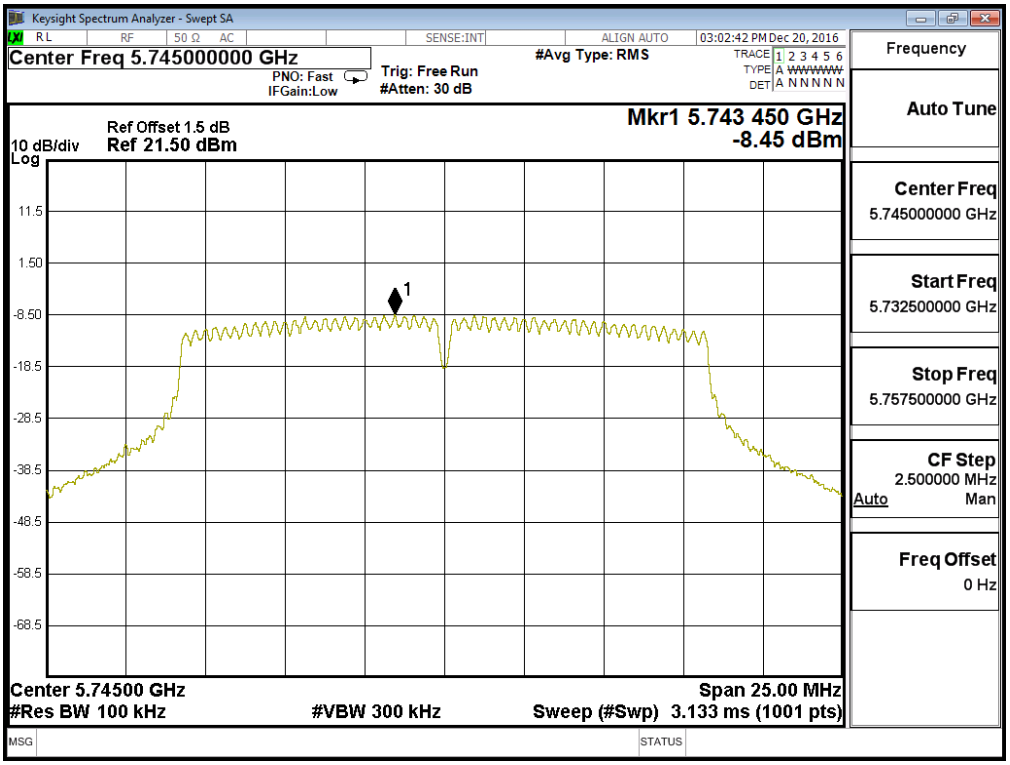

**Channel 116:**



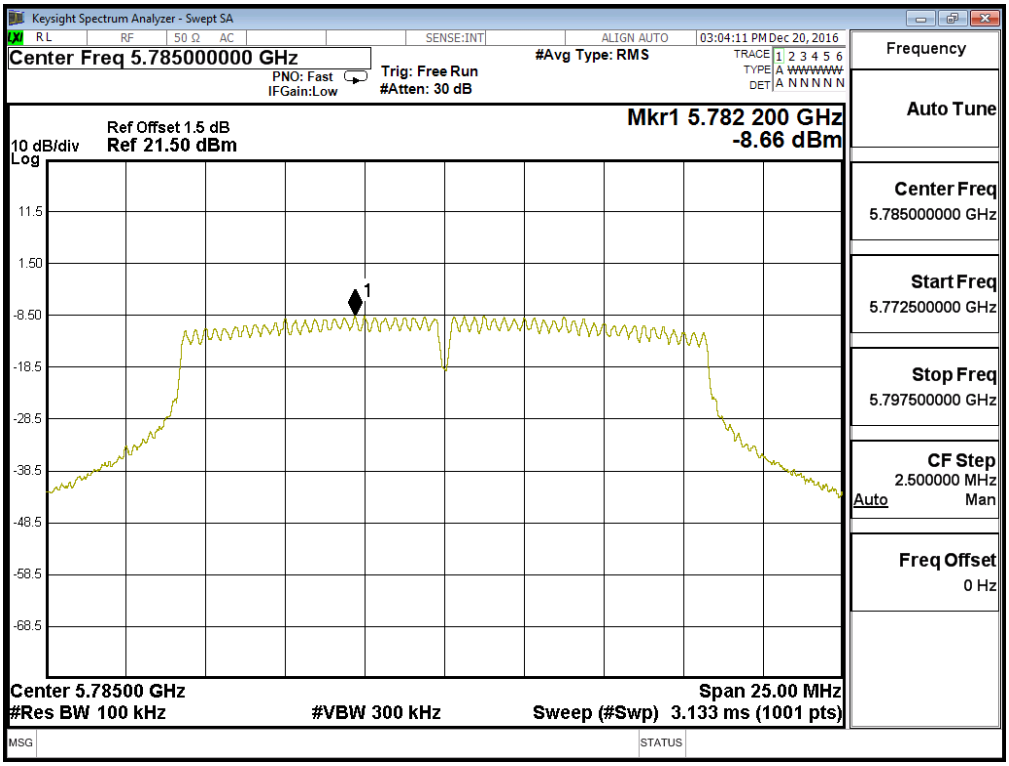
**Channel 140:**



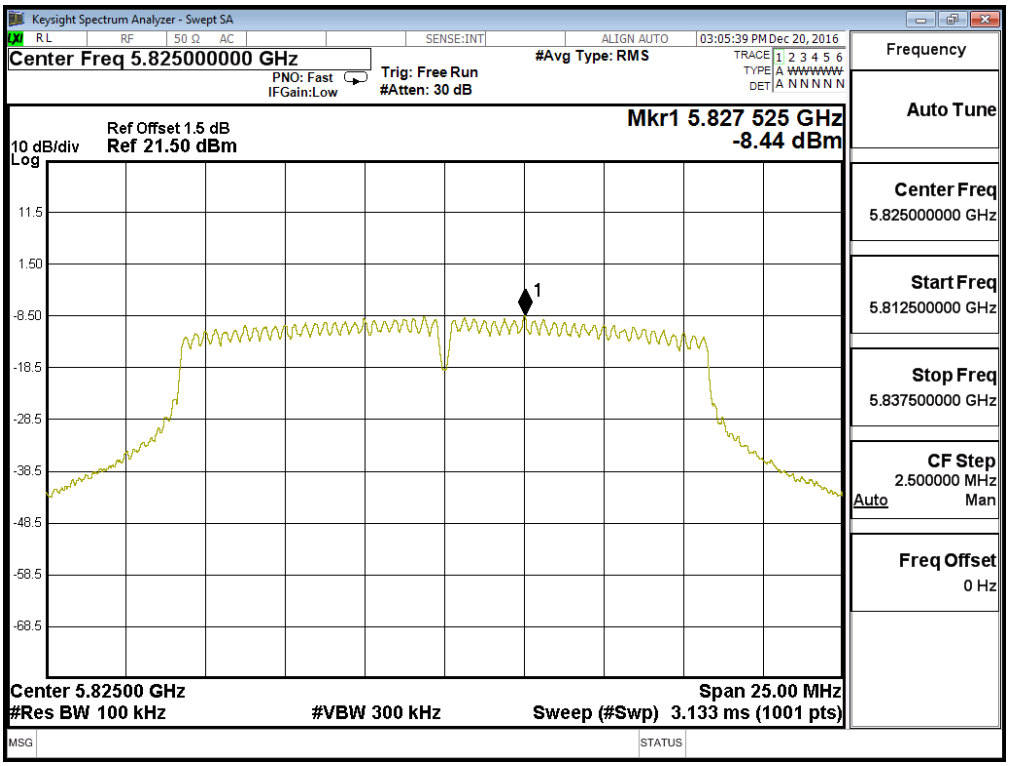

**Channel 149**



**Channel 157**




**Channel 165**



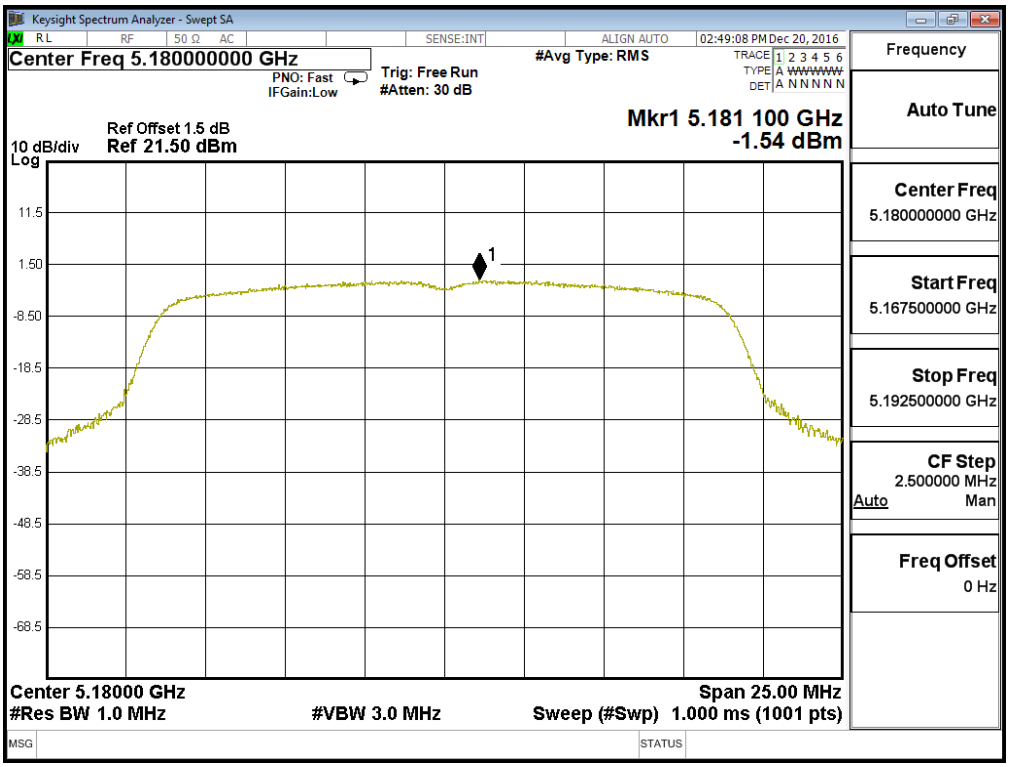
Product : Key programming device
Test Item : Peak Power Spectral Density
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps)

| Channel Number | Frequency (MHz) | Data Rata (Mbps) | Measurement Level (dBm) | Required Limit (dBm) | Result |
|---|---|---|---|---|---|
| 36 | 5180 | 7.2 | -1.540 | 11 | Pass |
| 44 | 5220 | 7.2 | -1.450 | 11 | Pass |
| 48 | 5240 | 7.2 | -1.120 | 11 | Pass |
| 52 | 5260 | 7.2 | -1.370 | 11 | Pass |
| 60 | 5300 | 7.2 | -1.110 | 11 | Pass |
| 64 | 5320 | 7.2 | -1.400 | 11 | Pass |
| 100 | 5500 | 7.2 | -1.410 | 11 | Pass |
| 116 | 5580 | 7.2 | -1.450 | 11 | Pass |
| 140 | 5700 | 7.2 | -1.490 | 11 | Pass |

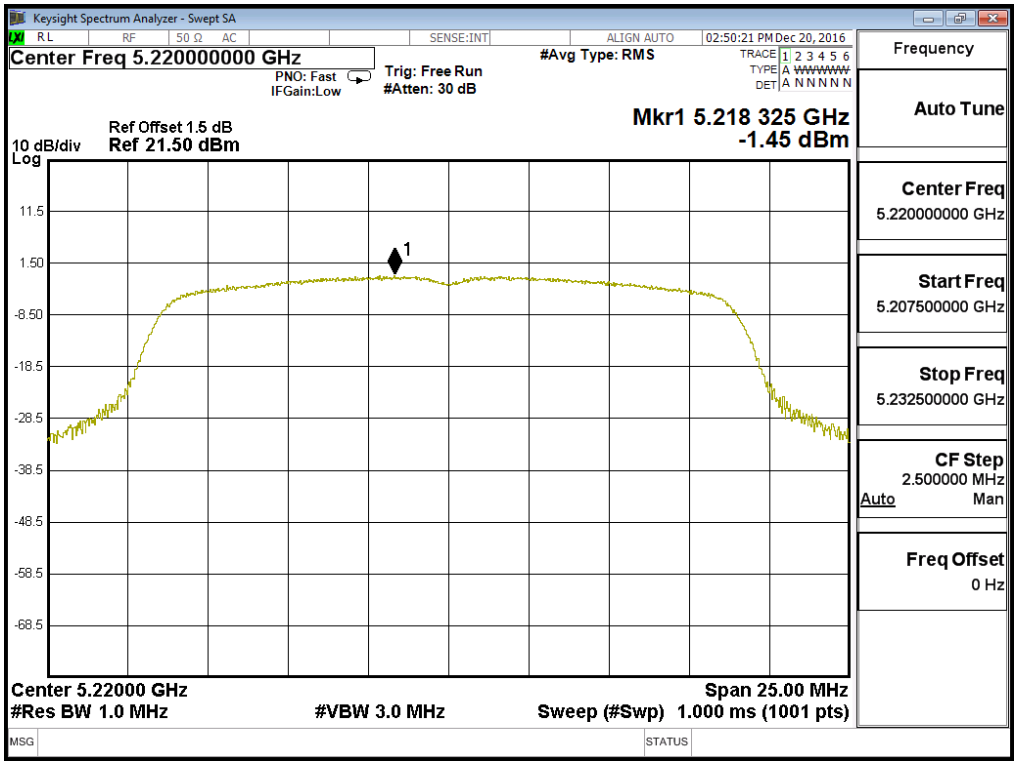
| Channel Number | Frequency (MHz) | Data Rata (Mbps) | PPSD (dBm) | BWCF (dB) | Total PPSD (dBm) | Required Limit (dBm) | Result |
|---|---|---|---|---|---|---|---|
| 149 | 5745 | 7.2 | -10.430 | 6.98 | -3.45 | <30 | Pass |
| 157 | 5785 | 7.2 | -10.450 | 6.98 | -3.47 | <30 | Pass |
| 165 | 5825 | 7.2 | -10.850 | 6.98 | -3.87 | <30 | Pass |

Note: Total PPSD Value = PPSD value + BWCF.

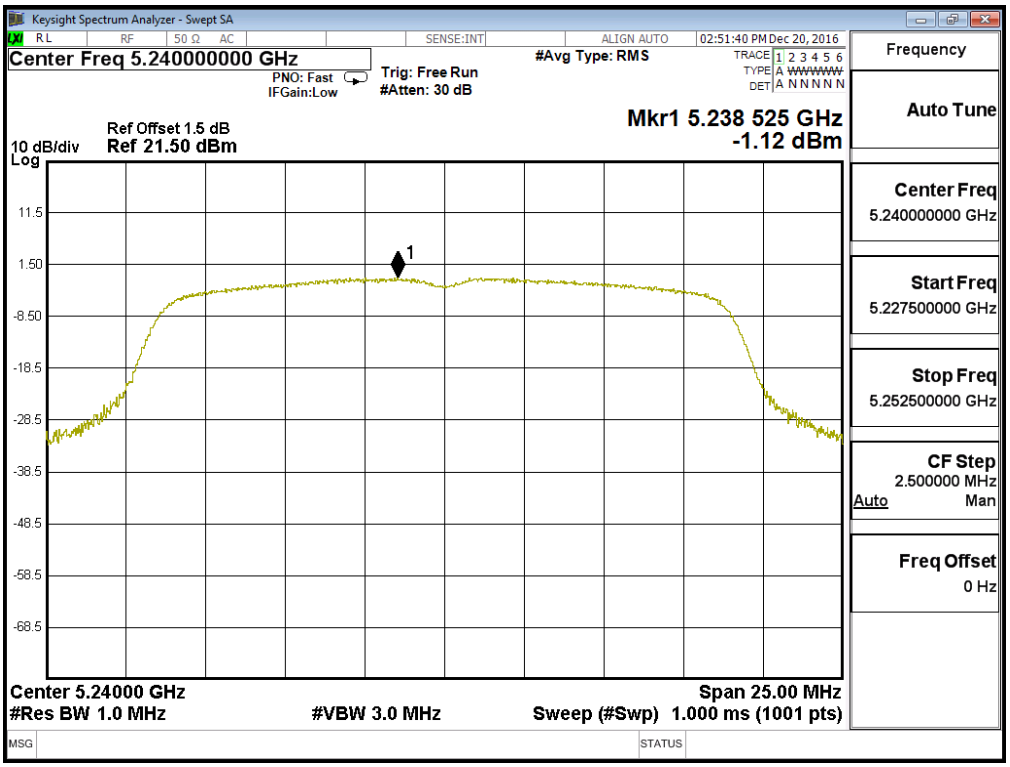
**Channel 36:**



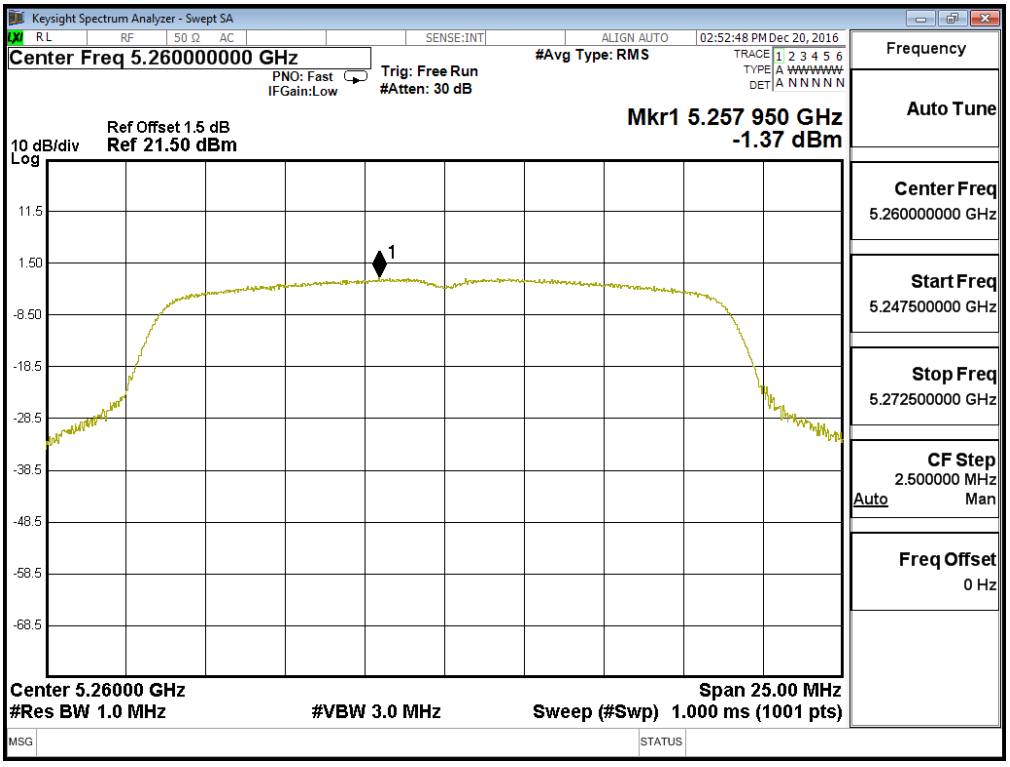

**Channel 44:**



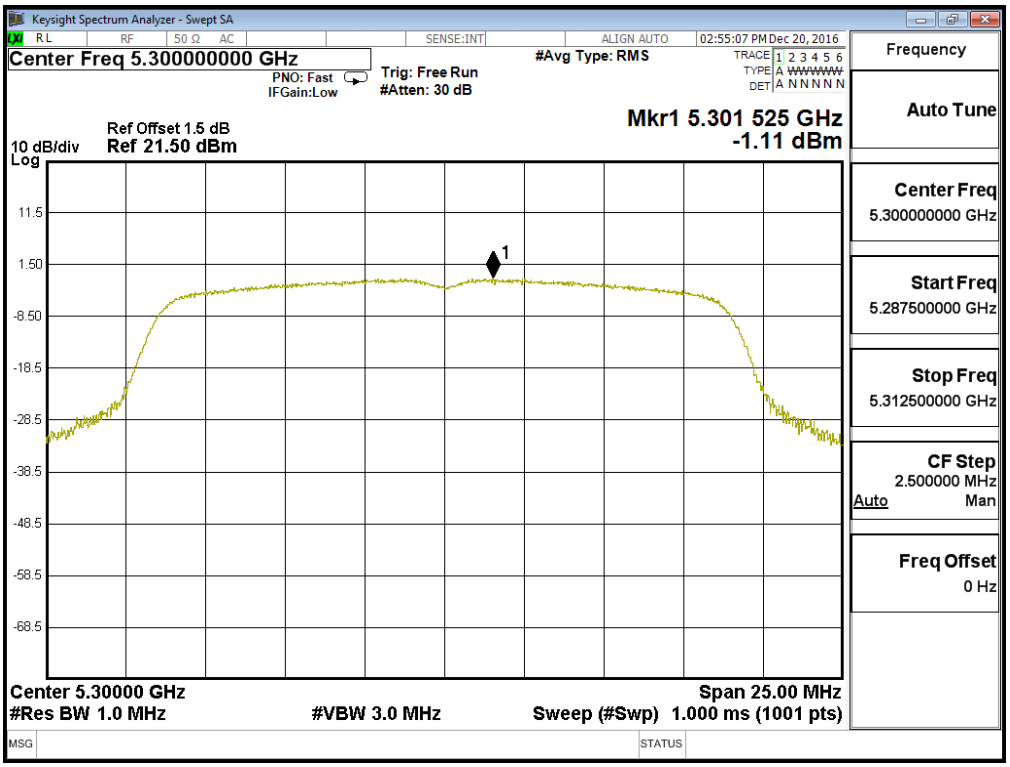
**Channel 48:**



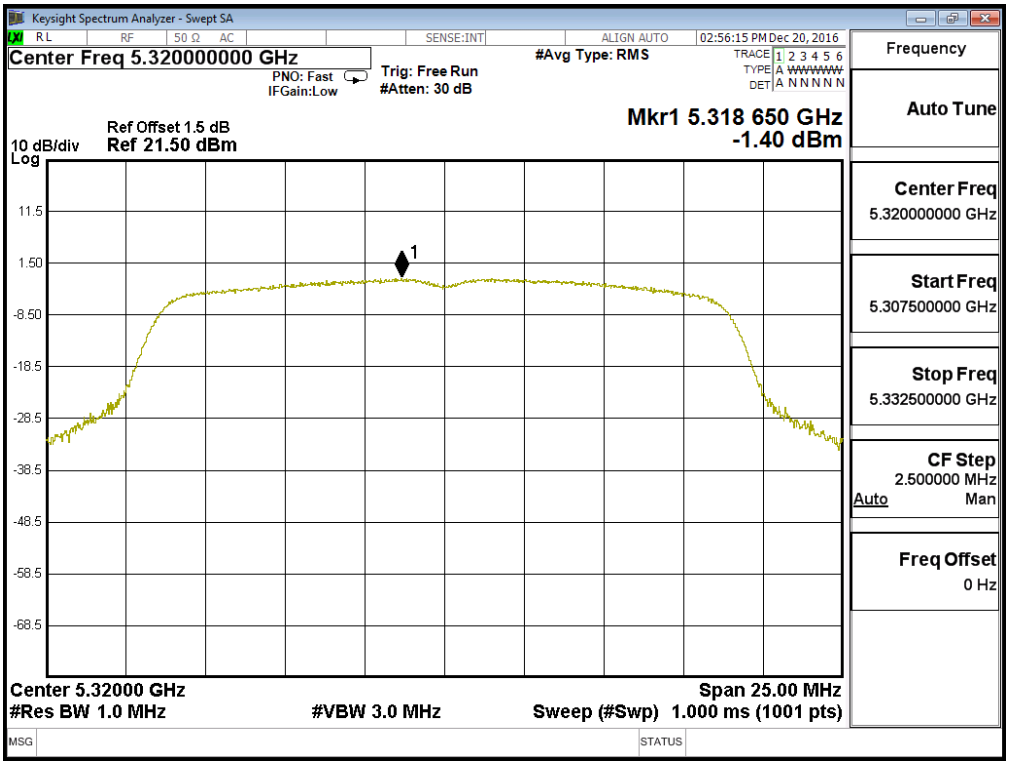

**Channel 52:**



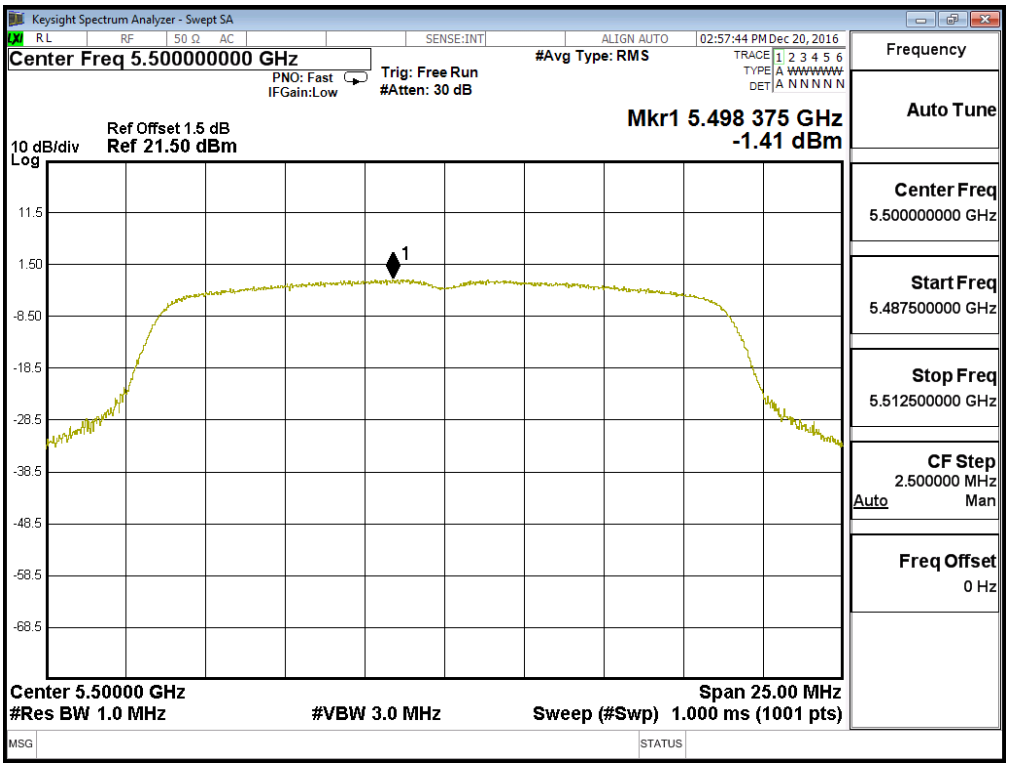
**Channel 60:**



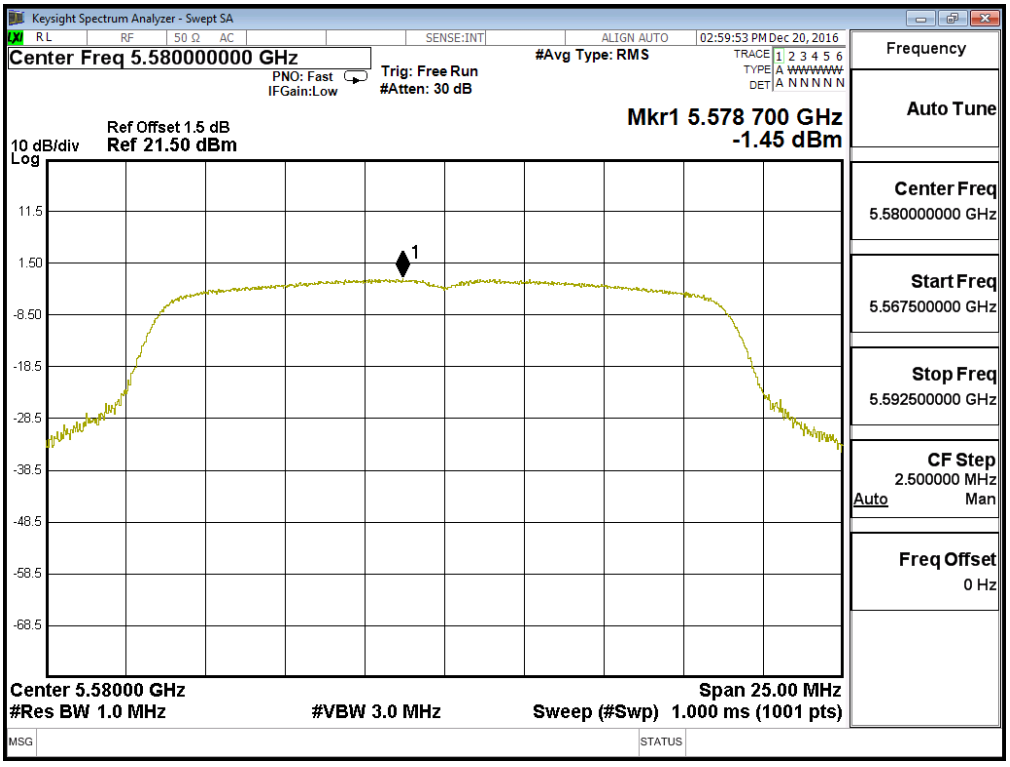

**Channel 64:**



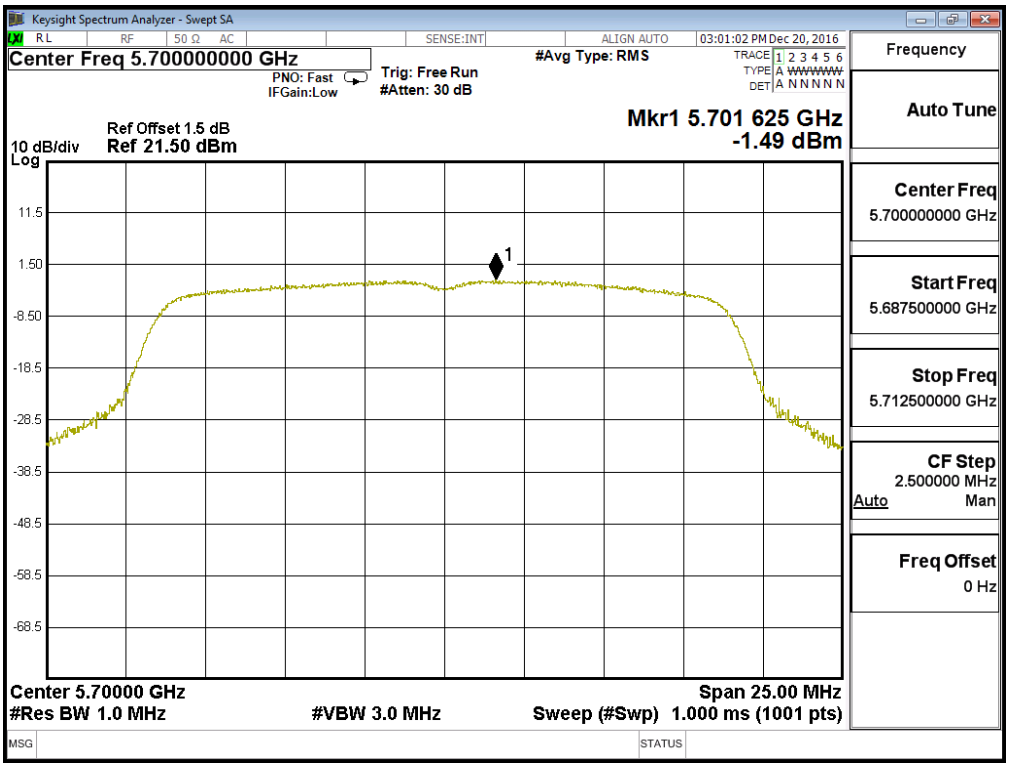
**Channel 100:**



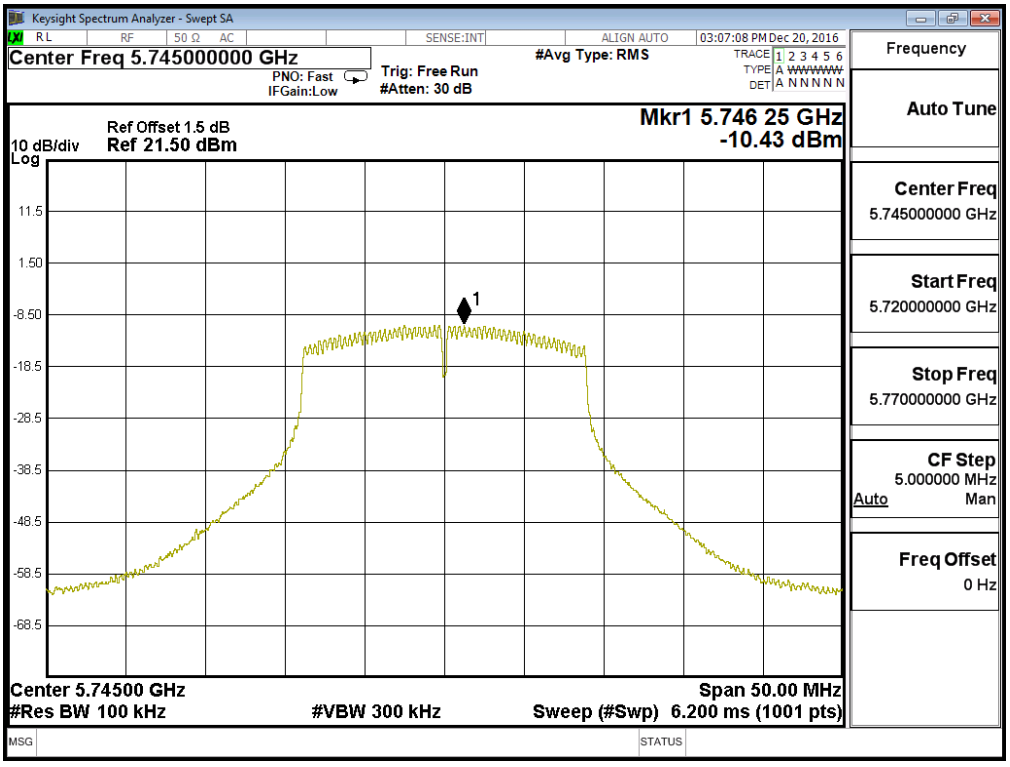

**Channel 116:**



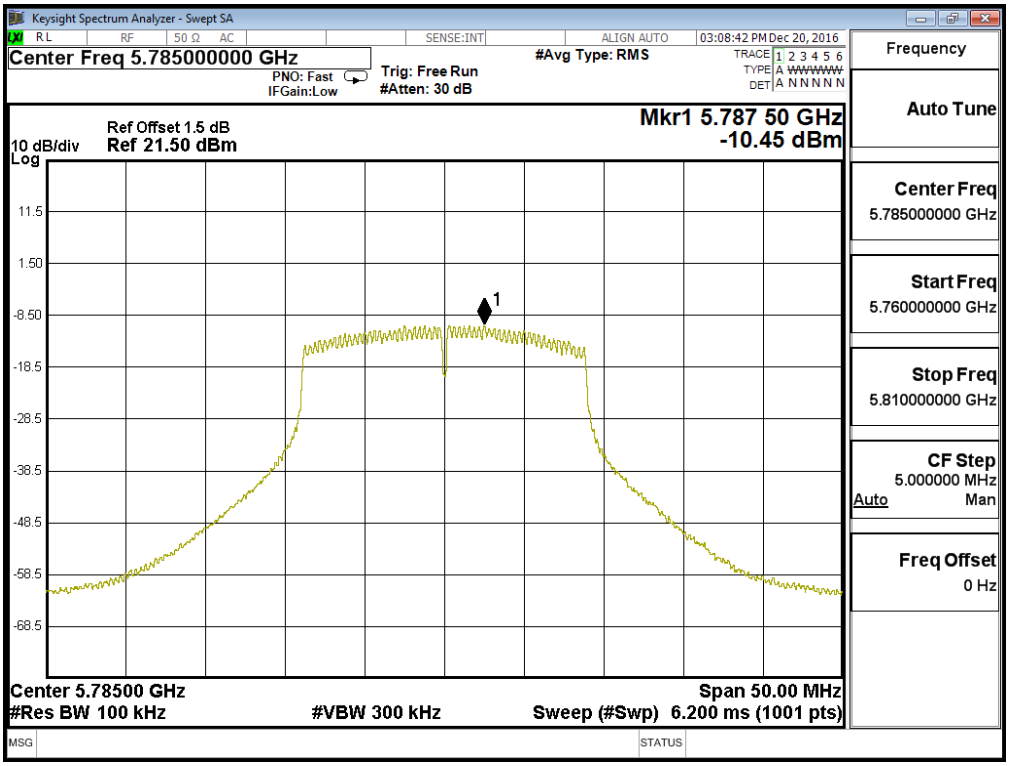
**Channel 140:**



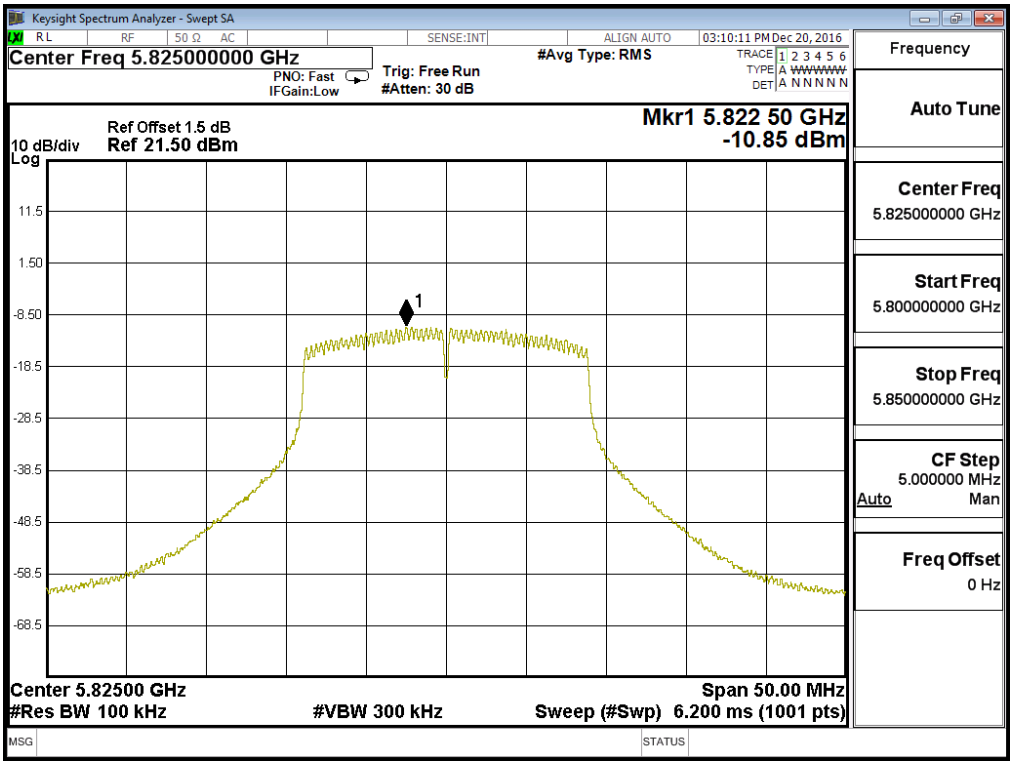

**Channel 149**



## Channel 157



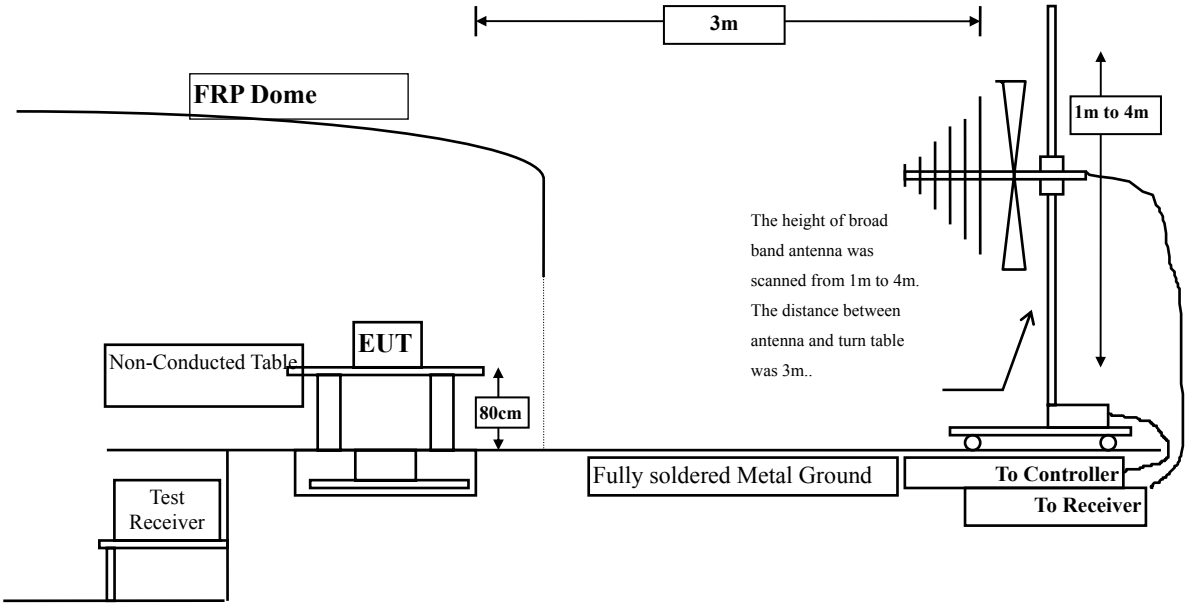

## Channel 165



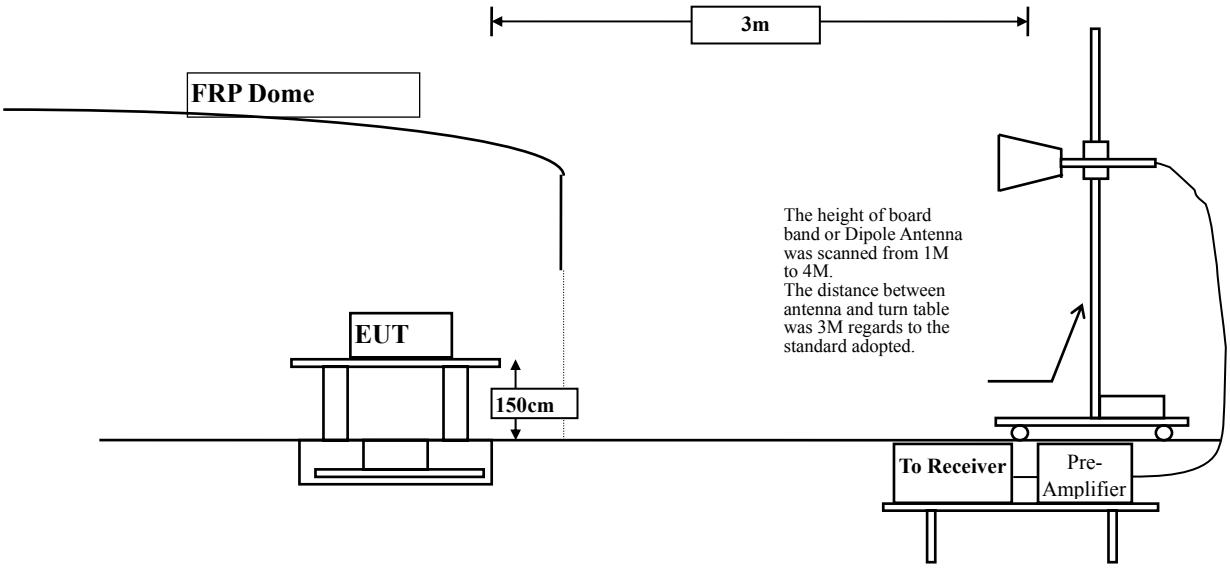
# 5. Radiated Emission

## 5.1. Test Setup

Radiated Emission Below 1GHz




Radiated Emission Above 1GHz




## 5.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in

paragraph 15.209, whichever is the lesser attenuation.

| **FCC Part 15 Subpart C Paragraph 15.209(a) Limits** | | |
|---|---|---|
| Frequency MHz | Field strength (microvolts/meter) | Measurement distance (meter) |
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| Above 960 | 500 | 3 |

Remarks: E field strength (dBμV/m) = 20 log E field strength (uV/m)

## 5.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground,when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

## 5.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

## 5.5. Test Result of Radiated Emission

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10360.000 | 10.540 | 41.620 | 52.160 | -21.840 | 74.000 |
| 15540.000 | * | * | * | * | 74.000 |
| 20720.000 | * | * | * | * | 74.000 |
| 25900.000 | * | * | * | * | 74.000 |
| 31080.000 | * | * | * | * | 74.000 |
| 36260.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10360.000 | 12.044 | 41.030 | 53.073 | -20.927 | 74.000 |
| 15540.000 | * | * | * | * | 74.000 |
| 20720.000 | * | * | * | * | 74.000 |
| 25900.000 | * | * | * | * | 74.000 |
| 31080.000 | * | * | * | * | 74.000 |
| 36260.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:
1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 1: Transmit (802.11a-6Mbps) (5220MHz) |

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10440.000 | 9.649 | 41.720 | 51.368 | -22.632 | 74.000 |
| 15660.000 | * | * | * | * | 74.000 |
| 20880.000 | * | * | * | * | 74.000 |
| 26100.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10440.000 | 11.429 | 41.640 | 53.068 | -20.932 | 74.000 |
| 15660.000 | * | * | * | * | 74.000 |
| 20880.000 | * | * | * | * | 74.000 |
| 26100.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 1: Transmit (802.11a-6Mbps) (5240MHz) |

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10480.000 | 10.166 | 41.610 | 51.776 | -22.224 | 74.000 |
| 15720.000 | * | * | * | * | 74.000 |
| 20960.000 | * | * | * | * | 74.000 |
| 26200.000 | * | * | * | * | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10480.000 | 12.101 | 41.130 | 53.231 | -20.769 | 74.000 |
| 15720.000 | * | * | * | * | 74.000 |
| 20960.000 | * | * | * | * | 74.000 |
| 26200.000 | * | * | * | * | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 1: Transmit (802.11a-6Mbps) (5260MHz) |

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10520.000 | 11.021 | 42.230 | 53.251 | -20.749 | 74.000 |
| 15780.000 | * | * | * | * | 74.000 |
| 21040.000 | * | * | * | * | 74.000 |
| 26300.000 | * | * | * | * | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10520.000 | 12.931 | 40.380 | 53.311 | -20.689 | 74.000 |
| 15780.000 | * | * | * | * | 74.000 |
| 21040.000 | * | * | * | * | 74.000 |
| 26300.000 | * | * | * | * | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5300MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10600.000 | 11.868 | 41.920 | 53.788 | -20.212 | 74.000 |
| 15900.000 | * | * | * | * | 74.000 |
| 21200.000 | * | * | * | * | 74.000 |
| 26500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10600.000 | 13.403 | 40.410 | 53.813 | -20.187 | 74.000 |
| 15900.000 | * | * | * | * | 74.000 |
| 21200.000 | * | * | * | * | 74.000 |
| 26500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 1: Transmit (802.11a-6Mbps) (5320MHz) |

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10640.000 | 11.844 | 41.610 | 53.454 | -20.546 | 74.000 |
| 15960.000 | * | * | * | * | 74.000 |
| 21280.000 | * | * | * | * | 74.000 |
| 26600.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10640.000 | 13.517 | 40.310 | 53.827 | -20.173 | 74.000 |
| 15960.000 | * | * | * | * | 74.000 |
| 21280.000 | * | * | * | * | 74.000 |
| 26600.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5500MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11000.000 | 12.392 | 41.080 | 53.472 | -20.528 | 74.000 |
| 16500.000 | * | * | * | * | 74.000 |
| 22000.000 | * | * | * | * | 74.000 |
| 27500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11000.000 | 14.514 | 38.920 | 53.434 | -20.566 | 74.000 |
| 16500.000 | * | * | * | * | 74.000 |
| 22000.000 | * | * | * | * | 74.000 |
| 27500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5580MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11160.000 | 12.201 | 40.310 | 52.511 | -21.489 | 74.000 |
| 16800.000 | * | * | * | * | 74.000 |
| 22400.000 | * | * | * | * | 74.000 |
| 28000.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11160.000 | 14.445 | 39.210 | 53.655 | -20.345 | 74.000 |
| 16800.000 | * | * | * | * | 74.000 |
| 22400.000 | * | * | * | * | 74.000 |
| 28000.000 | * | * | * | * | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 1: Transmit (802.11a-6Mbps) (5700MHz) |

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11400.000 | 13.372 | 38.720 | 52.092 | -21.908 | 74.000 |
| 17100.000 | * | * | * | * | 74.000 |
| 22800.000 | * | * | * | * | 74.000 |
| 28500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11400.000 | 14.922 | 38.730 | 53.652 | -20.348 | 74.000 |
| 17100.000 | * | * | * | * | 74.000 |
| 22800.000 | * | * | * | * | 74.000 |
| 28500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5745MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal Peak Detector:** | | | | | |
| 11490.000 | 14.326 | 38.240 | 52.565 | -21.435 | 74.000 |
| 17235.000 | * | * | * | * | 74.000 |
| 20720.000 | * | * | * | * | 74.000 |
| 25900.000 | * | * | * | * | 74.000 |
| 31080.000 | * | * | * | * | 74.000 |
| 36260.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical Peak Detector:** | | | | | |
| 11490.000 | 15.842 | 37.940 | 53.781 | -20.219 | 74.000 |
| 17235.000 | * | * | * | * | 74.000 |
| 20720.000 | * | * | * | * | 74.000 |
| 25900.000 | * | * | * | * | 74.000 |
| 31080.000 | * | * | * | * | 74.000 |
| 36260.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5785MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11570.000 | 14.849 | 38.130 | 52.979 | -21.021 | 74.000 |
| 17355.000 | * | * | * | * | 74.000 |
| 20800.000 | * | * | * | * | 74.000 |
| 26000.000 | * | * | * | * | 74.000 |
| 31200.000 | * | * | * | * | 74.000 |
| 36400.000 | * | * | * | * | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11570.000 | 16.215 | 36.450 | 52.664 | -21.336 | 74.000 |
| 17355.000 | * | * | * | * | 74.000 |
| 20800.000 | * | * | * | * | 74.000 |
| 26000.000 | * | * | * | * | 74.000 |
| 31200.000 | * | * | * | * | 74.000 |
| 36400.000 | * | * | * | * | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 1: Transmit (802.11a-6Mbps) (5825MHz) |

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11650.000 | 13.179 | 38.430 | 51.609 | -22.391 | 74.000 |
| 17475.000 | * | * | * | * | 74.000 |
| 20960.000 | * | * | * | * | 74.000 |
| 26200.000 | * | * | * | * | 74.000 |
| 31440000 | * | * | * | * | 74.000 |
| 36680.000 | * | * | * | * | * |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11650.000 | 14.634 | 38.280 | 52.914 | -21.086 | 74.000 |
| 17475.000 | * | * | * | * | 74.000 |
| 20960.000 | * | * | * | * | 74.000 |
| 26200.000 | * | * | * | * | 74.000 |
| 31440000 | * | * | * | * | 74.000 |
| 36680.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5180MHz) |

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10360.000 | 10.540 | 41.080 | 51.620 | -22.380 | 74.000 |
| 15540.000 | * | * | * | * | 74.000 |
| 20720.000 | * | * | * | * | 74.000 |
| 25900.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10360.000 | 12.044 | 40.310 | 52.353 | -21.647 | 74.000 |
| 15540.000 | * | * | * | * | 74.000 |
| 20720.000 | * | * | * | * | 74.000 |
| 25900.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5220MHz) |

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10440.000 | 9.649 | 41.390 | 51.038 | -22.962 | 74.000 |
| 15660.000 | * | * | * | * | 74.000 |
| 20880.000 | * | * | * | * | 74.000 |
| 26100.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10440.000 | 11.429 | 41.420 | 52.848 | -21.152 | 74.000 |
| 15660.000 | * | * | * | * | 74.000 |
| 20880.000 | * | * | * | * | 74.000 |
| 26100.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5240MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10480.000 | 10.166 | 41.630 | 51.796 | -22.204 | 74.000 |
| 15720.000 | * | * | * | * | 74.000 |
| 20960.000 | * | * | * | * | 74.000 |
| 26200.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10480.000 | 12.101 | 40.470 | 52.571 | -21.429 | 74.000 |
| 15720.000 | * | * | * | * | 74.000 |
| 20960.000 | * | * | * | * | 74.000 |
| 26200.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5260MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10520.000 | 11.021 | 42.010 | 53.031 | -20.969 | 74.000 |
| 15780.000 | * | * | * | * | 74.000 |
| 21040.000 | * | * | * | * | 74.000 |
| 26300.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10520.000 | 12.931 | 40.310 | 53.241 | -20.759 | 74.000 |
| 15780.000 | * | * | * | * | 74.000 |
| 21040.000 | * | * | * | * | 74.000 |
| 26300.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5300MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10600.000 | 11.868 | 41.280 | 53.148 | -20.852 | 74.000 |
| 15900.000 | * | * | * | * | 74.000 |
| 21200.000 | * | * | * | * | 74.000 |
| 26500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10600.000 | 13.403 | 40.030 | 53.433 | -20.567 | 74.000 |
| 15900.000 | * | * | * | * | 74.000 |
| 21200.000 | * | * | * | * | 74.000 |
| 26500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5320MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 10640.000 | 11.844 | 40.920 | 52.764 | -21.236 | 74.000 |
| 15960.000 | * | * | * | * | 74.000 |
| 21280.000 | * | * | * | * | 74.000 |
| 26600.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 10640.000 | 13.517 | 40.130 | 53.647 | -20.353 | 74.000 |
| 15960.000 | * | * | * | * | 74.000 |
| 21280.000 | * | * | * | * | 74.000 |
| 26600.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5500MHz) |

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11000.000 | 12.392 | 41.190 | 53.582 | -20.418 | 74.000 |
| 16500.000 | * | * | * | * | 74.000 |
| 22000.000 | * | * | * | * | 74.000 |
| 27500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11000.000 | 14.514 | 38.350 | 52.864 | -21.136 | 74.000 |
| 16500.000 | * | * | * | * | 74.000 |
| 22000.000 | * | * | * | * | 74.000 |
| 27500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5580MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11160.000 | 12.201 | 40.130 | 52.331 | -21.669 | 74.000 |
| 16800.000 | * | * | * | * | 74.000 |
| 22400.000 | * | * | * | * | 74.000 |
| 28000.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11160.000 | 14.445 | 39.130 | 53.575 | -20.425 | 74.000 |
| 16800.000 | * | * | * | * | 74.000 |
| 22400.000 | * | * | * | * | 74.000 |
| 28000.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Harmonic Radiated Emission Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5700MHz) |

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11400.000 | 13.372 | 40.040 | 53.412 | -20.588 | 74.000 |
| 17100.000 | * | * | * | * | 74.000 |
| 22800.000 | * | * | * | * | 74.000 |
| 28500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11400.000 | 14.922 | 38.530 | 53.452 | -20.548 | 74.000 |
| 17100.000 | * | * | * | * | 74.000 |
| 22800.000 | * | * | * | * | 74.000 |
| 28500.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5745MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11490.000 | 14.326 | 38.490 | 52.815 | -21.185 | 74.000 |
| 17235.000 | * | * | * | * | 74.000 |
| 20720.000 | * | * | * | * | 74.000 |
| 25900.000 | * | * | * | * | 74.000 |
| 31080.000 | * | * | * | * | 74.000 |
| 36260.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11490.000 | 15.842 | 37.520 | 53.361 | -20.639 | 74.000 |
| 17235.000 | * | * | * | * | 74.000 |
| 20720.000 | * | * | * | * | 74.000 |
| 25900.000 | * | * | * | * | 74.000 |
| 31080.000 | * | * | * | * | 74.000 |
| 36260.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5785MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11570.000 | 14.849 | 38.160 | 53.009 | -20.991 | 74.000 |
| 17355.000 | * | * | * | * | 74.000 |
| 20880.000 | * | * | * | * | 74.000 |
| 26100.000 | * | * | * | * | 74.000 |
| 31320.000 | * | * | * | * | 74.000 |
| 36540.000 | * | * | * | * | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11570.000 | 16.215 | 36.920 | 53.134 | -20.866 | 74.000 |
| 17355.000 | * | * | * | * | 74.000 |
| 20880.000 | * | * | * | * | 74.000 |
| 26100.000 | * | * | * | * | 74.000 |
| 31320.000 | * | * | * | * | 74.000 |
| 36540.000 | * | * | * | * | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5825MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal Peak Detector:** | | | | | |
| 11650.000 | 13.179 | 38.720 | 51.899 | -22.101 | 74.000 |
| 17475.000 | * | * | * | * | 74.000 |
| 20960.000 | * | * | * | * | 74.000 |
| 26200.000 | * | * | * | * | 74.000 |
| 31440.000 | * | * | * | * | 74.000 |
| 36680.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |
| **Vertical Peak Detector:** | | | | | |
| 11650.000 | 14.634 | 39.060 | 53.694 | -20.306 | 74.000 |
| 17475.000 | * | * | * | * | 74.000 |
| 20960.000 | * | * | * | * | 74.000 |
| 26200.000 | * | * | * | * | 74.000 |
| 31440.000 | * | * | * | * | 74.000 |
| 36680.000 | * | * | * | * | 74.000 |
| **Average Detector:** | | | | | |
| * | * | * | * | * | * |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Key programming device
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5220MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector** | | | | | |
| 146.550 | -7.761 | 35.341 | 27.581 | -15.919 | 43.500 |
| 261.140 | -5.462 | 37.909 | 32.447 | -13.553 | 46.000 |
| 362.250 | 0.043 | 41.171 | 41.214 | -4.786 | 46.000 |
| 577.820 | 3.294 | 34.301 | 37.594 | -8.406 | 46.000 |
| 751.150 | 4.220 | 27.981 | 32.201 | -13.799 | 46.000 |
| 933.470 | 7.046 | 27.548 | 34.594 | -11.406 | 46.000 |
| **Vertical** | | | | | |
| **Peak Detector** | | | | | |
| 234.550 | -6.916 | 36.875 | 29.959 | -16.041 | 46.000 |
| 371.280 | -0.330 | 39.989 | 39.659 | -6.341 | 46.000 |
| 546.330 | 0.845 | 29.601 | 30.447 | -15.553 | 46.000 |
| 693.950 | 1.662 | 21.922 | 23.584 | -22.416 | 46.000 |
| 796.650 | 2.637 | 29.507 | 32.144 | -13.856 | 46.000 |
| 922.540 | 3.196 | 30.029 | 33.225 | -12.775 | 46.000 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Key programming device
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5300MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector** | | | | | |
| 157.540 | -9.073 | 38.245 | 29.172 | -14.328 | 43.500 |
| 359.680 | -0.252 | 28.087 | 27.835 | -18.165 | 46.000 |
| 561.860 | 1.949 | 28.556 | 30.505 | -15.495 | 46.000 |
| 681.190 | 2.816 | 29.203 | 32.018 | -13.982 | 46.000 |
| 836.210 | 6.014 | 26.240 | 32.254 | -13.746 | 46.000 |
| 942.840 | 6.818 | 28.375 | 35.194 | -10.806 | 46.000 |
| **Vertical** | | | | | |
| **Peak Detector** | | | | | |
| 85.550 | -4.039 | 27.613 | 23.574 | -16.426 | 40.000 |
| 376.660 | 0.570 | 19.315 | 19.885 | -26.115 | 46.000 |
| 536.690 | 1.679 | 20.376 | 22.055 | -23.945 | 46.000 |
| 751.250 | 2.294 | 22.589 | 24.884 | -21.116 | 46.000 |
| 846.580 | 1.942 | 22.216 | 24.158 | -21.842 | 46.000 |
| 962.950 | 3.556 | 25.918 | 29.474 | -24.526 | 54.000 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Key programming device
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5580MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector** | | | | | |
| 97.580 | -10.137 | 38.031 | 27.895 | -15.605 | 43.500 |
| 162.250 | -10.059 | 38.633 | 28.574 | -14.926 | 43.500 |
| 362.540 | 0.072 | 29.624 | 29.696 | -16.304 | 46.000 |
| 611.550 | 3.461 | 27.717 | 31.178 | -14.822 | 46.000 |
| 824.510 | 7.307 | 23.737 | 31.044 | -14.956 | 46.000 |
| 904.580 | 5.994 | 32.654 | 38.648 | -7.352 | 46.000 |
| **Vertical** | | | | | |
| **Peak Detector** | | | | | |
| 106.690 | -4.285 | 27.329 | 23.044 | -20.456 | 43.500 |
| 383.360 | 0.105 | 20.740 | 20.844 | -25.156 | 46.000 |
| 521.280 | 1.088 | 20.052 | 21.141 | -24.859 | 46.000 |
| 689.440 | 2.301 | 21.813 | 24.114 | -21.886 | 46.000 |
| 824.590 | 3.072 | 20.443 | 23.515 | -22.485 | 46.000 |
| 963.640 | 3.653 | 24.040 | 27.694 | -26.306 | 54.000 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Key programming device
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5785MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector** | | | | | |
| 142.220 | -7.615 | 33.089 | 25.474 | -18.026 | 43.500 |
| 236.780 | -8.053 | 33.493 | 25.440 | -20.560 | 46.000 |
| 315.660 | -4.621 | 36.605 | 31.984 | -14.016 | 46.000 |
| 516.520 | 3.198 | 30.821 | 34.019 | -11.981 | 46.000 |
| 659.540 | 1.887 | 25.754 | 27.641 | -18.359 | 46.000 |
| 937.580 | 6.754 | 23.193 | 29.947 | -16.053 | 46.000 |
| **Vertical** | | | | | |
| **Peak Detector** | | | | | |
| 211.250 | -5.696 | 36.170 | 30.474 | -13.026 | 43.500 |
| 339.590 | -1.438 | 29.333 | 27.895 | -18.105 | 46.000 |
| 441.590 | -6.800 | 28.385 | 21.585 | -24.415 | 46.000 |
| 611.490 | 1.978 | 25.871 | 27.849 | -18.151 | 46.000 |
| 834.510 | 1.490 | 25.097 | 26.588 | -19.412 | 46.000 |
| 965.850 | 3.864 | 25.249 | 29.113 | -24.887 | 54.000 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Key programming device
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5220MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector** | | | | | |
| 165.140 | -9.936 | 37.522 | 27.585 | -15.915 | 43.500 |
| 253.360 | -5.630 | 37.478 | 31.848 | -14.152 | 46.000 |
| 356.440 | -1.112 | 30.753 | 29.641 | -16.359 | 46.000 |
| 480.520 | 1.829 | 36.318 | 38.147 | -7.853 | 46.000 |
| 504.520 | 2.038 | 37.810 | 39.847 | -6.153 | 46.000 |
| 926.690 | 6.916 | 21.939 | 28.854 | -17.146 | 46.000 |
| **Vertical** | | | | | |
| **Peak Detector** | | | | | |
| 136.540 | -4.514 | 36.098 | 31.584 | -11.916 | 43.500 |
| 204.580 | -5.474 | 30.063 | 24.589 | -18.911 | 43.500 |
| 382.390 | 0.426 | 31.514 | 31.940 | -14.060 | 46.000 |
| 611.840 | 1.954 | 29.924 | 31.877 | -14.123 | 46.000 |
| 851.940 | -0.371 | 29.525 | 29.154 | -16.846 | 46.000 |
| 962.690 | 3.521 | 38.023 | 41.544 | -12.456 | 54.000 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Key programming device
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5300MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector** | | | | | |
| 310.250 | -4.590 | 33.071 | 28.480 | -17.520 | 46.000 |
| 481.590 | 1.715 | 29.440 | 31.155 | -14.845 | 46.000 |
| 507.850 | 2.674 | 28.687 | 31.361 | -14.639 | 46.000 |
| 604.690 | 4.301 | 27.810 | 32.111 | -13.889 | 46.000 |
| 757.840 | 5.115 | 18.504 | 23.619 | -22.381 | 46.000 |
| 929.690 | 7.477 | 20.110 | 27.587 | -18.413 | 46.000 |
| **Vertical** | | | | | |
| **Peak Detector** | | | | | |
| 130.210 | -3.734 | 35.424 | 31.690 | -11.810 | 43.500 |
| 184.570 | -4.903 | 33.738 | 28.836 | -14.664 | 43.500 |
| 251.950 | -4.988 | 28.775 | 23.788 | -22.212 | 46.000 |
| 420.250 | -6.731 | 30.046 | 23.314 | -22.686 | 46.000 |
| 495.520 | -1.255 | 25.802 | 24.547 | -21.453 | 46.000 |
| 751.250 | 2.294 | 21.352 | 23.647 | -22.353 | 46.000 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Key programming device
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5580MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector** | | | | | |
| 132.250 | -7.431 | 34.057 | 26.625 | -16.875 | 43.500 |
| 348.470 | -1.317 | 32.573 | 31.256 | -14.744 | 46.000 |
| 483.540 | 1.508 | 26.044 | 27.552 | -18.448 | 46.000 |
| 513.360 | 3.183 | 34.018 | 37.201 | -8.799 | 46.000 |
| 742.280 | 3.895 | 22.797 | 26.693 | -19.307 | 46.000 |
| 942.360 | 6.805 | 21.759 | 28.564 | -17.436 | 46.000 |
| **Vertical** | | | | | |
| **Peak Detector** | | | | | |
| 186.220 | -5.590 | 29.156 | 23.566 | -19.934 | 43.500 |
| 314.250 | -4.099 | 30.569 | 26.470 | -19.530 | 46.000 |
| 364.470 | 0.275 | 27.238 | 27.514 | -18.486 | 46.000 |
| 532.270 | 1.207 | 24.678 | 25.885 | -20.115 | 46.000 |
| 699.100 | 0.050 | 32.183 | 32.233 | -13.767 | 46.000 |
| 856.660 | -0.291 | 31.516 | 31.225 | -14.775 | 46.000 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Key programming device
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5785MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBμV | dBμV/m | dB | dBμV/m |
| **Horizontal** | | | | | |
| **Peak Detector** | | | | | |
| 236.690 | -8.093 | 39.677 | 31.584 | -14.416 | 46.000 |
| 384.580 | 1.235 | 36.648 | 37.884 | -8.116 | 46.000 |
| 461.190 | 3.991 | 27.261 | 31.252 | -14.748 | 46.000 |
| 521.250 | 3.195 | 27.830 | 31.025 | -14.975 | 46.000 |
| 738.940 | 3.501 | 29.862 | 33.363 | -12.637 | 46.000 |
| 942.250 | 6.802 | 21.094 | 27.896 | -18.104 | 46.000 |
| **Vertical** | | | | | |
| **Peak Detector** | | | | | |
| 212.220 | -5.745 | 35.378 | 29.633 | -13.867 | 43.500 |
| 376.690 | 0.573 | 30.900 | 31.474 | -14.526 | 46.000 |
| 462.020 | -2.282 | 27.946 | 25.663 | -20.337 | 46.000 |
| 683.470 | 1.949 | 21.565 | 23.514 | -22.486 | 46.000 |
| 734.160 | -0.854 | 33.159 | 32.305 | -13.695 | 46.000 |
| 965.520 | 3.851 | 23.993 | 27.844 | -26.156 | 54.000 |

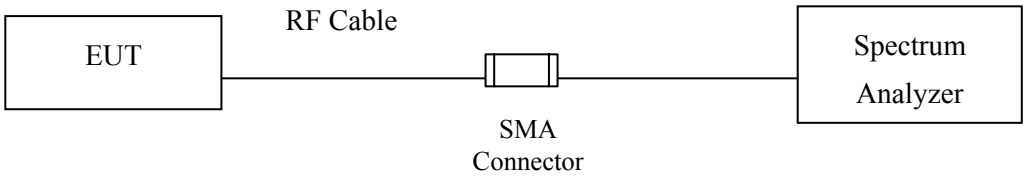
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

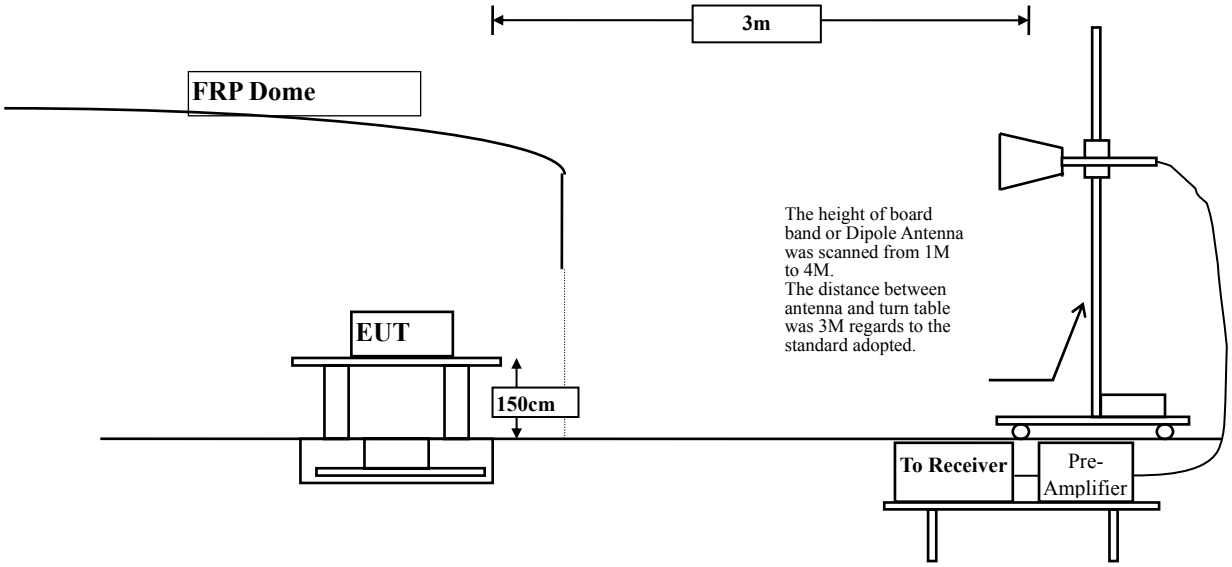
# 6. Band Edge

## 6.1. Test Setup

**RF Conducted Measurement:**




**RF Radiated Measurement:**



## 6.2. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

| FCC Part 15 Subpart C Paragraph 15.209 Limits | | |
|---|---|---|
| Frequency MHz | uV/m @3m | dBμV/m@3m |
| 30-88 | 100 | 40 |
| 88-216 | 150 | 43.5 |
| 216-960 | 200 | 46 |
| Above 960 | 500 | 54 |

Remarks : 1. RF Voltage (dBμV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

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.

## 6.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

## 6.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

## 6.5. Test Result of Band Edge

Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

**RF Radiated Measurement (Horizontal):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Average Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 36 (Peak) | 5148.800 | 2.801 | 47.978 | 50.778 | 74.00 | 54.00 | Pass |
| 36 (Peak) | 5150.000 | 2.796 | 47.287 | 50.083 | 74.00 | 54.00 | Pass |
| 36 (Peak) | 5178.400 | 2.701 | 92.416 | 95.117 | -- | -- | -- |
| 36 (Average) | 5150.000 | 2.796 | 36.396 | 39.192 | 74.00 | 54.00 | Pass |
| 36 (Average) | 5182.200 | 2.688 | 72.045 | 74.733 | -- | -- | -- |

**Figure Channel 36: Horizontal (Peak)**

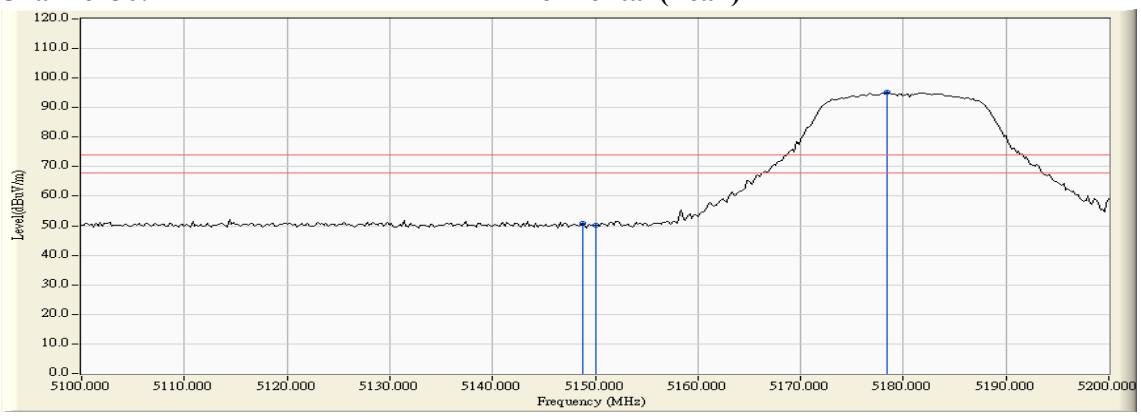
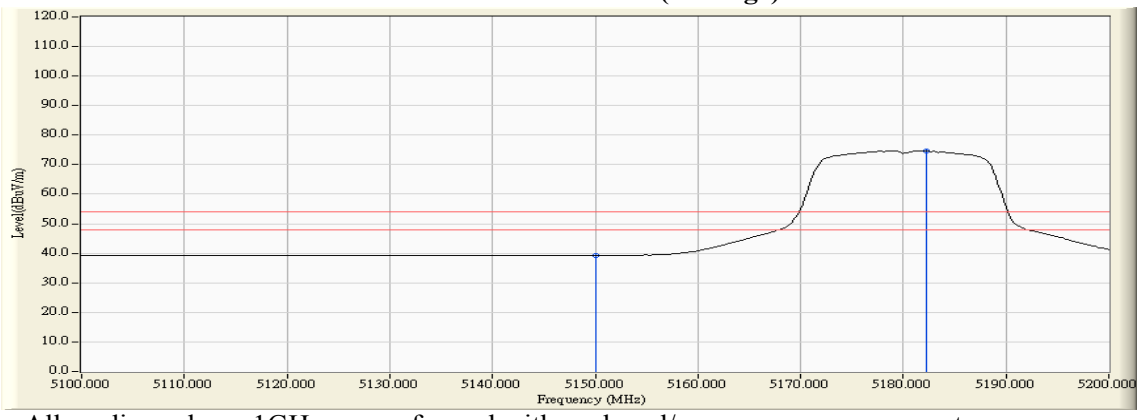



**Figure Channel 36: Horizontal (Average)**




Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5180MHz)

**RF Radiated Measurement (Vertical):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Average Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 36 (Peak) | 5134.600 | 3.255 | 49.498 | 52.752 | 74.00 | 54.00 | Pass |
| 36 (Peak) | 5150.000 | 3.331 | 48.626 | 51.958 | 74.00 | 54.00 | Pass |
| 36 (Peak) | 5178.800 | 3.466 | 102.007 | 105.474 | -- | -- | -- |
| 36 (Average) | 5150.000 | 3.331 | 37.306 | 40.638 | 74.00 | 54.00 | Pass |
| 36 (Average) | 5182.200 | 3.483 | 79.124 | 82.607 | -- | -- | -- |

**Figure Channel 36: Vertical (Peak)**

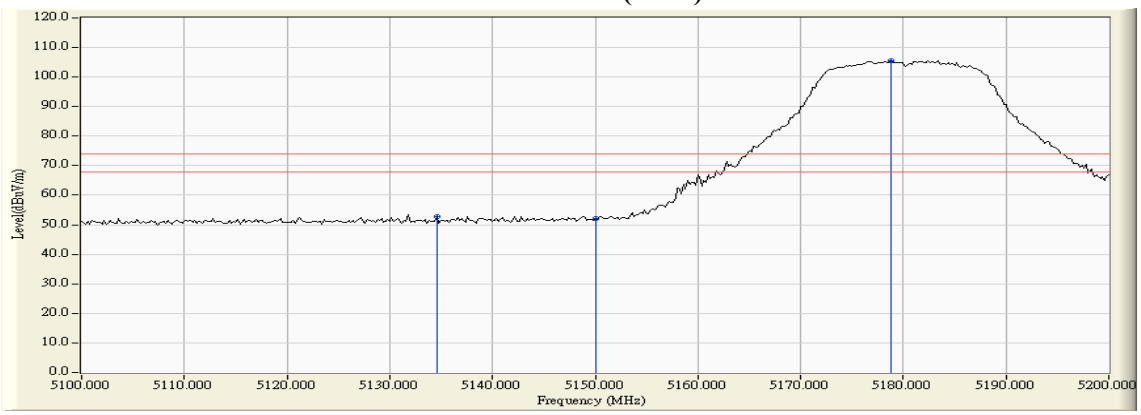
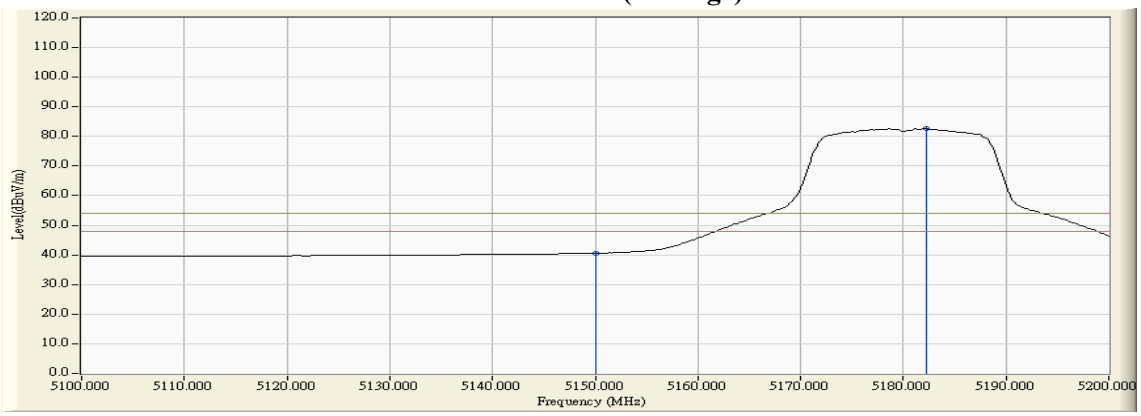



**Figure Channel 36: Vertical (Average)**




Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5320MHz)

**RF Radiated Measurement (Horizontal):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Arerage Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 64 (Peak) | 5318.600 | 3.645 | 93.261 | 96.906 | -- | -- | -- |
| 64 (Peak) | 5350.000 | 3.575 | 46.681 | 50.256 | 74.00 | 54.00 | Pass |
| 64 (Peak) | 5352.000 | 3.570 | 49.077 | 52.647 | 74.00 | 54.00 | Pass |
| 64 (Average) | 5321.800 | 3.639 | 72.165 | 75.804 | -- | -- | -- |
| 64 (Average) | 5350.000 | 3.575 | 36.104 | 39.679 | 74.00 | 54.00 | Pass |

**Figure Channel 64: Horizontal (Peak)**

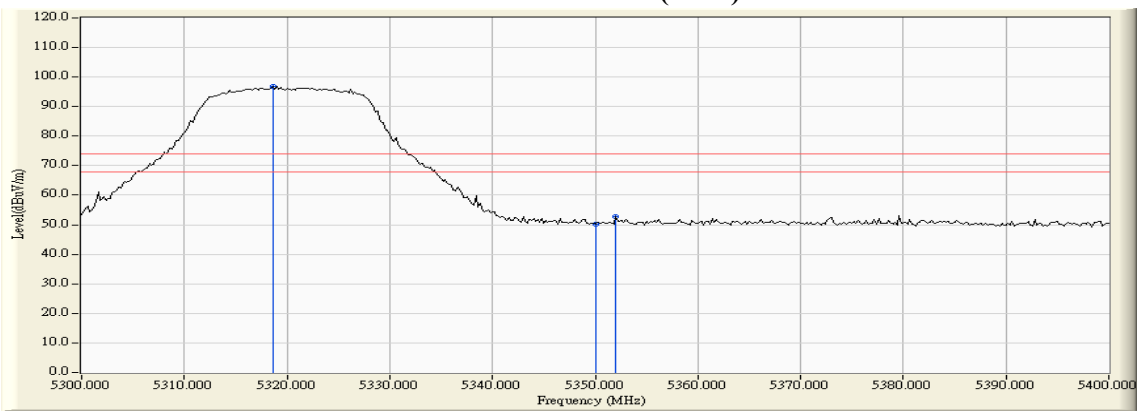
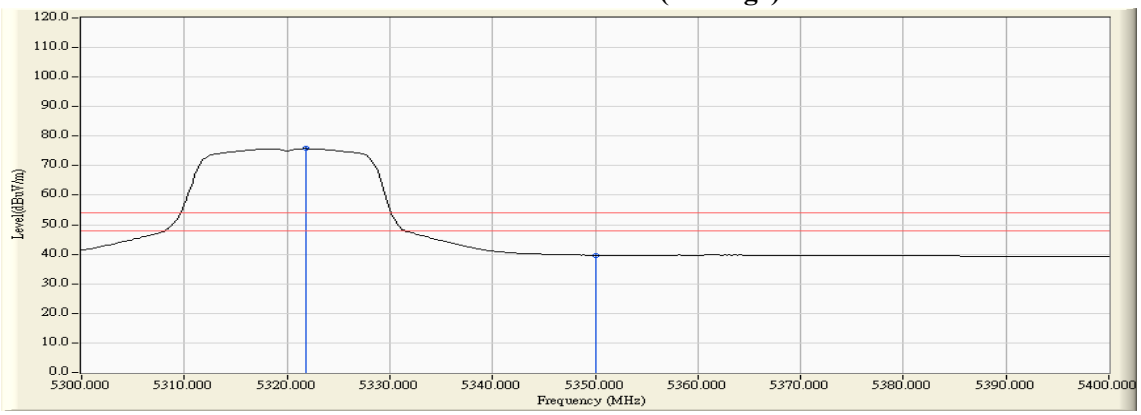



**Figure Channel 64: Horizontal (Average)**




Note:
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5320MHz)

**RF Radiated Measurement (Vertical):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Arerage Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 64 (Peak) | 5317.000 | 3.884 | 104.098 | 107.982 | -- | -- | -- |
| 64 (Peak) | 5350.000 | 3.900 | 49.174 | 53.074 | 74.00 | 54.00 | Pass |
| 64 (Peak) | 5353.000 | 3.894 | 51.020 | 54.915 | | | |
| 64 (Average) | 5321.400 | 3.887 | 80.143 | 84.031 | -- | -- | -- |
| 64 (Average) | 5350.000 | 3.900 | 37.848 | 41.748 | 74.00 | 54.00 | Pass |

**Figure Channel 64: Vertical (Peak)**

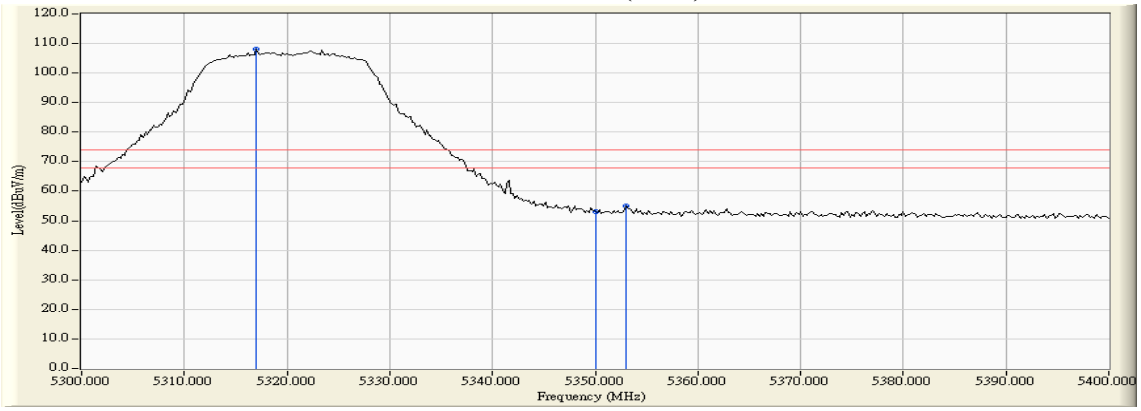
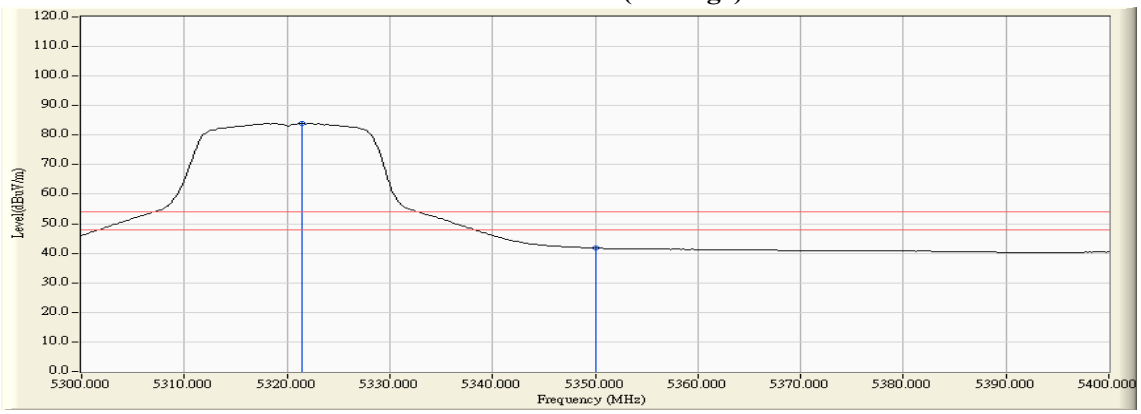



**Figure Channel 64: Vertical (Average)**




Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5500MHz)

**RF Radiated Measurement (Horizontal):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Arerage Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 100 (Peak) | 5455.000 | 3.678 | 48.771 | 52.449 | 74.00 | 54.00 | Pass |
| 100 (Peak) | 5460.000 | 3.775 | 46.262 | 50.037 | 74.00 | 54.00 | Pass |
| 100 (Peak) | 5496.800 | 4.436 | 94.479 | 98.914 | -- | -- | -- |
| 100 (Average) | 5460.000 | 3.775 | 35.973 | 39.748 | 74.00 | 54.00 | Pass |
| 100 (Average) | 5502.200 | 4.509 | 72.527 | 77.035 | -- | -- | -- |

**Figure Channel 100: Horizontal (Peak)**

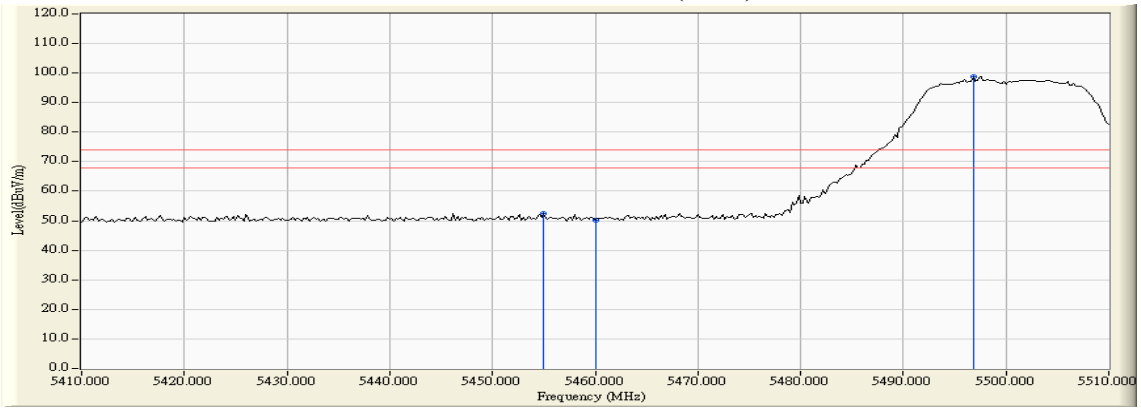
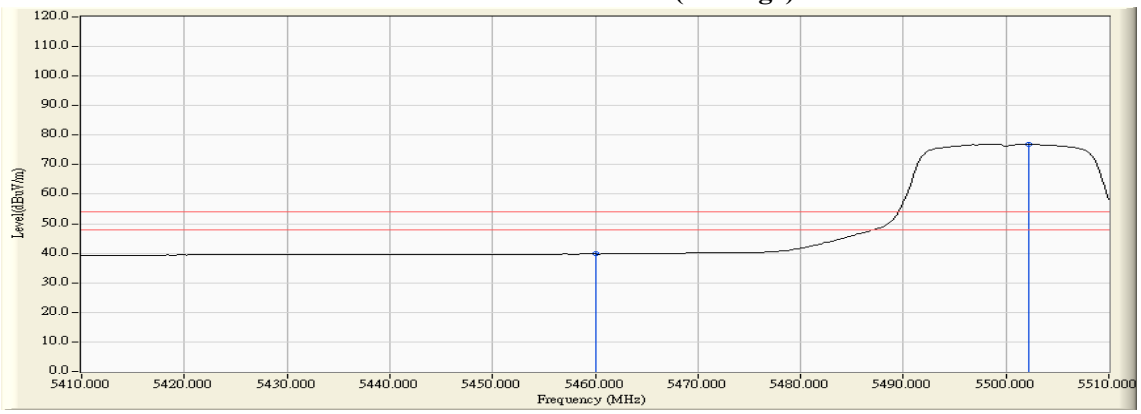



**Figure Channel 100: Horizontal (Average)**




Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5500MHz)

**RF Radiated Measurement (Vertical):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Arerage Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 100 (Peak) | 5458.200 | 3.910 | 50.340 | 54.249 | 74.00 | 54.00 | Pass |
| 100 (Peak) | 5460.000 | 3.934 | 49.394 | 53.329 | 74.00 | 54.00 | Pass |
| 100 (Peak) | 5499.000 | 4.450 | 102.908 | 107.357 | -- | -- | -- |
| 100 (Average) | 5460.000 | 3.934 | 36.916 | 40.851 | 74.00 | 54.00 | Pass |
| 100 (Average) | 5498.400 | 4.443 | 79.457 | 83.900 | -- | -- | -- |

**Figure Channel 100: Vertical (Peak)**

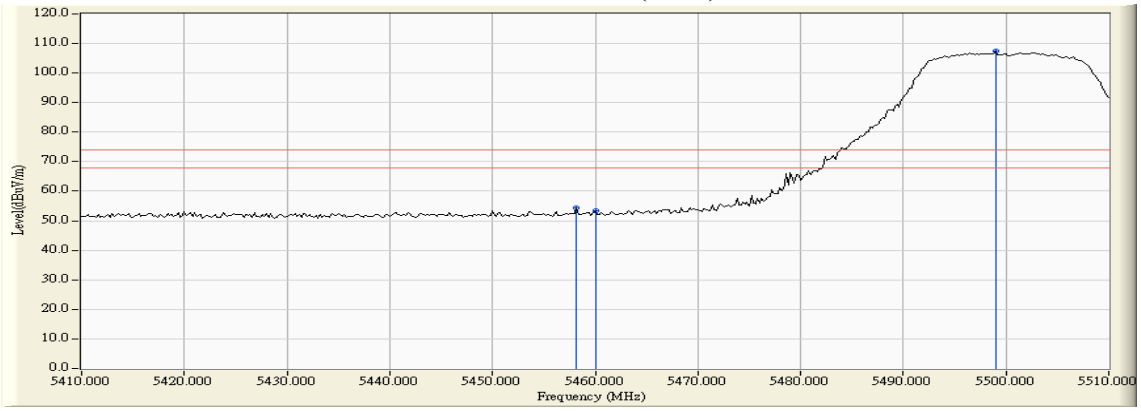
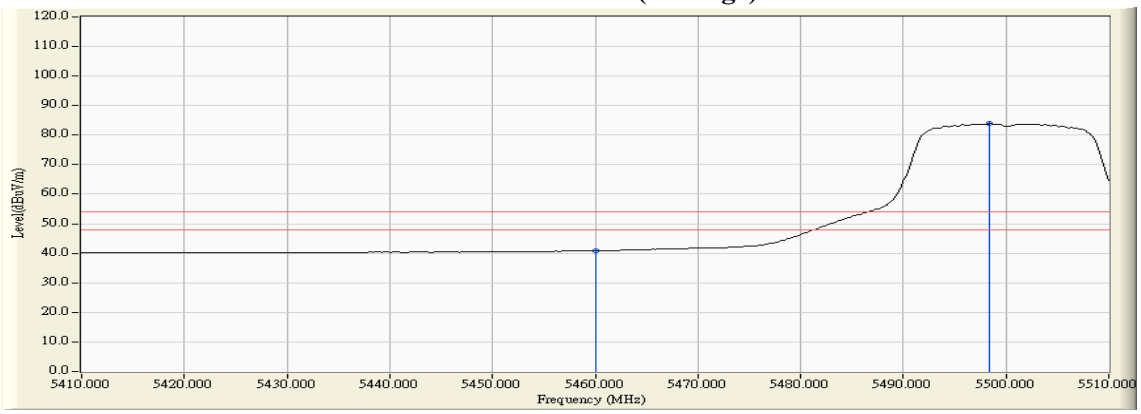



**Figure Channel 100: Vertical (Average)**



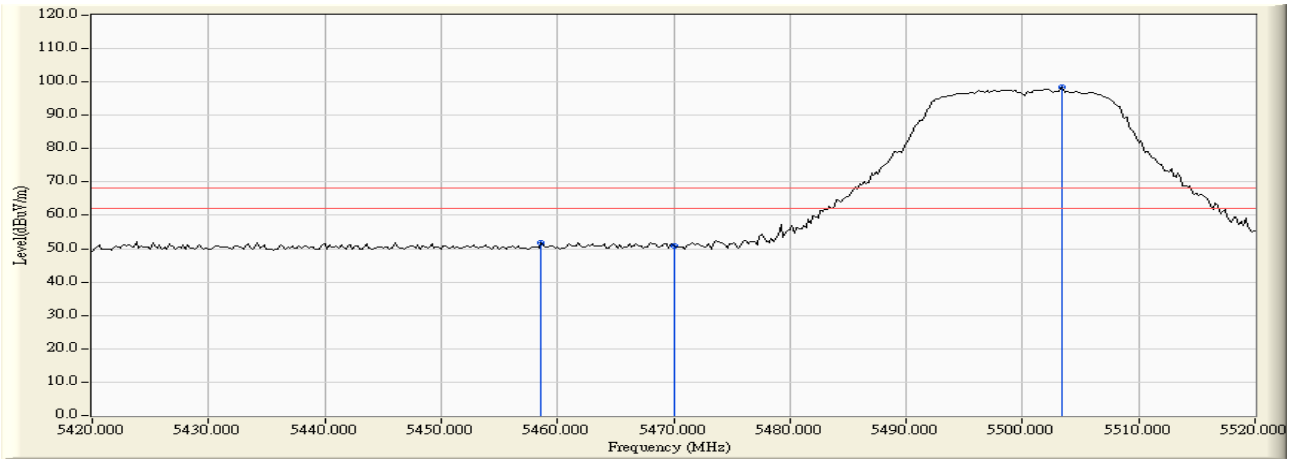

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

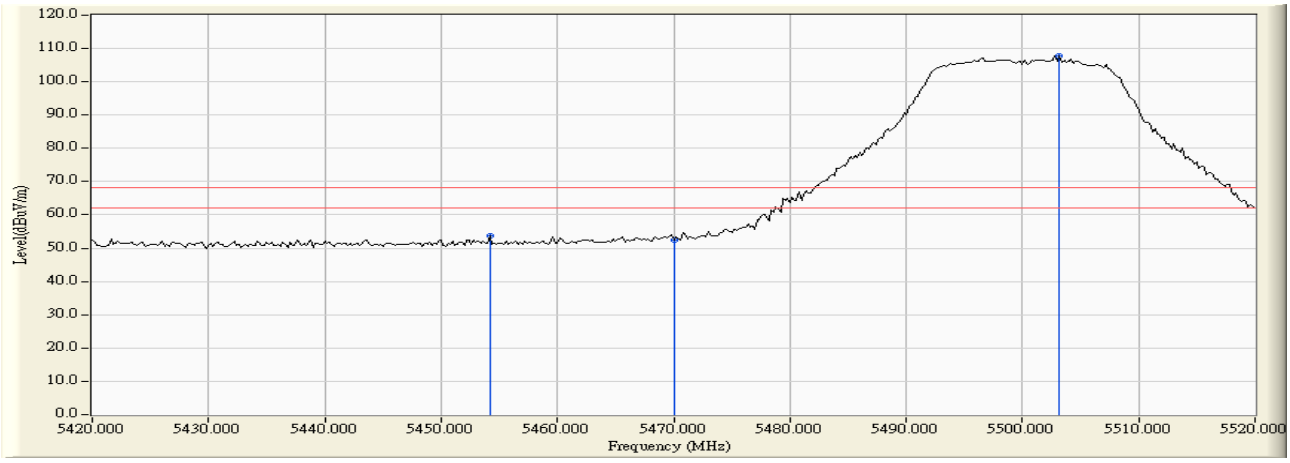
Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5500MHz)

**RF Radiated Measurement:**

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Horizontal | 5458.600 | 3.749 | 48.096 | 51.844 | -16.376 | 68.220 | Pass |
| Horizontal | 5470.000 | 3.970 | 46.881 | 50.851 | -17.369 | 68.220 | Pass |
| Horizontal | 5503.400 | 4.525 | 94.034 | 98.559 | -- | -- | -- |



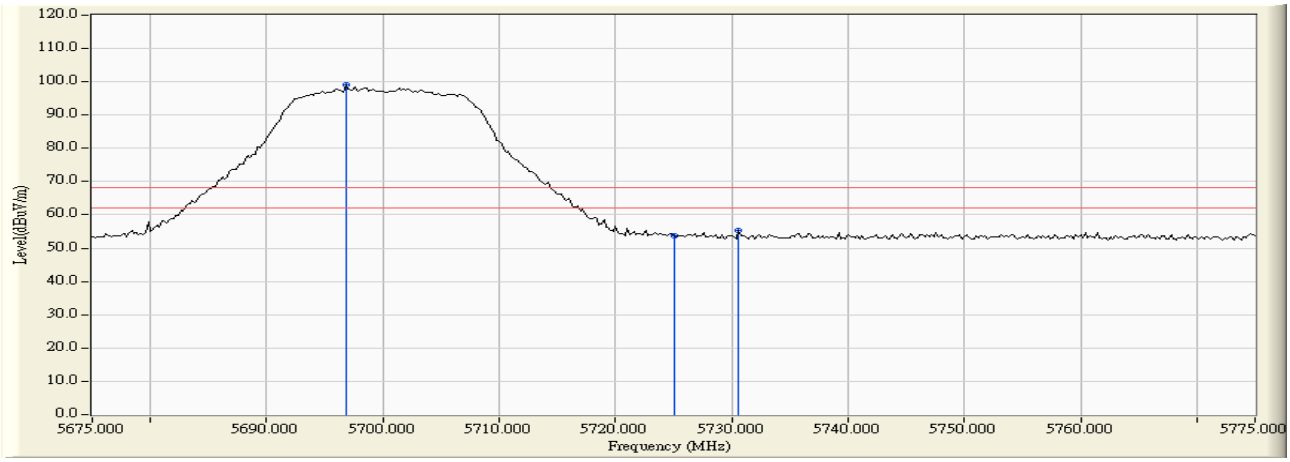

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Vertical | 5454.200 | 3.851 | 49.946 | 53.798 | -14.422 | 68.220 | Pass |
| Vertical | 5470.000 | 4.079 | 48.394 | 52.473 | -15.747 | 68.220 | Pass |
| Vertical | 5503.200 | 4.493 | 103.284 | 107.777 | -- | -- | -- |



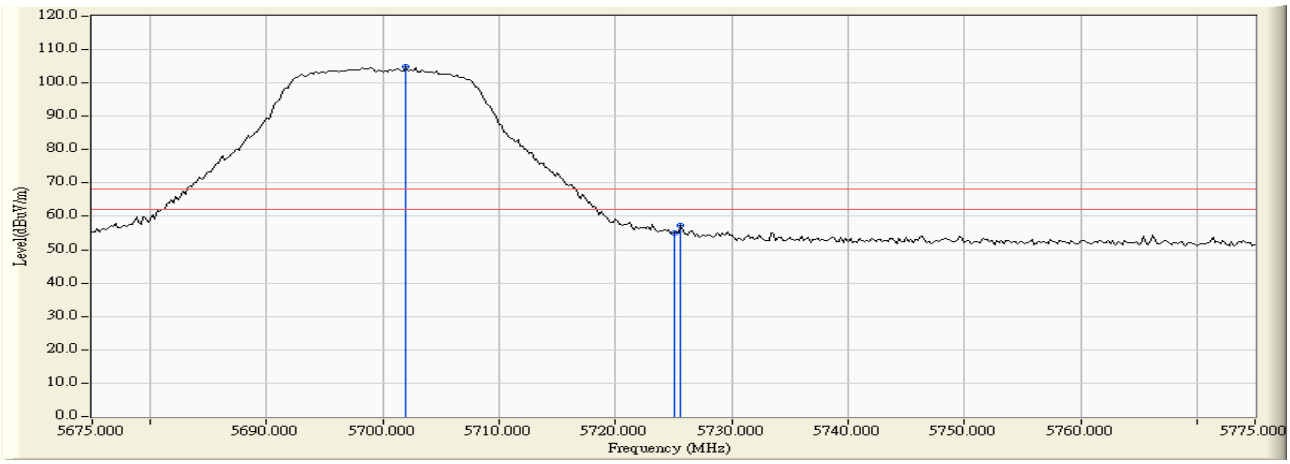
Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5700MHz)

**RF Radiated Measurement:**

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Horizontal | 5696.800 | 4.989 | 94.010 | 98.999 | -- | -- | -- |
| Horizontal | 5725.000 | 5.104 | 48.751 | 53.854 | -14.366 | 68.220 | Pass |
| Horizontal | 5730.600 | 5.127 | 50.088 | 55.215 | -13.005 | 68.220 | Pass |



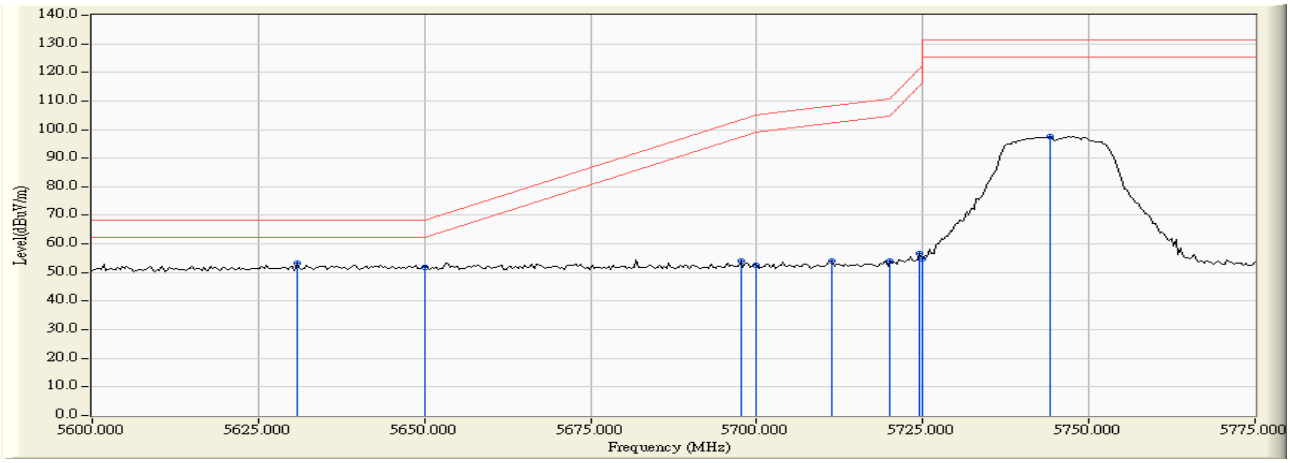

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Vertical | 5702.000 | 4.174 | 100.618 | 104.792 | -- | -- | -- |
| Vertical | 5725.000 | 4.215 | 50.823 | 55.038 | -13.182 | 68.220 | Pass |
| Vertical | 5725.600 | 4.216 | 53.078 | 57.294 | -10.926 | 68.220 | Pass |



Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5745MHz)

**RF Radiated Measurement:**

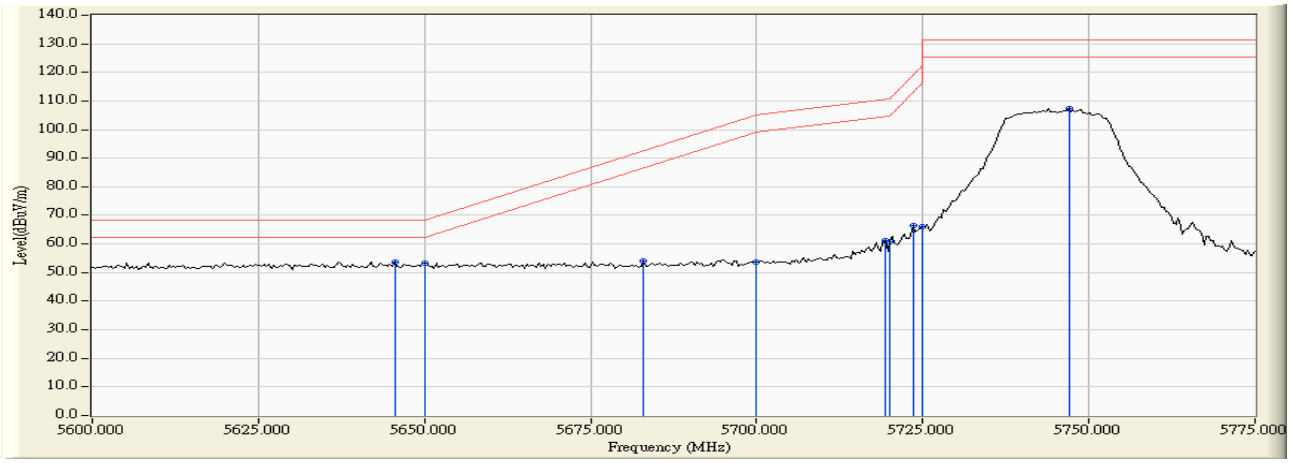
| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Horizontal | 5630.800 | 4.518 | 48.926 | 53.445 | -14.775 | 68.220 | Pass |
| Horizontal | 5650.000 | 4.764 | 47.208 | 51.973 | -16.247 | 68.220 | Pass |
| Horizontal | 5697.650 | 4.992 | 48.998 | 53.990 | -49.472 | 103.462 | Pass |
| Horizontal | 5700.000 | 5.002 | 47.529 | 52.531 | -52.669 | 105.200 | Pass |
| Horizontal | 5711.300 | 5.048 | 49.013 | 54.061 | -54.303 | 108.364 | Pass |
| Horizontal | 5720.000 | 5.083 | 48.834 | 53.917 | -56.883 | 110.800 | Pass |
| Horizontal | 5724.600 | 5.102 | 51.420 | 56.522 | -64.766 | 121.288 | Pass |
| Horizontal | 5725.000 | 5.104 | 49.797 | 54.900 | -67.300 | 122.200 | Pass |
| Horizontal | 5744.200 | 5.183 | 92.536 | 97.719 | -33.481 | 131.200 | Pass |



Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5745MHz)

**RF Radiated Measurement:**

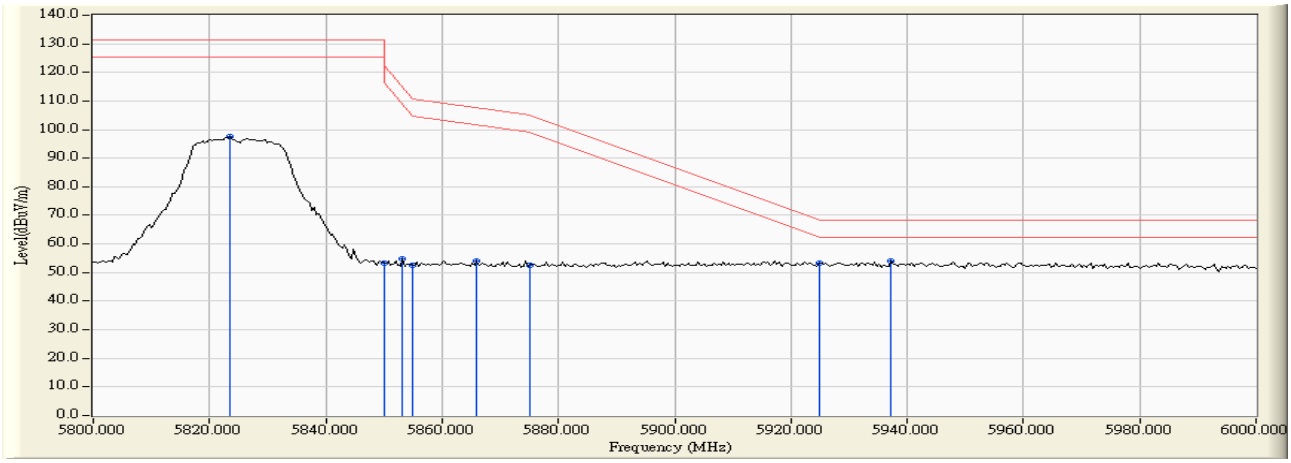
| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Vertical | 5645.500 | 4.358 | 49.255 | 53.613 | -14.607 | 68.220 | Pass |
| Vertical | 5650.000 | 4.361 | 48.749 | 53.111 | -15.109 | 68.220 | Pass |
| Vertical | 5682.950 | 4.232 | 49.921 | 54.153 | -38.437 | 92.590 | Pass |
| Vertical | 5700.000 | 4.176 | 49.552 | 53.728 | -51.472 | 105.200 | Pass |
| Vertical | 5719.350 | 4.198 | 56.854 | 61.052 | -49.566 | 110.618 | Pass |
| Vertical | 5720.000 | 4.200 | 56.624 | 60.824 | -49.976 | 110.800 | Pass |
| Vertical | 5723.550 | 4.211 | 62.133 | 66.343 | -52.551 | 118.894 | Pass |
| Vertical | 5725.000 | 4.215 | 61.854 | 66.069 | -56.131 | 122.200 | Pass |
| Vertical | 5747.000 | 4.279 | 103.097 | 107.376 | -23.824 | 131.200 | Pass |



Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5825MHz)

**RF Radiated Measurement:**

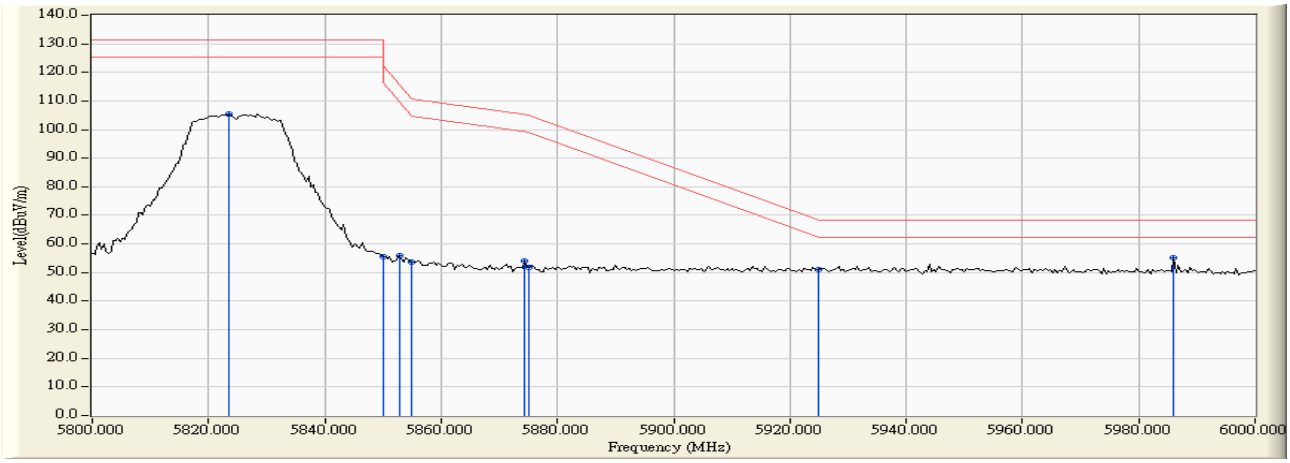
| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Horizontal | 5823.600 | 5.532 | 91.945 | 97.477 | -33.723 | 131.200 | Pass |
| Horizontal | 5850.000 | 5.715 | 47.722 | 53.437 | -68.763 | 122.200 | Pass |
| Horizontal | 5853.200 | 5.741 | 49.132 | 54.874 | -60.030 | 114.904 | Pass |
| Horizontal | 5855.000 | 5.757 | 46.681 | 52.438 | -58.362 | 110.800 | Pass |
| Horizontal | 5866.000 | 5.851 | 48.187 | 54.038 | -53.682 | 107.720 | Pass |
| Horizontal | 5875.000 | 5.931 | 46.657 | 52.588 | -52.612 | 105.200 | Pass |
| Horizontal | 5925.000 | 6.245 | 47.047 | 53.293 | -14.907 | 68.200 | Pass |
| Horizontal | 5937.200 | 6.286 | 47.767 | 54.053 | -14.147 | 68.200 | Pass |



Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5825MHz)

**RF Radiated Measurement:**

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Vertical | 5823.600 | 4.298 | 101.108 | 105.406 | -25.794 | 131.200 | Pass |
| Vertical | 5850.000 | 4.194 | 51.322 | 55.516 | -66.684 | 122.200 | Pass |
| Vertical | 5852.800 | 4.187 | 51.687 | 55.874 | -59.942 | 115.816 | Pass |
| Vertical | 5855.000 | 4.181 | 49.450 | 53.631 | -57.169 | 110.800 | Pass |
| Vertical | 5874.400 | 4.138 | 49.974 | 54.112 | -51.256 | 105.368 | Pass |
| Vertical | 5875.000 | 4.137 | 47.799 | 51.936 | -53.264 | 105.200 | Pass |
| Vertical | 5925.000 | 4.270 | 46.673 | 50.943 | -17.257 | 68.200 | Pass |
| Vertical | 5986.000 | 4.018 | 51.322 | 55.339 | -12.861 | 68.200 | Pass |



Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5180MHz)

**RF Radiated Measurement (Horizontal):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Average Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 36 (Peak) | 5138.800 | 2.830 | 48.648 | 51.478 | 74.00 | 54.00 | Pass |
| 36 (Peak) | 5150.000 | 2.796 | 46.874 | 49.670 | 74.00 | 54.00 | Pass |
| 36 (Peak) | 5180.200 | 2.695 | 93.748 | 96.443 | -- | -- | -- |
| 36 (Average) | 5150.000 | 2.796 | 36.394 | 39.190 | 74.00 | 54.00 | Pass |
| 36 (Average) | 5182.200 | 2.688 | 71.862 | 74.550 | -- | -- | -- |

**Figure Channel 36: Horizontal (Peak)**

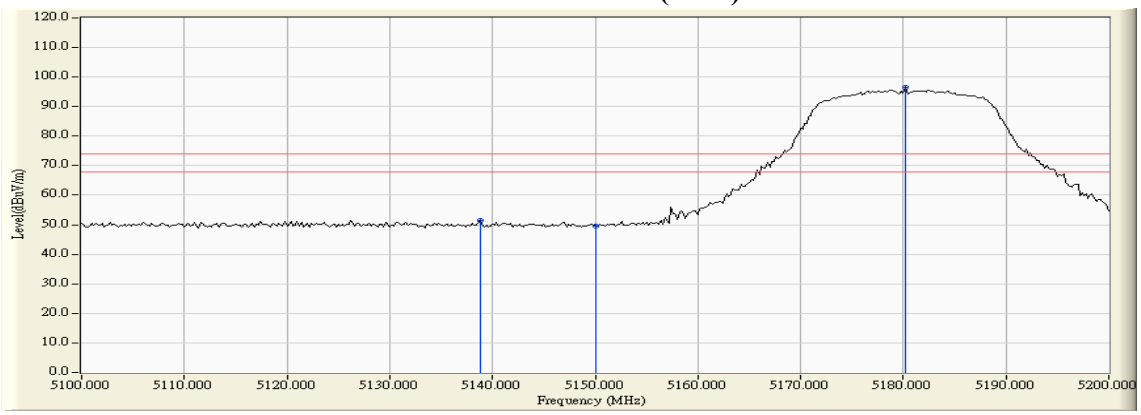
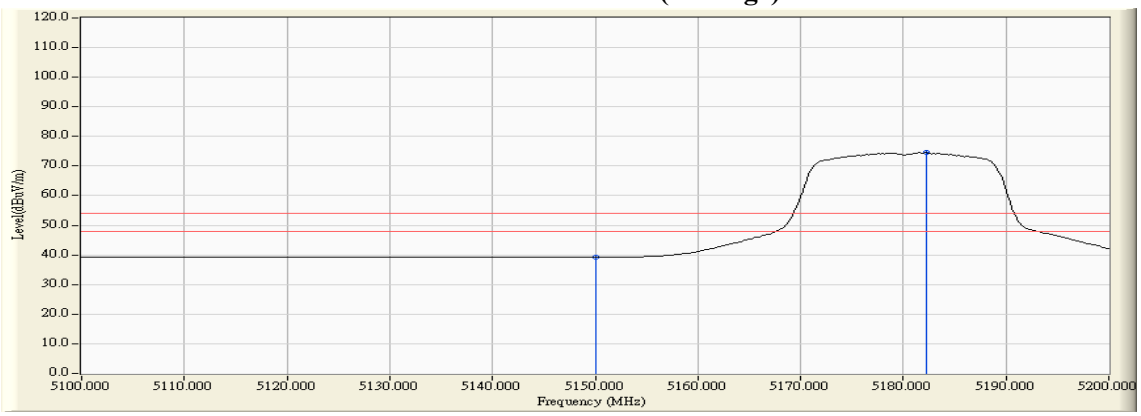



**Figure Channel 36: Horizontal (Average)**




Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Band Edge Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5180MHz) |

**RF Radiated Measurement (Vertical):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Average Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 36 (Peak) | 5127.000 | 3.215 | 49.326 | 52.541 | 74.00 | 54.00 | Pass |
| 36 (Peak) | 5150.000 | 3.331 | 48.938 | 52.270 | 74.00 | 54.00 | Pass |
| 36 (Peak) | 5182.200 | 3.483 | 101.664 | 105.147 | -- | -- | -- |
| 36 (Average) | 5150.000 | 3.331 | 37.337 | 40.669 | 74.00 | 54.00 | Pass |
| 36 (Average) | 5182.000 | 3.482 | 78.068 | 81.550 | -- | -- | -- |

**Figure Channel 36: Vertical (Peak)**

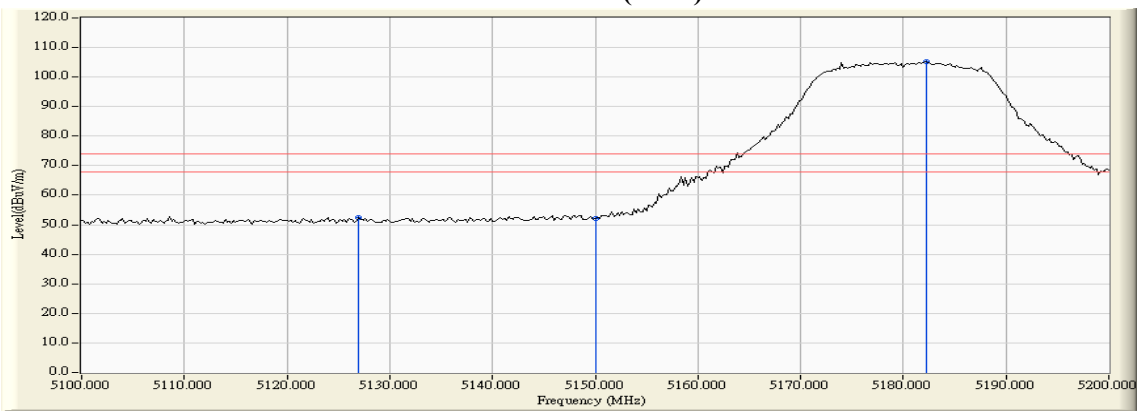
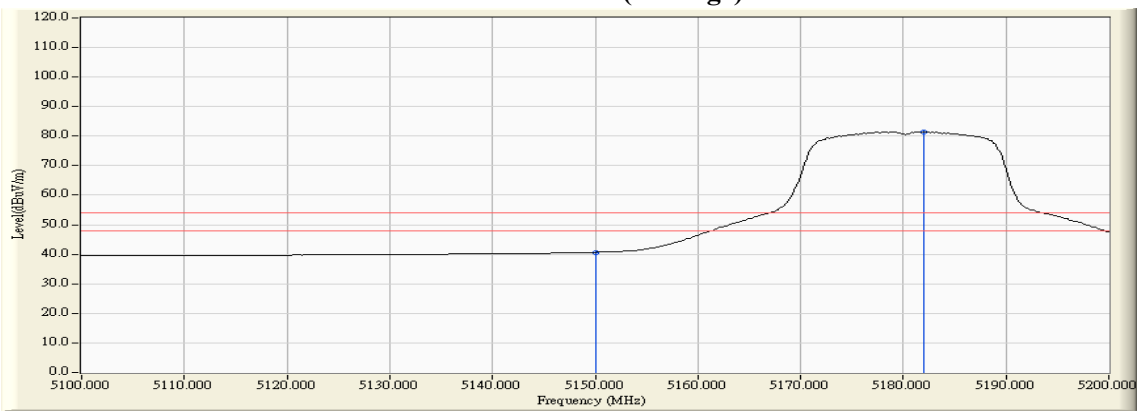



**Figure Channel 36: Vertical (Average)**




Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

| | | |
|---|---|---|
| Product | : | Key programming device |
| Test Item | : | Band Edge Data |
| Test Site | : | No.3 OATS |
| Test Date | : | 2016/12/20 |
| Test Mode | : | Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5320MHz) |

**RF Radiated Measurement (Horizontal):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Arerage Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 64 (Peak) | 5317.600 | 3.647 | 94.046 | 97.693 | -- | -- | -- |
| 64 (Peak) | 5350.000 | 3.575 | 47.504 | 51.079 | 74.00 | 54.00 | Pass |
| 64 (Peak) | 5356.400 | 3.535 | 48.903 | 52.438 | 74.00 | 54.00 | Pass |
| 64 (Average) | 5318.400 | 3.646 | 71.886 | 75.532 | -- | -- | -- |
| 64 (Average) | 5350.000 | 3.575 | 36.138 | 39.713 | 74.00 | 54.00 | Pass |

**Figure Channel 64: Horizontal (Peak)**

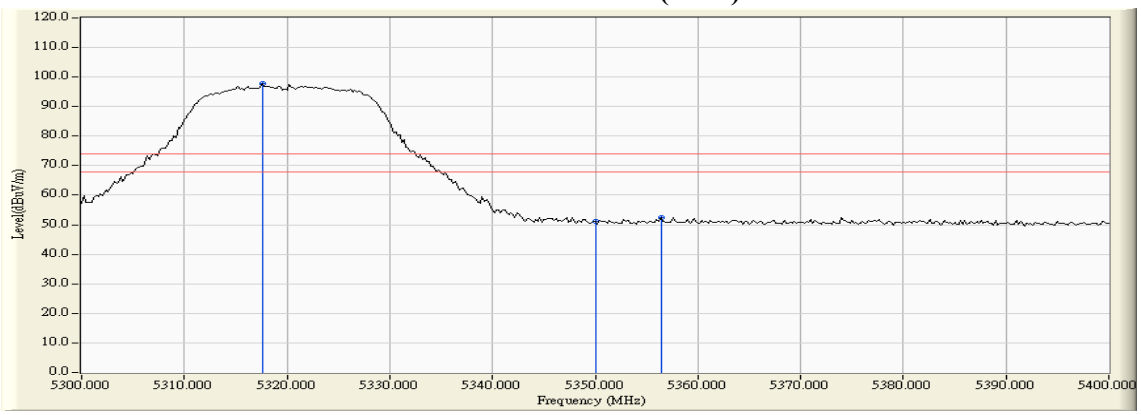
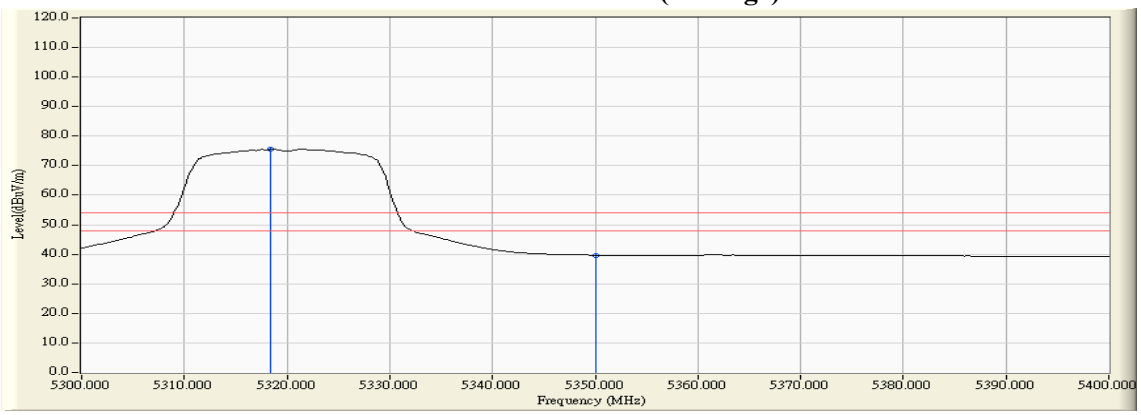



**Figure Channel 64: Horizontal (Average)**




Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5320MHz)

**RF Radiated Measurement (Vertical):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Arerage Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 64 (Peak) | 5321.400 | 3.887 | 103.857 | 107.745 | -- | -- | -- |
| 64 (Peak) | 5350.000 | 3.900 | 49.527 | 53.427 | 74.00 | 54.00 | Pass |
| 64 (Peak) | 5356.400 | 3.877 | 50.548 | 54.426 | 74.00 | 54.00 | Pass |
| 64 (Average) | 5322.000 | 3.889 | 79.527 | 83.415 | -- | -- | -- |
| 64 (Average) | 5350.000 | 3.900 | 37.913 | 41.813 | 74.00 | 54.00 | Pass |

**Figure Channel 64: Vertical (Peak)**

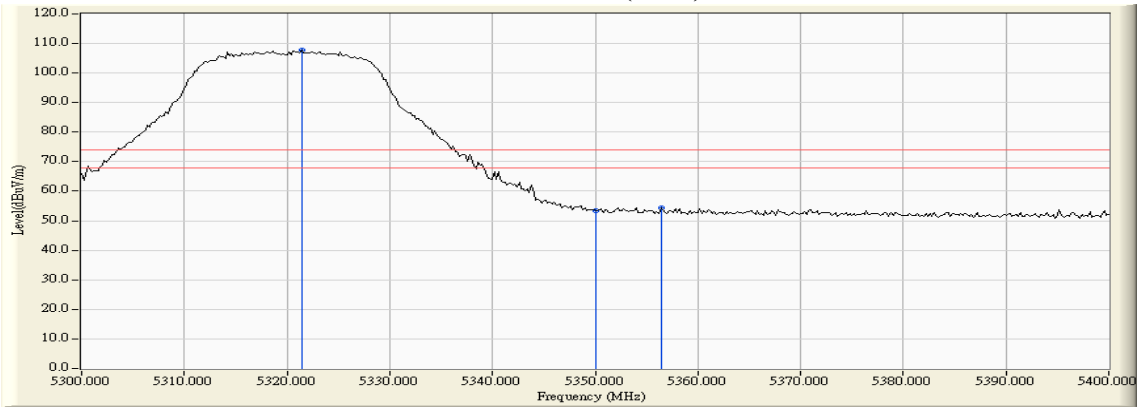
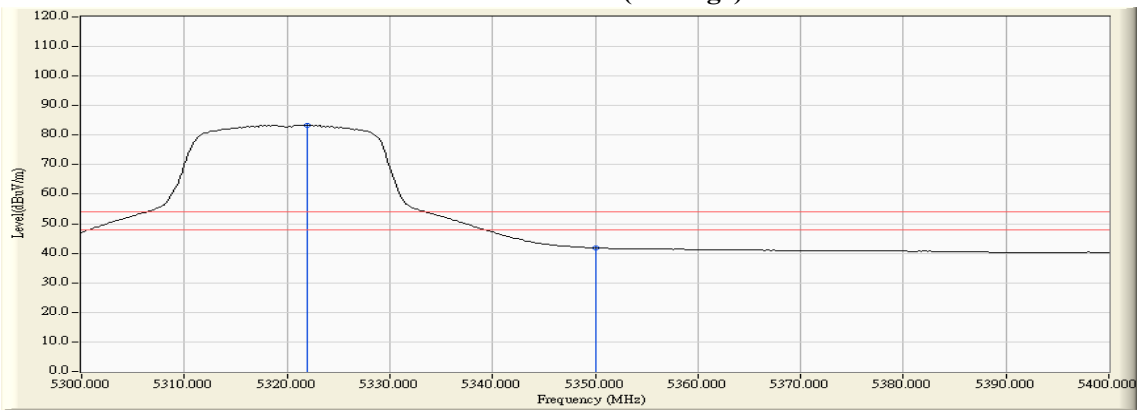



**Figure Channel 64: Vertical (Average)**




Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5500MHz)

**RF Radiated Measurement (Horizontal):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Arerage Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 100 (Peak) | 5449.600 | 3.613 | 48.921 | 52.533 | 74.00 | 54.00 | Pass |
| 100 (Peak) | 5460.000 | 3.775 | 47.031 | 50.806 | 74.00 | 54.00 | Pass |
| 100 (Peak) | 5496.600 | 4.433 | 93.483 | 97.916 | -- | -- | -- |
| 100 (Average) | 5460.000 | 3.775 | 36.272 | 40.047 | 74.00 | 54.00 | Pass |
| 100 (Average) | 5501.800 | 4.503 | 71.728 | 76.231 | -- | -- | -- |

**Figure Channel 100: Horizontal (Peak)**

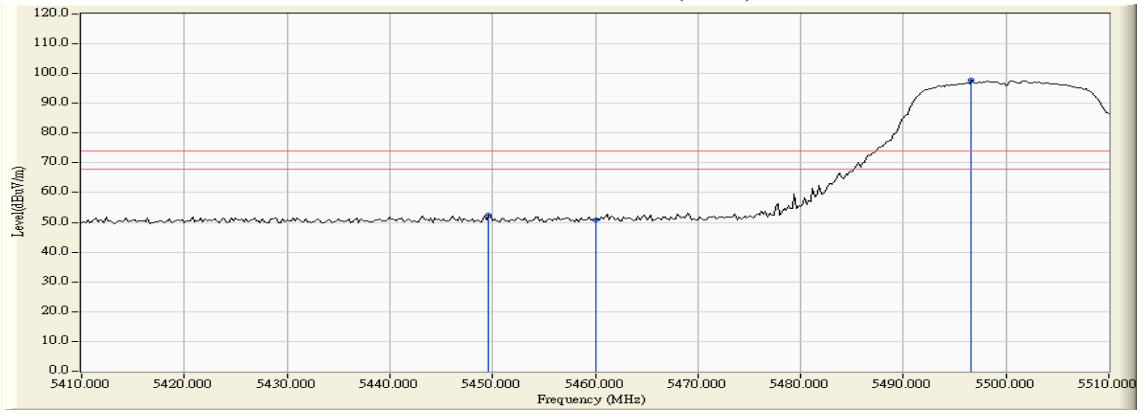
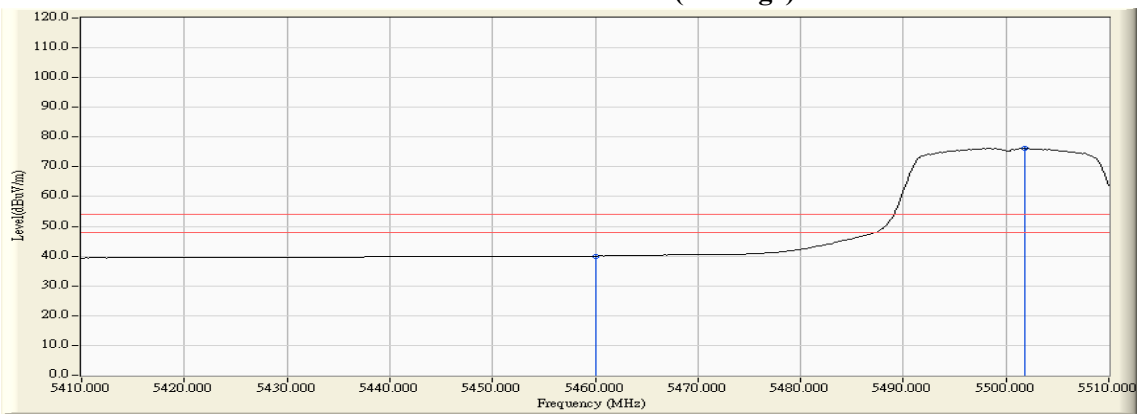



**Figure Channel 100: Horizontal (Average)**




Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5500MHz)

**RF Radiated Measurement (Vertical):**

| Channel No. | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBμV) | Emission Level (dBμV/m) | Peak Limit (dBμV/m) | Arerage Limit (dBμV/m) | Result |
|---|---|---|---|---|---|---|---|
| 100 (Peak) | 5459.400 | 3.927 | 52.318 | 56.244 | 74.00 | 54.00 | Pass |
| 100 (Peak) | 5460.000 | 3.934 | 50.088 | 54.023 | 74.00 | 54.00 | Pass |
| 100 (Peak) | 5500.600 | 4.466 | 102.261 | 106.727 | -- | -- | -- |
| 100 (Average) | 5460.000 | 3.934 | 38.708 | 42.643 | 74.00 | 54.00 | Pass |
| 100 (Average) | 5498.200 | 4.441 | 78.438 | 82.879 | -- | -- | -- |

**Figure Channel 100: Vertical (Peak)**

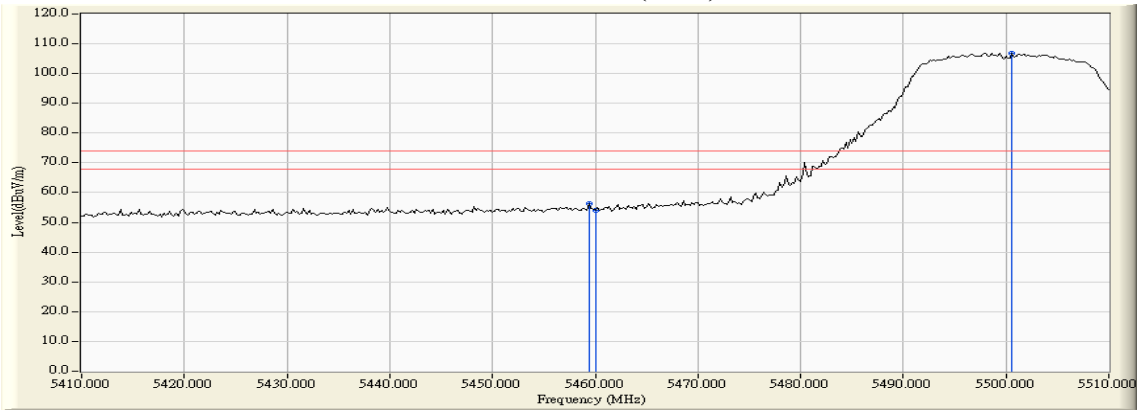
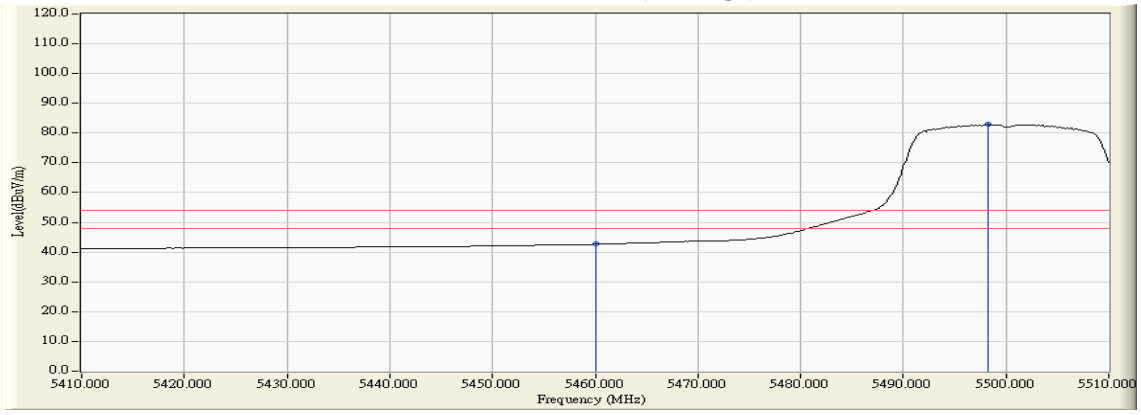



**Figure Channel 100: Vertical (Average)**



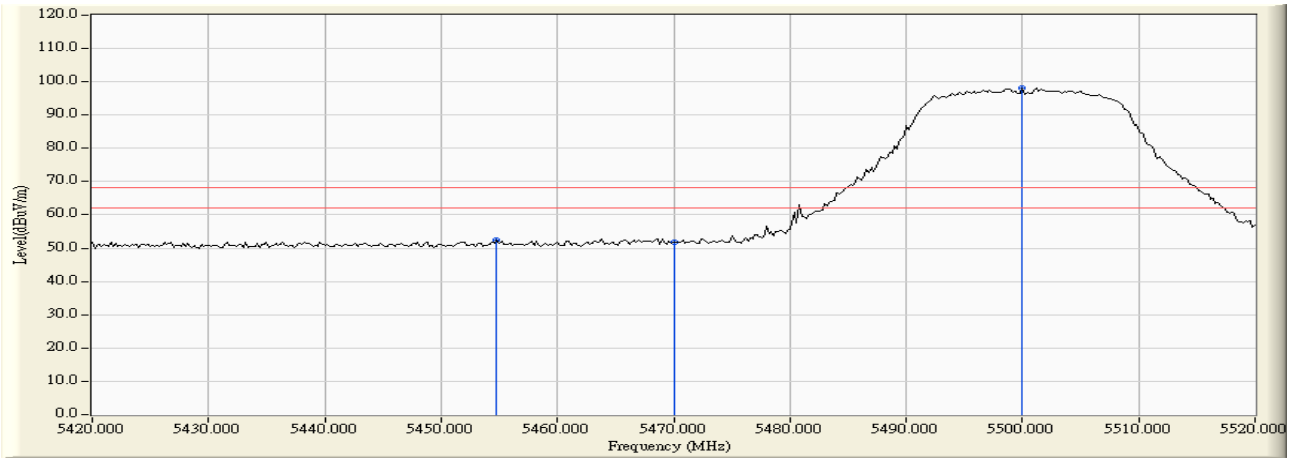

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

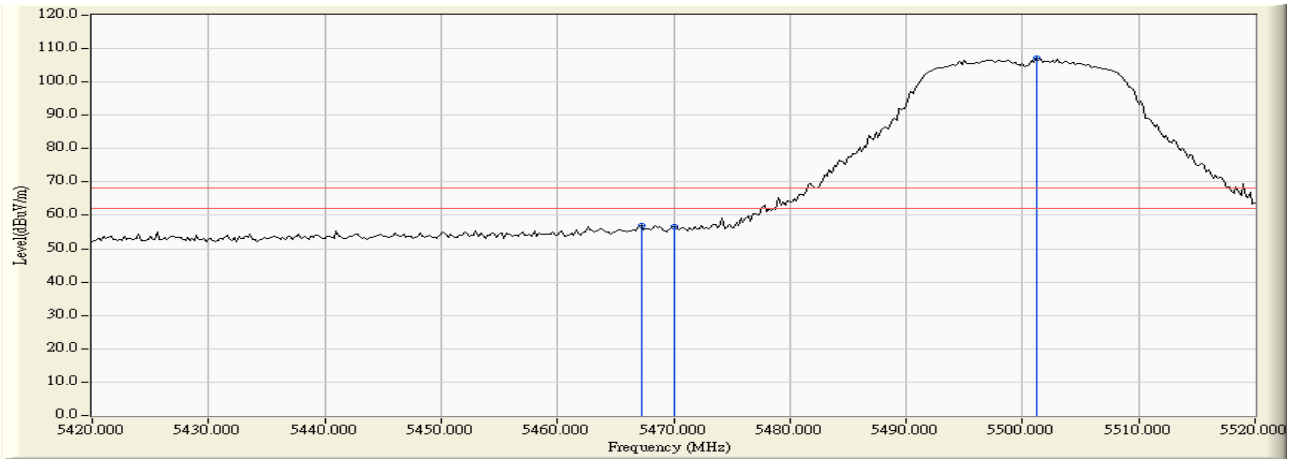
Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5500MHz)

**RF Radiated Measurement:**

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Horizontal | 5454.800 | 3.675 | 48.850 | 52.524 | -15.696 | 68.220 | Pass |
| Horizontal | 5470.000 | 3.970 | 47.727 | 51.697 | -16.523 | 68.220 | Pass |
| Horizontal | 5500.000 | 4.479 | 93.702 | 98.181 | -- | -- | -- |



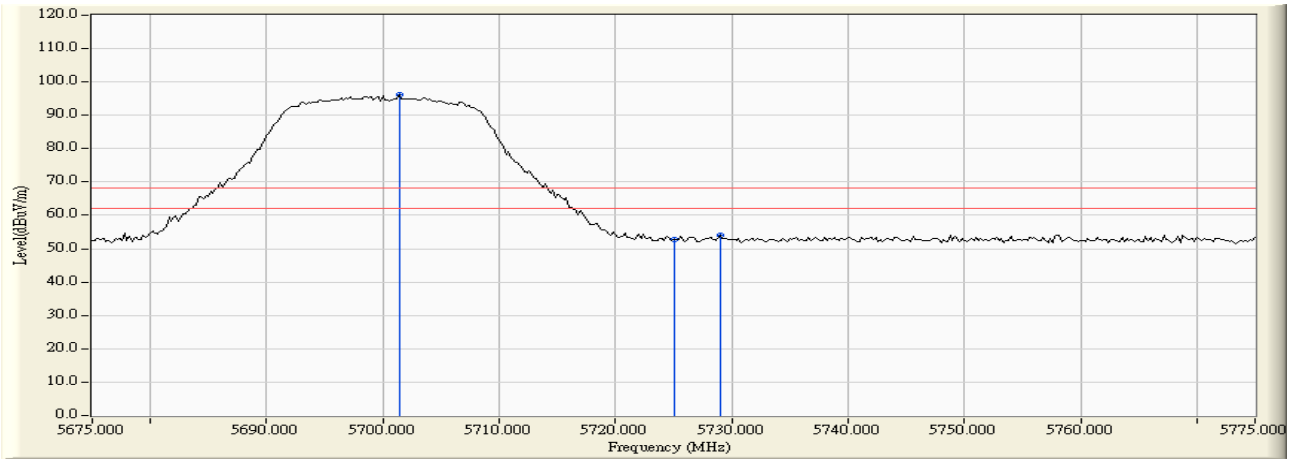

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Vertical | 5467.200 | 4.039 | 52.801 | 56.840 | -11.380 | 68.220 | Pass |
| Vertical | 5470.000 | 4.079 | 52.523 | 56.602 | -11.618 | 68.220 | Pass |
| Vertical | 5501.200 | 4.472 | 102.521 | 106.993 | -- | -- | -- |



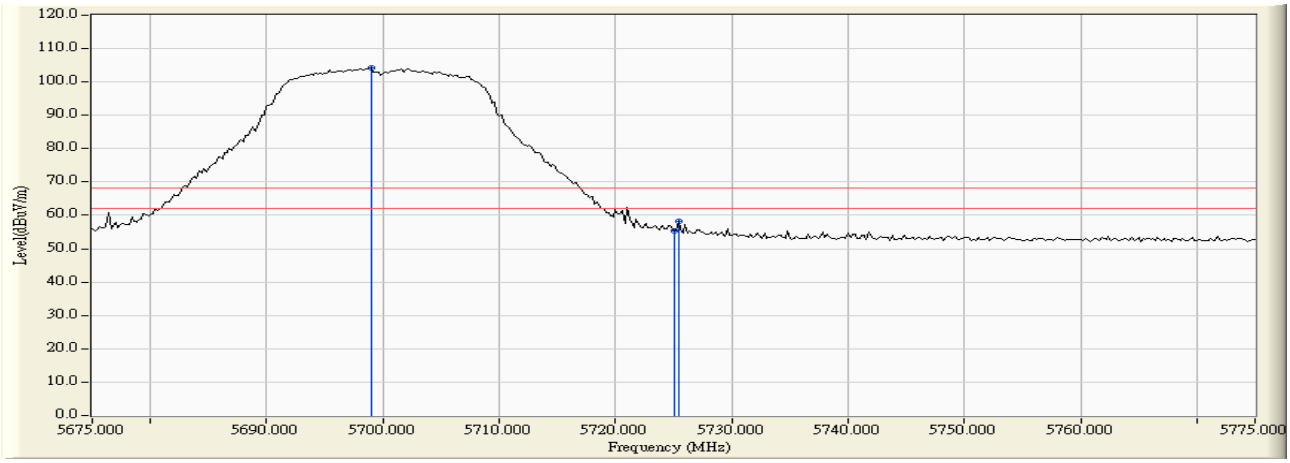
Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5700MHz)

**RF Radiated Measurement:**

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Horizontal | 5701.400 | 5.008 | 91.300 | 96.308 | -- | -- | -- |
| Horizontal | 5725.000 | 5.104 | 47.797 | 52.900 | -15.320 | 68.220 | Pass |
| Horizontal | 5729.000 | 5.121 | 49.019 | 54.139 | -14.081 | 68.220 | Pass |



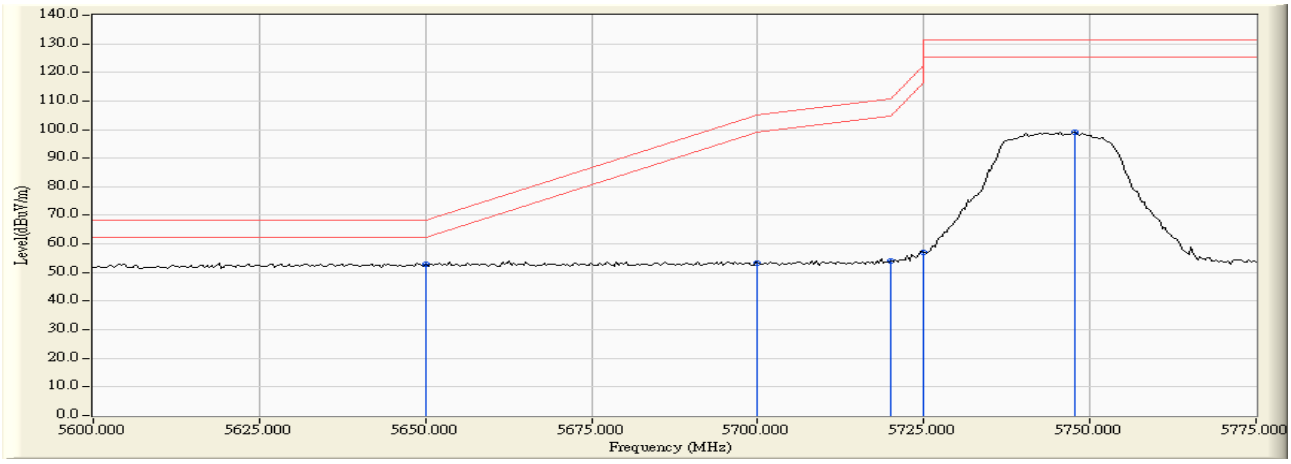

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Vertical | 5699.000 | 4.176 | 100.045 | 104.222 | -- | -- | -- |
| Vertical | 5725.000 | 4.215 | 51.210 | 55.425 | -12.795 | 68.220 | Pass |
| Vertical | 5725.400 | 4.216 | 54.037 | 58.253 | -9.967 | 68.220 | Pass |



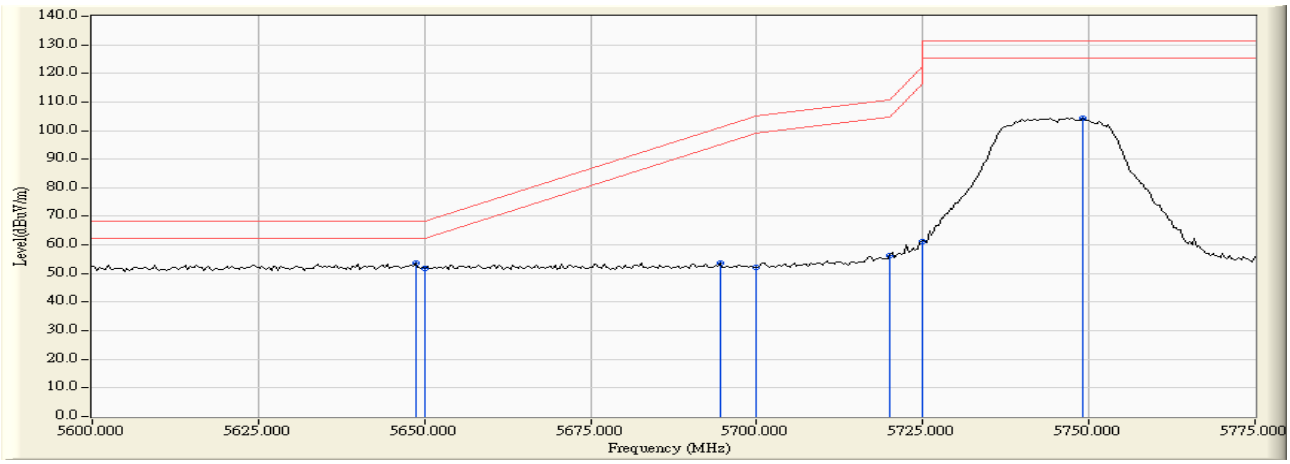
Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5745MHz)

**RF Radiated Measurement:**

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Horizontal | 5650.000 | 4.764 | 48.202 | 52.967 | -15.253 | 68.220 | Pass |
| Horizontal | 5700.000 | 5.002 | 48.252 | 53.254 | -51.946 | 105.200 | Pass |
| Horizontal | 5720.000 | 5.083 | 49.023 | 54.106 | -56.694 | 110.800 | Pass |
| Horizontal | 5725.000 | 5.104 | 51.799 | 56.902 | -65.298 | 122.200 | Pass |
| Horizontal | 5747.700 | 5.195 | 93.791 | 98.987 | -32.213 | 131.200 | Pass |



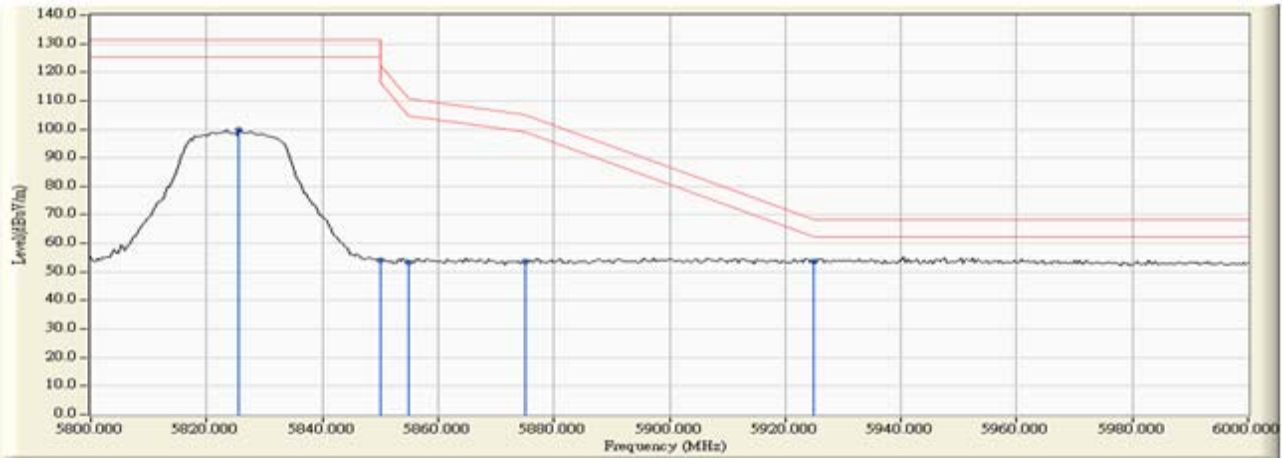

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Vertical | 5648.650 | 4.360 | 49.366 | 53.727 | -14.493 | 68.220 | Pass |
| Vertical | 5650.000 | 4.361 | 47.545 | 51.907 | -16.313 | 68.220 | Pass |
| Vertical | 5694.500 | 4.180 | 49.409 | 53.589 | -47.543 | 101.132 | Pass |
| Vertical | 5700.000 | 4.176 | 47.900 | 52.076 | -53.124 | 105.200 | Pass |
| Vertical | 5720.000 | 4.200 | 52.170 | 56.370 | -54.430 | 110.800 | Pass |
| Vertical | 5725.000 | 4.215 | 57.125 | 61.340 | -60.860 | 122.200 | Pass |
| Vertical | 5749.100 | 4.284 | 100.077 | 104.361 | -26.839 | 131.200 | Pass |



Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5825MHz)

**RF Radiated Measurement:**

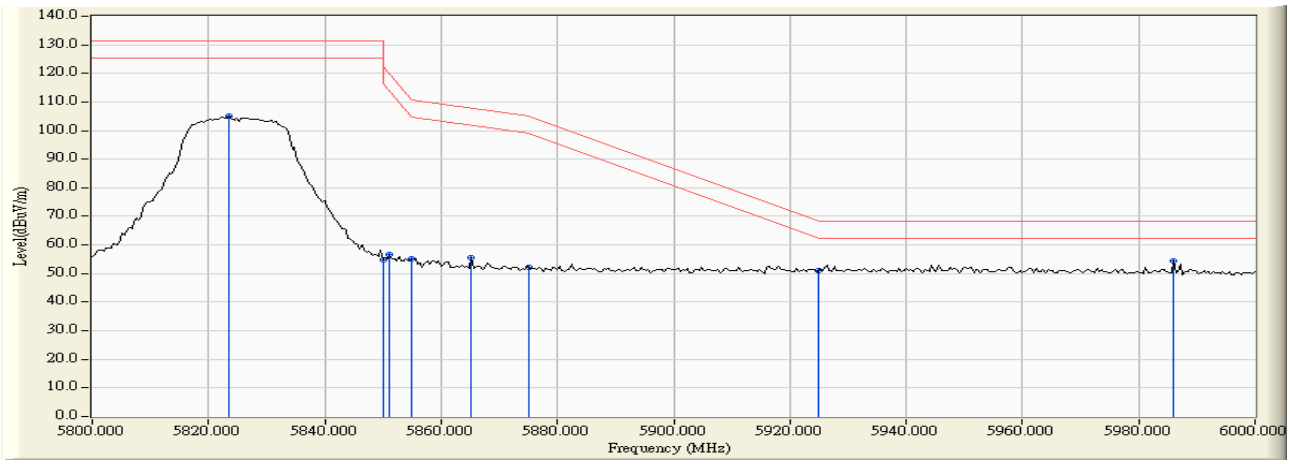
| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Horizontal | 5825.600 | 5.546 | 94.408 | 99.953 | -31.247 | 131.200 | Pass |
| Horizontal | 5850.000 | 5.715 | 48.200 | 53.915 | -68.285 | 122.200 | Pass |
| Horizontal | 5855.000 | 5.757 | 47.654 | 53.411 | -57.389 | 110.800 | Pass |
| Horizontal | 5875.000 | 5.931 | 47.626 | 53.557 | -51.643 | 105.200 | Pass |
| Horizontal | 5925.000 | 6.245 | 47.384 | 53.630 | -14.570 | 68.200 | Pass |



Product : Key programming device
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps) (5825MHz)

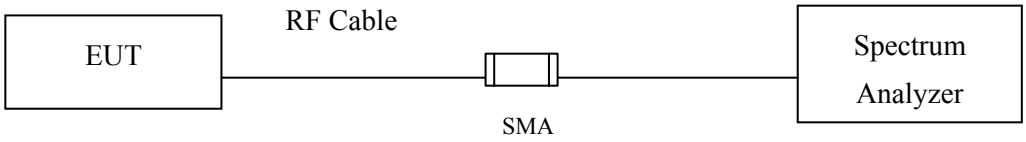
**RF Radiated Measurement:**

| | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBm) | Measure Level (dBm/m) | Margin (dB) | Limit (dBm/m) | Result |
|---|---|---|---|---|---|---|---|
| Vertical | 5823.600 | 4.298 | 100.749 | 105.047 | -26.153 | 131.200 | Pass |
| Vertical | 5850.000 | 4.194 | 50.539 | 54.733 | -67.467 | 122.200 | Pass |
| Vertical | 5851.200 | 4.191 | 52.306 | 56.497 | -62.967 | 119.464 | Pass |
| Vertical | 5855.000 | 4.181 | 50.919 | 55.100 | -55.700 | 110.800 | Pass |
| Vertical | 5865.200 | 4.156 | 51.282 | 55.438 | -52.506 | 107.944 | Pass |
| Vertical | 5875.000 | 4.137 | 48.044 | 52.181 | -53.019 | 105.200 | Pass |
| Vertical | 5925.000 | 4.270 | 46.891 | 51.161 | -17.039 | 68.200 | Pass |
| Vertical | 5986.000 | 4.018 | 50.296 | 54.313 | -13.887 | 68.200 | Pass |



# 7. Occupied Bandwidth

## 7.1. Test Setup




## 7.2. Limits

For the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz

## 7.3. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

## 7.4. Uncertainty

± 681.6Hz

## 7.5. Test Result of Occupied Bandwidth

Product : Key programming device
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 1: Transmit (802.11a-6Mbps)

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|---|---|---|---|---|
| 149 | 5745 | 15350 | >500 | Pass |
| 157 | 5785 | 15400 | >500 | Pass |
| 165 | 5825 | 16150 | >500 | Pass |

**Figure Channel 149:**

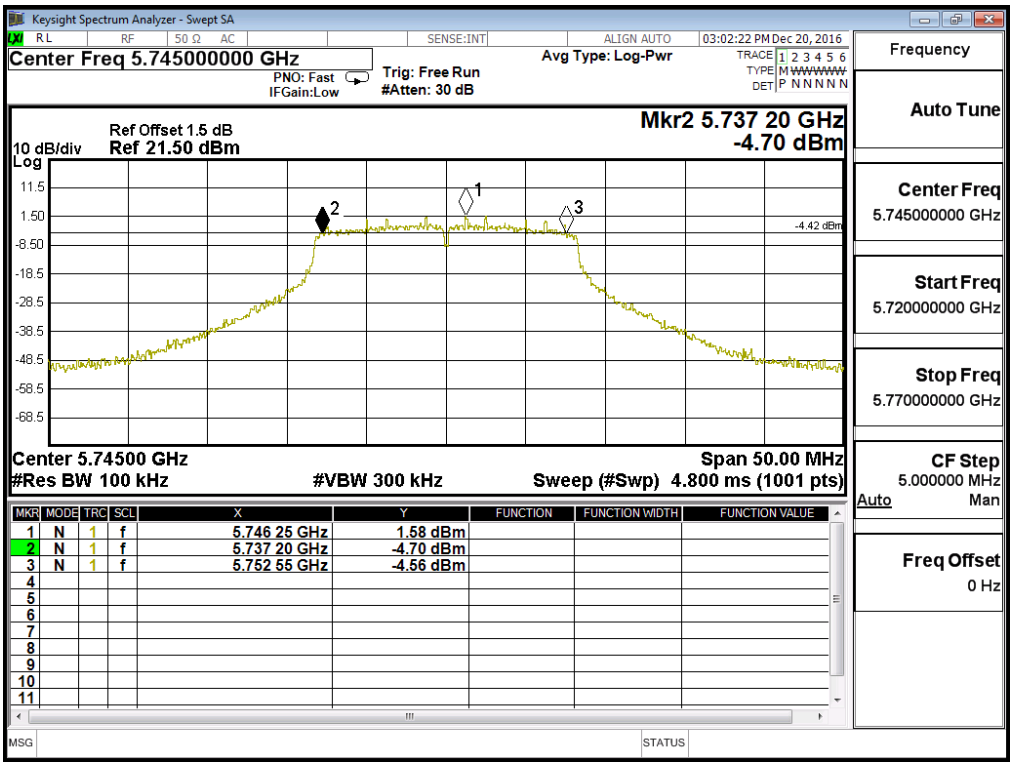


**Figure Channel 157:**

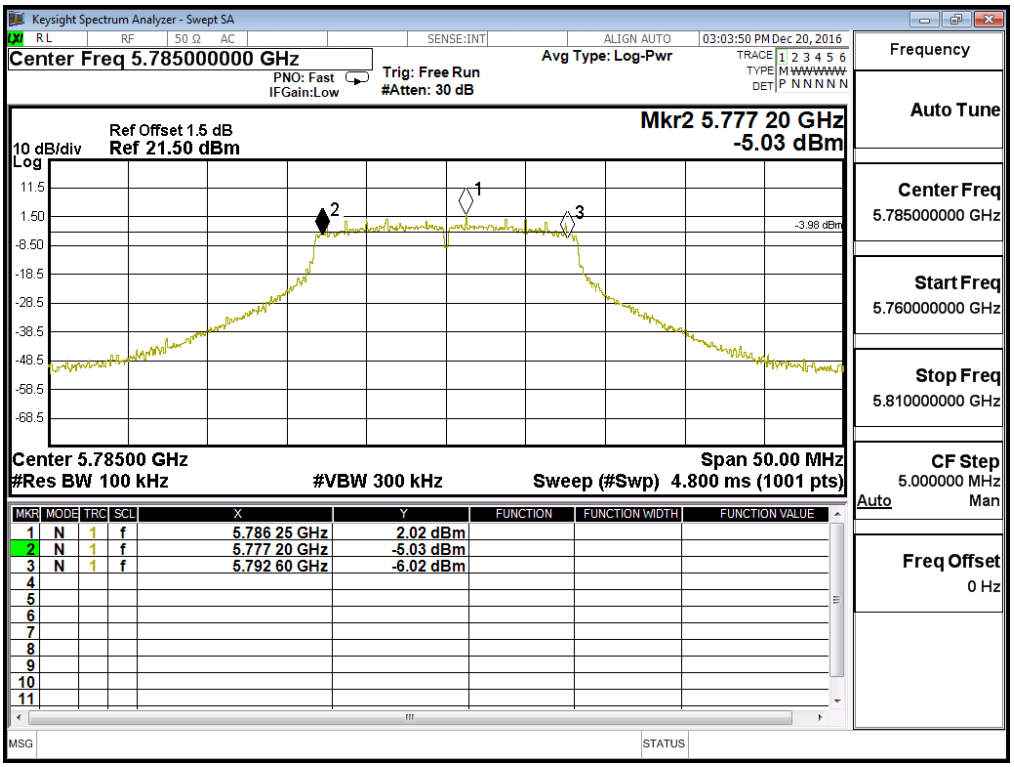
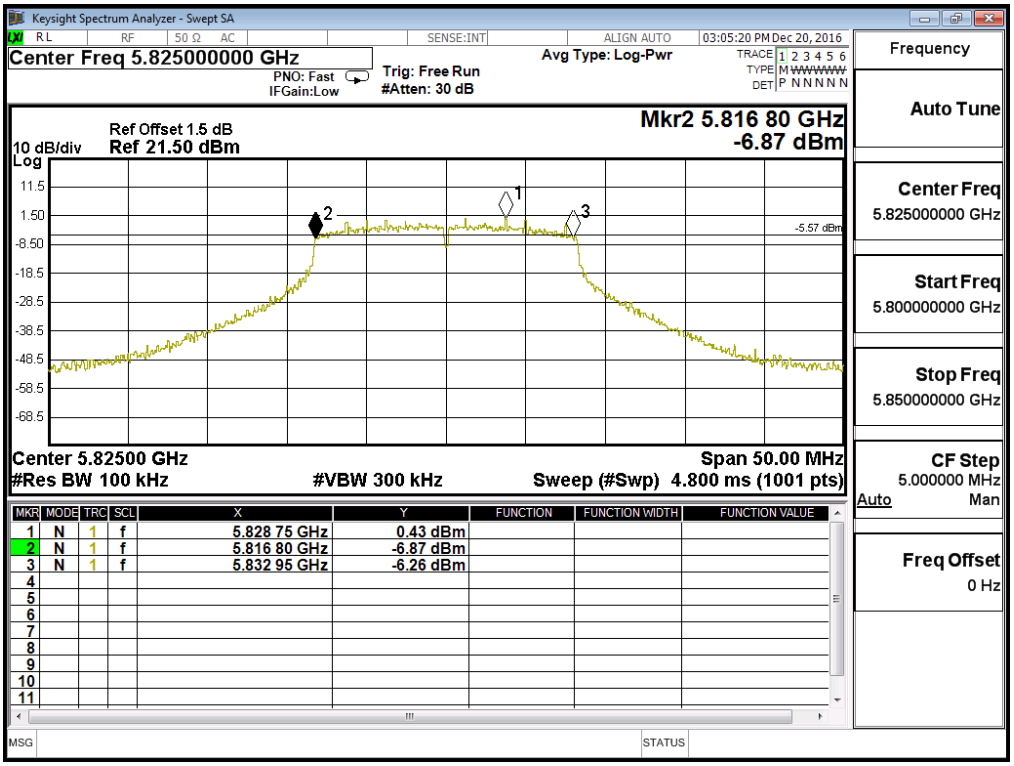



**Figure Channel 165:**



Product : Key programming device
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Date : 2016/12/20
Test Mode : Mode 2: Transmit (802.11n-20BW 7.2Mbps)

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|---|---|---|---|---|
| 149 | 5745 | 16200 | >500 | Pass |
| 157 | 5785 | 15550 | >500 | Pass |
| 165 | 5825 | 15100 | >500 | Pass |

**Figure Channel 149:**

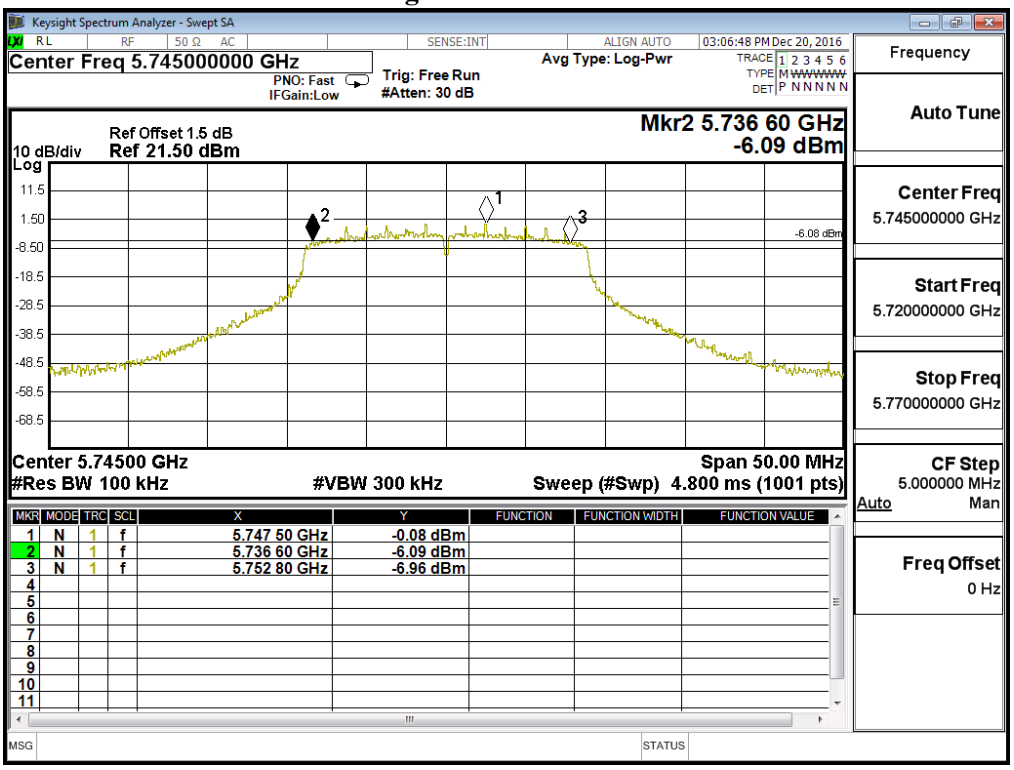


**Figure Channel 157:**

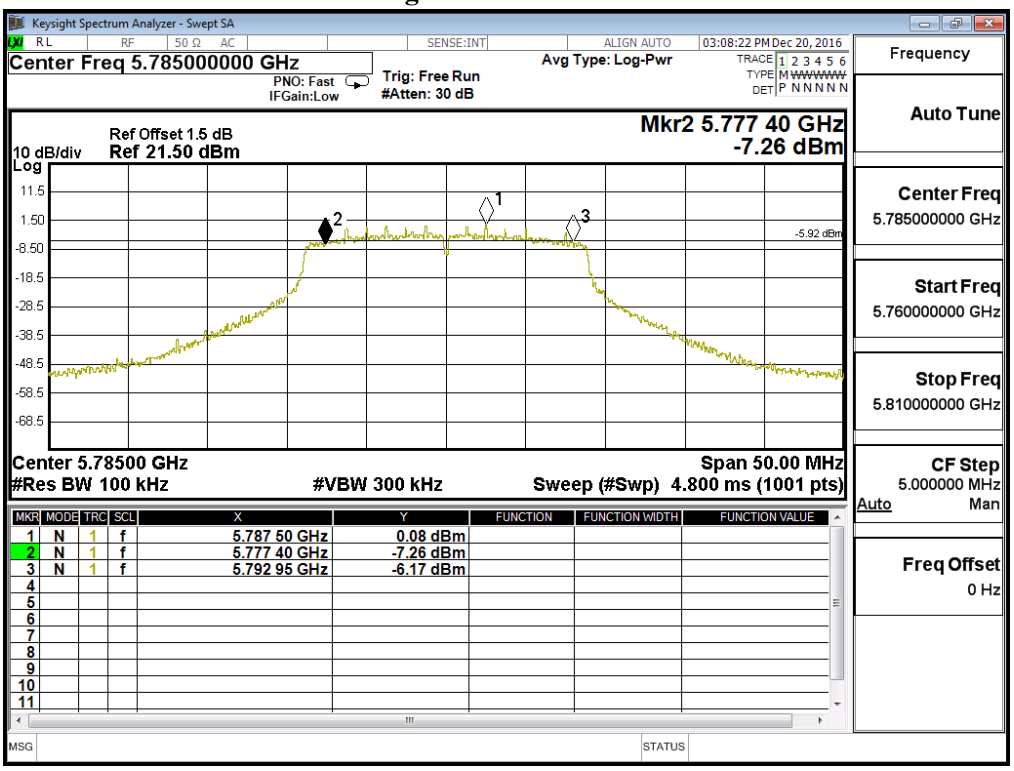
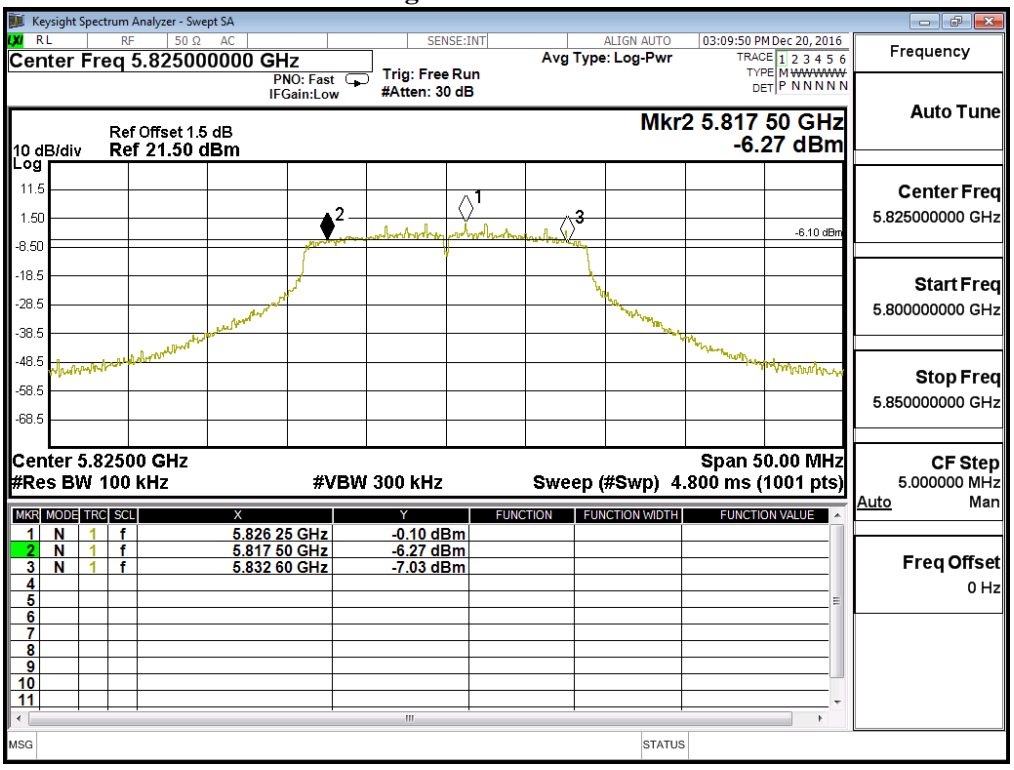
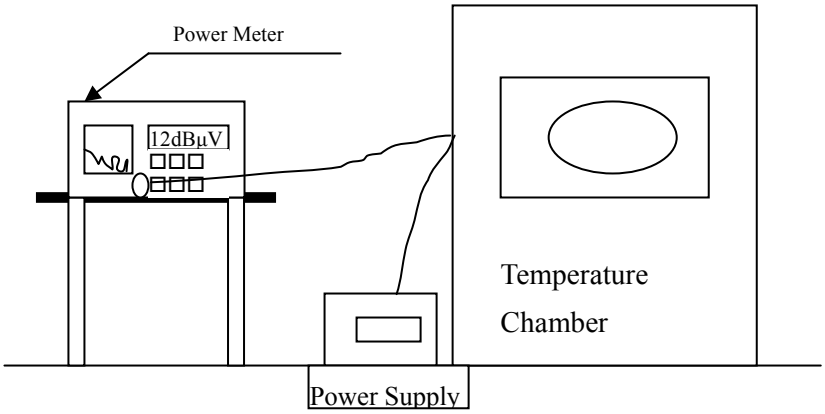



**Figure Channel 165:**



# 8. Frequency Stability

## 8.1. Test Setup




## 8.2. Limits

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified

## 8.3. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

## 8.4. Uncertainty

± 681.6 Hz

## 8.5. Test Result of Frequency Stability

Product : Key programming device
Test Item : Frequency Stability
Test Site : Temperature Chamber
Test Date : 2016/12/20
Test Mode : Carrier Wave

| Test Conditions | | Channel | Frequency (MHz) | Frequency (MHz) | △F (MHz) |
|---|---|---|---|---|---|
| Tnom (20)℃ | Vnom (3.6)V | 36 | 5180.0000 | 5180.0091 | -0.0091 |
| | | 44 | 5220.0000 | 5220.0123 | -0.0123 |
| | | 48 | 5240.0000 | 5240.0069 | -0.0069 |
| | | 52 | 5260.0000 | 5260.0054 | -0.0054 |
| | | 60 | 5300.0000 | 5300.0141 | -0.0141 |
| | | 64 | 5320.0000 | 5320.0032 | -0.0032 |
| | | 100 | 5500.0000 | 5500.0086 | -0.0086 |
| | | 116 | 5580.0000 | 5580.0031 | -0.0031 |
| | | 140 | 5700.0000 | 5700.0062 | -0.0062 |
| | | 149 | 5745.0000 | 5745.0087 | -0.0087 |
| | | 157 | 5785.0000 | 5785.0059 | -0.0059 |
| | | 165 | 5825.0000 | 5825.0091 | -0.0091 |
| Tmax (50)℃ | Vmax (4.14)V | 36 | 5180.0000 | 5180.0061 | -0.0061 |
| | | 44 | 5220.0000 | 5220.0069 | -0.0069 |
| | | 48 | 5240.0000 | 5240.0042 | -0.0042 |
| | | 52 | 5260.0000 | 5260.0081 | -0.0081 |
| | | 60 | 5300.0000 | 5300.0041 | -0.0041 |
| | | 64 | 5320.0000 | 5320.0052 | -0.0052 |
| | | 100 | 5500.0000 | 5500.0091 | -0.0091 |
| | | 116 | 5580.0000 | 5580.0048 | -0.0048 |
| | | 140 | 5700.0000 | 5700.0059 | -0.0059 |
| | | 149 | 5745.0000 | 5745.0098 | -0.0098 |
| | | 157 | 5785.0000 | 5785.0062 | -0.0062 |
| | | 165 | 5825.0000 | 5825.0063 | -0.0063 |

| Test Conditions | | Channel | Frequency (MHz) | Frequency (MHz) | △F (MHz) |
|---|---|---|---|---|---|
| Tmax (50)℃ | Vmin (3.06)V | 36 | 5180.0000 | 5180.0055 | -0.0055 |
| | | 44 | 5220.0000 | 5220.0081 | -0.0081 |
| | | 48 | 5240.0000 | 5240.0065 | -0.0065 |
| | | 52 | 5260.0000 | 5260.0091 | -0.0091 |
| | | 60 | 5300.0000 | 5300.0041 | -0.0041 |
| | | 64 | 5320.0000 | 5320.0029 | -0.0029 |
| | | 100 | 5500.0000 | 5500.0071 | -0.0071 |
| | | 116 | 5580.0000 | 5580.0068 | -0.0068 |
| | | 140 | 5700.0000 | 5700.0077 | -0.0077 |
| | | 149 | 5745.0000 | 5745.0053 | -0.0053 |
| | | 157 | 5785.0000 | 5785.0083 | -0.0083 |
| | | 165 | 5825.0000 | 5825.0068 | -0.0068 |
| Tmin (-30)℃ | Vmax (4.14)V | 36 | 5180.0000 | 5180.0028 | -0.0028 |
| | | 44 | 5220.0000 | 5220.0071 | -0.0071 |
| | | 48 | 5240.0000 | 5240.0046 | -0.0046 |
| | | 52 | 5260.0000 | 5260.0086 | -0.0086 |
| | | 60 | 5300.0000 | 5300.0057 | -0.0057 |
| | | 64 | 5320.0000 | 5320.0072 | -0.0072 |
| | | 100 | 5500.0000 | 5500.0038 | -0.0038 |
| | | 116 | 5580.0000 | 5580.0081 | -0.0081 |
| | | 140 | 5700.0000 | 5700.0024 | -0.0024 |
| | | 149 | 5745.0000 | 5745.0068 | -0.0068 |
| | | 157 | 5785.0000 | 5785.0039 | -0.0039 |
| | | 165 | 5825.0000 | 5825.0056 | -0.0056 |

| Test Conditions | | Channel | Frequency (MHz) | Frequency (MHz) | △F (MHz) |
|---|---|---|---|---|---|
| Tmin (-30)℃ | Vmin (3.06)V | 36 | 5180.0000 | 5180.0072 | -0.0072 |
| | | 44 | 5220.0000 | 5220.0053 | -0.0053 |
| | | 48 | 5240.0000 | 5240.0089 | -0.0089 |
| | | 52 | 5260.0000 | 5260.0062 | -0.0062 |
| | | 60 | 5300.0000 | 5300.0041 | -0.0041 |
| | | 64 | 5320.0000 | 5320.0029 | -0.0029 |
| | | 100 | 5500.0000 | 5500.0085 | -0.0085 |
| | | 116 | 5580.0000 | 5580.0052 | -0.0052 |
| | | 140 | 5700.0000 | 5700.0053 | -0.0053 |
| | | 149 | 5745.0000 | 5745.0073 | -0.0073 |
| | | 157 | 5785.0000 | 5785.0062 | -0.0062 |
| | | 165 | 5825.0000 | 5825.0041 | -0.0041 |

## 9. EMI Reduction Method During Compliance Testing

No modification was made during testing.