# Test Report

| | |
|---|---|
| Product Name | 802.11a CPE |
| Model No | CPE2618; CPE2514 |
| FCC ID. | VYXWIFI-005 |

| | |
|---|---|
| Applicant | ARGtek Communication Inc. |
| Address | 8F-9, NO. 4, LANE 609, SEC. 5,CHUNG HSIN RD., SAN CHUNG CITY, TAIPEI HSIEN TAIWAN R.O.C. |

| | |
|---|---|
| Date of Receipt | Aug. 31, 2009 |
| Issue Date | Oct. 30, 2009 |
| Report No. | 099058R-RFUSP28V01 |
| Report Version | V1.0 |

# Test Report Certification

Issue Date: Oct. 30, 2009
Report No.: 099058R-RFUSP28V01

**Accredited by NIST (NVLAP)**
NVLAP Lab Code: 200533-0

| | |
|---|---|
| Product Name | 802.11a CPE |
| Applicant | ARGtek Communication Inc. |
| Address | 8F-9, NO. 4, LANE 609, SEC. 5,CHUNG HSIN RD., SAN CHUNG CITY, TAIPEI HSIEN TAIWAN R.O.C. |
| Manufacturer | ARGtek Communication Inc. |
| Model No. | CPE2618; CPE2514 |
| EUT Rated Voltage | AC 100-240V, 50/60Hz |
| EUT Test Voltage | AC 120V/60Hz |
| Trade Name | None |
| Applicable Standard | FCC CFR Title 47 Part 15 Subpart C: 2008<br>ANSI C63.4: 2003 |
| Test Result | Complied |

NVLAP Lab Code: 200533-0

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

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(Adm. Specialist / Joanne Lin )

Tested By : Johnson Liao
( Engineer / Johnson Liao )

Approved By :
( Manager / Vincent Lin )

Testing Laboratory
0914

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# 1. GENERAL INFORMATION

## 1.1. EUT Description

| | |
|---|---|
| Product Name | 802.11a CPE |
| Trade Name | None |
| FCC ID. | VYXWIFI-005 |
| Model No. | CPE2618; CPE2514 |
| Frequency Range | 5745-5825MHz |
| Number of Channels | 802.11a/n-20MHz: 5, n-40MHz: 2 |
| Data Speed | 802.11a: 6-54Mbps, 802.11n: 7.2-150Mbps |
| Channel separation | 802.11a/n-20MHz: 20MHz<br>802.11n-40MHz: 40MHz |
| Type of Modulation | 802.11a/n: OFDM<br>( BPSK, QPSK, 16QAM, 64QAM) |
| Antenna Type | Printed on PCB |
| Antenna Gain | Refer to the table “Antenna List” |
| Channel Control | Auto |
| Power Adapter | MFR: DVE, M/N: DSA-15P-12<br>Input: AC 100-240V, 50/60Hz, 0.5A<br>Output: DC +12V, 1.25A<br>Cable Out: Non-Shielded, 1.8m |

**Antenna List**

| No. | Manufacturer | Part No. | Peak Gain |
|---|---|---|---|
| 1 | ARGtek | CPE2618 Patch Antenna | 18 dBi in 5GHz |

Note: The antenna of EUT is conform to FCC 15.203

802.11a/n-20MHz (5GHz Band) Center Working Frequency of Each Channel:

| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|---|---|
| Channel 149: | 5745 MHz | Channel 153: | 5765 MHz | Channel 157: | 5785 MHz | Channel 161: | 5805 MHz |
| Channel 165: | 5825 MHz | | | | | | |

802.11n-40MHz (5GHz Band) Center Working Frequency of Each Channel:

| Channel | Frequency | Channel | Frequency |
|---|---|---|---|
| Channel 151: | 5755 MHz | Channel 159: | 5795 MHz |

Note:

1. The EUT is a 802.11a CPE with a built-in 5GHz WLAN card.
2. The EUT is including two models for different marketing requirement.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11a is 6Mbps、802.11n(20BW) is 7.2Mbps and 、802.11n(40BW) is 15Mbps)
5. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11a/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.
6. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

## 1.2. Operational Description

The EUT is a 802.11a CPE with a built-in 5GHz WLAN card. The device provided of eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11a).

The device provided of eight kinds of transmitting speed 7.2、14.4、21.7、28.9、43.3、57.8、65 and 72.2Mbps in 802.11n(20BW) mode and 15、30、45、60、90、120、135 and 150Mbps(40BW) the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11n).

The device adapts direct sequence spread spectrum modulation. The antenna provides diversity function to improve the receiving function and the antennas to support 1(Transmit) × 1(Receive) SISO technology.

This 802.11a CPE, compliant with IEEE 802.11a/n, is a high-efficiency Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. its standard compliance ensures that it can communicate with any IEEE 802.11a/n network.

| | |
|---|---|
| Test Mode | Mode 1: Transmit - 802.11a 6Mbps |
| | Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) |
| | Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) |

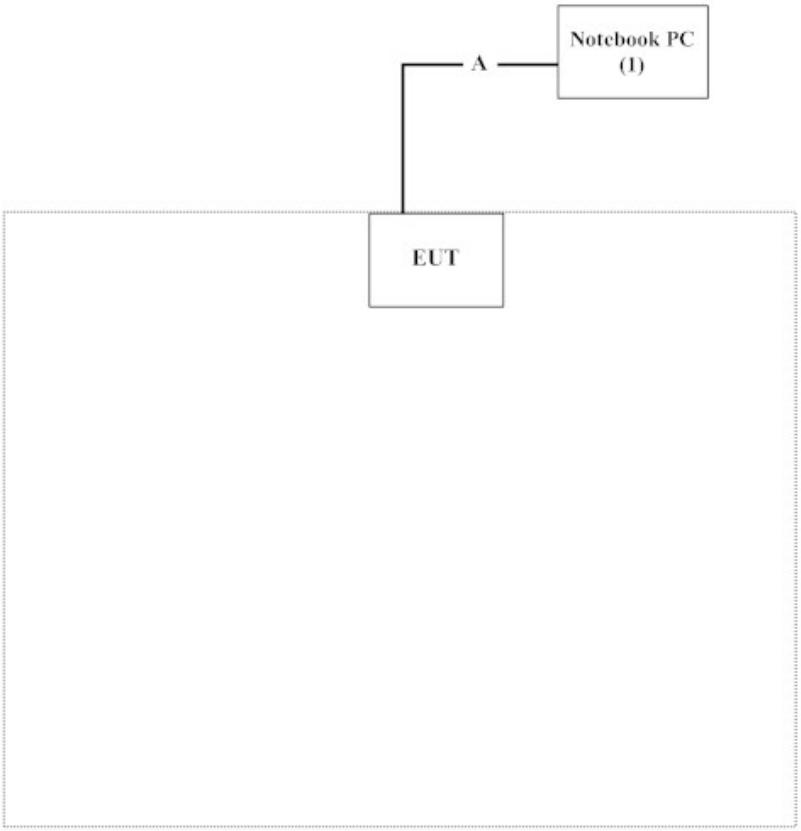
## 1.3. Tested System Details

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 | DELL | PP04X | 2D2ZM1S | Non-Shielded, 0.8m |

| Signal Cable Type | | Signal cable Description |
|---|---|---|
| A | LAN Cable | Shielded, 5m |

## 1.4. Configuration of Tested System



## 1.5. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.4

(2) Execute RT2880 (Version 1.4.0.8) on the Notebook via LAN cable.

(3) Configure the test mode, the test channel, and the data rate.

(4) Press “OK” to start the continuous transmission.

(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 QuieTek Corporation's Web Site : http://tw.quietek.com/modules/myalbum/
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

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FCC Accreditation Number: TW1014

Testing Laboratory
0914

## 2. Conducted Emission

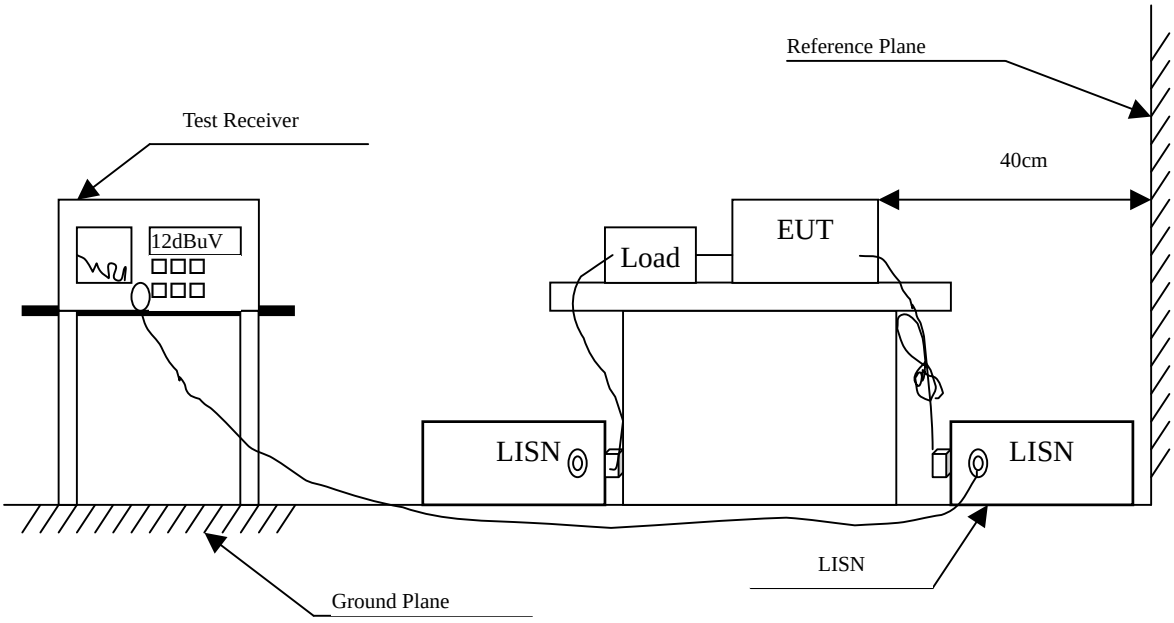
### 2.1. Test Equipment

The following test equipment are used during the conducted emission test:

| Item | Instrument | Manufacturer | Type No./Serial No | Last Cal. | Remark |
|---|---|---|---|---|---|
| 1 | Test Receiver | R & S | ESCS 30/825442/17 | May, 2009 | |
| 2 | L.I.S.N. | R & S | ESH3-Z5/825016/6 | May, 2009 | EUT |
| 3 | L.I.S.N. | Kyoritsu | KNW-407/8-1420-3 | May, 2009 | Peripherals |
| 4 | Pulse Limiter | R & S | ESH3-Z2 | May, 2009 | |
| 5 | No.1 Shielded Room | | | N/A | |

Note: All instruments are calibrated every one year.

### 2.2. Test Setup



## 2.3. Limits

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

## 2.4. 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 C63.4: 2003 on conducted measurement.

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

## 2.5. Uncertainty

± 2.26 dB

## 2.6. Test Result of Conducted Emission

Product : 802.11a CPE
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5755MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV | dB | dBuV |
| **Line 1** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.302 | 9.790 | 26.000 | 35.790 | -25.867 | 61.657 |
| 0.330 | 9.790 | 25.570 | 35.360 | -25.497 | 60.857 |
| 0.490 | 9.790 | 17.220 | 27.010 | -29.276 | 56.286 |
| 0.857 | 9.800 | 17.690 | 27.490 | -28.510 | 56.000 |
| 10.716 | 9.880 | 22.990 | 32.870 | -27.130 | 60.000 |
| 14.548 | 10.110 | 20.350 | 30.460 | -29.540 | 60.000 |
| **Average** | | | | | |
| 0.302 | 9.790 | 18.780 | 28.570 | -23.087 | 51.657 |
| 0.330 | 9.790 | 17.760 | 27.550 | -23.307 | 50.857 |
| 0.490 | 9.790 | 6.080 | 15.870 | -30.416 | 46.286 |
| 0.857 | 9.800 | 6.980 | 16.780 | -29.220 | 46.000 |
| 10.716 | 9.880 | 15.160 | 25.040 | -24.960 | 50.000 |
| 14.548 | 10.110 | 12.180 | 22.290 | -27.710 | 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
4. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and data rate.
5. Only worst case is shown in the test mode.

Product : 802.11a CPE
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5755MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV | dB | dBuV |
| **Line 2** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.306 | 9.789 | 26.390 | 36.179 | -25.364 | 61.543 |
| 0.341 | 9.790 | 21.550 | 31.340 | -29.203 | 60.543 |
| 0.459 | 9.790 | 17.310 | 27.100 | -30.071 | 57.171 |
| 0.716 | 9.790 | 15.800 | 25.590 | -30.410 | 56.000 |
| 10.302 | 9.900 | 22.960 | 32.860 | -27.140 | 60.000 |
| 13.783 | 10.150 | 20.660 | 30.810 | -29.190 | 60.000 |
| **Average** | | | | | |
| 0.306 | 9.789 | 17.230 | 27.019 | -24.524 | 51.543 |
| 0.341 | 9.790 | 9.220 | 19.010 | -31.533 | 50.543 |
| 0.459 | 9.790 | 7.030 | 16.820 | -30.351 | 47.171 |
| 0.716 | 9.790 | 4.270 | 14.060 | -31.940 | 46.000 |
| 10.302 | 9.900 | 15.210 | 25.110 | -24.890 | 50.000 |
| 13.783 | 10.150 | 12.390 | 22.540 | -27.460 | 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
4. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and data rate.
5. Only worst case is shown in the test mode.

# 3. Peak Power Output

## 3.1. Test Equipment

The following test equipments are used during the radiated emission tests:

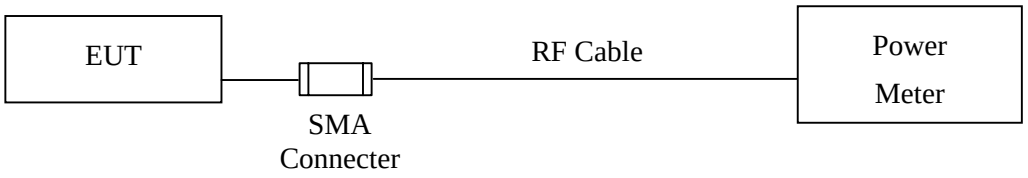
| | Equipment | Manufacturer | Model No./Serial No. | Last Cal. |
|---|---|---|---|---|
| X | Power Meter | Anritsu | ML2495A/6K00003357 | May, 2009 |
| X | Power Sensor | Anritsu | MA2411B/0846193 | Jun, 2009 |

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.

## 3.2. Test Setup

Conducted Measurement




## 3.3. Limits

The maximum peak power shall be less 1 Watt.

## 3.4. Test Procedure

The EUT was tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

## 3.5. Uncertainty

± 1.27 dB

## 3.6. Test Result of Peak Power Output

Product : 802.11a CPE
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps

| Cable loss=0.5dB | | Power Output (dBm) | | | | | | | | | Required Limit | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Channel No. | Frequency (MHz) | Average Data Rate (Mbps) | | | | | | | | Peak POWER | | |
| | | 6 | 9 | 12 | 18 | 24 | 36 | 48 | 54 | 6 | | |
| 149 | 5745.00 | -- | -- | -- | -- | -- | -- | -- | -- | 15.45 | 18dBm | Pass |
| 157 | 5785.00 | 8.1 | 8.02 | 7.95 | 7.75 | 7.77 | 8.02 | 7.95 | 7.88 | 15.26 | 18dBm | Pass |
| 165 | 5825.00 | -- | -- | -- | -- | -- | -- | -- | -- | 16.10 | 18dBm | Pass |

Note:

1. Peak Power Output Value =Reading value on peak power meter + cable loss
2. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. Antenna Gain =18dBi , Output power=30dBm-(18dB-6dB)=18dBm

Product : 802.11a CPE
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band)

| Cable loss=0.5dB | | Power Output (dBm) | | | | | | | | | Required Limit | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Channel No. | Frequency (MHz) | Average Data Rate (Mbps) | | | | | | | | Peak POWER | | |
| | | MCS0 | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 | MCS0 | | |
| 149 | 5745.00 | -- | -- | -- | -- | -- | -- | -- | -- | 16.31 | 18dBm | Pass |
| 157 | 5785.00 | 8.22 | 7.95 | 7.77 | 7.79 | 7.93 | 8.06 | 8.11 | 7.95 | 15.47 | 18dBm | Pass |
| 165 | 5825.00 | -- | -- | -- | -- | -- | -- | -- | -- | 15.82 | 18dBm | Pass |

Note:

1. Peak Power Output Value =Reading value on peak power meter + cable loss
2. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. Antenna Gain =18dBi , Output power=30dBm-(18dB-6dB)=18dBm

Product : 802.11a CPE
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band)

| Cable loss=0.5dB | | Power Output (dBm) | | | | | | | | | Required Limit | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Channel No. | Frequency (MHz) | Average Data Rate (Mbps) | | | | | | | | Peak POWER | | |
| | | MCS0 | MCS1 | MCS2 | MCS3 | MCS4 | MCS5 | MCS6 | MCS7 | MCS0 | | |
| 151 | 5755.00 | 8.46 | 8.25 | 8.22 | 8.05 | 8.22 | 8.32 | 8.15 | 8.2 | 15.97 | 18dBm | Pass |
| 159 | 5795.00 | -- | -- | -- | -- | -- | -- | -- | -- | 14.65 | 18dBm | Pass |

Note:

1. Peak Power Output Value =Reading value on peak power meter + cable loss
2. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. Antenna Gain =18dBi , Output power=30dBm-(18dB-6dB)=18dBm

# 4. Radiated Emission

## 4.1. Test Equipment

The following test equipment are used during the radiated emission test:

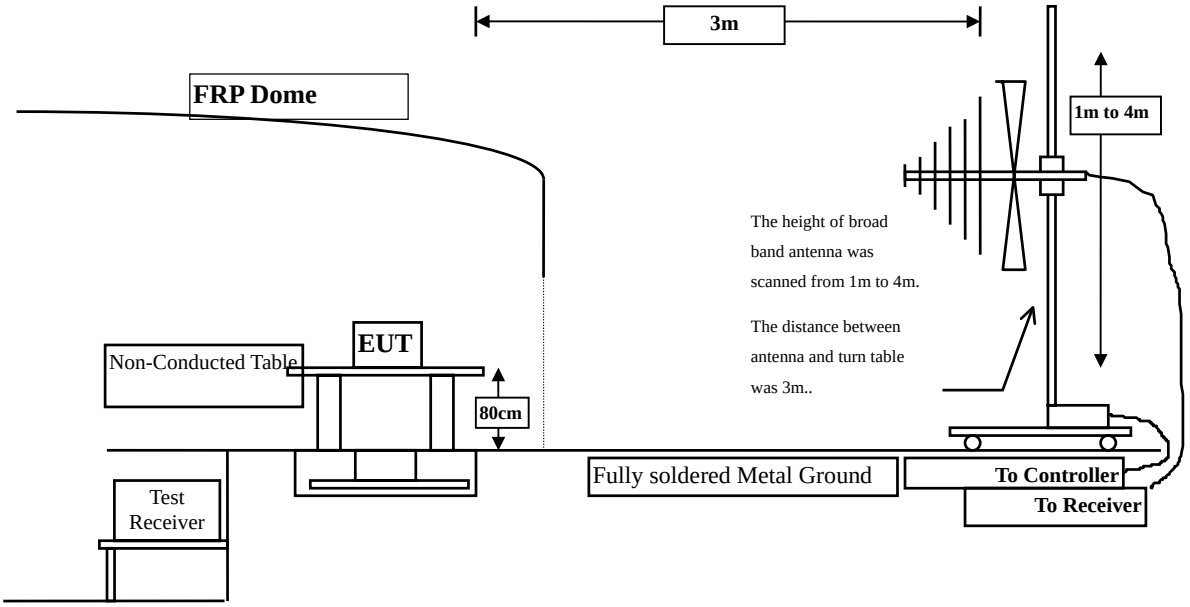
| Test Site | | Equipment | Manufacturer | Model No./Serial No. | Last Cal. |
|---|---|---|---|---|---|
| ☒Site # 3 | X | Bilog Antenna | Schaffner Chase | CBL6112B/2673 | Sep., 2009 |
| | X | Horn Antenna | Schwarzbeck | BBHA9120D/D305 | Sep., 2009 |
| | X | Horn Antenna | Schwarzbeck | BBHA9170/208 | Jul., 2009 |
| | X | Pre-Amplifier | AGILENT | 8447D/2944A09549 | Sep., 2009 |
| | X | Test Receiver | R & S | ESCS 30/ 825442/018 | Sep., 2009 |
| | X | Spectrum Analyzer | Advantest | R3162/91700283 | Oct., 2009 |
| | X | Coaxial Cable | QuieTek | QTK-CABLE/ CAB5 | Feb., 2009 |
| | X | Controller | QuieTek | QTK-CONTROLLER/ CTRL3 | N/A |
| | X | Coaxial Switch | Anritsu | MP59B/6200265729 | N/A |

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

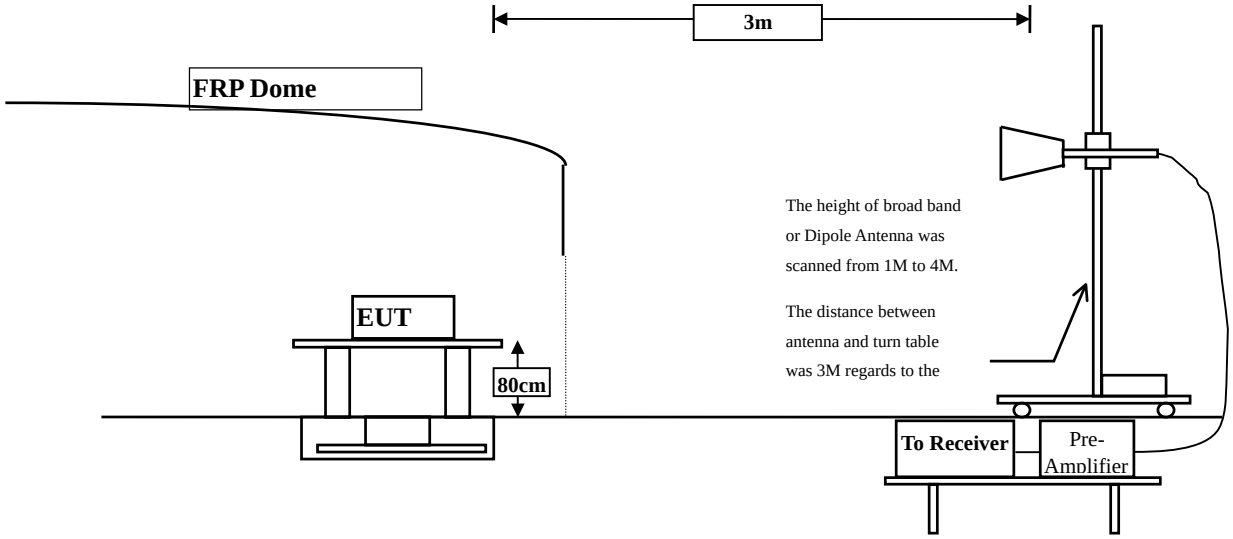
2. The test instruments marked with “X” are used to measure the final test results.

## 4.2. Test Setup

Radiated Emission Below 1GHz




Radiated Emission Above 1GHz



## 4.3. 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 | uV/m @3m | dBuV/m@3m |
| 30-88 | 100 | 40 |
| 88-216 | 150 | 43.5 |
| 216-960 | 200 | 46 |
| Above 960 | 500 | 54 |

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

## 4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 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 C63.4:2003 on radiated measurement.

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

Radiated emission measurements below 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 30MHz - 10th Harmonic of fundamental was investigated.

## 4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

## 4.6. Test Result of Radiated Emission

Product : 802.11a CPE
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5745 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal Peak Detector:** | | | | | |
| 11490.000 | 19.970 | 44.070 | 64.040 | -9.960 | 74.000 |
| **Average Detector:** | | | | | |
| 11490.000 | 19.970 | 30.370 | 50.340 | -3.660 | 54.000 |
| **Vertical Peak Detector:** | | | | | |
| 11490.000 | 18.883 | 37.180 | 56.063 | -17.937 | 74.000 |
| **Average Detector:** | | | | | |
| 11490.000 | 18.883 | 22.520 | 41.403 | -12.597 | 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. " * ", 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.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11a CPE
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5785 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal Peak Detector:** | | | | | |
| 11570.000 | 19.925 | 43.010 | 62.935 | -11.065 | 74.000 |
| **Average Detector:** | | | | | |
| 11570.000 | 19.925 | 29.130 | 49.055 | -4.945 | 54.000 |
| **Vertical Peak Detector:** | | | | | |
| 11570.000 | 19.036 | 36.370 | 55.405 | -18.595 | 74.000 |
| **Average Detector:** | | | | | |
| 11570.000 | 19.036 | 25.630 | 44.665 | -9.335 | 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. " * ", 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.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11a CPE
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5825 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal Peak Detector:** | | | | | |
| 11650.000 | 19.755 | 42.630 | 62.384 | -11.616 | 74.000 |
| **Average Detector:** | | | | | |
| 11650.000 | 19.755 | 28.310 | 48.064 | -5.936 | 54.000 |
| **Vertical Peak Detector:** | | | | | |
| 11650.000 | 18.830 | 36.800 | 55.630 | -18.370 | 74.000 |
| **Average Detector:** | | | | | |
| 11650.000 | 18.830 | 32.020 | 50.850 | -3.150 | 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. " * ", 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.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11a CPE
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5745MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11490.000 | 19.970 | 44.250 | 64.220 | -9.780 | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| 11490.000 | 19.970 | 29.200 | 49.170 | -4.830 | 54.000 |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11490.000 | 18.883 | 37.450 | 56.333 | -17.667 | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| 11490.000 | 18.883 | 25.220 | 44.103 | -9.897 | 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. " * ", 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.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11a CPE
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5785 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal Peak Detector:** | | | | | |
| 11570.000 | 19.925 | 43.010 | 62.935 | -11.065 | 74.000 |
| **Average Detector:** | | | | | |
| 11570.000 | 19.925 | 28.020 | 47.945 | -6.055 | 54.000 |
| **Vertical Peak Detector:** | | | | | |
| 11570.000 | 19.036 | 36.690 | 55.725 | -18.275 | 74.000 |
| **Average Detector:** | | | | | |
| 11570.000 | 19.036 | 23.010 | 42.045 | -11.955 | 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. " * ", 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.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11a CPE
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5825 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal Peak Detector:** | | | | | |
| 11650.000 | 19.755 | 42.010 | 61.764 | -12.236 | 74.000 |
| **Average Detector:** | | | | | |
| 11650.000 | 19.755 | 27.480 | 47.234 | -6.766 | 54.000 |
| **Vertical Peak Detector:** | | | | | |
| 11650.000 | 18.830 | 35.380 | 54.210 | -19.790 | 74.000 |
| **Average Detector:** | | | | | |
| 11650.000 | 18.830 | 22.020 | 40.850 | -13.150 | 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. " * ", 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.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11a CPE
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5755MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 11510.000 | 19.945 | 40.170 | 60.115 | -13.885 | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| 11510.000 | 19.945 | 27.040 | 46.985 | -7.015 | 54.000 |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 11510.000 | 18.914 | 35.120 | 54.034 | -19.966 | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| 11510.000 | 18.914 | 21.060 | 39.974 | -14.026 | 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. " * ", 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.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11a CPE
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5795 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal Peak Detector:** | | | | | |
| 11590.000 | 19.924 | 39.520 | 59.444 | -14.556 | 74.000 |
| **Average Detector:** | | | | | |
| 11590.000 | 19.924 | 26.580 | 46.504 | -7.496 | 54.000 |
| **Vertical Peak Detector:** | | | | | |
| 11590.000 | 19.082 | 33.390 | 52.472 | -21.528 | 74.000 |
| **Average Detector:** | | | | | |
| 11590.000 | 19.082 | 22.360 | 41.442 | -12.558 | 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. " * ", 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.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11a CPE
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps(5785 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal** | | | | | |
| 286.080 | -5.222 | 46.505 | 41.283 | -4.717 | 46.000 |
| 295.780 | -4.148 | 45.592 | 41.444 | -4.556 | 46.000 |
| 394.720 | -2.863 | 38.191 | 35.328 | -10.672 | 46.000 |
| 431.580 | -2.561 | 38.471 | 35.910 | -10.090 | 46.000 |
| 716.760 | 3.056 | 30.031 | 33.088 | -12.912 | 46.000 |
| 959.260 | 5.760 | 37.060 | 42.820 | -3.180 | 46.000 |
| **Vertical** | | | | | |
| 286.080 | -8.632 | 50.764 | 42.132 | -3.868 | 46.000 |
| 381.140 | -2.176 | 39.474 | 37.298 | -8.702 | 46.000 |
| 501.420 | -1.290 | 37.625 | 36.336 | -9.664 | 46.000 |
| 718.700 | -0.798 | 35.195 | 34.397 | -11.603 | 46.000 |
| 788.540 | 2.551 | 30.445 | 32.996 | -13.004 | 46.000 |
| 930.160 | 5.990 | 33.982 | 39.972 | -6.028 | 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. " * ", 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 : 802.11a CPE
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5785 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal** | | | | | |
| 295.780 | -4.148 | 45.037 | 40.889 | -5.111 | 46.000 |
| 357.860 | -2.509 | 42.677 | 40.168 | -5.832 | 46.000 |
| 429.640 | -2.700 | 40.107 | 37.407 | -8.593 | 46.000 |
| 524.700 | 1.282 | 33.132 | 34.414 | -11.586 | 46.000 |
| 718.700 | 3.052 | 30.599 | 33.651 | -12.349 | 46.000 |
| 957.320 | 5.727 | 35.383 | 41.110 | -4.890 | 46.000 |
| **Vertical** | | | | | |
| 295.780 | -7.948 | 47.326 | 39.378 | -6.622 | 46.000 |
| 392.780 | -4.114 | 42.696 | 38.582 | -7.418 | 46.000 |
| 501.420 | -1.290 | 36.350 | 35.061 | -10.939 | 46.000 |
| 716.760 | -1.134 | 35.899 | 34.766 | -11.234 | 46.000 |
| 932.100 | 5.660 | 33.578 | 39.238 | -6.762 | 46.000 |
| 955.380 | 6.129 | 35.841 | 41.970 | -4.030 | 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. " * ", 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 : 802.11a CPE
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5755MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal** | | | | | |
| 286.080 | -5.222 | 46.402 | 41.180 | -4.820 | 46.000 |
| 357.860 | -2.509 | 43.219 | 40.710 | -5.290 | 46.000 |
| 429.640 | -2.700 | 38.583 | 35.883 | -10.117 | 46.000 |
| 718.700 | 3.052 | 29.828 | 32.880 | -13.120 | 46.000 |
| 786.600 | 4.305 | 29.768 | 34.073 | -11.927 | 46.000 |
| 957.320 | 5.727 | 31.272 | 36.999 | -9.001 | 46.000 |
| **Vertical** | | | | | |
| 295.780 | -7.948 | 46.711 | 38.763 | -7.237 | 46.000 |
| 381.140 | -2.176 | 38.661 | 36.485 | -9.515 | 46.000 |
| 503.360 | -1.350 | 37.279 | 35.929 | -10.071 | 46.000 |
| 788.540 | 2.551 | 32.027 | 34.578 | -11.422 | 46.000 |
| 930.160 | 5.990 | 34.557 | 40.547 | -5.453 | 46.000 |
| 959.260 | 6.430 | 35.697 | 42.127 | -3.873 | 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. " * ", 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.

# 5. RF antenna conducted test

## 5.1. Test Equipment

The following test equipments are used during the radiated emission tests:

| | Equipment | Manufacturer | Model No./Serial No. | Last Cal. |
|---|---|---|---|---|
| X | Spectrum Analyzer | R&S | FSP40 / 100170 | Nov, 2008 |
| | Spectrum Analyzer | Agilent | E4407B / US39440758 | May, 2009 |
| | Spectrum Analyzer | Agilent | N9010A / MY48030495 | Apr., 2009 |

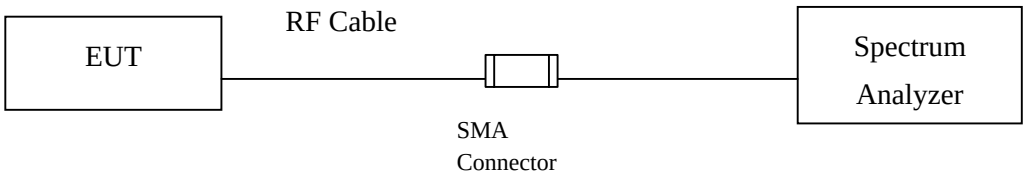
Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

3. The power combiner is used for measure 11n mode.

## 5.2. Test Setup

**RF antenna Conducted Measurement:**




## 5.3. Limits

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

## 5.4. Test Procedure

The EUT was tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

## 5.5. Uncertainty

The measurement uncertainty
Conducted is defined as ± 1.27dB

## 5.6. Test Result of RF antenna conducted test

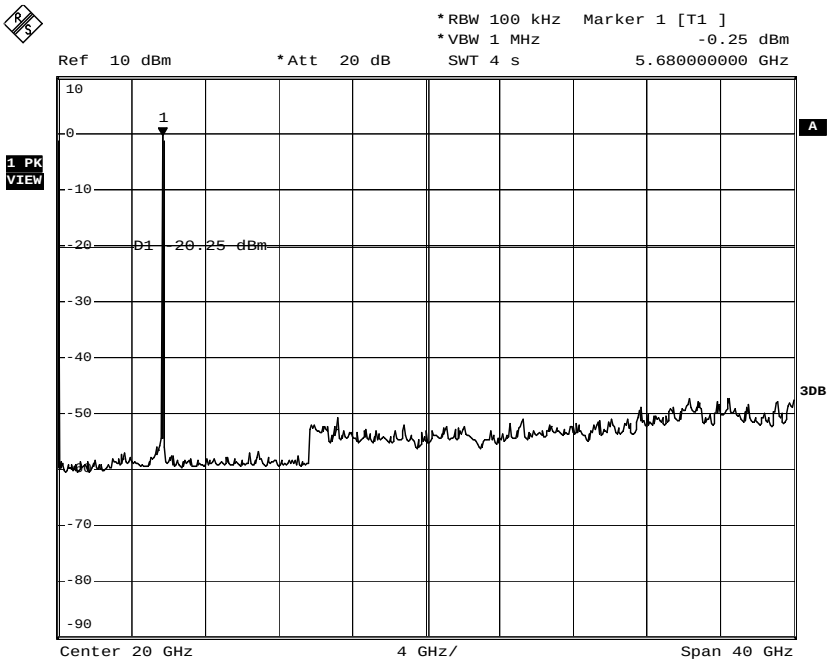
Product : 802.11a CPE

Test Item : RF Antenna Conducted Spurious

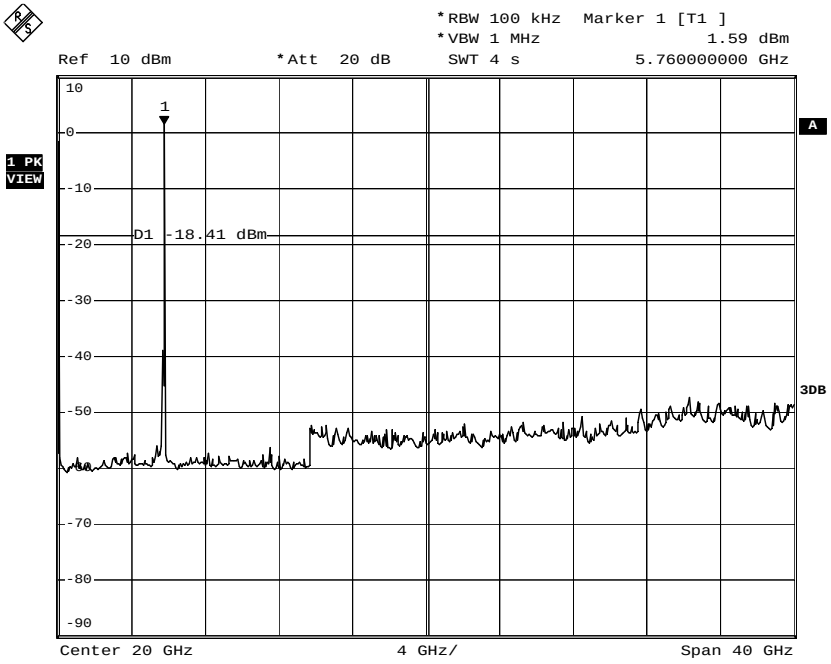
Test Site : No.3 OATS

Test Mode : Mode 1: Transmit - 802.11a 6Mbps

**Channel 149 (5745MHz) 30MHz -40GHz**

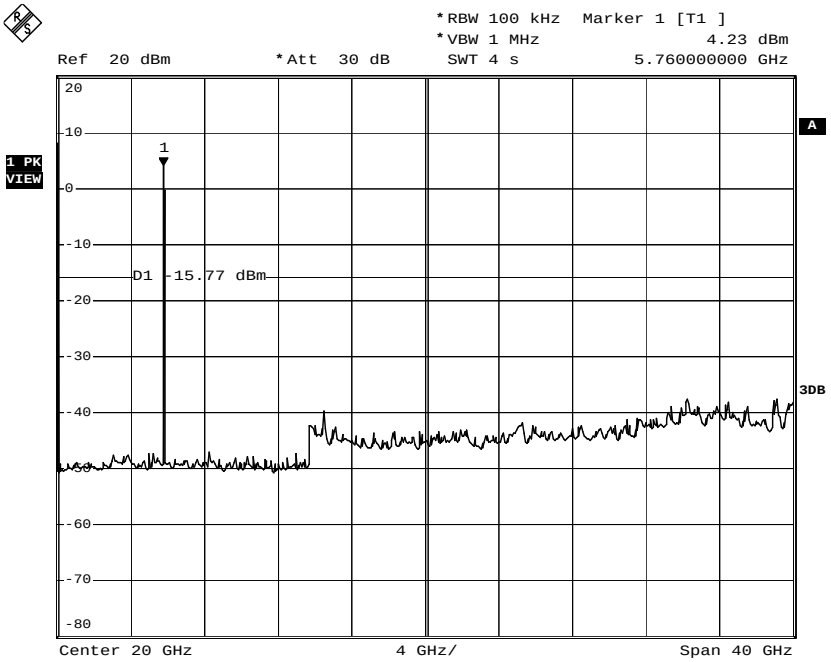


## Channel 157 (5785MHz) 30MHz -40GHz




Date: 22.JUN.2009 18:20:12

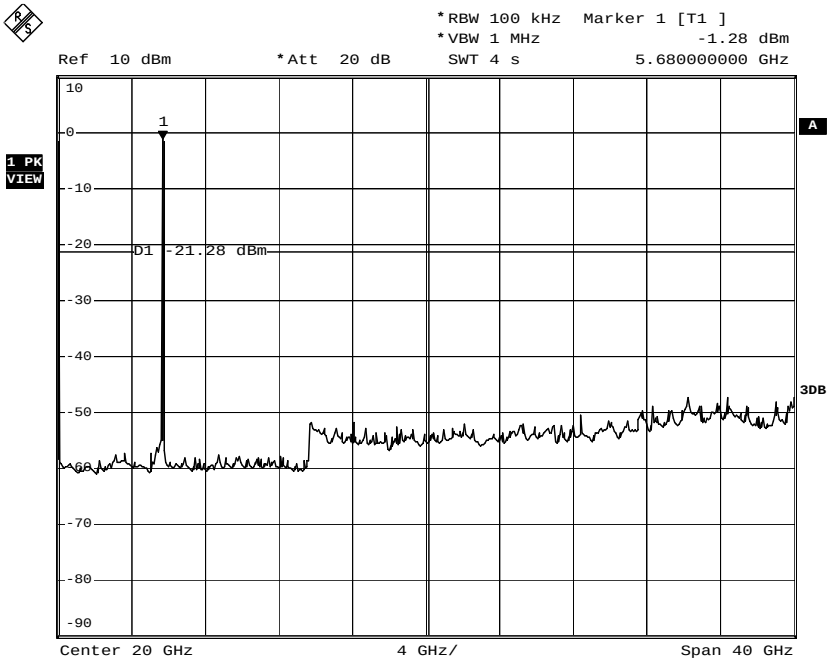
## Channel 165 (5825MHz) 30MHz -40GHz



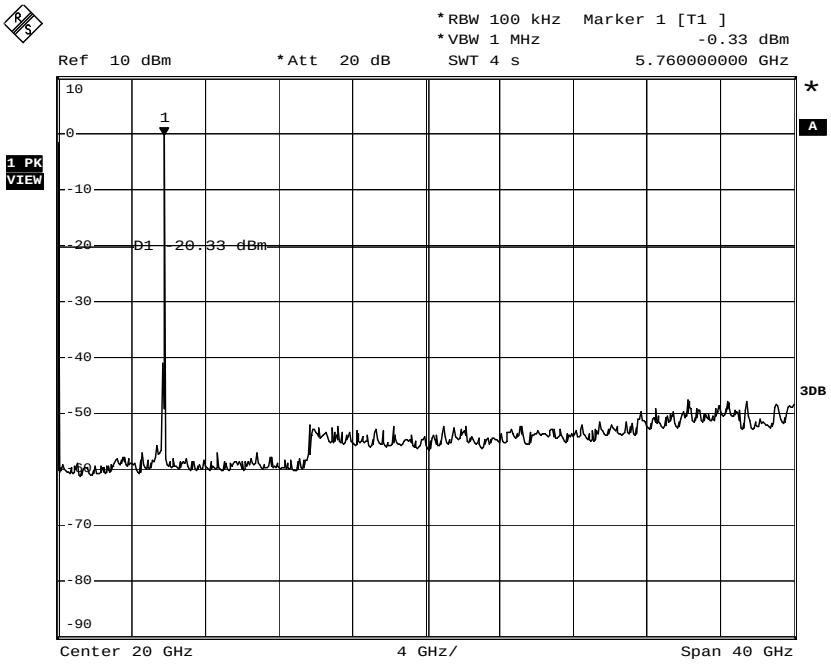

Date: 22.JUN.2009 19:26:34

Product : 802.11a CPE
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band)

**Channel 149 (5745MHz) 30MHz -40GHz**

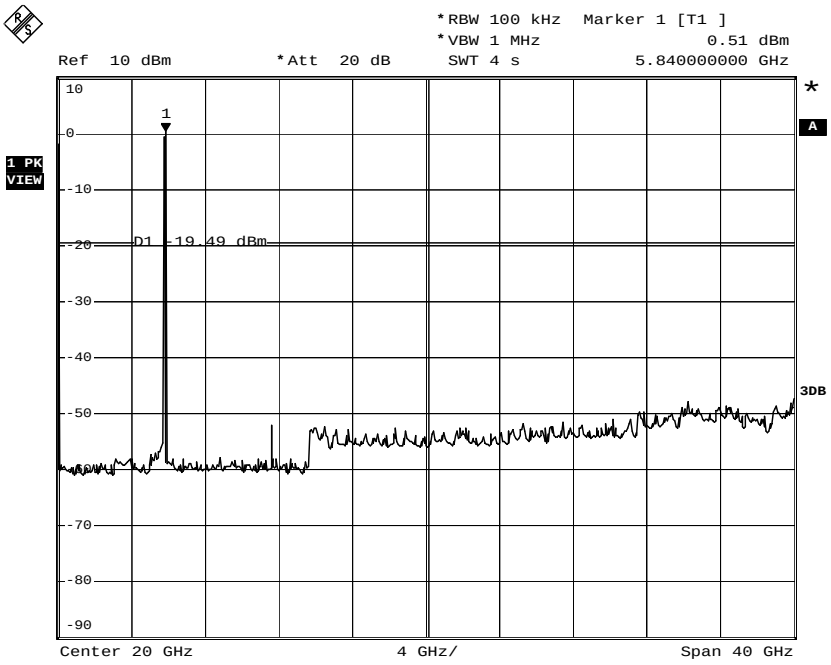


## Channel 157 (5785MHz) 30MHz -40GHz




Date: 22.JUN.2009 19:28:42

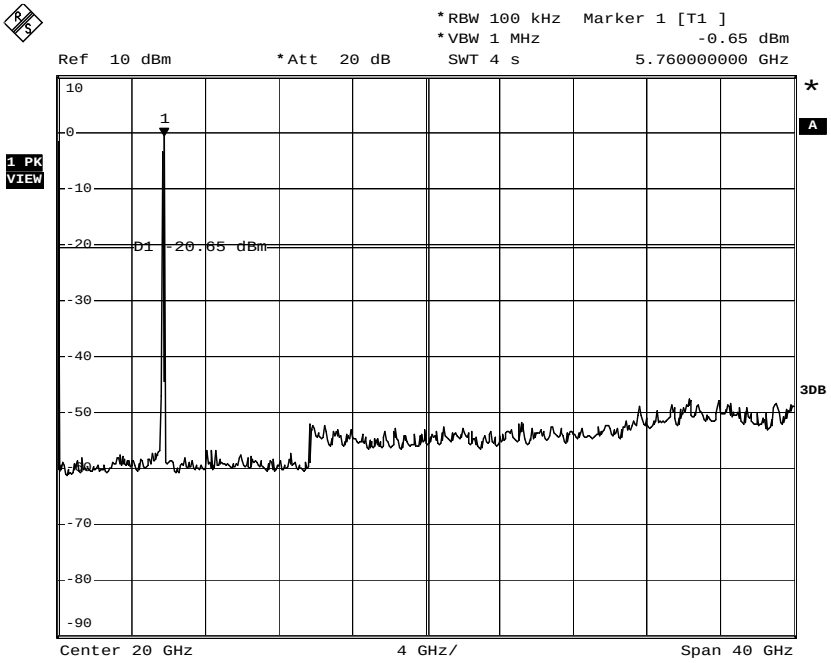
## Channel 165 (5825MHz) 30MHz -40GHz




Date: 22.JUN.2009 19:29:26

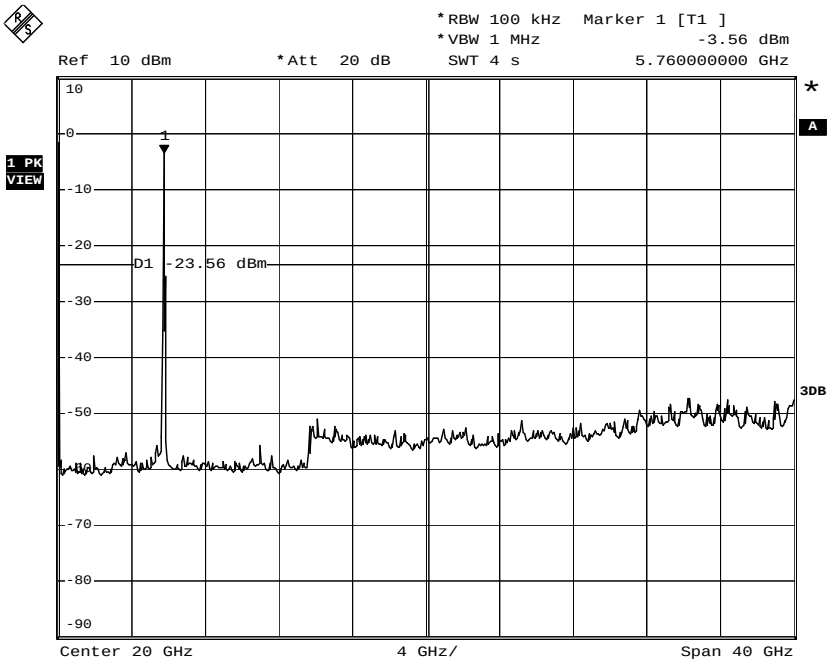
Product : 802.11a CPE
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band)

**Channel 151 (5755MHz) 30MHz -40GHz**




Date: 22.JUN.2009 19:30:34

## Channel 159 (5795MHz) 30MHz -40GHz




Date: 22.JUN.2009 19:31:13

# 6. Band Edge

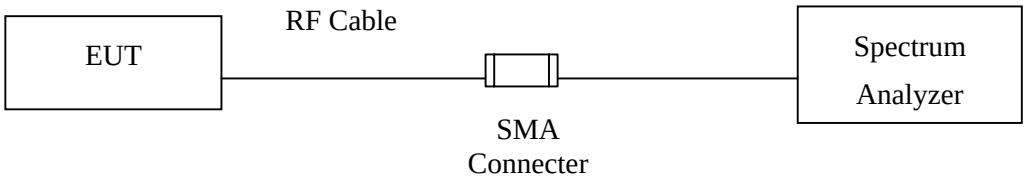
## 6.1. Test Equipment

The following test equipments are used during the radiated emission tests:

| | Equipment | Manufacturer | Model No./Serial No. | Last Cal. |
|---|---|---|---|---|
| X | Spectrum Analyzer | Agilent | N9010A / MY48030495 | Apr, 2009 |

Note: 1. All instruments are calibrated every one year.
2. The test instruments marked by "X" are used to measure the final test results.

## 6.2. Test Setup




## 6.3. 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.

## 6.4. Test Procedure

The EUT was tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Set VBW> RBW

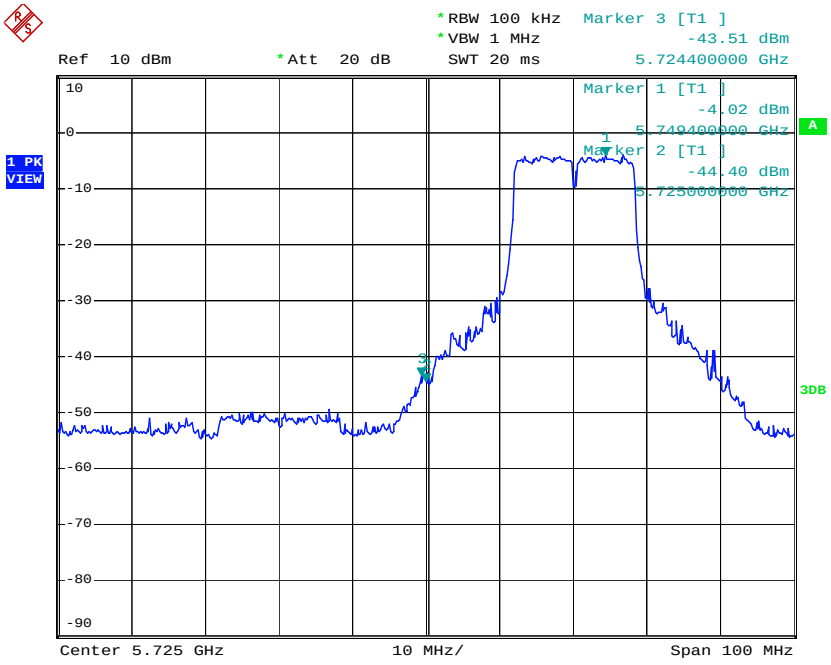
## 6.5. Uncertainty

± 3.9 dB above 1GHz
± 3.8 dB below 1GHz

## 6.6. Test Result of Band Edge

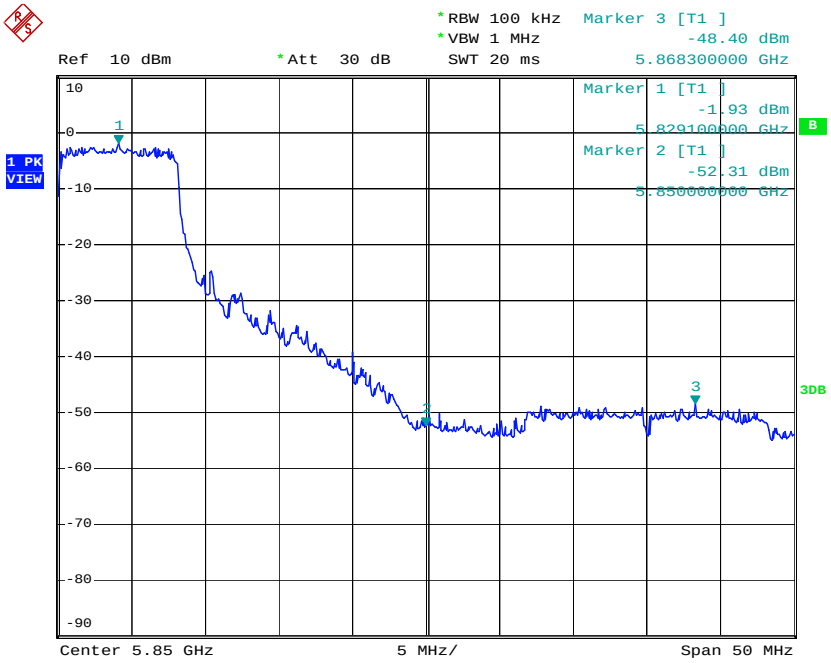
Product : 802.11a CPE
Test Item : Band edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5745MHz)

**Figure Channel 149:**



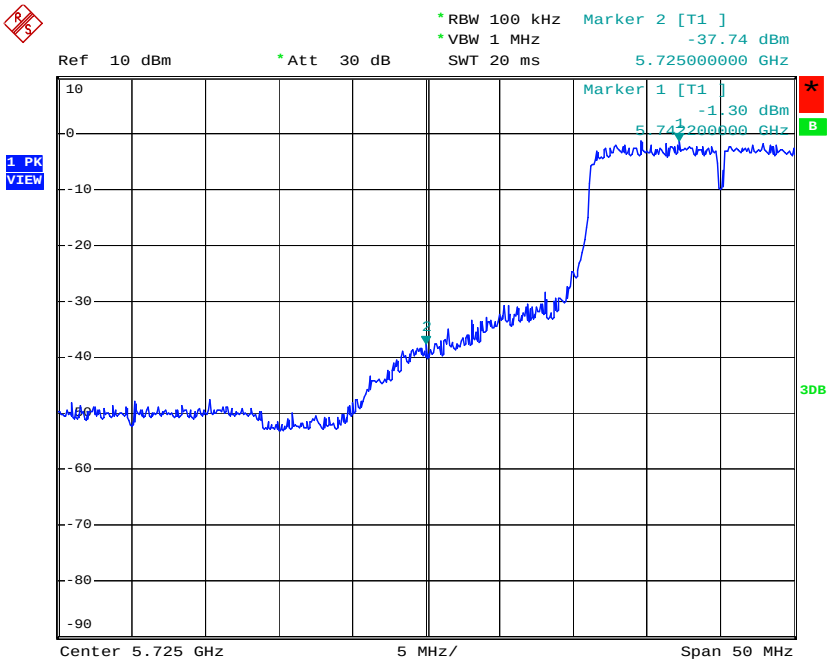
Product : 802.11a CPE
Test Item : Band edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5825MHz)

**Figure Channel 165:**



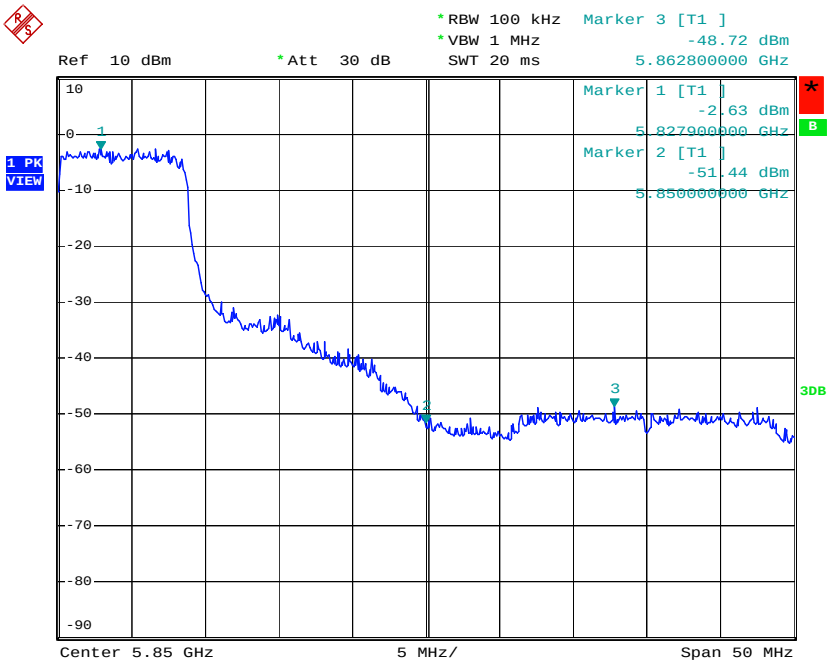
Product : 802.11a CPE
Test Item : Band edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5745MHz)

**Figure Channel 149:**



Product : 802.11a CPE
Test Item : Band edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5825MHz)

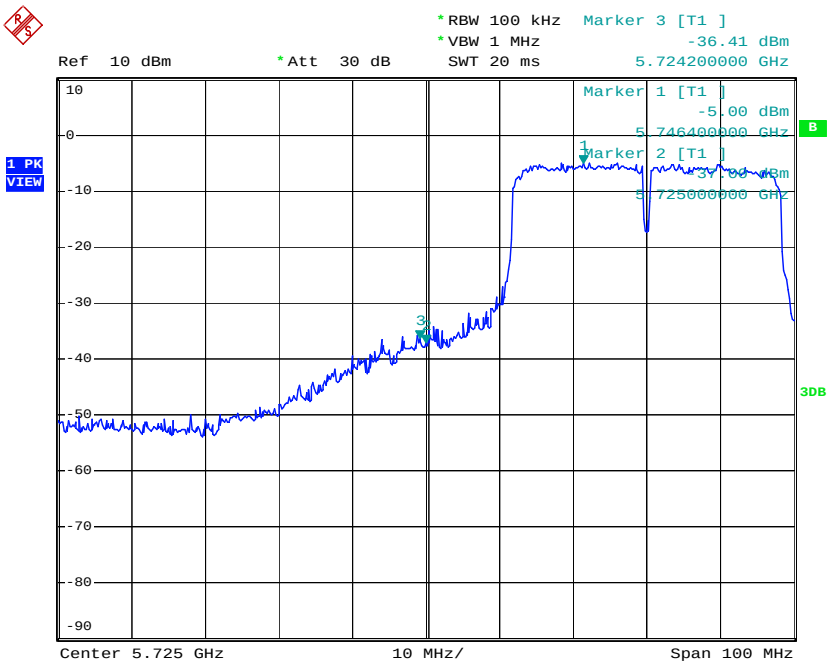
**Figure Channel 165:**




Date: 15.OCT.2009 12:01:04

Product : 802.11a CPE
Test Item : Band edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5755MHz)

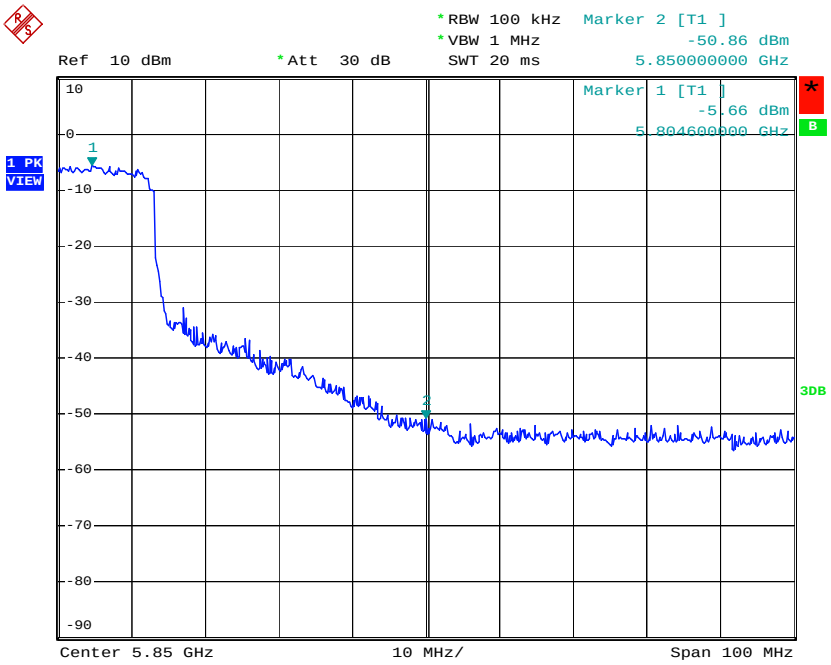
**Figure Channel 151:**




Date: 15.OCT.2009 12:03:08

Product : 802.11a CPE
Test Item : Band edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5795MHz)

**Figure Channel 159:**



# 7. Occupied Bandwidth

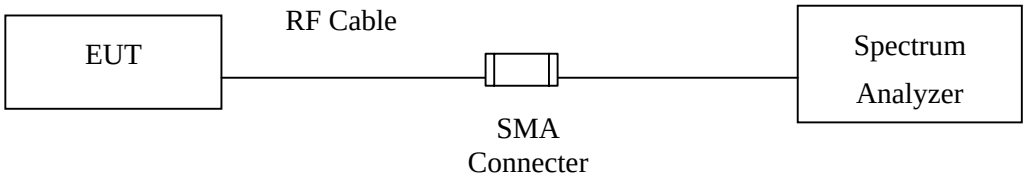
## 7.1. Test Equipment

The following test equipments are used during the radiated emission tests:

| | Equipment | Manufacturer | Model No./Serial No. | Last Cal. |
|---|---|---|---|---|
| | Spectrum Analyzer | Agilent | N9010A / MY48030495 | Apr, 2009 |
| X | Spectrum Analyzer | R&S | FSP40 / 100170 | Nov, 2008 |

Note: 1. All instruments are calibrated every one year.
2. The test instruments marked by "X" are used to measure the final test results.

## 7.2. Test Setup




## 7.3. Limits

The minimum bandwidth shall be at least 500 kHz.

## 7.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Span greater than RBW.

## 7.5. Uncertainty

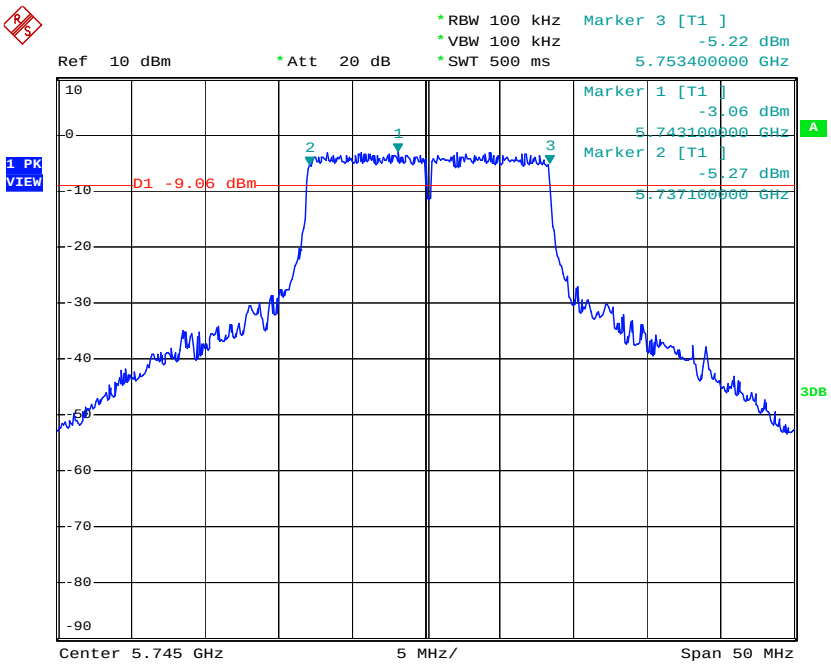
± 150Hz

## 7.6. Test Result of Occupied Bandwidth

Product : 802.11a CPE
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5745MHz)

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|---|---|---|---|---|
| 149 (6Mbps) | 5745.00 | 16300 | >500 | Pass |

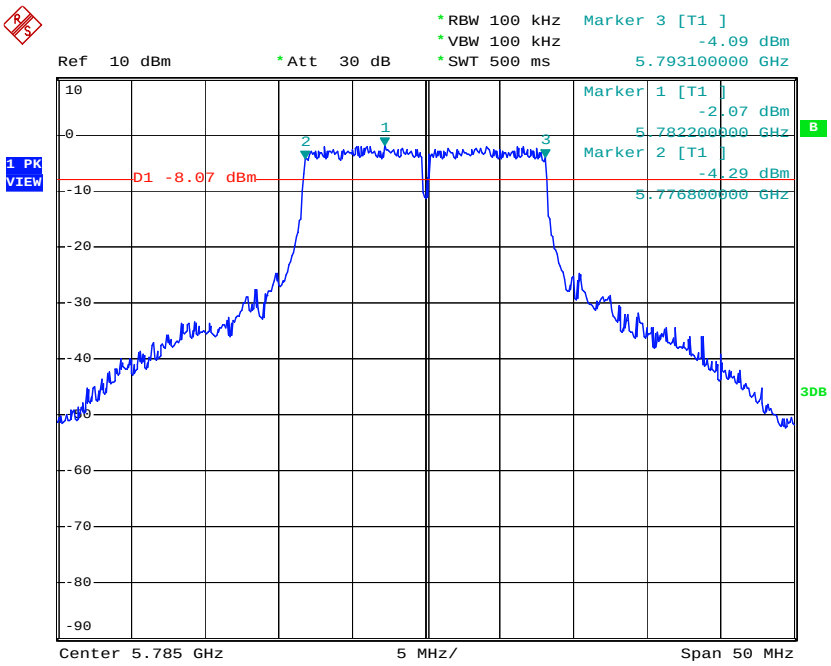
**Figure Channel 149:**



Product : 802.11a CPE
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5785MHz)

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|---|---|---|---|---|
| 157 (6Mbps) | 5785.00 | 16300 | >500 | Pass |

**Figure Channel 157:**

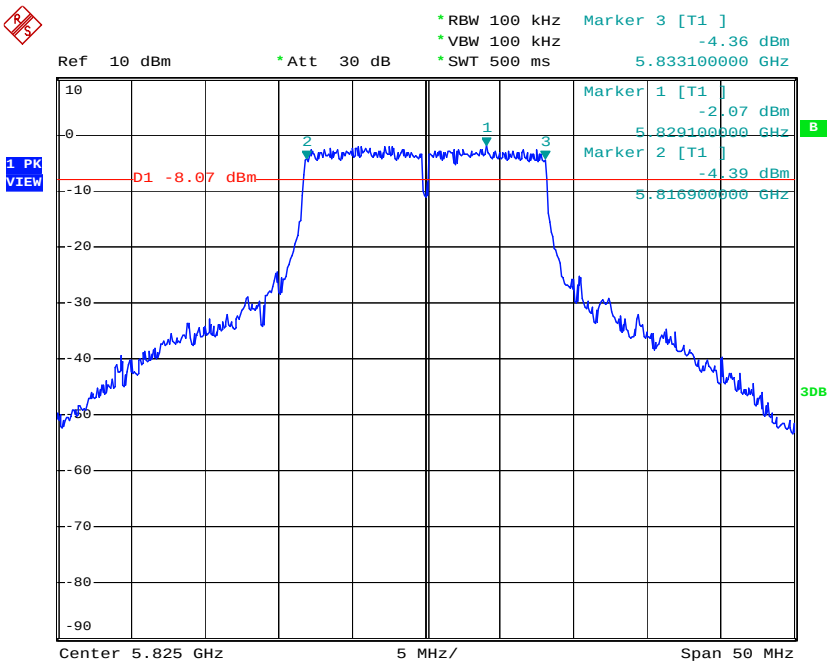



Date: 15.OCT.2009 10:18:14

Product : 802.11a CPE
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5825MHz)

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|---|---|---|---|---|
| 165 (6Mbps) | 5825.00 | 16200 | >500 | Pass |

**Figure Channel 165:**

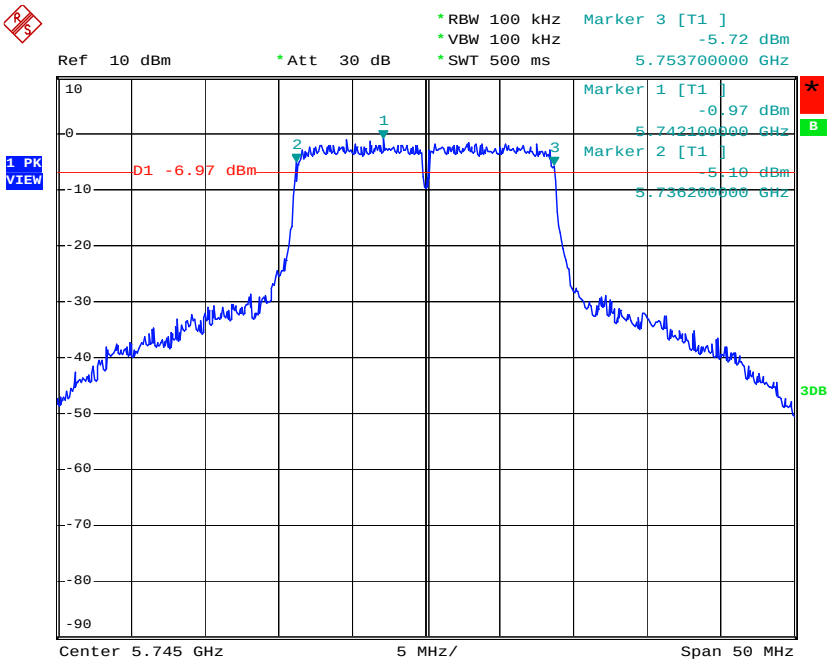



Date: 15.OCT.2009 10:22:23

Product : 802.11a CPE
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5745MHz)

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|---|---|---|---|---|
| 149(7.2Mbps) | 5745.00 | 17500 | >500 | Pass |

**Figure Channel 149:**

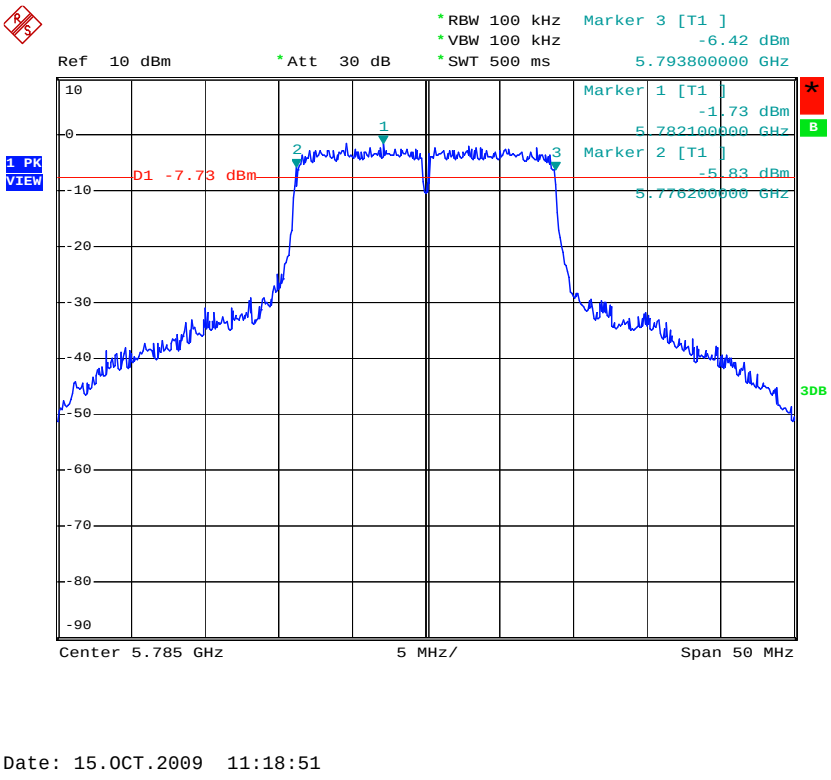



Date: 15.OCT.2009 11:14:00

Product : 802.11a CPE
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5785MHz)

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|---|---|---|---|---|
| 157(7.2Mbps) | 5785.00 | 17600 | >500 | Pass |

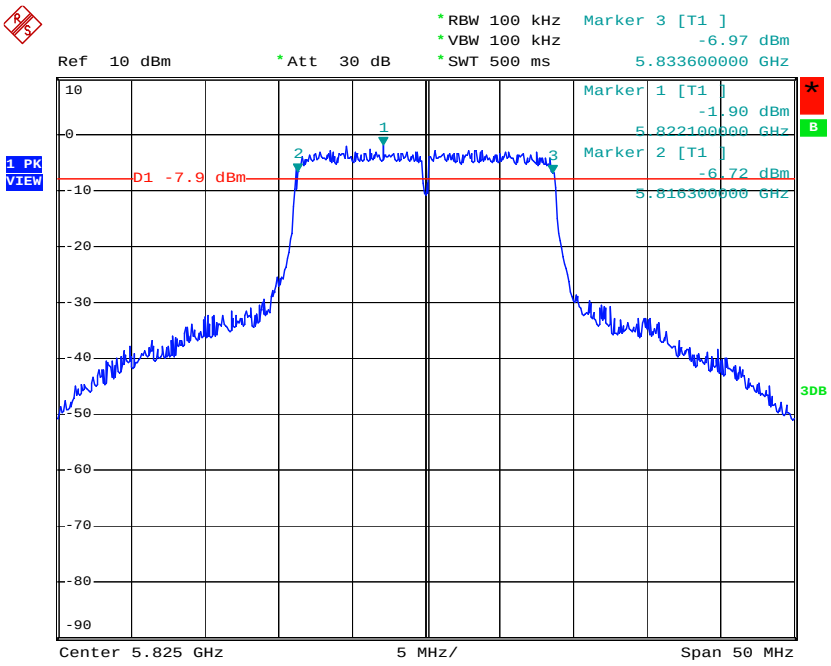
**Figure Channel 157:**



Product : 802.11a CPE
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5825MHz)

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|---|---|---|---|---|
| 165(7.2Mbps) | 5825.00 | 17300 | >500 | Pass |

**Figure Channel 165:**

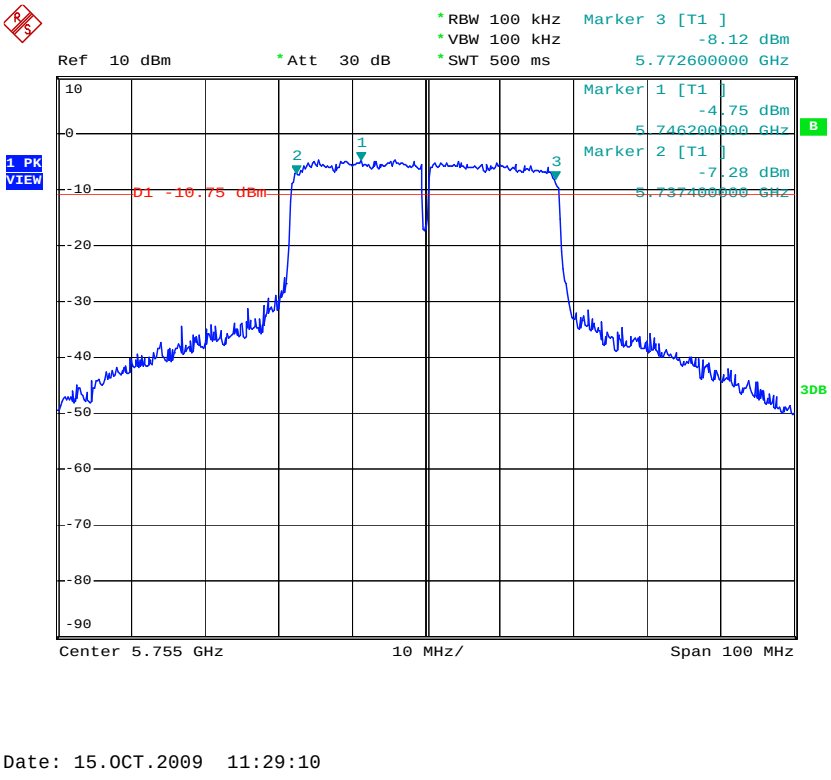



Date: 15.OCT.2009 11:23:43

Product : 802.11a CPE
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5755MHz)

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|---|---|---|---|---|
| 151 (15Mbps) | 5755.00 | 35200 | >500 | Pass |

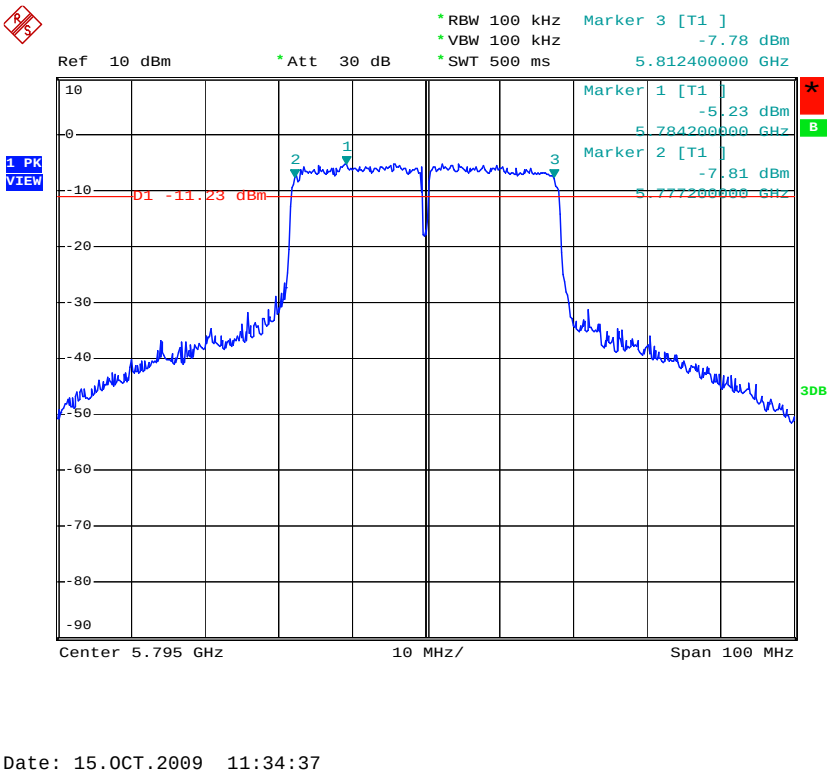
**Figure Channel 151:**



Product : 802.11a CPE
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5795MHz)

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|---|---|---|---|---|
| 159 (15Mbps) | 5795.00 | 35200 | >500 | Pass |

**Figure Channel 159:**



# 8. Power Density

## 8.1. Test Equipment

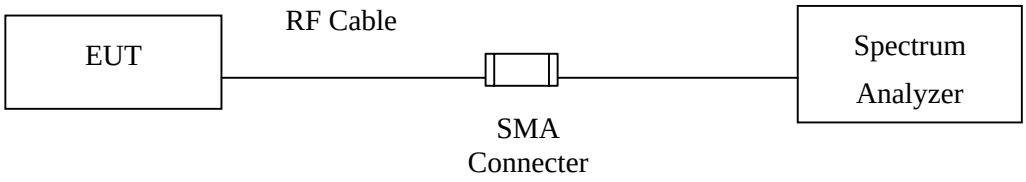
The following test equipments are used during the radiated emission tests:

| | Equipment | Manufacturer | Model No./Serial No. | Last Cal. |
|---|---|---|---|---|
| | Spectrum Analyzer | Agilent | N9010A / MY48030495 | Apr, 2009 |
| X | Spectrum Analyzer | R&S | FSP40 / 100170 | Nov, 2008 |

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

## 8.2. Test Setup




## 8.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

## 8.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW= 3 kHz, VBW=10KHz, Sweep time=(SPAN/3KHz), detector=Peak detector

## 8.5. Uncertainty

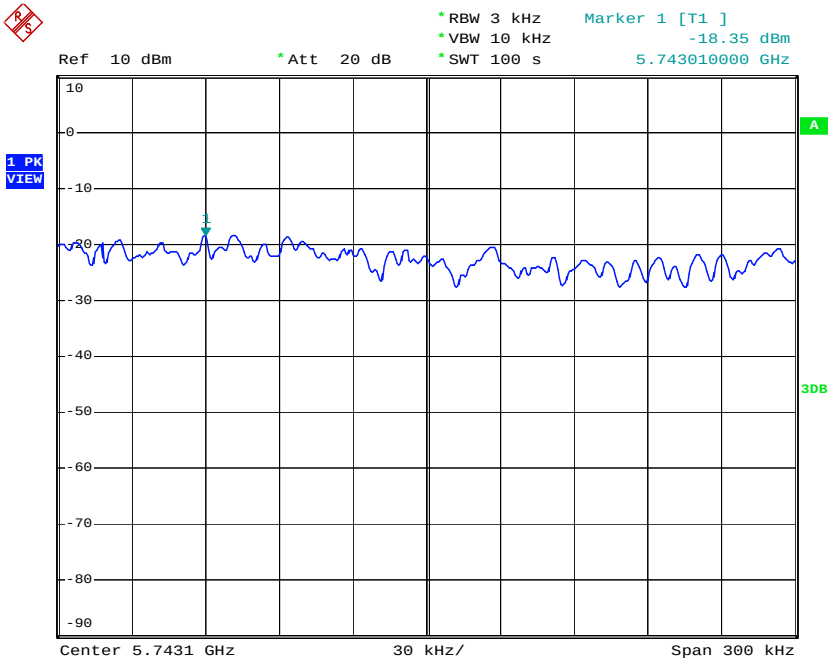
± 1.27 dB

## 8.6. Test Result of Power Density

Product : 802.11a CPE
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5745MHz)

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| 149 (6Mbps) | 5745.000 | -18.350 | < 8dBm | Pass |

**Figure Channel 149:**

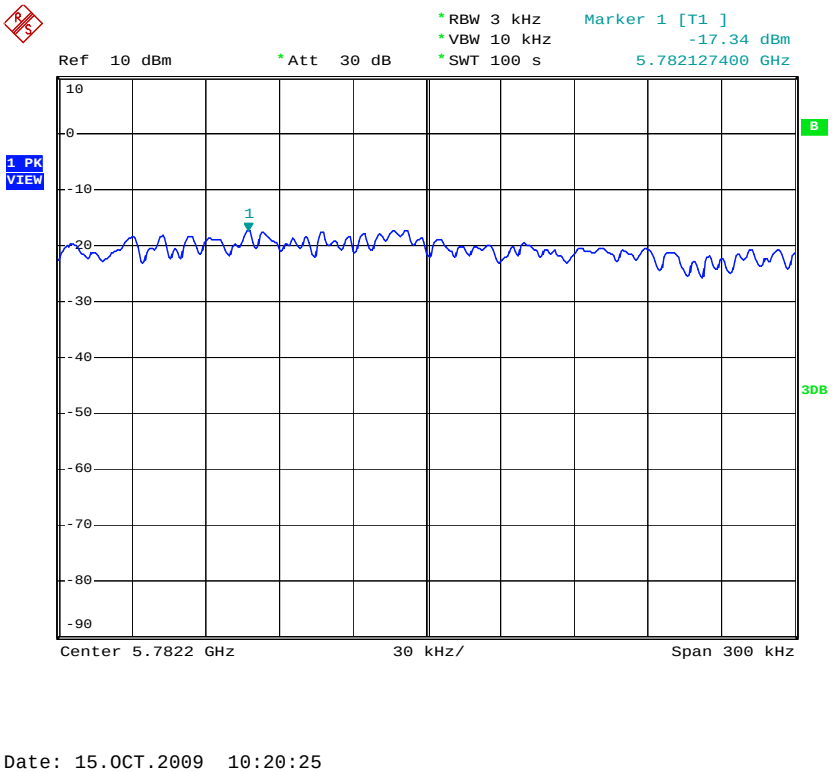



Date: 15.OCT.2009 10:08:28

Product : 802.11a CPE
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5785MHz)

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| 157(6Mbps) | 5785.000 | -17.340 | < 8dBm | Pass |

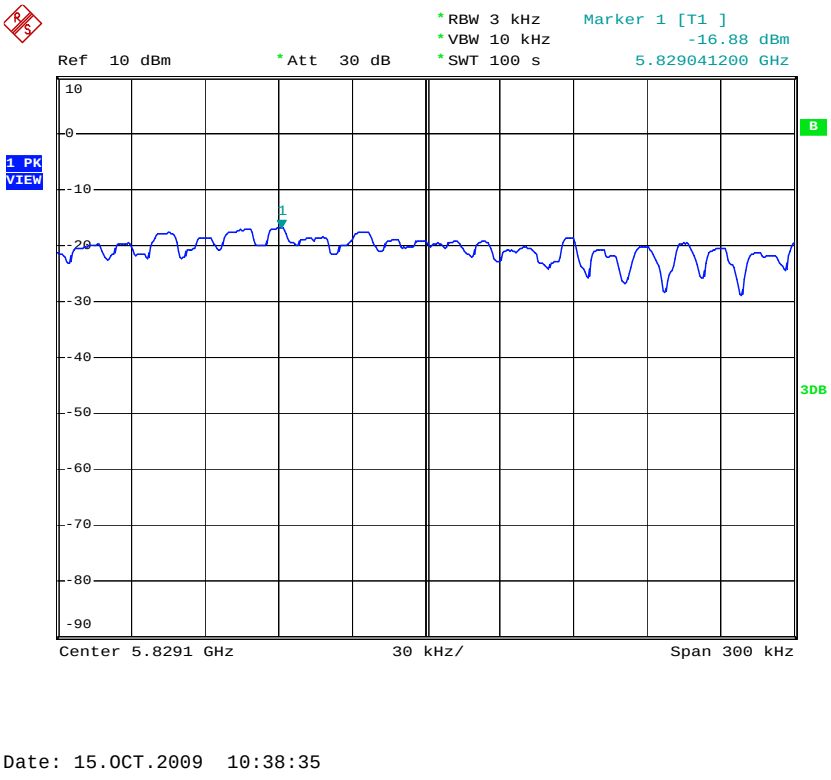
**Figure Channel 157:**



Product : 802.11a CPE
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 802.11a 6Mbps (5825MHz)

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| 165 (6Mbps) | 5825.000 | -16.880 | < 8dBm | Pass |

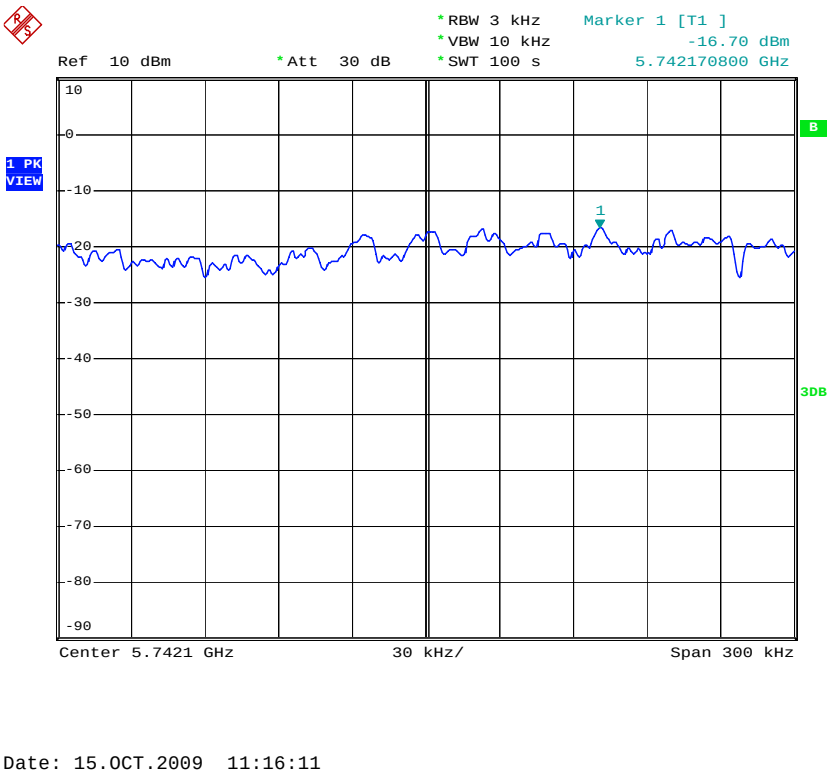
**Figure Channel 165:**



Product : 802.11a CPE
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5745MHz)

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| 149 (7.2Mbps) | 5745.00 | -16.700 | < 8dBm | Pass |

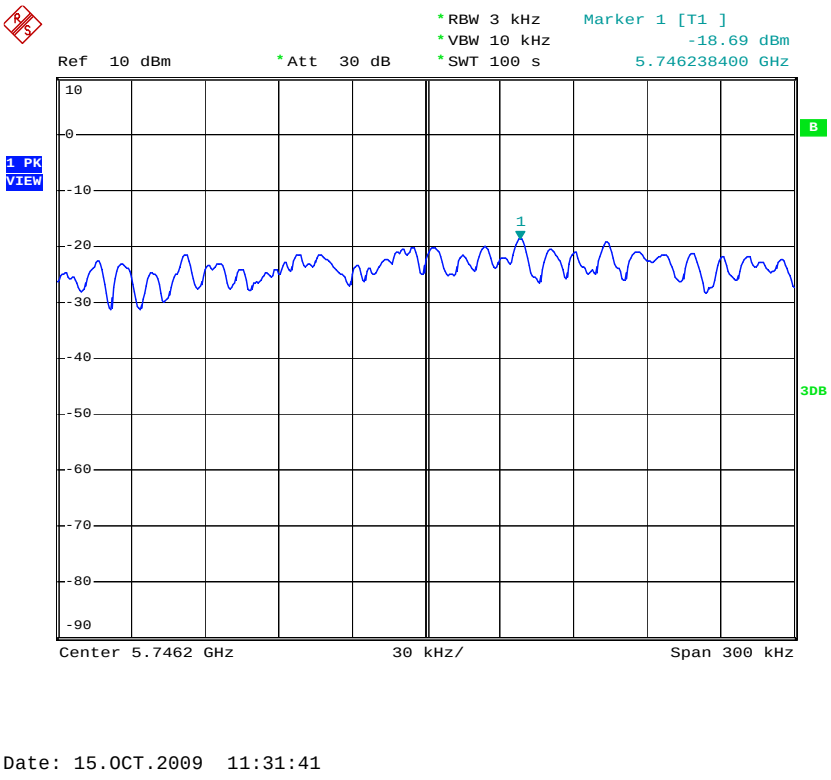
**Figure Channel 149:**



Product : 802.11a CPE
Test Item : Power Density Data
Test Site : No.3OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5785MHz)

| Channel No. | Frequency (MHz) | Measurement Level (dBm) | Required Limit (dBm) | Result |
|---|---|---|---|---|
| 157(7.2Mbps) | 5785.000 | -18.690 | < 8dBm | Pass |

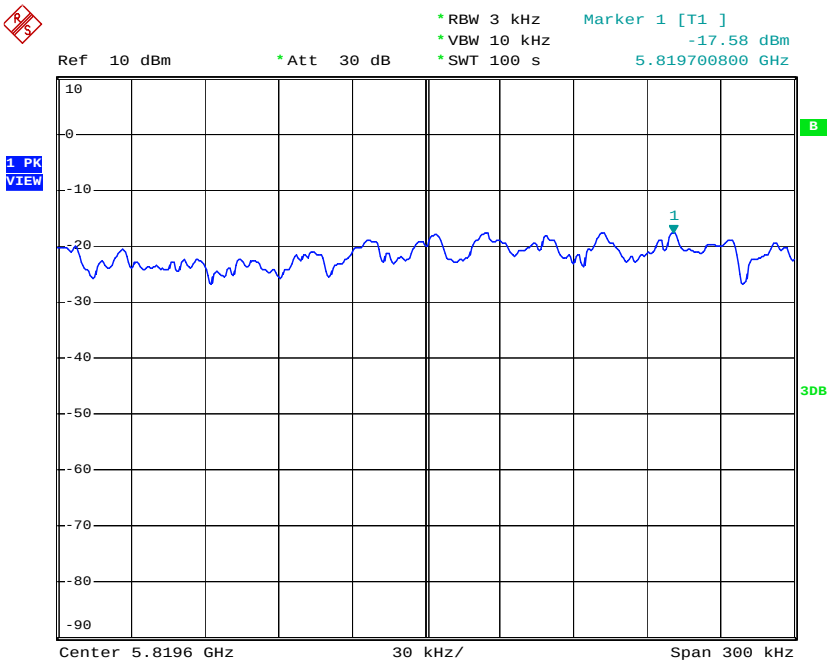
**Figure Channel 157:**



Product : 802.11a CPE
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 802.11n-20BW_7.2Mbps(5GHz Band) (5825MHz)

| Channel No. | Frequency (MHz) | Measurement Level (dBm) | Required Limit (dBm) | Result |
|---|---|---|---|---|
| 165(7.2Mbps) | 5825.00 | -17.580 | < 8dBm | Pass |

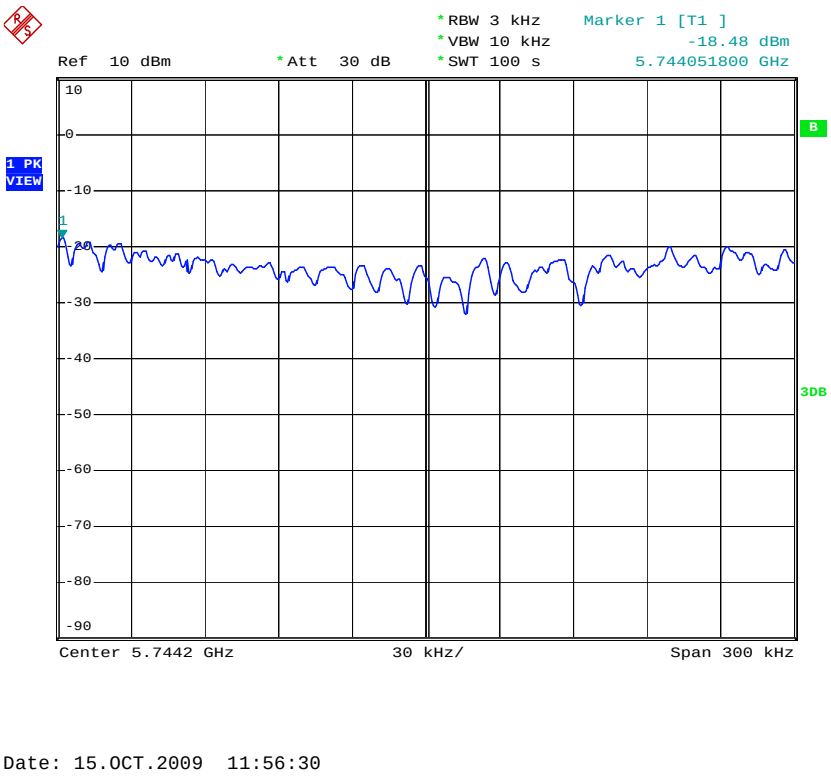
**Figure Channel 165:**



Product : 802.11a CPE
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5755MHz)

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| 151 (15Mbps) | 5755.00 | -18.480 | < 8dBm | Pass |

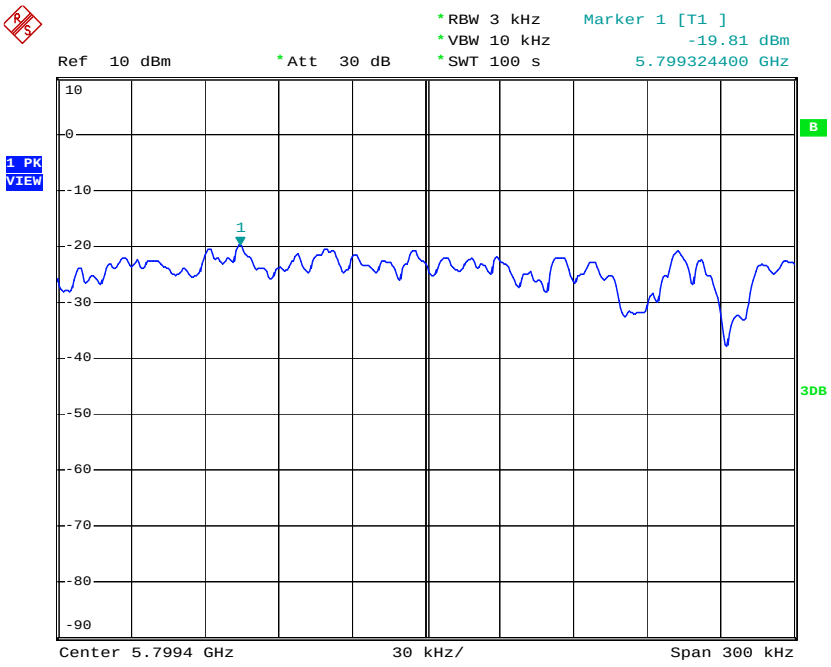
**Figure Channel 151:**



Product : 802.11a CPE
Test Item : Power Density Data
Test Site : No.3OATS
Test Mode : Mode 3: Transmit - 802.11n-40BW_15Mbps(5GHz Band) (5795MHz)

| Channel No. | Frequency (MHz) | Measurement Level (dBm) | Required Limit (dBm) | Result |
|---|---|---|---|---|
| 159 (15Mbps) | 5795.000 | -19.810 | < 8dBm | Pass |

**Figure Channel 159:**



## 9. EMI Reduction Method During Compliance Testing

No modification was made during testing.