



ISM Test Report

AIR-RM1520A-A-K9 802.11a Radio Module

FCC ID: LDK102063

Against the following Specifications:

CFR47 Part 15.247

RSS210

Cisco Systems

170 West Tasman Drive

San Jose, CA 95134

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Approved By:

Title:



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Section 1: Overview

1.1 Test Summary

samples were assessed against the tests detailed in section 3 under the requirements of the following specifications:

| Emission | Immunity |
|---|----------|
| CFR47 Part 15.247(a) CFR47 Part 15.247(a)(2) CFR47 Part 15.247a3 (RSS210) CFR47 Part 15: 2005 CFR47 Part 15: 2005 (CAN/CSA-CISPR 22-02) | N/A |

The specifications listed above represent actual tests performed to demonstrate compliance against the specifications and basic standards listed on the front cover of this report. This list is not a one to one match to the front cover for one or more of the following reasons.

1. Basic standards call up many different test phenomena specifications such as the 61000-4-X series. The basic standards define which elements and levels shall be applied from these specifications and as such it is not appropriate to list the individual specifications on the front cover.
2. A Standard listed on the front cover may be required in a particular country but is not appropriate for the particular technologies included in the equipment under test. E.g. You cannot test a DC product to the mains Harmonics requirements in EN61000-3-2. See section 3.2.
3. Test results against a particular standard or specification may be included in a different test report. See section 3.2 for an EDCS reference of this data.
4. Where appropriate, Cisco may have substituted a later revision of a basic standard to those referenced in the specification on the front sheet of this test report. This decision was based upon improved test methodology and repeatability and/or where the newer revision represented a more stringent test.
5. Where relevant, testing has been carried out to the requirements of both EN and IEC Specifications. This was possible because of the similarities of the test methods involved and the Cisco EMC test procedures.
6. Testing may have been performed to an equivalent test that satisfies the requirements of the standards and specifications listed on the front cover of the report. See section 3.2.
7. Where radiated emissions testing has been performed to EN55022/CISPR22 the additional requirements of VCCI: V- 3/2006.04, EN55022: 1994 +A1/2 and CAN/CSA- CISPR 22-02 have also been evaluated unless otherwise stated.
8. Testing to the requirements of CFR47 Part 15 was performed against the CISPR22 limits. The results are therefore deemed satisfactory evidence of compliance with Industry Canada Interference Causing Equipment Standard ICES-003.
9. Where assessment has been performed to CISPR24, all the applicable test requirements may have not been covered. Refer to the results section for the tests performed.

Notes:

- 1) Where a specification listed on the front cover of this report has deviations from the basic standards listed above, the additional technical requirements of the specification were also assessed.
- 2) Where appropriate, Cisco may have substituted a later revision of a basic standard to those referenced in the specification on the front sheet of this test report. This decision was based upon improved test methodology and repeatability and/or where the newer revision represented a more stringent test.
- 3) Where relevant, testing has been carried out to the requirements of both EN and IEC Specifications. This was possible because of the similarities of the test methods involved and the Cisco EMC test procedures.



Section 2: Assessment Information

2.1 General

This report contains an assessment of an apparatus against Electromagnetic Compatibility Standards based upon tests carried out on the samples submitted. The testing was performed by and for the use of Cisco systems Inc:

With regard to this assessment, the following points should be noted:

- a) The results contained in this report relate only to the items tested and were obtained in the period between the date of the initial assessment and the date of issue of the report. Manufactured products will not necessarily give identical results due to production and measurement tolerances.
- b) The apparatus was set up and exercised using the configuration and modes of operation defined in this report only.
- c) Where relevant, the apparatus was only assessed using the susceptibility criteria defined in this report and the Test Assessment Plan (TAP).
- d) All testing was performed under the following environmental conditions:

| | |
|----------------------|--------------------------------------|
| Temperature | 15°C to 35°C (54°F to 95°F) |
| Atmospheric Pressure | 860mbar to 1060mbar (25.4" to 31.3") |
| Humidity | 10% to 75*% |

*[Where applicable] For ESD testing the humidity limits used were 30% to 60% and for EFT/B tests the humidity limits used were 25% to 75%.
- e) All AC testing was performed at one or more of the following supply voltages:

| |
|---------------------|
| 110V 60 Hz (+/-20%) |
| 220V 50 Hz (+/-20%) |

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2.2 Date of start of testing

06-Mar-2007

2.3 Report Issue Date

Cisco uses an electronic system to issue, store and control the revision of test reports. This system is called the Engineering Document Control System (EDCS). The actual report issue date is embedded into the original file on EDCS. Any copies of this report, either electronic or paper, that are not on EDCS must be considered uncontrolled

2.4 Testing facilities

This assessment was performed by:

Testing Laboratory

| | |
|-------------------------|-----------------------|
| Cisco Systems, Inc., | Cisco Systems, Inc. |
| 4125 Highlander Parkway | 170 West Tasman Drive |
| Richfield, OH 44286 | San Jose, CA 95134 |
| USA | USA |

Test Engineers

James Nicholson

2.5 Equipment Assessed (EUT)

AIR-RM1520A-A-K9 802.11a Radio Module.

2.6 EUT Description

The AIR-RM1520A-A-K9 802.11a radio module operates exclusively in the AIR-LAP1520 series access point, and may operate simultaneously with the AIR-RM1520G-A-K9 802.11b/g radio module.

The following antennas are supported by this product.

| | | |
|----------------|----------------|---------------------------|
| AIR-ANT5180V-N | 4900-5850 MHz | 8.0 dBi Omni-directional |
| AIR-ANT5114P-N | 4900 -5850 MHz | 14.0 dBi Patch |
| AIR-ANT5117S-N | 4900 -5850 MHz | 17.0 dBi 90-degree Sector |

**Section 3: Sample Details**

| Sample No. | Equipment Details | Part Number | Manufacturer | Hardware Rev. | Firmware Rev. | Software Rev. | Serial Number |
|------------|----------------------|---------------------|---------------|---------------|---------------|---------------|---------------|
| S01 | 802.11a Radio Module | AIR-RM1520A-A-K9 | Cisco Systems | NA | NA | NA | NA |
| S02 | Mesh Access Point | AIR-LAP1522A G-A-K9 | Cisco Systems | NA | NA | NA | NA |
| S03 | 8.0 dBi Omni Antenna | AIR-ANT5180 V-N | Cisco Systems | NA | NA | NA | NA |
| S04 | 14 dBi Patch Antenna | AIR-ANT5114 P-N | Cisco Systems | NA | NA | NA | NA |
| S05 | 17dBi Patch Antenna | AIR-ANT5117 S-N | Cisco Systems | NA | NA | NA | NA |

**Appendix A: Emission Test Results****Testing Laboratory:** Cisco Systems, Inc., 4125 Highlander Parkway, Richfield, OH, USA**Average Output Power**

Average Power with up to 8, 14, and 17 dBi Antennas

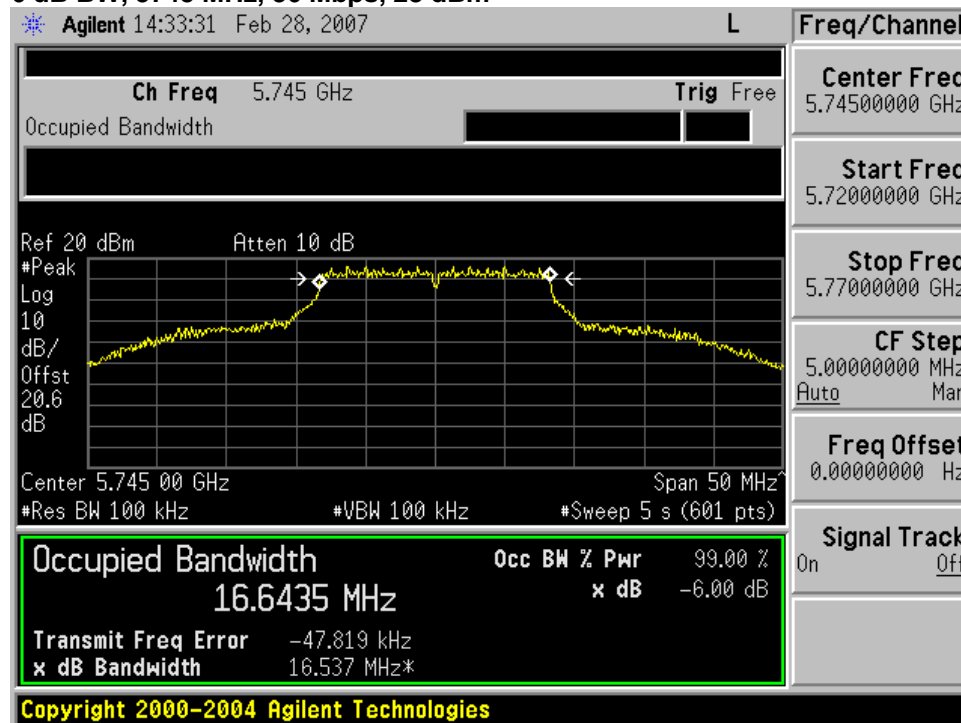
| Frequency (MHz) | Data Rate (Mbps) | Antenna Gain (dBi) | Target Power Level (dBm) | Actual Power Level (dBm) |
|--------------------|------------------------|--------------------------|-----------------------------------|-----------------------------------|
| 5745 | 36 | 8,14,17 | 28 | 26.9 |
| 5785 | 36 | 8,14,17 | 28 | 26.6 |
| 5825 | 36 | 8,14,17 | 28 | 27.0 |

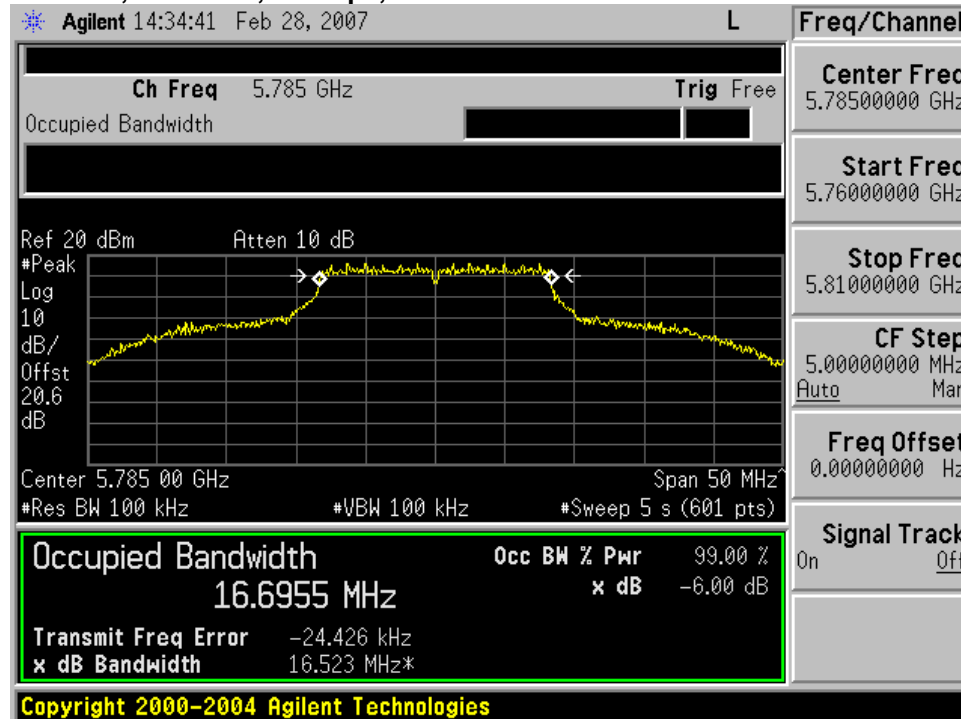
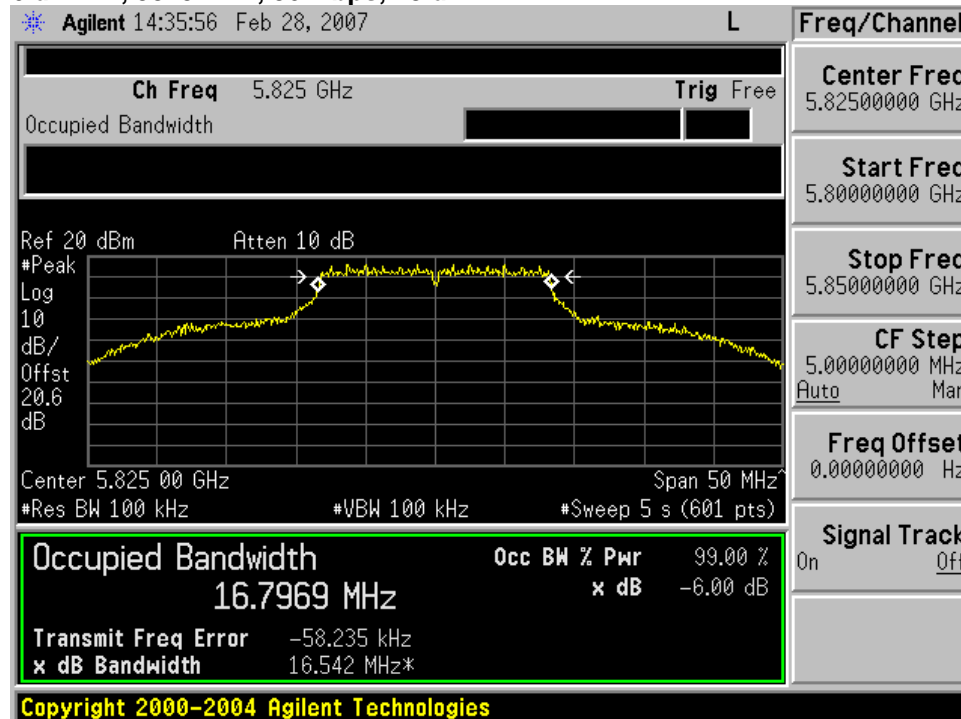
6dB Bandwidth

15.247: Systems using digital modulation techniques may operate in the 5725-5850MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.

| Frequency (MHz) | Data Rate (Mbps) | 6dB BW (MHz) | Limit (kHz) | Margin (kHz) |
|-----------------|------------------|--------------|-------------|--------------|
| 5745 | 36 | 16.5 | >500 | 16000 |
| 5785 | 36 | 16.5 | >500 | 16000 |
| 5825 | 36 | 16.5 | >500 | 16000 |

6 dB BW, 5745 MHz, 36 Mbps, 28 dBm

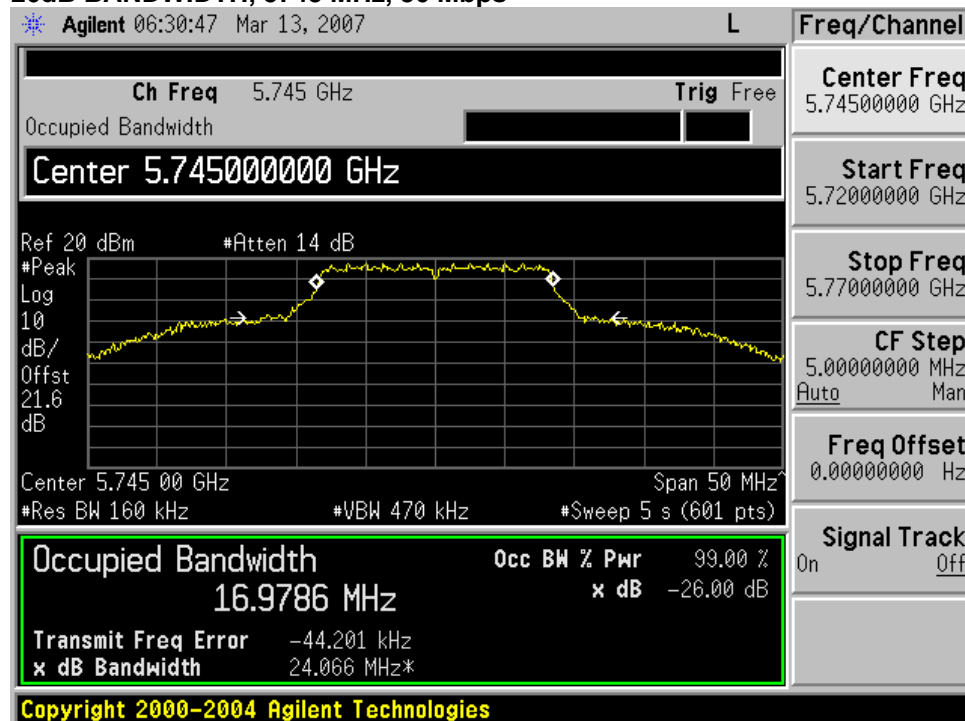


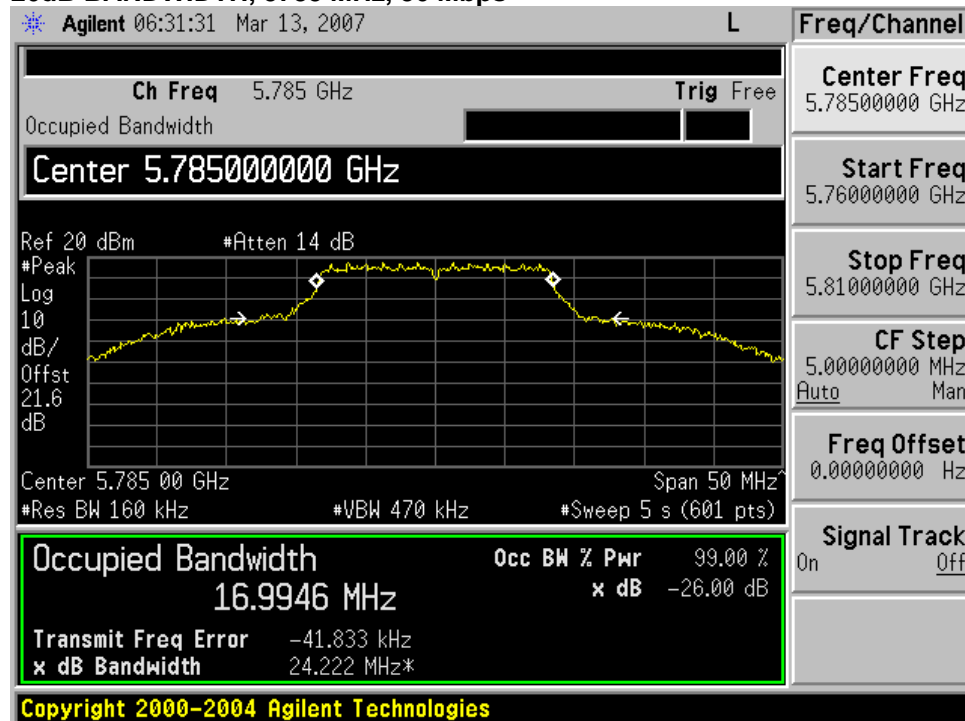
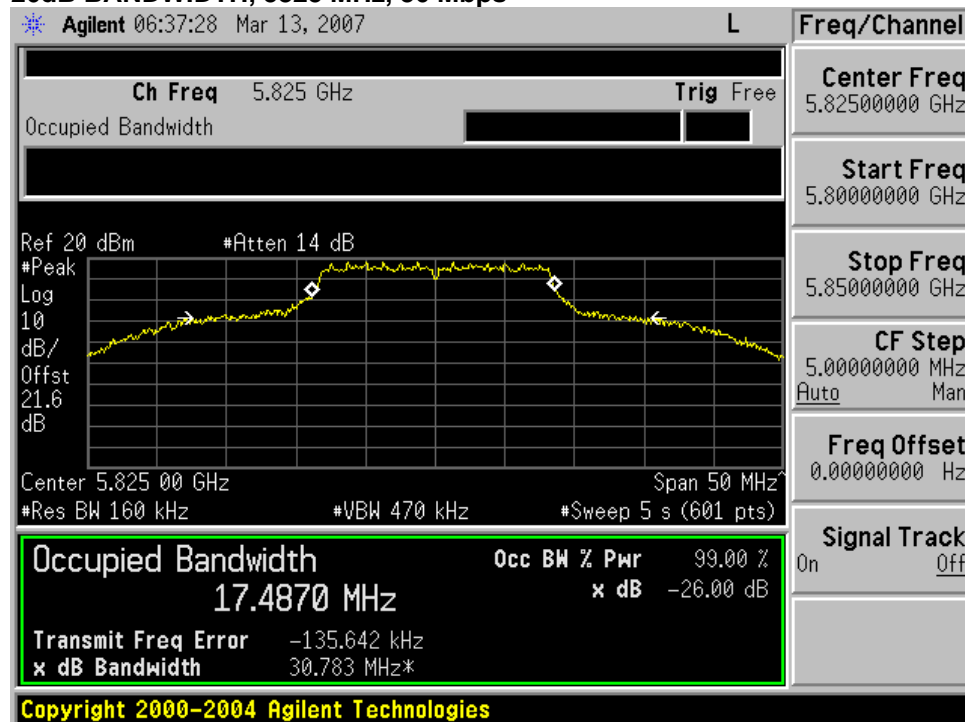
**6 dB BW, 5785 MHz, 36 Mbps, 28 dBm****6 dB BW, 5825 MHz, 36 Mbps, 28 dBm**

99% and 26dB Bandwidth

| Frequency (MHz) | Data Rate (Mbps) | 26dB BW (MHz) | 99% BW (MHz) |
|-----------------|------------------|---------------|--------------|
| 5745 | 36 | 24.1 | 17.0 |
| 5785 | 36 | 24.2 | 17.0 |
| 5825 | 36 | 30.8 | 17.5 |

26dB BANDWIDTH, 5745 MHz, 36 Mbps



**26dB BANDWIDTH, 5785 MHz, 36 Mbps****26dB BANDWIDTH, 5825 MHz, 36 Mbps**

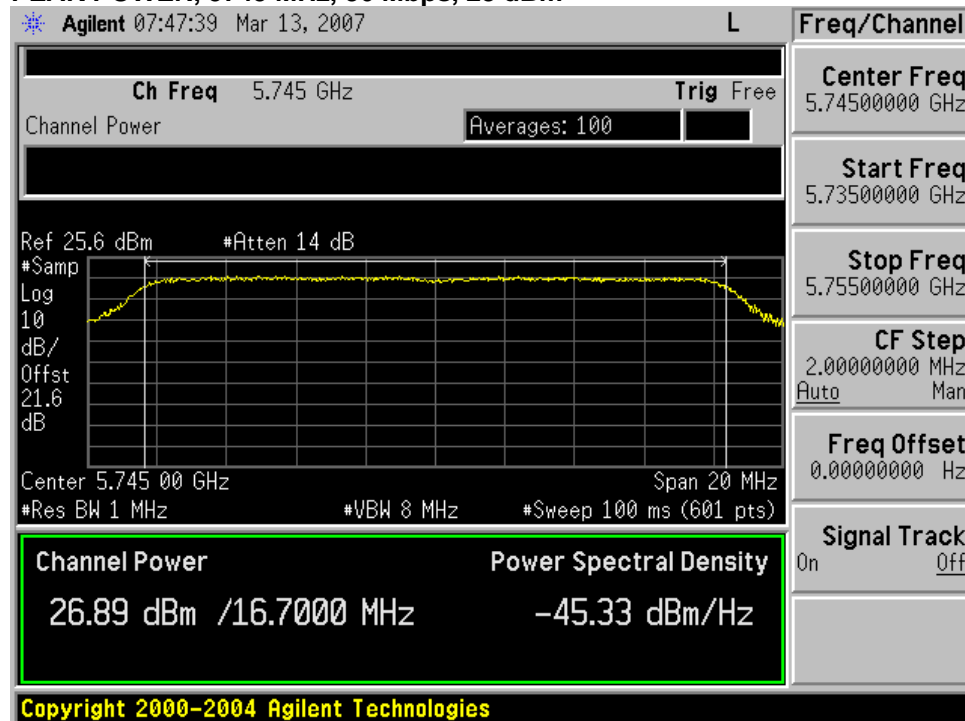
Peak Output Power

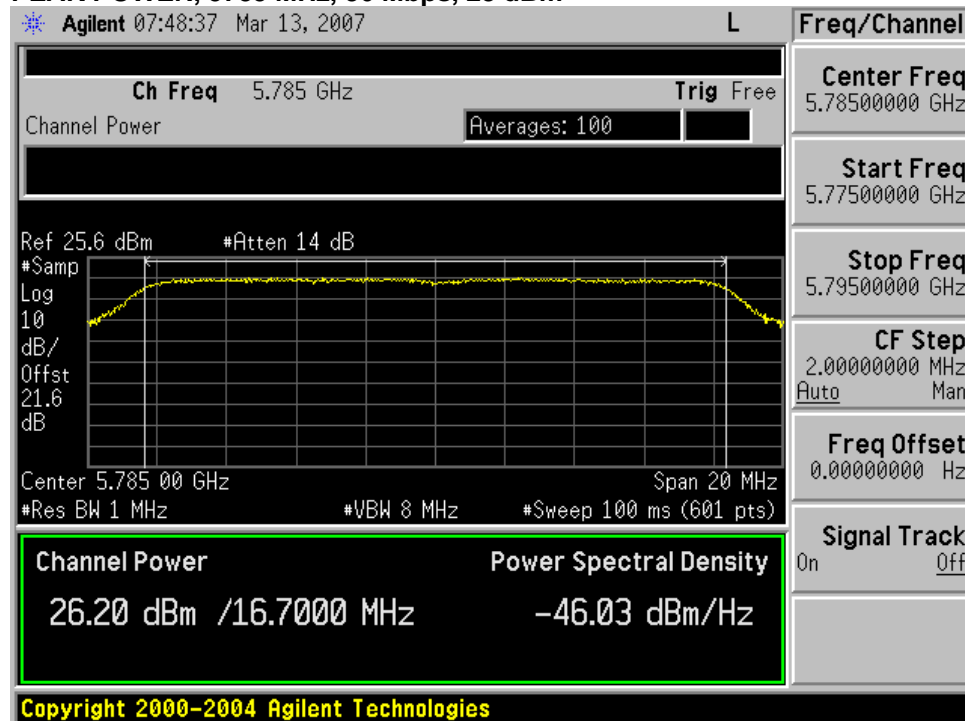
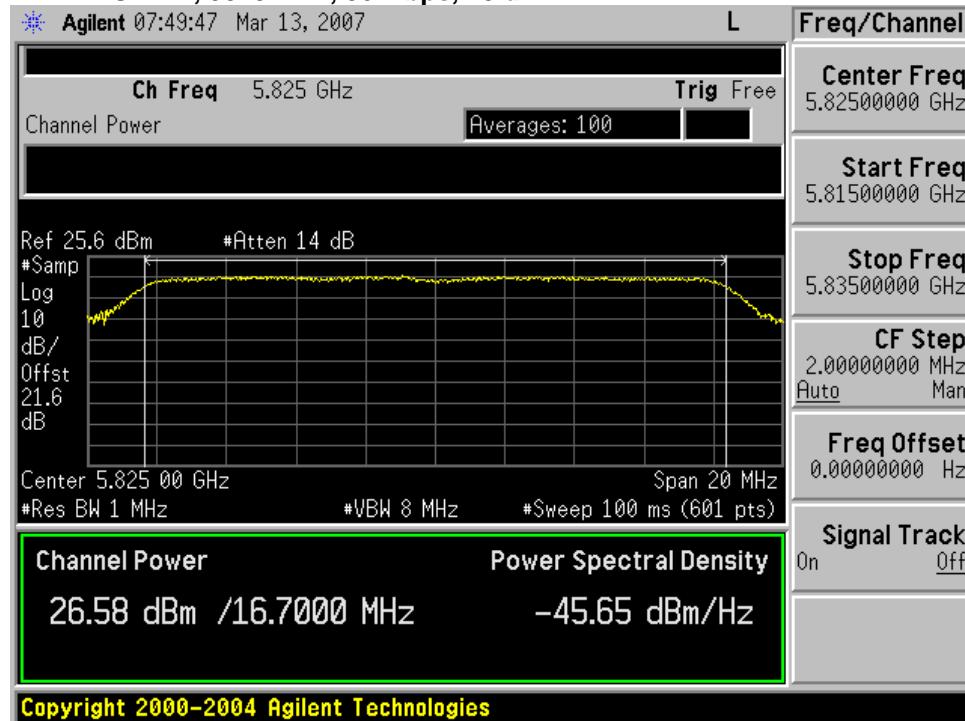
15.247: The maximum conducted output power of the intentional radiator for systems using digital modulation in the 5725-5850MHz band shall not exceed 1 Watt (30dBm). If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power

- For the 8 dBi Omni-directional antenna, the maximum allowable output power must be reduced by 8dBi-6dbi = 2dB, for a maximum peak conducted output power of 28 dBm.
- The 14 dBi and 17dBi antennas are used exclusively for fixed, point-to-point operations and require no reduction in transmitter conducted output power.

| Frequency (MHz) | Data Rate (Mbps) | Antenna Gain (dBi) | Peak Power (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|------------------|--------------------|------------------|-------------|-------------|
| 5745 | 36 | 8,14,17 | 26.9 | 28.0 | 1.1 |
| 5785 | 36 | 8,14,17 | 26.2 | 28.0 | 1.8 |
| 5825 | 36 | 8,14,17 | 26.6 | 28.0 | 1.4 |

PEAK POWER, 5745 MHz, 36 Mbps, 28 dBm



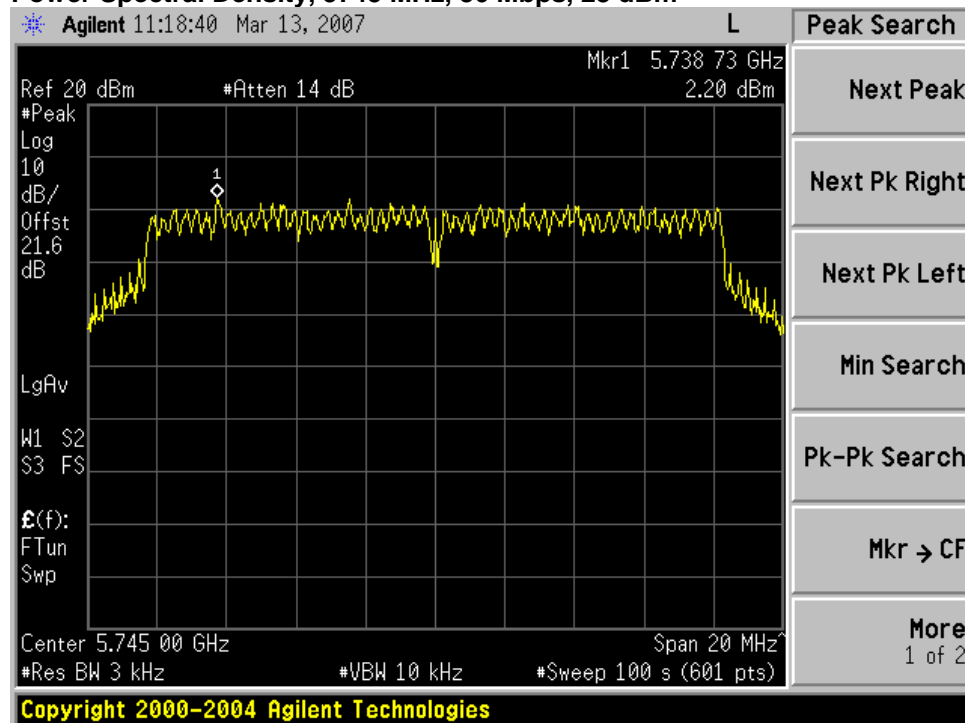
**PEAK POWER, 5785 MHz, 36 Mbps, 28 dBm****PEAK POWER, 5825 MHz, 36 Mbps, 28 dBm**

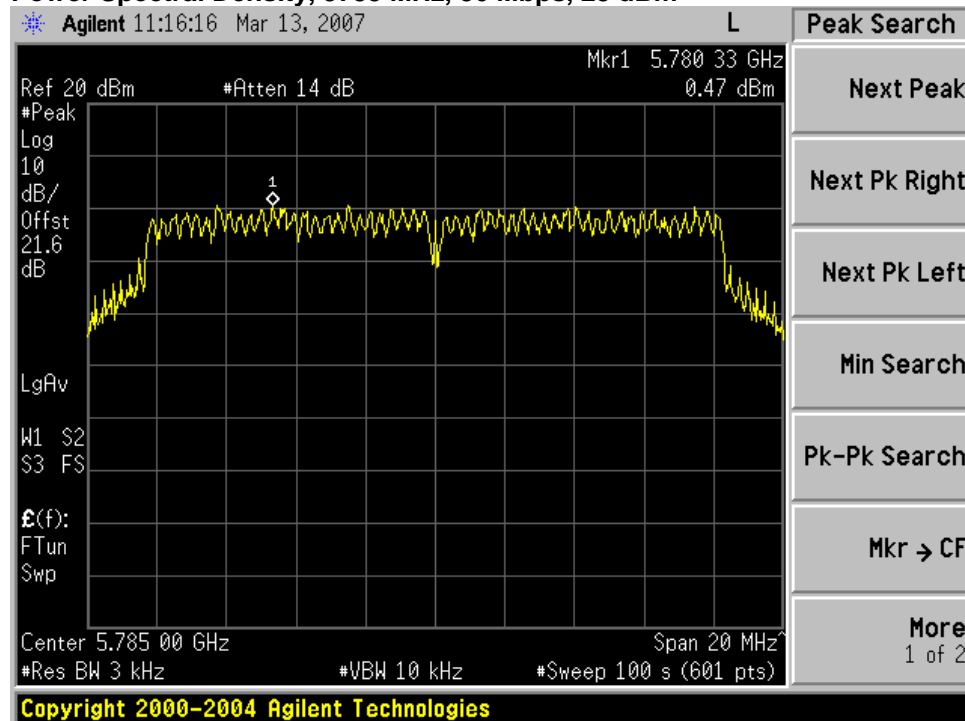
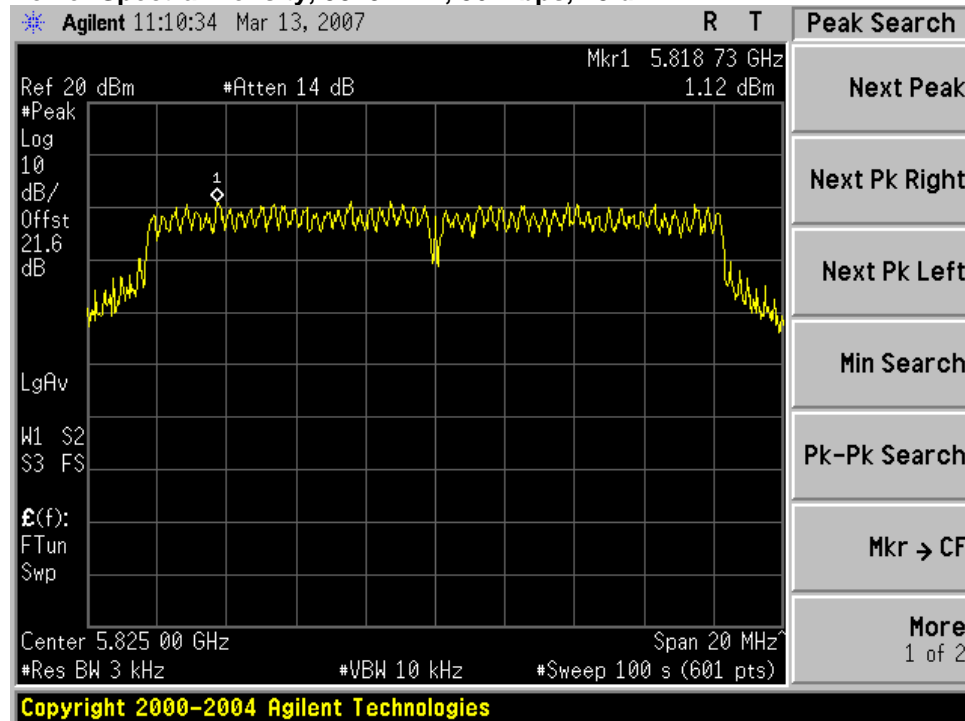
Power Spectral Density

15.247: For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

| Frequency (MHz) | Data Rate (Mbps) | PSD (dBm/kHz) | Limit (dBm/kHz) | Margin (dB) |
|-----------------|------------------|---------------|-----------------|-------------|
| 5745 | 36 | 2.2 | 8.0 | 5.8 |
| 5785 | 36 | 0.5 | 8.0 | 7.5 |
| 5825 | 36 | 1.1 | 8.0 | 6.9 |

Power Spectral Density, 5745 MHz, 36 Mbps, 28 dBm



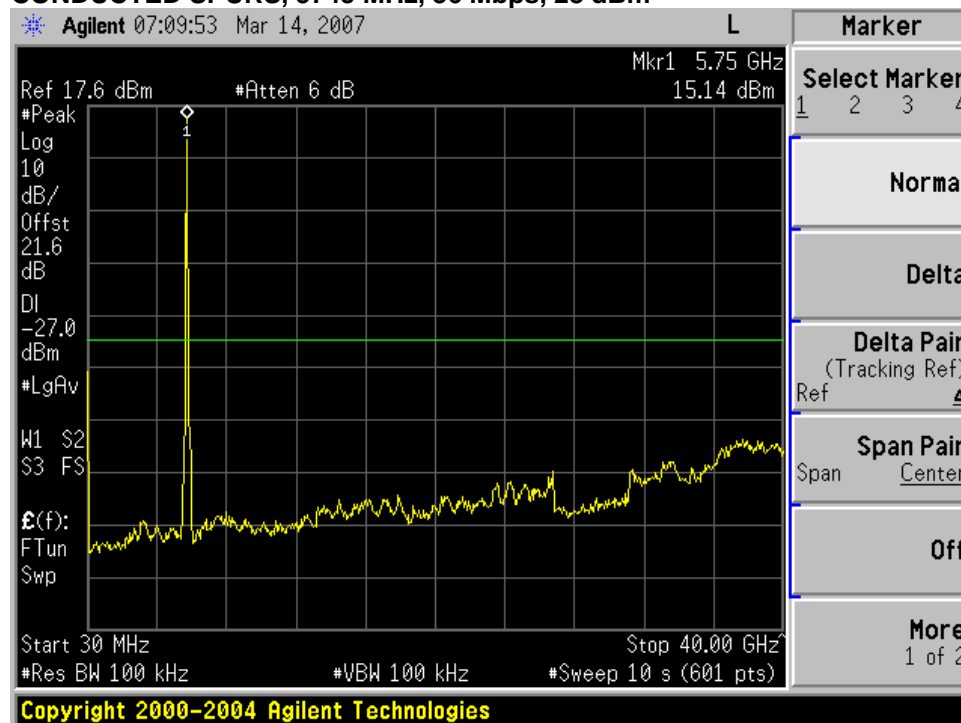
Power Spectral Density, 5785 MHz, 36 Mbps, 28 dBm**Power Spectral Density, 5825 MHz, 36 Mbps, 28 dBm**

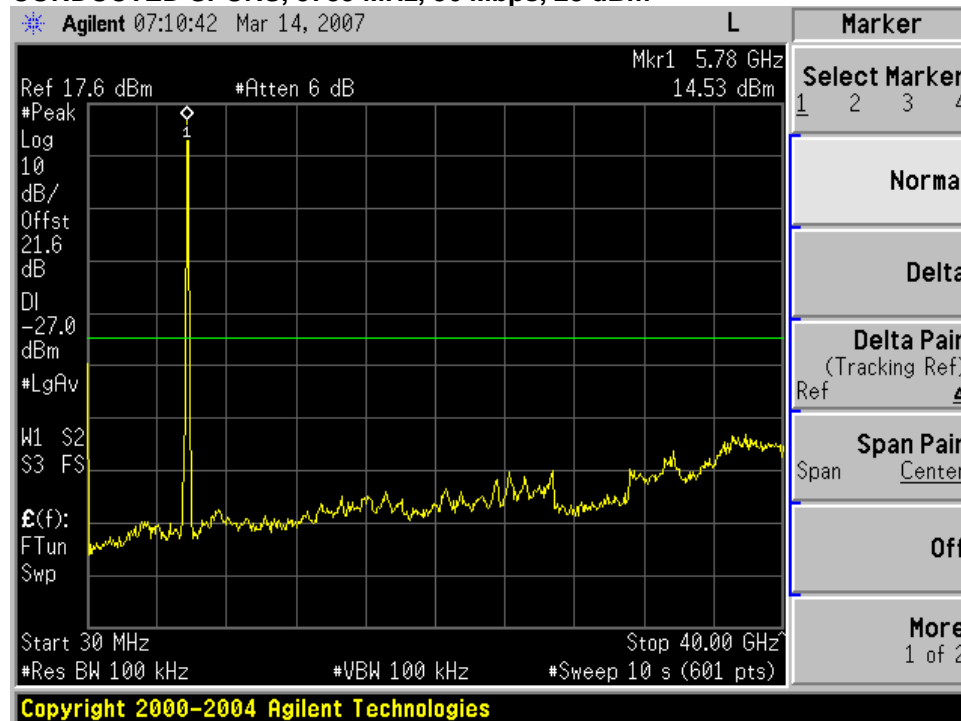
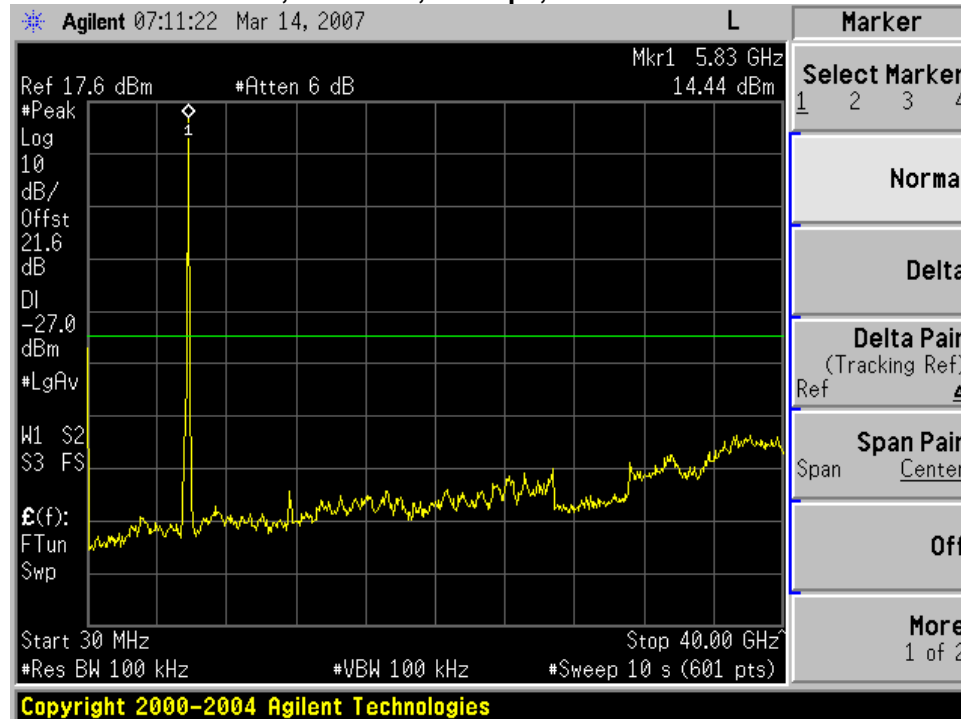
Conducted Spurious Emissions

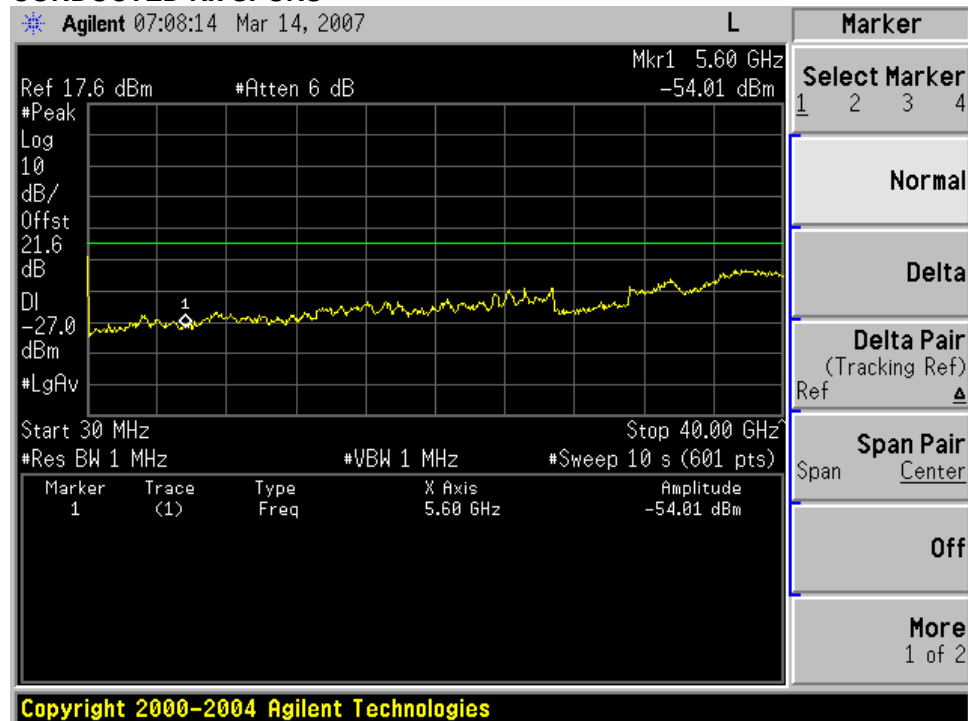
15.247: In any 100 kHz bandwidth outside the frequency band in which the digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

| Frequency (MHz) | Data Rate (Mbps) | Conducted Spurs |
|-----------------|------------------|-----------------|
| 5745 | 36 | >30dBc |
| 5785 | 36 | >30dBc |
| 5825 | 36 | >30dBc |

CONDUCTED SPURS, 5745 MHz, 36 Mbps, 28 dBm



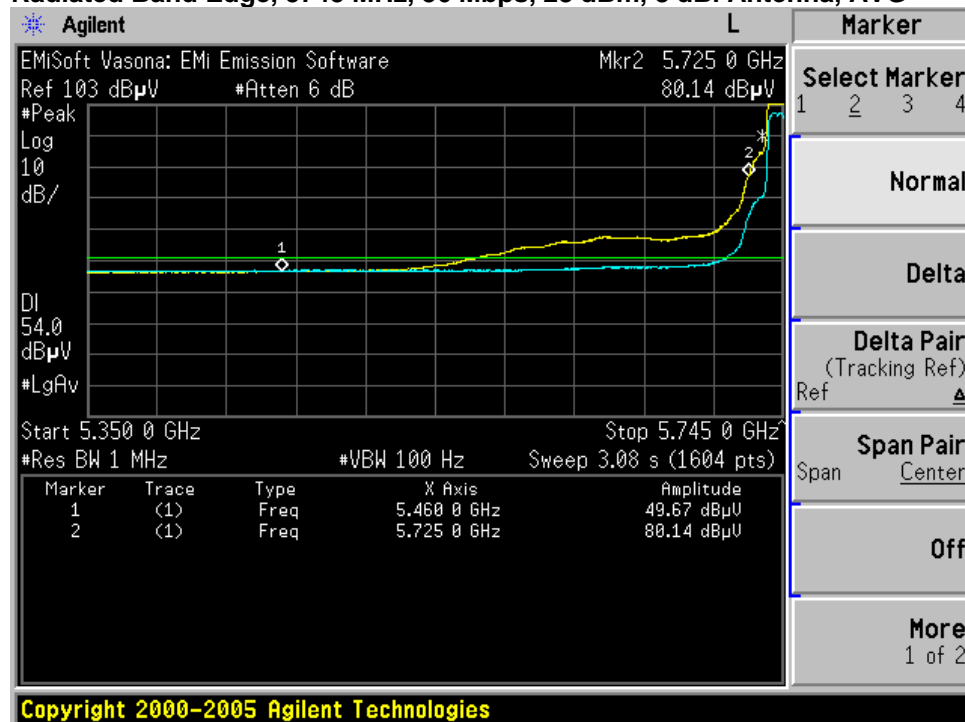
CONDUCTED SPURS, 5785 MHz, 36 Mbps, 28 dBm**CONDUCTED SPURS, 5825 MHz, 36 Mbps, 28 dBm**

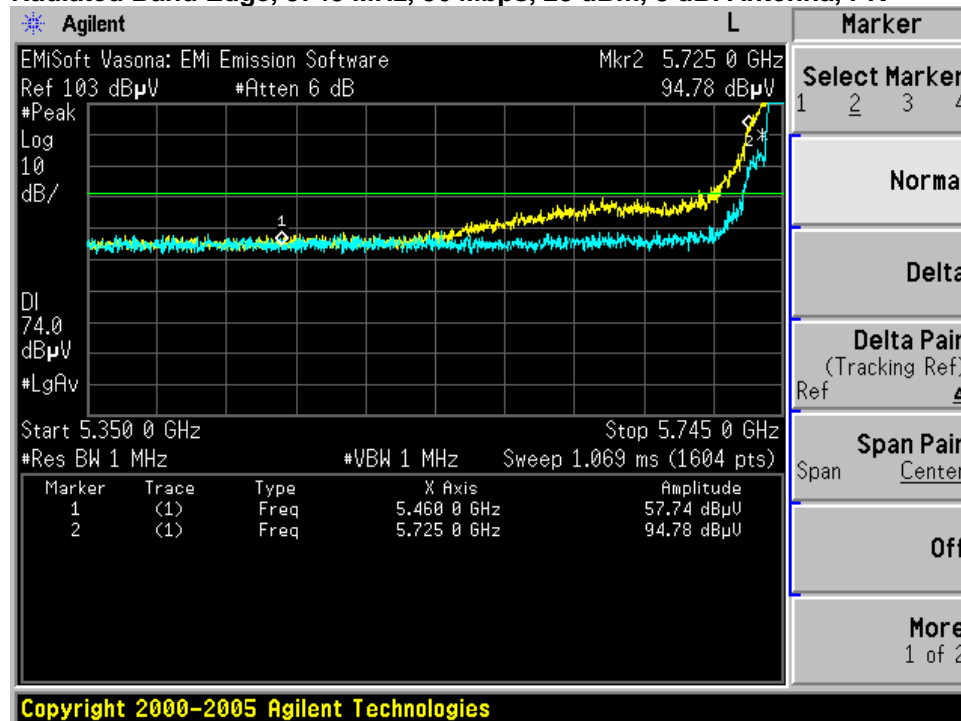
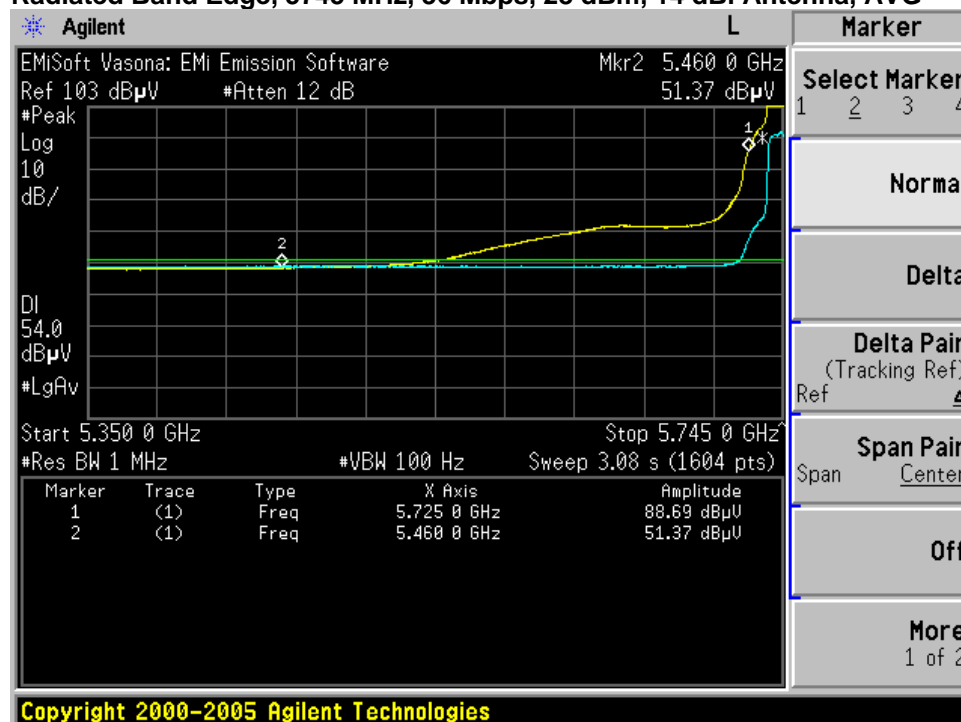
**CONDUCTED Rx SPURS**

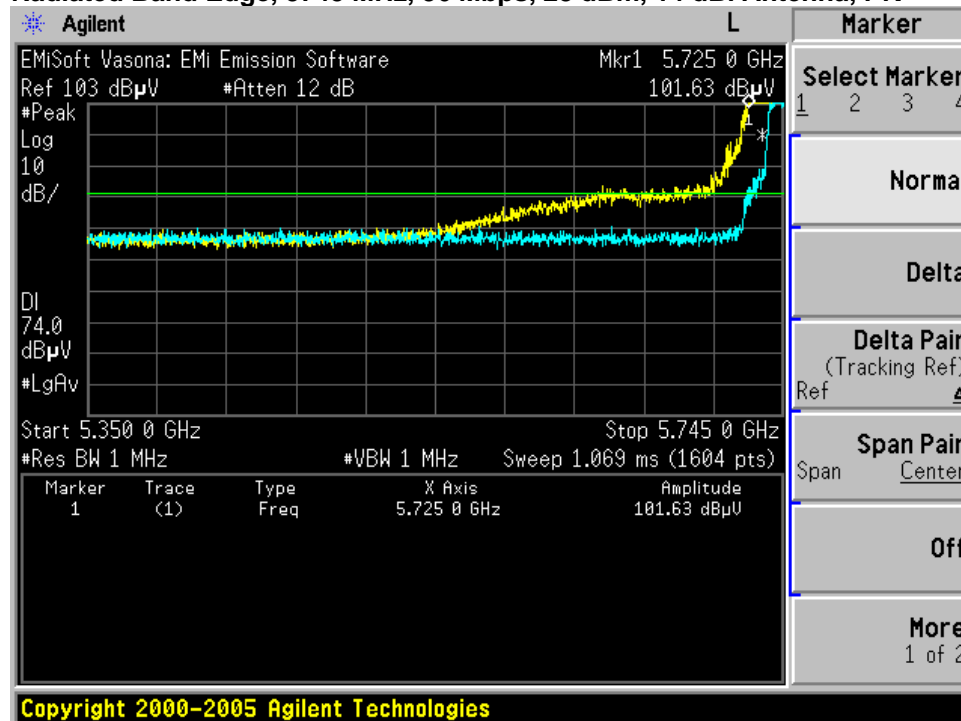
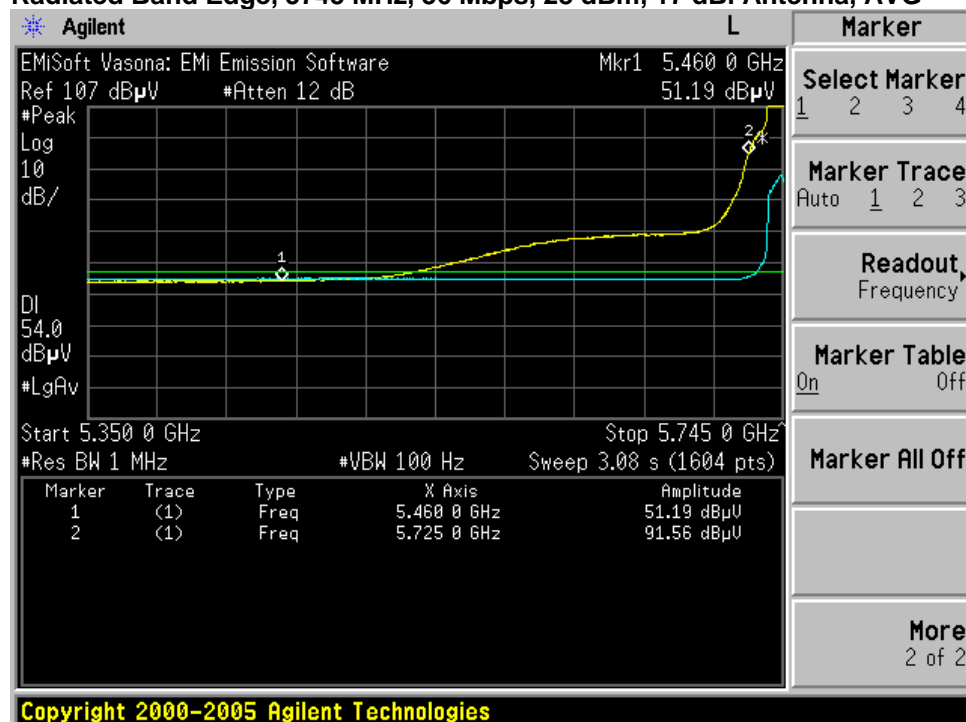
Appendix B: Emission Test Results**Testing Laboratory:** Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134, USA**Radiated Band Edge Emissions**

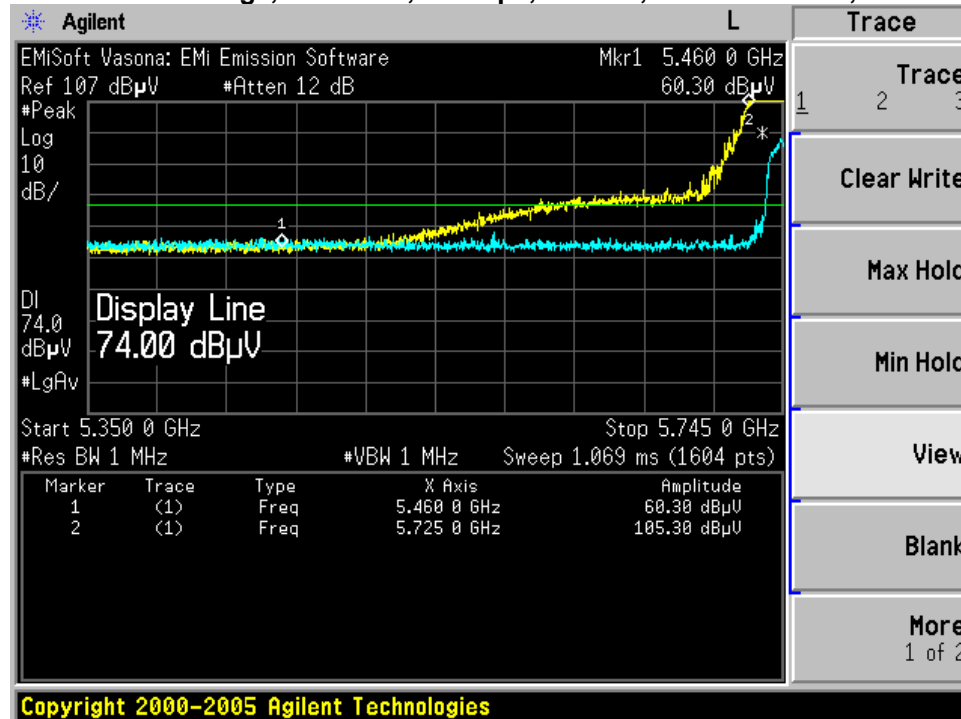
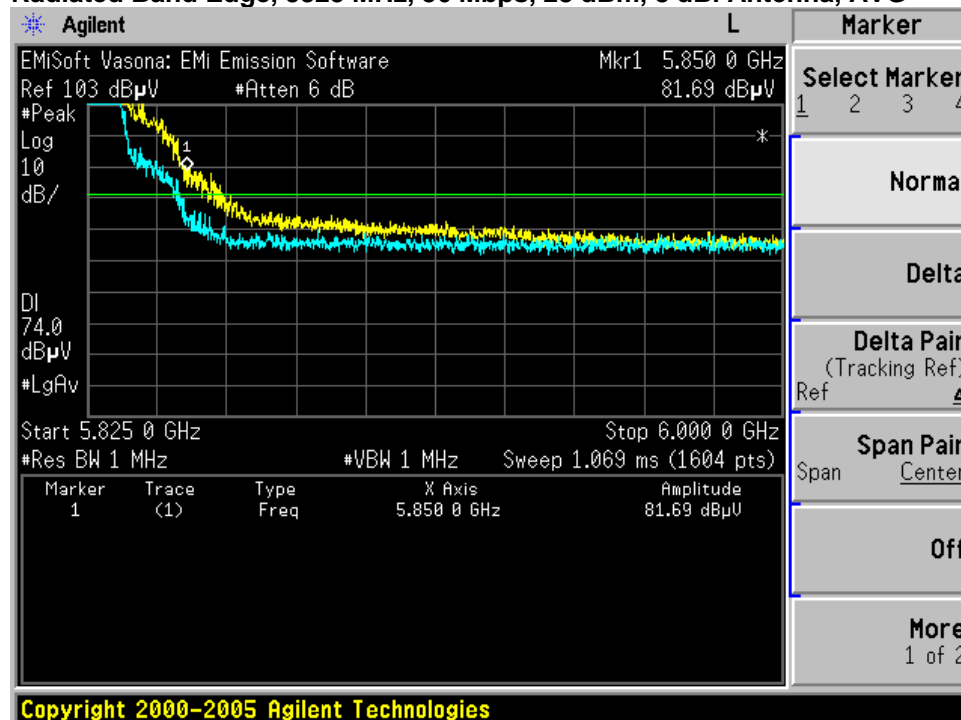
Radiated emissions which fall in the restricted bands, as defined in Sec. 15.205(a), must also comply with the radiated emission limits specified in Sec. 15.209(a).

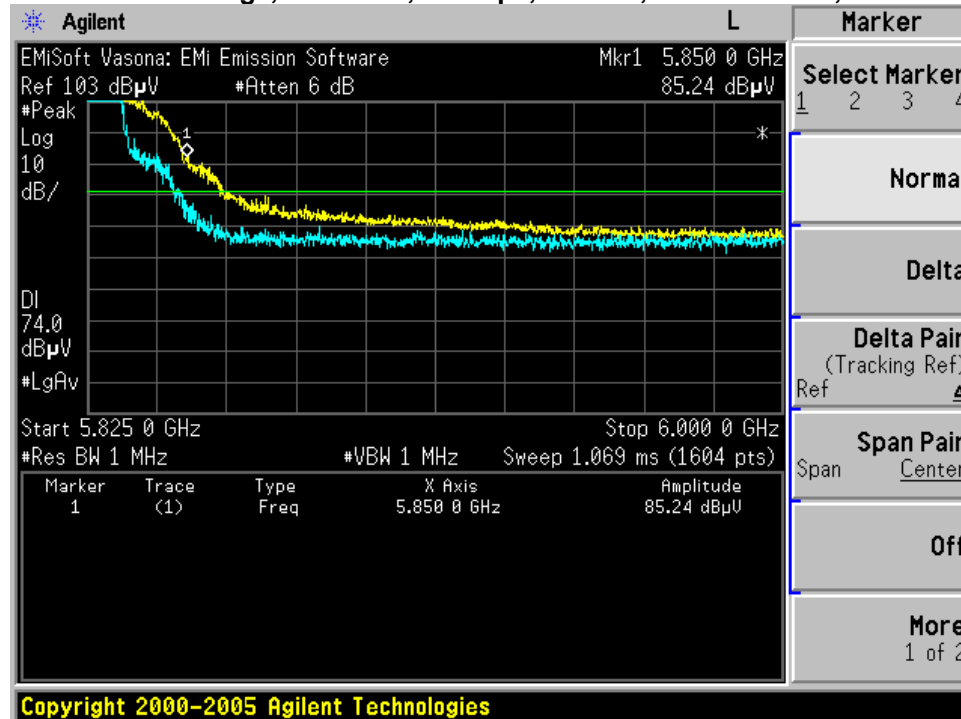
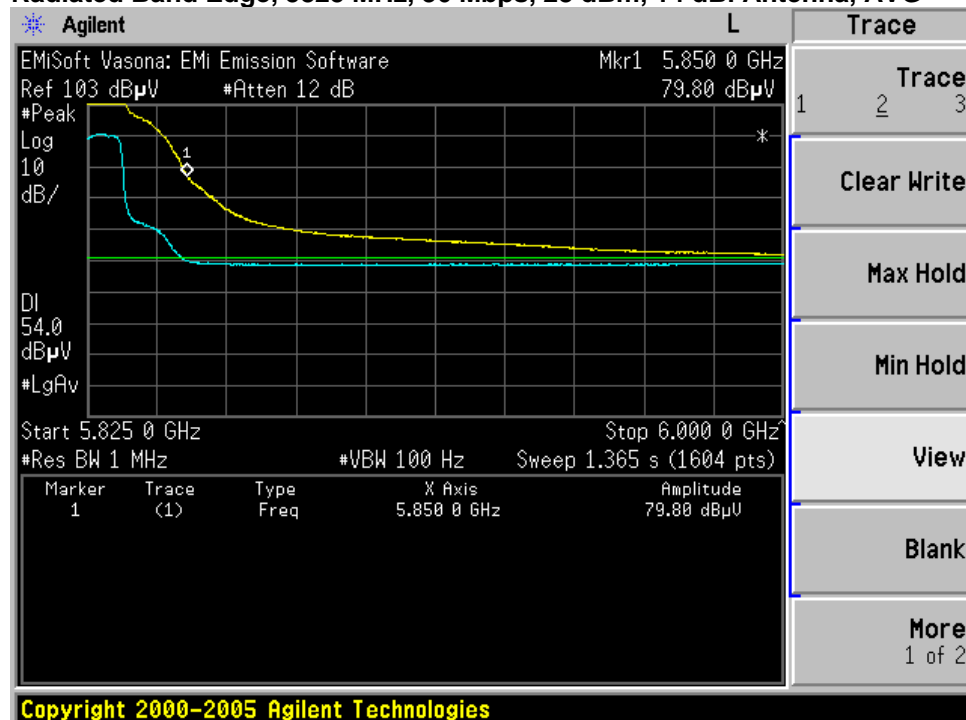
| Frequency (MHz) | Data Rate (Mbps) | Radiated Bandedge Margin (dB) |
|-----------------|------------------|-------------------------------|
| 5745 | 36 | 2.8 |
| 5825 | 36 | 2.8 |

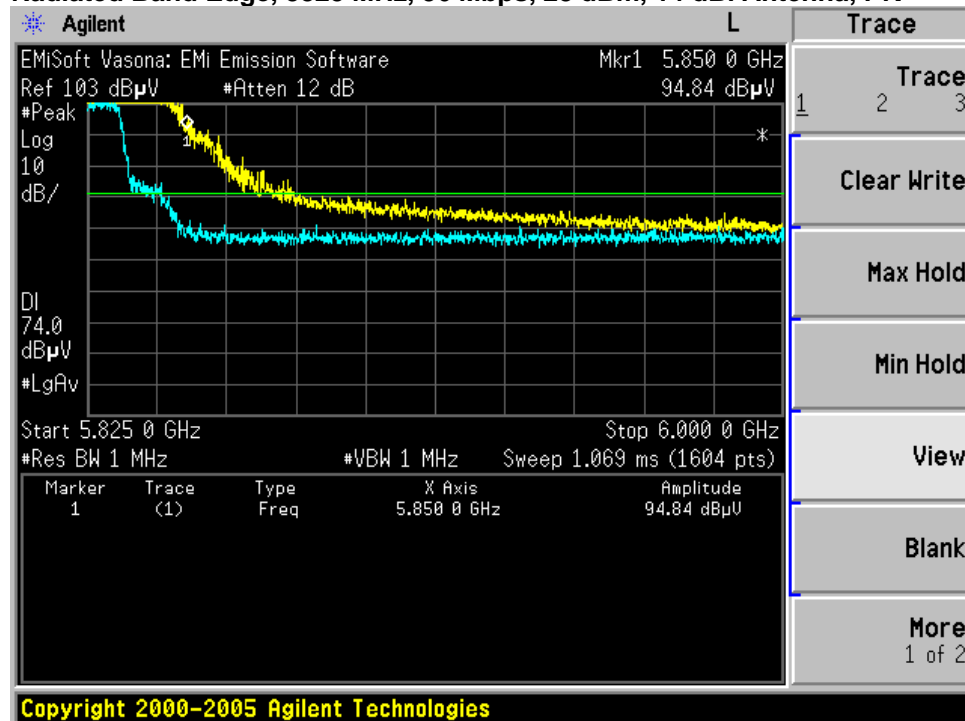
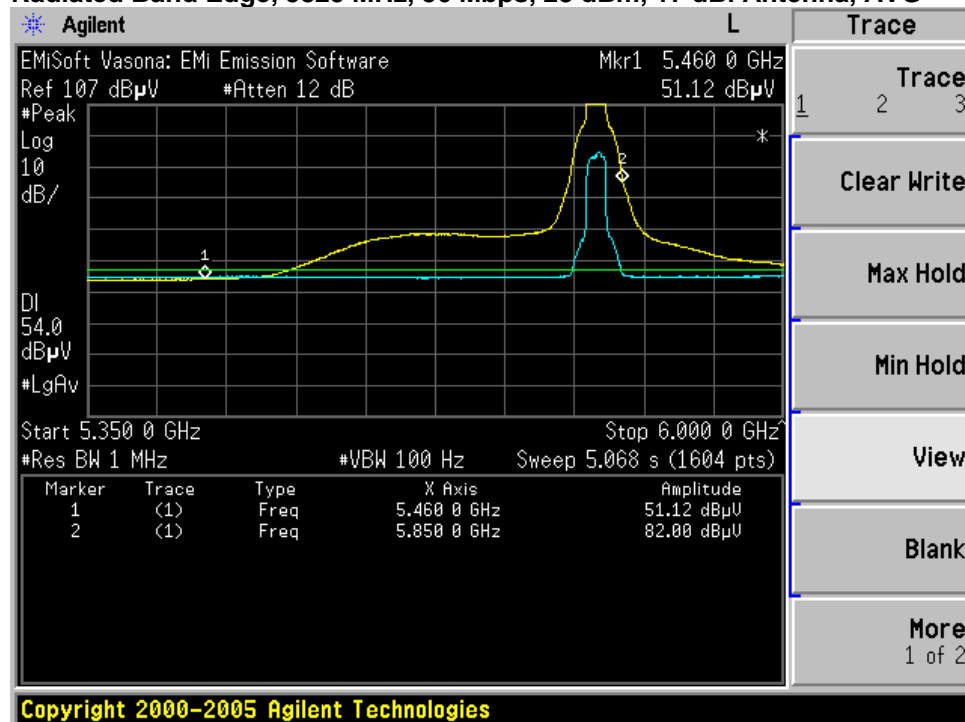
Radiated Band Edge, 5745 MHz, 36 Mbps, 28 dBm, 8 dBi Antenna, AVG

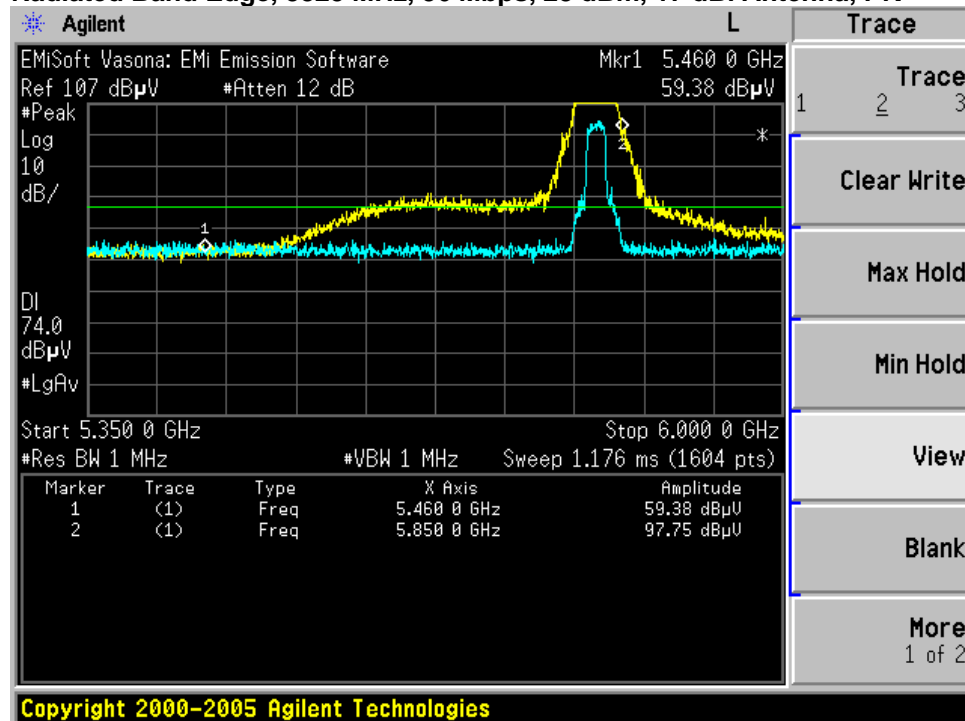
Radiated Band Edge, 5745 MHz, 36 Mbps, 28 dBm, 8 dBi Antenna, PK**Radiated Band Edge, 5745 MHz, 36 Mbps, 28 dBm, 14 dBi Antenna, AVG**

Radiated Band Edge, 5745 MHz, 36 Mbps, 28 dBm, 14 dBi Antenna, PK**Radiated Band Edge, 5745 MHz, 36 Mbps, 28 dBm, 17 dBi Antenna, AVG**

Radiated Band Edge, 5745 MHz, 36 Mbps, 28 dBm, 17 dBi Antenna, PK**Radiated Band Edge, 5825 MHz, 36 Mbps, 28 dBm, 8 dBi Antenna, AVG**

Radiated Band Edge, 5825 MHz, 36 Mbps, 28 dBm, 8 dBi Antenna, PK**Radiated Band Edge, 5825 MHz, 36 Mbps, 28 dBm, 14 dBi Antenna, AVG**

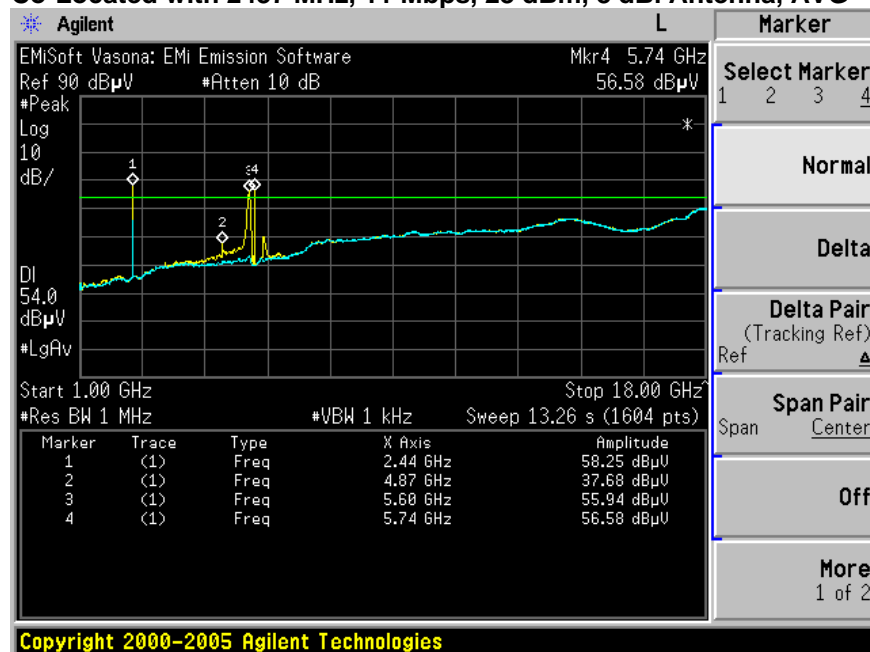
Radiated Band Edge, 5825 MHz, 36 Mbps, 28 dBm, 14 dBi Antenna, PK**Radiated Band Edge, 5825 MHz, 36 Mbps, 28 dBm, 17 dBi Antenna, AVG**

Radiated Band Edge, 5825 MHz, 36 Mbps, 28 dBm, 17 dBi Antenna, PK

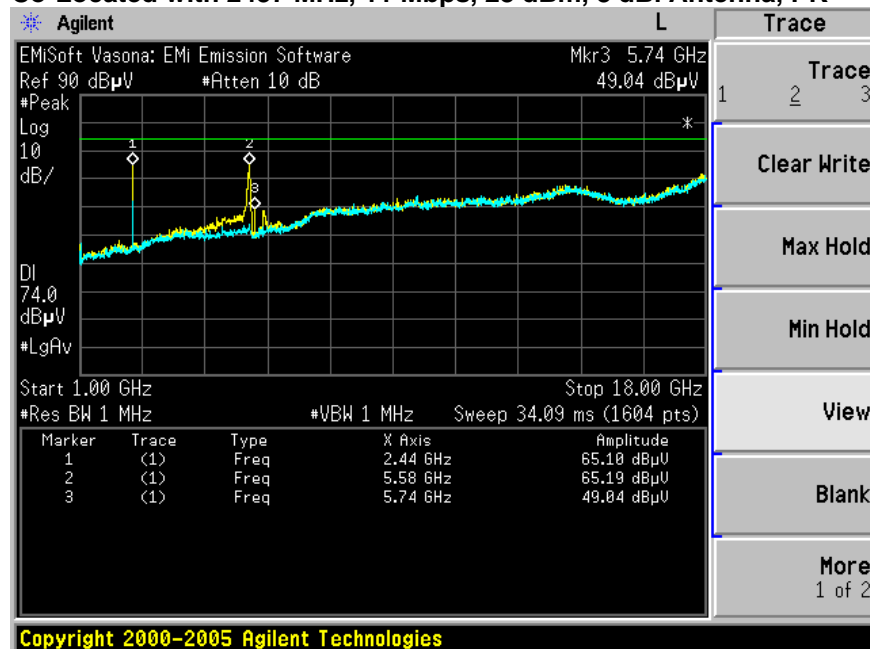
Radiated Spurs and Harmonics with All Antennas

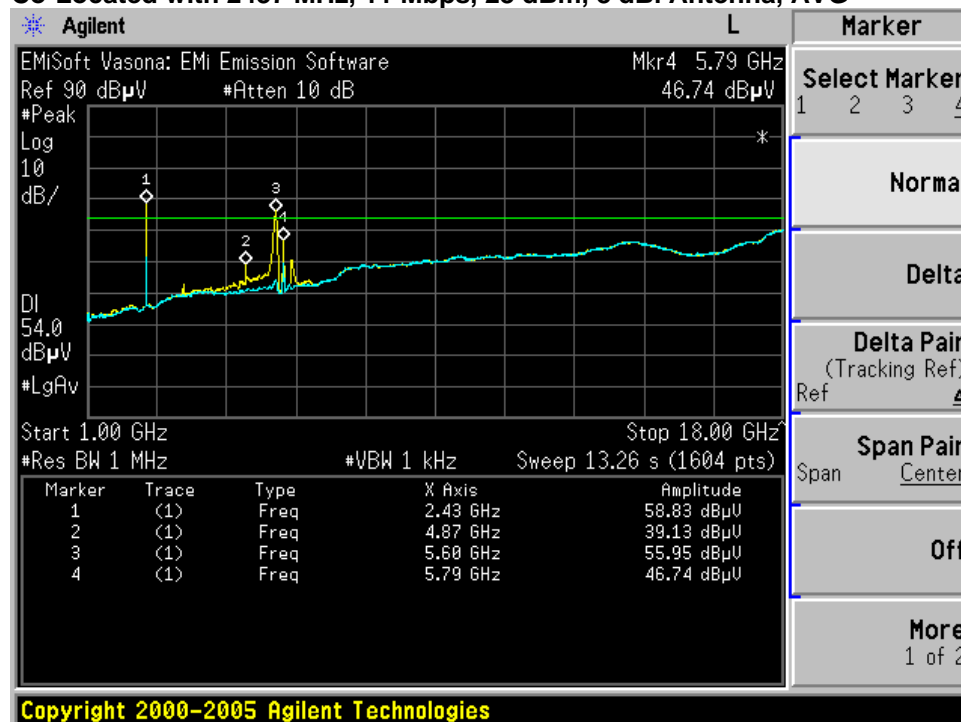
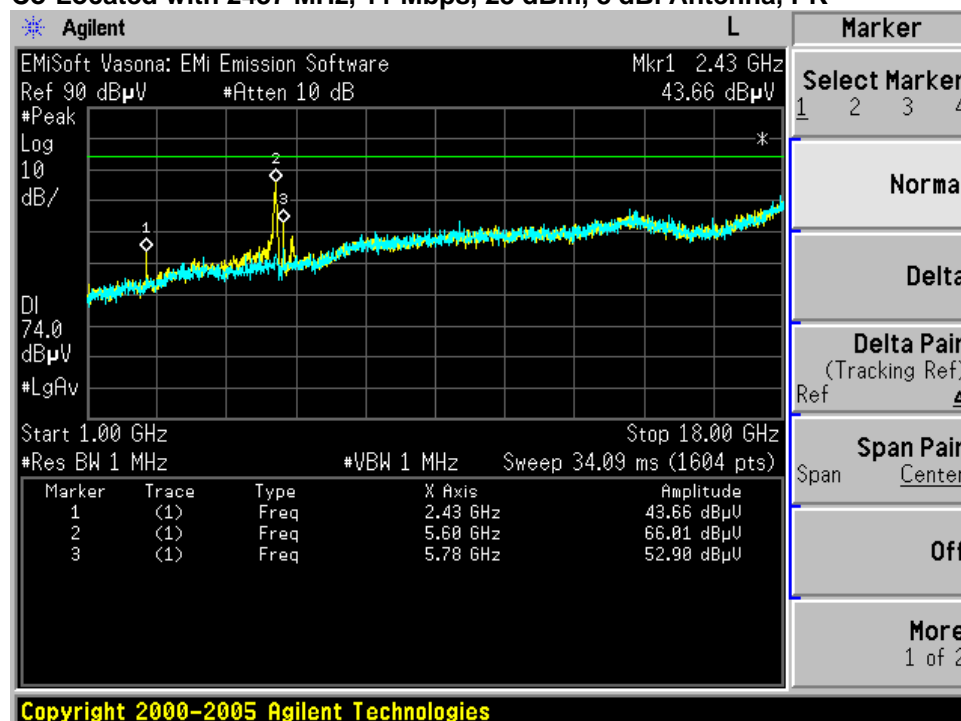
There were no measurable emissions above 18GHz for any of the channel/antenna combinations. The data is a worst case representation of all configurations.

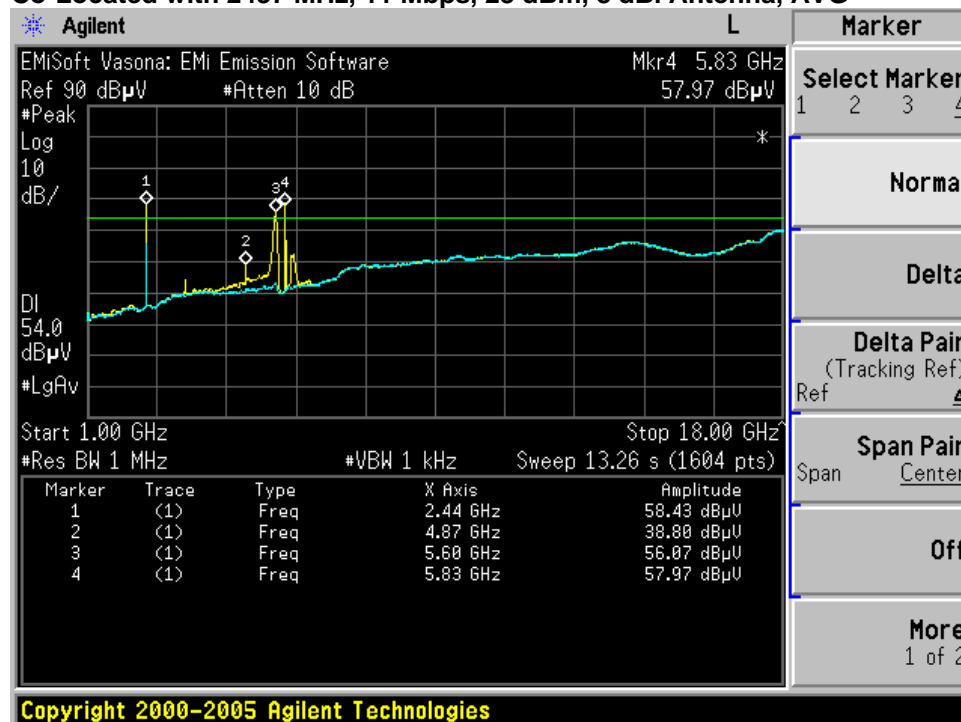
Radiated Spurious Emissions, 5745 MHz, 36 Mbps, 28 dBm, 17 dBi Antenna Co-Located with 2437 MHz, 11 Mbps, 28 dBm, 8 dBi Antenna, AVG

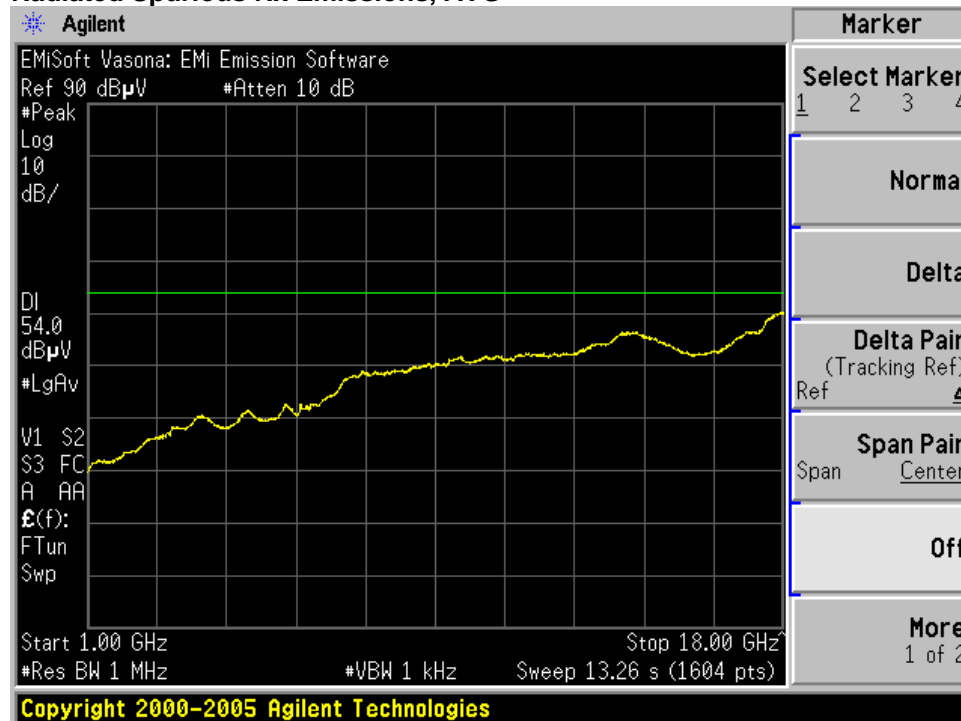
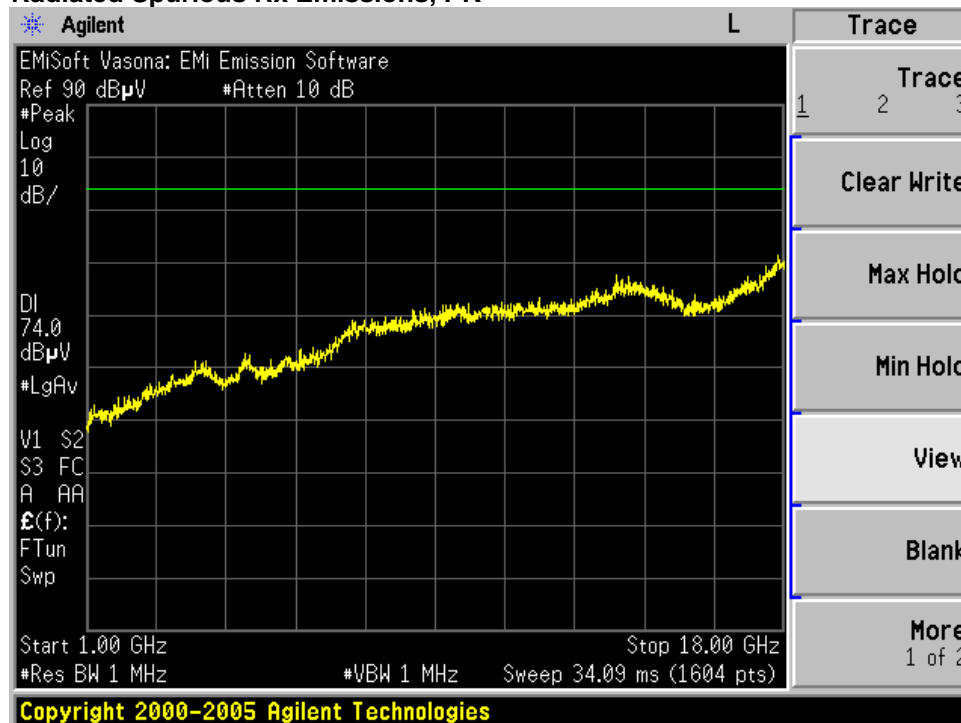


Radiated Spurious Emissions, 5745 MHz, 36 Mbps, 28 dBm, 17 dBi Antenna Co-Located with 2437 MHz, 11 Mbps, 28 dBm, 8 dBi Antenna, PK



**Radiated Spurious Emissions, 5785 MHz, 36 Mbps, 28 dBm, 17 dBi Antenna
Co-Located with 2437 MHz, 11 Mbps, 28 dBm, 8 dBi Antenna, AVG****Radiated Spurious Emissions, 5785 MHz, 36 Mbps, 28 dBm, 17 dBi Antenna
Co-Located with 2437 MHz, 11 Mbps, 28 dBm, 8 dBi Antenna, PK**

**Radiated Spurious Emissions, 5825 MHz, 36 Mbps, 28 dBm, 17 dBi Antenna
Co-Located with 2437 MHz, 11 Mbps, 28 dBm, 8 dBi Antenna, AVG****Radiated Spurious Emissions, 5825 MHz, 36 Mbps, 28 dBm, 17 dBi Antenna
Co-Located with 2437 MHz, 11 Mbps, 28 dBm, 8 dBi Antenna, PK**

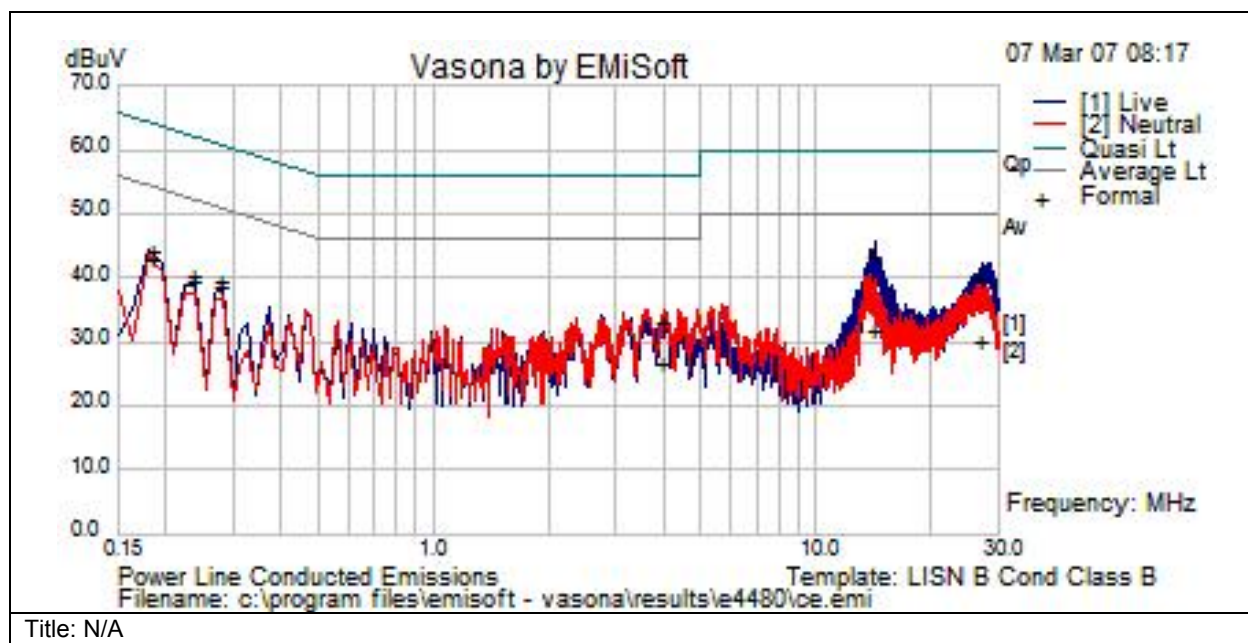
Radiated Spurious Rx Emissions, AVG**Radiated Spurious Rx Emissions, PK**



Powerline Conducted emissions

| Test Number: 26067 Spec ID: 484 | | | | |
|---|---|-------|------------------|-------------------------|
| Basic Standard | Applied to | Class | Freq Range | Test Details / Comments |
| CFR47 Part 15.207 (LP0002 2.2.3, RSS210) | AC Power Line | B | 0.150MHz - 30MHz | |
| Operating Mode | Mode : 1, Continuous | | | |
| Power Input | 110, 60Hz (+/-20%) | | | |
| Overall Result | Pass | | | |
| Comments | No further comments | | | |
| Deviation | There were no deviations from the specification | | | |

| | | |
|------------------------------------|--------------------------|---------------------------|
| Subtest Number: 26067 - 1 | | Subtest Date: 07-Mar-2007 |
| Engineer | James Nicholson | |
| Lab Information | Building P, 10m Anechoic | |
| Subtest Results | | |
| Line Under Test | Power Input | |
| Transducer | LISN | |
| Subtest Result | Pass | |
| Highest Frequency | 30.0 | |
| Lowest Frequency | 0.15 | |
| Comments on the above Test Results | No further comments | |

**Test Results Table**

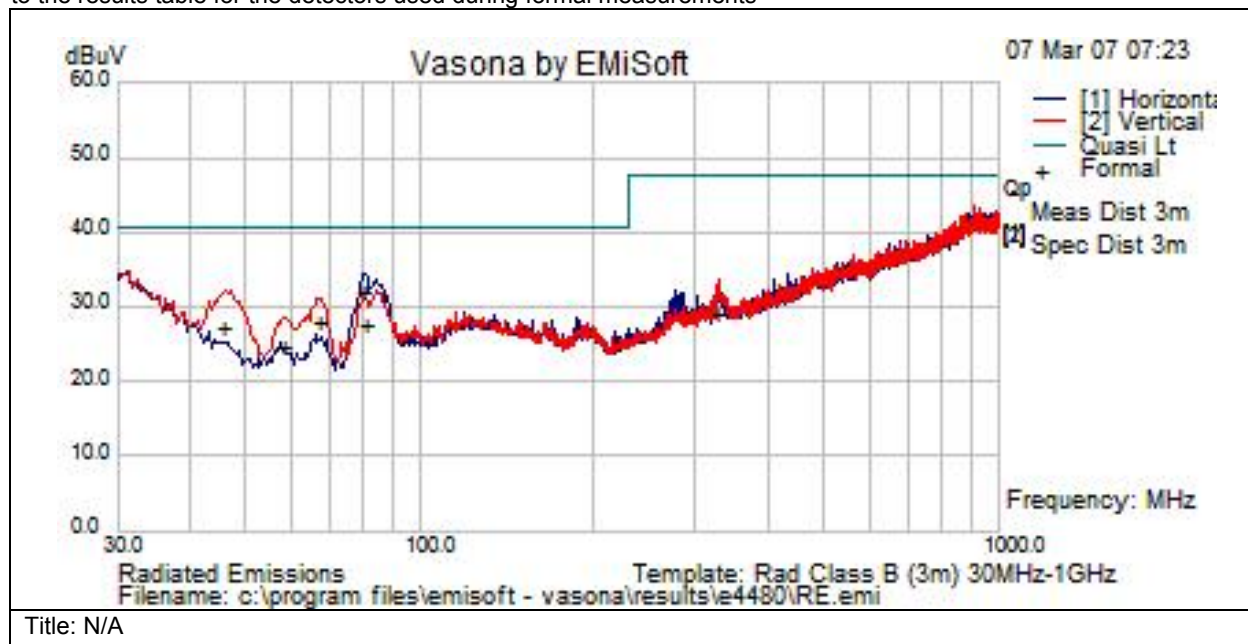
| Frequency MHz | Raw dBuV | Cable Loss | Factors dB | Level dBuV | Measureme nt Type | Line | Limit dBuV | Margin dB | Pass /Fail | Comments |
|------------------|-------------|---------------|---------------|---------------|----------------------|------|---------------|--------------|------------|----------|
| 0.187 | 20.2 | 20.3 | 0.2 | 40.8 | Av | L | 54.2 | -13.4 | Pass | |
| 0.187 | 21.5 | 20.3 | 0.2 | 42 | Qp | L | 64.2 | -22.1 | Pass | |
| 0.236 | 17.8 | 20.2 | 0.1 | 38.2 | Qp | L | 62.2 | -24 | Pass | |
| 0.236 | 16.9 | 20.2 | 0.1 | 37.3 | Av | L | 52.2 | -14.9 | Pass | |
| 0.283 | 17.2 | 20.2 | 0.1 | 37.6 | Qp | L | 60.7 | -23.2 | Pass | |
| 0.283 | 16.4 | 20.2 | 0.1 | 36.6 | Av | L | 50.7 | -14.1 | Pass | |
| 4.03 | 10.9 | 20 | 0.1 | 31 | Qp | N | 56 | -25 | Pass | |
| 4.03 | 4.3 | 20 | 0.1 | 24.4 | Av | N | 46 | -21.6 | Pass | |
| 14.338 | 20.9 | 20.2 | 0.2 | 41.3 | Qp | L | 60 | -18.7 | Pass | |
| 14.338 | 9.3 | 20.2 | 0.2 | 29.7 | Av | L | 50 | -20.3 | Pass | |
| 27.091 | 16.1 | 20.5 | 1.2 | 37.8 | Qp | L | 60 | -22.2 | Pass | |
| 27.091 | 6.3 | 20.5 | 1.2 | 28 | Av | L | 50 | -22 | Pass | |

Unintentional Radiated emissions

| | | |
|------------------------------------|--------------------------|---------------------------|
| Subtest Number: 26044 - 1 | | Subtest Date: 07-Mar-2007 |
| Engineer | James Nicholson | |
| Lab Information | Building P, 10m Anechoic | |
| Subtest Results | | |
| Subtest Title | RE | |
| Subtest Result | Pass | |
| Highest Frequency | 1000.0 | |
| Lowest Frequency | 30.0 | |
| Comments on the above Test Results | No further comments | |

Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



Test Results Table

| Frequency MHz | Raw dBuV | Cable Loss | AF dB | Level dBuV | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV | Margin dB | Pass /Fail | Comments |
|---------------|----------|------------|-------|------------|------------------|-----|--------|---------|------------|-----------|------------|----------|
| 46.162 | 16.9 | 0.7 | 7.8 | 25.4 | Qp | V | 138 | 216 | 40.5 | -15.1 | Pass | |
| 58.599 | 16.5 | 0.7 | 5.6 | 22.7 | Qp | V | 105 | 241 | 40.5 | -17.8 | Pass | |
| 67.554 | 19 | 0.7 | 6.2 | 26 | Qp | V | 103 | 212 | 40.5 | -14.4 | Pass | |
| 80.113 | 23.4 | 0.8 | 5.8 | 30.1 | Qp | H | 233 | 249 | 40.5 | -10.4 | Pass | |
| 80.778 | 19.4 | 0.8 | 5.8 | 25.9 | Qp | V | 107 | 56 | 40.5 | -14.6 | Pass | |
| 328.239 | 12.5 | 1.7 | 13.3 | 27.4 | Qp | V | 115 | 204 | 47.5 | -20.1 | Pass | |

Maximum Permissible Exposure (MPE) Calculations

15.247: ISM devices are subject to the radio frequency radiation exposure requirements specified in Sec. 1.1307(b), Sec. 2.1091 and Sec. 2.1093 of this chapter, as appropriate. All equipment shall be considered to operate in a "general population/uncontrolled" environment. Applications for equipment authorization of devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

Given

$$E = \sqrt{(30 \cdot P \cdot G)/d} \text{ and } S = E^2/3770$$

where

E=Field Strength in Volts/meter

P=Power in Watts

G=Numeric Antenna Gain

d=Distance in meters

S=Power Density in mW/cm²

Combine equations and rearrange the terms to express the distance as a function of the remaining variables:

$$d = \sqrt{((30 \cdot P \cdot G)/(3770 \cdot S))}$$

Changing to units of power in mW and distance in cm, using:

$$P(\text{mW}) = P(\text{W})/1000 \quad d(\text{cm}) = 100 \cdot d(\text{m})$$

yields

$$d = 100 \cdot \sqrt{((30 \cdot (P/1000) \cdot G)/(3770 \cdot S))}$$

$$d = 0.282 \cdot \sqrt{(P \cdot G/S)}$$

where

d=Distance in cm

P=Power in mW

G=Numerica Antenna Gain

S=Power Density in mW/cm²

Substituting the logarithmic form of power and gain using:

$$P(\text{mW}) = 10^{(P(\text{dBm})/10)} \quad G(\text{numeric}) = 10^{(G(\text{dBi})/10)}$$

yields

$$d = 0.282 \cdot 10^{((P+G)/20)/\sqrt{S}} \quad \text{Equation (1)}$$

and

$$s = ((0.282 \cdot 10^{((P+G)/20)})/d)^2 \quad \text{Equation (2)}$$

where

d=MPE distance in cm

P=Power in dBm

G=Antenna Gain in dBi

S=Power Density in mW/cm²



Equation (1) and the measured peak power are used to calculate the MPE distance. Note that for mobile or fixed location transmitters such as an access point, the minimum separation distance is 20 cm even if the calculations indicate that the MPE distance may be less.

$S=1\text{mW/cm}^2$ maximum. Using the peak power levels and antenna gains recorded in the test report along with Equation 1 above, the MPE distances are calculated as follows.

| Frequency (MHz) | Bit Rate (Mbps) | Power Density (mW/cm ²) | Peak Transmit Power (dBm) | Antenna Gain (dBi) | MPE Distance (cm) | Limit (cm) | Margin (cm) |
|-----------------|-----------------|-------------------------------------|---------------------------|--------------------|-------------------|------------|-------------|
| 5745 | 36 | 1 | 26.9 | 17 | 44.18 | 20 | -24.18 |
| 5785 | 36 | 1 | 26.2 | 17 | 40.76 | 20 | -20.76 |
| 5825 | 36 | 1 | 26.6 | 17 | 42.68 | 20 | -22.68 |

MPE Calculations

To maintain compliance, installations will assure a separation distance of at least 50cm.

Using Equation 2, the MPE levels (s) at 20 cm are calculated as follows:

| Frequency (MHz) | Bit Rate (Mbps) | MPE Distance (cm) | Peak Transmit Power (dBm) | Antenna Gain (dBi) | Power Density (mW/cm ²) | Limit (mW/cm ²) | Margin (mW/cm ²) |
|-----------------|-----------------|-------------------|---------------------------|--------------------|-------------------------------------|-----------------------------|------------------------------|
| 5745 | 36 | 20 | 26.9 | 17 | 4.88 | 1 | -3.88 |
| 5785 | 36 | 20 | 26.2 | 17 | 4.15 | 1 | -3.15 |
| 5825 | 36 | 20 | 26.6 | 17 | 4.55 | 1 | -3.55 |

Appendix C: Abbreviation Key and Definitions

The following table defines abbreviations used within this test report.

| Abbreviation | Description | Abbreviation | Description |
|--------------|--|--------------|-------------------------------------|
| EMC | Electro Magnetic Compatibility | °F | Degrees Fahrenheit |
| EMI | Electro Magnetic Interference | °C | Degrees Celsius |
| EUT | Equipment Under Test | Temp | Temperature |
| ITE | Information Technology Equipment | S/N | Serial Number |
| TAP | Test Assessment Schedule | Qty | Quantity |
| ESD | Electro Static Discharge | emf | Electromotive force |
| EFT | Electric Fast Transient | RMS | Root mean square |
| EDCS | Engineering Document Control System | Qp | Quasi Peak |
| Config | Configuration | Av | Average |
| CIS# | Cisco Number (unique identification number for Cisco test equipment) | Pk | Peak |
| Cal | Calibration | kHz | Kilohertz (1×10^3) |
| EN | European Norm | MHz | Megahertz (1×10^6) |
| IEC | International Electro technical Commission | GHz | Gigahertz (1×10^9) |
| CISPR | International Special Committee on Radio Interference | H | Horizontal |
| CDN | Coupling/Decoupling Network | V | Vertical |
| LISN | Line Impedance Stabilization Network | dB | decibel |
| PE | Protective Earth | V | Volt |
| GND | Ground | kV | Kilovolt (1×10^3) |
| L1 | Line 1 | μ V | Microvolt (1×10^{-6}) |
| L2 | Line2 | A | Amp |
| L3 | Line 3 | μ A | Micro Amp (1×10^{-6}) |
| DC | Direct Current | mS | Milli Second (1×10^{-3}) |
| RAW | Uncorrected measurement value, as indicated by the measuring device | μ S | Micro Second (1×10^{-6}) |
| RF | Radio Frequency | μ S | Micro Second (1×10^{-6}) |
| SLCE | Signal Line Conducted Emissions | m | Meter |
| Meas dist | Measurement distance | Spec dist | Specification distance |
| N/A or NA | Not Applicable | SL | Signal Line (or Telecom Line) |
| P | Power Line | L | Live Line |
| N | Neutral Line | R | Return |
| S | Supply | AC | Alternating Current |

Appendix E: Test Equipment/Software Used to perform the test

| Equip# | Manufacturer/ Model | Description | Last Cal | Next Due | Test Number(s) |
|--------|---|---|-----------|-----------|---|
| 004883 | EMC Test Systems/ 3115 | Double Ridged Guide Horn Antenna | 19-APR-06 | 19-APR-07 | [26022], [26032], [26044] |
| 005568 | HP/ 8449B | PreAmplifier (1-26.5GHz) | 08-SEP-06 | 08-SEP-07 | [26044] |
| 005691 | Miteq/ NSP1800-25-S1 | Broadband Preamplifier (1-18GHz) | 09-OCT-06 | 09-OCT-07 | [26022], [26032], [26044] |
| 008136 | Huber + Suhner/ SF106A | 7m Sucoflex cable | 05-JAN-07 | 05-JAN-08 | [26044] |
| 008370 | Andrew/ F4A-PNMNM | 49 ft Helix Cable | 16-MAR-06 | 16-MAR-07 | [26067] |
| 008591 | Fischer Custom Communications/ FCC-RFM2F-520R | LISN AC Adaptor - Std 120V outlet | 16-MAR-06 | 16-MAR-07 | [26067] |
| 019209 | TTE/ H785-150K-50-2137 8 | Hi Pass Filter 150KHz | 02-JAN-07 | 02-JAN-08 | [26067] |
| 020975 | Micro-Coax/ UFB311A-0-1344-5 20520 | RF Coaxial Cable, to 18GHz, 134.4 in | 16-MAR-06 | 16-MAR-07 | [26022], [26032], [26044] |
| 024905 | Agilent/ E4440A | Precision Spectrum Analyzer | 14-FEB-07 | 14-FEB-08 | [26022], [26032], [26044] |
| 025640 | Micro-Coax/ UFB311A-0-2720-5 20520 | RF Coaxial Cable, to 18GHz, 272 in | 05-JAN-07 | 05-JAN-08 | [26044] |
| 025655 | Micro-Coax/ UFB311A-1-0840-5 04504 | RF Coaxial Cable, to 18GHz, 84 in | 17-MAR-06 | 17-MAR-07 | [26022], [26032], [26044] |
| 025657 | Micro-Coax/ UFB311A-1-0840-5 04504 | RF Coaxial Cable, to 18GHz, 84 in | 19-AUG-06 | 19-AUG-07 | [26022], [26032], [26044], [26067] |
| 025660 | Micro-Coax/ UFB311A-1-0840-5 04504 | Coaxial Cable, 84.0 in. to 18GHz | 05-JAN-07 | 05-JAN-08 | [26044] |
| 030495 | Agilent/ 8761B | SPDT RF Switch, to 18GHz | 07-APR-06 | 07-APR-07 | [26022], [26032], [26044] |
| 030496 | Agilent/ 8761B | SPDT RF Switch, to 18GHz | 08-SEP-06 | 08-SEP-07 | [26044] |
| 030563 | Micro-Coax/ UFB311A-1-0950-5 04504 | RF Coaxial Cable, to 18GHz, 95 in | 05-JAN-07 | 05-JAN-08 | [26044] |
| 030652 | Sunol Sciences/ JB1 | Combination Antenna, 30MHz-2GHz | 06-JUL-06 | 06-JUL-07 | [26044] |
| 032455 | Midwest Microwave/ CSY-MNMN-82-273 001 | RF Coaxial Cable to 18 GHz | 11-SEP-06 | 11-MAR-07 | [26022], [26032], [26044] |



| | | | | | |
|--------|--|---|-----------|-----------|---------------------------------|
| 032801 | ETS-Lindgren/ 3117 | Double Ridged Waveguide Horn Antenna | 28-JUL-06 | 28-JUL-07 | [26044] |
| 034188 | Micro-Tronics/ BRC50703-02 | Notch Filter, SB:5.150-5.350GHz, to 11GHz | 17-JUL-06 | 17-JUL-07 | [26044] |
| 034189 | Micro-Tronics/ BRC50704-02 | Notch Filter, SB:5.470-5.725GHz, to 12GHz | 17-JUL-06 | 17-JUL-07 | [26044] |
| 034304 | Micro-Tronics/ BRM50702-02 | Notch Filter, SB:2.4-2.5GHz, to 18GHz | 17-JUL-06 | 17-JUL-07 | [26044] |
| 034974 | Midwest Microwave/ ATT-0640-20-29M-0 2 | Attenuator, 20dB, DC-40GHz | 09-MAY-06 | 09-MAY-07 | [26022], [26032] |
| 035040 | Micro-Tronics/ HPM50112-02 | High pass Filter, 6.4-18GHz | 17-JUL-06 | 17-JUL-07 | [26044] |
| 035624 | Rohde & Schwarz/ ESCI | EMI Test Receiver | 28-JUN-06 | 28-JUN-07 | [26044], [26067] |
| 036716 | Cisco/ RF Coaxial Cable-SMA | Radio Test Cable, SMA-SMA | 11-DEC-06 | 11-DEC-07 | [26022], [26032], [26044] |
| 038396 | Micro-Coax/ UFB293C-Q-1200-5 0U50L | RF Coaxial Cable, 120 Inches, to 18GHz | 13-JUL-06 | 13-JUL-07 | [26044] |