

*Electromagnetic Emissions Test Report
and
Application for Grant of Equipment Authorization
pursuant to
Industry Canada RSS-Gen Issue 2 / RSS 210 Issue 7
FCC Part 15 Subpart C
FCC Part 15, Subpart E
on the
OQO
Transmitter
Model: 2042*

UPN: 6026A-A8YWFS
FCC ID: SHD-A8YWFS

GRANTEE: OQO
583 Shotwell St.
San Francisco, CA 94110

TEST SITE: Elliott Laboratories, Inc.
684 W. Maude Ave
Sunnyvale, CA 94086

REPORT DATE: July 25, 2007
REVISION DATE: September 26, 2007

FINAL TEST DATES: June 18, June 19, June 20, June 22, June 25,
July 16 and July 24, 2007

AUTHORIZED SIGNATORY: _____



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2016-01

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REVISION HISTORY

Revision #	Date	Comments	Modified By
1	September 11, 2007	Initial Release	David Guidotti
2	September 24, 2007	Removal of the 5.4 GHz band, addition of EDR BT data	Mark Hill
3	September 26, 2007	Corrected reference to 15.207/15.209 in summary tables.	Mark Hill

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SCOPE

An electromagnetic emissions test has been performed on the OQO model 2042 pursuant to the following rules:

- Industry Canada RSS-Gen Issue 2
- RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"
- FCC Part 15 Subpart C
- FCC Part 15, Subpart E requirements for UNII Devices

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in Elliott Laboratories test procedures:

- ANSI C63.4:2003

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the OQO model 2042 and therefore apply only to the tested sample. The sample was selected and prepared by Bob Hymes of OQO.

OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, all unlicensed transmitters and transceivers require certification. Receive-only devices operating between 30 MHz and 960 MHz are subject to either certification or a manufacturer's declaration of conformity, with all other receive-only devices exempt from the technical requirements.

Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification. Class II devices are required to meet the appropriate technical requirements but are exempt from certification requirements.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

STATEMENT OF COMPLIANCE

The tested sample of OQO model 2042 complied with the requirements of the following regulations:

- Industry Canada RSS-Gen Issue 2
- RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"
- CC Part 15 Subpart C
- FCC Part 15, Subpart E requirements for UNII Devices

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

TEST RESULTS SUMMARY**DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz) BPSK**

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses DSSS techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	12.0 MHz	>500kHz	Complies
	RSP100	99% Bandwidth	15.8 MHz	Information only	Complies
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	20.2 dBm (0.105 Watts) EIRP = 0.105 W ^{Note 1}	1 Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	-3.6 dBm / 3kHz	8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All Emissions < -20dBc	< -20dBc	Complies
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	52.9 dBuV/m @ 2487.8 MHz (-1.1dB)	15.209 in restricted bands, all others < -20dBc	Complies

Note 1: EIRP calculated using antenna gain of 0 dBi for the highest EIRP multi-point system.

DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz) OFDM

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	16.4 MHz	>500kHz	Complies
	RSP100	99% Bandwidth	17.7 MHz	Information only	Complies
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	15.7 dBm (0.037 Watts) EIRP = 0.037 W ^{Note 1}	1 Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	-9.3 dBm / 3kHz	8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All Emissions < -30dBc	< -30dBc ^{Note 2}	Complies
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	53.6 dBuV/m @ 2484.0 MHz (-0.4dB)	15.209 in restricted bands, all others < -30dBc ^{Note 2}	Complies

Note 1: EIRP calculated using antenna gain of 0 dBi for the highest EIRP multi-point system.

Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst).

DIGITAL TRANSMISSION SYSTEMS (5725 –5850 MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	16.4 MHz	>500kHz	Complies
	RSP100	99% Bandwidth	17.1 MHz	Information only	Complies
15.247 (b) (3) 15.247		Output Power (multipoint systems)	17.5 dBm (0.056 Watts) EIRP = 0.056 W ^{Note 1}	1 Watt, EIRP limited to 4 Watts.	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions – 30MHz – 40 GHz	All spurious emissions < -30dBc	< -30dBc ^{Note 2}	Complies
15.247(c) / 15.209	RSS 210 A8.5 Table 2, 3	Radiated Spurious Emissions 30MHz – 40 GHz	50.0 dBuV/m @ 11650.1 MHz (-4.0dB)	15.209 in restricted bands, all others <-30dBc ^{Note 2}	Complies

Note 1: EIRP calculated using antenna gain of 0 dBi for the highest EIRP multi-point system.

Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst).

FREQUENCY HOPPING SPREAD SPECTRUM (2400 – 2483.5 MHz, 75 channels or more)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247 (a) (1)	RSS 210 A8.1 (1)	20dB Bandwidth	905 kHz 1.32 MHz (EDR Mode)	Channel spacing > 20dB bandwidth	Complies
15.247 (a) (1)	RSS 210 A8.1 (2)	Channel Separation	1030 kHz 1016 kHz (EDR Mode)		Complies
15.247 (a) (1) (iii)	RSS 210 A8.1 (4)	Channel Dwell Time (average time of occupancy)	0.4 seconds per 31.6 seconds	<0.4 second within a period of 0.4 x number of channels	Complies
15.247 (a) (1) (iii)	RSS 210 A8.1 (4)	Number of Channels	79	75 or more	Complies
15.247 (a) (1)	RSS 210 A8.1 (1)	Channel Utilization	The system uses the BlueTooth algorithm and, therefore, meets all requirements for channel utilization.	All channels shall, on average, be used equally	Complies
15.247 (b) (3)	RSS 210 A8.4 (2)	Output Power (multipoint systems)	0.0 dBm (0.001 Watts) EIRP = 0.0 W ^{Note 1}	1 Watt, EIRP limited to 4 Watts.	Complies
15.247(c)	RSS 210 A8.5	Spurious Emissions – 30MHz – 25GHz	All spurious emissions < -20dBc	< -20dBc	Complies
15.247(c) / 15.209	RSS 210 A8.5 Table 2, 3	Radiated Spurious Emissions 30MHz – 25GHz	46.8dBμV/m (218.8μV/m) @ 2501.4MHz	15.209 in restricted bands, all others < -20dBc	Complies (-7.2dB)
	RSS 210 A8.1(2)	Receiver bandwidth	Refer to operational description	Shall match the channel bandwidth	Complies

Note 1: EIRP calculated using antenna gain of 0 dBi for the highest EIRP multi-point system.

UNII / LELAN DEVICES**Operation in the 5.15 – 5.25 GHz Band**

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407(e)		Indoor operation only	Refer to user's manual	N/A	Complies
15.407(a)(1)		26dB Bandwidth	34.0 MHz	N/A – limits output power if < 20MHz	N/A
15.407(a)(1)	A9.2(1)	Output Power	16.7 dBm (0.047 W)	17 dBm	Complies
15.407(a)(1)	A9.2(1)	Power Spectral Density	3.94 dBm/MHz	4 dBm/MHz	Complies
	A9.5(2)b	Peak Spectral Density	3.94 dBm/MHz	Shall not exceed the average value by more than 3dB	Complies

Operation in the 5.25 – 5.35 GHz Band

Note: The device is restricted to indoor use only, therefore the spectral density of spurious emissions in the 5.15 – 5.25 GHz band were limited to the power spectral limits for intentional signals detailed in FCC 15.407(a)(1) and RSS 210 6.2.2 q1 (i)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a)(2)		26dB Bandwidth	33.3 MHz	N/A – limits output power if < 20MHz	N/A
15.407(a)(2)	A9.2(2)	Output Power	17.7 dBm (0.059 W)	24 dBm	Complies
15.407(a)(2)	A9.2(2)	Power Spectral Density	4.98 dBm/MHz	11 dBm/MHz	Complies
	A9.5b	Peak Spectral Density	4.98 dBm/MHz	Shall not exceed the average value by more than 3dB	Complies
15.407(a)(2))	A9.4	Dynamic frequency selection / Transmit power control	Refer to separate test report		Complies

General requirements for all UNII bands

	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
	A9.5a	Modulation	Digital Modulation is used (OFDM)	Digital modulation is required	Complies
	RSP 100	99% bandwidth	17.7 MHz		
15.407(b)(6) / 15.209	A9.3	Spurious Emissions below 1GHz	None		Complies
15.407(b)(2)	A9.3	Spurious Emissions above 1GHz	52.0dB μ V/m (398.1 μ V/m) @ 5350.0MHz		Complies (- 2.0 dB)
15.407(a)(6)	-	Peak Excursion Ratio	11.6 dB	< 13dB	Complies (- 1.4 dB)
	A9.5c	Channel Selection	The device was tested at the highest, lowest and center channels in each operating range.	Device shall be tested on the top, bottom and center channels in each band	N/A
15.407 (c)	A9.5d	Operation in the absence of information to transmit	Operation is discontinued in the absence of information (Operational Description)	Device shall automatically discontinue operation in the absence of information to transmit	Complies
15.407 (g)	A9.5e	Frequency Stability	Frequency stability is better than 20ppm (Operational Description)		Complies
	A9.9g	User Manual information	Refer to Exhibit 6 for details		Complies

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Internal to device		Complies
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	UNII: 59.7dB μ V/m (966.1 μ V/m) @ 10512.8MHz (-14.3dB) DTS/BT: 46.0dB μ V/m (199.5 μ V/m) @ 3854.5MHz (-8.0dB)	Refer to Standard	Complies (- 14.3 dB) Complies (- 8.0 dB)
15.207	RSS GEN Table 2	AC Conducted Emissions	58.8dB μ V (871.0 μ V) @ 0.179MHz	Refer to standard	Complies (- 5.7 dB)
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in Exhibit 11, RSS 102 declaration and User Manual statements. Refer to SAR report	Refer to OET 65, FCC Part 1 and RSS 102	Complies
	RSP 100 RSS GEN 7.1.5	User Manual	Refer to manual	Statement required regarding non-interference	
	RSP 100 RSS GEN 7.1.5	User Manual	Refer to manual	Statement required regarding detachable antenna	

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	0.015 to 30	± 3.0
Radiated Emissions	30 to 1000	± 3.6
Radiated Emissions	1000 to 40000	± 6.0

EQUIPMENT UNDER TEST (EUT) DETAILS**GENERAL**

The OQO model 2042 is a Handheld PC. Since the EUT would be placed on a table top during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 5Vdc, 3.5 Amps. It can be powered from an internal battery or external AC/DC adapter rated for operation from 100-240V, 50/60Hz, 0.5A.

The sample was received on June 18, 2007 and tested on June 18, June 19, June 20, June 22, June 25, July 16 and July 24, 2007. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number	FCC ID
OQO	2060	Handheld PC with Bluetooth, WLAN and WWAN	112718003	SHD-A8YWFS

OTHER EUT DETAILS

Testing performed on the 2060 was considered representative of the 2042 and 2050. The 2060 model is capable of transmitting on both the WLAN and WWAN frequencies concurrently. The 2050 model is electrical identical to the 2060, but the software does not allow for concurrent transmission of the WLAN and WWAN. The model 2042 is identical to the model 2050 except that the Novatel EV-DO (WWAN) module has been removed.

ANTENNA SYSTEM

The EUT antenna is an internal flex.

ENCLOSURE

The EUT enclosure is primarily constructed of Metal and Plastic. It measures approximately 15 cm long by 5 cm Wide by 2 cm high.

MODIFICATIONS

The EUT required the following modifications during testing in order to comply with emissions specifications:

Three 1pF caps were added to the bypass circuit of the power amplifier for the 5GHz transmitter.

SUPPORT EQUIPMENT

The following equipment was used as local support equipment for emissions testing:

Manufacturer	Model	Description	Serial Number	FCC ID
Microsoft	Wheel Mouse Optical USB	Mouse	56180-523-0422391-1	DoC
Samsung	204B	Monitor	BR20HVFL400076K	DoC

No remote support equipment was used during emissions testing.

EUT INTERFACE PORTS

The I/O cabling configuration during emissions testing was as follows:

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Video	Monitor	15pin Dsub	Shielded	2.0
USB	Mouse	USB 4wire	Shielded	2.0
Video	Monitor	15pin Dsub	Shielded	2.0
AC Power	AC Mains	2 wire	unshielded	2.0
DC Power	Docking station	2 wire	-	-

EUT OPERATION

During testing the EUT was configured to continuously transmit on the desired channel, at the selected power level.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on June 18, June 19, June 20, June 22, June 25, July 16 and July 24, 2007 at the Elliott Laboratories Open Area Test Site #2 located at 684 West Maude Avenue, Sunnyvale, California. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission.

ANSI C63.4:2003 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4:2003.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4:2003. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4:2003 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4:2003.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.4:2003 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

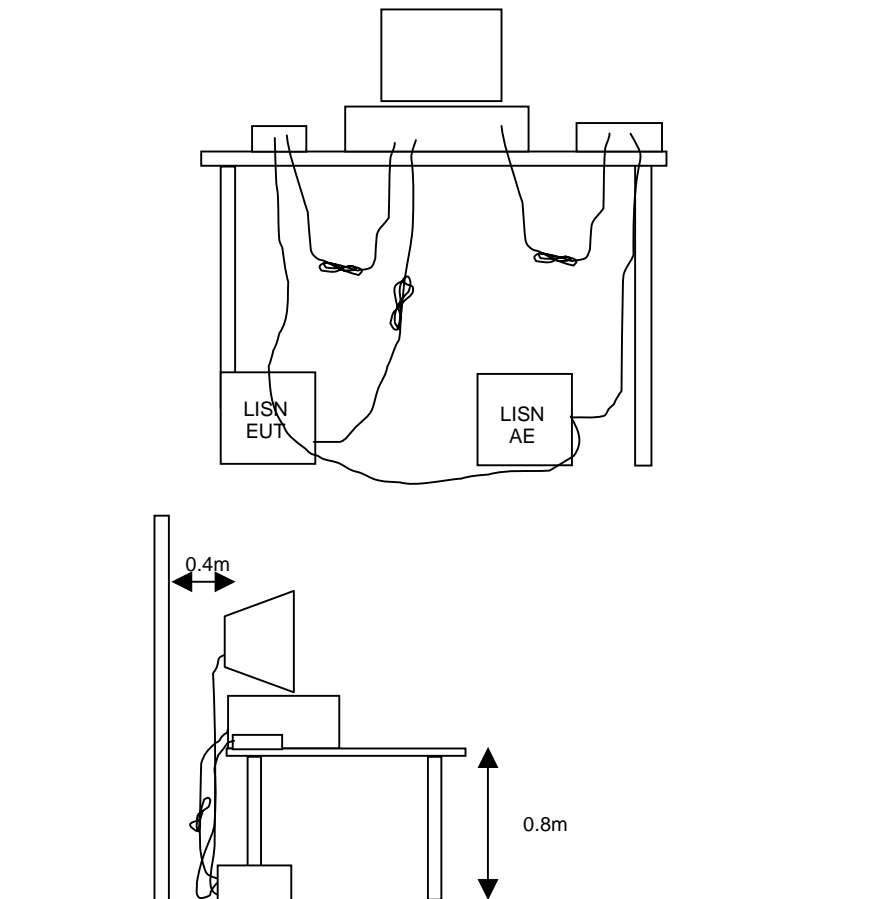
TEST PROCEDURES

EUT AND CABLE PLACEMENT

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4:2003, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.



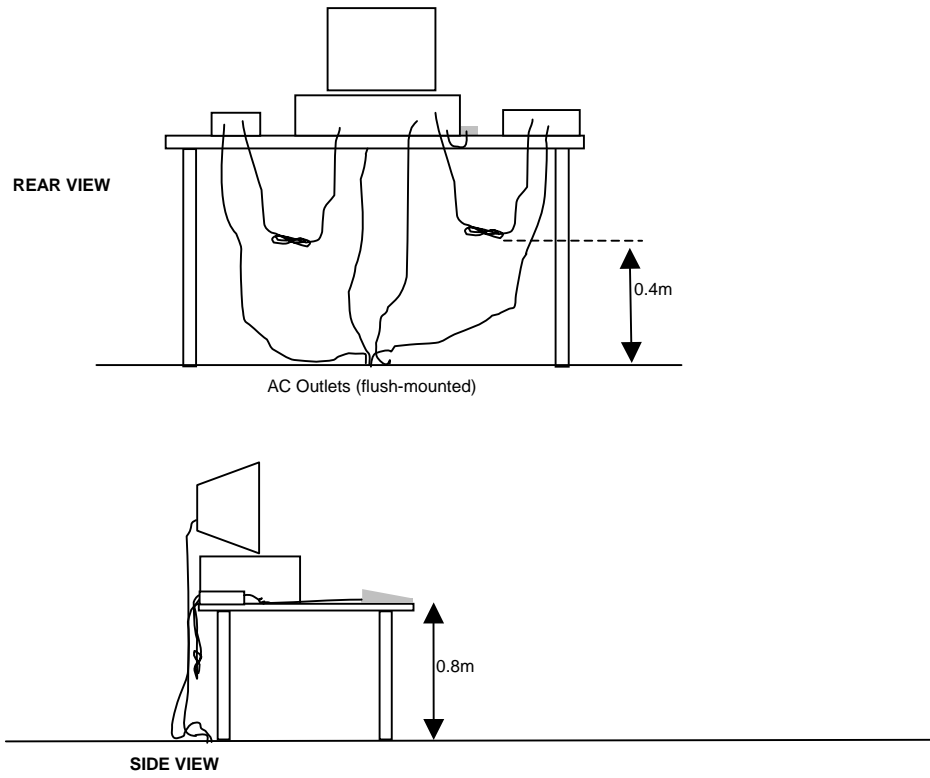
RADIATED EMISSIONS

A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

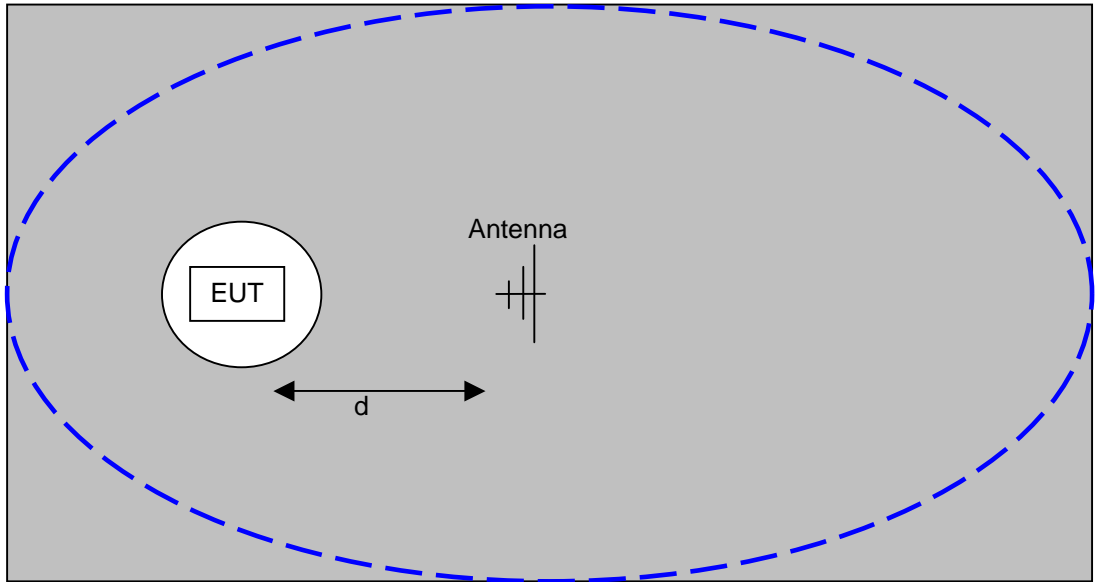
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

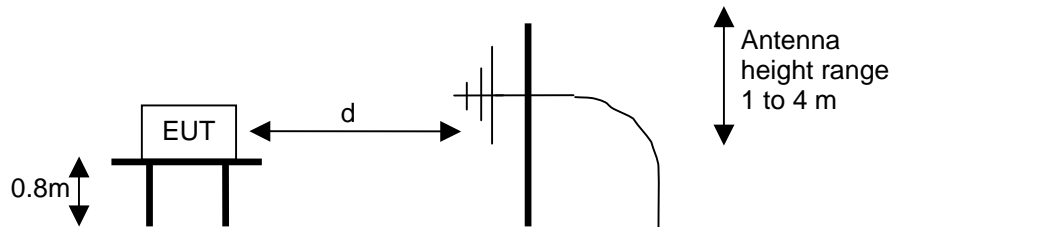
When testing above 18 GHz, the receive antenna is located at 1 meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



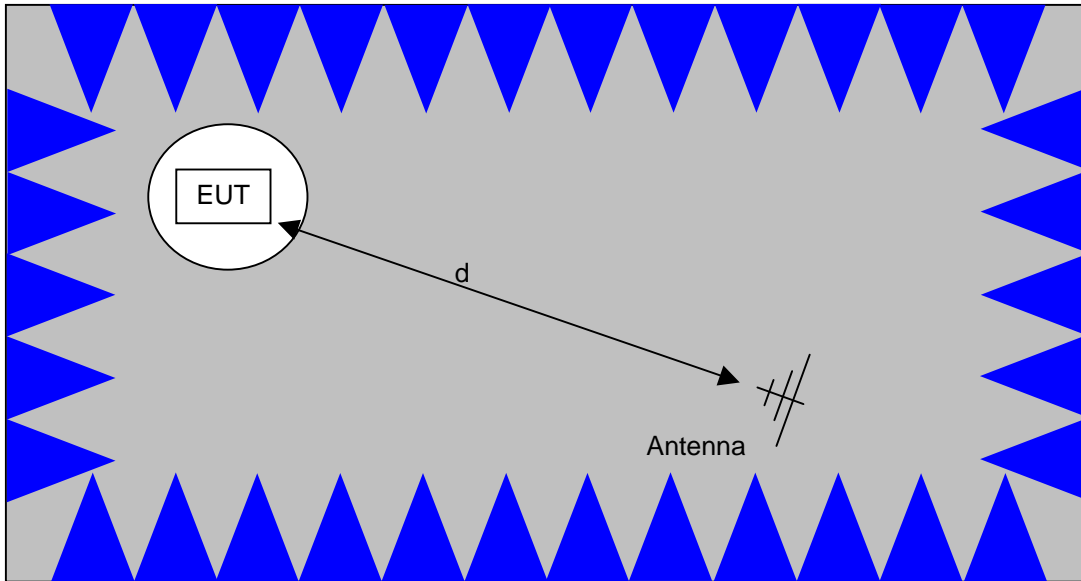
Typical Test Configuration for Radiated Field Strength Measurements



The ground plane extends beyond the ellipse defined in CISPR 16 / CISPR 22 / ANSI C63.4 and is large enough to accommodate test distances (d) of 3m and 10m. Refer to the test data tables for the actual measurement distance.

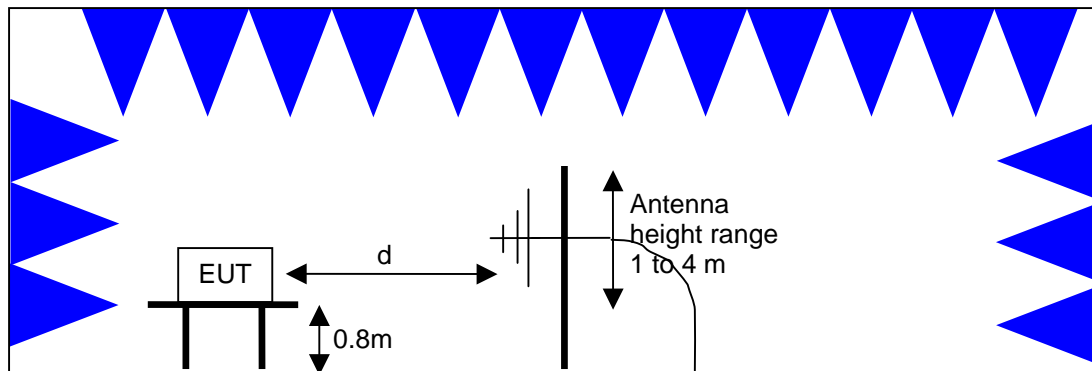


Test Configuration for Radiated Field Strength Measurements
OATS- Plan and Side Views



The anechoic materials on the walls and ceiling ensure compliance with the normalized site attenuation requirements of CISPR 16 / CISPR 22 / ANSI C63.4 for an alternate test site at the measurement distances used.

Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



Test Configuration for Radiated Field Strength Measurements
Semi-Anechoic Chamber, Plan and Side Views

BANDWIDTH MEASUREMENTS

The 6dB, 20dB and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4. When required, the 99% bandwidth is measured using the methods detailed in RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

CONDUCTED EMISSIONS SPECIFICATION LIMITS: FCC 15.207; FCC 15.107(a), RSS GEN

The table below shows the limits for the emissions on the AC power line from an intentional radiator and a receiver.

Frequency (MHz)	Average Limit (dBuV)	Quasi Peak Limit (dBuV)
0.150 to 0.500	Linear decrease on logarithmic frequency axis between 56.0 and 46.0	Linear decrease on logarithmic frequency axis between 66.0 and 56.0
0.500 to 5.000	46.0	56.0
5.000 to 30.000	50.0	60.0

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands¹ (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	$2400/F_{\text{KHz}} @ 300\text{m}$	$67.6-20*\log_{10}(F_{\text{KHz}}) @ 300\text{m}$
0.490-1.705	$24000/F_{\text{KHz}} @ 30\text{m}$	$87.6-20*\log_{10}(F_{\text{KHz}}) @ 30\text{m}$
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100 @ 3m	40 @ 3m
88 to 216	150 @ 3m	43.5 @ 3m
216 to 960	200 @ 3m	46.0 @ 3m
Above 960	500 @ 3m	54.0 @ 3m

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109, RSS 210 Table 2, RSS GEN Table 1 and RSS 310 Table 3. Note that receivers operating outside of the frequency range 30 MHz – 960 MHz are exempt from the requirements of 15.109.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

¹ The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

The table below shows the limits for output power and output power density. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
902 – 928	1 Watt (30 dBm)	8 dBm/3kHz
2400 – 2483.5	1 Watt (30 dBm)	8 dBm/3kHz
5725 – 5850	1 Watt (30 dBm)	8 dBm/3kHz

The maximum permitted output power is reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5850 MHz band are not subject to this restriction.

OUTPUT POWER LIMITS – FHSS SYSTEMS

The table below shows the limits for output power based on the number of channels available for the hopping system.

Operating Frequency (MHz)	Number of Channels	Output Power
902 – 928	≥ 50	1 Watt (30 dBm)
902 – 928	25 to 49	0.25 Watts (24 dBm)
2400 – 2483.5	≥ 75	1 Watt (30 dBm)
2400 – 2483.5	< 75	0.125 Watts (21 dBm)
5725 – 5850	75	1 Watt (30 dBm)

The maximum permitted output power is reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5850 MHz band are not subject to this restriction.

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

The limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands are those specified in the general limits sections of FCC Part 15 and RSS 210. All other unwanted (spurious) emissions shall be at least 20dB below the level of the highest in-band signal level (30dB if the power is measured using the sample detector/power averaging method).

FCC 15.407 (a) OUTPUT POWER LIMITS

The table below shows the limits for output power and output power density. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 - 5250	50mW (17 dBm)	4 dBm/MHz
5250 - 5350	250 mW (24 dBm)	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm)	17 dBm/MHz

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

OUTPUT POWER AND SPURIOUS LIMITS –UNII DEVICES

The table below shows the limits for output power and output power density defined by FCC Part 15 Subpart E. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 - 5250	50mW (17 dBm)	10 dBm/MHz
5250 - 5350	250 mW (24 dBm)	11 dBm/MHz
5470 - 5725	250 mW (24 dBm)	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm)	17 dBm/MHz

The peak excursion envelope is limited to 13dB.

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

$$F_d = 20 * \text{LOG}_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40 * \text{LOG}_{10} (D_m/D_s)$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

$$R_r = \text{Receiver Reading in dBuV/m}$$

$$F_d = \text{Distance Factor in dB}$$

$$R_c = \text{Corrected Reading in dBuV/m}$$

$$L_s = \text{Specification Limit in dBuV/m}$$

$$M = \text{Margin in dB Relative to Spec}$$

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of 3m from the equipment under test:

$$E = \frac{1000000 \sqrt{30 P}}{3} \quad \text{microvolts per meter}$$

where P is the eirp (Watts)

EXHIBIT 1: Test Equipment Calibration Data

2 Pages

Radiated Emissions, 30 - 26,500 MHz, 21-Jun-07**Engineer: Rafael Varelas**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1156	05-Jul-07
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FMT (SA40) Blue	8564E (84125C)	1393	09-Jan-08
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	15-Nov-07
Hewlett Packard	High Pass filter, 3.5 GHz (Purple System)	P/N 84300-80038 (84125C)	1768	08-Nov-07

Conducted Emissions - AC Power Ports, 22-Jun-07**Engineer: wfisher**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
Elliott Laboratories	LISN, FCC / CISPR	LISN-3, OATS	304	30-Jun-07
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	372	28-Aug-07
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz - 22 GHz	8593EM	1319	18-May-08
Rohde & Schwarz	Test Receiver, 0.009-2750 MHz	ESN	1332	21-Nov-07

Transmitter Testing, June 19 thru July 16, 2007**Engineer: Mehran Birgani, Juan Martinez and Rafael Varelas**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-May-08
EMCO	Antenna, Horn, 18-26.5 GHz (SA40-Purple)	3160-09 (84125C)	1773	10-Nov-07
EMCO	Antenna, Horn, 26.5-40 GHz (SA40-Purple)	3160-10 (84125C)	1774	10-Nov-07
Hewlett Packard	EMC Spectrum Analyzer, 9 kHz - 6.5 GHz	8595EM	780	05-Sep-07
Hewlett Packard	High Pass filter, 8.2 GHz (Purple System)	P/N 84300-80039 (84125C)	1767	08-Nov-07
Hewlett Packard	Test Sys (SA40, 9kHz - 40GHz) Purple	84125C	1770	11-Aug-07
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	15-Nov-07
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	15-Nov-07

Radiated Emissions, 30 - 26,500 MHz, 21-Jun-07**Engineer: Rafael Varelas**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	07-Jun-08
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1156	05-Jul-07
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Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	15-Nov-07
Hewlett Packard	High Pass filter, 3.5 GHz (Purple System)	P/N 84300-80038 (84125C)	1768	08-Nov-07

Conducted Emissions - AC Power Ports, 22-Jun-07**Engineer: wfisher**

<u>Manufacturer</u>	<u>Description</u>	<u>Model #</u>	<u>Asset #</u>	<u>Cal Due</u>
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Transmitter Testing, June 19 thru July 16, 2007**Engineer: Mehran Birgani, Juan Martinez and Rafael Varelas**

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EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-May-08
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EMCO	Antenna, Horn, 26.5-40 GHz (SA40-Purple)	3160-10 (84125C)	1774	10-Nov-07
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Hewlett Packard	Test Sys (SA40, 9kHz - 40GHz) Purple	84125C	1770	11-Aug-07
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	15-Nov-07
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	15-Nov-07

EXHIBIT 2: Test Measurement Data

T68341_New 89 Pages
T69707 FCC-BT 39 Pages



EMC Test Data

Client:	OQO	Job Number:	J68325
Model:	2050 and 2060	Test-Log Number:	T68341
		Project Manager:	Susan Pelzl
Contact:	Bob Hymes		
Emissions Spec:	EN55022 / FCC	Class:	B
Immunity Spec:	-	Environment:	-

EMC Test Data

For The

OQO

Model

2050 and 2060

Date of Last Test: 7/31/2007



EMC Test Data

Client:	OOO	Job Number:	J68325
Model:	2050 and 2060	Test-Log Number:	T68341
		Project Manager:	Susan Pelzl
Contact:	Bob Hymes		
Emissions Spec:	EN55022 / FCC	Class:	B
Immunity Spec:	-	Environment:	-

EUT INFORMATION

*The following information was collected during the test sessions(s).
The client agreed provide the following information after the test session(s).*

General Description

The EUT is a Handheld PC. Since the EUT would be placed on a table top during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is -5Vdc, 3.5 Amps.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
OOO	Model 02	Handheld PC	19 (potassium)	

Other EUT Details

The following EUT details should be noted: The 2060 model is capable of transmitting on both the WLAN and WWAN frequencies concurrently. The 2050 model cannot. The model 2042 is identical to the model 2050 except it does not have the Novatel EV-DO module

EUT Antenna (Intentional Radiators Only)

The EUT antenna is an internal flex.
The antenna is integral to the device.

EUT Enclosure

The EUT enclosure is primarily constructed of metal and plastic. It measures approximately 15 cm long by 5 cm Wide by 2 cm high.

Modification History

Mod. #	Test	Date	Modification
1	TX Spurious Emissions	19-Jun	Three 1pF caps were added to the bypass circuit of the power amplifier for the 5GHz transmitter.
2			
3			

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.



EMC Test Data

Client:	OOO	Job Number:	J68325
Model:	2050 and 2060	T-Log Number:	T68341
Contact:	Bob Hymes	Project Manager:	Susan Pelzl
Emissions Spec:	EN55022 / FCC	Class:	B
Immunity Spec:	-	Environment:	-

Test Configuration #1

The following information was collected during the test sessions(s).

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Microsoft	Wheel Mouse Optical USB	Mouse	56180-523-0422391-1	DoC
Samsung	204B	Monitor	BR20HVFL400076K	DoC

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
-	-	-	-	-

Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Video	Monitor	15pin Dsub	Shielded	2.0
USB	Mouse	USB 4wire	Shielded	2.0
Video	Monitor	15pin Dsub	Shielded	2.0
AC Power	AC Mains	2 wire	unshielded	2.0
DC Power	Docking station	2 wire	-	-

EUT Operation During Emissions Tests

During testing the EUT was configured to continuously transmit on the desired channel, at the selected power level.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

**RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements
Power, Bandwidth and Spurious Emissions (802.11b mode)**

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 6/18/2007	Config. Used: 1
Test Engineer: Rafael Varelas	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 14.3 °C
 Rel. Humidity: 75 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	20.2 dBm
2	Power spectral Density (PSD)	15.247(d)	Pass	-3.6 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	12.6 MHz
3	99% Bandwidth	RSS GEN	-	16.0 MHz
4	Spurious emissions	15.247(b)	Pass	>20dB below the limit

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

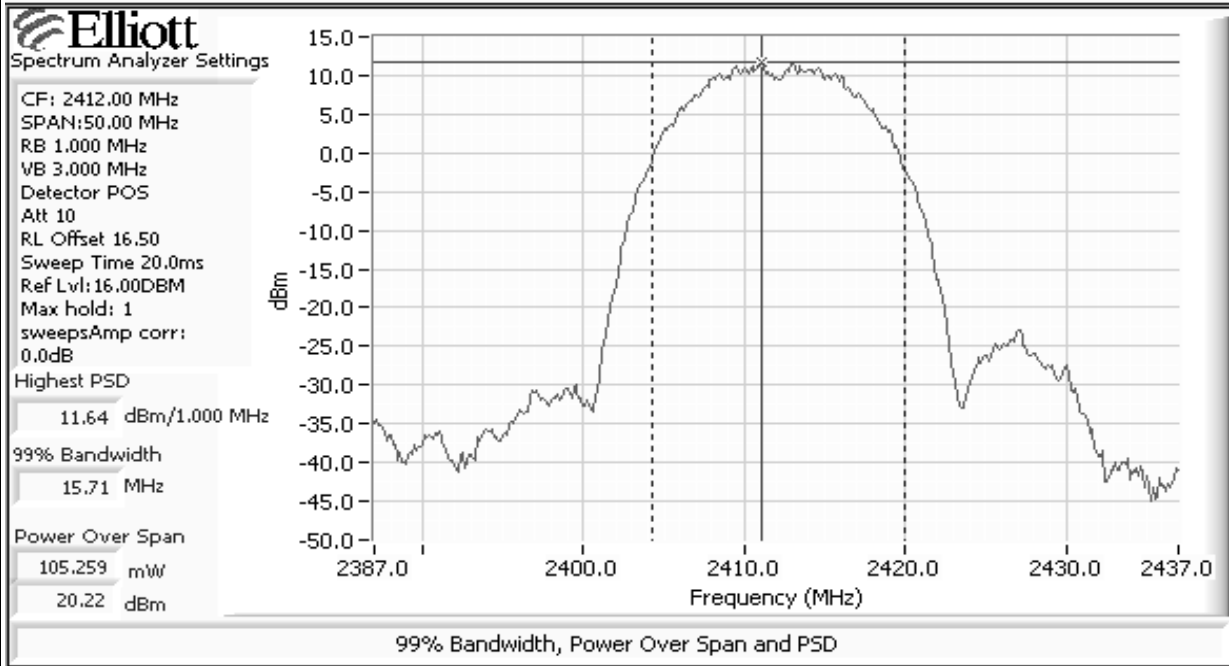
No deviations were made from the requirements of the standard.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

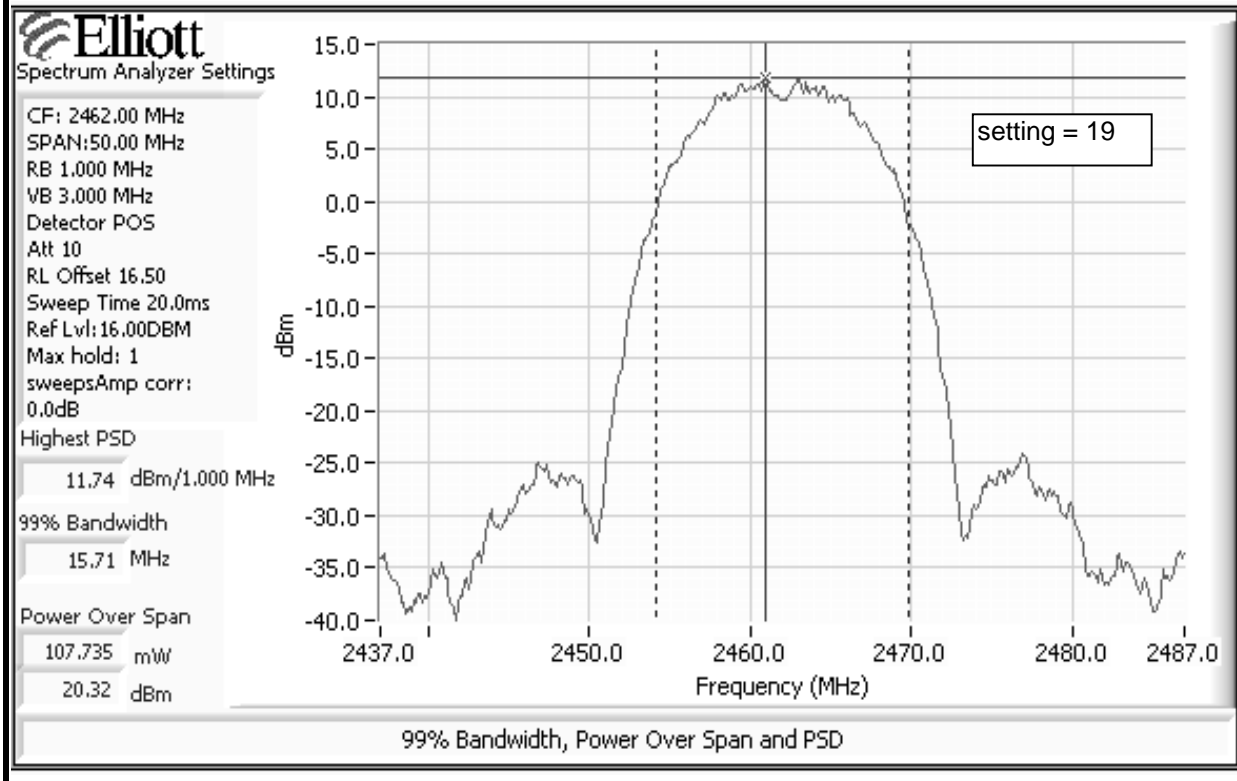
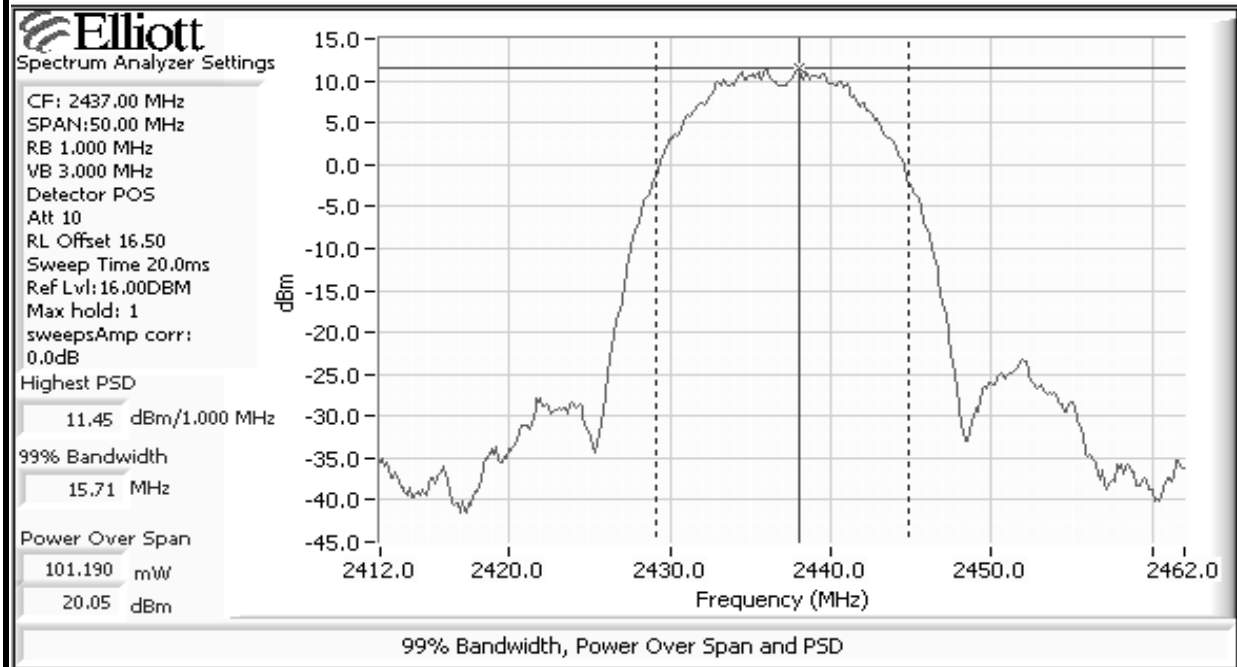
Run #1: Output Power

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Output Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
19	2412	20.2	104.7	0.0	Pass	20.2	0.105	19.3	85.1
19	2437	20.1	102.3	0.0	Pass	20.1	0.102	19.8	95.5
19	2462	20.3	107.2	0.0	Pass	20.3	0.107	19.9	97.7
17.5	2462	18.8	75.9	0.0	Pass	18.8	0.076	18.1	64.6

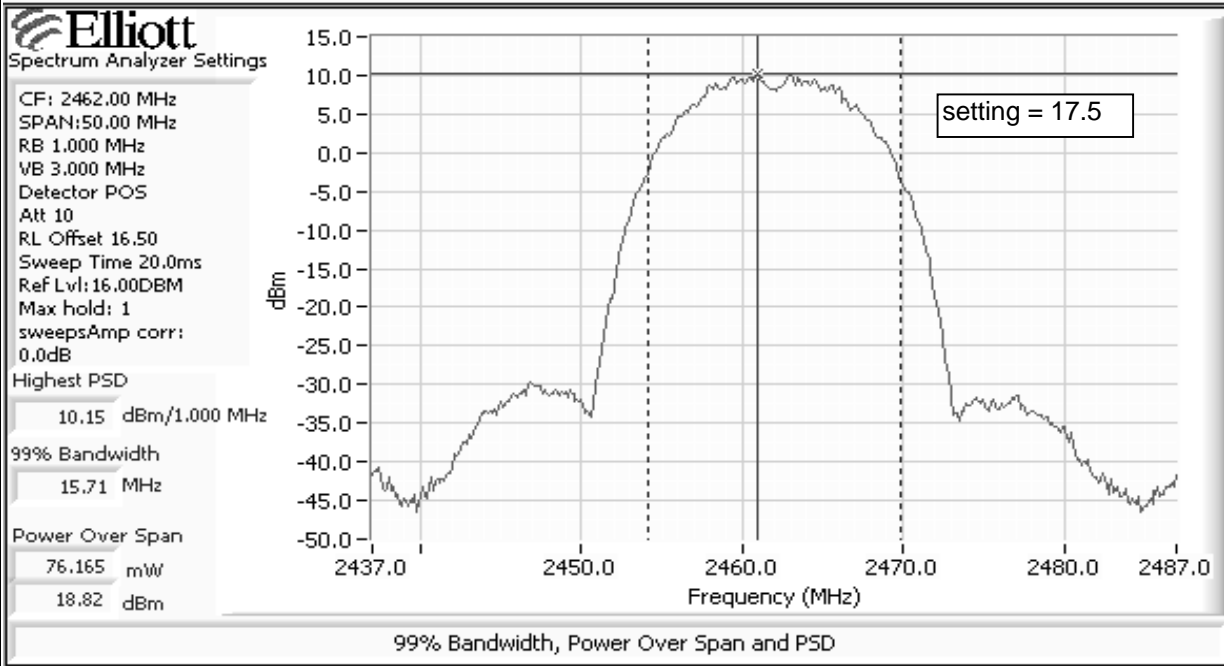
Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, peak detector, power averaging off, max hold and power integration over 50 MHz The output power limit is 30dBm
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Measured using an average power meter for comparison to SAR power testing.



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

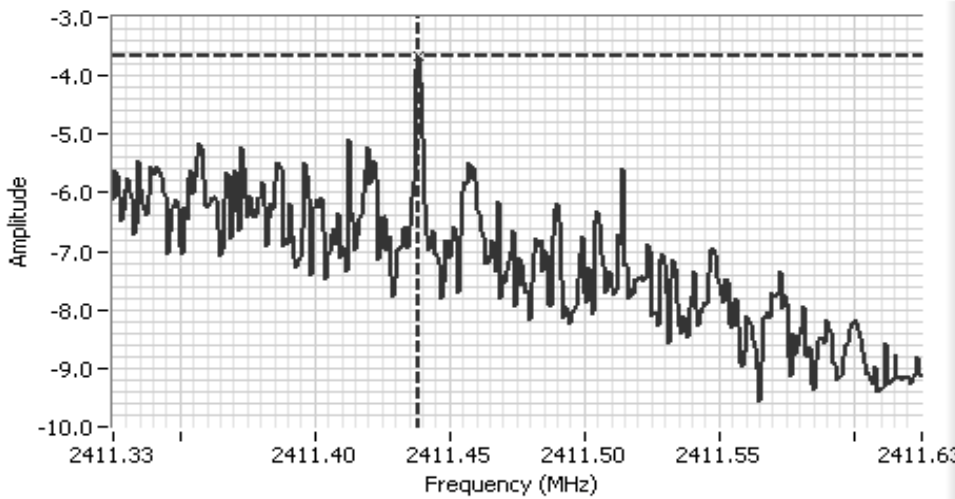


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit	Result
		(dBm/3kHz) ^{Note 1}		
19	2412	-3.6	8.0	Pass
19	2437	-3.6	8.0	Pass
19	2462	-3.6	8.0	Pass

Note 1: Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.



Analyzer Settings

HP8595EM

CF: 2411.48 MHz
 SPAN: 300 kHz
 RB 3 kHz
 VB 10 kHz
 Detector POS
 Att 10
 RL Offset 16.50
 Sweep Time 100.0s
 Ref Lvl: 16.00DBM

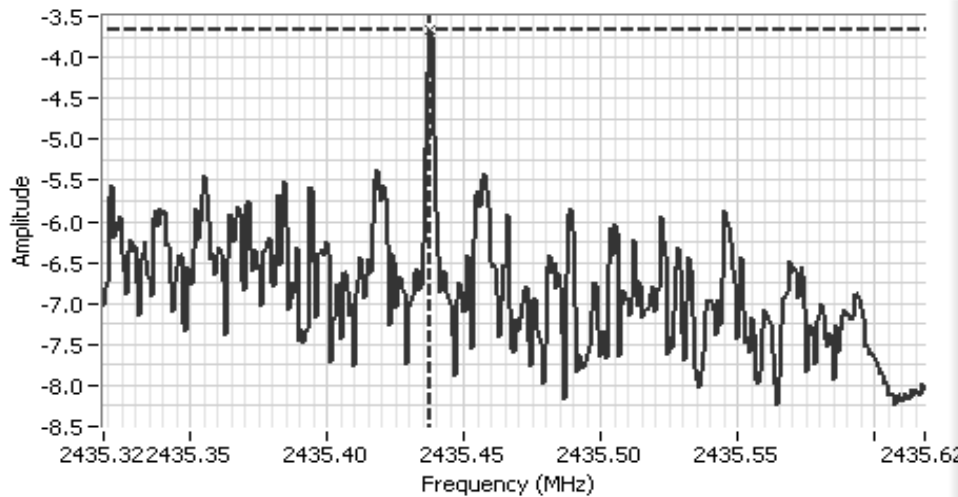
Comments

PSD = -3.6dBm
 2412 MHz
 Setting = 19

Cursor 1 2411.43 -3.67 ⊕ ⊖ 🔒

 0.000 0.00 ⊕ ⊖ 🔒

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

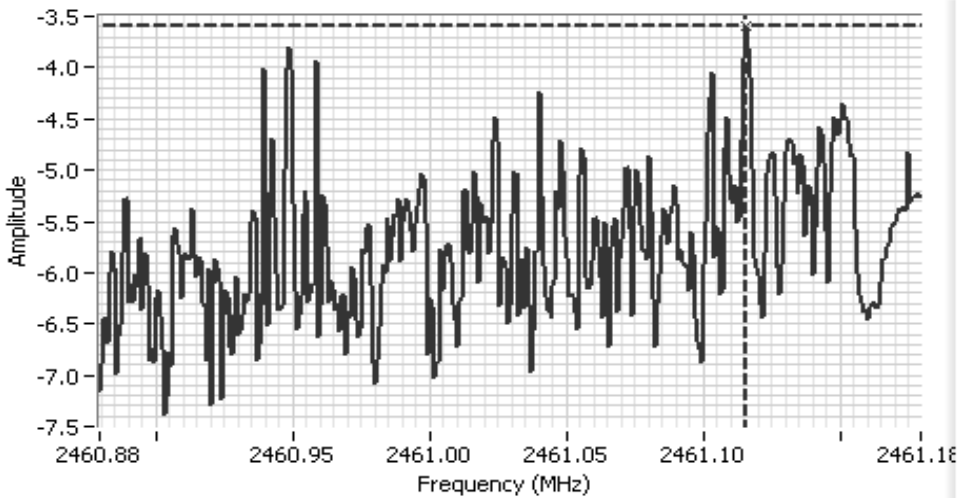
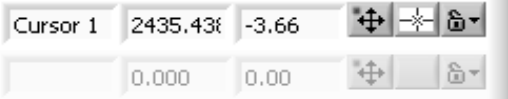


Analyzer Settings

HP8595EM
 CF: 2435.47 MHz
 SPAN:300 kHz
 RB 3 kHz
 VB 10 kHz
 Detector POS
 Att 10
 RL Offset 16.50
 Sweep Time 100.0s
 Ref Lvl:16.00DBM

Comments

PSD = -3.6dBm
 2437 MHz
 Setting = 19

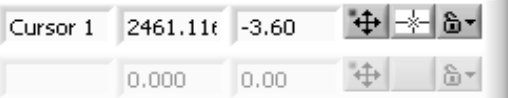


Analyzer Settings

HP8595EM
 CF: 2461.03 MHz
 SPAN:300 kHz
 RB 3 kHz
 VB 10 kHz
 Detector POS
 Att 10
 RL Offset 16.50
 Sweep Time 100.0s
 Ref Lvl:16.00DBM

Comments

PSD = -3.6dBm
 2462 MHz
 Setting = 19

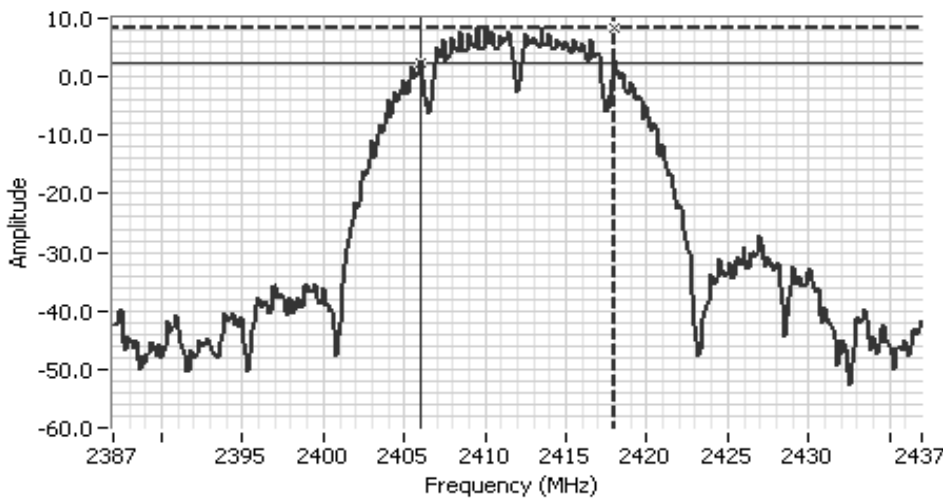


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
19	2412	100k	12	15.8
19	2437	100k	12.1	15.8
19	2462	100k	12.6	16.0

Note 1: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB



Analyzer Settings
 HP8595EM
 CF: 2412.00 MHz
 SPAN:50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector POS
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl:16.00DBM

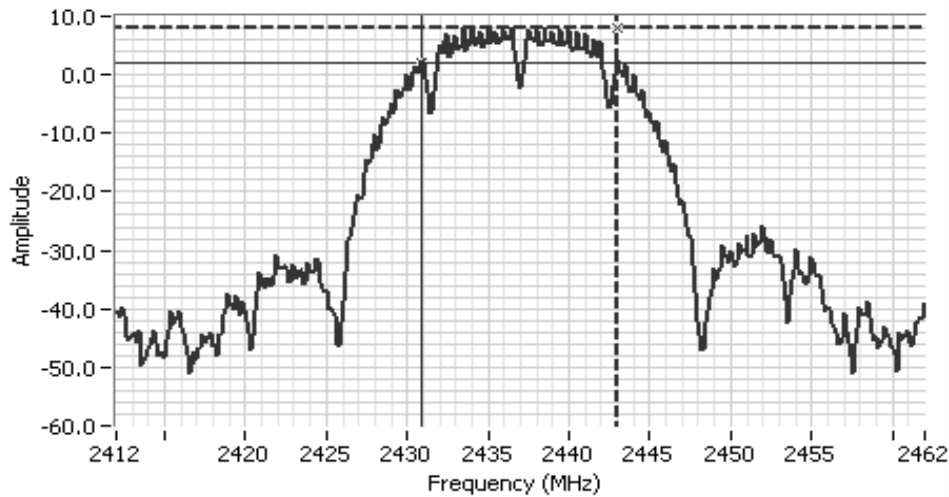
Comments
 6dB BW, 2412 MHz

Cursor 1	2418.00	8.41	+	*	⏏
Cursor 2	2406.00	2.41	+	*	⏏

Delta Freq. 12.00
 Delta Amplitude 6.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

HP8595EM
 CF: 2437.00 MHz
 SPAN: 50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector POS
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl: 16.00DBM

Comments

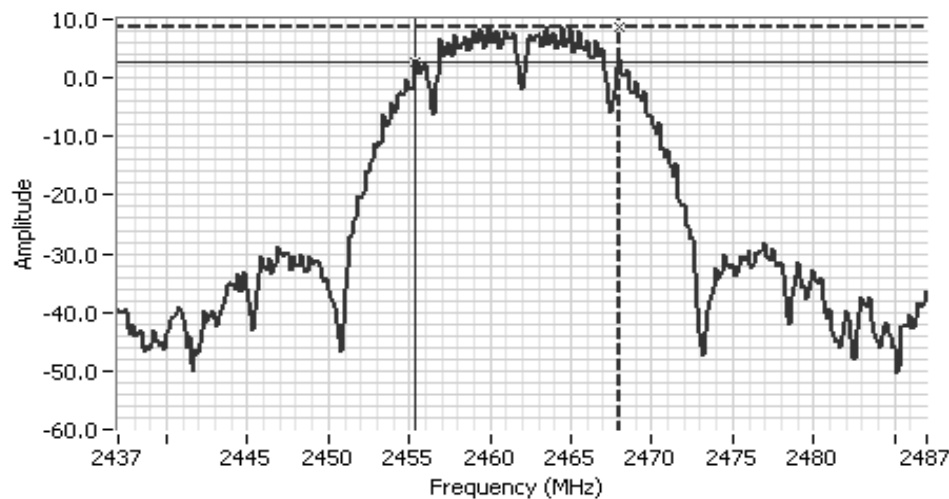
6dB BW, 2437 MHz

Cursor 1 2443.000 8.08

Cursor 2 2430.875 2.08

Delta Freq. 12.12

Delta Amplitude 6.00



Analyzer Settings

HP8595EM
 CF: 2462.00 MHz
 SPAN: 50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector POS
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl: 16.00DBM

Comments

6dB BW, 2462 MHz

Cursor 1 2468.000 8.75

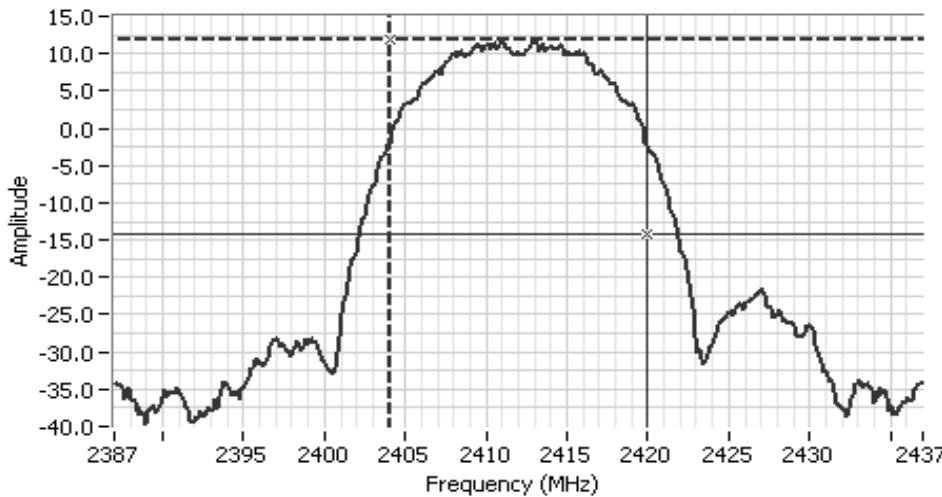
Cursor 2 2455.375 2.75

Delta Freq. 12.62

Delta Amplitude 6.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

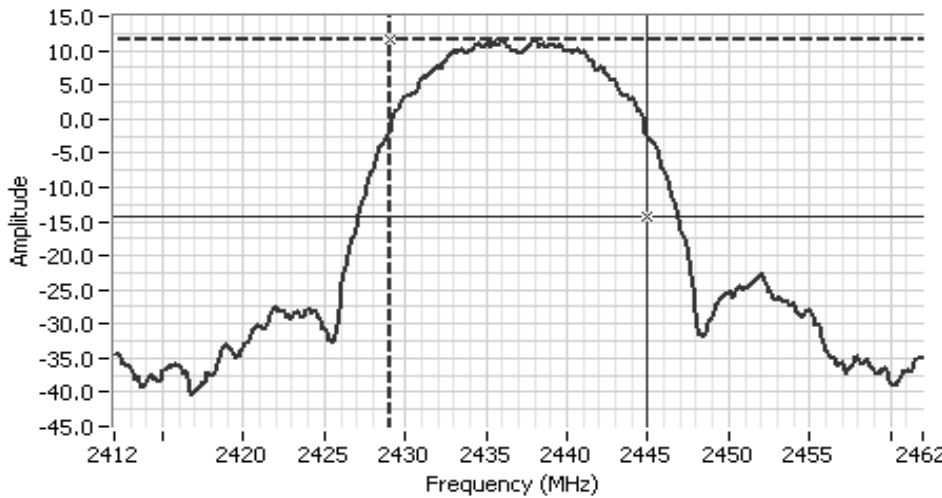


Analyzer Settings
 HP8595EM
 CF: 2412.00 MHz
 SPAN: 50.00 MHz
 RB 1.000 MHz
 VB 3.000 MHz
 Detector POS
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl: 16.00DBM

Comments
 99% power bandwidth
 15.84 MHz
 Power over span:
 20.38dBm (ref only)

Cursor 1 2404.08 11.83
 Cursor 2 2419.91 -14.17

Delta Freq. 15.84
 Delta Amplitude 26.00



Analyzer Settings
 HP8595EM
 CF: 2437.00 MHz
 SPAN: 50.00 MHz
 RB 1.000 MHz
 VB 3.000 MHz
 Detector POS
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl: 16.00DBM

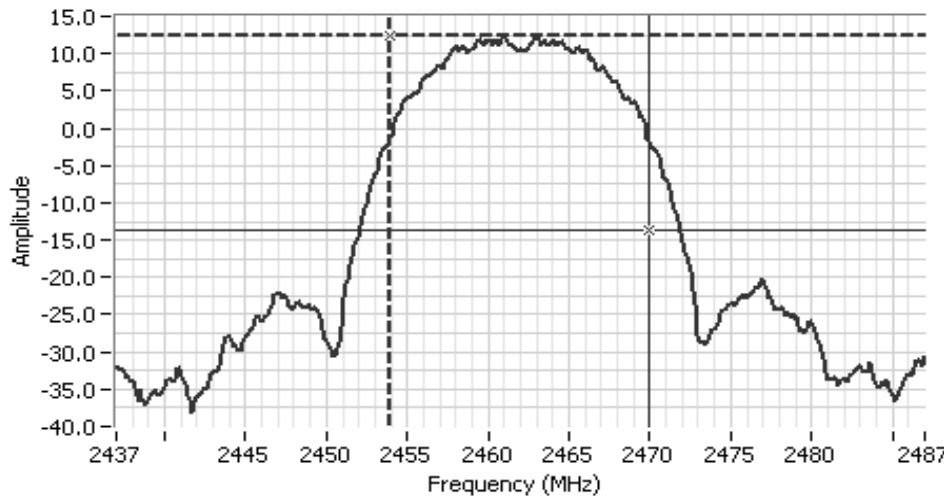
Comments
 99% power bandwidth
 15.84 MHz
 Power over span:
 20.32dBm (ref only)

Cursor 1 2429.08 11.61
 Cursor 2 2444.91 -14.39

Delta Freq. 15.84
 Delta Amplitude 26.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings
 HP8595EM
 CF: 2462.00 MHz
 SPAN: 50.00 MHz
 RB 1.000 MHz
 VB 3.000 MHz
 Detector POS
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl: 16.00DBM

Comments
 99% power bandwidth
 15.96 MHz
 Power over span:
 21.00dBm (ref only)

Cursor 1 2453.958 12.41

Cursor 2 2469.918 -13.59

Delta Freq. 15.96

Delta Amplitude 26.00

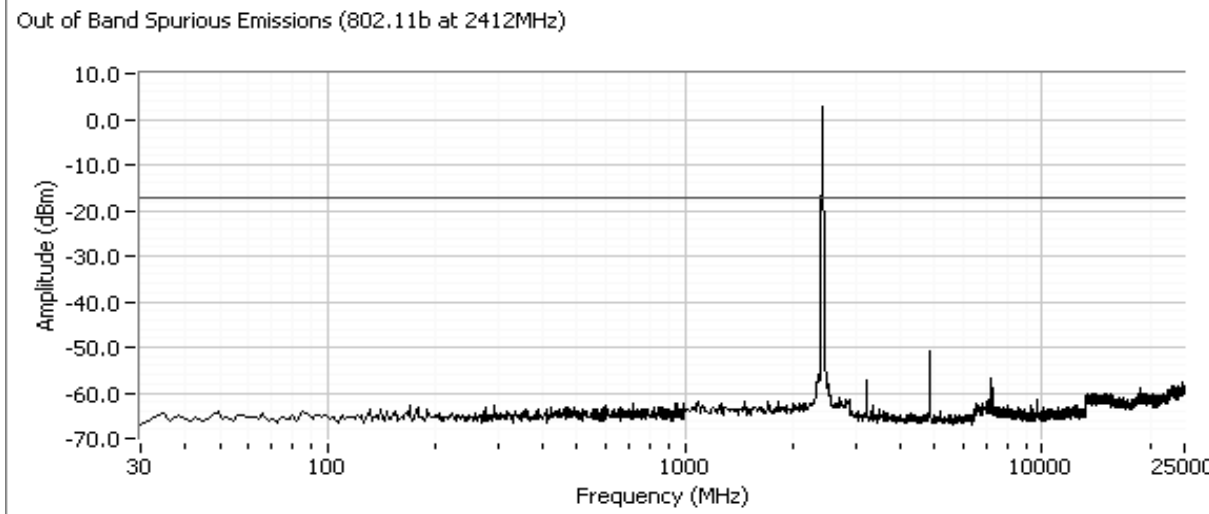


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

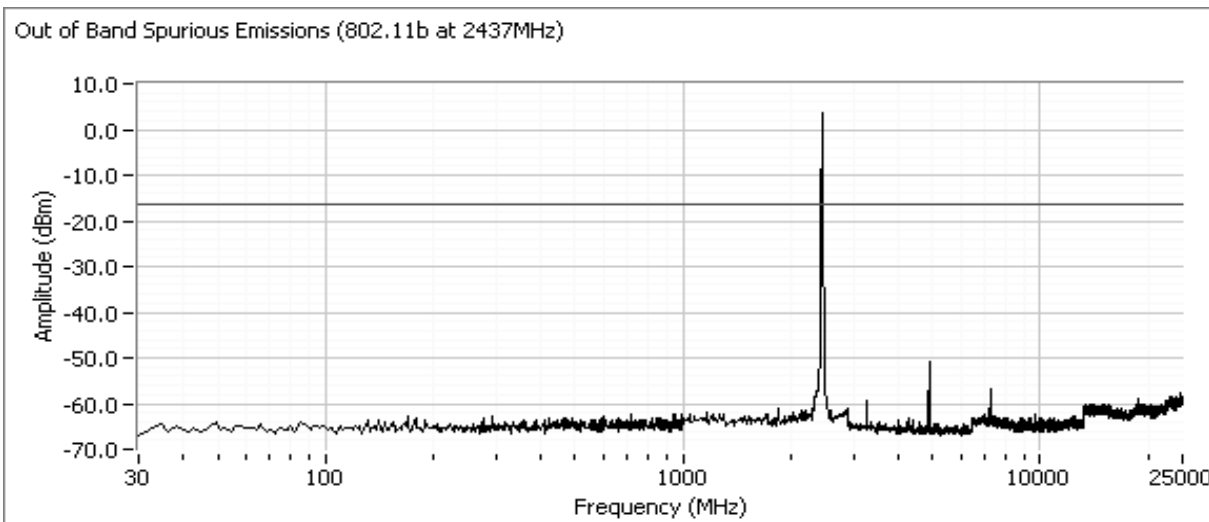
Run #4: Out of Band Spurious Emissions

Frequency (MHz)	Limit	Result
2412	-20dBc	Pass
2437	-20dBc	Pass
2462	-20dBc	Pass

Plots for low channel, power setting(s) = 19



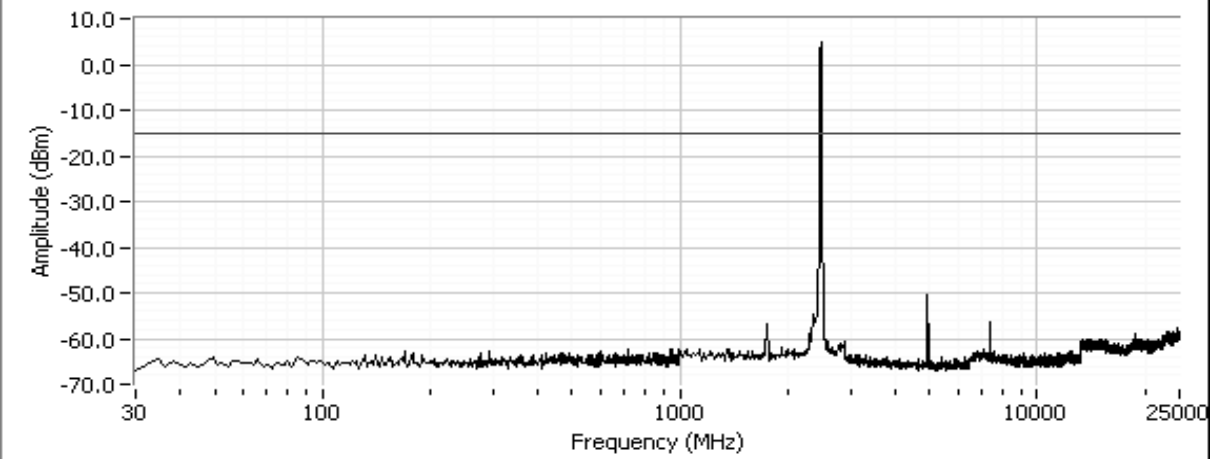
Plots for center channel, power setting(s) = 19



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Plots for high channel, power setting(s) = 19

Out of Band Spurious Emissions (802.11b at 2462MHz)



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

**RSS 210 and FCC 15.247 Radiated Spurious Emissions
(802.11b mode)**

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 6/19/2007 0:07	Config. Used: 1
Test Engineer: Rafael Varelas	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators used.

Unless stated otherwise the EUT was operating such that it constantly hopped on either the low, center or high channels.

Ambient Conditions: Temperature: 13 °C
 Rel. Humidity: 77 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1a - c	30 - 18000 MHz - Radiated Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	52.9dBµV/m @ 2487.8MHz (-1.1dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

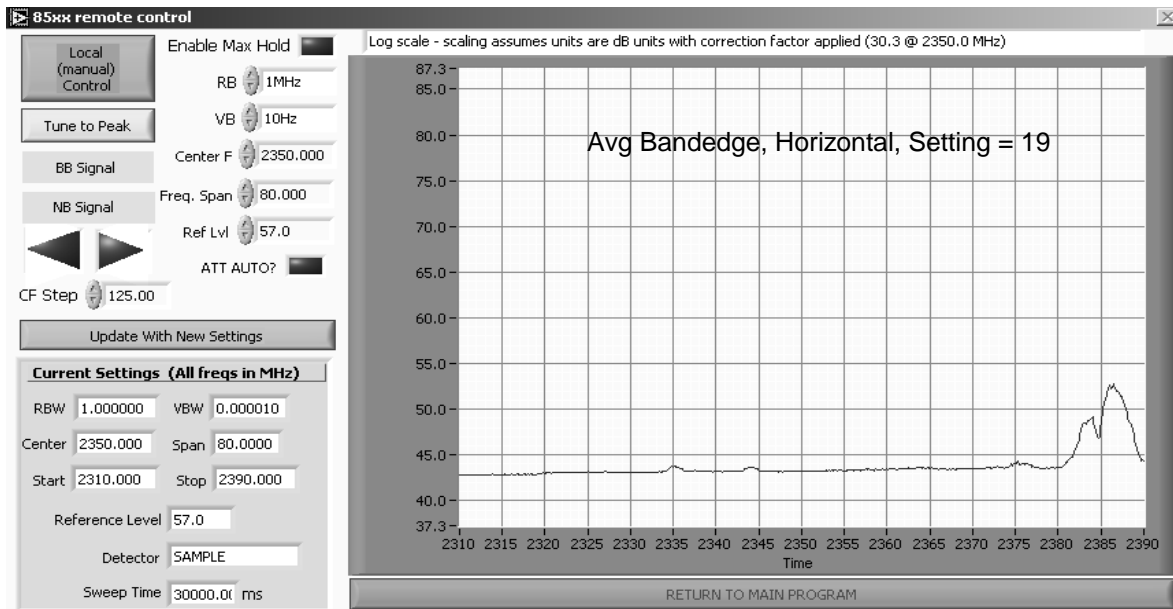
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1a: Radiated Spurious Emissions, 30 - 18000 MHz. Low Channel @ 2412 MHz
Setting = 19
EUT on its Side

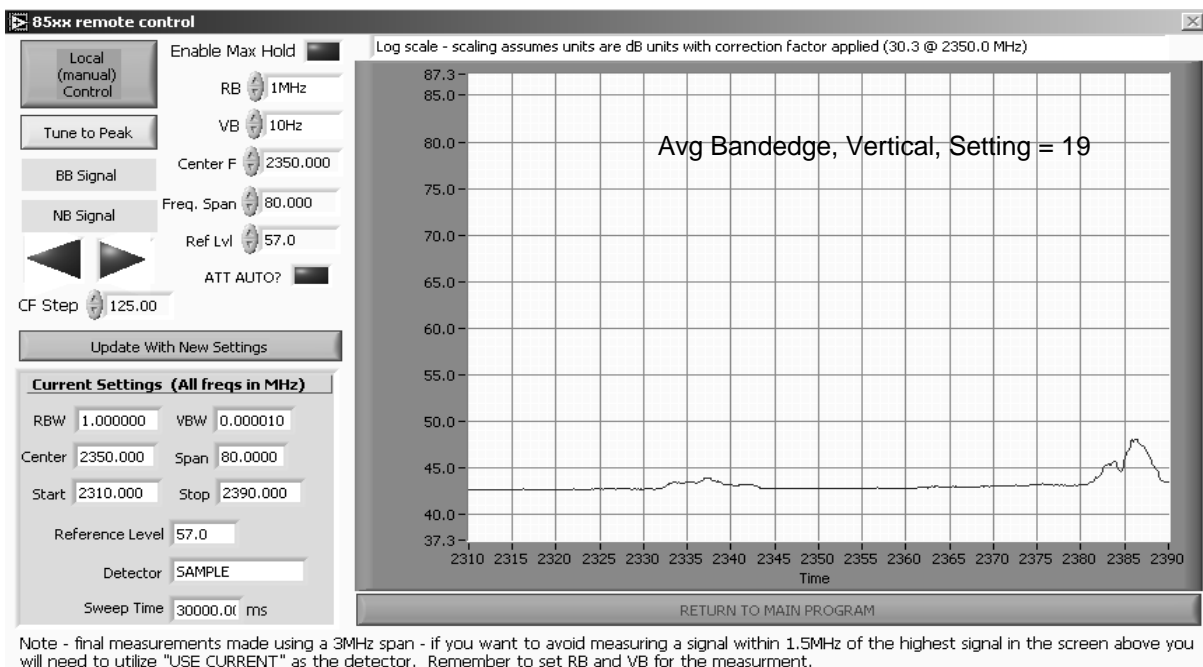
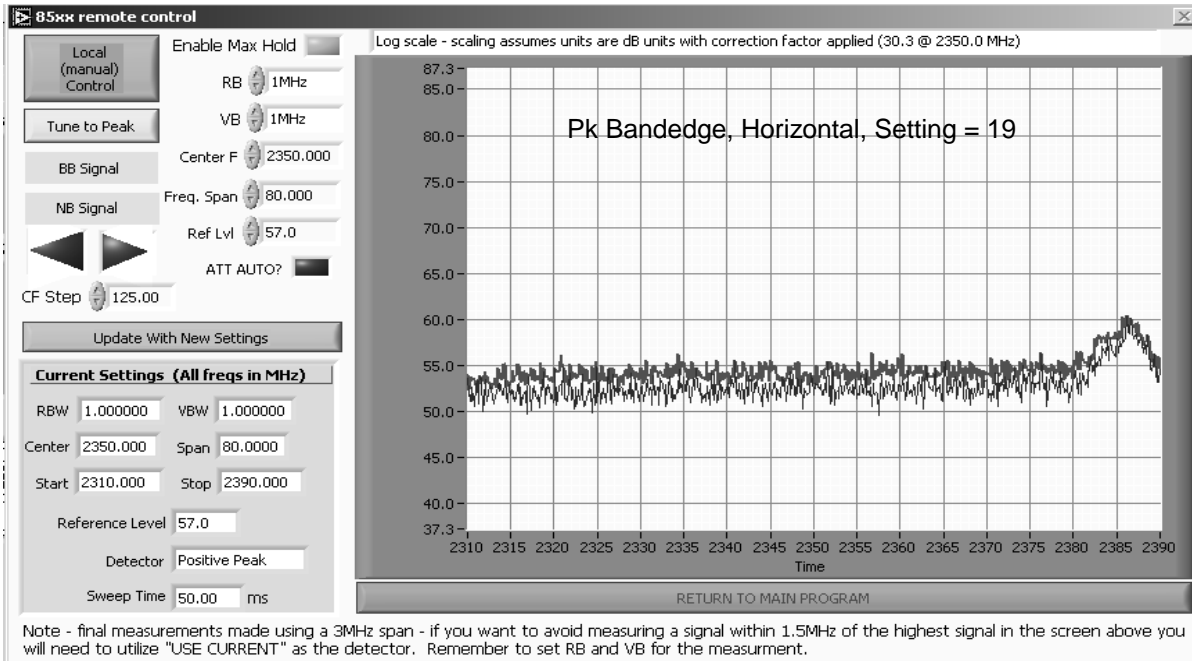
	H	V
Fundamental emission level @ 3m in 100kHz RBW:	102.4	97.6
Limit for emissions outside of restricted bands:	82.4 dB μ V/m	



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

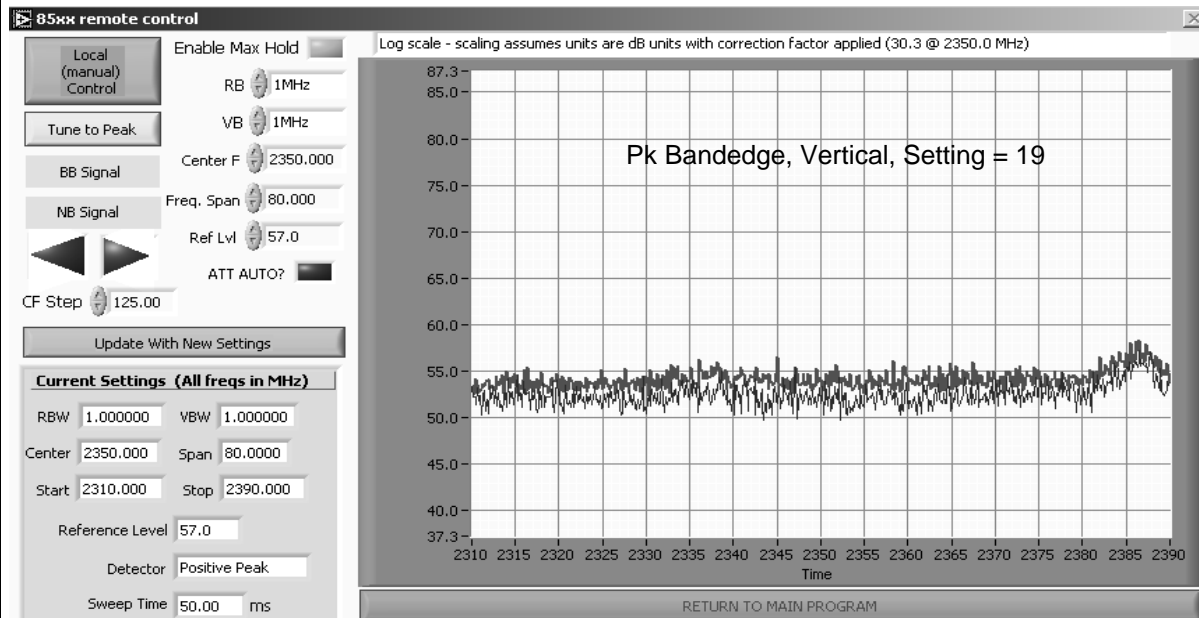
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Run #1a: Continued



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1a: Continued



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2386.210	52.8	H	54.0	-1.2	AVG	101	1.3	
2386.330	60.6	H	74.0	-13.4	PK	101	1.3	
2386.120	50.4	V	54.0	-3.6	AVG	10	1.4	
2386.120	58.7	V	74.0	-15.3	PK	10	1.4	



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1a: Continued

Other Spurious Emissions

Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4823.96	45.0	H	54.0	-9.0	AVG	57	1.4	
12059.02	42.7	H	54.0	-11.3	AVG	149	1.1	
4824.10	42.2	V	54.0	-11.8	AVG	325	1.0	
12061.21	42.1	V	54.0	-11.9	AVG	195	1.0	
9648.02	59.4	V	82.4	-23.0	PK	189	1.0	Non-restricted
9648.04	58.6	H	82.4	-23.8	PK	154	1.0	Non-restricted
7236.72	37.1	H	54.0	-16.9	AVG	232	1.0	
7236.43	35.5	V	54.0	-18.5	AVG	146	2.0	
12059.02	53.1	H	74.0	-20.9	PK	149	1.1	
12061.21	52.4	V	74.0	-21.6	PK	195	1.0	
4823.96	49.1	H	74.0	-24.9	PK	57	1.4	
7236.72	47.1	H	74.0	-26.9	PK	232	1.0	
4824.10	47.1	V	74.0	-26.9	PK	325	1.0	
7236.43	46.3	V	74.0	-27.7	PK	146	2.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1b: Radiated Spurious Emissions, 30 - 18000 MHz. Center Channel @ 2437 MHz
Setting = 19
EUT on its Side

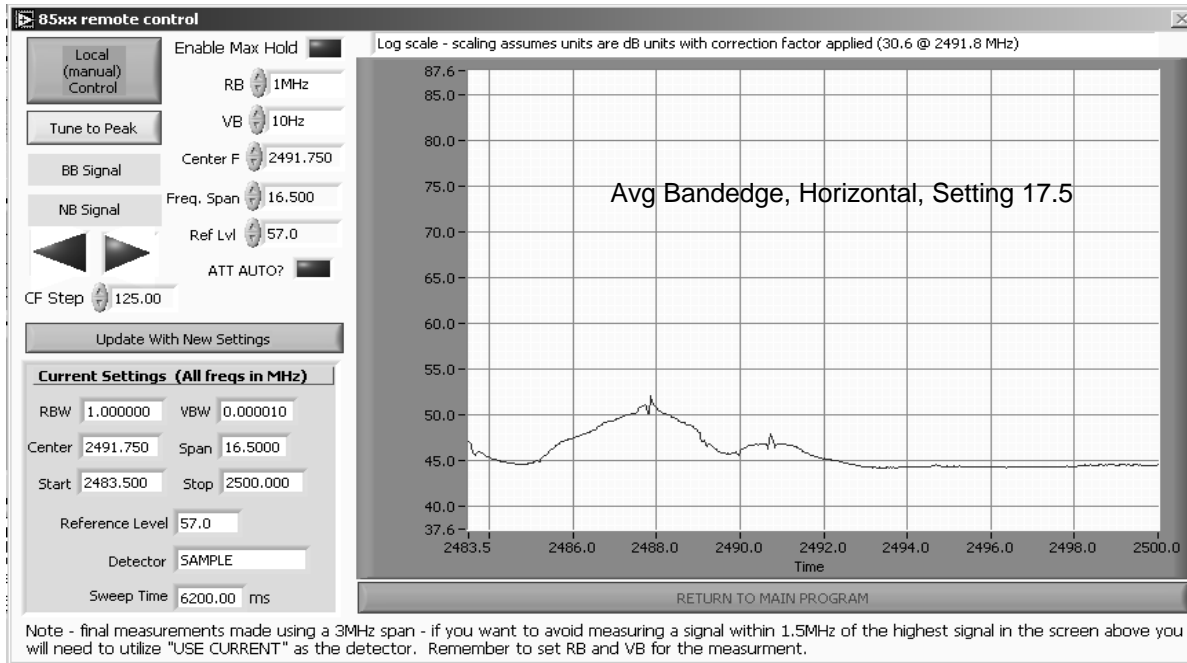
Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
9748.05	46.3	V	54.0	-7.7	AVG	228	1.3	
4873.93	45.5	V	54.0	-8.5	AVG	90	1.1	
4874.02	44.4	H	54.0	-9.6	AVG	63	1.0	
9747.96	40.8	H	54.0	-13.2	AVG	237	1.3	
14622.61	37.7	H	54.0	-16.3	AVG	154	1.0	
14623.32	37.6	V	54.0	-16.4	AVG	0	1.0	
12184.41	36.2	H	54.0	-17.8	AVG	154	1.0	
7312.42	36.0	H	54.0	-18.0	AVG	231	1.0	
7309.73	35.7	V	54.0	-18.3	AVG	170	1.0	
12184.07	34.0	V	54.0	-20.0	AVG	215	1.0	
9748.05	50.3	V	74.0	-23.7	PK	228	1.3	
14623.32	49.3	V	74.0	-24.7	PK	0	1.0	
4873.93	48.8	V	74.0	-25.2	PK	90	1.1	
14622.61	48.6	H	74.0	-25.4	PK	154	1.0	
4874.02	48.5	H	74.0	-25.5	PK	63	1.0	
7309.73	47.5	V	74.0	-26.5	PK	170	1.0	
7312.42	46.3	H	74.0	-27.7	PK	231	1.0	
9747.96	46.3	H	74.0	-27.7	PK	237	1.3	
12184.41	46.3	H	74.0	-27.7	PK	154	1.0	
12184.07	44.8	V	74.0	-29.2	PK	215	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

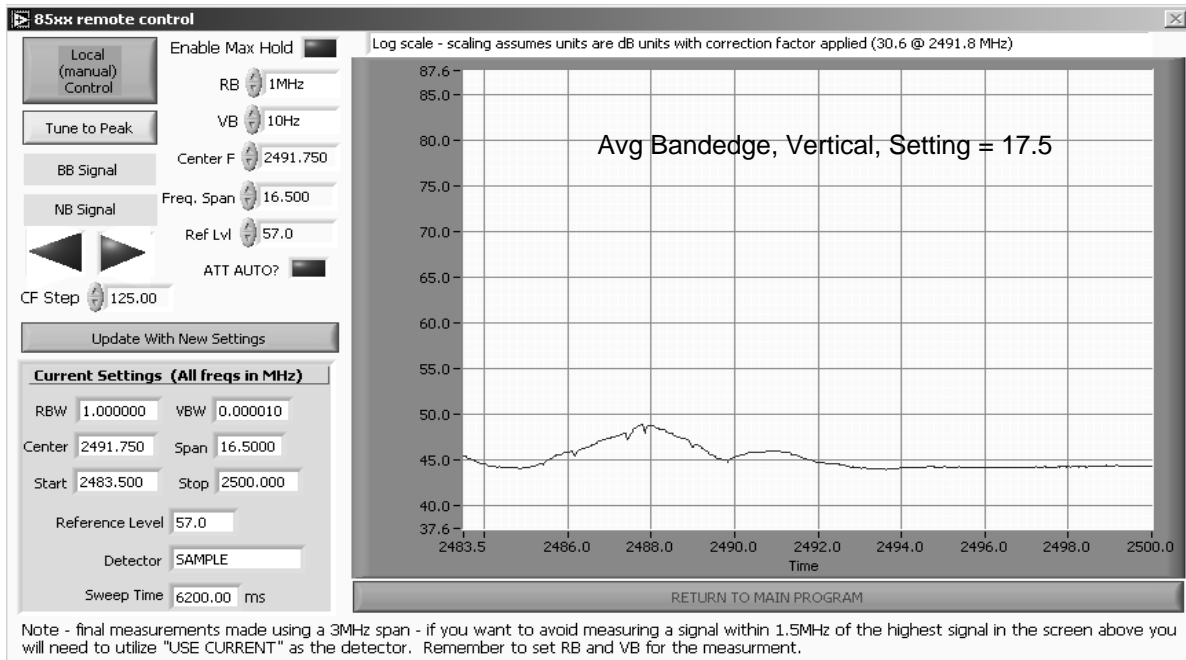
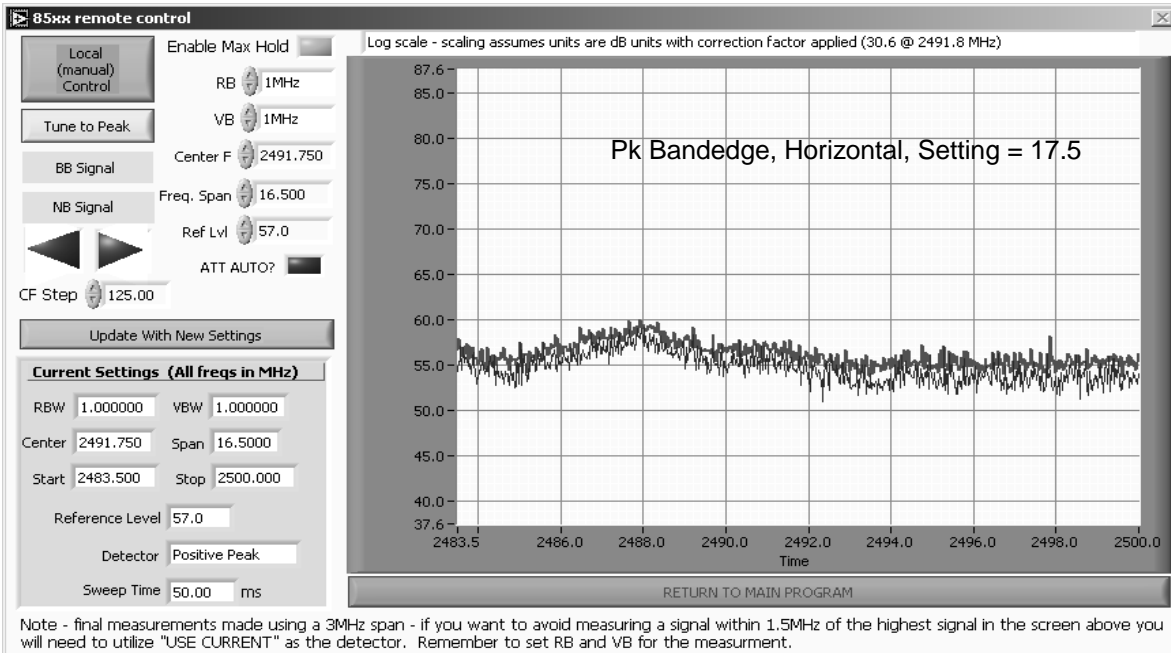
Run #1c: Radiated Spurious Emissions, 30 - 18000 MHz. High Channel @ 2462 MHz
Setting = 17.5
EUT on its Side

	H	V
Fundamental emission level @ 3m in 100kHz RBW:	105.5	102.5
Limit for emissions outside of restricted bands:	85.5 dB μ V/m	



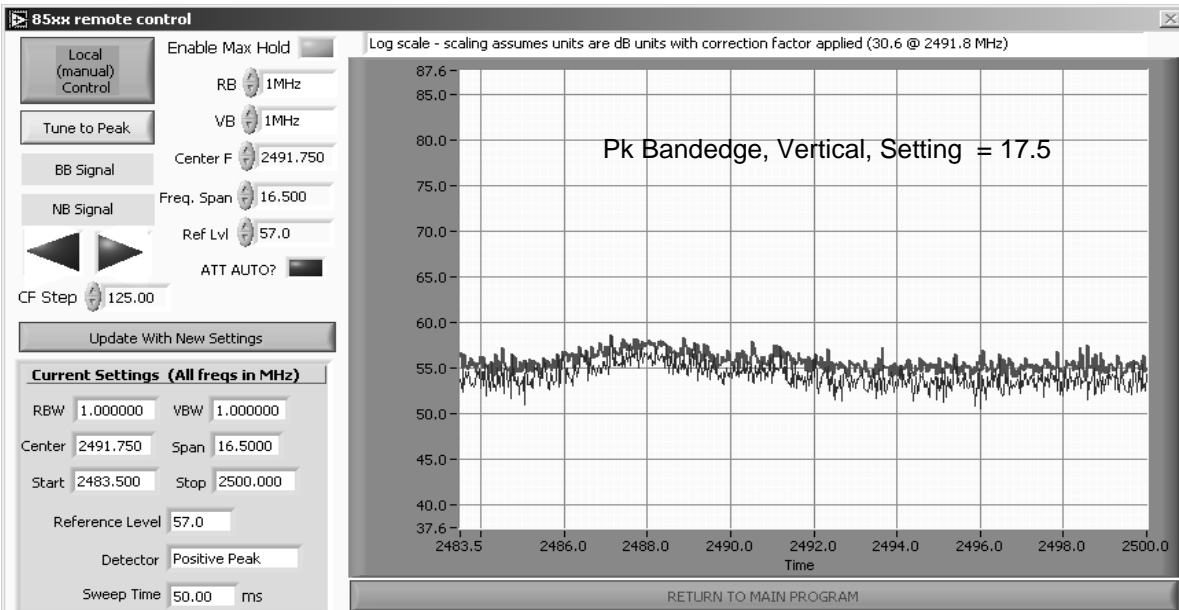
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1c: Continued



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1c: Continued



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2487.760	52.9	H	54.0	-1.1	AVG	329	1.4	
2487.760	60.1	H	74.0	-13.9	PK	329	1.4	
2487.740	51.1	V	54.0	-2.9	AVG	234	1.3	
2487.740	58.7	V	74.0	-15.3	PK	234	1.3	



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1c: Continued

Other Spurious Emissions

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4923.96	45.3	H	54.0	-8.7	AVG	38	1.2	
4924.01	44.3	V	54.0	-9.7	AVG	183	1.0	
12311.18	40.5	V	54.0	-13.5	AVG	193	1.0	
12309.13	40.5	H	54.0	-13.5	AVG	164	1.0	
7387.37	38.8	H	54.0	-15.2	AVG	51	1.0	
7386.46	36.6	V	54.0	-17.4	AVG	360	1.0	
9847.99	56.5	V	85.5	-29.0	PK	198	1.2	Non-restricted
9848.03	55.7	H	85.5	-29.8	PK	119	1.3	Non-restricted
12309.13	51.4	H	74.0	-22.6	PK	164	1.0	
12311.18	51.0	V	74.0	-23.0	PK	193	1.0	
4923.96	49.3	H	74.0	-24.7	PK	38	1.2	
7387.37	49.3	H	74.0	-24.7	PK	51	1.0	
4924.01	49.2	V	74.0	-24.8	PK	183	1.0	
7386.46	47.4	V	74.0	-26.6	PK	360	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

**RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements
Power, Bandwidth and Spurious Emissions**

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 6/18/2007	Config. Used: 1
Test Engineer: Rafael Varelas	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 14.3 °C
 Rel. Humidity: 75 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	15.7 dBm
2	Power spectral Density (PSD)	15.247(d)	Pass	-9.3 dBm/3kHz
3	6dB Bandwidth	15.247(a)	Pass	16.6
3	99% Bandwidth	RSS GEN	-	18.0
4	Spurious emissions	15.247(b)	Pass	>30dB below the limit

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

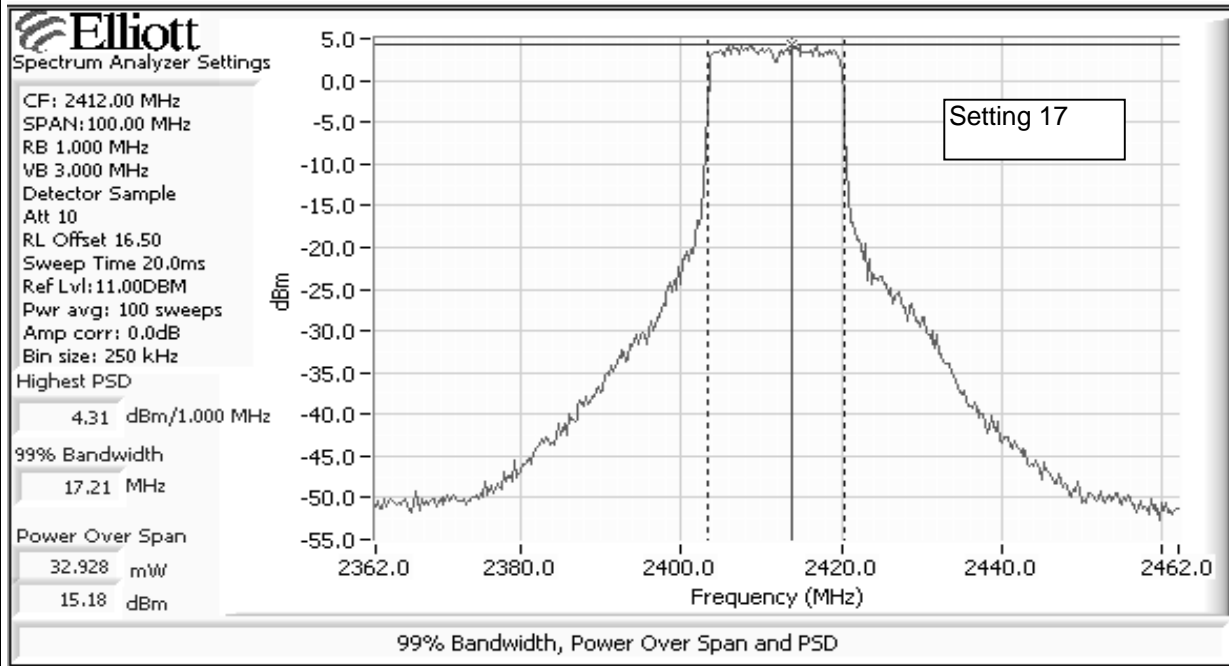
Run #1: Output Power

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Output Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
17	2412	15.2	33.1	0.0	Pass	15.2	0.033		
18	2437	15.7	37.2	0.0	Pass	15.7	0.037	17.0	50.1
16.5	2462	15.3	33.9	0.0	Pass	15.3	0.034		

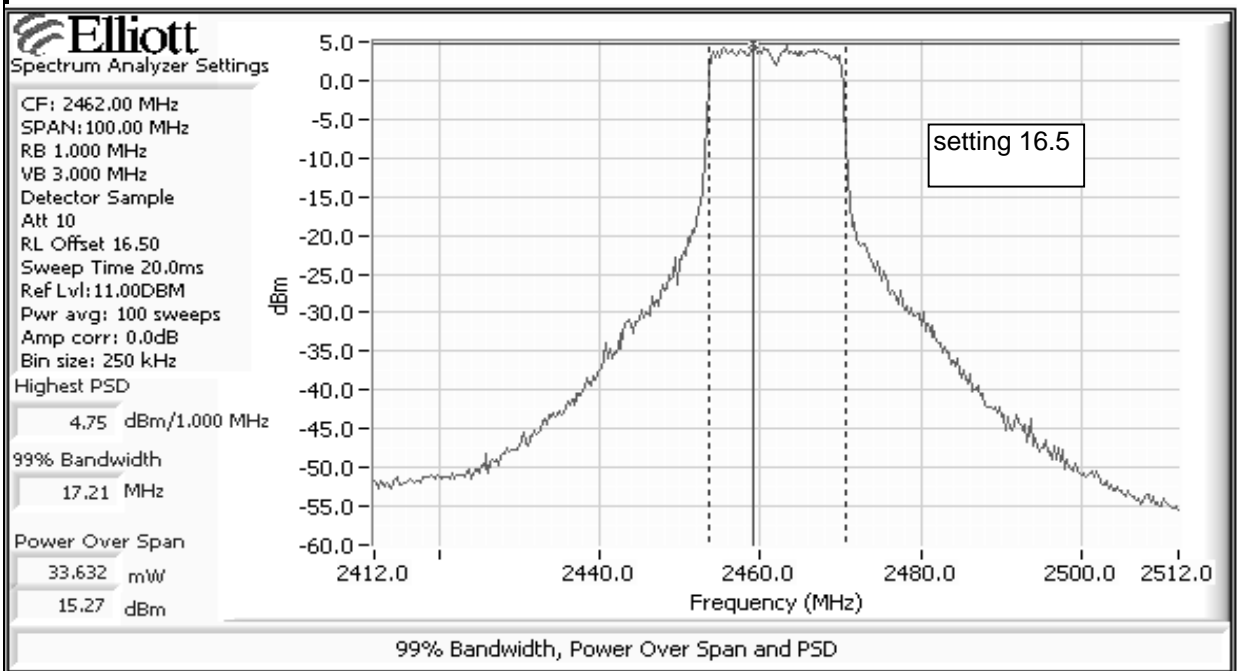
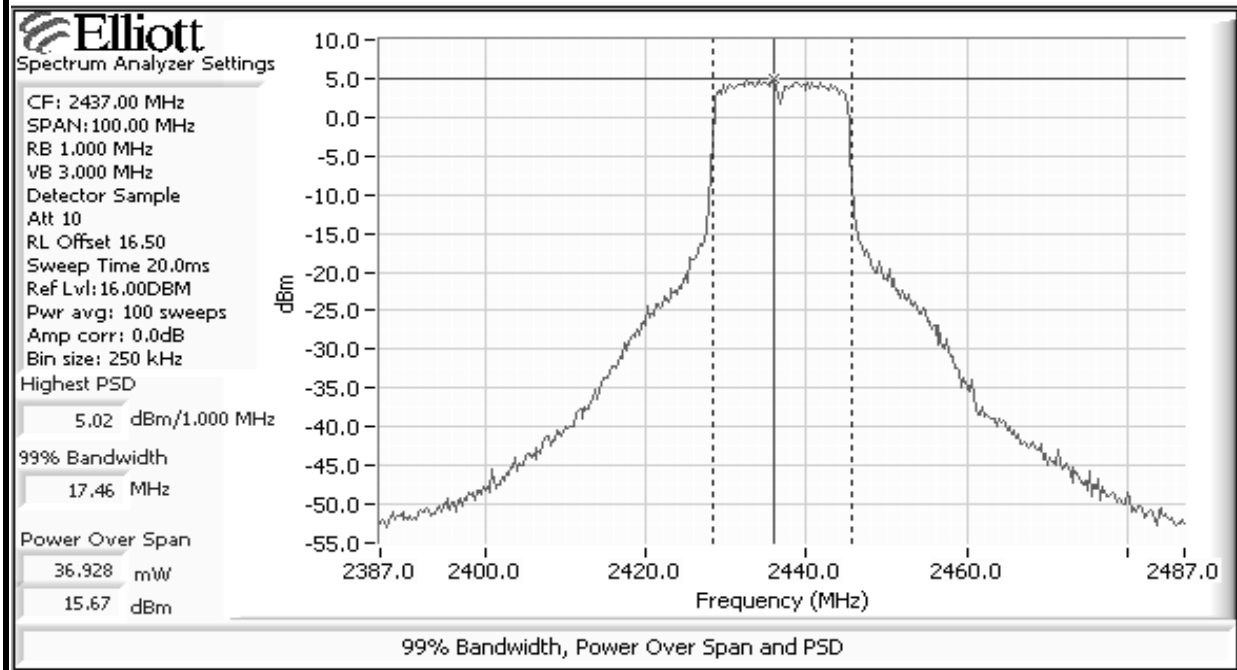
Note 1: Output power measured using a spectrum analyzer (see plots below):
 RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 100 MHz
 The output power limit is 30dBm

Note 2: Power setting - the software power setting used during testing, included for reference only.

Note 3: Measured using an average power meter for comparison to SAR power testing.



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

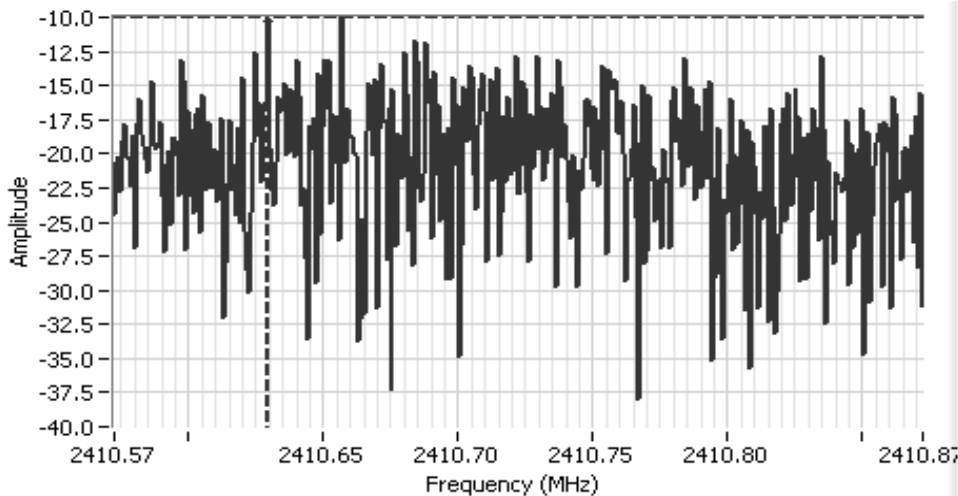


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit	Result
		(dBm/3kHz) ^{Note 1}		
18	2412	-10.0	8.0	Pass
18	2437	-10.2	8.0	Pass
18	2462	-9.3	8.0	Pass

Note 1: Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.

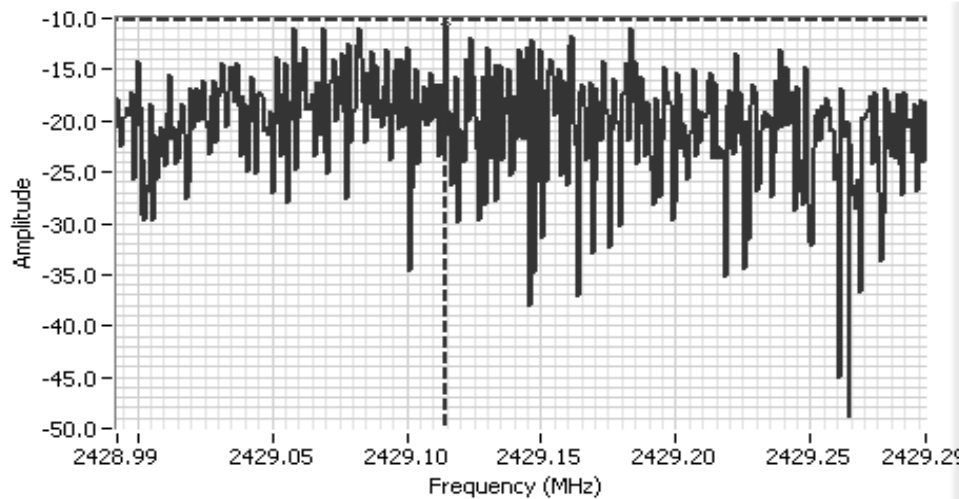


Analyzer Settings
 HP8595EM
 CF: 2410.72 MHz
 SPAN: 300 kHz
 RB 3 kHz
 VB 10 kHz
 Detector Sample
 Att 10
 RL Offset 16.50
 Sweep Time 100.0s
 Ref Lvl: 16.00DBM

Comments
 PSD 2412 MHz

Cursor 1	2410.62	-10.04	
	0.000	0.00	

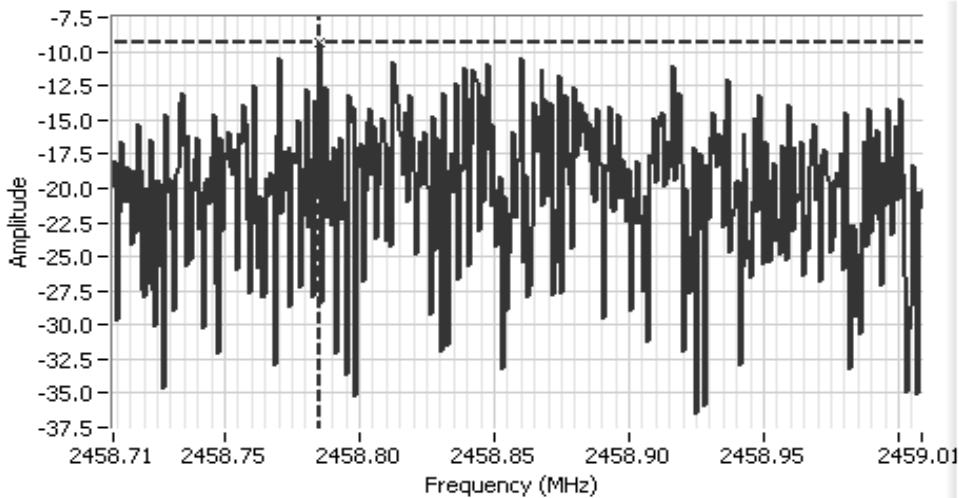
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings
 HP8595EM
 CF: 2429.14 MHz
 SPAN: 300 kHz
 RB 3 kHz
 VB 10 kHz
 Detector Sample
 Att 10
 RL Offset 16.50
 Sweep Time 100.0s
 Ref Lvl: 16.00DBM

Comments
 PSD 2437
 MHz

Cursor 1 2429.11 MHz -10.24 dBm
 0.000 0.00



Analyzer Settings
 HP8595EM
 CF: 2458.86 MHz
 SPAN: 300 kHz
 RB 3 kHz
 VB 10 kHz
 Detector Sample
 Att 10
 RL Offset 16.50
 Sweep Time 100.0s
 Ref Lvl: 16.00DBM

Comments
 PSD 2462 MHz

Cursor 1 2458.78 MHz -9.31 dBm
 0.000 0.00

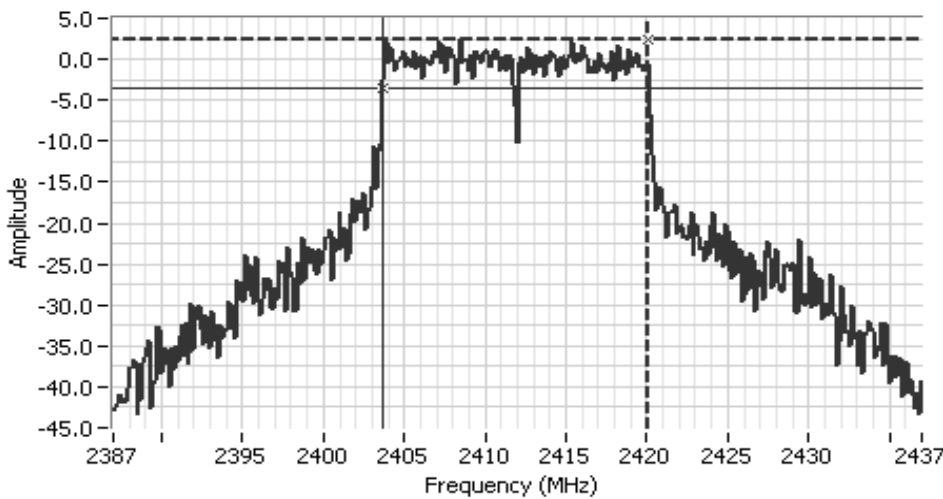


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
18	2412	100k	16.5	18.0
18	2437	100k	16.4	17.7
18	2462	100k	16.6	17.7

Note 1: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB



Analyzer Settings
 HP8595EM
 CF: 2412.00 MHz
 SPAN: 50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector Sample
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl: 16.00DBM

Comments
 6 dB BW, 2412 MHz, mode

Cursor 1 2420.12 2.46

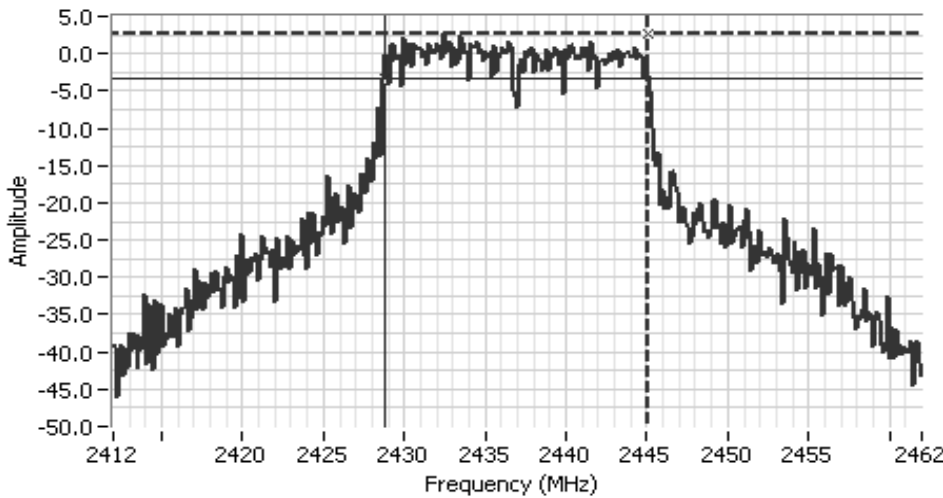
Cursor 2 2403.62 -3.54

Delta Freq. 16.50

Delta Amplitude 6.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

HP8595EM
 CF: 2437.00 MHz
 SPAN:50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector Sample
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl:16.00DBM

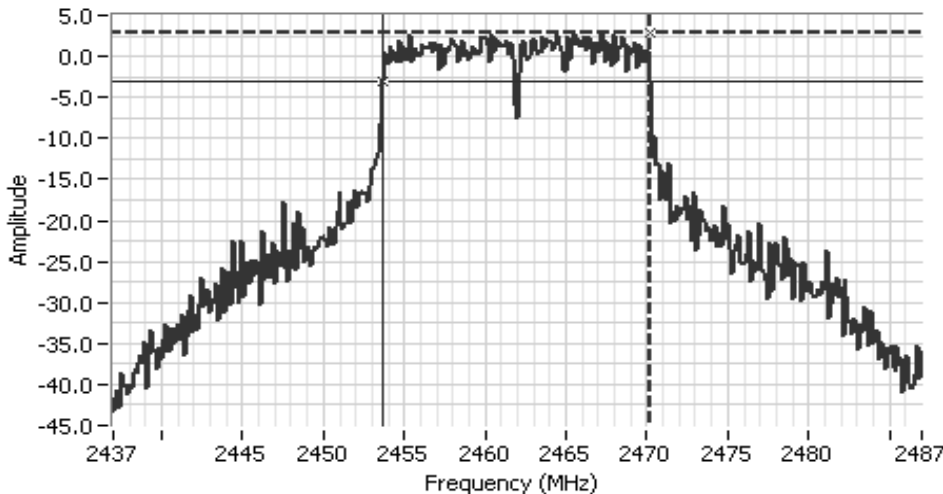
Comments

6 dB BW, 2437 MHz, mode

Cursor 1 2445.12 2.59
 Cursor 2 2428.75 -3.41

Delta Freq. 16.37

Delta Amplitude 6.00



Analyzer Settings

HP8595EM
 CF: 2462.00 MHz
 SPAN:50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector Sample
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl:16.00DBM

Comments

6 dB BW, 2462 MHz, mode

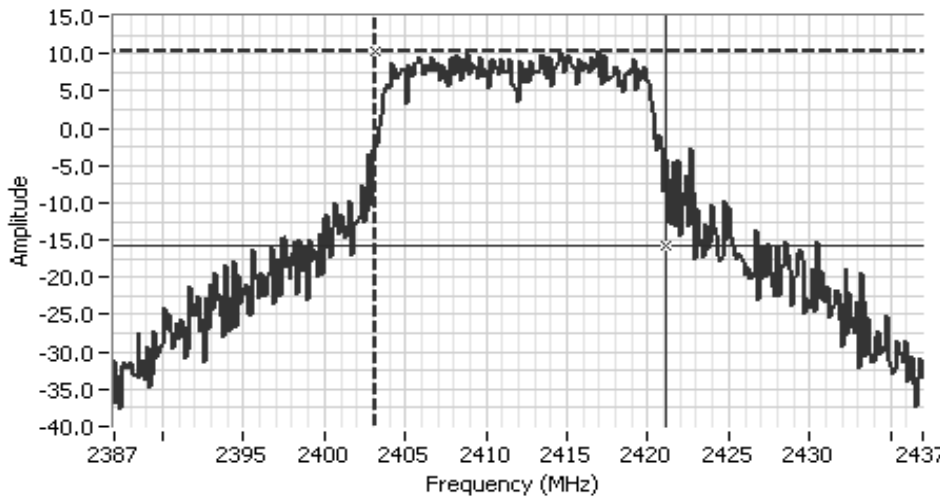
Cursor 1 2470.25 2.86
 Cursor 2 2453.62 -3.14

Delta Freq. 16.62

Delta Amplitude 6.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

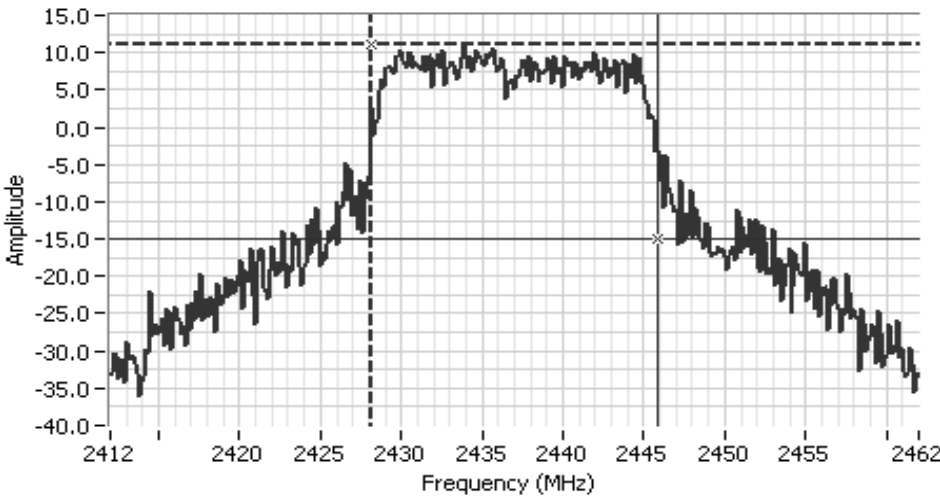


Analyzer Settings
 HP8595EM
 CF: 2412.00 MHz
 SPAN: 50.00 MHz
 RB 1.000 MHz
 VB 3.000 MHz
 Detector Sample
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl: 16.00DBM

Comments
 99% power bandwidth
 17.96 MHz
 Power over span:
 19.67dBm (ref only)

Cursor 1 2403.20 10.24
 Cursor 2 2421.16 -15.76

Delta Freq. 17.96
 Delta Amplitude 26.00



Analyzer Settings
 HP8595EM
 CF: 2437.00 MHz
 SPAN: 50.00 MHz
 RB 1.000 MHz
 VB 3.000 MHz
 Detector Sample
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl: 16.00DBM

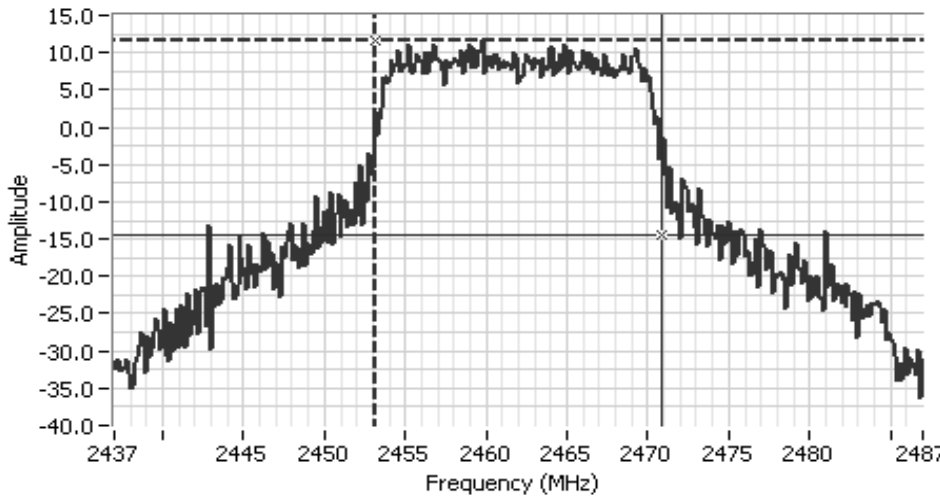
Comments
 99% power bandwidth
 17.71 MHz
 Power over span:
 19.94dBm (ref only)

Cursor 1 2428.08 11.11
 Cursor 2 2445.79 -14.89

Delta Freq. 17.71
 Delta Amplitude 26.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings
 HP8595EM
 CF: 2462.00 MHz
 SPAN: 50.00 MHz
 RB 1.000 MHz
 VB 3.000 MHz
 Detector Sample
 Att 10
 RL Offset 16.50
 Sweep Time 20.0ms
 Ref Lvl: 16.00DBM

Comments
 99% power bandwidth
 17.71 MHz
 Power over span:
 20.43dBm (ref only)

Cursor 1 2453.08 11.56
 Cursor 2 2470.79 -14.44

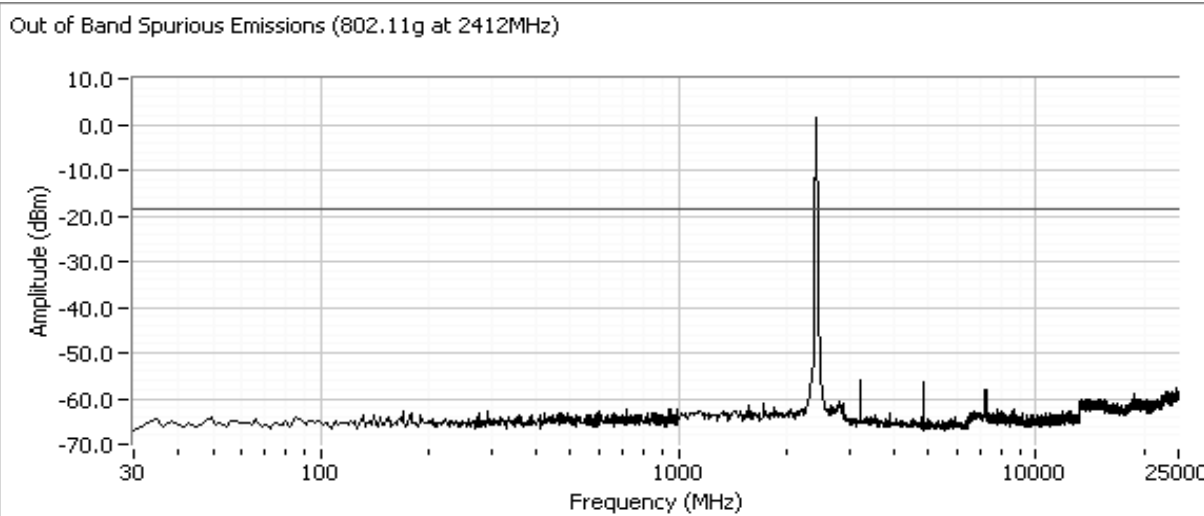
Delta Freq. 17.71
 Delta Amplitude 26.00



Run #4: Out of Band Spurious Emissions

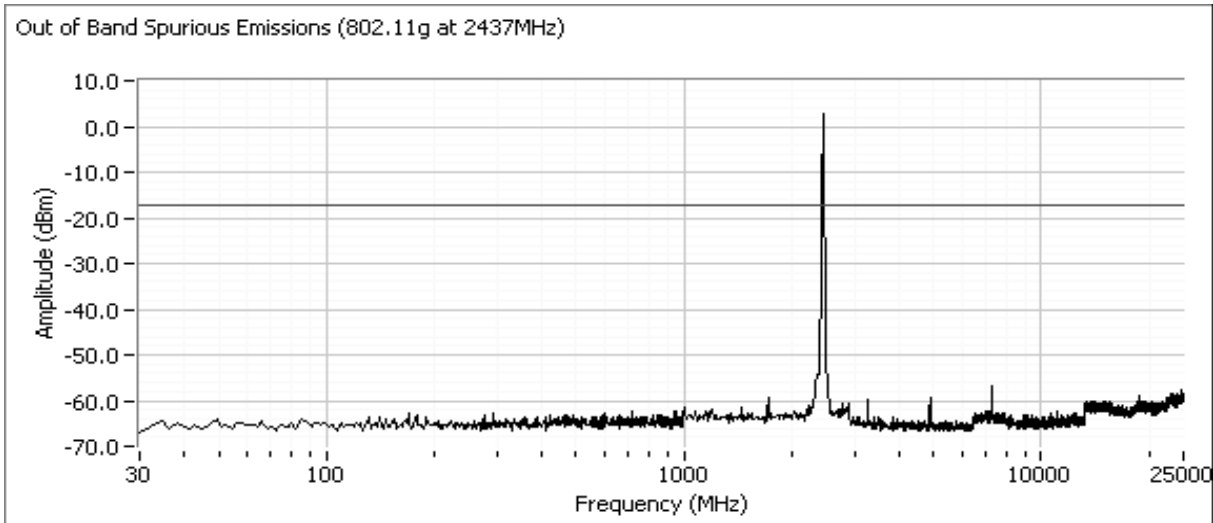
Frequency (MHz)	Limit	Result
2412	-30dBc	Pass
2437	-30dBc	Pass
2462	-30dBc	Pass

Plots for low channel, power setting(s) = 19

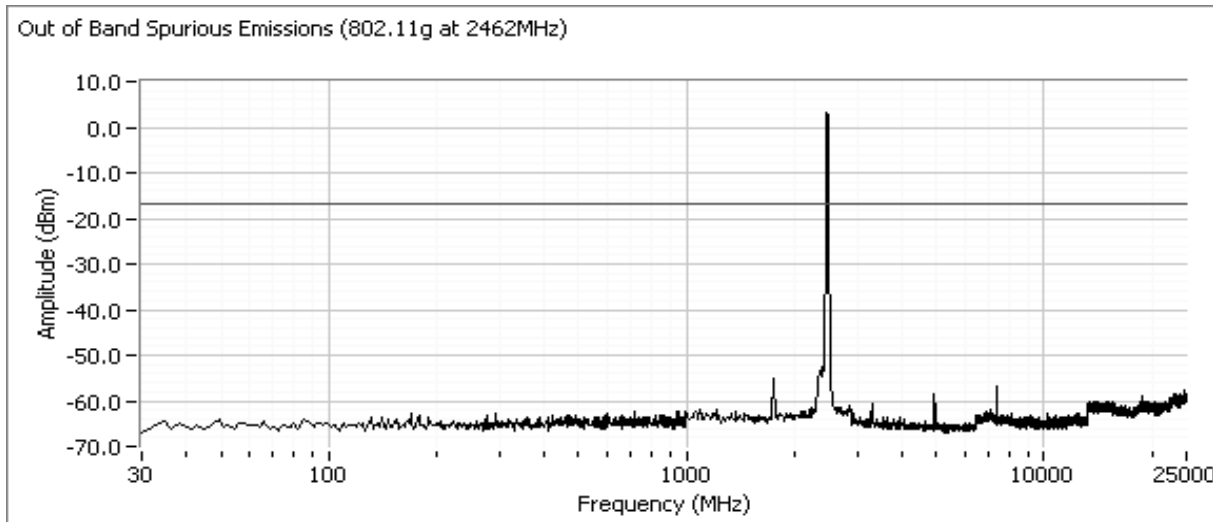


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Plots for center channel, power setting(s) = 19



Plots for high channel, power setting(s) = 19



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

**RSS 210 and FCC 15.247 Radiated Spurious Emissions
802.11g mode**

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 6/19/2007	Config. Used: 1
Test Engineer: Mehran Birgani	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators used.

Unless stated otherwise the EUT was operating such that it constantly hopped on either the low, center or high channels.

Ambient Conditions: Temperature: 13 °C
 Rel. Humidity: 77 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1a - c	30 - 18000 MHz - Radiated Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	53.6dBµV/m (478.6µV/m) @ 2484.0MHz (-0.4dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

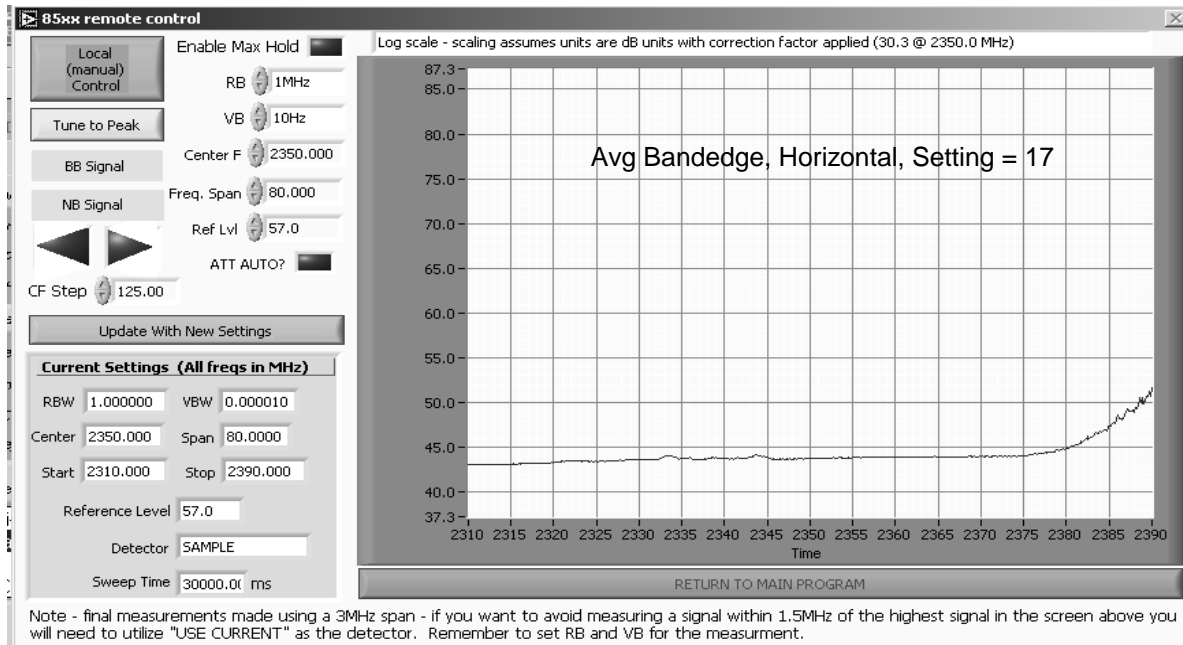
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

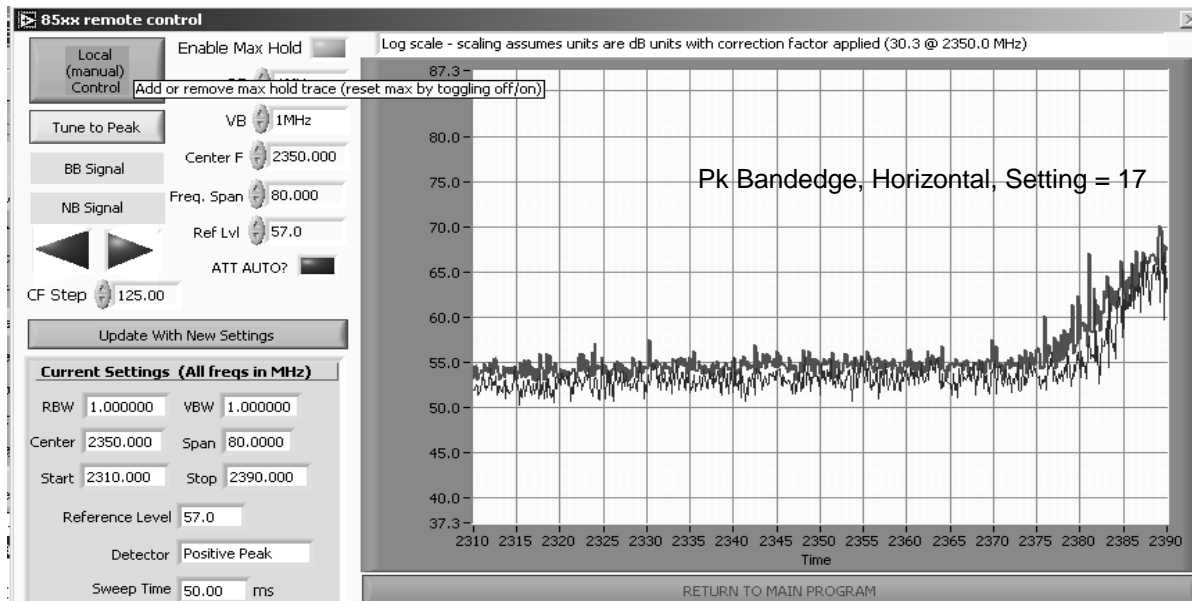
Run #1a: Radiated Spurious Emissions, 30 - 18000 MHz. Low Channel @ 2412 MHz
Setting = 18
EUT on its Side

Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
2413.350	98.8	H	54.0	44.8	AVG	104	1.4	Side
2413.350	107.4	H	74.0	33.4	PK	104	1.4	Side
2413.500	93.5	V	54.0	39.5	AVG	111	1.1	Side
2413.500	102.2	V	74.0	28.2	PK	111	1.1	Side
2413.200	88.3	H	54.0	34.3	AVG	114	1.6	Flat
2413.200	96.4	H	74.0	22.4	PK	114	1.6	Flat
2415.200	94.1	V	54.0	40.1	AVG	86	1.6	Flat
2415.200	103.9	V	74.0	29.9	PK	86	1.6	Flat
2414.330	95.5	H	54.0	41.5	AVG	79	1.0	Upright
2414.330	104.1	H	74.0	30.1	PK	79	1.0	Upright
2412.800	96.2	V	54.0	42.2	AVG	79	1.0	Upright
2412.800	104.5	V	74.0	30.5	PK	79	1.0	Upright



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

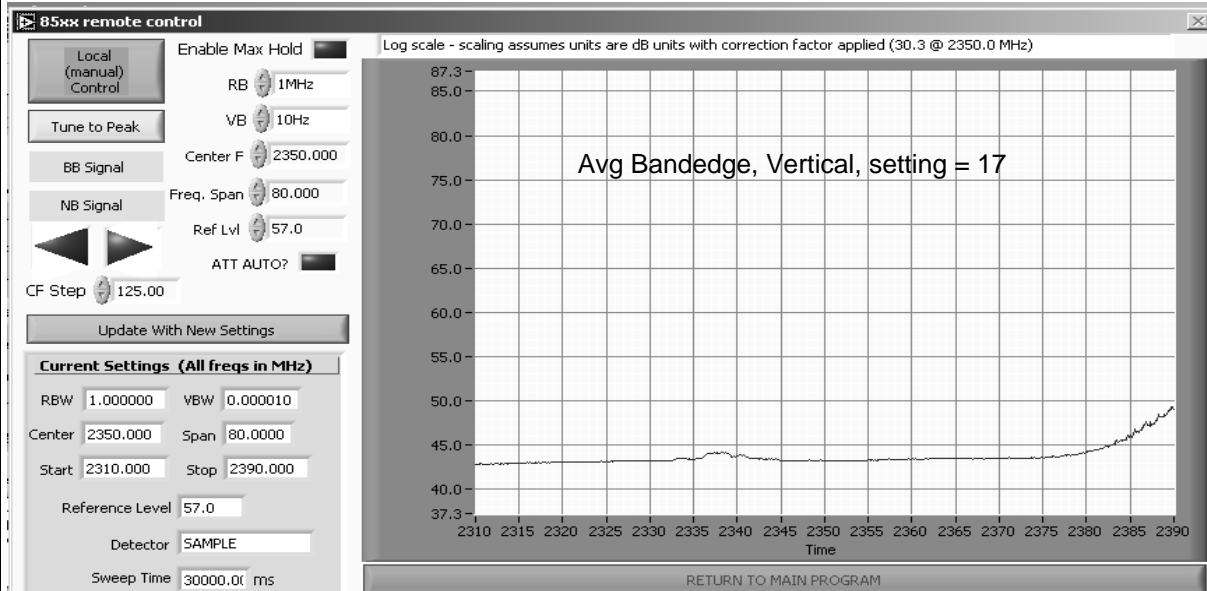
Run #1a: Continued



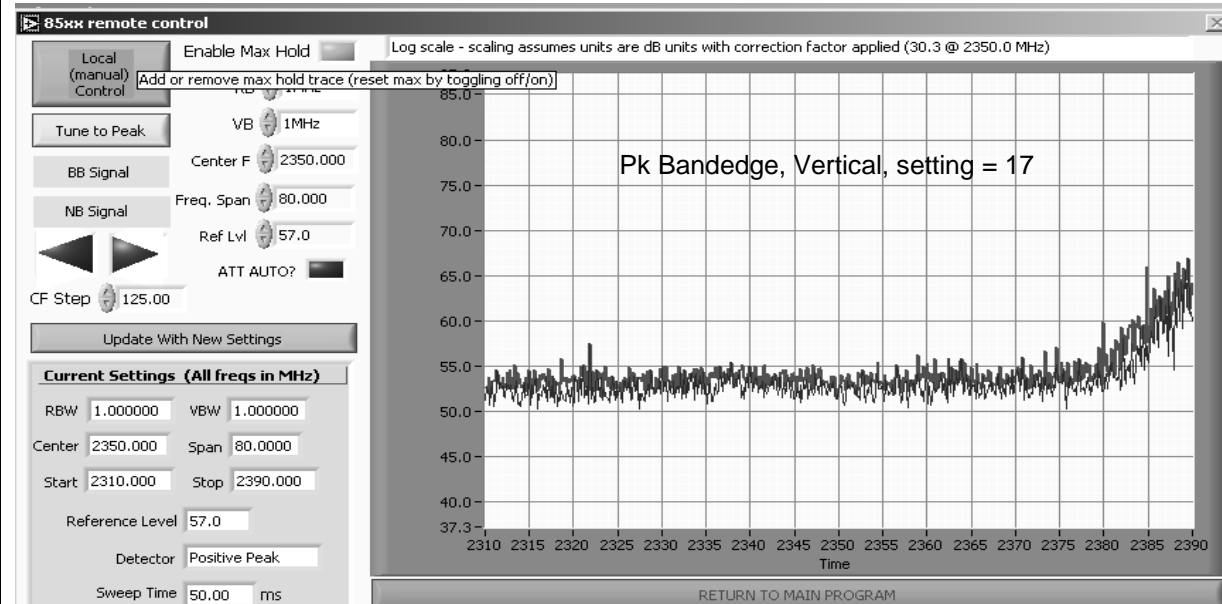
Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Run #1a: Continued



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1a: Continued

Band Edge Signal Field Strength

Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
2389.910	52.4	H	54.0	-1.6	Avg	97	1.6	Setting = 17
2389.410	70.9	H	74.0	-3.1	Pk	97	1.6	Setting = 17
2389.550	51.9	V	54.0	-2.1	AVG	329	1.0	Setting = 17
2389.550	68.7	V	74.0	-5.3	PK	329	1.0	Setting = 17

Other Spurious Emissions

Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
9646.76	41.9	V	54.0	-12.1	AVG	191	1.0	
9647.63	41.5	H	54.0	-12.5	AVG	148	1.3	
12061.45	40.4	V	54.0	-13.6	AVG	181	1.0	
12061.39	40.1	H	54.0	-13.9	AVG	52	2.0	
7236.67	36.0	H	54.0	-18.0	AVG	181	1.0	
7237.25	35.5	V	54.0	-18.5	AVG	237	1.4	
4822.59	34.9	H	54.0	-19.1	AVG	220	1.4	
9646.76	54.5	V	74.0	-19.5	PK	191	1.0	
4827.00	33.5	V	54.0	-20.5	AVG	270	1.0	
9647.63	53.4	H	74.0	-20.6	PK	148	1.3	
12061.45	52.8	V	74.0	-21.2	PK	181	1.0	
12061.39	50.9	H	74.0	-23.1	PK	52	2.0	
7236.67	47.3	H	74.0	-26.7	PK	181	1.0	
7237.25	46.7	V	74.0	-27.3	PK	237	1.4	
4822.59	46.6	H	74.0	-27.4	PK	220	1.4	
4827.00	44.5	V	74.0	-29.5	PK	270	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental.



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

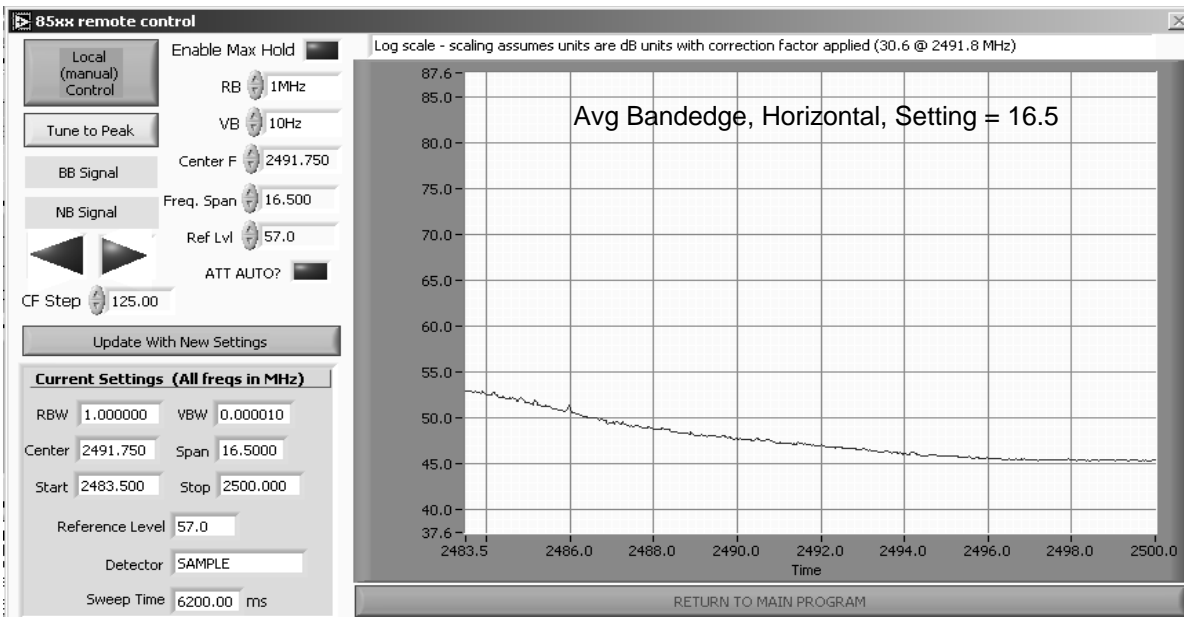
Run #1b: Radiated Spurious Emissions, 30 - 18000 MHz. Center Channel @ 2437 MHz
Setting = 18
EUT on its Side

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
9749.05	43.2	H	54.0	-10.8	AVG	142	1.4	
9748.31	41.1	V	54.0	-12.9	AVG	148	1.0	
12186.09	40.0	V	54.0	-14.0	AVG	197	1.0	
12186.00	39.6	H	54.0	-14.4	AVG	150	2.0	
7312.22	36.3	H	54.0	-17.7	AVG	21	1.0	
7310.41	36.2	V	54.0	-17.8	AVG	25	1.2	
4874.08	35.7	H	54.0	-18.3	AVG	142	1.0	
4877.30	34.9	V	54.0	-19.1	AVG	180	1.0	
9749.05	54.6	H	74.0	-19.4	PK	142	1.4	
9748.31	53.0	V	74.0	-21.0	PK	148	1.0	
12186.00	50.6	H	74.0	-23.4	PK	150	2.0	
12186.09	50.5	V	74.0	-23.5	PK	197	1.0	
7312.22	47.8	H	74.0	-26.2	PK	21	1.0	
7310.41	47.1	V	74.0	-26.9	PK	25	1.2	
4874.08	46.9	H	74.0	-27.1	PK	142	1.0	
4877.30	45.9	V	74.0	-28.1	PK	180	1.0	

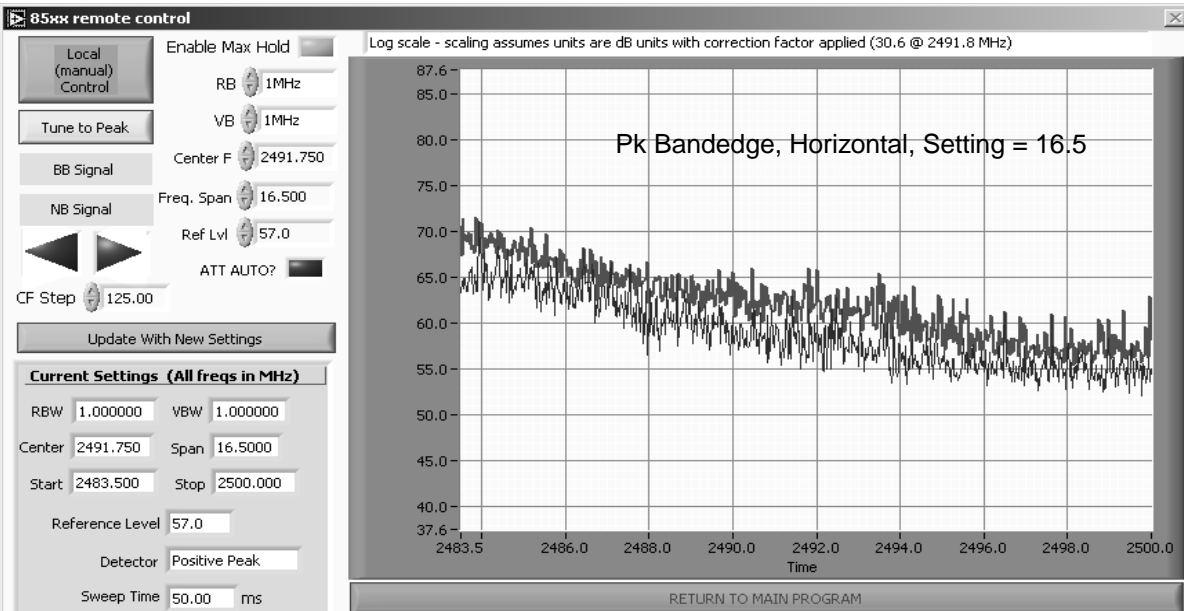
Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Run #1c: Radiated Spurious Emissions, 30 - 18000 MHz. High Channel @ 2462 MHz
Setting = 16.5
EUT on its Side



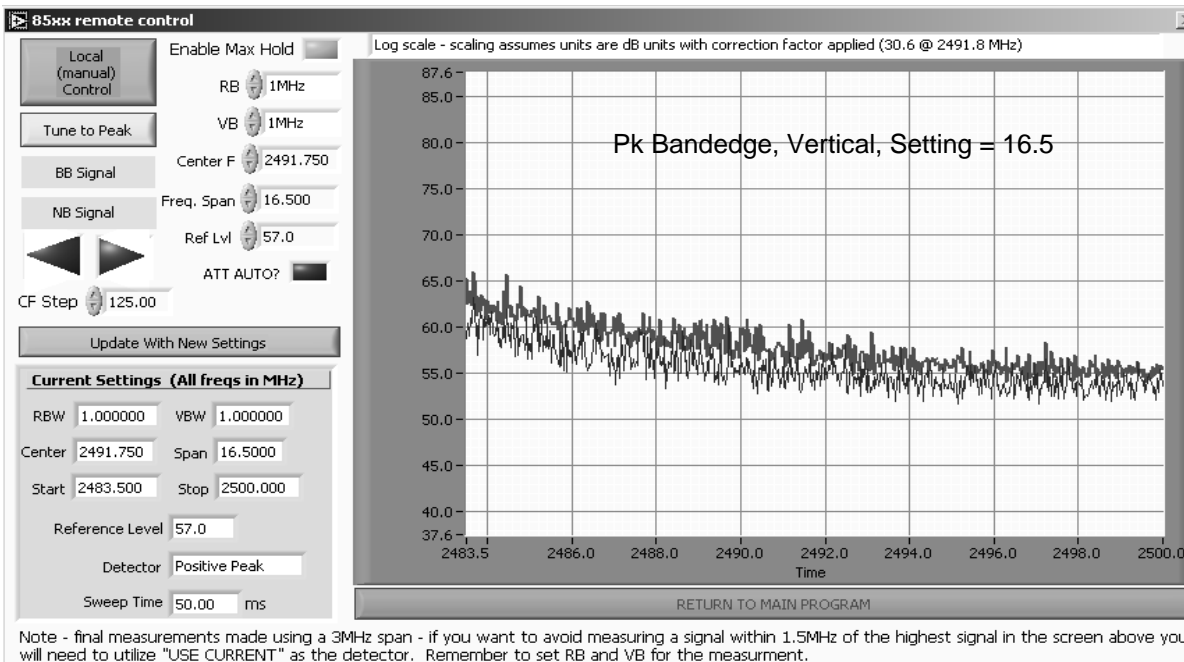
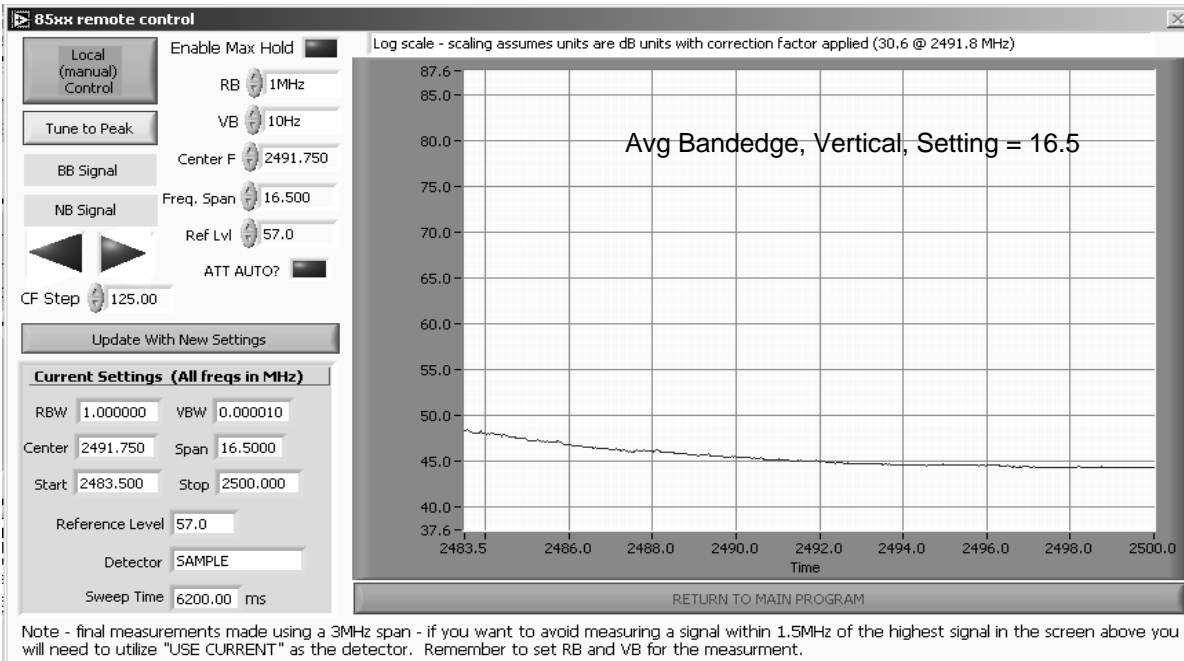
Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Run #1c: Continued





EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1c: Continued

Band Edge Signal Field Strength

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
2483.950	53.6	H	54.0	-0.4	Avg	83	1.3	
2483.920	73.6	H	74.0	-0.4	PK	83	1.3	
2483.710	48.0	V	54.0	-6.0	AVG	25	1.0	
2483.710	65.2	V	74.0	-8.8	PK	25	1.0	

Other Spurious Emissions

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4920.38	42.1	H	54.0	-11.9	AVG	34	1.4	
9847.99	40.5	H	54.0	-13.5	AVG	134	1.3	
9847.55	40.1	V	54.0	-13.9	AVG	203	1.4	
12310.24	39.4	V	54.0	-14.6	AVG	199	1.0	
12310.85	39.2	H	54.0	-14.8	AVG	335	1.0	
7386.53	36.8	H	54.0	-17.2	AVG	251	1.2	
7386.72	36.8	V	54.0	-17.2	AVG	86	1.4	
4920.45	36.3	V	54.0	-17.7	AVG	78	2.0	
9847.55	52.2	V	74.0	-21.8	PK	203	1.4	
9847.99	51.4	H	74.0	-22.6	PK	134	1.3	
12310.85	50.1	H	74.0	-23.9	PK	335	1.0	
12310.24	50.1	V	74.0	-23.9	PK	199	1.0	
4920.38	48.6	H	74.0	-25.4	PK	34	1.4	
7386.72	47.4	V	74.0	-26.6	PK	86	1.4	
7386.53	47.2	H	74.0	-26.8	PK	251	1.2	
4920.45	46.3	V	74.0	-27.7	PK	78	2.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 30dB below the level of the fundamental.

Client:	OQO	Job Number:	J68325
Model:	2050 and 2060	T-Log Number:	T68341
		Account Manager:	Susan Pelzl
Contact:	Bob Hymes		
Standard:	EN55022 / FCC	Class:	B

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 7/24/2007
 Test Engineer: Mehran Birgani
 Test Location: Chamber #2

Config. Used: 1
 Config Change: None
 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 20 °C
 Rel. Humidity: 54 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1 (802.11b Mode)	RE, 30 - 7500 MHz Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	33.2dBµ V/m (45.7µ V/m) @ 3256.5MHz (-20.8dB)
2 (802.11g Mode)	RE, 30 - 7500 MHz Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	32.7dBµ V/m (43.2µ V/m) @ 3256.5MHz (-21.3dB)

Modifications Made During Testing:

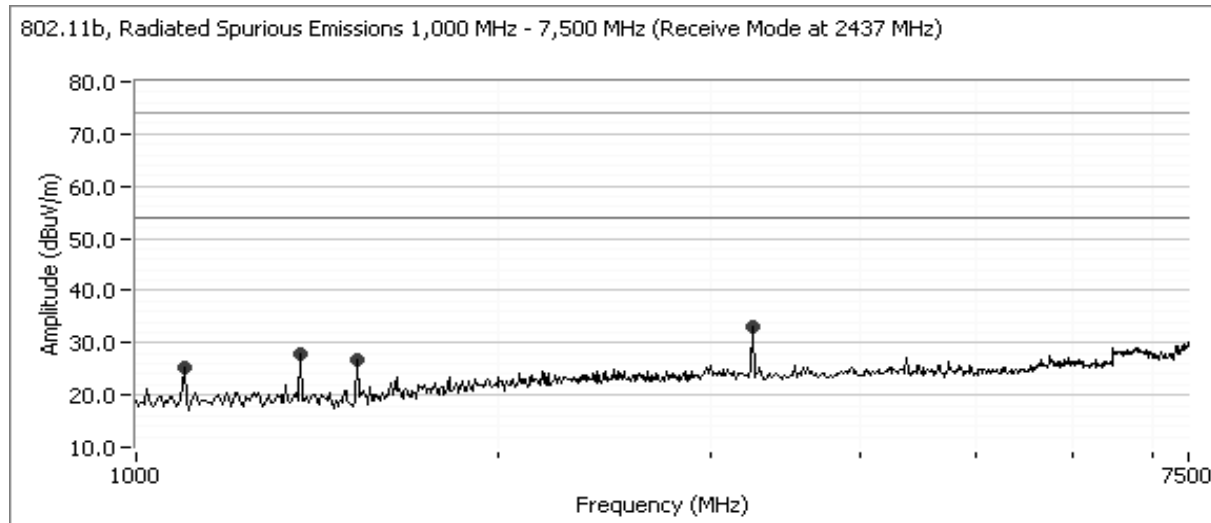
No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

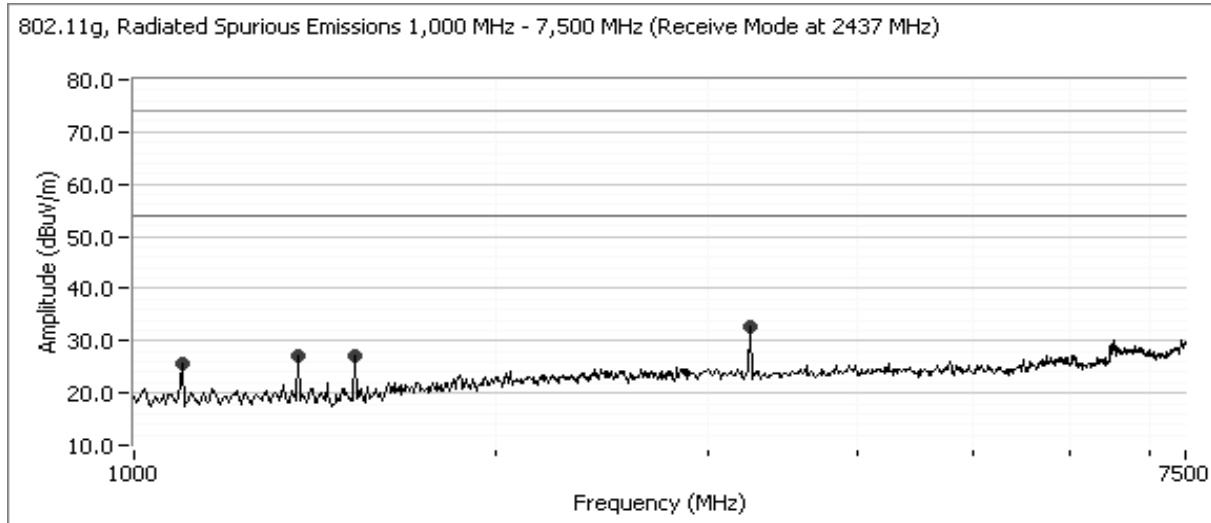
Note : Test data was imported from J62637 (T644964_FCC) was performed on 9/1/2006

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: B

Run #1: Radiated Spurious Emissions, 30 - 7,500 MHz. Operating Mode: 802.11b @ 2437 MHz


Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3256.500	33.2	V	54.0	-20.8	Peak	236	1.7	
1370.500	27.9	H	54.0	-26.1	Peak	195	1.7	
1527.250	26.8	H	54.0	-27.2	Peak	186	1.7	
1095.000	25.1	V	54.0	-28.9	Peak	28	1.7	

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: B

Run #2: Radiated Spurious Emissions, 30 - 7,500 MHz. Operating Mode: 802.11g @ 2437 MHz


Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3256.500	32.7	H	54.0	-21.3	Peak	244	1.7	
1370.500	27.9	H	54.0	-26.1	Peak	195	1.7	
1527.250	26.8	H	54.0	-27.2	Peak	186	1.7	
1095.000	25.1	V	54.0	-28.9	Peak	28	1.7	

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

**RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements
Power, Bandwidth and Spurious Emissions (802.11a 5725 - 5850 MHz)**

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 7/16/2007	Config. Used: 1
Test Engineer: Mehran Birgani	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions: Temperature: 24 °C
 Rel. Humidity: 41 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Output Power	15.247(b)	Pass	17.5 dBm
2	Power spectral Density (PSD)	15.247(d)	Pass	-6.4 dBm/ 3kHz
3	6dB Bandwidth	15.247(a)	Pass	16.4 Mhz
3	99% Bandwidth	RSS GEN	-	17.1 MHz
4	Spurious emissions	15.247(b)	Pass	>30dBc below the limit

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

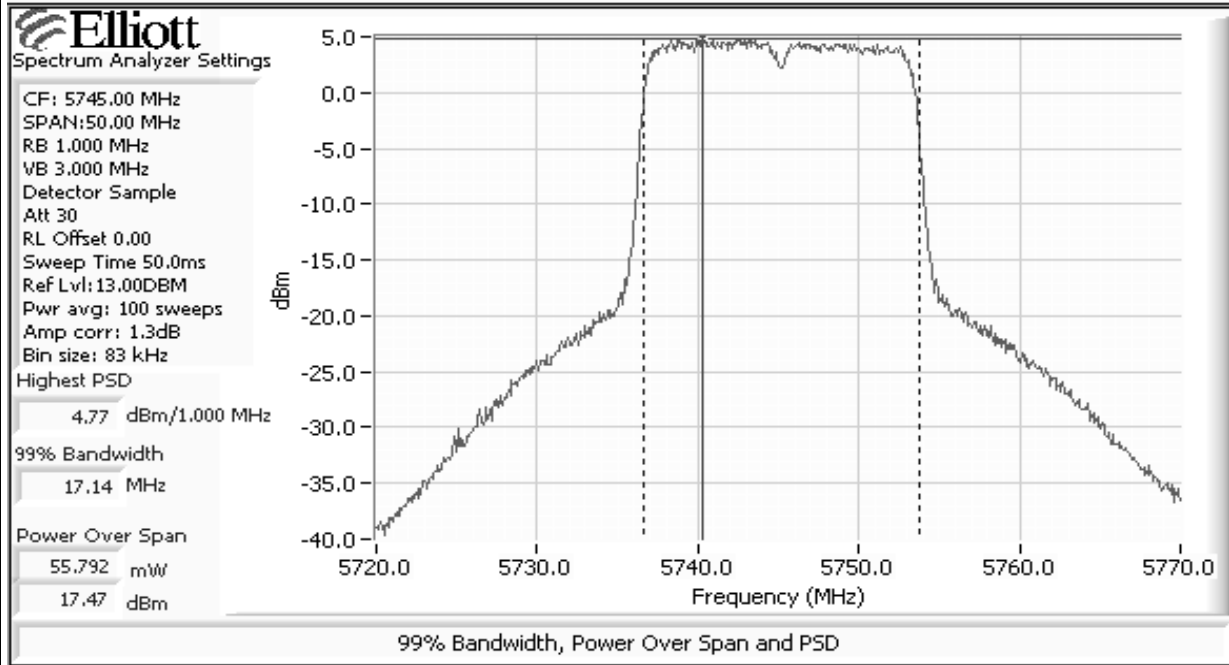
No deviations were made from the requirements of the standard.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

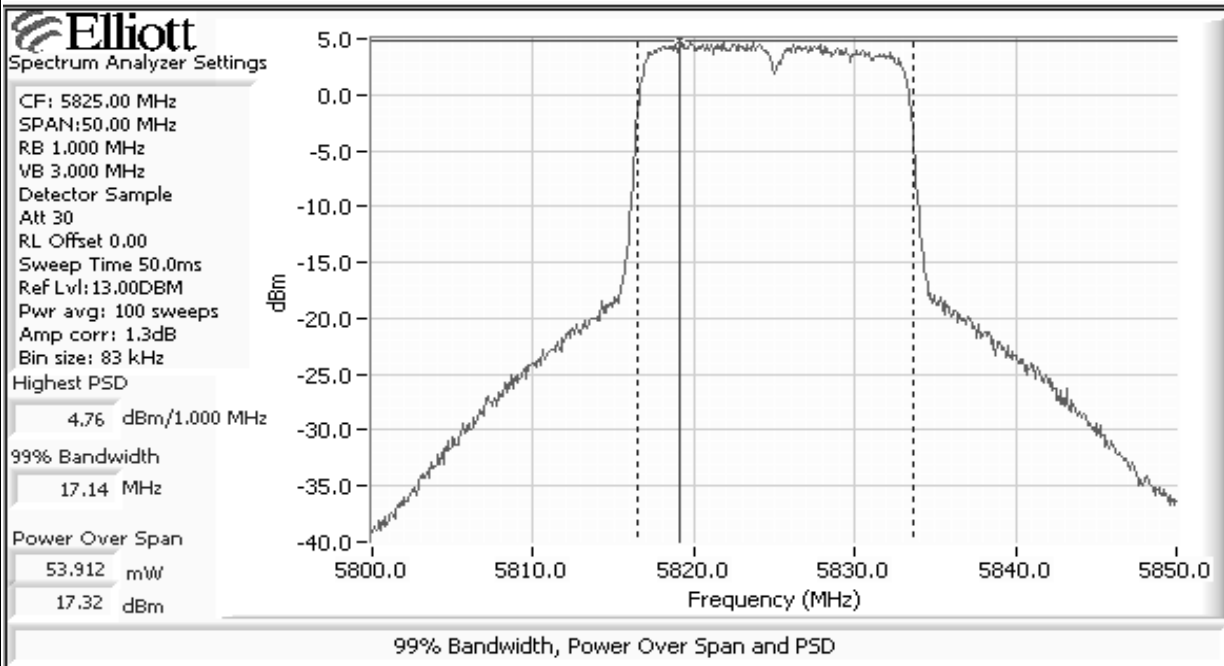
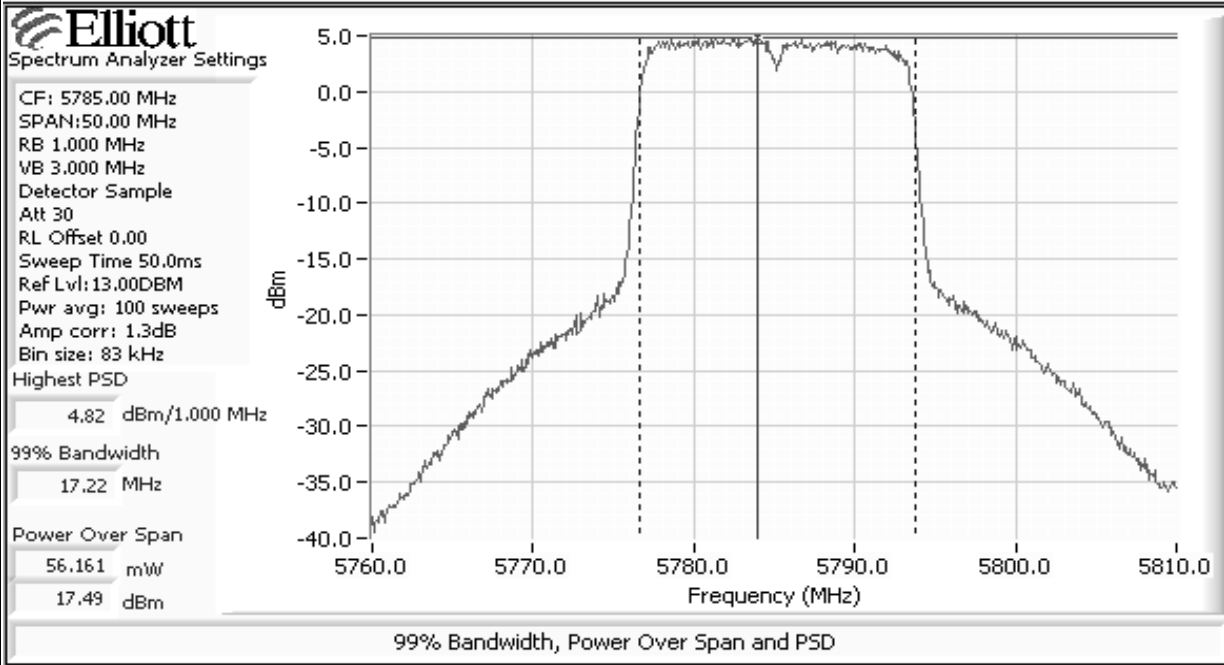
Run #1: Output Power

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Output Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
17	5745	17.5	56.2	0.0	Pass	17.5	0.056		
17	5785	17.5	56.2	0.0	Pass	17.5	0.056	17.2	
17	5825	17.3	53.7	0.0	Pass	17.3	0.054		

- Note 1: Output power measured using a spectrum analyzer (see plots below):
 RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz
 The output power limit is 30dBm
- Note 2: Power setting - the software power setting used during testing, included for reference only.
- Note 3: Avg power using power meter to match SAR power method.



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

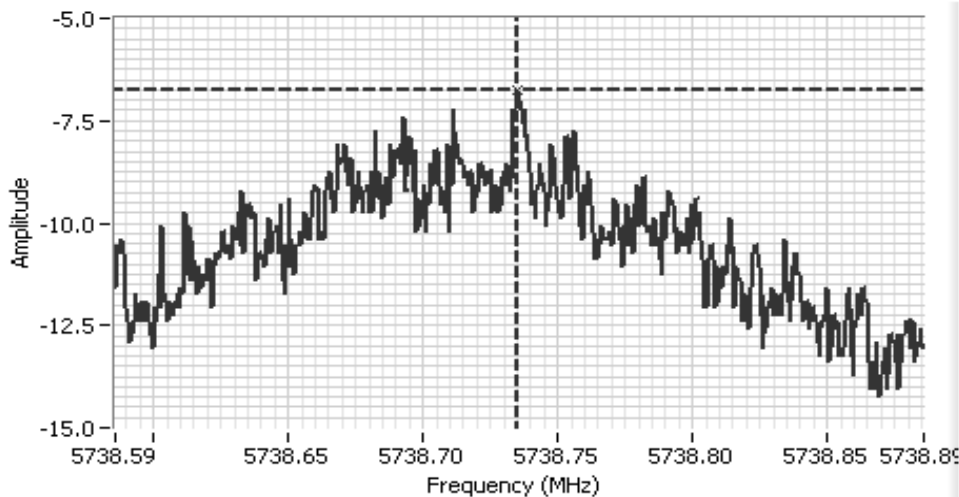


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit	Result
		(dBm/3kHz) ^{Note 1}		
17	5738.74	-6.7	8.0	Pass
17	5783.37	-6.4	8.0	Pass
17	5822.18	-6.4	8.0	Pass

Note 1: Power spectral density measured using RB=3 kHz, VB=10kHz, analyzer with peak detector and with a sweep time set to ensure a dwell time of at least 1 second per 3kHz. The measurement is made at the frequency of PPSD determined from preliminary scans using RB=3kHz using multiple sweeps at a faster rate over the 6dB bandwidth of the signal.



Analyzer Settings

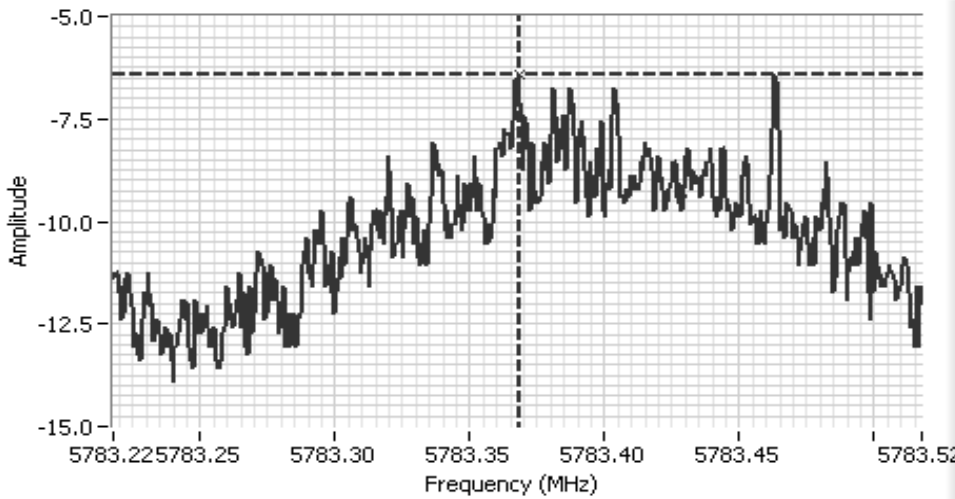
HP8564E,EMI
 CF: 5738.74 MHz
 SPAN:300 kHz
 RB 3 kHz
 VB 10 kHz
 Detector POS
 Att 30
 RL Offset 1.00
 Sweep Time 100.0s
 Ref Lvl:15.10DBM

Comments

5745 MHz
 PSD

Cursor 1	5738.738	-6.73	
	0.000	0.00	

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

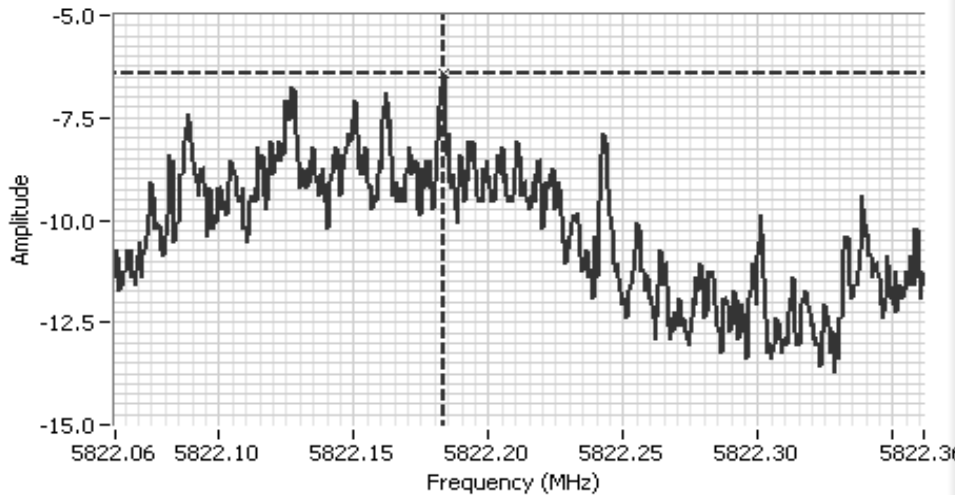
HP8564E,EMI
 CF: 5783.37 MHz
 SPAN:300 kHz
 RB 3 kHz
 VB 10 kHz
 Detector POS
 Att 30
 RL Offset 1.00
 Sweep Time 100.0s
 Ref Lvl:15.10DBM

Comments

5785 MHz
 PSD

Cursor 1 5783.36 -6.40

0.000 0.00



Analyzer Settings

HP8564E,EMI
 CF: 5822.21 MHz
 SPAN:300 kHz
 RB 3 kHz
 VB 10 kHz
 Detector POS
 Att 30
 RL Offset 1.00
 Sweep Time 100.0s
 Ref Lvl:15.10DBM

Comments

5825 MHz
 PSD

Cursor 1 5822.18 -6.40

0.000 0.00

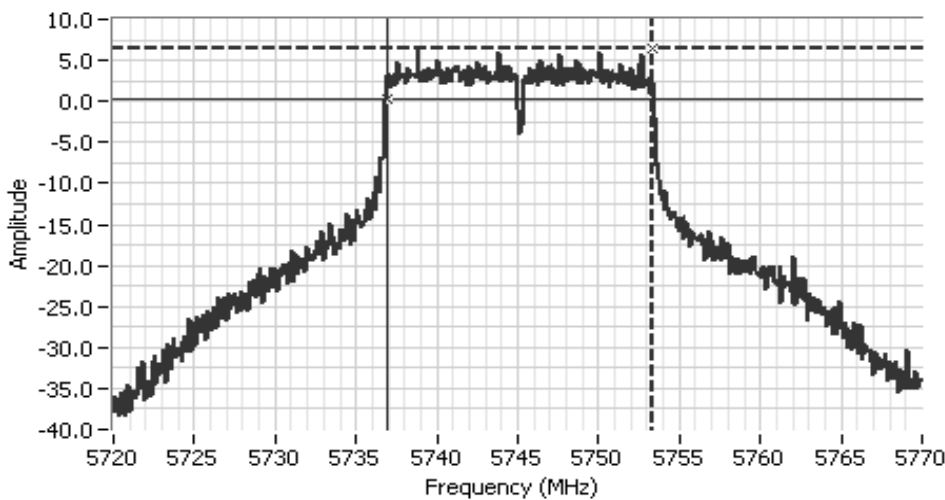


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
17	5745	1MHz	16.4	17.1
17	5785	1MHz	16.5	17.2
17	5825	1MHz	16.4	17.1

Note 1: 99% bandwidth measured in accordance with RSS GEN, with RB > 1% of the span and VB > 3xRB



Analyzer Settings

HP8564E,EMI
 CF: 5745.00 MHz
 SPAN:50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl:7.90DBM

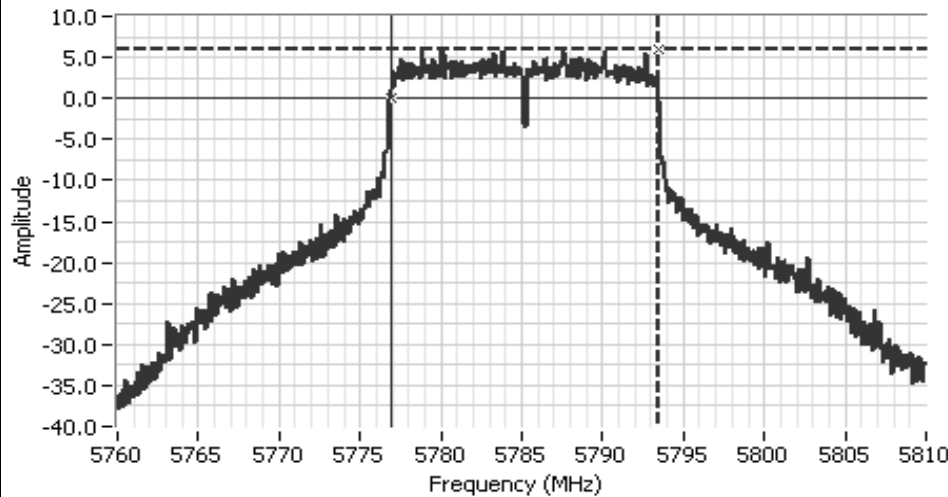
Comments

6dB Bandwidth

Cursor 1	5753.33	6.40	
Cursor 2	5736.91	0.40	

Delta Freq. 16.42
 Delta Amplitude 6.00

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

HP8564E,EMI
 CF: 5785.00 MHz
 SPAN:50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl:7.90DBM

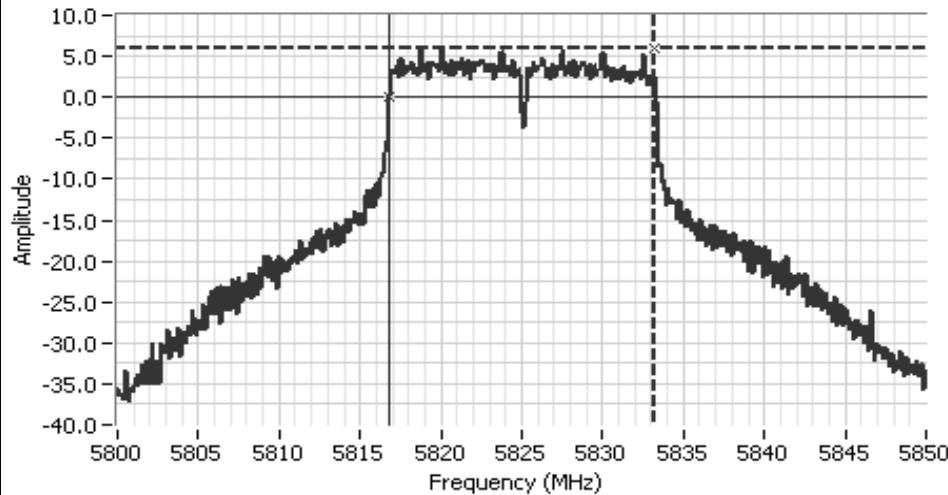
Comments

6dB Bandwidth

Cursor 1 5793.41: 6.07
 Cursor 2 5776.91: 0.07

Delta Freq. 16.50

Delta Amplitude 6.00



Analyzer Settings

HP8564E,EMI
 CF: 5825.00 MHz
 SPAN:50.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl:7.90DBM

Comments

6dB Bandwidth

Cursor 1 5833.25: 6.07
 Cursor 2 5816.83: 0.07

Delta Freq. 16.42

Delta Amplitude 6.00

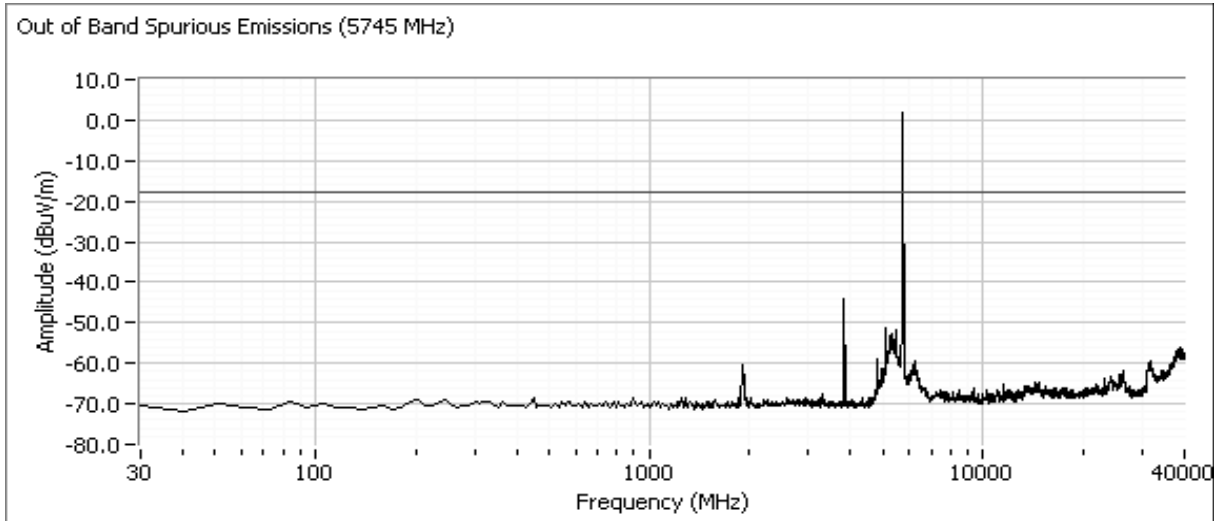


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

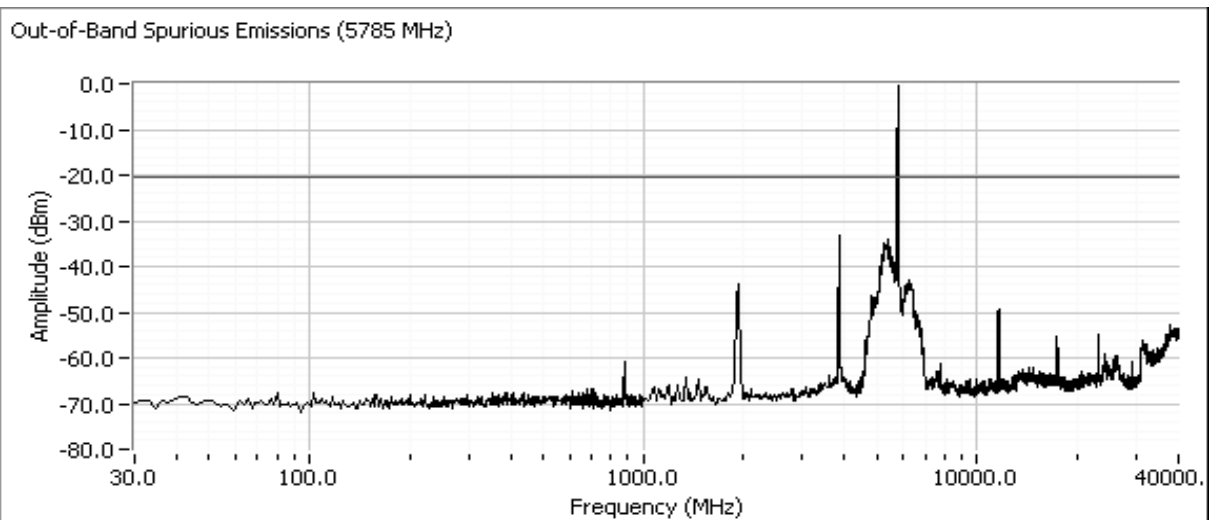
Run #4: Out of Band Spurious Emissions

Frequency (MHz)	Limit	Result
5745	-30dBc	Pass
5785	-30dBc	Pass
5825	-30dBc	Pass

Plots for low channel, power setting(s) = 17

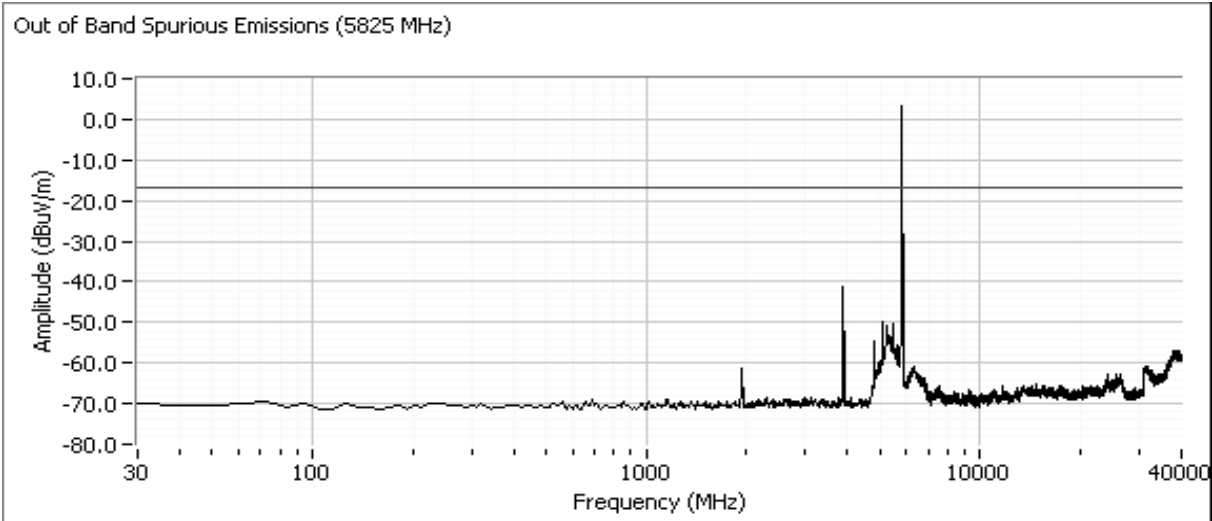


Plots for center channel, power setting(s) = 17



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Plots for high channel, power setting(s) = 17



Client:	OOO	Job Number:	J68325
Model:	2050 and 2060	T-Log Number:	T68341
		Account Manager:	Susan Pelzl
Contact:	Bob Hymes		
Standard:	EN55022 / FCC	Class:	N/A

Radiated Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 6/19/2007 0:07
 Test Engineer: Rafael Varelas
 Test Location: SVOATS #2

Config. Used: 1
 Config Change: None
 EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 13 °C
 Rel. Humidity: 77 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1a - c (Transmit mode)	RE, 30 - 40000 MHz Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	50.0dBµV/m (316.2µV/m) @ 11650.1MHz (-4.0dB)
2a - c (Receive mode)	RE, 30 - 18000 MHz Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	37.1dBµV/m (71.6µV/m) @ 11656.6MHz (-16.9dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

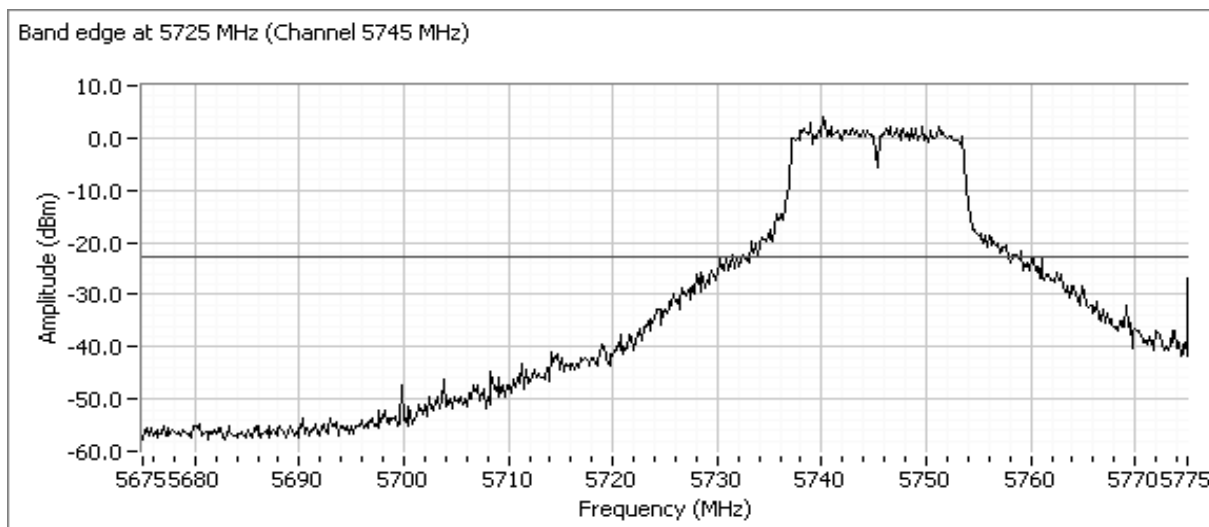
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1: Radiated Spurious Emissions, 30 - 40000 MHz.

Run #1a: Radiated Spurious Emissions, 30 - 18000 MHz. Low Channel @ 5745 MHz

Setting = 17

EUT on its Side



Other Spurious Radiated Emissions: (retested on 7/13/07 with new modifications)

Frequency	Level	Pol	15.209 / 15.247	Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters
11491.970	49.8	H	54.0	-4.2	AVG	154	1.1
17233.850	43.7	H	54.0	-10.3	AVG	121	1.0
17233.850	43.6	V	54.0	-10.4	AVG	0	1.0
11489.370	42.4	V	54.0	-11.6	AVG	139	1.0
11491.970	61.5	H	74.0	-12.5	PK	154	1.1
17233.850	55.5	H	74.0	-18.5	PK	121	1.0
17233.850	55.5	V	74.0	-18.5	PK	0	1.0
11489.370	54.6	V	74.0	-19.4	PK	139	1.0

Note 1: For emissions in restricted bands, the limit of 15.209 was used.



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1b: Radiated Spurious Emissions, 30 - 18000 MHz. Center Channel @ 5785 MHz
EUT on its Side

Other Spurious Radiated Emissions: (retested on 7/13/07 with new modifications)

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
11568.430	49.0	H	54.0	-5.0	AVG	147	1.0	
17355.830	44.2	V	54.0	-9.8	AVG	310	1.0	
17355.030	44.1	H	54.0	-9.9	AVG	199	1.0	
11570.900	43.0	V	54.0	-11.0	AVG	139	1.0	
11568.430	61.1	H	74.0	-12.9	PK	147	1.0	
17355.830	56.5	V	74.0	-17.5	PK	310	1.0	
17355.030	56.2	H	74.0	-17.8	PK	199	1.0	
11570.900	54.5	V	74.0	-19.5	PK	139	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used.

Run #1c: Radiated Spurious Emissions, 30 - 18000 MHz. High Channel @ 5825 MHz
EUT on its Side

Other Spurious Radiated Emissions: (retested on 7/13/07 with new modifications)

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
11650.100	50.0	H	54.0	-4.0	AVG	149	1.0	
11651.530	46.8	V	54.0	-7.2	AVG	139	1.8	
11650.100	61.7	H	74.0	-12.3	PK	149	1.0	
11651.530	58.2	V	74.0	-15.8	PK	139	1.8	

Note 1: For emissions in restricted bands, the limit of 15.209 was used.

Run #2: Receive Radiated Spurious Emissions, 30 - 18000 MHz.
Run #2a: Radiated Spurious Emissions, 30 - 18000 MHz. Low Channel @ 5745 MHz
EUT on its Side

Other Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
11480.200	35.9	H	54.0	-18.1	AVG	351	1.0	
11487.770	35.9	V	54.0	-18.1	AVG	201	1.0	
5735.300	31.1	H	54.0	-22.9	AVG	304	1.0	
5744.130	30.8	V	54.0	-23.2	AVG	5	1.0	
11480.200	47.7	H	74.0	-26.3	PK	351	1.0	
11487.770	46.9	V	74.0	-27.1	PK	201	1.0	
5735.300	42.6	H	74.0	-31.4	PK	304	1.0	
5744.130	42.4	V	74.0	-31.6	PK	5	1.0	



EMC Test Data

Client:	OOO	Job Number:	J68325
Model:	2050 and 2060	T-Log Number:	T68341
		Account Manager:	Susan Pelzl
Contact:	Bob Hymes		
Standard:	EN55022 / FCC	Class:	N/A

**Run #2b: Radiated Spurious Emissions, 30 - 18000 MHz. Center Channel @ 5785 MHz
EUT on its Side**

Other Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
11562.630	36.0	V	54.0	-18.0	AVG	335	1.0	
11571.630	36.0	H	54.0	-18.0	AVG	65	1.0	
5785.940	31.3	H	54.0	-22.7	AVG	0	1.0	
5784.470	31.2	V	54.0	-22.8	AVG	65	1.0	
11562.630	47.8	V	74.0	-26.2	PK	335	1.0	
11571.630	47.5	H	74.0	-26.5	PK	65	1.0	
5785.940	43.1	H	74.0	-30.9	PK	0	1.0	
5784.470	42.3	V	74.0	-31.7	PK	65	1.0	

**Run #2c: Radiated Spurious Emissions, 30 - 18000 MHz. High Channel @ 5825 MHz
EUT on its Side**

Other Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
11656.600	37.1	H	54.0	-16.9	AVG	0	1.0	
11653.870	37.0	V	54.0	-17.0	AVG	28	2.0	
5827.370	30.9	H	54.0	-23.1	AVG	57	1.0	
5825.810	30.9	V	54.0	-23.1	AVG	248	1.0	
11656.600	48.4	H	74.0	-25.6	PK	0	1.0	
11653.870	48.3	V	74.0	-25.7	PK	28	2.0	
5825.810	42.5	V	74.0	-31.5	PK	248	1.0	
5827.370	41.7	H	74.0	-32.3	PK	57	1.0	

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Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

RSS 210 and FCC 15.247 Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 9/1/2006	Config. Used: 1
Test Engineer: Mehran Birgani	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature:	20 °C
Rel. Humidity:	54 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1 (802.11a Mode) 5725 - 5850MHz	RE, 30 - 18000 MHz Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	46.0dB μ V/m (199.5 μ V/m) @ 3854.5MHz (-8.0dB)

Modifications Made During Testing:

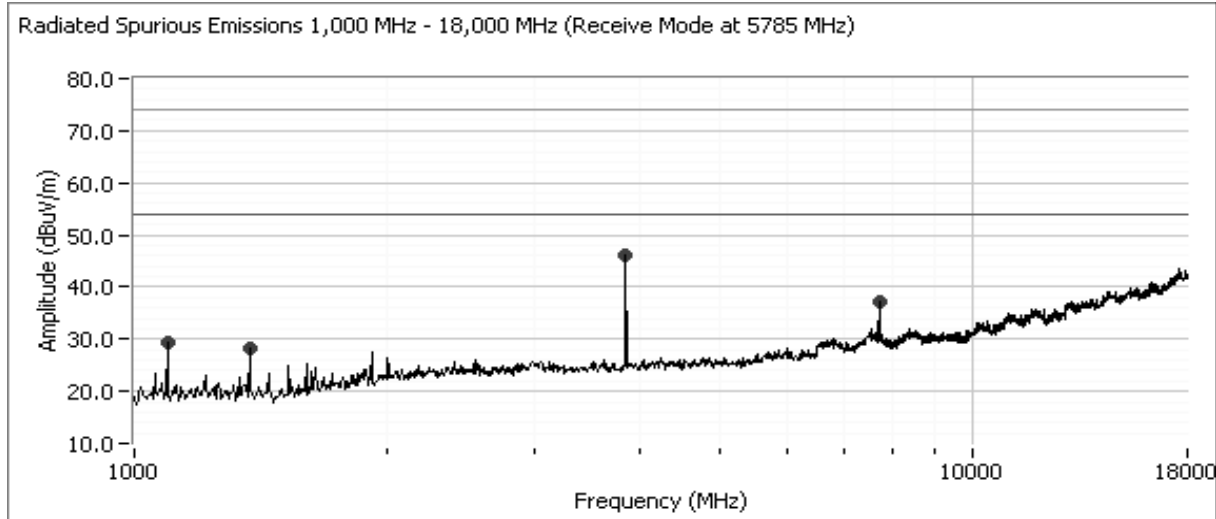
No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Note : Test data was imported from J62637 (T644964_FCC) was performed on 9/1/2006

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1: Radiated Spurious Emissions, 30 - 18,000 MHz. Operating Mode: 802.11a @ 5785 MHz


Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
3854.500	46.0	H	54.0	-8.0	Peak	188	1.7	
3854.500	46.0	H	54.0	-8.0	Peak	188	1.7	
7718.750	37.1	H	54.0	-16.9	Peak	260	1.7	
1095.000	29.4	H	54.0	-24.6	Peak	214	1.7	
1370.500	28.1	H	54.0	-25.9	Peak	166	1.7	

Client:	OOO	Job Number:	J68325
Model:	2050 and 2060	T-Log Number:	T68341
		Account Manager:	Susan Pelzl
Contact:	Bob Hymes		
Standard:	EN55022 / FCC	Class:	N/A

Radiated Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 6/19/2007 0:07	Config. Used: 1
Test Engineer: Rafael Varelas	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 13 °C
 Rel. Humidity: 77 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1a - c	RE, 30 - 18000 MHz - Spurious Emissions (TX)	FCC Part 15.209 / 15.407(b)	Pass	52.0dBµV/m (398.1µV/m) @ 5350.0MHz (-2.0dB)
2a - c	RE, 30 - 18000 MHz - Spurious Emissions (RX)	RSS GEN	Pass	59.7dBµV/m (966.1µV/m) @ 10512.8MHz (-14.3dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

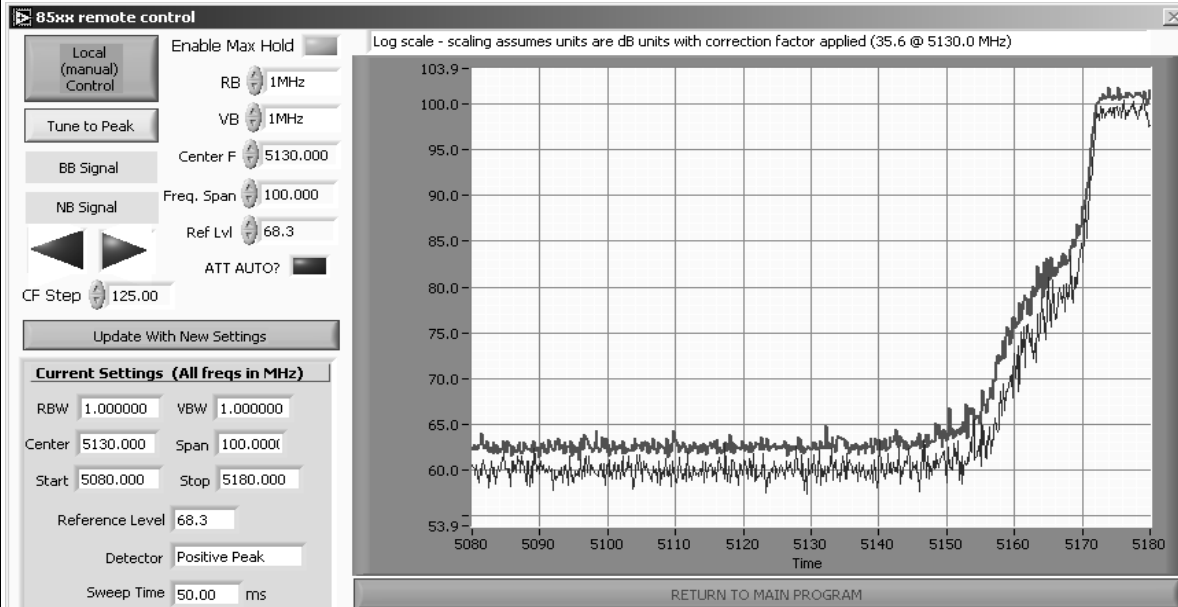
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1a: Radiated Spurious Emissions, 30 - 40000 MHz. Low Channel @ 5180 MHz

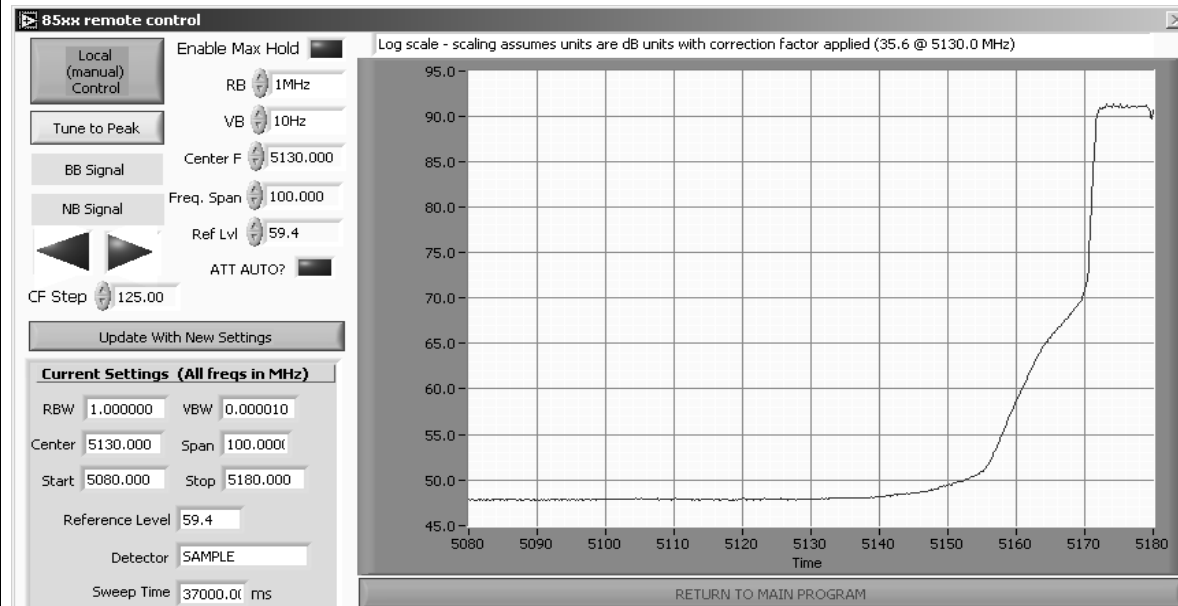
EUT on its Side

Setting = 17

Horizontal



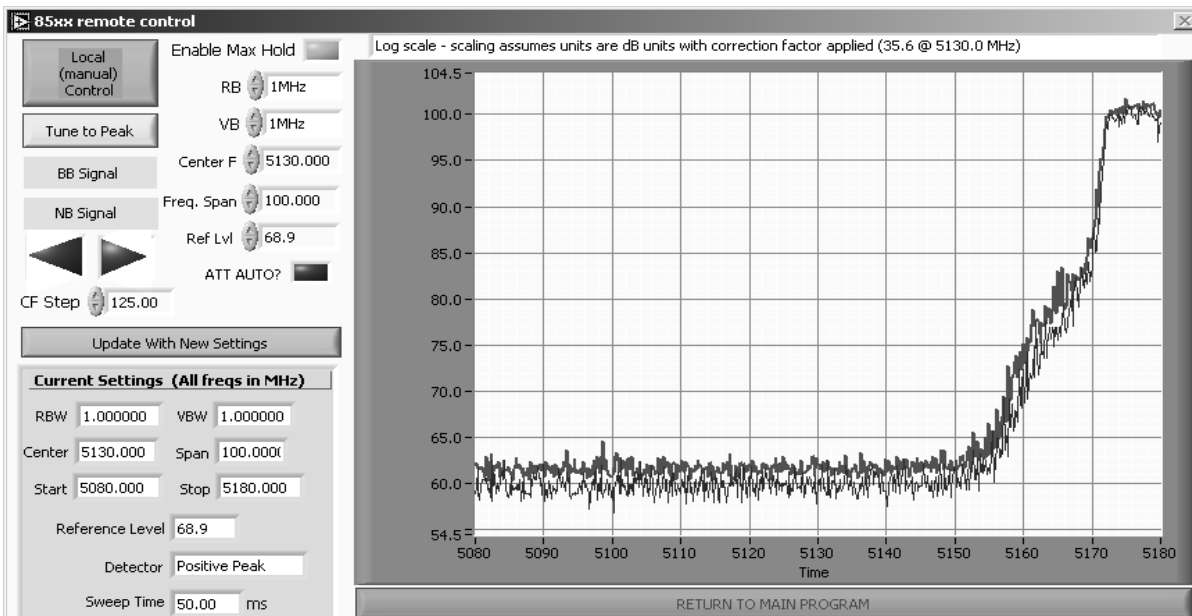
Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



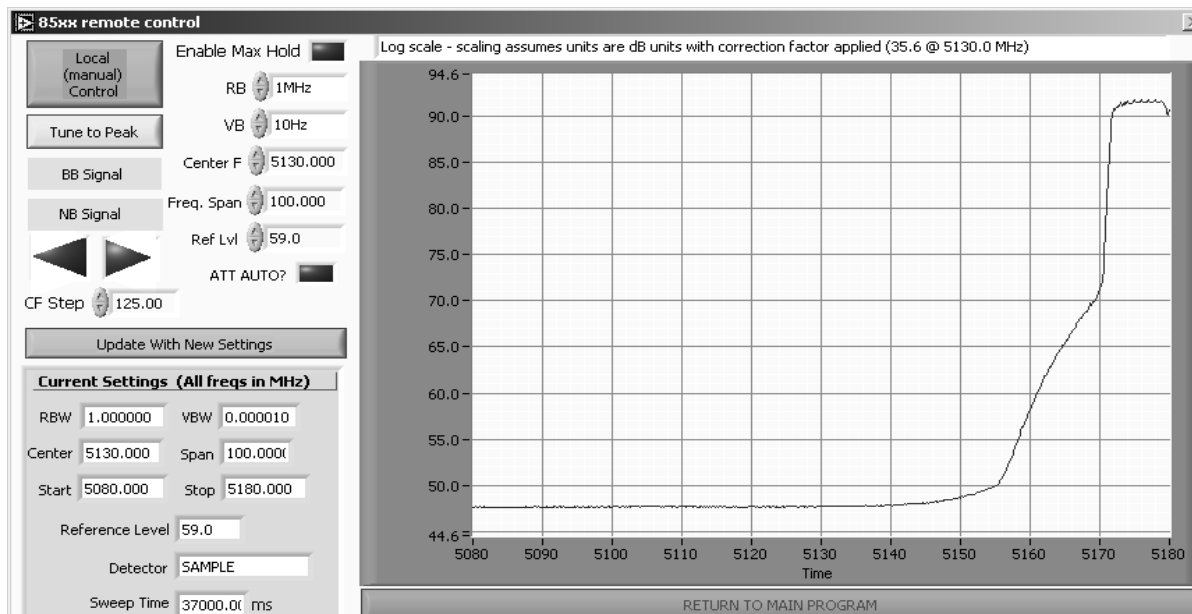
Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Vertical



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



EMC Test Data

Client:	OOO	Job Number:	J68325
Model:	2050 and 2060	T-Log Number:	T68341
Contact:	Bob Hymes	Account Manager:	Susan Pelzl
Standard:	EN55022 / FCC	Class:	N/A

Band Edge Signal Radiated Field Strength

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5180.920	92.8	H	-	-	AVG	23	1.1	Fundamental
5180.920	101.1	H	-	-	PK	23	1.1	Fundamental
5150.600	50.8	H	54.0	-3.2	AVG	23	1.1	
5150.600	65.1	H	74.0	-8.9	PK	23	1.1	
5181.060	93.4	V	-	-	AVG	206	1.0	Fundamental
5181.060	101.9	V	-	-	PK	206	1.0	Fundamental
5149.260	49.8	V	54.0	-4.2	AVG	206	1.0	
5149.260	64.3	V	74.0	-9.7	PK	206	1.0	

Other Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
10359.360	50.7	H	54.0	-3.3	AVG	199	1.0	
10358.740	46.3	V	54.0	-7.7	AVG	216	1.2	
15540.360	43.2	H	54.0	-10.8	AVG	205	1.0	
10359.360	62.9	H	74.0	-11.1	PK	199	1.0	
15539.210	40.3	V	54.0	-13.7	AVG	201	1.0	
10358.740	57.9	V	74.0	-16.1	PK	216	1.2	
15540.360	56.5	H	74.0	-17.5	PK	205	1.0	
15539.210	52.5	V	74.0	-21.5	PK	201	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set to -27dBm/MHz (-68dBuV/m).

Run #1b: Radiated Spurious Emissions, 30 - 40000 MHz. Center Channel @ 5260 MHz

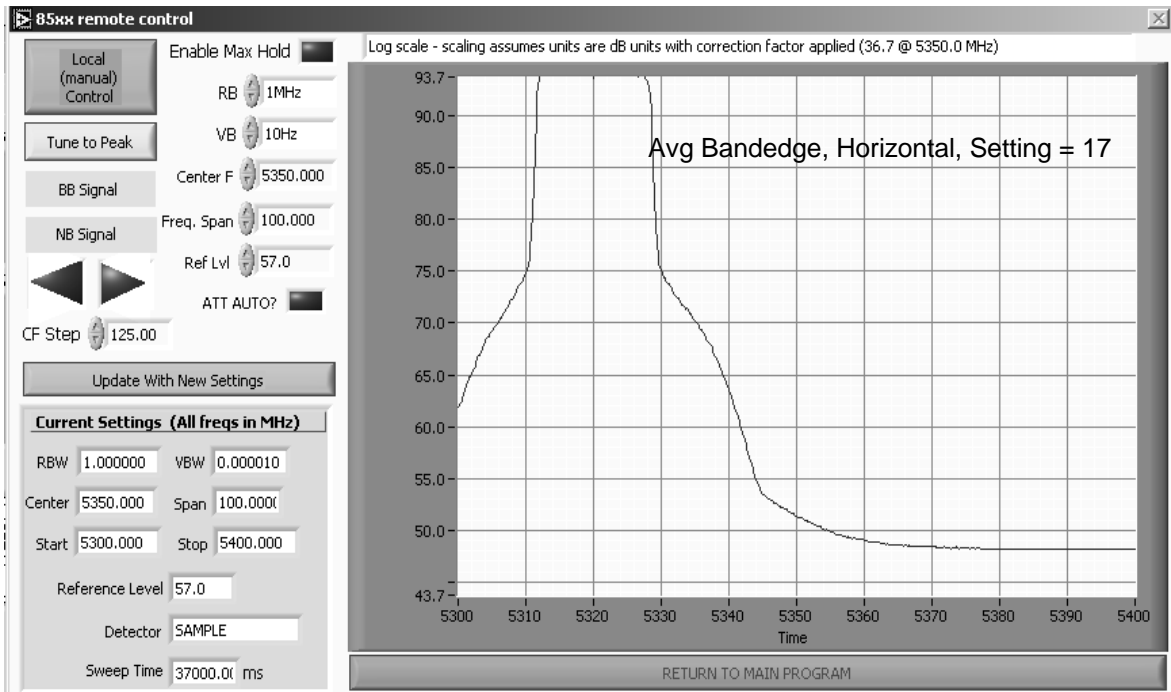
Setting = 17
EUT on its Side

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.407		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
15779.420	43.7	H	54.0	-10.3	AVG	198	1.2	
10521.050	56.1	H	68.3	-12.2	AVG	176	1.1	Non-restricted
15779.280	39.0	V	54.0	-15.0	AVG	39	1.0	
10521.270	50.9	V	68.3	-17.4	AVG	168	1.2	Non-restricted
15779.420	55.7	H	74.0	-18.3	PK	198	1.2	
15779.280	49.8	V	74.0	-24.2	PK	39	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set to -27dBm/MHz (-68dBuV/m).

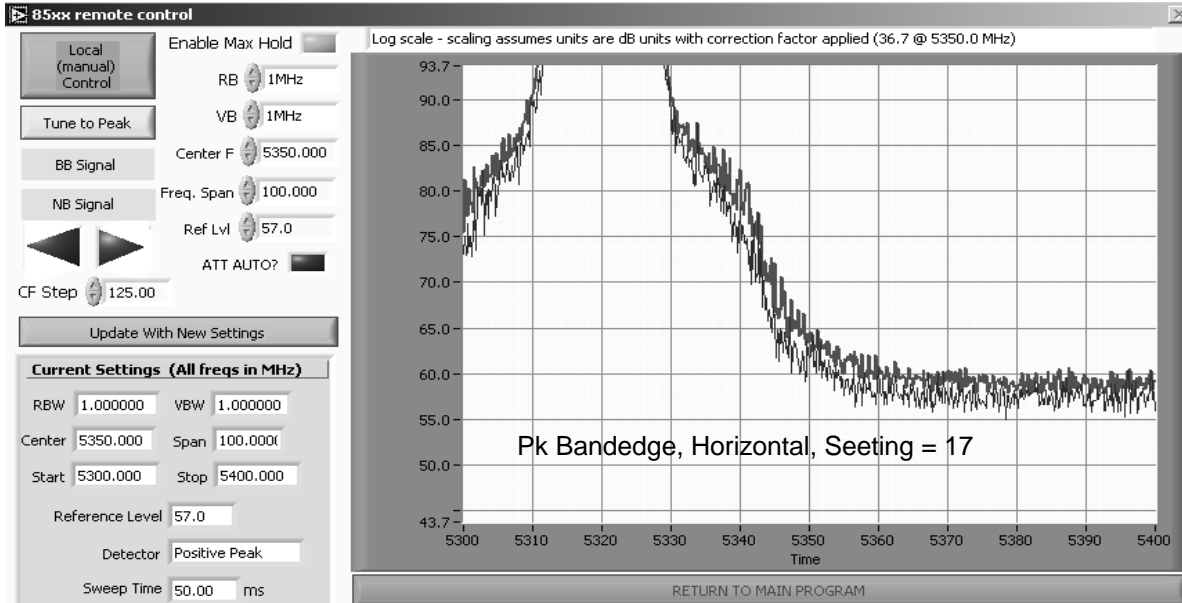
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1c: Radiated Spurious Emissions, 30 - 40000 MHz. High Channel @ 5320 MHz
Setting = 17
EUT on its Side

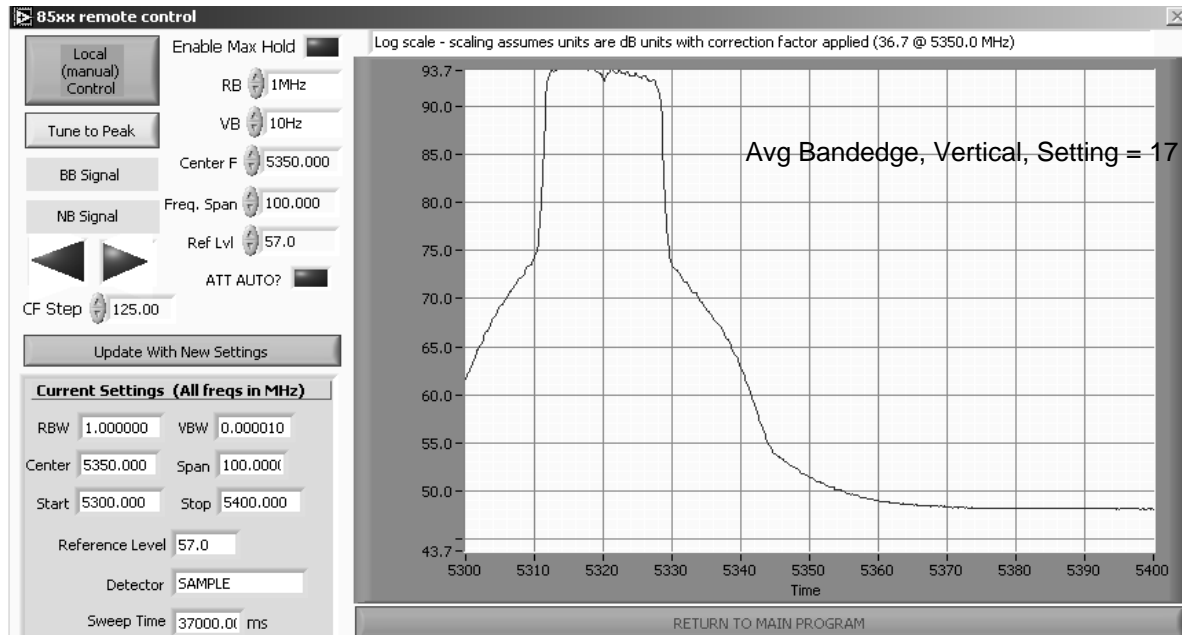


Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzl
Standard: EN55022 / FCC	Class: N/A

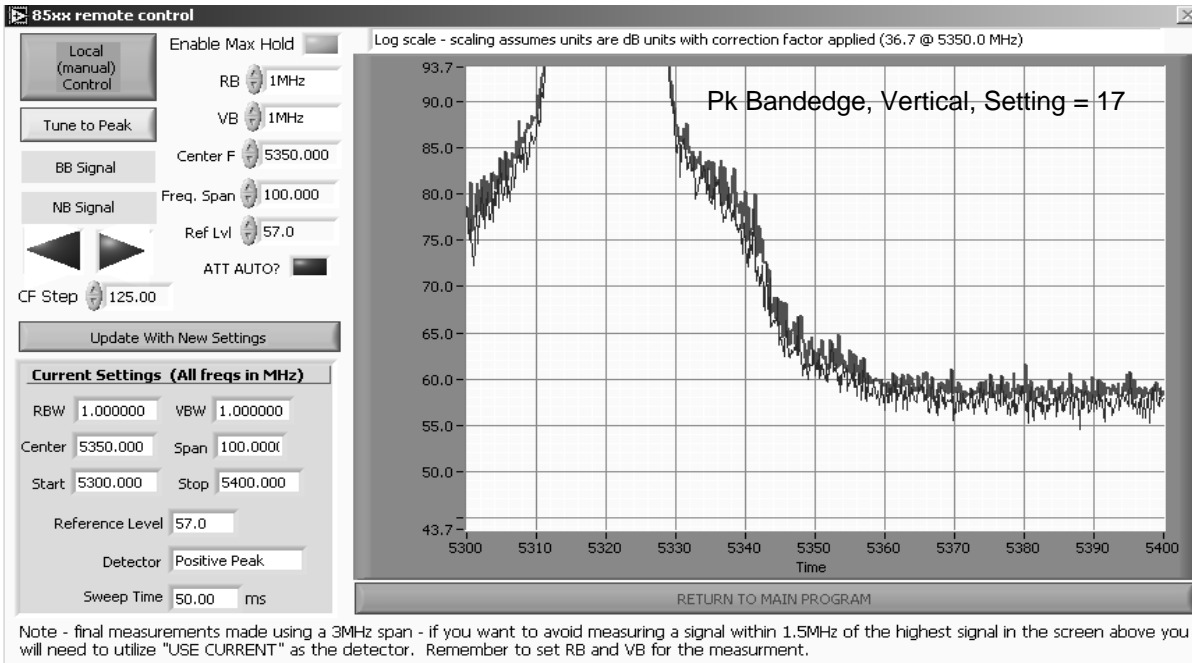


Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A



Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.000	52.0	H	54.0	-2.0	AVG	233	1.1	
5350.000	68.5	H	74.0	-5.5	PK	233	1.1	
5350.000	51.8	V	54.0	-2.2	AVG	232	1.2	
5350.050	67.9	V	74.0	-6.1	PK	232	1.2	

Other Spurious Radiated Emissions:

Other Spurious Radiated Emissions: (retested on 7/13/07 with new modifications)

Frequency	Level	Pol	15.209 / 15.407		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10643.700	44.1	H	54.0	-9.9	AVG	204	1.8	
10643.030	41.4	V	54.0	-12.6	AVG	172	1.0	
10643.700	56.6	H	74.0	-17.4	PK	204	1.8	
10643.030	54.5	V	74.0	-19.5	PK	172	1.0	



EMC Test Data

Client:	OOO	Job Number:	J68325
Model:	2050 and 2060	T-Log Number:	T68341
		Account Manager:	Susan Pelzl
Contact:	Bob Hymes		
Standard:	EN55022 / FCC	Class:	N/A

**Run #2a: Receive Radiated Spurious Emissions, 30 - 18000 MHz. Low Channel @ 5180 MHz
EUT on its Side**

Other Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.407		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
10356.930	37.1	V	54.0	-16.9	AVG	106	1.0	
10351.930	37.1	H	54.0	-16.9	AVG	266	1.0	
5173.570	30.2	H	54.0	-23.8	AVG	299	1.0	
5171.270	30.1	V	54.0	-23.9	AVG	360	1.0	
10351.930	48.7	H	74.0	-25.3	PK	266	1.0	
10356.930	48.6	V	74.0	-25.4	PK	106	1.0	
5173.570	41.7	H	74.0	-32.3	PK	299	1.0	
5171.270	41.3	V	74.0	-32.7	PK	360	1.0	

**Run #2b: Radiated Spurious Emissions, 30 - 18000 MHz. Center Channel @ 5260 MHz
EUT on its Side**

Other Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.407		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
10512.830	59.7	H	74.0	-14.3	PK	38	1.0	
10512.830	36.3	H	54.0	-17.7	AVG	38	1.0	
5261.370	30.6	H	54.0	-23.4	AVG	29	1.0	
5256.900	30.4	V	54.0	-23.6	AVG	58	1.0	
5261.370	42.4	H	74.0	-31.6	PK	29	1.0	
5256.900	41.7	V	74.0	-32.3	PK	58	1.0	

**Run #2c: Radiated Spurious Emissions, 30 - 18000 MHz. High Channel @ 5320 MHz
EUT on its Side**

Other Spurious Radiated Emissions:

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.407		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
10633.630	34.9	V	54.0	-19.1	AVG	353	1.0	
10641.900	34.9	H	54.0	-19.1	AVG	12	1.0	
5329.900	30.3	H	54.0	-23.7	AVG	10	1.0	
5320.770	30.3	V	54.0	-23.7	AVG	111	1.0	
10641.900	46.1	H	74.0	-27.9	PK	12	1.0	
10633.630	46.0	V	74.0	-28.0	PK	353	1.0	
5320.770	42.0	V	74.0	-32.0	PK	111	1.0	
5329.900	41.9	H	74.0	-32.1	PK	10	1.0	

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

FCC Part 15 Subpart E Tests

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 7/16/2007	Config. Used: 1
Test Engineer: Mehran Birgani	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions: Temperature: 22 °C
 Rel. Humidity: 41 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5150-5350 MHz	15.407(a) (1), (2)	Pass	17.7 dBm
1	PSD, 5150-5350 MHz	15.407(a) (1), (2)	Pass	3.94 dBm/ 1MHz
1	26dB Bandwidth	15.407	Pass	33.3 MHz
1	99% Bandwidth	RSS 210	-	17.5 MHz
2	Peak Excursion Envelope	15.407(a) (6)	Pass	11.64 dBm
3	Antenna Conducted - Out of Band Spurious	15.407(b)	Pass	All emissions below the -27dBm/MHz limit

Modifications Made During Testing:
 No modifications were made to the EUT during testing

Deviations From The Standard
 No deviations were made from the requirements of the standard.



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

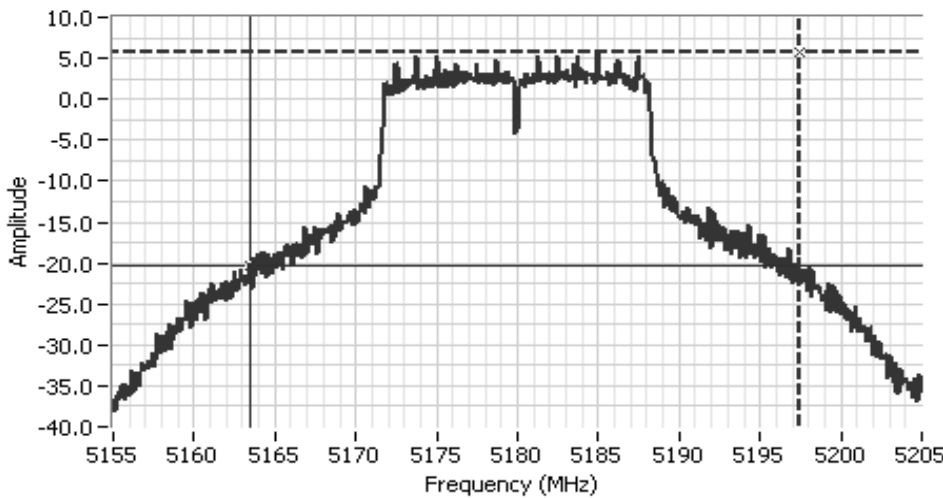
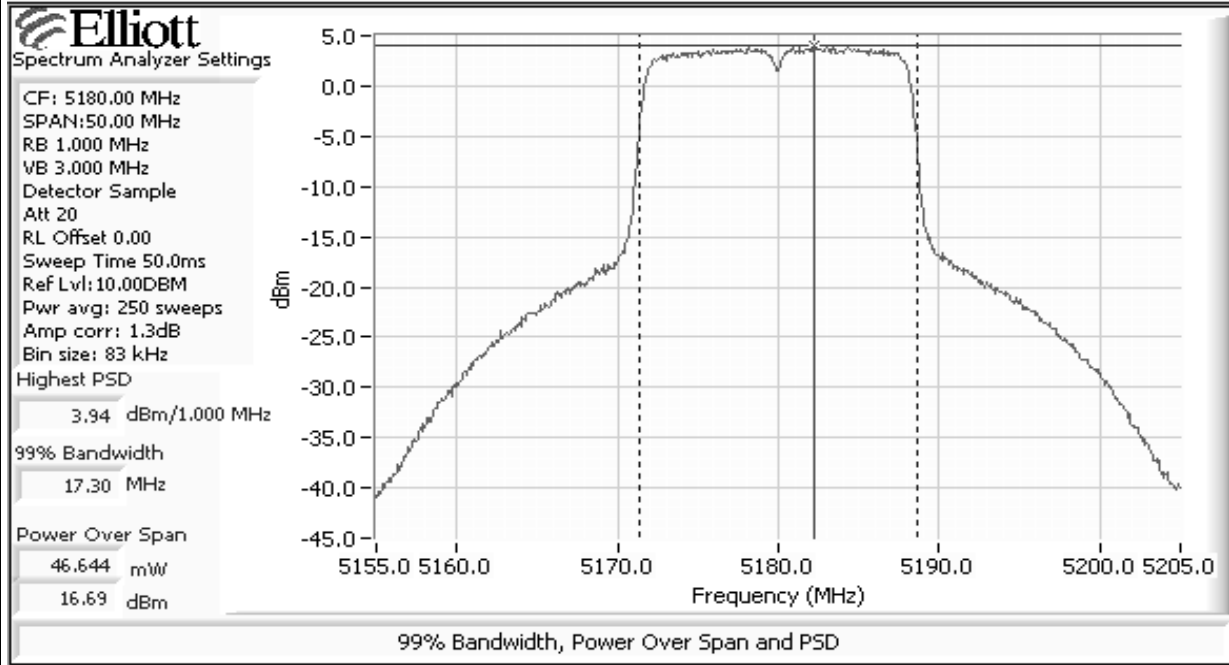
Run #1: Bandwidth, Output Power and Power spectral Density

Antenna Gain: 0 dBi

Frequency (MHz)	Software Setting	Bandwidth		Output Power ¹ dBm		Power (Watts)	PSD ² dBm/MHz			Result
		26dB	99% ⁴	Measured	Limit		Measured	FCC Limit	RSS Limit ³	
5150-5350 MHz Band										
5180	17.0	34.0	17.3	16.7	17.0	0.047	3.94	4.0	7.3	Pass
5240	17.0	34.0	17.5	16.7	17.0	0.047	3.81	4.0	7.3	Pass
5260	17.0	34.1	17.5	16.9	24.0	0.049	4.30	11.0	7.5	Pass
5320	17.0	33.3	17.4	17.7	24.0	0.059	4.98	11.0	8.3	Pass

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz.
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	For RSS210 the measured value of the PSD (see note 3) must not exceed the average value (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	At 5250, power was measured using avg power meter for comparison to SAR power; avg power was 17.1 dBm. At 5600 MHz, power was measured using avg power meter for comparison to SAR power; Avg power was 17.8 dBm.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

HP8564E, EMI
 CF: 5180.00 MHz
 SPAN: 50.00 MHz
 RB: 100 kHz
 VB: 300 kHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl: 7.20DBM

Comments

26dB Bandwidth

Cursor 1 5197.41: 5.70

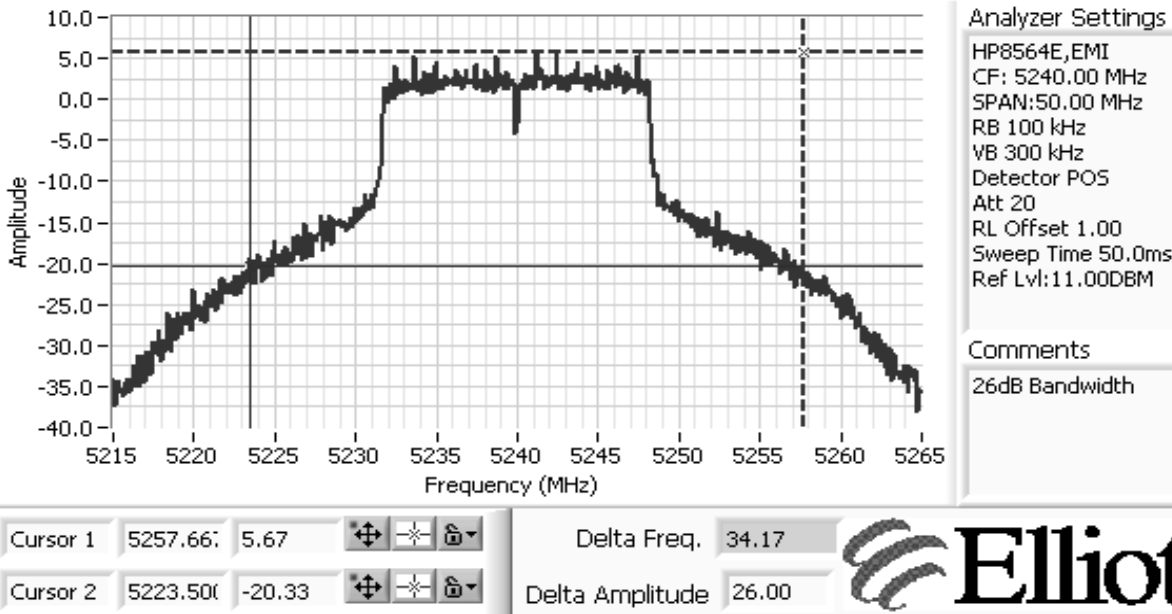
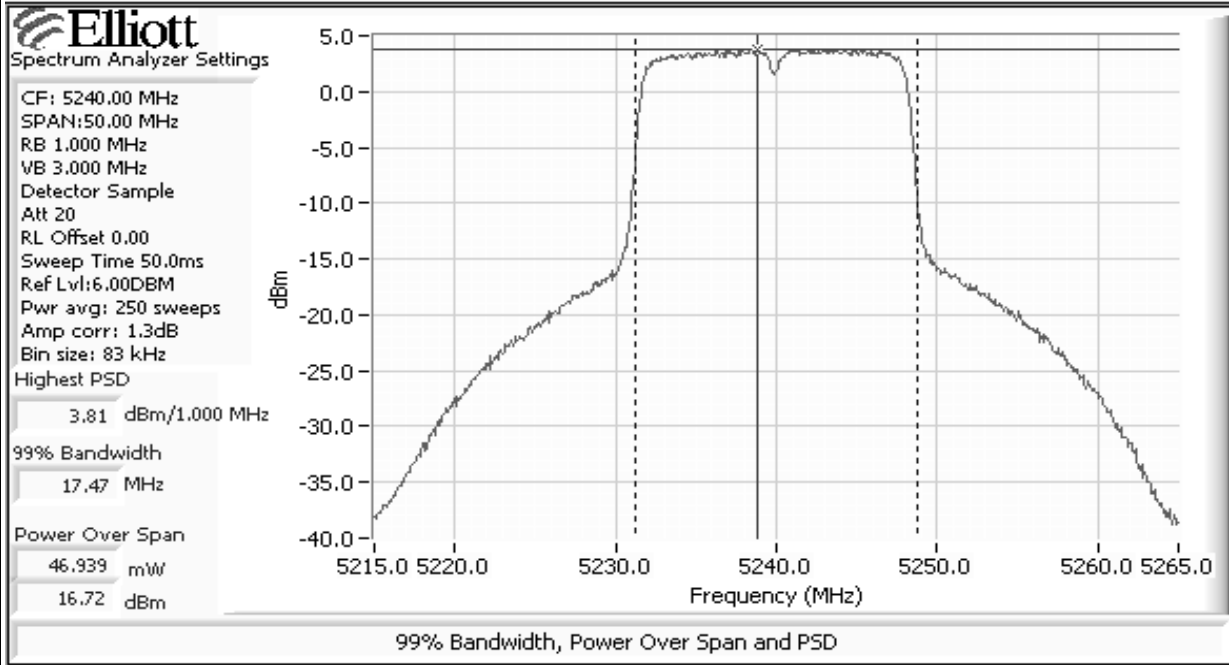
Cursor 2 5163.41: -20.30

Delta Freq. 34.00

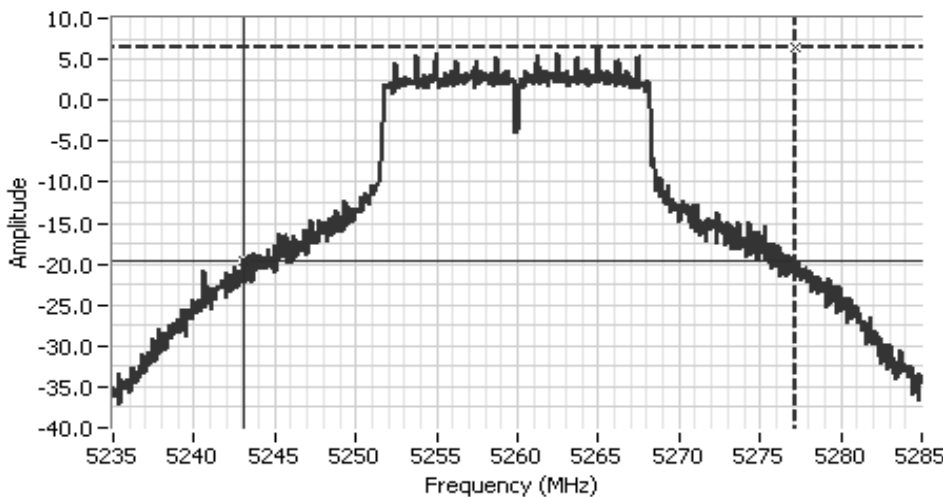
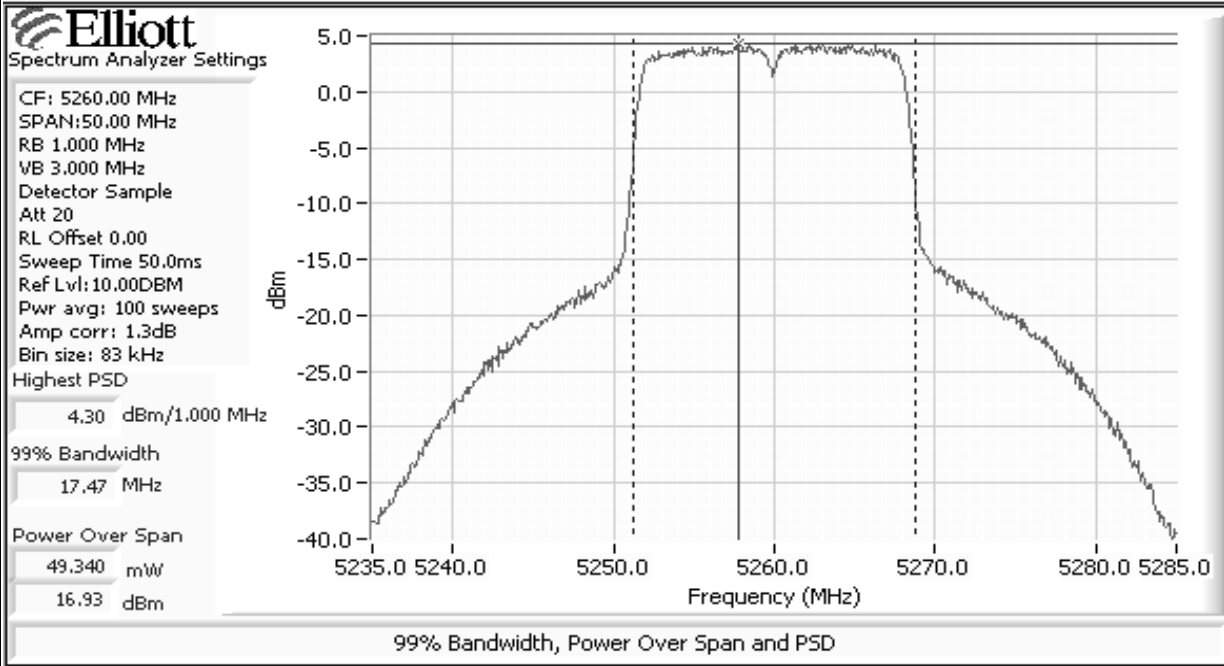
Delta Amplitude 26.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

HP8564E, EMI
 CF: 5260.00 MHz
 SPAN: 50.00 MHz
 RB 100 kHz
 VB 300 kHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl: 7.20DBM

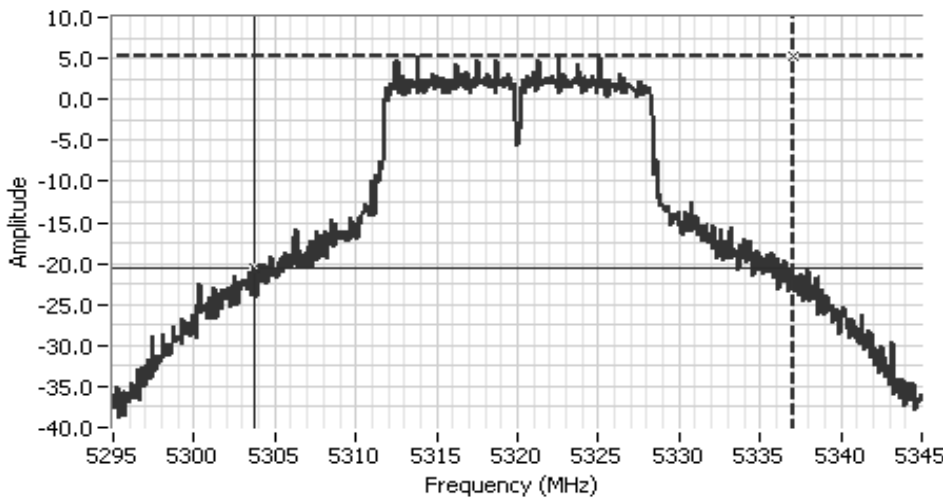
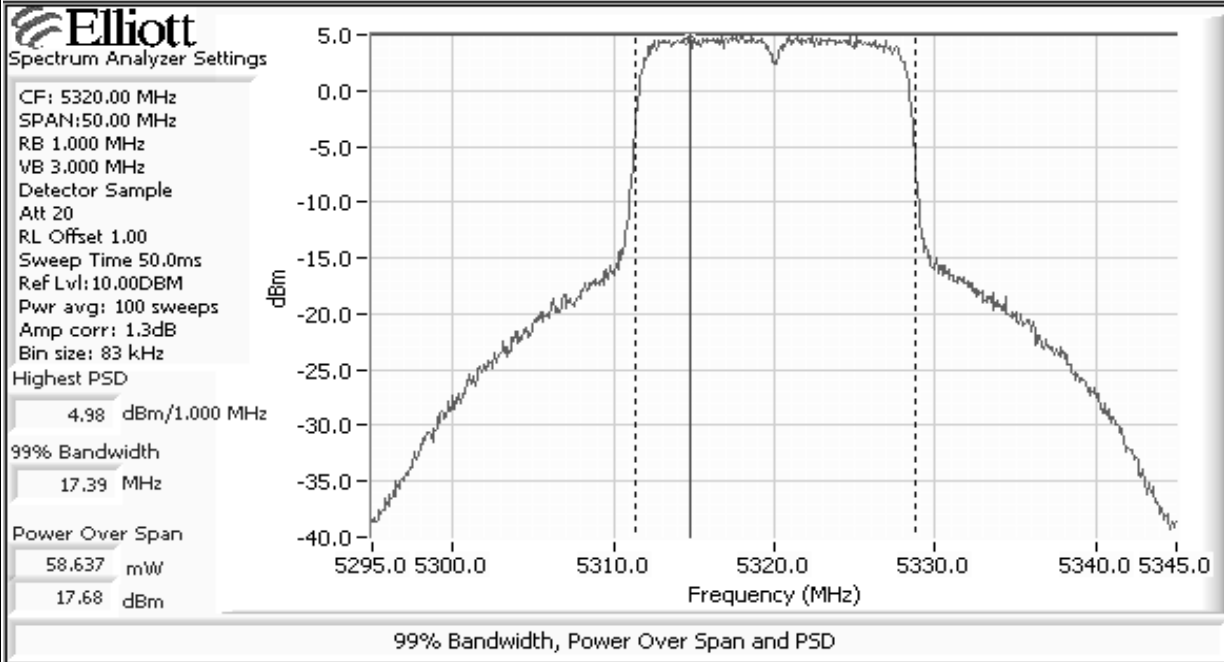
Comments

26dB Bandwidth

Cursor 1	5277.16	6.37	⊕ ⊖ 🔒
Cursor 2	5243.08	-19.63	⊕ ⊖ 🔒

Delta Freq. 34.08
 Delta Amplitude 26.00

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

- HP8564E, EMI
- CF: 5320.00 MHz
- SPAN: 50.00 MHz
- RB 100 kHz
- VB 300 kHz
- Detector POS
- Att 20
- RL Offset 1.00
- Sweep Time 50.0ms
- Ref Lvl: 7.20DBM

Comments

26dB Bandwidth

Cursor 1	5337.00	5.37	⊕ ⊖ ⊞ ⊚
Cursor 2	5303.75	-20.63	⊕ ⊖ ⊞ ⊚

Delta Freq. 33.25
Delta Amplitude 26.00

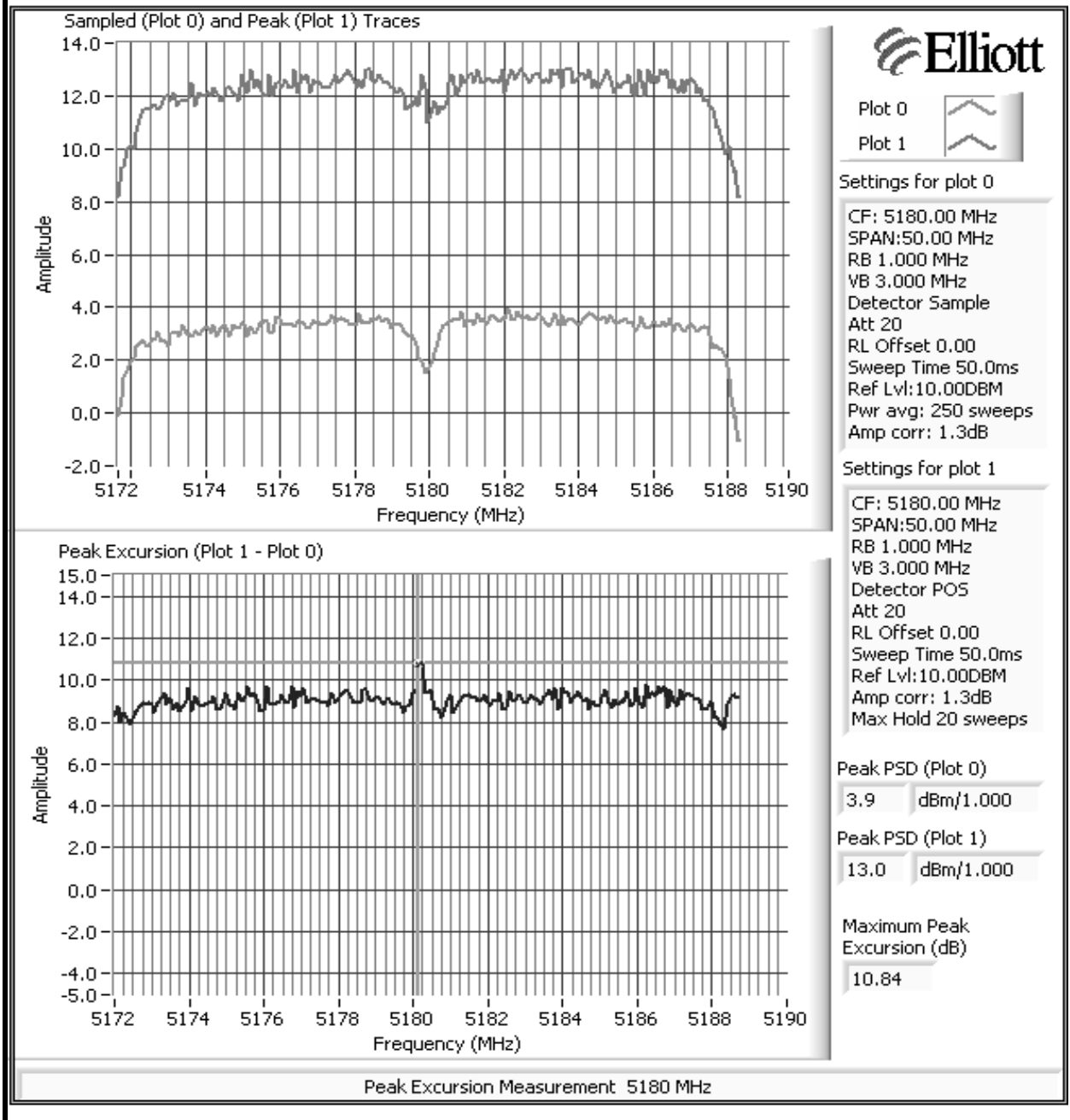
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #2: Peak Excursion Measurement

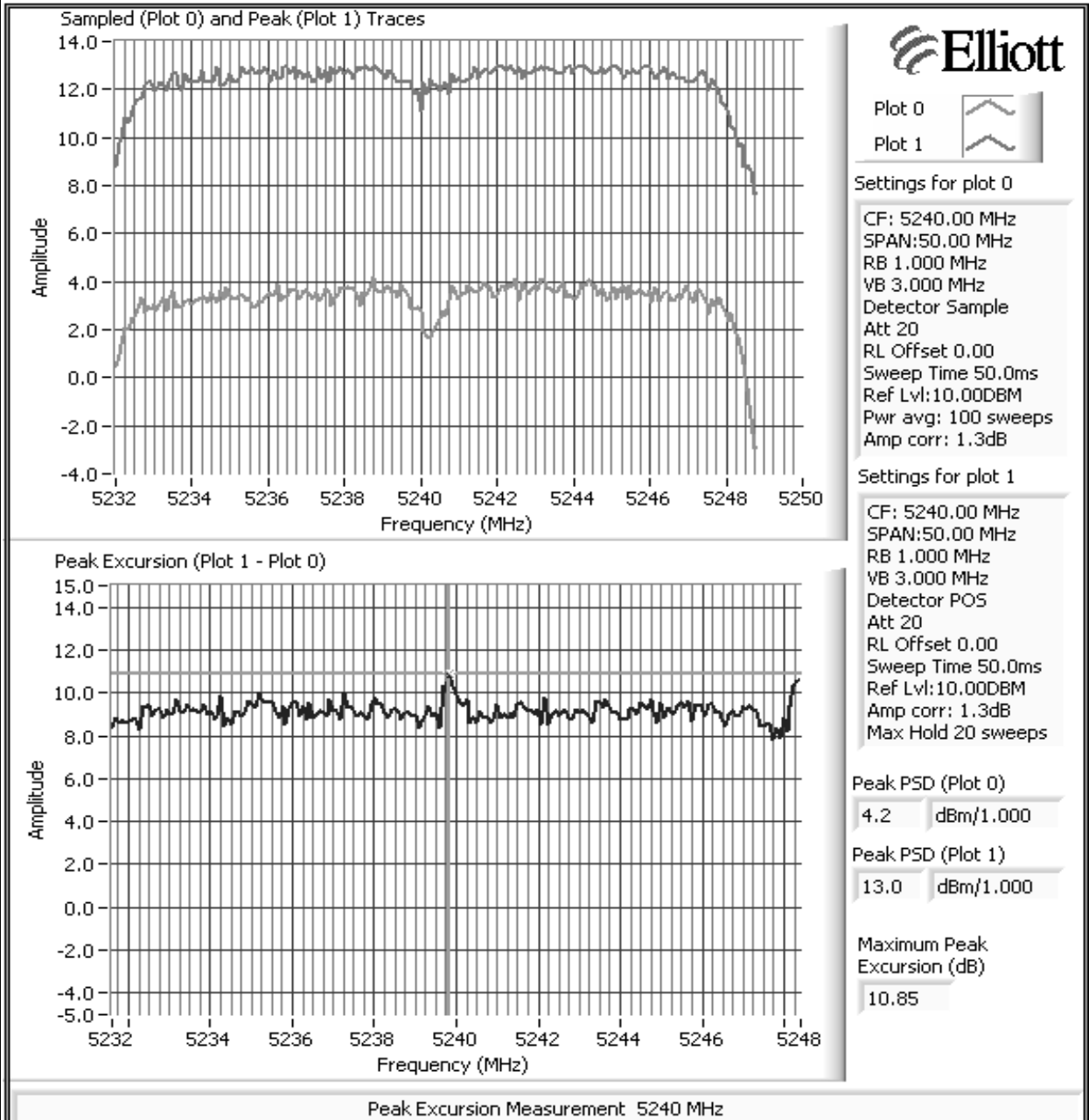
Plots Showing Peak Excursion

Trace A: RBW = VBW = 1MHz

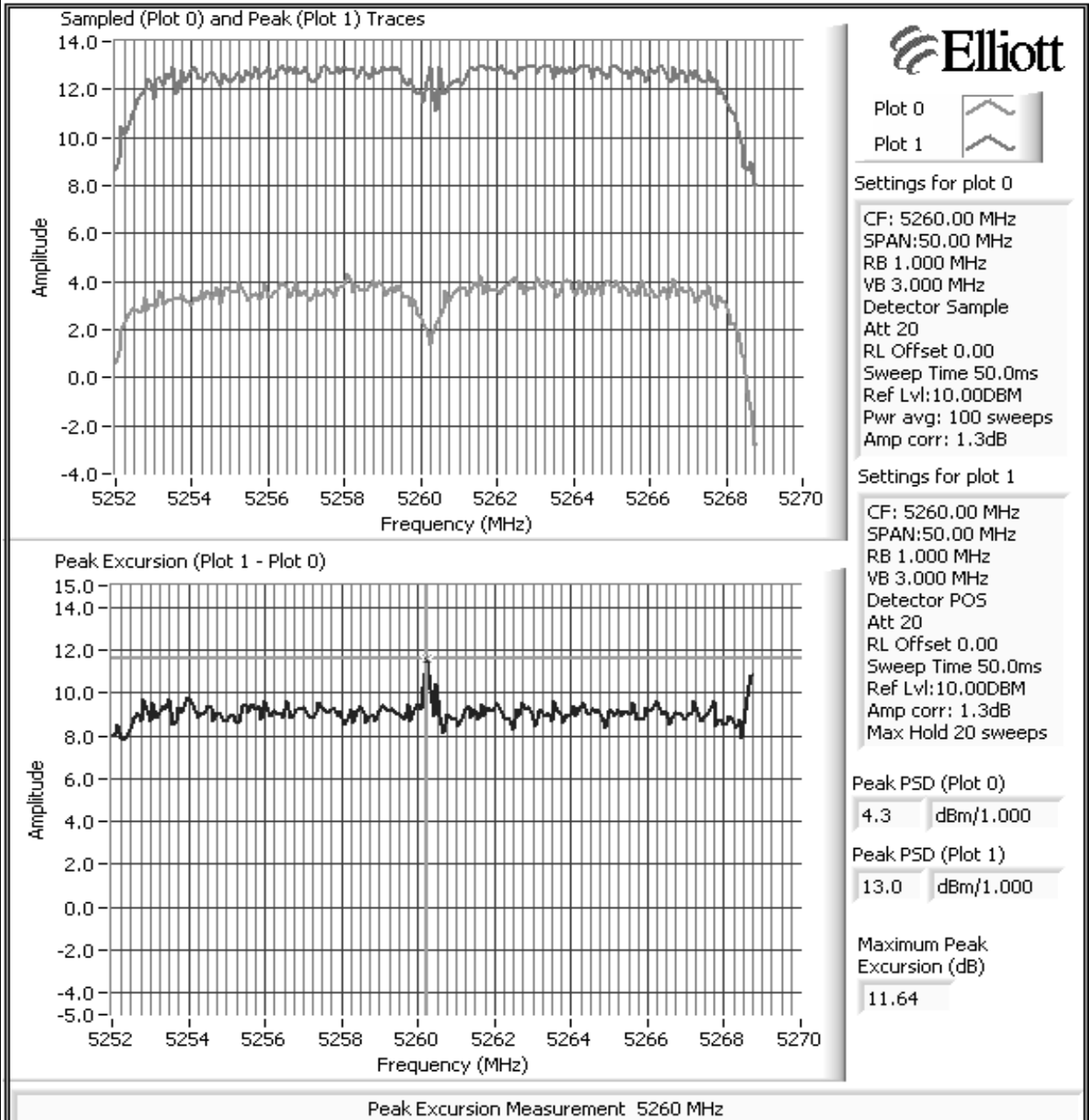
Trace B: RBW = 1 MHz, VBW = 30kHz



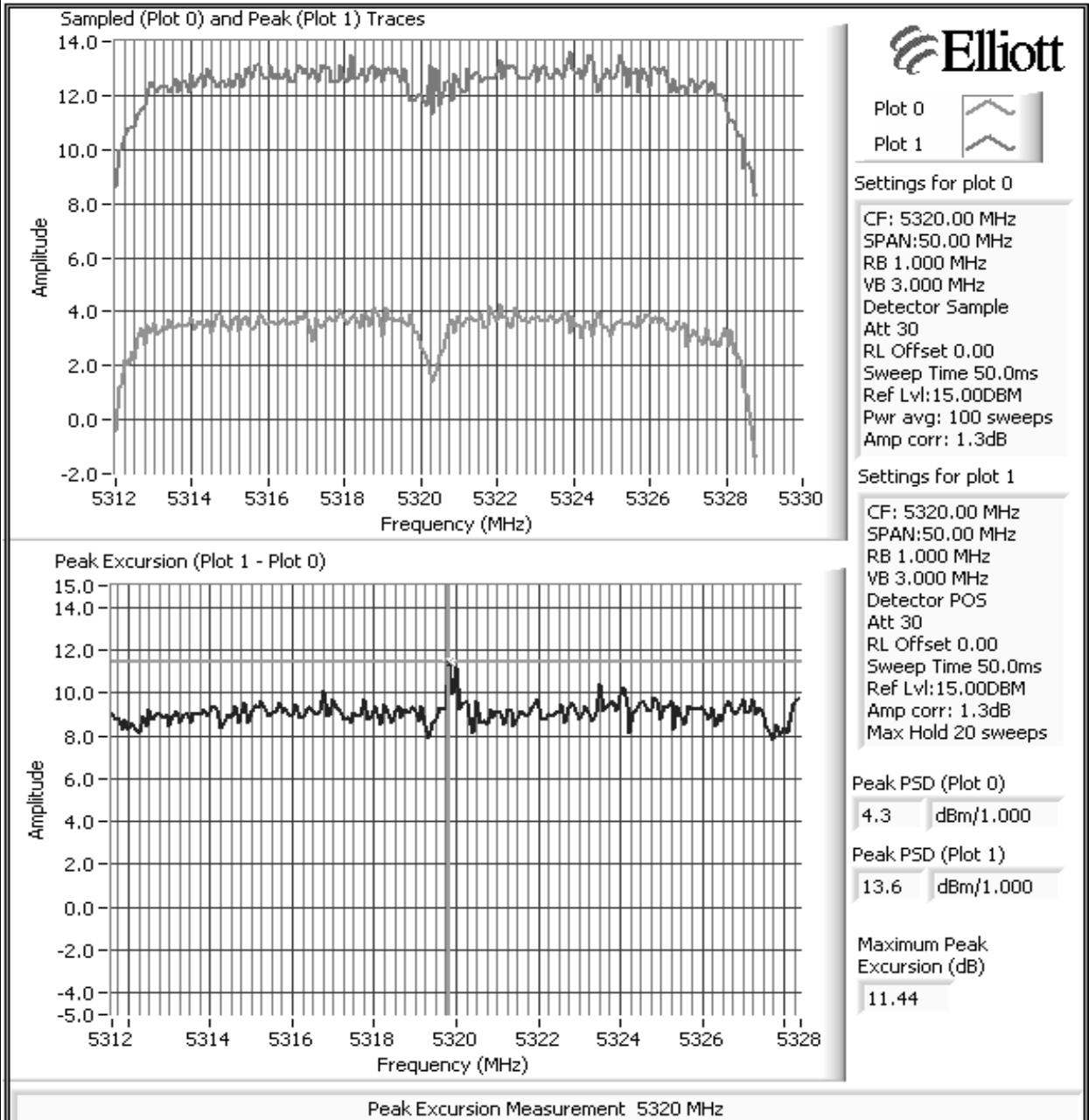
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

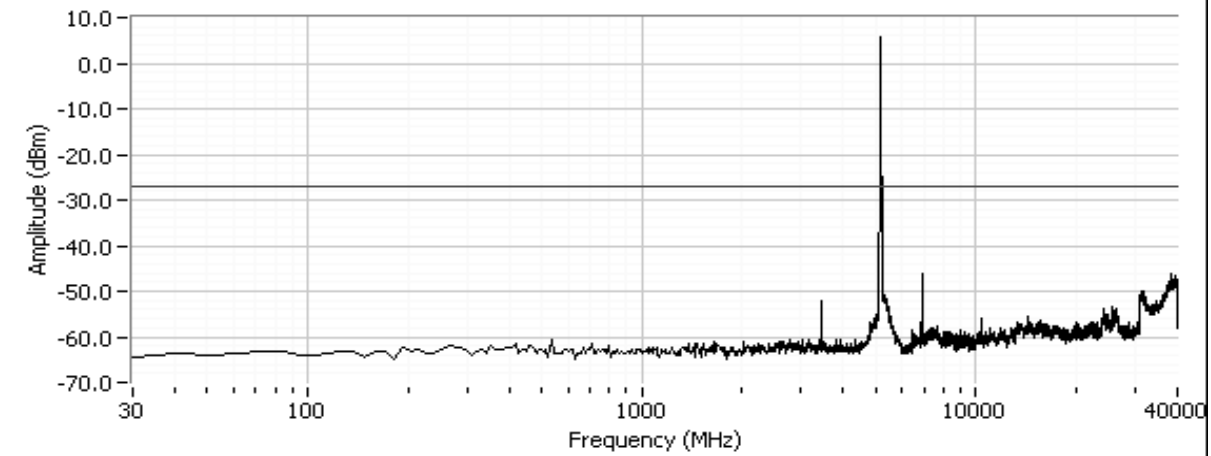
Maximum Antenna Gain: 0 dBi
 Spurious Limit: -27 dBm/MHz eirp
 Limit Used On Plots ^{Note 1}: -27 dBm/MHz

Note 1:	The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
Note 2:	All spurious signals below 1GHz are measured during digital device radiated emissions test.
Note 3:	Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
Note 4:	If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
Note 5:	Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

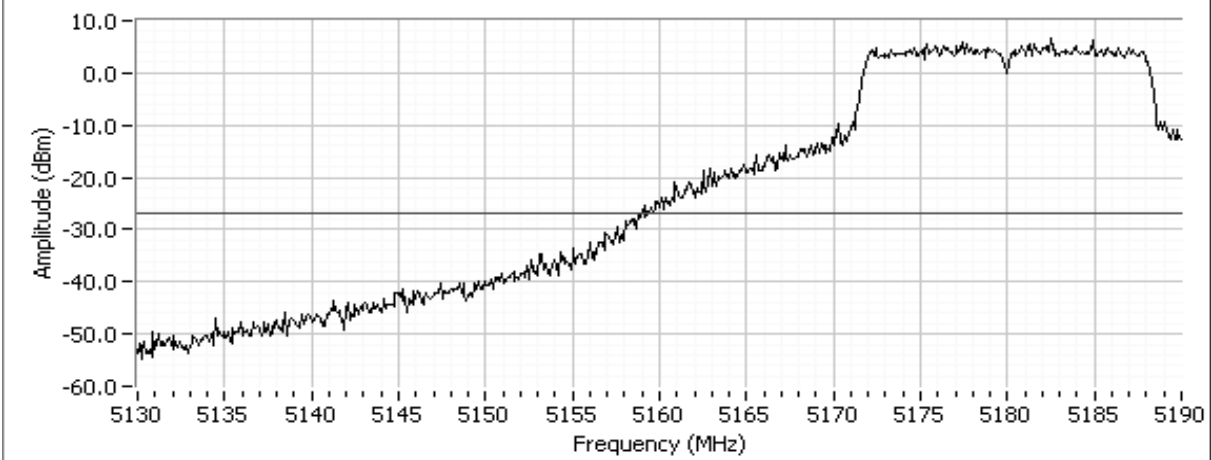
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

Out of Band Spurious Emissions (5180 MHz)

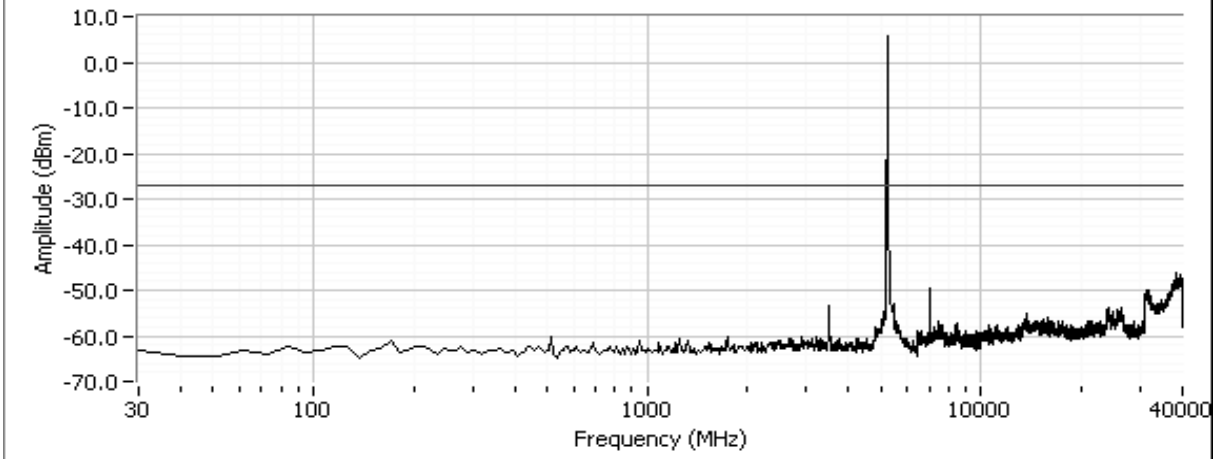


Out of Band Spurious Emissions (Band edge at 5150 MHz)

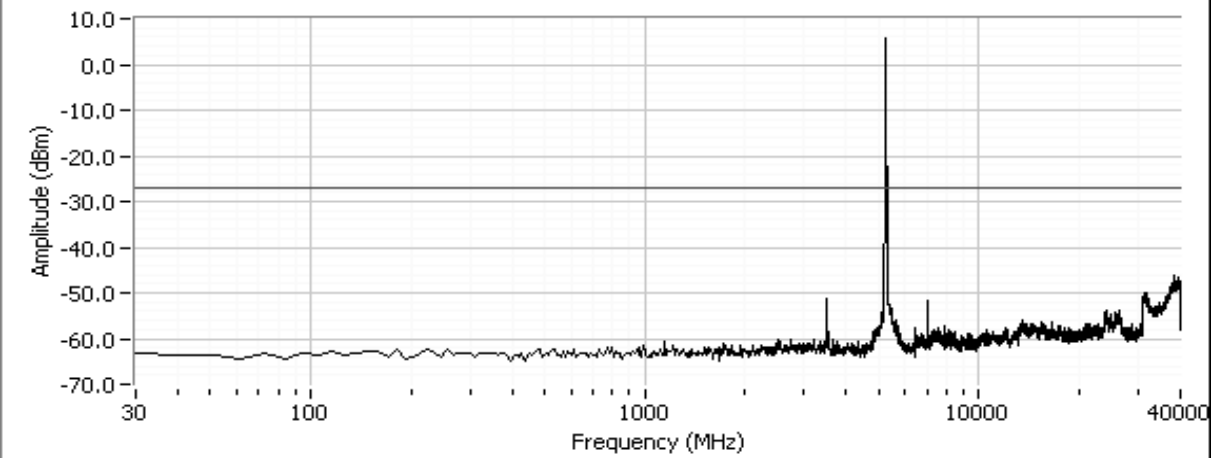


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Out of Band Spurious Emissions (5240 MHz)

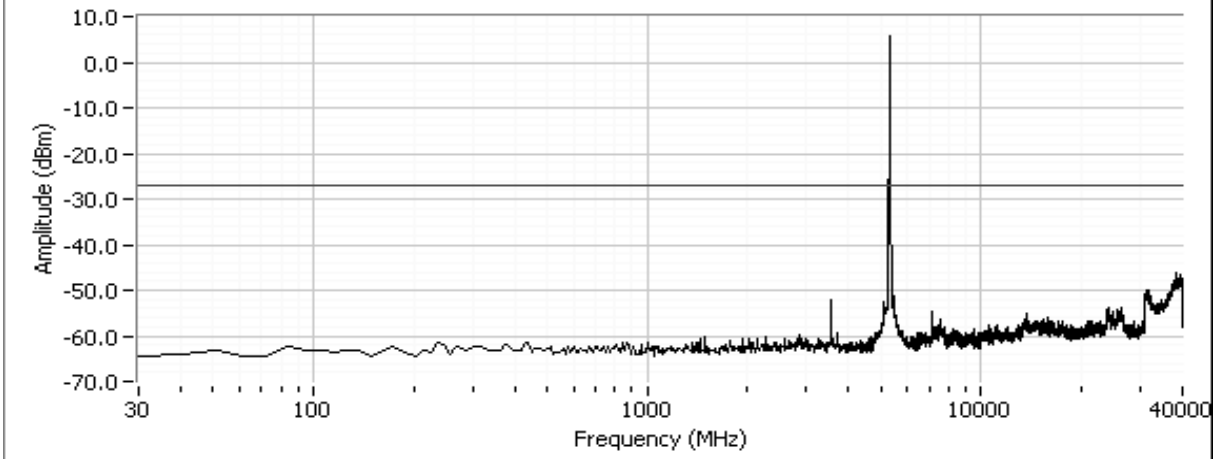


Out of Band Spurious Emissions (5260 MHz)

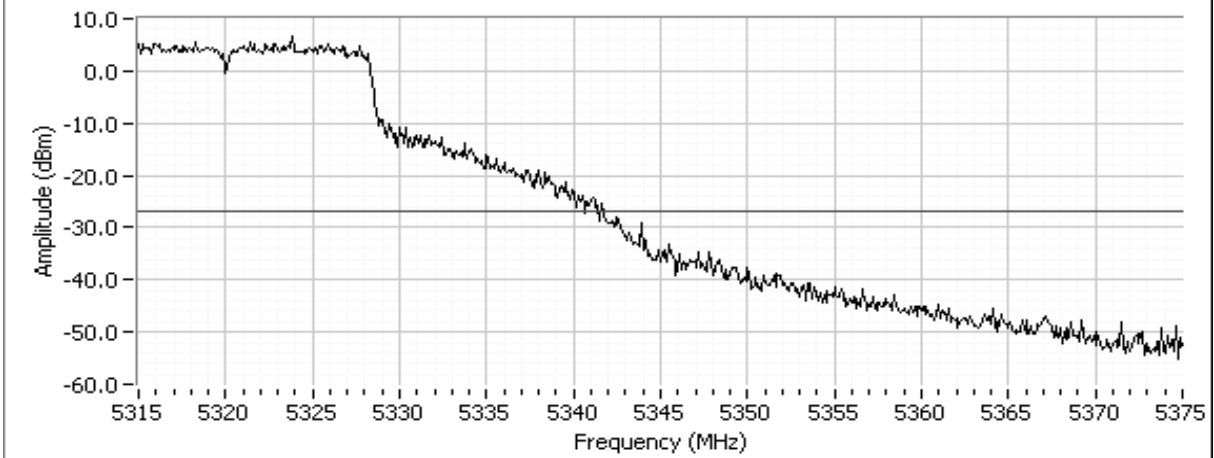


Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Out of Band Spurious Emissions (5320 MHz)



Out of Band Spurious Emissions (Band edge at 5350 MHz)



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: B

Conducted Emissions - Power Ports

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 6/22/2007 13:39	Config. Used: 1
Test Engineer: Wayne Fisher	Config Change: None
Test Location: SVOATS #2	EUT Voltage: Refer to individual run

General Test Configuration

The EUT was located on a wooden table, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment.

Ambient Conditions: Temperature: 22.1 °C
 Rel. Humidity: 51 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 230V/50Hz	EN55022 Class B	Pass	58.8dBµV (871.0µV) @ 0.179MHz (-5.7dB)
2	CE, AC Power, 120V/60Hz	EN55022 Class B	Pass	40.8dBµV @ 7.866MHz (-9.2dB)

Modifications Made During Testing:

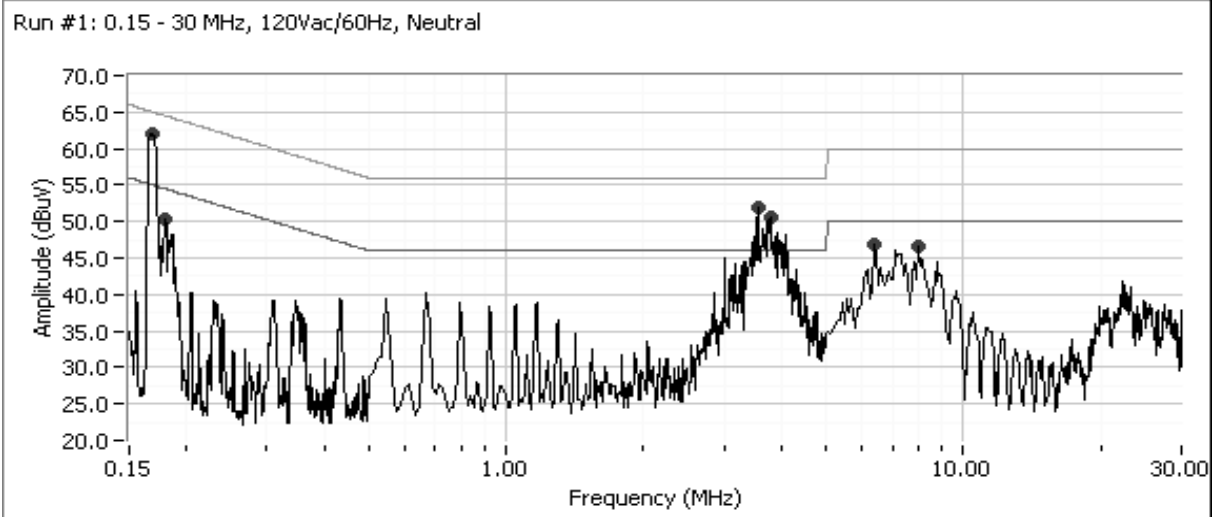
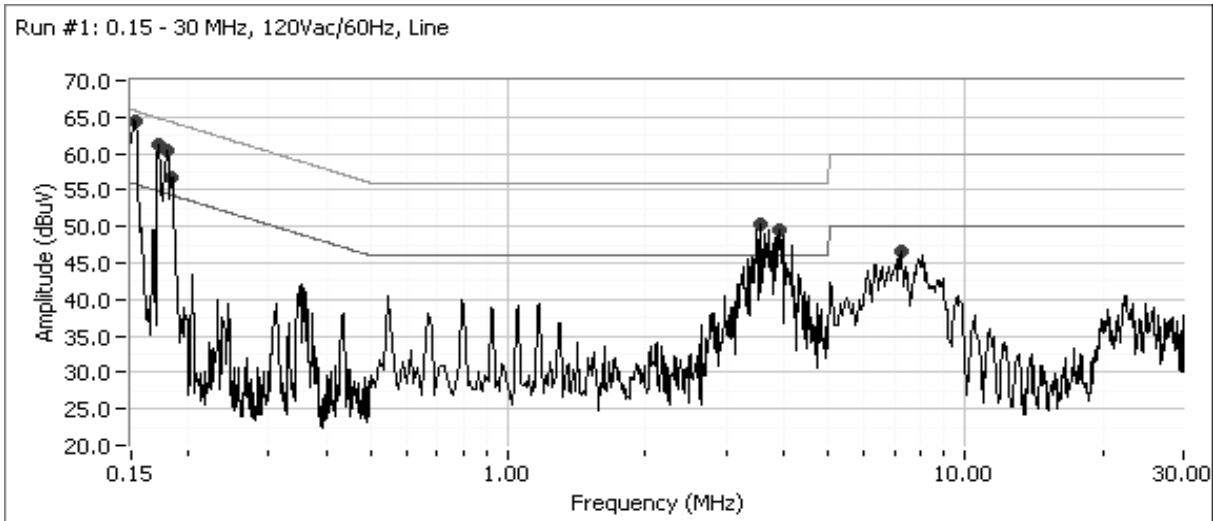
No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: B

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz





EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: B

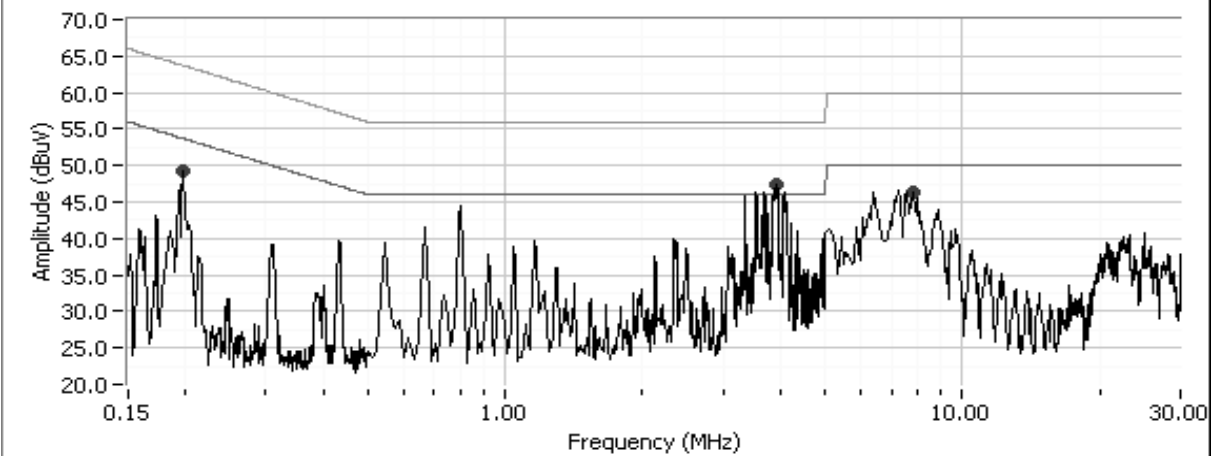
Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz

Frequency MHz	Level dBµV	AC Line	EN55022 B		Detector QP/Ave	Comments
			Limit	Margin		
0.179	58.8	Line 1	64.5	-5.7	QP	
0.168	59.0	Neutral	65.1	-6.1	QP	
0.185	57.9	Line 1	64.2	-6.3	QP	
0.185	57.7	Line 1	64.3	-6.6	QP	
0.180	57.3	Neutral	64.5	-7.2	QP	
7.191	42.7	Line 1	50.0	-7.3	AVG	
0.151	57.0	Line 1	65.9	-8.9	QP	
3.800	45.9	Neutral	56.0	-10.1	QP	
3.903	45.8	Line 1	56.0	-10.2	QP	
8.093	39.6	Neutral	50.0	-10.4	AVG	
3.559	45.3	Line 1	56.0	-10.7	QP	
0.179	43.5	Line 1	54.5	-11.0	AVG	
0.180	43.4	Neutral	54.5	-11.1	AVG	
3.903	34.6	Line 1	46.0	-11.4	AVG	
3.800	34.4	Neutral	46.0	-11.6	AVG	
6.444	38.4	Neutral	50.0	-11.6	AVG	
3.556	44.3	Neutral	56.0	-11.7	QP	
0.168	43.2	Neutral	55.1	-11.9	AVG	
0.185	42.2	Line 1	54.2	-12.0	AVG	
3.559	34.0	Line 1	46.0	-12.0	AVG	
0.185	42.0	Line 1	54.3	-12.3	AVG	
3.556	33.5	Neutral	46.0	-12.5	AVG	
7.191	46.1	Line 1	60.0	-13.9	QP	
6.444	43.3	Neutral	60.0	-16.7	QP	
8.093	42.8	Neutral	60.0	-17.2	QP	
0.151	33.2	Line 1	55.9	-22.7	AVG	

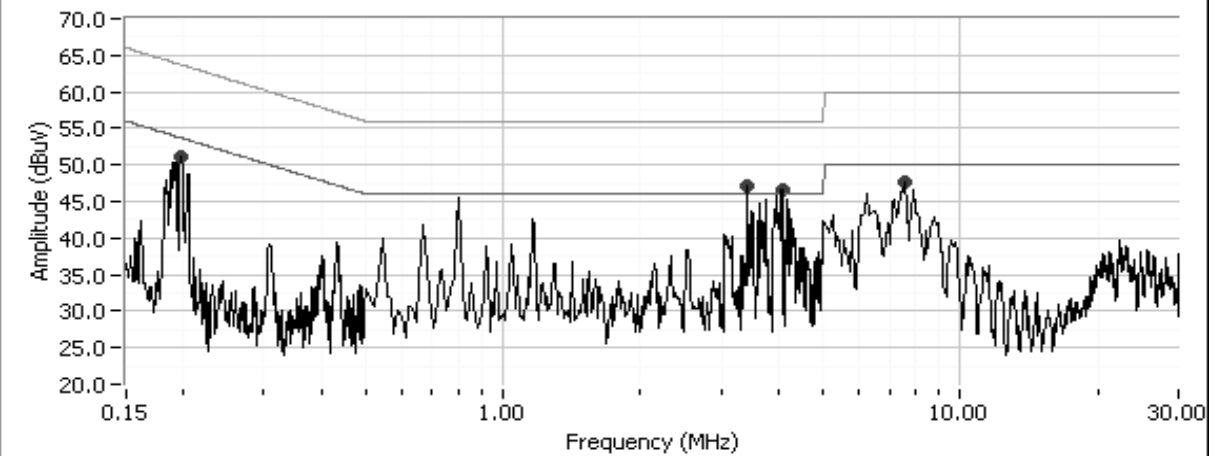
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: B

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz

Run #2: 0.15 - 30 MHz, 230Vac/50Hz, Neutral



Run #2: 0.15 - 30 MHz, 230Vac/50Hz, Line





EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: B

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz

Frequency MHz	Level dBµV	AC Line	EN55022 A		Detector QP/Ave	Comments
			Limit	Margin		
7.866	40.8	Neutral	50.0	-9.2	AVG	
4.093	43.1	Neutral	56.0	-12.9	QP	
3.955	43.0	Neutral	56.0	-13.0	QP	
3.415	40.5	Neutral	56.0	-15.5	QP	
0.198	48.1	Neutral	63.7	-15.6	QP	
0.196	48.1	Neutral	63.8	-15.7	QP	
7.866	43.5	Neutral	60.0	-16.5	QP	
7.647	42.4	Neutral	60.0	-17.6	QP	
4.093	27.1	Neutral	46.0	-18.9	AVG	
0.196	34.6	Neutral	53.8	-19.2	AVG	
7.647	30.4	Neutral	50.0	-19.6	AVG	
3.955	25.9	Neutral	46.0	-20.1	AVG	
0.198	32.8	Neutral	53.7	-20.9	AVG	
3.415	23.8	Neutral	46.0	-22.2	AVG	



EMC Test Data

Client:	OQO	Job Number:	J68325
Model:	2050 and 2060	Test-Log Number:	T68341
		Project Manager:	Susan Pelzl
Contact:	Bob Hymes		
Emissions Spec:	EN55022 / FCC	Class:	B
Immunity Spec:	-	Environment:	-

EMC Test Data

For The

OQO

Model

2050 and 2060

Date of Last Test: 9/23/2007



EMC Test Data

Client:	OOO	Job Number:	J68325
Model:	2050 and 2060	Test-Log Number:	T68341
		Project Manager:	Susan Pelzl
Contact:	Bob Hymes		
Emissions Spec:	EN55022 / FCC	Class:	B
Immunity Spec:	-	Environment:	-

EUT INFORMATION

*The following information was collected during the test sessions(s).
The client agreed provide the following information after the test session(s).*

General Description

The EUT is a Handheld PC. Since the EUT would be placed on a table top during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is -5Vdc, 3.5 Amps.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
OOO	Model 02	Handheld PC	19 (potassium)	

Other EUT Details

The following EUT details should be noted: The 2060 model is capable of transmitting on both the WLAN and WWAN frequencies concurrently. The 2050 model cannot. The model 2042 is identical to the model 2050 except it does not have the Novatel EV-DO module

EUT Antenna (Intentional Radiators Only)

The EUT antenna is an internal flex.
The antenna is integral to the device.

EUT Enclosure

The EUT enclosure is primarily constructed of metal and plastic. It measures approximately 15 cm long by 5 cm Wide by 2 cm high.

Modification History

Mod. #	Test	Date	Modification
1	TX Spurious Emissions	19-Jun	Three 1pF caps were added to the bypass circuit of the power amplifier for the 5GHz transmitter.
2			
3			

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.



EMC Test Data

Client:	OOO	Job Number:	J68325
Model:	2050 and 2060	T-Log Number:	T68341
		Project Manager:	Susan Pelzl
Contact:	Bob Hymes		
Emissions Spec:	EN55022 / FCC	Class:	B
Immunity Spec:	-	Environment:	-

Test Configuration #1

The following information was collected during the test sessions(s).

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Microsoft	Wheel Mouse Optical USB	Mouse	56180-523-0422391-1	DoC
Samsung	204B	Monitor	BR20HVFL400076K	DoC

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
-	-	-	-	-

Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Video	Monitor	15pin Dsub	Shielded	2.0
USB	Mouse	USB 4wire	Shielded	2.0
Video	Monitor	15pin Dsub	Shielded	2.0
AC Power	AC Mains	2 wire	unshielded	2.0
DC Power	Docking station	2 wire	-	-

EUT Operation During Emissions Tests

During testing the EUT was configured to continuously transmit on the desired channel, at the selected power level.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

RSS 210 and FCC 15.247 Radiated Spurious Emissions (EDR Mode)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 9/22/2007	Config. Used: 1
Test Engineer: Rafael Varelas	Config Change: None
Test Location: SVOATS #1	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature:	16 °C
Rel. Humidity:	81 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1 (EDR Mode)	RE, 30 - 18000 MHz - Spurious Emissions	FCC Part 15.209 / 15.247(c)	Pass	46.8dB μ V/m (218.8 μ V/m) @ 2501.4MHz (-7.2dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

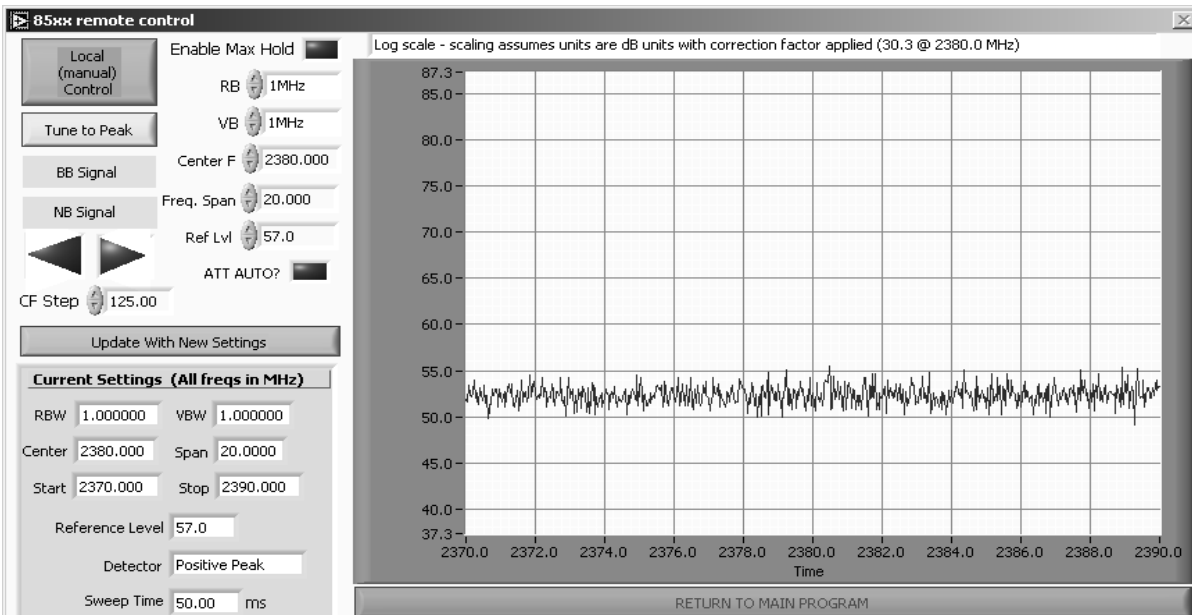
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1: Radiated Spurious Emissions, 30 - 18000 MHz.

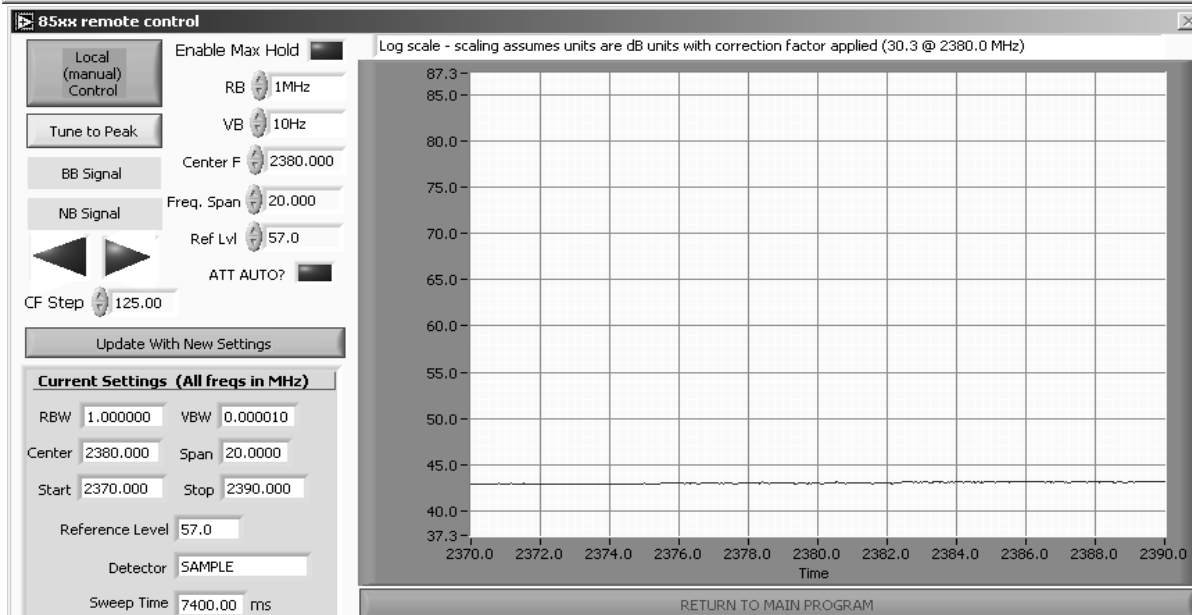
Run #1a: Low Channel @ 2402 MHz

EUT Upright

Vertical



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

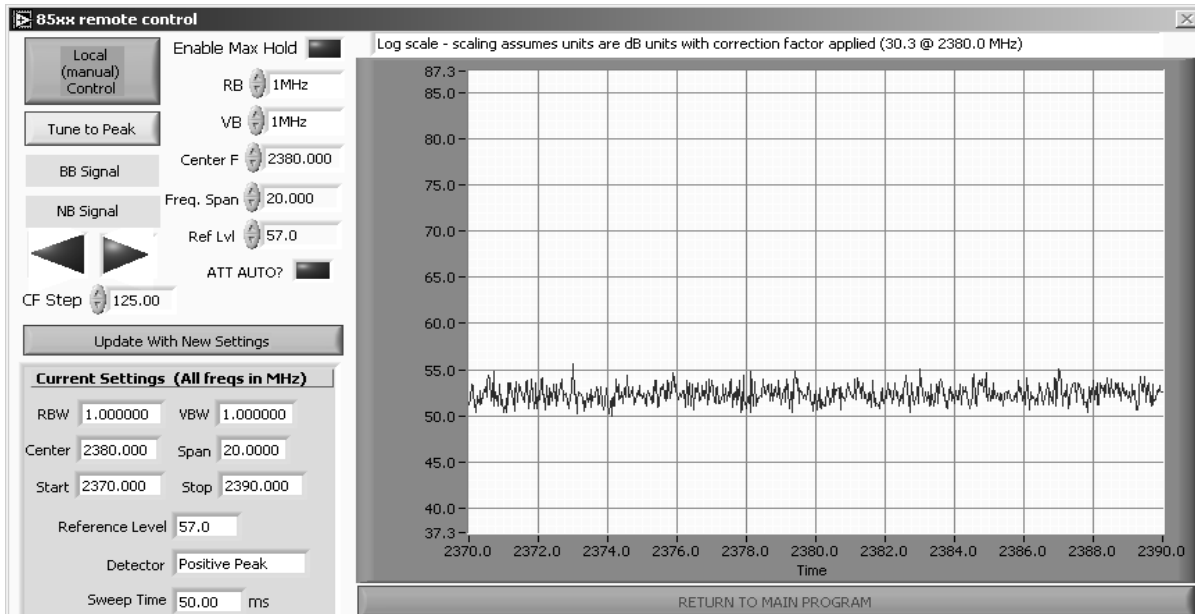


Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

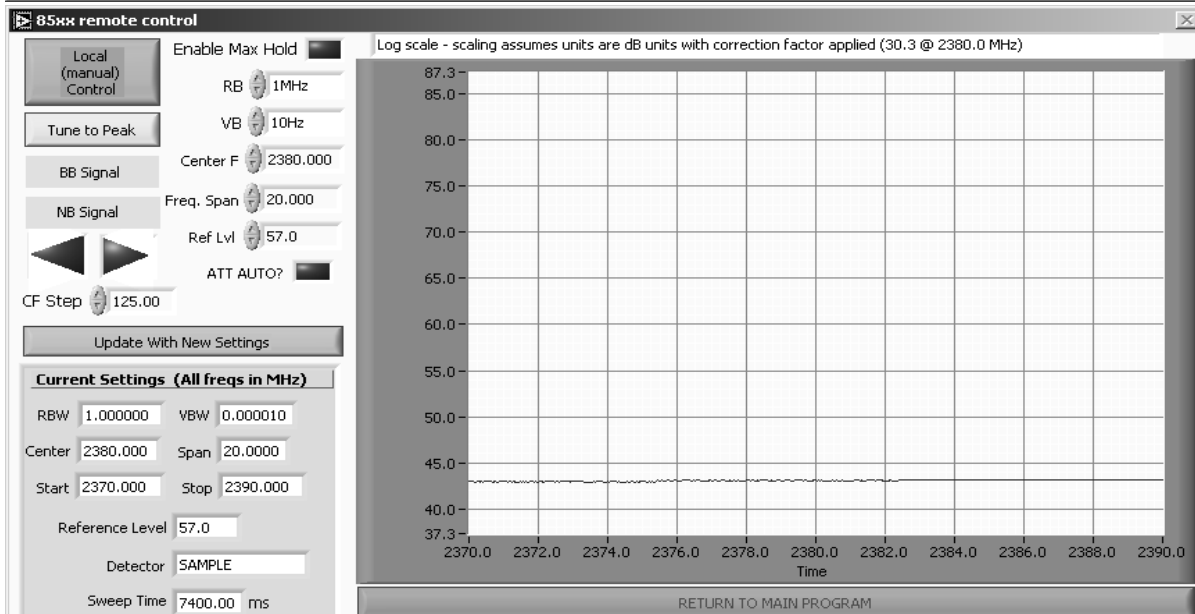
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Run #1a: Continued

Horizontal



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1a: Continued

Band Edge Signal Field Strength

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
2389.850	44.4	V	54.0	-9.6	AVG	339	1.0	
2389.850	55.4	V	74.0	-18.6	PK	339	1.0	
2387.960	44.3	H	54.0	-9.7	AVG	37	1.0	
2387.960	56.0	H	74.0	-18.0	PK	37	1.0	

Spurious Emissions

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
9607.920	36.4	H	54.0	-17.6	AVG	350	1.0	
9608.240	35.3	V	54.0	-18.7	AVG	42	1.2	
7205.520	33.1	H	54.0	-20.9	AVG	306	1.0	
7204.690	32.8	V	54.0	-21.2	AVG	299	1.0	
4804.080	31.7	V	54.0	-22.3	AVG	360	1.3	
4804.110	31.6	H	54.0	-22.4	AVG	296	1.0	
9607.920	49.0	H	74.0	-25.0	PK	350	1.0	
9608.240	46.3	V	74.0	-27.7	PK	42	1.2	
7205.520	44.3	H	74.0	-29.7	PK	306	1.0	
4804.080	44.0	V	74.0	-30.0	PK	360	1.3	
7204.690	44.0	V	74.0	-30.0	PK	299	1.0	
4804.110	42.8	H	74.0	-31.2	PK	296	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band but the more stringent restricted band limit was used.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1b: Center Channel @ 2441 MHz
EUT Upright

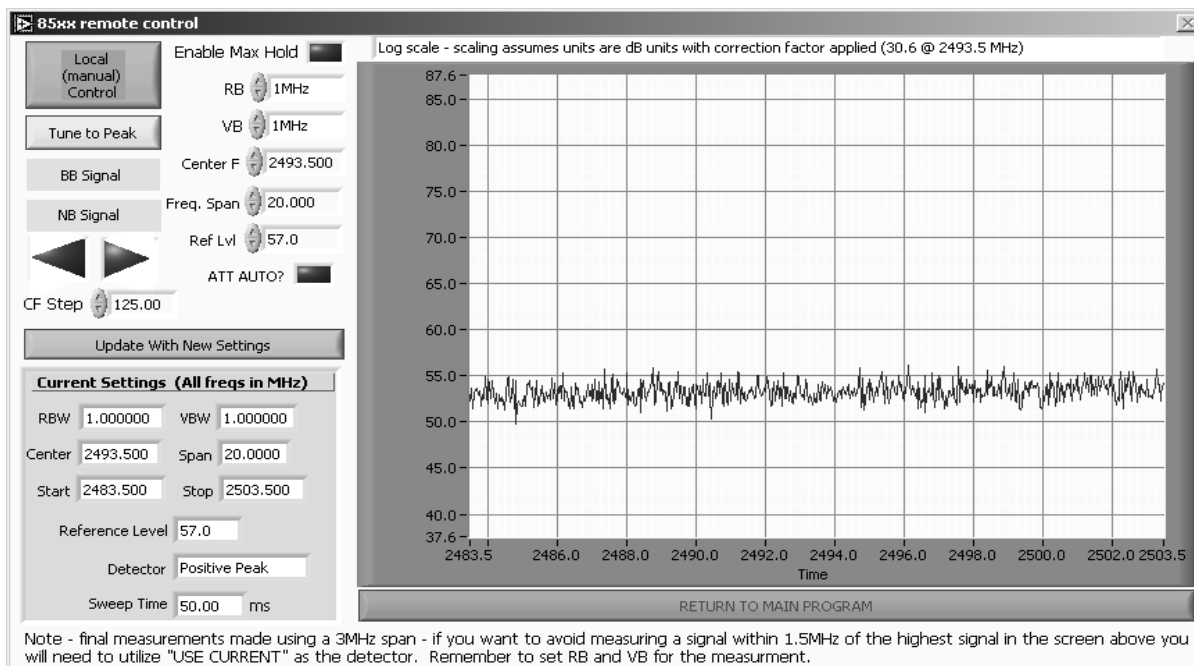
Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
7322.310	34.5	H	54.0	-19.5	AVG	336	1.0	
9764.170	34.4	H	54.0	-19.6	AVG	348	1.0	
7322.940	34.3	V	54.0	-19.7	AVG	47	1.0	
9762.830	34.0	V	54.0	-20.0	AVG	136	1.4	
4881.920	31.6	H	54.0	-22.4	AVG	0	1.0	
4881.980	31.3	V	54.0	-22.7	AVG	0	1.1	
7322.310	46.3	H	74.0	-27.7	PK	336	1.0	
7322.940	45.7	V	74.0	-28.3	PK	47	1.0	
9764.170	45.6	H	74.0	-28.4	PK	348	1.0	
9762.830	45.1	V	74.0	-28.9	PK	136	1.4	
4881.920	42.9	H	74.0	-31.1	PK	0	1.0	
4881.980	42.6	V	74.0	-31.4	PK	0	1.1	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band but the more stringent restricted band limit was used.

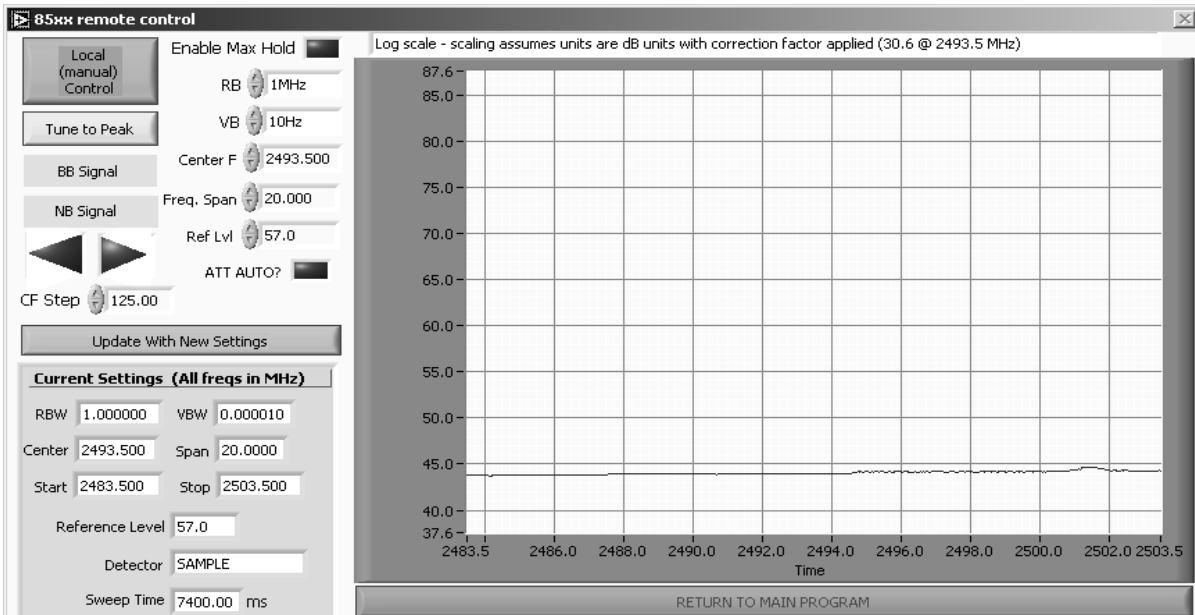
Run #1c: High Channel @ 2480 MHz
EUT Upright

Vertical



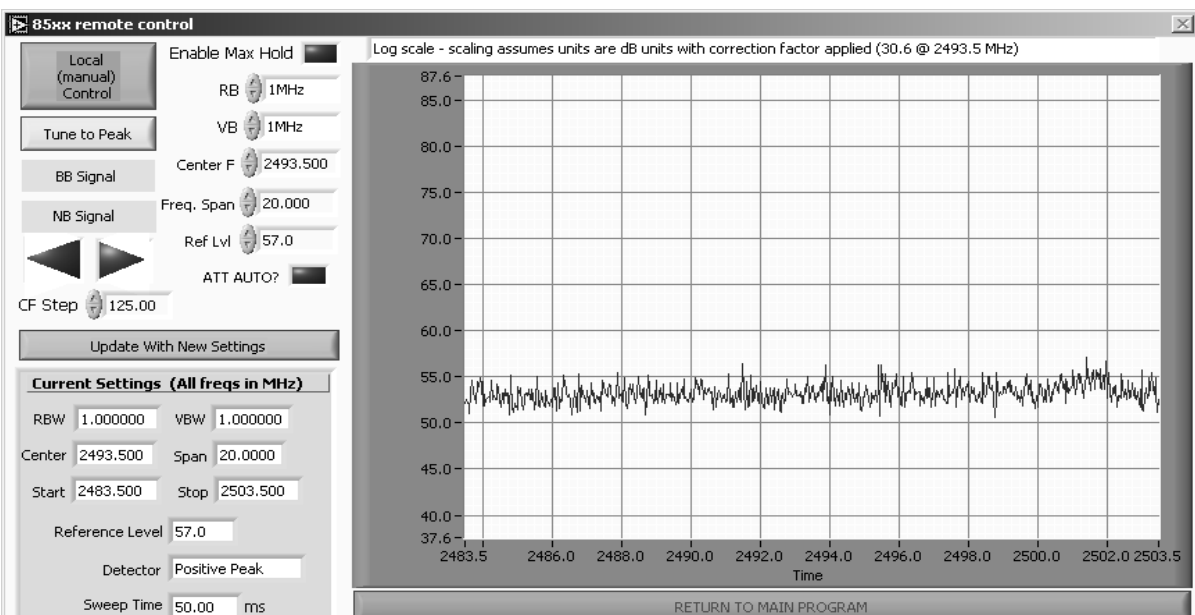
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Run #1c: Continued



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

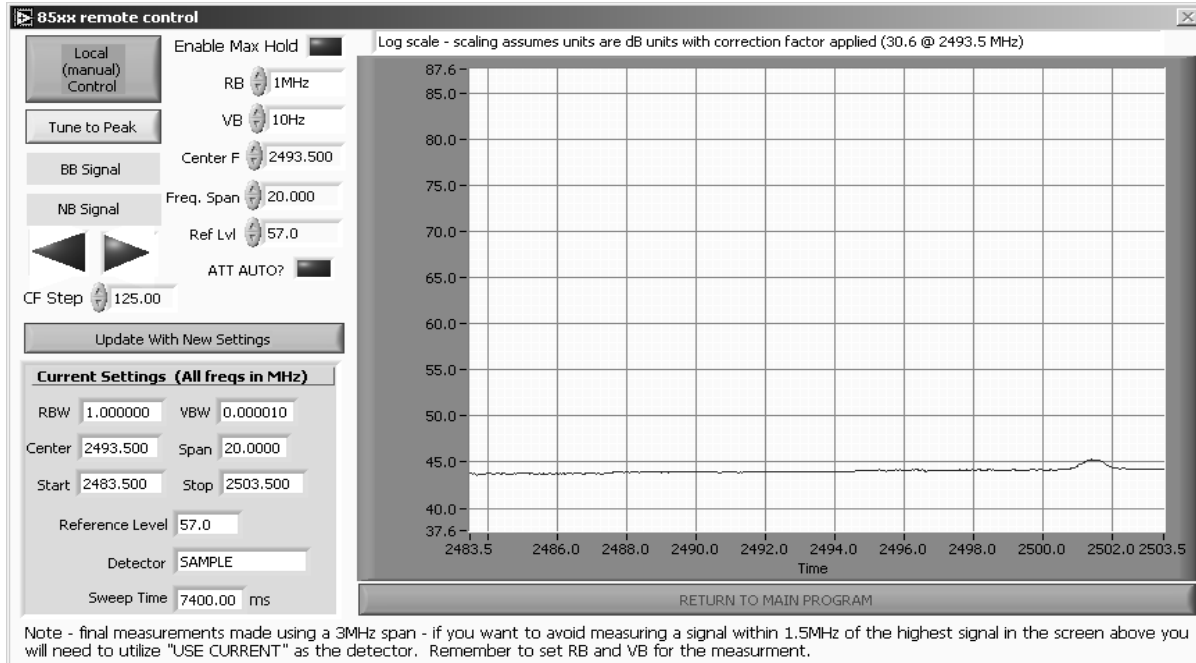
Horizontal



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1c: Continued



Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2501.410	46.8	H	54.0	-7.2	AVG	192	1.0	
2501.100	44.9	V	54.0	-9.1	AVG	338	1.0	
2501.410	57.4	H	74.0	-16.6	PK	192	1.0	
2501.100	56.6	V	74.0	-17.4	PK	338	1.0	



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1c: Continued

Spurious Emissions

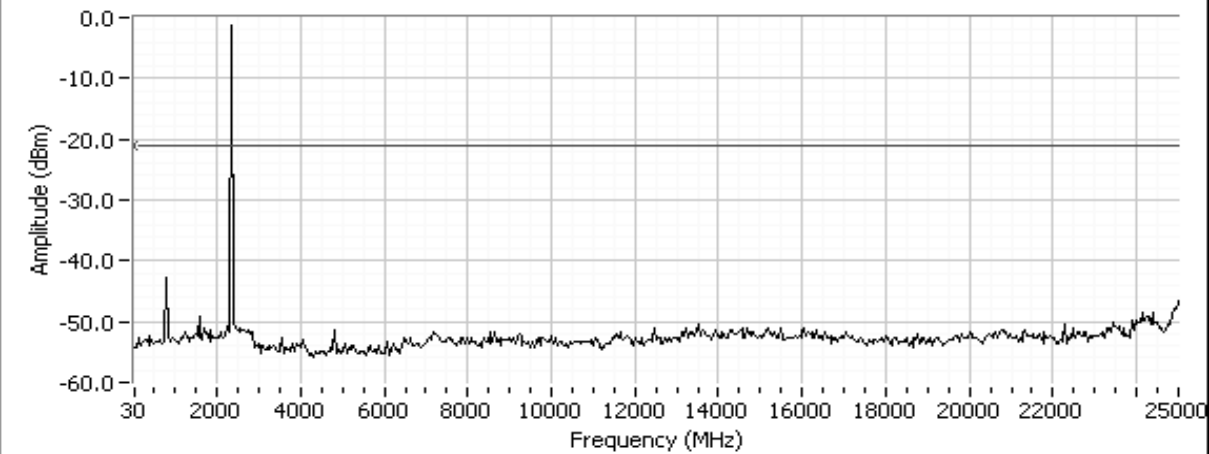
Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
9920.960	35.5	H	54.0	-18.5	AVG	298	1.0	
9918.540	35.4	V	54.0	-18.6	AVG	360	1.0	
7440.370	34.9	V	54.0	-19.1	AVG	176	1.0	
7440.250	34.9	H	54.0	-19.1	AVG	290	1.0	
4960.130	31.0	H	54.0	-23.0	AVG	314	1.0	
4960.040	30.8	V	54.0	-23.2	AVG	28	1.0	
9920.960	47.6	H	74.0	-26.4	PK	298	1.0	
9918.540	46.8	V	74.0	-27.2	PK	360	1.0	
7440.370	46.3	V	74.0	-27.7	PK	176	1.0	
7440.250	46.3	H	74.0	-27.7	PK	290	1.0	
4960.040	42.4	V	74.0	-31.6	PK	28	1.0	
4960.130	42.3	H	74.0	-31.7	PK	314	1.0	

- Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.
- Note 2: Signal is not in a restricted band but the more stringent restricted band limit was used.

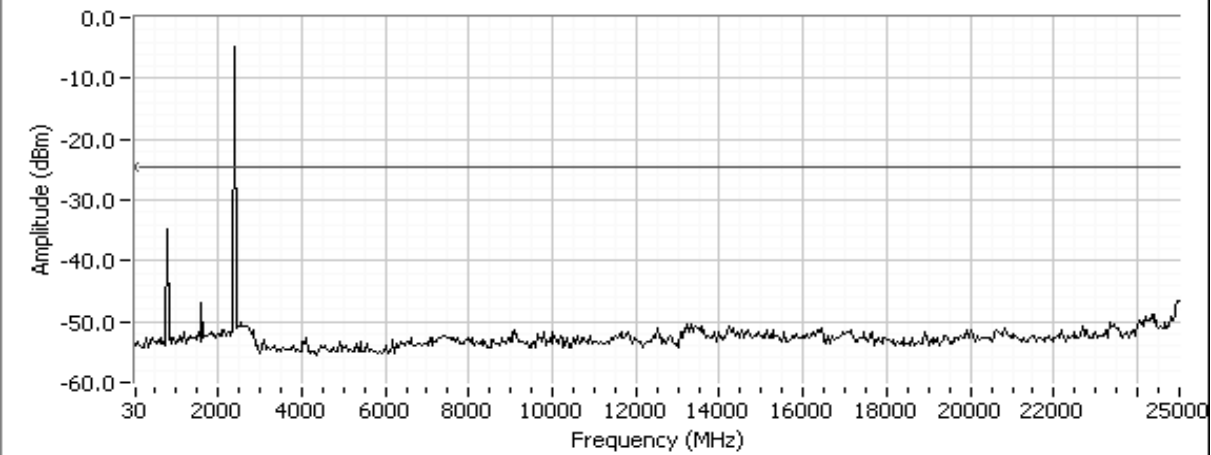
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1: Conducted Spurious Emissions

Conducted Spurious Emission at 2402 MHz and highest power setting of 105

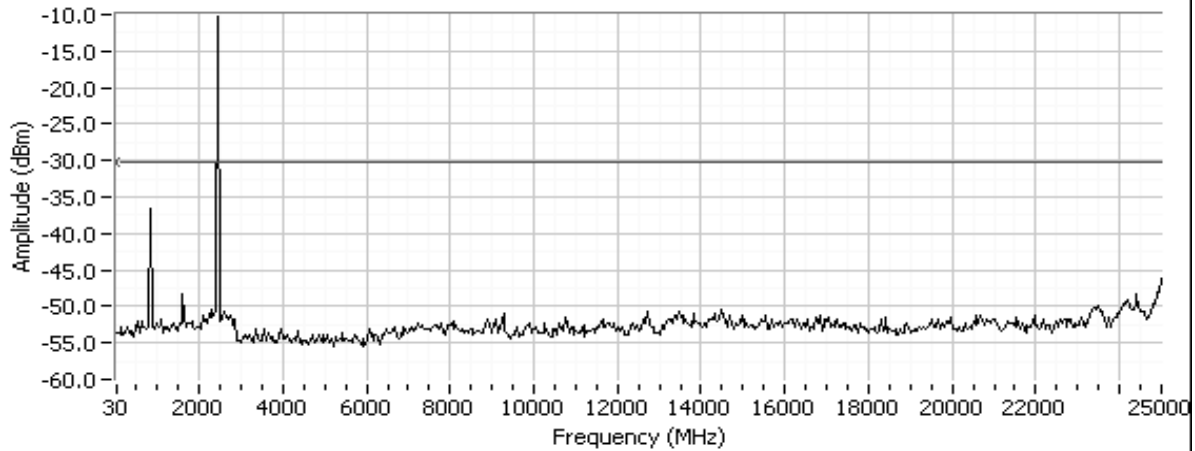


Conducted Spurious Emission at 2441 MHz and highest power setting of 105



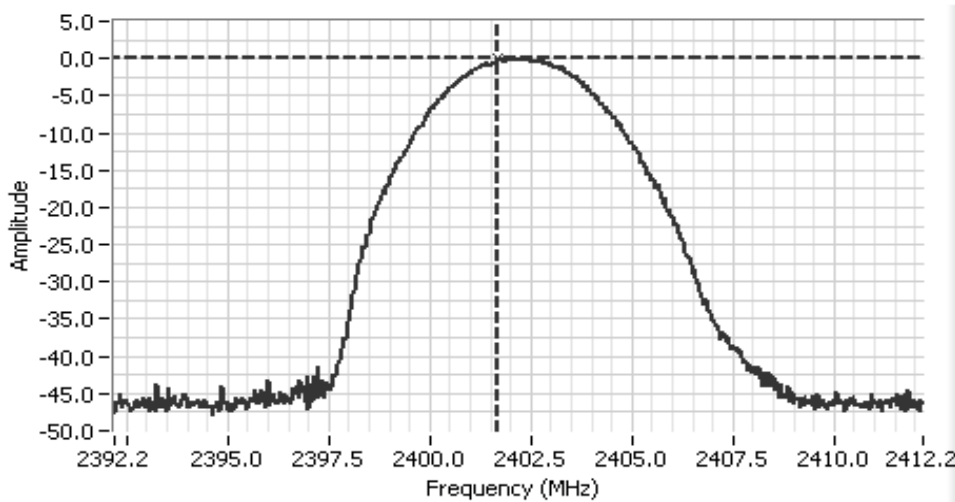
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Conducted Spurious Emission at 2480 MHz and highest power setting of 105



Run #2: Output Power

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result
		(dBm)	mW		
N/A	2402	0.0	1.0	0.0	Pass
N/A	2441	-0.6	0.9	0.0	Pass
N/A	2480	-1.6	0.7	0.0	Pass



Analyzer Settings

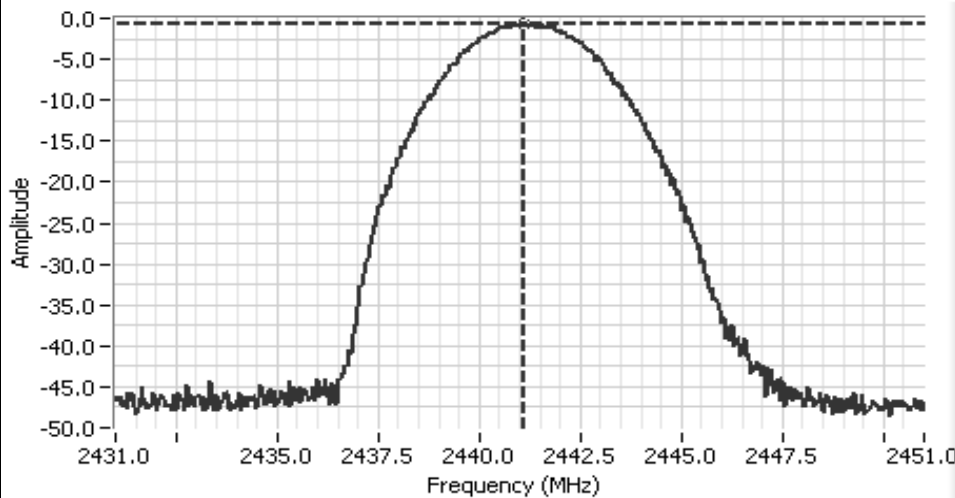
HP8564E
 CF: 2402.20 MHz
 SPAN: 20.00 MHz
 RB 2.000 MHz
 VB 3.000 MHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl: 7.20DBM

Comments

2402 MHz
 Power = 0.0 dBm
 Setting: 95

Cursor 1	2401.70	0.03	
	0.000	0.00	

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

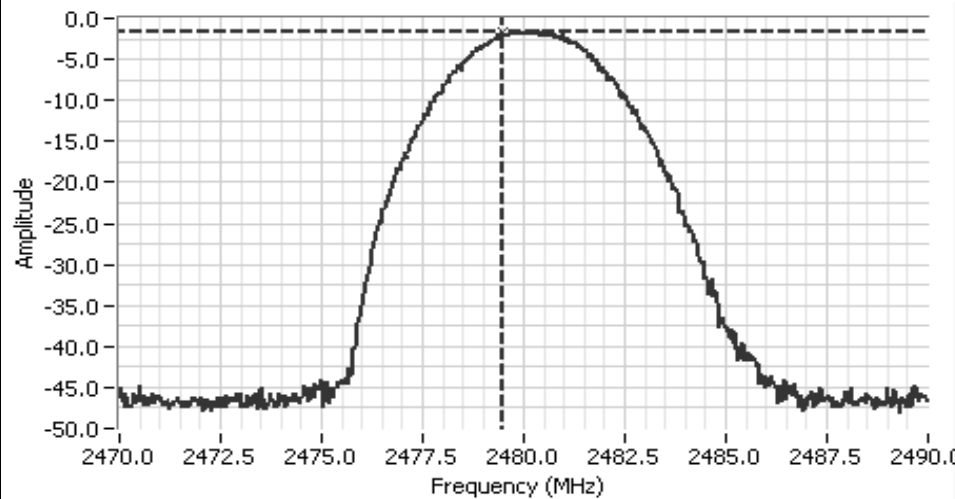
HP8564E
 CF: 2441.00 MHz
 SPAN: 20.00 MHz
 RB 2.000 MHz
 VB 3.000 MHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl: 7.20DBM

Comments

2441 MHz
 Power = -0.6 dBm
 Setting: 95

Cursor 1 2441.10(-0.63) [Icons]

0.000 0.00 [Icons]



Analyzer Settings

HP8564E
 CF: 2480.00 MHz
 SPAN: 20.00 MHz
 RB 2.000 MHz
 VB 3.000 MHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl: 7.20DBM

Comments

2480 MHz
 Power = -1.6 dBm
 Setting: 97

Cursor 1 2479.50(-1.63) [Icons]

0.000 0.00 [Icons]



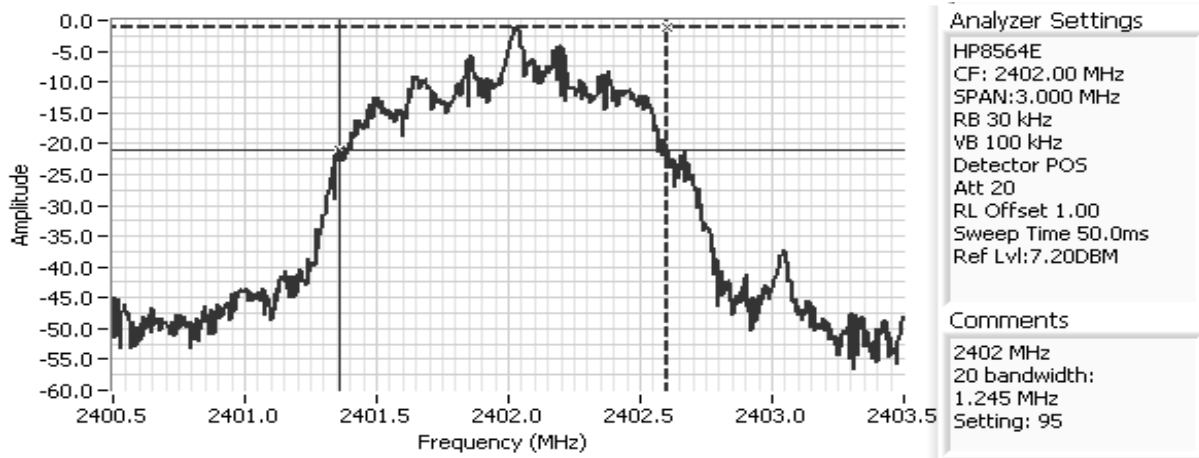
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Run #3: Bandwidth, Channel Occupancy, Spacing and Number of Channels

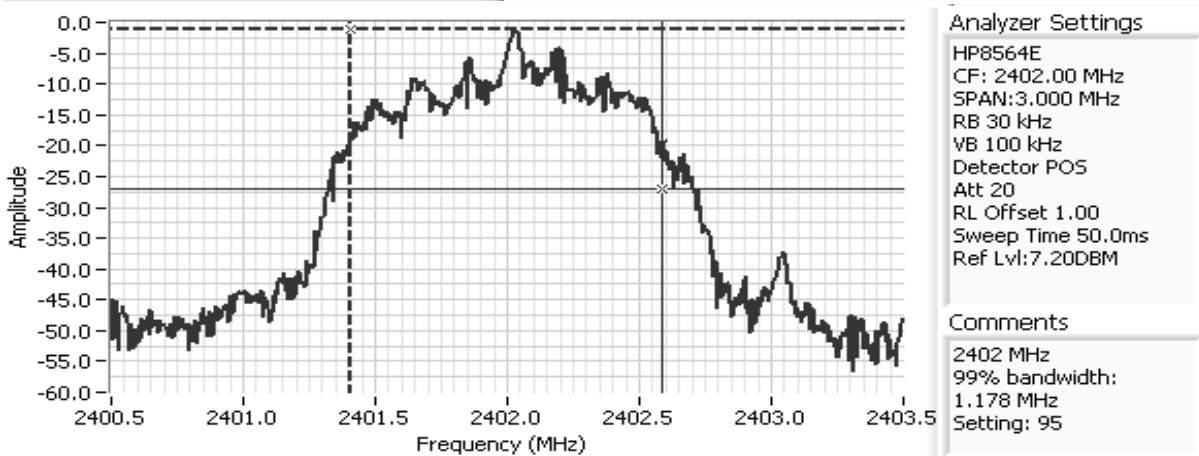
Channel	Frequency (MHz)	Resolution Bandwidth	20dB Bandwidth (MHz)	Resolution Bandwidth	99% Bandwidth (MHz)
Low	2402	30kHz	1.25	30kHz	1.18
Mid	2441	30kHz	1.22	30kHz	1.18
High	2480	30kHz	1.32	30kHz	1.17

Note 1: 20dB bandwidth measured using RB = 30kHz VB = 100kHz (VB > RB)

Note 2: 99% bandwidth measured using RB = 30kHz VB = 100kHz (VB >=3RB)

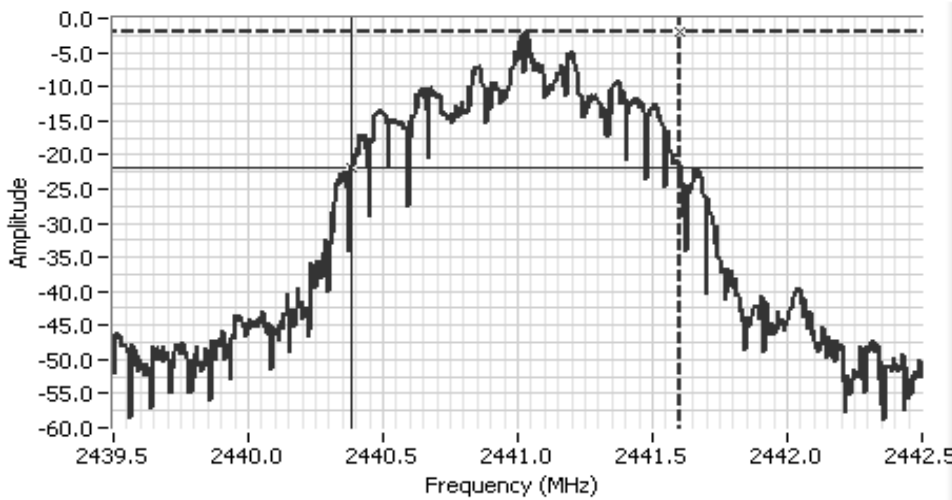


Cursor 1 2402.60 -1.13 Delta Freq. 1.245
 Cursor 2 2401.36 -21.13 Delta Amplitude 20.00



Cursor 1 2401.40 -1.13 Delta Freq. 1.178
 Cursor 2 2402.58 -27.13 Delta Amplitude 26.00

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

HP8564E
 CF: 2441.00 MHz
 SPAN: 3.000 MHz
 RB 30 kHz
 VB 100 kHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl: 7.20DBM

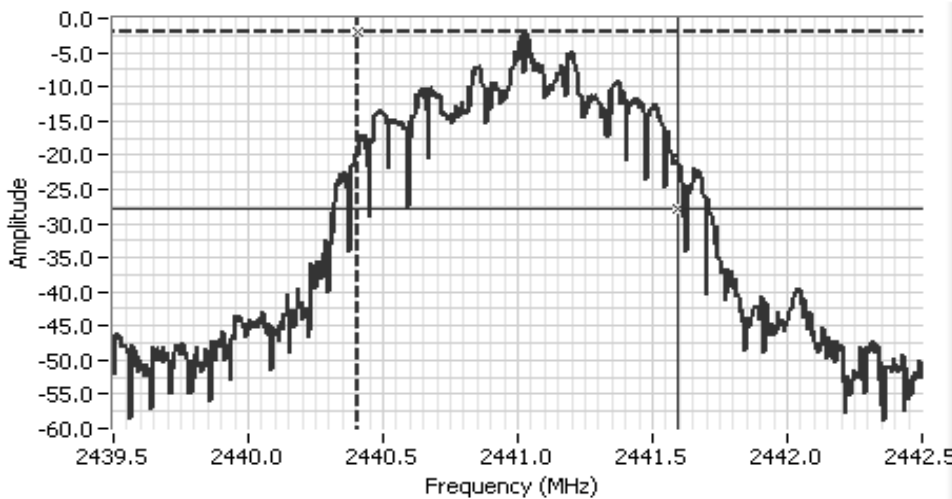
Comments

2441 MHz
 20 bandwidth:
 1.183 MHz
 Setting: 95

Cursor 1 2441.60 -1.97
 Cursor 2 2440.38 -21.97

Delta Freq. 1.220

Delta Amplitude 20.00



Analyzer Settings

HP8564E
 CF: 2441.00 MHz
 SPAN: 3.000 MHz
 RB 30 kHz
 VB 100 kHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl: 7.20DBM

Comments

2441 MHz
 99% bandwidth:
 1.183 MHz
 Setting: 95

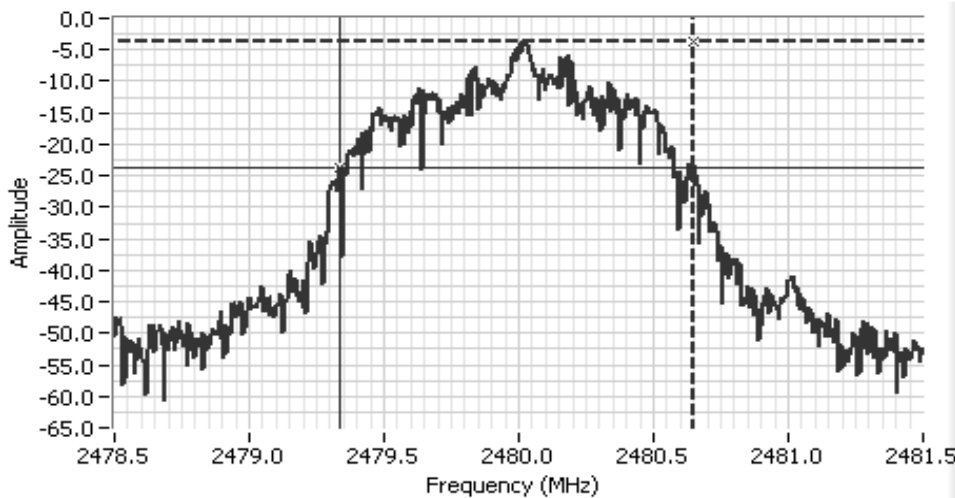
Cursor 1 2440.40 -1.97
 Cursor 2 2441.59 -27.97

Delta Freq. 1.183

Delta Amplitude 26.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

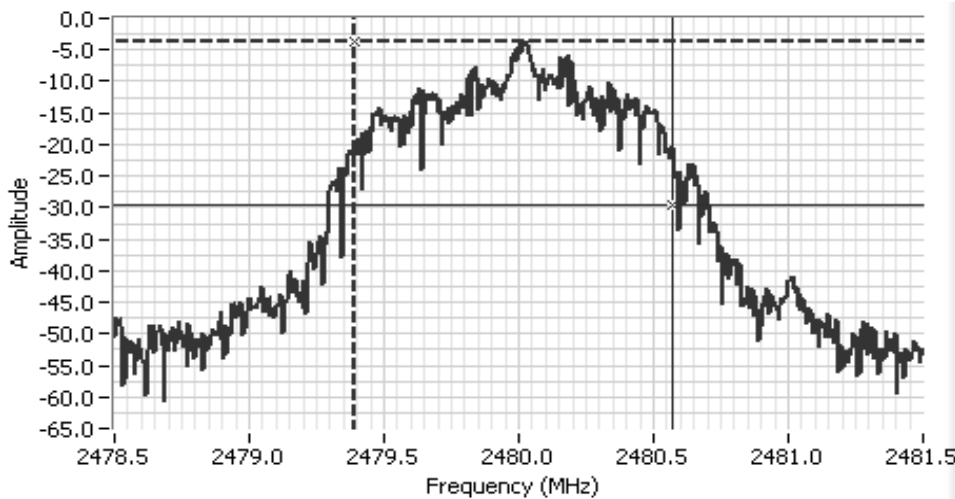
HP8564E
 CF: 2480.00 MHz
 SPAN: 3.000 MHz
 RB 30 kHz
 VB 100 kHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl: 7.20DBM

Comments

2480 MHz
 20dB Bandwidth
 Setting: 97

Cursor 1	2480.650	-3.63	
Cursor 2	2479.335	-23.63	

Delta Freq. 1.315
 Delta Amplitude 20.00



Analyzer Settings

HP8564E
 CF: 2480.00 MHz
 SPAN: 3.000 MHz
 RB 30 kHz
 VB 100 kHz
 Detector POS
 Att 20
 RL Offset 1.00
 Sweep Time 50.0ms
 Ref Lvl: 7.20DBM

Comments

2480 MHz
 99% bandwidth:
 1.173 MHz
 Setting: 97

Cursor 1	2479.395	-3.63	
Cursor 2	2480.565	-29.63	

Delta Freq. 1.173
 Delta Amplitude 26.00



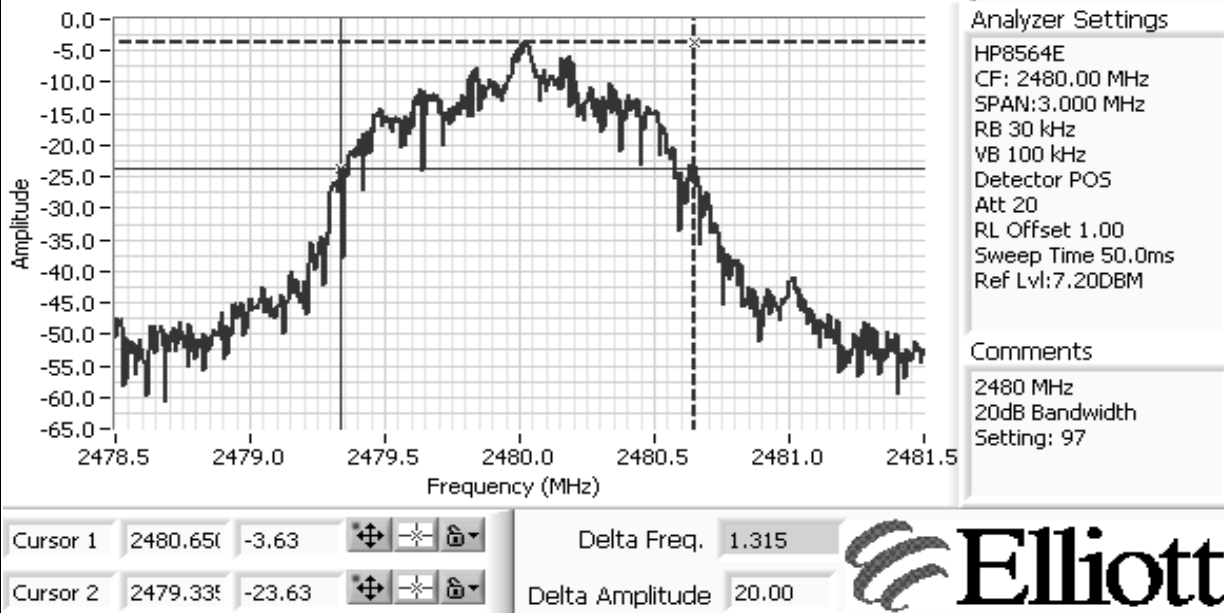
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Frequency hopping systems in the **2400-2483.5 MHz** band shall use at least 15 channels.
 The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. (Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.)

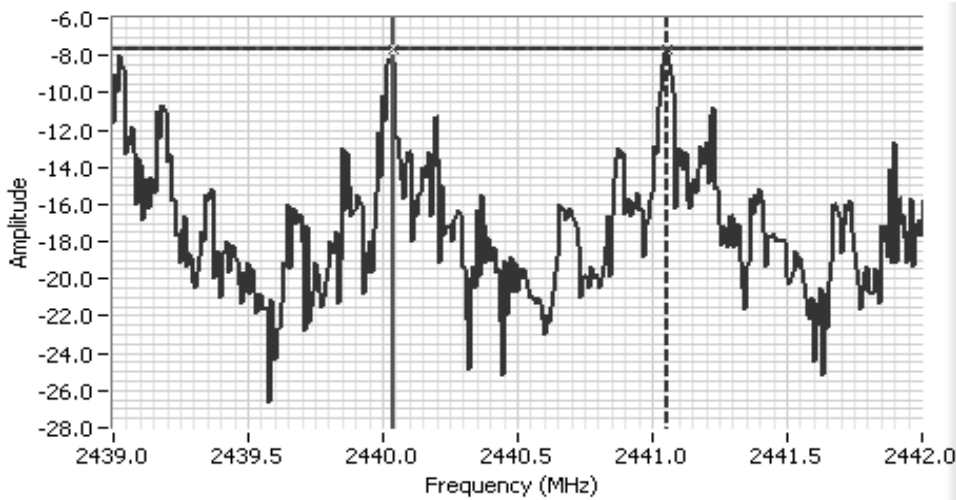
The channel dwell time is calculated from the transmit time on a channel multiplied by the number of times a channel could be used in a period of 0.4 times the number of channels, N (i.e. 0.4N divided by the time between successive hops, rounded up to the closest integer), unless the time between successive hops exceeds 0.4N, in which case the channel dwell time is the transmit time on a channel.

Maximum 20dB bandwidth:	1315 kHz	
2/3 of Max 20 dB Bandwidth:	876.6667 kHz	Pass
Channel spacing:	1016 kHz	Pass
Transmission time per hop:	1.248101 ms	
The time between successive hops on a channel:	98.6 ms	
Number of channels (N):	79	Pass
Channel dwell time in 31.6 seconds:	400 ms	Pass

Because the timing between successive hops on a channel is always the same, 98.6ms, no matter which channel is measured, the system must hop on all channels before returning to the same channel.



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

- HP8564E
- CF: 2441.00 MHz
- SPAN: 5.000 MHz
- RB 30 kHz
- VB 100 kHz
- Detector POS
- Att 10
- RL Offset 0.00
- Sweep Time 50.0ms
- Ref Lvl: 0.00DBM

Comments

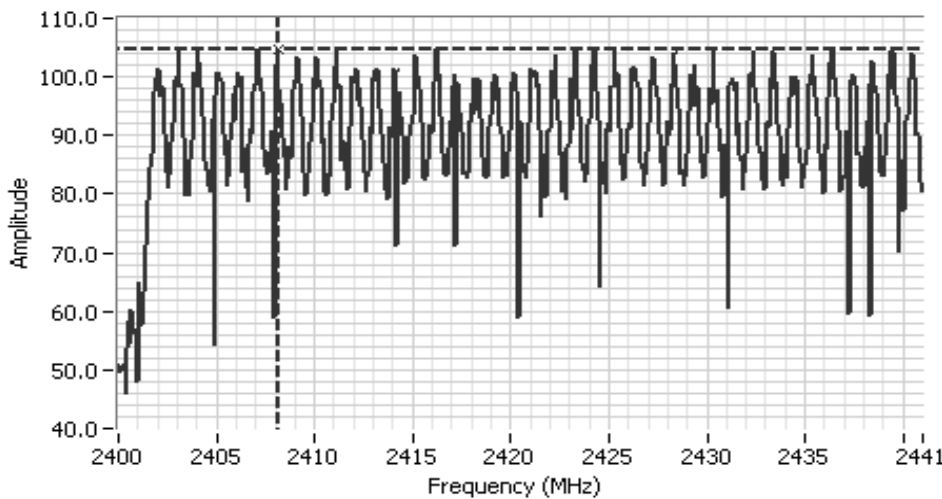
Channel Spacing

Cursor 1	2441.05	-7.67	
Cursor 2	2440.03	-7.67	

Delta Freq. 1.016

Delta Amplitude 0.00

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

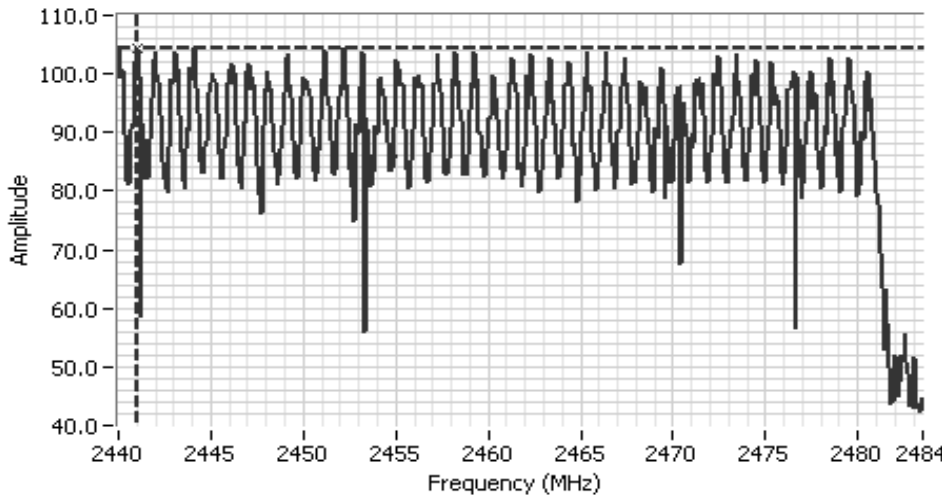
HP8564E, EMI
 CF: 2420.50 MHz
 SPAN: 41.00 MHz
 RB 30 kHz
 VB 10 kHz
 Detector POS
 Att 20
 RL Offset 0.00
 Sweep Time 0.4s
 Ref Lvl: 115.70DBUW

Comments

Number of channels:
 channels between
 2402-2440 MHz

Cursor 1 2408.13 104.70

0.000 0.00



Analyzer Settings

HP8564E, EMI
 CF: 2461.75 MHz
 SPAN: 43.50 MHz
 RB 30 kHz
 VB 10 kHz
 Detector POS
 Att 20
 RL Offset 0.00
 Sweep Time 0.4s
 Ref Lvl: 115.70DBUW

Comments

Number of channels:
 channels between
 2440-2483.5 MHz

Cursor 1 2441.01 104.37

0.000 0.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

FCC 15.247 FHSS - Power, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 6/20/2007 10:04	Config. Used: 1
Test Engineer: Juan Martinez	Config Change:
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane or routed in overhead in the GR-1089 test configuration.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators used.

Unless stated otherwise the EUT was operating such that it constantly hopped on either the low, center or high channels.

Ambient Conditions:

Temperature:	24 °C
Rel. Humidity:	41 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	30 - 25000 MHz - Conducted Spurious Emissions	FCC Part 15.247(c)	Pass	All signal > 20dB below the limit
2	Output Power	15.247(b)	Pass	-0.5 dBm
3	20dB Bandwidth	15.247(a)	Pass	905 kHz
3	99% bandwidth	15.247(a)	Pass	879 kHz
3	Channel Occupancy	15.247(a)	Pass	400ms
3	Number of Channels	15.247(a)	Pass	79

Modifications Made During Testing:

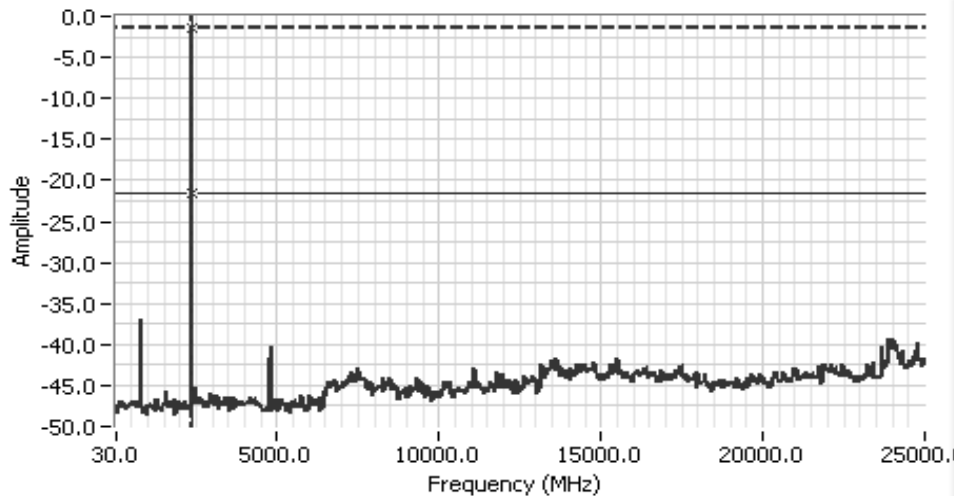
No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Run #1: Conducted Spurious Emissions

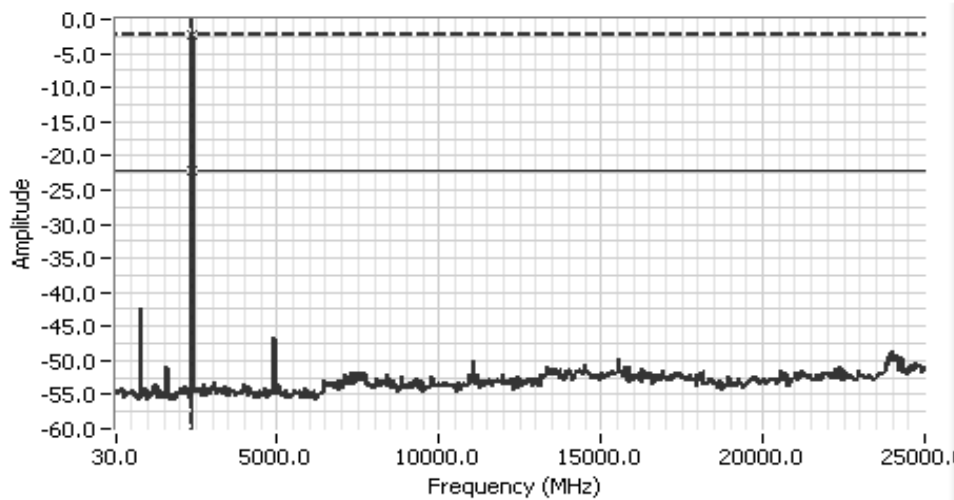


Analyzer Settings
 HP8564E,EMI
 CF: 12515.00 MHz
 SPAN:24970.00 MHz
 RB 1.000 MHz
 VB 1.000 MHz
 Detector POS
 Att 30
 RL Offset 0.00
 Sweep Time 0.5s
 Ref Lvl:20.00DBM

Comments
 Out of Band
 2402 MHz

Cursor 1 2360.53 -1.50
 Cursor 2 2360.53 -21.50

Delta Freq. 0.00 MHz
 Delta Amplitude 20.00



Analyzer Settings
 HP8564E,EMI
 CF: 12515.00 MHz
 SPAN:24970.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector POS
 Att 30
 RL Offset 0.00
 Sweep Time 14.0s
 Ref Lvl:20.00DBM

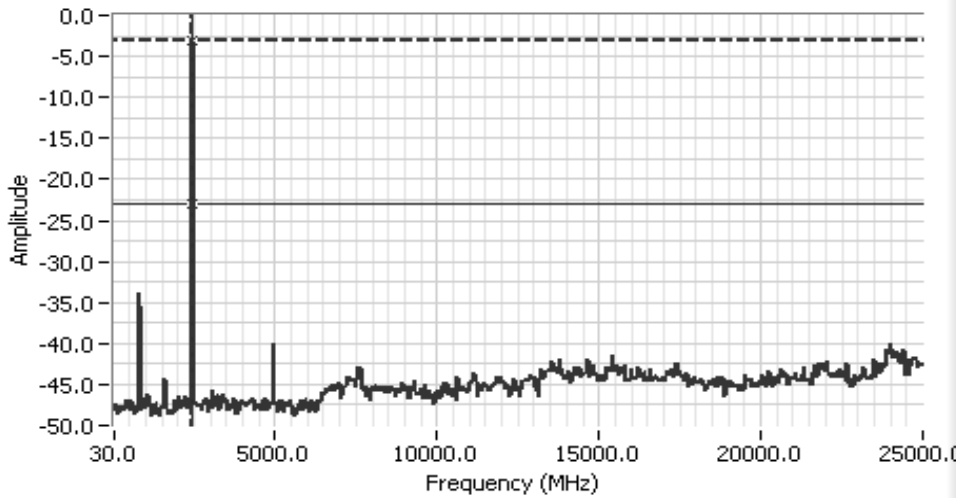
Comments
 Out of Band
 2480 MHz

Cursor 1 2402.15 -2.17
 Cursor 2 2402.15 -22.17

Delta Freq. 0.00 MHz
 Delta Amplitude 20.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings
 HP8564E, EMI
 CF: 12515.00 MHz
 SPAN: 24970.00 MHz
 RB 1.000 MHz
 VB 1.000 MHz
 Detector POS
 Att 30
 RL Offset 0.00
 Sweep Time 0.5s
 Ref Lvl: 20.00DBM

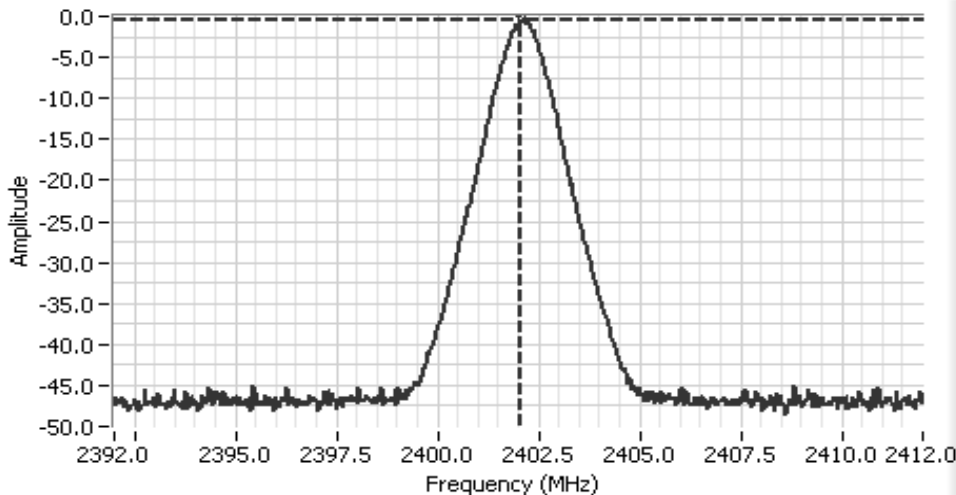
Comments
 Out of Band
 2480 MHz

Cursor 1 2443.76; -3.00
 Cursor 2 2443.76; -23.00
 Delta Freq. 0.00 MHz
 Delta Amplitude 20.00



Run #2: Output Power

Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result
		(dBm)	mW		
N/A	2402	-0.5	0.9	0.0	Pass
N/A	2441	-1.0	0.8	0.0	Pass
N/A	2480	-2.2	0.6	0.0	Pass



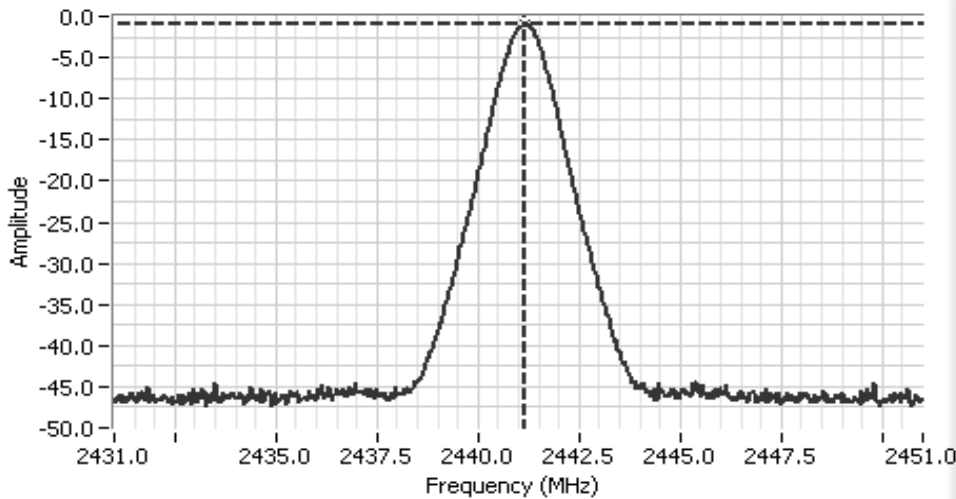
Analyzer Settings
 HP8564E, EMI
 CF: 2402.00 MHz
 SPAN: 20.00 MHz
 RB 1.000 MHz
 VB 1.000 MHz
 Detector POS
 Att 30
 RL Offset 0.00
 Sweep Time 50.0ms
 Ref Lvl: 20.00DBM

Comments
 Power Output =
 -1.5dBm
 2402 MHz

Cursor 1 2402.06; -0.50
 0.000 0.00



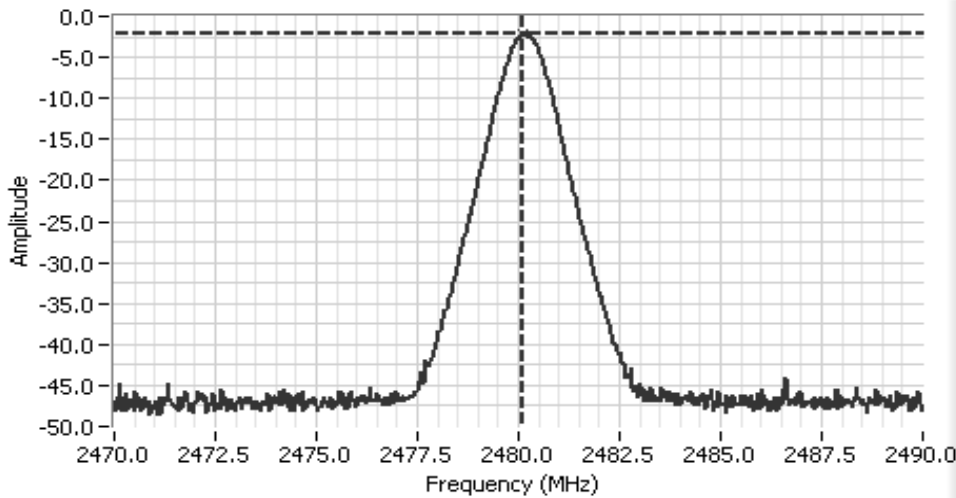
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings
 HP8564E,EMI
 CF: 2441.00 MHz
 SPAN:20.00 MHz
 RB 1.000 MHz
 VB 1.000 MHz
 Detector POS
 Att 30
 RL Offset 0.00
 Sweep Time 50.0ms
 Ref Lvl:20.00DBM

Comments
 Power Output = -1dB
 2441 MHz

Cursor 1 2441.130 -1.00
 0.000 0.00



Analyzer Settings
 HP8564E,EMI
 CF: 2480.00 MHz
 SPAN:20.00 MHz
 RB 1.000 MHz
 VB 1.000 MHz
 Detector POS
 Att 30
 RL Offset 0.00
 Sweep Time 50.0ms
 Ref Lvl:20.00DBM

Comments
 Power = -2.17dBm
 2480 MHz

Cursor 1 2480.100 -2.17
 0.000 0.00



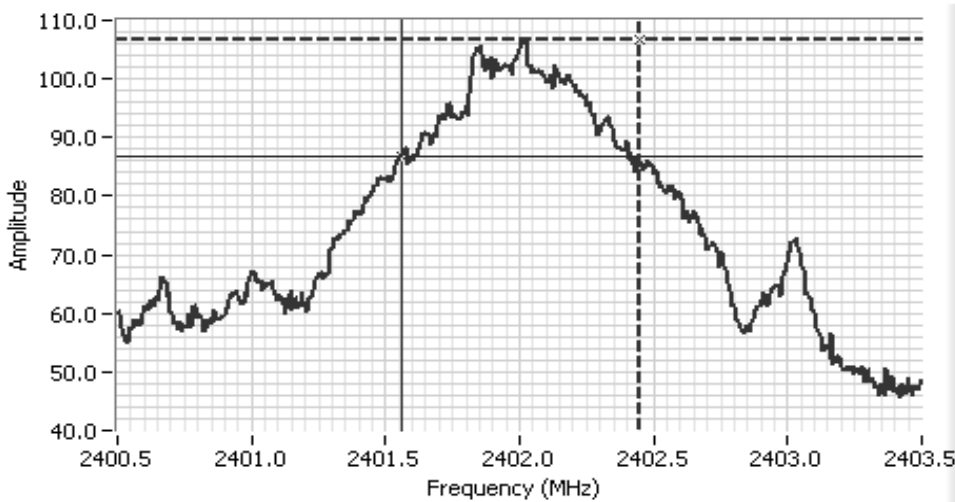
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #3: Bandwidth, Channel Occupancy, Spacing and Number of Channels

Channel	Frequency (MHz)	Resolution Bandwidth	20dB Bandwidth (kHz)	Resolution Bandwidth	99% Bandwidth (kHz)
Low	2402	30kHz	885	30kHz	879
Mid	2440	30kHz	855	30kHz	879
High	2480	30kHz	905	30kHz	874

Note 1: 20dB bandwidth measured using RB = 30kHz VB = 100kHz (VB > RB)

Note 2: 99% bandwidth measured using RB = 30kHz VB = 100kHz (VB >= 3RB)



Analyzer Settings

HP8564E,EMI
 CF: 2402.00 MHz
 SPAN:3.000 MHz
 RB 30 kHz
 VB 100 kHz
 Detector POS
 Att 20
 RL Offset 0.00
 Sweep Time 50.0ms
 Ref Lvl:115.70DBUV

Comments

20dB Bandwith, 2402 MHz

Cursor 1	2402.44	106.70	Delta Freq.	885 kHz
Cursor 2	2401.56	86.70	Delta Amplitude	20.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

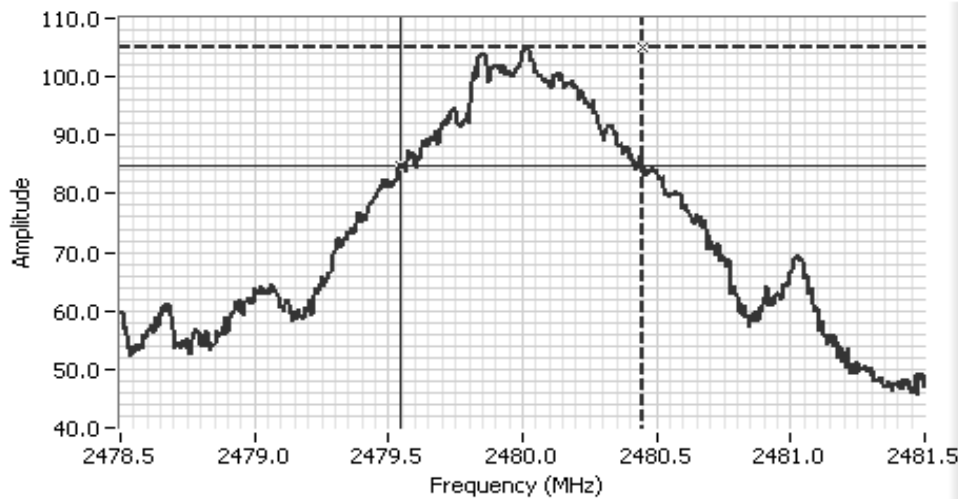
Frequency hopping systems in the **2400-2483.5 MHz** band shall use at least 15 channels.

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. (Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.)

The channel dwell time is calculated from the transmit time on a channel multiplied by the number of times a channel could be used in a period of 0.4 times the number of channels, N (i.e. $0.4N$ divided by the time between successive hops, rounded up to the closest integer), unless the time between successive hops exceeds $0.4N$, in which case the channel dwell time is the transmit time on a channel.

Maximum 20dB bandwidth:	905 kHz	
Channel spacing:	1030 kHz	Pass
Transmission time per hop:	1.248101 ms	
The time between successive hops on a channel:	98.6 ms	
Number of channels (N):	79	Pass
Channel dwell time in 31.6 seconds:	400 ms	Pass

Because the timing between successive hops on a channel is always the same, 98.6ms, no matter which channel is measured, the system must hop on all channels before returning to the same channel.



Analyzer Settings	
HP8564E,EMI	
CF: 2480.00 MHz	
SPAN:3.000 MHz	
RB 30 kHz	
VB 100 kHz	
Detector POS	
Att 20	
RL Offset 0.00	
Sweep Time 50.0ms	
Ref Lvl:115.70DBUV	

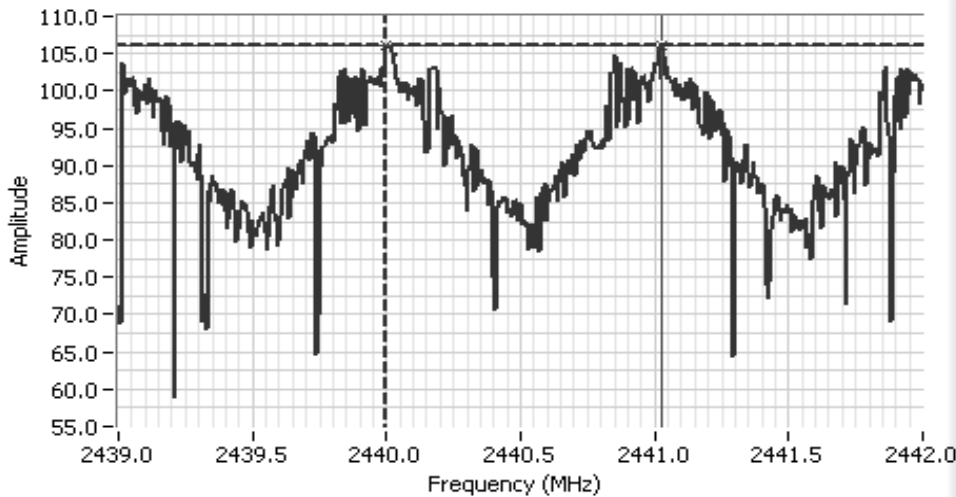
Comments
20dB Bandwidth, 2480 MHz

Cursor 1	2480.450	104.87	
Cursor 2	2479.545	84.87	

Delta Freq.	0.905
Delta Amplitude	20.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A



Analyzer Settings

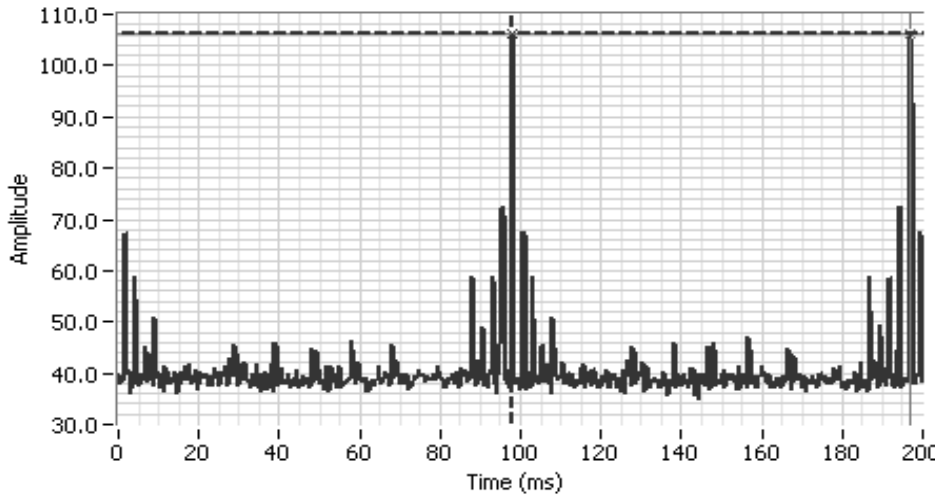
HP8564E,EMI
 CF: 2440.50 MHz
 SPAN:3.000 MHz
 RB 30 kHz
 VB 100 kHz
 Detector POS
 Att 20
 RL Offset 0.00
 Sweep Time 50.0ms
 Ref Lvl:115.70DBUV

Comments

Channel Spacing

Cursor 1	2440.000	106.20	
Cursor 1	2441.030	106.03	

Delta Freq. 1.030
 Delta Amplitude 0.17



Analyzer Settings

HP8564E,EMI
 CF: 2440.00 MHz
 SPAN:0.00 MHz
 RB 100 kHz
 VB 100 kHz
 Detector POS
 Att 20
 RL Offset 0.00
 Sweep Time 200.0ms
 Ref Lvl:115.70DBUV

Comments

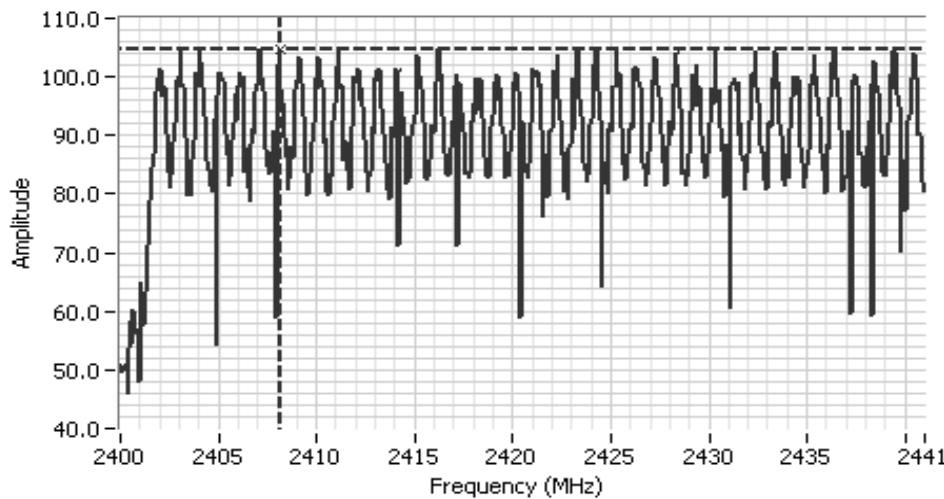
Channel Occupancy:
 98.6ms between
 successive hops on the
 same channel

Cursor 1	98.000	106.20	
Cursor 1	196.667	106.03	

Delta Time (ms) 98.67
 Delta Amplitude 0.17



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A



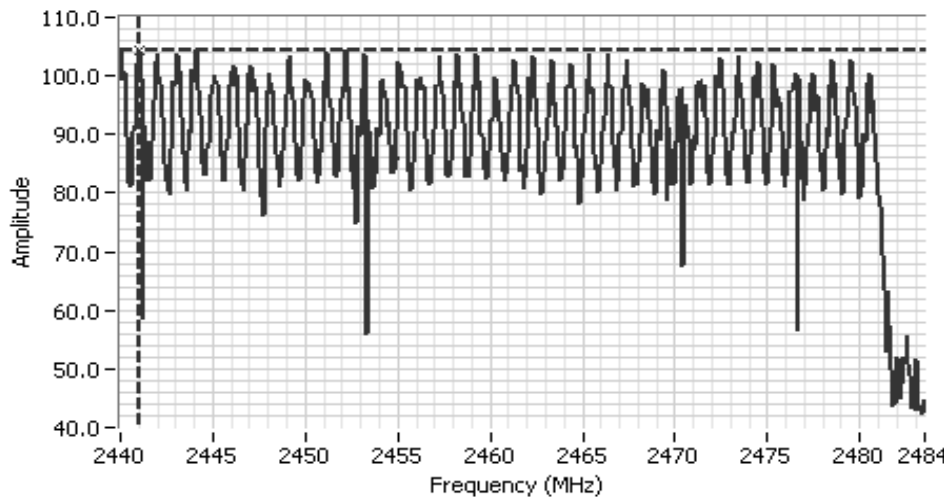
Analyzer Settings

HP8564E, EMI
 CF: 2420.50 MHz
 SPAN: 41.00 MHz
 RB 30 kHz
 VB 10 kHz
 Detector POS
 Att 20
 RL Offset 0.00
 Sweep Time 0.4s
 Ref Lvl: 115.70DBUW

Comments

Number of channels:
 channels between
 2402-2440 MHz

Cursor 1 2408.13 104.70
 0.000 0.00



Analyzer Settings

HP8564E, EMI
 CF: 2461.75 MHz
 SPAN: 43.50 MHz
 RB 30 kHz
 VB 10 kHz
 Detector POS
 Att 20
 RL Offset 0.00
 Sweep Time 0.4s
 Ref Lvl: 115.70DBUW

Comments

Number of channels:
 channels between
 2440-2483.5 MHz

Cursor 1 2441.01 104.37
 0.000 0.00



Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

RSS 210 and FCC 15.247 Radiated Spurious Emissions (Bluetooth)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 6/25/2007	Config. Used: 1
Test Engineer: Rafael Varelas	Config Change: None
Test Location: SVOATS #2	EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions: Temperature: 14 °C
 Rel. Humidity: 75 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	RE, Fundamental	FCC Part 15.209 / 15.247(c)	-	
2	RE, 30 - 18000 MHz - Spurious Emissions - Tx mode	FCC Part 15.209 / 15.247(c)	Pass	46.5dBµV/m (211.3µV/m) @ 2501.3MHz (-7.5dB)
3	RE, 30 - 18000 MHz - Spurious Emissions - Rx Mode	RSS 210	Pass	40.8dBµV/m @ 1625.7MHz (-13.2dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #1: Fundamental

Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
EUT Flat								
Low Channel								
2401.940	67.4	H	-	-	AVG	145	1.0	RB = 1MHz, VB = 10Hz
2401.940	77.0	H	-	-	PK	145	1.0	RB = VB = 1MHz
2402.040	76.8	H	-	-	PK	145	1.0	RB = VB = 100kHz
2402.000	77.8	V	-	-	AVG	153	1.0	RB = 1MHz, VB = 10Hz
2402.000	87.2	V	-	-	PK	153	1.0	RB = VB = 1MHz
2402.020	87.1	V	-	-	PK	153	1.0	RB = VB = 100kHz
Middle Channel								
2440.850	77.2	V	-	-	AVG	162	1.0	RB = 1MHz, VB = 10Hz
2440.850	87.0	V	-	-	PK	162	1.0	RB = VB = 1MHz
2441.020	86.9	V	-	-	PK	162	1.0	RB = VB = 100kHz
2440.960	70.3	H	-	-	AVG	295	2.0	RB = 1MHz, VB = 10Hz
2440.960	79.7	H	-	-	PK	295	2.0	RB = VB = 1MHz
2440.930	79.5	H	-	-	PK	295	2.0	RB = VB = 100kHz
High Channel								
2479.930	74.7	V	-	-	AVG	165	1.0	RB = 1MHz, VB = 10Hz
2479.930	84.1	V	-	-	PK	165	1.0	RB = VB = 1MHz
2479.830	84.1	V	-	-	PK	165	1.0	RB = VB = 100kHz
2479.860	73.2	H	-	-	AVG	234	1.8	RB = 1MHz, VB = 10Hz
2479.860	82.6	H	-	-	PK	234	1.8	RB = VB = 1MHz
2480.000	82.5	H	-	-	PK	234	1.8	RB = VB = 100kHz
EUT On its Side								
Low Channel								
2401.940	78.2	H	-	-	AVG	210	2.0	RB = 1MHz, VB = 10Hz
2401.940	87.6	H	-	-	PK	210	2.0	RB = VB = 1MHz
2401.830	87.0	H	-	-	PK	210	2.0	RB = VB = 100kHz
2402.080	77.4	V	-	-	AVG	75	1.0	RB = 1MHz, VB = 10Hz
2402.080	86.4	V	-	-	PK	75	1.0	RB = VB = 1MHz
2401.840	86.5	V	-	-	PK	75	1.0	RB = VB = 100kHz
Middle Channel								
2440.960	77.0	H	-	-	AVG	76	1.5	RB = 1MHz, VB = 10Hz
2440.960	86.7	H	-	-	PK	76	1.5	RB = VB = 1MHz
2440.820	86.0	H	-	-	PK	76	1.5	RB = VB = 100kHz
2440.990	78.3	V	-	-	AVG	142	1.9	RB = 1MHz, VB = 10Hz
2440.990	88.0	V	-	-	PK	142	1.9	RB = VB = 1MHz
2441.010	86.6	V	-	-	PK	141	1.9	RB = VB = 100kHz

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

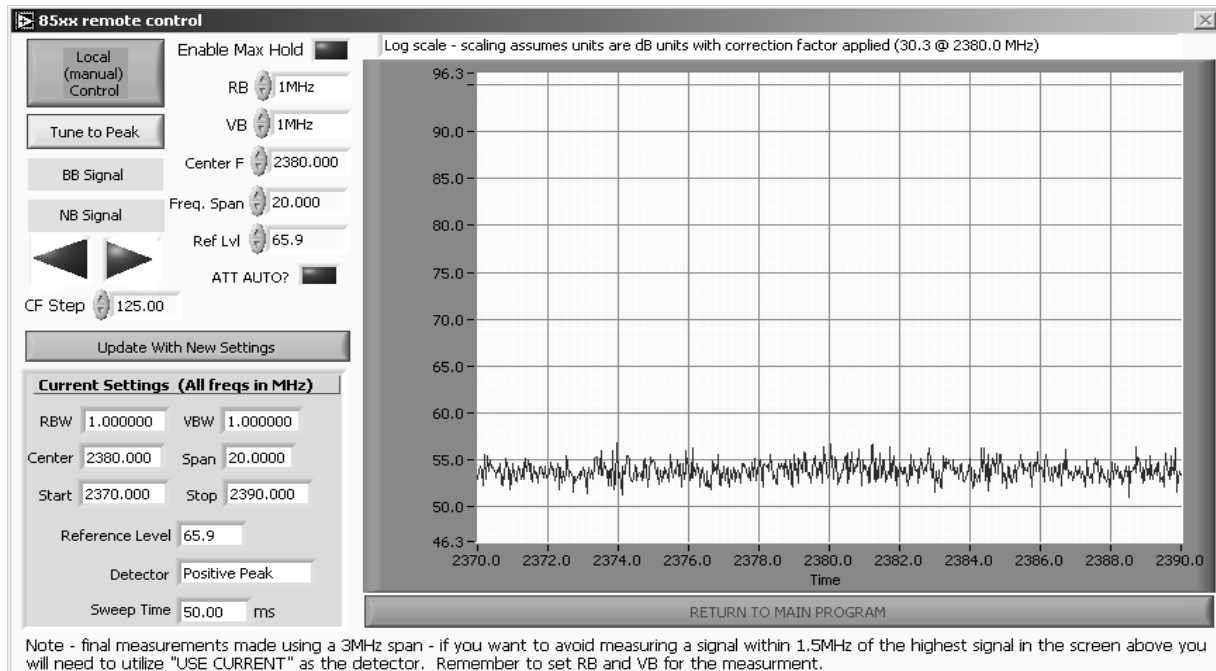
Run #1: Continued

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
High Channel								
2479.870	75.4	H	-	-	AVG	113	1.7	RB = 1MHz, VB = 10Hz
2479.870	85.1	H	-	-	PK	113	1.7	RB = VB = 1MHz
2479.830	84.5	H	-	-	PK	113	1.7	RB = VB = 100kHz
2479.890	73.4	V	-	-	AVG	74	1.0	RB = 1MHz, VB = 10Hz
2479.890	82.7	V	-	-	PK	74	1.0	RB = VB = 1MHz
2479.850	84.0	V	-	-	PK	74	1.0	RB = VB = 100kHz
EUT Upright								
Low Channel								
2401.900	76.3	H	-	-	AVG	254	1.4	RB = 1MHz, VB = 10Hz
2401.900	85.9	H	-	-	PK	254	1.4	RB = VB = 1MHz
2402.030	86.4	H	-	-	PK	254	1.0	RB = VB = 100kHz
2401.920	79.2	V	-	-	AVG	214	1.0	RB = 1MHz, VB = 10Hz
2401.920	88.6	V	-	-	PK	214	1.0	RB = VB = 1MHz
2402.010	88.7	V	-	-	PK	214	1.0	RB = VB = 100kHz

Run #2a: Spurious Emissions, Low Channel @ 2402 MHz

EUT Upright

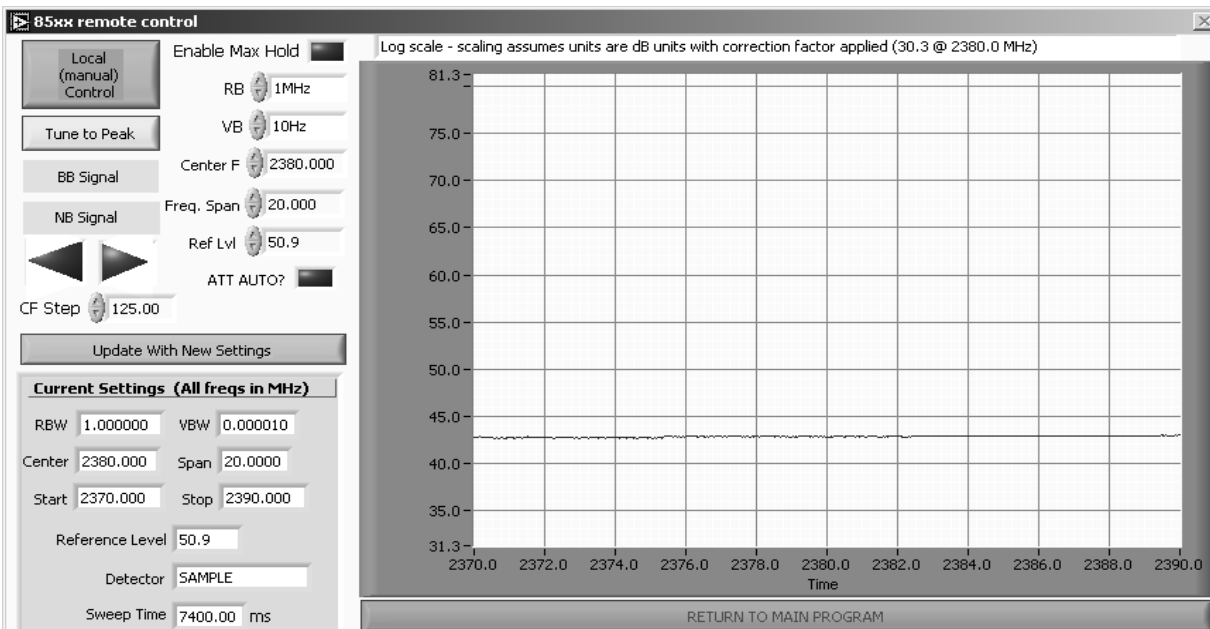
Vertical



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

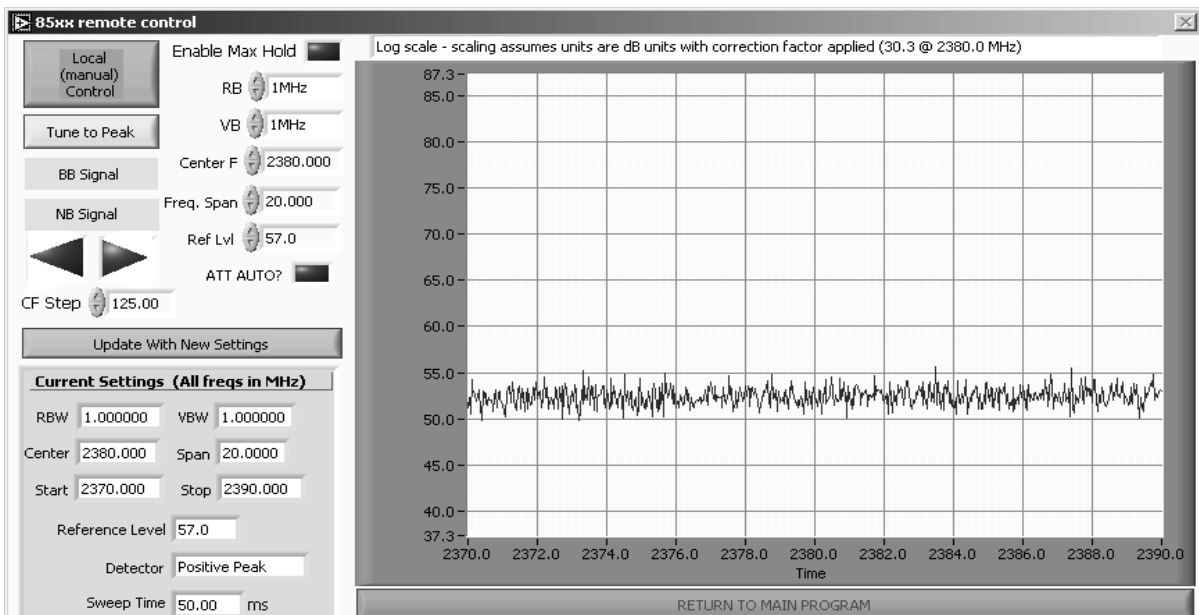
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Run #2a: Continued



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

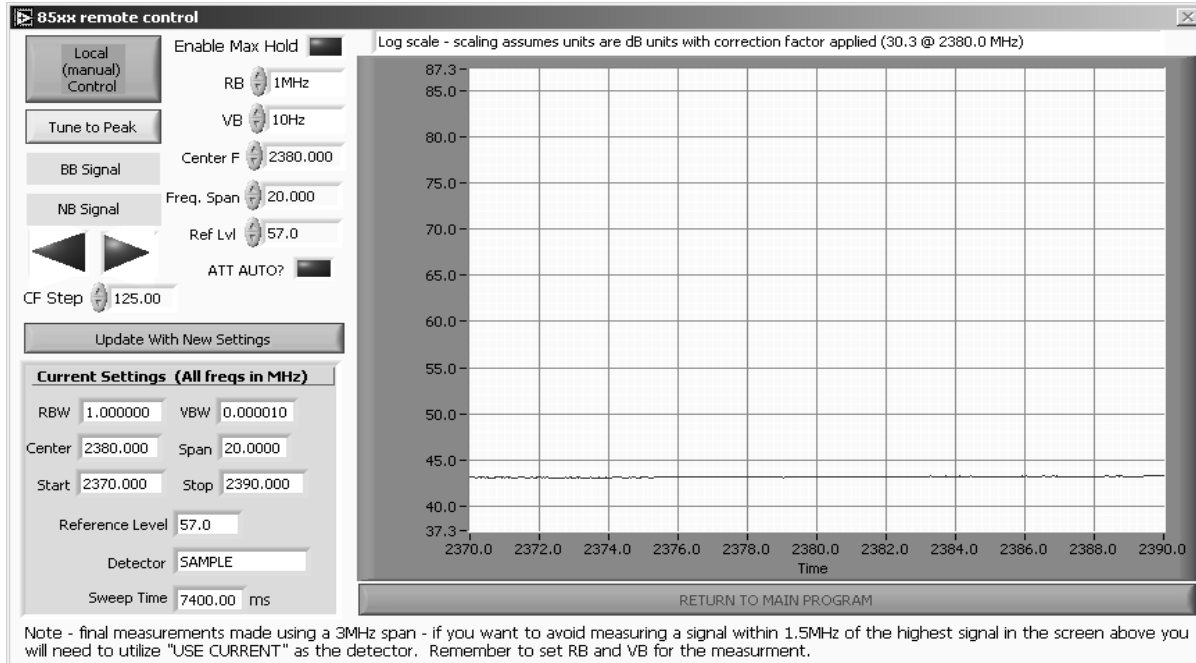
Horizontal



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #2a: Continued



Band Edge Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	44.6	V	54.0	-9.4	AVG	339	1.0	
2388.760	44.4	H	54.0	-9.6	AVG	37	1.0	
2388.760	56.2	H	74.0	-17.8	PK	37	1.0	
2390.000	56.0	V	74.0	-18.0	PK	339	1.0	



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #2a: Continued

Spurious Emissions

Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4804.000	37.2	H	54.0	-16.8	AVG	192	1.2	
9608.060	35.5	H	54.0	-18.5	AVG	250	1.0	
9606.800	35.3	V	54.0	-18.7	AVG	0	1.0	
4804.060	34.7	V	54.0	-19.3	AVG	151	1.4	
7205.080	34.0	H	54.0	-20.0	AVG	0	1.0	
7204.880	33.9	V	54.0	-20.1	AVG	253	1.0	
4804.000	48.3	H	74.0	-25.7	PK	192	1.2	
9608.060	47.2	H	74.0	-26.8	PK	250	1.0	
9606.800	46.3	V	74.0	-27.7	PK	0	1.0	
7205.080	46.2	H	74.0	-27.8	PK	0	1.0	
4804.060	45.8	V	74.0	-28.2	PK	151	1.4	
7204.880	45.7	V	74.0	-28.3	PK	253	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band but the more stringent restricted band limit was used.

Run #2b: Spurious Emissions, Middle Channel @ 2441 MHz

EUT Upright

Frequency MHz	Level dBµV/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4882.000	36.6	H	54.0	-17.4	AVG	191	1.3	
7321.650	34.1	H	54.0	-19.9	AVG	90	1.0	
7324.120	34.1	V	54.0	-19.9	AVG	360	1.0	
9762.530	33.8	V	54.0	-20.2	AVG	101	1.0	
9763.070	33.7	H	54.0	-20.3	AVG	360	1.0	
4880.720	30.5	V	54.0	-23.5	AVG	148	1.0	
4882.000	47.9	H	74.0	-26.1	PK	191	1.3	
7321.650	46.6	H	74.0	-27.4	PK	90	1.0	
9762.530	46.0	V	74.0	-28.0	PK	101	1.0	
7324.120	45.6	V	74.0	-28.4	PK	360	1.0	
9763.070	44.9	H	74.0	-29.1	PK	360	1.0	
4880.720	42.0	V	74.0	-32.0	PK	148	1.0	

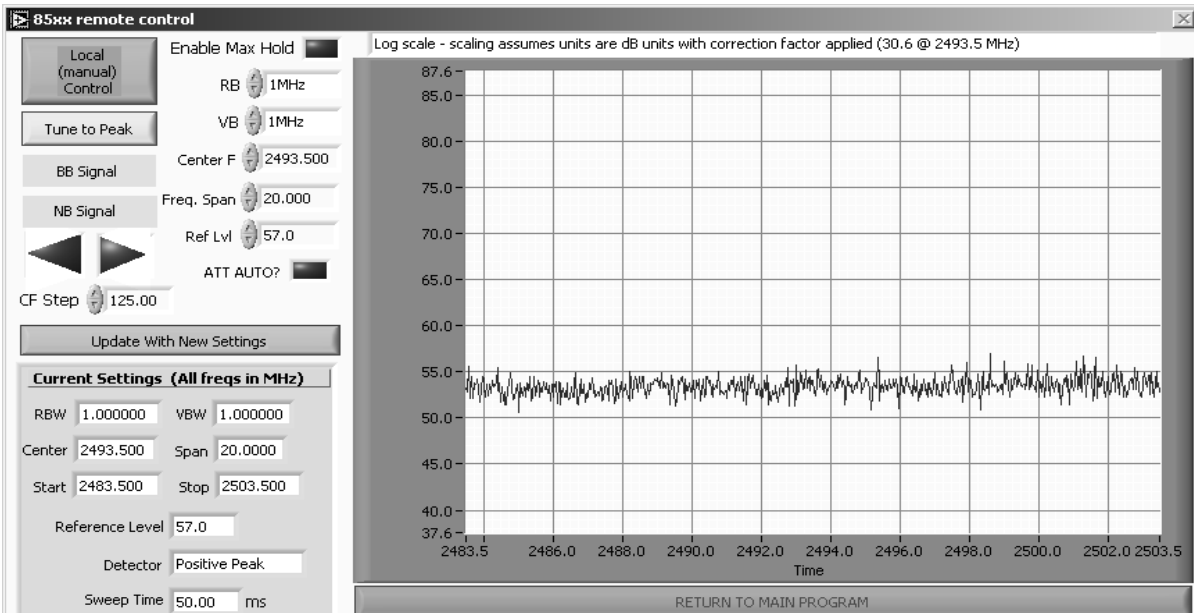
Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band but the more stringent restricted band limit was used.

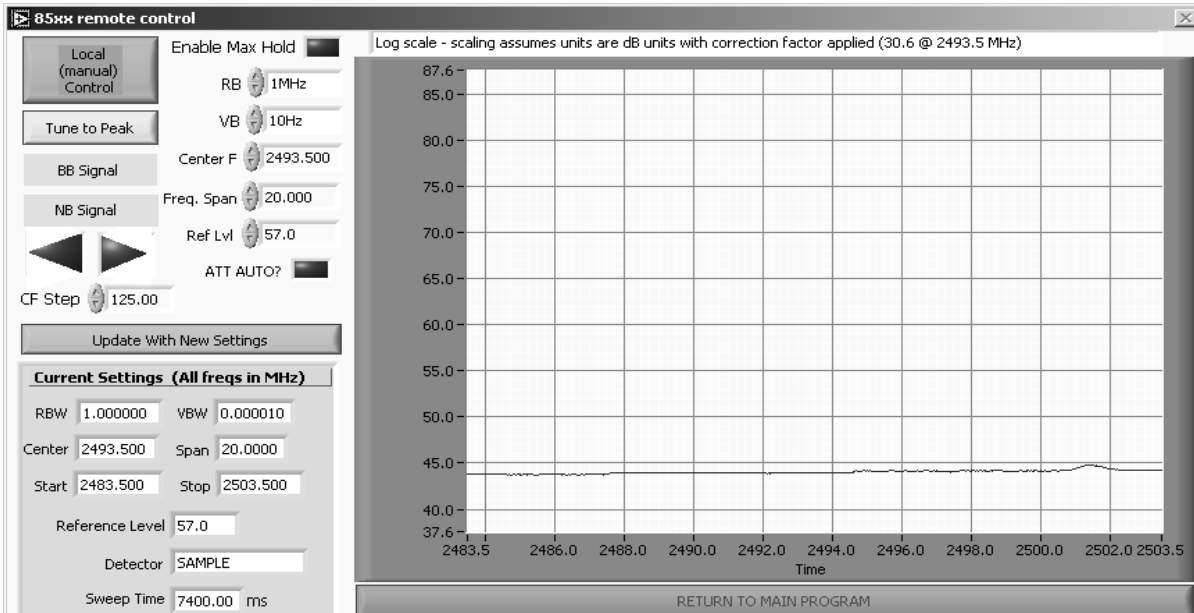
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzl
Standard: EN55022 / FCC	Class: N/A

Run #2c: Spurious Emissions, High Channel @ 2480 MHz EUT Upright

Vertical



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

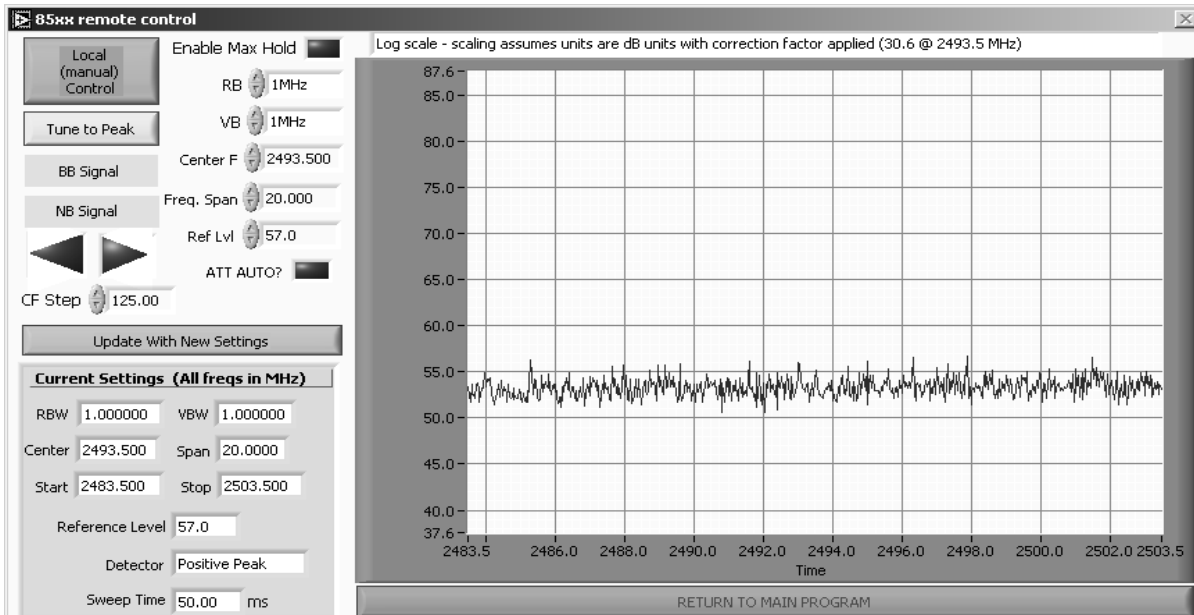


Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.

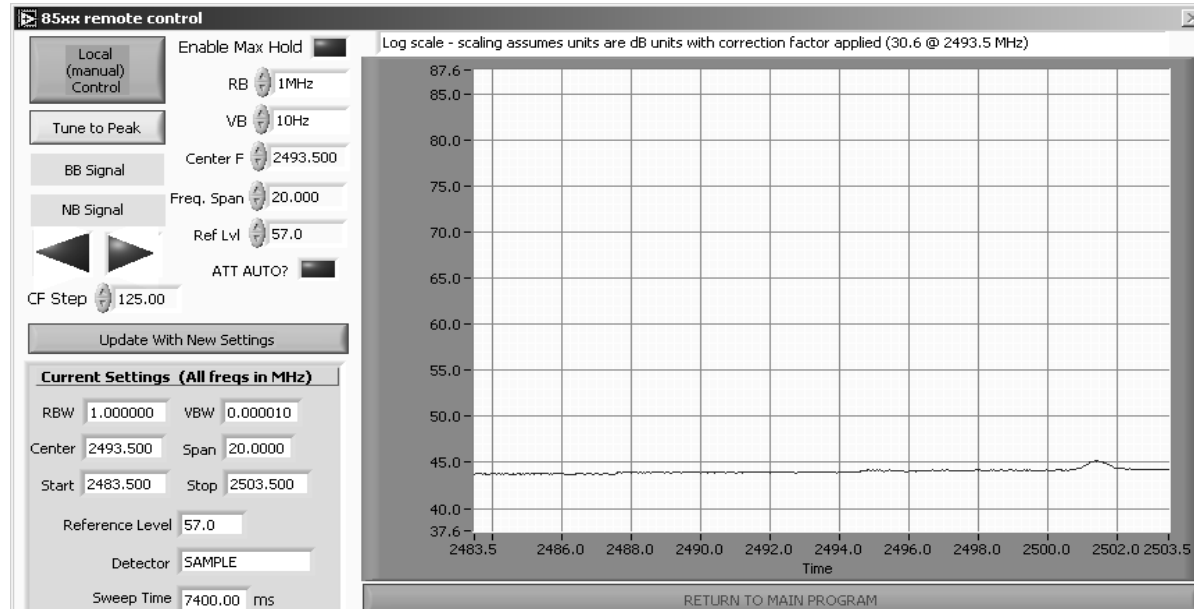
Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
Contact: Bob Hymes	Account Manager: Susan Pelzi
Standard: EN55022 / FCC	Class: N/A

Run #2c: Continued

Horizontal



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



Note - final measurements made using a 3MHz span - if you want to avoid measuring a signal within 1.5MHz of the highest signal in the screen above you will need to utilize "USE CURRENT" as the detector. Remember to set RB and VB for the measurement.



EMC Test Data

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzl
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #2c: Continued

Band Edge Signal Field Strength

Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
2501.330	46.5	H	54.0	-7.5	AVG	192	1.0	
2501.670	46.0	V	54.0	-8.0	AVG	338	1.0	
2501.330	57.6	H	74.0	-16.4	PK	192	1.0	
2501.670	57.3	V	74.0	-16.7	PK	338	1.0	

Spurious Emissions

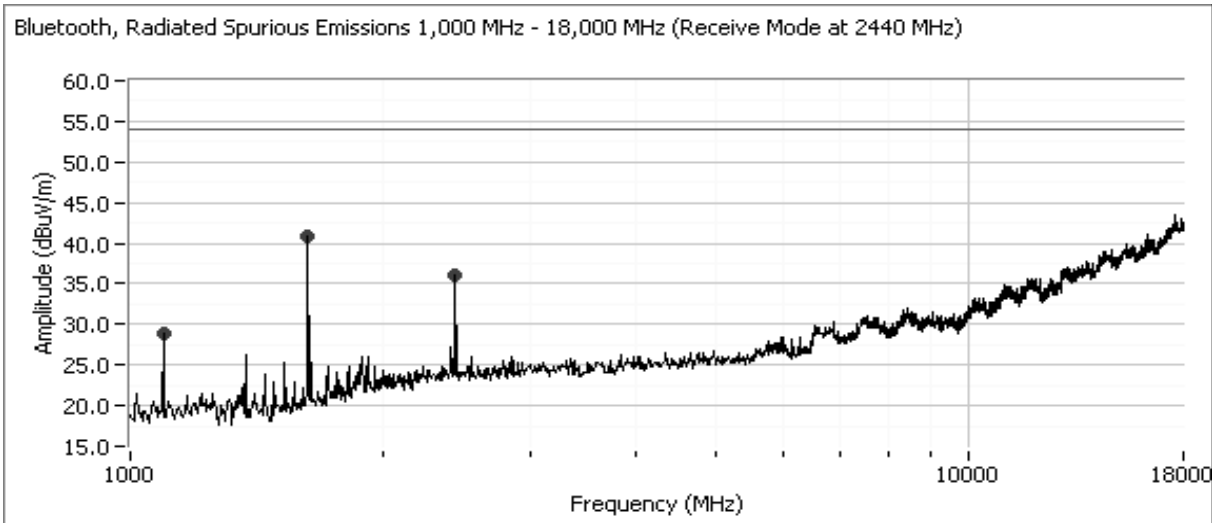
Frequency MHz	Level dB μ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
4959.960	36.9	H	54.0	-17.1	AVG	189	1.0	
9920.010	36.4	H	54.0	-17.6	AVG	156	1.3	
7440.080	36.2	V	54.0	-17.8	AVG	163	1.3	
7439.980	36.2	H	54.0	-17.8	AVG	360	1.0	
9920.830	36.0	V	54.0	-18.0	AVG	165	1.3	
4961.330	31.0	V	54.0	-23.0	AVG	360	1.3	
9920.830	48.5	V	74.0	-25.5	PK	165	1.3	
4959.960	48.0	H	74.0	-26.0	PK	189	1.0	
9920.010	48.0	H	74.0	-26.0	PK	156	1.3	
7440.080	47.6	V	74.0	-26.4	PK	163	1.3	
7439.980	47.4	H	74.0	-26.6	PK	360	1.0	
4961.330	42.5	V	74.0	-31.5	PK	360	1.3	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the limit was set 20dB below the level of the fundamental and measured in 100kHz.

Note 2: Signal is not in a restricted band but the more stringent restricted band limit was used.

Client: OOO	Job Number: J68325
Model: 2050 and 2060	T-Log Number: T68341
	Account Manager: Susan Pelzi
Contact: Bob Hymes	
Standard: EN55022 / FCC	Class: N/A

Run #3: Radiated Spurious Emissions, 30 - 18,000 MHz (Receive Mode).
Taken from T64964



Frequency MHz	Level dBuV/m	Pol V/H	RSS 210		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
1625.720	40.8	H	54.0	-13.2	Peak	167	1.7	
2438.540	36.1	H	54.0	-17.9	Peak	353	1.7	
1095.391	29.0	V	54.0	-25.0	Peak	260	1.7	

EXHIBIT 3: Photographs of Test Configurations

4 Pages

EXHIBIT 4: Proposed FCC ID Label & Label Location

*EXHIBIT 5: Detailed Photographs
of OQO Model 2042, 2050 and 2060 Construction*

Pages

***EXHIBIT 6: Operator's Manual
for OOO Model 2042, 2050 and 2060***

Pages

*EXHIBIT 7: Block Diagram
of OQO Model 2042, 2050 and 2060*

Pages

*EXHIBIT 8: Schematic Diagrams
for OOO Model 2042, 2050 and 2060*

Pages

*EXHIBIT 9: Theory of Operation
for OOO Model 2042, 2050 and 2060*

Pages

EXHIBIT 10: RF Exposure Information

Pages