



EMC Test Report

*Industry Canada RSS-Gen Issue 2 / RSS 210 Issue 7
FCC Part 15 Subpart C*

Model: Falcon X3

IC CERTIFICATION #: 3862C-FALX3
FCC ID: U4SFALX3

APPLICANT: Datalogic Mobile Inc.
1505 Westec Drive
Eugene, OR 97402

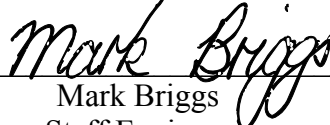
TEST SITE(S): Elliott Laboratories
41039 Boyce Road.
Fremont, CA. 94538-2435

IC SITE REGISTRATION #: 2845B-4, 2845B-5

REPORT DATE: June 22, 2010

FINAL TEST DATES: January 14, 21, 22, 2010, April 14, 15, 16 and
19, 2010

AUTHORIZED SIGNATORY:



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Testing Cert #2016-01

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REVISION HISTORY

Rev#	Date	Comments	Modified By
-	June 22, 2010	First release	

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SCOPE

An electromagnetic emissions test has been performed on the Datalogic Mobile Inc. model Falcon X3, 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

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

FCC DTS Measurement Procedure KDB558074, March 2005

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.

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 Datalogic Mobile Inc. model Falcon X3 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"
FCC Part 15 Subpart C

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

The test results recorded herein are based on a single type test of Datalogic Mobile Inc. model Falcon X3 and therefore apply only to the tested sample. The sample was selected and prepared by Jerry Kalina of Datalogic Mobile Inc..

DEVIATIONS FROM THE STANDARDS

No deviations were made from the published requirements listed in the scope of this report.

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

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (Margin)
15.247(a)	RSS 210 A8.2	Digital Modulation	Systems uses OFDM and DSSS techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	802.11b: 1241 kHz 802.11g: 16500 kHz	>500kHz	Complies
-	RSS GEN 4.4.1	99% Bandwidth	802.11b: 16140 kHz 802.11g: 17220 kHz	Information only	N/A
15.247 (b) (3)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	802.11b: 0.056 W 802.11g: 0.123 W EIRP = 0.219W ^{Note 1}	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	-6.7 dBm/3kHz	8dBm/3kHz	Complies
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	802.11b: < -30dBc 802.11g: < -20dBc	< -30dBc ^{Note 2} < -20dBc	Complies
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	51.8dBμV/m @ 2389.9MHz	15.207 in restricted bands, all others -20dBc/-30dBc ^{Note 2}	Complies (2.2dB)

Note 1: The maximum EIRP calculated using antenna gain of 2.5dBi.
Note 2: Limit of -30dBc used for 802.11b mode because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst) / RMS averaging over a time interval, as permitted under RSS 210 section A8.4(4). The power in 802.11g mode was measured as a peak power, therefore the spurious limit for 802.11g mode was -20dBc.

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	16500 kHz	>500kHz	Complies
-	RSS GEN 4.4.1	99% Bandwidth	17100 kHz	Information only	N/A
15.247 (b)	RSS 210 A8.2 (4)	Output Power (multipoint systems)	11.5dBm (0.014Watts) EIRP = 0.021 W ^{Note 1}	1Watt, EIRP limited to 4 Watts.	Complies
15.247(d)	RSS 210 A8.2 (2)	Power Spectral Density	7.5dBm/3kHz	Maximum permitted is 8dBm/3kHz	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	48.4dBμV/m @ 11609.8MHz	15.207 in restricted bands, all others <-30dBc ^{Note 2}	Complies (5.6dB)

Note 1: EIRP calculated using antenna gain of 4.8dBi.
Note 2: Limit of -30dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst) / RMS averaging over a time interval, as permitted under RSS 210 section A8.4(4).

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Integral antennas	Integral antenna or unique connector	Complies
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	45.8dB μ V/m @ 1111.5MHz	Refer to page 17	Complies (8.2dB)
15.207	RSS GEN Table 2	AC Conducted Emissions	37.0dB μ V @ 3.106MHz	Refer to page 16	Complies (19.0dB)
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to SAR report and RSS 102 declaration	Refer to OET 65, FCC Part 1 and RSS 102	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	Statement is in the manual (Regulatory Statements section)	Statement required regarding non-interference	Complies
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth		Information only	N/A

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	Measurement Unit	Frequency Range	Expanded Uncertainty
RF power, conducted (power meter)	dBm	25 to 7000 MHz	± 0.52 dB
RF power, conducted (Spectrum analyzer)	dBm	25 to 7000 MHz	± 0.7 dB
Conducted emission of transmitter	dBm	25 to 26500 MHz	± 0.7 dB
Conducted emission of receiver	dBm	25 to 26500 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 26500 MHz	± 2.5 dB
Radiated emission (field strength)	dB μ V/m	25 to 1000 MHz	± 3.6 dB
		1000 to 40000 MHz	± 6.0 dB
Conducted Emissions (AC Power)	dB μ V	0.15 to 30 MHz	± 2.4 dB

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

The Datalogic Mobile Inc. model Falcon X3 is a portable data terminal that is designed for warehouse use. The device contains a Bluetooth transmitter and a Wi-Fi 802.11abg transmitter.

The Bluetooth transmitter is implemented via a single chip solution and uses a integral antenna. It supports EDR (2Mb/s, 3Mb/s) and legacy (1Mb/s) data rates and can operate with adaptive frequency hopping to use a minimum of 20 of the 79 channels.

The Wi-Fi radio, which is covered by the scope of this test report, is implemented through a plug-in radio module. Although the module has its own FCC approval the integration of the device utilizes a different set of antennas than those approved with the module. Additionally, the device can be body worn and the modular approval only allows for use in mobile rf exposure conditions, therefore the application covers both Bluetooth and WiFi devices in this host system.

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 3.7 V DC, 120m Amps. The electrical rating of the AD/DC adaptor is 100-240 Volts, 60/50 Hz, 0.5 Amps.

The sample of the Falcon X3, which was used to evaluate the radiated emissions from the 802.11abg radio, was received on April 12, 2010 and tested on April 14, 15, 16 and 19, 2010.

Antenna port measurements (power, bandwidth and spurious emissions) were made on a sample of the SDC-MSD30AG 802.11abg module. This module was received on January 8, 2010 and tested on January 14, 21, 22, 2010.

The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Datalogic Mobile	Falcon X3	Portable Data Terminal	Sample #1	U4SFALX3
Summit Data Communications Inc.	SDC-MSD30AG	802.11AG Mini Compact Flash Module with antenna connectors	-	

ANTENNA SYSTEM

The antenna system consists of a pair of dipole antennas (a main antenna and a second antenna to provide spatial diversity) integrated into the host system

ENCLOSURE

The Falcon X3 enclosure is primarily constructed of plastic. It measures approximately 9 cm wide by 6 cm deep by 23 cm high.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at Elliott.

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
HP	NC600	Laptop	-	-
Hewlett Packard	iPAQ	Handheld Computer	-	DoC

EUT INTERFACE PORTS

The I/O cabling configuration during testing of the Falcon X3 was as follows:

Port	Connected To	Description	Cable(s)	
			Shielded or Unshielded	Length(m)
Serial	Laptop	Serial	Shielded	2.0
mini USB	Laptop	USB Cable	Unshielded	2.0
AC Power	AC/DC Adaptor	Power cable	Unshielded	2.0

The I/O cabling configuration for measurements at the antenna port of the 802.11abg module was as follows:

Port	Connected To	Description	Cable(s)	
			Shielded or Unshielded	Length(m)
iPAQ Power	AC Mains	2wire	Unshielded	1.5
Flash Module	iPAQ Module Port	-	-	-

EUT OPERATION

During testing the EUT was configured to transmit on the low, middle, and high channels in each of the operating bands. Testing was performed at the lowest data rates in each mode as these data rates produce the highest output power in that particular mode (1Mbps for 802.11b mode, and 6Mbps for 802.11g and 802.11a modes).

Tests were also performed with the 802.11abg radio in receive mode, tuned to the center channel in each operating band.

TEST SITE**GENERAL INFORMATION**

Final test measurements were taken at the test sites listed below. 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 and with industry Canada.

Site	Registration Numbers		Location
	FCC	Canada	
Chamber 4	211948	2845B-4	41039 Boyce Road Fremont, CA 94538-2435
Chamber 5	211948	2845B-5	

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. The test site(s) contain 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 16-1-1 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.

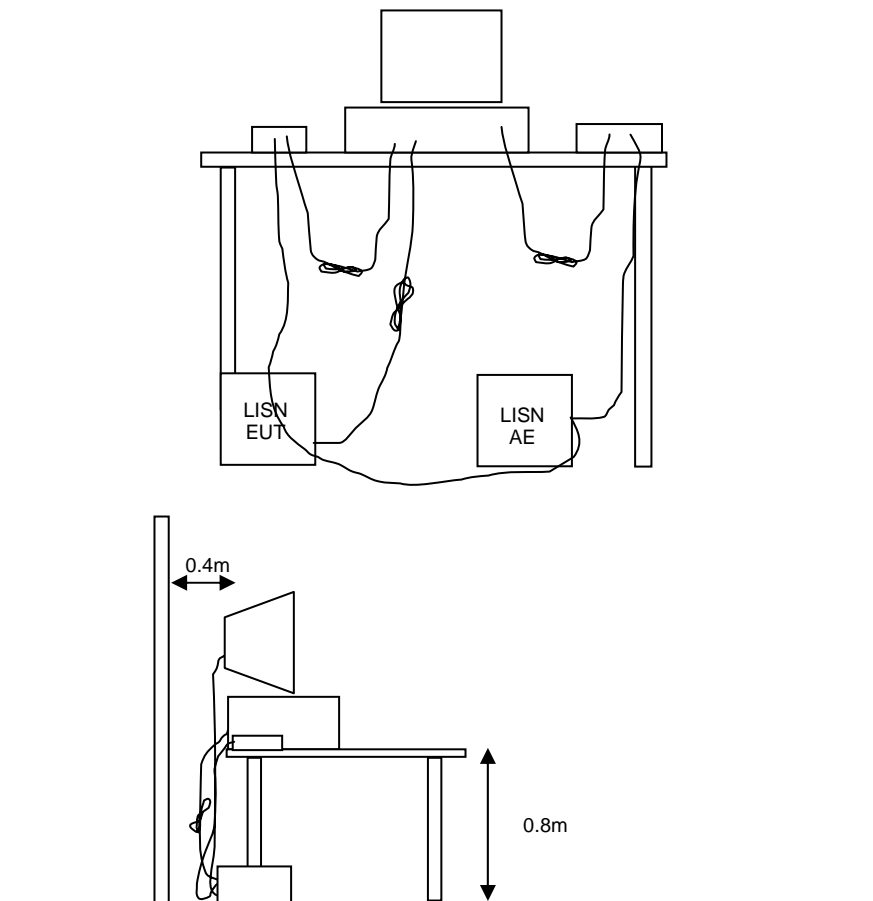
TEST PROCEDURES

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.



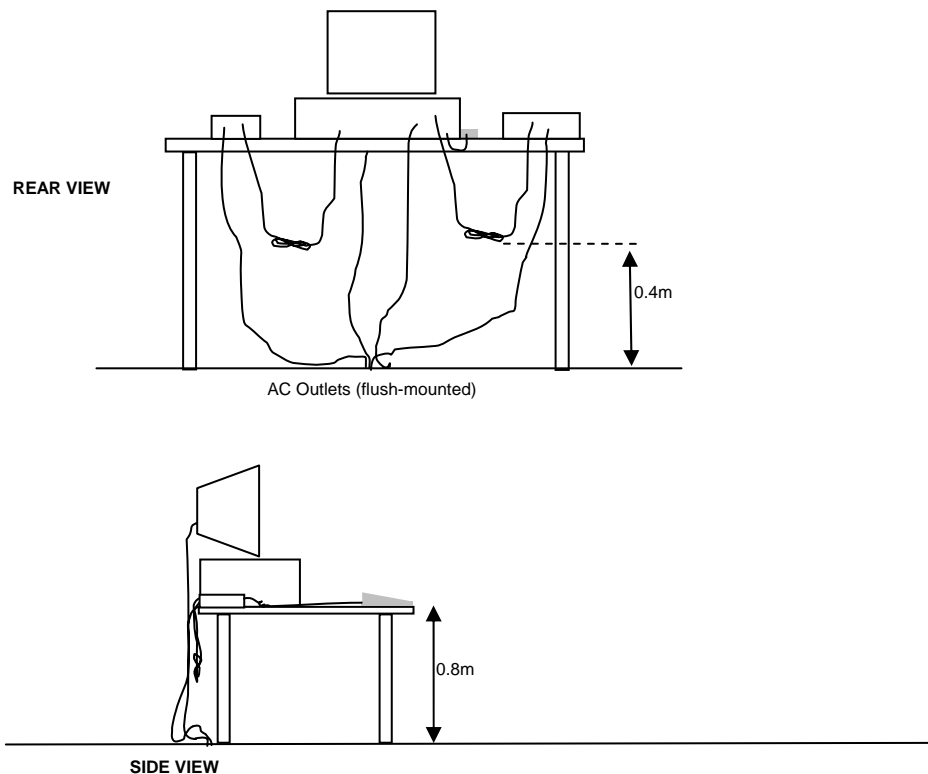
RADIATED EMISSIONS

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.

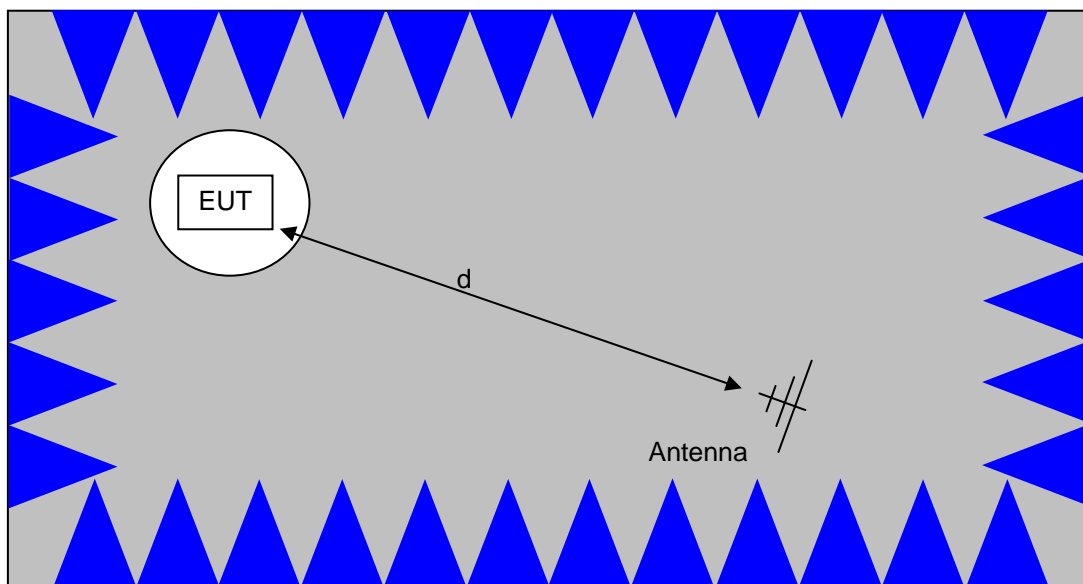
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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.

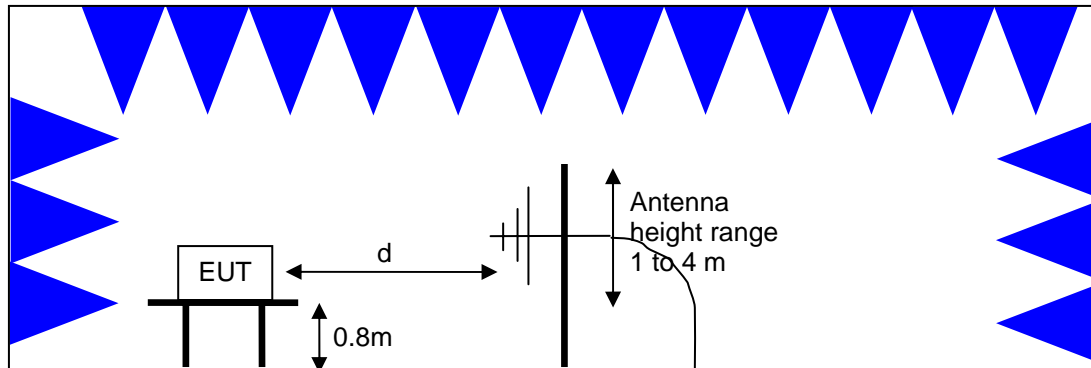


Typical Test Configuration for Radiated Field Strength Measurements



The 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 _{KHz} @ 300m	67.6-20*log ₁₀ (F _{KHz}) @ 300m
0.490-1.705	24000/F _{KHz} @ 30m	87.6-20*log ₁₀ (F _{KHz}) @ 30m
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

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

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

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.

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).

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_T - S = M$$

where:

R_T = 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:

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

$$D_m = \text{Measurement Distance in meters}$$

$$D_s = \text{Specification Distance in meters}$$

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:

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

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

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

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

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

Appendix A Test Equipment Calibration Data**Radio Antenna Port (Power and Spurious Emissions), January 2010**

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Weinschel Corp	Attenuator, 10dB , 50 ohms, 25W, DC-18 GHz	SA18N-10	2099	N/A
Rohde & Schwarz	Power Meter, Single Channel	NRVS	1290	10/22/2010
Rohde & Schwarz	Power Sensor 100 uW - 2 Watts	NRV-Z32	1423	10/23/2010
Rohde & Schwarz	Power Sensor 100 uW - 10 Watts	NRV-Z53	1555	1/28/2010

Radio Spurious Emissions, April 2010

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	6/3/2010
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/10/2010
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	5/12/2010
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Hewlett Packard	High Pass filter, 8.2 GHz (Blu System)	P/N 84300-80039 (84125C)	1392	6/22/2010
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/10/2010
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	7/29/2010
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1728	2/1/2011
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	9/25/2010
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	9/25/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	9/30/2010
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	9/17/2010

Conducted Emissions - AC Power Ports, 19-Apr-10

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	LISN, 10 kHz-100 MHz	3825/2	1293	3/12/2011
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	10/15/2010
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1593	6/9/2010

Appendix B Test Data

T78990 (Radiated emissions, AC Power
port conducted emissions) 39 Pages

T79612 (Antenna port measurements) 19 Pages



EMC Test Data

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3	T-Log Number:	T78990
	Portable Data Terminal(System Approval)	Account Manager:	Christine Krebill
Contact:	Jerry Kalina		-
Emissions Standard(s):	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

DATALOGIC MOBILE INC

Model

Falcon x3

Portable Data Terminal(System Approval)

Date of Last Test: 6/1/2010

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Conducted Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

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: 4/19/2010
Test Engineer: Suhaila Khushzad
Test Location: Fremont Chamber #4

Config. Used: 1
Config Change: None
EUT Voltage: 230V/50Hz & 120V/60Hz

General Test Configuration

For tabletop equipment, the EUT was located on a wooden table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment. Remote support equipment was located outside of the semi-anechoic chamber. Any cables running to remote support equipment were routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

Ambient Conditions:
Temperature: 20 °C
Rel. Humidity: 50 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 230V/50Hz	Class B	Pass	42.4dBµV @ 3.110MHz (-13.6dB)
2	CE, AC Power, 120V/60Hz	Class B	Pass	37.0dBµV @ 3.106MHz (-19.0dB)

Modifications Made During Testing

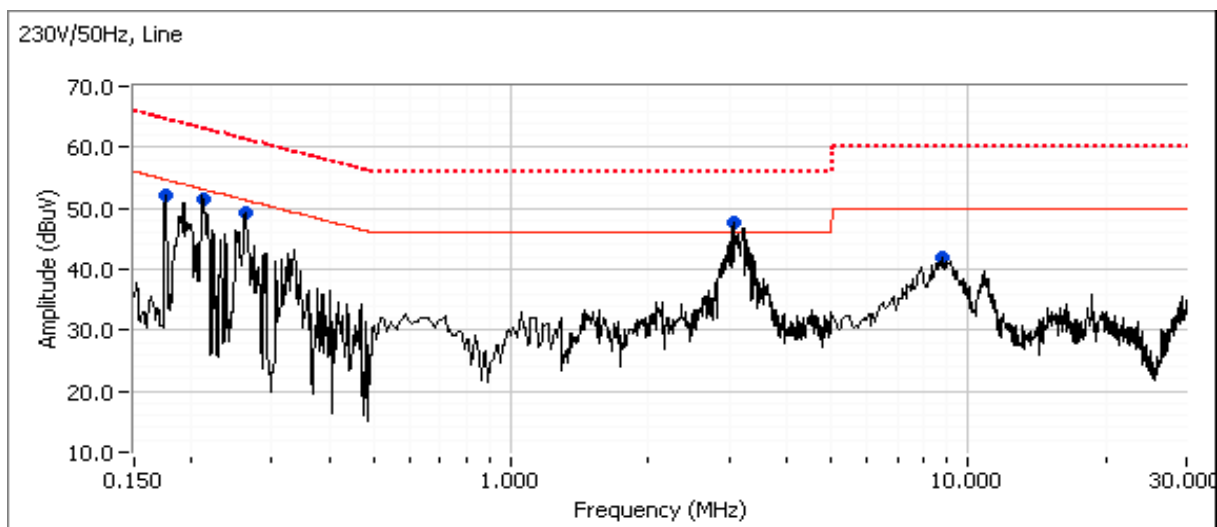
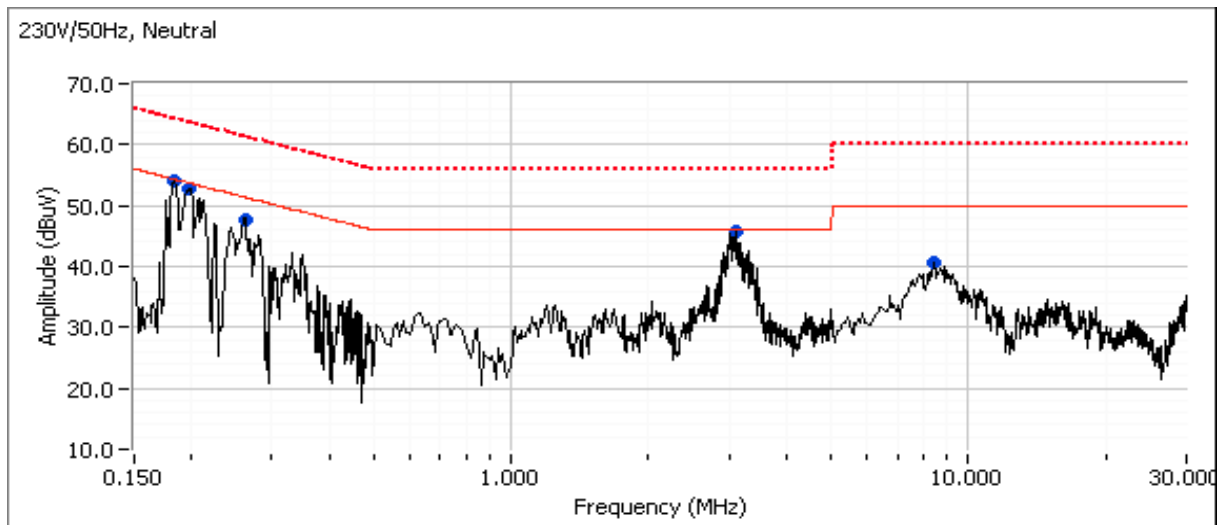
No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

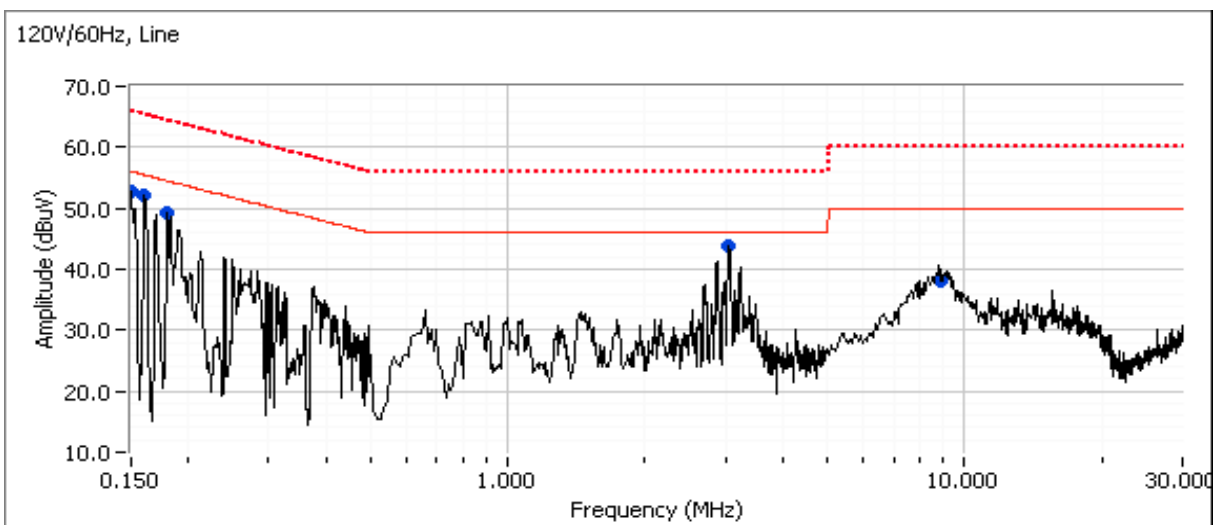
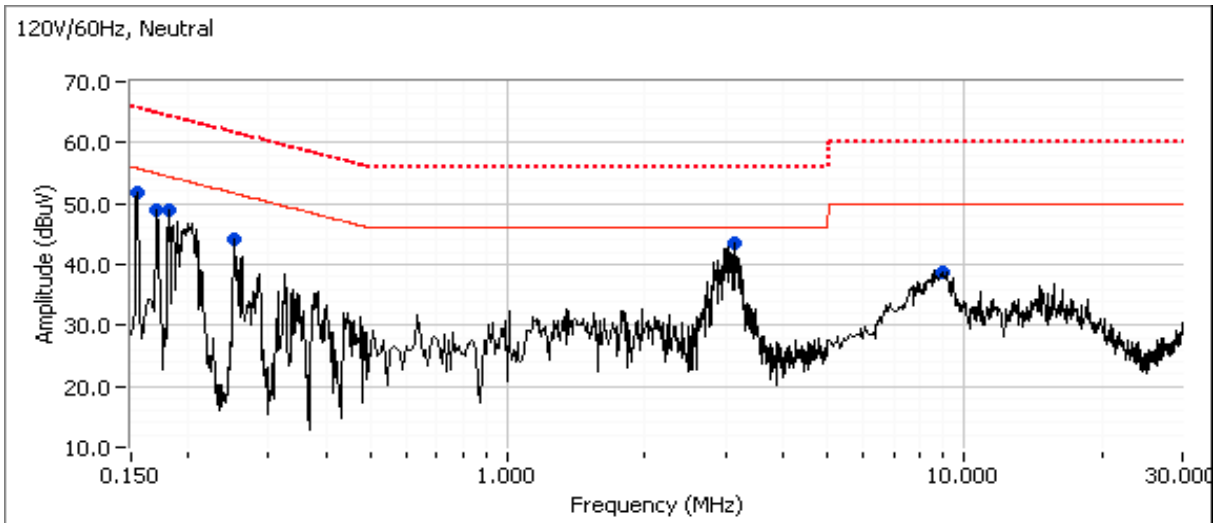
Frequency MHz	Level dBμV	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
3.110	47.6	Line	46.0	1.6	Peak	
3.097	45.8	Neutral	46.0	-0.2	Peak	
0.184	54.0	Neutral	54.3	-0.3	Peak	
0.198	52.8	Neutral	53.7	-0.9	Peak	
0.213	51.6	Line	53.1	-1.5	Peak	
0.266	49.1	Line	51.3	-2.2	Peak	
0.176	52.1	Line	54.7	-2.6	Peak	
0.264	47.8	Neutral	51.3	-3.5	Peak	
8.681	41.9	Line	50.0	-8.1	Peak	
8.407	40.5	Neutral	50.0	-9.5	Peak	

Final quasi-peak and average readings

Frequency MHz	Level dBμV	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
3.110	42.4	Line	56.0	-13.6	QP	QP (1.00s)
0.184	50.6	Neutral	64.3	-13.7	QP	QP (1.00s)
0.184	38.3	Neutral	54.3	-16.0	AVG	AVG (0.10s)
0.213	47.0	Line	63.1	-16.1	QP	QP (1.00s)
3.097	39.8	Neutral	56.0	-16.2	QP	QP (1.00s)
0.266	44.0	Line	61.2	-17.2	QP	QP (1.00s)
0.198	46.3	Neutral	63.7	-17.4	QP	QP (1.00s)
3.110	28.3	Line	46.0	-17.7	AVG	AVG (0.10s)
0.176	45.6	Line	64.7	-19.1	QP	QP (1.00s)
8.681	30.4	Line	50.0	-19.6	AVG	AVG (0.10s)
3.097	26.4	Neutral	46.0	-19.6	AVG	AVG (0.10s)
0.264	41.0	Neutral	61.3	-20.3	QP	QP (1.00s)
0.266	30.1	Line	51.2	-21.1	AVG	AVG (0.10s)
8.407	28.3	Neutral	50.0	-21.7	AVG	AVG (0.10s)
0.198	31.6	Neutral	53.7	-22.1	AVG	AVG (0.10s)
0.213	30.3	Line	53.1	-22.8	AVG	AVG (0.10s)
8.681	36.8	Line	60.0	-23.2	QP	QP (1.00s)
8.407	35.5	Neutral	60.0	-24.5	QP	QP (1.00s)
0.264	25.4	Neutral	51.3	-25.9	AVG	AVG (0.10s)
0.176	25.5	Line	54.7	-29.2	AVG	AVG (0.10s)

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency MHz	Level dBμV	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
3.066	43.9	Line	46.0	-2.1	Peak	
3.106	43.4	Neutral	46.0	-2.6	Peak	
0.151	52.7	Line	56.0	-3.3	Peak	
0.162	52.0	Line	55.4	-3.4	Peak	
0.151	51.9	Neutral	55.8	-3.9	Peak	
0.181	49.2	Line	54.5	-5.3	Peak	
0.185	49.0	Neutral	54.4	-5.4	Peak	
0.168	48.8	Neutral	54.9	-6.1	Peak	
0.251	44.3	Neutral	51.7	-7.4	Peak	
8.800	38.7	Neutral	50.0	-11.3	Peak	
8.746	38.1	Line	50.0	-11.9	Peak	

Final quasi-peak and average readings

Frequency MHz	Level dBμV	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
3.106	37.0	Neutral	56.0	-19.0	QP	QP (1.00s)
0.185	45.0	Neutral	64.3	-19.3	QP	QP (1.00s)
0.151	46.0	Neutral	65.9	-19.9	QP	QP (1.00s)
3.066	36.0	Line	56.0	-20.0	QP	QP (1.00s)
0.151	45.7	Line	65.9	-20.2	QP	QP (1.00s)
0.162	44.2	Line	65.4	-21.2	QP	QP (1.00s)
0.168	43.8	Neutral	65.1	-21.3	QP	QP (1.00s)
8.746	28.6	Line	50.0	-21.4	AVG	AVG (0.10s)
0.181	42.3	Line	64.4	-22.1	QP	QP (1.00s)
3.066	23.7	Line	46.0	-22.3	AVG	AVG (0.10s)
3.106	22.3	Neutral	46.0	-23.7	AVG	AVG (0.10s)
8.800	26.1	Neutral	50.0	-23.9	AVG	AVG (0.10s)
0.251	37.6	Neutral	61.7	-24.1	QP	QP (1.00s)
8.746	35.1	Line	60.0	-24.9	QP	QP (1.00s)
8.800	34.8	Neutral	60.0	-25.2	QP	QP (1.00s)
0.185	28.4	Neutral	54.3	-25.9	AVG	AVG (0.10s)
0.251	22.5	Neutral	51.7	-29.2	AVG	AVG (0.10s)
0.181	24.0	Line	54.4	-30.4	AVG	AVG (0.10s)
0.151	22.5	Neutral	55.9	-33.4	AVG	AVG (0.10s)
0.162	21.5	Line	55.4	-33.9	AVG	AVG (0.10s)
0.168	20.9	Neutral	55.1	-34.2	AVG	AVG (0.10s)
0.151	21.5	Line	55.9	-34.4	AVG	AVG (0.10s)

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Radiated Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

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: 4/15/2010
Test Engineer: Suhaila Khushzad
Test Location: Fremont Chamber #4

Config. Used: 1
Config Change: None
EUT Voltage: 230V/50Hz

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing. Any remote support equipment was located outside the semi-anechoic chamber. Any cables running to remote support equipment were routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, **preliminary** testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. **Maximized** testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions: Temperature: 20 °C
Rel. Humidity: 43 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	Radiated Emissions 30 - 1000 MHz	-	-	Covered by the digital device emissions tests
2	Radiated Emissions 1 GHz - 7.5 GHz Maximized	RSS 210	Pass	45.8dBµV/m @ 1111.5MHz (-8.2dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

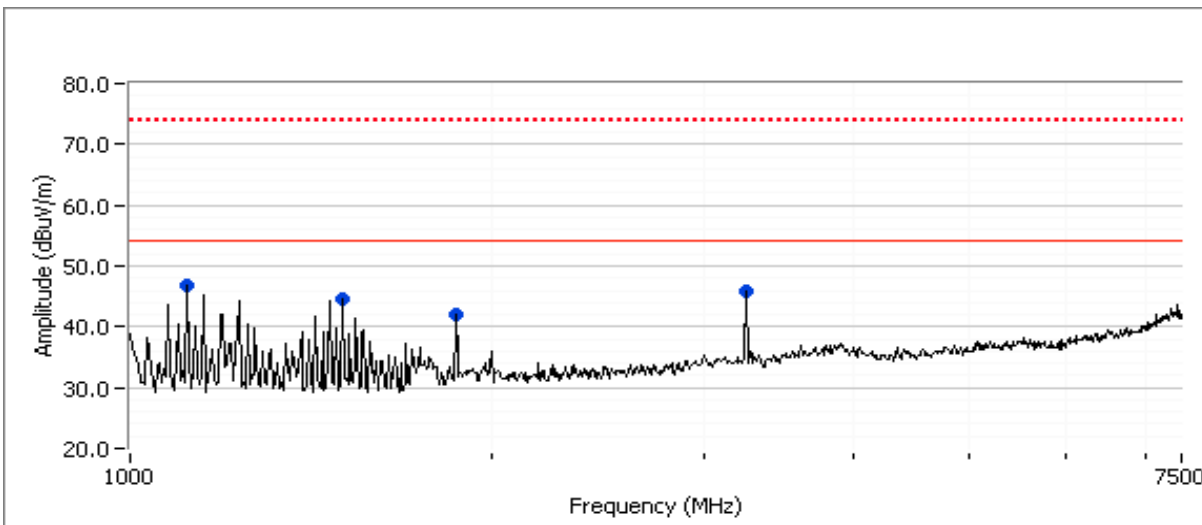
No deviations were made from the requirements of the standard.

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Run #2: Maximized Readings, 1000 - 7500 MHz

802.11.b, Channel 6 @ 2437 MHz in Rx mode, Bluetooth at 2440MHz in Rx mode

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 7500 MHz	3	3	0.0



Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency	Level	Pol	RSS 210		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1111.540	46.9	H	54.0	-7.1	Peak	280	1.6	
3249.390	45.8	H	54.0	-8.2	Peak	190	1.0	
1501.510	44.6	V	54.0	-9.4	Peak	160	1.6	
1875.500	42.1	V	54.0	-11.9	Peak	0	1.0	

Final peak and average readings

Frequency	Level	Pol	RSS 210		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1111.540	45.8	H	54.0	-8.2	AVG	242	1.5	RB 1 MHz; VB: 10 Hz
1111.540	47.0	H	74.0	-27.0	PK	242	1.5	RB 1 MHz; VB: 1 MHz
1871.900	26.1	V	54.0	-27.9	AVG	42	1.0	RB 1 MHz; VB: 10 Hz
1889.400	37.5	V	74.0	-36.5	PK	42	1.0	RB 1 MHz; VB: 1 MHz
1501.410	43.9	V	54.0	-10.1	AVG	159	1.5	RB 1 MHz; VB: 10 Hz
1501.310	45.8	V	74.0	-28.2	PK	159	1.5	RB 1 MHz; VB: 1 MHz
3249.290	44.9	H	54.0	-9.1	AVG	179	1.0	RB 1 MHz; VB: 10 Hz
3249.190	47.4	H	74.0	-26.6	PK	179	1.0	RB 1 MHz; VB: 1 MHz

Note 1: Above 1 GHz, the limit is based on an average measurement. In addition, the peak reading of any emission above 1 GHz can not exceed the average limit by more than 20 dB.

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Radiated Emissions

(Elliott Laboratories Fremont Facility, Semi-Anechoic Chamber)

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: 4/19/2010
Test Engineer: Suhaila Khushzad
Test Location: Fremont Chamber #4

Config. Used: 1
Config Change: None
EUT Voltage: 230V/50Hz

General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing. Any remote support equipment was located outside the semi-anechoic chamber. Any cables running to remote support equipment were routed through metal c

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, **preliminary** testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. **Maximized** testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement

Ambient Conditions: Temperature: 20 °C
Rel. Humidity: 43 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1a	Radiated Emissions 1 - 18 GHz Maximize (Rx@5200MHz)	RSS 210 FCC Class B	Pass	47.2dBμV/m @ 3466.7MHz (-6.8dB)
1b	Radiated Emissions 1 - 18 GHz Maximize (Rx@5300MHz)	RSS 210 FCC Class B	Pass	46.4dBμV/m @ 7066.7MHz (-7.6dB)
1c	Radiated Emissions 1 - 18 GHz Maximize (Rx@5580MHz)	RSS 210 FCC Class B	Pass	42.2dBμV/m @ 1462.5MHz (-11.8dB)
1d	Radiated Emissions 1 - 18 GHz Maximize (Rx@5785MHz)	RSS 210 FCC Class B	Pass	41.9dBμV/m @ 1072.5MHz (-12.1dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

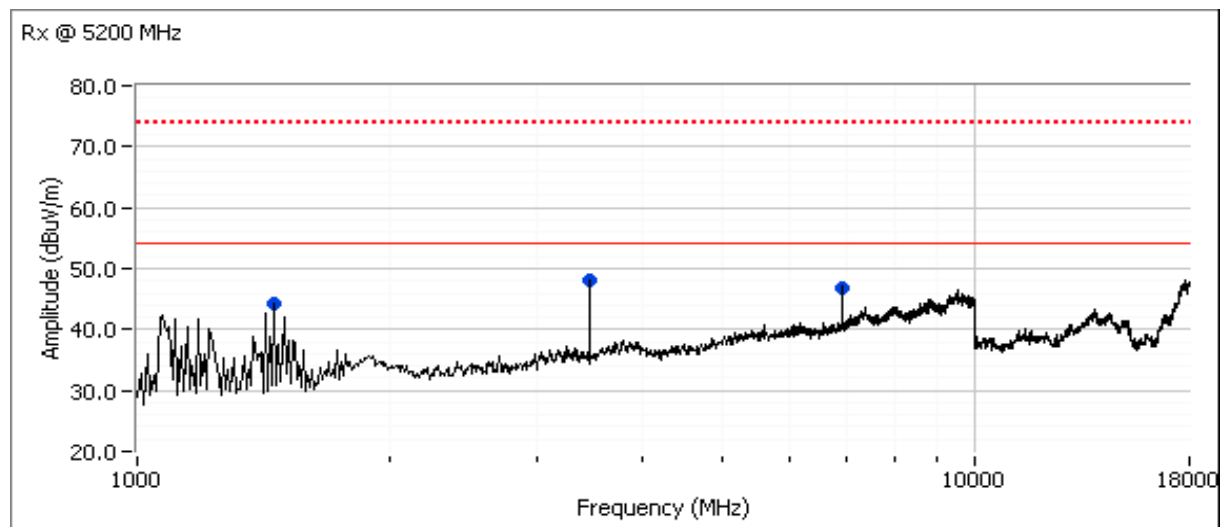
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Run #1a: Maximized Readings, 1000 - 18000 MHz, Rx Mode @ 5200 MHz

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 10000 MHz	3	3	0.0
10000 - 18000 MHz	1	3	-9.5



Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1462.490	44.3	V	54.0	-9.7	Peak	188	1.3	Up Right
3466.700	48.1	H	54.0	-5.9	Peak	190	1.0	Up Right
6933.340	46.8	H	54.0	-7.2	Peak	143	1.3	Up Right

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Final peak and average readings

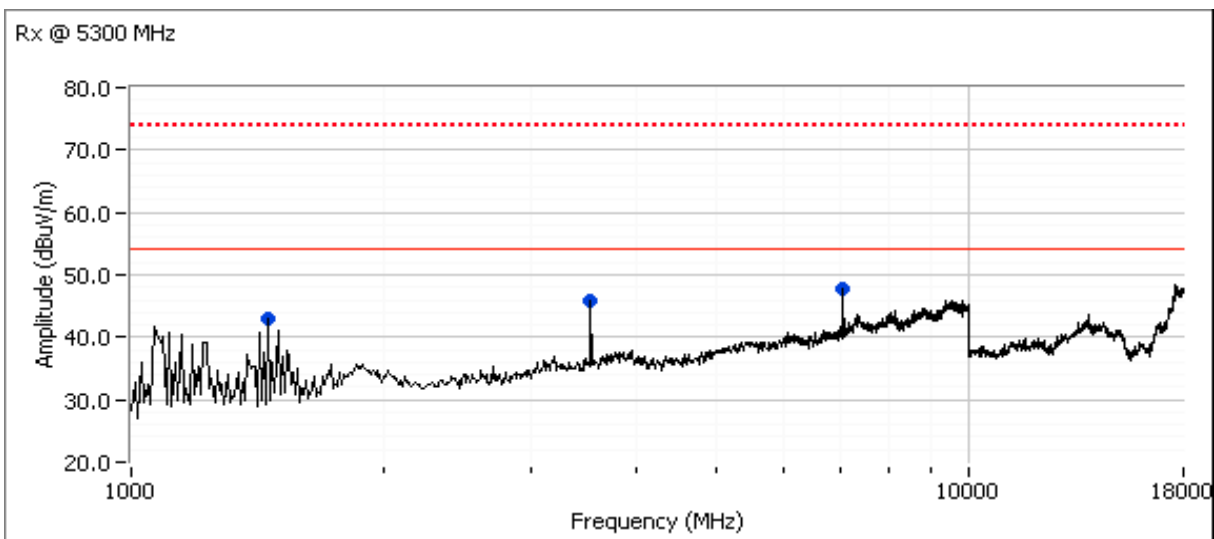
Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
Up Right								
3466.730	47.2	H	54.0	-6.8	AVG	183	1.0	RB 1 MHz; VB: 10 Hz Up Right
3466.730	50.8	H	74.0	-23.2	PK	183	1.0	RB 1 MHz; VB: 1 MHz Up Right
6933.390	45.2	H	54.0	-8.8	AVG	147	1.2	RB 1 MHz; VB: 10 Hz Up Right
6933.490	51.0	H	74.0	-23.0	PK	147	1.2	RB 1 MHz; VB: 1 MHz Up Right
1462.520	43.5	V	54.0	-10.5	AVG	162	1.3	RB 1 MHz; VB: 10 Hz Up Right
1462.560	46.0	V	74.0	-28.0	PK	162	1.3	RB 1 MHz; VB: 1 MHz Up Right
On Edge								
1462.590	35.9	V	54.0	-18.1	AVG	94	2.0	RB 1 MHz; VB: 10 Hz On Edge
1462.390	41.3	V	74.0	-32.7	PK	94	2.0	RB 1 MHz; VB: 1 MHz On Edge
3466.860	36.5	H	54.0	-17.5	AVG	207	1.8	RB 1 MHz; VB: 10 Hz On Edge
3466.600	43.7	H	74.0	-30.3	PK	207	1.8	RB 1 MHz; VB: 1 MHz On Edge
6933.460	43.8	H	54.0	-10.2	AVG	169	1.3	RB 1 MHz; VB: 10 Hz On Edge
6933.320	49.4	H	74.0	-24.6	PK	169	1.3	RB 1 MHz; VB: 1 MHz On Edge
Flat								
1462.590	37.6	V	54.0	-16.4	AVG	333	1.4	RB 1 MHz; VB: 10 Hz Flat
1462.590	42.5	V	74.0	-31.5	PK	333	1.4	RB 1 MHz; VB: 1 MHz Flat
3466.860	35.9	H	54.0	-18.1	AVG	202	1.9	RB 1 MHz; VB: 10 Hz Flat
3466.800	43.0	H	74.0	-31.0	PK	202	1.9	RB 1 MHz; VB: 1 MHz Flat
6933.390	37.0	H	54.0	-17.0	AVG	339	1.0	RB 1 MHz; VB: 10 Hz Flat
6933.590	48.2	H	74.0	-25.8	PK	339	1.0	RB 1 MHz; VB: 1 MHz Flat

Note 1: Above 1 GHz, the limit is based on an average measurement. In addition, the peak reading of any emission above 1 GHz can not exceed the average limit by more than 20 dB.

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Run #1b: Maximized Readings, 1000 - 18000 MHz, Rx Mode @ 5300 MHz

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 10000 MHz	3	3	0.0
10000 - 18000 MHz	1	3	-9.5



Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7066.700	47.9	H	54.0	-6.1	Peak	139	1.3	Up Right
3533.390	45.9	H	54.0	-8.1	Peak	163	1.0	Up Right
1462.450	42.9	V	54.0	-11.1	Peak	162	1.3	Up Right

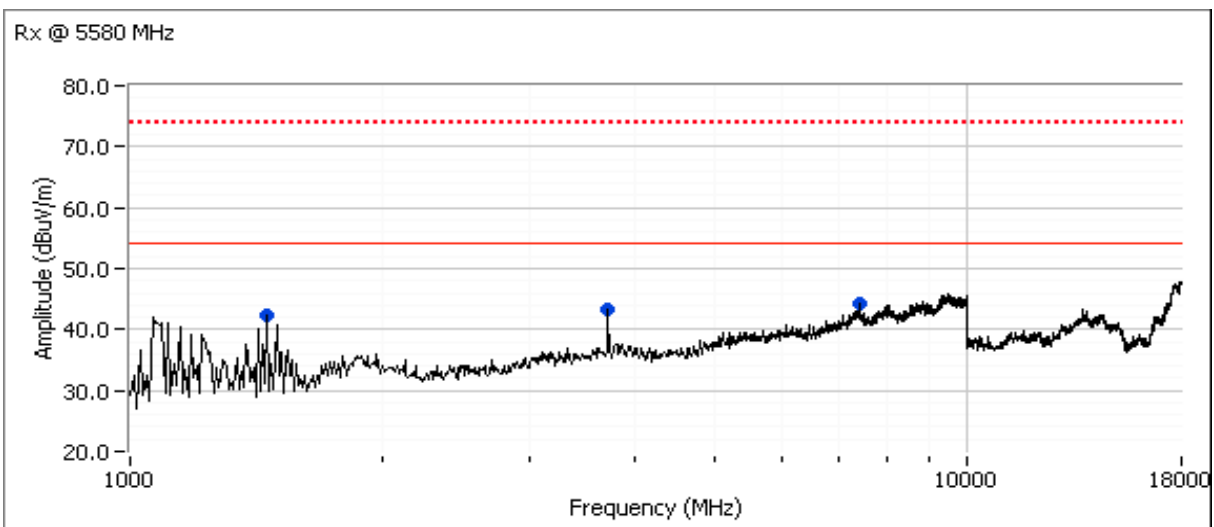
Final peak and average readings

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7066.700	46.4	H	54.0	-7.6	AVG	153	1.1	RB 1 MHz; VB: 10 Hz Up Right
7066.480	51.4	H	74.0	-22.6	PK	153	1.1	RB 1 MHz; VB: 1 MHz Up Right
3533.390	45.7	H	54.0	-8.3	AVG	162	1.0	RB 1 MHz; VB: 10 Hz Up Right
3533.220	49.4	H	74.0	-24.6	PK	162	1.0	RB 1 MHz; VB: 1 MHz Up Right
1462.550	42.9	V	54.0	-11.1	AVG	158	1.3	RB 1 MHz; VB: 10 Hz Up Right
1462.480	45.5	V	74.0	-28.5	PK	158	1.3	RB 1 MHz; VB: 1 MHz Up Right

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Run #1c: Maximized Readings, 1000 - 18000 MHz, Rx Mode @ 5580 MHz

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 10000 MHz	3	3	0.0
10000 - 18000 MHz	1	3	-9.5



Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1462.490	42.3	V	54.0	-11.7	Peak	161	1.3	Up Right
3720.100	43.2	H	54.0	-10.8	Peak	181	1.9	Up Right
7440.040	44.2	H	54.0	-9.8	Peak	147	1.3	Up Right

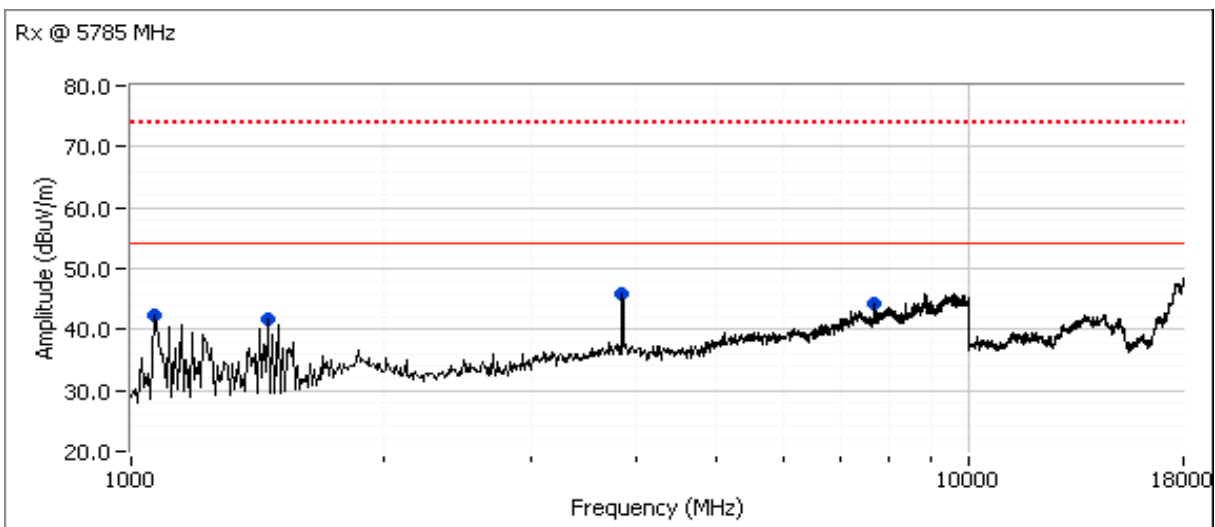
Final peak and average readings

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1462.520	42.2	V	54.0	-11.8	AVG	163	1.3	RB 1 MHz; VB: 10 Hz Up Right
1462.340	44.9	V	74.0	-29.1	PK	163	1.3	RB 1 MHz; VB: 1 MHz Up Right
3720.070	43.3	H	54.0	-10.7	AVG	180	1.7	RB 1 MHz; VB: 10 Hz Up Right
3719.950	48.4	H	74.0	-25.6	PK	180	1.7	RB 1 MHz; VB: 1 MHz Up Right
7440.040	41.1	H	54.0	-12.9	AVG	148	1.2	RB 1 MHz; VB: 10 Hz Up Right
7439.810	49.8	H	74.0	-24.2	PK	148	1.2	RB 1 MHz; VB: 1 MHz Up Right

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Run #1d: Maximized Readings, 1000 - 18000 MHz, Rx Mode @ 5785 MHz

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 10000 MHz	3	3	0.0
10000 - 18000 MHz	1	3	-9.5



Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7713.420	44.1	H	54.0	-9.9	Peak	223	1.3	Up Right
3856.690	46.0	H	54.0	-8.0	Peak	152	1.0	Up Right
1462.490	41.8	V	54.0	-12.2	Peak	173	1.3	Up Right
1072.540	42.4	H	54.0	-11.6	Peak	277	1.6	Up Right

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	A

Final peak and average readings

Frequency	Level	Pol	FCC Class B		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1072.540	41.9	H	54.0	-12.1	AVG	263	1.6	RB 1 MHz; VB: 10 Hz Up Right
1072.490	44.8	H	74.0	-29.2	PK	263	1.6	RB 1 MHz; VB: 1 MHz Up Right
7713.390	40.7	H	54.0	-13.3	AVG	233	1.2	RB 1 MHz; VB: 10 Hz Up Right
7713.540	49.3	H	74.0	-24.7	PK	233	1.2	RB 1 MHz; VB: 1 MHz Up Right
3856.720	44.0	H	54.0	-10.0	AVG	156	1.0	RB 1 MHz; VB: 10 Hz Up Right
3856.740	48.4	H	74.0	-25.6	PK	156	1.0	RB 1 MHz; VB: 1 MHz Up Right
1462.560	41.8	V	54.0	-12.2	AVG	162	1.3	RB 1 MHz; VB: 10 Hz Up Right
1462.620	44.9	V	74.0	-29.1	PK	162	1.3	RB 1 MHz; VB: 1 MHz Up Right
7713.550	37.5	H	54.0	-16.5	AVG	239	1.3	RB 1 MHz; VB: 10 Hz Flat
7697.550	47.9	H	74.0	-26.1	PK	239	1.3	RB 1 MHz; VB: 1 MHz Flat
3856.760	35.3	H	54.0	-18.7	AVG	272	1.0	RB 1 MHz; VB: 10 Hz Flat
3856.620	43.7	H	74.0	-30.3	PK	272	1.0	RB 1 MHz; VB: 1 MHz Flat
1462.560	39.1	V	54.0	-14.9	AVG	336	1.0	RB 1 MHz; VB: 10 Hz Flat
1462.690	43.2	V	74.0	-30.8	PK	336	1.0	RB 1 MHz; VB: 1 MHz Flat
1072.610	37.2	H	54.0	-16.8	AVG	301	1.1	RB 1 MHz; VB: 10 Hz Flat
1072.610	41.2	H	74.0	-32.8	PK	301	1.1	RB 1 MHz; VB: 1 MHz Flat
7713.550	37.5	H	54.0	-16.5	AVG	209	1.0	RB 1 MHz; VB: 10 Hz On Edge
7722.890	48.6	H	74.0	-25.4	PK	209	1.0	RB 1 MHz; VB: 1 MHz On Edge
3856.760	41.5	H	54.0	-12.5	AVG	209	1.8	RB 1 MHz; VB: 10 Hz On Edge
3856.760	46.6	H	74.0	-27.4	PK	209	1.8	RB 1 MHz; VB: 1 MHz On Edge
1462.560	34.4	V	54.0	-19.6	AVG	95	2.5	RB 1 MHz; VB: 10 Hz On Edge
1462.560	40.0	V	74.0	-34.0	PK	95	2.5	RB 1 MHz; VB: 1 MHz On Edge
1072.610	39.2	H	54.0	-14.8	AVG	119	1.1	RB 1 MHz; VB: 10 Hz
1072.540	43.5	H	74.0	-30.5	PK	119	1.1	RB 1 MHz; VB: 1 MHz

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

RSS 210 and FCC 15.247 (DTS) 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.

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: 20 °C

Rel. Humidity: 50 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11b	Low(1) 2412 MHz	100%	-	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	47.5dBµV/m @ 2386.4MHz (-6.5dB)
1b		High(11) 2462 MHz	100%	-	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	47.8dBµV/m @ 2488.0MHz (-6.2dB)
2a	802.11b	Center(6) 2437 MHz	100%	-	Radiated Emissions, 1 - 18 GHz	FCC Part 15.209 / 15.247(c)	49.1dBµV/m @ 4874.2MHz (-4.9dB)
2b	802.11b	High(11) 2462 MHz	100%	-	Radiated Emissions, 1 - 18 GHz	FCC Part 15.209 / 15.247(c)	51.0dBµV/m @ 4924.1MHz (-3.0dB)
2c	802.11b	Low(1) 2412 MHz	100%	-	Radiated Emissions, 1 - 18 GHz	FCC Part 15.209 / 15.247(c)	50.4dBµV/m @ 4824.1MHz (-3.6dB)

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:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 18000 MHz. Operating Mode: 802.11b

Date of Test: 4/14/2010

Test Engineer: Suhaila Khushzad

Test Location: Chamber #4

Run #1a: Low Channel 1 @ 2412 MHz, Power 100%

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

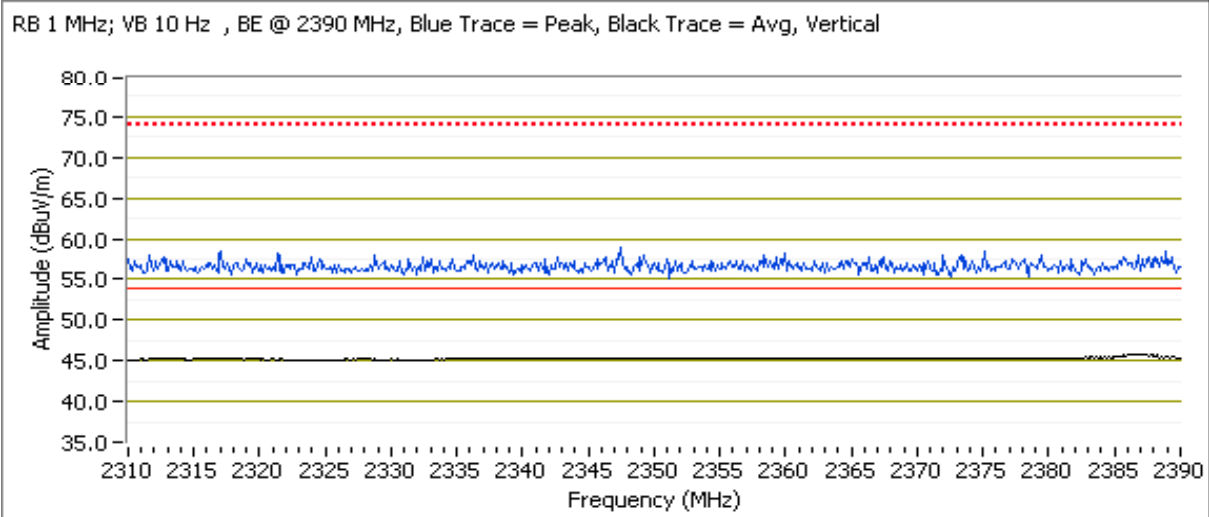
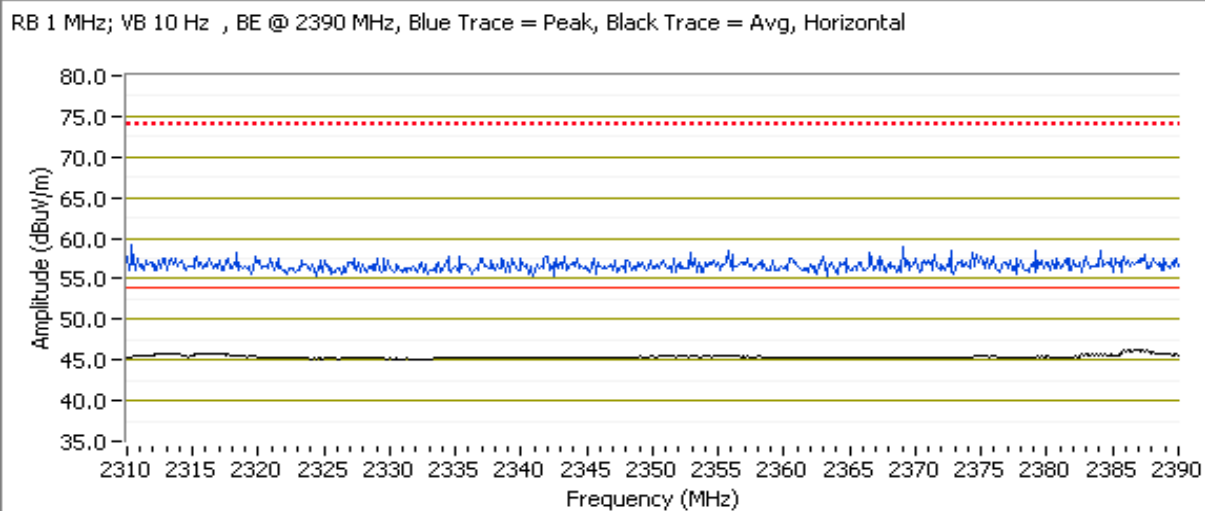
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2409.600	100.9	H	-	-	AVG	103	1.0	RB 1 MHz; VB: 10 Hz
2413.330	104.1	H	-	-	PK	103	1.0	RB 1 MHz; VB: 1 MHz
2414.330	98.4	H	-	-	PK	103	1.0	RB 100 kHz; VB: 100 kHz
2415.070	97.4	V	-	-	AVG	50	1.0	RB 1 MHz; VB: 10 Hz
2413.330	100.4	V	-	-	PK	50	1.0	RB 1 MHz; VB: 1 MHz
2410.730	93.1	V	-	-	PK	50	1.0	RB 100 kHz; VB: 100 kHz

Fundamental emission level @ 3m in 100kHz RBW:	98.4	dB μ V/m	
Limit for emissions outside of restricted bands:	78.4	dB μ V/m	Limit is -20dBc (Peak power measurement)
Limit for emissions outside of restricted bands:	68.4	dB μ V/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength - Direct measurement of field strength

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	
2386.400	47.5	H	54.0	-6.5	AVG	103	1.0	RB 1 MHz; VB: 10 Hz
2312.000	59.0	H	74.0	-15.0	PK	103	1.0	RB 1 MHz; VB: 1 MHz
2386.400	47.1	V	54.0	-6.9	AVG	50	1.0	RB 1 MHz; VB: 10 Hz
2321.070	58.1	V	74.0	-15.9	PK	50	1.0	RB 1 MHz; VB: 1 MHz

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #1c: High Channel 11 @ 2462 MHz, Power 100%

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

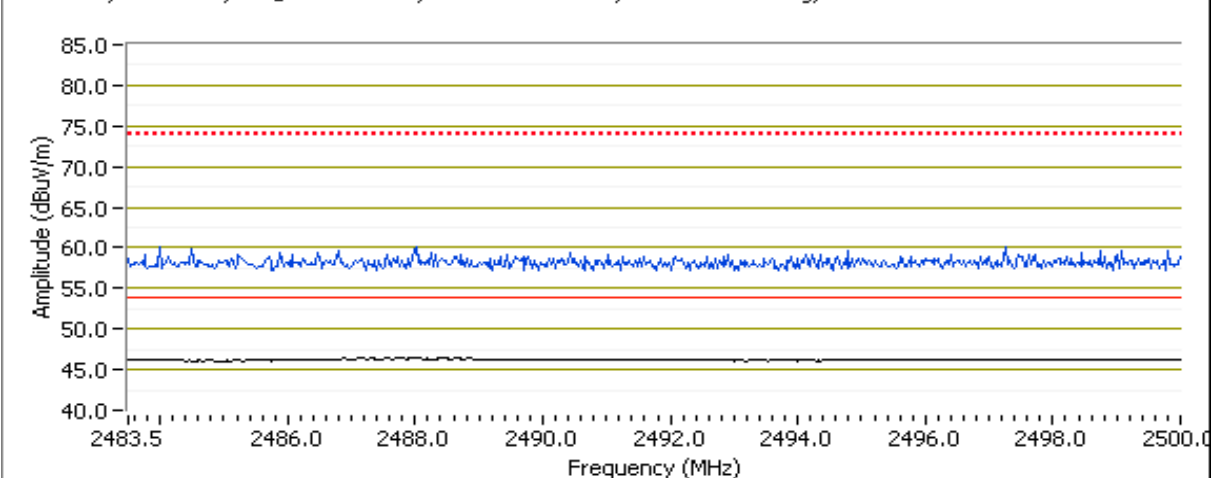
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2459.730	96.3	V	-	-	AVG	18	1.0	RB 1 MHz; VB: 10 Hz
2460.800	99.2	V	-	-	PK	18	1.0	RB 1 MHz; VB: 1 MHz
2459.730	93.2	V	-	-	PK	18	1.0	RB 100 kHz; VB: 100 kHz
2459.600	99.9	H	-	-	AVG	100	1.0	RB 1 MHz; VB: 10 Hz
2461.200	102.0	H	-	-	PK	100	1.0	RB 1 MHz; VB: 1 MHz
2460.730	96.2	H	-	-	PK	100	1.0	RB 100 kHz; VB: 100 kHz

Fundamental emission level @ 3m in 100kHz RBW:	96.3	dB μ V/m	
Limit for emissions outside of restricted bands:	76.3	dB μ V/m	Limit is -20dBc (Peak power measurement)
Limit for emissions outside of restricted bands:	66.3	dB μ V/m	Limit is -30dBc (UNII power measurement)

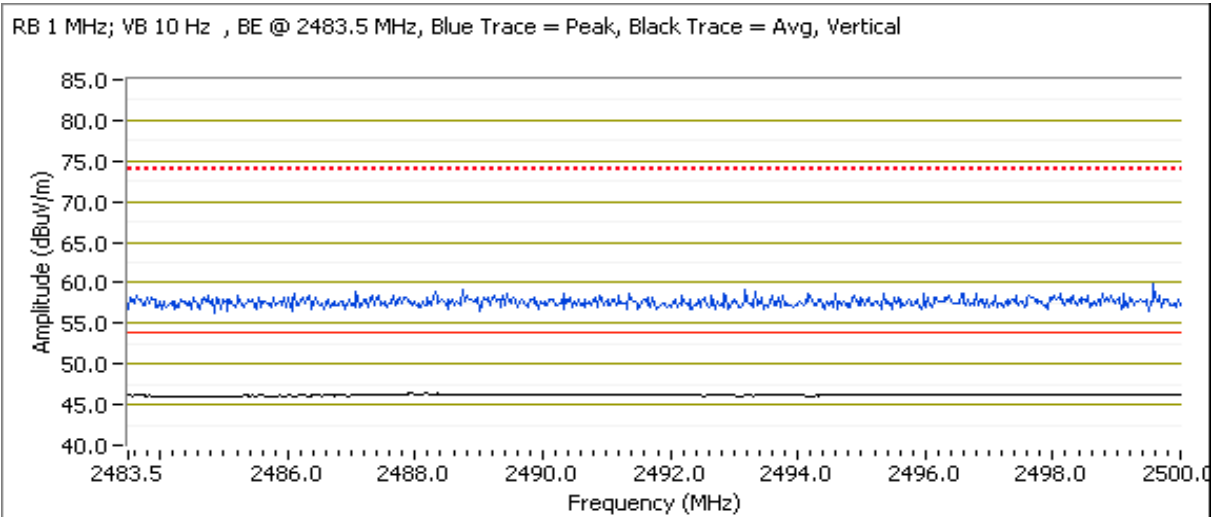
Band Edge Signal Field Strength - Direct measurement of field strength

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	
2487.980	47.8	V	54.0	-6.2	AVG	18	1.0	MHz; VB: 10 Hz
2493.840	59.0	V	74.0	-15.0	PK	18	1.0	MHz; VB: 1 MHz
2488.010	47.7	H	54.0	-6.3	AVG	100	1.0	MHz; VB: 10 Hz
2494.660	58.3	H	74.0	-15.7	PK	100	1.0	MHz; VB: 1 MHz

RB 1 MHz; VB 10 Hz , BE @ 2483.5 MHz, Blue Trace = Peak, Black Trace = Avg, Horizontal



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #2a: Center Channel @ 2437 MHz, Power 100%(Retest with Sample #2)

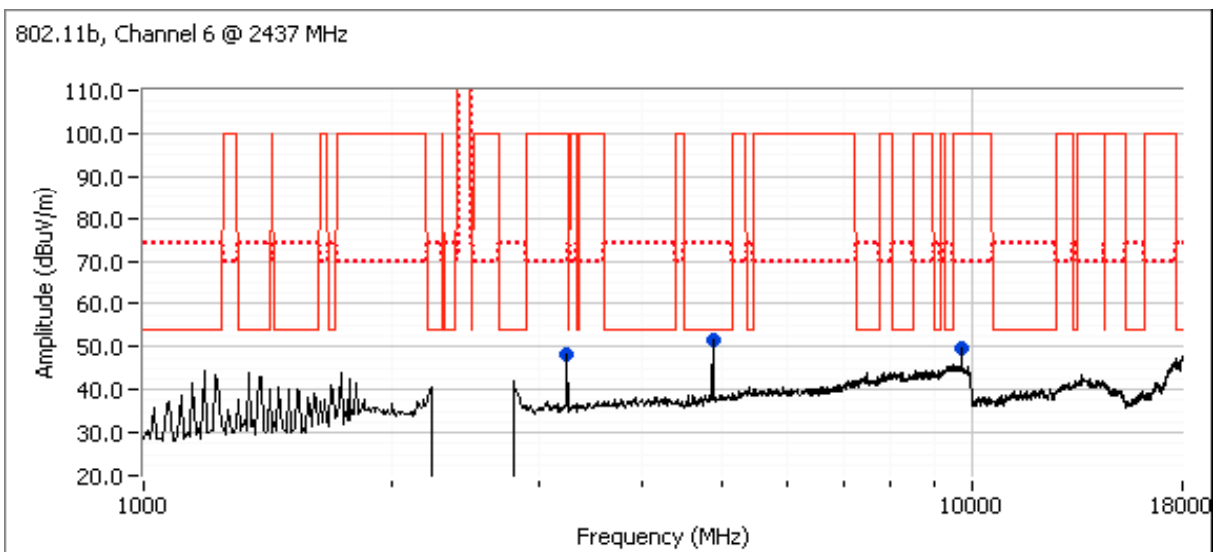
Date of Test: 4/28/2010

Test Engineer: Suhaila Khushzad

Test Location: Chamber #4

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

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	
2434.600	99.7	V	-	-	AVG	149	1.0	RB 1 MHz; VB: 10 Hz 100%
2436.400	102.4	V	-	-	PK	149	1.0	RB 1 MHz; VB: 1 MHz 100%
2436.800	96.3	V	-	-	PK	149	1.0	RB 100 kHz; VB: 100 kHz 100%
2440.000	98.1	H	-	-	AVG	305	1.0	RB 1 MHz; VB: 10 Hz 100%
2438.470	100.9	H	-	-	PK	305	1.0	RB 1 MHz; VB: 1 MHz 100%
2436.800	95.6	H	-	-	PK	305	1.0	RB 100 kHz; VB: 100 kHz 100%



Other Spurious Emissions

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	
4874.170	49.1	V	54.0	-4.9	AVG	221	1.3	RB 1 MHz; VB: 10 Hz 100%
4873.970	52.0	V	74.0	-22.0	PK	221	1.3	RB 1 MHz; VB: 1 MHz 100%
3249.310	48.4	H	66.3	-17.9	Peak	166	1.3	100%
9748.090	49.9	H	66.3	-16.4	Peak	156	1.0	100%

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #2b: High Channel @ 2462 MHz, Power 100%(Retest with Sample #2)

Date of Test: 4/28/2010

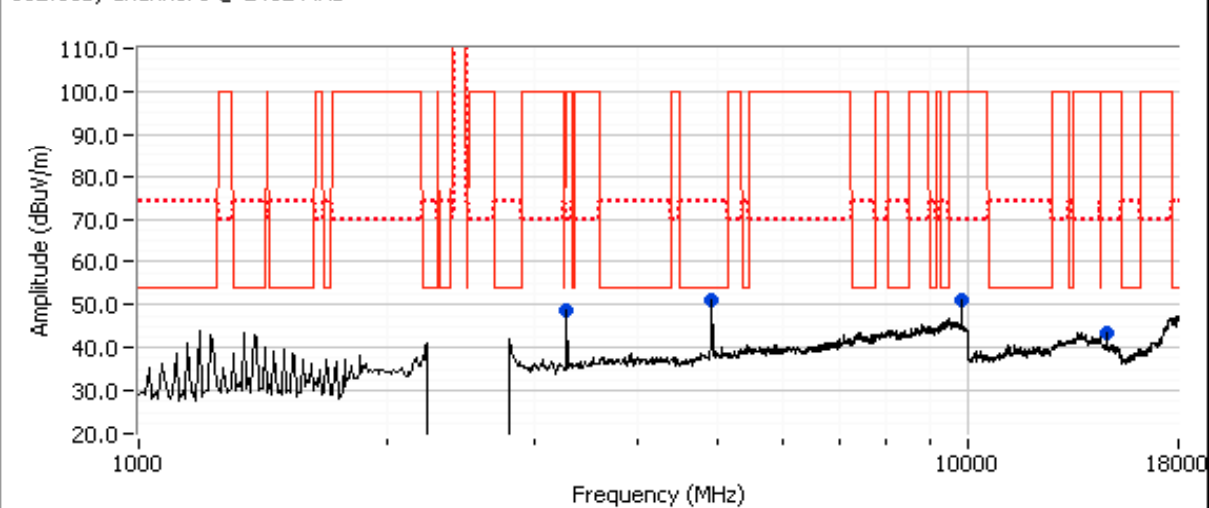
Test Engineer: Suhaila Khushzad

Test Location: Chamber #4

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

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	
2459.600	96.0	V	-	-	AVG	142	1.0	RB 1 MHz; VB: 10 Hz 100%
2463.330	98.9	V	-	-	PK	142	1.0	RB 1 MHz; VB: 1 MHz 100%
2459.730	92.7	V	-	-	PK	142	1.0	RB 100 kHz; VB: 100 kHz 100%
2459.600	97.7	H	-	-	AVG	311	1.0	RB 1 MHz; VB: 10 Hz 100%
2461.270	100.3	H	-	-	PK	311	1.0	RB 1 MHz; VB: 1 MHz 100%
2460.730	95.0	H	-	-	PK	311	1.0	RB 100 kHz; VB: 100 kHz 100%

802.11b, Channel 1 @ 2462 MHz



Other Spurious Emissions

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	
4924.090	51.0	V	54.0	-3.0	AVG	153	1.2	RB 1 MHz; VB: 10 Hz 100%
4924.130	54.0	V	74.0	-20.0	PK	153	1.2	RB 1 MHz; VB: 1 MHz 100%
14773.330	43.6	V	70.0	-26.4	Peak	147	1.0	100%
9848.070	51.1	H	70.0	-18.9	Peak	160	1.3	100%
3282.680	48.9	H	70.0	-21.1	Peak	172	1.0	100%

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #2c: Low Channel @ 2412 MHz, Power 100%(Retest with Sample #2)

Date of Test: 5/4/2010

Test Engineer: Suhaila Khushzad

Other Spurious Emissions

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4824.070	50.4	V	54.0	-3.6	AVG	178	1.3	RB 1 MHz; VB: 10 Hz 100%
4823.950	52.3	V	74.0	-21.7	PK	178	1.3	RB 1 MHz; VB: 1 MHz 100%
4824.050	46.3	H	54.0	-7.7	AVG	118	1.0	RB 1 MHz; VB: 10 Hz 100%
4823.920	49.9	H	74.0	-24.1	PK	118	1.0	RB 1 MHz; VB: 1 MHz 100%
7252.600	35.0	H	54.0	-19.0	AVG	59	1.0	RB 1 MHz; VB: 10 Hz 100%
7240.800	46.7	H	70.0	-23.3	PK	59	1.0	RB 1 MHz; VB: 1 MHz 100%
7254.730	35.1	V	54.0	-18.9	AVG	3	1.0	RB 1 MHz; VB: 10 Hz 100%
7249.400	45.9	V	70.0	-24.1	PK	3	1.0	RB 1 MHz; VB: 1 MHz 100%

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

RSS 210 and FCC 15.247 (DTS) 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.

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: 20 °C

Rel. Humidity: 45 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11g	Low(1) 2412 MHz	97%	-	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	51.8dBµV/m @ 2389.9MHz (-2.2dB)
			100%	-	Radiated Emissions, 1 - 18 GHz	FCC Part 15.209 / 15.247(c)	40.4dBµV/m @ 4822.0MHz (-13.6dB)
1b	802.11g	Center(6) 2437 MHz	100%	-	Radiated Emissions, 1 - 18 GHz	FCC Part 15.209 / 15.247(c)	41.5dBµV/m @ 7310.2MHz (-12.5dB)
1c	802.11g	High(11) 2462 MHz	97%	-	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	51.8dBµV/m @ 2483.7MHz (-2.2dB)
			100%	-	Radiated Emissions, 1 - 18 GHz	FCC Part 15.209 / 15.247(c)	43.3dBµV/m @ 4924.1MHz (-10.7dB)

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 : EUT has been verified in all orientation and Up Right is the worst for 2.4GHz, therefore, all tests in 2.4GHz should be perform in Up Right orientation. Unit 1 has been used for all 2.4GHz tests.

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 18000 MHz. Operating Mode: 802.11g

Date of Test: 4/14/2010

Test Engineer: Suhaila Khushzad

Test Location: Chamber #4

Run #1a: Low Channel 1 @ 2412 MHz, Power @ 97 %

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

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	
2415.070	94.4	V	-	-	AVG	76	1.0	MHz; VB: 10 Hz
2405.530	102.2	V	-	-	PK	76	1.0	MHz; VB: 1 MHz
2414.600	93.7	V	-	-	PK	76	1.0	0 kHz; VB: 100 kHz
2405.200	93.4	H	-	-	AVG	103	1.0	MHz; VB: 10 Hz
2405.930	101.2	H	-	-	PK	103	1.0	MHz; VB: 1 MHz
2404.730	92.9	H	-	-	PK	103	1.0	0 kHz; VB: 100 kHz

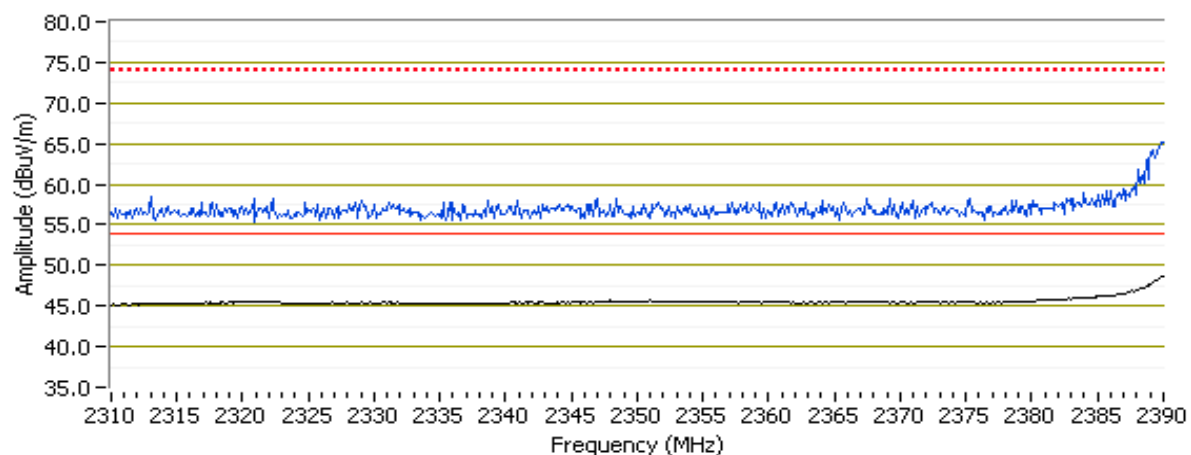
Fundamental emission level @ 3m in 100kHz RBW:	96.6	dB μ V/m	
Limit for emissions outside of restricted bands:	76.6	dB μ V/m	Limit is -20dBc (Peak power measurement)
Limit for emissions outside of restricted bands:	66.6	dB μ V/m	Limit is -30dBc (UNII power measurement)

Band Edge Signal Field Strength - Direct measurement of field strength

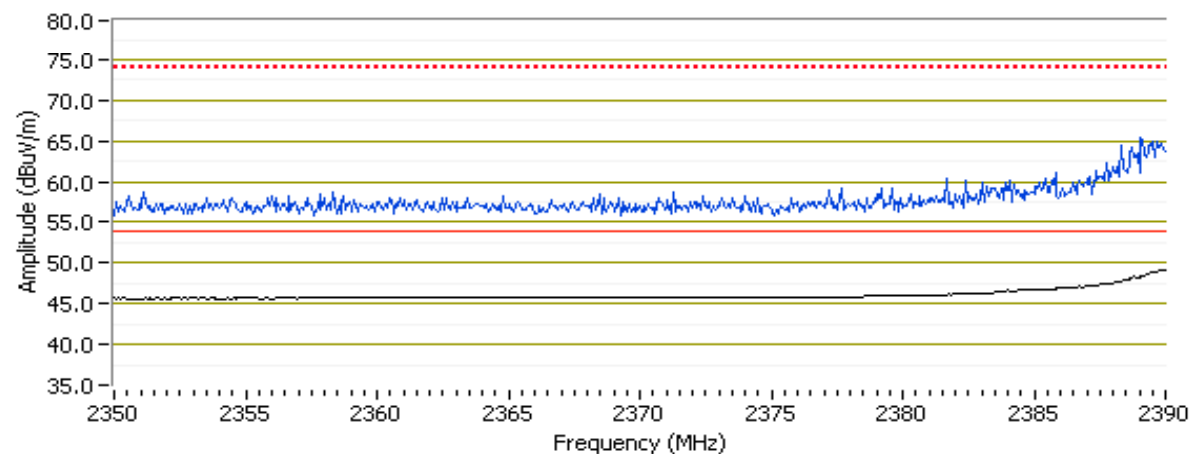
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.930	51.8	V	54.0	-2.2	AVG	75	1.0	MHz; VB: 10 Hz
2389.730	65.9	V	74.0	-8.1	PK	75	1.0	MHz; VB: 1 MHz
2390.000	50.7	H	54.0	-3.3	AVG	103	1.0	MHz; VB: 10 Hz
2389.000	62.7	H	74.0	-11.3	PK	103	1.0	MHz; VB: 1 MHz

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

RB 1 MHz; VB 10 Hz , BE @ 2390 MHz, Blue Trace = Peak, Black Trace = Avg, Horizontal



RB 1 MHz; VB 10 Hz , BE @ 2390 MHz, Blue Trace = Peak, Black Trace = Avg, Vertical



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Other Spurious Emissions, Setting @ 100%

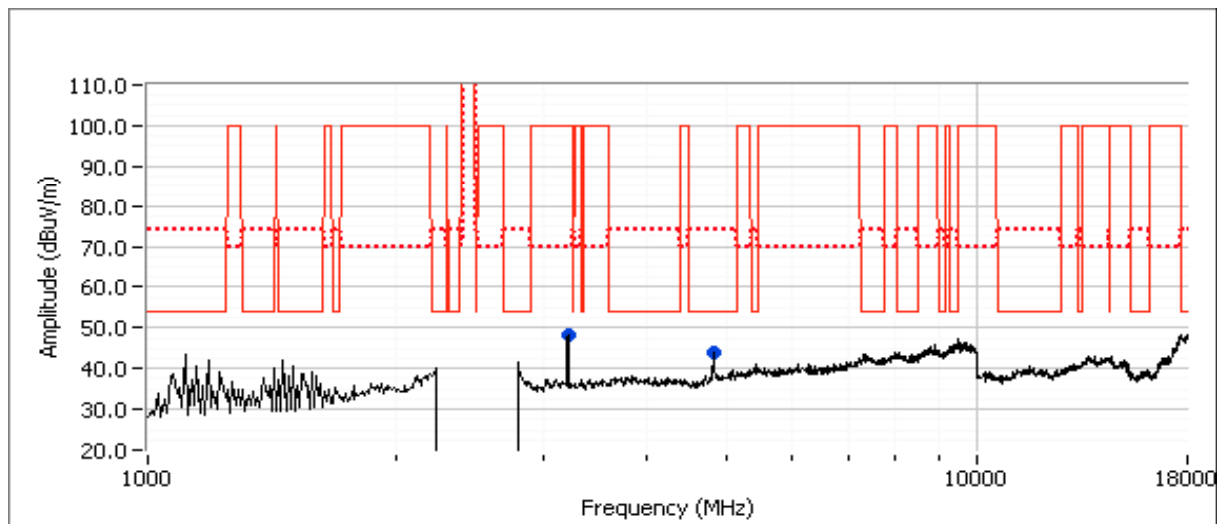
Date of Test: 4/14/2010

Test Engineer: Rafael Varelas

Test Location: Chamber #4

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	
4822.020	40.4	V	54.0	-13.6	AVG	303	1.2	MHz; VB: 10 Hz
4822.520	52.0	V	74.0	-22.0	PK	303	1.2	MHz; VB: 1 MHz
3218.330	48.4	H	70.0	-21.6	Peak	166	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 and measured in 100kHz.



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #1b: Center Channel @ 2437 MHz, Power Setting 100%

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

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	
2430.170	101.3	V	-	-	AVG	175	1.0	MHz; VB: 10 Hz
2430.770	109.1	V	-	-	PK	175	1.0	MHz; VB: 1 MHz
2430.900	101.3	V	-	-	PK	176	1.0	0 kHz; VB: 100 kHz
2430.300	97.7	H	-	-	AVG	165	1.3	MHz; VB: 10 Hz
2430.530	105.8	H	-	-	PK	165	1.3	MHz; VB: 1 MHz

Fundamental emission level @ 3m in 100kHz RBW:		101.3	dB μ V/m	
Limit for emissions outside of restricted bands:		81.3	dB μ V/m	Limit is -20dBc (Peak power measurement)
Limit for emissions outside of restricted bands:		71.3	dB μ V/m	Limit is -30dBc (UNII power measurement)

Other Spurious Emissions, Setting @ 100%

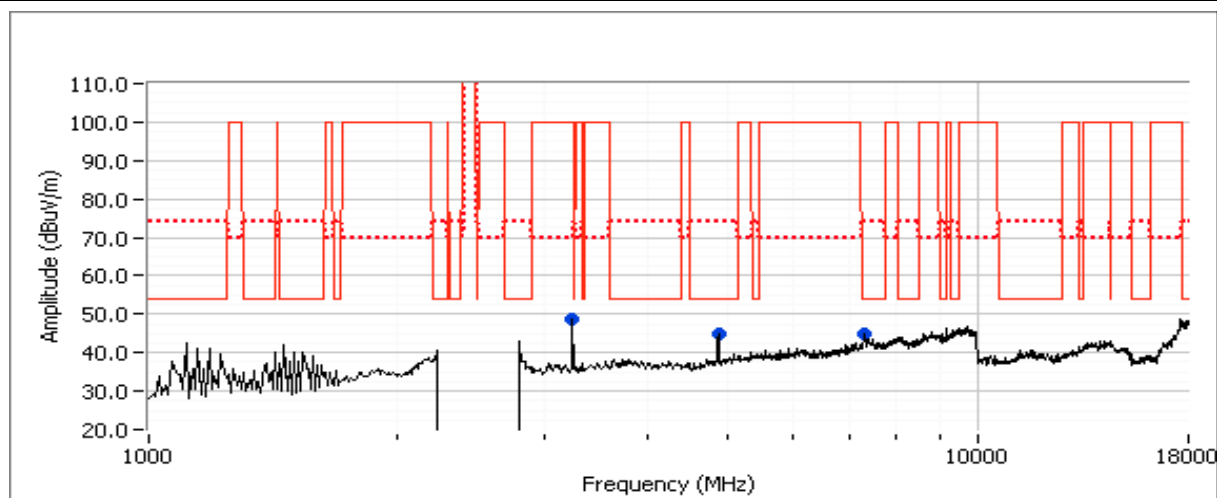
Date of Test: 4/14/2010

Test Engineer: Rafael Varelas

Test Location: Chamber #4

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	
7310.210	41.5	V	54.0	-12.5	AVG	265	1.3	MHz; VB: 10 Hz
7313.780	53.3	V	74.0	-20.7	PK	265	1.3	MHz; VB: 1 MHz
4874.140	40.8	V	54.0	-13.2	AVG	308	1.0	MHz; VB: 10 Hz
4872.370	52.0	V	74.0	-22.0	PK	308	1.0	MHz; VB: 1 MHz
3245.830	48.8	H	70.0	-21.2	Peak	160	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 and measured in 100kHz.



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #1c: High Channel 11 @ 2462 MHz, Power @ 97%

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

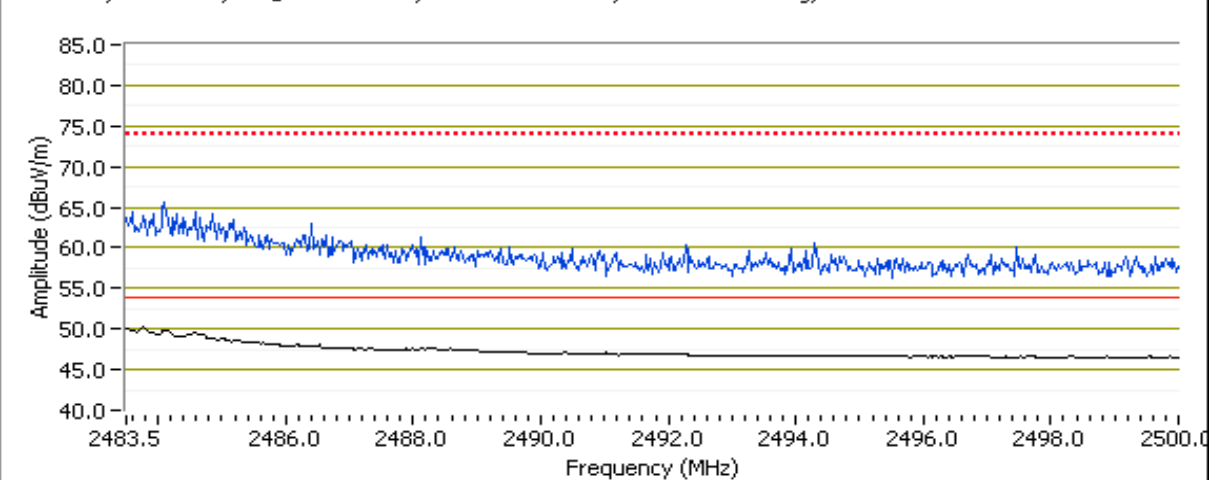
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2455.200	95.0	V	-	-	AVG	25	1.0	RB 1 MHz; VB: 10 Hz
2455.670	102.8	V	-	-	PK	25	1.0	RB 1 MHz; VB: 1 MHz
2469.200	93.7	V	-	-	PK	25	1.0	RB 100 kHz; VB: 100 kHz
2455.070	96.0	H	-	-	AVG	101	1.0	RB 1 MHz; VB: 10 Hz
2455.800	103.6	H	-	-	PK	101	1.0	RB 1 MHz; VB: 1 MHz
2454.670	94.8	H	-	-	PK	101	1.0	RB 100 kHz; VB: 100 kHz

Fundamental emission level @ 3m in 100kHz RBW:	94.8	dB μ V/m	
Limit for emissions outside of restricted bands:	74.8	dB μ V/m	Limit is -20dBc (Peak power measurement)
Limit for emissions outside of restricted bands:	64.8	dB μ V/m	Limit is -30dBc (UNII power measurement)

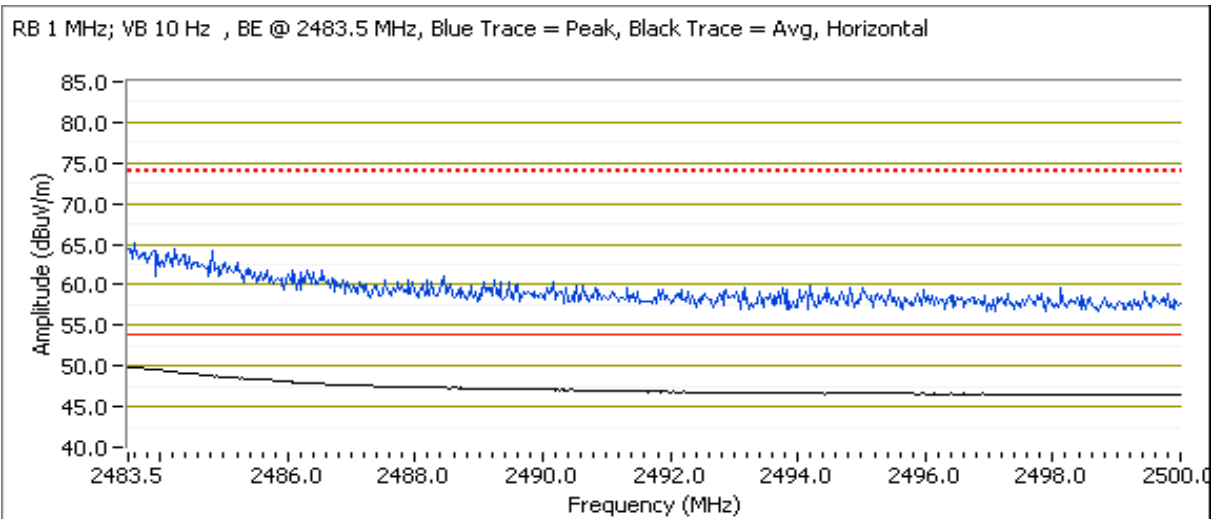
Band Edge Signal Field Strength - Direct measurement of field strength

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	
2483.660	51.8	V	54.0	-2.2	AVG	25	1.0	MHz; VB: 10 Hz
2483.660	64.3	V	74.0	-9.7	PK	25	1.0	MHz; VB: 1 MHz
2483.500	51.5	H	54.0	-2.5	AVG	101	1.0	MHz; VB: 10 Hz
2483.640	64.0	H	74.0	-10.0	PK	101	1.0	MHz; VB: 1 MHz

RB 1 MHz; VB 10 Hz , BE @ 2483.5 MHz, Blue Trace = Peak, Black Trace = Avg, Vertical



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Other Spurious Emissions, Setting @ 100%

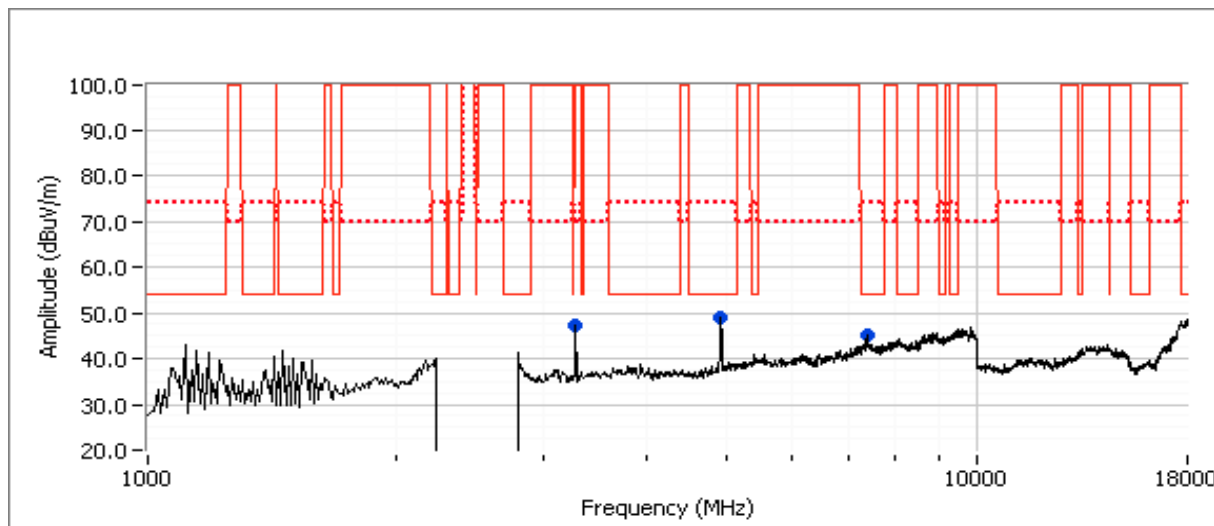
Date of Test: 4/14/2010

Test Engineer: Rafael Varelas

Test Location: Chamber #4

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	
4924.140	43.3	H	54.0	-10.7	AVG	166	1.0	MHz; VB: 10 Hz
4925.040	55.1	H	74.0	-18.9	PK	166	1.0	MHz; VB: 1 MHz
3282.500	47.4	H	70.0	-22.6	Peak	158	1.3	
7388.220	42.4	V	54.0	-11.6	AVG	268	1.3	MHz; VB: 10 Hz
7386.150	54.8	V	74.0	-19.2	PK	268	1.3	MHz; VB: 1 MHz

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 and measured in 100kHz.



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

RSS 210 and FCC 15.247 (DTS) 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.

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: 20 °C

Rel. Humidity: 45 %

Summary of Results - Device Operating in the 5725-5850 MHz Band

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1a	802.11a	Low(149) 5745 MHz	100%	-	Restricted Band Edge (5725 MHz)	FCC Part 15.209 / 15.247(c)	55.0dBµV/m @ 5724.9MHz (-12.6dB)
			100%	-	Radiated Emissions, 1 - 18 GHz	FCC Part 15.209 / 15.247(c)	47.0dBµV/m @ 11490.1MHz (-7.0dB)
1b	802.11a	Mid(157) 5785 MHz	100%	-	Radiated Emissions, 1 - 18 GHz	FCC Part 15.209 / 15.247(c)	48.3dBµV/m @ 11570.3MHz (-5.7dB)
1c	802.11a	High(161) 5805 MHz	100%	-	Restricted Band Edge (5850 MHz)	FCC Part 15.209 / 15.247(c)	52.2dBµV/m @ 5852.5MHz (-15.0dB)
			100%	-	Radiated Emissions, 1 - 18 GHz	FCC Part 15.209 / 15.247(c)	48.4dBµV/m @ 11609.8MHz (-5.6dB)

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.

Test Notes

The EUT has been verified in all orientations and upright is the worst for 5GHz, therefore, all tests in 5GHz were performed in an upright orientation.

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #1: Radiated Spurious Emissions, 1000 - 18000 MHz. Operating Mode: 802.11a

Date of Test: 4/16/2010

Test Engineer: David W. Bare

Test Location: Chamber #4

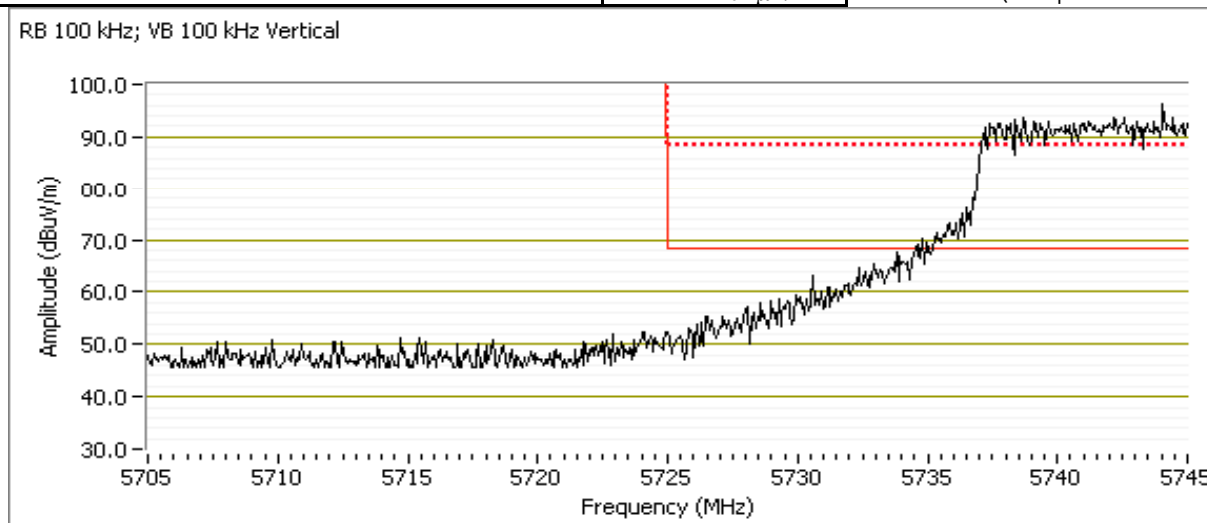
Run #1a: Low Channel 1 @ 5745 MHz, Power @ 100 %

Fundamental Signal Field Strength: peak value measured in 100kHz

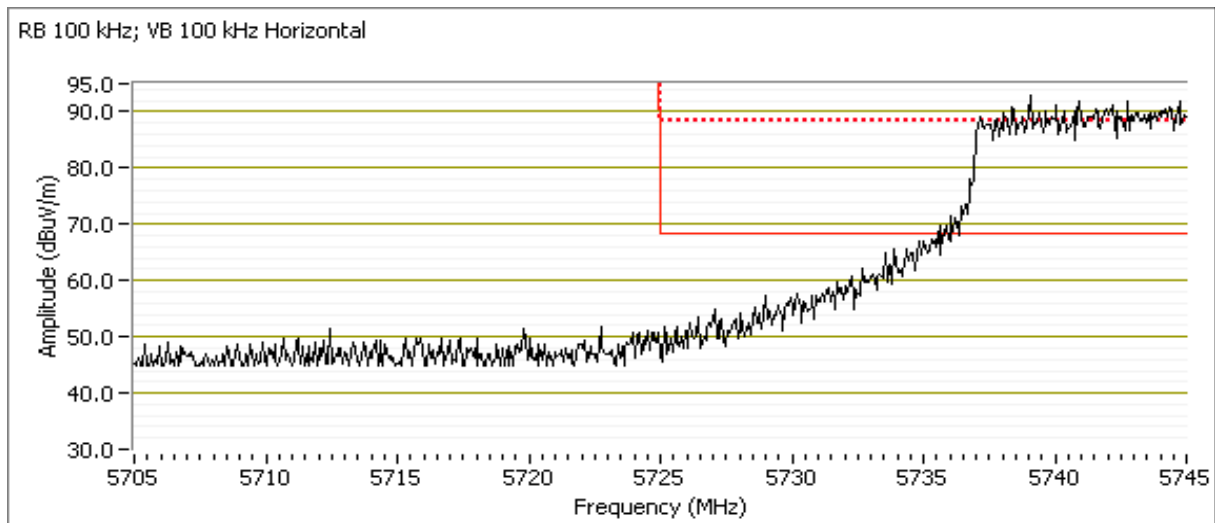
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
5744.370	93.6	H	-	-	PK	194	1.0	0 kHz; VB: 100 kHz
5746.290	97.6	V	-	-	PK	267	1.0	0 kHz; VB: 100 kHz

Fundamental emission level @ 3m in 100kHz RBW:	97.6	dB μ V/m	
Limit for emissions outside of restricted bands:	77.6	dB μ V/m	Limit is -20dBc (Peak power measurement)
Limit for emissions outside of restricted bands:	67.6	dB μ V/m	Limit is -30dBc (UNII power measurement)

RB 100 kHz; VB 100 kHz Vertical



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A



Band Edge Signal Field Strength - Direct measurement of 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	
5724.900	55.0	V	67.6	-12.6	PK	268	1.0	RB 100 kHz; VB: 100 kHz
5705.170	52.1	H	67.6	-15.5	PK	192	1.0	RB 100 kHz; VB: 100 kHz

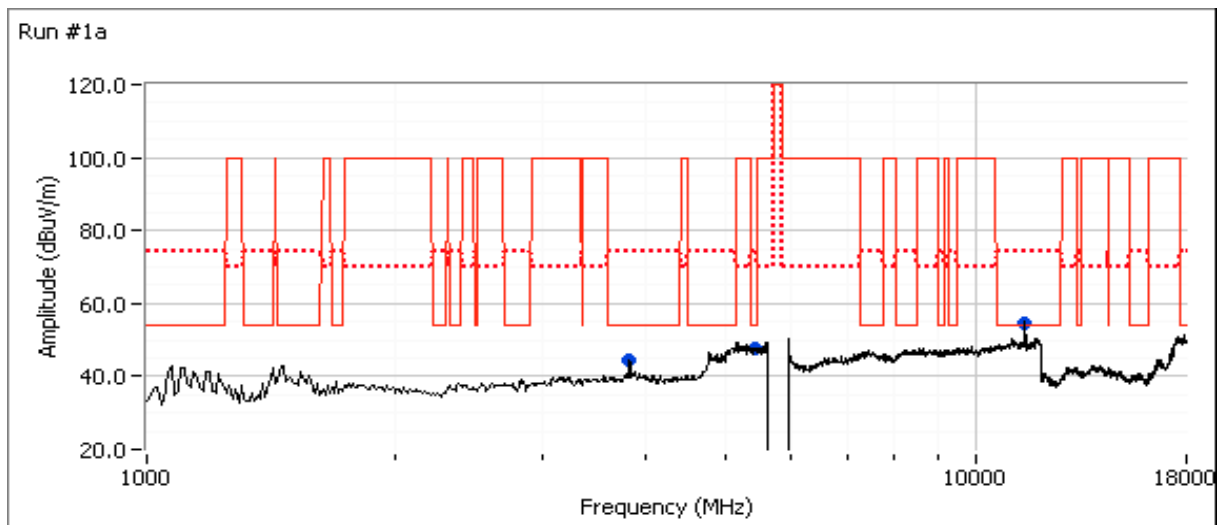
Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Other Spurious Emissions, Setting @ 100%

Date of Test: 4/16/2010

Test Engineer: David W. Bare

Test Location: Chamber #4



Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11490.100	47.0	H	54.0	-7.0	AVG	232	1.1	RB 1 MHz; VB: 10 Hz
3830.030	45.2	H	54.0	-8.8	AVG	175	1.1	RB 1 MHz; VB: 10 Hz
11489.670	59.3	H	74.0	-14.7	PK	232	1.1	RB 1 MHz; VB: 1 MHz
5412.870	38.8	V	54.0	-15.2	AVG	325	1.5	RB 1 MHz; VB: 10 Hz
5410.810	50.9	V	74.0	-23.1	PK	325	1.5	RB 1 MHz; VB: 1 MHz
3829.930	48.8	H	74.0	-25.2	PK	175	1.1	RB 1 MHz; VB: 1 MHz

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 and measured in 100kHz.

Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #1b: Center Channel @ 5785 MHz, Power Setting 100%

Other Spurious Emissions, Setting @ 100%

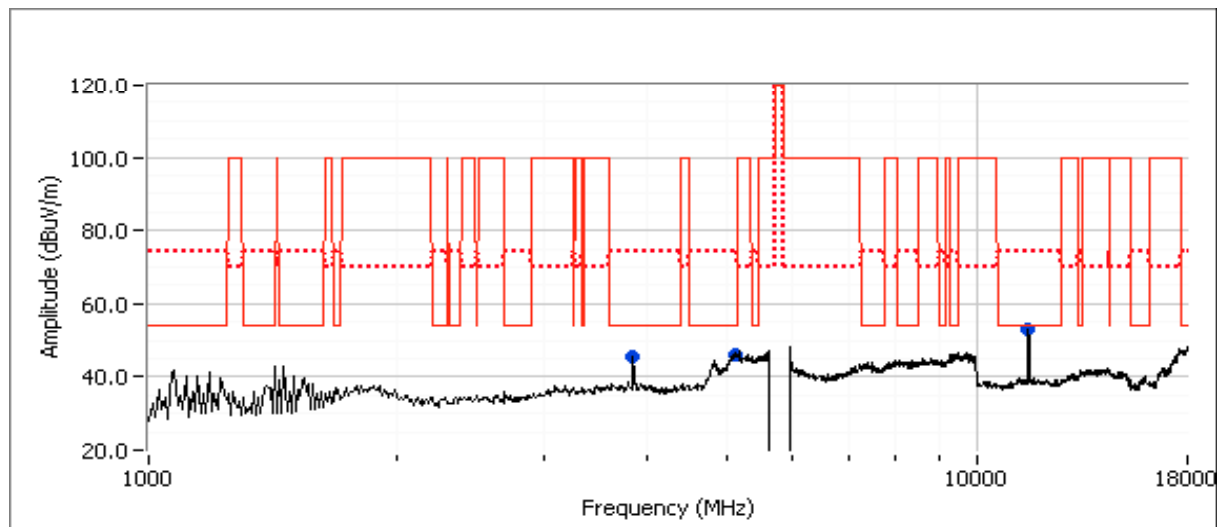
Date of Test: 4/16/2010

Test Engineer: Rafael Varelas

Test Location: Chamber #5

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
11570.270	48.3	H	54.0	-5.7	AVG	54	1.0	MHz; VB: 10 Hz
11572.070	59.3	H	74.0	-14.7	PK	54	1.0	MHz; VB: 1 MHz
3856.690	44.6	H	54.0	-9.4	AVG	10	1.0	MHz; VB: 10 Hz
3856.640	49.3	H	74.0	-24.7	PK	10	1.0	MHz; VB: 1 MHz
5121.480	42.4	V	54.0	-11.6	AVG	127	1.0	MHz; VB: 10 Hz
5106.140	53.9	V	74.0	-20.1	PK	127	1.0	MHz; VB: 1 MHz

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 and measured in 100kHz.



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Run #1c: High Channel 161 @ 5805 MHz, Power @ 100%

Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz

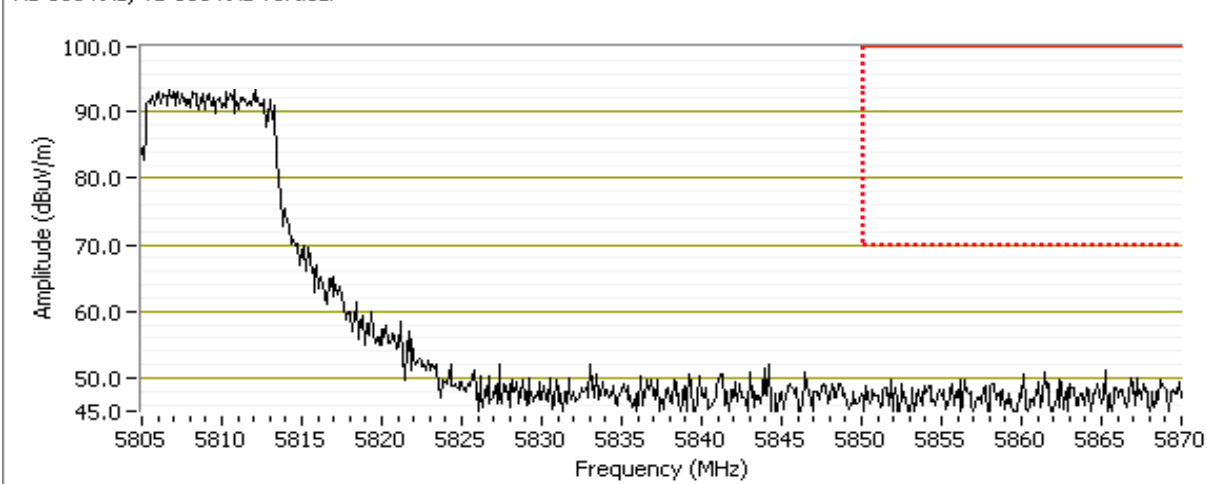
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB μ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
5806.430	97.2	V	-	-	PK	90	1.0	0 kHz; VB: 100 kHz
5807.630	95.3	H	-	-	PK	12	1.1	0 kHz; VB: 100 kHz

Fundamental emission level @ 3m in 100kHz RBW:	97.2	dB μ V/m	
Limit for emissions outside of restricted bands:	77.2	dB μ V/m	Limit is -20dBc (Peak power measurement)
Limit for emissions outside of restricted bands:	67.2	dB μ V/m	Limit is -30dBc (UNII power measurement)

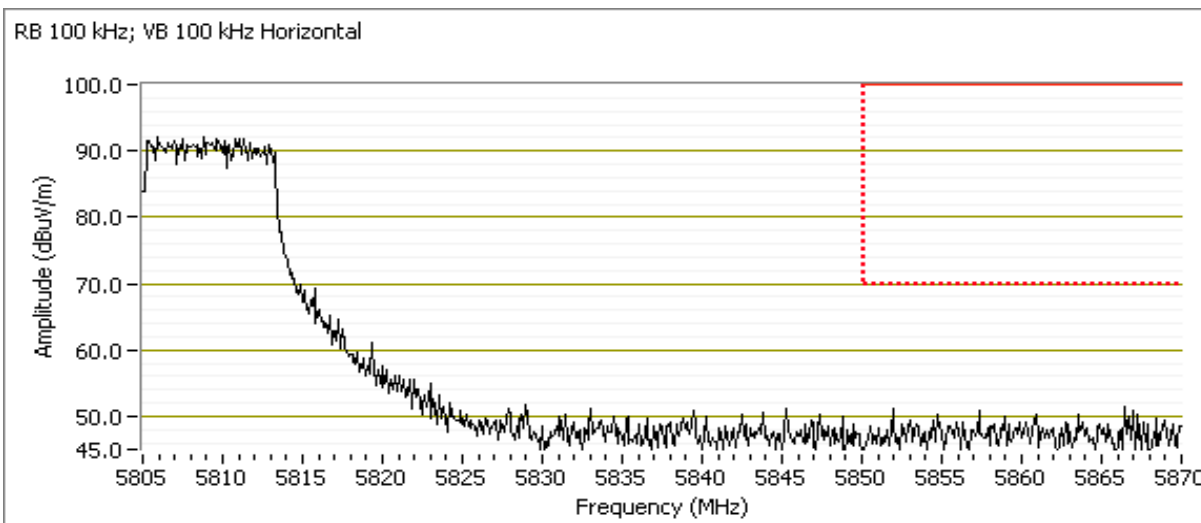
Band Edge Signal Field Strength - Direct measurement of field strength

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	
5852.490	52.2	V	67.2	-15.0	PK	90	1.0	0 kHz; VB: 100 kHz
5851.290	51.7	H	67.2	-15.5	PK	12	1.1	0 kHz; VB: 100 kHz

RB 100 kHz; VB 100 kHz Vertical



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A



Client:	DATALOGIC MOBILE INC	Job Number:	J77585
Model:	Falcon x3 Portable Data Terminal(System Approval)	T-Log Number:	T78990
Contact:	Jerry Kalina	Account Manager:	Christine Krebill
Standard:	FCC Part 15 Subpart B,E, 15.209 / 15.247, RSS-210,	Class:	N/A

Other Spurious Emissions, Setting @ 100%

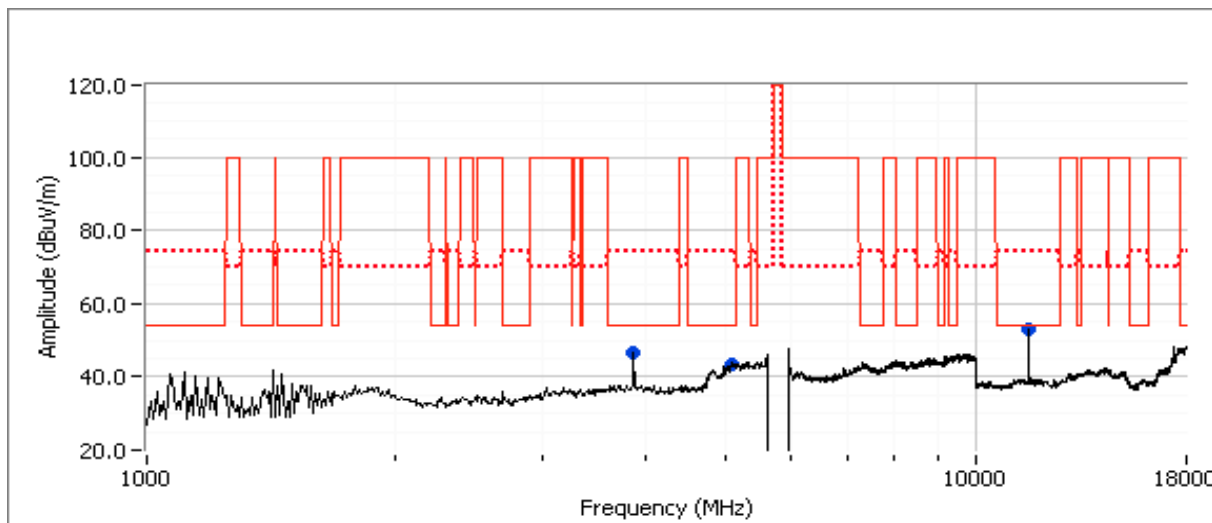
Date of Test: 4/16/2010

Test Engineer: Rafael Varelas

Test Location: Chamber #5

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	
11609.840	48.4	H	54.0	-5.6	AVG	47	1.0	MHz; VB: 10 Hz
11610.330	60.0	H	74.0	-14.0	PK	47	1.0	MHz; VB: 1 MHz
3870.030	46.3	V	54.0	-7.7	AVG	33	1.0	MHz; VB: 10 Hz
3870.030	51.2	V	74.0	-22.8	PK	33	1.0	MHz; VB: 1 MHz
5097.030	39.4	V	54.0	-14.6	AVG	163	1.3	MHz; VB: 10 Hz
5094.500	50.0	V	74.0	-24.0	PK	163	1.3	MHz; VB: 1 MHz

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 and measured in 100kHz.





EMC Test Data

Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
		Account Manager:	Christine Krebill
Contact:	Jerry Pohmurski		
Emissions Standard(s):	FCC 15.247/RSS 210	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Summit Data Communications/Data Logic

Model

SDC-MSD30AG / Falcon X3

Date of Last Test: 1/22/2010

Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, PSD, 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: 1/21&22/2010	Config. Used: 1
Test Engineer: Rafael Varelas & Suhaila Khushzad	Config Change: None
Test Location: FT Chamber #5	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:	18.2 °C
	Rel. Humidity:	37 %

Summary of Results

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	100%	-	Output Power	15.247(b)	Pass	17.4dBm
2	100%	-	Power spectral Density (PSD)	15.247(d)	Pass	-6.7 dBm/3kHz
3	100%	-	Minimum 6dB Bandwidth	15.247(a)	Pass	12.41 MHz
3	100%	-	99% Bandwidth	RSS GEN	-	16.1 MHz
4	100%	-	Spurious emissions	15.247(b)	Pass	All signal < -30dBc

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

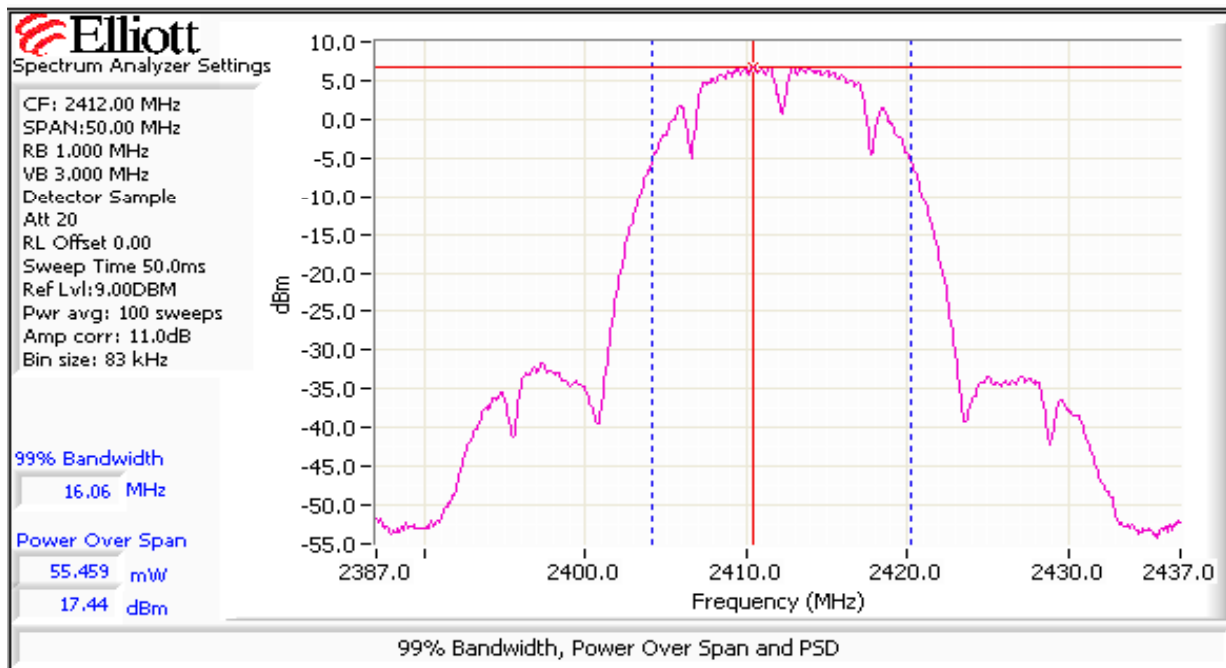
No deviations were made from the requirements of the standard.

Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	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	17.4	55.5	2.5	Pass	19.9	0.099	17.7	58.9
19	2437	17.3	53.2	2.5	Pass	19.8	0.095	17.3	53.7
17	2462	16.7	46.7	2.5	Pass	19.2	0.083	16.5	44.7

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. Spurious limit is -30dBc because this method was used.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Avg power meter measurement, for reference only.



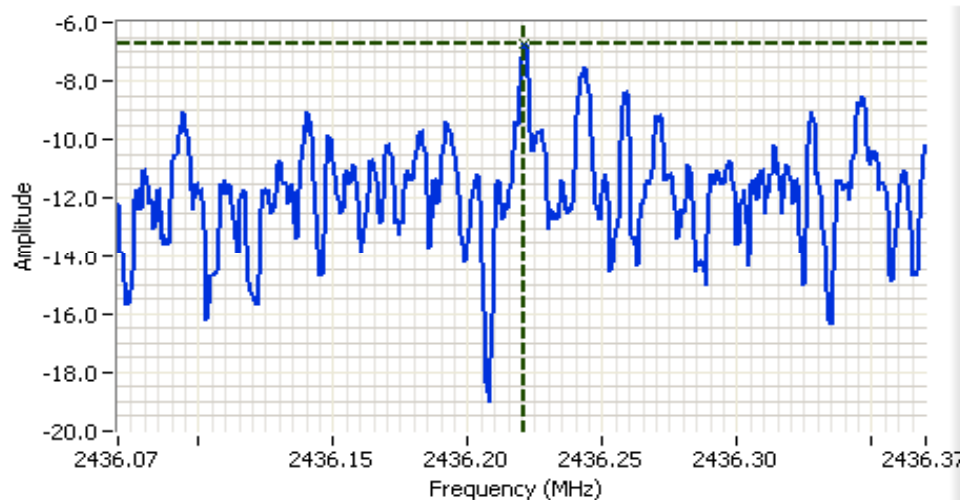
Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) <small>Note 1</small>	Limit dBm/3kHz	Result
19	2412	-7.9	8.0	Pass
19	2437	-6.7	8.0	Pass
19	2462	-6.7	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: 2436.220 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 10
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:0.80DBM

Comments

PSD @ 2437 MHz
19dB

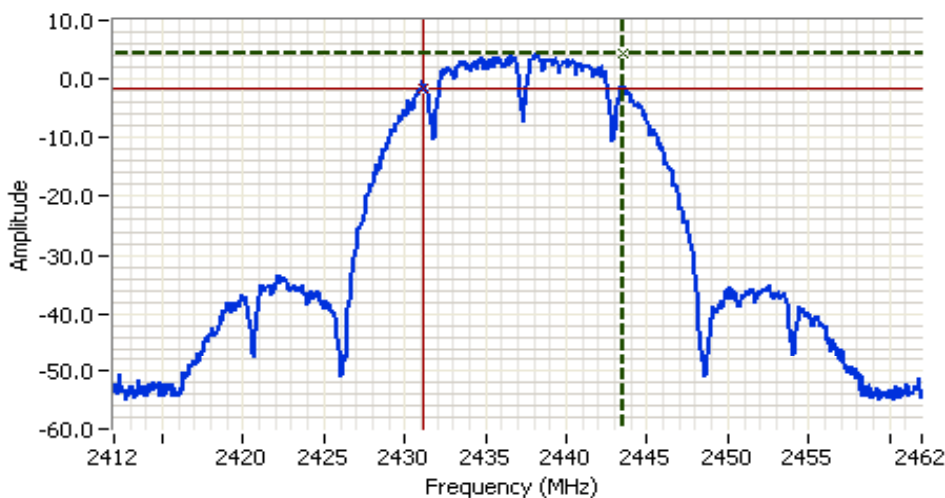
Cursor 1	2436.2205	-6.70			
	0.0000	0.00			

Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
19	2412	100kHz	12.66	16.06
19	2437	100kHz	12.41	16.06
19	2462	100kHz	12.58	16.14

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





Analyzer Settings

HP8564E,EMI
CF: 2437.000 MHz
SPAN:50.000 MHz
RB 100 kHz
VB 100 kHz
Detector Sample
Att 20
RL Offset 11.00
Sweep Time 50.0ms
Ref Lvl:20.00DBM

Comments

6dB BW: 12.417 MHz

Cursor 1	2443.5000	4.50	
Cursor 2	2431.0833	-1.50	

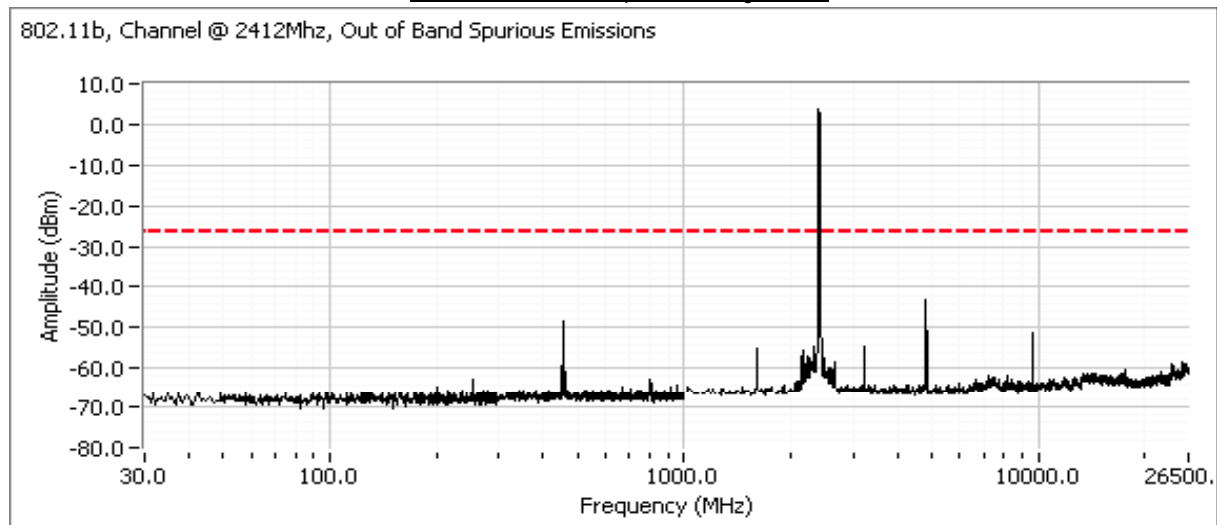
Delta Freq. 12.417
Delta Amplitude 6.00

Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

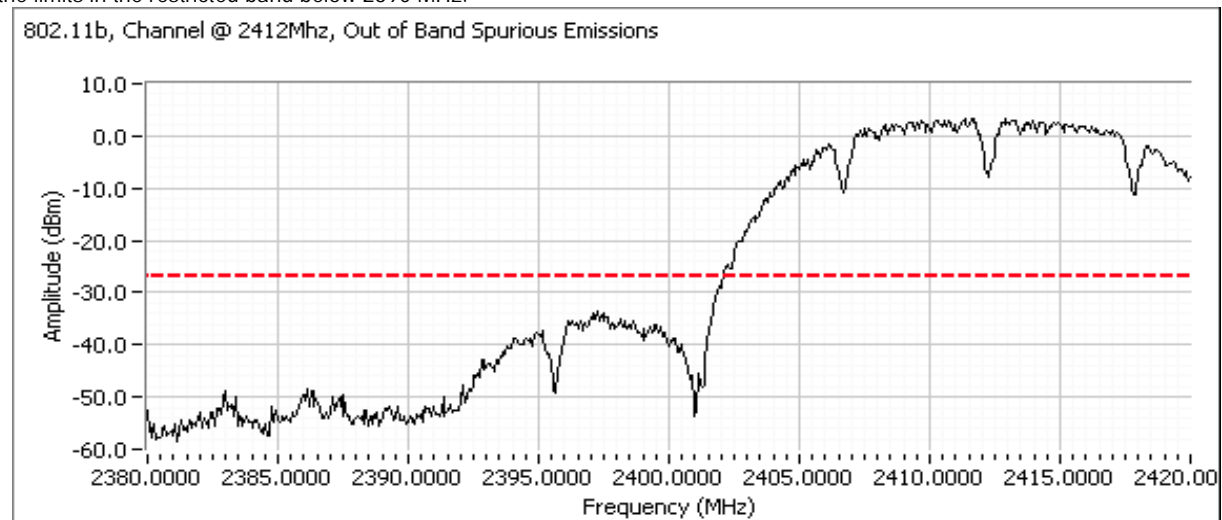
Run #4: Out of Band Spurious Emissions

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

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

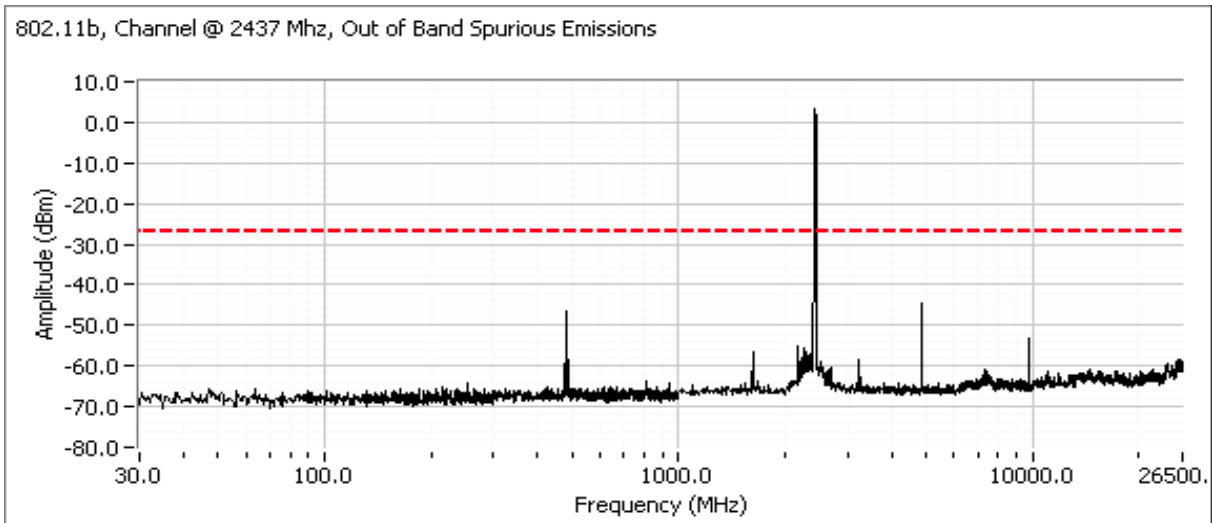


Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

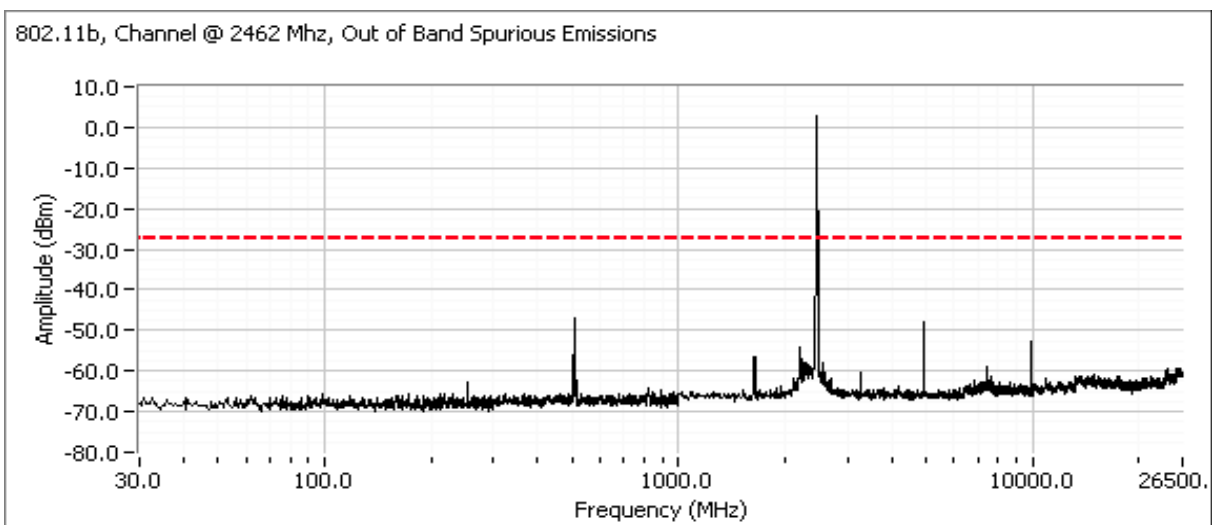


Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

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



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



Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, PSD, 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: 1/21&22/2010
Test Engineer: Rafael Varelas
Test Location: FT Chamber #5

Config. Used: 1
Config Change: None
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: 18.2 °C
Rel. Humidity: 37 %

Summary of Results

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	-	-	Output Power	15.247(b)	Pass	16.5dBm
2	100%	-	Power spectral Density (PSD)	15.247(d)	Pass	-7.9 dBm/3kHz
3	100%	-	Minimum 6dB Bandwidth	15.247(a)	Pass	16.5 MHz
3	100%	-	99% Bandwidth	RSS GEN	-	17.2 MHz
4	100%	-	Spurious emissions	15.247(b)	Pass	All signal < -20dBc

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:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #1: Output Power

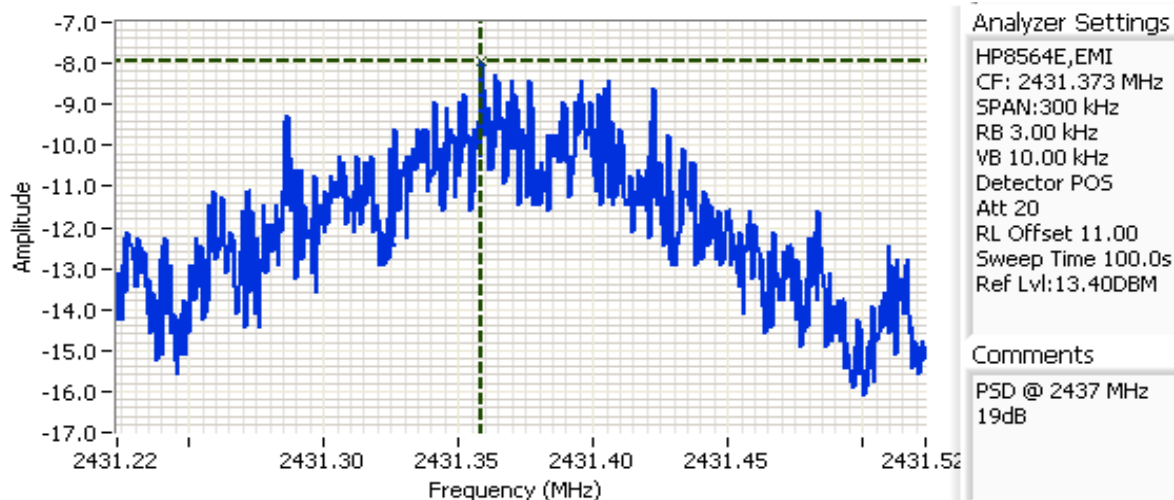
Power Setting ²	Frequency (MHz)	Output Power		Antenna Gain (dBi)	Result	EIRP ^{Note 2}		Output Power	
		(dBm) ¹	mW			dBm	W	(dBm) ³	mW
19	2412	20.6	114.8	2.5	Pass	23.1	0.204	16.3	42.7
19	2437	20.9	123.0	2.5	Pass	23.4	0.219	17.4	55.0
19	2462	20.7	117.5	2.5	Pass	23.2	0.209	16.0	39.8

Note 1:	Output power measured using a peak power meter. Spurious limit is -20dBc because this method was used.
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Avg power meter measurement, for reference and for MPE calculations.

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit dBm/3kHz	Result
		(dBm/3kHz) ^{Note 1}		
19	2412	-8.5	8.0	Pass
19	2437	-7.9	8.0	Pass
19	2462	-9.4	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.
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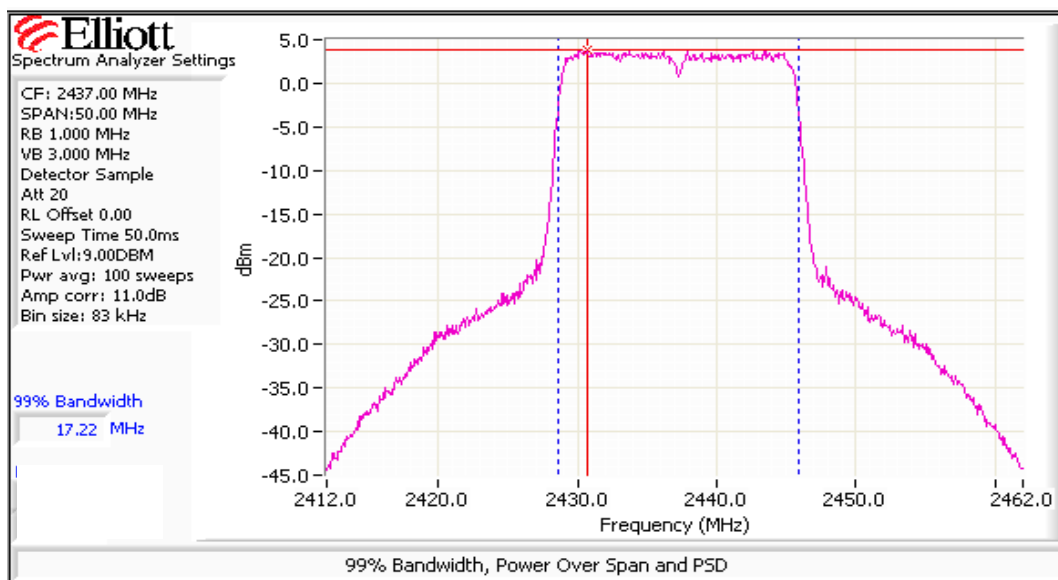
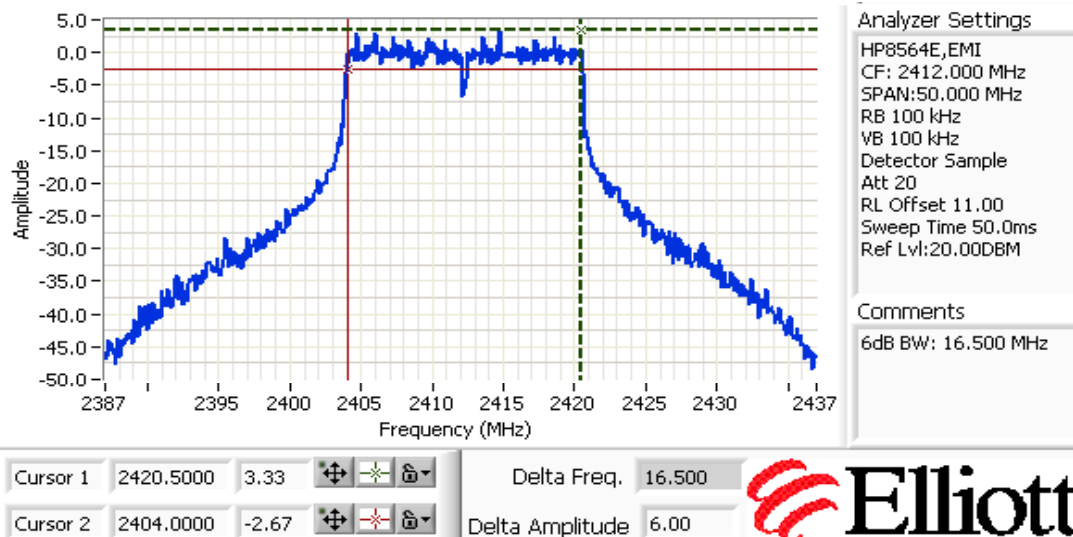
Cursor 1	2431.3588	-7.93		
	0.0000	0.00		

Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #3: Signal Bandwidth

Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
19	2412	100kHz	16.5	17.22
19	2437	100kHz	16.58	17.22
19	2462	100kHz	16.58	17.22

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



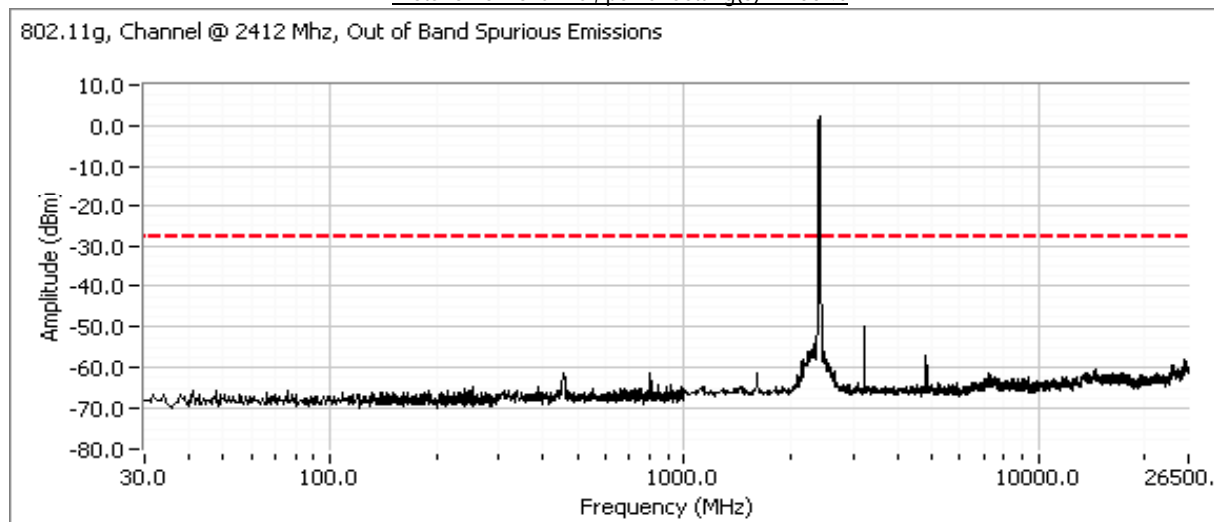
Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #4: Out of Band Spurious Emissions

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

Note: The limit lines on the wideband plots show a -30dBc limit. Peak power measurement was use, actual limit is -20dBc.

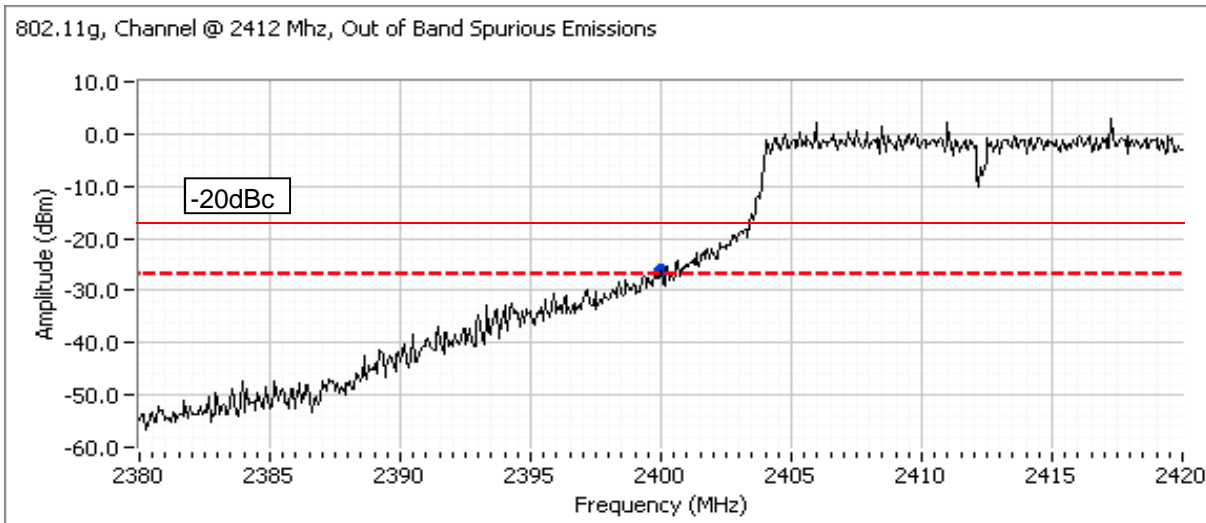
Plots for low channel, power setting(s) = 100 %



Plot at power setting 19dBm

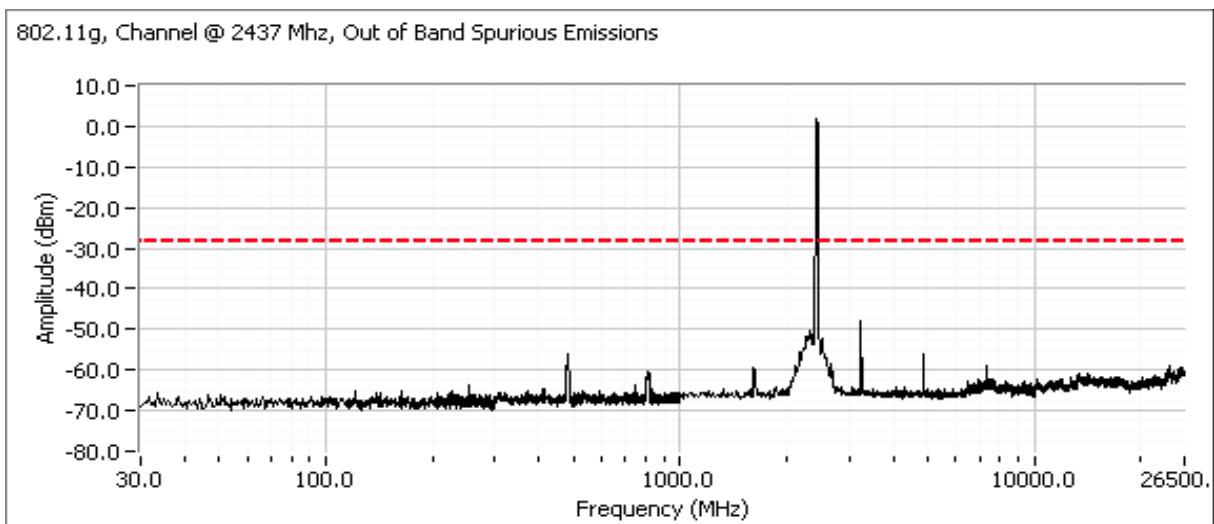
Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.



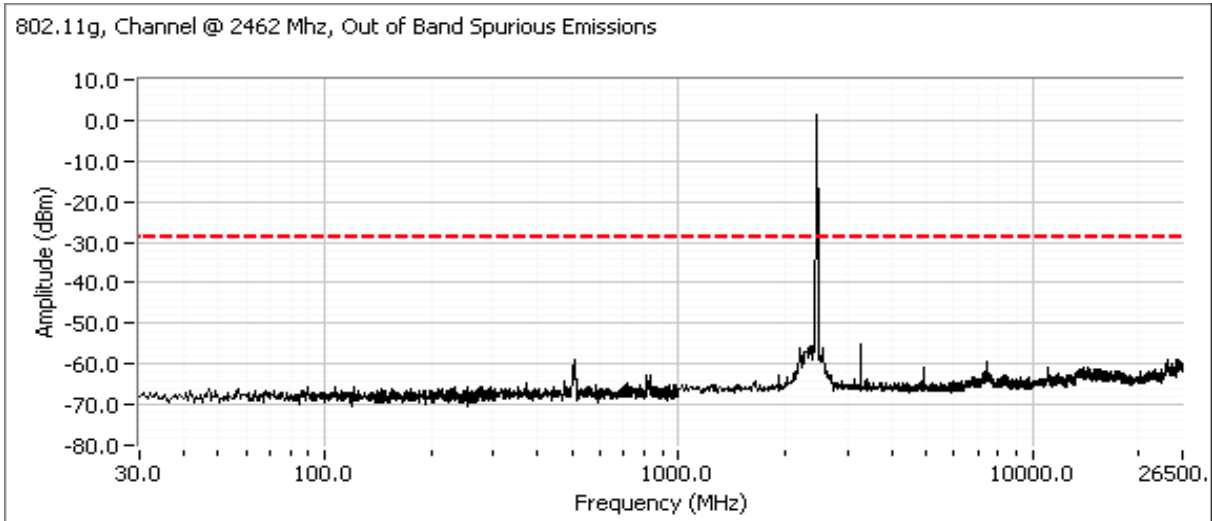
Plot at power setting 19dBm

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



Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

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



Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

RSS 210 and FCC 15.247 (DTS) Antenna Port Measurements Power, PSD, 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: 1/14/2010
Test Engineer: Joseph Cadigal
Test Location: FT Chamber#5

Config. Used: 1
Config Change: None
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: 10-15 °C
Rel. Humidity: 30-50 %

Summary of Results

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	-	-	Output Power	15.247(b)	Pass	11.5dBm (14.1mW)
2	-	-	Power spectral Density (PSD)	15.247(d)	Pass	7.5 dBm/3kHz
3	-	-	Minimum 6dB Bandwidth	15.247(a)	Pass	16.5 MHz
3	-	-	99% Bandwidth	RSS GEN	-	17.1 MHz
4	18.0	-	Spurious emissions	15.247(b)	Pass	All signals were 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:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

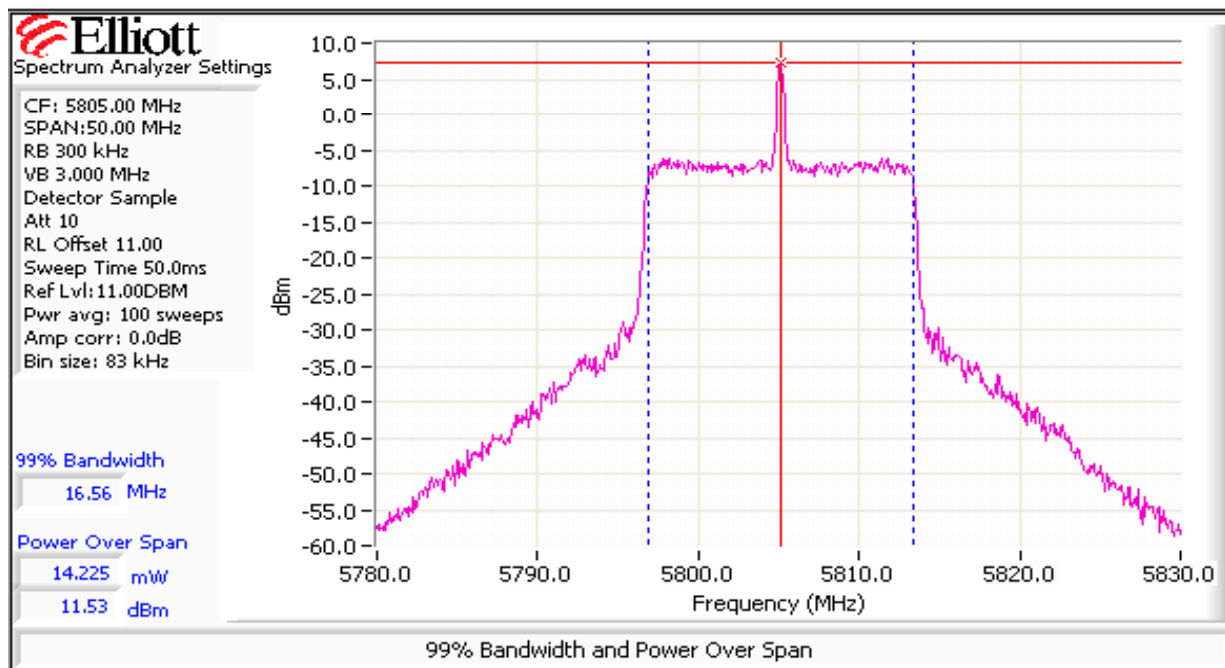
Run #1: Output Power

Power Setting ²	Frequency (MHz)	Output Power (dBm) ¹	mW	Antenna Gain (dBi)	Result	EIRP ^{Note 2} dBm	W	Output Power (dBm) ³	mW
18.0	5745	10.5	11.2	4.8	Pass	15.3	0.034	20.5	112.2
18.0	5785	11.5	14.1	4.8	Pass	16.3	0.043	19.6	91.2
17.0	5805	11.5	14.1	4.8	Pass	16.3	0.043	19.5	89.1

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. **Spurious limit is -30dBc because this method was used.**
For Channel 161 (5805 MHz), the RBW=1MHz, VB=3 MHz, sample detector, max hold for at least 60 seconds (transmitted signal was not continuous) and power integration over 50 MHz.

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

Note 3: Avg power meter measurement, for reference only.

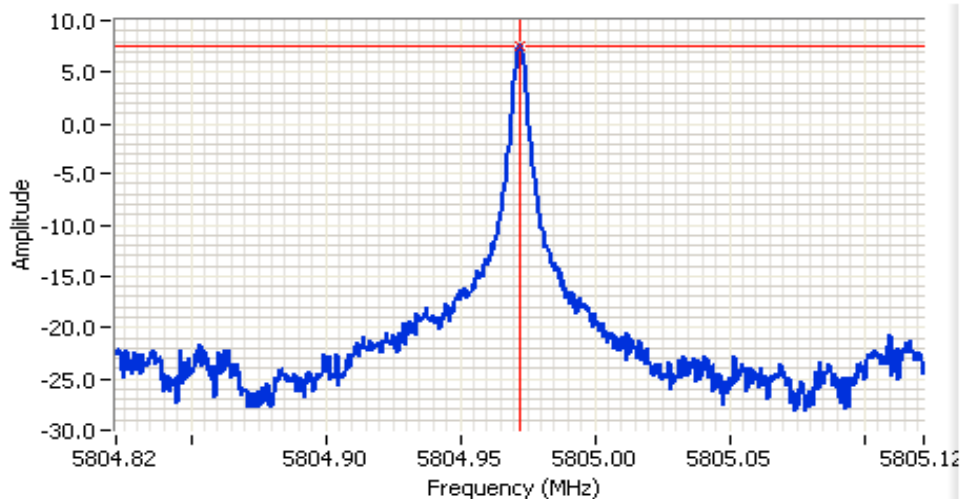


Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #2: Power spectral Density

Power Setting	Frequency (MHz)	PSD	Limit dBm/3kHz	Result
		(dBm/3kHz) <small>Note 1</small>		
18.0	5745	2.0	8.0	Pass
18.0	5785	-12.7	8.0	Pass
17.0	5805	7.5	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: 5804.972 MHz
SPAN:300 kHz
RB 3.00 kHz
VB 10.00 kHz
Detector POS
Att 20
RL Offset 11.00
Sweep Time 100.0s
Ref Lvl:15.70DBM

Comments

PSD @ Channel 161,
power setting @ 17dBm

Cursor 1	5804.9722	7.53		
	0.0000	0.00		

Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

Run #3: Signal Bandwidth

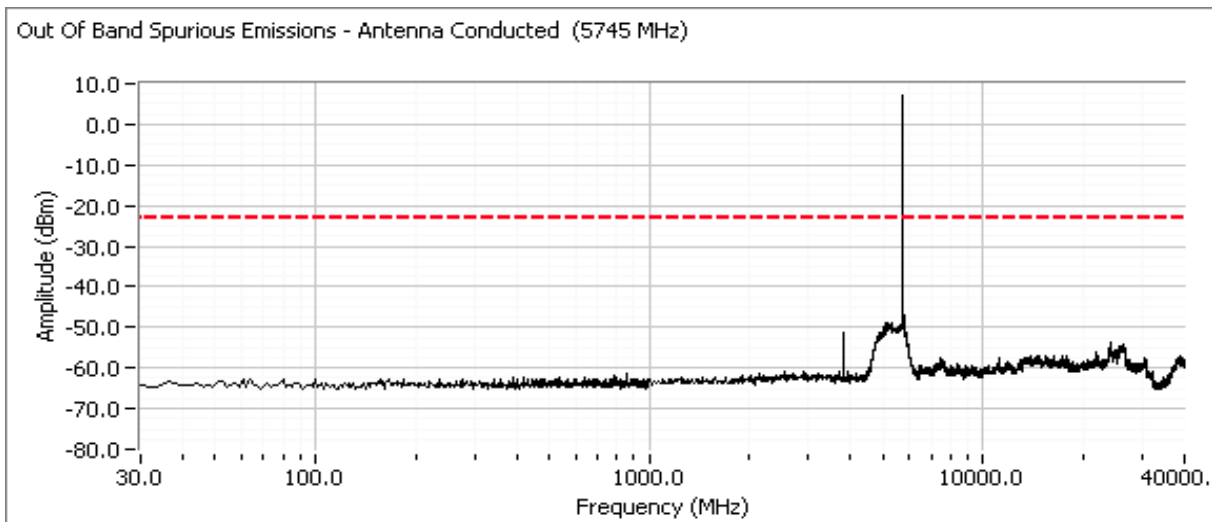
Power Setting	Frequency (MHz)	Resolution Bandwidth	Bandwidth (MHz)	
			6dB	99%
18.0	5745	100kHz	16.6	17.1
18.0	5785	100kHz	16.5	16.8
17.0	5805	100kHz	16.5	16.6

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

Run #4: Out of Band Spurious Emissions

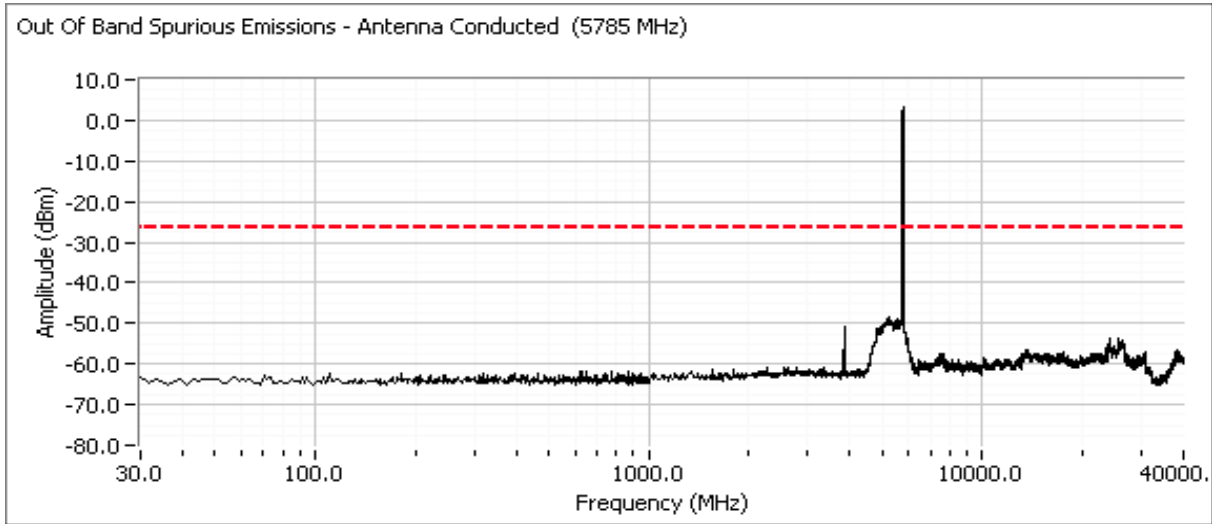
Frequency (MHz)	Limit	Result
5745	-30dBc	Pass
5785	-30dBc	Pass
5805	-30dBc	Pass

Plots for low channel, power setting(s) = 18.0dBm

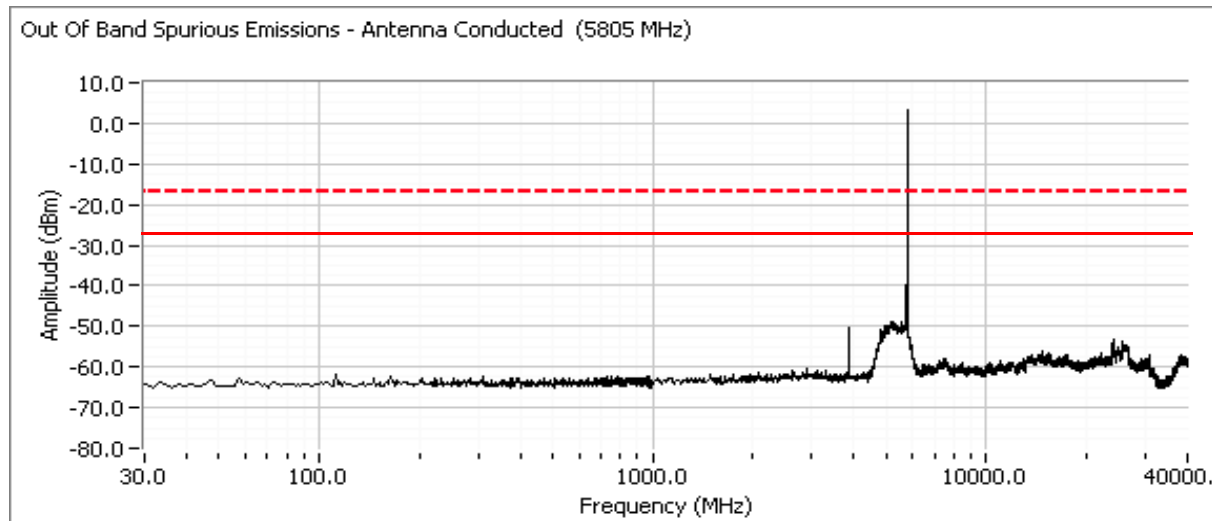


Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

Plots for center channel, power setting(s) = 18.0dBm



Plots for high channel, power setting(s) = 18.0dBm



Client:	Summit Data Communications/Data Logic	Job Number:	J77585
Model:	SDC-MSD30AG / Falcon X3	T-Log Number:	T79612
Contact:	Jerry Pohmurski	Account Manager:	Christine Krebill
Standard:	FCC 15.247/RSS 210	Class:	N/A

Additional plot from 5810 - 5850 MHz showing compliance with -20dBc at the band edge.

