



Engineering and Testing for EMC and Safety Compliance

CERTIFICATION APPLICATION REPORT
FCC PART 15.247 & INDUSTRY CANADA RSS-210

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FCC ID / IC ID:	I28MD-BTC2TY2/ 3798A-BTC2TY2	GRANTEE FRN NUMBER:	0006-3040-75
PLATFORM:	Zebra portable printers & other Zebra products with similar physical characteristics	RTL WORK ORDER NUMBER:	2004158
MODEL NAME / NUMBER:	ZBR-3 / EYSF2CAXX (Bluetooth modular radio)	RTL QUOTE NUMBER:	QRTL04-261
DATE OF TEST REPORT:	December 8, 2004		
AMERICAN NATIONAL STANDARD INSTITUTE:	ANSI C63.4: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz		
FCC CLASSIFICATION:	DSS – Part 15 Spread Spectrum Transmitter Frequency Hopping		
FCC RULE PART(S):	Part 15.247: Operation within the bands 920-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Frequency Hopping System		
INDUSTRY CANADA STANDARD:	RSS-210: Low Power License-Exempt Radio Communication Devices (All Frequency Bands)		
DIGITAL INTERFACE INFORMATION	Digital Interface was found to be compliant		
Frequency Range (MHz)	Output Power* (W)	Frequency Tolerance	Emission Designator
2402-2480	0.0003	N/A	N/A

* output power is maximum peak conducted

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report.

Furthermore, there was no deviation from, additions to, or exclusions from the FCC Part 2, FCC Part 15, Industry Canada RSS-210, ANSI C63.4, ANSI/TIA/EIA603, and ANSI/TIA/EIA 603-1.

Signature: 

Date: December 8, 2004

Typed/Printed Name: Desmond A. Fraser

Position: President

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1 GENERAL INFORMATION

1.1 SCOPE

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz.

IC RSS-210 Section 6.2.2(o): Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz.

A direct sequence (DS) system is a spread spectrum (SS) system in which the carrier has been modulated by a high speed spreading code and an information data stream. The high-speed code sequence dominates the “modulating function” and is the direct cause of the wide spreading of the transmitted signal.

1.2 TEST FACILITY

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 2003).

1.3 RELATED SUBMITTAL(S)/GRANT(S)

This is an original FCC certification application for LIMITED MODULAR transmitter approval, based on the guidelines in FCC Publication DA 00-1407, for Zebra Technologies Corp., Model Name: ZBR-3, Model # EYSF2CAXX, a modular Bluetooth radio, under FCC ID: I28MD-BTC2TY2. The applicant requests LIMITED MODULAR APPROVAL to allow the use of this radio in Zebra printers and other Zebra products similar in style to those presented in this report, including housing type and materials, and not limited to the printers in this report. This Zebra radio has a proprietary interface that is only found in Zebra Technologies’ printers and other products. The Bluetooth module itself is resident on a “carrier” printer circuit board, which should be considered as part of the “module” from the perspective of this LIMITED MODULAR APPROVAL. Appendix A of this report is a letter from the applicant justifying the LIMITED MODULAR APPROVAL request.

With respect to Industry Canada, the applicant requests MODULAR APPROVAL, based on RSS-210, Section 5.18. Appendix A of this report includes a letter from the applicant justifying MODULAR APPROVAL under the conditions set forth in the standard.

1.4 MODIFICATIONS

No modifications were made or performed during testing to achieve compliance with any standard(s) in this application.

2 TEST INFORMATION

2.1 TEST JUSTIFICATION

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. 2402 MHz, 2440 MHz and 2480 MHz were tested and investigated from 9 kHz to 24 GHz. Data for all three channels is presented in this report.

Eight antennas were tested with the Bluetooth module, and all were found to be compliant. The Bluetooth module and one of the antenna options are intended to be used in various Zebra hosts, such as portable printers and other Zebra devices with similar physical characteristics. The antennas are all internal dipole antennas, and the single antenna used in the final application will be internal to the host. The antenna transmits, receives, and is connected to, the Bluetooth module antenna port.

2.2 EXERCISING THE EUT

The EUT was provided with software to continuously transmit on one channel or in the hopping mode during testing. The carrier was also checked to verify that information was being transmitted. There were no deviations from the test standard(s) and/or methods.

2.3 TEST RESULT SUMMARY

TABLE 2-1: TEST RESULT SUMMARY FOR FCC RULES AND REGULATIONS

STANDARD	TEST	PASS/FAIL OR N/A
FCC 15.205	Compliance with the Restricted Band Edge	Pass
FCC 15.207	Conducted Emissions	Pass
FCC 15.209	Radiated Emissions	Pass
FCC 15.247(a)(2)	Modulated Bandwidth	Pass
FCC 15.247(b)	Power Output	Pass
FCC 15.247(c)	Antenna Conducted Spurious Emissions	Pass

2.4 TEST SYSTEM DETAILS

The test sample was received on September 28, 2004. The FCC Identifiers for all equipment, plus descriptions of all cables used in the tested system, are identified in Table 2-2. The EUT, Model ZBR-3, is a Bluetooth radio module made by Zebra Technologies and designed for use in Zebra Technologies portable printers and other Zebra products. This device has a proprietary interface that is only found in Zebra Technologies printers. The test results relate only to the item that was tested.

TABLE 2-2: EQUIPMENT UNDER TEST (EUT)

Part	Manufacturer	Model	Serial Number	FCC Identifier	Cable Description	RTL Barcode
Bluetooth Module	Zebra Technologies	ZBR-3	N/A	I28MD-BTC2TY2	N/A	016160
Bluetooth Module	Zebra Technologies	ZBR-3	N/A	I28MD-BTC2TY2	N/A	016158
Test Bed	Zebra Technologies	NA	N/A	Sample	N/A	016152
ZP Radio Module	Zebra Technologies	ZPR Pod (CQ15813-1)	N/A	Sample	N/A	016155
Mobile Printer	Zebra Technologies	QL420 BT with QL Family Antenna (CC16203-2)	N/A	Sample	N/A	016151
Portable Printer	Zebra Technologies	Cameo 3 (CQ15352-1)	N/A	Sample	N/A	016150
Portable Printer	Zebra Technologies	Cameo 2 (CQ15731-1)	N/A	Sample	N/A	016149
Portable Encoding Printer	Zebra Technologies	Cameo 3 PEP (CQ15729-1)	N/A	Sample	N/A	016148
Portable Printer	Zebra Technologies	Cameo 3 SC (CQ16142-1)	N/A	Sample	N/A	016147
Portable Printer	Zebra Technologies	RW420 (CQ17109-1)	N/A	Sample	N/A	016146
Antenna	Zebra Technologies	QL Family 2 nd Generation Bluetooth (CQ17383-1)	N/A	Sample	N/A	016169

TABLE 2-3: SUPPORT EQUIPMENT

Part	Manufacturer	Model	Serial Number	FCC Identifier	Cable Description	RTL Barcode
Charger	Zebra Technologies	L172	N/A	Sample	N/A	016162
Extender Cable	Zebra Technologies	N/A	N/A	Sample	N/A	016154
Extender Cable	Zebra Technologies	N/A	N/A	Sample	N/A	016153
Battery	Zebra Technologies	AT16293-1	N/A	Sample	N/A	016156
Battery	Zebra Technologies	AT16293-1	N/A	Sample	N/A	016157

2.5 CONFIGURATION OF TESTED SYSTEM

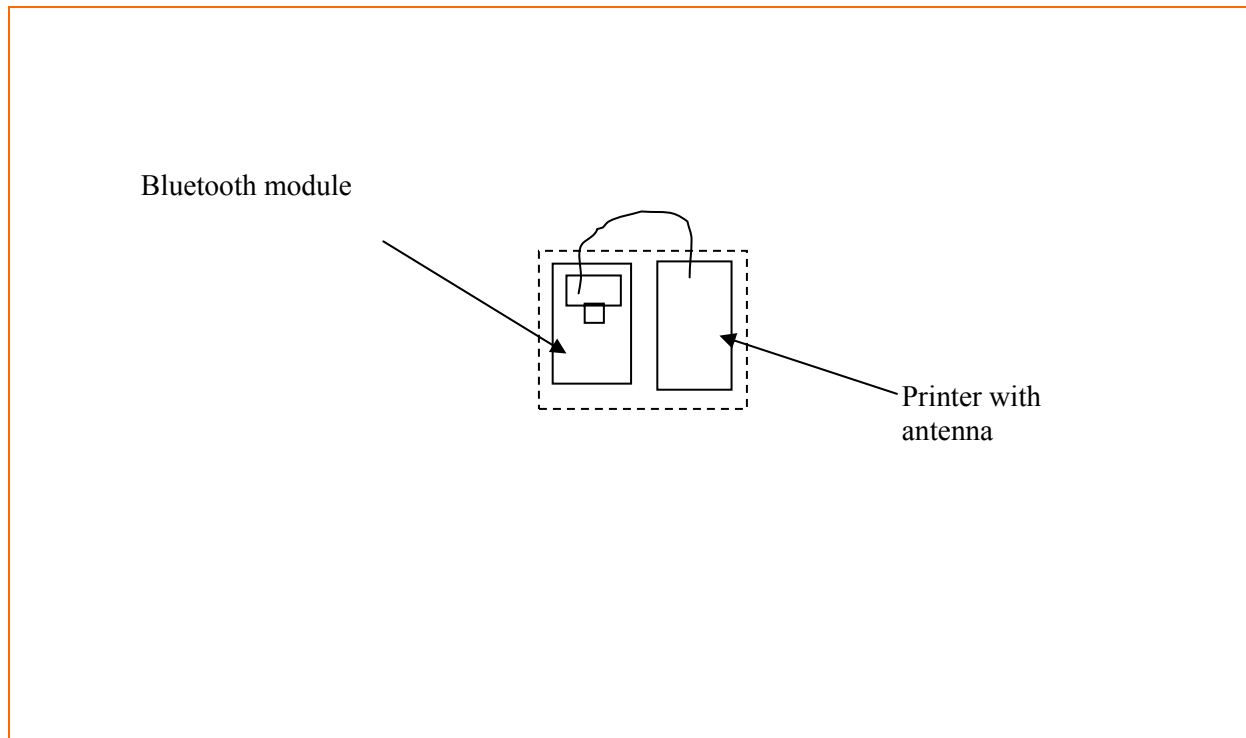


FIGURE 1: WORST CASE CONFIGURATION OF SYSTEM UNDER TEST

3 COMPLIANCE WITH THE RESTRICTED BAND EDGE– FCC §15.205; IC RSS-210 §6.3

3.1 TEST PROCEDURE

Compliance with the band edges was performed using the FCC’s “Radiated Measurement at a Band Edge” guidance document. The data taken in this report represents the worst case at 2 Mbps. The data rate at 1 Mbps was also investigated and found to be in compliance.

3.2 BAND EDGE TEST EQUIPMENT

TABLE 3-1: BAND EDGE TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	5/20/07
901215	Hewlett Packard	8596EM	EMC Analyzer (9 kHz – 12.8 GHz)	3826A00144	9/8/05
901231	IW Microwave Products	KPW-1503-2400-KPS	High Frequency RF Cables	240"	1/30/05
901235	IW Microwave Products	KPS-1503-360-KPS	High Frequency RF Cables	36"	1/30/05
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1 - 26.5 GHz)	3008A00505	5/5/05

3.3 COMPLIANCE WITH THE RESTRICTED BAND EDGE TEST DATA

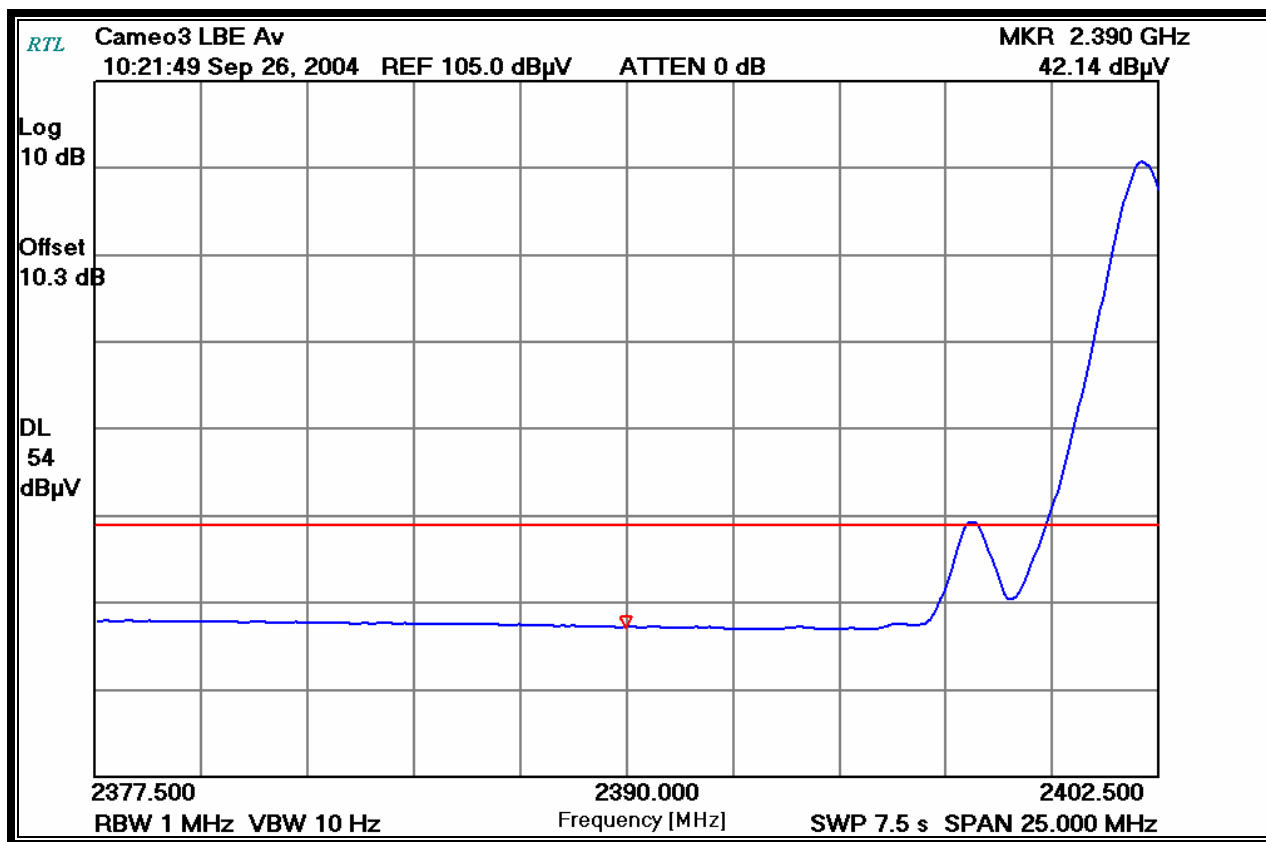
TABLE 3-2: COMPLIANCE WITH THE RESTRICTED BAND EDGE TEST DATA

Antenna Sample	Channel Set to	Frequency Tested (MHz)	Detector	Corrected Field Strength Level At Restricted Band (dBμV/m)	FCC Limit (dBμV/m)	FCC Margin (dB)
Cameo 3	2	2402	Av	42.1	54.0	-11.9
Cameo 3	80	2480	Av	44.2	54.0	-9.8
Cameo 2	2	2402	Av	42.1	54.0	-11.9
Cameo 2	80	2480	Av	44.4	54.0	-9.6
QL-420	2	2402	Av	42.1	54.0	-11.9
QL-420	80	2480	Av	43.9	54.0	-10.1
Cameo 3 SC	2	2402	Av	43.4	54.0	-10.6
Cameo 3 SC	80	2480	Av	44.0	54.0	-10.0
RW-420	2	2402	Av	42.1	54.0	-11.9
RW-420	80	2480	Av	45.4	54.0	-8.6
Cameo 3 PEP	2	2402	Av	42.1	54.0	-11.9
Cameo 3 PEP	80	2480	Av	41.8	54.0	-12.2
ZPR Pod	2	2402	Av	42.0	54.0	-12.0
ZPR Pod	80	2480	Av	45.3	54.0	-8.7
QL Series	2	2402	Av	43.5	54.0	-10.5
QL Series	80	2480	Av	49.4	54.0	-4.6

3.4 RESTRICTED BAND EDGE PLOTS

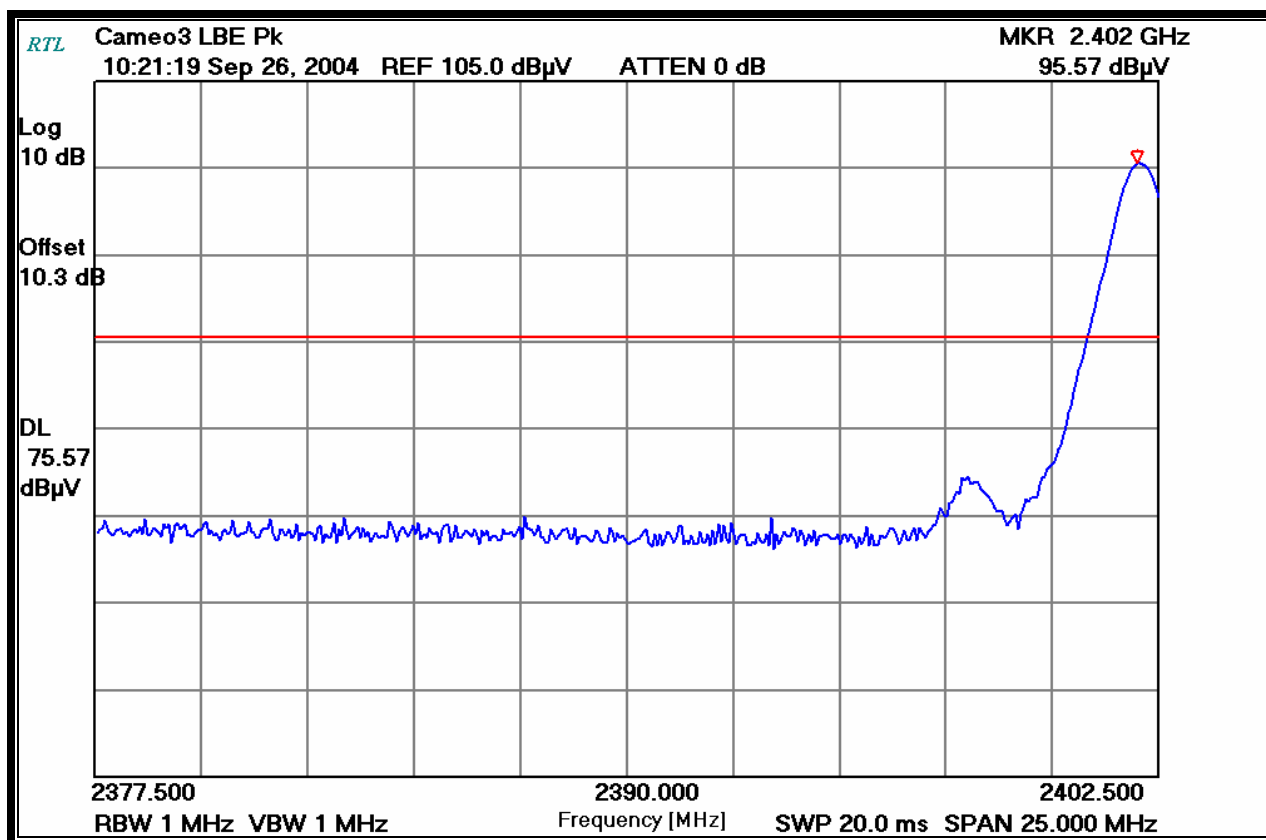
Channel Number: 2
 Frequency MHz: 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (Hz): 10
 Sweep Time (s): 7.5

PLOT 3-1: LOWER BAND EDGE: AVERAGE MEASUREMENT CAMEO 3



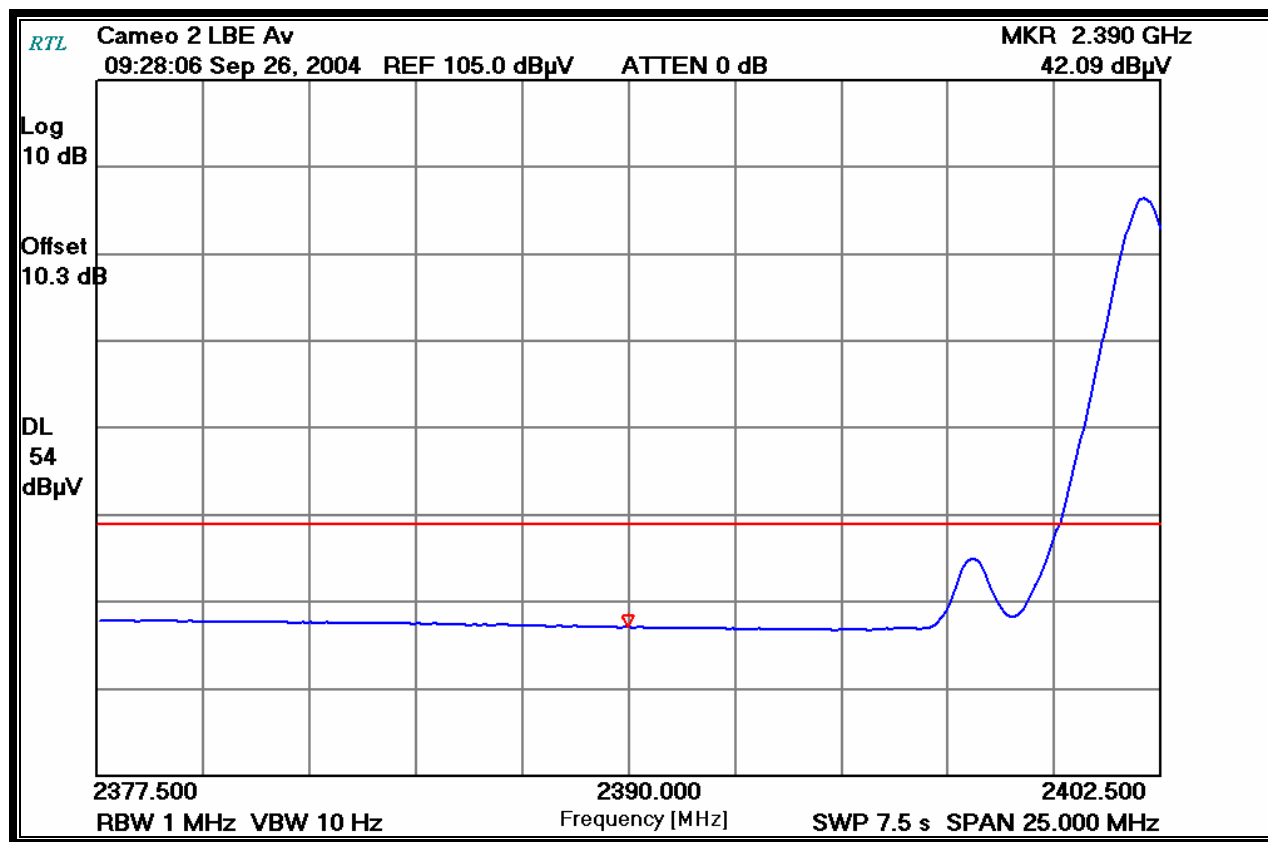
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-2: LOWER BAND EDGE: PEAK MEASUREMENT CAMEO 3



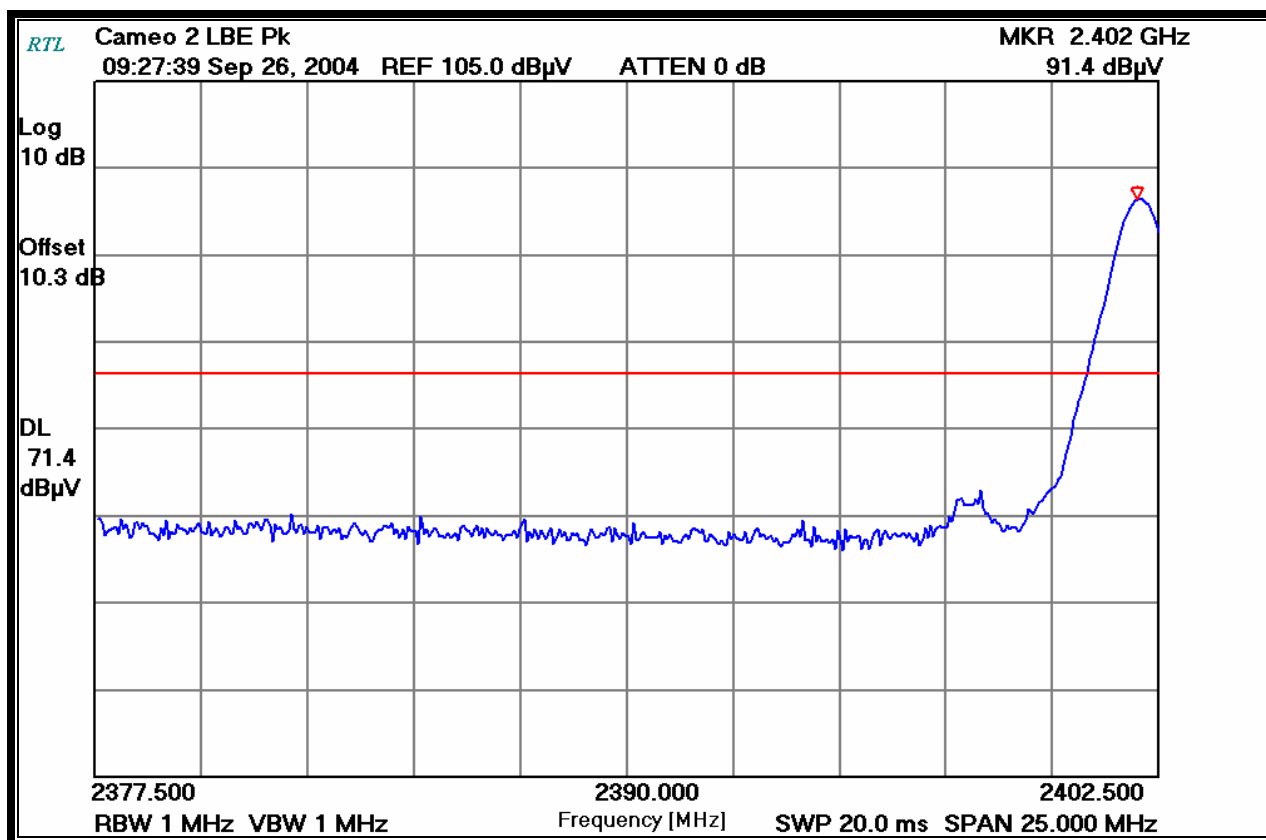
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (Hz): 10
 Sweep Time (s): 7.5

PLOT 3-3: LOWER BAND EDGE: AVERAGE MEASUREMENT CAMEO 2



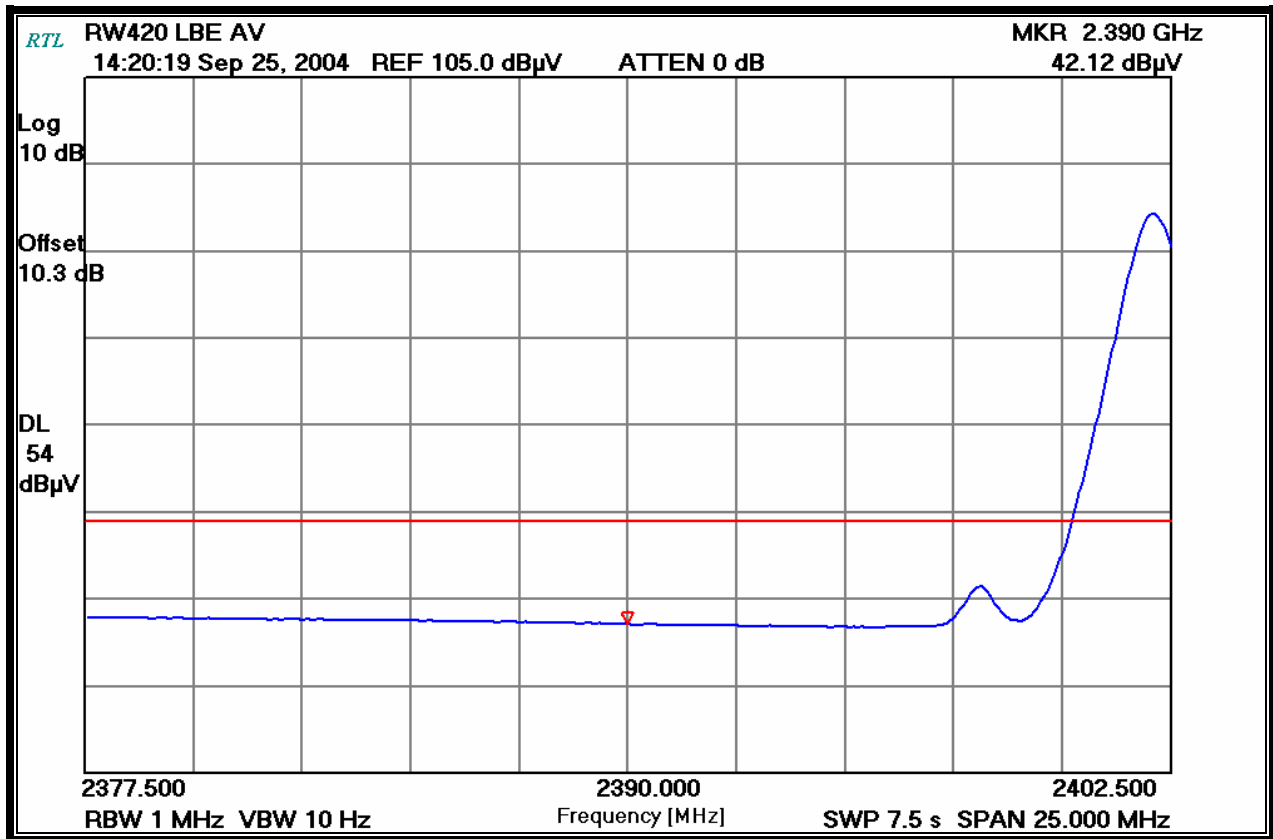
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-4: LOWER BAND EDGE: PEAK MEASUREMENT CAMEO 2



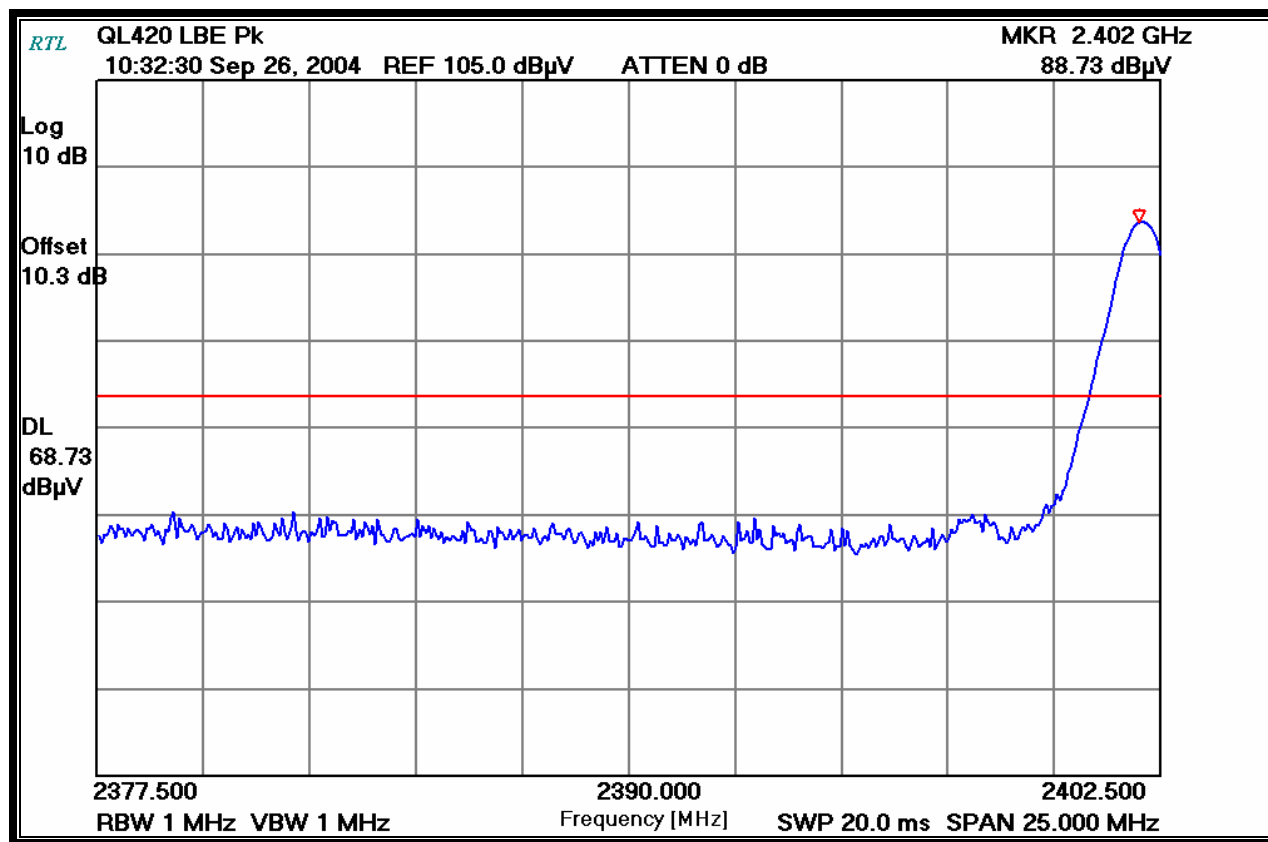
Channel Number: 2
Frequency (MHz): 2402
Resolution Bandwidth (MHz): 1
Video Bandwidth (Hz): 10
Sweep Time (s): 7.5

PLOT 3-5: LOWER BAND EDGE: AVERAGE MEASUREMENT QL-420



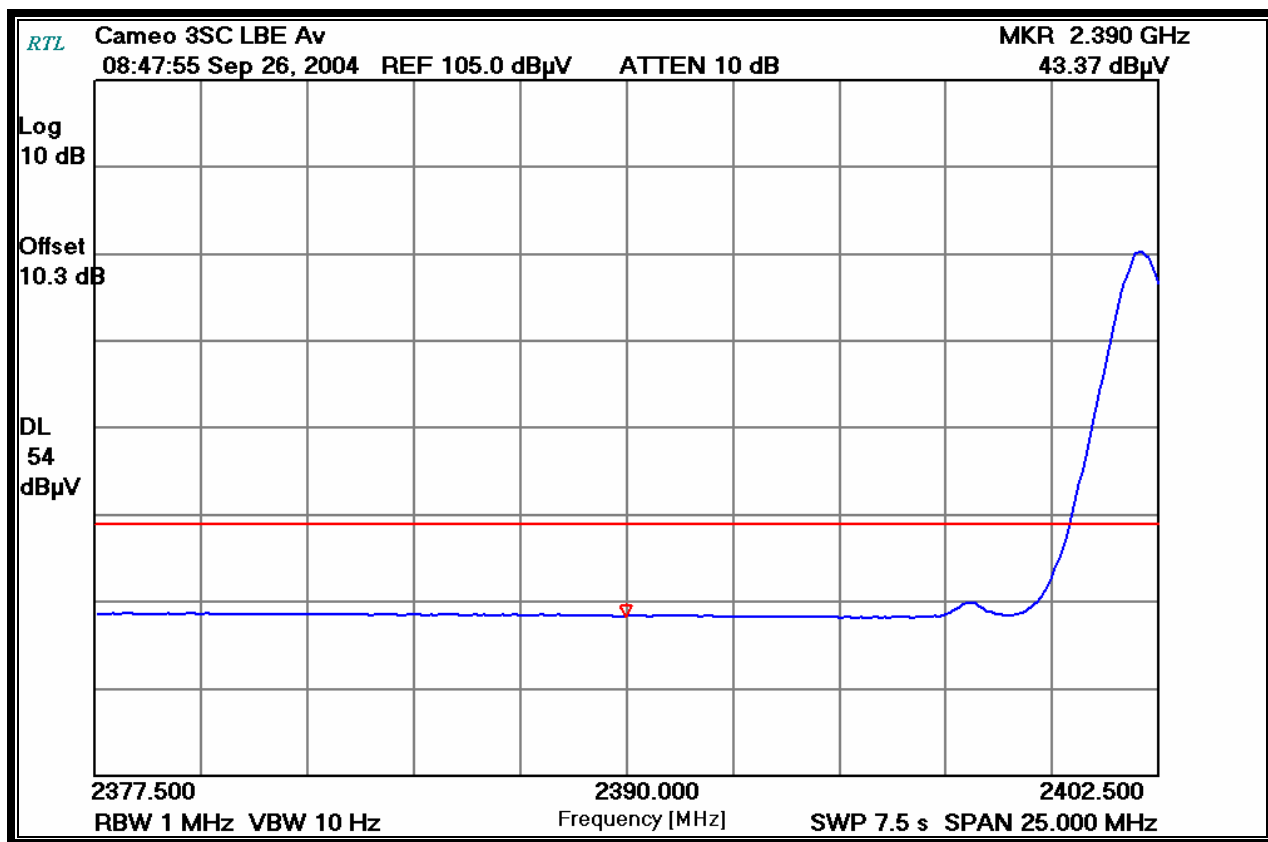
Channel Number: 2
Frequency (MHz): 2402
Resolution Bandwidth (MHz): 1
Video Bandwidth (MHz): 1
Sweep Time (ms): 20

PLOT 3-6: LOWER BAND EDGE: PEAK MEASUREMENT QL-420



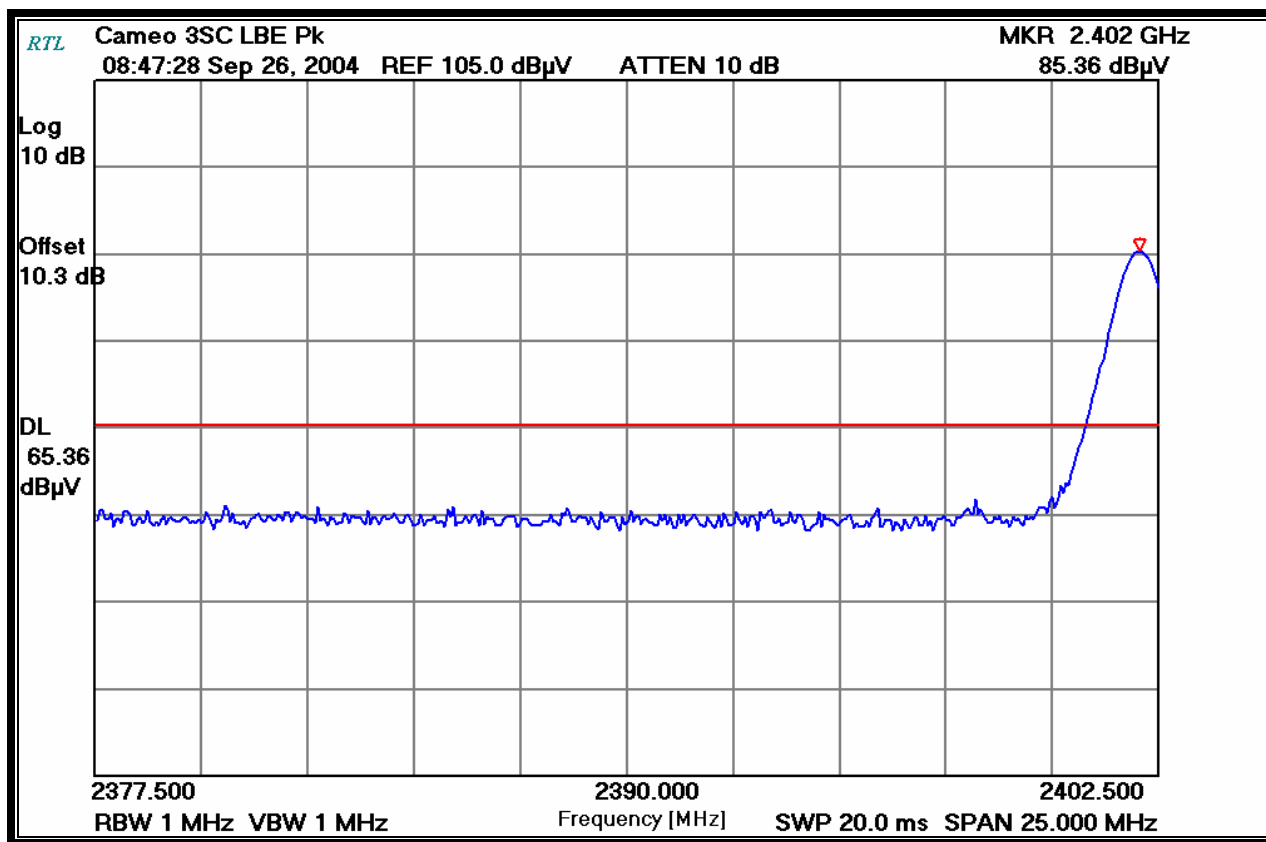
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (Hz): 10
 Sweep Time (s): 7.5

PLOT 3-7: LOWER BAND EDGE: AVERAGE MEASUREMENT CAMEO 3 SC



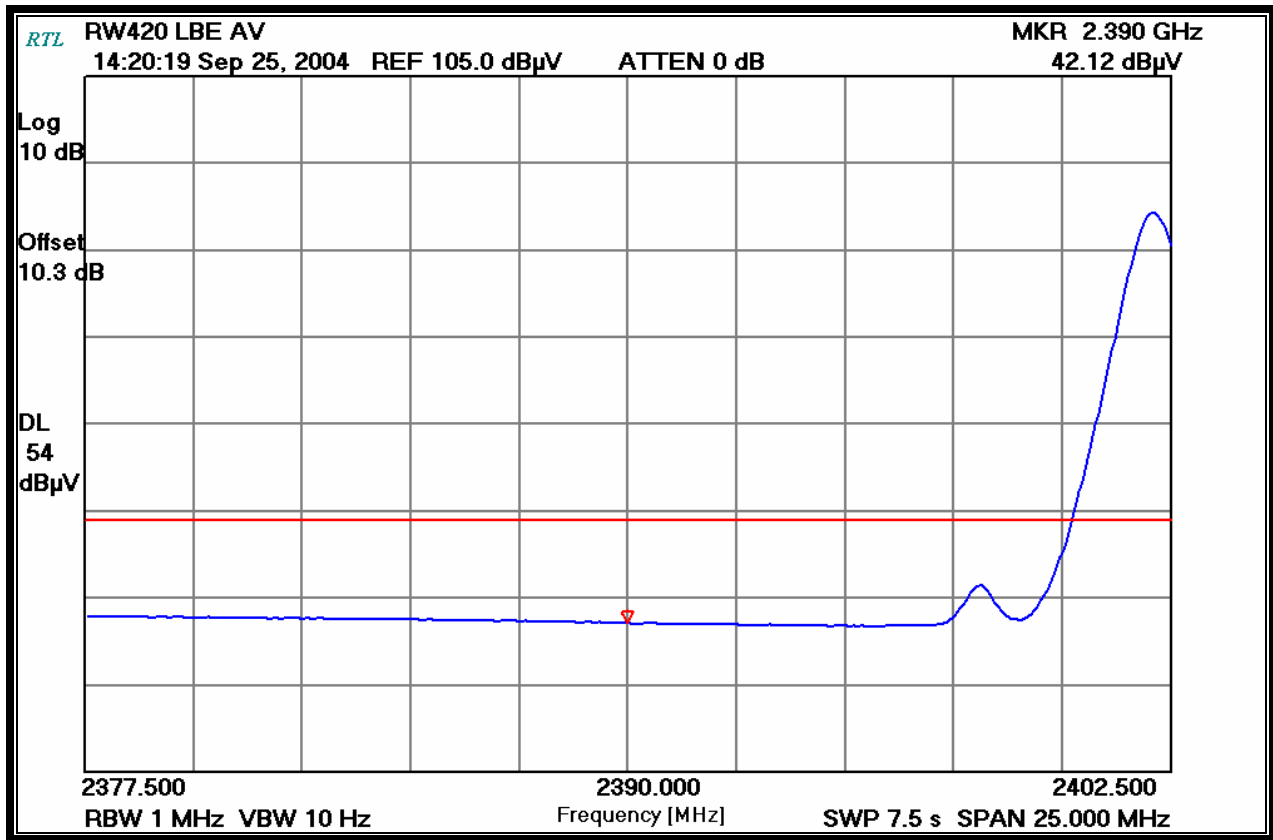
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-8: LOWER BAND EDGE: PEAK MEASUREMENT CAMEO 3 SC



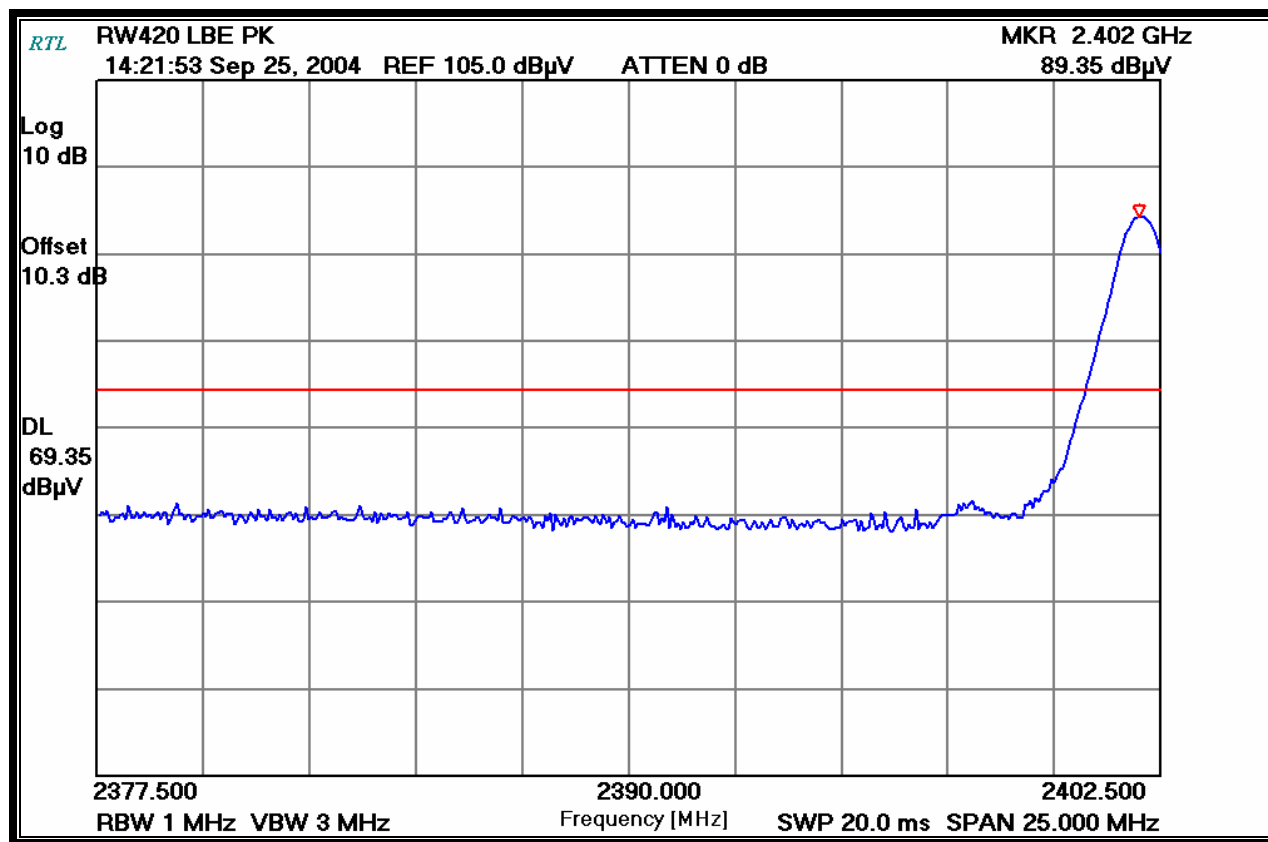
Channel Number: 2
Frequency (MHz): 2402
Resolution Bandwidth (MHz): 1
Video Bandwidth (Hz): 10
Sweep Time (s): 7.5

PLOT 3-9: LOWER BAND EDGE: AVERAGE MEASUREMENT RW-420



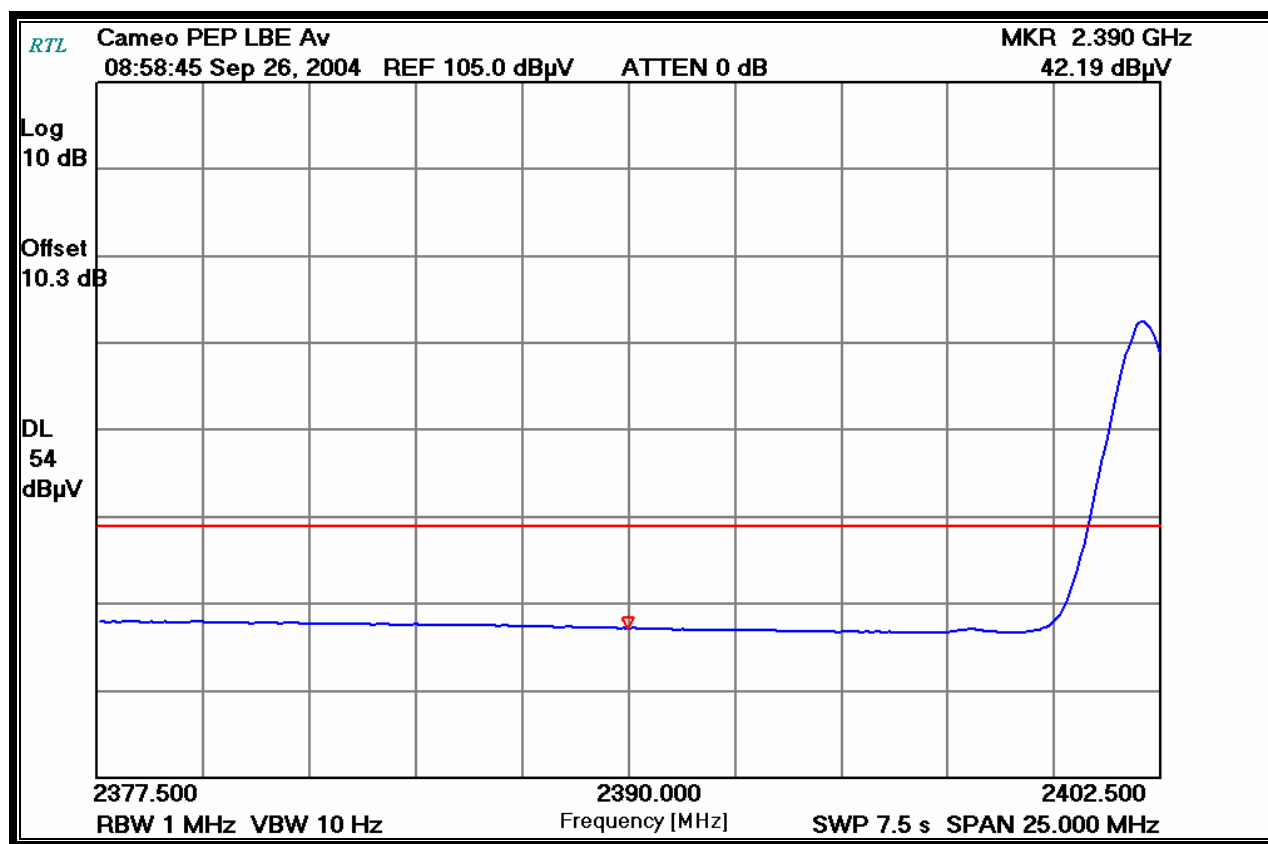
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 3
 Sweep Time (ms): 20

PLOT 3-10: LOWER BAND EDGE: PEAK MEASUREMENT RW-420



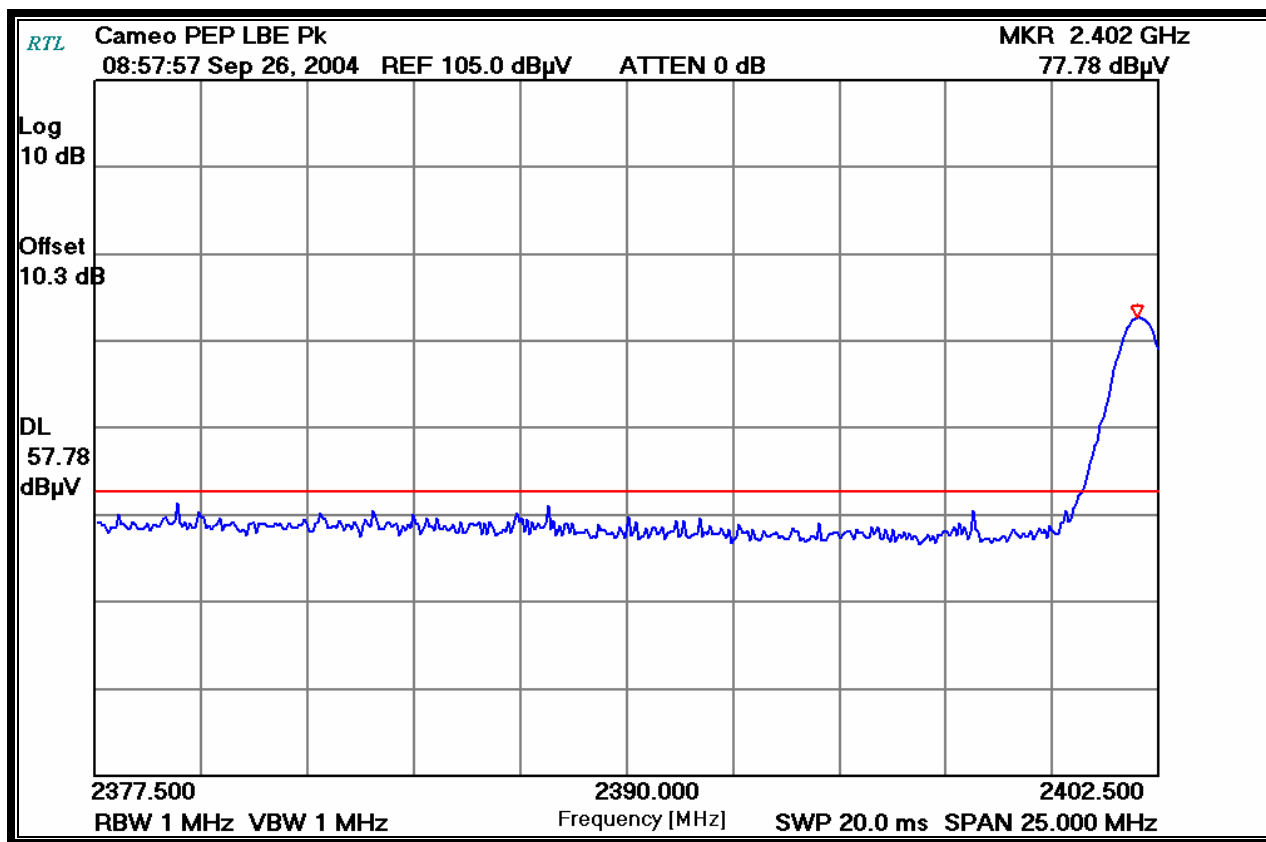
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (Hz): 10
 Sweep Time (s): 7.5

PLOT 3-11: LOWER BAND EDGE: AVERAGE MEASUREMENT CAMEO 3 PEP



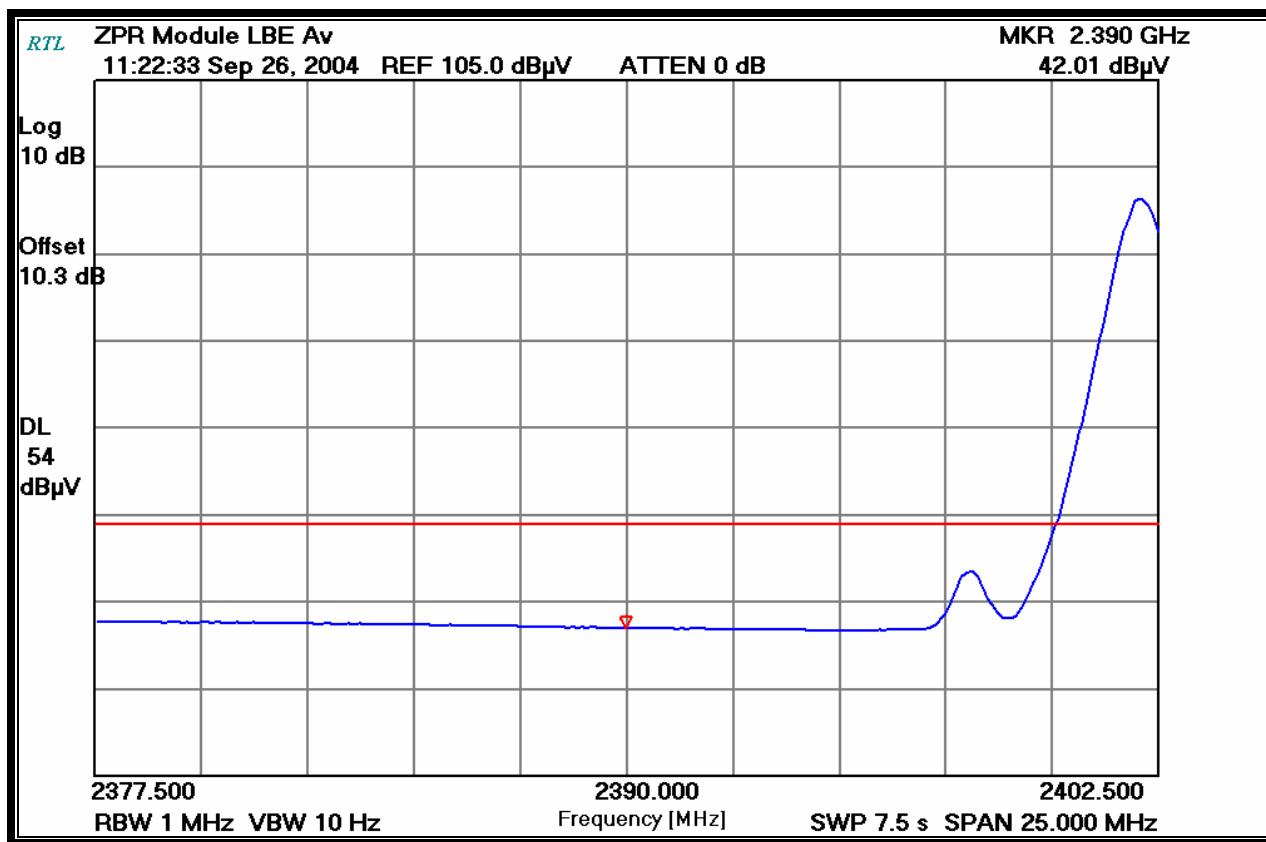
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-12: LOWER BAND EDGE: PEAK MEASUREMENT CAMEO 3 PEP



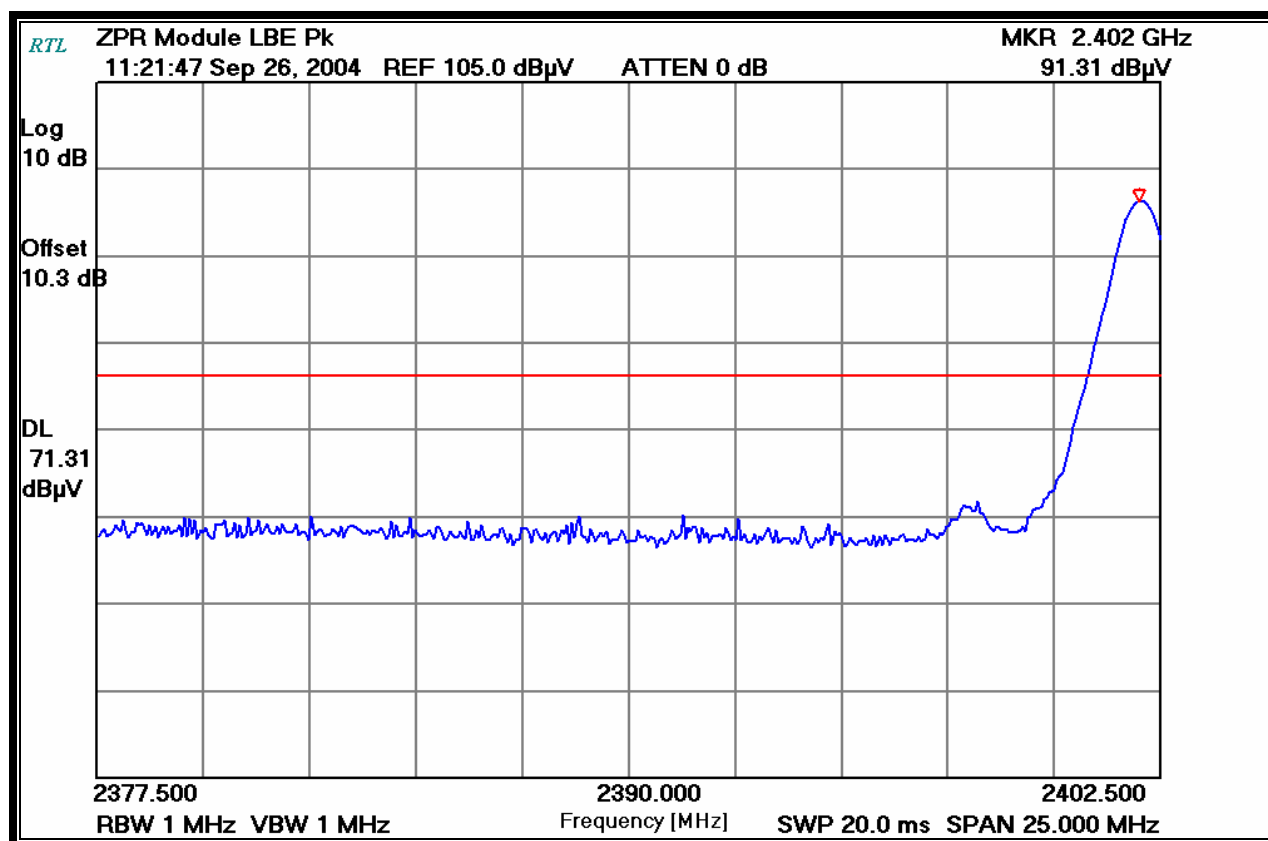
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (Hz): 10
 Sweep Time (s): 7.5

PLOT 3-13: LOWER BAND EDGE: AVERAGE MEASUREMENT ZPR POD



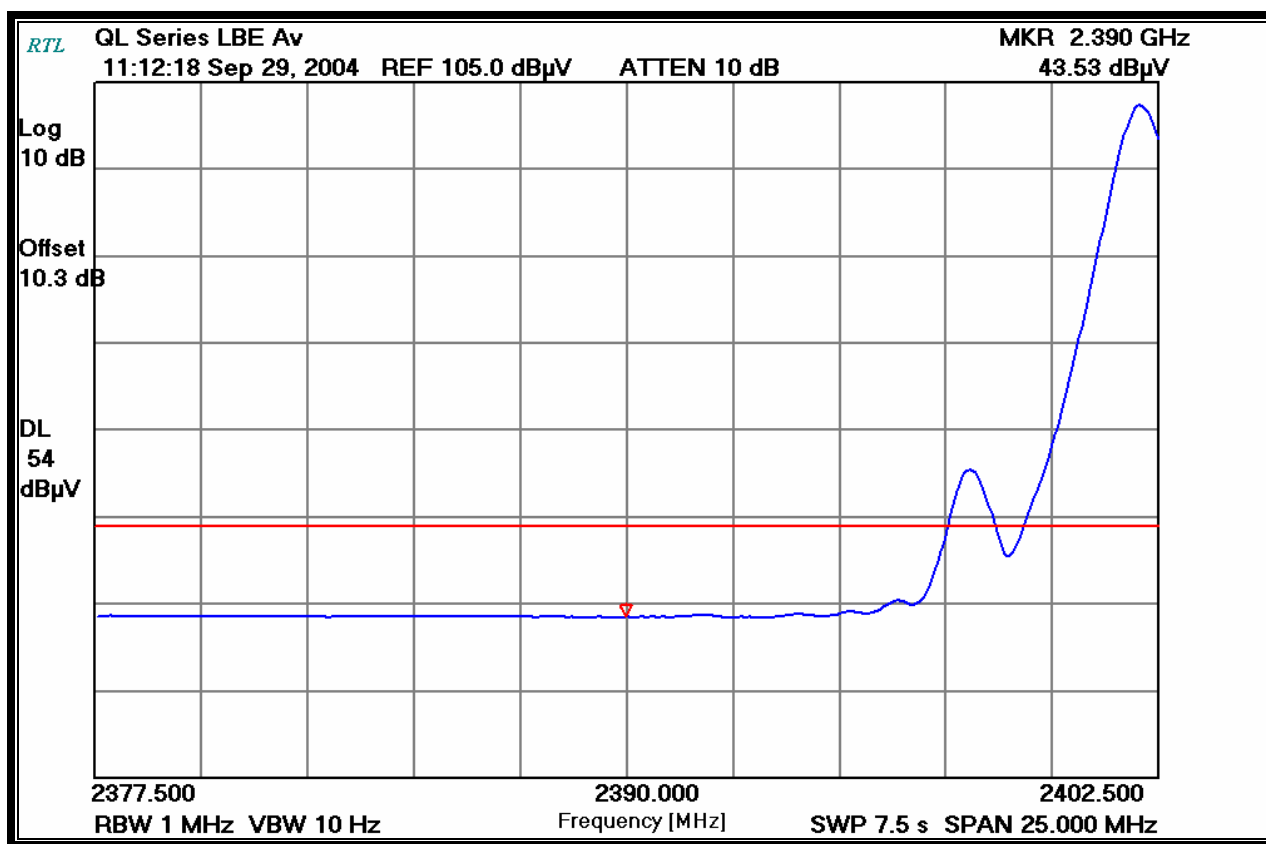
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-14: LOWER BAND EDGE: PEAK MEASUREMENT ZPR POD



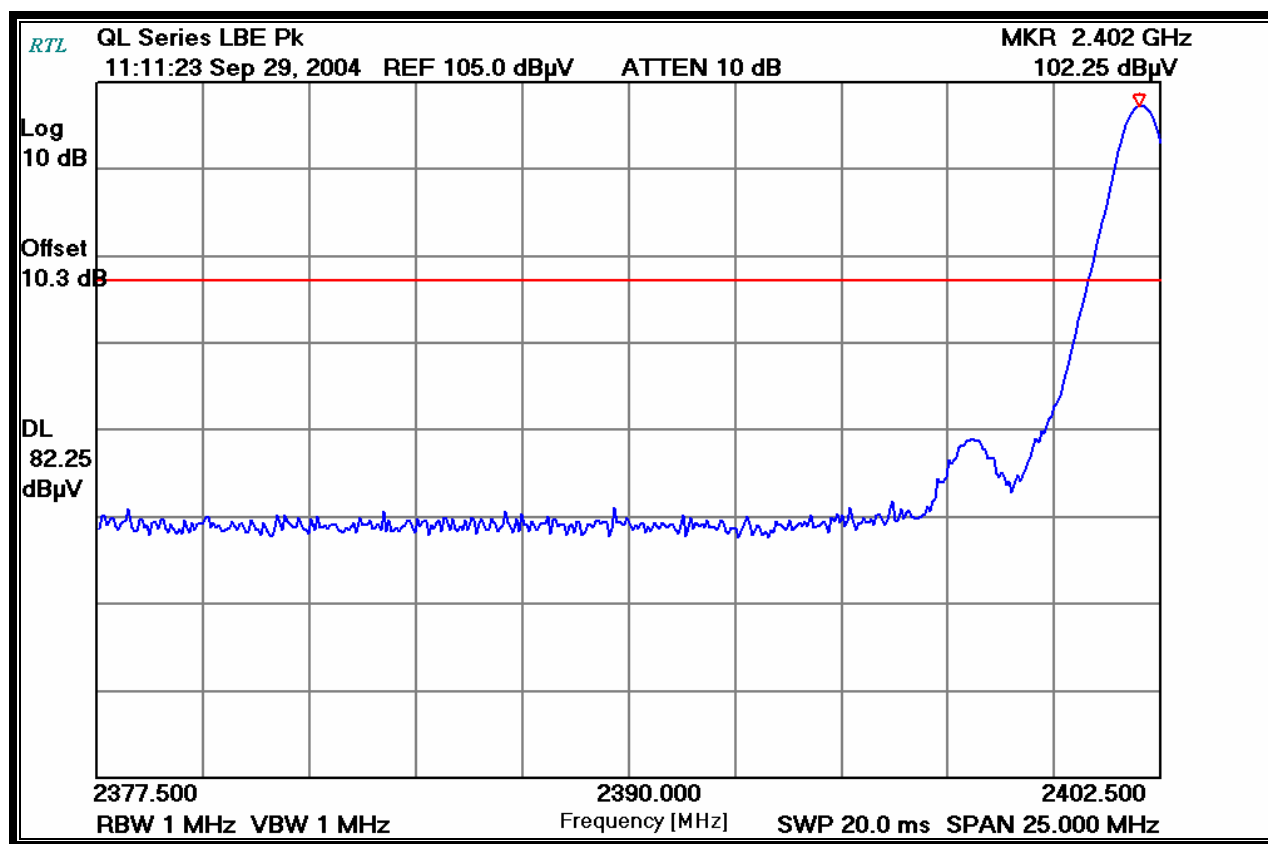
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (Hz): 10
 Sweep Time (s): 7.5

PLOT 3-15: LOWER BAND EDGE: AVERAGE MEASUREMENT QL SERIES ANTENNA



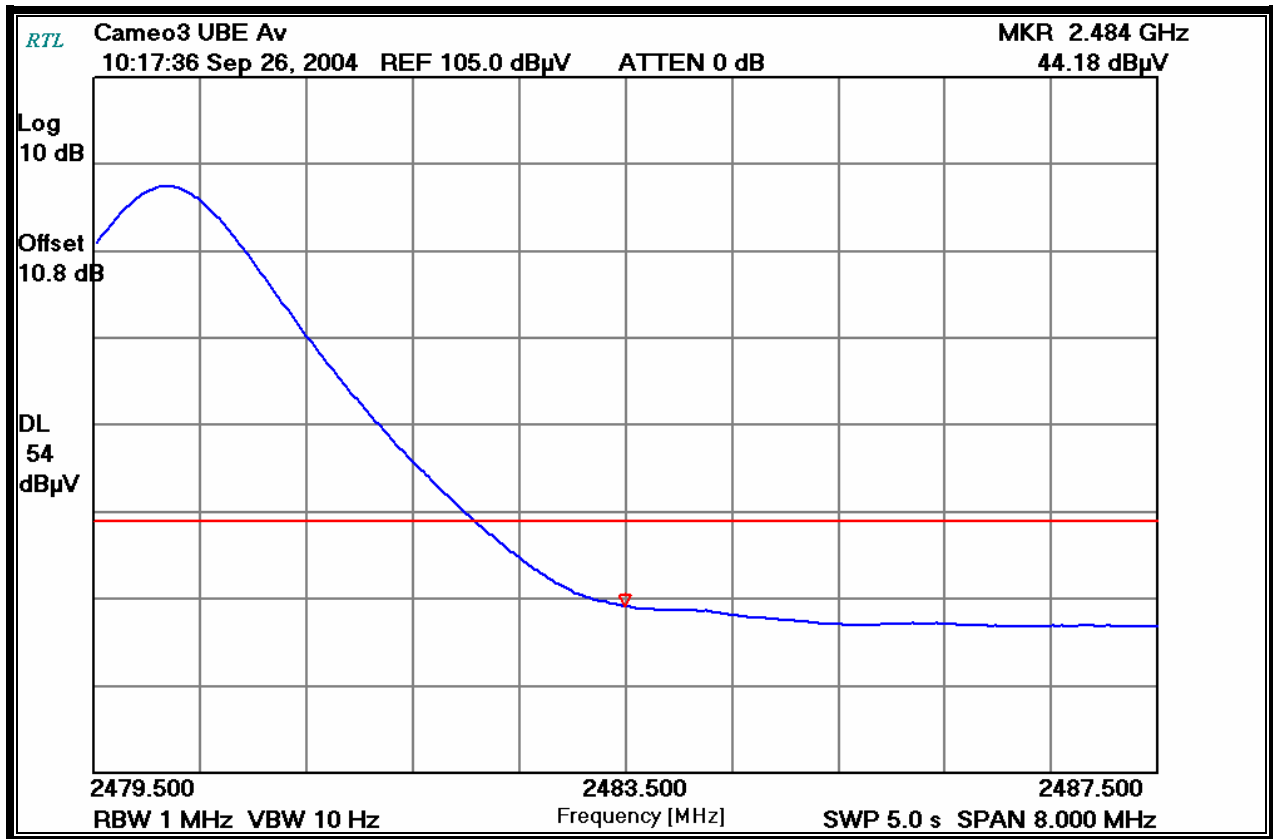
Channel Number: 2
 Frequency (MHz): 2402
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-16: LOWER BAND EDGE: PEAK MEASUREMENT QL SERIES ANTENNA



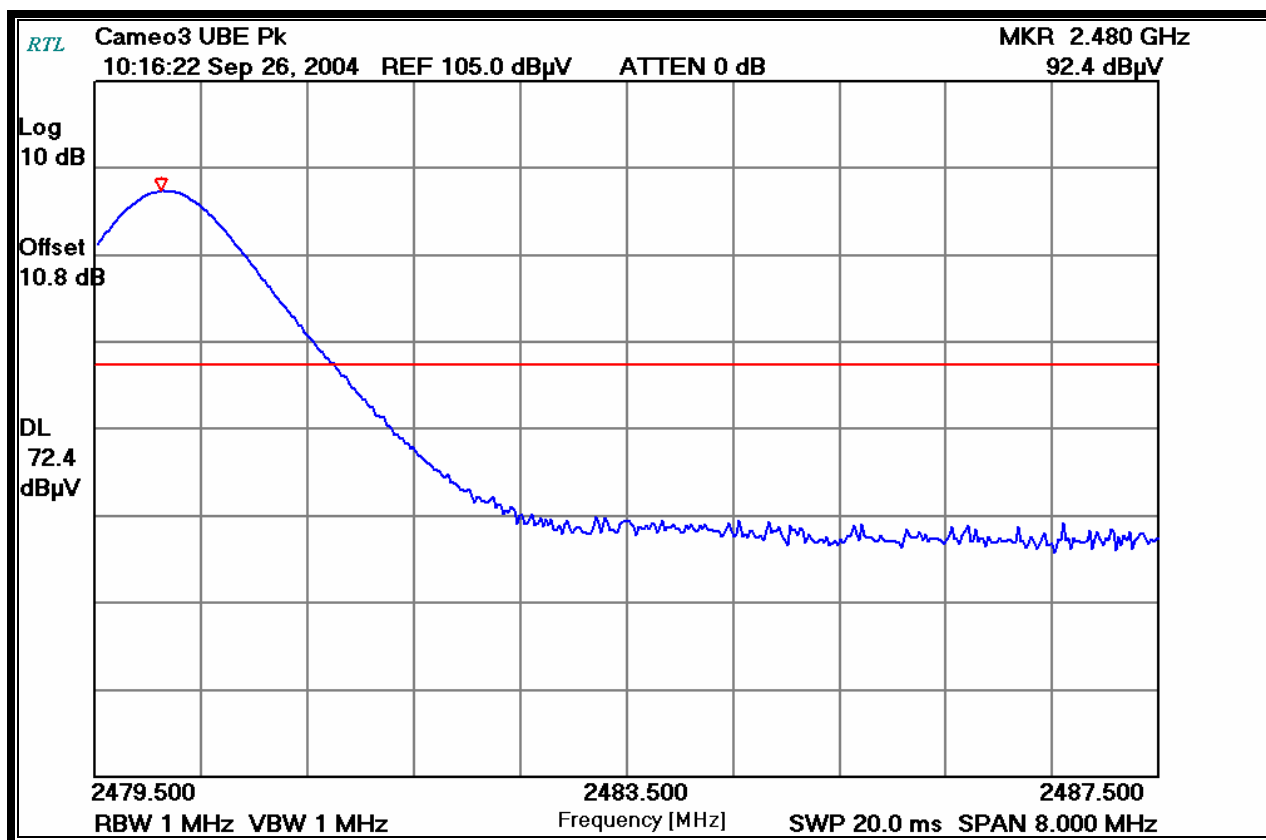
Channel Number: 80
Frequency (MHz): 2480
Resolution Bandwidth (MHz): 1
Video Bandwidth (Hz): 10
Sweep Time (s): 5

PLOT 3-17: UPPER BAND EDGE: AVERAGE MEASUREMENT CAMEO 3



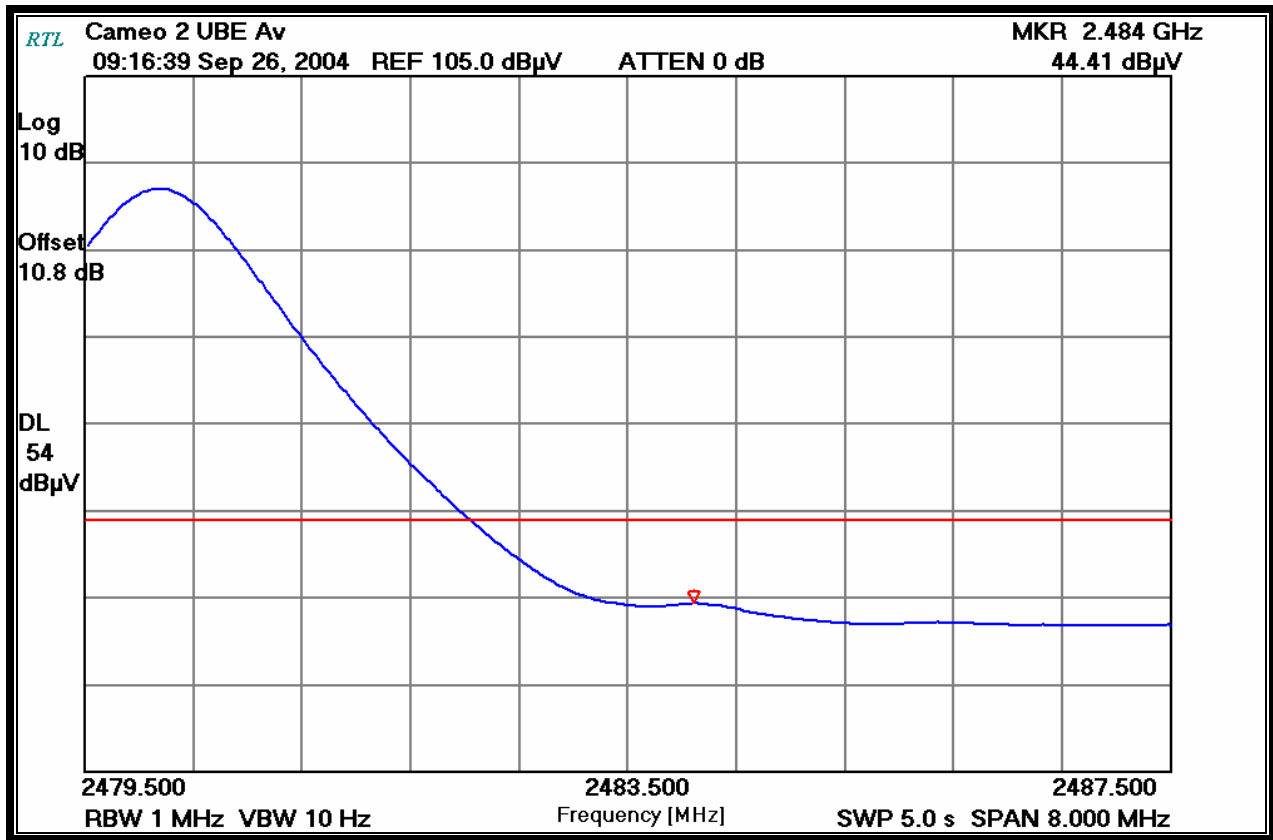
Channel Number: 80
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-18: UPPER BAND EDGE: PEAK MEASUREMENT CAMEO 3



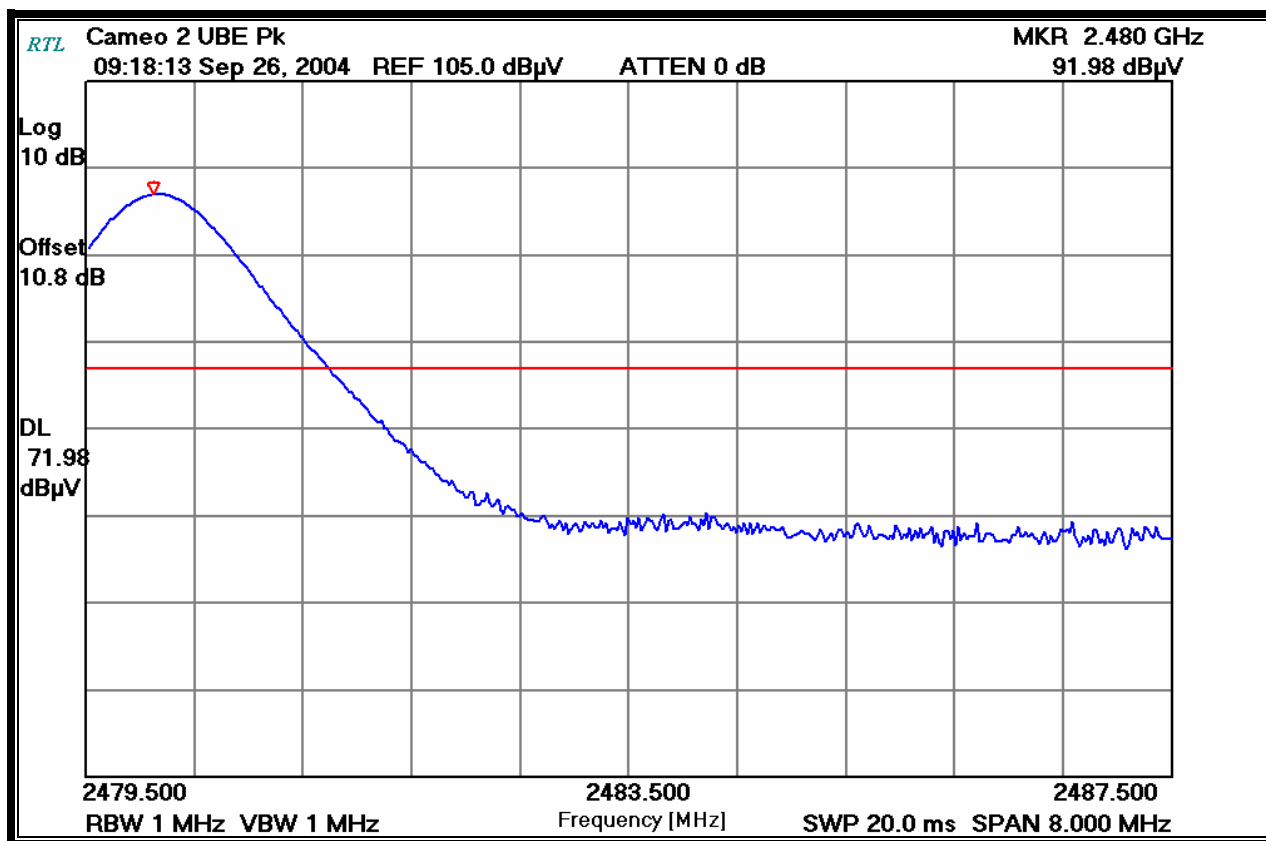
Channel Number: 80
Frequency (MHz): 2480
Resolution Bandwidth (MHz): 1
Video Bandwidth (Hz): 10
Sweep Time (s): 5

PLOT 3-19: UPPER BAND EDGE: AVERAGE MEASUREMENT CAMEO 2



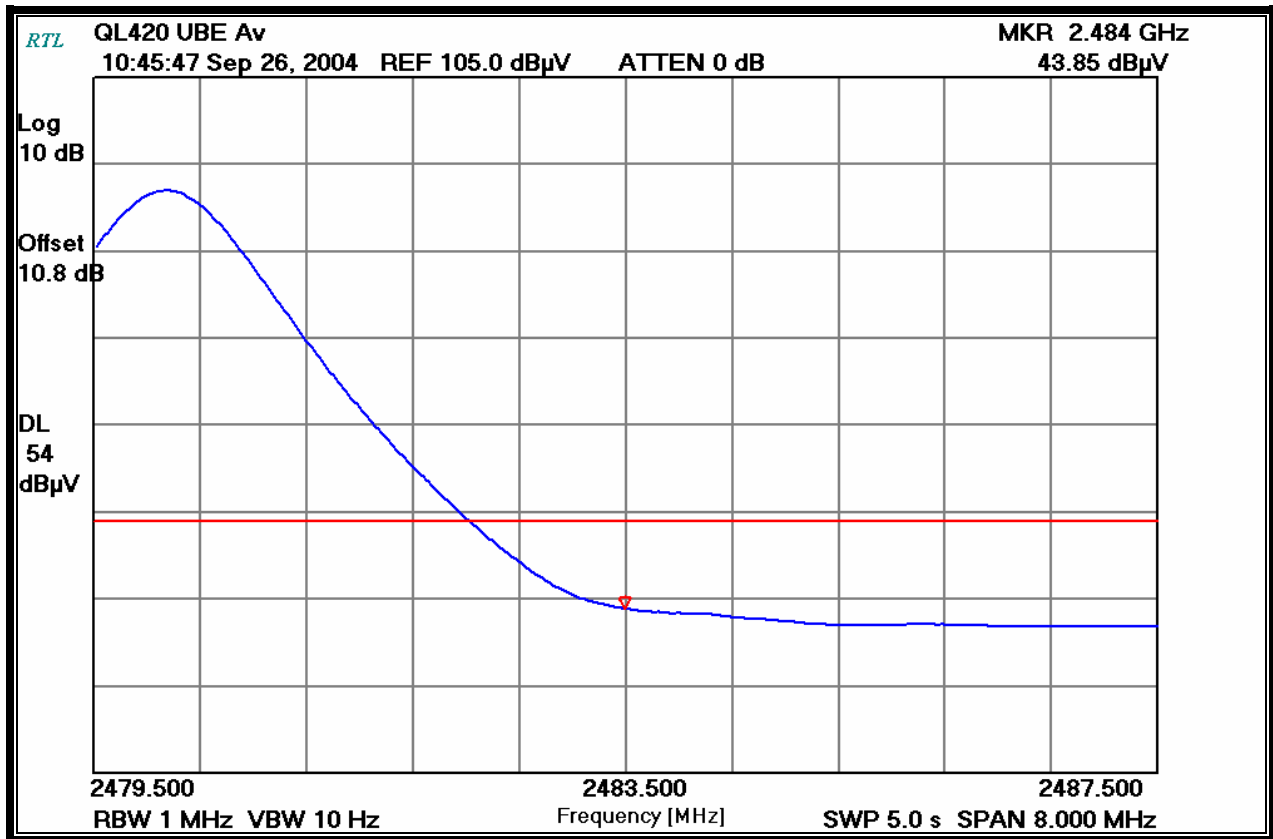
Channel Number: 80
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-20: UPPER BAND EDGE: PEAK MEASUREMENT CAMEO 2



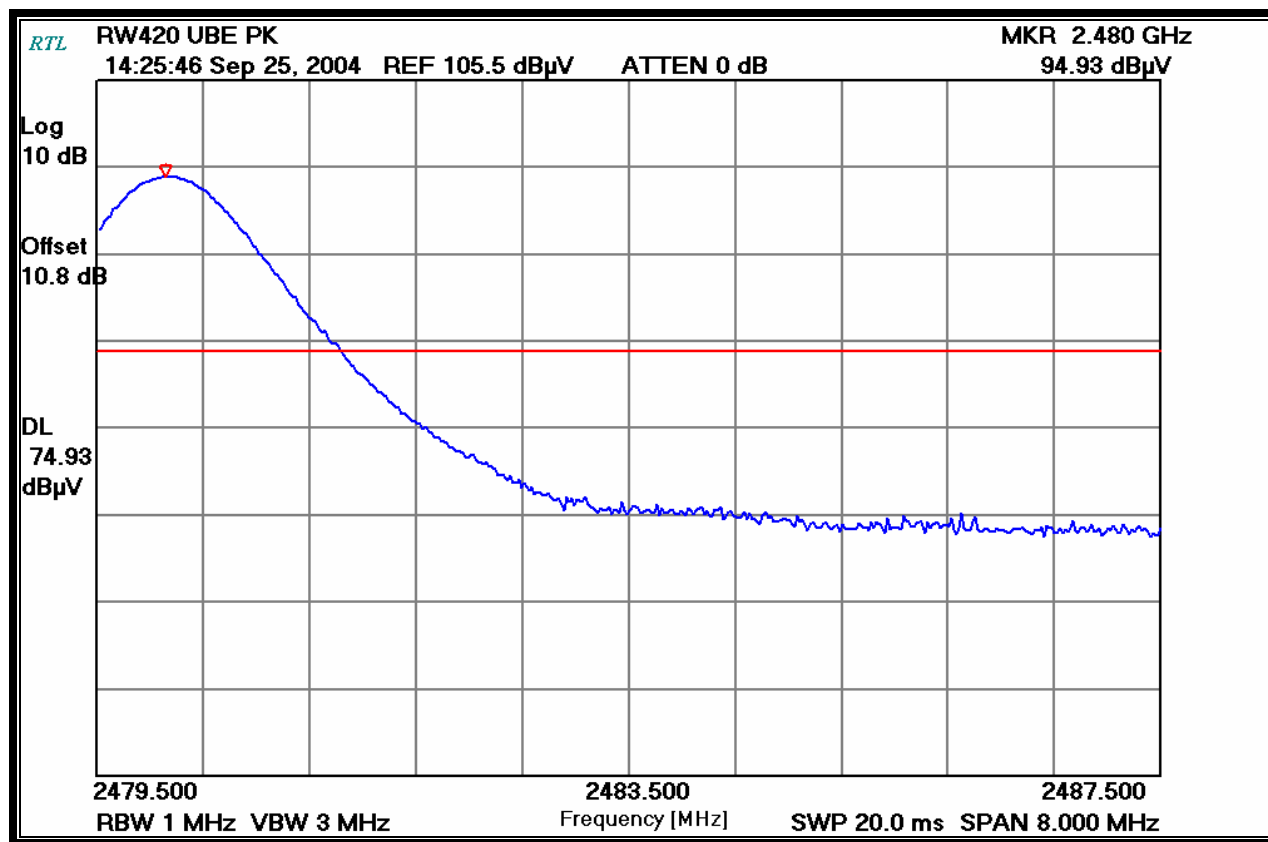
Channel Number: 80
Frequency (MHz): 2480
Resolution Bandwidth (MHz): 1
Video Bandwidth (Hz): 10
Sweep Time (s): 5

PLOT 3-21: UPPER BAND EDGE: AVERAGE MEASUREMENT QL-420



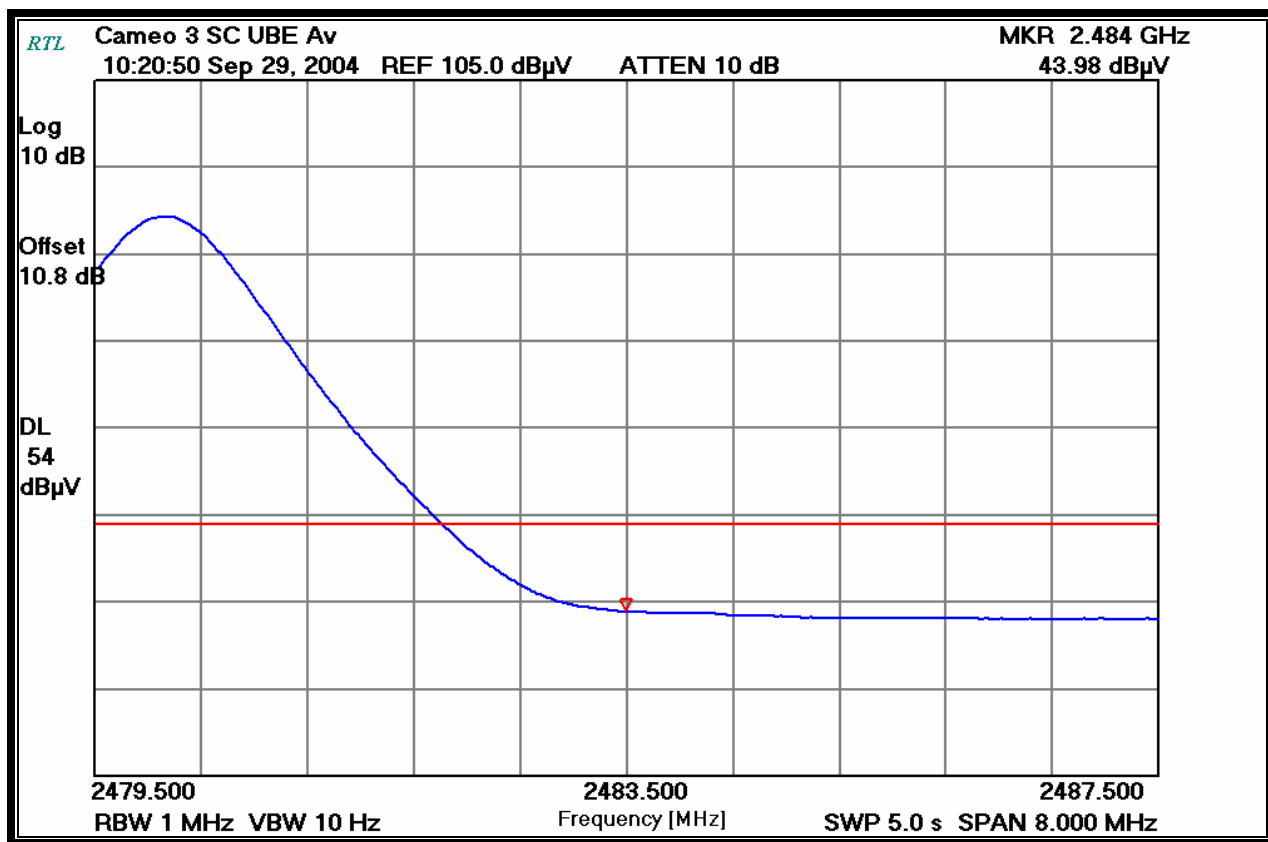
Channel Number: 80
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 3
 Sweep Time (ms): 20

PLOT 3-22: UPPER BAND EDGE: PEAK MEASUREMENT QL-420



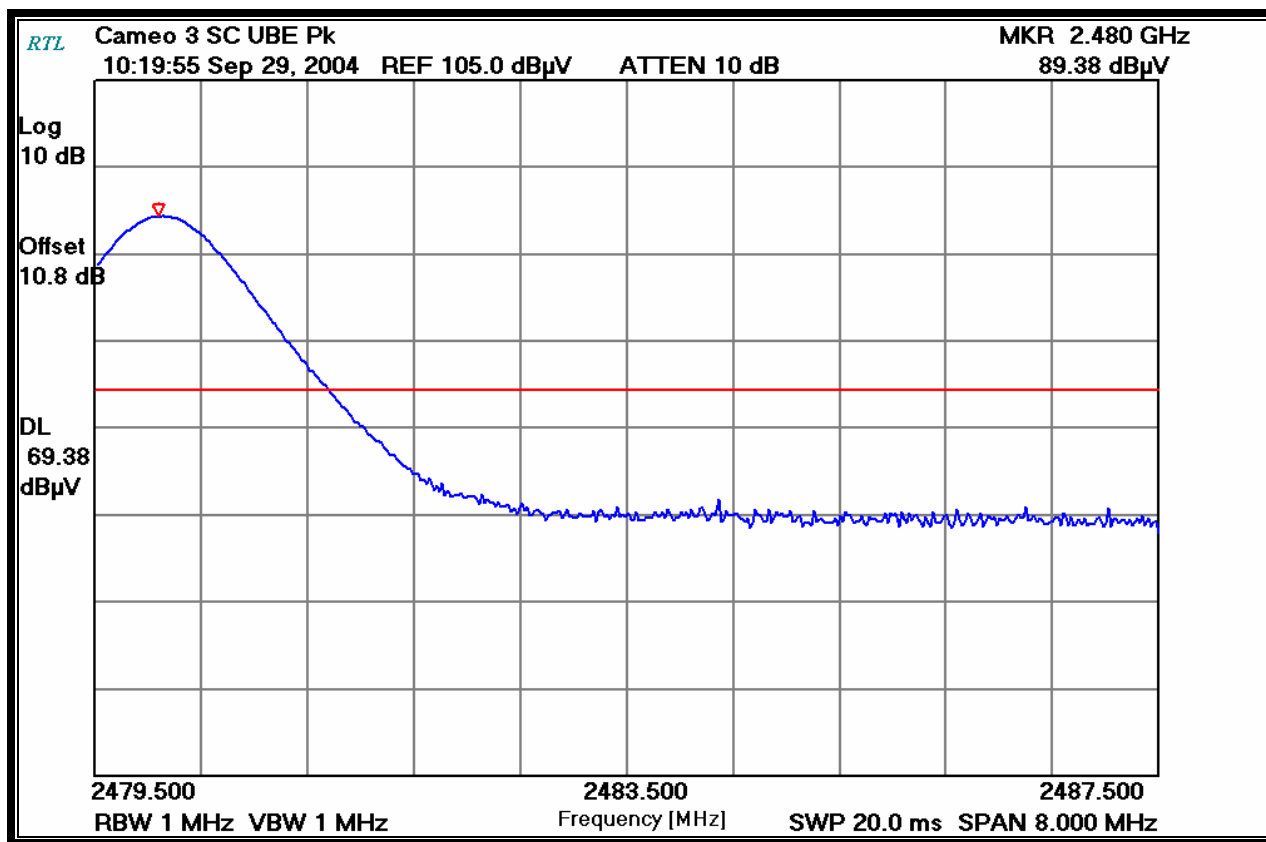
Channel Number: 80
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (Hz): 10
 Sweep Time (s): 5

PLOT 3-23: UPPER BAND EDGE: AVERAGE MEASUREMENT CAMEO 3 SC



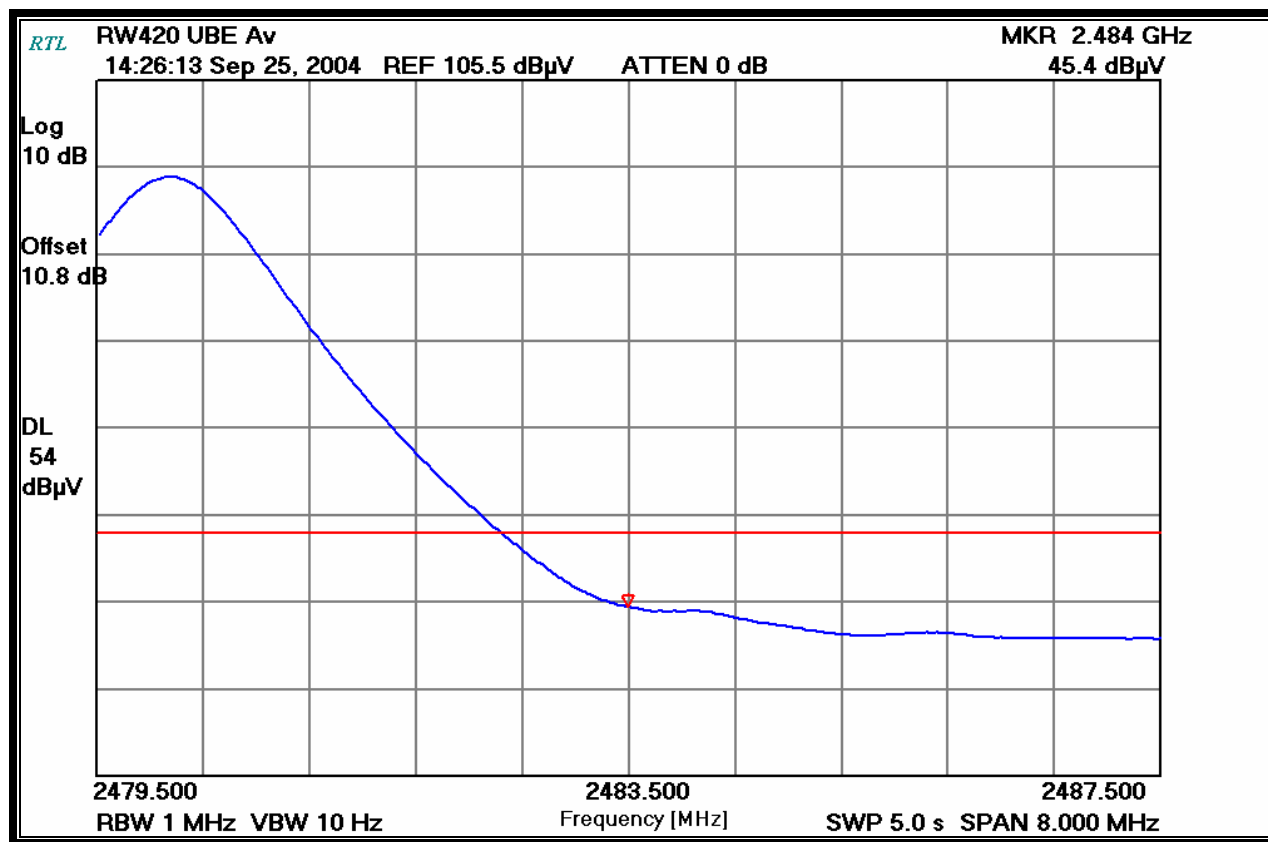
Channel Number: 80
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-24: UPPER BAND EDGE: PEAK MEASUREMENT CAMEO 3 SC



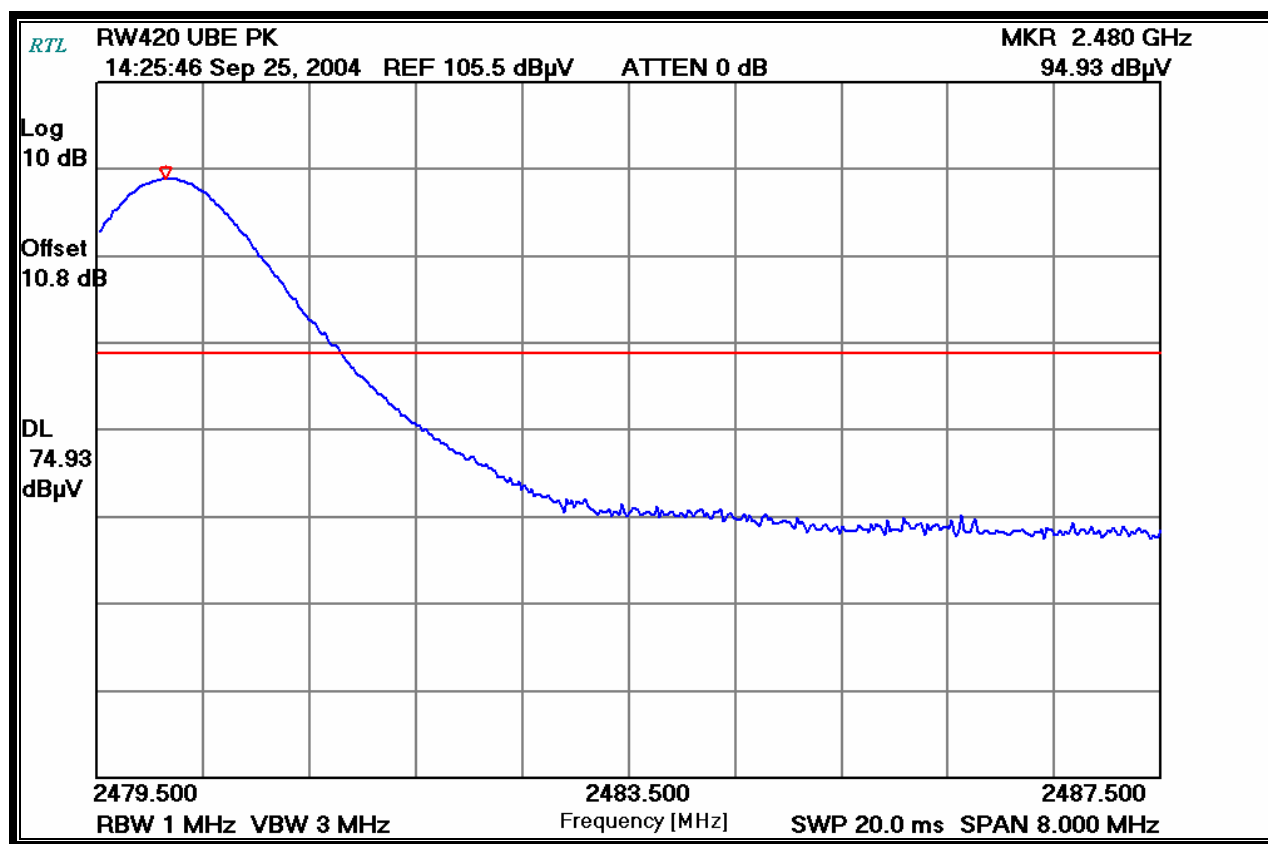
Channel Number: 80
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (Hz): 10
 Sweep Time (s): 5

PLOT 3-25: UPPER BAND EDGE: AVERAGE MEASUREMENT RW-420



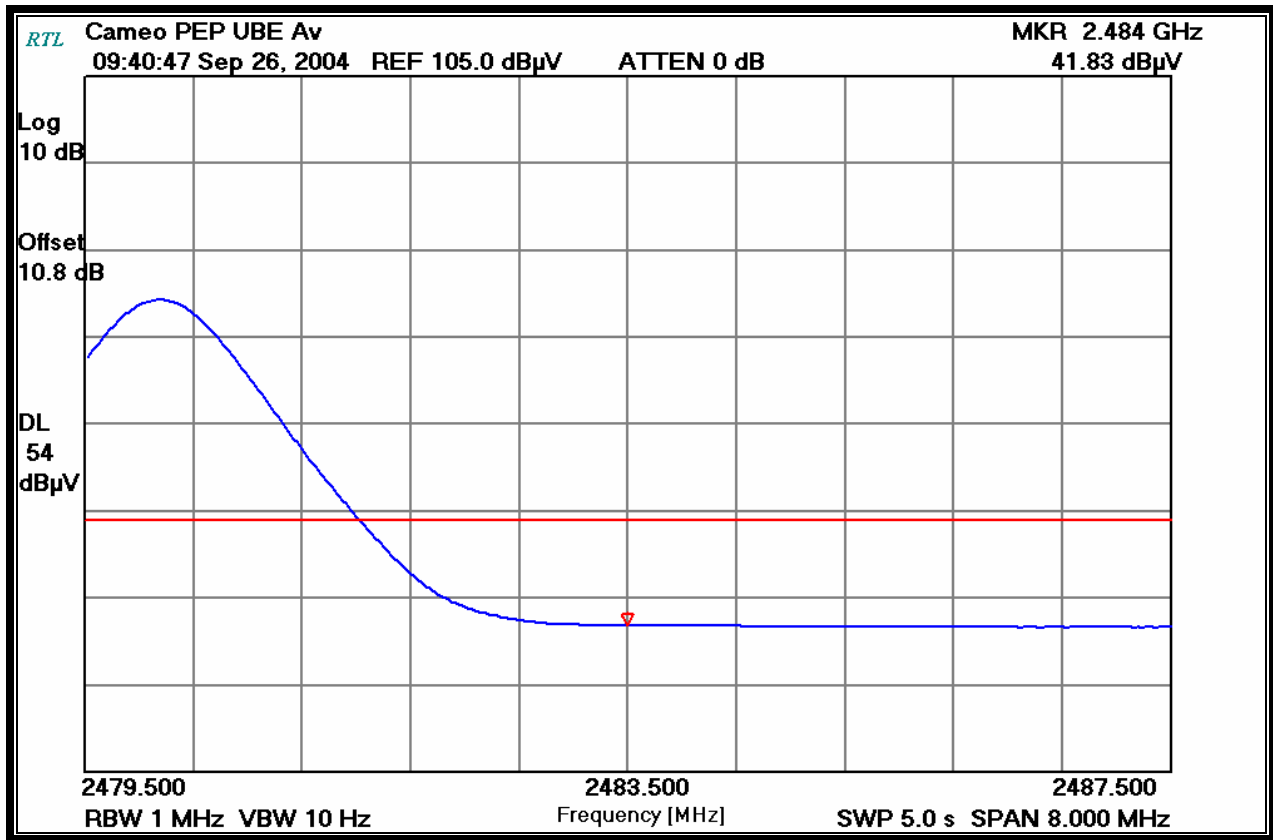
Channel Number: 80
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 3
 Sweep Time (ms): 20

PLOT 3-26: UPPER BAND EDGE: PEAK MEASUREMENT RW-420



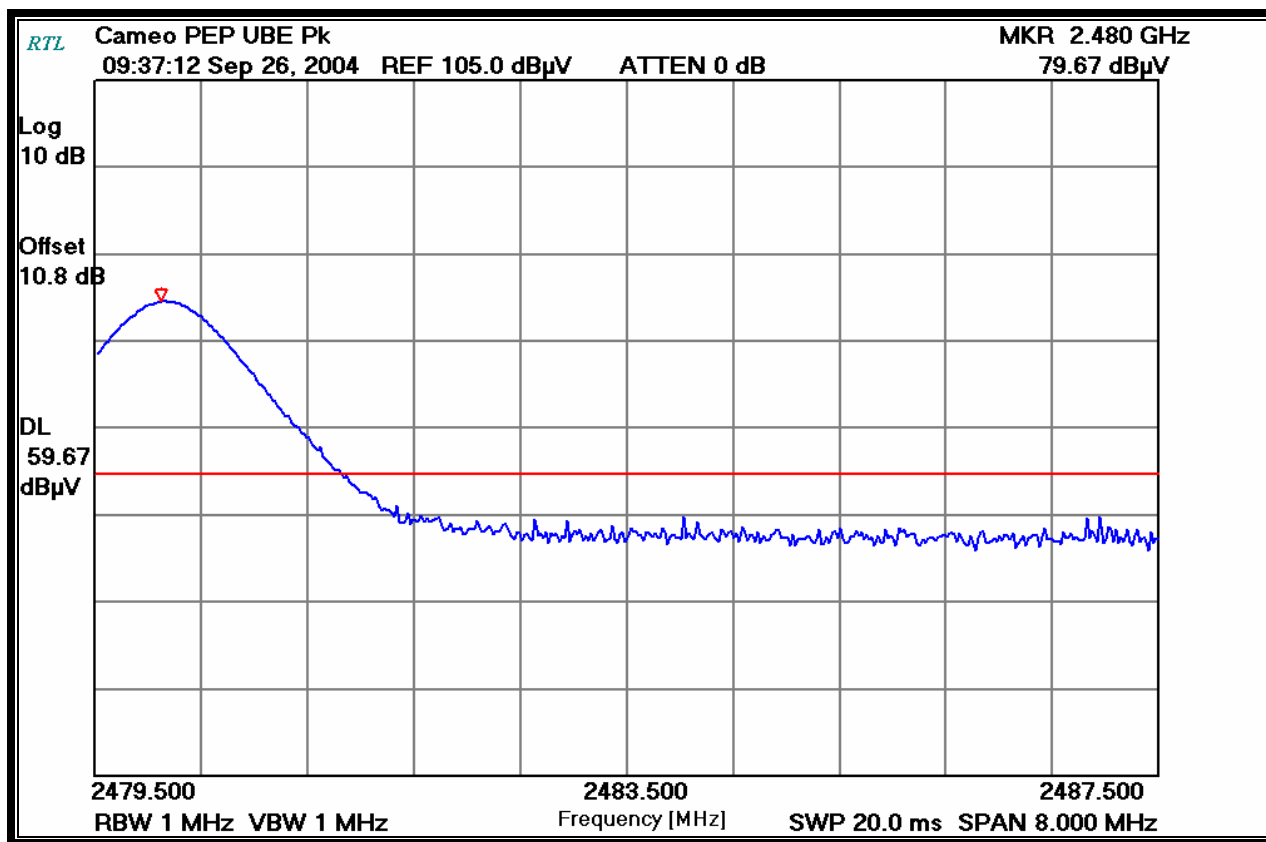
Channel Number: 80
Frequency (MHz): 2480
Resolution Bandwidth (MHz): 1
Video Bandwidth (Hz): 10
Sweep Time (s): 5

PLOT 3-27: UPPER BAND EDGE: AVERAGE MEASUREMENT CAMEO 3 PEP



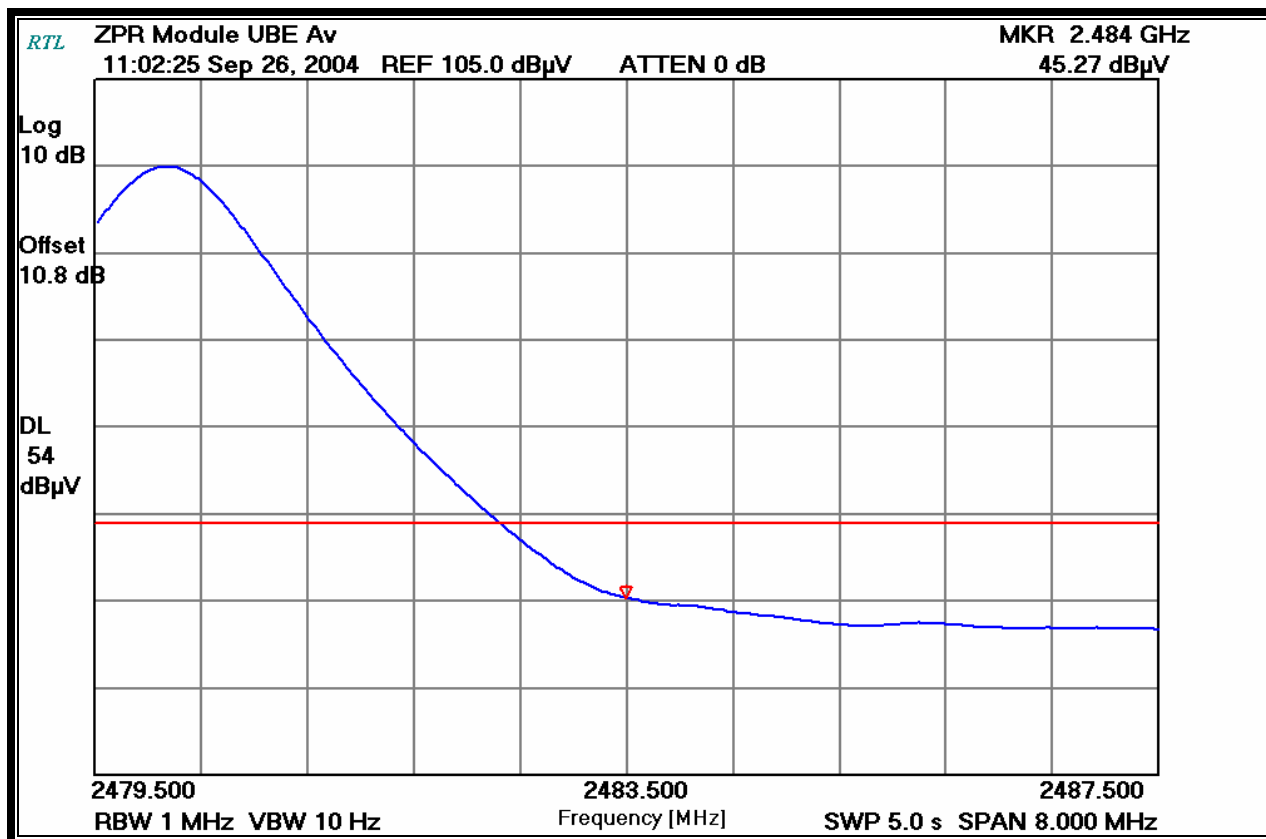
Channel Number: 80
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-28: UPPER BAND EDGE: PEAK MEASUREMENT CAMEO 3 PEP



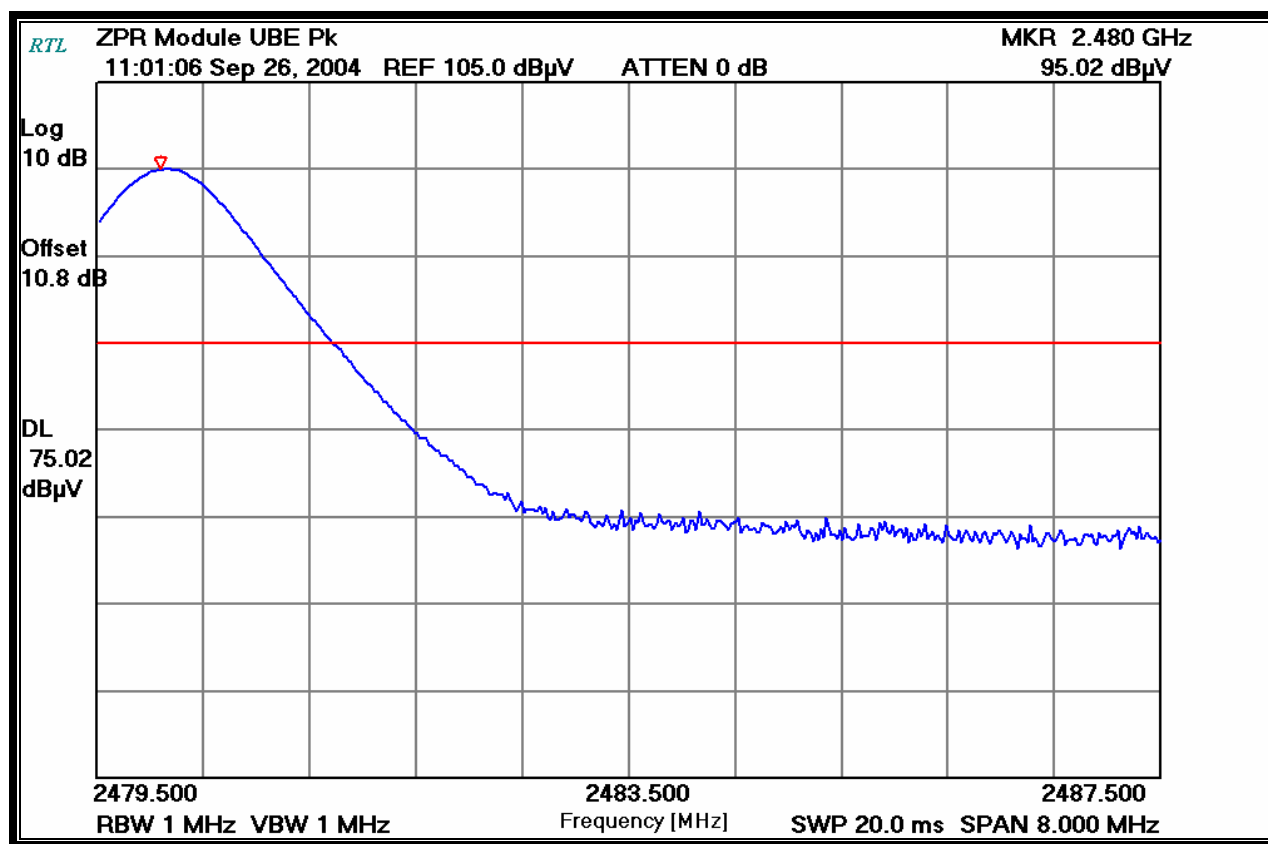
Channel Number: 80
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (Hz): 10
 Sweep Time (s): 5

PLOT 3-29: UPPER BAND EDGE: AVERAGE MEASUREMENT ZPR POD



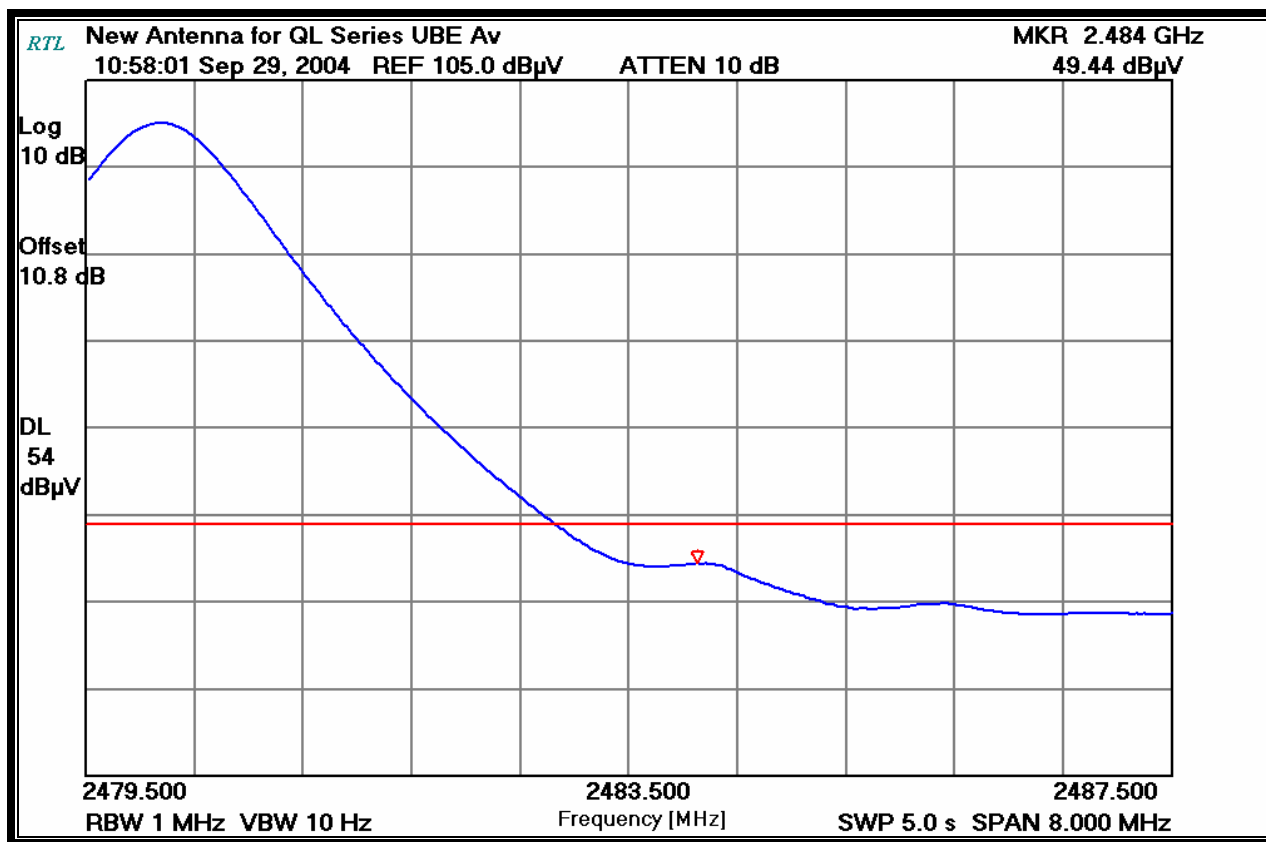
Channel Number: 80
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (MHz): 1
 Sweep Time (ms): 20

PLOT 3-30: UPPER BAND EDGE: PEAK MEASUREMENT ZPR POD



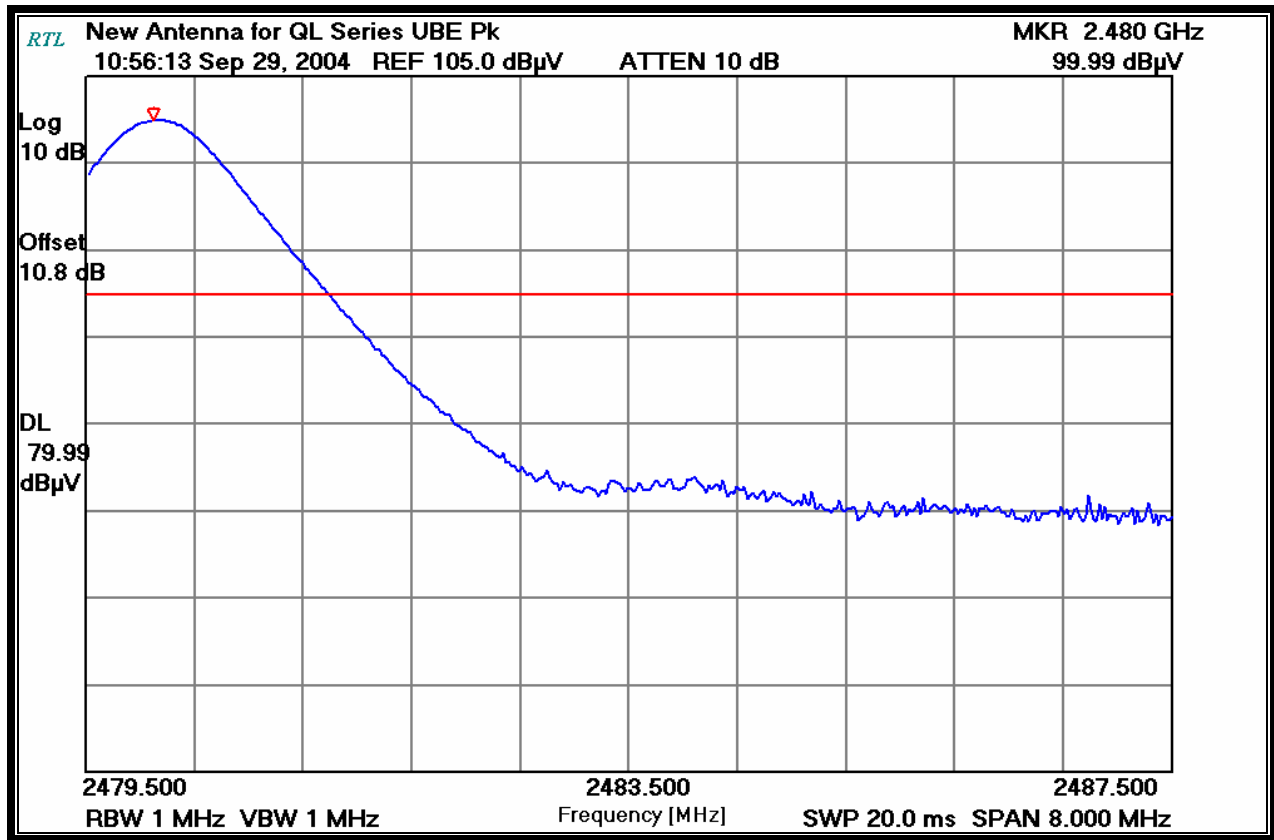
Channel Number: 2
 Frequency (MHz): 2480
 Resolution Bandwidth (MHz): 1
 Video Bandwidth (Hz): 10
 Sweep Time (s): 5

PLOT 3-31: UPPER BAND EDGE: AVERAGE MEASUREMENT QL SERIES ANTENNA



Channel Number: 2
Frequency (MHz): 2480
Resolution Bandwidth (MHz): 1
Video Bandwidth (MHz): 1
Sweep Time (ms): 20

PLOT 3-32: UPPER BAND EDGE: PEAK MEASUREMENT QL SERIES ANTENNA



TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer

Signature

September 25/26/29, 2004
Dates Of Test

4 CONDUCTED LIMITS – FCC §15.207; IC RSS-210 §6.6 AND 7.4

The EUT is battery operated, but an AC Adapter provided 10 VDC to power the Bluetooth module, and conducted line emission data is presented.

4.1 TEST METHODOLOGY FOR CONDUCTED EMISSIONS MEASUREMENTS

The power line conducted emission measurements were performed in a Series 81 type shielded enclosure manufactured by Rayproof. The EUT was assembled on a wooden table 80 centimeters high. Power was fed to the EUT through a 50 ohm / 50 microhenry Line Impedance Stabilization Network (EUT LISN). The EUT LISN was fed power through an A.C. filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. A second LISN, the peripheral LISN, provides isolation for the EUT test peripherals. This peripheral LISN was also fed A.C. power. A metal power outlet box, which is bonded to the ground plane and electrically connected to the peripheral LISN, powers the EUT host peripherals.

The spectrum analyzer was connected to the A.C. line through an isolation transformer. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input through a Solar 7 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 7 kHz. Conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The analyzer's 6 dB bandwidth was set to 9 kHz. No video filter less than 10 times the resolution bandwidth was used. Average measurements are performed in linear mode using a 10 kHz resolution bandwidth, a 1 Hz video bandwidth, and by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in this report.

Note: Rhein Tech Laboratories, Inc. has implemented procedures to minimize errors that occur from test instruments, calibration, procedures, and test setups. Test instrument and calibration errors are documented from the manufacturer or calibration lab. Other errors have been defined and calculated within the Rhein Tech Quality Manual, Section 6.1. Rhein Tech implements the following procedures to minimize errors that may occur: yearly as well as daily calibration methods, technician training, and emphasis to employees on avoiding errors.

4.2 CONDUCTED EMISSION TEST

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. If the conducted emissions exceed the limit with the instrument set to the quasi-peak mode, then measurements are made in the average mode. If the quasi-peak measurement is at least 6 dB higher than the amplitude in the average mode, the level measured in the quasi-peak mode may be reduced by 13 dB before comparing it to the limit.

The conducted test was performed with the EUT exercise program loaded, and the emissions were scanned between 150 kHz to 30 MHz on the NEUTRAL SIDE and PHASE SIDE.

TABLE 4-1: CONDUCTED EMISSION TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900339	Hewlett Packard	85650A	Quasi-Peak Adapter (30 Hz - 1 GHz)	2521A00743	4/28/05
901084	AFJ International	LS16	16A LISN	16010020082	12/4/04
900968	Hewlett Packard	8567A	Spectrum Analyzer (10 kHz - 1.5 GHz)	2602A00160	4/28/2005
900970	Hewlett Packard	85662A	Spectrum Analyzer Display	2542A11239	4/28/2005

4.3 CONDUCTED SPURIOUS EMISSIONS TEST DATA

TABLE 4-2: CONDUCTED EMISSIONS RECEIVER (LINE 1)

Temperature: 74°F Humidity: 54%										
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/Fail	Comments
0.184	Pk	44.2	1.8	46.0	64.3	-18.3	54.3	-8.3	Pass	
0.241	Pk	42.1	1.4	43.5	62.1	-18.6	52.1	-8.6	Pass	
0.388	Pk	39.3	1.0	40.3	58.1	-17.8	48.1	-7.8	Pass	
0.880	Pk	40.4	0.8	41.2	56.0	-14.8	46.0	-4.8	Pass	
21.920	Pk	29.4	4.0	33.4	60.0	-26.6	50.0	-16.6	Pass	
24.570	Pk	30.0	4.3	34.3	60.0	-25.7	50.0	-15.7	Pass	

TABLE 4-3: CONDUCTED EMISSIONS RECEIVER (LINE 2)

Temperature: 74°F Humidity: 54%										
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/Fail	Comments
0.182	Pk	39.2	1.8	41.0	64.4	-23.4	54.4	-13.4	Pass	
0.244	Pk	39.7	1.4	41.1	62.0	-20.9	52.0	-10.9	Pass	
0.484	Pk	38.2	0.9	39.1	56.3	-17.2	46.3	-7.2	Pass	
1.210	Pk	35.4	1.0	36.4	56.0	-19.6	46.0	-9.6	Pass	
6.400	Pk	28.3	2.1	30.4	60.0	-29.6	50.0	-19.6	Pass	
20.500	Pk	23.6	3.9	27.5	60.0	-32.5	50.0	-22.5	Pass	

TABLE 4-4: CONDUCTED EMISSIONS TRANSMITTER (LINE 1) CHANNEL 2 (2402 MHZ)

Temperature: 74°F					Humidity: 54%					Comments
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/Fail	
0.180	Pk	43.1	1.8	44.9	64.5	-19.6	54.5	-9.6	Pass	
0.241	Pk	41.4	1.4	42.8	62.1	-19.3	52.1	-9.3	Pass	
0.420	Pk	41.8	1.0	42.8	57.4	-14.6	47.4	-4.6	Pass	
1.440	Pk	36.1	1.1	37.2	56.0	-18.8	46.0	-8.8	Pass	
22.090	Pk	31.2	4.0	35.2	60.0	-24.8	50.0	-14.8	Pass	
24.690	Pk	31.2	4.3	35.5	60.0	-24.5	50.0	-14.5	Pass	

TABLE 4-5: CONDUCTED EMISSIONS TRANSMITTER (LINE 2) CHANNEL 2 (2402 MHZ)

Temperature: 74°F					Humidity: 54%					Comments
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/Fail	
0.184	Pk	40.1	1.8	41.9	64.3	-22.4	54.3	-12.4	Pass	
0.242	Pk	34.5	1.4	35.9	62.0	-26.1	52.0	-16.1	Pass	
0.423	Pk	39.2	1.0	40.2	57.4	-17.2	47.4	-7.2	Pass	
1.180	Pk	33.4	1.0	34.4	56.0	-21.6	46.0	-11.6	Pass	
6.750	Pk	29.2	2.2	31.4	60.0	-28.6	50.0	-18.6	Pass	
23.980	Pk	25.8	4.2	30.0	60.0	-30.0	50.0	-20.0	Pass	

TABLE 4-6: CONDUCTED EMISSIONS TRANSMITTER (LINE 1) CHANNEL 40 (2440 MHZ)

Temperature: 74°F					Humidity: 54%					
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/Fail	Comments
0.180	Pk	44.1	1.8	45.9	64.5	-18.6	54.5	-8.6	Pass	
0.240	Pk	41.1	1.4	42.5	62.1	-19.6	52.1	-9.6	Pass	
0.421	Pk	41.6	1.0	42.6	57.4	-14.8	47.4	-4.8	Pass	
2.330	Pk	35.7	1.5	37.2	56.0	-18.8	46.0	-8.8	Pass	
25.040	Pk	30.9	4.3	35.2	60.0	-24.8	50.0	-14.8	Pass	
27.730	Pk	30.7	4.4	35.1	60.0	-24.9	50.0	-14.9	Pass	

TABLE 4-7: CONDUCTED EMISSIONS TRANSMITTER (LINE 2) CHANNEL 40 (2440 MHZ)

Temperature: 74°F					Humidity: 54%					
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/Fail	Comments
0.179	Pk	42.7	1.8	44.5	64.5	-20.0	54.5	-10.0	Pass	
0.241	Pk	39.8	1.4	41.2	62.1	-20.9	52.1	-10.9	Pass	
0.423	Pk	35.6	1.0	36.6	57.4	-20.8	47.4	-10.8	Pass	
1.240	Pk	35.6	1.0	36.6	56.0	-19.4	46.0	-9.4	Pass	
6.340	Pk	29.4	2.1	31.5	60.0	-28.5	50.0	-18.5	Pass	
24.690	Pk	23.3	4.3	27.6	60.0	-32.4	50.0	-22.4	Pass	

TABLE 4-8: CONDUCTED EMISSIONS TRANSMITTER (LINE 1) CHANNEL 80 (2480 MHZ)

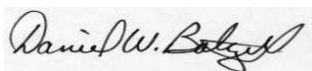
Temperature: 74°F Humidity: 54%										
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/Fail	Comments
0.182	Pk	43.7	1.8	45.5	64.4	-18.9	54.4	-8.9	Pass	
0.242	Pk	42.6	1.4	44.0	62.0	-18.0	52.0	-8.0	Pass	
0.481	Pk	40.5	0.9	41.4	56.3	-14.9	46.3	-4.9	Pass	
0.650	Pk	37.3	0.8	38.1	56.0	-17.9	46.0	-7.9	Pass	
21.860	Pk	28.0	4.0	32.0	60.0	-28.0	50.0	-18.0	Pass	
24.690	Pk	28.8	4.3	33.1	60.0	-26.9	50.0	-16.9	Pass	

TABLE 4-9: CONDUCTED EMISSIONS TRANSMITTERS (LINE 2) CHANNEL 80 (2480 MHZ)

Temperature: 74°F Humidity: 54%										
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/Fail	Comments
0.182	Pk	39.2	1.8	41.0	64.4	-23.4	54.4	-13.4	Pass	
0.244	Pk	39.7	1.4	41.1	62.0	-20.9	52.0	-10.9	Pass	
0.484	Pk	38.2	0.9	39.1	56.3	-17.2	46.3	-7.2	Pass	
1.210	Pk	35.4	1.0	36.4	56.0	-19.6	46.0	-9.6	Pass	
6.400	Pk	28.3	2.1	30.4	60.0	-29.6	50.0	-19.6	Pass	
20.500	Pk	23.6	3.9	27.5	60.0	-32.5	50.0	-22.5	Pass	

TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer



Signature

September 27, 2004
Date Of Test

5 RADIATED EMISSION LIMITS RECEIVER/DIGITAL INTERFACE – FCC §15.109; IC RSS-210 §7.3

5.1 RECEIVER/DIGITAL INTERFACE RADIATED EMISSION LIMITS TEST PROCEDURE

Emissions from the digital portion of the EUT were tested and found to comply with the requirements of FCC Part 15.209.

5.2 RECEIVER/DIGITAL INTERFACE RADIATED EMISSIONS TEST EQUIPMENT

TABLE 5-1: RECEIVER/DIGITAL INTERFACE RADIATED EMISSIONS TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900889	Hewlett Packard	85685A	RF Preselector for HP 8566B or 8568B (20 Hz - 2 GHz)	3146A01309	3/10/05
900905	Rhein Tech Labs	PR-1040	Amplifier	900905	9/10/05
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	6/23/05
900969	Hewlett Packard	85650A	Quasi-Peak Adapter	2412A00414	6/23/05
901053	Schaffner Chase	CBL6112B	Bi-Log Antenna (20 MHz - 2 GHz)	2648	9/20/05

5.3 RECEIVER/DIGITAL INTERFACE RADIATED EMISSION LIMITS TEST DATA

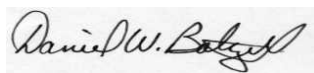
TABLE 5-2: RECEIVER/DIGITAL INTERFACE RADIATED EMISSIONS

Temperature: 74°F Humidity: 43%									
Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
144.000	Qp	H	0	1.0	38.1	-19.4	18.7	43.5	-24.8
176.000	Qp	H	0	1.0	34.1	-20.6	13.5	43.5	-30.0
240.000	Qp	H	0	1.4	41.3	-17.6	23.7	46.0	-22.3
1200.996	Av	H	0	1.5	36.3	1.4	37.7	54.0	-16.3
1200.996	Pk	H	0	1.0	46.6	9.4	56.0	74.0	-18.0
1220.498	Av	H	0	1.0	36.1	1.9	38.0	54.0	-16.0
1220.498	Pk	H	0	1.0	46.7	9.7	56.4	74.0	-17.6
1239.998	Av	H	0	1.0	35.9	2.4	38.3	54.0	-15.7
1239.998	Pk	H	0	1.0	47.4	10.0	57.4	74.0	-16.6

QP: RES. = 120 kHz, VID= 120 kHz; PK: RES. = 1MHz, VID = 1 MHz; AV: RES. = 1MHz, VID= 10 Hz

TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer



Signature

September 27, 2004
and December 6, 2004

Date Of Test

6 RADIATED EMISSION LIMITS; SPURIOUS AND HARMONICS – FCC §15.247; IC RSS-210 §6.3

6.1 RADIATED SPURIOUS EMISSION LIMITS TEST PROCEDURE

Radiated Spurious Emissions applies to harmonics and spurious emissions that fall in the restricted and non-restricted bands. The restricted bands are listed in Part 15.205. The maximum permitted average field strength for the restricted band is listed in Part 15.209. The EUT was tested in the 3 orthogonal planes at a 1 meter distance, since the amplitudes of the harmonics were not visible at 3 meters, and interpolated to 3 meters in the report results.

6.2 RADIATED SPURIOUS TEST EQUIPMENT

TABLE 6-1: RADIATED SPURIOUS EMISSIONS TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	5/20/07
900323	EMCO	3160-7	Horn Antennas (8.2 - 12.4 GHz)	9605-1054	5/20/07
900356	EMCO	3160-08	Horn Antennas (12.4 – 18 GHz)	9607-1044	5/20/07
900321	EMCO	3161-03	Horn Antenna (4.0 - 8.2 GHz)	9508-1020	5/20/07
901053	Schaffner & Chase	CBL6112B	Bilog Antenna (20 MHz - 2 GHz)	2648	9/20/05
900905	Rhein Tech Laboratories	PR-1040	Pre Amplifier 40 dB (10 MHz – 2 GHz)	1006	9/10/05
900325	EMCO	3160-9	Horn Antennas (18 – 26.5 GHz)	9605-1051	5/20/07
900814	Electro-Metrics	EM-6961 (RGA-60)	Double Ridged Guide Antenna (1 - 18 GHz)	2310	2/17/06
900889	Hewlett Packard	85685A	RF Preselector for HP 8566B or 8568B (20 Hz - 2 GHz)	3146A01309	3/10/05
900905	Rhein Tech Labs	PR-1040	Amplifier	900905	9/10/05
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	6/23/05
900930	Hewlett Packard	85662A	Spectrum Analyzer Display Section	3144A20839	6/23/05
900932	Hewlett Packard	8449B	Microwave Preamplifier, (1 - 26.5 GHz)	3008A00505	5/5/05
900969	Hewlett Packard	85650A	Quasi-Peak Adapter	2412A00414	6/23/05

6.3 RADIATED EMISSIONS HARMONICS/SPURIOUS TEST DATA

Operating Frequency (MHz): 2402
Measured Level at 100 kHz (dBuV/m): 87.4
Limit (dBuV/m): 67.4

TABLE 6-2: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 2; 2402 MHZ; RW-420)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1180.5	29.1	-13.2	15.9	54.0	-38.1
2401.0	36.0	10.6	46.6	67.4	-20.8
2403.0	49.2	10.6	59.8	67.4	-7.6
4804.0	3.5	14.3	17.8	54.0	-36.2
7206.0	3.7	13.1	16.8	67.4	-50.6
9608.0	4.5	18.7	23.2	67.4	-44.2
12010.0	5.7	19.5	25.2	54.0	-28.8
14412.0	5.3	20.5	25.8	67.4	-41.6

Operating Frequency (MHz): 2440
Measured Level at 100 kHz (dBuV/m): 89.4
Limit (dBuV/m): 69.4

TABLE 6-3: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 40; 2440 MHZ; RW-420)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1218.505	28.7	28.6	-13.0	15.6	54.0	-38.4
2439.000	19.3	19.2	14.2	33.4	69.4	-36.0
2441.000	44.7	44.6	14.2	58.8	69.4	-10.6
4880.000	15.8	15.6	14.2	29.8	54.0	-24.2
7320.000	8.7	8.5	12.6	21.1	54.0	-32.9
9760.000	11.7	11.6	15.4	27.0	69.4	-42.4
12200.000	1.7	1.5	19.2	20.7	54.0	-33.3

Operating Frequency (MHz): 2480
Measured Level at 100 kHz (dBuV/m): 87.5
Limit (dBuV/m): 67.5

TABLE 6-4: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 80; 2480 MHZ; RW-420)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1258.5	29.5	-11.2	18.3	67.5	-49.2
2479.0	43.2	10.8	54.0	67.5	-13.5
2481.0	41.2	10.8	52.0	67.5	-15.5
4960.0	5.3	14.6	19.9	54.0	-34.1
7440.0	4.8	13.5	18.3	54.0	-35.7
9920.0	6.0	18.3	24.3	67.5	-43.2
12400.0	4.7	18.4	23.1	54.0	-30.9
14880.0	5.3	21.8	27.1	67.5	-40.4

Operating Frequency (MHz): 2402
Measured Level at 100 kHz (dBuV/m): 86.1
Limit (dBuV/m): 66.1

TABLE 6-5: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 2; 2402 MHZ; CAMEO 3 SC)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1180.5	47.8	-13.2	34.6	54.0	-19.4
2401.0	38.5	10.6	49.1	66.1	-17.0
2403.0	42.3	10.6	52.9	66.1	-13.2
4804.0	5.8	14.3	20.1	54.0	-33.9
7206.0	6.6	13.1	19.7	66.1	-46.4
9608.0	6.1	18.7	24.8	66.1	-41.3
12010.0	7.0	19.5	26.5	54.0	-27.5
14412.0	6.3	20.5	26.8	66.1	-39.3

Operating Frequency (MHz): 2440
Measured Level at 100 kHz (dBuV/m): 85.4
Limit (dBuV/m): 65.4

TABLE 6-6: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 40; 2440 MHZ; CAMEO 3 SC)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1218.505	26.2	26.0	-13.0	13.0	54.0	-41.0
2439.000	29.7	29.5	14.2	43.7	65.4	-21.7
2441.000	37.5	37.4	14.2	51.6	65.4	-13.8
4880.000	15.5	15.3	14.2	29.5	54.0	-24.5
7320.000	2.7	2.5	12.6	15.1	54.0	-38.9
9760.000	9.2	9.0	15.4	24.4	65.4	-41.0
12200.000	-0.6	-0.5	19.2	18.7	54.0	-35.3

Operating Frequency (MHz): 2480
Measured Level at 100 kHz (dBuV/m): 83.5
Limit (dBuV/m): 63.5

TABLE 6-7: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 80; 2480 MHZ; CAMEO 3 SC)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1258.5	24.7	-12.5	12.2	63.5	-51.3
2479.0	40.8	10.8	51.6	63.5	-11.9
2481.0	37.2	10.8	48.0	63.5	-15.5
4960.0	7.0	14.6	21.6	54.0	-32.4
7440.0	6.5	13.5	20.0	54.0	-34.0
9920.0	6.5	18.3	24.8	63.5	-38.7
12400.0	5.8	18.4	24.2	54.0	-29.8
14880.0	5.6	21.8	27.4	63.5	-36.1

Operating Frequency (MHz): 2402
Measured Level at 100 kHz (dBuV/m): 90.6
Limit (dBuV/m): 70.6

TABLE 6-8: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 2; 2402 MHZ; CAMEO 3 PEP)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1180.5	39.7	-13.2	26.5	54.0	-27.5
2401.0	52.5	10.6	63.1	70.6	-7.5
2403.0	53.7	10.6	64.3	70.6	-6.3
4804.0	4.3	14.3	18.6	54.0	-35.4
7206.0	4.7	13.1	17.8	70.6	-52.8
9608.0	4.8	18.7	23.5	70.6	-47.1
12010.0	5.3	19.5	24.8	54.0	-29.2
14412.0	6.0	20.5	26.5	70.6	-44.1

Operating Frequency (MHz): 2440
Measured Level at 100 kHz (dBuV/m): 77.8
Limit (dBuV/m): 57.8

TABLE 6-9: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 40; 2440 MHZ; CAMEO 3 PEP)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1218.505	27.0	26.0	-13.0	13.0	54.0	-41.0
2439.000	22.2	21.9	14.2	36.1	57.8	-21.7
2441.000	27.5	25.4	14.2	39.6	57.8	-18.2
4880.000	13.9	13.7	14.2	27.9	54.0	-26.1
7320.000	4.3	4.0	12.6	16.6	54.0	-37.4
9760.000	10.5	8.9	15.4	24.3	57.8	-33.5
12200.000	1.6	1.0	19.2	20.2	54.0	-33.8

Operating Frequency (MHz): 2480
Measured Level at 100 kHz (dBuV/m): 89.6
Limit (dBuV/m): 69.6

TABLE 6-10: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 80; 2480 MHZ; CAMEO 3 PEP)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1258.5	31.5	-12.5	19.0	69.6	-50.6
2479.0	42.0	10.8	52.8	69.6	-16.8
2481.0	43.7	10.8	54.5	69.6	-15.1
4960.0	4.8	14.6	19.4	54.0	-34.6
7440.0	4.5	13.5	18.0	54.0	-36.0
9920.0	6.5	18.3	24.8	69.6	-44.8
12400.0	5.5	18.4	23.9	54.0	-30.1
14880.0	6.2	21.8	28.0	69.6	-41.6

Operating Frequency (MHz): 2402
Measured Level at 100 kHz (dBuV/m): 95.6
Limit (dBuV/m): 75.6

TABLE 6-11: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 2; 2402 MHZ; CAMEO 2)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1180.5	38.0	-13.2	24.8	54.0	-29.2
2401.0	44.5	10.6	55.1	75.6	-20.5
2403.0	44.8	10.6	55.4	75.6	-20.2
4804.0	5.2	14.3	19.5	54.0	-34.5
7206.0	5.5	13.1	18.6	75.6	-57.0
9608.0	5.8	18.7	24.5	75.6	-51.1
12010.0	6.0	19.5	25.5	54.0	-28.5
14412.0	6.6	20.5	27.1	75.6	-48.5

Operating Frequency (MHz): 2440
Measured Level at 100 kHz (dBuV/m): 91.4
Limit (dBuV/m): 71.4

TABLE 6-12: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 40; 2440 MHZ; CAMEO 2)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1218.505	26.8	26.5	-13.0	13.5	54.0	-40.5
2439.000	35.0	34.6	14.2	48.8	71.4	-22.6
2441.000	42.0	42.0	14.2	56.2	71.4	-15.2
4880.000	12.7	11.7	14.2	25.9	54.0	-28.1
7320.000	1.7	1.0	12.6	13.6	54.0	-40.4
9760.000	13.0	12.9	15.4	28.3	71.4	-43.1
12200.000	1.2	0.7	19.2	19.9	54.0	-34.1

Operating Frequency (MHz): 2480
Measured Level at 100 kHz (dBuV/m): 93.8
Limit (dBuV/m): 73.8

TABLE 6-13: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 80; 2480 MHZ; CAMEO 2)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1258.5	30.0	-12.5	17.5	73.8	-56.3
2479.0	47.5	10.8	58.3	73.8	-15.5
2481.0	41.0	10.8	51.8	73.8	-22.0
4960.0	6.3	14.6	20.9	54.0	-33.1
7440.0	6.2	13.5	19.7	54.0	-34.3
9920.0	6.5	18.3	24.8	73.8	-49.0
12400.0	6.3	18.4	24.7	54.0	-29.3
14880.0	6.1	21.8	27.9	73.8	-45.9

Operating Frequency (MHz): 2402
Measured Level at 100 kHz (dBuV/m): 95.3
Limit (dBuV/m): 75.3

TABLE 6-14: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 2; 2402 MHZ; CAMEO 3)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1180.5	34.5	-13.2	21.3	54.0	-32.7
2401.0	48.0	10.6	58.6	75.3	-16.7
2403.0	53.2	10.6	63.8	75.3	-11.5
4804.0	4.8	14.3	19.1	54.0	-34.9
7206.0	4.8	13.1	17.9	75.3	-57.4
9608.0	4.8	18.7	23.5	75.3	-51.8
12010.0	7.1	19.5	26.6	54.0	-27.4
14412.0	6.0	20.5	26.5	75.3	-48.8

Operating Frequency (MHz): 2440
Measured Level at 100 kHz (dBuV/m): 95.6
Limit (dBuV/m): 75.6

TABLE 6-15: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 40; 2440 MHZ; CAMEO 3)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1218.505	26.0	25.5	-13.0	12.5	54.0	-41.5
2439.000	37.2	36.7	14.2	50.9	75.6	-24.7
2441.000	43.8	43.5	14.2	57.7	75.6	-17.9
4880.000	13.1	12.4	14.2	26.6	54.0	-27.4
7320.000	5.7	3.5	12.6	16.1	54.0	-37.9
9760.000	7.6	6.5	15.4	21.9	75.6	-53.7
12200.000	-0.2	-1.0	19.2	18.2	54.0	-35.8

Operating Frequency (MHz): 2480
Measured Level at 100 kHz (dBuV/m): 95.1
Limit (dBuV/m): 75.1

TABLE 6-16: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 80; 2480 MHZ; CAMEO 3)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1258.5	29.2	-11.2	18.0	75.1	-57.1
2479.0	44.0	10.8	54.8	75.1	-20.3
2481.0	41.3	10.8	52.1	75.1	-23.0
4960.0	6.5	14.6	21.1	54.0	-32.9
7440.0	5.5	13.5	19.0	54.0	-35.0
9920.0	6.3	18.3	24.6	75.1	-50.5
12400.0	5.6	18.4	24.0	54.0	-30.0
14880.0	5.1	21.8	26.9	75.1	-48.2

Operating Frequency (MHz): 2402
Measured Level at 100 kHz (dBuV/m): 87.6
Limit (dBuV/m): 67.6

TABLE 6-17: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 2; 2402 MHZ; QL-420)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB0)
1180.5	47.5	-12.2	35.3	54.0	-18.7
2401.0	43.3	10.6	53.9	67.6	-13.7
2403.0	47.5	10.6	58.1	67.6	-9.5
4804.0	4.0	14.3	18.3	54.0	-35.7
7206.0	5.2	13.1	18.3	67.6	-49.3
9608.0	5.8	18.7	24.5	67.6	-43.1
12010.0	6.7	19.5	26.2	54.0	-27.8
14412.0	11.2	20.5	31.7	67.6	-35.9

Operating Frequency (MHz): 2440
Measured Level at 100 kHz (dBuV/m): 88.7
Limit (dBuV/m): 68.7

TABLE 6-18: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 40; 2440 MHZ; QL-420)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB0)
1218.505	27.7	27.4	-13.0	14.4	54.0	-39.6
2437.000	38.2	37.8	14.2	52.0	68.7	-16.7
2438.999	46.2	46.2	14.2	60.4	68.7	-8.3
4879.989	12.7	12.4	14.2	26.6	54.0	-27.4
7319.984	6.8	5.7	12.6	18.3	54.0	-35.7
9759.979	4.3	3.5	15.4	18.9	68.7	-49.8
12199.979	0.6	0.1	19.2	19.3	54.0	-34.7

Operating Frequency (MHz): 2480
Measured Level at 100 kHz (dBuV/m): 88.3
Limit (dBuV/m): 68.3

TABLE 6-19: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 80; 2480 MHZ; QL-420)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB0)
1258.5	37.2	-11.4	25.8	68.3	-42.4
2479.0	37.2	10.8	48.0	68.3	-20.3
2481.0	46.3	10.8	57.1	68.3	-11.2
4960.0	5.8	14.6	20.4	54.0	-33.6
7440.0	5.0	13.5	18.5	54.0	-35.5
9920.0	6.3	18.3	24.6	68.3	-43.7
12400.0	6.3	18.4	24.7	54.0	-29.3
14880.0	6.7	21.8	28.5	68.3	-39.8

Operating Frequency (MHz): 2402
Measured Level at 100 kHz (dBuV/m): 87.3
Limit (dBuV/m): 67.3

TABLE 6-20: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 2; 2402 MHZ; ZPR MODULE)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB0)
1180.5	48.3	-12.2	36.1	54.0	-17.9
2401.0	46.0	10.6	56.6	67.3	-10.7
2403.0	48.8	10.6	59.4	67.3	-7.9
4804.0	4.3	14.3	18.6	54.0	-35.4
7206.0	5.2	13.1	18.3	67.3	-49.0
9608.0	5.7	18.7	24.4	67.3	-42.9
12010.0	5.8	19.5	25.3	54.0	-28.7
14412.0	6.0	20.5	26.5	67.3	-40.8

Operating Frequency (MHz): 2440
Measured Level at 100 kHz (dBuV/m): 91.3
Limit (dBuV/m): 71.3

TABLE 6-21: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 40; 2440 MHZ; ZPR MODULE)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB0)
1218.505	24.5	24.3	-13.0	11.3	54.0	-42.7
2439.000	36.0	35.7	14.2	49.9	71.3	-21.4
2441.000	47.2	47.1	14.2	61.3	71.3	-10.0
4880.000	20.3	19.3	14.2	33.5	54.0	-20.5
7320.000	6.0	5.2	12.6	17.8	54.0	-36.2
9760.000	8.9	7.3	15.4	22.7	71.3	-48.6
12200.000	0.2	-0.4	19.2	18.8	54.0	-35.2

Operating Frequency (MHz): 2480
Measured Level at 100 kHz (dBuV/m): 88.8
Limit (dBuV/m): 68.8

TABLE 6-22: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 80; 2480 MHZ; ZPR MODULE)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB0)
1258.5	35.8	-11.4	24.4	68.8	-44.4
2479.0	41.5	10.8	52.3	68.8	-16.5
2481.0	20.5	10.8	31.3	68.8	-37.5
4960.0	5.7	14.6	20.3	54.0	-33.7
7440.0	4.8	13.5	18.3	54.0	-35.7
9920.0	5.7	18.3	24.0	68.8	-44.8
12400.0	5.8	18.4	24.2	54.0	-29.8
14880.0	5.0	21.8	26.8	68.8	-42.0

Operating Frequency (MHz): 2402
Measured Level at 100 kHz (dBuV/m): 97.9
Limit (dBuV/m): 77.9

TABLE 6-23: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 2; 2402 MHZ; QL ANTENNA)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB0)
1180.5	47.7	-12.2	35.5	54.0	-18.5
2401.0	40.2	10.6	50.8	77.9	-27.1
2403.0	39.3	10.6	49.9	77.9	-28.0
4804.0	5.3	14.3	19.6	54.0	-34.4
7206.0	5.5	13.1	18.6	77.9	-59.3
9608.0	4.8	18.7	23.5	77.9	-54.4
12010.0	5.8	19.5	25.3	54.0	-28.7
14412.0	4.8	20.5	25.3	77.9	-52.6

Operating Frequency (MHz): 2440
Measured Level at 100 kHz (dBuV/m): 102.3
Limit (dBuV/m): 82.3

TABLE 6-24: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 40; 2440 MHZ; QL ANTENNA)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB0)
1218.505	50.3	45.7	-13.0	32.7	54.0	-21.3
2439.000	50.1	48.5	14.2	62.7	82.3	-19.6
2441.000	51.4	49.6	14.2	63.8	82.3	-18.5
4880.000	17.9	15.4	14.2	29.6	54.0	-24.4
7320.000	7.1	5.8	12.6	18.4	54.0	-35.6
9760.000	14.8	13.7	15.4	29.1	82.3	-53.2
12200.000	3.7	2.1	19.2	21.3	54.0	-32.7

Operating Frequency (MHz): 2480
Measured Level at 100 kHz (dBuV/m): 89.6
Limit (dBuV/m): 69.6

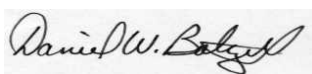
TABLE 6-25: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 80; 2480 MHZ; QL ANTENNA)

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB0)
1258.5	40.5	-11.4	29.1	69.6	-40.5
2479.0	32.0	10.8	42.8	69.6	-26.8
2481.0	32.5	10.8	43.3	69.6	-26.3
4960.0	5.8	14.6	20.4	54.0	-33.6
7440.0	5.3	13.5	18.8	54.0	-35.2
9920.0	4.3	18.3	22.6	69.6	-47.0
12400.0	4.5	18.4	22.9	54.0	-31.1
14880.0	5.7	21.8	27.5	69.6	-42.1

TEST PERSONNEL:

Daniel W. Baltzell

EMC Test Engineer



Signature

September 29, 2004 and December 2, 3, 2004

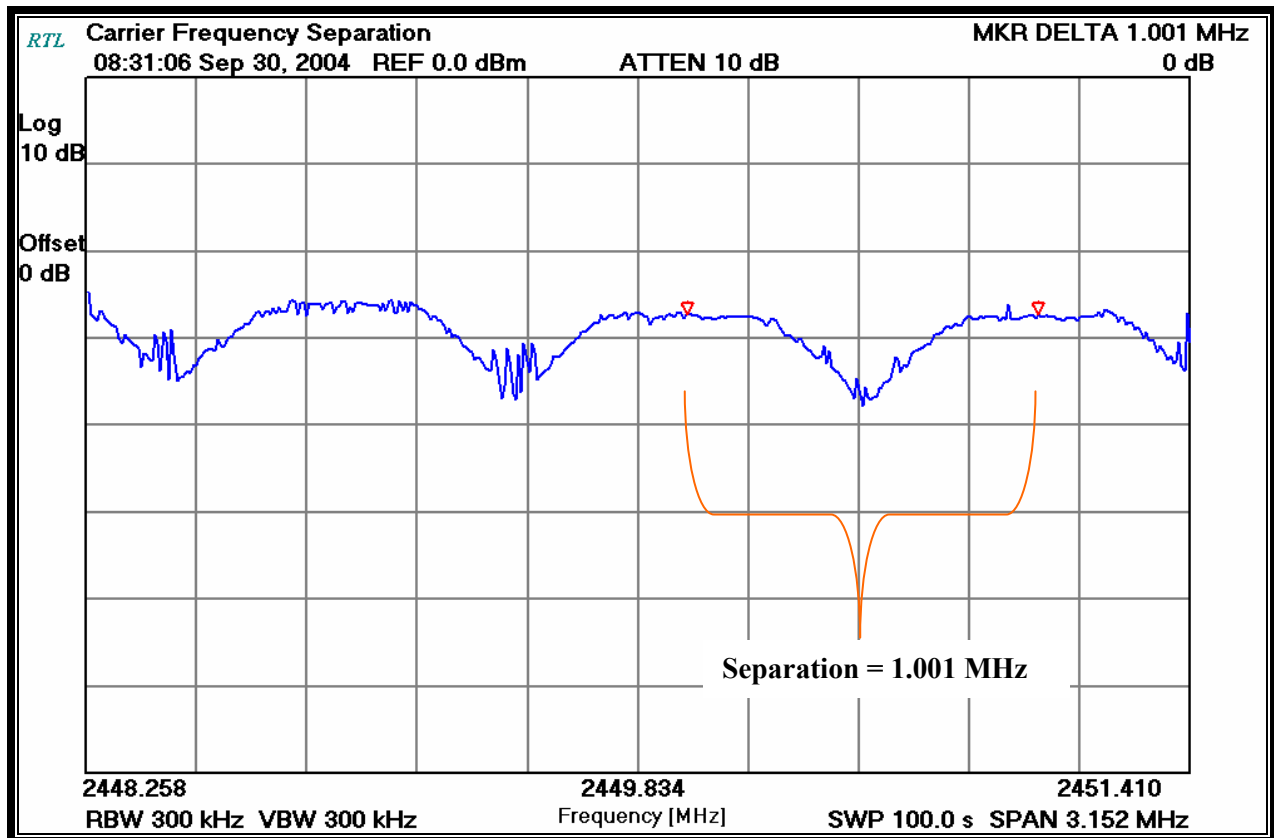
Dates Of Test

7 CARRIER FREQUENCY SEPARATION - §15.247 (A)(1)

Frequency Hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Measured frequency separation = 1.001 MHz

PLOT 7-1: CARRIER FREQUENCY SEPARATION



TEST PERSONNEL:

Daniel W. Baltzell
 EMC Test Engineer

Daniel W. Baltzell
 Signature

September 30, 2004
 Date Of Test

7.1 20 DB BANDWIDTH TEST PROCEDURE – FCC §15.247 (A)(1)(II); IC RSS-210 §5.9.1

The minimum 20 dB bandwidths per RSS-210 were measured using a 50 ohm spectrum analyzer. The carrier was adjusted on the analyzer so that it was displayed entirely on the Spectrum Analyzer. The sweep time was set to 10 seconds and allowed through several sweeps with the max hold function used in peak detector mode. The resolution bandwidth was set to 100 kHz, and the video bandwidth set at 300 kHz. The minimum 20 dB bandwidths were measured using the spectrum analyzer delta marker set 20 dB down from the peak of the carrier and modulated with a 2 Mbps data rate. The table below contains the bandwidth measurement results.

TABLE 7-1 20 DB BANDWIDTH TEST EQUIPMENT

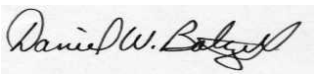
RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	6/23/05

TABLE 7-2 MODULATED BANDWIDTH TEST DATA

Minimum 20 dB bandwidths

CHANNEL	20 dB BANDWIDTH (kHz)
2	762
40	768
80	816

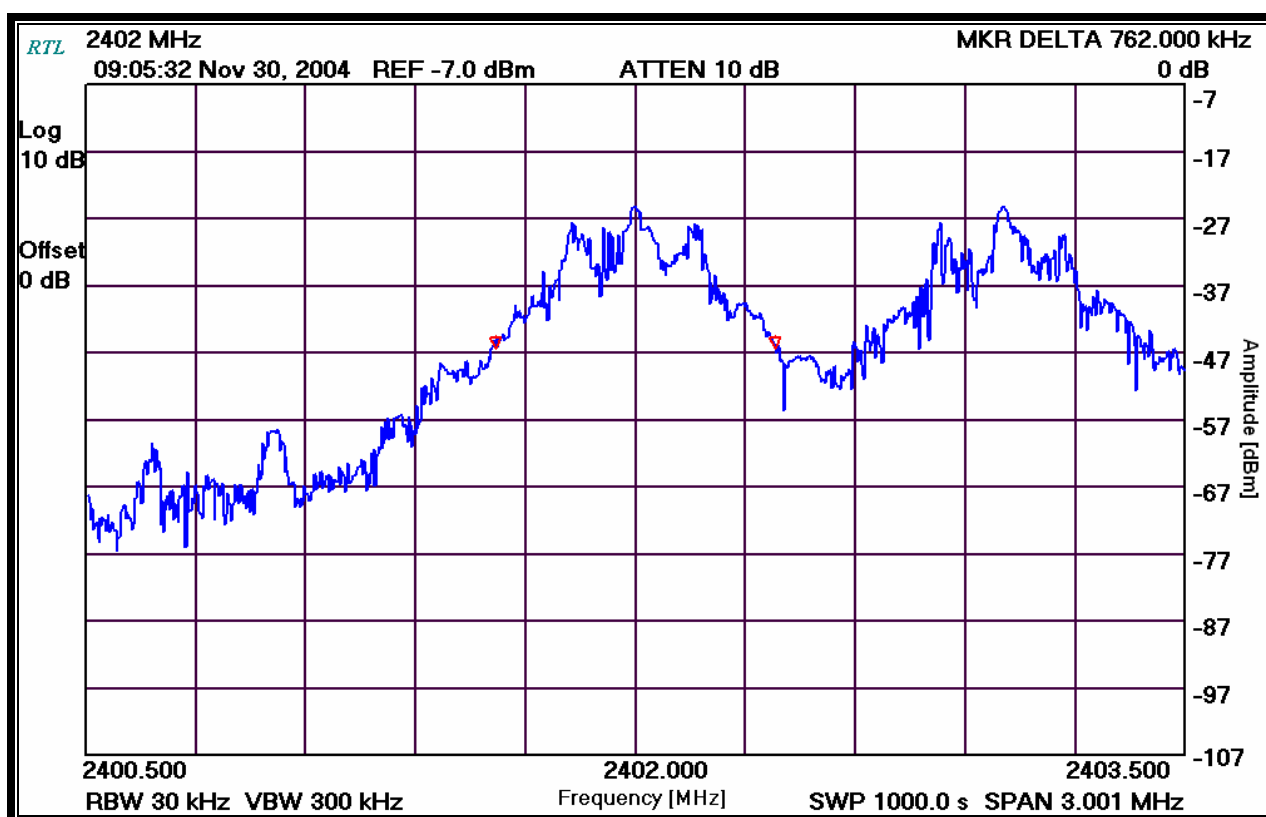
TEST PERSONNEL:

Daniel W. Baltzell EMC Test Engineer	 Signature	November 30, 2004 Date Of Test
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20 dB Bandwidth Plots

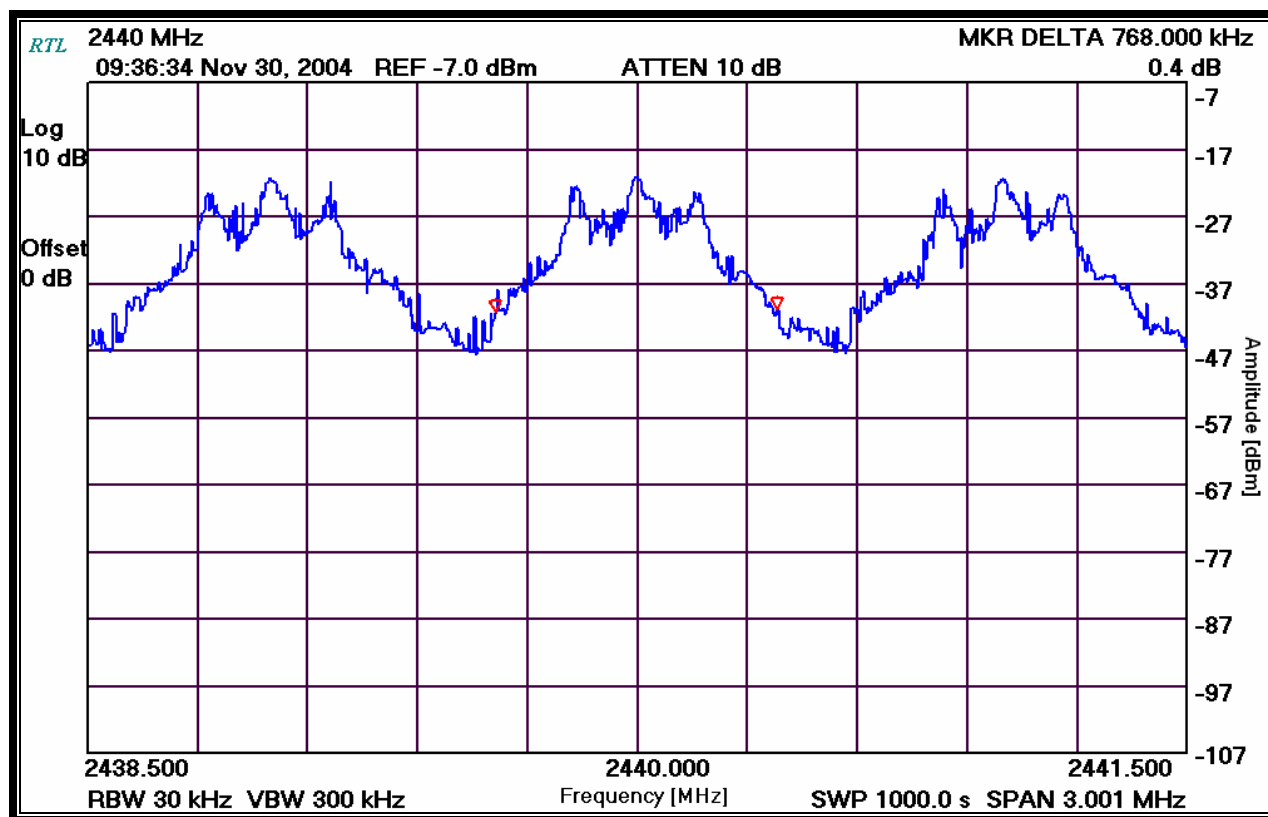
Channel: 2
 Channel Frequency (MHz): 2402
 Resolution Bandwidth (kHz): 30
 Video Bandwidth (kHz): 300
 Span (MHz): 3

PLOT 7-2: 20 DB BANDWIDTH CHANNEL 2



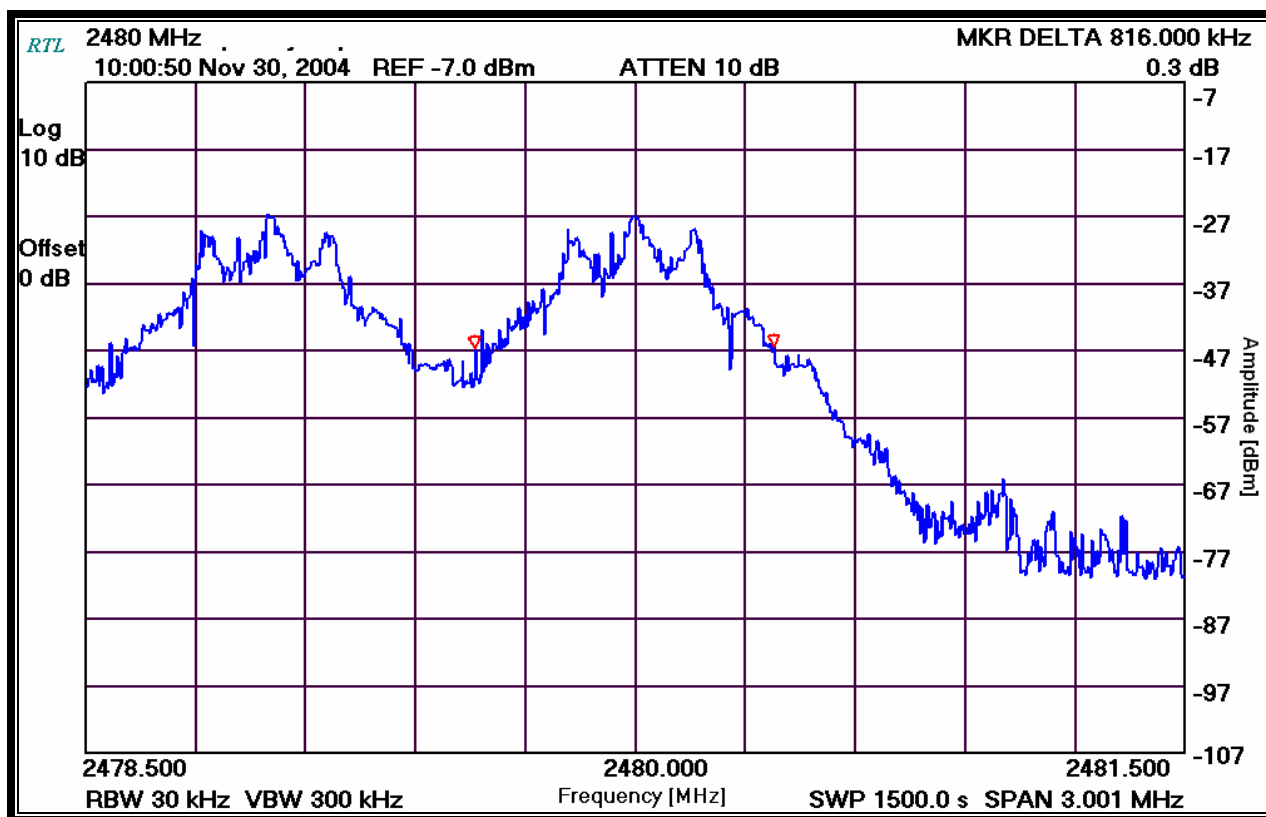
Channel: 40
 Channel Frequency (MHz): 2440
 Resolution Bandwidth (kHz): 30
 Video Bandwidth (kHz): 300
 Span (MHz): 3

PLOT 7-3: 20 DB BANDWIDTH CHANNEL 40



Channel: 80
Channel Frequency (MHz): 2480
Resolution Bandwidth (kHz): 30
Video Bandwidth (kHz): 300
Span (MHz): 3

PLOT 7-4: 20 DB BANDWIDTH CHANNEL 80



TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer

Daniel W. Baltzell
Signature

September 25, 2004
Date Of Test

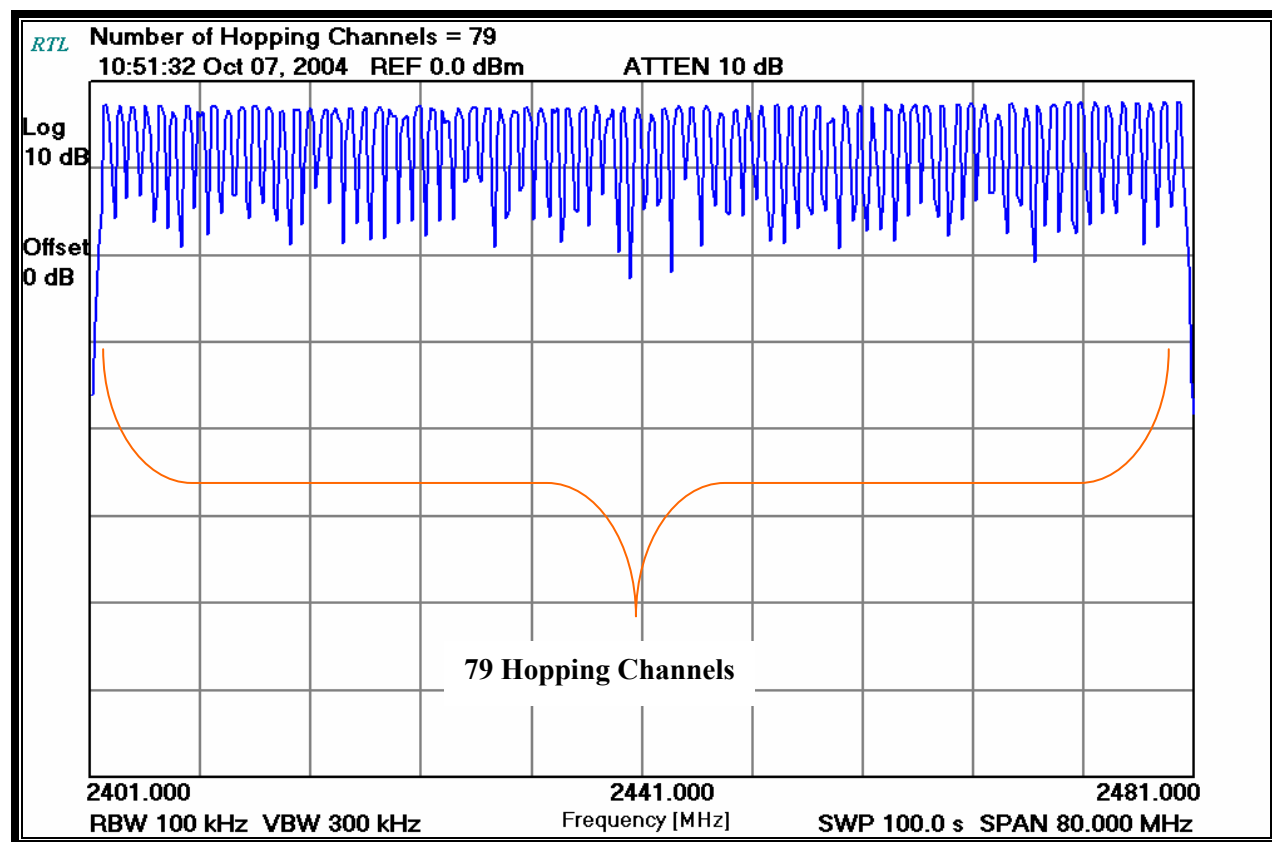
8 HOPPING CHARACTERISTICS – FCC §15.247 (A)(1)(III); IC RSS-210 §6.2.2(O)

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems which use fewer than 75 hopping frequencies may employ intelligent hopping techniques to avoid interference with other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

8.1 NUMBER OF HOPPING FREQUENCIES

Measured number of hopping frequencies = 79

PLOT 8-1: NUMBER OF HOPPING FREQUENCIES



TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer

Daniel W. Baltzell
Signature

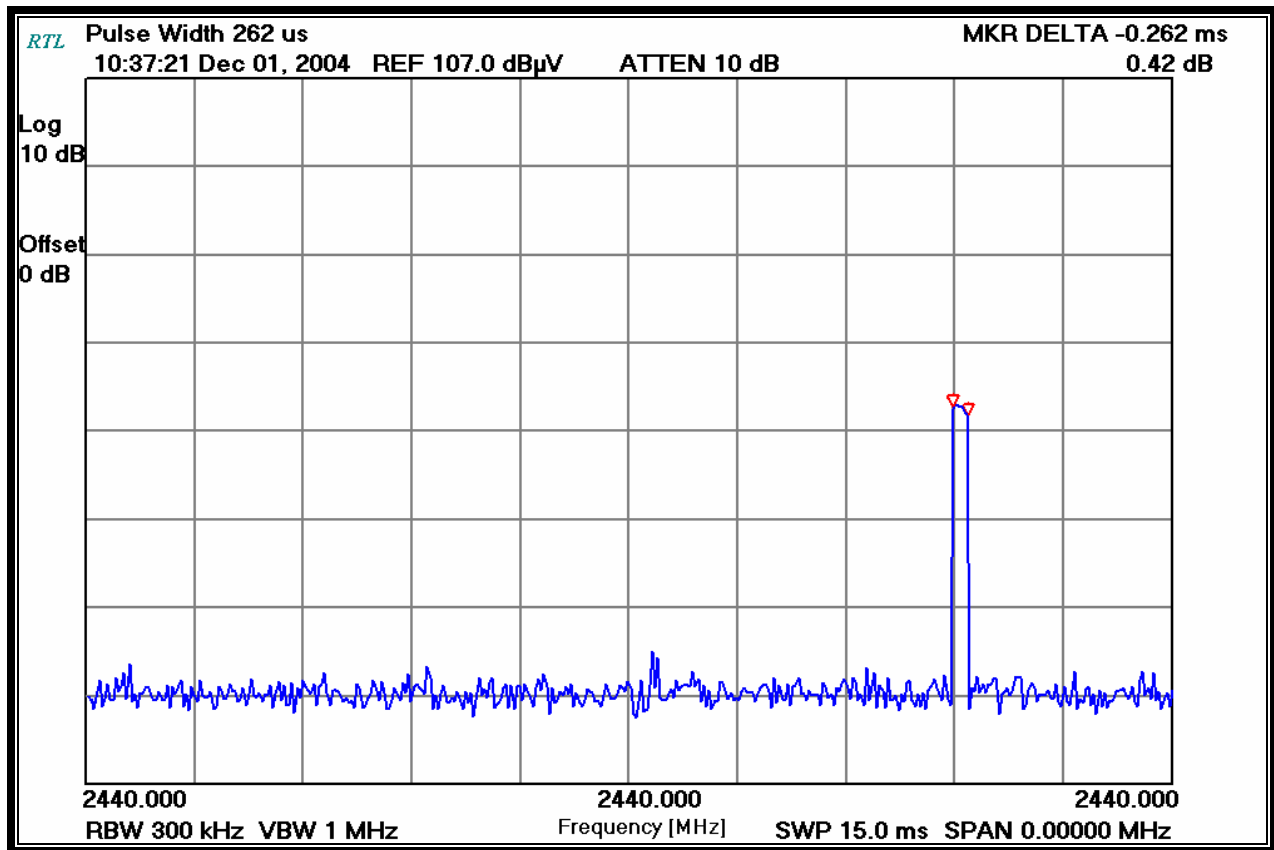
October 7, 2004
Date Of Test

8.2 AVERAGE TIME OF OCCUPANCY

The spectrum analyzer sweep was set to 0.015 second, with a zero span and max hold until a pulse from the device under test was captured. A marker delta was used to measure dwell time for this plot. The sweep was then set to single sweep for 30 seconds for the required average time, and the number of pulses counted to calculate the average time of occupancy as:

Number of Pulses in 30 Seconds (215) x Dwell Time Measured (0.262 milliseconds) = 56.3 ms Average Occupancy in 30 seconds, which meets the criteria of the average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

PLOT 8-2: TIME OF OCCUPANCY (DWEELL TIME)



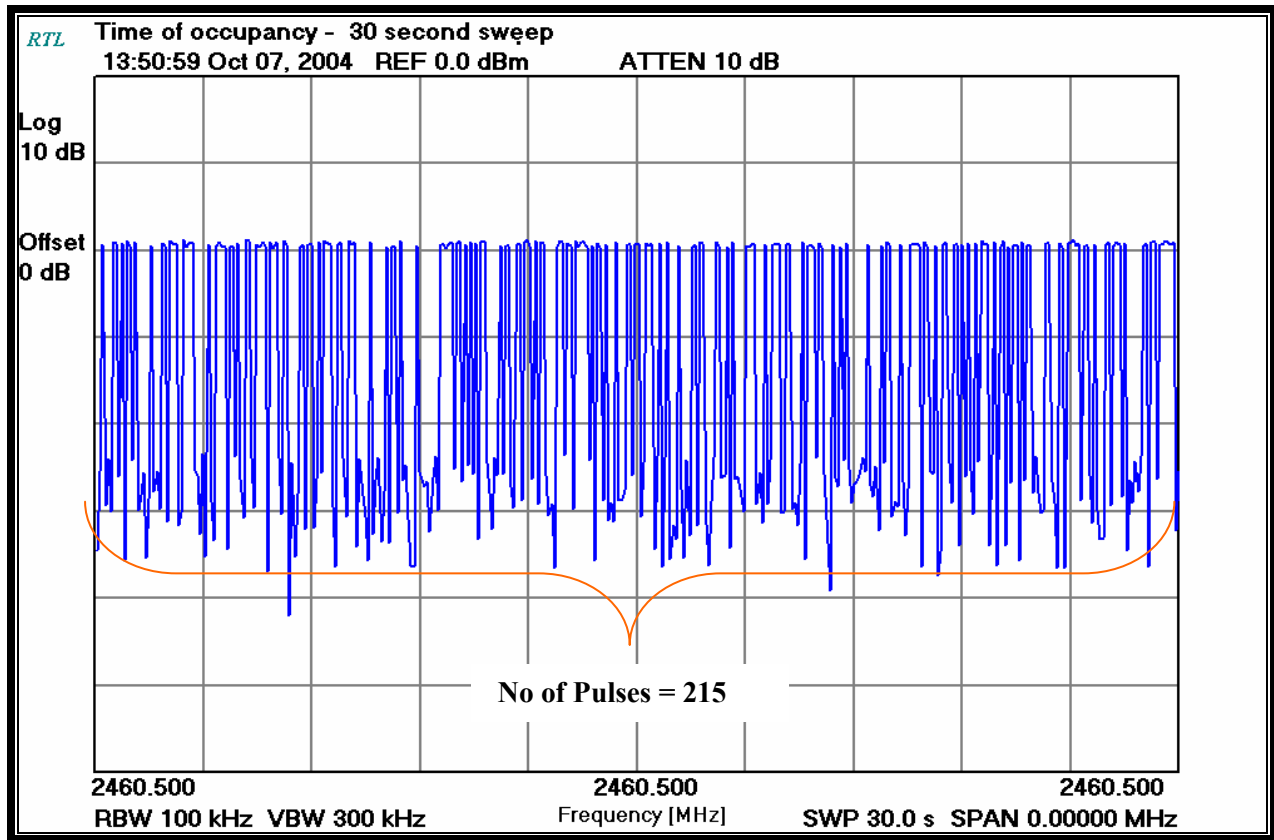
TEST PERSONNEL:

Daniel W. Baltzell
 EMC Test Engineer

Daniel W. Baltzell
 Signature

October 7, 2004
 Date Of Test

PLOT 8-3: TIME OF OCCUPANCY (DWELL TIME 30 SECOND SWEEP)



TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer


Signature

October 7, 2004
Date Of Test

9 PEAK OUTPUT POWER - FCC §15.247(B)(1); IC RSS-210 §6.2.2(O)(B)

9.1 CONDUCTED ANTENNA PORT POWER OUTPUT TEST PROCEDURE

A conducted power measurement of the EUT was taken using an Agilent 4416A EPM-P Series Power Meter with an E9323A Peak and Average Power Sensor.

9.2 CONDUCTED ANTENNA PORT POWER OUTPUT TEST EQUIPMENT

TABLE 9-1: CONDUCTED ANTENNA PORT POWER OUTPUT TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
901186	Agilent Technologies	E9323A (50 MHz-6 GHz)	Peak & Average Power Sensor	US40410380	8/2/05
901184	Agilent Technologies	E4416A	EPM-P Power Meter, Single Channel	GB41050573	8/2/05

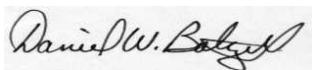
9.3 CONDUCTED ANTENNA PORT POWER OUTPUT TEST DATA

TABLE 9-2: CONDUCTED ANTENNA PORT POWER OUTPUT TEST DATA

FREQUENCY (MHZ)	CHANNEL	PEAK POWER CONDUCTED OUTPUT (dBm)	PEAK POWER CONDUCTED OUTPUT (mW)
2402	2	-5.4	0.3
2440	40	-5.6	0.3
2480	80	-5.5	0.3

TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer



Signature

September 25, 2004
Date Of Test

10 ANTENNA CONDUCTED SPURIOUS EMISSIONS - §15.247(C); IC RSS-210 §6.2.2(O)(E1)

10.1 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST PROCEDURES

Antenna spurious emissions per FCC 15.247(c) were measured from the EUT antenna port using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 300 kHz. The modulated carrier was identified at 2.402 GHz for the low channel, 2.440 GHz for the mid channel, and 2.480 GHz for the high channel. No other harmonics or spurs were found within 20 dB of the carrier level from 9 kHz to the carrier 10th harmonic. The low, middle, and high channels were investigated and tested. No notch filter was used during measurement since the fundamental did not overload the input to the spectrum analyzer.

10.2 ANTENNA CONDUCTED SPURIOUS TEST EQUIPMENT

TABLE 10-1: ANTENNA CONDUCTED SPURIOUS TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	6/23/05

10.3 ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 2

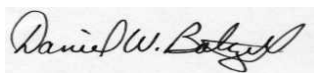
Operating Frequency (MHz): 2402
Channel: 2
Fundamental Amplitude (dBm): -5.4
Limit (dBm): -25.4

TABLE 10-2: ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 2

Frequency (MHz)	Measured Level (dBm)	Measured Level (dBc)	Limit (dBc)	Margin (dB)
1200.000	-70.9	65.5	20.0	-45.5
2398.000	-49.6	44.2	20.0	-24.2
2401.000	-38.0	32.6	20.0	-12.6
2403.000	-40.2	34.8	20.0	-14.8
4804.000	-72.1	66.7	20.0	-46.7
7206.000	-73.6	68.2	20.0	-48.2
9608.000	-78.3	72.9	20.0	-52.9
12010.000	-80.5	75.1	20.0	-55.1
14412.000	-101.0	95.6	20.0	-75.6

TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer



Signature

September 25, 2004
Date Of Test

10.4 ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 40

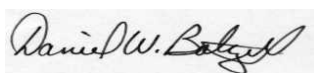
Operating Frequency (MHz): 2440
Channel: 40
Measured Level at 100 kHz (dBm): -5.6
Limit (dBm): -25.6

TABLE 10-3: ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 40

Frequency (MHz)	Measured Level (dBm)	Measured Level (dBc)	Limit (dBc)	Margin (dB)
1218.505	-69.5	63.9	20.0	-43.9
2439.000	-39.1	33.5	20.0	-13.5
2441.000	-41.9	36.3	20.0	-16.3
4880.000	-74.0	68.4	20.0	-48.4
7320.000	-97.8	92.2	20.0	-72.2
9760.000	-77.7	72.1	20.0	-52.1
12200.000	-96.5	90.9	20.0	-70.9
14640.000	-103.3	97.7	20.0	-77.7

TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer



Signature

September 25, 2004
Date Of Test

10.5 ANTENNA CONDUCTED SPURIOUS EMISSIONS HIGH CHANNEL 80

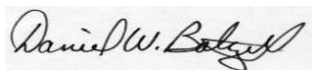
Operating Frequency (MHz): 2480
Channel: 80
Measured Level at 100kHz (dBm): -5.5
Limit (dBm): -25.5

TABLE 10-4: ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 80

Frequency (MHz)	Measured Level (dBm)	Measured Level (dBc)	Limit (dBc)	Margin (dB)
1240.520	-69.6	64.1	20.0	-44.1
2447.982	-63.7	58.2	20.0	-38.2
2475.980	-49.6	44.1	20.0	-24.1
2477.690	-52.5	47.0	20.0	-27.0
2478.985	-39.3	33.8	20.0	-13.8
2481.020	-40.0	34.5	20.0	-14.5
2482.265	-52.7	47.2	20.0	-27.2
2511.992	-62.4	56.9	20.0	-36.9
2543.998	-65.5	60.0	20.0	-40.0
3719.650	-67.8	62.3	20.0	-42.3
4960.000	-70.7	65.2	20.0	-45.2
7440.000	-80.1	74.6	20.0	-54.6
9920.000	-86.7	81.2	20.0	-61.2
12400.000	-101.2	95.7	20.0	-75.7
14880.000	-101.2	95.7	20.0	-75.7

TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer



Signature

September 25, 2004
Date Of Test

Rhein Tech Laboratories
360 Herndon Parkway
Suite 1400
Herndon, VA 20170
<http://www.rheintech.com>

Client: Zebra Technologies Corp.
Model Name/ #: ZBR-3/EYSF2CAXX
FCC ID: I28MD-BTC2TY2
FCC: 15.247
IC: RSS-210

11 CONCLUSION

The data in this measurement report shows that Zebra Technologies Corp. Model # TCK4EEYSF2CAXX, Model Name: ZBR-3, Bluetooth Modular Radio, FCC ID: I28MD-BTC2TY2 complies with all the requirements of Parts 2 and 15 of the FCC Rules and Industry Canada RSS-210. Furthermore, it meets the guidelines for LIMITED MODULAR transmitter approval as shown in FCC Publication DA 00-1407, and should be granted as such.