



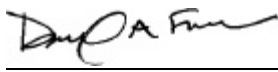
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CERTIFICATE OF COMPLIANCE
FCC PART 15.247 CERTIFICATION & INDUSTRY CANADA CERTIFICATION

Test Lab:		Applicant Information	
Rhein Tech Laboratories, Inc. 360 Herndon Parkway Suite 1400 Herndon, VA 20170		Samsung Electronics Co., LTD R&D Division, PC 416 Maetan-3Dong, Paldal-Gu Paldal-Gu, Kyungki-do 442742, Korea	
Phone: 703-689-0368 Fax: 703-689-2056 Web Site: www.rheintech.com			
FCC ID:	A3LSQ10WLR	GRANTEE FRN NUMBER:	0005-8239-50
PLAT FORM:	200 STM	RTL WORK ORDER NUMBER:	2002029
MODEL(S):	MPCI3A-0/R	RTL QUOTE NUMBER:	QRTL02-414
DATE OF TEST REPORT:	March 29, 2002		
American National Standard Institute:	ANSI/TIA/EIA603 and ANSI/TIA/EIA 603-1		
FCC Classification:	DSS – Spread Spectrum Transmitter		
FCC Rule Part(s):	Part 15.247: Operation within the bands 920-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System		
Industry Canada Standard:	RSS-210: Low Power License-Exempt Radio-communication Devices (All Frequency Bands) RSS-210 Section 6.2.2(o): 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz		
Digital Interface Information	Digital Interface was found to be compliant		
Receiver Information	Receiver was found to be compliant		
Frequency Range (MHz)	Output Power (W) EIRP	Freq. Tolerance	Emission Designator
2412-2462	0.022	N/A	N/A

We, 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. No modifications were made to the equipment during testing in order to achieve compliance with these standards.

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: March 29, 2002

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 Communication Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 1992).

1.3 RELATED SUBMITAL(S)/GRANT(S)

This is an original application for Certification on the WLAN card. The Storm PC platform notebook computer M/N: MPC13A-0/R; FCC ID: A3LSQ10R is the host platform for the EUT. The application for FCC ID: A3LSQ10R notebook has been submitted for FCC certification. A DoC report is on file for the receiver section and digital interface for the EUT. The IF, LO and up to the 2nd LO were investigated and tested.



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2 EQUIPMENT INFORMATION

2.1 APPLICANT AND EQUIPMENT INFORMATION

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Phone: 703-689-0368 Fax: 703-689-2056 Web Site: www.rheintech.com			
FCC ID:	A3LSQ10WLR	GRANTEE FRN NUMBER:	0005-8239-50
PLAT FORM:	200 STM	RTL WORK ORDER NUMBER:	2002029
MODEL(S):	MPCI3A-0/R	RTL QUOTE NUMBER:	QRTL02-414

2.2 JUSTIFICATION

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. Channel 1 at 2412 MHz, Channel 6 at 2437 MHz and channel 11 at 2462 MHz were tested and investigated from 9 kHz to 24 GHz. Data for all three channels are presented in this report.

The EUT contains two antennas, in order to complete the configuration required, the transmitter was tested in a notebook computer with an internal antenna. The main antenna transmits and receives and is connected to the main antenna port. The second antenna receives only and is connected to the AUX antenna port. Please refer to the product description appendix section of this application. Refer to the external antenna part of the Product Description exhibit.

The EUT was investigated with the internal antennas. The worst-case data taken in this report represents the highest data rate at 11 MBPS. Data rates of 5.5 MBPS, 2 MBPS and 1 MBPS were investigated and found to be in compliance. The change in envelope did not cause the EUT to be non-compliant in any of the aforementioned modes.

2.3 EXERCISING THE EUT

The EUT was provided with the software to continuously transmit during testing. The carrier was also checked to verify that the information was being transmitted.



2.4 TEST SYSTEM DETAILS

The FCC Identifiers for all equipment, plus descriptions of all cables used in the tested system are:

TABLE 2-1: EQUIPMENT UNDER TEST (EUT)

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
WLAN CARD	SAMSUNG ELECTRONICS CO, LTD	MPC13A-ORR	019492/B	A3LSQ10WL	COAXIAL FROM ANTENNA TO WLAN	

TABLE 2-2: EXTERNAL COMPONENTS IN TEST CONFIGURATION

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
NOTEBOOK	SAMSUNG ELECTRONICS CO, LTD	200STM	DOC12040048	A3LSQ10R	UNSHIELDED	14236
Power supply	Samsung	AD-4212	6500645	N/A	Unshielded Power	014233
Keyboard	Microsoft Corporation	E06401C0MB	71305-584-7628174-39319	DOC	2 Meter With Ferrite on Connector end of IO cable	012091
Monitor	Lite-on Technology	LE-500 (B157OMNS1)	004	Sample	Shielded W/Ferrite on Connector end of I/O cable, Unshielded Power	012383
Printer	Canon	K10143	EAT14116	DoC	Shielded IO Unshielded Power	900342
Speaker	Boston Acoustics	BA7500	7001508	N/A	Unshielded IO	011541
Speaker	Boston Acoustics	BA735	7001332	N/A	Unshielded IO	010717
Microphone	Telex	700358	N/A	N/A	Shielded IO	010155
ZIP Drive	Iomega	Z100USB	04041100	DoC	Shielded IO Unshielded Power	011168
External Modem	US Robotics	Model 0413	Sportster 33.6 Faxmodem	DoC	Shielded IO Unshielded Power	900409



2.5 CONFIGURATION OF TESTED SYSTEM

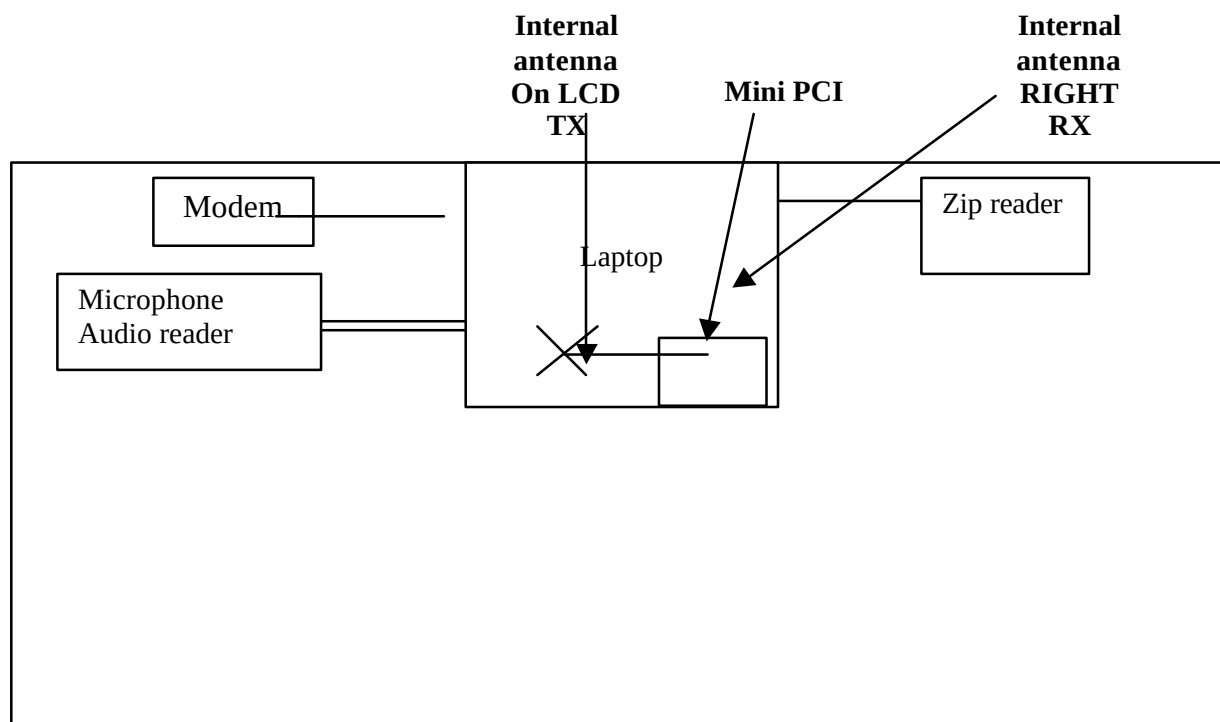


FIGURE 2-1: WORST CASE CONFIGURATION OF SYSTEM UNDER TEST



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3 COMPLIANCE WITH THE RESTRICTED BAND EDGE - §15.205

3.1 TEST PROCEDURE

Compliance with the band edges was performed using the FCC's "Radiated Measurement at a Band Edge" guidance document. The final data derived below were from radiated measurements only. The data taken in this report represents the worst case at 11 MBPS. Data rates of 5.5MBPS, 2 MBPS and 1 MBPS were investigated and found to be in compliance.

3.2 COMPLIANCE WITH THE RESTRICTED BAND EDGE TEST DATA

Operating Frequency (MHz): 2412-2462
Channel: 1 & 11
Distance: 3 meter
Limit: 54 dBuV/m

TABLE 3-1: COMPLIANCE WITH THE RESTRICTED BAND EDGE TEST DATA

Channel Set to	Frequency tested MHz	Detector	Field Strength Level (dBmV/m)	Level Corrected (dBmV/m)	FCC Limit (dBmV/m)	FCC Margin (dB)
1	2390.0	Absolute measurement	41.2	46.7	54.0	-7.3
11	2483.5	Absolute measurement	40.4	45.9	54.0	-8.1

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

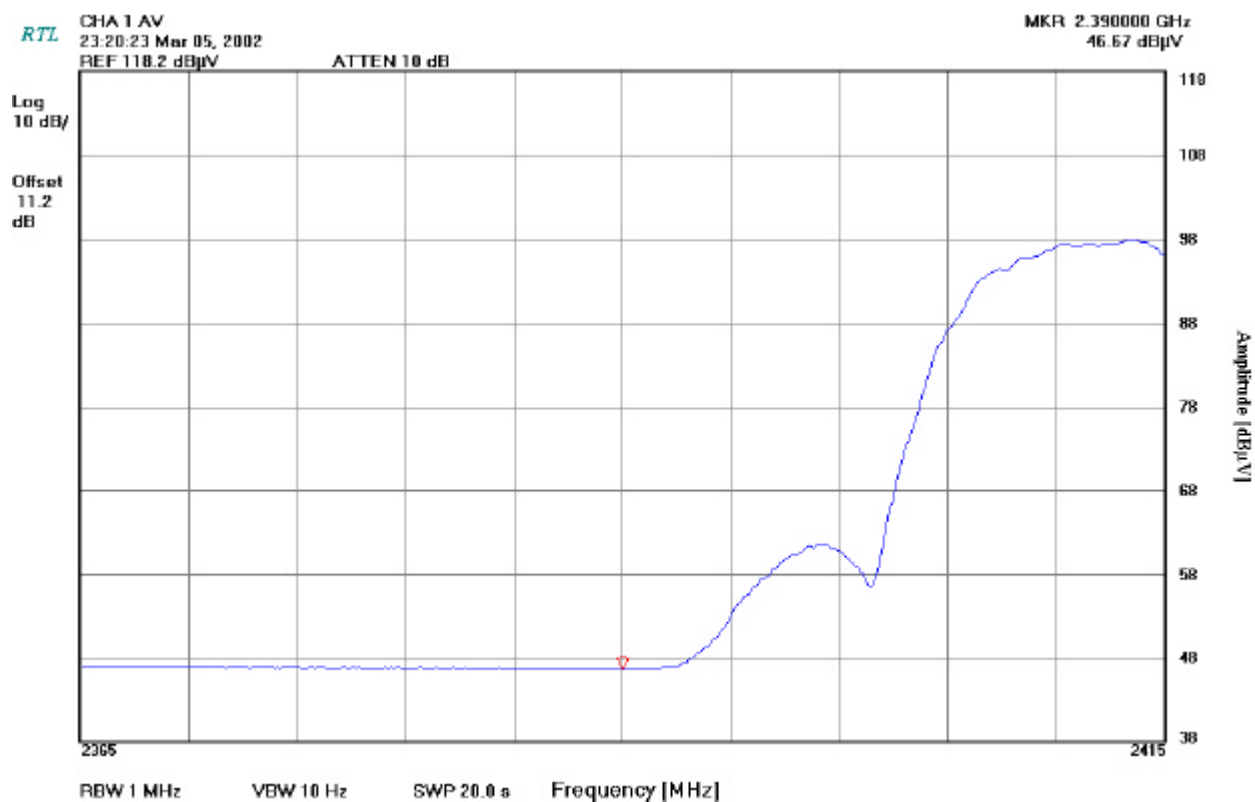
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Channel Number: 1
Frequency: 2412MHz
Resolution Bandwidth: 1MHz
Video Bandwidth: 10Hz
Sweep Time: 20.0s

PLOT 3-1: BAND EDGE: AVERAGE MEASUREMENT FOR CHANNEL 1



TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

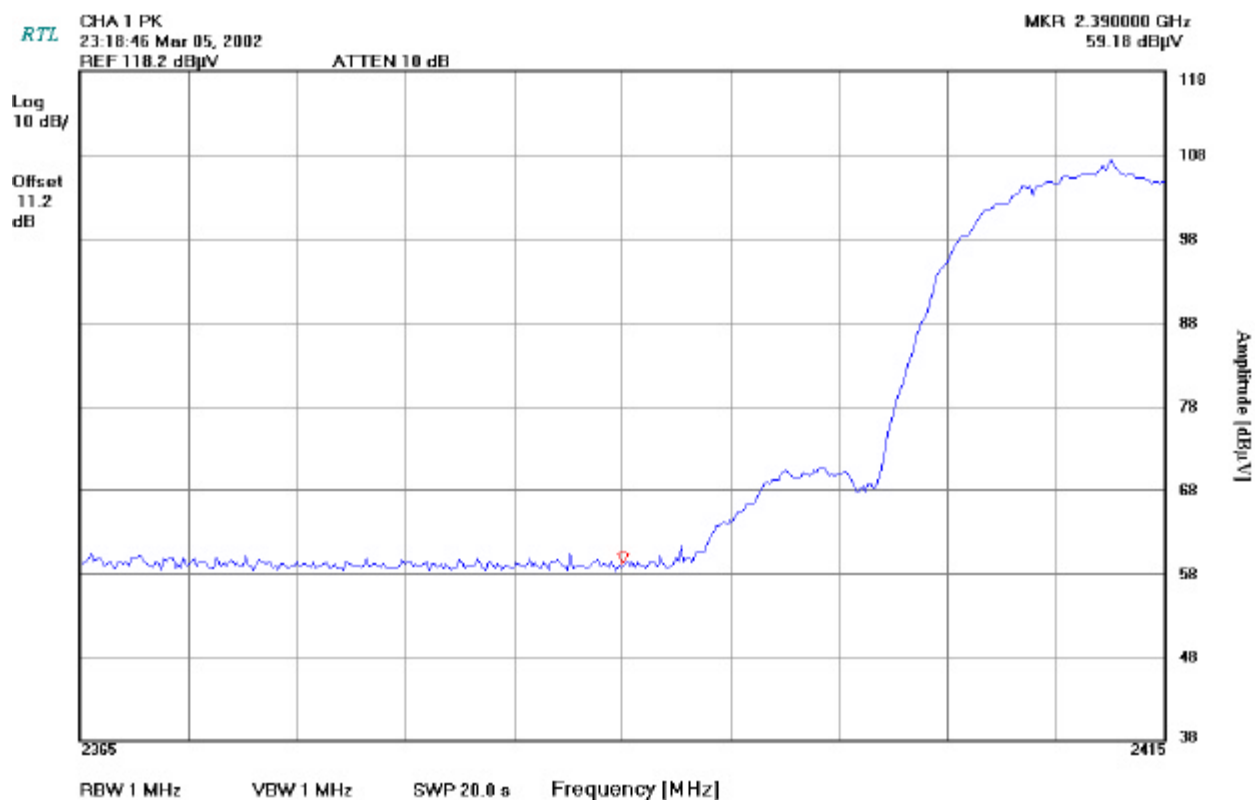
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Channel Number: 1
Frequency: 2412MHz
Bandwidth Resolution: 1MHz
Video Bandwidth: 1MHz
Sweep Time: 20.0s

PLOT 3-2: BAND EDGE: PEAK MEASUREMENT FOR CHANNEL 1



TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

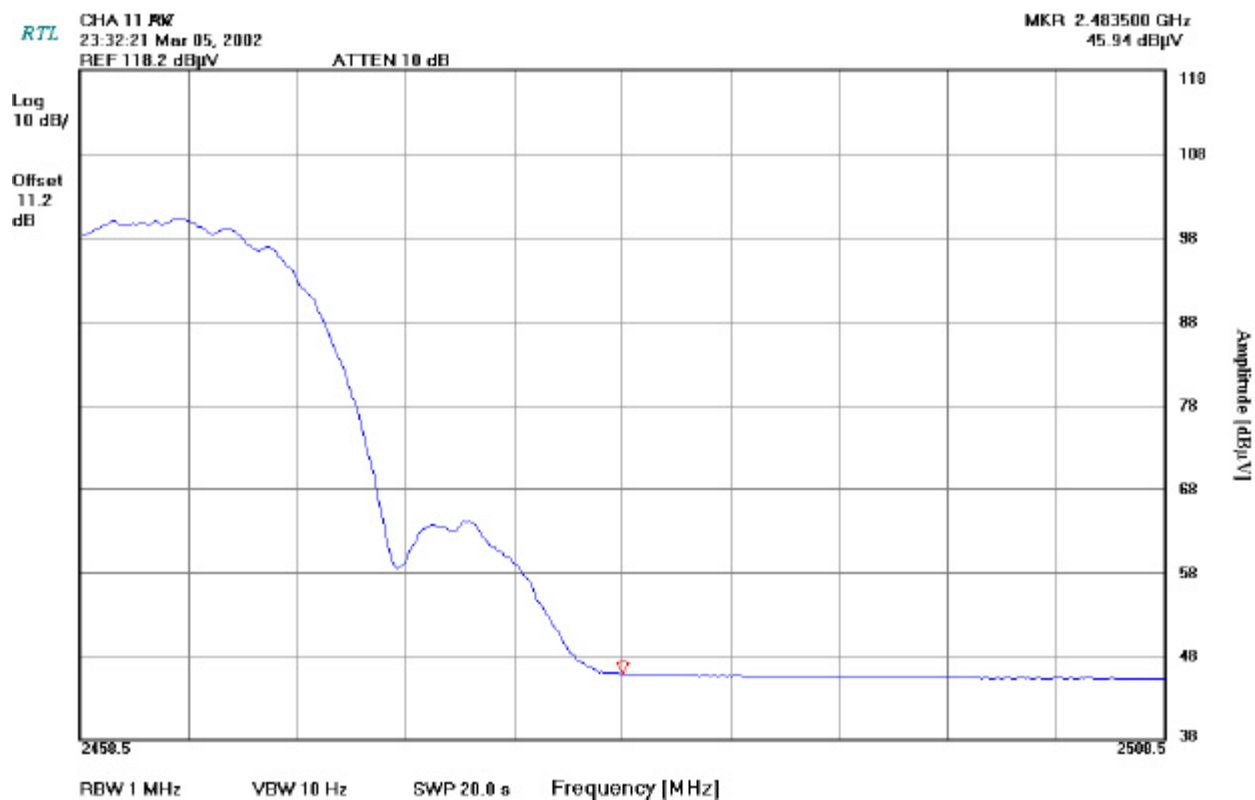
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Channel Number: 11
Frequency: 2462MHz
Resolution Bandwidth: 1MHz
Video Bandwidth: 10Hz
Sweep Time: 20.0s

PLOT 3-3: BAND EDGE: AVERAGE MEASUREMENT FOR CHANNEL 11



TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

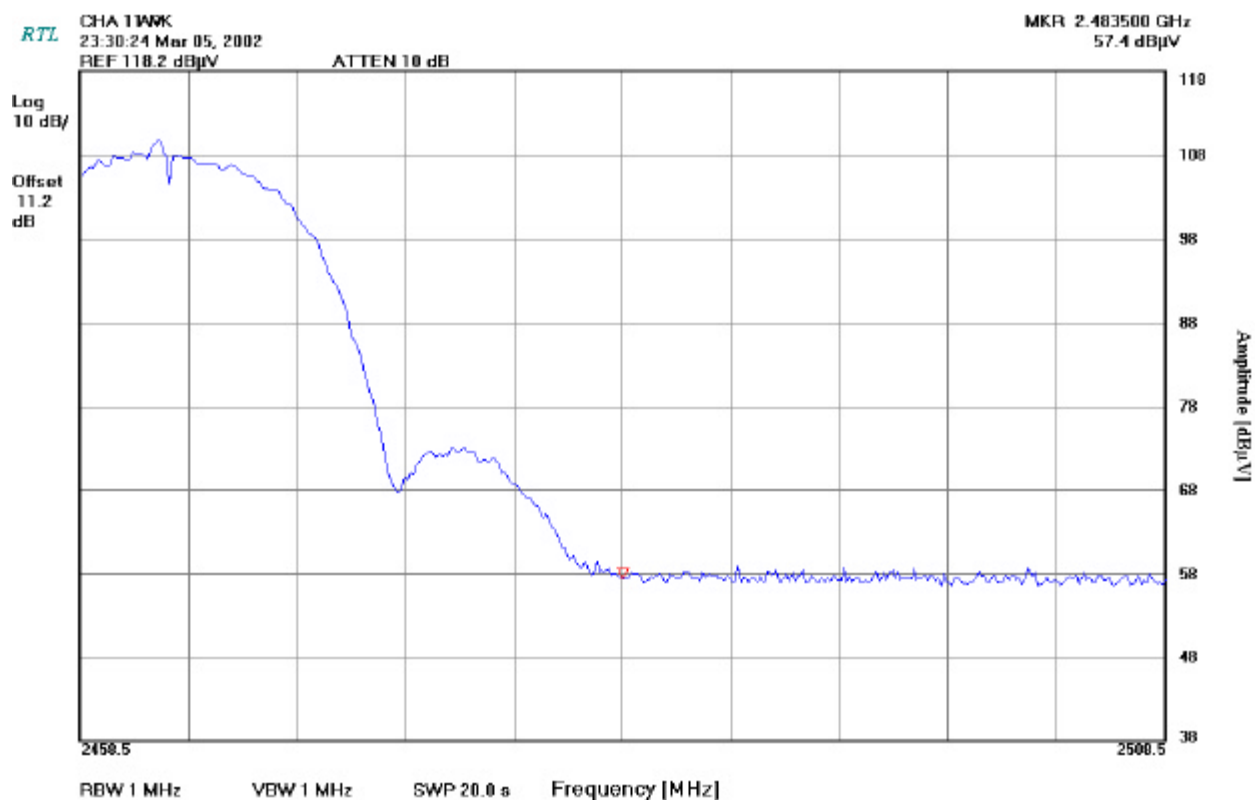
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Channel Number: 11
Frequency: 2462MHz
Resolution Bandwidth: 1MHz
Video Bandwidth: 1MHz
Sweep Time: 20.0s

PLOT 3-4: BAND EDGE: PEAK MEASUREMENT FOR CHANNEL 11



TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

3/05/2002
Date Of Test



4 CONDUCTED LIMITS - §15.207

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 400 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 400 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 (150/450) 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 error.

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 6dB higher than the amplitude in the average mode, the level measured in the quasi-peak mode may be reduced by 13dB before comparing it to the limit.

The conducted test was performed with the EUT exercise program loaded, and the emissions were scanned between 450 kHz to 30 MHz on the NEUTRAL SIDE and PHASE SIDE.



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4.3 CONDUCTED EMISSION TEST DATA

TABLE 4-1: CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 6

		Temperature: 74°F		Humidity: 43%		
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.480	Pk	33.8	0.7	34.5	48.0	-13.5
1.870	Pk	34.6	1.1	35.7	48.0	-12.3
5.560	Pk	39.7	1.8	41.5	48.0	-6.5
8.430	Pk	36.2	2.0	38.2	48.0	-9.8
17.380	Pk	32.7	2.8	35.5	48.0	-12.5
28.290	Pk	24.1	3.5	27.6	48.0	-20.4

TABLE 4-2: CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING CH 6

		Temperature: 74°F		Humidity: 43%		
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.480	Pk	36.3	0.7	37.0	48.0	-11.0
4.940	Pk	42.0	1.6	43.6	48.0	-4.4
12.920	Pk	36.5	2.5	39.0	48.0	-9.0
17.350	Pk	35.0	2.8	37.8	48.0	-10.2
22.140	Pk	33.4	3.2	36.6	48.0	-11.4
28.580	Pk	27.0	3.6	30.6	48.0	-17.4

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

3/05/2002
Date Of Test

All channels in the transmitting mode were tested and investigated, channel 6 in the table above, was considered the worst case channel.



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TABLE 4-3: CONDUCTED EMISSIONS (PHASE SIDE) RECEIVING CH 6

Temperature: 74°F Humidity: 43%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.480	Pk	33.8	0.7	34.5	48.0	-13.5
1.870	Pk	34.6	1.1	35.7	48.0	-12.3
5.560	Pk	39.7	1.8	41.5	48.0	-6.5
8.430	Pk	36.2	2.0	38.2	48.0	-9.8
17.380	Pk	32.7	2.8	35.5	48.0	-12.5
28.290	Pk	24.1	3.5	27.6	48.0	-20.4

TABLE 4-4: CONDUCTED EMISSIONS (NEUTRAL SIDE) RECEIVING CH 6

Temperature: 74°F Humidity: 43%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.480	Pk	36.3	0.7	37.0	48.0	-11.0
4.940	Pk	42.0	1.6	43.6	48.0	-4.4
12.920	Pk	36.5	2.5	39.0	48.0	-9.0
17.350	Pk	35.0	2.8	37.8	48.0	-10.2
22.140	Pk	33.4	3.2	36.6	48.0	-11.4
28.580	Pk	27.0	3.6	30.6	48.0	-17.4

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

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Date Of Test

All channels in the receiving mode were tested and investigated, channel 6 in the table above, was considered the worst case channel.



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5 RADIATED EMISSION LIMITS (GENERAL REQUIREMENTS) - §15.209

5.1 RADIATED 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 X-Y, X-Z, and Y-Z orthogonal plane.

5.2 RADIATED EMISSION TEST DATA

Operating Frequency (MHz): 2437
Channel: 6
Measured Cond. Pwr. (dBm): 15.8

MEASURED EIRP (DBM): 13.4
Antenna: TX Antenna
Mode: Transmitting

TABLE 5-1: RADIATED EMISSIONS (TRANSMITTING ANTENNA)

Temperature: 73°F					Humidity: 45%				
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)
373.987	Qp	V	130	1.0	35.3	-3.9	31.4	46.0	-14.6
418.000	Qp	H	45	3.0	28.8	-2.1	26.7	46.0	-19.3
644.310	Qp	V	45	1.0	37.5	2.5	40.0	46.0	-6.0
660.000	Qp	V	268	1.0	36.0	3.1	39.1	46.0	-6.9
816.137	Qp	V	260	1.0	30.7	6.4	37.1	46.0	-8.9
912.153	Qp	V	270	1.0	33.3	7.8	41.1	46.0	-4.9
1055.995	Av	V	35	1.0	27.2	-3.1	24.1	54.0	-29.9

Operating Frequency (MHz): 2437
Channel: 6
Measured TX Cond. Pwr. (dBm): 15.8

Measured EIRP (dBm) TX mode: 13.4
Antenna: RX Antenna
Mode: Receiving

TABLE 5-2: RADIATED EMISSIONS (RECEIVING ANTENNA)

Temperature: 72°F					Humidity: 55%				
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)
373.987	Qp	H	45	1.0	34.3	-3.9	30.4	46.0	-15.6
418.000	Qp	H	266	1.3	31.0	-2.1	28.9	46.0	-17.1
572.000	Qp	V	190	1.0	31.5	1.3	32.8	46.0	-13.2
660.000	Qp	V	105	1.0	34.5	3.1	37.6	46.0	-8.4
770.000	Qp	V	330	1.0	27.9	4.9	32.8	46.0	-13.2
912.153	Qp	V	345	1.0	33.2	7.8	41.0	46.0	-5.0
1011.995	Av	V	1	1.0	30.0	-4.1	25.9	54.0	-28.1
1055.995	Av	V	155	1.0	30.0	-3.1	26.9	54.0	-27.1

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

3/05/2002
Date Of Test



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5.3 RADIATED HARMONICS/SPURIOUS EMISSION TEST DATA

Operating Frequency (MHz): 2412

Channel: 1

Measured Cond. Pwr. (dBm): 15.8

Measured EIRP (dBm): 13.1

Antenna: Antenna left side of LCD

TABLE 5-3: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 1)

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)
2250.090	Av	V	10	1.0	38.35	3.4	40.1	54.0
2250.090	Pk	V	10	1.0	49.8	3.4	53.2	
2412.640	Av	V	10	1.0	92.7	3.3	96.0	Fundamental
2412.400	Pk	V	10	1.0	99.6	3.3	102.9	Fundamental
4824.630	Av	V	10	1.0	33.1	11.4	44.5	54.0
4824.230	Pk	V	10	1.0	45.4	11.4	56.8	
7236.570	Av	V	20	1.0	<20 dB			54.0
9604.00	Av	V	10	1.0	<20 dB			54.0
12005.00	Av	V	10	1.0	<20 dB			54.0
14406.00	Av	V	10	1.0	<20 dB			54.0
16807.00	Av	V	10	1.0	<20 dB			54.0
19208.00	Av	V	10	1.0	<20 dB			54.0
21609.00	Av	V	10	1.0	<20 dB			54.0
24010.00	Av	V	10	1.0	<20 dB			54.0

PEAK: RES. =1 MHz, VID= 1MHz; AVERAGE: RES. =1 MHz, VID= 10Hz; <20dB= 20dB BELOW THE LIMIT

TEST PERSONNEL:

Jeff Singleton

Test Technician/Engineer

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Operating Frequency (MHz): 2437
Channel: 6
Measured Cond. Pwr. (dBm): 15.8

Measured EIRP (dBm): 13.4
Antenna: Antenna left side of LCD

TABLE 5-4: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 6)

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)
2437.63	Av	V	20	1.2	92.9	3.1	96.0	Fundamental
2437.51	Pk	V	20	1.2	100.9	3.1	104.0	Fundamental
4877.00	Av	V	20	1.0	33.0	11.4	44.4	54.0
4877.00	Pk	V	20	1.0	45.7	11.4	57.1	
7315.50	Av	V	10	1.0	<20 dB			54.0
9754.00	Av	V	10	1.0	<20 dB			54.0
12192.50	Av	V	10	1.0	<20 dB			54.0
14631.00	Av	V	10	1.0	<20 dB			54.0
17069.50	Av	V	10	1.0	<20 dB			54.0
19508.00	Av	V	10	1.0	<20 dB			54.0
21946.50	Av	V	10	1.0	<20 dB			54.0
24385.00	Av	V	10	1.0	<20 dB			54.0

AVERAGE: RES. =1 MHz, VID= 10Hz; <20dB= 20dB BELOW THE LIMIT

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

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Date Of Test



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Operating Frequency (MHz): 2462
Channel: 11
Measured Cond. Pwr. (dBm): 15.6

Measured EIRP (dBm): 12.0
Antenna: Antenna left side of LCD

TABLE 5-5: RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 11)

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)
2462.42	Av	V	20	1.3	92.1	2.9	95.0	Fundamental
2462.59	Pk	V	20	1.3	99.4	2.9	102.3	Fundamental
2483.36	Av	V	20	1.2	35.7	2.7	38.4	54.0
2483.47	Pk	V	20	1.2	47.3	2.7	50.0	
4922.00	Av	V	10	1.2	33.9	11.4	45.3	54.0
4922.00	Pk	V	10	1.0	45.1	11.4	56.5	
7383.00	Av	V	10	1.0	<20 dB			54.0
9844.00	Av	V	10	1.0	<20 dB			54.0
12305.00	Av	V	10	1.0	<20 dB			54.0
14766.00	Av	V	10	1.0	<20 dB			54.0
17227.00	Av	V	10	1.0	<20 dB			54.0
19688.00	Av	V	10	1.0	<20 dB			54.0
22149.00	Av	V	10	1.0	<20 dB			54.0
24610.00	Av	V	10	1.0	<20 dB			54.0

AVERAGE: RES. =1 MHz; VID= 10Hz; NF = NOISE FLOOR

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

3/05/2002
Date Of Test

5.4 TEST EQUIPMENT USED FOR TESTING

TABLE 5-6: RADIATED SPURIOUS EMISSIONS TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER
900931	HP	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771
900772	EMCO	3161-02	Horn ANTENNA (2-4 GHz)	900772
900321	EMCO	3161-03	Horn Antennas (4-8,2GHz)	9508-1020
900323	EMCO	3160-7	Horn Antennas (8,2-12,4 GHz)	9605-1054
900325	EMCO	3160-9	Horn Antennas (18 - 26.5 GHz)	9605-1051
900723	Miteq	NA	AMP 100MHz-26GHz	NA
900791	Schaffner - Chase	CBL6112	Antenna (25 MHz - 2 GHz)	2099



6 MODULATED BANDWIDTH - §15.247(A)(2)

6.1 MODULATED BANDWIDTH TEST PROCEDURE

The minimum 6 dB bandwidth per FCC 15.247 (a)(2) was measured using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 300 kHz. The minimum 6 dB modulated bandwidths are the following:

6.2 MODULATED BANDWIDTH TEST DATA

TABLE 6-1: MINIMUM 6 DB MODULATED BANDWIDTHS

CHANNEL	6 dB BANDWIDTH (MHz)
1	10.70
6	10.90
11	10.90

The 6 dB bandwidths are listed below.

6.3 TEST EQUIPMENT USED FOR TESTING

TABLE 6-2: TEST EQUIPMENT USED FOR TESTING (MODULATED BANDWIDTH)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number
900931	HP	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

3/22/2002
Date Of Test

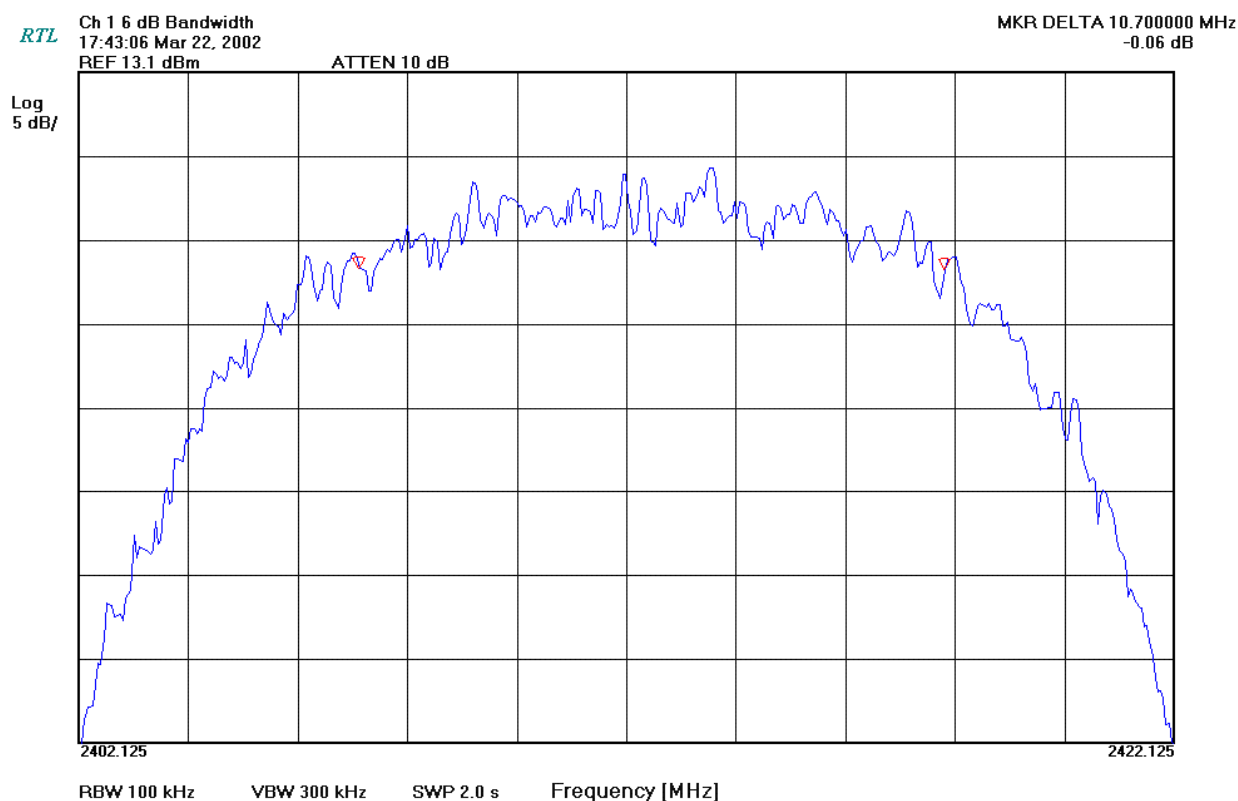


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6.4 MODULATED BANDWIDTH PLOTS

Channel Number: 1
Frequency (MHz): 2412
Resolution Bandwidth: 100kHz
Video Bandwidth: 300kHz
Sweep Time: 2.0s
REF LEVEL CH1 EIRP 13.1dBm

PLOT 6-1: MODULATED BANDWIDTH CHANNEL 1



TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

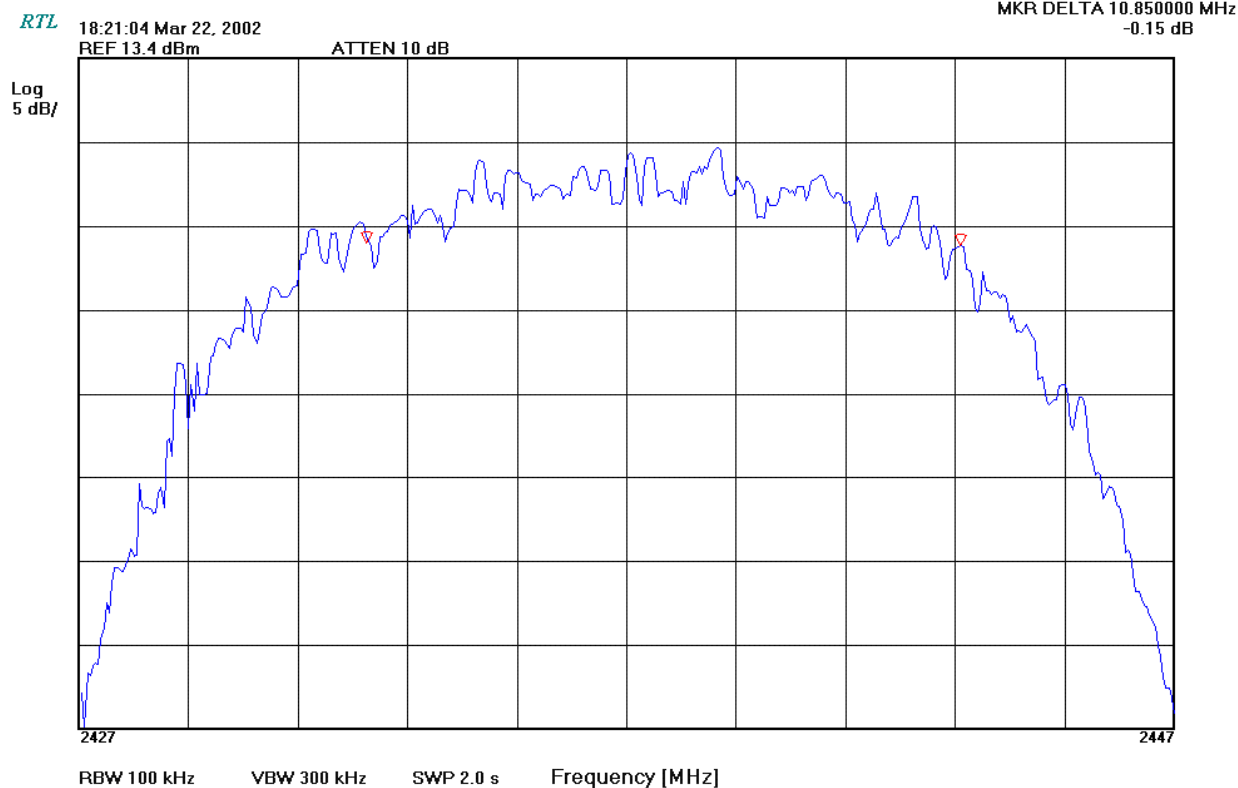
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Channel Number: 6
Frequency (MHz): 2437
Resolution Bandwidth: 100kHz
Video Bandwidth: 300kHz
Sweep Time: 2.0s
REF LEVEL CH6 EIRP 13.4dBm

PLOT 6-2: MODULATED BANDWIDTH CHANNEL 6



TEST PERSONNEL:

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Test Technician/Engineer

Signature

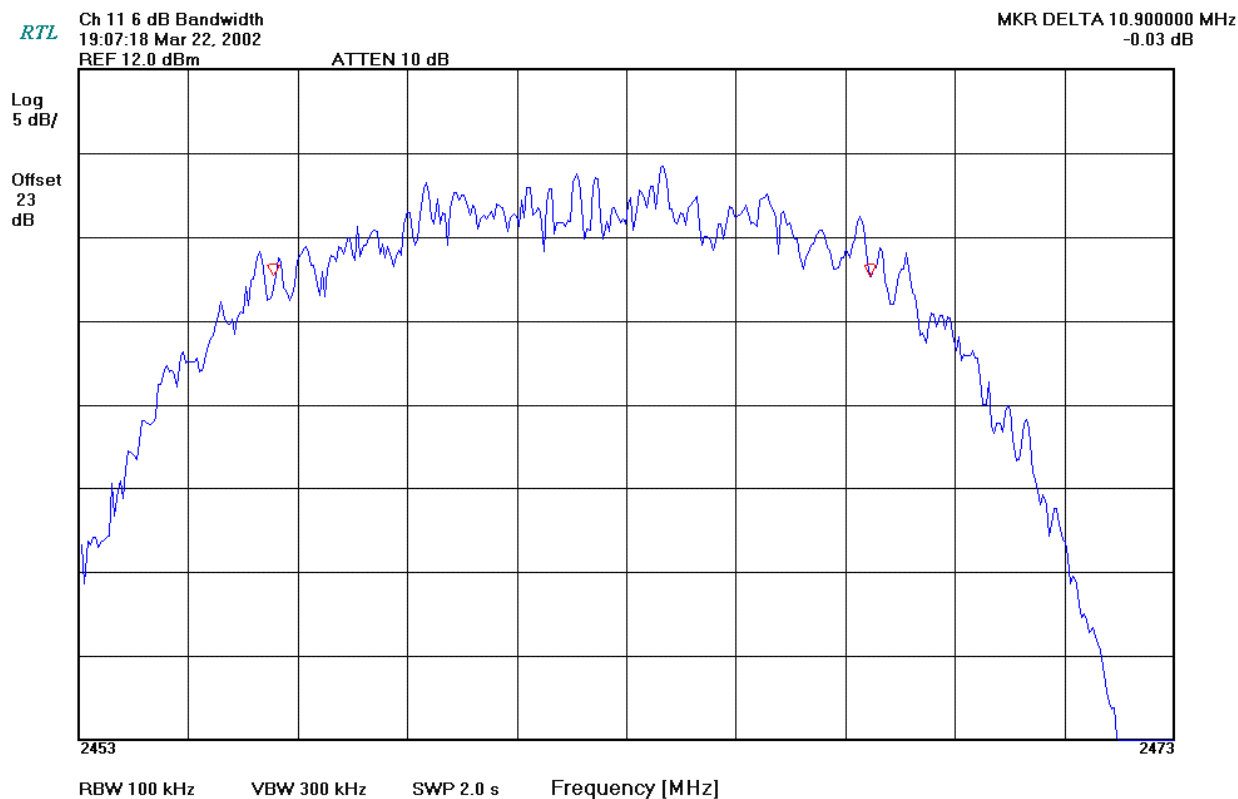
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Channel Number: 11
Frequency (MHz): 2462
Resolution Bandwidth: 100kHz
Video Bandwidth: 300kHz
Sweep Time: 2.0s
REF LEVEL CH11 EIRP 12.0dBm

PLOT 6-3: MODULATED BANDWIDTH CHANNEL 11



TEST PERSONNEL:

Jeff Singleton
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Date Of Test



7 POWER OUTPUT - §15.247(B)

7.1 POWER OUTPUT TEST PROCEDURE

The power output per FCC 15.247(b) was measured on the EUT using an Agilent Diode Detector, an oscilloscope to have a reference of the power output. Then the unit was substituted to a signal generator, and was tuned until it reached the same reference level, the value displayed on the signal generator was recorded. EIRP measurement was performed as a radiated test using the substitution method.

7.2 POWER OUTPUT TEST DATA

TABLE 7-1: POWER OUTPUT TEST DATA

Operating Frequency (MHz): 2412MHz, 2437MHz, 2462MHz
Channel: 1, 6 & 11
Measured Cond. Pwr. (dBm): 15.8, 15.8 & 15.6
Measured EIRP (dBm): 13.1, 13.4 & 12.0
Modulation: 10.3MHz
Antenna: Left Antenna

TABLE 7-2: POWER OUTPUT TEST DATA

CHANNEL	EIRP (dBm)* Antenna on left of LCD	POWER CONDUCTED OUTPUT (dBm)
1	13.1	15.8
6	13.4	15.8
11	12.0	15.6

*Measurement accuracy is +/- 1.5 dB

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

3/05/2002
Date Of Test

7.3 TEST EQUIPMENT USED FOR TESTING

TABLE 7-3: TEST EQUIPMENT USED FOR TESTING (RADIATED RF OUTPUT - EIRP)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number
900931	HP	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771
901186	Agilent Technologies	8471E	Diode Detector	05505
901184	Tektronix	TDS540B	Oscilloscope	B020129
900772	EMCO	3161-02	Horn ANTENNA (2-4 GHz)	900772
900723	Miteq	NA	AMP 100MHz-26GHz	NA
900814	Electro-Metrics	RGA-60	Double Ridges Guide Antenna (1-18 GHz)	2310



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8 ANTENNA CONDUCTED SPURIOUS EMISSIONS - §15.247(C)

8.1 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST PROCEDURES

Antenna spurious emission per FCC 15.247(c) was 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 2.410GHz for Channel 1, 2.437GHz for Channel 6 and 2.463GHz for Channel 11. No other harmonics or spurs were found within 20 dB of the carrier level, and from 9kHz to the carriers 10th harmonic. See antenna conducted spurious noise table. Channels 1, 6, and 11 were investigated and tested.

8.2 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST DATA

Operating Frequency (MHz): 2412
Channel: 1
Measured Cond. Pwr. (dBm): 15.6
Measured EIRP (dBm): 13.1
Limit: 20dB below carrier

TABLE 8-1: ANTENNA CONDUCTED SPURIOUS EMISSIONS: CHANNEL 1 (MAIN)

Frequency (MHz)	Spurious level (dBm)	FCC Margin (dB)
563.1	-49.5	-29.8
631.3	-51.8	-32.1
730.5	-59.7	-40.0

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

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Date Of Test



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Operating Frequency (MHz): 2437
Channel: 6
Measured Cond. Pwr. (dBm): 15.8
Measured EIRP (dBm): 13.4
Limit: 20dB below carrier

TABLE 8-2: ANTENNA CONDUCTED SPURIOUS EMISSIONS: CHANNEL 6 (MAIN)

Frequency (MHz)	Spurious level (dBm)	FCC Margin (dB)
563.1	-48.0	-28.3
632.7	-48.6	-28.9

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

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Date Of Test

Operating Frequency (MHz): 2462
Channel: 11
Measured Cond. Pwr. (dBm): 15.6
Measured EIRP (dBm): 12.0
Limit: 20dB below carrier

TABLE 8-3: ANTENNA CONDUCTED SPURIOUS EMISSIONS: CHANNEL 11 (MAIN)

Frequency (MHz)	Spurious level (dBm)	FCC Margin (dB)
528.0	-53.2	-33.5
564.5	-51.5	-31.8

TEST PERSONNEL:

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9 POWER SPECTRAL DENSITY - §15.247(D)

9.1 POWER SPECTRAL DENSITY TEST PROCEDURE

The Power spectral density per FCC 15.247(d) was measured from the antenna port of the EUT using a 50 ohm spectrum analyzer with the resolution bandwidth set at 3kHz, the video bandwidth set at 300kHz, and the sweep time set at 1000 second. The spectral lines were resolved for the modulated carriers at 2.410GHz, 2.437GHz and 2.463GHz respectively. These levels are well below the +8 dBm limit. See power spectral density table and plots.

9.2 TEST EQUIPMENT USED FOR TESTING

TABLE 9-1: TEST EQUIPMENT USED FOR TESTING (POWER SPECTRAL DENSITY)

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER
900931	HP	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771

9.3 POWER SPECTRAL DENSITY TEST DATA

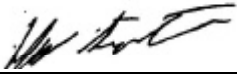
Operating Frequency (MHz): 2412MHz, 2437MHz & 2462
Channel: 1, 6 & 11
Measured Cond. Pwr. (dBm): 15.8, 15.8 & 15.6
Modulation Bandwidth: 10.3 MHz
Limit: 8dBm

TABLE 9-2: POWER SPECTRAL DENSITY (MAIN PORT)

CHANNEL	POWER SPECTRAL DENSITY LIMIT = +8dBm
1	-5.57
6	-0.77
11	+0.50

TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer


Signature

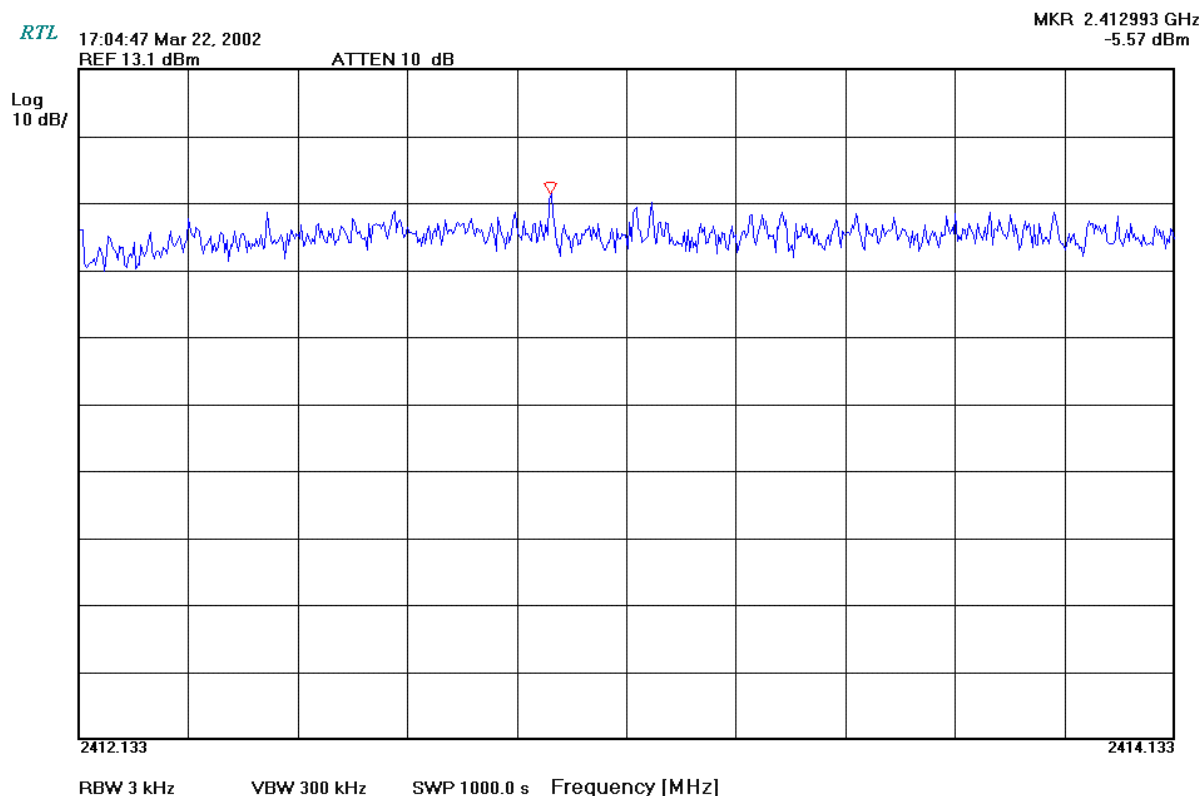
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Operating Frequency (MHz): 2412
Channel: 1
Measured Cond. Pwr. (dBm): 15.8
Measured EIRP (dBm): 13.1
Bandwidth Resolution: 3kHz
Bandwidth Video: 300kHz
Sweep Time: 1000.0s

PLOT 9-1: POWER SPECTRAL DENSITY: CHANNEL 1



TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

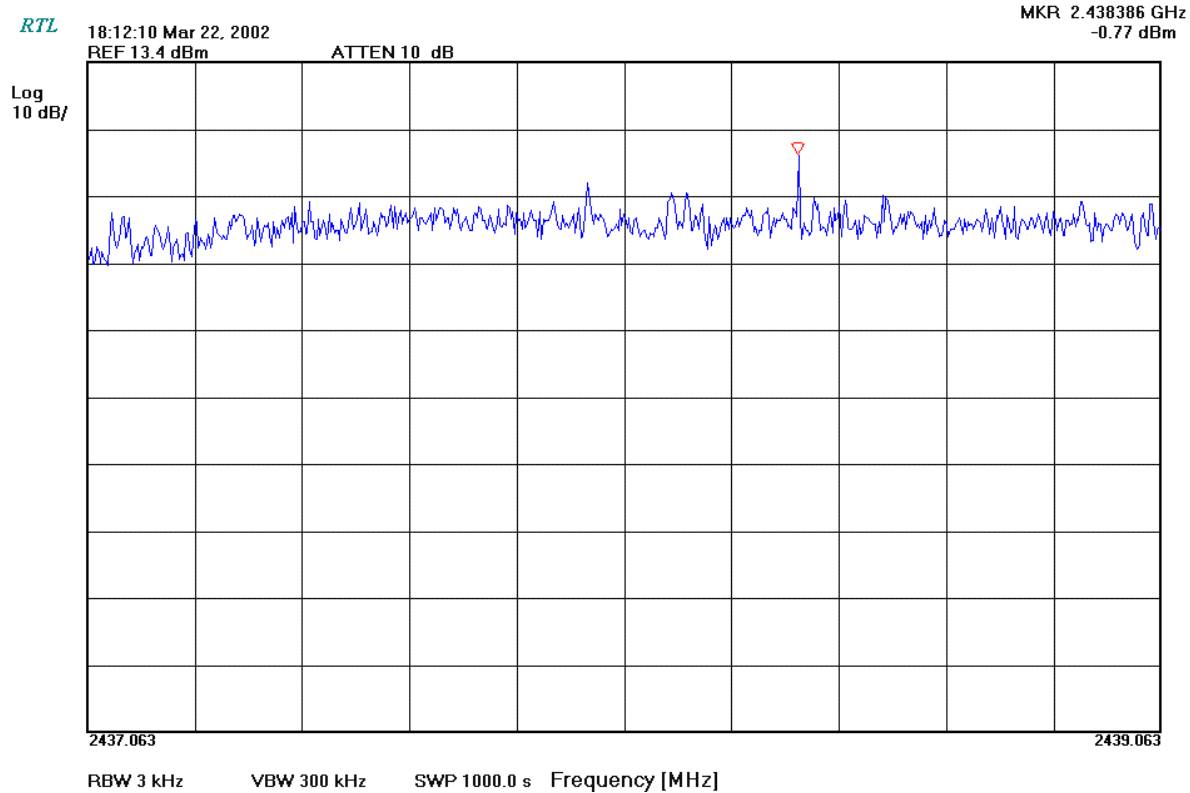
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Operating Frequency (MHz): 2437
Channel: 6
Measured Cond. Pwr. (dBm): 15.8
Measured EIRP (dBm): 13.4
Bandwidth Resolution: 3kHz
Bandwidth Video: 300kHz
Sweep Time: 1000.0s

PLOT 9-2: POWER SPECTRAL DENSITY: CHANNEL 6



TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

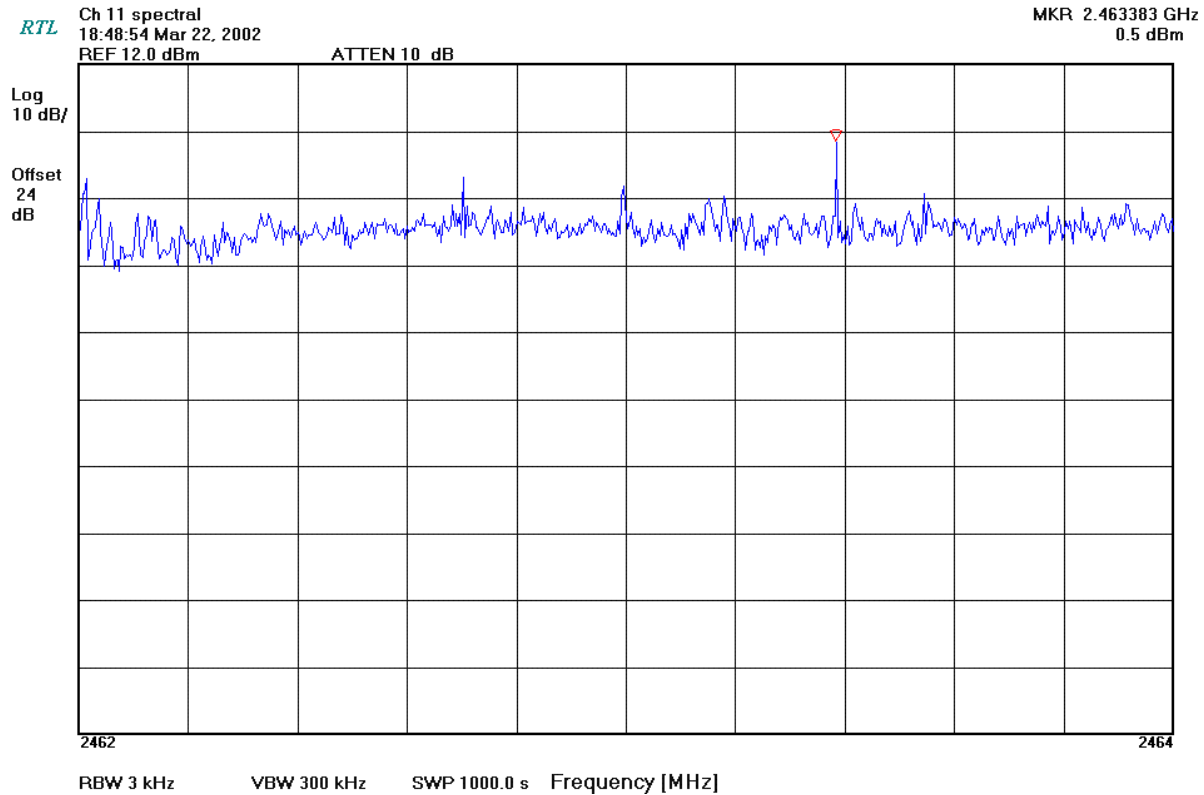
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Operating Frequency (MHz): 2462
Channel: 11
Measured Cond. Pwr. (dBm): 15.6
Measured EIRP (dBm): 12.0
Bandwidth Resolution: 3kHz
Bandwidth Video: 300kHz
Sweep Time: 1000.0s

PLOT 9-3: POWER SPECTRAL DENSITY: CHANNEL 11



TEST PERSONNEL:

Jeff Singleton
Test Technician/Engineer

Signature

3/22/2002
Date Of Test



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10 CONCLUSION

The data in this measurement report shows that the computer, **Model: MPC13A-20-, Platform: , configured with the EUT FCC ID:A3LSQ10WLR** complies with all the requirements of Parts 2 and 15.247 of the FCC Rules.