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CERTIFICATION APPLICATION REPORT

FCC PART 15.247 CERTIFICATION & INDUSTRY CANADA CERTIFICATION

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FCC ID:	A3LST10WLR	GRANTEE FRN NUMBER:	0005-8239-50
PLAT FORM:	Transport GX3	RTL WORK ORDER NUMBER:	2002067
MODEL(S):	MPCI3A-20/R	RTL QUOTE NUMBER:	QRTL02-413
DATE OF TEST REPORT:	April 30, 2002		
American National Standard Institute:	ANSI 63.4		
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 Radiocommunication 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	0.0135	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: May 20, 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 Communications Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 1992).

2 TEST INFORMATION

2.1 RELATED SUBMITTAL(S)/GRANT(S)

This is an original application for Certification on the WLAN card. The Matrix PC platform notebook M/N: Transport GX3; FCC ID: A3LST10 is host platform for the EUT. 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.

2.2 TEST 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, 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 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 RESULT SUMMARY

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

STANADARD	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	N/A device has integral antenna
FCC 15.247(d)	Power Spectral Density	Pass

2.5 TEST SYSTEM DETAILS

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

TABLE 2-2: EQUIPMENT UNDER TEST (EUT)

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
MATRIX III	SAMSUNG ELECTRONICS CO., LTD	MPC13A-20/R	02UT10515406 019052/B	A3LST10WLR	NA	

TABLE 2-3: EXTERNAL COMPONENTS IN TEST CONFIGURATION

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
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	011541
Power supply	Astec Custom Power	BA44-00107A European	B33738001MOB B	N/A	Unshielded Power	014186
LAPTOP	MICRON	TRANSPORT GX3	M3+020209PR67	A3LST10	N/A	14185

2.6 CONFIGURATION OF TESTED SYSTEM

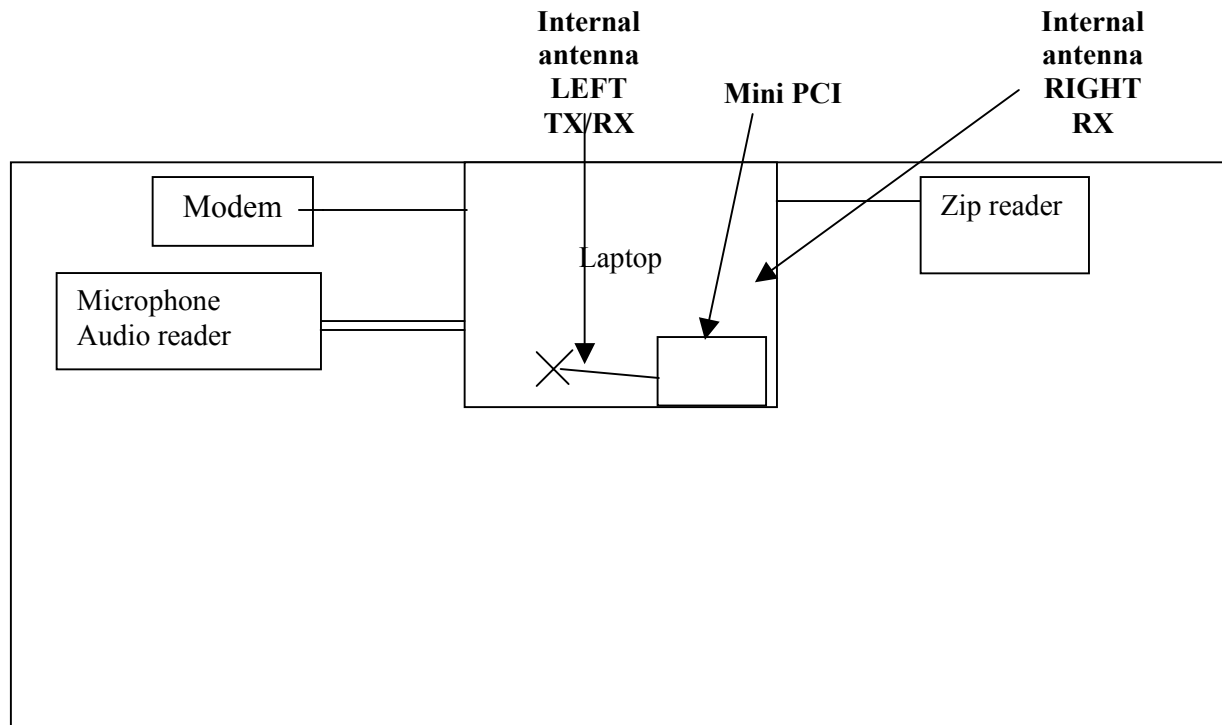


FIGURE 1: WORST CASE CONFIGURATION OF SYSTEM UNDER TEST

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 (dBμV/m)	Level Corrected (dBμV/m)	FCC Limit (dBμV/m)	FCC Margin (dB)
1	2390.0	Absolute measurement	35.0	47.0	54.0	-7.0
11	2483.5	Absolute measurement	32.6	43.7	54.0	-10.3

TEST PERSONNEL:

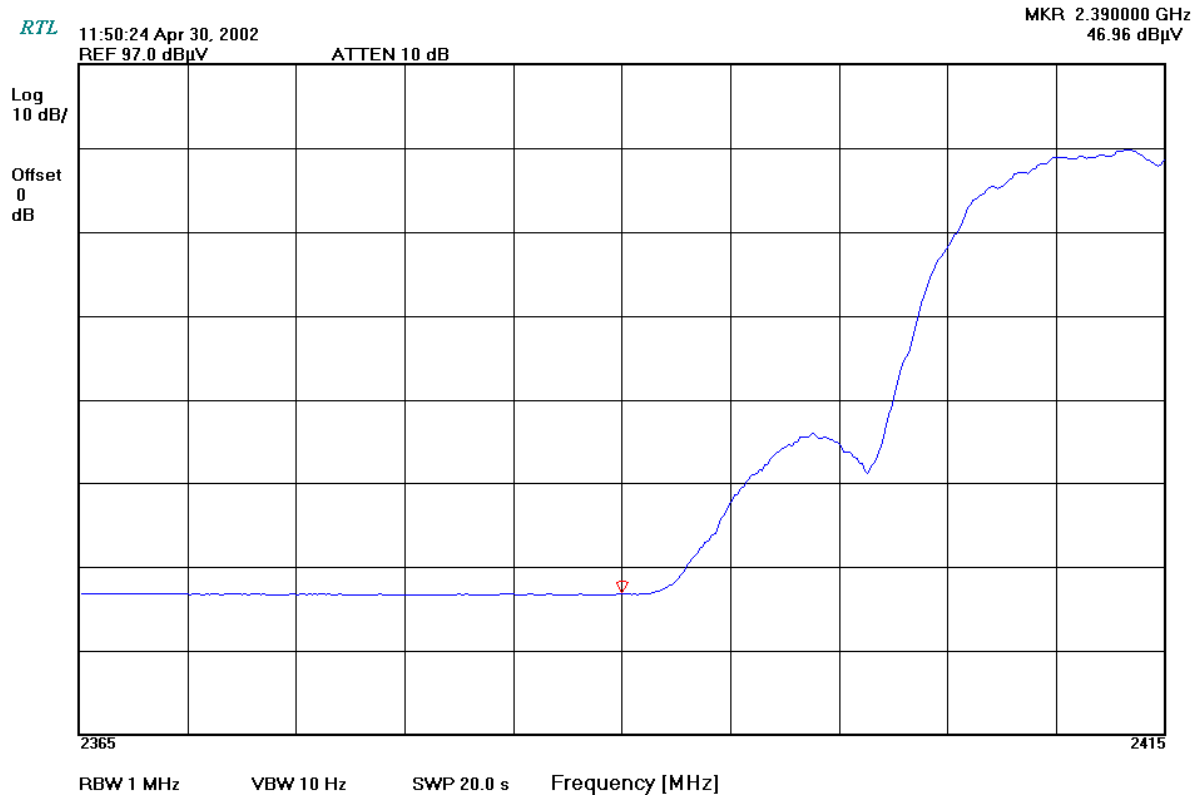
Rachid Sehb
Test Engineer


Signature

4/30/02
Date Of Test

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:

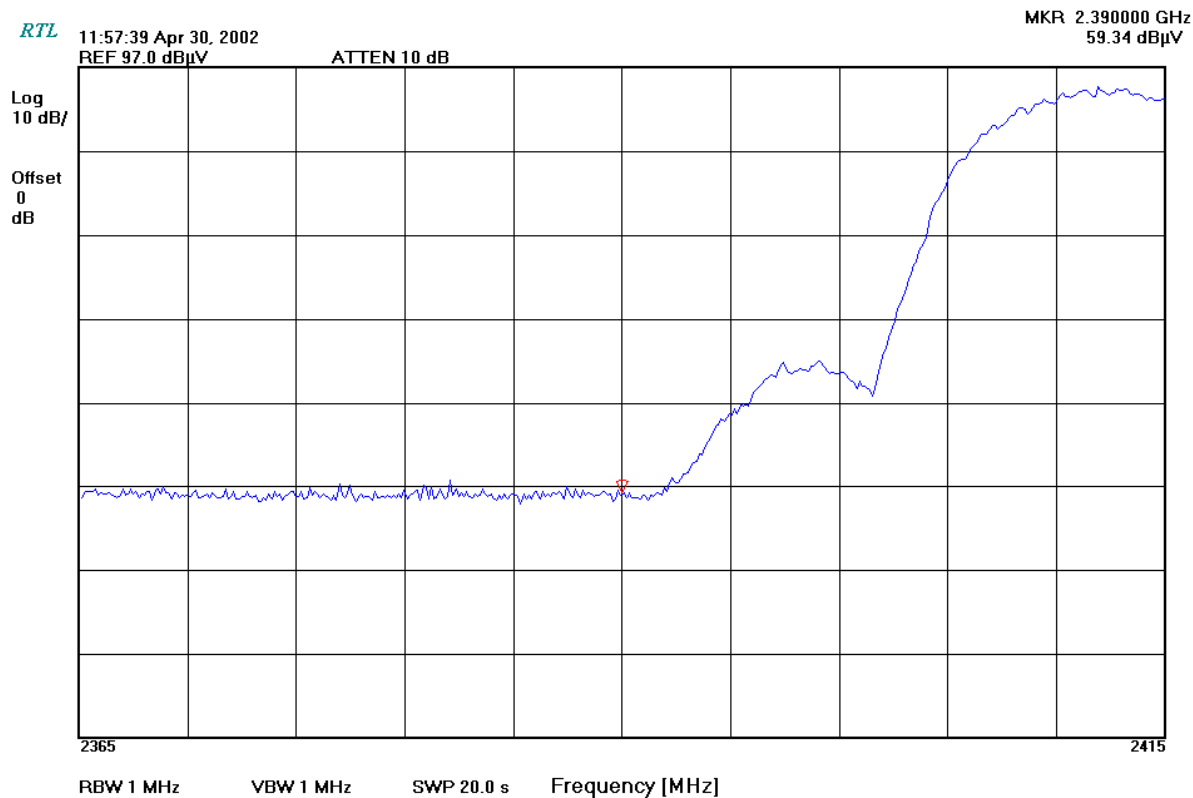
Rachid Sehb
Test Engineer

Signature

4/30/02
Date Of Test

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:

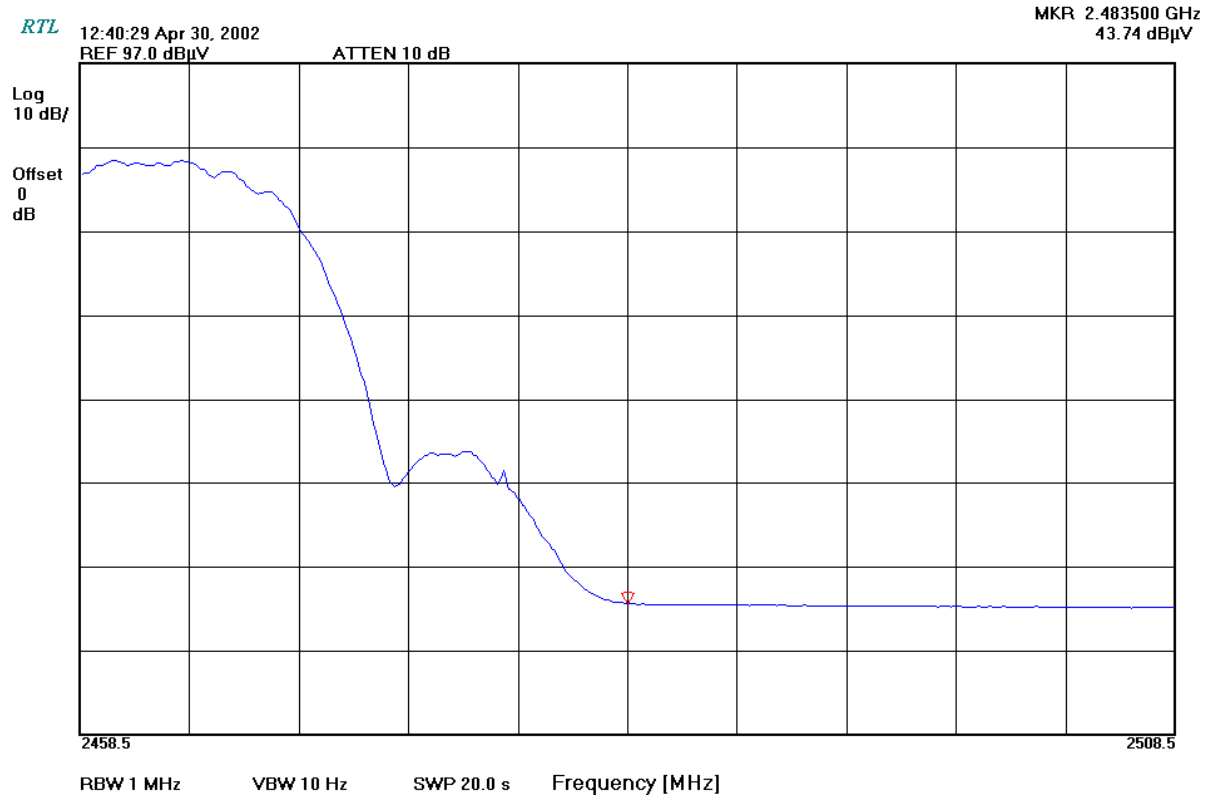
Rachid Sehb
Test Engineer

Signature

4/30/02
Date Of Test

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:

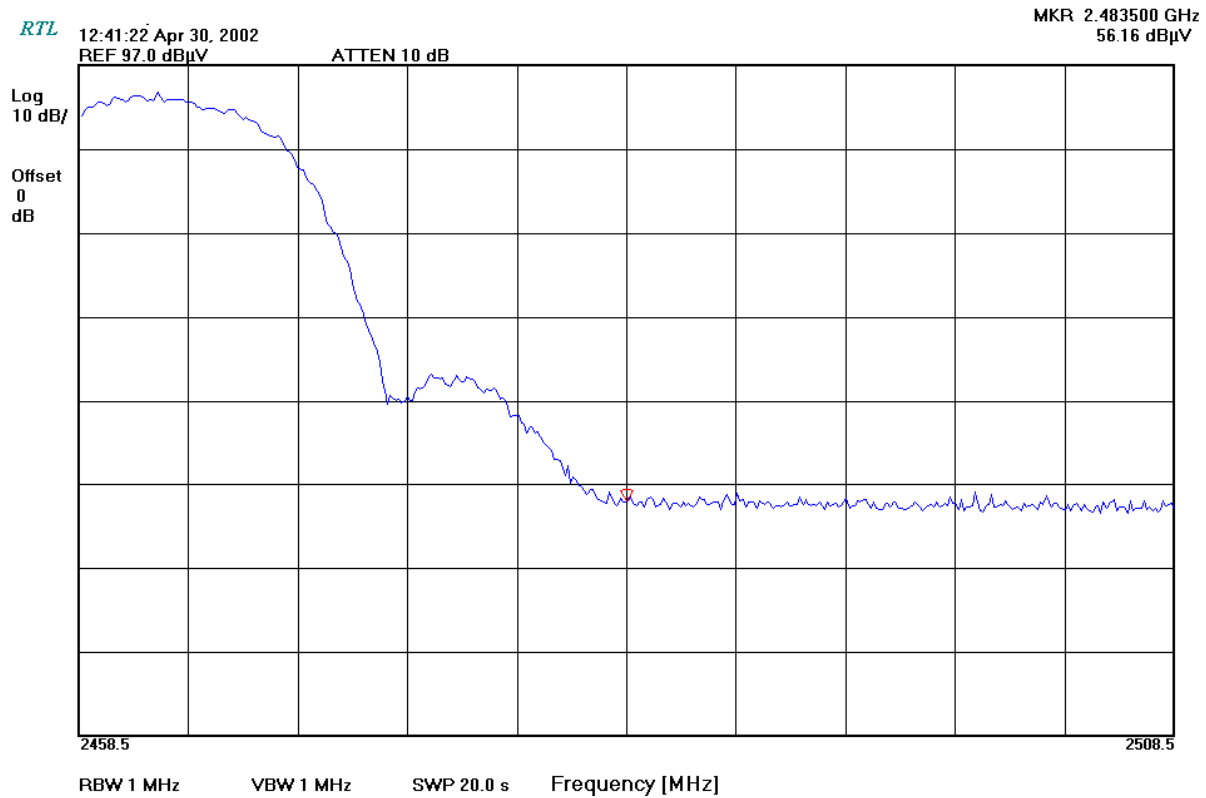
Rachid Sehb
Test Engineer

Signature

4/30/02
Date Of Test

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:

Rachid Sehb
Test Engineer

Signature

4/30/02
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.

TABLE 4-1: CONDUCTED SPURIOUS EMISSIONS TEST EQUIPMENT

RTL Asset #	Manufacturer	Model	Part Type	Serial Number
900931	HP	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771
900070	Solar		LISN	

4.3 CONDUCTED EMISSION TEST DATA

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

Temperature: 71.8°F Humidity: 24%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.450	Pk	39.2	0.8	40.0	48.0	-8.0
0.480	Pk	34.3	0.7	35.0	48.0	-13.0
3.760	Pk	24.4	1.4	25.8	48.0	-22.2
5.650	Pk	25.0	1.7	26.7	48.0	-21.3
18.060	Pk	22.4	2.9	25.3	48.0	-22.7
28.910	Pk	26.9	3.6	30.5	48.0	-17.5

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

Temperature: 71.8°F Humidity: 24%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.450	Pk	33.7	0.8	34.5	48.0	-13.5
0.860	Pk	26.4	0.7	27.1	48.0	-20.9
5.680	Pk	23.1	1.8	24.9	48.0	-23.1
9.730	Pk	21.9	1.5	23.4	48.0	-24.6
15.990	Pk	21.9	2.8	24.7	48.0	-23.3
29.410	Pk	25.0	3.6	28.6	48.0	-19.4

TEST PERSONNEL:

Rachid Sehb Test Engineer	 Signature	4/30/02 Date Of Test
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All channels in the transmitting mode were tested and investigated, channel 6 in the table above, were considered the worst-case channel.

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

Temperature: 72°F				Humidity: 43%		
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.450	Pk	39.1	0.8	39.9	48.0	-8.1
0.920	Pk	34.1	0.7	34.8	48.0	-13.2
3.820	Pk	26.2	1.4	27.6	48.0	-20.4
4.820	Pk	26.4	1.6	28.0	48.0	-20.0
25.720	Pk	25.1	3.4	28.5	48.0	-19.5
28.200	Pk	27.0	3.6	30.6	48.0	-17.4

TABLE 4-5: CONDUCTED EMISSIONS (NEUTRAL SIDE) RECEIVING CH 6

Temperature: 72°F				Humidity: 43%		
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.450	Pk	35.3	0.8	36.1	48.0	-11.9
2.220	Pk	23.8	1.2	25.0	48.0	-23.0
5.620	Pk	22.4	1.8	24.2	48.0	-23.8
16.700	Pk	22.5	2.8	25.3	48.0	-22.7
22.610	Pk	20.7	3.3	24.0	48.0	-24.0
28.940	Pk	23.9	3.6	27.5	48.0	-20.5

TEST PERSONNEL:

Rachid Sehb Test Engineer	 _____ Signature	4/30/02 Date Of Test
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All channels in the receiving mode were tested and investigated, channel 6 in the table above, were considered the worst-case channel.

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 TEST EQUIPMENT USED FOR TESTING

TABLE 5-1: 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

5.3 RADIATED EMISSION LIMITS TEST DATA

TABLE 5-2: RADIATED EMISSIONS TRANSMITTING CH6

Temperature: 50°F Humidity: 89%									
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)
66.000	Qp	V	312	1.0	44.3	-16.1	28.2	40.0	-11.8
132.000	Qp	H	12	3.5	38.0	-12.5	25.5	43.5	-18.0
220.000	Qp	V	90	1.0	34.8	-9.8	25.0	46.0	-21.0
352.000	Qp	V	265	1.0	37.2	-4.9	32.3	46.0	-13.7
418.000	Qp	V	5	2.6	30.8	-2.9	27.9	46.0	-18.1
440.000	Qp	V	45	1.0	38.1	-2.7	35.4	46.0	-10.6
660.000	Qp	V	269	1.0	33.7	3.1	36.8	46.0	-9.2
682.000	Qp	V	89	1.0	35.8	3.0	38.8	46.0	-7.2

TABLE 5-3: RADIATED EMISSIONS RECEIVING CH6

Temperature: 50°F Humidity: 99%									
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)
66.000	Qp	H	65	2.0	42.3	-16.3	26.0	40.0	-14.0
132.000	Qp	H	145	3.0	36.2	-12.5	23.7	43.5	-19.8
220.000	Qp	H	270	3.0	36.8	-10.5	26.3	46.0	-19.7
352.000	Qp	V	185	1.0	37.1	-4.9	32.2	46.0	-13.8
418.000	Qp	V	320	1.0	34.1	-2.9	31.2	46.0	-14.8
440.000	Qp	V	234	2.0	35.0	-2.7	32.3	46.0	-13.7
660.000	Qp	V	198	1.0	32.0	3.1	35.1	46.0	-10.9
682.000	Qp	V	255	1.0	34.9	3.0	37.9	46.0	-8.1

TEST PERSONNEL:

Rachid Sehb		4/30/02
Test Technician/Engineer	Signature	Date Of Test

All channels in the transmitting and receiving mode were tested and investigated between 10 kHz and 1GHz, channel 6 in the tables above, were considered the worst-case channel in both modes.

Operating Frequency (MHz): 2412
 Channel: 1
 Measured Cond. Pwr. (dBm): 15.6

Measured EIRP (dBm): 11.0
 Antenna: Dipole antenna

TABLE 5-4: 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)
2390.091	Av	V	10	1.0	36.5	3.4	39.9	54.0
2389.862	Pk	V	10	1.0	49.4	3.4	52.8	
2412.641	Av	V	10	1.0	92.4	3.3	95.7	Fundamental
2412.401	Pk	V	10	1.0	99.4	3.3	102.7	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	
7236.572	Av	V	20	1.0	35.4	9.7	45.1	54.0
7236.572	Pk	V	20	1.0	46.0	9.7	55.7	
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:

Rachid Sehb
 Test Engineer



Signature

4/30/02
 Date Of Test

Operating Frequency (MHz): 2437
Channel: 6
Measured Cond. Pwr. (dBm): 15.7

Measured EIRP (dBm): 11.3
Antenna: Dipole antenna

TABLE 5-5: 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	92.0	3.1	95.1	Fundamental
2437.51	Pk	V	20	1.2	99.9	3.1	103.0	Fundamental
4877.00	Av	V	20	1.0	32.0	11.4	43.4	54.0
4877.00	Pk	V	20	1.0	45.0	11.4	56.4	
7315.50	Av	V	10	1.2	35.0	9.7	44.7	54.0
7315.50	Pk	V	10	1.2	45.0	9.7	54.7	
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:

Rachid Sehb
Test Engineer



Signature

4/30/02
Date Of Test

Operating Frequency (MHz): 2462
 Channel: 11
 Measured Cond. Pwr. (dBm): 15.8

Measured EIRP (dBm): 10.3
 Antenna: Dipole antenna

TABLE 5-6: 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	91.5	2.9	94.4	Fundamental
2462.59	Pk	V	20	1.3	99.0	2.9	101.9	Fundamental
2483.36	Av	V	20	1.2	35.0	2.7	37.7	54.0
2483.47	Pk	V	20	1.2	47.0	2.7	49.7	
4922.00	Av	V	10	1.2	32.0	11.4	43.4	54.0
4922.00	Pk	V	10	1.0	44.6	11.4	56.0	
7383.00	Av	V	10	1.0	35.0	9.7	44.7	54.0
7383.00	Pk	V	10	1.2	45.0	9.7	54.7	
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; <20dB= 20dB BELOW THE LIMIT

TEST PERSONNEL:

Rachid Sehb
 Test Engineer



Signature

4/30/02
 Date Of Test

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 TEST EQUIPMENT USED FOR TESTING

TABLE 6-1: TEST EQUIPMENT USED FOR TESTING (MODULATED BANDWIDTH)

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

6.3 MODULATED BANDWIDTH TEST DATA

TABLE 6-2: MINIMUM 6 DB MODULATED BANDWIDTHS

CHANNEL	6 dB BANDWIDTH (MHz)
1	11.4
6	11.4
11	11.5

TEST PERSONNEL:

Rachid Sehb
Test Engineer

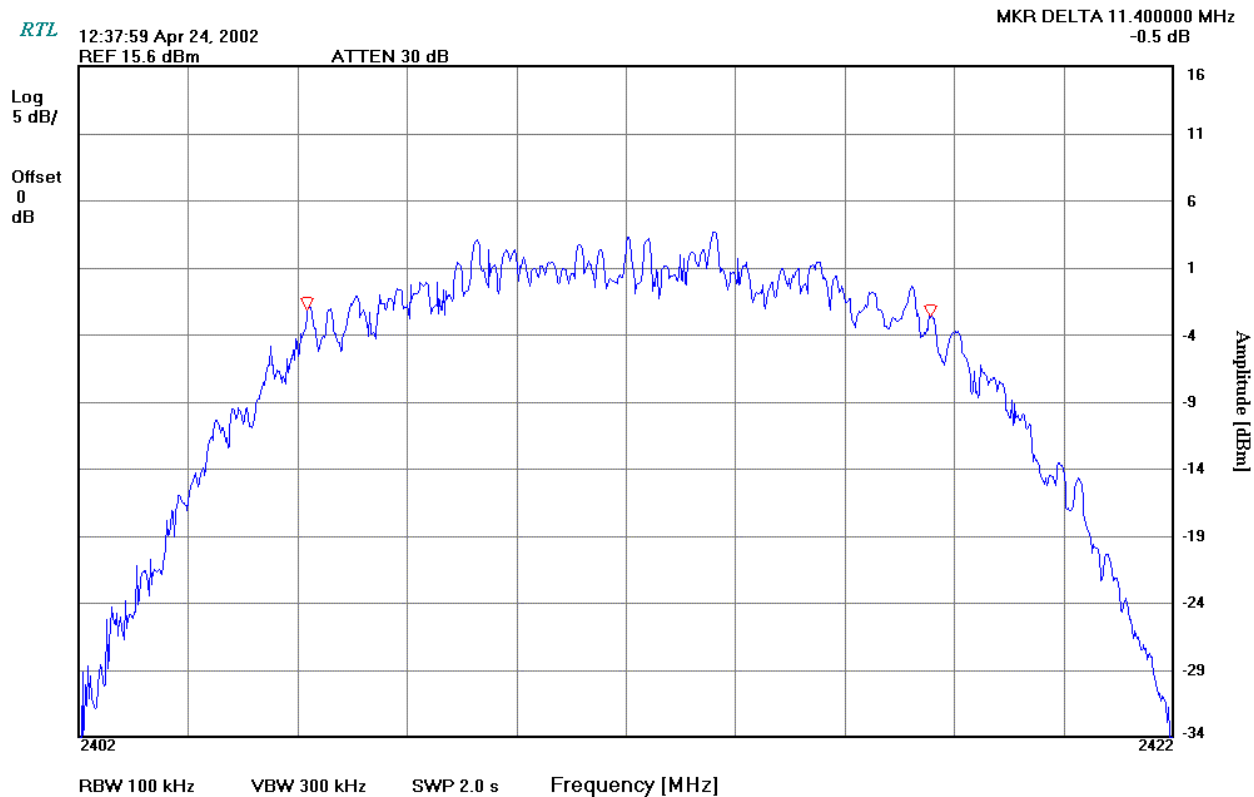

Signature

4/30/02
Date Of Test

6.4 MODULATED BANDWIDTH PLOTS

Channel Number: 1
Frequency (MHz): 2412
Resolution Bandwidth: 100kHz
Video Bandwidth: 300kHz
Sweep Time: 2.0s

PLOT 6-1: MODULATED BANDWIDTH CHANNEL 1



TEST PERSONNEL:

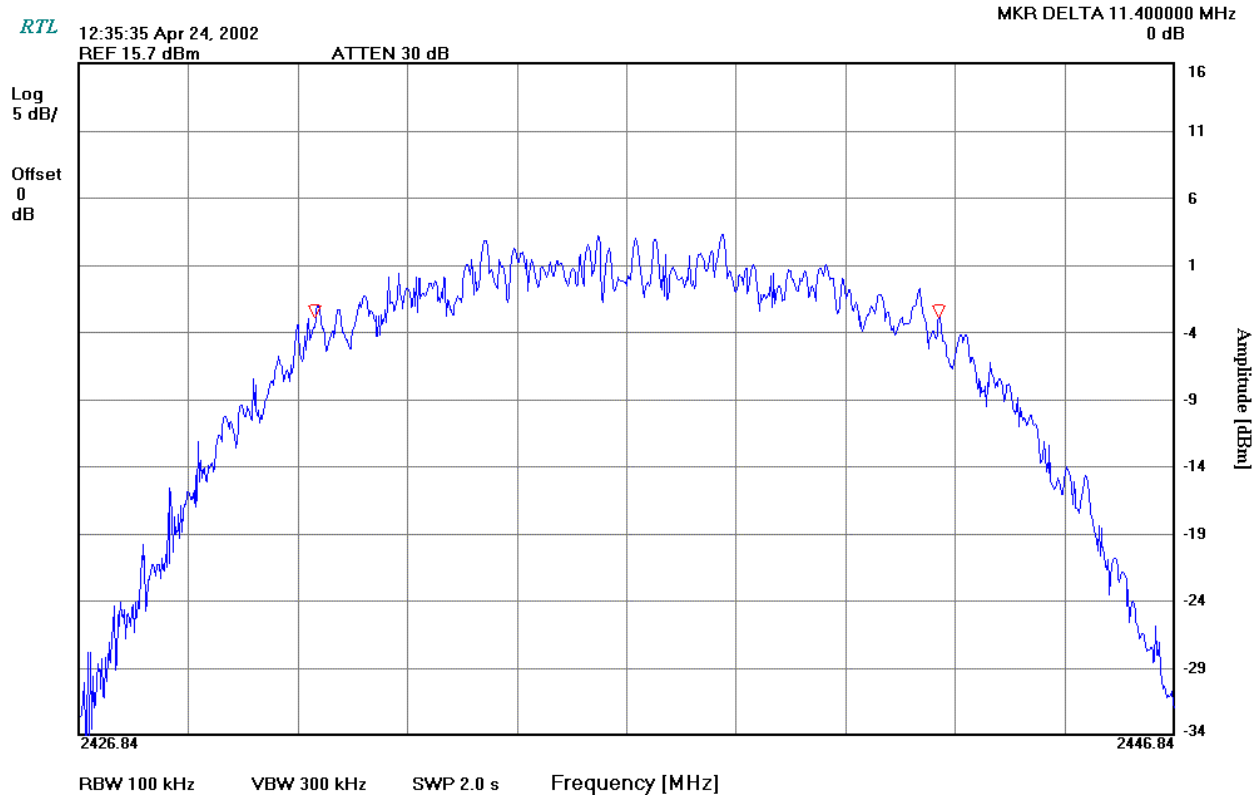
Rachid Sehb
Test Engineer

Signature

4/30/02
Date Of Test

Channel Number: 6
Frequency (MHz): 2437
Resolution Bandwidth: 100kHz
Video Bandwidth: 300kHz
Sweep Time: 2.0s

PLOT 6-2: MODULATED BANDWIDTH CHANNEL 6



TEST PERSONNEL:

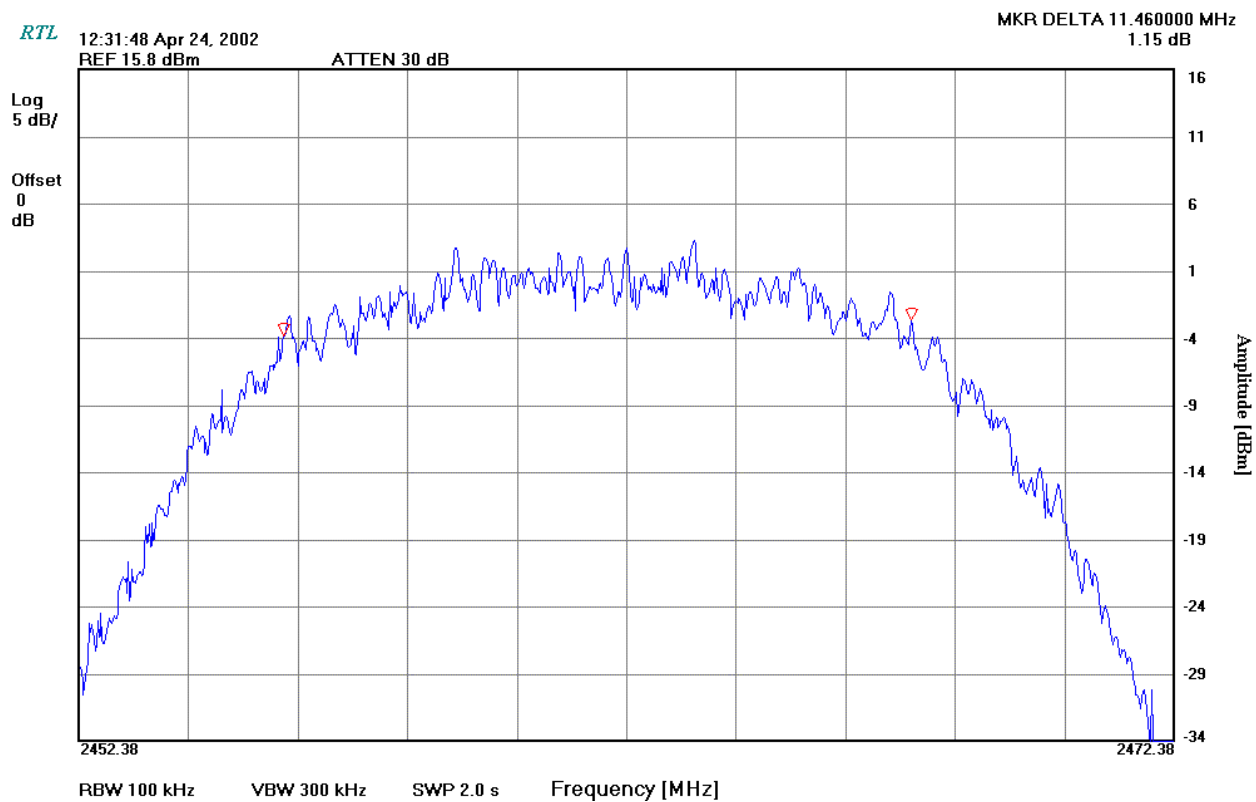
Rachid Sehb
Test Engineer

Signature

4/30/02
Date Of Test

Channel Number: 11
Frequency (MHz): 2462
Resolution Bandwidth: 100kHz
Video Bandwidth: 300kHz
Sweep Time: 2.0s

PLOT 6-3: MODULATED BANDWIDTH CHANNEL 11



TEST PERSONNEL:

Rachid Sehb
Test Engineer

Signature

4/30/02
Date Of Test

7 POWER OUTPUT - §15.247(B)

7.1 POWER OUTPUT TEST PROCEDURE

The peak conducted output power of the EUT was measured using an Agilent 4416A EPM-P Series Power Meter with an E9323A Peak and Average Power Sensor. The EIRP measurement was performed as a radiated test using the substitution method

7.2 TEST EQUIPMENT USED FOR TESTING

TABLE 7-1: TEST EQUIPMENT USED FOR TESTING (RADIATED RF OUTPUT – EIRP)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number
901186	Agilent Technologies	E9323A (50MHz-6GHz)	Peak & Avg. Power Sensor	US40410380
901184	Agilent Technologies	E4416A	EPM-P Power Meter, single channel	GB41050573
900931	HP	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771
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

7.3 POWER OUTPUT TEST DATA

TABLE 7-2: POWER OUTPUT TEST DATA

Operating Frequency (MHz): 2412MHz, 2437MHz, 2462MHz
Channel: 1, 6 & 11
Measured Cond. Pwr. (dBm): 15.6, 15.7 & 15.8
Measured EIRP (dBm): 11.0, 11.3 & 10.3
Modulation bandwidth: 11.5MHz
Antenna: Dipole Antenna

TABLE 7-3: POWER OUTPUT TEST DATA

CHANNEL	EIRP (dBm)*	POWER CONDUCTED OUTPUT (dBm)
1	11.0	15.6
6	11.3	15.7
11	10.3	15.8

*Measurement accuracy is +/- 1.5 dB

TEST PERSONNEL:

Rachid Sehb
Test Engineer


Signature

4/30/02
Date Of Test

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 9 kHz 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):
Channel:
Measured Cond. Pwr. (dBm):
Measured EIRP (dBm):
Limit:

TABLE 8-1: ANTENNA CONDUCTED SPURIOUS EMISSIONS

This device contains an integral antenna. This section does not apply.

TEST PERSONNEL:

Test Technician/Engineer

Signature

Date Of Test

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 using a 50 ohm spectrum analyzer with the resolution bandwidth set at 3 kHz, the video bandwidth set at 30 kHz, and the sweep time set at 1000 second. Since the EUT has an integral antenna, the test was performed as a radiated testing. The 6 dB value on the bandwidth plots were corrected using the site correction factor (i.e. cable loss, amplifier gain, and antenna factor) and the path loss at 3 meter distance; and referenced to the EIRP value measured in section 7 of this report. The spectral lines were resolved for the modulated carriers at 2.412GHz, 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):
Modulation Bandwidth: 11.5 MHz
Limit: 8dBm

TABLE 9-2: POWER SPECTRAL DENSITY

CHANNEL	POWER SPECTRAL DENSITY LIMIT = +8dBm
1	3.7
6	5.6
11	3.6

TEST PERSONNEL:

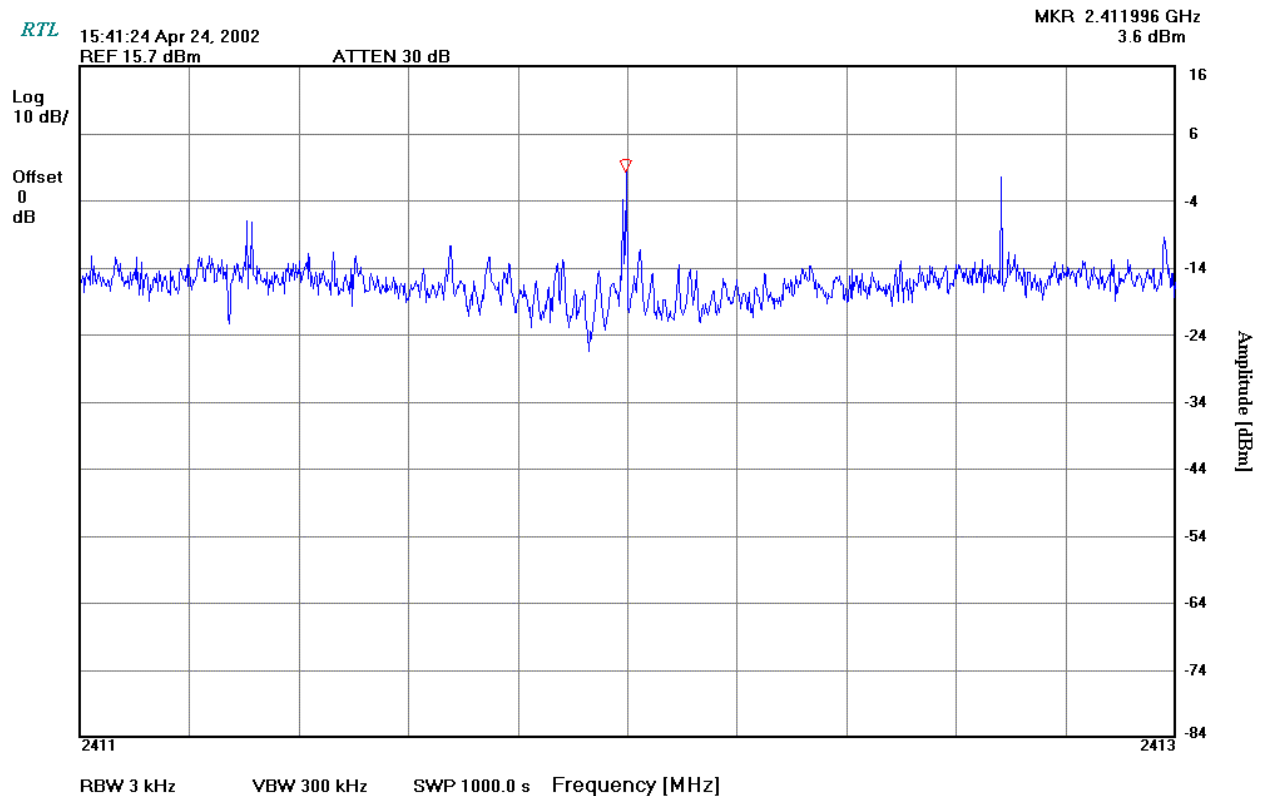
Rachid Sehb
Test Engineer


Signature

4/30/02
Date Of Test

Operating Frequency (MHz): 2412
Channel: 1
Measured Cond. Pwr. (dBm): 15.6
Measured EIRP (dBm): 11.0
Bandwidth Resolution: 3kHz
Bandwidth Video: 300kHz
Sweep Time: 1000.0s

PLOT 9-1: POWER SPECTRAL DENSITY: CHANNEL 1



TEST PERSONNEL:

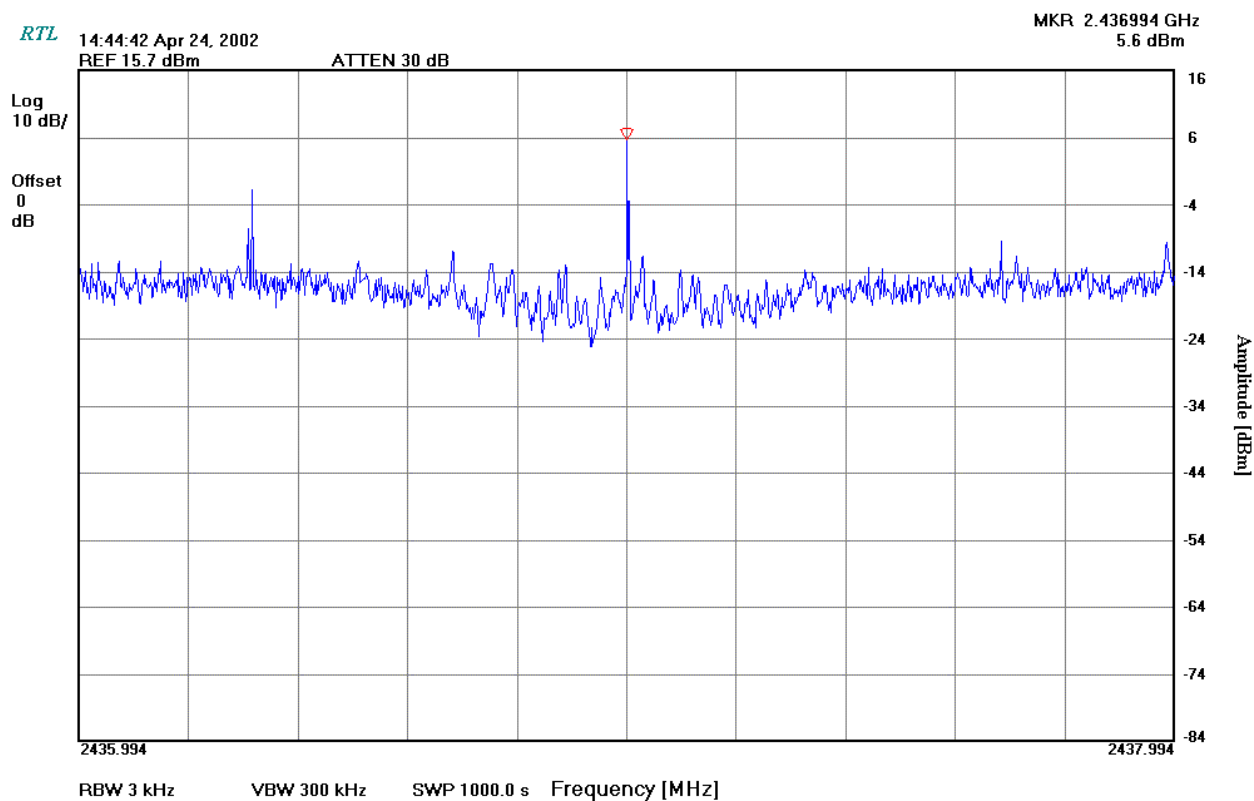
Rachid Sehb
Test Engineer

Signature

4/30/02
Date Of Test

Operating Frequency (MHz): 2437
Channel: 6
Measured Cond. Pwr. (dBm): 15.7
Measured EIRP (dBm): 11.3 11.3
Bandwidth Resolution: 3kHz
Bandwidth Video: 300kHz
Sweep Time: 1500.0s

PLOT 9-2: POWER SPECTRAL DENSITY: CHANNEL 6



TEST PERSONNEL:

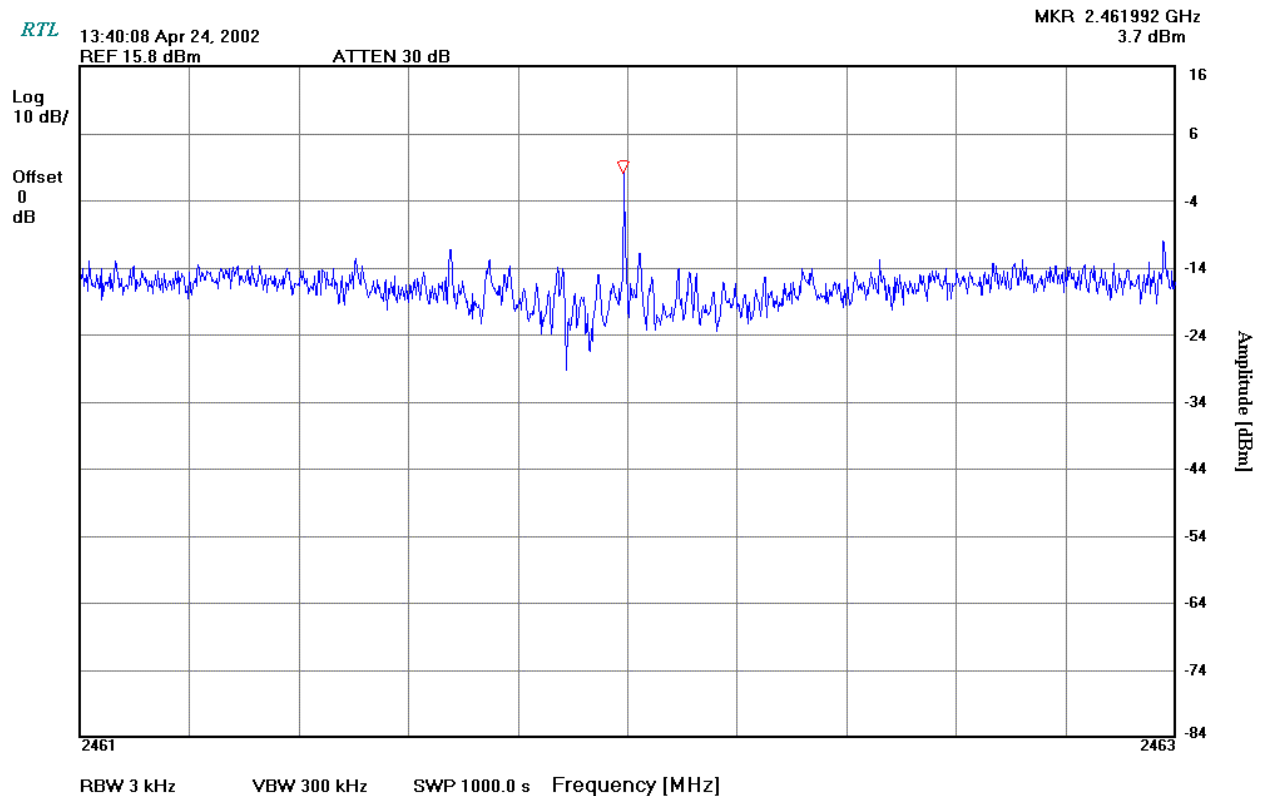
Rachid Sehb
Test Engineer

Signature

4/30/02
Date Of Test

Operating Frequency (MHz): 2462
Channel: 11
Measured Cond. Pwr. (dBm): 15.8
Measured EIRP (dBm): 10.3
Bandwidth Resolution: 3kHz
Bandwidth Video: 300kHz
Sweep Time: 1000.0s

PLOT 9-3: POWER SPECTRAL DENSITY: CHANNEL 11



TEST PERSONNEL:

Rachid Sehb
Test Engineer

Signature

4/30/02
Date Of Test

10 CONCLUSION

The data in this measurement report shows that the **Samsung Electronics Co., LTD, Model:** MPC13A-20/R, FCC ID: A3LST10WLR, **Platform:** Transport GX3, **FCC ID:** A3LST10WL complies with all the requirements of Parts 2 and 15 of the FCC Rules and Industry Canada RSS-210.