

FCC CFR47 PART 15 CERTIFICATION



TEST REPORT

FOR

11 Mbps RF MODULE

MODEL: GINA-2011

FCC ID: DE8-2011

REPORT NUMBER: 01U0988-1

ISSUE DATE: OCTOBER 2, 2001

Prepared for
GRE AMERICA, INC.
425 HARBOR BLVD.
BELMONT, CA 94002
USA

Prepared by
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LAB CODE:200065-0

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ATTACHMENTS

- EUT PHOTOGRAPHS
- MPE CALCULATION
- FREQUENCY RANGE-CORRECTION LETTER
- PROPOSED FCC ID LABEL
- AGENT AUTHORIZATION LETTER
- REQUEST FOR CONFIDENTIALITY
- ANTENNA SPECIFICATION
- USER'S MANUAL
- PART LIST
- PRODUCT SPECIFICATION
- PROCESSING GAIN
- THEORY OF OPERATION
- RF BLOCK DIAGRAM & SCHEMATIC DIAGRAM

1. TEST RESULT CERTIFICATION

COMPANY NAME: GRE AMERICA, INC.
425 HARBOR BLVD.
BELMONT, CA 94002 USA

CONTACT PERSON: TERU TAKAHASHI / PRESIDENT

TELEPHONE NO: 650-591-1400

EUT DESCRIPTION: 11 MBPS RF MODULE

MODEM NAME: GINA-2011

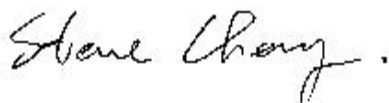
DATE TESTED: OCTOBER 02, 2001

TYPE OF EQUIPMENT	INTENTIONAL RADIATOR
EQUIPMENT TYPE	2.4GHz TRANSCEIVER
MEASUREMENT PROCEDURE	ANSI 63.4 / 1992, TIA/EIA 603
PROCEDURE	CERTIFICATION
FCC RULE	CFR 47 PART 15.247

Compliance Certification Services, Inc. tested the above equipment for compliance with the requirement set forth in CFR 47, PART 15.247. The equipment in the configuration described in this report, shows the measured emission levels emanating from the equipment do not exceed the specified limit.

Note: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Approved & Released For CCS By:



STEVE CHENG
EMC ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES

Tested By:



HUE LY VANG
ASSOCIATE EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The GINA-2011 is a small, versatile high performance RF Module that delivers data up to speeds of 11Mbps/s. The Module is designed to provide up to 0.5 watt (27dBm) output power. The GINA-2011 RF Module is available as a plug-in module for those Research who wish to interface it with there own designed controllers.

GINA-2011 operates at 2.4 GHz Direct Sequence Spread Spectrum (DSSS) Module physical layer can be compliant with IEEE 802.11b standard insures interoperability with other Wireless LAN products.

GINA-2011's highly integrated digital modulation transceiver module can also be used for factory automation equipment and barcode readers, embedded systems, and other applications.

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures documented on chapter 13 of ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

4. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5. ACCREDITATION AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200065-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT (1300B3) and 31040/SIT (1300F2))

5.1. Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	NVLAP*	FCC Part 15, CISPR 22, AS/NZS 3548, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, CNS 13438	 200065-0
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 1300
Japan	VCCI	CISPR 22 Two OATS and one conducted Site	VCCI R-1014, R-619, C-640
Norway	NEMKO	EN50081-1, EN50081-2, EN50082-1, EN50082-2, IEC61000-6-1, IEC61000-6-2, EN50083-2, EN50091-2, EN50130-4, EN55011, EN55013, EN55014-1, EN55104, EN55015, EN61547, EN55022, EN55024, EN61000-3-2, EN61000-3-3, EN60945, EN61326-1	 ELA 117
Norway	NEMKO	EN60601-1-2 and IEC 60601-1-2, the Collateral Standards for Electro-Medical Products. MDD, 93/42/EEC, AIMD 90/385/EEC	 ELA-171
Taiwan	BSMI	CNS 13438	 SL2-IN-E-1012
Canada	Industry Canada	RSS210 Low Power Transmitter and Receiver	 IC2324 A,B,C, and F

*No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government

6. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

TEST EQUIPMENTS LIST				
Name of Equipment	Manufacturer	Model No.	Serial No.	Due Date
Spectrum Analyzer	HP100Hz - 22GHz	8566B	2140A01296	5/4/02
Spectrum Display	HP	85662A	2152A03066	4/10/02
Quasi-Peak Detector	HP9K - 1GHz	85650A	2811A01155	5/4/02
Pre-Amplifier, 25 dB	HP 0.1 - 1300MHz	8447D (P_1M)	2944A06833	11/21/01
Antenna, BiLog	Chase 30 - 2000MHz	CBL6112	2049	12/11/01
LISN	Fisher Cus. Comm.	LISN-50/250-25-2	2023	8/5/02
EMI Test Receiver	Rohde & Schwarz	ESHS 20	827129/006	2/28/02
EMC Receiver (9K-26.5GHz)	HP	8593EM	3710A00205	6/20/02
Horn Antenna(1 - 18GHz)	EMCO	3115	2238	6/20/02
Horn Antenna,(18 - 26GHz)	Antenna Research Associate	MWH 1826/B	1013	7/26/02
Power Meter	HP	436A	2709A29209	2/8/02
High pass filter	ESM Microwave	HM 4570-9SS	3	N C R

6.1. Measurement Uncertainty

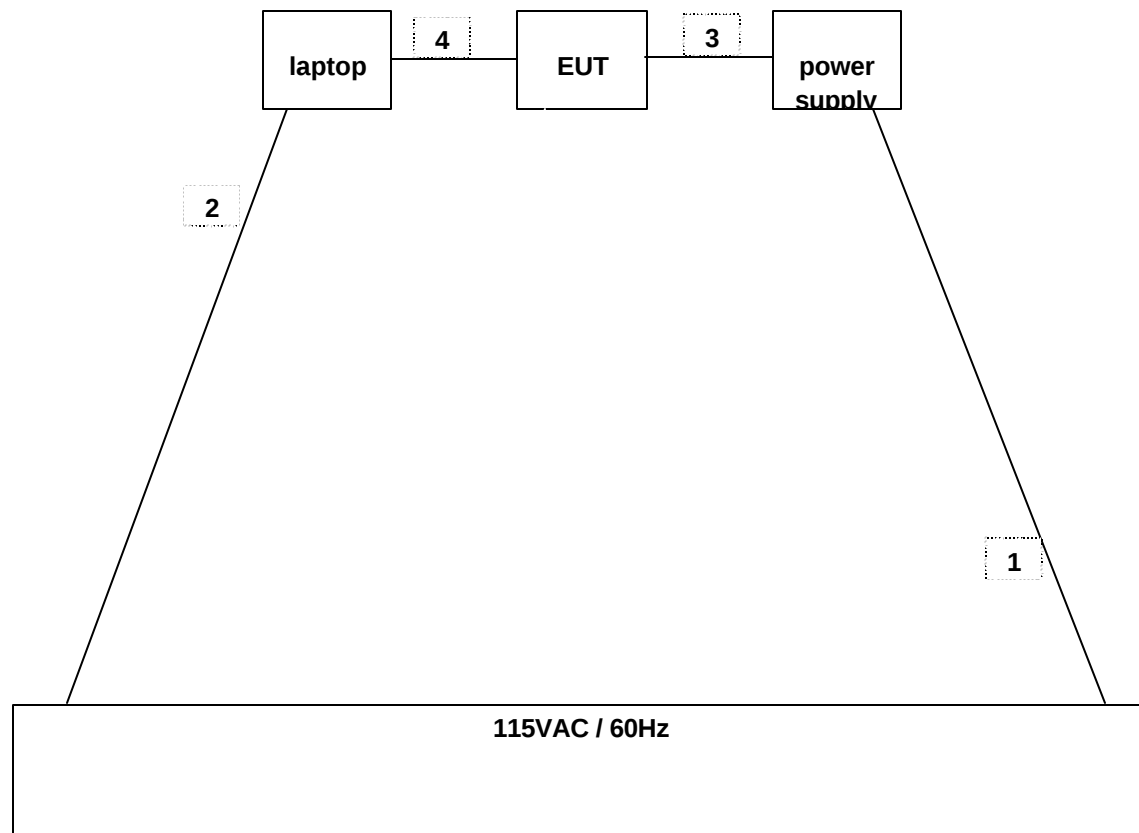
Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Radiated Emission	
30MHz – 200 MHz	+/- 3.3dB
200MHz – 1000MHz	+4.5/-2.9dB
1000MHz – 2000MHz	+4.6/-2.2dB
Power Line Conducted Emission	
150kHz – 30MHz	+/-2.9

Any results falling within the above values are deemed to be marginal.

7. SUPPORT EQUIPMENT / TEST DIAGRAM

TEST PERIPHERALS				
Device Type	Manufacturer	Model Number	Serial Number	FCC ID
Power Supply	Kikusui Corp.	PAB	A9288132	DoC
Laptop	Hitachi	7360	TD045700087	DoC
AC/DC Adaptor	Phihong	PSA10R-075CB	C11201385A1	DoC



8. APPLICABLE RULES AND BRIEF TEST RESULT

§15.247- POWER LIMIT

(b) The maximum peak output power of the intentional radiator shall not exceed the following:

(1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels, all frequency hopping systems in the 5725-5850 MHz band, and all direct sequence systems: 1 watt.

Spec limit: As specified above, 1W maximum.

Test result: No non-compliance noted.

Channel	Frequency (MHz)	EUT reading (dBm)	6 dB Bandwidth (MHz)	True Power (dBm)
1	2412	20.8	9.75	25.92
6	2436	22.2	9.09	27.01
11	2462	19.3	9.66	24.4

§14.407- BANDWIDTH LIMITATION

(2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

Spec limit: > 500 kHz.

Test result: No non-compliance noted.

Channel	Frequency (MHz)	Bandwidth(MHz)
1	2412	9.75
6	2436	9.09
11	2462	9.66

§15.247- PEAK POWER SPECTRAL DENSITY

(d) For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Spec limit: < 8dBm.

Test result: No non-compliance noted.

Channel	Frequency (MHz)	Results (dBm)
1	2412	-3.5
6	2436	-1.7
11	2462	-4.5

§15.247- PROCESS GAIN

(e) The processing gain of a direct sequence system shall be at least 10 dB. The processing gain represents the improvement to the received signal-to-noise ratio, after filtering to the information bandwidth, from the spreading/despreading function.

Spec limit: >10dBm.

Test result: No non-compliance noted.

§15.205- RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

Spec limit: As specified above,.

Test result: No non-compliance noted. See section 9.7 Radiated Emission.

§90.209- RADIATED EMISSION LIMITS; GENERAL REQUIREMENTS

(a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

(b) In the emission table above, the tighter limit applies at the band edges.

FCC PART 15 CLASS A

MEASURING DISTANCE OF 10 METER		
FREQUENCY RANGE (MHz)	FIELD STRENGTH (Microvolts/m)	FIELD STRENGTH (dBuV/m)
30-88	90	39.1
88-216	150	43.5
216-960	210	46.4
Above 960	300	49.5

FCC PART 15 CLASS B

MEASURING DISTANCE OF 3 METER		
FREQUENCY RANGE (MHz)	FIELD STRENGTH (Microvolts/m)	FIELD STRENGTH (dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Spec limit: As specified above.

Test result: No non-compliance noted.

§15.207- CONDUCTED LIMITS

(a) For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 450 kHz to 30 MHz shall not exceed 250 microvolts. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

FCC CLASS A

FREQUENCY RANGE	FIELD STRENGTH (Microvolts)	FIELD STRENGTH (dBuV)/QP
450kHz-1.705MHz	1000	60
1.705MHz - 30MHz	3000	69.54

FCC CLASS B

FREQUENCY RANGE	FIELD STRENGTH (Microvolts)	FIELD STRENGTH (dBuV)/QP
450kHz-30MHz	250	48

Spec limit: As specified above.

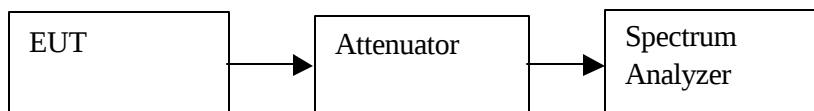
Test result: No non-compliance noted. No radiated emissions were detected other than the fundamental frequency and harmonics. Line conducted emissions comply.

9. TEST SETUP, PROCEDURE AND RESULT

9.1. CONDUCTED POWER

9.1.1. Spectrum Analyzer Measurement

TEST SETUP



Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 3 MHz ☐ 1 MHz	☒ 3 MHz ☐ 10 Hz

TEST PROCEDURE

The EUT is configured on a test bench as shown above in a continuously transmitting / receiving mode. While the transceiver started, the analyzer MAX HOLD function is used to capture the emissions.

Then that number is added to the 6 dB correction factor.

Formula = reading + 10 log (6dB bandwidth / resolution bandwidth)

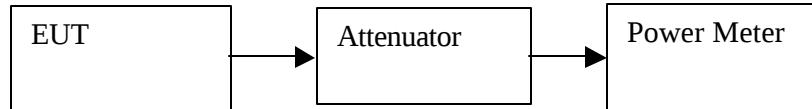
Channel	Frequency (MHz)	EUT reading (dBm)	6 dB Bandwidth (MHz)	True Power (dBm)
1	2412	20.8	9.75	25.92
6	2436	22.2	9.09	27.01
11	2462	19.3	9.66	24.4

See plots:

6 dB plots is in the 6 dB bandwidth measurement sections

9.1.2. Power Meter Measurement

TEST SETUP



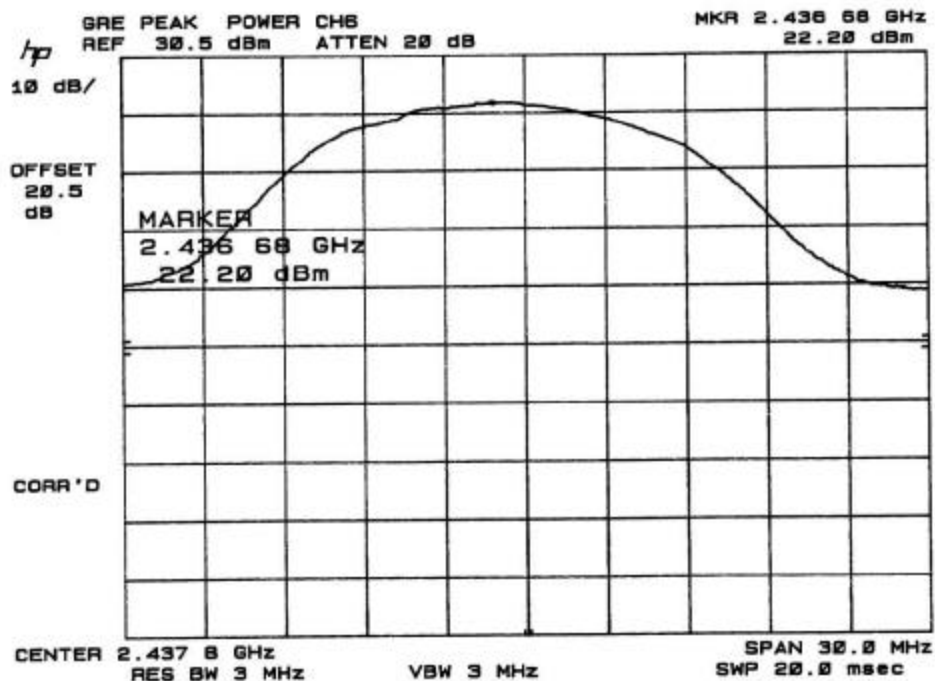
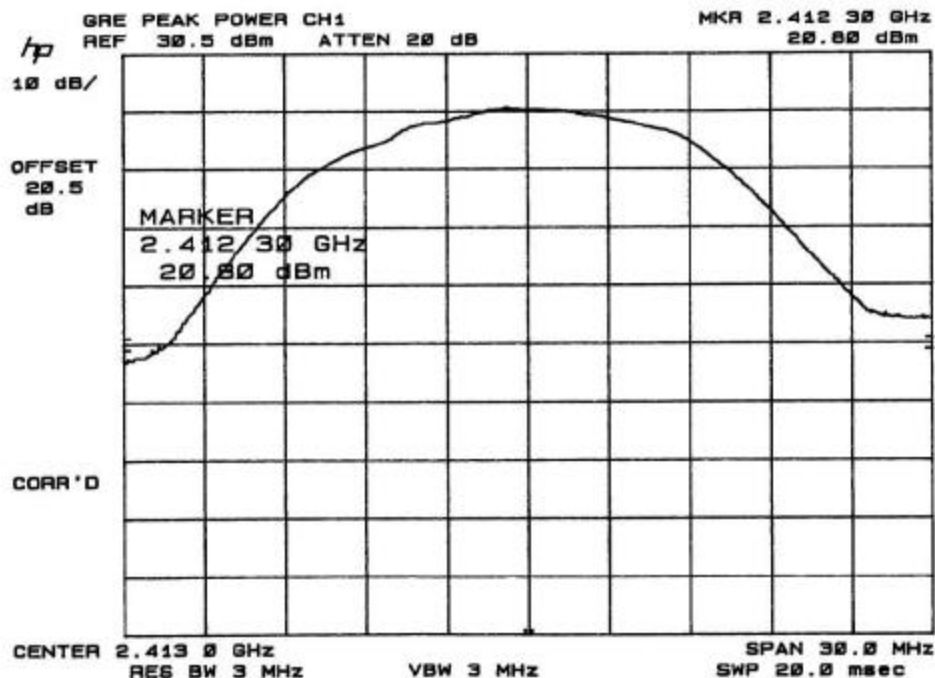
TEST PROCEDURE

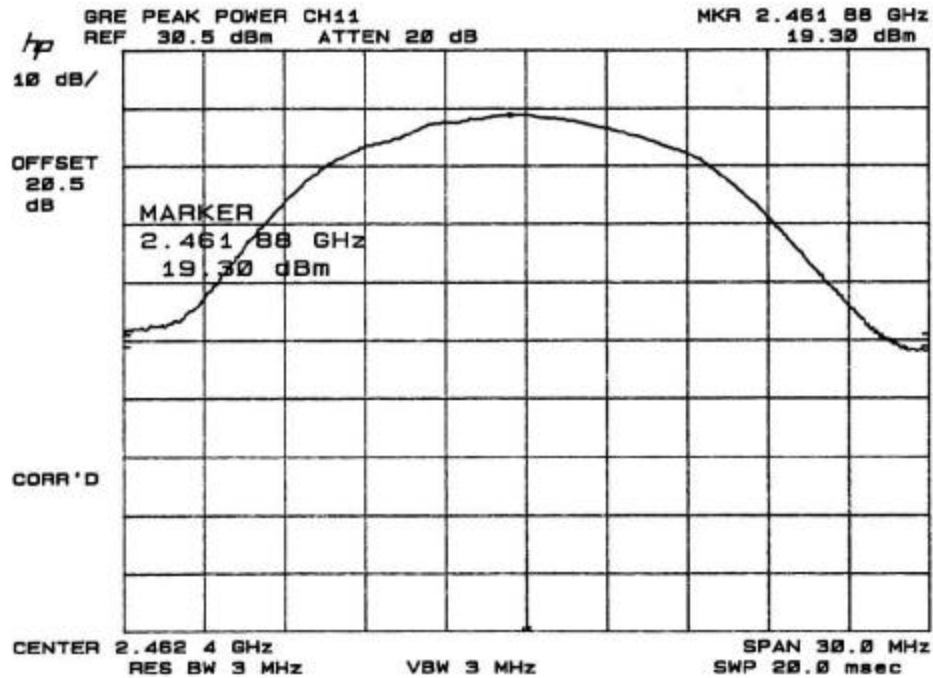
The EUT is configured on a test bench as shown above in a continuously transmitting / receiving mode.

RESULT

No non-compliance noted.

<i>Channel</i>	<i>Frequency (MHz)</i>	<i>Output Power(watts)</i>
<i>1</i>	<i>2412</i>	<i>92.26mWatt(19.65dBm)</i>
<i>6</i>	<i>2436</i>	<i>154.88mWatt(21.9dBm)</i>
<i>11</i>	<i>2462</i>	<i>59.67mWatt(17.75dBm)</i>





9.2. 6 dB BANDWIDTH MEASUREMENT

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 100 kHz ☐ 1 MHz	☒ 100 kHz ☐ 1 MHz

TEST SETUP

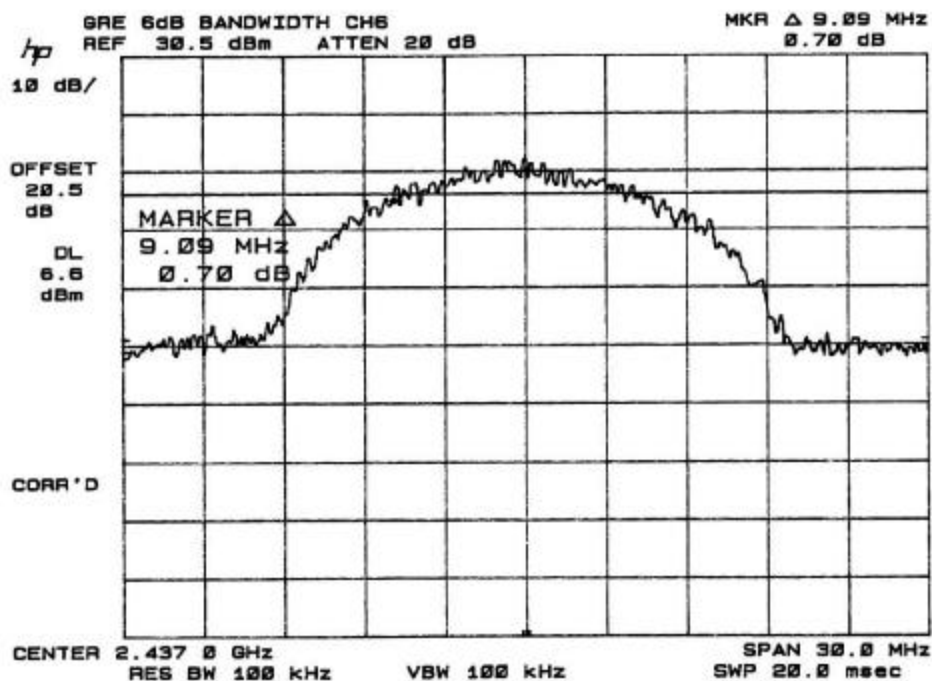
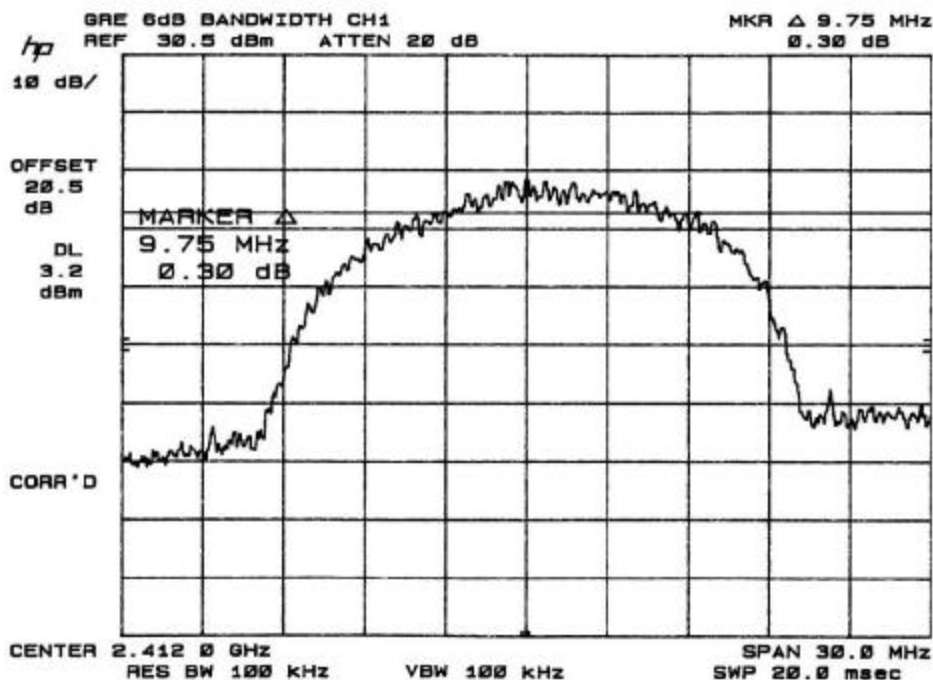


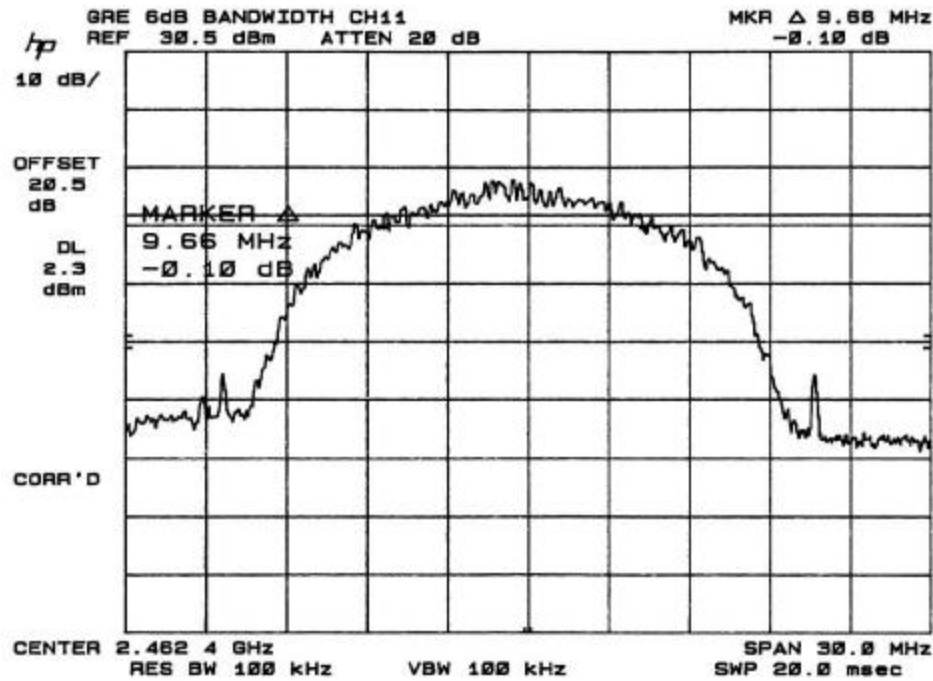
TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 100 kHz VBW. The 6 dB bandwidth is defined as the total spectrum the power off which is higher than peak power minus 6 dB.

RESULT

No non-compliance noted.





9.3. CONDUCTED SPURIOUS EMISSION

Detector Function Setting of Test Receiver

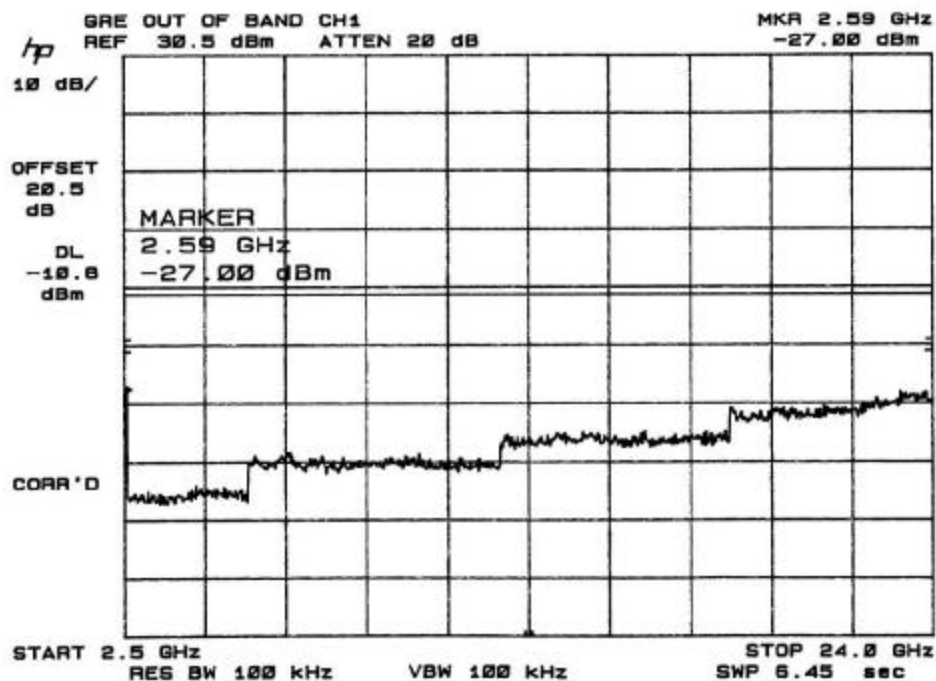
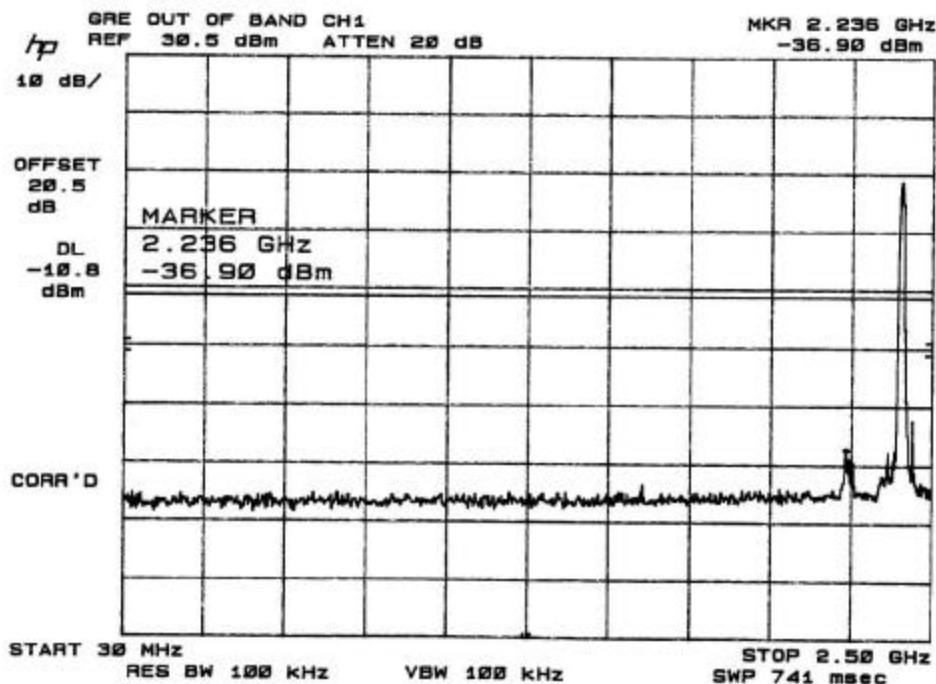
Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Below 1000	☒ Peak ☐ Average	☒ 100 kHz ☐ 1 MHz	☒ 100 kHz ☐ 10 Hz
Above 1000	☒ Peak ☐ Average	☒ 1 MHz ☐ 1 MHz	☒ 1 MHz ☐ 10 Hz

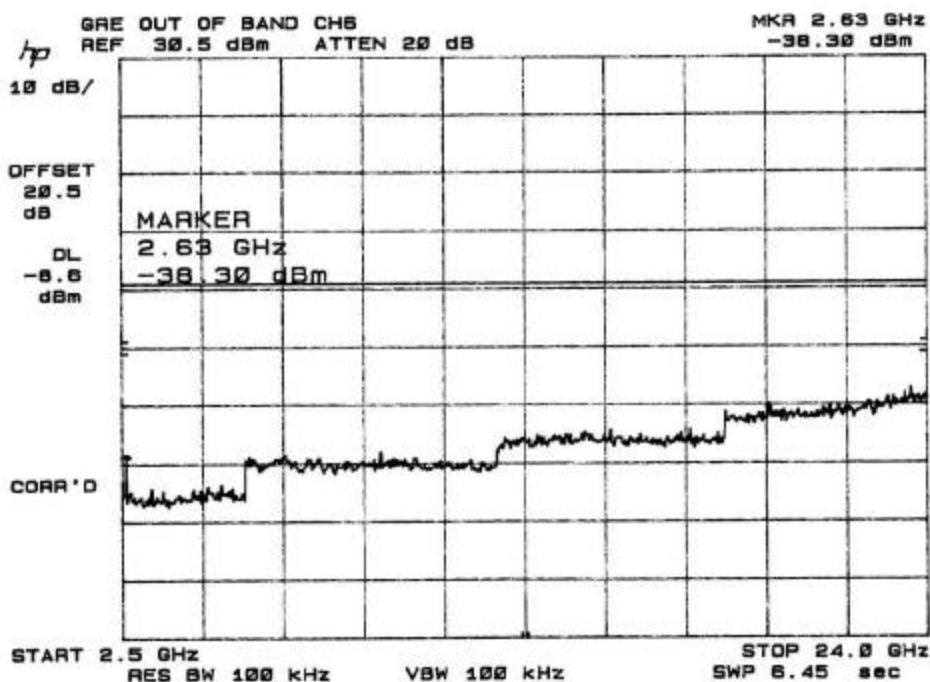
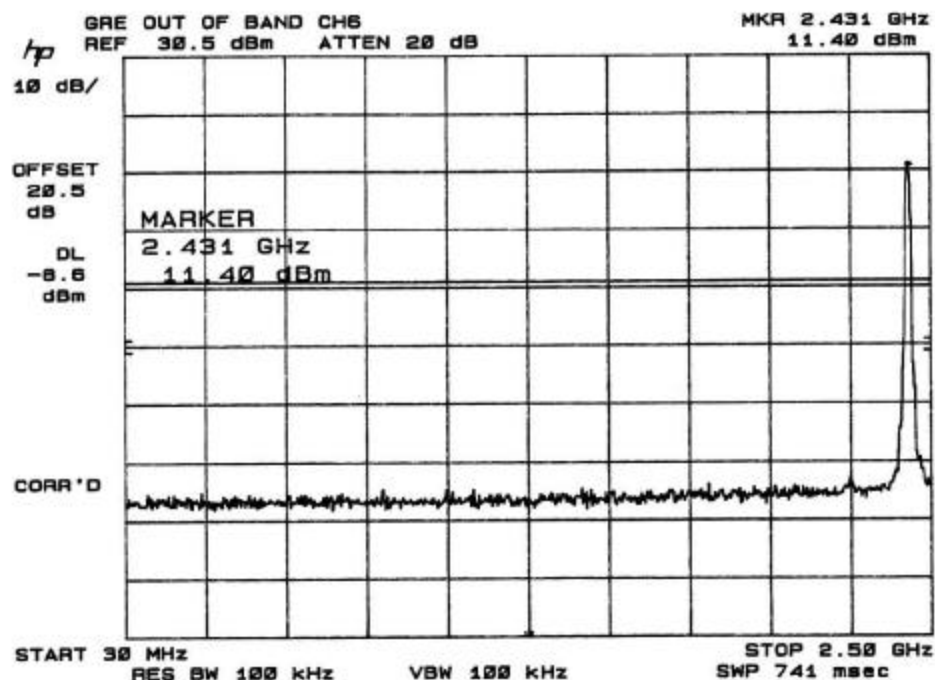
TEST SETUP

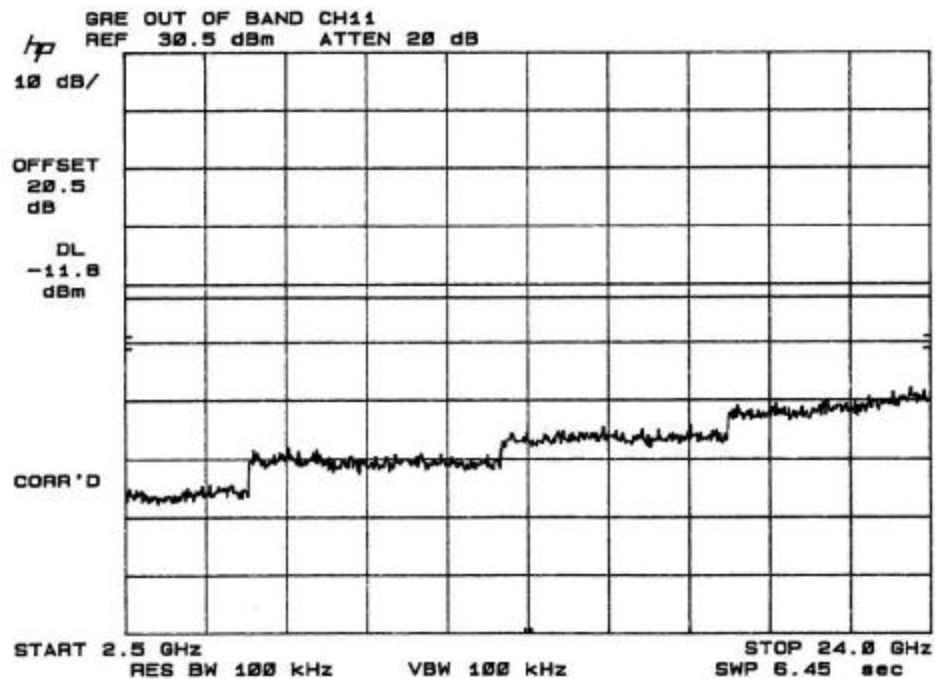
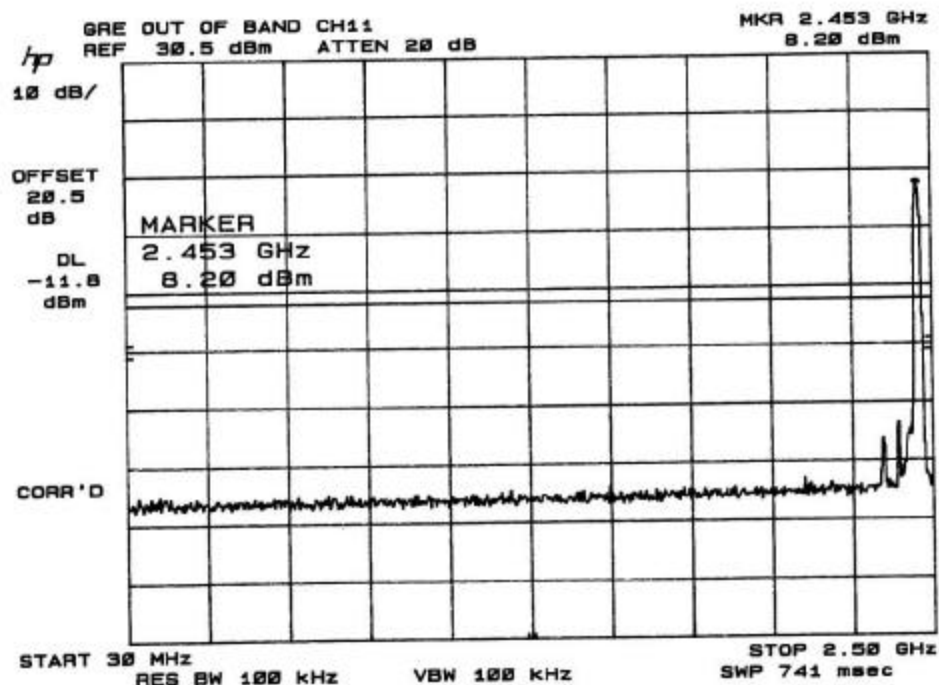


TEST PROCEDURE

Connect the Eut's antenna port to the Spectrum Analyzer's input put.
Investigate the entire frequency of the carrier frequency band to the tenth harmonic.
The limit is the peak minus 20 dB.







9.4. PEAK POWER SPECTRAL DENSITY

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 3 kHz ☐ 1 MHz	☒ 3 kHz ☐ 10 Hz

TEST SETUP



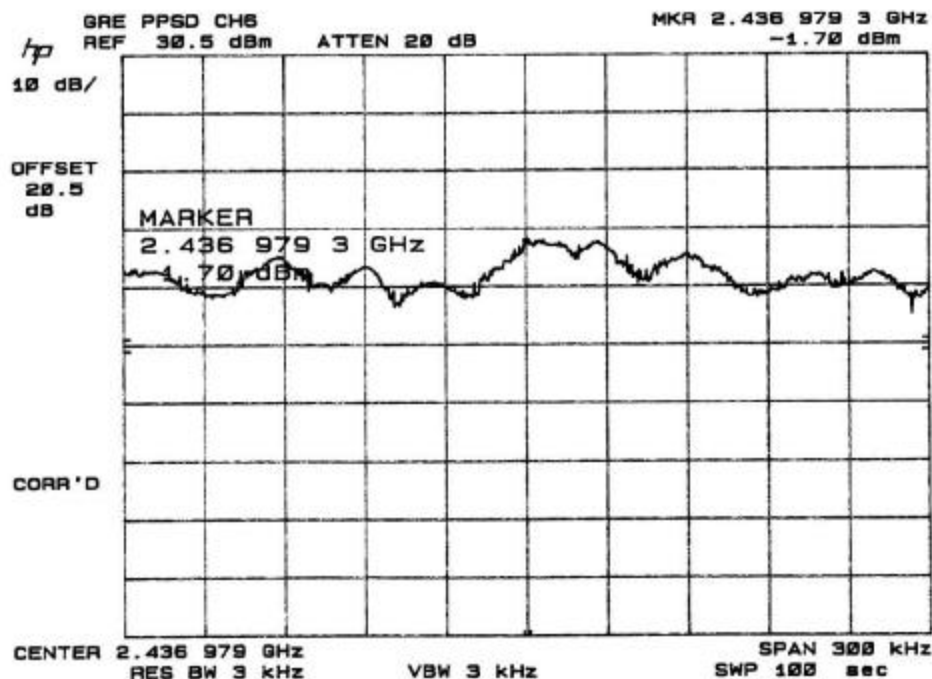
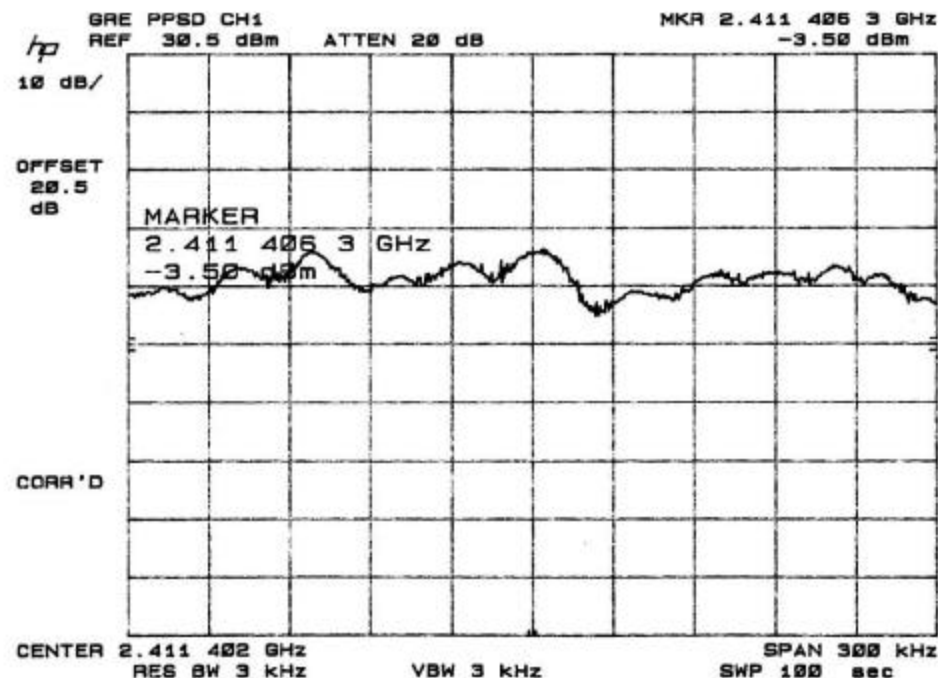
TEST PROCEDURE

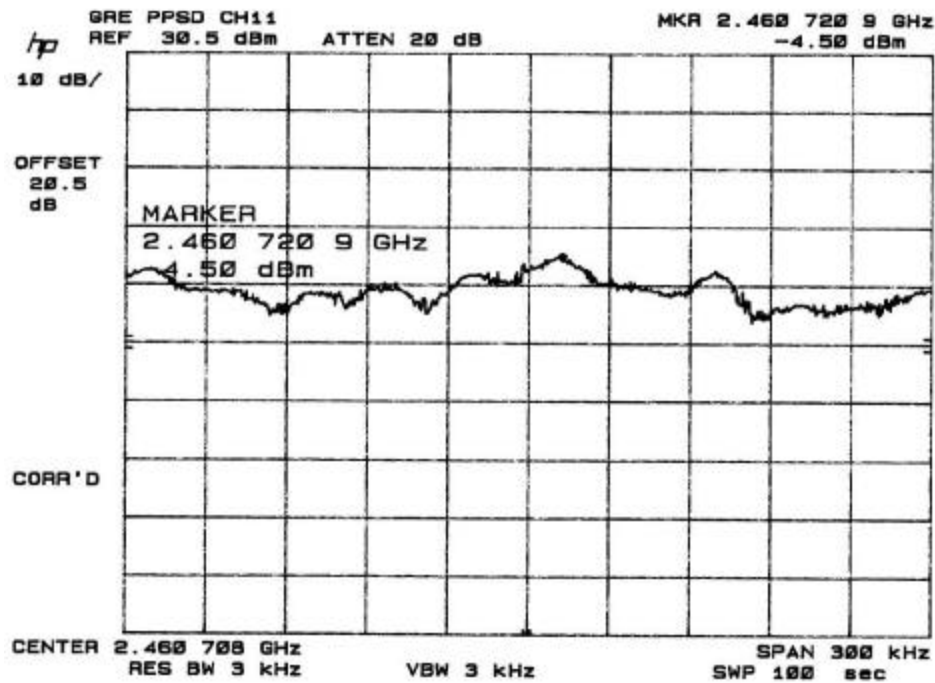
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 3 kHz VBW, set sweep time=span/3kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3KHz for a full response of the mixer in the spectrum analyzer.

Result:

No non-compliance noted. See plots:





9.5. PROCESSING GAIN

CUSTOMER PROVIDED PROCESSING GAIN.

Channel	Processing gain (dBm)	Limit (dBm)	Margin (dBm)
1	11.4	>10	1.4
6	11.4	>10	1.4
11	11.4	>10	1.4

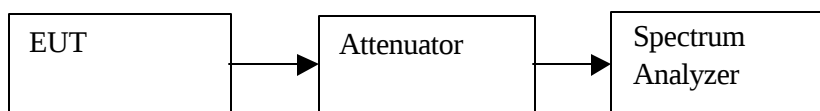
Refer to attachment “jamming margin.PDF” for detail measurement procedures and results.

9.6. CONDUCTED BAND EDGE MEASUREMENT

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 100 kHz ☐ 1 MHz	☒ 100 kHz ☐ 10 Hz

TEST SETUP



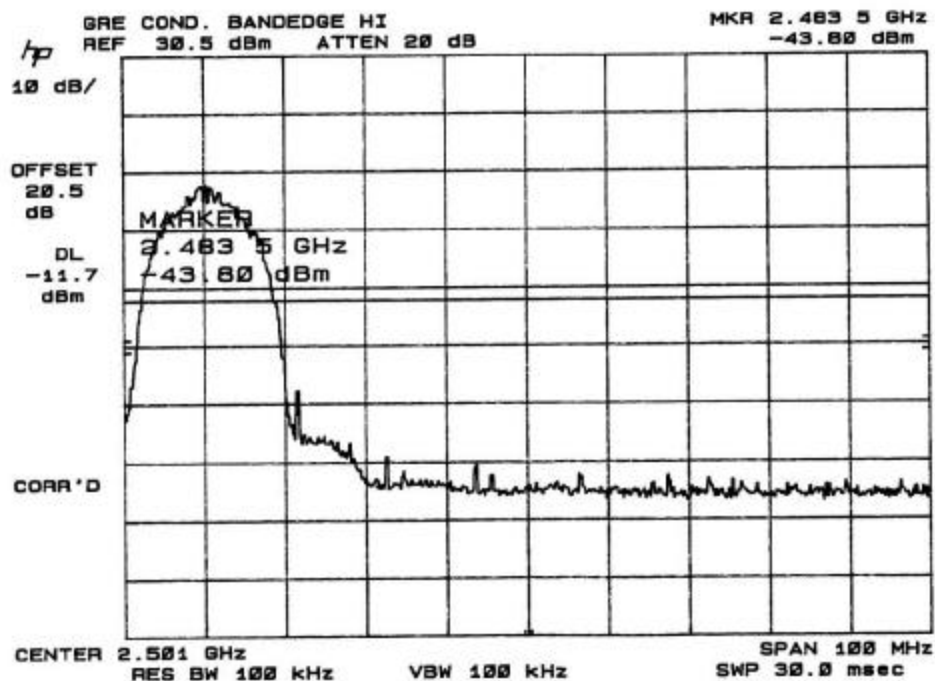
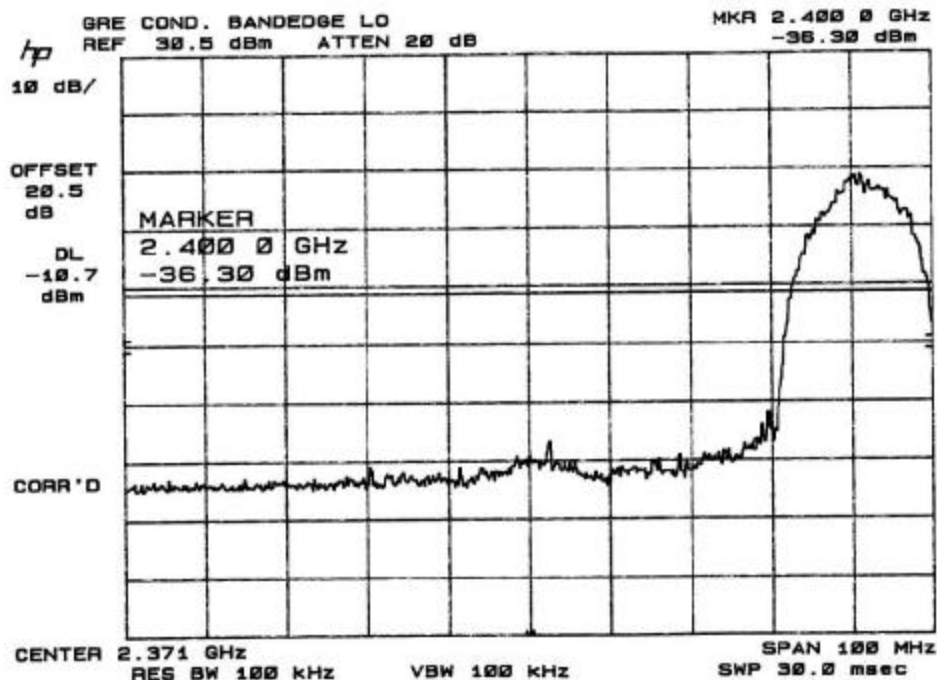
TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator; the lower and upper band edge of the EUT is investigated.

The resolutions and video bandwidth were set to 100kHz.

RESULT

No non-compliance noted. See plots:



9.7. RADIATED EMISSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	☒ Peak	☒ 100 KHz	☒ 100 KHz
	☐ Quasi Peak	☐ 120 KHz	☐ 120 KHz
Above 1000	☒ Peak	☒ 1 MHz	☒ 1 MHz
	☐ Average	☐ 1 MHz	☐ 10 Hz

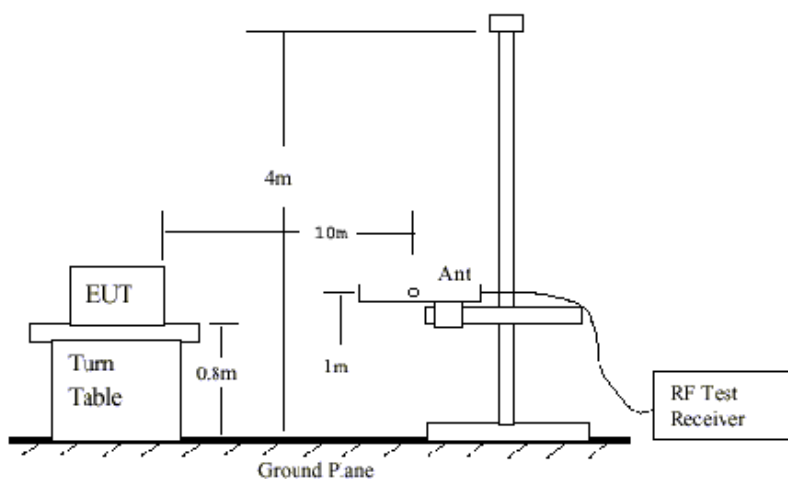


Fig 1: Radiated Emission Measurement 30 to 1000 MHz

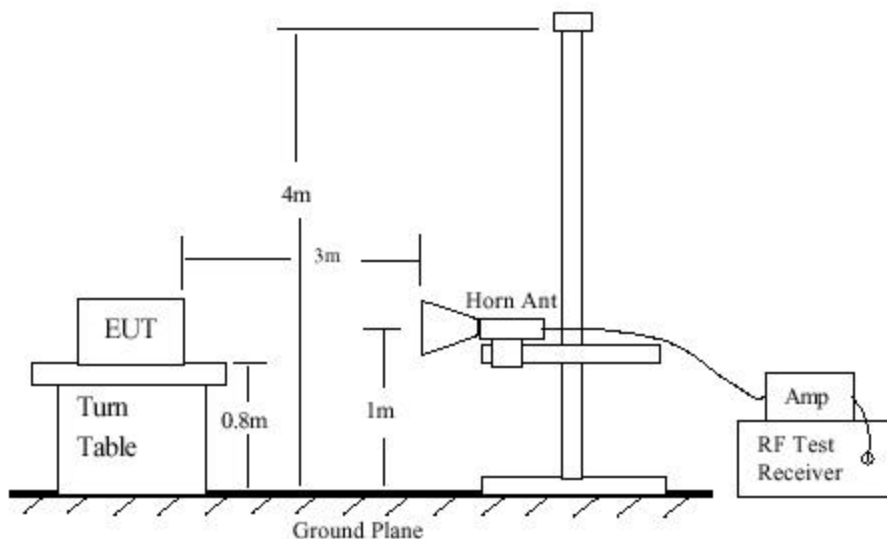


Fig 2: Radiated Emission Above 1000 MHz

TEST SETUP & PROCEDURE

1. The EUT was placed on the turn table 0.8 meter above ground in 3 meter open area test site.
2. Set the resolution bandwidth to 120KHz in the test receiver and select Peak function to scan the frequency below 1 GHz.
3. Shift the interference-receiving antenna located in antenna tower upwards and downwards between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Locate the interference-receiving antenna at the position where the local peak reach the maximum emission.
5. Rotate the turn table and stop at the angle where the measurement device has maximum reading
6. Shift the interference-receiving antenna again to detect the maximum emission of the local peak
7. If the reading of the local peak under Peak function is lower than limit by 6dB, then Quasi Peak detection is not needed and this reading should be recorded. And if it is higher than Peak limit, then the test is fail. Others, switch the receiver to Quasi Peak function, set the resolution bandwidth to 100kHz and repeat the procedures C ~ F. If the reading is lower than limit, this reading should be recorded, otherwise, the test is fail.
8. Set the resolution and video bandwidth of the spectrum analyzer to 1MHz and repeat procedures C ~ F for frequency band from 1 GHz to 10 times carrier frequency.

9. If the reading for the local peak is lower than the Average limit, no further testing is needed in this local peak and this reading should be recorded. If it is higher than Average limit but lower than Peak limit, then set the resolution bandwidth to 1MHz and video bandwidth to 300Hz. Repeat procedures C ~ F. If the maximum reading is lower than Average limit, then this reading should be recorded. If it is higher, then the test is fail.

RESULT

No non-compliance noted, as shown below.

		Project #: 01U0988-1 Report #: 011002h Date& Time: 10/02/01 11:56 AM Test Engr: Hue Ly Vang	
FCC, VCCI, CISPR, CE, AUSTEL, NZ UL, CSA, TUV, BSMI, DHHS, NVLAP			
561F MONTEREY ROAD, SAN JOSE, CA 95037-9001 PHONE: (408) 463-0885 FAX: (408) 463-0888			
Company: GRE America, INC.		EUT Description: 11MPs RF Module	
Test Configuration : EUT/Laptop/ Powersupply		Type of Test: FCC Class B	
Mode of Operation: Continous packet RX mode		<< Main Sheet	

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
748.00	47.30	20.30	6.78	29.40	44.97	46.00	-1.03	3mH	90.00	1.00	QP
748.00	47.00	19.71	6.78	29.40	44.09	46.00	-1.91	3mV	180.00	1.00	QP
280.00	47.00	13.26	3.62	28.86	35.02	46.00	-10.98	3mH	90.00	1.00	P
114.00	46.40	11.55	2.32	29.52	30.75	43.50	-12.75	3mV	180.00	1.00	P
44.00	39.10	7.68	1.66	29.68	18.76	40.00	-21.24	3mV	180.00	1.00	P
44.00	35.90	10.66	1.66	29.68	18.54	40.00	-21.46	3mH	180.00	1.00	P
6 Worst Data											

COMPLIANCE ENGINEERING SERVICES, INC.													
Harmonic Emissions													
GRE American Inc.													
Channel 1 : 2412MHz													
Telex 2415													
A site (1.0 Meter)													
F(MHz)	READING		AF	CL	AMP	DIST	HPF	TOTAL		LIMIT	MARGIN		POL
	(dBuV)		(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)		(dBuV/m)	(dB)		(H/V)
	Pk	Avg						Pk	Avg	Pk	Avg	Pk	Avg
2388*		28.9	29	3	0	9.5	0	22.5	51.4	74	54	-51.5	-2.6 H
4824	63.9	53.6	33	4.93	41	9.5	1	52.33	42.03	74	54	-21.7	-12 H
7235.9	57.1	46	37.2	6.29	41	9.5	1	51.09	39.99	74	54	-22.9	-14 H
9642.8	54.8	48.3	38.1	7.48	39.4	9.5	1	52.48	45.98	74	54	-21.5	-8.02 H
12061.5	56.7	45.9	39	8.67	40	9.5	1	55.87	45.07	74	54	-18.1	-8.93 H
14472	48.6	38.2	41.3	9.69	42.5	9.5	1	48.59	38.19	74	54	-25.4	-15.8 H
16884	49.5	38.9	43.2	11.05	44	9.5	1	51.25	40.65	74	54	-22.8	-13.4 H
19296	44.5	38.8	45	11.9	44	9.5	1	48.9	43.2	74	54	-25.1	-10.8 H
21708	46.2	39.2	47	13.09	42.5	9.5	1	55.29	48.29	74	54	-18.7	-5.71 H
24120	44.3	39.1	45	13.43	42	9.5	1	52.23	47.03	74	54	-21.8	-6.97 H
2388*		27	29	3	0	9.5	0	22.5	49.5	74	54	-51.5	-4.5 V
4824	67.8	57.2	33	4.93	41	9.5	1	56.23	45.63	74	54	-17.8	-8.37 V
7235.9	63.9	52.9	37.2	6.29	41	9.5	1	57.89	46.89	74	54	-16.1	-7.11 V
9642.8	52.6	47	38.1	7.48	39.4	9.5	1	50.28	44.68	74	54	-23.7	-9.32 V
12061.5	54.5	42.4	39	8.67	40	9.5	1	53.67	41.57	74	54	-20.3	-12.4 V
14472	49.9	38.5	41.3	9.69	42.5	9.5	1	49.89	38.49	74	54	-24.1	-15.5 V
16884	49.7	38.4	43.2	11.05	44	9.5	1	51.45	40.15	74	54	-22.6	-13.9 V
19296	44.5	38.9	45	11.9	44	9.5	1	48.9	43.3	74	54	-25.1	-10.7 V
21708	43.6	38.1	47	13.09	42.5	9.5	1	52.69	47.19	74	54	-21.3	-6.81 V
24120	46.1	39.2	45	13.43	42	9.5	1	54.03	47.13	74	54	-20	-6.87 V
NOTE: ALL READINGS MEASURED AT 1 METER.													
DIST: Correction to extrapolate reading to 3m specification distance													
ANALYZER SETTINGS													
AF: Antenna Factor													
AMP: Pre-amp gain													
CL: Cable loss													
HPF: High pass filter insertion loss													
*: Restricted band													
PEAK(Pk): Res bw Avg. bw													
1MHz 1MHz													
AVG(Pk): Res bw Avg. bw													
1MHz 10Hz													

COMPLIANCE ENGINEERING SERVICES, INC.														
Harmonic Emissions														
GRE American Inc.										12/21/01				
Channel 6 : 2437 MHz										Hue Vang				
Telex 2415										A site (1.0 Meter)				
F(MHz)	READING		AF	CL	AMP	DIST	HPF	TOTAL		LIMIT		MARGIN		POL
	(dBuV)		(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)		(dBuV/m)		(dB)		(H/V)
	Pk	Avg						Pk	Avg	Pk	Avg	Pk	Avg	
4873.5	70.8	59.5	33	4.93	41	9.5	1	59.23	47.93	74	54	-14.8	-6.07	H
7312.3	62.5	50.5	37.2	6.29	41	9.5	1	56.49	44.49	74	54	-17.5	-9.51	H
9749.3	57.5	51.1	38.1	7.48	39.4	9.5	1	55.18	48.78	74	54	-18.8	-5.22	H
12185	56.9	46.6	39	8.67	40	9.5	1	56.07	45.77	74	54	-17.9	-8.23	H
14622	48.7	38.1	41.3	9.69	42.5	9.5	1	48.69	38.09	74	54	-25.3	-15.9	H
17059	50	38.4	43.2	11.05	44	9.5	1	51.75	40.15	74	54	-22.3	-13.9	H
19496	50	38.9	45	11.9	44	9.5	1	54.4	43.3	74	54	-19.6	-10.7	H
21933	46	39	47	13.09	42.5	9.5	1	55.09	48.09	74	54	-18.9	-5.91	H
24370	47	35.1	45	13.43	42	9.5	1	54.93	43.03	74	54	-19.1	-11	H
4873.5	70	59.6	33	4.93	41	9.5	1	58.43	48.03	74	54	-15.6	-5.97	V
7312.3	57.3	46.5	37.2	6.29	41	9.5	1	51.29	40.49	74	54	-22.7	-13.5	V
9749.3	54	42.6	38.1	7.48	39.4	9.5	1	51.68	40.28	74	54	-22.3	-13.7	V
12185	58.4	38	39	8.67	40	9.5	1	57.57	37.17	74	54	-16.4	-16.8	V
14622	48.4	38	41.3	9.69	42.5	9.5	1	48.39	37.99	74	54	-25.6	-16	V
17059	48.5	39	43.2	11.05	44	9.5	1	50.25	40.75	74	54	-23.8	-13.3	V
19496	49	39.5	45	11.9	44	9.5	1	53.4	43.9	74	54	-20.6	-10.1	V
21933	48.6	38.1	47	13.09	42.5	9.5	1	57.69	47.19	74	54	-16.3	-6.81	V
24370	49.5	38.5	45	13.43	42	9.5	1	57.43	46.43	74	54	-16.6	-7.57	V
NOTE: ALL READINGS MEASURED AT 1 METER.														
DIST: Correction to extrapolate reading to 3m specification distance														
										ANALYZER SETTINGS				
AF: Antenna Factor								PEAK(PK):		Res bw		Avg. bw		
AMP: Pre-amp gain										1MHz		1MHz		
CL: Cable loss								AVG(PK):		Res bw		Avg. bw		
HPF: High pass filter insertion loss										1MHz		10Hz		

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COMPLIANCE ENGINEERING SERVICES, INC.														
Harmonic Emissions														
GRE American Inc.										12/21/01				
Channel 1 : 2412MHz										Hue Vang				
Cushcraft S2403BP120										A site (1.0 Meter)				
F(MHz)	READING		AF	CL	AMP	DIST	HPF	TOTAL		LIMIT		MARGIN		POL
	(dBuV)		(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)		(dBuV/m)		(dB)		(H/V)
	Pk	Avg						Pk	Avg	Pk	Avg	Pk	Avg	
2388*		27.3	29	3	0	9.5	0	22.5	49.8	74	54	-51.5	-4.2	H
4824	62.7	51.9	33	4.93	41	9.5	1	51.13	40.33	74	54	-22.9	-13.7	H
7235.9	57.6	46.1	37.2	6.29	41	9.5	1	51.59	40.09	74	54	-22.4	-13.9	H
9642.8	51.2	43.1	38.1	7.48	39.4	9.5	1	48.88	40.78	74	54	-25.1	-13.2	H
12061.5	56.7	45.9	39	8.67	40	9.5	1	55.87	45.07	74	54	-18.1	-8.93	H
14472	48.6	38.2	41.3	9.69	42.5	9.5	1	48.59	38.19	74	54	-25.4	-15.8	H
16884	49.5	38.9	43.2	11.05	44	9.5	1	51.25	40.65	74	54	-22.8	-13.4	H
19296	44.5	38.8	45	11.9	44	9.5	1	48.9	43.2	74	54	-25.1	-10.8	H
21708	46.2	39.2	47	13.09	42.5	9.5	1	55.29	48.29	74	54	-18.7	-5.71	H
24120	44.3	39.1	45	13.43	42	9.5	1	52.23	47.03	74	54	-21.8	-6.97	H
2388*		27.3	29	3	0	9.5	0	22.5	49.8	74	54	-51.5	-4.2	V
4824	67.1	56.9	33	4.93	41	9.5	1	55.53	45.33	74	54	-18.5	-8.67	V
7235.9	57.7	45.6	37.2	6.29	41	9.5	1	51.69	39.59	74	54	-22.3	-14.4	V
9642.8	53.8	48.8	38.1	7.48	39.4	9.5	1	51.48	46.48	74	54	-22.5	-7.52	V
12061.5	54.5	42.4	39	8.67	40	9.5	1	53.67	41.57	74	54	-20.3	-12.4	V
14472	49.9	38.5	41.3	9.69	42.5	9.5	1	49.89	38.49	74	54	-24.1	-15.5	V
16884	49.7	38.4	43.2	11.05	44	9.5	1	51.45	40.15	74	54	-22.6	-13.9	V
19296	44.5	38.9	45	11.9	44	9.5	1	48.9	43.3	74	54	-25.1	-10.7	V
21708	43.6	38.1	47	13.09	42.5	9.5	1	52.69	47.19	74	54	-21.3	-6.81	V
24120	46.1	39.2	45	13.43	42	9.5	1	54.03	47.13	74	54	-20	-6.87	V
NOTE: ALL READINGS MEASURED AT 1 METER.														
DIST: Correction to extrapolate reading to 3m specification distance														
										ANALYZER SETTINGS				
AF: Antenna Factor								PEAK(Pk):		Res bw		Avg. bw		
AMP: Pre-amp gain										1MHz		1MHz		
CL: Cable loss								AVG(Pk):		Res bw		Avg. bw		
HPF: High pass filter insertion loss										1MHz		10Hz		
*: Restricted band														

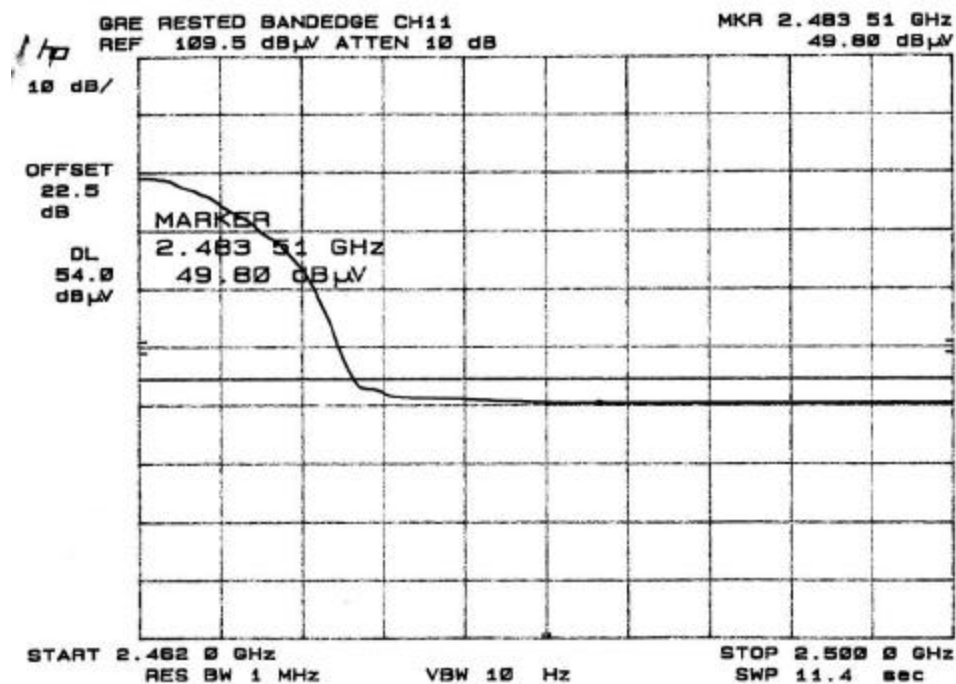
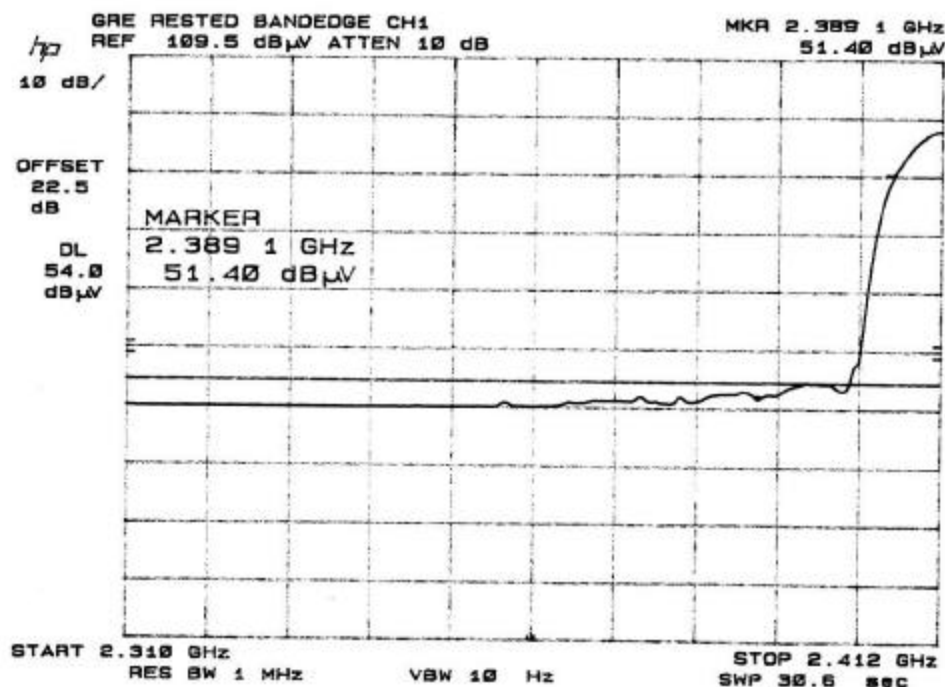
COMPLIANCE ENGINEERING SERVICES, INC.																				
Harmonic Emissions																				
GRE American Inc.										12/21/01										
Channel 6 : 2437 MHz										Hue Vang										
Cushcraft S2403BP120										A site (1.0 Meter)										
F(MHz)	READING		AF	CL	AMP	DIST	HPF	TOTAL		LIMIT		MARGIN		POL						
	(dBuV)		(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)		(dBuV/m)		(dB)		(H/V)						
	Pk	Avg						Pk	Avg	Pk	Avg	Pk	Avg							
4873.5	67.6	57.7	33	4.93	41	9.5	1	56.03	46.13	74	54	-18	-7.87	H						
7312.3	58.1	47.1	37.2	6.29	41	9.5	1	52.09	41.09	74	54	-21.9	-12.9	H						
9749.3	50.2	41.9	38.1	7.48	39.4	9.5	1	47.88	39.58	74	54	-26.1	-14.4	H						
12185	56.9	46.6	39	8.67	40	9.5	1	56.07	45.77	74	54	-17.9	-8.23	H						
14622	48.7	38.1	41.3	9.69	42.5	9.5	1	48.69	38.09	74	54	-25.3	-15.9	H						
17059	50	38.4	43.2	11.05	44	9.5	1	51.75	40.15	74	54	-22.3	-13.9	H						
19496	50	38.9	45	11.9	44	9.5	1	54.4	43.3	74	54	-19.6	-10.7	H						
21933	46	39	47	13.09	42.5	9.5	1	55.09	48.09	74	54	-18.9	-5.91	H						
24370	47	35.1	45	13.43	42	9.5	1	54.93	43.03	74	54	-19.1	-11	H						
4873.5	71.1	60.4	33	4.93	41	9.5	1	59.53	48.83	74	54	-14.5	-5.17	V						
7312.3	60.2	50	37.2	6.29	41	9.5	1	54.19	43.99	74	54	-19.8	-10	V						
9749.3	56.6	50.8	38.1	7.48	39.4	9.5	1	54.28	48.48	74	54	-19.7	-5.52	V						
12185	58.4	38	39	8.67	40	9.5	1	57.57	37.17	74	54	-16.4	-16.8	V						
14622	48.4	38	41.3	9.69	42.5	9.5	1	48.39	37.99	74	54	-25.6	-16	V						
17059	48.5	39	43.2	11.05	44	9.5	1	50.25	40.75	74	54	-23.8	-13.3	V						
19496	49	39.5	45	11.9	44	9.5	1	53.4	43.9	74	54	-20.6	-10.1	V						
21933	48.6	38.1	47	13.09	42.5	9.5	1	57.69	47.19	74	54	-16.3	-6.81	V						
24370	49.5	38.5	45	13.43	42	9.5	1	57.43	46.43	74	54	-16.6	-7.57	V						
NOTE: ALL READINGS MEASURED AT 1 METER.																				
DIST: Correction to extrapolate reading to 3m specification distance																				
										ANALYZER SETTINGS										
AF: Antenna Factor								PEAK(PK):		Res bw		Avg. bw								
AMP: Pre-amp gain										1MHz		1MHz								
CL: Cable loss								AVG(PK):		Res bw		Avg. bw								
HPF: High pass filter insertion loss										1MHz		10Hz								

COMPLIANCE ENGINEERING SERVICES, INC.														
Harmonic Emissions														
GRE American Inc.														
Channel 11 : 2462 MHz														
Cushcraft S2403BP120														
A site (1.0 Meter)														
12/21/01														
Hue Vang														
F(MHz) READING AF CL AMP DIST HPF TOTAL LIMIT MARGIN POL														
(dBuV) (dB) (dB) (dB) (dB) (dB) (dB) (dBuV/m) (dBuV/m) (dB) (H/V)														
Pk Avg Pk Avg Pk Avg														
2491*		27.3	29	3	0	9.5	0	22.5	49.8	74	54	-51.5	-4.2	H
4924	68	59.2	33	4.93	41	9.5	1	56.43	47.63	74	54	-17.6	-6.37	H
7388	58	51.1	37.2	6.29	41	9.5	1	51.99	45.09	74	54	-22	-8.91	H
9848	55	50.1	38.1	7.48	39.4	9.5	1	52.68	47.78	74	54	-21.3	-6.22	H
12310	58.6	47.4	39	8.67	40	9.5	1	57.77	46.57	74	54	-16.2	-7.43	H
14772	50	38.1	41.3	9.69	42.5	9.5	1	49.99	38.09	74	54	-24	-15.9	H
17234	49.4	38.4	43.2	11.05	44	9.5	1	51.15	40.15	74	54	-22.9	-13.9	H
19696	45	38.6	45	11.9	44	9.5	1	49.4	43	74	54	-24.6	-11	H
22158	45.6	38.9	47	13.09	42.5	9.5	1	54.69	47.99	74	54	-19.3	-6.01	H
24620	46.5	39.2	45	13.43	42	9.5	1	54.43	47.13	74	54	-19.6	-6.87	H
2491*		27.1	29	3	0	9.5	1	23.5	50.6	74	54	-50.5	-3.4	V
4924	71.2	62.3	33	4.93	41	9.5	0	58.63	49.73	74	54	-15.4	-4.27	V
7388	60	48.6	37.2	6.29	41	9.5	1	53.99	42.59	74	54	-20	-11.4	V
9848	55.2	47.9	38.1	7.48	39.4	9.5	1	52.88	45.58	74	54	-21.1	-8.42	V
12310	55.1	41.9	39	8.67	40	9.5	1	54.27	41.07	74	54	-19.7	-12.9	V
14772	48.1	38	41.3	9.69	42.5	9.5	1	48.09	37.99	74	54	-25.9	-16	V
17234	48.3	38.3	43.2	11.05	44	9.5	1	50.05	40.05	74	54	-24	-14	V
19696	45.3	38.5	45	11.9	44	9.5	1	49.7	42.9	74	54	-24.3	-11.1	V
22158	45.8	38.9	47	13.09	42.5	9.5	1	54.89	47.99	74	54	-19.1	-6.01	V
24620	46.1	39.2	45	13.43	42	9.5	1	54.03	47.13	74	54	-20	-6.87	V
NOTE: ALL READINGS MEASURED AT 1 METER.														
DIST: Correction to extrapolate reading to 3m specification distance														
ANALYZER SETTINGS														
AF: Antenna Factor														
AMP: Pre-amp gain														
CL: Cable loss														
HPF: High pass filter insertion loss														
*: Restricted band														
PEAK(Pk): Res bw Avg. bw														
1MHz 1MHz														
AVG(Pk): Res bw Avg. bw														
1MHz 10Hz														

COMPLIANCE ENGINEERING SERVICES, INC.														
Harmonic Emissions														
GRE American Inc.										12/21/01				
Channel 1 : 2412MHz										Hue Vang				
0dB Gain Dipole										A site (1.0 Meter)				
F(MHz)	READING		AF	CL	AMP	DIST	HPF	TOTAL		LIMIT		MARGIN		POL
	(dBuV)		(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)		(dBuV/m)		(dB)		(H/V)
	Pk	Avg						Pk	Avg	Pk	Avg	Pk	Avg	
2388*		26	29	3	0	9.5	0	22.5	48.5	74	54	-51.5	-5.5	H
4824	67.3	51.1	33	4.93	41	9.5	1	55.73	39.53	74	54	-18.3	-14.5	H
7235.9	61.7	49.3	37.2	6.29	41	9.5	1	55.69	43.29	74	54	-18.3	-10.7	H
9642.8	55	45	38.1	7.48	39.4	9.5	1	52.68	42.68	74	54	-21.3	-11.3	H
12061.5	56.7	45.9	39	8.67	40	9.5	1	55.87	45.07	74	54	-18.1	-8.93	H
14472	48.6	38.2	41.3	9.69	42.5	9.5	1	48.59	38.19	74	54	-25.4	-15.8	H
16884	49.5	38.9	43.2	11.05	44	9.5	1	51.25	40.65	74	54	-22.8	-13.4	H
19296	44.5	38.8	45	11.9	44	9.5	1	48.9	43.2	74	54	-25.1	-10.8	H
21708	46.2	39.2	47	13.09	42.5	9.5	1	55.29	48.29	74	54	-18.7	-5.71	H
24120	44.3	39.1	45	13.43	42	9.5	1	52.23	47.03	74	54	-21.8	-6.97	H
2388*		25.9	29	3	0	9.5	0	22.5	48.4	74	54	-51.5	-5.6	V
4824	67.3	56.8	33	4.93	41	9.5	1	55.73	45.23	74	54	-18.3	-8.77	V
7235.9	54.5	46.8	37.2	6.29	41	9.5	1	48.49	40.79	74	54	-25.5	-13.2	V
9642.8	53.7	47	38.1	7.48	39.4	9.5	1	51.38	44.68	74	54	-22.6	-9.32	V
12061.5	54.5	42.4	39	8.67	40	9.5	1	53.67	41.57	74	54	-20.3	-12.4	V
14472	49.9	38.5	41.3	9.69	42.5	9.5	1	49.89	38.49	74	54	-24.1	-15.5	V
16884	49.7	38.4	43.2	11.05	44	9.5	1	51.45	40.15	74	54	-22.6	-13.9	V
19296	44.5	38.9	45	11.9	44	9.5	1	48.9	43.3	74	54	-25.1	-10.7	V
21708	43.6	38.1	47	13.09	42.5	9.5	1	52.69	47.19	74	54	-21.3	-6.81	V
24120	46.1	39.2	45	13.43	42	9.5	1	54.03	47.13	74	54	-20	-6.87	V
NOTE: ALL READINGS MEASURED AT 1 METER.														
DIST: Correction to extrapolate reading to 3m specification distance														
										ANALYZER SETTINGS				
AF: Antenna Factor									PEAK(Pk):	Res bw		Avg. bw		
AMP: Pre-amp gain										1MHz		1MHz		
CL: Cable loss									AVG(Pk):	Res bw		Avg. bw		
HPF: High pass filter insertion loss										1MHz		10Hz		
*: Restricted band														

COMPLIANCE ENGINEERING SERVICES, INC.														
Harmonic Emissions														
GRE American Inc.									12/21/01					
Channel 6 : 2437 MHz									Hue Vang					
0dB Gain Dipole									A site (1.0 Meter)					
F(MHz)	READING		AF	CL	AMP	DIST	HPF	TOTAL		LIMIT		MARGIN		POL
	(dBuV)		(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)		(dBuV/m)		(dB)		(H/V)
	Pk	Avg						Pk	Avg	Pk	Avg	Pk	Avg	
4873.5	65.8	54.2	33	4.93	41	9.5	1	54.23	42.63	74	54	-19.8	-11.4	H
7312.3	59.2	48.6	37.2	6.29	41	9.5	1	53.19	42.59	74	54	-20.8	-11.4	H
9749.3	55.2	47	38.1	7.48	39.4	9.5	1	52.88	44.68	74	54	-21.1	-9.32	H
12185	56.9	46.6	39	8.67	40	9.5	1	56.07	45.77	74	54	-17.9	-8.23	H
14622	48.7	38.1	41.3	9.69	42.5	9.5	1	48.69	38.09	74	54	-25.3	-15.9	H
17059	50	38.4	43.2	11.05	44	9.5	1	51.75	40.15	74	54	-22.3	-13.9	H
19496	50	38.9	45	11.9	44	9.5	1	54.4	43.3	74	54	-19.6	-10.7	H
21933	46	39	47	13.09	42.5	9.5	1	55.09	48.09	74	54	-18.9	-5.91	H
24370	47	35.1	45	13.43	42	9.5	1	54.93	43.03	74	54	-19.1	-11	H
4873.5	71.5	58.1	33	4.93	41	9.5	1	59.93	46.53	74	54	-14.1	-7.47	V
7312.3	62.8	51.8	37.2	6.29	41	9.5	1	56.79	45.79	74	54	-17.2	-8.21	V
9749.3	58	53.2	38.1	7.48	39.4	9.5	1	55.68	50.88	74	54	-18.3	-3.12	V
12185	58.4	38	39	8.67	40	9.5	1	57.57	37.17	74	54	-16.4	-16.8	V
14622	48.4	38	41.3	9.69	42.5	9.5	1	48.39	37.99	74	54	-25.6	-16	V
17059	48.5	39	43.2	11.05	44	9.5	1	50.25	40.75	74	54	-23.8	-13.3	V
19496	49	39.5	45	11.9	44	9.5	1	53.4	43.9	74	54	-20.6	-10.1	V
21933	48.6	38.1	47	13.09	42.5	9.5	1	57.69	47.19	74	54	-16.3	-6.81	V
24370	49.5	38.5	45	13.43	42	9.5	1	57.43	46.43	74	54	-16.6	-7.57	V
NOTE: ALL READINGS MEASURED AT 1 METER.														
DIST: Correction to extrapolate reading to 3m specification distance														
										ANALYZER SETTINGS				
AF: Antenna Factor								PEAK(PK):		Res bw		Avg. bw		
AMP: Pre-amp gain										1MHz		1MHz		
CL: Cable loss								AVG(PK):		Res bw		Avg. bw		
HPF: High pass filter insertion loss										1MHz		10Hz		

COMPLIANCE ENGINEERING SERVICES, INC.														
Harmonic Emissions														
GRE American Inc.														
Channel 11 : 2462 MHz														
0dB Gain Dipole														
A site (1.0 Meter)														
12/21/01														
Hue Vang														
F(MHz)	READING		AF	CL	AMP	DIST	HPF	TOTAL		LIMIT		MARGIN		POL
	(dBuV)		(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)		(dBuV/m)		(dB)		(H/V)
	Pk	Avg						Pk	Avg	Pk	Avg	Pk	Avg	
2491*		26.2	29	3	0	9.5	0	22.5	48.7	74	54	-51.5	-5.3	H
4924	68.1	58.3	33	4.93	41	9.5	1	56.53	46.73	74	54	-17.5	-7.27	H
7388	58.4	48.8	37.2	6.29	41	9.5	1	52.39	42.79	74	54	-21.6	-11.2	H
9848	57.1	50.5	38.1	7.48	39.4	9.5	1	54.78	48.18	74	54	-19.2	-5.82	H
12310	58.6	47.4	39	8.67	40	9.5	1	57.77	46.57	74	54	-16.2	-7.43	H
14772	50	38.1	41.3	9.69	42.5	9.5	1	49.99	38.09	74	54	-24	-15.9	H
17234	49.4	38.4	43.2	11.05	44	9.5	1	51.15	40.15	74	54	-22.9	-13.9	H
19696	45	38.6	45	11.9	44	9.5	1	49.4	43	74	54	-24.6	-11	H
22158	45.6	38.9	47	13.09	42.5	9.5	1	54.69	47.99	74	54	-19.3	-6.01	H
24620	46.5	39.2	45	13.43	42	9.5	1	54.43	47.13	74	54	-19.6	-6.87	H
2491*		26	29	3	0	9.5	1	23.5	49.5	74	54	-50.5	-4.5	V
4924	71	61.1	33	4.93	41	9.5	0	58.43	48.53	74	54	-15.6	-5.47	V
7388	62.7	51	37.2	6.29	41	9.5	1	56.69	44.99	74	54	-17.3	-9.01	V
9848	57.2	49.6	38.1	7.48	39.4	9.5	1	54.88	47.28	74	54	-19.1	-6.72	V
12310	55.1	41.9	39	8.67	40	9.5	1	54.27	41.07	74	54	-19.7	-12.9	V
14772	48.1	38	41.3	9.69	42.5	9.5	1	48.09	37.99	74	54	-25.9	-16	V
17234	48.3	38.3	43.2	11.05	44	9.5	1	50.05	40.05	74	54	-24	-14	V
19696	45.3	38.5	45	11.9	44	9.5	1	49.7	42.9	74	54	-24.3	-11.1	V
22158	45.8	38.9	47	13.09	42.5	9.5	1	54.89	47.99	74	54	-19.1	-6.01	V
24620	46.1	39.2	45	13.43	42	9.5	1	54.03	47.13	74	54	-20	-6.87	V
NOTE: ALL READINGS MEASURED AT 1 METER.														
DIST: Correction to extrapolate reading to 3m specification distance														
ANALYZER SETTINGS														
AF: Antenna Factor										PEAK(Pk):				
AMP: Pre-amp gain										Res bw				
CL: Cable loss										1MHz				
HPF: High pass filter insertion loss										AVG(Pk):				
*: Restricted band										Res bw				
										1MHz				
										10Hz				

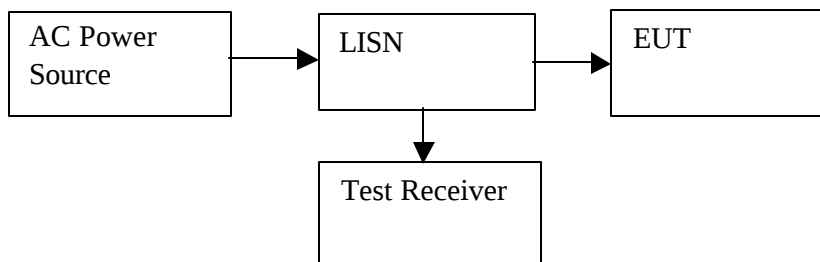


9.8. POWER LINE CONDUCTED EMISSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
450 K to 30 MHz	☒ Peak ☐ CISPR Quasi Peak	☒ 9 KHz	☒ 9 KHz

TEST SETUP



TEST PROCEDURE

1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in a continuous mode.
2. Line conducted data was recorded for both NEUTRAL and HOT lines.

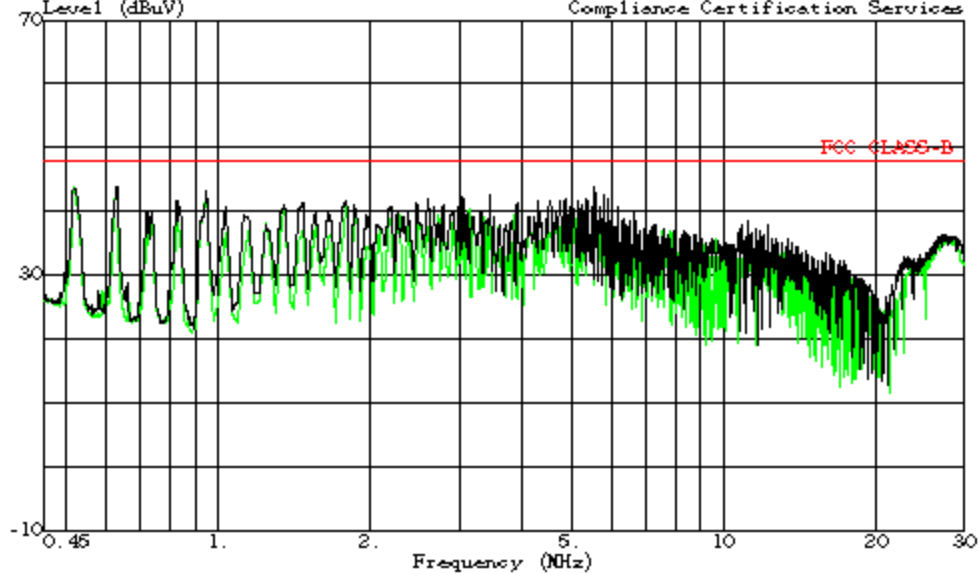
RESULT

No non-compliance noted. See plot Line Conduction.



561 F Monterey Road, Route 2
Morgan Hill, CA 95037-9001 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 7 File#: 01U0988.ENI Date: 10-02-2001 Time: 15:42:18
Level (dBuV) Compliance Certification Services



Trace: 3
Project No. : 01U0988-1
Report No. : 0110021c
Test Engr : Hue Ly Vang
Company : GRE America, Inc.
EUT Description : 11Mbps RF Module
Model : GINA-2011
EUT Config. : EUT/PC/powersupply
Type of Test : FCC Class B
Mode of Operation: Continuous Packet receive
: Peak: L1 (Green), L2 (Black)
: 115Vac, 60Hz

Ref Trace:

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit		Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.52	42.98	--	--	0.00	48.00	--	-5.02	--	L1
1.79	42.09	--	--	0.00	48.00	--	-5.91	--	L1
27.35	36.99	--	--	0.00	48.00	--	-11.01	--	L1
0.62	45.05	--	--	0.00	48.00	--	-2.95	--	L2
5.57	45.20	--	--	0.00	48.00	--	-2.80	--	L2
12.26	38.32	--	--	0.00	48.00	--	-9.68	--	L2
6 Worst Data									

9.9. SETUP PHOTOS

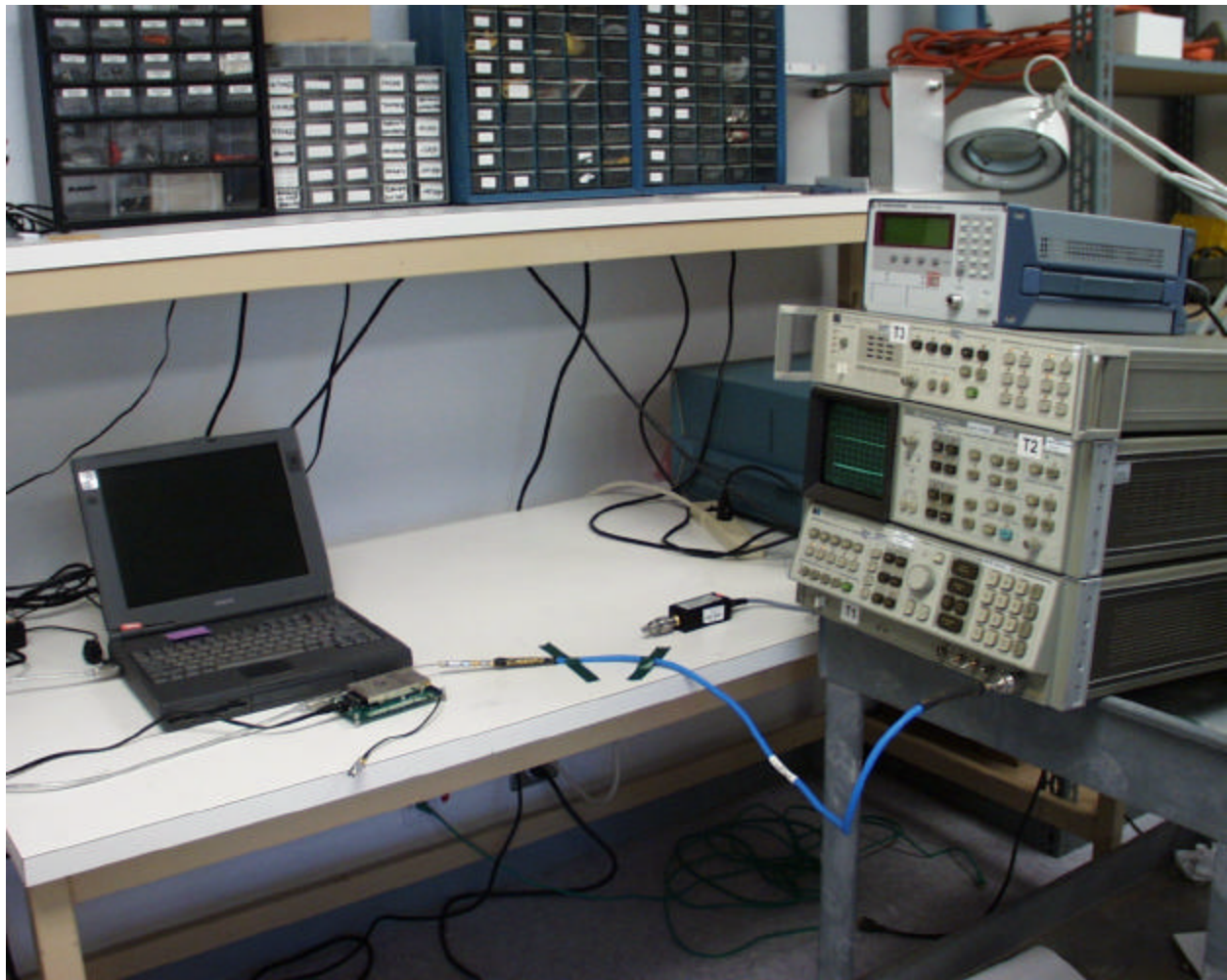
Radiated Emission photos.



Conducted Emission Photos



FCC testing to antenna port



FCC testing above 1GIGHz







ATTACHMENTS

EUT PHOTOGRAPHS

