FCC CFR47 PART 15 CERTIFICATION

TEST REPORT

FOR

2.4GHz SPREAD SPECTRUM STATION RADIO

MODEL: 2411EZYLINK-9

FCC ID: MKZ2411EZYLINK-9

REPORT NUMBER: 01U0986-1

ISSUE DATE: OCTOBER 2, 2001

Prepared for
OTC WIRELESS INC.
48507 MILMONT DRIVE
FREMONT, CA 94538
USA

Prepared by
COMPLIANCE CERTIFICATION SERVICES
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LAB CODE:200065-0

TABLE OF CONTENT

1. TEST RESULT CERTIFICATION

COMPANY NAME: **OTC WIRELESS, INC.**
48507 MILMONT DRIVE
FREMONT, CA 94538 USA

CONTACT PERSON: **YAN ZHENG / ENGINEER**

TELPHONE NO: **510-490-8288**

EUT DESCRIPTION: **2.4GHZ STATION RADIO**

MODEM NAME: **2411EZYLINK-9**

DATE TESTED: **OCTOBER 12, 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: Tested By:

STEVE CHENG
EMC ENGINEERING MANAGER
COMPLIANCE CERTIFICATION SERVICES

HUE LY VANG
ASSOCIATE EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

Crystal

Broad Name	Crystal (MHz)
Main Unit	9.6MHz , 32.768MHz
Handset Unit	9.6MHz , 32.768MHz

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	NVLAP 200065-0
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	FC 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	N 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	N ELA-171
Taiwan	BSMI	CNS 13438	商檢 SL2-IN-E-1012
Canada	Industry Canada	RSS210 Low Power Transmitter and Receiver	Canada 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

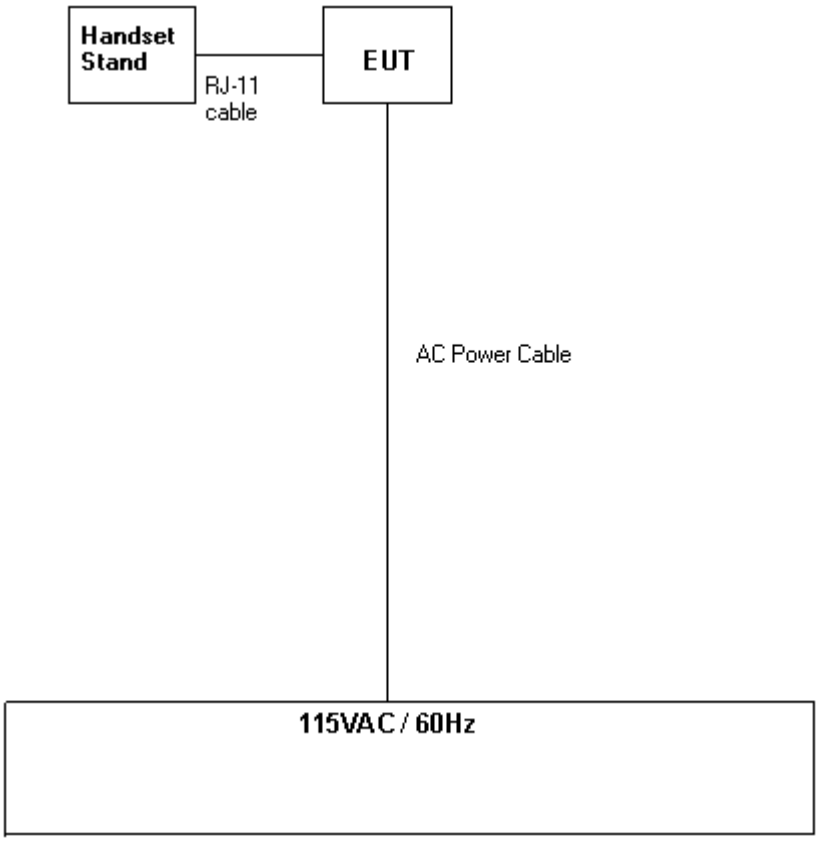
Any results falling within the above values are deemed to be marginal.

7. SUPPORT EQUIPMENT / TEST DIAGRAM

Support Equipment

During Radiated Emission testing, no support equipment was used.

Test Diagram



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.

Measured With Average Power Meter		
Channel	***Frequency (MHz)***	***Output Power(watts)***
1	***2412***	***36.3mWatt(15.6dBm)***
7	***2442***	***37.12mWatt(15.7dBm)***
11	***2462***	***38.90mWatt(15.9dBm)***

Measured with Summation Method		
Channel	***Frequency (MHz)***	***Output Power (Watts)***
1	***2412***	***141.98mWatt (21.52dBm)***
7	***2442***	***145.38mWatt (21.62dBm)***
11	***2462***	***143.09mWatt (21.27dBm)***

§14.407- BANDDWIDTH 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***	***10.25***
7	***2442***	***10.28***
11	***2462***	***9.93***

§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)*	*PPSD(dBm)*
1	***2412***	***-13.3***
7	***2442***	***-11.92***
11	***2462***	***-13.8***

§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)
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. MODIFICATIONS

To achieve compliance modifications were made to the EUT.

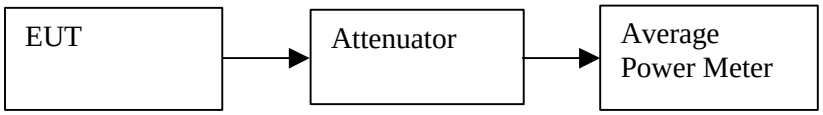
1. Added ferrite core (Fair-Rite brand, part #:0444164181) onto RJ-45 with one turn at EUT end.
2. Added ferrite core (Fair- Rite brand, part #:0443164151) onto DC power Line with two turns at EUT end.
3. Replaced the R75 (0 ohm) and R76 (0 ohm) with ferrite bead.

10. TEST SETUP, PROCEDURE AND RESULT

10.1. CONDUCTED POWER

10.1.1. Power Meter Measurement

TEST SETUP



TEST PROCEDURE

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

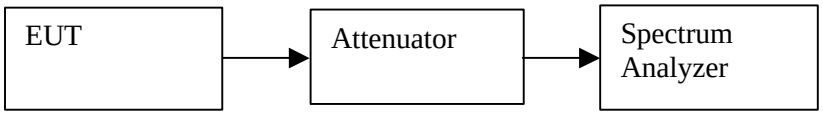
RESULT

No non-compliance noted.

Channel	*Frequency (MHz)*	*Output Power(watts)*
1	***2412***	***36.3mWatt(15.6dBm)***
7	***2442***	***37.12mWatt(15.7dBm)***
11	***2462***	***38.90mWatt(15.9dBm)***

10.1.2. Summations method

TEST SETUP



Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak	☒ 3 MHz	☒ 3 MHz

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. A signal at every 3 MHz from the center is taken. The number is converted into watts and then added up.

To Convert from dB to Watts used this formula: 10 log (x)dB
To convert from Watts to dB use this formula: Anti log ((X)Watts/10)

Channel:1 (Fo=2412)

Frequency	dBm	mWatts
2422	4.4	2.75
2419	11.3	13.49
2116	14.6	28.84
2413	17..31	43.82
2410	15.67	36.9
2407	11.61	14.49
2404	2.28	1.69

Total = 141.98mWatts
141.98mWatts = **21.52dBm**

Channel:7 (Fo=2442)

Frequency	dBm	Mwatts
2452	3.02	2
2449	10.73	11.83
2146	14.35	27.22
2443	17.41	55.08
2440	15.51	35.56
2437	10.88	12.25
2434	1.81	1.52

Total = 145.38mWatts
145.38mWatts = **21.62dBm**

Channel:1 (Fo=2462)

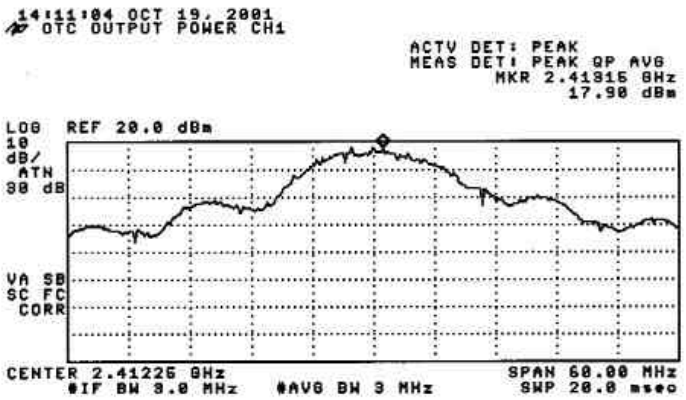
Frequency	dBm	Mwatts
2472	2.75	1.88
2469	10.42	11.01
2466	13.94	24.77
2463	16.91	49.09
2460	15.24	33.42
2457	10.9	12.3
2454	2.09	1.62

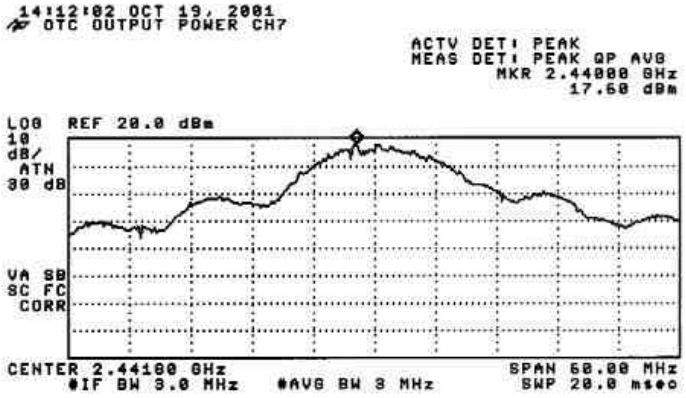
Total = 134.09mWatts
134.09mWatts = **21.27dBm**

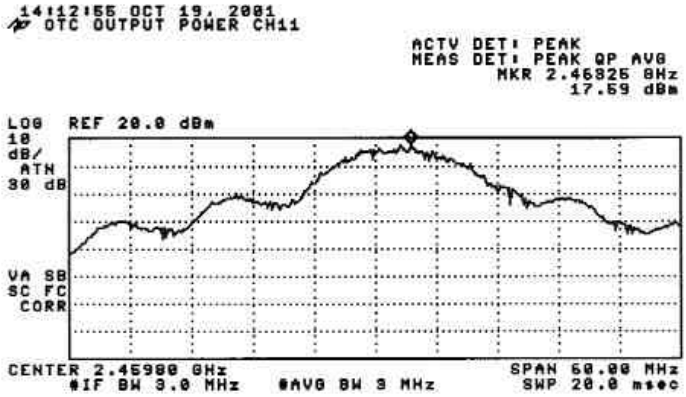
RESULT

No non-compliance noted.

Channel	*Frequency (MHz)*	*Output Power (Watts)*
1	***2412***	***141.98mWatt (21.52dBm)***
7	***2442***	***145.38mWatt (21.62dBm)***
11	***2462***	***143.09mWatt (21.27dBm)***





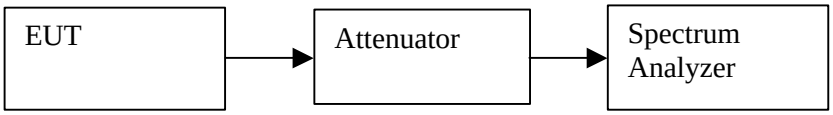


10.2. 6 dB BANDWIDTH MEASUREMENT

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



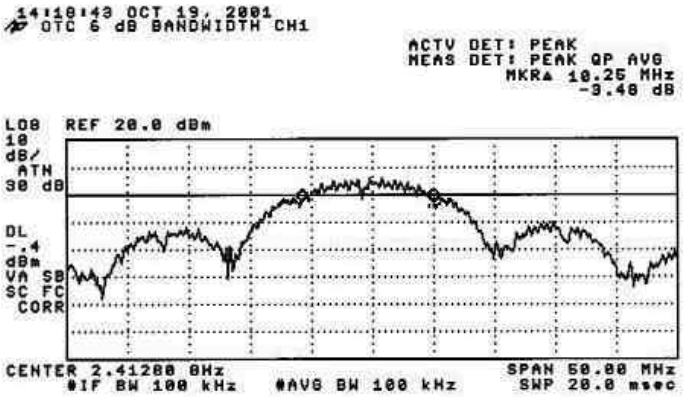
TEST PROCEDURE

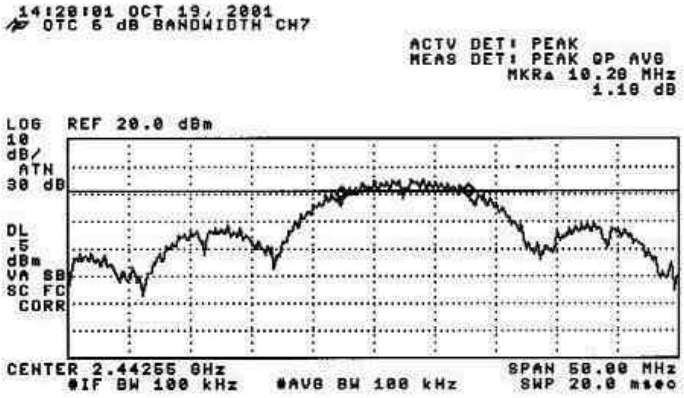
The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 100 kHz VBW. The 6 dB bandwidth is defined as the total spectrum the poweroff which is higher than peak power minus 6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

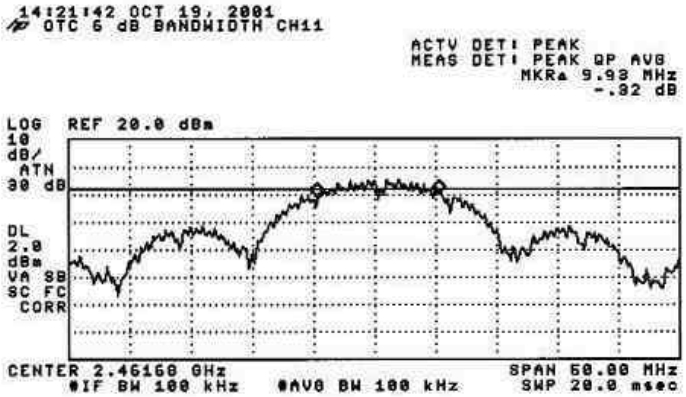
RESULT

No non-compliance noted.

Channel	***Frequency (MHz)***	***Bandwidth(MHz)***
1	***2412***	***10.25***
7	***2442***	***10.28***
11	***2462***	***9.93***





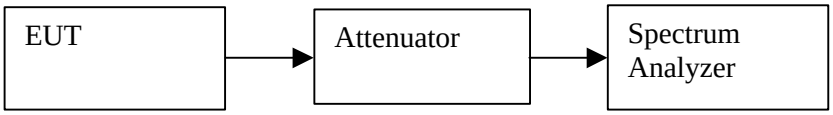


10.3. CONDUCTED SPURIOUS EMISSION

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	☒ 100 kHz ☐ 1 MHz	☒ 100 kHz ☐ 10 Hz

TEST SETUP

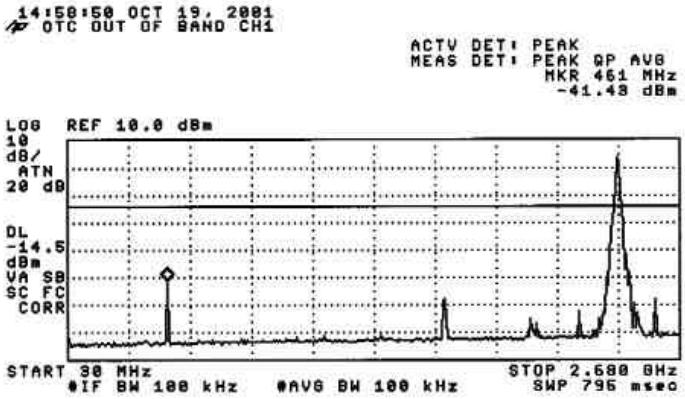


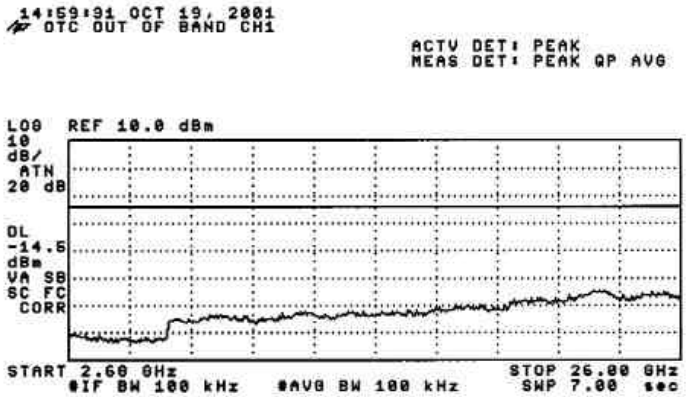
TEST PROCEDURE

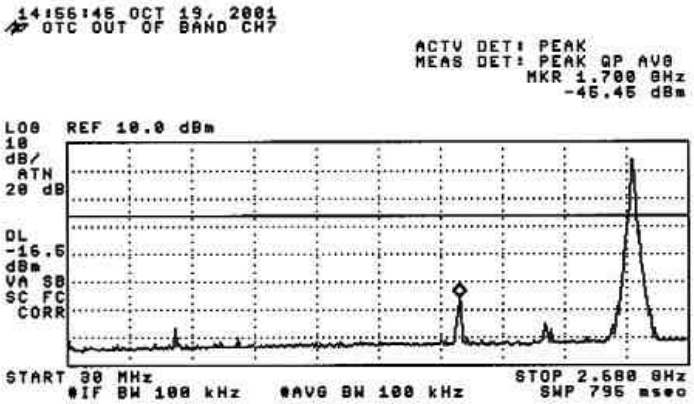
Connect the Eut's antenna port to the Spectrum Analyzer's input put.
Investigate the entire frequency of the carrier frequency, up to the tenth harmonic.

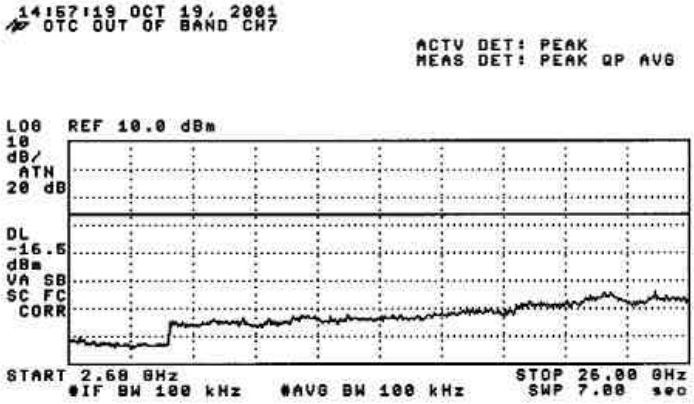
RESULT

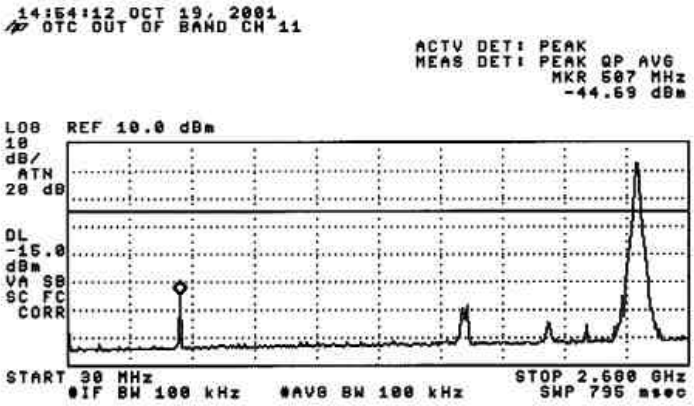
No non-compliance noted.

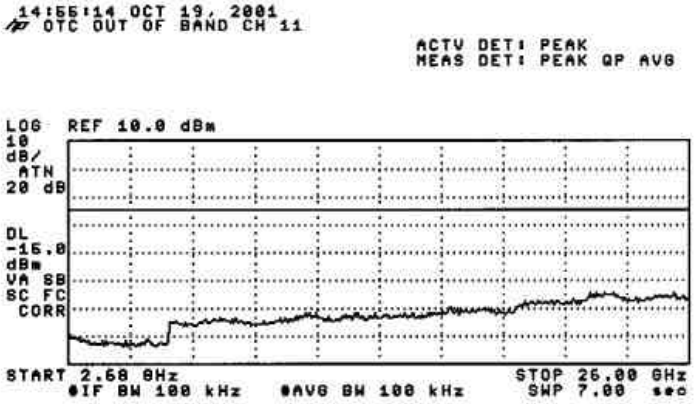










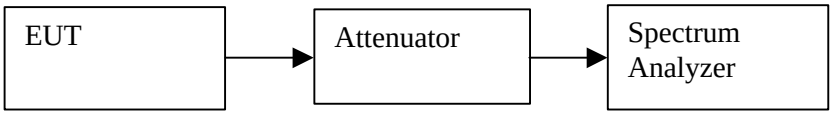


9.3.1 Conducted Bandedge

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	☒ 100 kHz ☐ 1 MHz	☒ 100 kHz ☐ 10 Hz

TEST SETUP

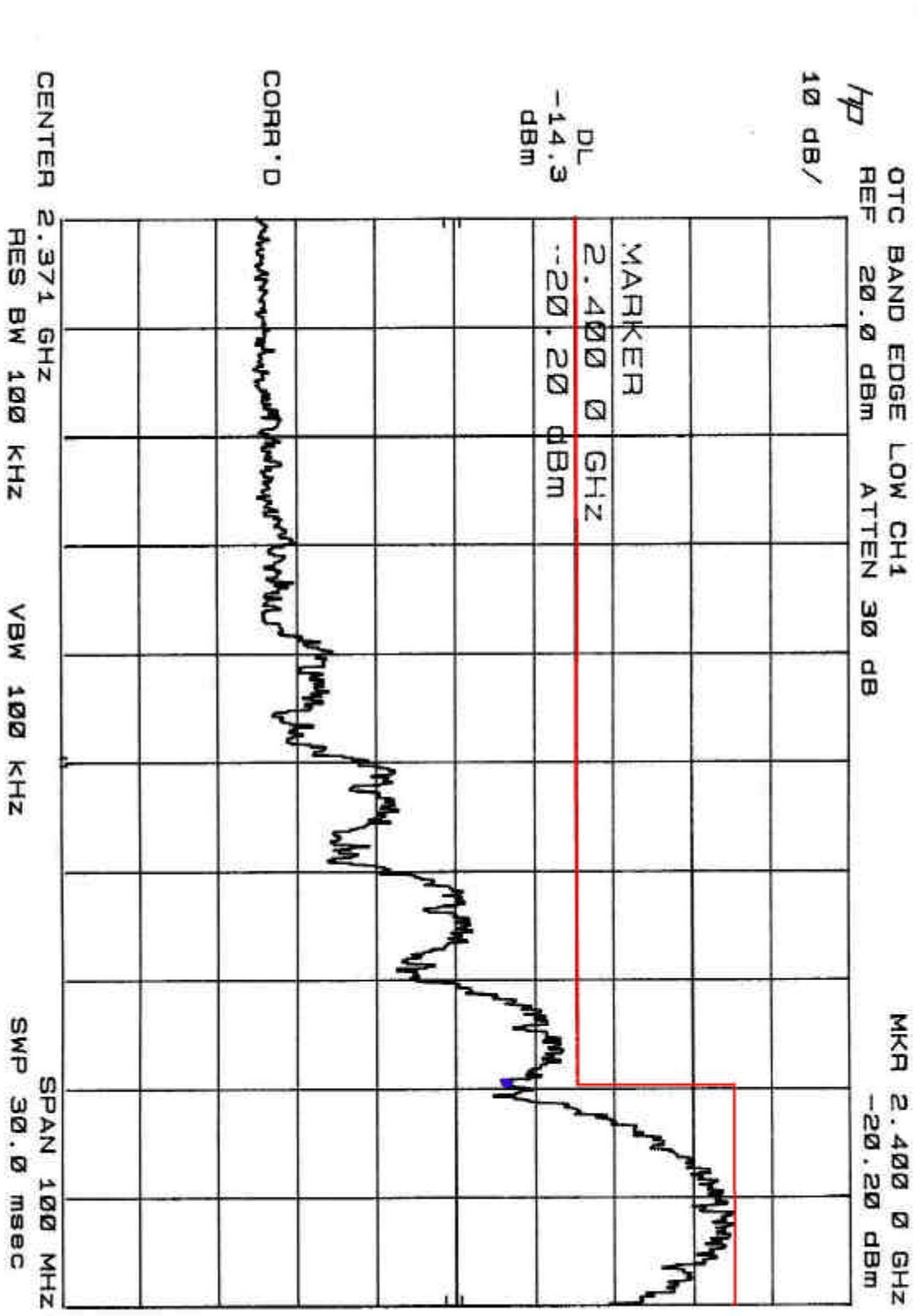


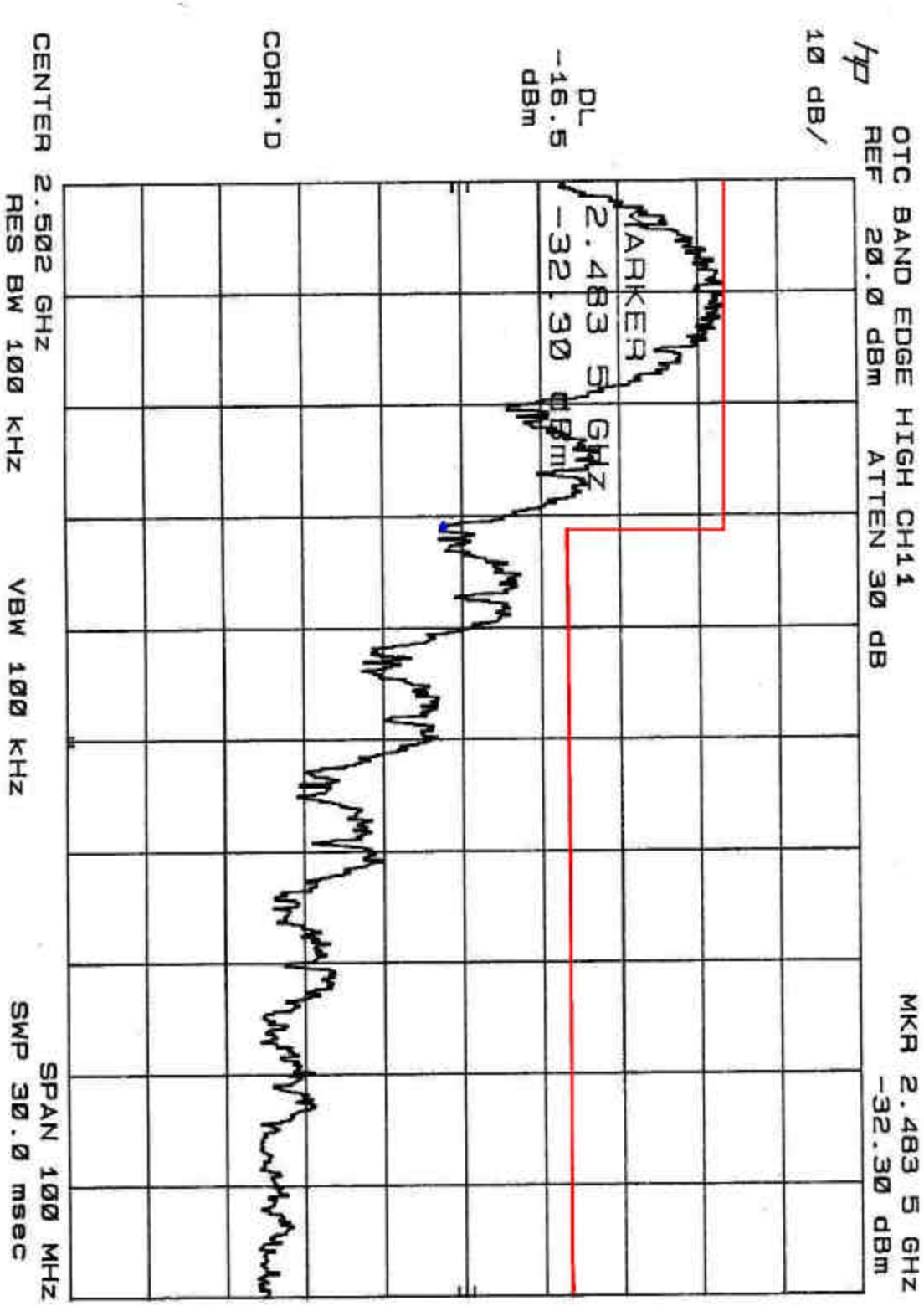
TEST PROCEDURE

Connect the Eut's antenna port to the Spectrum Analyzer's input put.
Using peak search take the peak from the carrier frequency. Subtract 20 from the peak.
The carrier signal should not go out of it's band of operations. Investigate the lowest and highest channel at the band edge to see if they pass the conducted spurious limit.

RESULT

No non-compliance noted.



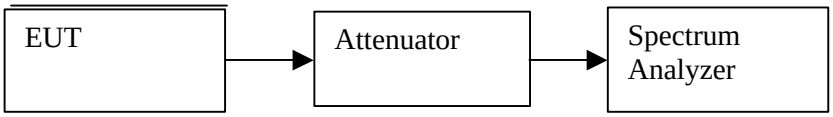


10.4. PEAK POWER SPECTRAL DENSITY

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

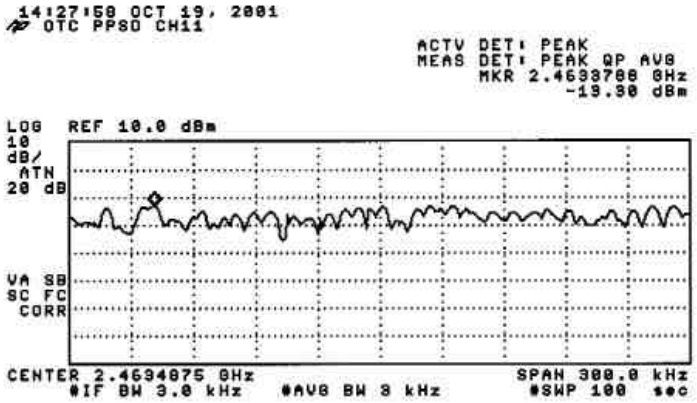


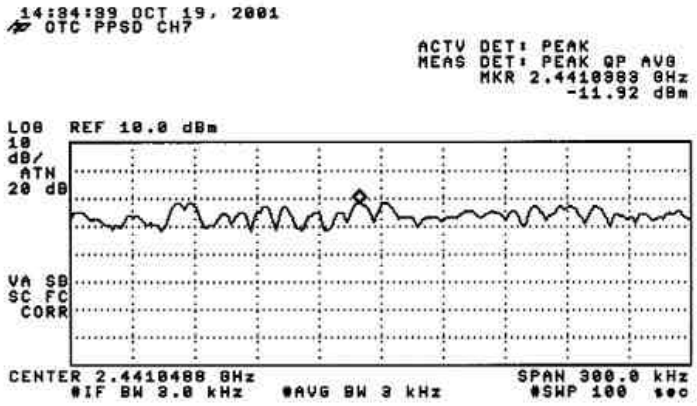
TEST PROCEDURE

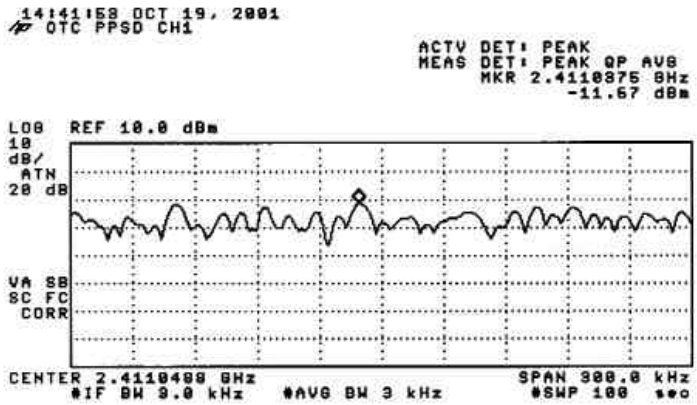
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time=span/3kHz. The power spectral density was measured and recorded.
The sweep time is allowed to be longer than span/3KHz for a full response of the mixer in the spectrum analyzer.

Result:
No non-compliance noted. See plots:

Channel	***Frequency (MHz)***	***PPSD(dBm)***
1	***2412***	***-13.3***
7	***2442***	***-11.92***
11	***2462***	***-11.67***







10.5. PROCESSING GAIN

CUSTOMER PROVIDED PROCESSING GAIN.

PROCESSING GAIN MEASUREMENT

1.1 Measurement Setup

Figure 1 shows the setup for measuring the processing gain of EzyLINK-9. A Transmitting Computer A and a Receiving Computer B are used to execute a Bit Error Rate (BER) Testing Computer Program. The BER is determined by repetitively transmitting a testing data file from Computer A to Computer B. At Computer B the received data file is compared with a pre-stored version of the testing data file to compute the bit error rate. An HP 8648C Signal Generator is used to generate interference or jamming signal.

Data signal from the Transmitting Computer is sent to the Transmitting EzyLINK-9 unit for modulation. It is then combined with the interference signal from the Signal Generator through a equal power (3 dB) combiner. The combined signal is fed into a Receiving EzyLINK-9, the Device Under Test (DUT), for demodulation, and the demodulated signal is sent into the Receiving Computer for Bit Error Rate computation.

1.2 Measurement Procedure

The data signal level at the input of the Receiving EzyLINK-9, point P in Figure 1, is determined. With Attenuator A set at 60 dB attenuation, the data signal level at point P is measured to be -35 dBm.

Then the Signal Generator is set at a certain CW frequency between 2434 MHz and 2450 MHz. The interference level at the input of the Receiving EzyLINK-9, the DUT, can be varied by adjusting the output level of the Signal Generator.

The measurement of processing gain is carried out by adjusting the output level of the Signal Generator such that the Bit Error Rate is maintained at no higher than 10^{-5}. The interference level at the input of the DUT, the point P, is then measured. In the EzyLINK-9 receiving chain a Surface Acoustic Wave (SAW)IF filter which has a nominal 3-dB bandwidth of $\pm$7.5 MHz centered at 374 MHz (see Fig. 2) is used. Jamming signals outside the 2442$\pm$7.5 MHz frequency band will be heavily attenuated. The measurement is performed from 2434 MHz to 2450 MHz at 50 KHz interval. The measured interference power level at point P with BER $\leq 10^{-5}$ at each frequency is shown in the following:

Freq. (MHz	Jammer Power(dBm)	J/S (dB)	Freq. (MHz)	Jammer Power(dBm)	J/S (dB)	Freq. (MHz)	Jammer Power(dBm)	J/S (dB)	Freq. (MHz)	Jammer Power(dBm)	J/S (dB)
2434	-39.6	-4.6	2436	-40.1	-5.1	2438	-40.1	-5.1	2440	-40.3	-5.3
2434.05	-39.4	-4.4	2436.05	-40.4	-5.4	2438.05	-40.2	-5.2	2440.05	-40.1	-5.1
2434.1	-39.7	-4.7	2436.1	-40.3	-5.3	2438.1	-40.2	-5.2	2440.1	-40.2	-5.2
2434.15	-39.7	-4.7	2436.15	-40.2	-5.2	2438.15	-40.2	-5.2	2440.15	-40.3	-5.3
2434.2	-39.8	-4.8	2436.2	-40.1	-5.1	2438.2	-40.2	-5.2	2440.2	-40.1	-5.1
2434.25	.39.8	-4.8	2436.25	-40.4	-5.4	2438.25	-40.1	-5.1	2440.25	-40.2	-5.2
2434.3	-39.8	-4.8	2436.3	-40.2	-5.2	2438.3	-40.1	-5.1	2440.3	-40.3	-5.3
2434.35	-39.7	-4.7	2436.35	-40.3	-5.3	2438.35	-40.3	-5.3	2440.35	-40.2	-5.2
2434.4	-39.7	-4.7	2436.4	-40.2	-5.2	2438.4	-40.3	-5.3	2440.4	-40.2	-5.2
2434.45	-39.8	-4.8	2436.45	-40.1	-5.1	2438.45	-40.2	-5.2	2440.45	-40.2	-5.2
2434.5	-39.9	-4.9	2436.5	-40.2	-5.2	2438.5	-40.1	-5.1	2440.5	-40.3	-5.3
2434.55	-39.9	-4.9	2436.55	-40.2	-5.2	2438.55	-40.3	-5.3	2440.55	-40.2	-5.2
2434.6	-39.8	-4.8	2436.6	-40.1	-5.1	2438.6	-40.1	-5.1	2440.6	-40.2	-5.2
2434.65	-39.9	-4.9	2436.65	-40	-5	2438.65	-40.2	-5.2	2440.65	-40.3	-5.3
2434.7	-40	-5	2436.7	-40.1	-5.1	2438.7	-40.2	-5.2	2440.7	-40.3	-5.3
2434.75	-40.1	-5.1	2436.75	-40	-5	2438.75	-40.2	-5.2	2440.75	-40.2	-5.2
2434.8	-40.2	-5.2	2436.8	-39.9	-4.9	2438.8	-40	-5	2440.8	-40.3	-5.3
2434.85	-40.2	-5.2	2436.85	-39.9	-4.9	2438.85	-40.1	-5.1	2440.85	-40.2	-5.2
2434.9	-40.3	-5.3	2436.9	-39.9	-4.9	2438.9	-40	-5	2440.9	-40.4	-5.4
2434.95	-40.4	-5.4	2436.95	-40.1	-5.1	2438.95	-40	-5	2440.95	-40.3	-5.3
2435	-40.5	-5.5	2437	-40	-5	2439	-40.2	-5.2	2441	-40.4	-5.4
2435.05	-40.5	-5.5	2437.05	-40	-5	2439.05	-40.1	-5.1	2441.05	-40.4	-5.4
2435.1	-40.4	-5.4	2437.1	-39.9	-4.9	2439.1	-40.2	-5.2	2441.1	-40.5	-5.5
2435.15	-40.5	-5.5	2437.15	-40	-5	2439.15	-40.1	-5.1	2441.15	-40.5	-5.5
2435.2	-40.4	-5.4	2437.2	-40.1	-5.1	2439.2	-40.1	-5.1	2441.2	-40.6	-5.6
2435.25	-40.3	-5.3	2437.25	-40	-5	2439.25	-40.2	-5.2	2441.25	-40.8	-5.8
2435.3	-40.4	-5.4	2437.3	-39.9	-4.9	2439.3	-40.1	-5.1	2441.3	-41.1	-6.1
2435.35	-40.5	-5.5	2437.35	-40	-5	2439.35	-40.3	-5.3	2441.35	-41.5	-6.5
2435.4	-40.3	-5.3	2437.4	-40.3	-5.3	2439.4	-40.2	-5.2	2441.4	-42.1	-7.1
2435.45	-40.4	-5.4	2437.45	-40.2	-5.2	2439.45	-40.1	-5.1	2441.45	-42.2	-7.2
2435.5	-40.3	-5.3	2437.5	-40.2	-5.2	2439.5	-40	-5	2441.5	-42.4	-7.4
2435.55	-40.3	-5.3	2437.55	-40.1	-5.1	2439.55	-40.2	-5.2	2441.55	-42.7	-7.7
2435.6	-40.4	-5.4	2437.6	-40.1	-5.1	2439.6	-40.1	-5.1	2441.6	-43	-8
2435.65	-40.4	-5.4	2437.65	-40.2	-5.2	2439.65	-40.3	-5.3	2441.65	-43.1	-8.1
2435.7	-40.5	-5.5	2437.7	-40.2	-5.2	2439.7	-40.3	-5.3	2441.7	-43.3	-8.3
2435.75	-40.5	-5.5	2437.75	-40.3	-5.3	2439.75	-40.3	-5.3	2441.75	-43.9	-8.9
2435.8	-40.5	-5.5	2437.8	-40.3	-5.3	2439.8	-40.2	-5.2	2441.8	-43.8	-8.8
2435.85	-40.4	-5.4	2437.85	-40.4	-5.4	2439.85	-40.2	-5.2	2441.85	-43.8	-8.8
2435.9	-40.3	-5.3	2437.9	-40.3	-5.3	2439.9	-40.1	-5.1	2441.9	-43.9	-8.9
2435.95	-40.4	-5.4	2437.95	-40.1	-5.1	2439.95	-40.3	-5.3	2441.95	-43.6	-8.6

Freq. (MHz	Jammer Power(dBm)	J/S (dB)	Freq. (MHz)	Jammer Power(dBm)	J/S (dB)	Freq. (MHz)	Jammer Power(dBm)	J/S (dB)	Freq. (MHz)	Jammer Power(dBm)	J/S (dB)
2442	-43.1	-8.1	2444	-40.4	-5.4	2446	-39.9	-4.9	2448	-39.8	-4.8
2442.05	-43.6	-8.6	2444.05	-40.1	-5.1	2446.05	-39.6	-4.6	2448.05	-39.7	-4.7
2442.1	-43.5	-8.5	2444.1	-40.2	-5.2	2446.1	-39.7	-4.7	2448.1	-39.7	-4.7
2442.15	-43.3	-8.3	2444.15	-40.3	-5.3	2446.15	-39.7	-4.7	2448.15	-39.8	-4.8
2442.2	-43.7	-8.7	2444.2	-40.2	-5.2	2446.2	-39.6	-4.6	2448.2	-39.9	-4.9
2442.25	-43	-8	2444.25	-40.3	-5.3	2446.25	-39.8	-4.8	2448.25	-39.7	-4.7
2442.3	-42.9	-7.9	2444.3	-40.2	-5.2	2446.3	-39.7	-4.7	2448.3	-39.9	-4.9
2442.35	-42.7	-7.7	2444.35	-40.1	-5.1	2446.35	-39.9	-4.9	2448.35	-40	-5
2442.4	-42.7	-7.7	2444.4	-40.4	-5.4	2446.4	-39.7	-4.7	2448.4	-40.1	-5.1
2442.45	-42.6	-7.6	2444.45	-40.3	-5.3	2446.45	-40	-5	2448.45	-40.1	-5.1
2442.5	-42.5	-7.5	2444.5	-40.4	-5.4	2446.5	-40	-5	2448.5	-40	-5
2442.55	-42.3	-7.3	2444.55	-40.3	-5.3	2446.55	-40.1	-5.1	2448.55	-40	-5
2442.6	-42.1	-7.1	2444.6	-40.2	-5.2	2446.6	-40.1	-5.1	2448.6	-39.9	-4.9
2442.65	-41.9	-6.9	2444.65	-40.2	-5.2	2446.65	-40.1	-5.1	2448.65	-39.9	-4.9
2442.7	-41.8	-6.8	2444.7	-40.2	-5.2	2446.7	-40.2	-5.2	2448.7	-39.8	-4.8
2442.75	-41.6	-6.6	2444.75	-40.1	-5.1	2446.75	-40.1	-5.1	2448.75	-39.9	-4.9
2442.8	-41.5	-6.5	2444.8	-40.2	-5.2	2446.8	-40.1	-5.1	2448.8	-39.8	-4.8
2442.85	-41.3	-6.3	2444.85	-40.2	-5.2	2446.85	-40.2	-5.2	2448.85	-39.9	-4.9
2442.9	-41.1	-6.1	2444.9	-40	-5	2446.9	-40.3	-5.3	2448.9	-39.9	-4.9
2442.95	-40.8	-5.8	2444.95	-39.9	-4.9	2446.95	-40.3	-5.3	2448.95	-40	-5
2443	-40.7	-5.7	2445	-39.9	-4.9	2447	-40.4	-5.4	2449	-40.1	-5.1
2443.05	-40.6	-5.6	2445.05	-39.9	-4.9	2447.05	-40.4	-5.4	2449.05	-40	-5
2443.1	-40.5	-5.5	2445.1	-39.9	-4.9	2447.1	-40.4	-5.4	2449.1	-40.1	-5.1
2443.15	-40.3	-5.3	2445.15	-39.9	-4.9	2447.15	-40.4	-5.4	2449.15	-40.1	-5.1
2443.2	-40.2	-5.2	2445.2	-39.9	-4.9	2447.2	-40.3	-5.3	2449.2	-40.2	-5.2
2443.25	-40.2	-5.2	2445.25	-39.8	-4.8	2447.25	-40.3	-5.3	2449.25	-40.2	-5.2
2443.3	-40.1	-5.1	2445.3	-39.8	-4.8	2447.3	-40.3	-5.3	2449.3	-40.1	-5.1
2443.35	-40.2	-5.2	2445.35	-39.8	-4.8	2447.35	-40.2	-5.2	2449.35	-40.2	-5.2
2443.4	-40	-5	2445.4	-39.7	-4.7	2447.4	-40.2	-5.2	2449.4	-40.1	-5.1
2443.45	-40	-5	2445.45	-39.8	-4.8	2447.45	-40.2	-5.2	2449.45	-40.2	-5.2
2443.5	-40	-5	2445.5	-39.7	-4.7	2447.5	-40.1	-5.1	2449.5	-40	-5
2443.55	-40.1	-5.1	2445.55	-39.7	-4.7	2447.55	-40.2	-5.2	2449.55	-40	-5
2443.6	-40.1	-5.1	2445.6	-39.7	-4.7	2447.6	-40.1	-5.1	2449.6	-40	-5
2443.65	-40	-5	2445.65	-39.6	-4.6	2447.65	-40	-5	2449.65	-40.2	-5.2
2443.7	-39.9	-4.9	2445.7	-39.7	-4.7	2447.7	-40	-5	2449.7	-40.2	-5.2
2443.75	-39.9	-4.9	2445.75	-39.7	-4.7	2447.75	-39.9	-4.9	2449.75	-40.2	-5.2
2443.8	-40.1	-5.1	2445.8	-39.7	-4.7	2447.8	-39.9	-4.9	2449.8	-40.1	-5.1
2443.85	-40.1	-5.1	2445.85	-39.7	-4.7	2447.85	-39.8	-4.8	2449.85	-40.1	-5.1
2443.9	-40	-5	2445.9	-39.6	-4.6	2447.9	-39.7	-4.7	2449.9	-40	-5
2443.95	-40	-5	2445.95	-39.8	-4.8	2447.95	-39.8	-4.8	2449.95	-40.1	-5.1

Freq. (MHz)	Jammer Power(dBm)	J/S (dB)
2450	-40.3	-5.3

1.3 Determination of Processing Gain

Let the required theoretical signal to noise ratio for achieving a certain BER, say 10^{-5} , in a non-spread-spectrum receiver be SNRN and that for achieving the same BER in a spread-spectrum receiver be SNRS, the processing gain G_p achieved by this spread-spectrum receiver can be computed using the following formula:

G_p = SNRN + L_s -SNRS (in dB),

where L_s is the system loss due to the difference between a practical system and the ideal system such as the non-ideal filter characteristic.

EzyLINK-9 uses DQPSK CCK modulation scheme that converts each 8-bit symbol into one of 256 complex code words of 8-bit chip sequences and transmits each sequence through the I and the Q channels. It is known that the theoretical signal to noise ratio required to achieve a 10^{-5} BER for such a DQPSK receiver with CCK modulation is 17 dB[1]]. The system loss L_s for EzyLINK-9 is estimated to be approximately 2 dB.

The signal to noise ratio required by EzyLINK-9 in the presence of a CW jamming signal to achieved a BER $\leq 10^{-5}$ can be computed by the measured data listed in the preceding section. The data signal level at the input of the DUT is -35 dBm. The lowest interference power level for maintaining a BER of 10^{-5} , after the worst 20% data points being discarded, is -40.4 dBm. The lowest interference to signal power ratio is -5.4 dB

The Processing Gain is therefore

G_p = 17 +2 -5.4 = 13.6 dB

Reference

[1] Intersil Product Data Sheet HFA3861B

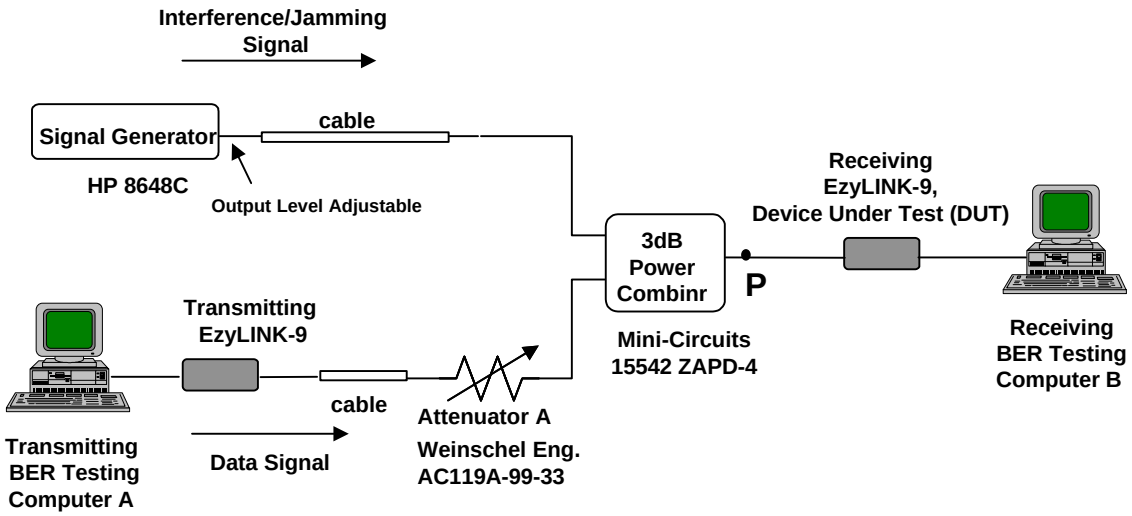


Figure 1. Processing Gain Measurement Setup for EzyLINK-9.

10.6. RESTRICTED BAND EDGE MEASUREMENT

Detector Function Setting of Test Receiver

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

TEST SETUP

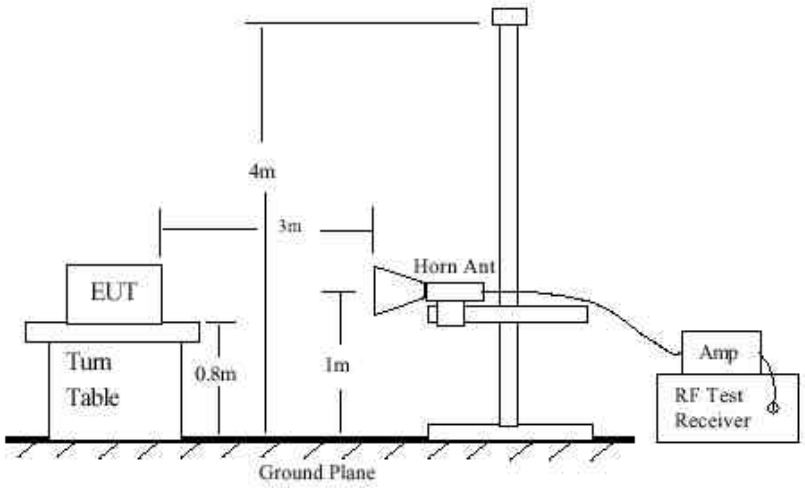


Fig 2: Radiated Emission Above 1000 MHz

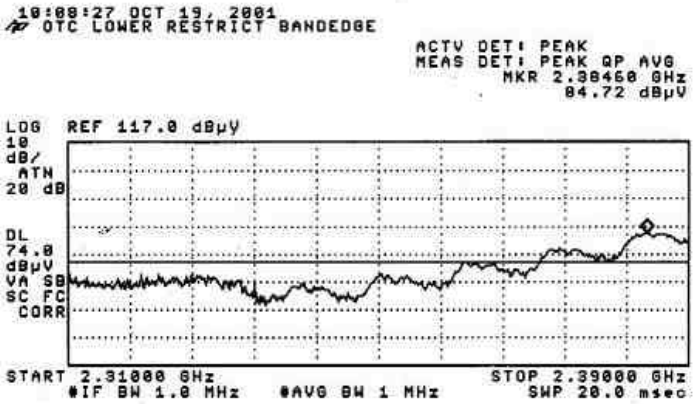
TEST PROCEDURE

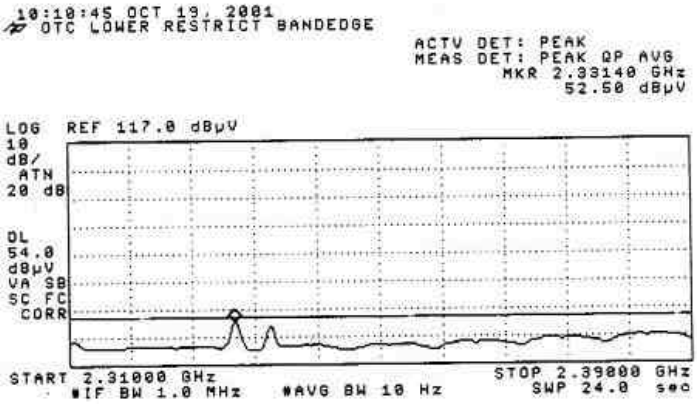
1. The Lower and upper were investigated, due to two restricted band located close to the passband.
2. The EUT was placed on the turn table 0.8 meter above ground in 3 meter open area test site.
3. Shift the interference-receiving antenna located in antenna tower upwards and downwards between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Rotate the turn table and stop at the angle where the measurement device has maximum reading

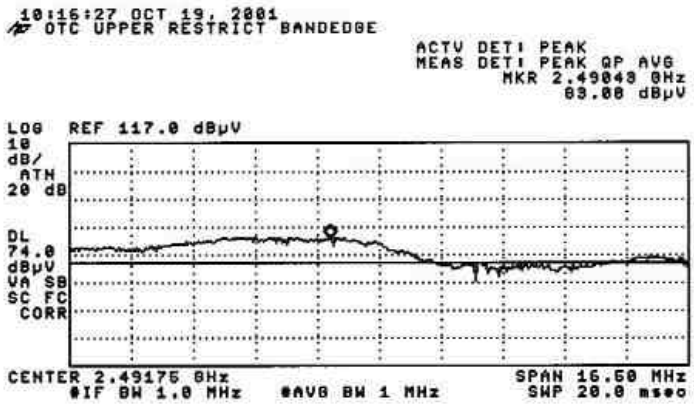
RESULT

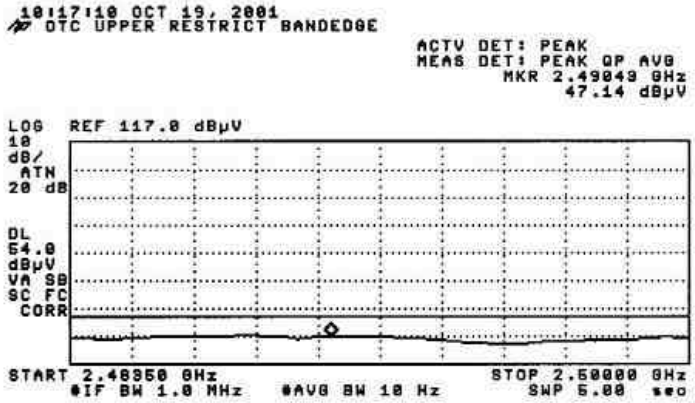
No non-compliance noted. See plots:

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Dist dB	Other dB	Level (dBuV/m)	Limit FCC B	Margin (dB)	Pol (P/A)
2386	84.72	29.20	3.40	42.00	9.50	0.00	65.82	74.0	-8.18	P
2386	52.50	29.20	3.40	42.00	9.50	0.00	33.60	54.0	-20.40	A
2489	83.08	29.20	3.40	42.00	9.50	0.00	64.18	74.0	-9.82	P
2489	48.87	29.20	3.40	42.00	9.50	0.00	29.97	54.0	-24.03	A









10.7. RADIATED EMISSION

Detector Function Setting of Test Receiver

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

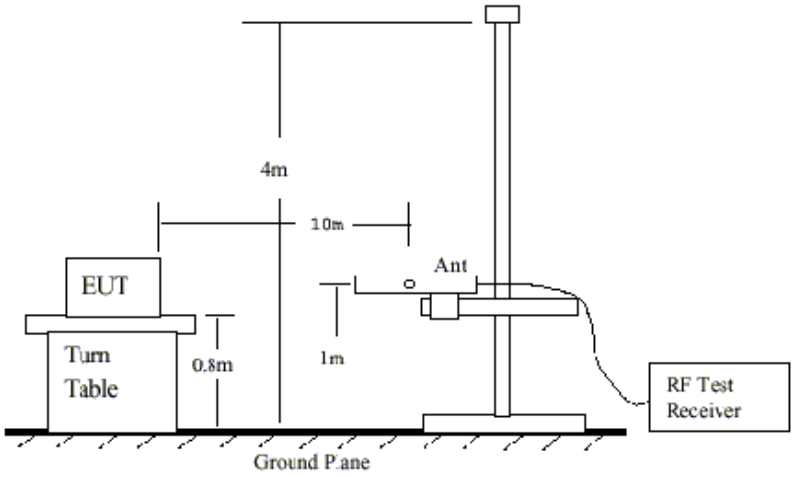


Fig 1: Radiated Emission Measurement 30 to 1000 MHz

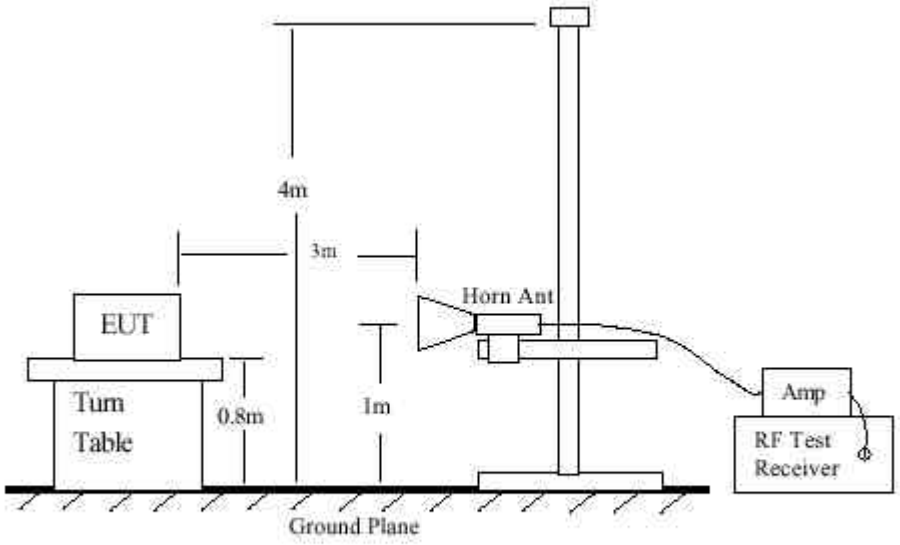


Fig 2: Radiated Emission Above 1000 MHz

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.

COMPLIANCE Certification Services

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

Project #: 01U0986-1
Report #: 011018B1
Date& Time: 10/18/01 9:59 AM
Test Engr: KERWIN CORPUZ

Company: OTC WIRELESS, INC.
EUT Description: 2.4GHz CLIENT RADIO (M/N: 2411EZY-9)
Test Configuration : EUT ONLY
Type of Test: VCCI CLASS B
Mode of Operation: TX

<< Main Sheet

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit EN_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
176.00	43.20	9.39	2.94	29.29	26.23	30.00	-3.77	10mV	0.00	1.00	P
220.00	40.50	11.37	3.32	29.05	26.14	30.00	-3.86	10mV	0.00	1.00	P
352.00	42.10	14.34	4.28	29.09	31.64	37.00	-5.36	10mV	315.00	1.00	P
264.00	44.00	12.50	3.66	28.89	31.27	37.00	-5.73	10mV	0.00	1.00	P
528.00	34.90	18.06	5.46	29.75	28.67	37.00	-8.33	10mV	315.00	1.00	P
308.00	39.50	12.72	3.98	28.86	27.34	37.00	-9.66	10mV	0.00	1.00	P
6 Worst Data											

COMPLIANCE ENGINEERING SERVICES, INC.														
Harmonic Emissions														
OTC Wireless										10/19/01				
Channel 1 : 2412 GHz										Hue Vang				
										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**~~	
4824	65.98	34.56	33	5.44	41	9.5	1	54.92	23.5	74	54	-19.1	-30.5	H
7237	52.17	33.9	37	6.29	41.43	9.5	1	45.53	27.26	74	54	-28.5	-26.7	H
9648	47.87	33.28	38.1	7.31	39.3	9.5	1	45.48	30.89	74	54	-28.5	-23.1	H
12060	48.9	34.61	39	8.5	39.5	9.5	1	48.4	34.11	74	54	-25.6	-19.9	H
14472	48.6	37.59	41.3	9.69	42.5	9.5	1	48.59	37.58	74	54	-25.4	-16.4	H
16884	49.63	37.75	43.2	11.05	44.03	9.5	1	51.35	39.47	74	54	-22.7	-14.5	H
4824	68.18	34.87	33	5.44	41	9.5	1	57.12	23.81	74	54	-16.9	-30.2	V
7237	53.04	34	37	6.29	41.43	9.5	1	46.4	27.36	74	54	-27.6	-26.6	V
9648	54.23	35.03	38.1	7.31	39.3	9.5	1	51.84	32.64	74	54	-22.2	-21.4	V
12060	50.68	35	39	8.5	39.5	9.5	1	50.18	34.5	74	54	-23.8	-19.5	V
14472	53.07	36	41.3	9.69	42.5	9.5	1	53.06	35.99	74	54	-20.9	-18	V
16884	50.03	38.72	43.2	11.05	44.03	9.5	1	51.75	40.44	74	54	-22.3	-13.6	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														
OTC Wireless										10/19/01				
Channel 7 : 2442 MHz										Hue Vang				
										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~~**	
4884	67.8	36.19	33	5.44	41	9.5	1	56.74	25.13	74	54	-17.3	-28.9	H
7327	50.4	34	37	6.29	41.43	9.5	1	43.76	27.36	74	54	-30.2	-26.6	H
9768	47.14	33.24	38.1	7.31	39.3	9.5	1	44.75	30.85	74	54	-29.3	-23.2	H
12209	46.35	34.28	39	8.5	39.5	9.5	1	45.85	33.78	74	54	-28.2	-20.2	H
14652	50.35	37.78	41.3	9.69	42.5	9.5	1	50.34	37.77	74	54	-23.7	-16.2	H
17094	50.35	38.66	43.2	11.05	44.03	9.5	1	52.07	40.38	74	54	-21.9	-13.6	H
4884	69.08	35.08	33	5.44	41	9.5	1	58.02	24.02	74	54	-16	-30	V
7327	55.92	35.17	37	6.29	41.43	9.5	1	49.28	28.53	74	54	-24.7	-25.5	V
9768	52	34.34	38.1	7.31	39.3	9.5	1	49.61	31.95	74	54	-24.4	-22.1	V
12209	46	34.5	39	8.5	39.5	9.5	1	45.5	34	74	54	-28.5	-20	V
14652	49.63	37.9	41.3	9.69	42.5	9.5	1	49.62	37.89	74	54	-24.4	-16.1	V
17094	48.61	38.73	43.2	11.05	44.03	9.5	1	50.33	40.45	74	54	-23.7	-13.6	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**	

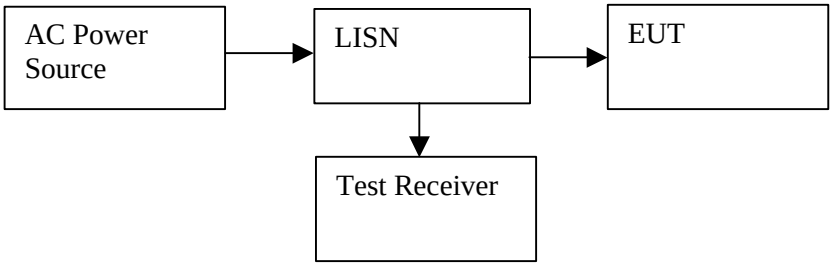
COMPLIANCE ENGINEERING SERVICES, INC.														
Harmonic Emissions														
OTC										10/19/01				
Channel 11 : 2462 MHz										Hue Vang				
										A site (1.0 Meter)				
F(MHz)	**READING**		**AF**	**CL**	**AMP**	**DIST**	**HPF**	**TOTAL**		**LIMIT**		**MARGIN**		**P0L**
	(dBuV)		(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)		(dBuV/m)		(dB)		(H/V)
	~~**Pk**~~	~~**Avg**~~						~~**Pk**~~	~~**Avg**~~	~~**Pk**~~	~~**Avg**~~	~~**Pk**~~	~~**Avg**~~	
4922	69.97	35.12	33	5.44	41	9.5	1	58.91	24.06	74	54	-15.1	-29.9	H
7388	51.03	34.24	37	6.29	41.43	9.5	1	44.39	27.6	74	54	-29.6	-26.4	H
9846	51	34.4	38.1	7.31	39.3	9.5	1	48.61	32.01	74	54	-25.4	-22	H
12308	45.93	34.26	39	8.5	39.5	9.5	1	45.43	33.76	74	54	-28.6	-20.2	H
14770	50	37.5	41.3	9.69	42.5	9.5	1	49.99	37.49	74	54	-24	-16.5	H
17232	50.4	38.5	43.2	11.05	44.03	9.5	1	52.12	40.22	74	54	-21.9	-13.8	H
4922	72.1	35.45	33	5.44	41	9.5	1	61.04	24.39	74	54	-13	-29.6	V
7388	50.96	33.89	37	6.29	41.43	9.5	1	44.32	27.25	74	54	-29.7	-26.8	V
9846	54.95	34.89	38.1	7.31	39.3	9.5	1	52.56	32.5	74	54	-21.4	-21.5	V
12308	51.28	35.17	39	8.5	39.5	9.5	1	50.78	34.67	74	54	-23.2	-19.3	V
14770	55.5	38.5	41.3	9.69	42.5	9.5	1	55.49	38.49	74	54	-18.5	-15.5	V
17232	50.97	38.65	43.2	11.05	44.03	9.5	1	52.69	40.37	74	54	-21.3	-13.6	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**	

10.8. POWER LINE CONDUCTED EMISSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
450 KHz 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.

With DC injector.

CONDUCTED EMISSIONS DATA (115VAC 60Hz)

Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.15	54.29	--	--	0.00	66.00	56.00	-11.71	-1.71	L1
0.81	38.42	--	--	0.00	56.00	46.00	-17.58	-7.58	L1
1.18	38.45	--	--	0.00	56.00	46.00	-17.55	-7.55	L1
0.15	53.27	--	--	0.00	66.00	56.00	-12.73	-2.73	L2
0.81	38.71	--	--	0.00	56.00	46.00	-17.29	-7.29	L2
1.18	38.63	--	--	0.00	56.00	46.00	-17.37	-7.37	L2
6 Worst Data									

With Out DC Injector.

CONDUCTED EMISSIONS DATA (115VAC 60Hz)

Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.20	59.92	--	44.21	0.00	64.51	54.51	-4.59	-10.30	L1
0.61	48.06	--	39.69	0.00	56.00	46.00	-7.94	-6.31	L1
1.38	48.71	--	37.86	0.00	56.00	46.00	-7.29	-8.14	L1
0.20	54.62	--	41.14	0.00	64.46	54.46	-9.84	-13.32	L2
0.62	47.66	--	38.90	0.00	56.00	46.00	-8.34	-7.10	L2
1.44	49.07	--	37.40	0.00	56.00	46.00	-6.93	-8.60	L2
6 Worst Data									

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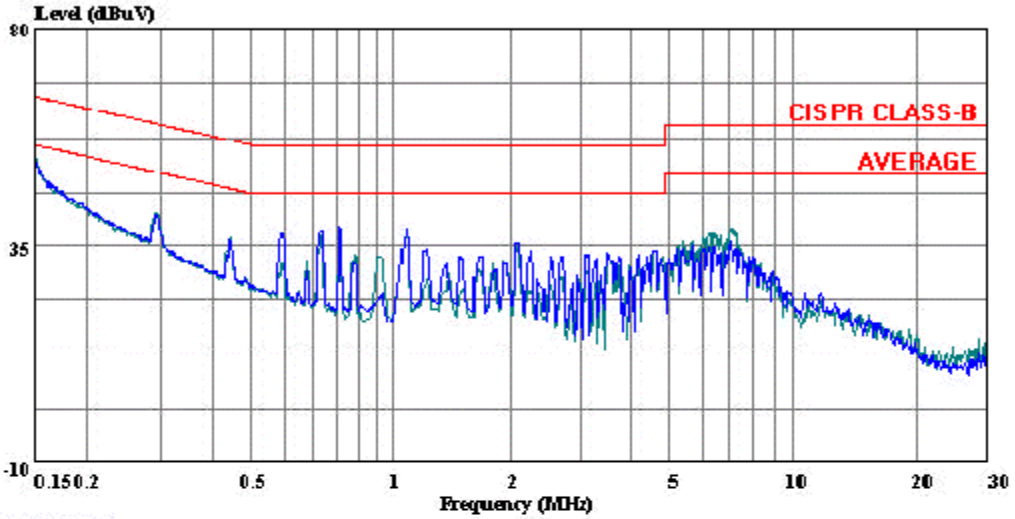
Data#: 7 File#: 01U0986B.EMI Date: 10-18-2001 Time: 17:57:46



(Audix ATC)
Trace: 3 Ref Trace:

Report : 011018LC
Project# : 01U0986-1
Tested By : KERWIN CORPUZ
Manufacture : OTC WIRELESS, INC.
EUT Description : 2.4GHz CLIENT RADIO (M/N: 2411EZY-9)
Test Config. : EUT with DC Injector and power supply
: M/N: ADP-9EB A
Test Target : EN55022 CLASS B
Mode of Operation: TX
: PEAK: L1 (blue), L2 (green)
: 115Vac, 60Hz

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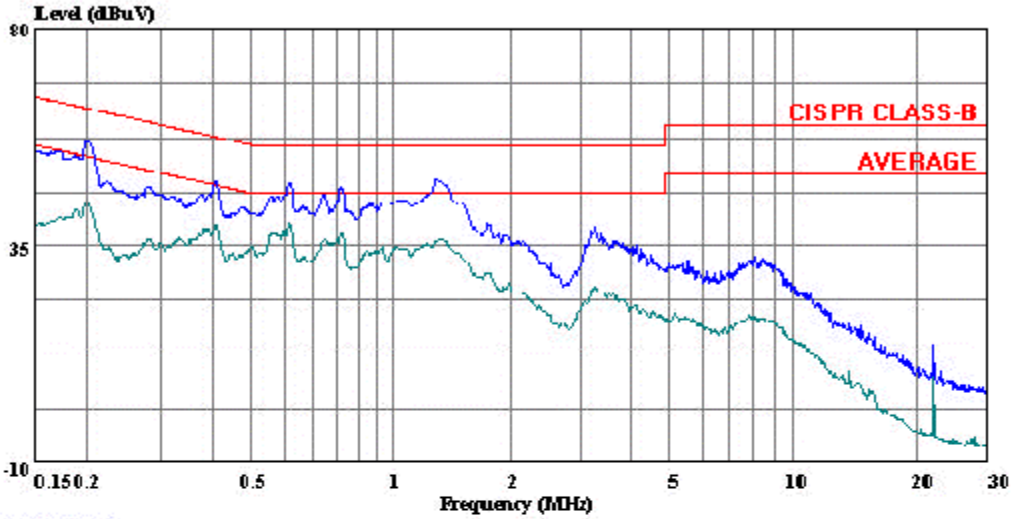
Morgan Hill, CA 95037
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 22 File#: 01u0986a.EMI Date: 10-18-2001 Time: 17:05:28



(Audix ATC)
Trace: 20 Ref Trace:

Report : 011018LC
Project# : 01U0986-1
Tested By : KERWIN CORPUZ
Manufacture : OTC WIRELESS, INC.
EUT Description : 2.4GHz CLIENT RADIO (M/N: 2411EZY-9)
Test Config. : EUT with power supply M/N: A10D1-05MP
Test Target : EN55022 CLASS B
Mode of Operation: TX
: L1: Peak (blue), Average (green)
: 115Vac, 60Hz

561F Monterey Road,
Morgan Hill, CA 95037
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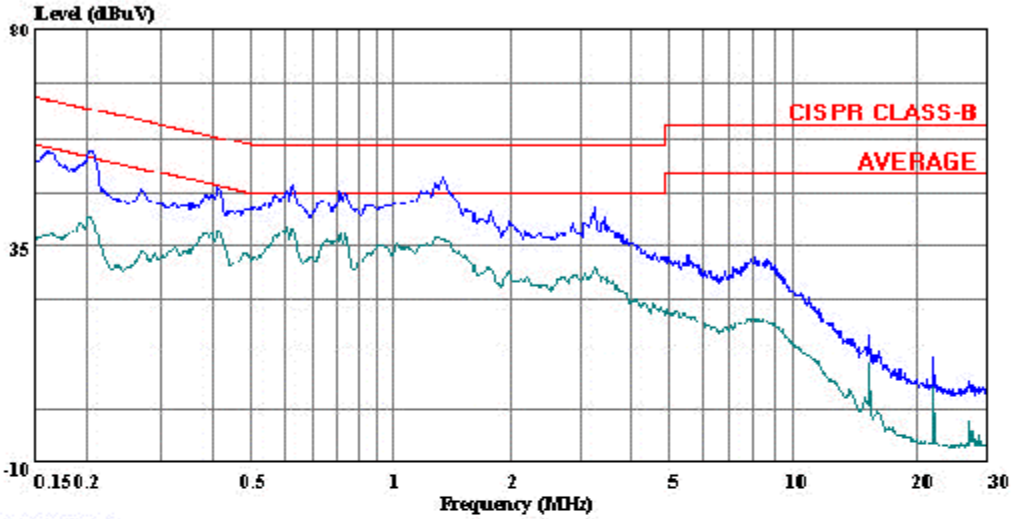
Fax: (408) 463-0888

Data#: 29 File#: 01u0986a.EMI Date: 10-18-2001 Time: 17:21:43



(Audix ATC)
Trace: 27 Ref Trace:

Report : 011018LC
Project# : 01U0986-1
Tested By : KERWIN CORPUZ
Manufacture : OTC WIRELESS, INC.
EUT Description : 2.4GHz CLIENT RADIO (M/N: 2411EZY-9)
Test Config. : EUT with power supply M/N: A10D1-05MP
Test Target : EN55022 CLASS B
Mode of Operation: TX
: L2: Peak (blue), Average (green)
: 115Vac, 60Hz