FCC CFR47 PART 15 CERTIFICATION

TEST REPORT

FOR

2.4GHz SPREAD SPECTRUM CORDLESS TELEPHONE

MODEL: D271

FCC ID: HOLD271

REPORT NUMBER: 01U0950-1

ISSUE DATE: FEBRUARY 13, 2002

Prepared for
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105 COCHRANE CIRCLE
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USA

Prepared by
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LAB CODE:200065-0

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1. TEST RESULT CERTIFICATION

COMPANY NAME: **CIDCO COMMUNICATIONS, LLC.**
105 COCHRANE CIRCLE
MORGAN HILL, CA 95035
USA

CONTACT PERSON: **SA FOO / ENGINEER**

TELPHONE NO: **408-782-8200**

EUT DESCRIPTION: **2.4GHZ SPREAD SPECTRUM CORDLESS TELEPHONE**

MODEM NAME: **D271**

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:

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ASSOCIATE EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The D271 is a 2.4GHz cordless phone that incorporates your telephone company's calling features, such as calling ID. Voice Mail, and call Waiting ID, to provide a powerful full function caller ID cordless telephone. Listed below are some key features;

- Handset Jack
- Call timer
- Single key redialing
- English and Spanish
- Speakerphone
- New message Indicator
- Stores up to 50 caller ID recordings
- 50 directory records

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	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**	**5/10/02**
Quasi-Peak Detector	**HP9K - 1GHz**	**85650A**	**2811A01155**	**5/4/02**
Pre-Amplifier, 25 dB	**HP 0.1 - 1300MHz**	**8447D (P_1M)**	**2944A06833**	**8/21/02**
Antenna, BiLog	**Chase 30 - 2000MHz**	**CBL6112**	**2049**	**8/2/02**
LISN	**Fisher Cus. Comm.**	**LISN-50/250-25-2**	**2023**	**8/8/02**
EMI Test Receiver	**Rohde & Schwarz**	**ESHS 20**	**827129/006**	**4/2/02**
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**	**4/2/02**
High Pass filter	**FSM Microwave**	**HM 4570-9SS**	**3**	**N.C.R.**
Attenuator	**Mini-Circuits**	**MCLBW-S20WL**	**N/A**	**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

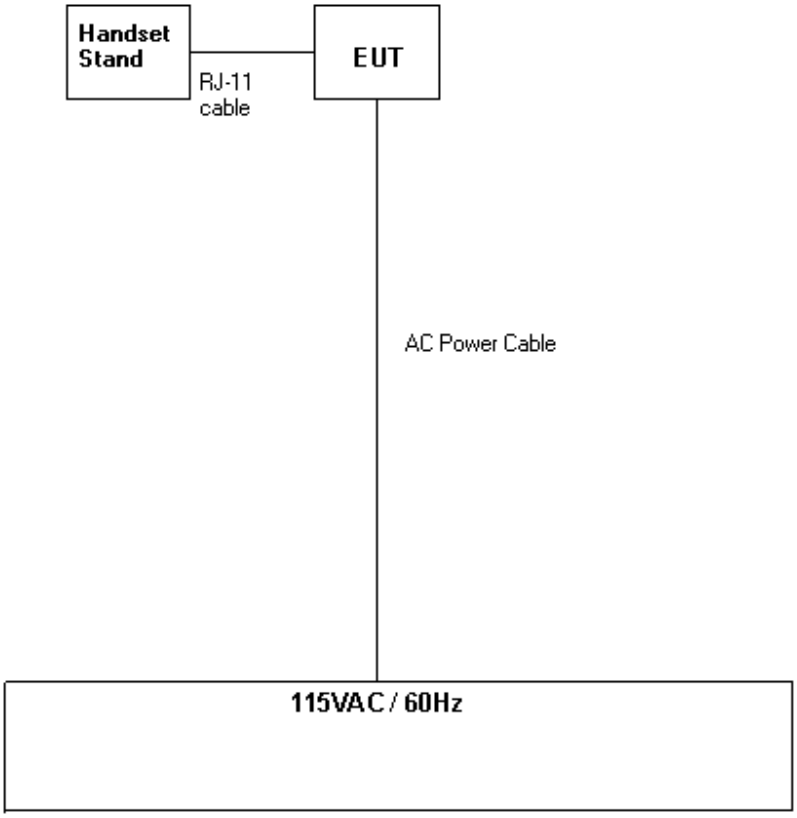
Any results falling within the above values are deemed to be marginal.

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- CONDUCTED RF 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.

Base unit

Channel	*Frequency (MHz)*	*Output Power(watts)*
4	*2404*	*49.89mWatts(16.98dBm)*
10	*2426*	*47.64mWatts(16.78dBm)*
15	*2444*	*42.95mWatts(16.33dBm)*

Handset unit

Channel	*Frequency (MHz)*	*Output Power(watts)*
4	*2408*	*32.2mWatts(15.08dBm)*
10	*2452*	*28.58mWatts(14.56dBm)*
15	*2469*	*31.77mWatts(15.02dBm)*

§15.247- 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.

Main unit

Channel	*Frequency (MHz)*	*Bandwidth(MHz)*
4	*2404*	*1.6*
10	*2426*	*1.613*
15	*2444*	*1.613*

Handset unit

Channel	*Frequency (MHz)*	*Bandwidth(MHz)*
4	*2408*	*1.638*
10	*2452*	*1.575*
15	*2469*	*1.65*

§15.247- OUT OF BAND EMISSION LIMIT

(c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Spec limit: As specified above, -20 dB maximum.
Test result: No non-compliance noted.

§15.247- PEAK POWER SPECTRAL DENSITY LIMIT

(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.

Main unit

Channel	*Frequency (MHz)*	*Results (dBm)*
4	*2404*	*.35*
10	*2426*	*.45*
15	*2462*	*.82*

Handset unit

Channel	*Frequency (MHz)*	*Results (dBm)*
4	*2408*	*-2.27*
10	*2452*	*-2.96*
15	*2469*	*-1.39*

§15.247- PROCESSING 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.

§15.209- RADIATED EMISSION LIMIT

(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 15.209

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- POWER LINE CONDUCTED EMISSION LIMIT

(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 PART 15.207

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

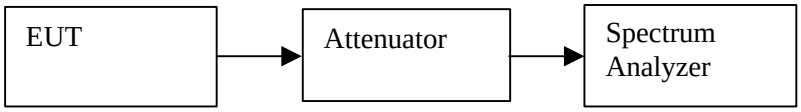
Spec limit: As specified above.

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 RF POWER

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 EUT is operating, the analyzer MAX HOLD function is used to capture the emissions.

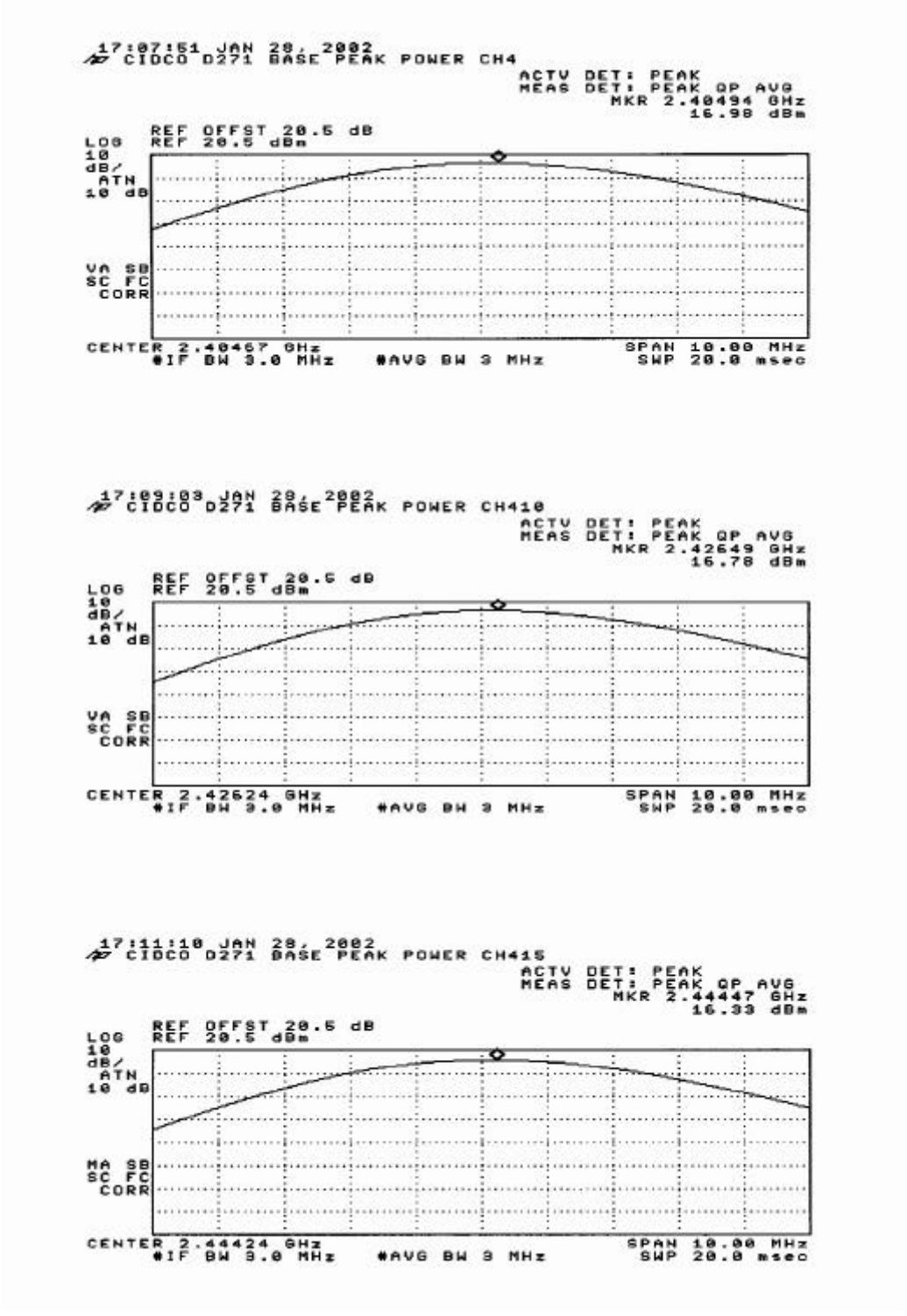
Base Unit

Channel	***Frequency (MHz)***	***Output Power (Watts)***
4	***2404***	***49.89mWatts(16.98dBm)***
10	***2426***	***47.64mWatts(16.78dBm)***
15	***2444***	***42.95mWatts(16.33dBm)***

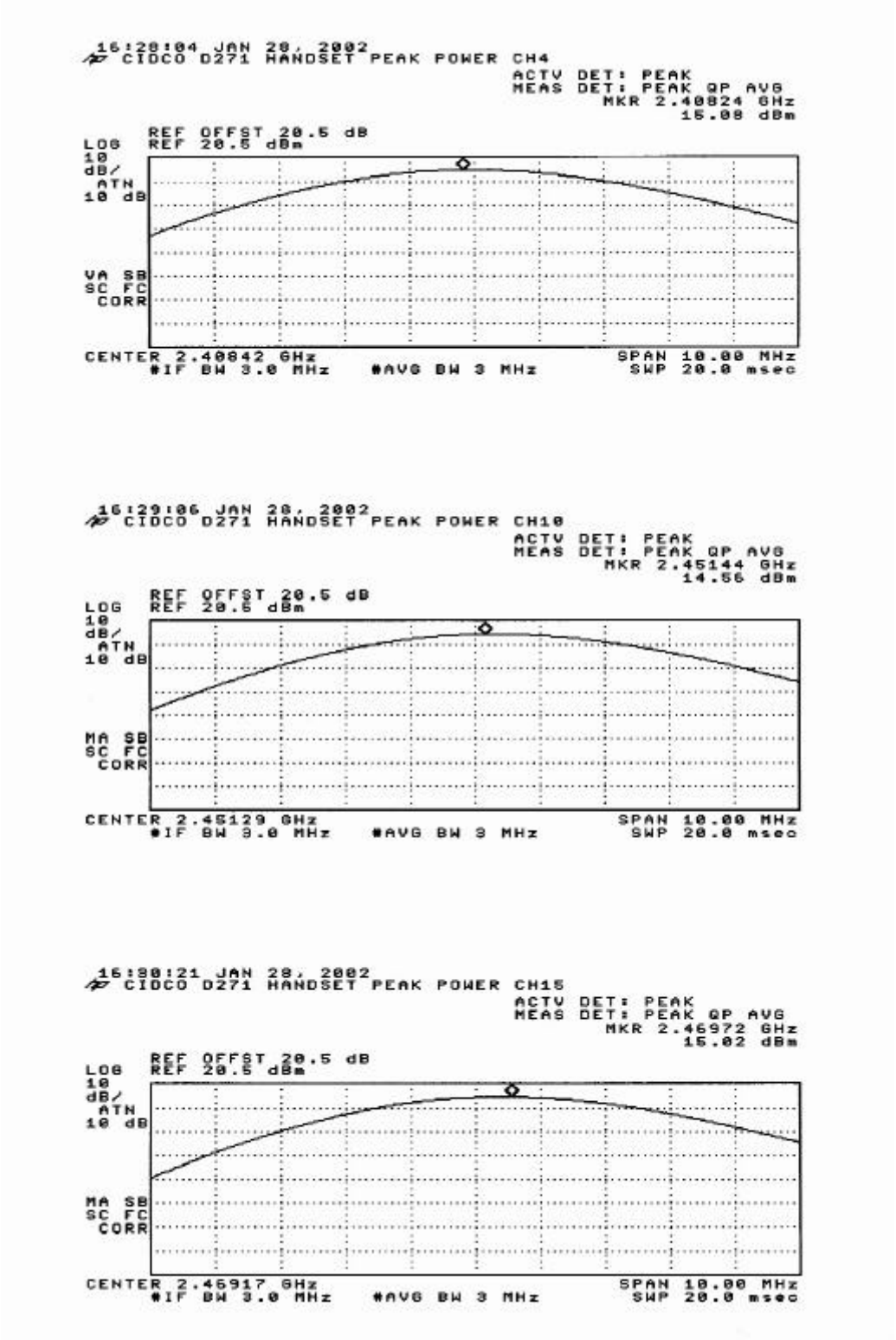
Handset Unit

Channel	***Frequency (MHz)***	***Output Power(Watts)***
4	***2408***	***32.2mWatts(15.08dBm)***
10	***2452***	***28.58mWatts(14.56dBm)***
15	***2469***	***31.77mWatts(15.02dBm)***

RF Power for Base Unit



RF Power for Handset Unit

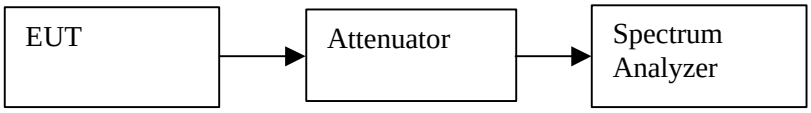


9.2. 6 dB BANDWIDTH MEASUREMENT

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



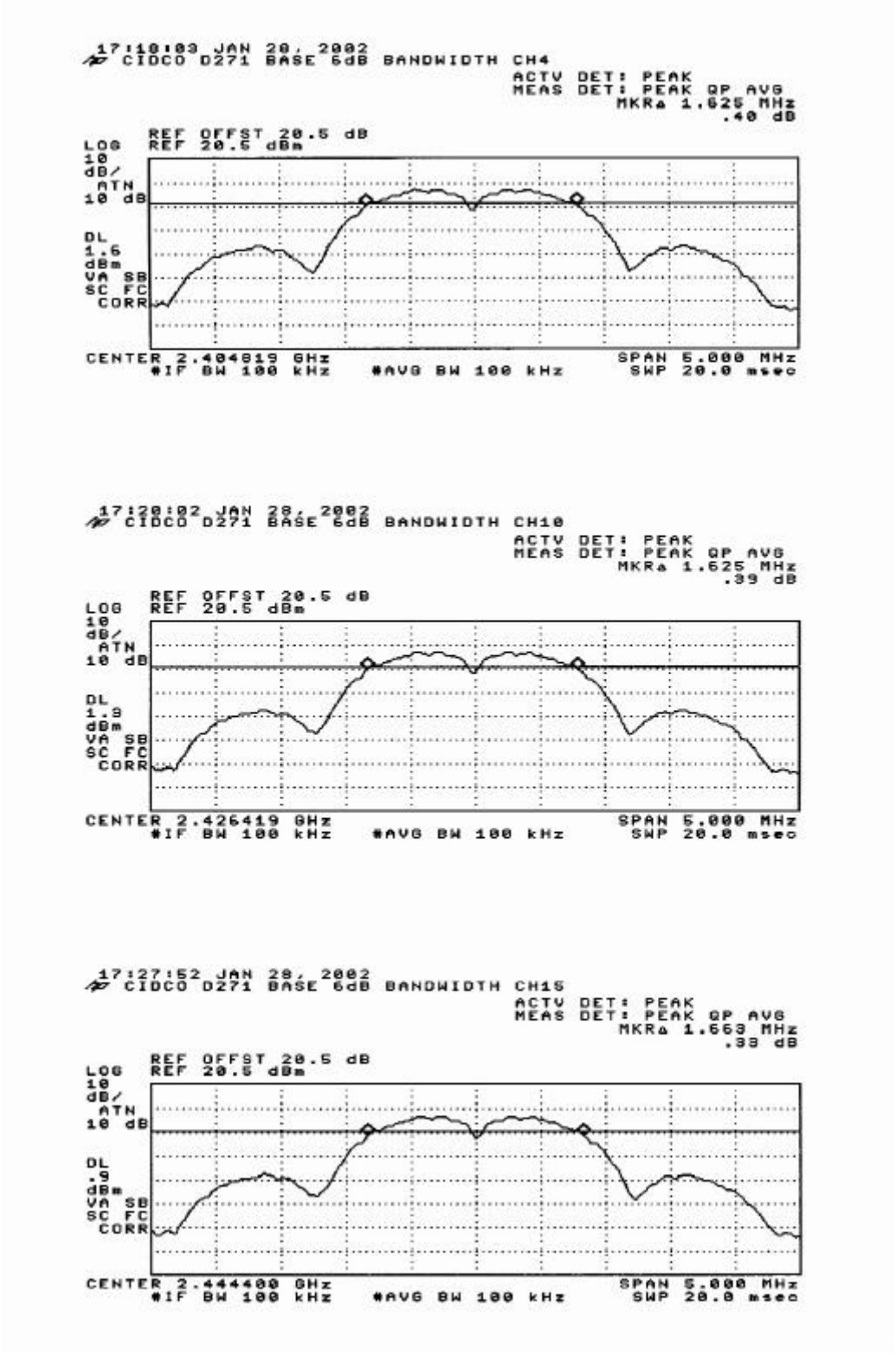
TEST PROCEDURE

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 poweroff which is higher than peak power minus 6 dB.

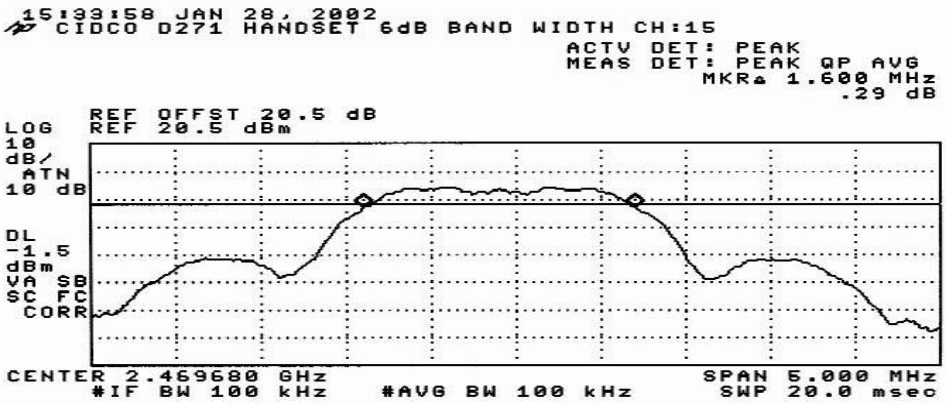
RESULT

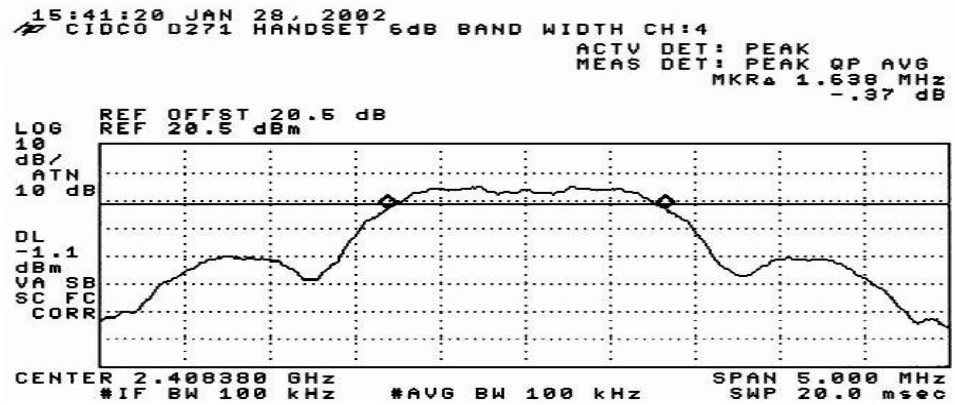
No non-compliance noted.

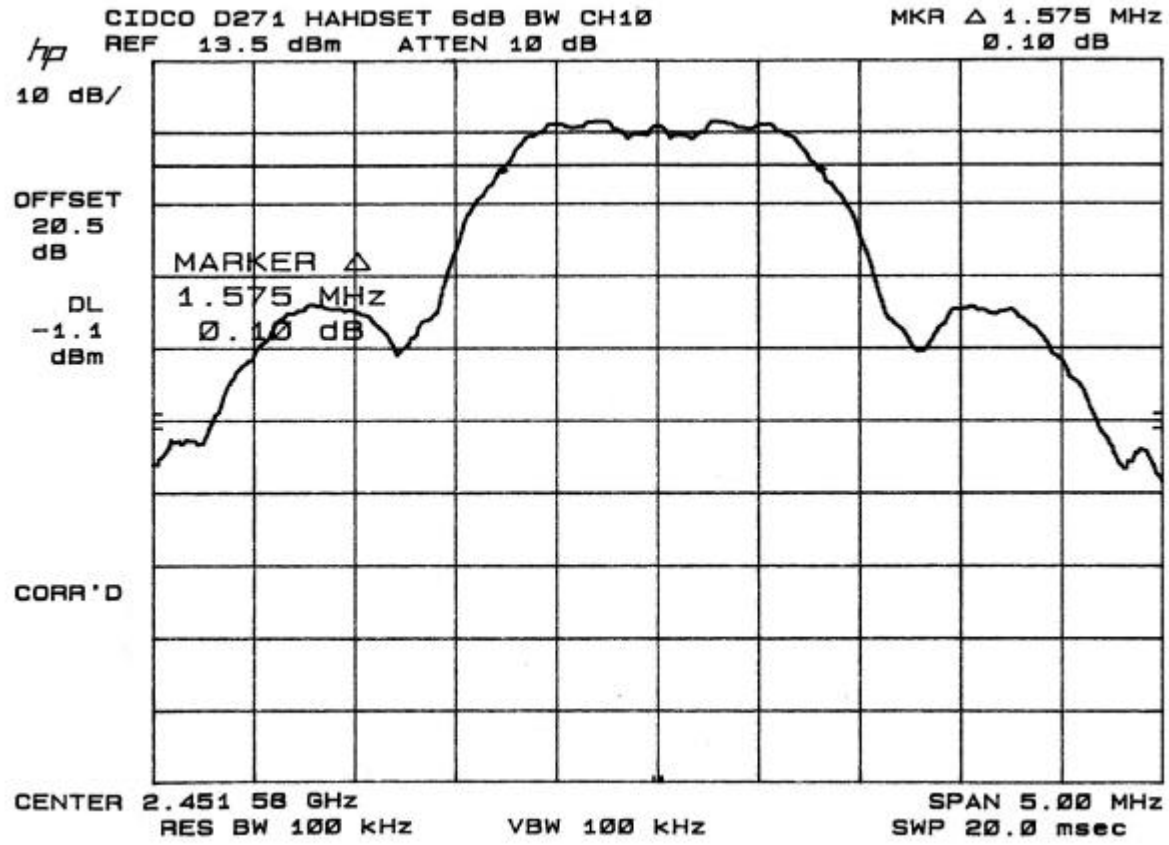
6 dB Bandwidth for Base Unit



6 dB Bandwidth for Handset Unit





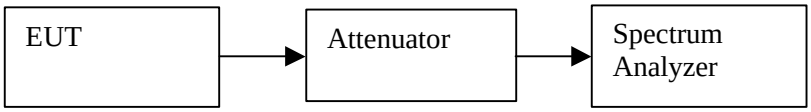


9.3. OUT OF BAND CONDUCTED SPURIOUS EMISSION

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



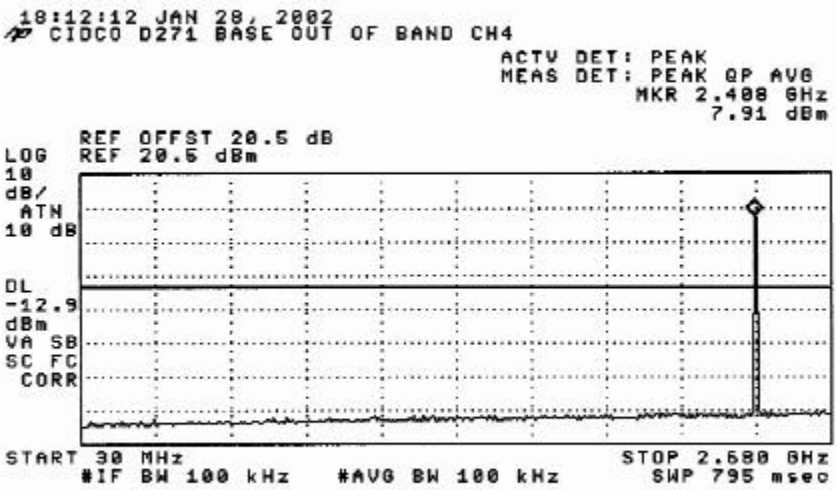
TEST PROCEDURE

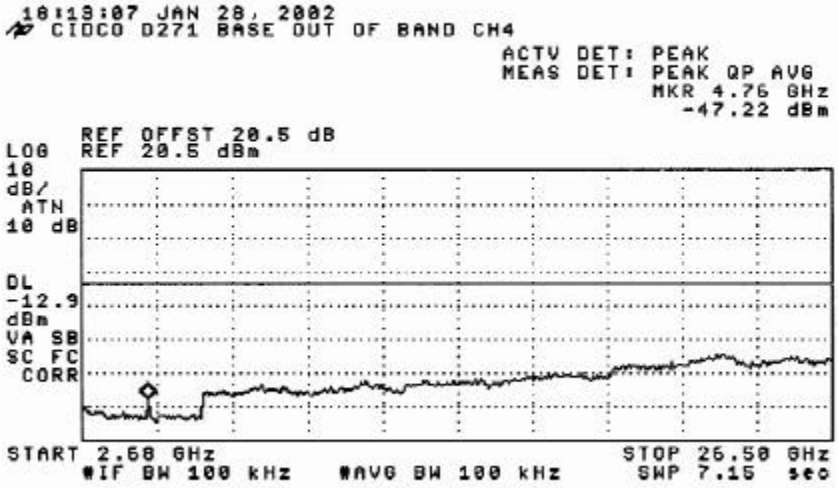
Connect the EUT's antenna port to the Spectrum Analyzer's input.
Investigate the entire frequency of the carrier frequency, up to the tenth harmonic.

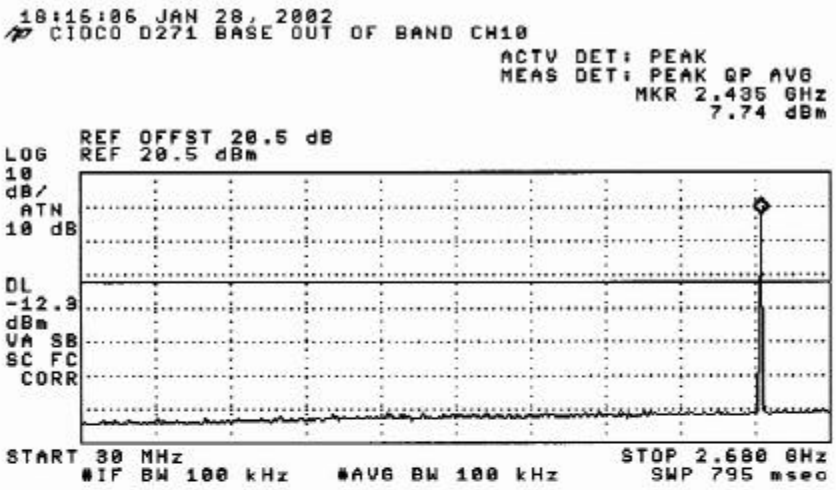
RESULT

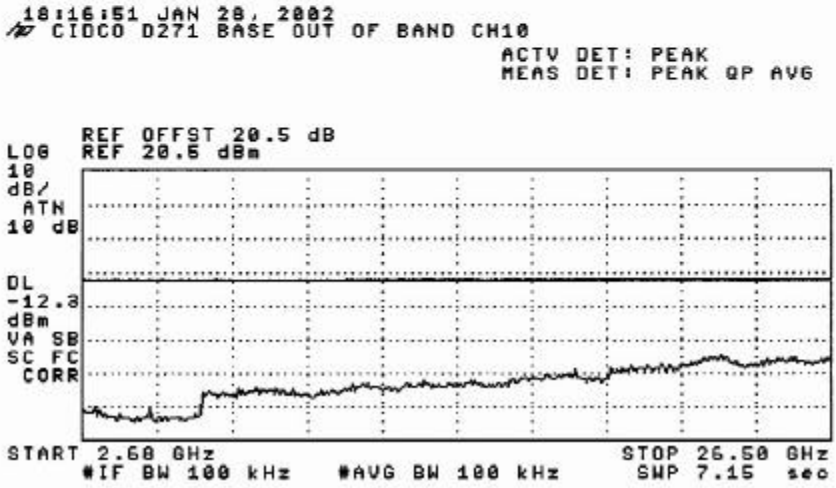
No non-compliance noted.

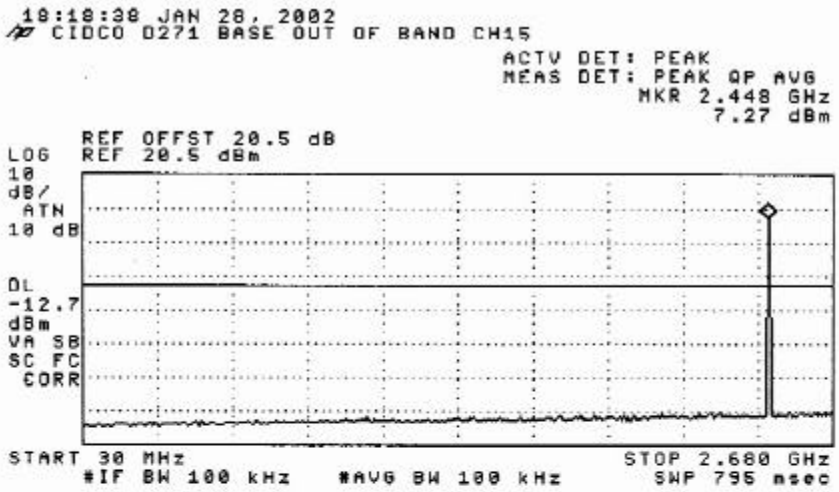
Conducted Spurious Emission for Base Unit

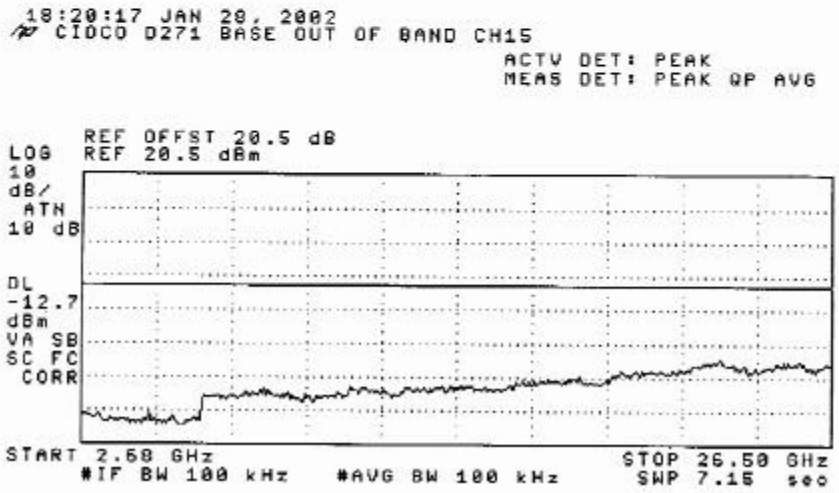


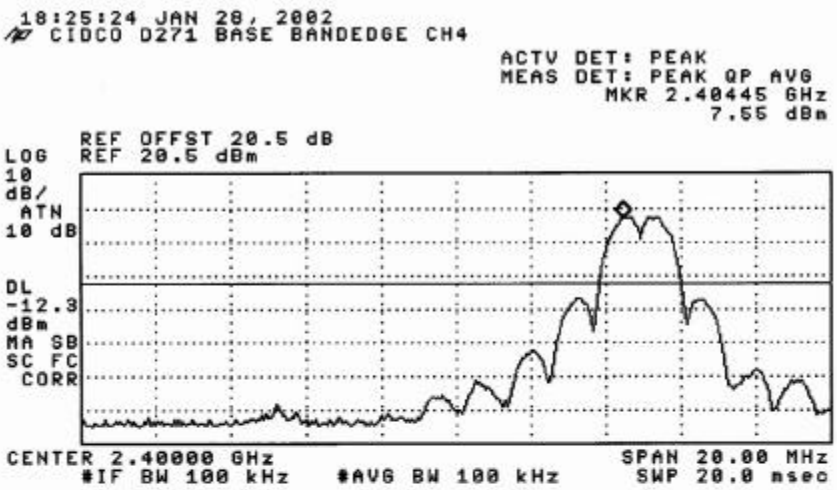


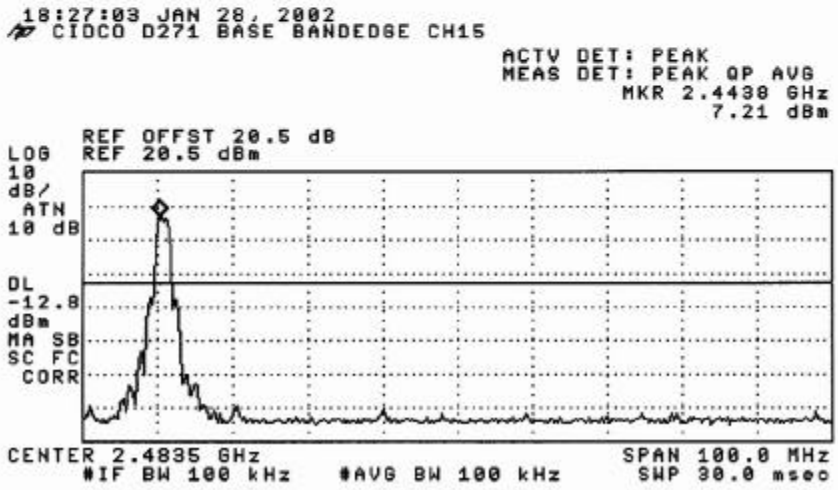




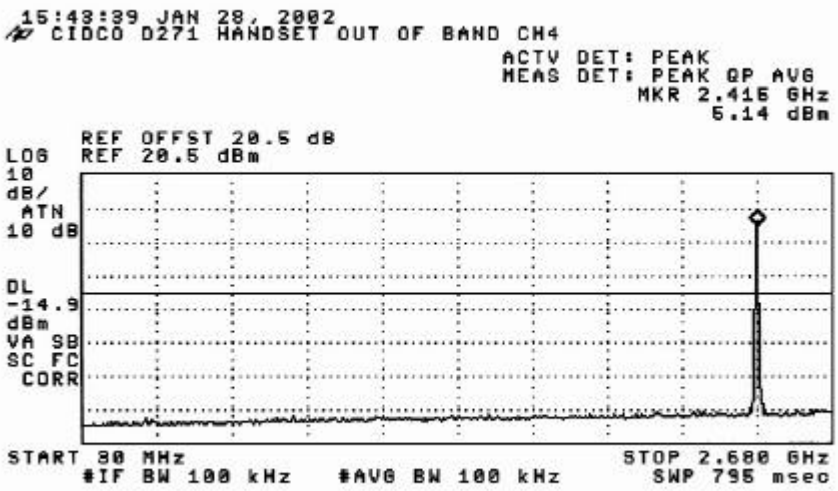


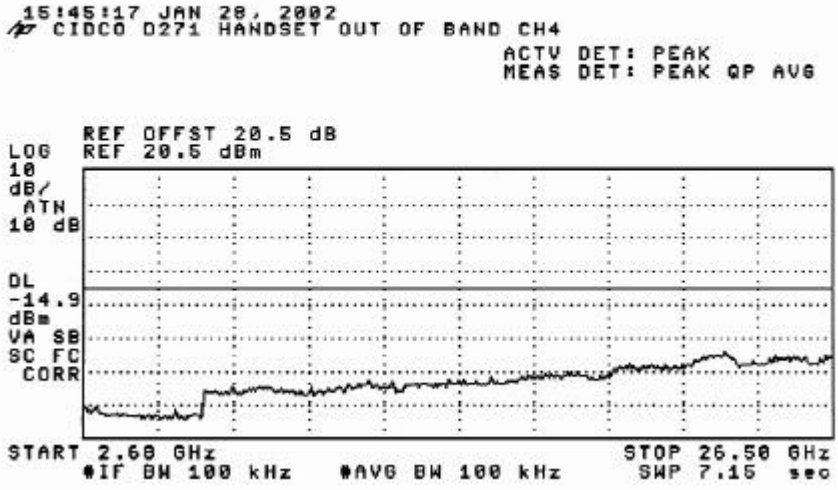


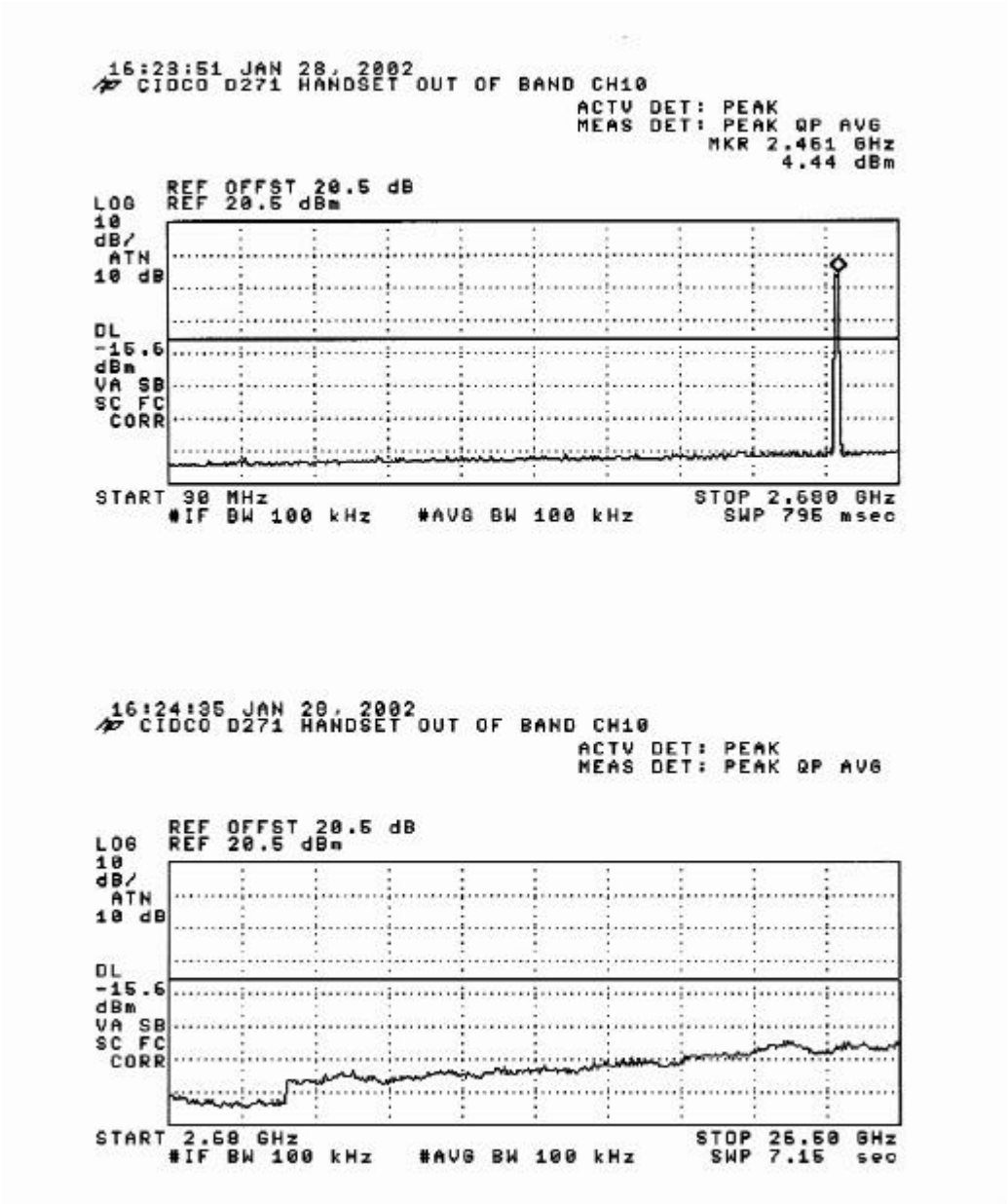


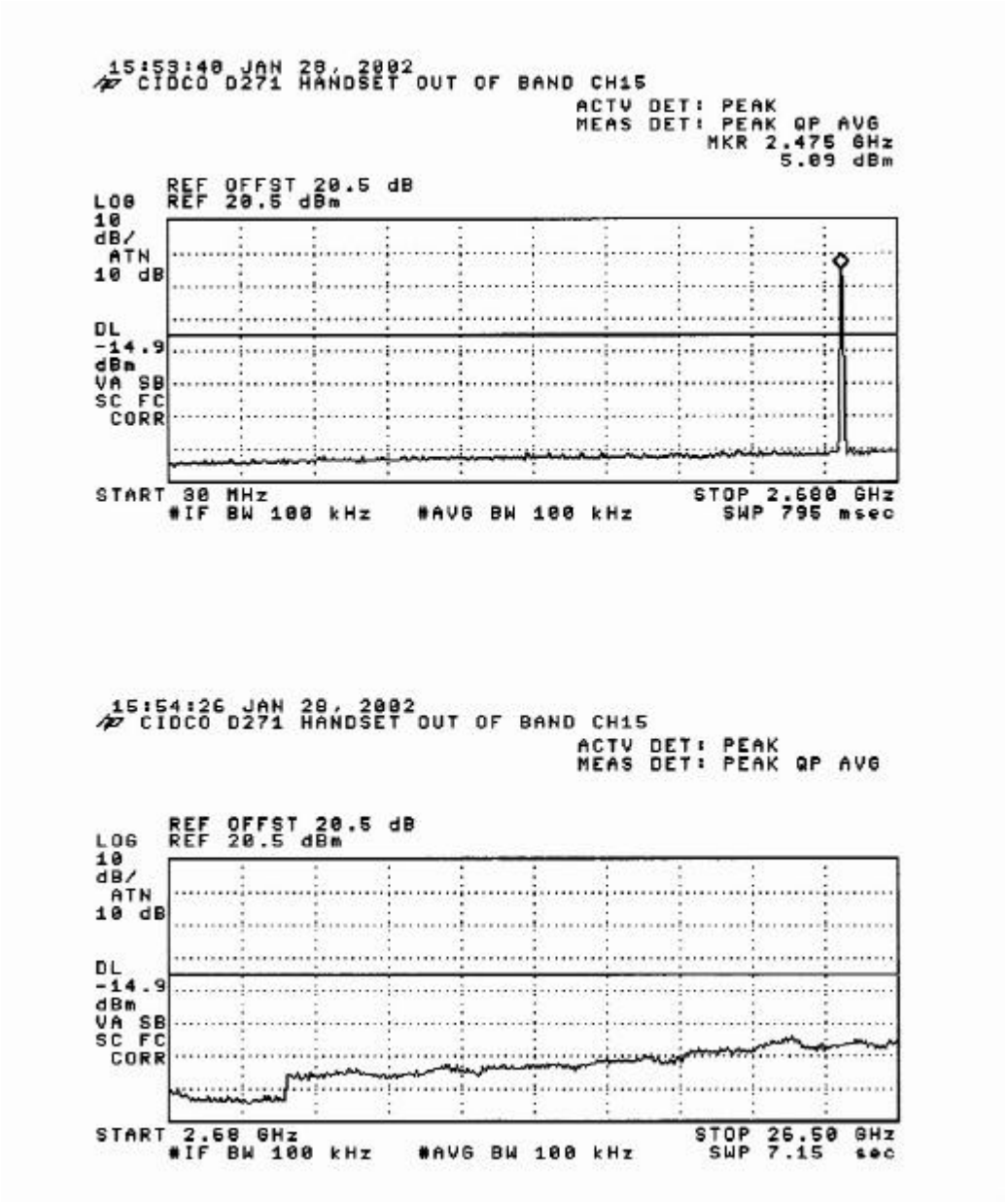


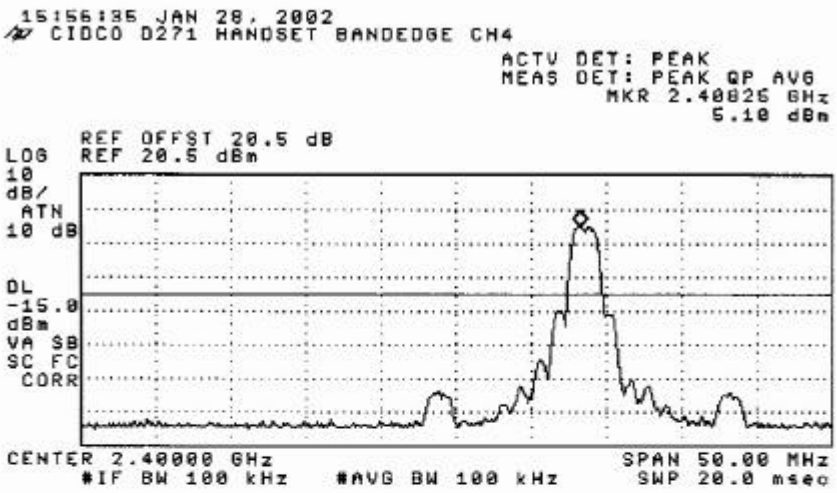
Conducted Spurious Emission for Handset Unit

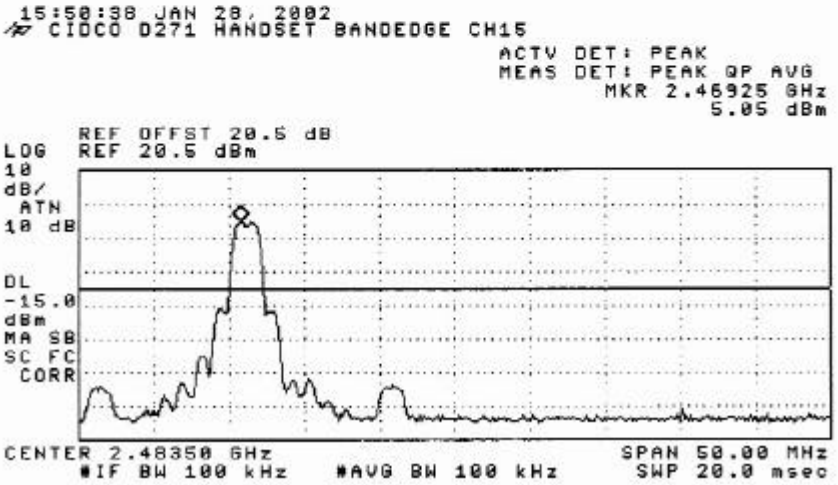










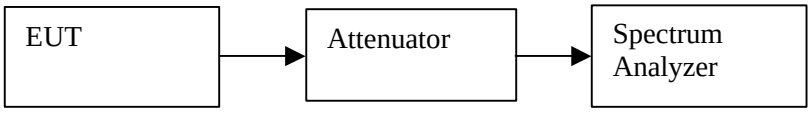


9.4. PEAK POWER SPECTRAL DENSITY

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

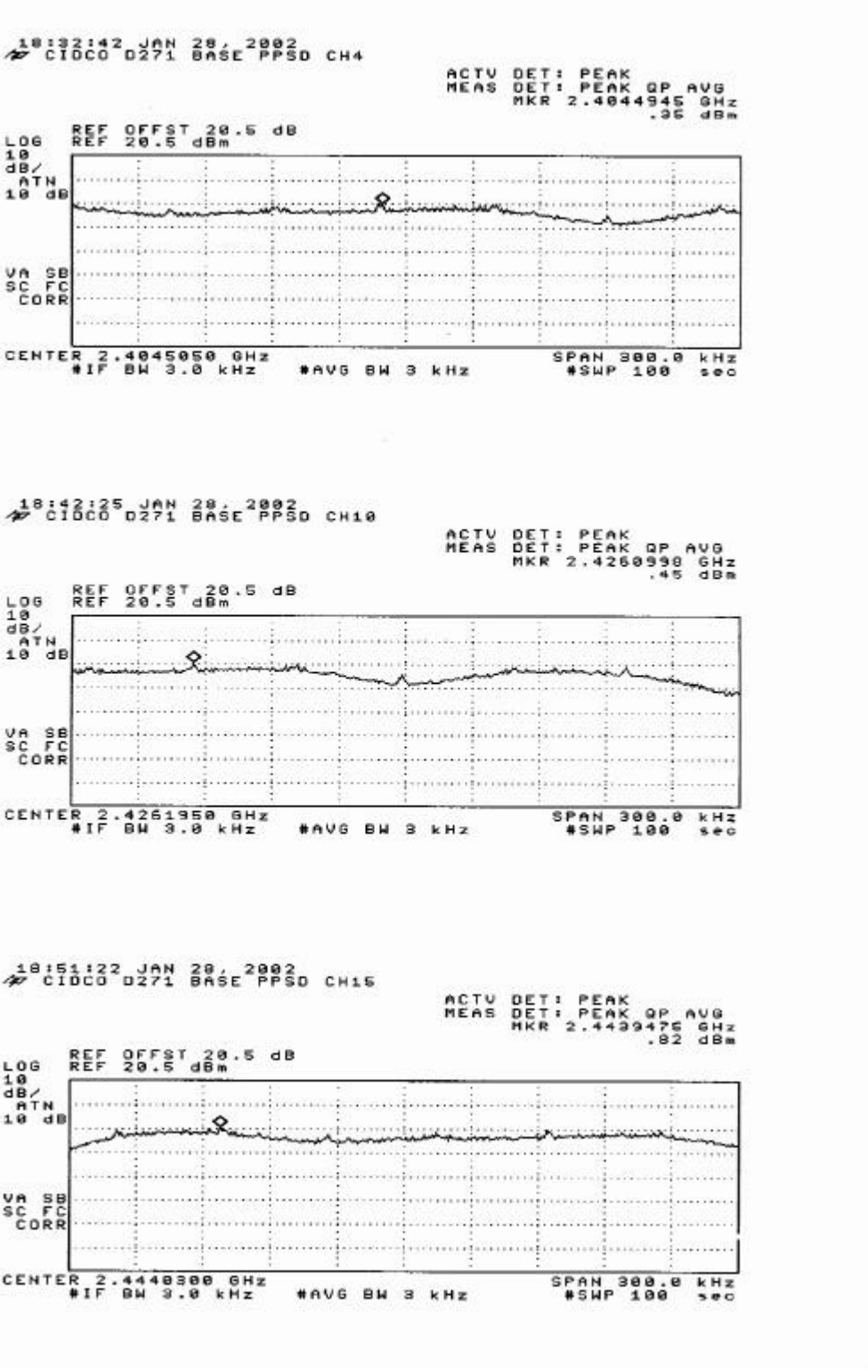


TEST PROCEDURE

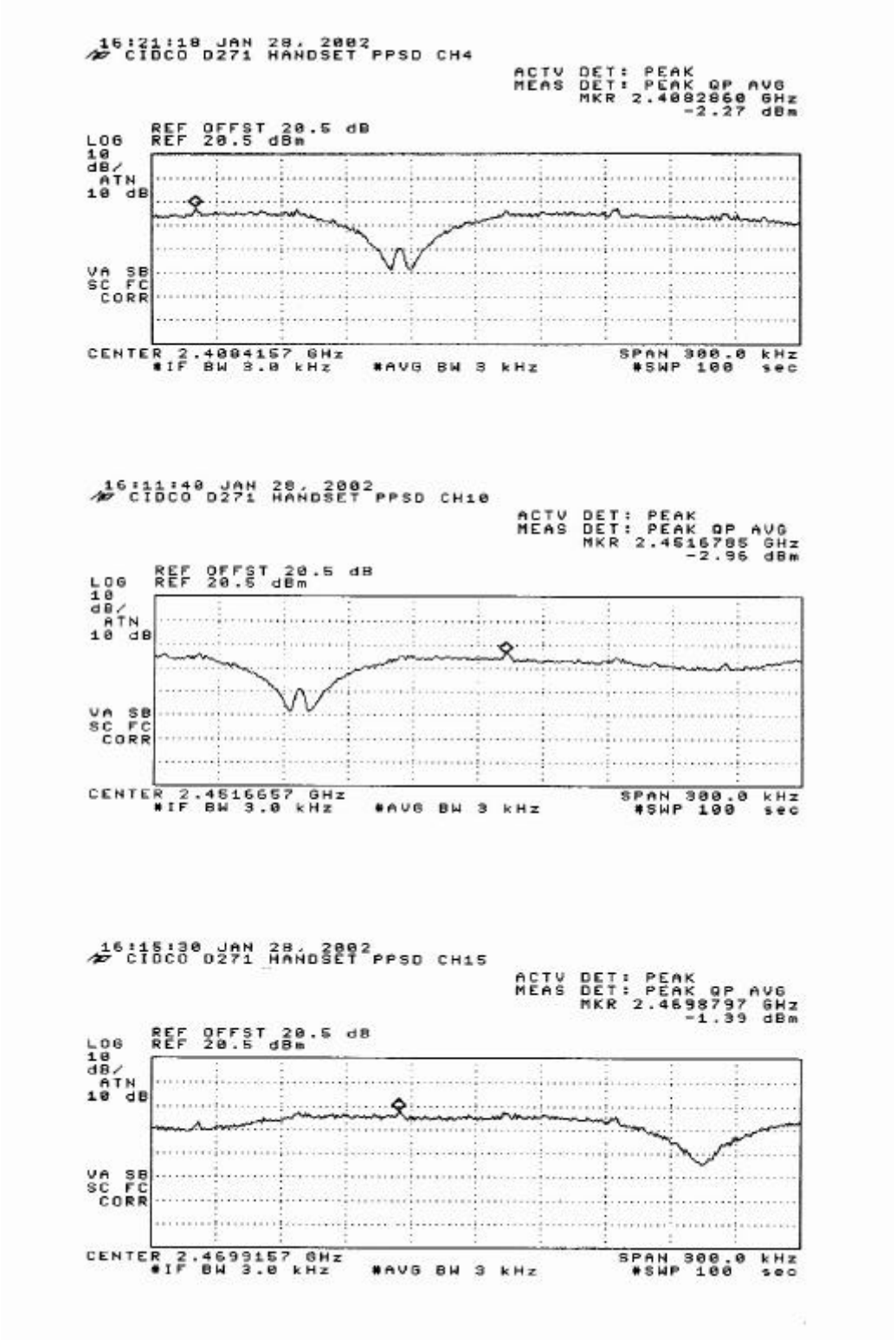
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time=span/3kHz. The power spectral density was measured and recorded.
The sweep time is allowed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

Result:
No non-compliance noted. See plots:

Peak Power Spectral Density for Base Unit



Peak Power Spectral Density for Handset Unit



9.5. PROCESSING GAIN

CUSTOMER PROVIDED PROCESSING GAIN.

Appendix B An Overview of the Processing Gain

The processing gain of a system is the measure of its ability to withstand external interference (jamming). The processing gain is defined as ratio of spread data rate to the unspread data rate. Theoretical processing gain limit for the 12-bit spreading BPSK system is 10.8 dB.

Processing Gain = 10 Log (spread data rate/unspread data rate)

= Log [(12 chip/bit × 100 kbps)/100 kbps)]
= 10 Log [12]
= 10.8 dB

Processing Gain Measurement Method

The following method is specified by the FCC to measure processing gain. The details are in FCC document 15.247 (e)(1). This involves transmitting a Continuous Wave (CW) jammer in the RF passband of the system and measuring the Jammer to Signal Ratio (JSR) required to achieve a certain BER (normally 10^{-3}). The choice of the actual value of the BER is left up to the tester. The jammer is stepped in 50 kHz increments across the entire passband and in each case the JSR to achieve the desired BER is measured. The Jammer to Signal Ratio (JSR) is measured at the RF input of the system under test. The lowest 20 percent of the JSR data (in dB) is discarded. The processing gain can then be calculated as follows:

$$G_p = \left(\frac{S}{N}\right)_{theory} + \left(\frac{J}{S}\right)_{measured} + L_{system}$$

where G_P is the processing gain (dB), S is signal power (dBm), N is signal noise (dBm), J is jammer power (dBm), and L_{system} is the system implementation losses (dB). Note that the FCC does not allow values for L_{system} greater than 2 dB.

Processing Gain Measurement Test Setup

The test set up is shown in Figure B-1. The base station and handset are configured to measure the BER using the utility program *Merlin_V1.exe*. The BER test results are displayed on the monitor. The strength of the received signal entering at the receiving antenna port of the UUT is derived from the signal strength of the transmitting unit.

General Procedure

1. Measure the output power of the base station and handset units in LOW, MEDIUM, and HIGH power modes. Determine attenuation and signal losses in the path to calculate the received signal strength arriving at the base station antenna port.
2. Connect the serial interface of the base station and handset to the serial ports of a PC.
3. Connect the base station and handset through the attenuator, signal combiner, and other components using 50 Ω SMA connectors and cables as shown in Figure B-1. In this way, the BER test set up establishes a link through wired connections.
4. Using the Test Utility software, select the channel frequency, power mode, and corresponding LNA attenuation for the base station and handset units.
5. On the **BER Test** window, click on the "Start S7 HS Master" button. The link is established and the BER results are displayed on the monitor.
6. Turn on the very low power jamming signal from the signal generator.

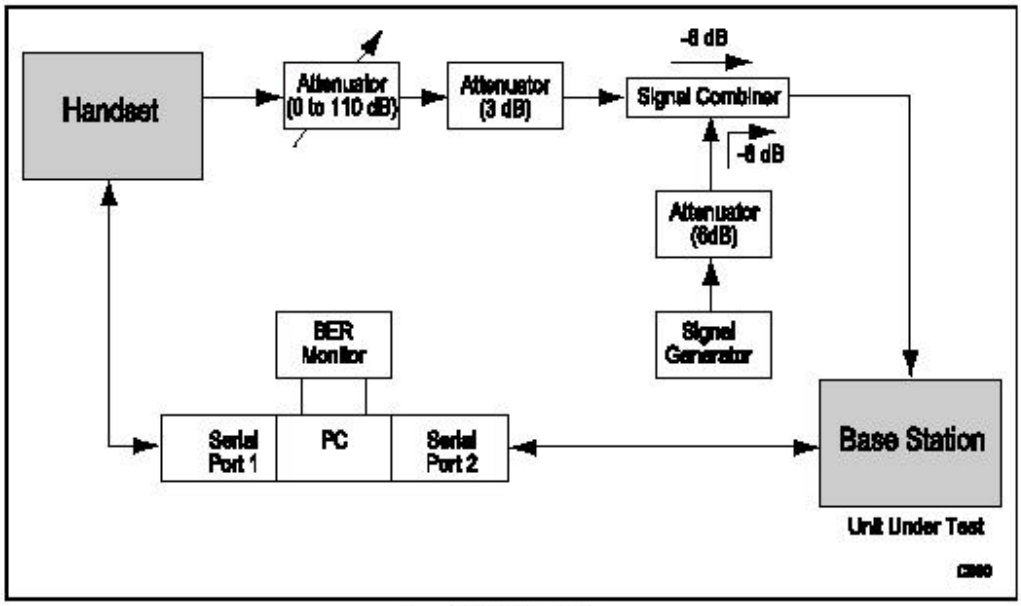


Figure B-1. BER Test Setup

7. Increase jamming signal power until the BER increases to ≤ 10^{-3}. This signal power is recorded for computing received jammer power level *J*.
8. Increment the jamming signal frequency in steps of 20 kHz and repeat step 7. Determine the minimum jammer signal power required to achieve a BER of ≤ 10^{-3}. Calculate the processing gain.

Table B-1 provides the parameters used for the test setup. Table B-2 presents test measurement results taken at the base station. The desired BER was set to 10^{-3}.

For Differential Binary Phase-Shift Keying (DBPSK) systems at 10^{-3} BER, the required SNR is 8.0 dB. Using the results above and the data in Table B-3, the processing gain is calculated to be 11.3 dB. The measured result for a processing gain of 11.3 dB is close to the actual processing gain due to a 12-chip spreading code of $10 \times \log_{10}(12) = 10.8$ dB

Table B-1. Test Setup Parameters

Parameter	Signal Level	Notes
Handset Tx power	–1.9 dBm	Measured @ 50 Ω SMA-antenna port
Base station LNA gain	0 dB	
Test system losses (signal)	–61.75 dB	–50 dB (channel attenuation), –5.75 dB (attenuator and cables), and –6 dB (signal combiner)
Received signal strength at combiner output	–63.65 dBm	Measured @ combiner output
Test system losses (jammer) up to the combiner output	–12.85 dB	–6 dB (attenuator), –6 dB (signal combiner), –0.85 dB (cable)

Processing gain for the handset

Table B-2. Test Results

Jammer Frequency (MHz)	BER (Base Station)	Received Jammer Power (dBm)	Received Signal Power (dBm)	Jammer/Signal Ratio (dB)
913.80	9.4×10^{-4}	–59.55	–63.65	4.1
913.85	9.6×10^{-4}	–57.95	–63.65	5.7
913.90	9.6×10^{-4}	–60.15	–63.65	3.5
913.95	9.6×10^{-4}	–64.25	–63.65	–0.6
914.00	1.1×10–3	–61.55	–63.65	2.1
914.05	9.8×10–4	–61.55	–63.65	2.1
914.10	1.1×10–3	–61.95	–63.65	1.7
914.15	9.2×10–4	–62.85	–63.65	0.8
914.20	1.0×10–3	–59.85	–63.65	3.8
914.25	1.0×10–3	–61.15	–63.65	2.5
914.30	1.1×10–3	–62.05	–63.65	1.6
914.35	1.0×10–3	–57.65	–63.65	6.0
914.40	1.1×10–3	–55.65	–63.65	8.0
914.45	1.0×10–3	–49.35	–63.65	14.3
914.50	1.1×10–3	–59.25	–63.65	4.4
914.55	1.0×10–3	–62.35	–63.65	1.3
914.60	9.7×10–4	–59.05	–63.65	4.6
914.65	1.0×10–3	–61.05	–63.65	2.6
914.70	1.1×10–3	–62.55	–63.65	1.1
914.75	9.0×10–4	–61.95	–63.65	1.7
914.80	1.0×10–3	–61.05	–63.65	2.6
914.85	9.9×10–4	–62.35	–63.65	1.3
914.90	1.1×10–3	–64.05	–63.65	–0.4
914.95	9.2×10–4	–56.25	–63.65	7.4
915.00	1.0×10–3	–59.85	–63.65	3.8
915.05	1.1×10–3	–57.25	–63.65	6.4
915.10	9.9×10–4	–58.15	–63.65	5.5

Table B-3: Processing Gain Calculation Data

Parameter	Relative Power Difference (dB)
Required SNR	8.0
System losses	2.0
J/S ratio at 80% point (see shaded row in Table B-2)	1.30
FCC Processing gain	11.3

Processing Gain for the main unit.

Freq. Start:	2443 (MHz)		**SNRo:**	8 (dB)		
Freq. Stop:	2445.8 (MHz)		**Lsys:**	2 (dB)		
			Signal Level:	-47 (dB)		
Frequency (MHz)	**Jammer Level from Sweeper(dB)**	**Corrected Jammer Level (dBm)**	**SNRo (dB)**	**Lsys (dB)**	**Signal Level (dBm)**	**Gp (dB)**
2443	-7.5	-24.8	8	2	-47	32.2
2443.05	-8	-25.3	8	2	-47	31.7
2443.1	-8.5	-25.8	8	2	-47	31.2
2443.15	-9	-26.3	8	2	-47	30.7
2443.2	-10.5	-27.8	8	2	-47	29.2
2443.25	-14.5	-31.8	8	2	-47	25.2
2443.3	-12.5	-29.8	8	2	-47	27.2
2443.35	-14	-31.3	8	2	-47	25.7
2443.4	-15.5	-32.8	8	2	-47	24.2
2443.45	-16.5	-33.8	8	2	-47	23.2
2443.5	-19	-36.3	8	2	-47	20.7
2443.55	-20	-37.3	8	2	-47	19.7
2443.6	-21.5	-38.8	8	2	-47	18.2
2443.65	-22	-39.3	8	2	-47	17.7
2443.7	-26	-43.3	8	2	-47	13.7
2443.75	-23.5	-40.8	8	2	-47	16.2
2443.8	-21.5	-38.8	8	2	-47	18.2
2443.85	-25	-42.3	8	2	-47	14.7
2443.9	-21	-38.3	8	2	-47	18.7
2443.95	-29	-46.3	8	2	-47	10.7
2444	-27.5	-44.8	8	2	-47	12.2

Frequency (MHz)	Jammer Level from Sweeper(dB)	Corrected Jammer Level (dBm)	SNRo (dB)	Lsys (dB)	Signal Level (dBm)	Gp (dB)
2444.05	-26	-43.3	8	2	-47	13.7
2444.1	-27	-44.3	8	2	-47	12.7
2444.15	-28	-45.3	8	2	-47	11.7
2444.2	-26	-43.3	8	2	-47	13.7
2444.25	-23.5	-40.8	8	2	-47	16.2
2444.3	-27.5	-44.8	8	2	-47	12.2
2444.35	-24.5	-41.8	8	2	-47	15.2
2444.4	-18	-35.3	8	2	-47	21.7
2444.45	-15	-32.3	8	2	-47	24.7
2444.5	-21	-38.3	8	2	-47	18.7
2444.55	-27.5	-44.8	8	2	-47	12.2
2444.6	-25	-42.3	8	2	-47	14.7
2444.65	-24	-41.3	8	2	-47	15.7
2444.7	-28	-45.3	8	2	-47	11.7
2444.75	-27	-44.3	8	2	-47	12.7
2444.8	-27	-44.3	8	2	-47	12.7
2444.85	-26.5	-43.8	8	2	-47	13.2
2444.9	-29.5	-46.8	8	2	-47	10.2
2444.95	-25	-42.3	8	2	-47	14.7
2445	-23	-40.3	8	2	-47	16.7
2445.05	-25	-42.3	8	2	-47	14.7
2445.1	-20	-37.3	8	2	-47	19.7
2445.15	-27	-44.3	8	2	-47	12.7
2445.2	-24.5	-41.8	8	2	-47	15.2
2445.25	-21.5	-38.8	8	2	-47	18.2
2445.3	-21	-38.3	8	2	-47	18.7
2445.35	-20	-37.3	8	2	-47	19.7
2445.4	-18.5	-35.8	8	2	-47	21.2
2445.45	-17	-34.3	8	2	-47	22.7
2445.5	-15.5	-32.8	8	2	-47	24.2
2445.55	-13.5	-30.8	8	2	-47	26.2
2445.6	-13	-30.3	8	2	-47	26.7
2445.65	-15	-32.3	8	2	-47	24.7
2445.7	-11.5	-28.8	8	2	-47	28.2
2445.75	-10.5	-27.8	8	2	-47	29.2
2445.8	-10	-27.3	8	2	-47	29.7

9.6. 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

Refer to section 9.7 Radiated Emission for test setup.

TEST PROCEDURE

Refer to section 9.7 Radiated Emission for test procedure.

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 ☐ Quasi Peak	☒ 100 KHz ☐ 120 KHz	☒ 100 KHz ☐ 120 KHz
Above 1000	☒ Peak ☐ Average	☒ 1 MHz ☐ 1 MHz	☒ 1 MHz ☐ 10 Hz

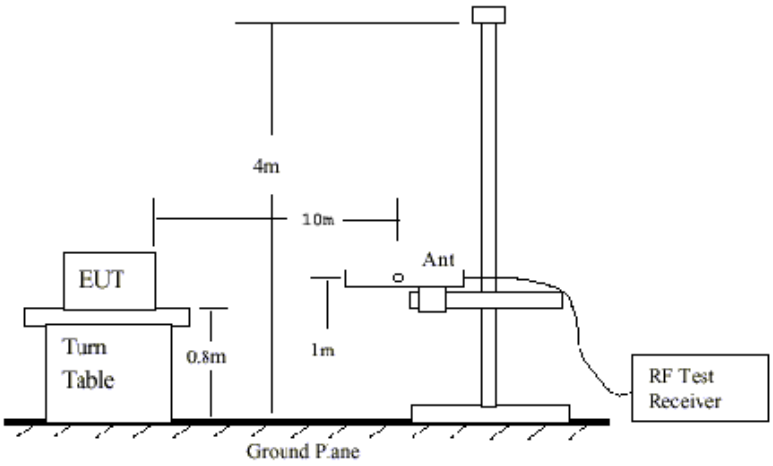


Fig 1: Radiated Emission Measurement 30 to 1000 MHz

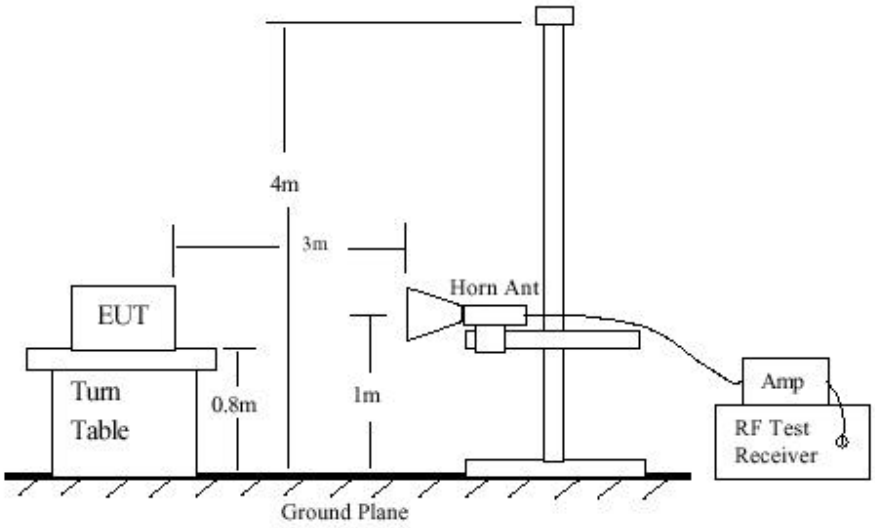


Fig 2: Radiated Emission Above 1000 MHz

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 #:	01U0950-1
Report #:	010904b
Date& Time:	09/04/01 8:58 AM
Test Engr:	Hue Ly Vang

Company:	Cidco Communications, LLC
EUT Description:	2.4GHz Spread Spectream Cordless Telephone
Test Configuration :	EUT only
Type of Test:	FCC Class B
Mode of Operation:	Dailing/Charging Battery

<< 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)
86.00	56.40	9.70	1.23	27.81	39.52	40.00	-0.48	3mH	180.00	1.00	QP
172.80	57.20	11.28	1.73	27.54	42.67	43.50	-0.83	3mV	180.00	1.00	QP
230.40	57.00	13.21	2.02	27.32	44.91	46.00	-1.09	3mH	180.00	2.00	QP
192.00	56.80	10.84	1.84	27.48	42.01	43.50	-1.49	3mH	180.00	2.00	P
182.40	57.00	10.41	1.78	27.51	41.67	43.50	-1.83	3mV	180.00	1.00	P
48.00	52.00	13.06	0.91	27.83	38.14	40.00	-1.86	3mV	180.00	1.00	P
6 Worst Data											

COMPLIANCE ENGINEERING SERVICES, INC.														
Harmonic Emissions														
Cidco Communications LLC.										2/12/02				
Base Unit										Hue Vang				
Channel 4 : 2.404GHz										B site (1.5 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~~**	
4808	53.04	50	32.5	5.1	42.5	6	1	43.14	40.1	74	54	-30.9	-13.9	H
7212	51.41	41.31	37.2	5.44	42.5	6	1	46.55	36.45	74	54	-27.5	-17.6	H
9616	45.9	37.5	38	7.48	39.4	6	1	46.98	38.58	74	54	-27	-15.4	H
12020	48.6	36.5	39.3	8.5	39.5	6	1	51.9	39.8	74	54	-22.1	-14.2	H
14424	50.2	36.8	41.3	9.69	42.5	6	1	53.69	40.29	74	54	-20.3	-13.7	H
16828	50.1	36.7	40.1	10.2	44.5	6	1	50.9	37.5	74	54	-23.1	-16.5	H
19232	50.6	36.9	32.1	12.75	44.29	6	1	46.16	32.46	74	54	-27.8	-21.5	H
21636	50.4	37.1	32.7	13.09	42.51	6	1	48.68	35.38	74	54	-25.3	-18.6	H
24040	51.1	37.5	32.9	14.28	43.95	6	1	49.33	35.73	74	54	-24.7	-18.3	H
4808	50.57	45.73	32.5	5.1	42.5	6	1	40.67	35.83	74	54	-33.3	-18.2	V
7212	51.3	40.74	37.2	5.44	42.5	6	1	46.44	35.88	74	54	-27.6	-18.1	V
9616	50	37	38	7.48	39.4	6	1	51.08	38.08	74	54	-22.9	-15.9	V
12020	48.9	36.5	39.3	8.5	39.5	6	1	52.2	39.8	74	54	-21.8	-14.2	V
14424	50.2	37.2	41.3	9.69	42.5	6	1	53.69	40.69	74	54	-20.3	-13.3	V
16828	50.3	38.1	40.1	10.2	44.5	6	1	51.1	38.9	74	54	-22.9	-15.1	V
19232	51.1	36.4	32.1	12.75	44.29	6	1	46.66	31.96	74	54	-27.3	-22	V
21636	51.2	37.3	32.7	13.09	42.51	6	1	49.48	35.58	74	54	-24.5	-18.4	V
24040	51.6	38.2	32.9	14.28	43.95	6	1	49.83	36.43	74	54	-24.2	-17.6	V
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															
Cidco Communications LLC.										2/12/02					
Base Unit										Hue Vang					
Channel 10 : 2.426 GHz										B site (1.5 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**~~		
4852	52.33	49.92	32.5	5.1	42.5	6	1	42.43	40.02	74	54	-31.6	-14	H	
7278	48	44.6	37.2	5.44	42.5	6	1	43.14	39.74	74	54	-30.9	-14.3	H	
9704	48.5	36.5	38	7.48	39.4	6	1	49.58	37.58	74	54	-24.4	-16.4	H	
12130	48.2	36.7	39.3	8.5	39.5	6	1	51.5	40	74	54	-22.5	-14	H	
14556	49.5	36.2	41.3	9.69	42.5	6	1	52.99	39.69	74	54	-21	-14.3	H	
16982	49.8	37.1	40.1	10.2	44.5	6	1	50.6	37.9	74	54	-23.4	-16.1	H	
19408	49.6	37.5	32.1	12.75	44.29	6	1	45.16	33.06	74	54	-28.8	-20.9	H	
21834	50.8	37.2	32.7	13.09	42.51	6	1	49.08	35.48	74	54	-24.9	-18.5	H	
24260	51	37.8	32.9	14.28	43.95	6	1	49.23	36.03	74	54	-24.8	-18	H	
4852	47.8	41.81	32.5	5.1	42.5	6	1	37.9	31.91	74	54	-36.1	-22.1	V	
7278	52	40.8	37.2	5.44	42.5	6	1	47.14	35.94	74	54	-26.9	-18.1	V	
9704	46.5	36.8	38	7.48	39.4	6	1	47.58	37.88	74	54	-26.4	-16.1	V	
12130	47.3	35.9	39.3	8.5	39.5	6	1	50.6	39.2	74	54	-23.4	-14.8	V	
14556	48.9	36.5	41.3	9.69	42.5	6	1	52.39	39.99	74	54	-21.6	-14	V	
16982	49.4	36.4	40.1	10.2	44.5	6	1	50.2	37.2	74	54	-23.8	-16.8	V	
19408	50.6	36	32.1	12.75	44.29	6	1	46.16	31.56	74	54	-27.8	-22.4	V	
21834	51	37	32.7	13.09	42.51	6	1	49.28	35.28	74	54	-24.7	-18.7	V	
24260	51.2	37.2	32.9	14.28	43.95	6	1	49.43	35.43	74	54	-24.6	-18.6	V	
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														
Cidco Communications LLC.										2/12/02				
Base Unit										Hue Vang				
Channel 15 : 2.444 GHz										B site (1.5 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**~~	
4888	54.17	49.5	32.5	5.1	42.5	6	1	44.27	39.6	74	54	-29.7	-14.4	H
7332	51.53	41.9	37.2	5.44	42.5	6	1	46.67	37.04	74	54	-27.3	-17	H
9776	48.9	36.5	38	7.48	39.4	6	1	49.98	37.58	74	54	-24	-16.4	H
12220	48	36.7	39.3	8.5	39.5	6	1	51.3	40	74	54	-22.7	-14	H
14.664	50	36.2	41.3	9.69	42.5	6	1	53.49	39.69	74	54	-20.5	-14.3	H
17.108	50	37.1	40.1	10.2	44.5	6	1	50.8	37.9	74	54	-23.2	-16.1	H
19.552	50	37.5	32.1	12.75	44.29	6	1	45.56	33.06	74	54	-28.4	-20.9	H
21.996	50.5	37.2	32.7	13.09	42.51	6	1	48.78	35.48	74	54	-25.2	-18.5	H
24440	51	37.8	32.9	14.28	43.95	6	1	49.23	36.03	74	54	-24.8	-18	H
4888	49.1	41.51	32.5	5.1	42.5	6	1	39.2	31.61	74	54	-34.8	-22.4	V
7332	52.02	42.18	37.2	5.44	42.5	6	1	47.16	37.32	74	54	-26.8	-16.7	V
9776	46.5	36.8	38	7.48	39.4	6	1	47.58	37.88	74	54	-26.4	-16.1	V
12220	47.8	35.8	39.3	8.5	39.5	6	1	51.1	39.1	74	54	-22.9	-14.9	V
14.664	49.5	36.5	41.3	9.69	42.5	6	1	52.99	39.99	74	54	-21	-14	V
17.108	50.2	36.4	40.1	10.2	44.5	6	1	51	37.2	74	54	-23	-16.8	V
19.552	50.6	36	32.1	12.75	44.29	6	1	46.16	31.56	74	54	-27.8	-22.4	V
21.996	50.8	37	32.7	13.09	42.51	6	1	49.08	35.28	74	54	-24.9	-18.7	V
24440	50.9	37.2	32.9	14.28	43.95	6	1	49.13	35.43	74	54	-24.9	-18.6	V
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														
Cidco Communications LLC.										2/12/02				
Handset Unit										Frank I.				
Channel 4 : 2.408GHz										A site (2 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~~**	
4816	60.6	57.7	32.5	5.1	42.5	3.5	0	52.2	49.3	74	54	-21.8	-4.7	H
7224	51.41	41.31	37.2	5.44	42.5	3.5	0	48.05	37.95	74	54	-26	-16.1	H
9632	45.9	37.5	38	7.48	39.4	3.5	0	48.48	40.08	74	54	-25.5	-13.9	H
12040	48.1	36.5	39.3	8.5	39.5	3.5	0	52.9	41.3	74	54	-21.1	-12.7	H
14448	49.5	36.8	41.3	9.69	42.5	3.5	0	54.49	41.79	74	54	-19.5	-12.2	H
16856	49.8	36.7	40.1	10.2	44.5	3.5	0	52.1	39	74	54	-21.9	-15	H
19264	50.4	37.1	32.1	12.75	44.29	3.5	0	47.46	34.16	74	54	-26.5	-19.8	H
21672	51.1	37.5	32.7	13.09	42.51	3.5	0	50.88	37.28	74	54	-23.1	-16.7	H
24080	51.1	37.6	32.9	14.28	43.95	3.5	0	50.83	37.33	74	54	-23.2	-16.7	H
4816	54.3	49.6	32.5	5.1	42.5	3.5	0	45.9	41.2	74	54	-28.1	-12.8	V
7224	51.3	40.74	37.2	5.44	42.5	3.5	0	47.94	37.38	74	54	-26.1	-16.6	V
9632	46.2	36.6	38	7.48	39.4	3.5	0	48.78	39.18	74	54	-25.2	-14.8	V
12040	47.8	36.2	39.3	8.5	39.5	3.5	0	52.6	41	74	54	-21.4	-13	V
14448	50.3	36.6	41.3	9.69	42.5	3.5	0	55.29	41.59	74	54	-18.7	-12.4	V
16856	50.2	36.8	40.1	10.2	44.5	3.5	0	52.5	39.1	74	54	-21.5	-14.9	V
19264	51	37.2	32.1	12.75	44.29	3.5	0	48.06	34.26	74	54	-25.9	-19.7	V
21672	50.2	37.5	32.7	13.09	42.51	3.5	0	49.98	37.28	74	54	-24	-16.7	V
24080	51.6	38.2	32.9	14.28	43.95	3.5	0	51.33	37.93	74	54	-22.7	-16.1	V
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															
Cidco Communications LLC.										2/12/02					
Handset Unit										Frank I.					
Channel 10: 2.452 GHz										A site (2 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~~**		
4904	62.6	58.2	32.5	5.1	42.5	6	0	51.7	47.3	74	54	-22.3	-6.7	H	
7356	48	44.6	37.2	5.44	42.5	6	0	42.14	38.74	74	54	-31.9	-15.3	H	
9808	48.6	37.6	38	7.48	39.4	6	0	48.68	37.68	74	54	-25.3	-16.3	H	
12260	48.9	36.8	39.3	8.5	39.5	6	0	51.2	39.1	74	54	-22.8	-14.9	H	
14712	50.1	37.2	41.3	9.69	42.5	6	0	52.59	39.69	74	54	-21.4	-14.3	H	
17164	50.6	36.8	40.1	10.2	44.5	6	0	50.4	36.6	74	54	-23.6	-17.4	H	
19616	50.5	37.4	32.1	12.75	44.29	6	0	45.06	31.96	74	54	-28.9	-22	H	
22068	51.2	36.6	32.7	13.09	42.51	6	0	48.48	33.88	74	54	-25.5	-20.1	H	
24520	51.3	36.8	32.9	14.28	43.95	6	0	48.53	34.03	74	54	-25.5	-20	H	
4904	59.6	55.2	32.5	5.1	42.5	6	0	48.7	44.3	74	54	-25.3	-9.7	V	
7356	52	40.8	37.2	5.44	42.5	6	0	46.14	34.94	74	54	-27.9	-19.1	V	
9808	48.6	37.5	38	7.48	39.4	6	0	48.68	37.58	74	54	-25.3	-16.4	V	
12260	48.7	37.6	39.3	8.5	39.5	6	0	51	39.9	74	54	-23	-14.1	V	
14712	50.2	37.7	41.3	9.69	42.5	6	0	52.69	40.19	74	54	-21.3	-13.8	V	
17164	50.4	36.8	40.1	10.2	44.5	6	0	50.2	36.6	74	54	-23.8	-17.4	V	
19616	50.6	36.8	32.1	12.75	44.29	6	0	45.16	31.36	74	54	-28.8	-22.6	V	
22068	50.3	37.4	32.7	13.09	42.51	6	0	47.58	34.68	74	54	-26.4	-19.3	V	
24520	51	37.7	32.9	14.28	43.95	6	0	48.23	34.93	74	54	-25.8	-19.1	V	
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**	

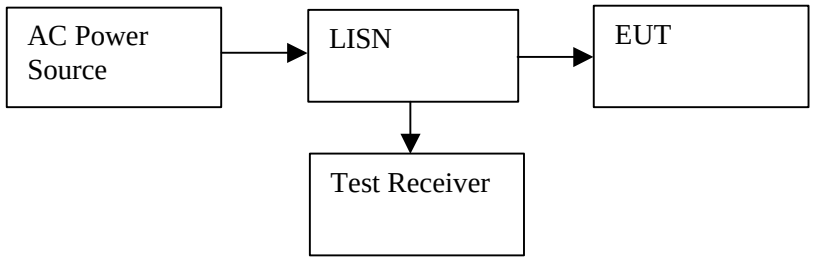
COMPLIANCE ENGINEERING SERVICES, INC.														
Harmonic Emissions														
Cidco Communications LLC.										2/12/02				
Handset Unit										Frank I.				
Channel 15 : 2.469 GHz										A site (1.5 Meter)				
F(MHz)	**READING**		**AF**	**CL**	**AMP**	**DIST**	**HPF**	**TOTAL**		**LIMIT**		**MARGIN**		**POL**
	(dBuV)		(dB)	(dB)	(dB)	(dB)	(dB)	(dBuV/m)		(dBuV/m)		(dB)		(H/V)
	~~**Pk**~~	~~**Avg**~~						~~**Pk**~~	~~**Avg**~~	~~**Pk**~~	~~**Avg**~~	~~**Pk**~~	~~**Avg**~~	
4938	60.7	55.7	32.5	5.1	42.5	3.5	0	52.3	47.3	74	54	-21.7	-6.7	H
7407	51.53	41.9	37.2	5.44	42.5	3.5	0	48.17	38.54	74	54	-25.8	-15.5	H
9876	49.3	36.5	38	7.48	39.4	3.5	0	51.88	39.08	74	54	-22.1	-14.9	H
12345	47	36.8	39.3	8.5	39.5	3.5	0	51.8	41.6	74	54	-22.2	-12.4	H
14814	47.6	37.1	41.3	9.69	42.5	3.5	0	52.59	42.09	74	54	-21.4	-11.9	H
17283	48.6	37.8	40.1	10.2	44.5	3.5	0	50.9	40.1	74	54	-23.1	-13.9	H
19752	49.8	37	32.1	12.75	44.29	3.5	0	46.86	34.06	74	54	-27.1	-19.9	H
22221	49.7	37.6	32.7	13.09	42.51	3.5	0	49.48	37.38	74	54	-24.5	-16.6	H
24690	50	37.4	32.9	14.28	43.95	3.5	0	49.73	37.13	74	54	-24.3	-16.9	H
4938	58.1	53.3	32.5	5.1	42.5	3.5	0	49.7	44.9	74	54	-24.3	-9.1	V
7407	52.02	42.18	37.2	5.44	42.5	3.5	0	48.66	38.82	74	54	-25.3	-15.2	V
9876	48.3	37	38	7.48	39.4	3.5	0	50.88	39.58	74	54	-23.1	-14.4	V
12345	48.9	37.2	39.3	8.5	39.5	3.5	0	53.7	42	74	54	-20.3	-12	V
14814	48.8	37.4	41.3	9.69	42.5	3.5	0	53.79	42.39	74	54	-20.2	-11.6	V
17283	47.6	37.7	40.1	10.2	44.5	3.5	0	49.9	40	74	54	-24.1	-14	V
19752	46.9	37.5	32.1	12.75	44.29	3.5	0	43.96	34.56	74	54	-30	-19.4	V
22221	47.9	38	32.7	13.09	42.51	3.5	0	47.68	37.78	74	54	-26.3	-16.2	V
24690	48	38.9	32.9	14.28	43.95	3.5	0	47.73	38.63	74	54	-26.3	-15.4	V
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**	

9.8. 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.

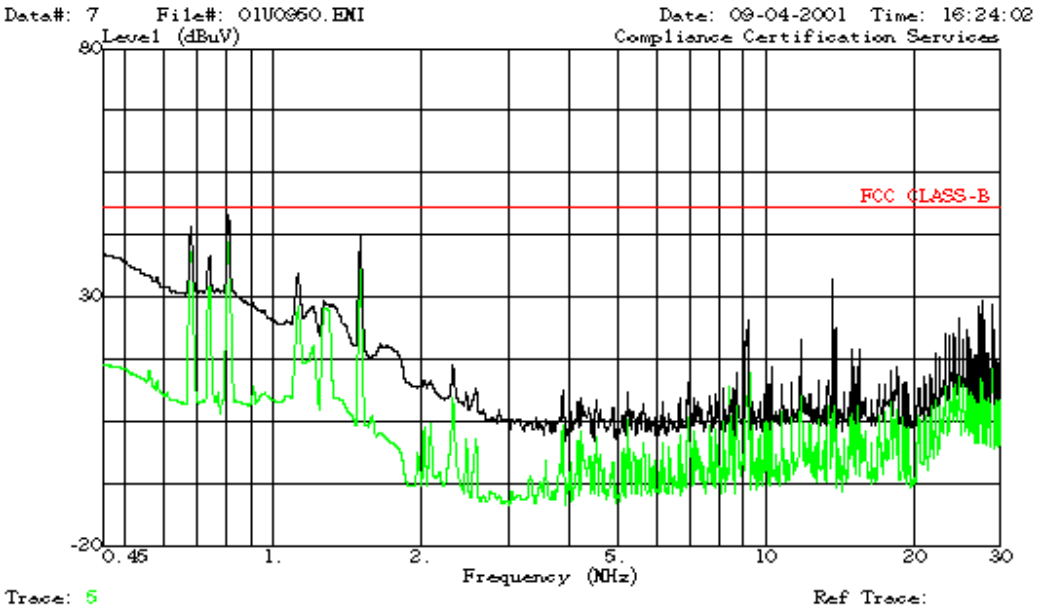
RESULT

No non-compliance noted. See plot Line Conduction.

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									

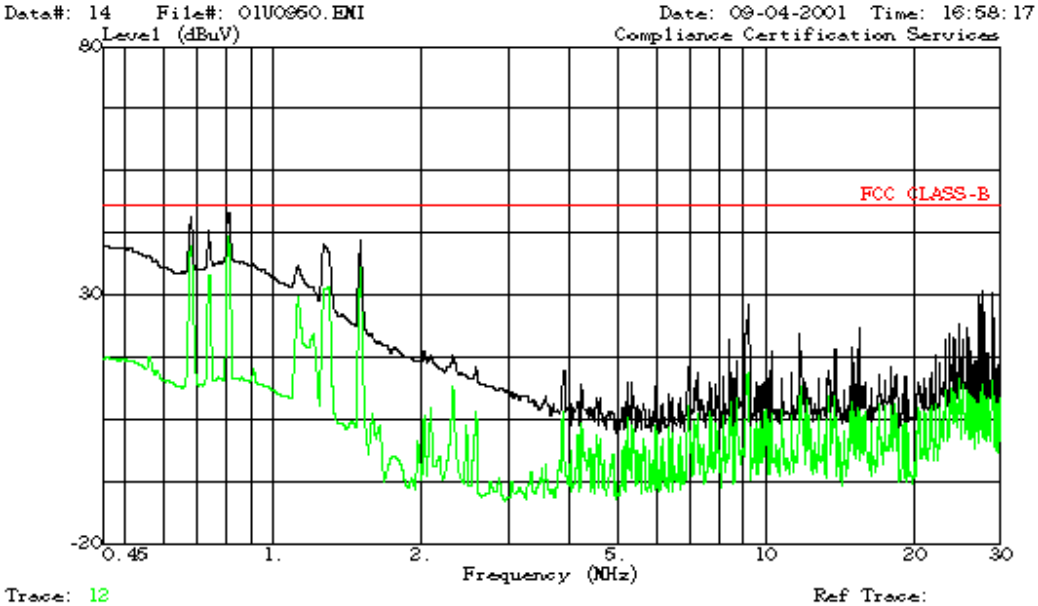
561 F Monterey Road, Route 2
Morgan Hill, CA 95037-9001 USA
Tel: (408) 463-0885
Fax: (408) 463-0888



Trace: 5 Ref Trace:

Project No.	:	01U0950-1
Report No.	:	0109041c
Test Engr	:	Hue Ly Vang
Company	:	Cidco Communications , LLC
EUT Description	:	2.4 GHz S.S. Cordless telephone
Model	:	D271
EUT Config.	:	EUT Only
Type of Test	:	FCC Class B
Mode of Operation:		
	:	QPEAK: L1(Green), PEAK: L1(Black)
	:	115Vac, 60Hz

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



Trace: 12 Ref Trace:

Project No.	:	01U0950-1
Report No.	:	010904-12
Test Engr	:	Hue Ly Vang
Company	:	Cidco Communications , LLC
EUT Description	:	2.4 GHz S.S. Cordless telephone
Model	:	D271
EUT Config.	:	EUT Only
Type of Test	:	FCC Class B
Mode of Operation:		
	:	QPEAK: L2 (Green), Peak L2 (Black)
	:	115Vac, 60Hz