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TEST REPORT
PER FCC Part 15, Subparts B, C, and D
IC RSS-213 & ICES-003
UPCS / LE-PCS Isochronous Device
Base & Handset: 1921.536 – 1928.448 MHz
ANSI C63.17 - 1998 (or 2005 Draft where applicable)
ANSI C63.4 – 2003

APPLICANT	UNIDEN AMERICA CORPORATION
ADDRESS	4700 AMON CARTER BLVD. FORT WORTH TEXAS 76155 UNITED STATES
FCC ID	AMWUC577B
IC CERTIFICATION	513C-UC577A
MODEL	CT14
PRODUCT DESCRIPTION	1.9 GHz Cordless DECT Telephone – Base Unit
DATE SAMPLE RECEIVED	1/21/2009
DATE TESTED	1/30/2009
TESTED BY	NAM NGUYEN
APPROVED BY	MARIO DE ARANZETA
TIMCO REPORT NO.	194AUT9TestReport.doc
TEST RESULTS	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Certificate # 0955-01

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GENERAL INFORMATION

The test results relate only to the items tested.

COMPLIANCE STATEMENT

This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report and demonstrate that the equipment complies with the appropriate standards.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made by me or under my supervision, at Timco Engineering, Inc. located at 849 N.W. State Road 45, Newberry, Florida 32669 USA.



Testing Certificate #0955-01

AUTHORIZED BY: Mario de Aranzeta



SIGNATURE:

FUNCTION: Lab Supervisor/ Test Engineer

DATE: 2/26/2009

REPORT SUMMARY

Disclaimer:	The test results relate only to the items tested.
Purpose of Test:	To demonstrate that the DUT is compliant with FCC and Industry Canada requirements DECT phone.
Applicable Standards:	FCC Pt 15 Subparts B, C and D, IC RSS-213 and ICES-003, ANSI C63.17-1998 or 2005 Draft where applicable, ANSI C63.4-2003
Related Reports:	N/A

TEST ENVIRONMENT AND TEST SETUP

Test Facilities:	All measurements were made at one or more of the test sites of TIMCO ENGINEERING INC. located at 849 N.W. State Road 45, Newberry, FL 32669.
Laboratory Test Conditions:	Temperature: 26°C, Humidity: 55%
Test Exercise:	The DUT was set in continuous transmit mode of operation.
Deviation to the Standards:	There was no deviation from the standard.
Modification to the DUT:	No modification was made.
Supporting Accessories:	None
Details of power supply	Normal test voltage: Handset (Vnom): 2.4 VDC Base (Vnom): 9 VDC

DUT DESCRIPTION

DUT Description	1.9 GHz DECT Telephone – Base Unit
FCC ID	AMWUC577B
IC Certification	513C-UC577A
Model Number	CT14
Maximum Output Power	20.6 dBm
Operating Frequency	1920-1930 MHz
Type of Modulation	FSK
Maximum number of Channels	5
DUT Power Source	<input checked="" type="checkbox"/> 110–120Vac/50– 60Hz
	<input type="checkbox"/> DC Power
	<input type="checkbox"/> Battery Operated Exclusively
Test Item	<input type="checkbox"/> Prototype
	<input type="checkbox"/> Pre-Production
	<input type="checkbox"/> Production
Construction of equipment	<input checked="" type="checkbox"/> Single Unit
	<input type="checkbox"/> Multiple units (if multiple units, describe each one clearly)
Type of Equipment	<input checked="" type="checkbox"/> Fixed
	<input type="checkbox"/> Mobile
	<input type="checkbox"/> Portable Station

EMC EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/20/07	3/19/10
3-Meter OATS	TEI	N/A	N/A	Listed 2/5/09	2/5/12
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	Listed 5/11/07	5/11/10
AC Voltmeter	HP	400FL	2213A14728	CAL 5/14/07	5/14/09
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 11/30/07	11/30/09
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 11/30/07	11/30/09
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 11/30/07	11/30/09
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 11/30/07	11/30/09
Antenna: Dipole Kit	Electro-Metrics	TDA-30/1-4	153	CHAR 4/5/06	4/5/09
Frequency Counter	HP	5385A	2730A03025	CAL 7/6/07	7/6/09
Hygro-Thermometer	Extech	445703	0602	CAL 11/15/07	11/15/09
Antenna: Log-Periodic	Electro-Metrics	LPA-30	409	CAL 7/18/08	7/18/09
Measuring Tape-7.5M	Kraftixx	7.5M PROFI		CHAR 11/13/07	11/13/09
Modulation Analyzer	HP	8901A	3435A06868	CAL 5/9/07	5/9/09
Digital Multimeter	Fluke	FLUKE-77-3	79510405	CAL 5/14/07	5/14/09
System One	Audio Precision	System One	SYS1-45868	CHAR 2/27/08	2/27/10
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 4/25/08	4/25/10

APPLICANT: UNIDEN AMERICA CORPORATION

FCC ID: AMWUC577B

REPORT #: Y:\U\Uniden AMW\194AUT9\194AUT9TestReport.docx

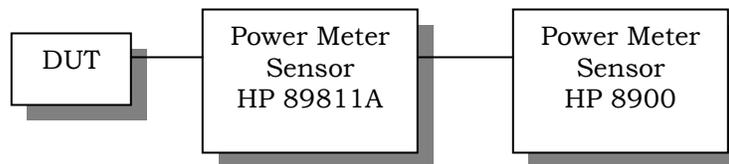
TEST PROCEDURES

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI C63.4-2003 using a 50uH LISN. Both lines were observed with the DUT transmitting. The resolution bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

BANDWIDTH 20 dB: The measurements were made with the spectrum analyzer's resolution bandwidth (RBW) = 1 MHz and the video bandwidth (VBW) = 3 MHz and the span set as shown on plot.

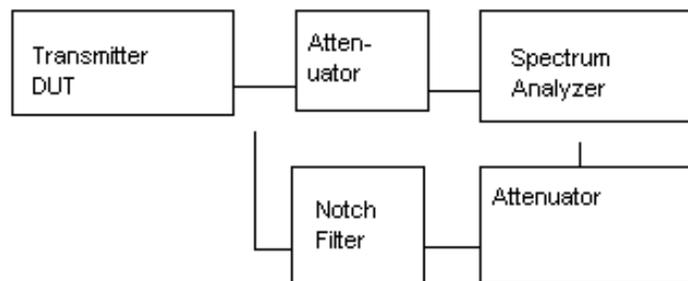
RF Power Output: The RF power output was measured at the antenna feed point using a peak power meter.

Output Power Test Setup Diagram



ANTENNA CONDUCTED EMISSIONS: The RBW = 100 kHz, VBW = 300 kHz and the span set to 10.0 MHz and the spectrum was scanned from 30 MHz to the 10th Harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz. Power was measured by disconnecting the antennas and measuring across a 50 ohm load as recommended by the manufacturer using a peak power meter. The antenna is non-directional and doesn't exceed 6 dBi gain. The power output was measured at three places in the band highest is reported below.

Spurious Emissions at Antenna Terminals





RADIATION INTERFERENCE: The test procedure used was ANSI C63.4-2003 using an Agilent spectrum receiver with preselector. The bandwidth (RBW) of the spectrum receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

ANTENNA REQUIREMENT

Clause: 15.319

DUT must meet the antenna requirements of FCC Rules 15.203.

This DUT uses a permanently attached antenna which is considered sufficient to comply with the provisions of this rule. Please refer to the internal photos for more details.

DIGITAL MODULATION TECHNIQUES

Clause: 15.319(b)

All transmissions must use only digital modulation techniques.

The requirements are made in accordance with ANSI C63.17 sub-clause 6.1.4.

Attestation: Please refer to relevant DECT standards for details

PEAK TRANSMIT POWER

Clause: 15.319(c)

The peak transmit power (P_{EUT}) shall not exceed $100\mu W$ multiplied by the square root of the emission bandwidth (B) in Hz or $5 \log_{10} B - 10$ dBm. The peak transmit power shall be reduced by the amount in dB that the maximum directional gain of the antenna exceeds 3 dBi.

Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.2.

Calculation of Peak Transmit Power Limit (P_{max}):

$$(P_{max}) = 5 \log_{10} B - 10 \text{ dBm} \quad \text{when } G_A < 3 \text{ dBi}$$

Where G_A = EUT Antenna Gain: 0 dBi

Channel	Channel Frequency (MHz)	Measured Peak Transmit Power (dBm)	Limit (dBm)	Results
Lowest	1921.536	20.3	20.85	Pass
Highest	1928.448	20.6	20.88	Pass

RADIATED PEAK TRANSMIT POWER

Clause: 15.319(c)

Test Procedure: ANSI C63.17 section 6.1.2

Requirements: The peak transmit power shall not exceed 100 μW multiplied by the square root of the emission bandwidth in hertz measured at 26dBc.

The measured emissions bandwidth is 1.5 MHz max

$$\text{Limit} = 100\mu\text{W} * \sqrt{(\text{BW in Hz})} = 0.122\text{W} = 20.8 \text{ dBm}$$

and Radiated limit ≤ 118 dBμV/m at 3m by radiated measurement derived from Friis formula as follows $P = (E*d)^2/30G$, where $P = 0.122 \text{ W} = 20.8 \text{ dBm}$

This assumes a $G = \text{Numeric gain of TX antenna} = 1.585 (2.0 \text{ dBi})$ worst-case across band
 $d = 3 \text{ m}$

Notes: The calculated limit of 118 dBμV/m assumes free space conditions. This device was measured on a typical test site (OATS) with a reference ground plane as described in ANSI C63.4. This maximum value was obtained with the EUT set up at a height of 80cm. Placing the EUT at a height of 100cm reduces the maximum amplitude measured by about 3-4dB.

Test Conditions: Power output measurements were performed on an Open Area Test Site at a distance of 3meter. The antenna for this device is integral.

SA Settings:

RBW ≥ Emission BW (or increased until no more than 0.5 dB change in power), VBW ≥ 3 x RBW Span = zero, centered on channel center, Sweep: fast enough to resolve transmit pulse
 Detection: Peak

TEST DATA:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m
1,921.50	1,921.54	77.7	H	2.84	30.7	111.24
1,921.50	1,921.54	84.2	V	2.84	30.7	117.74
1,928.50	1,928.45	79.3	H	2.84	30.74	112.88
1,928.50	1,928.45	84.4	V	2.84	30.74	117.98

POWER SPECTRAL DENSITY

Clause: 15.319(d)

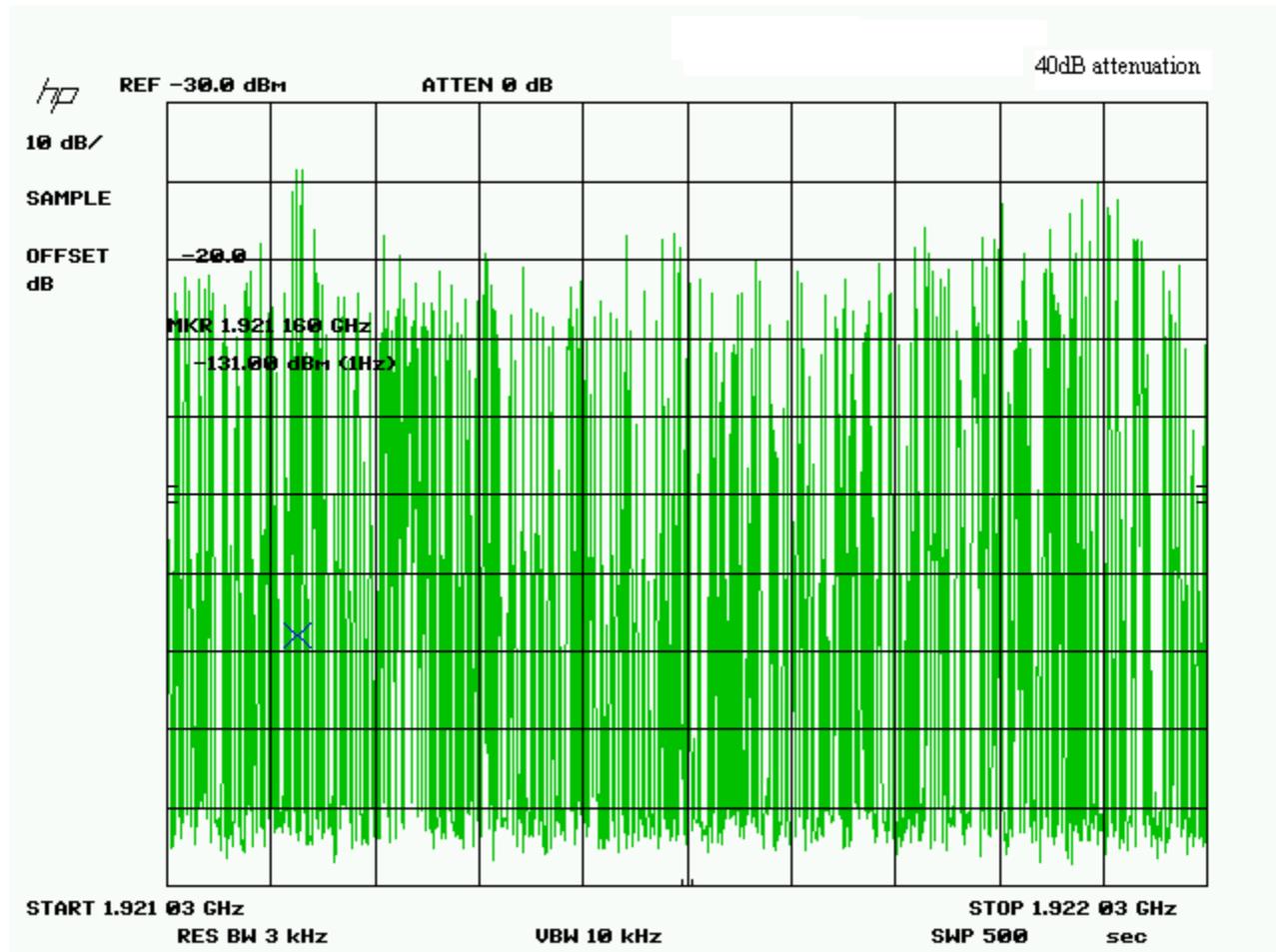
Power spectral density shall not exceed 3 mW (4.8dBm) in any 3 kHz bandwidth as measured with a spectrum analyzer having a resolution bandwidth of 3 kHz.

Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.5.

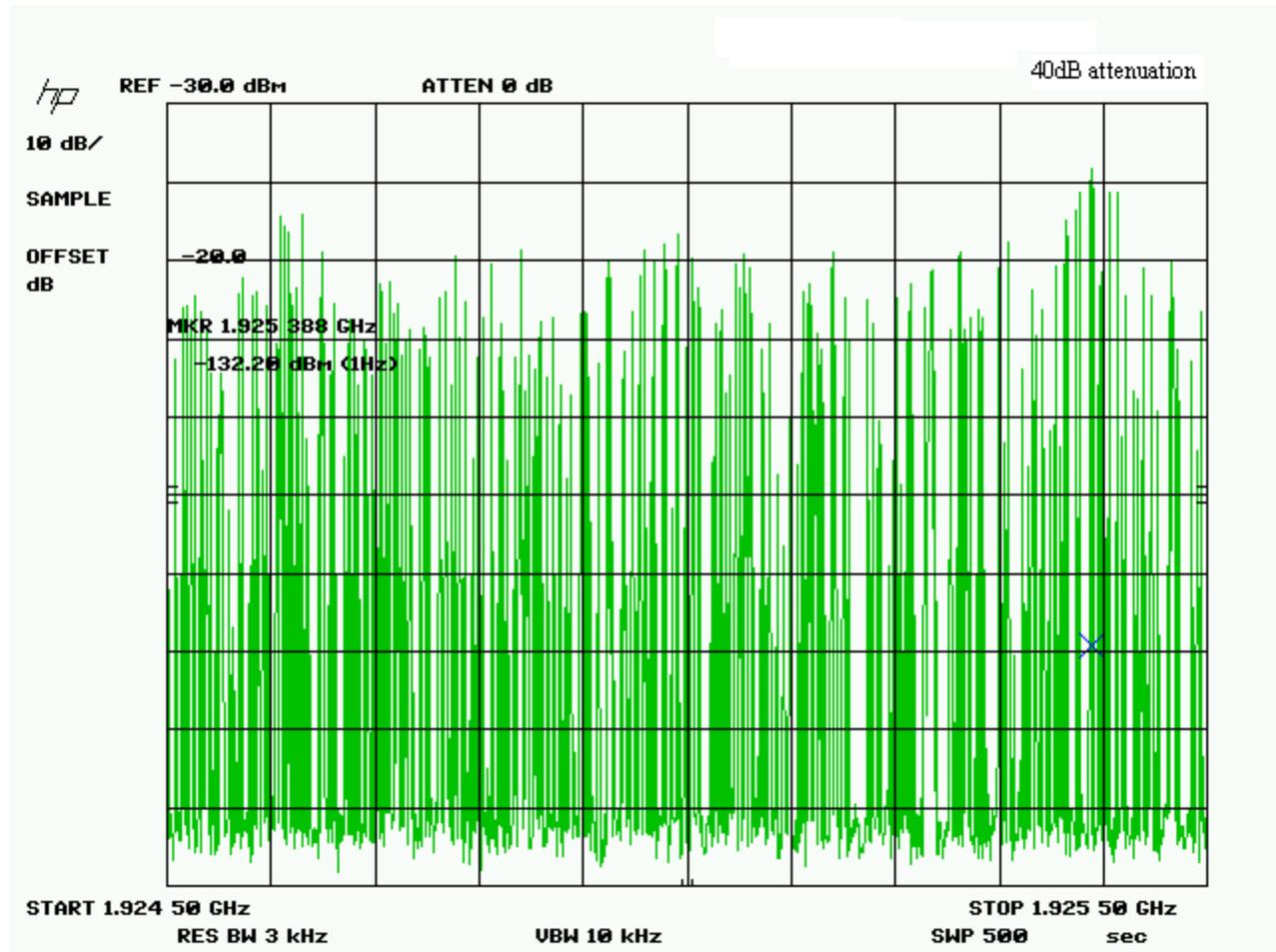
1. Traffic Carrier

Channel	Channel Frequency (MHz)	Measured Power Spectral Density (dBm/3kHz)	Limit (dBm/3 kHz)	Results
Lowest	1921.03	-56	4.8	Pass
Mid	1925.388	-57	4.8	Pass
Highest	1928.44	-59	4.8	Pass

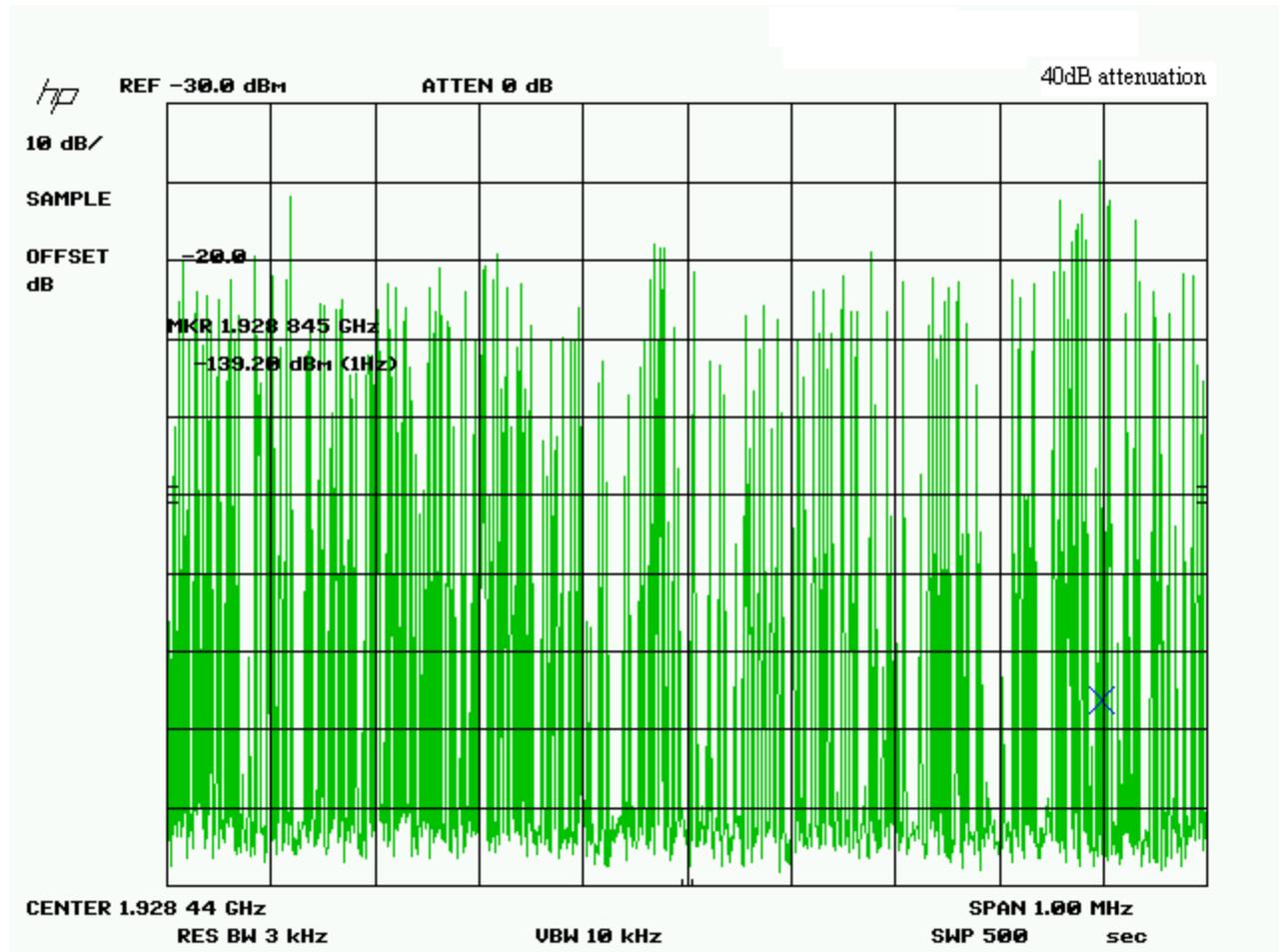
POWER SPECTRAL DENSITY PLOT – 1921 MHz



POWER SPECTRAL DENSITY PLOT – 1925 MHz



POWER SPECTRAL DENSITY PLOT – 1928 MHz



AUTOMATIC DISCONTINUATION OF TRANSMISSION

Clause: 15.319(f)

The DUT shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude transmission of control and signaling information or use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

Result:

The manufacturer declares that the EUT can automatically discontinue transmission in case of either absent information to transmit or operational failure. The declaration is part of the filing.

EMISSION BANDWIDTH

Clause: 15.323(a)

Operation shall be contained within the 1920-1930 MHz band. The emission bandwidth shall be less than 2.5 MHz and greater than 50 kHz.

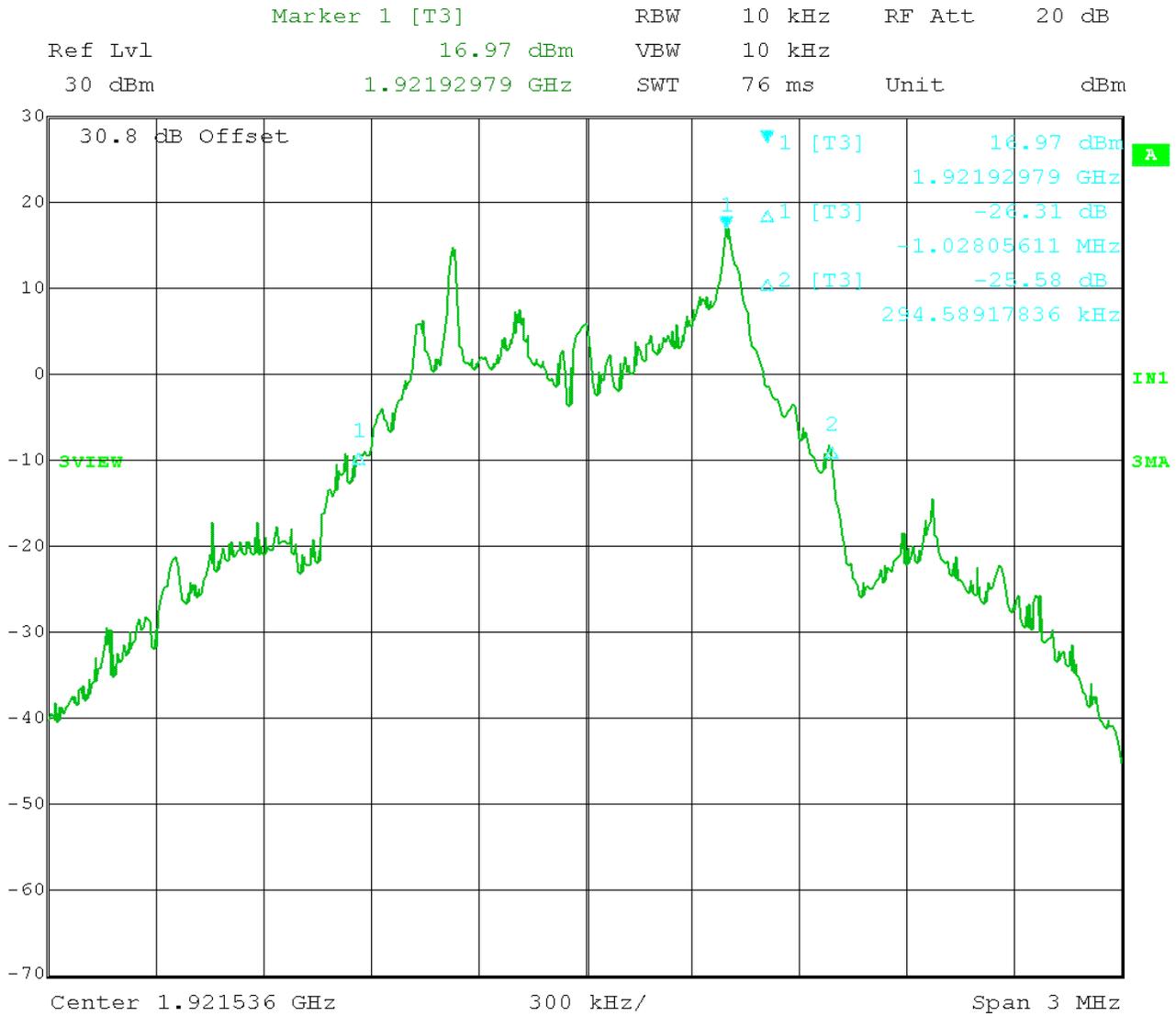
Measurements are made in accordance with ANSI C63.17 sub-clause 6.1.3.

Test Results:

Channel	Channel Frequency (MHz)	Measuring Signal Level	Measured Emission Bandwidth (MHz)	Results
Lowest	1921.929	26 dB down	0.294	Pass
Middle	1925.391	26 dB down	0.294	Pass
Highest	1928.841	26 dB down	0.300	Pass

Please refer to the following plots for more details.

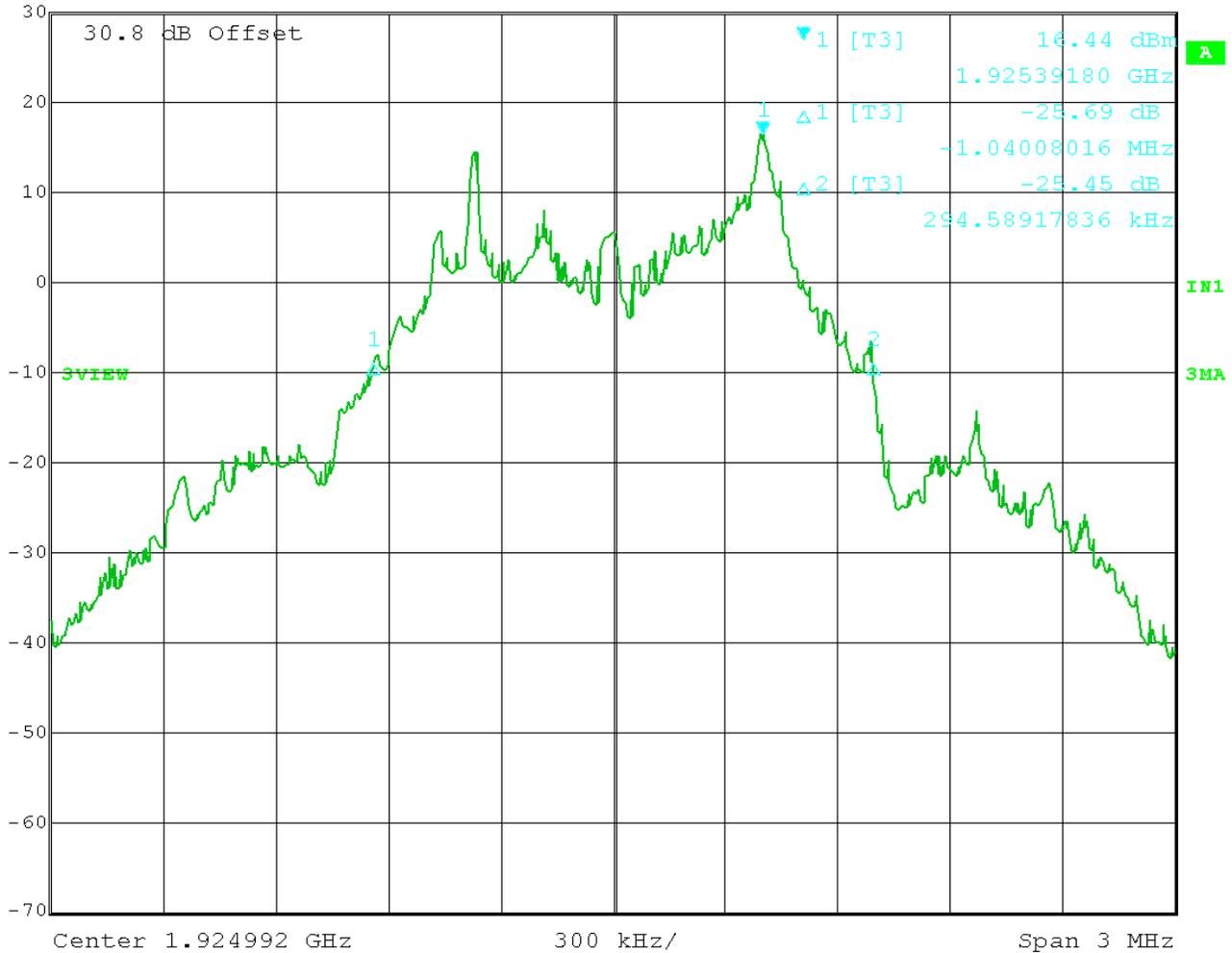
EMISSION BANDWIDTH PLOT - 1921.536 MHz



Date: 29.JAN.2009 14:56:58

EMISSION BANDWIDTH PLOT - 1925.391 MHz

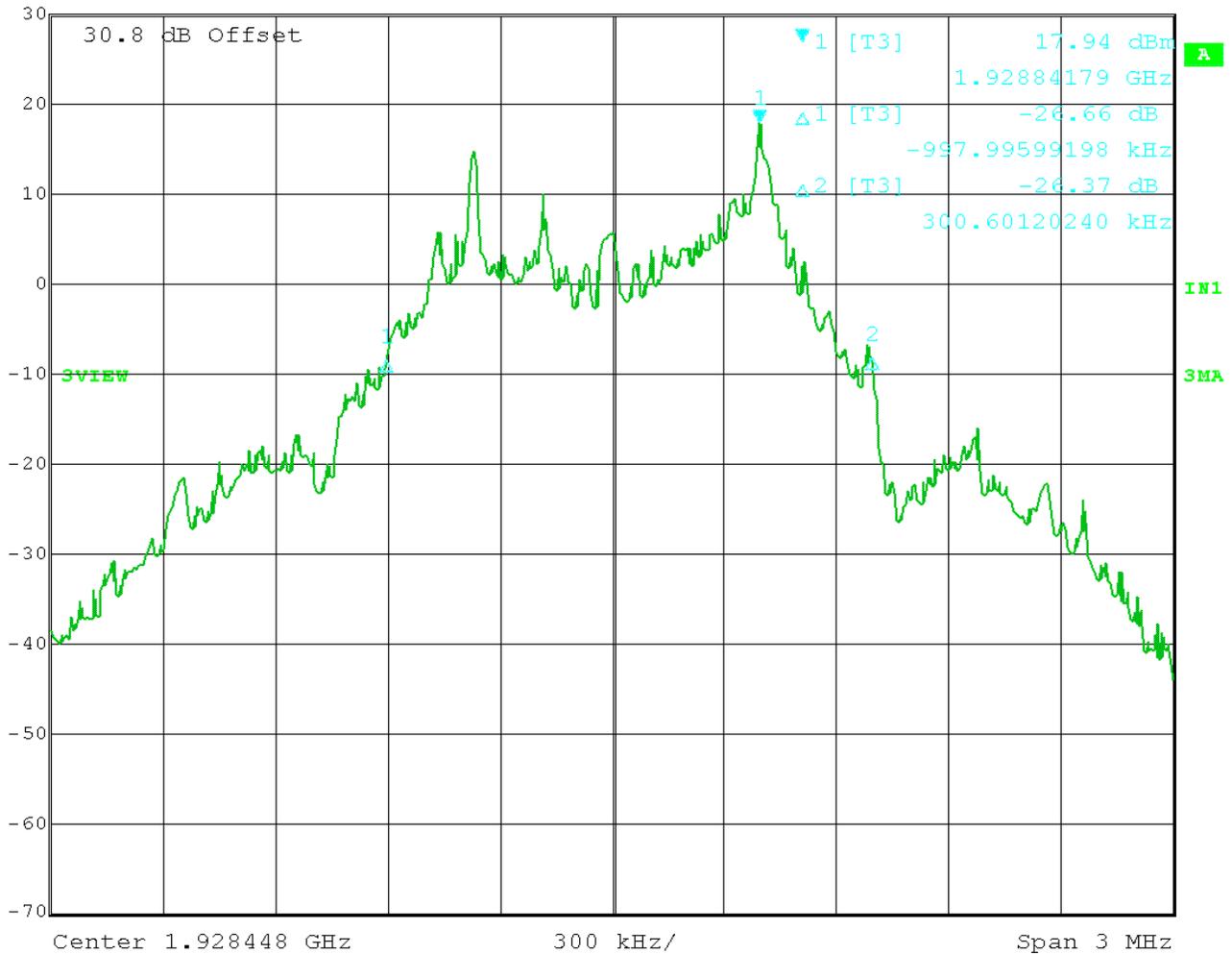
Marker 1 [T3] RBW 10 kHz RF Att 20 dB
 Ref Lvl 16.44 dBm VBW 10 kHz
 30 dBm 1.92539180 GHz SWT 76 ms Unit dBm



Date: 29.JAN.2009 15:06:22

EMISSION BANDWIDTH PLOT - 1928.841 MHz

Marker 1 [T3] RBW 10 kHz RF Att 20 dB
 Ref Lvl 17.94 dBm VBW 10 kHz
 30 dBm 1.92884179 GHz SWT 76 ms Unit dBm



Date: 29.JAN.2009 15:00:00

DIRECTIONAL GAIN OF THE ANTENNA

Clause: 15.319(e)

The peak transmit power shall be reduced by the amount in dB that the maximum directional gain of the antenna exceeds 3 dBi.

The requirements are made in accordance with ANSI C63.17 sub clause 4.3.1.

Result:

The manufacturer declares that the directional gain of the antenna is less than or equal to 3dBi. No peak transmit power reduction is required.

TRANSMITTER SPURIOUS EMISSIONS

Rules Part: 15.319(g) and 15.323(d)

Test Procedure: ANSI C63.17 section 6.1.1

Requirements: 15.319(g) Notwithstanding other technical requirements specified in this subpart, attenuation of emissions below the general emission limits in Section 15.209 is not required.

15.323(d) Emissions outside the sub-band shall be attenuated below a reference power of 112 milliwatts as follows: 30 dB between the sub-band and 1.25 MHz above or below the sub-band; 50 dB between 1.25 and 2.5 MHz above or below the sub-band; and 60 dB at 2.5 MHz or greater above or below the subband. Compliance with the emission limits is based on the use of measurement instrumentation employing peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

Test Conditions:

Lowest and Highest channel only. Radiated on an Open Area Test Site at a distance of 3 meters.

Test Data: Peak

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dB μ V	Ant. Polarity	Coax & Filter Loss dB	Correction Factor dB/m	Field Strength dB μ V/m
1,921.50	3,843.07	18.4	H	4.36	33.35	56.11
1,921.50	3,843.07	20.5	V	4.36	33.35	58.21
1,921.50	5,764.61	26.7	V	5.23	35.07	67
1,921.50	5,764.61	27.7	H	5.23	35.07	68
1,928.50	3,856.90	18.6	H	4.37	33.37	56.34
1,928.50	3,856.90	20.4	V	4.37	33.37	58.14
1,928.50	5,785.34	29.2	V	5.24	35.1	69.54
1,928.50	5,785.34	30.1	H	5.24	35.1	70.44

15.319 (g) Notwithstanding other technical requirements specified in this subpart, attenuation of emissions below the general emission limits in 15.209 is not required.

Limit: 74 dB μ V/m peak and 54 dB μ V/m Average

Test Data: Average

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBμV	Ant. Polarity	Coax & Filter Loss dB	Correction Factor dB/m	Duty cycle CF dB	Field Strength dBμV/m
1,921.50	3,843.07	18.4	H	4.36	33.35	15.6	40.51
1,921.50	3,843.07	20.5	V	4.36	33.35	15.6	42.61
1,921.50	5,764.61	26.7	V	5.23	35.07	15.6	51.4
1,921.50	5,764.61	27.7	H	5.23	35.07	15.6	52.4
1,928.50	3,856.90	18.6	H	4.37	33.37	15.6	40.74
1,928.50	3,856.90	20.4	V	4.37	33.37	15.6	42.54
1,928.50	5,785.34	29.2	V	5.24	35.1	15.6	53.94
1,928.50	5,785.34	30.1	H	5.24	35.1	15.6	54.84

GENERAL RADIATED SPURIOUS EMISSIONS

Rules Part: 15.109, 15.33 AND 15.31

Test Procedure: ANSI C63.4 - 2003

Requirements:

Emission Frequency (MHz)	Field Strength		At Distance (m)	Detector Type
	(μ V/m)	(dB μ V/m)		
0.009 – 0.490	2400/f (kHz)	67.6 / kHz	300	AV (9-90 kHz, 110-490 kHz) QP (others)
0.490 – 1.705	24000/f (kHz)	87.6 / kHz	30	QP
1.705 – 30.0	30	29.5	30	QP
30 – 88	100	40	3	QP
88 – 216	150	43.5	3	QP
216 – 960	200	46	3	QP
> 960	500	54	3	AV (> 1GHz)

Test Conditions: Lowest and Highest channel only. Radiated on an Open Area Test Site at a distance of 3 meter.

PK: RBW \geq 100 kHz for $f < 1$ GHz, 1 MHz for $f \geq 1$ GHz, VBW \geq RBW

Avg: RBW = 1 MHz for $f \geq 1$ GHz, VBW = 10Hz, Linear average. If the emission is pulsed, the device was modified for continuous operations, and the average level was calculated according to part 15.35(c)

Test Data – In stand-by mode:

Emission Frequency MHz	Meter Reading dB μ V	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dB μ V/m	Margin dB μ V/m
32.16	19.0	V	0.41	11.21	30.62	9.38
56.49	7.9	H	0.52	10.97	19.39	20.61
56.85	17.3	V	0.52	10.88	28.70	11.30
89.22	15.7	H	0.62	7.91	24.23	19.27
89.55	21.2	V	0.62	9.00	30.82	12.68

APPLICANT: UNIDEN AMERICA CORPORATION

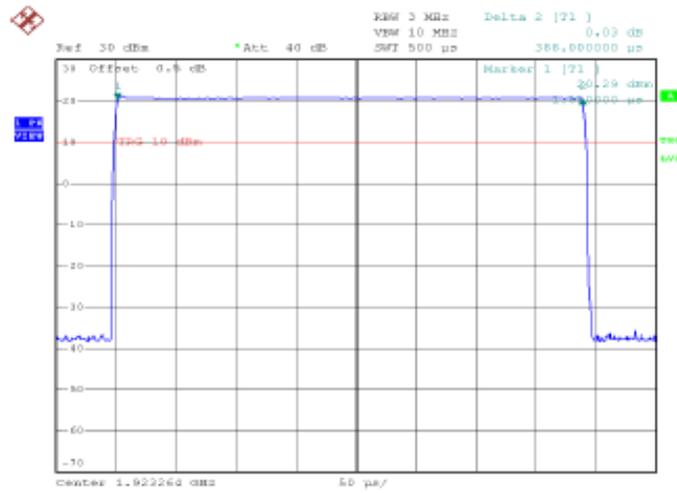
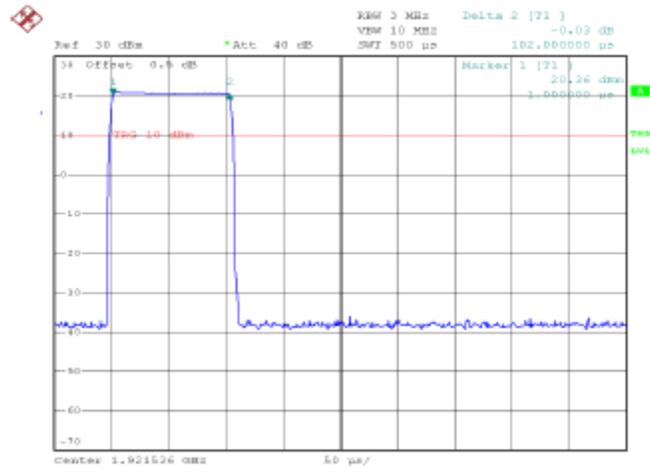
FCC ID: AMWUC577B

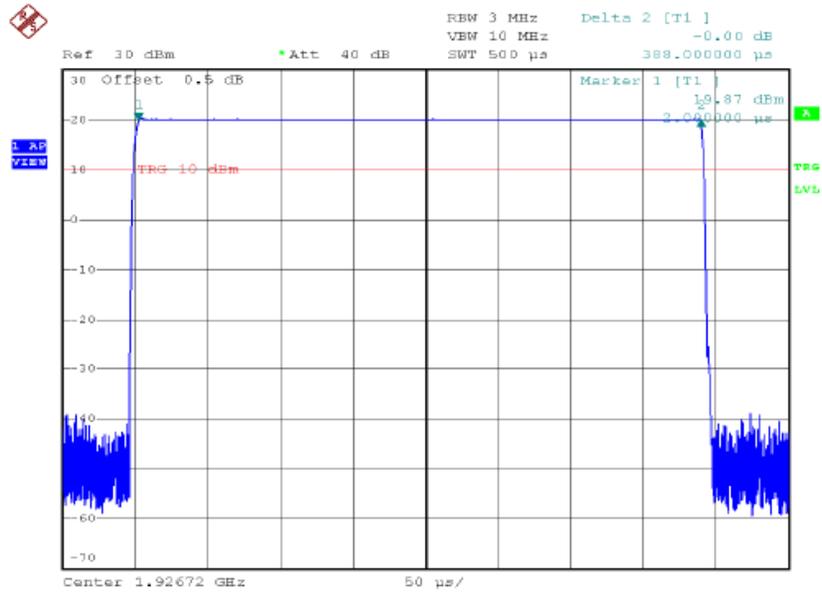
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Test Data – In stand-by mode – cont’d:

Emission Frequency MHz	Meter Reading dB μ V	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dB μ V/m	Margin dB μ V/m
114.36	18.9	H	0.66	14.40	33.96	9.54
114.45	15.0	V	0.66	14.67	30.33	13.17
143.01	24.9	H	0.69	13.30	38.89	4.61
143.79	15.1	V	0.69	13.45	29.24	14.26
162.72	10.7	V	0.75	15.13	26.58	16.92
163.62	20.4	H	0.75	14.19	35.34	8.16
205.60	19.3	H	0.91	11.99	32.20	11.30
206.00	17.1	V	0.91	11.70	29.71	13.79
224.50	20.4	H	0.95	11.50	32.85	13.15
248.60	18.7	V	1.00	12.42	32.12	13.88
249.60	24.5	H	1.00	12.48	37.98	8.02
381.50	9.6	V	1.18	15.35	26.13	19.87
419.60	6.8	V	1.22	16.00	24.02	21.98
643.50	6.4	H	1.64	20.01	28.05	17.95
964.00	20.3	V	2.05	22.80	45.15	0.85
964.50	10.4	H	2.05	23.65	36.10	9.90

Duty Cycle





Correction Factor: = $20 * \log(\text{on-time}/\text{period})$
 $20 * \log(4 * 1 * 0.388 \text{ ms} + 0.1 \text{ ms}) / (10 \text{ ms})$
 $20 * \log(1.65 / 10)$
 15.6 dB

AC POWER LINE CONDUCTED INTERFERENCE

Rules Part: 15.315, 15.207, 15.31

Test Procedure: ANSI C63.4 - 2003

Requirements:

FCC:

Emission Frequency (MHz)	Conducted Limit (dBμV)	
	Quasi-peak (QP)	Average (AV)
0.15 – 0.5	66 to 56 *	56 to 46 *
0.5 – 5	56	46
5 – 30	60	50
* Decreases with the logarithm of the frequency.		

IC: 250 μV (48 dBμV) within 0.45-30 MHz using CISPR method of measurement.

Test Conditions:

PK and QP(detector): RBW = 10kHz VBW>RBW

Avg: RBW = 10kHz VBW = 10Hz

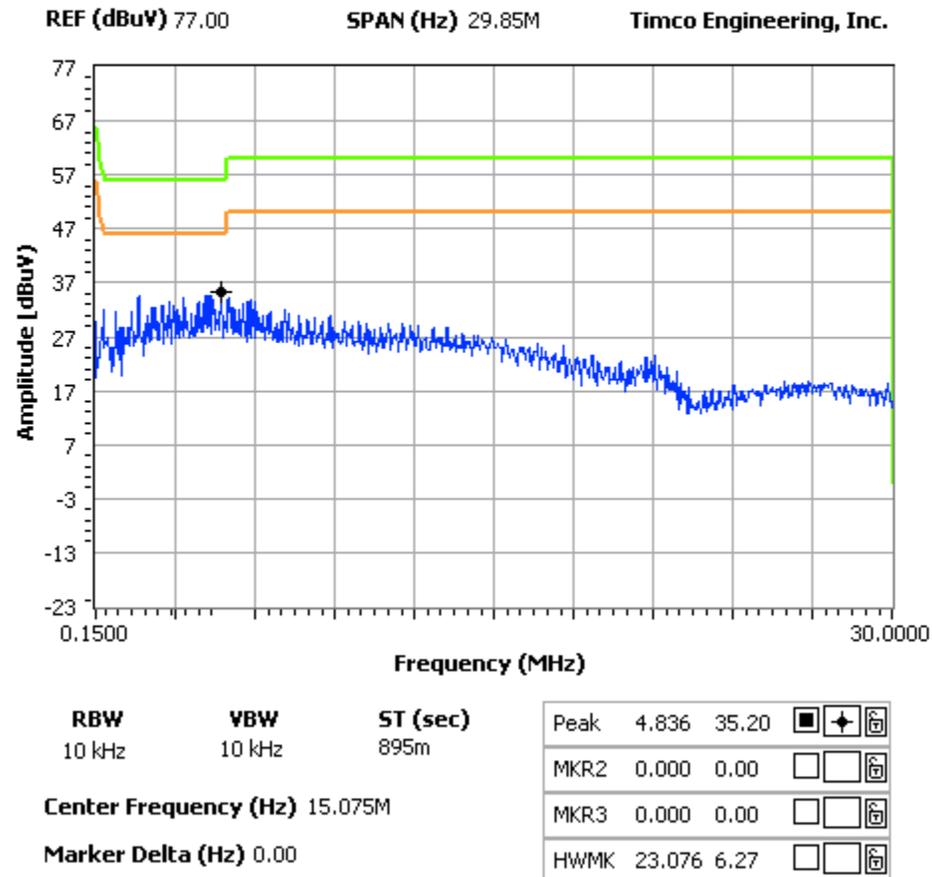
Test Data: The following plots represent the emissions read for power line conducted. Both lines were observed

POWERLINE CONDUCTED PLOT – LINE 1

NOTES:

UNIDEN AMERICA CORPORATION - FCC ID: AMWUC518
 POWER LINES CONDUCTED PLOT - LINE 1

FCC 15.107 Mask Class B

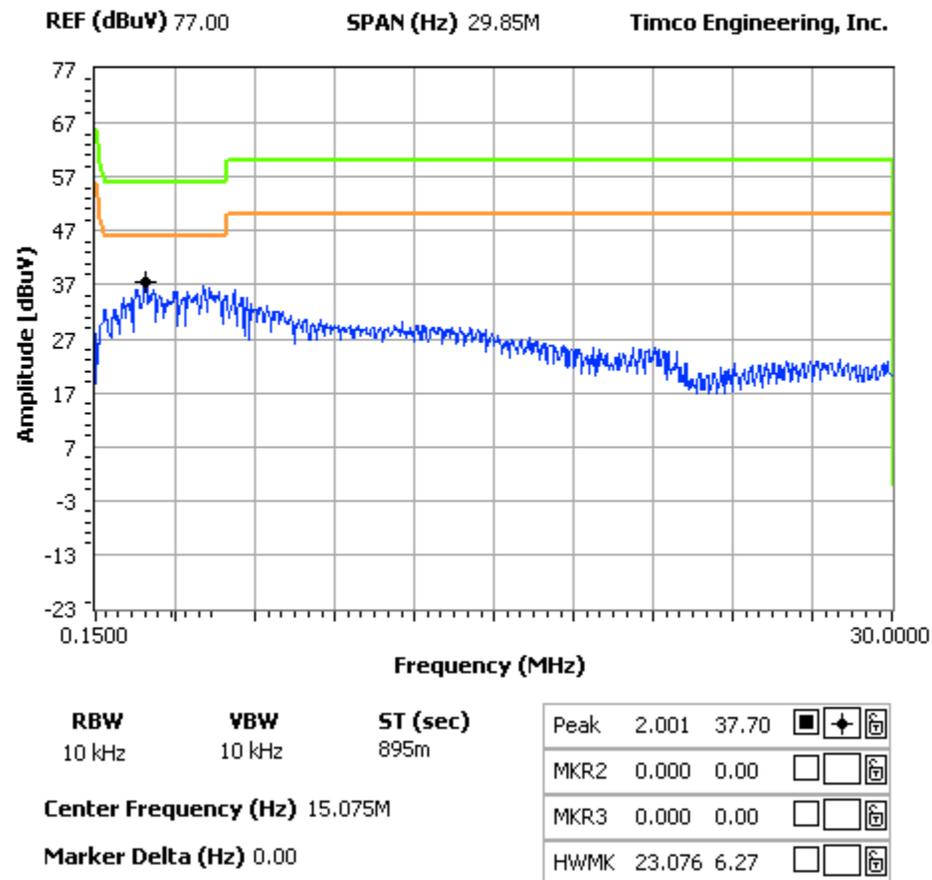


POWERLINE CONDUCTED PLOT – LINE 2

NOTES:

UNIDEN AMERICA CORPORATION - FCC ID: AMWUC518
 POWER LINES CONDUCTED PLOT - LINE 2

FCC 15.107 Mask Class B



RADIATED EMISSIONS TEST SET UP PHOTO



POWERLINE CONDUCTED EMISSIONS TEST SET UP PHOTO

