TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: sid@timcoengr.com

Test Report

Product Name: 2.4 GHz WIRELESS MICROPHONE

FCC ID: AMWUT601

Applicant:

UNIDEN AMERICA CORPORATION
181 N. COUNTRY CLUB RD.
P.O. BOX 580
LAKE CITY, SC 29560

Date Receipt: NOVEMBER 19, 2004

Date Tested: DECEMBER 8, 2004

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APPLICANT: UNIDEN AMERICA CORPORATION

FCC ID: AMWUT601

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TEST REPORT CONTAINING:

EXHIBITS INCLUDED:

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EMC Equipment List

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date or Status
3-Meter OATS	TEI	N/A	N/A	Listed 1/13/03	1/12/06
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/27/04	3/26/07
Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 9/23/03	9/23/05
Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 9/23/03	9/23/05
Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 9/23/03	9/23/05
Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 9/23/03	9/23/05
Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/15/03	4/15/05
Blue Tower RF Preselector	HP	85685A	2620A00294	CAL 4/27/04	4/27/06
Blue Tower Quasi-Peak Adapter	HP	85650A	2811A01279	CAL 4/15/03	4/15/05
Silver Tower Spectrum Analyzer	HP	8566B Opt 462	3552A22064 3638A08608	CAL 3/22/04	3/22/06
Silver Tower RF Preselector	HP	85685A	2926A00983	CAL 3/22/04	3/22/06
Silver Tower Quasi-Peak Adapter	HP	85650A	3303A01844	CAL 3/22/04	3/22/06
Silver Tower Preamplifier	HP	8449B	3008A01075	CAL 3/22/04	3/22/06
Biconnical Antenna	Electro-Metrics	BIA-25	1171	CAL 4/26/01	4/26/03
Biconnical Antenna	Eaton	94455-1	1096	CAL 8/17/04	8/17/06
Biconnical Antenna	Eaton	94455-1	1057	CAL 3/18/03	3/18/05
BiconiLog Antenna	EMCO	3143	9409-1043	No Cal Required	
Log-Periodic Antenna	Electro-Metrics	LPA-25	1122	CAL 8/26/04	8/26/06
Log-Periodic Antenna	Electro-Metrics	LPA-30	409	CAL 3/4/03	3/4/05
Log-Periodic	Eaton	96005	1243	CAL	5/8/05

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date or Status
Antenna				5/8/03	
Dipole Antenna Kit	Electro-Metrics	TDA-30/1-4	152	CAL 3/21/01	3/21/04
Dipole Antenna Kit	Electro-Metrics	TDA-30/1-4	153	CAL 9/26/02	9/26/05
Double-Ridged Horn Antenna	Electro-Metrics	RGA-180	2319	CAL 2/17/03	2/17/05
Horn Antenna *(at 3 meters)	Electro-Metrics	EM-6961	6246	CAL 3/31/03	3/31/05
Horn Antenna *(at 10 meters)	Electro-Metrics	EM-6961	6246	CAL 6/4/03	6/4/05
Passive Loop Antenna	EMC Test Systems	EMCO 6512	9706-1211	CHAR 7/10/01	7/10/03
Harmonic Mixer with Horn Antenna	Oleson Microwave Labs	M08HW/A	F30425-1	CHAR 4/25/03	4/25/05
Harmonic Mixer with Horn Antenna	Oleson Microwave Labs	M12HW/A	E30425-1	CHAR 4/25/03	4/25/05
LISN	Electro-Metrics	ANS-25/2	2604	CAL 8/27/04	8/27/06
LISN	Electro-Metrics	EM-7820	2682	CAL 3/12/03	3/12/05
Termaline Wattmeter	Bird Electronic Corporation	611	16405	CAL 7/16/04	7/16/06
Termaline Wattmeter	Bird Electronic Corporation	6104	1926	CAL 7/16/04	7/16/06
Oscilloscope	Tektronix	2230	300572	CAL 7/3/03	7/3/05
System One	Audio Precision	System One	SYS1-45868	CHAR 4/25/02	4/25/04
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 1/22/02	1/22/04
AC Voltmeter	HP	400FL	2213A14499	CAL 7/19/04	7/19/06
AC Voltmeter	HP	400FL	2213A14261	CHAR 10/15/01	10/15/03
AC Voltmeter	HP	400FL	2213A14728	CHAR 10/15/01	10/15/03
Digital Multimeter	Fluke	77	35053830	CHAR 1/8/02	1/8/04
Digital Multimeter	Fluke	77	43850817	CHAR 1/8/02	1/8/04

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date or Status
Digital Multimeter	HP	E2377A	2927J05849	CHAR 1/8/02	1/8/04
Multimeter	Fluke	FLUKE-77-3	79510405	CHAR 9/26/01	9/26/03
Peak Power Meter	HP	8900C	2131A00545	CAL 7/2/03	7/2/05
Power Sensor	Agilent Technologies	84811A	2551A02705	CAL 7/2/03	7/2/05
Power Meter	HP	432A	1141A07655	CAL 4/15/03	4/15/05
Power Sensor	HP	478A	72129	CAL 4/15/03	4/15/05
Power Meter And Sensor	Bird	4421-107 & 4022	0166 & 0218	CAL 4/16/03	4/16/05
Digital Thermometer	Fluke	2166A	42032	CAL 7/19/04	7/19/06
Thermometer	Traulsen	SK-128		CHAR 1/22/02	1/22/04
Thermometer	Extech	4028	14871-2	CAL 3/7/03	3/7/05
Hygro-Thermometer	Extech	445703	0602	CAL 10/4/02	10/4/04
Frequency Counter	HP	5352B	2632A00165	CAL 8/3/04	8/3/06
Frequency Counter	HP	5385A	2730A03025	CAL 3/7/03	3/7/05
Service Monitor	IFR	FM/AM 500A	5182	CAL 11/22/00	Out of Service
Comm. Serv. Monitor	IFR	FM/AM 1200S	6593	CAL 5/12/02	5/12/04
Signal Generator	HP	8640B	2308A21464	CAL 8/26/04	8/26/06
Sweep Generator	Wiltron	6648	101009	CAL 4/15/03	4/15/05
Sweep Generator	Wiltron	6669M	007005	CAL 3/3/03	3/3/05
Modulation Analyzer	HP	8901A	3435A06868	CAL 9/5/01	9/5/03
Modulation Meter	Boonton	8220	10901AB	CAL 4/15/05	4/15/05
Near Field Probe	HP	HP11940A	2650A02748	CHAR 2/1/01	Out of Service
BandReject Filter	Lorch	5BR4-	Z1	CHAR	4/17/05

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date or Status
	Microwave	2400/60-N		4/17/03	
BandReject Filter	Lorch Microwave	6BR6-2442/300-N	Z1	CHAR 4/17/03	4/17/05
BandReject Filter	Lorch Microwave	5BR4-10525/900-S	Z1	CHAR 4/12/03	4/12/05
Notch Filter	Lorch Microwave	5BRX-850/X100-N	AD-1	CHAR 4/17/03	4/17/05
High Pass Filter	Unk	3768(5)-400	041	CHAR 12/17/02	12/17/04
High Pass Filter	Microlab	HA-10N		CHAR 11/17/02	11/17/04
High Pass Filter	Microlab	HA-20N		CHAR 12/17/02	12/17/04
Audio Oscillator	HP	653A	832-00260	CHAR 12/1/02	12/1/04
Audio Generator	B&K Precision	3010	8739686	CHAR 12/1/02	12/1/04
Frequency Counter	HP	5382A	1620A03535	CHAR 3/2/01	Out of Service
Frequency Counter	HP	5385A	3242A07460	CAL 3/7/03	3/7/05
Amplifier	HP	11975A	2738A01969	No Cal Required	
Egg Timer	Unk			CHAR 2/1/02	2/1/04
Measuring Tape-20M	Kraftixx	0631-20		CHAR 2/1/02	2/1/04
Measuring Tape-7.5M	Kraftixx	7.5M PROFI		CHAR 2/1/02	2/1/04
Coaxial Cable #51	Insulated Wire Inc.	NPS 2251-2880	Timco #51	CHAR 1/23/02	1/23/04
Coaxial Cable #64	Semflex Inc.	60637	Timco #64	CHAR 1/24/02	1/24/04
Coaxial Cable #65	General Cable Co.	E9917 RG233/U	Timco #65	CHAR 1/23/02	1/23/04
Coaxial Cable #106	Unknown	Unknown	Timco #106	CHAR 1/23/02	1/23/04
Injection Probe	Fischer Custom Communications	F-120-9A	270	CAL 6/1/01	6/1/03
Power Line Coupling/Decoupling Network	Fischer Custom Communications	FCC-801-M2-16A	01048	CAL 8/29/01	8/29/03
Power Line	Fischer Custom	FCC-801-M3-	01060	CAL	8/29/03

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date or Status
Coupling/Decoupling Network	Communications	16A		8/29/01	
VHF/UHF Current Probe	Fischer Custom Communications	F-52	130	CAL 8/30/01	8/30/03
Passive Impedance Adapter	Fischer Custom Communications	FCC-801-150-50-CDN	01117 & 01118	CAL 8/29/01	8/29/03
Radiating Field Coil	Fischer Custom Communications	F-1000-4-8/9/10-L-1M	9859	CAL 10/15/98	10/15/00
EMC Immunity Test System	Keytek	CEMASTER	9810210	CAL 2/1/02	2/1/04
Compliance Test System - AC Power Source	California Instruments	1251RP	L05865	CAL 2/25/04	2/25/06
Compliance Test System - PACS-1 Module	California Instruments	PACS-1	X71484	CAL 2/25/04	2/25/06
Isotropic Field Probe	Amplifier Research	FP5000	22839		
Isotropic Field Probe	Amplifier Research	FP5000	300103		
Capacitor Clamp	Keytek	CM-CCL	9811359	No Cal Required	
Amplifier	Amplifier Research	10W1000B	23117	No Cal Required	
Field Monitor	Amplifier Research	FM5004	22288	No Cal Required	
ELF Meter	F. W. Bell	4060	Not Serialized		Out of Service
Standard Gain Horn 1.0-2.4 GHz	Polarad	CA-L	235	No Cal Required	
Standard Gain Horn 2.14-4.34 GHz	Polarad	CA-S	203	No Cal Required	
Standard Gain Horn 3.95-5.85 GHz	Scientific-Atlanta Inc.	11A-3.9	8448CG	No Cal Required	
Standard Gain Horn 8.2-12.5 GHz	Systron Donner	DBG-520-20	Not Serialized	No Cal Required	
Standard Gain Horn 18.0-26.3 GHz	Systron Donner	DBE-520-20	Not Serialized	No Cal Required	
Standard Gain Horn 26.5-40.2 GHz	Systron Donner	DBD-520-20	Not Serialized	No Cal Required	
Standard Gain Horn 40.0-60.0 GHz	ATM	19-443-6R	Not Serialized	No Cal Required	
Double-Ridged Horn	EMCO	3116	9011-2145		Out of

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Antenna					Service
Standard Gain Horn 12.4-18.0 GHz	ATM	62-442-6	D262108-01	No Cal Required	
Standard Gain Horn 5.85-8.2 GHz	ATM	137-442-2	D261908-01	No Cal Required	
AC Voltmeter	HP	400F	0950A05433	CAL 8/13/03	8/13/05
RF Power Amplifier	Ophir RF	5150F	1041 'X1'	No Cal Required	
Electric Field Sensor	Amplifier Research	FP6001	302504		
Electric Field Sensor	Amplifier Research	FP6001	302510	CAL 6/1/04	6/1/06
Surge Generator	Com-Power Corporation	SG-168	25802	CAL 2/27/04	2/27/06
RF Power Amplifier	Ophir RF, Inc.	5150F	1041	CHAR 10/31/03	10/31/05
3-Meter Anechoic Chamber	Panashield	N/A	N/A	Listed 5/12/04	5/11/07
Digital Multimeter	Fluke	77III	79510408	CAL 7/19/04	7/19/06
Open-Frame Tower Spectrum Analyzer	HP	8566B/85662A	2627A03154/2648A14276	CAL 7/9/04	7/9/06
Open-Frame Tower RF Preselector	HP	85685A	3107A01282	CAL 7/9/04	7/9/06
Open-Frame Tower Quasi-Peak Adapter	HP	85650A	2046A00305	CAL 7/9/04	7/9/06
Signal Generator	HP	8648C	3847A04696	CAL 9/27/04	9/27/06

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TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2003 using a 50uH LISN. Both lines were observed with the UUT transmitting. The bandwidth of the spectrum analyzer was 10kHz with an appropriate sweep speed. The ambient temperature of the UUT was 76°F with a humidity of 55%.

BANDWIDTH 6.0dB: The measurements were made with the spectrum analyzer's resolution bandwidth (RBW)=1.0MHz and the video bandwidth (VBW) =3.0MHz and the span set as shown on plot.

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

ANTENNA CONDUCTED EMISSIONS: The RBW=100KHz, VBW=300KHz and the span set to 10.0MHz and the spectrum was scanned from 30MHz to the 10th Harmonic of the fundamental. Above 1.0GHz the resolution bandwidth was 1.0MHz and the VBW = 3.0MHz and the span to 50MHz.

ANTENNA CONNECTION: This device uses an integral antenna.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2003 using a HEWLETT PACKARD spectrum analyzer with a pre-selector. The bandwidth (RBW) of the spectrum analyzer was 100kHz up to 1GHz and 1.0MHz above 1GHz with an appropriate sweep speed. The VBW above 1.0GHz was = 3.0MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the UUT was 76°F with a humidity of 55%.

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APPLICANT: UNIDEN AMERICA CORPORATION

FCC ID: AMWUT601

NAME OF TEST: 6.0dB BANDWIDTH

RULES PART NO.: 15.247(a)(2)

REQUIREMENTS: The 6.0dB bandwidth must be greater than 500 kHz.

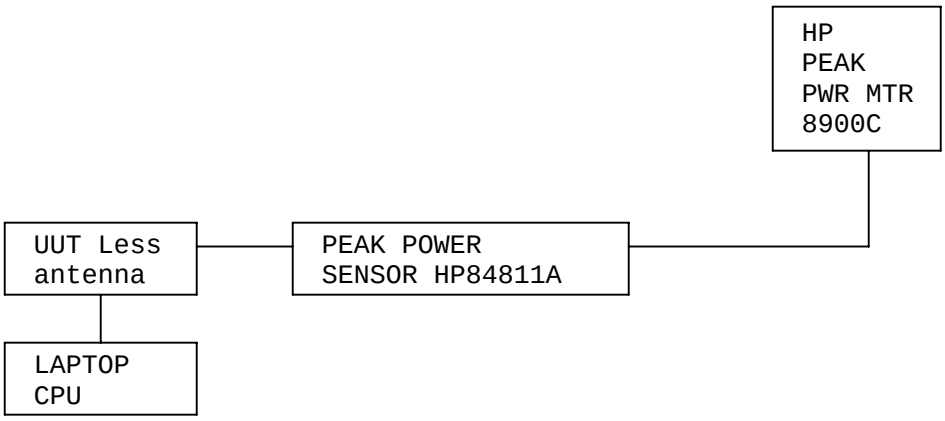
MEASUREMENT DATA: See the following plots

NAME OF TEST: POWER OUTPUT

RULES PART NO.: 15.247(b) 1.0Watt or +30dBm
250mW Watts or 24dBm for 24dBi Gain Ant

MEASUREMENT: 158.0 mWatts or 22.0 dBm @ 2433.0MHz

15.247(c) Method of Measuring RF Power output: The Peak power Sensor was connected in place of the antenna.



Harmonics were checked through the 10th harmonic

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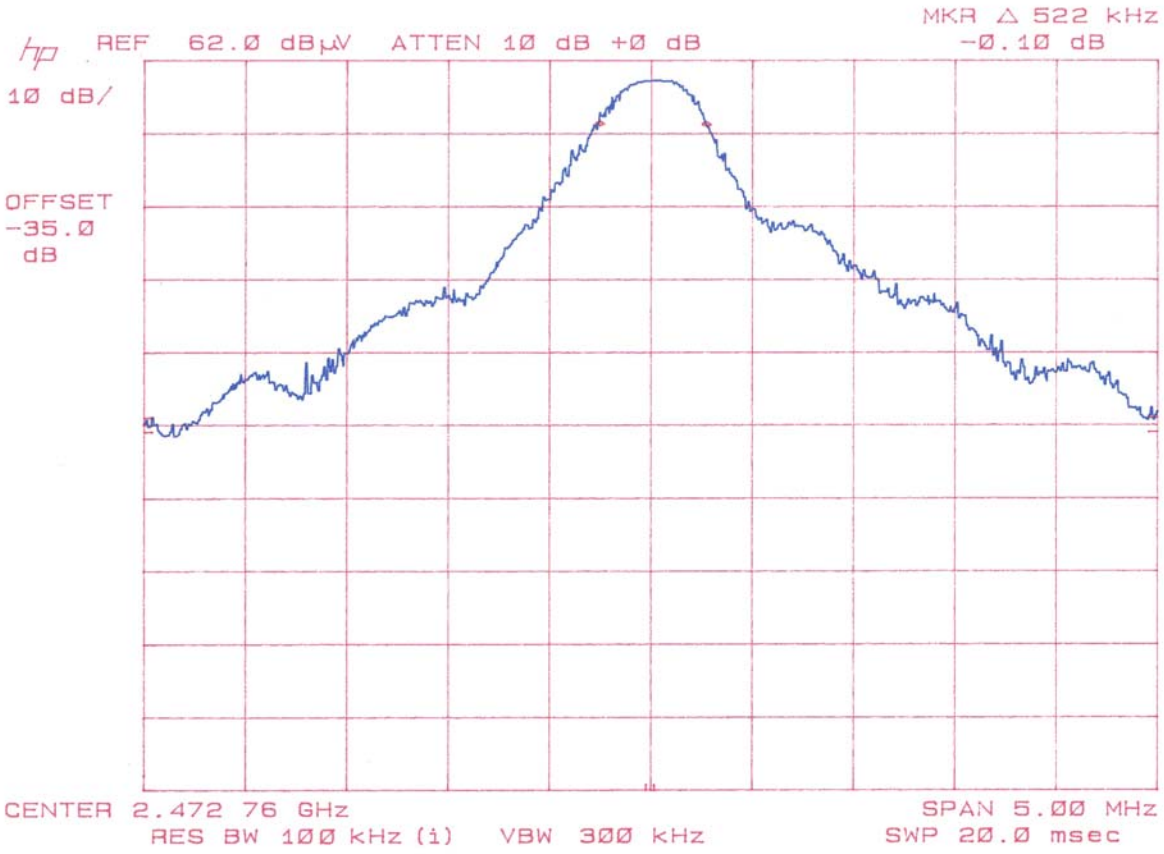
6 dB BANDWIDTH PLOT



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NAME OF TEST: **SPURIOUS EMISSIONS AT ANTENNA TERMINALS**

REQUIREMENTS: Emissions must be at least 20dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

43 + 10log(P) = 35dB

TEST DATA:

TF	EF	dB below carrier
2407.2	2407.2	0.0
	4814.4	66.6
	7221.6	79.4

TF	EF	dB below carrier
2442	2442	0.0
	4884	64.2
	7326	81.2

TF	EF	dB below carrier
2472.8	2472.8	0.0
	4945.6	75.1
	7418.4	72.4

NOTE: THE SPECTRUM WAS SCANNED TO THE TENTH HARMONIC.

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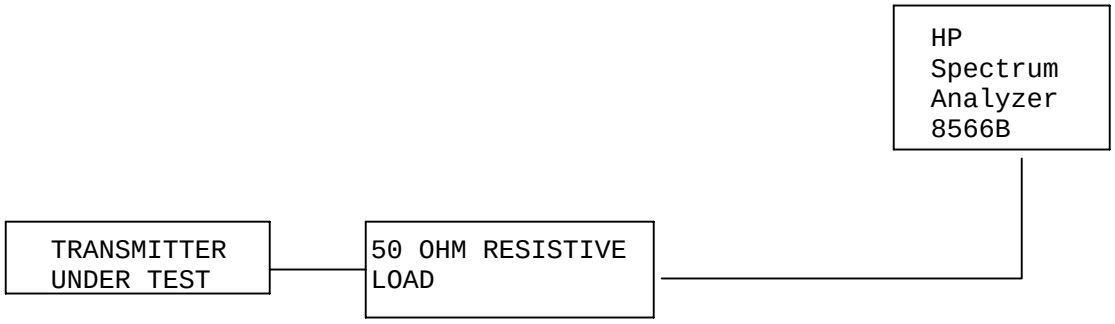
Method of Measuring RF Conducted Spurious Emissions



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15.247(c), 15.205 &15.209(b) **Field_strength_of_spurious_emissions:**

REQUIREMENTS:

FIELD STRENGTH	FIELD STRENGTH	S15.209
of Fundamental:	of Harmonics	30 - 88 MHz 40 dBuV/m @3M
902-928MHz		88 -216 MHz 43.5
2.4-2.4835GHz	127.37dBuV/m	216 -960 MHz 46
	54 dBuV/m @3m	ABOVE 960 MHz 54dBuV/m

EMISSIONS RADIATED OUTSIDE OF THE SPECIFIED FREQUENCY BANDS, EXCEPT FOR HARMONICS, SHALL BE ATTENUATED BY AT LEAST 50 dB BELOW THE LEVEL OF THE FUNDAMENTAL OR TO THE GENERAL RADIATED EMISSION LIMITS IN 15.209, WHICHEVER IS THE LESSER ATTENUATION.

REQUIREMENTS FOR EMISSIONS THAT FALL IN A RESTRICTED BAND:

FIELD STRENGTH LIMITS FOR PEAK READINGS: 74 dBuV/m
FIELD STRENGTH LIMITS FOR AVERAGE READINGS: 54 dBuV/m

TEST DATA:

Tuned Frequency MHz	Emission Frequency MHz		Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m		Margin dB
2,407.2	2,407.20		73.4	H	3.19	32.34	108.93		24.04
2,407.2	4,814.40	R	9.9	H	4.91	34.35	49.16	PK	4.84
2,446.1	2,446.10		73.5	H	3.21	32.45	109.16		18.21
2,446.1	4,892.30	R	12.0	H	4.95	34.41	51.36	PK	2.64
2,446.1	7,338.50	R	11.0	H	5.80	36.31	53.11	PK	0.89
2,472.8	2,472.80		74.7	H	3.23	32.52	110.45		16.92
2,472.8	4,945.60	R	13.0	H	4.97	34.46	52.43	PK	1.57
2,472.8	7,418.40	R	2.14	H	5.85	36.40	44.39	AV	9.61
2,472.8	7,418.40	R	13.0	H	5.85	36.40	55.25	PK	18.75

Harmonics were checked through the 10th harmonic

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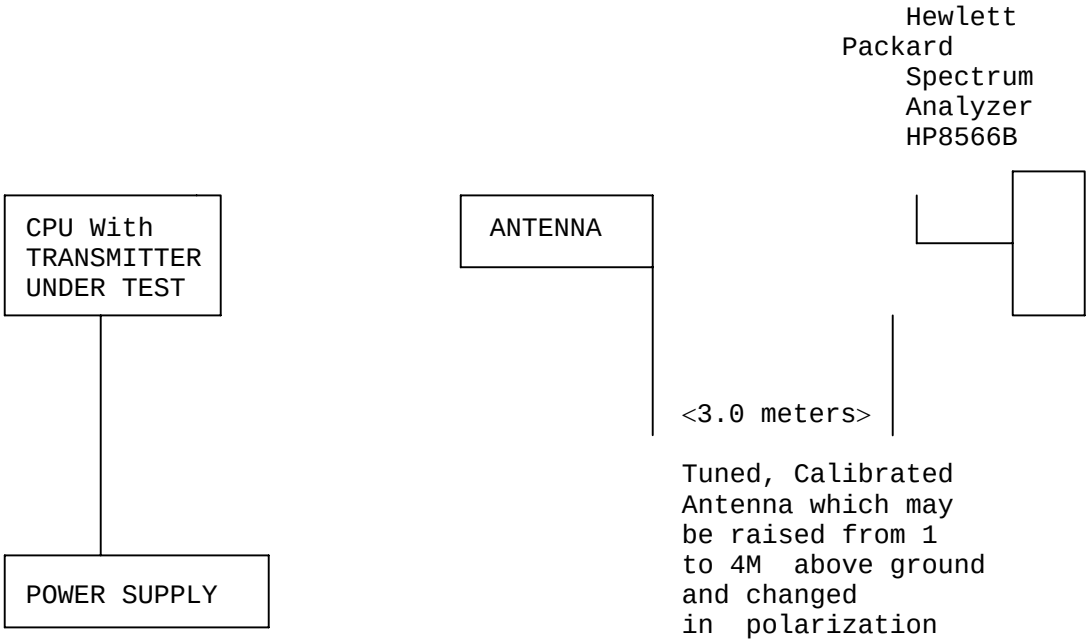
Method of Measuring Radiated Spurious Emissions



Equipment placed 80cm above ground on a rotatable platform.

METHOD OF MEASUREMENT: The procedure used was ANSI STANDARD C63.4-2003 & the FCC/OET Guidance on Measurements for Direct Sequence Spread Spectrum Systems – Public Notice 54797 Dated July 12, 1995. Measurements were made at the open field test site of TIMCO ENGINEERING INC. located at 849 N.W. State Road 45, Newberry, FL 32669.

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FCC ID: AMWUT601

NAME OF TEST: RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND

REQUIREMENTS: Emissions that fall in the restricted bands (15.205). These emissions must be less than or equal to 500 uV/m (54 dBuV/m).

TEST PROCEDURE: An in band field strength measurement of the fundamental Emission using the RBW and detector function required by C63.4-2000 and FCC Rules. The procedure was repeated with an average detector and a plot made. The calculated field strength in the adjacent restricted band is presented below.

Average	Average
CHANNEL 1	CHANNEL 11
FREQUENCY: 2390.00 MHz	FREQUENCY: 2483.50 MHz
+ 3.00 dBuV from plot	+ 8.10 dBuV from plot
+29.23 dB ACF	+29.38 dB ACF
+ 1.89 dB Coax Loss	+ 1.94 dB Coax Loss
	+10.00 dB Attn. Pad
+34.12 dBuV	+49.42 dBuV

Peak	Peak
CHANNEL 1	CHANNEL 11
FREQUENCY: 2390.00 MHz	FREQUENCY: 2483.50 MHz
+14.40 dBuV from plot	+18.60 dBuV from plot
+29.23 dB ACF	+29.38 dB ACF
+ 1.89 dB Coax Loss	+ 1.94 dB Coax Loss
	+10.00 dB Attn. Pad
+45.52 dBuV	+59.92 dBuV

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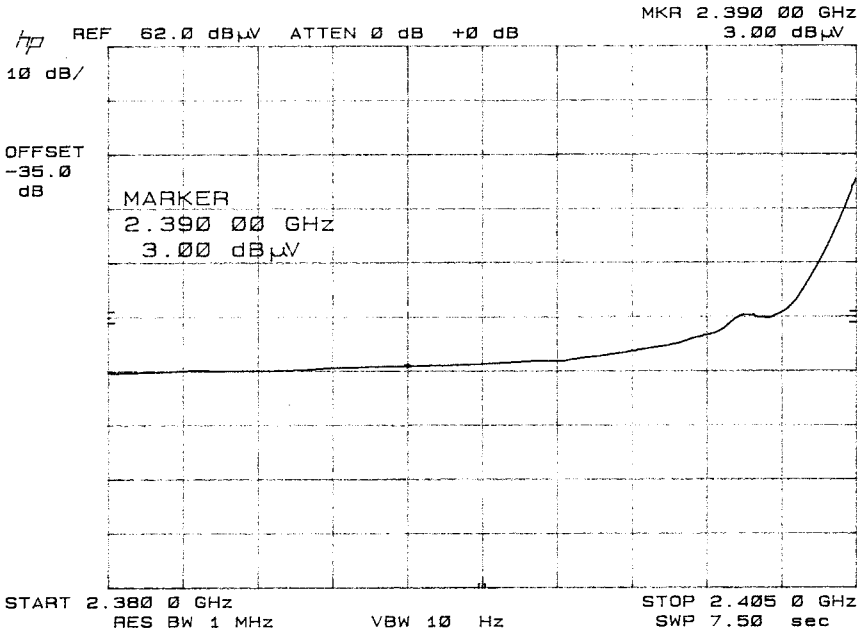
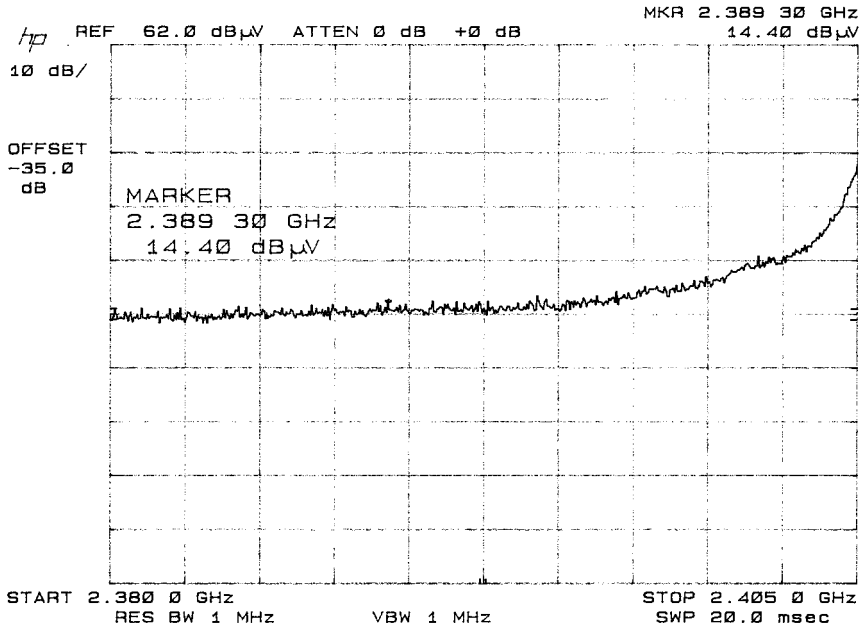
AVERAGE



PEAK



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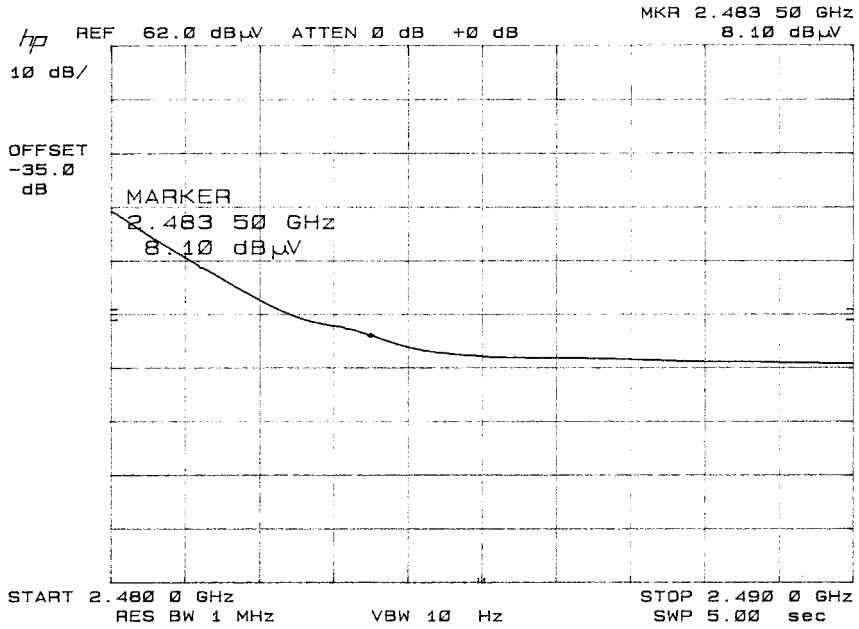
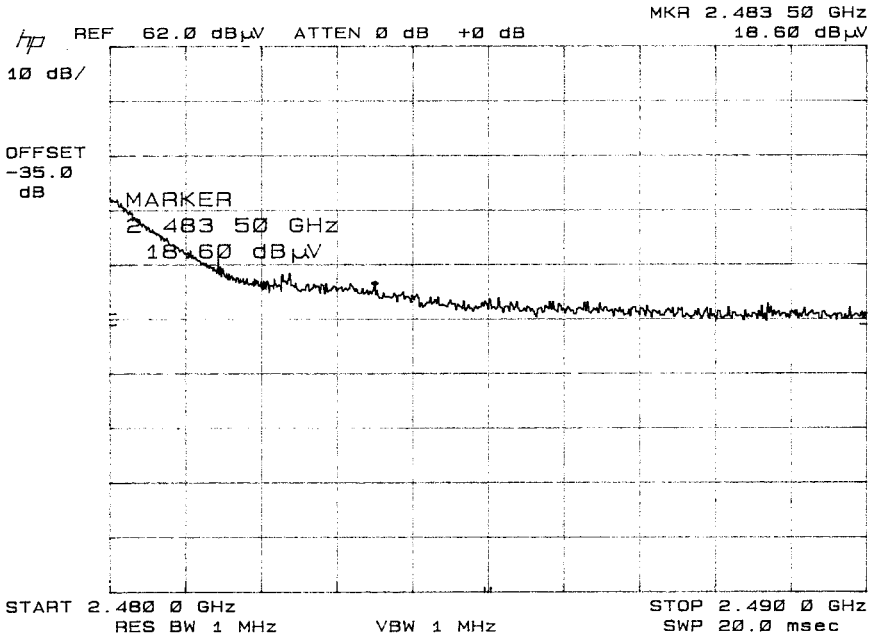
AVERAGE



PEAK



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APPLICANT: UNIDEN AMERICA CORPORATION

FCC ID: AMWUT601

NAME OF TEST: POWER SPECTRAL DENSITY

RULES PART NO.: 15.247(d)

REQUIREMENTS: The peak level measured must be no greater than +8.0dBm.

DATA: SEE THE FOLLOWING PLOT

```
+ 9.3 dBuV
+50   dB    Attn.
+35   dB    Correction Factor
___________
+94.3 dBuV
-107  dB
___________
-12.7 dBm
```

POWER SPECTRAL DENSITY PLOT