

# **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](mailto:sid@timcoengr.com)



## Test Report

Product Name: 462 MHz WALKIE TALKIE TRANSMITTER

FCC ID: IGFWT-325

Applicant:

**SPECTRA MERCHANDISING INTL.  
4230 NORTH NORMANDY AVENUE  
CHICAGO, IL. 60634**

**Date Receipt: MARCH 13, 2003**

**Date Tested: MARCH 28, 2003**

APPLICANT: SPECTRA MERCHANDISING INTL.  
FCC ID: IGFWT-325  
REPORT #: S\SPECTRA\175ZUT3\175ZUT3TestReport.doc

COVER SHEET

# **TIMCO ENGINEERING INC.**

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## EMC Equipment List

	DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
X	3-Meter OATS	TEI	N/A	N/A	Listed 12/22/99	12/22/02
	3/10-Meter OATS	TEI	N/A	N/A	Listed 3/26/01	3/26/04
	Receiver, Beige Tower Spectrum Analyzer (Tan)	HP	8566B Opt 462	3138A07786 3144A20661	CAL 8/31/01	8/31/03
	RF Preselector (Tan)	HP	85685A	3221A01400	CAL 8/31/01	8/31/03
	Quasi-Peak Adapter (Tan)	HP	85650A	3303A01690	CAL 8/31/01	8/31/03
X	Receiver, Blue Tower Spectrum Analyzer (Blue)	HP	8568B	2928A04729 2848A18049	CHAR 10/22/01	10/22/03
X	RF Preselector (Blue)	HP	85685A	2926A00983	CHAR 10/22/01	10/22/03
X	Quasi-Peak Adapter (Blue)	HP	85650A	2811A01279	CHAR 10/22/01	10/22/03
X	Biconnical Antenna	Electro-Metrics	BIA-25	1171	CAL 4/26/01	4/26/03
	Biconnical Antenna	Eaton	94455-1	1096	CAL 10/1/01	10/1/03
	Biconnical Antenna	Eaton	94455-1	1057	CHAR 3/15/00	3/15/02
	BiconiLog Antenna	EMCO	3143	9409-1043		
X	Log-Periodic Antenna	Electro-Metrics	LPA-25	1122	CAL 10/2/01	10/2/03
	Log-Periodic Antenna	Electro-Metrics	EM-6950	632	CHAR 10/15/01	10/15/03
	Log-Periodic Antenna	Electro-Metrics	LPA-30	409	CHAR 10/16/01	10/16/03
	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	CHAR 11/24/00	11/24/03
	Double-Ridged Horn Antenna	Electro-Metrics	RGA -180	2319	CAL 12/19/01	12/19/03
	Horn Antenna	Electro-Metrics	EM-6961	6246	CAL 3/21/01	3/21/03

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DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
Horn Antenna	ATM	19-443-6R	None	No Cal Required	
Passive Loop Antenna	EMC Test Systems	EMCO 6512	9706-1211	CHAR 7/10/01	7/10/03
Line Impedance Stabilization . . .	Electro-Metrics	ANS-25/2	2604	CAL 10/9/01	10/9/03
Line Impedance Stabilization . . .	Electro-Metrics	EM-7820	2682	CAL 3/16/01	3/16/03
Termaline Wattmeter	Bird Electronic Corporation	611	16405	CAL 5/25/99	5/25/01
Termaline Wattmeter	Bird Electronic Corporation	6104	1926	CAL 12/12/01	12/12/03
Oscilloscope	Tektronix	2230	300572	CHAR 2/1/01	2/1/03
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 1/22/02	1/22/04
AC Voltmeter	HP	400FL	2213A14499	CAL 10/9/01	10/9/03
AC Voltmeter	HP	400FL	2213A14261	CHAR 10/15/01	10/15/03
AC Voltmeter	HP	400FL	2213A14728	CHAR 10/15/01	10/15/03
X Digital Multimeter	Fluke	77	35053830	CHAR 1/8/02	1/8/04
Digital Multimeter	Fluke	77	43850817	CHAR 1/8/02	1/8/04
Digital Multimeter	HP	E2377A	2927J05849	CHAR 1/8/02	1/8/04
Multimeter	Fluke	FLUKE-77-3	79510405	CAL 9/26/01	9/26/03
Peak Power Meter	HP	8900C	2131A00545	CHAR 1/26/01	1/26/03
Digital Thermometer	Fluke	2166A	42032	CAL 1/16/02	1/16/04
Thermometer	Traulsen	SK-128		CHAR 1/22/02	1/22/04
X Temp/Humidity gauge	EXTech	44577F	E000901	CHAR 1/22/02	1/22/04
Frequency Counter	HP	5352B	2632A00165	CAL 11/28/01	11/28/03
Power Sensor	Agilent Technologies	84811A	2551A02705	CAL 1/26/01	1/26/03
Service Monitor	IFR	FM/AM 500A	5182	CAL 11/22/00	11/22/02

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DEVICE	MFGR	MODEL	SERNO	CAL/CHAR DATE	DUE DATE or STATUS
Comm. Serv. Monitor	IFR	FM/AM 1200S	6593	CAL 5/12/02	5/12/04
Signal Generator	HP	8640B	2308A21464	CAL 11/15/01	11/15/03
Modulation Analyzer	HP	8901A	3435A06868	CAL 9/5/01	9/5/03
Near Field Probe	HP	HP11940A	2650A02748	CHAR 2/1/01	2/1/03
BandReject Filter	Lorch Microwave	5BR4-2400/60-N	Z1	CHAR 3/2/01	3/2/03
BandReject Filter	Lorch Microwave	6BR6-2442/300-N	Z1	CHAR 3/2/01	3/2/03
BandReject Filter	Lorch Microwave	5BR4-10525/900-S	Z1	CHAR 3/2/01	3/2/03
High Pas Filter	Microlab	HA-10N		CHAR 10/4/01	10/4/03
Audio Oscillator	HP	653A	832-00260	CHAR 3/1/01	3/1/03
Frequency Counter	HP	5382A	1620A03535	CHAR 3/2/01	3/2/03
Frequency Counter	HP	5385A	3242A07460	CHAR 12/11/01	12/11/03
Preamplifier	HP	8449B-H02	3008A00372	CHAR 3/4/01	3/4/03
Amplifier	HP	11975A	2738A01969	CHAR 3/1/01	3/1/03
Egg Timer	Unk			CHAR 8/31/01	8/31/03
Measuring Tape, 20M	Kraftixx	0631-20		CHAR 2/1/02	2/1/04
Measuring Tape, 7.5M	Kraftixx	7.5M PROFI		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

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## **TEST PROCEDURES**

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

**RADIATION INTERFERENCE:** The test procedure used was ANSI STANDARD C63.4-1992 using a HEWLETT PACKARD spectrum analyzer with a preselector. In the frequency range 10 kHz to 30 MHz the RBW was 10 kHz and from 30-1000 MHz the RBW of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz. The ambient temperature of the UUT was 80°F with a humidity of 76%.

**FORMULA OF CONVERSION FACTORS:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz) METER READING + ACF = FS  
33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

**ANSI C63.4-1992 Section 8.2.1 MEASUREMENT PROCEDURES:** The EUT was placed on a non-conducting table 80 cm above the ground plane with the EUT located in the center of the table. With the antenna vertical a preliminary scan was done at 1 meters distance, the EUT was moved to a 3.0-meter distance and the antenna height varied and also placed in a horizontal position. The frequency was scanned from 9.0 kHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The EUT was measured in three (3) orthogonal planes. The unit was measured at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45 Newberry, Florida 32669.

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**APPLICANT:** SPECTRA MERCHANTISING INTL.

**FCC ID:** IGFWT-325

**NAME OF TEST:** RADIATION INTERFERENCE

**RULES PART NO.** 15.109(a) and 15.209

**REQUIREMENTS:** OUT-OF-BAND EMISSIONS SHALL NOT EXCEED THE LEVEL OF THE FUNDAMENTAL.

30 to 88 MHz: 40.00 dBuV/M @ 3 METERS  
88 to 216 MHz: 43.50 dBuV/M  
216 to 960 MHz: 46.02 dBuV/M  
ABOVE 960 MHz: 54.00 dBuV/M

## **TEST DATA:**

Emission Frequency MHz	Meter Reading dBuV	ANT. POLARITY	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
462.57	23.5	V	1.60	17.20	42.30	3.70
462.57	27.0	H	1.60	17.20	45.80	0.20
925.13	1.9	H	2.60	23.45	27.95	18.05
925.13	2.4	V	2.60	23.45	28.45	17.55
925.13	2.4	H	2.60	23.45	28.45	17.55
1,387.71	3.0	V	2.09	28.83	33.92	20.08
1,387.71	4.2	H	2.09	28.83	35.12	18.88

The spectrum was scanned from 10 kHz to 5000 MHz.

SAMPLE CALCULATION: FSdBuV/m = MR (dBuV) + ACFdB.

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**APPLICANT:** SPECTRA MERCHANDISING INTL.

**FCC ID:** IGFWT-325

**NAME OF TEST:** RADIATION INTERFERENCE CONTD.

**RULES PART NO.** 15.109(a) and 15.209

**TEST PROCEDURE:** The procedure used was ANSI C63.4-1992 Section 8.2. The frequency was scanned from 9.0 kHz to 5.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The EUT was measured in three (3) orthogonal planes. The unit was measured at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45 Newberry, Florida 32669.

**TEST RESULTS:** THE UNIT DOES MEET THE FCC REQUIREMENTS.

**PERFORMED BY:** SID SANDERS

**DATE:** MARCH 28, 2003

APPLICANT: SPECTRA MERCHANDISING INTL.

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**APPLICANT:** SPECTRA MERCHANDISING INTL.

**FCC ID:** IGFWT-325

**NAME OF TEST:** Occupied Bandwidth

**RULES PART NO.:** 15.209

**REQUIREMENTS:** The bandwidth of the emission shall be no wider than 0.25% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier. The unit does meet this requirement.

THE GRAPH ON THE NEXT PAGE REPRESENTS THE EMISSIONS TAKEN FOR THE DEVICE.

**METHOD OF MEASUREMENT:** A small sample of the transmitter output was fed into the spectrum analyzer and the attached plot was taken. The vertical scale is set to 10 dB per division. The horizontal scale is set to 10 kHz per division.

**TEST RESULTS:** The unit DOES meet the FCC requirements.

**PERFORMED BY:** SID SANDERS

**DATE:** MARCH 28, 2003

APPLICANT: SPECTRA MERCHANDISING INTL.

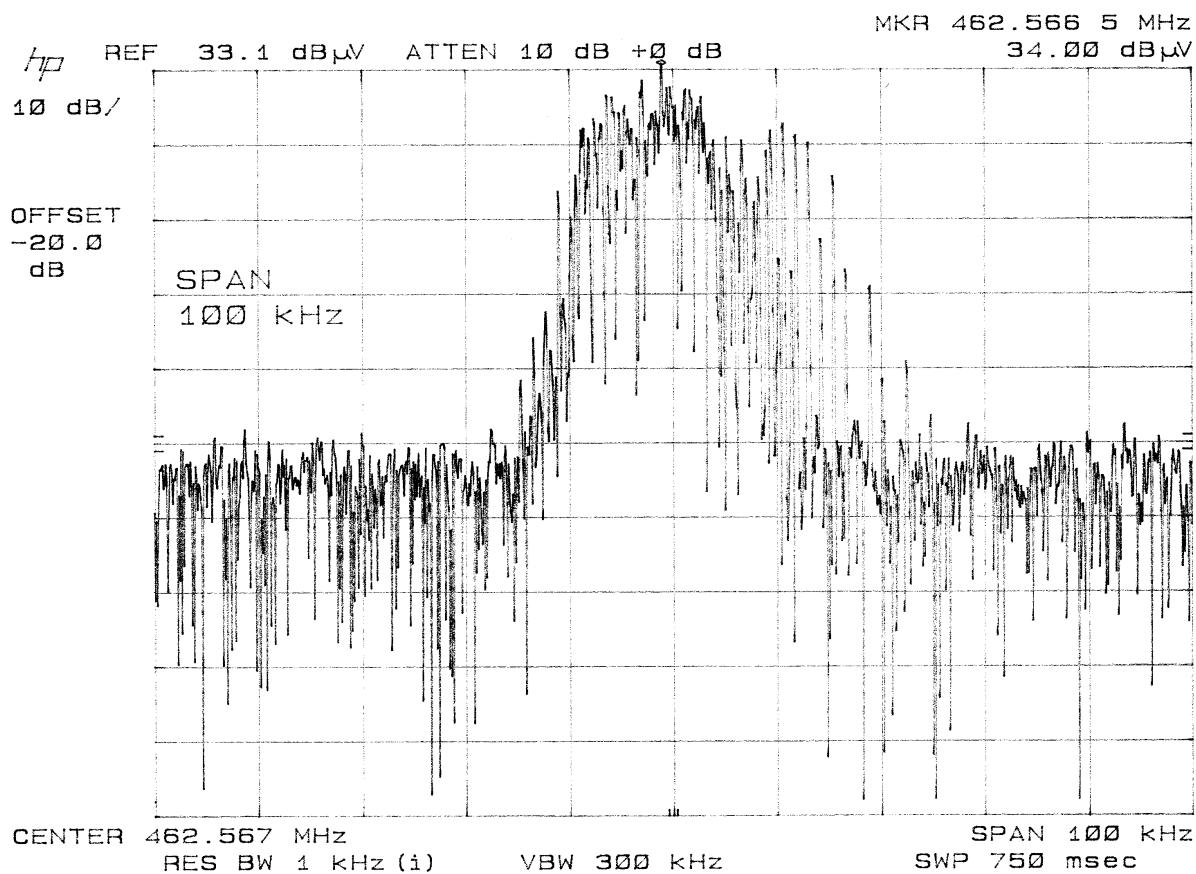
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## OCCUPIED BANDWIDTH PLOT



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