

# TIMCO ENGINEERING INC.

849 NW State Road 45  
Newberry, Florida 32669  
<http://www.timcoengr.com>  
888.472.2424 F 352.472.2030 email: [tei@timcoengr.com](mailto:tei@timcoengr.com)

## FCC Test Report

Product Name: RADIO TRANSCEIVER

FCC ID: Q9S02042108V

Applicant:

**ADVANCED WIRELESS COMMUNICATIONS  
20809 KENSINGTON BLVD.  
LAKEVILLE MINNESOTA 55044**

**Date Receipt: SEPTEMBER 9, 2004**

**Date Tested: SEPTEMBER 23, 2004**

**APPLICANT:** ADVANCED WIRELESS COMMUNICATIONS

**FCC ID:** Q9SAWR2108V

**REPORT #:** A\ADVANCED WIRELESS\_Q9S\505YAUT4\505YAUT4TestReport.doc

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ANTENNA TERMINALS  
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### EXHIBITS CONTAINING:

CONFIDENTIALITY LETTER  
BLOCK DIAGRAM  
SCHEMATIC  
PARTS LIST  
USERS MANUAL  
LABEL SAMPLE  
LABEL LOCATION  
EXTERNAL PHOTOGRAPHS  
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TUNING PROCEDURE  
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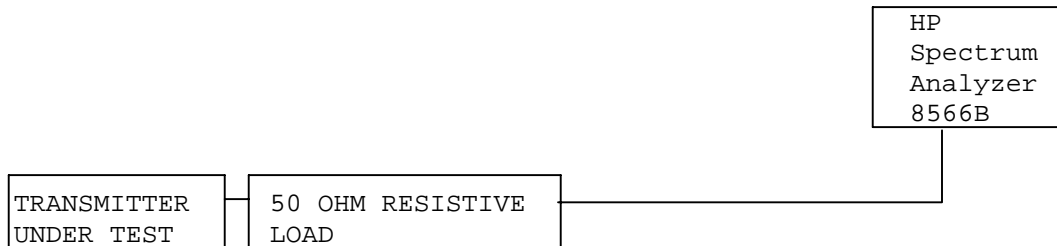
**2.1051**                    **Spurious emissions at antenna terminals (conducted):**  
 Data below shows the level of conducted spurious responses. The carrier was modulated 100% using a 2500 Hz tone. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental. The measurements were made in accordance with standard TIA/EIA-603.

**REQUIREMENTS:**            Emissions must be 50 + 10log(Po) dB below the mean power output of the transmitter.

$$50 + 10\log(1.50) = 51.76 \text{ dB}$$

TF	EF	dB below carrier	TF	EF	dB below carrier	TF	EF	dB below carrier
150	150	0.0	160	160	0.0	173.98	173.98	0.0
	300	73.5		320	77.5		347.96	93.0
	450	83.4		480	74.0		521.94	74.5
	600	80.3		640	82.8		695.92	80.5
	750	73.8		800	72.6		869.90	74.1
	900	78.0		960	81.2		1043.88	83.4
	1050	86.8		1120	86.9		1217.86	76.3
	1200	75.4		1280	78.9		1391.84	81.2
	1350	81.4		1440	79.9		1565.82	77.6
	1500	82.7		1660	74.5		1739.80	68.8

### Method of Measuring Conducted Spurious Emissions



**METHOD OF MEASUREMENT:** The procedure used was TIA/EIA-603 STANDARD without any exceptions. An audio generator was connected to the UUT through a dummy microphone circuit and the output of the transmitter connected to a standard load and from the standard load through a pre-selector filter of the spectrum analyzer. The spectrum was scanned from 400 kHz to at least the tenth harmonic of the fundamental using a HP model 8566B spectrum analyzer. The measurements were made using the shielded room located at TIMCO ENGINEERING INC. 849 N.W. State Road 45, Newberry, Florida 32669.

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**2.1053**                      **Field strength of spurious emissions:**

**NAME OF TEST:**            RADIATED SPURIOUS EMISSIONS

**REQUIREMENTS:**        Emissions must be  $50 + 10\log(P_o)$  dB below the mean power output of the transmitter.

$$50 + 10\log(1.50) = 51.76 \text{ dB}$$

**TEST DATA:**

Emission Frequency MHz	Ant. Polarity	Corrected EUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
150.00	0	30.50	0	-0.45	0
300.00	V	-40.00	0	-1.35	71.4
450.00	H	-42.20	0	-0.45	72.7
600.00	H	-52.10	0	-0.45	82.6
750.00	V	-43.00	0	-0.55	73.6
900.00	V	-52.30	0	-0.55	82.9
1050.00	H	-51.00	1.01	3.15	78.91
1200.00	V	-52.80	1.04	3.75	80.14
1350.00	H	-55.40	1.07	4.35	82.17
1500.00	H	-46.90	1.1	4.95	73.1

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**NAME OF TEST:**              RADIATED SPURIOUS EMISSIONS

**REQUIREMENTS:**        Emissions must be  $50 + 10\log(P_o)$  dB below the mean power output of the transmitter.

$$50 + 10\log(1.50) = 51.76 \text{ dB}$$

**TEST DATA:**

Emission Frequency MHz	Ant. Polarity	Corrected EUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
160.20	0	30.90	0	-0.25	0
320.40	V	-32.20	0	-1.25	64.1
480.60	H	-36.10	0	-0.57	67.32
640.80	H	-51.70	0	-0.19	82.54
801.00	V	-38.90	0	-1.35	70.9
961.20	H	-49.20	0	-1.27	81.12
1121.40	V	-47.60	1.02	3.43	75.84
1281.60	V	-49.70	1.06	4.07	77.34
1441.80	H	-42.70	1.09	4.71	69.73
1602.00	V	-45.20	1.22	5.01	72.06

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**2.1053**                      **Field strength of spurious emissions:**

**NAME OF TEST:**              RADIATED SPURIOUS EMISSIONS

**REQUIREMENTS:**          Emissions must be  $50 + 10\log(P_o)$  dB below the mean power output of the transmitter.

$$50 + 10\log(1.50) = 51.76 \text{ dB}$$

**TEST DATA:**

Emission Frequency MHz	Ant. Polarity	Corrected EUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
174.00	0	32.70	0	-0.25	0
348.00	V	-41.30	0	-1.15	74.9
522.00	H	-39.40	0	-0.56	72.41
696.00	V	-54.80	0	0.13	87.12
870.00	V	-43.10	0	-0.79	76.34
1044.00	H	-56.60	1.01	3.13	86.93
1218.00	V	-43.50	1.04	3.82	73.17
1392.00	V	-55.60	1.08	4.52	84.61
1566.00	V	-49.00	1.11	4.99	77.57
1740.00	V	-34.30	1.15	5.09	62.81

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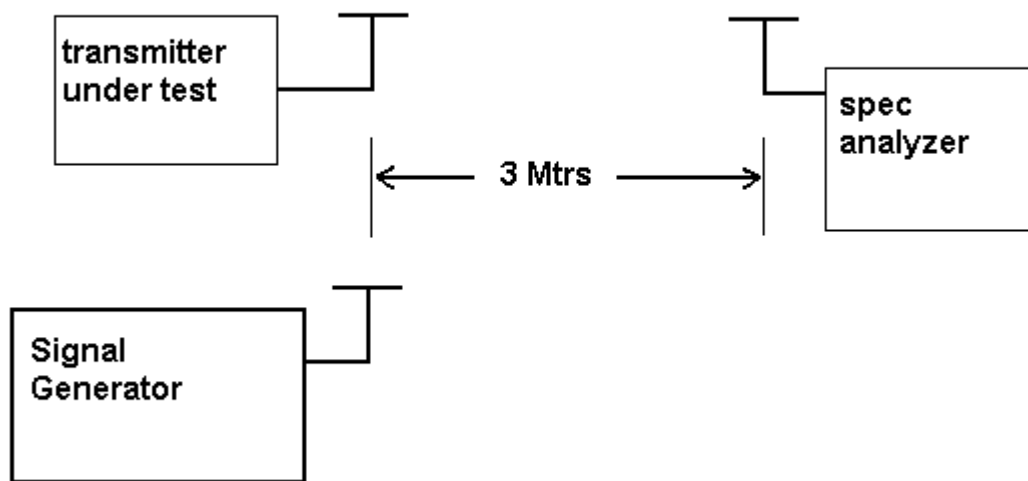
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## Method of Measuring Radiated Spurious Emissions



**METHOD OF MEASUREMENTS:** The tabulated data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. This test was conducted per TIA/EIA STANDARD 603 using the substitution method. Measurements were made at the open field test site of TIMCO ENGINEERING, INC. located at 849 NW State Road 45, Newberry, FL 32669.

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## EMC Equipment List

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
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
Biconnical Antenna	Electro-Metrics	BIA-25	1171	CAL 4/26/01	4/26/03
Log-Periodic Antenna	Electro-Metrics	LPA-25	1122	CAL 10/2/01	10/2/03
Double-Ridged Horn Antenna	Electro-Metrics	RGA-180	2319	CAL 2/17/03	2/17/05
LISN	Electro-Metrics	ANS-25/2	2604	CAL 10/9/01	10/9/03
Termaline Wattmeter	Bird Electronic Corporation	611	16405	out for cal	
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
Digital Multimeter	Fluke	77	35053830	CHAR 1/8/02	1/8/04
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
Digital Thermometer	Fluke	2166A	42032	out for cal	
Frequency Counter	HP	5352B	2632A00165	CAL 8/3/04	8/3/06
Service Monitor	IFR	FM/AM 500A	5182	CAL 11/22/00	Out of Service
Signal Generator	HP	8640B	2308A21464	CAL 2/15/02	2/15/04
Modulation Analyzer	HP	8901A	3435A06868	CAL 9/5/01	9/5/03
Egg Timer	Unk			CHAR 2/1/02	2/1/04
Measuring Tape-20M	Kraftixx	0631-20		CHAR 2/1/02	2/1/04

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