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APPLICANT: LINK TECH COMMUNICATION LTD.

FCC ID: PS2VMR2001A

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GENERAL_INFORMATION_REQUIRED
FOR_TYPE_ACCEPTANCE

2.1033 (c) (1,2) LINK TECH COMMUNICATION LTD. will sell the
FCC ID: PS2VMR2001A VHF Marine transmitter in
quantity, for use under FCC RULES PART 80.

2.202 (c) TECHNICAL_DESCRIPTION

2.1033 (c) (4)

(1) Type of Emission: 16KOG3E For 20 kHz
For 25kHz

$$B_n = 2M + 2DK$$

$$M = 3000$$

$$D = 3.8 \text{ kHz (Peak Deviation)}$$

$$K = 1$$

$$B_n = 2(3.0k) + 2(3.8k)(1) = 6.0 + 7.6 = 13.6 \text{ k}$$

80.205(A) ALLOWED AUTHORIZED BANDWIDTH = 20.00 kHz.

2.1033 (c) (5)

(2) Frequency Range: 156-162 MHz

80.215 (e)

(3) Power Range and Controls: There is a user Power switch for
High/Low Power.

2.1033 (c) (6,7)

(4) Maximum Output Power Rating:

High 21.4 Watts,

Low 1.0Watt

into a 50 ohm resistive load.

(5) DC Voltages and Current into Final Amplifier:

POWER INPUT

FINAL AMPLIFIER ONLY

High

Vce = 13.0 Volts

Ice = 3.75 A.

Pin = 48.75 Watts

Efficiency = 43.9%

Low

Vce = 13.0 VDC

Ice = 1.0 A.

Pin = 13.00 Watts

= 7.7%

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- 2.1033(c)(10) (7) Complete Circuit Diagrams: The circuit diagram is included as EXHIBIT 6. The block diagram is included as EXHIBIT 5.
- 2.1033 (c) (3)(8) Instruction book. The instruction manual is included as EXHIBIT #7.
- 2.1033(c)(9) (9) Tune-up procedure. The tune-up procedure is given in EXHIBIT #8.
- 2.1033(c)(10) (10) Description of all circuitry and devices provided for determining and stabilizing frequency is included in the circuit description in the instruction manual.
- 2.1033(c)(13) (11) Digital modulation. This unit does NOT use digital modulation.

The data required by 2.1046 through 2.1047 is submitted below.

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2.1033(c)(6) RF_power_output.
80.215(e)(1)

RF power is measured by connecting a 50 ohm, resistive wattmeter to the RF output connector. With a nominal battery voltage of 13.0V, and the transmitter properly adjusted the RF output measures:

POWER OUTPUT

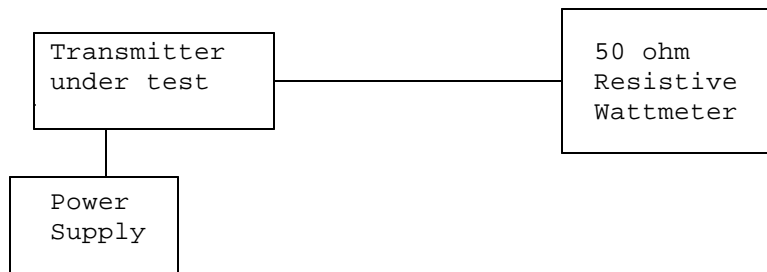
HIGH POWER:

OUTPUT POWER: 21.4 Watts

LOW POWER:

OUTPUT POWER: 1.0 Watt

METHOD OF MEASURING RF POWER OUTPUT



2.1047(a) Voice Modulation characteristics:

(a) AUDIO_FREQUENCY_RESPONSE See page 4.

80.213 (e) AUDIO_LOW_PASS_FILTER

The audio low pass filter is included and the plot is shown in page 5. Rules 80.213(e) for ship stations with a low pass filter.

80.213(d) Audio_input_versus_modulation A plot of the audio input versus deviation is shown in in Pages 6-8.

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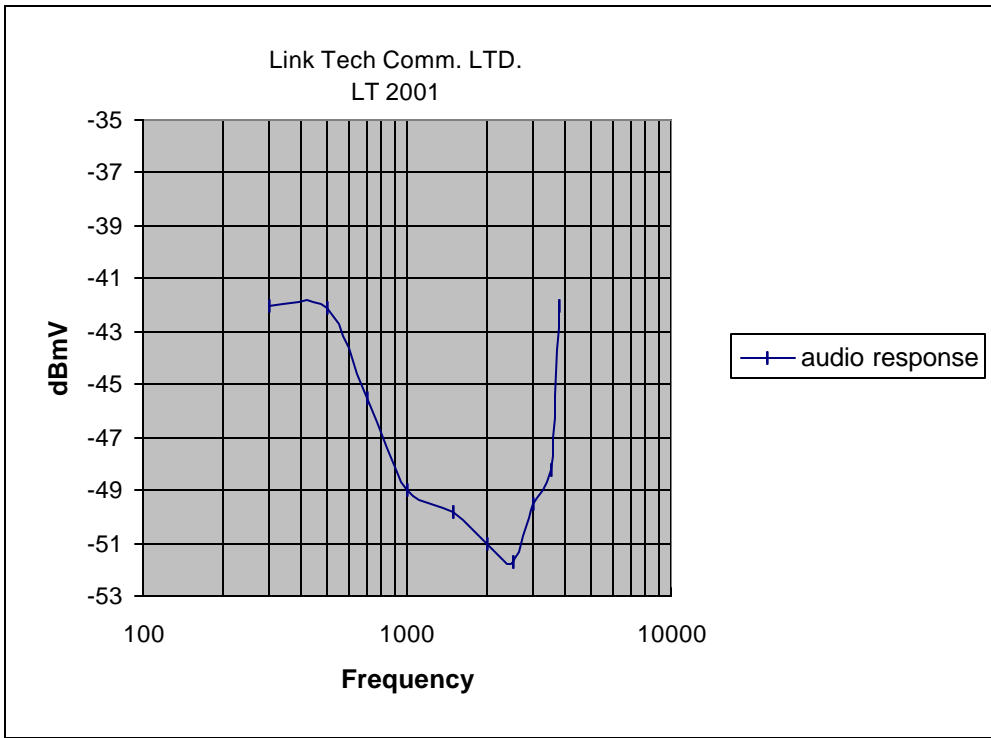
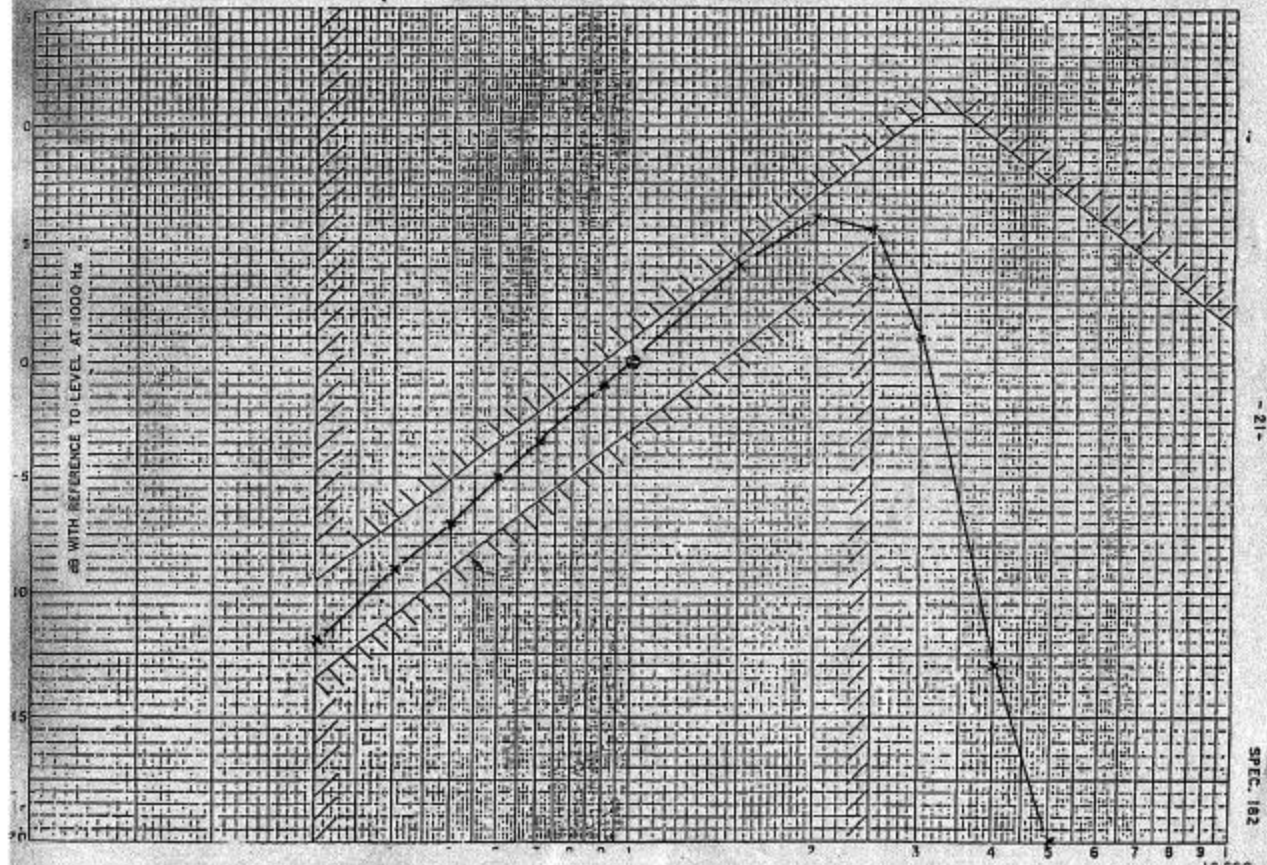


FIG-2
TRANSMITTER AUDIO RESPONSE CHARACTERISTIC

2001 No. 2

SAM



- 21 -

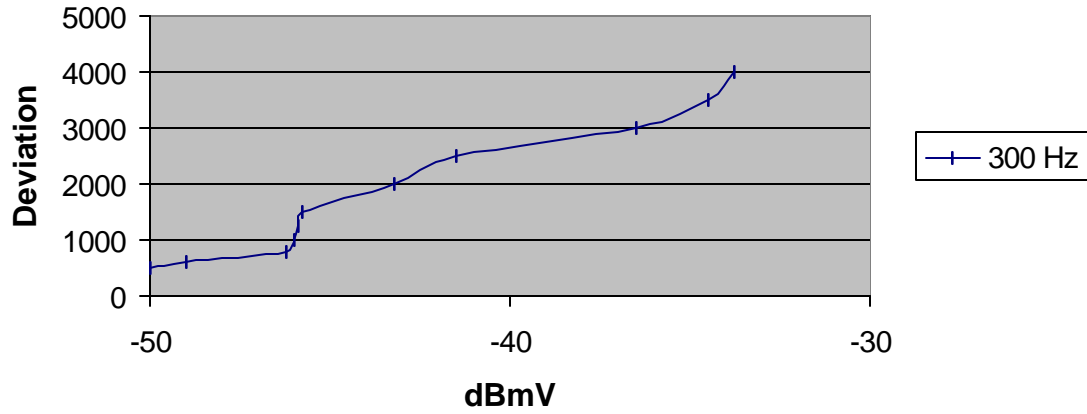
SPEC. 162

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Modulation Limiting
Link Tech Comm. LTD.
LT 2001

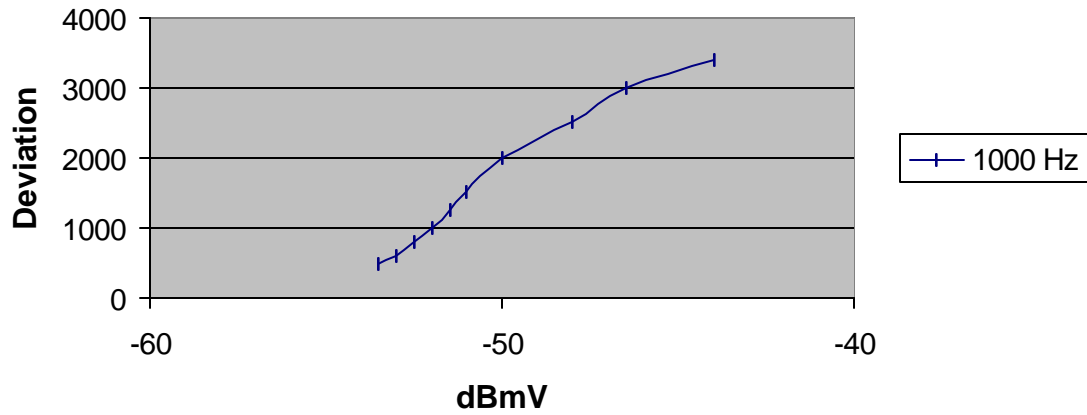


APPLICANT: LINK TECH COMMUNICATION LTD.

FCC ID: PS2VMR2001A

REPORT #: T:\L\LTECH\809YAH1\809YAH1TestReport.doc

Modulation Limiting
Link Tech Comm. LTD.
LT 2001

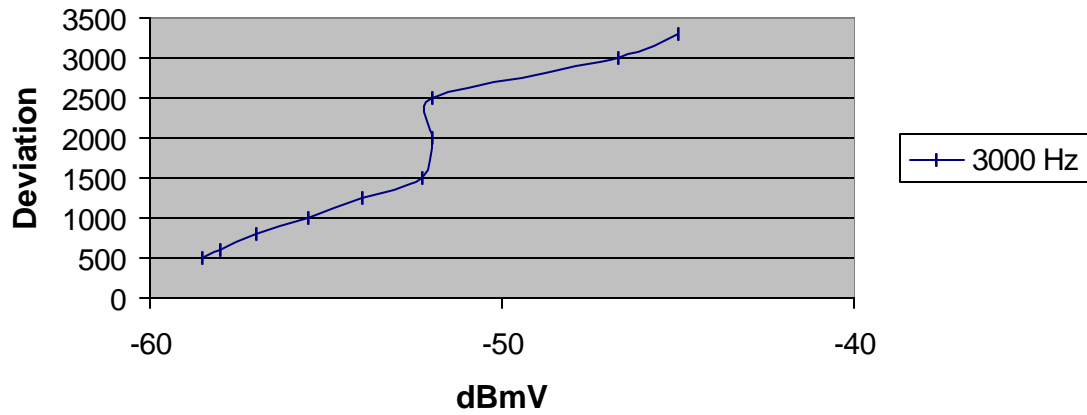


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Modulation Limiting
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LT 2001



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2.2049(c) Occupied_bandwidth:

80.205(a)

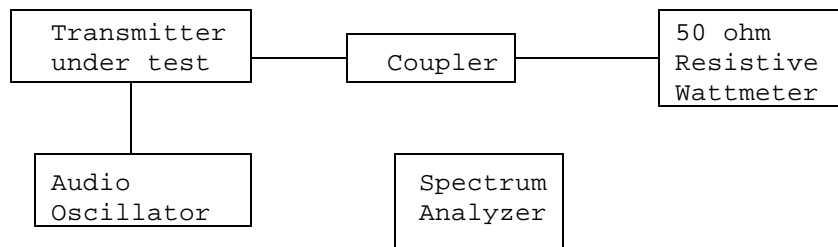
Data in the plots shows that on any frequency removed from the assigned frequency by more than 50%, but not more than 100%: At least 25dB. On any frequency removed from the assigned frequency by more than 100%, but not more than 250%: At least 35dB. On any frequency removed from the assigned frequency by more than 250%, of the authorized bandwidth: At least $43+\log(P)$ dB.

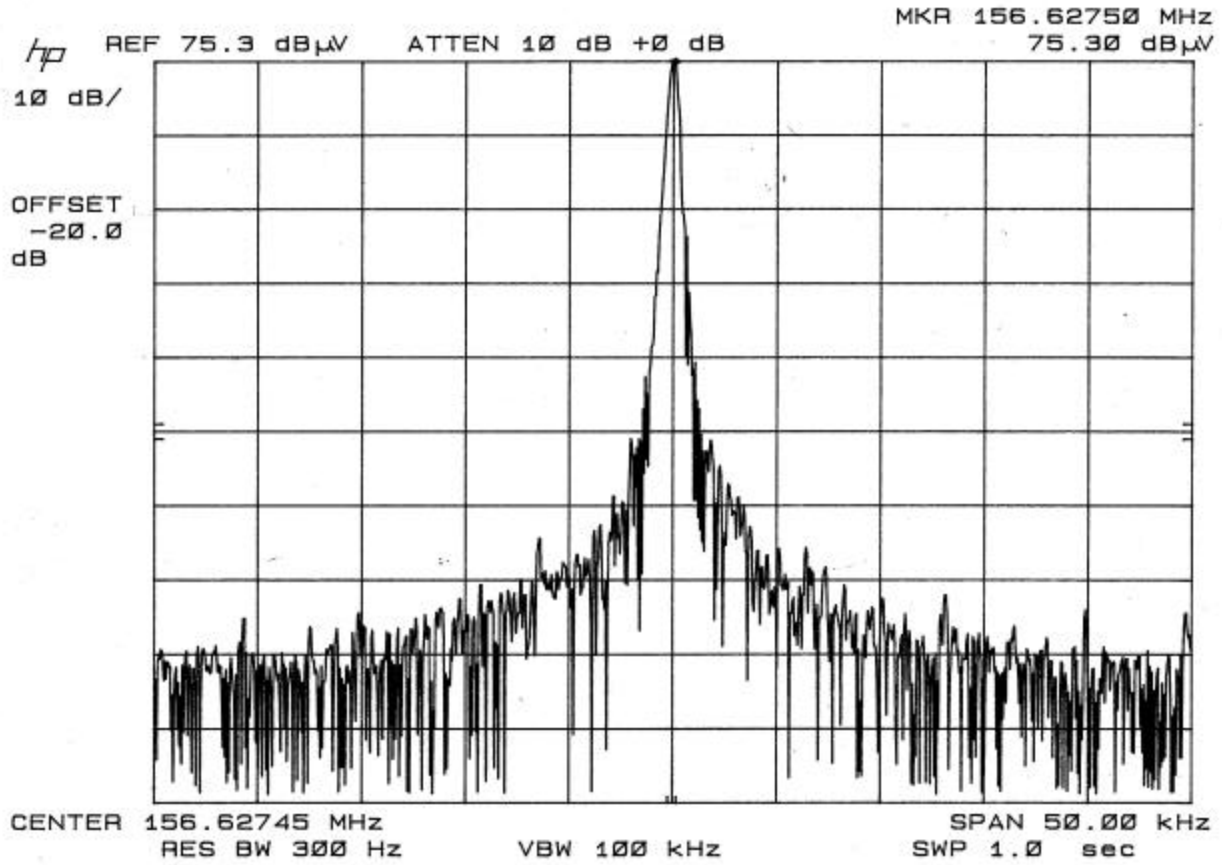
Radiotelephone transmitter with modulation limiter.

Test procedure: TIA/EIA-603 para 2.2.11 , with the exception that various tones were used.

Test procedure diagram

OCCUPIED BANDWIDTH MEASUREMENT

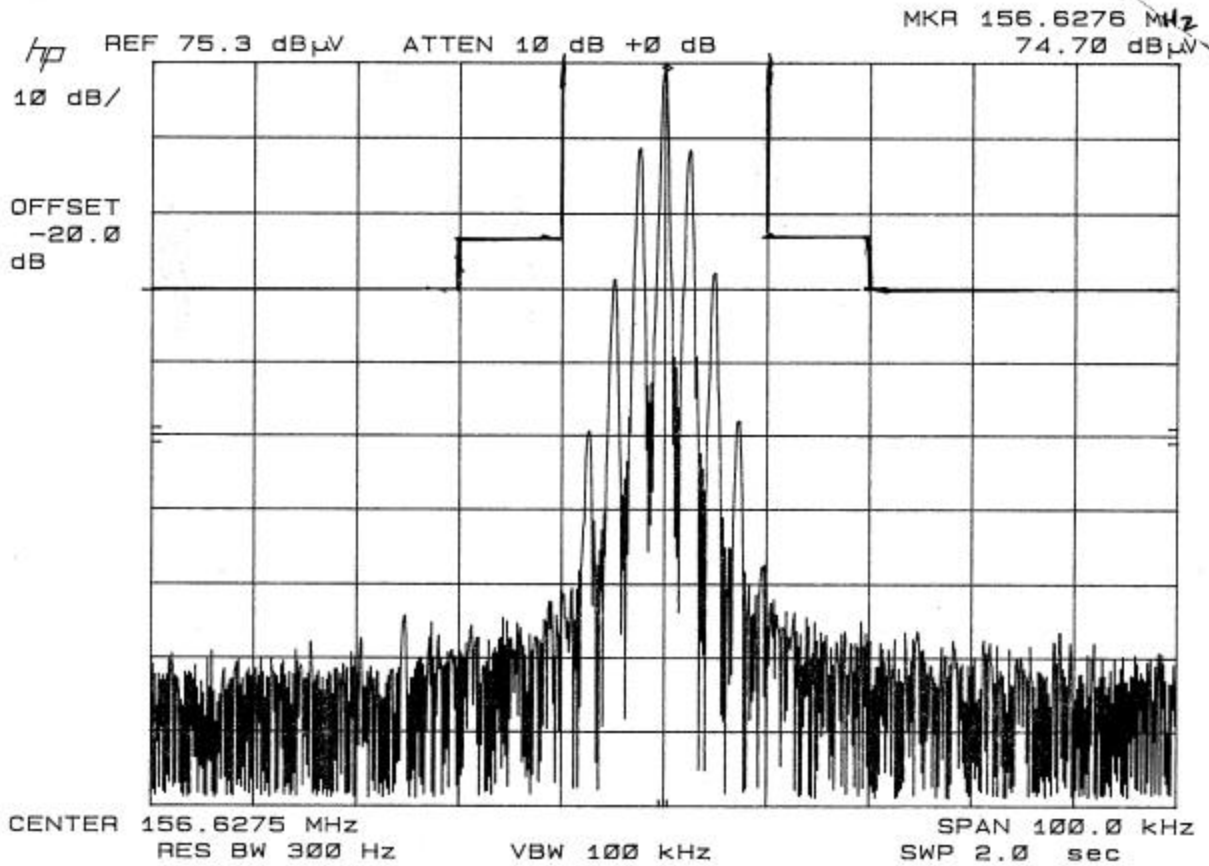




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APPLICANT: LINK TECH COMMUNICATION LTD.

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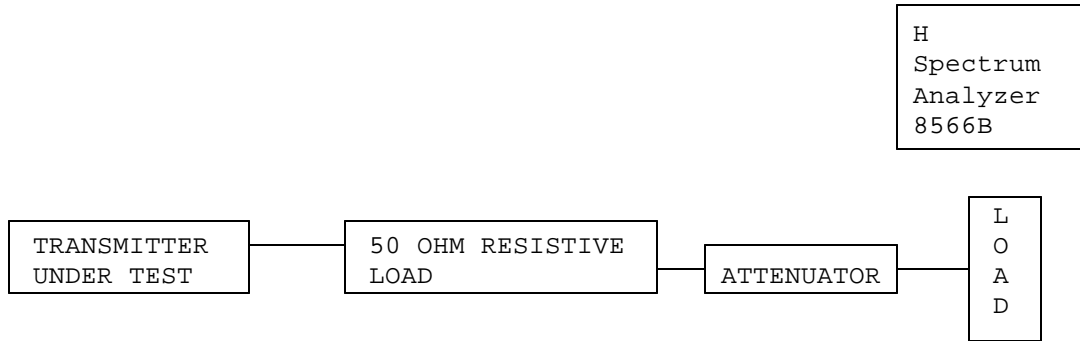
REPORT #: T:\L\LTECH\809YAH1\809YAH1TestReport.doc

2.1051
80.213

Spurious emissions at antenna terminals(conducted):

The data on the following page shows the level of conducted spurious responses. The carrier was modulated 100% using a 2500Hz 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.

Method of Measuring Conducted Spurious Emissions



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2.1051 Continued Spurious_Emissions_at_the_Antenna_Terminals:

REQUIREMENTS: Emissions must be 43 +10log(Po) dB below the mean power output of the transmitter.

HIGH POWER 43 + 10log(21.4) = 56.30 dB
 LOW POWER 43 + 10log(1) = 43.00 dB

HIGH POWER		LOW POWER	
EMISSION		EMISSION	
FREQUENCY	dB BELOW	FREQUENCY	dB BELOW
MHz	CARRIER	MHz	CARRIER

HIGH POWER		LOW POWER	
156.30	00.0	156.60	0.0
313.20	77.3	313.20	76.2
469.80	75.6	469.80	83.8
626.50	95.1	626.50	83.5
783.10	101.1	783.10	89.0
939.70	98.0	939.70	100.9
1096.30	93.6	1096.30	99.0
1253.00	103.4	1253.00	92.2
1409.60	102.4	1409.60	95.2
1566.20	92.8	1566.20	92.1

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 NW STATE ROAD 45, NEWBERRY FLORIDA 32669.

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2.1053(a)(b) Field_strength_of_spurious_emissions:

NAME OF TEST: RADIATED SPURIOUS EMISSIONS

REQUIREMENTS: Emissions must be 43 +10log(Po) dB below the mean power output of the transmitter.

HIGH POWER 43 + 10log(21.4) = 56.30 dB

LOW POWER 43 + 10 LOG(1.0) = 43.0 dB

TEST DATA:

Emission Frequency MHz	ATTN dBc	Margin dB
High Power		
156.60	0.00	0.00
313.20	63.49	7.19
469.80	69.24	12.94
626.50	78.66	22.36
783.10	76.50	20.20
939.70	74.12	17.82
1,096.30	75.93	19.63
1,253.00	70.44	14.14
1,409.60	76.86	20.56
1,566.20	74.59	18.29
Low Power		
156.00	0.00	0.00
313.20	50.60	7.60
469.80	63.95	20.95
626.50	83.47	40.47
783.10	78.01	35.01
939.70	65.73	22.73
1,096.30	67.44	24.44

METHOD OF MEASUREMENT: The tabulated Data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 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 N.W. State Road 45, Newberry, FL 32669.

APPLICANT: LINK TECH COMMUNICATION LTD.

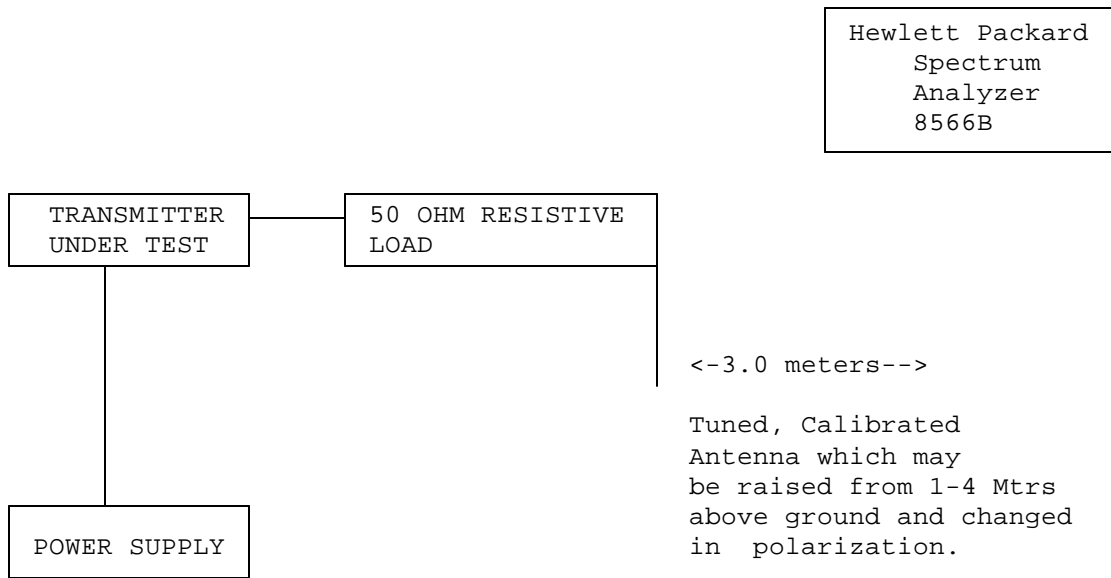
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2.1053(a)(b) Continued Field_strength_of_spurious_emissions:

Method of Measuring Radiated Spurious Emissions



Equipment placed 80 cm above ground on a rotatable platform.

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Frequency stability:

2.1055(a)(2)

80.209(a)

Temperature and voltage tests were performed to verify that the frequency remains within the .0010%,10.0 ppm specification limit, for 20kHz spacing. The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 degrees C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15 second intervals. The worse case number was taken for temperature plotting. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -20 degrees C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15 second intervals. The worst case number was recorded for temperature plotting. This procedure was repeated in 10 degree increments up to + 50 degrees C.

Readings were also taken at minus 25% of the battery voltage of 13.0VDC, which we estimate to be the battery endpoint.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 156.050478 000MHz

TEMPERATURE °C	FREQUENCY MHz	PPM	
REFERENCE_____	156.050478	00.0	
-20_____	156.049149	- 8.52	
-10_____	156.049572	- 5.81	
0_____	156.049997	- 3.08	
+10_____	156.050214	- 1.69	
+20_____	156.050480	0.01	
+30_____	156.050832	2.27	
+40_____	156.051317	5.38	
+50_____	156.051808	8.52	
20oC 0.85% Battery Voltage		156.050498	0.13
1.15% Battery Voltage		156.050470	-0.05

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was -8.52 to 8.52 ppm. The maximum frequency variation over the voltage range was 0.13 ppm.

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TEST EQUIPMENT LIST

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1. X Spectrum Analyzer: HP 8566B-Opt 462, S/N 3138A07786, w/
preselector HP 85685A, S/N 3221A01400, Quasi-Peak Adapter
HP 85650A, S/N 3303A01690 & Preamplifier HP 8449B-OPT H02,
S/N 3008A00372 Cal. 8/31/01 Due 8/31/02
2. X Biconnical Antenna: Eaton Model 94455-1, S/N 1057,
Cal. 10/1/01 Due 10/1/02
3. Biconnical Antenna: Electro-Metrics Model BIA-25, S/N 1171
Cal. 4/26/01 Due 4/26/03
4. Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632
Char. 3/15/00 Due 3/15/01
5. X Log-Periodic Antenna: Electro-Metrics Model LPA-30, S/N 409
Char. 3/15/00 Due 3/15/01
6. X Log-Periodic Antenna: Electro-Metrics Model LPA-25, S/N 1122
Char. 2/10/01 Due 3/10/02
7. Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180,
1-18 GHz, S/N 2319 Cal. 4/27/99 Due 4/27/00
8. 18-26.3GHz Systron Donner Standard Gain Horn #DBE-520-20
No Cal Required
9. Horn 40-60GHz: ATM Part #19-443-6R No Cal Required
10. X Line Impedance Stabilization Network: Electro-Metrics Model
EM-7820, w/NEMA Adapter S/N 2682 Cal. 3/16/01 Due 3/16/02
11. X Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
Char. 1/27/01 Due 1/27/02
12. Frequency Counter: HP Model 5385A, S/N 3242A07460
Char. 11/20/00 Due 11/20/01
13. X Peak Power Meter: HP Model 8900C, S/N 2131A00545
Char. 1/26/01 Due 1/26/02
14. X Open Area Test Site #1-3meters Cal. 12/22/99
15. Signal Generator: HP 8640B, S/N 2308A21464
Cal. 11/15/01 Due 11/15/02
16. Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N
9706-1211 Char. 6/10/00 Due 6/10/01
17. Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153
Char. 11/24/00 Due 11/24/01
18. X AC Voltmeter: HP Model 400FL, S/N 2213A14499
Cal. 10/9/01 Due 10/09/02
19. Digital Multimeter: Fluke Model 77, S/N 43850817
Cal. 11/16/00 Due 11/16/01
20. Oscilloscope: Tektronix Model 2230, S/N 300572
Char. 2/1/01 Due 2/1/02

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