

5.0 TEST RESULTS

5.1 Bandwidth (§15.247(a), ET 96-8;FCC 97-114)

The bandwidth was measured to be 1.71MHz.

5.2 Power Output (§15.247(b)(2), ET 96-8;FCC 97-114)

The EUT's RF power output was found to be -9.75 dBm (.106mW).

5.3 RF Antenna Conducted Spurious Emissions (§15.247(c), ET 96-8;FCC 97-114)

Antenna Conducted Spurious Emissions are tabulated below. All emissions were found to be more than 20dB below the desired signal output.

FREQ (MHZ)	SPUR LEVEL (dBm)	SPEC LIMIT (dBm)	SPEC MARGIN (dB)
32.0	-52.2	-34.8	-17.4
48.0	-63.1	-34.8	-28.3
906.0*	-14.8	-34.8	----
1812.0	-70.5	-34.8	-35.7
2718.0	-74.7	-34.8	-39.9

*906 MHz is the desired signal. The Spec limit is 20 below this level.

5.4 Radiated Emissions (§15.24205, §15.209, ET 96-8;FCC 97-114)

The initial Radiated Emissions test results are tabulated below. The EUT exceeded the spec limits as it was first tested.

RBW / VBW = 120KHz / 300KHz, Detector = Quasi Peak, Distance = 3 meters.									
Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
80.0	H	2.50	60.6	26.0	2.7	6.7	44.0	49.6	-5.6
152.0	H	2.00	44.0	26.0	3.7	8.9	30.6	54.0	-23.4
906.0	H	1.00	93.7	26.0	10.7	24.1	102.5	NONE	---
906.0	V	1.00	99.3	26.0	10.7	24.1	108.1	NONE	---
RBW / VBW = 1MHz / 30Hz, Detector = Peak, Distance = 3 meters.									
906.0	H	1.00	97.0	26.0	10.7	24.1	105.8	NONE	
906.0	V	1.00	105.9	26.0	10.7	24.1	114.7	NONE	
RBW / VBW = 1MHz / 30Hz, Detector = Peak, Distance = 1 meters.									
2718 (3x)	H	1.25	59.8	0.0	8.1	29.6	97.5	63.5	34.0
3624 (4x)	H	1.25	34.4	0.0	10.7	32.8	77.9	63.5	14.4
4530 (5x)	H	1.25	22.0	0.0	13.3	32.1	67.4	63.5	3.9

The EUT was then modified as described in Section 6.0 and Radiated Emissions were measured

again, with the results tabulated below. Note that it will be necessary to modify each unit in order to maintain compliance to the test standard.

RBW / VBW = 1MHz / 30Hz, Detector = Peak, Distance = 1 meters.									
Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
2718 (3x)	H	1.25	24.7	0.0	8.1	29.6	62.4	63.5	-1.1
3624 (4x)	H	1.25	18.4	0.0	10.7	32.8	61.9	63.5	-1.6
4530 (5x)	H	1.25	13.9	0.0	13.3	32.1	59.3	63.5	-4.2

5.5 Power Spectral Density (§15.247(d), ET 96-8;FCC 97-114)

The Power spectral density was found to be -39.2dBm in a 3KHz band.

5.6 Processing Gain (§15.247(c), ET 96-8;FCC 97-114)

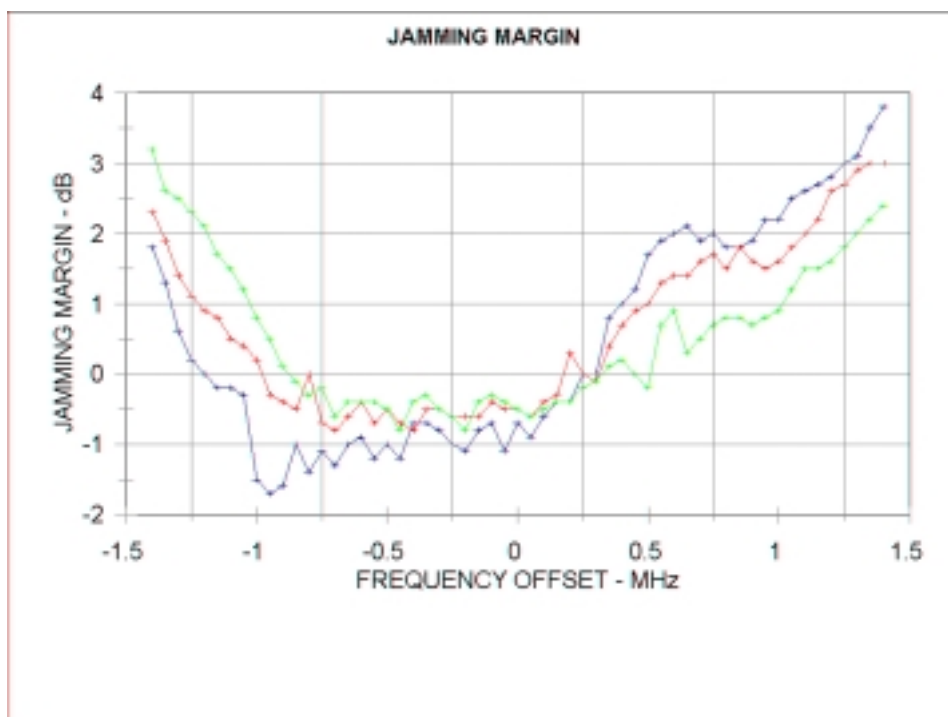
Three units were tested with results as tabulated and plotted below.

FORMULA FOR PROCESSING GAIN:

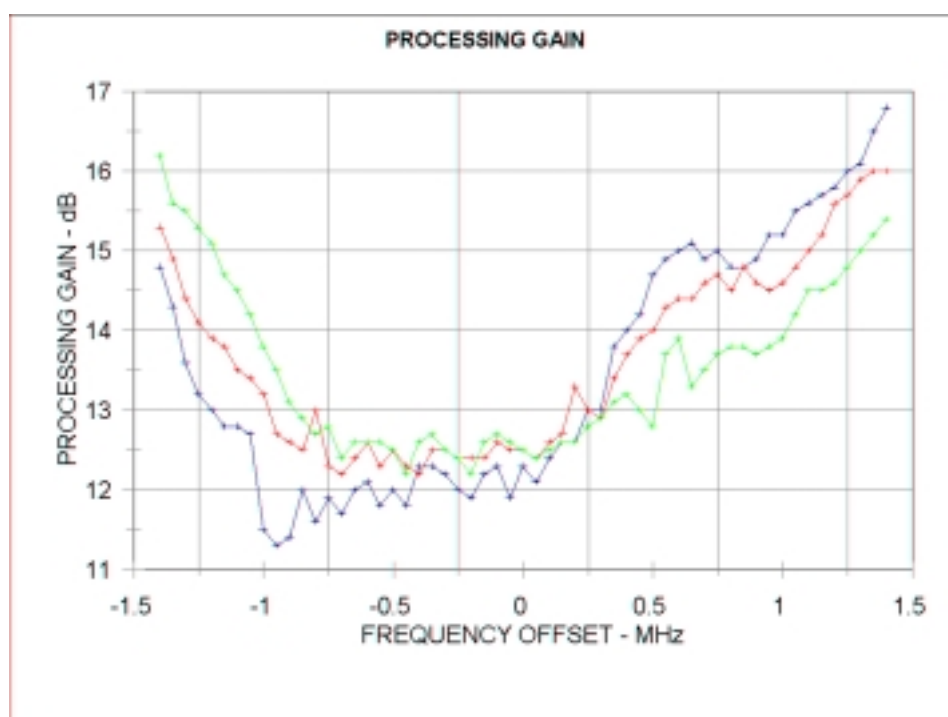
$$G_p = [L_{sys} + (S/N)_{out}] = M_j ; L_{sys} = 0\text{dB}$$

$$(S/N)_{out} = 13\text{dB for } 10^{-5} \text{ BER}$$

dF (MHz)	UNIT 1		UNIT 2		UNIT 3	
	Mj (dB)	Gp (dB)	Mj (dB)	Gp (dB)	Mj (dB)	Gp (dB)
1.40	3.8	16.8	3.0	13.0	2.4	15.4
1.35	3.5	16.5	3.0	16.0	2.2	15.2
1.30	3.1	16.1	2.9	16.0	2.0	15.0
1.25	3.0	16.0	2.7	15.9	1.8	14.8
1.20	2.8	15.8	2.6	15.7	1.6	14.6
1.15	2.7	15.7	2.2	15.6	1.5	14.5
1.10	2.6	15.6	2.0	15.2	1.5	14.5
1.05	2.5	15.5	1.8	15.0	1.2	14.2
1.00	2.2	15.2	1.6	14.8	0.9	13.9
0.95	2.2	15.2	1.5	14.6	0.8	13.8
0.90	1.9	14.9	1.6	14.5	0.7	13.7
0.85	1.8	14.8	1.8	14.6	0.8	13.8
0.80	1.8	14.8	1.5	14.8	0.8	13.8
0.75	2.0	15.0	1.7	14.5	0.7	13.7
0.70	1.9	14.9	1.6	14.7	0.5	13.5
0.65	2.1	15.1	1.4	14.6	0.3	13.3
0.60	2.0	15.0	1.4	14.4	0.9	13.9
0.55	1.9	14.9	1.3	14.4	0.7	13.7
0.50	1.7	14.7	1.0	14.3	-0.2	12.8
0.45	1.2	14.2	0.9	14.0	0.0	13.0
0.40	1.0	14.0	0.7	13.9	0.2	13.2
0.35	0.8	13.8	0.4	13.7	0.1	13.1
0.30	0.0	13.0	-0.1	13.4	-0.1	12.9
0.25	0.0	13.0	0.0	12.9	-0.2	12.8
0.20	-0.4	12.6	0.3	13.0	-0.4	12.6
0.15	-0.4	12.6	-0.3	13.3	-0.4	12.6
0.10	-0.6	12.4	-0.4	12.7	-0.5	12.5
0.05	-0.9	12.1	-0.6	12.6	-0.6	12.4
-0.00	-0.7	12.3	-0.5	12.4	-0.5	12.5
-0.05	-1.1	11.9	-0.5	12.5	-0.4	12.6
-0.10	-0.7	12.3	-0.4	12.5	-0.3	12.7
-0.15	-0.8	12.2	-0.6	12.6	-0.4	12.6
-0.20	-1.1	11.9	-0.6	12.4	-0.8	12.2
-0.25	-1.0	12.0	-0.6	12.4	-0.6	12.4
-0.30	-0.8	12.2	-0.5	12.4	-0.5	12.5
-0.35	-0.7	12.3	-0.5	12.5	-0.3	12.7
-0.40	-0.7	12.3	-0.8	12.5	-0.4	12.6
-0.45	-1.2	11.8	-0.7	12.2	-0.8	12.2
-0.50	-1.0	12.0	-0.5	12.3	-0.5	12.5
-0.55	-1.2	11.8	-0.7	12.5	-0.4	12.6
-0.60	-0.9	12.1	-0.4	12.3	-0.4	12.6
-0.65	-1.0	12.0	-0.6	12.6	-0.4	12.6
-0.70	-1.3	11.7	-0.8	12.4	-0.6	12.4
-0.75	-1.1	11.9	-0.7	12.2	-0.2	12.8
-0.80	-1.4	11.6	0.0	12.3	-0.3	12.7
-0.85	-1.0	12.0	-0.5	13.0	-0.1	12.9
-0.90	-1.6	11.4	-0.4	12.5	0.1	13.1
-0.95	-1.7	11.3	-0.3	12.6	0.5	13.5
-1.00	-1.5	11.5	0.2	12.7	0.8	13.8
-1.05	-0.3	12.7	0.4	13.2	1.2	14.2
-1.10	-0.2	12.8	0.5	13.4	1.5	14.5
-1.15	-0.2	12.8	0.8	13.5	1.7	14.7
-1.20	0.0	13.0	0.9	13.8	2.1	15.1
-1.25	0.2	13.2	1.1	13.9	2.3	15.3



-1.30	0.6	13.6	1.4	14.1	2.5	15.5
-1.35	1.3	14.3	1.9	14.4	2.6	15.6



-1.40	1.8	14.8	2.3	14.9	3.2	16.2
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6.0 DESCRIPTION OF CIRCUIT MODIFICATIONS

Two modifications were made to the EUT in order to gain compliance with the test standard. They are described as follows:

- 1.1_ Add an 0805 size 47pF chip capacitor between the base of Q6 and GND. This part is to be located directly across the from C35.
- 1.2_ Change the Q6 Collector resistor (R83) from 10 ohms to 22 ohms.

7.0 Certification of Test Results

The tests and data evaluations of this report have been prepared by me or under my direct supervision. All tests were performed in accordance with the applicable specifications and procedures of FCC Title 47 CFR Part 2, Part 15 / Subpart C and ET Docket No. 96-8; FCC 97-114.

The test data, data evaluations and equipment configurations presented herein are a true and accurate representation of the measurements of the test sample(s) as of the date(s) of the tests and the conditions specified.

written signature of authorized signer

Date

typed signature of authorized signer

Title of signer

