

Test Report... FCC ID: O78SCU99BL

**Assembled from Manufacture Measurements performed to EIA/TIA-603
and
Measurements made at ADRad Communications, Inc.**

2 May 2001

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1.0 Specification Information

Model Numbers:	SCU99BL, SCU32BL, or SCU08B (Same RF and controller)	
Number of Channels:	99, 32, or 8 channels dependent on model number.	
Frequency Range:	450 to 480 MHz	
Channel Spacing:	12.5 or 25 kHz	
Transmitter Power Output	1 or 4 watt, user or programmer selectable. (± 1 dB)	
Battery Voltage:	7.5 volts	
Current Drain:	Tx...	1450 mA @ 4 watts
		750 mA @ 1 watt
	Rx...	160 mA @ 2 50 mW of Rx audio
		50 mA @ standby
Antenna Impedance:	50 Ohms	
Frequency Stability:	± 2.5 ppm	
Temperature Range:	-30°C to $+60^{\circ}\text{C}$	
Nominal Battery Voltage:	7.5 VDC (6 cells NiCad or NMHy)	
Emission Designations:	12.5 kHz Channel	(2x2.5kHz deviation)+(2x3kHz) 11k0F3E
	25.0 kHz Channel	(2x5.0kHz deviation)+(2x3kHz) 16k0F3E
	for 3 kHz maximum modulation frequency	

All measurements made to TIA/EIA-603 procedures

2.0 RF Power Output

At 5 watt Output Level

<i>DC Voltage @ -15%</i>	<i>DC Voltage @ Nominal 7.5 VDC</i>	<i>DC Voltage @+15%</i>
4.0 Watts	4.2 Watts	4.2 Watts

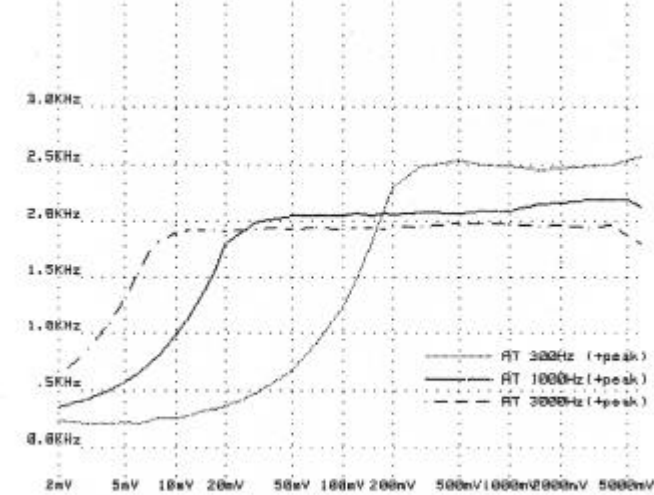
At 1 watt Output Level

<i>DC Voltage @ -15%</i>	<i>DC Voltage @ Nominal 7.5 VDC</i>	<i>DC Voltage @+15%</i>
0.9 Watts	0.95 Watts	1.00 Watts

3.0 Modulation Characteristics

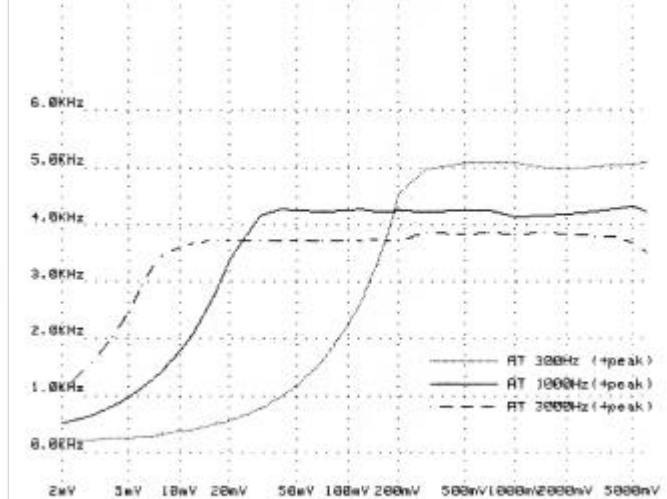
Mic input level , Mic input Frequency US Deviation [GRAPH]

NP022001 01 168.8500MHz 1.8W 7.500 HU 22 Jan 2000 06:54:53 Room Temperature



Mic input level , Mic input Frequency US Deviation [GRAPH]

NP022001 01 168.8500MHz 1.8W 7.500 HU 25 Nov 1999 13:14:01 Room Temperature



Mic input level , Mic input Frequency US Deviation [TABLE]

NP022001 01 168.8500MHz 1.8W 7.500 HU 22 Jan 2000 06:55:34 Room Temperature

Mic input level [mV]	Mic input frequency Deviation of 300Hz [KHz]	Mic input frequency Deviation of 1000Hz [KHz]	Mic input frequency Deviation of 3000Hz [KHz]
2.0	0.23	0.21	0.34
3.0	0.20	0.18	0.32
4.0	0.21	0.16	0.47
5.0	0.22	0.18	0.53
6.0	0.21	0.20	0.60
7.0	0.23	0.22	0.74
8.0	0.25	0.21	0.80
10.0	0.25	0.24	0.94
12.0	0.27	0.26	1.09
15.0	0.32	0.28	1.39
17.0	0.33	0.30	1.54
20.0	0.36	0.33	1.80
30.0	0.47	0.43	1.99
40.0	0.59	0.53	2.02
50.0	0.68	0.65	2.04
70.0	0.95	0.85	2.05
100.0	1.25	1.15	2.05
120.0	1.48	1.44	2.07
150.0	1.81	1.81	2.08
180.0	2.13	2.11	2.08
200.0	2.28	2.28	2.08
300.0	2.58	2.58	2.07
500.0	3.05	3.05	2.09
700.0	3.50	3.50	2.09
1000.0	4.25	4.25	2.10
1500.0	4.99	4.99	2.15
2000.0	4.96	4.96	2.16
3000.0	4.96	4.96	2.18
4000.0	5.00	5.00	2.18
5000.0	5.03	5.03	2.18
6000.0	5.07	5.07	2.13

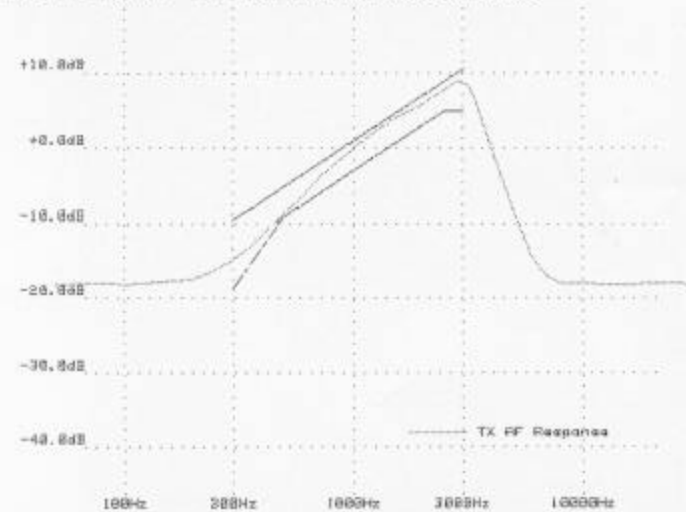
Mic input level , Mic input Frequency US Deviation [TABLE]

NP022001 01 168.8500MHz 1.8W 7.500 HU 25 Nov 1999 13:14:45 Room Temperature

Mic input level [mV]	Mic input frequency Deviation of 300Hz [KHz]	Mic input frequency Deviation of 1000Hz [KHz]	Mic input frequency Deviation of 3000Hz [KHz]
2.0	0.23	0.20	0.34
3.0	0.21	0.18	0.32
4.0	0.24	0.23	0.47
5.0	0.26	0.26	0.53
6.0	0.27	0.25	0.60
7.0	0.28	0.28	0.74
8.0	0.31	0.33	0.80
10.0	0.37	0.33	0.94
12.0	0.39	0.39	1.09
15.0	0.46	0.43	1.39
17.0	0.50	0.49	1.54
20.0	0.55	0.53	1.80
30.0	0.76	0.75	1.99
40.0	0.97	0.96	2.02
50.0	1.17	1.15	2.04
70.0	1.60	1.57	2.05
100.0	2.23	2.22	2.05
120.0	2.66	2.64	2.07
150.0	3.32	3.30	2.08
180.0	3.98	3.96	2.08
200.0	4.54	4.52	2.08
300.0	4.98	4.96	2.07
500.0	5.08	5.06	2.09
700.0	5.09	5.01	2.09
1000.0	5.09	5.06	2.10
1500.0	4.99	4.99	2.15
2000.0	4.98	4.98	2.16
3000.0	5.01	5.19	2.18
4000.0	5.03	5.09	2.18
5000.0	5.06	4.88	2.18
6000.0	5.08	4.83	2.13

TX Audio Response [Constant input level] [GRAPH]

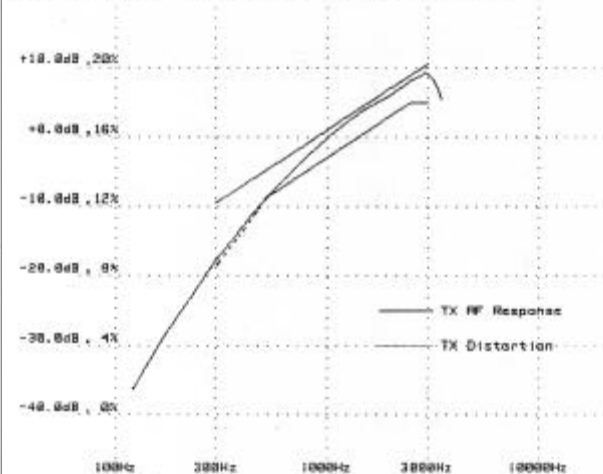
NP022001 01 168.8500MHz 1.8W 7.500 HU 22 Jan 2000 06:11:30 Room Temperature



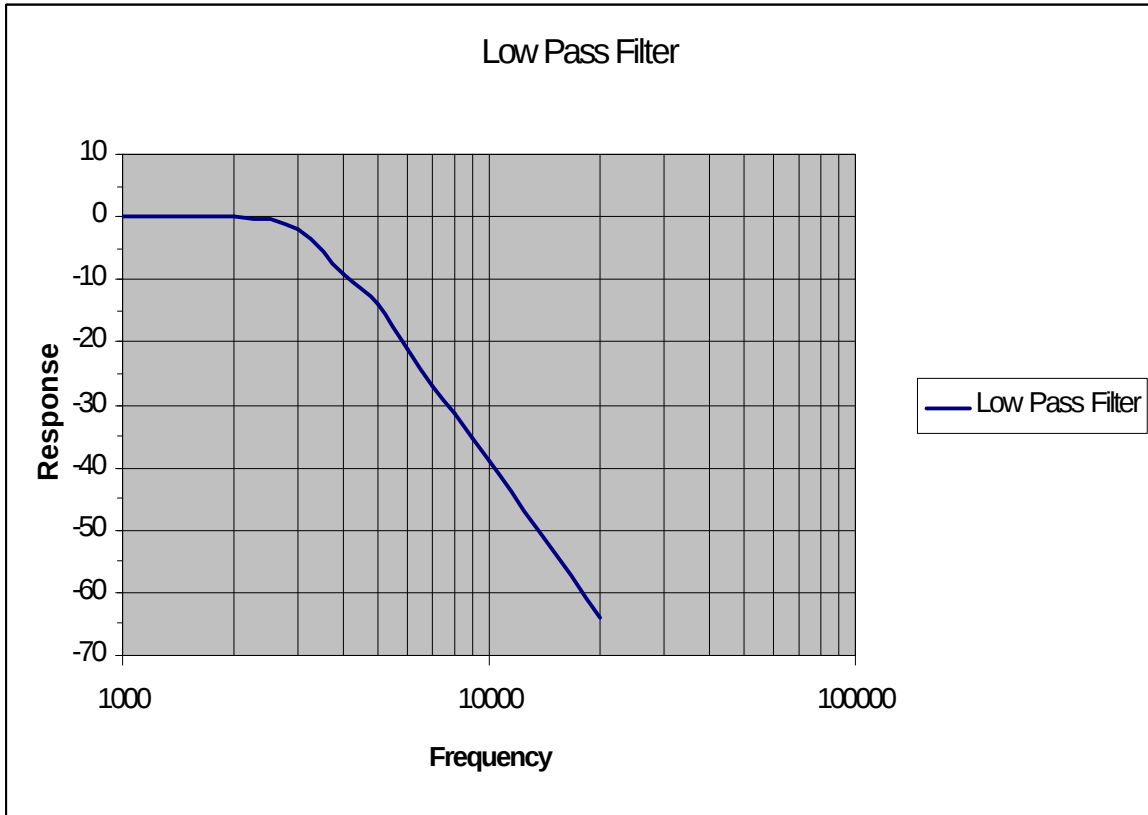
Narrow Band Mode

TX Audio Response [Constant deviation] & TX Distortion [GRAPH]

NP022001 01 168.8500MHz 1.8W 7.500 HU 25 Nov 1999 12:58:15 Room Temperature

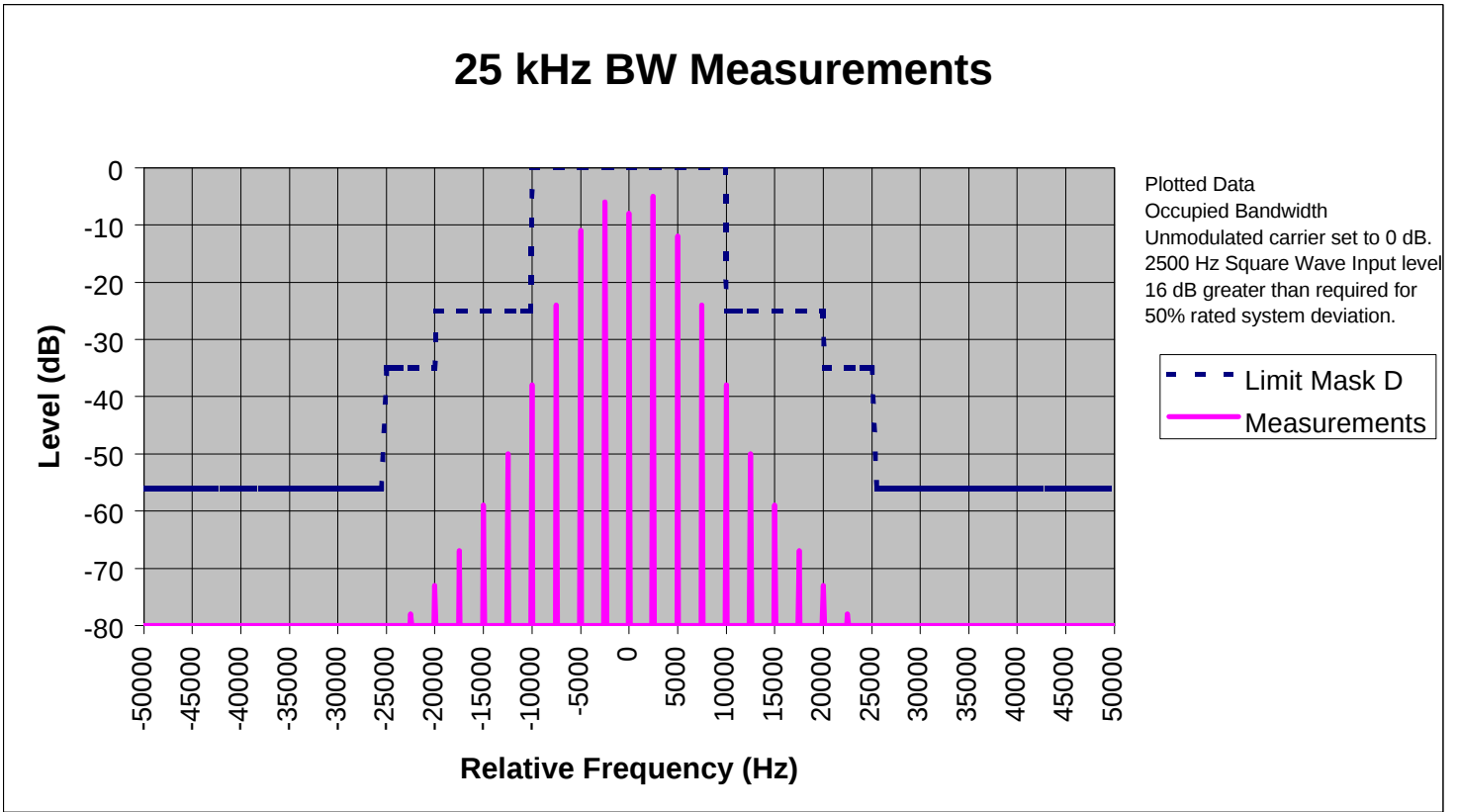
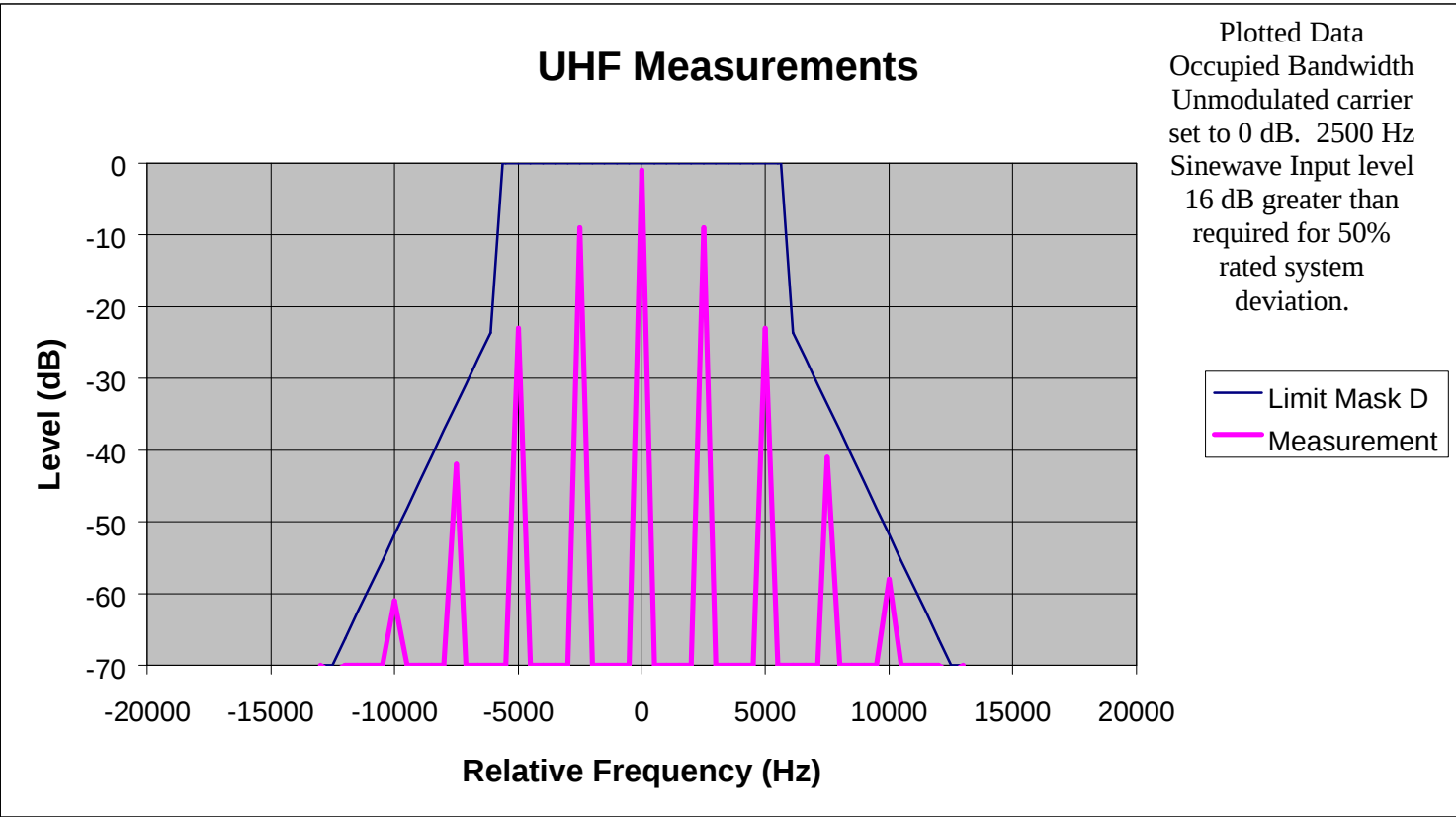


Wide Band Mode



4.0 Occupied Bandwidth

Plotted from data taken.
12.5 kHz Bandwidth Measurements



5.0 Spurious Emissions (Conducted)

Requirement is – 56 dBc at the 4 watt level, -50 dBc at the one watt level.

CHANNEL SPACING	: 12.5 KHz	TEST METHOD	: EIA
SYSTEM DEVIATION	: 2.5 KHz	TEST DEVIATION	: 1.5 KHz
SUPPLY VOLTAGE	: 7.50 Volts		
RATED AUDIO POWER	: .10 Watts		
SPK IMPEDANCE	: 8.0 Ohms		
Test Operator	: HU	1st IF	-34.300MHz
Measurement Date	: 20 Jan 2000	2nd IF	-455.000KHz
Issued Date	08:08:27 / 20 Jan 2000		

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----- TX -----
SERIAL NUMBER 01 01 01 01
TEMPERATURE °C +25.0 +25.0 +25.0 +25.0
RF FREQUENCY MHz 450.0500 460.0500 470.0500 480.0500
TEST VOLTAGE V 7.50 7.50 7.50 7.50
CARRIER POWER W 4.07 4.02 4.11 3.99
POWER DOWN 1min X -.78 -1.45 -2.20 -1.40
POWER DOWN 3min X -.84 -2.44 -3.75 -3.27
MOD LIMIT (+) KHz 2.07 2.20 2.14 1.72
MOD LIMIT (-) KHz 1.97 2.04 1.97 1.73
SPURIOUS 1 dB -71.0 -75.2 -72.0 -72.5
  at RF FREQ MHz 449.970 460.147 469.943 480.130
SPURIOUS 2 dB -73.3 -75.7 -72.7 -72.7
  at RF FREQ MHz 450.133 460.227 470.142 480.155
SPURIOUS 3 dB -83.0 -82.2 -82.7 -82.3
  at RF FREQ MHz 450.717 460.717 471.217 478.550
SPURIOUS 4 dB -81.8 -82.8 -82.7 -82.3
  at RF FREQ MHz 205.025 456.716 463.249 511.253
SPURIOUS 5 dB -70.7 -68.3 -67.3 -65.2
  at RF FREQ MHz 916.964 933.780 950.630 967.514

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Spurious with four watt output, dBc ref to fundamental.

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----- ( LOW POWER ) -----
CARRIER POWER W 1.13 1.10 1.14 1.18
SPURIOUS 1 dB -78.2 -78.3 -75.2 -78.0
  at RF FREQ MHz 431.883 463.550 470.383 495.550
SPURIOUS 2 dB -75.3 -77.3 -77.3 -77.0
  at RF FREQ MHz 205.025 565.060 534.656 701.938
SPURIOUS 3 dB -63.3 -62.3 -60.7 -64.3
  at RF FREQ MHz 916.964 933.780 1908.871 967.514

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Spurious with One watt output, dBc ref to fundamental

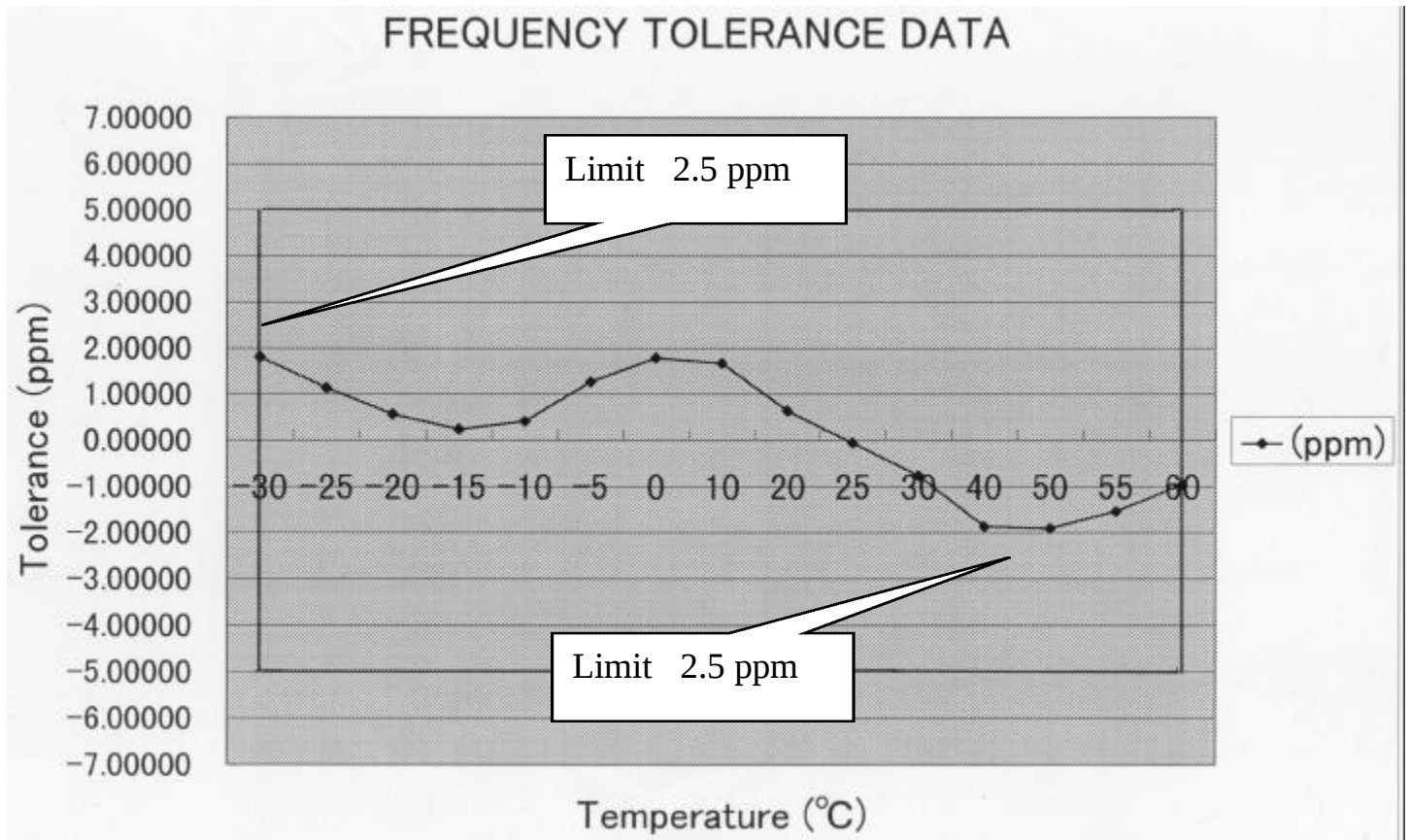
Other Spurious is greater than –76 dBc.

6.0 Frequency Stability

FCC Limit is +/- 2.5 ppm.

Frequency at -15% = 465,050,040 Hz
 Frequency at 7.5 VDC = 465,050,070 Hz
 Frequency at +15% = 465,050,080 Hz

DC Voltage @ -15%	DC Voltage @ Nominal 7.5 VDC	DC Voltage @ +15%
+40 Hz (+0.09 ppm)	+70 Hz (+0.15 ppm)	+80 Hz (+0.17 ppm)



7.0 Transient Frequency Characteristics

