FCC PART 90 TYPE APPROVAL
EMI MEASUREMENT AND TEST REPORT

For

GENEX TELECOM CO., LTD.

6F FARMAX B/D 796-27 Bangbae-Dong, Seocho-Gu,
Seoul, 137-830, Korea

FCC ID: PM3GX80

2004-03-10

This Report Concerns:	**Equipment Type:**
☒ Original Report	Transceiver, VHF, PTT

Test Engineer:	Hang Tan
Report No.:	R0402182
Test Date:	2004-02-24
Reviewed By:	Ming Jing
Prepared By:	Bay Area Compliance Laboratory Corporation 230 Commercial Street Sunnyvale, CA 94085 Tel: (408) 732-9162 Fax: (408) 732 9164

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *GENEX Telecom CO., LTD.'s* Model: *GX-80* or the "EUT" as referred to in this report is a transceiver, VHF, PTT, which measured approximately 9.9"L x 2.5"W x 1.75"H.

The EUT operates at 150.8975 – 173.9875 MHz with maximum power of 36.83 dBm (4.819W), frequency tolerance 2.5ppm, emission designator 6K17F3E..

**The test data gathered are from production sample serial number 00000001 provided by the manufacturer.*

Objective

This type approval report is prepared on behalf of *GENEX Telecom CO., LTD.* in accordance with Part 2 and Part 90 of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, spurious emission at antenna terminal, band edge, conducted and radiated margin.

Related Submittal(s)/Grant(s)

No Related Submittals

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following individual parts:

Part 90 – Private Land Mobile Radio Service

Applicable Standards: TIA EIA 137-A, TIA EIA 98-C, TIA/EIA-603, ANSI 63.4-2001, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Open Area Test site used by Bay Area Compliance Laboratory Corporation to collect radiated and conducted emission measurement data is located in the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA.

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2001.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratory Corporation is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (NVLAP). The scope of the accreditation covers the FCC Method - 47 CFR Part 15 - Digital Devices, IEC/CISPR 22: 1998, and AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment test methods under NVLAP Lab Code 200167.

SYSTEM TEST CONFIGURATION

Justification

The host system was configured for testing according to ANSI C63.4-2001.

The EUT was tested in the normal (native) operating mode to represent *worst*-case results during the final qualification test.

Block Diagram

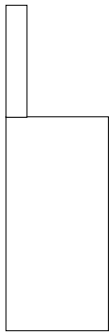
Please refer to Exhibit D.

Equipment Modifications

No modifications were necessary for the EUT to comply with the applicable limits and requirements.

Test Setup Block Diagram

The EUT is a standalone device.



EUT

SUMMARY OF TEST RESULTS

FCC RULE	DESCRIPTION OF TEST	RESULT
§ 2.1046, § 90.205	RF power output	Compliant
§ 2.1047 § 90.207	Modulation Characteristics	Compliant
§ 2.1049 § 90.209	Emission, Occupied Bandwidth	Compliant
§ 2.1051 § 90.210	Spurious emissions at antenna terminals	Compliant
§ 2.1053 § 90.210	Field strength of spurious radiation	Compliant
§ 2.1055 § 90.213	Frequency stability vs. temperature Frequency stability vs. voltage	Compliant
§ 90.214	Transient Frequency Behavior	Compliant

§2.1046 and §90.205 – RF POWER OUTPUT

Applicable Standard

§2.1046
§90.205: Power dependent upon station's antenna HAAT and required service area and may be from 1 to 500 watts.

Test Procedure

1. The EUT was placed at 1.5m height turnaround table and in a position for normal use declared by the manufacturer.
2. The test antenna was oriented initially for vertical position with 3m away from EUT.
3. The output of the antenna was connected to the measuring receiver and the quasi-peak detector is used for the measurement.
4. The transmitter was turned on and the measuring receiver was tuned to the frequency of the transmitter under the testing.
5. The test antenna was raised and lowered through specified ranged of height until the maximum signal level was detected by the measuring receiver.
6. The transmitter was rotated through 360˚ in the horizontal plane until the maximum signal level was detected.
7. The transmitter was then replaced by a dipole which is a substitution antenna.
8. The substitution antenna was oriented for vertical polarization and then connected to a calibrated signal generator.
9. The input attenuator of measuring receiver was adjusted to increased the sensitivity.
10. The substitution antenna was raised and lowered to ensure the maximum signal level was detected.
11. The input signal to the substitution antenna was adjusted to the level to produce a level which was equal to the level noted while the transmitter radiated power was measured, corrected for the change of the input attenuator of the measuring receiver.
12. The input level to the substitution antenna was recorded as power level in dBm, corrected for any change of input attenuator of the measuring receiver.
13. The measurement was repeated with the test antenna and the substitution antenna oriented for horizontal polarization.
14. The measure of the radiated output power is the larger one of the two level recorded, at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

Test Equipment

Manufacturer	Description	Model	Serial Number	Cal. Date
Rohde & Schwarz	Signal Generator	SMIQ03	DE23746	2003-07-03
Com Power Corporation	Dipole Antenna	AD-100	02222	2003-07-23

*** Statement of Traceability: BACL Corp.** certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Environmental Conditions

Temperature:	16.7° C
Relative Humidity:	56%
ATM Pressure:	1012 mbar

Test Results

Generator					
Substitution			Antenna	Cable	Absolute
Frequency MHz	Level dBm	Polar H/V	Gain Corrected	Loss DB	Level dBm
Low Channel					
150.8975	36.8	v	0	0.1	36.7
150.8975	37.2	h	0	0.1	37.1
Mid Channel					
162.9875	37.6	v	0	0.1	37.5
162.9875	36.1	h	0	0.1	36.0
High Channel					
173.9875	36.4	v	0	0.1	36.3
173.9875	37	h	0	0.1	36.9

§2.1046 and §90.205(d) - CONDUCTED OUTPUT POWER

Provision Applicable

Per FCC §2.1046 and §90.205(d): the output power shall be 1 – 500W.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuator.

Test Equipment

Manufacturer	Description	Model	Serial Number	Cal. Date
Hewlett Packard	Spectrum Analyzer	8565EC	3946A00131	2003-06-30

*** Statement of Traceability: BACL Corp.** certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

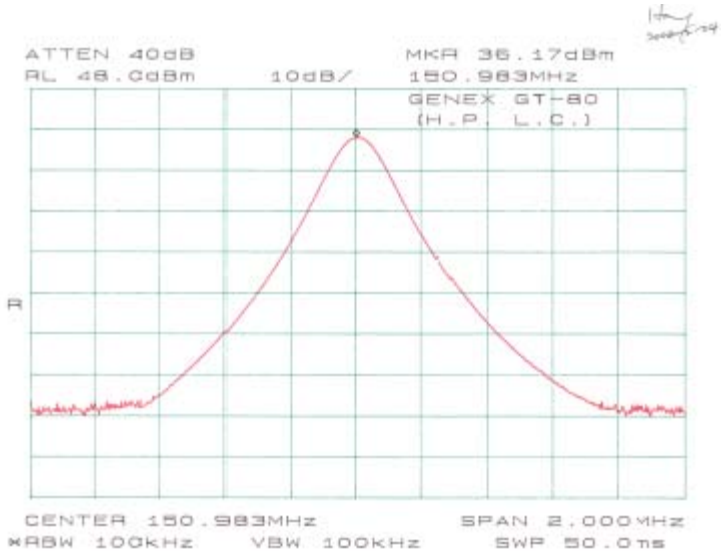
Environmental Conditions

Temperature:	14° C
Relative Humidity:	72%
ATM Pressure:	1015 mbar

Test Results

Power Level	Channel	Output Power in dBm	Output Power in W
High Power	150.983	36.17	4.140
	162.990	36.83	4.819
	173.980	36.17	4.140
Low Power	150.983	30.00	1.000
	162.980	29.83	0.962
	173.987	29.17	0.826

Note: The power output may depend on the intended use of the EUT. For all tests, the EUT was set to maximum conditions.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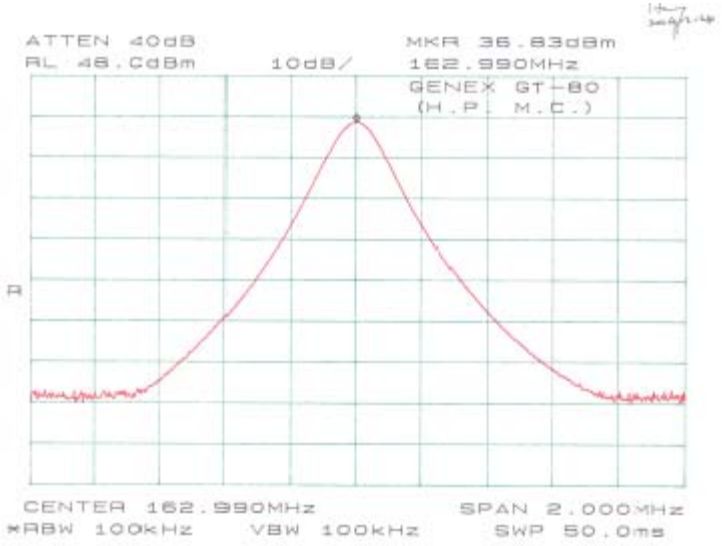
RL 48.0dBm
10dB/
MKR 36.17dBm
150.983MHz
GENEX GT-80
(H.P. L.C.)
R
CENTER 150.983MHz
SPAN 2.000MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms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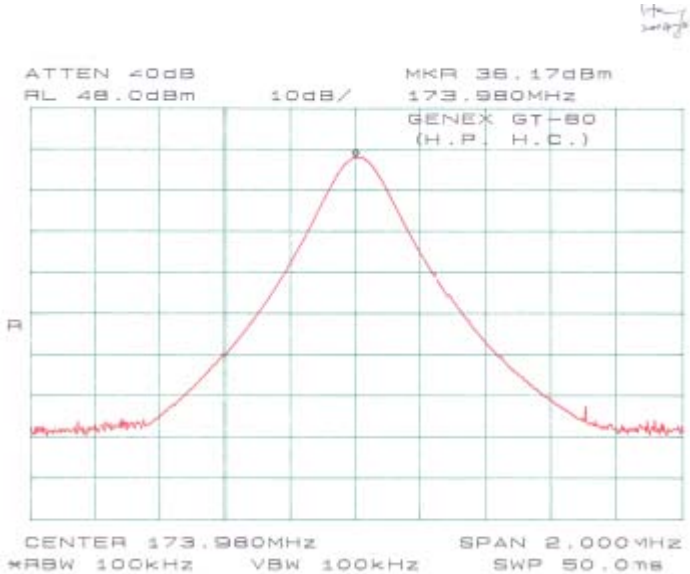
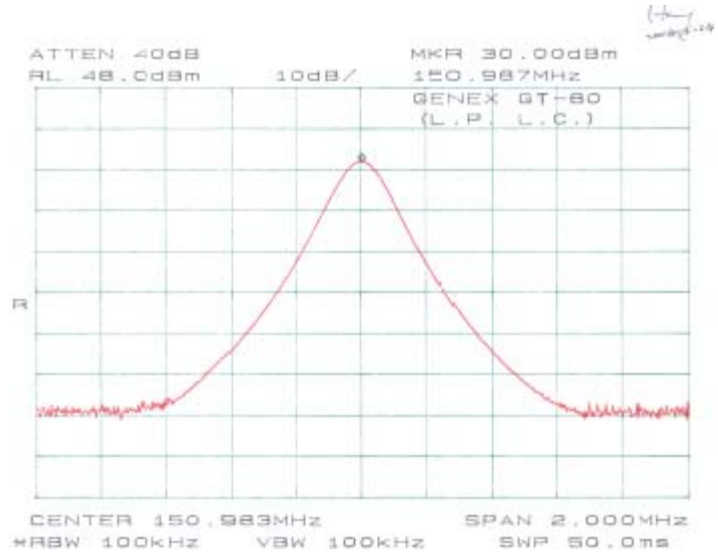
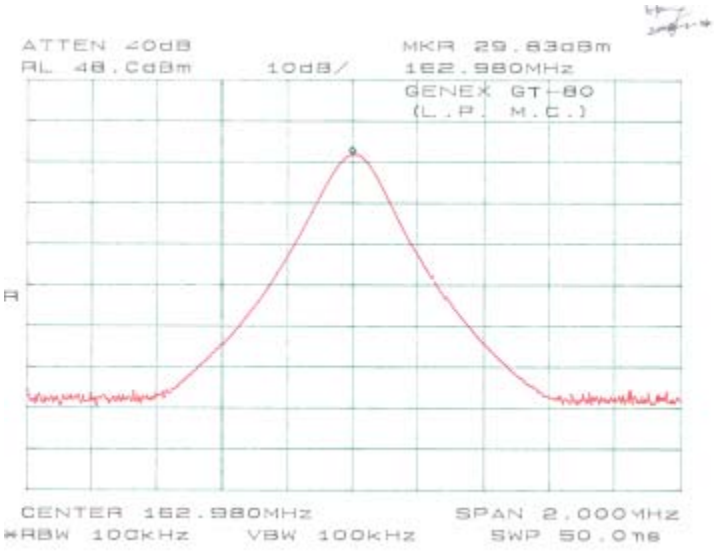
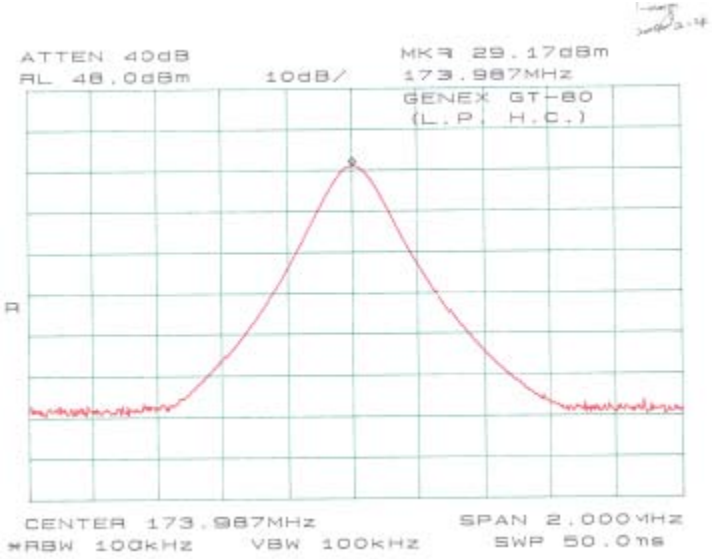
10dB/
MKR 36.83dBm
162.990MHz
GENEX GT-80
(H.P. M.C.)
R
CENTER 162.990MHz
SPAN 2.000MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 40dB
RL 48.0dBm
10dB/
MKR 36.17dBm
173.980MHz
GENEX GT-80
(H.P. H.C.)
R
CENTER 173.980MHz
SPAN 2.000MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 40dB
RL 48.0dBm
10dB/
MKR 30.00dBm
150.987MHz
GENEX GT-80
(L.P. L.C.)
R
CENTER 150.983MHz
SPAN 2.000MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 40dB
RL 48.0dBm
10dB/
MKR 29.83dBm
162.980MHz
GENEX GT-80
(L.P. M.C.)
R
CENTER 162.980MHz
SPAN 2.000MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 40dB
RL 48.0dBm
10dB/
MKR 29.17dBm
173.987MHz
GENEX GT-80
(L.P. H.C.)
R
CENTER 173.987MHz
SPAN 2.000MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

§2.1047, §90.205 - MODULATION CHARACTERISTIC

Applicable Standard

§2.1047:

(a) Equipment which utilizes voice modulated communication shall show the frequency response of the audio modulating circuit over a range of 100 to 5000Hz. for equipment which is required to have a low pass filter, the frequency response of the filter, or all of the circuitry installed between the modulation limited and the modulated stage shall be supplied.

(b) Equipment which employs modulation limiting, a curve showing the percentage of modulation versus the modulation input voltage shall be supplied.

§90.205

Transmitters utilizing analog emissions that are equipped with an audio low-pass filter must meet the emission limitations and must meet proper emissions mask of 90.210.

Test Procedure

Test Method: TIA/EIA-603 2.2.3

Test Equipment

Manufacturer	Description	Model	Serial Number	Cal. Due Date
Agilent	Spectrum Analyzer	8565EC	3946A00131	2003-06-30
Hewlett Packard	Modulation Analyzer	8901A	2026A00847	2003-08-09

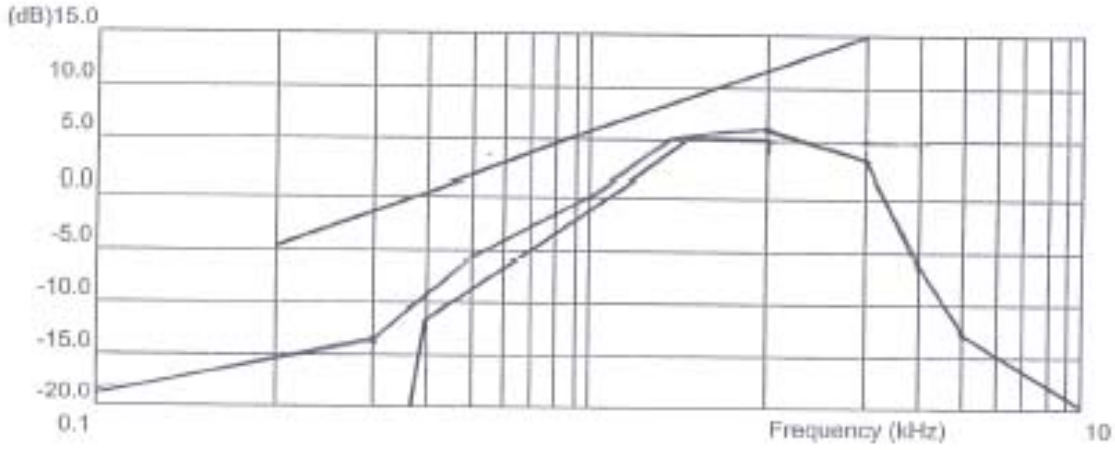
*** Statement of Traceability: BACL Corp.** certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

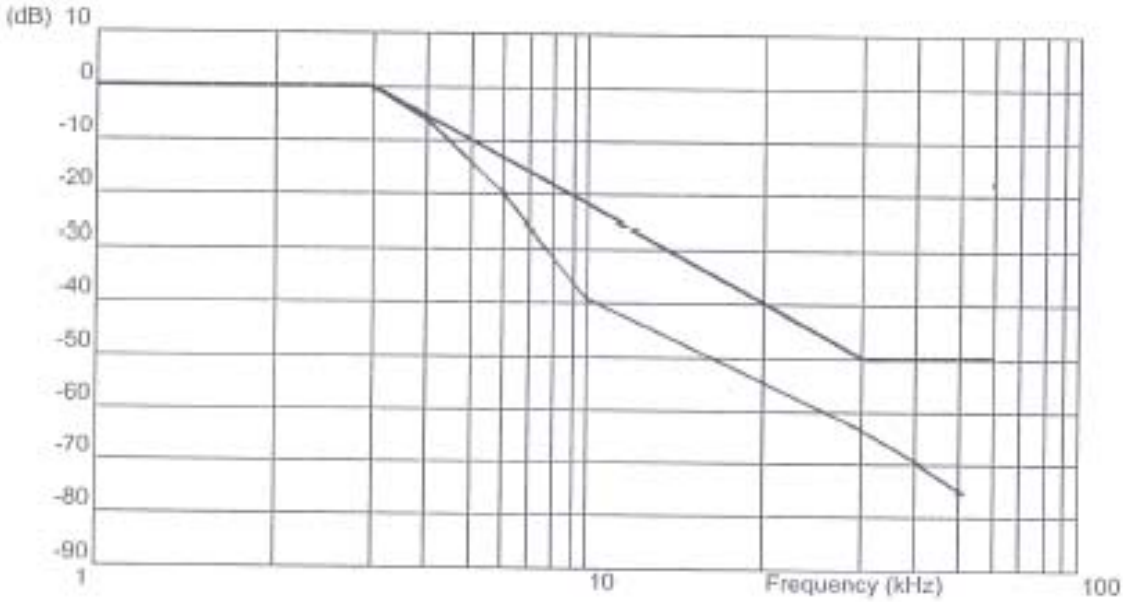
Environmental Conditions

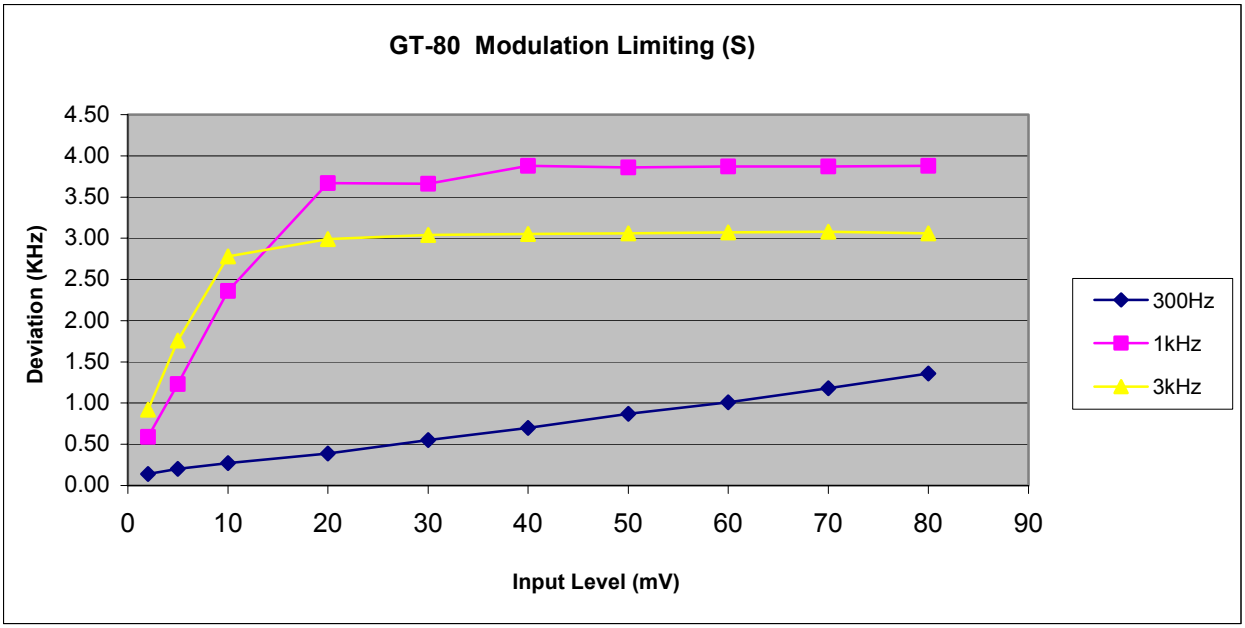
Temperature:	16.7° C
Relative Humidity:	56%
ATM Pressure:	1012 mbar

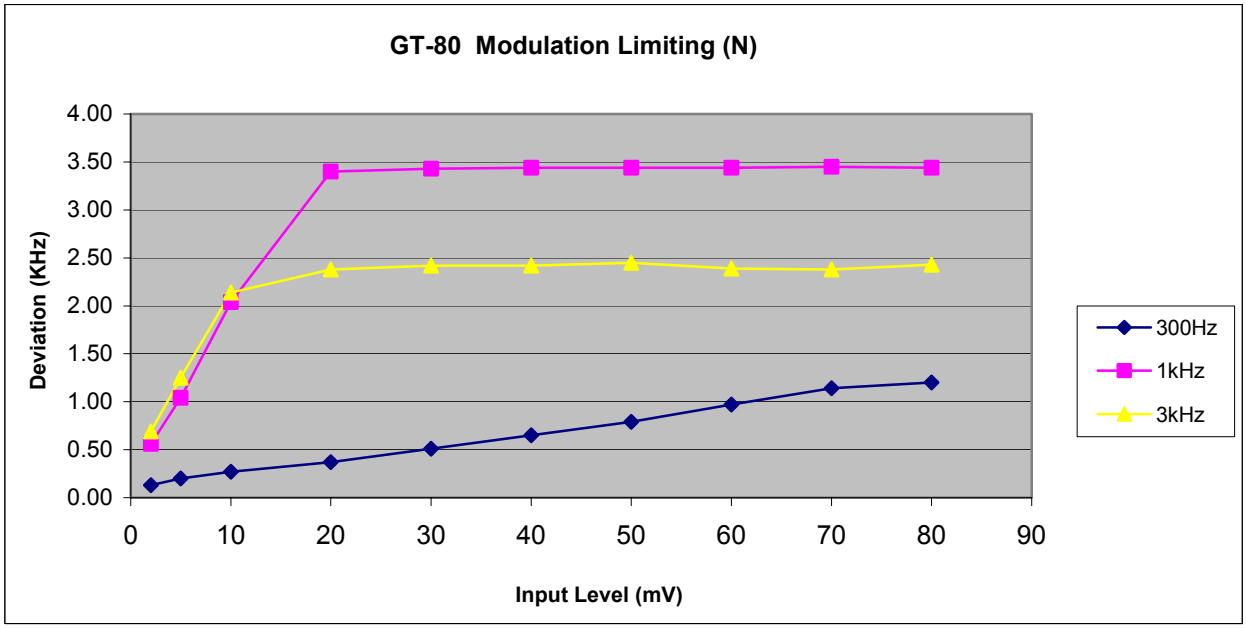
Test Results

The plot(s) of modulation characteristic is presented hereinafter as reference.


(dB)15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
0.1
Frequency (kHz)
10


(dB) 10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
1
10
Frequency (kHz)
100


GT-80 Modulation Limiting (S)
Deviation (KHz)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0
10
20
30
40
50
60
70
80
90
Input Level (mV)
300Hz
1kHz
3kHz


GT-80 Modulation Limiting (N)
Deviation (KHz)
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0
10
20
30
40
50
60
70
80
90
Input Level (mV)
300Hz
1kHz
3kHz

§2.1049, and § 90.210 – OCCUPIED BANDWIDTH

Applicable Standard

§2.1049 and §90.210

12.5kHz bandwidth:
For any frequency removed from the center of the authorized bandwidth f_0 to 5.625kHz removed from f_0, 0dB.

On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.626kHz but no more than 12.5kHz, at least 7.27 (f_d –2.88kHz) dB.

On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5kHz at least:

Low: 50+l0logP=50+10log(4.4)=56.4dB
Middle: 50+10logP=50+10log(4.1)=56.1dB
High: 50+10logP=50+10log(3.9)=55.9dB

25kHz bandwidth:
For any frequency removed from the center of the assigned channel by more than 50 percent up to and including 100 percent of the authorized bandwidth, at least 25 dB.

On any frequency removed from the center of the assigned channel by more than 100 percent up to and including 250 percent, at least 35 dB.

On any frequency removed from the center of the assigned channel by more than 250 percent at least:

Low: 43+l0logP=43+10log(4.4)=49.4dB
Middle: 43+10logP=43+10log(4.1)=49.1dB
High: 43+10logP=43+10log(3.9)=48.9dB

The resolution bandwidth was 300Hz or greater for measuring up to 250kHz from the edge of the authorized frequency segment, and 30kHz or greater for measuring more than 250kHz from the authorized frequency segment.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 30 KHz and the spectrum was recorded in the frequency band ±50 KHz from the carrier frequency.

Emission Designator = 2M + 2D = 2(3) + 2(3.5) = 13K0F3E
Emission Designator = 2M + 2D = 2(3) + 2(4) = 14K0F3E

Test Equipment

Manufacturer	Description	Model No.	Serial No.	Calibration Date
Agilent	Spectrum Analyzer	8565EC	3946A00131	2003-06-30
Hewlett Packard	Plotter	HP7470A	N/A	N/A
NAAYAN	Audio Generator	NY2201	00042	N/A

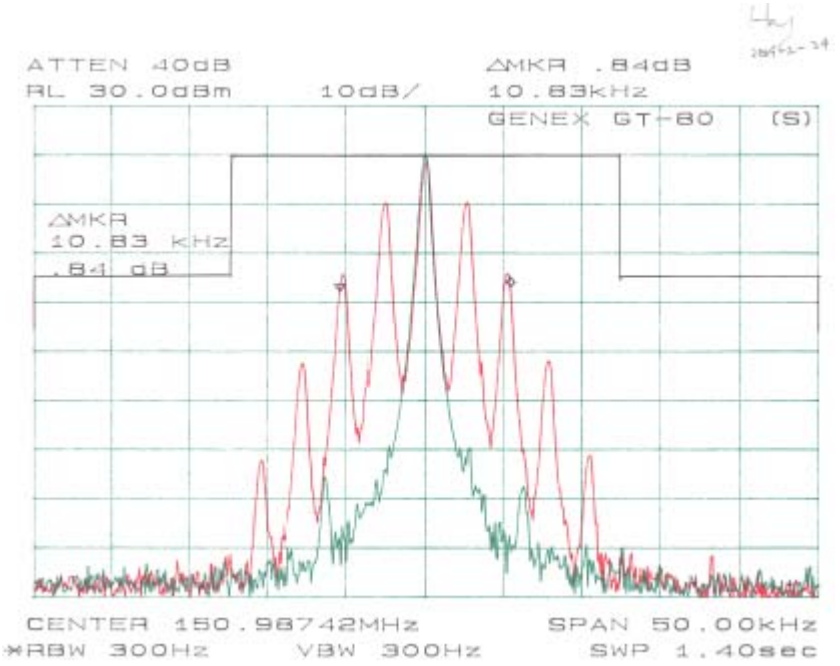
*** Statement of Traceability: BACL Corp.** certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

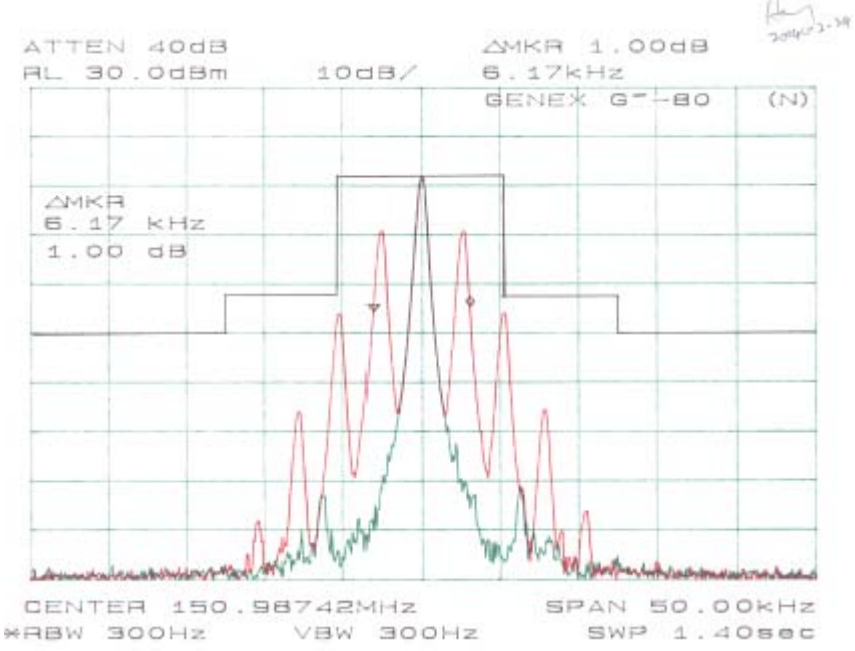
Environmental Conditions

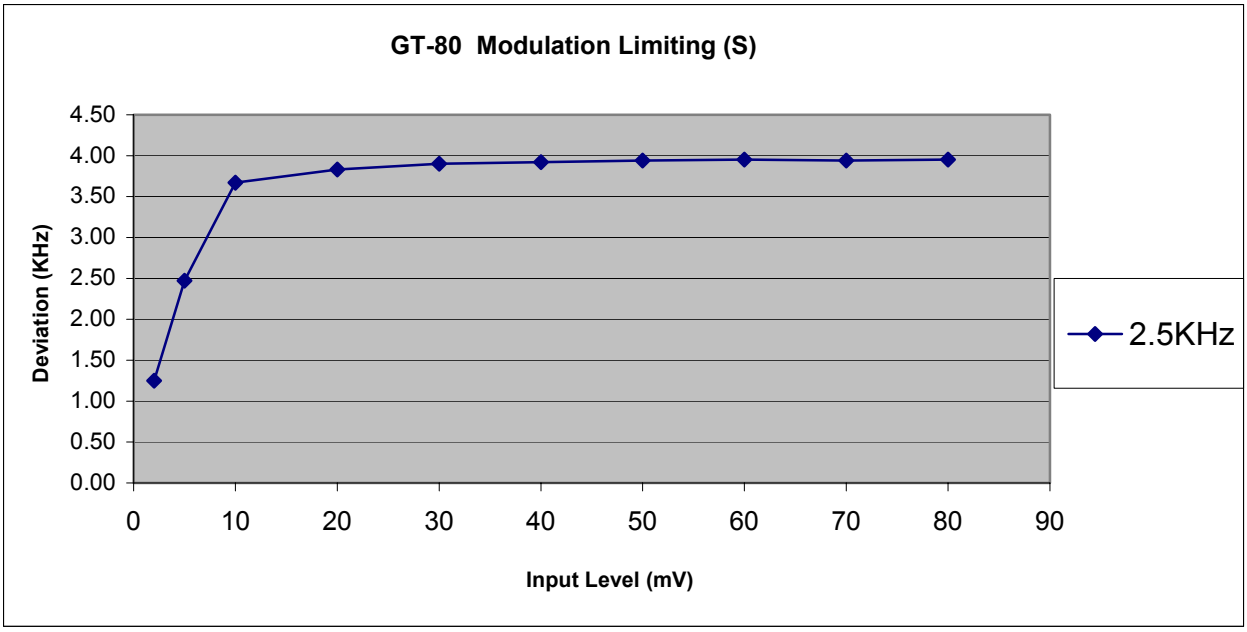
Temperature:	16.7° C
Relative Humidity:	56%
ATM Pressure:	1012 mbar

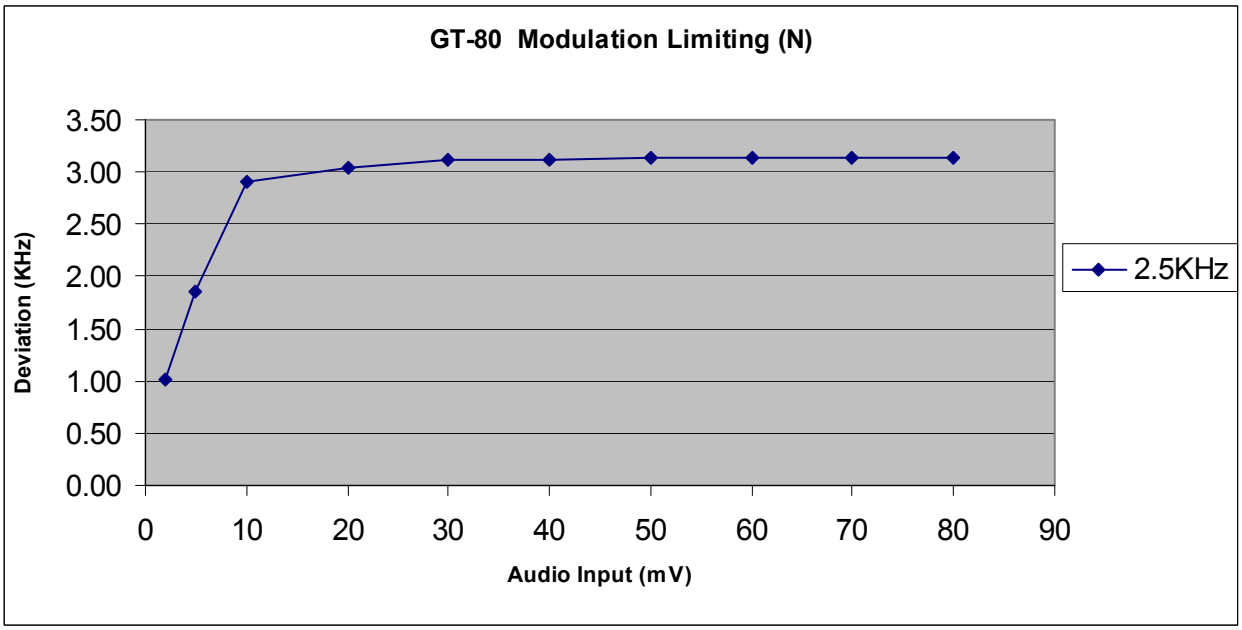
Test Results

Please refer to the hereinafter plots.


ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR .84dB
10.83kHz
GENEX GT-80 (S)
ΔMKR
10.83 kHz
.84 dB
CENTER 150.98742MHz
SPAN 50.00kHz
*RBW 300Hz
VBW 300Hz
SWP 1.40sec


ATTEN 40dB
RL 30.0dBm
10dB/
ΔMKR 1.00dB
6.17kHz
GENEX GT-80 (N)
ΔMKR
6.17 kHz
1.00 dB
CENTER 150.98742MHz
SPAN 50.00kHz
*RBW 300Hz
VBW 300Hz
SWP 1.40sec


GT-80 Modulation Limiting (S)
Deviation (KHz)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0
10
20
30
40
50
60
70
80
90
Input Level (mV)
2.5KHz


GT-80 Modulation Limiting (N)
Deviation (KHz)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0
10
20
30
40
50
60
70
80
90
Audio Input (mV)
2.5KHz

§2.1051 and §90.210 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Test Procedure

§2.1051and §90.210 (25kHz bandwidth only)

On any frequency removed from the center of the assigned channel by more than 250 percent at least:

Low: 43+l0logP=43+10log(4.4)=49.4dB
Middle: 43+10logP=43+10log(4.1)=49.1dB
High: 43+10logP=43+10log(3.9)=48.9dB

§90.210 (12.5kHz bandwidth only)

On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5kHz at least:

Low: 50+l0logP=50+10log(4.4)=49.4dB
Middle: 50+10logP=50+10log(4.1)=49.1dB
High: 50+10logP=50+10log(3.9)=48.9dB

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

Test Equipment

Manufacturer	Description	Model No.	Serial No.	Calibration Date
Agilent	Spectrum Analyzer	8565EC	3946A00131	2003-06-30

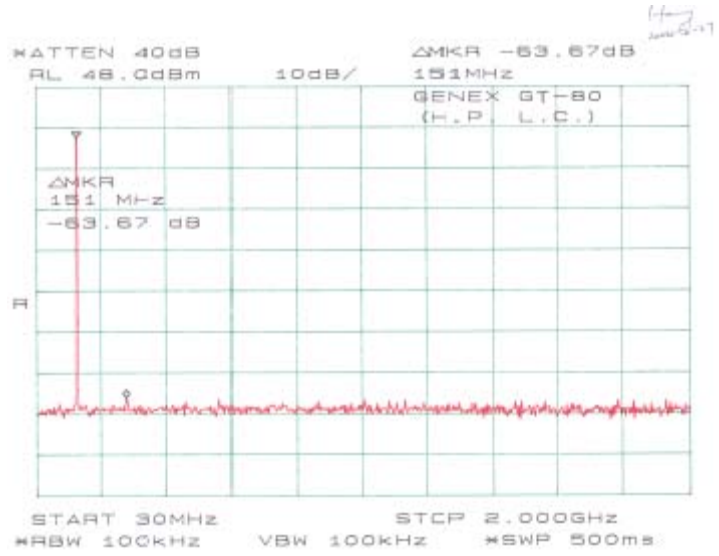
*** Statement of Traceability: BACL Corp.** certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

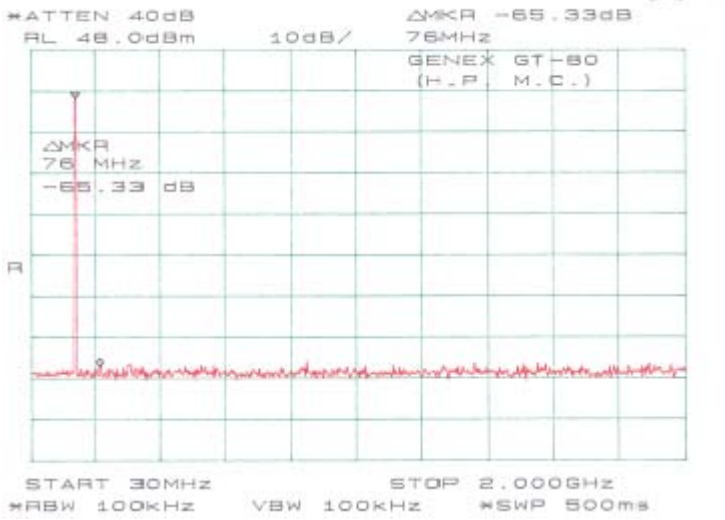
Environmental Conditions

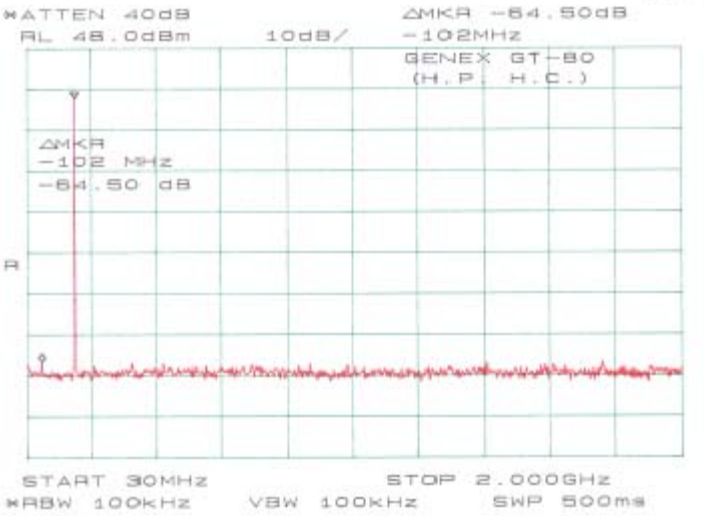
Temperature:	16.7° C
Relative Humidity:	56%
ATM Pressure:	1012 mbar

Test Results

Please refer to the hereinafter plots.


*ATTEN 40dB
RL 48.0dBm
10dB/
ΔMKR -63.67dB
151MHz
GENEX GT-80
(H.P. L.C.)
ΔMKR
151 MHz
-63.67 dB
A
START 30MHz
STOP 2.000GHz
*RBW 100kHz
VBW 100kHz
*SWP 500ms


*ATTEN 40dB
RL 48.0dBm
10dB/
ΔMKR -65.33dB
76MHz
GENEX GT-80
(H.P. M.C.)
ΔMKR
76 MHz
-65.33 dB
A
START 30MHz
STOP 2.000GHz
*RBW 100kHz
VBW 100kHz
*SWP 500ms


*ATTEN 40dB
RL 48.0dBm
10dB/
ΔMKR -64.50dB
-102MHz
GENEX GT-80
(H.P. H.C.)
ΔMKR
-102 MHz
-64.50 dB
A
START 30MHz
STOP 2.000GHz
*RBW 100kHz
VBW 100kHz
SWP 500ms

§2.1053 and §90.210 - RADIATED SPURIOUS EMISSION

Test Procedure

§2.1053 and §90.210 (25kHz bandwidth only)

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Test Equipment

Manufacturer	Description	Model	Serial Number	Cal. Date
EMCO	Biconical Antennas	3110B	9603-2315	2003-10-11
EMCO	Log-Periodic Antenna	3148	0004-1155	2003-10-11
A.H. System	Horn Antenna	SAS-200/571	2455-261	2003-08-02
Agilent	Spectrum Analyzer	8565EC	3946A00131	2003-06-30

*** Statement of Traceability: BACL Corp.** certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Environmental Conditions

Temperature:	16.7° C
Relative Humidity:	56%
ATM Pressure:	1012 mbar

Test Result

Low Frequency: -35.3 dB at 301.7950MHz
Mid Frequency: -36.0 dB at 325.9750MHz
High Frequency: -34.3 dB at 347.9750MHz

Test Data for High Power, Test Distance = 3 Meter:

EUT					Generator						Standard	
Indicated		Table	Test Antenna		Substitution			Antenna	Cable	Absolute	FCC	FCC
Frequency MHz	Ampl. dBuV/m	Angle Degree	Height Meter	Polar H/V	Frequency MHz	Level dBm	Polar H/V	Gain Corrected	Loss DB	Level dBm	Limit dBm	Margin DB
Low Channel												
150.8975	122.5	90	1.4	v	150.8975	36.8	v	0	0.1	36.7		
150.8975	123.33	180	1.5	h	150.8975	37.2	h	0	0.1	37.1		
301.7950	58.83	120	1.5	v	301.7950	-48.5	v	0	0.1	-48.3	-13	-35.3
301.7950	58.17	210	2	h	301.7950	-50.4	h	0	0.1	-50.5	-13	-37.5
452.6925	52.67	210	1.6	h	452.6925	-59.3	h	0	0.1	-59.4	-13	-46.4
452.6925	49.67	120	1.5	v	452.6925	-61.2	v	0	0.1	-61.3	-13	-48.3
Mid Channel												
162.9875	123.5	180	2.5	v	162.9875	37.6	v	0	0.1	37.5		
162.9875	121.7	315	1.4	h	162.9875	36.1	h	0	0.1	36		
325.9750	58.33	330	1.8	h	325.9750	-48.9	h	0	0.1	-49	-13	-36.0
325.9750	56.17	150	1.1	v	325.9750	-53.7	v	0	0.1	-53.8	-13	-40.8
488.9625	53.17	0	1.5	h	488.9625	-58.8	h	0	0.1	-58.9	-13	-45.9
488.9625	51.4	345	1.5	v	488.9625	-60.3	v	0	0.1	-60.4	-13	-47.4
High Channel												
173.9875	119.5	180	1.6	v	173.9875	36.4	v	0	0.1	36.3		
173.9875	121.3	330	1.2	h	173.9875	37	h	0	0.1	36.9		
347.9750	58	315	1.4	h	347.9750	-47.2	h	0	0.1	-47.3	-13	-34.3
347.9750	56.17	150	1.7	v	347.9750	-54.3	v	0	0.1	-54.4	-13	-41.4
521.9625	56.5	180	1.3	h	521.9625	-55.6	h	0	0.1	-55.7	-13	-42.7
521.9625	54	240	1.8	v	521.9625	-58.1	v	0	0.1	-58.2	-13	-45.2

Note: No pre-amplifier for the test.
Dipole antenna for frequency below 1000 MHz, Horn antenna for frequency above 1000 MHz.

§2.1055 (d) and §90.213- FREQUENCY STABILITY

Applicable Standard

§2.1055 (d)

§90.213
For output power > 2 watts, the limit is 2.0ppm.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the counter.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.

Test Equipment

Manufacturer	Description	Model	Serial Number	Cal. Date
Tenney	Temperature Chamber -50^0 to $+100^0$C	Versa	12.222-193	2003-04-23
Agilent	Spectrum Analyzer	8565EC	3946A00131	2003-06-30

*** Statement of Traceability: BACL Corp.** certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Environmental Conditions

Temperature:	16.7° C
Relative Humidity:	56%
ATM Pressure:	1012 mbar

Test Results

Reference Frequency: 162.9860 MHz, Limit: 2.0 ppm			
Environment Temperature (°C)	Power Supplied (Vdc)	Frequency Measure with Time Elapsed	
		MCF (MHz)	PPM Error
50	New Battery	162.98620	-1.84
40	New Battery	162.98630	-1.23
30	New Battery	162.98640	-0.61
20	New Battery	162.98650	0.00
10	New Battery	162.98660	0.61
0	New Battery	162.98640	-0.61
-10	New Battery	162.98640	-0.61
-20	New Battery	162.98630	-1.23
-30	New Battery	162.98620	-1.84

Frequency Stability Versus Input Voltage

Reference Frequency: 162.9860MHz						
Frequency Measure with Time Elapsed						
Power Supplied	2 Minutes		5 Minutes		10 Minutes	
Vdc	MHz	%	MHz	%	MHz	%
4.8V	162.98590	-0.61	162.98600	0.00	162.98580	-1.23

§90.214 - TRANSIENT FREQUENCY BEHAVIOR

Standard Applicable

§90.214

Test Method

TIA/EIA-603 2.2.19

Test Equipment

Manufacturer	Description	Model	Serial Number	Cal. Date
Tektronix	Oscilloscope	TDS7104	B020557	2003-10-09
NAA YAN	Audio Generator	NY2201	00042	N/A
HP	Modulation Analyzer	8901A	2026A00847	2003-08-09

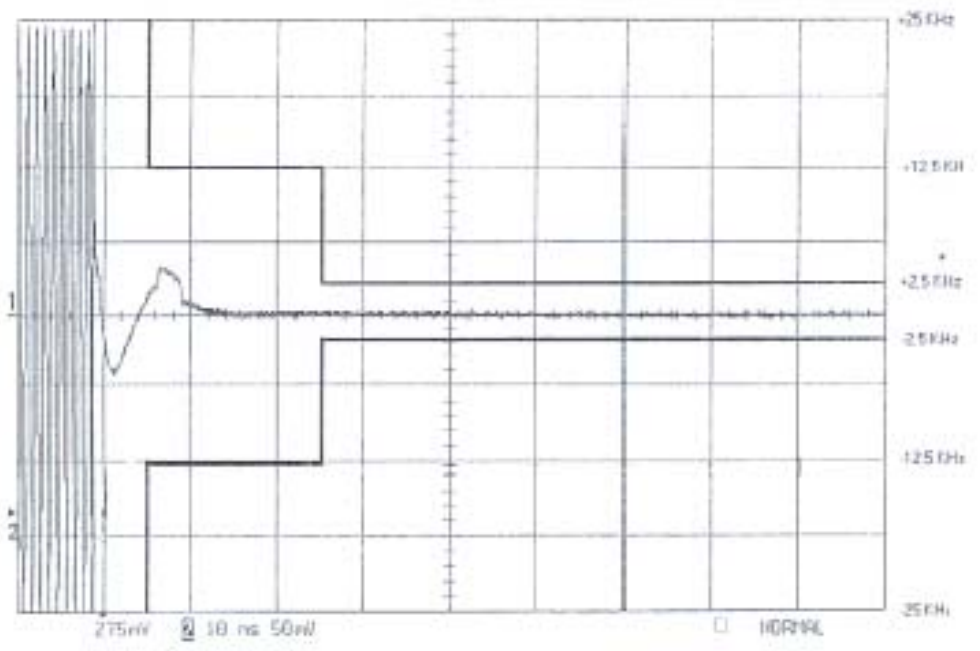
*** Statement of Traceability: BACL Corp.** certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Environmental Conditions

Temperature:	16.7° C
Relative Humidity:	56%
ATM Pressure:	1012 mbar

Test Result

Please refer to the plot hereinafter.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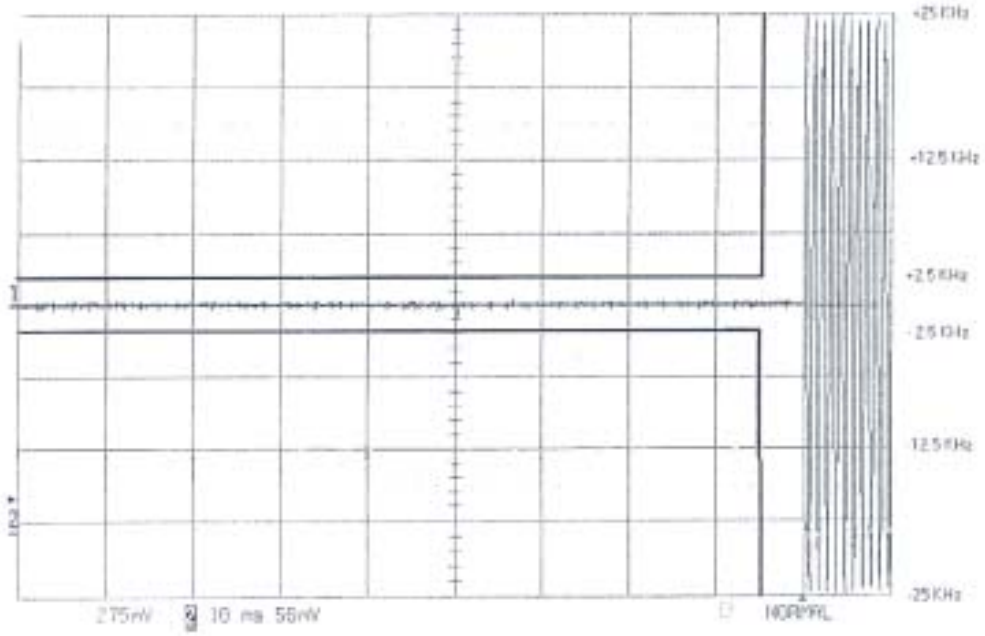
+12.5KHz
+2.5KHz
2.5KHz
-12.5KHz
-25KHz
275mV
10 ms 50mV
NORMAL


+25KHz
+12.5KHz
+2.5KHz
-2.5KHz
-12.5KHz
-25KHz
275mV
10 ms 50mV
NORMAL