FCC PART 25 TYPE APPROVAL

EMI MEASUREMENT AND TEST REPORT

For

Globalstar USA, LLC

461 S. Milpitas Blvd.
Milpitas, CA 95035

FCC ID: TSEFAU200RA

This Report Concerns:	Equipment Type:
☒ Original Report	Satellite Earth Station Equipment

Test Engineer:	Snell Leong
Report No.:	R0508265
Report Date:	2005-10-21
Reviewed By:	Richard Lee
Prepared By:	Bay Area Compliance Laboratory Corporation (BACL) 230 Commercial Street Sunnyvale, CA 94085 Tel: (408) 732-9162 Fax: (408) 732 9164

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Globalstar USA, LLC's product*, FCC ID: *TSEFAU200RA*, model number: FAU200RA or the "EUT" as referred to in this report is a Fixed Access Unit (FAU). The EUT operates at 1610.73 – 1620.57 MHz with maximum output power 38.5 dBm (EIRP) and emission designator 1M29F9W.

The Fixed Access Unit (FAU) provides an interface for the end-user to access the Globalstar satellite network. The FAU communicates using the Globalstar Air Interface (GAI) via the satellite constellation to a number of groundstations or Gateways.

The gateway interconnects the Globalstar satellites network through a Cellular Switch directly into the local Public Switched Telephone Network (PSTN). The FAU is installed outdoors to provide an unobstructed view of the orbiting satellite constellation, and cabling is run from the unit to a conventional telephone socket mounted indoors, for easy connection of a telephone.

** The test data gathered are from production sample, serial number: GS004847, provided by the manufacturer.*

Objective

This type approval report is prepared on behalf of *Globalstar USA, LLC* in accordance with Part 2, Subpart J, and Part 25, Subparts C of the Federal Communication Commissions rules.

The objective of the manufacturer is to demonstrate compliance with FCC rules for Radiated Emission, Frequency Tolerance, Emission Limitation (out of band), Power Density, Emission Limitation (in band), and Power Limit.

Related Submittal(s)/Grant(s)

No Related Submittals.

Test Methodology

All measurements contained in this report were conducted with TIA 603-C.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp.

Test Facility

The Open Area Test site used by BACL 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 with registration number: 90464.

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC), Industry Canada (IC), 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 C63.4-2003.

The Federal Communications Commission, Industry Canada, and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2, IC registration number: 3062A, and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC, IC, and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm

SYSTEM TEST CONFIGURATION

Justification

The host system was configured for testing according to TIA 603-C.

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

EUT Exercise Software

The EUT operates in max data rate = 9600 bit/sec, max power mode during radiated and conducted testing.

Special Accessories

As shown in following test setup block diagram, all interface cables used for compliance testing are shielded.

Schematics / Block Diagram

Please refer to Appendix A.

Equipment Modifications

No modifications were made to the EUT.

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
IBM	Laptop	560	78-HN065 97/04	DOC
Anritsu	Global Star User Terminal Tester	MT8803G	MB06886	DOC

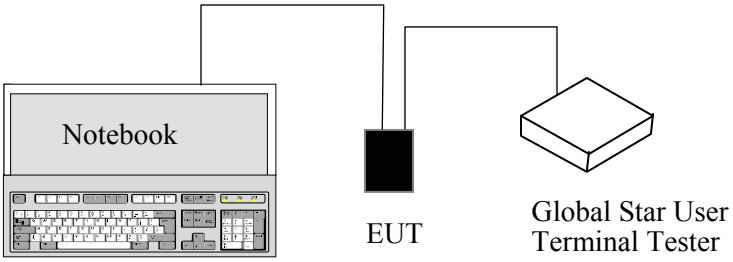
Power Supply Information

Manufacturer	Description	Model	Serial Number	FCC ID
Artesyn	ADC Power Supply	SSSL40-7617	91-57589	None

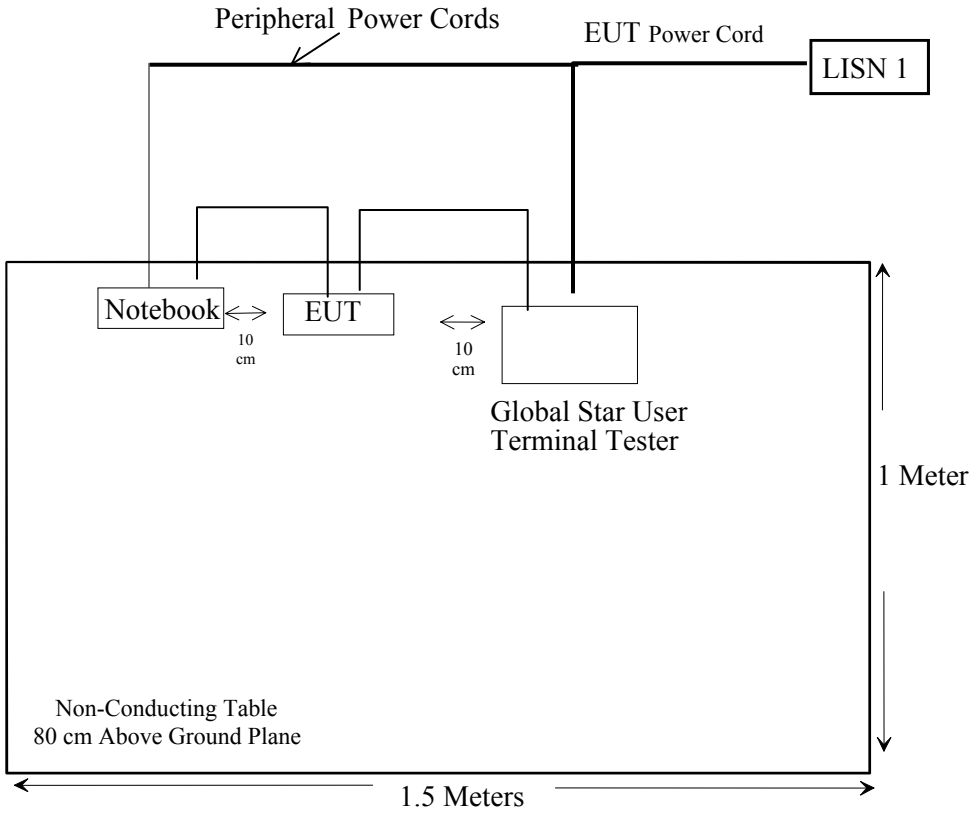
External I/O Cabling List and Details

Cable Description	Length (M)	Port/From	To
Serial Cable	1	Laptop	EUT

Configuration of Test System



Test Setup Block Diagram



SUMMARY OF TEST RESULTS

Results reported relate only to the product tested.

FCC RULES	DESCRIPTION OF TEST	RESULT
§1.1307(b)(1) & §2.1091	RF Exposure	Compliant
§2.1047	Modulation Characteristic	Compliant
§2.1051	Spurious Emission at Antenna Terminals	Compliant
§15.107	AC Line Conducted Emission	Compliant
§2.1055 & §25.202(d)	Frequency Stability	Compliant
§2.1053 & §25.202(f)	Field Strength of Spurious Radiation	Compliant
§25.202	Emission Mask	Compliant
§25.216 (b) & (g)	Emission from Mobile Earth Station for Protection of Aeronautical Radionavigation-Satellite Service	Compliant
§2.1046 & §25.204	Power Output	Compliant

§2.1047 – MODULATION CHARACTERISTICS

The EUT uses digital modulation techniques only which were employed during the tests for occupied bandwidth.

§2.1051 – SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Standard Applicable

Protection of the radio-navigation-satellite service. Mobile earth stations operating in the 1610-1626.5 MHz band shall limit out-of0band emissions in the 1574.397-1576.443 MHz band so as not to exceed an e.i.r.p. density level of –70 dB (W/MHz) averaged over any 20 ms period. The e.i.r.p. of any discrete spurious emission (i.e., bandwidth less than 600 Hz) in the 1574.397-1576.443 MHz band shall not exceed –80 dBW.

For out-of-band emissions for frequencies removed from the midpoint of the assigned frequency segment by more than 250% of the authorized bandwidth (1.23MHz), at least

43+ 10 log (P_{watts}) attenuation below the mean power of the transmitter.

For Lowest Channel = 43 + 10 log (0.282W) = 47.5 dBc
For Highest Channel = 43 + 10 log (0.355W) = 48.5 dBc

Measurement Procedure

Spurious emissions appearing at the antenna terminals were measured with a spectrum analyzer by connecting the spectrum analyzer directly via a short cable to the antenna output terminals or across the antenna leads on the PCB as specified by the manufacturer.

Equipment Lists

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Spectrum Analyzer	E4446A	US44300386	2005-11-10

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

Measurement Result

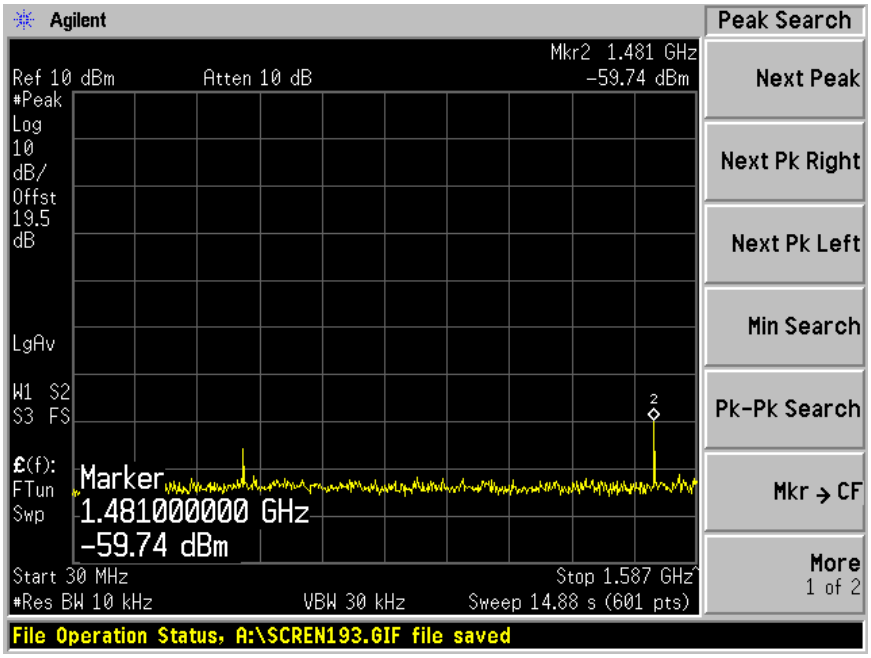
Environmental Conditions

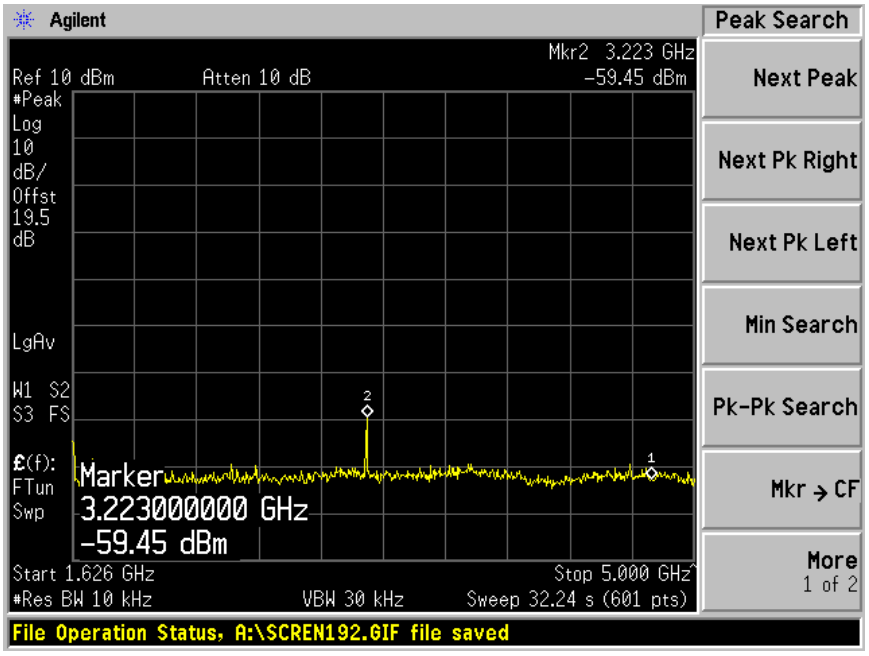
Temperature:	20° C
Relative Humidity:	58%
ATM Pressure:	1010 mbar

The testing was performed by Snell Leong on 2005-11-17.

The following plots show that all emissions ere at least 48.5 dB below the fundamental.

Low Channel


Agilent
Peak Search
Mkr2 1.481 GHz
Ref 10 dBm
Atten 10 dB
-59.74 dBm
#Peak
Log
10
dB/
Offst
19.5
dB
LgAv
W1 S2
S3 FS
£(f):
FTun
Swp
Marker
1.481000000 GHz
-59.74 dBm
Start 30 MHz
Stop 1.587 GHz
#Res BW 10 kHz
VBW 30 kHz
Sweep 14.88 s (601 pts)
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
File Operation Status, A:\SCREN193.GIF file saved


Agilent
Peak Search
Mkr2 3.223 GHz
Ref 10 dBm
Atten 10 dB
-59.45 dBm
#Peak
Log
10
dB/
Offst
19.5
dB
LgAv
W1 S2
S3 FS
£(f):
FTun
Swp
Marker
3.223000000 GHz
-59.45 dBm
Start 1.626 GHz
Stop 5.000 GHz
#Res BW 10 kHz
VBW 30 kHz
Sweep 32.24 s (601 pts)
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
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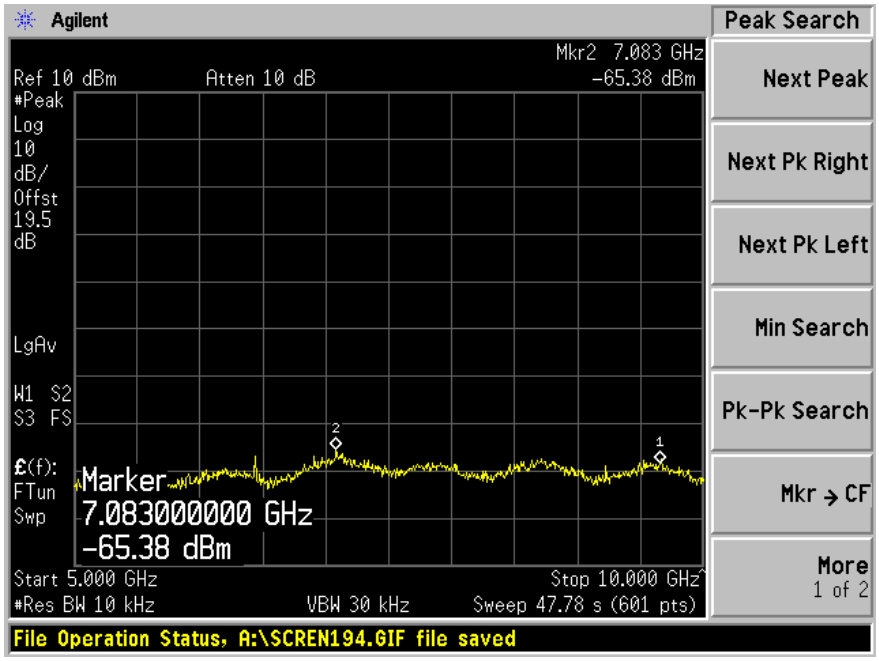
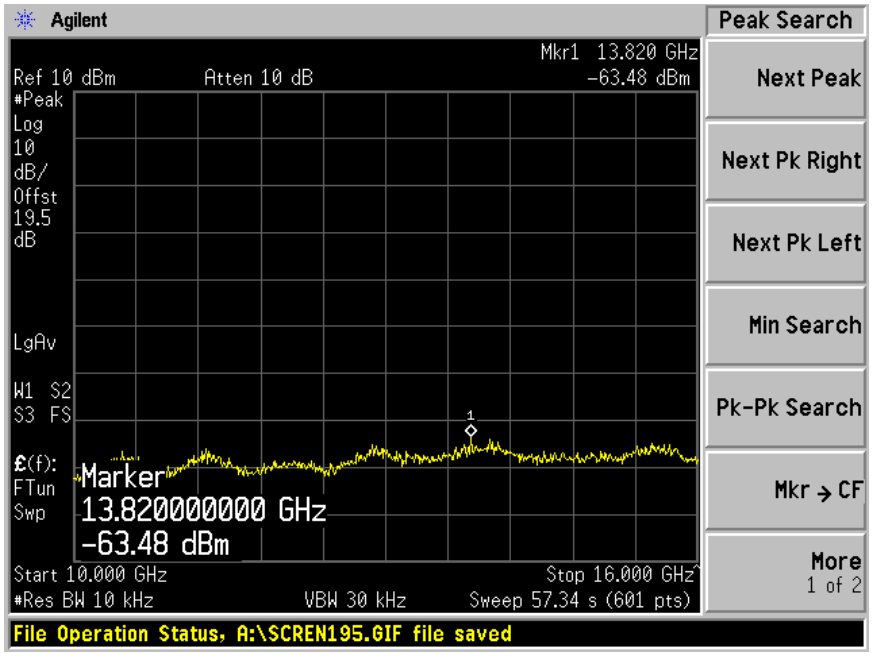
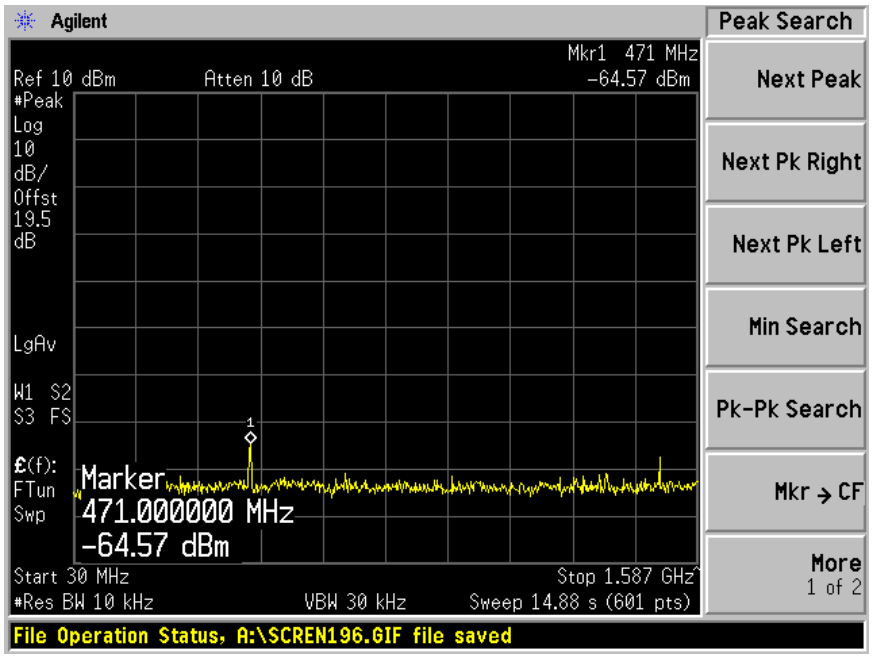
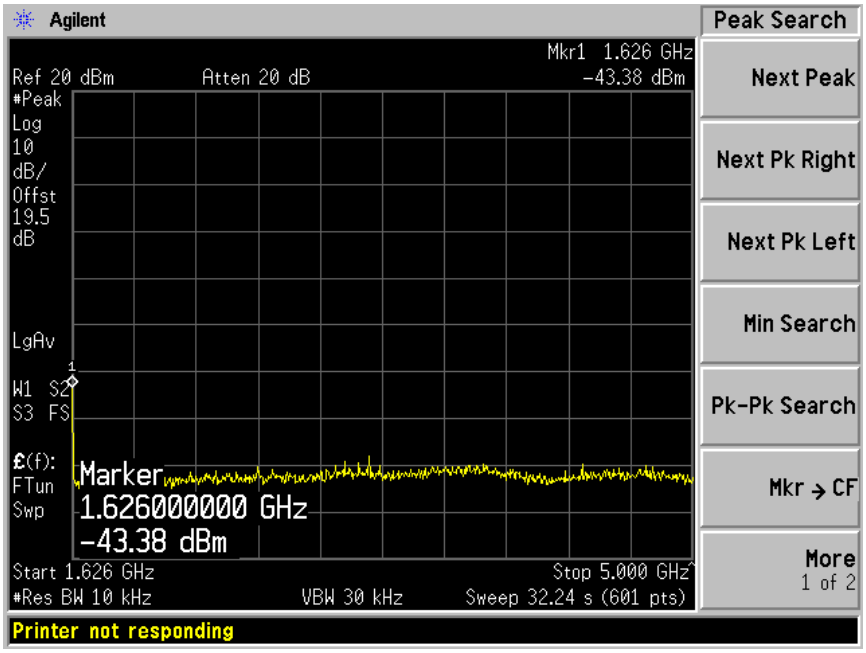
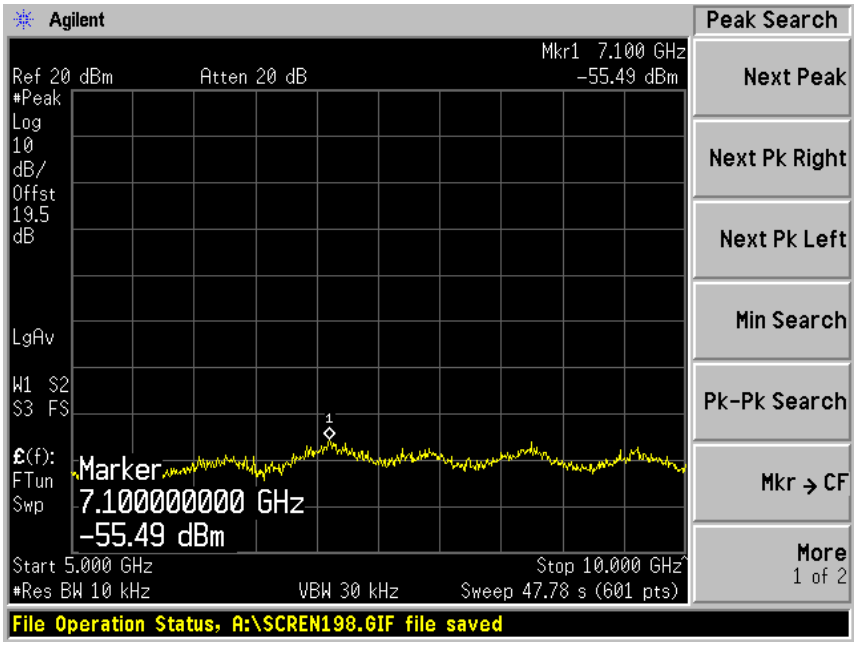

Agilent
Peak Search
Mkr2 7.083 GHz
Ref 10 dBm
Atten 10 dB
-65.38 dBm
#Peak
Log
10
dB/
Offst
19.5
dB
LgAv
W1 S2
S3 FS
£(f):
FTun
Swp
Marker
7.083000000 GHz
-65.38 dBm
Start 5.000 GHz
Stop 10.000 GHz
#Res BW 10 kHz
VBW 30 kHz
Sweep 47.78 s (601 pts)
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
File Operation Status, A:\SCREN194.GIF file saved

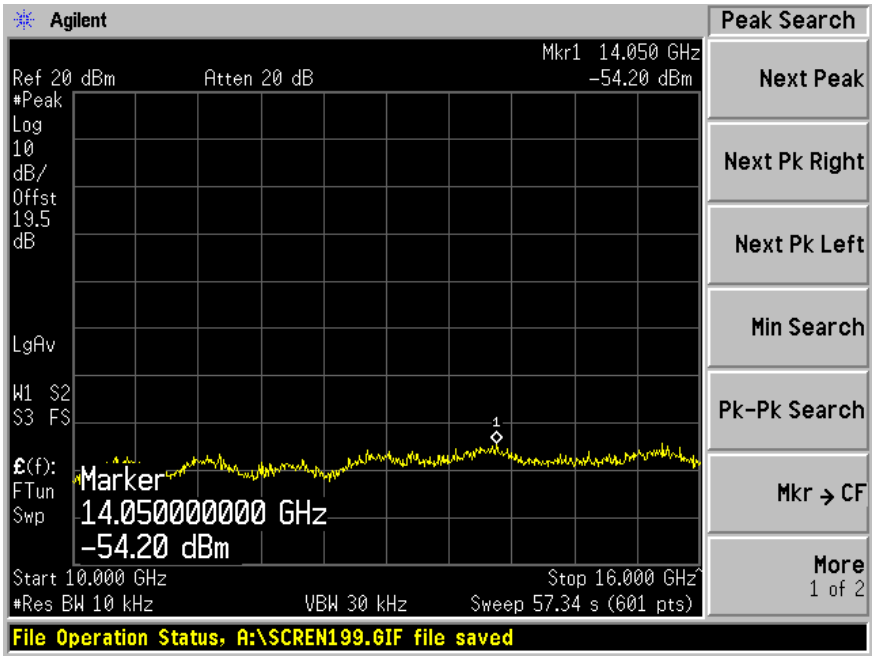

Agilent
Peak Search
Mkr1 13.820 GHz
Ref 10 dBm
Atten 10 dB
-63.48 dBm
#Peak
Log
10
dB/
Offst
19.5
dB
LgAv
W1 S2
S3 FS
£(f):
FTun
Swp
Marker
13.820000000 GHz
-63.48 dBm
Start 10.000 GHz
Stop 16.000 GHz
#Res BW 10 kHz
VBW 30 kHz
Sweep 57.34 s (601 pts)
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
File Operation Status, A:\SCREN195.GIF file saved

High Channel






Agilent
Peak Search
Mkr1 7.100 GHz
Ref 20 dBm
Atten 20 dB
-55.49 dBm
#Peak
Log
10
dB/
Offst
19.5
dB
LgAv
W1 S2
S3 FS
£(f):
FTun
Swp
Marker
7.100000000 GHz
-55.49 dBm
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
Start 5.000 GHz
Stop 10.000 GHz
#Res BW 10 kHz
VBW 30 kHz
Sweep 47.78 s (601 pts)
File Operation Status, A:\SCREN198.GIF file saved


Agilent
Peak Search
Mkr1 14.050 GHz
Ref 20 dBm
Atten 20 dB
-54.20 dBm
#Peak
Log
10
dB/
Offst
19.5
dB
LgAv
W1 S2
S3 FS
£(f):
FTun
Swp
Marker
14.050000000 GHz
-54.20 dBm
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2
Start 10.000 GHz
Stop 16.000 GHz
#Res BW 10 kHz
VBW 30 kHz
Sweep 57.34 s (601 pts)
File Operation Status, A:\SCREN199.GIF file saved

§15.107 - CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are receiver, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at BACL is ±2.4 dB.

EUT Setup

The measurement was performed in the shielded room, using the same setup per ANSI C63.4-2003 measurement procedure. The specification used was FCC 15 Class B limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

The EUT was connected to 120VAC/60Hz power source.

Receiver Setup

The receiver was set to investigate the frequency from 150 kHz to 30MHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Rohde & Schewarz	Artificial-Mains Network	ESH2-Z5	871884/039	2005-08-16
Rohde & Schewarz	EMI Test Receiver	ESCS30	100176	2005-09-15
Fluke	Calibrated Voltmeter	189	18485-38	2005-09-15

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

Test Procedure

During the conducted emission test, the power cord of the EUT was connected to the mains outlet of the LISN-1, the power cord of the monitor and modem were connected to the LISN-2.

Maximizing procedure were performed on the six (6) highest emissions of the EUT.

All data was recorded in the quasi-peak and average detection mode. Quasi-Peak readings are distinguished with an "QP". Average readings are distinguished with an "Ave".

Test Results Summary

According to the recorded data, the EUT complies with the FCC Conducted limits for a Class B device, with the worst margin reading of:

-5.8 dB at **0.580 MHz** at **Line** mode at 150 kHz to 30 MHz

Conducted Emissions Test Data

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1021mbar

**Testing was performed by Snell Leong on 2005-10-07.*

LINE CONDUCTED EMISSIONS				FCC15 CLASS B	
Frequency MHz	Amplitude dBµV	Detector Qp/Ave/Peak	Mode Line/Neutral	Limit dBµV	Margin dB
0.580	40.2	Ave	Line	46.00	-5.8
0.190	56.9	QP	Neutral	64.04	-7.1
0.570	38.2	Ave	Neutral	46.00	-7.8
0.580	48.1	QP	Line	56.00	-7.9
0.190	45.4	Ave	Neutral	54.04	-8.6
0.570	46.2	QP	Neutral	56.00	-9.8
0.180	54.5	QP	Line	64.49	-10.0
0.285	40.6	Ave	Neutral	50.67	-10.1
0.285	49.9	QP	Line	60.67	-10.8
0.180	43.0	Ave	Line	54.49	-11.5
0.285	48.4	QP	Neutral	60.67	-12.3
0.285	37.4	Ave	Line	50.67	-13.3

Plots of Conducted Emission

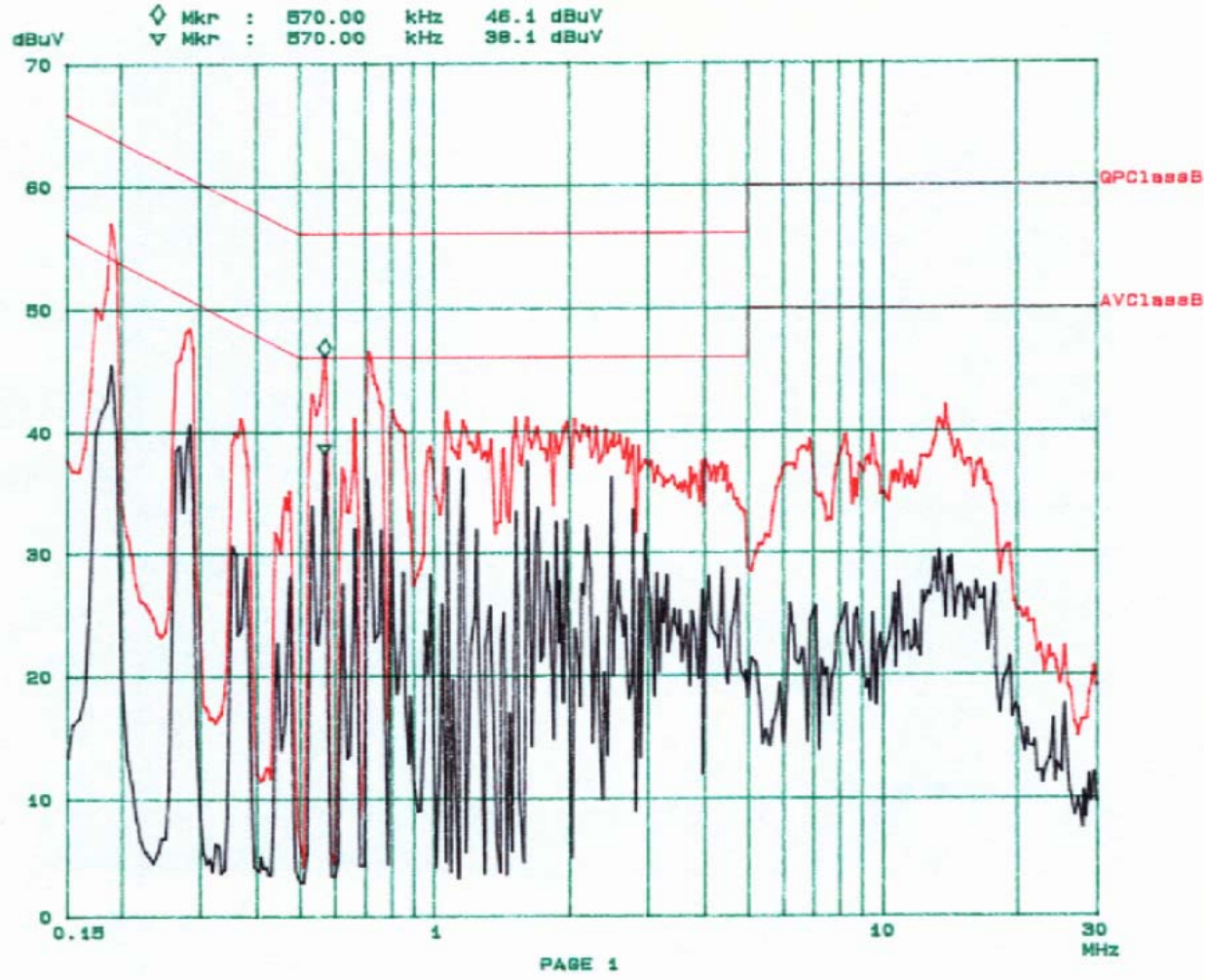
The plots of conducted emission are presented hereinafter as reference.

Bay Area Compliance Laboratory Corp 07. Oct 05 17:59
Class B
07/OCT/05
Snell

EUT: Satellite Mobile Earth Station
Manuf: Global Star
Op Cond: Normal
Operator: Snell
Comment: N
120VAC

Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	1M	5k	9k	QP+AV	20ms	15dBLN	OFF
1M	5M	10k	9k	QP+AV	1ms	15dBLN	OFF
5M	30M	100k	9k	QP+AV	1ms	15dBLN	OFF



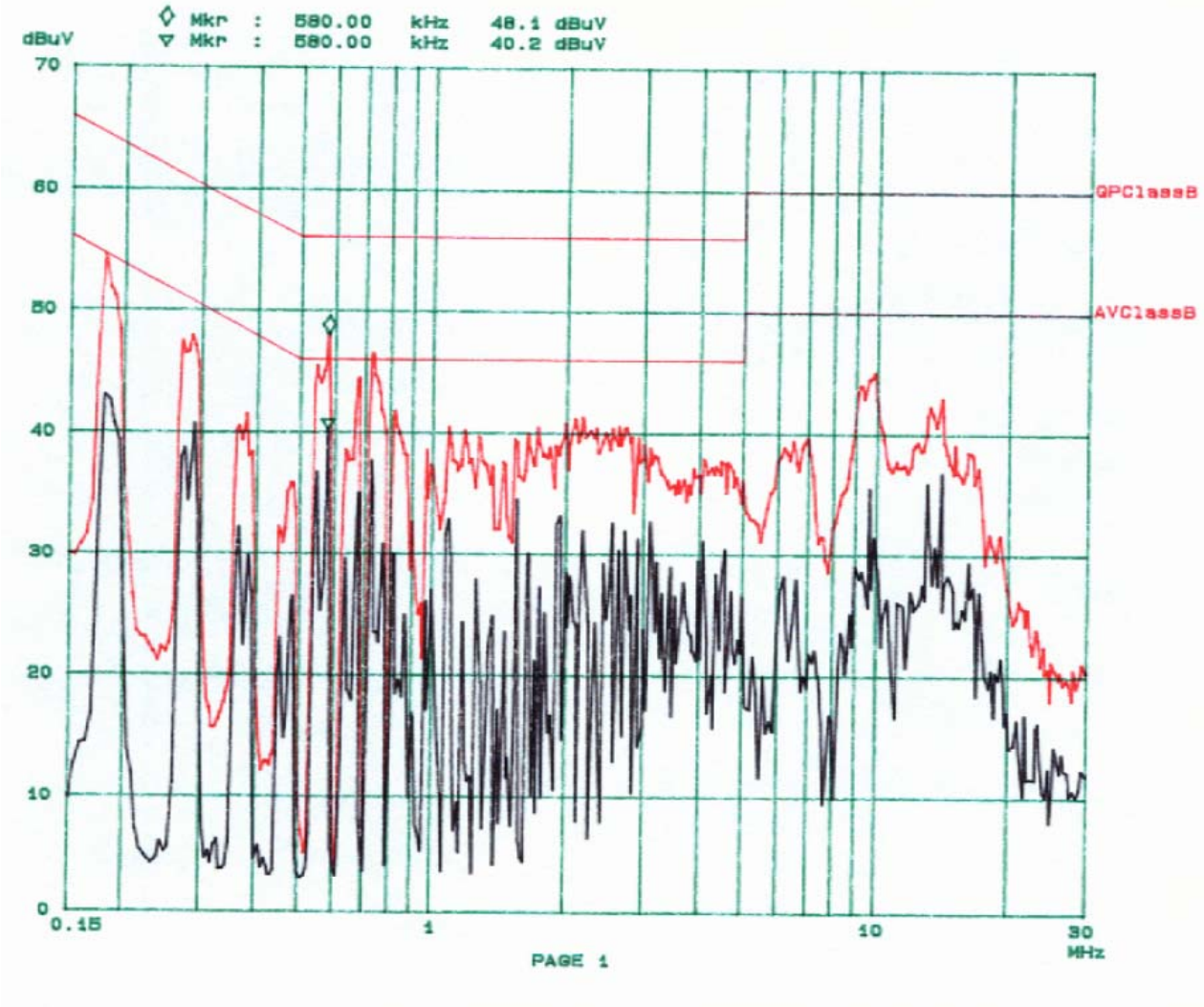
Bay Area Compliance Laboratory Corp 07. Oct 05 18:21
Class B

07/OCT/2005
Shell

EUT: Satellite Mobile Earth Station
Manuf: Global Star
Op Cond: Normal
Operator: Snell
Comment: L
120VAC

Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	1M	5k	9k	QP+AV	20ms	15dBLN	OFF
1M	5M	10k	9k	QP+AV	1ms	15dBLN	OFF
5M	30M	100k	9k	QP+AV	1ms	15dBLN	OFF



§ 2.1053 & §25.202 (f) – FIELD STRENGTH OF SPURIOUS RADIATION

Standard Applicable

Requirements: CFR 47, § 25.202(f). The mean power of emission shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;

In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.

Measurement Procedure

The testing procedure was set according to TIA 603-C.

Equipment Lists

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Spectrum Analyzer	E4446A	US44300386	2004-11-10

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

Measurement Result

Environmental Conditions

Temperature:	23° C
Relative Humidity:	65%
ATM Pressure:	1025 mbar

The testing was performed by Snell Leong on 2005-10-07.

Out of Band (Carrier On)

*Final Scan 1GHz – 16.5GHz (Lowest Channel: 1610.73 MHz), Antenna gain= 3.7 dB, Cable Loss=3.5dB 43 +10 *log(P) = 48.5 dBc, P=35.5 dBm*

Indicated		Table	Test Antenna		Substituted		Antenna	Cable	Absolute		Limit	Margin
Frequency	Ampl.	Angle	Height	Polar	Frequency	Level	Gain	Loss	Leval			
MHz	dBuV/m	Degree	Meter	H/V	MHz	dBm	Correction	dB	dBm	nW	dBm	dB
1615.65	107.5	180	1.4	v	1615.65	8.52	8.8	1.57	15.8	37583740.429		
1266.20	55.1	180	1.4	v	1266.20	-41.17	6.3	1.27	-36.1	243.220	-13	-23.1
1266.20	52.4	0	1.4	h	1266.20	-44.07	6.3	1.27	-39.0	124.738	-13	-26.0
77.30	51.2	90	1.2	v	77.30	-40.19	0	0.49	-40.7	85.507	-13	-27.7
77.30	48.9	0	1.4	h	232.70	-42.79	0	0.49	-43.3	46.989	-13	-30.3
232.70	45.6	180	1.4	v	232.70	-42.86	0	0.76	-43.6	43.451	-13	-30.6
1151.20	46.9	180	1.4	v	1151.20	-49.97	6.3	1.27	-44.9	32.063	-13	-31.9
232.70	42.1	0	1.4	h	3231.30	-45.26	0	0.76	-46.0	25.003	-13	-33.0
1151.20	44.3	0	1.4	h	1151.20	-52.07	6.3	1.27	-47.0	19.770	-13	-34.0
3231.30	43.1	330	1.2	h	1615.65	-70.30	9.6	2.4	-63.1	0.490	-13	-50.1
614.50	44.8	0	1.4	h	614.50	-61.76	0	2.06	-63.8	0.415	-13	-50.8
461.20	41.5	180	1.4	v	461.20	-63.46	0	1.66	-65.1	0.308	-13	-52.1
461.20	39.9	0	1.4	h	77.30	-65.16	0	1.66	-66.8	0.208	-13	-53.8
614.50	41.5	0	1.4	h	461.20	-65.06	0	2.06	-67.1	0.194	-13	-54.1
3231.30	36.7	90	1.2	v	3231.30	-79.50	9.6	2.4	-72.3	0.059	-13	-59.3

Final Scan 1GHz – 16.5GHz (Highest Channel: 1620.57 MHz), Antenna gain= 3.7 dB, Cable Loss=3.5dB

Indicated		Table	Test Antenna		Substituted		Antenna	Cable	Absolute		Limit	Margin
Frequency	Ampl.	Angle	Height	Polar	Frequency	Level	Gain	Loss	Leval			
MHz	dBuV/m	Degree	Meter	H/V	MHz	dBm	Correction	dB	dBm	nW	dBm	dB
1625.49	107.1	180	1.4	v	1625.49	8.49	8.8	1.57	15.7	37325015.780		
3250.98	46.9	330	1.2	h	1625.49	-67.63	9.6	2.4	-60.4	0.906	-13	-47.4
3250.98	45.1	90	1.2	v	3250.98	-68.4	9.6	2.4	-61.2	0.759	-13	-48.2
103.00	50.5	0	1.4	h	3250.98	-41.74	0	0.24	-42.0	63.387	-13	-29.0
103.00	46.2	180	1.4	v	103.00	-44.34	0	0.24	-44.6	34.834	-13	-31.6
306.30	47.8	0	1.4	h	103.00	-40.23	0	1.13	-41.4	73.114	-13	-28.4
306.30	45.1	90	1.2	v	306.30	-43.23	0	1.13	-44.4	36.644	-13	-31.4
483.30	37.4	0	1.4	h	306.30	-63.7	0	1.6	-65.3	0.295	-13	-52.3
483.30	35.1	180	1.4	v	483.30	-65.9	0	1.6	-67.5	0.178	-13	-54.5
644.30	36.1	0	1.4	h	483.30	-70.86	0	2.06	-72.9	0.051	-13	-59.9
644.30	33.8	0	1.4	h	644.30	-73.66	0	2.06	-75.7	0.027	-13	-62.7
1186.00	45.6	180	1.4	v	1186.00	-51.67	6.3	1.27	-46.6	21.677	-13	-33.6
1186.00	40.6	0	1.4	h	1186.00	-54.77	6.3	1.27	-49.7	10.617	-13	-36.7
1295.70	53.8	180	1.4	v	1295.70	-41.97	6.3	1.27	-36.9	202.302	-13	-23.9
1295.70	53.4	0	1.4	h	1295.70	-43.27	6.3	1.27	-38.2	149.968	-13	-25.2

§25.202 – EMISSION MASK

Standard Applicable

According to CFR 47, § 25.202. The mean power of emission shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB;

In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and include 250 percent of the authorized bandwidth: 35 dB;

Measurement Procedure

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 4 kHz. Sufficient scans were taken to show any out of band emissions up to 10^{th} harmonic.

Equipment Lists

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Spectrum Analyzer	E4446A	US44300386	2004-11-10

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

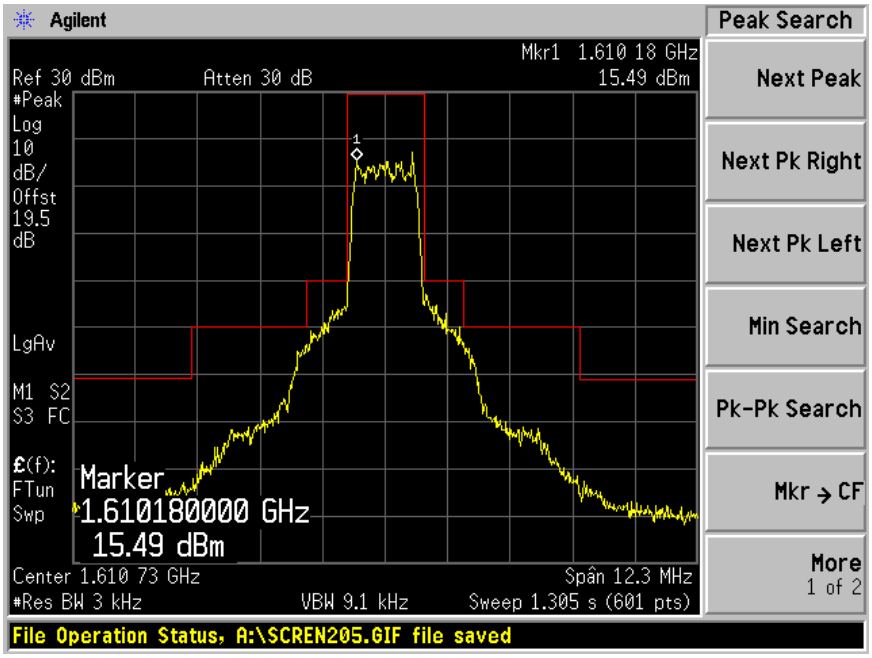
Measurement Result

Environmental Conditions

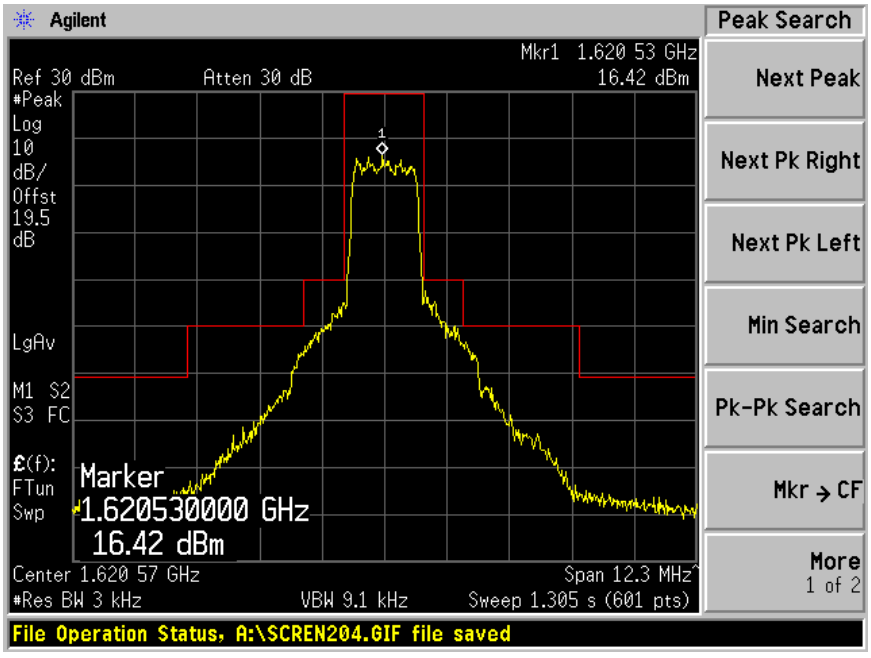
Temperature:	20° C
Relative Humidity:	58%
ATM Pressure:	1010 mbar

The testing was performed by Snell Leong on 2005-11-17.

Low Channel



High Channel



§2.1046 & §25.204 – POWER OUTPUT

Standard Applicable

According to §25.204 (a) In bands shared coequally with terrestrial radio communication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station, other than an ESV, operating in frequency bands between 1 and 15 GHz, shall not exceed the following limits except as provided for in paragraph (c) of this section:

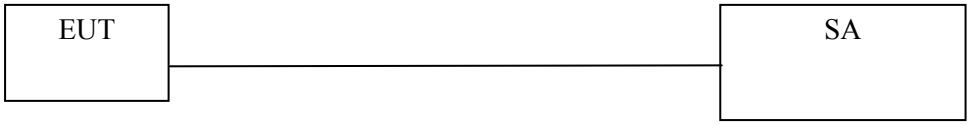
+40 dBW in any 4 kHz band for $\Theta \leq 0°$

+40 + 3Θ dBW in any 4 kHz band for $0° < \Theta \leq 5°$

where Θ is the angle of elevation of the horizon viewed from the center of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it.

Measurement Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a Spectrum Analyzer.



Equipment Lists

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Spectrum Analyzer	E4446A	US44300386	2005-11-10

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

Measurement Result

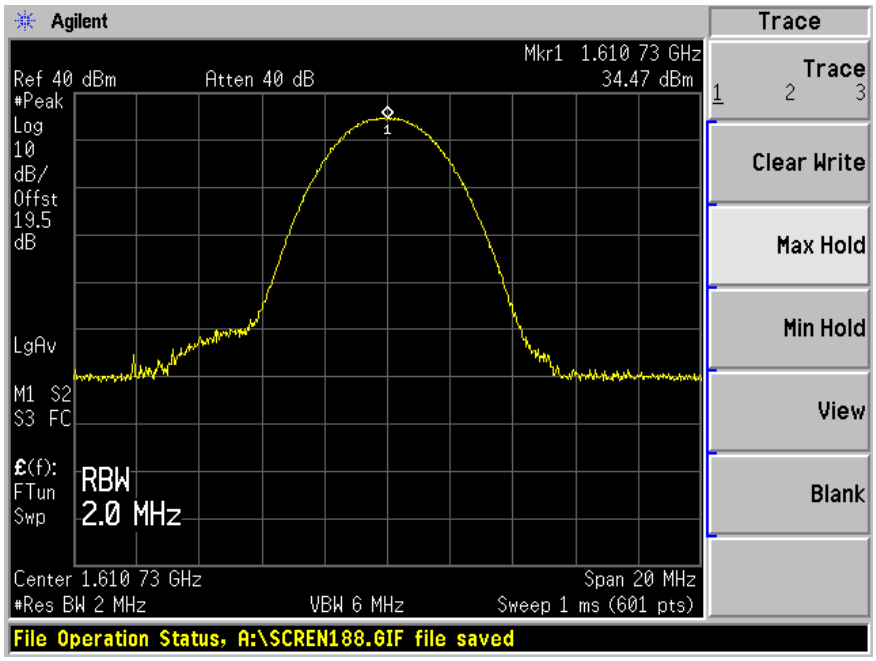
Environmental Conditions

Temperature:	23° C
Relative Humidity:	65%
ATM Pressure:	1025 mbar

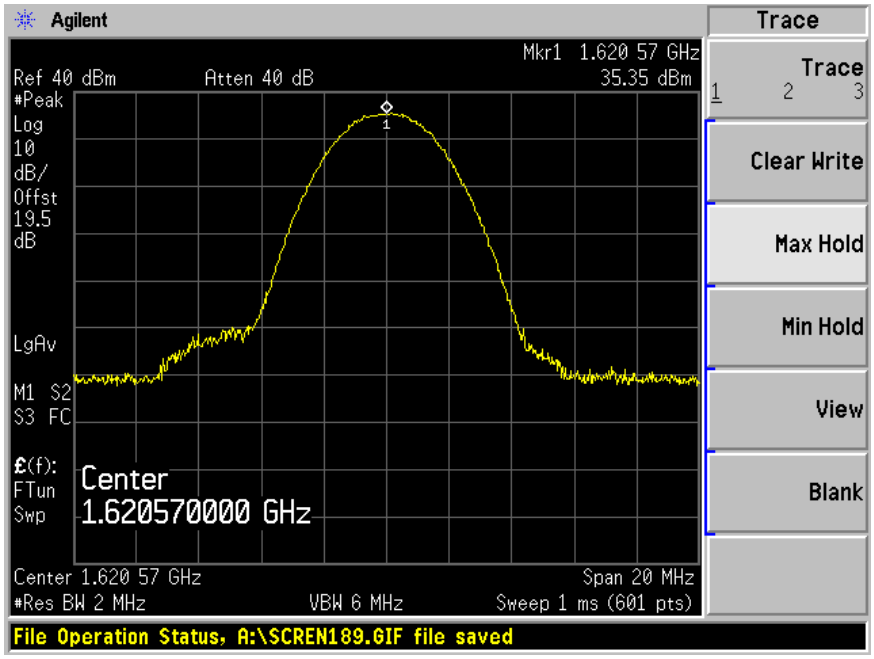
The testing was performed by Snell Leong on 2005-10-07.

Channel	Frequency	Max conducted power		Corrected Factors			Limit	Result
			Angle of	Antenna Gain	Cable Loss	EIRP		
	MHz	(dBm)	Elevation	dB	dB	dBm	(dBW)	
Low	1610.73	34.47	0.00	3.7	3.5	37.67	40	Pass
High	1620.57	35.50	0.00	3.7	3.5	35.70	40	Pass

Low Channel



High Channel



§25.216(b) & §25.216(g) – EMISSIONS FROM MOBILE EARTH SATIONS FOR PROTECTION OF AERONAUTICAL RADIONAVIGATION-SATELLITE SERVICE

Standard Applicable

According to §215.216(b), the e.i.r.p. density of emissions from mobile earth stations placed in service on or before July 21, 2002 with assigned uplink frequencies between 1610 MHz and 1626.5 MHz shall not exceed −64 dBW/MHz, averaged over any 2 millisecond active transmission interval, in the band 1587.42–1605 MHz. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth generated by such stations shall not exceed −74 dBW, averaged over any 2 millisecond active transmission interval, in the 1587.42–1605 MHz band.

According to §215.216(g), mobile earth stations manufactured more than six months after Federal Register publication of the rule changes adopted in FCC 03–283 with assigned uplink frequencies in the 1610–1626.5 MHz band shall suppress the power density of emissions in the 1605–1610 MHz band-segment to an extent determined by linear interpolation from −70 dBW/MHz at 1605 MHz to −10 dBW/MHz at 1610 MHz averaged over any 2 millisecond active transmission interval. The e.i.r.p of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed a level determined by linear interpolation from −80 dBW at 1605 MHz to −20 dBW at 1610 MHz, averaged over any 2 millisecond active transmission interval.

Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.

Equipment Lists

Manufacturer	Description	Model	Serial Number	Cal. Date
Agilent	Spectrum Analyzer	E4446A	US44300386	2004-11-10

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

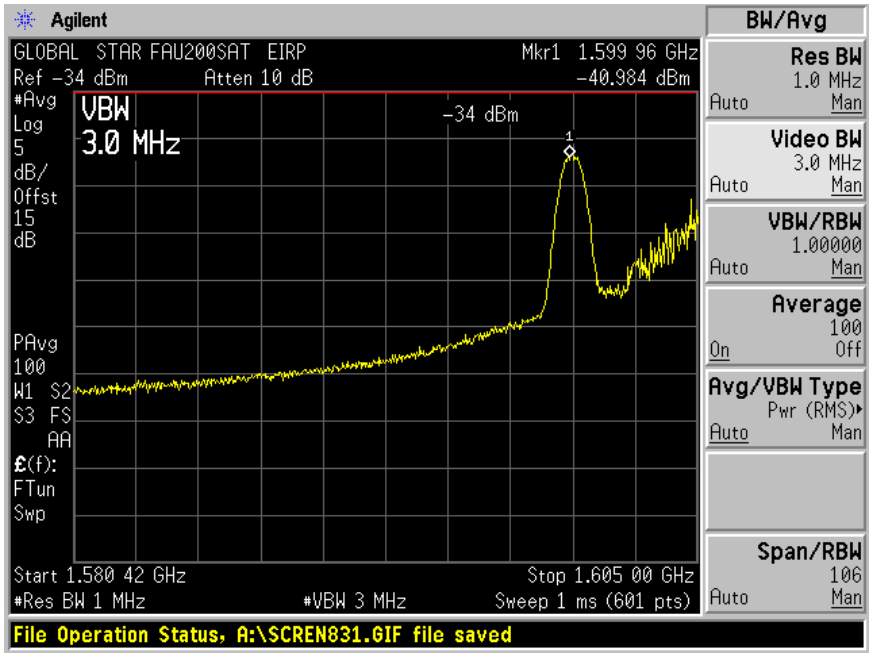
Measurement Result

Environmental Conditions

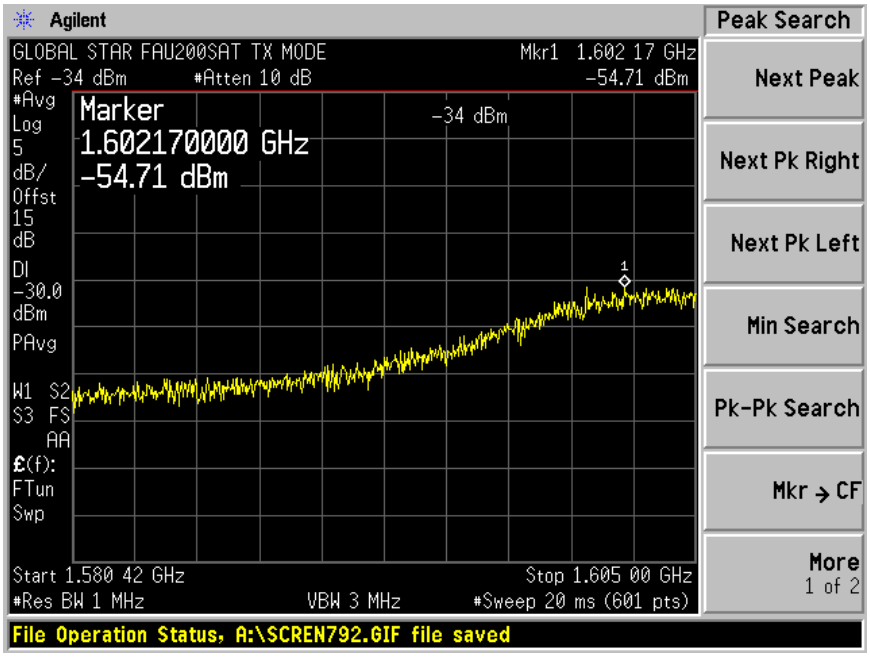
Temperature:	23° C
Relative Humidity:	65%
ATM Pressure:	1025 mbar

The testing was performed by Snell Leong on 2005-10-07.

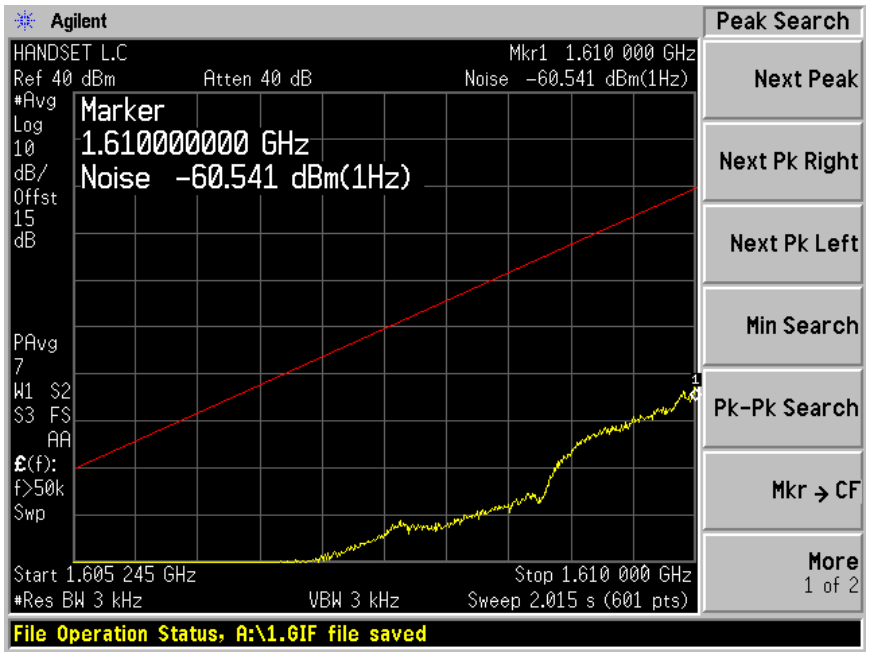
Low Channel



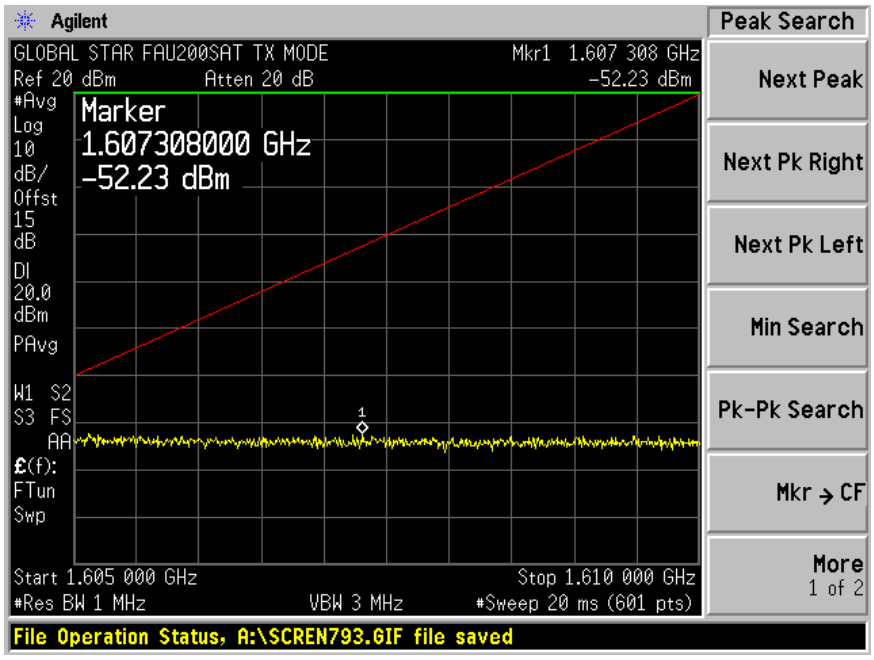
High Channel



Low Channel



High Channel



§2.1055 & §25.202(d) – FREQUENCY STABILITY

Standard Applicable

According to §25.202(d) *Frequency tolerance, Earth stations.* The carrier frequency of each earth station transmitter authorized in these services shall be maintained within 0.001 percent of the reference frequency.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
HP	Microwave Frequency Counter	5342A	2232A06380	2005-09-07
Tenney	Oven, Temperature	VersaTenn	12.222-193	2005-06-27

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

Measurement Result

Environmental Conditions

Temperature:	23° C
Relative Humidity:	65%
ATM Pressure:	1025 mbar

The testing was performed by Snell Leong on 2005-10-07.

Reference Frequency: 1614.42MHz, Limit: .001%				
Environment	Power	Measured	Error	Limit
Temperature(C)	Supply (V)	Freq (MHz)	%	%
50	110	1614.423500	0.00022	0.001
40	110	1614.422750	0.00017	0.001
30	110	1614.421310	0.00008	0.001
20	110	1614.420910	0.00006	0.001
10	110	1614.421010	0.00006	0.001
0	110	1614.421080	0.00007	0.001
-10	110	1614.422150	0.00013	0.001
-20	110	1614.422560	0.00016	0.001
-30	110	1614.423550	0.00022	0.001

Frequency Stability vs Extrema Voltage

Reference Frequency: 1614.42MHz, Limit: .001%				
Enviorment	Temperature	Measured	Error	Limit
Power Supply	C	Freq (MHz)	%	%
126.5	20	1614.420860	0.00005	0.001
110	20	1614.420910	0.00006	0.001
93.5	20	1614.420110	0.00001	0.001