Certification Test Report

FCC ID: 2ASIM-GS6C1

FCC Rule Part: 15.247

Report Number: AT72146079-1C0

Manufacturer: RSAE Labs
Model: GS-6C

Test Begin Date: February 14, 2019
Test End Date: March 5, 2019

Report Issue Date: March 27, 2019

FOR THE SCOPE OF ACCREDITATION UNDER Certificate Number: 2955.09

This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the Federal Government.

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This report contains 23 pages

TABLE OF CONTENTS

1 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations and Innovation, Science and Economic Development Canada's Radio Standards Specification RSS-247 for certification.

1.2 Product description

The RSAE Labs Global Sentinel GS-6C is a cargo container monitoring system. It utilizes 2.4GHz 802.15.4 transceiver, an approved cellular module (FCC ID: XPY1CGM5NNN), an approved Iridium Satellite module (FCC ID: Q369603N), and a GNSS receiver.

This test report documents the compliance of the 2.4GHz transceiver mode of operation.

Technical Details:

Detail	Description
Frequency Range (MHz)	2405 – 2480
Number of Channels	16
Channel Spacing	5 MHz
Modulation Format	DSSS
Data Rates	250kbps
Operating Voltage	8.5Vdc (Battery)
Antenna Type(s) / Gain(s)	Ceramic Chip / 1.7dBi

Manufacturer Information:
RSAE Labs
P.O. Box 15922
Panama City, Florida, 32406 USA

Test Sample Serial Number: Radiated: 1181800012
Conducted: 118180010

Test Sample Condition: The test samples were provided in good working order with no visible defects.

1.3 Test Methodology and Considerations

All modes of operation, including all available data rates, were evaluated. The data presented in this report represents the worst case where applicable.

For radiated emissions, the EUT was evaluated in three orthogonal orientations. The worst-case orientation was Z-position. The EUT was programmed to generate a continuously modulated signal on each channel evaluated.

For RF Conducted measurements, the EUT was connected to the test equipment with a U.FL to SMA connector. The EUT was programmed to generate a continuously modulated signal on each channel evaluated.

Intermodulation products were evaluated for all combinations of simultaneous transmission and found to be in compliance.

Software power setting during test: 4.5

2 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following addresses:

TÜV SÜD America, Inc.
5945 Cabot Pkwy, Suite 100
Alpharetta, GA 30005
Phone: (678) 341-5900

2.2 Laboratory Accreditations/Recognitions/Certifications

TÜV SÜD America, Inc. is accredited to ISO/IEC 17025 by the American Association for Laboratory Accreditation/A2LA accreditation program and has been issued certificate number 2955.09 in recognition of this accreditation.

Unless otherwise specified, all tests methods described within this report are covered under the ISO/IEC 17025 scopes of accreditation.

The Semi-Anechoic Chamber Test Sites and Conducted Emissions Sites have been fully described, submitted to, and accepted by the FCC, ISED Canada and the Japanese Voluntary Control Council for Interference by information technology equipment.

FCC Registration Number:	967699
ISED Canada Lab Code:	23932
VCCI Member Number:	1831
• VCCI Registration Number	A-0295

2.3 Radiated Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site – Chamber A

The Semi-Anechoic Chamber Test Site consists of a 20' x 30' x 18' shielded enclosure. The chamber is lined with Toyo Ferrite Grid Absorber, model number FFG-1000. The ferrite tile grid is 101 x 101 x 19mm thick and weighs approximately 550 grams. These tiles are mounted on steel panels and installed directly on the inner walls of the chamber.

The turntable is 5' in diameter and is located 5'6" from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is all steel, flush mounted EMCO Model 1060 installed in an all steel frame. The table is remotely operated from inside the control room located 25' from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Behind the turntable is a 3' x 6' x 4' deep shielded pit used for support equipment if necessary. The pit is equipped with 1 - 4" PVC chase from the turntable to the pit that allows for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit, so cables can be supplied to the EUT from the pit.

The chamber rear wall is covered with a mixture of Siepel pyramidal absorber. The side walls of the chamber are partially covered with Siepel pyramidal absorber.

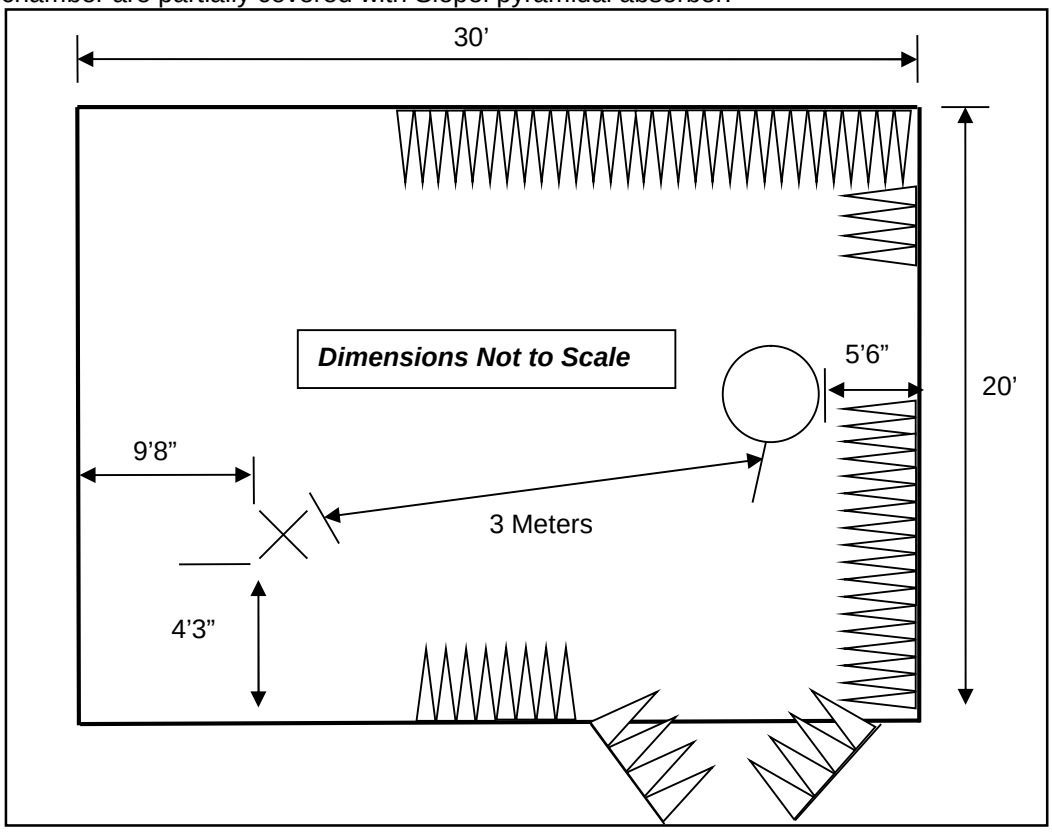

Figure 2.3.1-1: Semi-Anechoic Chamber Test Site – Chamber A

2.3.2 Semi-Anechoic Chamber Test Site – Chamber B

The Semi-Anechoic Chamber Test Site consists of a 20'W x 30'L x 20'H shielded enclosure. The chamber is lined with ETS-Lindgren Ferrite Absorber, model number FT-1500. The ferrite tile 600 mm x 600 mm (2.62 in x 23.62 in) panels and are mounted directly on the inner walls of the chamber shield.

The specular regions of the chamber are lined with additional ETS-Lindgren PS-600 hybrid absorber to extend its frequency range up to 18GHz and beyond.

The turntable is a 2m ETS-Lindgren Model 2170 and installed off the center axis is located 5'6" from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the shield using #8 solid copper wire.

The antenna mast is an EMCO 1060 and is remotely controlled from the control room for both antenna height and polarization.

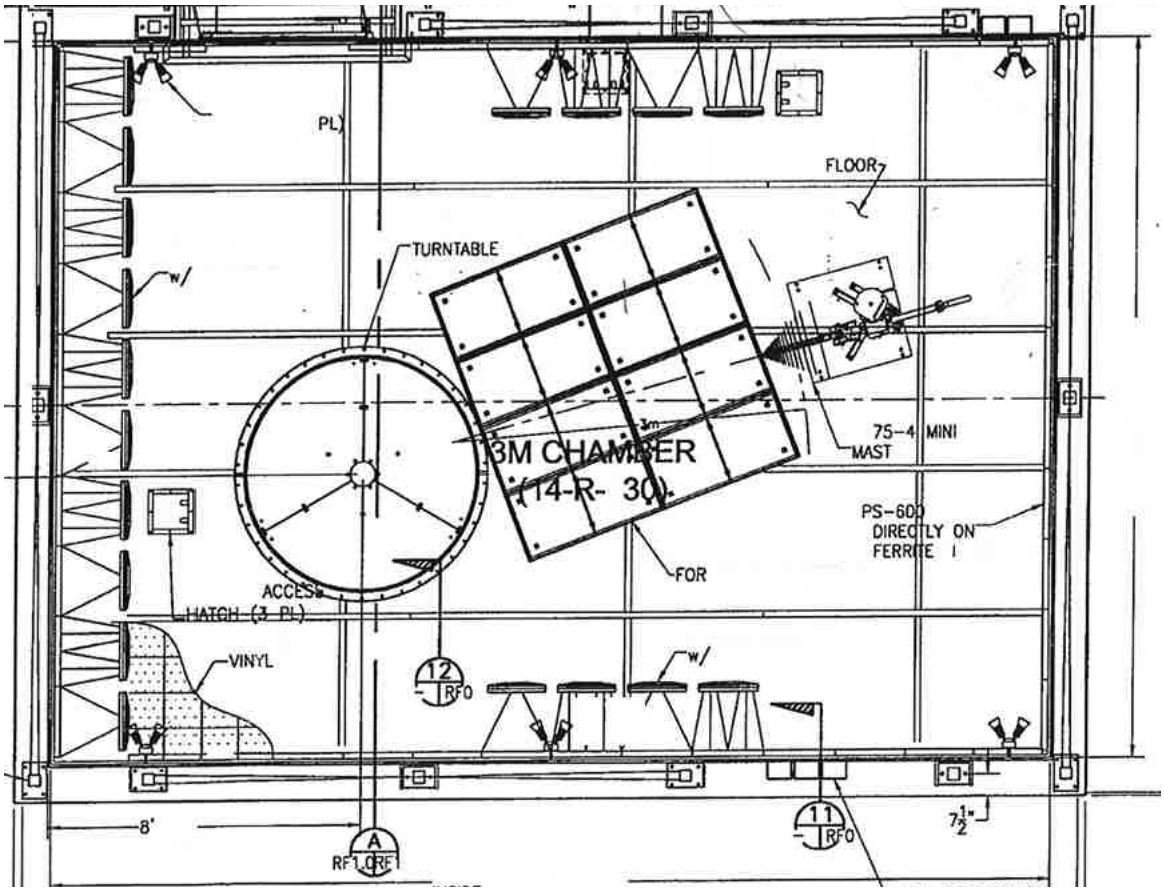

Figure 2.3.2-1: Semi-Anechoic Chamber Test Site – Chamber B

2.4 Conducted Emissions Test Site Description

2.4.1 Conducted Emissions Test Site

The AC mains conducted EMI site is located in the main EMC lab. It consists of a 12' x 10' horizontal coupling plane (HCP) as well as a 12'x8' vertical coupling plane (VCP). The HGP is constructed of 4' x 10' sheets of particle board sandwiched by galvanized steel sheets. These panels are bonded using 11AWG 1/8" x 2" by 10' galvanized sheet steel secured to the panels via by screws. The VCP is constructed of three 4'x8' sheets of 11AWG solid aluminum.

The HCP and VCP are electrically bonded together using 1"x1" angled aluminum secured with screws.

The site is of sufficient size to test table top and floor standing equipment in accordance with section 6.1.4 of ANSI C63.10.

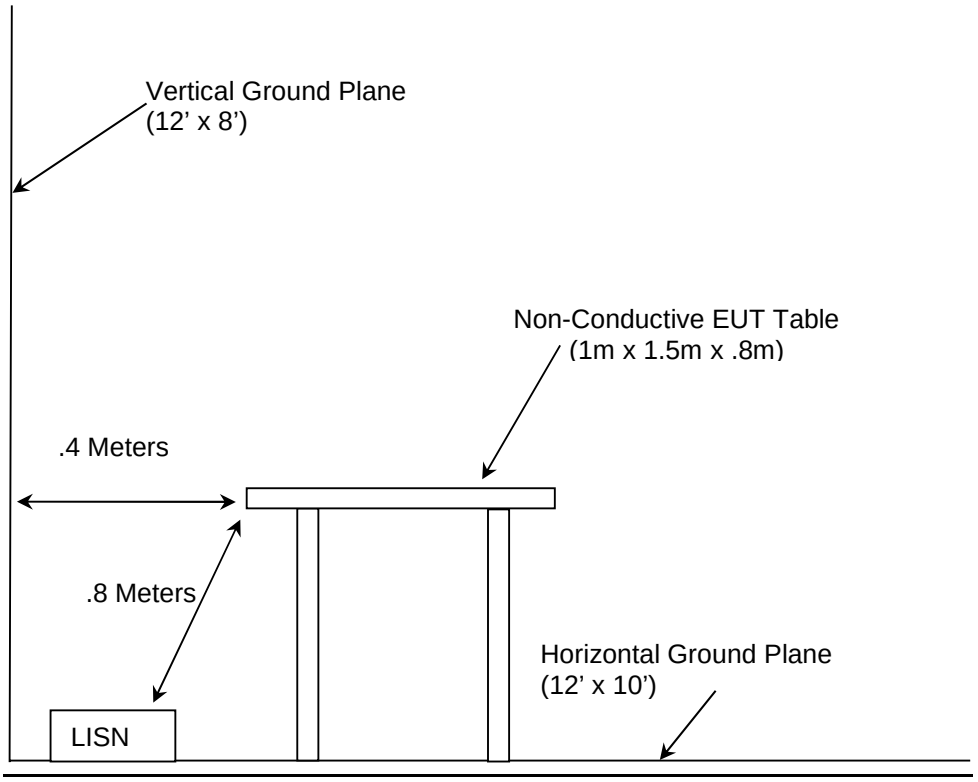

Figure 2.4.1-1: AC Mains Conducted EMI Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2019
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2019
- FCC KDB 558074 D01 DTS Meas Guidance v05r01 - Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247, February 11, 2019

4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

Table 4-1: Test Equipment

Asset ID	Manufacturer	Model	Equipment Type	Serial Number	Last Calibration Date	Calibration Due Date
30	Spectrum Technologies	DRH-0118	1-18GHz Horn Antenna	970102	05/09/2017	05/09/2019
144	Omega	RH411	Temp / Humidity Meter	H0103373	10/24/2018	10/24/2020
321	Hewlett Packard	HPC 8447D	Low Freq. Pre-Amp	1937A02809	09/12/2018	09/12/2019
324	ACS	Belden	Conducted EMI Cable	8214	04/05/2018	04/05/2019
335	Suhner	SF-102A	Cable (40GHZ)	882/2A	07/10/2018	07/10/2019
338	Hewlett Packard	8449B	High Frequency Pre-Amp	3008A01111	07/11/2017	07/11/2019
345	Suhner Sucoflex	102A	Cable 42(GHZ)	1077/2A	07/10/2018	07/10/2019
622	Rohde & Schwarz	FSV40 (v3.40)	FSV Signal Analyzer 10Hz to 40GHz	101338	07/30/2018	07/30/2020
638	Rohde & Schwarz	OSP 120	Open Switch and Control Unit	101229	04/28/2017	04/28/2019
651	Rohde & Schwarz	TS-PR26	18GHz to 26.5GHz Pre-Amplifier	100023	07/10/2018	07/10/2019
652	Rohde & Schwarz	3160-09	High Frequency Antenna 18GHz to 26.5GHz	060922-21894	NCR	NCR
813	PMM	9010	EMI Receiver; RF Input 50ohm; 10Hz-50MHz; 10Hz-30MHz	697WW30606	2/25/2019	2/25/2020
819	Rohde & Schwarz	ESR26	EMI Test Receiver	101345	11/06/2018	11/06/2019
827	(-)	TS8997 Rack Cable Set	TS8997 Rack Cable Set	N/A	08/13/2018	08/13/2019
851	TUV ATLANTA	FMC0101951-100CM	ASAC Cable Set Consisting of 566, 619, and 643	N/A	09/26/2018	09/26/2019
852	Teseq	CBL 6112D	Bilog Antenna; Attenuator	51617	10/15/2018	10/15/2019
3010	Rohde & Schwarz	ENV216	Two-Line V-Network	3010	07/11/2018	07/11/2019

NOTE: All test equipment was used only during active calibration cycles.

5 SUPPORT EQUIPMENT

Table 5-1: Support Equipment

Item	Equipment Type	Manufacturer	Model/Part Number	Serial Number
No support equipment was required – once placed in test mode, the EUT was tested standalone				

Table 5-2: Cable Description

Cable	Cable Type	Length	Shield	Termination
The EUT is a stand-alone, battery-powered device with no provisions for external cabling				

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

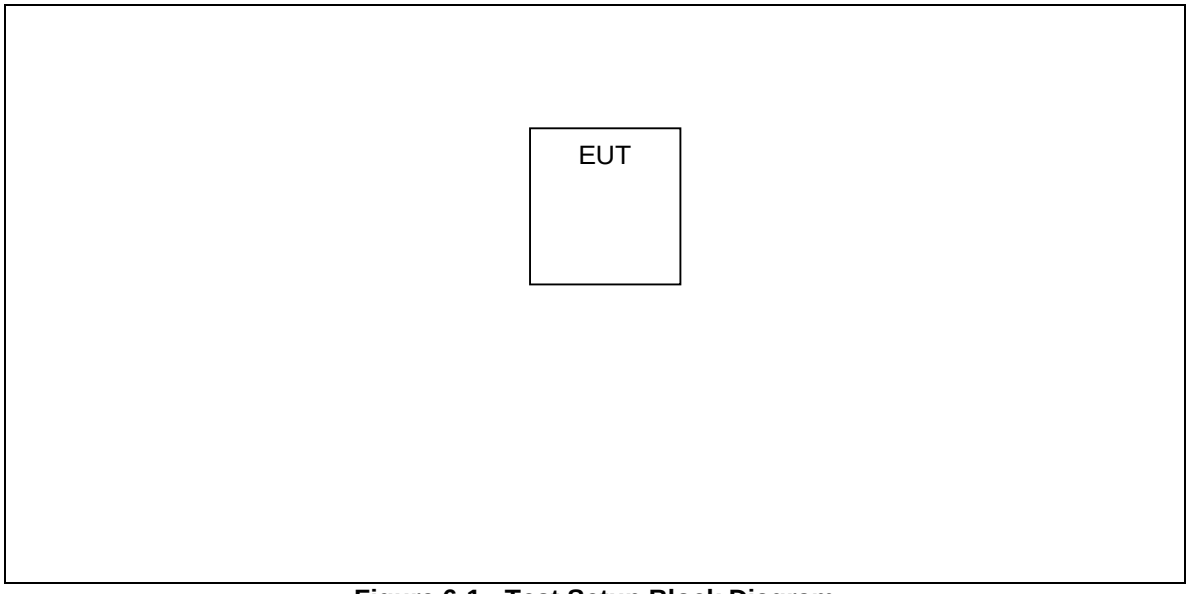

Figure 6-1: Test Setup Block Diagram

7 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

7.1 Antenna Requirement – FCC 15.203

The EUT utilizes a ceramic chip antenna which is not removeable by the end user thus meeting the requirements of 15.203. The max gain of the antenna is 1.7dBi in the 2.4GHz band.

7.2 Power Line Conducted Emissions – FCC 15.207, ISED Canada: RSS-Gen 8.8

The device was battery-powered and had no facility for connection to the AC mains.

7.3 6dB / 99% Bandwidth – FCC 15.247(a)(2)

7.3.1 Measurement Procedure

The 6dB bandwidth was measured in accordance with the FCC KDB 558074 D01 DTS Meas Guidance. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 100 kHz. The Video Bandwidth (VBW) was set to ≥ 3 times the RBW. The trace was set to max hold with a peak detector active. The marker-delta function of the spectrum analyzer was utilized to determine the 6 dB bandwidth of the emission.

The occupied bandwidth measurement function of the spectrum analyzer was used to measure the 99% bandwidth. The span of the analyzer was set to capture all products of the modulation process, including the emission sidebands. The resolution bandwidth was set from 1% to 5% of the occupied bandwidth and the video bandwidth set to at least 3 times the resolution bandwidth. A peak detector was used.

7.3.2 Measurement Results

Performed by: Jeremy Pickens

Table 7.3.2-1: 6dB / 99% Bandwidth

Modulation	Frequency [MHz]	6 dB Bandwidth [MHz]	99% Bandwidth [MHz]
DSSS	2405	1.634	2.523
	2445	1.683	2.538
	2480	1.683	2.538

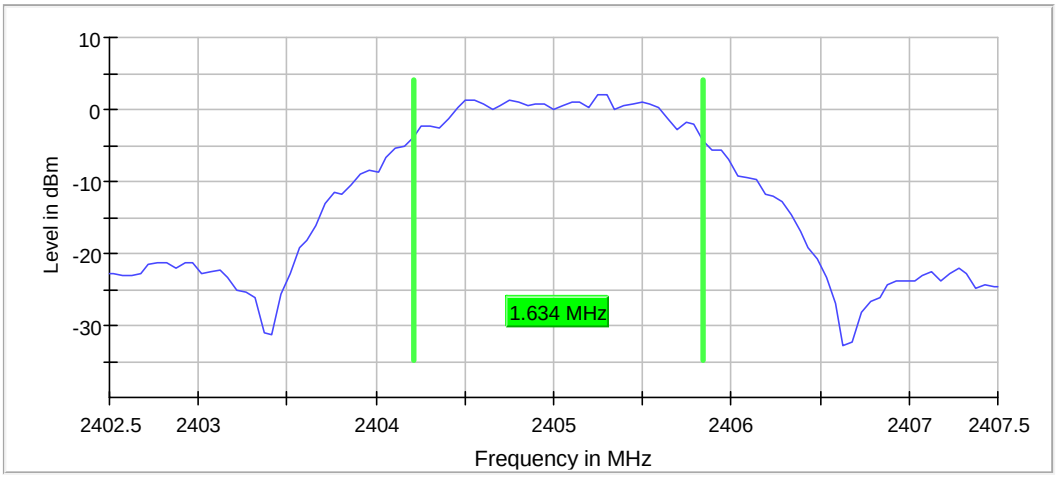

Figure 7.3.2-1: Sample Plot - 6dB BW

Table 7.3.2-2: Sample Measurement Settings (OBW)

Setting	Instrument Value	Target Value
Start Frequency	2.40250 GHz	2.40250 GHz
Stop Frequency	2.40750 GHz	2.40750 GHz
Span	5.000 MHz	5.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 100
Sweeptime	18.938 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	14 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.10 dB	0.50 dB

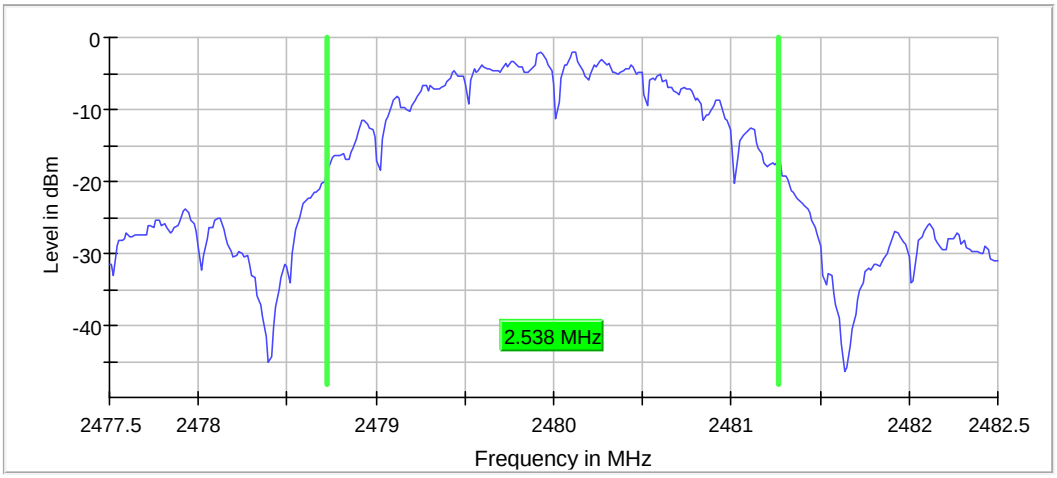

Figure 7.3.2-2: Sample Plot - 99% OBW

Table 7.3.2-3: Sample Measurement Settings (OBW)

Setting	Instrument Value	Target Value
Start Frequency	2.47750 GHz	2.47750 GHz
Stop Frequency	2.48250 GHz	2.48250 GHz
Span	5.000 MHz	5.000 MHz
RBW	30.000 kHz	>= 25.000 kHz
VBW	100.000 kHz	>= 90.000 kHz
SweepPoints	333	~ 333
Sweeptime	63.218 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	24 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.10 dB	0.30 dB

7.4 Fundamental Emission Output Power – FCC 15.247(b)(3)

7.4.1 Measurement Procedure

The maximum peak conducted output power was measured in accordance with FCC KDB 558074 D01 DTS Meas Guidance utilizing peak methods. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer applying suitable attenuation.

7.4.2 Measurement Results

Performed by: Jeremy Pickens

Table 7.4.2-1: Maximum Peak Conducted Output Power

Modulation	Frequency [MHz]	Peak Power [dBm]
DSSS	2405	5.5
	2445	5.5
	2480	5.2

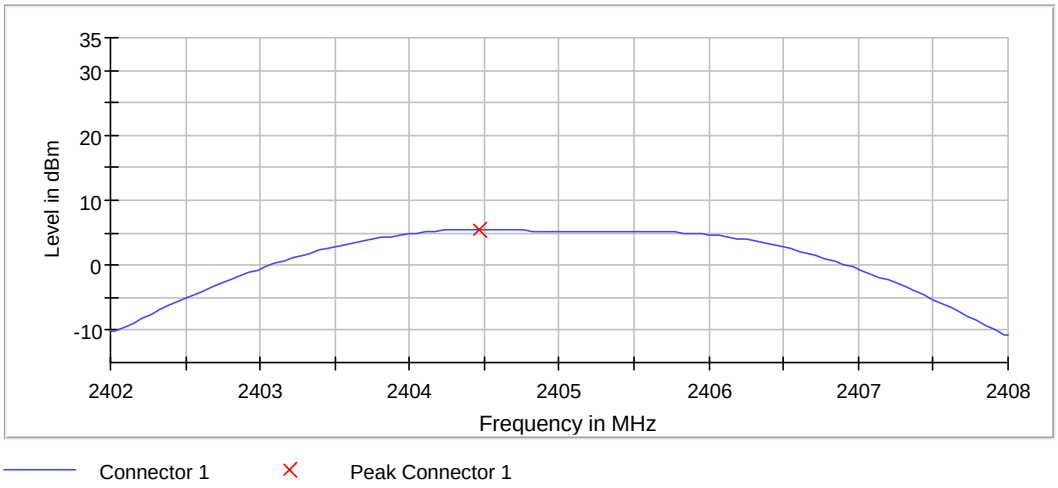

Figure 7.4.2-1: Sample Plot – Peak Power

Table 7.4.2-2: Sample Measurement Settings

Setting	Instrument Value	Target Value
Start Frequency	2.40200 GHz	2.40200 GHz
Stop Frequency	2.40800 GHz	2.40800 GHz
Span	6.000 MHz	6.000 MHz
RBW	2.000 MHz	>= 1.634 MHz
VBW	10.000 MHz	>= 6.000 MHz
SweepPoints	101	~ 101
Sweeptime	953.450 ns	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.03 dB	0.50 dB

7.5 Emission Levels

7.5.1 Emissions into Non-restricted Frequency Bands – FCC 15.247(d)

7.5.1.1 Measurement Procedure

The unwanted emissions into non-restricted bands were measured conducted in accordance with FCC KDB 558074 D01 DTS Meas Guidance. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer applying suitable attenuation. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 100 kHz. The Video Bandwidth (VBW) was set to ≥ 300 kHz. The resulting spectrum analyzer peak level was used to determine the reference level with respect to the 20 dBc limit at the band edges. The spectrum span was then adjusted for the measurement of spurious emissions from 30MHz to 25GHz, 10 times the highest fundamental frequency.

7.5.1.2 Measurement Results

Performed by: Jeremy Pickens

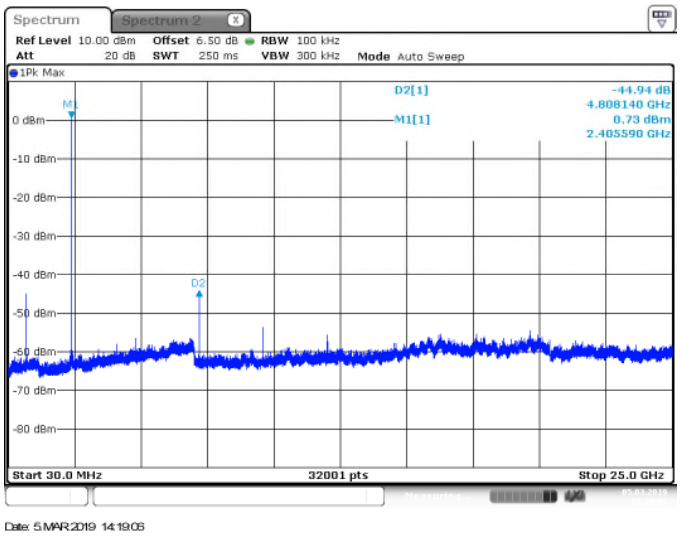

Figure 7.5.1.2-1: LCH – 30MHz–25GHz

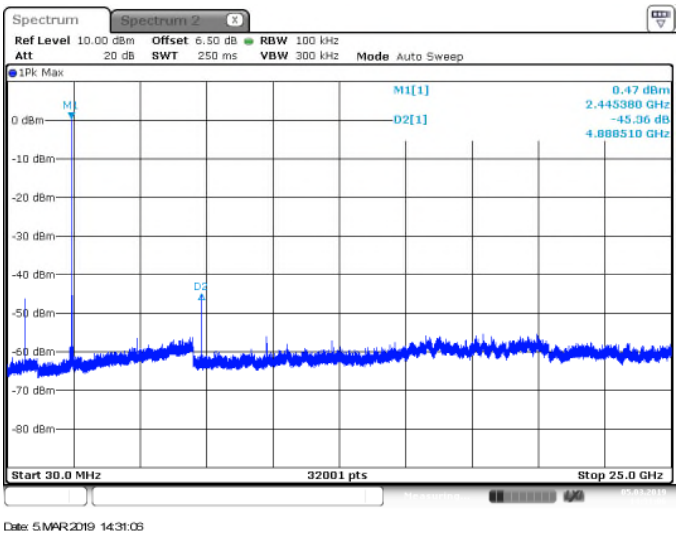

Figure 7.5.1.2-2: MCH – 30MHz–25GHz

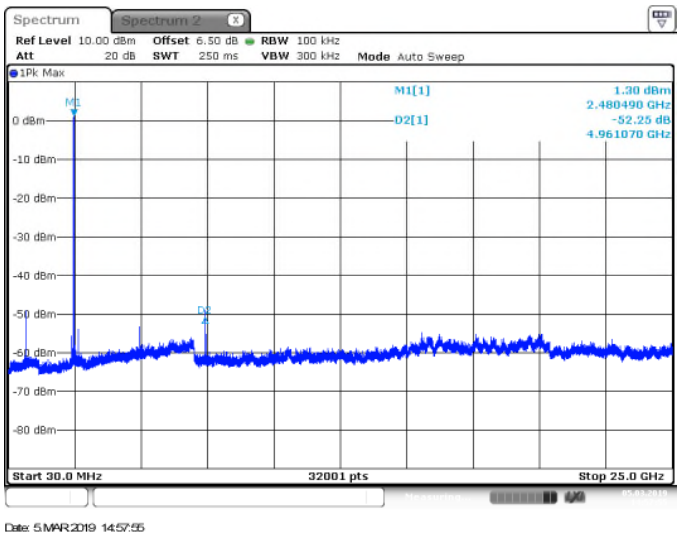

Figure 7.5.1.2-3: HCH – 30MHz–25GHz

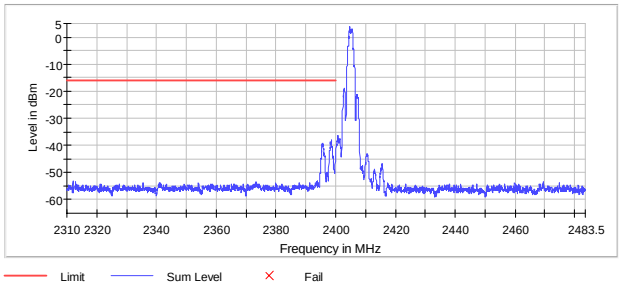

Figure 7.5.1.2-4: Lower Band-edge

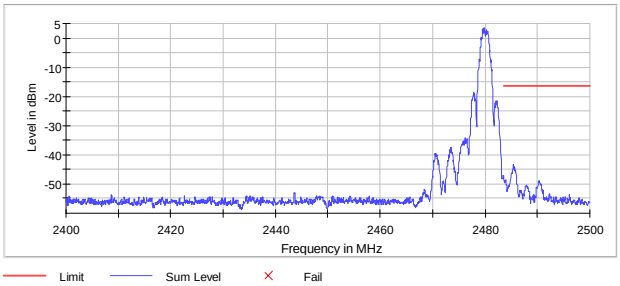

Figure 7.5.1.2-5: Upper Band-edge

Table 7.5.1.2-1: Lower Band-edge

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2398.475000	-37.9	21.8	-16.1	PASS
2398.425000	-38.2	22.1	-16.1	PASS
2398.525000	-38.2	22.1	-16.1	PASS
2398.275000	-38.6	22.5	-16.1	PASS
2398.375000	-38.7	22.5	-16.1	PASS
2398.575000	-38.9	22.7	-16.1	PASS
2395.525000	-39.1	22.9	-16.1	PASS
2398.325000	-39.4	23.3	-16.1	PASS
2395.775000	-39.5	23.4	-16.1	PASS
2398.225000	-39.5	23.4	-16.1	PASS
2395.475000	-39.7	23.5	-16.1	PASS
2398.625000	-39.7	23.6	-16.1	PASS
2395.725000	-39.8	23.6	-16.1	PASS
2395.575000	-39.8	23.7	-16.1	PASS
2395.625000	-39.9	23.8	-16.1	PASS

Table 7.5.1.2-2: Upper Band-edge

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2485.425000	-43.4	27.1	-16.3	PASS
2485.625000	-43.9	27.6	-16.3	PASS
2485.375000	-44.0	27.7	-16.3	PASS
2485.675000	-44.2	27.9	-16.3	PASS
2485.475000	-44.3	28.0	-16.3	PASS
2485.325000	-44.5	28.2	-16.3	PASS
2485.575000	-44.7	28.4	-16.3	PASS
2485.725000	-45.2	28.8	-16.3	PASS
2485.225000	-45.2	28.8	-16.3	PASS
2485.775000	-45.3	29.0	-16.3	PASS
2485.275000	-45.3	29.0	-16.3	PASS
2485.875000	-45.6	29.3	-16.3	PASS
2485.525000	-45.7	29.4	-16.3	PASS
2485.925000	-46.0	29.7	-16.3	PASS
2485.825000	-46.0	29.7	-16.3	PASS

7.5.2 Emissions into Restricted Frequency Bands – FCC: 15.205, 15.209

7.5.2.1 Measurement Procedure

The unwanted emissions into restricted bands were measured radiated over the frequency range of 9kHz to 25GHz, 10 times the highest fundamental frequency.

The EUT was rotated through 360° and the receive antenna height was varied from 1 meter to 4 meters so that the maximum radiated emissions level would be detected. For frequencies below 1000 MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000 MHz, peak and average measurements were made with RBW and VBW of 1 MHz and 3 MHz respectively.

Each emission found to be in a restricted band as defined by section 15.205, including any emission at the operational band-edge, was compared to the radiated emission limits as defined in section 15.209.

7.5.2.2 Measurement Results

Performed by: Jeremy Pickens / Tyler Leeson

Radiated spurious emissions found in the band of 9kHz to 25GHz are reported in the Table 7.4.2.2-1 below.

Table 7.5.2.2-1: Radiated Spurious Emissions Tabulated Data

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBµV/m)		Limit (dBµV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
2405 MHz										
2390	47.60	34.40	H	-3.90	43.70	30.50	74.0	54.0	30.3	23.5
2390	48.00	34.60	V	-3.90	44.10	30.70	74.0	54.0	29.9	23.3
4810	46.70	33.60	H	4.15	50.85	37.75	74.0	54.0	23.1	16.2
4810	48.40	35.40	V	4.15	52.55	39.55	74.0	54.0	21.4	14.4
2445 MHz										
4890	47.10	33.60	H	4.52	51.62	38.12	74.0	54.0	22.4	15.9
4890	48.10	36.10	V	4.52	52.62	40.62	74.0	54.0	21.4	13.4
7335	50.70	40.20	H	10.15	60.85	50.35	74.0	54.0	13.1	3.6
7335	52.50	43.70	V	10.15	62.65	53.85	74.0	54.0	11.3	0.1
2480 MHz										
2483.5	62.00	51.50	H	-3.46	58.54	48.04	74.0	54.0	15.5	6.0
2483.5	59.50	49.80	V	-3.46	56.04	46.34	74.0	54.0	18.0	7.7
4960	46.50	32.90	H	4.83	51.33	37.73	74.0	54.0	22.7	16.3
4960	46.90	33.70	V	4.83	51.73	38.53	74.0	54.0	22.3	15.5
7440	53.60	39.80	H	10.23	63.83	50.03	74.0	54.0	10.2	4.0
7440	53.50	39.90	V	10.23	63.73	50.13	74.0	54.0	10.3	3.9

7.5.3 Sample Calculation:

$R_C = R_U + CF_T$

Where:

CF_T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_U	=	Uncorrected Reading
R_C	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Example Calculation: Peak

Corrected Level: 52.50 + 10.15 = 62.65dBuV/m
Margin: 74dBµV/m – 62.65dBµV/m = 11.3dB

Example Calculation: Average

Corrected Level: 43.70 + 10.15 - 0 = 53.85dBuV
Margin: 54dBµV – 53.85dBµV = 0.1dB

7.6 Maximum Power Spectral Density in the Fundamental Emission

7.6.1 Measurement Procedure

The power spectral density was measured in accordance with the FCC KDB 558074 D01 DTS Meas Guidance utilizing the PKPSD method. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer applying suitable attenuation. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 10 kHz. The Video Bandwidth (VBW) was set to 30 kHz. Span was set to 1.5 times the DTS bandwidth. The trace was set to max hold with the Peak detector active.

7.6.2 Measurement Results

Performed by: Jeremy Pickens

Table 7.6.2-1: Power Spectral Density

Modulation	Frequency [MHz]	PSD [dBm]
DSSS	2405	-5.287
	2445	-5.278
	2480	-5.175

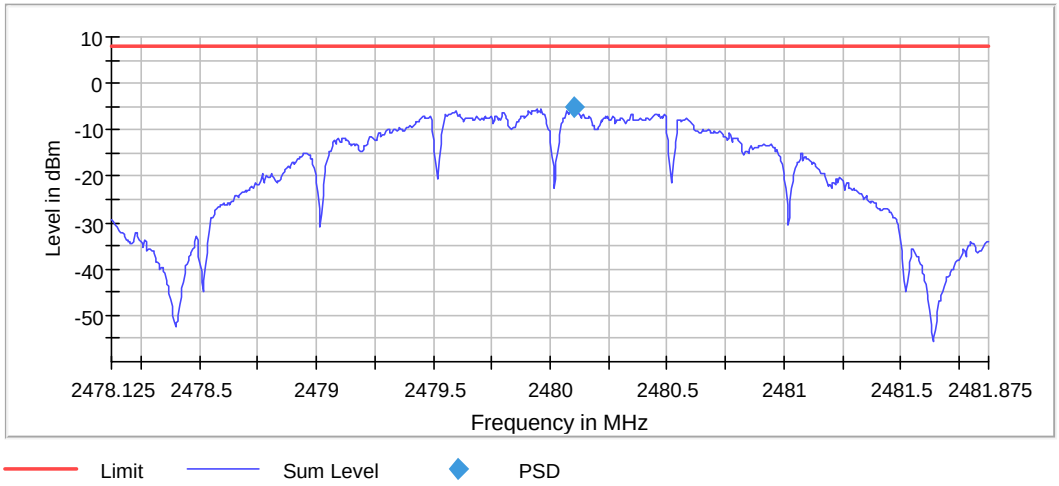

Figure 7.6.2-1: Sample PSD Plot

Table 7.6.2-2: Sample Measurement Settings (PSD)

Setting	Instrument Value	Target Value
Start Frequency	2.47813 GHz	2.47813 GHz
Stop Frequency	2.48188 GHz	2.48188 GHz
Span	3.750 MHz	3.750 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	750	~ 750
Sweeptime	3.750 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	38 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.30 dB	0.50 dB

7.7 Duty Cycle

7.7.1 Measurement Procedure

The duty cycle was using a fast power sensor and meter in conjunction with the WMS32 software. The software recorded the on and off times over a sample period and reported the duty cycle.

7.7.2 Measurement Results

Performed by: Jeremy Pickens

The results for all the modes of operation are provided below.

Table 7.7.2-1 Duty Cycle Correction Factor

Mode	Duty Cycle [%]	Correction Factor [dB]
DSSS	100.00	0.0

Note: The correction factor was calculated as 10*log (1/DC)

8 ESTIMATION OF MEASUREMENT UNCERTAINTY

The expanded laboratory measurement uncertainty figures (U_{Lab}) provided below correspond to an expansion factor (coverage factor) k = 1.96 which provide confidence levels of 95%.

Table 8-1: Estimation of Measurement Uncertainty

Parameter	U_{lab}
Occupied Channel Bandwidth	± 0.009 %
RF Conducted Output Power	± 0.349 dB
Power Spectral Density	± 0.372 dB
Antenna Port Conducted Emissions	± 1.264 dB
Radiated Emissions ≤ 1 GHz	± 5.814 dB
Radiated Emissions > 1 GHz	± 4.318 dB
Temperature	± 0.860 °C
Radio Frequency	± 2.832 x 10^{-8}
AC Power Line Conducted Emissions	± 3.360 dB

9 CONCLUSION

In the opinion of TUV SUD the GS-6C, manufactured by RSAE Labs meets the requirements of FCC Part 15 subpart C for the tests documented herein.

END REPORT