



LS RESEARCH, LLC

Wireless Product Development

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ENGINEERING TEST REPORT # 314305 E

LSR Job #: C-2063

RF Exposure Compliance of:

GVPU

Test Date(s):

November 12, 13, 14, 19, 24, 25, 26, 27 2014

Prepared For:

gogo Business Aviation

Attn: Anthony Beck

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This Test Report is issued under the Authority of: Adam Alger, EMC Engineer

Signature:

Date: 2-16-15

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Prepared For: gogo Business Aviation

Report: TR 314305 E

LSR: C-2063

Name: GVPU

Model: P24486

Serial: Eng. Sample

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LS Research, LLC in Review

As an EMC Testing Laboratory, our Accreditation and Assessments are recognized through the following:



TESTING CERT #1255.01

A2LA – American Association for Laboratory Accreditation

Accreditation based on ISO/IEC 17025: 2005 with Electrical (EMC) Scope of Accreditation

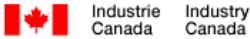
A2LA Certificate Number: 1255.01



Federal Communications Commission (FCC) – USA

Listing of 3 Meter Semi-Anechoic Chamber based on Title 47 CFR – Part 2.948

FCC Registration Number: 90756



Canada

Industry Canada

On file, 3 Meter Semi-Anechoic Chamber based on RSS-212 – Issue 1

File Number: IC 3088-A

On file, 3 and 10 Meter OATS based on RSS-212 – Issue 1

File Number: IC 3088



U. S. Conformity Assessment Body (CAB) Validation

Validated by the European Commission as a U. S. Competent Body operating under the U. S./EU, Mutual Recognition Agreement (MRA) operating under the European Union Electromagnetic Compatibility – Council Directive 2004/108/EC (formerly 89/336/EEC, Article 10.2).

Date of Validation: January 16, 2001

Validated by the European Commission as a U.S. Notified Body operating under the U.S. /EU, Mutual Recognition Agreement (MRA) operating under the European Union Telecommunication Equipment – Council Directive 99/5/EC, Annex V.

Date of Validation: November 20, 2002

Notified Body Identification Number: 1243

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1.0 Conformance Summary

The EUT was found to MEET the MPE threshold for FCC §2.1091(mobile) using methods of FCC KDB 447498 D01 General RF Exposure Guidance v05r02 as a standalone device.

2.0 Equipment Under Test (EUT) Information

The following information has been supplied by the applicant.

Product Name:	GVPU
Model Number:	P24486
Serial Number:	Eng. Sample
FCC ID	Y7A-P24486

2.1 Product Description

Gogo Video Processing Unit (GVPU) using LSR's Dual band (2.4/5 GHz) TiWi-5 radio module.

2.2 Additional Information

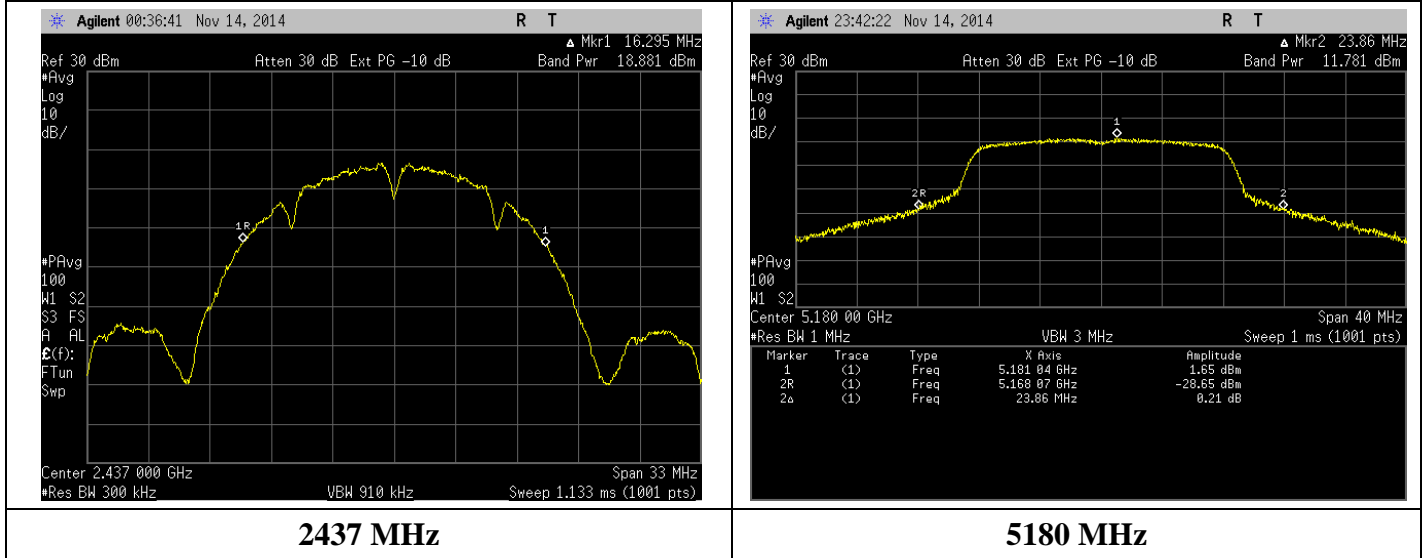
EUT programmed for continuous transmit or receive on selectable channel and data rate (modulation) using HCI commands via proprietary cable.

3.0 RF Conducted Measurement Data

Table

Frequency (MHz)	Power (dBm)
2437	18.88
5180	11.78

Plots – Maximum Average Output Power



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4.0 MPE Calculation

2.4 GHz

Type: RF Evaluation

Evaluated Against: General Population/Uncontrolled Exposure

Duty Cycle: 100 %

Document Used for Evaluation: KDB 447498 / OET 65

Measurement Distance: 20 cm

Power Density Limit: 1 mW/cm²

Calculated Value:

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal:	<u>18.88</u> (dBm)
Maximum peak output power at antenna input terminal:	<u>77.286</u> (mW)
Antenna gain(typical):	<u>2.15</u> (dBi)
Maximum antenna gain:	<u>1.641</u> (numeric)
Prediction distance:	<u>20</u> (cm)
Prediction frequency:	<u>2437</u> (MHz)
MPE limit for uncontrolled exposure at prediction frequency:	<u>1</u> (mW/cm ²)
Power density at prediction frequency:	0.025225 (mW/cm ²)

5 GHz

Type: RF Evaluation

Evaluated Against: General Population/Uncontrolled Exposure

Duty Cycle: 100 %

Document Used for Evaluation: KDB 447498 / OET 65

Measurement Distance: 20 cm

Power Density Limit: 1 mW/cm²

Calculated Value:

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal:	11.78 (dBm)
Maximum peak output power at antenna input terminal:	15.066 (mW)
Antenna gain(typical):	3.9 (dBi)
Maximum antenna gain:	2.455 (numeric)
Prediction distance:	20 (cm)
Prediction frequency:	5180 (MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1 (mW/cm ²)
Power density at prediction frequency:	0.007357 (mW/cm ²)

END OF REPORT

Date	Version	Comments	Person
2-16-15	V1	Final	Adam A
5-27-15	V1a	TCB Comments	Adam A

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