



LSRESEARCH, 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

105 Edgeview Drive

Suite 300

Broomfield, CO 80021

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

Name: GVPU

Report: TR 314305 E

Model: P24486

LSR: C-2063

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



Industrie
Canada

Industry
Canada

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.

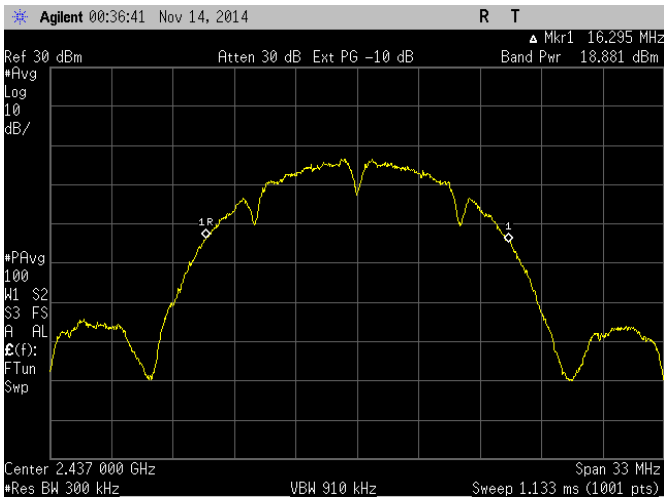
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3.0 RF Conducted Measurement Data

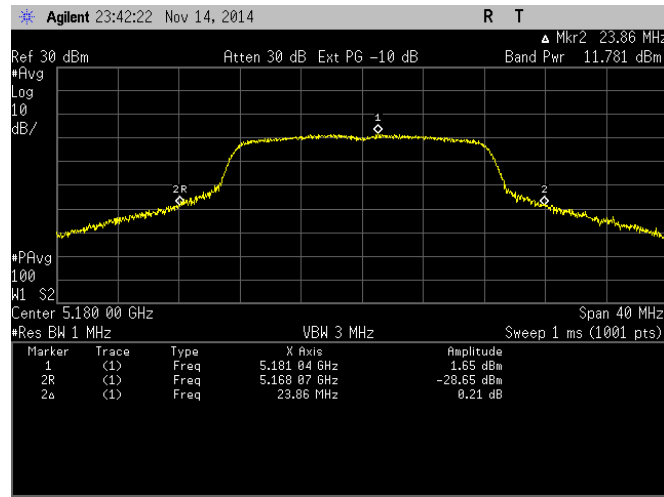
Table

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

Plots – Maximum Average Output Power



2437 MHz



5180 MHz

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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: 18.88 (dBm)

Maximum peak output power at antenna input terminal: 77.286 (mW)

Antenna gain(typical): 2.15 (dBi)

Maximum antenna gain: 1.641 (numeric)

Prediction distance: 20 (cm)

Prediction frequency: 2437 (MHz)

MPE limit for uncontrolled exposure at prediction frequency: 1 (mW/cm²)

Power density at prediction frequency: 0.025225 (mW/cm²)

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)

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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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