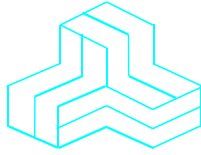


ENGINEERING TEST REPORT



Quad-band GSM/GPRS module
Model No.: MOCGW012012
FCC ID: 069-MOCGW012012

Applicant:

IMetrikM2M Inc.
3450 St. Denis, Suite 202
Montreal, QC
Canada H2X 3L3

In Accordance With

Federal Communications Commission (FCC) Rules
RF Exposure requirements stated in KDB 447498

UltraTech's File No.: IM2M-002Q_RFExpo

This Test report is Issued under the Authority of
Tri M. Luu, BASc
Vice President of Engineering
UltraTech Group of Labs

Date: June 27, 2012

Report Prepared by: Dharmajit Solanki

Issued Date: June 27, 2012

*The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.
This report must not be used by the client to claim product endorsement by NVLAP or any agency of the US Government.*

UltraTech

3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4
Tel.: (905) 829-1570 Fax.: (905) 829-8050
Website: www.ultratech-labs.com, Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com

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NVLap Lab Code 200093-0



SL2-IN-E-1119R



Korea KCC-RRL
CA2049

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EXHIBIT 1. INTRODUCTION

1.1. SCOPE

| | |
|--------------------------------------|---|
| Reference: | KDB Publication No. 447498 D01 |
| Title: | Mobile Portable RF Exposure Procedure v04 & Equipment Authorization Policies |
| Purpose of Test: | Class II Permissive Change filing for Co-location with FCC ID: ZTL-RFSC1 |
| Test Procedures: | Mobile Portable RF Exposure Procedure v04 & Equipment Authorization Policies |
| Environmental Classification: | [x] Commercial, industrial or business environment [x] Residential environment |

1.2. RELATED SUBMITTAL(S)/GRANT(S)

None

1.3. NORMATIVE REFERENCES

| Publication | Year | Title |
|--------------------------------|------|---|
| 47 CFR Parts 0-19 | 2011 | Code of Federal Regulations (CFR), Title 47 – Telecommunication |
| KDB Publication No. 447498 D01 | 2009 | Mobile Portable RF Exposure Procedure v04 & Equipment Authorization Policies |
| ANSI C63.10 | 2009 | American National Standard for Testing Unlicensed Wireless Devices |
| ANSI C63.4 | 2009 | 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 |

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

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EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

| APPLICANT | |
|------------------------|--|
| Name: | IMetrikM2M Inc. |
| Address: | 3450 St. Denis, Suite 202 Montreal, QC Canada H2X 3L3 |
| Contact Person: | Mr. Medhat Mahmoud Phone #: 416-305-7708 Fax #: 888-331-9577 Email Address: medhat.mahmoud@imetrikm2m.com |

2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

| | |
|---------------------------------------|------------------------------------|
| Brand Name: | IMetrikM2M Inc. |
| Product Name: | Quad-band GSM/GPRS module |
| Model Name or Number: | MOCGW012012 |
| Serial Number: | Test Sample |
| Type of Equipment: | Quad-band GSM/GPRS Cellular Module |
| Input Power Supply Type: | External Regulated DC Sources |
| Primary User Functions of EUT: | GSM/GPRS Cellular Gateway |

2.3. EUT'S TECHNICAL SPECIFICATIONS

| TRANSMITTER | |
|--|---|
| Equipment Type: | <ul style="list-style-type: none">MobileBase Station (fixed use) |
| Intended Operating Environment: | Commercial, industrial or business environment |
| Power Supply Requirement: | 5.0 VDC |
| RF Output Power Rating: | 2.04 W (Part 22H) 1.12 W (Part 24E) |
| Operating Frequency Range: | 824.2 - 848.8 MHz (Part 22H) 1850.2 - 1909.8 MHz (Part 24E) |
| RF Output Impedance: | 50 Ω |
| Duty Cycle: | 25% |

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2.4. RF Exposure Requirement

| FCC Section(s) | Test Requirements | Compliance (Yes/No) |
|---|-------------------|---------------------|
| KDB 447498 DO1, Sections 1.1307, 1.1310, 2.1091 & 2.1093 | RF Exposure | Yes |
| NOTE: Tests are not required for this Class II Permissive Change. | | |

2.5. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None

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Original Grant for Licensed Module:-

TCB

GRANT OF EQUIPMENT
AUTHORIZATION

TCB

Certification
Issued Under the Authority of the
Federal Communications Commission
By:

Ultratech Engineering Labs Inc.
3000 Bristol Circle
Oakville (Ontario), L6H 6G4
Canada

Date of Grant: 06/25/2012
Application Dated: 06/25/2012

iMetrikm2m Inc.
3450 St. Denis, Suite 202
QC H2X 3L3
Montreal, QC H2X 3L3
Canada

Attention: Medhat Mahmoud , Vice President

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: O69-MOCGW012012
Name of Grantee: iMetrikm2m Inc.
Equipment Class: PCS Licensed Transmitter
Notes: Quad-Band GSM/GPRS Module

| Grant Notes | FCC Rule Parts | Frequency Range (MHZ) | Output Watts | Frequency Tolerance | Emission Designator |
|-------------|----------------|--------------------------|-----------------|------------------------|------------------------|
| | 22H | 824.2 - 848.8 | 2.04 | 2.5 PM | GXW |
| | 24E | 1850.2 - 1909.8 | 1.12 | 2.5 PM | GXW |

Output power listed is conducted. This device is to be used in mobile or fixed applications only. For other antenna(s) not described in this filing the antenna gain including cable loss must not exceed 7.3 dBi in the 850 MHz Cellular band and 12.7 dBi in the PCS 1900 MHz band, for the purpose of satisfying the requirements of 2.1043 and 2.1091. The antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons, and must not be co-located or operating in conjunction with other antennas or transmitters within a host device, except in accordance with FCC multi-transmitter product procedures. Compliance of this device in all final product configurations is the responsibility of the Grantee. OEM integrators and end-users must be provided with specific information required to satisfy RF exposure compliance for all final host devices and installations.

This device contains GSM functions that are not operational in the U.S Territories. This filing is only applicable for U.S operations.

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Original Grant of Unlicensed DTS Module:-

TCB

GRANT OF EQUIPMENT
AUTHORIZATION

TCB

Certification
Issued Under the Authority of the
Federal Communications Commission
By:

Ultratech Engineering Labs Inc.
3000 Bristol Circle
Oakville (Ontario), L6H 6G4
Canada

Date of Grant: 11/09/2011
Application Dated: 11/09/2011

Monnit Corporation
450 South Simmons Way
Suite 670
Midvale, UT 84037

Attention: Kelly Lewis , EE

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and
is VALID ONLY for the equipment identified hereon for use under the
Commission's Rules and Regulations listed below.

FCC IDENTIFIER: ZTL-RFSC1
Name of Grantee: Monnit Corporation
Equipment Class: Digital Transmission System
Notes: Monnit Wireless Sensor Module
Modular Type: Single Modular

| <u>Grant Notes</u> | <u>FCC Rule Parts</u> | <u>Frequency Range (MHZ)</u> | <u>Output Watts</u> | <u>Frequency Tolerance</u> | <u>Emission Designator</u> |
|--------------------|-----------------------|----------------------------------|-------------------------|--------------------------------|--------------------------------|
| | 15C | 903.0 - 927.0 | 0.0063 | | |

Output power listed is conducted. This device must not be co-located or operating in
conjunction with any other antenna or transmitter. No restriction on use as shown in RF
Exposure compliance exhibit.



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2.6. RF EXPOSURE REQUIRMENTS [§§ 15.247(i), 1.1310 & 2.1091]

The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation.

FCC 47 CFR § 1.1310:

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------------|-------------------------------------|--|-----------------------------|
| (A) Limits for Occupational/Controlled Exposures | | | | |
| 0.3–3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0–30 | 1842/f | 4.89/f | *(900/f ²) | 6 |
| 30–300 | 61.4 | 0.163 | 1.0 | 6 |
| 300–1500 | | | f/300 | 6 |
| 1500–100,000 | | | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3–1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34–30 | 824/f | 2.19/f | *(180/f ²) | 30 |
| 30–300 | 27.5 | 0.073 | 0.2 | 30 |
| 300–1500 | | | f/1500 | 30 |
| 1500–100,000 | | | 1.0 | 30 |

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

2.6.1. Method of Measurements

Refer to Sections 1.1310, 2.1091

In order to demonstrate compliance with MPE requirements (see Section 2.1091), the following information is typically needed:

- (1) Calculation that estimates the minimum separation distance (20 cm or more) between an antenna and persons required to satisfy power density limits defined for free space.
- (2) Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement
- (3) Any caution statements and/or warning labels that are necessary in order to comply with the exposure limits
- (4) Any other RF exposure related issues that may affect MPE compliance

2.6.2. RF Evaluation

As per guidance provided by FCC under KDB 447498 D01, v04, Sec 8(a & b) for Transmitters and modules for use in mobile exposure conditions that allow simultaneous transmission shall comply with following.

(1) The antenna separation distance and MPE compliance boundary requirements that enable all simultaneous transmitting antennas incorporated within the host to comply with MPE limits are specified in the application filing of at least one of the certified transmitters incorporated in the host device. In addition, when transmitters certified for portable use are incorporated in a mobile host device the antenna(s) must be ≥ 5 cm from all other simultaneous transmitting antennas.

(2) All antennas in the final product must be at least 20 cm from users and nearby persons.

In order to calculate MPE compliance boundary for simultaneous transmitting antennas, the following formula will be used adding eirp power of both antennas as worst case to determine safety distance.

Calculation Method of RF Safety Distance:

$$S = \frac{P \cdot G}{4 \cdot \pi \cdot r^2} = \frac{EIRP}{4 \cdot \pi \cdot r^2}$$

Where: P: power input to the antenna in mW
EIRP: Equivalent (effective) isotropic radiated power added of both antennas
S: power density mW/cm²
G: numeric gain of antenna relative to isotropic radiator
r: distance to centre of radiation in cm

| Antenna No | Module 1 | Module 2 | Total |
|--|-----------------------------------|----------|-------------|
| Frequency (MHz) | 824.2 | 903 | |
| MPE Limit (mW/cm ²) | 0.55 | 0.60 | |
| Power (W) | 2.04 | 0.0063 | 2.0463 |
| Duty Cycle | 25% (As shown in Original filing) | 100% | |
| Time Averaged Power (W) | 0.51 | 0.0063 | |
| Highest Antenna Gain (dBi) (As approved in Original FCC filings) | 7.3 | 5.1 | |
| EIRP (W) | 2.74 | 0.02 | 2.76 |

The minimum separation distance from either antennas and nearby person is calculated using the following formula:

$$r = \sqrt{\frac{P \cdot G}{4 \cdot \pi \cdot S}} = \sqrt{\frac{EIRP}{4 \cdot \pi \cdot S}}$$

S = 0.55 mW/cm² (Worst Case); EIRP = 2.76 W = 2760 mW

$$(\text{Minimum Safe Distance, } r) = \sqrt{\frac{EIRP}{4 \cdot \pi \cdot S}} = \sqrt{\frac{2760}{4 \cdot \pi \cdot (0.55)}} \approx 19.98 \text{ cm}$$

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| Evaluation of RF Exposure Compliance Requirements | |
|--|--|
| RF Exposure Requirements | Compliance with FCC Rules |
| Minimum calculated separation distance between antenna and persons required: *19.98 cm | Manufacturer' instruction have specified for separation distance between antenna and persons required: 20 cm. |
| In a mobile host device the antenna(s) must be ≥ 5 cm from all other simultaneous transmitting antennas. | Manufacturer' instructions have specified more than 5 cm separation distance in the user manual. Actual distance measured is close to 8 cm between two antennas. |
| Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement | Antenna installation and device operating instructions shall be provided to installers to maintain and ensure compliance with RF exposure requirements. |
| Caution statements and/or warning labels that are necessary in order to comply with the exposure limits | Refer to User's Manual for RF Exposure Information. |

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