

Quectel Wireless Solutions Company Limited

GSM/GPRS Module

Main Model:M35

May 22, 2012

Report No.: 12050041-FCC-R2
(This report supersedes NONE)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

| | | |
|-----------------------------------|-------------------------------|--|
| | | |
| Back Huang Compliance Engineer | Alex Liu Technical Manager | |

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Test result presented in this test report is applicable to the representative sample only.

RF Exposure Report

SIEMIC, Inc.
Accessing global markets

To: FCC 2.1091: 2012

**SIEMIC, INC.**

Accessing global markets

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In addition to testing and certification, SIEMIC provides initial design reviews and compliance management through out a project. Our extensive experience with China, Asia Pacific, North America, European, and international compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

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| Country/Region | Accreditation Body | Scope |
|----------------|------------------------|------------------------------------|
| USA | FCC, A2LA | EMC , RF/Wireless , Telecom |
| Canada | IC, A2LA, NIST | EMC, RF/Wireless , Telecom |
| Taiwan | BSMI , NCC , NIST | EMC, RF, Telecom , Safety |
| Hong Kong | OFTA , NIST | RF/Wireless , Telecom |
| Australia | NATA, NIST | EMC, RF, Telecom , Safety |
| Korea | KCC/RRA, NIST | EMI, EMS, RF , Telecom, Safety |
| Japan | VCCI, JATE, TELEC, RFT | EMI, RF/Wireless, Telecom |
| Mexico | NOM, COFETEL, Caniety | Safety, EMC , RF/Wireless, Telecom |
| Europe | A2LA, NIST | EMC, RF, Telecom , Safety |

Accreditations for Product Certifications

| Country/Region | Accreditation Body | Scope |
|----------------|--------------------|-----------------------|
| USA | FCC TCB, NIST | EMC , RF , Telecom |
| Canada | IC FCB , NIST | EMC , RF , Telecom |
| Singapore | iDA, NIST | EMC , RF , Telecom |
| EU | NB | EMC & R&TTE Directive |
| Japan | MIC, (RCB 208) | RF , Telecom |
| Hong Kong | OFTA (US002) | RF , Telecom |



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1. EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programme was to demonstrate compliance of the Quectel Wireless Solutions Company Limited, GSM/GPRS Module and model: M35 against the current Stipulated Standards. The GSM/GPRS Module has demonstrated compliance with the FCC 2.1091: 2012.

EUT Information

EUT : **GSM/GPRS Module**
Description : **GSM 850: 1.5 dBi**
Model : **M35**
Antenna Gain : **PCS 1900: 1.5 dBi**
 SWITCHING POWER SUPPLY
 MODEL: P-050B
Input Power : **INPUT: 100V-240V, 50/60Hz, 0.3A**
 OUTPUT: 5.0V-2.0A
 P/N: B2152-1116
Maximum Conducted Peak Power to Antenna : **GSM850: 32.78 dBm**
 PCS1900: 29.19 dBm
Maximum Radiated ERP/EIRP : **GSM850: 27.48 dBm / ERP**
 PCS1900: 26.46 dBm / EIRP
Classification Per Stipulated Test Standard : **FCC 2.1091: 2012**

| Main Model | Revision Number | Report Number | Description of Revision | Date of Revision |
|------------|-----------------|--------------------|-------------------------|------------------|
| M95 | 0 | 12050015-FCC-R2-V1 | Original Report | March 10, 2012 |
| M35 | 1 | 12050041-FCC-R2 | Amended Report | May 22, 2012 |

Note: This is the amended report application (12050041-FCC-R2) of the device, the original submission (12050015-FCC-R2-V1) was granted on March 10, 2012. The difference between the original device and the current one was as following the detail information:

The difference of these two models is for different model names

All above were explained in the attached Declaration Letter. Based on the letter the difference between them will not affect all test items.



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2. TECHNICAL DETAILS

| | |
|--|--|
| Purpose | Compliance testing of GSM/GPRS Module with stipulated standard |
| Applicant / Client | Quectel Wireless Solutions Company Limited Room 501, Building 13, No.99 TianZhou Road, Xuhui District, Shanghai |
| Manufacturer | Quectel Wireless Solutions Company Limited Room 501, Building 13, No.99 TianZhou Road, Xuhui District, Shanghai |
| Laboratory performing the tests | SIEMIC Nanjing (China) Laboratories NO.2-1, Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China Tel: +86(25)86730128/86730129 Fax: +86(25)86730127 Email: info@siemic.com |
| Test report reference number | 12050041-FCC-R2 |
| Date EUT received | February 20, 2012 |
| Standard applied | FCC 2.1091: 2012 |
| Dates of test | March 5 to March 7, 2012 |
| No of Units | #1 |
| Equipment Category | PCE |
| Trade Name | Quectel |
| RF Operating Frequency (ies) | GSM850 TX : 824.2 ~ 848.8 MHz; RX : 869.2 ~ 893.8 MHz PCS1900 TX : 1850.2 ~ 1909.8 MHz; RX : 1930.2 ~ 1989.8 MHz |
| Number of Channels | 300CH (PCS1900) and 125CH (GSM850) |
| Modulation | GSM / GPRS: GMSK |
| GPRS Multi-slot class | 8/10/12 |
| FCC ID | XMR201202M35 |

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3. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FCC §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

| Limits for General Population/Uncontrolled Exposure | | | | |
|---|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Averaging Time (minutes) |
| 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

Test Data

Predication of MPE limit at a given distance

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

Where: S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

GSM 850

Maximum peak output power at antenna input terminal: 32.78 (dBm)

Maximum peak output power at antenna input terminal: 1896.71 (mW)

Predication distance: >20 (cm)

Predication frequency: 824.2 (MHz)

Antenna Gain (typical): 1.5 (dBi)

Antenna Gain (typical): 1.413 (numeric)



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The worst case is power density at predication frequency at 20 cm: 0.533 (mW/cm²)
MPE limit for general population exposure at prediction frequency: 0.549 (mW/cm²)

0.533 (mW/cm²) < 0.549 (mW/cm²)

PCS 1900

Maximum peak output power at antenna input terminal: 29.19 (dBm)
Maximum peak output power at antenna input terminal: 829.85 (mW)

Prediction distance: >20 (cm)
Predication frequency: 1909.8 (MHz)
Antenna Gain (typical): 1.5 (dBi)
Antenna Gain (typical): 1.413 (numeric)

The worst case is power density at predication frequency at 20 cm: 0.233 (mW/cm²)
MPE limit for general population exposure at prediction frequency: 1 (mW/cm²)

0.233 (mW/cm²) < 1 (mW/cm²)

Result: Pass



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Annex A DECLARATION OF SIMILARITY

Quectel Wireless Solutions Co., Ltd

To SIEMIC Inc
2208 Ringwood Ave
San Jose, CA 95131

Statement

We Quectel Wireless Solutions Co., Ltd agree Quectel M35 to use below information on file to apply a multiple-listing certification.

Name: GSM/GPRS Module
Model number: M95
Multiple listing model number: M35

We hereby state that these models are identical in interior structure, electrical circuits and components, and just model names are different for the marketing requirement.

Your assistance on this matter is highly appreciated.

Sincerely,
Name: Johnny Xiang
Title: Manager
Signature: 