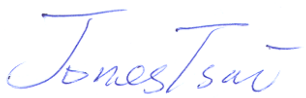
RF Exposure Evaluation Report

APPLICANT	**:**	**Getac Technology Corporation**
EQUIPMENT	**:**	**MC7700 Modem**
BRAND NAME	**:**	**Sierra**
MODEL NAME	**:**	**Sierra MC7700**
FCC ID	**:**	**QYLMC7700**
FILING TYPE	**:**	**Certification**
STANDARD	**:**	**OET Bulletin 65 Supplement C (Edition 01-01)**

The product was installed into Notebook (Brand Name: Getac, Model Name: S400) during test.

We, SPORTON INTERNATIONAL INC., would like to declare that the device has been evaluated in accordance with FCC OET Bulletin 65 Supplement C (Edition 01-01), and pass the limit. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

Table of Contents

Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA272530	Rev. 01	Initial issue of report	Sep. 04, 2012

1. RF Exposure Introduction

Requirements

Three different categories of transmitters are defined by the FCC in OET Bulletin 65. These categories are fixed installation, mobile and portable and are defined as follows:

▪ **Fixed installation:**

Fixed location means that the device, including its antenna, is physically secured at a permanent location and is not able to be easily moved to another location. Additionally, distance to humans form the antenna is maintained to at least 2 meters.

▪ **Mobile Devices:**

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitters's radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR 2.1091.

▪ **Portable Devices:**

A portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user. Portable device requirements are found in Section 2.1093 of the FCC's Rules (47 CFR 2.1093)

The FCC also categorizes the use of the device as based upon the user's awareness and ability to exercise control over his or her exposure. The two categories defined are Occupational/Controlled Exposure and General Population/Uncontrolled Exposure. These two categories are defined as follows:

▪ **Occupational/controlled Exposure:**

In general, occupational/controlled exposure limits are applicable to situation in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure. Awareness of the potential for RF exposure in a workplace or similar environment can be provided through specific training as part of a RF safety program. If appropriate, warning signs and labels can also be used to establish such awareness by providing prominent information on the risk of potential exposure and instructions on methods to minimize such exposure risks.

▪ **General Population/Uncontrolled Exposure:**

The general population / uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category and the general population/uncontrolled exposure limits apply to these devices.

2. Administration Data

2.1 Testing Laboratory

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

2.2 Applicant

Company Name	Getac Technology Corporation
Address	5F., Building A, No. 209, Sec.1, Nangang Rd.,Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

2.3 Manufacturer

Company Name	Sierra Wireless Inc.
Address	13811 Wireless Way Richmond, BC, V6V 3A4 Canada

3. General Information

3.1 Description of Device Under Test (DUT)

Product Feature & Specification	
DUT Type	MC7700 Modem
Brand Name	Sierra
Model Name	Sierra MC7700
FCC ID	QYLMC7700
Tx Frequency	GSM850 : 824.2 MHz ~ 848.8 MHz GSM1900 : 1850.2 MHz ~ 1909.8 MHz WCDMA Band V : 826.4 MHz ~ 846.6 MHz WCDMA Band II : 1852.4 MHz ~ 1907.6 MHz LTE Band 4 : 1710 MHz ~ 1755 MHz LTE Band 17 : 704 MHz ~ 716 MHz
Rx Frequency	GSM850 : 869.2 MHz ~ 893.8 MHz GSM1900 : 1930.2 MHz ~ 1989.8 MHz WCDMA Band V : 871.4 MHz ~ 891.6 MHz WCDMA Band II : 1932.4 MHz ~ 1987.6 MHz LTE Band 4 : 2110 MHz ~ 2155 MHz LTE Band 17 : 734 MHz ~ 746 MHz
Antenna Type	WWAN: PIFA Antenna LTE: PIFA Antenna
Antenna Gain	WWAN: 850 Band: 2.26 dBi 1900 Band: 0.87 dBi LTE Band 4: 0.58 dBi LTE Band 17: 0.17 dBi
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink)
DUT Stage	Production Unit

Remark: The above DUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

4. RF Exposure Evaluation

4.1 Radio Frequency Radiation Exposure Evaluation

According to 1.1310 of the FCC rules, the power density limit for General Population/Uncontrolled Exposure is f/1500 mW/cm^2 for 300 MHz to 1500 MHz and 1.0 mW/cm^2 for 1500 MHz to 100000 MHz. As this is a mobile application the MPE shall be calculated at 20 cm to show compliance with the power density limit. The following formula was used to calculate the Power Density:

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

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

This device is evaluated by mobile device with general population/uncontrolled exposure condition.

For this device, the calculation is as follows:

Operated in GSM or GPRS Multi-slot Class 8 for Cellular/PCS Band:

Function	Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum Average Power (dBm)	Maximum Average Power (mW)	Average EIRP (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
GSM Cellular Band	2.26	1.68	32.39	1733.80	364.68	0.07	0.55
GSM PCS Band	0.87	1.22	29.66	924.70	141.22	0.03	1.00

Operated in GPRS Multi-slot Class 10 for Cellular/PCS Band:

Function	Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum Average Power (dBm)	Maximum Average Power (mW)	Average EIRP (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
GSM Cellular Band	2.26	1.68	32.25	1678.80	706.22	0.14	0.55
GSM PCS Band	0.87	1.22	29.59	909.91	277.93	0.06	1.00

Operated in WCDMA Cellular/PCS Band:

Function	Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum Output Power (dBm)	Maximum Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
WCDMA Cellular Band	2.26	1.68	24.46	279.25	0.09	0.55
WCDMA PCS Band	0.87	1.22	24.82	303.39	0.07	1.00

Operated in LTE BAND 4 Band:

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum Output Power (dBm)	Maximum Output Power (mW)	Average EIRP (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
19975	1712.5	0.58	1.14	29.74	941.89	1076.47	0.21	1.00
20175	1732.5	0.58	1.14	29.98	995.41	1137.63	0.23	1.00
20375	1752.5	0.58	1.14	29.13	818.46	935.41	0.19	1.00

Operated in LTE Band 17 Band:

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum Output Power (dBm)	Maximum Output Power (mW)	Average EIRP (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
23755	706.5	0.17	1.04	29.57	905.73	941.89	0.19	1.00
23790	710.0	0.17	1.04	29.74	941.89	979.49	0.19	1.00
23825	713.5	0.17	1.04	29.76	946.24	984.01	0.20	1.00

For WWAN and WLAN Transmit Simultaneously

WWAN Max. Power Density	WLAN Max. Power Density	WWAN Freq. Dependent MPE Limits	WLAN Freq. Dependent MPE Limits	Sum of the MPE Ratios	MPE Ratio Limit
0.23	0.02	1.0	1.0	0.25	1.0

Note: WLAN Power refer to Report No: R84671 Report FCC ID:PD96235ANH and PD96235ANHU

This device can pass RF exposure limit.