

# Partial FCC RF Test Report

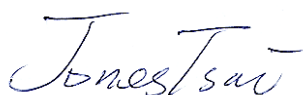
APPLICANT : Getac Technology Corporation.  
EQUIPMENT : Wireless module  
BRAND NAME : Sierra  
MODEL NAME : EM7355  
FCC ID : QYLEM7355V  
STANDARD : FCC 47 CFR Part 2, 22(H), 24(E), 27(L)  
CLASSIFICATION : PCS Licensed Transmitter (PCB)

This is a partial report which is included the Conducted Output Power and ERP/EIRP test item. The product was received on Sep. 17, 2013 and completely tested on Oct. 25, 2013. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



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FCC ID : QYLEM7355V

Page Number : 1 of 15

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Report Version : Rev. 01



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## REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FG3O1142A  | Rev. 01 | Initial issue of report | Nov. 13, 2013 |
|            |         |                         |               |
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## SUMMARY OF TEST RESULT

| Report Section | FCC Rule      | IC Rule                                         | Description                         | Limit          | Result | Remark |
|----------------|---------------|-------------------------------------------------|-------------------------------------|----------------|--------|--------|
| 3.1            | §2.1046       | RSS-132 (5.4)<br>RSS-133 (6.4)<br>RSS-139 (6.4) | Conducted Output Power              | Reporting Only | PASS   | -      |
| 3.1            | §22.913(a)(2) | RSS-132(5.4)<br>SRSP-503(5.1.3)                 | Effective Radiated Power            | < 7 Watts      | PASS   | -      |
| 3.1            | §24.232(c)    | RSS-133 (6.4)<br>SRSP-510(5.1.2)                | Equivalent Isotropic Radiated Power | < 2 Watts      | PASS   | -      |
| 3.1            | §27.50(d)(4)  | RSS-139 (6.4)<br>SRSP-513(5.1.2)                | Equivalent Isotropic Radiated Power | < 1 Watts      | PASS   | -      |

**Remark:** Due to the antenna-gains of the module in host evaluated in all dedicated bands are less than those in the module report in accordance with MPE value so that we do not perform the procedure for RSE measurement.

# 1 General Description

## 1.1 Applicant

Getac Technology Corporation.

5F., Building A, No. 209, Sec.1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

## 1.2 Manufacturer

Getac Technology(Kunshan)Co., LTD.

No. 269, No. 2 Avenue, Kunshan Comprehensive Free Trade Zone, Jiangsu Province, P.R.C

## 1.3 Feature of Equipment Under Test

| Product Feature                 |                                                               |
|---------------------------------|---------------------------------------------------------------|
| Equipment                       | Wireless module                                               |
| Brand Name                      | Sierra                                                        |
| Model Name                      | EM7355                                                        |
| Installed Notebook              | Brand Name: Getac<br>Model Name: V110<br>Marketing Name: V110 |
| FCC ID                          | QYLEM7355V                                                    |
| EUT supports Radios application | CDMA/EV-DO/GSM/EGPRS/WCDMA/HSPA/LTE                           |
| EUT Stage                       | Production Unit                                               |

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

## 1.4 Product Specification of Equipment Under Test

| Product Specification subjective to this standard |                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tx Frequency</b>                               | GSM850: 824.2 MHz ~ 848.8 MHz<br>GSM1900: 1850.2 MHz ~ 1909.8MHz<br>WCDMA Band V: 826.4 MHz ~ 846.6 MHz<br>WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz<br>WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz<br>CDMA2000 BC0: 824.70 MHz ~ 848.31 MHz<br>CDMA2000 BC1: 1851.25 MHz ~ 1908.75 MHz  |
| <b>Rx Frequency</b>                               | GSM850: 869.2 MHz ~ 893.8 MHz<br>GSM1900: 1930.2 MHz ~ 1989.8 MHz<br>WCDMA Band V: 871.4 MHz ~ 891.6 MHz<br>WCDMA Band IV: 2112.4 MHz ~ 2152.6 MHz<br>WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz<br>CDMA2000 BC0: 869.70 MHz ~ 893.31 MHz<br>CDMA2000 BC1: 1931.25 MHz ~ 1988.75 MHz |
| <b>Maximum Output Power to Antenna</b>            | GSM850 : 32.20 dBm<br>GSM1900: 29.30 dBm<br>WCDMA Band V: 22.79 dBm<br>WCDMA Band IV: 22.74 dBm<br>WCDMA Band I : 22.88 dBm<br>CDMA2000 BC0: 23.44 dBm<br>CDMA2000 BC1: 23.65 dBm                                                                                                |
| <b>Antenna Type</b>                               | PIFA Antenna                                                                                                                                                                                                                                                                     |
| <b>Antenna Gain</b>                               | GSM850: 0.78dBi<br>GSM1900: 2.36dBi<br>WCDMA Band V: 0.78dBi<br>WCDMA Band IV: 2.12dBi<br>WCDMA Band II: 2.36dBi<br>CDMA2000 BC0: 0.78dBi<br>CDMA2000 BC1: 2.36dBi                                                                                                               |
| <b>Type of Modulation</b>                         | GSM: GMSK<br>GPRS: GMSK<br>EDGE: GMSK / 8PSK<br>WCDMA: QPSK (Uplink)<br>HSDPA: QPSK (Uplink)<br>HSUPA: QPSK (Uplink)<br>CDMA2000: QPSK<br>CDMA2000 1xEV-DO: QPSK/8PSK                                                                                                            |

## 1.5 Modification of EUT

No modifications are made to the EUT during all test items.

## 1.6 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

| FCC Rule | System                      | Type of Modulation | Maximum ERP/EIRP (W) |
|----------|-----------------------------|--------------------|----------------------|
| Part 22  | GSM850 GPRS class 8         | GMSK               | 1.21                 |
| Part 22  | GSM850 EDGE class 8         | 8PSK               | 0.33                 |
| Part 22  | WCDMA Band V RMC 12.2Kbps   | QPSK               | 0.14                 |
| Part 22  | CDMA2000 BC0 1xEV-DO Rev. 0 | QPSK               | 0.16                 |
| Part 24  | GSM1900 GPRS class 8        | GMSK               | 1.47                 |
| Part 24  | GSM1900 EDGE class 10       | 8PSK               | 0.58                 |
| Part 24  | WCDMA Band II RMC 12.2Kbps  | QPSK               | 0.33                 |
| Part 24  | CDMA2000 BC1 1xEV-DO Rev. 0 | QPSK               | 0.40                 |
| Part 27  | WCDMA Band IV RMC 12.2Kbps  | QPSK               | 0.31                 |

## 1.7 Testing Site

|                    |                                                                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Site          | SPORTON INTERNATIONAL INC.                                                                                                                                      |
| Test Site Location | No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park,<br>Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |
| Test Site No.      | Sporton Site No.                                                                                                                                                |
|                    | TH02-HY                                                                                                                                                         |

## 1.8 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 2, 22(H), 24(E), 27(L)
- ♦ ANSI / TIA / EIA-603-C-2004
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v02r01
- ♦ FCC KDB 412172 D01 Determining ERP and ERIP v01

### Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

## 2 Test Configuration of Equipment Under Test

### 2.1 Test Mode

| Test Modes    |                                                                                                     |
|---------------|-----------------------------------------------------------------------------------------------------|
| Band          | Conducted TCs                                                                                       |
| GSM 850       | <ul style="list-style-type: none"> <li>■ GPRS class 8 Link</li> <li>■ EDGE class 8 Link</li> </ul>  |
| GSM 1900      | <ul style="list-style-type: none"> <li>■ GPRS class 8 Link</li> <li>■ EDGE class 10 Link</li> </ul> |
| WCDMA Band V  | <ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>                               |
| WCDMA Band IV | <ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>                               |
| WCDMA Band II | <ul style="list-style-type: none"> <li>■ RMC 12.2Kbps Link</li> </ul>                               |
| CDMA2000 BC0  | <ul style="list-style-type: none"> <li>■ 1xEV-DO Rev. 0 Link Mode</li> </ul>                        |
| CDMA2000 BC1  | <ul style="list-style-type: none"> <li>■ 1xEV-DO Rev. 0 Link Mode</li> </ul>                        |

The conducted power tables are as follows:

| Conducted Power (*Unit: dBm) |        |       |       |         |       |        |
|------------------------------|--------|-------|-------|---------|-------|--------|
| Band                         | GSM850 |       |       | GSM1900 |       |        |
| Channel                      | 128    | 189   | 251   | 512     | 661   | 810    |
| Frequency                    | 824.2  | 836.4 | 848.8 | 1850.2  | 1880  | 1909.8 |
| GPRS class 8                 | 32.19  | 32.20 | 32.12 | 29.30   | 29.19 | 28.74  |
| GPRS class 10                | 32.11  | 32.04 | 32.01 | 29.20   | 29.09 | 28.78  |
| EGPRS class 8                | 26.49  | 26.38 | 26.57 | 25.05   | 25.11 | 25.03  |
| EGPRS class 10               | 26.46  | 26.37 | 26.47 | 25.24   | 25.11 | 24.89  |
| EGPRS class 11               | 25.52  | 25.40 | 25.36 | 24.74   | 24.68 | 24.68  |
| EGPRS class 12               | 24.37  | 24.37 | 24.17 | 23.59   | 23.56 | 23.50  |

| Conducted Power (*Unit: dBm) |              |       |       |               |       |        |               |        |        |
|------------------------------|--------------|-------|-------|---------------|-------|--------|---------------|--------|--------|
| Band                         | WCDMA Band V |       |       | WCDMA Band II |       |        | WCDMA Band IV |        |        |
| Channel                      | 4132         | 4182  | 4233  | 9262          | 9400  | 9538   | 1312          | 1413   | 1513   |
| Frequency                    | 826.4        | 836.4 | 846.6 | 1852.4        | 1880  | 1907.6 | 1712.4        | 1732.6 | 1752.6 |
| RMC 12.2K                    | 22.79        | 22.74 | 22.74 | 22.88         | 22.76 | 22.84  | 22.68         | 22.74  | 22.53  |
| HSDPA Subtest-1              | 22.26        | 22.20 | 22.17 | 22.40         | 22.39 | 22.39  | 22.12         | 22.22  | 22.21  |
| HSDPA Subtest-2              | 22.23        | 22.18 | 22.14 | 22.28         | 22.26 | 22.23  | 22.17         | 22.26  | 22.03  |
| HSDPA Subtest-3              | 21.83        | 21.81 | 21.71 | 21.97         | 21.89 | 21.91  | 21.58         | 21.80  | 21.53  |
| HSDPA Subtest-4              | 21.78        | 21.74 | 21.67 | 21.87         | 21.77 | 21.83  | 21.58         | 21.74  | 21.26  |
| HSUPA Subtest-1              | 21.95        | 21.94 | 21.80 | 22.11         | 22.05 | 22.08  | 22.24         | 22.38  | 22.05  |
| HSUPA Subtest-2              | 20.68        | 20.66 | 20.51 | 21.06         | 20.90 | 20.97  | 20.53         | 20.84  | 20.79  |
| HSUPA Subtest-3              | 21.18        | 21.12 | 21.01 | 21.42         | 21.21 | 21.24  | 21.09         | 21.21  | 21.10  |
| HSUPA Subtest-4              | 20.74        | 20.70 | 20.70 | 21.07         | 20.92 | 21.02  | 20.76         | 21.01  | 20.77  |
| HSUPA Subtest-5              | 22.24        | 22.10 | 22.13 | 22.39         | 22.30 | 22.33  | 22.20         | 22.31  | 22.14  |

| Conducted Power (*Unit: dBm) |              |        |        |              |       |         |
|------------------------------|--------------|--------|--------|--------------|-------|---------|
| Band                         | CDMA2000 BC0 |        |        | CDMA2000 BC1 |       |         |
| Channel                      | 1013         | 384    | 777    | 25           | 600   | 1175    |
| Frequency                    | 824.7        | 836.52 | 848.31 | 1851.25      | 1880  | 1908.75 |
| 1xRTT RC1 SO55               | 23.44        | 23.41  | 23.36  | 23.64        | 23.43 | 23.49   |
| 1xRTT RC3 SO55               | 23.40        | 23.36  | 23.27  | 23.49        | 23.37 | 23.41   |
| 1xRTT RC3 SO32(+ F-SCH)      | 23.29        | 23.27  | 23.21  | 23.57        | 23.37 | 23.48   |
| 1xRTT RC3 SO32(+SCH)         | 23.42        | 23.34  | 23.32  | 23.58        | 23.44 | 23.43   |
| 1xEV-DO RTAP 153.6Kbps       | 23.44        | 23.40  | 23.36  | 23.65        | 23.43 | 23.47   |
| 1xEV-DO RETAP 4096Bits       | 23.28        | 23.24  | 23.23  | 23.53        | 23.35 | 23.37   |

### 3 Test Result

#### 3.1 Conducted Output Power Measurement and ERP/EIRP Measurement

##### 3.1.1 Description of the Conducted Output Power and ERP/EIRP Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band) and 1 Watts (AWS Band). According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$ ,  $ERP = EIRP - 2.15$ , where

$P_T$  = transmitter output power in dBm

$G_T$  = gain of the transmitting antenna in dBi

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna in dB

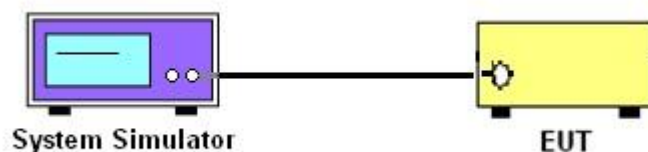
##### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

##### 3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.
6. The procedure section 2.0 of FCC KDB 412172 is used to determine the Radiated Power Measurement.

##### 3.1.4 Test Setup



### 3.1.5 Test Result of Conducted Output Power

| Cellular Band ( $G_T - L_C = 0.78 \text{ dB}$ ) |                       |              |               |                       |              |               |                             |               |                |
|-------------------------------------------------|-----------------------|--------------|---------------|-----------------------|--------------|---------------|-----------------------------|---------------|----------------|
| Modes                                           | GSM850 (GPRS class 8) |              |               | GSM850 (EDGE class 8) |              |               | WCDMA Band V (RMC 12.2Kbps) |               |                |
| Channel                                         | 128<br>(Low)          | 189<br>(Mid) | 251<br>(High) | 128<br>(Low)          | 189<br>(Mid) | 251<br>(High) | 4132<br>(Low)               | 4182<br>(Mid) | 4233<br>(High) |
| Frequency (MHz)                                 | 824.2                 | 836.4        | 848.8         | 824.2                 | 836.4        | 848.8         | 826.4                       | 836.4         | 846.6          |
| Conducted Power (dBm)                           | 32.19                 | 32.20        | 32.12         | 26.49                 | 26.38        | 26.57         | 22.79                       | 22.74         | 22.74          |
| Conducted Power (Watts)                         | 1.66                  | 1.66         | 1.63          | 0.45                  | 0.43         | 0.45          | 0.19                        | 0.19          | 0.19           |
| ERP(dBm)                                        | 30.82                 | 30.83        | 30.75         | 25.12                 | 25.01        | 25.20         | 21.42                       | 21.37         | 21.37          |
| ERP(Watts)                                      | 1.21                  | 1.21         | 1.19          | 0.33                  | 0.32         | 0.33          | 0.14                        | 0.14          | 0.14           |

| PCS Band ( $G_T - L_C = 2.36 \text{ dB}$ ) |                        |              |               |                         |              |               |                              |               |                |
|--------------------------------------------|------------------------|--------------|---------------|-------------------------|--------------|---------------|------------------------------|---------------|----------------|
| Modes                                      | GSM1900 (GPRS class 8) |              |               | GSM1900 (EDGE class 10) |              |               | WCDMA Band II (RMC 12.2Kbps) |               |                |
| Channel                                    | 512<br>(Low)           | 661<br>(Mid) | 810<br>(High) | 512<br>(Low)            | 661<br>(Mid) | 810<br>(High) | 9262<br>(Low)                | 9400<br>(Mid) | 9538<br>(High) |
| Frequency (MHz)                            | 1850.2                 | 1880         | 1909.8        | 1850.2                  | 1880         | 1909.8        | 1852.4                       | 1880          | 1907.6         |
| Conducted Power (dBm)                      | 29.30                  | 29.19        | 28.74         | 25.24                   | 25.11        | 24.89         | 22.88                        | 22.76         | 22.84          |
| Conducted Power (Watts)                    | 0.85                   | 0.83         | 0.75          | 0.33                    | 0.32         | 0.31          | 0.19                         | 0.19          | 0.19           |
| EIRP(dBm)                                  | 31.66                  | 31.55        | 31.10         | 27.60                   | 27.47        | 27.25         | 25.24                        | 25.12         | 25.20          |
| EIRP(Watts)                                | 1.47                   | 1.43         | 1.29          | 0.58                    | 0.56         | 0.53          | 0.33                         | 0.33          | 0.33           |



| AWS Band ( $G_T - L_C = 2.12$ dB) |                              |            |             |
|-----------------------------------|------------------------------|------------|-------------|
| Modes                             | WCDMA Band IV (RMC 12.2Kbps) |            |             |
| Channel                           | 1312(Low)                    | 1413 (Mid) | 1513 (High) |
| Frequency (MHz)                   | 1712.4                       | 1732.6     | 1752.6      |
| Conducted Power (dBm)             | 22.68                        | 22.74      | 22.53       |
| Conducted Power (Watts)           | 0.19                         | 0.19       | 0.18        |
| EIRP(dBm)                         | 24.80                        | 24.86      | 24.65       |
| EIRP(Watts)                       | 0.30                         | 0.31       | 0.29        |

**Note:** maximum burst average power for GSM, and maximum average power for WCDMA.

| Cellular Band ( $G_T - L_C = 0.78 \text{ dB}$ ) |                          |           |            |
|-------------------------------------------------|--------------------------|-----------|------------|
| Modes                                           | CDMA 2000 1xEV-DO Rev. 0 |           |            |
| Test Status                                     | RTAP 153.6K              |           |            |
| Channel                                         | 1013 (Low)               | 384 (Mid) | 777 (High) |
| Frequency (MHz)                                 | 824.70                   | 836.52    | 848.31     |
| Conducted Power (dBm)                           | 23.44                    | 23.41     | 23.36      |
| Conducted Power (Watts)                         | 0.22                     | 0.22      | 0.22       |
| ERP(dBm)                                        | 22.07                    | 22.04     | 21.99      |
| ERP(Watts)                                      | 0.16                     | 0.16      | 0.16       |

| PCS Band ( $G_T - L_C = 2.36 \text{ dB}$ ) |                          |           |             |
|--------------------------------------------|--------------------------|-----------|-------------|
| Modes                                      | CDMA 2000 1xEV-DO Rev. 0 |           |             |
| Test Status                                | RTAP 153.6K              |           |             |
| Channel                                    | 25 (Low)                 | 600 (Mid) | 1175 (High) |
| Frequency (MHz)                            | 1851.25                  | 1880.00   | 1908.75     |
| Conducted Power (dBm)                      | 23.65                    | 23.43     | 23.47       |
| Conducted Power (Watts)                    | 0.23                     | 0.22      | 0.22        |
| EIRP(dBm)                                  | 26.01                    | 25.79     | 25.83       |
| EIRP(Watts)                                | 0.40                     | 0.38      | 0.38        |

**Note:** maximum burst average power for CDMA.

$EIRP = P_T + G_T - L_C$ ,  $ERP = EIRP - 2.15$ , where

$P_T$  = transmitter output power in dBm

$G_T$  = gain of the transmitting antenna in dBi

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna in dB



## 4 List of Measuring Equipments

| Instrument       | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date     | Due Date      | Remark              |
|------------------|--------------|-----------|------------|-----------------|------------------|---------------|---------------|---------------------|
| System Simulator | R&S          | CMU200    | 117995     | N/A             | Aug. 01, 2013    | Oct. 25, 2013 | Jul. 31, 2014 | Conducted (TH02-HY) |