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

Testing Laboratory 1190

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG3O1142A	Rev. 01	Initial issue of report	Nov. 13, 2013

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.4)	Conducted Output Power	Reporting Only	PASS	-
3.1	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	-
3.1	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
3.1	§27.50(d)(4)	RSS-139 (6.4) 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 Model Name: V110 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	
Tx Frequency	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz CDMA2000 BC0: 824.70 MHz ~ 848.31 MHz CDMA2000 BC1: 1851.25 MHz ~ 1908.75 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 IV: 2112.4 MHz ~ 2152.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz CDMA2000 BC0: 869.70 MHz ~ 893.31 MHz CDMA2000 BC1: 1931.25 MHz ~ 1988.75 MHz
Maximum Output Power to Antenna	GSM850 : 32.20 dBm GSM1900: 29.30 dBm WCDMA Band V: 22.79 dBm WCDMA Band IV: 22.74 dBm WCDMA Band I : 22.88 dBm CDMA2000 BC0: 23.44 dBm CDMA2000 BC1: 23.65 dBm
Antenna Type	PIFA Antenna
Antenna Gain	GSM850: 0.78dBi GSM1900: 2.36dBi WCDMA Band V: 0.78dBi WCDMA Band IV: 2.12dBi WCDMA Band II: 2.36dBi CDMA2000 BC0: 0.78dBi CDMA2000 BC1: 2.36dBi
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink) CDMA2000: QPSK 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 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
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	■ GPRS class 8 Link ■ EDGE class 8 Link
GSM 1900	■ GPRS class 8 Link ■ EDGE class 10 Link
WCDMA Band V	■ RMC 12.2Kbps Link
WCDMA Band IV	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link
CDMA2000 BC0	■ 1xEV-DO Rev. 0 Link Mode
CDMA2000 BC1	■ 1xEV-DO Rev. 0 Link Mode

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

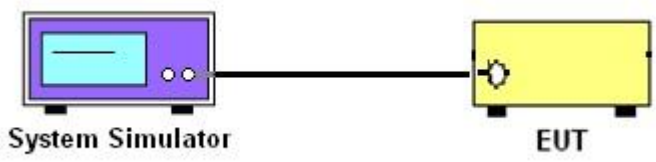
3.1.2 Measuring Instruments

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 dB)									
Modes	GSM850 (GPRS class 8)			GSM850 (EDGE class 8)			WCDMA Band V (RMC 12.2Kbps)		
Channel	128 (Low)	189 (Mid)	251 (High)	128 (Low)	189 (Mid)	251 (High)	4132 (Low)	4182 (Mid)	4233 (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 dB)									
Modes	GSM1900 (GPRS class 8)			GSM1900 (EDGE class 10)			WCDMA Band II (RMC 12.2Kbps)		
Channel	512 (Low)	661 (Mid)	810 (High)	512 (Low)	661 (Mid)	810 (High)	9262 (Low)	9400 (Mid)	9538 (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 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 =2.36dB)			
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)