



FCC RF Test Report

APPLICANT : Getac Technology Corporation.
EQUIPMENT : WWAN module
BRAND NAME : Getac
MODEL NAME : EM7455
FCC ID : QYLEM7455R
STANDARD : FCC 47 CFR Part 2, and 90(S)
CLASSIFICATION : PCS Licensed Transmitter (PCB)

This is a partial report. The product was completely tested on Jul. 12, 2018. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 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 (Shenzhen) Inc., the test report shall not be reproduced except in full.



Approved by: Eric Shih / Manager

Sporton International (Shenzhen) Inc.

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TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant.....	5
1.2 Feature of Equipment Under Test.....	5
1.3 Modification of EUT	5
1.4 Testing Site.....	6
1.5 Applied Standards	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	7
2.1 Test Mode.....	7
2.2 Connection Diagram of Test System	7
2.3 Support Unit used in test configuration and system.....	8
2.4 Frequency List of Low/Middle/High Channels.....	8
3 TEST RESULT	9
3.1 Conducted Output Power Measurement.....	9
3.2 Field Strength of Spurious Radiation Measurement	10
4 LIST OF MEASURING EQUIPMENT	12
5 UNCERTAINTY OF EVALUATION	13
APPENDIX A. TEST RESULTS OF CONDUCTED TEST	
APPENDIX B. TEST RESULTS OF RADIATED TEST	
APPENDIX C. TEST SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FW862709-01	Rev. 01	Initial issue of report	Jul. 31, 2018



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result
3.1	§2.1046	Conducted Output Power	Reporting only	PASS
3.2	§2.1055 §90.213	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS
Remark: Except conducted output power and radiated spurious emission is carrying out, For other test data please refer to Sierra Report No.: B15W50341-FCC-RF_Rev1 for WWAN module (Model: EM7455).				

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 Feature of Equipment Under Test

WCDMA/LTE

Product Specification subjective to this standard	
Antenna Type	WWAN: PIFA Antenna

The product was installed into Tablet (Brand Name: Getac, Model Name: RX10) during test, and all tests were performed with SKU A

SKU Table		
RX10 SKU		
	SKU A	SKU B
CPU	i5	M3
DDR	8G	4G
SSD	256GB	128GB
Panel	FHD	FHD
Digitizer	Support	Not Support
WLAN/BT	Support	Not Support
WWAN	Support	Not Support
GPS	Support	Not Support
RFID	Support	Not Support
Battery	5800mAh & 2160mAh	2160mAh

1.3 Modification of EUT

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



1.4 Testing Site

Sporton Lab is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No is CN5019.

Test Site	Sporton International (Shenzhen) Inc.	
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District Shenzhen City Guangdong Province 518055 China TEL: +86-755-3320-2398	
Test Site No.	Sporton Site No.	FCC Test Firm Registration No.
	03CH01-SZ	577730

Note: The test site complies with ANSI C63.4 2014 requirement.

1.5 Applied Standards

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

- ♦ FCC 47 CFR Part 2, 90(S)
- ♦ ANSI C63.26-2015
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 971168 D02 Misc Rev Approv License Devices v02r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

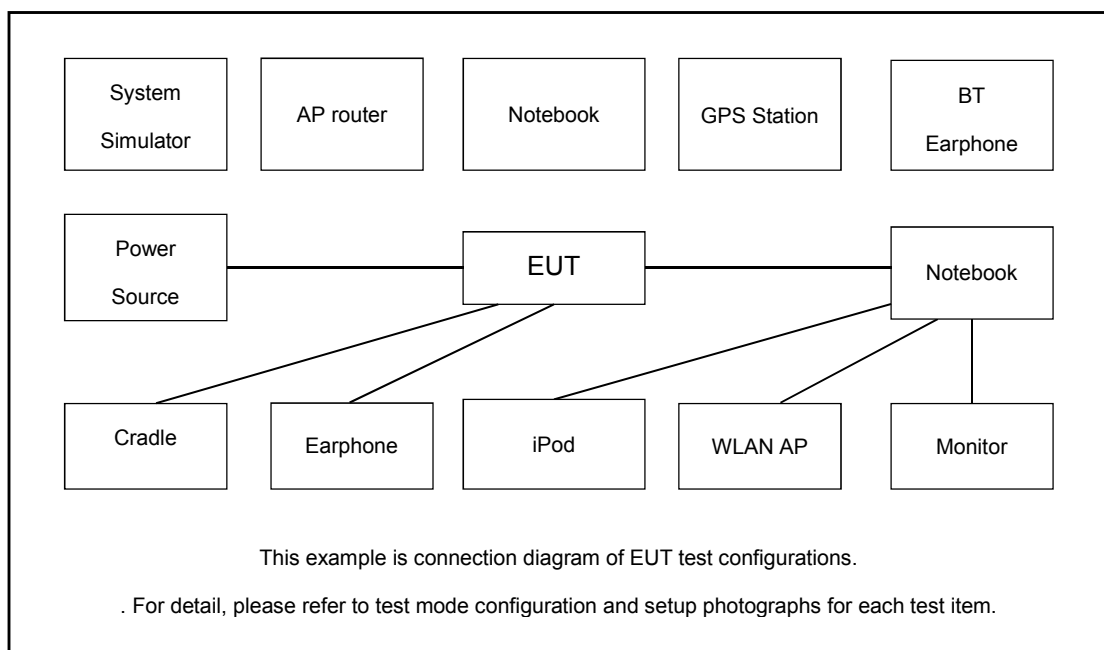
2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is 30 MHz to 9000 MHz.

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	26	v	v	v	v	v	-	v	v	v	v	v	v	v	v
Radiated Spurious Emission	26	Worse Case											v		
Note	1. The mark “v ” means that this configuration is chosen for testing 2. The mark “-” means that this bandwidth is not supported. 3. LTE Band26 transmit frequency for part22 rule is 824MHz-849MHz, for part90 rule is 814MHz-824MHz. ERP over 15MHz bandwidth complies the ERP limit line of part22 rule, therefore ERP of the partial frequency spectrum which falls within part 22 also complies.														

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GW INSTRON	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
3.	Earphone	Apple	MC690ZP/A	N/A	Shielded, 1.0m	N/A

2.4 Frequency List of Low/Middle/High Channels

LTE Band 26 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
15	Channel	26765	-	-
	Frequency	821.5	-	-
10	Channel	-	26740	-
	Frequency	-	819	-
5	Channel	26715	26740	26765
	Frequency	816.5	819	821.5
3	Channel	26705	26740	26775
	Frequency	815.5	819	822.5
1.4	Channel	26697	26740	26783
	Frequency	814.7	819	823.3

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

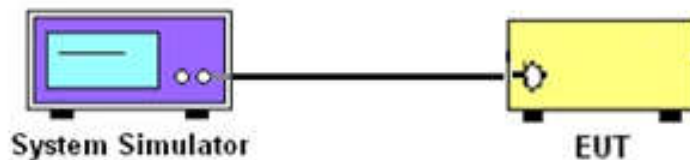
3.1.2 Measuring Instruments

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 the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

Please refer to Appendix A.

3.2 Field Strength of Spurious Radiation Measurement

3.2.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI/TIA-603-E. The power of any emission FCC Part 90.691 on any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log_{10}(P[\text{Watts}])$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.2.2 Measuring Instruments

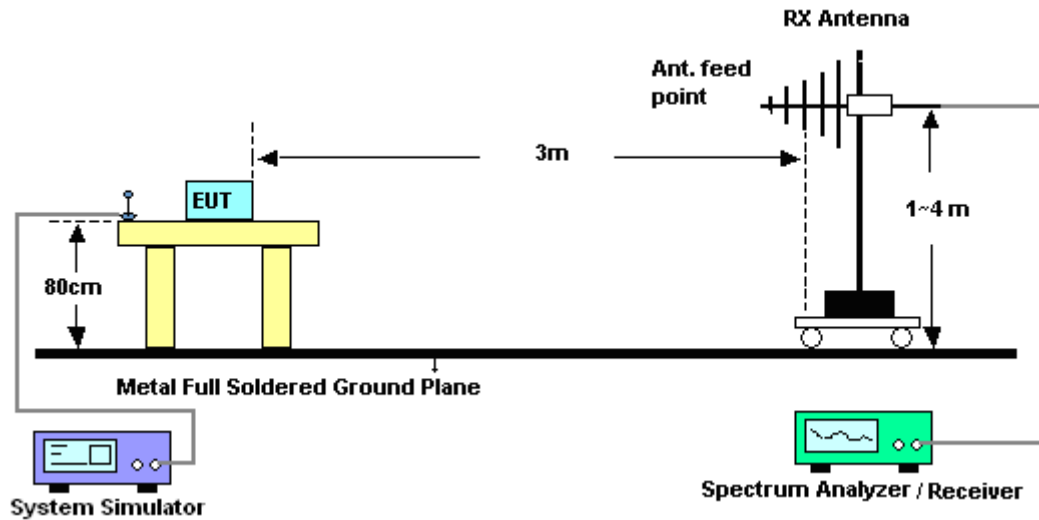
The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

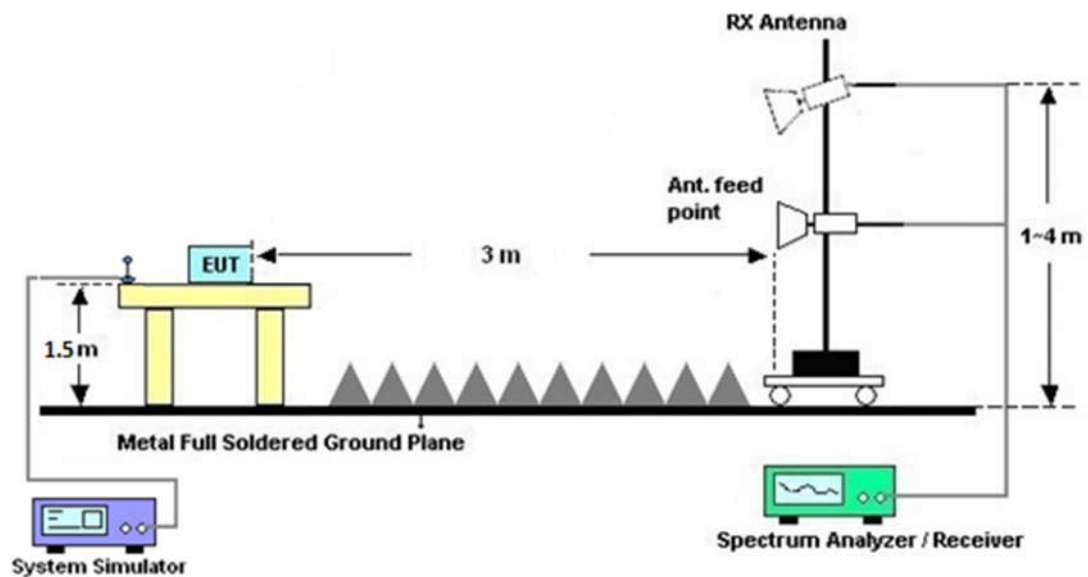
1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. $\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$
11. $\text{ERP (dBm)} = \text{EIRP} - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from $43 + 10 \log(P)$ dB below the transmitter power P(Watts)

3.2.4 Test Setup

For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



3.2.5 Test Result of Field Strength of Spurious Radiated

Please refer to Appendix B.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	9kHz~40GHz	Apr. 19, 2018	Jul. 12, 2018	Apr. 18, 2019	Conducted (TH01-SZ)
DC Power Supply	GWINSTEK	AnritsuGPS-3030D	EM882636	Max 30V	Apr. 19, 2018	Jul. 12, 2018	Apr. 18, 2019	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Apr. 19, 2018	Jul. 12, 2018	Apr. 18, 2019	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	Apr. 19, 2018	Jul. 12, 2018	Apr. 18, 2019	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	119436	1GHz~18GHz	Jul. 28, 2017	Jul. 12, 2018	Jul. 27, 2018	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz~40GHz	Mar. 30, 2018	Jul. 12, 2018	Mar. 29, 2019	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 19, 2018	Jul. 12, 2018	Apr. 18, 2019	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00 101800-30- 10P-R	1707137	1GHz~18GHz	Oct. 19, 2017	Jul. 12, 2018	Oct. 18, 2018	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 18, 2017	Jul. 12, 2018	Jul. 17, 2018	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Jul. 12, 2018	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jul. 12, 2018	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jul. 12, 2018	NCR	Radiation (03CH01-SZ)

NCR: No Calibration Required

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.5dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.5dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.0dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power (Average power)

LTE Band 26 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
15	1	0	QPSK	22.65	-	-
15	1	37		22.84		
15	1	74		22.51		
15	36	0		21.97		
15	36	20		22.00		
15	36	39		21.71		
15	75	0		21.95		
15	1	0	16-QAM	22.34		
15	1	37		22.13		
15	1	74		21.81		
15	36	0		20.91		
15	36	20		21.08		
15	36	39		20.64		
15	75	0		20.83		



LTE Band 26 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK		22.67	
10	1	25			22.69	
10	1	49			22.65	
10	25	0			21.79	
10	25	12			21.47	
10	25	25			21.76	
10	50	0			21.58	
10	1	0	16-QAM		21.71	
10	1	25			21.86	
10	1	49			21.70	
10	25	0			20.63	
10	25	12			20.60	
10	25	25			20.62	
10	50	0			20.82	
5	1	0	QPSK	22.81	22.71	22.52
5	1	12		22.79	22.67	22.53
5	1	24		22.82	22.64	22.65
5	12	0		21.97	21.67	21.45
5	12	7		21.95	21.47	21.54
5	12	13		21.88	21.67	21.58
5	25	0		21.87	21.55	21.58
5	1	0	16-QAM	22.32	21.71	21.76
5	1	12		22.24	21.87	21.86
5	1	24		22.18	21.59	21.74
5	12	0		20.98	20.70	20.63
5	12	7		20.90	20.67	20.47
5	12	13		20.92	20.64	20.50
5	25	0		21.00	20.63	20.66



LTE Band 26 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
3	1	0	QPSK	22.84	22.91	22.69
3	1	8		22.92	22.88	22.57
3	1	14		22.90	22.70	22.69
3	8	0		22.02	21.82	21.68
3	8	4		22.02	21.71	21.76
3	8	7		22.03	21.60	21.58
3	15	0		22.05	21.78	21.51
3	1	0	16-QAM	22.20	21.91	21.91
3	1	8		22.27	22.09	21.86
3	1	14		22.17	21.97	21.91
3	8	0		20.99	20.80	20.77
3	8	4		20.96	20.77	20.62
3	8	7		20.93	20.69	20.69
3	15	0		20.86	20.65	20.63
1.4	1	0	QPSK	22.92	22.56	22.54
1.4	1	3		22.90	22.57	22.49
1.4	1	5		22.90	22.71	22.55
1.4	3	0		22.85	22.73	22.56
1.4	3	1		22.84	22.65	22.47
1.4	3	3		22.81	22.63	22.46
1.4	6	0		21.84	21.91	21.59
1.4	1	0	16-QAM	22.21	21.72	21.84
1.4	1	3		22.40	21.66	21.86
1.4	1	5		22.34	21.78	21.87
1.4	3	0		21.97	21.61	21.61
1.4	3	1		22.02	21.93	21.45
1.4	3	3		22.08	21.82	21.59
1.4	6	0		21.04	20.91	20.80



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

LTE Band 26 / 1.4MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1632	-71.38	-13	-58.38	-69.59	-75.75	2.86	9.38	H
	2440	-68.84	-13	-55.84	-77.56	-73.53	3.74	10.58	H
	3256.28	-65.79	-13	-52.79	-80.35	-71.76	4.45	12.57	H
	1632	-73.70	-13	-60.70	-69.20	-78.07	2.86	9.38	V
	2440	-69.80	-13	-56.80	-78.03	-74.49	3.74	10.58	V
	3256.28	-66.95	-13	-53.95	-80.33	-72.92	4.45	12.57	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.