

Partial FCC Test Report

(PART 27)

Report No.: RF161003C38-7

FCC ID: QYLEM7355Z

Test Model: EM7355Z

Received Date: Oct. 03, 2016

Test Date: Oct. 26, 2016 ~ Nov.08, 2016

Issued Date: Nov. 14, 2016

Applicant: Getac Technology Corporation.

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

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
(R.O.C)

Test Location: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan
Hsien 333, Taiwan, R.O.C.



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Release Control Record

Issue No.	Description	Date Issued
RF161003C38-7	Original Release	Nov. 14, 2016

1 Certificate of Conformity

Product: Radio Module

Brand: Getac

Test Model: EM7355Z

Sample Status: Identical Prototype

Applicant: Getac Technology Corporation.

Test Date: Oct. 26, 2016 ~ Nov.08, 2016

Standards: FCC Part 27, Subpart C, L

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :

Gina Liu

Date:

Nov. 14, 2016

Gina Liu / Specialist

Approved by :

Stanley Wu

Date:

Nov. 14, 2016

Stanley Wu / Assistant Manager

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2 (WCDMA)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)(4)	Equivalent Isotropic Radiated Power	Pass	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049 27.53(h)	Occupied Bandwidth	N/A	Refer to Note
27.50(d)(5)	Peak to Average Ratio	N/A	Refer to Note
27.53(h)	Band Edge Measurements	N/A	Refer to Note
2.1051 27.53(h)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 27.53(h)	Radiated Spurious Emissions	N/A	Refer to Note

Applied Standard: FCC Part 27 & Part 2 (LTE 4)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)(4)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049 27.53(h)	Occupied Bandwidth	N/A	Refer to Note
27.50(d)(5)	Peak to Average Ratio	N/A	Refer to Note
27.53(h)	Band Edge Measurements	N/A	Refer to Note
2.1051 27.53(h)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 27.53(h)	Radiated Spurious Emissions	N/A	Refer to Note

Note: Only test item of EIRP was performed for this report. Other testing data please refer to Sierra Wireless, Inc. EM7355 3G/4G Reports for module (FCC ID: E7NEM7355)

Applied Standard: FCC Part 27 & Part 2 (LTE 13)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(b)(10)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049 27.53(g)	Occupied Bandwidth	N/A	Refer to Note
27.50(d)(5)	Peak to Average Ratio	N/A	Refer to Note
27.53(g)	Band Edge Measurements	N/A	Refer to Note
2.1051 27.53(g)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 27.53(g)	Radiated Spurious Emissions	N/A	Refer to Note

Applied Standard: FCC Part 27 & Part 2 (LTE 17)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(C)(10)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049 27.53(g)	Occupied Bandwidth	N/A	Refer to Note
27.50(d)(5)	Peak to Average Ratio	N/A	Refer to Note
27.53(g)	Band Edge Measurements	N/A	Refer to Note
2.1051 27.53(g)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 27.53(g)	Radiated Spurious Emissions	N/A	Refer to Note

Note: Only test item of ERP was performed for this report. Other testing data please refer to Sierra Wireless, Inc. EM7355 3G/4G Reports for module (FCC ID: E7NEM7355)

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Jan. 21, 2016	Jan. 20, 2017
Signal Generator Agilent	N5182B	MY53050430	Oct. 19, 2016	Oct. 18, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 17, 2015	Dec. 16, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Jan. 07, 2016	Jan. 06, 2017
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Jan. 04, 2016	Jan. 03, 2017
Double Ridge Guide Horn Antenna EMCO	3115	5619	Jan. 04, 2016	Jan. 03, 2017
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Jan. 07, 2016	Jan. 06, 2017
Agilent Communications Tester-Wireless	8960 Series 10	MY53201073	Jul. 03, 2015	Jul. 02, 2017
Preamplifier EMCI	EMC 012645	980115	Dec. 21, 2015	Dec. 20, 2016
Preamplifier EMCI	EMC 184045	980116	Dec. 21, 2015	Dec. 20, 2016
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2015	Dec. 27, 2016
Power Meter Anritsu	ML2495A	1232002	Sep. 08, 2016	Sep. 07, 2017
Power Sensor Anritsu	MA2411B	1207325	Sep. 08, 2016	Sep. 07, 2017
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 21, 2016	Oct. 20, 2017
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 21, 2016	Oct. 20, 2017
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 21, 2016	Oct. 20, 2017
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Radio Communication Analyzer	MT8820C	6201300640	Aug. 10, 2015	Aug. 09, 2017
Temperature & Humidity Chamber	GTH-120-40-CP-A R	MAA1306-019	Sep. 02, 2016	Sep. 01, 2017
DC Power Supply Topward	33010D	807748	Oct. 27, 2015	Oct. 26, 2016
			Oct. 25, 2016	Oct. 24, 2017
Digital Multimeter Fluke	87-III	70360742	Jul. 01, 2016	Jun. 30, 2017

- Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The FCC Site Registration No. is 690701.
5. The IC Site Registration No. is IC7450F-10.

3 General Information

3.1 General Description of EUT

Product	Radio Module	
Brand	Getac	
Test Model	EM7355Z	
Status of EUT	Identical Prototype	
Power Supply Rating	12.0 Vdc (adapter) 3.8 Vdc (Li-ion battery)	
Modulation Type	WCDMA	QPSK, BPSK
	LTE	QPSK, 16QAM
Frequency Range	WCDMA	1712.4 ~ 1752.6 MHz
	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	1710.7 ~ 1754.3 MHz
	LTE Band 4 (Channel Bandwidth: 3 MHz)	1711.5 ~ 1753.5 MHz
	LTE Band 4 (Channel Bandwidth: 5 MHz)	1712.5 ~ 1752.5 MHz
	LTE Band 4 (Channel Bandwidth: 10 MHz)	1715.0 ~ 1750.0 MHz
	LTE Band 4 (Channel Bandwidth: 15 MHz)	1717.5 ~ 1747.5 MHz
	LTE Band 4 (Channel Bandwidth: 20 MHz)	1720.0 ~ 1745.0 MHz
	LTE Band 13 (Channel Bandwidth: 5 MHz)	779.5 ~ 784.5 MHz
	LTE Band 13 (Channel Bandwidth: 10 MHz)	782.0 MHz
	LTE Band 17 (Channel Bandwidth: 5 MHz)	706.5 ~ 713.5 MHz
	LTE Band 17 (Channel Bandwidth: 10 MHz)	709 ~ 711 MHz
Max. ERP Power	LTE Band 13 (Channel Bandwidth: 5 MHz)	103.78mW
	LTE Band 13 (Channel Bandwidth: 10 MHz)	100.39mW
	LTE Band 17 (Channel Bandwidth: 5 MHz)	89.66mW
	LTE Band 17 (Channel Bandwidth: 10 MHz)	89.50mW
Max. EIRP Power	WCDMA	286.09mW
	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	322.48mW
	LTE Band 4 (Channel Bandwidth: 3 MHz)	325.61mW
	LTE Band 4 (Channel Bandwidth: 5 MHz)	324.12mW
	LTE Band 4 (Channel Bandwidth: 10 MHz)	321.00mW
	LTE Band 4 (Channel Bandwidth: 15 MHz)	325.61mW
	LTE Band 4 (Channel Bandwidth: 20 MHz)	321.88mW
Antenna Type	PIFA Antenna	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

1. The EUT is authorized for use in specific End-product. Please refer to below table for more details.

Item	Brand	Model
Tablet	Getac	ZX70

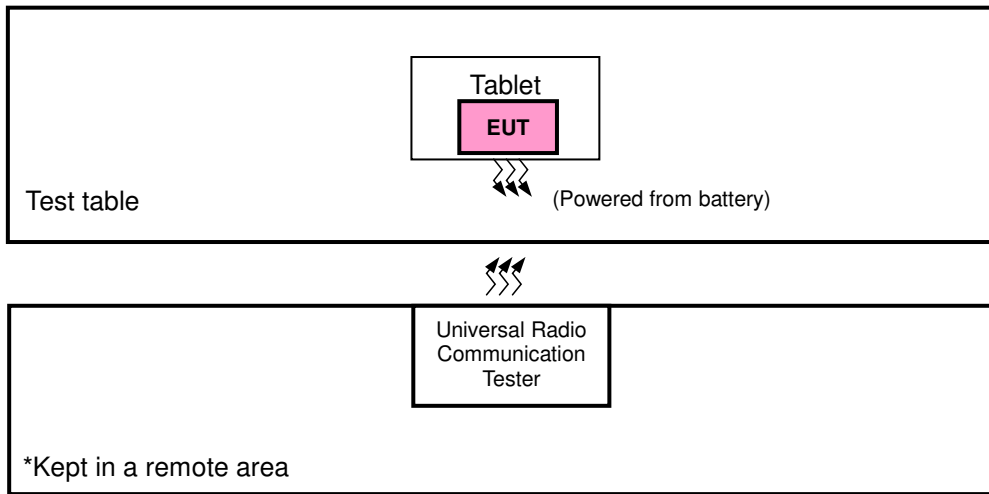
2. The End-product contains following accessory devices.

Product	Brand	Model	Description
Adapter	APD	WA24Q12R	I/P: 100-240 Vac, 50/60 Hz, 0.7 A O/P: 12 Vdc, 2 A 1.75m shielded cable with 1 core
Battery	Getac	BP1S2P4240L	3.8 Vdc, 8480 mAh
LCD Panel	Truly	TDO-HD0698K61701	7"
Photo Camera	Chicony	CWFFF2520005340LH	2MPs HD Fix focus camera
Video Camera	Chicony	CYAF82520005340LH	8MPs auto focus camera
CPU	intel	Atom Z8350	592 PIN
Memory	Samsung	K4E6E304EE-EGCE	DDR3 4G (2G*2)
Storage	Samsung	KLMBG4GEND-B031	32G
GPS	U-blox	MAX-M8N	
BT/WLAN Module	AMPAK	AP6234	
RFID	Jogtek	TRF7970A	
WWAN Module	Sierra	EM7355Z	
Fingerprint	IMD	SF1115	

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test

<E.R.P. / E.I.R.P. Test>



3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Tablet	Getac	ZX70	N/A	N/A

No.	Signal Cable Description Of The Above Support Units
1.	N/A

Note:

1. All power cords of the above support units are non-shielded (1.8m).

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis, and antenna ports

The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

Band	EIRP	Band	ERP
WCDMA	Y-plane	LTE Band 13	Y-plane
LTE Band 4	Y-plane	LTE Band 17	Y-plane

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	1312 to 1513	1312, 1413, 1513	WCDMA

LTE Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK, 16QAM	1 RB / 5 RB Offset
		19965 to 20385	19965, 20175, 20385	3 MHz	QPSK, 16QAM	1 RB / 14 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK, 16QAM	1 RB / 24 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK, 16QAM	1 RB / 49 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK, 16QAM	1 RB / 74 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK, 16QAM	1 RB / 99 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE Band 13

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK, 16QAM	1 RB / 24 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE Band 17

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	23755 to 23825	23755, 23790, 23825	5 MHz	QPSK, 16QAM	1 RB / 12 RB Offset
		23780 to 23800	23780, 23790, 23800	10 MHz	QPSK, 16QAM	1 RB / 24 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP / EIRP	25 deg. C, 65 % RH	3.8 Vdc	Getaz Yang

3.4 EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 27

KDB 971168 D01 Power Meas License Digital Systems v02r02

ANSI/TIA/EIA-603-D 2010

Note: All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

Portable stations (hand-held devices) operating in the 698-787 MHz band are limited to 3 watts ERP

4.1.2 Test Procedures

EIRP / ERP Measurement:

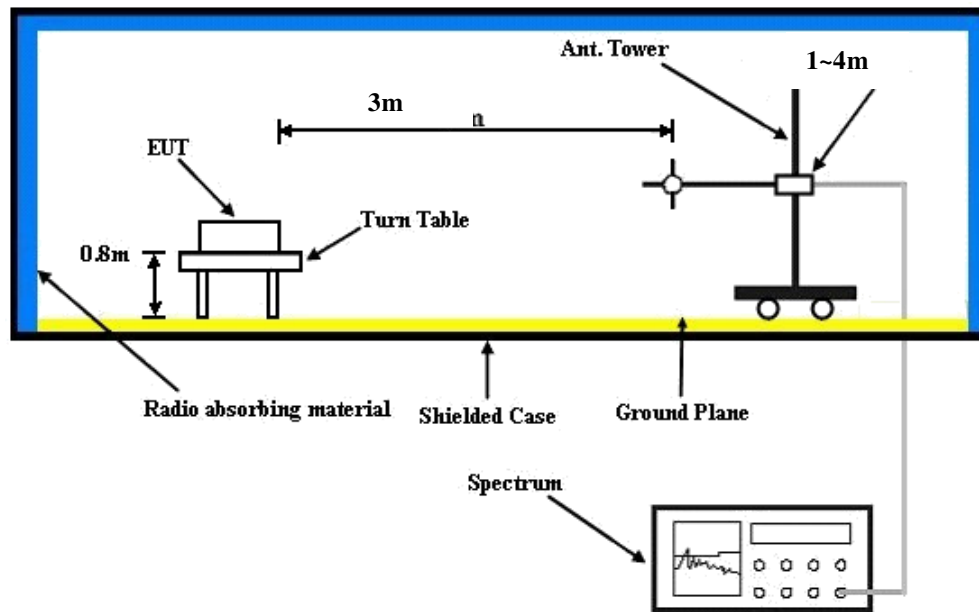
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5 MHz for WCDMA and 10 MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step b. Record the power level of S.G.
- d. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15 \text{ dBi}$.

Conducted Power Measurement:

- a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 Test Setup

EIRP / ERP Measurement:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

Conducted Power Measurement:



4.1.4 Test Results

Conducted Output Power (dBm)

Band	WCDMA IV		
Channel	1312	1413	1513
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	23.15	23.01	23.16
HSDPA Subtest-1	22.73	22.59	22.74
HSDPA Subtest-2	22.72	22.58	22.73
HSDPA Subtest-3	22.26	22.12	22.27
HSDPA Subtest-4	22.23	22.09	22.24
HSUPA Subtest-1	21.24	21.10	21.25
HSUPA Subtest-2	20.07	19.93	20.08
HSUPA Subtest-3	20.77	20.63	20.78
HSUPA Subtest-4	19.97	19.83	19.98
HSUPA Subtest-5	21.07	20.93	21.08

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 19957	Mid Ch 20175	High Ch 20393		Low Ch 19957	Mid Ch 20175	High Ch 20393	
			1710.7 MHz	1732.5 MHz	1754.3 MHz		1710.7 MHz	1732.5 MHz	1754.3 MHz	
4 / 1.4M	1	0	22.30	22.41	22.55	0	21.24	21.35	21.49	1
	1	2	22.35	22.46	22.60	0	21.29	21.40	21.54	1
	1	5	22.42	22.53	22.63	0	21.36	21.47	21.57	1
	3	0	22.08	22.19	22.33	0	21.02	21.13	21.27	1
	3	1	22.09	22.20	22.34	0	21.03	21.14	21.28	1
	3	3	22.11	22.22	22.36	0	21.05	21.16	21.30	1
	6	0	21.07	21.18	21.32	1	20.01	20.12	20.26	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 19965	Mid Ch 20175	High Ch 20385		Low Ch 19965	Mid Ch 20175	High Ch 20385	
			1711.5 MHz	1732.5 MHz	1753.5 MHz		1711.5 MHz	1732.5 MHz	1753.5 MHz	
4 / 3M	1	0	22.43	22.54	22.68	0	21.37	21.48	21.62	1
	1	7	22.48	22.59	22.73	0	21.42	21.53	21.67	1
	1	14	22.55	22.66	22.76	0	21.49	21.60	21.70	1
	8	0	21.21	21.32	21.46	1	20.15	20.26	20.40	2
	8	3	21.22	21.33	21.47	1	20.16	20.27	20.41	2
	8	7	21.24	21.35	21.49	1	20.18	20.29	20.43	2
	15	0	21.20	21.31	21.45	1	20.14	20.25	20.39	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 19975	Mid Ch 20175	High Ch 20375		Low Ch 19975	Mid Ch 20175	High Ch 20375	
			1712.5 MHz	1732.5 MHz	1752.5 MHz		1712.5 MHz	1732.5 MHz	1752.5 MHz	
4 / 5M	1	0	22.67	22.78	22.92	0	21.61	21.72	21.86	1
	1	12	22.72	22.83	22.97	0	21.66	21.77	21.91	1
	1	24	22.79	22.90	23.00	0	21.73	21.84	21.94	1
	12	0	21.45	21.56	21.70	1	20.39	20.50	20.64	2
	12	6	21.46	21.57	21.71	1	20.40	20.51	20.65	2
	12	13	21.48	21.59	21.73	1	20.42	20.53	20.67	2
	25	0	21.44	21.55	21.69	1	20.38	20.49	20.63	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 20000	Mid Ch 20175	High Ch 20350		Low Ch 20000	Mid Ch 20175	High Ch 20350	
			1715.0 MHz	1732.5 MHz	1750.0 MHz		1715.0 MHz	1732.5 MHz	1750.0 MHz	
4 / 10M	1	0	22.88	22.99	23.13	0	21.82	21.93	22.07	1
	1	24	22.93	23.04	23.18	0	21.87	21.98	22.12	1
	1	49	23.00	23.11	23.21	0	21.94	22.05	22.15	1
	25	0	21.66	21.77	21.91	1	20.60	20.71	20.85	2
	25	12	21.67	21.78	21.92	1	20.61	20.72	20.86	2
	25	25	21.69	21.80	21.94	1	20.63	20.74	20.88	2
	50	0	21.65	21.76	21.90	1	20.59	20.70	20.84	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 20025	Mid Ch 20175	High Ch 20325		Low Ch 20025	Mid Ch 20175	High Ch 20325	
			1717.5 MHz	1732.5 MHz	1747.5 MHz		1717.5 MHz	1732.5 MHz	1747.5 MHz	
4 / 15M	1	0	23.06	23.17	23.31	0	22.00	22.11	22.25	1
	1	37	23.11	23.22	23.36	0	22.05	22.16	22.30	1
	1	74	23.18	23.29	23.39	0	22.12	22.23	22.33	1
	36	0	21.84	21.95	22.09	1	20.78	20.89	21.03	2
	36	19	21.85	21.96	22.10	1	20.79	20.90	21.04	2
	36	39	21.87	21.98	22.12	1	20.81	20.92	21.06	2
	75	0	21.83	21.94	22.08	1	20.77	20.88	21.02	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 20050	Mid Ch 20175	High Ch 20300		Low Ch 20050	Mid Ch 20175	High Ch 20300	
			1720.0 MHz	1732.5 MHz	1745.0 MHz		1720.0 MHz	1732.5 MHz	1745.0 MHz	
4 / 20M	1	0	23.17	23.28	23.42	0	22.11	22.22	22.36	1
	1	50	23.22	23.33	23.47	0	22.16	22.27	22.41	1
	1	99	23.29	23.40	23.50	0	22.23	22.34	22.44	1
	50	0	21.95	22.06	22.20	1	20.89	21.00	21.14	2
	50	25	21.96	22.07	22.21	1	20.90	21.01	21.15	2
	50	50	21.98	22.09	22.23	1	20.92	21.03	21.17	2
	100	0	21.94	22.05	22.19	1	20.88	20.99	21.13	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 23205	Mid Ch 23230	High Ch 23255		Low Ch 23205	Mid Ch 23230	High Ch 23255	
			779.5 MHz	782.0 MHz	784.5 MHz		779.5 MHz	782.0 MHz	784.5 MHz	
13 / 5M	1	0	21.94	22.07	22.02	0	20.90	21.03	20.98	1
	1	12	22.00	22.13	22.08	0	20.96	21.09	21.04	1
	1	24	21.84	21.97	21.92	0	20.80	20.93	20.88	1
	12	0	20.91	21.04	20.99	1	19.87	20.00	19.95	2
	12	6	20.94	21.07	21.02	1	19.90	20.03	19.98	2
	12	13	20.85	20.98	20.93	1	19.81	19.94	19.89	2
	25	0	20.81	20.94	20.89	1	19.77	19.90	19.85	2

Band / BW	RB Size	RB Offset	QPSK		3GPP MPR (dB)	16QAM		3GPP MPR (dB)
			Mid Ch 23230	782.0 MHz		Mid Ch 23230	782.0 MHz	
			782.0 MHz	782.0 MHz		782.0 MHz	782.0 MHz	
13 / 10M	1	0	23.05	22.01	0	22.01	1	
	1	24	23.11	22.07	0	22.07	1	
	1	49	22.95	21.91	0	21.91	1	
	25	0	22.02	20.98	1	20.98	2	
	25	12	22.05	21.01	1	21.01	2	
	25	25	21.96	20.92	1	20.92	2	
	50	0	21.92	20.88	1	20.88	2	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 23755	Mid Ch 23790	High Ch 23825		Low Ch 23755	Mid Ch 23790	High Ch 23825	
			706.5 MHz	710.0 MHz	713.5 MHz		706.5 MHz	710.0 MHz	713.5 MHz	
17 / 5M	1	0	22.65	22.88	22.94	0	21.56	21.79	21.85	1
	1	12	22.67	22.90	22.96	0	21.58	21.81	21.87	1
	1	24	22.48	22.71	22.77	0	21.39	21.62	21.68	1
	12	0	21.61	21.84	21.90	1	20.52	20.75	20.81	2
	12	6	21.63	21.86	21.92	1	20.54	20.77	20.83	2
	12	13	21.60	21.83	21.89	1	20.51	20.74	20.80	2
	25	0	21.52	21.75	21.81	1	20.43	20.66	20.72	2

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low Ch 23780	Mid Ch 23790	High Ch 23800		Low Ch 23780	Mid Ch 23790	High Ch 23800	
			709.0 MHz	710.0 MHz	711.0 MHz		709.0 MHz	710.0 MHz	711.0 MHz	
17 / 10M	1	0	23.00	23.23	23.29	0	21.91	22.14	22.20	1
	1	24	23.02	23.25	23.31	0	21.93	22.16	22.22	1
	1	49	22.83	23.06	23.12	0	21.74	21.97	22.03	1
	25	0	21.96	22.19	22.25	1	20.87	21.10	21.16	2
	25	12	21.98	22.21	22.27	1	20.89	21.12	21.18	2
	25	25	21.95	22.18	22.24	1	20.86	21.09	21.15	2
	50	0	21.87	22.10	22.16	1	20.78	21.01	21.07	2

ERP Power (dBm)

LTE Band 13							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23205	779.5	-10.46	32.771	20.16	103.78	H
	23230	782.0	-10.50	32.741	20.09	102.12	
	23255	784.5	-10.68	32.854	20.02	100.55	
	23205	779.5	-16.30	32.5	14.05	25.41	V
	23230	782.0	-16.32	32.52	14.05	25.41	
	23255	784.5	-16.45	32.62	14.02	25.23	
Channel Bandwidth: 5 MHz / 16QAM							
Y	23205	779.5	-11.59	32.771	19.03	80.00	H
	23230	782.0	-11.50	32.741	19.09	81.11	
	23255	784.5	-11.66	32.854	19.04	80.24	
	23205	779.5	-17.26	32.5	13.09	20.37	V
	23230	782.0	-17.25	32.52	13.12	20.51	
	23255	784.5	-17.39	32.62	13.08	20.32	

LTE Band 13							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23230	782.0	-10.57	32.737	20.02	100.39	H
	23230	782.0	-16.34	32.52	14.03	25.29	V
Channel Bandwidth: 10 MHz / 16QAM							
Y	23230	782.0	-11.41	32.737	19.18	82.74	H
	23230	782.0	-17.26	32.52	13.11	20.46	V

LTE Band 17							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23755	706.5	-11.05	32.719	19.52	89.52	H
	23790	710.0	-11.06	32.736	19.53	89.66	
	23825	713.5	-10.96	32.591	19.48	88.74	
	23755	706.5	-17.01	32.69	13.53	22.54	V
	23790	710.0	-17.19	32.81	13.47	22.23	
	23825	713.5	-17.10	32.74	13.49	22.34	
Channel Bandwidth: 5 MHz / 16QAM							
Y	23755	706.5	-12.08	32.719	18.49	70.62	H
	23790	710.0	-12.08	32.736	18.51	70.89	
	23825	713.5	-11.86	32.591	18.58	72.13	
	23755	706.5	-18.09	32.69	12.45	17.58	V
	23790	710.0	-18.11	32.81	12.55	17.99	
	23825	713.5	-18.09	32.74	12.50	17.78	

LTE Band 17							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23780	709.0	-11.06	32.727	19.52	89.47	H
	23790	710.0	-11.08	32.739	19.51	89.31	
	23800	711.0	-11.06	32.728	19.52	89.50	
	23780	709.0	-17.06	32.75	13.54	22.59	V
	23790	710.0	-17.12	32.81	13.54	22.59	
	23800	711.0	-17.19	32.84	13.50	22.39	
Channel Bandwidth: 10 MHz / 16QAM							
Y	23780	709.0	-12.37	32.727	18.21	66.18	H
	23790	710.0	-12.47	32.739	18.12	64.85	
	23800	711.0	-12.24	32.728	18.34	68.20	
	23780	709.0	-18.05	32.75	12.55	17.99	V
	23790	710.0	-18.16	32.81	12.50	17.78	
	23800	711.0	-18.20	32.84	12.49	17.74	

EIRP Power (dBm)

WCDMA							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Y	1312	1712.4	-17.92	42.49	24.57	286.09	H
	1413	1732.6	-17.80	42.33	24.53	283.60	
	1513	1752.6	-17.58	42.10	24.52	283.14	
	1312	1712.4	-23.46	42.99	19.53	89.74	V
	1413	1732.6	-23.26	42.74	19.48	88.72	
	1513	1752.6	-22.69	42.21	19.52	89.54	

LTE Band 4							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Y	19957	1710.7	-17.40	42.49	25.09	322.48	H
	20175	1732.5	-17.26	42.33	25.07	321.14	
	20393	1754.3	-17.06	42.10	25.04	319.15	
	19957	1710.7	-22.93	42.99	20.06	101.39	V
	20175	1732.5	-22.70	42.74	20.04	100.93	
	20393	1754.3	-22.16	42.21	20.05	101.16	
Channel Bandwidth: 1.4 MHz / 16QAM							
Y	19957	1710.7	-18.45	42.49	24.04	253.22	H
	20175	1732.5	-18.29	42.33	24.04	253.34	
	20393	1754.3	-18.08	42.10	24.02	252.35	
	19957	1710.7	-23.98	42.99	19.01	79.62	V
	20175	1732.5	-23.65	42.74	19.09	81.10	
	20393	1754.3	-23.15	42.21	19.06	80.54	

LTE Band 4							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Y	19965	1711.5	-17.42	42.49	25.07	321.00	H
	20175	1732.5	-17.20	42.33	25.13	325.61	
	20385	1753.5	-17.03	42.10	25.07	321.37	
	19965	1711.5	-22.90	42.99	20.09	102.09	V
	20175	1732.5	-22.68	42.74	20.06	101.39	
	20385	1753.5	-22.20	42.21	20.01	100.23	
Channel Bandwidth: 3 MHz / 16QAM							
Y	19965	1711.5	-18.42	42.49	24.07	254.98	H
	20175	1732.5	-18.26	42.33	24.07	255.09	
	20385	1753.5	-17.99	42.10	24.11	257.63	
	19965	1711.5	-23.96	42.99	19.03	79.98	V
	20175	1732.5	-23.74	42.74	19.00	79.43	
	20385	1753.5	-23.12	42.21	19.09	81.10	

LTE Band 4							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Y	19975	1712.5	-17.40	42.49	25.09	322.48	H
	20175	1732.5	-17.22	42.33	25.11	324.12	
	20375	1752.5	-17.03	42.10	25.07	321.37	
	19975	1712.5	-22.94	42.99	20.05	101.16	V
	20175	1732.5	-22.63	42.74	20.11	102.57	
	20375	1752.5	-22.10	42.21	20.11	102.57	
Channel Bandwidth: 5 MHz / 16QAM							
Y	19975	1712.5	-18.42	42.49	24.07	254.98	H
	20175	1732.5	-18.21	42.33	24.12	258.05	
	20375	1752.5	-18.03	42.10	24.07	255.27	
	19975	1712.5	-23.89	42.99	19.10	81.28	V
	20175	1732.5	-23.74	42.74	19.00	79.43	
	20375	1752.5	-23.15	42.21	19.06	80.54	

LTE Band 4							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Y	20000	1715.0	-17.42	42.49	25.07	321.00	H
	20175	1732.5	-17.31	42.33	25.02	317.47	
	20350	1750.0	-17.08	42.10	25.02	317.69	
	20000	1715.0	-22.94	42.99	20.05	101.16	V
	20175	1732.5	-22.70	42.74	20.04	100.93	
	20350	1750.0	-22.16	42.21	20.05	101.16	
Channel Bandwidth: 10 MHz / 16QAM							
Y	20000	1715.0	-18.45	42.49	24.04	253.22	H
	20175	1732.5	-18.23	42.33	24.10	256.86	
	20350	1750.0	-18.10	42.10	24.00	251.19	
	20000	1715.0	-23.95	42.99	19.04	80.17	V
	20175	1732.5	-23.68	42.74	19.06	80.54	
	20350	1750.0	-23.08	42.21	19.13	81.85	

LTE Band 4							
Channel Bandwidth: 15 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Y	20025	1717.5	-17.49	42.49	25.00	315.86	H
	20175	1732.5	-17.20	42.33	25.13	325.61	
	20325	1747.5	-17.08	42.10	25.02	317.69	
	20025	1717.5	-22.96	42.99	20.03	100.69	V
	20175	1732.5	-22.69	42.74	20.05	101.16	
	20325	1747.5	-22.10	42.21	20.11	102.57	
Channel Bandwidth: 15 MHz / 16QAM							
Y	20025	1717.5	-18.43	42.49	24.06	254.39	H
	20175	1732.5	-18.26	42.33	24.07	255.09	
	20325	1747.5	-18.08	42.10	24.02	252.35	
	20025	1717.5	-23.98	42.99	19.01	79.62	V
	20175	1732.5	-23.68	42.74	19.06	80.54	
	20325	1747.5	-23.05	42.21	19.16	82.41	

LTE Band 4							
Channel Bandwidth: 20 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Y	20050	1720.0	-17.43	42.49	25.06	320.26	H
	20175	1732.5	-17.25	42.33	25.08	321.88	
	20300	1745.0	-17.06	42.10	25.04	319.15	
	20050	1720.0	-22.95	42.99	20.04	100.93	V
	20175	1732.5	-22.70	42.74	20.04	100.93	
	20300	1745.0	-22.16	42.21	20.05	101.16	
Channel Bandwidth: 20 MHz / 16QAM							
Y	20050	1720.0	-18.45	42.49	24.04	253.22	H
	20175	1732.5	-18.26	42.33	24.07	255.09	
	20300	1745.0	-18.02	42.10	24.08	255.86	
	20050	1720.0	-23.95	42.99	19.04	80.17	V
	20175	1732.5	-23.64	42.74	19.10	81.28	
	20300	1745.0	-23.10	42.21	19.11	81.47	

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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