

Partial FCC Test Report (Part 90 – LTE B14/B26)

Report No.: RFCDVB-WTW-P22100074-3

FCC ID: QYLEM9190V

Test Model: EM9190

Received Date: Nov. 15, 2022

Test Date: Nov. 29, 2022 ~ Dec. 06, 2022

Issued Date: Apr. 07, 2023

Applicant: Getac Technology Corporation.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / 788550 / TW0003
Designation Number:



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Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results	5
2.1 Measurement Uncertainty	6
2.2 Test Site and Instruments	7
3 General Information	8
3.1 General Description of EUT	8
3.2 Configuration of System under Test	10
3.2.1 Description of Support Units	10
3.3 Test Mode Applicability and Tested Channel Detail	11
3.4 EUT Operating Conditions	13
3.5 General Description of Applied Standards and References	13
4 Test Types and Results	14
4.1 Output Power Measurement	14
4.1.1 Limits of Output Power Measurement	14
4.1.2 Test Procedures	14
4.1.3 Test Setup	14
4.1.4 Test Results	15
4.2 Radiated Emission Measurement	27
4.2.1 Limits of Radiated Emission Measurement	27
4.2.2 Test Procedure	27
4.2.3 Deviation from Test Standard	27
4.2.4 Test Setup	28
4.2.5 Test Results	29
5 Pictures of Test Arrangements	41
Appendix – Information of the Testing Laboratories	42

Release Control Record

Issue No.	Description	Date Issued
RFCDVB-WTW-P22100074-3	Original Release	Apr. 07, 2023

1 Certificate of Conformity

Product: Radio Module

Brand: Getac

Test Model: EM9190

Sample Status: Engineering Sample

Applicant: Getac Technology Corporation.

Test Date: Nov. 29, 2022 ~ Dec. 06, 2022

Standards: FCC Part 90, Subpart I, S, R

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 RF characteristics under the conditions specified in this report.

Prepared by : Vera Huang , Date: Apr. 07, 2023
Vera Huang / Specialist

Approved by : Jeremy Lin , Date: Apr. 07, 2023
Jeremy Lin / Project Engineer

2 Summary of Test Results

For LTE Band 14

Applied Standard: FCC Part 90 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 90.542 (a)(7)	Effective Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	N/A	Refer to Note
2.1055 90.539 (e)	Frequency Stability	N/A	Refer to Note
2.1049	Occupied Bandwidth	N/A	Refer to Note
90.210 (n)	Emission Masks	N/A	Refer to Note
2.1053 90.543 (e)(2)(3)	Band Edge Measurements	N/A	Refer to Note
2.1051 90.543 (e)(3)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 90.543 (e)(f)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -1.10dB at 1581.00MHz.

For LTE Band 26

Applied Standard: FCC Part 90 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 90.635 (b)	Effective Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	N/A	Refer to Note
2.1055 90.213	Frequency Stability	N/A	Refer to Note
2.1049 90.209	Occupied Bandwidth	N/A	Refer to Note
90.691	Emission Mask	N/A	Refer to Note
2.1051 90.691	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 90.691	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -28.05dB at 2457.00MHz.

Note:

1. This report is a Class II change partial report. Therefore, only test item of Radiated Spurious Emissions tests and Effective Radiated Power were performed for this report. Other testing data please refer to Sporton International (Shenzhen) Inc. report no.: FG021501E_Rev. 02 and FW021501_Rev. 02 for module (Brand: Airprime, Model: EM9190).
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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) ($\pm$)
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1000 MHz	3.6 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model no.	Serial No.	Calibrated Date	Calibrated Until
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 27, 2022	Apr. 26, 2023
Spectrum Analyzer R&S	FSW43	101867	Jan. 07, 2022	Jan. 06, 2023
Loop Antenna TESEQ	HLA 6121	45745	Jul. 27, 2022	Jul. 26, 2023
Loop Antenna EMCI	EM-6879	269	Sep. 19, 2022	Sep. 18, 2023
Pre-amplifier EMCI	EMC001340	980201	Sep. 23, 2022	Sep. 22, 2023
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	Jan. 15, 2022	Jan. 14, 2023
Preamplifier Agilent	8447D	2944A10638	May 14, 2022	May 13, 2023
Bi_Log Antenna Schwarzbeck	VULB9168	9168-160	Oct. 20, 2022	Oct. 19, 2023
RF Coaxial Cable WOKEN	8D-FB	Cable-CH9-01	May 14, 2022	May 13, 2023
Horn Antenna Schwarzbeck	9120D	9120D-1169	Nov. 13, 2022	Nov. 12, 2023
Preamplifier Agilent	8449B	3008A02367	Feb. 16, 2022	Feb. 15, 2023
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104& EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 15, 2022	Jan. 14, 2023
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9- (250795/4)	Jan. 15, 2022	Jan. 14, 2023
RF FLITER MICRO-TRONICS	BRM50716	060	Jan. 10, 2022	Jan. 09, 2023
RF FLITER MICRO-TRONICS	BRM17690	004	Jan. 10, 2022	Jan. 09, 2023
Boresight antenna tower fixture BV	BAF-02	5	NA	NA
Pre-Amplifier EMCI	EMC 184045	980116	Oct. 01, 2022	Sep. 30, 2023
Horn Antenna Schwarzbeck	BBHA 9170	9170-480	Nov. 13, 2022	Nov. 12, 2023
Horn Antenna Schwarzbeck	BBHA 9170	BBHA9170243	Nov. 13, 2022	Nov. 12, 2023
RF Coaxial Cable EMCI	EMC102-KM-KM-3000	150929	Jul. 09, 2022	Jul. 08, 2023
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	Jul. 09, 2022	Jul. 08, 2023
Boresight antenna tower fixture BV	BAF-02	5	NA	NA
Radio Communication Analyzer Anritsu	MT8821C	6201462755	Mar. 03, 2022	Mar. 02, 2023

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HY - 966 chamber 4.

3 General Information

3.1 General Description of EUT

Product	Radio Module	
Brand	Getac	
Test Model	EM9190	
Status of EUT	Engineering Sample	
Power Supply Rating	3.3 Vdc (Host equipment)	
Modulation Type	QPSK, 16QAM, 64QAM, 256QAM	
Operating Frequency	LTE Band 14 (Channel Bandwidth 5MHz)	790.5MHz ~ 795.5MHz
	LTE Band 14 (Channel Bandwidth 10MHz)	793.0MHz
	LTE Band 26 (Channel Bandwidth 1.4MHz)	814.7MHz ~ 823.3MHz
	LTE Band 26 (Channel Bandwidth 3MHz)	815.5MHz ~ 822.5MHz
	LTE Band 26 (Channel Bandwidth 5MHz)	816.5MHz ~ 821.5MHz
	LTE Band 26 (Channel Bandwidth 10MHz)	819.0MHz
Max. ERP Power	LTE Band 14 (Channel Bandwidth 5MHz)	137.404mW (21.38dBm)
	LTE Band 14 (Channel Bandwidth 10MHz)	138.357mW (21.41dBm)
	LTE Band 26 (Channel Bandwidth 1.4MHz)	101.625mW (20.07dBm)
	LTE Band 26 (Channel Bandwidth 3MHz)	99.770mW (19.99dBm)
	LTE Band 26 (Channel Bandwidth 5MHz)	100.693mW (20.03dBm)
	LTE Band 26 (Channel Bandwidth 10MHz)	100.000mW (20.00dBm)
Antenna Type	Refer to Note as below	
Accessory Device	N/A	
Cable Supplied	N/A	

Note:

1. The EUT is authorized for use in specific End-product.

Product	Brand	Model	Difference
Notebook	Getac	V110	For marketing purpose
		V110G7	
		V110Y (Y= 10 characters, Y can be 0 to 9, A to Z, a to z, "I", " ", "-", " " or blank for marketing purpose)	

* The model of the V110G7 was chosen for final test.

2. The antenna information is listed as below.

Antenna Type	Antenna Gain (dBi)	
	LTE B14	LTE B26
PIFA	0.78	-0.86

* Detail antenna specification please refer to antenna datasheet or an antenna gain measurement report.

3. The End-product contains following accessory devices.

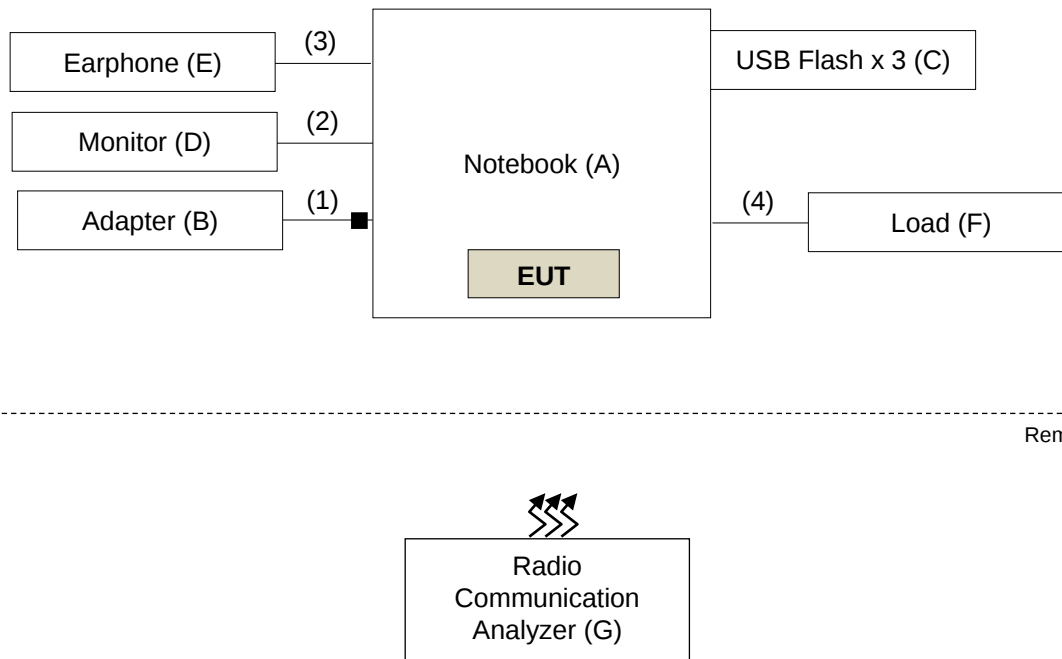
Part	Brand	Model	Specification
Adapter 1	FSP	FSP065-RBBN3	I/P: 100-240Vac, 50-60Hz, 1.5A O/P: 19.0Vdc, 3.42A 1.5m DC power cable with one core attached on adapter
Adapter 2	Getac	MTA190474W4	I/P: 100-240Vac, 50-60Hz, 1.6A O/P: 19.0Vdc, 4.74A 1.55m DC power cable with two cores attached on adapter
Battery	Getac	BP3S1P2100-S	Rating: 11.1Vdc, 2040mAh, 23Wh Typical name: 2100mAh, 24Wh
Digitizer Pen	EMpen Technology Corp	DIGITIZER PEN	-

4. The End-product has three SKUs for sale, after pre-test. SKU 3 was chosen for final test and presented in the test report.

Part	Brand	Model	Specification	Configuration		
				SKU 1	SKU 2	SKU 3
CPU	Intel	Alder Lake	i5-1235U (Non Vpro)	V		V
			i7-1265U (Vpro)		V	
DDR	Kingston	---	16GB (8GB+8GB)	V		
		---	32GB (16GB+16GB)		V	
		---	64GB (32GB+32GB)			V
SSD	SSSTC	---	256GB	V		
		---	512GB		V	
		---	1TB			V
LCD Panel	AUO	G116HAN01	11.6"	V	V	V
Finger Print	Egistec	---	---	V	V	V
WLAN Module	Intel	AX211NGW	---	V	V	V
WWAN Module	Sierra	EM9190	---	V	V	V
GPS	GlobalSat	MC1010G	---	V	V	V
RFID Module	NXP	PN-7462	---		V	V
Digitizer Module	Getac	EMR116-UA00	---		V	V
Bottom Camera	FOXLINK	FN80AF-443H	---	V	V	V
	Chicony	CKAM816	---	V	V	V
Camera	FOXLINK	FN20FF-679H	---	V	V	V
IR Camera	FOXLINK	FN23FF-678H	---		V	V
Option Bay	Honeywell	N6703	Barcode	V		V
	Getac	---	SD Card reader		V	
	Getac	---	Smart Card		V	

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

3.2 Configuration of System under 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.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	Getac	V110G7	NA	NA	Provided by manufacturer
B.	Adapter	FSP	FSP065-RBBN3	NA	NA	Provided by manufacturer
C.	USB Flash x 3	SanDisk	SDDDC3-032G	NA	NA	-
D.	Monitor	ASUS	VA24EHE	LCLMTF243824	NA	-
E.	Earphone	Apple	MB77PFEB	NA	NA	-
F.	Load	NA	NA	NA	NA	-
G.	Radio Communication Analyzer	Anritsu	MT8821C	6201462755	NA	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item G acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Power Cable	1	1.5	N	1	Provided by manufacturer Attached on adapter
2.	HDMI Cable	1	1.0	Y	0	-
3.	Earphone Cable	1	1.5	N	0	-
4.	RJ45 Cable	1	1.5	N	0	-

Note: The core(s) is(are) originally attached to the cable(s).

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 for tablet mode, and NB mode. 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	Radiated Emission
LTE Band 14	NB mode
LTE Band 26	NB mode

LTE Band 14

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	23305 to 23355	23305 (790.5MHz), 23330 (793.0MHz), 23355 (795.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 Half Full
		23330	23330 (793.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 Half Full
-	Radiated Emission Below 1GHz	23305 to 23355	23305 (790.5MHz)	5MHz	QPSK	1
-	Radiated Emission Above 1GHz	23305 to 23355	23305 (790.5MHz), 23330 (793.0MHz), 23355 (795.5MHz)	5MHz	QPSK	1
		23330	23330 (793.0MHz)	10MHz	QPSK	1

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.
2. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
3. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest & highest channel bandwidth for final test.

LTE Band 26

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	26697 to 26783	26697 (814.7MHz), 26740 (819.0MHz), 26783 (823.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	1 Half Full
		26705 to 26775	26705 (815.5MHz), 26740 (819.0MHz), 26775 (822.5MHz)	3MHz	QPSK / 16QAM / 64QAM	1 Half Full
		26715 to 26765	26715 (816.5MHz), 26740 (819.0MHz), 26765 (821.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 Half Full
		26740	26740 (819.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 Half Full
-	Radiated Emission Below 1GHz	26740	26740 (819.0MHz)	10MHz	QPSK	1
-	Radiated Emission Above 1GHz	26697 to 26783	26697 (814.7MHz), 26740 (819.0MHz), 26783 (823.3MHz)	1.4MHz	QPSK	1
		26715 to 26765	26715 (816.5MHz), 26740 (819.0MHz), 26765 (821.5MHz)	5MHz	QPSK	1
		26740	26740 (819.0MHz)	10MHz	QPSK	1

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.
2. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
3. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	25deg. C, 60%RH	120Vac, 60Hz (System)	Willy Cheng
Radiated Emission	23deg. C, 67%RH	120Vac, 60Hz (System)	Rex Wang Adair Peng

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 and References

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

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 90

ANSI 63.26-2015

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

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

KDB 971168 D02 Misc Rev Approv License Devices v02r01

ANSI/TIA/EIA-603-E 2016

All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

For LTE Band 14:

Control stations and mobile stations transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 30 watts ERP. Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

For LTE Band 26:

The output power shall be according to the specific rule Part 90.635 that “Mobile station are limited to 100 watts e.r.p”.

4.1.2 Test Procedures

Conducted Power Measurement:

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

Maximum EIRP / ERP

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

$$\text{EIRP} = P_{\text{Meas}} + G_T$$

$$\text{ERP} = P_{\text{Meas}} + G_T - 2.15$$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively
(expressed in the same units as P_{Meas} , e.g., dBm or dBW)

P_{Meas} measured transmitter output power or PSD, in dBm or dBW

G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

4.1.3 Test Setup

Conducted Power Measurement:



4.1.4 Test Results

Conducted Output Power (dBm)

LTE Band 14				
BW	MCS Index	RB Size	RB Offset	Mid
		Channel		23330
		Frequency (MHz)		793
10M	QPSK	1	0	22.78
		1	24	22.71
		1	49	22.69
		25	0	21.63
		25	12	21.58
		25	25	21.51
		50	0	21.49
10M	16QAM	1	0	22.06
		1	24	21.98
		1	49	21.95
		25	0	20.64
		25	12	20.61
		25	25	20.60
		50	0	20.58
10M	64QAM	1	0	20.74
		1	24	20.71
		1	49	20.68
		25	0	19.88
		25	12	19.86
		25	25	19.84
		50	0	19.81
10M	256QAM	1	0	17.73
		1	24	17.71
		1	49	17.68
		25	0	17.66
		25	12	17.62
		25	25	17.58
		50	0	17.54

LTE Band 14						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23305	23330	23355
		Frequency (MHz)		790.5	793	795.5
5M	QPSK	1	0	22.61	22.75	22.66
		1	12	22.64	22.68	22.70
		1	24	22.57	22.61	22.48
		12	0	21.54	21.58	21.54
		12	6	21.47	21.53	21.38
		12	13	21.42	21.41	21.32
		25	0	21.47	21.45	21.38
5M	16QAM	1	0	22.02	21.96	21.95
		1	12	21.89	21.95	21.75
		1	24	21.77	21.89	21.68
		12	0	20.49	20.63	20.44
		12	6	20.53	20.60	20.43
		12	13	20.50	20.57	20.41
		25	0	20.42	20.57	20.33
5M	64QAM	1	0	20.74	20.65	20.64
		1	12	20.58	20.67	20.53
		1	24	20.51	20.68	20.52
		12	0	19.83	19.87	19.75
		12	6	19.72	19.82	19.77
		12	13	19.72	19.81	19.64
		25	0	19.62	19.74	19.63
5M	256QAM	1	0	17.66	17.65	17.60
		1	12	17.63	17.69	17.58
		1	24	17.59	17.65	17.56
		12	0	17.64	17.59	17.52
		12	6	17.51	17.61	17.45
		12	13	17.52	17.51	17.45
		25	0	17.42	17.47	17.33

LTE Band 26				
BW	MCS Index	RB Size	RB Offset	Mid
		Channel		26740
		Frequency (MHz)		819
10M	QPSK	1	0	22.95
		1	24	23.01
		1	49	22.89
		25	0	22.14
		25	12	22.09
		25	25	22.07
		50	0	22.00
10M	16QAM	1	0	22.29
		1	24	22.20
		1	49	22.17
		25	0	21.15
		25	12	21.06
		25	25	21.01
		50	0	21.06
10M	64QAM	1	0	21.13
		1	24	21.10
		1	49	21.11
		25	0	20.10
		25	12	19.98
		25	25	19.88
		50	0	19.88
10M	256QAM	1	0	18.22
		1	24	18.08
		1	49	18.05
		25	0	18.08
		25	12	18.03
		25	25	18.00
		50	0	18.01

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26715	26740	26765
		Frequency (MHz)		816.5	819	821.5
5M	QPSK	1	0	22.99	22.95	23.04
		1	12	22.91	23.01	23.01
		1	24	22.95	22.89	22.97
		12	0	22.06	22.14	22.15
		12	6	22.07	22.09	22.11
		12	13	22.03	22.07	22.09
		25	0	22.03	22.00	22.08
5M	16QAM	1	0	22.33	22.29	22.33
		1	12	22.28	22.20	22.28
		1	24	22.12	22.17	22.21
		12	0	21.13	21.15	21.15
		12	6	21.02	21.06	21.11
		12	13	21.00	21.01	21.09
		25	0	21.04	21.06	21.07
5M	64QAM	1	0	21.21	21.13	21.22
		1	12	21.09	21.10	21.18
		1	24	21.08	21.11	21.14
		12	0	20.05	20.10	20.12
		12	6	19.96	19.98	20.06
		12	13	19.98	19.88	19.98
		25	0	19.94	19.88	19.95
5M	256QAM	1	0	18.15	18.22	18.22
		1	12	18.08	18.08	18.18
		1	24	18.04	18.05	18.14
		12	0	18.08	18.08	18.11
		12	6	18.05	18.03	18.09
		12	13	17.99	18.00	18.06
		25	0	17.94	18.01	18.02

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26705	26740	26775
		Frequency (MHz)		815.5	819	822.5
3M	QPSK	1	0	22.98	22.86	22.92
		1	7	22.92	22.89	23.00
		1	14	22.93	22.83	22.91
		8	0	22.13	22.14	22.07
		8	3	22.01	22.03	22.08
		8	7	22.02	22.03	21.96
		15	0	22.05	21.99	22.07
3M	16QAM	1	0	22.27	22.20	22.27
		1	7	22.23	22.06	22.25
		1	14	22.11	22.04	22.12
		8	0	21.10	21.12	21.14
		8	3	21.07	20.93	21.08
		8	7	21.00	21.01	21.05
		15	0	21.06	20.91	21.07
3M	64QAM	1	0	21.19	21.12	21.19
		1	7	21.14	21.03	21.03
		1	14	21.06	21.09	21.05
		8	0	20.08	19.96	19.97
		8	3	20.04	19.89	20.06
		8	7	19.91	19.76	19.85
		15	0	19.85	19.76	19.88
3M	256QAM	1	0	18.14	18.21	18.18
		1	7	18.09	17.97	18.05
		1	14	18.08	17.94	18.07
		8	0	18.02	18.04	18.02
		8	3	18.07	17.97	18.08
		8	7	17.98	17.99	18.01
		15	0	18.00	17.90	17.93

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26697	26740	26783
		Frequency (MHz)		814.7	819	823.3
1.4M	QPSK	1	0	22.85	22.95	22.90
		1	2	22.83	22.87	22.96
		1	5	22.85	22.81	22.87
		3	0	22.81	23.08	23.00
		3	1	22.78	22.96	23.05
		3	3	22.75	22.95	22.99
		6	0	21.86	21.89	22.07
1.4M	16QAM	1	0	22.30	22.20	22.33
		1	2	22.11	22.15	22.20
		1	5	22.11	22.02	22.07
		3	0	21.91	22.02	22.11
		3	1	21.89	21.96	21.97
		3	3	21.96	21.89	21.96
		6	0	20.98	20.96	20.95
1.4M	64QAM	1	0	21.12	21.09	21.22
		1	2	21.05	20.95	21.18
		1	5	21.01	21.06	21.04
		3	0	20.99	21.09	21.10
		3	1	20.95	20.97	21.03
		3	3	20.77	20.85	20.88
		6	0	19.81	19.74	19.87
1.4M	256QAM	1	0	18.20	18.14	18.08
		1	2	18.10	18.03	18.16
		1	5	18.08	18.00	18.01
		3	0	18.01	19.03	18.96
		3	1	18.03	18.97	18.99
		3	3	17.97	18.93	18.98
		6	0	17.96	17.99	17.95

ERP Power (dBm)

LTE Band 14				
BW	MCS Index	RB Size	RB Offset	Mid
		Channel		23330
		Frequency (MHz)		793
10M	QPSK	1	0	21.41
		1	24	21.34
		1	49	21.32
		25	0	20.26
		25	12	20.21
		25	25	20.14
		50	0	20.12
10M	16QAM	1	0	20.69
		1	24	20.61
		1	49	20.58
		25	0	19.27
		25	12	19.24
		25	25	19.23
		50	0	19.21
10M	64QAM	1	0	19.37
		1	24	19.34
		1	49	19.31
		25	0	18.51
		25	12	18.49
		25	25	18.47
		50	0	18.44
10M	256QAM	1	0	16.36
		1	24	16.34
		1	49	16.31
		25	0	16.29
		25	12	16.25
		25	25	16.21
		50	0	16.17

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 14						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		23305	23330	23355
		Frequency (MHz)		790.5	793	795.5
5M	QPSK	1	0	21.24	21.38	21.29
		1	12	21.27	21.31	21.33
		1	24	21.20	21.24	21.11
		12	0	20.17	20.21	20.17
		12	6	20.10	20.16	20.01
		12	13	20.05	20.04	19.95
		25	0	20.10	20.08	20.01
5M	16QAM	1	0	20.65	20.59	20.58
		1	12	20.52	20.58	20.38
		1	24	20.40	20.52	20.31
		12	0	19.12	19.26	19.07
		12	6	19.16	19.23	19.06
		12	13	19.13	19.20	19.04
		25	0	19.05	19.20	18.96
5M	64QAM	1	0	19.37	19.28	19.27
		1	12	19.21	19.30	19.16
		1	24	19.14	19.31	19.15
		12	0	18.46	18.50	18.38
		12	6	18.35	18.45	18.40
		12	13	18.35	18.44	18.27
		25	0	18.25	18.37	18.26
5M	256QAM	1	0	16.29	16.28	16.23
		1	12	16.26	16.32	16.21
		1	24	16.22	16.28	16.19
		12	0	16.27	16.22	16.15
		12	6	16.14	16.24	16.08
		12	13	16.15	16.14	16.08
		25	0	16.05	16.10	15.96

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 26				
BW	MCS Index	RB Size	RB Offset	Mid
		Channel		26740
		Frequency (MHz)		819
10M	QPSK	1	0	19.94
		1	24	20.00
		1	49	19.88
		25	0	19.13
		25	12	19.08
		25	25	19.06
		50	0	18.99
10M	16QAM	1	0	19.28
		1	24	19.19
		1	49	19.16
		25	0	18.14
		25	12	18.05
		25	25	18.00
		50	0	18.05
10M	64QAM	1	0	18.12
		1	24	18.09
		1	49	18.10
		25	0	17.09
		25	12	16.97
		25	25	16.87
		50	0	16.87
10M	256QAM	1	0	15.21
		1	24	15.07
		1	49	15.04
		25	0	15.07
		25	12	15.02
		25	25	14.99
		50	0	15.00

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26715	26740	26765
		Frequency (MHz)		816.5	819	821.5
5M	QPSK	1	0	19.98	19.94	20.03
		1	12	19.90	20.00	20.00
		1	24	19.94	19.88	19.96
		12	0	19.05	19.13	19.14
		12	6	19.06	19.08	19.10
		12	13	19.02	19.06	19.08
		25	0	19.02	18.99	19.07
5M	16QAM	1	0	19.32	19.28	19.32
		1	12	19.27	19.19	19.27
		1	24	19.11	19.16	19.20
		12	0	18.12	18.14	18.14
		12	6	18.01	18.05	18.10
		12	13	17.99	18.00	18.08
		25	0	18.03	18.05	18.06
5M	64QAM	1	0	18.20	18.12	18.21
		1	12	18.08	18.09	18.17
		1	24	18.07	18.10	18.13
		12	0	17.04	17.09	17.11
		12	6	16.95	16.97	17.05
		12	13	16.97	16.87	16.97
		25	0	16.93	16.87	16.94
5M	256QAM	1	0	15.14	15.21	15.21
		1	12	15.07	15.07	15.17
		1	24	15.03	15.04	15.13
		12	0	15.07	15.07	15.10
		12	6	15.04	15.02	15.08
		12	13	14.98	14.99	15.05
		25	0	14.93	15.00	15.01

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26705	26740	26775
		Frequency (MHz)		815.5	819	822.5
3M	QPSK	1	0	19.97	19.85	19.91
		1	7	19.91	19.88	19.99
		1	14	19.92	19.82	19.90
		8	0	19.12	19.13	19.06
		8	3	19.00	19.02	19.07
		8	7	19.01	19.02	18.95
		15	0	19.04	18.98	19.06
3M	16QAM	1	0	19.26	19.19	19.26
		1	7	19.22	19.05	19.24
		1	14	19.10	19.03	19.11
		8	0	18.09	18.11	18.13
		8	3	18.06	17.92	18.07
		8	7	17.99	18.00	18.04
		15	0	18.05	17.90	18.06
3M	64QAM	1	0	18.18	18.11	18.18
		1	7	18.13	18.02	18.02
		1	14	18.05	18.08	18.04
		8	0	17.07	16.95	16.96
		8	3	17.03	16.88	17.05
		8	7	16.90	16.75	16.84
		15	0	16.84	16.75	16.87
3M	256QAM	1	0	15.13	15.20	15.17
		1	7	15.08	14.96	15.04
		1	14	15.07	14.93	15.06
		8	0	15.01	15.03	15.01
		8	3	15.06	14.96	15.07
		8	7	14.97	14.98	15.00
		15	0	14.99	14.89	14.92

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26697	26740	26783
		Frequency (MHz)		814.7	819	823.3
1.4M	QPSK	1	0	19.84	19.94	19.89
		1	2	19.82	19.86	19.95
		1	5	19.84	19.80	19.86
		3	0	19.80	20.07	19.99
		3	1	19.77	19.95	20.04
		3	3	19.74	19.94	19.98
		6	0	18.85	18.88	19.06
1.4M	16QAM	1	0	19.29	19.19	19.32
		1	2	19.10	19.14	19.19
		1	5	19.10	19.01	19.06
		3	0	18.90	19.01	19.10
		3	1	18.88	18.95	18.96
		3	3	18.95	18.88	18.95
		6	0	17.97	17.95	17.94
1.4M	64QAM	1	0	18.11	18.08	18.21
		1	2	18.04	17.94	18.17
		1	5	18.00	18.05	18.03
		3	0	17.98	18.08	18.09
		3	1	17.94	17.96	18.02
		3	3	17.76	17.84	17.87
		6	0	16.80	16.73	16.86
1.4M	256QAM	1	0	15.19	15.13	15.07
		1	2	15.09	15.02	15.15
		1	5	15.07	14.99	15.00
		3	0	15.00	16.02	15.95
		3	1	15.02	15.96	15.98
		3	3	14.96	15.92	15.97
		6	0	14.95	14.98	14.94

*ERP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi) - 2.15

4.2 Radiated Emission Measurement

4.2.1 Limits of Radiated Emission Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm .

For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz . The limit of emissions is equal to -40 dBm .

4.2.2 Test Procedure

- a. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) 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.
- b. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- d. Following C63.26 section 5.5 and 5.2.7.
 $\text{EIRP (dBm)} = E (\text{dB}\mu\text{V/m}) + 20\log (D) - 104.8$; where D is the measurement distance (in the far field region) in m.
 $\text{ERP (dBm)} = E (\text{dB}\mu\text{V/m}) + 20\log (D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

Note:

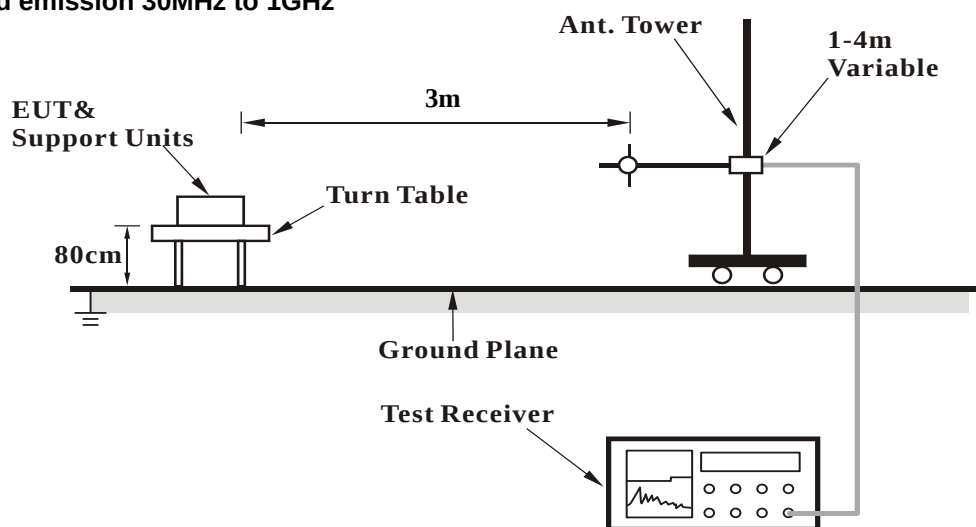
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.2.3 Deviation from Test Standard

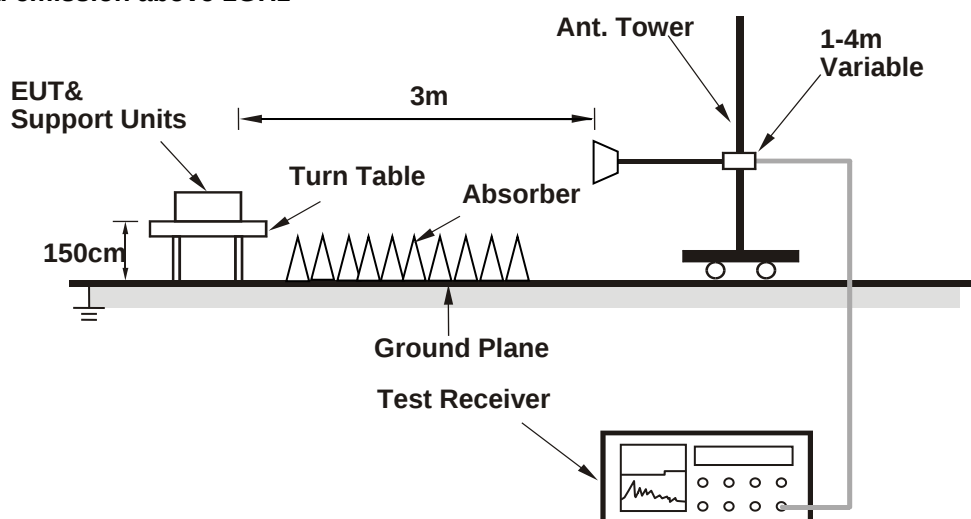
No deviation.

4.2.4 Test Setup

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



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

4.2.5 Test Results

Below 1GHz

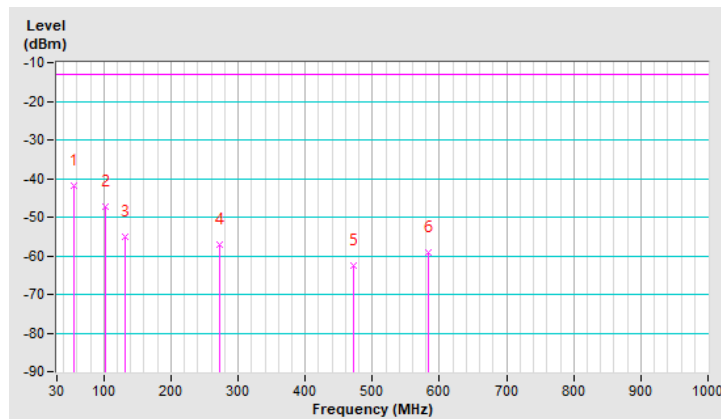
LTE Band 14, Channel Bandwidth 5MHz

Mode	TX channel 23305 (790.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	55.22	-41.99	-13.00	-28.99	1.50 H	277	64.62	-106.61
2	101.78	-47.35	-13.00	-34.35	1.50 H	1	63.45	-110.80
3	131.85	-54.97	-13.00	-41.97	1.00 H	107	52.56	-107.53
4	271.53	-57.07	-13.00	-44.07	1.50 H	156	48.17	-105.24
5	472.32	-62.40	-13.00	-49.40	1.00 H	269	38.07	-100.47
6	582.90	-59.20	-13.00	-46.20	1.00 H	107	39.15	-98.35

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

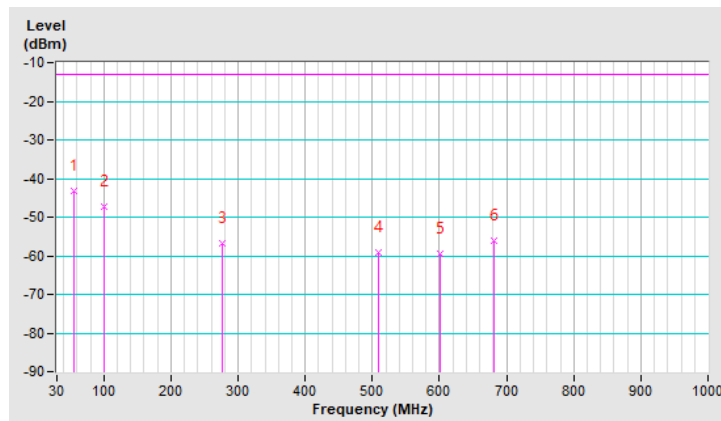


Mode	TX channel 23305 (790.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	55.22	-43.34	-13.00	-30.34	2.00 V	8	63.27	-106.61
2	100.81	-47.36	-13.00	-34.36	1.00 V	6	63.52	-110.88
3	277.35	-56.92	-13.00	-43.92	1.50 V	168	48.07	-104.99
4	508.21	-59.27	-13.00	-46.27	1.00 V	215	40.52	-99.79
5	600.36	-59.45	-13.00	-46.45	1.50 V	6	38.43	-97.88
6	681.84	-56.27	-13.00	-43.27	1.00 V	323	40.37	-96.64

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.



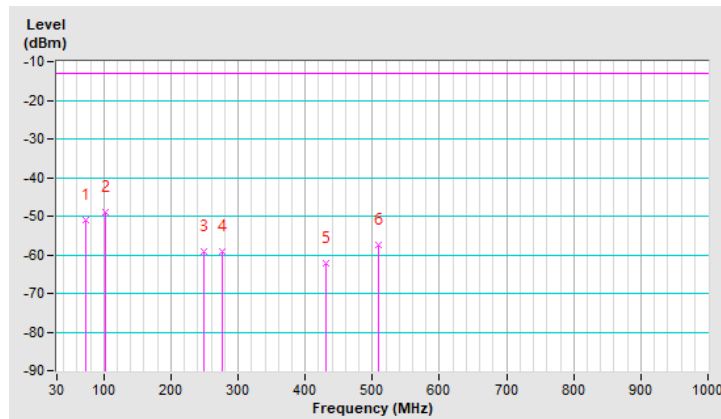
LTE Band 26, Channel Bandwidth 10MHz

Mode	TX channel 26740 (819.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	73.65	-50.93	-13.00	-37.93	1.50 H	104	58.48	-109.41
2	101.78	-48.89	-13.00	-35.89	1.50 H	4	61.91	-110.80
3	249.22	-59.03	-13.00	-46.03	1.00 H	321	47.37	-106.40
4	276.38	-59.16	-13.00	-46.16	1.00 H	282	45.87	-105.03
5	431.58	-62.11	-13.00	-49.11	2.00 H	232	39.11	-101.22
6	508.21	-57.33	-13.00	-44.33	1.00 H	187	42.46	-99.79

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

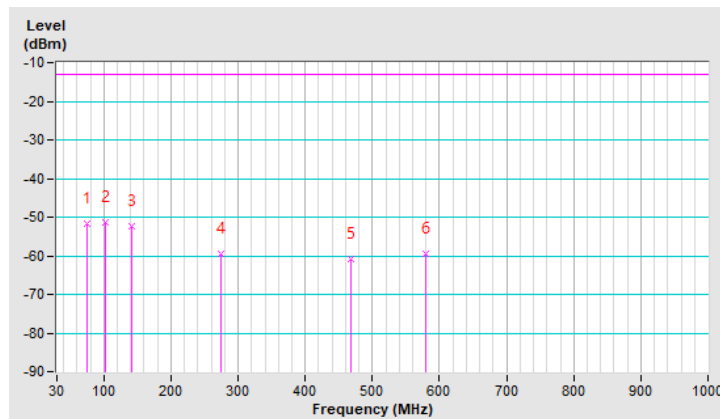


Mode	TX channel 26740 (819.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	75.59	-51.75	-13.00	-38.75	1.00 V	168	58.09	-109.84
2	102.75	-51.21	-13.00	-38.21	1.00 V	118	59.44	-110.65
3	141.55	-52.52	-13.00	-39.52	1.50 V	141	54.17	-106.69
4	274.44	-59.66	-13.00	-46.66	1.00 V	252	45.44	-105.10
5	468.44	-60.85	-13.00	-47.85	2.00 V	341	39.69	-100.54
6	579.02	-59.38	-13.00	-46.38	1.00 V	325	39.10	-98.48

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.



Above 1GHz

LTE Band 14, Channel Bandwidth 5MHz

Mode	TX channel 23305 (790.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1581.00	-41.10	-40.00	-1.10	1.73 H	320	59.03	-100.13
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1581.00	-42.95	-40.00	-2.95	2.21 V	195	57.18	-100.13

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

Mode	TX channel 23330 (793.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1586.00	-41.16	-40.00	-1.16	1.72 H	322	58.97	-100.13
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1586.00	-44.26	-40.00	-4.26	2.28 V	194	55.87	-100.13

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

Mode	TX channel 23355 (795.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1591.00	-41.79	-40.00	-1.79	1.80 H	323	58.35	-100.14
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1591.00	-43.01	-40.00	-3.01	2.30 V	193	57.13	-100.14

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

LTE Band 14, Channel Bandwidth 10MHz

Mode	TX channel 23330 (793.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1586.00	-41.74	-40.00	-1.74	1.78 H	324	58.39	-100.13
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1586.00	-43.34	-40.00	-3.34	2.28 V	194	56.79	-100.13

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

LTE Band 26, Channel Bandwidth 1.4MHz

Mode	TX channel 26697 (814.7MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Rex Wang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1629.40	-51.82	-13.00	-38.82	1.60 H	173	50.50	-102.32
2	2444.10	-41.81	-13.00	-28.81	1.62 H	64	57.00	-98.81
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1629.40	-51.72	-13.00	-38.72	2.44 V	23	50.60	-102.32
2	2444.10	-41.21	-13.00	-28.21	3.20 V	3	57.60	-98.81

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. Margin value = ERP – Limit value.
4. The other ERP levels were very low against the limit.

Mode	TX channel 26740 (819.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Rex Wang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-52.11	-13.00	-39.11	1.64 H	176	50.22	-102.33
2	2457.00	-41.93	-13.00	-28.93	1.66 H	65	56.88	-98.81
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-52.06	-13.00	-39.06	2.45 V	25	50.27	-102.33
2	2457.00	-41.85	-13.00	-28.85	3.22 V	4	56.96	-98.81

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. Margin value = ERP – Limit value.
4. The other ERP levels were very low against the limit.

Mode	TX channel 26783 (823.3MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Rex Wang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1646.60	-52.15	-13.00	-39.15	1.66 H	177	50.18	-102.33
2	2469.90	-41.76	-13.00	-28.76	1.64 H	57	57.08	-98.84
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1646.60	-52.03	-13.00	-39.03	2.39 V	20	50.30	-102.33
2	2469.90	-41.46	-13.00	-28.46	3.25 V	3	57.38	-98.84

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. Margin value = ERP – Limit value.
4. The other ERP levels were very low against the limit.

LTE Band 26, Channel Bandwidth 5MHz

Mode	TX channel 26715 (816.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Rex Wang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1633.00	-52.59	-13.00	-39.59	1.65 H	180	49.74	-102.33
2	2449.50	-41.72	-13.00	-28.72	1.65 H	63	57.08	-98.80
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1633.00	-52.21	-13.00	-39.21	2.43 V	22	50.12	-102.33
2	2449.50	-41.63	-13.00	-28.63	3.20 V	6	57.17	-98.80

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. Margin value = ERP – Limit value.
4. The other ERP levels were very low against the limit.

Mode	TX channel 26740 (819.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Rex Wang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-52.51	-13.00	-39.51	1.68 H	172	49.82	-102.33
2	2457.00	-41.61	-13.00	-28.61	1.71 H	66	57.20	-98.81
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-52.39	-13.00	-39.39	2.49 V	25	49.94	-102.33
2	2457.00	-41.54	-13.00	-28.54	3.24 V	3	57.27	-98.81

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. Margin value = ERP – Limit value.
4. The other ERP levels were very low against the limit.

Mode	TX channel 26765 (821.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Rex Wang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1643.00	-52.17	-13.00	-39.17	1.75 H	176	50.17	-102.34
2	2464.50	-41.58	-13.00	-28.58	1.76 H	64	57.23	-98.81
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1643.00	-51.76	-13.00	-38.76	2.42 V	25	50.58	-102.34
2	2464.50	-41.35	-13.00	-28.35	3.27 V	4	57.46	-98.81

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. Margin value = ERP – Limit value.
4. The other ERP levels were very low against the limit.

LTE Band 26, Channel Bandwidth 10MHz

Mode	TX channel 26740 (819.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 67%RH	Input Power	120Vac, 60Hz (System)
Tested By	Rex Wang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-51.85	-13.00	-38.85	1.62 H	175	50.48	-102.33
2	2457.00	-41.36	-13.00	-28.36	1.63 H	60	57.45	-98.81
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1638.00	-51.65	-13.00	-38.65	2.44 V	22	50.68	-102.33
2	2457.00	-41.05	-13.00	-28.05	3.25 V	3	57.76	-98.81

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$.
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$.
4. The other ERP levels were very low against the limit.

5 Pictures of Test Arrangements

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

Appendix – Information of 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 FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

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

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