

Partial FCC Test Report

(PART 27)

Report No.: RFBBGM-WTW-P21120256-2

FCC ID: WIYLE910C1NF

Test Model: LE910C1-NF

Received Date: Nov. 24, 2021

Test Date: Dec. 07 ~ Dec. 08, 2021

Issued Date: Jan. 10, 2022

Applicant: CASTLES TECHNOLOGY CO., LTD.

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

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**FCC Registration /
Designation Number:** 281270 / TW0032



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Release Control Record

Issue No.	Description	Date Issued
RFBBGM-WTW- P21120256-2	Original Release	Jan. 10, 2022

1 Certificate of Conformity

Product: WCDMA and LTE cellular wireless module

Brand:  CASTLES
TECHNOLOGY

Test Model: LE910C1-NF

Sample Status: Identical Prototype

Applicant: CASTLES TECHNOLOGY CO., LTD.

Test Date: Dec. 07 ~ Dec. 08, 2021

Standards: FCC Part 27, Subpart C, H, F, L, N

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 : Gina Liu , **Date:** Jan. 10, 2022
Gina Liu / Specialist

Approved by : Jeremy Lin , **Date:** Jan. 10, 2022
Jeremy Lin / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2 (WCDMA)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)	Equivalent Isotropically radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation characteristics	N/A	Refer to Note
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049	Emission Bandwidth	N/A	Refer to Note
2.1051 27.53(h)	Out of Band Emission Measurements	N/A	Refer to Note
27.50(d)(5)	Peak To Average Ratio	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	Pass	Meet the requirement of limit. Minimum passing margin is -21.26 dB at 887.48 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 4)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)	Equivalent Isotropically radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation characteristics	N/A	Refer to Note
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049	Emission Bandwidth	N/A	Refer to Note
2.1051 27.53(h)	Out of Band Emission Measurements	N/A	Refer to Note
27.50(d)(5)	Peak To Average Ratio	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 12)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(c)	Effective radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation characteristics	N/A	Refer to Note
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049	Emission Bandwidth	N/A	Refer to Note
2.1051 27.53(g)	Out of Band Emission Measurements	N/A	Refer to Note
--	Peak To Average Ratio	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 13)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(b)	Effective radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation characteristics	N/A	Refer to Note
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049	Emission Bandwidth	N/A	Refer to Note
2.1051 27.53(c)	Out of Band Emission Measurements	N/A	Refer to Note
--	Peak To Average Ratio	N/A	Refer to Note
2.1051 27.53(c)(f)	Conducted Spurious Emissions	N/A	Refer to Note
2.1053 27.53(c)(f))	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -8.13 dB at 1564.00 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 66)			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50(d)	Equivalent Isotropically radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation characteristics	N/A	Refer to Note
2.1055 27.54	Frequency Stability	N/A	Refer to Note
2.1049	Emission Bandwidth	N/A	Refer to Note
2.1051 27.53(h)	Out of Band Emission Measurements	N/A	Refer to Note
27.50(d)(5)	Peak To Average Ratio	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:

1. This report is a partial report. Therefore, only test item of Effective Radiated Power / Equivalent Isotropically Radiated Power and Radiated Spurious Emissions tests were performed for this report. Other testing data please refer to DEKRA report no.: 1980255R-HPUSP17V00-B & 1980255R-HPUSP17V00-C (LTE Module, Brand: Telit, Model: LE910C1-NF, FCC ID: WIYLE910C1NF).
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	3.04 dB
	30 MHz ~ 200 MHz	2.91 dB
	200 MHz ~ 1000 MHz	2.93 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.76 dB
	18 GHz ~ 40 GHz	1.77 dB


2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver KEYSIGHT	N9038B	MY60180018	Feb. 01, 2021	Jan. 31, 2022
Spectrum Analyzer KEYSIGHT	N9020B	MY60110513	Dec. 21, 2020	Dec. 20, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-1214	Oct. 27, 2021	Oct. 26, 2022
HORN Antenna RF SPIN	DRH18-E	210101A18E	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	9170-1049	Nov. 14, 2021	Nov. 13, 2022
Loop Antenna TESEQ	HLA 6121	45745	Jul. 21, 2021	Jul. 20, 2022
Preamplifier EMCI	EMC330N	980798	Jan. 19, 2021	Jan. 18, 2022
Preamplifier EMCI	EMC118A45SE	980809	Jan. 06, 2021	Jan. 05, 2022
Preamplifier EMCI	EMC184045SE	980786	Jan. 12, 2021	Jan. 11, 2022
RF signal cable EMCI	EMC104-SM-SM- (9000+2000+1000)	201244+ 201232+ 210103	Jan. 12, 2021	Jan. 11, 2022
RF signal cable EMCI	EMCCFD400-NM- NM-(9000+300+500)	201251+ 201249+ 201248	Jan. 12, 2021	Jan. 11, 2022
RF signal cable EMCI	EMC101G-KM-KM- (5000+3000+2000)	201261+201258+2 01249	Jan. 12, 2021	Jan. 11, 2022
Software BV ADT	ADT_Radiated_V7.6. 15.9.5	NA	NA	NA
Antenna Tower Max-Full	MFA-515BSN	NA	NA	NA
Turn Table Max-Full	MFT-201SS	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208676	NA	NA
Radio Communication Analyzer Anritsu	MT8821C	6201462755	Feb. 07, 2021	Feb. 06, 2022

- 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 WM Chamber 9.


3 General Information



3.1 General Description of EUT

Product	WCDMA and LTE cellular wireless module	
Brand		
Test Model	LE910C1-NF	
Status of EUT	Identical Prototype	
Power Supply Rating	5.0 Vdc (host equipment) 3.7 Vdc (Battery)	
Modulation Type	WCDMA	QPSK
	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 12 (Channel Bandwidth: 1.4 MHz)	699.7 ~ 715.3 MHz
	LTE Band 12 (Channel Bandwidth: 3 MHz)	700.5 ~ 714.5 MHz
	LTE Band 12 (Channel Bandwidth: 5 MHz)	701.5 ~ 713.5 MHz
	LTE Band 12 (Channel Bandwidth: 10 MHz)	704.0 ~ 711.0 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 66 (Channel Bandwidth: 1.4 MHz)	1710.7 ~ 1779.3 MHz
	LTE Band 66 (Channel Bandwidth: 3 MHz)	1711.5 ~ 1778.5 MHz
	LTE Band 66 (Channel Bandwidth: 5 MHz)	1712.5 ~ 1777.5 MHz
	LTE Band 66 (Channel Bandwidth: 10 MHz)	1715.0 ~ 1775.0 MHz
	LTE Band 66 (Channel Bandwidth: 15 MHz)	1717.5 ~ 1772.5 MHz
LTE Band 66 (Channel Bandwidth: 20 MHz)	1720.0 ~ 1770.0 MHz	
Max. ERP Power	LTE Band 12 (Channel Bandwidth: 1.4 MHz)	141.254 mW (21.50dBm)
	LTE Band 12 (Channel Bandwidth: 3 MHz)	140.929 mW (21.49dBm)
	LTE Band 12 (Channel Bandwidth: 5 MHz)	146.555 mW (21.66dBm)
	LTE Band 12 (Channel Bandwidth: 10 MHz)	147.571 mW (21.69dBm)
	LTE Band 13 (Channel Bandwidth: 5 MHz)	153.462 mW (21.86dBm)
	LTE Band 13 (Channel Bandwidth: 10 MHz)	158.125 mW (21.99dBm)
Max. EIRP Power	WCDMA	258.821 mW (24.13dBm)
	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	212.324 mW (23.27dBm)
	LTE Band 4 (Channel Bandwidth: 3 MHz)	213.304 mW (23.29dBm)
	LTE Band 4 (Channel Bandwidth: 5 MHz)	214.289 mW (23.31dBm)
	LTE Band 4 (Channel Bandwidth: 10 MHz)	215.278 mW (23.33dBm)
	LTE Band 4 (Channel Bandwidth: 15 MHz)	216.770 mW (23.36dBm)

	LTE Band 4 (Channel Bandwidth: 20 MHz)	218.776 mW (23.40dBm)
	LTE Band 66 (Channel Bandwidth: 1.4 MHz)	284.446 mW (24.54dBm)
	LTE Band 66 (Channel Bandwidth: 3 MHz)	288.403 mW (24.60dBm)
	LTE Band 66 (Channel Bandwidth: 5 MHz)	289.734 mW (24.62dBm)
	LTE Band 66 (Channel Bandwidth: 10 MHz)	289.068 mW (24.61dBm)
	LTE Band 66 (Channel Bandwidth: 15 MHz)	288.403 mW (24.60dBm)
	LTE Band 66 (Channel Bandwidth: 20 MHz)	293.089 mW (24.67dBm)
Antenna Type	Dipole Antenna	
Antenna Gain	WCDMA	0.64 dBi
	LTE Band 4	0.64 dBi
	LTE Band 12	0.37 dBi
	LTE Band 13	0.37 dBi
	LTE Band 66	0.70 dBi
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

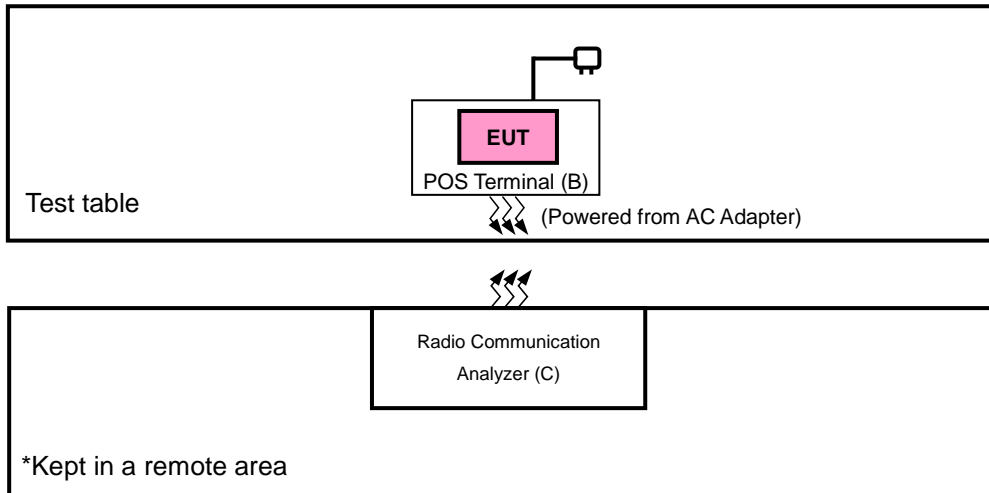
Note:

1. The EUT was installed in POS Terminal (Brand: , Model: VEGA3000).
2. The EUT contains following accessory devices.

Product	Brand	Model	Description
USB Cable	CHANG YANG ELECTRON CO., LTD.	CY-AS-HK0059	1 m
AC adapter		1A52-UB52A	AC input : 100-240V~0.3A 50-60Hz DC output : 5V 2A 10W
Battery		V3M2	3.7V, 3100mAh, 11.47Wh



3. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
4. 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.

No.	Product	Brand	Model No.	Serial No.	FCC ID
A.	Adapter	 CASTLES TECHNOLOGY	1A52-UB52A	N/A	N/A
B.	POS Terminal	 CASTLES TECHNOLOGY	VEGA3000	N/A	N/A
C.	Radio Communication Analyzer	Anritsu	MT8821C	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).
2. Item A-B was provided by client.

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 on X-plane for WCDMA and on Z-plane for LTE. Following channel(s) was (were) selected for the final test as listed below.

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	1312 to 1513	1312, 1413, 1513	WCDMA
-	Radiated Emission	1312 to 1513	1312	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 / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset

LTE Band 12

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095, 23165	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset

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 / 0 RB Offset
-	Radiated Emission	23205 to 23255	23230	5 MHz	QPSK	1 RB / 0 RB Offset

LTE Band 66

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	131979 to 132665	131979, 132322, 132665	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		131987 to 132657	131987, 132322, 132657	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132022 to 132622	132022, 132322, 132622	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132047 to 132597	132047, 132322, 132597	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP / EIRP	23 deg. C, 65 % RH	120 Vac, 60 Hz	Raymond Lee, Greg Lin
Radiated Emission	23 deg. C, 65 % RH	120 Vac, 60 Hz	Raymond Lee, Greg Lin

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 and references:

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 27

ANSI 63.26-2015

Note: 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

ANSI/TIA/EIA-603-E 2016

Note: 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 13

Control stations and mobile stations in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands and fixed stations transmitting in the 787-788 MHz and 805-806 MHz bands are limited to 30 watts ERP.

Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

For LTE Band 12:

Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP.

Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

For WCDMA Band 4, LTE Band 4, 66

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

4.1.2 Test Procedures

Conducted Power Measurement:

- The EUT was set up for the maximum power with WCDMA and 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:

$$\text{EIRP} = P_{\text{Meas}} + G_{\text{T}}$$

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

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

EIRP / ERP / 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	23.47	23.49	23.45
HSDPA Subtest-1	22.48	22.49	22.43
HSDPA Subtest-2	22.47	22.48	22.49
HSDPA Subtest-3	21.92	21.96	21.94
HSDPA Subtest-4	21.89	21.92	21.88
DC-HSDPA Subtest-1	22.21	21.95	21.85
DC-HSDPA Subtest-2	21.82	22.09	21.69
DC-HSDPA Subtest-3	21.33	21.53	21.32
DC-HSDPA Subtest-4	21.42	21.62	21.21
HSUPA Subtest-1	22.47	22.48	22.44
HSUPA Subtest-2	20.46	20.48	20.44
HSUPA Subtest-3	21.31	21.22	21.19
HSUPA Subtest-4	20.46	20.49	20.42
HSUPA Subtest-5	22.39	22.44	22.41

LTE Band 4																	
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel	20050	20175						20300	Channel	20025		20175	20325
				Frequency (MHz)	1720.0	1732.5						1745.0	Frequency (MHz)	1717.5		1732.5	1747.5
20M	QPSK	1	0	22.76	22.69	22.67	0	15M	QPSK	1	0	22.72	22.62	22.66	0		
		1	50	22.63	22.56	22.54	0			1	37	22.59	22.55	22.45	0		
		1	99	22.44	22.37	22.35	0			1	74	22.34	22.35	22.3	0		
		50	0	21.71	21.64	21.62	1			36	0	21.63	21.63	21.53	1		
		50	25	21.69	21.62	21.6	1			36	19	21.59	21.52	21.6	1		
		50	50	21.66	21.59	21.57	1			36	39	21.57	21.51	21.53	1		
		100	0	21.62	21.55	21.53	1			75	0	21.59	21.45	21.53	1		
	16QAM	1	0	21.68	21.61	21.59	1		16QAM	1	0	21.64	21.53	21.52	1		
		1	50	21.64	21.57	21.55	1			1	37	21.57	21.47	21.55	1		
		1	99	21.59	21.52	21.5	1			1	74	21.54	21.52	21.48	1		
		50	0	20.73	20.66	20.64	2			36	0	20.71	20.58	20.58	2		
		50	25	20.7	20.63	20.61	2			36	19	20.7	20.62	20.58	2		
		50	50	20.64	20.57	20.55	2			36	39	20.58	20.56	20.55	2		
		100	0	20.66	20.59	20.57	2			75	0	20.56	20.56	20.57	2		
10M	QPSK	1	0	22.69	22.54	22.55	0	5M	QPSK	1	0	22.67	22.46	22.52	0		
		1	24	22.42	22.43	22.54	0			1	12	22.48	22.44	22.4	0		
		1	49	22.3	22.23	22.31	0			1	24	22.24	22.27	22.16	0		
		25	0	21.55	21.56	21.45	1			12	0	21.6	21.58	21.49	1		
		25	12	21.54	21.5	21.5	1			12	6	21.66	21.48	21.38	1		
		25	25	21.61	21.57	21.48	1			12	13	21.53	21.54	21.32	1		
		50	0	21.45	21.38	21.38	1			25	0	21.4	21.52	21.37	1		
	16QAM	1	0	21.5	21.46	21.45	1		16QAM	1	0	21.59	21.49	21.44	1		
		1	24	21.64	21.39	21.36	1			1	12	21.44	21.38	21.42	1		
		1	49	21.54	21.42	21.35	1			1	24	21.38	21.31	21.38	1		
		25	0	20.61	20.6	20.41	2			12	0	20.57	20.52	20.51	2		
		25	12	20.56	20.55	20.39	2			12	6	20.49	20.48	20.43	2		
		25	25	20.5	20.51	20.36	2			12	13	20.54	20.53	20.41	2		
		50	0	20.65	20.53	20.47	2			25	0	20.48	20.38	20.39	2		
3M	QPSK	1	0	22.56	22.65	22.56	0	1.4M	QPSK	1	0	22.63	22.57	22.52	0		
		1	7	22.57	22.55	22.39	0			1	2	22.55	22.55	22.29	0		
		1	14	22.33	22.26	22.26	0			1	5	22.2	22.19	22.18	0		
		8	0	21.56	21.53	21.49	1			3	0	22.61	22.44	22.48	0		
		8	3	21.53	21.6	21.52	1			3	1	22.57	22.47	22.47	0		
		8	7	21.53	21.49	21.54	1			3	3	22.53	22.41	22.4	0		
		15	0	21.43	21.45	21.33	1			6	0	21.48	21.39	21.32	1		
	16QAM	1	0	21.47	21.53	21.41	1		16QAM	1	0	21.6	21.41	21.47	1		
		1	7	21.57	21.35	21.37	1			1	2	21.48	21.47	21.42	1		
		1	14	21.56	21.4	21.38	1			1	5	21.43	21.36	21.3	1		
		8	0	20.68	20.58	20.46	2			3	0	21.64	21.5	21.45	1		
		8	3	20.56	20.47	20.46	2			3	1	21.65	21.47	21.45	1		
		8	7	20.61	20.51	20.41	2			3	3	21.5	21.45	21.53	1		
		15	0	20.56	20.46	20.51	2			6	0	20.43	20.49	20.51	2		

LTE Band 12																	
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel	23060	23095						23130	Channel	23035		23095	23155
				Frequency (MHz)	704.0	707.5						711.0	Frequency (MHz)	701.5		707.5	713.5
10M	QPSK	1	0	23.16	23.47	23.27	0	5M	QPSK	1	0	23.15	23.44	23.17	0		
		1	24	23.08	23.39	23.19	0			1	12	23	23.33	23.16	0		
		1	49	22.9	23.21	23.01	0			1	24	22.82	23.18	22.98	0		
		25	0	22.15	22.46	22.26	1			12	0	22.11	22.37	22.2	1		
		25	12	22.11	22.42	22.22	1			12	6	22.04	22.38	22.14	1		
		25	25	22.06	22.37	22.17	1			12	13	22.03	22.28	22.09	1		
	16QAM	50	0	22.1	22.41	22.21	1		25	0	22.04	22.38	22.17	1			
		1	0	22.11	22.42	22.22	1		1	0	22.01	22.33	22.14	1			
		1	24	22.06	22.37	22.17	1		1	12	22	22.37	22.08	1			
		1	49	22.04	22.35	22.15	1		1	24	22.01	22.26	22.1	1			
		25	0	21.14	21.45	21.25	2		12	0	21.04	21.37	21.24	2			
		25	12	21.11	21.42	21.22	2		12	6	21.09	21.39	21.2	2			
		25	25	21.06	21.37	21.17	2		12	13	21	21.36	21.12	2			
		50	0	21.08	21.39	21.19	2		25	0	21.04	21.37	21.17	2			

LTE Band 13																	
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel	23230	23230						23225	Channel	23205		23230	23225
				Frequency (MHz)	782.0	782.0						784.5	Frequency (MHz)	779.5		782.0	784.5
10M	QPSK	1	0	23.77			0	5M	QPSK	1	0	23.57	23.64	23.61	0		
		1	24	23.75			0			1	12	23.54	23.61	23.58	0		
		1	49	23.72			0			1	24	23.49	23.56	23.53	0		
		25	0	22.81			1			12	0	22.61	22.68	22.65	1		
		25	12	22.75			1			12	6	22.58	22.65	22.62	1		
		25	25	22.71			1			12	13	22.54	22.61	22.58	1		
	16QAM	50	0	22.73			1		25	0	22.56	22.63	22.6	1			
		1	0	22.77			1		1	0	22.59	22.66	22.63	1			
		1	24	22.72			1		1	12	22.54	22.61	22.58	1			
		1	49	22.68			1		1	24	22.48	22.55	22.52	1			
		25	0	21.75			2		12	0	21.62	21.69	21.66	2			
		25	12	21.72			2		12	6	21.59	21.66	21.63	2			
		25	25	21.69			2		12	13	21.55	21.62	21.59	2			
		50	0	21.71			2		25	0	21.57	21.64	21.61	2			

LTE Band 66																	
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel	132072	132322						132572	Channel	132047		132322	132597
				Frequency (MHz)	1720.0	1745.0						1770.0	Frequency (MHz)	1717.5		1745.0	1772.5
20M	QPSK	1	0	23.65	23.97	23.33	0	15M	QPSK	1	0	23.59	23.9	23.29	0		
		1	50	23.25	23.32	23.28	0			1	37	23.2	23.24	23.21	0		
		1	99	23.05	23.15	23.14	0			1	74	23.04	23.14	23.12	0		
		50	0	21.94	22.01	21.95	1			36	0	21.84	21.91	21.93	1		
		50	25	21.88	21.97	21.88	1			36	19	21.81	21.94	21.78	1		
		50	50	21.8	21.88	21.78	1			36	39	21.73	21.79	21.77	1		
		100	0	21.81	21.86	21.76	1			75	0	21.71	21.83	21.67	1		
	16QAM	1	0	21.96	22.03	21.95	1		16QAM	1	0	21.87	22.01	21.88	1		
		1	50	22.04	22.09	22.07	1			1	37	22.02	22.01	22.01	1		
		1	99	21.77	21.84	21.81	1			1	74	21.74	21.79	21.76	1		
		50	0	21.12	21.13	21.11	2			36	0	21.04	21.13	21.11	2		
		50	25	21.06	21.09	21	2			36	19	21.04	21.02	20.9	2		
		50	50	21.11	21.11	21.07	2			36	39	21.1	21.09	21.07	2		
		100	0	20.92	21	20.91	2			75	0	20.84	21	20.83	2		
10M	QPSK	1	0	23.65	23.91	23.33	0	5M	QPSK	1	0	23.58	23.92	23.33	0		
		1	24	23.23	23.23	23.2	0			1	12	23.2	23.24	23.23	0		
		1	49	23.03	23.06	23.06	0			1	24	23	23.13	23.07	0		
		25	0	21.84	21.99	21.86	1			12	0	21.94	21.94	21.9	1		
		25	12	21.87	21.97	21.78	1			12	6	21.82	21.94	21.78	1		
		25	25	21.75	21.79	21.75	1			12	13	21.77	21.88	21.7	1		
		50	0	21.8	21.83	21.69	1			25	0	21.76	21.81	21.71	1		
	16QAM	1	0	21.93	22.03	21.92	1		16QAM	1	0	21.93	21.96	21.9	1		
		1	24	21.97	22.01	22.03	1			1	12	21.96	22.05	22.05	1		
		1	49	21.69	21.75	21.75	1			1	24	21.76	21.83	21.74	1		
		25	0	21.11	21.12	21.11	2			12	0	21.09	21.07	21.1	2		
		25	12	20.99	21.05	20.91	2			12	6	20.98	21.01	20.92	2		
		25	25	21.02	21.03	20.98	2			12	13	21.04	21.03	20.99	2		
		50	0	20.91	20.93	20.82	2			25	0	20.86	20.97	20.84	2		
3M	QPSK	1	0	23.63	23.9	23.24	0	1.4M	QPSK	1	0	23.51	23.84	23.24	0		
		1	7	23.21	23.25	23.27	0			1	2	23.11	23.07	23.21	0		
		1	14	22.99	23.13	23.09	0			1	5	22.9	23.08	22.98	0		
		8	0	21.89	22	21.92	1			3	0	22.87	22.85	22.76	0		
		8	3	21.78	21.9	21.88	1			3	1	22.75	22.76	22.8	0		
		8	7	21.72	21.83	21.76	1			3	3	22.57	22.84	22.63	0		
		15	0	21.72	21.81	21.73	1			6	0	21.7	21.72	21.56	1		
	16QAM	1	0	21.94	21.97	21.91	1		16QAM	1	0	21.95	21.95	21.75	1		
		1	7	21.96	22.06	22.05	1			1	2	21.99	21.96	22.06	1		
		1	14	21.71	21.83	21.73	1			1	5	21.65	21.66	21.7	1		
		8	0	21.09	21.1	21.1	2			3	0	21.95	22.12	22.08	1		
		8	3	21	21.01	20.96	2			3	1	21.88	21.94	21.82	1		
		8	7	21.06	21.05	21.07	2			3	3	22.06	21.97	21.87	1		
		15	0	20.91	20.93	20.84	2			6	0	20.86	20.9	20.7	2		

ERP Power (dBm)

LTE Band 12																	
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel	23060	23095						23130	Channel	23035		23095	23155
				Frequency (MHz)	704.0	707.5						711.0	Frequency (MHz)	701.5		707.5	713.5
10M	QPSK	1	0	21.38	21.69	21.49	0	5M	QPSK	1	0	21.37	21.66	21.39	0		
		1	24	21.3	21.61	21.41	0			1	12	21.22	21.55	21.38	0		
		1	49	21.12	21.43	21.23	0			1	24	21.04	21.4	21.2	0		
		25	0	20.37	20.68	20.48	1			12	0	20.33	20.59	20.42	1		
		25	12	20.33	20.64	20.44	1			12	6	20.26	20.6	20.36	1		
		25	25	20.28	20.59	20.39	1			12	13	20.25	20.5	20.31	1		
		50	0	20.32	20.63	20.43	1			25	0	20.26	20.6	20.39	1		
	16QAM	1	0	20.33	20.64	20.44	1		16QAM	1	0	20.23	20.55	20.36	1		
		1	24	20.28	20.59	20.39	1			1	12	20.22	20.59	20.3	1		
		1	49	20.26	20.57	20.37	1			1	24	20.23	20.48	20.32	1		
		25	0	19.36	19.67	19.47	2			12	0	19.26	19.59	19.46	2		
		25	12	19.33	19.64	19.44	2			12	6	19.31	19.61	19.42	2		
		25	25	19.28	19.59	19.39	2			12	13	19.22	19.58	19.34	2		
		50	0	19.3	19.61	19.41	2			25	0	19.26	19.59	19.39	2		

LTE Band 13																	
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel	23230	23230						23225	Channel	23205		23230	23225
				Frequency (MHz)	782.0	782.0						784.5	Frequency (MHz)	779.5		782.0	784.5
10M	QPSK	1	0		21.99		0	5M	QPSK	1	0	21.79	21.86	21.83	0		
		1	24		21.97		0			1	12	21.76	21.83	21.8	0		
		1	49		21.94		0			1	24	21.71	21.78	21.75	0		
		25	0		21.03		1			12	0	20.83	20.9	20.87	1		
		25	12		20.97		1			12	6	20.8	20.87	20.84	1		
		25	25		20.93		1			12	13	20.76	20.83	20.8	1		
		50	0		20.95		1			25	0	20.78	20.85	20.82	1		
	16QAM	1	0		20.99		1		16QAM	1	0	20.81	20.88	20.85	1		
		1	24		20.94		1			1	12	20.76	20.83	20.8	1		
		1	49		20.9		1			1	24	20.7	20.77	20.74	1		
		25	0		19.97		2			12	0	19.84	19.91	19.88	2		
		25	12		19.94		2			12	6	19.81	19.88	19.85	2		
		25	25		19.91		2			12	13	19.77	19.84	19.81	2		
		50	0		19.93		2			25	0	19.79	19.86	19.83	2		

EIRP Power (dBm)

Band	WCDMA IV		
Channel	1312	1413	1513
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	24.11	24.13	24.09
HSDPA Subtest-1	23.12	23.13	23.07
HSDPA Subtest-2	23.11	23.12	23.13
HSDPA Subtest-3	22.56	22.6	22.58
HSDPA Subtest-4	22.53	22.56	22.52
DC-HSDPA Subtest-1	22.85	22.59	22.49
DC-HSDPA Subtest-2	22.46	22.73	22.33
DC-HSDPA Subtest-3	21.97	22.17	21.96
DC-HSDPA Subtest-4	22.06	22.26	21.85
HSUPA Subtest-1	23.11	23.12	23.08
HSUPA Subtest-2	21.1	21.12	21.08
HSUPA Subtest-3	21.95	21.86	21.83
HSUPA Subtest-4	21.1	21.13	21.06
HSUPA Subtest-5	23.03	23.08	23.05

LTE Band 4																	
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel	20050	20175						20300	Channel	20025		20175	20325
				Frequency (MHz)	1720.0	1732.5						1745.0	Frequency (MHz)	1717.5		1732.5	1747.5
20M	QPSK	1	0	23.4	23.33	23.31	0	15M	QPSK	1	0	23.36	23.26	23.3	0		
		1	50	23.27	23.2	23.18	0			1	37	23.23	23.19	23.09	0		
		1	99	23.08	23.01	22.99	0			1	74	22.98	22.99	22.94	0		
		50	0	22.35	22.28	22.26	1			36	0	22.27	22.27	22.17	1		
		50	25	22.33	22.26	22.24	1			36	19	22.23	22.16	22.24	1		
		50	50	22.3	22.23	22.21	1			36	39	22.21	22.15	22.17	1		
		100	0	22.26	22.19	22.17	1			75	0	22.23	22.09	22.17	1		
	16QAM	1	0	22.32	22.25	22.23	1		16QAM	1	0	22.28	22.17	22.16	1		
		1	50	22.28	22.21	22.19	1			1	37	22.21	22.11	22.19	1		
		1	99	22.23	22.16	22.14	1			1	74	22.18	22.16	22.12	1		
		50	0	21.37	21.3	21.28	2			36	0	21.35	21.22	21.22	2		
		50	25	21.34	21.27	21.25	2			36	19	21.34	21.26	21.22	2		
		50	50	21.28	21.21	21.19	2			36	39	21.22	21.2	21.19	2		
		100	0	21.3	21.23	21.21	2			75	0	21.2	21.2	21.21	2		
10M	QPSK	1	0	23.33	23.18	23.19	0	5M	QPSK	1	0	23.31	23.1	23.16	0		
		1	24	23.06	23.07	23.18	0			1	12	23.12	23.08	23.04	0		
		1	49	22.94	22.87	22.95	0			1	24	22.88	22.91	22.8	0		
		25	0	22.19	22.2	22.09	1			12	0	22.24	22.22	22.13	1		
		25	12	22.18	22.14	22.14	1			12	6	22.3	22.12	22.02	1		
		25	25	22.25	22.21	22.12	1			12	13	22.17	22.18	21.96	1		
		50	0	22.09	22.02	22.02	1			25	0	22.04	22.16	22.01	1		
	16QAM	1	0	22.14	22.1	22.09	1		16QAM	1	0	22.23	22.13	22.08	1		
		1	24	22.28	22.03	22	1			1	12	22.08	22.02	22.06	1		
		1	49	22.18	22.06	21.99	1			1	24	22.02	21.95	22.02	1		
		25	0	21.25	21.24	21.05	2			12	0	21.21	21.16	21.15	2		
		25	12	21.2	21.19	21.03	2			12	6	21.13	21.12	21.07	2		
		25	25	21.14	21.15	21	2			12	13	21.18	21.17	21.05	2		
		50	0	21.29	21.17	21.11	2			25	0	21.12	21.02	21.03	2		
3M	QPSK	1	0	23.2	23.29	23.2	0	1.4M	QPSK	1	0	23.27	23.21	23.16	0		
		1	7	23.21	23.19	23.03	0			1	2	23.19	23.19	22.93	0		
		1	14	22.97	22.9	22.9	0			1	5	22.84	22.83	22.82	0		
		8	0	22.2	22.17	22.13	1			3	0	23.25	23.08	23.12	0		
		8	3	22.17	22.24	22.16	1			3	1	23.21	23.11	23.11	0		
		8	7	22.17	22.13	22.18	1			3	3	23.17	23.05	23.04	0		
		15	0	22.07	22.09	21.97	1			6	0	22.12	22.03	21.96	1		
	16QAM	1	0	22.11	22.17	22.05	1		16QAM	1	0	22.24	22.05	22.11	1		
		1	7	22.21	21.99	22.01	1			1	2	22.12	22.11	22.06	1		
		1	14	22.2	22.04	22.02	1			1	5	22.07	22	21.94	1		
		8	0	21.32	21.22	21.1	2			3	0	22.28	22.14	22.09	1		
		8	3	21.2	21.11	21.1	2			3	1	22.29	22.11	22.09	1		
		8	7	21.25	21.15	21.05	2			3	3	22.14	22.09	22.17	1		
		15	0	21.2	21.1	21.15	2			6	0	21.07	21.13	21.15	2		

LTE Band 66																	
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel	132072	132322						132572	Channel	132047		132322	132597
				Frequency (MHz)	1720.0	1745.0						1770.0	Frequency (MHz)	1717.5		1745.0	1772.5
20M	QPSK	1	0	24.35	24.67	24.03	0	15M	QPSK	1	0	24.29	24.6	23.99	0		
		1	50	23.95	24.02	23.98	0			1	37	23.9	23.94	23.91	0		
		1	99	23.75	23.85	23.84	0			1	74	23.74	23.84	23.82	0		
		50	0	22.64	22.71	22.65	1			36	0	22.54	22.61	22.63	1		
		50	25	22.58	22.67	22.58	1			36	19	22.51	22.64	22.48	1		
		50	50	22.5	22.58	22.48	1			36	39	22.43	22.49	22.47	1		
		100	0	22.51	22.56	22.46	1			75	0	22.41	22.53	22.37	1		
	16QAM	1	0	22.66	22.73	22.65	1		16QAM	1	0	22.57	22.71	22.58	1		
		1	50	22.74	22.79	22.77	1			1	37	22.72	22.71	22.71	1		
		1	99	22.47	22.54	22.51	1			1	74	22.44	22.49	22.46	1		
		50	0	21.82	21.83	21.81	2			36	0	21.74	21.83	21.81	2		
		50	25	21.76	21.79	21.7	2			36	19	21.74	21.72	21.6	2		
		50	50	21.81	21.81	21.77	2			36	39	21.8	21.79	21.77	2		
		100	0	21.62	21.7	21.61	2			75	0	21.54	21.7	21.53	2		
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel	132022	132322						132622	Channel	131997		132322	132647
				Frequency (MHz)	1715.0	1745.0						1775.0	Frequency (MHz)	1712.5		1745.0	1777.5
10M	QPSK	1	0	24.35	24.61	24.03	0	5M	QPSK	1	0	24.28	24.62	24.03	0		
		1	24	23.93	23.93	23.9	0			1	12	23.9	23.94	23.93	0		
		1	49	23.73	23.76	23.76	0			1	24	23.7	23.83	23.77	0		
		25	0	22.54	22.69	22.56	1			12	0	22.64	22.64	22.6	1		
		25	12	22.57	22.67	22.48	1			12	6	22.52	22.64	22.48	1		
		25	25	22.45	22.49	22.45	1			12	13	22.47	22.58	22.4	1		
		50	0	22.5	22.53	22.39	1			25	0	22.46	22.51	22.41	1		
	16QAM	1	0	22.63	22.73	22.62	1		16QAM	1	0	22.63	22.66	22.6	1		
		1	24	22.67	22.71	22.73	1			1	12	22.66	22.75	22.75	1		
		1	49	22.39	22.45	22.45	1			1	24	22.46	22.53	22.44	1		
		25	0	21.81	21.82	21.81	2			12	0	21.79	21.77	21.8	2		
		25	12	21.69	21.75	21.61	2			12	6	21.68	21.71	21.62	2		
		25	25	21.72	21.73	21.68	2			12	13	21.74	21.73	21.69	2		
		50	0	21.61	21.63	21.52	2			25	0	21.56	21.67	21.54	2		
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel	131987	132322						132657	Channel	131979		132322	132665
				Frequency (MHz)	1711.5	1745.5						1778.5	Frequency (MHz)	1710.7		1745.0	1779.3
3M	QPSK	1	0	24.33	24.6	23.94	0	1.4M	QPSK	1	0	24.21	24.54	23.94	0		
		1	7	23.91	23.95	23.97	0			1	2	23.81	23.77	23.91	0		
		1	14	23.69	23.83	23.79	0			1	5	23.6	23.78	23.68	0		
		8	0	22.59	22.7	22.62	1			3	0	23.57	23.55	23.46	0		
		8	3	22.48	22.6	22.58	1			3	1	23.45	23.46	23.5	0		
		8	7	22.42	22.53	22.46	1			3	3	23.27	23.54	23.33	0		
		15	0	22.42	22.51	22.43	1			6	0	22.4	22.42	22.26	1		
	16QAM	1	0	22.64	22.67	22.61	1		16QAM	1	0	22.65	22.65	22.45	1		
		1	7	22.66	22.76	22.75	1			1	2	22.69	22.66	22.76	1		
		1	14	22.41	22.53	22.43	1			1	5	22.35	22.36	22.4	1		
		8	0	21.79	21.8	21.8	2			3	0	22.65	22.82	22.78	1		
		8	3	21.7	21.71	21.66	2			3	1	22.58	22.64	22.52	1		
		8	7	21.76	21.75	21.77	2			3	3	22.76	22.67	22.57	1		
		15	0	21.61	21.63	21.54	2			6	0	21.56	21.6	21.4	2		

4.2 Radiated Emission Measurement

4.2.1 Limits of Radiated Emission Measurement

For WCDMA band 4, LTE Band 4, 66:

According to FCC 27.53(h), for operations in the 1695-1710MHz, 1710-1755MHz, 1755-1780 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log (P)$ dB.

For LTE Band 12:

According to FCC 27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. The limit of emissions is equal to -13 dBm.

For LTE Band 13:

According to FCC 27.53(c)(2), for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB. The limit of emissions is equal to -13 dBm.

According to FCC 27.53(f), for operations in the 775-788 MHz, emissions in the band 1559-1610MHz shall be limited to -70 dBW/MHz (EIRP). The limit of emissions is equal to -40 dBm.

4.2.2 Test Procedure

- a. In the semi-anechoic chamber, EUT placed on the 0.8m(below or equal 1GHz) and/or 1.5m(above 1GHz) 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 1m to 4m 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
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.
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.

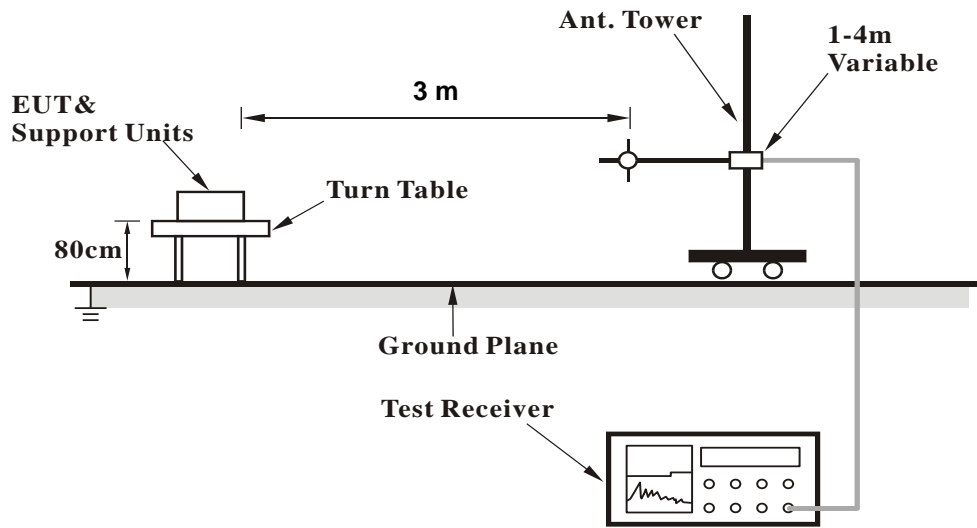
Note: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.2.3 Deviation from Test Standard

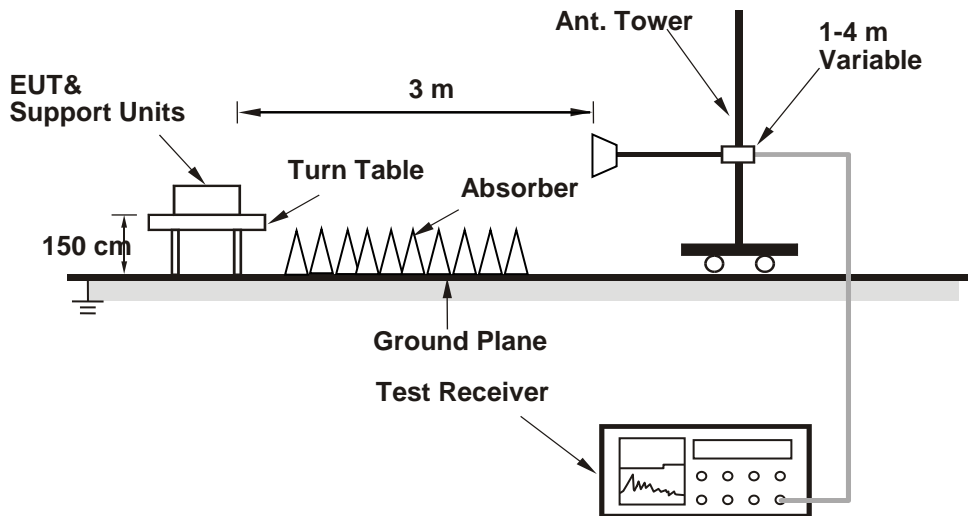
No deviation.

4.2.4 Test Setup

<Radiated Emission below or equal 1 GHz>



<Radiated Emission above 1 GHz>



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

4.2.5 Test Results

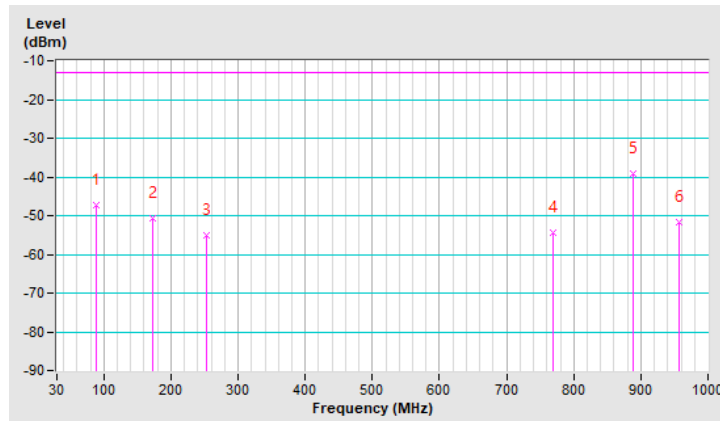
Below 1GHz
WCDMA Band 4

Mode	TX channel 1312 (1712.4MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Raymond Lee		

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	88.20	-47.33	-13.00	-34.33	1.00 H	160	71.84	-119.17
2	173.56	-50.80	-13.00	-37.80	1.00 H	251	63.36	-114.16
3	252.13	-55.10	-13.00	-42.10	2.00 H	155	59.49	-114.59
4	770.11	-54.36	-13.00	-41.36	1.50 H	165	49.01	-103.37
5	889.42	-39.02	-13.00	-26.02	1.00 H	70	63.09	-102.11
6	957.32	-51.85	-13.00	-38.85	2.00 H	345	49.12	-100.97

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV/m) + Correction\ Factor(dB/m)$
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.

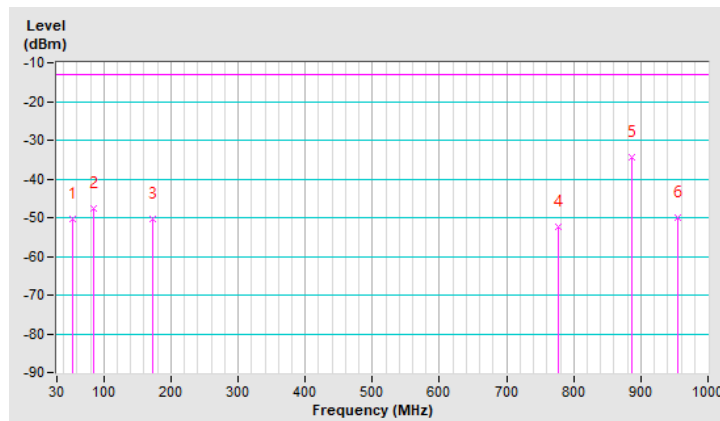


Mode	TX channel 1312 (1712.4MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Raymond Lee		

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	54.25	-50.46	-13.00	-37.46	1.50 V	328	63.58	-114.04
2	84.32	-47.70	-13.00	-34.70	1.00 V	256	71.31	-119.01
3	172.59	-50.36	-13.00	-37.36	2.00 V	242	63.74	-114.10
4	777.87	-52.21	-13.00	-39.21	1.00 V	165	51.02	-103.23
5	887.48	-34.26	-13.00	-21.26	1.50 V	176	67.90	-102.16
6	955.38	-50.02	-13.00	-37.02	1.00 V	306	51.01	-101.03

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV/m) + Correction\ Factor(dB/m)$
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.



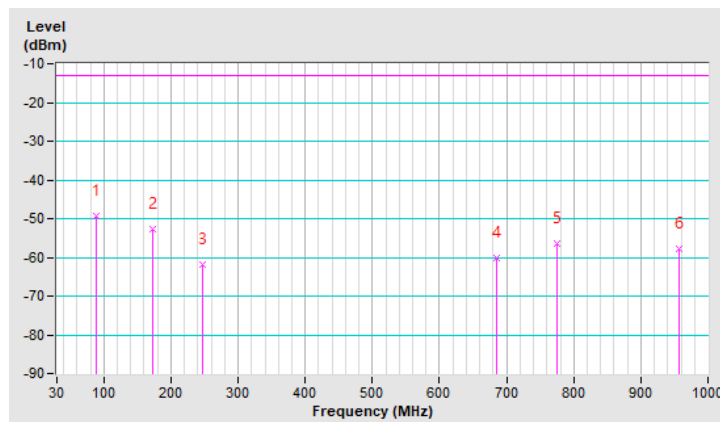
LTE Band 13, Channel Bandwidth: 5MHz

Mode	TX channel 23230 (782.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Raymond Lee		

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	88.20	-49.42	-13.00	-36.42	2.00 H	168	71.90	-121.32
2	173.56	-52.88	-13.00	-39.88	1.50 H	220	63.43	-116.31
3	247.28	-61.72	-13.00	-48.72	1.00 H	168	55.16	-116.88
4	685.72	-60.08	-13.00	-47.08	1.50 H	83	46.83	-106.91
5	774.96	-56.47	-13.00	-43.47	1.00 H	270	49.04	-105.51
6	957.32	-57.81	-13.00	-44.81	1.00 H	109	45.31	-103.12

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV/m) + Correction\ Factor(dB/m)$
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.

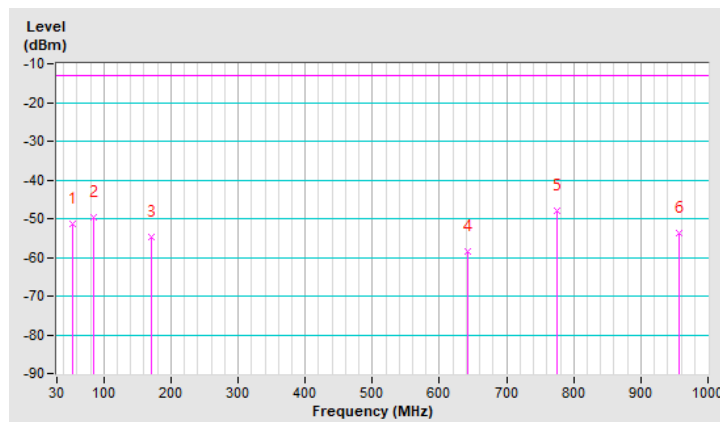


Mode	TX channel 23230 (782.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Raymond Lee		

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	54.25	-51.37	-13.00	-38.37	1.00 V	230	64.82	-116.19
2	84.32	-49.64	-13.00	-36.64	1.50 V	259	71.52	-121.16
3	170.65	-54.63	-13.00	-41.63	2.00 V	236	61.39	-116.02
4	642.07	-58.49	-13.00	-45.49	1.00 V	88	48.85	-107.34
5	774.96	-48.00	-13.00	-35.00	1.50 V	310	57.51	-105.51
6	956.35	-53.68	-13.00	-40.68	2.00 V	254	49.46	-103.14

Remarks:

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



Above 1GHz
WCDMA Band 4

Mode	TX channel 1312 (1712.4MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	23deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

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	3424.80	-46.94	-13.00	-33.94	2.70 H	331	49.32	-96.26

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	3424.80	-44.68	-13.00	-31.68	1.12 V	172	51.58	-96.26

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV/m) + Correction\ Factor(dB/m)$
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 13, Channel Bandwidth: 10MHz

Mode	TX channel 23230 (782.0MHz)	Frequency Range	1GHz ~ 18GHz
Environmental Conditions	23deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

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	1564.00	-49.18	-40.00	-9.18	1.51 H	19	51.43	-100.61

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	1564.00	-48.13	-40.00	-8.13	1.40 V	225	52.48	-100.61

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV/m) + Correction\ Factor(dB/m)$
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.

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 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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