

FCC Test Report (Part 24 – WCDMA B2, LTE B2/B25)

Report No.: RFBCKT-WTW-P22010886-4

FCC ID: HFSQTAD53N

Test Model: QTAD53

Received Date: Feb. 10, 2022

Test Date: Feb. 16 ~ Mar. 08, 2022

Issued Date: Mar. 30, 2022

Applicant: Quanta Computer Inc.

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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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Release Control Record

Issue No.	Description	Date Issued
RFBCKT-WTW-P22010886-4	Original release	Mar. 30, 2022

1 Certificate of Conformity

Product: 5G Hotspot

Brand: T-Mobile

Test Model: QTAD53

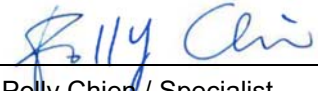
Sample Status: Engineering sample

Applicant: Quanta Computer Inc.

Test Date: Feb. 16 ~ Mar. 08, 2022

Standards: FCC Part 24, Subpart E

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 :  , **Date:** Mar. 30, 2022
Polly Chien / Specialist

Approved by :  , **Date:** Mar. 30, 2022
Jeremy Lin / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 24 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 24.232	Effective Isotropically Radiated Power	Pass	Meet the requirement of limit.
2.1046 24.232 (d)	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement
2.1055 24.235	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
24.238	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 24.238	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 24.238	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -31.95dB at 3825.00MHz.

Note: 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) (±)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.59 dB
	200MHz ~ 1000MHz	3.60 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.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 09, 2021	Apr. 08, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 10, 2021	Jun. 09, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Oct. 28, 2021	Oct. 27, 2022
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Oct. 26, 2021	Oct. 25, 2022
Loop Antenna TESEQ	HLA 6121	45745	Jul. 21, 2021	Jul. 20, 2022
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jun. 05, 2021	Jun. 04, 2022
Preamplifier Agilent (Above 1GHz)	8449B	3008A01962	Oct. 05, 2021	Oct. 04, 2022
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 15, 2022	Jan. 14, 2023
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795 /4)	Jan. 15, 2022	Jan. 14, 2023
RF signal cable Woken	8D-FB	Cable-CH9-01	Jun. 05, 2021	Jun. 04, 2022
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
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Standard Temperature And Humidity Chamber GIANT FORCE	GTH-120-40-CP-AR	MAA1306-019	Sep. 10, 2021	Sep. 09, 2022
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
True RMS Clamp Meter Fluke	325	31130711WS	Jun. 02, 2021	Jun. 01, 2022
DC power supply Keysight	U8002A	MY56330015	NA	NA

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 HwaYa Chamber 9.

3 General Information

3.1 General Description of EUT

Product	5G Hotspot	
Brand	T-Mobile	
Test Model	QTAD53	
Sample Status	Engineering sample	
Power Supply Rating	5Vdc / 9Vdc / 12Vdc (Adapter) 3.85Vdc (Battery)	
Modulation Type	WCDMA: BPSK, QPSK HSDPA: BPSK HSUPA: QPSK LTE: QPSK, 16QAM, 64QAM, 256QAM	
Operating Frequency	WCDMA Band 2	1852.4MHz ~ 1907.6MHz
	LTE Band 2 (Channel Bandwidth 1.4MHz)	1850.7MHz ~ 1909.3MHz
	LTE Band 2 (Channel Bandwidth 3MHz)	1851.5MHz ~ 1908.5MHz
	LTE Band 2 (Channel Bandwidth 5MHz)	1852.5MHz ~ 1907.5MHz
	LTE Band 2 (Channel Bandwidth 10MHz)	1855.0MHz ~ 1905.0MHz
	LTE Band 2 (Channel Bandwidth 15MHz)	1857.5MHz ~ 1902.5MHz
	LTE Band 2 (Channel Bandwidth 20MHz)	1860.0MHz ~ 1900.0MHz
	LTE Band 25 (Channel Bandwidth 1.4MHz)	1850.7MHz ~ 1914.3MHz
	LTE Band 25 (Channel Bandwidth 3MHz)	1851.5MHz ~ 1913.5MHz
	LTE Band 25 (Channel Bandwidth 5MHz)	1852.5MHz ~ 1912.5MHz
	LTE Band 25 (Channel Bandwidth 10MHz)	1855.0MHz ~ 1910.0MHz
	LTE Band 25 (Channel Bandwidth 15MHz)	1857.5MHz ~ 1907.5MHz
	LTE Band 25 (Channel Bandwidth 20MHz)	1860.0MHz ~ 1905.0MHz

Max. EIRP Power	WCDMA Band 2	297.167mW(24.73dBm)			
		QPSK	16QAM	64QAM	256QAM
	LTE Band 2 (Channel Bandwidth 1.4MHz)	298.538mW (24.75dBm)	243.781mW (23.87dBm)	189.671mW (22.78dBm)	97.724mW (19.90dBm)
	LTE Band 2 (Channel Bandwidth 3MHz)	298.538mW (24.75dBm)	244.343mW (23.88dBm)	189.234mW (22.77dBm)	97.051mW (19.87dBm)
	LTE Band 2 (Channel Bandwidth 5MHz)	300.608mW (24.78dBm)	246.037mW (23.91dBm)	190.108mW (22.79dBm)	97.051mW (19.87dBm)
	LTE Band 2 (Channel Bandwidth 10MHz)	298.538mW (24.75dBm)	242.661mW (23.85dBm)	189.234mW (22.77dBm)	97.949mW (19.91dBm)
	LTE Band 2 (Channel Bandwidth 15MHz)	300.608mW (24.78dBm)	244.906mW (23.89dBm)	189.671mW (22.78dBm)	97.051mW (19.87dBm)
	LTE Band 2 (Channel Bandwidth 20MHz)	304.089mW (24.83dBm)	246.604mW (23.92dBm)	190.546mW (22.80dBm)	98.175mW (19.92dBm)
	LTE Band 25 (Channel Bandwidth 1.4MHz)	312.608mW (24.95dBm)	250.611mW (23.99dBm)	198.609mW (22.98dBm)	97.724mW (19.90dBm)
	LTE Band 25 (Channel Bandwidth 3MHz)	310.456mW (24.92dBm)	251.189mW (24.00dBm)	194.536mW (22.89dBm)	97.724mW (19.90dBm)
	LTE Band 25 (Channel Bandwidth 5MHz)	310.456mW (24.92dBm)	248.313mW (23.95dBm)	194.984mW (22.90dBm)	98.628mW (19.94dBm)
	LTE Band 25 (Channel Bandwidth 10MHz)	310.456mW (24.92dBm)	248.886mW (23.96dBm)	197.697mW (22.96dBm)	97.724mW (19.90dBm)
	LTE Band 25 (Channel Bandwidth 15MHz)	312.608mW (24.95dBm)	249.459mW (23.97dBm)	198.609mW (22.98dBm)	98.175mW (19.92dBm)
	LTE Band 25 (Channel Bandwidth 20MHz)	314.051mW (24.97dBm)	252.930mW (24.03dBm)	198.609mW (22.98dBm)	99.312mW (19.97dBm)
Emission Designator	WCDMA Band 2	4M17F9W			
		QPSK	16QAM	64QAM	256QAM
	LTE Band 2 (Channel Bandwidth 1.4MHz)	1M09G7D	1M09D7W	1M09D7W	1M09D7W
	LTE Band 2 (Channel Bandwidth 3MHz)	2M70G7D	2M70D7W	2M70D7W	2M73D7W
	LTE Band 2 (Channel Bandwidth 5MHz)	4M49G7D	4M49D7W	4M50D7W	4M49D7W
	LTE Band 2 (Channel Bandwidth 10MHz)	8M98G7D	8M97D7W	8M97D7W	8M97D7W
	LTE Band 2 (Channel Bandwidth 15MHz)	13M5G7D	13M5D7W	13M5D7W	13M5D7W
	LTE Band 2 (Channel Bandwidth 20MHz)	18M0G7D	18M0D7W	18M0D7W	18M0D7W
	LTE Band 25 (Channel Bandwidth 1.4MHz)	1M09G7D	1M09D7W	1M09D7W	1M08D7W
	LTE Band 25 (Channel Bandwidth 3MHz)	2M70G7D	2M70D7W	2M70D7W	2M70D7W
	LTE Band 25 (Channel Bandwidth 5MHz)	4M50G7D	4M49D7W	4M50D7W	4M49D7W
	LTE Band 25 (Channel Bandwidth 10MHz)	8M99G7D	8M99D7W	8M99D7W	8M99D7W
	LTE Band 25 (Channel Bandwidth 15MHz)	13M5G7D	13M5D7W	13M5D7W	13M5D7W
	LTE Band 25 (Channel Bandwidth 20MHz)	18M0G7D	18M0D7W	18M0D7W	18M0D7W
Antenna Type	Refer to Note as below				
Antenna Connector	Refer to Note as below				
Accessory Device	Refer to Note as below				
Cable Supplied	Refer to Note as below				

Note:

1. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter 1	TEN PAO INTERNATIONAL LTD.	S018BYU1200150	I/P: 100-240Vac, 50/60Hz, 600mA O/P: 5Vdc/9Vdc/12Vdc=3A/2A/1.5A
Adapter 2	Aohai Technology Co., Ltd	A138A-120150U-US2	I/P: 100-240V~50/60Hz, 0.5A O/P: 5Vdc, 2.5A/9Vdc, 2A/12Vdc, 1.5A
USB cable 1	Electronics Taiwai Ltd.	DDEMU110079	0.95m shielded USB cable without core
USB cable 2	IMEX INC	60-6382-520-FA	0.97m shielded USB cable without core
Battery	VEKEN	141033	3.85Vdc, 6460mAh, 24.87Wh

* After pre-tested, adapter 2 and USB cable 1 were the worst case and chosen for final test.

2. There are two sources for EUT's memory. Only the supplier is different and the rest of the specifications are the same.

Sample	Item	Brand	Model
A	Memory - Main	Nanya Technology Corporation	NM4888KSPAXAI-3E
B	Memory - Second	Jeju Semiconductor Corp.	JSFDDQ5QHAFGD-405

* After pre-tested, sample A was the worse and chosen for final test.

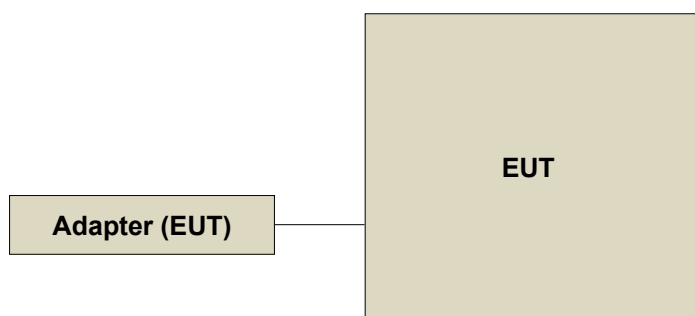
3. The following antennas were provided to the EUT.

2G / 3G Band					
Ant. No.	Type	Connector	Gain (dBi)		
			WCDMA B2	LTE B2	LTE B25
0	PIFA	MUR	1.23871	1.23871	1.23871
1	PIFA	IPEX	-	-	-
2	PIFA	IPEX	0.861738	0.861738	0.861738
3	PIFA	MUR	-	-	-
4	PIFA	IPEX	-	-	-

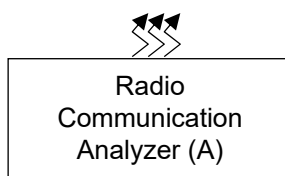
* There are diversity on WCDMA and LTE mode at ANT. No. 0 and 2. The max. gain are chosen for final test.

* 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.

3.2 Configuration of System under Test



Remote site



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.	Radio Communication Analyzer	Anritsu	MT8821C	6261806803	NA	-

Note:

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

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	Radiated Emission
WCDMA Band 2	X-plane
LTE Band 2	X-plane
LTE Band 25	X-plane

WCDMA Band 2

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	9262 to 9538	9262 (1852.4MHz), 9400 (1880.0MHz), 9538 (1907.6MHz)	WCDMA, HSDPA, HSUPA
-	Modulation Characteristics	9262 to 9538	9400 (1880.0MHz)	WCDMA, HSDPA, HSUPA
-	Frequency Stability	9262 to 9538	9262 (1852.4MHz), 9538 (1907.6MHz)	WCDMA
-	Occupied Bandwidth	9262 to 9538	9262 (1852.4MHz), 9400 (1880.0MHz), 9538 (1907.6MHz)	WCDMA, HSDPA, HSUPA
-	Band Edge	9262 to 9538	9262 (1852.4MHz), 9538 (1907.6MHz)	WCDMA, HSDPA, HSUPA
-	Peak To Average Ratio	9262 to 9538	9262 (1852.4MHz), 9400 (1880.0MHz), 9538 (1907.6MHz)	WCDMA, HSDPA, HSUPA
-	Conducted Emission	9262 to 9538	9262 (1852.4MHz), 9400 (1880.0MHz), 9538 (1907.6MHz)	WCDMA, HSDPA, HSUPA
-	Radiated Emission Below 1GHz	9262 to 9538	9400 (1880.0MHz)	WCDMA
-	Radiated Emission Above 1GHz	9262 to 9538	9262 (1852.4MHz), 9400 (1880.0MHz), 9538 (1907.6MHz)	WCDMA

Note: For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.

LTE Band 2

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	18607 to 19193	18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 2 RB Offset 1 RB / 5 RB Offset 3 RB / 0 RB Offset 3 RB / 1 RB Offset 3 RB / 3 RB Offset 6 RB / 0 RB Offset
		18615 to 19185	18615 (1851.5MHz), 18900 (1880.0MHz), 19185 (1908.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 7 RB Offset 1 RB / 14 RB Offset 8 RB / 0 RB Offset 8 RB / 3 RB Offset 8 RB / 7 RB Offset 15 RB / 0 RB Offset
		18625 to 19175	18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		18650 to 19150	18650 (1855.0MHz), 18900 (1880.0MHz), 19150 (1905.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
		18675 to 19125	18675 (1857.5MHz), 18900 (1880.0MHz), 19125 (1902.5MHz)	15MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 37 RB Offset 1 RB / 74 RB Offset 36 RB / 0 RB Offset 36 RB / 19 RB Offset 36 RB / 39 RB Offset 75 RB / 0 RB Offset
		18700 to 19100	18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 50 RB Offset 1 RB / 99 RB Offset 50 RB / 0 RB Offset 50 RB / 25 RB Offset 50 RB / 50 RB Offset 100 RB / 0 RB Offset
-	Modulation Characteristics	18700 to 19100	18900 (1880.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	100 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Frequency Stability	18607 to 19193	18607 (1850.7MHz), 19193 (1909.3MHz)	1.4MHz	QPSK	6 RB / 0 RB Offset
		18615 to 19185	18615 (1851.5MHz), 19185 (1908.5MHz)	3MHz	QPSK	15 RB / 0 RB Offset
		18625 to 19175	18625 (1852.5MHz), 19175 (1907.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		18650 to 19150	18650 (1855.0MHz), 19150 (1905.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
		18675 to 19125	18675 (1857.5MHz), 19125 (1902.5MHz)	15MHz	QPSK	75 RB / 0 RB Offset
		18700 to 19100	18700 (1860.0MHz), 19100 (1900.0MHz)	20MHz	QPSK	100 RB / 0 RB Offset
-	Occupied Bandwidth	18607 to 19193	18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	6 RB / 0RB Offset
		18615 to 19185	18615 (1851.5MHz), 18900 (1880.0MHz), 19185 (1908.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	15 RB / 0RB Offset
		18625 to 19175	18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	25RB / 0RB Offset
		18650 to 19150	18650 (1855.0MHz), 18900 (1880.0MHz), 19150 (1905.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	50RB / 0RB Offset
		18675 to 19125	18675 (1857.5MHz), 18900 (1880.0MHz), 19125 (1902.5MHz)	15MHz	QPSK / 16QAM / 64QAM / 256QAM	75 RB / 0 RB Offset
		18700 to 19100	18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	100 RB / 0 RB Offset
-	Band Edge	18607 to 19193	18607 (1850.7MHz), 19193 (1909.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		18615 to 19185	18615 (1851.5MHz), 19185 (1908.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		18625 to 19175	18625 (1852.5MHz), 19175 (1907.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		18650 to 19150	18650 (1855.0MHz), 19150 (1905.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
		18675 to 19125	18675 (1857.5MHz), 19125 (1902.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
		18700 to 19100	18700 (1860.0MHz), 19100 (1900.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset 1 RB / 99 RB Offset 100 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Peak to Average Ratio	18607 to 19193	18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	3 RB / 0 RB Offset
		18615 to 19185	18615 (1851.5MHz), 18900 (1880.0MHz), 19185 (1908.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 14 RB Offset
		18625 to 19175	18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		18650 to 19150	18650 (1855.0MHz), 18900 (1880.0MHz), 19150 (1905.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		18675 to 19125	18675 (1857.5MHz), 18900 (1880.0MHz), 19125 (1902.5MHz)	15MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		18700 to 19100	18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
-	Conducted Emission	18607 to 19193	18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz)	1.4MHz	QPSK	3 RB / 0 RB Offset
		18615 to 19185	18615 (1851.5MHz), 18900 (1880.0MHz), 19185 (1908.5MHz)	3MHz	QPSK	1 RB / 14 RB Offset
		18625 to 19175	18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650 (1855.0MHz), 18900 (1880.0MHz), 19150 (1905.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675 (1857.5MHz), 18900 (1880.0MHz), 19125 (1902.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission Below 1GHz	18700 to 19100	19175 (1907.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	18607 to 19193	18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz)	1.4MHz	QPSK	3 RB / 0 RB Offset
		18625 to 19175	18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. 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.
3. The output power for QPSK, 16QAM, 64QAM and 256QAM, measured value of QPSK is higher than 16QAM, 64QAM and 256QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM, 64QAM and 256QAM modes, the other test items were performed under QPSK mode only.

LTE Band 25

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	26047 to 26683	26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 2 RB Offset 1 RB / 5 RB Offset 3 RB / 0 RB Offset 3 RB / 1 RB Offset 3 RB / 3 RB Offset 6 RB / 0 RB Offset
		26055 to 26675	26055 (1851.5MHz), 26365 (1882.5MHz), 26675 (1913.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 7 RB Offset 1 RB / 14 RB Offset 8 RB / 0 RB Offset 8 RB / 3 RB Offset 8 RB / 7 RB Offset 15 RB / 0 RB Offset
		26065 to 26665	26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		26090 to 26640	26090 (1855.0MHz), 26365 (1882.5MHz), 26640 (1910.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
		26115 to 26615	26115 (1857.5MHz), 26365 (1882.5MHz), 26615 (1907.5MHz)	15MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 37 RB Offset 1 RB / 74 RB Offset 36 RB / 0 RB Offset 36 RB / 19 RB Offset 36 RB / 39 RB Offset 75 RB / 0 RB Offset
		26140 to 26590	26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset 1 RB / 50 RB Offset 1 RB / 99 RB Offset 50 RB / 0 RB Offset 50 RB / 25 RB Offset 50 RB / 50 RB Offset 100 RB / 0 RB Offset
-	Modulation Characteristics	26140 to 26590	26365 (1882.5MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	100 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Frequency Stability	26047 to 26683	26047 (1850.7MHz), 26683 (1914.3MHz)	1.4MHz	QPSK	6 RB / 0 RB Offset
		26055 to 26675	26055 (1851.5MHz), 26675 (1913.5MHz)	3MHz	QPSK	15 RB / 0 RB Offset
		26065 to 26665	26065 (1852.5MHz), 26665 (1912.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		26090 to 26640	26090 (1855.0MHz), 26640 (1910.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
		26115 to 26615	26115 (1857.5MHz), 26615 (1907.5MHz)	15MHz	QPSK	75 RB / 0 RB Offset
		26140 to 26590	26140 (1860.0MHz), 26590 (1905.0MHz)	20MHz	QPSK	100 RB / 0 RB Offset
-	Occupied Bandwidth	26047 to 26683	26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	6 RB / 0RB Offset
		26055 to 26675	26055 (1851.5MHz), 26365 (1882.5MHz), 26675 (1913.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	15 RB / 0RB Offset
		26065 to 26665	26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	25RB / 0RB Offset
		26090 to 26640	26090 (1855.0MHz), 26365 (1882.5MHz), 26640 (1910.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	50RB / 0RB Offset
		26115 to 26615	26115 (1857.5MHz), 26365 (1882.5MHz), 26615 (1907.5MHz)	15MHz	QPSK / 16QAM / 64QAM / 256QAM	75 RB / 0 RB Offset
		26140 to 26590	26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	100 RB / 0 RB Offset
-	Band Edge	26047 to 26683	26047 (1850.7MHz), 26683 (1914.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		26055 to 26675	26055 (1851.5MHz), 26675 (1913.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		26065 to 26665	26065 (1852.5MHz), 26665 (1912.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		26090 to 26640	26090 (1855.0MHz), 26640 (1910.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
		26115 to 26615	26115 (1857.5MHz), 26615 (1907.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
		26140 to 26590	26140 (1860.0MHz), 26590 (1905.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset 1 RB / 99 RB Offset 100 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Peak to Average Ratio	26047 to 26683	26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		26055 to 26675	26055 (1851.5MHz), 26365 (1882.5MHz), 26675 (1913.5MHz)	3MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		26065 to 26665	26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz)	5MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		26090 to 26640	26090 (1855.0MHz), 26365 (1882.5MHz), 26640 (1910.0MHz)	10MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		26115 to 26615	26115 (1857.5MHz), 26365 (1882.5MHz), 26615 (1907.5MHz)	15MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
		26140 to 26590	26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz)	20MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB / 0 RB Offset
-	Conducted Emission	26047 to 26683	26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		26055 to 26675	26055 (1851.5MHz), 26365 (1882.5MHz), 26675 (1913.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		26065 to 26665	26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		26090 to 26640	26090 (1855.0MHz), 26365 (1882.5MHz), 26640 (1910.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		26115 to 26615	26115 (1857.5MHz), 26365 (1882.5MHz), 26615 (1907.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		26140 to 26590	26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission Below 1GHz	26065 to 26665	26665 (1912.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	26047 to 26683	26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		26065 to 26665	26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		26140 to 26590	26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. 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.
3. The output power for QPSK, 16QAM, 64QAM and 256QAM, measured value of QPSK is higher than 16QAM, 64QAM and 256QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM, 64QAM and 256QAM modes, the other test items were performed under QPSK mode only.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Modulation Characteristics	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Frequency Stability	25deg. C, 60%RH	3.85Vdc	James Yang
Occupied Bandwidth	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Band Edge	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Peak To Average Ratio	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Conducted Emission	25deg. C, 60%RH	120Vac, 60Hz	James Yang
Radiated Emission	23deg. C, 65%RH, 22deg. C, 68%RH	120Vac, 60Hz	Jones Chang, 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:

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 24

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

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

Mobile / Portable station are limited to 2 watts e.i.r.p.

4.1.2 Test Procedures

Conducted Power Measurement:

The EUT was set up for the maximum power with WCDMA, 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)

Band	WCDMA II		
TX Channel	9262	9400	9538
Frequency	1852.4	1880	1907.6
RMC 12.2K	23.49	23.47	23.36
HSDPA Subtest-1	23.22	22.90	22.52
HSDPA Subtest-2	23.11	22.88	22.50
HSDPA Subtest-3	22.65	22.40	22.00
HSDPA Subtest-4	22.65	22.38	21.97
DC-HSDPA Subtest-1	23.10	22.78	22.40
DC-HSDPA Subtest-2	22.99	22.76	22.38
DC-HSDPA Subtest-3	22.53	22.28	21.88
DC-HSDPA Subtest-4	22.53	22.26	21.85
HSUPA Subtest-1	21.70	21.61	21.55
HSUPA Subtest-2	21.25	21.00	20.78
HSUPA Subtest-3	22.26	22.01	21.59
HSUPA Subtest-4	20.73	20.73	20.27
HSUPA Subtest-5	22.20	22.00	21.90
HSPA+ Subtest-1	20.13	20.13	19.67

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18700	18900	19100
		Frequency (MHz)		1860	1880	1900
20M	QPSK	1	0	23.59	23.54	23.49
		1	50	23.53	23.50	23.45
		1	99	23.47	23.44	23.39
		50	0	22.69	22.66	22.61
		50	25	22.65	22.62	22.57
		50	50	22.62	22.59	22.54
		100	0	22.61	22.58	22.53
20M	16QAM	1	0	22.68	22.65	22.60
		1	50	22.65	22.62	22.57
		1	99	22.63	22.60	22.55
		50	0	21.65	21.62	21.57
		50	25	21.58	21.55	21.50
		50	50	21.57	21.54	21.49
		100	0	21.53	21.50	21.45
20M	64QAM	1	0	21.56	21.53	21.48
		1	50	21.54	21.51	21.46
		1	99	21.53	21.50	21.45
		50	0	20.75	20.72	20.67
		50	25	20.67	20.64	20.59
		50	50	20.65	20.62	20.57
		100	0	20.61	20.58	20.53
20M	256QAM	1	0	18.68	18.60	18.55
		1	50	18.67	18.64	18.59
		1	99	18.59	18.56	18.51
		50	0	18.63	18.60	18.55
		50	25	18.63	18.60	18.55
		50	50	18.58	18.55	18.50
		100	0	18.61	18.58	18.53

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18675	18900	19125
		Frequency (MHz)		1857.5	1880	1902.5
15M	QPSK	1	0	23.54	23.46	23.43
		1	37	23.48	23.41	23.42
		1	74	23.43	23.44	23.38
		36	0	22.62	22.59	22.53
		36	19	22.58	22.53	22.51
		36	39	22.60	22.54	22.45
		75	0	22.59	22.51	22.43
15M	16QAM	1	0	22.65	22.62	22.54
		1	37	22.60	22.59	22.52
		1	74	22.53	22.54	22.54
		36	0	21.65	21.60	21.49
		36	19	21.52	21.45	21.40
		36	39	21.57	21.51	21.40
		75	0	21.47	21.48	21.43
15M	64QAM	1	0	21.54	21.51	21.42
		1	37	21.51	21.51	21.36
		1	74	21.53	21.41	21.42
		36	0	20.65	20.70	20.60
		36	19	20.65	20.61	20.53
		36	39	20.59	20.54	20.52
		75	0	20.52	20.56	20.51
15M	256QAM	1	0	18.63	18.59	18.50
		1	37	18.60	18.61	18.58
		1	74	18.59	18.54	18.46
		36	0	18.57	18.51	18.54
		36	19	18.57	18.54	18.49
		36	39	18.57	18.52	18.45
		75	0	18.52	18.57	18.47

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18650	18900	19150
		Frequency (MHz)		1855	1880	1905
10M	QPSK	1	0	23.45	23.51	23.40
		1	24	23.48	23.50	23.45
		1	49	23.45	23.43	23.36
		25	0	22.64	22.60	22.57
		25	12	22.60	22.57	22.48
		25	25	22.55	22.55	22.46
		50	0	22.54	22.53	22.53
10M	16QAM	1	0	22.61	22.60	22.50
		1	24	22.57	22.60	22.55
		1	49	22.53	22.55	22.48
		25	0	21.61	21.62	21.48
		25	12	21.53	21.48	21.45
		25	25	21.51	21.49	21.44
		50	0	21.51	21.49	21.37
10M	64QAM	1	0	21.51	21.48	21.39
		1	24	21.53	21.49	21.45
		1	49	21.43	21.50	21.42
		25	0	20.69	20.67	20.65
		25	12	20.61	20.57	20.49
		25	25	20.65	20.56	20.54
		50	0	20.51	20.58	20.44
10M	256QAM	1	0	18.62	18.52	18.54
		1	24	18.67	18.59	18.51
		1	49	18.54	18.46	18.51
		25	0	18.56	18.51	18.52
		25	12	18.58	18.60	18.49
		25	25	18.57	18.45	18.41
		50	0	18.60	18.55	18.44

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18625	18900	19175
		Frequency (MHz)		1852.5	1880	1907.5
5M	QPSK	1	0	23.54	23.47	23.37
		1	12	23.49	23.46	23.41
		1	24	23.47	23.41	23.35
		12	0	22.64	22.58	22.53
		12	6	22.60	22.55	22.47
		12	13	22.53	22.50	22.53
		25	0	22.60	22.48	22.49
5M	16QAM	1	0	22.67	22.60	22.56
		1	12	22.57	22.56	22.49
		1	24	22.62	22.55	22.49
		12	0	21.56	21.62	21.50
		12	6	21.57	21.53	21.40
		12	13	21.55	21.54	21.40
		25	0	21.48	21.44	21.45
5M	64QAM	1	0	21.55	21.49	21.38
		1	12	21.47	21.45	21.38
		1	24	21.53	21.50	21.44
		12	0	20.69	20.69	20.61
		12	6	20.58	20.56	20.53
		12	13	20.63	20.58	20.54
		25	0	20.56	20.51	20.49
5M	256QAM	1	0	18.63	18.56	18.49
		1	12	18.58	18.60	18.57
		1	24	18.53	18.52	18.43
		12	0	18.55	18.59	18.52
		12	6	18.58	18.56	18.54
		12	13	18.57	18.55	18.48
		25	0	18.57	18.57	18.44

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18615	18900	19185
		Frequency (MHz)		1851.5	1880	1908.5
3M	QPSK	1	0	23.47	23.47	23.37
		1	7	23.51	23.40	23.43
		1	14	23.40	23.37	23.34
		8	0	22.67	22.57	22.60
		8	3	22.63	22.55	22.52
		8	7	22.53	22.49	22.50
		15	0	22.56	22.49	22.45
3M	16QAM	1	0	22.64	22.55	22.55
		1	7	22.57	22.59	22.56
		1	14	22.56	22.51	22.54
		8	0	21.55	21.56	21.56
		8	3	21.49	21.53	21.49
		8	7	21.49	21.51	21.39
		15	0	21.48	21.43	21.40
3M	64QAM	1	0	21.51	21.46	21.48
		1	7	21.53	21.48	21.36
		1	14	21.50	21.48	21.44
		8	0	20.66	20.68	20.67
		8	3	20.62	20.60	20.59
		8	7	20.56	20.60	20.54
		15	0	20.55	20.57	20.51
3M	256QAM	1	0	18.63	18.54	18.50
		1	7	18.59	18.62	18.56
		1	14	18.56	18.49	18.46
		8	0	18.60	18.59	18.53
		8	3	18.59	18.55	18.49
		8	7	18.55	18.54	18.43
		15	0	18.61	18.58	18.43

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18607	18900	19193
		Frequency (MHz)		1850.7	1880	1909.3
1.4M	QPSK	1	0	23.51	23.44	23.45
		1	2	23.45	23.45	23.42
		1	5	23.47	23.34	23.34
		3	0	23.39	23.32	23.33
		3	1	23.33	23.33	23.30
		3	3	23.35	23.22	23.22
		6	0	22.58	22.49	22.50
1.4M	16QAM	1	0	22.61	22.60	22.58
		1	2	22.63	22.57	22.50
		1	5	22.55	22.53	22.45
		3	0	22.33	22.26	22.27
		3	1	22.27	22.27	22.24
		3	3	22.29	22.16	22.16
		6	0	21.48	21.47	21.41
1.4M	64QAM	1	0	21.52	21.53	21.48
		1	2	21.54	21.48	21.43
		1	5	21.46	21.44	21.36
		3	0	21.32	21.25	21.26
		3	1	21.26	21.26	21.23
		3	3	21.28	21.15	21.15
		6	0	20.56	20.49	20.46
1.4M	256QAM	1	0	18.63	18.55	18.54
		1	2	18.66	18.55	18.57
		1	5	18.52	18.52	18.46
		3	0	18.59	18.55	18.45
		3	1	18.58	18.60	18.51
		3	3	18.53	18.52	18.49
		6	0	18.61	18.49	18.45

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26140	26365	26590
		Frequency (MHz)		1860	1882.5	1905
20M	QPSK	1	0	23.73	23.65	23.51
		1	50	23.72	23.63	23.59
		1	99	23.65	23.56	23.52
		50	0	22.86	22.77	22.73
		50	25	22.85	22.76	22.72
		50	50	22.83	22.74	22.7
		100	0	22.82	22.73	22.69
20M	16QAM	1	0	22.79	22.7	22.66
		1	50	22.77	22.68	22.64
		1	99	22.71	22.62	22.58
		50	0	21.85	21.76	21.72
		50	25	21.79	21.7	21.66
		50	50	21.76	21.67	21.63
		100	0	21.68	21.59	21.55
20M	64QAM	1	0	21.74	21.65	21.61
		1	50	21.71	21.62	21.58
		1	99	21.68	21.59	21.55
		50	0	20.86	20.77	20.73
		50	25	20.84	20.75	20.71
		50	50	20.81	20.72	20.68
		100	0	20.78	20.69	20.65
20M	256QAM	1	0	18.73	18.64	18.60
		1	50	18.67	18.58	18.54
		1	99	18.66	18.57	18.53
		50	0	18.64	18.55	18.51
		50	25	18.63	18.54	18.50
		50	50	18.61	18.52	18.48
		100	0	18.58	18.49	18.45

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26115	26365	26615
		Frequency (MHz)		1857.5	1882.5	1907.5
15M	QPSK	1	0	23.71	23.61	23.59
		1	37	23.70	23.63	23.54
		1	74	23.60	23.54	23.45
		36	0	22.83	22.74	22.63
		36	19	22.84	22.66	22.72
		36	39	22.82	22.70	22.65
		75	0	22.75	22.71	22.61
15M	16QAM	1	0	22.73	22.62	22.63
		1	37	22.67	22.58	22.60
		1	74	22.61	22.53	22.57
		36	0	21.81	21.70	21.64
		36	19	21.69	21.62	21.60
		36	39	21.66	21.67	21.60
		75	0	21.68	21.57	21.50
15M	64QAM	1	0	21.74	21.56	21.58
		1	37	21.66	21.60	21.48
		1	74	21.62	21.58	21.54
		36	0	20.82	20.75	20.69
		36	19	20.80	20.66	20.69
		36	39	20.71	20.71	20.61
		75	0	20.77	20.66	20.60
15M	256QAM	1	0	18.68	18.55	18.60
		1	37	18.64	18.55	18.46
		1	74	18.63	18.50	18.45
		36	0	18.60	18.50	18.51
		36	19	18.61	18.53	18.42
		36	39	18.53	18.42	18.41
		75	0	18.55	18.42	18.39

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26090	26365	26640
		Frequency (MHz)		1855	1882.5	1910
10M	QPSK	1	0	23.64	23.55	23.46
		1	24	23.68	23.59	23.51
		1	49	23.65	23.48	23.48
		25	0	22.81	22.68	22.63
		25	12	22.77	22.74	22.62
		25	25	22.73	22.72	22.62
		50	0	22.79	22.64	22.69
10M	16QAM	1	0	22.72	22.63	22.64
		1	24	22.68	22.65	22.54
		1	49	22.71	22.52	22.56
		25	0	21.83	21.74	21.69
		25	12	21.69	21.61	21.60
		25	25	21.69	21.67	21.63
		50	0	21.61	21.54	21.48
10M	64QAM	1	0	21.72	21.55	21.54
		1	24	21.67	21.61	21.58
		1	49	21.68	21.49	21.50
		25	0	20.83	20.72	20.70
		25	12	20.82	20.70	20.67
		25	25	20.71	20.70	20.63
		50	0	20.72	20.65	20.61
10M	256QAM	1	0	18.66	18.62	18.59
		1	24	18.60	18.55	18.50
		1	49	18.64	18.51	18.43
		25	0	18.64	18.48	18.50
		25	12	18.61	18.53	18.49
		25	25	18.59	18.42	18.39
		50	0	18.53	18.42	18.40

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26065	26365	26665
		Frequency (MHz)		1852.5	1882.5	1912.5
5M	QPSK	1	0	23.67	23.63	23.62
		1	12	23.68	23.61	23.50
		1	24	23.58	23.52	23.47
		12	0	22.85	22.76	22.68
		12	6	22.79	22.70	22.67
		12	13	22.79	22.69	22.70
		25	0	22.80	22.71	22.59
5M	16QAM	1	0	22.70	22.64	22.62
		1	12	22.71	22.60	22.56
		1	24	22.69	22.54	22.53
		12	0	21.83	21.73	21.67
		12	6	21.73	21.64	21.64
		12	13	21.70	21.61	21.53
		25	0	21.67	21.51	21.52
5M	64QAM	1	0	21.66	21.59	21.56
		1	12	21.64	21.62	21.49
		1	24	21.63	21.52	21.48
		12	0	20.84	20.69	20.71
		12	6	20.83	20.73	20.70
		12	13	20.74	20.65	20.65
		25	0	20.78	20.62	20.61
5M	256QAM	1	0	18.70	18.61	18.55
		1	12	18.60	18.51	18.47
		1	24	18.57	18.57	18.48
		12	0	18.56	18.49	18.51
		12	6	18.55	18.54	18.41
		12	13	18.51	18.46	18.40
		25	0	18.50	18.40	18.40

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26055	26365	26675
		Frequency (MHz)		1851.5	1882.5	1913.5
3M	QPSK	1	0	23.68	23.61	23.54
		1	7	23.65	23.59	23.51
		1	14	23.63	23.51	23.43
		8	0	22.84	22.76	22.65
		8	3	22.77	22.69	22.67
		8	7	22.74	22.68	22.67
		15	0	22.73	22.72	22.63
3M	16QAM	1	0	22.76	22.70	22.60
		1	7	22.67	22.66	22.61
		1	14	22.68	22.55	22.49
		8	0	21.79	21.67	21.66
		8	3	21.75	21.64	21.56
		8	7	21.74	21.65	21.63
		15	0	21.58	21.49	21.53
3M	64QAM	1	0	21.65	21.59	21.59
		1	7	21.63	21.60	21.54
		1	14	21.59	21.58	21.53
		8	0	20.82	20.74	20.68
		8	3	20.80	20.74	20.70
		8	7	20.76	20.71	20.58
		15	0	20.78	20.68	20.62
3M	256QAM	1	0	18.66	18.62	18.54
		1	7	18.59	18.52	18.53
		1	14	18.61	18.52	18.47
		8	0	18.63	18.51	18.44
		8	3	18.53	18.46	18.50
		8	7	18.53	18.52	18.40
		15	0	18.49	18.47	18.41

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26047	26365	26683
		Frequency (MHz)		1850.7	1882.5	1914.3
1.4M	QPSK	1	0	23.71	23.61	23.51
		1	2	23.67	23.58	23.58
		1	5	23.56	23.51	23.47
		3	0	22.82	22.73	22.72
		3	1	22.82	22.67	22.70
		3	3	22.74	22.64	22.67
		6	0	22.80	22.72	22.60
1.4M	16QAM	1	0	22.75	22.64	22.62
		1	2	22.73	22.59	22.56
		1	5	22.61	22.55	22.57
		3	0	21.85	21.76	21.66
		3	1	21.69	21.70	21.65
		3	3	21.75	21.58	21.61
		6	0	21.61	21.53	21.54
1.4M	64QAM	1	0	21.74	21.60	21.61
		1	2	21.70	21.56	21.58
		1	5	21.58	21.58	21.55
		3	0	21.56	21.38	21.37
		3	1	21.48	21.40	21.33
		3	3	21.40	21.25	21.29
		6	0	20.68	20.62	20.57
1.4M	256QAM	1	0	18.64	18.58	18.51
		1	2	18.66	18.52	18.46
		1	5	18.62	18.48	18.48
		3	0	18.56	18.52	18.45
		3	1	18.62	18.48	18.44
		3	3	18.58	18.50	18.46
		6	0	18.51	18.46	18.45

EIRP Power (dBm)

Band	WCDMA II		
TX Channel	9262	9400	9538
Frequency	1852.4	1880	1907.6
RMC 12.2K	24.73	24.71	24.60
HSDPA Subtest-1	24.46	24.14	23.76
HSDPA Subtest-2	24.35	24.12	23.74
HSDPA Subtest-3	23.89	23.64	23.24
HSDPA Subtest-4	23.89	23.62	23.21
DC-HSDPA Subtest-1	24.34	24.02	23.64
DC-HSDPA Subtest-2	24.23	24.00	23.62
DC-HSDPA Subtest-3	23.77	23.52	23.12
DC-HSDPA Subtest-4	23.77	23.50	23.09
HSUPA Subtest-1	22.94	22.85	22.79
HSUPA Subtest-2	22.49	22.24	22.02
HSUPA Subtest-3	23.50	23.25	22.83
HSUPA Subtest-4	21.97	21.97	21.51
HSUPA Subtest-5	23.44	23.24	23.14
HSPA+ Subtest-1	21.37	21.37	20.91

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18700	18900	19100
		Frequency (MHz)		1860	1880	1900
20M	QPSK	1	0	24.83	24.78	24.73
		1	50	24.77	24.74	24.69
		1	99	24.71	24.68	24.63
		50	0	23.93	23.90	23.85
		50	25	23.89	23.86	23.81
		50	50	23.86	23.83	23.78
		100	0	23.85	23.82	23.77
20M	16QAM	1	0	23.92	23.89	23.84
		1	50	23.89	23.86	23.81
		1	99	23.87	23.84	23.79
		50	0	22.89	22.86	22.81
		50	25	22.82	22.79	22.74
		50	50	22.81	22.78	22.73
		100	0	22.77	22.74	22.69
20M	64QAM	1	0	22.80	22.77	22.72
		1	50	22.78	22.75	22.70
		1	99	22.77	22.74	22.69
		50	0	21.99	21.96	21.91
		50	25	21.91	21.88	21.83
		50	50	21.89	21.86	21.81
		100	0	21.85	21.82	21.77
20M	256QAM	1	0	19.92	19.84	19.79
		1	50	19.91	19.88	19.83
		1	99	19.83	19.80	19.75
		50	0	19.87	19.84	19.79
		50	25	19.87	19.84	19.79
		50	50	19.82	19.79	19.74
		100	0	19.85	19.82	19.77

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18675	18900	19125
		Frequency (MHz)		1857.5	1880	1902.5
15M	QPSK	1	0	24.78	24.70	24.67
		1	37	24.72	24.65	24.66
		1	74	24.67	24.68	24.62
		36	0	23.86	23.83	23.77
		36	19	23.82	23.77	23.75
		36	39	23.84	23.78	23.69
		75	0	23.83	23.75	23.67
15M	16QAM	1	0	23.89	23.86	23.78
		1	37	23.84	23.83	23.76
		1	74	23.77	23.78	23.78
		36	0	22.89	22.84	22.73
		36	19	22.76	22.69	22.64
		36	39	22.81	22.75	22.64
		75	0	22.71	22.72	22.67
15M	64QAM	1	0	22.78	22.75	22.66
		1	37	22.75	22.75	22.60
		1	74	22.77	22.65	22.66
		36	0	21.89	21.94	21.84
		36	19	21.89	21.85	21.77
		36	39	21.83	21.78	21.76
		75	0	21.76	21.80	21.75
15M	256QAM	1	0	19.87	19.83	19.74
		1	37	19.84	19.85	19.82
		1	74	19.83	19.78	19.70
		36	0	19.81	19.75	19.78
		36	19	19.81	19.78	19.73
		36	39	19.81	19.76	19.69
		75	0	19.76	19.81	19.71

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18650	18900	19150
		Frequency (MHz)		1855	1880	1905
10M	QPSK	1	0	24.69	24.75	24.64
		1	24	24.72	24.74	24.69
		1	49	24.69	24.67	24.60
		25	0	23.88	23.84	23.81
		25	12	23.84	23.81	23.72
		25	25	23.79	23.79	23.70
		50	0	23.78	23.77	23.77
10M	16QAM	1	0	23.85	23.84	23.74
		1	24	23.81	23.84	23.79
		1	49	23.77	23.79	23.72
		25	0	22.85	22.86	22.72
		25	12	22.77	22.72	22.69
		25	25	22.75	22.73	22.68
		50	0	22.75	22.73	22.61
10M	64QAM	1	0	22.75	22.72	22.63
		1	24	22.77	22.73	22.69
		1	49	22.67	22.74	22.66
		25	0	21.93	21.91	21.89
		25	12	21.85	21.81	21.73
		25	25	21.89	21.80	21.78
		50	0	21.75	21.82	21.68
10M	256QAM	1	0	19.86	19.76	19.78
		1	24	19.91	19.83	19.75
		1	49	19.78	19.70	19.75
		25	0	19.80	19.75	19.76
		25	12	19.82	19.84	19.73
		25	25	19.81	19.69	19.65
		50	0	19.84	19.79	19.68

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18625	18900	19175
		Frequency (MHz)		1852.5	1880	1907.5
5M	QPSK	1	0	24.78	24.71	24.61
		1	12	24.73	24.70	24.65
		1	24	24.71	24.65	24.59
		12	0	23.88	23.82	23.77
		12	6	23.84	23.79	23.71
		12	13	23.77	23.74	23.77
		25	0	23.84	23.72	23.73
5M	16QAM	1	0	23.91	23.84	23.80
		1	12	23.81	23.80	23.73
		1	24	23.86	23.79	23.73
		12	0	22.80	22.86	22.74
		12	6	22.81	22.77	22.64
		12	13	22.79	22.78	22.64
		25	0	22.72	22.68	22.69
5M	64QAM	1	0	22.79	22.73	22.62
		1	12	22.71	22.69	22.62
		1	24	22.77	22.74	22.68
		12	0	21.93	21.93	21.85
		12	6	21.82	21.80	21.77
		12	13	21.87	21.82	21.78
		25	0	21.80	21.75	21.73
5M	256QAM	1	0	19.87	19.80	19.73
		1	12	19.82	19.84	19.81
		1	24	19.77	19.76	19.67
		12	0	19.79	19.83	19.76
		12	6	19.82	19.80	19.78
		12	13	19.81	19.79	19.72
		25	0	19.81	19.81	19.68

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18615	18900	19185
		Frequency (MHz)		1851.5	1880	1908.5
3M	QPSK	1	0	24.71	24.71	24.61
		1	7	24.75	24.64	24.67
		1	14	24.64	24.61	24.58
		8	0	23.91	23.81	23.84
		8	3	23.87	23.79	23.76
		8	7	23.77	23.73	23.74
		15	0	23.80	23.73	23.69
3M	16QAM	1	0	23.88	23.79	23.79
		1	7	23.81	23.83	23.80
		1	14	23.80	23.75	23.78
		8	0	22.79	22.80	22.80
		8	3	22.73	22.77	22.73
		8	7	22.73	22.75	22.63
		15	0	22.72	22.67	22.64
3M	64QAM	1	0	22.75	22.70	22.72
		1	7	22.77	22.72	22.60
		1	14	22.74	22.72	22.68
		8	0	21.90	21.92	21.91
		8	3	21.86	21.84	21.83
		8	7	21.80	21.84	21.78
		15	0	21.79	21.81	21.75
3M	256QAM	1	0	19.87	19.78	19.74
		1	7	19.83	19.86	19.80
		1	14	19.80	19.73	19.70
		8	0	19.84	19.83	19.77
		8	3	19.83	19.79	19.73
		8	7	19.79	19.78	19.67
		15	0	19.85	19.82	19.67

LTE Band 2						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		18607	18900	19193
		Frequency (MHz)		1850.7	1880	1909.3
1.4M	QPSK	1	0	24.75	24.68	24.69
		1	2	24.69	24.69	24.66
		1	5	24.71	24.58	24.58
		3	0	24.63	24.56	24.57
		3	1	24.57	24.57	24.54
		3	3	24.59	24.46	24.46
		6	0	23.82	23.73	23.74
1.4M	16QAM	1	0	23.85	23.84	23.82
		1	2	23.87	23.81	23.74
		1	5	23.79	23.77	23.69
		3	0	23.57	23.50	23.51
		3	1	23.51	23.51	23.48
		3	3	23.53	23.40	23.40
		6	0	22.72	22.71	22.65
1.4M	64QAM	1	0	22.76	22.77	22.72
		1	2	22.78	22.72	22.67
		1	5	22.70	22.68	22.60
		3	0	22.56	22.49	22.50
		3	1	22.50	22.50	22.47
		3	3	22.52	22.39	22.39
		6	0	21.80	21.73	21.70
1.4M	256QAM	1	0	19.87	19.79	19.78
		1	2	19.90	19.79	19.81
		1	5	19.76	19.76	19.70
		3	0	19.83	19.79	19.69
		3	1	19.82	19.84	19.75
		3	3	19.77	19.76	19.73
		6	0	19.85	19.73	19.69

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26140	26365	26590
		Frequency (MHz)		1860	1882.5	1905
20M	QPSK	1	0	24.97	24.89	24.75
		1	50	24.96	24.87	24.83
		1	99	24.89	24.80	24.76
		50	0	24.10	24.01	23.97
		50	25	24.09	24.00	23.96
		50	50	24.07	23.98	23.94
		100	0	24.06	23.97	23.93
20M	16QAM	1	0	24.03	23.94	23.90
		1	50	24.01	23.92	23.88
		1	99	23.95	23.86	23.82
		50	0	23.09	23.00	22.96
		50	25	23.03	22.94	22.90
		50	50	23.00	22.91	22.87
		100	0	22.92	22.83	22.79
20M	64QAM	1	0	22.98	22.89	22.85
		1	50	22.95	22.86	22.82
		1	99	22.92	22.83	22.79
		50	0	22.10	22.01	21.97
		50	25	22.08	21.99	21.95
		50	50	22.05	21.96	21.92
		100	0	22.02	21.93	21.89
20M	256QAM	1	0	19.97	19.88	19.84
		1	50	19.91	19.82	19.78
		1	99	19.90	19.81	19.77
		50	0	19.88	19.79	19.75
		50	25	19.87	19.78	19.74
		50	50	19.85	19.76	19.72
		100	0	19.82	19.73	19.69

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26115	26365	26615
		Frequency (MHz)		1857.5	1882.5	1907.5
15M	QPSK	1	0	24.95	24.85	24.83
		1	37	24.94	24.87	24.78
		1	74	24.84	24.78	24.69
		36	0	24.07	23.98	23.87
		36	19	24.08	23.90	23.96
		36	39	24.06	23.94	23.89
		75	0	23.99	23.95	23.85
15M	16QAM	1	0	23.97	23.86	23.87
		1	37	23.91	23.82	23.84
		1	74	23.85	23.77	23.81
		36	0	23.05	22.94	22.88
		36	19	22.93	22.86	22.84
		36	39	22.90	22.91	22.84
		75	0	22.92	22.81	22.74
15M	64QAM	1	0	22.98	22.80	22.82
		1	37	22.90	22.84	22.72
		1	74	22.86	22.82	22.78
		36	0	22.06	21.99	21.93
		36	19	22.04	21.90	21.93
		36	39	21.95	21.95	21.85
		75	0	22.01	21.90	21.84
15M	256QAM	1	0	19.92	19.79	19.84
		1	37	19.88	19.79	19.70
		1	74	19.87	19.74	19.69
		36	0	19.84	19.74	19.75
		36	19	19.85	19.77	19.66
		36	39	19.77	19.66	19.65
		75	0	19.79	19.66	19.63

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26090	26365	26640
		Frequency (MHz)		1855	1882.5	1910
10M	QPSK	1	0	24.88	24.79	24.70
		1	24	24.92	24.83	24.75
		1	49	24.89	24.72	24.72
		25	0	24.05	23.92	23.87
		25	12	24.01	23.98	23.86
		25	25	23.97	23.96	23.86
		50	0	24.03	23.88	23.93
10M	16QAM	1	0	23.96	23.87	23.88
		1	24	23.92	23.89	23.78
		1	49	23.95	23.76	23.80
		25	0	23.07	22.98	22.93
		25	12	22.93	22.85	22.84
		25	25	22.93	22.91	22.87
		50	0	22.85	22.78	22.72
10M	64QAM	1	0	22.96	22.79	22.78
		1	24	22.91	22.85	22.82
		1	49	22.92	22.73	22.74
		25	0	22.07	21.96	21.94
		25	12	22.06	21.94	21.91
		25	25	21.95	21.94	21.87
		50	0	21.96	21.89	21.85
10M	256QAM	1	0	19.90	19.86	19.83
		1	24	19.84	19.79	19.74
		1	49	19.88	19.75	19.67
		25	0	19.88	19.72	19.74
		25	12	19.85	19.77	19.73
		25	25	19.83	19.66	19.63
		50	0	19.77	19.66	19.64

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26065	26365	26665
		Frequency (MHz)		1852.5	1882.5	1912.5
5M	QPSK	1	0	24.91	24.87	24.86
		1	12	24.92	24.85	24.74
		1	24	24.82	24.76	24.71
		12	0	24.09	24.00	23.92
		12	6	24.03	23.94	23.91
		12	13	24.03	23.93	23.94
		25	0	24.04	23.95	23.83
5M	16QAM	1	0	23.94	23.88	23.86
		1	12	23.95	23.84	23.80
		1	24	23.93	23.78	23.77
		12	0	23.07	22.97	22.91
		12	6	22.97	22.88	22.88
		12	13	22.94	22.85	22.77
		25	0	22.91	22.75	22.76
5M	64QAM	1	0	22.90	22.83	22.80
		1	12	22.88	22.86	22.73
		1	24	22.87	22.76	22.72
		12	0	22.08	21.93	21.95
		12	6	22.07	21.97	21.94
		12	13	21.98	21.89	21.89
		25	0	22.02	21.86	21.85
5M	256QAM	1	0	19.94	19.85	19.79
		1	12	19.84	19.75	19.71
		1	24	19.81	19.81	19.72
		12	0	19.80	19.73	19.75
		12	6	19.79	19.78	19.65
		12	13	19.75	19.70	19.64
		25	0	19.74	19.64	19.64

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26055	26365	26675
		Frequency (MHz)		1851.5	1882.5	1913.5
3M	QPSK	1	0	24.92	24.85	24.78
		1	7	24.89	24.83	24.75
		1	14	24.87	24.75	24.67
		8	0	24.08	24.00	23.89
		8	3	24.01	23.93	23.91
		8	7	23.98	23.92	23.91
		15	0	23.97	23.96	23.87
3M	16QAM	1	0	24.00	23.94	23.84
		1	7	23.91	23.90	23.85
		1	14	23.92	23.79	23.73
		8	0	23.03	22.91	22.90
		8	3	22.99	22.88	22.80
		8	7	22.98	22.89	22.87
		15	0	22.82	22.73	22.77
3M	64QAM	1	0	22.89	22.83	22.83
		1	7	22.87	22.84	22.78
		1	14	22.83	22.82	22.77
		8	0	22.06	21.98	21.92
		8	3	22.04	21.98	21.94
		8	7	22.00	21.95	21.82
		15	0	22.02	21.92	21.86
3M	256QAM	1	0	19.90	19.86	19.78
		1	7	19.83	19.76	19.77
		1	14	19.85	19.76	19.71
		8	0	19.87	19.75	19.68
		8	3	19.77	19.70	19.74
		8	7	19.77	19.76	19.64
		15	0	19.73	19.71	19.65

LTE Band 25						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26047	26365	26683
		Frequency (MHz)		1850.7	1882.5	1914.3
1.4M	QPSK	1	0	24.95	24.85	24.75
		1	2	24.91	24.82	24.82
		1	5	24.80	24.75	24.71
		3	0	24.06	23.97	23.96
		3	1	24.06	23.91	23.94
		3	3	23.98	23.88	23.91
		6	0	24.04	23.96	23.84
1.4M	16QAM	1	0	23.99	23.88	23.86
		1	2	23.97	23.83	23.80
		1	5	23.85	23.79	23.81
		3	0	23.09	23.00	22.90
		3	1	22.93	22.94	22.89
		3	3	22.99	22.82	22.85
		6	0	22.85	22.77	22.78
1.4M	64QAM	1	0	22.98	22.84	22.85
		1	2	22.94	22.80	22.82
		1	5	22.82	22.82	22.79
		3	0	22.80	22.62	22.61
		3	1	22.72	22.64	22.57
		3	3	22.64	22.49	22.53
		6	0	21.92	21.86	21.81
1.4M	256QAM	1	0	19.88	19.82	19.75
		1	2	19.90	19.76	19.70
		1	5	19.86	19.72	19.72
		3	0	19.80	19.76	19.69
		3	1	19.86	19.72	19.68
		3	3	19.82	19.74	19.70
		6	0	19.75	19.70	19.69

4.2 Modulation Characteristics Measurement

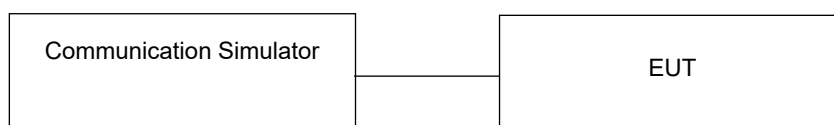
4.2.1 Limits of Modulation Characteristics

N/A

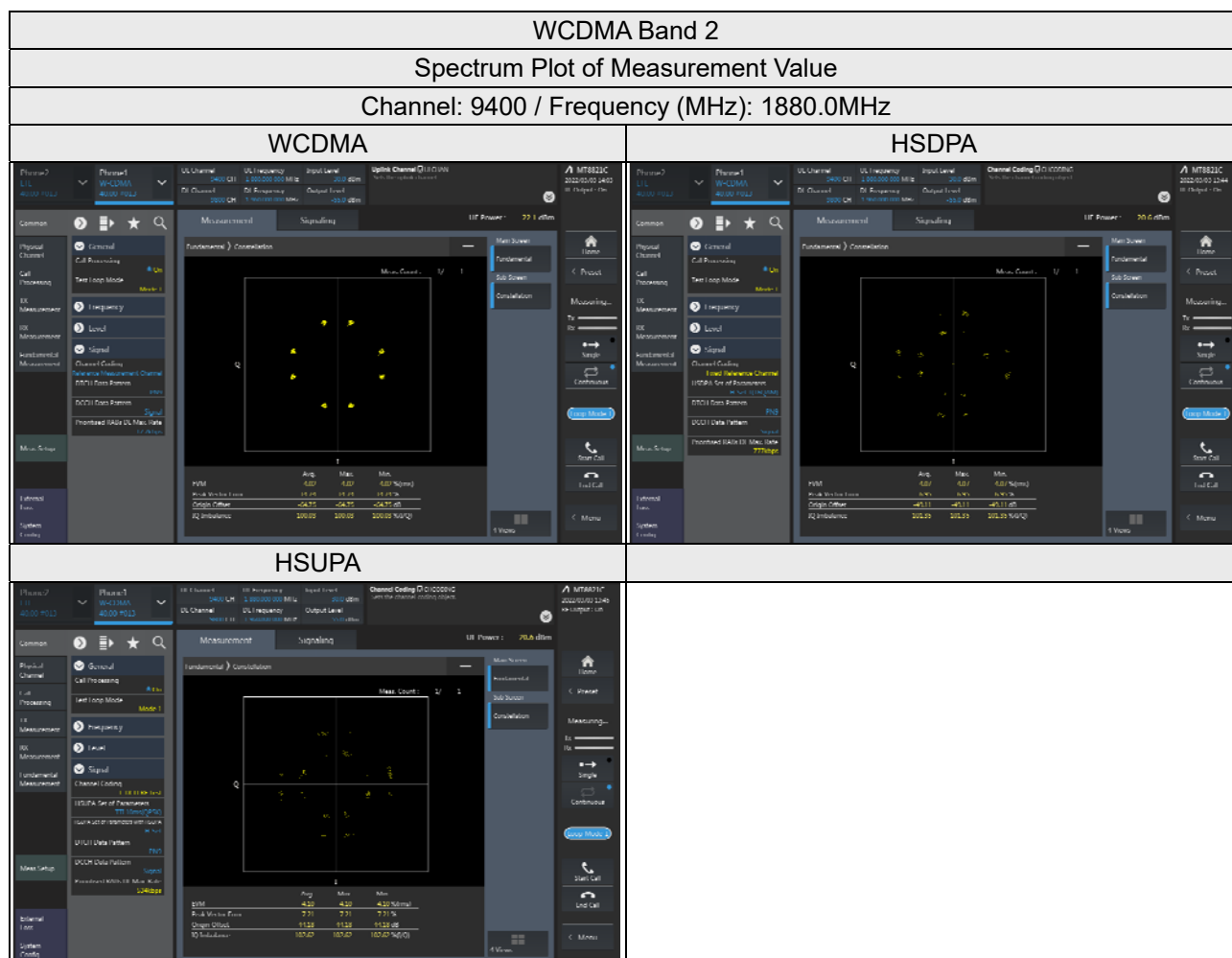
4.2.2 Test Procedure

Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.3 Test Setup



4.2.4 Test Results



LTE Band 2

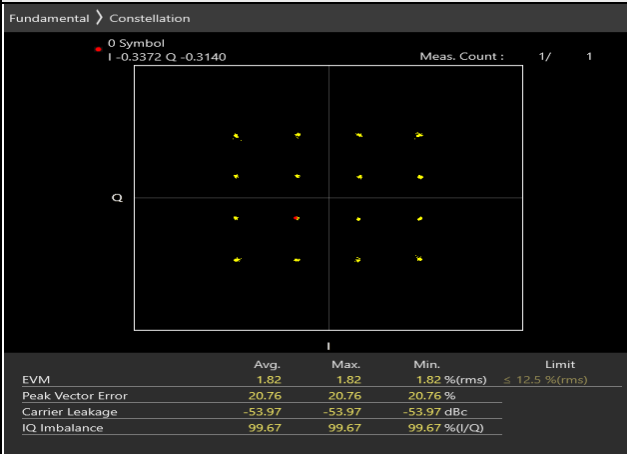
Spectrum Plot of Measurement Value

Channel: 18900 / Frequency (MHz): 1880.0MHz

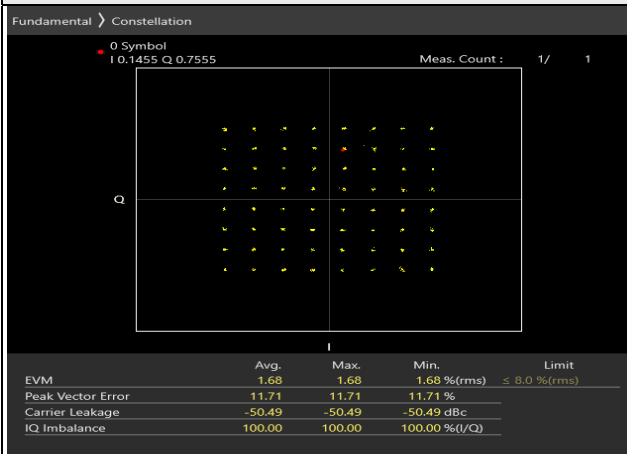
QPSK



16QAM



64QAM



256QAM



LTE Band 25

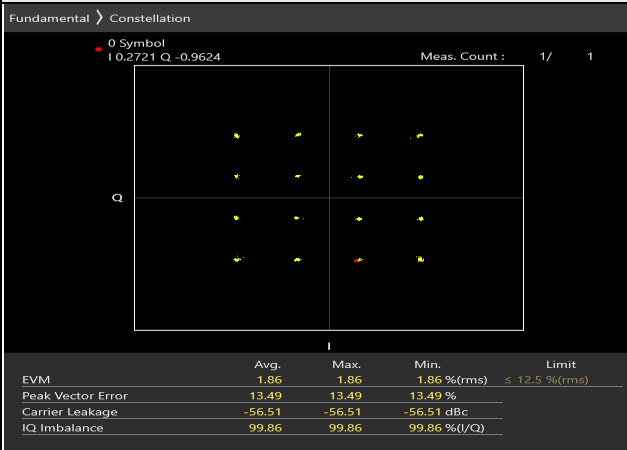
Spectrum Plot of Measurement Value

Channel: 26365 / Frequency (MHz): 1882.5MHz

QPSK



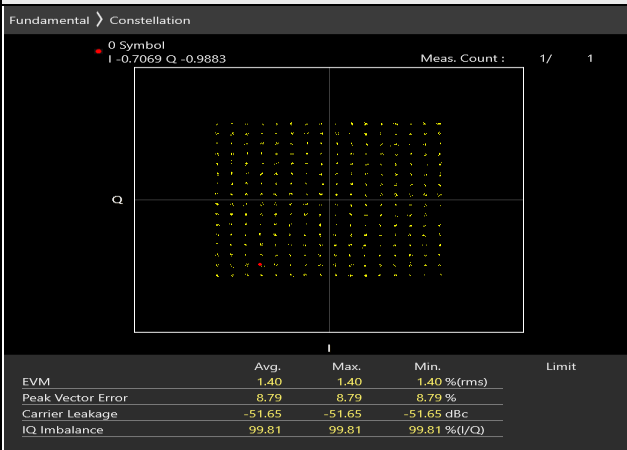
16QAM



64QAM



256QAM



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

4.3.2 Test Procedure

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

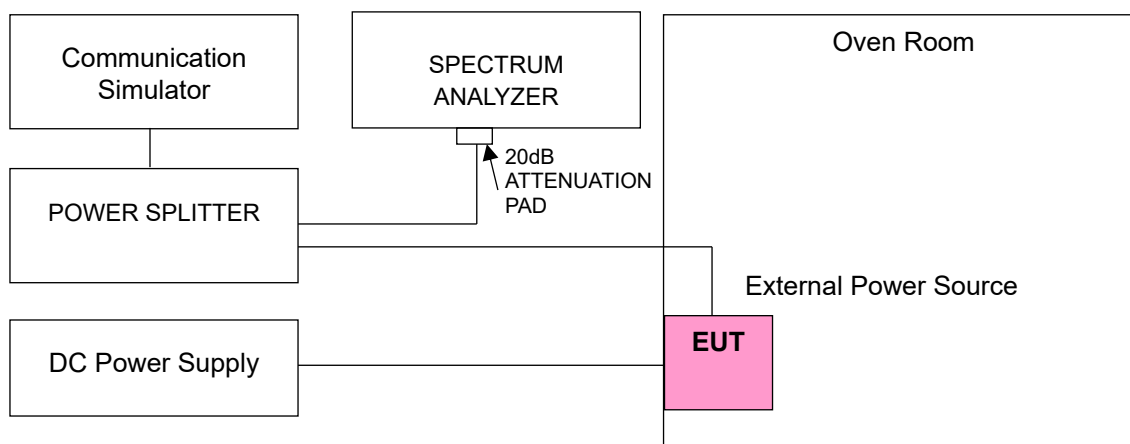
Note: The frequency error was recorded frequency error from the communication simulator.

4.3.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Radio Communication Analyzer Anritsu	MT8821C	6261806803	Feb. 16, 2022	Feb. 15, 2023
Temperature & Humidity Chamber TERCHY	HRM-120RF	931022	Jan. 03, 2022	Jan. 02, 2023
Digital Multimeter Fluke	87-III	70360742	Jun. 24, 2021	Jun. 23, 2022
DC Power Supply Topward	6306A	727263	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.4 Conducted Setup



4.3.5 Test Results

Frequency Error vs. Voltage

Voltage (Vdc)	WCDMA Band 2			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1852.400002	0.001	1907.599999	-0.001
3.85	1852.399996	-0.002	1907.599996	-0.002
3.28	1852.399997	-0.002	1907.600001	0.001

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	WCDMA Band 2			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1852.399997	-0.002	1907.600004	0.002
-20	1852.399997	-0.002	1907.600001	0.001
-10	1852.400002	0.001	1907.600004	0.002
0	1852.399997	-0.002	1907.599998	-0.001
10	1852.400003	0.002	1907.599999	-0.001
20	1852.399998	-0.001	1907.599996	-0.002
30	1852.399997	-0.002	1907.599999	-0.001
40	1852.399999	-0.001	1907.600001	0.001
50	1852.399999	-0.001	1907.600002	0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 2			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1850.700002	0.001	1909.300000	0.001
3.85	1850.700003	0.002	1909.299999	-0.001
3.28	1850.699997	-0.002	1909.299999	-0.001

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 2			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1850.699998	-0.001	1909.300003	0.002
-20	1850.700004	0.002	1909.300002	0.001
-10	1850.700002	0.001	1909.299998	-0.001
0	1850.699998	-0.001	1909.300001	0.001
10	1850.700003	0.002	1909.300003	0.002
20	1850.699997	-0.002	1909.299998	-0.001
30	1850.699997	-0.002	1909.300004	0.002
40	1850.699996	-0.002	1909.299999	-0.001
50	1850.699998	-0.001	1909.299998	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 2			
	Channel Bandwidth 3MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1851.500001	0.001	1908.500002	0.001
3.85	1851.500002	0.001	1908.500001	0.001
3.28	1851.500003	0.002	1908.499998	-0.001

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 2			
	Channel Bandwidth 3MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1851.500001	0.001	1908.499998	-0.001
-20	1851.500004	0.002	1908.500002	0.001
-10	1851.499998	-0.001	1908.500002	0.001
0	1851.499996	-0.002	1908.500003	0.002
10	1851.499998	-0.001	1908.499998	-0.001
20	1851.500003	0.002	1908.499996	-0.002
30	1851.499997	-0.002	1908.499998	-0.001
40	1851.500003	0.002	1908.500003	0.002
50	1851.499999	-0.001	1908.500003	0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 2			
	Channel Bandwidth 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1852.499998	-0.001	1907.500001	0.001
3.85	1852.500001	0.001	1907.499996	-0.002
3.28	1852.500002	0.001	1907.499996	-0.002

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 2			
	Channel Bandwidth 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1852.500002	0.001	1907.499996	-0.002
-20	1852.500002	0.001	1907.499997	-0.002
-10	1852.499997	-0.002	1907.500003	0.002
0	1852.499998	-0.001	1907.500003	0.002
10	1852.499997	-0.002	1907.499996	-0.002
20	1852.499999	-0.001	1907.499997	-0.002
30	1852.500001	0.001	1907.499998	-0.001
40	1852.499996	-0.002	1907.499999	-0.001
50	1852.500003	0.002	1907.500004	0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 2			
	Channel Bandwidth 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1854.999999	-0.001	1905.000003	0.002
3.85	1855.000003	0.002	1905.000004	0.002
3.28	1855.000004	0.002	1905.000004	0.002

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 2			
	Channel Bandwidth 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1855.000004	0.002	1904.999999	-0.001
-20	1855.000003	0.002	1904.999999	-0.001
-10	1855.000001	0.001	1905.000003	0.002
0	1854.999996	-0.002	1905.000004	0.002
10	1854.999998	-0.001	1905.000001	0.001
20	1854.999996	-0.002	1905.000004	0.002
30	1854.999997	-0.002	1905.000004	0.002
40	1854.999996	-0.002	1905.000002	0.001
50	1854.999996	-0.002	1905.000001	0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 2			
	Channel Bandwidth 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1857.500002	0.001	1902.499997	-0.002
3.85	1857.499996	-0.002	1902.499997	-0.002
3.28	1857.500004	0.002	1902.500004	0.002

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 2			
	Channel Bandwidth 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1857.499999	-0.001	1902.500002	0.001
-20	1857.499996	-0.002	1902.500002	0.001
-10	1857.500003	0.002	1902.499998	-0.001
0	1857.499998	-0.001	1902.499996	-0.002
10	1857.500002	0.001	1902.499998	-0.001
20	1857.499996	-0.002	1902.500001	0.001
30	1857.500003	0.002	1902.500004	0.002
40	1857.499998	-0.001	1902.500001	0.001
50	1857.500003	0.002	1902.499998	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 2			
	Channel Bandwidth 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1860.000003	0.002	1899.999999	-0.001
3.85	1860.000002	0.001	1900.000002	0.001
3.28	1860.000002	0.001	1900.000002	0.001

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 2			
	Channel Bandwidth 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1860.000003	0.002	1900.000003	0.002
-20	1860.000004	0.002	1900.000003	0.002
-10	1859.999996	-0.002	1900.000001	0.001
0	1860.000004	0.002	1900.000003	0.002
10	1859.999998	-0.001	1899.999999	-0.001
20	1860.000001	0.001	1900.000002	0.001
30	1859.999998	-0.001	1899.999996	-0.002
40	1859.999996	-0.002	1899.999999	-0.001
50	1859.999999	-0.001	1899.999998	-0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 25			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1850.699999	-0.001	1914.299996	-0.002
3.85	1850.700003	0.002	1914.300003	0.002
3.28	1850.699997	-0.002	1914.299998	-0.001

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 25			
	Channel Bandwidth 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1850.700001	0.001	1914.300004	0.002
-20	1850.700004	0.002	1914.300002	0.001
-10	1850.700003	0.002	1914.299997	-0.002
0	1850.699998	-0.001	1914.299997	-0.002
10	1850.700004	0.002	1914.299999	-0.001
20	1850.699997	-0.002	1914.300005	0.003
30	1850.700001	0.001	1914.300003	0.002
40	1850.699998	-0.001	1914.299996	-0.002
50	1850.699999	-0.001	1914.300003	0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 25			
	Channel Bandwidth 3MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1851.499997	-0.002	1913.500004	0.002
3.85	1851.500003	0.002	1913.500005	0.003
3.28	1851.500002	0.001	1913.500001	0.001

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 25			
	Channel Bandwidth 3MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1851.499999	-0.001	1913.500002	0.001
-20	1851.499997	-0.002	1913.500004	0.002
-10	1851.499996	-0.002	1913.500002	0.001
0	1851.499998	-0.001	1913.500003	0.002
10	1851.499996	-0.002	1913.500005	0.003
20	1851.500004	0.002	1913.499997	-0.002
30	1851.499997	-0.002	1913.500001	0.001
40	1851.500003	0.002	1913.499996	-0.002
50	1851.500003	0.002	1913.500001	0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 25			
	Channel Bandwidth 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1852.500002	0.001	1912.499996	-0.002
3.85	1852.500001	0.001	1912.499997	-0.002
3.28	1852.499999	-0.001	1912.500001	0.001

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 25			
	Channel Bandwidth 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1852.499997	-0.002	1912.499996	-0.002
-20	1852.500004	0.002	1912.500001	0.001
-10	1852.499996	-0.002	1912.499998	-0.001
0	1852.500001	0.001	1912.500004	0.002
10	1852.499999	-0.001	1912.499996	-0.002
20	1852.499996	-0.002	1912.500001	0.001
30	1852.499999	-0.001	1912.500002	0.001
40	1852.500002	0.001	1912.500002	0.001
50	1852.500001	0.001	1912.500001	0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 25			
	Channel Bandwidth 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1854.999999	-0.001	1910.000002	0.001
3.85	1854.999998	-0.001	1909.999999	-0.001
3.28	1854.999997	-0.002	1910.000003	0.002

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 25			
	Channel Bandwidth 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1854.999999	-0.001	1909.999998	-0.001
-20	1854.999997	-0.002	1910.000004	0.002
-10	1854.999999	-0.001	1909.999998	-0.001
0	1855.000001	0.001	1910.000002	0.001
10	1855.000002	0.001	1909.999999	-0.001
20	1854.999999	-0.001	1909.999997	-0.002
30	1854.999999	-0.001	1909.999997	-0.002
40	1855.000001	0.001	1909.999996	-0.002
50	1854.999996	-0.002	1909.999997	-0.002

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 25			
	Channel Bandwidth 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1857.499998	-0.001	1907.499997	-0.002
3.85	1857.500003	0.002	1907.499996	-0.002
3.28	1857.500003	0.002	1907.500004	0.002

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 25			
	Channel Bandwidth 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1857.500002	0.001	1907.499998	-0.001
-20	1857.500004	0.002	1907.499998	-0.001
-10	1857.500001	0.001	1907.500002	0.001
0	1857.500001	0.001	1907.499996	-0.002
10	1857.500004	0.002	1907.499999	-0.001
20	1857.500003	0.002	1907.500002	0.001
30	1857.500001	0.001	1907.500003	0.002
40	1857.500003	0.002	1907.499996	-0.002
50	1857.499999	-0.001	1907.500001	0.001

Frequency Error vs. Voltage

Voltage (Vdc)	LTE Band 25			
	Channel Bandwidth 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
4.43	1859.999998	-0.001	1905.000001	0.001
3.85	1860.000003	0.002	1905.000004	0.002
3.28	1859.999996	-0.002	1904.999999	-0.001

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 25			
	Channel Bandwidth 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1859.999998	-0.001	1904.999998	-0.001
-20	1860.000002	0.001	1904.999999	-0.001
-10	1859.999997	-0.002	1905.000001	0.001
0	1859.999997	-0.002	1904.999998	-0.001
10	1860.000001	0.001	1904.999998	-0.001
20	1860.000002	0.001	1904.999996	-0.002
30	1859.999996	-0.002	1904.999998	-0.001
40	1859.999999	-0.001	1904.999998	-0.001
50	1860.000004	0.002	1904.999998	-0.001