

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

Report No.: RFBHKI-WTW-P22030722-1

FCC ID: NKRUMC-STD31BPN

Test Model: UMC-STD31BPN

Received Date: May 05, 2022

Test Date: May 09 ~ May 17, 2022

Issued Date: Jul. 19. 2022

Applicant: Wistron NeWeb Corporation

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

Test Location (2): No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

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



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Release Control Record

Issue No.	Description	Date Issued
RFBHKI-WTW-P22030722-1	Original release	Jul. 19. 2022

1 Certificate of Conformity

Product: Cellular module

Brand: WNC

Test Model: UMC-STD31BPN

Sample Status: Engineering sample

Applicant: Wistron NeWeb Corporation

Test Date: May 09 ~ May 17, 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 : Celine Chou , **Date:** Jul. 19. 2022
Celine Chou / Senior Specialist

Approved by : Jeremy Lin , **Date:** Jul. 19. 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	Equivalent 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 -20.89dB at 33.88MHz.

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	3.00 dB
	30MHz ~ 200MHz	2.91 dB
	200MHz ~1000MHz	2.92 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.76 dB
	18GHz ~ 40GHz	1.77 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038B	MY60180018	Feb. 18, 2022	Feb. 17, 2023
Spectrum Analyzer KEYSIGHT	N9020B	MY60110462	Dec. 21, 2021	Dec. 20, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-995	Oct. 28, 2021	Oct. 27, 2022
HORN Antenna RF SPIN	DRH18-E	210104A18E	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	9170-995	Nov. 14, 2021	Nov. 13, 2022
Loop Antenna TESEQ	HLA 6121	45745	Jul. 21, 2021	Jul. 20, 2022
Preamplifier EMCI	EMC330N	980783	Jan. 17, 2022	Jan. 16, 2023
Preamplifier EMCI	EMC118A45SE	980810	Dec. 30, 2021	Dec. 29, 2022
Preamplifier EMCI	EMC184045SE	980787	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC104-SM-SM-(9000+2000+1000)	201230+ 201242+ 210101	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMCCFD400-NM-NM-(9000+300+500)	201252+ 201250+ 201245	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC101G-KM-KM-(5000+3000+2000)	201259+201256+201253	Jan. 17, 2022	Jan. 16, 2023
Software BV CPS	ADT_Radiated_V7.6.15.9.5	NA	NA	NA
Turn Table Max-Full	MFT-151SS-0.5T	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208675	NA	NA
Antenna Tower KaiTuo	NA	NA	NA	NA
Antenna Tower Controller KaiTuo	KT-2000	NA	NA	NA
Temperature & Humidity Chamber TERCHY	HRM-120RF	931022	Jan. 03, 2022	Jan. 02, 2023
True RMS Clamp Meter Fluke	325	31130711WS	Jun. 02, 2021	Jun. 01, 2022
DC power supply Keysight	U8002A	MY56330015	NA	NA
Radio Communication Analyzer Anritsu	MT8821C	6272278310	Jun. 23, 2021	Jun. 22, 2022
Universal Radio Communication Tester R&S	CMU200	101095	Nov. 18, 2021	Nov. 17, 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 7.

3 General Information

3.1 General Description of EUT

Product	Cellular module	
Brand	WNC	
Test Model	UMC-STD31BPN	
Sample Status	Engineering sample	
Power Supply Rating	4.0Vdc	
Modulation Type	GPRS: GMSK EDGE: 8PSK LTE: QPSK, 16QAM, 64QAM	
Operating Frequency	GPRS, EDGE	1850.2MHz ~ 1909.8MHz
	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	GPRS	1267.652mW (31.03dBm)		
	EDGE	1235.947mW (30.92dBm)		
		QPSK	16QAM	64QAM
	LTE Band 2 (Channel Bandwidth 1.4MHz)	285.102mW (24.55dBm)	228.560mW (23.59dBm)	169.044mW (22.28dBm)
	LTE Band 2 (Channel Bandwidth 3MHz)	291.072mW (24.64dBm)	230.675mW (23.63dBm)	171.791mW (22.35dBm)
	LTE Band 2 (Channel Bandwidth 5MHz)	293.089mW (24.67dBm)	231.206mW (23.64dBm)	172.584mW (22.37dBm)
	LTE Band 2 (Channel Bandwidth 10MHz)	287.740mW (24.59dBm)	224.905mW (23.52dBm)	168.655mW (22.27dBm)
	LTE Band 2 (Channel Bandwidth 15MHz)	283.139mW (24.52dBm)	229.615mW (23.61dBm)	172.187mW (22.36dBm)
	LTE Band 2 (Channel Bandwidth 20MHz)	291.743mW (24.65dBm)	230.675mW (23.63dBm)	172.584mW (22.37dBm)
	LTE Band 25 (Channel Bandwidth 1.4MHz)	276.694mW (24.42dBm)	219.786mW (23.42dBm)	165.577mW (22.19dBm)
	LTE Band 25 (Channel Bandwidth 3MHz)	281.838mW (24.50dBm)	222.844mW (23.48dBm)	164.437mW (22.16dBm)
	LTE Band 25 (Channel Bandwidth 5MHz)	281.838mW (24.50dBm)	227.510mW (23.57dBm)	169.824mW (22.30dBm)
	LTE Band 25 (Channel Bandwidth 10MHz)	274.157mW (24.38dBm)	216.770mW (23.36dBm)	163.682mW (22.14dBm)
	LTE Band 25 (Channel Bandwidth 15MHz)	275.423mW (24.40dBm)	221.309mW (23.45dBm)	163.682mW (22.14dBm)
	LTE Band 25 (Channel Bandwidth 20MHz)	274.789mW (24.39dBm)	221.309mW (23.45dBm)	164.816mW (22.17dBm)
	Emission Designator	GPRS	248KGXW	
EDGE		250KG7W		
		QPSK	16QAM	64QAM
LTE Band 2 (Channel Bandwidth 1.4MHz)		1M09G7D	1M09D7W	1M09D7W
LTE Band 2 (Channel Bandwidth 3MHz)		2M69G7D	2M69D7W	2M69D7W
LTE Band 2 (Channel Bandwidth 5MHz)		4M50G7D	4M49D7W	4M50D7W
LTE Band 2 (Channel Bandwidth 10MHz)		8M99G7D	8M99D7W	8M99D7W
LTE Band 2 (Channel Bandwidth 15MHz)		13M5G7D	13M5D7W	13M5D7W
LTE Band 2 (Channel Bandwidth 20MHz)		18M0G7D	18M0D7W	18M0D7W
LTE Band 25 (Channel Bandwidth 1.4MHz)		1M09G7D	1M09D7W	1M09D7W
LTE Band 25 (Channel Bandwidth 3MHz)		2M69G7D	2M69D7W	2M69D7W
LTE Band 25 (Channel Bandwidth 5MHz)		4M50G7D	4M50D7W	4M50D7W
LTE Band 25 (Channel Bandwidth 10MHz)		8M99G7D	8M99D7W	8M99D7W
LTE Band 25 (Channel Bandwidth 15MHz)		13M5G7D	13M5D7W	13M5D7W
LTE Band 25 (Channel Bandwidth 20MHz)	18M0G7D	18M0D7W	18M0D7W	

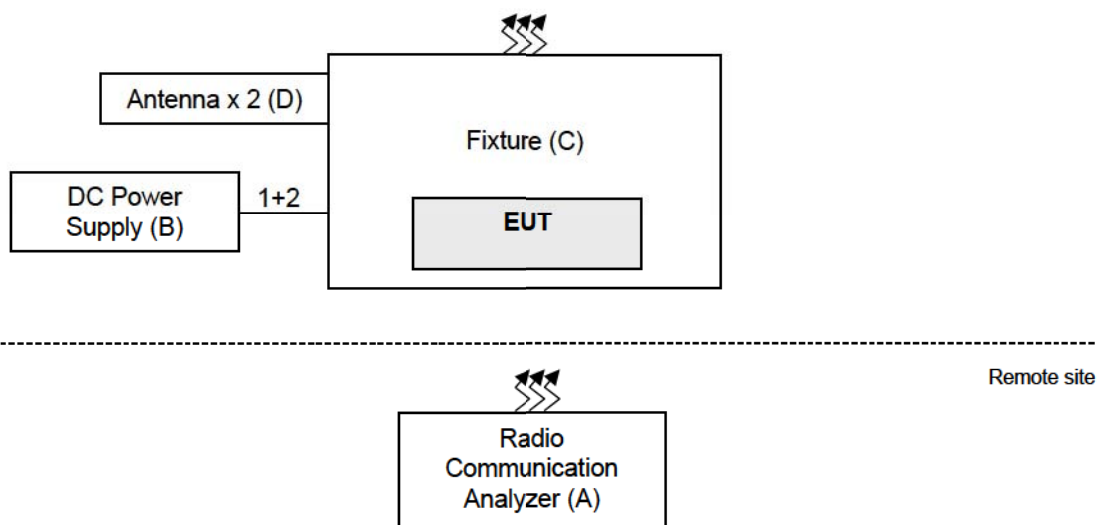
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Cable Supplied	NA

Note: The antenna information is listed as below. (For support unit only)

Type	Connector	Gain (dBi)											
		GSM 850	GSM 1900	LTE B2	LTE B4	LTE B5	LTE B7	LTE B12	LTE B17	LTE B25	LTE B26	LTE B66	LTE B71
Dipole	SMA	1.82	1.80	1.80	1.57	1.82	2.15	2.02	2.02	1.80	1.82	1.57	2.02

* 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



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	6272278310	NA	For LTE
		R&S	CMU200	101095	NA	For GPRS, EDGE
B.	DC Power Supply	JIN YIH Technology	SP3051	SP30512113422	NA	-
C.	Fixture	NA	NA	NA	NA	Provided by manufacturer
D.	Antenna x 2	WNC	RF21S00802A	NA	NA	Provided by manufacturer

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Power Cable	1	1.8	N	0	-
2.	DC Cable	1	0.12	N	0	-

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
GPRS, EDGE	X-plane
LTE Band 2	X-plane
LTE Band 25	X-plane

GPRS, EDGE Mode

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Modulation
-	EIRP	512 to 810	512 (1850.2MHz), 661 (1880.0MHz), 810 (1909.8MHz)	GPRS, EDGE
-	Modulation Characteristics	512 to 810	661 (1880.0MHz)	GPRS, EDGE
-	Frequency Stability	512 to 810	512 (1850.2MHz), 810 (1909.8MHz)	GPRS, EDGE
-	Occupied Bandwidth	512 to 810	512 (1850.2MHz), 661 (1880.0MHz), 810 (1909.8MHz)	GPRS, EDGE
-	Band Edge	512 to 810	512(1850.2MHz), 810(1909.8MHz)	GPRS, EDGE
-	Peak To Average Ratio	512 to 810	512 (1850.2MHz), 661 (1880.0MHz), 810 (1909.8MHz)	GPRS, EDGE
-	Conducted Emission	512 to 810	512 (1850.2MHz), 661 (1880.0MHz), 810 (1909.8MHz)	GPRS, EDGE
-	Radiated Emission	512 to 810	512 (1850.2MHz), 661 (1880.0MHz), 810 (1909.8MHz)	GPRS, EDGE

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	RB #
-	EIRP	18607 to 19193	18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	1 Half Full
		18615 to 19185	18615 (1851.5MHz), 18900 (1880.0MHz), 19185 (1908.5MHz)	3MHz	QPSK / 16QAM / 64QAM	1 Half Full
		18625 to 19175	18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 Half Full
		18650 to 19150	18650 (1855.0MHz), 18900 (1880.0MHz), 19150 (1905.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 Half Full
		18675 to 19125	18675 (1857.5MHz), 18900 (1880.0MHz), 19125 (1902.5MHz)	15MHz	QPSK / 16QAM / 64QAM	1 Half Full
		18700 to 19100	18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz)	20MHz	QPSK / 16QAM / 64QAM	1 Half Full
-	Modulation Characteristics	18700 to 19100	18900 (1880.0MHz)	20MHz	QPSK / 16QAM / 64QAM	Full
-	Frequency Stability	18607 to 19193	18607 (1850.7MHz), 19193 (1909.3MHz)	1.4MHz	QPSK	Full
		18615 to 19185	18615 (1851.5MHz), 19185 (1908.5MHz)	3MHz	QPSK	Full
		18625 to 19175	18625 (1852.5MHz), 19175 (1907.5MHz)	5MHz	QPSK	Full
		18650 to 19150	18650 (1855.0MHz), 19150 (1905.0MHz)	10MHz	QPSK	Full
		18675 to 19125	18675 (1857.5MHz), 19125 (1902.5MHz)	15MHz	QPSK	Full
		18700 to 19100	18700 (1860.0MHz), 19100 (1900.0MHz)	20MHz	QPSK	Full
-	Occupied Bandwidth	18607 to 19193	18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	Full
		18615 to 19185	18615 (1851.5MHz), 18900 (1880.0MHz), 19185 (1908.5MHz)	3MHz	QPSK / 16QAM / 64QAM	Full
		18625 to 19175	18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz)	5MHz	QPSK / 16QAM / 64QAM	Full
		18650 to 19150	18650 (1855.0MHz), 18900 (1880.0MHz), 19150 (1905.0MHz)	10MHz	QPSK / 16QAM / 64QAM	Full
		18675 to 19125	18675 (1857.5MHz), 18900 (1880.0MHz), 19125 (1902.5MHz)	15MHz	QPSK / 16QAM / 64QAM	Full
		18700 to 19100	18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz)	20MHz	QPSK / 16QAM / 64QAM	Full

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

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

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 36.521-1 Section 6.6.3.1.4.1, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

LTE Band 25

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	RB #
-	EIRP	26047 to 26683	26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	1 Half Full
		26055 to 26675	26055 (1851.5MHz), 26365 (1882.5MHz), 26675 (1913.5MHz)	3MHz	QPSK / 16QAM / 64QAM	1 Half Full
		26065 to 26665	26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 Half Full
		26090 to 26640	26090 (1855.0MHz), 26365 (1882.5MHz), 26640 (1910.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 Half Full
		26115 to 26615	26115 (1857.5MHz), 26365 (1882.5MHz), 26615 (1907.5MHz)	15MHz	QPSK / 16QAM / 64QAM	1 Half Full
		26140 to 26590	26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz)	20MHz	QPSK / 16QAM / 64QAM	1 Half Full
-	Modulation Characteristics	26140 to 26590	26365 (1882.5MHz)	20MHz	QPSK / 16QAM / 64QAM	Full
-	Frequency Stability	26047 to 26683	26047 (1850.7MHz), 26683 (1914.3MHz)	1.4MHz	QPSK	Full
		26055 to 26675	26055 (1851.5MHz), 26675 (1913.5MHz)	3MHz	QPSK	Full
		26065 to 26665	26065 (1852.5MHz), 26665 (1912.5MHz)	5MHz	QPSK	Full
		26090 to 26640	26090 (1855.0MHz), 26640 (1910.0MHz)	10MHz	QPSK	Full
		26115 to 26615	26115 (1857.5MHz), 26615 (1907.5MHz)	15MHz	QPSK	Full
		26140 to 26590	26140 (1860.0MHz), 26590 (1905.0MHz)	20MHz	QPSK	Full
-	Occupied Bandwidth	26047 to 26683	26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	Full
		26055 to 26675	26055 (1851.5MHz), 26365 (1882.5MHz), 26675 (1913.5MHz)	3MHz	QPSK / 16QAM / 64QAM	Full
		26065 to 26665	26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz)	5MHz	QPSK / 16QAM / 64QAM	Full
		26090 to 26640	26090 (1855.0MHz), 26365 (1882.5MHz), 26640 (1910.0MHz)	10MHz	QPSK / 16QAM / 64QAM	Full
		26115 to 26615	26115 (1857.5MHz), 26365 (1882.5MHz), 26615 (1907.5MHz)	15MHz	QPSK / 16QAM / 64QAM	Full
		26140 to 26590	26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz)	20MHz	QPSK / 16QAM / 64QAM	Full

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

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

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 36.521-1 Section 6.6.3.1.4.1, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP	25deg. C, 60%RH	4.0Vdc	Noah Chang
Modulation Characteristics	25deg. C, 60%RH	4.0Vdc	Noah Chang
Frequency Stability	25deg. C, 60%RH	4.0Vdc	Noah Chang
Occupied Bandwidth	25deg. C, 60%RH	4.0Vdc	Noah Chang
Band Edge	25deg. C, 60%RH	4.0Vdc	Noah Chang
Peak To Average Ratio	25deg. C, 60%RH	4.0Vdc	Noah Chang
Conducted Emission	25deg. C, 60%RH	4.0Vdc	Noah Chang
Radiated Emission	23deg. C, 72%RH	4.0Vdc	Edison Lee

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 GPRS, EDGE, 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	GPRS, EDGE 1900		
Channel	512	661	810
Frequency	1850.2	1880	1909.8
GPRS	29.19	29.23	29.20
EDGE	29.12	29.11	29.09

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	22.65	22.66	22.63
		1	50	22.85	22.73	22.74
		1	99	22.34	22.25	22.44
		50	0	21.72	21.62	21.72
		50	25	21.61	21.67	21.82
		50	50	21.67	21.67	21.66
		100	0	21.55	21.68	21.61
20M	16QAM	1	0	21.59	21.73	21.61
		1	50	21.81	21.68	21.83
		1	99	21.26	21.20	21.50
		50	0	20.80	20.66	20.72
		50	25	20.57	20.59	20.85
		50	50	20.73	20.73	20.57
		100	0	20.49	20.60	20.52
20M	64QAM	1	0	20.25	20.37	20.33
		1	50	20.44	20.35	20.57
		1	99	20.02	20.00	20.11
		50	0	19.56	19.45	19.46
		50	25	19.26	19.37	19.47
		50	50	19.45	19.48	19.24
		100	0	19.16	19.25	19.17

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	22.67	22.59	22.65
		1	37	22.69	22.72	22.70
		1	74	22.48	22.39	22.39
		36	0	21.66	21.75	21.77
		36	19	21.69	21.67	21.55
		36	39	21.67	21.51	21.64
		75	0	21.67	21.47	21.59
15M	16QAM	1	0	21.61	21.52	21.63
		1	37	21.65	21.81	21.64
		1	74	21.38	21.46	21.41
		36	0	20.63	20.82	20.84
		36	19	20.76	20.71	20.50
		36	39	20.70	20.41	20.72
		75	0	20.75	20.39	20.68
15M	64QAM	1	0	20.38	20.16	20.25
		1	37	20.31	20.56	20.36
		1	74	20.15	20.18	20.15
		36	0	19.38	19.55	19.48
		36	19	19.41	19.41	19.22
		36	39	19.45	19.07	19.47
		75	0	19.51	19.05	19.43

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	22.68	22.57	22.57
		1	24	22.79	22.60	22.64
		1	49	22.31	22.35	22.32
		25	0	21.64	21.64	21.62
		25	12	21.54	21.71	21.58
		25	25	21.64	21.48	21.45
		50	0	21.66	21.43	21.50
10M	16QAM	1	0	21.59	21.58	21.63
		1	24	21.72	21.56	21.69
		1	49	21.39	21.37	21.26
		25	0	20.69	20.67	20.58
		25	12	20.60	20.75	20.58
		25	25	20.71	20.48	20.50
		50	0	20.65	20.50	20.45
10M	64QAM	1	0	20.28	20.29	20.40
		1	24	20.47	20.20	20.39
		1	49	20.17	20.03	19.89
		25	0	19.32	19.30	19.20
		25	12	19.25	19.45	19.26
		25	25	19.45	19.25	19.16
		50	0	19.45	19.30	19.24

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	22.61	22.63	22.65
		1	12	22.60	22.74	22.87
		1	24	22.48	22.28	22.31
		12	0	21.65	21.54	21.55
		12	6	21.70	21.60	21.69
		12	13	21.53	21.44	21.59
		25	0	21.55	21.66	21.48
5M	16QAM	1	0	21.65	21.68	21.61
		1	12	21.68	21.82	21.84
		1	24	21.38	21.37	21.33
		12	0	20.69	20.48	20.49
		12	6	20.78	20.65	20.76
		12	13	20.49	20.44	20.50
		25	0	20.53	20.75	20.40
5M	64QAM	1	0	20.25	20.46	20.37
		1	12	20.34	20.45	20.57
		1	24	20.03	20.10	20.02
		12	0	19.47	19.17	19.21
		12	6	19.56	19.37	19.49
		12	13	19.19	19.13	19.29
		25	0	19.20	19.50	19.04

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	22.55	22.73	22.73
		1	7	22.65	22.84	22.76
		1	14	22.30	22.26	22.43
		8	0	21.77	21.82	21.76
		8	3	21.81	21.83	21.69
		8	7	21.69	21.63	21.53
		15	0	21.48	21.55	21.46
3M	16QAM	1	0	21.64	21.64	21.81
		1	7	21.69	21.83	21.66
		1	14	21.35	21.18	21.34
		8	0	20.83	20.76	20.73
		8	3	20.76	20.74	20.79
		8	7	20.63	20.68	20.56
		15	0	20.41	20.54	20.41
3M	64QAM	1	0	20.31	20.41	20.55
		1	7	20.30	20.55	20.32
		1	14	20.11	19.88	19.94
		8	0	19.58	19.38	19.38
		8	3	19.40	19.50	19.53
		8	7	19.25	19.46	19.20
		15	0	19.08	19.20	19.18

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	22.70	22.52	22.69
		1	2	22.60	22.75	22.64
		1	5	22.21	22.38	22.34
		3	0	22.66	22.49	22.54
		3	1	22.36	22.48	22.31
		3	3	22.58	22.61	22.43
		6	0	21.52	21.59	21.65
1.4M	16QAM	1	0	21.72	21.52	21.71
		1	2	21.69	21.79	21.61
		1	5	21.19	21.29	21.32
		3	0	21.68	21.51	21.64
		3	1	21.36	21.40	21.35
		3	3	21.59	21.62	21.33
		6	0	20.46	20.56	20.65
1.4M	64QAM	1	0	20.44	20.23	20.37
		1	2	20.32	20.48	20.24
		1	5	19.84	19.96	20.04
		3	0	20.40	20.26	20.39
		3	1	20.04	20.01	19.97
		3	3	20.35	20.38	20.04
		6	0	19.16	19.17	19.39

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	22.55	22.55	22.57
		1	50	22.49	22.44	22.59
		1	99	22.38	22.35	22.30
		50	0	21.49	21.72	21.48
		50	25	21.62	21.59	21.64
		50	50	21.32	21.32	21.41
		100	0	21.58	21.60	21.37
20M	16QAM	1	0	21.55	21.51	21.65
		1	50	21.44	21.40	21.63
		1	99	21.31	21.43	21.29
		50	0	20.54	20.78	20.51
		50	25	20.68	20.61	20.55
		50	50	20.42	20.41	20.50
		100	0	20.51	20.52	20.41
20M	64QAM	1	0	20.20	20.23	20.31
		1	50	20.20	20.16	20.37
		1	99	20.01	20.09	19.95
		50	0	19.19	19.49	19.25
		50	25	19.36	19.37	19.20
		50	50	19.06	19.06	19.29
		100	0	19.19	19.20	19.14

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	22.57	22.50	22.47
		1	37	22.60	22.56	22.52
		1	74	22.12	22.32	22.26
		36	0	21.49	21.65	21.62
		36	19	21.60	21.64	21.73
		36	39	21.21	21.47	21.37
		75	0	21.60	21.55	21.39
15M	16QAM	1	0	21.53	21.56	21.52
		1	37	21.65	21.51	21.55
		1	74	21.12	21.26	21.36
		36	0	20.51	20.66	20.69
		36	19	20.51	20.58	20.76
		36	39	20.14	20.53	20.27
		75	0	20.68	20.60	20.38
15M	64QAM	1	0	20.26	20.33	20.13
		1	37	20.30	20.18	20.34
		1	74	19.91	19.89	20.08
		36	0	19.30	19.41	19.36
		36	19	19.23	19.21	19.45
		36	39	18.75	19.18	19.05
		75	0	19.46	19.29	19.06

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	22.58	22.40	22.39
		1	24	22.47	22.48	22.53
		1	49	22.27	22.36	22.26
		25	0	21.67	21.78	21.49
		25	12	21.54	21.59	21.73
		25	25	21.22	21.45	21.25
		50	0	21.44	21.40	21.55
10M	16QAM	1	0	21.56	21.34	21.37
		1	24	21.44	21.53	21.55
		1	49	21.37	21.42	21.24
		25	0	20.71	20.79	20.57
		25	12	20.44	20.67	20.68
		25	25	20.19	20.43	20.31
		50	0	20.47	20.41	20.58
10M	64QAM	1	0	20.34	20.04	20.06
		1	24	20.19	20.25	20.21
		1	49	20.09	20.19	19.84
		25	0	19.38	19.48	19.19
		25	12	19.18	19.45	19.38
		25	25	18.79	19.22	18.94
		50	0	19.12	19.05	19.23

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	22.56	22.31	22.54
		1	12	22.69	22.67	22.70
		1	24	22.36	22.13	22.17
		12	0	21.60	21.72	21.67
		12	6	21.66	21.48	21.48
		12	13	21.29	21.44	21.44
		25	0	21.49	21.39	21.41
5M	16QAM	1	0	21.65	21.23	21.57
		1	12	21.77	21.71	21.71
		1	24	21.34	21.05	21.16
		12	0	20.65	20.81	20.62
		12	6	20.66	20.52	20.44
		12	13	20.34	20.36	20.48
		25	0	20.42	20.29	20.50
5M	64QAM	1	0	20.42	19.88	20.32
		1	12	20.50	20.47	20.37
		1	24	20.09	19.76	19.78
		12	0	19.29	19.55	19.25
		12	6	19.31	19.16	19.10
		12	13	18.94	19.16	19.28
		25	0	19.05	18.90	19.27

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	22.58	22.40	22.34
		1	7	22.69	22.60	22.70
		1	14	22.23	22.32	22.14
		8	0	21.73	21.57	21.65
		8	3	21.67	21.60	21.63
		8	7	21.29	21.34	21.39
		15	0	21.34	21.45	21.43
3M	16QAM	1	0	21.57	21.45	21.38
		1	7	21.66	21.58	21.68
		1	14	21.24	21.39	21.20
		8	0	20.71	20.62	20.59
		8	3	20.69	20.65	20.64
		8	7	20.26	20.43	20.33
		15	0	20.33	20.51	20.41
3M	64QAM	1	0	20.21	20.22	20.15
		1	7	20.31	20.34	20.36
		1	14	19.91	20.02	19.85
		8	0	19.47	19.38	19.21
		8	3	19.49	19.25	19.31
		8	7	18.86	19.11	19.10
		15	0	19.03	19.14	19.03

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	22.16	22.27	22.39
		1	2	22.42	22.61	22.57
		1	5	22.20	22.28	22.04
		3	0	22.44	22.43	22.62
		3	1	22.48	22.51	22.50
		3	3	22.42	22.50	22.50
		6	0	21.44	21.46	21.46
1.4M	16QAM	1	0	21.17	21.27	21.45
		1	2	21.48	21.59	21.62
		1	5	21.27	21.21	21.02
		3	0	21.36	21.35	21.62
		3	1	21.56	21.48	21.43
		3	3	21.49	21.45	21.47
		6	0	20.51	20.43	20.42
1.4M	64QAM	1	0	19.96	20.04	20.07
		1	2	20.08	20.24	20.39
		1	5	19.88	19.98	19.75
		3	0	20.09	20.05	20.33
		3	1	20.33	20.26	20.15
		3	3	20.17	20.22	20.10
		6	0	19.28	19.08	19.06

EIRP Power (dBm)

Band	GPRS, EDGE 1900		
Channel	512	661	810
Frequency	1850.2	1880	1909.8
GPRS	30.99	31.03	31.00
EDGE	30.92	30.91	30.89

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.45	24.46	24.43
		1	50	24.65	24.53	24.54
		1	99	24.14	24.05	24.24
		50	0	23.52	23.42	23.52
		50	25	23.41	23.47	23.62
		50	50	23.47	23.47	23.46
		100	0	23.35	23.48	23.41
20M	16QAM	1	0	23.39	23.53	23.41
		1	50	23.61	23.48	23.63
		1	99	23.06	23.00	23.30
		50	0	22.60	22.46	22.52
		50	25	22.37	22.39	22.65
		50	50	22.53	22.53	22.37
		100	0	22.29	22.40	22.32
20M	64QAM	1	0	22.05	22.17	22.13
		1	50	22.24	22.15	22.37
		1	99	21.82	21.80	21.91
		50	0	21.36	21.25	21.26
		50	25	21.06	21.17	21.27
		50	50	21.25	21.28	21.04
		100	0	20.96	21.05	20.97

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.47	24.39	24.45
		1	37	24.49	24.52	24.50
		1	74	24.28	24.19	24.19
		36	0	23.46	23.55	23.57
		36	19	23.49	23.47	23.35
		36	39	23.47	23.31	23.44
		75	0	23.47	23.27	23.39
15M	16QAM	1	0	23.41	23.32	23.43
		1	37	23.45	23.61	23.44
		1	74	23.18	23.26	23.21
		36	0	22.43	22.62	22.64
		36	19	22.56	22.51	22.30
		36	39	22.50	22.21	22.52
		75	0	22.55	22.19	22.48
15M	64QAM	1	0	22.18	21.96	22.05
		1	37	22.11	22.36	22.16
		1	74	21.95	21.98	21.95
		36	0	21.18	21.35	21.28
		36	19	21.21	21.21	21.02
		36	39	21.25	20.87	21.27
		75	0	21.31	20.85	21.23

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.48	24.37	24.37
		1	24	24.59	24.40	24.44
		1	49	24.11	24.15	24.12
		25	0	23.44	23.44	23.42
		25	12	23.34	23.51	23.38
		25	25	23.44	23.28	23.25
		50	0	23.46	23.23	23.30
10M	16QAM	1	0	23.39	23.38	23.43
		1	24	23.52	23.36	23.49
		1	49	23.19	23.17	23.06
		25	0	22.49	22.47	22.38
		25	12	22.40	22.55	22.38
		25	25	22.51	22.28	22.30
		50	0	22.45	22.30	22.25
10M	64QAM	1	0	22.08	22.09	22.20
		1	24	22.27	22.00	22.19
		1	49	21.97	21.83	21.69
		25	0	21.12	21.10	21.00
		25	12	21.05	21.25	21.06
		25	25	21.25	21.05	20.96
		50	0	21.25	21.10	21.04

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.41	24.43	24.45
		1	12	24.40	24.54	24.67
		1	24	24.28	24.08	24.11
		12	0	23.45	23.34	23.35
		12	6	23.50	23.40	23.49
		12	13	23.33	23.24	23.39
		25	0	23.35	23.46	23.28
5M	16QAM	1	0	23.45	23.48	23.41
		1	12	23.48	23.62	23.64
		1	24	23.18	23.17	23.13
		12	0	22.49	22.28	22.29
		12	6	22.58	22.45	22.56
		12	13	22.29	22.24	22.30
		25	0	22.33	22.55	22.20
5M	64QAM	1	0	22.05	22.26	22.17
		1	12	22.14	22.25	22.37
		1	24	21.83	21.90	21.82
		12	0	21.27	20.97	21.01
		12	6	21.36	21.17	21.29
		12	13	20.99	20.93	21.09
		25	0	21.00	21.30	20.84

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.35	24.53	24.53
		1	7	24.45	24.64	24.56
		1	14	24.10	24.06	24.23
		8	0	23.57	23.62	23.56
		8	3	23.61	23.63	23.49
		8	7	23.49	23.43	23.33
		15	0	23.28	23.35	23.26
3M	16QAM	1	0	23.44	23.44	23.61
		1	7	23.49	23.63	23.46
		1	14	23.15	22.98	23.14
		8	0	22.63	22.56	22.53
		8	3	22.56	22.54	22.59
		8	7	22.43	22.48	22.36
		15	0	22.21	22.34	22.21
3M	64QAM	1	0	22.11	22.21	22.35
		1	7	22.10	22.35	22.12
		1	14	21.91	21.68	21.74
		8	0	21.38	21.18	21.18
		8	3	21.20	21.30	21.33
		8	7	21.05	21.26	21.00
		15	0	20.88	21.00	20.98

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.50	24.32	24.49
		1	2	24.40	24.55	24.44
		1	5	24.01	24.18	24.14
		3	0	24.46	24.29	24.34
		3	1	24.16	24.28	24.11
		3	3	24.38	24.41	24.23
		6	0	23.32	23.39	23.45
1.4M	16QAM	1	0	23.52	23.32	23.51
		1	2	23.49	23.59	23.41
		1	5	22.99	23.09	23.12
		3	0	23.48	23.31	23.44
		3	1	23.16	23.20	23.15
		3	3	23.39	23.42	23.13
		6	0	22.26	22.36	22.45
1.4M	64QAM	1	0	22.24	22.03	22.17
		1	2	22.12	22.28	22.04
		1	5	21.64	21.76	21.84
		3	0	22.20	22.06	22.19
		3	1	21.84	21.81	21.77
		3	3	22.15	22.18	21.84
		6	0	20.96	20.97	21.19

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.35	24.35	24.37
		1	50	24.29	24.24	24.39
		1	99	24.18	24.15	24.10
		50	0	23.29	23.52	23.28
		50	25	23.42	23.39	23.44
		50	50	23.12	23.12	23.21
		100	0	23.38	23.40	23.17
20M	16QAM	1	0	23.35	23.31	23.45
		1	50	23.24	23.20	23.43
		1	99	23.11	23.23	23.09
		50	0	22.34	22.58	22.31
		50	25	22.48	22.41	22.35
		50	50	22.22	22.21	22.30
		100	0	22.31	22.32	22.21
20M	64QAM	1	0	22.00	22.03	22.11
		1	50	22.00	21.96	22.17
		1	99	21.81	21.89	21.75
		50	0	20.99	21.29	21.05
		50	25	21.16	21.17	21.00
		50	50	20.86	20.86	21.09
		100	0	20.99	21.00	20.94

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.37	24.30	24.27
		1	37	24.40	24.36	24.32
		1	74	23.92	24.12	24.06
		36	0	23.29	23.45	23.42
		36	19	23.40	23.44	23.53
		36	39	23.01	23.27	23.17
		75	0	23.40	23.35	23.19
15M	16QAM	1	0	23.33	23.36	23.32
		1	37	23.45	23.31	23.35
		1	74	22.92	23.06	23.16
		36	0	22.31	22.46	22.49
		36	19	22.31	22.38	22.56
		36	39	21.94	22.33	22.07
		75	0	22.48	22.40	22.18
15M	64QAM	1	0	22.06	22.13	21.93
		1	37	22.10	21.98	22.14
		1	74	21.71	21.69	21.88
		36	0	21.10	21.21	21.16
		36	19	21.03	21.01	21.25
		36	39	20.55	20.98	20.85
		75	0	21.26	21.09	20.86

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.38	24.20	24.19
		1	24	24.27	24.28	24.33
		1	49	24.07	24.16	24.06
		25	0	23.47	23.58	23.29
		25	12	23.34	23.39	23.53
		25	25	23.02	23.25	23.05
		50	0	23.24	23.20	23.35
10M	16QAM	1	0	23.36	23.14	23.17
		1	24	23.24	23.33	23.35
		1	49	23.17	23.22	23.04
		25	0	22.51	22.59	22.37
		25	12	22.24	22.47	22.48
		25	25	21.99	22.23	22.11
		50	0	22.27	22.21	22.38
10M	64QAM	1	0	22.14	21.84	21.86
		1	24	21.99	22.05	22.01
		1	49	21.89	21.99	21.64
		25	0	21.18	21.28	20.99
		25	12	20.98	21.25	21.18
		25	25	20.59	21.02	20.74
		50	0	20.92	20.85	21.03

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.36	24.11	24.34
		1	12	24.49	24.47	24.50
		1	24	24.16	23.93	23.97
		12	0	23.40	23.52	23.47
		12	6	23.46	23.28	23.28
		12	13	23.09	23.24	23.24
		25	0	23.29	23.19	23.21
5M	16QAM	1	0	23.45	23.03	23.37
		1	12	23.57	23.51	23.51
		1	24	23.14	22.85	22.96
		12	0	22.45	22.61	22.42
		12	6	22.46	22.32	22.24
		12	13	22.14	22.16	22.28
		25	0	22.22	22.09	22.30
5M	64QAM	1	0	22.22	21.68	22.12
		1	12	22.30	22.27	22.17
		1	24	21.89	21.56	21.58
		12	0	21.09	21.35	21.05
		12	6	21.11	20.96	20.90
		12	13	20.74	20.96	21.08
		25	0	20.85	20.70	21.07

*EIRP = Conducted + antenna gain (1.80dBi)

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	24.38	24.20	24.14
		1	7	24.49	24.40	24.50
		1	14	24.03	24.12	23.94
		8	0	23.53	23.37	23.45
		8	3	23.47	23.40	23.43
		8	7	23.09	23.14	23.19
		15	0	23.14	23.25	23.23
3M	16QAM	1	0	23.37	23.25	23.18
		1	7	23.46	23.38	23.48
		1	14	23.04	23.19	23.00
		8	0	22.51	22.42	22.39
		8	3	22.49	22.45	22.44
		8	7	22.06	22.23	22.13
		15	0	22.13	22.31	22.21
3M	64QAM	1	0	22.01	22.02	21.95
		1	7	22.11	22.14	22.16
		1	14	21.71	21.82	21.65
		8	0	21.27	21.18	21.01
		8	3	21.29	21.05	21.11
		8	7	20.66	20.91	20.90
		15	0	20.83	20.94	20.83

*EIRP = Conducted + antenna gain (1.80dBi)

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	23.96	24.07	24.19
		1	2	24.22	24.41	24.37
		1	5	24.00	24.08	23.84
		3	0	24.24	24.23	24.42
		3	1	24.28	24.31	24.30
		3	3	24.22	24.30	24.30
		6	0	23.24	23.26	23.26
1.4M	16QAM	1	0	22.97	23.07	23.25
		1	2	23.28	23.39	23.42
		1	5	23.07	23.01	22.82
		3	0	23.16	23.15	23.42
		3	1	23.36	23.28	23.23
		3	3	23.29	23.25	23.27
		6	0	22.31	22.23	22.22
1.4M	64QAM	1	0	21.76	21.84	21.87
		1	2	21.88	22.04	22.19
		1	5	21.68	21.78	21.55
		3	0	21.89	21.85	22.13
		3	1	22.13	22.06	21.95
		3	3	21.97	22.02	21.90
		6	0	21.08	20.88	20.86

*EIRP = Conducted + antenna gain (1.80dBi)

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

4.2.2 Test Procedure

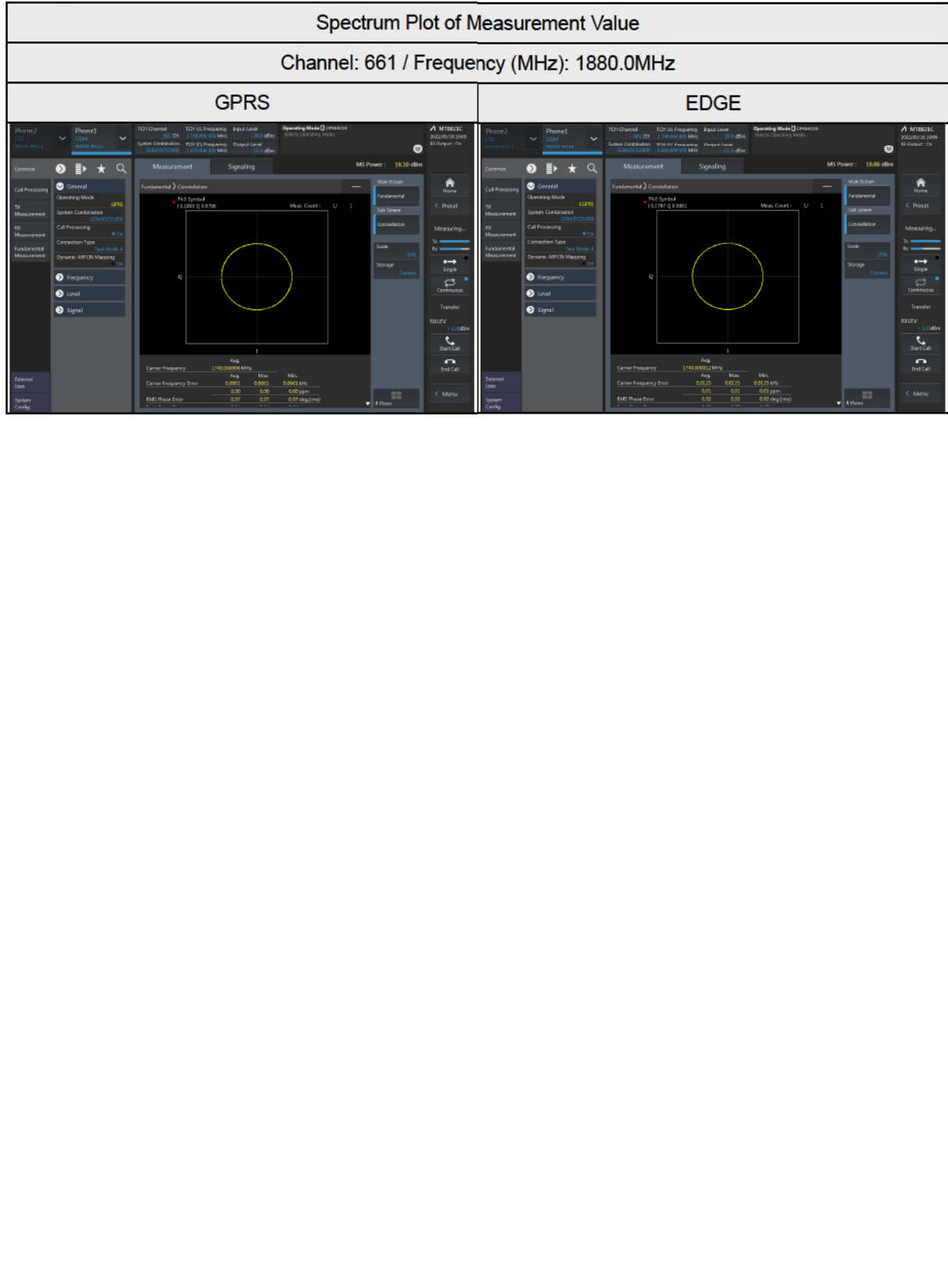
Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.3 Test Setup

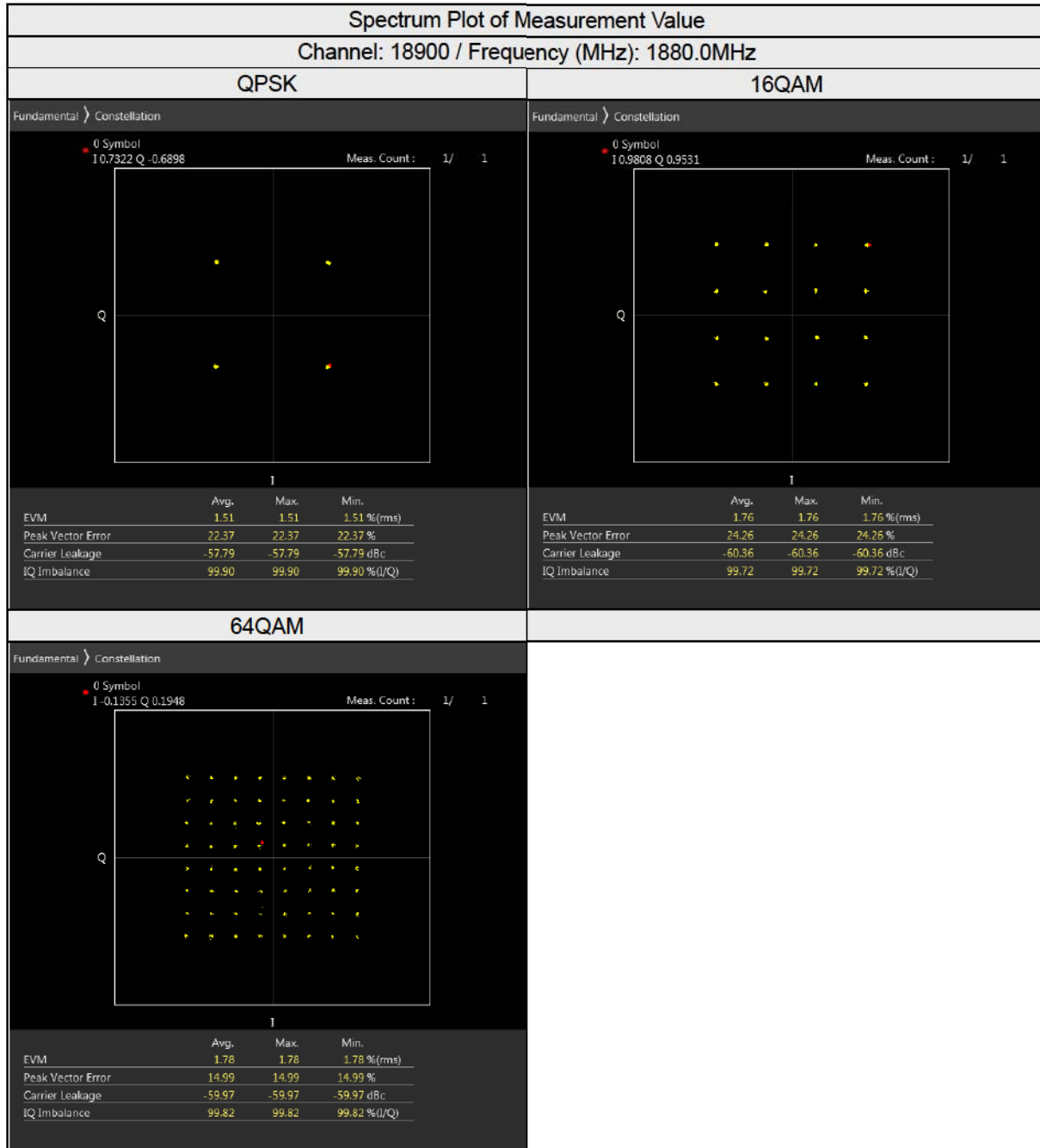


4.2.4 Test Results

GPRS, EDGE



LTE Band 2



LTE Band 25

