Prüfbericht-Nr.: *Test report no.:*	CN24Y2ZS 001	**Auftrags-Nr.:** *Order no.:*	48225046	Seite 1 von 41 *Page 1 of 41*
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2023-11-22	
Auftraggeber: *Client:*	AMobile Solutions Corp. 8F.-1, No.700, Zhongzheng Rd., Zhonghe Dist., New Taipei City 235, Taiwan			
Prüfgegenstand: *Test item:*	6" Rugged Mobile Computing Device			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	PD602			
Auftrags-Inhalt: *Order content:*	FCC Part 27 Test report			
Prüfgrundlage: *Test specification:*	FCC 47CFR Part 27 Subpart C, H, L, M			
Wareneingangsdatum: *Date of sample receipt:*	2023-10-26			
Prüfmuster-Nr.: *Test sample no:*	A003589973-006 A003589973-002			
Prüfzeitraum: *Testing period:*	2023-11-17 - 2023-12-16			
Ort der Prüfung: *Place of testing:*	EMC/RF Taipei Testing Site			
Prüflaboratorium: *Testing laboratory:*	Taipei Testing Laboratories			
Prüfergebnis*: *Test result*:*	Pass			
überprüft von: *compiled by:*	Anderson Chiu	**genehmigt von:** authorized by:	Brenda Chen	
Datum: *Date:* 2024-02-06		**Ausstellungsdatum:** *Issue date:* 2024-02-06		
Stellung / *Position:*	Senior Project Manager	**Stellung** / *Position:*	Senior Project Manager	
Sonstiges / *Other:*				
Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*	Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*			

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.

Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. *The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system.* *Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.*
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. *The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.*

TEST SUMMARY

Report Section	FCC Clause	Test Item	Support Band	Result
5.1.1	2.1046	Conducted Output Power	-	Pass
	27.50(c)(10)	Effective Radiated Power	Band 12 Band 17	Pass
	27.50(d)(4)	Effective Isotropically Radiated Power	Band 4	Pass
	27.50(h)(2)		Band 7 Band 41	Pass
5.1.2	2.1055 27.54	Frequency Stability	-	Pass
5.1.3	27.50(d)(5)	Peak to Average Ratio	-	Pass
5.1.4	2.1049	Occupied Bandwidth and 26 dB Bandwidth	-	Pass
5.1.5	2.1051	Conducted Band Edge & Emission Mask	-	Pass
	27.53(h)		Band 4	Pass
	27.53(g)		Band 12 Band 17	Pass
	27.53(m)(4)(6)		Band 7 Band 41	Pass
5.1.6	2.1051	Conducted Spurious Emissions	-	Pass
	27.53(h)		Band 4	Pass
	27.53(g)		Band 12 Band 17	Pass
	27.53(m)(4)(6)		Band 7 Band 41	Pass
5.1.7	2.1053	Radiated Spurious Emissions	-	Pass
	27.53(h)		Band 4	Pass
	27.53(g)		Band 12 Band 17	Pass
	27.53(m)(4)(6)		Band 7 Band 41	Pass

Note:

1. The mark "-" means that the standard applied to all the bands.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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APPENDIX B - TEST RESULT OF CONDUCTED_BANDEDGE

APPENDIX C - TEST RESULT OF CONDUCTED_CSE

APPENDIX D - TEST RESULT OF RADIATED SPURIOUS EMISSIONS

APPENDIX SP - PHOTOGRAPHS TEST SETUP

APPENDIX EP - PHOTOGRAPHS OF EUT

HISTORY OF THIS TEST REPORT

Revision	Description	Date Issued
R01	Original Release	2024-02-06

1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:
Appendix A - Test Result of Conducted_PAR&Bandwidth
Appendix B - Test Result of Conducted_Bandedge
Appendix C - Test Result of Conducted_CSE
Appendix D - Test Result of Radiated Spurious Emissions
Appendix SP - Photographs Test Setup
Appendix EP - Photographs of EUT

Applied Standard and Test Levels

Radio
FCC 47 CFR Part 2
FCC 47 CFR Part 27
KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI/TIA/EIA-603-E 2016
ANSI C63.26-2015

1.2 Decision Rule of Conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.

2. Test Sites

2.1 Test Laboratory

Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

2.2 Test Facility

Taipei Testing Laboratories

No.458-18, Sec. 2, Fenliao Rd., Linkou Dist.,
New Taipei City 244
Taiwan (R.O.C.)
FCC Registration No.: 180491
ISED Registration No.: 25563

2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

All measurement uncertainty values are shown with a coverage factor of k=2 to indicate a 95% level of confidence.

Emission Measurement Uncertainty

Parameter	Uncertainty
Radiated Emission (9 kHz ~ 30 MHz)	± 1.15 dB
Radiated Emission (30 MHz ~ 200 MHz)	± 1.30 dB
Radiated Emission (200 MHz ~ 1 GHz)	± 1.30 dB
Radiated Emission (1 GHz ~ 18 GHz)	± 1.54 dB
Radiated Emission (18 GHz ~ 40 GHz)	± 2.52 dB
Mains Conducted Emission	± 1.65 dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a 6" Rugged Mobile Computing Device. It contains a WWAN compatible module enabling the user to communicate data through a Wireless interface.
For details refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 System Details and Ratings

Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	6" Rugged Mobile Computing Device
Type Identification	PD602
FCC ID	2AQ5W-PD602

Technical Specification of EUT

Item	EUT information	
Operating Frequency	LTE Band 4 (1.4 MHz)	1710.7 ~ 1754.3 MHz
	LTE Band 4 (3 MHz)	1711.5 ~ 1753.5 MHz
	LTE Band 4 (5 MHz)	1712.5 ~ 1752.5 MHz
	LTE Band 4 (10 MHz)	1715.0 ~ 1750.0 MHz
	LTE Band 4 (15 MHz)	1717.5 ~ 1747.5 MHz
	LTE Band 4 (20 MHz)	1720.0 ~ 1745.0 MHz
	LTE Band 7 (5 MHz)	2502.5 ~ 2567.5 MHz
	LTE Band 7 (10 MHz)	2505 ~ 2565 MHz
	LTE Band 7 (15 MHz)	2507.5 ~ 2562.5 MHz
	LTE Band 7 (20 MHz)	2510 ~ 2560 MHz
	LTE Band 12 (1.4 MHz)	699.7 ~ 715.3 MHz
	LTE Band 12 (3 MHz)	700.5 ~ 714.5 MHz
	LTE Band 12 (5 MHz)	701.5 ~ 713.5 MHz
	LTE Band 12 (10 MHz)	704.0 ~ 711.0 MHz
	LTE Band 17 (5 MHz)	706.5 ~ 713.5 MHz
	LTE Band 17 (10 MHz)	709.0 ~ 711.0 MHz
	LTE Band 41 (5 MHz)	2537.5 ~ 2652.5 MHz
	LTE Band 41 (10 MHz)	2540.0 ~ 2650.0 MHz
	LTE Band 41 (15 MHz)	2542.5 ~ 2647.5 MHz
	LTE Band 41 (20 MHz)	2545.0 ~ 2645.0 MHz
Modulation	LTE	QPSK, 16QAM, 64QAM

Item	EUT information	
Operation Voltage	Battery: 3.85 Vdc USB: 5 Vdc	
Antenna Typ	LDS Antenna	
Antenna Gain (dBi)	LTE Band 4	-6.86
	LTE Band 7	-0.79
	LTE Band 12	-9.36
	LTE Band 17	-9.36
	LTE Band 41	-0.79
Accessory Device	Refer to 4.3	

Maximum ERP/EIRP and Emission Designator

Item	Band	Result
Maximum ERP/EIRP (dBm)	LTE Band 4 (1.4 MHz)	14.08
	LTE Band 4 (3 MHz)	13.93
	LTE Band 4 (5 MHz)	14.18
	LTE Band 4 (10 MHz)	14.18
	LTE Band 4 (15 MHz)	14.14
	LTE Band 4 (20 MHz)	14.19
	LTE Band 7 (5 MHz)	20.19
	LTE Band 7 (10 MHz)	20.20
	LTE Band 7 (15 MHz)	20.20
	LTE Band 7 (20 MHz)	20.28
	LTE Band 12 (1.4 MHz)	9.23
	LTE Band 12 (3 MHz)	9.15
	LTE Band 12 (5 MHz)	9.41
	LTE Band 12 (10 MHz)	9.51
	LTE Band 17 (5 MHz)	9.38
	LTE Band 17 (10 MHz)	9.54
	LTE Band 41 (5 MHz)	18.81
	LTE Band 41 (10 MHz)	18.73
	LTE Band 41 (15 MHz)	18.66
	LTE Band 41 (20 MHz)	18.90

Item	Band	Result
Emission Designator	LTE Band 4 (1.4 MHz)	1M10G7D, 1M10W7D, 1M10W7D
	LTE Band 4 (3 MHz)	2M70G7D, 2M69W7D, 2M69W7D
	LTE Band 4 (5 MHz)	4M51G7D, 4M51W7D, 4M51W7D
	LTE Band 4 (10 MHz)	8M99G7D, 8M99W7D, 8M99W7D
	LTE Band 4 (15 MHz)	13M5G7D, 13M5W7D, 13M5W7D
	LTE Band 4 (20 MHz)	18M0G7D, 18M0W7D, 18M0W7D
	LTE Band 7 (5 MHz)	4M51G7D, 4M51W7D, 4M51W7D
	LTE Band 7 (10 MHz)	8M99G7D, 8M99W7D, 8M99W7D
	LTE Band 7 (15 MHz)	13M5G7D, 13M5W7D, 13M4W7D
	LTE Band 7 (20 MHz)	18M0G7D, 18M0W7D, 18M0W7D
	LTE Band 12 (1.4 MHz)	1M10G7D, 1M10W7D, 1M10W7D
	LTE Band 12 (3 MHz)	2M70G7D, 2M69W7D, 2M69W7D
	LTE Band 12 (5 MHz)	4M51G7D, 4M51W7D, 4M51W7D
	LTE Band 12 (10 MHz)	9M05G7D, 9M05W7D, 9M02W7D
	LTE Band 17 (5 MHz)	4M51G7D, 4M51W7D, 4M51W7D
	LTE Band 17 (10 MHz)	8M99G7D, 8M99W7D, 8M99W7D
	LTE Band 41 (5 MHz)	4M51G7D, 4M51W7D, 4M51W7D
	LTE Band 41 (10 MHz)	9M02G7D, 8M99W7D, 9M02W7D
	LTE Band 41 (15 MHz)	13M5G7D, 13M5W7D, 13M5W7D
	LTE Band 41 (20 MHz)	18M0G7D, 18M0W7D, 18M0W7D

3.3 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.4 Submitted Documents

- Circuit Diagram
- Instruction Manual
- Rating Label
- Technical Description

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Setup for testing: Test samples enable WWAN function and make it possible to control them through Base Station simulator.

The samples were used as follows:
A003589973-006
A003589973-002
Full test was applied on all test modes, but only worst case was shown.

Effective Radiated Power (ERP) / Effective Isotropically Radiated Power (EIRP)
☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation
-	LTE Band 4	1.4 MHz	19957 to 20393	19957, 20175, 20393	QPSK, 16QAM, 64QAM
		3 MHz	19965 to 20385	19965, 20175, 20385	QPSK, 16QAM, 64QAM
		5 MHz	19975 to 20375	19975, 20175, 20375	QPSK, 16QAM, 64QAM
		10 MHz	20000 to 20350	20000, 20175, 20350	QPSK, 16QAM, 64QAM
		15 MHz	20025 to 20325	20025, 20175, 20325	QPSK, 16QAM, 64QAM
		20 MHz	20050 to 20300	20050, 20175, 20300	QPSK, 16QAM, 64QAM
-	LTE Band 7	5 MHz	20775 to 21425	20775, 21100, 21425	QPSK, 16QAM, 64QAM
		10 MHz	20800 to 21400	20800, 21100, 21400	QPSK, 16QAM, 64QAM
		15 MHz	20825 to 21375	20825, 21100, 21375	QPSK, 16QAM, 64QAM
		20 MHz	20850 to 21350	20850, 21100, 21350	QPSK, 16QAM, 64QAM
-	LTE Band 12	1.4 MHz	23017 to 23173	23017, 23095, 23173	QPSK, 16QAM, 64QAM
		3 MHz	23025 to 23165	23025, 23095, 23165	QPSK, 16QAM, 64QAM
		5 MHz	23035 to 23155	23035, 23095, 23155	QPSK, 16QAM, 64QAM
		10 MHz	23060 to 23130	23060, 23095, 23130	QPSK, 16QAM, 64QAM
-	LTE Band 17	5 MHz	23755 to 23825	23755, 23790, 23825	QPSK, 16QAM, 64QAM
		10 MHz	23780 to 23800	23780, 23790, 23800	QPSK, 16QAM, 64QAM
-	LTE Band 41	5 MHz	40065 to 41215	40065, 40590, 41215	QPSK, 16QAM, 64QAM
		10 MHz	40090 to 41190	40090, 40590, 41190	QPSK, 16QAM, 64QAM
		15 MHz	40115 to 41165	40115, 40590, 41165	QPSK, 16QAM, 64QAM
		20 MHz	40140 to 41140	40140, 40590, 41140	QPSK, 16QAM, 64QAM

Frequency Stability

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 4	20 MHz	20050 to 20300	20175	QPSK	Full RB
-	LTE Band 7	20 MHz	20850 to 21350	21100	QPSK	Full RB
-	LTE Band 12	10 MHz	23060 to 23130	23095	QPSK	Full RB
-	LTE Band 17	10 MHz	23780 to 23800	23790	QPSK	Full RB
-	LTE Band 41	20 MHz	40140 to 41140	40590	QPSK	Full RB

Peak to Average Ratio

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 4	1.4 MHz	19957 to 20393	19957, 20175, 20393	QPSK, 16QAM, 64QAM	1 RB / Full RB
		3 MHz	19965 to 20385	19965, 20175, 20385	QPSK, 16QAM, 64QAM	1 RB / Full RB
		5 MHz	19975 to 20375	19975, 20175, 20375	QPSK, 16QAM, 64QAM	1 RB / Full RB
		10 MHz	20000 to 20350	20000, 20175, 20350	QPSK, 16QAM, 64QAM	1 RB / Full RB
		15 MHz	20025 to 20325	20025, 20175, 20325	QPSK, 16QAM, 64QAM	1 RB / Full RB
		20 MHz	20050 to 20300	20050, 20175, 20300	QPSK, 16QAM, 64QAM	1 RB / Full RB
-	LTE Band 7	5 MHz	20775 to 21425	20775, 21100, 21425	QPSK, 16QAM, 64QAM	1 RB / Full RB
		10 MHz	20800 to 21400	20800, 21100, 21400	QPSK, 16QAM, 64QAM	1 RB / Full RB
		15 MHz	20825 to 21375	20825, 21100, 21375	QPSK, 16QAM, 64QAM	1 RB / Full RB
		20 MHz	20850 to 21350	20850, 21100, 21350	QPSK, 16QAM, 64QAM	1 RB / Full RB
-	LTE Band 12	1.4 MHz	23017 to 23173	23017, 23095, 23173	QPSK, 16QAM, 64QAM	1 RB / Full RB
		3 MHz	23025 to 23165	23025, 23095, 23165	QPSK, 16QAM, 64QAM	1 RB / Full RB
		5 MHz	23035 to 23155	23035, 23095, 23155	QPSK, 16QAM, 64QAM	1 RB / Full RB
		10 MHz	23060 to 23130	23060, 23095, 23130	QPSK, 16QAM, 64QAM	1 RB / Full RB
-	LTE Band 17	5 MHz	23755 to 23825	23755, 23790, 23825	QPSK, 16QAM, 64QAM	1 RB / Full RB
		10 MHz	23780 to 23800	23780, 23790, 23800	QPSK, 16QAM, 64QAM	1 RB / Full RB
-	LTE Band 41	5 MHz	40065 to 41215	40065, 40590, 41215	QPSK, 16QAM, 64QAM	1 RB / Full RB
		10 MHz	40090 to 41190	40090, 40590, 41190	QPSK, 16QAM, 64QAM	1 RB / Full RB
		15 MHz	40115 to 41165	40115, 40590, 41165	QPSK, 16QAM, 64QAM	1 RB / Full RB
		20 MHz	40140 to 41140	40140, 40590, 41140	QPSK, 16QAM, 64QAM	1 RB / Full RB

Occupied Bandwidth and 26 dB Bandwidth

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 4	1.4 MHz	19957 to 20393	19957, 20175, 20393	QPSK, 16QAM, 64QAM	Full RB
		3 MHz	19965 to 20385	19965, 20175, 20385	QPSK, 16QAM, 64QAM	Full RB
		5 MHz	19975 to 20375	19975, 20175, 20375	QPSK, 16QAM, 64QAM	Full RB
		10 MHz	20000 to 20350	20000, 20175, 20350	QPSK, 16QAM, 64QAM	Full RB
		15 MHz	20025 to 20325	20025, 20175, 20325	QPSK, 16QAM, 64QAM	Full RB
		20 MHz	20050 to 20300	20050, 20175, 20300	QPSK, 16QAM, 64QAM	Full RB
-	LTE Band 7	5 MHz	20775 to 21425	20775, 21100, 21425	QPSK, 16QAM, 64QAM	Full RB
		10 MHz	20800 to 21400	20800, 21100, 21400	QPSK, 16QAM, 64QAM	Full RB
		15 MHz	20825 to 21375	20825, 21100, 21375	QPSK, 16QAM, 64QAM	Full RB
		20 MHz	20850 to 21350	20850, 21100, 21350	QPSK, 16QAM, 64QAM	Full RB
-	LTE Band 12	1.4 MHz	23017 to 23173	23017, 23095, 23173	QPSK, 16QAM, 64QAM	Full RB
		3 MHz	23025 to 23165	23025, 23095, 23165	QPSK, 16QAM, 64QAM	Full RB
		5 MHz	23035 to 23155	23035, 23095, 23155	QPSK, 16QAM, 64QAM	Full RB
		10 MHz	23060 to 23130	23060, 23095, 23130	QPSK, 16QAM, 64QAM	Full RB
-	LTE Band 17	5 MHz	23755 to 23825	23755, 23790, 23825	QPSK, 16QAM, 64QAM	Full RB
		10 MHz	23780 to 23800	23780, 23790, 23800	QPSK, 16QAM, 64QAM	Full RB
-	LTE Band 41	5 MHz	40065 to 41215	40065, 40590, 41215	QPSK, 16QAM, 64QAM	Full RB
		10 MHz	40090 to 41190	40090, 40590, 41190	QPSK, 16QAM, 64QAM	Full RB
		15 MHz	40115 to 41165	40115, 40590, 41165	QPSK, 16QAM, 64QAM	Full RB
		20 MHz	40140 to 41140	40140, 40590, 41140	QPSK, 16QAM, 64QAM	Full RB

Band Edge & Emission Mask

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 4	1.4 MHz	19957 to 20393	19957, 20393	QPSK	1 RB / Full RB
		3 MHz	19965 to 20385	19965, 20385	QPSK	1 RB / Full RB
		5 MHz	19975 to 20375	19975, 20375	QPSK	1 RB / Full RB
		10 MHz	20000 to 20350	20000, 20350	QPSK	1 RB / Full RB
		15 MHz	20025 to 20325	20025, 20325	QPSK	1 RB / Full RB
		20 MHz	20050 to 20300	20050, 20300	QPSK	1 RB / Full RB
-	LTE Band 7	5 MHz	20775 to 21425	20775, 21425	QPSK	1 RB / Full RB
		10 MHz	20800 to 21400	20800, 21400	QPSK	1 RB / Full RB
		15 MHz	20825 to 21375	20825, 21375	QPSK	1 RB / Full RB
		20 MHz	20850 to 21350	20850, 21350	QPSK	1 RB / Full RB
-	LTE Band 12	1.4 MHz	23017 to 23173	23017, 23173	QPSK	1 RB / Full RB
		3 MHz	23025 to 23165	23025, 23165	QPSK	1 RB / Full RB
		5 MHz	23035 to 23155	23035, 23155	QPSK	1 RB / Full RB
		10 MHz	23060 to 23130	23060, 23130	QPSK	1 RB / Full RB
-	LTE Band 17	5 MHz	23755 to 23825	23755, 23825	QPSK	1 RB / Full RB
		10 MHz	23780 to 23800	23780, 23800	QPSK	1 RB / Full RB
-	LTE Band 41	5 MHz	40065 to 41215	40065, 41215	QPSK	1 RB / Full RB
		10 MHz	40090 to 41190	40090, 41190	QPSK	1 RB / Full RB
		15 MHz	40115 to 41165	40115, 41165	QPSK	1 RB / Full RB
		20 MHz	40140 to 41140	40140, 41140	QPSK	1 RB / Full RB

Conducted Spurious Emissions

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 4	1.4 MHz	19957 to 20393	19957, 20175, 20393	QPSK	1 RB
		3 MHz	19965 to 20385	19965, 20175, 20385	QPSK	1 RB
		5 MHz	19975 to 20375	19975, 20175, 20375	QPSK	1 RB
		10 MHz	20000 to 20350	20000, 20175, 20350	QPSK	1 RB
		15 MHz	20025 to 20325	20025, 20175, 20325	QPSK	1 RB
		20 MHz	20050 to 20300	20050, 20175, 20300	QPSK	1 RB
-	LTE Band 7	5 MHz	20775 to 21425	20775, 21100, 21425	QPSK	1 RB
		10 MHz	20800 to 21400	20800, 21100, 21400	QPSK	1 RB
		15 MHz	20825 to 21375	20825, 21100, 21375	QPSK	1 RB
		20 MHz	20850 to 21350	20850, 21100, 21350	QPSK	1 RB
-	LTE Band 12	1.4 MHz	23017 to 23173	23017, 23095, 23173	QPSK	1 RB
		3 MHz	23025 to 23165	23025, 23095, 23165	QPSK	1 RB
		5 MHz	23035 to 23155	23035, 23095, 23155	QPSK	1 RB
		10 MHz	23060 to 23130	23060, 23095, 23130	QPSK	1 RB
-	LTE Band 17	5 MHz	23755 to 23825	23755, 23790, 23825	QPSK	1 RB
		10 MHz	23780 to 23800	23780, 23790, 23800	QPSK	1 RB
-	LTE Band 41	5 MHz	40065 to 41215	40065, 40590, 41215	QPSK	1 RB
		10 MHz	40090 to 41190	40090, 40590, 41190	QPSK	1 RB
		15 MHz	40115 to 41165	40115, 40590, 41165	QPSK	1 RB
		20 MHz	40140 to 41140	40140, 40590, 41140	QPSK	1 RB

Radiated Spurious Emissions

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode	Postion
-	LTE Band 4	20 MHz	20050 to 20300	20050, 20175, 20300	QPSK	1 RB	Z-plane
	LTE Band 7	20 MHz	20850 to 21350	20850, 21100, 21350	QPSK	1 RB	Z-plane
	LTE Band 12	10 MHz	23060 to 23130	23060, 23095, 23130	QPSK	1 RB	Z-plane
	LTE Band 17	10 MHz	23780 to 23800	23780, 23790, 23800	QPSK	1 RB	Z-plane
	LTE Band 41	20 MHz	40140 to 41140	40140, 40590, 41140	QPSK	1 RB	Z-plane

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
ERP / EIRP	18-23 °C	55-68 %	Nick Hsu
Frequency Stability	18-23 °C	55-68 %	Nick Hsu
Peak to Average Ratio	18-23 °C	55-68 %	Nick Hsu
Occupied Bandwidth and 26 dB Bandwidth	18-23 °C	55-68 %	Nick Hsu
Band Edge & Emission Mask	18-23 °C	55-68 %	Nick Hsu
Conducted Spurious Emissions	18-23 °C	55-68 %	Nick Hsu
Radiated Spurious Emissions	23.8-25.2 °C	54-56 %	Chuan Chu

4.3 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

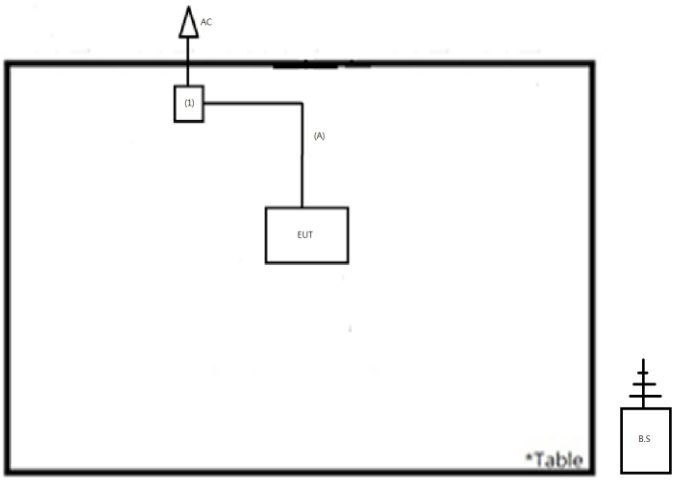
Accessory of EUT

No.	Product	Brand	Model	Description
A	USB Cable	CHINGLUNG	01.03.0012	--
-	Li-ion Battery	CHOLIPOWER	CLP1048	3.85 Vdc, 5000 mAh
-	Li-ion Battery	CHOLIPOWER	CLP301447	3.7 Vdc, 180 mAh

Support Unit

Support Unit								
No	Description	Brand	Model	S/N	Shielded	Ferrite Core (Qty)	Length (cm)	Remark
1	Adapter	OPPO	VC56JACH	J119492AC1009359	-	-	-	--

4.4 Test Setup Diagram



5. Test Results

5.1 Transmitter Requirement & Test Suites

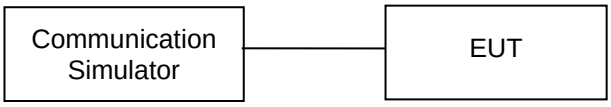
5.1.1 Conducted Output Power and ERP/EIRP

Limit

According to §27.50(d)(4): The EIRP must not exceed 1 Watts.
According to §27.50(h)(2): The EIRP must not exceed 2 Watts.
According to §27.50(c)(10): The ERP must not exceed 3 Watts.

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
WWAN BS	R & S	CMW500	166923	2023/04/12	2024/04/10	2023/11/17	2023/12/16
WWAN BS	Anritsu	MT8821C	6262044753	2023/06/14	2024/06/12	2023/11/17	2023/12/16

Test Procedures

The EUT was set up for the maximum power with WWAN 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.
EIRP = Conducted Power + Antenna Gain\
ERP = EIRP – 2.15

Test Result

<Conducted Output Power>

LTE Band 4								
Bandwidth	1.4 MHz				3 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		19957 / 1710.7	20175 / 1732.5	20393 / 1754.3		19965 / 1711.5	20175 / 1732.5	20385 / 1753.5
QPSK	1/0	20.47	20.69	20.82	1/0	20.36	20.51	20.58
	1/2	20.53	20.80	20.88	1/7	20.46	20.66	20.79
	1/5	20.49	20.71	20.84	1/14	20.37	20.57	20.70
	3/0	20.58	20.77	20.91	8/0	19.59	19.79	19.91
	3/1	20.60	20.79	20.92	8/3	19.65	19.85	19.99
	3/3	20.58	20.81	20.94	8/7	19.59	19.84	19.94
	6/0	19.74	19.94	20.04	15/0	19.59	19.78	19.90
16QAM	1/0	19.73	19.96	20.09	1/0	19.75	19.89	19.97
	1/2	19.81	20.14	20.30	1/7	19.78	19.99	20.03
	1/5	19.88	20.14	20.11	1/14	19.78	19.92	20.11
	3/0	19.60	19.82	20.04	8/0	18.69	18.86	19.00
	3/1	19.70	19.91	20.06	8/3	18.75	18.95	19.10
	3/3	19.56	19.87	19.96	8/7	18.71	18.93	19.05
	6/0	18.89	19.08	19.20	15/0	18.62	18.81	18.93
64QAM	1/0	18.93	19.07	19.13	1/0	18.62	18.93	19.02
	1/2	18.95	19.20	19.31	1/7	18.86	19.09	19.21
	1/5	18.93	19.12	19.23	1/14	18.68	18.97	19.08
	3/0	18.92	19.11	19.23	8/0	17.67	17.86	17.99
	3/1	18.88	19.10	19.26	8/3	17.77	17.94	18.08
	3/3	18.87	19.09	19.24	8/7	17.72	17.93	18.03
	6/0	17.80	17.96	18.11	15/0	17.64	17.81	17.95
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		19975 / 1712.5	20175 / 1732.5	20375 / 1752.5		20000 / 1715	20175 / 1732.5	20350 / 1750
QPSK	1/0	20.54	20.73	20.81	1/0	20.64	20.77	20.93
	1/12	20.73	20.95	21.04	1/24	20.77	20.93	21.00
	1/24	20.61	20.79	20.93	1/49	20.75	20.90	21.04
	12/0	19.65	19.85	19.95	25/0	19.63	19.79	19.90
	12/6	19.73	19.94	20.04	25/12	19.75	19.93	20.01
	12/13	19.70	19.93	20.03	25/25	19.73	19.91	19.97
	25/0	19.68	19.87	19.99	50/0	19.70	19.88	19.96
16QAM	1/0	19.81	20.03	20.30	1/0	19.97	20.08	20.33
	1/12	19.96	20.29	20.44	1/24	20.05	20.23	20.30
	1/24	19.93	20.17	20.24	1/49	20.06	20.18	20.38
	12/0	18.69	18.91	18.95	25/0	18.68	18.87	18.95
	12/6	18.77	18.96	19.07	25/12	18.81	18.98	19.06
	12/13	18.72	18.96	19.05	25/25	18.78	18.98	19.05
	25/0	18.72	18.95	19.06	50/0	18.73	18.89	18.98
64QAM	1/0	18.86	18.96	19.09	1/0	18.96	19.11	19.22
	1/12	19.03	19.23	19.32	1/24	19.05	19.20	19.29
	1/24	18.89	19.08	19.22	1/49	18.97	19.14	19.39
	12/0	17.73	17.94	18.02	25/0	17.70	17.84	17.98
	12/6	17.78	18.01	18.13	25/12	17.82	17.99	18.09
	12/13	17.77	18.02	18.10	25/25	17.80	17.98	18.06
	25/0	17.73	17.95	18.07	50/0	17.73	17.92	18.00

LTE Band 4								
Bandwidth	15 MHz				20 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		20025 / 1717.5	20175 / 1732.5	20325 / 1747.5		20050 / 1720	20175 / 1732.5	20300 / 1745
QPSK	1/0	20.58	20.70	20.81	1/0	20.46	20.58	20.70
	1/37	20.75	20.96	21.00	1/49	20.79	20.93	21.05
	1/74	20.77	20.90	20.98	1/99	20.73	20.83	20.89
	36/0	19.66	19.77	19.87	50/0	19.68	19.74	19.87
	36/19	19.74	19.89	19.99	50/24	19.82	19.94	19.99
	36/39	19.79	19.93	19.99	50/50	19.84	19.93	19.98
	75/0	19.74	19.86	19.94	100/0	19.76	19.86	19.90
16QAM	1/0	19.91	20.07	20.23	1/0	19.83	19.90	20.09
	1/37	20.00	20.29	20.34	1/49	20.17	20.37	20.30
	1/74	20.07	20.20	20.40	1/99	20.16	20.20	20.18
	36/0	18.71	18.80	18.91	50/0	18.69	18.78	18.91
	36/19	18.77	18.92	19.01	50/24	18.85	18.95	19.01
	36/39	18.82	18.95	19.03	50/50	18.86	18.97	19.02
	75/0	18.77	18.90	18.97	100/0	18.76	18.86	18.93
64QAM	1/0	18.83	18.97	19.10	1/0	18.74	18.81	18.96
	1/37	19.05	19.23	19.30	1/49	19.11	19.18	19.34
	1/74	19.00	19.11	19.29	1/99	19.04	19.06	19.18
	36/0	17.74	17.85	17.95	50/0	17.72	17.77	17.90
	36/19	17.84	18.00	18.06	50/24	17.86	17.98	18.03
	36/39	17.87	18.02	18.05	50/50	17.88	17.98	18.05
	75/0	17.77	17.92	17.98	100/0	17.78	17.89	17.95

LTE Band 7								
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		20775 / 2502.5	21100 / 2535	21425 / 2567.5		20800 / 2505	21100 / 2535	21400 / 2565
QPSK	1/0	20.48	20.60	20.85	1/0	20.59	20.67	20.87
	1/12	20.64	20.75	20.98	1/24	20.66	20.78	20.99
	1/24	20.50	20.63	20.87	1/49	20.59	20.74	20.98
	12/0	19.50	19.68	19.94	25/0	19.56	19.70	19.90
	12/6	19.58	19.70	19.94	25/12	19.61	19.72	19.96
	12/13	19.54	19.66	19.85	25/25	19.63	19.68	19.85
	25/0	19.54	19.65	19.89	50/0	19.57	19.72	19.89
16QAM	1/0	19.86	19.84	20.18	1/0	19.95	19.97	20.18
	1/12	20.00	20.11	20.22	1/24	19.98	20.09	20.27
	1/24	19.87	19.95	20.16	1/49	19.83	20.11	20.18
	12/0	18.51	18.69	18.94	25/0	18.59	18.74	18.93
	12/6	18.58	18.73	18.95	25/12	18.63	18.76	18.99
	12/13	18.54	18.68	18.91	25/25	18.67	18.71	18.88
	25/0	18.58	18.70	18.93	50/0	18.62	18.71	18.87
64QAM	1/0	18.72	18.83	19.07	1/0	18.73	18.83	19.09
	1/12	18.91	18.99	19.23	1/24	18.87	18.96	19.13
	1/24	18.74	18.78	19.03	1/49	18.84	18.89	19.11
	12/0	17.60	17.75	18.01	25/0	17.65	17.78	17.95
	12/6	17.66	17.80	18.04	25/12	17.68	17.80	18.06
	12/13	17.64	17.74	17.96	25/25	17.70	17.77	17.94
	25/0	17.62	17.74	17.97	50/0	17.64	17.76	17.95
Bandwidth	15 MHz				20 MHz			
Modulation	RB Size	Channel / Frequency (MHz)			RB Size	Channel / Frequency (MHz)		
		20825 / 2507.5	21100 / 2535	21375 / 2562.5		20850 / 2510	21100 / 2535	21350 / 2560
QPSK	1/0	20.51	20.56	20.81	1/0	20.52	20.59	20.83
	1/37	20.69	20.76	20.99	1/49	20.76	20.89	21.07
	1/74	20.58	20.74	20.89	1/99	20.58	20.79	20.93
	36/0	19.53	19.61	19.81	50/0	19.60	19.74	19.83
	36/19	19.58	19.71	19.92	50/24	19.75	19.84	20.07
	36/39	19.58	19.70	19.85	50/50	19.79	19.79	19.92
	75/0	19.58	19.67	19.85	100/0	19.68	19.77	19.90
16QAM	1/0	19.81	19.82	20.08	1/0	19.88	19.84	20.17
	1/37	20.03	20.07	20.31	1/49	20.15	20.10	20.32
	1/74	19.85	19.95	20.18	1/99	19.94	20.13	20.18
	36/0	18.53	18.63	18.82	50/0	18.61	18.78	18.84
	36/19	18.60	18.74	18.92	50/24	18.72	18.87	19.05
	36/39	18.59	18.71	18.85	50/50	18.81	18.79	18.94
	75/0	18.59	18.69	18.83	100/0	18.67	18.76	18.88
64QAM	1/0	18.69	18.78	19.04	1/0	18.71	18.82	19.04
	1/37	18.87	19.05	19.18	1/49	18.93	19.11	19.28
	1/74	18.77	18.97	19.03	1/99	18.71	18.99	19.12
	36/0	17.61	17.70	17.90	50/0	17.65	17.81	17.92
	36/19	17.65	17.76	18.02	50/24	17.79	17.90	18.11
	36/39	17.70	17.80	17.94	50/50	17.84	17.85	17.99
	75/0	17.62	17.71	17.88	100/0	17.76	17.80	17.94

LTE Band 12								
Bandwidth	1.4 MHz				3 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		23017 / 699.7	23095 / 707.5	23173 / 715.3		23025 / 700.5	23095 / 707.5	23165 / 714.5
QPSK	1/0	20.61	20.64	20.59	1/0	20.50	20.50	20.45
	1/2	20.71	20.67	20.61	1/7	20.66	20.60	20.59
	1/5	20.62	20.61	20.61	1/14	20.55	20.46	20.49
	3/0	20.70	20.70	20.68	8/0	19.76	19.68	19.73
	3/1	20.70	20.71	20.69	8/3	19.78	19.76	19.76
	3/3	20.74	20.71	20.70	8/7	19.72	19.72	19.67
	6/0	19.79	19.77	19.78	15/0	19.72	19.68	19.68
16QAM	1/0	19.94	19.96	19.96	1/0	19.71	19.84	19.83
	1/2	19.89	20.03	19.92	1/7	19.90	19.92	20.02
	1/5	19.80	19.92	19.90	1/14	19.81	19.78	19.79
	3/0	19.74	19.66	19.76	8/0	18.85	18.77	18.85
	3/1	19.79	19.70	19.76	8/3	18.85	18.84	18.83
	3/3	19.78	19.72	19.71	8/7	18.81	18.83	18.75
	6/0	18.93	18.92	18.91	15/0	18.76	18.73	18.74
64QAM	1/0	18.93	18.93	18.86	1/0	18.83	18.82	18.82
	1/2	19.05	19.00	18.96	1/7	19.04	18.94	18.91
	1/5	18.95	18.92	18.95	1/14	18.88	18.73	18.82
	3/0	18.98	18.97	18.92	8/0	17.85	17.76	17.81
	3/1	18.94	18.94	18.99	8/3	17.86	17.84	17.86
	3/3	18.95	18.92	18.95	8/7	17.77	17.81	17.76
	6/0	17.79	17.84	17.82	15/0	17.76	17.75	17.76
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size	Channel / Frequency (MHz)			RB Size	Channel / Frequency (MHz)		
		23035 / 701.5	23095 / 707.5	23155 / 713.5		23060 / 704	23095 / 707.5	23130 / 711
QPSK	1/0	20.76	20.74	20.68	1/0	20.99	20.94	20.96
	1/12	20.92	20.88	20.85	1/24	21.02	20.96	20.97
	1/24	20.73	20.76	20.72	1/49	20.94	20.94	20.91
	12/0	19.96	19.71	19.75	25/0	20.12	19.79	19.56
	12/6	19.90	19.82	19.84	25/12	19.98	19.95	19.88
	12/13	19.76	19.92	19.61	25/25	20.05	20.14	19.69
	25/0	19.89	19.85	19.71	50/0	20.11	20.03	19.65
16QAM	1/0	20.02	20.06	20.02	1/0	20.16	20.11	20.24
	1/12	20.19	20.23	20.17	1/24	20.32	20.26	20.28
	1/24	20.08	20.08	20.00	1/49	20.23	20.24	20.16
	12/0	18.96	18.75	18.77	25/0	19.14	18.84	18.62
	12/6	18.92	18.83	18.84	25/12	19.03	18.99	18.96
	12/13	18.80	18.95	18.64	25/25	19.09	19.22	18.74
	25/0	18.95	18.90	18.79	50/0	19.13	19.06	18.67
64QAM	1/0	18.97	18.98	19.03	1/0	19.15	19.18	19.09
	1/12	19.07	19.04	19.04	1/24	19.20	19.14	19.22
	1/24	18.89	18.88	18.97	1/49	19.12	19.12	19.11
	12/0	18.04	17.77	17.83	25/0	18.16	17.86	17.62
	12/6	17.96	17.90	17.93	25/12	18.06	18.01	17.98
	12/13	17.85	18.00	17.68	25/25	18.10	18.22	17.79
	25/0	17.95	17.90	17.80	50/0	18.14	18.08	17.69

LTE Band 17								
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size	Channel / Frequency (MHz)			RB Size	Channel / Frequency (MHz)		
		23755 / 706.5	23790 / 710	23825 / 713.5		23780 / 709	23790 / 710	23800 / 711
QPSK	1/0	20.81	20.77	20.77	1/0	20.99	21.01	20.99
	1/12	20.89	20.89	20.87	1/24	21.01	21.05	21.02
	1/24	20.79	20.77	20.75	1/49	20.92	20.95	20.95
	12/0	19.77	19.62	19.79	25/0	19.72	19.65	19.58
	12/6	19.86	19.84	19.84	25/12	19.98	19.96	19.93
	12/13	19.94	19.87	19.59	25/25	20.03	19.85	19.68
	25/0	19.87	19.79	19.69	50/0	19.93	19.79	19.66
16QAM	1/0	20.06	20.13	20.07	1/0	20.32	20.26	20.30
	1/12	20.18	20.14	20.12	1/24	20.35	20.25	20.32
	1/24	20.10	20.16	20.10	1/49	20.28	20.29	20.15
	12/0	18.78	18.69	18.79	25/0	18.77	18.69	18.64
	12/6	18.87	18.89	18.86	25/12	19.00	19.01	18.99
	12/13	18.98	18.92	18.64	25/25	19.07	18.92	18.74
	25/0	18.93	18.84	18.77	50/0	18.94	18.80	18.71
64QAM	1/0	18.94	18.97	18.98	1/0	19.22	19.12	19.19
	1/12	19.04	19.08	19.11	1/24	19.18	19.26	19.23
	1/24	18.98	19.02	18.95	1/49	19.09	19.13	19.05
	12/0	17.83	17.71	17.88	25/0	17.78	17.72	17.66
	12/6	17.94	17.90	17.93	25/12	18.02	18.03	18.02
	12/13	18.01	17.98	17.69	25/25	18.10	17.93	17.77
	25/0	17.93	17.86	17.78	50/0	17.98	17.84	17.72

LTE Band 41								
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		40065 / 2537.5	40590 / 2590	41215 / 2652.5		40090 / 2540	40590 / 2590	41190 / 2650
QPSK	1/0	19.41	19.13	18.84	1/0	19.44	19.25	18.88
	1/12	19.60	19.21	18.96	1/24	19.52	19.20	19.02
	1/24	19.42	19.07	18.82	1/49	19.47	19.15	18.90
	12/0	18.49	18.16	17.93	25/0	18.43	18.12	18.03
	12/6	18.53	18.28	17.98	25/12	18.46	18.17	17.91
	12/13	18.37	18.20	17.86	25/25	18.27	18.21	17.80
	25/0	18.41	18.16	17.91	50/0	18.36	18.11	17.92
16QAM	1/0	18.44	18.23	17.95	1/0	18.48	18.34	18.01
	1/12	18.59	18.16	18.06	1/24	18.61	18.31	18.12
	1/24	18.49	18.12	17.97	1/49	18.55	18.18	18.03
	12/0	17.41	17.11	16.91	25/0	17.46	17.10	17.04
	12/6	17.47	17.08	16.89	25/12	17.51	17.18	16.94
	12/13	17.38	17.10	16.81	25/25	17.34	17.22	16.82
	25/0	17.47	17.08	16.88	50/0	17.38	17.16	16.95
64QAM	1/0	17.11	16.82	16.58	1/0	17.14	16.98	16.61
	1/12	17.25	16.94	16.69	1/24	17.23	16.93	16.72
	1/24	17.16	16.76	16.60	1/49	17.12	16.82	16.62
	12/0	16.51	16.17	15.98	25/0	16.53	16.16	16.09
	12/6	16.57	16.15	16.02	25/12	16.52	16.22	16.00
	12/13	16.48	16.13	15.90	25/25	16.40	16.15	15.87
	25/0	16.52	16.10	15.92	50/0	16.38	16.10	15.93
Bandwidth	15 MHz				20 MHz			
Modulation	RB Size	Channel / Frequency (MHz)			RB Size	Channel / Frequency (MHz)		
		40115 / 2542.5	40590 / 2590	41165 / 2647.5		40140 / 2545	40590 / 2590	41140 / 2645
QPSK	1/0	19.34	19.22	18.84	1/0	19.48	19.36	18.98
	1/37	19.45	19.17	18.94	1/50	19.69	19.45	19.16
	1/74	19.41	19.11	18.86	1/99	19.53	19.13	18.95
	36/0	18.44	18.11	17.97	50/0	18.63	18.11	18.26
	36/19	18.45	18.07	17.94	50/25	18.58	18.40	18.11
	36/39	18.33	18.05	17.76	50/50	18.40	18.38	17.88
	75/0	18.32	17.98	17.85	100/0	18.55	18.40	18.08
16QAM	1/0	18.37	18.22	17.97	1/0	18.55	18.47	18.11
	1/37	18.54	18.20	18.07	1/50	18.77	18.53	18.30
	1/74	18.43	18.18	17.95	1/99	18.57	18.31	18.09
	36/0	17.42	17.03	17.03	50/0	17.65	17.21	17.33
	36/19	17.44	17.10	16.91	50/25	17.58	17.41	17.18
	36/39	17.34	17.08	16.78	50/50	17.40	17.45	16.84
	75/0	17.36	17.03	16.86	100/0	17.61	17.38	17.14
64QAM	1/0	17.05	16.91	16.55	1/0	17.18	17.12	16.69
	1/37	17.18	16.88	16.71	1/50	17.40	17.17	16.89
	1/74	17.13	16.78	16.59	1/99	17.22	16.96	16.66
	36/0	16.45	16.07	15.99	50/0	16.67	16.12	16.33
	36/19	16.44	16.03	15.93	50/25	16.61	16.35	16.17
	36/39	16.38	16.18	15.79	50/50	16.39	16.40	15.84
	75/0	16.37	16.03	15.91	100/0	16.61	16.41	16.15

<ERP / EIRP>

LTE Band 4								
Bandwidth	1.4 MHz				3 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		19957 / 1710.7	20175 / 1732.5	20393 / 1754.3		19965 / 1711.5	20175 / 1732.5	20385 / 1753.5
QPSK	1/0	13.61	13.83	13.96	1/0	13.50	13.65	13.72
	1/2	13.67	13.94	14.02	1/7	13.60	13.80	13.93
	1/5	13.63	13.85	13.98	1/14	13.51	13.71	13.84
	3/0	13.72	13.91	14.05	8/0	12.73	12.93	13.05
	3/1	13.74	13.93	14.06	8/3	12.79	12.99	13.13
	3/3	13.72	13.95	14.08	8/7	12.73	12.98	13.08
	6/0	12.88	13.08	13.18	15/0	12.73	12.92	13.04
16QAM	1/0	12.87	13.10	13.23	1/0	12.89	13.03	13.11
	1/2	12.95	13.28	13.44	1/7	12.92	13.13	13.17
	1/5	13.02	13.28	13.25	1/14	12.92	13.06	13.25
	3/0	12.74	12.96	13.18	8/0	11.83	12.00	12.14
	3/1	12.84	13.05	13.20	8/3	11.89	12.09	12.24
	3/3	12.70	13.01	13.10	8/7	11.85	12.07	12.19
	6/0	12.03	12.22	12.34	15/0	11.76	11.95	12.07
64QAM	1/0	12.07	12.21	12.27	1/0	11.76	12.07	12.16
	1/2	12.09	12.34	12.45	1/7	12.00	12.23	12.35
	1/5	12.07	12.26	12.37	1/14	11.82	12.11	12.22
	3/0	12.06	12.25	12.37	8/0	10.81	11.00	11.13
	3/1	12.02	12.24	12.40	8/3	10.91	11.08	11.22
	3/3	12.01	12.23	12.38	8/7	10.86	11.07	11.17
	6/0	10.94	11.10	11.25	15/0	10.78	10.95	11.09
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		19975 / 1712.5	20175 / 1732.5	20375 / 1752.5		20000 / 1715	20175 / 1732.5	20350 / 1750
QPSK	1/0	13.68	13.87	13.95	1/0	13.78	13.91	14.07
	1/12	13.87	14.09	14.18	1/24	13.91	14.07	14.14
	1/24	13.75	13.93	14.07	1/49	13.89	14.04	14.18
	12/0	12.79	12.99	13.09	25/0	12.77	12.93	13.04
	12/6	12.87	13.08	13.18	25/12	12.89	13.07	13.15
	12/13	12.84	13.07	13.17	25/25	12.87	13.05	13.11
	25/0	12.82	13.01	13.13	50/0	12.84	13.02	13.10
16QAM	1/0	12.95	13.17	13.44	1/0	13.11	13.22	13.47
	1/12	13.10	13.43	13.58	1/24	13.19	13.37	13.44
	1/24	13.07	13.31	13.38	1/49	13.20	13.32	13.52
	12/0	11.83	12.05	12.09	25/0	11.82	12.01	12.09
	12/6	11.91	12.10	12.21	25/12	11.95	12.12	12.20
	12/13	11.86	12.10	12.19	25/25	11.92	12.12	12.19
	25/0	11.86	12.09	12.20	50/0	11.87	12.03	12.12
64QAM	1/0	12.00	12.10	12.23	1/0	12.10	12.25	12.36
	1/12	12.17	12.37	12.46	1/24	12.19	12.34	12.43
	1/24	12.03	12.22	12.36	1/49	12.11	12.28	12.53
	12/0	10.87	11.08	11.16	25/0	10.84	10.98	11.12
	12/6	10.92	11.15	11.27	25/12	10.96	11.13	11.23
	12/13	10.91	11.16	11.24	25/25	10.94	11.12	11.20
	25/0	10.87	11.09	11.21	50/0	10.87	11.06	11.14

LTE Band 4								
Bandwidth	15 MHz				20 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		20025 / 1717.5	20175 / 1732.5	20325 / 1747.5		20050 / 1720	20175 / 1732.5	20300 / 1745
QPSK	1/0	13.72	13.84	13.95	1/0	13.60	13.72	13.84
	1/37	13.89	14.10	14.14	1/49	13.93	14.07	14.19
	1/74	13.91	14.04	14.12	1/99	13.87	13.97	14.03
	36/0	12.80	12.91	13.01	50/0	12.82	12.88	13.01
	36/19	12.88	13.03	13.13	50/24	12.96	13.08	13.13
	36/39	12.93	13.07	13.13	50/50	12.98	13.07	13.12
	75/0	12.88	13.00	13.08	100/0	12.90	13.00	13.04
16QAM	1/0	13.05	13.21	13.37	1/0	12.97	13.04	13.23
	1/37	13.14	13.43	13.48	1/49	13.31	13.51	13.44
	1/74	13.21	13.34	13.54	1/99	13.30	13.34	13.32
	36/0	11.85	11.94	12.05	50/0	11.83	11.92	12.05
	36/19	11.91	12.06	12.15	50/24	11.99	12.09	12.15
	36/39	11.96	12.09	12.17	50/50	12.00	12.11	12.16
	75/0	11.91	12.04	12.11	100/0	11.90	12.00	12.07
64QAM	1/0	11.97	12.11	12.24	1/0	11.88	11.95	12.10
	1/37	12.19	12.37	12.44	1/49	12.25	12.32	12.48
	1/74	12.14	12.25	12.43	1/99	12.18	12.20	12.32
	36/0	10.88	10.99	11.09	50/0	10.86	10.91	11.04
	36/19	10.98	11.14	11.20	50/24	11.00	11.12	11.17
	36/39	11.01	11.16	11.19	50/50	11.02	11.12	11.19
	75/0	10.91	11.06	11.12	100/0	10.92	11.03	11.09

LTE Band 7								
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		20775 / 2502.5	21100 / 2535	21425 / 2567.5		20800 / 2505	21100 / 2535	21400 / 2565
QPSK	1/0	19.69	19.81	20.06	1/0	19.80	19.88	20.08
	1/12	19.85	19.96	20.19	1/24	19.87	19.99	20.20
	1/24	19.71	19.84	20.08	1/49	19.80	19.95	20.19
	12/0	18.71	18.89	19.15	25/0	18.77	18.91	19.11
	12/6	18.79	18.91	19.15	25/12	18.82	18.93	19.17
	12/13	18.75	18.87	19.06	25/25	18.84	18.89	19.06
	25/0	18.75	18.86	19.10	50/0	18.78	18.93	19.10
16QAM	1/0	19.07	19.05	19.39	1/0	19.16	19.18	19.39
	1/12	19.21	19.32	19.43	1/24	19.19	19.30	19.48
	1/24	19.08	19.16	19.37	1/49	19.04	19.32	19.39
	12/0	17.72	17.90	18.15	25/0	17.80	17.95	18.14
	12/6	17.79	17.94	18.16	25/12	17.84	17.97	18.20
	12/13	17.75	17.89	18.12	25/25	17.88	17.92	18.09
	25/0	17.79	17.91	18.14	50/0	17.83	17.92	18.08
64QAM	1/0	17.93	18.04	18.28	1/0	17.94	18.04	18.30
	1/12	18.12	18.20	18.44	1/24	18.08	18.17	18.34
	1/24	17.95	17.99	18.24	1/49	18.05	18.10	18.32
	12/0	16.81	16.96	17.22	25/0	16.86	16.99	17.16
	12/6	16.87	17.01	17.25	25/12	16.89	17.01	17.27
	12/13	16.85	16.95	17.17	25/25	16.91	16.98	17.15
	25/0	16.83	16.95	17.18	50/0	16.85	16.97	17.16
Bandwidth	15 MHz				20 MHz			
Modulation	RB Size	Channel / Frequency (MHz)			RB Size	Channel / Frequency (MHz)		
		20825 / 2507.5	21100 / 2535	21375 / 2562.5		20850 / 2510	21100 / 2535	21350 / 2560
QPSK	1/0	19.72	19.77	20.02	1/0	19.73	19.80	20.04
	1/37	19.90	19.97	20.20	1/49	19.97	20.10	20.28
	1/74	19.79	19.95	20.10	1/99	19.79	20.00	20.14
	36/0	18.74	18.82	19.02	50/0	18.81	18.95	19.04
	36/19	18.79	18.92	19.13	50/24	18.96	19.05	19.28
	36/39	18.79	18.91	19.06	50/50	19.00	19.00	19.13
	75/0	18.79	18.88	19.06	100/0	18.89	18.98	19.11
16QAM	1/0	19.02	19.03	19.29	1/0	19.09	19.05	19.38
	1/37	19.24	19.28	19.52	1/49	19.36	19.31	19.53
	1/74	19.06	19.16	19.39	1/99	19.15	19.34	19.39
	36/0	17.74	17.84	18.03	50/0	17.82	17.99	18.05
	36/19	17.81	17.95	18.13	50/24	17.93	18.08	18.26
	36/39	17.80	17.92	18.06	50/50	18.02	18.00	18.15
	75/0	17.80	17.90	18.04	100/0	17.88	17.97	18.09
64QAM	1/0	17.90	17.99	18.25	1/0	17.92	18.03	18.25
	1/37	18.08	18.26	18.39	1/49	18.14	18.32	18.49
	1/74	17.98	18.18	18.24	1/99	17.92	18.20	18.33
	36/0	16.82	16.91	17.11	50/0	16.86	17.02	17.13
	36/19	16.86	16.97	17.23	50/24	17.00	17.11	17.32
	36/39	16.91	17.01	17.15	50/50	17.05	17.06	17.20
	75/0	16.83	16.92	17.09	100/0	16.97	17.01	17.15

LTE Band 12								
Bandwidth	1.4 MHz				3 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		23017 / 699.7	23095 / 707.5	23173 / 715.3		23025 / 700.5	23095 / 707.5	23165 / 714.5
QPSK	1/0	9.10	9.13	9.08	1/0	8.99	8.99	8.94
	1/2	9.20	9.16	9.10	1/7	9.15	9.09	9.08
	1/5	9.11	9.10	9.10	1/14	9.04	8.95	8.98
	3/0	9.19	9.19	9.17	8/0	8.25	8.17	8.22
	3/1	9.19	9.20	9.18	8/3	8.27	8.25	8.25
	3/3	9.23	9.20	9.19	8/7	8.21	8.21	8.16
	6/0	8.28	8.26	8.27	15/0	8.21	8.17	8.17
16QAM	1/0	8.43	8.45	8.45	1/0	8.20	8.33	8.32
	1/2	8.38	8.52	8.41	1/7	8.39	8.41	8.51
	1/5	8.29	8.41	8.39	1/14	8.30	8.27	8.28
	3/0	8.23	8.15	8.25	8/0	7.34	7.26	7.34
	3/1	8.28	8.19	8.25	8/3	7.34	7.33	7.32
	3/3	8.27	8.21	8.20	8/7	7.30	7.32	7.24
	6/0	7.42	7.41	7.40	15/0	7.25	7.22	7.23
64QAM	1/0	7.42	7.42	7.35	1/0	7.32	7.31	7.31
	1/2	7.54	7.49	7.45	1/7	7.53	7.43	7.40
	1/5	7.44	7.41	7.44	1/14	7.37	7.22	7.31
	3/0	7.47	7.46	7.41	8/0	6.34	6.25	6.30
	3/1	7.43	7.43	7.48	8/3	6.35	6.33	6.35
	3/3	7.44	7.41	7.44	8/7	6.26	6.30	6.25
	6/0	6.28	6.33	6.31	15/0	6.25	6.24	6.25
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size	Channel / Frequency (MHz)			RB Size	Channel / Frequency (MHz)		
		23035 / 701.5	23095 / 707.5	23155 / 713.5		23060 / 704	23095 / 707.5	23130 / 711
QPSK	1/0	9.25	9.23	9.17	1/0	9.48	9.43	9.45
	1/12	9.41	9.37	9.34	1/24	9.51	9.45	9.46
	1/24	9.22	9.25	9.21	1/49	9.43	9.43	9.40
	12/0	8.45	8.20	8.24	25/0	8.61	8.28	8.05
	12/6	8.39	8.31	8.33	25/12	8.47	8.44	8.37
	12/13	8.25	8.41	8.10	25/25	8.54	8.63	8.18
	25/0	8.38	8.34	8.20	50/0	8.60	8.52	8.14
16QAM	1/0	8.51	8.55	8.51	1/0	8.65	8.60	8.73
	1/12	8.68	8.72	8.66	1/24	8.81	8.75	8.77
	1/24	8.57	8.57	8.49	1/49	8.72	8.73	8.65
	12/0	7.45	7.24	7.26	25/0	7.63	7.33	7.11
	12/6	7.41	7.32	7.33	25/12	7.52	7.48	7.45
	12/13	7.29	7.44	7.13	25/25	7.58	7.71	7.23
	25/0	7.44	7.39	7.28	50/0	7.62	7.55	7.16
64QAM	1/0	7.46	7.47	7.52	1/0	7.64	7.67	7.58
	1/12	7.56	7.53	7.53	1/24	7.69	7.63	7.71
	1/24	7.38	7.37	7.46	1/49	7.61	7.61	7.60
	12/0	6.53	6.26	6.32	25/0	6.65	6.35	6.11
	12/6	6.45	6.39	6.42	25/12	6.55	6.50	6.47
	12/13	6.34	6.49	6.17	25/25	6.59	6.71	6.28
	25/0	6.44	6.39	6.29	50/0	6.63	6.57	6.18

LTE Band 17								
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size	Channel / Frequency (MHz)			RB Size	Channel / Frequency (MHz)		
		23755 / 706.5	23790 / 710	23825 / 713.5		23780 / 709	23790 / 710	23800 / 711
QPSK	1/0	9.30	9.26	9.26	1/0	9.48	9.50	9.48
	1/12	9.38	9.38	9.36	1/24	9.50	9.54	9.51
	1/24	9.28	9.26	9.24	1/49	9.41	9.44	9.44
	12/0	8.26	8.11	8.28	25/0	8.21	8.14	8.07
	12/6	8.35	8.33	8.33	25/12	8.47	8.45	8.42
	12/13	8.43	8.36	8.08	25/25	8.52	8.34	8.17
	25/0	8.36	8.28	8.18	50/0	8.42	8.28	8.15
16QAM	1/0	8.55	8.62	8.56	1/0	8.81	8.75	8.79
	1/12	8.67	8.63	8.61	1/24	8.84	8.74	8.81
	1/24	8.59	8.65	8.59	1/49	8.77	8.78	8.64
	12/0	7.27	7.18	7.28	25/0	7.26	7.18	7.13
	12/6	7.36	7.38	7.35	25/12	7.49	7.50	7.48
	12/13	7.47	7.41	7.13	25/25	7.56	7.41	7.23
	25/0	7.42	7.33	7.26	50/0	7.43	7.29	7.20
64QAM	1/0	7.43	7.46	7.47	1/0	7.71	7.61	7.68
	1/12	7.53	7.57	7.60	1/24	7.67	7.75	7.72
	1/24	7.47	7.51	7.44	1/49	7.58	7.62	7.54
	12/0	6.32	6.20	6.37	25/0	6.27	6.21	6.15
	12/6	6.43	6.39	6.42	25/12	6.51	6.52	6.51
	12/13	6.50	6.47	6.18	25/25	6.59	6.42	6.26
	25/0	6.42	6.35	6.27	50/0	6.47	6.33	6.21

LTE Band 41								
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		40065 / 2537.5	40590 / 2590	41215 / 2652.5		40090 / 2540	40590 / 2590	41190 / 2650
QPSK	1/0	18.62	18.34	18.05	1/0	18.65	18.46	18.09
	1/12	18.81	18.42	18.17	1/24	18.73	18.41	18.23
	1/24	18.63	18.28	18.03	1/49	18.68	18.36	18.11
	12/0	17.70	17.37	17.14	25/0	17.64	17.33	17.24
	12/6	17.74	17.49	17.19	25/12	17.67	17.38	17.12
	12/13	17.58	17.41	17.07	25/25	17.48	17.42	17.01
	25/0	17.62	17.37	17.12	50/0	17.57	17.32	17.13
16QAM	1/0	17.65	17.44	17.16	1/0	17.69	17.55	17.22
	1/12	17.80	17.37	17.27	1/24	17.82	17.52	17.33
	1/24	17.70	17.33	17.18	1/49	17.76	17.39	17.24
	12/0	16.62	16.32	16.12	25/0	16.67	16.31	16.25
	12/6	16.68	16.29	16.10	25/12	16.72	16.39	16.15
	12/13	16.59	16.31	16.02	25/25	16.55	16.43	16.03
	25/0	16.68	16.29	16.09	50/0	16.59	16.37	16.16
64QAM	1/0	16.32	16.03	15.79	1/0	16.35	16.19	15.82
	1/12	16.46	16.15	15.90	1/24	16.44	16.14	15.93
	1/24	16.37	15.97	15.81	1/49	16.33	16.03	15.83
	12/0	15.72	15.38	15.19	25/0	15.74	15.37	15.30
	12/6	15.78	15.36	15.23	25/12	15.73	15.43	15.21
	12/13	15.69	15.34	15.11	25/25	15.61	15.36	15.08
	25/0	15.73	15.31	15.13	50/0	15.59	15.31	15.14
Bandwidth	15 MHz				20 MHz			
Modulation	RB Size	Channel / Frequency (MHz)			RB Size	Channel / Frequency (MHz)		
		40115 / 2542.5	40590 / 2590	41165 / 2647.5		40140 / 2545	40590 / 2590	41140 / 2645
QPSK	1/0	18.55	18.43	18.05	1/0	18.69	18.57	18.19
	1/37	18.66	18.38	18.15	1/50	18.90	18.66	18.37
	1/74	18.62	18.32	18.07	1/99	18.74	18.34	18.16
	36/0	17.65	17.32	17.18	50/0	17.84	17.32	17.47
	36/19	17.66	17.28	17.15	50/25	17.79	17.61	17.32
	36/39	17.54	17.26	16.97	50/50	17.61	17.59	17.09
	75/0	17.53	17.19	17.06	100/0	17.76	17.61	17.29
16QAM	1/0	17.58	17.43	17.18	1/0	17.76	17.68	17.32
	1/37	17.75	17.41	17.28	1/50	17.98	17.74	17.51
	1/74	17.64	17.39	17.16	1/99	17.78	17.52	17.30
	36/0	16.63	16.24	16.24	50/0	16.86	16.42	16.54
	36/19	16.65	16.31	16.12	50/25	16.79	16.62	16.39
	36/39	16.55	16.29	15.99	50/50	16.61	16.66	16.05
	75/0	16.57	16.24	16.07	100/0	16.82	16.59	16.35
64QAM	1/0	16.26	16.12	15.76	1/0	16.39	16.33	15.90
	1/37	16.39	16.09	15.92	1/50	16.61	16.38	16.10
	1/74	16.34	15.99	15.80	1/99	16.43	16.17	15.87
	36/0	15.66	15.28	15.20	50/0	15.88	15.33	15.54
	36/19	15.65	15.24	15.14	50/25	15.82	15.56	15.38
	36/39	15.59	15.39	15.00	50/50	15.60	15.61	15.05
	75/0	15.58	15.24	15.12	100/0	15.82	15.62	15.36

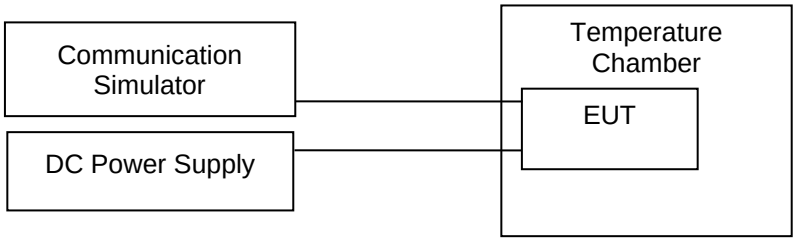
5.1.2 Frequency Stability

Limit

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

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV	101512	2023/02/23	2024/02/22	2023/11/17	2023/12/16
Thermal Chamber	GIANT FORCE	GCT-099-40-S	MAF0103-007	2023/02/20	2024/02/19	2023/11/17	2023/12/16
Wwan BS	R & S	CMW500	166923	2023/04/12	2024/04/10	2023/11/17	2023/12/16
Wwan BS	Anritsu	MT8821C	6262044753	2023/06/14	2024/06/12	2023/11/17	2023/12/16

Test Procedure

a. Device is placed at the temperature chamber. The temperature chamber could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
b. 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.
c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5 ℃ 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.

Test Results

LTE Band 4				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-7.82	-0.0045	± 2.5
25	3.6	-5.34	-0.0031	± 2.5
25	4.4	-6.31	-0.0036	± 2.5
50	3.85	-9.01	-0.0052	± 2.5
40	3.85	-8.52	-0.0049	± 2.5
30	3.85	-8.13	-0.0047	± 2.5
20	3.85	-7.82	-0.0045	± 2.5
10	3.85	-6.33	-0.0037	± 2.5
0	3.85	-4.25	-0.0025	± 2.5
-10	3.85	-4.01	-0.0023	± 2.5
-20	3.85	-3.86	-0.0022	± 2.5
-30	3.85	-3.69	-0.0021	± 2.5

LTE Band 7				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-2.22	-0.0009	± 2.5
25	3.6	-2.71	-0.0011	± 2.5
25	4.4	-2.49	-0.0010	± 2.5
50	3.85	-2.32	-0.0009	± 2.5
40	3.85	-2.81	-0.0011	± 2.5
30	3.85	-2.53	-0.0010	± 2.5
20	3.85	-2.22	-0.0009	± 2.5
10	3.85	-2.36	-0.0009	± 2.5
0	3.85	-2.74	-0.0011	± 2.5
-10	3.85	-2.81	-0.0011	± 2.5
-20	3.85	-3.12	-0.0012	± 2.5
-30	3.85	-3.37	-0.0013	± 2.5

LTE Band 12				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-1.82	-0.0026	± 2.5
25	3.6	-1.63	-0.0023	± 2.5
25	4.4	-1.77	-0.0025	± 2.5
50	3.85	-2.53	-0.0036	± 2.5
40	3.85	-2.16	-0.0031	± 2.5
30	3.85	-2.02	-0.0029	± 2.5
20	3.85	-1.82	-0.0026	± 2.5
10	3.85	-1.58	-0.0022	± 2.5
0	3.85	-2.12	-0.0030	± 2.5
-10	3.85	-2.53	-0.0036	± 2.5
-20	3.85	-2.92	-0.0041	± 2.5
-30	3.85	-3.33	-0.0047	± 2.5

LTE Band 17				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-1.57	-0.0022	± 2.5
25	3.6	-1.45	-0.0020	± 2.5
25	4.4	-1.59	-0.0022	± 2.5
50	3.85	-2.53	-0.0036	± 2.5
40	3.85	-2.18	-0.0031	± 2.5
30	3.85	-1.84	-0.0026	± 2.5
20	3.85	-1.63	-0.0023	± 2.5
10	3.85	-1.66	-0.0023	± 2.5
0	3.85	-1.93	-0.0027	± 2.5
-10	3.85	-2.21	-0.0031	± 2.5
-20	3.85	-2.41	-0.0034	± 2.5
-30	3.85	-2.73	-0.0038	± 2.5

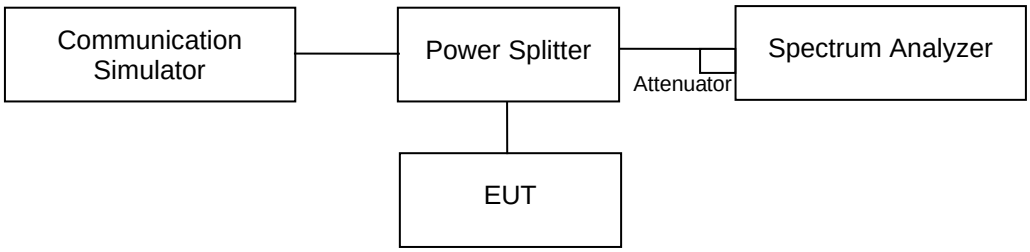
LTE Band 41				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-2.21	-0.0009	± 2.5
25	3.6	-2.43	-0.0009	± 2.5
25	4.4	-2.29	-0.0009	± 2.5
50	3.85	-2.83	-0.0011	± 2.5
40	3.85	-2.41	-0.0009	± 2.5
30	3.85	-2.32	-0.0009	± 2.5
20	3.85	-2.21	-0.0009	± 2.5
10	3.85	-1.93	-0.0007	± 2.5
0	3.85	-1.79	-0.0007	± 2.5
-10	3.85	-2.01	-0.0008	± 2.5
-20	3.85	-2.28	-0.0009	± 2.5
-30	3.85	-2.63	-0.0010	± 2.5

5.1.3 Peak to Average Ratio

Limit 13 dB

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV	101512	2023/02/23	2024/02/22	2023/11/17	2023/12/16
Thermal Chamber	GIANT FORCE	GCT-099-40-S	MAF0103-007	2023/02/20	2024/02/19	2023/11/17	2023/12/16
Wwan BS	R & S	CMW500	166923	2023/04/12	2024/04/10	2023/11/17	2023/12/16
Wwan BS	Anritsu	MT8821C	6262044753	2023/06/14	2024/06/12	2023/11/17	2023/12/16

Test Procedure

1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1 %.

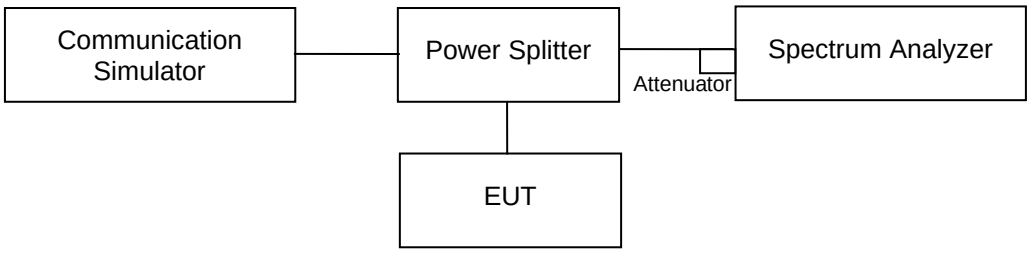
Test Results

Please refer to Appendix A.

5.1.4 Occupied Bandwidth and 26 dB Bandwidth Measurement

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV	101512	2023/02/23	2024/02/22	2023/11/17	2023/12/16
Thermal Chamber	GIANT FORCE	GCT-099-40-S	MAF0103-007	2023/02/20	2024/02/19	2023/11/17	2023/12/16
Wwan BS	R & S	CMW500	166923	2023/04/12	2024/04/10	2023/11/17	2023/12/16
Wwan BS	Anritsu	MT8821C	6262044753	2023/06/14	2024/06/12	2023/11/17	2023/12/16

Test Procedure

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.
- Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Test Results

Please refer to Appendix A.

5.1.5 Conducted Band Edge & Emission Mask

Limit

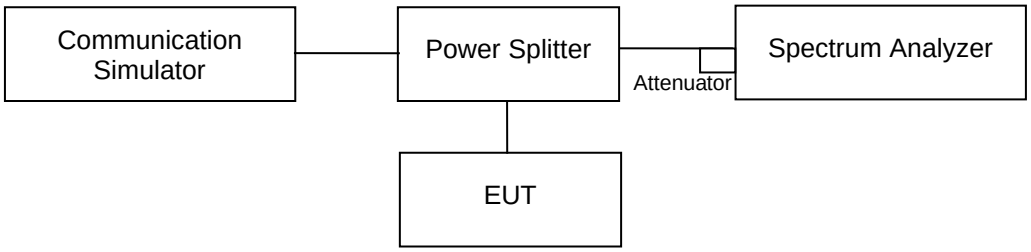
§27.53(h): For operations in the 1710–1755 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB.

§27.53(m)(4)(6): The power of any emission outside of the channel edge must be attenuated below the transmitting power (P) by a factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed.

§27.53(g): For operations in the 600 MHz and 698-787 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.
However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV	101512	2023/02/23	2024/02/22	2023/11/17	2023/12/16
Thermal Chamber	GIANT FORCE	GCT-099-40-S	MAF0103-007	2023/02/20	2024/02/19	2023/11/17	2023/12/16
Wwan BS	R & S	CMW500	166923	2023/04/12	2024/04/10	2023/11/17	2023/12/16
Wwan BS	Anritsu	MT8821C	6262044753	2023/06/14	2024/06/12	2023/11/17	2023/12/16

Test Procedure

a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency.
c. Record the maximum trace plot into the test report.

Test Results

Please refer to Appendix B.

5.1.6 Conducted Spurious Emissions

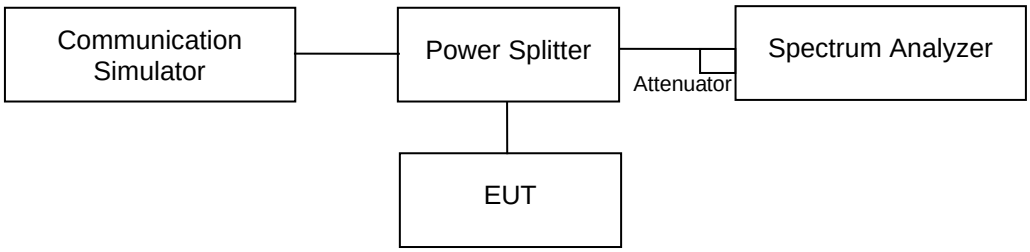
Limit

§27.53(h), §27.53(g): The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log (P) dB.

§27.53(m)(4)(6): The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 + 10 log (P) dB.

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV	101512	2023/02/23	2024/02/22	2023/11/17	2023/12/16
Thermal Chamber	GIANT FORCE	GCT-099-40-S	MAF0103-007	2023/02/20	2024/02/19	2023/11/17	2023/12/16
Wwan BS	R & S	CMW500	166923	2023/04/12	2024/04/10	2023/11/17	2023/12/16
Wwan BS	Anritsu	MT8821C	6262044753	2023/06/14	2024/06/12	2023/11/17	2023/12/16

Test Procedure

a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to the 10th harmonic of fundamental frequency. 10 dB attenuation pad is connected with spectrum.

Test Results

Please refer to Appendix C.

5.1.7 Radiated Spurious Emissions

Limit

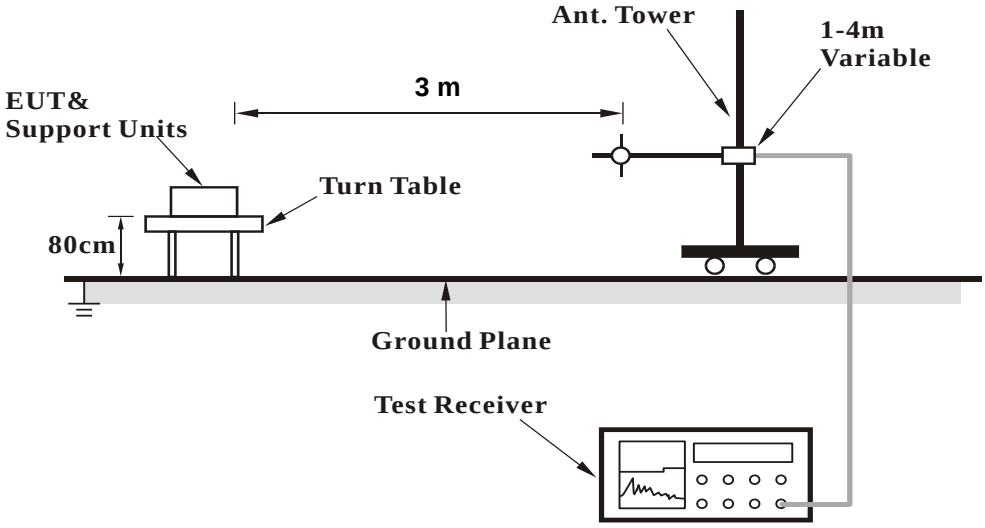
§27.53(h), §27.53(g): The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log (P) dB.

§27.53(m)(4)(6): The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 + 10 log (P) dB.

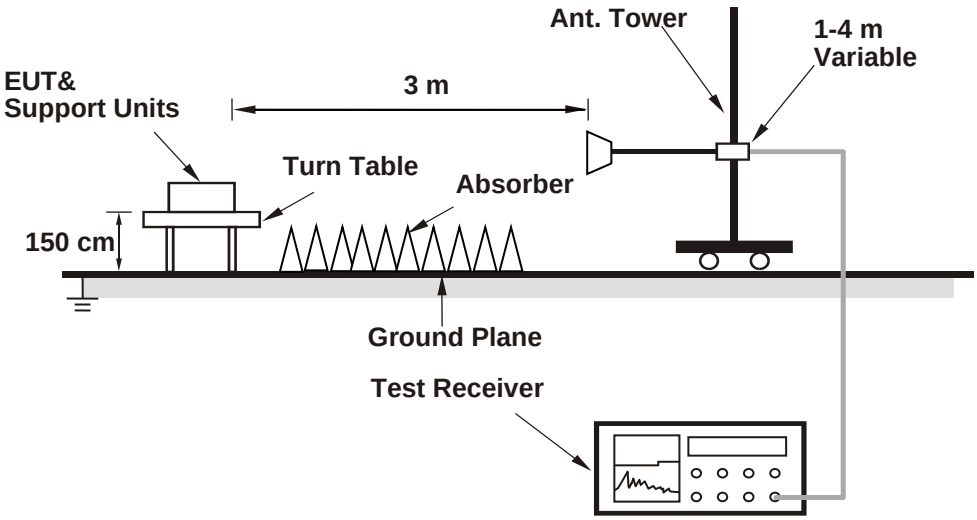
Kind of Test Site 3m Semi-Anechoic Chamber

Test Setup

<Radiated Emissions below or equal to 1 GHz>



<Radiated Emissions above 1 GHz>



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

Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Above 1 GHz					
Signal Analyzer	R&S	FSV40	101509	2023/4/26	2024/4/24
wideband radio communication tester	R&S	CMW500	166978	2023/4/20	2024/4/18
Horn Antenna	ETS-Lindgren	3117	00218931	2023/2/24	2024/2/23
HF-AMP + AC source	EMCI	EM01G18GA	980635	2023/2/16	2024/2/15
HF-AMP + AC source	EMCI	EMC184045SE	980656	2023/1/6	2024/1/5
Horn Antenna	SCHWARZBECK	BBHA 9170	00890	2023/5/4	2024/5/2
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A
30 MHz ~ 1 GHz					
Receiver	R&S	ESR7	102109	2023/2/24	2024/2/23
wideband radio communication tester	R&S	CMW500	166978	2023/4/20	2024/4/18
Bilog Antenna	SCHWARZBECK	VULB-9168	00951	2023/3/31	2024/3/29
LF-AMP	Agilent	8447D	2944A107722	2023/3/22	2024/3/20
Test Software	Audix E3	15914a_20191106 tuv	PK-001087	N/A	N/A

Test Procedures

a. In the semi-anechoic chamber, EUT placed on the 0.8m (below or equal 1 GHz) and/or 1.5m (above 1 GHz) height of turn table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value“ is the spectrum reading the maximum power value.
b. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
c. Perform a field strength measurement and record the worse rad value, is the filed strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathemtically convert the measured field strength level to EIRP/ERP level.
d. Following C63.26 section 5.5 and 5.2.7
EIRP (dBm) = E (dBµV/m) + 20log(D) – 104.8; where D is measurement distance (in the far field region) in m.
ERP (dBm) = E (dBµV/m) + 20log(D) – 104.8 – 2.15; where D is measurement distance (in the far field region) in m.

Note:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
2. Testing was carried out within frequency range 30 MHz to the tenth harmonic.
3. All modes of operation were investigated and the worst-case emissions are reported.
4. The Radiated Emissions testing was performed in the X, Y and Z axis orientation. The worst-case Axis orientation is recorded in this test report.

Test Results

Please refer to Appendix D.