Prüfbericht-Nr.: *Test report no.:*	CN243R14 001	**Auftrags-Nr.:** *Order no.:*	48225046	Seite 1 von 31 *Page 1 of 31*
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 24 Test report			
Prüfgrundlage: *Test specification:*	FCC 47CFR Part 24 Subpart E			
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:*		**genehmigt von:** authorized by:		
Datum: *Date:* 2024-02-06	Anderson Chiu	**Ausstellungsdatum:** *Issue date:* 2024-02-06	Brenda Chen	
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	Result
5.1.1	2.1046 24.232(c)	Conducted Output Power and Effective Isotropically Radiated Power	Pass
5.1.2	2.1055 24.235	Frequency Stability	Pass
5.1.3	24.232(d)	Peak to Average Ratio	Pass
5.1.4	2.1049	Occupied Bandwidth and 26 dB Bandwidth	Pass
5.1.5	2.1051 24.238(a)	Conducted Band Edge	Pass
5.1.6	2.1051 24.238(a)	Conducted Spurious Emissions	Pass
5.1.7	2.1053 24.238(a)	Radiated Spurious Emissions	Pass

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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APPENDIX A - TEST RESULT OF CONDUCTED

APPENDIX B - 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
Appendix B - Test Result of Radiated Spurious Emissions
Appendix SP - Photographs Test Setup
Appendix EP - Photographs of EUT

Applied Standard and Test Levels

Radio
FCC 47CFR Part 2
FCC 47CFR Part 24 Subpart E
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	GSM/GPSR/EDGE	1850.2 ~ 1909.8 MHz
	WCDMA	1852.4 ~ 1907.6 MHz
	LTE Band 2 (1.4 MHz)	1850.7 ~ 1909.3 MHz
	LTE Band 2 (3 MHz)	1851.5 ~ 1908.5 MHz
	LTE Band 2 (5 MHz)	1852.5 ~ 1907.5 MHz
	LTE Band 2 (10 MHz)	1855.0 ~ 1905.0 MHz
	LTE Band 2 (15 MHz)	1857.5 ~ 1902.5 MHz
	LTE Band 2 (20 MHz)	1860.0 ~ 1900.0 MHz
Modulation	GSM/GPRS	GMSK
	EDGE	8PSK
	WCDMA	QPSK
	LTE	QPSK, 16QAM, 64QAM
Operation Voltage	Battery: 3.85 Vdc USB: 5 Vdc	
Antenna Information	LDS antenna with -0.19 dBi gain	
Accessory Device	Refer to 4.3	

Maximum EIRP and Emission Designator

Item	Band	Result
Maximum EIRP (dBm)	GSM/GPSR	28.20
	EDGE	25.68
	WCDMA	23.55
	LTE Band 2 (1.4 MHz)	20.65
	LTE Band 2 (3 MHz)	20.57
	LTE Band 2 (5 MHz)	20.79
	LTE Band 2 (10 MHz)	20.77
	LTE Band 2 (15 MHz)	20.77
	LTE Band 2 (20 MHz)	20.86
Emission Designator	GSM/GPSR	249KGXW
	EDGE	244KG7W
	WCDMA	4M19F9W
	LTE Band 2 (1.4 MHz)	1M10G7D, 1M10W7D, 1M10W7D
	LTE Band 2 (3 MHz)	2M70G7D, 2M70W7D, 2M69W7D
	LTE Band 2 (5 MHz)	4M50G7D, 4M51W7D, 4M50W7D
	LTE Band 2 (10 MHz)	8M99G7D, 8M99W7D, 8M99W7D
	LTE Band 2 (15 MHz)	13M5G7D, 13M5W7D, 13M5W7D
	LTE Band 2 (20 MHz)	18M4G7D, 18M4W7D, 18M4W7D

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 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	Available Channel	Tested Channel	Mode
-	GSM	512 to 810	512, 661, 810	GSM / EDGE
-	WCDMA	9262 to 9538	9262, 9400, 9538	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation
-	LTE Band 2	1.4 MHz	18607 to 19193	18607, 18900, 19193	QPSK, 16QAM, 64QAM
		3 MHz	18615 to 19185	18615, 18900, 19185	QPSK, 16QAM, 64QAM
		5 MHz	18625 to 19175	18625, 18900, 19175	QPSK, 16QAM, 64QAM
		10 MHz	18650 to 19150	18650, 18900, 19150	QPSK, 16QAM, 64QAM
		15 MHz	18675 to 19125	18675, 18900, 19125	QPSK, 16QAM, 64QAM
		20 MHz	18700 to 19100	18700, 18900, 19100	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	Available Channel	Tested Channel	Mode
-	GSM	512 to 810	661	GSM / EDGE
-	WCDMA	9262 to 9538	9400	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 2	20 MHz	18700 to 19100	18900	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	Available Channel	Tested Channel	Mode
-	GSM	512 to 810	512, 661, 810	GSM / EDGE
-	WCDMA	9262 to 9538	9262, 9400, 9538	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 2	1.4 MHz	18607 to 19193	18607, 18900, 19193	QPSK, 16QAM, 64QAM	1 RB / Full RB
		3 MHz	18615 to 19185	18615, 18900, 19185	QPSK, 16QAM, 64QAM	1 RB / Full RB
		5 MHz	18625 to 19175	18625, 18900, 19175	QPSK, 16QAM, 64QAM	1 RB / Full RB
		10 MHz	18650 to 19150	18650, 18900, 19150	QPSK, 16QAM, 64QAM	1 RB / Full RB
		15 MHz	18675 to 19125	18675, 18900, 19125	QPSK, 16QAM, 64QAM	1 RB / Full RB
		20 MHz	18700 to 19100	18700, 18900, 19100	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	Available Channel	Tested Channel	Mode
-	GSM	512 to 810	512, 661, 810	GSM / EDGE
-	WCDMA	9262 to 9538	9262, 9400, 9538	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 2	1.4 MHz	18607 to 19193	18607, 18900, 19193	QPSK, 16QAM, 64QAM	Full RB
		3 MHz	18615 to 19185	18615, 18900, 19185	QPSK, 16QAM, 64QAM	Full RB
		5 MHz	18625 to 19175	18625, 18900, 19175	QPSK, 16QAM, 64QAM	Full RB
		10 MHz	18650 to 19150	18650, 18900, 19150	QPSK, 16QAM, 64QAM	Full RB
		15 MHz	18675 to 19125	18675, 18900, 19125	QPSK, 16QAM, 64QAM	Full RB
		20 MHz	18700 to 19100	18700, 18900, 19100	QPSK, 16QAM, 64QAM	Full RB

Band Edge

☒ 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	Available Channel	Tested Channel	Mode
-	GSM	512 to 810	512, 810	GSM / EDGE
-	WCDMA	9262 to 9538	9262, 9538	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 2	1.4 MHz	18607 to 19193	18607, 19193	QPSK	1 RB / Full RB
		3 MHz	18615 to 19185	18615, 19185	QPSK	1 RB / Full RB
		5 MHz	18625 to 19175	18625, 19175	QPSK	1 RB / Full RB
		10 MHz	18650 to 19150	18650, 19150	QPSK	1 RB / Full RB
		15 MHz	18675 to 19125	18675, 19125	QPSK	1 RB / Full RB
		20 MHz	18700 to 19100	18700, 19100	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	Available Channel	Tested Channel	Mode
-	GSM	512 to 810	512, 661, 810	GSM / EDGE
-	WCDMA	9262 to 9538	9262, 9400, 9538	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 2	1.4 MHz	18607 to 19193	18607, 18900, 19193	QPSK	1 RB
		3 MHz	18615 to 19185	18615, 18900, 19185	QPSK	1 RB
		5 MHz	18625 to 19175	18625, 18900, 19175	QPSK	1 RB
		10 MHz	18650 to 19150	18650, 18900, 19150	QPSK	1 RB
		15 MHz	18675 to 19125	18675, 18900, 19125	QPSK	1 RB
		20 MHz	18700 to 19100	18700, 18900, 19100	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	Available Channel	Tested Channel	Mode	Position
-	GSM	512 to 810	512, 661, 810	GSM / EDGE	Y-plane
-	WCDMA	9262 to 9538	9262, 9400, 9538	WCDMA	Y-plane

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode	Postion
-	LTE Band 2	20 MHz	18700 to 19100	18700, 18900, 19100	QPSK	1 RB	Y-plane

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
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	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:

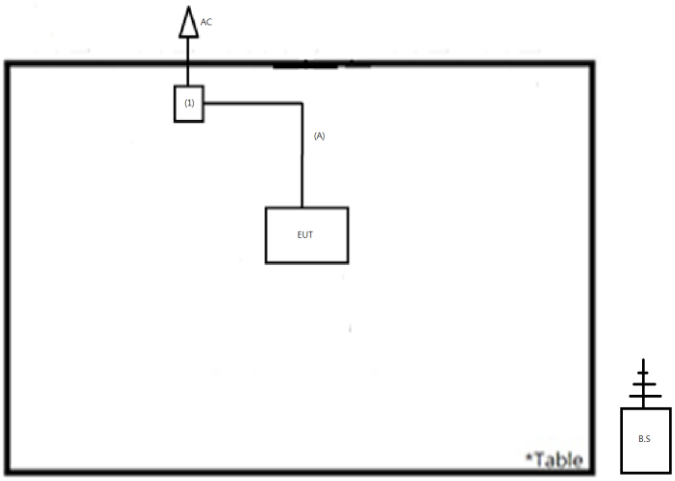
Accessory of EUT

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

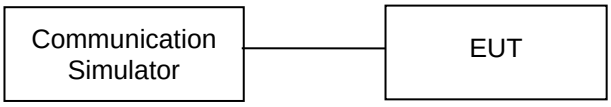
5.1 Transmitter Requirement & Test Suites

5.1.1 Conducted Output Power and EIRP

Limit 2 watt (EIRP)

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>

Band	GSM1900_Power (dBm)		
Channel	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8
GSM (GMSK, 1Tx-slot)	28.38	28.09	27.80
GPRS (GMSK, 1Tx-slot)	28.39	28.11	27.81
GPRS (GMSK, 2Tx-slot)	27.65	27.39	27.11
GPRS (GMSK, 3Tx-slot)	26.36	26.10	25.83
GPRS (GMSK, 4Tx-slot)	25.85	25.52	25.27
EDGE (8PSK, 1Tx-slot)	25.87	25.66	25.30
EDGE (8PSK, 2Tx-slot)	25.73	25.64	25.26
EDGE (8PSK, 3Tx-slot)	25.69	25.59	25.23
EDGE (8PSK, 4Tx-slot)	25.42	25.50	25.21

Band	WCDMA II_Power (dBm)		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
RMC 12.2K	23.74	23.42	23.04
HSDPA Subtest-1	22.73	22.47	22.20
HSDPA Subtest-2	22.72	22.46	22.16
HSDPA Subtest-3	22.23	21.98	21.67
HSDPA Subtest-4	22.23	21.99	21.68
HSUPA Subtest-1	20.51	20.41	20.14
HSUPA Subtest-2	20.74	20.53	20.74
HSUPA Subtest-3	21.47	21.32	21.11
HSUPA Subtest-4	20.26	20.01	20.21
HSUPA Subtest-5	21.69	21.46	21.19

LTE Band 2_Power (dBm)								
Bandwidth	1.4 MHz				3 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset			
		18607 / 1850.7	18900 / 1880	19193 / 1909.3		18615 / 1851.5	18900 / 1880	19185 / 1908.5
QPSK	1/0	20.75	20.47	20.21	1/0	20.66	20.40	20.11
	1/2	20.79	20.51	20.23	1/7	20.76	20.49	20.26
	1/5	20.72	20.47	20.20	1/14	20.61	20.41	20.11
	3/0	20.82	20.54	20.29	8/0	19.86	19.63	19.38
	3/1	20.84	20.58	20.31	8/3	19.96	19.71	19.45
	3/3	20.84	20.56	20.28	8/7	19.93	19.65	19.38
	6/0	19.97	19.73	19.45	15/0	19.91	19.65	19.38
16QAM	1/0	20.00	19.70	19.50	1/0	19.87	19.58	19.34
	1/2	20.17	19.84	19.46	1/7	20.02	19.71	19.61
	1/5	20.11	19.75	19.48	1/14	20.02	19.62	19.31
	3/0	19.82	19.60	19.35	8/0	18.94	18.73	18.47
	3/1	19.90	19.62	19.35	8/3	19.03	18.79	18.54
	3/3	19.93	19.65	19.33	8/7	19.02	18.73	18.44
	6/0	19.07	18.85	18.54	15/0	18.91	18.69	18.38
64QAM	1/0	19.19	18.79	18.48	1/0	19.00	18.76	18.46
	1/2	19.14	18.82	18.62	1/7	19.13	18.82	18.55
	1/5	19.06	18.86	18.49	1/14	19.00	18.77	18.45
	3/0	19.16	18.83	18.57	8/0	18.00	17.72	17.46
	3/1	19.13	18.87	18.60	8/3	18.06	17.79	17.56
	3/3	19.14	18.88	18.54	8/7	18.02	17.76	17.48
	6/0	18.02	17.76	17.49	15/0	17.94	17.66	17.40

LTE Band 2_Power (dBm)								
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		18625 / 1852.5	18900 / 1880	19175 / 1907.5		18650 / 1855	18900 / 1880	19150 / 1905
QPSK	1/0	20.87	20.63	20.39	1/0	20.94	20.71	20.47
	1/12	20.98	20.73	20.50	1/24	20.96	20.73	20.54
	1/24	20.85	20.59	20.32	1/49	20.91	20.70	20.44
	12/0	19.89	19.73	19.48	25/0	19.85	19.73	19.52
	12/6	20.03	19.78	19.52	25/12	19.99	19.79	19.56
	12/13	19.96	19.70	19.42	25/25	19.98	19.73	19.43
	25/0	19.97	19.74	19.47	50/0	19.94	19.77	19.52
16QAM	1/0	20.14	19.84	19.74	1/0	20.27	20.03	19.89
	1/12	20.39	20.06	19.86	1/24	20.23	20.03	19.85
	1/24	20.10	19.96	19.56	1/49	20.16	19.97	19.73
	12/0	18.93	18.75	18.50	25/0	18.89	18.75	18.57
	12/6	19.06	18.80	18.56	25/12	19.04	18.84	18.62
	12/13	19.00	18.72	18.43	25/25	19.04	18.77	18.48
	25/0	19.03	18.78	18.49	50/0	18.95	18.79	18.54
64QAM	1/0	19.08	18.97	18.62	1/0	19.22	18.96	18.78
	1/12	19.34	19.02	18.81	1/24	19.24	19.03	18.74
	1/24	19.12	18.82	18.57	1/49	19.19	19.00	18.68
	12/0	17.98	17.82	17.56	25/0	17.92	17.78	17.58
	12/6	18.12	17.88	17.61	25/12	18.07	17.86	17.64
	12/13	18.05	17.80	17.49	25/25	18.05	17.81	17.51
	25/0	18.04	17.82	17.53	50/0	17.96	17.79	17.57
Bandwidth	15 MHz				20 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		18675 / 1857.5	18900 / 1880	19125 / 1902.5		18700 / 1860	18900 / 1880	19100 / 1900
QPSK	1/0	20.89	20.74	20.48	1/0	20.94	20.76	20.56
	1/37	20.96	20.75	20.59	1/49	21.05	20.90	20.70
	1/74	20.81	20.65	20.41	1/99	20.82	20.64	20.45
	36/0	19.91	19.77	19.53	50/0	19.93	19.94	19.67
	36/19	19.96	19.79	19.55	50/24	20.08	19.95	19.73
	36/39	19.86	19.79	19.48	50/50	19.94	19.92	19.61
	75/0	19.91	19.79	19.54	100/0	19.93	19.91	19.64
16QAM	1/0	20.17	19.99	19.78	1/0	20.27	19.99	19.93
	1/37	20.35	20.03	19.77	1/49	20.39	20.08	20.00
	1/74	20.09	19.84	19.61	1/99	20.12	19.99	19.65
	36/0	18.90	18.78	18.56	50/0	18.94	18.94	18.69
	36/19	19.01	18.82	18.58	50/24	19.12	18.96	18.74
	36/39	18.90	18.80	18.52	50/50	18.96	18.91	18.64
	75/0	18.93	18.81	18.56	100/0	18.95	18.91	18.64
64QAM	1/0	19.17	18.96	18.68	1/0	19.20	19.03	18.84
	1/37	19.21	18.99	18.86	1/49	19.33	19.05	18.90
	1/74	19.08	18.90	18.62	1/99	19.11	18.81	18.69
	36/0	17.99	17.86	17.61	50/0	17.97	17.97	17.73
	36/19	18.06	17.88	17.61	50/24	18.14	17.96	17.76
	36/39	17.96	17.84	17.56	50/50	17.98	17.94	17.64
	75/0	17.95	17.82	17.58	100/0	17.97	17.93	17.68

<EIRP>

Band	GSM1900_Power (dBm)		
Channel	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8
GSM (GMSK, 1Tx-slot)	28.19	27.90	27.61
GPRS (GMSK, 1Tx-slot)	28.20	27.92	27.62
GPRS (GMSK, 2Tx-slot)	27.46	27.20	26.92
GPRS (GMSK, 3Tx-slot)	26.17	25.91	25.64
GPRS (GMSK, 4Tx-slot)	25.66	25.33	25.08
EDGE (8PSK, 1Tx-slot)	25.68	25.47	25.11
EDGE (8PSK, 2Tx-slot)	25.54	25.45	25.07
EDGE (8PSK, 3Tx-slot)	25.50	25.40	25.04
EDGE (8PSK, 4Tx-slot)	25.23	25.31	25.02

Band	WCDMA II_Power (dBm)		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
RMC 12.2K	23.55	23.23	22.85
HSDPA Subtest-1	22.54	22.28	22.01
HSDPA Subtest-2	22.53	22.27	21.97
HSDPA Subtest-3	22.04	21.79	21.48
HSDPA Subtest-4	22.04	21.80	21.49
HSUPA Subtest-1	20.32	20.22	19.95
HSUPA Subtest-2	20.55	20.34	20.55
HSUPA Subtest-3	21.28	21.13	20.92
HSUPA Subtest-4	20.07	19.82	20.02
HSUPA Subtest-5	21.50	21.27	21.00

LTE Band 2_Power (dBm)								
Bandwidth	1.4 MHz				3 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset			
		18607 / 1850.7	18900 / 1880	19193 / 1909.3		18615 / 1851.5	18900 / 1880	19185 / 1908.5
QPSK	1/0	20.56	20.28	20.02	1/0	20.47	20.21	19.92
	1/2	20.60	20.32	20.04	1/7	20.57	20.30	20.07
	1/5	20.53	20.28	20.01	1/14	20.42	20.22	19.92
	3/0	20.63	20.35	20.10	8/0	19.67	19.44	19.19
	3/1	20.65	20.39	20.12	8/3	19.77	19.52	19.26
	3/3	20.65	20.37	20.09	8/7	19.74	19.46	19.19
	6/0	19.78	19.54	19.26	15/0	19.72	19.46	19.19
16QAM	1/0	19.81	19.51	19.31	1/0	19.68	19.39	19.15
	1/2	19.98	19.65	19.27	1/7	19.83	19.52	19.42
	1/5	19.92	19.56	19.29	1/14	19.83	19.43	19.12
	3/0	19.63	19.41	19.16	8/0	18.75	18.54	18.28
	3/1	19.71	19.43	19.16	8/3	18.84	18.60	18.35
	3/3	19.74	19.46	19.14	8/7	18.83	18.54	18.25
	6/0	18.88	18.66	18.35	15/0	18.72	18.50	18.19
64QAM	1/0	19.00	18.60	18.29	1/0	18.81	18.57	18.27
	1/2	18.95	18.63	18.43	1/7	18.94	18.63	18.36
	1/5	18.87	18.67	18.30	1/14	18.81	18.58	18.26
	3/0	18.97	18.64	18.38	8/0	17.81	17.53	17.27
	3/1	18.94	18.68	18.41	8/3	17.87	17.60	17.37
	3/3	18.95	18.69	18.35	8/7	17.83	17.57	17.29
	6/0	17.83	17.57	17.30	15/0	17.75	17.47	17.21

LTE Band 2_Power (dBm)								
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		18625 / 1852.5	18900 / 1880	19175 / 1907.5		18650 / 1855	18900 / 1880	19150 / 1905
QPSK	1/0	20.68	20.44	20.20	1/0	20.75	20.52	20.28
	1/12	20.79	20.54	20.31	1/24	20.77	20.54	20.35
	1/24	20.66	20.40	20.13	1/49	20.72	20.51	20.25
	12/0	19.70	19.54	19.29	25/0	19.66	19.54	19.33
	12/6	19.84	19.59	19.33	25/12	19.80	19.60	19.37
	12/13	19.77	19.51	19.23	25/25	19.79	19.54	19.24
	25/0	19.78	19.55	19.28	50/0	19.75	19.58	19.33
16QAM	1/0	19.95	19.65	19.55	1/0	20.08	19.84	19.70
	1/12	20.20	19.87	19.67	1/24	20.04	19.84	19.66
	1/24	19.91	19.77	19.37	1/49	19.97	19.78	19.54
	12/0	18.74	18.56	18.31	25/0	18.70	18.56	18.38
	12/6	18.87	18.61	18.37	25/12	18.85	18.65	18.43
	12/13	18.81	18.53	18.24	25/25	18.85	18.58	18.29
	25/0	18.84	18.59	18.30	50/0	18.76	18.60	18.35
64QAM	1/0	18.89	18.78	18.43	1/0	19.03	18.77	18.59
	1/12	19.15	18.83	18.62	1/24	19.05	18.84	18.55
	1/24	18.93	18.63	18.38	1/49	19.00	18.81	18.49
	12/0	17.79	17.63	17.37	25/0	17.73	17.59	17.39
	12/6	17.93	17.69	17.42	25/12	17.88	17.67	17.45
	12/13	17.86	17.61	17.30	25/25	17.86	17.62	17.32
	25/0	17.85	17.63	17.34	50/0	17.77	17.60	17.38
Bandwidth	15 MHz				20 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		18675 / 1857.5	18900 / 1880	19125 / 1902.5		18700 / 1860	18900 / 1880	19100 / 1900
QPSK	1/0	20.70	20.55	20.29	1/0	20.75	20.57	20.37
	1/37	20.77	20.56	20.40	1/49	20.86	20.71	20.51
	1/74	20.62	20.46	20.22	1/99	20.63	20.45	20.26
	36/0	19.72	19.58	19.34	50/0	19.74	19.75	19.48
	36/19	19.77	19.60	19.36	50/24	19.89	19.76	19.54
	36/39	19.67	19.60	19.29	50/50	19.75	19.73	19.42
	75/0	19.72	19.60	19.35	100/0	19.74	19.72	19.45
16QAM	1/0	19.98	19.80	19.59	1/0	20.08	19.80	19.74
	1/37	20.16	19.84	19.58	1/49	20.20	19.89	19.81
	1/74	19.90	19.65	19.42	1/99	19.93	19.80	19.46
	36/0	18.71	18.59	18.37	50/0	18.75	18.75	18.50
	36/19	18.82	18.63	18.39	50/24	18.93	18.77	18.55
	36/39	18.71	18.61	18.33	50/50	18.77	18.72	18.45
	75/0	18.74	18.62	18.37	100/0	18.76	18.72	18.45
64QAM	1/0	18.98	18.77	18.49	1/0	19.01	18.84	18.65
	1/37	19.02	18.80	18.67	1/49	19.14	18.86	18.71
	1/74	18.89	18.71	18.43	1/99	18.92	18.62	18.50
	36/0	17.80	17.67	17.42	50/0	17.78	17.78	17.54
	36/19	17.87	17.69	17.42	50/24	17.95	17.77	17.57
	36/39	17.77	17.65	17.37	50/50	17.79	17.75	17.45
	75/0	17.76	17.63	17.39	100/0	17.78	17.74	17.49

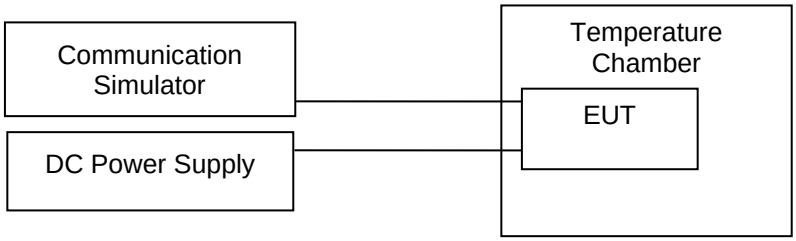
5.1.2 Frequency Stability

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

GSM				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-5.18	-0.0028	± 2.5
25	3.6	-5.36	-0.0029	± 2.5
25	4.4	-5.25	-0.0028	± 2.5
50	3.85	-6.14	-0.0033	± 2.5
40	3.85	-5.72	-0.0030	± 2.5
30	3.85	-5.46	-0.0029	± 2.5
20	3.85	-5.18	-0.0028	± 2.5
10	3.85	-5.02	-0.0027	± 2.5
0	3.85	-4.85	-0.0026	± 2.5
-10	3.85	-4.38	-0.0023	± 2.5
-20	3.85	-4.02	-0.0021	± 2.5
-30	3.85	-3.84	-0.0020	± 2.5

EDGE				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-2.72	-0.0014	± 2.5
25	3.6	-6.68	-0.0036	± 2.5
25	4.4	-2.71	-0.0014	± 2.5
50	3.85	-4.13	-0.0022	± 2.5
40	3.85	-4.03	-0.0021	± 2.5
30	3.85	-4.50	-0.0024	± 2.5
20	3.85	-2.97	-0.0016	± 2.5
10	3.85	-6.79	-0.0036	± 2.5
0	3.85	-6.33	-0.0034	± 2.5
-10	3.85	-4.48	-0.0024	± 2.5
-20	3.85	-2.41	-0.0013	± 2.5
-30	3.85	-6.56	-0.0035	± 2.5

WCDMA				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-0.18	-0.0001	± 2.5
25	3.6	0.34	0.0002	± 2.5
25	4.4	0.19	0.0001	± 2.5
50	3.85	-0.11	-0.0001	± 2.5
40	3.85	-0.72	-0.0004	± 2.5
30	3.85	-0.31	-0.0002	± 2.5
20	3.85	-0.18	-0.0001	± 2.5
10	3.85	0.21	0.0001	± 2.5
0	3.85	0.38	0.0002	± 2.5
-10	3.85	0.42	0.0002	± 2.5
-20	3.85	0.55	0.0003	± 2.5
-30	3.85	1.02	0.0005	± 2.5

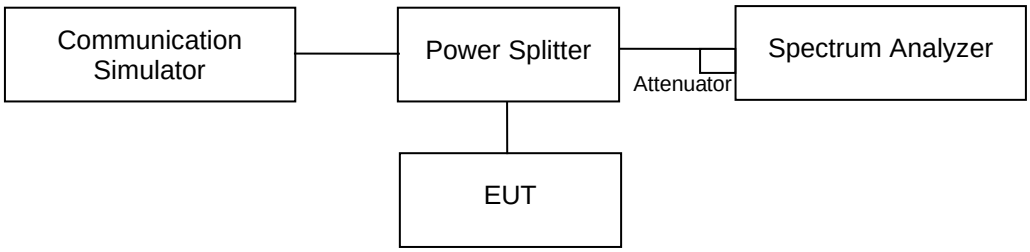
LTE Band 5				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-4.71	-0.0025	± 2.5
25	3.6	-1.93	-0.0010	± 2.5
25	4.4	-3.26	-0.0017	± 2.5
50	3.85	-7.36	-0.0039	± 2.5
40	3.85	-5.23	-0.0028	± 2.5
30	3.85	-3.31	-0.0018	± 2.5
20	3.85	-2.34	-0.0012	± 2.5
10	3.85	-3.93	-0.0021	± 2.5
0	3.85	-6.23	-0.0033	± 2.5
-10	3.85	-8.11	-0.0043	± 2.5
-20	3.85	-8.42	-0.0045	± 2.5
-30	3.85	-9.01	-0.0048	± 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 %.

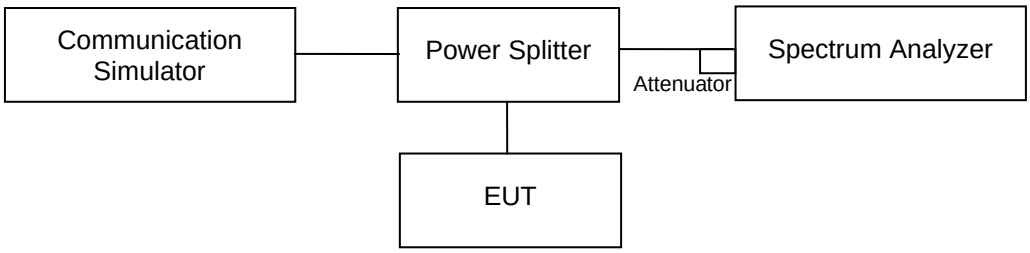
Test Results

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.

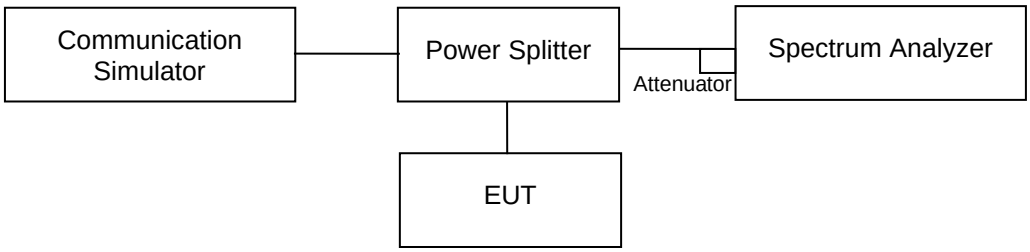
5.1.5 Conducted Band Edge

Limit

In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1% of the emission bandwidth of the fundamental emission of the transmitter limit at least 43 + 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. 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 A.

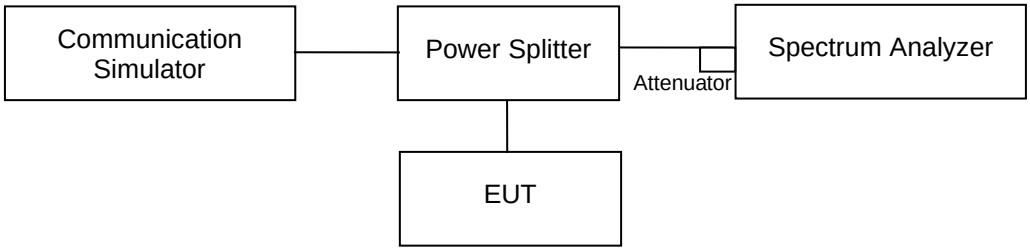
5.1.6 Conducted Spurious Emissions

Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 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 A.

5.1.7 Radiated Spurious Emissions

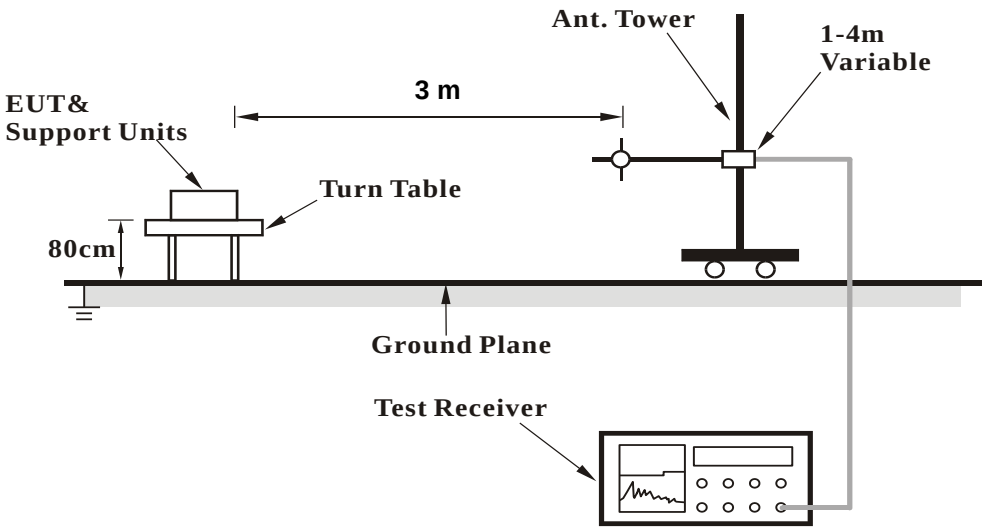
Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

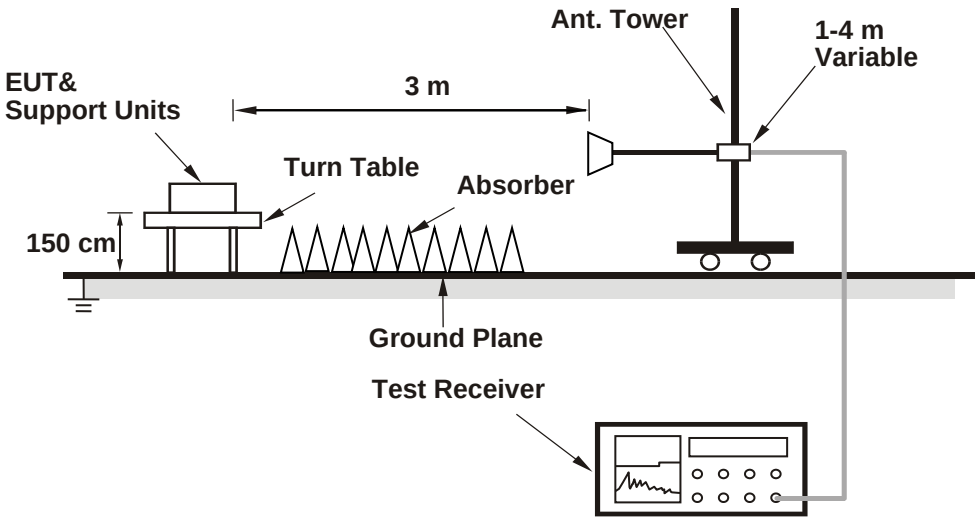
Kind of Test Site 3m Semi-Anechoic Chamber

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 B.