

Prüfbericht-Nr.: Test report no.:	CN24RX0M 001	Auftrags-Nr.: Order no.:	48225046	Seite 1 von 30 Page 1 of 30																								
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 22 Test report																											
Prüfgrundlage: Test specification:	FCC 47CFR Part 22 Subpart H																											
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	Ausstellungsdatum: Issue date:	2024-02-06																									
Stellung / Position:	Anderson Chiu Senior Project Manager	Stellung / Position:	Brenda Chen 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																										
<table><tr><td>* Legende:</td><td>1 = sehr gut</td><td>2 = gut</td><td>3 = befriedigend</td><td>4 = ausreichend</td><td>5 = mangelhaft</td></tr><tr><td></td><td>P(ass) = entspricht o.g. Prüfgrundlage(n)</td><td>F(ail) = entspricht nicht o.g. Prüfgrundlage(n)</td><td>N/A = nicht anwendbar</td><td>N/T = nicht getestet</td><td></td></tr><tr><td>* Legend:</td><td>1 = very good</td><td>2 = good</td><td>3 = satisfactory</td><td>4 = sufficient</td><td>5 = poor</td></tr><tr><td></td><td>P(ass) = passed a.m. test specification(s)</td><td>F(ail) = failed a.m. test specification(s)</td><td>N/A = not applicable</td><td>N/T = not tested</td><td></td></tr></table>					* 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	
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Anmerkungen
Remarks

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4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen 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 bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>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.</i>

TEST SUMMARY

Report Section	FCC Clause	Test Item	Result
5.1.1	2.1046 22.913 (a)	Conducted Output Power and Effective Radiated Power	Pass
5.1.2	2.1055 22.355	Frequency Stability	Pass
5.1.3	22.913 (d)	Peak to Average Ratio	Pass
5.1.4	2.1049	Occupied Bandwidth and 26 dB Bandwidth	Pass
5.1.5	2.1051 22.917(a)	Conducted Band Edge	Pass
5.1.6	2.1051 22.917(a)	Conducted Spurious Emissions	Pass
5.1.7	2.1053 22.917(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

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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 47 CFR Part 2
FCC 47 CFR Part 22 Subpart H
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 basis 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	824.2 ~ 848.8 MHz
	WCDMA	826.4 ~ 846.6 MHz
	LTE Band 5 (1.4 MHz)	824.7 ~ 848.3 MHz
	LTE Band 5 (3 MHz)	825.5 ~ 847.5 MHz
	LTE Band 5 (5 MHz)	826.5 ~ 846.5 MHz
	LTE Band 5 (10 MHz)	829 ~ 844 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 -2.61 dBi gain	
Accessory Device	Refer to 4.3	

Maximum ERP and Emission Designator

Item	Band	Result
Maximum ERP (dBm)	GSM/GPRS	29.23
	EDGE	21.44
	WCDMA	17.62
	LTE Band 5 (1.4 MHz)	15.06
	LTE Band 5 (3 MHz)	14.95
	LTE Band 5 (5 MHz)	15.18
	LTE Band 5 (10 MHz)	15.28
Emission Designator	GSM/GPRS	249KGXW
	EDGE	246KG7W
	WCDMA	4M16F9W
	LTE Band 5 (1.4 MHz)	1M10G7D, 1M10W7D, 1M10W7D
	LTE Band 5 (3 MHz)	2M70G7D, 2M69W7D, 2M69W7D
	LTE Band 5 (5 MHz)	4M51G7D, 4M52W7D, 4M51W7D
	LTE Band 5 (10 MHz)	8M99G7D, 8M99W7D, 8M99W7D

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)

☒ 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	128 to 251	128, 189, 251	GSM / EDGE
-	WCDMA	4132 to 4233	4132, 4182, 4233	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation
-	LTE Band 5	1.4 MHz	20407 to 20643	20407, 20525, 20643	QPSK, 16QAM, 64QAM
		3 MHz	20415 to 20635	20415, 20525, 20635	QPSK, 16QAM, 64QAM
		5 MHz	20425 to 20625	20425, 20525, 20625	QPSK, 16QAM, 64QAM
		10 MHz	20450 to 20600	20450, 20525, 20600	QPSK, 16QAM, 64QAM

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	128 to 251	128, 189, 251	GSM / EDGE
-	WCDMA	4132 to 4233	4132, 4182, 4233	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 5	1.4 MHz	20407 to 20643	20407, 20525, 20643	QPSK, 16QAM, 64QAM	1 RB / Full RB
		3 MHz	20415 to 20635	20415, 20525, 20635	QPSK, 16QAM, 64QAM	1 RB / Full RB
		5 MHz	20425 to 20625	20425, 20525, 20625	QPSK, 16QAM, 64QAM	1 RB / Full RB
		10 MHz	20450 to 20600	20450, 20525, 20600	QPSK, 16QAM, 64QAM	1 RB / Full RB

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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	128 to 251	189	GSM / EDGE
-	WCDMA	4132 to 4233	4182	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 5	10 MHz	20450 to 20600	20525	QPSK	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	128 to 251	128, 189, 251	GSM / EDGE
-	WCDMA	4132 to 4233	4132, 4182, 4233	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 5	1.4 MHz	20407 to 20643	20407, 20525, 20643	QPSK, 16QAM, 64QAM	Full RB
		3 MHz	20415 to 20635	20415, 20525, 20635	QPSK, 16QAM, 64QAM	Full RB
		5 MHz	20425 to 20625	20425, 20525, 20625	QPSK, 16QAM, 64QAM	Full RB
		10 MHz	20450 to 20600	20450, 20525, 20600	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	128 to 251	128, 251	GSM / EDGE
-	WCDMA	4132 to 4233	4132, 4233	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 5	1.4 MHz	20407 to 20643	20407, 20643	QPSK	1 RB / Full RB
		3 MHz	20415 to 20635	20415, 20635	QPSK	1 RB / Full RB
		5 MHz	20425 to 20625	20425, 20625	QPSK	1 RB / Full RB
		10 MHz	20450 to 20600	20450, 20600	QPSK	1 RB / Full RB

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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	128 to 251	128, 189, 251	GSM / EDGE
-	WCDMA	4132 to 4233	4132, 4182, 4233	WCDMA

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode
-	LTE Band 5	1.4 MHz	20407 to 20643	20407, 20525, 20643	QPSK	1 RB
		3 MHz	20415 to 20635	20415, 20525, 20635	QPSK	1 RB
		5 MHz	20425 to 20625	20425, 20525, 20625	QPSK	1 RB
		10 MHz	20450 to 20600	20450, 20525, 20600	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	128 to 251	128, 189, 251	GSM / EDGE	X-plane
-	WCDMA	4132 to 4233	4132, 4182, 4233	WCDMA	X-plane

EUT Configure Mode	Band	Channel Bandwidth	Available Channel	Tested Channel	Modulation	Mode	Position
-	LTE Band 5	10 MHz	20450 to 20600	20450, 20525, 20600	QPSK	1 RB	X-plane

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
ERP	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:

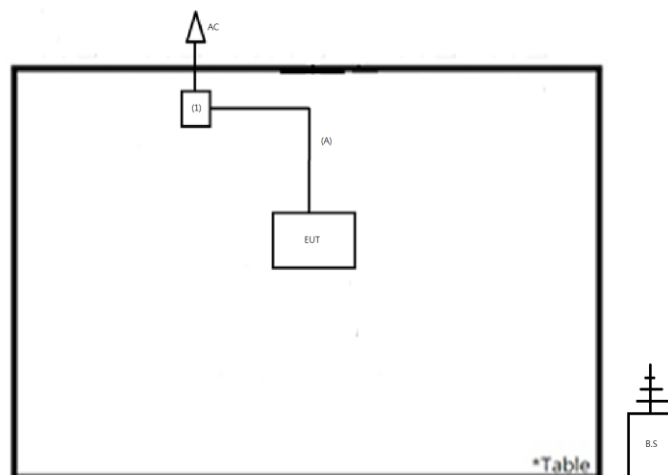
Accessory of EUT

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

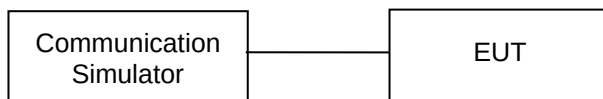
5.1 Transmitter Requirement & Test Suites

5.1.1 Conducted Output Power and ERP

Limit 7 watt (ERP)

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	GSM850 Power (dBm)		
Channel	128	189	251
Frequency (MHz)	824.2	836.4	848.8
GSM (GMSK, 1Tx-slot)	33.98	33.98	33.95
GPRS (GMSK, 1Tx-slot)	33.99	33.99	33.96
GPRS (GMSK, 2Tx-slot)	32.90	32.70	32.40
GPRS (GMSK, 3Tx-slot)	30.60	30.40	30.10
GPRS (GMSK, 4Tx-slot)	29.20	29.00	28.70
EDGE (8PSK, 1Tx-slot)	26.20	26.10	25.70
EDGE (8PSK, 2Tx-slot)	25.70	25.70	25.40
EDGE (8PSK, 3Tx-slot)	25.50	25.60	24.90
EDGE (8PSK, 4Tx-slot)	25.00	24.90	24.50

Band	WCDMA V Power (dBm)		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	22.38	22.35	22.20
HSDPA Subtest-1	21.35	21.25	21.15
HSDPA Subtest-2	21.30	21.35	21.17
HSDPA Subtest-3	20.77	20.68	20.55
HSDPA Subtest-4	20.82	20.74	20.63
HSUPA Subtest-1	21.27	21.22	21.05
HSUPA Subtest-2	19.27	19.18	19.06
HSUPA Subtest-3	20.34	20.17	20.11
HSUPA Subtest-4	19.32	19.15	19.09
HSUPA Subtest-5	21.31	21.15	21.13

LTE Band 5 Power (dBm)								
Bandwidth	1.4 MHz				3 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		20407/824.7	20525/836.5	20643/848.3		20415/825.5	20525/836.5	20635/847.5
QPSK	1/0	19.52	19.62	19.69	1/0	19.46	19.52	19.55
	1/2	19.61	19.63	19.76	1/7	19.60	19.63	19.71
	1/5	19.56	19.59	19.71	1/14	19.49	19.47	19.58
	3/0	19.63	19.70	19.79	8/0	18.67	18.70	18.77
	3/1	19.64	19.70	19.82	8/3	18.70	18.77	18.88
	3/3	19.63	19.70	19.82	8/7	18.66	18.73	18.83
16QAM	6/0	18.74	18.80	18.90	15/0	18.63	18.70	18.78
	1/0	18.83	18.86	18.91	1/0	18.69	18.74	18.89
	1/2	18.95	18.99	18.98	1/7	18.96	18.95	19.03
	1/5	18.88	18.91	18.99	1/14	18.76	18.76	18.87
	3/0	18.61	18.75	18.79	8/0	17.75	17.81	17.88
	3/1	18.62	18.79	18.87	8/3	17.80	17.89	17.96
64QAM	3/3	18.62	18.78	18.78	8/7	17.76	17.80	17.92
	6/0	17.85	17.96	18.03	15/0	17.67	17.74	17.79
	1/0	17.90	17.95	17.98	1/0	17.78	17.85	17.91
	1/2	17.95	18.03	18.13	1/7	17.94	17.99	18.06
	1/5	17.86	17.96	18.05	1/14	17.78	17.86	17.97
	3/0	17.93	18.01	18.03	8/0	16.75	16.82	16.90
5 MHz	3/1	17.90	18.03	18.04	8/3	16.80	16.86	16.96
	3/3	17.89	17.94	18.07	8/7	16.76	16.80	16.91
	6/0	16.75	16.80	16.96	15/0	16.70	16.76	16.82
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size	Channel / Frequency (MHz)			RB Size	Channel / Frequency (MHz)		
		20425/826.5	20525/836.5	20625/846.5		20450/829	20525/836.5	20600/844
QPSK	1/0	19.67	19.74	19.78	1/0	19.80	19.81	19.84
	1/12	19.80	19.91	19.94	1/24	19.83	19.89	19.92
	1/24	19.71	19.81	19.87	1/49	19.83	19.84	20.04
	12/0	18.74	18.69	18.81	25/0	18.84	18.67	18.88
	12/6	18.81	18.84	18.89	25/12	18.85	18.85	18.90
	12/13	18.69	18.86	18.82	25/25	18.81	18.82	18.88
16QAM	25/0	18.73	18.78	18.84	50/0	18.87	18.77	18.90
	1/0	18.93	19.00	19.17	1/0	19.11	19.05	19.22
	1/12	19.18	19.26	19.21	1/24	19.13	19.13	19.17
	1/24	19.05	19.20	19.20	1/49	19.20	19.16	19.34
	12/0	17.77	17.71	17.83	25/0	17.87	17.72	17.96
	12/6	17.83	17.89	17.96	25/12	17.86	17.91	17.95
64QAM	12/13	17.71	17.89	17.87	25/25	17.82	17.89	17.94
	25/0	17.78	17.87	17.91	50/0	17.87	17.80	17.95
	1/0	17.92	18.00	18.00	1/0	18.03	18.04	18.05
	1/12	18.03	18.08	18.20	1/24	18.06	18.07	18.17
	1/24	17.92	17.97	18.13	1/49	17.97	18.02	18.12
	12/0	16.80	16.76	16.89	25/0	16.90	16.74	16.98
10 MHz	12/6	16.88	16.93	16.99	25/12	16.94	16.92	16.99
	12/13	16.76	16.97	16.92	25/25	16.84	16.92	16.97
	25/0	16.80	16.88	16.93	50/0	16.88	16.85	16.97

<ERP>

Band	GSM850 Power (dBm)		
Channel	128	189	251
Frequency (MHz)	824.2	836.4	848.8
GSM (GMSK, 1Tx-slot)	29.22	29.22	29.19
GPRS (GMSK, 1Tx-slot)	29.23	29.23	29.20
GPRS (GMSK, 2Tx-slot)	28.14	27.94	27.64
GPRS (GMSK, 3Tx-slot)	25.84	25.64	25.34
GPRS (GMSK, 4Tx-slot)	24.44	24.24	23.94
EDGE (8PSK, 1Tx-slot)	21.44	21.34	20.94
EDGE (8PSK, 2Tx-slot)	20.94	20.94	20.64
EDGE (8PSK, 3Tx-slot)	20.74	20.84	20.14
EDGE (8PSK, 4Tx-slot)	20.24	20.14	19.74

Band	WCDMA V Power (dBm)		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	17.62	17.59	17.44
HSDPA Subtest-1	16.59	16.49	16.39
HSDPA Subtest-2	16.54	16.59	16.41
HSDPA Subtest-3	16.01	15.92	15.79
HSDPA Subtest-4	16.06	15.98	15.87
HSUPA Subtest-1	16.51	16.46	16.29
HSUPA Subtest-2	14.51	14.42	14.30
HSUPA Subtest-3	15.58	15.41	15.35
HSUPA Subtest-4	14.56	14.39	14.33
HSUPA Subtest-5	16.55	16.39	16.37

LTE Band 5 Power (dBm)								
Bandwidth	1.4 MHz				3 MHz			
Modulation	RB Size / Offset	Channel / Frequency (MHz)			RB Size / Offset	Channel / Frequency (MHz)		
		20407/824.7	20525/836.5	20643/848.3		20415/825.5	20525/836.5	20635/847.5
QPSK	1/0	14.76	14.86	14.93	1/0	14.70	14.76	14.79
	1/2	14.85	14.87	15.00	1/7	14.84	14.87	14.95
	1/5	14.80	14.83	14.95	1/14	14.73	14.71	14.82
	3/0	14.87	14.94	15.03	8/0	13.91	13.94	14.01
	3/1	14.88	14.94	15.06	8/3	13.94	14.01	14.12
	3/3	14.87	14.94	15.06	8/7	13.90	13.97	14.07
16QAM	6/0	13.98	14.04	14.14	15/0	13.87	13.94	14.02
	1/0	14.07	14.10	14.15	1/0	13.93	13.98	14.13
	1/2	14.19	14.23	14.22	1/7	14.20	14.19	14.27
	1/5	14.12	14.15	14.23	1/14	14.00	14.00	14.11
	3/0	13.85	13.99	14.03	8/0	12.99	13.05	13.12
	3/1	13.86	14.03	14.11	8/3	13.04	13.13	13.20
64QAM	3/3	13.86	14.02	14.02	8/7	13.00	13.04	13.16
	6/0	13.09	13.20	13.27	15/0	12.91	12.98	13.03
	1/0	13.14	13.19	13.22	1/0	13.02	13.09	13.15
	1/2	13.19	13.27	13.37	1/7	13.18	13.23	13.30
	1/5	13.10	13.20	13.29	1/14	13.02	13.10	13.21
	3/0	13.17	13.25	13.27	8/0	11.99	12.06	12.14
5 MHz	3/1	13.14	13.27	13.28	8/3	12.04	12.10	12.20
	3/3	13.13	13.18	13.31	8/7	12.00	12.04	12.15
	6/0	11.99	12.04	12.20	15/0	11.94	12.00	12.06
Bandwidth	5 MHz				10 MHz			
Modulation	RB Size	Channel / Frequency (MHz)			RB Size	Channel / Frequency (MHz)		
		20425/826.5	20525/836.5	20625/846.5		20450/829	20525/836.5	20600/844
QPSK	1/0	14.91	14.98	15.02	1/0	15.04	15.05	15.08
	1/12	15.04	15.15	15.18	1/24	15.07	15.13	15.16
	1/24	14.95	15.05	15.11	1/49	15.07	15.08	15.28
	12/0	13.98	13.93	14.05	25/0	14.08	13.91	14.12
	12/6	14.05	14.08	14.13	25/12	14.09	14.09	14.14
	12/13	13.93	14.10	14.06	25/25	14.05	14.06	14.12
16QAM	25/0	13.97	14.02	14.08	50/0	14.11	14.01	14.14
	1/0	14.17	14.24	14.41	1/0	14.35	14.29	14.46
	1/12	14.42	14.50	14.45	1/24	14.37	14.37	14.41
	1/24	14.29	14.44	14.44	1/49	14.44	14.40	14.58
	12/0	13.01	12.95	13.07	25/0	13.11	12.96	13.20
	12/6	13.07	13.13	13.20	25/12	13.10	13.15	13.19
64QAM	12/13	12.95	13.13	13.11	25/25	13.06	13.13	13.18
	25/0	13.02	13.11	13.15	50/0	13.11	13.04	13.19
	1/0	13.16	13.24	13.24	1/0	13.27	13.28	13.29
	1/12	13.27	13.32	13.44	1/24	13.30	13.31	13.41
	1/24	13.16	13.21	13.37	1/49	13.21	13.26	13.36
	12/0	12.04	12.00	12.13	25/0	12.14	11.98	12.22
10 MHz	12/6	12.12	12.17	12.23	25/12	12.18	12.16	12.23
	12/13	12.00	12.21	12.16	25/25	12.08	12.16	12.21
	25/0	12.04	12.12	12.17	50/0	12.12	12.09	12.21

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Test Report No.

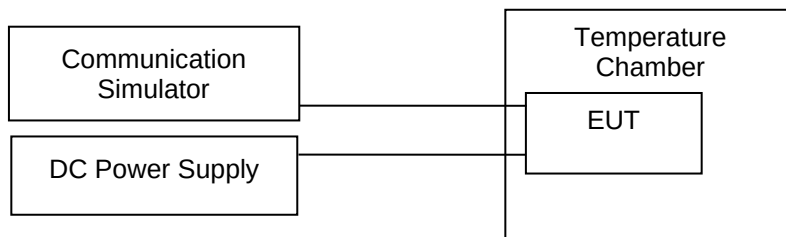
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5.1.2 Frequency Stability

Limit ± 2.5 ppm

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

- 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.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ± 0.5 °C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

Test Results

GSM				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-4.23	-0.0051	± 2.5
25	3.6	-4.63	-0.0055	± 2.5
25	4.4	-4.41	-0.0053	± 2.5
50	3.85	-5.18	-0.0062	± 2.5
40	3.85	-4.81	-0.0058	± 2.5
30	3.85	-4.54	-0.0054	± 2.5
20	3.85	-4.23	-0.0051	± 2.5
10	3.85	-4.02	-0.0048	± 2.5
0	3.85	-3.85	-0.0046	± 2.5
-10	3.85	-3.49	-0.0042	± 2.5
-20	3.85	-3.22	-0.0038	± 2.5
-30	3.85	-2.84	-0.0034	± 2.5

EDGE				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-3.54	-0.0042	± 2.5
25	3.6	-3.88	-0.0046	± 2.5
25	4.4	-2.62	-0.0031	± 2.5
50	3.85	-5.40	-0.0065	± 2.5
40	3.85	-2.67	-0.0032	± 2.5
30	3.85	-4.96	-0.0059	± 2.5
20	3.85	-5.66	-0.0068	± 2.5
10	3.85	-3.17	-0.0038	± 2.5
0	3.85	-4.00	-0.0048	± 2.5
-10	3.85	-6.96	-0.0083	± 2.5
-20	3.85	-6.91	-0.0083	± 2.5
-30	3.85	-3.25	-0.0039	± 2.5

WCDMA				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	0.21	0.0001	± 2.5
25	3.6	0.05	0.0000	± 2.5
25	4.4	-0.19	-0.0001	± 2.5
50	3.85	0.92	0.0005	± 2.5
40	3.85	0.72	0.0004	± 2.5
30	3.85	0.52	0.0003	± 2.5
20	3.85	0.21	0.0001	± 2.5
10	3.85	-0.11	-0.0001	± 2.5
0	3.85	-0.28	-0.0002	± 2.5
-10	3.85	-0.34	-0.0002	± 2.5
-20	3.85	-0.46	-0.0003	± 2.5
-30	3.85	-0.72	-0.0004	± 2.5

LTE Band 5				
Frequency Error versus Voltage				
Temperature (°C)	Power Supply (Vdc)	Frequency Error		Limit (ppm)
		Hz	ppm	
25	3.85	-1.12	-0.0013	± 2.5
25	3.6	-1.62	-0.0019	± 2.5
25	4.4	-1.83	-0.0022	± 2.5
50	3.85	-2.15	-0.0026	± 2.5
40	3.85	-1.83	-0.0022	± 2.5
30	3.85	-1.62	-0.0019	± 2.5
20	3.85	-1.12	-0.0013	± 2.5
10	3.85	-1.53	-0.0018	± 2.5
0	3.85	-0.82	-0.0010	± 2.5
-10	3.85	-2.12	-0.0025	± 2.5
-20	3.85	-2.41	-0.0029	± 2.5
-30	3.85	-2.84	-0.0034	± 2.5

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Test Report No.

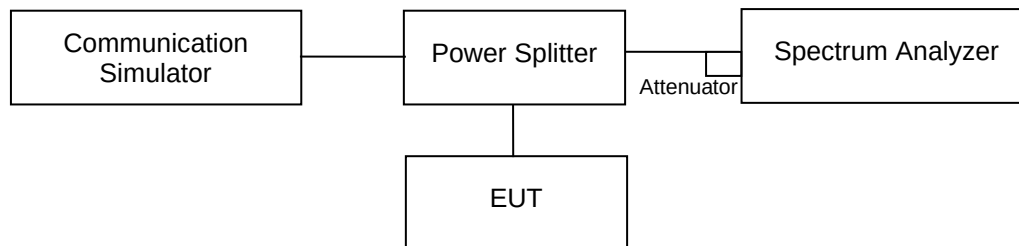
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5.1.3 Peak to Average Ratio

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 $\geq$ 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.

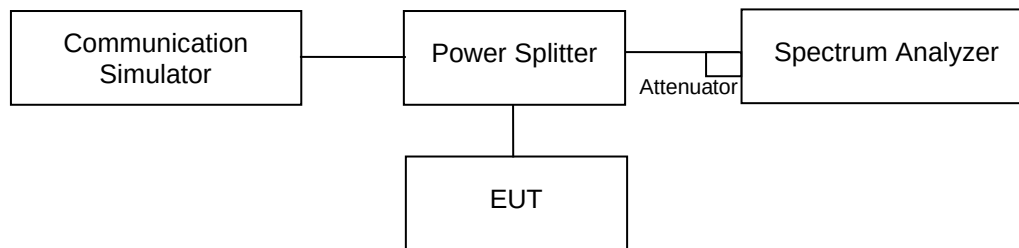
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5.1.4 Occupied Bandwidth and 26 dB Bandwidth Measurement

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.

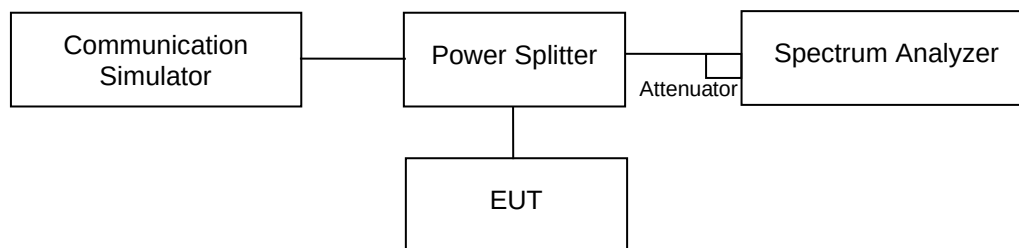
5.1.5 Conducted Band Edge

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

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

Test Results

Please refer to Appendix A.

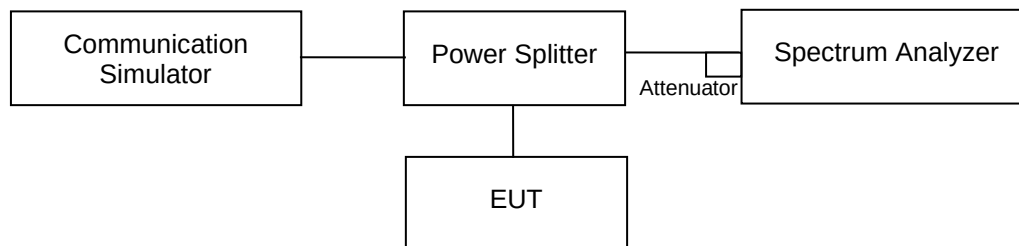
5.1.6 Conducted Spurious Emissions

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

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- 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

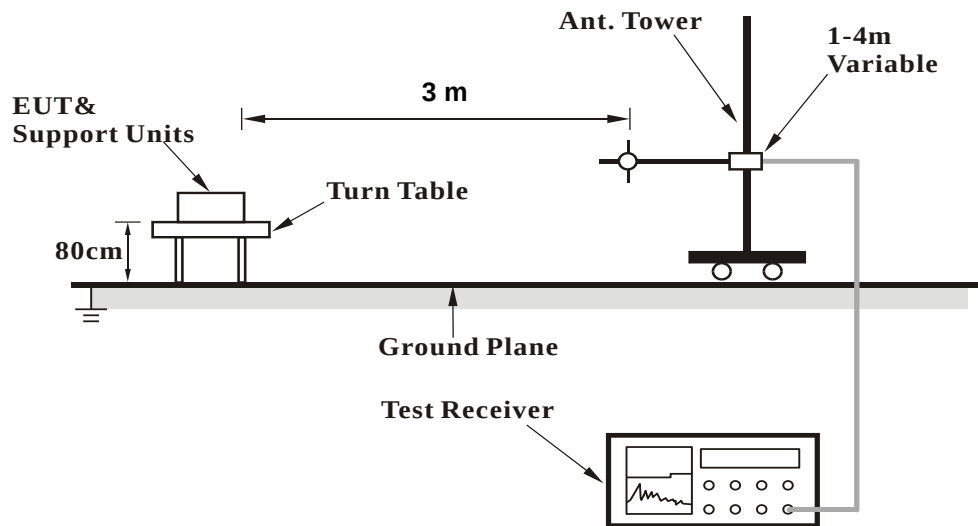
Limit

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.

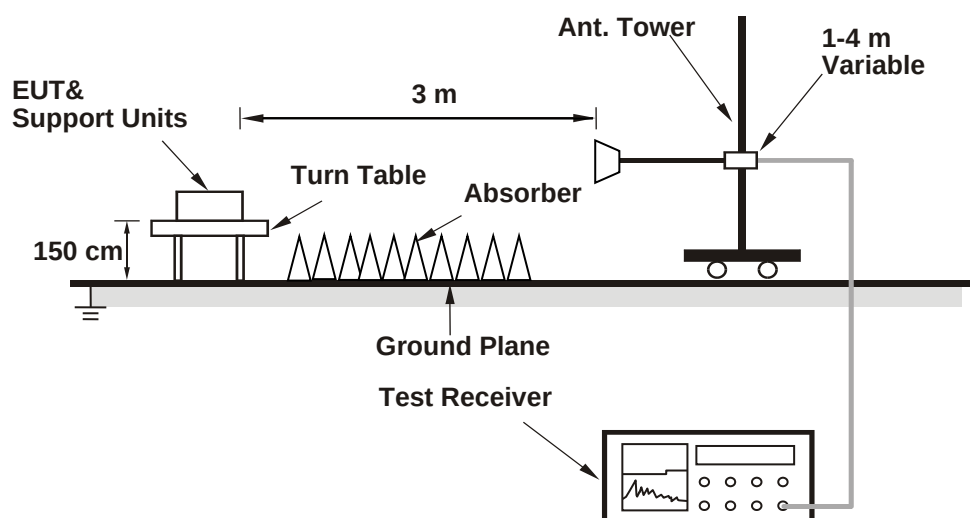
Kind of Test Site 3m Semi-Anechoic Chamber

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

- 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.
- 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.
- 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 mathematically convert the measured field strength level to EIRP/ERP level.
- Following C63.26 section 5.5 and 5.2.7

$$\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8$$
where D is measurement distance (in the far field region) in m.

$$\text{ERP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8 - 2.15$$
where D is measurement distance (in the far field region) in m.

Note:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
- Testing was carried out within frequency range 30 MHz to the tenth harmonic.
- All modes of operation were investigated and the worst-case emissions are reported.
- 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.

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Test Results

Please refer to Appendix B.