



SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240400117607

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TEST REPORT

Application No.: SZCR2404001176AT
Applicant: Grab Technology LLC
Address of Applicant: 113 Cherry ST PMB 78120 Seattle, WA 98104 USA
Manufacturer: GrabTaxi Holdings Pte. Ltd.
Address of Manufacturer: 3 Media Cl, Singapore 138498
Factory: SKY LIGHT Electronic (ShenZhen) Limited
Address of Factory: No. 8 & 9 Building, AnTuoShan High-tech Industrial Area, Xinsha Road, ShaJing, Bao'An, Shenzhen, China.

Equipment Under Test (EUT):

EUT Name: KartaDashcam
Model No.: GSP
FCC ID: 2BB5A-GSP
Standard(s) : 47 CFR Part 2
47 CFR Part 22 subpart H
47 CFR Part 24 subpart E
47 CFR Part 27 subpart C
47 CFR Part 90 subpart R

Date of Receipt: 2024-04-03
Date of Test: 2024-04-12 to 2024-04-17
Date of Issue: 2024-04-29

Test Result:	Pass
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* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu

Keny Xu
EMC Laboratory Manager



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Shenzhen Branch

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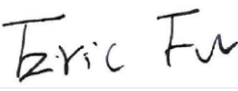
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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2024-04-29		Original

Authorized for issue by:				
				
		Leo Lai/Project Engineer		
				
		Eric Fu/Reviewer		



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2 Test Summary

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Output Power Data	§2.1046 §22.913 §24.232 §27.50(b) §27.50(c) §27.50(d) §27.50(h) §90.542(a)	ERP≤ 7W(LTE Band 5) EIRP≤ 2W(LTE Band 2) ERP≤ 3W(LTE Band 13,14) ERP≤ 3W(LTE Band 12,71) EIRP≤ 1W(LTE Band 4,66)	PASS
Peak-Average Ratio	§22.913 §24.232 §27.50(a) §27.50(d) §96.41(g)	≤13dB	PASS
Bandwidth	§2.1049(h)	OBW: No limit EBW: No limit	PASS
Band Edge Compliance	§2.1051 §22.917 §24.238 §27.50(g) §27.50(h) §27.50(m) §27.53(c) §90.543(e)	≤ -13dBm (LTE Band5) ≤ -13dBm (LTE Band2) ≤ -13dBm (LTE Band12,71) ≤ -13dBm (LTE Band4,66) Refer to clause 6.4 for LTE Band13 Refer to clause 6.4 for LTE Band14	PASS
Spurious emissions at antenna terminals	§2.1051 §22.917 §24.238 §27.50(g) §27.50(h) §27.50(m) §27.53(c) §90.543(e)	≤ -13dBm (LTE Band5) ≤ -13dBm (LTE Band2) ≤ -13dBm (LTE Band12, ,71) ≤ -13dBm (LTE Band4,66) Refer to clause 6.5 for LTE Band7 Refer to clause 6.5 for LTE Band13 Refer to clause 6.5 for LTE Band14	PASS
Field strength of spurious radiation	§2.1051 §22.917 §24.238 §27.50(g) §27.50(h) §27.50(m) §27.53(c) §90.543(e)	≤ -13dBm (LTE Band5) ≤ -13dBm (LTE Band2) ≤ -13dBm (LTE Band12,71) ≤ -13dBm (LTE Band4,66) Refer to clause 6.6 for LTE Band13 Refer to clause 6.6 for LTE Band14	PASS





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Frequency stability	§2.1055 §22.355 §24.235 §27.54 §90.213	$\leq \pm 2.5\text{ppm.}$	PASS
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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 12-24V
Tested Voltage:	DC 12V
Cable Loss (for RF conducted test):	1dB
Sample Type:	Mobile production
LTE Operation Frequency Band:	LTE FDD Band 2,4,5,12, 13, 14, 66, 71
Modulation Type:	QPSK, 16QAM
LTE Power Class:	Level 3
Antenna Type:	PIFA Antenna
Antenna Gain:	LTE B2:2dBi; B4:1.71dBi; B5:-1.47dBi; B12:-1.47dBi; B13:-1.47dBi; B14:-1.47dBi; B66:1.71dBi; B71:-1.47dBi

4.2 Test Frequency

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855.0	1880	1905.0
	15	1857.5	1880	1902.5
	20	1860.0	1880	1900.0
Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715.0	1732.5	1750.0
	15	1717.5	1732.5	1747.5
	20	1720.0	1732.5	1745.0
Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
	1.4	824.7	836.5	848.3



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LTE FDD Band 5	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829.0	836.5	844.0
Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704.0	707.5	711.0
Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 13	5	779.5	782.0	784.5
	10	/	782.0	/
Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 14	5	790.5	793.0	795.5
	10	/	793.0	/
Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 66	1.4	1710.7	1745.0	1779.3
	3	1711.5	1745.0	1778.5
	5	1712.5	1745.0	1777.5
	10	1715.0	1745.0	1775.0
	15	1717.5	1745.0	1772.5
	20	1720.0	1745.0	1770.0
Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 71	5	665.5	680.5	695.5
	10	668.0	680.5	693.0
	15	670.5	680.5	690.5
	20	673.0	680.5	688.0



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4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Temperature:	TL	-10°C
	TN	+20°C
	TH	+50°C
Voltage:	VL	10.2 Vdc
	VN	12 Vdc
	VH	13.8 Vdc

NOTE: VL= lower extreme test voltage
 VN= nominal voltage
 VH= upper extreme test voltage
 TL= lower extreme test temperature
 TN= normal temperature
 TH= upper extreme test temperature

4.4 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
DC Source	Zhaoxin	PS-3005D	REF. No.SEM011-10

4.5 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 5.4 \times 10^{-8}$
2	Duty cycle	$\pm 0.3\%$
3	Occupied Bandwidth	$\pm 3\%$
4	RF conducted power	$\pm 0.8\text{dB}$
5	RF power density	$\pm 0.4\text{dB}$
6	Conducted Spurious emissions	$\pm 2.7\text{dB}$
7	Radiated Spurious emission test	$\pm 3.1\text{dB}$ (Below 1GHz)
		$\pm 4.4\text{dB}$ (Above 1GHz)
8	Temperature test	$\pm 1^\circ\text{C}$
9	Humidity test	$\pm 3\%$
10	Supply voltages	$\pm 1.5\%$
11	Time	$\pm 3\%$

4.6 Test Location

All tests were performed at:

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No tests were sub-contracted.

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd.

Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.8 Deviation from Standards

None

4.9 Abnormalities from Standard Conditions

None



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5 Equipment List

RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date
Programmable DC Source	Chroma	62024P-80-60	SEM011-09	2023/07/11	2024/07/10
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024/03/19	2025/03/18
Spectrum Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2024/03/15	2025/03/14
Measurement Software	TST	TST PASS V2.0	N/A	N/A	N/A
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023/07/11	2024/07/10
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2024/03/14	2025/03/13
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2024/03/15	2025/03/14

RE in Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	SEM003-33	2021/09/25	2024/09/24
MXE EMI receiver	Agilent	N9038A	SEM004-05	2023/07/11	2024/07/10
Pre-amplifier	HP	8447D	SEM005-02	2023/07/11	2024/07/10
Spectrum Analyzer	Rohde & Schwarz	101288	SEM004-08	2023/07/11	2024/07/10
Low Noise Amplifier	CLAVIIO	BDLNA-0118-352810	SEM005-05	2023/07/11	2024/07/10
Substitution Antenna	Schwarzbeck	VULB9168	SEM003-18	2022/08/07	2025/08/06
Signal Generator(9kHz-40GHz)	N5173B	MY53270267	Agilent	2023/07/11	2024/07/10
Pre-amplifier	HP	8447D	SEM005-02	2023/07/11	2024/07/10
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	SEM003-15	2021/07/11	2024/07/10
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120D	SEM003-32	2021/09/26	2024/09/25
Double-ridged waveguide horn	ETS-LINDGREN	3117	SEM003-34	2021/09/25	2024/09/24
Spectrum Analyzer	Rohde & Schwarz	101288	SEM004-08	2023/07/11	2024/07/10
Low Noise Amplifier	CLAVIIO	BDLNA-0118-352810	SEM005-05	2023/07/11	2024/07/10



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Pre-amplifier	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2023/07/11	2024/07/10
Pre-amplifier	Rohde & Schwarz	CH14-H052	SEM005-17	2023/07/11	2024/07/10
Substitution Antenna	ETS-Lindgren	3142C	SEM003-01	2023/06/25	2026/06/24
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2024/03/14	2025/03/13

General used equipment

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	deli	8838	SEM002-32	2023-07-28	2024-07-27
Humidity/ Temperature Indicator	deli	8838	SEM002-33	2023-07-28	2024-07-27
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2024/03/18	2025/03/17



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6 Radio Spectrum Matter Test Results

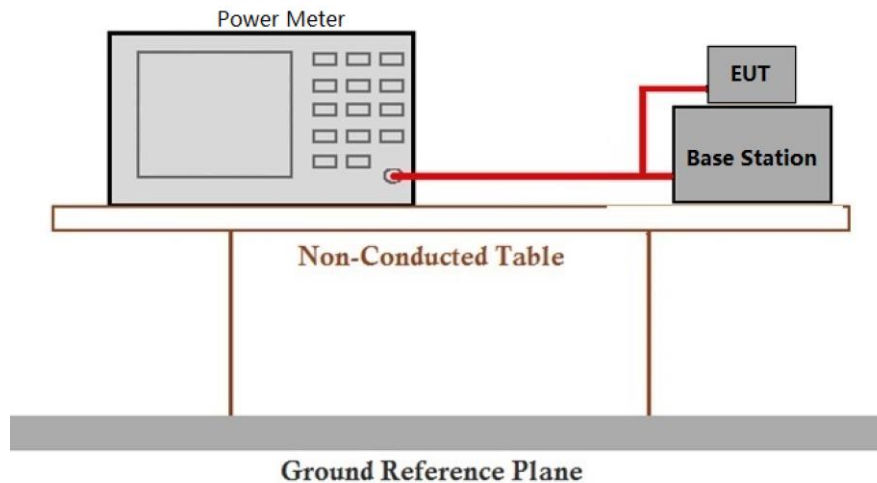
6.1 Effective (Isotropic) Radiated Output Power Data

Test Requirement: §2.1046, §22.913, §24.232, §27.50(d), §27.50(h)
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit:
 ERP ≤ 7W (LTE Band 5)
 EIRP ≤ 2W (LTE Band 2)
 ERP ≤ 3W (LTE Band 13, 14)
 ERP ≤ 3W (LTE Band 12, 71)
 EIRP ≤ 1W (LTE Band 4, 66)
 ERP ≤ 3W (LTE Band 14)

6.1.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
 Test mode 32: TX mode_Keep the EUT in transmitting mode

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

Please refer to Appendix test data.

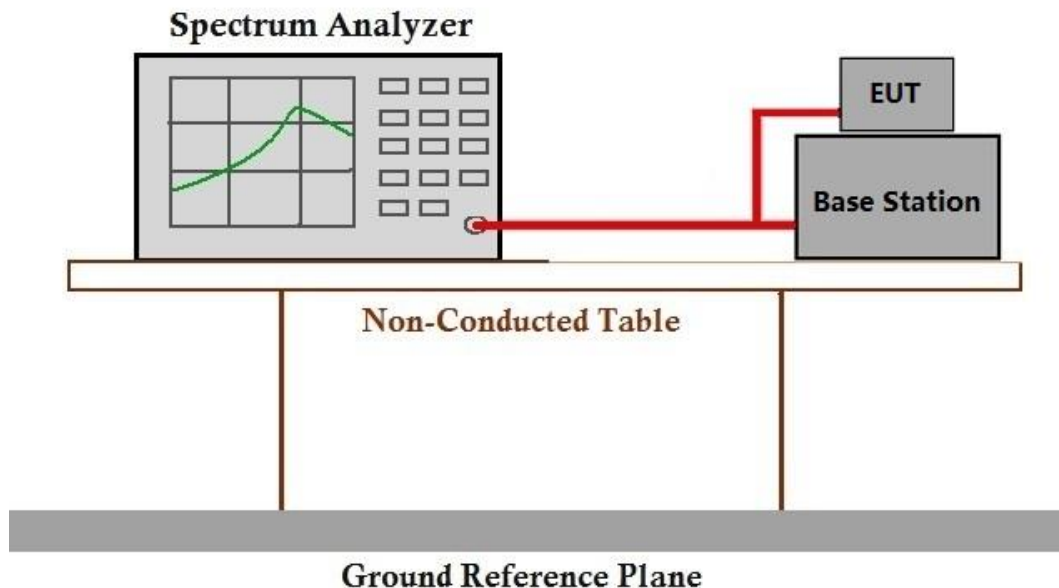
6.2 Peak-Average Ratio

Test Requirement: §22.913, §24.232, §27.50(d)
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: ≤13dB

6.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
 Test mode 32: TX mode_Keep the EUT in transmitting mode

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

Please refer to Appendix test data.

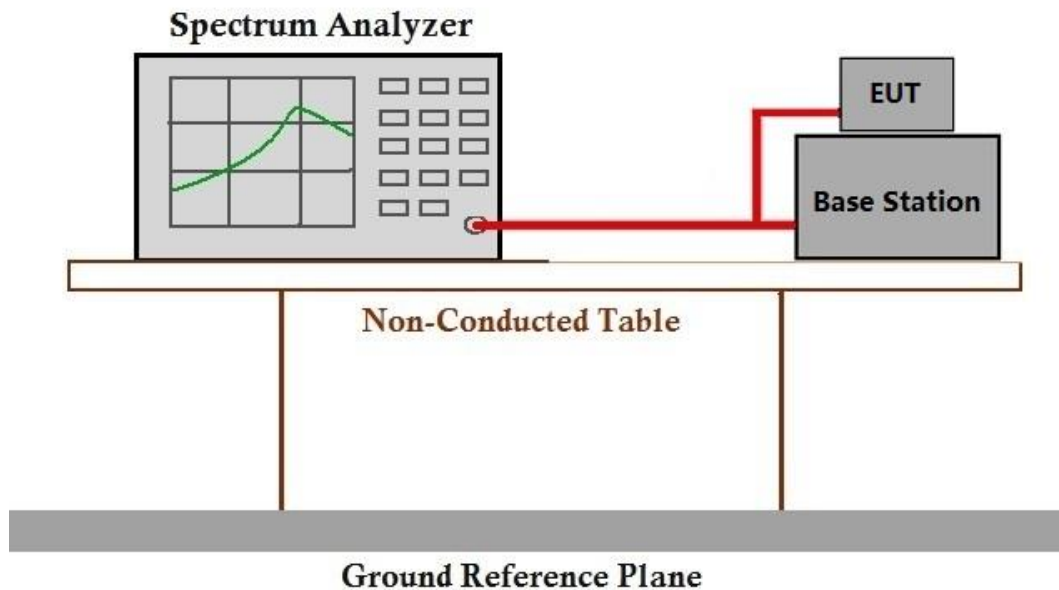
6.3 Bandwidth

Test Requirement: §2.1049(h)
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: OBW: No limit
 EBW: No limit

6.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
 Test mode 32: TX mode_Keep the EUT in transmitting mode

6.3.2 Test Setup Diagram



6.3.3 Measurement Data

Please refer to Appendix test data.

6.4 Band Edge Compliance

Test Requirement: §2.1051, §22.917, §24.238, §27.50(h), §27.50(m), §27.53(a)

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01

Limit: ≤ -13dBm (LTE Band2,4,5,12,13, 66,71)

Band 14

For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the 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, in accordance with the following:

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.
- (4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
- (5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar

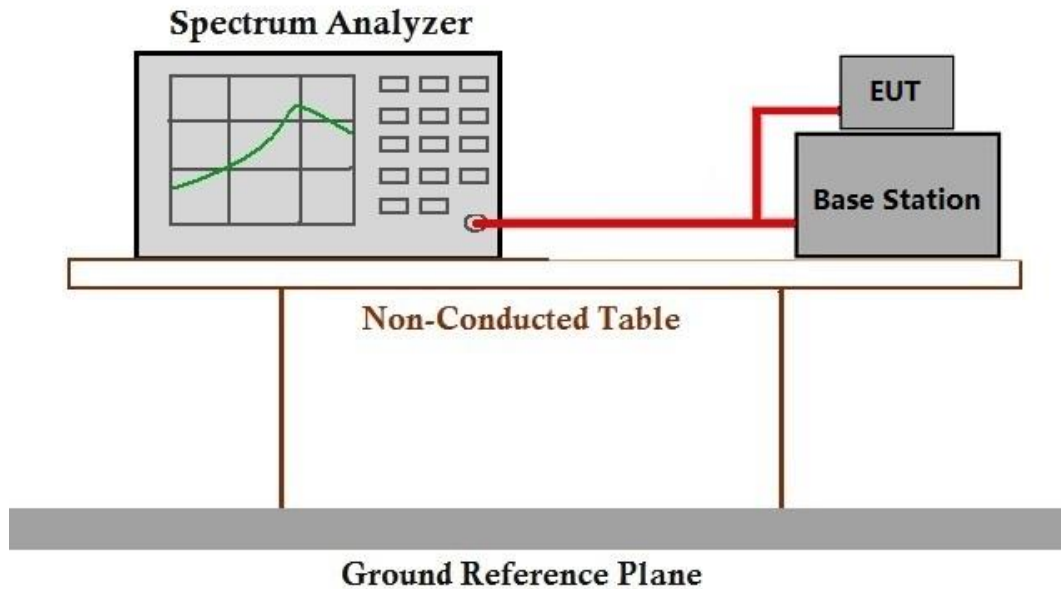
Test mode 32: TX mode_Keep the EUT in transmitting mode



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6.4.2 Test Setup Diagram



6.4.3 Measurement Data

Please refer to Appendix test data.

6.5 Spurious emissions at antenna terminals

Test Requirement: §2.1051, §22.917, §24.238, §27.50(h), §27.50(m), §27.53(a)

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01

Limit: ≤ -13dBm (LTE Band2,4,5,12,66,71)

For Band 13:

On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations

For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to -70 dBW/MHz(-40dBm/MHz) equivalent isotropically radiated power (EIRP) for wideband signals.

For Band 14:

On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to -70 dBW/MHz(-40dBm/MHz) equivalent isotropically radiated power (EIRP) for wideband signals.

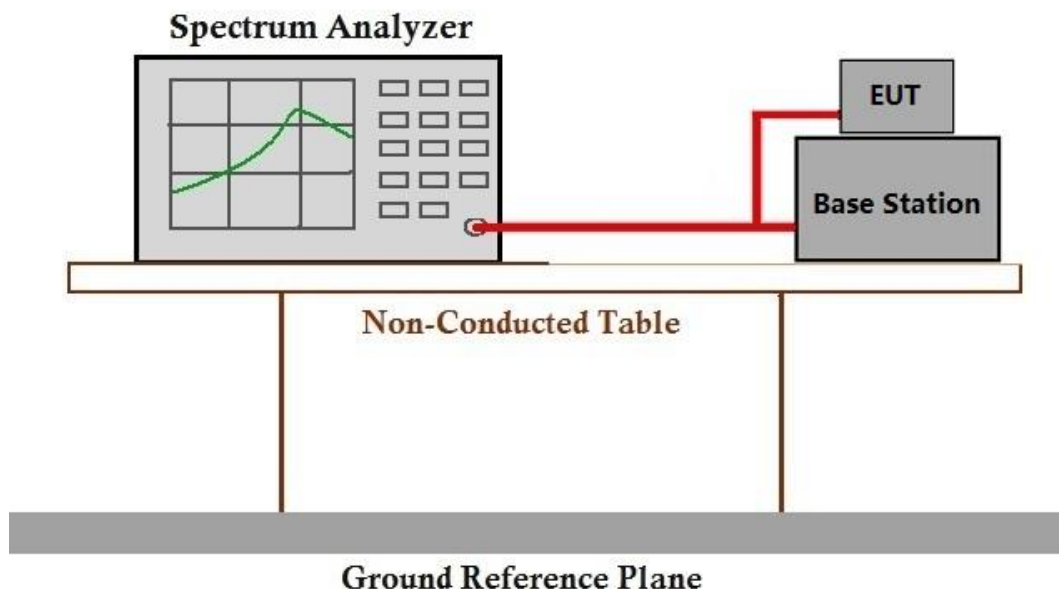
6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar

Test mode 32: TX mode_Keep the EUT in transmitting mode

6.5.2 Test Setup Diagram





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6.5.3 Measurement Data

Please refer to Appendix test data.



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6.6 Field strength of spurious radiation

Test Requirement: §2.1051, §22.917, §24.238, §27.50(h), §27.50(m), §27.53(a)
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: ≤ -13dBm (LTE Band2,4,5,12)

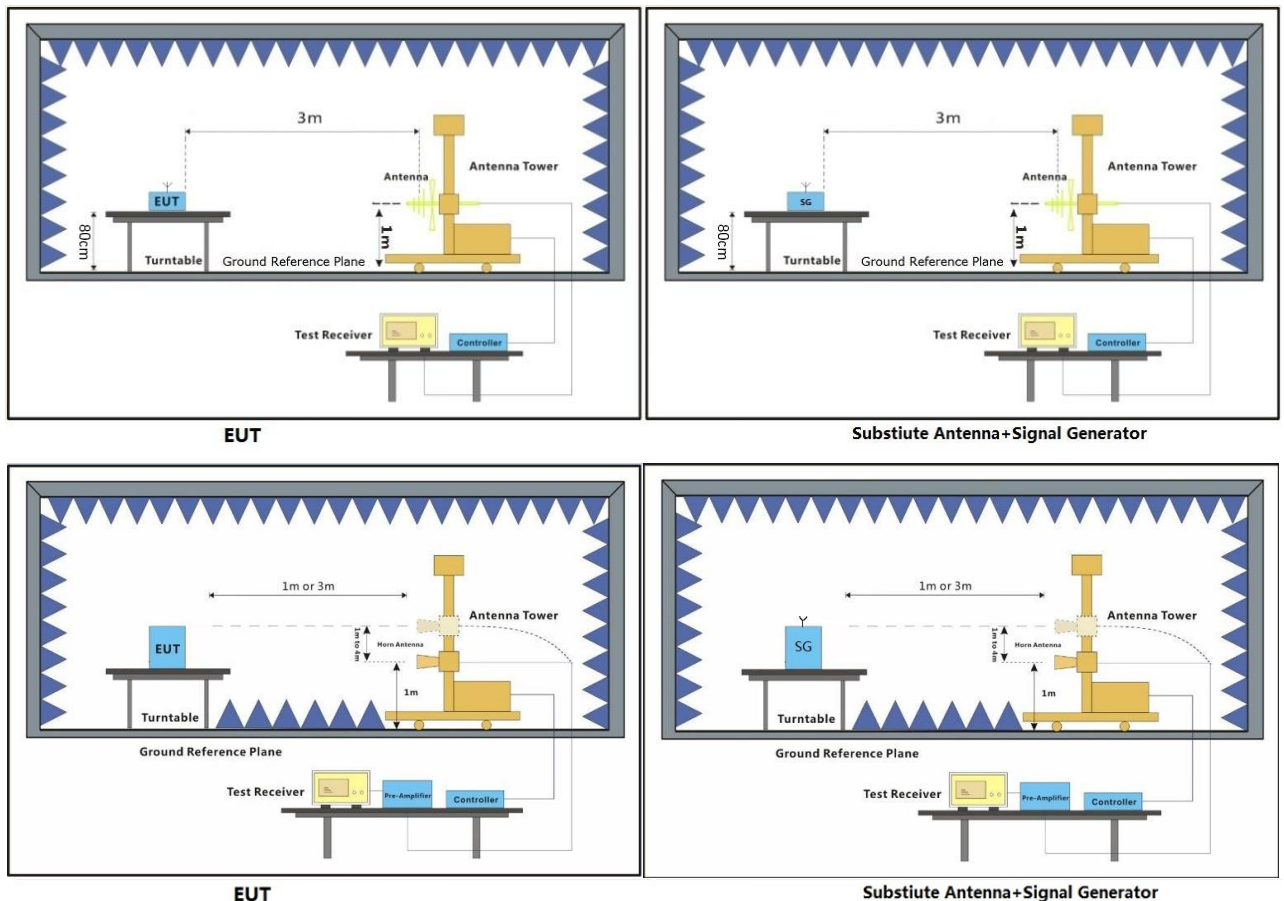
6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 47.5 % RH Atmospheric Pressure: 1020 mbar

Test mode 32: TX mode_Keep the EUT in transmitting mode

6.6.2 Test Setup Diagram



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6.6.3 Measurement Procedure and Data

Test Procedure:

- (1) On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
- (2) The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
- (3) The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
- (4) The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
- (5) The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
- (6) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- (7) The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
- (8) The maximum signal level detected by the measuring receiver shall be noted.
- (9) The measurement shall be repeated with the test antenna set to horizontal polarization.
- (10) Replace the antenna with a proper Antenna (substitution antenna).
- (11) The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
- (12) The substitution antenna shall be connected to a calibrated signal generator.
- (13) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- (14) The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
- (15) The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
- (16) The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
- (17) The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.



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FDD LTE Band2-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3700.14	-54.65	-13	-41.65	-59.53	3.29	8.17	Horizontal	Pass
5550.21	-51.73	-13	-38.73	-57.94	4.24	10.45	Horizontal	Pass
7400.28	-47.12	-13	-34.12	-54.06	4.19	11.13	Horizontal	Pass
3700.14	-54.5	-13	-41.5	-59.38	3.29	8.17	Vertical	Pass
5550.21	-51.51	-13	-38.51	-57.72	4.24	10.45	Vertical	Pass
7400.28	-47.73	-13	-34.73	-54.67	4.19	11.13	Vertical	Pass

FDD LTE Band2-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3758.74	-54.49	-13	-41.49	-59.37	3.29	8.17	Horizontal	Pass
5638.11	-52.06	-13	-39.06	-58.27	4.24	10.45	Horizontal	Pass
7517.48	-46.79	-13	-33.79	-54.315	4.215	11.74	Horizontal	Pass
3758.74	-54.9	-13	-41.9	-59.78	3.29	8.17	Vertical	Pass
5638.11	-50.74	-13	-37.74	-56.95	4.24	10.45	Vertical	Pass
7517.48	-47.92	-13	-34.92	-55.445	4.215	11.74	Vertical	Pass

FDD LTE Band2-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3817.34	-54.67	-13	-41.67	-59.55	3.29	8.17	Horizontal	Pass
5726.01	-52.9	-13	-39.9	-59.11	4.24	10.45	Horizontal	Pass
7634.68	-49.27	-13	-36.27	-56.795	4.215	11.74	Horizontal	Pass
3817.34	-54.71	-13	-41.71	-59.59	3.29	8.17	Vertical	Pass
5726.01	-52.36	-13	-39.36	-58.57	4.24	10.45	Vertical	Pass
7634.68	-48.89	-13	-35.89	-56.415	4.215	11.74	Vertical	Pass



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FDD LTE Band4-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3420.14	-55.22	-13	-42.22	-59.18	2.96	6.92	Horizontal	Pass
5130.21	-52.62	-13	-39.62	-58.5	4.26	10.14	Horizontal	Pass
6840.28	-49.69	-13	-36.69	-55.975	4.205	10.49	Horizontal	Pass
3420.14	-55.56	-13	-42.56	-59.52	2.96	6.92	Vertical	Pass
5130.21	-51.98	-13	-38.98	-57.86	4.26	10.14	Vertical	Pass
6840.28	-49.34	-13	-36.34	-55.625	4.205	10.49	Vertical	Pass

FDD LTE Band4-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3463.74	-56.44	-13	-43.44	-60.4	2.96	6.92	Horizontal	Pass
5195.61	-51.97	-13	-38.97	-57.85	4.26	10.14	Horizontal	Pass
6927.48	-50.02	-13	-37.02	-56.305	4.205	10.49	Horizontal	Pass
3463.74	-56.52	-13	-43.52	-60.48	2.96	6.92	Vertical	Pass
5195.61	-52.42	-13	-39.42	-58.3	4.26	10.14	Vertical	Pass
6927.48	-50.07	-13	-37.07	-56.355	4.205	10.49	Vertical	Pass

FDD LTE Band4-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3507.34	-55.19	-13	-42.19	-60.07	3.29	8.17	Horizontal	Pass
5261.01	-52.16	-13	-39.16	-58.04	4.26	10.14	Horizontal	Pass
7014.68	-49.42	-13	-36.42	-56.36	4.19	11.13	Horizontal	Pass
3507.34	-56.26	-13	-43.26	-61.14	3.29	8.17	Vertical	Pass
5261.01	-52.1	-13	-39.1	-57.98	4.26	10.14	Vertical	Pass
7014.68	-49.37	-13	-36.37	-56.31	4.19	11.13	Vertical	Pass

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FDD LTE Band5-Low channel, Modulation: QPSK, Bandwidth: 10MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1648.14	-65.74	-13	-52.74	-69.625	1.995	5.88	Horizontal	Pass
2472.21	-52.34	-13	-39.34	-52.46	2.35	4.62	Horizontal	Pass
3296.28	-57.11	-13	-44.11	-58.92	2.96	6.92	Horizontal	Pass
1648.14	-64.44	-13	-51.44	-66.175	1.995	5.88	Vertical	Pass
2472.21	-60.36	-13	-47.36	-60.48	2.35	4.62	Vertical	Pass
3296.28	-56.61	-13	-43.61	-58.42	2.96	6.92	Vertical	Pass

FDD LTE Band5-Middle channel, Modulation: QPSK, Bandwidth: 10MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1671.74	-64.75	-13	-51.75	-68.635	1.995	5.88	Horizontal	Pass
2507.61	-59.94	-13	-46.94	-60.955	2.655	5.82	Horizontal	Pass
3343.48	-55.64	-13	-42.64	-57.45	2.96	6.92	Horizontal	Pass
1671.74	-65.52	-13	-52.52	-67.255	1.995	5.88	Vertical	Pass
2507.61	-61.26	-13	-48.26	-62.275	2.655	5.82	Vertical	Pass
3343.48	-56.31	-13	-43.31	-58.12	2.96	6.92	Vertical	Pass

FDD LTE Band5-High channel, Modulation: QPSK, Bandwidth: 10MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1695.34	-64.71	-13	-51.71	-68.595	1.995	5.88	Horizontal	Pass
2543.01	-59.4	-13	-46.4	-60.415	2.655	5.82	Horizontal	Pass
3390.68	-56.13	-13	-43.13	-57.94	2.96	6.92	Horizontal	Pass
1695.34	-64.79	-13	-51.79	-66.525	1.995	5.88	Vertical	Pass
2543.01	-60.4	-13	-47.4	-61.415	2.655	5.82	Vertical	Pass
3390.68	-55.41	-13	-42.41	-57.22	2.96	6.92	Vertical	Pass

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FDD LTE Band12-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1398.14	-64.55	-13	-51.55	-65.62	1.64	2.71	Horizontal	Pass
2097.21	-62.52	-13	-49.52	-62.64	2.35	4.62	Horizontal	Pass
2796.28	-59.62	-13	-46.62	-60.635	2.655	5.82	Horizontal	Pass
1398.14	-64.33	-13	-51.33	-63.25	1.64	2.71	Vertical	Pass
2097.21	-62.83	-13	-49.83	-62.95	2.35	4.62	Vertical	Pass
2796.28	-59.31	-13	-46.31	-60.325	2.655	5.82	Vertical	Pass

FDD LTE Band12-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1413.74	-63.44	-13	-50.44	-64.51	1.64	2.71	Horizontal	Pass
2120.61	-62.67	-13	-49.67	-62.79	2.35	4.62	Horizontal	Pass
2827.48	-59.33	-13	-46.33	-60.345	2.655	5.82	Horizontal	Pass
1413.74	-65.28	-13	-52.28	-64.2	1.64	2.71	Vertical	Pass
2120.61	-63.64	-13	-50.64	-63.76	2.35	4.62	Vertical	Pass
2827.48	-58.97	-13	-45.97	-59.985	2.655	5.82	Vertical	Pass

FDD LTE Band12-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1429.34	-64.75	-13	-51.75	-65.82	1.64	2.71	Horizontal	Pass
2144.01	-64.38	-13	-51.38	-64.5	2.35	4.62	Horizontal	Pass
2858.68	-58.88	-13	-45.88	-59.895	2.655	5.82	Horizontal	Pass
1429.34	-64.07	-13	-51.07	-62.99	1.64	2.71	Vertical	Pass
2144.01	-64.07	-13	-51.07	-64.19	2.35	4.62	Vertical	Pass
2858.68	-58.71	-13	-45.71	-59.725	2.655	5.82	Vertical	Pass



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FDD LTE Band13-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1554.5	-63.63	-13	-50.63	-67.515	1.995	5.88	Horizontal	Pass
2331.75	-62.9	-13	-49.9	-63.02	2.35	4.62	Horizontal	Pass
3109	-56.69	-13	-43.69	-58.5	2.96	6.92	Horizontal	Pass
1554.5	-64.28	-13	-51.28	-66.015	1.995	5.88	Vertical	Pass
2331.75	-63	-13	-50	-63.12	2.35	4.62	Vertical	Pass
3109	-55.65	-13	-42.65	-57.46	2.96	6.92	Vertical	Pass

FDD LTE Band13-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1559.5	-64.67	-40	-24.67	-68.555	1.995	5.88	Horizontal	Pass
2339.25	-61.49	-13	-48.49	-61.61	2.35	4.62	Horizontal	Pass
3119	-55.68	-13	-42.68	-57.49	2.96	6.92	Horizontal	Pass
1559.5	-64.14	-40	-24.14	-65.875	1.995	5.88	Vertical	Pass
2339.25	-62.64	-13	-49.64	-62.76	2.35	4.62	Vertical	Pass
3119	-56.76	-13	-43.76	-58.57	2.96	6.92	Vertical	Pass

FDD LTE Band13-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1564.5	-63.4	-40	-23.4	-67.285	1.995	5.88	Horizontal	Pass
2346.75	-60.91	-13	-47.91	-61.03	2.35	4.62	Horizontal	Pass
3129	-55.78	-13	-42.78	-57.59	2.96	6.92	Horizontal	Pass
1564.5	-64.76	-40	-24.76	-66.495	1.995	5.88	Vertical	Pass
2346.75	-62.56	-13	-49.56	-62.68	2.35	4.62	Vertical	Pass
3129	-55.98	-13	-42.98	-57.79	2.96	6.92	Vertical	Pass

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FDD LTE Band14-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1576.5	-64.57	-40	-24.57	-68.455	1.995	5.88	Horizontal	Pass
2364.75	-61.91	-13	-48.91	-62.03	2.35	4.62	Horizontal	Pass
3153	-55.19	-13	-42.19	-57	2.96	6.92	Horizontal	Pass
1576.5	-63.96	-40	-23.96	-65.695	1.995	5.88	Vertical	Pass
2364.75	-62.54	-13	-49.54	-62.66	2.35	4.62	Vertical	Pass
3153	-54.61	-13	-41.61	-56.42	2.96	6.92	Vertical	Pass

FDD LTE Band14-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1581.5	-64.56	-40	-24.56	-68.445	1.995	5.88	Horizontal	Pass
2372.25	-60.46	-13	-47.46	-60.58	2.35	4.62	Horizontal	Pass
3163	-54.65	-13	-41.65	-56.46	2.96	6.92	Horizontal	Pass
1581.5	-64.78	-40	-24.78	-66.515	1.995	5.88	Vertical	Pass
2372.25	-62.06	-13	-49.06	-62.18	2.35	4.62	Vertical	Pass
3163	-54.84	-13	-41.84	-56.65	2.96	6.92	Vertical	Pass

FDD LTE Band14-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1586.5	-64.69	-40	-24.69	-68.575	1.995	5.88	Horizontal	Pass
2379.75	-61.2	-13	-48.2	-61.32	2.35	4.62	Horizontal	Pass
3173	-54.46	-13	-41.46	-56.27	2.96	6.92	Horizontal	Pass
1586.5	-63.81	-40	-23.81	-65.545	1.995	5.88	Vertical	Pass
2379.75	-62.41	-13	-49.41	-62.53	2.35	4.62	Vertical	Pass
3173	-54.99	-13	-41.99	-56.8	2.96	6.92	Vertical	Pass

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FDD LTE Band66-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3420.14	-55.08	-13	-42.08	-59.04	2.96	6.92	Horizontal	Pass
5130.21	-51.39	-13	-38.39	-57.27	4.26	10.14	Horizontal	Pass
6840.28	-50.02	-13	-37.02	-56.305	4.205	10.49	Horizontal	Pass
3420.14	-56.15	-13	-43.15	-60.11	2.96	6.92	Vertical	Pass
5130.21	-52.63	-13	-39.63	-58.51	4.26	10.14	Vertical	Pass
6840.28	-49.19	-13	-36.19	-55.475	4.205	10.49	Vertical	Pass

FDD LTE Band66-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3488.74	-56.03	-13	-43.03	-59.99	2.96	6.92	Horizontal	Pass
5233.11	-51.72	-13	-38.72	-57.6	4.26	10.14	Horizontal	Pass
6977.48	-49.63	-13	-36.63	-55.915	4.205	10.49	Horizontal	Pass
3488.74	-55.38	-13	-42.38	-59.34	2.96	6.92	Vertical	Pass
5233.11	-51.58	-13	-38.58	-57.46	4.26	10.14	Vertical	Pass
6977.48	-49.84	-13	-36.84	-56.125	4.205	10.49	Vertical	Pass

FDD LTE Band66-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3557.34	-55.87	-13	-42.87	-60.75	3.29	8.17	Horizontal	Pass
5336.01	-51.84	-13	-38.84	-57.72	4.26	10.14	Horizontal	Pass
7114.68	-48.41	-13	-35.41	-55.35	4.19	11.13	Horizontal	Pass
3557.34	-55.84	-13	-42.84	-60.72	3.29	8.17	Vertical	Pass
5336.01	-52.25	-13	-39.25	-58.13	4.26	10.14	Vertical	Pass
7114.68	-48.97	-13	-35.97	-55.91	4.19	11.13	Vertical	Pass



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FDD LTE Band71-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1326.5	-61.2	-13	-48.2	-62.27	1.64	2.71	Horizontal	Pass
1989.75	-62.76	-13	-49.76	-64.495	1.995	5.88	Horizontal	Pass
2653	-57.88	-13	-44.88	-58.895	2.655	5.82	Horizontal	Pass
1326.5	-60.92	-13	-47.92	-59.84	1.64	2.71	Vertical	Pass
1989.75	-62.71	-13	-49.71	-64.445	1.995	5.88	Vertical	Pass
2653	-47.78	-13	-34.78	-48.795	2.655	5.82	Vertical	Pass

FDD LTE Band71-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1356.5	-64.47	-13	-51.47	-65.54	1.64	2.71	Horizontal	Pass
2034.75	-61.43	-13	-48.43	-61.55	2.35	4.62	Horizontal	Pass
2713	-57.89	-13	-44.89	-58.905	2.655	5.82	Horizontal	Pass
1356.5	-63.32	-13	-50.32	-62.24	1.64	2.71	Vertical	Pass
2034.75	-61.9	-13	-48.9	-62.02	2.35	4.62	Vertical	Pass
2713	-58.76	-13	-45.76	-59.775	2.655	5.82	Vertical	Pass

FDD LTE Band71-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB0								
Frequency (MHz)	EIRP (dBm)	Limit(dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1386.5	-61.16	-13	-48.16	-62.23	1.64	2.71	Horizontal	Pass
2079.75	-62.12	-13	-49.12	-62.24	2.35	4.62	Horizontal	Pass
2773	-57.42	-13	-44.42	-58.435	2.655	5.82	Horizontal	Pass
1386.5	-61.59	-13	-48.59	-60.51	1.64	2.71	Vertical	Pass
2079.75	-61.77	-13	-48.77	-61.89	2.35	4.62	Vertical	Pass
2773	-57.67	-13	-44.67	-58.685	2.655	5.82	Vertical	Pass

Note: All modes have been tested and we found QPSK test mode has the worst test result. Only record the worst test result.



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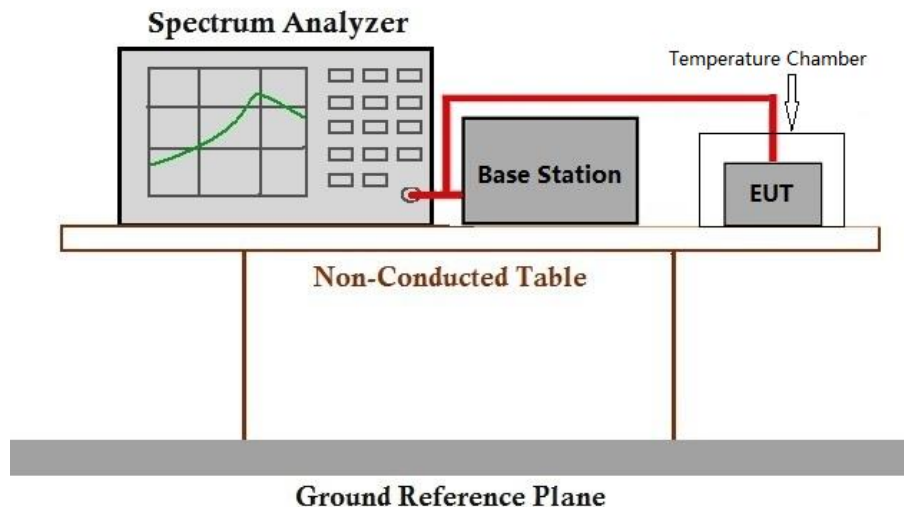
6.7 Frequency stability

Test Requirement: \$2.1055,\$22.355,\$24.235,\$27.54
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: $\leq \pm 2.5\text{ppm}$.

6.7.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
 Test mode 32: TX mode_Keep the EUT in transmitting mode

6.7.2 Test Setup Diagram



6.7.3 Measurement Data

Please refer to Appendix test data.

7 Test Setup Photo

Refer to Appendix - Test Setup Photo for SZCR2404001176AT

8 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for SZCR2404001176AT

- End of the Report -

