

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

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240100017609

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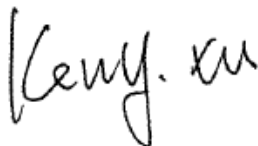
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TEST REPORT

Application No.: SZCR2401000176AT
Applicant: Vanstone Electronic (Beijing) Co., Ltd.
Address of Applicant: 3F No.2 Building, Aisino Corporation Park 18A, Xingshikou Road, Haidian District, Beijing, China 100195
Manufacturer: Vanstone Electronic (Beijing) Co., Ltd.
Address of Manufacturer: 3F No.2 Building, Aisino Corporation Park 18A, Xingshikou Road, Haidian District, Beijing, China 100195
Equipment Under Test (EUT):
EUT Name: Android POS Terminal
Model No.: A99
FCC ID: OWLA99-A
Standard(s) : 47 CFR Part 2
47 CFR Part 22 subpart H
47 CFR Part 24 subpart E
47 CFR Part 27 subpart C
Date of Receipt: 2024-01-11
Date of Test: 2024-01-15 to 2024-01-30
Date of Issue: 2024-03-15

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



Keny Xu
EMC Laboratory Manager



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

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2024-03-15		Original

Authorized for issue by:			
		Calvin Weng	
		Calvin Weng/Project Engineer	
		Eric Fu	
		Eric Fu/Reviewer	



2 Test Summary

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Output Power Data	§2.1046 §22.913 §24.232 §27.50(a) §27.50(d) §27.50(h)	ERP≤ 7W(LTE Band 5) EIRP≤ 2W(LTE Band 2) EIRP≤ 250mW/5MHz(LTE Band 40) EIRP≤ 1W(LTE Band 4) EIRP≤ 2W(LTE Band 7,38,41)	PASS
Peak-Average Ratio	§22.913 §24.232 §27.50(d)	≤13dB	PASS
Bandwidth	§2.1049(h)	OBW: No limit EBW: No limit	PASS
Band Edge Compliance	§2.1051 §22.917 §24.238 §27.50(h) §27.50(m) §27.53(a)	≤ -13dBm (LTE Band5) ≤ -13dBm (LTE Band2) ≤ -13dBm (LTE Band4) Refer to clause 6.4 for LTE Band7,38,41 Refer to clause 6.4 for LTE Band 40	PASS
Spurious emissions at antenna terminals	§2.1051 §22.917 §24.238 §27.50(h) §27.50(m) §27.53(a)	≤ -13dBm (LTE Band5) ≤ -13dBm (LTE Band2) ≤ -13dBm (LTE Band4) Refer to clause 6.5 for LTE Band7,38,41 Refer to clause 6.5 for LTE Band 40	PASS
Field strength of spurious radiation	§2.1051 §22.917 §24.238 §27.50(h) §27.50(m) §27.53(a)	≤ -13dBm (LTE Band5) ≤ -13dBm (LTE Band2) ≤ -13dBm (LTE Band4) Refer to clause 6.6 for LTE Band7,38,41 Refer to clause 6.6 for LTE Band40	PASS
Frequency stability	§2.1055 §22.355 §24.235 §27.54	≤ ±2.5ppm.	PASS



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC7.6V by li-ion battery(2600mAh) Battery M/N:BT-991 Battery Manufacture: Hunan Gaoyuan Battery Co.,LTD. Recharged by AC/DC adapter Adapter M/N:SW-0983 Adapter Input:AC100-240V, 50/60Hz, 0.5A Adapter Output: DC5V/2A
Cable(s):	USB type C cable: 1.5m unshielded cable without ferrite core
Cable Loss (for RF conducted test):	0.7dBi(below 1GHz), 1dBi(above 1GHz)
Sample Type:	Portable production
LTE Operation Frequency Band:	LTE FDD Band 2,4,5,7,38,40,41
Modulation Type:	QPSK, 16QAM
LTE Power Class:	Level 3
Antenna Type:	PIFA Antenna
Antenna Gain:	LTE B2: 2.29 dBi; B4: 2.18 dBi; B5: -2.26dBi; B7: 2.31 dBi; B38: 2.1dBi; B40: 3dBi; B41:2.31 dBi
SIM Card:	This device has dual SIM Card sockets. Both the SIM sockets have been tested. SIM1 was worst case, only record SIM1.



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	1751.5
	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
LTE FDD Band 5	1.4	824.7	836.5	848.3
	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 7	5	2502.5	2535.0	2567.5
	10	2505.0	2535.0	2565.0
	15	2507.5	2535.0	2562.5
	20	2510.0	2535.0	2560.0



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Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 38	5	2572.5	2595.0	2617.5
	10	2575.0	2595.0	2615.0
	15	2577.5	2595.0	2612.5
	20	2580.0	2595.0	2610.0

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 40a	5	2307.5	2310.0	2312.5
	10	/	2310.0	/
Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 40b	5	2352.5	2355.0	2357.5
	10	/	2355.0	/
Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 41	5	2498.5	2593.0	2687.5
	10	2501.0	2593.0	2685.0
	15	2503.5	2593.0	2682.5
	20	2506.0	2593.0	2680.0



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4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Temperature:	TL	-30°C
	TN	+20°C
	TH	+50°C
Voltage:	VL	6.6 Vdc
	VN	7.6 Vdc
	VH	8.7 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

The EUT has been tested independent unit.

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	$\pm 3\%$



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4.6 Test Location

All tests were performed at:

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

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

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	2023/03/21	2024/03/20
Spectrum Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2023/03/20	2024/03/19
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	2023/03/28	2024/03/27
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2023/03/21	2024/03/20

RE in Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	SEM003-33	2021/9/25	2024/9/24
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	2021/7/11	2024/7/10
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120D	SEM003-32	2021/9/26	2024/9/25
Double-ridged waveguide horn	ETS-LINDGREN	3117	SEM003-34	2021/9/25	2024/9/24
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	2024/03/28	2024/03/27

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	2023-03-23	2024-03-22



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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) EIRP ≤ 250mW/5MHz (LTE Band 40) EIRP ≤ 1W (LTE Band 4) EIRP ≤ 2W (LTE Band 7, 38, 41)

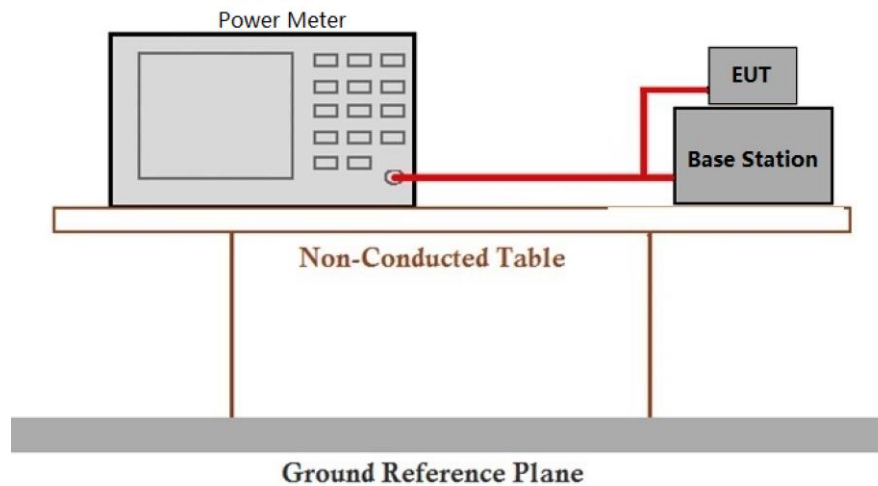
6.1.1 E.U.T. Operation

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 for LTE test data.

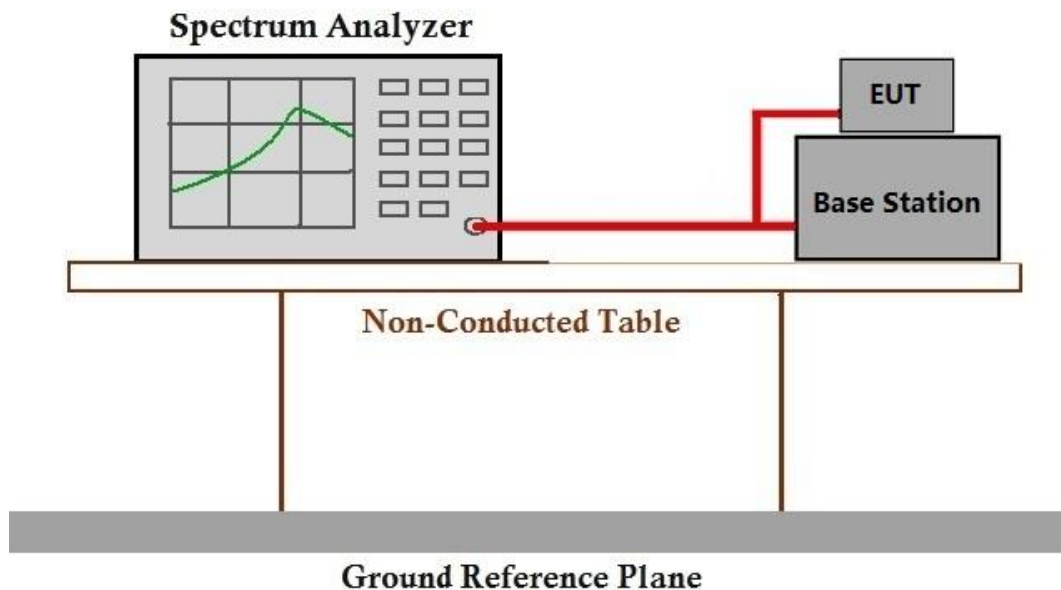
6.2 Peak-Average Ratio

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 for LTE test data.



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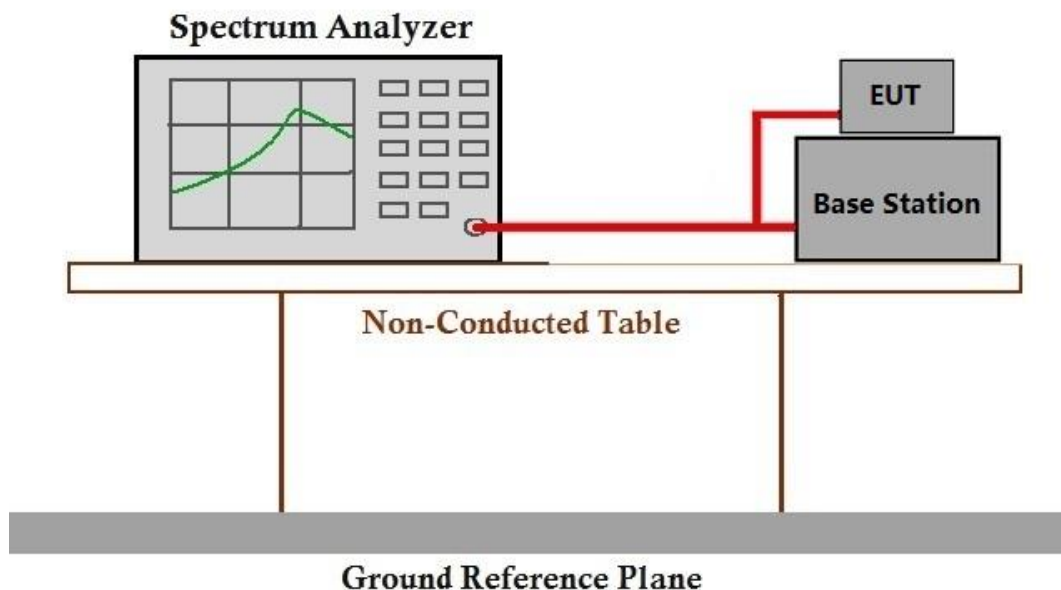
6.3 Bandwidth

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 for LTE 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: $\leq -13\text{dBm}$ (LTE Band2,4,5)

For **Band7,38,41**:

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

For **Band40**:

(i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;

(iii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log (P)$ dB above 2365 MHz.

6.4.1 E.U.T. Operation

Operating Environment:

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

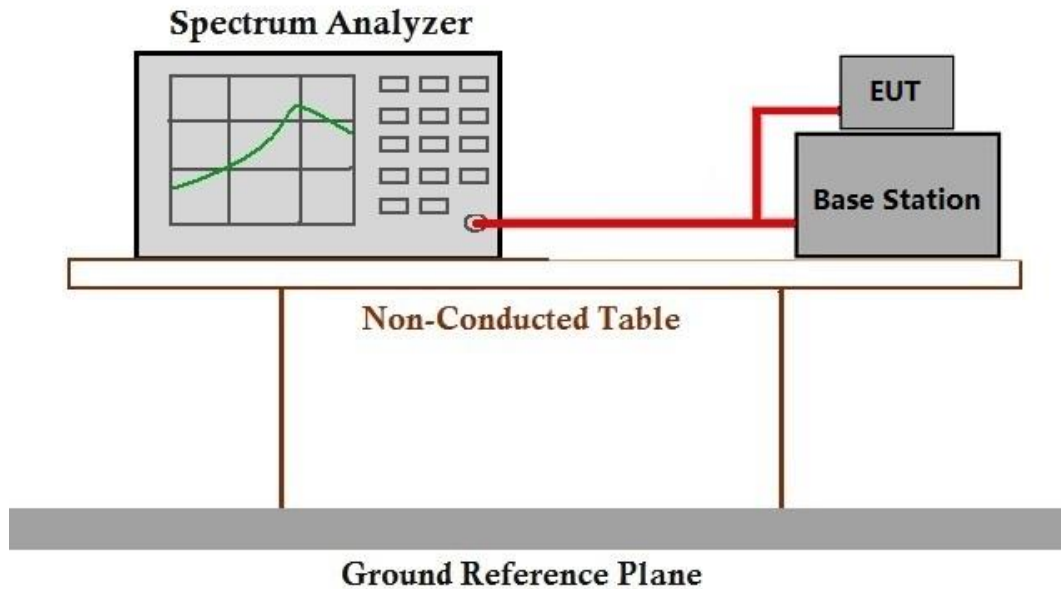
Test mode 32: TX mode_Keep the EUT in transmitting mode



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6.4.2 Test Setup Diagram



6.4.3 Measurement Data

Please refer to Appendix for LTE test data.



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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: $\leq -13\text{dBm}$ (**LTE Band2,4,5**)

For **Band7,38,41**:

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

For **Band40**:

(i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;

(iii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log (P)$ dB above 2365 MHz.

6.5.1 E.U.T. Operation

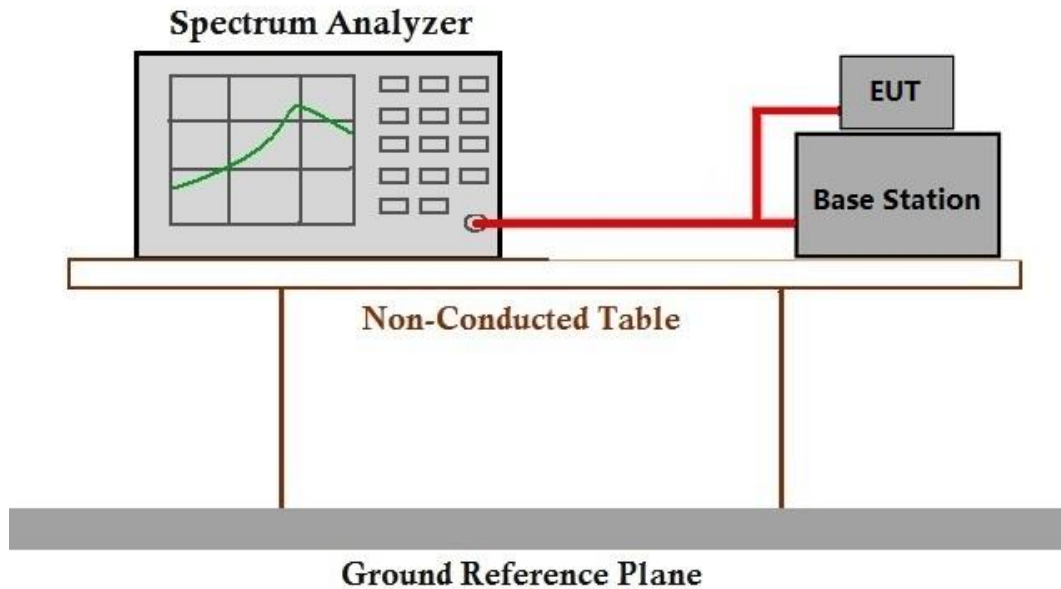
Operating Environment:

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



6.5.3 Measurement Data

Please refer to Appendix for LTE 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**)

For **Band7,38,41**:

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

For **Band40**:

- (i) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz;
- (ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz;
- (iii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

6.6.1 E.U.T. Operation

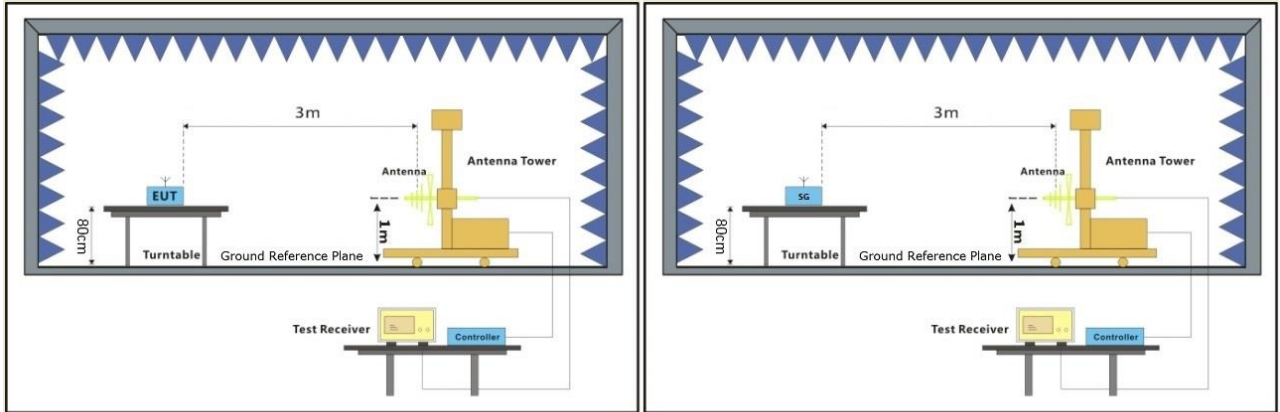
Operating Environment:
 Temperature: 22.5 °C Humidity: 47.5 % RH Atmospheric Pressure: 1020 mbar
 Test mode 32: TX mode_Keep the EUT in transmitting mode



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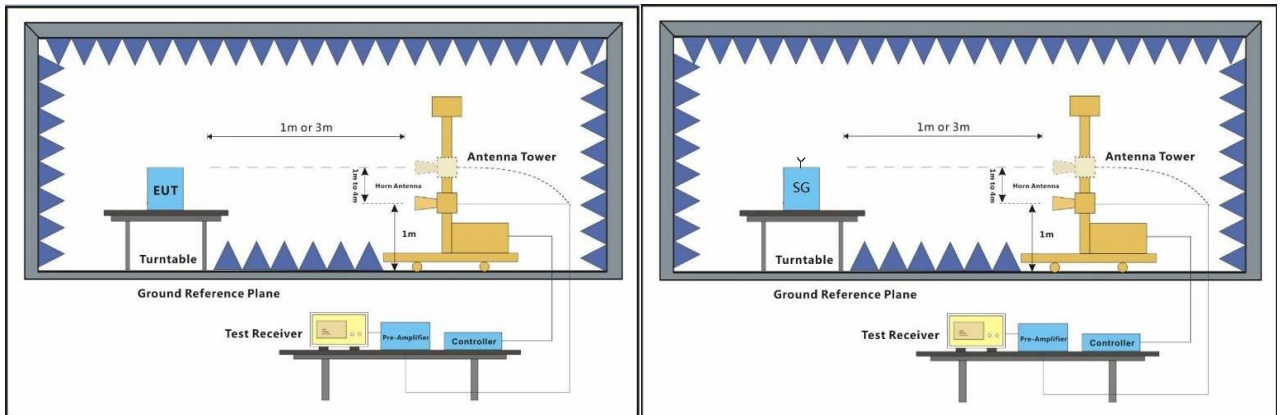
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6.6.2 Test Setup Diagram



EUT

Substiute Antenna+Signal Generator



EUT

Substiute Antenna+Signal Generator



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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	-54.44	-13	-41.44	-59.32	3.29	8.17	Horizontal	Pass
5550.21	-51.88	-13	-38.88	-58.09	4.24	10.45	Horizontal	Pass
7400.28	-48.98	-13	-35.98	-55.92	4.19	11.13	Horizontal	Pass
3700.14	-55.75	-13	-42.75	-60.63	3.29	8.17	Vertical	Pass
5550.21	-52.14	-13	-39.14	-58.35	4.24	10.45	Vertical	Pass
7400.28	-48.44	-13	-35.44	-55.38	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	-55.55	-13	-42.55	-60.43	3.29	8.17	Horizontal	Pass
5638.11	-53.39	-13	-40.39	-59.6	4.24	10.45	Horizontal	Pass
7517.48	-49.21	-13	-36.21	-56.735	4.215	11.74	Horizontal	Pass
3758.74	-55.43	-13	-42.43	-60.31	3.29	8.17	Vertical	Pass
5638.11	-53.49	-13	-40.49	-59.7	4.24	10.45	Vertical	Pass
7517.48	-49.28	-13	-36.28	-56.805	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	-55.57	-13	-42.57	-60.45	3.29	8.17	Horizontal	Pass
5726.01	-53.4	-13	-40.4	-59.61	4.24	10.45	Horizontal	Pass
7634.68	-49.6	-13	-36.6	-57.125	4.215	11.74	Horizontal	Pass
3817.34	-56.24	-13	-43.24	-61.12	3.29	8.17	Vertical	Pass
5726.01	-52.84	-13	-39.84	-59.05	4.24	10.45	Vertical	Pass
7634.68	-49.67	-13	-36.67	-57.195	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	-56.1	-13	-43.1	-60.06	2.96	6.92	Horizontal	Pass
5130.21	-53.32	-13	-40.32	-59.2	4.26	10.14	Horizontal	Pass
6840.28	-51.09	-13	-38.09	-57.375	4.205	10.49	Horizontal	Pass
3420.14	-56.09	-13	-43.09	-60.05	2.96	6.92	Vertical	Pass
5130.21	-53.63	-13	-40.63	-59.51	4.26	10.14	Vertical	Pass
6840.28	-50.48	-13	-37.48	-56.765	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	-57.35	-13	-44.35	-61.31	2.96	6.92	Horizontal	Pass
5195.61	-53.03	-13	-40.03	-58.91	4.26	10.14	Horizontal	Pass
6927.48	-50.77	-13	-37.77	-57.055	4.205	10.49	Horizontal	Pass
3463.74	-56.31	-13	-43.31	-60.27	2.96	6.92	Vertical	Pass
5195.61	-53.95	-13	-40.95	-59.83	4.26	10.14	Vertical	Pass
6927.48	-51.15	-13	-38.15	-57.435	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	-57.56	-13	-44.56	-62.44	3.29	8.17	Horizontal	Pass
5261.01	-53	-13	-40	-58.88	4.26	10.14	Horizontal	Pass
7014.68	-50.64	-13	-37.64	-57.58	4.19	11.13	Horizontal	Pass
3507.34	-58.34	-13	-45.34	-63.22	3.29	8.17	Vertical	Pass
5261.01	-53.16	-13	-40.16	-59.04	4.26	10.14	Vertical	Pass
7014.68	-50.4	-13	-37.4	-57.34	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	-66.05	-13	-53.05	-69.935	1.995	5.88	Horizontal	Pass
2472.21	-58.91	-13	-45.91	-59.03	2.35	4.62	Horizontal	Pass
3296.28	-57.81	-13	-44.81	-59.62	2.96	6.92	Horizontal	Pass
1648.14	-65.53	-13	-52.53	-67.265	1.995	5.88	Vertical	Pass
2472.21	-61.73	-13	-48.73	-61.85	2.35	4.62	Vertical	Pass
3296.28	-57.88	-13	-44.88	-59.69	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	-65.85	-13	-52.85	-69.735	1.995	5.88	Horizontal	Pass
2507.61	-62.01	-13	-49.01	-63.025	2.655	5.82	Horizontal	Pass
3343.48	-56.75	-13	-43.75	-58.56	2.96	6.92	Horizontal	Pass
1671.74	-66.11	-13	-53.11	-67.845	1.995	5.88	Vertical	Pass
2507.61	-57.98	-13	-44.98	-58.995	2.655	5.82	Vertical	Pass
3343.48	-56.6	-13	-43.6	-58.41	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	-66.3	-13	-53.3	-70.185	1.995	5.88	Horizontal	Pass
2543.01	-61.68	-13	-48.68	-62.695	2.655	5.82	Horizontal	Pass
3390.68	-56.98	-13	-43.98	-58.79	2.96	6.92	Horizontal	Pass
1695.34	-65.36	-13	-52.36	-67.095	1.995	5.88	Vertical	Pass
2543.01	-61.06	-13	-48.06	-62.075	2.655	5.82	Vertical	Pass
3390.68	-56.4	-13	-43.4	-58.21	2.96	6.92	Vertical	Pass



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FDD LTE Band7-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
5000.5	-52.97	-25	-27.97	-58.85	4.26	10.14	Horizontal	Pass
7500.75	-48.51	-25	-23.51	-56.035	4.215	11.74	Horizontal	Pass
10001	-47.3	-25	-22.3	-55.25	5.08	13.03	Horizontal	Pass
5000.5	-53.34	-25	-28.34	-59.22	4.26	10.14	Vertical	Pass
7500.75	-48.77	-25	-23.77	-56.295	4.215	11.74	Vertical	Pass
10001	-47.52	-25	-22.52	-55.47	5.08	13.03	Vertical	Pass

FDD LTE Band7-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
5065.5	-53.75	-25	-28.75	-59.63	4.26	10.14	Horizontal	Pass
7598.25	-49.59	-25	-24.59	-57.115	4.215	11.74	Horizontal	Pass
10131	-46.8	-25	-21.8	-54.75	5.08	13.03	Horizontal	Pass
5065.5	-54.19	-25	-29.19	-60.07	4.26	10.14	Vertical	Pass
7598.25	-49.73	-25	-24.73	-57.255	4.215	11.74	Vertical	Pass
10131	-46.9	-25	-21.9	-54.85	5.08	13.03	Vertical	Pass

FDD LTE Band7-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
5130.5	-53.9	-25	-28.9	-59.78	4.26	10.14	Horizontal	Pass
7695.75	-49.45	-25	-24.45	-56.975	4.215	11.74	Horizontal	Pass
10261	-48.66	-25	-23.66	-56.61	5.08	13.03	Horizontal	Pass
5130.5	-52.99	-25	-27.99	-58.87	4.26	10.14	Vertical	Pass
7695.75	-50.81	-25	-25.81	-58.335	4.215	11.74	Vertical	Pass
10261	-48.71	-25	-23.71	-56.66	5.08	13.03	Vertical	Pass



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FDD LTE Band38-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
5140.5	-53.2	-25	-28.2	-59.08	4.26	10.14	Horizontal	Pass
7710.75	-48.99	-25	-23.99	-56.515	4.215	11.74	Horizontal	Pass
10281	-47.88	-25	-22.88	-55.83	5.08	13.03	Horizontal	Pass
5140.5	-52.87	-25	-27.87	-58.75	4.26	10.14	Vertical	Pass
7710.75	-50.47	-25	-25.47	-57.995	4.215	11.74	Vertical	Pass
10281	-47.87	-25	-22.87	-55.82	5.08	13.03	Vertical	Pass

FDD LTE Band38-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
5185.5	-53.54	-25	-28.54	-59.42	4.26	10.14	Horizontal	Pass
7778.25	-50.57	-25	-25.57	-58.095	4.215	11.74	Horizontal	Pass
10371	-47.31	-25	-22.31	-55.26	5.08	13.03	Horizontal	Pass
5185.5	-53.75	-25	-28.75	-59.63	4.26	10.14	Vertical	Pass
7778.25	-48.93	-25	-23.93	-56.455	4.215	11.74	Vertical	Pass
10371	-48.61	-25	-23.61	-56.56	5.08	13.03	Vertical	Pass

FDD LTE Band38-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
5230.5	-51.89	-25	-26.89	-57.77	4.26	10.14	Horizontal	Pass
7845.75	-48.89	-25	-23.89	-56.415	4.215	11.74	Horizontal	Pass
10461	-47.65	-25	-22.65	-55.6	5.08	13.03	Horizontal	Pass
5230.5	-52.44	-25	-27.44	-58.32	4.26	10.14	Vertical	Pass
7845.75	-48.07	-25	-23.07	-55.595	4.215	11.74	Vertical	Pass
10461	-47.11	-25	-22.11	-55.06	5.08	13.03	Vertical	Pass



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FDD LTE Band40-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
4600.5	-55.08	-40	-15.08	-60.54	3.94	9.4	Horizontal	Pass
6900.75	-51.29	-40	-11.29	-57.575	4.205	10.49	Horizontal	Pass
9201	-47.37	-40	-7.37	-56.01	4.57	13.21	Horizontal	Pass
4600.5	-54.87	-40	-14.87	-60.33	3.94	9.4	Vertical	Pass
6900.75	-51	-40	-11	-57.285	4.205	10.49	Vertical	Pass
9201	-46.39	-40	-6.39	-55.03	4.57	13.21	Vertical	Pass

FDD LTE Band40-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
4695.5	-54.37	-40	-14.37	-59.83	3.94	9.4	Horizontal	Pass
7043.25	-49.5	-40	-9.5	-56.44	4.19	11.13	Horizontal	Pass
9391	-48.42	-40	-8.42	-57.06	4.57	13.21	Horizontal	Pass
4695.5	-54.43	-40	-14.43	-59.89	3.94	9.4	Vertical	Pass
7043.25	-50.3	-40	-10.3	-57.24	4.19	11.13	Vertical	Pass
9391	-48.09	-40	-8.09	-56.73	4.57	13.21	Vertical	Pass

FDD LTE Band40-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
4790.5	-53.4	-40	-13.4	-58.86	3.94	9.4	Horizontal	Pass
7185.75	-49.95	-40	-9.95	-56.89	4.19	11.13	Horizontal	Pass
9581	-47.55	-40	-7.55	-55.965	4.825	13.24	Horizontal	Pass
4790.5	-53.51	-40	-13.51	-58.97	3.94	9.4	Vertical	Pass
7185.75	-50.19	-40	-10.19	-57.13	4.19	11.13	Vertical	Pass
9581	-47.95	-40	-7.95	-56.365	4.825	13.24	Vertical	Pass



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FDD LTE Band41-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
4997	-54.18	-25	-29.18	-59.64	3.94	9.4	Horizontal	Pass
7495.5	-48.38	-25	-23.38	-55.32	4.19	11.13	Horizontal	Pass
9994	-47.42	-25	-22.42	-55.835	4.825	13.24	Horizontal	Pass
4997	-53.87	-25	-28.87	-59.33	3.94	9.4	Vertical	Pass
7495.5	-49.76	-25	-24.76	-56.7	4.19	11.13	Vertical	Pass
9994	-46.69	-25	-21.69	-55.105	4.825	13.24	Vertical	Pass

FDD LTE Band41-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
5186	-52.62	-25	-27.62	-58.5	4.26	10.14	Horizontal	Pass
7779	-49.93	-25	-24.93	-57.455	4.215	11.74	Horizontal	Pass
10372	-48.02	-25	-23.02	-55.97	5.08	13.03	Horizontal	Pass
5186	-53.74	-25	-28.74	-59.62	4.26	10.14	Vertical	Pass
7779	-49.11	-25	-24.11	-56.635	4.215	11.74	Vertical	Pass
10372	-47.51	-25	-22.51	-55.46	5.08	13.03	Vertical	Pass

FDD LTE Band41-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
5375	-53.59	-25	-28.59	-59.47	4.26	10.14	Horizontal	Pass
8062.5	-47.89	-25	-22.89	-55.98	4.24	12.33	Horizontal	Pass
10750	-46.04	-25	-21.04	-54.085	5.075	13.12	Horizontal	Pass
5375	-53	-25	-28	-58.88	4.26	10.14	Vertical	Pass
8062.5	-47.08	-25	-22.08	-55.17	4.24	12.33	Vertical	Pass
10750	-45.91	-25	-20.91	-53.955	5.075	13.12	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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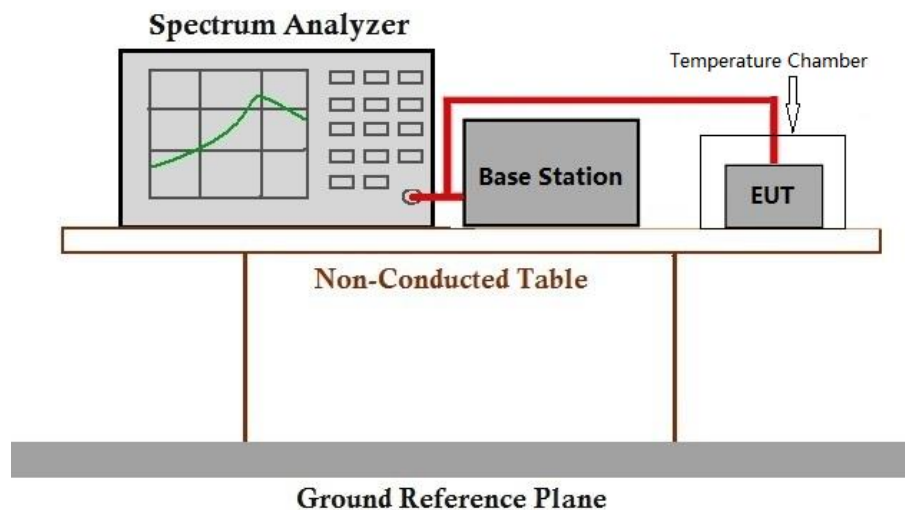
6.7 Frequency stability

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 for LTE test data.



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7 Test Setup Photo

Refer to Appendix - Test Setup Photo for SZCR2401000176AT

8 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for SZCR2401000176AT

- End of the Report -

