TEST REPORT

Application No.:	SZCR2212004131AT
Applicant:	Shenzhen RAKwireless Technology Co.,Ltd.
Address of Applicant:	Room 506, Building B, New Compark, Pingshan First Road, Taoyuan Street, Nanshan District, Shenzhen, China
Manufacturer:	Shenzhen RAKwireless Technology Co.,Ltd.
Address of Manufacturer:	Room 506, Building B, New Compark, Pingshan First Road, Taoyuan Street, Nanshan District, Shenzhen, China
Equipment Under Test (EUT):	
EUT Name:	All-in-One. 5G
Model No.:	M320
Trade Mark:	RAK, MNTD
FCC ID:	2AF6B-M320
Standard(s) :	47 CFR Part 2 47 CFR Part 96 subpart E
Date of Receipt:	2022-12-08
Date of Test:	2023-03-14 to 2023-04-06
Date of Issue:	2023-04-19
Test Result:	**Pass**

* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu
EMC Laboratory Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2023-04-19		Original

Authorized for issue by:				
		Benson Wang **Benson Wang/Project Engineer**		
		Eric Fu **Eric Fu/Reviewer**		

2 Test Summary

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Output Power Data & Maximum Power Spectral Density	§2.1046 §96.41(b)	EIRP≤ 30dBm/10MHz(LTE Band 48 & 5G NR n48) PSD≤ 20dBm/MHz(LTE Band 48 & 5G NR n48)	PASS
Peak-Average Ratio	§96.41(g)	≤13dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049(h)	OBW: No limit EBW: No limit	PASS
Band Edge Compliance	§2.1051 §96.41(e)	Refer to clause 6.4 for LTE Band48 & 5G NR n48	PASS
Spurious emissions at antenna terminals	§2.1051 §96.41(e)	Refer to clause 6.5 for LTE Band48 & 5G NR n48	PASS
Field strength of spurious radiation	§2.1051 §96.41(e)	Refer to clause 6.6 for LTE Band48 & 5G NR n48	PASS
Frequency stability	§2.1055	≤ ±2.5ppm.	PASS

3 Contents

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

4 General Information

4.1 Details of E.U.T.	
Power supply:	Powered by POE adapter: Adapter model: RP026-5601080YE Input: AC 100-240V 50/60Hz Output: DC 56.0V 1.08A
Cable:	Lan cable x 2: 302cm unshielded
EUT Type:	CBSD
Category of EUT:	Category A
LTE:	
Operation Frequency Band:	Band 48 (3550-3700MHz)
Test Mode:	E-TM1.1; E-TM3.2; E-TM3.1;
Modulation Type:	QPSK, 16QAM, 64QAM
Bandwidth:	10MHz; 20MHz
5GNR:	
Operation Frequency Band:	n48 (3550-3700MHz)
Test Mode:	NR-FR1-TM1.1; NR-FR1-TM3.1; NR-FR1-TM3.1a;
Modulation Type:	QPSK, 64QAM, 256QAM,
Bandwidth:	10MHz; 20MHz; 30MHz; 40MHz;
SCS:	30KHz
LTE & 5GNR:	
Transmission (TX) and Receiving (RX) Antenna Ports:	TX port: 2
MIMO supported	2*2 UL
Antenna Type:	Integral Antenna
Antenna Gain:	5.5dBi

Note:
(1)The antenna gain value is provided by the customer. The test lab will not be responsible for wrong test result due to incorrect information about antenna gain values.

4.2 Test Frequency

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 48	10	3555.0	3625.0	3695.0
	20	3560.0	3625.0	3690.0

Test mode:	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
5GNR n48	10	3555.0	3624.99	3694.98
	20	3560.01	3624.99	3690.0
	30	3565.02	3624.99	3684.99
	40	3570	3624.99	3679.98

4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	52%	
Atmospheric Pressure:	1020Pa	
Temperature:	TL	-30°C
	TN	+20°C
	TH	+50°C
Voltage:	VL	DC 50.4 V
	VN	DC 56.0 V
	VH	DC 61.6 V

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	± 5.4 x 10^{-8}
2	Duty cycle	± 0.3%
3	Occupied Bandwidth	± 3%
4	RF conducted power	± 0.8dB
5	RF power density	± 0.4dB
6	Conducted Spurious emissions	± 2.7dB
7	Radiated Spurious emission test	± 3.1dB (Below 1GHz)
		± 4.4dB (Above 1GHz)
8	Temperature test	± 1°C
9	Humidity test	± 3%
10	Supply voltages	± 1.5%
11	Time	± 3%

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, 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

5 Equipment List

RF test system					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
Shielding Room	SAEMC	MSR733	SEM001-09	2022-05-14	2025-05-13
MXA Signal Analyzer	KEYSIGHT	N9020B	SEM004-17	2022-03-21 2023-03-20	2023-03-20 2024-03-14
Mobile Communications DC Source	Agilent	66319D	SEM011-12	2022-05-07	2023-05-06
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2022-04-07	2023-04-06
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2022-04-07	2023-04-06
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2022-04-07	2023-04-06
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2022-04-07	2023-04-06
Coaxial Cable	SGS	N/A	SEM031-01	2022-07-08	2023-07-07

RE in Chamber					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2022-04-02	2025-04-01
EXA Signal Analyzer (10Hz-44GHz)	Agilent Technologies Inc	N9010A	SEM004-12	2022-04-07	2023-04-06
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2021-09-17	2023-09-16
Horn Antenna (800MHz-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2022-07-24	2024-07-23
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2022-08-10	2024-08-09
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120D	SEM003-32	2021-09-26	2024-09-25
Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2022-09-15	2023-09-14
Microwave System Amplifier(0.5-26.5GHz)	Agilent	83017A	SEM005-25	2022-09-21	2023-09-20
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2022-03-22	2023-03-21
Substitution Antenna	Rohde & Schwarz	HF907	SEM003-06	2022-08-07	2024-08-06
Substitution Antenna	Schwarzbeck	BBHA 9170	SEM003-15	2022-08-10	2024-08-09

Signal Generator(9kHz-40GHz)	N5173B	MY53270267	Agilent	2022-07-12	2023-07-11
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-06	2022-07-08	2023-07-07

RE in Chamber					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2021-11-30	2023-11-29
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2022-10-20	2023-10-19
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2021-09-17	2023-09-16
Substitution Antenna	Schwarzbeck	VULB9163	SEM003-05	2021-09-17	2023-09-16
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2022-03-21 2023-03-20	2023-03-20 2024-03-19
Signal Generator(9kHz-40GHz)	N5173B	MY53270267	Agilent	2022-07-12	2023-07-11
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2022-07-08	2023-07-07

General used equipment					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2022-09-04	2023-09-03
Humidity/ Temperature Indicator	Anymetre	TH101B	SEM002-09	2022-09-04	2023-09-03
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2022-03-21 2023-03-20	2023-03-20 2024-03-19

6 Radio Spectrum Matter Test Results

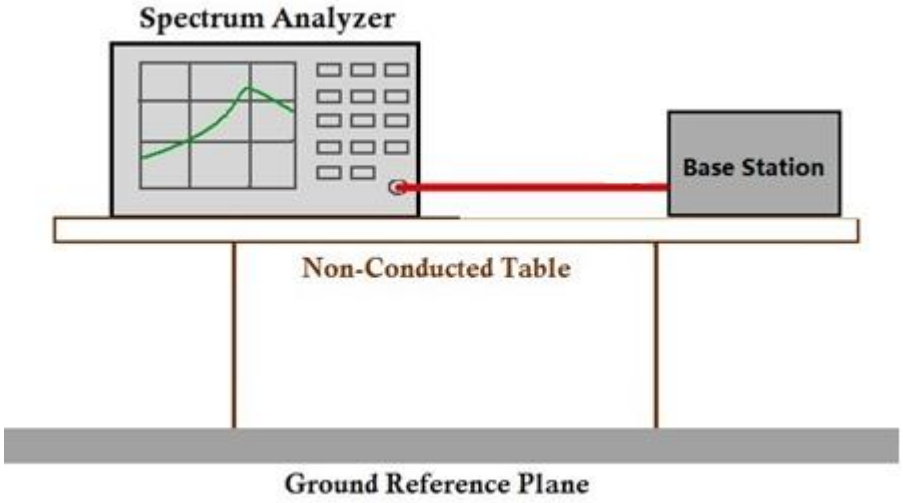
6.1 Effective (Isotropic) Radiated Output Power & Maximum Power Spectral Density

Test Requirement: §2.1046, §96.41(b)
Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
Limit: EIRP≤30dBm/10MHz
PSD≤20dBm/MHz

6.1.1 E.U.T. Operation

Operating Environment:
Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

Please refer to Appendix for Effective (Isotropic) Radiated Output Power Data & Maximum Power Spectral Density.

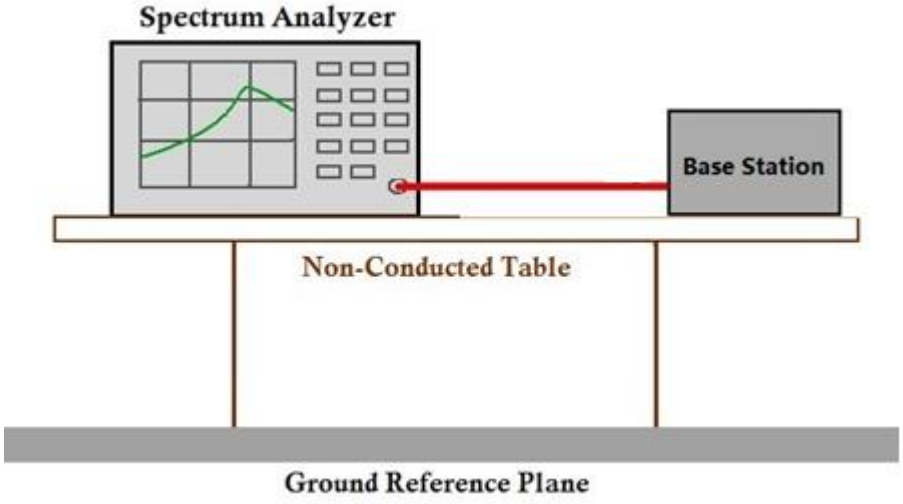
6.2 Peak-Average Ratio

Test Requirement: §96.41(g)
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 01: Tx mode, Keep the EUT in transmitting mode.

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

Please refer to Appendix for Peak-Average Ratio.

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

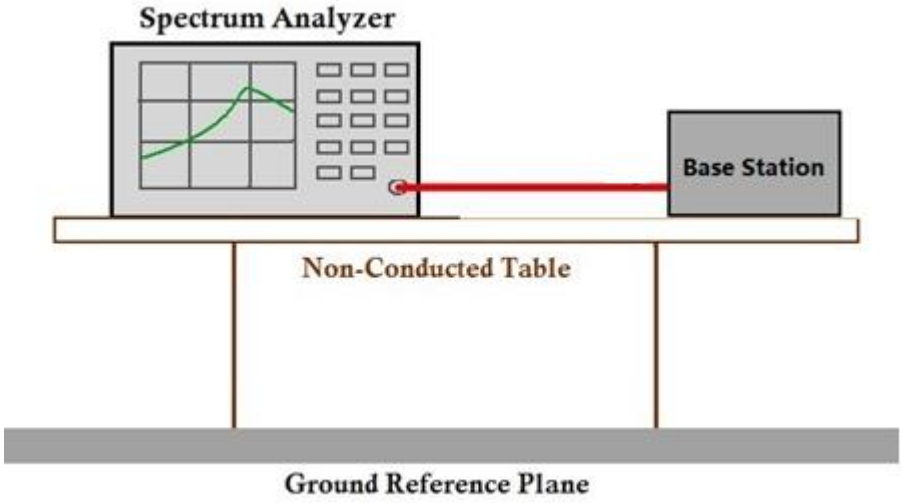
6.3.1 E.U.T. Operation

Operating Environment:

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

Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.3.2 Test Setup Diagram



6.3.3 Measurement Data

Please refer to Appendix for Bandwidth.

6.4 Band Edge Compliance

Test Requirement: §2.1051, §96.41(e),

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

Limit:

1) The conducted power of any CBSD emission outside the fundamental emission bandwidth (whether the emission is inside or outside of the authorized band) shall not exceed −13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed −25 dBm/MHz.
2) The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

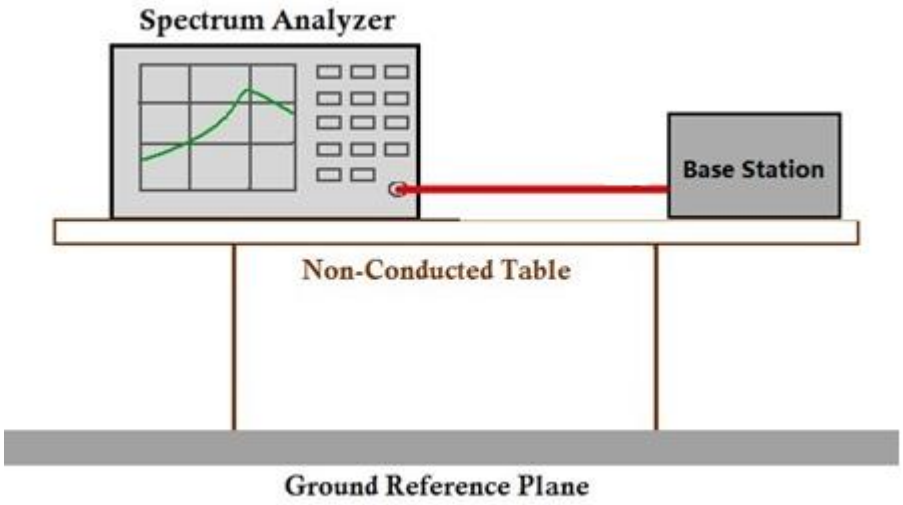
6.4.1 E.U.T. Operation

Operating Environment:

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

Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

Please refer to Appendix for Spurious emissions at antenna terminals & Band Edge.

6.5 Spurious emissions at antenna terminals

Test Requirement: §2.1051 ,§96.41(e)

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

Limit:

1) The conducted power of any CBSD emission outside the fundamental emission bandwidth (whether the emission is inside or outside of the authorized band) shall not exceed −13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed −25 dBm/MHz.
2) The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

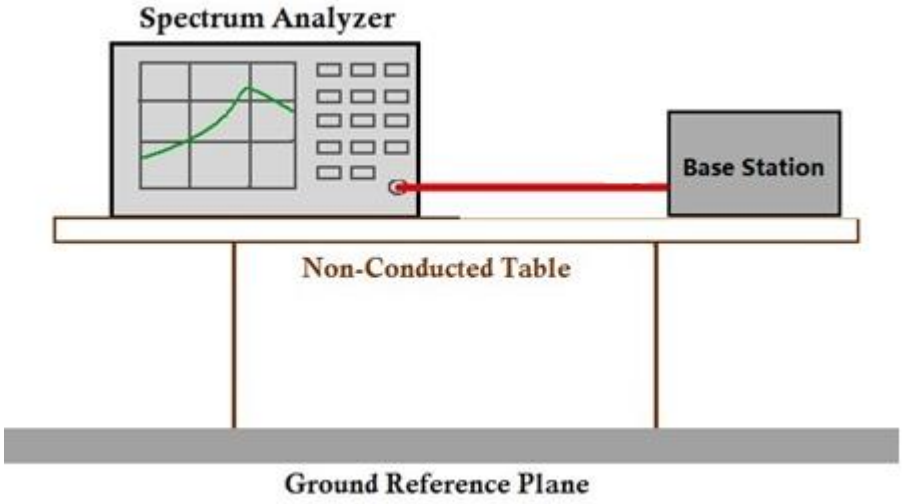
6.5.1 E.U.T. Operation

Operating Environment:

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

Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.5.2 Test Setup Diagram



6.5.3 Measurement Data

Please refer to Appendix for Spurious emissions at antenna terminals & Band Edge.

6.6 Field strength of spurious radiation

Test Requirement: §2.1051, §96.41(e)

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

Limit:

1) Emission outside the fundamental emission bandwidth (whether the emission is inside or outside of the authorized band) shall not exceed −13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the emission shall not exceed −25 dBm/MHz.
2) Emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

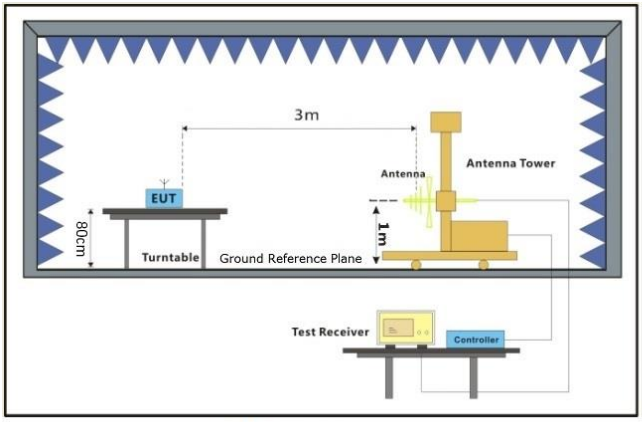
6.6.1 E.U.T. Operation

Operating Environment:

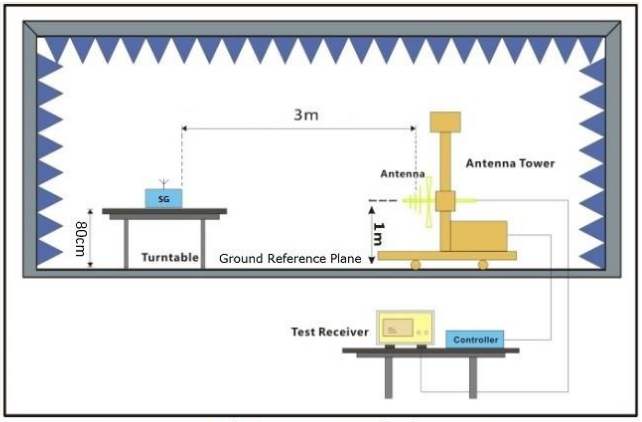
Temperature: 18.5 °C Humidity: 39.5 % RH Atmospheric Pressure: 1020 mbar

Test mode 01: Tx mode, Keep the EUT in transmitting mode.

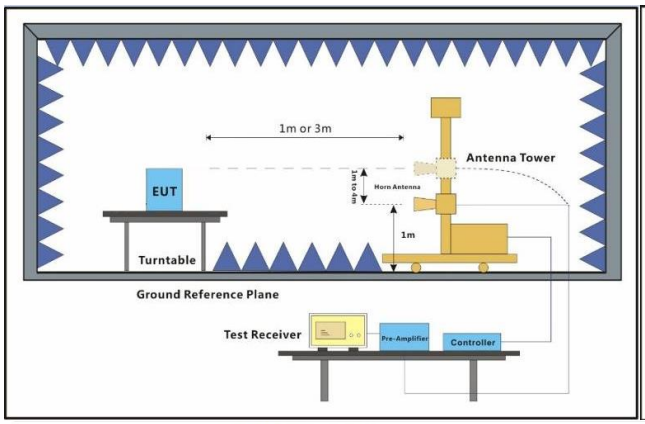
6.6.2 Test Setup Diagram



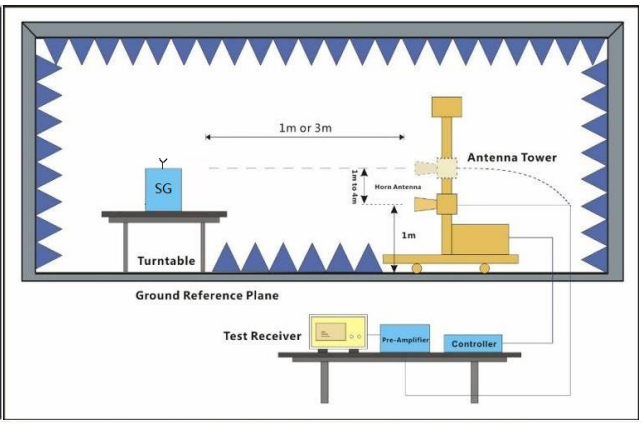
EUT



Substiute Antenna+Signal Generator



EUT



Substiute Antenna+Signal Generator

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 than 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.

LTE:

TM1.1 10MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7101	35.8	8.42	35.93	-71.19	-52.27	-40	-12.27	Horizontal	Peak
10651.5	37.6	11.02	35.86	-71.34	-48.82	-40	-8.82	Horizontal	Peak
14202	39.5	12.92	37.21	-71.48	-48.12	-40	-8.12	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7101	35.8	8.42	35.93	-71.07	-52.15	-40	-12.15	Vertical	Peak
10651.5	37.6	11.02	35.86	-71.11	-48.59	-40	-8.59	Vertical	Peak
14202	39.5	12.92	37.21	-71.85	-48.49	-40	-8.49	Vertical	Peak

TM1.1 20MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7241	35.8	8.55	35.96	-71.74	-52.96	-40	-12.96	Horizontal	Peak
10861.5	37.66	11.17	35.94	-70.8	-47.53	-40	-7.53	Horizontal	Peak
14482	39.86	12.92	37.22	-70.26	-46.78	-40	-6.78	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7241	35.8	8.55	35.96	-71.54	-52.76	-40	-12.76	Vertical	Peak
10861.5	37.66	11.17	35.94	-70.75	-47.48	-40	-7.48	Vertical	Peak
14482	39.86	12.92	37.22	-70.02	-46.54	-40	-6.54	Vertical	Peak

TM3.1 10MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7381	35.9	8.68	35.98	-70.16	-51.41	-40	-11.41	Horizontal	Peak
11071.5	37.77	11.31	36.04	-71.53	-47.58	-40	-7.58	Horizontal	Peak
14762	40.16	12.93	37.24	-70.74	-44.83	-40	-4.83	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7381	35.9	8.68	35.98	-71.08	-52.33	-40	-12.33	Vertical	Peak
11071.5	37.77	11.31	36.04	-71.17	-47.22	-40	-7.22	Vertical	Peak
14762	40.16	12.93	37.24	-70.89	-44.98	-40	-4.98	Vertical	Peak

TM3.1 20MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7102	35.8	8.42	35.93	-71.23	-52.32	-40	-12.32	Horizontal	Peak
10653	37.6	11.02	35.86	-70.43	-47.9	-40	-7.9	Horizontal	Peak
14204	39.51	12.92	37.21	-70.19	-46.82	-40	-6.82	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7102	35.8	8.42	35.93	-70.97	-52.06	-40	-12.06	Vertical	Peak
10653	37.6	11.02	35.86	-70.51	-47.98	-40	-7.98	Vertical	Peak
14204	39.51	12.92	37.21	-71.17	-47.8	-40	-7.8	Vertical	Peak

TM3.2 10MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7232	35.8	8.54	35.95	-71.7	-52.91	-40	-12.91	Horizontal	Peak
10848	37.65	11.16	35.94	-70.55	-47.34	-40	-7.34	Horizontal	Peak
14464	39.83	12.92	37.22	-70.2	-46.73	-40	-6.73	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7232	35.8	8.54	35.95	-70.62	-51.83	-40	-11.83	Vertical	Peak
10848	37.65	11.16	35.94	-70.86	-47.65	-40	-7.65	Vertical	Peak
14464	39.83	12.92	37.22	-70.04	-46.57	-40	-6.57	Vertical	Peak

TM3.2 20MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7362	35.9	8.66	35.98	-70.73	-51.96	-40	-11.96	Horizontal	Peak
11043	37.74	11.29	36.03	-71.14	-47.28	-40	-7.28	Horizontal	Peak
14724	40.12	12.93	37.24	-70.99	-45.43	-40	-5.43	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7362	35.9	8.66	35.98	-70.5	-51.73	-40	-11.73	Vertical	Peak
11043	37.74	11.29	36.03	-71.03	-47.17	-40	-7.17	Vertical	Peak
14724	40.12	12.93	37.24	-71.05	-45.49	-40	-5.49	Vertical	Peak

5GNR:

TM1.1 10MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7101	35.8	8.42	35.93	-71.16	-52.24	-40	-12.24	Horizontal	Peak
10651.5	37.6	11.02	35.86	-71.41	-48.89	-40	-8.89	Horizontal	Peak
14202	39.5	12.92	37.21	-71.26	-47.9	-40	-7.9	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7101	35.8	8.42	35.93	-71.17	-52.25	-40	-12.25	Vertical	Peak
10651.5	37.6	11.02	35.86	-71.12	-48.6	-40	-8.6	Vertical	Peak
14202	39.5	12.92	37.21	-71.18	-47.82	-40	-7.82	Vertical	Peak

TM1.1 20MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7120.02	35.8	8.43	35.93	-71.47	-52.58	-40	-12.58	Horizontal	Peak
10680.03	37.6	11.04	35.87	-70.59	-47.97	-40	-7.97	Horizontal	Peak
14240.04	39.58	12.92	37.21	-71.44	-48.03	-40	-8.03	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7120.02	35.8	8.43	35.93	-70.3	-51.41	-40	-11.41	Vertical	Peak
10680.03	37.6	11.04	35.87	-71.12	-48.5	-40	-8.5	Vertical	Peak
14240.04	39.58	12.92	37.21	-71.51	-48.1	-40	-8.1	Vertical	Peak

TM1.1 30MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7103	35.8	8.42	35.93	-71.11	-52.2	-40	-12.2	Horizontal	Peak
10654.5	37.6	11.02	35.86	-70.53	-48	-40	-8	Horizontal	Peak
14206	39.51	12.92	37.21	-71.46	-48.1	-40	-8.1	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7103	35.8	8.42	35.93	-71.05	-52.14	-40	-12.14	Vertical	Peak
10654.5	37.6	11.02	35.86	-70.84	-48.31	-40	-8.31	Vertical	Peak
14206	39.51	12.92	37.21	-71.59	-48.23	-40	-8.23	Vertical	Peak

TM1.1 40MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7140	35.8	8.45	35.94	-71.2	-52.33	-40	-12.33	Horizontal	Peak
10710	37.6	11.06	35.88	-70.62	-47.9	-40	-7.9	Horizontal	Peak
14280	39.66	12.92	37.21	-70.73	-47.28	-40	-7.28	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7140	35.8	8.45	35.94	-71.56	-52.69	-40	-12.69	Vertical	Peak
10710	37.6	11.06	35.88	-70.39	-47.67	-40	-7.67	Vertical	Peak
14280	39.66	12.92	37.21	-71.48	-48.03	-40	-8.03	Vertical	Peak

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TM3.1 10MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7240.98	35.8	8.55	35.96	-70.95	-52.17	-40	-12.17	Horizontal	Peak
10861.47	37.66	11.17	35.94	-69.79	-46.52	-40	-6.52	Horizontal	Peak
14481.96	39.86	12.92	37.22	-70.49	-47.01	-40	-7.01	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7240.98	35.8	8.55	35.96	-70.7	-51.92	-40	-11.92	Vertical	Peak
10861.47	37.66	11.17	35.94	-70.81	-47.54	-40	-7.54	Vertical	Peak
14481.96	39.86	12.92	37.22	-69.41	-45.93	-40	-5.93	Vertical	Peak

TM3.1 20MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7249.98	35.8	8.56	35.96	-71.19	-52.42	-40	-12.42	Horizontal	Peak
10874.97	37.68	11.17	35.95	-70.57	-47.25	-40	-7.25	Horizontal	Peak
14499.96	39.9	12.93	37.23	-69.86	-46.35	-40	-6.35	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7249.98	35.8	8.56	35.96	-71.34	-52.57	-40	-12.57	Vertical	Peak
10874.97	37.68	11.17	35.95	-71.28	-47.96	-40	-7.96	Vertical	Peak
14499.96	39.9	12.93	37.23	-70.95	-47.44	-40	-7.44	Vertical	Peak

TM3.1 30MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7223	35.8	8.53	35.95	-70.06	-51.26	-40	-11.26	Horizontal	Peak
10834.5	37.63	11.15	35.93	-70.17	-47.02	-40	-7.02	Horizontal	Peak
14446	39.79	12.92	37.22	-68.76	-45.32	-40	-5.32	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7223	35.8	8.53	35.95	-70.84	-52.04	-40	-12.04	Vertical	Peak
10834.5	37.63	11.15	35.93	-70.02	-46.87	-40	-6.87	Vertical	Peak
14446	39.79	12.92	37.22	-68.81	-45.37	-40	-5.37	Vertical	Peak

TM3.1 40MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7249.98	35.8	8.56	35.96	-71.1	-52.33	-40	-12.33	Horizontal	Peak
10874.97	37.68	11.17	35.95	-70.45	-47.13	-40	-7.13	Horizontal	Peak
14499.96	39.9	12.93	37.23	-70.43	-46.92	-40	-6.92	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7249.98	35.8	8.56	35.96	-71.59	-52.82	-40	-12.82	Vertical	Peak
10874.97	37.68	11.17	35.95	-70.16	-46.84	-40	-6.84	Vertical	Peak
14499.96	39.9	12.93	37.23	-70	-46.49	-40	-6.49	Vertical	Peak

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TM3.1a 10MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7380.96	35.9	8.68	35.98	-70.6	-51.85	-40	-11.85	Horizontal	Peak
11071.44	37.77	11.31	36.04	-70.92	-46.97	-40	-6.97	Horizontal	Peak
14761.92	40.16	12.93	37.24	-71.41	-45.5	-40	-5.5	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7380.96	35.9	8.68	35.98	-69.73	-50.98	-40	-10.98	Vertical	Peak
11071.44	37.77	11.31	36.04	-70.79	-46.84	-40	-6.84	Vertical	Peak
14761.92	40.16	12.93	37.24	-70.51	-44.6	-40	-4.6	Vertical	Peak

TM3.1a 20MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7380	35.9	8.68	35.98	-71.03	-52.27	-40	-12.27	Horizontal	Peak
11070	37.77	11.31	36.04	-70.28	-46.33	-40	-6.33	Horizontal	Peak
14760	40.16	12.93	37.24	-70.45	-44.56	-40	-4.56	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7380	35.9	8.68	35.98	-70.45	-51.69	-40	-11.69	Vertical	Peak
11070	37.77	11.31	36.04	-71.18	-47.23	-40	-7.23	Vertical	Peak
14760	40.16	12.93	37.24	-69.78	-43.89	-40	-3.89	Vertical	Peak

TM3.1a 30MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7343	35.9	8.64	35.97	-69.03	-50.24	-40	-10.24	Horizontal	Peak
11014.5	37.71	11.27	36.01	-69.02	-45.24	-40	-5.24	Horizontal	Peak
14686	40.09	12.93	37.23	-70.67	-45.44	-40	-5.44	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7343	35.9	8.64	35.97	-70.59	-51.8	-40	-11.8	Vertical	Peak
11014.5	37.71	11.27	36.01	-69.02	-45.24	-40	-5.24	Vertical	Peak
14686	40.09	12.93	37.23	-69.57	-44.34	-40	-4.34	Vertical	Peak

TM3.1a 40MHz

Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7359.96	35.9	8.66	35.98	-71.48	-52.71	-40	-12.71	Horizontal	Peak
11039.94	37.74	11.29	36.02	-70.72	-46.85	-40	-6.85	Horizontal	Peak
14719.92	40.12	12.93	37.24	-70.69	-45.16	-40	-5.16	Horizontal	Peak
Freq (MHz)	LISN_Factor (dB)	Cable_Loss (dB)	Preamp_Gain (dB)	Read_Level (dBm)	Level (dBm)	Limit_Line (dBm)	Over -40DBM	Polarization(H/V)	Remark
7359.96	35.9	8.66	35.98	-71.23	-52.46	-40	-12.46	Vertical	Peak
11039.94	37.74	11.29	36.02	-70.74	-46.87	-40	-6.87	Vertical	Peak
14719.92	40.12	12.93	37.24	-70.86	-45.33	-40	-5.33	Vertical	Peak

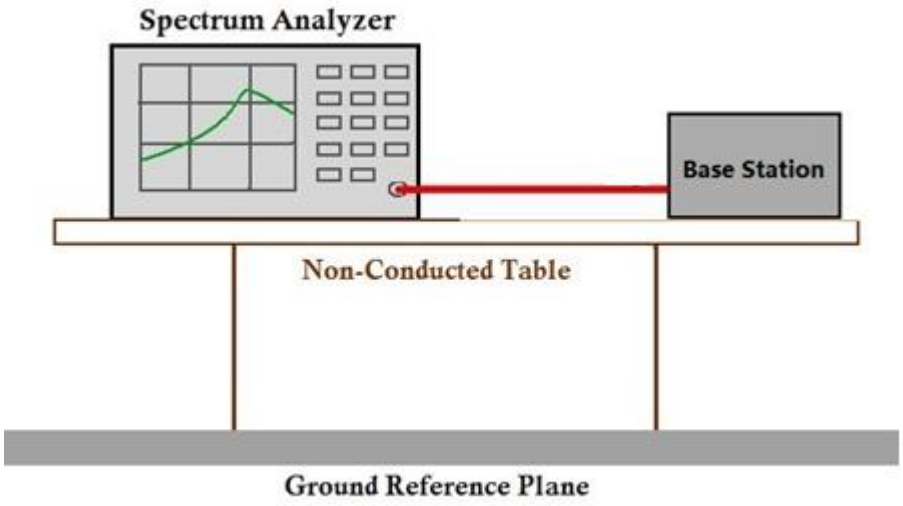
6.7 Frequency stability

Test Requirement: §2.1055
Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
Limit: Within the authorized bands of operation

6.7.1 E.U.T. Operation

Operating Environment:
Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.7.2 Test Setup Diagram



6.7.3 Measurement Data

Please refer to Appendix for Frequency stability.

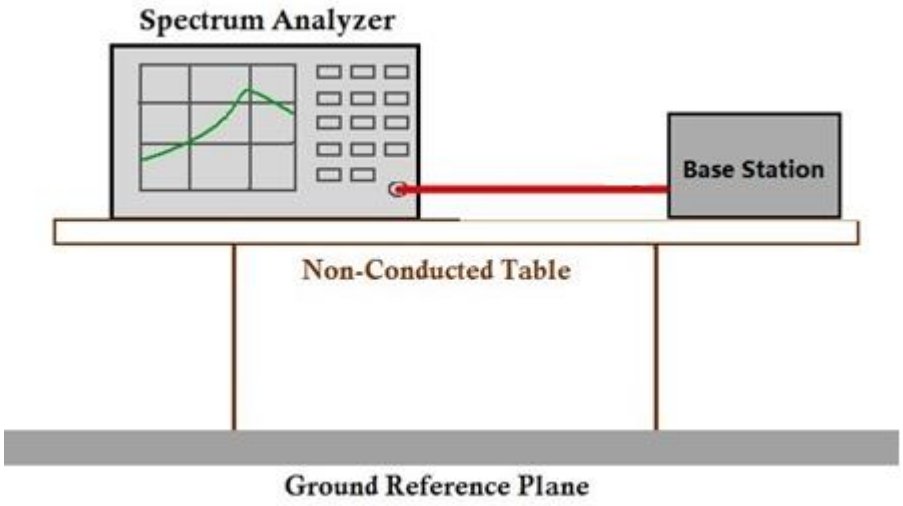
6.8 Modulation Characteristics

Test Requirement: §2.1047
Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
Limit: Digital modulation

6.8.1 E.U.T. Operation

Operating Environment:
Temperature: 21.5 °C Humidity: 53.5 % RH Atmospheric Pressure: 1020 mbar
Test mode 01: Tx mode, Keep the EUT in transmitting mode.

6.8.2 Test Setup Diagram



6.8.3 Measurement Data

Pass, it's a digital modulation device.

7 Test Setup Photo

Refer to Appendix - Test Setup Photo CBD and DSS for SZCR2212004131AT.

8 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for SZCR2212004131AT.

- End of the Report -

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