



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

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250400123402

Page: 1 of 21

TEST REPORT

Application No.: SZCR2504001234AT
Applicant: MOMAGIC TECHNOLOGIES PRIVATE LIMITED
Address of Applicant: Ground Floor, Tower 3, Plot No 2B, IGL Building, Sector 126, Noida, Uttar Pradesh, India 201303.
Manufacturer: MOMAGIC TECHNOLOGIES PRIVATE LIMITED
Address of Manufacturer: I-9, LGF, Block I, Lajpat Nagar III, New Delhi - 110024
Factory: MICKEYFONE TECHNOLOGIES INDIA PRIVATE LIMITED
Address of Factory: B-25, B BLOCK, B BLOCK, SECTOR 83, NOIDA, UTTAR PRADESH - 201301

Equipment Under Test (EUT):

EUT Name: LTE Cat1 bis module

Model No.: TW450, MMT45 ♣

♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

FCC ID: 2A2OT-TW450-MMT45

Standard(s) : 47 CFR Part 2

47 CFR Part 22

47 CFR Part 27

Date of Receipt: 2025-04-01

Date of Test: 2025-04-04 to 2025-04-09

Date of Issue: 2025-04-15

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



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Testing Center EMC Laboratory

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2025-04-15		Original

Authorized for issue by:				
		Edison Li		
		Edison Li/Project Engineer		
		Eric Fu		
		Eric Fu/Reviewer		



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2 Test Summary

LTE Band 5

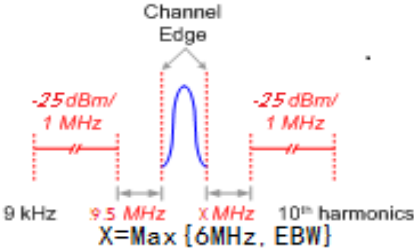
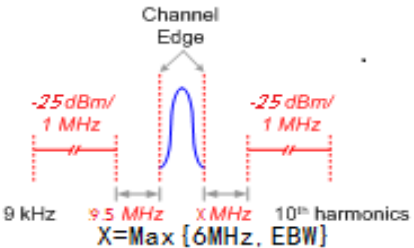
Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913(a)(5)	ERP ≤ 7 W	Appendix B.1	Pass
Peak-Average Ratio	§22.913(d)	Limit≤13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Band Edges Compliance	§2.1051, §22.917(a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.		Pass
Spurious Emission at Antenna Terminals	§2.1051, §22.917(a)	FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.		Pass
Field Strength of Spurious Radiation	§2.1053, §22.917(a)	FCC: ≤ -13 dBm/100 kHz.		Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(2) §22.355	±2.5ppm.		Pass



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LTE Band 41

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(h)(2)	EIRP ≤ 2 W.	Appendix B.2	Pass
Peak-Average Ratio	---	Limits ≤ 13 dB		Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.		Pass
Band Edges Compliance	§2.1051, §27.53(m)(4)	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.		Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)			Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(m)			Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d) (2) §27.54	Within authorized bands of operation/frequency block.		Pass



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No.1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3.7V powered by test mainboard	
LTE Operation Frequency Band:	LTE FDD Band 5, LTE TDD Band 41	
Modulation Type:	QPSK, 16QAM	
Antenna Type:	FPC Antenna	
Antenna Gain:	4.5dBi	
RF Cable:	9kHz ~ 30MHz(0.3dB); 1000MHz ~ 2000MHz(0.8dB); 4000MHz ~ 6000MHz(1.8dB);	30MHz ~ 1000MHz(0.6dB) 2000MHz ~ 4000MHz(1.1dB) 6000MHz ~ 12750MHz(2.6dB)

Remark:

As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	L480	REF. No.SEA18C00E
Mini USB Cable	SANBO	SU-T21	REF. No.SEA07B01
Test mainboard	Provided by client	/	/

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	3.4 V
	VN	3.7 V
	VH	4.2 V

NOTE: 1. 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
2. According to ANSI C63.26-2015 requirements, the limit test temperature should be between -30°C and 50 °C.



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4.4 Technical Specification

Characteristics	Description				
Radio System Type	<input checked="" type="checkbox"/> LTE				
Supported Frequency Range	Band	TX		RX	
	LTE Band 5	824 to 849 MHz		869 to 894 MHz	
	LTE Band 41	2496 to 2690MHz		2496 to 2690MHz	
Supported Channel Bandwidth	LTE Band 5	<input checked="" type="checkbox"/> 1.4 MHz	<input checked="" type="checkbox"/> 3 MHz	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz
	LTE Band 41	<input checked="" type="checkbox"/> 5 MHz	<input checked="" type="checkbox"/> 10 MHz	<input checked="" type="checkbox"/> 15MHz	<input checked="" type="checkbox"/> 20MHz

4.1 Test Channel

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band 5	1.4MHz	TX	Channel 20407	Channel 20525	Channel 20643
			824.7 MHz	836.5 MHz	848.3 MHz
		RX	Channel 2407	Channel 2525	Channel 2643
			869.7 MHz	881.5 MHz	893.3 MHz
	3MHz	TX	Channel 20415	Channel 20525	Channel 20635
			825.5 MHz	836.5 MHz	847.5 MHz
		RX	Channel 2415	Channel 2525	Channel 2635
			870.5 MHz	881.5 MHz	892.5 MHz
	5MHz	TX	Channel 20425	Channel 20525	Channel 20625
			826.5 MHz	836.5 MHz	846.5 MHz
		RX	Channel 2425	Channel 2525	Channel 2625
			871.5 MHz	881.5 MHz	891.5 MHz
	10MHz	TX	Channel 20450	Channel 20525	Channel 20600
			829 MHz	836.5 MHz	844 MHz
		RX	Channel 2450	Channel 2525	Channel 2600
			874 MHz	881.5 MHz	889 MHz



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Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE Band41	5MHz	TX	Channel 39675	Channel40620	Channel 41565
			2498.5 MHz	2593 MHz	2687.5 MHz
		RX	Channel 39675	Channel40620	Channel 41565
			2498.5 MHz	2593 MHz	2687.5 MHz
	10MHz	TX	Channel 39700	Channel40620	Channel 41540
			2501 MHz	2593 MHz	2685 MHz
		RX	Channel 39700	Channel40620	Channel 41540
			2501 MHz	2593 MHz	2685 MHz
	15MHz	TX	Channel 39725	Channel40620	Channel 41515
			2503.5 MHz	2593 MHz	2682.5 MHz
		RX	Channel 39725	Channel40620	Channel 41515
			2503.5 MHz	2593 MHz	2682.5 MHz
	20MHz	TX	Channel 39750	Channel40620	Channel 41490
			2506 MHz	2593 MHz	2680 MHz
		RX	Channel 39750	Channel40620	Channel 41490
			2506 MHz	2593 MHz	2680 MHz

4.2 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.25 x 10 ⁻⁸
2	Occupied Bandwidth	3%
3	RF conducted power	0.75dB
4	Conducted Spurious emissions	0.75dB
5	RF Radiated power	4.5dB (below 1GHz)
		4.8dB (above 1GHz)
6	Radiated Spurious emission test	4.5dB (Below 1GHz)
		4.8dB (Above 1GHz)
7	Temperature test	1°C
8	Humidity test	3%
9	Supply voltages	1.5%
10	Time	3%



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4.3 Test Location

All tests were performed at:

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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.

4.4 Test Facility

• 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.

4.5 Deviation from Standards

None

4.6 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
Humidity/ Temperature Indicator	Deli	8838	SEM002-40	2024/7/24	2025/7/23
MXA Signal Analyzer(10Hz-50GHz)	Keysight Technologies	N9020B	SEM004-24	2025/3/3	2026/3/2
Keysight PXA Signal Analyzer(2Hz-50GHz)	Keysight Technologies	N9030B	SEM004-30	2024/9/4	2025/9/3
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	SEM010-14	2025/3/3	2026/3/2
Radio Communication Analyzer	Anristu	MT8821C	SEM010-09	2025/3/3	2026/3/2
Radio Communication Test Station	Anristu	MT8000A	SEM010-10	2025/3/4	2026/3/3
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2025/2/26	2026/2/25
DC power supply	Chroma	62012P-80-60	SEM011-11	2024/8/14	2025/8/13
Test Software	TST PASS	TST PASS V2.0	N/A	NCR	NCR

Radiated spurious emissions					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal.Due date (yyyy/mm/dd)
MXE EMI receiver (3Hz-3.6GHz)	KEYSIGHT	N9038B	SEM004-29	2024/08/14	2025/08/13
Signal & Spectrum Analyzer	Rohde & Schwarz	FSV	SZ-WRG-M-048	2025/01/07	2026/01/06
Pre-amplifier (30MHz-1GHz)	SGS	AMP30M1G30	SEM005-33	2025/03/04	2026/03/03
Low Noise Amplifier 30M-8GHz	Tonscend	TAP30M8G30	SZ-WRG-M-050	2025/01/07	2026/01/06
Low Noise Amplifier 1G-18GHz	Tonscend	TAP01018050	SZ-WRG-M-051	2025/01/07	2026/01/06
Low Noise Amplifier	Tonscend	TAP18040048	SZ-WRG-M-052	2025/01/07	2026/01/06



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Shenzhen Branch Inspection & Testing Services

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中国·广东·深圳市南山区科技园中区M-10栋1号厂房 邮编:518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

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18G-40GHz					
Active Loop Antenna 9kHz-30MHz	SCHWARZBECK	FMZB 1519B	SZ-WRG-M-053	2023/12/25	2025/12/24
TRILOG Breitband Antenne 30MHz-1GHz	SCHWARZBECK	VULB 9168	SZ-WRG-M-054	2023/12/25	2025/12/24
Double Ridge Horn Antenna 1GHz-18GHz	SCHWARZBECK	BBHA 9120 D	SZ-WRG-M-055	2023/12/21	2025/12/20
SHF-EHF Horn 15GHz-40GHz	SCHWARZBECK	BBHA 9170	SZ-WRG-M-056	2023/12/25	2025/12/24
RSE Test Software	Tonscend	JS32-RSE V4.0.0	SZ-WRG-M-058	NCR	NCR
RE Test Software	Tonscend	JS32-RE V4.0.0	SZ-WRG-M-059	NCR	NCR
Measurement Software	AUDIX	e3 V8.2014-6-27	NCR	NCR	NCR
Chamber	CRTSGSSAC966	N/A	SZ-WRG-C-063	2025/01/07	2026/01/06
Humidity/ Temperature Indicator	Deli	8838	SEM002-46	2024/07/24	2025/07/23
Spectrum Analyzer	Keysight	N9020A	SZ-WRG-M-002	2024/08/17	2025/08/16
Radio Communication Tester	Anriesu	MT8821C	SZ-WRG-M-014	2024/08/19	2025/08/18

General used equipment					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	deli	8838	SEM002-32	2024-07-24	2025-07-23
Humidity/ Temperature Indicator	deli	8838	SEM002-33	2024-07-24	2025-07-23
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2025-03-03	2026-03-02



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6 Radio Spectrum Matter Test Results

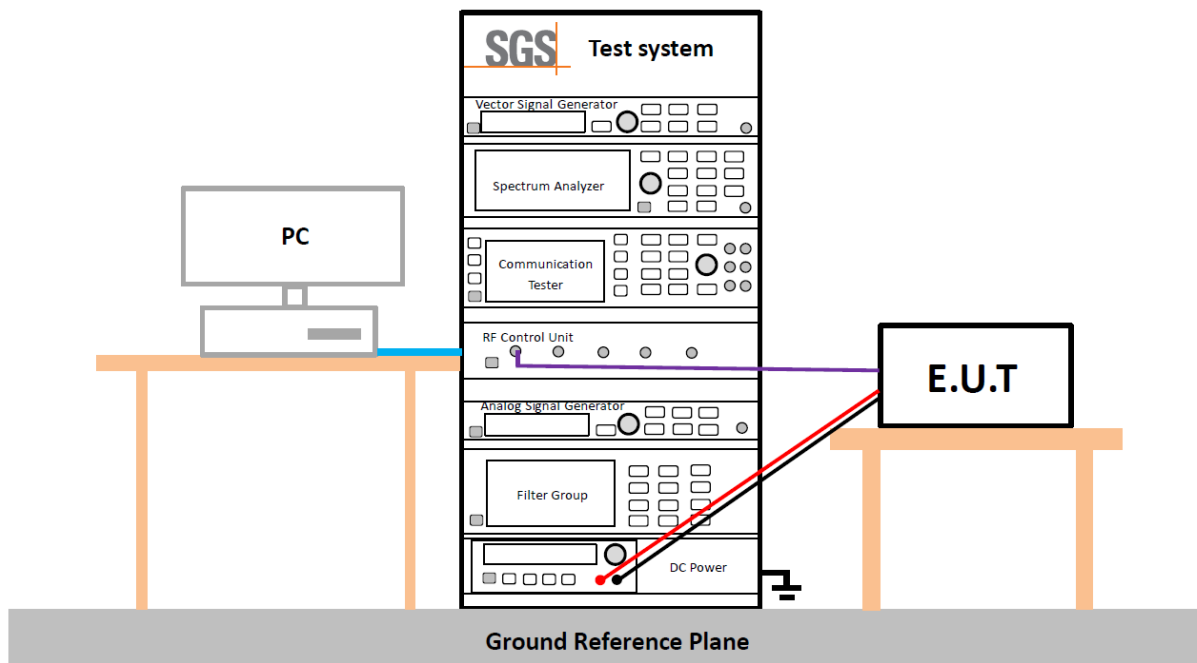
6.1 Effective (Isotropic) Radiated Power Output Data

Test Requirement: Reference test summary
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03
 Limit: Reference test summary

6.1.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.2 °C Humidity: 50.1 % RH Atmospheric Pressure: 1020 mbar
 Test mode: 03: Tx mode, Keep the EUT in transmitting mode.

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

Please refer to Appendix B.1, Appendix B.2.

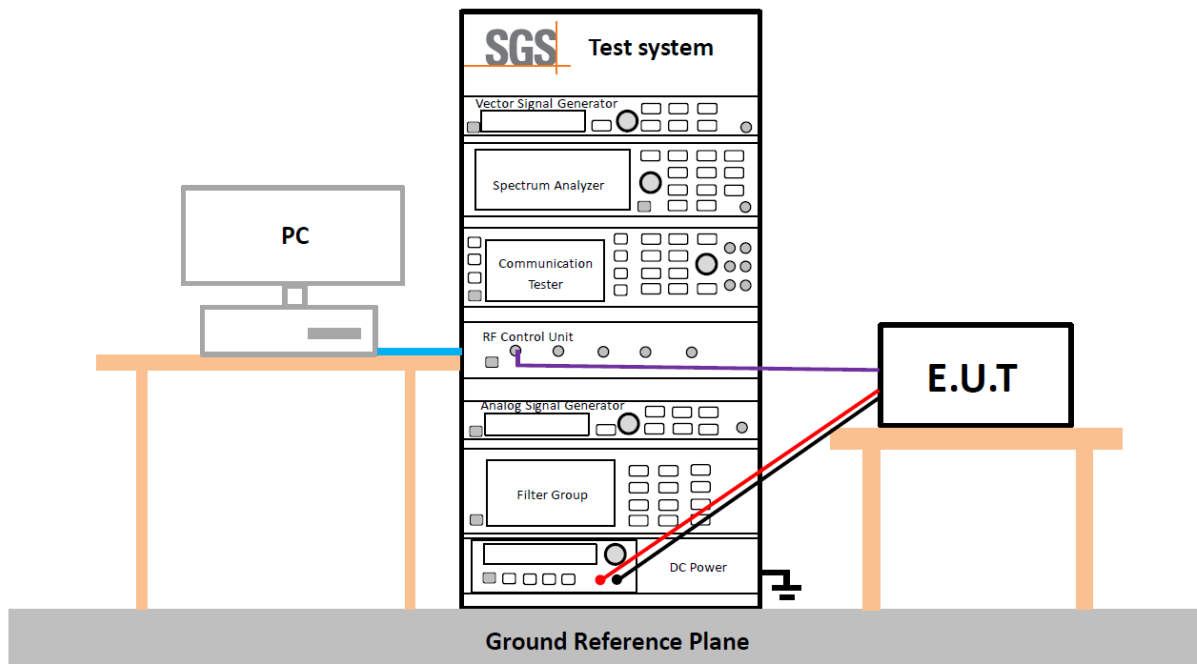
6.2 Peak-Average Ratio

Test Requirement: Reference test summary
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03
 Limit: $\leq 13\text{dB}$

6.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.2 °C Humidity: 50.1 % RH Atmospheric Pressure: 1020 mbar
 Test mode: 03: Tx mode, Keep the EUT in transmitting mode.

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

Please refer to Appendix B.1, Appendix B.2.

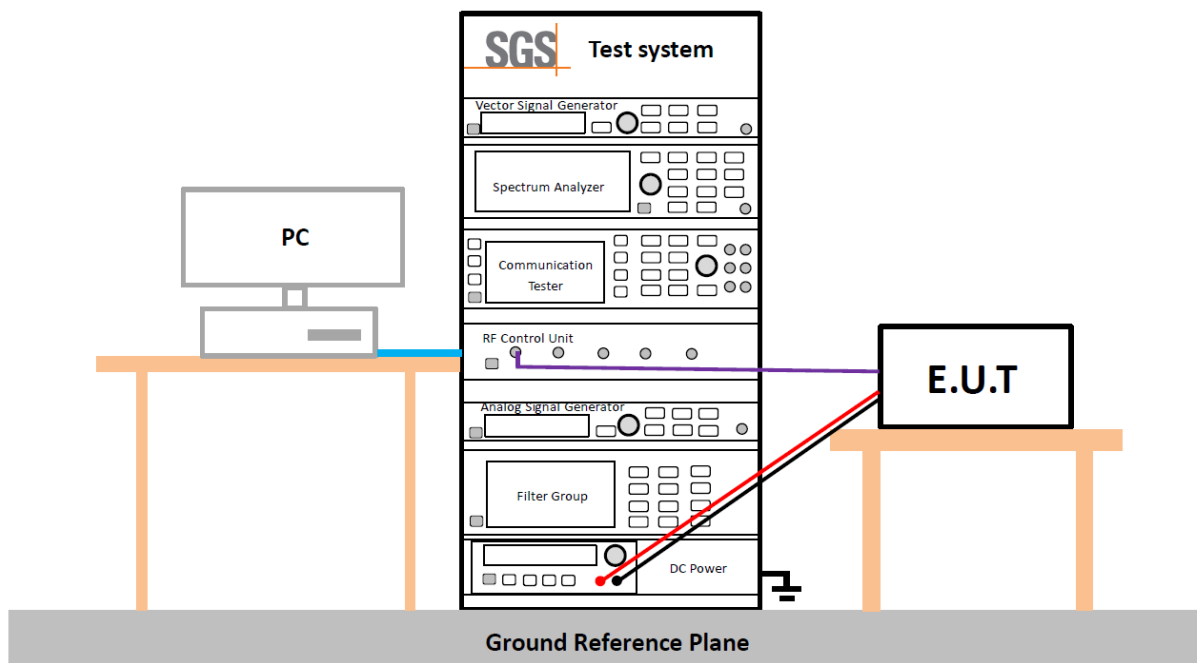
6.3 Bandwidth

Test Requirement:	Reference test summary
Test Method:	ANSI C63.26-2015, KDB 971168 D01 v03
Limit:	OBW: No limit
	EBW: No limit

6.3.1 E.U.T. Operation

Operating Environment:			
Temperature:	22.2 °C	Humidity:	50.1 % RH
		Atmospheric Pressure:	1020 mbar
Test mode:	03: Tx mode, Keep the EUT in transmitting mode.		

6.3.2 Test Setup Diagram



6.3.3 Measurement Data

Please refer to Appendix B.1, Appendix B.2.

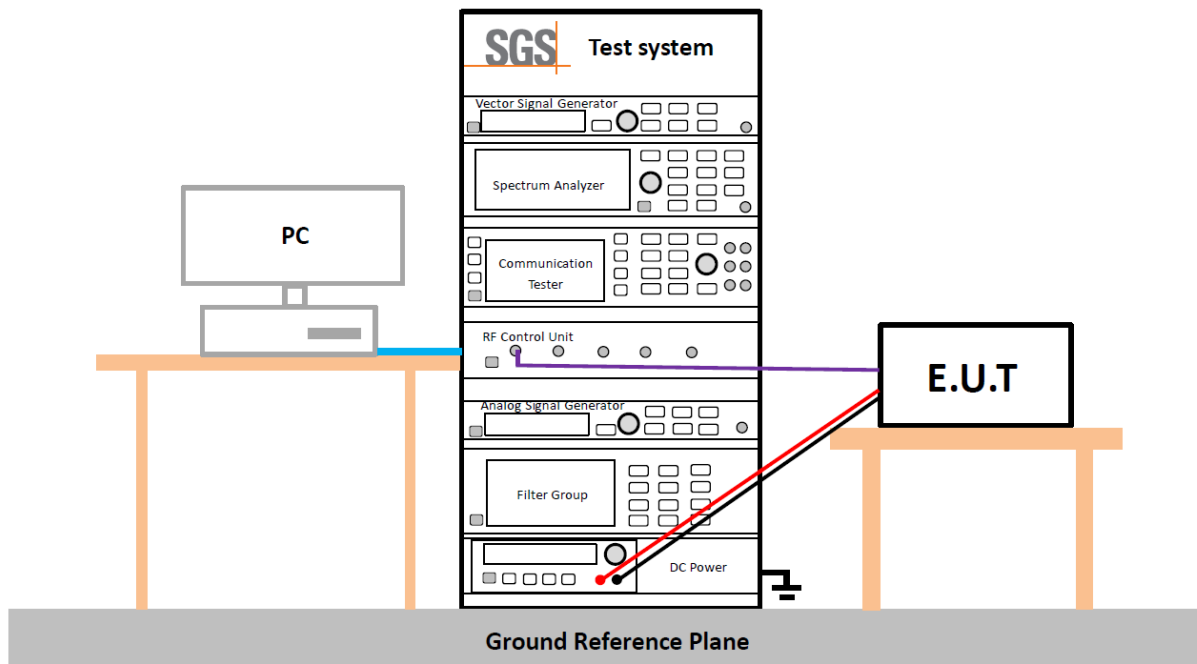
6.4 Band Edge Compliance

Test Requirement: Reference test summary
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03
 Limit: Reference test summary

6.4.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.2 °C Humidity: 50.1 % RH Atmospheric Pressure: 1020 mbar
 Test mode: 03: Tx mode, Keep the EUT in transmitting mode.

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

Please refer to Appendix B.1, Appendix B.2.

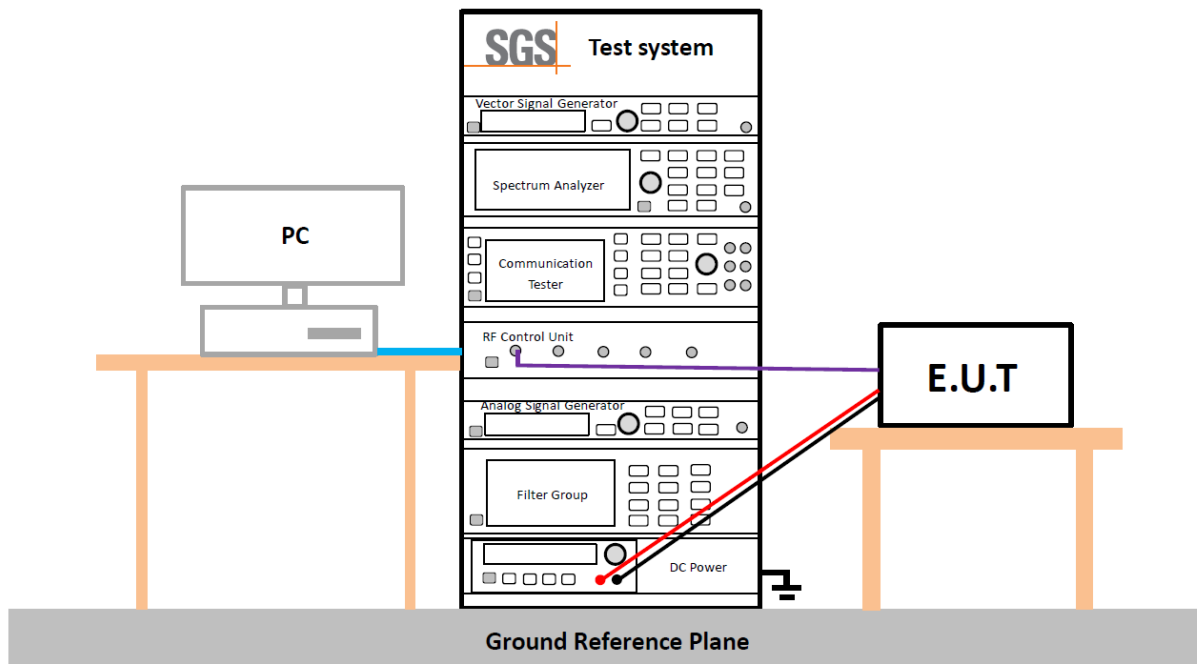
6.5 Spurious emissions at antenna terminals

Test Requirement: Reference test summary
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03
 Limit: Reference test summary

6.5.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.2 °C Humidity: 50.1 % RH Atmospheric Pressure: 1020 mbar
 Test mode: 03: Tx mode, Keep the EUT in transmitting mode.

6.5.2 Test Setup Diagram



6.5.3 Measurement Data

Please refer to Appendix B.1, Appendix B.2.

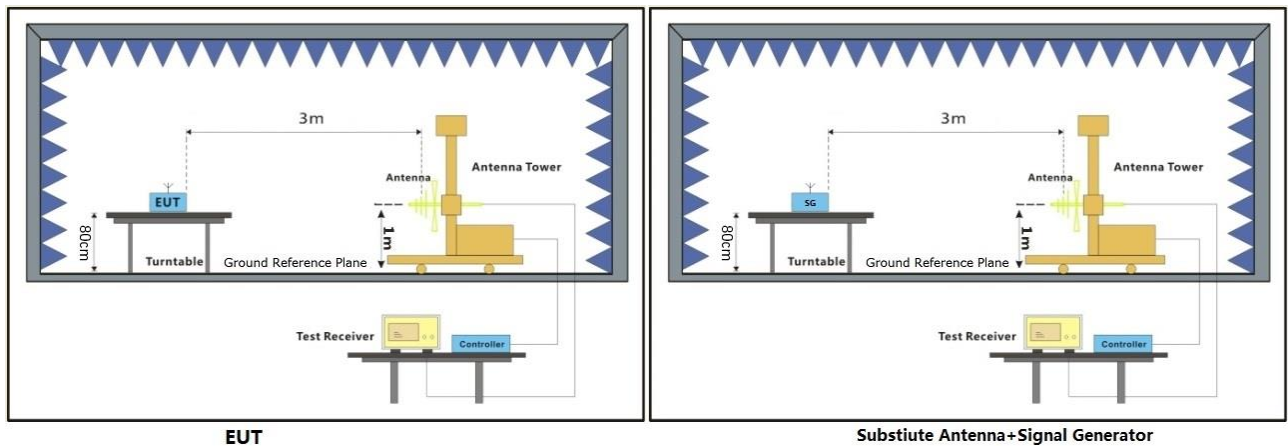
6.6 Field strength of spurious radiation

Test Requirement: Reference test summary
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03
 Limit: Reference test summary

6.6.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.2 °C Humidity: 50.1 % RH Atmospheric Pressure: 1020 mbar
 Test mode: 03: Tx mode, Keep the EUT in transmitting mode.

6.6.2 Test Setup Diagram



EUT

Substitute 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 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.

Please refer to Appendix B.1, Appendix B.2.

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

EIRP= S.G. Power- Cable loss+ Antenna Gain



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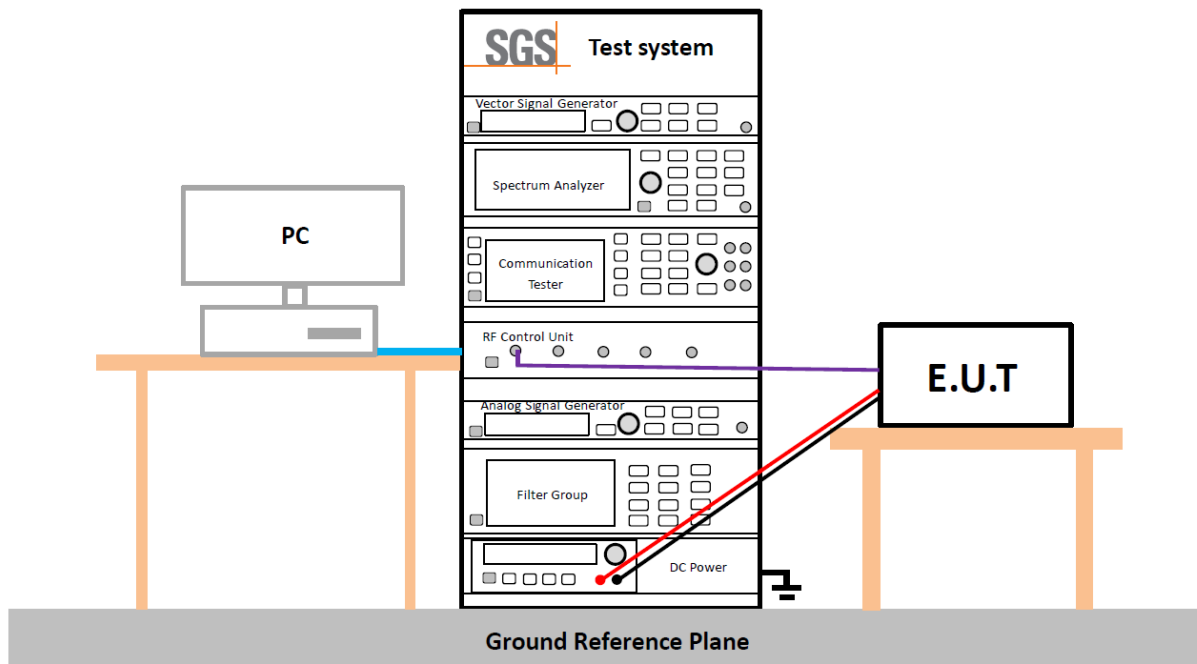
6.7 Frequency stability

Test Requirement: Reference test summary
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03
 Limit: Reference test summary

6.7.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.2 °C Humidity: 50.1 % RH Atmospheric Pressure: 1020 mbar
 Test mode: 03: Tx mode, Keep the EUT in transmitting mode.

6.7.2 Test Setup Diagram



6.7.3 Measurement Data

Please refer to Appendix B.1, Appendix B.2.

7 Test Setup Photo

Refer to Appendix - Test Setup Photo for SZCR2504001234AT.

8 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for SZCR2504001234AT.

- End of the Report -

