



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

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR230600172802

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TEST REPORT

Application No.: SZCR2306001728AT
Applicant: Edgenectar Inc.
Address of Applicant: 111 N, Market St. #300, San Jose, California 95113 United States
Manufacturer: Edgenectar Inc.
Address of Manufacturer: 111 N, Market St. #300, San Jose, California 95113 United States
Equipment Under Test (EUT):
EUT Name: Outdoor CAT-B intergrated
Model No.: Odge5000i
FCC ID: 2A9Z95GEMFOB01
Standard(s) : 47 CFR Part 96 subpart E
Date of Receipt: 2023-11-20
Date of Test: 2023-11-20 to 2023-12-22
Date of Issue: 2024-01-04

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 EMC Laboratory

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

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



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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≤ 47dBm/10MHz PSD≤ 37dBm/MHz	PASS
Peak-Average Ratio	§96.41(g)	≤13dB	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	PASS
Spurious emissions at antenna terminals	§2.1051 §96.41(e)	Refer to clause 6.5	PASS
Field strength of spurious radiation	§2.1051 §96.41(e)	Refer to clause 6.6	PASS
Frequency stability	§2.1055	≤ ±2.5ppm.	PASS

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Shenzhen Branch Inspection & Testing Services Laboratory

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC48V
EUT Type:	CBSD
Category of EUT:	Category B
Operation Frequency Band:	n48 (3550-3700MHz)
Test Mode:	TM1.1, TM3.1a
Modulation Type:	QPSK, 16QAM
Bandwidth:	100MHz
Transmission (TX) and Receiving (RX) Antenna Ports:	4*4
MIMO supported	4*4 UL 4*4 DL
Antenna Type:	External Antenna
Antenna Gain:	14dBi
Cable Loss (for RF conducted test):	1.5dBi

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
n48	100	3600.0	3624.99	3649.98

4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Temperature:	TL	-30°C
	TN	+20°C
	TH	+50°C
Voltage:	VL	DC 40.8 V
	VN	DC 48 V
	VH	DC 55.2 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	$\pm 5.4 \times 10^{-8}$
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 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	2023-03-20	2024-03-14
Mobile Communications DC Source	Agilent	66319D	SEM011-12	2023-05-06	2024-05-05
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2023-04-06	2024-04-05
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2023-04-06	2024-04-05
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2023-04-06	2024-04-05
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2023-04-06	2024-04-05
Coaxial Cable	SGS	N/A	SEM031-01	2023-07-07	2024-07-06

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	2023-04-06	2024-04-05
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	2023-09-14	2024-09-13
Microwave System Amplifier(0.5-26.5GHz)	Agilent	83017A	SEM005-25	2023-09-20	2024-09-19
Pre-amplifier (26- 40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2023-03-21	2024-03-20
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
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A



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Coaxial Cable	SGS	N/A	SEM026-06	2023-07-07	2024-07-06
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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	2023-11-29 2025-11-28
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2023-07-18	2026-07-17
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2023-10-19	2024-10-18
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2023-09-16	2026-09-15
Substitution Antenna	ETS-Lindgren	3142C	SEM003-02	2023-06-25	2026-06-24
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2023-03-20	2024-03-19
Signal Generator(9kHz-40GHz)	N5173B	MY53270267	Agilent	2023-07-11	2024-07-10
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2023-07-07	2024-07-06

General used equipment					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2023-09-03	2024-09-02
Humidity/ Temperature Indicator	Anymetre	TH101B	SEM002-09	2023-09-03	2024-09-02
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2023-03-20	2024-03-19



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6 Radio Spectrum Matter Test Results

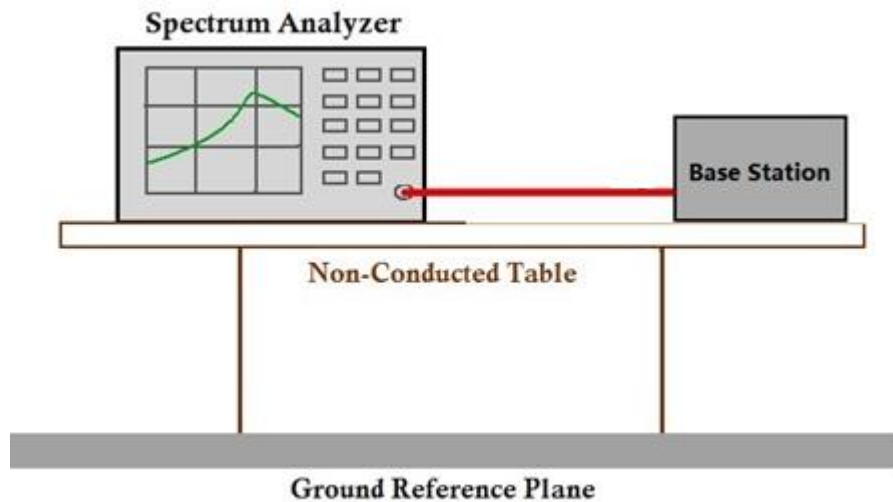
6.1 Effective (Isotropic) Radiated Output Power & Maximum Power Spectral Density

Test Requirement: §2.1046, §96.41(b)
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: EIRP≤47dBm/10MHz(N48)
 PSD≤37dBm/MHz(N48)

6.1.1 E.U.T. Operation

Operating Environment:
 Temperature: 18.5 °C Humidity: 50.5 % RH Atmospheric Pressure: 1000 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 test data appendix.

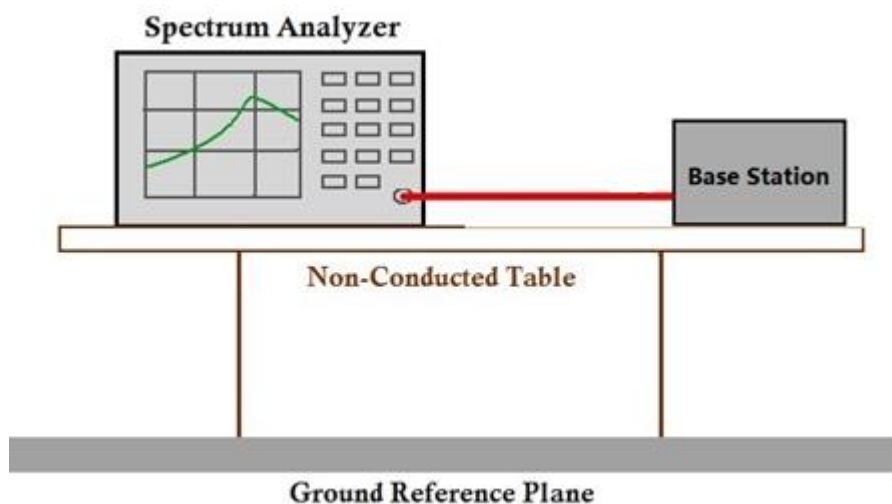
6.2 Peak-Average Ratio

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: 18.5 °C Humidity: 50.5 % RH Atmospheric Pressure: 1000 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 test data appendix.

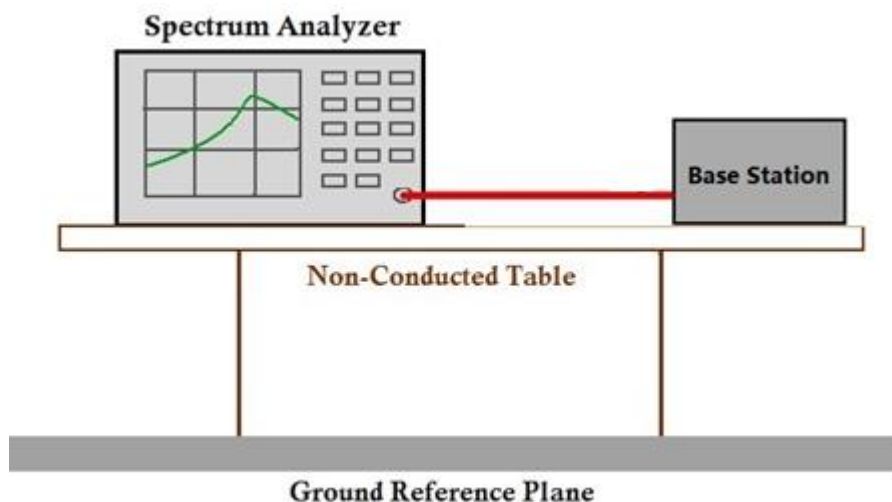
6.3 Bandwidth

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: 18.5 °C Humidity: 50.5 % RH Atmospheric Pressure: 1000 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 test data appendix.

6.4 Band Edge Compliance

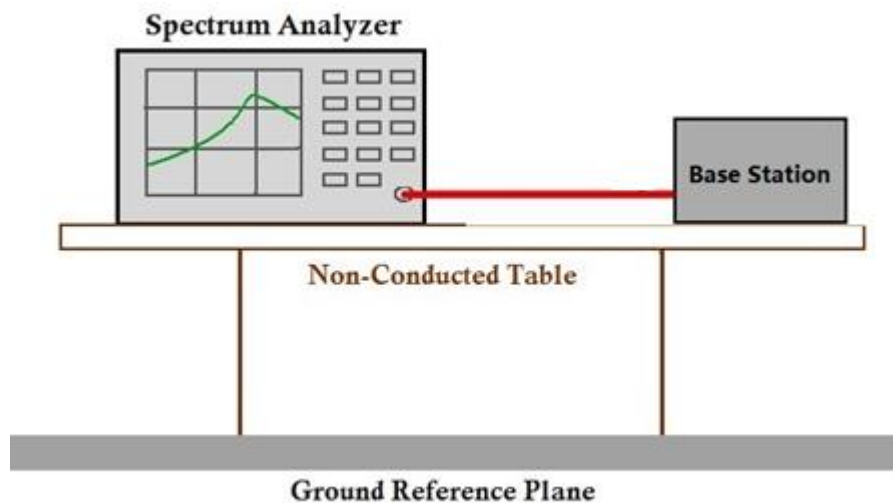
Test Requirement: §2.1051, §96.41(e),
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: For **Band48**:

- 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 -40 dBm/MHz.

6.4.1 E.U.T. Operation

Operating Environment:
 Temperature: 18.5°C Humidity: 50.5 % RH Atmospheric Pressure: 1000 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 test data appendix.

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: For **Band48**:

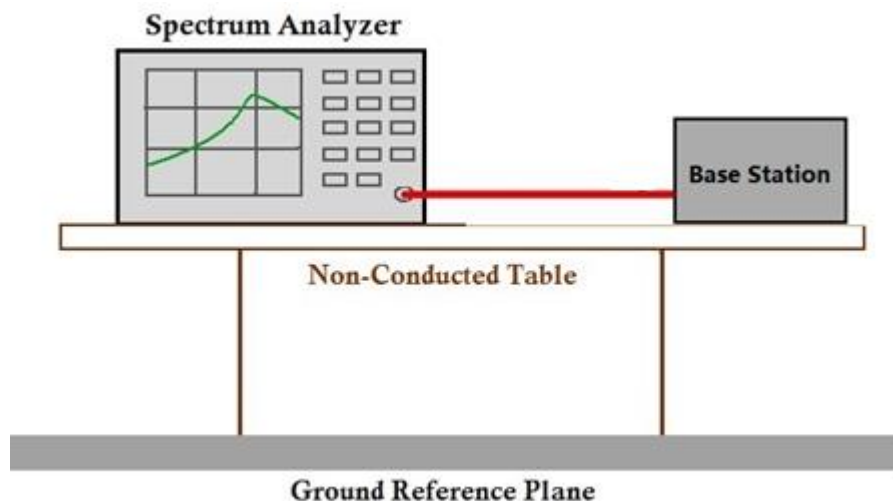
- 1) The conducted power of any CBSD emission outside the fundamental emission bandwidth (whether the emission is inside or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned 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 -40 dBm/MHz.

6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 18.5°C Humidity: 50.5 % RH Atmospheric Pressure: 1000 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 test data appendix.

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: For **Band48**:

- 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: 49.5 % RH Atmospheric Pressure: 1000 mbar

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



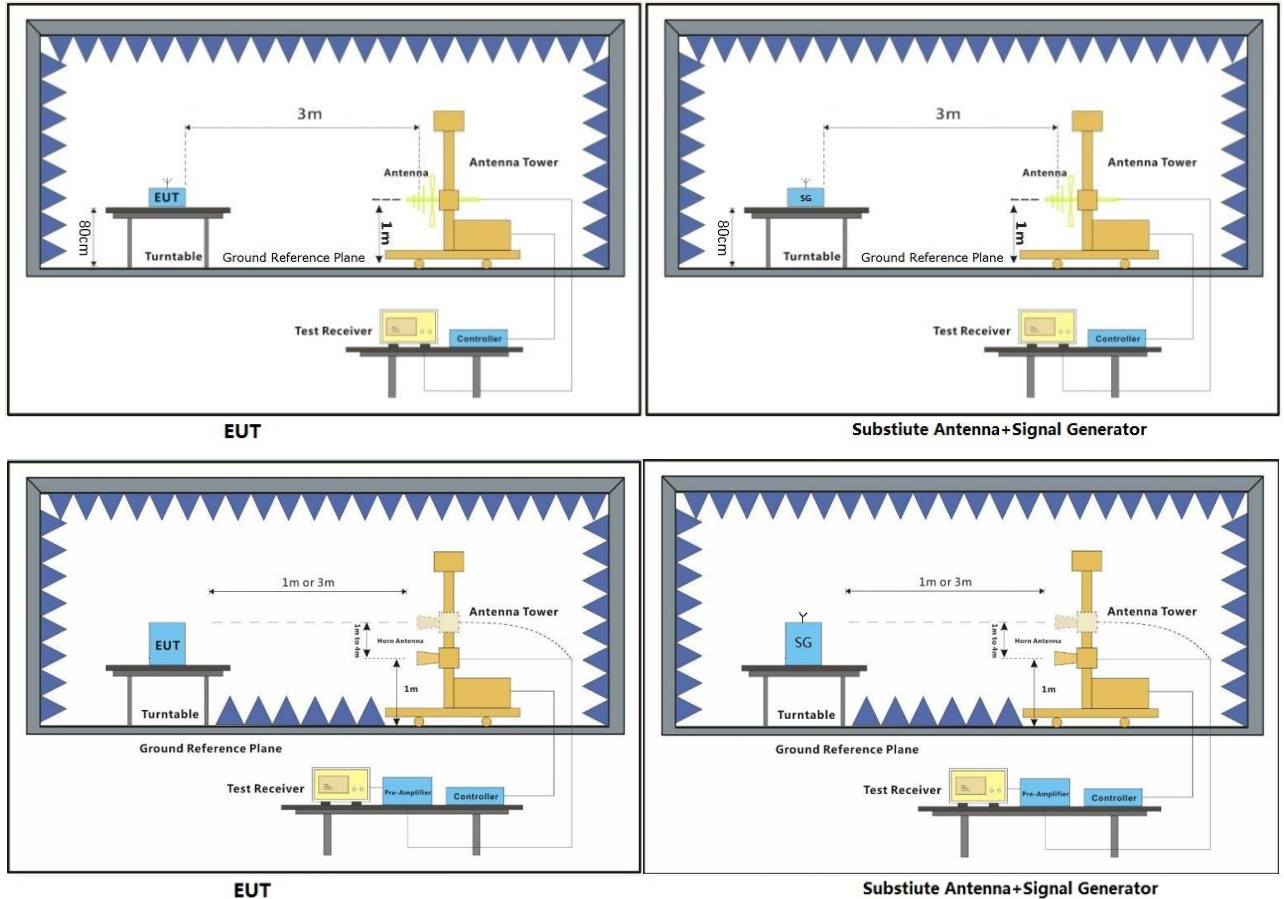
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6.6.2 Test Setup Diagram



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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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TM1.1 100MHz

N48-Low channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1249.269	-64.79	-40	-24.79	-65.86	1.64	2.71	Horizontal	Pass
2664.019	-63.08	-40	-23.08	-64.095	2.655	5.82	Horizontal	Pass
4790.245	-56.28	-40	-16.28	-61.74	3.94	9.4	Horizontal	Pass
1249.269	-64.79	-40	-24.79	-65.86	1.64	2.71	Horizontal	Pass
2664.019	-63.08	-40	-23.08	-64.095	2.655	5.82	Horizontal	Pass
4790.245	-56.28	-40	-16.28	-61.74	3.94	9.4	Horizontal	Pass
1249.269	-65.43	-40	-25.43	-64.35	1.64	2.71	Vertical	Pass
2679.464	-64.08	-40	-24.08	-65.095	2.655	5.82	Vertical	Pass
4888.151	-57.33	-40	-17.33	-62.79	3.94	9.4	Vertical	Pass
7110	-54.3	-40	-14.3	-61.24	4.19	11.13	Vertical	Pass
10655	-51.41	-40	-11.41	-59.455	5.075	13.12	Vertical	Pass
14220	-49.15	-40	-9.15	-58.81	4.82	14.48	Vertical	Pass

N48-Middle channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1249.269	-64.69	-40	-24.69	-65.76	1.64	2.71	Horizontal	Pass
2671.73	-63.49	-40	-23.49	-64.505	2.655	5.82	Horizontal	Pass
4417.841	-57.38	-40	-17.38	-62.6	3.62	8.84	Horizontal	Pass
7159.98	-54.51	-40	-14.51	-61.45	4.19	11.13	Horizontal	Pass
10739.97	-49.83	-40	-9.83	-57.875	5.075	13.12	Horizontal	Pass
14319.96	-48.34	-40	-8.34	-58	4.82	14.48	Horizontal	Pass
1249.269	-64.52	-40	-24.52	-65.59	1.64	2.71	Vertical	Pass
2847.139	-63.52	-40	-23.52	-64.535	2.655	5.82	Vertical	Pass
4379.699	-57.75	-40	-17.75	-62.97	3.62	8.84	Vertical	Pass
7159.98	-54.29	-40	-14.29	-61.23	4.19	11.13	Vertical	Pass
10739.97	-50.11	-40	-10.11	-58.155	5.075	13.12	Vertical	Pass
14319.96	-47.54	-40	-7.54	-57.2	4.82	14.48	Vertical	Pass



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N48-High channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1300.858	-65.45	-40	-25.45	-66.52	1.64	2.71	Horizontal	Pass
2595.613	-64.62	-40	-24.62	-65.635	2.655	5.82	Horizontal	Pass
4417.841	-57.8	-40	-17.8	-63.02	3.62	8.84	Horizontal	Pass
7209.96	-53.71	-40	-13.71	-60.65	4.19	11.13	Horizontal	Pass
10814.94	-49.86	-40	-9.86	-57.905	5.075	13.12	Horizontal	Pass
14419.92	-47.32	-40	-7.32	-56.98	4.82	14.48	Horizontal	Pass
1249.269	-64.88	-40	-24.88	-65.95	1.64	2.71	Vertical	Pass
2710.622	-63.82	-40	-23.82	-64.835	2.655	5.82	Vertical	Pass
4430.628	-57.71	-40	-17.71	-62.93	3.62	8.84	Vertical	Pass
7209.96	-53.48	-40	-13.48	-60.42	4.19	11.13	Vertical	Pass
10814.94	-50.37	-40	-10.37	-58.415	5.075	13.12	Vertical	Pass
14419.92	-46.69	-40	-6.69	-56.35	4.82	14.48	Vertical	Pass

Note: All modes have been tested and we found TM1.1 test mode has the worst test result. Only record the worst test result.



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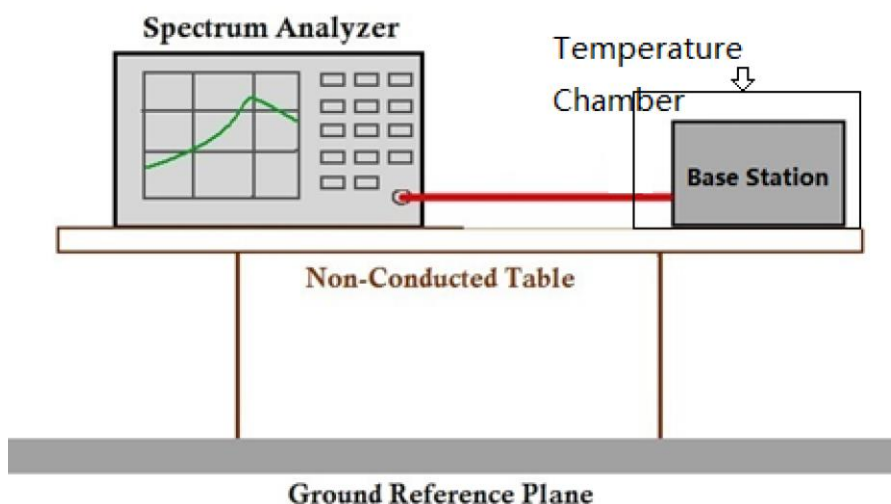
6.7 Frequency stability

Test Requirement: §2.1055
 Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
 Limit: $\leq \pm 1.5\text{ppm}$.

6.7.1 E.U.T. Operation

Operating Environment:
 Temperature: 18.5 °C Humidity: 50.5 % RH Atmospheric Pressure: 1000 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 test data appendix.

7 Test Setup Photo

Refer to Appendix - Test Setup Photo for SZCR2306001728AT

8 EUT Constructional Details (EUT Photos)

Refer to Appendix – External and Internal Photos for SZCR2306001728AT

- End of the Report -