TEST REPORT

Application No.:	SZCR2103000030AT(SHEM2011009697CR)
FCC ID:	2APJ4-SLM500
Applicant:	MeiG Smart Technology Co., Ltd
Address of Applicant:	3/F,No.88,Qinjiang Road, Xuhui District, Shanghai, China.
Manufacturer:	MeiG Smart Technology Co., Ltd
Address of Manufacturer:	5/F,Bld G,No.2337,Gudai Road,Minghang District,Shanghai,China
Equipment Under Test (EUT):	
EUT Name:	Smart module
Model No.:	SLM500
Trade mark:	Meig Link
Standard(s) :	47 CFR Part 2 47 CFR Part 22 subpart H 47 CFR Part 24 subpart E
Date of Receipt:	2020-11-19
Date of Test:	2020-12-22 to 2021-01-08
Date of Issue:	2021-01-11
Test Result:	**Pass***

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

Keny Xu
EMC Laboratory Manager

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2021-01-11	/

Authorized for issue by:				
				
		Bill Chen / Project Engineer		
				
		Eric Fu / Reviewer		

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2 Test Summary

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913, §24.232	ERP≤7W(GSM850) EIRP≤2W(GSM1900)	PASS
Peak-Average Ratio	§24.232	≤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, §22.917, §24.238	≤ -13dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	PASS
Spurious emissions at antenna terminals	§2.1051, §22.917, §24.238	≤ -13dBm	PASS
Field strength of spurious radiation	§2.1051, §22.917, §24.238	≤ -13dBm	PASS
Frequency stability	§2.1055, §22.355, §24.235	≤ ±2.5ppm.	PASS

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3.8V by DC power supply
Test voltage:	DC 3.8V
Serial Number:	M500QE8BYA071000060
Firmware version:	SLM500Q_EQ000_2774.2AAF2F74.BCA2CDE_200628_100_V01_T09
Sample Type:	Portable production
Support Network:	GSM, GPRS, EGPRS
Operation Frequency Band:	GSM850/GSM1900
Modulation Type:	GMSK for GSM/GPRS/EGPRS; 8PSK for EGPRS
GPRS Class:	12
EGPRS Class:	12
Antenna Type:	Dipole
Antenna Gain:	GSM850: 1dBi (Provided by the manufacturer) GSM1900: 1dBi (Provided by the manufacturer)
Extreme temp. Tolerance:	-10°C to +55°C
Extreme vol. Limits:	3.5VDC to 4.2VDC (nominal: 3.8VDC)
IMEI:	863188040006347

4.2 Test Frequency

Test mode:	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
GSM850	TX	Channel 128	Channel 190	Channel 251
		824.2MHz	836.6 MHz	848.8 MHz
	RX	Channel 128	Channel 190	Channel 251
		869.2 MHz	881.6 MHz	893.8 MHz
Test mode:	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
GSM1900	TX	Channel 512	Channel 661	Channel 810
		1850.2MHz	1880.0 MHz	1909.8 MHz
	RX	Channel 512	Channel 661	Channel 810
		1930.2 MHz	1960.0 MHz	1989.8 MHz

4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	48%	
Atmospheric Pressure:	1015Pa	
Temperature:	TN	25 °C
Voltage:	VL	3.5 V
	VN	3.8 V
	VH	4.2 V

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

4.4 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
DC Power Supply	Laboratory	N/A	E903131

4.5 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4×10^{-8}
2	Timeout	2s
3	Duty cycle	0.37%
4	Occupied Bandwidth	3%
5	RF conducted power	0.6dB
6	RF power density	2.84dB
7	Conducted Spurious emissions	0.75dB
8	RF Radiated power	4.6dB (Below 1GHz)
		4.1dB (Above 1GHz)
9	Radiated Spurious emission test	4.2dB (Below 30MHz)
		4.4dB (30MHz-1GHz)
		4.8dB (1GHz-18GHz)
		5.2dB (Above 18GHz)
10	Temperature test	1°C
11	Humidity test	3%
12	Supply voltages	1.5%
13	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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

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. 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: CN1178

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

Designation Number: CN1178. Test Firm Registration Number: 406779.

• 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

Conducted Tests					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
MXA Signal Analyzer(10Hz-26.5GHz)	KEYSIGHT	N9020A	SEM004-17	2020-05-21	2021-05-20
Signal Generator (9kHz-40GHz)	KEYSIGHT	N5173B	SEM006-05	2020-09-23	2021-09-22
MXG Vector Signal Generator	KEYSIGHT	N5182A	SEM006-14	2020-03-23	2021-03-22
ESG Vector Signal Generator	KEYSIGHT	E4438C	SEM006-15	2020-09-23	2021-09-22
DC Power Supply	Rohde & Schwarz	NGSM 32/10	SEM011-04	2020-03-24	2021-03-23
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2020-04-09	2021-04-08
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2020-04-09	2021-04-08
Power Sensor	KEYSIGHT	U2021XA	SEM009-20	2020-05-21	2021-05-20
Power Sensor	KEYSIGHT	U2021XA	SEM009-21	2020-05-21	2021-05-20
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2020-03-25	2021-03-24
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2020-04-01	2021-03-31
Measurement Software	TST	TST PASS V1.0.5	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-03	2020-07-10	2021-07-09

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Radiated Tests					
RE in Chamber ＜1GHz					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
MXE EMI receiver(3Hz-3.6GHz)	KEYSIGHT	N9038A	SEM004-15	2020-11-02	2021-11-01
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-02	2019-05-24	2022-05-23
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2020-04-01	2021-03-31
Measurement Software	Farad	EZ-EMC	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2020-07-10	2021-07-09
RE in Chamber ＞1GHz					
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	2018-03-13	2021-03-12
EXA Signal Analyzer (10Hz-44GHz)	Agilent Technologies Inc	N9010A	SEM004-12	2020-04-09	2021-04-08
Horn Antenna (800MHz-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2020-09-23	2021-09-22
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2020-04-01	2021-03-31
Measurement Software	Farad	EZ-EMC	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2020-07-10	2021-07-09

6 Radio Spectrum Matter Test Results

6.1 Effective (Isotropic) Radiated Power Output Data

Test Requirement: §2.1046, §22.913, §24.232

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: ERP≤7W(GSM850)

EIRP ≤ 2 W(GSM1900)

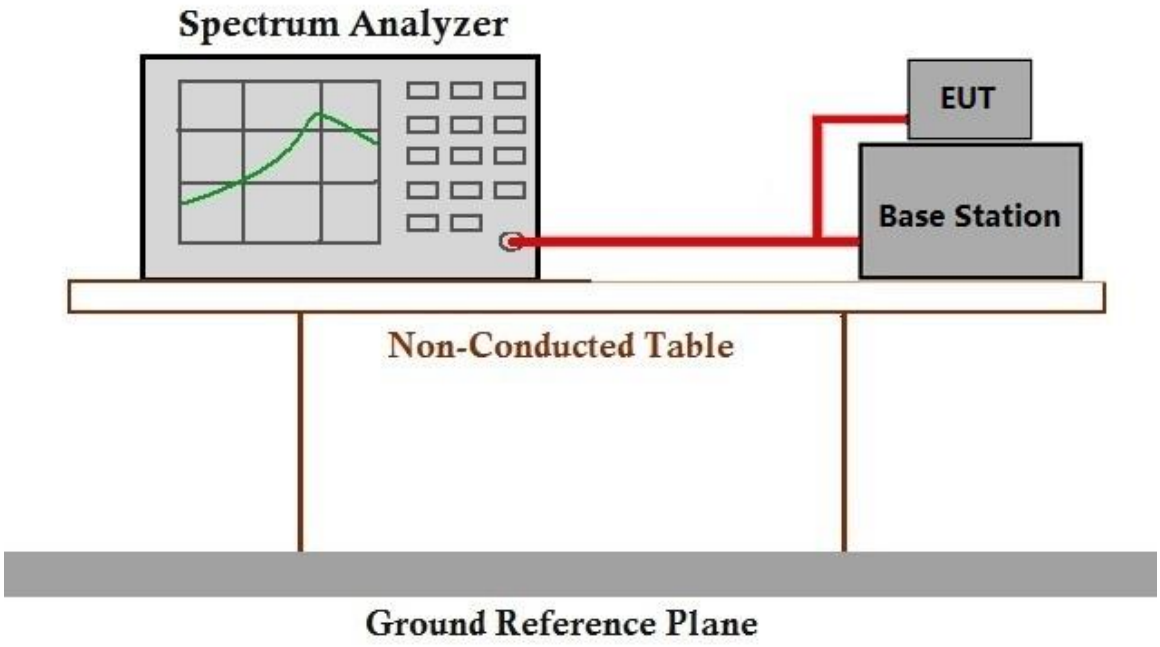
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1030 mbar

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

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

Please refer to Appendix E for SZCR210300003005

6.2 Peak-Average Ratio

Test Requirement: §24.232

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: ≤13dB

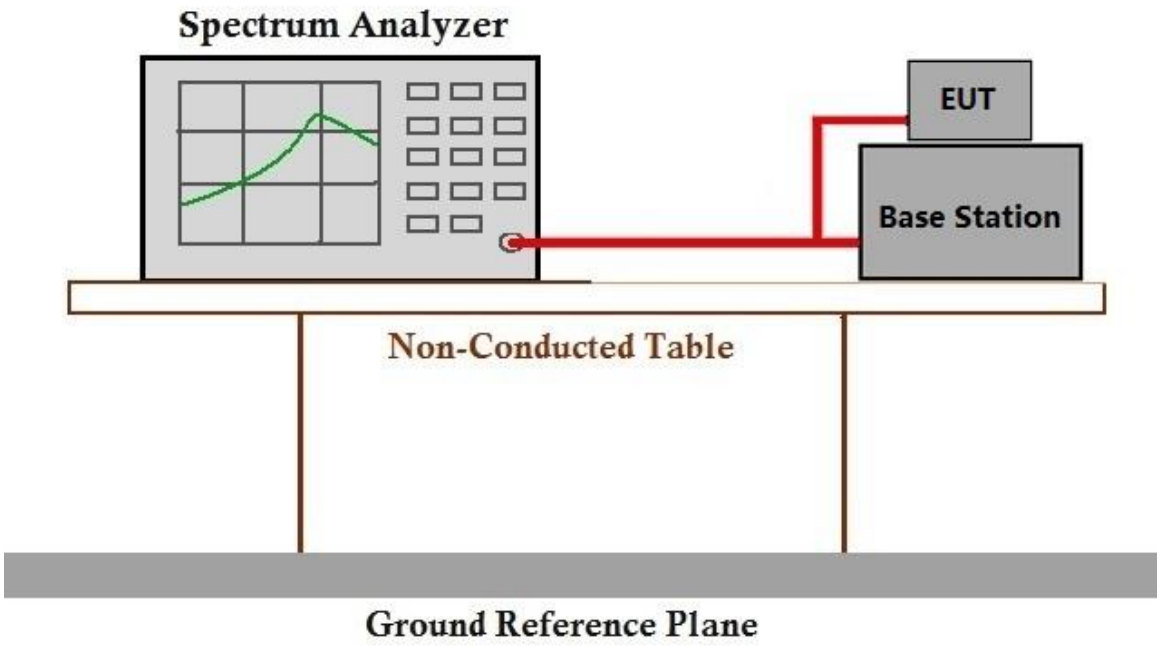
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1030 mbar

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

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

Please refer to Appendix E for SZCR210300003005

6.3 Bandwidth

Test Requirement: §2.1049(h), §22.917, §24.238

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: OBW: No limit

EBW: No limit

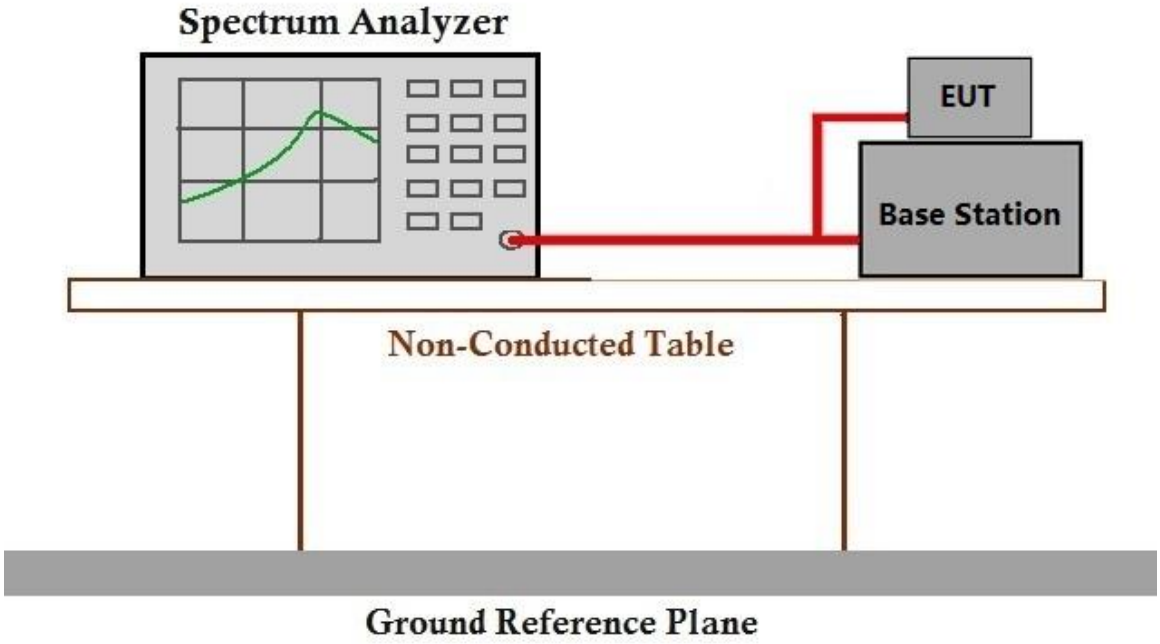
6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1030 mbar

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

6.3.2 Test Setup Diagram



6.3.3 Measurement Data

Please refer to Appendix E for SZCR210300003005

6.4 Band Edge Compliance

Test Requirement: §2.1051, §22.917, §24.238

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: ≤ -13dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.

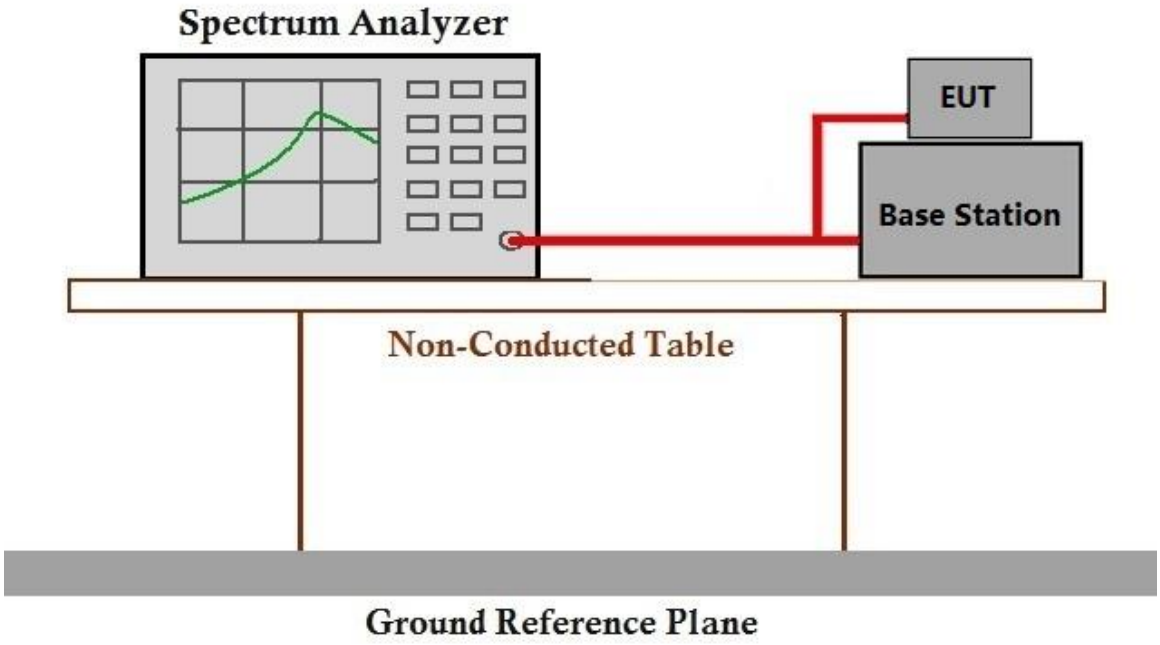
6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1030 mbar

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

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

Please refer to Appendix E for SZCR210300003005

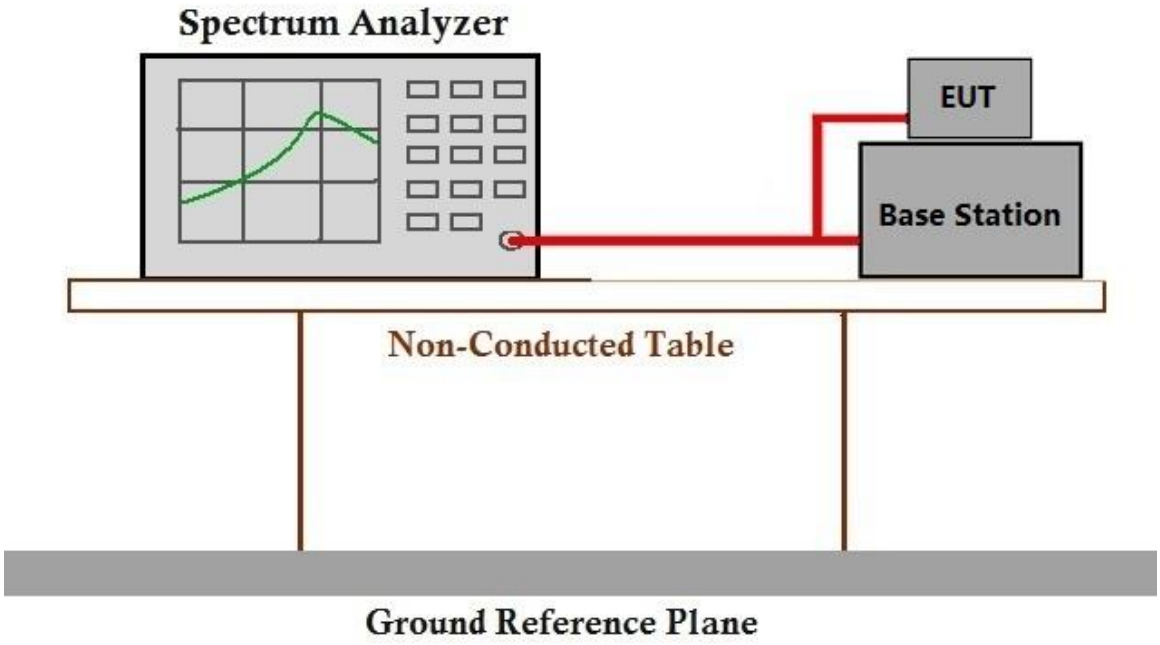
6.5 Spurious emissions at antenna terminals

Test Requirement: §2.1051, §22.917, §24.238
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: ≤ -13dBm

6.5.1 E.U.T. Operation

Operating Environment:
Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1030 mbar
Test mode: I: Tx mode, Keep the EUT in transmitting mode.

6.5.2 Test Setup Diagram



6.5.3 Measurement Data

Please refer to Appendix E for SZCR210300003005

6.6 Field strength of spurious radiation

Test Requirement: §2.1051, §22.917, §24.238,

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: ≤ -13dBm

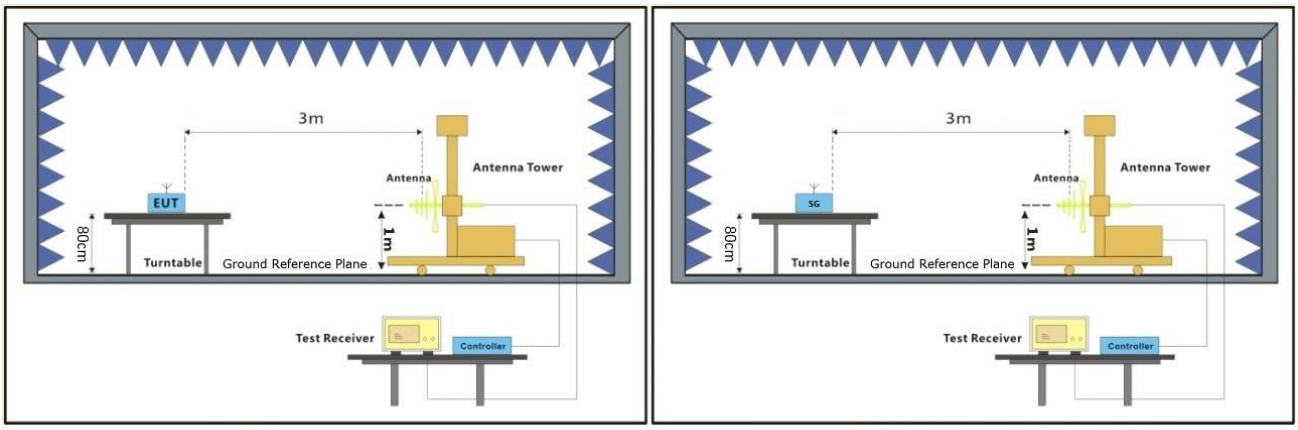
6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1030 mbar

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

6.6.2 Test Setup Diagram



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.

GSM850-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1648.400	-52.33	-13	-39.33	Horizontal
2472.600	-60.65	-13	-47.65	Horizontal
3296.800	-53.29	-13	-40.29	Horizontal
1648.400	-52.81	-13	-39.81	Vertical
2472.600	-59.16	-13	-46.16	Vertical
3296.800	-56.34	-13	-43.34	Vertical

GSM850-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1672.800	-50.95	-13	-37.95	Horizontal
2509.200	-58.97	-13	-45.97	Horizontal
3345.600	-56.12	-13	-43.12	Horizontal
1672.800	-57.59	-13	-44.59	Vertical
2509.200	-59.25	-13	-46.25	Vertical
3345.600	-55.60	-13	-42.60	Vertical

GSM850-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1697.600	-60.45	-13	-47.45	Horizontal
2546.400	-59.98	-13	-46.98	Horizontal
3395.200	-55.99	-13	-42.99	Horizontal
1697.600	-56.94	-13	-43.94	Vertical
2546.400	-60.12	-13	-47.12	Vertical
3395.200	-56.56	-13	-43.56	Vertical

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GSM1900-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3700.400	-50.84	-13	-37.84	Horizontal
5550.600	-49.41	-13	-36.41	Horizontal
7400.800	-45.39	-13	-32.39	Horizontal
3700.400	-51.24	-13	-38.24	Vertical
5550.600	-51.45	-13	-38.45	Vertical
7400.800	-47.59	-13	-34.59	Vertical

GSM1900-Middle channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3760.000	-41.97	-13	-28.97	Horizontal
5640.000	-50.48	-13	-37.48	Horizontal
7520.000	-44.71	-13	-31.71	Horizontal
3760.000	-44.31	-13	-31.31	Vertical
5640.000	-52.90	-13	-39.90	Vertical
7520.000	-45.58	-13	-32.58	Vertical

GSM1900-High channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3819.600	-51.05	-13	-38.05	Horizontal
5729.400	-52.73	-13	-39.73	Horizontal
7639.200	-41.38	-13	-28.38	Horizontal
3819.600	-54.33	-13	-41.33	Vertical
5729.400	-49.42	-13	-36.42	Vertical
7639.200	-40.22	-13	-27.22	Vertical

Remark:
We have tested all modulation and all Bandwidth , but only the worst case data presented in this report.

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6.7 Frequency stability

Test Requirement: §2.1055, §22.355, §24.235

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: ≤ ±2.5ppm.

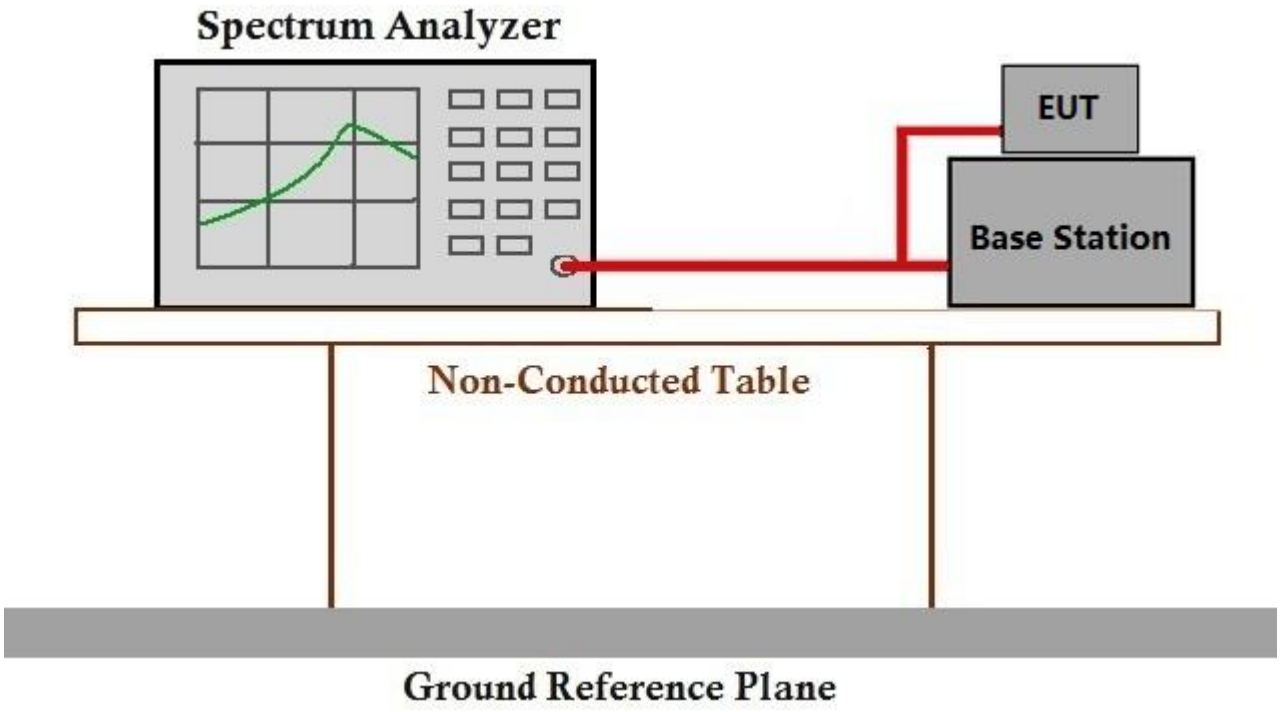
6.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1030 mbar

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

6.7.2 Test Setup Diagram



6.7.3 Measurement Data

Please refer to Appendix E for SZCR210300003005

6.8 Modulation Characteristics

Test Requirement: §2.1047

Test Method: ANSI C63.26, KDB 971168 D01 v03

Limit: Digital modulation

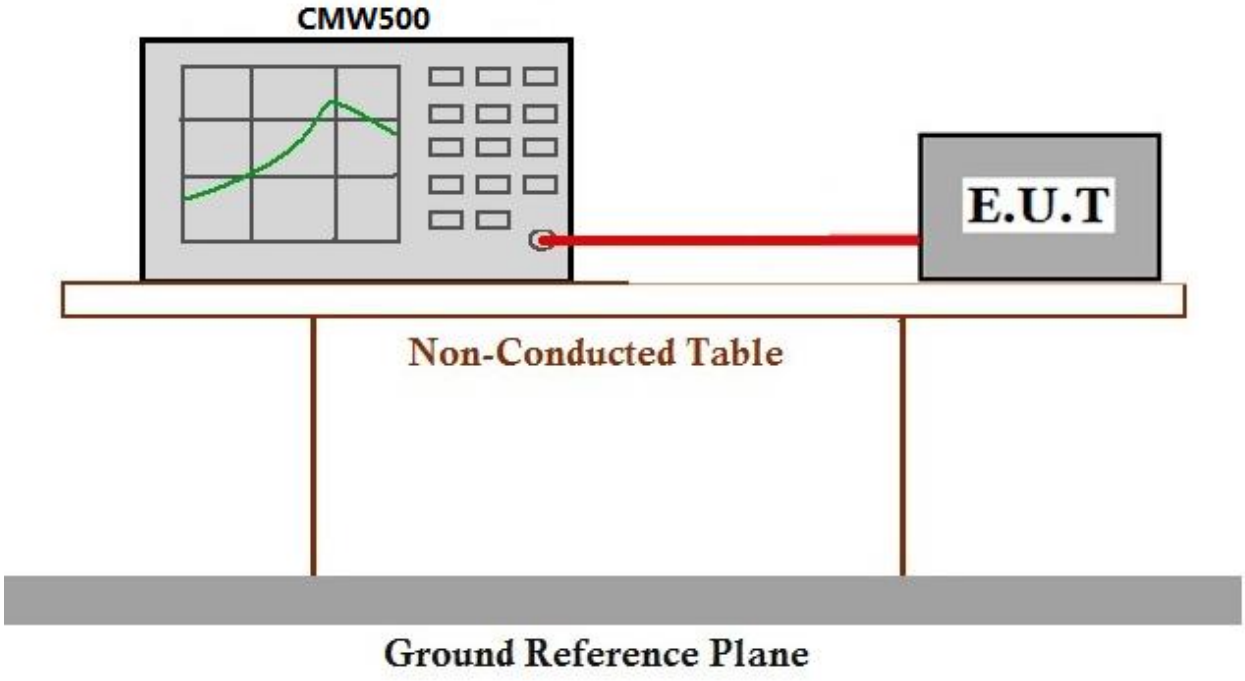
6.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 68.2 % RH Atmospheric Pressure: 1030 mbar

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

6.8.2 Test Setup Diagram



6.8.3 Measurement Data

Please refer to Appendix E for SZCR210300003005

7 Test Setup Photographs

Refer to the < Test Setup photos-FCC>.

8 EUT Constructional Details

Refer to the < Internal Photos >.

- End of the Report -

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