

Report No.: KSCR220500066808

Page: 1 of 25

TEST REPORT**Application No.:**

KSCR2205000668AT

FCC ID:

2AH25T8920

Applicant:

Shanghai Sunmi Technology Co.,Ltd.

Address of Applicant:

Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai, China

Manufacturer:

Shanghai Sunmi Technology Co.,Ltd.

Address of Manufacturer:

Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai, China

Equipment Under Test (EUT):

Handheld Wireless Terminal

EUT Name:

T8920

Model No.:

SUNMI

Trade mark:

47 CFR FCC Part 2

Standard(s) :

47 CFR FCC Part 22

47 CFR FCC Part 24

47 CFR FCC Part 27

Date of Receipt:

2022-07-13

Date of Test:

2022-07-15 to 2022-08-16

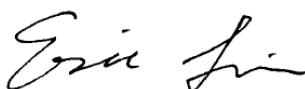
Date of Issue:

2022-08-24

Test Result:

Pass*

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



Eric Lin
Laboratory Manager

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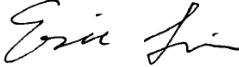


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Revision Record			
Version	Description	Date	Remark
00	Original	2022-08-24	/

Authorized for issue by:			
		Eric Liu /Project Engineer	
		Eric Lin /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 §27.50(d)	EIRP≤2W (Band 2) EIRP≤1W (Band 4) ERP≤7W (Band 5)	PASS
Peak-Average Ratio	§24.232 §27.50(d)	≤13dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	PASS
Bandwidth	§2.1049	OBW: No limit EBW: No limit	PASS
Band Edge Compliance	§2.1051, §22.917, §24.238 §27.53(h)	≤ -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 §27.53(h)	≤ -13dBm	PASS
Radiated spurious emissions	§2.1051, §22.917, §24.238 §27.53(h)	≤ -13dBm	PASS
Frequency stability	§2.1055, §22.355, §24.235 §27.54	≤ ±2.5ppm.	PASS

Note: After Pre-scan test, we chose sim card 1 as the main test, sim card 2 was verified the Spurious emissions.

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4 General Information

4.1 Details of E.U.T.

Power Supply:	Adapter 1 Model: TPA-23A050200UU01 Input: 100-240V~50/60Hz 0.3A Output: 5.0V 2.0A Adapter 2 Model: UC13US Input: 100-240V~50/60Hz 0.35A Output: 5.0V 2.0A Battery: Model: JKNR 1ICP10/51/66 Rated capacity: 5000mAh/19Wh Nominal voltage: 3.8V Limited charge voltage: 4.35V
Test voltage:	3.8V DC
Serial Number:	LP07D26F00016
Firmware version:	Sun8611_V0.41_20220622
Sample Type:	Portable production
Operation Frequency Band:	UMTS B2, B4, B5
Modulation Type:	QPSK, BPSK
Antenna Type:	PIFA Antenna
Antenna Gain:	UMTS B2: -0.56dBi (Provided by the manufacturer) UMTS B4: 0.44dBi (Provided by the manufacturer) UMTS B5: -2.02dBi (Provided by the manufacturer)
Extreme temp. Tolerance:	-20°C to +55°C
Extreme vol. Limits:	3.46V DC to 4.35V DC (nominal: 3.8V DC)
HSDPA UE Category:	14
HSUPA UE Category:	6
IMEI:	867682065002807

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4.2 Test Frequency

Test mode:	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA B2	TX	Channel 9262	Channel 9400	Channel 9538
		1852.4 MHz	1880.0 MHz	1907.6 MHz
	RX	Channel 9662	Channel 9800	Channel 9938
		1932.4 MHz	1960 MHz	1987.6 MHz
Test mode:	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA B4	TX	Channel 1312	Channel 1413	Channel 1513
		1712.4 MHz	1732.6 MHz	1752.6 MHz
	RX	Channel 1537	Channel 1638	Channel 1738
		2112.4 MHz	2132.6 MHz	2152.6 MHz
Test mode:	TX / RX	RF Channel		
		Low (L)	Middle (M)	High (H)
WCDMA B5	TX	Channel 4132	Channel 4183	Channel 4233
		826.4 MHz	836.6 MHz	846.6 MHz
	RX	Channel 4357	Channel 4408	Channel 4458
		871.4 MHz	881.6 MHz	891.6 MHz

4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	52%	
Atmospheric Pressure:	1015Pa	
Temperature:	TN	25 °C
Voltage:	VL	3.46V
	VN	3.8V
	VH	4.35V

NOTE: VL= lower extreme test voltage

VN= nominal voltage

VH= upper extreme test voltage

TN= normal temperature



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4.4 Description of Support Units

The EUT has been tested as an independent unit.

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.

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4.6 Test Location

All tests were performed at:

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No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

- SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
- SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS**

CNAS has accredited Compliance Certification Services (Kunshan) Inc. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC**

Compliance Certification Services Inc. has been recognized as an accredited testing laboratory.

Designation Number: CN1172.

- **ISED**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

Company Number: 2324E

- **VCCI**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively..

4.8 Deviation from Standards

None



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4.9 Abnormalities from Standard Conditions

None



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5 Equipment List

Item	Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal. Due Date
RF Conducted Test						
1	Spectrum Analyzer	Agilent	E4446A	MY44020154	04/16/2022	04/15/2023
2	Spectrum Analyzer	Keysight	N9020A	MY55370209	12/02/2021	12/01/2022
3	Spectrum Analyzer	Keysight	N9010A	MY56480443	02/01/2022	01/31/2023
4	Signal Generator	Agilent	N5182A	MY50142015	09/25/2020	09/24/2021
5	Radio Communication Test Station	Anritsu	MT8000A	6262012849	N/A	N/A
6	Radio Communication Analyzer	Anritsu	MT8821C	6201692222	N/A	N/A
7	Universal Radio Communication Tester	R&S	CMW500	159275	10/19/2021	10/18/2022
8	Universal Radio Communication Tester	R&S	CMW500	167239	04/16/2022	04/15/2023
9	Power Meter	Anritsu	ML2495A	1445010	04/15/2022	04/14/2023
10	Switcher	CCSRF	FY562	KUS2001M001-3	10/19/2021	10/18/2022
11	6dB Attenuator	Mini-Circuits	NAT-6-2W	15542-1	N.C.R	N.C.R
12	Power Divider	AISI	IOWOPE2068	PE2068	N.C.R	N.C.R
13	Filter	MICRO-TRONICS	BRM50701	5	N.C.R	N.C.R
14	Conducted test cable	/	RF01-RF04	/	04/15/2022	04/14/2023
15	Software	BST	TST-PASS	N/A	N/A	N/A
16	Temp. / Humidity Chamber	TERCHY	MHK-120AK	X30109	04/15/2022	04/14/2023
17	Thermometer	Anymetre	TH603	CCS007	10/16/2021	10/15/2022
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	101493	10/19/2021	10/18/2022
2	Signal Generator	Agilent	E8257C	MY43321570	10/19/2021	10/18/2022
4	Bilog Antenna	TESEQ	CBL 6112D	35403	06/21/2020	06/20/2022
5	Bilog Antenna	TESEQ	CBL 6112D	35403	06/21/2021	06/20/2023
6	Bilog Antenna	SCHWARZBECK	VULB9160	9160-3342	04/13/2021	04/12/2023
7	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	267	10/26/2020	10/25/2022
8	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	00143290	02/22/2021	02/21/2023
9	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	BBHA9170171	02/22/2022	02/21/2023
10	Pre-Amplifier(30MHz~18GHz)	LNA	/	/	04/15/2022	04/14/2023
11	Amplifier(18~40GHz)	COM-POWER	PAM-840A	461332	10/23/2021	10/22/2022
12	Low Pass Filter	MICRO-TRONICS	VLFX-950	RV142900829	N.C.R	N.C.R
13	High Pass Filter	Mini-Circuits	VHF-1200	15542	N.C.R	N.C.R
14	Filter (885 MHz~915 MHz)	MICRO-TRONICS	BRM14698	1	N.C.R	N.C.R
15	Filter (815 MHz~860 MHz)	MICRO-TRONICS	BRM14697	1	N.C.R	N.C.R
16	Filter (1745 MHz~1910 MHz)	MICRO-TRONICS	BRM14700	1	N.C.R	N.C.R
17	Filter (1922 MHz~1977 MHz)	MICRO-TRONICS	BRM50715	1	N.C.R	N.C.R
18	Filter (1532 MHz~1845 MHz)	MICRO-TRONICS	BRM50713	1	N.C.R	N.C.R
19	RE test cable	/	RE01-RE04	/	04/15/2022	04/14/2023
20	Software	Faratronic	EZ_EMCA-3A1	N/A	N/A	N/A

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21	Universal Radio Communication Tester	R&S	CMW500	159275	10/19/2021	10/18/2022
22	Universal Radio Communication Tester	R&S	CMW500	167239	04/16/2022	04/15/2023

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6 Radio Spectrum Matter Test Results

6.1 Effective (Isotropic) Radiated Power Output Data

Test Requirement: §2.1046, §22.913, §24.232, §27.50(d)

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

Limit: EIRP≤2W (Band 2); EIRP≤1W (Band 4); ERP≤7W (Band 5)

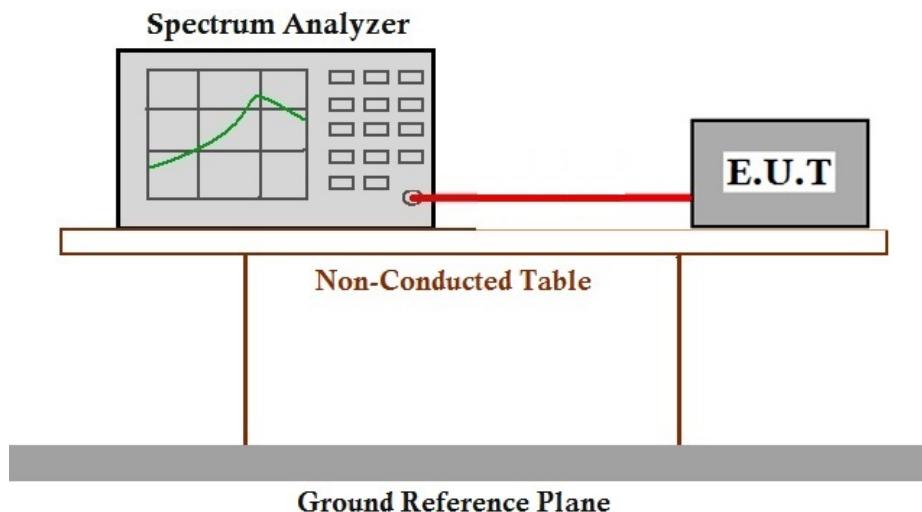
6.1.1 E.U.T. Operation

Operating Environment:

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

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

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

Please refer to Appendix G for KSCR2205000668AT, Appendix H for KSCR2205000668AT, Appendix I for KSCR2205000668AT.

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6.2 Peak-Average Ratio

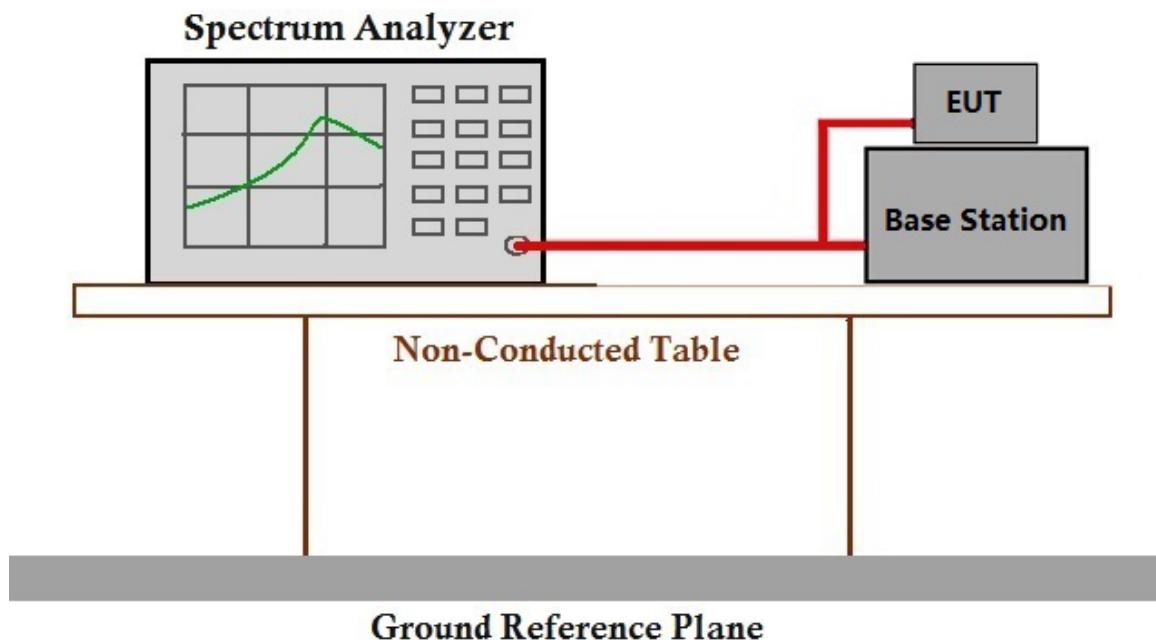
Test Requirement: §24.232
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: ≤13dB

6.2.1 E.U.T. Operation

Operating Environment:

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

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

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6.3 Bandwidth

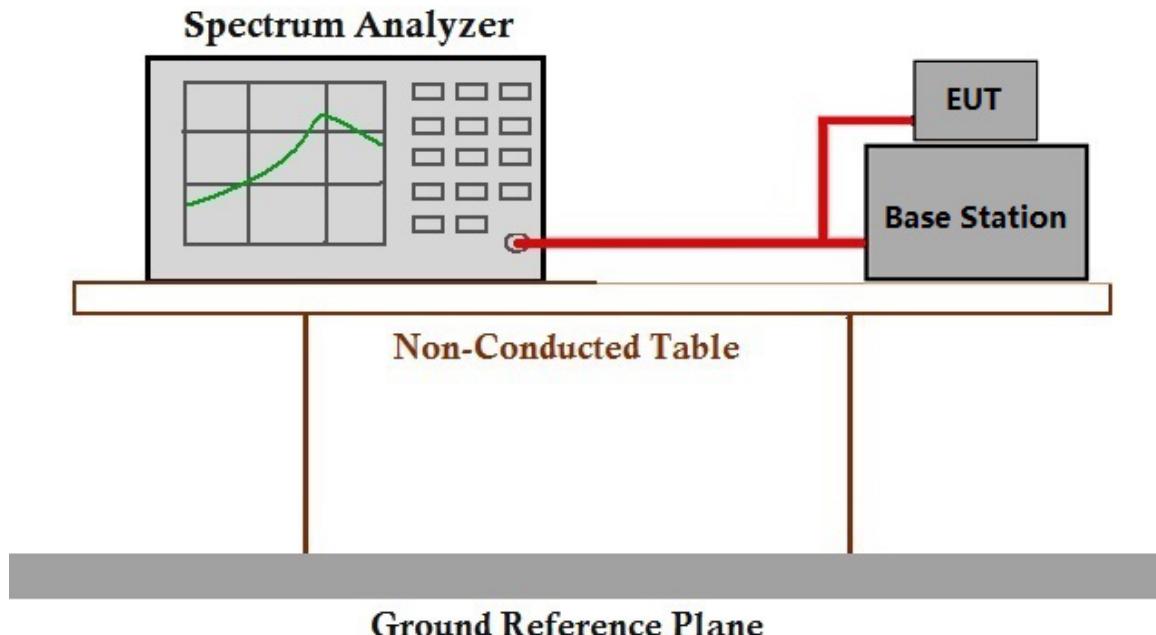
Test Requirement: §2.1049(h), §22.917, §24.238
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: OBW: No limit
EBW: No limit

6.3.1 E.U.T. Operation

Operating Environment:

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

6.3.2 Test Setup Diagram



6.3.3 Measurement Data

Please refer to Appendix G for KSCR2205000668AT, Appendix H for KSCR2205000668AT, Appendix I for KSCR2205000668AT.

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6.4 Band Edge Compliance

Test Requirement: §2.1051, §22.917, §24.238; §27.53(h)

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

Limit: $\leq -13\text{dBm}/1\% \times \text{EBW}$, in 1 MHz bands immediately outside and adjacent to the frequency block.

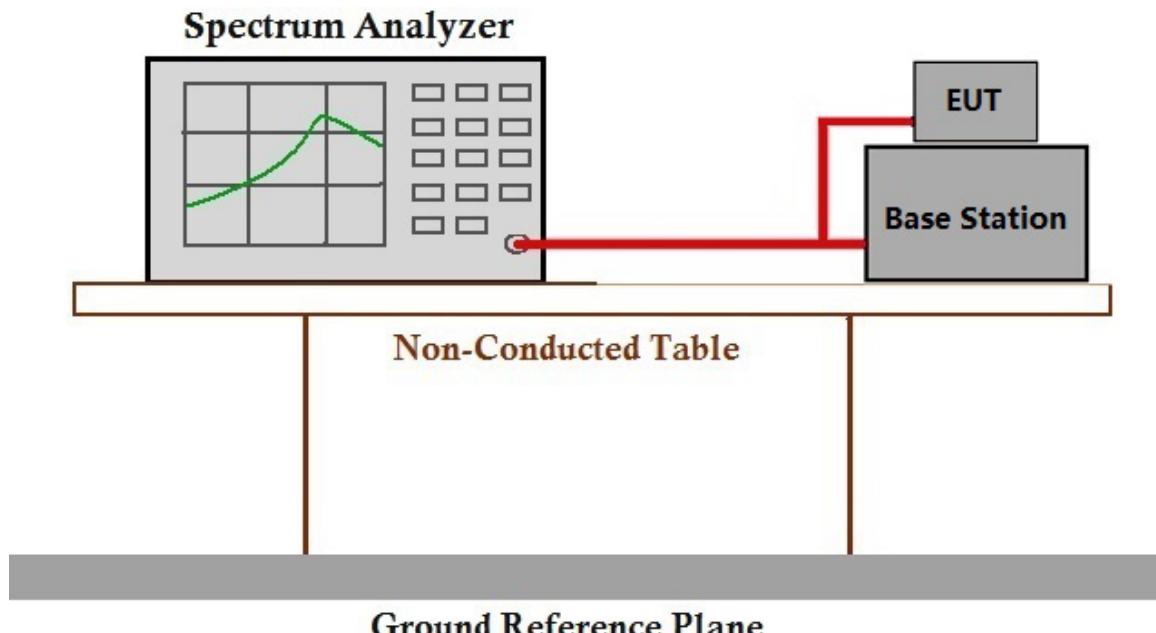
6.4.1 E.U.T. Operation

Operating Environment:

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

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

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

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6.5 Spurious emissions at antenna terminals

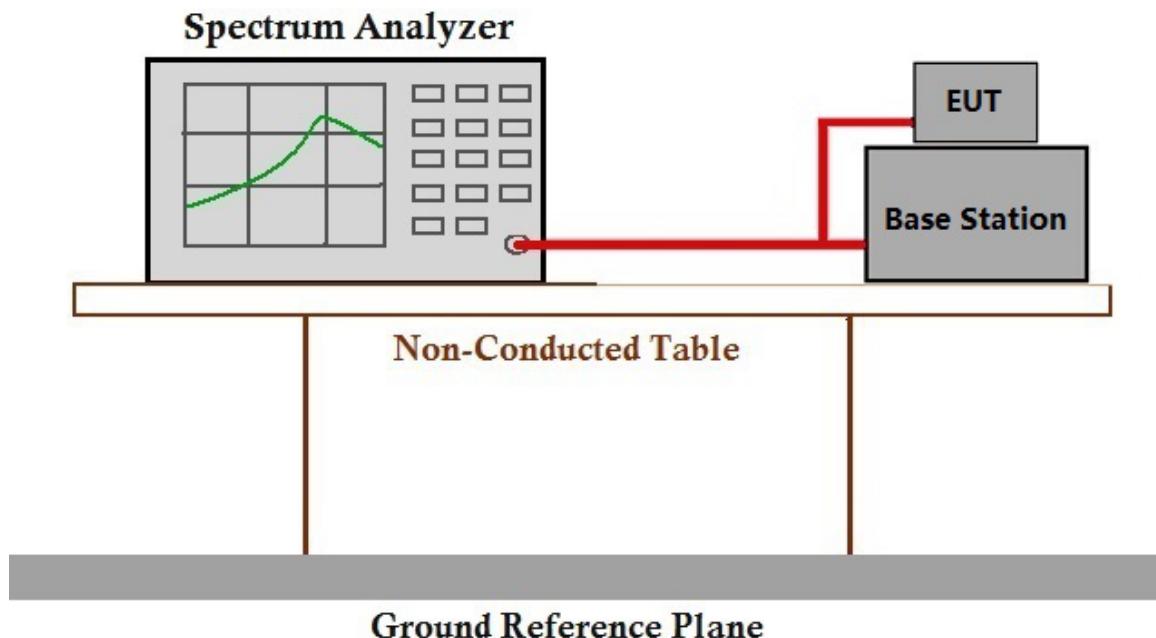
Test Requirement: §2.1051, §22.917, §24.238; §27.53(h)
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: ≤ -13dBm

6.5.1 E.U.T. Operation

Operating Environment:

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

6.5.2 Test Setup Diagram



6.5.3 Measurement Data

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6.6 Field strength of spurious radiation

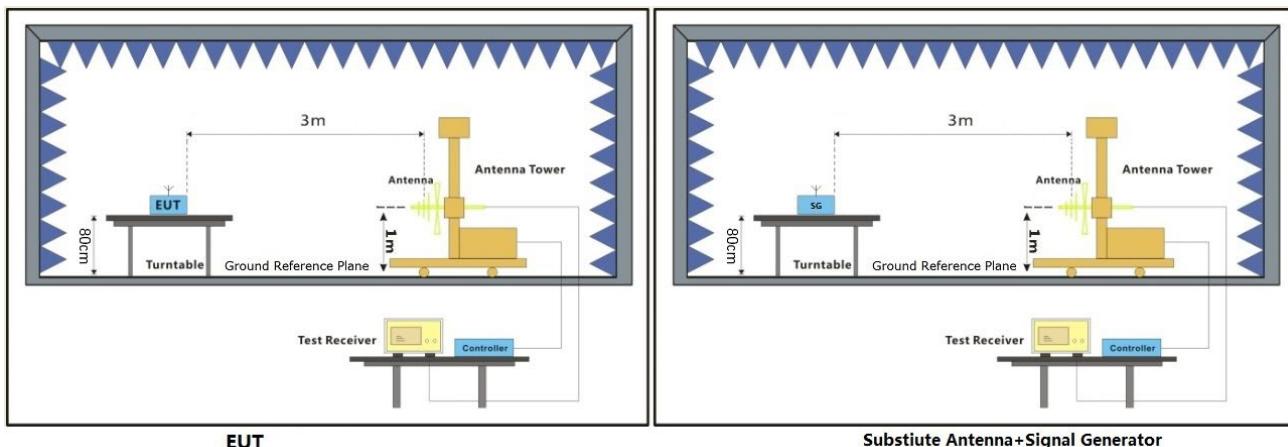
Test Requirement: §2.1051, §22.917, §24.238, §27.53(h)
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: $\leq -13\text{dBm}$

6.6.1 E.U.T. Operation

Operating Environment:

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

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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WCDMA BAND II-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3704.800	-53.02	-13	-40.02	Horizontal
5557.200	-59.08	-13	-46.08	Horizontal
7409.600	-53.91	-13	-40.91	Horizontal
3704.800	-59.59	-13	-46.59	Vertical
5557.200	-55.99	-13	-42.99	Vertical
7409.600	-57.64	-13	-44.64	Vertical

WCDMA BAND II-Middle channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3760.000	-51.02	-13	-38.02	Horizontal
5640.000	-60.81	-13	-47.81	Horizontal
7520.000	-55.77	-13	-42.77	Horizontal
3760.000	-54.77	-13	-41.77	Vertical
5640.000	-58.27	-13	-45.27	Vertical
7520.000	-56.58	-13	-43.58	Vertical

WCDMA BAND II-High channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3815.200	-56.18	-13	-43.18	Horizontal
5722.800	-59.22	-13	-46.22	Horizontal
7630.400	-54.33	-13	-41.33	Horizontal
3815.200	-59.82	-13	-46.82	Vertical
5722.800	-62.53	-13	-49.53	Vertical
7630.400	-55.79	-13	-42.79	Vertical

WCDMA BAND IV-Low channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3440.000	-50.13	-13	-37.13	Horizontal

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5160.000	-47.06	-13	-34.06	Horizontal
6880.000	-45.46	-13	-32.46	Horizontal
3440.000	-48.88	-13	-35.88	Vertical
5160.000	-49.58	-13	-36.58	Vertical
6880.000	-44.41	-13	-31.41	Vertical

WCDMA BAND IV-Middle channel

Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3465.200	-48.91	-13	-35.91	Horizontal
5197.800	-49.88	-13	-36.88	Horizontal
6930.400	-45.33	-13	-32.33	Horizontal
3465.200	-42.47	-13	-29.47	Vertical
5197.800	-50.89	-13	-37.89	Vertical
6930.400	-45.90	-13	-32.90	Vertical

WCDMA BAND IV-High channel

Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
3490.000	-46.38	-13	-33.38	Horizontal
5235.000	-51.57	-13	-38.57	Horizontal
6980.000	-42.04	-13	-29.04	Horizontal
3490.000	-47.88	-13	-34.88	Vertical
5235.000	-50.56	-13	-37.56	Vertical
6980.000	-44.84	-13	-31.84	Vertical

WCDMA BAND V-Low channel

Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1652.800	-53.08	-13	-40.08	Horizontal
2479.200	-48.91	-13	-35.91	Horizontal

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3305.600	-47.16	-13	-34.16	Horizontal
1652.800	-52.44	-13	-39.44	Vertical
2479.200	-46.82	-13	-33.82	Vertical
3305.600	-46.95	-13	-33.95	Vertical

WCDMA BAND V-Middle channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1672.800	-45.65	-13	-32.65	Horizontal
2509.200	-54.66	-13	-41.66	Horizontal
3345.600	-48.96	-13	-35.96	Horizontal
1672.800	-40.65	-13	-27.65	Vertical
2509.200	-54.48	-13	-41.48	Vertical
3345.600	-46.65	-13	-33.65	Vertical

WCDMA BAND V-High channel				
Frequency (MHz)	Level (dBm)	Limit (dBm)	Over Limit (dB)	Polarization
1692.800	-53.50	-13	-40.50	Horizontal
2539.200	-51.17	-13	-38.17	Horizontal
3385.600	-42.19	-13	-29.19	Horizontal
1692.800	-46.07	-13	-33.07	Vertical
2539.200	-48.64	-13	-35.64	Vertical
3385.600	-40.56	-13	-27.56	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: $\leq \pm 2.5\text{ppm}$.

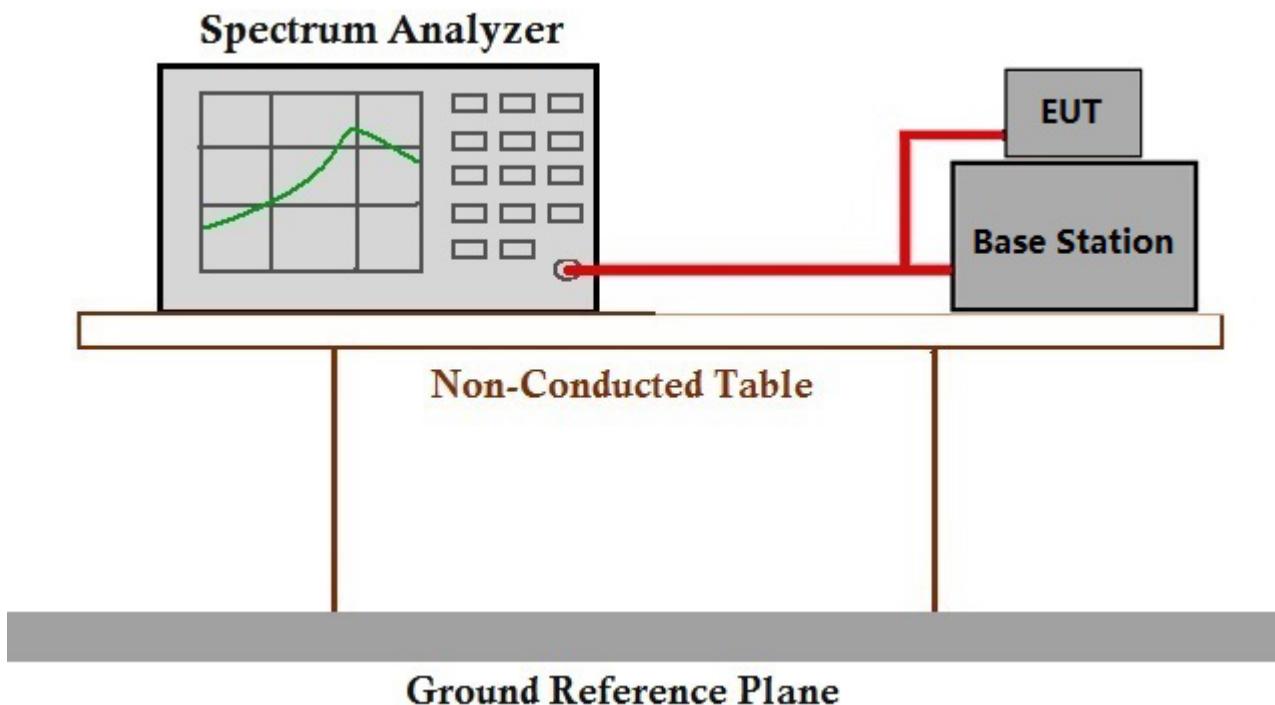
6.7.1 E.U.T. Operation

Operating Environment:

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

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

6.7.2 Test Setup Diagram



6.7.3 Measurement Data

Please refer to Appendix G for KSCR2205000668AT, Appendix H for KSCR2205000668AT, Appendix I for KSCR2205000668AT.

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6.8 Modulation Characteristics

Test Requirement: §2.1047

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

Limit: Digital modulation

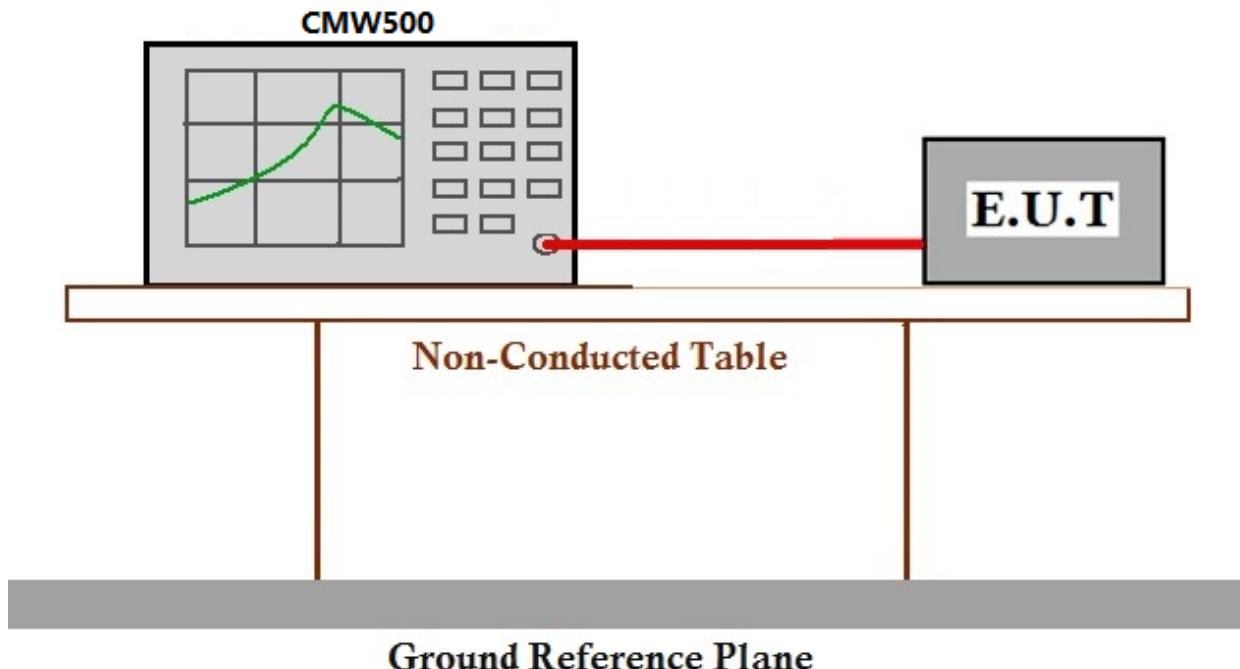
6.8.1 E.U.T. Operation

Operating Environment:

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

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

6.8.2 Test Setup Diagram



6.8.3 Measurement Data

Please refer to Appendix G for KSCR2205000668AT, Appendix H for KSCR2205000668AT, Appendix I for KSCR2205000668AT.

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7 Photographs

Refer to the < Photographs >

- End of the Report -



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