TEST REPORT

Application No.:	SZEM1908017790CR
Applicant:	Dspread Technology (Beijing) Inc
Address of Applicant:	Rm.407, B12C, #10(Universal Business Park), Jiuxianqiao Road,Chaoyang District,Beijing, China
Manufacturer:	Dspread Technology (Beijing) Inc
Address of Manufacturer:	Rm.407, B12C, #10(Universal Business Park), Jiuxianqiao Road,Chaoyang District,Beijing, China
Factory:	SHENZHEN WINSTAR PRECISION ELECTRONICS CO.,LTD
Address of factory:	The East Side of the Floor 6,Floor 5,Building 28,Shancheng Industrial Park,Shixin Connmunity, LangxinCommunity,shiyan Street,Bao'an District,shenzhen City,Guangdong Province,P.R.China
Equipment Under Test (EUT):	
EUT Name:	Mobile POS
Model No.:	GD004
FCC ID:	2AGQ6-GD004-4G
Standard(s) :	47 CFR Part 2 47 CFR Part 22 subpart H 47 CFR Part 24 subpart E 47 CFR Part 27 subpart C
Date of Receipt:	2019-08-23
Date of Test:	2019-08-28 to 2020-07-22
Date of Issue:	2020-07-23
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		2020-07-23		Original

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

2 Test Summary

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §22.913 §24.232 §27.50(a) §27.50(d) §27.50(h)	EIRP≤ 2W(LTE Band 2) EIRP≤ 1W(LTE Band 4) ERP≤ 7W(LTE Band 5) EIRP≤ 2W(LTE Band 7) EIRP≤250mW/5MHz(LTE Band 40)	PASS
Peak-Average Ratio	§22.913 §24.232 §27.50(a) §27.50(d)	≤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 §27.53(a) §27.53(h)	≤ -13dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block(LTE Band2,4,5) Refer to clause 6.4 for LTE Band7 and 40	PASS
Spurious emissions at antenna terminals	§2.1051 §22.917 §24.238 §27.53(a) §27.53(h) §27.53(m)	≤ -13dBm(LTE Band2,4,5) ≤ -25dBm(LTE Band7) ≤ -40dBm(LTE Band40)	PASS
Field strength of spurious radiation	§2.1051 §22.917 §24.238 §27.53(a) §27.53(h) §27.53(m)	≤ -13dBm(LTE Band2,4,5) ≤ -25dBm(LTE Band7) ≤ -40dBm(LTE Band40)	PASS
Frequency stability	§2.1055 §22.355 §24.235 §27.54	≤ ±2.5ppm.	PASS

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3.7V by Li-ion battery Recharge input: DC5V/1A by adapter
LTE Operation Frequency Band:	LTE FDD Band 2, 4, 5, 7, 40
Modulation Type:	QPSK, 16QAM
LTE Power Class:	Level 3
Antenna Type:	Integral Antenna
Antenna Gain:	LTE Band 2: -0.55dBi LTE Band 4: -0.55dBi LTE Band 5: -1.45dBi LTE Band 7: -0.55dBi LTE Band 40: -0.55dBi
SIM Card:	This device has dual SIM Card sockets. Both the SIM sockets have been tested. SIM1 was worst case, only record SIM1.
Extreme temp. Tolerance:	-30℃ to +50℃
Extreme vol. Limits:	3.3VDC to 4.3VDC (nominal: 3.7VDC)

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4.2 Test Frequency

Test Mode	Nominal Bandwidth (MHz)	RF Channel		
		Low (L)	Middle (M)	High (H)
		MHz	MHz	MHz
LTE FDD Band 2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855.0	1880	1905.0
	15	1857.5	1880	1902.5
	20	1860.0	1880	1900.0
Test Mode	**Nominal Bandwidth (MHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE FDD Band 4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715.0	1732.5	1750.0
	15	1717.5	1732.5	1747.5
	20	1720.0	1732.5	1745.0
Test Mode	**Nominal Bandwidth (MHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE FDD Band 5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829.0	836.5	844.0
Test Mode	**Nominal Bandwidth (MHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE FDD Band 7	5	2502.5	2535.0	2567.5
	10	2505.0	2535.0	2565.0
	15	2507.5	2535.0	2562.5
	20	2510.0	2535.0	2560.0
Test Mode	**Nominal Bandwidth (MHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**

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LTE FDD Band 40(a)	5	2307.5	2310.0	2312.5
	10	/	2310.0	/
Test Mode	**Nominal Bandwidth (MHz)**	**RF Channel**		
		Low (L)	**Middle (M)**	**High (H)**
		MHz	**MHz**	**MHz**
LTE FDD Band 40(b)	5	2352.5	2355.0	2357.5
	10	/	2355.0	/

4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	52%	
Atmospheric Pressure:	1015Pa	
Temperature:	TN	25 ℃
Voltage:	VL	3.3 V
	VN	3.7 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

The EUT has been tested independent unit.

4.5 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.25×10^{-8}
2	Duty cycle	0.37%
3	Occupied Bandwidth	3%
4	RF conducted power	0.75dB
5	RF power density	2.84dB
6	Conducted Spurious emissions	0.75dB
7	RF Radiated power	4.5dB (below 1GHz)
		4.8dB (above 1GHz)
8	Radiated Spurious emission test	4.5dB (Below 1GHz)
		4.8dB (Above 1GHz)
9	Temperature test	1℃
10	Humidity test	3%
11	Supply voltages	1.5%
12	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:

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 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 (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

RF conducted test					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
DC Power Supply	ZhaoXin	PS-3005D	SEM011-05	2018-09-25	2019-09-24
DC Power Supply	ZhaoXin	PS-3005D	SEM011-05	2019-09-24	2020-09-23
Spectrum Analyzer (20Hz-43GHz)	Rohde & Schwarz	FSU43	SEM004-08	2019-04-12	2020-04-11
Spectrum Analyzer (20Hz-43GHz)	Rohde & Schwarz	FSU43	SEM004-08	2020-04-11	2021-04-10
Signal Analyzer (10Hz-40GHz)	Rohde & Schwarz	FSV40	SEM008-04	2019-04-01	2020-03-31
Signal Analyzer (10Hz-40GHz)	Rohde & Schwarz	FSV40	SEM008-04	2020-03-31	2021-03-30
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.6	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2019-07-11	2020-07-10
Coaxial Cable	SGS	N/A	SEM031-01	2020-07-10	2021-07-09
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2019-04-01	2020-03-31
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2020-03-31	2021-03-30
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	SEM010-02	2019-04-01	2020-03-31
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	SEM010-02	2020-03-31	2021-03-30
Power Sensor	KEYSIGHT	U2021XA	SEM009-13	2019-04-12	2020-04-11
Power Sensor	KEYSIGHT	U2021XA	SEM009-13	2020-04-11	2021-04-10
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018-09-25	2019-09-24
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23

RE in Chamber					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
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	2019-04-12	2020-04-11
EXA Signal Analyzer (10Hz-44GHz)	Agilent Technologies Inc	N9010A	SEM004-12	2020-04-11	2021-04-10
Horn Antenna	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12

(800MHz-18GHz)					
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16
Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2018-09-25	2019-09-24
Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2019-09-24	2020-09-23
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2018-11-12	2019-11-11
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2019-11-11	2020-11-10
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2019-04-01	2020-03-31
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2020-03-31	2021-03-30
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2019-04-01	2020-03-31
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2020-03-31	2021-03-30
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2019-07-11	2020-07-10
Coaxial Cable	SGS	N/A	SEM026-01	2020-07-10	2021-07-09
Substitution Antenna	ETS-Lindgren	3142C	SEM003-01	2017-06-27	2020-06-26
Substitution Antenna	ETS-Lindgren	3142C	SEM003-01	2020-06-26	2023-06-25
Signal Generator	R&S	SMA100A	102174	2019-07-11	2020-07-10
Signal Generator	R&S	SMA100A	102174	2020-07-10	2021-07-09

RE in Chamber					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-08-05	2020-08-04
MXE EMI Receiver (20Hz-8.4GHz)	Agilent Technologies	N9038A	SEM004-05	2018-09-25	2019-09-24
MXE EMI Receiver (20Hz-8.4GHz)	Agilent Technologies	N9038A	SEM004-05	2019-09-24	2020-09-23
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017-06-27	2020-06-26
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2020-06-26	2023-06-25

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(26-3000MHz)					
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2019-04-01	2020-03-31
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2020-03-31	2021-03-30
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2019-07-11	2020-07-10
Coaxial Cable	SGS	N/A	SEM025-01	2020-07-10	2021-07-09
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2019-04-01	2020-03-31
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2020-03-31	2021-03-30

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2018-09-27	2019-09-26
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2019-09-26	2020-09-25
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2018-09-27	2019-09-26
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2019-09-26	2020-09-25
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2018-09-27	2019-09-26
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2019-09-26	2020-09-25
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2019-04-04	2020-04-03
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2020-04-03	2021-04-02

6 Radio Spectrum Matter Test Results

6.1 Effective (Isotropic) Radiated Power Output Data

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

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

Limit: EIRP≤ 2W(LTE Band 2)
EIRP≤ 1W(LTE Band 4)
ERP≤ 7W(LTE Band 5)
EIRP≤ 2W(LTE Band 7)
EIRP≤250mW/5MHz(LTE Band 40)

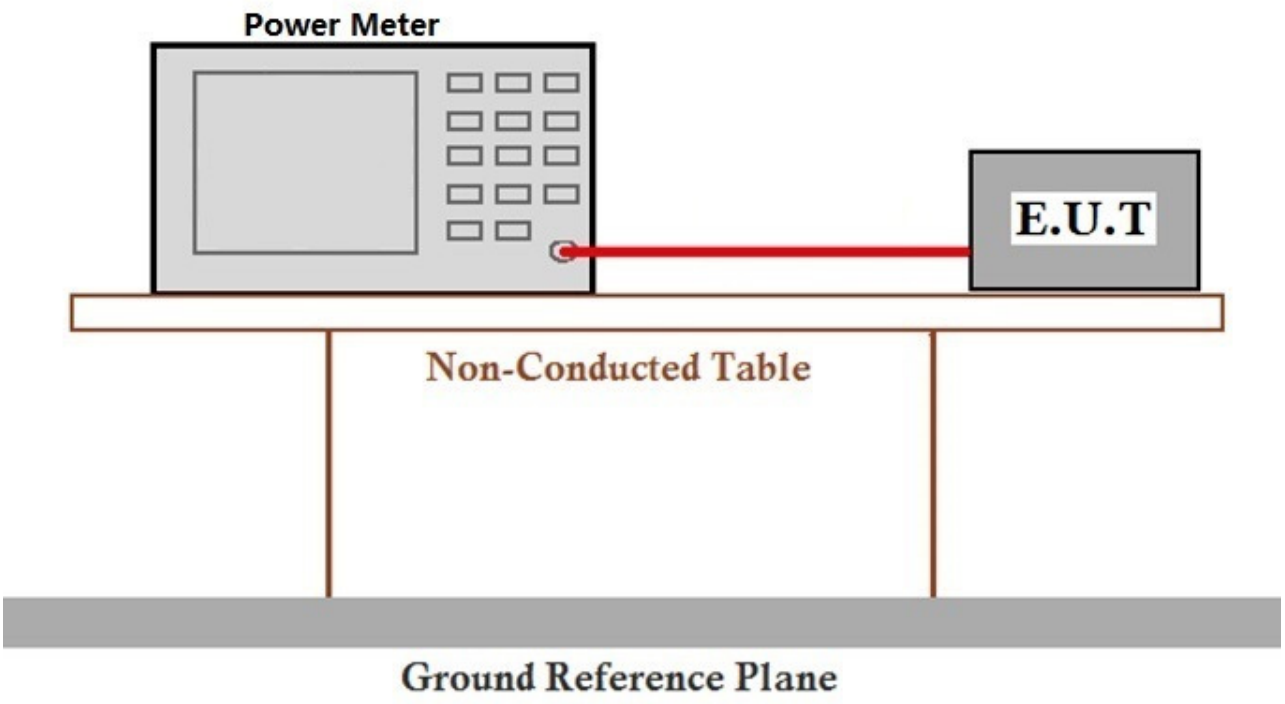
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 18.6 °C Humidity: 29.1 % RH Atmospheric Pressure: 1025 mbar

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

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

Please refer to Appendix B-Output power

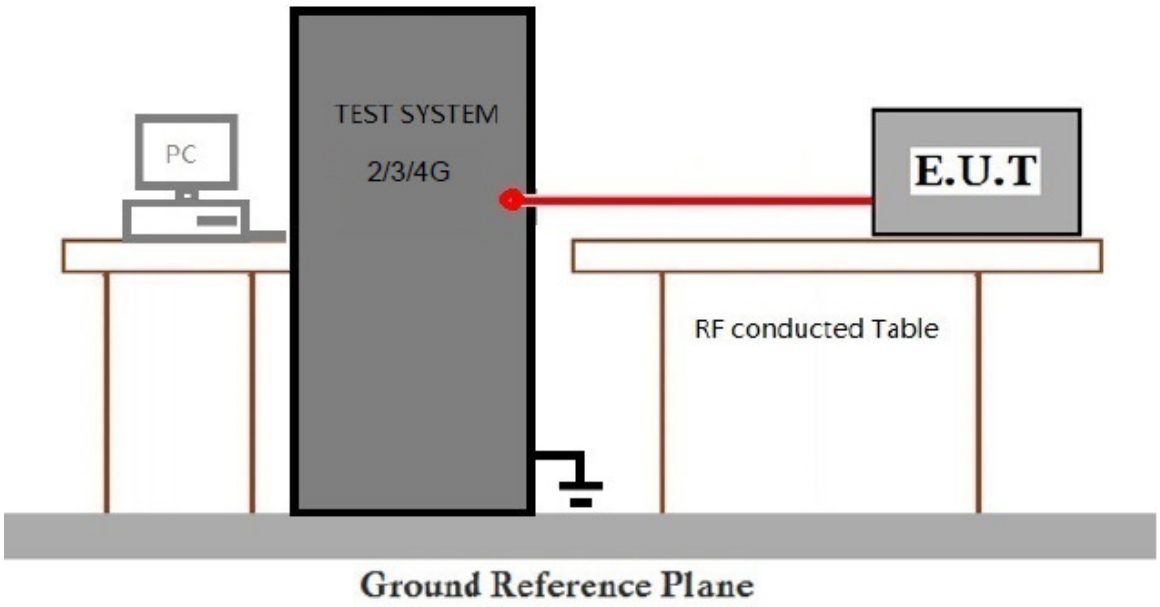
6.2 Peak-Average Ratio

Test Requirement: §22.913, §24.232, §27.50(a), §27.50(d)
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: ≤13dB

6.2.1 E.U.T. Operation

Operating Environment:
Temperature: 18.6 °C Humidity: 29.1 % RH Atmospheric Pressure: 1025 mbar
Test mode j: Tx mode, Keep the EUT in transmitting mode.

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

Please refer to Appendix C- Peak-Average Ratio

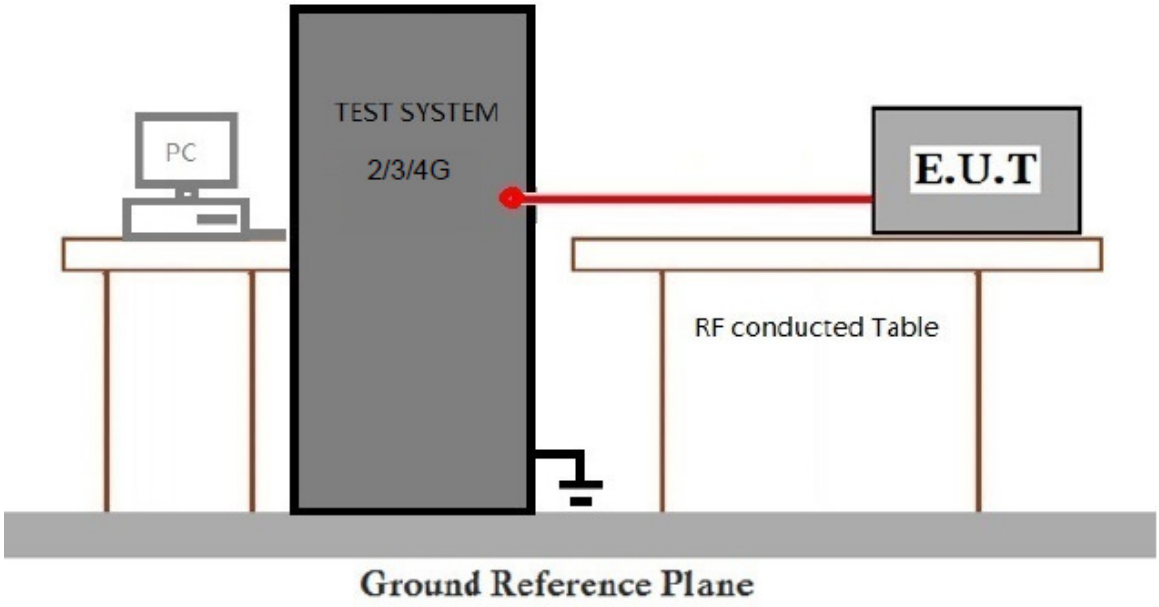
6.3 Bandwidth

Test Requirement: §2.1049(h)
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: 18.6 °C Humidity: 29.1 % RH Atmospheric Pressure: 1025 mbar
Test mode j: Tx mode, Keep the EUT in transmitting mode.

6.3.2 Test Setup Diagram



6.3.3 Measurement Data

Please refer to Appendix D- Bandwidth

6.4 Band Edge Compliance

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

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(LTE Band2,4,5)

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 that 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. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. (LTE Band7)

For base and fixed stations' operations in the 2305–2320 MHz band and the 2345–2360 MHz band:

(i) By a factor of not less than 43 + 10log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, and not less than 75 + 10 log(P) dB on all frequencies between 2320 and 2345 MHz;

(ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 70 + 10 log (P) dB on all frequencies between 2287.5 and 2300 MHz, 72 + 10 log (P) dB on all frequencies between 2285 and 2287.5 MHz, and 75 + 10 log (P) dB below 2285 MHz;

(iii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2362.5 MHz, 55 + 10 log (P) dB on all frequencies between 2362.5 and 2365 MHz, 70 + 10 log (P) dB on all frequencies between 2365 and 2367.5 MHz, 72 + 10 log (P) dB on all frequencies between 2367.5 and 2370 MHz, and 75 + 10log (P) dB above 2370 MHz. (LTE Band40)

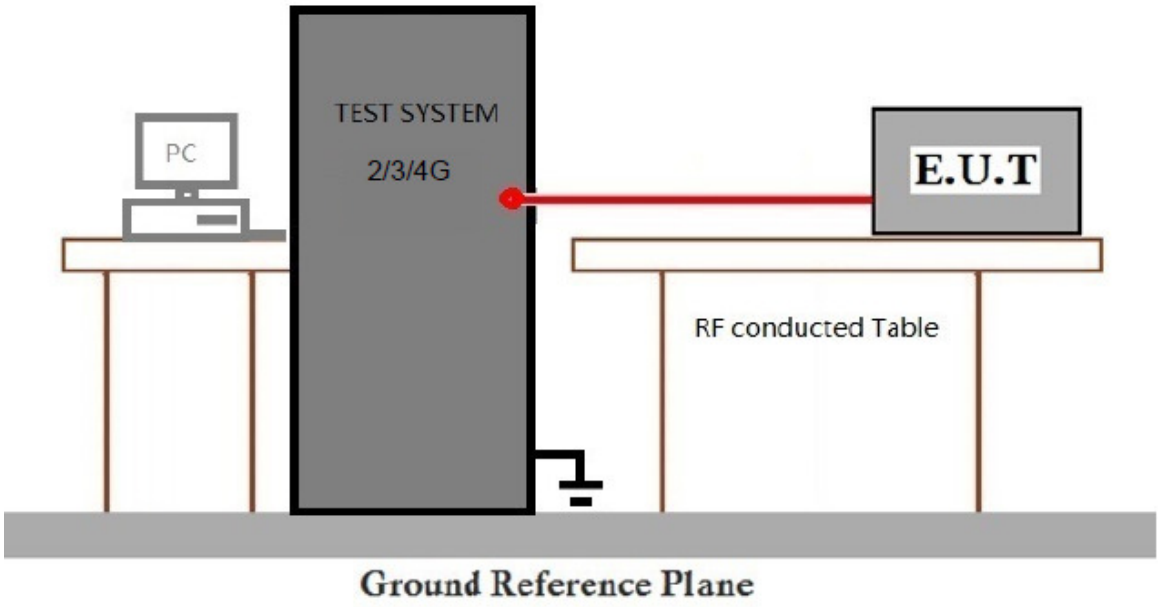
6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 18.6 °C Humidity: 29.1 % RH Atmospheric Pressure: 1025 mbar

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

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

Please refer to Appendix E- Band Edge & Spurious emission

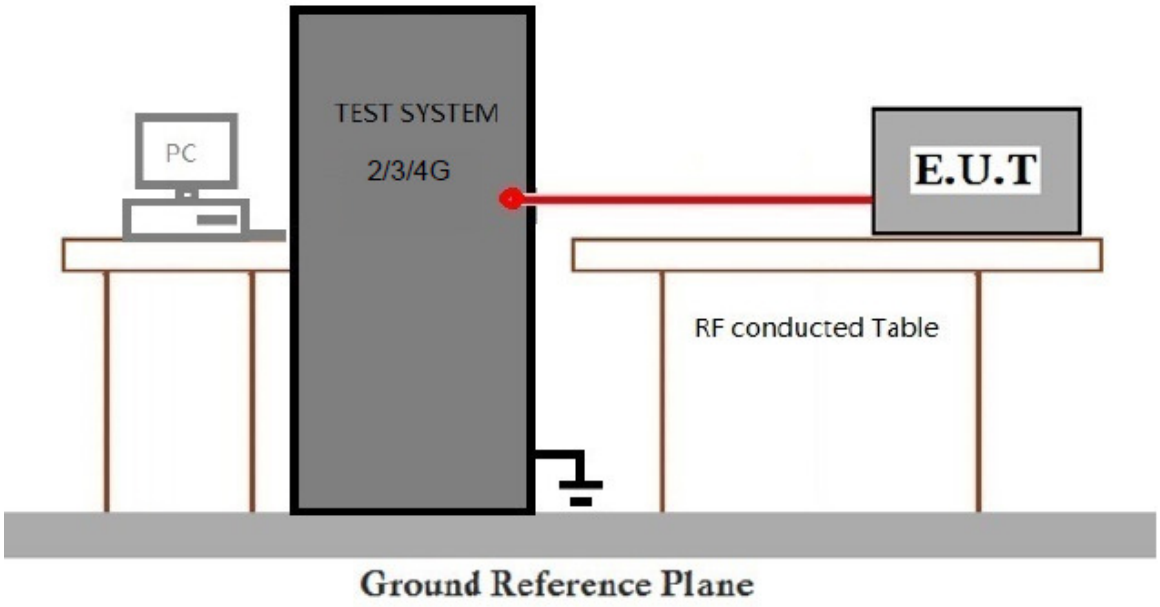
6.5 Spurious emissions at antenna terminals

Test Requirement: §2.1051, §22.917, §24.238, §27.53(a), §27.53(h), §27.53(m)
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: ≤ -13dBm(LTE Band2, 4, 5)
≤ -25dBm(LTE Band7)
≤ -40dBm(LTE Band40)

6.5.1 E.U.T. Operation

Operating Environment:
Temperature: 18.6 °C Humidity: 29.1 % RH Atmospheric Pressure: 1025 mbar
Test mode j: Tx mode, Keep the EUT in transmitting mode.

6.5.2 Test Setup Diagram



6.5.3 Measurement Data

Please refer to Appendix E- Band Edge & Spurious emission

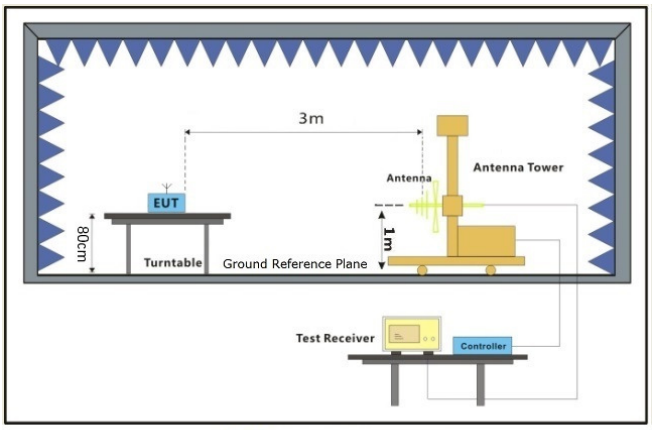
6.6 Field strength of spurious radiation

Test Requirement: §2.1051, §22.917, §24.238, §27.53(a), §27.53(h), §27.53(m)
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: ≤ -13dBm(LTE Band2, 4, 5)
≤ -25dBm(LTE Band7)
≤ -40dBm(LTE Band40)

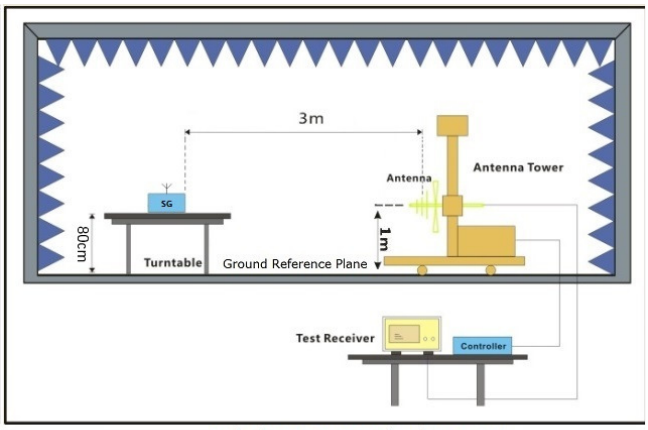
6.6.1 E.U.T. Operation

Operating Environment:
Temperature: 18.6 °C Humidity: 29.1 % RH Atmospheric Pressure: 1025 mbar
Test mode j: 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.

LTE Band II-20M Low channel, Modulation: QPSK, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3702	-49.47	0.71	7.6	-42.58	-13	-29.58	Horizontal	Pass
5553	-54.39	0.85	10.3	-44.94	-13	-31.94	Horizontal	Pass
7404	-59.04	1	12.9	-47.14	-13	-34.14	Horizontal	Pass
3702	-50	0.71	7.6	-43.11	-13	-30.11	Vertical	Pass
5553	-54.8	0.85	10.3	-45.35	-13	-32.35	Vertical	Pass
7404	-59.15	1	12.9	-47.25	-13	-34.25	Vertical	Pass

LTE Band II-20M Middle channel, Modulation: QPSK, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3742	-50.89	0.71	7.6	-44	-13	-31	Horizontal	Pass
5613	-54.77	0.85	10.3	-45.32	-13	-32.32	Horizontal	Pass
7484	-58.18	1	12.9	-46.28	-13	-33.28	Horizontal	Pass
3742	-49.87	0.71	7.6	-42.98	-13	-29.98	Vertical	Pass
5613	-55.62	0.85	10.3	-46.17	-13	-33.17	Vertical	Pass
7484	-60.32	1	12.9	-48.42	-13	-35.42	Vertical	Pass

LTE Band II-20M High channel, Modulation: QPSK, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3782	-48.94	0.71	7.6	-42.05	-13	-29.05	Horizontal	Pass
5673	-53.18	0.85	10.3	-43.73	-13	-30.73	Horizontal	Pass
7564	-59.86	0.99	13.2	-47.65	-13	-34.65	Horizontal	Pass
3782	-49.42	0.71	7.6	-42.53	-13	-29.53	Vertical	Pass
5673	-56.77	0.85	10.3	-47.32	-13	-34.32	Vertical	Pass
7564	-58.97	0.99	13.2	-46.76	-13	-33.76	Vertical	Pass

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LTE Band IV-20M Low channel, Modulation: QPSK, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3422	-46.78	0.65	6.2	-41.23	-13	-28.23	Horizontal	Pass
5133	-49.84	0.82	9.6	-41.06	-13	-28.06	Horizontal	Pass
6844	-57.42	0.95	11.8	-46.57	-13	-33.57	Horizontal	Pass
3422	-47.15	0.65	6.2	-41.6	-13	-28.6	Vertical	Pass
5133	-50.03	0.82	9.6	-41.25	-13	-28.25	Vertical	Pass
6844	-57.96	0.95	11.8	-47.11	-13	-34.11	Vertical	Pass

LTE Band IV-20M Middle channel, Modulation: QPSK, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3447	-44.99	0.65	6.2	-39.44	-13	-26.44	Horizontal	Pass
5170.5	-50.13	0.82	9.6	-41.35	-13	-28.35	Horizontal	Pass
6894	-58.25	0.95	11.8	-47.4	-13	-34.4	Horizontal	Pass
3447	-47.18	0.65	6.2	-41.63	-13	-28.63	Vertical	Pass
5170.5	-49.45	0.82	9.6	-40.67	-13	-27.67	Vertical	Pass
6894	-60.47	0.95	11.8	-49.62	-13	-36.62	Vertical	Pass

LTE Band IV-20M High channel, Modulation: QPSK, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3472	-45.02	0.65	6.2	-39.47	-13	-26.47	Horizontal	Pass
5208	-49.66	0.82	9.6	-40.88	-13	-27.88	Horizontal	Pass
6944	-57.55	0.95	11.8	-46.7	-13	-33.7	Horizontal	Pass
3472	-45.83	0.65	6.2	-40.28	-13	-27.28	Vertical	Pass
5208	-49.61	0.82	9.6	-40.83	-13	-27.83	Vertical	Pass
6944	-59.13	0.95	11.8	-48.28	-13	-35.28	Vertical	Pass

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FDD LTE Band5-Low channel, Modulation: QPSK, Bandwidth: 10MHz, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
1649	-48.6	0.52	6	-43.12	-13	-30.12	Horizontal	Pass
2473.5	-63.28	0.53	5.8	-58.01	-13	-45.01	Horizontal	Pass
3298	-57.72	0.65	6.2	-52.17	-13	-39.17	Horizontal	Pass
1649	-47.83	0.52	6	-42.35	-13	-29.35	Vertical	Pass
2473.5	-63.47	0.53	5.8	-58.2	-13	-45.2	Vertical	Pass
3298	-57.52	0.65	6.2	-51.97	-13	-38.97	Vertical	Pass

FDD LTE Band5-Middle channel, Modulation: QPSK, Bandwidth: 10MHz, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
1664	-48.63	0.52	6	-43.15	-13	-30.15	Horizontal	Pass
2496	-63.09	0.53	5.8	-57.82	-13	-44.82	Horizontal	Pass
3328	-57.92	0.65	6.2	-52.37	-13	-39.37	Horizontal	Pass
1664	-48.31	0.52	6	-42.83	-13	-29.83	Vertical	Pass
2496	-64.79	0.53	5.8	-59.52	-13	-46.52	Vertical	Pass
3328	-59.17	0.65	6.2	-53.62	-13	-40.62	Vertical	Pass

FDD LTE Band5-High channel, Modulation: QPSK, Bandwidth: 10MHz, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
1679	-48.21	0.52	6	-42.73	-13	-29.73	Horizontal	Pass
2518.5	-62.68	0.59	5.3	-57.97	-13	-44.97	Horizontal	Pass
3358	-57.75	0.65	6.2	-52.2	-13	-39.2	Horizontal	Pass
1679	-47.77	0.52	6	-42.29	-13	-29.29	Vertical	Pass
2518.5	-63.66	0.59	5.3	-58.95	-13	-45.95	Vertical	Pass
3358	-59.54	0.65	6.2	-53.99	-13	-40.99	Vertical	Pass

FDD LTE Band7-Low channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
5002	-58.05	0.82	9.6	-49.27	-25	-24.27	Horizontal	Pass
7503	-59.56	0.99	13.2	-47.35	-25	-22.35	Horizontal	Pass
10004	-55.98	1.26	12.7	-44.54	-25	-19.54	Horizontal	Pass
5002	-57.59	0.82	9.6	-48.81	-25	-23.81	Vertical	Pass
7503	-59.45	0.99	13.2	-47.24	-25	-22.24	Vertical	Pass
10004	-58.17	1.26	12.7	-46.73	-25	-21.73	Vertical	Pass

FDD LTE Band7-Middle channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
5052	-57.63	0.82	9.6	-48.85	-25	-23.85	Horizontal	Pass
7578	-59.84	0.99	13.2	-47.63	-25	-22.63	Horizontal	Pass
10104	-55.29	1.26	12.7	-43.85	-25	-18.85	Horizontal	Pass
5052	-57.35	0.82	9.6	-48.57	-25	-23.57	Vertical	Pass
7578	-61.6	0.99	13.2	-49.39	-25	-24.39	Vertical	Pass
10104	-56.33	1.26	12.7	-44.89	-25	-19.89	Vertical	Pass

FDD LTE Band7-High channel, Modulation: QPSK, Bandwidth: 20MHz, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
5102	-58.27	0.82	9.6	-49.49	-25	-24.49	Horizontal	Pass
7653	-58.07	0.99	13.2	-45.86	-25	-20.86	Horizontal	Pass
10204	-56.62	1.26	12.7	-45.18	-25	-20.18	Horizontal	Pass
5102	-59.69	0.82	9.6	-50.91	-25	-25.91	Vertical	Pass
7653	-59.98	0.99	13.2	-47.77	-25	-22.77	Vertical	Pass
10204	-57.17	1.26	12.7	-45.73	-25	-20.73	Vertical	Pass

FDD LTE Band40(a)-Middle channel, Modulation: QPSK, Bandwidth: 10MHz, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
4611	-50.83	0.76	9.7	-41.89	-40	-1.89	Horizontal	Pass
6916.5	-58.74	0.95	11.8	-47.89	-40	-7.89	Horizontal	Pass
9222	-56.88	1.23	12.4	-45.71	-40	-5.71	Horizontal	Pass
4611	-50.91	0.76	9.7	-41.97	-40	-1.97	Vertical	Pass
6916.5	-58.13	0.95	11.8	-47.28	-40	-7.28	Vertical	Pass
9222	-56.54	1.23	12.4	-45.37	-40	-5.37	Vertical	Pass

FDD LTE Band40(b)-Middle channel, Modulation: QPSK, Bandwidth: 10MHz, 1 RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	Polarization (H/V)	Result
4701	-50.18	0.76	9.7	-41.24	-40	-1.24	Horizontal	Pass
7051.5	-58.23	1	12.9	-46.33	-40	-6.33	Horizontal	Pass
9402	-56.29	1.23	12.4	-45.12	-40	-5.12	Horizontal	Pass
4701	-50.3	0.76	9.7	-41.36	-40	-1.36	Vertical	Pass
7051.5	-59.85	1	12.9	-47.95	-40	-7.95	Vertical	Pass
9402	-57.11	1.23	12.4	-45.94	-40	-5.94	Vertical	Pass

Note: All modes have been tested and we found QPSK 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, §22.355, §24.235, §27.54

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

Limit: ≤ ±2.5ppm.

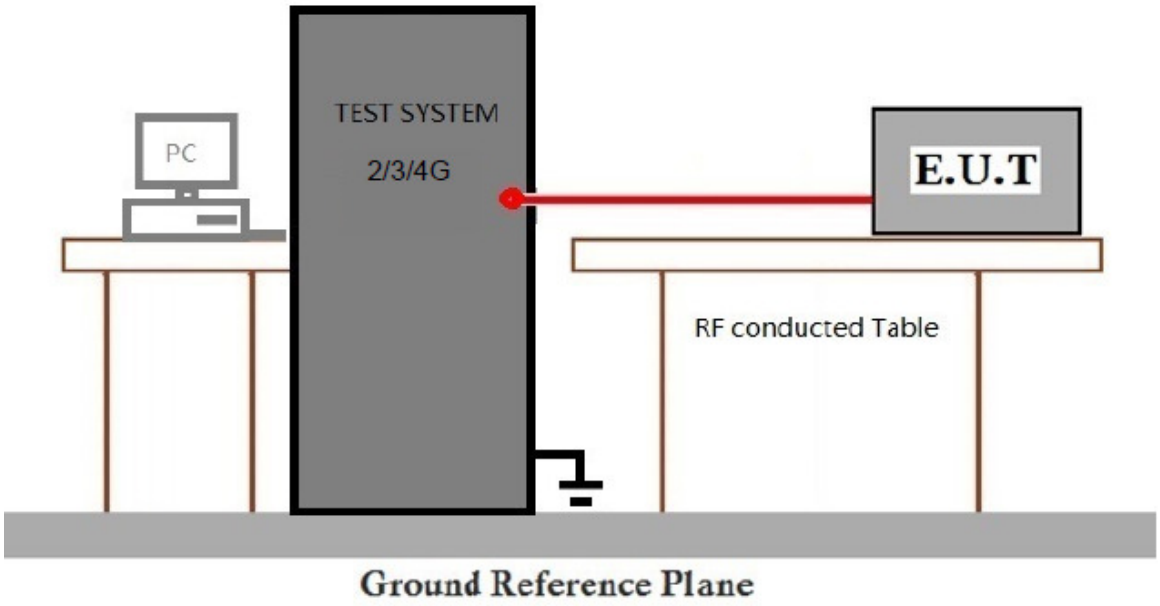
6.7.1 E.U.T. Operation

Operating Environment:

Temperature: 18.6 °C Humidity: 29.1 % RH Atmospheric Pressure: 1025 mbar

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

6.7.2 Test Setup Diagram



6.7.3 Measurement Data

LTE FDD Band 2 QPSK/20MHz Assigned Frequency:1880MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	-1.10	-0.000585	±2.5	Pass
	-20	-2.87	-0.001527		
	-10	-1.55	-0.000824		
	0	-0.08	-0.000043		
	10	1.76	0.000936		
	20	-2.22	-0.001181		
	30	-3.58	-0.001904		
	40	0.56	0.000298		
	50	-3.40	-0.001809		
3.3 V	25	-2.54	-0.001351		
4.2 V	25	-1.49	-0.000793		

LTE FDD Band 2 16QAM/20MHz Assigned Frequency:1880MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	-2.94	-0.001564	±2.5	Pass
	-20	-2.38	-0.001266		
	-10	-3.59	-0.001910		
	0	-0.06	-0.000032		
	10	-2.25	-0.001197		
	20	-2.22	-0.001181		
	30	-0.86	-0.000457		
	40	1.48	0.000787		
	50	-3.56	-0.001894		
3.3 V	25	-0.40	-0.000213		
4.2 V	25	1.58	0.000840		

LTE FDD Band 4 QPSK/20MHz Assigned Frequency: 1732.5MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	-0.07	-0.000040	±2.5	Pass
	-20	0.52	0.000300		
	-10	3.53	0.002038		
	0	-0.57	-0.000329		
	10	2.81	0.001622		
	20	-3.66	-0.002113		
	30	-0.20	-0.000115		
	40	3.87	0.002234		
	50	2.14	0.001235		
3.3 V	25	-0.98	-0.000566		
4.2 V	25	-3.78	-0.002182		

LTE FDD Band 4 16QAM/20MHz Assigned Frequency: 1732.5MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	2.08	0.001201	±2.5	Pass
	-20	3.28	0.001893		
	-10	2.29	0.001322		
	0	-0.91	-0.000525		
	10	-1.70	-0.000981		
	20	-2.25	-0.001299		
	30	1.74	0.001004		
	40	2.08	0.001201		
	50	-3.72	-0.002147		
3.3 V	25	0.91	0.000525		
4.2 V	25	-2.21	-0.001276		

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LTE FDD Band 5 QPSK/10MHz Assigned Frequency:836.5MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	3.57	0.004268	±2.5	Pass
	-20	2.21	0.002642		
	-10	-3.07	-0.003670		
	0	-1.95	-0.002331		
	10	0.49	0.000586		
	20	-3.86	-0.004614		
	30	-3.16	-0.003778		
	40	-3.23	-0.003861		
	50	0.49	0.000586		
3.3 V	25	2.74	0.003276		
4.2 V	25	-2.60	-0.003108		

LTE FDD Band 5 16QAM/10MHz Assigned Frequency:836.5MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	-1.93	-0.002307	±2.5	Pass
	-20	-2.36	-0.002821		
	-10	0.03	0.000036		
	0	-1.27	-0.001518		
	10	-0.84	-0.001004		
	20	-2.35	-0.002809		
	30	-0.29	-0.000347		
	40	-3.11	-0.003718		
	50	-0.11	-0.000132		
3.3 V	25	2.98	0.003562		
4.2 V	25	-1.02	-0.001219		

LTE FDD Band 7 QPSK/20MHz Assigned Frequency:2535MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	-2.55	-0.001006	±2.5	Pass
	-20	2.21	0.000872		
	-10	-1.55	-0.000611		
	0	2.64	0.001041		
	10	2.04	0.000805		
	20	3.22	0.001270		
	30	2.72	0.001073		
	40	-1.23	-0.000485		
	50	-2.09	-0.000824		
3.3 V	25	2.77	0.001093		
4.2 V	25	3.14	0.001239		

LTE FDD Band 7 16QAM/20MHz Assigned Frequency:2535MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	-0.33	-0.000130	±2.5	Pass
	-20	1.76	0.000694		
	-10	3.72	0.001467		
	0	-1.04	-0.000410		
	10	0.50	0.000197		
	20	-1.88	-0.000742		
	30	0.94	0.000371		
	40	3.08	0.001215		
	50	-0.15	-0.000059		
3.3 V	25	0.03	0.000012		
4.2 V	25	-2.20	-0.000868		

LTE FDD Band 40(a) QPSK/10MHz Assigned Frequency:2310MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	2.30	0.000996	±2.5	Pass
	-20	-3.13	-0.001355		
	-10	3.73	0.001615		
	0	-0.77	-0.000333		
	10	-0.84	-0.000364		
	20	-3.95	-0.001710		
	30	3.13	0.001355		
	40	0.05	0.000022		
	50	-1.35	-0.000584		
3.3 V	25	1.45	0.000628		
4.2 V	25	-0.77	-0.000333		

LTE FDD Band 40(a) 16QAM/10MHz Assigned Frequency:2310MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	1.42	0.000615	±2.5	Pass
	-20	1.92	0.000831		
	-10	-3.59	-0.001554		
	0	0.64	0.000277		
	10	3.38	0.001463		
	20	-3.61	-0.001563		
	30	-1.78	-0.000771		
	40	2.61	0.001130		
	50	1.30	0.000563		
3.3 V	25	-1.67	-0.000723		
4.2 V	25	-1.43	-0.000619		

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LTE FDD Band 40(b) QPSK/10MHz Assigned Frequency:2355MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	0.19	0.000081	±2.5	Pass
	-20	3.47	0.001473		
	-10	-1.62	-0.000688		
	0	-0.96	-0.000408		
	10	2.24	0.000951		
	20	-1.86	-0.000790		
	30	1.51	0.000641		
	40	-1.27	-0.000539		
	50	-1.34	-0.000569		
3.3 V	25	2.02	0.000858		
4.2 V	25	-2.55	-0.001083		

LTE FDD Band 40(b) 16QAM/10MHz Assigned Frequency:2355MHz					
Voltage(V)	Temperature (℃)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	-0.61	-0.000259	±2.5	Pass
	-20	-2.55	-0.001083		
	-10	-3.92	-0.001665		
	0	3.86	0.001639		
	10	1.00	0.000425		
	20	2.35	0.000998		
	30	-2.89	-0.001227		
	40	-2.51	-0.001066		
	50	1.78	0.000756		
3.3 V	25	0.01	0.000004		
4.2 V	25	-2.49	-0.001057		

Note: All modes have been tested and we only record the worst test result.

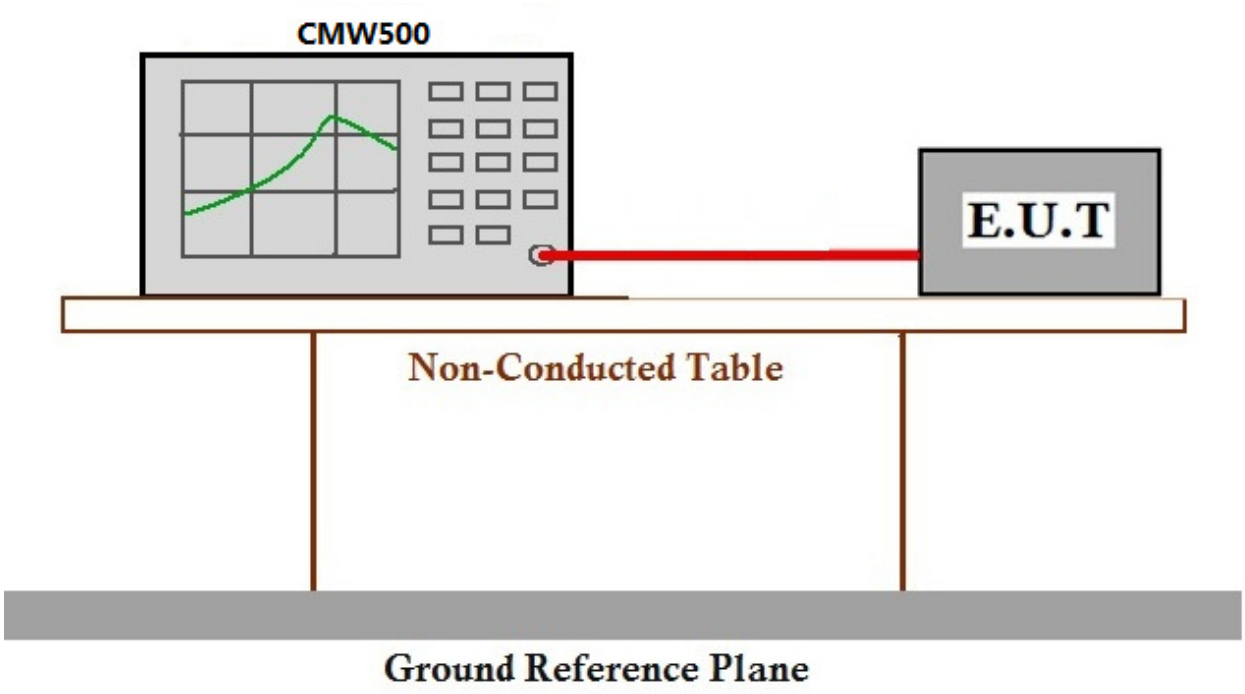
6.8 Modulation Characteristics

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: 18.6 °C Humidity: 29.1 % RH Atmospheric Pressure: 1025 mbar
Test mode j: Tx mode, Keep the EUT in transmitting mode.

6.8.2 Test Setup Diagram



6.8.3 Measurement Data

Please refer to Appendix F- Modulation Characteristics

7 Photographs

7.1 Test Setup

Please refer to setup photos.

7.2 EUT Constructional Details (EUT Photos)

Please Refer to external and internal photos for details.

- End of the Report -