



TEST REPORT

Application No.: SZEM1810009316CR
Applicant: Ninebot (Changzhou) Tech Co., Ltd
Address of Applicant: 16F-17F, Block A, Building 3, Changwu Mid Road 18#, Wujin Dist., Changzhou, Jiangsu, China
Manufacturer: Ninebot (Changzhou) Tech Co., Ltd
Address of Manufacturer: 16F-17F, Block A, Building 3, Changwu Mid Road 18#, Wujin Dist., Changzhou, Jiangsu, China
Equipment Under Test (EUT):
EUT Name: IoT device
Model No.: PJ22IOT
Trade mark: Segway
FCC ID: 2ALS8-NB2588
Standard(s) : 47 CFR Part 2(2017)
47 CFR Part 22 subpart H
47 CFR Part 24 subpart E
47 CFR Part 27 subpart C
Date of Receipt: 2018-10-29
Date of Test: 2018-11-01 to 2018-12-14
Date of Issue: 2018-12-26

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



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Shenzhen Branch EMC Laboratory

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Report No.: SZEM181000931604

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2018-12-26		Original

Authorized for issue by:				
				
		Vincent 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 §27.50(c) §27.50(d)	EIRP≤ 2W(LTE Band 2) EIRP≤ 1W(LTE Band 4) ERP≤3W(LTE Band 12)	PASS
Peak-Average Ratio	§24.232 §27.50(c) §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(h) §27.53(g)	≤ -13dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block(LTE Band2,4,12)	PASS
Spurious emissions at antenna terminals	§2.1051, §22.917, §24.238 §27.53(h) §27.53(g)	≤ -13dBm(LTE Band2,4,12)	PASS
Field strength of spurious radiation	§2.1051, §22.917, §24.238 §27.53(h) §27.53(g)	≤ -13dBm(LTE Band2,4,12)	PASS
Frequency stability	§2.1055, §22.355, §24.235 §27.54	≤ ±2.5ppm.	PASS



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4 General Information

4.1 Details of E.U.T.

Power supply:	Powered by DC 3.7V Lithium ion Battery, Charging by DC 36V from external power input
Hardware Version:	V1.1
Software Version:	V1.0.5
LTE Operation Frequency Band:	LTE FDD Band 2, 4, 12
Modulation Type:	QPSK, 16QAM
LTE Power Class:	Level 3
Antenna Type:	PIFA Antenna
Antenna Gain:	LTE Band 4: -0.2dBi LTE Band 2: -0.3dBi LTE Band 12: 0.2dBi
Extreme temp. Tolerance:	-30°C to +50°C
Extreme vol. Limits:	3.2VDC 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 12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704.0	707.5	711.0



4.3 Max ERP/EIRP Power, Frequency Tolerance and Emission Designator

FCC Rule	Band	Modulation	BW (MHz)	Emission Designator	Frequency Tolerance (ppm)	Maximum ERP/EIRP (W)
Part24E	LTE Band2	QPSK	1.4	1M09G7D	/	0.141906
Part24E	LTE Band2	16QAM	1.4	1M10W7D	/	0.103992
Part24E	LTE Band2	QPSK	3	2M69G7D	/	0.137721
Part24E	LTE Band2	16QAM	3	2M68W7D	/	0.108893
Part24E	LTE Band2	QPSK	5	4M54G7D	/	0.138357
Part24E	LTE Band2	16QAM	5	4M51W7D	/	0.101625
Part24E	LTE Band2	QPSK	10	8M96G7D	/	0.245471
Part24E	LTE Band2	16QAM	10	8M94W7D	/	0.194089
Part24E	LTE Band2	QPSK	15	13M50G7D	/	0.246604
Part24E	LTE Band2	16QAM	15	13M50W7D	/	0.229087
Part24E	LTE Band2	QPSK	20	17M96G7D	0.010	0.224905
Part24E	LTE Band2	16QAM	20	17M88W7D	0.010	0.195434
Part27	LTE Band4	QPSK	1.4	1M10G7D	/	0.162930
Part27	LTE Band4	16QAM	1.4	1M10W7D	/	0.132739
Part27	LTE Band4	QPSK	3	2M69G7D	/	0.153815
Part27	LTE Band4	16QAM	3	2M69W7D	/	0.127057
Part27	LTE Band4	QPSK	5	4M52G7D	/	0.162930
Part27	LTE Band4	16QAM	5	4M51W7D	/	0.114815
Part27	LTE Band4	QPSK	10	8M96G7D	/	0.202302
Part27	LTE Band4	16QAM	10	8M94W7D	/	0.153109
Part27	LTE Band4	QPSK	15	13M50G7D	/	0.196789
Part27	LTE Band4	16QAM	15	13M47W7D	/	0.168267
Part27	LTE Band4	QPSK	20	17M88G7D	0.010	0.195434
Part27	LTE Band4	16QAM	20	17M88W7D	0.010	0.152757
Part27	LTE Band12	QPSK	1.4	1M10G7D	/	0.267301
Part27	LTE Band12	16QAM	1.4	1M09W7D	/	0.203704
Part27	LTE Band12	QPSK	3	2M69G7D	/	0.265461
Part27	LTE Band12	16QAM	3	2M70W7D	/	0.199067
Part27	LTE Band12	QPSK	5	4M52G7D	/	0.266073
Part27	LTE Band12	16QAM	5	4M54W7D	/	0.199986
Part27	LTE Band12	QPSK	10	8M96G7D	0.025	0.277332
Part27	LTE Band12	16QAM	10	8M96W7D	0.024	0.211349



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4.4 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	52%	
Atmospheric Pressure:	1015Pa	
Temperature:	TN	25 °C
Voltage:	VL	3.2 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

4.5 Description of Support Units

The EUT has been tested independent unit.

4.6 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 °C
10	Humidity test	3%
11	Supply voltages	1.5%
12	Time	3%



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4.7 Test Location

All tests were performed at:

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518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.8 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.

4.9 Deviation from Standards

None

4.10 Abnormalities from Standard Conditions

None



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5 Equipment List

RF Conducted Test					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2018-09-27	2019-09-26
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2018-09-27	2019-09-26
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2018-07-12	2019-07-11
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018-09-27	2019-09-26
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018-09-27	2019-09-26
Audio Analyzer	Rohde & Schwarz	UPL	SEM0093	2018-09-27	2019-09-26
Wireless Communication Tester	Rohde & Schwarz	CMW500	W005-03	2018-04-02	2019-04-01
Splitter	MACOM	2090-6214-00	SEL0226	2018-04-13	2019-04-12

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
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017-06-27	2020-06-26
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2018-04-02	2019-04-01
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-02	2017-03-05	2020-03-04
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018-09-27	2019-09-26
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2018-07-12	2019-07-11
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	W005-02	2018-04-02	2019-04-01
Wireless Communication Tester	Rohde & Schwarz	CMW500	W005-03	2018-04-02	2019-04-01



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Radiated Spurious Emissions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2017-05-02	2020-05-01
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2018-07-12	2019-07-11
Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2018-04-13	2019-04-12
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017-06-27	2020-06-26
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
Horn Antenna (15GHz-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16
Pre-amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2018-09-27	2019-09-26
Low Noise Amplifier (100MHz-18GHz)	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2018-09-27	2019-09-26
Pre-amplifier(18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2018-04-02	2019-04-01
Pre-amplifier (26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2018-04-13	2019-04-12
DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2018-09-27	2019-09-26
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21
Band filter	N/A	N/A	SEM023-01	N/A	N/A
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	W005-02	2018-04-02	2019-04-01
Wireless Communication Tester	Rohde & Schwarz	CMW500	W005-03	2018-04-02	2019-04-01
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018-09-27	2019-09-26
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-06	2018-04-13	2021-04-12



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General used equipment					
Test 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	SEM002-04	2018-09-27	2019-09-26
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2018-09-27	2019-09-26
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2018-04-08	2019-04-07



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6 Radio Spectrum Matter Test Results

6.1 Effective (Isotropic) Radiated Power Output Data

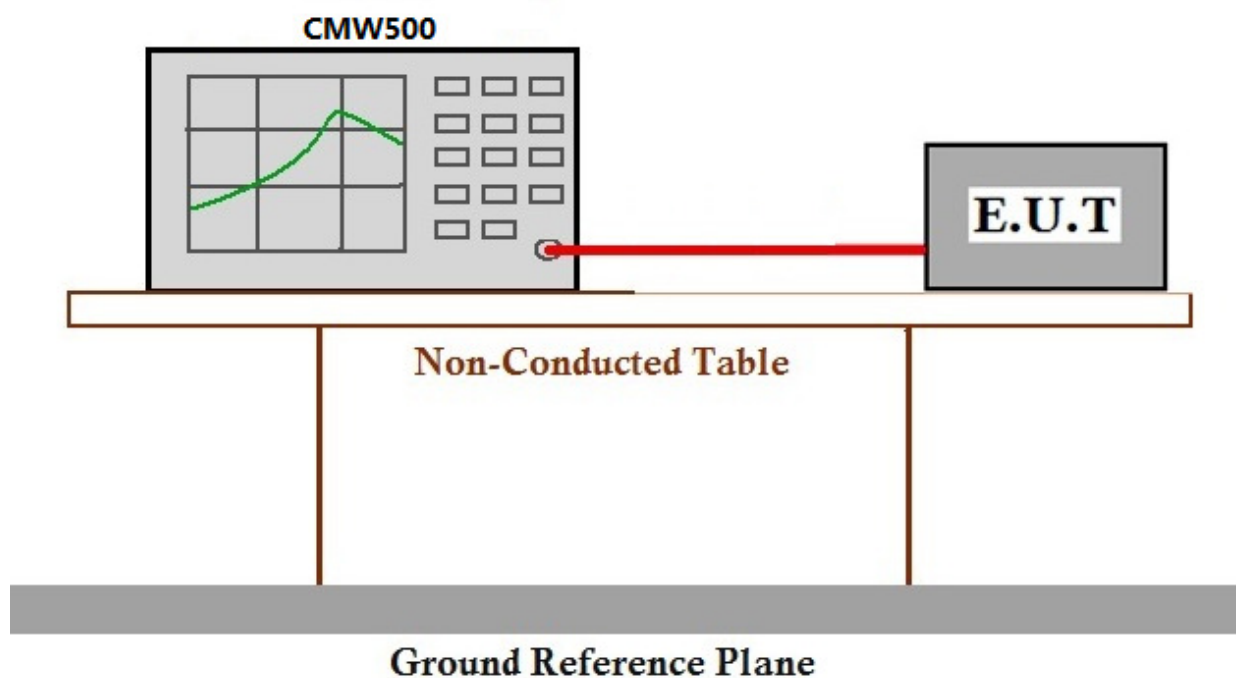
Test Requirement: §2.1046, §22.913, §24.232, §27.50(c), §27.50(d)
 Test Method: ANSI C63.26, KDB 971168 D01 v03
 Limit: ERP≤3W(LTE Band 12)
 EIRP≤ 2W(LTE Band 2)
 EIRP≤ 1W(LTE Band 4)

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

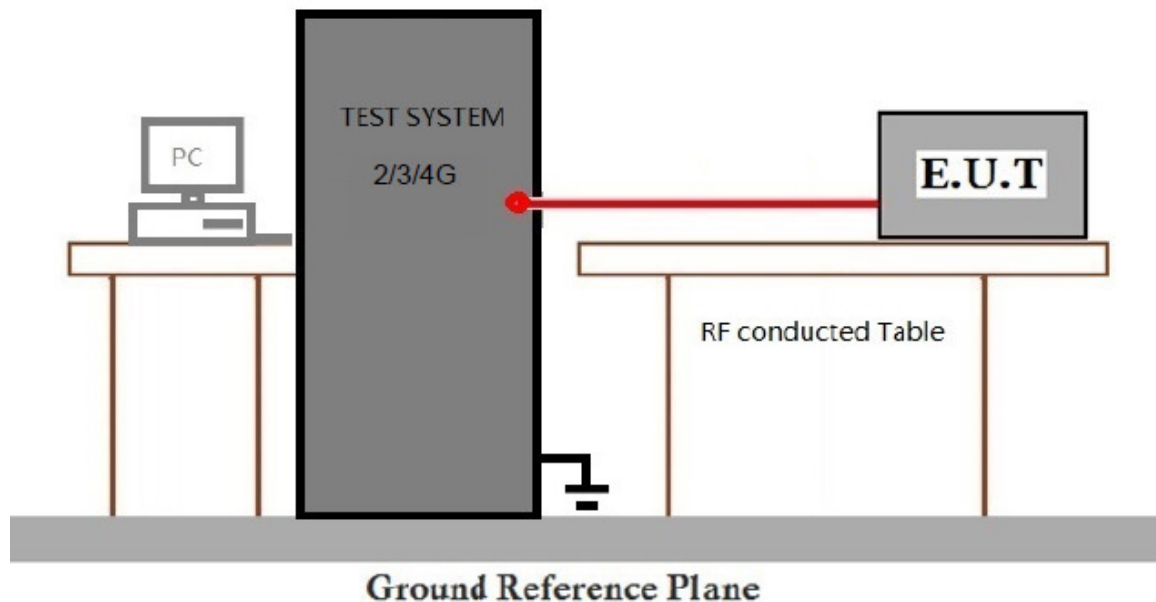
6.2.1 E.U.T. Operation

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

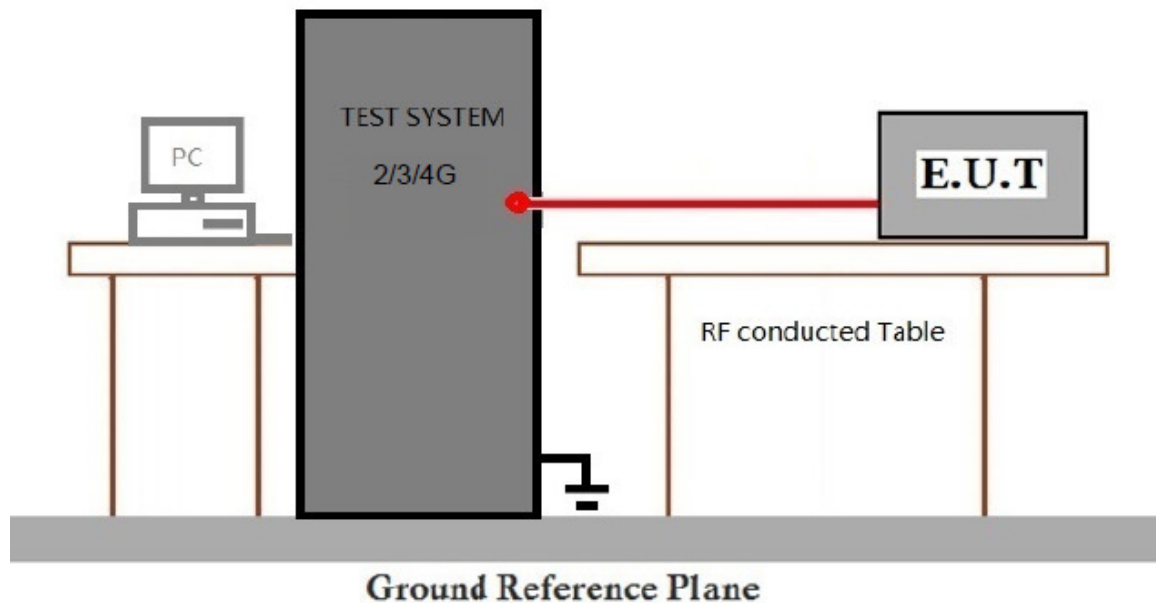
Test Requirement: §2.1049(h), §22.917, §24.238
Test Method: ANSI C63.26, KDB 971168 D01 v03
Limit: OBW: No limit
EBW: No limit

6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 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



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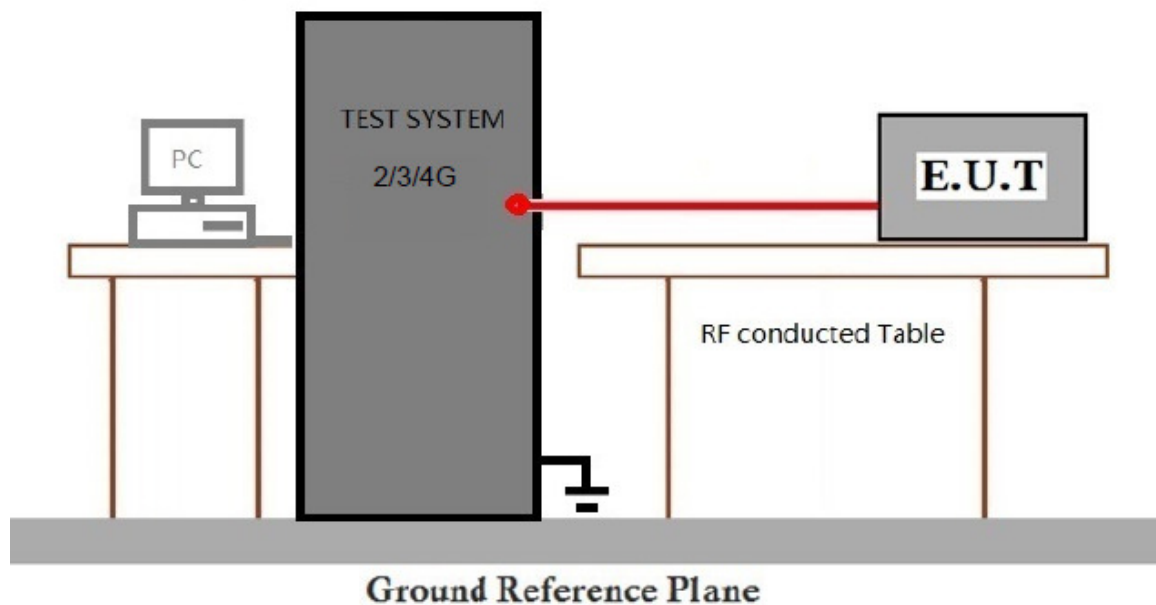
6.4 Band Edge Compliance

Test Requirement: §2.1051, §22.917, §24.238
 Test Method: ANSI C63.26, KDB 971168 D01 v03
 Limit: $\leq -13\text{dBm}/1\% \cdot \text{EBW}$, in 1 MHz bands immediately outside and adjacent to the frequency block(LTE Band2,4,12)
 For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. 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)
 $\leq 50 + 10 \cdot \log_{10}(P)$ at bandedge and for all out-of-band emissions within 37.5KHz of block edge(LTE Band26)

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



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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: $\leq -13\text{dBm}$ (LTE Band2,4,5,12)

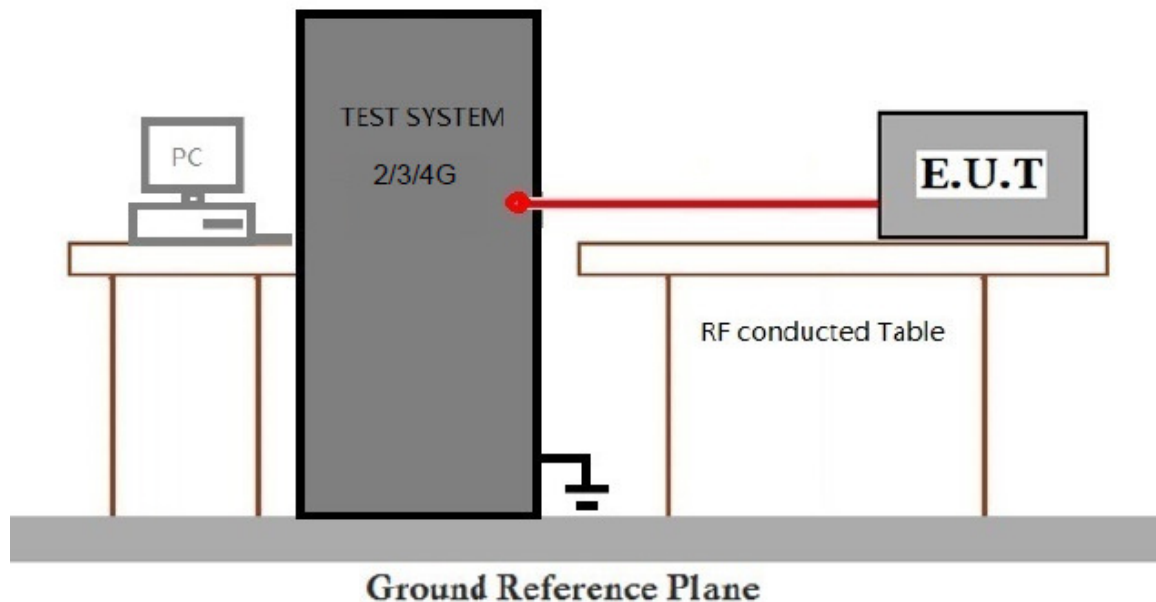
6.5.1 E.U.T. Operation

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 F- Spurious emissions at antenna terminals

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: $\leq -13\text{dBm}$ (LTE Band2,4,12)

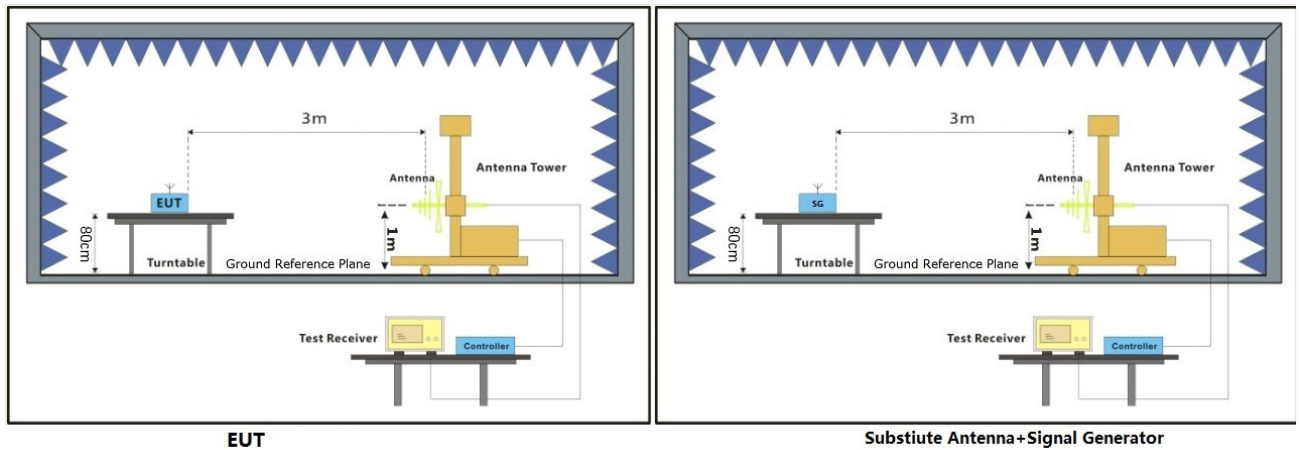
6.6.1 E.U.T. Operation

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

Substitute Antenna+Signal Generator



6.6.3 Measurement Procedure and Data

Test Procedure:

- (1) On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
- (2) The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
- (3) The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
- (4) The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
- (5) The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
- (6) The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- (7) The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
- (8) The maximum signal level detected by the measuring receiver shall be noted.
- (9) The measurement shall be repeated with the test antenna set to horizontal polarization.
- (10) Replace the antenna with a proper Antenna (substitution antenna).
- (11) The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
- (12) The substitution antenna shall be connected to a calibrated signal generator.
- (13) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- (14) The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
- (15) The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
- (16) The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
- (17) The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.



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LTE Band XII-1.4M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1398.14	-39.32	0.43	1.9	-37.85	-13	-24.85	Horizontal	Pass
2097.21	-34.97	0.53	5.8	-29.7	-13	-16.7	Horizontal	Pass
2796.28	-40.08	0.59	5.3	-35.37	-13	-22.37	Horizontal	Pass
3495.35	-51.72	0.65	6.2	-46.17	-13	-33.17	Horizontal	Pass
1398.14	-48.43	0.43	1.9	-46.96	-13	-33.96	Vertical	Pass
2097.21	-44.01	0.53	5.8	-38.74	-13	-25.74	Vertical	Pass
2796.28	-51.52	0.59	5.3	-46.81	-13	-33.81	Vertical	Pass
3495.35	-50.07	0.65	6.2	-44.52	-13	-31.52	Vertical	Pass

LTE Band XII-1.4M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1413.74	-34.19	0.43	1.9	-32.72	-13	-19.72	Horizontal	Pass
2120.61	-38.46	0.53	5.8	-33.19	-13	-20.19	Horizontal	Pass
2827.48	-42.51	0.59	5.3	-37.8	-13	-24.8	Horizontal	Pass
3534.35	-47.12	0.71	7.6	-40.23	-13	-27.23	Horizontal	Pass
1413.74	-46.06	0.43	1.9	-44.59	-13	-31.59	Vertical	Pass
2120.61	-42.57	0.53	5.8	-37.3	-13	-24.3	Vertical	Pass
2827.48	-47.74	0.59	5.3	-43.03	-13	-30.03	Vertical	Pass
3534.35	-51.46	0.71	7.6	-44.57	-13	-31.57	Vertical	Pass

LTE Band XII-1.4M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1429.34	-35.62	0.43	1.9	-34.15	-13	-21.15	Horizontal	Pass
2144.01	-39.4	0.53	5.8	-34.13	-13	-21.13	Horizontal	Pass
2858.68	-40.06	0.59	5.3	-35.35	-13	-22.35	Horizontal	Pass
3573.35	-42.63	0.71	7.6	-35.74	-13	-22.74	Horizontal	Pass
1429.34	-52.02	0.43	1.9	-50.55	-13	-37.55	Vertical	Pass
2144.01	-42.04	0.53	5.8	-36.77	-13	-23.77	Vertical	Pass
2858.68	-46.63	0.59	5.3	-41.92	-13	-28.92	Vertical	Pass
3573.35	-44.07	0.71	7.6	-37.18	-13	-24.18	Vertical	Pass



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LTE Band XII-3M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1398.3	-39.2	0.43	1.9	-37.73	-13	-24.73	Horizontal	Pass
2097.45	-37.86	0.53	5.8	-32.59	-13	-19.59	Horizontal	Pass
2796.6	-43.03	0.59	5.3	-38.32	-13	-25.32	Horizontal	Pass
3495.75	-48.96	0.65	6.2	-43.41	-13	-30.41	Horizontal	Pass
1398.3	-50.53	0.43	1.9	-49.06	-13	-36.06	Vertical	Pass
2097.45	-45.46	0.53	5.8	-40.19	-13	-27.19	Vertical	Pass
2796.6	-51.92	0.59	5.3	-47.21	-13	-34.21	Vertical	Pass
3495.75	-50.63	0.65	6.2	-45.08	-13	-32.08	Vertical	Pass

LTE Band XII-3M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1412.3	-36.08	0.43	1.9	-34.61	-13	-21.61	Horizontal	Pass
2118.45	-34.59	0.53	5.8	-29.32	-13	-16.32	Horizontal	Pass
2824.6	-37.92	0.59	5.3	-33.21	-13	-20.21	Horizontal	Pass
3530.75	-41.09	0.71	7.6	-34.2	-13	-21.2	Horizontal	Pass
1412.3	-43.08	0.43	1.9	-41.61	-13	-28.61	Vertical	Pass
2118.45	-41.2	0.53	5.8	-35.93	-13	-22.93	Vertical	Pass
2824.6	-43.28	0.59	5.3	-38.57	-13	-25.57	Vertical	Pass
3530.75	-45.66	0.71	7.6	-38.77	-13	-25.77	Vertical	Pass

LTE Band XII-3M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1426.3	-33.51	0.43	1.9	-32.04	-13	-19.04	Horizontal	Pass
2139.45	-39.7	0.53	5.8	-34.43	-13	-21.43	Horizontal	Pass
2852.6	-42.87	0.59	5.3	-38.16	-13	-25.16	Horizontal	Pass
3565.75	-43.45	0.71	7.6	-36.56	-13	-23.56	Horizontal	Pass
1426.3	-50.51	0.43	1.9	-49.04	-13	-36.04	Vertical	Pass
2139.45	-41.51	0.53	5.8	-36.24	-13	-23.24	Vertical	Pass
2852.6	-52.14	0.59	5.3	-47.43	-13	-34.43	Vertical	Pass
3565.75	-49.98	0.71	7.6	-43.09	-13	-30.09	Vertical	Pass



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LTE Band XII-5M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1398.5	-38.14	0.43	1.9	-36.67	-13	-23.67	Horizontal	Pass
2097.75	-39.43	0.53	5.8	-34.16	-13	-21.16	Horizontal	Pass
2797	-44.52	0.59	5.3	-39.81	-13	-26.81	Horizontal	Pass
3496.25	-46.38	0.65	6.2	-40.83	-13	-27.83	Horizontal	Pass
1398.5	-51.38	0.43	1.9	-49.91	-13	-36.91	Vertical	Pass
2097.75	-46.15	0.53	5.8	-40.88	-13	-27.88	Vertical	Pass
2797	-50.29	0.59	5.3	-45.58	-13	-32.58	Vertical	Pass
3496.25	-46.34	0.65	6.2	-40.79	-13	-27.79	Vertical	Pass

LTE Band XII-5M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1410.5	-36.25	0.43	1.9	-34.78	-13	-21.78	Horizontal	Pass
2115.75	-35.16	0.53	5.8	-29.89	-13	-16.89	Horizontal	Pass
2821	-40.7	0.59	5.3	-35.99	-13	-22.99	Horizontal	Pass
3526.25	-41.05	0.71	7.6	-34.16	-13	-21.16	Horizontal	Pass
1410.5	-43.18	0.43	1.9	-41.71	-13	-28.71	Vertical	Pass
2115.75	-41.91	0.53	5.8	-36.64	-13	-23.64	Vertical	Pass
2821	-45.38	0.59	5.3	-40.67	-13	-27.67	Vertical	Pass
3526.25	-42.98	0.71	7.6	-36.09	-13	-23.09	Vertical	Pass

LTE Band XII-5M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1422.5	-32.88	0.43	1.9	-31.41	-13	-18.41	Horizontal	Pass
2133.75	-38.99	0.53	5.8	-33.72	-13	-20.72	Horizontal	Pass
2845	-44.43	0.59	5.3	-39.72	-13	-26.72	Horizontal	Pass
3556.25	-47.09	0.71	7.6	-40.2	-13	-27.2	Horizontal	Pass
1422.5	-47.97	0.43	1.9	-46.5	-13	-33.5	Vertical	Pass
2133.75	-43.75	0.53	5.8	-38.48	-13	-25.48	Vertical	Pass
2845	-49.99	0.59	5.3	-45.28	-13	-32.28	Vertical	Pass
3556.25	-49.4	0.71	7.6	-42.51	-13	-29.51	Vertical	Pass



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LTE Band XII-10M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1399	-36.95	0.43	1.9	-35.48	-13	-22.48	Horizontal	Pass
2098.5	-38.67	0.53	5.8	-33.4	-13	-20.4	Horizontal	Pass
2798	-44	0.59	5.3	-39.29	-13	-26.29	Horizontal	Pass
3497.5	-50.12	0.65	6.2	-44.57	-13	-31.57	Horizontal	Pass
1399	-42.91	0.43	1.9	-41.44	-13	-28.44	Vertical	Pass
2098.5	-44.94	0.53	5.8	-39.67	-13	-26.67	Vertical	Pass
2798	-50.48	0.59	5.3	-45.77	-13	-32.77	Vertical	Pass
3497.5	-49.87	0.65	6.2	-44.32	-13	-31.32	Vertical	Pass

LTE Band XII-10M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1406	-37.25	0.43	1.9	-35.78	-13	-22.78	Horizontal	Pass
2109	-37.04	0.53	5.8	-31.77	-13	-18.77	Horizontal	Pass
2812	-40.22	0.59	5.3	-35.51	-13	-22.51	Horizontal	Pass
3515	-40.27	0.71	7.6	-33.38	-13	-20.38	Horizontal	Pass
1406	-46.54	0.43	1.9	-45.07	-13	-32.07	Vertical	Pass
2109	-45.02	0.53	5.8	-39.75	-13	-26.75	Vertical	Pass
2812	-49.6	0.59	5.3	-44.89	-13	-31.89	Vertical	Pass
3515	-43.45	0.71	7.6	-36.56	-13	-23.56	Vertical	Pass

LTE Band XII-10M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
1413	-34.56	0.43	1.9	-33.09	-13	-20.09	Horizontal	Pass
2119.5	-37.21	0.53	5.8	-31.94	-13	-18.94	Horizontal	Pass
2826	-42.33	0.59	5.3	-37.62	-13	-24.62	Horizontal	Pass
3532.5	-45.8	0.71	7.6	-38.91	-13	-25.91	Horizontal	Pass
1413	-41.24	0.43	1.9	-39.77	-13	-26.77	Vertical	Pass
2119.5	-40.58	0.53	5.8	-35.31	-13	-22.31	Vertical	Pass
2826	-46.99	0.59	5.3	-42.28	-13	-29.28	Vertical	Pass



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3532.5	-45.03	0.71	7.6	-38.14	-13	-25.14	Vertical	Pass
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LTE Band IV- 1.4M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3420.14	-50.11	0.65	6.2	-44.56	-13	-31.56	Horizontal	Pass
5130.21	-53.99	0.82	9.6	-45.21	-13	-32.21	Horizontal	Pass
6840.28	-55.59	0.95	11.8	-44.74	-13	-31.74	Horizontal	Pass
3420.14	-53.93	0.65	6.2	-48.38	-13	-35.38	Vertical	Pass
5130.21	-56.58	0.82	9.6	-47.8	-13	-34.8	Vertical	Pass
6840.28	-55.3	0.95	11.8	-44.45	-13	-31.45	Vertical	Pass

LTE Band IV-1.4M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3463.74	-49.45	0.65	6.2	-43.9	-13	-30.9	Horizontal	Pass
5195.61	-49.27	0.82	9.6	-40.49	-13	-27.49	Horizontal	Pass
6927.48	-56.02	0.95	11.8	-45.17	-13	-32.17	Horizontal	Pass
3463.74	-51.73	0.65	6.2	-46.18	-13	-33.18	Vertical	Pass
5195.61	-54.07	0.82	9.6	-45.29	-13	-32.29	Vertical	Pass
6927.48	-54.89	0.95	11.8	-44.04	-13	-31.04	Vertical	Pass

LTE Band IV-1.4M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3507.34	-51.25	0.71	7.6	-44.36	-13	-31.36	Horizontal	Pass
5261.01	-47.62	0.82	9.6	-38.84	-13	-25.84	Horizontal	Pass
7014.68	-56.11	1	12.9	-44.21	-13	-31.21	Horizontal	Pass
3507.34	-53.17	0.71	7.6	-46.28	-13	-33.28	Vertical	Pass
5261.01	-53.61	0.82	9.6	-44.83	-13	-31.83	Vertical	Pass
7014.68	-56.82	1	12.9	-44.92	-13	-31.92	Vertical	Pass



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LTE Band IV-3M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3420.3	-50.13	0.65	6.2	-44.58	-13	-31.58	Horizontal	Pass
5130.45	-53.08	0.82	9.6	-44.3	-13	-31.3	Horizontal	Pass
6840.6	-55.3	0.95	11.8	-44.45	-13	-31.45	Horizontal	Pass
3420.3	-54.73	0.65	6.2	-49.18	-13	-36.18	Vertical	Pass
5130.45	-54.77	0.82	9.6	-45.99	-13	-32.99	Vertical	Pass
6840.6	-55.38	0.95	11.8	-44.53	-13	-31.53	Vertical	Pass

LTE Band IV-3M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3462.3	-49.12	0.65	6.2	-43.57	-13	-30.57	Horizontal	Pass
5193.45	-48.3	0.82	9.6	-39.52	-13	-26.52	Horizontal	Pass
6924.6	-54.41	0.95	11.8	-43.56	-13	-30.56	Horizontal	Pass
3462.3	-52.04	0.65	6.2	-46.49	-13	-33.49	Vertical	Pass
5193.45	-55.53	0.82	9.6	-46.75	-13	-33.75	Vertical	Pass
6924.6	-55.28	0.95	11.8	-44.43	-13	-31.43	Vertical	Pass

LTE Band IV-3M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3504.3	-49.77	0.71	7.6	-42.88	-13	-29.88	Horizontal	Pass
5256.45	-48.07	0.82	9.6	-39.29	-13	-26.29	Horizontal	Pass
7008.6	-56.56	1	12.9	-44.66	-13	-31.66	Horizontal	Pass
3504.3	-55.79	0.71	7.6	-48.9	-13	-35.9	Vertical	Pass
5256.45	-51.56	0.82	9.6	-42.78	-13	-29.78	Vertical	Pass



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Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3420.5	-50.51	0.65	6.2	-44.96	-13	-31.96	Horizontal	Pass
5130.75	-52.05	0.82	9.6	-43.27	-13	-30.27	Horizontal	Pass
6841	-55.01	0.95	11.8	-44.16	-13	-31.16	Horizontal	Pass
3420.5	-53.76	0.65	6.2	-48.21	-13	-35.21	Vertical	Pass
5130.75	-54.76	0.82	9.6	-45.98	-13	-32.98	Vertical	Pass
6841	-55.06	0.95	11.8	-44.21	-13	-31.21	Vertical	Pass

LTE Band IV-5M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3460.5	-49.63	0.65	6.2	-44.08	-13	-31.08	Horizontal	Pass
5190.75	-48.18	0.82	9.6	-39.4	-13	-26.4	Horizontal	Pass
6921	-55.12	0.95	11.8	-44.27	-13	-31.27	Horizontal	Pass
3460.5	-53.16	0.65	6.2	-47.61	-13	-34.61	Vertical	Pass
5190.75	-55.61	0.82	9.6	-46.83	-13	-33.83	Vertical	Pass
6921	-55.69	0.95	11.8	-44.84	-13	-31.84	Vertical	Pass

LTE Band IV-5M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3500.5	-50.11	0.71	7.6	-43.22	-13	-30.22	Horizontal	Pass
5250.75	-49.01	0.82	9.6	-40.23	-13	-27.23	Horizontal	Pass
7001	-55.36	1	12.9	-43.46	-13	-30.46	Horizontal	Pass
3500.5	-55.66	0.71	7.6	-48.77	-13	-35.77	Vertical	Pass
5250.75	-55.72	0.82	9.6	-46.94	-13	-33.94	Vertical	Pass
7001	-55.82	1	12.9	-43.92	-13	-30.92	Vertical	Pass



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LTE Band IV-10M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3421	-50.41	0.65	6.2	-44.86	-13	-31.86	Horizontal	Pass
5131.5	-52.98	0.82	9.6	-44.2	-13	-31.2	Horizontal	Pass
6842	-54.17	0.95	11.8	-43.32	-13	-30.32	Horizontal	Pass
3421	-53.83	0.65	6.2	-48.28	-13	-35.28	Vertical	Pass
5131.5	-55.93	0.82	9.6	-47.15	-13	-34.15	Vertical	Pass
6842	-55.43	0.95	11.8	-44.58	-13	-31.58	Vertical	Pass

LTE Band IV-10M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3456	-49.63	0.65	6.2	-44.08	-13	-31.08	Horizontal	Pass
5184	-51.04	0.82	9.6	-42.26	-13	-29.26	Horizontal	Pass
6912	-55.93	0.95	11.8	-45.08	-13	-32.08	Horizontal	Pass
3456	-52.67	0.65	6.2	-47.12	-13	-34.12	Vertical	Pass
5184	-54.85	0.82	9.6	-46.07	-13	-33.07	Vertical	Pass
6912	-55.64	0.95	11.8	-44.79	-13	-31.79	Vertical	Pass

LTE Band IV-10M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3491	-48.7	0.65	6.2	-43.15	-13	-30.15	Horizontal	Pass
5236.5	-48.59	0.82	9.6	-39.81	-13	-26.81	Horizontal	Pass
6982	-54.92	0.95	11.8	-44.07	-13	-31.07	Horizontal	Pass
3491	-52.28	0.65	6.2	-46.73	-13	-33.73	Vertical	Pass
5236.5	-55.34	0.82	9.6	-46.56	-13	-33.56	Vertical	Pass
6982	-54.95	0.95	11.8	-44.1	-13	-31.1	Vertical	Pass



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LTE Band IV-15M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3421.5	-56.7	0.65	6.2	-51.15	-13	-38.15	Horizontal	Pass
5132.25	-55.87	0.82	9.6	-47.09	-13	-34.09	Horizontal	Pass
6843	-55.6	0.95	11.8	-44.75	-13	-31.75	Horizontal	Pass
3421.5	-57.12	0.65	6.2	-51.57	-13	-38.57	Vertical	Pass
5132.25	-56.05	0.82	9.6	-47.27	-13	-34.27	Vertical	Pass
6843	-54.42	0.95	11.8	-43.57	-13	-30.57	Vertical	Pass

LTE Band IV-15M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3451.5	-56	0.65	6.2	-50.45	-13	-37.45	Horizontal	Pass
5177.25	-56.46	0.82	9.6	-47.68	-13	-34.68	Horizontal	Pass
6903	-55.51	0.95	11.8	-44.66	-13	-31.66	Horizontal	Pass
3451.5	-57.39	0.65	6.2	-51.84	-13	-38.84	Vertical	Pass
5177.25	-56.47	0.82	9.6	-47.69	-13	-34.69	Vertical	Pass
6903	-55.1	0.95	11.8	-44.25	-13	-31.25	Vertical	Pass

LTE Band IV-15M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3481.5	-49.14	0.65	6.2	-43.59	-13	-30.59	Horizontal	Pass
5222.25	-48.04	0.82	9.6	-39.26	-13	-26.26	Horizontal	Pass
6963	-54.74	0.95	11.8	-43.89	-13	-30.89	Horizontal	Pass
3481.5	-53.9	0.65	6.2	-48.35	-13	-35.35	Vertical	Pass
5222.25	-53.06	0.82	9.6	-44.28	-13	-31.28	Vertical	Pass
6963	-54.69	0.95	11.8	-43.84	-13	-30.84	Vertical	Pass



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LTE Band IV-20M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3422	-48.53	0.65	6.2	-42.98	-13	-29.98	Horizontal	Pass
5133	-52.08	0.82	9.6	-43.3	-13	-30.3	Horizontal	Pass
6844	-54.54	0.95	11.8	-43.69	-13	-30.69	Horizontal	Pass
3422	-52.08	0.65	6.2	-46.53	-13	-33.53	Vertical	Pass
5133	-55.65	0.82	9.6	-46.87	-13	-33.87	Vertical	Pass
6844	-55.11	0.95	11.8	-44.26	-13	-31.26	Vertical	Pass

LTE Band IV-20M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3447	-50.99	0.65	6.2	-45.44	-13	-32.44	Horizontal	Pass
5170.5	-51.9	0.82	9.6	-43.12	-13	-30.12	Horizontal	Pass
6894	-55.68	0.95	11.8	-44.83	-13	-31.83	Horizontal	Pass
3447	-54.28	0.65	6.2	-48.73	-13	-35.73	Vertical	Pass
5170.5	-55.6	0.82	9.6	-46.82	-13	-33.82	Vertical	Pass
6894	-55.8	0.95	11.8	-44.95	-13	-31.95	Vertical	Pass

LTE Band IV-20M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3472	-47.81	0.65	6.2	-42.26	-13	-29.26	Horizontal	Pass
5208	-47.79	0.82	9.6	-39.01	-13	-26.01	Horizontal	Pass
6944	-55.04	0.95	11.8	-44.19	-13	-31.19	Horizontal	Pass
3472	-50.7	0.65	6.2	-45.15	-13	-32.15	Vertical	Pass
5208	-53.23	0.82	9.6	-44.45	-13	-31.45	Vertical	Pass
6944	-55.06	0.95	11.8	-44.21	-13	-31.21	Vertical	Pass



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LTE Band II-1.4M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3700.14	-40.73	0.71	7.6	-33.84	-13	-20.84	Horizontal	Pass
5550.21	-36.98	0.85	10.3	-27.53	-13	-14.53	Horizontal	Pass
7400.28	-47.05	1	12.9	-35.15	-13	-22.15	Horizontal	Pass
3700.14	-48.92	0.71	7.6	-42.03	-13	-29.03	Vertical	Pass
5550.21	-41.37	0.85	10.3	-31.92	-13	-18.92	Vertical	Pass
7400.28	-48.38	1	12.9	-36.48	-13	-23.48	Vertical	Pass

LTE Band II-1.4M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3758.74	-43.99	0.71	7.6	-37.1	-13	-24.1	Horizontal	Pass
5638.11	-37.71	0.85	10.3	-28.26	-13	-15.26	Horizontal	Pass
7517.48	-57.87	0.99	13.2	-45.66	-13	-32.66	Horizontal	Pass
3758.74	-49.37	0.71	7.6	-42.48	-13	-29.48	Vertical	Pass
5638.11	-39	0.85	10.3	-29.55	-13	-16.55	Vertical	Pass
7517.48	-53.58	0.99	13.2	-41.37	-13	-28.37	Vertical	Pass

LTE Band II-1.4M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3817.34	-47.22	0.71	7.6	-40.33	-13	-27.33	Horizontal	Pass
5726.01	-43.32	0.85	10.3	-33.87	-13	-20.87	Horizontal	Pass
7634.68	-53.76	0.99	13.2	-41.55	-13	-28.55	Horizontal	Pass
3817.34	-55.75	0.71	7.6	-48.86	-13	-35.86	Vertical	Pass
5726.01	-45.17	0.85	10.3	-35.72	-13	-22.72	Vertical	Pass
7634.68	-54.16	0.99	13.2	-41.95	-13	-28.95	Vertical	Pass



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LTE Band II-3M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3700.3	-46.7	0.71	7.6	-39.81	-13	-26.81	Horizontal	Pass
5550.45	-38.59	0.85	10.3	-29.14	-13	-16.14	Horizontal	Pass
7400.6	-46.82	1	12.9	-34.92	-13	-21.92	Horizontal	Pass
3700.3	-40.21	0.71	7.6	-33.32	-13	-20.32	Vertical	Pass
5550.45	-37.32	0.85	10.3	-27.87	-13	-14.87	Vertical	Pass
7400.6	-46.85	1	12.9	-34.95	-13	-21.95	Vertical	Pass

LTE Band II-3M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3757.3	-44.06	0.71	7.6	-37.17	-13	-24.17	Horizontal	Pass
5635.95	-38.55	0.85	10.3	-29.1	-13	-16.1	Horizontal	Pass
7514.6	-55.99	0.99	13.2	-43.78	-13	-30.78	Horizontal	Pass
3757.3	-52.49	0.71	7.6	-45.6	-13	-32.6	Horizontal	Pass
5635.95	-39.66	0.85	10.3	-30.21	-13	-17.21	Vertical	Pass
7514.6	-52.17	0.99	13.2	-39.96	-13	-26.96	Vertical	Pass

LTE Band II-3M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3814.3	-55.62	0.71	7.6	-48.73	-13	-35.73	Horizontal	Pass
5721.45	-44.82	0.85	10.3	-35.37	-13	-22.37	Horizontal	Pass
7628.6	-52.85	0.99	13.2	-40.64	-13	-27.64	Horizontal	Pass
3814.3	-47.73	0.71	7.6	-40.84	-13	-27.84	Vertical	Pass
5721.45	-42.83	0.85	10.3	-33.38	-13	-20.38	Vertical	Pass
7628.6	-55.64	0.99	13.2	-43.43	-13	-30.43	Vertical	Pass



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LTE Band II-5M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3700.5	-39.02	0.71	7.6	-32.13	-13	-19.13	Horizontal	Pass
5550.75	-36.04	0.85	10.3	-26.59	-13	-13.59	Horizontal	Pass
7401	-46.93	1	12.9	-35.03	-13	-22.03	Horizontal	Pass
3700.5	-47.3	0.71	7.6	-40.41	-13	-27.41	Vertical	Pass
5550.75	-39.52	0.85	10.3	-30.07	-13	-17.07	Vertical	Pass
7401	-46.36	1	12.9	-34.46	-13	-21.46	Vertical	Pass

LTE Band II-5M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3755.5	-44.42	0.71	7.6	-37.53	-13	-24.53	Horizontal	Pass
5633.25	-38.86	0.85	10.3	-29.41	-13	-16.41	Horizontal	Pass
7511	-56.51	0.99	13.2	-44.3	-13	-31.3	Horizontal	Pass
3755.5	-51.91	0.71	7.6	-45.02	-13	-32.02	Vertical	Pass
5633.25	-40.24	0.85	10.3	-30.79	-13	-17.79	Vertical	Pass
7511	-53.39	0.99	13.2	-41.18	-13	-28.18	Vertical	Pass

LTE Band II-5M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3810.5	-46.87	0.71	7.6	-39.98	-13	-26.98	Horizontal	Pass
5715.75	-42.77	0.85	10.3	-33.32	-13	-20.32	Horizontal	Pass
7621	-53.93	0.99	13.2	-41.72	-13	-28.72	Horizontal	Pass
3810.5	-53.92	0.71	7.6	-47.03	-13	-34.03	Vertical	Pass
5715.75	-45.36	0.85	10.3	-35.91	-13	-22.91	Vertical	Pass
7621	-54.47	0.99	13.2	-42.26	-13	-29.26	Vertical	Pass



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LTE Band II-10M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3701	-43.62	0.71	7.6	-36.73	-13	-23.73	Horizontal	Pass
5551.5	-46.51	0.85	10.3	-37.06	-13	-24.06	Horizontal	Pass
7402	-53.21	1	12.9	-41.31	-13	-28.31	Horizontal	Pass
3701	-46.91	0.71	7.6	-40.02	-13	-27.02	Vertical	Pass
5551.5	-38.63	0.85	10.3	-29.18	-13	-16.18	Vertical	Pass
7402	-46.95	1	12.9	-35.05	-13	-22.05	Vertical	Pass

LTE Band II-10M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3742.18	-43.68	0.71	7.6	-36.79	-13	-23.79	Horizontal	Pass
5631.875	-38.28	0.85	10.3	-28.83	-13	-15.83	Horizontal	Pass
7484.36	-56.91	1	12.9	-45.01	-13	-32.01	Horizontal	Pass
3742.18	-49.25	0.71	7.6	-42.36	-13	-29.36	Vertical	Pass
5631.875	-42.34	0.85	10.3	-32.89	-13	-19.89	Vertical	Pass
7484.36	-55.67	1	12.9	-43.77	-13	-30.77	Vertical	Pass

LTE Band II-10M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3801	-44.23	0.71	7.6	-37.34	-13	-24.34	Horizontal	Pass
5701.5	-42.76	0.85	10.3	-33.31	-13	-20.31	Horizontal	Pass
7602	-56.33	0.99	13.2	-44.12	-13	-31.12	Horizontal	Pass
3801	-45.23	0.71	7.6	-38.34	-13	-25.34	Vertical	Pass
5701.5	-44.11	0.85	10.3	-34.66	-13	-21.66	Vertical	Pass
7602	-55.44	0.99	13.2	-43.23	-13	-30.23	Vertical	Pass



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LTE Band II-15M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3701.5	-40.67	0.71	7.6	-33.78	-13	-20.78	Horizontal	Pass
5552.25	-37.14	0.85	10.3	-27.69	-13	-14.69	Horizontal	Pass
7403	-46.76	1	12.9	-34.86	-13	-21.86	Horizontal	Pass
3701.5	-46.86	0.71	7.6	-39.97	-13	-26.97	Vertical	Pass
5552.25	-40.04	0.85	10.3	-30.59	-13	-17.59	Vertical	Pass
7403	-46.67	1	12.9	-34.77	-13	-21.77	Vertical	Pass

LTE Band II-15M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3746.5	-50.97	0.71	7.6	-44.08	-13	-31.08	Horizontal	Pass
5619.75	-42.04	0.85	10.3	-32.59	-13	-19.59	Horizontal	Pass
7493	-48.82	1	12.9	-36.92	-13	-23.92	Horizontal	Pass
3746.5	-45.58	0.71	7.6	-38.69	-13	-25.69	Vertical	Pass
5619.75	-38.82	0.85	10.3	-29.37	-13	-16.37	Vertical	Pass
7493	-55.56	1	12.9	-43.66	-13	-30.66	Vertical	Pass

LTE Band II-15M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3791.5	-53.51	0.71	7.6	-46.62	-13	-33.62	Horizontal	Pass
5687.25	-45.01	0.85	10.3	-35.56	-13	-22.56	Horizontal	Pass
7583	-54.84	0.99	13.2	-42.63	-13	-29.63	Horizontal	Pass
3791.5	-49.18	0.71	7.6	-42.29	-13	-29.29	Vertical	Pass
5687.25	-43.77	0.85	10.3	-34.32	-13	-21.32	Vertical	Pass
7583	-57.55	0.99	13.2	-45.34	-13	-32.34	Vertical	Pass



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LTE Band II-20M Low channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3702	-50.62	0.71	7.6	-43.73	-13	-30.73	Horizontal	Pass
5553	-45.56	0.85	10.3	-36.11	-13	-23.11	Horizontal	Pass
7404	-55.82	1	12.9	-43.92	-13	-30.92	Horizontal	Pass
3702	-56.37	0.71	7.6	-49.48	-13	-36.48	Vertical	Pass
5553	-54.38	0.85	10.3	-44.93	-13	-31.93	Vertical	Pass
7404	-57.22	1	12.9	-45.32	-13	-32.32	Vertical	Pass

LTE Band II-20M Middle channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3768.513	-53.63	0.71	7.6	-46.74	-13	-33.74	Horizontal	Pass
5648.176	-48.85	0.85	10.3	-39.4	-13	-26.4	Horizontal	Pass
7484	-56.44	1	12.9	-44.54	-13	-31.54	Horizontal	Pass
3742	-57.14	0.71	7.6	-50.25	-13	-37.25	Vertical	Pass
5631.875	-49.75	0.85	10.3	-40.3	-13	-27.3	Vertical	Pass
7484	-56.93	1	12.9	-45.03	-13	-32.03	Vertical	Pass

LTE Band II-20M High channel, Modulation: QPSK, Full RB								
Frequency (MHz)	S.G. Power (dBm)	Cable loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization (H/V)	Result
3782	-55.36	0.71	7.6	-48.47	-13	-35.47	Horizontal	Pass
5673	-52.11	0.85	10.3	-42.66	-13	-29.66	Horizontal	Pass
7564	-56.85	0.99	13.2	-44.64	-13	-31.64	Horizontal	Pass
3782	-57.53	0.71	7.6	-50.64	-13	-37.64	Vertical	Pass
5673	-53.12	0.85	10.3	-43.67	-13	-30.67	Vertical	Pass
7564	-56.72	0.99	13.2	-44.51	-13	-31.51	Vertical	Pass

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



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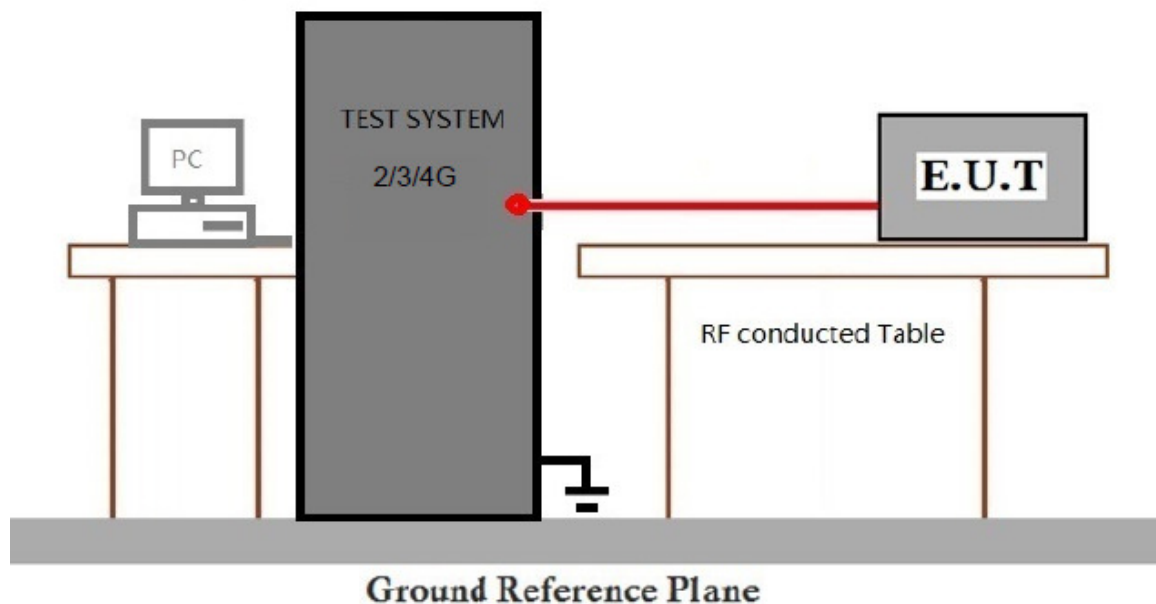
6.7 Frequency stability

Test Requirement: §2.1055, §22.355, §24.235
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: 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



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LTE FDD Band 2 QPSK/20MHz Assigned Frequency:1880MHz					
Voltage(V)	Temperature (°C)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	14	0.007	±2.5	Pass
	-20	15	0.008		
	-10	17	0.009		
	0	15	0.008		
	10	16	0.009		
	20	13	0.007		
	30	18	0.010		
	40	12	0.006		
	50	11	0.006		
3.2 V	25	15	0.007		
4.2 V	25	18	0.010		

LTE FDD Band 4 QPSK/20MHz Assigned Frequency: 1732.5MHz					
Voltage(V)	Temperature (°C)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	11	0.006	±2.5	Pass
	-20	12	0.007		
	-10	14	0.008		
	0	16	0.009		
	10	13	0.008		
	20	15	0.009		
	30	16	0.009		
	40	12	0.007		
	50	13	0.008		
3.2 V	25	14	0.008		
4.2 V	25	17	0.010		



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LTE FDD Band 12 QPSK/20MHz Assigned Frequency:707.5MHz					
Voltage(V)	Temperature (°C)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	11	0.015	±2.5	Pass
	-20	12	0.017		
	-10	15	0.021		
	0	12	0.017		
	10	15	0.021		
	20	14	0.020		
	30	13	0.018		
	40	16	0.023		
	50	18	0.025		
3.2 V	25	13	0.018		
4.2 V	25	15	0.021		



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LTE FDD Band 2 16QAM/20MHz Assigned Frequency:1880MHz					
Voltage(V)	Temperature (°C)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	15	0.008	±2.5	Pass
	-20	12	0.006		
	-10	16	0.009		
	0	12	0.006		
	10	11	0.006		
	20	17	0.009		
	30	13	0.007		
	40	14	0.007		
	50	16	0.009		
3.2 V	25	14	0.007		
4.2 V	25	19	0.010		

LTE FDD Band 4 16QAM/20MHz Assigned Frequency:1732.5MHz					
Voltage(V)	Temperature (°C)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	14	0.008	±2.5	Pass
	-20	12	0.007		
	-10	11	0.006		
	0	15	0.009		
	10	17	0.010		
	20	12	0.007		
	30	13	0.008		
	40	16	0.009		
	50	18	0.010		
3.2 V	25	13	0.0078		
4.2 V	25	12	0.007		



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LTE FDD Band 12 16QAM/20MHz Assigned Frequency:707.5MHz					
Voltage(V)	Temperature (°C)	Frequency Deviation(Hz)	Frequency Deviation(ppm)	Limit (ppm)	Result
3.7V	-30	13	0.018	±2.5	Pass
	-20	11	0.015		
	-10	14	0.020		
	0	12	0.017		
	10	15	0.021		
	20	16	0.023		
	30	12	0.017		
	40	14	0.020		
	50	13	0.018		
3.2 V	25	17	0.024		
4.2 V	25	16	0.023		

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



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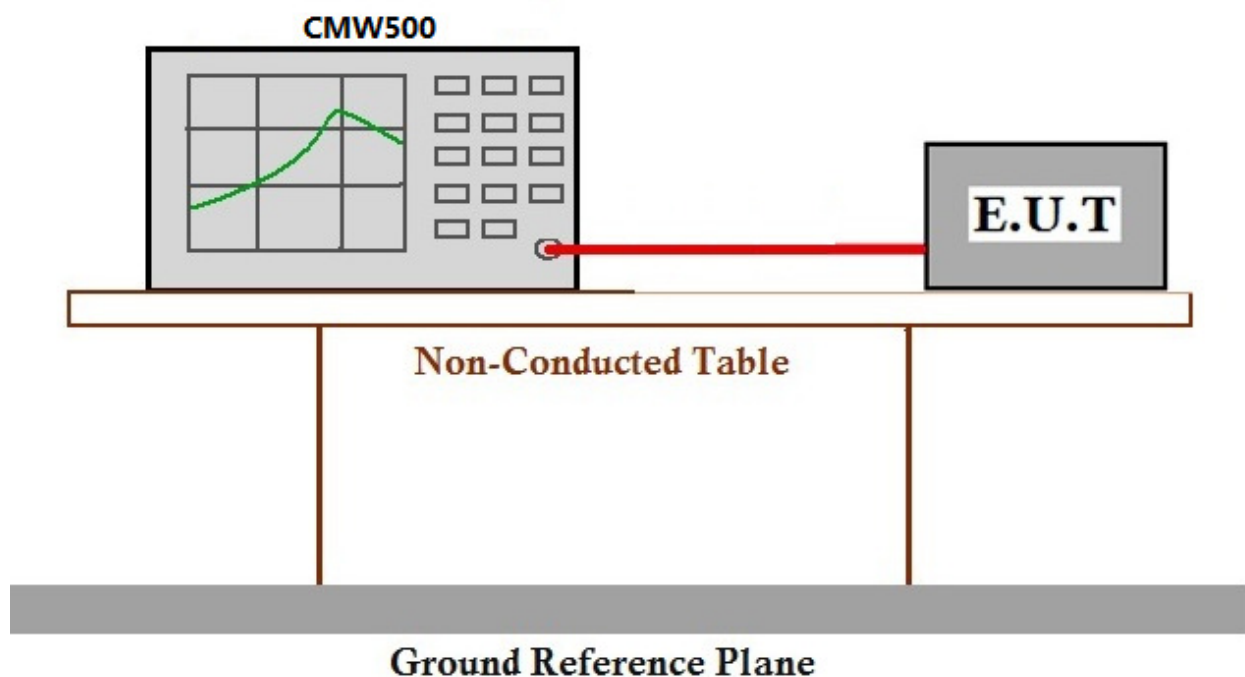
6.8 Modulation Characteristics

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: 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



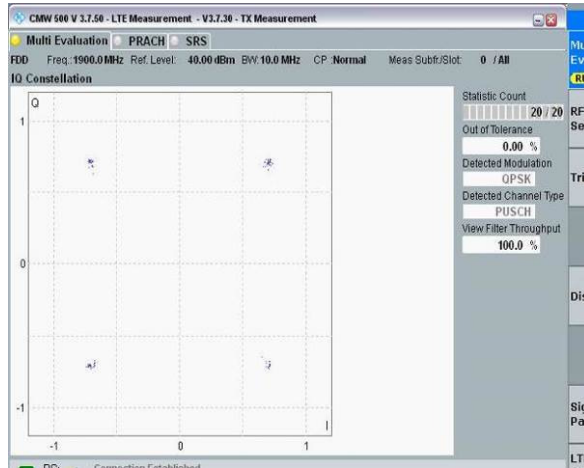
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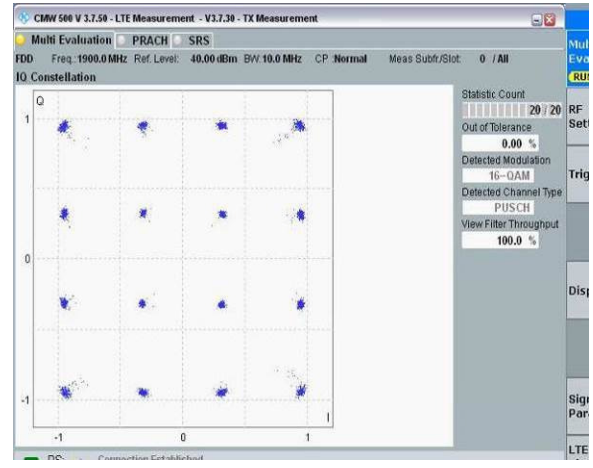
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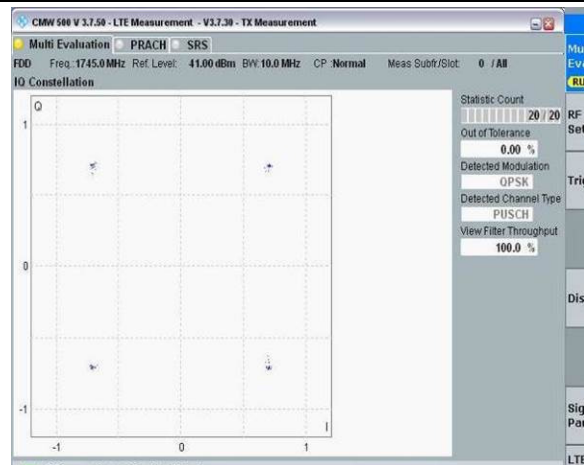
Test Plot



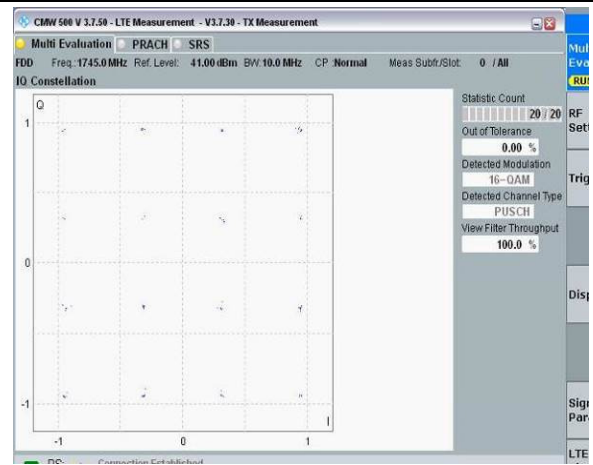
LTE FDD Band 2 QPSK



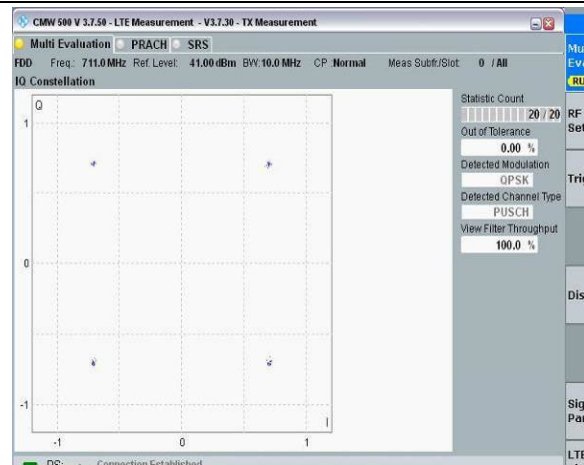
LTE FDD Band 2 16QAM



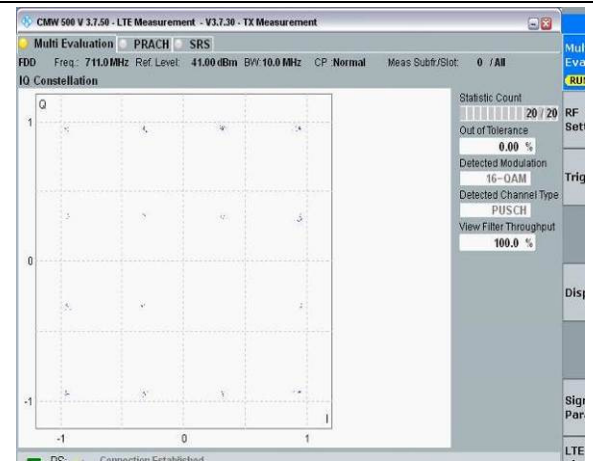
LTE FDD Band 4 QPSK



LTE FDD Band 4 16QAM



LTE FDD Band 12 QPSK



LTE FDD Band 12 16QAM



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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 -



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