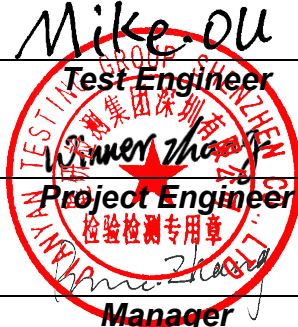




FCC RF Test Report

Applicant: Baicells Technologies Co., Ltd.
Address of Applicant: 9-10F, 1stBldg., No.81BeiqingRoad, Haidian District, Beijing, China
Equipment Under Test (EUT)
Product Name: LTE Turbo UE
Model No.: EG8015Q-M11
Trade mark: Baicells
FCC ID: 2AG32EG8015QM11
Applicable standards: FCC CFR Title 47 Part 2, 96
Date of sample receipt: 05 Apr., 2022
Date of Test: 06 Apr., to 28 Jun., 2022
Date of report issued: 28 Jul., 2022
Test Result: PASS

Tested by: Mike OU **Date:** 28 Jul., 2022
Reviewed by: Wenwen Zhang **Date:** 28 Jul., 2022
Approved by: Wenwen Zhang **Date:** 28 Jul., 2022
Test Engineer
Project Engineer
Manager



This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

2. Version

Version No.	Date	Description
00	29 Jun., 2022	Original
01	28 Jul., 2022	Update Page 4.

3. Contents

	Page
1. Cover Page	1
2. Version	2
3. Contents	3
4. General Information	4
4.1 Client Information	4
4.2 General Description of E.U.T.	4
4.3 Test Mode and Environment	5
4.4 Description of Test Auxiliary Equipment	5
4.5 Measurement Uncertainty	5
4.6 Additions to, Deviations, or Exclusions from the Method	5
4.7 Laboratory Facility	5
4.8 Laboratory Location.....	5
4.9 Test Instruments list	6
5. Measurement Setup and Procedure	7
5.1 Test Channel	7
5.2 Test Setup	7
5.3 Test Procedure	8
6. Test Results	9
6.1 Summary	9
6.2 Effective Isotropic Radiated Power (EIRP)	11
6.3 Power Spectral Density (PSD)	13
6.4 Peak-to-average power ratio (PAPR).....	14
6.5 Occupied Bandwidth	15
6.6 Field Strength of Spurious Radiation	16
6.7 Frequency stability	19

4. General Information

4.1 Client Information

Applicant:	Baicells Technologies Co., Ltd.
Address:	9-10F, 1stBldg., No.81BeiqingRoad, Haidian District, Beijing, China
Manufacturer	Baicells Technologies Co., Ltd.
Address:	9-10F, 1stBldg., No.81BeiqingRoad, Haidian District, Beijing, China

4.2 General Description of E.U.T.

Product Name:	LTE Turbo UE		
Model No.:	EG8015Q-M11		
HVIN:	ver.A		
FVIN:	BaiCE_LT_1.0.16		
Operation Frequency range:	LTE band 48:	3550MHz~3700MHz	
Modulation type:	<input checked="" type="checkbox"/> QPSK	<input checked="" type="checkbox"/> 16QAM	<input checked="" type="checkbox"/> 64QAM
Antenna type:	Internal antenna		
Antenna gain:	LTE band 48: 13.0 dBi (declare by Applicant)		
Antenna Transmit Mode:	2x4 MIMO (2TX, 4RX)		
Category device:	Category B device		
AC adapter:	Model: G0720-240-100 Input: 100-240V~50/60Hz, 0.75A MAX Output: 24.0V, 1.0A, 24.0W		
Test Sample Condition:	The test samples were provided in good working order with no visible defects.		

4.3 Test Mode and Environment

Test Mode:	
QPSK mode:	Keep the EUT in QPSK modulation mode to communication
16QAM mode:	Keep the EUT in 64QAM modulation mode to communication
<i>Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes. Just the worst case position (H mode) shown in report.</i>	
Operating Environment:	
Temperature:	Normal: 15°C ~ 35°C, Extreme: -30°C ~ +50°C
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 120 Vac, Extreme: Low 102 Vac, High 138 Vac

4.4 Description of Test Auxiliary Equipment

The EUT has been tested as an independent unit.

4.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Radiated Emission (30MHz ~ 1GHz) (3m SAC)	±4.45 dB
Radiated Emission (1GHz ~ 18GHz) (3m SAC)	±5.34 dB
Radiated Emission (18GHz ~ 40GHz) (3m SAC)	±5.34 dB

Note: All the measurement uncertainty value were shown with a coverage k=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

4.6 Additions to, Deviations, or Exclusions from the Method

No

4.7 Laboratory Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> ● FCC - Designation No.: CN1211 JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551. ● ISED – CAB identifier.: CN0021 The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1. ● CNAS - Registration No.: CNAS L15527 JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527. ● A2LA - Registration No.: 4346.01 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf
--

4.8 Laboratory Location

<p>JianYan Testing Group Shenzhen Co., Ltd. Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Tel: +86-755-23118282, Fax: +86-755-23116366 Email: info-JYTee@lets.com, Website: http://jyt.lets.com</p>

4.9 Test Instruments list

Radiated Emission(3m SAC):					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	9m*6m*6m	WXJ001-1	04-14-2021	04-13-2024
Loop Antenna	Schwarzbeck	FMZB 1519 B	WXJ002-4	03-07-2022	03-06-2023
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ002	03-08-2022	03-07-2023
Biconical Antenna	Schwarzbeck	VUBA9117	WXJ002-1	07-02-2021	07-01-2024
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-2	03-08-2022	03-07-2023
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-3	04-07-2022	04-06-2023
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-5	04-07-2022	04-06-2023
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-6	04-07-2022	04-06-2023
Pre-amplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9743B	WXJ001-2	01-20-2022	01-19-2023
Pre-amplifier (1GHz ~ 18GHz)	SKET	LNPA_0118G-50	WXJ001-3	01-20-2022	01-19-2023
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXJ002-7	03-30-2022	03-29-2023
EMI Test Receiver	Rohde & Schwarz	ESRP7	WXJ003-1	03-05-2022	03-04-2023
Spectrum Analyzer	Rohde & Schwarz	FSP 30	WXJ004	01-20-2022	01-19-2023
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ004-2	10-27-2021	10-26-2022
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-8M	WXG001-4	01-20-2022	01-19-2023
Coaxial Cable (1GHz ~ 18GHz)	JYTSZ	JYT3M-18G-NN-8M	WXG001-5	01-20-2022	01-19-2023
Coaxial Cable (18GHz ~ 40GHz)	JYTSZ	JYT3M-40G-SS-8M	WXG001-7	01-20-2022	01-19-2023
Band Reject Filter Group	Tonscend	JS0806-F	WXJ089	N/A	
Test Software	Tonscend	TS+	Version: 3.0.0.1		

Conducted Method:					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Keysight	N9020B	WXJ081-1	07-02-2021	07-01-2022
Simulated Station	Rohde & Schwarz	CMW500	WXJ081	07-02-2021	07-01-2022
DC Power Supply	Keysight	E3642A	WXJ025-2	10-27-2021	10-26-2022
Temperature Humidity Chamber	ZHONG ZHI	CZ-A-80D	WXJ032-3	03-19-2021	03-18-2023
RF Control Unit	Tonscend	JS0806-1	WXG010	N/A	
Band Reject Filter Group	Tonscend	JS0806-F	WXG010-1	N/A	
Test Software	Tonscend	TS+	Version: 2.6.9.0526		

5. Measurement Setup and Procedure

5.1 Test Channel

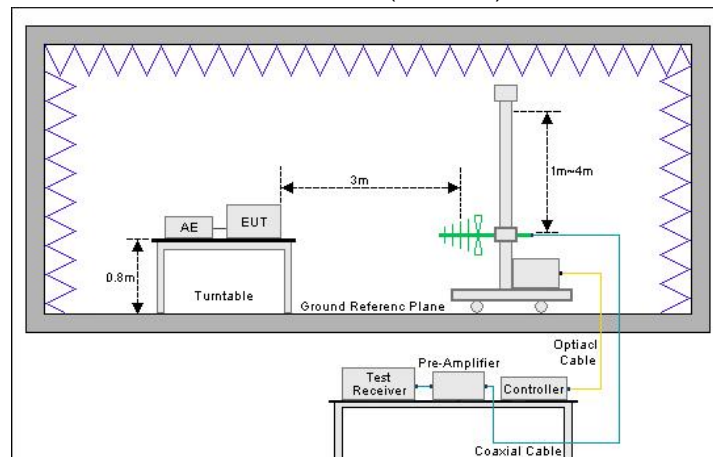
According to ANSI C63.26-2015 chapter 5.1.2.1 Table 2 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:

LTE band 48					
Channels		Frequency (MHz)	Channels		Frequency (MHz)
10 MHz			15 MHz		
Lowest channel	55290	3555.0	Lowest channel	55315	3557.5
Middle channel	55990	3625.0	Middle channel	55990	3625.0
Highest channel	56690	3695.0	Highest channel	56665	3692.5
20 MHz					
Lowest channel	55340	3560.0			
Middle channel	55990	3625.0			
Highest channel	56640	3690.0			

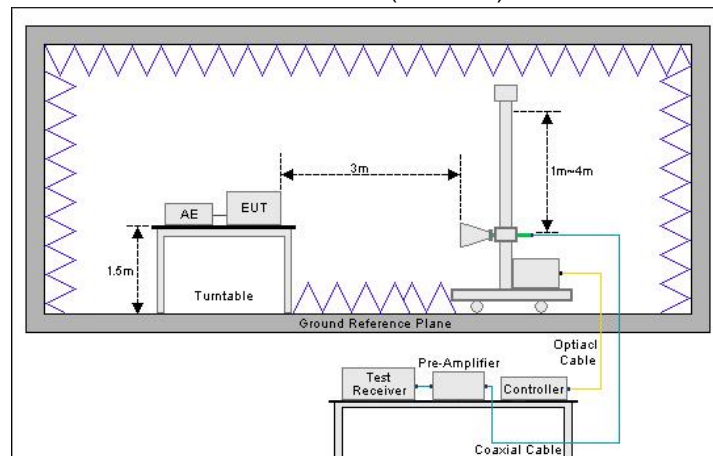
5.2 Test Setup

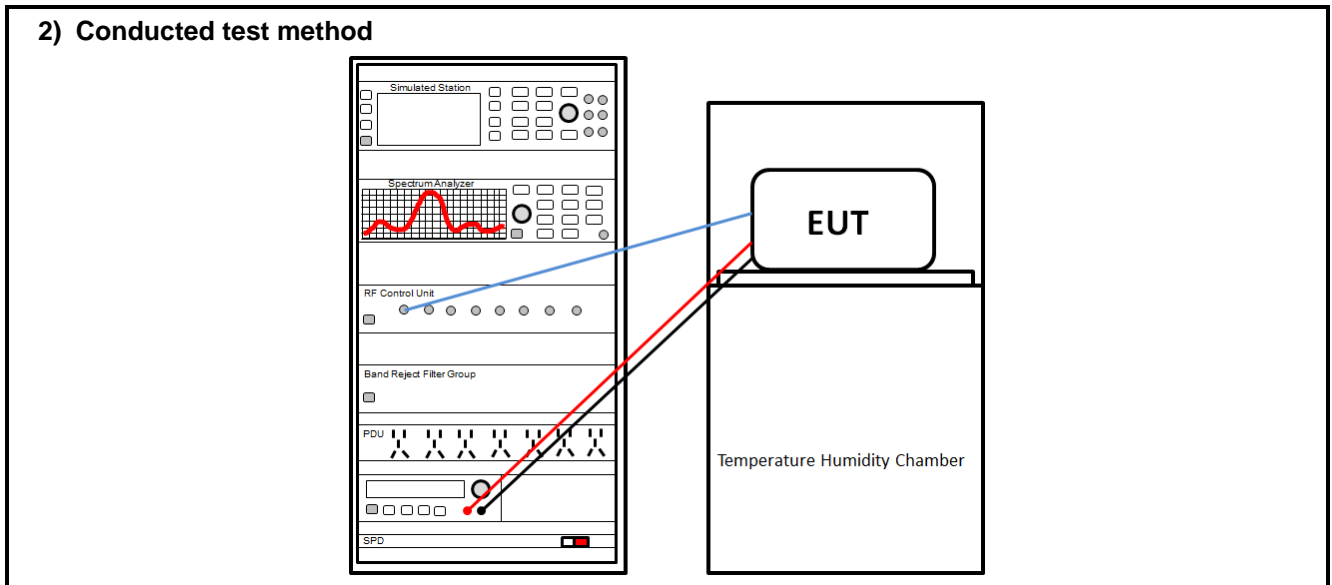
1) Radiated emission measurement:

Below 1GHz (3m SAC)



Above 1GHz (3m SAC)





5.3 Test Procedure

Test method	Test step
Radiated emission	<p>For below 1GHz:</p> <ol style="list-style-type: none"> The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m. EUT works in each mode of operation that needs to be tested , and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data. <p>For above 1GHz:</p> <ol style="list-style-type: none"> The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m. EUT works in each mode of operation that needs to be tested , and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
Conducted test method	<ol style="list-style-type: none"> The antenna port of EUT was connected to the test port of the test system through an RF cable. The EUT is keeping in continuous transmission mode and tested in all modulation modes. Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.

6. Test Results

6.1 Summary

6.1.1 Clause and Data Summary

Test items	Standard clause	Test data	Result
Effective Isotropic Radiated Power (EIRP)	Part 2.1046 Part 96.41(b)	See Section 6.2 Appendix – LTE band 48	Pass
Power Spectral Density (PSD)	Part 2.1046 Part 96.41(b)	See Section 6.3 Appendix – LTE band 48	Pass
Peak-to-average power ratio (PAPR)	Part 96.41(g)	See Section 6.4 Appendix – LTE band 48	Pass
99% Occupied Bandwidth -26 dB Occupied Bandwidth	Part 2.1049	See Section 6.5 Appendix – LTE band 48	Pass
Emission Mask	Part 96.41(e)(1)	Appendix – LTE band 48	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 96.41(e)(2)	Appendix – LTE band 48	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 96.41(e)(2)	See Section 6.6	Pass
Frequency stability	Part 2.1055(a)(b)	See Section 6.7	Pass
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (Fundamental Frequency below 1GHz)/1.0dB (Fundamental Frequency above 1GHz) (provided by the customer).			
Test Method:	ANSI/TIA-603-E-2016 ANSI C63.26-2015 KDB 971168 D01 Power Meas License Digital Systems v03r01 KDB 940660 D01 Part 96 CBRS Eqpt v03 KDB 662911 D01 Multiple Transmitter Output v02r01		

6.1.2 Test Limit

Test items	Limit												
Effective Isotropic Radiated Power (EIRP) Power Spectral Density (PSD)	<table border="1"> <thead> <tr> <th data-bbox="687 300 919 353">Device</th> <th data-bbox="919 300 1177 353">Maximum EIRP (dBm/10 MHz)</th> <th data-bbox="1177 300 1425 353">Maximum PSD (dBm/MHz)</th> </tr> </thead> <tbody> <tr> <td data-bbox="687 353 919 383">End User Device</td> <td data-bbox="919 353 1177 383">23</td> <td data-bbox="1177 353 1425 383">N/A</td> </tr> <tr> <td data-bbox="687 383 919 412">Category A CBSD</td> <td data-bbox="919 383 1177 412">30</td> <td data-bbox="1177 383 1425 412">20</td> </tr> <tr> <td data-bbox="687 412 919 441">Category B CBSD</td> <td data-bbox="919 412 1177 441">47</td> <td data-bbox="1177 412 1425 441">37</td> </tr> </tbody> </table>	Device	Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)	End User Device	23	N/A	Category A CBSD	30	20	Category B CBSD	47	37
Device	Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)											
End User Device	23	N/A											
Category A CBSD	30	20											
Category B CBSD	47	37											
Peak-to-Average Power Ratio	The peak-to-average power ratio (PAPR) of any CBSD transmitter output power must not exceed 13 dB												
26dB Emission Bandwidth 99% Occupied Bandwidth	N/A												
Emission Mask	<p>(i) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any CBSD emission outside the fundamental emission bandwidth as specified in paragraph (e) (3) of this section (whether the emission is inside or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed -25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.</p> <p>(ii) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.</p>												
Out of Band Emission at Antenna Terminals Field Strength of Spurious Radiation	Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.												
Frequency Stability	The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.												

6.2 Effective Isotropic Radiated Power (EIRP)

For 10MHz measurement bandwidth							
Modulation	Test channel	ANT. Port	Output Power (dBm/10MHz)	Total Power (dBm/10MHz)	Directional gain (dBi)	EIRP (dBm)	Limit (dBm)
QPSK (10MHz)	Lowest	ANT 0	23.42	26.46	13.00	39.46	47.00
		ANT 1	23.48				
	Middle	ANT 0	23.03	26.13			
		ANT 1	23.21				
	Highest	ANT 0	22.76	25.73			
		ANT 1	22.68				
64QAM (10MHz)	Lowest	ANT 0	22.29	25.28	13.00	38.28	
		ANT 1	22.25				
	Middle	ANT 0	22.24	25.20			
		ANT 1	22.13				
	Highest	ANT 0	21.63	24.72			
		ANT 1	21.79				
QPSK (15MHz)	Lowest	ANT 0	22.60	25.60	13.00	38.60	47.00
		ANT 1	22.57				
	Middle	ANT 0	21.50	24.52			
		ANT 1	21.51				
	Highest	ANT 0	21.38	24.41			
		ANT 1	21.41				
64QAM (15MHz)	Lowest	ANT 0	21.12	24.30	13.00	37.30	
		ANT 1	21.45				
	Middle	ANT 0	20.35	23.38			
		ANT 1	20.39				
	Highest	ANT 0	20.55	23.55			
		ANT 1	20.53				
QPSK (20MHz)	Lowest	ANT 0	21.63	24.71	13.00	37.71	47.00
		ANT 1	21.77				
	Middle	ANT 0	20.24	23.23			
		ANT 1	20.20				
	Highest	ANT 0	20.25	23.23			
		ANT 1	20.19				
64QAM (20MHz)	Lowest	ANT 0	20.62	23.55	13.00	36.55	
		ANT 1	20.45				
	Middle	ANT 0	19.08	22.08			
		ANT 1	19.05				
	Highest	ANT 0	19.15	22.14			
		ANT 1	19.10				

Remark:
 1. All transmit signals are completely uncorrelated with each other, Directional gain = GANT =13.00 dBi.

For full bandwidth measurement bandwidth							
Modulation	Test channel	ANT. Port	Output Power (dBm/15MHz)	Total Power (dBm/15MHz)	Directional gain (dBi)	EIRP (dBm)	Limit (dBm)
QPSK (15MHz)	Lowest	ANT 0	23.89	26.86	13.00	39.86	N/A
		ANT 1	23.80				
	Middle	ANT 0	22.54	25.56			
		ANT 1	22.56				
	Highest	ANT 0	22.75	25.71			
		ANT 1	22.64				
64QAM (15MHz)	Lowest	ANT 0	22.25	25.22	13.00	38.22	
		ANT 1	22.17				
	Middle	ANT 0	21.23	24.25			
		ANT 1	21.24				
	Highest	ANT 0	21.77	24.78			
		ANT 1	21.76				

Remark:
1. All transmit signals are completely uncorrelated with each other, Directional gain = GANT =13.00 dBi.

For full bandwidth measurement bandwidth							
Modulation	Test channel	ANT. Port	Output Power (dBm/20MHz)	Total Power (dBm/20MHz)	Directional gain (dBi)	EIRP (dBm)	Limit (dBm)
QPSK (20MHz)	Lowest	ANT 0	23.61	26.69	13.00	39.69	N/A
		ANT 1	23.74				
	Middle	ANT 0	22.67	25.61			
		ANT 1	22.52				
	Highest	ANT 0	22.68	25.62			
		ANT 1	22.54				
64QAM (20MHz)	Lowest	ANT 0	21.72	24.69	13.00	37.69	
		ANT 1	21.64				
	Middle	ANT 0	21.31	24.28			
		ANT 1	21.23				
	Highest	ANT 0	21.25	24.30			
		ANT 1	21.32				

Remark:
1. All transmit signals are completely uncorrelated with each other, Directional gain = GANT =13.00 dBi.

6.3 Power Spectral Density (PSD)

Modulation	Test channel	ANT. Port	PSD (dBm/MHz)	Total PSD (dBm/MHz)	Directional gain (dBi)	PSD (e.i.r.p) (dBm)	Limit (dBm)
QPSK (10MHz)	Lowest	ANT 0	14.70	17.14	13.00	30.14	37.00
		ANT 1	13.48				
	Middle	ANT 0	12.97	16.14			
		ANT 1	13.29				
	Highest	ANT 0	13.00	16.10			
		ANT 1	13.18				
64QAM (10MHz)	Lowest	ANT 0	13.04	15.97	13.00	28.97	37.00
		ANT 1	12.87				
	Middle	ANT 0	11.95	15.10			
		ANT 1	12.23				
	Highest	ANT 0	12.93	15.83			
		ANT 1	12.70				
QPSK (15MHz)	Lowest	ANT 0	13.13	16.04	13.00	29.04	37.00
		ANT 1	12.93				
	Middle	ANT 0	12.30	14.73			
		ANT 1	11.06				
	Highest	ANT 0	12.13	14.96			
		ANT 1	11.76				
64QAM (15MHz)	Lowest	ANT 0	11.54	14.55	13.00	27.55	37.00
		ANT 1	11.53				
	Middle	ANT 0	11.00	14.21			
		ANT 1	11.39				
	Highest	ANT 0	11.33	13.98			
		ANT 1	10.58				
QPSK (20MHz)	Lowest	ANT 0	12.46	15.27	13.00	28.27	37.00
		ANT 1	12.05				
	Middle	ANT 0	11.01	14.37			
		ANT 1	11.69				
	Highest	ANT 0	11.50	14.59			
		ANT 1	11.65				
64QAM (20MHz)	Lowest	ANT 0	10.34	13.47	13.00	26.47	37.00
		ANT 1	10.57				
	Middle	ANT 0	11.30	13.99			
		ANT 1	10.63				
	Highest	ANT 0	11.01	13.66			
		ANT 1	10.26				

Remark:

1. All transmit signals are completely uncorrelated with each other, Directional gain = GANT = 13.00 dBi.

6.4 Peak-to-average power ratio (PAPR)

Modulation	Test channel	ANT. Port	PAPR(dB)	Limit (dB)
QPSK (10MHz)	Lowest	ANT 0	8.92	13
		ANT 1	8.94	
	Middle	ANT 0	8.74	
		ANT 1	8.84	
	Highest	ANT 0	8.74	
		ANT 1	8.74	
64QAM (10MHz)	Lowest	ANT 0	10.10	
		ANT 1	10.04	
	Middle	ANT 0	9.15	
		ANT 1	9.22	
	Highest	ANT 0	8.99	
		ANT 1	9.15	
QPSK (15MHz)	Lowest	ANT 0	8.82	
		ANT 1	8.85	
	Middle	ANT 0	8.97	
		ANT 1	9.01	
	Highest	ANT 0	8.94	
		ANT 1	9.00	
64QAM (15MHz)	Lowest	ANT 0	8.92	
		ANT 1	9.03	
	Middle	ANT 0	9.14	
		ANT 1	9.12	
	Highest	ANT 0	10.02	
		ANT 1	10.03	
QPSK (20MHz)	Lowest	ANT 0	8.10	
		ANT 1	8.11	
	Middle	ANT 0	8.11	
		ANT 1	8.09	
	Highest	ANT 0	8.02	
		ANT 1	8.06	
64QAM (20MHz)	Lowest	ANT 0	8.96	
		ANT 1	8.79	
	Middle	ANT 0	8.32	
		ANT 1	8.56	
	Highest	ANT 0	8.48	
		ANT 1	8.83	

6.5 Occupied Bandwidth

Modulation	Test channel	ANT. Port	26dB Occupy bandwidth (MHz)	99% Occupy bandwidth (MHz)
QPSK (10MHz)	Lowest	ANT 0	9.726	8.9447
		ANT 1	9.686	8.9437
	Middle	ANT 0	9.581	8.9480
		ANT 1	9.633	8.9464
	Highest	ANT 0	9.803	8.9307
		ANT 1	9.612	8.9643
64QAM (10MHz)	Lowest	ANT 0	9.791	8.9467
		ANT 1	9.667	8.9485
	Middle	ANT 0	9.586	8.9421
		ANT 1	9.710	8.9228
	Highest	ANT 0	9.718	8.9360
		ANT 1	9.436	8.9353
QPSK (15MHz)	Lowest	ANT 0	14.51	13.405
		ANT 1	14.42	13.396
	Middle	ANT 0	14.11	13.407
		ANT 1	14.21	13.461
	Highest	ANT 0	14.33	13.411
		ANT 1	14.33	13.411
64QAM (15MHz)	Lowest	ANT 0	14.57	13.434
		ANT 1	14.70	13.411
	Middle	ANT 0	14.19	13.406
		ANT 1	14.32	13.390
	Highest	ANT 0	14.19	13.435
		ANT 1	14.01	13.374
QPSK (20MHz)	Lowest	ANT 0	18.88	17.830
		ANT 1	18.99	17.822
	Middle	ANT 0	18.72	17.834
		ANT 1	18.77	17.843
	Highest	ANT 0	18.78	17.814
		ANT 1	18.65	17.851
64QAM (20MHz)	Lowest	ANT 0	18.90	17.829
		ANT 1	19.00	17.819
	Middle	ANT 0	18.89	17.772
		ANT 1	18.81	17.881
	Highest	ANT 0	18.47	17.808
		ANT 1	18.51	17.817

6.6 Field Strength of Spurious Radiation

Remark: During the test, pre-scan the QPSK, 64QAM modulation, and found the QPSK modulation is the worst case.

LTE band 48 (10 MHz) - QPSK						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
7110.00	-43.87	-0.32	-44.19	-40.00	4.19	Vertical
10665.00	-52.69	6.55	-46.14	-40.00	6.14	Vertical
7110.00	-44.69	-0.32	-45.01	-40.00	5.01	Horizontal
10665.00	-53.41	6.55	-46.86	-40.00	6.86	Horizontal
Middel channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
7250.00	-45.36	-0.33	-45.69	-40.00	5.69	Vertical
10875.00	-53.68	6.66	-47.02	-40.00	7.02	Vertical
7250.00	-44.15	-0.33	-44.48	-40.00	4.48	Horizontal
10875.00	-52.77	6.66	-46.11	-40.00	6.11	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
7390.00	-44.68	-0.04	-44.72	-40.00	4.72	Vertical
11085.00	-53.62	6.56	-47.06	-40.00	7.06	Vertical
7390.00	-44.99	-0.04	-45.03	-40.00	5.03	Horizontal
11085.00	-52.98	6.56	-46.42	-40.00	6.42	Horizontal
Remark: The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.						

LTE band 48 (15 MHz) - QPSK						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
7115.00	-43.64	-0.32	-43.96	-40.00	3.96	Vertical
10672.00	-52.98	6.57	-46.41	-40.00	6.41	Vertical
7115.00	-43.14	-0.32	-43.46	-40.00	3.46	Horizontal
10672.00	-53.41	6.57	-46.84	-40.00	6.84	Horizontal
Middel channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
7250.00	-44.32	-0.33	-44.65	-40.00	4.65	Vertical
10875.00	-53.87	6.66	-47.21	-40.00	7.21	Vertical
7250.00	-44.68	-0.33	-45.01	-40.00	5.01	Horizontal
10875.00	-53.10	6.66	-46.44	-40.00	6.44	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
7385.00	-43.65	-0.06	-43.71	-40.00	3.71	Vertical
11077.00	-52.10	6.59	-45.51	-40.00	5.51	Vertical
7385.00	-44.84	-0.06	-44.9	-40.00	4.90	Horizontal
11077.00	-52.91	6.59	-46.32	-40.00	6.32	Horizontal
Remark: The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.						

LTE band 48 (20 MHz) - QPSK						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
7120.00	-44.01	-0.31	-44.32	-40.00	4.32	Vertical
10680.00	-53.21	6.60	-46.61	-40.00	6.61	Vertical
7120.00	-44.85	-0.31	-45.16	-40.00	5.16	Horizontal
10680.00	-53.10	6.60	-46.50	-40.00	6.50	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
7250.00	-45.20	-0.33	-45.53	-40.00	5.53	Vertical
10875.00	-54.19	6.66	-47.53	-40.00	7.53	Vertical
7250.00	-43.96	-0.33	-44.29	-40.00	4.29	Horizontal
10875.00	-55.12	6.66	-48.46	-40.00	8.46	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
7380.00	-44.12	-0.08	-44.20	-40.00	4.20	Vertical
11070.00	-53.69	6.62	-47.07	-40.00	7.07	Vertical
7380.00	-44.87	-0.08	-44.95	-40.00	4.95	Horizontal
11070.00	-53.42	6.62	-46.80	-40.00	6.80	Horizontal
Remark:						
<i>The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.</i>						

6.7 Frequency stability

Voltage measurement								
Band	Bandwidth	Modulation	Channel	Voltage [Vac]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
Band48	10MHz	QPSK	Middle	102	25	65	0.0179	within the authorized bands
Band48	10MHz	QPSK	Middle	120	25	43	0.0119	
Band48	10MHz	QPSK	Middle	138	25	101	0.0279	
Band48	10MHz	64QAM	Middle	102	25	78	0.0215	
Band48	10MHz	64QAM	Middle	120	25	86	0.0237	
Band48	10MHz	64QAM	Middle	138	25	72	0.0199	
Band48	15MHz	QPSK	Middle	102	25	77	0.0212	
Band48	15MHz	QPSK	Middle	120	25	96	0.0265	
Band48	15MHz	QPSK	Middle	138	25	56	0.0154	
Band48	15MHz	64QAM	Middle	102	25	82	0.0226	
Band48	15MHz	64QAM	Middle	120	25	68	0.0188	
Band48	15MHz	64QAM	Middle	138	25	49	0.0135	
Band48	20MHz	QPSK	Middle	102	25	82	0.0226	
Band48	20MHz	QPSK	Middle	120	25	93	0.0257	
Band48	20MHz	QPSK	Middle	138	25	91	0.0251	
Band48	20MHz	64QAM	Middle	102	25	84	0.0232	
Band48	20MHz	64QAM	Middle	120	25	77	0.0212	
Band48	20MHz	64QAM	Middle	138	25	51	0.0141	

Temperature measurement								
Band	Bandwidth	Modulation	Channel	Voltage [Vac]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
Band48	10MHz	QPSK	Middle	120	-30	77	0.0212	within the authorized bands
Band48	10MHz	QPSK	Middle	120	-20	86	0.0237	
Band48	10MHz	QPSK	Middle	120	-10	100	0.0276	
Band48	10MHz	QPSK	Middle	120	0	54	0.0149	
Band48	10MHz	QPSK	Middle	120	10	73	0.0201	
Band48	10MHz	QPSK	Middle	120	20	86	0.0237	
Band48	10MHz	QPSK	Middle	120	30	82	0.0226	
Band48	10MHz	QPSK	Middle	120	40	55	0.0152	
Band48	10MHz	QPSK	Middle	120	50	69	0.0190	
Band48	10MHz	64QAM	Middle	120	-30	92	0.0254	
Band48	10MHz	64QAM	Middle	120	-20	88	0.0243	
Band48	10MHz	64QAM	Middle	120	-10	73	0.0201	
Band48	10MHz	64QAM	Middle	120	0	102	0.0281	
Band48	10MHz	64QAM	Middle	120	10	86	0.0237	
Band48	10MHz	64QAM	Middle	120	20	95	0.0262	
Band48	10MHz	64QAM	Middle	120	30	100	0.0276	
Band48	10MHz	64QAM	Middle	120	40	69	0.0190	
Band48	10MHz	64QAM	Middle	120	50	78	0.0215	

Temperature measurement								
Band	Bandwidth	Modulation	Channel	Voltage [Vac]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
Band48	15MHz	QPSK	Middle	120	-30	98	0.0270	within the authorized bands
Band48	15MHz	QPSK	Middle	120	-20	79	0.0218	
Band48	15MHz	QPSK	Middle	120	-10	85	0.0234	
Band48	15MHz	QPSK	Middle	120	0	101	0.0279	
Band48	15MHz	QPSK	Middle	120	10	105	0.0290	
Band48	15MHz	QPSK	Middle	120	20	77	0.0212	
Band48	15MHz	QPSK	Middle	120	30	65	0.0179	
Band48	15MHz	QPSK	Middle	120	40	68	0.0188	
Band48	15MHz	QPSK	Middle	120	50	81	0.0223	
Band48	15MHz	64QAM	Middle	120	-30	85	0.0234	
Band48	15MHz	64QAM	Middle	120	-20	94	0.0259	
Band48	15MHz	64QAM	Middle	120	-10	88	0.0243	
Band48	15MHz	64QAM	Middle	120	0	87	0.0240	
Band48	15MHz	64QAM	Middle	120	10	102	0.0281	
Band48	15MHz	64QAM	Middle	120	20	77	0.0212	
Band48	15MHz	64QAM	Middle	120	30	84	0.0232	
Band48	15MHz	64QAM	Middle	120	40	88	0.0243	
Band48	15MHz	64QAM	Middle	120	50	101	0.0279	

Temperature measurement								
Band	Bandwidth	Modulation	Channel	Voltage [Vac]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)
Band48	20MHz	QPSK	Middle	120	-30	102	0.0281	within the authorized bands
Band48	20MHz	QPSK	Middle	120	-20	100	0.0276	
Band48	20MHz	QPSK	Middle	120	-10	88	0.0243	
Band48	20MHz	QPSK	Middle	120	0	75	0.0207	
Band48	20MHz	QPSK	Middle	120	10	79	0.0218	
Band48	20MHz	QPSK	Middle	120	20	94	0.0259	
Band48	20MHz	QPSK	Middle	120	30	68	0.0188	
Band48	20MHz	QPSK	Middle	120	40	66	0.0182	
Band48	20MHz	QPSK	Middle	120	50	70	0.0193	
Band48	20MHz	64QAM	Middle	120	-30	91	0.0251	
Band48	20MHz	64QAM	Middle	120	-20	79	0.0218	
Band48	20MHz	64QAM	Middle	120	-10	90	0.0248	
Band48	20MHz	64QAM	Middle	120	0	100	0.0276	
Band48	20MHz	64QAM	Middle	120	10	94	0.0259	
Band48	20MHz	64QAM	Middle	120	20	87	0.0240	
Band48	20MHz	64QAM	Middle	120	30	75	0.0207	
Band48	20MHz	64QAM	Middle	120	40	102	0.0281	
Band48	20MHz	64QAM	Middle	120	50	97	0.0268	

-----End of report-----