FCC RF Test Report

(LTE)

Applicant:	Maersk Container Industry AS
Address of Applicant:	Bjerndrupvej 47, 6360 Tinglev, Denmark
Equipment Under Test (EUT)	
Product Name:	Sekstant Gateway
Model No.:	Sekstant Gateway v1.3
Trade Mark:	SEKSTANT
FCC ID:	2AUZI-819628B
Applicable Standards:	FCC CFR Title 47 Part 2, 22H, 24E, 27L&M&H
Date of Sample Receipt:	08 Dec., 2022
Date of Test:	09 Dec., 2022 to 13 Jan., 2023
Date of Report Issued:	16 Jan., 2023
Test Result:	PASS

Tested by:	Mike.ou ***Test Engineer***	***Date:***	*16 Jan., 2023*
Reviewed by:	Winner Zhang ***Project Engineer***	***Date:***	*16 Jan., 2023*
Approved by:	Marc Zhang ***Manager***	***Date:***	*16 Jan., 2023*

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.

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1 Version

Version No.	Date	Description
00	*16 Jan., 2023*	*Original*

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3 General Information

3.1 Client Information

Applicant:	Maersk Container Industry AS
Address:	Bjerndrupvej 47, 6360 Tinglev, Denmark
Manufacturer:	Maersk Container Industry AS
Address:	Bjerndrupvej 47, 6360 Tinglev, Denmark
Factory:	Ark Electronics
Address:	No.70 Beijing Road I Qingdao Free Trade Zone, Qingdao I Shangdong, CN 266500

3.2 General Description of E.U.T.

Product Name:	Sekstant Gateway		
Model No.:	Sekstant Gateway v1.3		
Operation Frequency Range:	LTE band 2:	Tx: 1850 MHz - 1910 MHz	Rx: 1930 MHz - 1990 MHz
	LTE band 4:	Tx: 1710 MHz - 1755 MHz	Rx: 2110 MHz - 2155 MHz
	LTE band 5:	Tx: 824 MHz - 849 MHz	Rx: 869 MHz - 894 MHz
	LTE band 7:	Tx: 2500 MHz - 2570 MHz	Rx: 2620 MHz - 2690 MHz
	LTE band 12:	Tx: 699 MHz - 716 MHz	Rx: 729 MHz - 746 MHz
Modulation Type:	☒QPSK	☒16QAM	
Antenna Type:	Internal Antenna		
Antenna Gain:	LTE band 2:	1.1 dBi (declare by Applicant)	
	LTE band 4:	0.4 dBi (declare by Applicant)	
	LTE band 5:	-11.5 dBi (declare by Applicant)	
	LTE band 7:	-0.5 dBi (declare by Applicant)	
	LTE band 12:	-13.6 dBi (declare by Applicant)	
Power Supply:	DC 12V-36V		
Test Sample Condition:	The test samples were provided in good working order with no visible defects.		

3.3 Test Mode and Environment

Test Mode:	
QPSK mode:	Keep the EUT communication with simulated station in QPSK mode
16QAM mode:	Keep the EUT communication with simulated station in 16QAM mode
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.*	
Operating Environment:	
Temperature:	Normal: 15℃ ~ 35℃
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 12.0 Vdc

3.4 Description of Test Auxiliary Equipment

Test Equipment	Manufacturer	Model No.	Serial No.
Simulated Station	Anritsu	MT8820C	6201026545

3.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Radiated Emission (30MHz ~ 1GHz) (3m SAC)	3.8 dB
Radiated Emission (1GHz ~ 18GHz) (3m SAC)	3.6 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.*	

3.6 Additions to, Deviations, or Exclusions from the Method

No

3.7 Laboratory Facility

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

- **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

3.8 Laboratory Location

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

3.9 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	10-17-2022	10-16-2023
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	06-29-2022	06-28-2023
Simulated Station	Rohde & Schwarz	CMW500	WXJ081	06-29-2022	06-28-2023
Temperature Humidity Chamber	ZHONG ZHI	CZ-A-80D	WXJ032-3	03-19-2021	03-18-2023
DC Power Supply	Keysight	E3642A	WXJ025-2	N/A	
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		

4 Measurement Setup and Procedure

4.1 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 2

Channels		Frequency (MHz)	Channels		Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest channel	18607	1850.7	Lowest channel	18915	1851.5
Middle channel	18900	1880.0	Middle channel	18900	1880.0
Highest channel	19193	1909.3	Highest channel	19185	1908.5
5 MHz			**10 MHz**		
Lowest channel	18625	1852.5	Lowest channel	18650	1855.0
Middle channel	18900	1880.0	Middle channel	18900	1880.0
Highest channel	19175	1907.5	Highest channel	19150	1905.0

LTE band 4

Channels		Frequency (MHz)	Channels		Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest channel	19957	1710.7	Lowest channel	19965	1711.5
Middle channel	20175	1732.5	Middle channel	20175	1732.5
Highest channel	20393	1754.3	Highest channel	20385	1753.5
5 MHz			**10 MHz**		
Lowest channel	19975	1712.5	Lowest channel	20000	1715.0
Middle channel	20175	1732.5	Middle channel	20175	1732.5
Highest channel	20375	1752.5	Highest channel	20350	1750.0

LTE band 5

Channels		Frequency (MHz)	Channels		Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest channel	20407	824.7	Lowest channel	20415	825.5
Middle channel	20525	836.5	Middle channel	20525	836.5
Highest channel	20643	848.3	Highest channel	20635	847.5
5 MHz			**10 MHz**		
Lowest channel	20425	826.5	Lowest channel	20450	829.0
Middle channel	20525	836.5	Middle channel	20525	836.5
Highest channel	20625	846.5	Highest channel	20600	844.0

LTE band 7

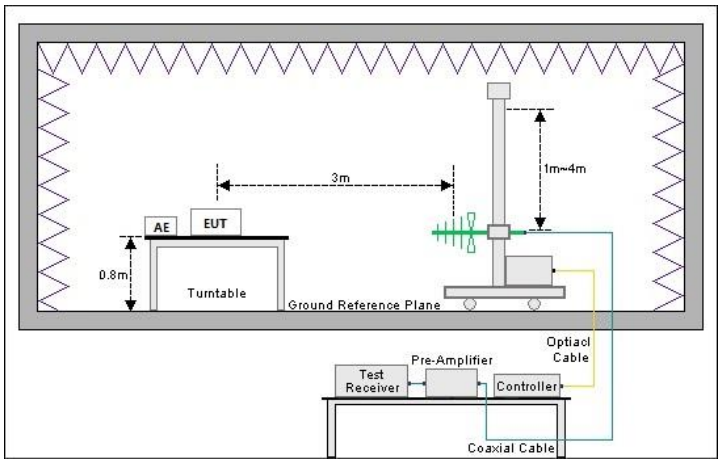
Channels		Frequency (MHz)	Channels		Frequency (MHz)
5 MHz			**10 MHz**		
Lowest channel	20775	2502.5	Lowest channel	20800	2505.0
Middle channel	21100	2535.0	Middle channel	21100	2535.0
Highest channel	21425	2567.5	Highest channel	21400	2565.0

LTE band 12					
Channels		Frequency (MHz)	Channels		Frequency (MHz)
1.4 MHz			**3 MHz**		
Lowest channel	23017	699.70	Lowest channel	23025	700.50
Middle channel	23095	707.50	Middle channel	23095	707.50
Highest channel	23173	715.30	Highest channel	23165	714.50
5 MHz			**10 MHz**		
Lowest channel	23035	701.50	Lowest channel	23060	704.00
Middle channel	23095	707.50	Middle channel	23095	707.50
Highest channel	23155	713.50	Highest channel	23130	711.00

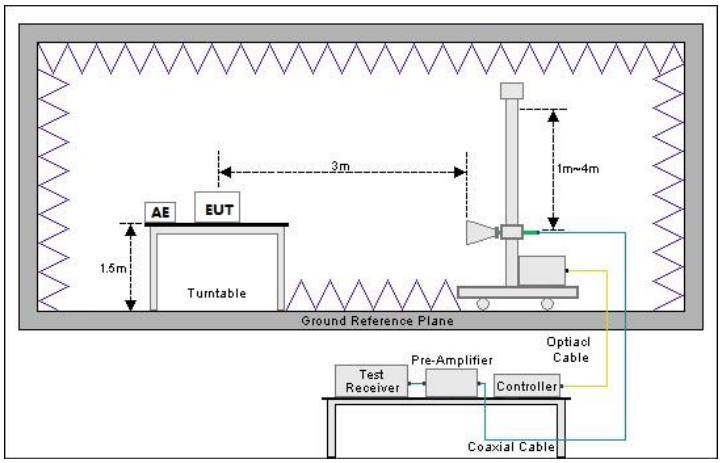
4.2 Test Setup

1) Radiated emission measurement:

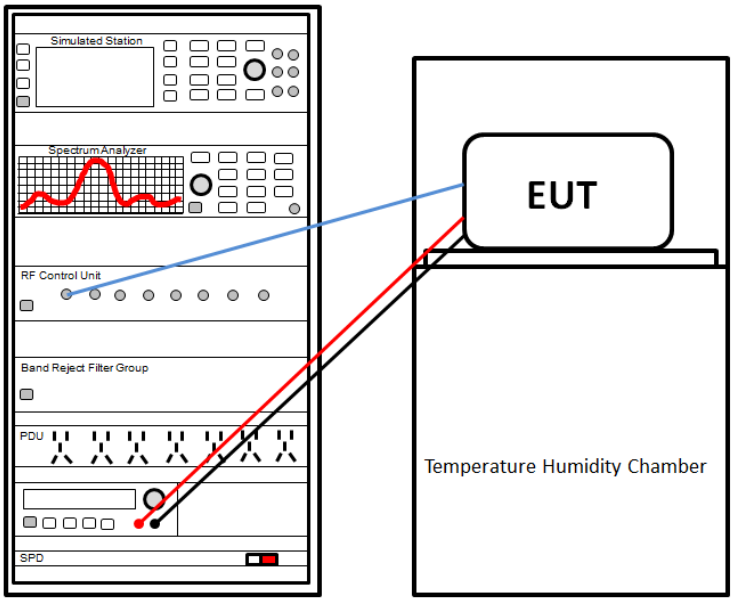
Below 1GHz (3m SAC)



Above 1GHz (3m SAC)



2) Conducted test method



4.3 Test Procedure

Test method	Test step
Radiated emission	**For below 1GHz:** 1. 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. 2. 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. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data. **For above 1GHz:** 1. 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. 2. 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. 3. 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	1. The LTE antenna port of EUT was connected to the test port of the test system through an RF cable. 2. The EUT is keeping in continuous transmission mode and tested in all modulation modes. 3. 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.

5 Test Results

5.1 Summary

5.1.1 Clause and Data Summary

Test items	Standard clause	Test data	Result
RF Exposure	Part 1.1307 Part 2.1093	See Report No.: JYTSZ-R12-2202493	Pass
RF Output Power	Part 2.1046 Part 22.913 (a)(5) Part 24.232 (c) Part 27.50 (c)(10) Part 27.50 (d)(4) Part 27.50 (h)(2)	Appendix A– LTE Power	Pass
Peak-to-Average Power Ratio	Part 24.232 (d) Part 27.50 (d)(5)	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2
Modulation Characteristics	Part 2.1047	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2
26dB Emission Bandwidth 99% Occupied Bandwidth	Part 2.1049	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2
Out of Band Emission at Antenna Terminals	Part 2.1051 Part 22.917 (a) Part 24.238 (a) Part 27.53 (g) Part 27.53 (h) Part 27.53 (m)(4)	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a) Part 27.53 (g) Part 27.53 (h) Part 27.53 (m)(4)	See Section 5.2	Pass
Frequency Stability vs. Temperature	Part 2.1055 (a)(1)(b) Part 22.355 Part 24.235 Part 27.54	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2
Frequency Stability vs. Voltage	Part 2.1055 (d)(2) Part 22.355 Part 24.235 Part 27.54	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2	Reference FCC ID: QIPPLS63-W, report No.: 200722016RFM-2

Remark:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *FCC ID: QIPPLS63-W, report No.: 200722016RFM-2, which is issued by Shenzhen UnionTrust Quality and Technology Co., Ltd.*
3. *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*

5.1.2 Test Limit

<table>
<tr><th>Test items</th><th>Limit</th></tr>
<tr><td>RF Output Power</td><td>LTE band 2/7: 2W EIRP
LTE band 4: 1W EIRP
LTE band 5: 7W ERP
LTE band 12: 3W ERP</td></tr>
<tr><td>Peak-to-Average Power Ratio</td><td>LTE band 2/4:The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB
Other bands: N/A report only</td></tr>
<tr><td>Modulation Characteristics</td><td>N/A</td></tr>
<tr><td>26dB Emission Bandwidth
99% Occupied Bandwidth</td><td>N/A</td></tr>
<tr><td>Out of Band Emission at Antenna Terminals

Field Strength of Spurious Radiation</td><td>LTE band 2, 4, 5, 12:
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

LTE band 7:
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.</td></tr>
<tr><td>Frequency Stability vs. Temperature

Frequency Stability vs. Voltage</td><td>LTE band 2:
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

LTE band 4, 7, 12:
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

LTE band 5:
Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.
TABLE C-1—FREQUENCY TOLERANCE FOR TRANSMITTERS IN THE PUBLIC MOBILE SERVICES
<table>
<tr><th>Frequency range (MHz)</th><th>Base, fixed (ppm)</th><th>Mobile >3 watts (ppm)</th><th>Mobile ≤3 watts (ppm)</th></tr>
<tr><td>25 to 50</td><td>20.0</td><td>20.0</td><td>50.0</td></tr>
<tr><td>50 to 450</td><td>5.0</td><td>5.0</td><td>50.0</td></tr>
<tr><td>450 to 512</td><td>2.5</td><td>5.0</td><td>5.0</td></tr>
<tr><td>821 to 896</td><td>1.5</td><td>2.5</td><td>2.5</td></tr>
<tr><td>928 to 929</td><td>5.0</td><td>n/a</td><td>n/a</td></tr>
<tr><td>929 to 960</td><td>1.5</td><td>n/a</td><td>n/a</td></tr>
<tr><td>2110 to 2220</td><td>10.0</td><td>n/a</td><td>n/a</td></tr>
</table></td></tr>
</table>

5.2 Field Strength of Spurious Radiation Measurement

LTE band 2 – 1.4 MHz bandwidth

Lowest channel

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3701.40	-49.81	-1.36	-51.17	-13.00	38.17	Vertical
5552.10	-51.71	5.43	-46.28	-13.00	33.28	Vertical
7402.00	-54.25	12.61	-41.64	-13.00	28.64	Vertical
3701.40	-49.88	-1.85	-51.73	-13.00	38.73	Horizontal
5552.10	-52.47	3.80	-48.67	-13.00	35.67	Horizontal
7402.00	-54.33	10.88	-43.45	-13.00	30.45	Horizontal

Middle channel

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3760.00	-49.93	-1.06	-50.99	-13.00	37.99	Vertical
5640.00	-51.01	7.14	-43.87	-13.00	30.87	Vertical
7520.00	-53.25	11.47	-41.78	-13.00	28.78	Vertical
3760.00	-48.88	-1.55	-50.43	-13.00	37.43	Horizontal
5640.00	-52.38	4.45	-47.93	-13.00	34.93	Horizontal
7520.00	-53.56	9.98	-43.58	-13.00	30.58	Horizontal

Highest channel

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3816.60	-49.60	-0.76	-50.36	-13.00	37.36	Vertical
5724.90	-51.45	8.51	-42.94	-13.00	29.94	Vertical
7633.20	-52.88	11.11	-41.77	-13.00	28.77	Vertical
3816.60	-48.05	-1.24	-49.29	-13.00	36.29	Horizontal
5724.90	-52.40	5.85	-46.55	-13.00	33.55	Horizontal
7633.20	-53.49	9.95	-43.54	-13.00	30.54	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

LTE band 2 – 10 MHz bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3720.00	-50.11	-1.26	-51.37	-13.00	38.37	Vertical
5580.00	-50.75	5.85	-44.90	-13.00	31.90	Vertical
7440.00	-52.68	12.18	-40.50	-13.00	27.50	Vertical
3720.00	-49.38	-1.76	-51.14	-13.00	38.14	Horizontal
5580.00	-52.10	4.00	-48.10	-13.00	35.10	Horizontal
7440.00	-53.87	10.51	-43.36	-13.00	30.36	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3760.00	-50.05	-1.06	-51.11	-13.00	38.11	Vertical
5640.00	-50.50	7.14	-43.36	-13.00	30.36	Vertical
7520.00	-52.63	11.47	-41.16	-13.00	28.16	Vertical
3760.00	-49.78	-1.55	-51.33	-13.00	38.33	Horizontal
5640.00	-52.39	4.45	-47.94	-13.00	34.94	Horizontal
7520.00	-52.96	9.98	-42.98	-13.00	29.98	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3800.00	-49.31	-0.85	-50.16	-13.00	37.16	Vertical
5700.00	-50.43	8.54	-41.89	-13.00	28.89	Vertical
7600.00	-53.63	11.24	-42.39	-13.00	29.39	Vertical
3800.00	-48.87	-1.35	-50.22	-13.00	37.22	Horizontal
5700.00	-51.83	4.93	-46.90	-13.00	33.90	Horizontal
7600.00	-53.71	10.06	-43.65	-13.00	30.65	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

LTE band 4 – 1.4 MHz bandwidth

Lowest channel

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3421.40	-49.78	-4.19	-53.97	-13.00	40.97	Vertical
5132.10	-51.12	4.68	-46.44	-13.00	33.44	Vertical
6842.80	-52.71	10.63	-42.08	-13.00	29.08	Vertical
3421.40	-47.97	-4.29	-52.26	-13.00	39.26	Horizontal
5132.10	-51.54	4.21	-47.33	-13.00	34.33	Horizontal
6842.80	-53.14	9.58	-43.56	-13.00	30.56	Horizontal

Middle channel

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.00	-49.75	-3.00	-52.75	-13.00	39.75	Vertical
5197.50	-51.74	4.10	-47.64	-13.00	34.64	Vertical
6930.00	-52.58	11.18	-41.40	-13.00	28.40	Vertical
3465.00	-48.80	-3.11	-51.91	-13.00	38.91	Horizontal
5197.50	-52.10	3.60	-48.50	-13.00	35.50	Horizontal
6930.00	-52.66	9.86	-42.80	-13.00	29.80	Horizontal

Highest channel

Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3508.60	-49.79	-1.98	-51.77	-13.00	38.77	Vertical
5262.90	-51.22	3.70	-47.52	-13.00	34.52	Vertical
7017.20	-52.60	11.17	-41.43	-13.00	28.43	Vertical
3508.60	-49.73	-2.15	-51.88	-13.00	38.88	Horizontal
5262.90	-52.80	3.31	-49.49	-13.00	36.49	Horizontal
7017.20	-52.59	9.63	-42.96	-13.00	29.96	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

LTE band 4 – 10 MHz bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3440.00	-50.40	-3.66	-54.06	-13.00	41.06	Vertical
5160.00	-50.95	4.43	-46.52	-13.00	33.52	Vertical
6880.00	-51.65	11.05	-40.60	-13.00	27.60	Vertical
3440.00	-48.78	-3.77	-52.55	-13.00	39.55	Horizontal
5160.00	-51.62	3.95	-47.67	-13.00	34.67	Horizontal
6880.00	-53.43	9.87	-43.56	-13.00	30.56	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3465.00	-49.53	-3.00	-52.53	-13.00	39.53	Vertical
5197.50	-50.76	4.10	-46.66	-13.00	33.66	Vertical
6930.00	-52.12	11.18	-40.94	-13.00	27.94	Vertical
3465.00	-48.95	-3.11	-52.06	-13.00	39.06	Horizontal
5197.50	-52.97	3.60	-49.37	-13.00	36.37	Horizontal
6930.00	-52.66	9.86	-42.80	-13.00	29.80	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
3490.00	-49.28	-2.31	-51.59	-13.00	38.59	Vertical
5235.00	-51.40	3.88	-47.52	-13.00	34.52	Vertical
6980.00	-53.34	11.02	-42.32	-13.00	29.32	Vertical
3490.00	-48.84	-2.42	-51.26	-13.00	38.26	Horizontal
5235.00	-51.81	3.44	-48.37	-13.00	35.37	Horizontal
6980.00	-52.19	9.59	-42.60	-13.00	29.60	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

LTE band 5 – 1.4 MHz bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1649.40	-46.84	-11.41	-58.25	-13.00	45.25	Vertical
2474.10	-48.68	-6.45	-55.13	-13.00	42.13	Vertical
3298.80	-49.52	-4.88	-54.40	-13.00	41.40	Vertical
1649.40	-47.65	-11.31	-58.96	-13.00	45.96	Horizontal
2474.10	-50.32	-6.79	-57.11	-13.00	44.11	Horizontal
3298.80	-49.36	-5.17	-54.53	-13.00	41.53	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673.30	-46.41	-11.39	-57.80	-13.00	44.80	Vertical
2509.50	-49.36	-6.70	-56.06	-13.00	43.06	Vertical
3346.00	-48.97	-5.17	-54.14	-13.00	41.14	Vertical
1673.30	-48.61	-11.48	-60.09	-13.00	47.09	Horizontal
2509.50	-49.87	-6.40	-56.27	-13.00	43.27	Horizontal
3346.00	-49.72	-4.96	-54.68	-13.00	41.68	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1696.60	-46.70	-11.54	-58.24	-13.00	45.24	Vertical
2544.90	-48.70	-6.25	-54.95	-13.00	41.95	Vertical
3393.20	-49.75	-5.05	-54.80	-13.00	41.80	Vertical
1696.60	-48.79	-11.48	-60.27	-13.00	47.27	Horizontal
2544.90	-49.78	-6.56	-56.34	-13.00	43.34	Horizontal
3393.20	-48.78	-5.16	-53.94	-13.00	40.94	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

LTE band 5 – 10 MHz bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1658.00	-46.36	-11.43	-57.79	-13.00	44.79	Vertical
2487.00	-50.23	-6.44	-56.67	-13.00	43.67	Vertical
3316.00	-48.95	-4.91	-53.86	-13.00	40.86	Vertical
1658.00	-49.48	-11.33	-60.81	-13.00	47.81	Horizontal
2487.00	-48.87	-6.77	-55.64	-13.00	42.64	Horizontal
3316.00	-50.48	-5.17	-55.65	-13.00	42.65	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673.30	-45.56	-11.48	-57.04	-13.00	44.04	Vertical
2509.50	-50.23	-6.40	-56.63	-13.00	43.63	Vertical
3346.00	-49.24	-4.96	-54.20	-13.00	41.20	Vertical
1673.30	-49.36	-11.39	-60.75	-13.00	47.75	Horizontal
2509.50	-49.04	-6.70	-55.74	-13.00	42.74	Horizontal
3346.00	-49.22	-5.17	-54.39	-13.00	41.39	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1688.00	-46.68	-11.52	-58.20	-13.00	45.20	Vertical
2532.00	-50.19	-6.30	-56.49	-13.00	43.49	Vertical
3376.00	-49.78	-5.02	-54.80	-13.00	41.80	Vertical
1688.00	-49.11	-11.45	-60.56	-13.00	47.56	Horizontal
2532.00	-49.71	-6.61	-56.32	-13.00	43.32	Horizontal
3376.00	-48.94	-5.16	-54.10	-13.00	41.10	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

LTE band 7 – 5 MHz bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
5005.00	-52.72	4.03	-48.69	-25.00	23.69	Vertical
7507.50	-53.65	11.51	-42.14	-25.00	17.14	Vertical
10010.00	-52.58	16.40	-36.18	-25.00	11.18	Vertical
5005.00	-51.20	3.59	-47.61	-25.00	22.61	Horizontal
7507.50	-54.07	9.97	-44.10	-25.00	19.10	Horizontal
10010.00	-53.11	16.02	-37.09	-25.00	12.09	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
5070.00	-52.12	4.68	-47.44	-25.00	22.44	Vertical
7605.00	-53.48	11.22	-42.26	-25.00	17.26	Vertical
10140.00	-51.90	17.42	-34.48	-25.00	9.48	Vertical
5070.00	-50.77	4.23	-46.54	-25.00	21.54	Horizontal
7605.00	-53.33	10.04	-43.29	-25.00	18.29	Horizontal
10140.00	-53.43	16.47	-36.96	-25.00	11.96	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
5135.00	-52.16	4.66	-47.50	-25.00	22.50	Vertical
7702.50	-54.44	10.87	-43.57	-25.00	18.57	Vertical
10270.00	-51.67	18.25	-33.42	-25.00	8.42	Vertical
5135.00	-51.10	4.19	-46.91	-25.00	21.91	Horizontal
7702.50	-54.20	9.77	-44.43	-25.00	19.43	Horizontal
10270.00	-52.60	17.13	-35.47	-25.00	10.47	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

LTE band 7 – 10 MHz bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
5020.00	-52.87	4.18	-48.69	-25.00	23.69	Vertical
7530.00	-53.40	11.44	-41.96	-25.00	16.96	Vertical
10040.00	-51.61	16.75	-34.86	-25.00	9.86	Vertical
5020.00	-50.78	3.73	-47.05	-25.00	22.05	Horizontal
7530.00	-53.36	9.99	-43.37	-25.00	18.37	Horizontal
10040.00	-52.69	16.14	-36.55	-25.00	11.55	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
5070.00	-51.95	4.68	-47.27	-25.00	22.27	Vertical
7605.00	-52.74	11.22	-41.52	-25.00	16.52	Vertical
10140.00	-51.89	17.42	-34.47	-25.00	9.47	Vertical
5070.00	-51.73	4.23	-47.50	-25.00	22.50	Horizontal
7605.00	-52.48	10.04	-42.44	-25.00	17.44	Horizontal
10140.00	-54.15	16.47	-37.68	-25.00	12.68	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
5120.00	-51.28	4.79	-46.49	-25.00	21.49	Vertical
7680.00	-52.97	10.93	-42.04	-25.00	17.04	Vertical
10240.00	-52.37	17.90	-34.47	-25.00	9.47	Vertical
5120.00	-51.37	4.33	-47.04	-25.00	22.04	Horizontal
7680.00	-54.10	9.79	-44.31	-25.00	19.31	Horizontal
10240.00	-53.79	16.90	-36.89	-25.00	11.89	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

LTE band 12 – 1.4 MHz bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1399.40	-49.44	-7.91	-57.35	-13.00	44.35	Vertical
2099.10	-49.28	-7.51	-56.79	-13.00	43.79	Vertical
2798.80	-50.26	-5.52	-55.78	-13.00	42.78	Vertical
1399.40	-48.20	-8.39	-56.59	-13.00	43.59	Horizontal
2099.10	-49.38	-7.20	-56.58	-13.00	43.58	Horizontal
2798.80	-49.32	-5.52	-54.84	-13.00	41.84	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1415.00	-49.02	-8.25	-57.27	-13.00	44.27	Vertical
2122.50	-49.65	-7.08	-56.73	-13.00	43.73	Vertical
2830.00	-49.80	-5.39	-55.19	-13.00	42.19	Vertical
1415.00	-48.98	-8.68	-57.66	-13.00	44.66	Horizontal
2122.50	-48.75	-6.89	-55.64	-13.00	42.64	Horizontal
2830.00	-48.91	-5.44	-54.35	-13.00	41.35	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1430.60	-48.19	-8.59	-56.78	-13.00	43.78	Vertical
2145.90	-50.07	-6.60	-56.67	-13.00	43.67	Vertical
2861.20	-49.78	-5.25	-55.03	-13.00	42.03	Vertical
1430.60	-49.96	-8.98	-58.94	-13.00	45.94	Horizontal
2145.90	-48.82	-6.55	-55.37	-13.00	42.37	Horizontal
2861.20	-48.89	-5.37	-54.26	-13.00	41.26	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

LTE band 12 – 10 MHz bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1408.00	-48.47	-8.09	-56.56	-13.00	43.56	Vertical
2112.00	-49.99	-7.25	-57.24	-13.00	44.24	Vertical
2816.00	-50.46	-5.45	-55.91	-13.00	42.91	Vertical
1408.00	-48.52	-8.54	-57.06	-13.00	44.06	Horizontal
2112.00	-49.45	-7.02	-56.47	-13.00	43.47	Horizontal
2816.00	-48.32	-5.47	-53.79	-13.00	40.79	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1415.00	-49.93	-8.25	-58.18	-13.00	45.18	Vertical
2122.50	-50.35	-7.08	-57.43	-13.00	44.43	Vertical
2830.00	-50.42	-5.39	-55.81	-13.00	42.81	Vertical
1415.00	-48.49	-8.68	-57.17	-13.00	44.17	Horizontal
2122.50	-47.76	-6.89	-54.65	-13.00	41.65	Horizontal
2830.00	-49.23	-5.44	-54.67	-13.00	41.67	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1422.00	-49.11	-8.09	-57.20	-13.00	44.20	Vertical
2133.00	-49.57	-7.25	-56.82	-13.00	43.82	Vertical
2844.00	-48.84	-5.45	-54.29	-13.00	41.29	Vertical
1422.00	-49.28	-8.82	-58.10	-13.00	45.10	Horizontal
2133.00	-49.37	-6.73	-56.10	-13.00	43.10	Horizontal
2844.00	-49.55	-5.41	-54.96	-13.00	41.96	Horizontal

Remark:

1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.

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