TEST REPORT

Product	:	AI Dash Camera
Trade mark	:	BRIGADE
Model/Type reference	:	DC-204-AI(NA)-C, DC-204-AI(XXXXX), DC-204-AI(XXXXX)-C (Where "X" can represent any character for any associated variant.)
Serial Number	:	N/A
Report Number	:	EED32P80610802
FCC ID	:	R5XDC200AI
Date of Issue	:	Jun. 21, 2023
Test Standards	:	47 CFR Part 2 47 CFR Part 22 subpart H 47 CFR Part 24 subpart E 47 CFR Part 27
Test result	:	PASS

Prepared for:

Brigade Electronics Group Plc
Brigade House, The Mills, Station Road, South Darenth, DA4 9BD, United Kingdom

Prepared by:

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Compiled by:	Frazer Li	Reviewed by:	Tom Chen
	Frazer Li		Tom Chen
Approved by:	Aaron Ma	Date:	Jun. 21, 2023
	Aaron Ma		

Check No.:5830190423

2 Version

Version No.	Date	Description
00	Jun. 21, 2023	Original

3 Test Summary

LTE band 2			
Test Item	**Test Requirement**	**Test method**	**Result**
Field strength of spurious radiation	Part 2.1053 /Part 2.1057 / Part 24.238(a)(b)	TIA-603-E-2016&KDB 971168 D01v03r01	PASS
Conducted output power	Part 2.1046(a) /Part 24.232(c)	TIA-603-E-2016&KDB 971168 D01v03r01	Note1
Effective Radiated Power of Transmitter(EIRP)	Part 2.1046(a) / Part 24.232(c)	TIA-603-E-2016&KDB 971168 D01v03r01	PASS
peak-to-average ratio	Part 24.232(d)	KDB 971168 D01v03r01	Note1
99% &26dBOccupied Bandwidth	Part 2.1049(h)	Part 24.238(b) &KDB 971168 D01v03r01	Note1
Band Edge at antenna terminals	Part 2.1051/ Part 24.238(a)	Part 24.238(b) &KDB 971168 D01v03r01	Note1
Spurious emissions at antenna terminals	Part 2.1051/ Part 2.1057/ Part 24.238(a)(b)	TIA-603-E-2016&KDB 971168 D01v03r01	Note1
Frequency stability	Part 2.1055/Part 24.235	TIA-603-E-2016&KDB 971168 D01v03r01	Note1

Note1:Refer to the report of Report No.:R2007A0434-R2,(LTE module’s FCC ID:XMR202008EC25AFXD) and Report No.:R1907A0408-R2,(LTE module’s FCC ID:XMR201909EC25AFX)
This test report (Ref. No.:EED32P80610802) is only valid with the original test report (Ref. No.: Report No.:R2007A0434-R2 and Report No.:R1907A0408-R2).
Review this report and original report,the module without changes in circuit and product function, therefore in this report the Radiated Spurious Emission were retested and shown the data in this report, other tests data please refer to original Report No.:R2007A0434-R2 and Report No.:R1907A0408-R2.

LTE band 4			
Test Item	**Test Requirement**	**Test method**	**Result**
Field strength of spurious radiation	Part 2.1053/ Part 27.53(h)	TIA-603-E-2016&KDB 971168 D01v03r01	PASS
Conducted output power	Part 2.1046(a) /Part 27.50(d)	TIA-603-E-2016&KDB 971168 D01v03r01	Note2
Effective Radiated Power of Transmitter(EIRP)	Part 2.1046(a) / Part 27.50(d)	TIA-603-E-2016&KDB 971168 D01v03r01	PASS
peak-to-average ratio	Part 27.50(d)	KDB 971168 D01v03r01	Note2
99% &26dBOccupied Bandwidth	Part 2.1049(h)	Part 27.53(h) &KDB 971168 D01v03r01	Note2
Band Edge at antenna terminals	Part 2.1051/ Part 27.53(h)	Part 27.53(h) &KDB 971168 D01v03r01	Note2
Spurious emissions at antenna terminals	Part 2.1051/ Part 27.53(h)	TIA-603-E-2016&KDB 971168 D01v03r01	Note2
Frequency stability	Part 2.1055/Part 27.54	TIA-603-E-2016&KDB 971168 D01v03r01	Note2

Note2:Refer to the report of Report No.:R2007A0434-R3,(LTE module’s FCC ID:XMR202008EC25AFXD) and Report No.:R1907A0408-R3,(LTE module’s FCC ID:XMR201909EC25AFX).

This test report (Ref. No.:EED32P80610802) is only valid with the original test report (Ref. No.: Report No.:R2007A0434-R3 and Report No.:R1907A0408-R3).

Review this report and original report,the module without changes in circuit and product function, therefore in this report the Radiated Spurious Emission were retested and shown the data in this report, other tests data please refer to original Report No.:R2007A0434-R3 and Report No.:R1907A0408-R3.

LTE Band 5			
Test Item	**Test Requirement**	**Test method**	**Result**
Field strength of spurious radiation	Part 2.1053/ Part 2.1057/ Part 22.917(a)(b)	TIA-603-E-2016&KDB 971168 D01v03r01	PASS
Conducted output power	Part 2.1046(a)/Part 22.913(a)	TIA-603-E-2016&KDB 971168 D01v03r01	Note3
Effective Radiated Power of Transmitter(ERP)	Part 2.1046(a)/Part 22.913(a)	TIA-603-E-2016&KDB 971168 D01v03r01	PASS
99%&26dB Occupied Bandwidth	Part 2.1049(h)	Part 22.917(b) &KDB 971168 D01v03r01	Note3
Band Edge at antenna terminals	Part 2.1051/Part 22.917(a)	Part 22.917(b) &KDB 971168 D01v03r01	Note3
Spurious emissions at antenna terminals	Part 2.1051/ Part 2.1057/ Part 22.917(a)(b)	TIA-603-E-2016&KDB 971168 D01v03r01	Note3
Frequency stability	Part 2.1055/ Part 22.355	TIA-603-E-2016&KDB 971168 D01v03r01	Note3

Note3:Refer to the report of Report No.:R2007A0434-R1,(LTE module’s FCC ID:XMR202008EC25AFXD) and Report No.:R1907A0408-R1,(LTE module’s FCC ID:XMR201909EC25AFX).

This test report (Ref. No.:EED32P80610802) is only valid with the original test report (Ref. No.: Report No.:R2007A0434-R1 and Report No.:R1907A0408-R1).

Review this report and original report,the module without changes in circuit and product function, therefore in this report the Radiated Spurious Emission were retested and shown the data in this report, other tests data please refer to original Report No.:R2007A0434-R1 and Report No.:R1907A0408-R1.

LTE Band 12			
Test Item	**Test Requirement**	**Test method**	**Result**
Field strength of spurious radiation	Part 2.1053/ Part 27.53(g)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Conducted output power	Part 2.1046(a) /Part 27.50(c)	TIA-603-E-2016 & KDB 971168 D01v03r01	Note4
Effective Radiated Power of Transmitter(EIRP)	Part 2.1046(a) / Part 27.50(c)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
99% & 26dB Occupied Bandwidth	Part 2.1049(h)	KDB 971168 D01v03r01	Note4
Band Edge at antenna terminals	Part 2.1051/ Part 27.53(g)	KDB 971168 D01v03r01	Note4
Spurious emissions at antenna terminals	Part 2.1051/ Part 27.53(g)	TIA-603-E-2016 & KDB 971168 D01v03r01	Note4
Frequency stability	Part 2.1055/Part 27.54	TIA-603-E-2016 & KDB 971168 D01v03r01	Note4

Note4:Refer to the report of Report No.:R2007A0434-R3,(LTE module’s FCC ID:XMR202008EC25AFXD) and Report No.:R1907A0408-R3,(LTE module’s FCC ID:XMR201909EC25AFX).

This test report (Ref. No.:EED32P80610802) is only valid with the original test report (Ref. No.: Report No.:R2007A0434-R3 and Report No.:R1907A0408-R3).

Review this report and original report,the module without changes in circuit and product function, therefore in this report the Radiated Spurious Emission were retested and shown the data in this report, other tests data please refer to original Report No.:R2007A0434-R3 and Report No.:R1907A0408-R3.

LTE Band 13			
Test Item	**Test Requirement**	**Test method**	**Result**
Field strength of spurious radiation	Part 2.1053/ Part 27.53(g)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Conducted output power	Part 2.1046(a) /Part 27.50(c)	TIA-603-E-2016 & KDB 971168 D01v03r01	Note5
Effective Radiated Power of Transmitter(EIRP)	Part 2.1046(a) / Part 27.50(c)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
99% & 26dB Occupied Bandwidth	Part 2.1049(h)	KDB 971168 D01v03r01	Note5
Band Edge at antenna terminals	Part 2.1051/ Part 27.53(g)	KDB 971168 D01v03r01	Note5
Spurious emissions at antenna terminals	Part 2.1051/ Part 27.53(g)	TIA-603-E-2016 & KDB 971168 D01v03r01	Note5
Frequency stability	Part 2.1055/Part 27.54	TIA-603-E-2016 & KDB 971168 D01v03r01	Note5

Note5:Refer to the report of Report No.:R2007A0434-R3,(LTE module’s FCC ID:XMR202008EC25AFXD) and Report No.:R1907A0408-R3,(LTE module’s FCC ID:XMR201909EC25AFX).

This test report (Ref. No.:EED32P80610802) is only valid with the original test report (Ref. No.: Report No.:R2007A0434-R3 and Report No.:R1907A0408-R3).

Review this report and original report,the module without changes in circuit and product function, therefore in this report the Radiated Spurious Emission were retested and shown the data in this report, other tests data please refer to original Report No.:R2007A0434-R3 and Report No.:R1907A0408-R3.

LTE Band 66			
Test Item	**Test Requirement**	**Test method**	**Result**
Field strength of spurious radiation	Part 2.1053/ Part 27.53(g)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Conducted output power	Part 2.1046(a) /Part 27.50(c)	TIA-603-E-2016 & KDB 971168 D01v03r01	Note6
Effective Radiated Power of Transmitter(EIRP)	Part 2.1046(a) / Part 27.50(c)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
99% & 26dB Occupied Bandwidth	Part 2.1049(h)	KDB 971168 D01v03r01	Note6
Band Edge at antenna terminals	Part 2.1051/ Part 27.53(g)	KDB 971168 D01v03r01	Note6
Spurious emissions at antenna terminals	Part 2.1051/ Part 27.53(g)	TIA-603-E-2016 & KDB 971168 D01v03r01	Note6
Frequency stability	Part 2.1055/Part 27.54	TIA-603-E-2016 & KDB 971168 D01v03r01	Note6

Note6:Refer to the report of Report No.:R2007A0434-R3,(LTE module’s FCC ID:XMR202008EC25AFXD) and Report No.:R1907A0408-R3,(LTE module’s FCC ID:XMR201909EC25AFX).

This test report (Ref. No.:EED32P80610802) is only valid with the original test report (Ref. No.: Report No.:R2007A0434-R3 and Report No.:R1907A0408-R3).

Review this report and original report,the module without changes in circuit and product function, therefore in this report the Radiated Spurious Emission were retested and shown the data in this report, other tests data please refer to original Report No.:R2007A0434-R3 and Report No.:R1907A0408-R3.

LTE Band 71			
Test Item	**Test Requirement**	**Test method**	**Result**
Field strength of spurious radiation	Part 2.1053/ Part 27.53(g)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Conducted output power	Part 2.1046(a) /Part 27.50(c)	TIA-603-E-2016 & KDB 971168 D01v03r01	Note7
Effective Radiated Power of Transmitter(EIRP)	Part 2.1046(a) / Part 27.50(c)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
99% & 26dB Occupied Bandwidth	Part 2.1049(h)	KDB 971168 D01v03r01	Note7
Band Edge at antenna terminals	Part 2.1051/ Part 27.53(g)	KDB 971168 D01v03r01	Note7
Spurious emissions at antenna terminals	Part 2.1051/ Part 27.53(g)	TIA-603-E-2016 & KDB 971168 D01v03r01	Note7
Frequency stability	Part 2.1055/Part 27.54	TIA-603-E-2016 & KDB 971168 D01v03r01	Note7

Note7:Refer to the report of Report No.:R2007A0434-R3,(LTE module’s FCC ID:XMR202008EC25AFXD) and Report No.:R1907A0408-R3,(LTE module’s FCC ID:XMR201909EC25AFX).

This test report (Ref. No.:EED32P80610802) is only valid with the original test report (Ref. No.: Report No.:R2007A0434-R3 and Report No.:R1907A0408-R3).

Review this report and original report,the module without changes in circuit and product function, therefore in this report the Radiated Spurious Emission were retested and shown the data in this report, other tests data please refer to original Report No.:R2007A0434-R3 and Report No.:R1907A0408-R3.

Remark:

The module only applies LTE band 2,LTE band 4,LTE Band 5,LTE Band 12,LTE Band 13,LTE Band 66 and LTE Band 71,Other frequency bands are not in use.

Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn’t verified.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application

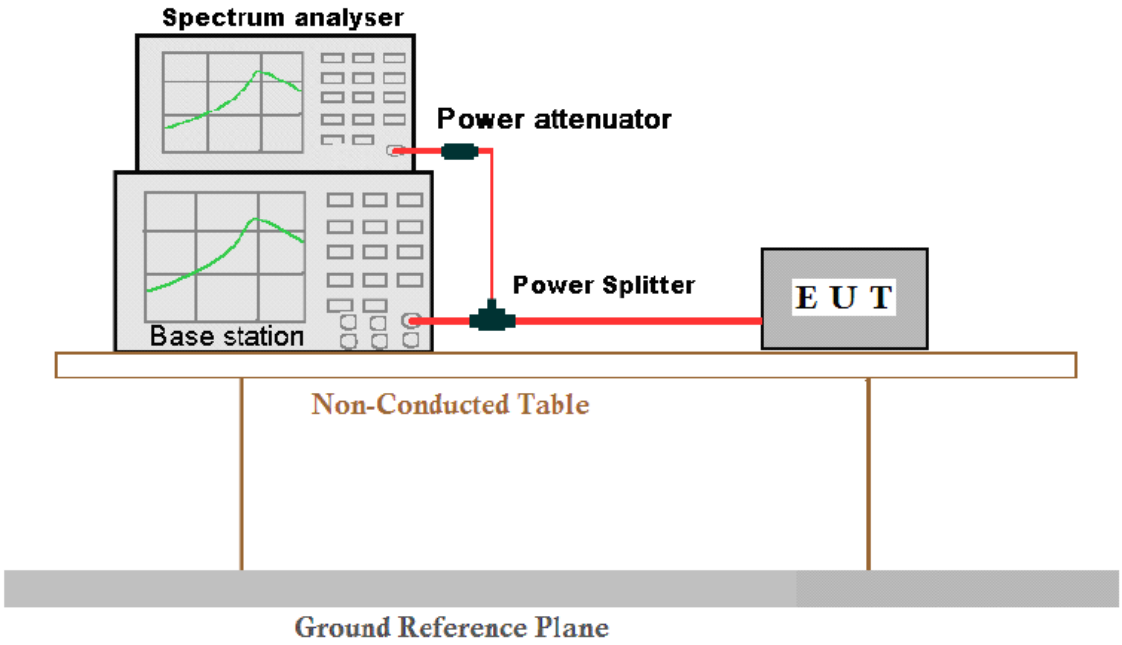
4 Content

5 Test Requirement

5.1 Test setup

5.1.1 For Radiated Emissions test setup

Test setup 1:



Radiated Emissions setup:

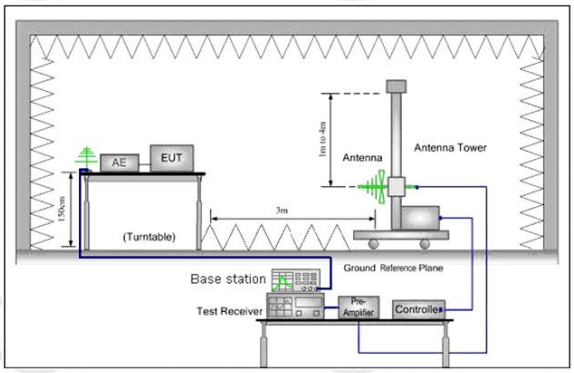


Figure 1.30MHz to 1GHz

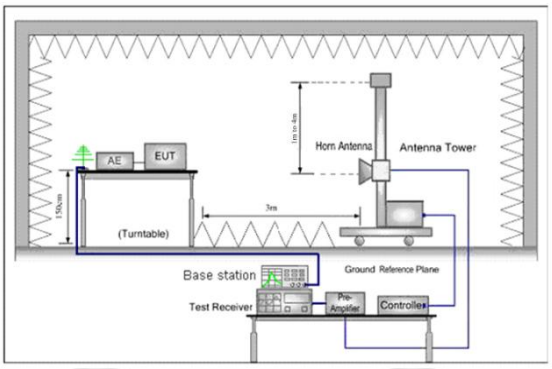


Figure 2. above 1GHz

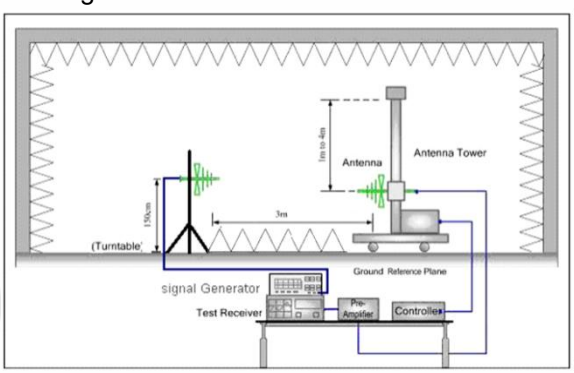


Figure 1. 30MHz to 1GHz

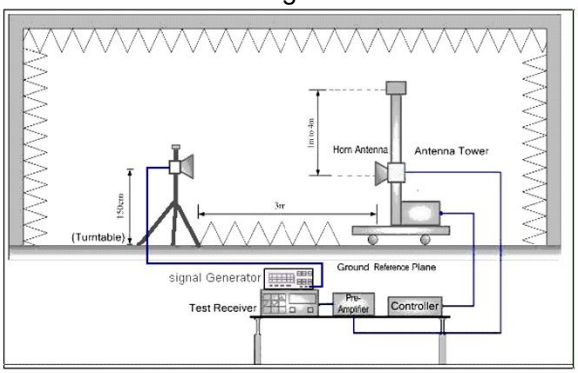


Figure 2. above 1GHz

5.2 Test Environment

Operating Environment:	
Radiated Spurious Emissions:	
Temperature:	22~25.0 °C
Humidity:	50~56 % RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

Test channel:

Test Mode	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink(MHz)
LTE band2 TX:1850-1910MHz	Low Range	1.4	18607	1850.7
		3	18615	1851.5
		5	18625	1852.5
		10	18650	1855
		15	18675	1857.5
		20	18700	1860
	Mid Range	1.4/3/5/10/15/20	18900	1880
	High Range	1.4	19193	1909.3
		3	19185	1908.5
		5	19175	1907.5
		10	19150	1905
		15	19125	1902.5
		20	19100	1900

Test Mode	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink(MHz)
LTE band 4 TX:1710–1755 MHz	Low Range	1.4	19957	1710.7
		3	19965	1711.5
		5	19976	1712.5
		10	20000	1715
		15	20025	1717.5
		20	20050	1720
	Mid Range	1.4/3/5/10/15/20	20175	1732.5
	High Range	1.4	20393	1754.3
		3	20385	1753.5
		5	20375	1752.5
		10	20350	1750
		15	20325	1747.5
		20	20300	1745

Test Mode	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink(MHz)
LTE band 5 TX:824–849 MHz	Low Range	1.4	20407	824.7
		3	20415	825.5
		5	20425	826.5
		10	20450	829
	Mid Range	1.4/3/5/10	20525	836.5
	High Range	1.4	20643	848.3
		3	20635	847.5
		5	20625	846.5
		10	20600	844

Test Mode	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink(MHz)
LTE band 12 TX:699 to 716 MHz	Low Range	1.4	23017	699.7
		3	23025	700.5
		5	23035	701.5
		10	23060	704
	Mid Range	1.4/3/5/10	23095	707.5
	High Range	1.4	23173	715.3
		3	23165	714.5
		5	23155	713.5
		10	23130	711

Test Mode	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink(MHz)
LTE band 13 TX:777 to 787 MHz	Low Range	5	23205	779.5
		10	23230	782
	Mid Range	5/10	23230	782
	High Range	5	23255	784.5
		10	23230	782

Test Mode	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink(MHz)
LTEband66 Tx: 1710- 1780MHz	Low Range	1.4	131979	1710.7
		3	131987	1711.5
		5	131997	1712.5
		10	132022	1715
		15	132047	1717.5
		20	132072	1720
	Mid Range	1.4/3/5/10/15/20	132322	1745
	High Range	1.4	132665	1779.3
		3	132657	1778.5
		5	132647	1777.5
		10	132622	1775
		15	132597	1772.5
		20	132572	1770

Test Mode	Test Frequency ID	Bandwidth (MHz)	Number [UL]	Frequency of Uplink(MHz)
LTEband71 Tx: 663- 698MHz	Low Range	5	133147	665.5
		10	133172	668
		15	133197	670.5
		20	133222	673
	Mid Range	5/10/15/20	133297	680.5
	High Range	5	133447	695.5
		10	133422	693
		15	133397	690.5
		20	133372	688

6 General Information

6.1 Client Information

Applicant:	Brigade Electronics Group Plc
Address of Applicant:	Brigade House, The Mills, Station Road, South Darenth, DA4 9BD, United Kingdom
Manufacturer:	Brigade Electronics Group Plc
Address of Manufacturer:	Brigade House, The Mills, Station Road, South Darenth, DA4 9BD, United Kingdom

6.2 General Description of EUT

Product Name:	AI Dash Camera
Model No.:	DC-204-AI(NA)-C, DC-204-AI(XXXXX), DC-204-AI(XXXXX)-C (Where "X" can represent any character for any associated variant.)
Model similarities and differences:	The main test model is DC-204-AI(NA)-C and series mode are, DC-204AI(XXXXX), DC-204-AI(XXXXX)-C Where "X" can represent any character for any associated variant. Bespoke models can have reduced electronic component population and cabling, software changes, customized settings or differing equipment connections. The appearance, structure, circuit schematic diagram, PCB layout, etc. are the same for both. The difference of the series models is due to reduced electronic components and cabling, software, customised settings or differing equipment connections.
Trade mark:	BRIGADE
Power Supply:	9-36V⎓ 2A
Sample Received Date:	Apr. 27, 2023
Sample tested Date:	May. 29, 2023 to Jun. 08, 2023

6.3 Product Specification subjective to this standard

Frequency Band:	LTE Band 2: Tx: 1850-1910MHz; LTE Band 4: Tx: 1710-1755 MHz; LTE Band 5: Tx: 824-849 MHz; LTE Band 12: Tx: 699-716 MHz; LTE Band 13:TX:777 -787 MHz; LTE Band 66:Tx: 1710- 1780MHz; LTE Band 71:Tx: 663- 698MHz;
Modulation Type:	QPSK, 16QAM
Antenna Type	Internal antenna
Antenna Gain:	LTE B2: 1.72dBi, LTE B4: 1.72dBi, LTE B5:0.37dBi, LTE B12: 0.37dBi, LTE B13 :0.37dBi, LTE B66:1.72dBi, LTE B71:0.37dBi

6.4 Description of Support Units

The EUT has been tested with associated equipment below.

1）support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd
Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China
Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385
No tests were sub-contracted.
FCC Designation No.: CN1164

6.6 Deviation from Standards

None.

6.7 Abnormalities from Standard Conditions

None.

6.8 Other Information Requested by the Customer

None.

6.9 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.3dB (30MHz-1GHz)
		4.5dB (1GHz-12.75GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

7 Equipment List

3M full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
RSE Automatic test software	JS Tonscend	JS36-RSE	10166	---	---
Receiver	Keysight	N9038A	MY57290136	02-27-2023	02-26-2024
Spectrum Analyzer	Keysight	N9020B	MY57111112	02-21-2023	02-20-2024
Spectrum Analyzer	Keysight	N9030B	MY57140871	02-21-2023	02-20-2024
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-28-2021	04-27-2024
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-15-2021	04-14-2024
Horn Antenna	ETS-LINDGREN	3117	57407	07-04-2021	07-03-2024
Preamplifier	EMCI	EMC184055SE	980597	04-13-2023	04-12-2024
Preamplifier	EMCI	EMC001330	980563	03-28-2023	03-27-2024
Preamplifier	JS Tonscend	TAP-011858	AP21B806112	07-29-2022	07-28-2023
Communication test set	R&S	CMW500	102898	12-23-2022	12-22-2023
Temperature/ Humidity Indicator	biaozhi	GM1360	EE1186631	04-11-2023	04-10-2024
Fully Anechoic Chamber	TDK	FAC-3	---	01-09-2021	01-08-2024
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	---	---
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	---	---
Cable line	Times	EMC104-NMNM-1000	SN160710	---	---
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	---	---
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	---	---
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	---	---
Cable line	Times	HF160-KMKM-3.00M	393493-0001	---	---

7.1 Effective Radiated Power of Transmitter(EIRP)

Band	Conducted power (dBm)	Antenna gain (dBi)	ERP/EIRP (dBm)	Limit (dBm)	Conclusion
LTE Band 2	23.84	1.72	25.56	33	Pass
LTE Band 4	23.72	1.72	25.44	30	Pass
LTE Band 5	24.19	0.37	22.41	38.45	Pass
LTE Band 12	23.74	0.37	21.96	34.77	Pass
LTE Band 13	23.85	0.37	22.07	34.77	Pass
LTE Band 66	23.82	1.72	25.54	30	Pass
LTE Band 71	23.47	0.37	21.69	34.77	Pass

Remark:

1.The Conducted power refer to the report of Report No.:R2007A0434-R1,R2007A0434-R2,R2007A0434-R3,R1907A0408-R1,R1907A0408-R2,R1907A0408-R3..Only the worst case was recorded in the report.

2.According to KDB 412172 D01 Power Approach,Calculate power in dBm by the following formula:

ERP(dBm) = Conducted output powe(dBm) + antenna gain (dBd)

EIRP(dBm) = Conducted output powe(dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB

7.2 Field strength of spurious radiation

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-30MHz	Peak	10kHz	30kHz	Peak
30MHz-1GHz	Peak	120kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak

Measurement Procedure:

1. Scan up to 10th harmonic, find the maximum radiation frequency to measure.
2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT.

Test procedure as below:

The EUT was powered ON and placed on a 1.5m hight table at a 3 meter fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.

The EUT was set 3 meters(above 18GHz the distance is 1 meter) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter.

A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions.

The output power into the substitution antenna was then measured.

Steps 6) and 7)were repeated with both antennas polarized.

Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)

EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

EIRP=ERP+2.15dB

where:

Pg is the generator output power into the substitution antenna.

) Test the EUT in the lowest channel, the middle channel the Highest channel

) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode,And found the X axis positioning which it is worse case.

) Repeat above procedures until all frequencies measured was complete.

Limit: Attenuated at least 43+10log(P)

Measurement Data

Remark: Only the worst case was recorded in the report.

QPSK:

Mode:	LTE Traffic						
Band:	2	Channel:	18700				
Remark:	20MHz						

NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	120.034	150	357	-58.85	-13.00	45.85	PASS	Horizontal
2	199.978	150	357	-69.90	-13.00	56.90	PASS	Horizontal
3	281.4743	150	357	-73.48	-13.00	60.48	PASS	Horizontal
4	625.117	150	340	-72.72	-13.00	59.72	PASS	Horizontal
5	5002.6001	150	146	-55.53	-13.00	42.53	PASS	Horizontal
6	14398.3199	150	360	-46.25	-13.00	33.25	PASS	Horizontal
7	48.4337	150	115	-66.76	-13.00	53.76	PASS	Vertical
8	120.034	150	357	-61.65	-13.00	48.65	PASS	Vertical
9	259.936	150	115	-69.13	-13.00	56.13	PASS	Vertical
10	742.1224	150	357	-62.69	-13.00	49.69	PASS	Vertical
11	5002.6001	150	289	-55.11	-13.00	42.11	PASS	Vertical
12	16491.6746	150	30	-45.67	-13.00	32.67	PASS	Vertical

Mode:	LTE Traffic						
Band:	4	Channel:	20050				
Remark:	20MHz						

NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	45.3291	150	108	-73.14	-13.00	60.14	PASS	Horizontal
2	120.034	150	357	-58.44	-13.00	45.44	PASS	Horizontal
3	360.06	150	357	-71.01	-13.00	58.01	PASS	Horizontal
4	5032.6016	150	150	-55.77	-13.00	42.77	PASS	Horizontal
5	10992.3996	150	29	-49.53	-13.00	36.53	PASS	Horizontal
6	14525.0763	150	327	-46.12	-13.00	33.12	PASS	Horizontal
7	40.2841	150	183	-63.98	-13.00	50.98	PASS	Vertical
8	120.034	150	357	-62.76	-13.00	49.76	PASS	Vertical
9	259.936	150	39	-69.11	-13.00	56.11	PASS	Vertical
10	3810.0405	150	289	-58.50	-13.00	45.50	PASS	Vertical
11	8154.2577	150	326	-53.35	-13.00	40.35	PASS	Vertical
12	10390.1195	150	181	-50.10	-13.00	37.10	PASS	Vertical

Mode:	LTE Traffic							
Band:	5		Channel:		20450			
Remark:	10MHz							
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	43.0006	150	11	-64.04	-13.00	51.04	PASS	Horizontal
2	95.197	150	2	-59.75	-13.00	46.75	PASS	Horizontal
3	327.8496	150	2	-64.17	-13.00	51.17	PASS	Horizontal
4	1598.4598	150	65	-60.22	-13.00	47.22	PASS	Horizontal
5	4651.5826	150	329	-56.96	-13.00	43.96	PASS	Horizontal
6	9276.3138	150	346	-49.73	-13.00	36.73	PASS	Horizontal
7	50.5681	150	19	-56.25	-13.00	43.25	PASS	Vertical
8	133.0346	150	1	-56.57	-13.00	43.57	PASS	Vertical
9	276.0412	150	1	-65.22	-13.00	52.22	PASS	Vertical
10	2566.5567	150	150	-58.20	-13.00	45.20	PASS	Vertical
11	8764.0382	150	83	-51.86	-13.00	38.86	PASS	Vertical
12	13909.2955	150	38	-47.90	-13.00	34.90	PASS	Vertical

Mode:	LTE Traffic							
Band:	12		Channel:		23060			
Remark:	10MHz							
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	60.076	150	10	-72.02	-13.00	59.02	PASS	Horizontal
2	91.1222	150	2	-58.89	-13.00	45.89	PASS	Horizontal
3	327.0734	150	2	-67.38	-13.00	54.38	PASS	Horizontal
4	1432.4432	150	270	-59.51	-13.00	46.51	PASS	Horizontal
5	3588.7794	150	200	-57.71	-13.00	44.71	PASS	Horizontal
6	9085.0543	150	218	-52.54	-13.00	39.54	PASS	Horizontal
7	38.5377	150	2	-54.10	-13.00	41.10	PASS	Vertical
8	140.4081	150	2	-53.97	-13.00	40.97	PASS	Vertical
9	291.3703	150	2	-67.12	-13.00	54.12	PASS	Vertical
10	2410.7411	150	260	-59.09	-13.00	46.09	PASS	Vertical
11	4575.8288	150	305	-57.73	-13.00	44.73	PASS	Vertical
12	9025.0513	150	73	-52.32	-13.00	39.32	PASS	Vertical

Mode:	LTE Traffic							
Band:	13		Channel:		23230			
Remark:	10M							
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	64.927	150	32	-62.38	-13.00	49.38	PASS	Horizontal
2	120.034	150	357	-60.07	-13.00	47.07	PASS	Horizontal
3	274.2949	150	2	-66.03	-13.00	53.03	PASS	Horizontal
4	2199.72	150	20	-59.05	-13.00	46.05	PASS	Horizontal
5	4381.5691	150	276	-58.10	-13.00	45.10	PASS	Horizontal
6	8505.2753	150	350	-52.67	-13.00	39.67	PASS	Horizontal
7	53.4787	150	1	-57.73	-13.00	44.73	PASS	Vertical
8	163.4987	150	9	-60.15	-13.00	47.15	PASS	Vertical
9	309.2218	150	32	-64.76	-13.00	51.76	PASS	Vertical
10	2108.3108	150	117	-59.72	-13.00	46.72	PASS	Vertical
11	5011.6006	150	95	-55.55	-13.00	42.55	PASS	Vertical
12	12788.7394	150	244	-49.03	-13.00	36.03	PASS	Vertical

Mode:	LTE Traffic							
Band:	66		Channel:		132322			
Remark:	20M							
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	61.6283	150	33	-63.78	-13.00	50.78	PASS	Horizontal
2	120.034	150	357	-59.19	-13.00	46.19	PASS	Horizontal
3	360.06	150	357	-69.88	-13.00	56.88	PASS	Horizontal
4	2119.712	150	66	-59.48	-13.00	46.48	PASS	Horizontal
5	5032.6016	150	292	-55.67	-13.00	42.67	PASS	Horizontal
6	13738.2869	150	29	-47.94	-13.00	34.94	PASS	Horizontal
7	64.7329	150	33	-54.44	-13.00	41.44	PASS	Vertical
8	120.034	150	357	-61.46	-13.00	48.46	PASS	Vertical
9	221.3223	150	33	-68.27	-13.00	55.27	PASS	Vertical
10	2711.1711	150	43	-58.51	-13.00	45.51	PASS	Vertical
11	4986.0993	150	324	-55.58	-13.00	42.58	PASS	Vertical
12	10141.1071	150	206	-48.89	-13.00	35.89	PASS	Vertical

Mode:	LTE Traffic						
Band:	71	Channel:	133297				
Remark:	20M						

NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	61.6276	150	33	-63.78	-13.00	50.78	PASS	Horizontal
2	140.6021	150	33	-61.61	-13.00	48.61	PASS	Horizontal
3	360.06	150	357	-69.88	-13.00	56.88	PASS	Horizontal
4	3193.5097	150	182	-56.65	-13.00	43.65	PASS	Horizontal
5	14405.8203	150	3	-45.86	-13.00	32.86	PASS	Horizontal
6	25022.6809	150	357	-52.33	-13.00	39.33	PASS	Horizontal
7	64.7329	150	33	-54.44	-13.00	41.44	PASS	Vertical
8	120.034	150	357	-61.46	-13.00	48.46	PASS	Vertical
9	211.6203	150	33	-63.33	-13.00	50.33	PASS	Vertical
10	360.06	150	249	-71.04	-13.00	58.04	PASS	Vertical
11	3015.7508	150	287	-57.90	-13.00	44.90	PASS	Vertical
12	13706.0353	150	260	-47.91	-13.00	34.91	PASS	Vertical

Note:

1.Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

2.All modulation and all Bandwidth had been tested, but only the worst case data displayed in this report.

3.Since 2.4G WiFi and LTE can transmit simultaneously, therefore have provided the test result of Radiated spurious emission under co-location condition.