TEST REPORT

APPLICANT	:	Xingtera Inc.
PRODUCT NAME	:	Xingtera IP Camera Series
MODEL NAME	:	XTEE50216, XTEE51216
BRAND NAME	:	Xingtera
FCC ID	:	2AWQ9-XTEE50216
STANDARD(S)	:	47 CFR Part 2 47 CFR Part 96
RECEIPT DATE	:	2022-09-15
TEST DATE	:	2022-09-22 to 2022-09-28
ISSUE DATE	:	2022-11-29

Edited by: Peng Mi (Rapporteur)

Approved by: Shen Junsheng (Supervisor)

MORLAB

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Change History		
Version	**Date**	**Reason for change**
1.0	2022-11-29	First edition

1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Xingtera Inc.
Applicant Address:	4633 Old Ironsides Dr, Suite 460, Santa Clara, California, USA, 95054
Manufacturer:	Xiamen Four-Faith Communication Technology Co., Ltd.
Manufacturer Address:	11th Floor, A-06 Area, No.370, Chengyi Street, Jimei District, Xiamen City, Fujian Province, China

1.2. Equipment Under Test (EUT) Description

Product Name:	Xingtera IP Camera Series	
Sample No.:	3#	
Hardware Version:	V1.0.1.0	
Software Version:	FFIPC_11.1.0.6-r29	
Modulation Type:	QPSK, 16QAM	
Operation Band:	Band 48	
Frequency Range:	LTE Band 48	Tx: 3550MHz–3700MHz
		Rx: 3550MHz–3700MHz
Channel Bandwidth	LTE Band 48	5MHz, 10MHz, 15MHz, 20MHz
Antenna Type:	Fixed External Antenna	
Antenna Gain:	LTE Band 48	3.49dBi

Note 1: This test report is variant from the original report (Report No.: SZ22090060W02, FCC ID: 2A8OE-F-SC241), based on the similarity between before, changed the applicant information, product name, brand name, FCC ID and model name, and they certify that the product have two models as below: XTEE50216 and XTEE51216 are accordant in both hardware and basic software, these models only differ in software function, XTEE51216 software support AI process function. Manufacturer information, product name and brand name are the same. No other changes, and the changes do not affect the results in this report.

Note 1: The test results of all conducted test items please refer to the module FCC test report (FCC ID: ZMOFM160NA, Report No.: FYCR220400010001), which issued on May 20, 2022 and test report (FCC ID: ZMOFM160NA, Report No.: KSCR220500074001), which issued on May 13, 2022 by SGS-CSTC Standards Technical Services (Suzhou) Co.,Ltd. We only recorded the radiated test result in this report.

Note 2: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.3. Maximum E.R.P./E.I.R.P. and Emission Designator

LTE Band 48	**Maximum E.R.P./E.I.R.P. (W)**	
BW(MHz)	QPSK	16QAM
20	0.284	0.311
15	0.349	0.274
10	0.364	0.300
5	0.394	0.270

1.4. Test Standards and Results

The objective of the report is to perform testing according to Part 2 and Part 96 for the EUT FCC ID Certification:

No	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 96	CITIZENS BROADBAND RADIO SERVICE

Test detailed items/section required by FCC rules and results are as below:

Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
2.1046, 96.41(b)	Transmitter Conducted Output Power and ERP/EIRP	Sep. 22, 2022	Li Huaijie	PASS$_{Note2}$	No deviation
2.1049	Occupied Bandwidth	N/A	N/A	N/A$_{Note1}$	N/A
96.41(g)	Peak -Average Ratio	N/A	N/A	N/A$_{Note1}$	N/A
2.1055	Frequency Stability	N/A	N/A	N/A$_{Note1}$	N/A
2.1051, 96.41(e)	Conducted Spurious Emissions	N/A	N/A	N/A$_{Note1}$	N/A
2.1051, 96.41(e)	Band Edge	N/A	N/A	N/A$_{Note1}$	N/A
2.1051, 96.41(e)	Radiated Spurious Emissions	Sep. 28, 2022	Gao Jianrou	PASS$_{Note2}$	No deviation

Note 1: The test results of all conducted test items please refer to the module FCC test report (FCC ID: ZMOFM160NA, Report No.: FYCR220400010001), which issued on May 20, 2022 and test report (FCC ID: ZMOFM160NA, Report No.: KSCR220500074001), which issued on May 13, 2022 by SGS-CSTC Standards Technical Services (Suzhou) Co.,Ltd. We only recorded the radiated test result in this report.

Note 2: The test results of these test items in this report refer to the test report (Report No.: SZ22090060W02).

Note 3: Additions to, deviation, or exclusions from the method shall be judged in the "method

determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 4: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

1.5. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106

2. 47 CFR Part 2, Part 96 Requirements

2.1. E.R.P./E.I.R.P.

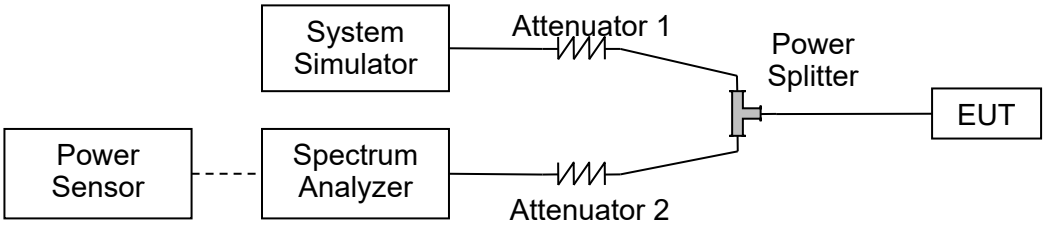
2.1.1.Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

The maximum effective isotropic radiated power (EIRP) and maximum Power Spectral Density (PSD) of any CBSD and End User Device must comply with the limits shown in the table as below. paragraph

Device	Maximum EIRP (dBm/10 megahertz)	Maximum PSD (dBm/MHz)
End User Device	23	n/a
Category A CBSD	30	20
Category B CBSD[1]	47	37

2.1.2.Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.1.3.Test procedure

KDB 971168 D01v03 Section 5.2 and ANSI/TIA-603-E-2016.

EIRP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi)
ERP (dBm) = EIPR (dBm) - 2.15

2.1.4.Result

Effective Radiated Power and Effective Isotropic Radiated Power:

LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55340		55990		56640	
Frequency (MHz)				3560		3625		3690	
				dBm	W	dBm	W	dBm	W
20	QPSK	1	0	22.27	0.169	24.41	0.276	23.12	0.205
20	QPSK	1	49	22.09	0.162	24.32	0.270	23.29	0.213
20	QPSK	1	99	21.84	0.153	24.53	0.284	23.29	0.213
20	QPSK	50	0	23.32	0.215	23.58	0.228	24.31	0.270
20	QPSK	50	24	23.31	0.214	23.71	0.235	24.54	0.284
20	QPSK	50	50	23.34	0.216	23.08	0.203	22.09	0.162
20	QPSK	100	0	20.78	0.120	20.81	0.121	19.46	0.088
20	16QAM	1	0	23.62	0.230	23.81	0.240	23.95	0.248
20	16QAM	1	49	23.75	0.237	23.66	0.232	24.93	0.311
20	16QAM	1	99	20.77	0.119	21.85	0.153	24.73	0.297
20	16QAM	50	0	20.26	0.106	22.57	0.181	22.97	0.198
20	16QAM	50	24	22.57	0.181	20.33	0.108	23.43	0.220
20	16QAM	50	50	22.39	0.173	22.42	0.175	23.54	0.226
20	16QAM	100	0	19.76	0.095	17.24	0.053	20.69	0.117

LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55315		55990		56665	
Frequency (MHz)				3557.5		3625		3692.5	
				dBm	W	dBm	W	dBm	W
15	QPSK	1	0	24.41	0.276	24.75	0.299	25.00	0.316
15	QPSK	1	37	24.50	0.282	24.80	0.302	25.43	0.349
15	QPSK	1	74	24.54	0.284	24.13	0.259	25.27	0.337
15	QPSK	36	0	23.32	0.215	23.48	0.223	24.31	0.270
15	QPSK	36	20	23.42	0.220	23.75	0.237	24.44	0.278
15	QPSK	36	39	23.46	0.222	23.49	0.223	24.54	0.284
15	QPSK	75	0	21.80	0.151	22.22	0.167	23.48	0.223
15	16QAM	1	0	23.40	0.219	23.21	0.209	24.06	0.255
15	16QAM	1	37	23.49	0.223	23.46	0.222	24.06	0.255
15	16QAM	1	74	23.40	0.219	23.61	0.230	24.38	0.274
15	16QAM	36	0	22.31	0.170	20.42	0.110	23.41	0.219
15	16QAM	36	20	22.35	0.172	22.83	0.192	21.28	0.134
15	16QAM	36	39	22.45	0.176	22.78	0.190	23.45	0.221
15	16QAM	75	0	21.21	0.132	21.56	0.143	22.30	0.170

LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55290		55990		56690	
Frequency (MHz)				3555		3625		3695	
				dBm	W	dBm	W	dBm	W
10	QPSK	1	0	24.40	0.275	24.76	0.299	25.27	0.337
10	QPSK	1	25	24.76	0.299	24.85	0.305	25.61	0.364
10	QPSK	1	49	24.47	0.280	24.69	0.294	25.51	0.356
10	QPSK	25	0	23.60	0.229	23.64	0.231	24.69	0.294
10	QPSK	25	12	23.69	0.234	24.02	0.252	24.63	0.290
10	QPSK	25	25	23.33	0.215	24.16	0.261	24.43	0.277
10	QPSK	50	0	23.76	0.238	23.69	0.234	24.73	0.297
10	16QAM	1	0	23.73	0.236	23.64	0.231	24.25	0.266
10	16QAM	1	25	23.63	0.231	23.60	0.229	24.77	0.300
10	16QAM	1	49	23.42	0.220	24.04	0.254	24.42	0.277
10	16QAM	25	0	22.70	0.186	22.92	0.196	23.35	0.216
10	16QAM	25	12	22.66	0.185	23.06	0.202	23.68	0.233
10	16QAM	25	25	22.62	0.183	22.89	0.195	23.69	0.234
10	16QAM	50	0	22.34	0.171	22.80	0.191	23.85	0.243

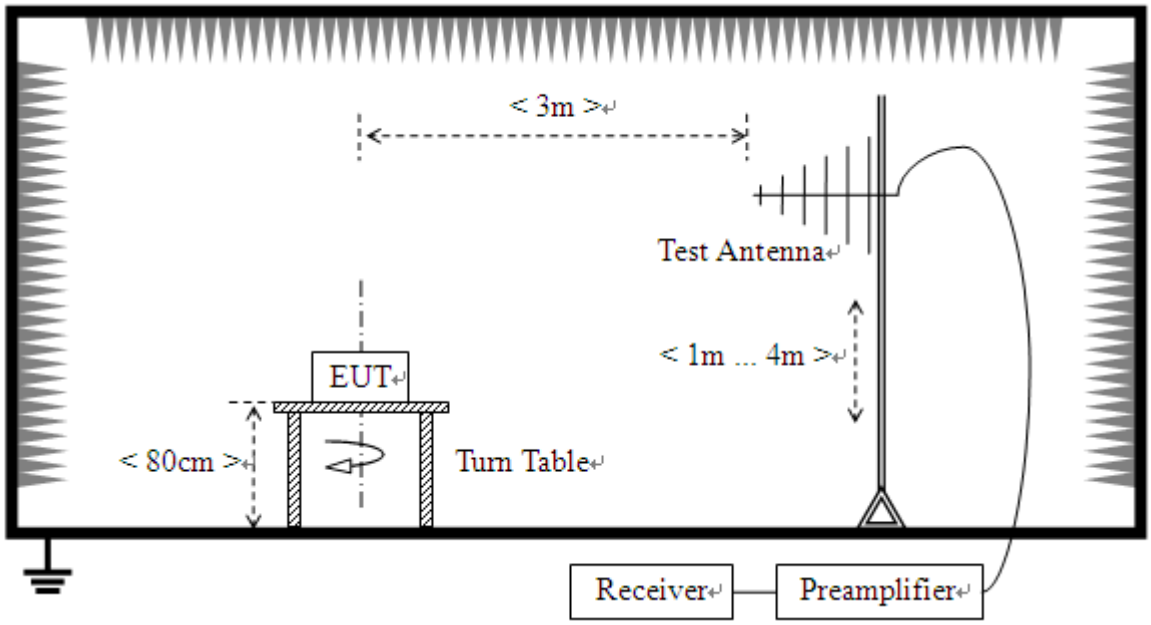
LTE Band 48				Measured E.I.R.P.					
BW [MHz]	Modulation	RB Size	RB Offset	Low Ch. / Freq.		Middle Ch. / Freq.		High Ch. / Freq.	
Channel				55265		55990		56175	
Frequency (MHz)				3552.5		3625		3697.5	
				dBm	W	dBm	W	dBm	W
5	QPSK	1	0	24.26	0.267	24.76	0.299	25.96	0.394
5	QPSK	1	12	24.49	0.281	24.55	0.285	25.23	0.333
5	QPSK	1	24	24.42	0.277	24.90	0.309	25.09	0.323
5	QPSK	12	0	23.80	0.240	23.14	0.206	24.27	0.267
5	QPSK	12	7	23.37	0.217	23.29	0.213	24.84	0.305
5	QPSK	12	13	23.72	0.236	24.56	0.286	23.93	0.247
5	QPSK	25	0	23.47	0.222	23.19	0.208	25.03	0.318
5	16QAM	1	0	23.50	0.224	23.89	0.245	24.07	0.255
5	16QAM	1	12	23.32	0.215	23.90	0.245	24.31	0.270
5	16QAM	1	24	23.38	0.218	22.93	0.196	23.34	0.216
5	16QAM	12	0	22.31	0.170	22.20	0.166	23.38	0.218
5	16QAM	12	7	22.47	0.177	22.96	0.198	23.23	0.210
5	16QAM	12	13	22.55	0.180	22.90	0.195	23.51	0.224
5	16QAM	25	0	22.52	0.179	21.96	0.157	23.34	0.216

2.2. Radiated Spurious Emissions

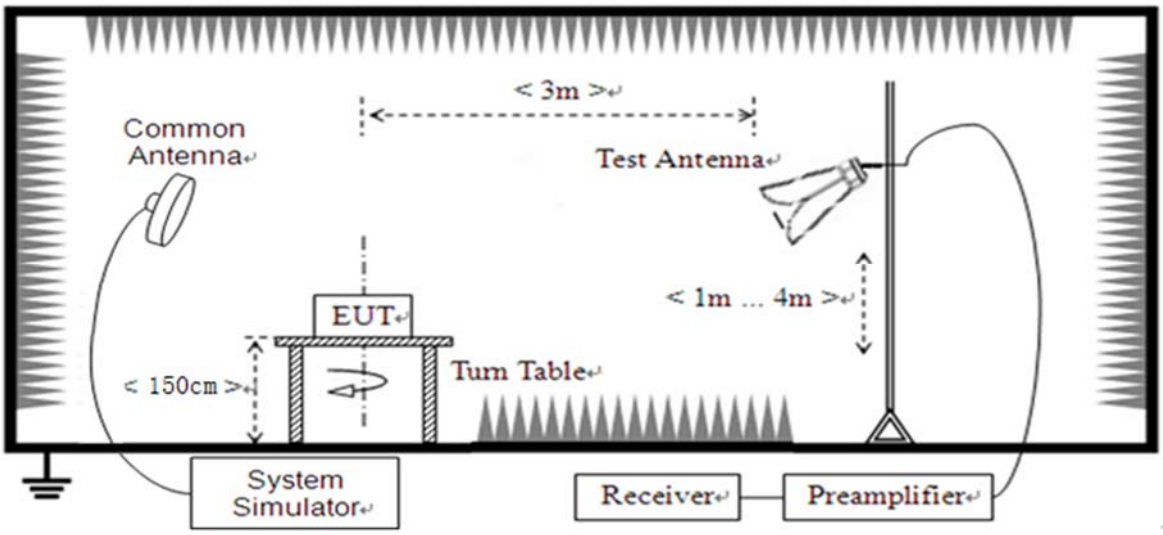
2.2.1.Requirement

The power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

2.2.2.Test Description



(For the test frequency from 30MHz to1GHz)



(For the test frequency above 1GHz)

The EUT is located in a 3m Full-Anechoic Chamber, the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.
A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power, and only the test result of the maximum output power was recorded.
In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground and the Turn Table is actuated to turn from 0° to 360°to determine the maximum value of the radiated power. The emission levels at both horizontal and vertical polarizations should be tested. The Filters consists of Notch Filters and High Pass Filter.

Note: when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

2.2.3.Test procedure

KDB 971168 D01v03 Section 5.8 and ANSI/TIA-603-E-2016.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements.

2.2.4.Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested to verify the out of band emissions.

The substitution corrections are obtained as described below:

$A_{SUBST} = P_{SUBST\_TX} - P_{SUBST\_RX} - L_{SUBST\_CABLES} + G_{SUBST\_TX\_ANT}$

$A_{TOT} = L_{CABLES} + A_{SUBST}$

Where A_{SUBST} is the final substitution correction including receive antenna gain.

P_{SUBST_TX} is signal generator level,

P_{SUBST_RX} is receiver level,

L_{SUBST_CABLES} is cable losses including TX cable,

$G_{SUBST\_TX\_ANT}$ is substitution antenna gain.

A_{TOT} is total correction factor including cable loss and substitution correction

During the test, the data of A_{TOT} was added in the test spectrum analyze, so spectrum analyze reading is the final values which contain the data of A_{TOT}.

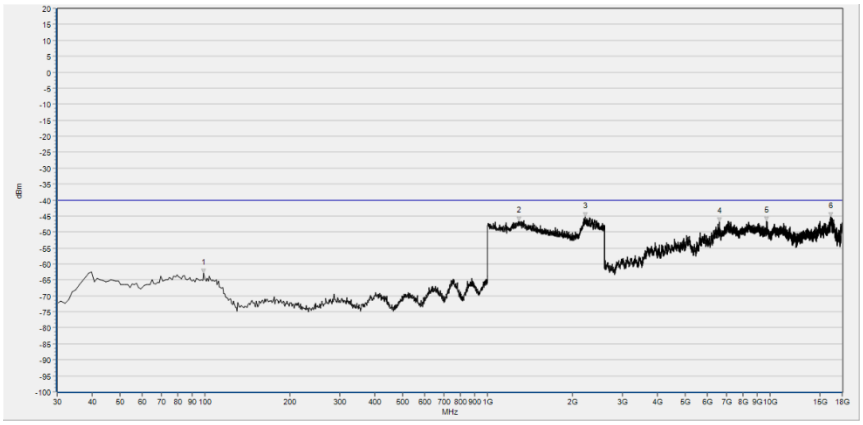
Note1: The power of the EUT transmitting frequency should be ignored.

Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

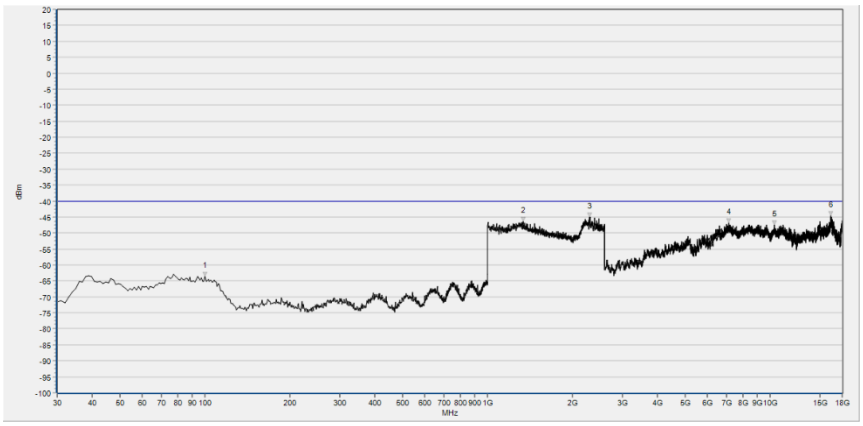
Note3: All bandwidth and modulation were considered and evaluated respectively by performing full test for each band, only the worst cases (Max Bandwidth and QPSK mode) were recorded in this test report.

Note4: N/A means the frequency is the basic frequency or the base station frequency, they are no need to verdict.

LTE Band 48, 20MHz BW, Low Channel, QPSK

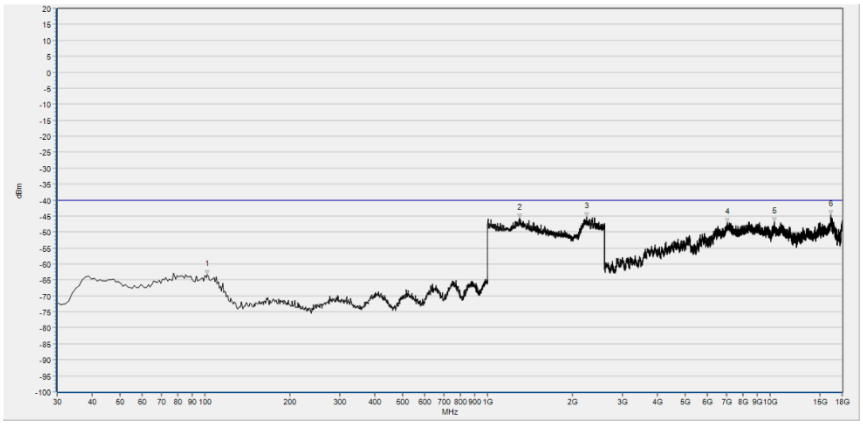


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	98.939	-62.89	-40.00	Horizontal	PASS
2	1293.093	-46.69	-40.00	Horizontal	PASS
3	2212.412	-45.28	-40.00	Horizontal	PASS
4	6632.527	-46.91	-40.00	Horizontal	PASS
5	9725.465	-46.69	-40.00	Horizontal	PASS
6	16382.677	-45.29	-40.00	Horizontal	PASS

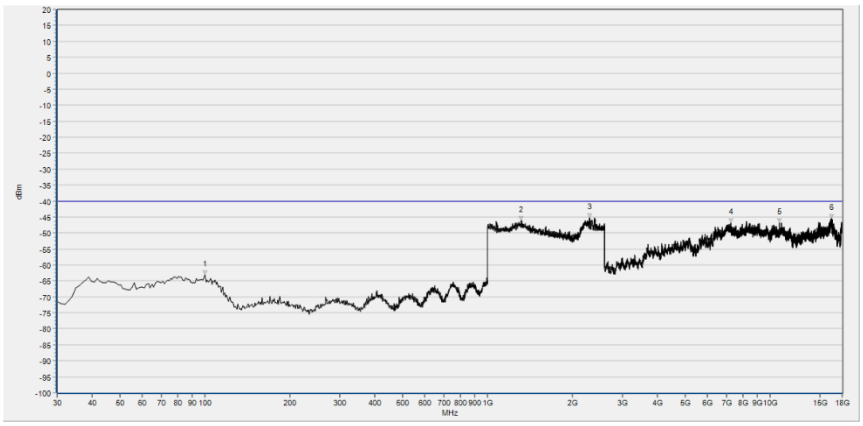


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	99.910	-63.65	-40.00	Vertical	PASS
2	1339.540	-46.43	-40.00	Vertical	PASS
3	2300.501	-44.93	-40.00	Vertical	PASS
4	7156.231	-46.86	-40.00	Vertical	PASS
5	10335.427	-47.50	-40.00	Vertical	PASS
6	16425.805	-44.58	-40.00	Vertical	PASS

LTE Band 48, 20MHz BW, Mid Channel, QPSK

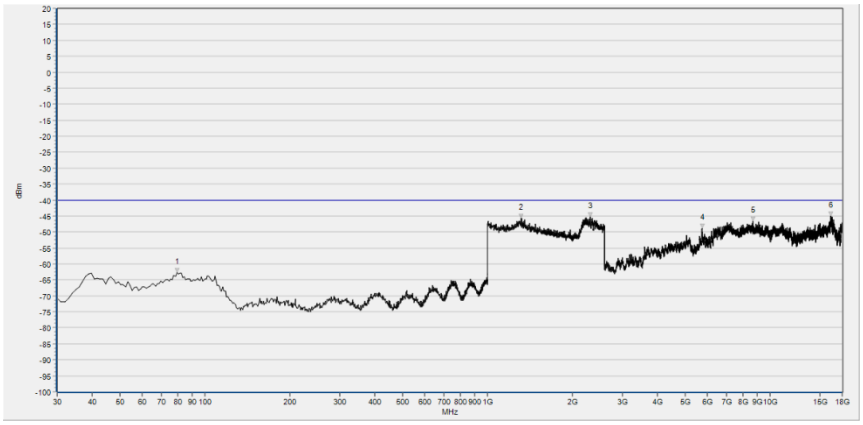


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	101.852	-63.38	-40.00	Horizontal	PASS
2	1301.101	-45.67	-40.00	Horizontal	PASS
3	2241.241	-45.20	-40.00	Horizontal	PASS
4	7069.974	-47.06	-40.00	Horizontal	PASS
5	10335.427	-46.76	-40.00	Horizontal	PASS
6	16422.725	-44.50	-40.00	Horizontal	PASS

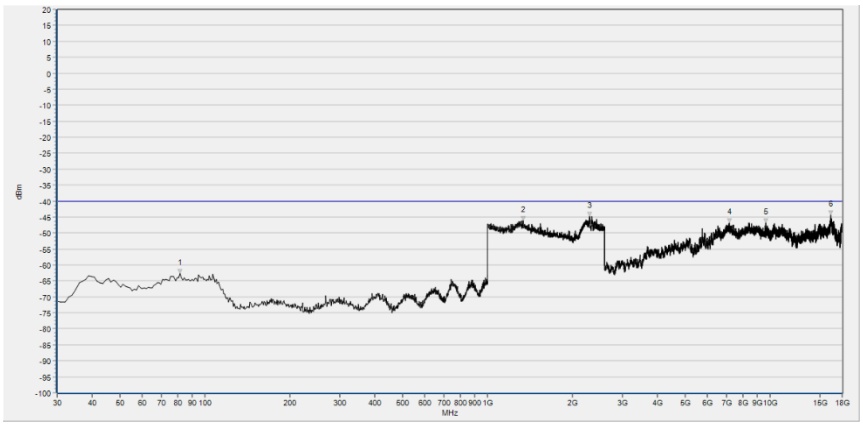


No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	99.910	-63.21	-40.00	Vertical	PASS
2	1312.312	-46.24	-40.00	Vertical	PASS
3	2303.704	-45.36	-40.00	Vertical	PASS
4	7273.295	-46.71	-40.00	Vertical	PASS
5	10816.003	-46.87	-40.00	Vertical	PASS
6	16456.611	-45.44	-40.00	Vertical	PASS

LTE Band 48, 20MHz BW, High Channel, QPSK



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	79.520	-62.77	-40.00	Horizontal	PASS
2	1313.914	-45.78	-40.00	Horizontal	PASS
3	2306.907	-45.19	-40.00	Horizontal	PASS
4	5742.228	-48.93	-40.00	Horizontal	PASS
5	8684.217	-46.66	-40.00	Horizontal	PASS
6	16407.321	-45.02	-40.00	Horizontal	PASS



No.	Fre.(MHz)	PK (dBm)	Limit (dBm)	Antenna	Verdict
1	81.461	-62.61	-40.00	Vertical	PASS
2	1336.336	-46.22	-40.00	Vertical	PASS
3	2303.704	-44.74	-40.00	Vertical	PASS
4	7165.473	-46.85	-40.00	Vertical	PASS
5	9651.530	-46.75	-40.00	Vertical	PASS
6	16422.725	-44.39	-40.00	Vertical	PASS

Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test Items	Uncertainty
Output Power	±2.22 dB
Bandwidth	±5%
Conducted Spurious Emission	±2.77 dB
Band Edge	±2.77 dB
Equivalent Isotropic Radiated Power	±2.22 dB
Radiated Spurious Emissions	±6 dB

This uncertainty represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.

4. Test Equipments Utilized

4.1 List of Software Used

Description	Manufacturer	Software Version
Morlab FCC Test System	MORLAB	V2.8
MORLAB EMCR V1.2	MORLAB	V1.0

4.2 Radiated Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
System Simulator	152038	CMW500	R&S	2021.10.21	2022.10.20
System Simulator	6200995016	MT8820C	Anritsu	2021.10.21	2022.10.20
Receiver	MY54130016	N9038A	Agilent	2022.07.07	2023.07.06
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2022.02.25	2025.02.24
Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2022.05.23	2025.05.24
Test Antenna - Horn	01774	BBHA 9120D	Schwarzbeck	2022.07.13	2025.07.12
Coaxial cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-40GHz)	CB05	EMC05	Morlab	N/A	N/A
1-18GHz pre-Amplifier	61171/61172	S020180L3203	Tonscend	2022.07.08	2023.07.07
18-26.5GHz pre-Amplifier	46732	S10M100L3802	Tonscend	2022.07.08	2023.07.07
26-40GHz pre-Amplifier	56774	S40M400L4002	Tonscend	2022.07.08	2023.07.07

Notch Filter	N/A	WRCGV -LTE B48	Wainwright	2022.07.08	2023.07.07
Anechoic Chamber	N/A	9m*6m*6m	CRT	2019.07.13	2022.07.12

END OF REPORT