Certificate #6613.01

VARIANT FCC TEST REPORT

(PART 24)

Applicant:	TCL Communication Ltd.
Address:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong

Manufacturer or Supplier:	TCL Communication Ltd.
Address:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Product:	TCL LINKPORT IK511
Brand Name:	TCL
Model Name:	IK511U
FCC ID:	2ACCJSCD005
Date of tests:	Jul. 05, 2024 ~ Jul. 24, 2024 Mar. 13,2025 ~ Mar. 28, 2025

The tests have been carried out according to the requirements of the following standard:

☒ **FCC PART 24, Subpart E** ☒ **FCC PART 2**
☒ **ANSI/TIA/EIA-603-D** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Hanwen Xu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
Xu Hanwen Date: Mar. 28, 2025	Sun Peibo Date: Mar. 28, 2025

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/ and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P24070005RF02	Original release	Jul. 24, 2024
PSU-QSU2503120111RF02	Based on the original product, the new adds 2nd PCB/ Crystal materials. This report verify power and RSE worst case. The verify results of conducted power are similar or lower. So this report only replaces RSE worst case(LTE B25-1.4M-CH26683), other data is copied from the original report.	Mar. 28, 2025

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2		
STANDARD SECTION	**TEST TYPE**	**RESULT**
§2.1046	Conducted Output Power	Compliance
§24.232(c)	Equivalent Isotropic Radiated Power	Compliance
§2.1055 §24.235	Frequency Stability	Compliance
§2.1049	Occupied Bandwidth	Compliance
§24.232(d)	Peak to average ratio	Compliance
§24.238(a)(b)	Band Edge Measurements	Compliance
§2.1051 §24.238(a)(b)	Conducted Spurious Emissions	Compliance
§2.1053 §24.238(a)(b)	Radiated Spurious Emissions	Compliance

NOTE:
The worst-case scenario for all measurements is based on an engineering evaluation made on different modulations. Then, QPSK and 16QAM were observed as the worst mode to LTE bands respectively and set for all conducted and radiated. Output power measurements were measured on QPSK, 16QAM, 64QAM modulations, and tests other than output power are performed only in worse-case QPSK and 16QAM modulations.

***Test Lab Information Reference**

Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

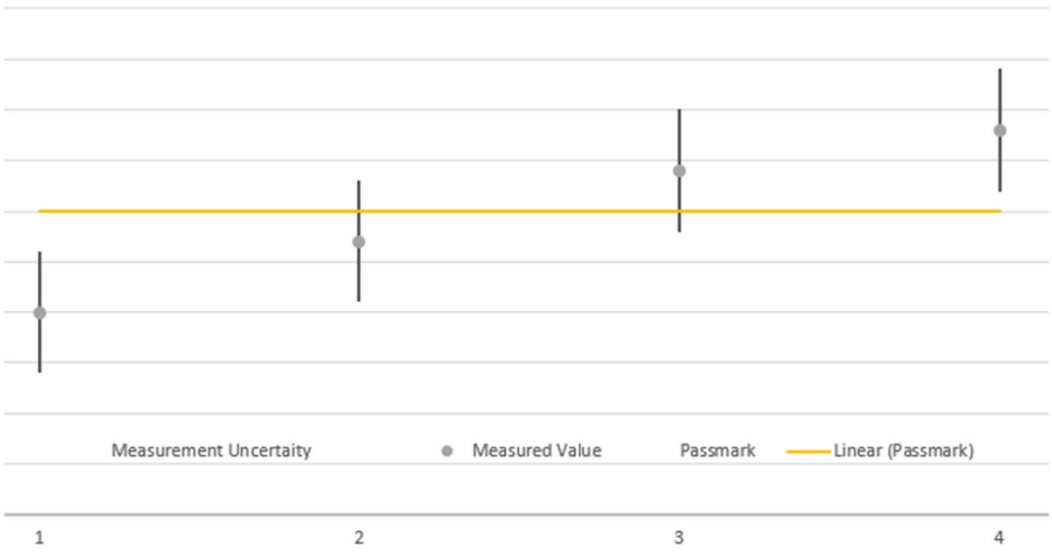
The FCC Site Registration No. is 434559; The Designation No. is CN1325.

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
Frequency Stability	±76.97Hz
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions & Radiated Power (30MHz~1GHz)	±4.98dB
Radiated emissions & Radiated Power (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Band Edge Measurements	±4.70dB
Peak to average ratio	±0.76dB

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



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.

1.2 TEST SITE AND INSTRUMENTS

For Date of tests: Jul. 05, 2024 ~ Jul. 24, 2024

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 28,24	Mar. 27,25
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.10,24	May.09,25
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.03,23	Sep.02,24
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 18,24	Feb. 17,25
Horn Antenna	ETS-LINDGREN	3117	00168692	Feb. 18,24	Feb. 17,25
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Sep.04, 23	Sep.03, 24
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 14,24	Feb. 13,25
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 06,24	May. 05,25
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.10,24	May.09,25
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 17,24	Feb.16,25
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Nov. 14,23	Nov. 13,26
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	50HF-010-SMA	May. 06,24	May. 05,25
Power Meter	Anritsu	ML2495A	1506002	Feb. 14,24	Feb. 13,25
Power Sensor	Anritsu	MA2411B	1339352	Feb. 14,24	Feb. 13,25
Temperature Chamber	ESPEC	SH-242	93000855	May. 06,24	May. 05,25
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 14,24	Feb. 13,25
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.10,24	May.09,25
DC Source	Kikusui/JP	PMX18-5A	N/A	Aug. 11,23	Aug. 10,24

NOTE: 1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.

3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 525120; The Designation No. is CN1171.

For Date of tests: Mar. 13,2025 ~ Mar. 28, 2025

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,23	Aug.29,25
Pre-Amplifier	R&S	SCU08F1	101028	Jan.22,24	Jan.21,26
Vector Signal Generator	R&S	SMBV100B	102176	Mar.29,24	Mar.28,26
Signal Generator	R&S	SMB100A	182185	Mar.29,24	Mar.28,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Mar.28,24	Mar.27,26
EMI TEST Receiver	R&S	ESW44	101973	Mar.28,24	Mar.27,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Dec.26,23	Dec.25,25
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,23	Aug.21,25
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Jul.15,24	Jul.14,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,23	Aug.21,25
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.22,25	Feb.21,27
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.19,24	Jun.18,26
Test Software	EMC32	EMC32	N/A	N/A	N/A
6DB attenuator	Tonscend Technology Co., Ltd	N/A	23062787	N/A	N/A
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	N/A	N/A
DC Source	HYELEC	HY3010B	551016	Aug.31,23	Aug.30,25
Hygrothermograph	DELI	20210528	SZ014	Sep.06,23	Sep.05,25
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.27,24	Apr.26,25
CABLE	R&S	W12.14	N/A	Apr.27,24	Apr.26,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.27,24	Apr.26,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.27,24	Apr.26,25
Temperature Chamber	votsch	VT4002	58566078100050	May.30,24	May.29,26

NOTE: 1. The calibration interval of the above test instruments is 12/ 24/ 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.

3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 434559; The Designation No. is CN1325.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT*	TCL LINKPORT IK511	
BRAND NAME*	TCL	
MODEL NAME*	IK511U	
NOMINAL VOLTAGE*	DC5V	
MODULATION TYPE*	**LTE Band 2/25:** QPSK, 16QAM, 64QAM	
FREQUENCY RANGE	**LTE Band 2 Channel Bandwidth: 1.4MHz**	1850.7MHz ~ 1909.3MHz
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5MHz ~ 1908.5MHz
	LTE Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~ 1907.5MHz
	LTE Band 2 Channel Bandwidth: 10MHz	1855.0MHz ~ 1905.0MHz
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5MHz ~ 1902.5MHz
	LTE Band 2 Channel Bandwidth: 20MHz	1860.0MHz ~ 1900.0MHz
	LTE Band 25 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1914.3MHz
	LTE Band 25 Channel Bandwidth: 3MHz	1851.5MHz ~ 1913.5MHz
	LTE Band 25 Channel Bandwidth: 5MHz	1852.5MHz ~ 1912.5MHz
	LTE Band 25 Channel Bandwidth: 10MHz	1855.0MHz ~ 1910.0MHz
	LTE Band 25 Channel Bandwidth: 15MHz	1857.5MHz ~ 1907.5MHz
	LTE Band 25 Channel Bandwidth: 20MHz	1860.0MHz ~ 1905.0MHz
MAX. EIRP POWER	**LTE Band 2 Channel Bandwidth: 1.4MHz**	202.77mW
	LTE Band 2 Channel Bandwidth: 3MHz	199.07mW
	LTE Band 2 Channel Bandwidth: 5MHz	200.91mW
	LTE Band 2 Channel Bandwidth: 10MHz	199.53mW
	LTE Band 2 Channel Bandwidth: 15MHz	202.77mW

	LTE Band 2 Channel Bandwidth: 20MHz	203.7mW
	LTE Band 25 Channel Bandwidth: 1.4MHz	202.77mW
	LTE Band 25 Channel Bandwidth: 3MHz	201.37mW
	LTE Band 25 Channel Bandwidth: 5MHz	202.3mW
	LTE Band 25 Channel Bandwidth: 10MHz	199.07mW
	LTE Band 25 Channel Bandwidth: 15MHz	202.77mW
	LTE Band 25 Channel Bandwidth: 20MHz	204.64mW
EMISSION DESIGNATOR	**LTE Band 25 Channel Bandwidth: 1.4MHz**	QPSK: 1M11G7D
		16QAM: 1M10W7D
	LTE Band 25 Channel Bandwidth: 3MHz	QPSK: 2M71G7D
		16QAM: 2M71W7D
	LTE Band 25 Channel Bandwidth: 5MHz	QPSK: 4M53G7D
		16QAM: 4M53W7D
	LTE Band 25 Channel Bandwidth: 10MHz	QPSK: 8M99G7D
		16QAM: 9M00W7D
	LTE Band 25 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M5W7D
	LTE Band 25 Channel Bandwidth: 20MHz	QPSK: 18M0G7D
		16QAM: 18M0W7D
ANTENNA TYPE*	Fixed Internal Antenna with 0.7dBi gain for LTE B2/LTE B25	
HW VERSION*	V3.0	
SW VERSION*	IK511U_ZZ_01.00_01	
I/O PORTS*	Refer to user's manual	
CABLE SUPPLIED*	USB cable: With shielded cable, w/o ferrite core, 0.15 meter	
EXTREME TEMPERATURE*	-20-55 ℃	
EXTREME VOLTAGE*	4.75V - 5.25V	

NOTE:

1. ***Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

3. The EUT incorporates a SISO function.

MODULATION MODE	TX FUNCTION
LTE	1TX

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

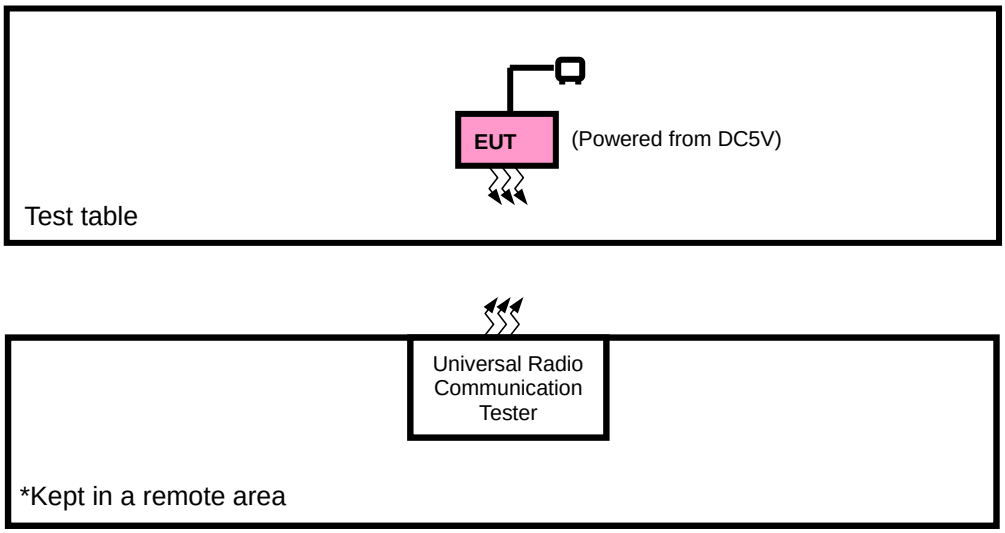
5. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.

6. **List of Accessory:**

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
USB cable	N/A	Huizhou Juwei Electronics Co., Ltd.	N/A	Signal Line,0.15meter Type C-to-C, USB3.0

2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION TEST



2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB cable: Unshielded, Detachable 0.15m

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports The worst case in EIRP and radiated emission was found when positioned on X-plane for LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + DC Supply with LTE link

LTE BAND 2 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	18607 to 19193	18607, 18900, 19193	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18615 to 19185	18615, 18900, 19185	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18625 to 19175	18625, 18900, 19175	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18650 to 19150	18650, 18900, 19150	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18675 to 19125	18675, 18900, 19125	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		18700 to 19100	18700, 18900, 19100	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset

Note: 1.This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. LTE Band 2 are covered by LTE Band 25, Because it is a subset of LTE Band 25 with the same output power and supported bandwidths, So the conducted test data and RSE test data please refer to LTE

LTE BAND 25 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26090 to 26640	26090, 26365 26640	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26115 to 26615	26115, 26365, 26615	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	FREQUENCY STABILITY	26090 to 26640	26090, 26365 26640	10MHz	QPSK	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK,16QAM	6 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK,16QAM	15 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK,16QAM	25 RB / 0 RB Offset
		26090 to 26640	26090, 26365 26640	10MHz	QPSK,16QAM	50 RB / 0 RB Offset
		26115 to 26615	26115, 26365, 26615	15MHz	QPSK,16QAM	75 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM	100 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	26140 to 26590	26140, 26365, 26590	20MHz	QPSK,16QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
A	BAND EDGE	26047 to 26683	26047	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			26683	1.4MHz	QPSK,16QAM	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		26055 to 26675	26055	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			26675	3MHz	QPSK,16QAM	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		26065 to 26665	26065	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			26665	5MHz	QPSK,16QAM	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		26090 to 26640	26090	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			26640	10MHz	QPSK,16QAM	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		26115 to 26615	26115	15MHz	QPSK,16QAM	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			26615	15MHz	QPSK,16QAM	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		26140 to 26590	26140	20MHz	QPSK,16QAM	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			26590	20MHz	QPSK,16QAM	1 RB / 99 RB Offset
						100 RB / 0 RB Offset
A	CONDUCTED EMISSION	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK	1 RB / 0 RB Offset
		26055 to 26675	26055, 26365, 26675	3MHz	QPSK	1 RB / 0 RB Offset
		26065 to 26665	26065, 26365, 26665	5MHz	QPSK	1 RB / 0 RB Offset
		26090 to 26640	26090, 26365 26640	10MHz	QPSK	1 RB / 0 RB Offset

		26115 to 26615	26115, 26365, 26615	15MHz	QPSK	1 RB / 0 RB Offset
		26140 to 26590	26140, 26365, 26590	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	26047 to 26683	26047, 26365, 26683	1.4MHz	QPSK	1 RB / 0 RB Offset
		26055 to 26675	26365	3MHz	QPSK	1 RB / 0 RB Offset
		26065 to 26665	26365	5MHz	QPSK	1 RB / 0 RB Offset
		26090 to 26640	26365	10MHz	QPSK	1 RB / 0 RB Offset
		26115 to 26615	26365	15MHz	QPSK	1 RB / 0 RB Offset
		26140 to 26590	26365	20MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
EIRP	25deg. C, 57%RH	DC 5V	Hanwen Xu
FREQUENCY STABILITY	23deg. C, 61%RH	DC 4.75V/5V/5.25V	James Fu
OCCUPIED BANDWIDTH	23deg. C, 61%RH	DC 5V	James Fu
PEAK TO AVERAGE RATIO	23deg. C, 61%RH	DC 5V	James Fu
BAND EDGE	23deg. C, 61%RH	DC 5V	James Fu
CONDUCTED EMISSION	23deg. C, 61%RH	DC 5V	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC 5V	Hanwen Xu/Hanwen Xu

2.5 EUT OPERATING CONDITIONS

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.

3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile and portable stations are limited to 2 watts EIRP.

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determing the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

ERP or EIRP = $P_{Meas} + G_T - L_C$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

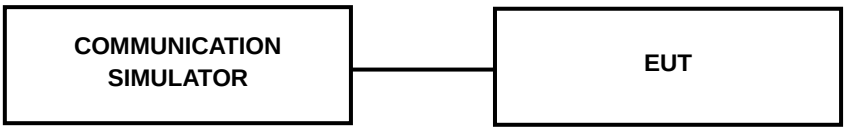
CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

LTE Band 2						
BW	**Modulation**	**RB Size**	**RB Offset**	**Low**	**Mid**	**High**
		Channel		**18700**	**18900**	**19100**
		Frequence (MHz)		**1860**	**1880**	**1900**
20M	QPSK	1	0	22.27	22.25	22.32
		1	50	22.28	22.31	**22.39**
		1	99	22.19	22.32	22.23
		50	0	21.22	21.22	21.19
		50	25	21.24	21.23	21.25
		50	50	21.25	21.24	21.27
		100	0	21.22	21.24	21.25
	16QAM	1	0	21.39	21.32	21.31
		1	50	21.40	21.39	21.33
		1	99	21.30	21.33	21.35
		50	0	20.20	20.22	20.25
		50	25	20.30	20.23	20.26
		50	50	20.29	20.25	20.22
		100	0	20.23	20.22	20.19
	64QAM	1	0	20.23	20.24	20.34
		1	50	20.51	20.48	20.35
		1	99	20.25	20.31	20.27
		50	0	19.29	19.23	19.20
		50	25	19.23	19.26	19.23
		50	50	19.23	19.22	19.21
		100	0	19.23	19.27	19.24

BW	Modulation	Channel		18675	18900	19125
		Frequence (MHz)		1857.5	1880	1902.5
15M	QPSK	1	0	22.15	22.37	22.30
		1	37	22.17	22.26	22.31
		1	74	22.06	22.21	22.20
		36	0	21.17	21.15	21.09
		36	19	21.23	21.24	21.09
		36	39	21.10	21.16	21.15
		75	0	21.14	21.12	21.15
	16QAM	1	0	21.37	21.17	21.22
		1	37	21.36	21.35	21.27
		1	74	21.25	21.26	21.27
		36	0	20.06	20.15	20.23
		36	19	20.25	20.18	20.18
		36	39	20.15	20.14	20.11
		75	0	20.09	20.10	20.06
	64QAM	1	0	20.18	20.20	20.21
		1	37	20.40	20.39	20.34
		1	74	20.13	20.16	20.18
		36	0	19.25	19.13	19.05
		36	19	19.14	19.16	19.14
		36	39	19.12	19.15	19.18
		75	0	19.13	19.24	19.18

BW	Modulation	Channel		18650	18900	19150
		Frequence (MHz)		1855	1880	1905
10M	QPSK	1	0	22.20	22.24	22.20
		1	24	22.18	22.30	22.25
		1	49	22.15	22.27	22.11
		25	0	21.21	21.21	21.12
		25	12	21.19	21.20	21.08
		25	25	21.14	21.22	21.20
		50	0	21.15	21.09	21.17
	16QAM	1	0	21.35	21.21	21.26
		1	24	21.26	21.34	21.28
		1	49	21.29	21.32	21.27
		25	0	20.09	20.08	20.20
		25	12	20.15	20.21	20.19
		25	25	20.20	20.15	20.07
		50	0	20.12	20.17	20.06
	64QAM	1	0	20.22	20.13	20.29
		1	24	20.50	20.34	20.33
		1	49	20.12	20.27	20.13
		25	0	19.25	19.21	19.15
		25	12	19.13	19.19	19.21
		25	25	19.18	19.09	19.16
		50	0	19.18	19.13	19.22

BW	Modulation	Channel		18625	18900	19175
		Frequence (MHz)		1852.5	1880	1907.5
5M	QPSK	1	0	22.16	22.33	22.20
		1	12	22.12	22.24	22.30
		1	24	22.16	22.19	22.08
		12	0	21.09	21.09	21.11
		12	6	21.15	21.14	21.15
		12	13	21.22	21.15	21.18
		25	0	21.12	21.21	21.18
	16QAM	1	0	21.30	21.26	21.24
		1	12	21.34	21.27	21.24
		1	24	21.20	21.26	21.22
		12	0	20.16	20.17	20.15
		12	6	20.27	20.21	20.11
		12	13	20.18	20.23	20.10
		25	0	20.22	20.13	20.05
	64QAM	1	0	20.22	20.10	20.25
		1	12	20.43	20.34	20.22
		1	24	20.19	20.25	20.24
		12	0	19.26	19.14	19.08
		12	6	19.09	19.23	19.20
		12	13	19.10	19.14	19.19
		25	0	19.13	19.20	19.13

BW	Modulation	Channel		18615	18900	19185
		Frequence (MHz)		1851.5	1880	1908.5
3M	QPSK	1	0	22.19	22.26	22.28
		1	7	22.21	22.25	22.29
		1	14	22.15	22.26	22.21
		8	0	21.17	21.14	21.18
		8	3	21.14	21.21	21.18
		8	7	21.12	21.11	21.15
		15	0	21.08	21.12	21.19
	16QAM	1	0	21.35	21.25	21.28
		1	7	21.34	21.26	21.32
		1	14	21.18	21.20	21.27
		8	0	20.06	20.08	20.15
		8	3	20.16	20.22	20.23
		8	7	20.15	20.24	20.08
		15	0	20.12	20.16	20.04
	64QAM	1	0	20.09	20.23	20.24
		1	7	20.43	20.46	20.21
		1	14	20.14	20.25	20.17
		8	0	19.28	19.21	19.10
		8	3	19.11	19.24	19.10
		8	7	19.18	19.17	19.16
		15	0	19.14	19.21	19.21

BW	Modulation	Channel		18607	18900	19193
		Frequence (MHz)		1850.7	1880	1909.3
1.4M	QPSK	1	0	22.24	22.37	22.27
		1	2	22.21	22.32	22.20
		1	5	22.05	22.31	22.09
		3	0	21.87	21.98	21.96
		3	1	22.03	22.01	21.95
		3	3	21.88	21.95	21.93
		6	0	21.07	21.21	21.06
	16QAM	1	0	21.31	21.31	21.20
		1	2	21.33	21.33	21.30
		1	5	21.26	21.32	21.21
		3	0	20.88	20.91	21.03
		3	1	20.98	20.90	21.02
		3	3	21.00	20.96	20.93
		6	0	20.18	20.17	20.17
	64QAM	1	0	20.08	20.09	20.27
		1	2	20.47	20.37	20.20
		1	5	20.18	20.29	20.23
		3	0	20.03	19.96	19.93
		3	1	19.95	19.93	19.89
		3	3	19.91	19.87	19.97
		6	0	19.10	19.24	19.22

LTE Band 25						
BW	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		26140	26340	26590
		Frequency (MHz)		1860	1880	1905
20M	QPSK	1	0	22.36	22.31	22.28
		1	50	**22.41**	22.35	22.39
		1	99	22.34	22.30	22.23
		50	0	21.24	21.24	21.19
		50	25	21.28	21.27	21.25
		50	50	21.25	21.22	21.21
		100	0	21.24	21.23	21.19
	16QAM	1	0	21.37	21.33	21.46
		1	50	21.50	21.46	21.45
		1	99	21.31	21.47	21.40
		50	0	20.24	20.24	20.21
		50	25	20.28	20.32	20.30
		50	50	20.29	20.30	20.27
		100	0	20.24	20.32	20.19
	64QAM	1	0	20.34	20.33	20.37
		1	50	20.54	20.49	20.45
		1	99	20.40	20.40	20.36
		50	0	19.19	19.23	19.20
		50	25	19.31	19.31	19.19
		50	50	19.30	19.33	19.29
		100	0	19.27	19.27	19.20

BW	Modulation	Channel		26115	26340	26615
		Frequency (MHz)		1857.5	1880	1907.5
15M	QPSK	1	0	22.34	22.25	22.37
		1	37	22.30	22.27	22.26
		1	74	22.23	22.26	22.18
		36	0	21.17	21.12	21.05
		36	19	21.23	21.21	21.12
		36	39	21.14	21.23	21.24
		75	0	21.14	21.13	21.18
	16QAM	1	0	21.26	21.29	21.39
		1	37	21.48	21.35	21.41
		1	74	21.24	21.46	21.38
		36	0	20.21	20.20	20.13
		36	19	20.15	20.23	20.29
		36	39	20.16	20.26	20.20
		75	0	20.13	20.20	20.07
	64QAM	1	0	20.23	20.32	20.34
		1	37	20.41	20.34	20.43
		1	74	20.25	20.31	20.23
		36	0	19.06	19.09	19.16
		36	19	19.22	19.21	19.04
		36	39	19.28	19.30	19.28
		75	0	19.22	19.22	19.11

BW	Modulation	Channel		26090	26340	26640
		Frequency (MHz)		1855	1880	1910
10M	QPSK	1	0	22.27	22.26	22.29
		1	24	22.29	22.25	22.26
		1	49	22.27	22.21	22.21
		25	0	21.14	21.12	21.14
		25	12	21.23	21.16	21.08
		25	25	21.16	21.14	21.22
		50	0	21.13	21.08	21.15
	16QAM	1	0	21.23	21.25	21.34
		1	24	21.42	21.38	21.41
		1	49	21.18	21.40	21.31
		25	0	20.16	20.13	20.15
		25	12	20.18	20.31	20.16
		25	25	20.17	20.29	20.17
		50	0	20.15	20.21	20.18
	64QAM	1	0	20.25	20.24	20.23
		1	24	20.53	20.38	20.33
		1	49	20.39	20.35	20.21
		25	0	19.05	19.19	19.05
		25	12	19.30	19.28	19.04
		25	25	19.29	19.30	19.26
		50	0	19.22	19.21	19.05

BW	Modulation	Channel		26065	26340	26665
		Frequency (MHz)		1852.5	1880	1912.5
5M	QPSK	1	0	22.33	22.31	22.36
		1	12	22.20	22.23	22.27
		1	24	22.32	22.27	22.17
		12	0	21.23	21.21	21.07
		12	6	21.20	21.17	21.16
		12	13	21.20	21.12	21.18
		25	0	21.15	21.19	21.12
	16QAM	1	0	21.32	21.18	21.42
		1	12	21.40	21.44	21.41
		1	24	21.21	21.38	21.25
		12	0	20.17	20.23	20.18
		12	6	20.24	20.18	20.20
		12	13	20.27	20.25	20.21
		25	0	20.17	20.17	20.10
	64QAM	1	0	20.29	20.20	20.32
		1	12	20.47	20.45	20.34
		1	24	20.35	20.33	20.31
		12	0	19.08	19.15	19.18
		12	6	19.23	19.18	19.14
		12	13	19.18	19.31	19.16
		25	0	19.24	19.20	19.14

BW	Modulation	Channel		26055	26340	26675
		Frequency (MHz)		1851.5	1880	1913.5
3M	QPSK	1	0	22.31	22.34	22.26
		1	7	22.19	22.26	22.29
		1	14	22.26	22.20	22.09
		8	0	21.10	21.15	21.06
		8	3	21.19	21.10	21.13
		8	7	21.15	21.18	21.23
		15	0	21.10	21.16	21.13
	16QAM	1	0	21.26	21.25	21.40
		1	7	21.36	21.32	21.42
		1	14	21.24	21.41	21.38
		8	0	20.16	20.17	20.16
		8	3	20.25	20.21	20.23
		8	7	20.27	20.15	20.25
		15	0	20.15	20.22	20.10
	64QAM	1	0	20.31	20.18	20.31
		1	7	20.46	20.47	20.43
		1	14	20.35	20.29	20.35
		8	0	19.15	19.11	19.05
		8	3	19.29	19.26	19.11
		8	7	19.21	19.26	19.15
		15	0	19.15	19.20	19.13

BW	Modulation	Channel		26047	26340	26683
		Frequency (MHz)		1850.7	1880	1914.3
1.4M	QPSK	1	0	22.32	22.29	22.37
		1	2	22.19	22.21	22.32
		1	5	22.33	22.26	22.18
		3	0	22.21	22.23	22.10
		3	1	22.21	22.19	22.07
		3	3	22.13	22.25	22.20
		6	0	21.10	21.14	21.06
	16QAM	1	0	21.29	21.22	21.44
		1	2	21.36	21.33	21.40
		1	5	21.30	21.45	21.25
		3	0	21.15	21.20	21.16
		3	1	21.13	21.17	21.16
		3	3	21.28	21.28	21.23
		6	0	20.11	20.21	20.16
	64QAM	1	0	20.32	20.29	20.24
		1	2	20.39	20.35	20.34
		1	5	20.39	20.38	20.29
		3	0	20.07	20.20	20.16
		3	1	20.21	20.21	20.05
		3	3	20.19	20.28	20.14
		6	0	19.17	19.21	19.14

EIRP POWER (dBm)

LTE B2 1.4M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	22.24	0.7	22.94	196.79	2
18900	1880	22.37	0.7	23.07	202.77	2
19193	1909.3	22.27	0.7	22.97	198.15	2

LTE B2 1.4M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	21.33	0.7	22.03	159.59	2
18900	1880	21.33	0.7	22.03	159.59	2
19193	1909.3	21.3	0.7	22	158.49	2

LTE B2 1.4M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18607	1850.7	20.47	0.7	21.17	130.92	2
18900	1880	20.37	0.7	21.07	127.94	2
19193	1909.3	20.27	0.7	20.97	125.03	2

LTE B2 3M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	22.21	0.7	22.91	195.43	2
18900	1880	22.26	0.7	22.96	197.7	2
19185	1908.5	22.29	0.7	22.99	199.07	2

LTE B2 3M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	21.35	0.7	22.05	160.32	2
18900	1880	21.26	0.7	21.96	157.04	2
19185	1908.5	21.32	0.7	22.02	159.22	2

LTE B2 3M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18615	1851.5	20.43	0.7	21.13	129.72	2
18900	1880	20.46	0.7	21.16	130.62	2
19185	1908.5	20.24	0.7	20.94	124.17	2

LTE B2 5M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	22.16	0.7	22.86	193.2	2
18900	1880	22.33	0.7	23.03	200.91	2
19175	1907.5	22.3	0.7	23	199.53	2

LTE B2 5M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	21.34	0.7	22.04	159.96	2
18900	1880	21.27	0.7	21.97	157.4	2
19175	1907.5	21.24	0.7	21.94	156.31	2

LTE B2 5M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18625	1852.5	20.43	0.7	21.13	129.72	2
18900	1880	20.34	0.7	21.04	127.06	2
19175	1907.5	20.25	0.7	20.95	124.45	2

LTE B2 10M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855	22.2	0.7	22.9	194.98	2
18900	1880	22.3	0.7	23	199.53	2
19150	1905	22.25	0.7	22.95	197.24	2

LTE B2 10M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855	21.35	0.7	22.05	160.32	2
18900	1880	21.34	0.7	22.04	159.96	2
19150	1905	21.28	0.7	21.98	157.76	2

LTE B2 10M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18650	1855	20.5	0.7	21.2	131.83	2
18900	1880	20.34	0.7	21.04	127.06	2
19150	1905	20.33	0.7	21.03	126.77	2

LTE B2 15M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	22.17	0.7	22.87	193.64	2
18900	1880	22.37	0.7	23.07	202.77	2
19125	1902.5	22.31	0.7	23.01	199.99	2

LTE B2 15M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	21.37	0.7	22.07	161.06	2
18900	1880	21.35	0.7	22.05	160.32	2
19125	1902.5	21.27	0.7	21.97	157.4	2

LTE B2 15M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18675	1857.5	20.4	0.7	21.1	128.82	2
18900	1880	20.39	0.7	21.09	128.53	2
19125	1902.5	20.34	0.7	21.04	127.06	2

LTE B2 20M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	22.28	0.7	22.98	198.61	2
18900	1880	22.32	0.7	23.02	200.45	2
19100	1900	22.39	0.7	23.09	203.7	2

LTE B2 20M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	21.4	0.7	22.1	162.18	2
18900	1880	21.39	0.7	22.09	161.81	2
19100	1900	21.35	0.7	22.05	160.32	2

LTE B2 20M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
18700	1860	20.51	0.7	21.21	132.13	2
18900	1880	20.48	0.7	21.18	131.22	2
19100	1900	20.35	0.7	21.05	127.35	2

LTE B25 1.4M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26047	1850.7	22.33	0.7	23.03	200.91	2
26340	1880	22.29	0.7	22.99	199.07	2
26683	1914.3	22.37	0.7	23.07	202.77	2

LTE B25 1.4M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26047	1850.7	21.36	0.7	22.06	160.69	2
26340	1880	21.45	0.7	22.15	164.06	2
26683	1914.3	21.44	0.7	22.14	163.68	2

LTE B25 1.4M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26047	1850.7	20.39	0.7	21.09	128.53	2
26340	1880	20.38	0.7	21.08	128.23	2
26683	1914.3	20.34	0.7	21.04	127.06	2

LTE B25 3M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26055	1851.5	22.31	0.7	23.01	199.99	2
26340	1880	22.34	0.7	23.04	201.37	2
26675	1913.5	22.29	0.7	22.99	199.07	2

LTE B25 3M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26055	1851.5	21.36	0.7	22.06	160.69	2
26340	1880	21.41	0.7	22.11	162.55	2
26675	1913.5	21.42	0.7	22.12	162.93	2

LTE B25 3M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26055	1851.5	20.46	0.7	21.16	130.62	2
26340	1880	20.47	0.7	21.17	130.92	2
26675	1913.5	20.43	0.7	21.13	129.72	2

LTE B25 5M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26065	1852.5	22.33	0.7	23.03	200.91	2
26340	1880	22.31	0.7	23.01	199.99	2
26665	1912.5	22.36	0.7	23.06	202.3	2

LTE B25 5M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26065	1852.5	21.4	0.7	22.1	162.18	2
26340	1880	21.44	0.7	22.14	163.68	2
26665	1912.5	21.42	0.7	22.12	162.93	2

LTE B25 5M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26065	1852.5	20.47	0.7	21.17	130.92	2
26340	1880	20.45	0.7	21.15	130.32	2
26665	1912.5	20.34	0.7	21.04	127.06	2

LTE B25 10M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26090	1855	22.29	0.7	22.99	199.07	2
26340	1880	22.26	0.7	22.96	197.7	2
26640	1910	22.29	0.7	22.99	199.07	2

LTE B25 10M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26090	1855	21.42	0.7	22.12	162.93	2
26340	1880	21.4	0.7	22.1	162.18	2
26640	1910	21.41	0.7	22.11	162.55	2

LTE B25 10M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26090	1855	20.53	0.7	21.23	132.74	2
26340	1880	20.38	0.7	21.08	128.23	2
26640	1910	20.33	0.7	21.03	126.77	2

LTE B25 15M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26115	1857.5	22.34	0.7	23.04	201.37	2
26340	1880	22.27	0.7	22.97	198.15	2
26615	1907.5	22.37	0.7	23.07	202.77	2

LTE B25 15M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26115	1857.5	21.48	0.7	22.18	165.2	2
26340	1880	21.46	0.7	22.16	164.44	2
26615	1907.5	21.41	0.7	22.11	162.55	2

LTE B25 15M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26115	1857.5	20.41	0.7	21.11	129.12	2
26340	1880	20.34	0.7	21.04	127.06	2
26615	1907.5	20.43	0.7	21.13	129.72	2

LTE B25 20M QPSK						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26140	1860	22.41	0.7	23.11	204.64	2
26340	1880	22.35	0.7	23.05	201.84	2
26590	1905	22.39	0.7	23.09	203.7	2

LTE B25 20M 16QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26140	1860	21.5	0.7	22.2	165.96	2
26340	1880	21.47	0.7	22.17	164.82	2
26590	1905	21.46	0.7	22.16	164.44	2

LTE B25 20M 64QAM						
Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dBi)	EIRP (dBm)	EIRP (mW)	Limit (W)
26140	1860	20.54	0.7	21.24	133.05	2
26340	1880	20.49	0.7	21.19	131.52	2
26590	1905	20.45	0.7	21.15	130.32	2

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.2.2 TEST PROCEDURE

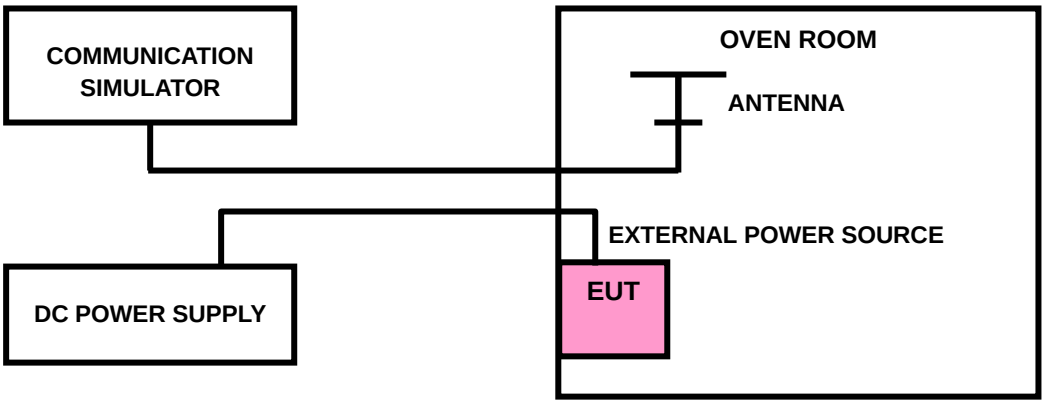
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.

c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

3.2.3 TEST SETUP



3.2.4 TEST RESULTS

Please Refer to Appendix B.

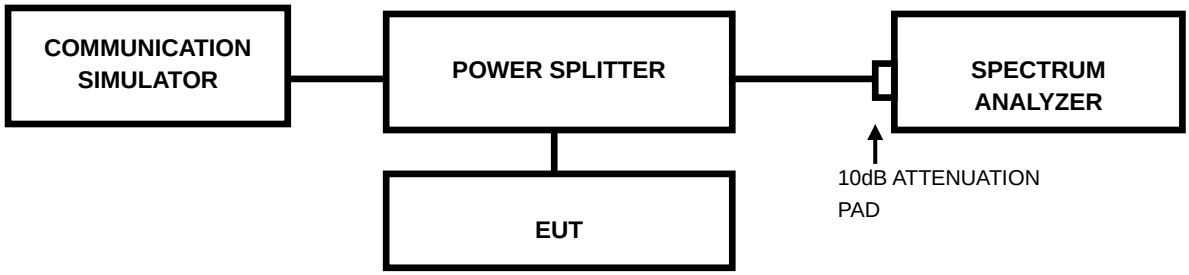
Note: VL = Low voltage(4.75V); VN/NV = Normal voltage(5V); VH = High voltage(5.25V);
NT = Normal temperature (25℃)

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage
0.5 %of the total mean power of a given emission.

3.3.2 TEST SETUP



3.3.3 TEST PROCEDURES

a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.3.4 TEST RESULTS

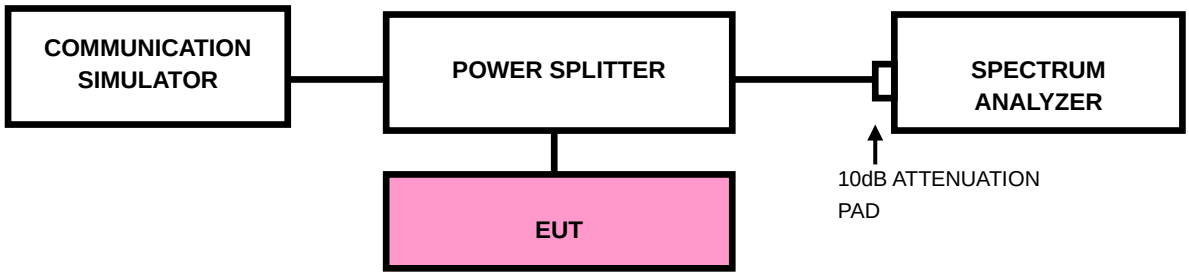
Please Refer to Appendix B.

3.4 BAND EDGE MEASUREMENTC

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

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. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

a) All measurements were done at low and high operational frequency range

b) Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.

c) Tune the analyzer to the nominal center frequency of the emission bandwidth (EBW)

d) .Set the resolution bandwidth (RBW) ≧ 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.

e) Beyond the 1MHz band from the band edge, RBW=1MHz was used.

f) Set the video bandwidth (VBW) to ≧3 x RBW.

g) Select the average power (RMS) display detector.

h) Set the number of measurement points to ≧ 1001.

i) Use auto-coupled sweep time.

j) Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.

k) The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.

l) Record the max trace plot into the test report.

3.4.4. TEST RESULTS

Please Refer to Appendix B.

3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

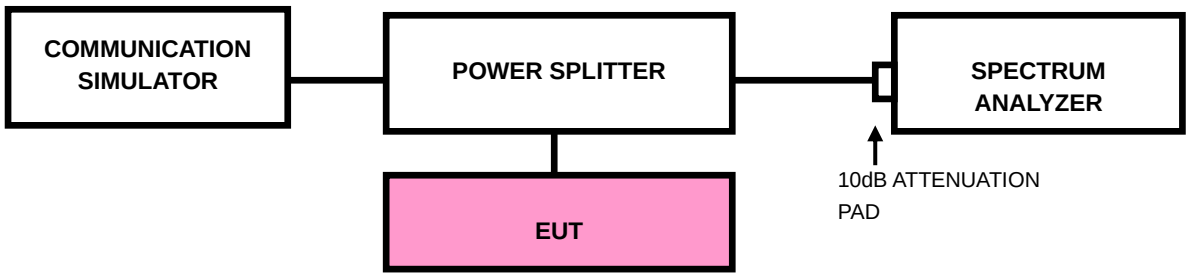
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

3.5.2 TEST PROCEDURE

a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.

b. Measuring frequency range is from 30MHz up to a frequency including its 10th harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.3 TEST SETUP



3.5.4 TEST RESULTS

NOTE ：The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

Please Refer to Appendix B.

3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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. The emission limit equal to –13dBm.

3.6.2 TEST PROCEDURES

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.

b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G

c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

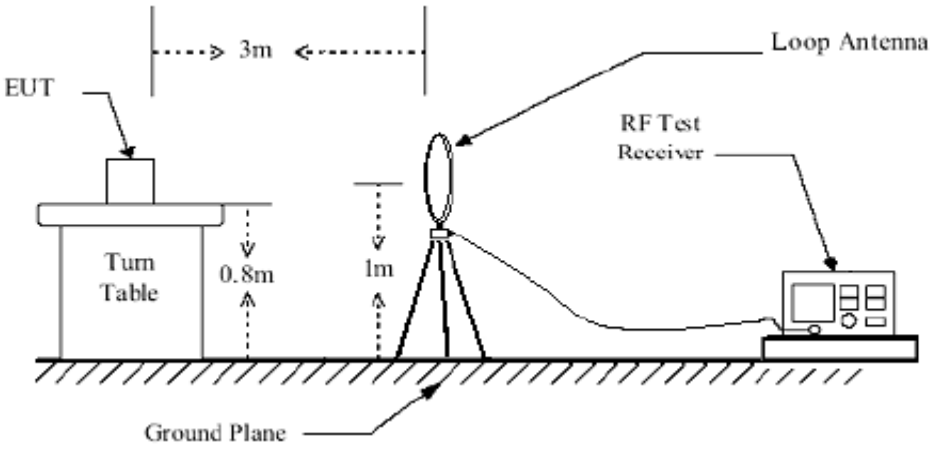
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

3.6.3 DEVIATION FROM TEST STANDARD

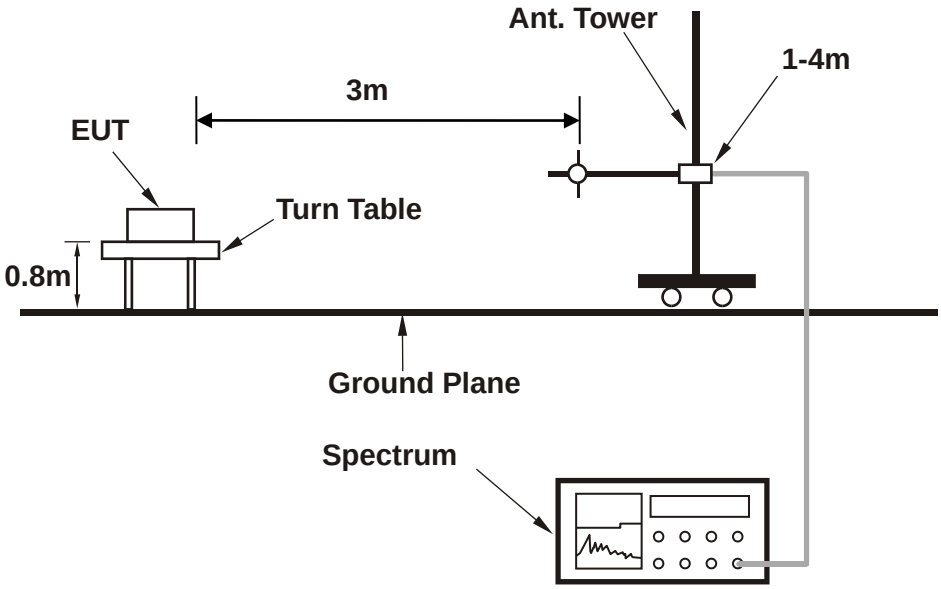
No deviation

3.6.4 TEST SETUP

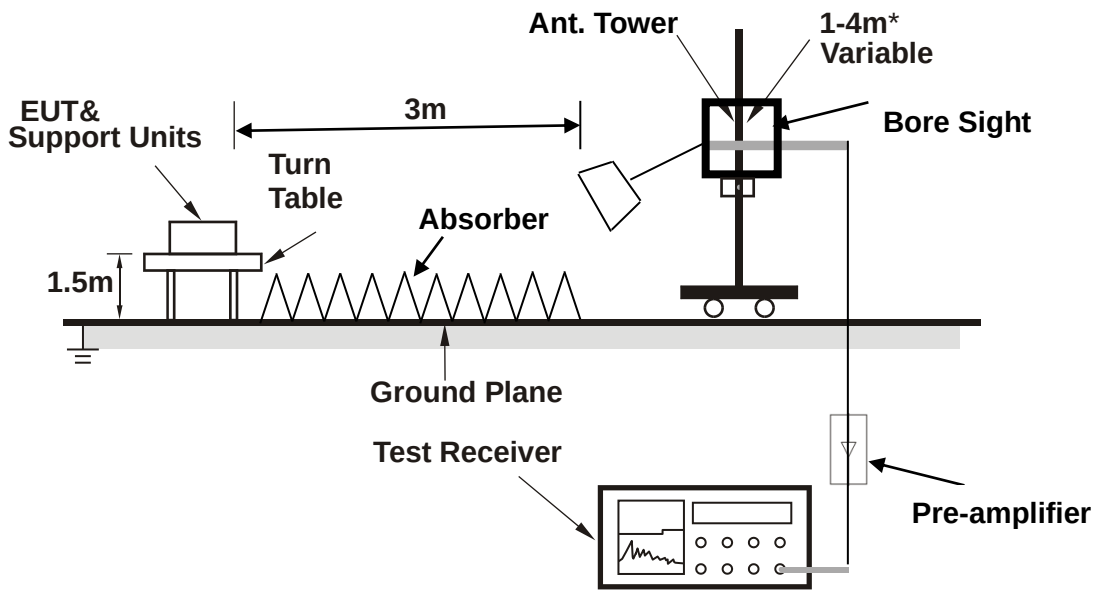
< Frequency Range below 30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.6.5 TEST RESULTS

Remark: Spurious emissions below 1GHz were found more than 20dB below limit line.

ABOVE 1GHz DATA

Note: For higher frequency, the emission is too low to be detected.

WORST-CASE DATA

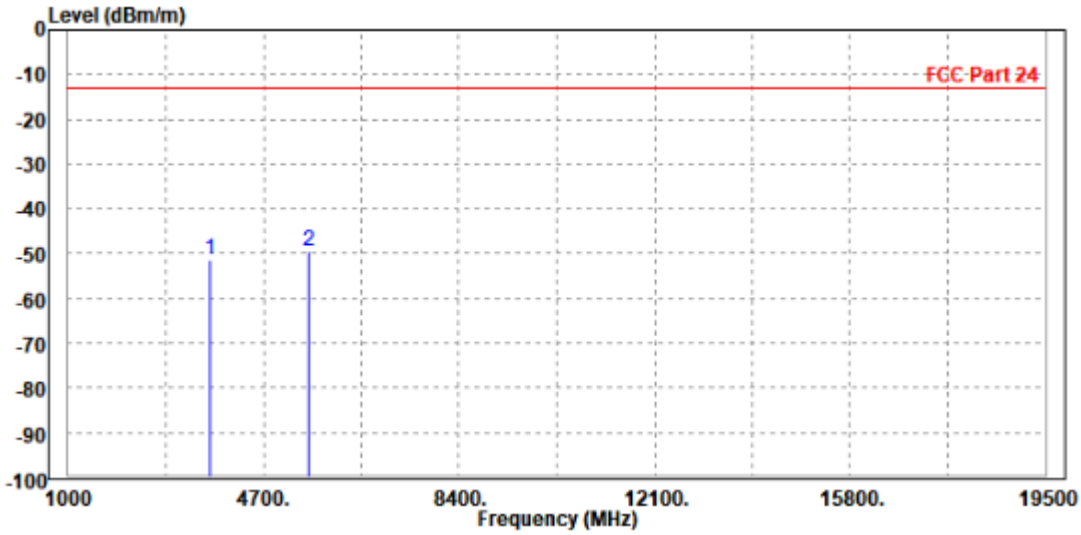
LTE Band 25

CHANNEL BANDWIDTH: 1.4MHz / QPSK

CH26047

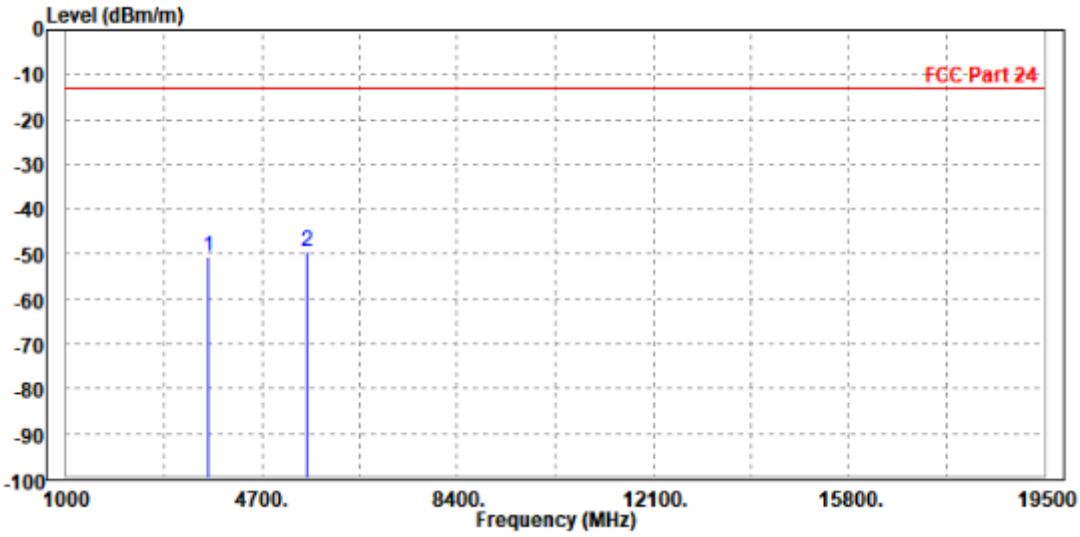
MODE	TX channel 26047	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3701.400	-51.38	-59.78	-13.00	-38.38	8.40	Peak	Horizontal
2	PP	5551.000	-49.55	-61.35	-13.00	-36.55	11.80	Peak	Horizontal



MODE	TX channel 26047	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

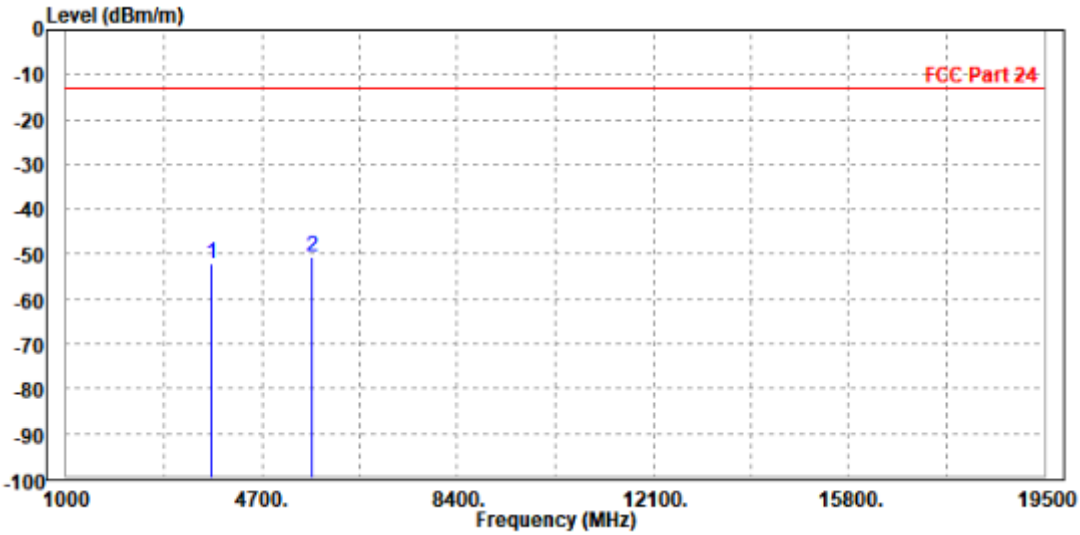
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3701.000	-50.48	-59.11	-13.00	-37.48	8.63	Peak	Vertical
2 PP	5552.100	-49.44	-61.77	-13.00	-36.44	12.33	Peak	Vertical



CH26365

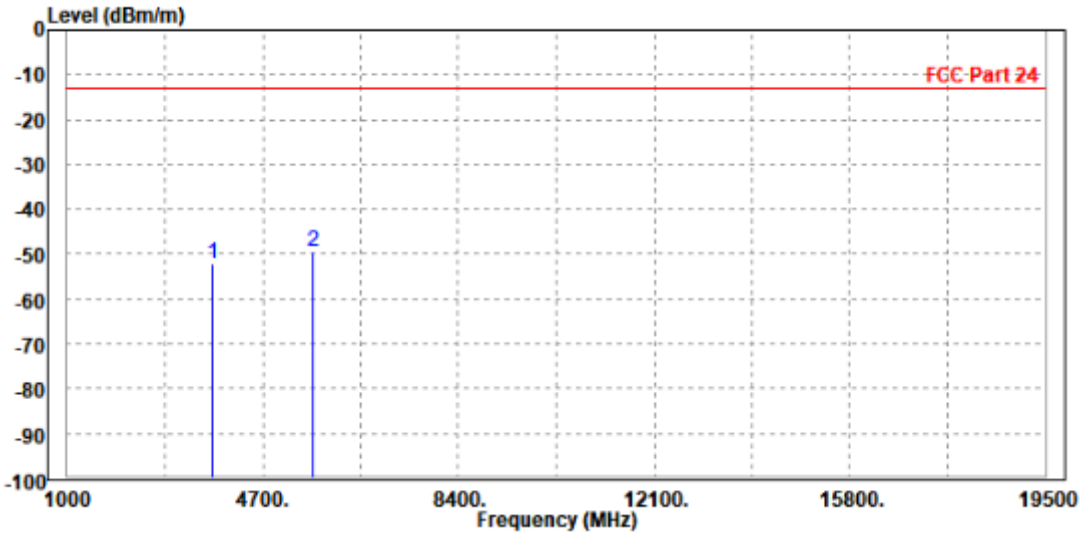
MODE	TX channel 26365	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-52.02	-60.37	-13.00	-39.02	8.35	Peak	Horizontal
2 PP	5647.500	-50.58	-62.39	-13.00	-37.58	11.81	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

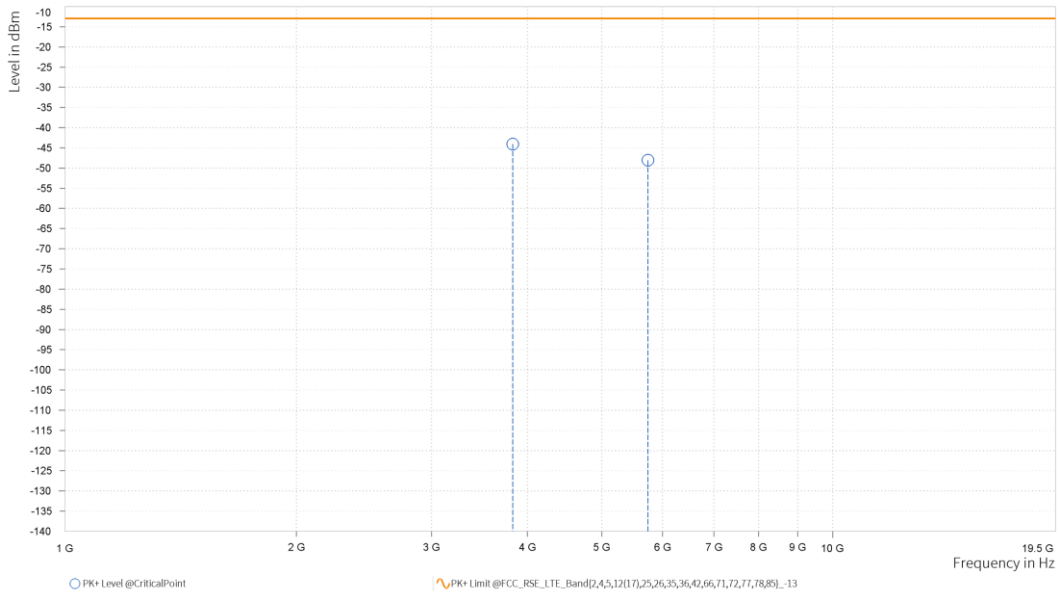
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3765.000	-51.92	-60.55	-13.00	-38.92	8.63	Peak	Vertical
2	PP	5643.500	-49.38	-61.70	-13.00	-36.38	12.32	Peak	Vertical



CH26683

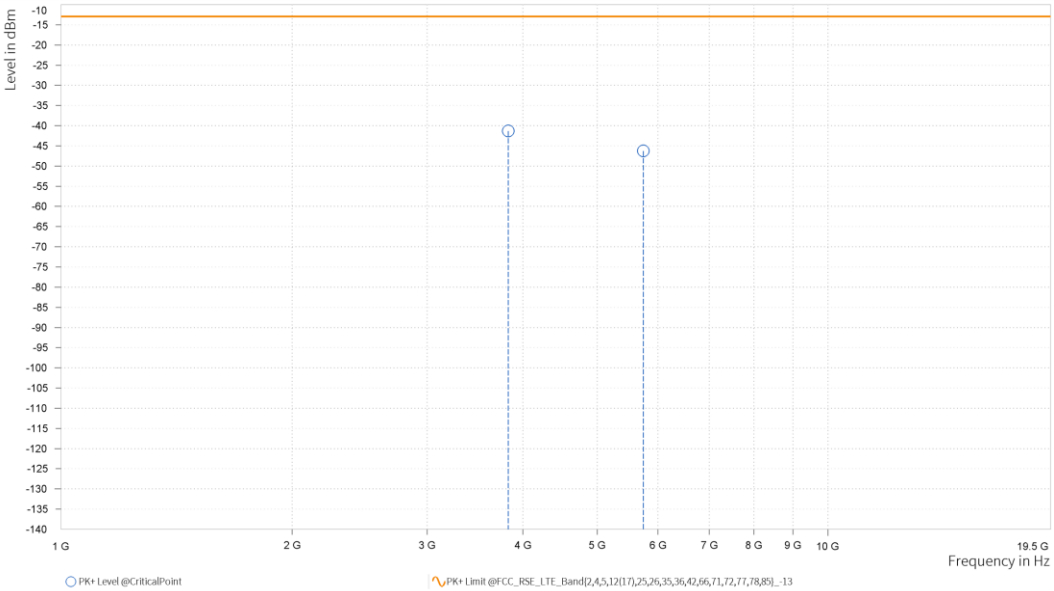
MODE	TX channel 26683	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,827.500	-44.05	-13.00	31.05	22.24	H	160.5	2.00
4	5,741.010	-48.08	-13.00	35.08	25.36	H	52.3	2.00



MODE	TX channel 26683	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

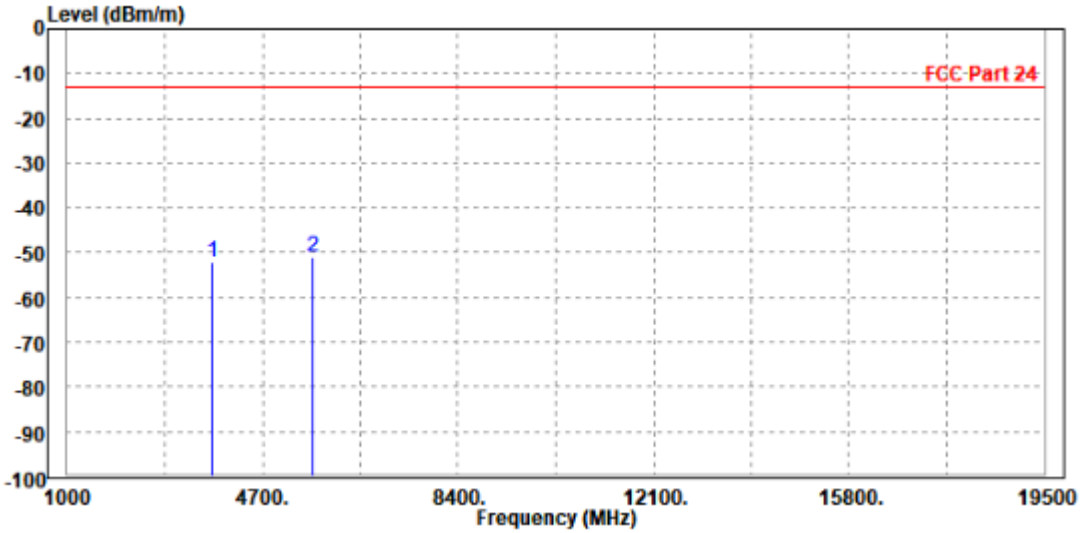
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,827.500	-41.31	-13.00	28.31	22.59	V	259.5	2.00
4	5,741.010	-46.24	-13.00	33.24	25.83	V	227	1.00



CHANNEL BANDWIDTH: 3MHz / QPSK

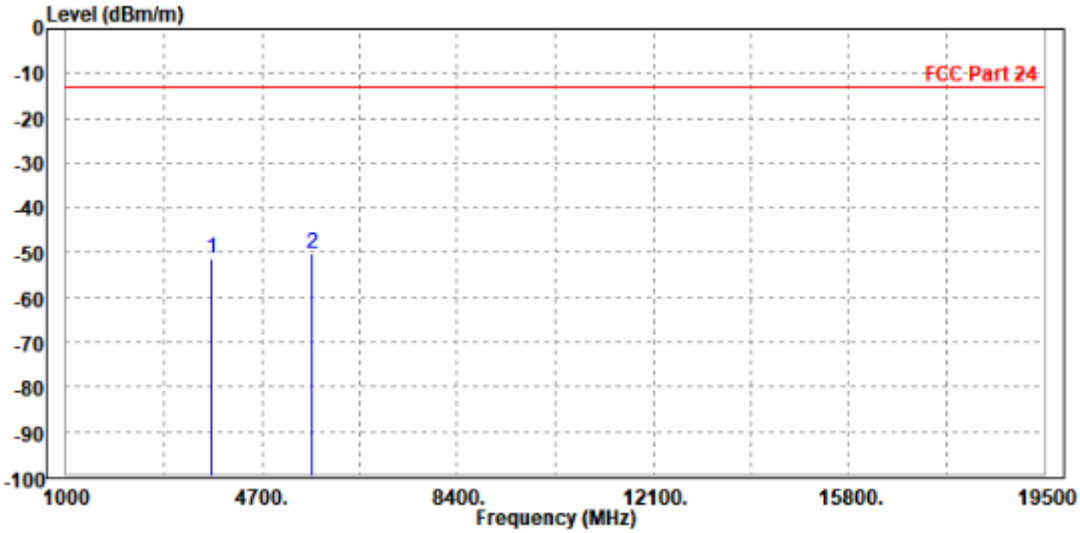
MODE	TX channel 26365	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3765.000	-52.04	-60.39	-13.00	-39.04	8.35	Peak	Horizontal
2 PP	5643.500	-51.01	-62.82	-13.00	-38.01	11.81	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

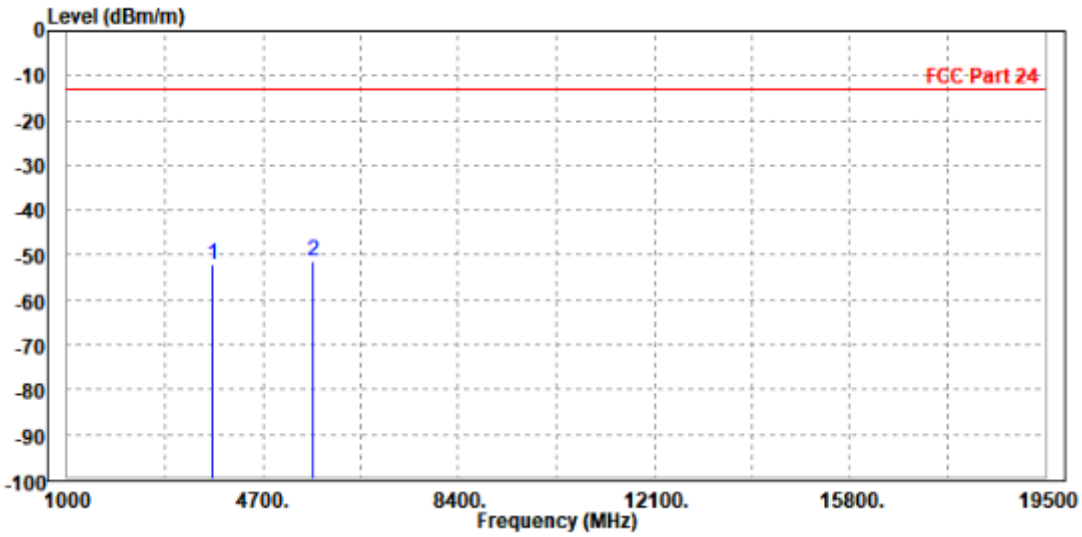
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3756.500	-51.19	-59.82	-13.00	-38.19	8.63	Peak	Vertical
2	PP	5647.500	-50.22	-62.54	-13.00	-37.22	12.32	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

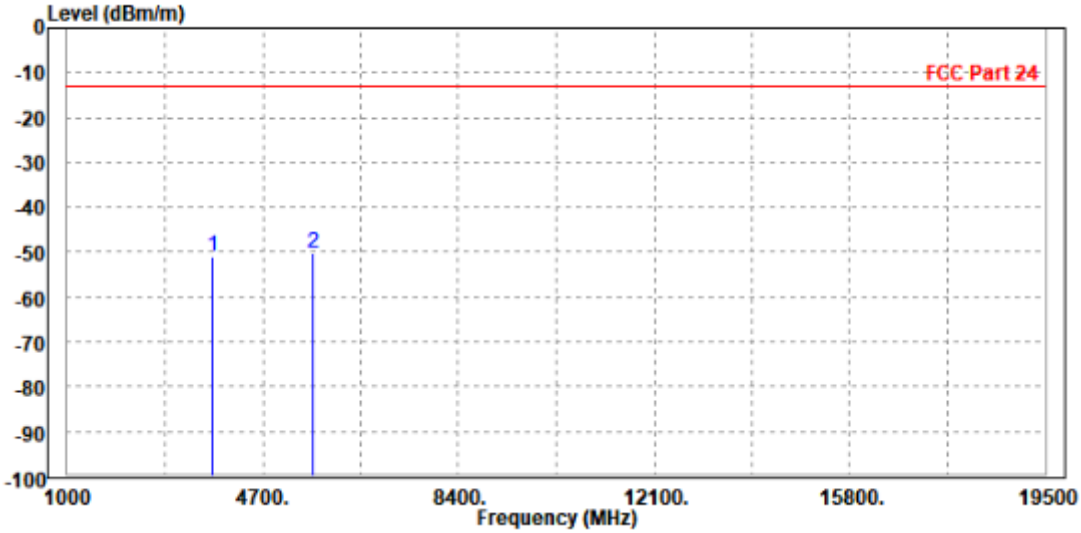
MODE	TX channel 26365	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3756.500	-51.98	-60.33	-13.00	-38.98	8.35	Peak	Horizontal
2	PP	5647.500	-51.15	-62.96	-13.00	-38.15	11.81	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

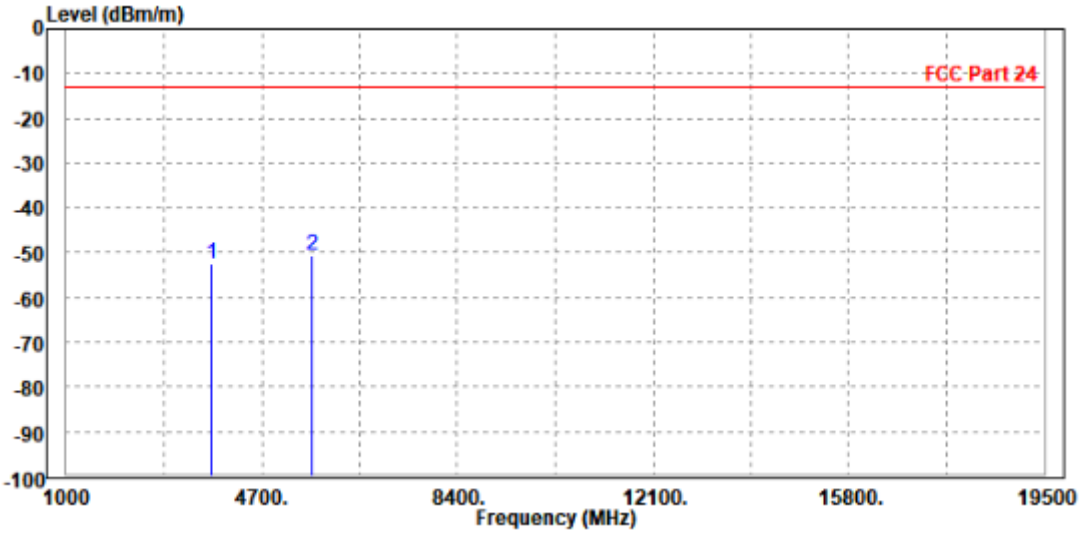
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3765.000	-51.05	-59.68	-13.00	-38.05	8.63	Peak	Vertical
2	PP	5643.500	-50.32	-62.64	-13.00	-37.32	12.32	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

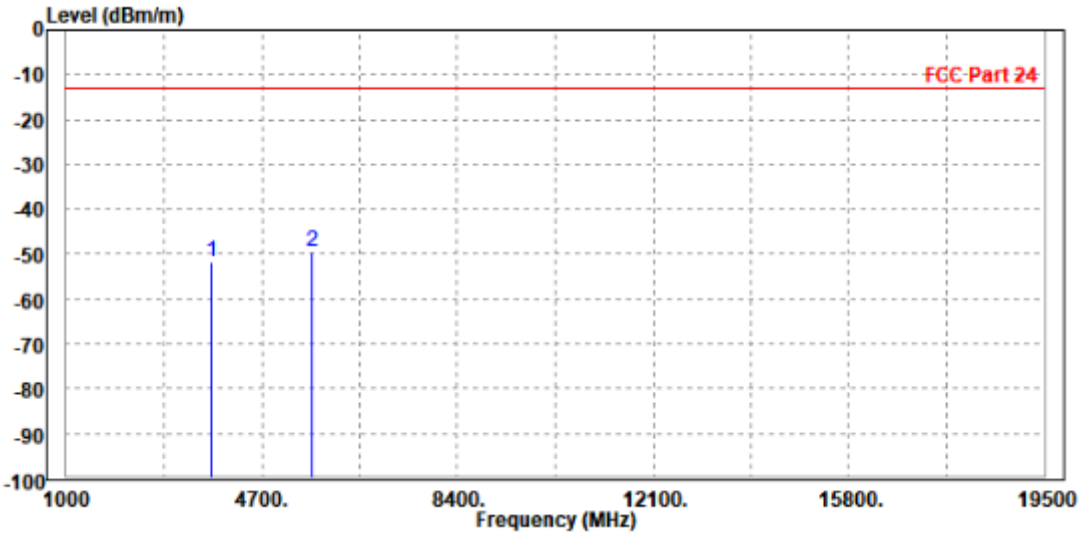
MODE	TX channel 26365	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3765.000	-52.65	-61.00	-13.00	-39.65	8.35	Peak	Horizontal
2	PP	5643.500	-50.65	-62.46	-13.00	-37.65	11.81	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

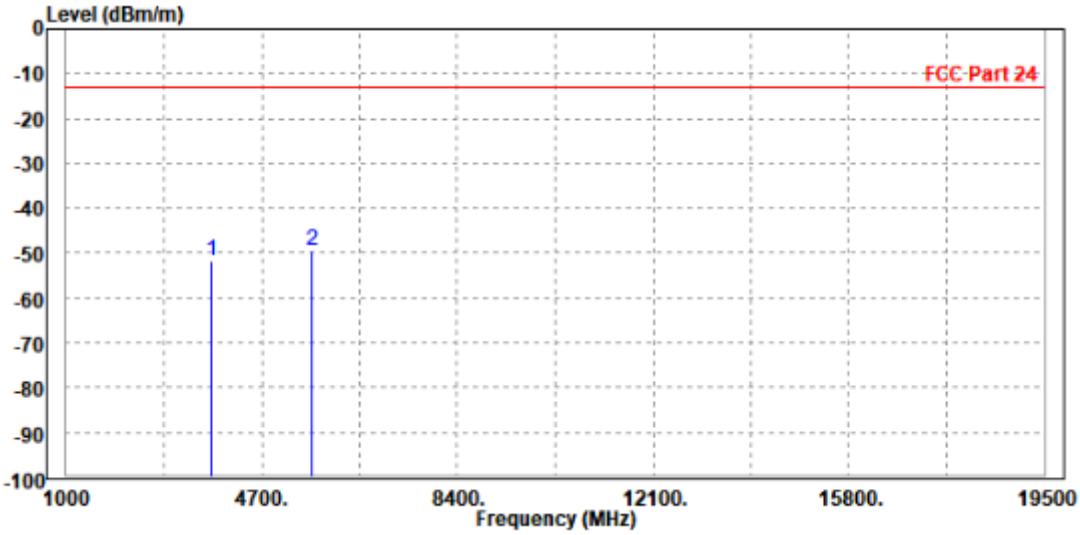
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3756.500	-51.84	-60.47	-13.00	-38.84	8.63	Peak	Vertical
2	PP	5647.500	-49.46	-61.78	-13.00	-36.46	12.32	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

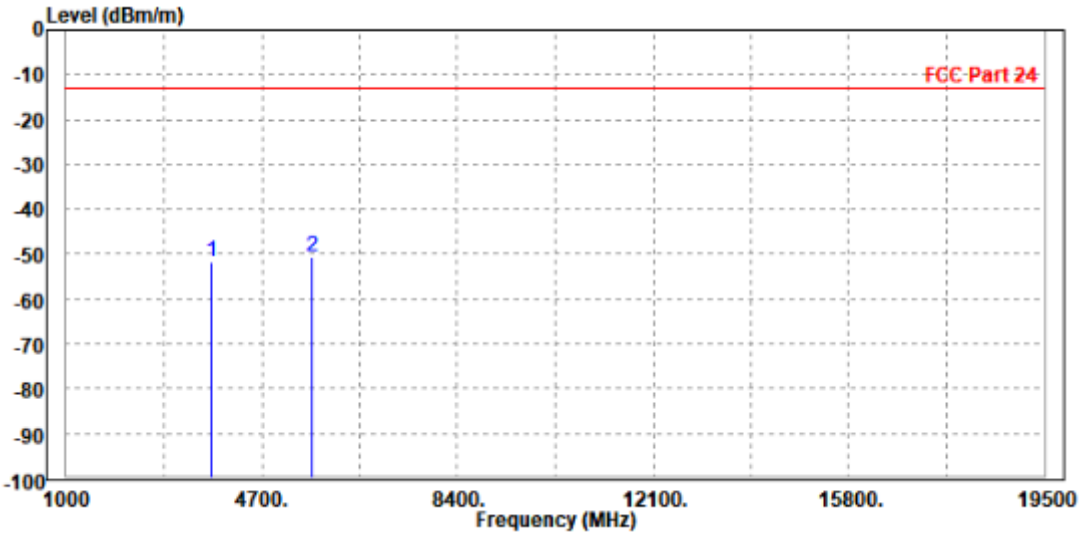
MODE	TX channel 26365	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3765.000	-51.76	-60.11	-13.00	-38.76	8.35	Peak	Horizontal
2 PP	5643.500	-49.57	-61.38	-13.00	-36.57	11.81	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

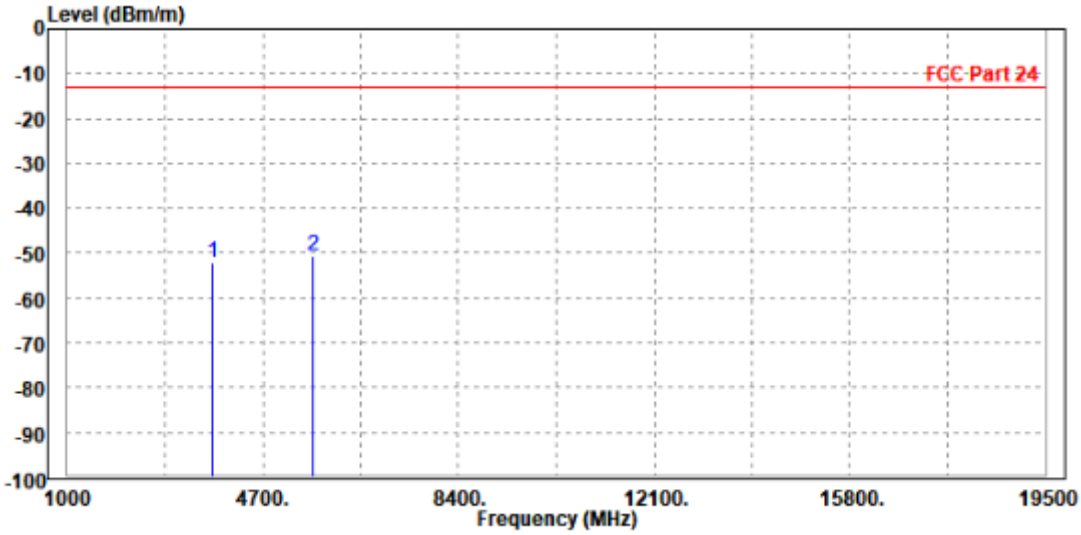
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3756.500	-51.85	-60.48	-13.00	-38.85	8.63	Peak	Vertical
2 PP	5647.500	-50.63	-62.95	-13.00	-37.63	12.32	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

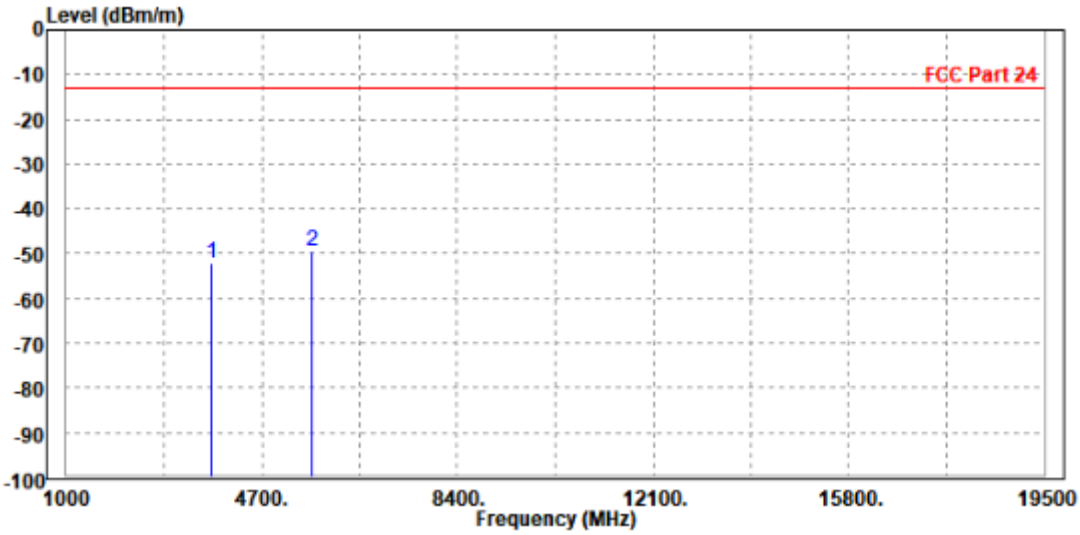
MODE	TX channel 26365	**FREQUENCY RANGE**	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	**INPUT POWER**	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3756.500	-52.00	-60.35	-13.00	-39.00	8.35	Peak	Horizontal
2	PP	5647.500	-50.58	-62.39	-13.00	-37.58	11.81	Peak	Horizontal



MODE	TX channel 26365	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC5V
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		3765.000	-52.17	-60.80	-13.00	-39.17	8.63	Peak	Vertical
2	PP	5643.500	-49.49	-61.81	-13.00	-36.49	12.32	Peak	Vertical

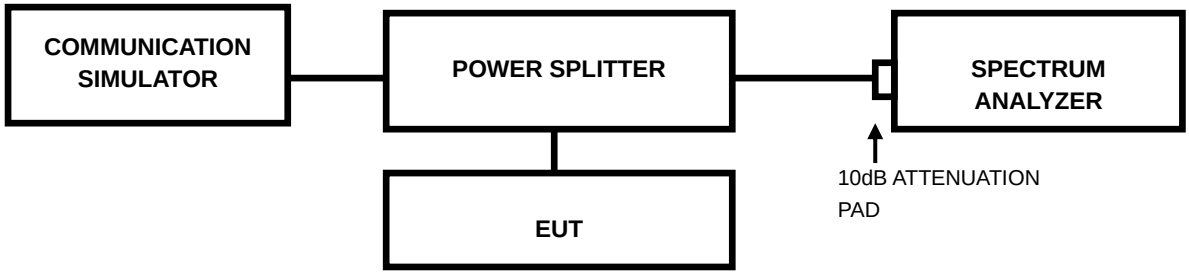


3.7 PEAK TO AVERAGE RATIO

3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

3.7.2 TEST SETUP



3.7.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

3.7.4 TEST RESULTS

Please Refer to Appendix B.

4 INFORMATION ON THE TESTING LABORATORIES

We, Huarui 7layers High Technology (Suzhou) Co., Ltd. ,were founded in 2020 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Huarui 7Layers High Technology (Suzhou) Co., Ltd.
Lab Address:
Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province
Accredited Test Lab Cert 6613.01

If you have any comments, please feel free to contact us at the following:

Suzhou EMC/RF Lab:
Tel: +86 (0557) 368 1008

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

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