



Test Report No.: RF260714B012



FCC TEST REPORT (PART 96)

Applicant:	Juniper Systems, Inc.
Address:	1132 W 1700 N Logan, UT 84321 USA

Manufacturer or Supplier:	Juniper Systems, Inc.
Address:	1132 W 1700 N Logan, UT 84321 USA
Product:	ALTA
Brand Name:	Juniper Systems
Model Name:	ALT1 / FC-8000 / SHC8000
FCC ID:	VSFALT1
Date of tests:	Dec. 30, 2025 - Jul. 10, 2026

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

☒ **47 CFR FCC Part 96**

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

Prepared by Carl Xie Engineer / Mobile Department	Approved by Simon Wang Manager / Mobile Department
Date: Jul. 10, 2026	Date: Jul. 10, 2026

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RELEASE CONTROL RECORD

ISSUE NO.	DESCRIPTION	DATE ISSUED
RF260714B012	Original release	Jul. 10, 2026



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1 SUMMARY OF TEST RESULTS

47 CFR FCC PART 96		
FCC CLAUSE	TEST ITEM	RESULT
2.1046 96.41(b)	Maximum Peak Output Power and Maximum EIRP	Compliance
2.1046 96.41(e)	Conducted Band Edge	Compliance
2.1049	Occupied Bandwidth	Compliance
2.1055	Frequency Stability	Compliance
2.1051 96.41(e)	Conducted Spurious Emissions	Compliance
2.1053 96.41(e)	Radiated Spurious Emissions	Compliance
96.41(g)	Peak-to-Average Power Ratio	Compliance

Note:

Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

*Test Lab Information Reference

Lab A:

BOOMWAVE TEST (SHENZHEN) CO., LTD.

Lab Address:

Room B38, Warehouse A5(Chiwan No.1), No.3 Chiwan 4th Road, Chiwan Community, Zhaoshang Street,
Nanshan District, Shenzhen, Guangdong, P.R. CHINA

Accredited Test Lab Cert 7607.01

The FCC Site Registration No. is 646781; The Designation No. is CN1429.

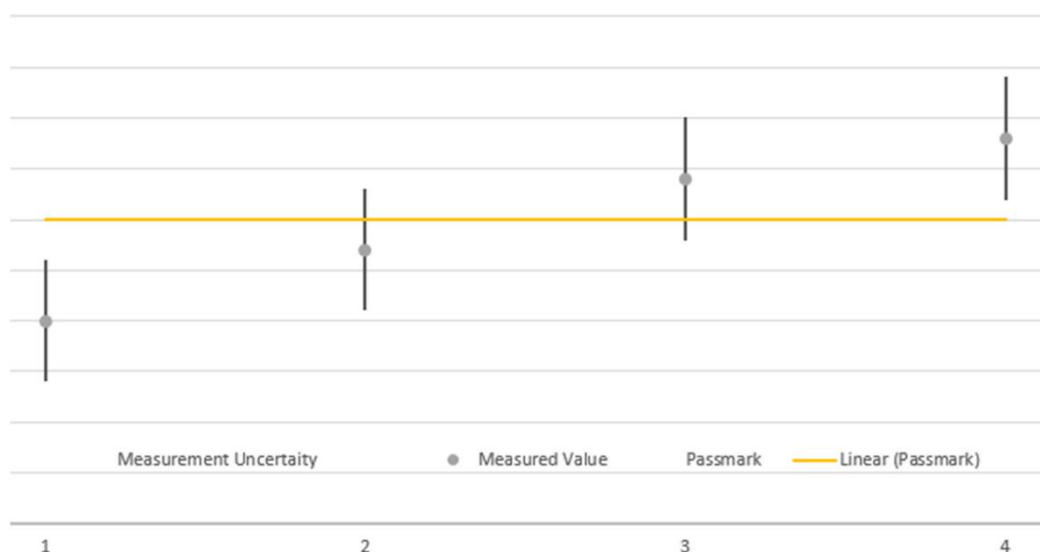
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1.1 MEASUREMENT UNCERTAINTY

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
Effective Radiated Power	±1.48dB
Frequency Stability	±39.27Hz
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	±4.01 dB
Occupied Channel Bandwidth	±21.7KHz
Band Edge Measurements	±1.48dB
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.



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1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	2025/7/3	2027/7/2
BiConiLog Antenna	ETS-LINDGREN	3143B	161965	2025/7/17	2027/7/16
Horn Antenna	SCHWARZBECK	BBHA9120D	3297	2025/9/27	2027/9/26
Horn Antenna	STEATITE	QWH-SL-18-40-K-SG QMS-00361	15433	2025/7/19	2027/7/18
Preamplifier	Tonscend	TPA184045	AP24L8060388	2025/7/3	2027/7/2
MXE EMI Receiver	keysight	N9038B	MY50018017	2025/7/1	2027/6/30
MXG Vector Signal Generator	Keysight	N5183B	MY59100137	2025/6/30	2027/6/29
Preamplifier	Tonscend	TPA001330	806JSAPO40804251015	2025/6/30	2027/6/29
Preamplifier	Tonscend	TPA011845	AP24L8060392	2025/6/30	2027/6/29
Attenuator 6DB	SHX	TS2-6-6-A	230927166	2025/6/30	2027/6/29
Attenuator 6DB	SHX	TS2-6-6-A	230927165	2025/6/30	2027/6/29
Active Receive Loop Antenna	SCHWARZBECK	FMZB 1519 B	00173	2025/6/30	2027/6/29
Temp. & Humi. Recorder	Kejian	HTC-01	157246	2025/7/2	2027/7/1
HIGH pass FILTER 1-18	EWT	EWT-57-0222	EWT-57-0222	2025/6/30	2027/6/29
HIGH pass FILTER 7-18	EWT	EWT-57-0223	EWT-57-0223	2025/6/30	2027/6/29
HIGH pass FILTER 3-18	EWT	EWT-57-0221	EWT-57-0221	2025/6/30	2027/6/29
DC~1GHz Lowpass Filter	EWT	EWT-56-0649	EWT-56-0649	2025/7/3	2027/7/2
Cable 1	N/A	N/A	N/A	2025/9/28	2027/9/27
Cable 2	N/A	N/A	N/A	2025/9/28	2027/9/27
Cable 3	N/A	N/A	N/A	2025/9/28	2027/9/27
Wireless communication integrated tester	Rohde&Schwarz	CMW500	182016	2025/6/30	2027/6/29
EXA Signal Analyzer	KEYSIGHT	N9010B	MY62170156	2025/6/30	2027/6/29
RF Control Unit	Tonscend	JS0806-1	21K8060504	2025/6/16	2027/6/15
DC Power Supply	AGILENT	HMP2020	100598	2025/7/1	2027/6/30
10dB attenuator	JFW INDUSTRIES INC	50HF-010-SMA	50HF-010-SMA-1	2025/6/30	2027/6/29
10dB attenuator	JFW INDUSTRIES INC	50HF-010-SMA	50HF-010-SMA-2	2025/6/30	2027/6/29
hygrothermograph	Anymetrers	----	TH101B	2025/7/22	2027/7/21
Temperature Box	zhongkemeiqi	MA22040172	MQ-DTH50F-2	2025/7/1	2027/6/30
power divider	WOKEN	71688	204-003180-01	2025/6/30	2027/6/29
5G Wireless Test Platform	StarPoint	SP9500-20388	SP9500-20698	2025/1/17	2027/1/16
RF Control Unit	Tonscend	JS0806-1	23K80610751	2025/1/16	2027/1/15
MXA Signal Analyzer	KEYSIGHT	N9020B	MY60110626	2025/7/1	2027/6/30

BOOMWAVE TEST (SHENZHEN)
CO., LTD.

Room B38, Warehouse A5(Chiwan No.1), No.3 Chiwan
4th Road, Chiwan Community, Zhaoshang Street,
Nanshan District, Shenzhen, Guangdong, P.R. CHINA

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com



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NOTE:

1. The calibration interval of the above test instruments is 24 months and the calibrations are traceable to CEPREI/CHINA, GREGT/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 646781; The Designation No. is CN1429.



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2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	ALTA	
BRAND NAME	Juniper Systems	
MODEL NAME	ALT1 / FC-8000 / SHC8000	
NOMINAL VOLTAGE	3.7Vdc	
MODULATION TECHNOLOGY	LTE	QPSK, 16QAM, 64QAM, 256QAM
	5G NR	DFT-s-OFDM(Pi/2BPSK,QPSK,16QAM,64QAM,256QAM); CP-OFDM(QPSK,16QAM,64QAM,256QAM);
FREQUENCY RANGE	LTE Band 42 Channel Bandwidth: 5MHz	3552.5 MHz ~ 3597.5MHz
	LTE Band 42 Channel Bandwidth: 10MHz	3555MHz ~ 3595MHz
	LTE Band 42 Channel Bandwidth: 15MHz	3557.5MHz ~ 3592.5MHz
	LTE Band 42 Channel Bandwidth: 20MHz	3560MHz ~ 3590MHz
	LTE Band 48 Channel Bandwidth: 5MHz	3552.5MHz ~ 3697.5MHz
	LTE Band 48 Channel Bandwidth: 10MHz	3555MHz ~ 3695MHz
	LTE Band 48 Channel Bandwidth: 15MHz	3557.5MHz ~ 3692.5MHz
	LTE Band 48 Channel Bandwidth: 20MHz	3560MHz ~ 3690MHz
	NR Band 48 Channel Bandwidth : 20MHz	3560.01MHz ~ 3690MHz
	NR Band 48 Channel Bandwidth : 30MHz	3565.02MHz ~ 3684.99MHz
	NR Band 48 Channel Bandwidth : 40MHz	3570MHz ~ 3679.98MHz



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	LTE CA: UL&DL: CA_19A-42A CA_19A-42C CA_28A-42A CA_28A-42C CA_2A-13A-48A CA_2A-13A-48C CA_2A-5A-48A CA_2A-5A-48C CA_8A-42A CA_8A-42C DL Only: CA_13A-48A CA_13A-48C CA_13A-48D CA_2A-48A CA_2A-48A-48A CA_2A-48C CA_2A-48D CA_41A-42A CA_41A-42C CA_42A-42A CA_42A-42C CA_42C CA_42D CA_42E CA_48A-48A CA_48C CA_48D CA_48E CA_4A-48A CA_4A-48C CA_4A-48D CA_5A-48A CA_5A-48C CA_5A-48D NR ENDC: UL&DL: CA_n25A-n48A CA_n5A-n48A CA_n2A-n5A-n48A CA_n41A-n48A CA_n48(2A) CA_n48B CA_n48C	
	EMISSION DESIGNATOR	LTE Band 48 Channel Bandwidth: 5MHz
		QPSK: 4M49G7D 16QAM: 4M49W7D 64QAM: 4M50W7D

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	LTE Band 48 Channel Bandwidth: 10MHz	256QAM: 4M49W7D
		QPSK: 9M00G7D
		16QAM: 8M98W7D
		64QAM: 8M97W7D
	LTE Band 48 Channel Bandwidth: 15MHz	256QAM: 8M97W7D
		QPSK: 13M5G7D
		16QAM: 13M5W7D
		64QAM: 13M5W7D
	LTE Band 48 Channel Bandwidth: 20MHz	256QAM: 13M5W7D
		QPSK: 17M9G7D
		16QAM: 17M9W7D
		64QAM: 18M0W7D
	NR Band 48 Channel Bandwidth : 20MHz	256QAM: 17M9W7D
		QPSK: 18M1G7D
		16QAM: 18M1W7D
		Pi/2BPSK: 18M1G7D
MAX. EIRP POWER	LTE Band 42 Channel Bandwidth: 5MHz	305.49 mW
	LTE Band 42 Channel Bandwidth: 10MHz	303.39 mW
	LTE Band 42 Channel Bandwidth: 15MHz	301.30 mW
	LTE Band 42 Channel Bandwidth: 20MHz	307.61 mW
	LTE Band 48 Channel Bandwidth: 5MHz	180.72 mW
	LTE Band 48 Channel Bandwidth: 10MHz	181.97 mW
	LTE Band 48 Channel Bandwidth: 15MHz	182.39 mW
	LTE Band 48 Channel Bandwidth: 20MHz	183.65 mW
	NR Band 48 Channel Bandwidth : 20MHz	184.50 mW
	NR Band 48 Channel Bandwidth : 30MHz	185.78 mW
	NR Band 48 Channel Bandwidth : 40MHz	186.64 mW
ANTENNA GAIN	☒ Provided by client	
	LTE BAND42	ANT0:-4.38dBi ANT1:-0.9dBi
	LTE BAND48	ANT0:-6.54dBi ANT1:-1.5dBi
	NR Band48	ANT1:-1.5dBi
ANTENNA TYPE	Fixed Internal Antenna	



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HW VERSION	DVT2
SW VERSION	JP_W.00.00.0128.T1_USERDEBUG
I/O PORTS	Refer to user's manual
DATA CABLE	N/A
EXTREME TEMPERATURE	-29°C to 63°C
EXTREME VOLTAGE	3.4V to 4.2V

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

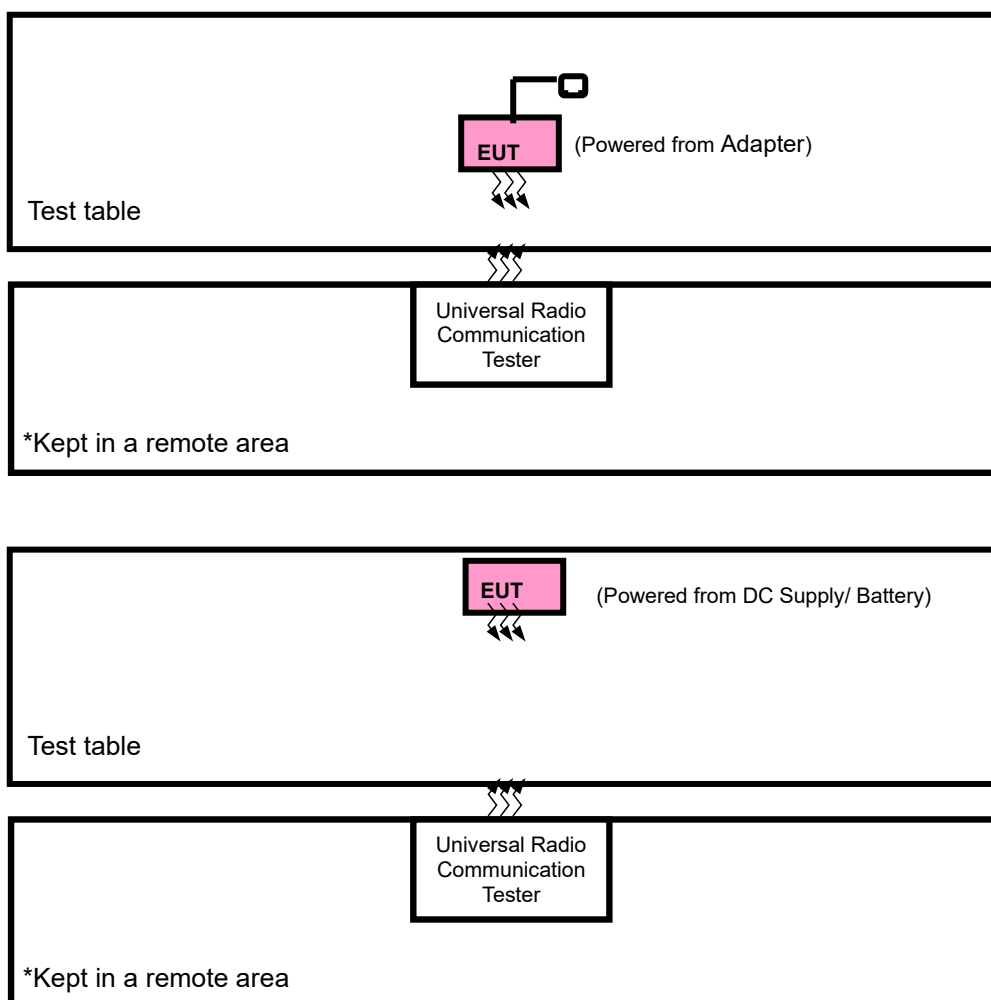
MODULATION MODE	TX FUNCTION
LTE	2TX/2RX
NR	1TX/1RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
4. For Band Edge and Emission Mask: The all BW combinations were tested. Combination pairs of the same BW are considered generally equivalent. The RB combinations were selected such that the signal is active closest to the band limit, as this is the worst case.
5. For Out of Band Emissions: The all combination was tested. The highest power RB combination was selected as worst case.

6. List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery 1	NA	Fullymax Battery Co., Ltd.	FBC442760	3.7Vdc, 700mAh
Battery 2	NA	Fullymax Battery Co., Ltd.	FBC6570106	3.8Vdc, 5700mAh
Battery 3	NA	Fullymax Battery Co., Ltd.	FBC8570106	3.7Vdc, 15000mAh
AC Adapter 1	Juniper	SHENZHEN MERRYKING ELECTRONICS CO.,LTD.	MK-P301EXC	I/P: 100-240Vac, 800mA, O/P: 12Vdc, 2500mA
USB Cable 1	CONSHARE	CONSHARE	80.10.320002	1.0 meter

2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION TEST





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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	Laptop	Lenovo	ThinkPad E14	HRSW00024	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

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 was found when positioned on Y-plane for EIRP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + USB Cable with LTE link
B	EUT + DC Supply with LTE link



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LTE band 42						
EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	43115 to 43565	43115 (3552.5MHz), 43340 (3575.0MHz), 43565 (3597.5MHz)	5MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset
		43140 to 43540	43140 (3555.0MHz), 43340 (3575.0MHz), 43540 (3595.0MHz)	10MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset
		43165 to 43515	43165 (3557.5MHz), 43340 (3575.0MHz), 43515 (3592.5MHz)	15MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset
		43190 to 43490	43190 (3560.0MHz), 43340 (3575.0MHz), 43490 (3590.0MHz)	20MHz	QPSK, 16QAM, 64QAM, 256QAM	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 42 are covered by LTE Band 48, Because it is a subset of LTE Band 48 with the same output power and supported bandwidths, So the conducted test data and RSE test data please refer to LTE Band 48

LTE BAND 48 MODE						
EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	55265 to 56715	55265, 55990, 56715	5MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset
		55290 to 56690	55290, 55990, 56690	10MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset
		55315 to 56665	55315, 55990, 56665	15MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset
		55340 to 56640	55340, 55990, 56640	20MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	55340 to 56640	55340, 56640	20MHz	QPSK	1 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	55265 to 56715	55265, 55990, 56715	5MHz	QPSK, 16QAM, 64QAM, 256QAM	25 RB / 0 RB Offset
		55290 to 56690	55290, 55990, 56690	10MHz	QPSK, 16QAM, 64QAM, 256QAM	50 RB / 0 RB Offset
		55315 to 56665	55315, 55990, 56665	15MHz	QPSK, 16QAM, 64QAM, 256QAM	75 RB / 0 RB Offset
		55340 to 56640	55340, 55990, 56640	20MHz	QPSK, 16QAM, 64QAM, 256QAM	100 RB / 0 RB Offset



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A	PEAK TO AVERAGE RATIO	55340 to 56640	55340, 55990, 56640	20MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
A	BAND EDGE	55265 to 56715	55265	5MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
			56715	5MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset
		55290 to 56690	55290	10MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
			56690	10MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset
		55315 to 56665	55315	15MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset
			56665	15MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 74 RB Offset 75 RB / 0 RB Offset
		55340 to 56640	55340	20MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
			56640	20MHz	QPSK, 16QAM, 64QAM, 256QAM	1 RB / 99 RB Offset 100 RB / 0 RB Offset
A	CONDCUETED EMISSION	55265 to 56715	55265, 55990, 56715	5MHz	QPSK	1 RB / 0 RB Offset
		55290 to 56690	55290, 55990, 56690	10MHz	QPSK	1 RB / 0RB Offset
		55315 to 56665	55315, 55990, 56665	15MHz	QPSK	1 RB / 0 RB Offset
		55340 to 56640	55340, 55990, 56640	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	55265 to 56715	55990	5MHz	QPSK	1 RB / 0 RB Offset
		55290 to 56690	55290, 55990, 56690	10MHz	QPSK	1 RB / 0RB Offset
		55315 to 56665	55990	15MHz	QPSK	1 RB / 0 RB Offset
		55340 to 56640	55990	20MHz	QPSK	1 RB / 0 RB Offset
A	ACLR	55265 to 56715	55265	5MHz	QPSK	1 RB / 0 RB Offset 25 RB / 0 RB Offset
			56715	5MHz	QPSK	1 RB / 24 RB Offset 25 RB / 0 RB Offset



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		55290 to 56690	55290	10MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
		56690	56690	10MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		55315 to 56665	55315	15MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
		56665	56665	15MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		55340 to 56640	55340	20MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
		56640	56640	20MHz	QPSK	1 RB / 99 RB Offset
						100 RB / 0 RB Offset

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

5G NR n48

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CP-OFDM CHANNEL	AVAILABLE DFT-S-OFDM CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE(DFT-S-OFDM) (INCLUDE CP-OFDM)
A	EIRP	337334 to 646000	337334 to 646000	Low, Middle, High	20MHz	QPSK	1RB/ 0RB Offset
		637666 to 645666	637666 to 645666	Low, Middle, High	30MHz	QPSK	1RB/ 0RB Offset
		338000 to 645332	338000 to 645332	Low, Middle, High	40MHz	QPSK	1RB/ 0RB Offset
B	FREQUENCY STABILITY	337334 to 646000	337334 to 646000	Low,High	20MHz	QPSK	Outer_ Full
A	PEAK TO AVERAGE RATIO	337334 to 646000	337334 to 646000	Low, Middle, High	20MHz	QPSK	1RB/ 0RB Offset
							Outer_ Full
		637666 to 645666	637666 to 645666	Low, Middle, High	30MHz	QPSK	1RB/ 0RB Offset
							Outer_ Full
		338000 to 645332	338000 to 645332	Low, Middle, High	40MHz	QPSK	1RB/ 0RB Offset
							Outer_ Full
A	OCCUPIED BANDWIDTH	337334 to 646000	337334 to 646000	Low, Middle, High	20MHz	Pi/2BPSK,QPSK,16QAM, 64QAM, 256QAM	Outer_ Full
		637666 to 645666	637666 to 645666	Low, Middle, High	30MHz	Pi/2BPSK,QPSK,16QAM, 64QAM, 256QAM	Outer_ Full
		338000 to 645332	338000 to 645332	Low, Middle, High	40MHz	Pi/2BPSK,QPSK,16QAM, 64QAM, 256QAM	Outer_ Full

BOOMWAVE TEST (SHENZHEN)
CO., LTD.

Room B38, Warehouse A5(Chiwan No.1), No.3 Chiwan
4th Road, Chiwan Community, Zhaoshang Street,
Nanshan District, Shenzhen, Guangdong, P.R. CHINA

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com



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A	BAND EDGE	337334 to 646000	337334 to 646000	Low	20MHz	QPSK	1RB/ 0RB Offset
				High	20MHz	QPSK	Outer Full
		637666 to 645666	637666 to 645666	Low	30MHz	QPSK	1RB/ 0RB Offset
				High	30MHz	QPSK	Outer Full
		338000 to 645332	338000 to 645332	Low	40MHz	QPSK	1RB/ 0RB Offset
				High	40MHz	QPSK	Outer Full
		337334 to 646000	337334 to 646000	Low, Middle, High	20MHz	QPSK	1RB/ 0RB Offset
				Low, Middle, High	30MHz	QPSK	1RB/ 0RB Offset
		372000 to 381000	372000 to 381000	Low, Middle, High	40MHz	QPSK	1RB/ 0RB Offset
				Low, Middle, High	40MHz	QPSK	1RB/ 0RB Offset
		337334 to 646000	337334 to 646000	Middle	20MHz	QPSK	1RB/ 0RB Offset
		371000 to 382000	371000 to 382000	Low, Middle, High	30MHz	QPSK	1RB/ 0RB Offset
A	RADIATED EMISSION	371500 to 381500	371500 to 381500	Middle	40MHz	QPSK	1RB/ 0RB Offset

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

2. The test data presented in the report from worst SA_n25

TEST CONDITION			
TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC 3.7V By Battery	Carl Xie
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.4/3.7/4.2V By DC Supply	Alan Yu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC 3.7V By Battery	Alan Yu
BAND EDGE	23deg. C, 70%RH	DC 3.7V By Battery	Alan Yu
CONDCUDED EMISSION	23deg. C, 70%RH	DC 3.7V By Battery	Alan Yu
RADIATED EMISSION	23deg. C, 70%RH	DC 3.7V By Battery	Carl Xie
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC 3.7V By Battery	Alan Yu



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2.5 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 96

KDB 971168 D02 Power Meas License Digital Systems v02r02

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

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



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3 TEST TYPES AND RESULTS

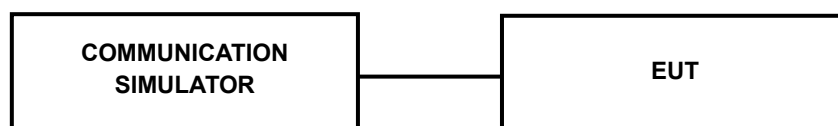
3.1 MAXIMUM EIRP MEASUREMENT

3.1.1 LIMITS OF MAXIMUM EIRP MEASUREMENT

Device	Maximum EIRP (dBm/10 MHz)
End User Device	23
Category A CBSD	30
Category B CBSD	47

3.1.2 TEST SETUP

CONDUCTED POWER MEASUREMENT:



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



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3.1.3 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 determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}} - L_{\text{C}}$$

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:

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

Note: The worst case EIRP shown in this section is found with LTE operating only using 1RB. As such, the EIRP/10MHz and full channel EIRP values will be identical since 1RB is fully contained within all available channel bandwidths (i.e., 5, 10, 15, 20MHz).

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.



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3.1.5 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Part96_LTE Band 42 (Ant1)						
BW [MHz]	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		43190	43340	43490
		Frequency (MHz)		3560	3575	3590
20	QPSK	1	0	23.62	23.32	23.68
		1	50	23.56	23.31	23.65
		1	99	23.59	23.18	23.61
		50	0	22.57	22.39	22.74
		50	25	22.67	22.41	22.79
		50	50	22.48	22.27	22.68
		100	0	22.59	22.34	22.73
	16QAM	1	0	22.48	22.31	22.55
		1	50	22.37	22.28	22.08
		1	99	22.36	22.15	22.42
		50	0	21.47	21.35	21.73
		50	25	21.56	21.33	21.75
		50	50	21.54	21.22	21.72
		100	0	21.64	21.36	21.70
	64QAM	1	0	21.82	21.30	21.49
		1	50	21.38	21.32	21.63
		1	99	21.97	21.14	20.93
		50	0	20.48	20.35	20.82
		50	25	20.66	20.35	20.88
		50	50	20.80	20.24	20.65
		100	0	20.56	20.34	20.79
	256QAM	1	0	18.60	18.29	18.70
		1	50	18.35	18.19	18.58
		1	99	18.84	18.17	18.54
		50	0	18.79	18.38	18.78
		50	25	18.60	18.35	18.81
		50	50	18.76	18.27	18.63
		100	0	18.57	18.36	18.71
BW [MHz]	Modulation	Channel		43165	43340	43515
		Frequency (MHz)		3557.5	3575	3592.5
15	QPSK	1	0	23.49	23.17	23.57
		1	37	23.53	23.25	23.57
		1	74	23.56	23.04	23.55
		36	0	22.52	22.30	22.60
		36	19	22.57	22.30	22.65
		36	39	22.40	22.13	22.61
		75	0	22.47	22.30	22.71



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	16QAM	1	0	22.46	22.19	22.46
		1	37	22.35	22.21	22.03
		1	74	22.34	22.06	22.37
		36	0	21.34	21.23	21.64
		36	19	21.45	21.28	21.61
		36	39	21.39	21.18	21.66
		75	0	21.51	21.28	21.62
	64QAM	1	0	21.72	21.22	21.44
		1	37	21.36	21.24	21.54
		1	74	21.89	21.01	20.90
		36	0	20.36	20.22	20.72
		36	19	20.65	20.31	20.74
		36	39	20.67	20.11	20.63
		75	0	20.55	20.27	20.75
	256QAM	1	0	18.53	18.21	18.65
		1	37	18.30	18.15	18.45
		1	74	18.80	18.14	18.39
		36	0	18.64	18.27	18.76
		36	19	18.59	18.29	18.70
		36	39	18.62	18.25	18.55
		75	0	18.44	18.23	18.57
BW [MHz]	Modulation	Channel		43140	43340	43540
		Frequency (MHz)		3555	3575	3595
10	QPSK	1	0	23.51	23.21	23.58
		1	24	23.55	23.27	23.56
		1	49	23.49	23.17	23.64
		25	0	22.42	22.36	22.62
		25	12	22.60	22.30	22.67
		25	25	22.45	22.18	22.54
		50	0	22.45	22.25	22.66
	16QAM	1	0	22.46	22.17	22.45
		1	24	22.32	22.16	21.96
		1	49	22.34	22.00	22.29
		25	0	21.38	21.33	21.65
		25	12	21.51	21.18	21.69
		25	25	21.49	21.19	21.71
		50	0	21.58	21.21	21.57
	64QAM	1	0	21.73	21.22	21.44
		1	24	21.23	21.30	21.56
		1	49	21.86	21.07	20.78
		25	0	20.47	20.29	20.74
		25	12	20.62	20.24	20.76
		25	25	20.69	20.19	20.59
		50	0	20.54	20.21	20.64
	256QAM	1	0	18.55	18.20	18.62



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		1	24	18.25	18.11	18.43
		1	49	18.73	18.02	18.43
		25	0	18.77	18.25	18.67
		25	12	18.50	18.32	18.75
		25	25	18.72	18.21	18.54
		50	0	18.42	18.34	18.57
BW [MHz]	Modulation	Channel		43115	43340	43565
		Frequency (MHz)		3552.50	3575.00	3597.50
5	QPSK	1	0	23.42	23.18	23.56
		1	12	23.46	23.25	23.53
		1	24	23.51	23.13	23.55
		12	0	22.43	22.29	22.70
		12	6	22.60	22.26	22.73
		12	13	22.43	22.19	22.67
		25	0	22.52	22.30	22.65
	16QAM	1	0	22.44	22.21	22.41
		1	12	22.29	22.22	21.93
		1	24	22.23	22.05	22.32
		12	0	21.41	21.28	21.68
		12	6	21.52	21.24	21.62
		12	13	21.47	21.18	21.69
		25	0	21.49	21.25	21.65
	64QAM	1	0	21.67	21.24	21.48
		1	12	21.33	21.17	21.50
		1	24	21.82	21.11	20.85
		12	0	20.40	20.23	20.79
		12	6	20.63	20.24	20.73
		12	13	20.68	20.14	20.61
		25	0	20.51	20.20	20.74
	256QAM	1	0	18.49	18.26	18.69
		1	12	18.23	18.18	18.57
		1	24	18.78	18.04	18.46
		12	0	18.71	18.30	18.66
		12	6	18.55	18.27	18.75
		12	13	18.61	18.16	18.56
		25	0	18.44	18.33	18.67



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Part 96_LTE Band 48 (Ant1)						
BW [MHz]	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		55340	55990	56640
		Frequency (MHz)		3560	3625	3690
20	QPSK	1	0	23.46	24.11	24.03
		1	50	23.71	24.14	24.09
		1	99	23.57	23.98	24.01
		50	0	22.73	23.22	23.25
		50	25	22.85	23.30	23.28
		50	50	22.81	23.28	23.26
		100	0	22.79	23.31	23.12
	16QAM	1	0	22.45	22.42	23.12
		1	50	22.74	22.68	23.27
		1	99	22.82	22.79	23.08
		50	0	21.74	21.76	22.15
		50	25	21.79	21.83	22.04
		50	50	21.71	21.68	22.17
		100	0	21.83	21.82	22.13
	64QAM	1	0	21.67	21.65	22.28
		1	50	22.02	21.97	22.24
		1	99	22.08	22.05	22.26
		50	0	20.72	20.81	21.17
		50	25	20.82	21.25	21.25
		50	50	20.85	21.33	21.14
		100	0	20.63	21.31	21.13
	256QAM	1	0	18.40	19.17	19.18
		1	50	18.78	18.42	18.22
		1	99	18.95	19.21	19.21
		50	0	18.67	18.62	19.11
		50	25	18.98	19.05	19.06
		50	50	18.80	18.86	19.18
		100	0	18.72	18.83	19.11
BW [MHz]	Modulation	Channel		55315	55990	56665
		Frequency (MHz)		3557.5	3625	3692.5
15	QPSK	1	0	23.33	24.10	23.96
		1	37	23.67	24.11	23.99
		1	74	23.55	23.86	23.93
		36	0	22.70	23.14	23.17
		36	19	22.72	23.23	23.21
		36	39	22.70	23.14	23.19
		75	0	22.78	23.17	23.02
	16QAM	1	0	22.35	22.27	23.11
		1	37	22.64	22.54	23.13
		1	74	22.81	22.73	23.01



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		36	0	21.71	21.73	22.08
		36	19	21.64	21.80	22.01
		36	39	21.60	21.60	22.05
		75	0	21.78	21.80	22.09
	64QAM	1	0	21.55	21.63	22.19
		1	37	21.89	21.96	22.14
		1	74	21.95	21.96	22.22
		36	0	20.64	20.70	21.05
		36	19	20.68	21.17	21.20
		36	39	20.84	21.29	21.01
		75	0	20.61	21.26	20.98
	256QAM	1	0	18.31	19.13	19.04
		1	37	18.76	18.32	18.21
		1	74	18.84	19.18	19.12
		36	0	18.65	18.55	18.96
		36	19	18.93	18.91	19.02
		36	39	18.78	18.81	19.09
		75	0	18.69	18.68	19.07
BW [MHz]	Modulation	Channel		55290	55990	56690
		Frequency (MHz)		3555	3625	3695
10	QPSK	1	0	23.42	24.10	24.02
		1	24	23.69	24.01	23.97
		1	49	23.45	23.86	23.88
		25	0	22.62	23.08	23.17
		25	12	22.84	23.29	23.18
		25	25	22.68	23.22	23.19
		50	0	22.67	23.18	23.08
	16QAM	1	0	22.44	22.39	23.05
		1	24	22.70	22.55	23.18
		1	49	22.79	22.77	22.95
		25	0	21.65	21.69	22.05
		25	12	21.77	21.81	22.01
		25	25	21.69	21.66	22.04
		50	0	21.78	21.76	22.03
	64QAM	1	0	21.64	21.54	22.23
		1	24	21.96	21.91	22.10
		1	49	21.94	21.97	22.11
		25	0	20.60	20.75	21.13
		25	12	20.68	21.24	21.18
		25	25	20.84	21.27	21.00
		50	0	20.62	21.20	21.01
	256QAM	1	0	18.36	19.08	19.12
		1	24	18.63	18.31	18.11
		1	49	18.93	19.12	19.15
		25	0	18.65	18.55	18.98



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		25	12	18.85	19.03	18.95
		25	25	18.72	18.81	19.05
		50	0	18.70	18.79	19.03
BW [MHz]	Modulation	Channel		55265	55990	56715
		Frequency (MHz)		3552.5	3625	3697.5
5	QPSK	1	0	23.33	23.98	23.93
		1	12	23.57	24.07	24.04
		1	24	23.45	23.90	23.98
		12	0	22.58	23.07	23.12
		12	6	22.75	23.16	23.23
		12	13	22.72	23.22	23.11
		25	0	22.70	23.22	23.03
	16QAM	1	0	22.41	22.34	23.05
		1	12	22.67	22.62	23.18
		1	24	22.81	22.68	22.98
		12	0	21.66	21.69	22.03
		12	6	21.68	21.82	21.92
		12	13	21.66	21.67	22.06
		25	0	21.68	21.72	22.03
	64QAM	1	0	21.64	21.59	22.20
		1	12	21.98	21.90	22.11
		1	24	21.93	21.94	22.24
		12	0	20.69	20.72	21.06
		12	6	20.74	21.17	21.23
		12	13	20.84	21.19	21.13
		25	0	20.57	21.24	21.07
	256QAM	1	0	18.28	19.08	19.11
		1	12	18.70	18.41	18.13
		1	24	18.81	19.11	19.16
		12	0	18.53	18.50	19.05
		12	6	18.95	18.97	18.95
		12	13	18.65	18.81	19.09
		25	0	18.65	18.68	18.99



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Part96 n48 (SCS 30kHz)_Ant1						
BW [MHz]	DFT-s-OFDM	RB Size	RB Offset	Low	Mid	High
		Channel		638000	641666	645332
		Frequency (MHz)		3570	3624.99	3679.98
40	Pi/2 BPSK	1	1	23.69	23.91	24.04
		1	53	23.85	24.15	24.11
		1	104	23.90	23.97	24.01
		50	0	23.09	23.15	23.15
		50	28	23.83	24.14	23.90
		50	56	23.14	23.12	23.07
		100	0	23.08	23.25	23.05
	QPSK	1	1	23.98	24.16	24.21
		1	53	23.95	24.13	24.15
		1	104	23.76	24.05	24.09
		50	0	22.84	23.28	23.17
		50	28	23.88	24.04	24.09
		50	56	22.92	23.15	23.07
		100	0	22.85	23.07	23.15
	16QAM	1	1	22.81	23.02	23.19
	64QAM	1	1	21.08	21.29	21.51
	256QAM	1	1	19.09	19.38	19.46
BW [MHz]	DFT-s-OFDM	Channel		637668	641666	645666
		Frequency (MHz)		3565.02	3624.99	3684.99
30	QPSK	1	1	23.86	24.19	24.16
BW [MHz]	DFT-s-OFDM	Channel		637334	641666	646000
		Frequency (MHz)		3560.01	3624.99	3690
20	QPSK	1	1	23.82	24.16	24.08



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EIRP

Part96_LTE Band 42 (Ant1)							
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm)
20M-QPSK	43190	3560	23.62	-0.9	22.72	187.07	23
	43340	3575	23.32	-0.9	22.42	174.58	23
	43490	3590	23.68	-0.9	22.78	189.67	23
20M-16QAM	43190	3560	22.48	-0.9	21.58	143.88	23
	43340	3575	22.31	-0.9	21.41	138.36	23
	43490	3590	22.55	-0.9	21.65	146.22	23
20M-64QAM	43190	3560	21.97	-0.9	21.07	127.94	23
	43340	3575	21.32	-0.9	20.42	110.15	23
	43490	3590	21.63	-0.9	20.73	118.30	23
20M-256QAM	43190	3560	18.84	-0.9	17.94	62.23	23
	43340	3575	18.38	-0.9	17.48	55.98	23
	43490	3590	18.81	-0.9	17.91	61.80	23
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm)
15M-QPSK	43165	3557.5	23.56	-0.9	22.66	184.50	23
	43340	3575	23.25	-0.9	22.35	171.79	23
	43515	3592.5	23.57	-0.9	22.67	184.93	23
15M-16QAM	43165	3557.5	22.46	-0.9	21.56	143.22	23
	43340	3575	22.21	-0.9	21.31	135.21	23
	43515	3592.5	22.46	-0.9	21.56	143.22	23
15M-64QAM	43165	3557.5	21.89	-0.9	20.99	125.60	23
	43340	3575	21.24	-0.9	20.34	108.14	23
	43515	3592.5	21.54	-0.9	20.64	115.88	23
15M-256QAM	43165	3557.5	18.80	-0.9	17.90	61.66	23
	43340	3575	18.29	-0.9	17.39	54.83	23
	43515	3592.5	18.76	-0.9	17.86	61.09	23
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm)
10M-QPSK	43140	3555	23.55	-0.9	22.65	184.08	23
	43340	3575	23.27	-0.9	22.37	172.58	23
	43540	3595	23.64	-0.9	22.74	187.93	23
10M-16QAM	43140	3555	22.46	-0.9	21.56	143.22	23
	43340	3575	22.17	-0.9	21.27	133.97	23
	43540	3595	22.45	-0.9	21.55	142.89	23
	43140	3555	21.86	-0.9	20.96	124.74	23



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10M-64QAM	43340	3575	21.30	-0.9	20.40	109.65	23
	43540	3595	21.56	-0.9	20.66	116.41	23
10M-256QAM	43140	3555	18.77	-0.9	17.87	61.24	23
	43340	3575	18.34	-0.9	17.44	55.46	23
	43540	3595	18.75	-0.9	17.85	60.95	23
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm)
5M-QPSK	43115	3552.5	23.51	-0.9	22.61	182.39	23
	43340	3575	23.25	-0.9	22.35	171.79	23
	43565	3597.5	23.56	-0.9	22.66	184.50	23
5M-16QAM	43115	3552.5	22.44	-0.9	21.54	142.56	23
	43340	3575	22.22	-0.9	21.32	135.52	23
	43565	3597.5	22.41	-0.9	21.51	141.58	23
5M-64QAM	43115	3552.5	21.82	-0.9	20.92	123.59	23
	43340	3575	21.24	-0.9	20.34	108.14	23
	43565	3597.5	21.50	-0.9	20.60	114.82	23
5M-256QAM	43115	3552.5	18.78	-0.9	17.88	61.38	23
	43340	3575	18.33	-0.9	17.43	55.34	23
	43565	3597.5	18.75	-0.9	17.85	60.95	23

Part 96 EIRP_LTE Band 48 (Ant1)								
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	FCC Limit (dbm)	IC Limit (dbm)
20M-QPSK	55340	3560	23.71	-1.5	22.21	166.34	23	30
	55990	3625	24.14	-1.5	22.64	183.65	23	30
	56640	3690	24.09	-1.5	22.59	181.55	23	30
20M-16QAM	55340	3560	22.82	-1.5	21.32	135.52	23	30
	55990	3625	22.79	-1.5	21.29	134.59	23	30
	56640	3690	23.27	-1.5	21.77	150.31	23	30
20M-64QAM	55340	3560	22.08	-1.5	20.58	114.29	23	30
	55990	3625	22.05	-1.5	20.55	113.50	23	30
	56640	3690	22.28	-1.5	20.78	119.67	23	30
20M-256QAM	55340	3560	18.98	-1.5	17.48	55.98	23	30
	55990	3625	19.21	-1.5	17.71	59.02	23	30
	56640	3690	19.21	-1.5	17.71	59.02	23	30
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	FCC Limit (dbm)	IC Limit (dbm)
15M-QPSK	55315	3557.5	23.67	-1.5	22.17	164.82	23	30
	55990	3625	24.11	-1.5	22.61	182.39	23	30
	56665	3692.5	23.99	-1.5	22.49	177.42	23	30
	55315	3557.5	22.81	-1.5	21.31	135.21	23	30

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CO., LTD.

Room B38, Warehouse A5(Chiwan No.1), No.3 Chiwan
4th Road, Chiwan Community, Zhaoshang Street,
Nanshan District, Shenzhen, Guangdong, P.R. CHINA

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com



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15M-16QAM	55990	3625	22.73	-1.5	21.23	132.74	23	30
	56665	3692.5	23.13	-1.5	21.63	145.55	23	30
15M-64QAM	55315	3557.5	21.95	-1.5	20.45	110.92	23	30
	55990	3625	21.96	-1.5	20.46	111.17	23	30
	56665	3692.5	22.22	-1.5	20.72	118.03	23	30
15M-256QAM	55315	3557.5	18.93	-1.5	17.43	55.34	23	30
	55990	3625	19.18	-1.5	17.68	58.61	23	30
	56665	3692.5	19.12	-1.5	17.62	57.81	23	30
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	FCC Limit (dbm)	IC Limit (dbm)
10M-QPSK	55290	3555	23.69	-1.5	22.19	165.58	23	30
	55990	3625	24.10	-1.5	22.60	181.97	23	30
	56690	3695	24.02	-1.5	22.52	178.65	23	30
10M-16QAM	55290	3555	22.79	-1.5	21.29	134.59	23	30
	55990	3625	22.77	-1.5	21.27	133.97	23	30
	56690	3695	23.18	-1.5	21.68	147.23	23	30
10M-64QAM	55290	3555	21.96	-1.5	20.46	111.17	23	30
	55990	3625	21.97	-1.5	20.47	111.43	23	30
	56690	3695	22.23	-1.5	20.73	118.30	23	30
10M-256QAM	55290	3555	18.93	-1.5	17.43	55.34	23	30
	55990	3625	19.12	-1.5	17.62	57.81	23	30
	56690	3695	19.15	-1.5	17.65	58.21	23	30
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	FCC Limit (dbm)	IC Limit (dbm)
5M-QPSK	55265	3552.5	23.57	-1.5	22.07	161.06	23	30
	55990	3625	24.07	-1.5	22.57	180.72	23	30
	56715	3697.5	24.04	-1.5	22.54	179.47	23	30
5M-16QAM	55265	3552.5	22.81	-1.5	21.31	135.21	23	30
	55990	3625	22.68	-1.5	21.18	131.22	23	30
	56715	3697.5	23.18	-1.5	21.68	147.23	23	30
5M-64QAM	55265	3552.5	21.98	-1.5	20.48	111.69	23	30
	55990	3625	21.94	-1.5	20.44	110.66	23	30
	56715	3697.5	22.24	-1.5	20.74	118.58	23	30
5M-256QAM	55265	3552.5	18.95	-1.5	17.45	55.59	23	30
	55990	3625	19.11	-1.5	17.61	57.68	23	30
	56715	3697.5	19.16	-1.5	17.66	58.34	23	30



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Part96/RSS-192_n48 (SCS 30kHz)_Ant1							
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	FCC Limit (dbm)
40M-Pi/2 BPSK	638000	3570	23.90	-1.5	22.40	173.78	23
	641666	3624.99	24.15	-1.5	22.65	184.08	23
	645332	3679.98	24.11	-1.5	22.61	182.39	23
40M-QPSK	638000	3570	23.98	-1.5	22.48	177.01	23
	641666	3624.99	24.16	-1.5	22.66	184.50	23
	645332	3679.98	24.21	-1.5	22.71	186.64	23
40M-16QAM	638000	3570	22.81	-1.5	21.31	135.21	23
	641666	3624.99	23.02	-1.5	21.52	141.91	23
	645332	3679.98	23.19	-1.5	21.69	147.57	23
40M-64QAM	638000	3570	21.08	-1.5	19.58	90.78	23
	641666	3624.99	21.29	-1.5	19.79	95.28	23
	645332	3679.98	21.51	-1.5	20.01	100.23	23
40M-256QAM	638000	3570	19.09	-1.5	17.59	57.41	23
	641666	3624.99	19.38	-1.5	17.88	61.38	23
	645332	3679.98	19.46	-1.5	17.96	62.52	23
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	FCC Limit (dbm)
30M-QPSK	637668	3565.02	23.86	-1.5	22.36	172.19	23
	641666	3624.99	24.19	-1.5	22.69	185.78	23
	645666	3684.99	24.16	-1.5	22.66	184.50	23
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	EIRP (dBm)	EIRP (mW)	FCC Limit (dbm)
20M-QPSK	637334	3560.01	23.82	-1.5	22.32	170.61	23
	641666	3624.99	24.16	-1.5	22.66	184.50	23
	646000	3690	24.08	-1.5	22.58	181.13	23

Note: The worst case EIRP shown in this section is found with LTE operating only using 1RB. As such, the EIRP/10MHz and full channel EIRP values will be identical since 1RB is fully contained within all available channel bandwidths (i.e., 5, 10, 15, 20MHz).



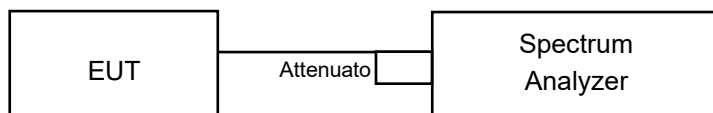
Test Report No.: RF260714B012

3.2 CONDUCTED BAND EDGE

3.2.1 LIMITS OF CONDUCTED BAND EDGE MEASUREMENT

The conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

3.2.2 TEST SETUP



3.2.3 TEST INSTRUMENTS

Refer to section 1.2 to get information of above instrument.



Test Report No.: RF260714B012

3.2.4 TEST PROCEDURE

For the Conducted Band Edge:

- a. Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
- b. Tune the analyzer to the nominal center frequency of the emission bandwidth (EBW).
- c. Set the resolution bandwidth (RBW) $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
- d. Beyond the 1MHz band from the band edge, RBW=1MHz was used.
- e. Set the video bandwidth (VBW) to $\geq 3 \times$ RBW.
- f. Select the average power (RMS) display detector.
- g. Set the number of measurement points to ≥ 1001 .
- h. Use auto-coupled sweep time.
- i. Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.
- j. The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.
- k. Record the max trace plot into the test report.

For Adjacent Channel Leakage Ratio (ACLR) measurement:

1. The Adjacent Channel Leakage Ratio (ACLR) is the ratio of the average power in the assigned aggregated channel bandwidth to the average power over the equivalent adjacent channel bandwidth.
2. The option ACLR of spectrum analyzer is used and measures the ACLR ratio by setting equivalent channel bandwidth.
3. The measured ACLR ratio shall be at least 30 dB.

3.2.5 DEVIATION FROM TEST STANDARD

No deviation.



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3.2.6 TEST RESULTS

Please Refer to Appendix Of this test report.

3.3 FREQUENCY STABILITY MEASUREMENT

3.3.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

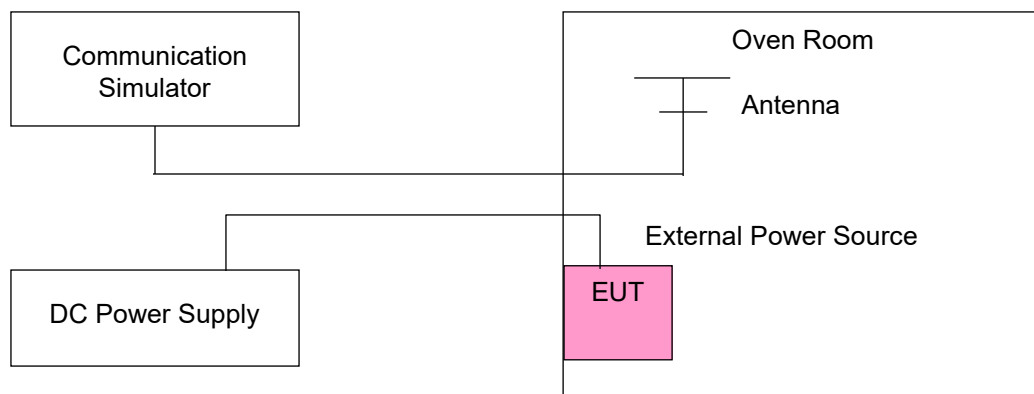
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency band.

3.3.2 TEST PROCEDURE

- 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.
- 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.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ 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.

3.3.3 TEST SETUP





Test Report No.: RF260714B012

3.3.4 TEST RESULTS

Please Refer to Appendix Of this test report.

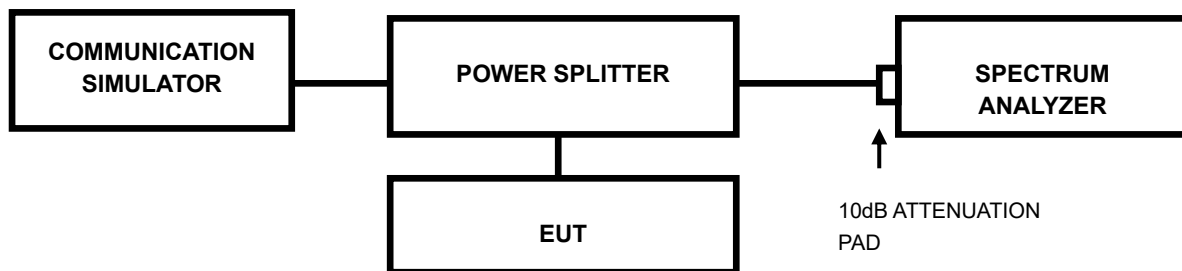
Note: VL = Low voltage(3.4V); VN/NV = Normal voltage(3.7V); VH = High voltage(4.2V);
NT = Normal temperature (25°C)

3.4 OCCUPIED BANDWIDTH MEASUREMENT

3.4.1 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.

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Refer to section 1.2 to get information of above instrument.

3.4.4 TEST PROCEDURE

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

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.



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3.4.6 TEST RESULT

Please Refer to Appendix Of this test report.



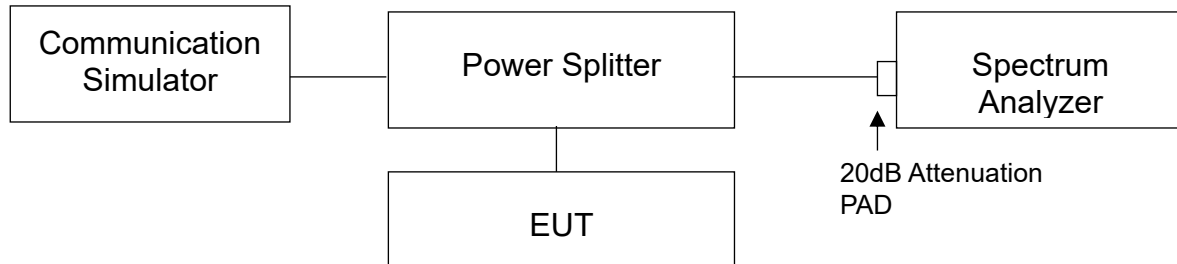
Test Report No.: RF260714B012

3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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

3.5.2 TEST SETUP



3.5.3 TEST PROCEDURE

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9 kHz to 40 GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.



Test Report No.: RF260714B012

3.5.4 TEST RESULTS

Please Refer to Appendix Of this test report.



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3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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(below or equal 1GHz) and/or 1.5m(above 1GHz) 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 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. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,
 $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15dBi.$

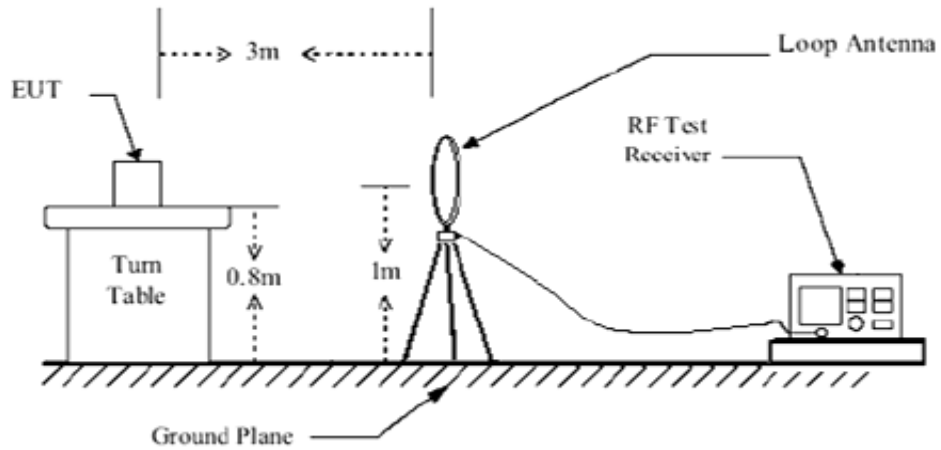
Note: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.6.3 DEVIATION FROM TEST STANDARD

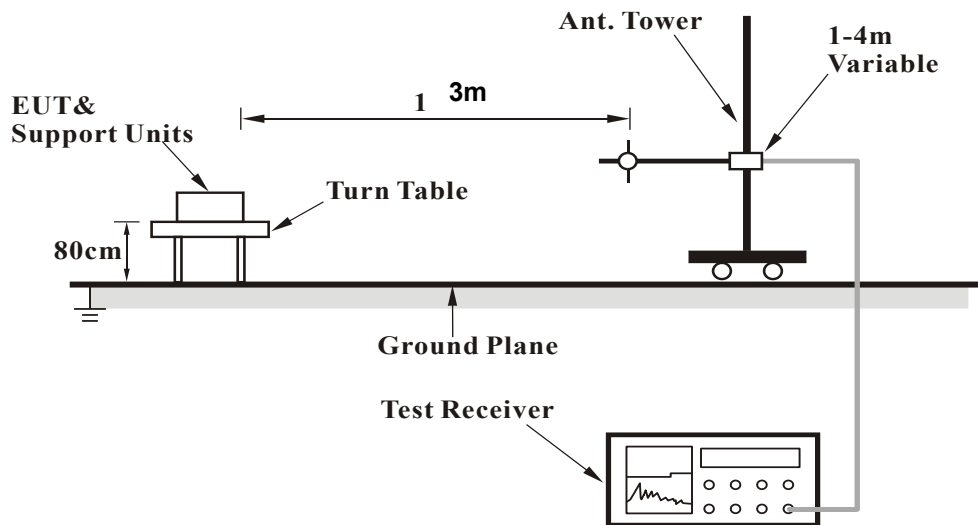
No deviation.

Test Report No.: RF260714B012
3.6.4 TEST SET UP

< Frequency Range below 30MHz >

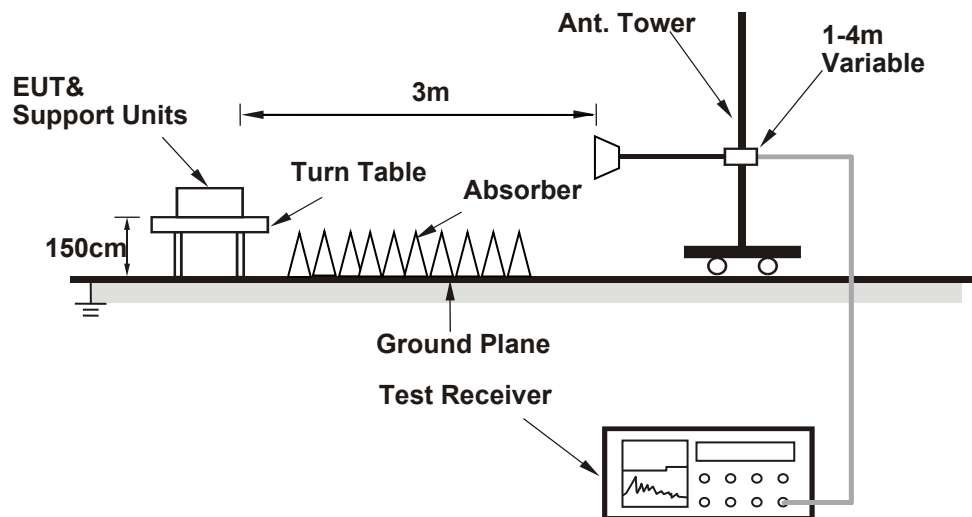


<Frequency Range below 1GHz>



Test Report No.: RF260714B012

<Frequency Range above 1GHz>



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



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3.6.5 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.

BELOW 1GHz WORST-CASE DATA

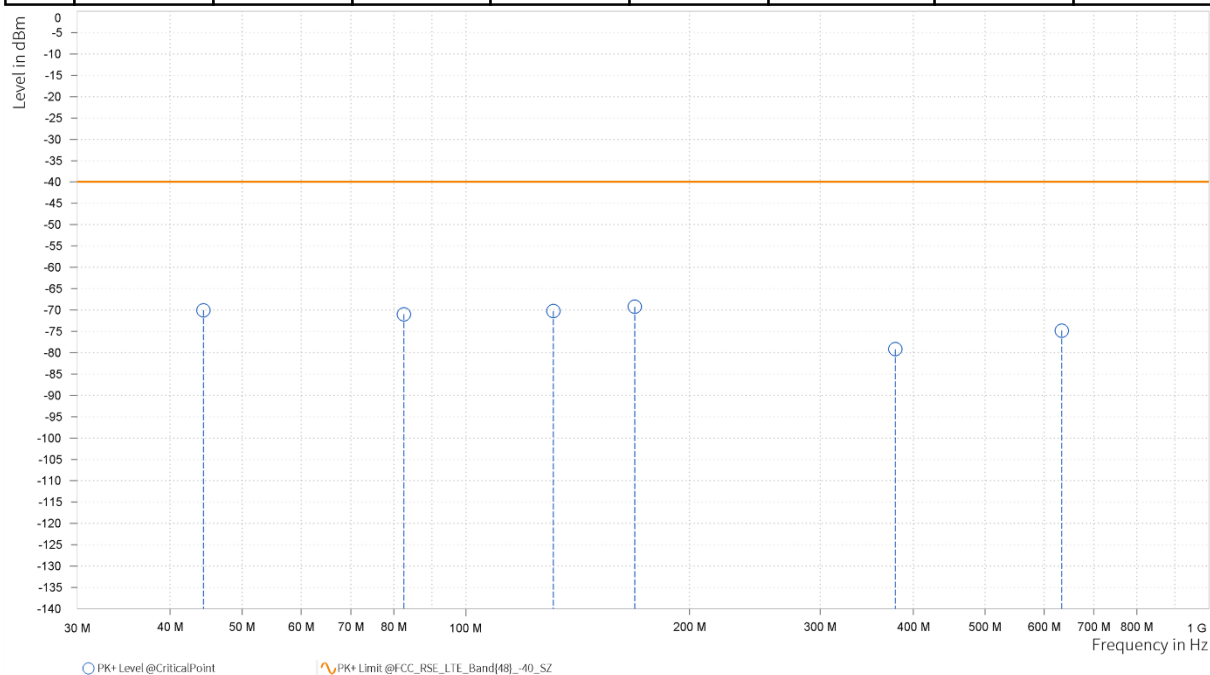
30 MHz – 1GHz data:

LTE Band 48

CHANNEL BANDWIDTH: 10MHz / QPSK

MODE	TX channel 56690	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Carl Xie		
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]
1	44.350	-70.07	-40.00	30.07	-1.10	H	4.9	1.00
1	82.500	-70.98	-40.00	30.98	-14.00	H	26	2.00
1	131.150	-70.26	-40.00	30.26	-13.46	H	125.2	2.00
1	168.850	-69.23	-40.00	29.23	-9.89	H	86.5	1.00
1	378.550	-79.18	-40.00	39.18	-0.38	H	232.3	1.00
2	633.700	-74.82	-40.00	34.82	1.47	H	295.7	1.00

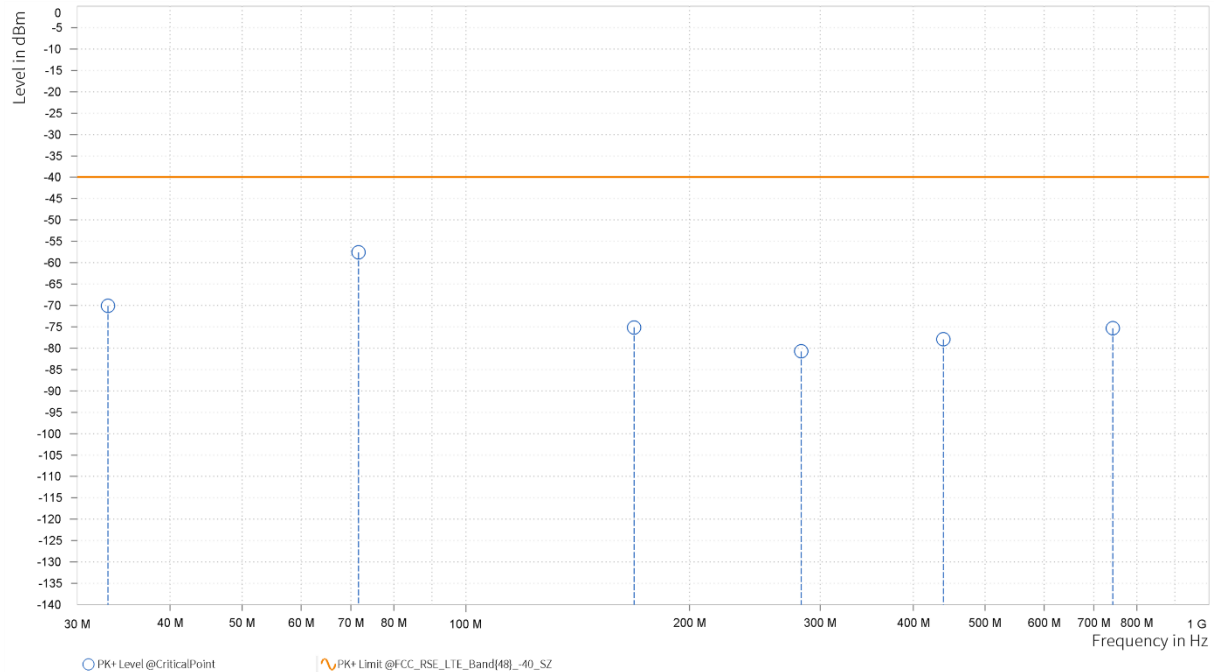




Test Report No.: RF260714B012

MODE	TX channel 56690	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Carl Xie		
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]
1	33.000	-70.11	-40.00	30.11	-6.30	V	162.4	2.00
1	71.700	-57.58	-40.00	17.58	-8.55	V	359	2.00
1	168.400	-75.13	-40.00	35.13	-10.02	V	215	2.00
1	282.700	-80.75	-40.00	40.75	-1.28	V	135.5	1.00
1	439.200	-77.91	-40.00	37.91	1.11	V	359.1	1.00
2	742.463	-75.34	-40.00	35.34	2.13	V	0.9	2.00



BOOMWAVE TEST (SHENZHEN)
CO., LTD.

Room B38, Warehouse A5(Chiwan No.1), No.3 Chiwan
4th Road, Chiwan Community, Zhaoshang Street,
Nanshan District, Shenzhen, Guangdong, P.R. CHINA

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com

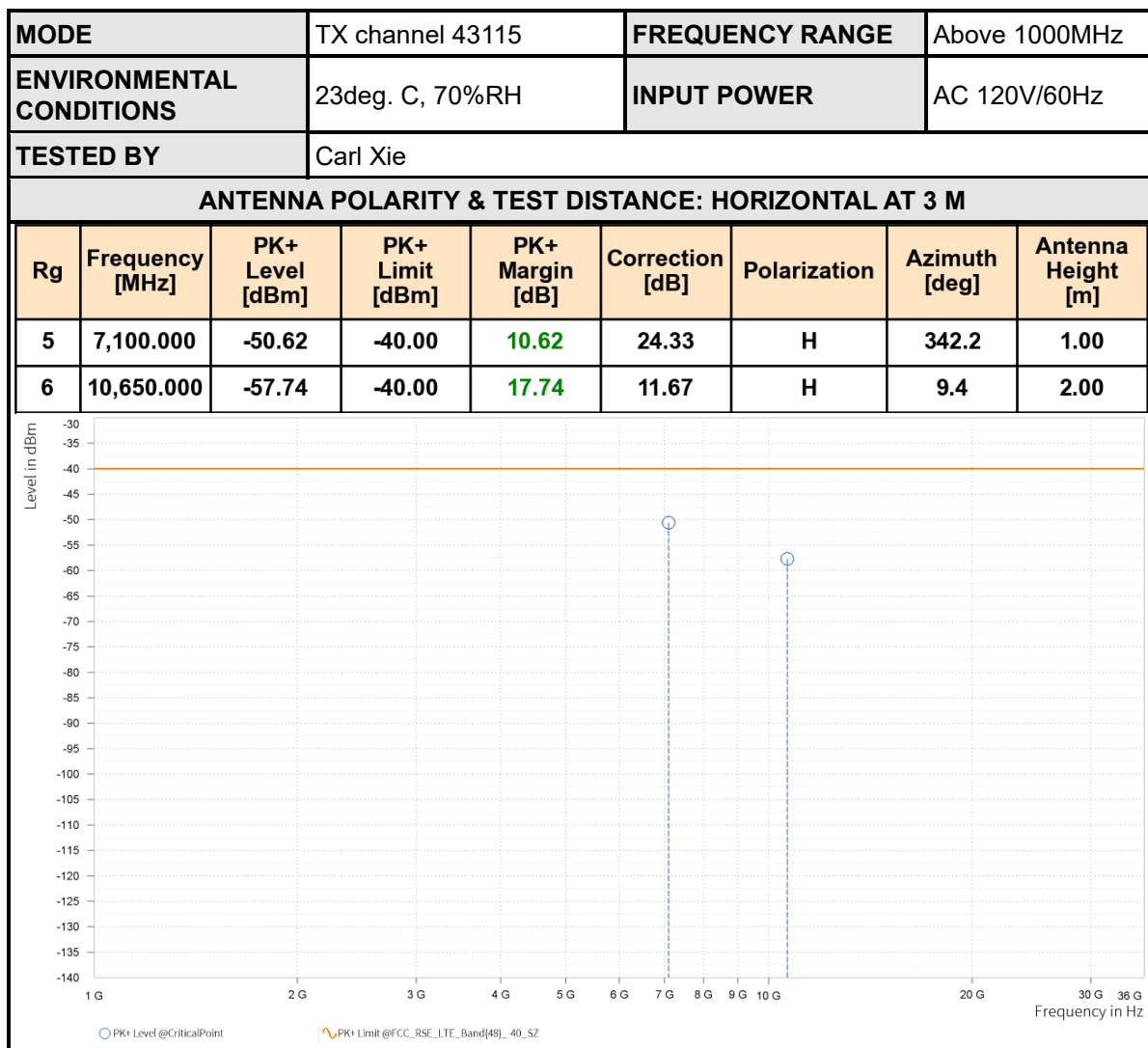


Test Report No.: RF260714B012
ABOVE 1GHz

Note: For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

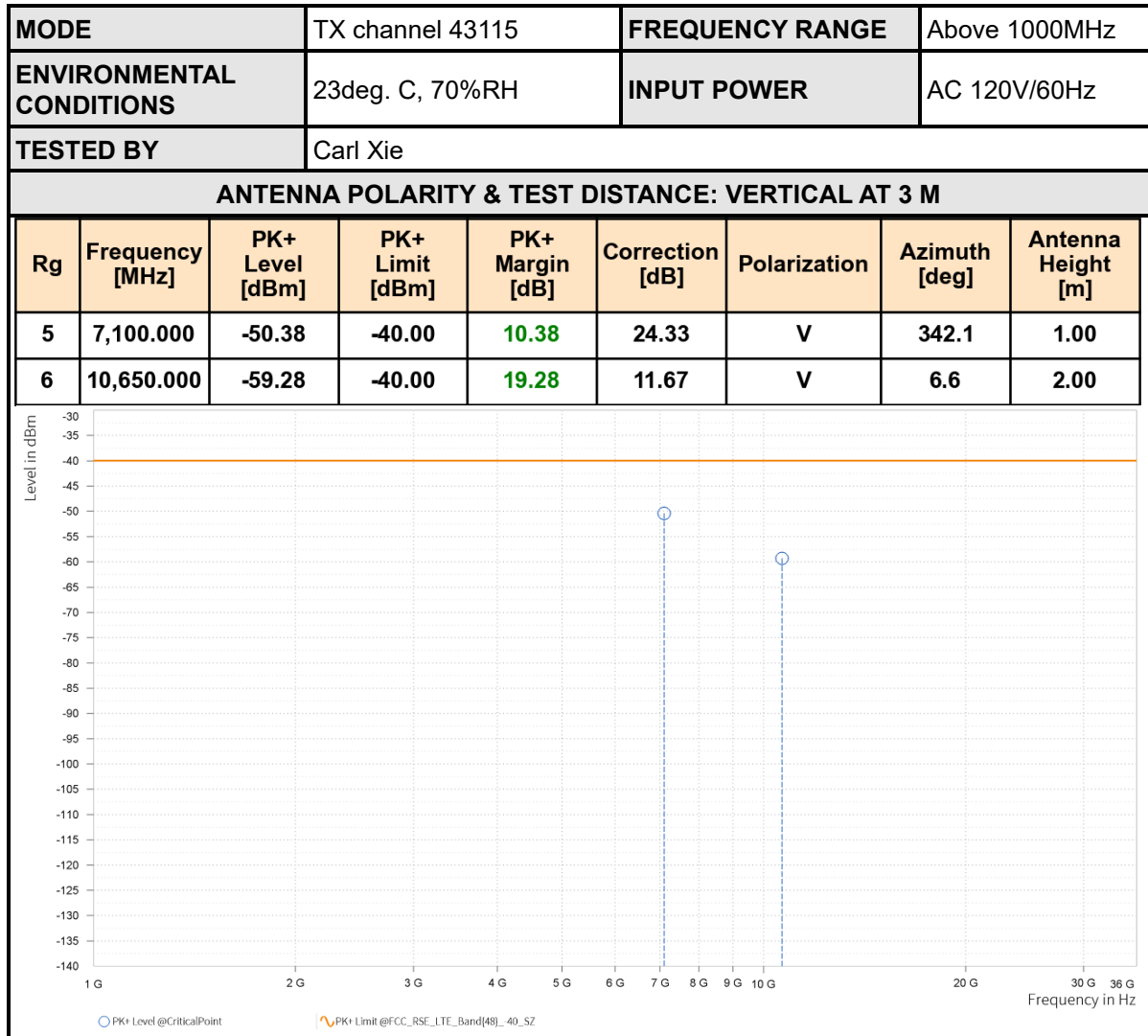
LTE BAND 42

CHANNEL BANDWIDTH: 5MHz / QPSK





Test Report No.: RF260714B012



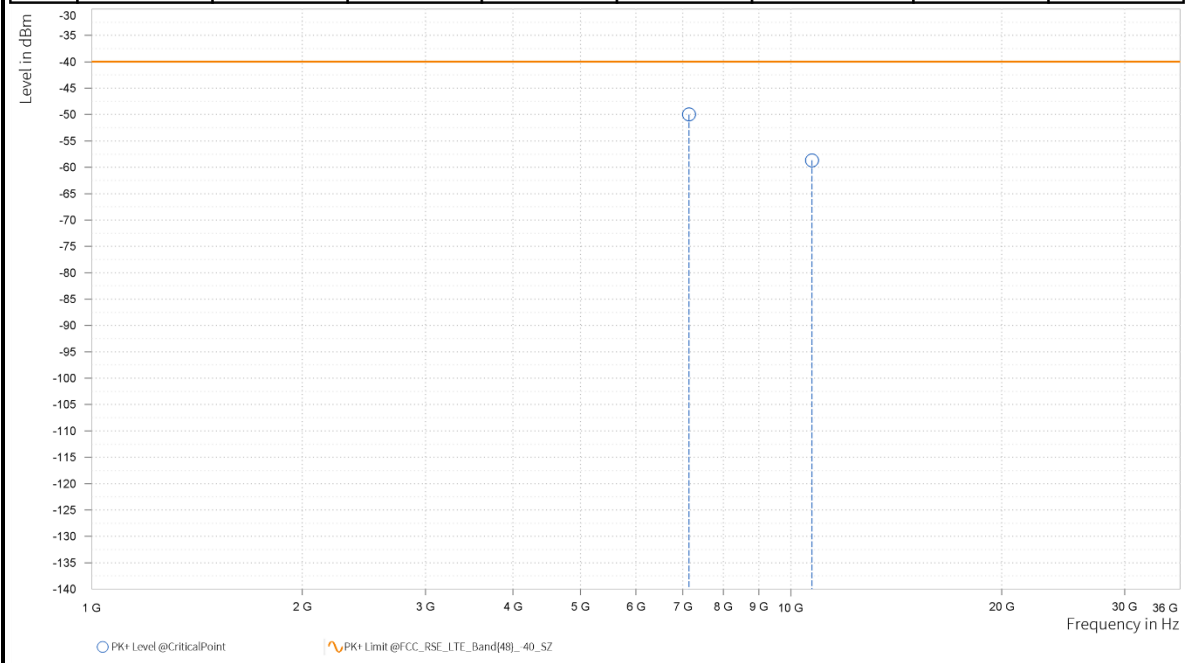


Test Report No.: RF260714B012

MODE	TX channel 43340	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Carl Xie		

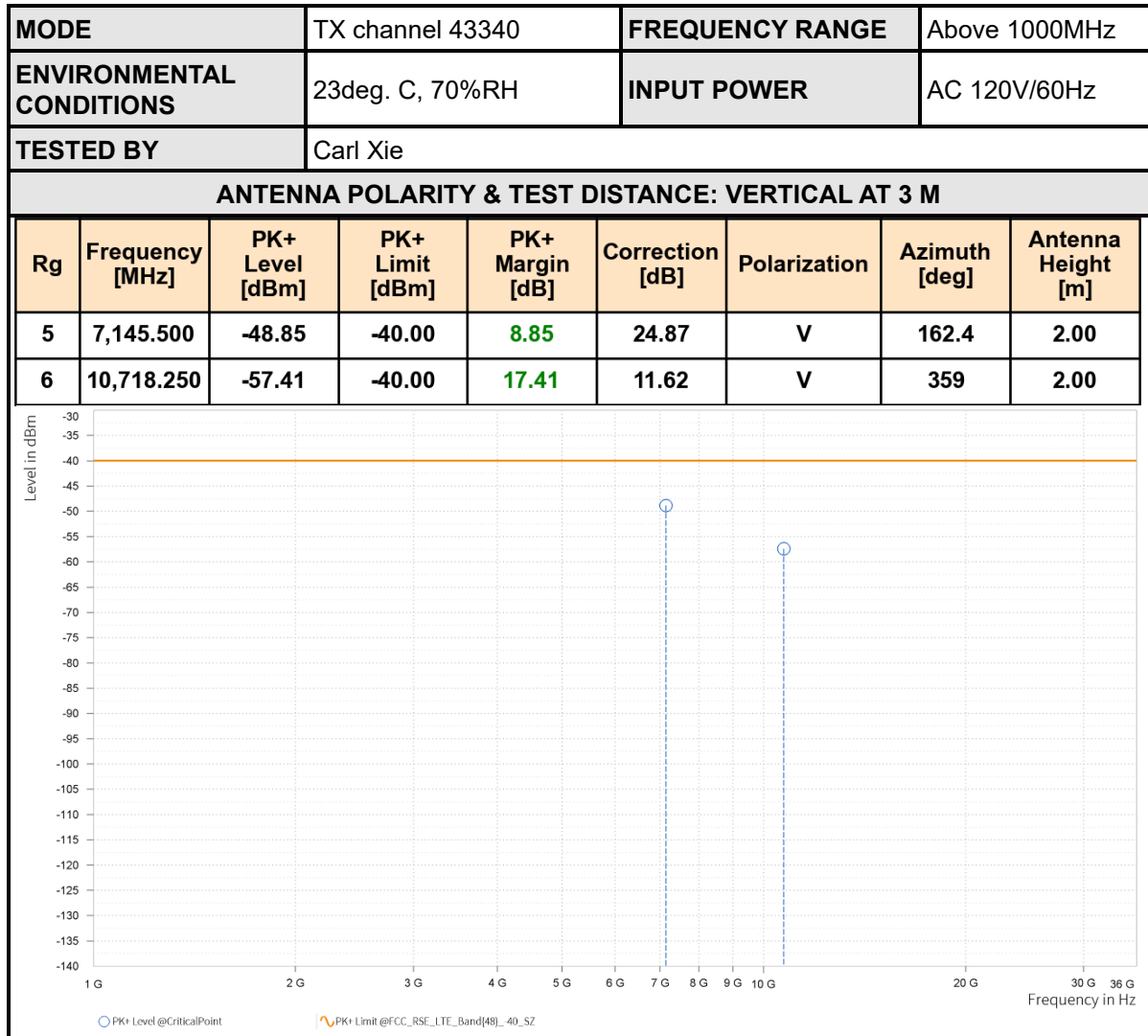
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,145.500	-49.99	-40.00	9.99	24.87	H	359.1	1.00
6	10,718.250	-58.68	-40.00	18.68	11.62	H	118.2	2.00





Test Report No.: RF260714B012



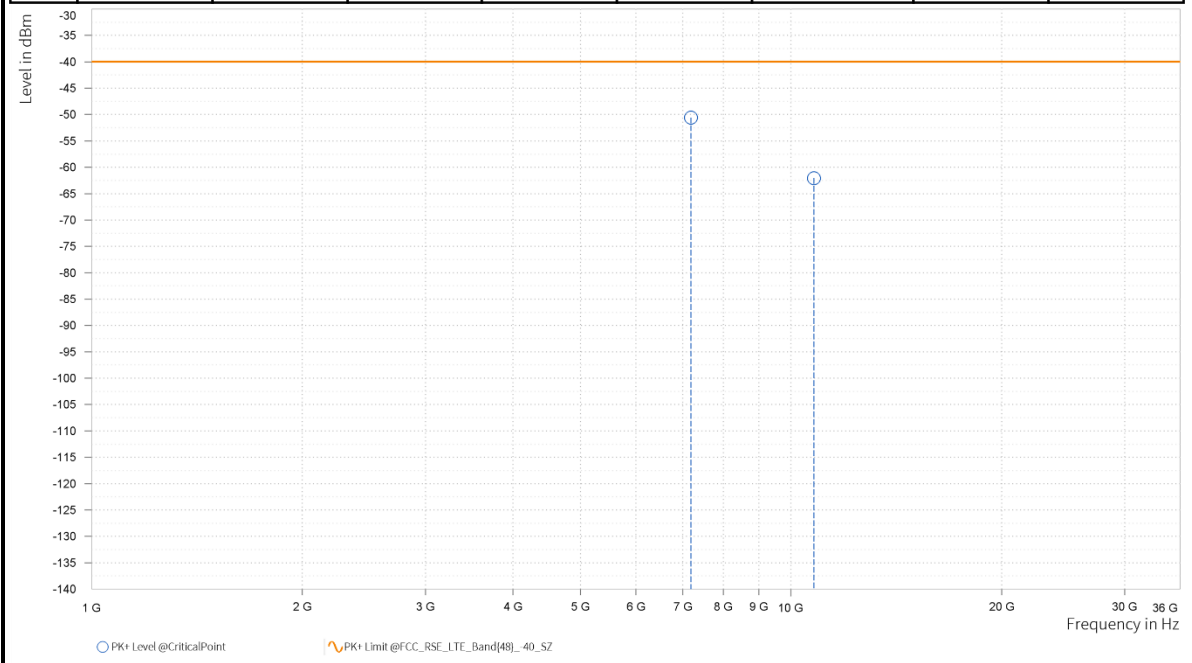


Test Report No.: RF260714B012

MODE	TX channel 43565	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Carl Xie		

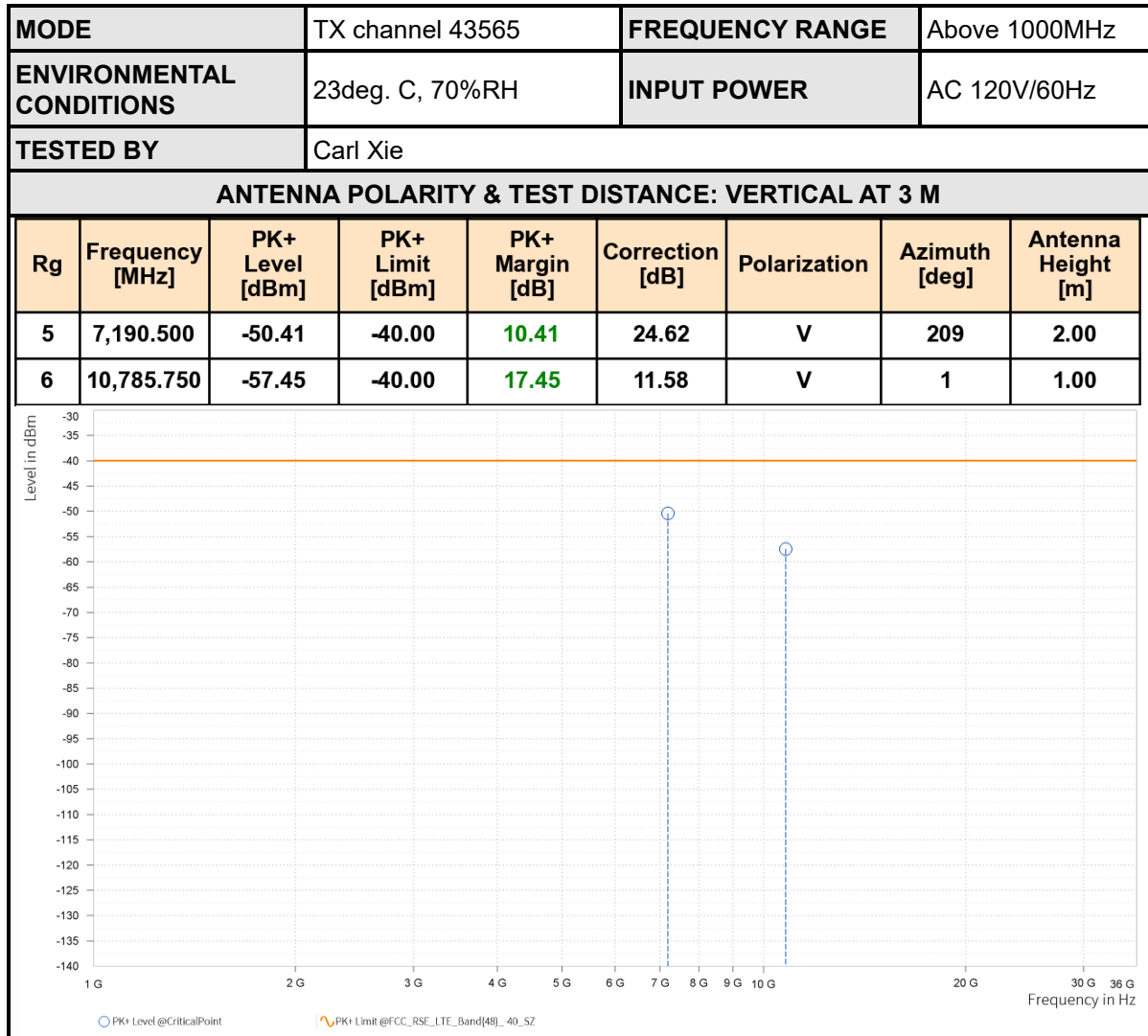
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,190.500	-50.56	-40.00	10.56	24.62	H	359	2.00
6	10,785.750	-62.05	-40.00	22.05	11.58	H	1	2.00





Test Report No.: RF260714B012





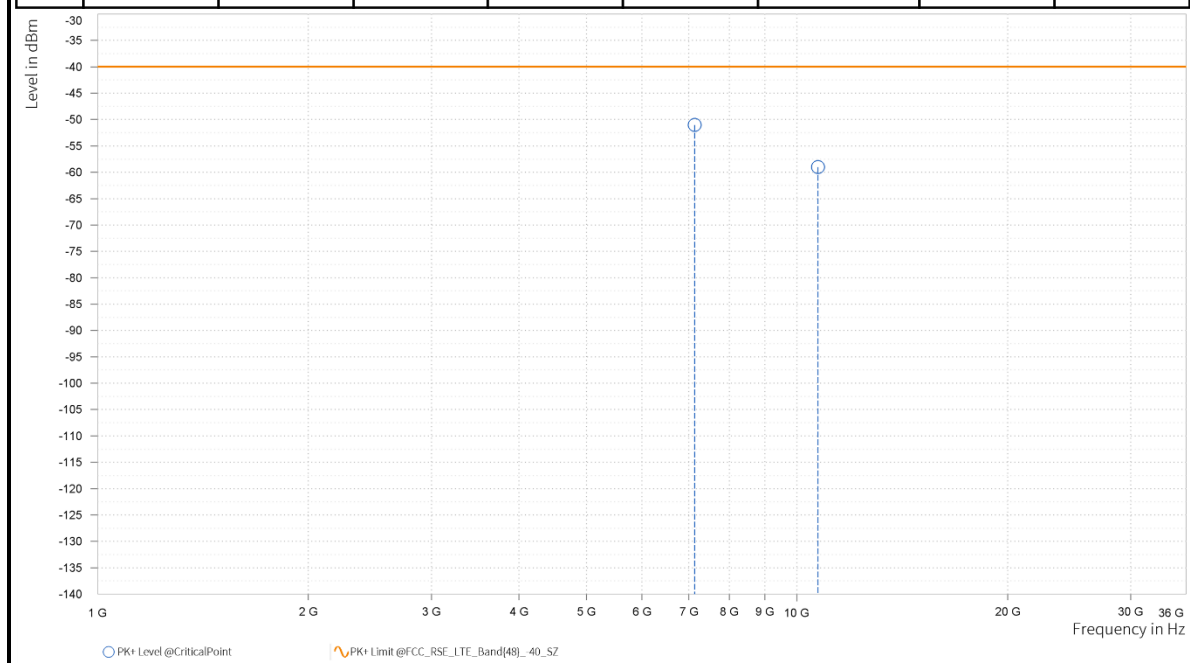
Test Report No.: RF260714B012

CHANNEL BANDWIDTH: 10MHz / QPSK

MODE	TX channel 43340	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Carl Xie		

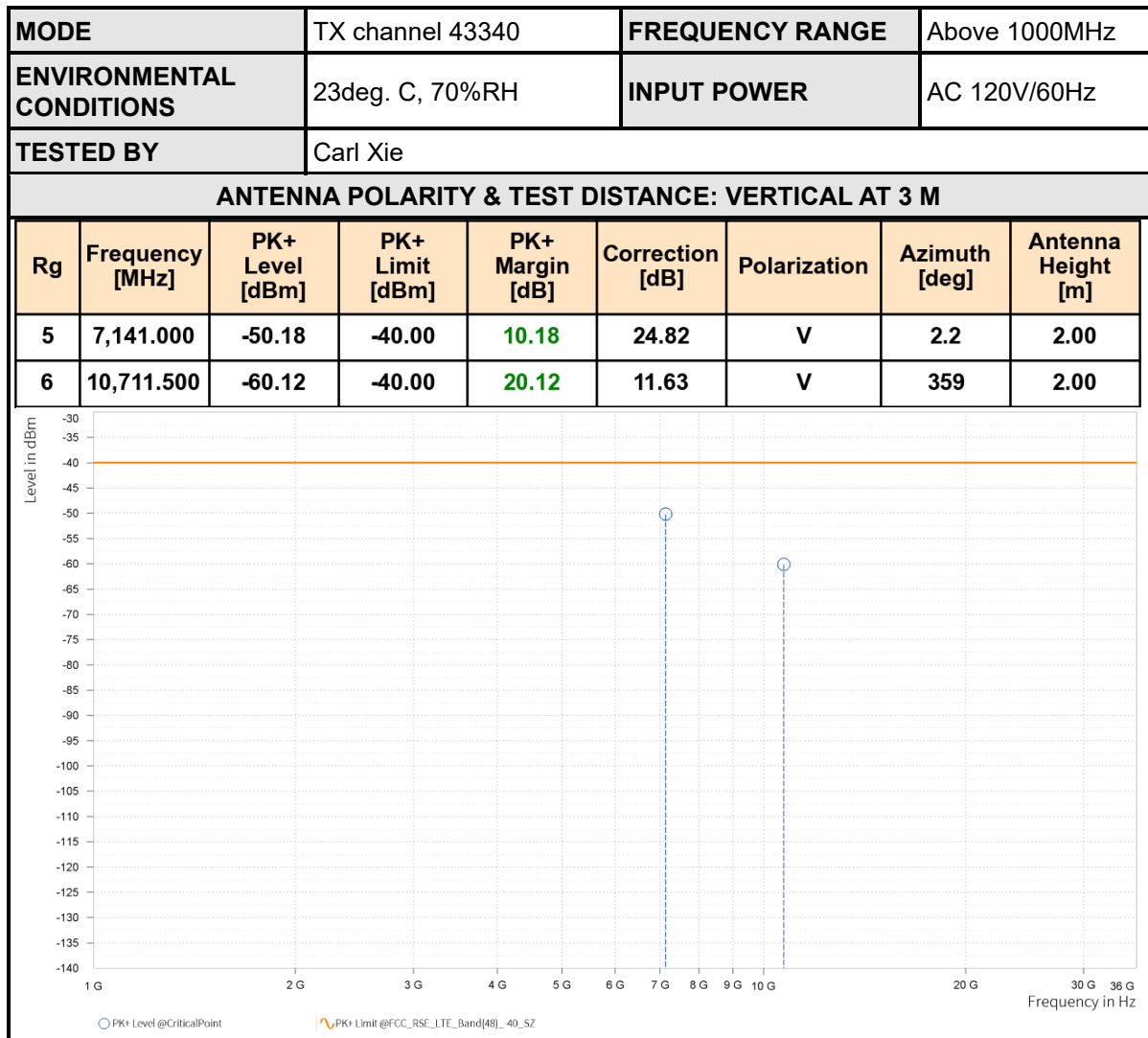
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,141.000	-51.03	-40.00	11.03	24.82	H	19.7	2.00
6	10,711.500	-59.03	-40.00	19.03	11.63	H	0.9	2.00





Test Report No.: RF260714B012





Test Report No.: RF260714B012

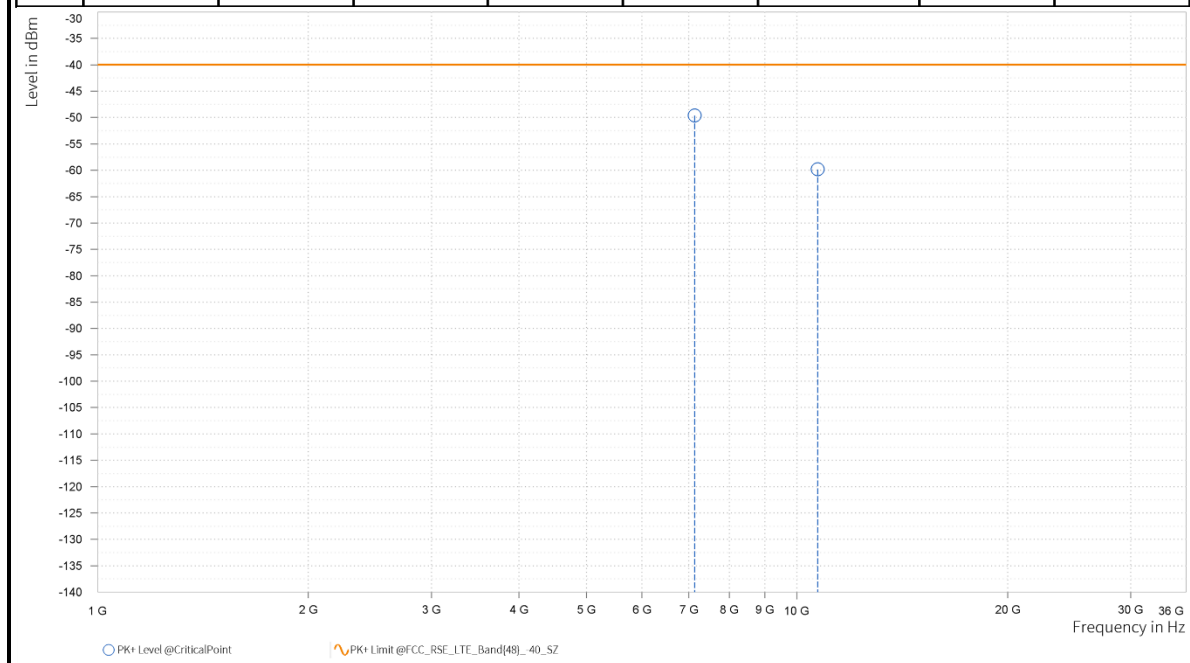
CHANNEL BANDWIDTH: 15MHz / QPSK

CH43340

MODE	TX channel 43340	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Carl Xie		

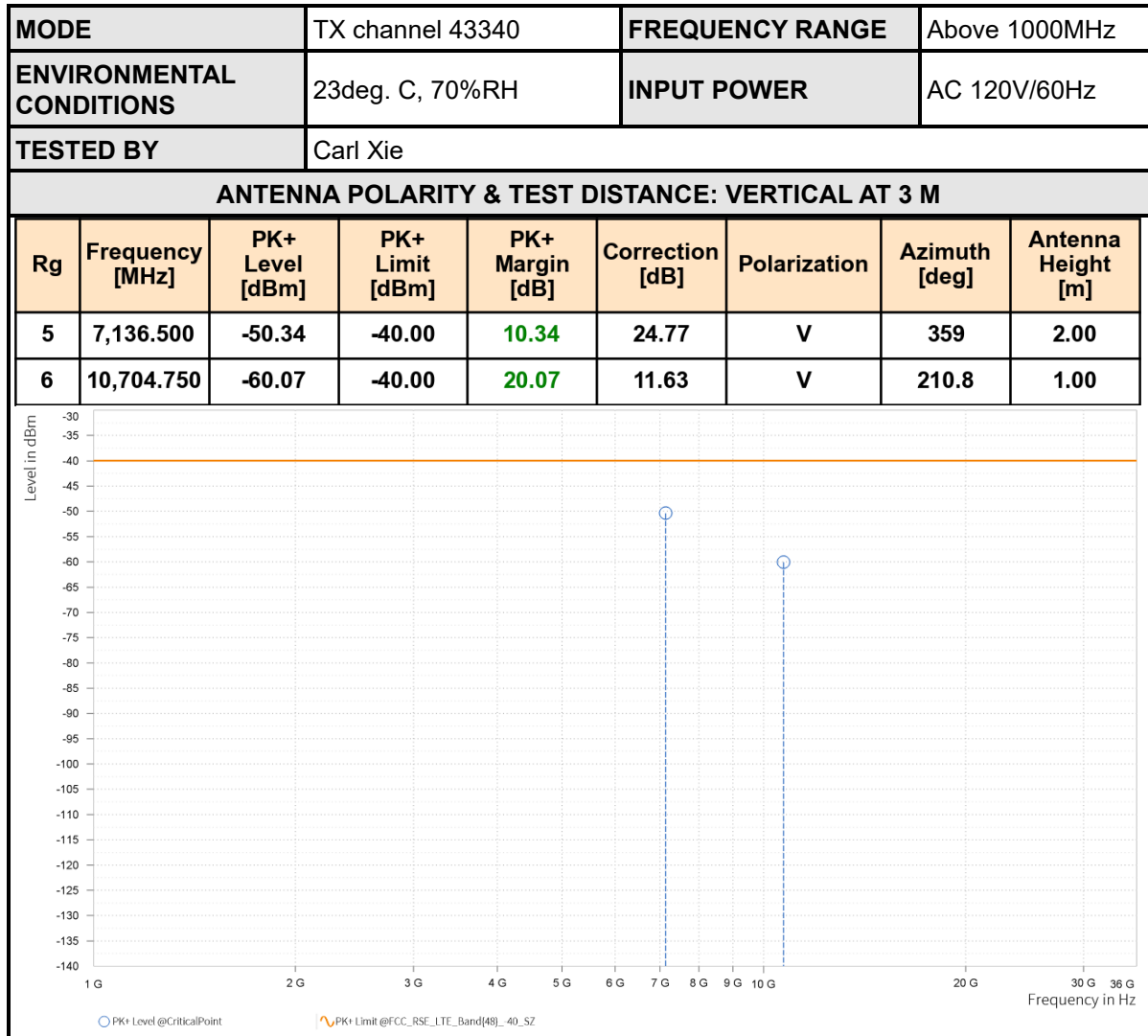
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,136.500	-49.62	-40.00	9.62	24.77	H	359	2.00
6	10,704.750	-59.82	-40.00	19.82	11.63	H	351.7	1.00





Test Report No.: RF260714B012





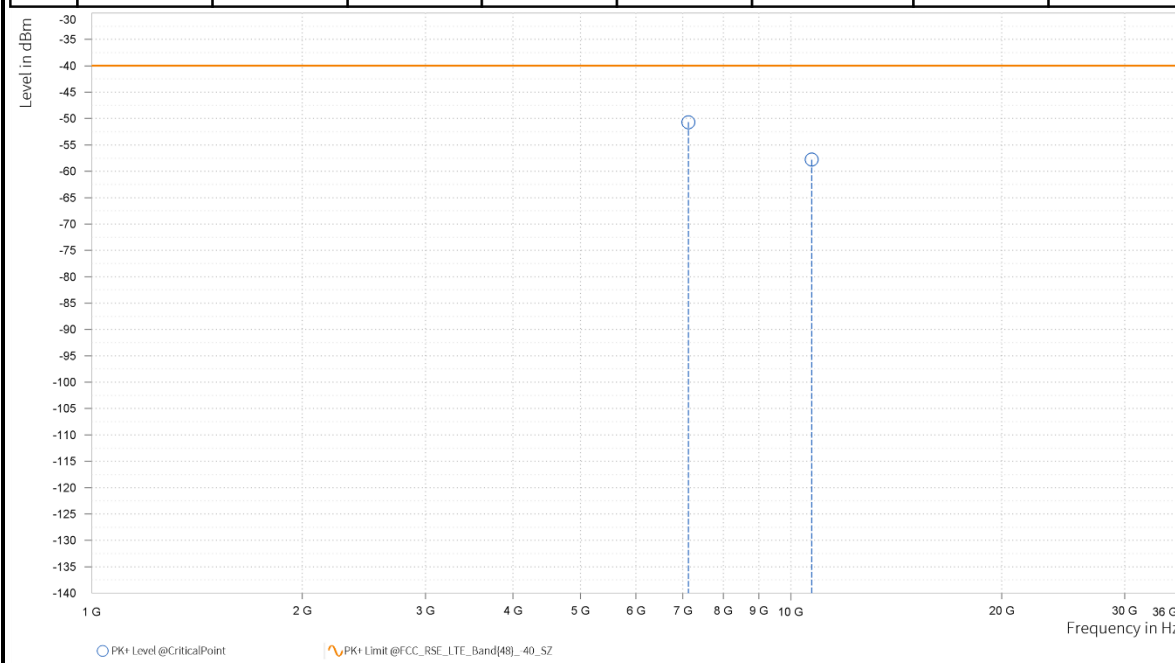
Test Report No.: RF260714B012

CHANNEL BANDWIDTH: 20MHz / QPSK

MODE	TX channel 43340	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Carl Xie		

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]
5	7,132.000	-50.68	-40.00	10.68	24.72	H	356.1	1.00
6	10,698.000	-57.80	-40.00	17.80	11.64	H	237.1	1.00



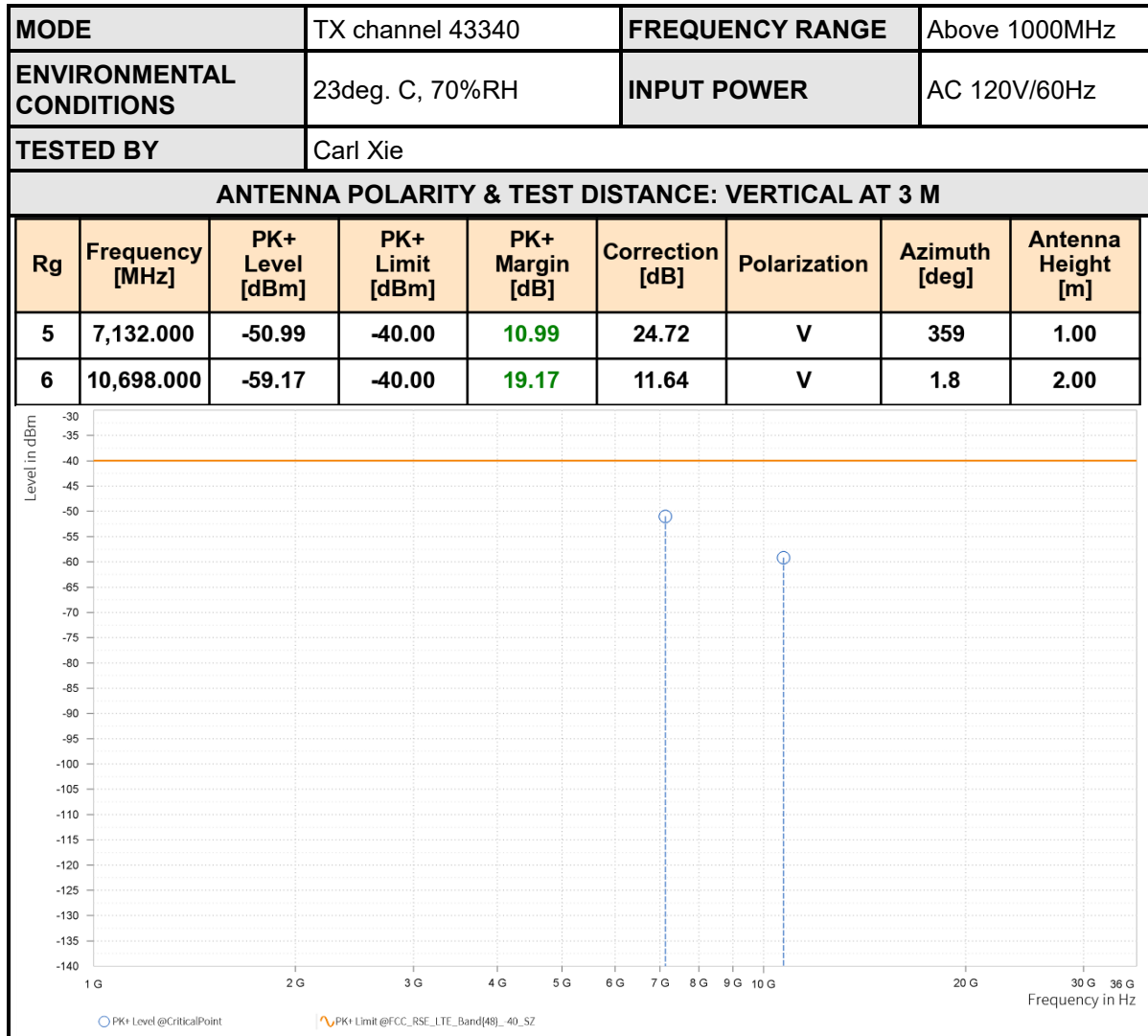
BOOMWAVE TEST (SHENZHEN)
CO., LTD.

Room B38, Warehouse A5(Chiwan No.1), No.3 Chiwan
4th Road, Chiwan Community, Zhaoshang Street,
Nanshan District, Shenzhen, Guangdong, P.R. CHINA

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com



Test Report No.: RF260714B012





Test Report No.: RF260714B012

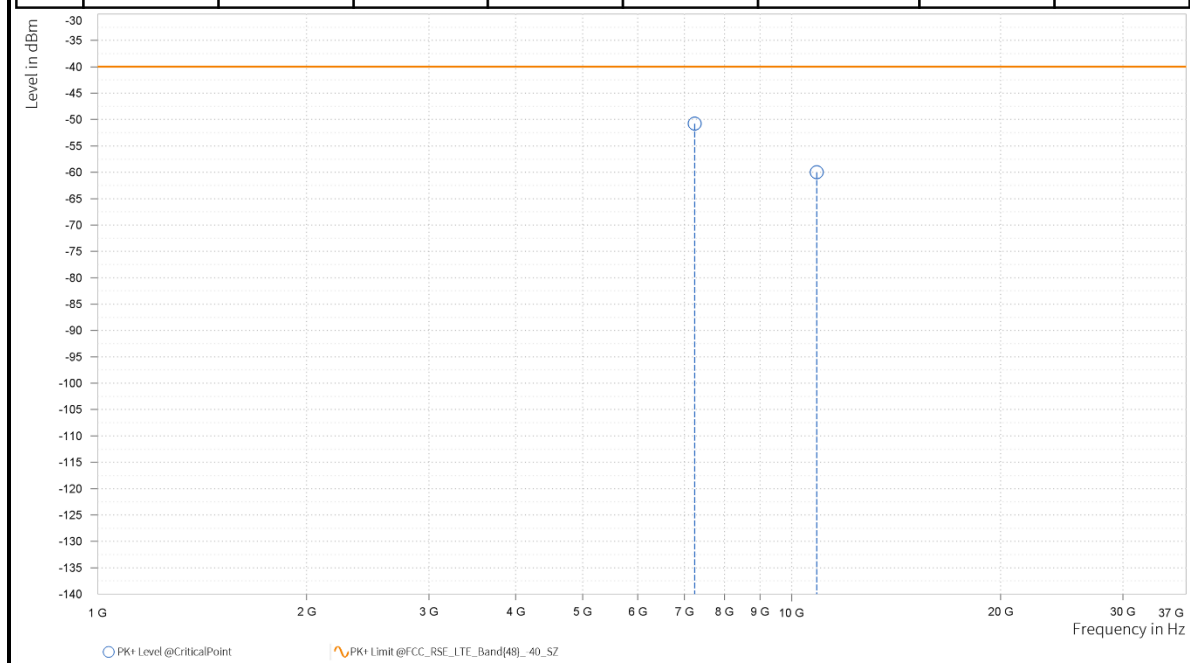
LTE BAND 48

CHANNEL BANDWIDTH: 5MHz / QPSK

MODE	TX channel 55990	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Carl Xie		

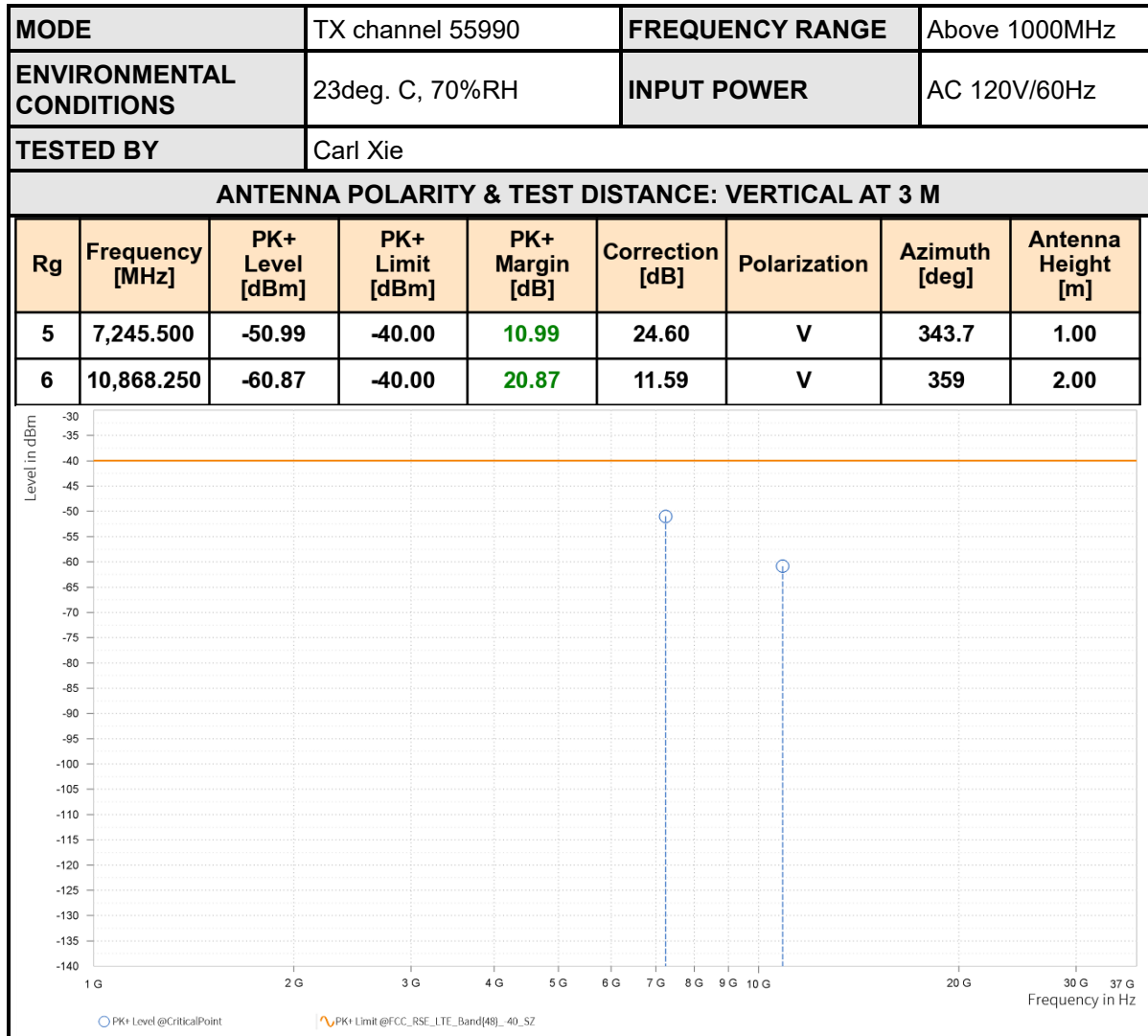
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,245.500	-50.78	-40.00	10.78	24.60	H	1	2.00
6	10,868.250	-60.00	-40.00	20.00	11.59	H	155.1	2.00





Test Report No.: RF260714B012





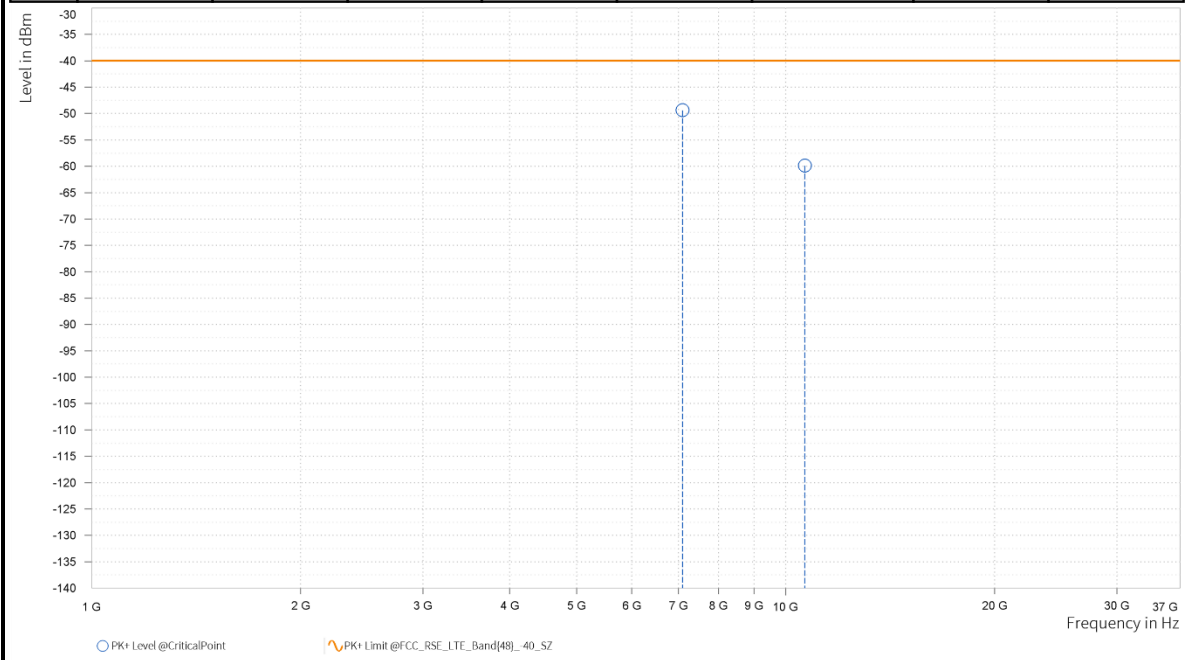
Test Report No.: RF260714B012

CHANNEL BANDWIDTH: 10MHz / QPSK

MODE	TX channel 55290	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Carl Xie		

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]
5	7,101.000	-49.37	-40.00	9.37	24.35	H	12.1	2.00
6	10,651.500	-59.87	-40.00	19.87	11.67	H	359.1	1.00



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CO., LTD.

Room B38, Warehouse A5(Chiwan No.1), No.3 Chiwan
4th Road, Chiwan Community, Zhaoshang Street,
Nanshan District, Shenzhen, Guangdong, P.R. CHINA

Mobile: +86 15118052731
Email:shimin.wang@boomwavelab.com

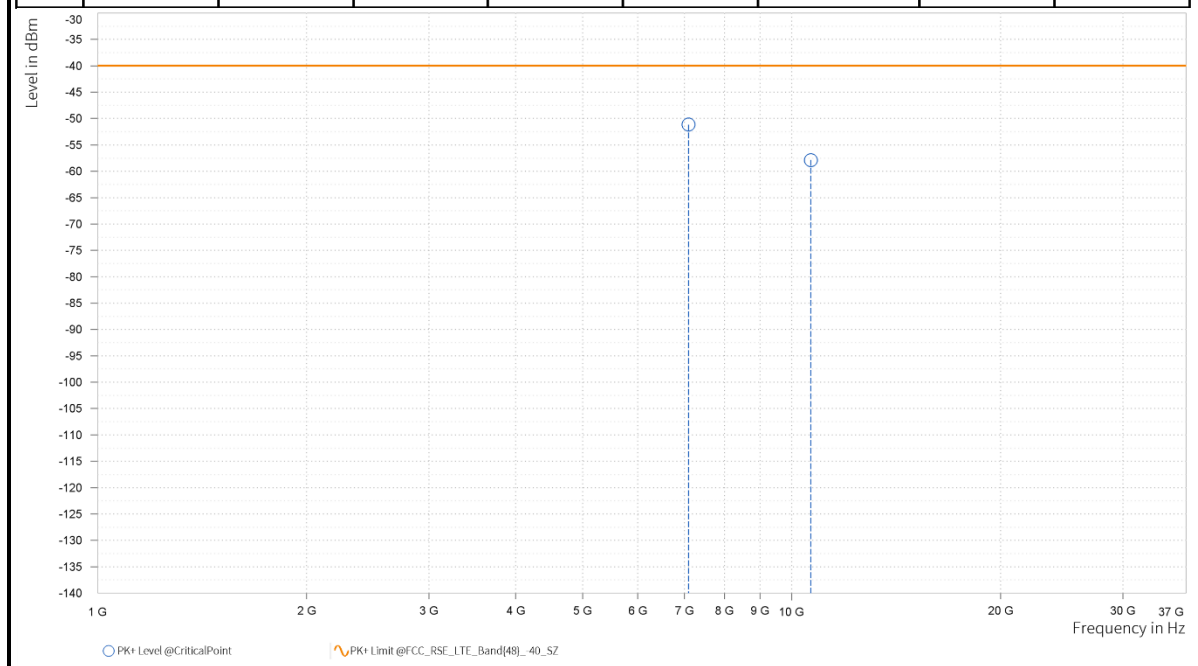


Test Report No.: RF260714B012

MODE	TX channel 55290	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Carl Xie		

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]
5	7,101.000	-51.17	-40.00	11.17	24.35	V	359.1	1.00
6	10,651.500	-57.89	-40.00	17.89	11.67	V	359.1	1.00



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CO., LTD.

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4th Road, Chiwan Community, Zhaoshang Street,
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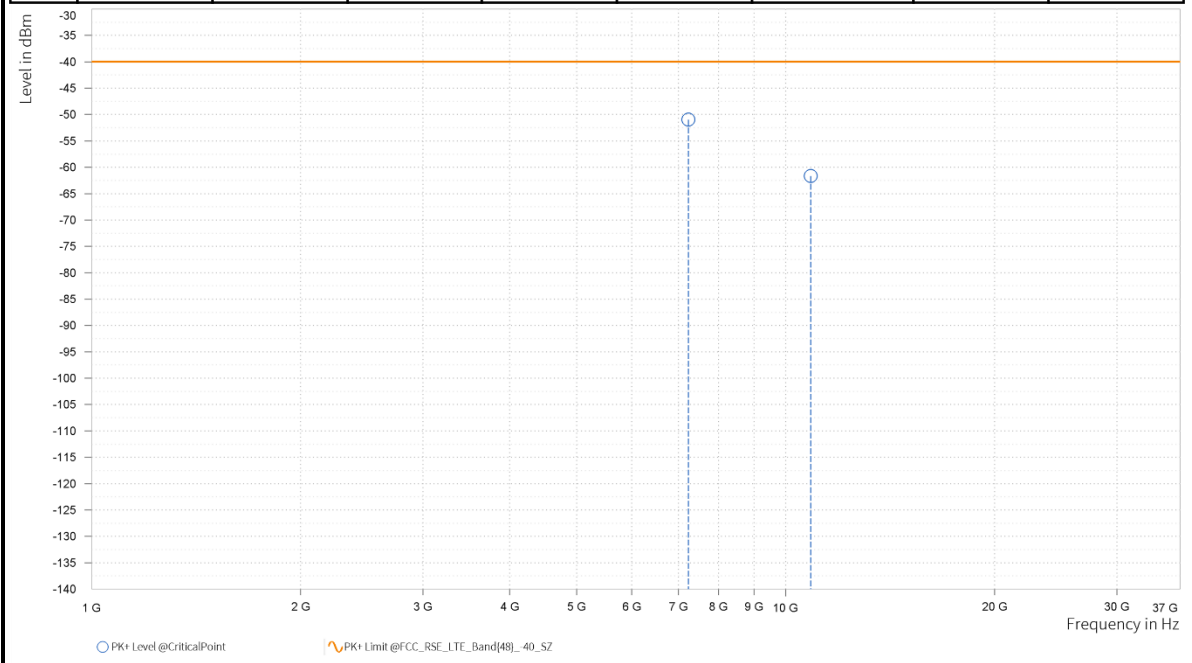


Test Report No.: RF260714B012

MODE	TX channel 55990	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60Hz
TESTED BY	Carl Xie		

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]
5	7,241.000	-50.97	-40.00	10.97	24.57	H	16.3	2.00
6	10,861.500	-61.65	-40.00	21.65	11.56	H	204.8	1.00





Test Report No.: RF260714B012

