



**中认信通**

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



## TEST REPORT

**Applicant:** Shanghai AllyNav Technology Co.,Ltd.

Address: Room 201, Buliding 1, No 215, Gaoguang RD, Qingpu District, Shanghai, China, 201702

**FCC ID:** 2AT4H-T101PRO

**Product Name:** Rugged high-precision vehicle-mounted tablet

**Standard(s):** 47 CFR Part 2, 47 CFR Part 22, Subpart H  
47 CFR Part 24, Subpart E  
47 CFR Part 27  
ANSI C63.26-2015  
KDB 971168 D01 Power Meas License Digital Systems  
v03r01

The above device has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

**Report Number:** CR230744003-00F

**Date Of Issue:** 2023/10/23

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### **Test Facility**

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

### **Declarations**

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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## DOCUMENT REVISION HISTORY

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Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230744003-00F	Original Report	2023/10/23

## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment under Test (EUT)

<b>EUT Name:</b>	Rugged high-precision vehicle-mounted tablet
<b>EUT Model:</b>	T101pro
<b>Operation Bands and modes:</b>	GSM/GPRS/EDGE: 850/1900 WCDMA: Band 2/4/5 LTE: Band 2/4/5/7/12/17/25/38/40/41
<b>Modulation Type:</b>	GMSK,8PSK, BPSK, QPSK, 16QAM
<b>Rated Input Voltage:</b>	DC 12V
<b>Serial Number:</b>	28LK-1
<b>EUT Received Date:</b>	2023/8/2
<b>EUT Received Status:</b>	Good

#### Operation Voltage ( $V_{DC}$ ) ▲ :

Lowest:	6	Normal:	12	Highest:	36
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#### Transmission Antenna Information ▲ :

Antenna Type	Operation Bands	Antenna Frequency Range(MHz)	Antenna Gain ( $G_r$ )(dBi)	L <sub>c</sub> (dB)
FPC	GSM850	824-849	3.02	0.1
	PCS1900	1850-1910	2.82	0.3
	WCDMA B2	1850-1910	2.82	0.3
	WCDMA B4	1710-1755	3.49	0.3
	WCDMA B5	824-849	3.02	0.1
	LTE B2	1850-1910	2.82	0.3
	LTE B4	1710-1755	3.49	0.3
	LTE B5	824-849	3.02	0.1
	LTE B7	2500-2570	2.37	0.4
	LTE B12	699-716	5.25	0.1
	LTE B17	704-716	5.25	0.1
	LTE B25	1850-1915	2.97	0.3
	LTE B38	2570-2620	2.16	0.4
	LTE B40 Lower	2305-2315	1	0.4
	LTE B40 Upper	2350-2360	2.36	0.4
LTE B41	2555-2655	2.16	0.4	

Note: L<sub>c</sub>= Signal Attenuation in the connecting cable between the transmitter and antenna, in dB.

#### Accessory Information:

Accessory Description	Manufacturer	Model	Parameters
/	/	/	/

## 1.2 Description of Test Configuration

### 1.2.1 EUT Operation Condition:

<b>EUT Operation Mode:</b>	The system was configured for testing in each operation mode.
<b>Equipment Modifications:</b>	No
<b>EUT Exercise Software:</b>	No

The maximum power was configured per 3GPP Standard for each operation modes as below setting:

**GSM/GPRS/EGPRS**

Function: Menu select > GSM Mobile Station > GSM 850/1900  
 Press Connection control to choose the different menus  
 Press RESET > choose all the reset all settings  
 Connection Press Signal Off to turn off the signal and change settings  
 Network Support > GSM + GPRS or GSM + EGSM  
 Main Service > Packet Data  
 Service selection > Test Mode A – Auto Slot Config. off  
 MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting  
     > Slot configuration > Uplink/Gamma  
     > 33 dBm for GPRS 850  
     > 30 dBm for GPRS 1900  
     > 27 dBm for EGPRS 850  
     > 26 dBm for EGPRS 1900  
 BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel  
 Frequency Offset > + 0 Hz  
 Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)  
 BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off  
 P0 > 4 dB  
 Slot Config > Unchanged (if already set under MS signal)  
 TCH > choose desired test channel  
 Hopping > Off  
 Main Timeslot > 3  
 Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream  
 AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input  
 Connection Press Signal on to turn on the signal and change settings

**WCDMA**

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	1	2	3	4	5
<b>WCDMA General Settings</b>	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	$\beta_c$	11/15	6/15	15/15	2/15	15/15
	$\beta_d$	15/15	15/15	9/15	15/5	0
	$\beta_{ec}$	209/225	12/15	30/15	2/15	5/15
	$\beta_c/\beta_d$	11/15	6/15	15/9	2/15	-
	$\beta_{hs}$	22/15	12/15	30/15	4/15	5/15
CM(dB)	1.0	3.0	2.0	3.0	1.0	
PR(dB)	0	2	1	2	0	
<b>HSDPA Specific Settings</b>	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	$A_{hs}=\beta_{hs}/\beta_c$	30/15				
<b>HSUPA Specific Settings</b>	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate k s	242.1	174.9	482.8	205.8	308.9
	Reference E_FCI	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27		

**LTE (FDD):**

The following tests were conducted according to the test requirements in 3GPP TS36.101

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3**

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS\_01".

**Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)**

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks ( $N_{RB}$ )	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 96	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 <sup>1</sup>	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.



**LTE(TDD):**

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink				Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS		
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink	
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	
1	$19760 \cdot T_s$			$20480 \cdot T_s$			
2	$21952 \cdot T_s$			$23040 \cdot T_s$			
3	$24144 \cdot T_s$			$25600 \cdot T_s$			
4	$26336 \cdot T_s$			$7680 \cdot T_s$			
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	
6	$19760 \cdot T_s$			$23040 \cdot T_s$			
7	$21952 \cdot T_s$			$12800 \cdot T_s$			
8	$24144 \cdot T_s$			-			
9	$13168 \cdot T_s$			-			

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

**Calculated Duty Cycle**

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle = Extended cyclic prefix in uplink x (T<sub>s</sub>) x # of S + # of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:  
 Calculated Duty Cycle =  $5120 \times [1/(15000 \times 2048)] \times 2 + 6 \text{ ms} = 63.33\%$   
 where  
 T<sub>s</sub> = 1/(15000 x 2048) seconds

**1.2.2 Support Equipment List and Details**

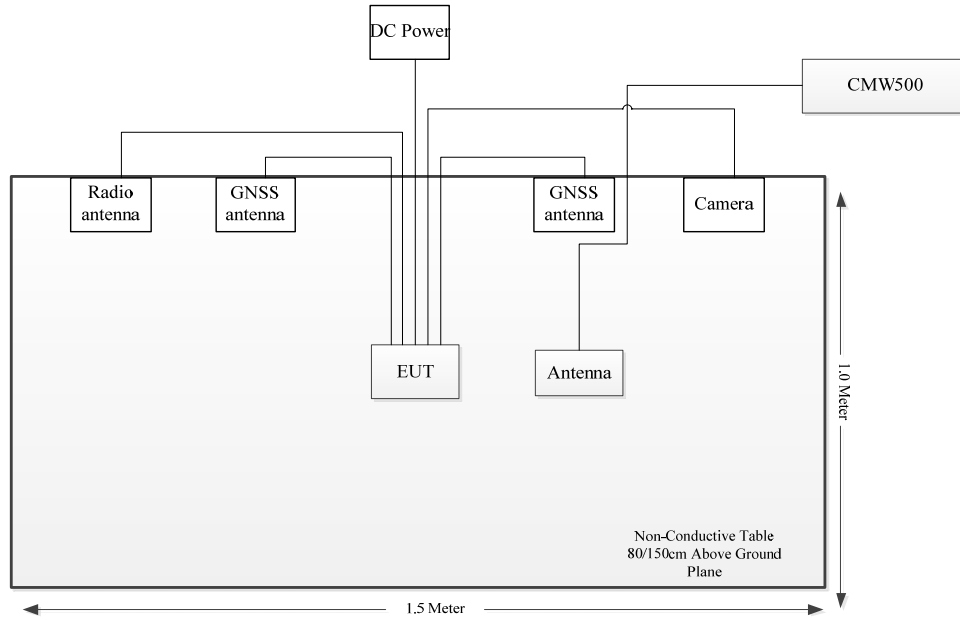
Manufacturer	Description	Model	Serial Number
ZHAOXIN	DC Power	RXN-6010D	21R6010D0912386
Unknown	Radio antenna	QC400SI	Unknown
HD	Camera	F23A220-S7100-P20065	Unknown
Unknown	GNSS Antenna	A10	C23070006680
Unknown	GNSS Antenna	A10	C23070006681
Unknown	ANT	Unknown	Unknown
R&S	Wideband Radio Communication Tester	CMW500	143458

**1.2.3 Support Cable List and Details**

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Power Cable	No	Yes	1.2	EUT	DC Power
Cable	No	No	5	EUT	Radio antenna
Cable	No	No	5	EUT	Camera
Cable*2	No	No	5	EUT	GNSS Antenna
Coaxial-Cable	No	No	10	ANT	CMW500

### 1.2.4 Block Diagram of Test Setup

Spurious emissions:



### 1.3 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	30M~200MHz: 4.15 dB, 200M~1GHz: 5.61 dB, 1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB
Unwanted Emissions, conducted	±1.26 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
RF Frequency	±0.082×10 <sup>-6</sup>

## 2. SUMMARY OF TEST RESULTS

Rules	Description of Test	Result
FCC§2.1046; § 22.913; § 24.232; §27.50;	RF Output Power	Compliant
FCC§ 2.1047	Modulation Characteristics	Not Applicable
FCC§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53;	Occupied Bandwidth	Compliant
FCC§ 2.1051; § 22.917; § 24.238; §27.53;	Spurious Emissions at Antenna Terminal	Compliant
FCC§ 22.917; § 24.238; §27.53;	Out of band emission, Band Edge	Compliant
FCC§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability vs. temperature Frequency stability vs. voltage	Compliant
FCC§ 2.1053; § 22.917; § 24.238; §27.53;	Field Strength of Spurious Radiation	Compliant

## 3. REQUIREMENTS AND TEST PROCEDURES

### 3.1 Applicable Standard For Part 22 Subpart H:

#### 3.1.1 RF Output Power

FCC §22.913

(a)(5) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7watts.

(d) *Power measurement.* Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB. Power measurements for base transmitters and repeaters must be made in accordance with either of the following:

- (1) A Commission-approved average power technique (*see* FCC Laboratory's Knowledge Database); or
- (2) For purposes of this section, peak transmit power must be measured over an interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, *etc.*, so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

#### 3.1.2 Spurious Emissions

FCC §22.917

(a) Out of band emissions. 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.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a reference bandwidth as follows:

- (1) In the spectrum below 1 GHz, instrumentation should employ a reference bandwidth of 100 kHz or greater. 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy, provided that the measured power is integrated over the full required reference bandwidth (i.e., 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
- (2) In the spectrum above 1 GHz, instrumentation should employ a reference bandwidth of 1 MHz

#### 3.1.3 Frequency stability

FCC §22.355

Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Table C-1 - Frequency Tolerance for Transmitters in the Public Mobile Services

<b>Frequency range (MHz)</b>	<b>Base, fixed (ppm)</b>	<b>Mobile &gt;3 watts (ppm)</b>	<b>Mobile <math>\leq</math>3 watts (ppm)</b>
25 to 50	20	20	50
50 to 450	5	5	50
450 to 512	2.5	5	5
821 to 896	1.5	<b>2.5</b>	<b>2.5</b>
928 to 929	5	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10	n/a	n/a

### **3.2 Applicable Standard For Part 24 Subpart E:**

#### **3.2.1 RF Output Power**

FCC §24.232

(c) Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

(d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of § 24.51. 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.

#### **3.2.2 Spurious Emissions**

FCC §24.238

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.

(a) Out of band emissions. 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.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, 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. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) Alternative out of band emission limit. Licensees in this service may establish an alternative out of band emission limit to be used at specified band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.

(d) Interference caused by out of band emissions. If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

#### **3.2.3 Frequency stability**

FCC §24.235

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



### 3.3 Applicable Standard For Part 27:

#### 3.3.1 RF Output Power

FCC §27.50

(a)(3) *Mobile and portable stations.*

(i) For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, *except that* for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

(ii) Mobile and portable stations are not permitted to transmit in the 2315-2320 MHz and 2345-2350 MHz bands.

(iii) *Automatic transmit power control.* Mobile and portable stations transmitting in the 2305-2315 MHz band or in the 2350-2360 MHz band must employ automatic transmit power control when operating so the stations operate with the minimum power necessary for successful communications.

(iv) *Prohibition on external vehicle-mounted antennas.* The use of external vehicle-mounted antennas for mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band is prohibited.

(b)(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

(c)(10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

(d)(4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(h) The following power limits shall apply in the BRS and EBS:

(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

#### 3.3.2 Spurious Emissions

FCC §27.53

(a) For operations in the 2305-2320 MHz band and the 2345-2360 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power P (with averaging performed only during periods of transmission) within the licensed band(s) of operation, in watts, by the following amounts:

(4) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

(i) By a factor of not less than:  $43 + 10 \log (P)$  dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than  $55 + 10 \log (P)$  dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than  $61 + 10 \log (P)$  dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than  $67 + 10 \log (P)$  dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than  $43 + 10 \log (P)$  dB on all frequencies between 2300 and 2305 MHz,  $55 + 10 \log (P)$  dB on all frequencies between 2296 and 2300 MHz,  $61 + 10 \log (P)$  dB on all frequencies between 2292 and 2296 MHz,  $67 + 10 \log (P)$  dB on all frequencies between 2288 and 2292 MHz, and  $70 + 10 \log (P)$  dB below 2288 MHz;

(iii) By a factor of not less than  $43 + 10 \log (P)$  dB on all frequencies between 2360 and 2365 MHz, and not less than  $70 + 10 \log (P)$  dB above 2365 MHz.

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB;

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB;

(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than  $76 + 10 \log (P)$  dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to - 70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and - 80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log (P)$  dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

(h) AWS emission limits

(1) **General protection levels.** Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10} (P)$  dB.

(m)(4) For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

### **3.3.3 Frequency stability**

FCC §27.54

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### 3.5 Test Method:

#### 3.5.1 Transmitter output power, e.r.p. and e.i.r.p

According to CFR Part 2.1046, ANSI C63.26-2015 Section 5.2.5.5 and KDB 971168 D01 Power Meas License Digital Systems v03r01:

The relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

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

where:

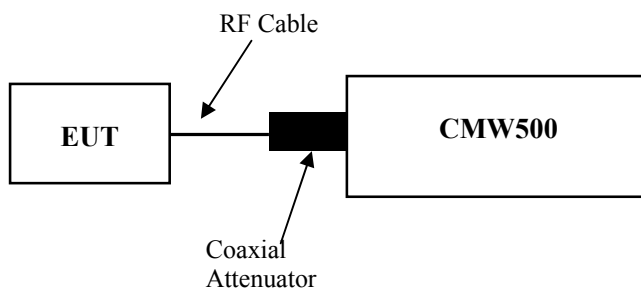
ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as  $P_{\text{Meas}}$ , typically dBW or dBm);

$P_{\text{Meas}}$  = 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.

#### Test Setup Block:



Note: The Insertion loss of the RF cable and coaxial Attenuator was offset into the Reading of CMW500.

### 3.5.2 Occupied Bandwidth

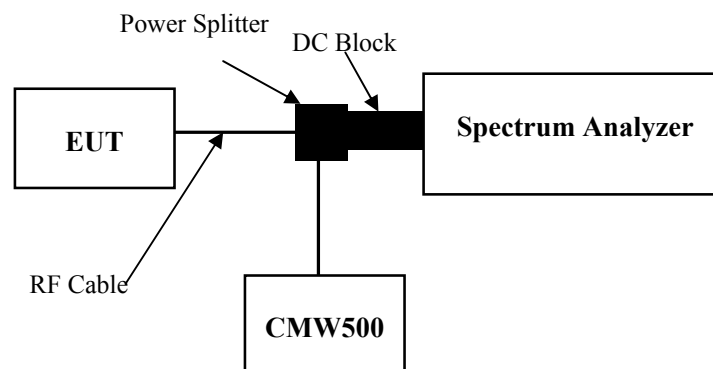
According to ANSI C63.26-2015 Section 5.4.4

The OBW is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

The following procedure shall be used for measuring (99%) power bandwidth:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of  $1.5 \times \text{OBW}$  is sufficient).
- b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set  $\geq 3 \times \text{RBW}$ .
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.  
NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances.
- d) Set the detection mode to peak, and the trace mode to max-hold.
- e) If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies.
- f) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

#### Test Setup Block:

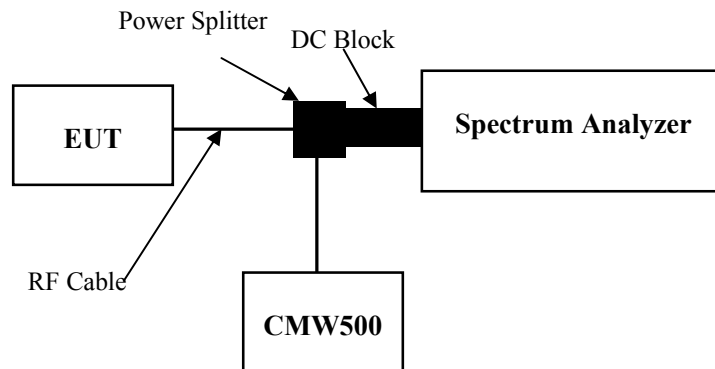


### 3.5.3 Transmitter unwanted emissions-at antenna terminals

According to ANSI C63.26-2015 Section 5.7.4, KDB 971168 D01 Power Meas License Digital Systems v03r01:

the applicable rule part specifies the reference bandwidth for measuring unwanted emission levels (typically, 100 kHz if the authorized frequency band/block is at or below 1 GHz and 1 MHz if the authorized frequency band/block is above 1 GHz),<sup>8</sup> effectively depicting the unwanted emission limit in terms of a power spectral density. In those cases where no reference bandwidth is explicitly specified, the values in the preceding sentence should be used.

#### Test Setup Block:

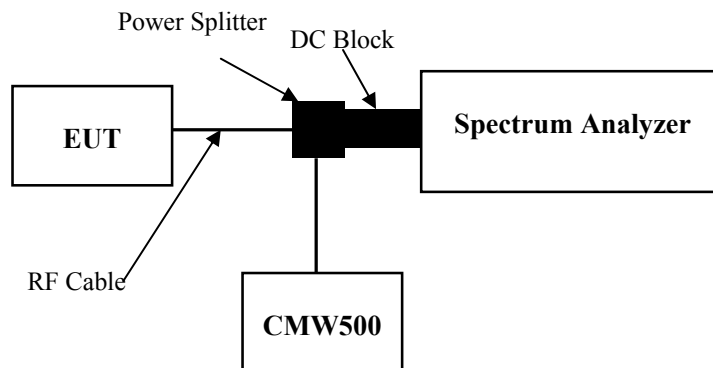


### 3.5.4 Transmitter unwanted emissions-Out of band emission

According to ANSI C63.26-2015 Section 5.7.3, KDB 971168 D01 Power Meas License Digital Systems v03r01:

Typically, a measurement (resolution) bandwidth smaller than the reference bandwidth is allowed for measurements within a specified frequency range at the edge of the authorized frequency block/band (e.g., within the first Y MHz outside of the authorized frequency band/block, where the value of Y is specified in the relevant rule part). Some FCC out-of-band emission rules permit the use of a narrower RBW (typically limited to a minimum RBW of 1 % of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth. Beyond the specified frequency range in which this relaxation of the uniform reference bandwidth is permitted, it typically is also acceptable to use a narrower RBW (again limited to a minimum of 1 % of OBW) to increase accuracy, but the measurement result must subsequently be integrated over the full reference bandwidth.

#### Test Setup Block:



### 3.5.5 Frequency stability

According to ANSI C63.26-2015 Section 5.6, KDB 971168 D01 Power Meas License Digital Systems v03r01:

Frequency stability is a measure of the frequency drift due to temperature and supply voltage variations, with reference to the frequency measured at +20 °C and rated supply voltage.

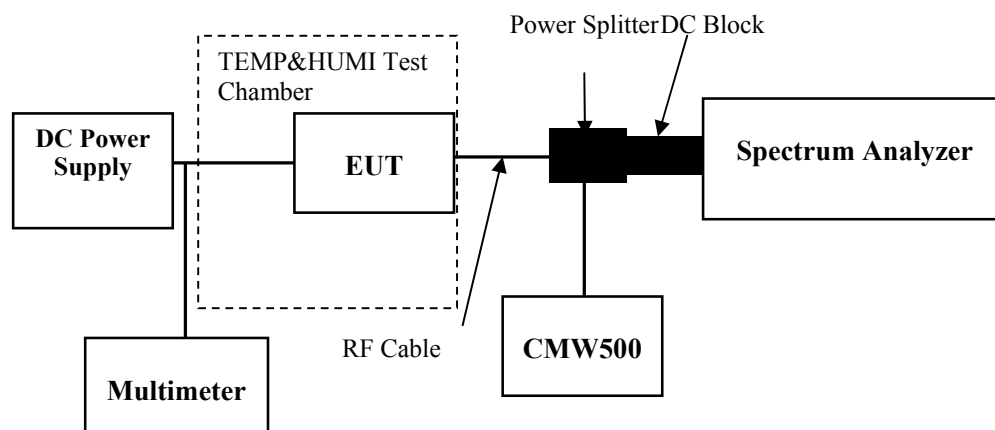
The operating carrier frequency shall be set up in accordance with the manufacturer's published operation and instruction manual prior to the commencement of these tests. No adjustment of any frequency determining circuit element shall be made subsequent to this initial set-up. Frequency stability is tested:

- a) At 10 °C intervals of temperatures between –30 °C and +50 °C at the manufacturer's rated supply voltage, and
- b) At +20 °C temperature and ±15% supply voltage variations. If a product is specified to operate over a range of input voltage then the –15% variation is applied to the lowermost voltage and the +15% is applied to the uppermost voltage.

During the test all necessary settings, adjustments and control of the EUT have to be performed without disturbing the test environment, i.e., without opening the environmental chamber. The frequency stabilities can be maintained to a lesser temperature range provided that the transmitter is automatically inhibited from operating outside the lesser temperature range. For handheld equipment that is only capable of operating from internal batteries and the supply voltage cannot be varied, the frequency stability tests shall be performed at the nominal battery voltage and the battery end point voltage specified by the manufacturer. An external supply voltage can be used and set at the internal battery nominal voltage, and again at the battery operating end point voltage which shall be specified by the equipment manufacturer.

If an unmodulated carrier is not available, the mean frequency of a modulated carrier can be obtained by using a frequency counter with gating time set to an appropriately large multiple of bit periods (gating time depending on the required accuracy). Full details on the choice of values shall be included in the test report.

#### Test Setup Block:



### 3.5.6 Transmitter unwanted emissions- Radiated Spurious emissions

According to ANSI C63.26-2015 Section 5.5.3:

#### Test setup:

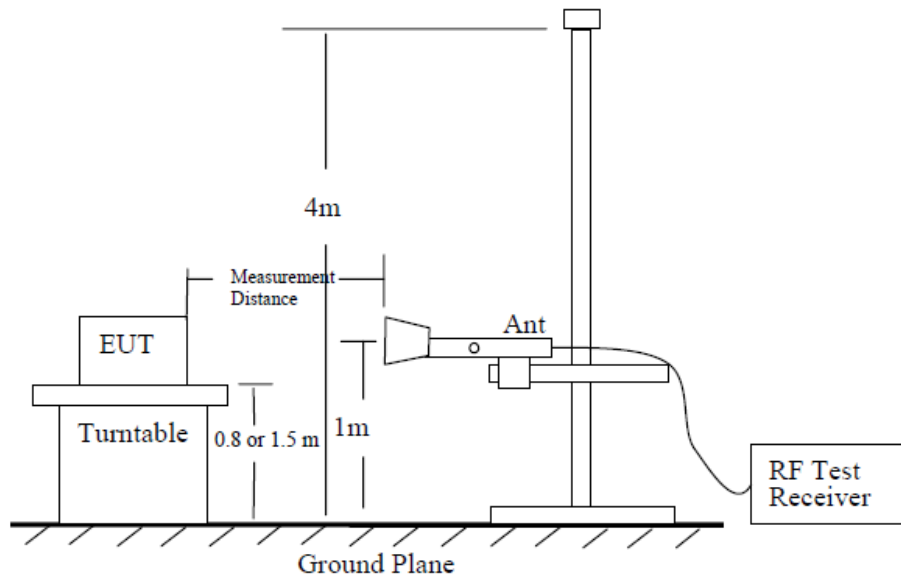


Figure 6—Test site-up for radiated ERP and/or EIRP measurements

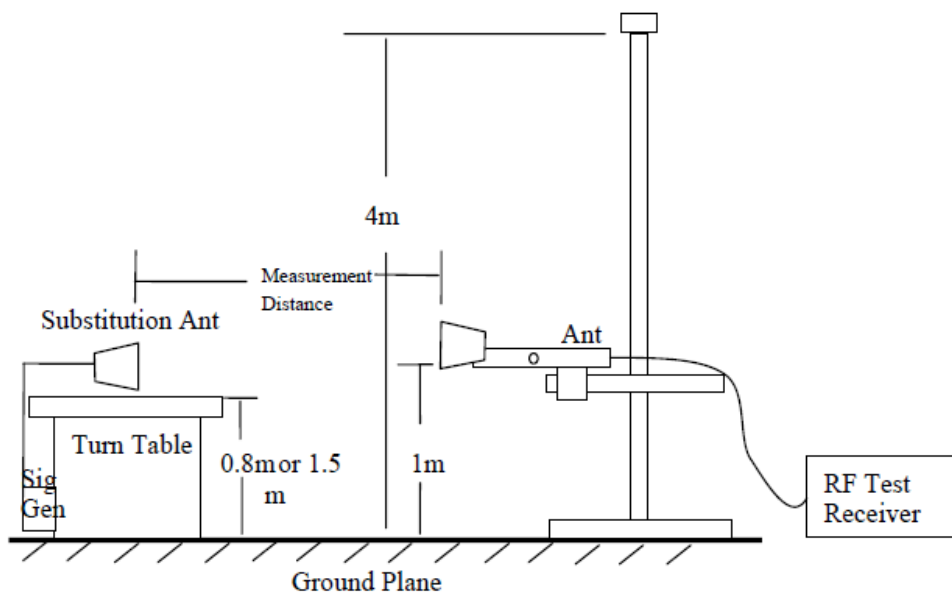


Figure 7—Substitution method set-up for radiated emission



**Test Procedure:**

- a) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.
- b) Each emission under consideration shall be evaluated:
  - 1) Raise and lower the measurement antenna in accordance 5.5.2, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
  - 2) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.
  - 3) Return the turntable to the azimuth where the highest emission amplitude level was observed.
  - 4) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.
  - 5) Record the measured emission amplitude level and frequency using the appropriate RBW.
- c) Repeat step b) for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.
- d) Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the initial EUT measurement.
- e) Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.
- f) Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.
- g) For each emission that was detected and measured in the initial test [i.e., in step b) and step c)]:
  - 1) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.
  - 2) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step b) and step c).
  - 3) Record the output power level of the signal generator when equivalence is achieved in step 2).
- h) Repeat step e) through step g) with the measurement antenna oriented in the opposite polarization.
- i) Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:
$$P_e = P_s(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$
where
  - $P_e$  = equivalent emission power in dBm
  - $P_s$  = source (signal generator) power in dBmNOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.
- j) Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from:  $\text{gain (dBd)} = \text{gain (dBi)} - 2.15 \text{ dB}$ . If necessary, the antenna gain can be calculated from calibrated antenna factor information
- k) Provide the complete measurement results as a part of the test report.

## 4. Test DATA AND RESULTS

### 4.1 Antenna Port Test Data and Results for GSM 850 band:

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	<b>Pass</b>

#### Environmental Conditions:

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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#### Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### Test Frequency for Each Mode:

Operation Modes	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
GSM	824.2	836.6	848.8
GPRS	824.2	836.6	848.8
EDGE	824.2	836.6	848.8

**Test Data:**

<b>FCC§2.1046;§ 22.913 (a):RF Output Power</b>					
Test Mode	Conducted Peak Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
GSM	31.86	31.95	31.89	32.72	38.45
GPRS 1 Slot	31.89	31.82	31.91	32.68	38.45
GPRS 2 Slots	31.85	31.74	31.81	32.62	38.45
GPRS 3 Slots	29.83	29.78	29.86	30.63	38.45
GPRS 4 Slots	28.67	28.71	28.73	29.5	38.45
EDGE 1 Slot	26.04	25.96	25.94	26.81	38.45
EDGE 2 Slots	24.76	24.71	24.69	25.53	38.45
EDGE 3 Slots	22.39	22.36	22.33	23.16	38.45
EDGE 4 Slots	20.89	20.83	20.82	21.66	38.45

Note:  
 ERP= Conducted Power(dBm) - Lc(dB) + Gr(dBd)  
 Gr(dBd)=Gr(dBi)-2.15

<b>Result:</b>	<b>Pass</b>
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<b>FCC §2.1049, §22.917, §22.905:Occupied Bandwidth</b>						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
GSM	0.245	0.245	0.247	0.316	0.314	0.316
EDGE	0.25	0.248	0.248	0.318	0.322	0.316

Note: The test plots please refer to the Plots of Occupied Bandwidth

<b>FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.</b>

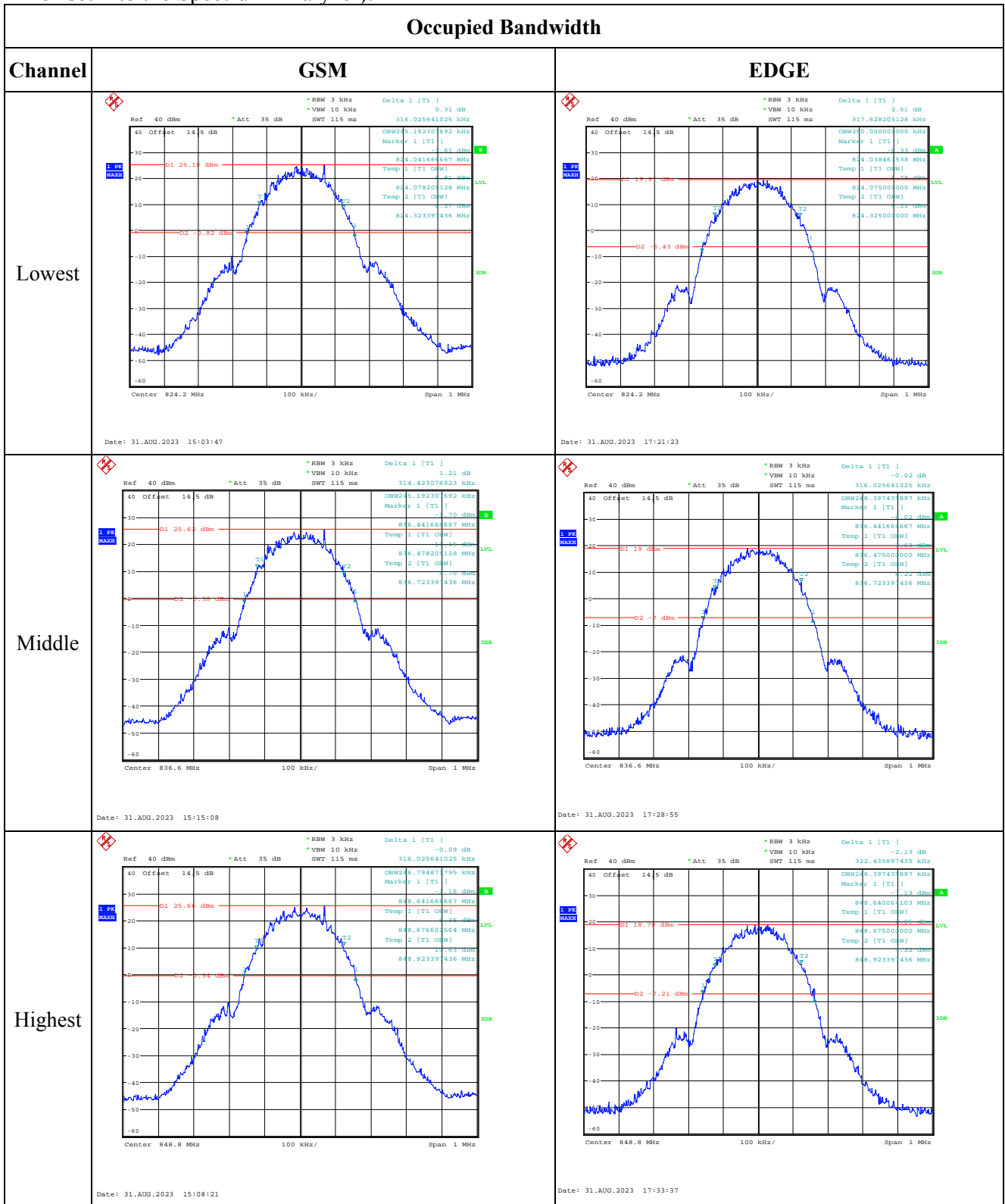
<b>FCC §2.1051, §22.917(a):Out of band emission, Band Edge</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>

<b>FCC §2.1055, §22.355: Frequency Stability</b>					
Test Modulation:	GMSK		Test Channel:	836.6	MHz
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	12	25	0.030	2.5
	-20	12	11	0.013	2.5
	-10	12	46	0.055	2.5
	0	12	31	0.037	2.5
	10	12	22	0.026	2.5

	20	12	19	0.023	2.5
	30	12	112	0.134	2.5
	40	12	74	0.088	2.5
	50	12	59	0.071	2.5
Frequency Stability vs. Voltage	20	6	33	0.039	2.5
	20	36	26	0.031	2.5
				<b>Result:</b>	<b>Pass</b>

Test Modulation:	8PSK		Test Channel:	836.6	MHz
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	12	56	0.067	2.5
	-20	12	39	0.047	2.5
	-10	12	41	0.049	2.5
	0	12	52	0.062	2.5
	10	12	24	0.029	2.5
	20	12	8	0.010	2.5
	30	12	19	0.023	2.5
	40	12	61	0.073	2.5
Frequency Stability vs. Voltage	20	6	73	0.087	2.5
	20	36	55	0.066	2.5
				<b>Result:</b>	<b>Pass</b>

**Test Plots** (Note: The 14.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):



Spurious Emissions at Antenna Terminal

Channel	GSM	
Lowest	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -34.13 dBm  VSW 300 kHz    SWT 100 ms    281.205122205 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 31.AUG.2023 16:11:46</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -24.41 dBm  VSW 3 MHz    SWT 55 ms    1.649038462 GHz</p> <p>Start 1 GHz    900 MHz/    Stop 10 GHz</p> <p>Date: 31.AUG.2023 16:12:42</p>
Middle	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -33.66 dBm  VSW 300 kHz    SWT 100 ms    196.641025641 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 31.AUG.2023 16:15:03</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -24.48 dBm  VSW 3 MHz    SWT 55 ms    1.662365339 GHz</p> <p>Start 1 GHz    900 MHz/    Stop 10 GHz</p> <p>Date: 31.AUG.2023 16:14:27</p>
Highest	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -33.95 dBm  VSW 300 kHz    SWT 100 ms    432.612179487 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 31.AUG.2023 16:16:24</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -24.34 dBm  VSW 3 MHz    SWT 55 ms    1.692307692 GHz</p> <p>Start 1 GHz    900 MHz/    Stop 10 GHz</p> <p>Date: 31.AUG.2023 16:16:38</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
GSM	<p>Ref 30 dBm    Att 25 dB    RBW 3 kHz    Marker 1 [T1]    -16.00 dBm          VBW 10 kHz    SWT 225 ms    823.996794872 MHz</p> <p>Center 824 MHz    200 kHz/    Span 2 MHz</p> <p>Date: 31.AUG.2023 15:00:00</p>	<p>Ref 30 dBm    Att 25 dB    RBW 3 kHz    Marker 1 [T1]    -13.55 dBm          VBW 10 kHz    SWT 225 ms    849.019230769 MHz</p> <p>Center 849 MHz    200 kHz/    Span 2 MHz</p> <p>Date: 31.AUG.2023 15:09:41</p>
EDGE	<p>Ref 40 dBm    Att 35 dB    RBW 3 kHz    Marker 1 [T1]    -25.23 dBm          VBW 10 kHz    SWT 225 ms    823.995512821 MHz</p> <p>Center 824 MHz    200 kHz/    Span 2 MHz</p> <p>Date: 31.AUG.2023 17:23:02</p>	<p>Ref 40 dBm    Att 35 dB    RBW 3 kHz    Marker 1 [T1]    -26.25 dBm          VBW 10 kHz    SWT 225 ms    849.017307692 MHz</p> <p>Center 849 MHz    200 kHz/    Span 2 MHz</p> <p>Date: 31.AUG.2023 17:34:21</p>

**4.2 Antenna Port Test Data and Results for GSM 1900 band:**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	<b>Pass</b>

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

*\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

**Test Frequency for Each Mode:**

Operation Modes	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
GSM	1850.2	1880	1909.8
GPRS	1850.2	1880	1909.8
EDGE	1850.2	1880	1909.8



**Test Data:**

<b>FCC§2.1046;§ 24.232 (c):RF Output Power</b>					
Test Mode	Conducted Peak Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
GSM	28.36	28.42	28.31	30.94	33
GPRS 1 Slot	28.34	28.36	28.33	30.88	33
GPRS 2 Slots	28.33	28.26	28.29	30.85	33
GPRS 3 Slots	26.09	26.11	26.14	28.66	33
GPRS 4 Slots	25.03	25.12	25.04	27.64	33
EDGE 1 Slot	26.61	26.64	26.54	29.16	33
EDGE 2 Slots	25.21	25.2	25.19	27.73	33
EDGE 3 Slots	23.18	23.19	23.21	25.73	33
EDGE 4 Slots	22.06	22.03	22.03	24.58	33

Note: EIRP=Conducted Power(dBm) - Lc(dB) + Gr(dBi)

<b>Result:</b>	<b>Pass</b>
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<b>FCC §2.1049, §24.238:Occupied Bandwidth</b>						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
GSM	0.245	0.245	0.247	0.312	0.313	0.315
EDGE	0.255	0.255	0.253	0.326	0.323	0.322

Note: The test plots please refer to the Plots of Occupied Bandwidth

<b>FCC §2.1051, § 24.238 (a):Spurious Emissions at Antenna Terminal</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.</b>

<b>FCC §2.1051, § 24.238 (a):Out of band emission, Band Edge</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>

<b>FCC §2.1055, §24.235: Frequency Stability</b>						
Test Mode:	GMSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	1850.073	1850.000	1909.933	1910.000
	-20	12	1850.067	1850.000	1909.932	1910.000
	-10	12	1850.069	1850.000	1909.929	1910.000
	0	12	1850.066	1850.000	1909.943	1910.000
	10	12	1850.063	1850.000	1909.926	1910.000
	20	12	1850.080	1850.000	1909.925	1910.000
	30	12	1850.060	1850.000	1909.949	1910.000

	40	12	1850.062	1850.000	1909.947	1910.000
	50	12	1850.065	1850.000	1909.941	1910.000
Frequency Stability vs. Voltage	20	6	1850.063	1850.000	1909.935	1910.000
	20	36	1850.055	1850.000	1909.941	1910.000
					<b>Result:</b>	<b>Pass</b>

Test Mode:	8PSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	1850.054	1850.000	1909.929	1910.000
	-20	12	1850.048	1850.000	1909.941	1910.000
	-10	12	1850.068	1850.000	1909.932	1910.000
	0	12	1850.057	1850.000	1909.935	1910.000
	10	12	1850.070	1850.000	1909.939	1910.000
	20	12	1850.073	1850.000	1909.927	1910.000
	30	12	1850.055	1850.000	1909.941	1910.000
	40	12	1850.059	1850.000	1909.931	1910.000
	50	12	1850.066	1850.000	1909.928	1910.000
Frequency Stability vs. Voltage	20	6	1850.047	1850.000	1909.928	1910.000
	20	36	1850.067	1850.000	1909.953	1910.000
					<b>Result:</b>	<b>Pass</b>

**Test Plots** (Note: The 14.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

<b>Occupied Bandwidth</b>		
<b>Channel</b>	<b>GSM</b>	<b>EDGE</b>
<b>Lowest</b>	<p>Ref 40 dBm *Att 35 dB Delta 1 [T1] 0.74 dB            *RBW 3 kHz *VBW 10 kHz            SWT 115 ms 311.858974398 kHz            OBW2 5.192307692 kHz            Marker 1 [T1] -23.24 dBm            1.85004872 GHz            Temp 1 [T1] OSW] -23.24 dBm            1.85007808 GHz            Temp 2 [T1] OSW] -23.24 dBm            1.85032000 GHz            -23.24 dBm            -9.71 dBm            -9.71 dBm            Center 1.8502 GHz 100 kHz/ Span 1 MHz</p> <p>Date: 31.AUG.2023 15:26:06</p>	<p>Ref 40 dBm *Att 35 dB Delta 1 [T1] 1.44 dB            *RBW 3 kHz *VBW 10 kHz            SWT 115 ms 325.641025641 kHz            OBW2 4.807693308 kHz            Marker 1 [T1] -35.45 dBm            1.85003462 GHz            Temp 1 [T1] OSW] -35.45 dBm            1.85007397 GHz            Temp 2 [T1] OSW] -35.45 dBm            1.85032205 GHz            -35.45 dBm            -5.9 dBm            -5.9 dBm            Center 1.8502 GHz 100 kHz/ Span 1 MHz</p> <p>Date: 31.AUG.2023 17:39:24</p>
<b>Middle</b>	<p>Ref 40 dBm *Att 35 dB Delta 1 [T1] 0.10 dB            *RBW 3 kHz *VBW 10 kHz            SWT 115 ms 313.461538460 kHz            OBW2 5.192307692 kHz            Marker 1 [T1] -27.87 dBm            1.87984872 GHz            Temp 1 [T1] OSW] -27.87 dBm            1.87987808 GHz            Temp 2 [T1] OSW] -27.87 dBm            1.88012000 GHz            -27.87 dBm            -3.19 dBm            -3.19 dBm            Center 1.88 GHz 100 kHz/ Span 1 MHz</p> <p>Date: 31.AUG.2023 15:36:08</p>	<p>Ref 40 dBm *Att 35 dB Delta 1 [T1] 0.93 dB            *RBW 3 kHz *VBW 10 kHz            SWT 115 ms 323.076927071 kHz            OBW2 4.807693308 kHz            Marker 1 [T1] -31.21 dBm            1.87984667 GHz            Temp 1 [T1] OSW] -31.21 dBm            1.87987300 GHz            Temp 2 [T1] OSW] -31.21 dBm            1.88012808 GHz            -31.21 dBm            -7.25 dBm            -7.25 dBm            Center 1.88 GHz 100 kHz/ Span 1 MHz</p> <p>Date: 31.AUG.2023 17:43:19</p>
<b>Highest</b>	<p>Ref 40 dBm *Att 35 dB Delta 1 [T1] 2.22 dB            *RBW 3 kHz *VBW 10 kHz            SWT 115 ms 315.064102663 kHz            OBW2 6.79487795 kHz            Marker 1 [T1] -36.86 dBm            1.90964269 GHz            Temp 1 [T1] OSW] -36.86 dBm            1.90967205 GHz            Temp 2 [T1] OSW] -36.86 dBm            1.90992000 GHz            -36.86 dBm            -3.02 dBm            -3.02 dBm            Center 1.9098 GHz 100 kHz/ Span 1 MHz</p> <p>Date: 31.AUG.2023 15:33:02</p>	<p>Ref 40 dBm *Att 35 dB Delta 1 [T1] 0.56 dB            *RBW 3 kHz *VBW 10 kHz            SWT 115 ms 322.435897438 kHz            OBW2 3.205121205 kHz            Marker 1 [T1] -31.03 dBm            1.90963462 GHz            Temp 1 [T1] OSW] -31.03 dBm            1.90967107 GHz            Temp 2 [T1] OSW] -31.03 dBm            1.90992463 GHz            -31.03 dBm            -7.44 dBm            -7.44 dBm            Center 1.9098 GHz 100 kHz/ Span 1 MHz</p> <p>Date: 31.AUG.2023 17:46:26</p>

Spurious Emissions at Antenna Terminal

Channel	GSM	
Lowest	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -31.59 dBm  VSW 300 kHz    SWT 100 ms    420.176282051 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 31.AUG.2023 16:18:05</p>	<p>Ref 40 dBm    Att 35 dB    RBW 1 MHz    Marker 1 [T1]    -23.48 dBm  VSW 3 MHz    SWT 110 ms    9.251602564 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 31.AUG.2023 16:19:29</p>
Middle	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -31.20 dBm  VSW 300 kHz    SWT 100 ms    583.397435897 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 31.AUG.2023 16:21:58</p>	<p>Ref 40 dBm    Att 35 dB    RBW 1 MHz    Marker 1 [T1]    -23.39 dBm  VSW 3 MHz    SWT 110 ms    3.131410296 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 31.AUG.2023 16:21:08</p>
Highest	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -31.76 dBm  VSW 300 kHz    SWT 100 ms    773.044871795 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 31.AUG.2023 16:22:47</p>	<p>Ref 40 dBm    Att 35 dB    RBW 1 MHz    Marker 1 [T1]    -23.64 dBm  VSW 3 MHz    SWT 110 ms    3.131410296 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 31.AUG.2023 16:23:13</p>

Out of band emission, Band Edge

Channel	Lowest	Highest
GSM	<p>Ref 30 dBm    Offset 14.5 dB    Att 25 dB    RBW 3 kHz    VBW 10 kHz    SWT 225 ms    Marker 1 [T1]    -17.51 dBm</p> <p>Center 1.85 GHz    200 kHz/    Span 2 MHz</p> <p>Date: 31.AUG.2023 15:26:47</p>	<p>Ref 30 dBm    Offset 14.5 dB    Att 25 dB    RBW 3 kHz    VBW 10 kHz    SWT 225 ms    Marker 1 [T1]    -15.89 dBm</p> <p>Center 1.91 GHz    200 kHz/    Span 2 MHz</p> <p>Date: 31.AUG.2023 15:28:38</p>
EDGE	<p>Ref 40 dBm    Offset 14.5 dB    Att 35 dB    RBW 3 kHz    VBW 10 kHz    SWT 225 ms    Marker 1 [T1]    -22.67 dBm</p> <p>Center 1.85 GHz    200 kHz/    Span 2 MHz</p> <p>Date: 31.AUG.2023 17:40:23</p>	<p>Ref 40 dBm    Offset 14.5 dB    Att 35 dB    RBW 3 kHz    VBW 10 kHz    SWT 225 ms    Marker 1 [T1]    -22.04 dBm</p> <p>Center 1.91 GHz    200 kHz/    Span 2 MHz</p> <p>Date: 31.AUG.2023 17:47:42</p>

**4.3 Antenna Port Test Data and Results for WCDMA Band 2:**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Frequency for Each Mode:**

Operation Modes	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
WCDMA Band 2	1852.4	1880	1907.6

**Test Data:****FCC§2.1046;§ 24.232****RF Output Power:**

Test Mode	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
WCDMA R99	21.79	21.54	21.62	24.31	33
HSDPA Subtest 1	21.82	21.45	21.59	24.34	33
HSDPA Subtest 2	21.78	21.51	21.33	24.3	33
HSDPA Subtest 3	21.75	21.62	21.46	24.27	33
HSDPA Subtest 4	21.81	21.54	21.59	24.33	33
HSUPA Subtest 1	21.43	21.52	21.58	24.1	33
HSUPA Subtest 2	21.59	21.43	21.46	24.11	33
HSUPA Subtest 3	21.46	21.32	21.44	23.98	33
HSUPA Subtest 4	20.64	20.37	20.45	23.16	33
HSUPA Subtest 5	21.55	21.56	21.61	24.13	33

Note: EIRP=Conducted Power(dBm) - Lc(dB) + Gr(dBi)

**Result:****Pass****Peak-to-average Ratio(PAR)**

Test Mode	Peak-to-average Ratio(dB)			Limit (dB)
	Lowest Channel	Middle Channel	Highest Channel	
WCDMA R99	3.11	3.14	3.08	13
HSDPA	4.1	4.01	4.04	13
HSUPA	4.46	4.04	4.17	13

**Result:****Pass****FCC §2.1049, §24.238:Occupied Bandwidth**

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
WCDMA R99	4.167	4.183	4.183	4.728	4.728	4.728
HSDPA	4.167	4.167	4.199	4.744	4.728	4.728
HSUPA	4.183	4.183	4.183	4.712	4.728	4.728

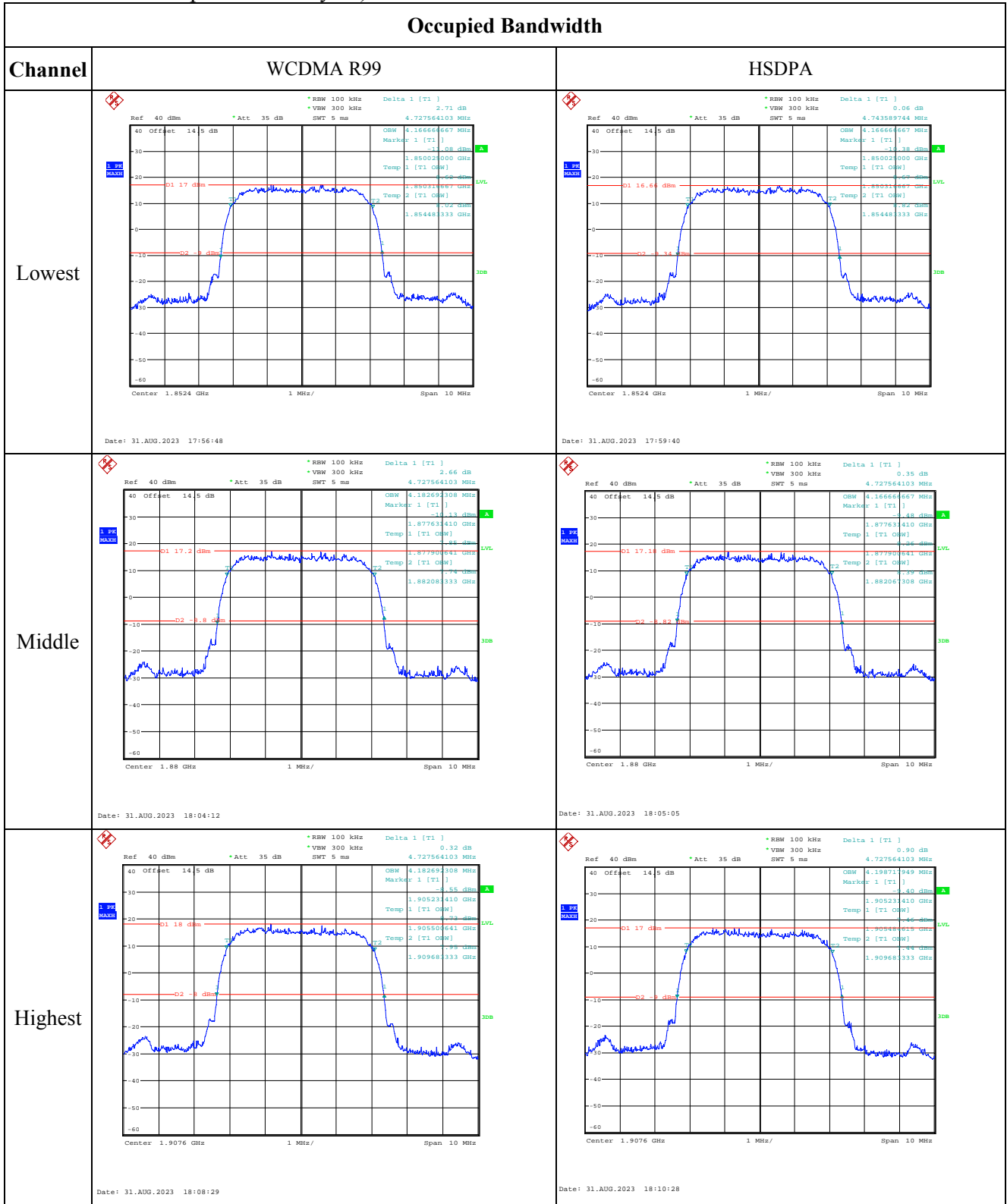
Note: The test plots please refer to the Plots of Occupied Bandwidth

**FCC §2.1051, § 24.238 (a):Spurious Emissions at Antenna Terminal****Result:****Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.****FCC §2.1051, § 24.238 (a):Out of band emission, Band Edge****Result:****Pass, Please refer to the test plots of Out of band emission, Band Edge.**

<b>FCC §2.1055, §24.235: Frequency Stability</b>						
Test Mode:	WCDMA R99	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	1850.291	1850.000	1909.691	1910.000
	-20	12	1850.300	1850.000	1909.699	1910.000
	-10	12	1850.312	1850.000	1909.684	1910.000
	0	12	1850.308	1850.000	1909.688	1910.000
	10	12	1850.294	1850.000	1909.690	1910.000
	20	12	1850.317	1850.000	1909.683	1910.000
	30	12	1850.294	1850.000	1909.686	1910.000
	40	12	1850.302	1850.000	1909.705	1910.000
	50	12	1850.295	1850.000	1909.702	1910.000
Frequency Stability vs. Voltage	20	6	1850.298	1850.000	1909.705	1910.000
	20	36	1850.289	1850.000	1909.710	1910.000
					<b>Result:</b>	<b>Pass</b>



**Test Plots** (Note: The 14.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):



Occupied Bandwidth

Channel	HSUPA
Lowest	<p>Ref 40 dBm *Att 35 dB Delta 1 [T1] -0.29 dB          *RBW 100 kHz VBW 300 kHz SWT 5 ms 4.731538462 MHz          OBSW 4.182693308 MHz Marker 1 [T1] -3.44 dBm          1.85004026 GHz Temp 1 [T1 OSW] -16.6 dBm          D1 17.2 dBm          1.85031957 GHz Temp 2 [T1 OSW] -16.6 dBm          D2 -9.8 dBm          1.85449359 GHz          Center 1.8524 GHz 1 MHz/ Span 10 MHz</p> <p>Date: 31.AUG.2023 18:01:01</p>
Middle	<p>Ref 40 dBm *Att 35 dB Delta 1 [T1] 0.61 dB          *RBW 100 kHz VBW 300 kHz SWT 5 ms 4.727564103 MHz          OBSW 4.182693308 MHz Marker 1 [T1] -3.44 dBm          1.87763410 GHz Temp 1 [T1 OSW] -16.6 dBm          D1 17.16 dBm          1.87750064 GHz Temp 2 [T1 OSW] -16.6 dBm          D2 -9.8 dBm          1.88208333 GHz          Center 1.88 GHz 1 MHz/ Span 10 MHz</p> <p>Date: 31.AUG.2023 18:06:06</p>
Highest	<p>Ref 40 dBm *Att 35 dB Delta 1 [T1] 0.64 dB          *RBW 100 kHz VBW 300 kHz SWT 5 ms 4.727564103 MHz          OBSW 4.182693308 MHz Marker 1 [T1] -3.44 dBm          1.905231410 GHz Temp 1 [T1 OSW] -16.6 dBm          D1 18.3 dBm          1.90550664 GHz Temp 2 [T1 OSW] -16.6 dBm          D2 -9.7 dBm          1.90968333 GHz          Center 1.9076 GHz 1 MHz/ Span 10 MHz</p> <p>Date: 31.AUG.2023 18:48:02</p>

Spurious Emissions at Antenna Terminal

Channel	WCDMA R99	
Lowest	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -31.65 dBm            *VSW 300 kHz    -31.65 dBm            *SWT 100 ms    281.826923077 MHz</p> <p>Date: 31.AUG.2023 19:40:09</p>	<p>Ref 40 dBm    Att 35 dB    RBW 1 MHz    Marker 1 [T1]    -22.76 dBm            *VSW 3 MHz    -22.76 dBm            *SWT 110 ms    3.133410256 GHz</p> <p>Date: 31.AUG.2023 19:40:33</p>
Middle	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -31.61 dBm            *VSW 300 kHz    -31.61 dBm            *SWT 100 ms    547.644230769 MHz</p> <p>Date: 31.AUG.2023 19:41:04</p>	<p>Ref 40 dBm    Att 35 dB    RBW 1 MHz    Marker 1 [T1]    -24.48 dBm            *VSW 3 MHz    -24.48 dBm            *SWT 110 ms    3.133410256 GHz</p> <p>Date: 31.AUG.2023 19:41:16</p>
Highest	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -31.63 dBm            *VSW 300 kHz    -31.63 dBm            *SWT 100 ms    884.967948718 MHz</p> <p>Date: 31.AUG.2023 19:41:39</p>	<p>Ref 40 dBm    Att 35 dB    RBW 1 MHz    Marker 1 [T1]    -24.74 dBm            *VSW 3 MHz    -24.74 dBm            *SWT 110 ms    3.133410256 GHz</p> <p>Date: 31.AUG.2023 19:41:54</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
R99		
HSUPA		
HSDPA		

**4.4 Antenna Port Test Data and Results for WCDMA Band 4:**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

*\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

**Test Frequency for Each Mode:**

Operation Modes	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
WCDMA Band 4	1712.4	1732.6	1752.6

**Test Data:****FCC§2.1046;§27.50(d)(4)  
RF Output Power:**

Test Mode	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
WCDMA R99	22.61	22.71	22.63	25.9	30
HSDPA Subtest 1	22.58	22.63	22.59	25.82	30
HSDPA Subtest 2	22.45	22.57	22.51	25.76	30
HSDPA Subtest 3	22.39	22.41	22.46	25.65	30
HSDPA Subtest 4	22.37	22.39	22.66	25.85	30
HSUPA Subtest 1	22.46	22.61	22.54	25.8	30
HSUPA Subtest 2	22.37	22.54	22.45	25.73	30
HSUPA Subtest 3	22.54	22.52	22.37	25.73	30
HSUPA Subtest 4	21.68	21.84	21.59	25.03	30
HSUPA Subtest 5	22.47	22.61	22.54	25.8	30

Note: EIRP=Conducted Power(dBm) - Lc(dB) + Gr(dBi)

<b>Result:</b>	<b>Pass</b>
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**Peak-to-average Ratio(PAR)**

Test Mode	Peak-to-average Ratio(dB)			Limit (dB)
	Lowest Channel	Middle Channel	Highest Channel	
WCDMA R99	3.11	3.27	3.14	13
HSDPA	3.94	4.04	3.72	13
HSUPA	3.97	4.04	4.01	13

<b>Result:</b>	<b>Pass</b>
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**FCC §2.1049, §27.53:Occupied Bandwidth**

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
WCDMA R99	4.183	4.183	4.183	4.728	4.721	4.705
HSDPA	4.167	4.183	4.183	4.712	4.721	4.705
HSUPA	4.167	4.183	4.183	4.712	4.705	4.721

Note: The test plots please refer to the Plots of Occupied Bandwidth

**FCC §2.1051, § 27.53:Spurious Emissions at Antenna Terminal**

<b>Result:</b>	<b>Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.</b>
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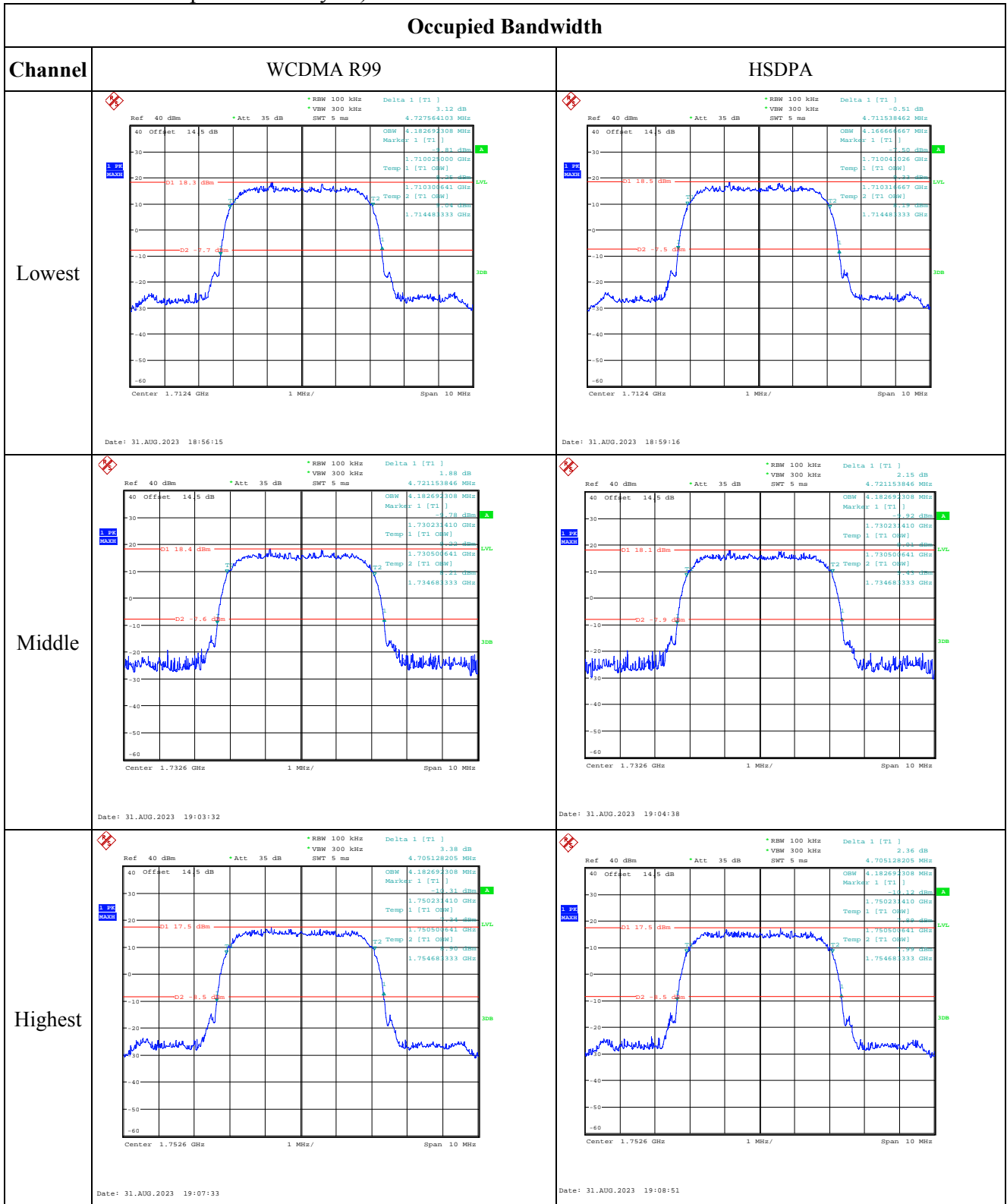
**FCC §2.1051, § 27.53:Out of band emission, Band Edge**

<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>
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**FCC §2.1055, §27.54: Frequency Stability**

Test Mode:	WCDMA R99	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	1710.291	1710.000	1754.710	1755.000
	-20	12	1710.300	1710.000	1754.712	1755.000
	-10	12	1710.294	1710.000	1754.702	1755.000
	0	12	1710.274	1710.000	1754.710	1755.000
	10	12	1710.285	1710.000	1754.707	1755.000
	20	12	1710.301	1710.000	1754.683	1755.000
	30	12	1710.285	1710.000	1754.698	1755.000
	40	12	1710.295	1710.000	1754.696	1755.000
	50	12	1710.298	1710.000	1754.694	1755.000
Frequency Stability vs. Voltage	20	6	1710.297	1710.000	1754.687	1755.000
	20	36	1710.298	1710.000	1754.692	1755.000
					<b>Result:</b>	<b>Pass</b>

**Test Plots** (Note: The 14.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):





Occupied Bandwidth

Channel	HSUPA
Lowest	<p>Date: 31.AUG.2023 19:01:03</p>
Middle	<p>Date: 31.AUG.2023 19:06:01</p>
Highest	<p>Date: 31.AUG.2023 19:09:40</p>

Spurious Emissions at Antenna Terminal

Channel	WCDMA R99	
Lowest	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -34.74 dBm            *VSW 300 kHz    -34.01 dBm            *SWT 100 ms    833.669871795 MHz</p> <p>40 Offset 14.5 dB</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 31.AUG.2023 19:42:19</p>	<p>Ref 40 dBm    Att 35 dB    RBW 1 MHz    Marker 1 [T1]    -22.71 dBm            *VSW 3 MHz    -22.71 dBm            *SWT 110 ms    3.131410256 GHz</p> <p>40 Offset 14.5 dB</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 31.AUG.2023 19:42:38</p>
Middle	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -34.01 dBm            *VSW 300 kHz    -34.01 dBm            *SWT 100 ms    274.054487179 MHz</p> <p>40 Offset 14.5 dB</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 31.AUG.2023 19:43:05</p>	<p>Ref 40 dBm    Att 35 dB    RBW 1 MHz    Marker 1 [T1]    -22.97 dBm            *VSW 3 MHz    -22.97 dBm            *SWT 110 ms    3.161858974 GHz</p> <p>40 Offset 14.5 dB</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 31.AUG.2023 19:44:05</p>
Highest	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1]    -34.25 dBm            *VSW 300 kHz    -34.25 dBm            *SWT 100 ms    731.073717949 MHz</p> <p>40 Offset 14.5 dB</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 31.AUG.2023 19:44:42</p>	<p>Ref 40 dBm    Att 35 dB    RBW 1 MHz    Marker 1 [T1]    -23.99 dBm            *VSW 3 MHz    -23.99 dBm            *SWT 110 ms    3.496794872 GHz</p> <p>40 Offset 14.5 dB</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 31.AUG.2023 19:45:33</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
R99		
HSUPA		
HSDPA		

**4.5 Antenna Port Test Data and Results for WCDMA Band 5:**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

*\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

**Test Frequency:**

Operation Modes	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
WCDMA Band 5	826.4	836.6	846.6

**Test Data:****FCC§2.1046;§ 22.913 (a)****RF Output Power:**

Test Mode	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
WCDMA R99	22.23	22.19	22.15	23	38.45
HSDPA Subtest 1	22.14	22.15	22.18	22.95	38.45
HSDPA Subtest 2	22.19	22.13	22.07	22.96	38.45
HSDPA Subtest 3	22.21	22.09	22.17	22.98	38.45
HSDPA Subtest 4	22.14	22.05	22.12	22.91	38.45
HSUPA Subtest 1	22.17	22.09	22.15	22.94	38.45
HSUPA Subtest 2	22.15	22.13	22.04	22.92	38.45
HSUPA Subtest 3	22.17	22.15	22.08	22.94	38.45
HSUPA Subtest 4	21.23	21.34	21.19	22.11	38.45
HSUPA Subtest 5	22.08	22.04	22.06	22.85	38.45

Note:

ERP= Conducted Power(dBm) - Lc(dB) + Gr(dBd)

Gr(dBd)=Gr(dBi)-2.15

**Result:****Pass****Peak-to-average Ratio(PAR)**

Test Mode	Peak-to-average Ratio(dB)			Limit (dB)
	Lowest Channel	Middle Channel	Highest Channel	
WCDMA R99	3.01	3.08	3.08	13
HSDPA	3.88	3.97	4.1	13
HSUPA	3.85	3.97	4.1	13

**Result:****Pass****FCC §2.1049, §22.917, §22.905:Occupied Bandwidth**

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
WCDMA R99	4.167	4.183	4.167	4.721	4.721	4.721
HSDPA	4.167	4.167	4.167	4.705	4.721	4.705
HSUPA	4.183	4.183	4.167	4.737	4.721	4.721

Note: The test plots please refer to the Plots of Occupied Bandwidth

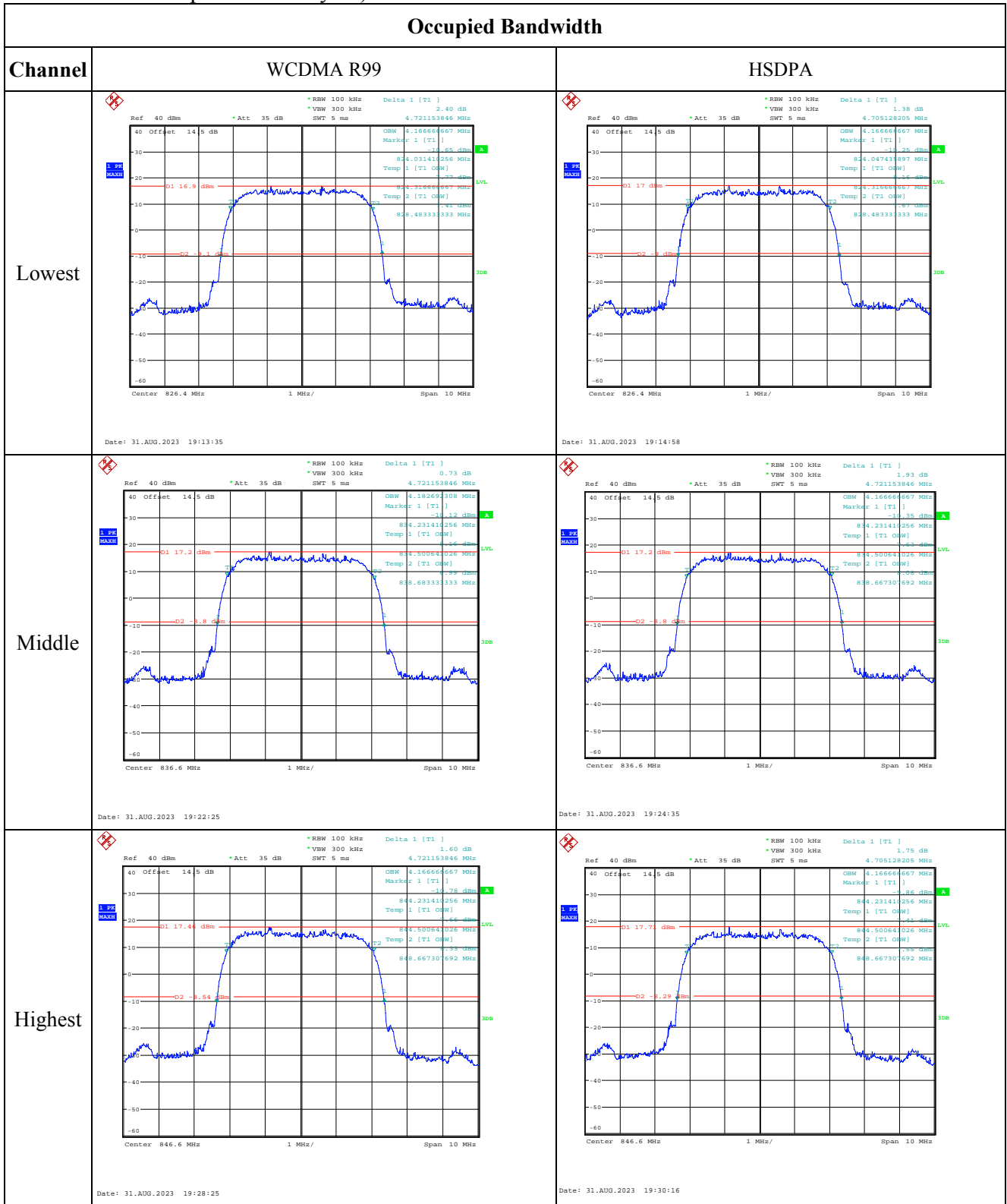
**FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal****Result:** Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**FCC §2.1051, §22.917(a):Out of band emission, Band Edge**

<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>
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**FCC §2.1055, §22.355: Frequency Stability**

Test Modulation:	WCDMA R99		Test Channel:	836.6	MHz
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	12	26	0.031	2.5
	-20	12	39	0.047	2.5
	-10	12	15	0.018	2.5
	0	12	47	0.056	2.5
	10	12	82	0.098	2.5
	20	12	17	0.020	2.5
	30	12	52	0.062	2.5
	40	12	74	0.088	2.5
Frequency Stability vs. Voltage	50	12	11	0.013	2.5
	20	6	54	0.065	2.5
	20	36	68	0.081	2.5
				<b>Result:</b>	<b>Pass</b>

**Test Plots**(Note: The 14.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

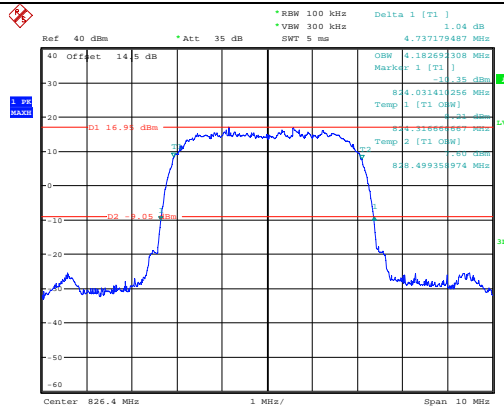


Occupied Bandwidth

Channel

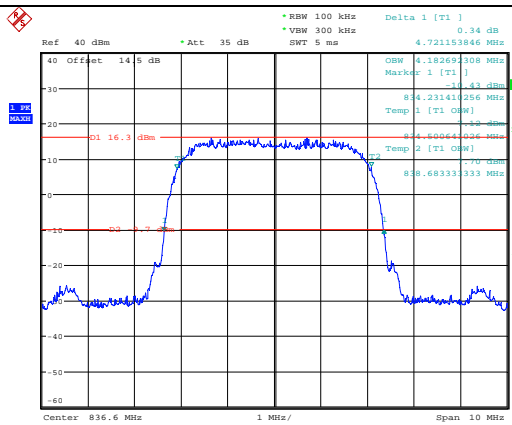
HSUPA

Lowest



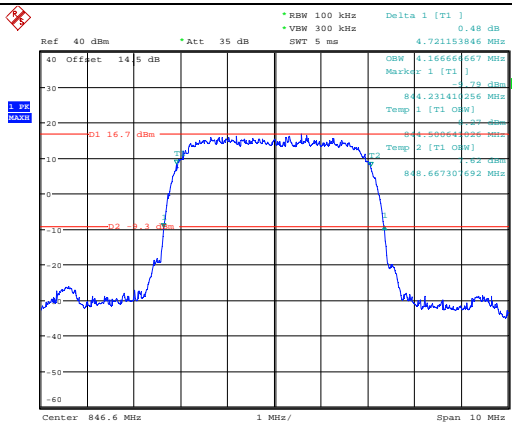
Date: 31.AUG.2023 19:18:20

Middle



Date: 31.AUG.2023 19:25:41

Highest



Date: 31.AUG.2023 19:31:38



### Spurious Emissions at Antenna Terminal

Channel	WCDMA R99	
Lowest		
Middle		
Highest		

Out of band emission, Band Edge

Mode	Lowest	Highest
R99	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1] -18.00 dBm  VSW 300 kHz    SWT 5 ms    824.000000000 MHz</p> <p>Center 824 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 31.AUG.2023 19:13:57</p>	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1] -19.20 dBm  VSW 300 kHz    SWT 5 ms    849.000000000 MHz</p> <p>Center 849 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 31.AUG.2023 19:28:50</p>
HSUPA	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1] -17.36 dBm  VSW 300 kHz    SWT 5 ms    824.000000000 MHz</p> <p>Center 824 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 31.AUG.2023 19:18:37</p>	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1] -17.45 dBm  VSW 300 kHz    SWT 5 ms    849.000000000 MHz</p> <p>Center 849 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 31.AUG.2023 19:32:09</p>
HSDPA	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1] -15.55 dBm  VSW 300 kHz    SWT 5 ms    824.000000000 MHz</p> <p>Center 824 MHz    1 MHz/    Span 10 MHz</p>	<p>Ref 40 dBm    Att 35 dB    RBW 100 kHz    Marker 1 [T1] -16.49 dBm  VSW 300 kHz    SWT 5 ms    849.000000000 MHz</p> <p>Center 849 MHz    1 MHz/    Span 10 MHz</p> <p>Date: 31.AUG.2023 19:29:13</p>

**4.6 Antenna Port Test Data and Results for LTE Band 2**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	<b>Pass</b>

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Frequency for Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	1850.7	1880	1909.3
3MHz	1851.5	1880	1908.5
5MHz	1852.5	1880	1907.5
10MHz	1855	1880	1905
15MHz	1857.5	1880	1902.5
20MHz	1860	1880	1900

**Test Data:****FCC§2.1046;§ 24.232****RF Output Power:**

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	21.49	21.24	20.37	24.12	33
	RB1#3	21.6	21.42	20.58		
	RB1#5	21.4	21.25	20.34		
	RB3#0	21.55	21.35	20.54		
	RB3#3	21.52	21.34	20.46		
	RB6#0	20.5	20.31	19.47		
1.4MHz 16QAM	RB1#0	20.44	20.38	19.42	23.26	33
	RB1#3	20.61	20.56	19.62		
	RB1#5	20.45	20.36	19.44		
	RB3#0	20.74	20.34	19.76		
	RB3#3	20.72	20.24	19.79		
	RB6#0	19.5	19.33	18.8		
3MHz QPSK	RB1#0	21.52	20.65	20.76	24.06	33
	RB1#8	21.54	20.54	20.79		
	RB1#14	21.49	20.56	20.73		
	RB6#0	20.46	19.59	19.75		
	RB6#9	20.53	19.57	19.69		
	RB15#0	20.53	19.6	19.75		
3MHz 16QAM	RB1#0	20.56	20.27	19.9	23.11	33
	RB1#8	20.59	20.18	19.89		
	RB1#14	20.49	20.19	19.87		
	RB6#0	19.43	18.67	18.73		
	RB6#9	19.45	18.63	18.77		
	RB15#0	19.61	18.68	18.72		
5MHz QPSK	RB1#0	21.42	21.29	20.11	24.1	33
	RB1#13	21.58	21.38	20.17		
	RB1#24	21.35	21.18	20.08		
	RB15#0	20.5	20.4	19.28		
	RB15#10	20.52	20.34	19.12		
	RB25#0	20.52	20.32	19.16		
5MHz 16QAM	RB1#0	20.52	20.22	19.35	23.17	33
	RB1#13	20.65	20.23	19.47		
	RB1#24	20.49	20.08	19.36		
	RB15#0	19.54	19.44	18.25		
	RB15#10	19.6	19.34	18.08		
	RB25#0	19.49	19.37	18.14		
10MHz QPSK	RB1#0	21.52	21.16	20.56	24.18	33
	RB1#25	21.66	21.15	20.71		

	RB1#49	21.4	20.98	20.52		
	RB25#0	20.48	20.25	19.76		
	RB25#25	20.52	20.15	19.46		
	RB50#0	20.5	20.21	19.59		
10MHz 16QAM	RB1#0	20.52	20.72	19.7	23.36	33
	RB1#25	20.68	20.84	19.87		
	RB1#49	20.42	20.57	19.67		
	RB25#0	19.62	19.34	18.79		
	RB25#25	19.62	19.19	18.48		
	RB50#0	19.51	19.2	18.61		
15MHz QPSK	RB1#0	21.43	21.24	20.73	23.95	33
	RB1#38	21.42	21.18	20.67		
	RB1#74	21.3	20.89	20.53		
	RB36#0	20.48	20.27	19.75		
	RB36#39	20.41	20.14	19.56		
	RB75#0	20.45	20.22	19.66		
15MHz 16QAM	RB1#0	20.86	20.8	19.87	23.39	33
	RB1#38	20.87	20.8	19.8		
	RB1#74	20.7	20.47	19.62		
	RB36#0	19.43	19.3	18.75		
	RB36#39	19.36	19.1	18.58		
	RB75#0	19.4	19.2	18.68		
20MHz QPSK	RB1#0	21.27	20.65	20.69	24.04	33
	RB1#50	21.52	20.83	20.9		
	RB1#99	21.05	20.27	20.44		
	RB50#0	20.38	19.9	19.76		
	RB50#50	20.32	19.65	19.41		
	RB100#0	20.39	19.77	19.67		
20MHz 16QAM	RB1#0	20.86	20	19.88	23.63	33
	RB1#50	21.11	20.15	20.1		
	RB1#99	20.68	19.56	19.65		
	RB50#0	19.45	18.88	18.8		
	RB50#50	19.37	18.65	18.44		
	RB100#0	19.39	18.83	18.68		

Note: EIRP=Conducted Power(dBm) - Lc(dB) + Gr(dBi)

**Result:**

**Pass**

### Peak-to-average Ratio(PAR)

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	9.46	7.92	9.55	13
	RB100#0	6.51	6.35	6.35	13
20MHz 16QAM	RB1#0	11.25	12.15	10.61	13
	RB100#0	7.28	7.21	7.12	13
<b>Result:</b>					<b>Pass</b>

<b>FCC §2.1049, §24.238: Occupied Bandwidth</b>						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.098	1.098	1.104	1.302	1.308	1.296
1.4MHz 16QAM	1.104	1.092	1.098	1.308	1.284	1.29
3MHz QPSK	2.687	2.687	2.676	2.892	2.88	2.88
3MHz 16QAM	2.687	2.687	2.687	2.88	2.892	2.88
5MHz QPSK	4.5	4.52	4.5	4.9	4.94	4.92
5MHz 16QAM	4.52	4.5	4.52	4.9	4.94	4.92
10MHz QPSK	8.96	8.96	8.96	9.6	9.64	9.6
10MHz 16QAM	8.96	8.96	8.96	9.6	9.56	9.52
15MHz QPSK	13.56	13.5	13.5	14.82	14.7	14.58
15MHz 16QAM	13.5	13.5	13.5	14.76	14.82	14.76
20MHz QPSK	18	17.92	17.84	19.36	19.12	19.28
20MHz 16QAM	18	18	17.92	19.44	19.2	19.2

Note: The test plots please refer to the Plots of Occupied Bandwidth

<b>FCC §2.1051, § 24.238 (a): Spurious Emissions at Antenna Terminal</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.</b>

<b>FCC §2.1051, § 24.238 (a): Out of band emission, Band Edge</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>

<b>FCC §2.1055, §24.235: Frequency Stability</b>						
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	1851.014	1850.000	1908.890	1910.000
	-20	12	1851.017	1850.000	1908.899	1910.000
	-10	12	1851.036	1850.000	1908.888	1910.000
	0	12	1851.019	1850.000	1908.892	1910.000
	10	12	1851.032	1850.000	1908.896	1910.000
	20	12	1851.040	1850.000	1908.880	1910.000
	30	12	1851.012	1850.000	1908.881	1910.000
	40	12	1851.025	1850.000	1908.883	1910.000
	50	12	1851.021	1850.000	1908.897	1910.000
Frequency Stability vs. Voltage	20	6	1851.035	1850.000	1908.899	1910.000
	20	36	1851.020	1850.000	1908.907	1910.000
					<b>Result:</b>	<b>Pass</b>

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	1851.013	1850.000	1908.968	1910.000
	-20	12	1851.017	1850.000	1908.976	1910.000
	-10	12	1851.013	1850.000	1908.988	1910.000
	0	12	1851.018	1850.000	1908.986	1910.000
	10	12	1851.019	1850.000	1908.989	1910.000
	20	12	1851.040	1850.000	1908.960	1910.000
	30	12	1851.023	1850.000	1908.987	1910.000
	40	12	1851.024	1850.000	1908.987	1910.000
	50	12	1851.028	1850.000	1908.964	1910.000
Frequency Stability vs. Voltage	20	6	1851.028	1850.000	1908.988	1910.000
	20	36	1851.030	1850.000	1908.964	1910.000
					<b>Result:</b>	<b>Pass</b>

**Test Plots**(Note: The 14.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

<b>Occupied Bandwidth</b>		
<b>Channel</b>	<b>1.4MHz Bandwidth QPSK</b>	<b>1.4MHz Bandwidth 16QAM</b>
Lowest	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 0.67 dB                      *VBW 100 kHz *OSW 1.392000000 MHz                      Marker 1 [T1] 1.850000000 MHz -11.55 dBm                      Temp 1 [T1 OSW] 1.850050000 GHz                      Temp 2 [T1 OSW] 1.850140000 GHz                      Temp 3 [T1 OSW] 1.851240000 GHz                      Center 1.8507 GHz 300 kHz/ Span 3 MHz                      Date: 29.AUG.2023 23:25:54                 </p>	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 1.24 dB                      *VBW 100 kHz *OSW 1.398000000 MHz                      Marker 1 [T1] 1.850040000 MHz -11.10 dBm                      Temp 1 [T1 OSW] 1.850040000 GHz                      Temp 2 [T1 OSW] 1.850140000 GHz                      Temp 3 [T1 OSW] 1.851250000 GHz                      Center 1.8507 GHz 300 kHz/ Span 3 MHz                      Date: 29.AUG.2023 23:26:16                 </p>
Middle	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 2.09 dB                      *VBW 100 kHz *OSW 1.398000000 MHz                      Marker 1 [T1] 1.879340000 MHz -11.89 dBm                      Temp 1 [T1 OSW] 1.879340000 GHz                      Temp 2 [T1 OSW] 1.879440000 GHz                      Temp 3 [T1 OSW] 1.880540000 GHz                      Center 1.88 GHz 300 kHz/ Span 3 MHz                      Date: 29.AUG.2023 23:26:34                 </p>	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] -0.82 dB                      *VBW 100 kHz *OSW 1.284000000 MHz                      Marker 1 [T1] 1.879350000 MHz -11.78 dBm                      Temp 1 [T1 OSW] 1.879350000 GHz                      Temp 2 [T1 OSW] 1.879450000 GHz                      Temp 3 [T1 OSW] 1.880540000 GHz                      Center 1.88 GHz 300 kHz/ Span 3 MHz                      Date: 29.AUG.2023 23:26:51                 </p>
Highest	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] -0.60 dB                      *VBW 100 kHz *OSW 1.296000000 MHz                      Marker 1 [T1] 1.908400000 MHz -11.34 dBm                      Temp 1 [T1 OSW] 1.908400000 GHz                      Temp 2 [T1 OSW] 1.908740000 GHz                      Temp 3 [T1 OSW] 1.909840000 GHz                      Center 1.9093 GHz 300 kHz/ Span 3 MHz                      Date: 29.AUG.2023 23:27:12                 </p>	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 2.16 dB                      *VBW 100 kHz *OSW 1.290000000 MHz                      Marker 1 [T1] 1.908650000 MHz -11.75 dBm                      Temp 1 [T1 OSW] 1.908650000 GHz                      Temp 2 [T1 OSW] 1.908750000 GHz                      Temp 3 [T1 OSW] 1.909850000 GHz                      Center 1.9093 GHz 300 kHz/ Span 3 MHz                      Date: 29.AUG.2023 23:27:33                 </p>



Occupied Bandwidth

Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

### Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB            *RBW 100 kHz Delta 1 [T1] 1.71 dB            *VBW 300 kHz *VMW 300 kHz            SWT 5 ms 4.920000000 MHz            OBSW 4.920000000 MHz            Marker 1 [T1] 1.850000000 MHz            Marker 2 [T1] 1.854760000 MHz            D1 16.01 dBm            D2 -10.67 dBm            Temp 1 [T1] 1.850000000 GHz            Temp 2 [T1] 1.854760000 GHz            Center 1.8525 GHz 1 MHz/ Span 10 MHz            Date: 29.AUG.2023 23:30:57</p>	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB            *RBW 100 kHz Delta 1 [T1] 1.75 dB            *VBW 300 kHz *VMW 300 kHz            SWT 5 ms 4.920000000 MHz            OBSW 4.920000000 MHz            Marker 1 [T1] 1.850000000 MHz            Marker 2 [T1] 1.854760000 MHz            D1 14.1 dBm            D2 -11.67 dBm            Temp 1 [T1] 1.850000000 GHz            Temp 2 [T1] 1.854760000 GHz            Center 1.8525 GHz 1 MHz/ Span 10 MHz            Date: 29.AUG.2023 23:31:17</p>
Middle	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB            *RBW 100 kHz Delta 1 [T1] -2.17 dB            *VBW 300 kHz *VMW 300 kHz            SWT 5 ms 4.940000000 MHz            OBSW 4.920000000 MHz            Marker 1 [T1] 1.877520000 MHz            Marker 2 [T1] 1.882260000 MHz            D1 15.3 dBm            D2 -10.67 dBm            Temp 1 [T1] 1.877520000 GHz            Temp 2 [T1] 1.882260000 GHz            Center 1.88 GHz 1 MHz/ Span 10 MHz            Date: 29.AUG.2023 23:31:39</p>	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB            *RBW 100 kHz Delta 1 [T1] -3.06 dB            *VBW 300 kHz *VMW 300 kHz            SWT 5 ms 4.940000000 MHz            OBSW 4.920000000 MHz            Marker 1 [T1] 1.877520000 MHz            Marker 2 [T1] 1.882260000 MHz            D1 13.7 dBm            D2 -12.5 dBm            Temp 1 [T1] 1.877520000 GHz            Temp 2 [T1] 1.882260000 GHz            Center 1.88 GHz 1 MHz/ Span 10 MHz            Date: 29.AUG.2023 23:32:02</p>
Highest	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB            *RBW 100 kHz Delta 1 [T1] -0.20 dB            *VBW 300 kHz *VMW 300 kHz            SWT 5 ms 4.920000000 MHz            OBSW 4.920000000 MHz            Marker 1 [T1] 1.905040000 MHz            Marker 2 [T1] 1.909760000 MHz            D1 15.2 dBm            D2 -10.77 dBm            Temp 1 [T1] 1.905040000 GHz            Temp 2 [T1] 1.909760000 GHz            Center 1.9075 GHz 1 MHz/ Span 10 MHz            Date: 29.AUG.2023 23:32:26</p>	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB            *RBW 100 kHz Delta 1 [T1] -1.99 dB            *VBW 300 kHz *VMW 300 kHz            SWT 5 ms 4.920000000 MHz            OBSW 4.920000000 MHz            Marker 1 [T1] 1.905040000 MHz            Marker 2 [T1] 1.909760000 MHz            D1 14.7 dBm            D2 -11.2 dBm            Temp 1 [T1] 1.905040000 GHz            Temp 2 [T1] 1.909760000 GHz            Center 1.9075 GHz 1 MHz/ Span 10 MHz            Date: 29.AUG.2023 23:32:49</p>

**Occupied Bandwidth**

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	<p>Date: 29.AUG.2023 23:33:51</p>	<p>Date: 29.AUG.2023 23:34:12</p>
Middle	<p>Date: 29.AUG.2023 23:34:30</p>	<p>Date: 29.AUG.2023 23:34:51</p>
Highest	<p>Date: 29.AUG.2023 23:35:16</p>	<p>Date: 29.AUG.2023 23:35:36</p>

Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

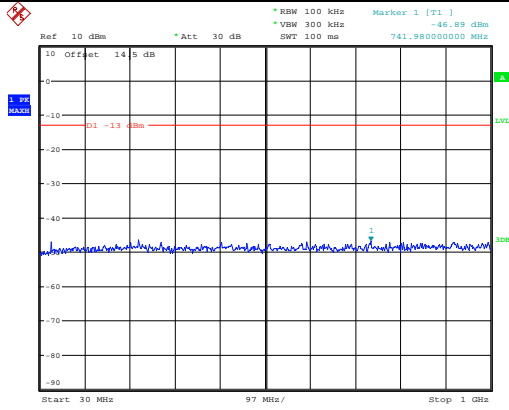
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal

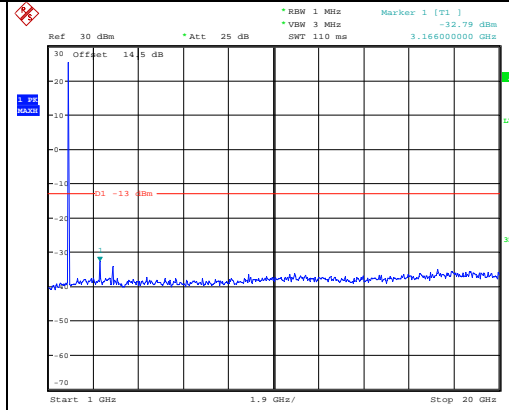
Channel

1.4MHz Bandwidth QPSK

Lowest

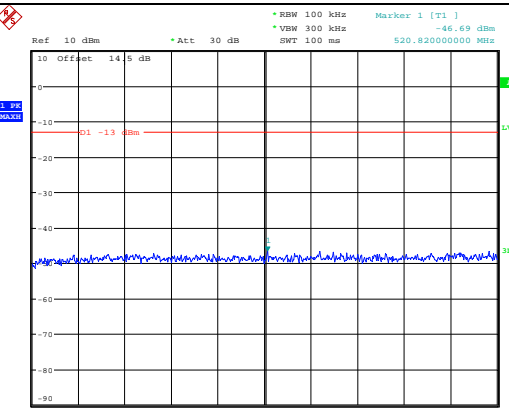


Date: 30.AUG.2023 17:36:57

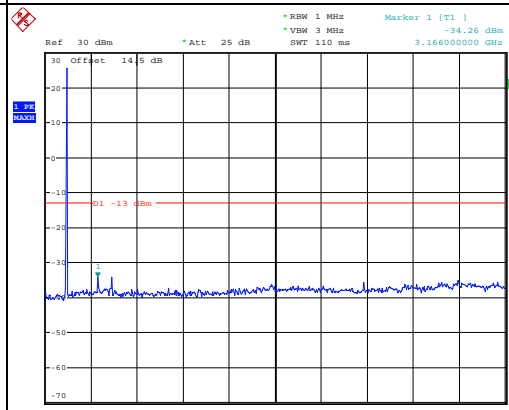


Date: 30.AUG.2023 17:37:08

Middle

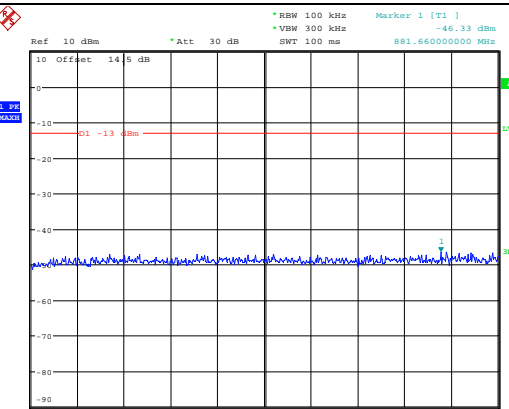


Date: 30.AUG.2023 17:37:25

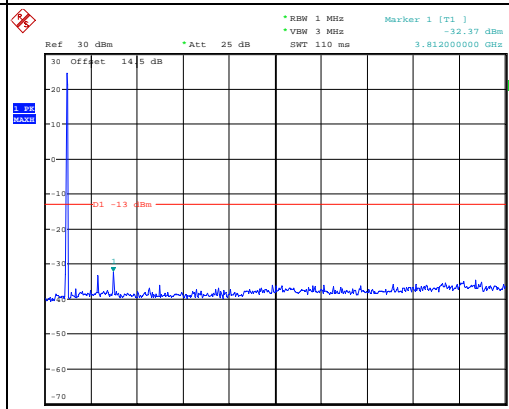


Date: 30.AUG.2023 17:37:37

Highest



Date: 30.AUG.2023 17:37:50



Date: 30.AUG.2023 17:38:01

Spurious Emissions at Antenna Terminal

Channel	3MHz Bandwidth QPSK	
Lowest	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [T1]    -45.90 dBm                      *VMW 300 kHz    -45.90 dBm                      *SWT 100 ms    895.240000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:38:48</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [T1]    -33.14 dBm                      *VMW 3 MHz    -33.14 dBm                      *SWT 110 ms    3.128000000 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:38:59</p>
Middle	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [T1]    -46.09 dBm                      *VMW 300 kHz    -46.09 dBm                      *SWT 100 ms    761.380000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:39:16</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [T1]    -33.53 dBm                      *VMW 3 MHz    -33.53 dBm                      *SWT 110 ms    3.160000000 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:39:27</p>
Highest	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [T1]    -46.34 dBm                      *VMW 300 kHz    -46.34 dBm                      *SWT 100 ms    243.400000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:39:44</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [T1]    -32.17 dBm                      *VMW 3 MHz    -32.17 dBm                      *SWT 110 ms    3.160000000 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:39:55</p>

### Spurious Emissions at Antenna Terminal

Channel	5MHz Bandwidth QPSK	
Lowest	<p>Ref 10 dBm    Att 30 dB    RBW 100 kHz    Marker 1 [T1]    -45.89 dBm            VSW 300 kHz    SWT 100 ms    674.08000000 MHz</p> <p>Date: 30.AUG.2023 17:40:42</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -33.51 dBm            VSW 3 MHz    SWT 110 ms    3.128000000 GHz</p> <p>Date: 30.AUG.2023 17:40:53</p>
Middle	<p>Ref 10 dBm    Att 30 dB    RBW 100 kHz    Marker 1 [T1]    -46.76 dBm            VSW 300 kHz    SWT 100 ms    214.30000000 MHz</p> <p>Date: 30.AUG.2023 17:41:10</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -32.94 dBm            VSW 3 MHz    SWT 110 ms    3.128000000 GHz</p> <p>Date: 30.AUG.2023 17:41:21</p>
Highest	<p>Ref 10 dBm    Att 30 dB    RBW 100 kHz    Marker 1 [T1]    -45.83 dBm            VSW 300 kHz    SWT 100 ms    569.32000000 MHz</p> <p>Date: 30.AUG.2023 17:41:38</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -34.08 dBm            VSW 3 MHz    SWT 110 ms    3.128000000 GHz</p> <p>Date: 30.AUG.2023 17:41:49</p>



Spurious Emissions at Antenna Terminal

Channel	10MHz Bandwidth QPSK	
Lowest	<p>Ref 10 dBm Att 30 dB RBW 100 kHz Marker 1 [T1] -46.17 dBm            VSW 300 kHz SWT 100 ms 875.84800000 MHz</p> <p>Start 30 MHz 97 MHz/ Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:42:31</p>	<p>Ref 30 dBm Att 25 dB RBW 1 MHz Marker 1 [T1] -34.51 dBm            VSW 3 MHz SWT 110 ms 3.128000000 GHz</p> <p>Start 1 GHz 1.9 GHz/ Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:42:42</p>
Middle	<p>Ref 10 dBm Att 30 dB RBW 100 kHz Marker 1 [T1] -46.03 dBm            VSW 300 kHz SWT 100 ms 965.08000000 MHz</p> <p>Start 30 MHz 97 MHz/ Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:42:55</p>	<p>Ref 30 dBm Att 25 dB RBW 1 MHz Marker 1 [T1] -33.10 dBm            VSW 3 MHz SWT 110 ms 3.128000000 GHz</p> <p>Start 1 GHz 1.9 GHz/ Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:43:07</p>
Highest	<p>Ref 10 dBm Att 30 dB RBW 100 kHz Marker 1 [T1] -46.74 dBm            VSW 300 kHz SWT 100 ms 571.26000000 MHz</p> <p>Start 30 MHz 97 MHz/ Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:43:20</p>	<p>Ref 30 dBm Att 25 dB RBW 1 MHz Marker 1 [T1] -33.88 dBm            VSW 3 MHz SWT 110 ms 3.128000000 GHz</p> <p>Start 1 GHz 1.9 GHz/ Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:43:31</p>

Spurious Emissions at Antenna Terminal

Channel	15MHz Bandwidth QPSK	
Lowest	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [71]    -46.42 dBm            *VMW 300 kHz            SWT 100 ms    765.26000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:44:10</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [71]    -33.17 dBm            *VMW 3 MHz            SWT 110 ms    3.128000000 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:44:21</p>
Middle	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [71]    -46.95 dBm            *VMW 300 kHz            SWT 100 ms    237.58000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:44:35</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [71]    -33.59 dBm            *VMW 3 MHz            SWT 110 ms    3.128000000 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:44:46</p>
Highest	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [71]    -46.71 dBm            *VMW 300 kHz            SWT 100 ms    753.62000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:44:59</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [71]    -32.59 dBm            *VMW 3 MHz            SWT 110 ms    3.128000000 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:45:11</p>

Spurious Emissions at Antenna Terminal

Channel	20MHz Bandwidth QPSK	
Lowest	<p>Ref 10 dBm    Att 30 dB    RBW 100 kHz    Marker 1 [T1]    -46.43 dBm            VSW 300 kHz    SWT 100 ms    932.100000000 GHz</p> <p>Date: 30.AUG.2023 17:45:52</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -32.83 dBm            VSW 3 MHz    SWT 110 ms    3.128000000 GHz</p> <p>Date: 30.AUG.2023 17:46:04</p>
Middle	<p>Ref 10 dBm    Att 30 dB    RBW 100 kHz    Marker 1 [T1]    -46.55 dBm            VSW 300 kHz    SWT 100 ms    961.200000000 GHz</p> <p>Date: 30.AUG.2023 17:46:20</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -34.23 dBm            VSW 3 MHz    SWT 110 ms    3.128000000 GHz</p> <p>Date: 30.AUG.2023 17:46:32</p>
Highest	<p>Ref 10 dBm    Att 30 dB    RBW 100 kHz    Marker 1 [T1]    -46.27 dBm            VSW 300 kHz    SWT 100 ms    1.000000000 GHz</p> <p>Date: 30.AUG.2023 17:46:45</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -33.45 dBm            VSW 3 MHz    SWT 110 ms    3.128000000 GHz</p> <p>Date: 30.AUG.2023 17:46:56</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	<p>Date: 30.AUG.2023 13:40:11</p>	<p>Date: 30.AUG.2023 13:40:32</p>
QPSK 3MHz	<p>Date: 30.AUG.2023 13:41:26</p>	<p>Date: 30.AUG.2023 13:41:47</p>
QPSK 5MHz	<p>Date: 30.AUG.2023 13:43:31</p>	<p>Date: 30.AUG.2023 13:43:53</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 10MHz	<p>Date: 30.AUG.2023 13:44:48</p>	<p>Date: 30.AUG.2023 13:45:12</p>
QPSK 15MHz	<p>Date: 30.AUG.2023 13:58:31</p>	<p>Date: 30.AUG.2023 13:58:51</p>
QPSK 20MHz	<p>Date: 30.AUG.2023 13:59:48</p>	<p>Date: 30.AUG.2023 14:00:07</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	<p>Date: 30.AUG.2023 13:40:21</p>	<p>Date: 30.AUG.2023 13:40:43</p>
16QAM 3MHz	<p>Date: 30.AUG.2023 13:41:36</p>	<p>Date: 30.AUG.2023 13:41:58</p>
16QAM 5MHz	<p>Date: 30.AUG.2023 13:43:41</p>	<p>Date: 30.AUG.2023 13:44:05</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz	<p>Date: 30.AUG.2023 13:44:59</p>	<p>Date: 30.AUG.2023 13:45:24</p>
16QAM 15MHz	<p>Date: 30.AUG.2023 13:58:41</p>	<p>Date: 30.AUG.2023 13:59:00</p>
16QAM 20MHz	<p>Date: 30.AUG.2023 13:59:57</p>	<p>Date: 30.AUG.2023 14:00:16</p>

**4.7 Antenna Port Test Data and Results for LTE Band 4**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	<b>Pass</b>

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Frequency for Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	1710.7	1732.5	1754.3
3MHz	1711.5	1732.5	1753.5
5MHz	1712.5	1732.5	1752.5
10MHz	1715	1732.5	1750
15MHz	1717.5	1732.5	1747.5
20MHz	1720	1732.5	1745



**Test Data:**

<b>FCC§2.1046;§ 27.50(d)(4)</b>						
<b>RF Output Power:</b>						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	22.41	22.25	22.53	25.9	30
	RB1#3	22.6	22.47	22.71		
	RB1#5	22.36	22.22	22.53		
	RB3#0	22.47	22.36	22.67		
	RB3#3	22.48	22.41	22.62		
	RB6#0	21.49	21.36	21.59		
1.4MHz 16QAM	RB1#0	21.53	21.27	21.56	25	30
	RB1#3	21.71	21.54	21.73		
	RB1#5	21.53	21.32	21.52		
	RB3#0	21.47	21.45	21.79		
	RB3#3	21.48	21.43	21.81		
	RB6#0	20.51	20.27	20.63		
3MHz QPSK	RB1#0	22.95	22.66	22.12	26.14	30
	RB1#8	22.92	22.68	22.06		
	RB1#14	22.89	22.68	22.05		
	RB6#0	21.84	21.66	21.08		
	RB6#9	21.87	21.59	21.03		
	RB15#0	21.91	21.71	21.1		
3MHz 16QAM	RB1#0	21.94	22.36	21.25	25.55	30
	RB1#8	21.94	22.32	21.24		
	RB1#14	21.87	22.27	21.26		
	RB6#0	20.79	20.74	20.08		
	RB6#9	20.9	20.71	20.09		
	RB15#0	20.95	20.74	20.07		
5MHz QPSK	RB1#0	22.81	22.32	22.04	26.17	30
	RB1#13	22.98	22.5	22.17		
	RB1#24	22.8	22.28	21.99		
	RB15#0	21.94	21.47	21.13		
	RB15#10	21.96	21.37	21.06		
	RB25#0	21.91	21.39	21.06		
5MHz 16QAM	RB1#0	21.89	21.25	21.33	25.17	30
	RB1#13	21.98	21.3	21.42		
	RB1#24	21.87	21.2	21.28		
	RB15#0	20.94	20.5	20.11		
	RB15#10	20.97	20.43	20.05		
	RB25#0	20.92	20.51	20.07		
10MHz QPSK	RB1#0	22.89	22.89	22.01	26.25	30
	RB1#25	23.06	23.05	22.1		

	RB1#49	22.94	22.77	21.91		
	RB25#0	21.89	21.96	20.99		
	RB25#25	21.95	21.84	20.91		
	RB50#0	21.88	21.91	20.94		
10MHz 16QAM	RB1#0	21.88	22.5	21.13	25.86	30
	RB1#25	22.09	22.67	21.24		
	RB1#49	21.9	22.36	20.97		
	RB25#0	20.96	21	20.03		
	RB25#25	21.03	20.89	19.91		
	RB50#0	20.92	20.89	19.95		
15MHz QPSK	RB1#0	22.85	22.63	21.99	26.1	30
	RB1#38	22.91	22.66	21.98		
	RB1#74	22.77	22.53	21.77		
	RB36#0	21.86	21.73	20.99		
	RB36#39	21.93	21.75	20.98		
	RB75#0	21.92	21.7	20.96		
15MHz 16QAM	RB1#0	22.21	22.22	21.14	25.49	30
	RB1#38	22.3	22.29	21.11		
	RB1#74	22.18	22.1	20.86		
	RB36#0	20.86	20.72	19.97		
	RB36#39	20.89	20.7	19.94		
	RB75#0	20.87	20.71	19.96		
20MHz QPSK	RB1#0	22.6	22.03	22.63	26.2	30
	RB1#50	23.01	22.32	22.94		
	RB1#99	22.58	21.89	22.42		
	RB50#0	21.93	21.33	21.86		
	RB50#50	21.83	21.16	21.76		
	RB100#0	21.87	21.22	21.79		
20MHz 16QAM	RB1#0	22.22	21.32	21.85	25.76	30
	RB1#50	22.57	21.65	22.18		
	RB1#99	22.21	21.19	21.63		
	RB50#0	20.91	20.29	20.81		
	RB50#50	20.84	20.16	20.75		
	RB100#0	20.89	20.24	20.82		

Note: EIRP=Conducted Power(dBm) - Lc(dB) + Gr(dBi)

**Result:****Pass****Peak-to-average Ratio(PAR)**

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	10.16	10.96	10.29	13
	RB100#0	6.44	6.47	6.51	13
20MHz 16QAM	RB1#0	11.12	8.4	10.71	13
	RB100#0	7.18	7.24	7.28	13
<b>Result:</b>					<b>Pass</b>

<b>FCC §2.1049, §27.53:Occupied Bandwidth</b>						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.098	1.11	1.098	1.314	1.29	1.296
1.4MHz 16QAM	1.092	1.104	1.11	1.29	1.302	1.308
3MHz QPSK	2.687	2.687	2.687	2.892	2.88	2.88
3MHz 16QAM	2.687	2.687	2.687	2.892	2.868	2.88
5MHz QPSK	4.5	4.5	4.52	4.9	4.94	4.92
5MHz 16QAM	4.52	4.52	4.52	5	4.92	4.88
10MHz QPSK	8.96	8.96	8.96	9.56	9.6	9.52
10MHz 16QAM	8.96	8.96	8.96	9.56	9.6	9.52
15MHz QPSK	13.56	13.5	13.5	14.76	14.64	14.7
15MHz 16QAM	13.5	13.5	13.5	14.82	14.82	14.64
20MHz QPSK	18.08	18	17.92	19.2	19.36	19.36
20MHz 16QAM	18	17.92	18	19.28	19.28	19.2

Note: The test plots please refer to the Plots of Occupied Bandwidth

<b>FCC §2.1051, § 27.53:Spurious Emissions at Antenna Terminal</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.</b>

<b>FCC §2.1051, § 27.53:Out of band emission, Band Edge</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>

<b>FCC §2.1055, §27.54: Frequency Stability</b>						
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	1710.956	1710.00	1753.979	1755
	-20	12	1710.945	1710.00	1753.973	1755
	-10	12	1710.948	1710.00	1753.964	1755
	0	12	1710.941	1710.00	1753.980	1755
	10	12	1710.939	1710.00	1753.965	1755
	20	12	1710.960	1710.00	1753.960	1755
	30	12	1710.942	1710.00	1753.985	1755
	40	12	1710.951	1710.00	1753.982	1755
	50	12	1710.943	1710.00	1753.984	1755
Frequency Stability vs. Voltage	20	6	1710.954	1710.00	1753.986	1755
	20	36	1710.955	1710.00	1753.966	1755
					<b>Result:</b>	<b>Pass</b>

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	1711.030	1710.00	1754.065	1755
	-20	12	1711.017	1710.00	1754.054	1755
	-10	12	1711.035	1710.00	1754.054	1755
	0	12	1711.021	1710.00	1754.050	1755
	10	12	1711.018	1710.00	1754.057	1755
	20	12	1711.040	1710.00	1754.040	1755
	30	12	1711.023	1710.00	1754.043	1755
	40	12	1711.022	1710.00	1754.060	1755
	50	12	1711.039	1710.00	1754.054	1755
Frequency Stability vs. Voltage	20	6	1711.035	1710.00	1754.045	1755
	20	36	1711.021	1710.00	1754.060	1755
					<b>Result:</b>	<b>Pass</b>

**Test Plots**(Note: The 14.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

<b>Occupied Bandwidth</b>		
<b>Channel</b>	<b>1.4MHz Bandwidth QPSK</b>	<b>1.4MHz Bandwidth 16QAM</b>
<b>Lowest</b>	<p style="font-size: small;">Date: 29.AUG.2023 23:41:51</p>	<p style="font-size: small;">Date: 29.AUG.2023 23:42:11</p>
<b>Middle</b>	<p style="font-size: small;">Date: 29.AUG.2023 23:42:33</p>	<p style="font-size: small;">Date: 29.AUG.2023 23:42:53</p>
<b>Highest</b>	<p style="font-size: small;">Date: 29.AUG.2023 23:43:15</p>	<p style="font-size: small;">Date: 29.AUG.2023 23:43:35</p>

### Occupied Bandwidth

Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest	<p>Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 0.70 dB *VSW 100 kHz *SWT 30 ms 2.892000000 MHz</p> <p>OSW 2.888000000 MHz Marker 1 [T1] -1.82 dBm 1.710040000 GHz Temp 1 [T1 OSW] -13.41 dBm 1.710150000 GHz Temp 2 [T1 OSW] -13.41 dBm 1.712840000 GHz</p> <p>Center 1.7115 GHz 600 kHz/ Span 6 MHz</p> <p>Date: 29.AUG.2023 23:44:29</p>	<p>Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] -0.37 dB *VSW 100 kHz *SWT 30 ms 2.892000000 MHz</p> <p>OSW 2.888000000 MHz Marker 1 [T1] -1.40 dBm 1.710040000 GHz Temp 1 [T1 OSW] -12.94 dBm 1.710150000 GHz Temp 2 [T1 OSW] -12.94 dBm 1.712840000 GHz</p> <p>Center 1.7115 GHz 600 kHz/ Span 6 MHz</p> <p>Date: 29.AUG.2023 23:44:49</p>
Middle	<p>Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] -0.50 dB *VSW 100 kHz *SWT 30 ms 2.880000000 MHz</p> <p>OSW 2.880000000 MHz Marker 1 [T1] -1.86 dBm 1.731060000 GHz Temp 1 [T1 OSW] -15.31 dBm 1.731150000 GHz Temp 2 [T1 OSW] -15.31 dBm 1.733840000 GHz</p> <p>Center 1.7325 GHz 600 kHz/ Span 6 MHz</p> <p>Date: 29.AUG.2023 23:45:10</p>	<p>Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 1.34 dB *VSW 100 kHz *SWT 30 ms 2.868000000 MHz</p> <p>OSW 2.868000000 MHz Marker 1 [T1] -1.82 dBm 1.731060000 GHz Temp 1 [T1 OSW] -12.97 dBm 1.731150000 GHz Temp 2 [T1 OSW] -12.97 dBm 1.733840000 GHz</p> <p>Center 1.7325 GHz 600 kHz/ Span 6 MHz</p> <p>Date: 29.AUG.2023 23:45:30</p>
Highest	<p>Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 0.07 dB *VSW 100 kHz *SWT 30 ms 2.880000000 MHz</p> <p>OSW 2.880000000 MHz Marker 1 [T1] -1.87 dBm 1.752060000 GHz Temp 1 [T1 OSW] -12.74 dBm 1.752150000 GHz Temp 2 [T1 OSW] -12.74 dBm 1.754840000 GHz</p> <p>Center 1.7535 GHz 600 kHz/ Span 6 MHz</p> <p>Date: 29.AUG.2023 23:45:49</p>	<p>Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 1.44 dB *VSW 100 kHz *SWT 30 ms 2.880000000 MHz</p> <p>OSW 2.880000000 MHz Marker 1 [T1] -1.81 dBm 1.752060000 GHz Temp 1 [T1 OSW] -12.71 dBm 1.752150000 GHz Temp 2 [T1 OSW] -12.71 dBm 1.754840000 GHz</p> <p>Center 1.7535 GHz 600 kHz/ Span 6 MHz</p> <p>Date: 29.AUG.2023 23:46:09</p>

### Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	<p>Ref 30 dB Offset 14.5 dB Att 25 dB RBW 100 kHz VBW 300 kHz SWT 10 ms Delta 1 [T1] 9.560000000 MHz</p> <p>Marker 1 [T1] 8.960000000 MHz -13.57 dBm</p> <p>Temp 1 [T1] 1.710200000 GHz -13.57 dBm</p> <p>Temp 2 [T1] 1.719480000 GHz -13.57 dBm</p> <p>Center 1.715 GHz 2 MHz/ Span 20 MHz</p> <p>Date: 29.AUG.2023 23:49:33</p>	<p>Ref 30 dB Offset 14.5 dB Att 25 dB RBW 100 kHz VBW 300 kHz SWT 10 ms Delta 1 [T1] 9.560000000 MHz</p> <p>Marker 1 [T1] 8.960000000 MHz -12.6 dBm</p> <p>Temp 1 [T1] 1.710200000 GHz -12.6 dBm</p> <p>Temp 2 [T1] 1.719480000 GHz -12.6 dBm</p> <p>Center 1.715 GHz 2 MHz/ Span 20 MHz</p> <p>Date: 29.AUG.2023 23:49:54</p>
Middle	<p>Ref 30 dB Offset 14.5 dB Att 25 dB RBW 100 kHz VBW 300 kHz SWT 10 ms Delta 1 [T1] 9.600000000 MHz</p> <p>Marker 1 [T1] 8.960000000 MHz -13.44 dBm</p> <p>Temp 1 [T1] 1.727740000 GHz -13.44 dBm</p> <p>Temp 2 [T1] 1.736980000 GHz -13.44 dBm</p> <p>Center 1.7325 GHz 2 MHz/ Span 20 MHz</p> <p>Date: 29.AUG.2023 23:50:16</p>	<p>Ref 30 dB Offset 14.5 dB Att 25 dB RBW 100 kHz VBW 300 kHz SWT 10 ms Delta 1 [T1] 9.600000000 MHz</p> <p>Marker 1 [T1] 8.960000000 MHz -13.64 dBm</p> <p>Temp 1 [T1] 1.727740000 GHz -13.64 dBm</p> <p>Temp 2 [T1] 1.736980000 GHz -13.64 dBm</p> <p>Center 1.7325 GHz 2 MHz/ Span 20 MHz</p> <p>Date: 29.AUG.2023 23:50:38</p>
Highest	<p>Ref 30 dB Offset 14.5 dB Att 25 dB RBW 100 kHz VBW 300 kHz SWT 10 ms Delta 1 [T1] 9.520000000 MHz</p> <p>Marker 1 [T1] 8.960000000 MHz -12.9 dBm</p> <p>Temp 1 [T1] 1.745240000 GHz -12.9 dBm</p> <p>Temp 2 [T1] 1.754480000 GHz -12.9 dBm</p> <p>Center 1.75 GHz 2 MHz/ Span 20 MHz</p> <p>Date: 29.AUG.2023 23:50:59</p>	<p>Ref 30 dB Offset 14.5 dB Att 25 dB RBW 100 kHz VBW 300 kHz SWT 10 ms Delta 1 [T1] 9.520000000 MHz</p> <p>Marker 1 [T1] 8.960000000 MHz -12.9 dBm</p> <p>Temp 1 [T1] 1.745240000 GHz -12.9 dBm</p> <p>Temp 2 [T1] 1.754480000 GHz -12.9 dBm</p> <p>Center 1.75 GHz 2 MHz/ Span 20 MHz</p> <p>Date: 29.AUG.2023 23:51:19</p>



Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] *VMW 1 MHz 0.46 dB SWT 2.5 ms 14.760000000 MHz              OBS 3.560000000 MHz Marker 1 [T1] -16.97 dBm              D1 16.97 dBm              D2 3.01 dBm              Temp 1 [T1 OSM] 1.717500000 GHz              Temp 2 [T1 OSM] 1.724280000 GHz              Center 1.7175 GHz 3 MHz/ Span 30 MHz              Date: 29.AUG.2023 23:52:13</p>	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] *VMW 1 MHz 1.20 dB SWT 2.5 ms 14.820000000 MHz              OBS 3.500000000 MHz Marker 1 [T1] -15.9 dBm              D1 15.9 dBm              D2 3.01 dBm              Temp 1 [T1 OSM] 1.717500000 GHz              Temp 2 [T1 OSM] 1.724280000 GHz              Center 1.7175 GHz 3 MHz/ Span 30 MHz              Date: 29.AUG.2023 23:52:34</p>
Middle	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] *VMW 1 MHz -1.92 dB SWT 2.5 ms 14.640000000 MHz              OBS 3.500000000 MHz Marker 1 [T1] -16.4 dBm              D1 16.4 dBm              D2 3.01 dBm              Temp 1 [T1 OSM] 1.732500000 GHz              Temp 2 [T1 OSM] 1.739280000 GHz              Center 1.7325 GHz 3 MHz/ Span 30 MHz              Date: 29.AUG.2023 23:52:56</p>	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] *VMW 1 MHz -2.34 dB SWT 2.5 ms 14.820000000 MHz              OBS 3.500000000 MHz Marker 1 [T1] -15.44 dBm              D1 15.44 dBm              D2 3.01 dBm              Temp 1 [T1 OSM] 1.732500000 GHz              Temp 2 [T1 OSM] 1.739280000 GHz              Center 1.7325 GHz 3 MHz/ Span 30 MHz              Date: 29.AUG.2023 23:53:17</p>
Highest	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] *VMW 1 MHz -0.37 dB SWT 2.5 ms 14.700000000 MHz              OBS 3.500000000 MHz Marker 1 [T1] -16.85 dBm              D1 16.85 dBm              D2 3.16 dBm              Temp 1 [T1 OSM] 1.747500000 GHz              Temp 2 [T1 OSM] 1.754280000 GHz              Center 1.7475 GHz 3 MHz/ Span 30 MHz              Date: 29.AUG.2023 23:53:35</p>	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] *VMW 1 MHz -2.98 dB SWT 2.5 ms 14.640000000 MHz              OBS 3.500000000 MHz Marker 1 [T1] -16.1 dBm              D1 16.1 dBm              D2 3.01 dBm              Temp 1 [T1 OSM] 1.747500000 GHz              Temp 2 [T1 OSM] 1.754280000 GHz              Center 1.7475 GHz 3 MHz/ Span 30 MHz              Date: 29.AUG.2023 23:53:55</p>

### Occupied Bandwidth

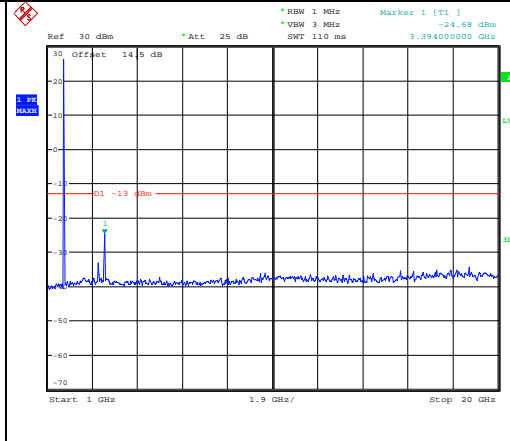
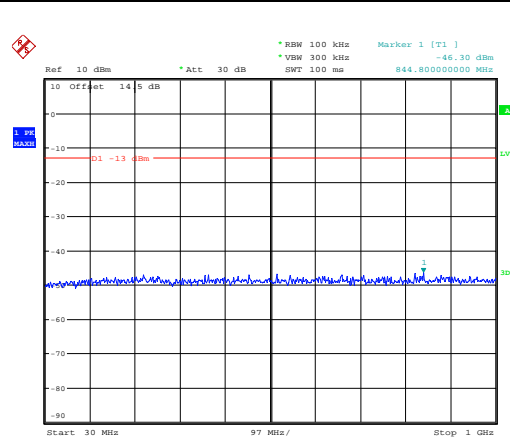
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	<p>Date: 29.AUG.2023 23:54:51</p>	<p>Date: 29.AUG.2023 23:55:11</p>
Middle	<p>Date: 29.AUG.2023 23:55:32</p>	<p>Date: 29.AUG.2023 23:55:53</p>
Highest	<p>Date: 29.AUG.2023 23:56:14</p>	<p>Date: 29.AUG.2023 23:56:35</p>

Spurious Emissions at Antenna Terminal

Channel

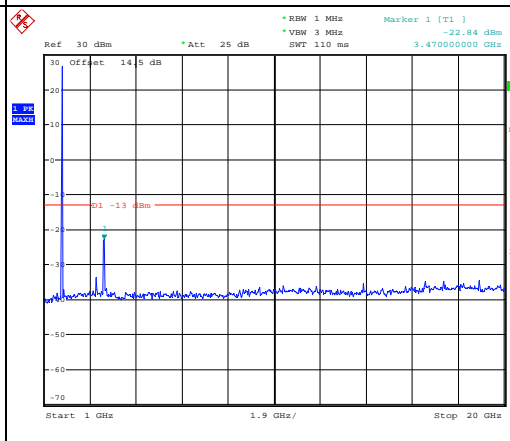
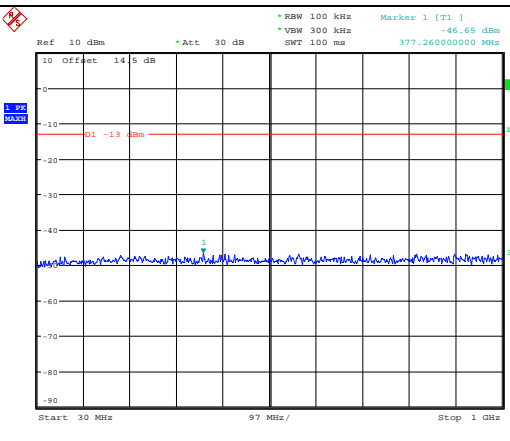
1.4MHz Bandwidth QPSK

Lowest



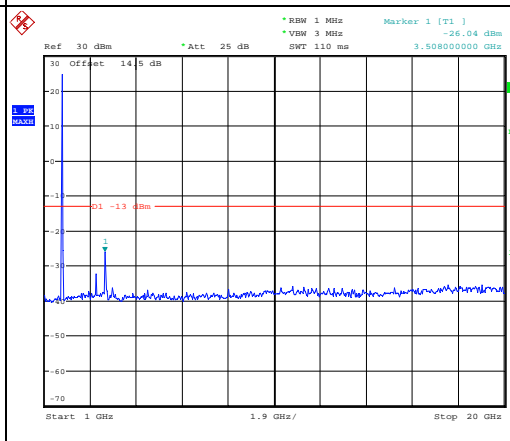
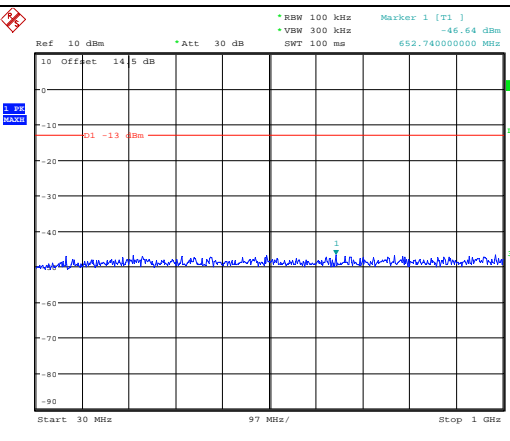
Date: 30.AUG.2023 17:47:26

Middle



Date: 30.AUG.2023 17:47:54

Highest



Date: 30.AUG.2023 17:48:19

Spurious Emissions at Antenna Terminal

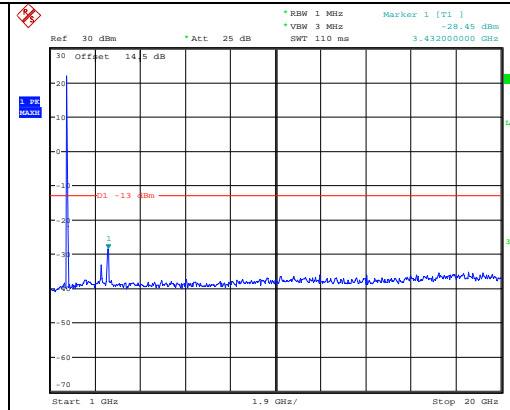
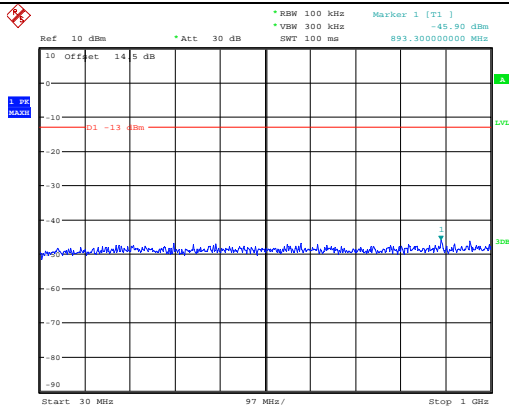
Channel	3MHz Bandwidth QPSK	
Lowest	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [T1]    -46.75 dBm            *VMW 300 kHz    -46.75 dBm            *SWT 100 ms    887.480000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:49:14</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [T1]    -27.56 dBm            *VMW 3 MHz    -27.56 dBm            *SWT 110 ms    3.394000000 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:49:25</p>
Middle	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [T1]    -46.95 dBm            *VMW 300 kHz    -46.95 dBm            *SWT 100 ms    714.820000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:49:38</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [T1]    -25.60 dBm            *VMW 3 MHz    -25.60 dBm            *SWT 110 ms    3.470000000 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:49:49</p>
Highest	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [T1]    -45.81 dBm            *VMW 300 kHz    -45.81 dBm            *SWT 100 ms    937.920000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:50:06</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [T1]    -25.42 dBm            *VMW 3 MHz    -25.42 dBm            *SWT 110 ms    3.508000000 GHz</p> <p>Start 1 GHz    1.9 GHz/    Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:50:17</p>

Spurious Emissions at Antenna Terminal

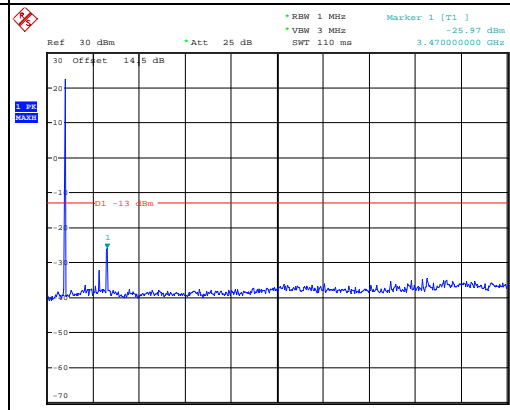
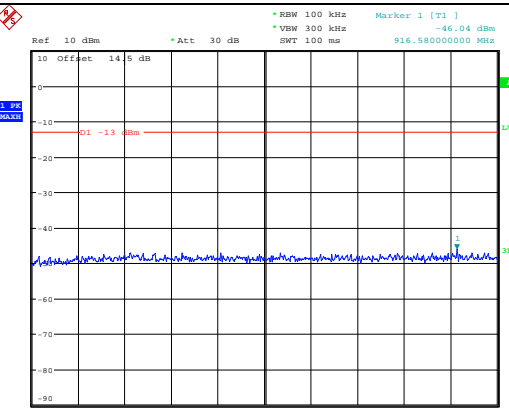
Channel

5MHz Bandwidth QPSK

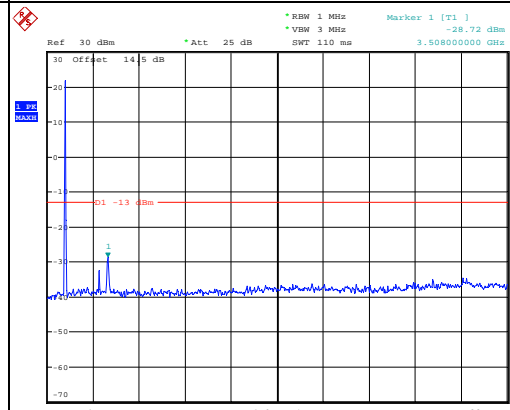
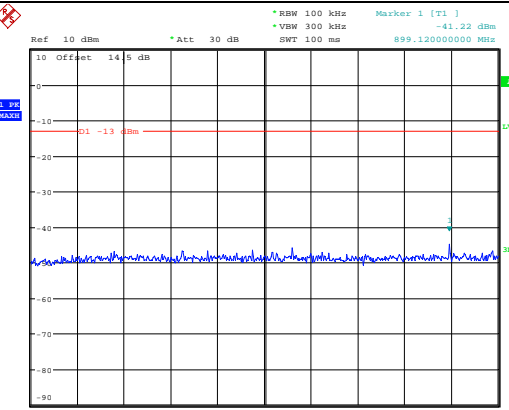
Lowest



Middle



Highest



Spurious Emissions at Antenna Terminal

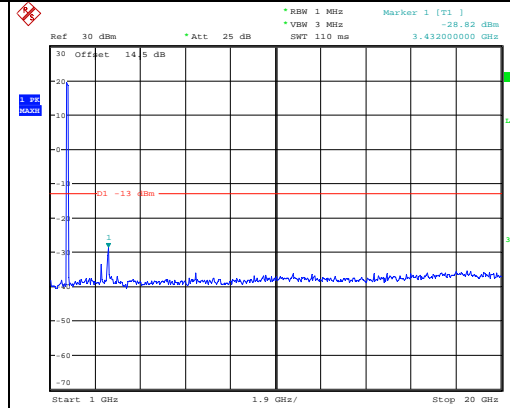
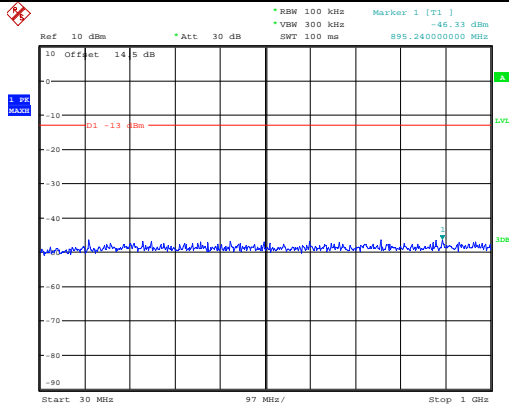
Channel	10MHz Bandwidth QPSK	
Lowest	<p>Ref 10 dBm Att 30 dB RBW 100 kHz Marker 1 [T1] -46.81 dBm                      VSW 300 kHz SWT 100 ms 569.72000000 MHz</p> <p>Start 30 MHz 97 MHz/ Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:53:19</p>	<p>Ref 30 dBm Att 25 dB RBW 1 MHz Marker 1 [T1] -29.77 dBm                      VSW 3 MHz SWT 110 ms 3.432000000 GHz</p> <p>Start 1 GHz 1.9 GHz/ Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:53:30</p>
Middle	<p>Ref 10 dBm Att 30 dB RBW 100 kHz Marker 1 [T1] -46.47 dBm                      VSW 300 kHz SWT 100 ms 621.70000000 MHz</p> <p>Start 30 MHz 97 MHz/ Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:53:44</p>	<p>Ref 30 dBm Att 25 dB RBW 1 MHz Marker 1 [T1] -28.19 dBm                      VSW 3 MHz SWT 110 ms 3.470000000 GHz</p> <p>Start 1 GHz 1.9 GHz/ Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:53:55</p>
Highest	<p>Ref 10 dBm Att 30 dB RBW 100 kHz Marker 1 [T1] -46.47 dBm                      VSW 300 kHz SWT 100 ms 388.90000000 MHz</p> <p>Start 30 MHz 97 MHz/ Stop 1 GHz</p> <p>Date: 30.AUG.2023 17:54:08</p>	<p>Ref 30 dBm Att 25 dB RBW 1 MHz Marker 1 [T1] -30.35 dBm                      VSW 3 MHz SWT 110 ms 3.470000000 GHz</p> <p>Start 1 GHz 1.9 GHz/ Stop 20 GHz</p> <p>Date: 30.AUG.2023 17:54:20</p>

Spurious Emissions at Antenna Terminal

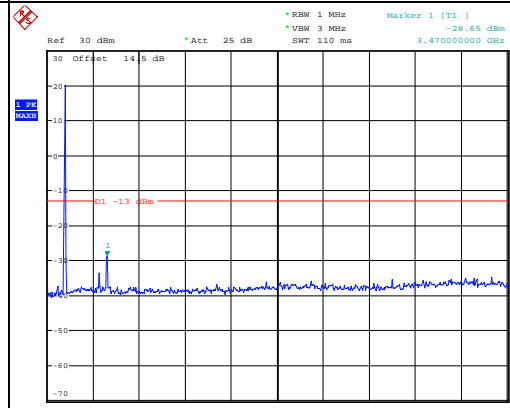
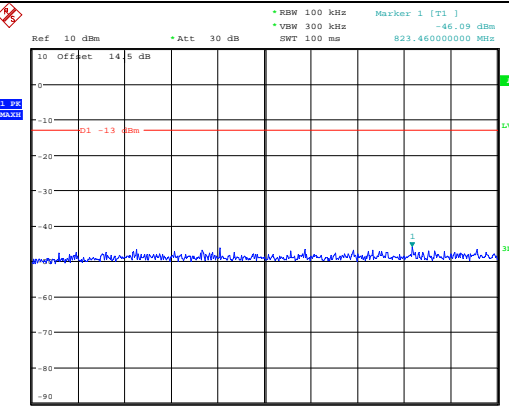
Channel

15MHz Bandwidth QPSK

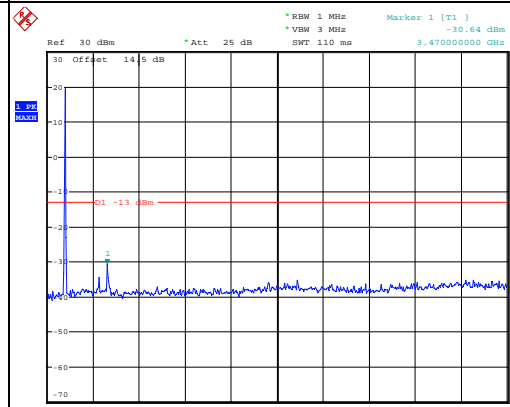
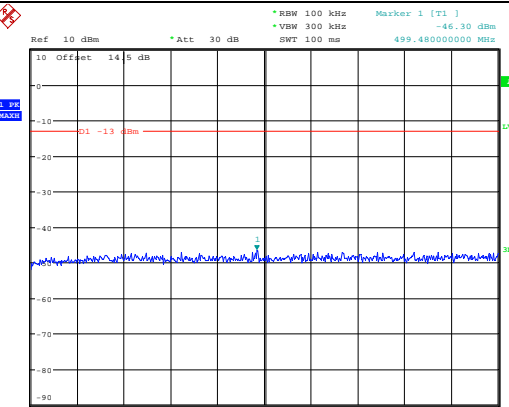
Lowest



Middle



Highest



### Spurious Emissions at Antenna Terminal

Channel	20MHz Bandwidth QPSK	
Lowest	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [T1]    -46.36 dBm                      *VBW 300 kHz                      SWT 100 ms    912.700000000 MHz</p> <p>Date: 30.AUG.2023 17:57:30</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [T1]    -30.59 dBm                      *VBW 3 MHz                      SWT 110 ms    3.432000000 GHz</p> <p>Date: 30.AUG.2023 17:57:41</p>
Middle	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [T1]    -46.21 dBm                      *VBW 300 kHz                      SWT 100 ms    827.340000000 MHz</p> <p>Date: 30.AUG.2023 17:57:55</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [T1]    -29.51 dBm                      *VBW 3 MHz                      SWT 110 ms    3.470000000 GHz</p> <p>Date: 30.AUG.2023 17:58:06</p>
Highest	<p>Ref 10 dBm    Att 30 dB    *RBW 100 kHz    Marker 1 [T1]    -46.43 dBm                      *VBW 300 kHz                      SWT 100 ms    532.460000000 MHz</p> <p>Date: 30.AUG.2023 17:58:20</p>	<p>Ref 30 dBm    Att 25 dB    *RBW 1 MHz    Marker 1 [T1]    -29.51 dBm                      *VBW 3 MHz                      SWT 110 ms    3.470000000 GHz</p> <p>Date: 30.AUG.2023 17:58:31</p>



Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	<p>Ref 30 dBm    Att 25 dB    RBW 30 kHz    Marker 1 [T1]    -29.31 dBm            VSW 100 kHz    SWT 35 ms    1.710000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.71 GHz    300 kHz/    Span 3 MHz</p> <p>Date: 30.AUG.2023 14:00:32</p>	<p>Ref 30 dBm    Att 25 dB    RBW 30 kHz    Marker 1 [T1]    -30.33 dBm            VSW 100 kHz    SWT 35 ms    1.755000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.755 GHz    300 kHz/    Span 3 MHz</p> <p>Date: 30.AUG.2023 14:00:52</p>
QPSK 3MHz	<p>Ref 30 dBm    Att 25 dB    RBW 30 kHz    Marker 1 [T1]    -31.93 dBm            VSW 100 kHz    SWT 35 ms    1.710000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.71 GHz    600 kHz/    Span 6 MHz</p> <p>Date: 30.AUG.2023 14:08:53</p>	<p>Ref 30 dBm    Att 25 dB    RBW 30 kHz    Marker 1 [T1]    -34.94 dBm            VSW 100 kHz    SWT 35 ms    1.755000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.755 GHz    600 kHz/    Span 6 MHz</p> <p>Date: 30.AUG.2023 14:09:13</p>
QPSK 5MHz	<p>Ref 30 dBm    Att 25 dB    RBW 100 kHz    Marker 1 [T1]    -29.69 dBm            VSW 500 kHz    SWT 35 ms    1.710000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.71 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 30.AUG.2023 14:53:11</p>	<p>Ref 30 dBm    Att 25 dB    RBW 100 kHz    Marker 1 [T1]    -29.33 dBm            VSW 500 kHz    SWT 35 ms    1.755000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.755 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 30.AUG.2023 14:53:33</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 10MHz	<p>Date: 30.AUG.2023 14:54:42</p>	<p>Date: 30.AUG.2023 14:55:06</p>
QPSK 15MHz	<p>Date: 30.AUG.2023 14:56:41</p>	<p>Date: 30.AUG.2023 14:57:00</p>
QPSK 20MHz	<p>Date: 30.AUG.2023 14:57:44</p>	<p>Date: 30.AUG.2023 14:58:03</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	<p>Ref 30 dBm    Att 25 dB    RBW 30 kHz    Marker 1 [T1] -28.81 dBm  VSM 100 kHz    SWT 35 ms    1.710000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.71 GHz    300 kHz/    Span 3 MHz</p> <p>Date: 30.AUG.2023 14:00:43</p>	<p>Ref 30 dBm    Att 25 dB    RBW 30 kHz    Marker 1 [T1] -29.78 dBm  VSM 100 kHz    SWT 35 ms    1.755000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.755 GHz    300 kHz/    Span 3 MHz</p> <p>Date: 30.AUG.2023 14:01:02</p>
16QAM 3MHz	<p>Ref 30 dBm    Att 25 dB    RBW 30 kHz    Marker 1 [T1] -31.25 dBm  VSM 100 kHz    SWT 35 ms    1.710000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.71 GHz    600 kHz/    Span 6 MHz</p> <p>Date: 30.AUG.2023 14:09:03</p>	<p>Ref 30 dBm    Att 25 dB    RBW 30 kHz    Marker 1 [T1] -33.86 dBm  VSM 100 kHz    SWT 35 ms    1.755000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.755 GHz    600 kHz/    Span 6 MHz</p> <p>Date: 30.AUG.2023 14:09:22</p>
16QAM 5MHz	<p>Ref 30 dBm    Att 25 dB    RBW 100 kHz    Marker 1 [T1] -29.59 dBm  VSM 500 kHz    SWT 35 ms    1.710000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.71 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 30.AUG.2023 14:53:22</p>	<p>Ref 30 dBm    Att 25 dB    RBW 100 kHz    Marker 1 [T1] -29.88 dBm  VSM 500 kHz    SWT 35 ms    1.755000000 GHz</p> <p>30 Offset 14.5 dB</p> <p>D1 -13 dBm</p> <p>SWP 50 OF 50</p> <p>Center 1.755 GHz    1 MHz/    Span 10 MHz</p> <p>Date: 30.AUG.2023 14:53:44</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz	<p>Date: 30.AUG.2023 14:54:54</p>	<p>Date: 30.AUG.2023 14:55:16</p>
16QAM 15MHz	<p>Date: 30.AUG.2023 14:56:50</p>	<p>Date: 30.AUG.2023 14:57:09</p>
16QAM 20MHz	<p>Date: 30.AUG.2023 14:57:53</p>	<p>Date: 30.AUG.2023 14:58:12</p>

**4.8 Antenna Port Test Data and Results for LTE Band 5**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Frequency for Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	824.7	836.5	848.3
3MHz	825.5	836.5	847.5
5MHz	826.5	836.5	846.5
10MHz	829	836.5	844

**Test Data:**

<b>FCC§2.1046;§ 22.913 (a)</b>						
<b>RF Output Power:</b>						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	23.51	23.35	24.07	24.98	38.45
	RB1#3	23.63	23.49	24.21		
	RB1#5	23.48	23.3	24.07		
	RB3#0	23.55	23.42	24.19		
	RB3#3	23.59	23.45	24.13		
	RB6#0	22.54	22.41	23.15		
1.4MHz 16QAM	RB1#0	22.6	22.32	23.06	24.08	38.45
	RB1#3	22.82	22.55	23.22		
	RB1#5	22.66	22.4	23.06		
	RB3#0	22.5	22.51	23.31		
	RB3#3	22.51	22.5	23.29		
	RB6#0	21.57	21.36	22.16		
3MHz QPSK	RB1#0	24.23	23.36	24.2	25	38.45
	RB1#8	24.21	23.32	24.22		
	RB1#14	24.16	23.3	24.19		
	RB6#0	23.12	22.33	23.15		
	RB6#9	23.16	22.31	23.16		
	RB15#0	23.18	22.35	23.18		
3MHz 16QAM	RB1#0	23.24	22.91	23.36	24.13	38.45
	RB1#8	23.22	22.88	23.33		
	RB1#14	23.15	22.87	23.32		
	RB6#0	22.1	21.39	22.24		
	RB6#9	22.1	21.37	22.21		
	RB15#0	22.19	21.4	22.17		
5MHz QPSK	RB1#0	24.1	24.04	24.11	24.99	38.45
	RB1#13	24.22	24.2	24.22		
	RB1#24	24.1	24.05	24.08		
	RB15#0	23.18	23.2	23.26		
	RB15#10	23.21	23.19	23.2		
	RB25#0	23.17	23.16	23.21		
5MHz 16QAM	RB1#0	23.18	22.98	23.43	24.32	38.45
	RB1#13	23.31	23.09	23.55		
	RB1#24	23.14	22.98	23.37		
	RB15#0	22.2	22.25	22.26		
	RB15#10	22.23	22.23	22.17		
	RB25#0	22.21	22.22	22.25		
10MHz QPSK	RB1#0	24.25	24.18	24.21	25.13	38.45
	RB1#25	24.32	24.32	24.36		
	RB1#49	24.19	24.18	24.22		

	RB25#0	23.27	23.3	23.27		
	RB25#25	23.17	23.26	23.23		
	RB50#0	23.26	23.26	23.23		
10MHz 16QAM	RB1#0	23.22	23.75	23.34	24.63	38.45
	RB1#25	23.37	23.86	23.5		
	RB1#49	23.2	23.72	23.32		
	RB25#0	22.36	22.34	22.33		
	RB25#25	22.27	22.31	22.27		
	RB50#0	22.23	22.27	22.27		

Note:

ERP= Conducted Power(dBm) - Lc(dB) + Gr(dBd)

Gr(dBd)=Gr(dBi)-2.15

**Result:****Pass****Peak-to-average Ratio(PAR)**

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit(dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	5.74	4.46	5.35	13
	RB50#0	5.54	5.64	5.61	13
10MHz 16QAM	RB1#0	6.76	5.58	6.03	13
	RB50#0	6.47	6.51	6.57	13

**Result:****Pass****FCC §2.1049, §22.905:Occupied Bandwidth**

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.11	1.098	1.098	1.314	1.302	1.302
1.4MHz 16QAM	1.092	1.104	1.104	1.332	1.296	1.326
3MHz QPSK	2.687	2.687	2.687	2.88	2.868	2.88
3MHz 16QAM	2.687	2.676	2.676	2.868	2.88	2.868
5MHz QPSK	4.5	4.52	4.52	4.94	4.9	4.9
5MHz 16QAM	4.5	4.5	4.5	4.92	4.82	4.92
10MHz QPSK	8.96	8.96	8.96	9.68	9.6	9.56
10MHz 16QAM	8.96	8.96	8.96	9.56	9.56	9.56

Note: The test plots please refer to the Plots of Occupied Bandwidth

**FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal****Result:** Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.

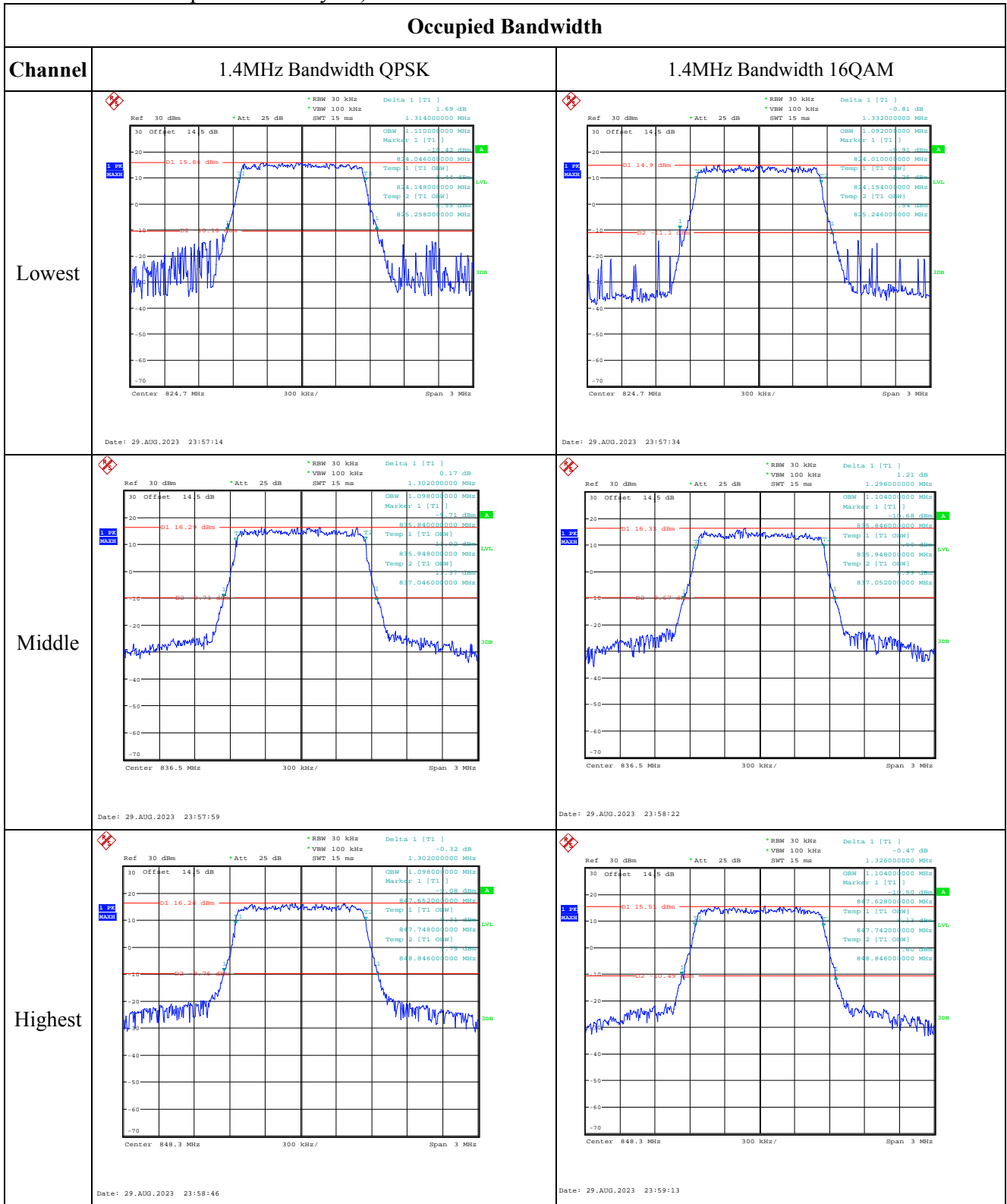
**FCC §2.1051, §22.917(a):Out of band emission, Band Edge****Result: Pass, Please refer to the test plots of Out of band emission, Band Edge.****FCC §2.1055, §22.355: Frequency Stability**

Test Modulation:	10 MHz QPSK		Test Channel:	836.5	MHz
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	12	36	0.043	2.5
	-20	12	5	0.006	2.5
	-10	12	11	0.013	2.5
	0	12	6	0.007	2.5
	10	12	1	0.001	2.5
	20	12	5	0.006	2.5
	30	12	4	0.005	2.5
	40	12	42	0.050	2.5
Frequency Stability vs. Voltage	50	12	47	0.056	2.5
	20	6	11	0.013	2.5
	20	36	2	0.002	2.5
<b>Result:</b>				<b>Pass</b>	

Test Modulation:	10 MHz 16QAM		Test Channel:	836.5	MHz
Test Item	Temperature(°C)	Voltage(V <sub>DC</sub> )	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	12	17	0.020	2.5
	-20	12	25	0.030	2.5
	-10	12	14	0.017	2.5
	0	12	14	0.017	2.5
	10	12	5	0.006	2.5
	20	12	8	0.010	2.5
	30	12	3	0.004	2.5
	40	12	25	0.030	2.5
	50	12	13	0.016	2.5
Frequency Stability vs. Voltage	20	6	18	0.022	2.5
	20	36	14	0.017	2.5
<b>Result:</b>				<b>Pass</b>	



**Test Plots**(Note: The 14.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):



### Occupied Bandwidth

Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest	<p>Date: 30.AUG.2023 00:00:27</p>	<p>Date: 30.AUG.2023 00:00:24</p>
Middle	<p>Date: 30.AUG.2023 00:00:46</p>	<p>Date: 30.AUG.2023 00:01:09</p>
Highest	<p>Date: 30.AUG.2023 00:01:30</p>	<p>Date: 30.AUG.2023 00:01:53</p>

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

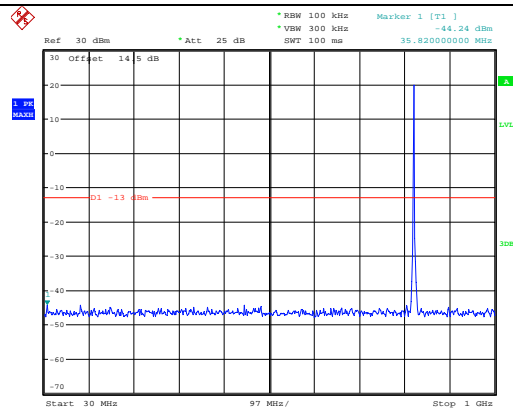
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal

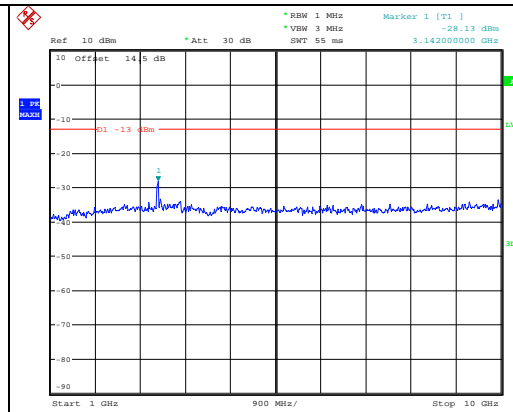
Channel

1.4MHz Bandwidth QPSK

Lowest

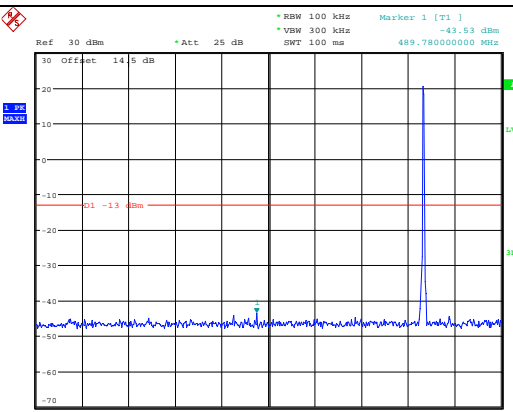


Date: 30.AUG.2023 17:58:49

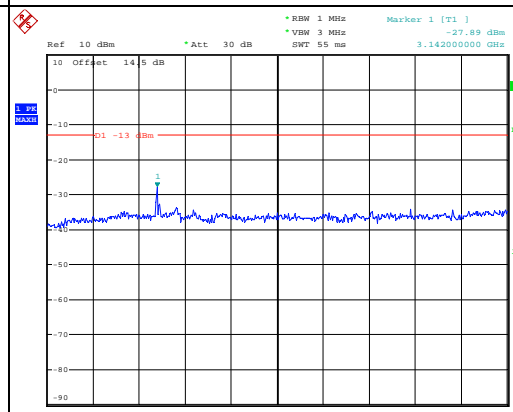


Date: 30.AUG.2023 17:59:00

Middle

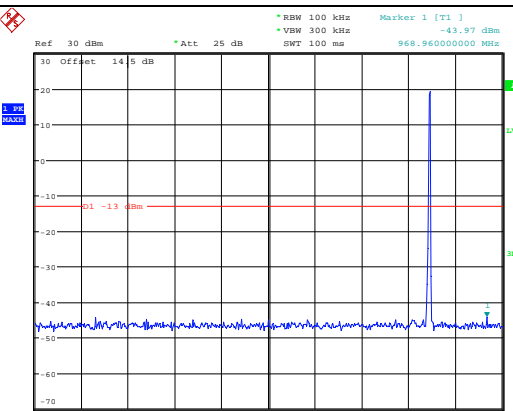


Date: 30.AUG.2023 17:59:14

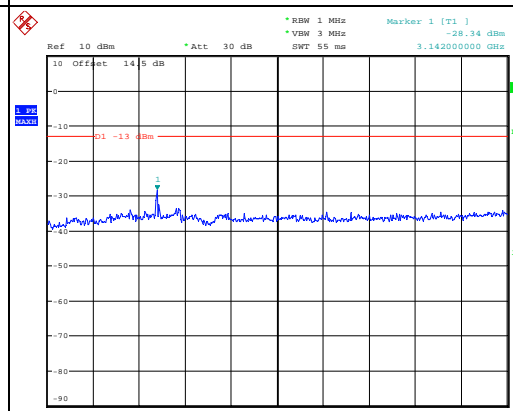


Date: 30.AUG.2023 17:59:26

Highest



Date: 30.AUG.2023 17:59:39



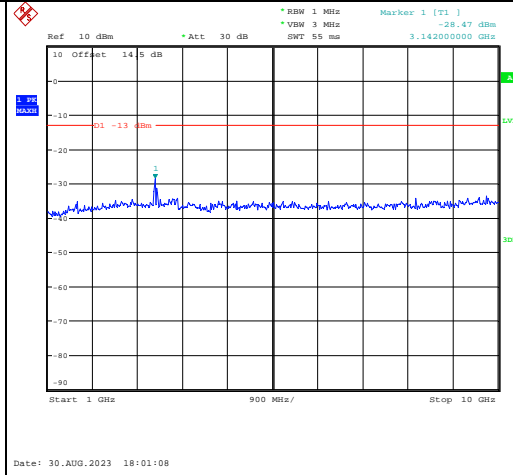
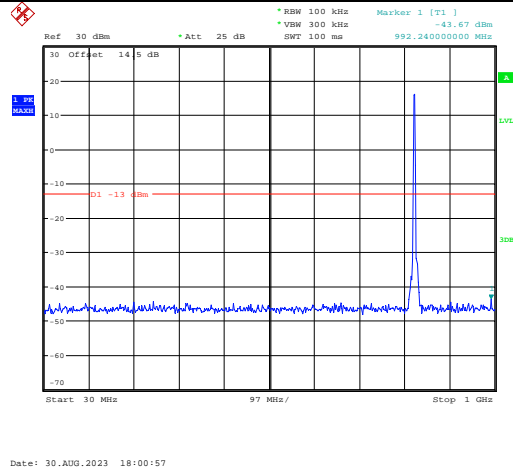
Date: 30.AUG.2023 17:59:53

**Spurious Emissions at Antenna Terminal**

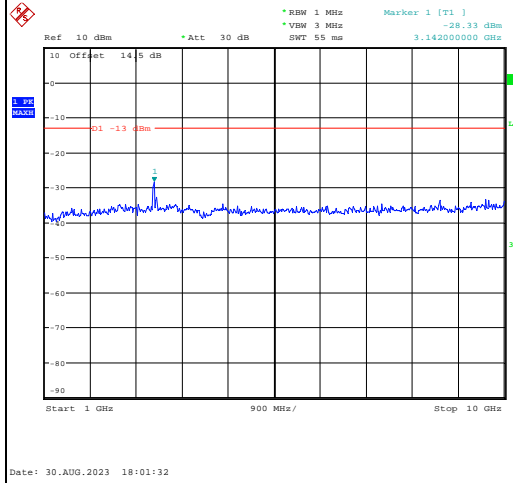
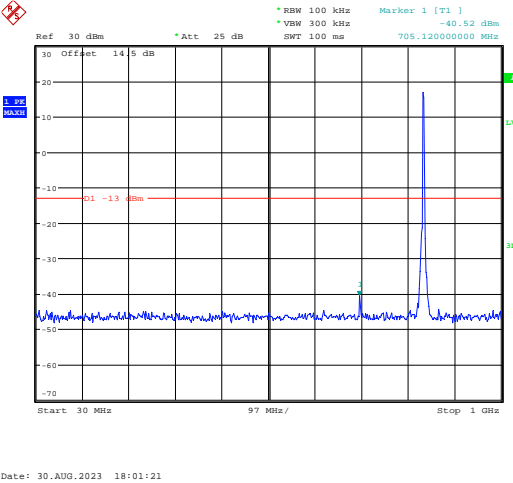
**Channel**

**3MHz Bandwidth QPSK**

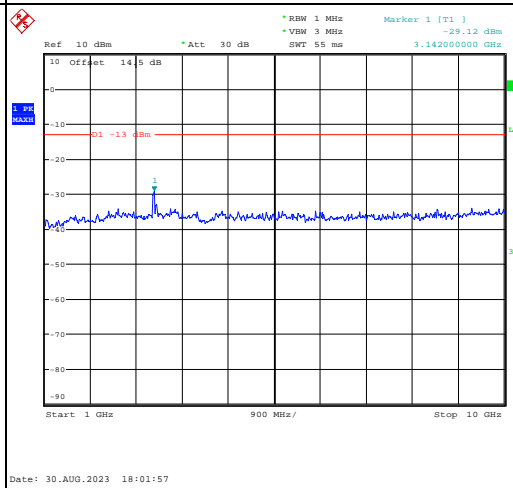
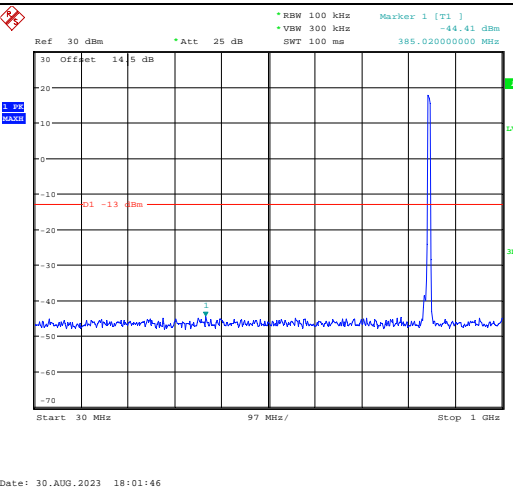
Lowest



Middle



Highest

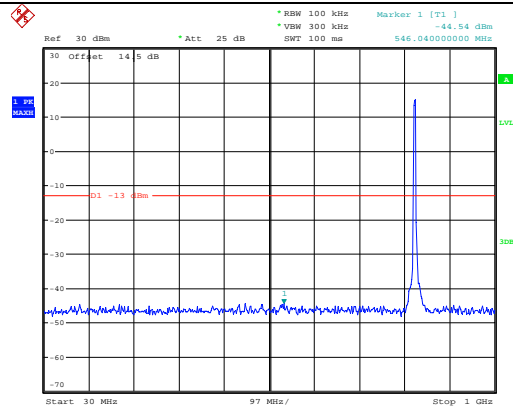


Spurious Emissions at Antenna Terminal

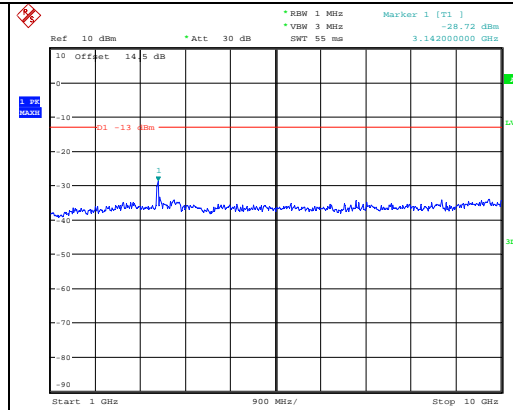
Channel

5MHz Bandwidth QPSK

Lowest

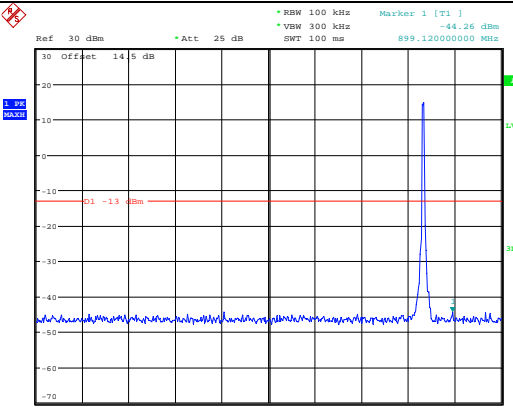


Date: 30.AUG.2023 18:03:00

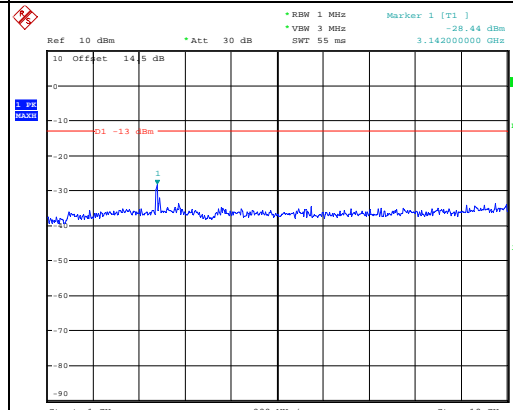


Date: 30.AUG.2023 18:03:11

Middle

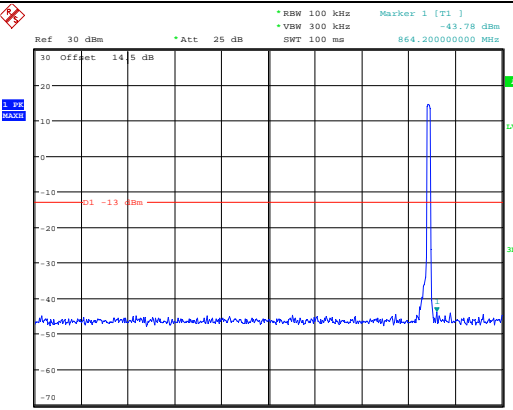


Date: 30.AUG.2023 18:03:25

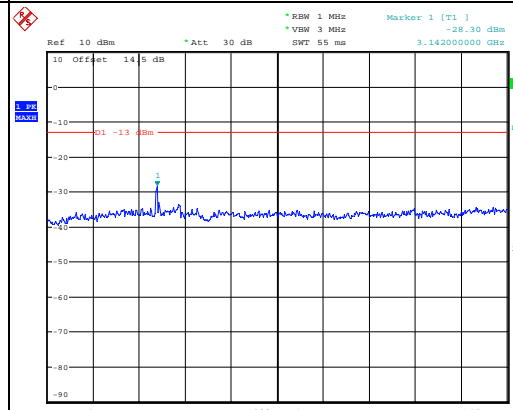


Date: 30.AUG.2023 18:03:36

Highest



Date: 30.AUG.2023 18:03:53



Date: 30.AUG.2023 18:04:04

Spurious Emissions at Antenna Terminal

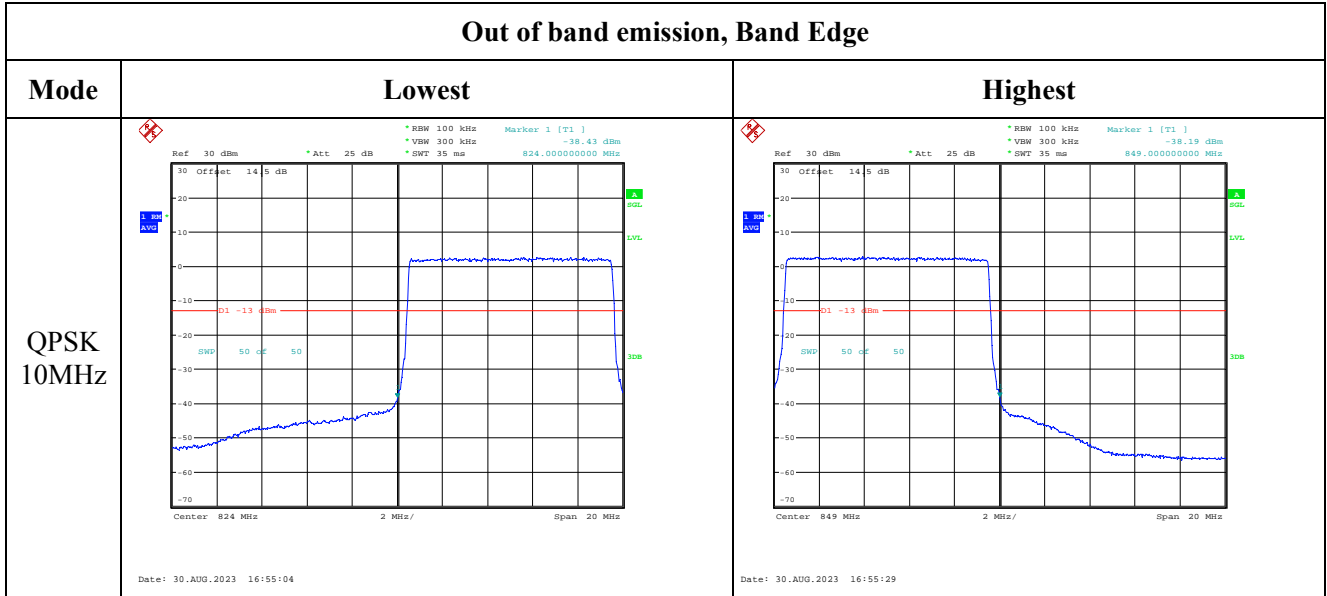
Channel	10MHz Bandwidth QPSK	
Lowest	<p>Ref 30 dBm    Att 25 dB    RBW 100 kHz    Marker 1 [T1]    -44.10 dBm            * VSW 300 kHz    * SWT 100 ms    80.00000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 18:05:07</p>	<p>Ref 10 dBm    Att 30 dB    RBW 1 MHz    Marker 1 [T1]    -27.68 dBm            * VSW 3 MHz    * SWT 55 ms    3.142000000 GHz</p> <p>Start 1 GHz    900 MHz/    Stop 10 GHz</p> <p>Date: 30.AUG.2023 18:05:18</p>
Middle	<p>Ref 30 dBm    Att 25 dB    RBW 100 kHz    Marker 1 [T1]    -44.63 dBm            * VSW 300 kHz    * SWT 100 ms    970.90000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 18:05:32</p>	<p>Ref 10 dBm    Att 30 dB    RBW 1 MHz    Marker 1 [T1]    -28.25 dBm            * VSW 3 MHz    * SWT 55 ms    3.142000000 GHz</p> <p>Start 1 GHz    900 MHz/    Stop 10 GHz</p> <p>Date: 30.AUG.2023 18:05:43</p>
Highest	<p>Ref 30 dBm    Att 25 dB    RBW 100 kHz    Marker 1 [T1]    -43.90 dBm            * VSW 300 kHz    * SWT 100 ms    804.05000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 18:05:59</p>	<p>Ref 10 dBm    Att 30 dB    RBW 1 MHz    Marker 1 [T1]    -28.44 dBm            * VSW 3 MHz    * SWT 55 ms    3.142000000 GHz</p> <p>Start 1 GHz    900 MHz/    Stop 10 GHz</p> <p>Date: 30.AUG.2023 18:06:11</p>



Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	<p>Date: 30.AUG.2023 14:58:27</p>	<p>Date: 30.AUG.2023 14:58:46</p>
QPSK 3MHz	<p>Date: 30.AUG.2023 16:35:36</p>	<p>Date: 30.AUG.2023 16:35:57</p>
QPSK 5MHz	<p>Date: 30.AUG.2023 16:53:46</p>	<p>Date: 30.AUG.2023 16:54:09</p>

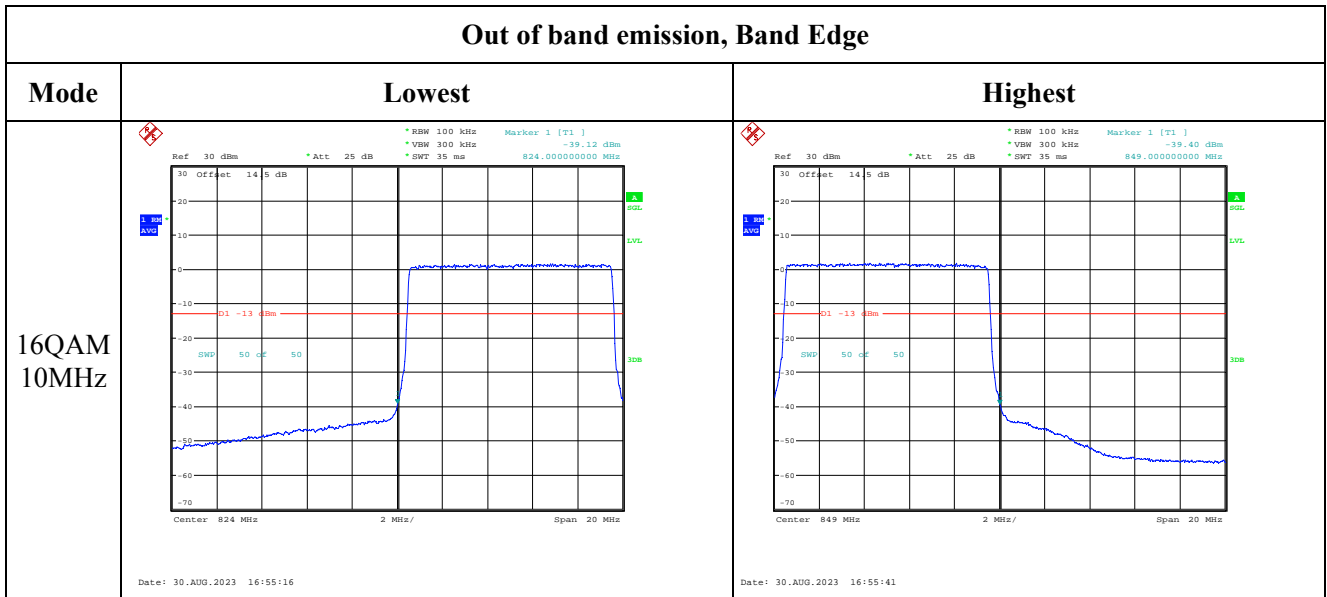
Out of band emission, Band Edge



Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	<p>Date: 30.AUG.2023 14:58:36</p>	<p>Date: 30.AUG.2023 14:58:56</p>
16QAM 3MHz	<p>Date: 30.AUG.2023 16:35:46</p>	<p>Date: 30.AUG.2023 16:36:07</p>
16QAM 5MHz	<p>Date: 30.AUG.2023 16:53:57</p>	<p>Date: 30.AUG.2023 16:54:19</p>

Out of band emission, Band Edge



**4.9 Antenna Port Test Data and Results for LTE Band 7**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Frequency For Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	2502.5	2535	2567.5
10MHz	2505	2535	2565
15MHz	2507.5	2535	2562.5
20MHz	2510	2535	2560

**Test Data:**

<b>FCC§2.1046;§ 27.50(h)(2)</b>						
<b>RF Output Power:</b>						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
5MHz QPSK	RB1#0	18.39	17.87	17.57	20.39	33
	RB1#13	18.42	17.92	17.73		
	RB1#24	18.32	17.8	17.65		
	RB15#0	17.45	16.98	16.77		
	RB15#10	17.38	16.87	16.67		
	RB25#0	17.39	16.89	16.69		
5MHz 16QAM	RB1#0	17.62	16.95	16.49	19.66	33
	RB1#13	17.69	17.01	16.6		
	RB1#24	17.58	16.87	16.53		
	RB15#0	16.52	16.09	15.9		
	RB15#10	16.48	16	15.79		
	RB25#0	16.48	15.99	15.8		
10MHz QPSK	RB1#0	18.29	17.42	18.08	20.37	33
	RB1#25	18.4	17.54	18.09		
	RB1#49	18.18	17.31	17.64		
	RB25#0	17.35	16.57	16.63		
	RB25#25	17.31	16.4	16.65		
	RB50#0	17.32	16.47	16.95		
10MHz 16QAM	RB1#0	17.3	16.99	16.79	19.35	33
	RB1#25	17.38	17.13	16.95		
	RB1#49	17.24	17	16.7		
	RB25#0	16.53	15.65	15.98		
	RB25#25	16.44	15.52	15.87		
	RB50#0	16.41	15.58	15.99		
15MHz QPSK	RB1#0	18.21	17.58	17.26	20.23	33
	RB1#38	18.26	17.62	17.01		
	RB1#74	18.02	17.37	16.99		
	RB36#0	17.37	16.79	16.1		
	RB36#39	17.28	16.75	15.96		
	RB75#0	17.32	16.76	16.12		
15MHz 16QAM	RB1#0	17.51	17.3	16.09	19.57	33
	RB1#38	17.6	17.24	16.11		
	RB1#74	17.09	17.04	16.12		
	RB36#0	16.27	15.99	15.26		
	RB36#39	15.99	15.84	15.11		
	RB75#0	16.13	15.96	15.41		
20MHz QPSK	RB1#0	18	17.65	16.73	20.32	33
	RB1#50	18.35	17.81	17.11		

	RB1#99	17.76	17.3	16.7		
	RB50#0	17.33	16.77	15.8		
	RB50#50	17.31	16.48	15.76		
	RB100#0	17.36	16.71	15.81		
20MHz 16QAM	RB1#0	17.58	16.8	15.92	19.66	33
	RB1#50	17.69	17.15	16.28		
	RB1#99	17.08	16.62	15.89		
	RB50#0	16.27	15.8	14.91		
	RB50#50	15.88	15.75	14.83		
	RB100#0	15.94	15.83	14.86		

Note: EIRP=Conducted Power(dBm) - Lc(dB) + Gr(dBi)

**Result: Pass**

**Peak-to-average Ratio(PAR)**

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit(dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	9.49	10.38	9.04	13
	RB100#0	6.47	6.51	6.47	13
20MHz 16QAM	RB1#0	10.29	10.22	9.78	13
	RB100#0	7.24	7.31	7.18	13

**Result: Pass**

**FCC §2.1049, §27.53:Occupied Bandwidth**

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
5MHz QPSK	4.52	4.5	4.5	4.96	4.88	4.96
5MHz 16QAM	4.52	4.52	4.52	4.92	4.96	4.94
10MHz QPSK	8.96	8.96	8.96	9.6	9.6	9.56
10MHz 16QAM	8.96	8.96	8.96	9.56	9.56	9.52
15MHz QPSK	13.5	13.5	13.44	14.7	14.76	14.7
15MHz 16QAM	13.5	13.5	13.5	14.7	14.76	14.76
20MHz QPSK	18	17.92	17.92	19.52	19.2	19.2
20MHz 16QAM	18	17.92	17.92	19.2	19.12	19.36

Note: The test plots please refer to the Plots of Occupied Bandwidth

**FCC §2.1051, § 27.53:Spurious Emissions at Antenna Terminal**

**Result: Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

**FCC §2.1051, § 27.53:Out of band emission, Band Edge**

**Result: Pass, Please refer to the test plots of Out of band emission, Band Edge.**

**FCC §2.1055, §27.54: Frequency Stability**

Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	2501.023	2500.00	2568.981	2570
	-20	12	2501.032	2500.00	2568.985	2570
	-10	12	2501.013	2500.00	2568.961	2570
	0	12	2501.018	2500.00	2568.961	2570
	10	12	2501.033	2500.00	2568.970	2570
	20	12	2501.040	2500.00	2568.960	2570
	30	12	2501.021	2500.00	2568.988	2570
	40	12	2501.039	2500.00	2568.963	2570
	50	12	2501.039	2500.00	2568.974	2570
Frequency Stability vs. Voltage	20	6	2501.026	2500.00	2568.960	2570
	20	36	2501.032	2500.00	2568.982	2570
					<b>Result:</b>	<b>Pass</b>

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	2501.026	2500.00	2568.968	2570
	-20	12	2501.023	2500.00	2568.976	2570
	-10	12	2501.031	2500.00	2568.973	2570
	0	12	2501.011	2500.00	2568.977	2570
	10	12	2501.034	2500.00	2568.984	2570
	20	12	2501.040	2500.00	2568.960	2570
	30	12	2501.016	2500.00	2568.978	2570
	40	12	2501.034	2500.00	2568.989	2570
	50	12	2501.036	2500.00	2568.980	2570
Frequency Stability vs. Voltage	20	6	2501.036	2500.00	2568.970	2570
	20	36	2501.021	2500.00	2568.964	2570
					<b>Result:</b>	<b>Pass</b>



**Test Plots**(Note: The 14.5dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer):

<b>Occupied Bandwidth</b>		
<b>Channel</b>	<b>5MHz Bandwidth QPSK</b>	<b>5MHz Bandwidth 16QAM</b>
<b>Lowest</b>	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] 1.23 dB          *VSW 300 kHz *SWT 5 ms 4.960000000 MHz          Marker 1 [T1] 15.24 dBm          1 2.500024000 GHz          2 2.500240000 GHz          3 2.504760000 GHz          Center: 2.5025 GHz 1 MHz/ Span 10 MHz          Date: 30.AUG.2023 00:07:56</p>	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] 0.59 dB          *VSW 300 kHz *SWT 5 ms 4.920000000 MHz          Marker 1 [T1] 14.24 dBm          1 2.500044000 GHz          2 2.500240000 GHz          3 2.504760000 GHz          Center: 2.5025 GHz 1 MHz/ Span 10 MHz          Date: 30.AUG.2023 00:08:16</p>
<b>Middle</b>	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] 0.50 dB          *VSW 300 kHz *SWT 5 ms 4.880000000 MHz          Marker 1 [T1] 16.3 dBm          1 2.532640000 GHz          2 2.532760000 GHz          3 2.537260000 GHz          Center: 2.535 GHz 1 MHz/ Span 10 MHz          Date: 30.AUG.2023 00:08:42</p>	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] -1.66 dB          *VSW 300 kHz *SWT 5 ms 4.920000000 MHz          Marker 1 [T1] 14.81 dBm          1 2.532640000 GHz          2 2.532740000 GHz          3 2.537260000 GHz          Center: 2.535 GHz 1 MHz/ Span 10 MHz          Date: 30.AUG.2023 00:09:05</p>
<b>Highest</b>	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] -1.23 dB          *VSW 300 kHz *SWT 5 ms 4.960000000 MHz          Marker 1 [T1] 16.3 dBm          1 2.565024000 GHz          2 2.565240000 GHz          3 2.569760000 GHz          Center: 2.5675 GHz 1 MHz/ Span 10 MHz          Date: 30.AUG.2023 00:09:33</p>	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] -1.41 dB          *VSW 300 kHz *SWT 5 ms 4.940000000 MHz          Marker 1 [T1] 14.81 dBm          1 2.565024000 GHz          2 2.565240000 GHz          3 2.569760000 GHz          Center: 2.5675 GHz 1 MHz/ Span 10 MHz          Date: 30.AUG.2023 00:09:56</p>

Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] 1.14 dB *VSW 1 MHz SWT 2.5 ms OBSW 19.520000000 MHz Marker 1 [T1] 1.68 dBm              D1 14.84 dBm Temp 1 [T1] OBSW 2.500240000 GHz              D2 -11.17 dBm Temp 2 [T1] OBSW 2.501040000 GHz              Temp 3 [T1] OBSW 2.519040000 GHz              Center 2.51 GHz 4 MHz/ Span 40 MHz              Date: 30.AUG.2023 00:16:13</p>	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] -1.93 dB *VSW 1 MHz SWT 2.5 ms OBSW 19.200000000 MHz Marker 1 [T1] -0.07 dBm              D1 15.24 dBm Temp 1 [T1] OBSW 2.500480000 GHz              D2 -10.77 dBm Temp 2 [T1] OBSW 2.501040000 GHz              Temp 3 [T1] OBSW 2.519040000 GHz              Center 2.51 GHz 4 MHz/ Span 40 MHz              Date: 30.AUG.2023 00:16:37</p>
Middle	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] 0.29 dB *VSW 1 MHz SWT 2.5 ms OBSW 19.200000000 MHz Marker 1 [T1] -1.44 dBm              D1 15.33 dBm Temp 1 [T1] OBSW 2.525400000 GHz              D2 -10.67 dBm Temp 2 [T1] OBSW 2.526040000 GHz              Temp 3 [T1] OBSW 2.543960000 GHz              Center 2.535 GHz 4 MHz/ Span 40 MHz              Date: 30.AUG.2023 00:17:01</p>	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] -1.43 dB *VSW 1 MHz SWT 2.5 ms OBSW 19.120000000 MHz Marker 1 [T1] -0.05 dBm              D1 15.24 dBm Temp 1 [T1] OBSW 2.525480000 GHz              D2 -10.77 dBm Temp 2 [T1] OBSW 2.526040000 GHz              Temp 3 [T1] OBSW 2.543960000 GHz              Center 2.535 GHz 4 MHz/ Span 40 MHz              Date: 30.AUG.2023 00:17:28</p>
Highest	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] -1.41 dB *VSW 1 MHz SWT 2.5 ms OBSW 19.200000000 MHz Marker 1 [T1] -0.42 dBm              D1 15.9 dBm Temp 1 [T1] OBSW 2.550480000 GHz              D2 -10.8 dBm Temp 2 [T1] OBSW 2.551040000 GHz              Temp 3 [T1] OBSW 2.568960000 GHz              Center 2.56 GHz 4 MHz/ Span 40 MHz              Date: 30.AUG.2023 00:17:56</p>	<p>Ref 30 dBm Offset 14.5 dB Att 25 dB *RBW 300 kHz Delta 1 [T1] 0.15 dB *VSW 1 MHz SWT 2.5 ms OBSW 19.360000000 MHz Marker 1 [T1] -1.17 dBm              D1 14.94 dBm Temp 1 [T1] OBSW 2.560320000 GHz              D2 -11.47 dBm Temp 2 [T1] OBSW 2.551040000 GHz              Temp 3 [T1] OBSW 2.568960000 GHz              Center 2.56 GHz 4 MHz/ Span 40 MHz              Date: 30.AUG.2023 00:18:20</p>

Spurious Emissions at Antenna Terminal

Channel	5MHz Bandwidth QPSK	
Lowest	<p>Ref 0 dBm *Att 30 dB *RBW 100 kHz Marker 1 [T1] -46.50 dBm            *VSW 300 kHz *SWT 100 ms 681.840000000 MHz</p> <p>Date: 30.AUG.2023 18:06:29</p>	<p>Ref 30 dBm *Att 25 dB *RBW 1 MHz Marker 1 [T1] -32.23 dBm            *VSW 3 MHz *SWT 150 ms 26.398000000 GHz</p> <p>Date: 30.AUG.2023 18:06:40</p>
Middle	<p>Ref 0 dBm *Att 30 dB *RBW 100 kHz Marker 1 [T1] -46.14 dBm            *VSW 300 kHz *SWT 100 ms 379.200000000 MHz</p> <p>Date: 30.AUG.2023 18:06:57</p>	<p>Ref 30 dBm *Att 25 dB *RBW 1 MHz Marker 1 [T1] -32.30 dBm            *VSW 3 MHz *SWT 150 ms 24.915000000 GHz</p> <p>Date: 30.AUG.2023 18:07:08</p>
Highest	<p>Ref 0 dBm *Att 30 dB *RBW 100 kHz Marker 1 [T1] -46.00 dBm            *VSW 300 kHz *SWT 100 ms 429.640000000 MHz</p> <p>Date: 30.AUG.2023 18:07:22</p>	<p>Ref 30 dBm *Att 25 dB *RBW 1 MHz Marker 1 [T1] -31.88 dBm            *VSW 3 MHz *SWT 150 ms 26.245000000 GHz</p> <p>Date: 30.AUG.2023 18:07:33</p>

Spurious Emissions at Antenna Terminal

Channel	10MHz Bandwidth QPSK	
Lowest	<p>Ref 0 dBm    Att 30 dB    RBW 100 kHz    Marker 1 [T1]    -45.10 dBm            VSW 300 kHz    SWT 100 ms    889.12000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 18:08:28</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -32.68 dBm            VSW 3 MHz    SWT 150 ms    26.29800000 GHz</p> <p>Start 1 GHz    2.55 GHz/    Stop 26.5 GHz</p> <p>Date: 30.AUG.2023 18:08:39</p>
Middle	<p>Ref 0 dBm    Att 30 dB    RBW 100 kHz    Marker 1 [T1]    -45.61 dBm            VSW 300 kHz    SWT 100 ms    980.60000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 18:08:53</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -31.61 dBm            VSW 3 MHz    SWT 150 ms    24.15400000 GHz</p> <p>Start 1 GHz    2.55 GHz/    Stop 26.5 GHz</p> <p>Date: 30.AUG.2023 18:09:04</p>
Highest	<p>Ref 0 dBm    Att 30 dB    RBW 100 kHz    Marker 1 [T1]    -45.10 dBm            VSW 300 kHz    SWT 100 ms    233.70000000 MHz</p> <p>Start 30 MHz    97 MHz/    Stop 1 GHz</p> <p>Date: 30.AUG.2023 18:09:18</p>	<p>Ref 30 dBm    Att 25 dB    RBW 1 MHz    Marker 1 [T1]    -32.03 dBm            VSW 3 MHz    SWT 150 ms    25.07200000 GHz</p> <p>Start 1 GHz    2.55 GHz/    Stop 26.5 GHz</p> <p>Date: 30.AUG.2023 18:09:29</p>

Spurious Emissions at Antenna Terminal

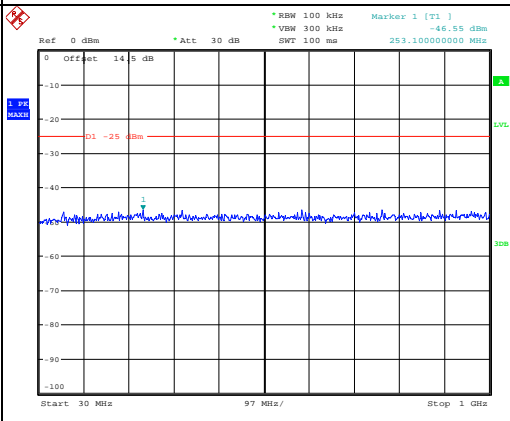
Channel	15MHz Bandwidth QPSK	
Lowest	<p>Ref 0 dBm *Att 30 dB *RBW 100 kHz Marker 1 [T1] -45.81 dBm *VSW 300 kHz *SWT 100 ms 596.48000000 MHz</p> <p>0 Offset 14.5 dB -20 -30 -40 -50 -60 -70 -80 -90 -100</p> <p>Start 30 MHz 97 MHz/ Stop 1 GHz</p> <p>Date: 30.AUG.2023 18:10:27</p>	<p>Ref 30 dBm *Att 25 dB *RBW 1 MHz Marker 1 [T1] -31.79 dBm *VSW 3 MHz *SWT 150 ms 26.295000000 GHz</p> <p>30 Offset 14.5 dB -20 -30 -40 -50 -60 -70</p> <p>Start 1 GHz 2.55 GHz/ Stop 26.5 GHz</p> <p>Date: 30.AUG.2023 18:10:38</p>
Middle	<p>Ref 0 dBm *Att 30 dB *RBW 100 kHz Marker 1 [T1] -45.34 dBm *VSW 300 kHz *SWT 100 ms 891.360000000 MHz</p> <p>0 Offset 14.5 dB -20 -30 -40 -50 -60 -70 -80 -90 -100</p> <p>Start 30 MHz 97 MHz/ Stop 1 GHz</p> <p>Date: 30.AUG.2023 18:10:55</p>	<p>Ref 30 dBm *Att 25 dB *RBW 1 MHz Marker 1 [T1] -32.49 dBm *VSW 3 MHz *SWT 150 ms 26.290000000 GHz</p> <p>30 Offset 14.5 dB -20 -30 -40 -50 -60 -70</p> <p>Start 1 GHz 2.55 GHz/ Stop 26.5 GHz</p> <p>Date: 30.AUG.2023 18:11:06</p>
Highest	<p>Ref 0 dBm *Att 30 dB *RBW 100 kHz Marker 1 [T1] -44.86 dBm *VSW 300 kHz *SWT 100 ms 891.360000000 MHz</p> <p>0 Offset 14.5 dB -20 -30 -40 -50 -60 -70 -80 -90 -100</p> <p>Start 30 MHz 97 MHz/ Stop 1 GHz</p> <p>Date: 30.AUG.2023 18:11:23</p>	<p>Ref 30 dBm *Att 25 dB *RBW 1 MHz Marker 1 [T1] -32.62 dBm *VSW 3 MHz *SWT 150 ms 25.072000000 GHz</p> <p>30 Offset 14.5 dB -20 -30 -40 -50 -60 -70</p> <p>Start 1 GHz 2.55 GHz/ Stop 26.5 GHz</p> <p>Date: 30.AUG.2023 18:11:34</p>

### Spurious Emissions at Antenna Terminal

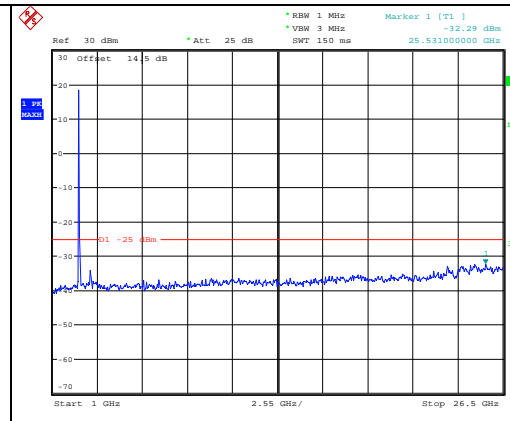
Channel

20MHz Bandwidth QPSK

Lowest

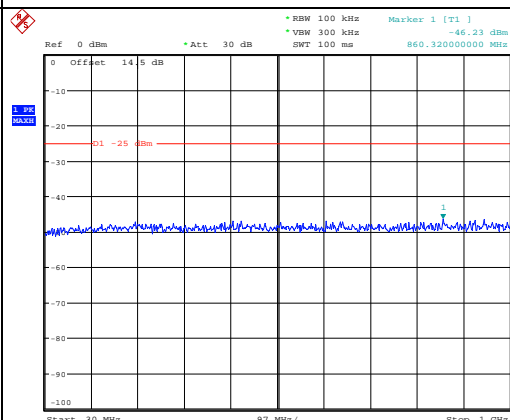


Date: 30.AUG.2023 18:12:29

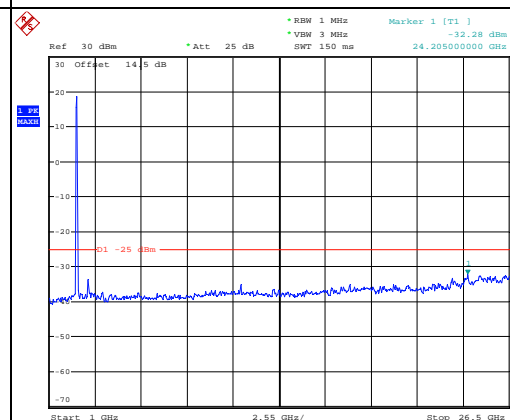


Date: 30.AUG.2023 18:12:40

Middle

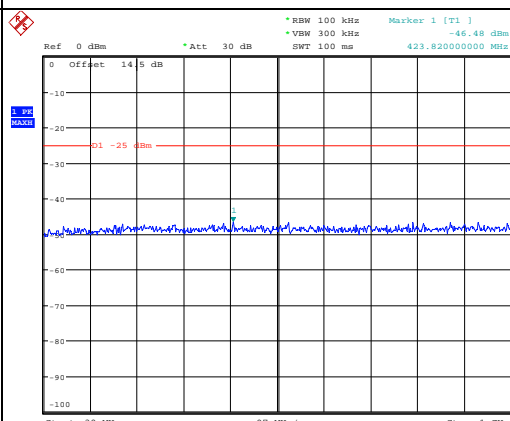


Date: 30.AUG.2023 18:12:54

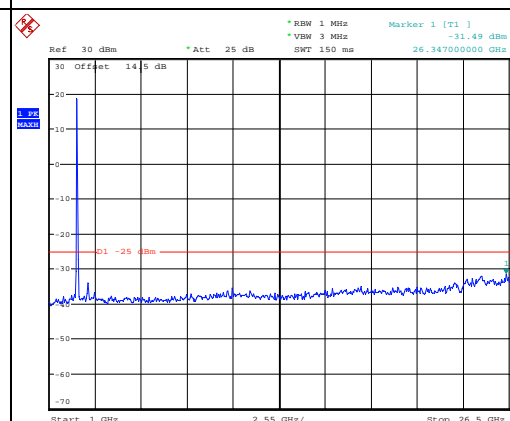


Date: 30.AUG.2023 18:13:05

Highest



Date: 30.AUG.2023 18:13:21



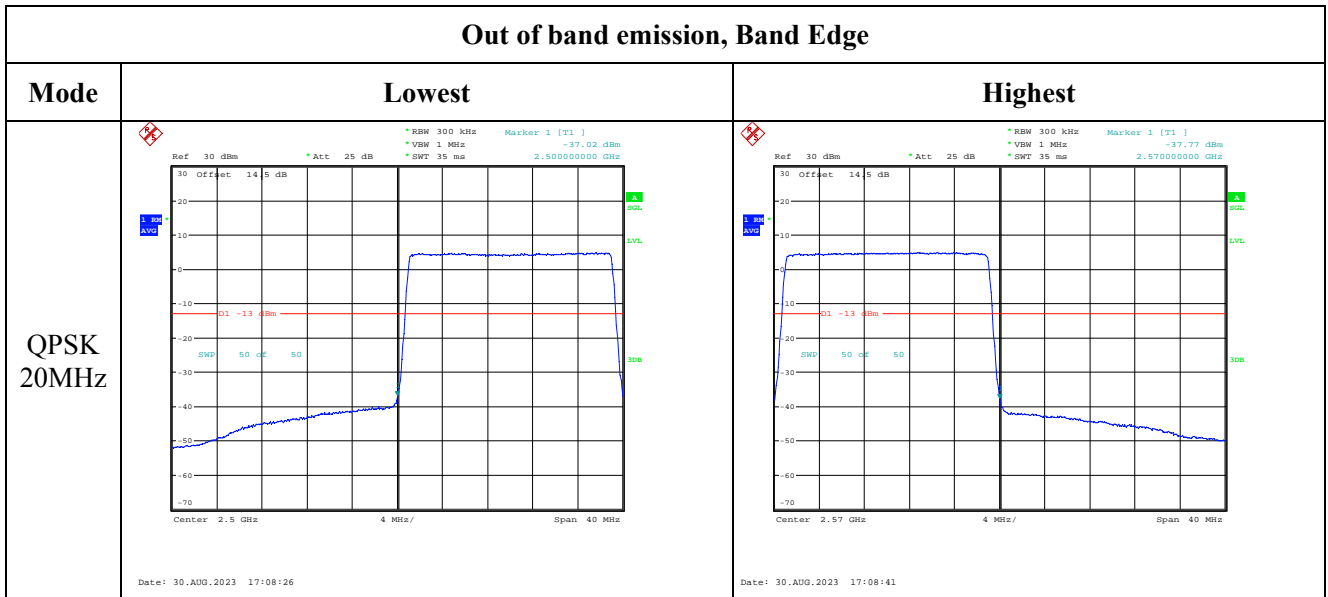
Date: 30.AUG.2023 18:13:33



Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 5MHz	<p>Date: 30.AUG.2023 16:55:56</p>	<p>Date: 30.AUG.2023 16:56:18</p>
QPSK 10MHz	<p>Date: 30.AUG.2023 16:57:21</p>	<p>Date: 30.AUG.2023 16:57:44</p>
QPSK 15MHz	<p>Date: 30.AUG.2023 17:07:14</p>	<p>Date: 30.AUG.2023 17:07:30</p>

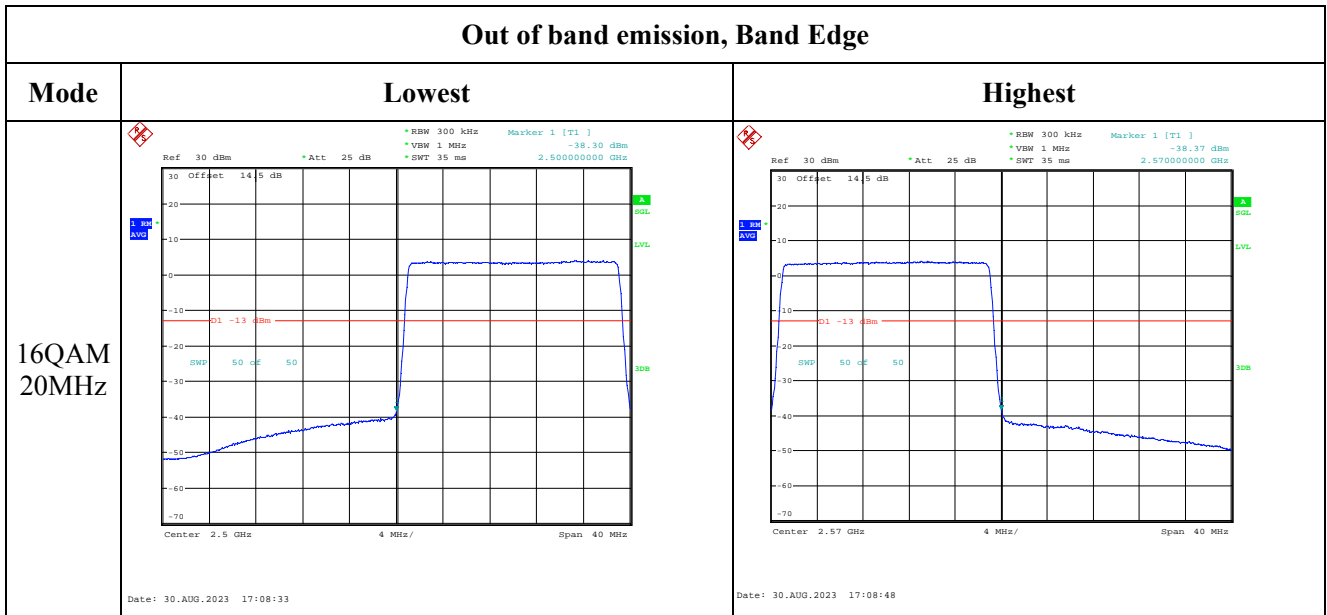
Out of band emission, Band Edge



Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 5MHz	<p>Date: 30.AUG.2023 16:56:07</p>	<p>Date: 30.AUG.2023 16:56:28</p>
16QAM 10MHz	<p>Date: 30.AUG.2023 16:57:31</p>	<p>Date: 30.AUG.2023 16:57:55</p>
16QAM 15MHz	<p>Date: 30.AUG.2023 17:07:22</p>	<p>Date: 30.AUG.2023 17:07:37</p>

Out of band emission, Band Edge



**4.10 Antenna Port Test Data and Results for LTE Band 12**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Frequency for Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	699.7	707.5	715.3
3MHz	700.5	707.5	714.5
5MHz	701.5	707.5	713.5
10MHz	704	707.5	711

**Test Data:**

<b>FCC§2.1046;§ 27.50(c) (10)</b>						
<b>RF Output Power:</b>						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	25.09	25.01	24.9	28.26	34.77
	RB1#3	25.26	25.2	25.1		
	RB1#5	25.08	24.99	24.95		
	RB3#0	25.19	25.13	25.05		
	RB3#3	25.16	25.12	25.04		
	RB6#0	24.16	24.13	24.07		
1.4MHz 16QAM	RB1#0	24.2	24.05	24.04	27.36	34.77
	RB1#3	24.36	24.23	24.28		
	RB1#5	24.15	24.06	24.06		
	RB3#0	24.21	24.34	23.98		
	RB3#3	24.16	24.3	24		
	RB6#0	23.14	23.12	23.09		
3MHz QPSK	RB1#0	25.18	25.06	25.03	28.18	34.77
	RB1#8	25.1	25.05	24.97		
	RB1#14	25.13	25.01	25		
	RB6#0	24.09	24.11	23.99		
	RB6#9	24.14	24.06	24.02		
	RB15#0	24.17	24.13	24.07		
3MHz 16QAM	RB1#0	24.27	24.71	24.24	27.71	34.77
	RB1#8	24.14	24.66	24.15		
	RB1#14	24.16	24.63	24.11		
	RB6#0	23.06	23.14	23.04		
	RB6#9	23.04	23.08	23.04		
	RB15#0	23.24	23.18	23.03		
5MHz QPSK	RB1#0	25.11	25.04	25.01	28.18	34.77
	RB1#13	25.18	25.1	25.09		
	RB1#24	25.08	25.01	24.93		
	RB15#0	24.18	24.18	24.11		
	RB15#10	24.29	24.08	24.06		
	RB25#0	24.2	24.12	24.08		
5MHz 16QAM	RB1#0	24.23	23.94	24.34	27.35	34.77
	RB1#13	24.33	24.02	24.35		
	RB1#24	24.16	23.97	24.2		
	RB15#0	23.18	23.23	23.07		
	RB15#10	23.31	23.13	23.07		
	RB25#0	23.27	23.18	23.07		
10MHz QPSK	RB1#0	25.15	25.04	25.02	28.32	34.77
	RB1#25	25.32	25.26	25.19		

	RB1#49	25.06	25.01	24.95		
	RB25#0	24.15	24.2	24.41		
	RB25#25	24.2	24.01	24.18		
	RB50#0	24.17	24.1	24.27		
10MHz 16QAM	RB1#0	24.2	24.75	24.24	27.8	34.77
	RB1#25	24.34	24.8	24.41		
	RB1#49	24.13	24.61	24.12		
	RB25#0	23.24	23.26	23.37		
	RB25#25	23.3	23.07	23.19		
	RB50#0	23.23	23.09	23.28		

Note:

ERP= Conducted Power(dBm) - Lc(dB) + Gr(dBd)

Gr(dBd)=Gr(dBi)-2.15

<b>Result:</b>	<b>Pass</b>
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**Peak-to-average Ratio(PAR)**

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit(dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	4.74	3.94	3.81	13
	RB50#0	5.35	5.29	5.58	13
10MHz 16QAM	RB1#0	5.51	4.81	4.84	13
	RB50#0	6.19	6.22	6.38	13
<b>Result:</b>					<b>Pass</b>

**FCC §2.1049, §27.53:Occupied Bandwidth**

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.098	1.098	1.104	1.308	1.452	1.308
1.4MHz 16QAM	1.092	1.11	1.098	1.29	1.374	1.284
3MHz QPSK	2.7	2.687	2.687	2.892	2.88	2.868
3MHz 16QAM	2.687	2.676	2.687	2.856	2.868	2.88
5MHz QPSK	4.52	4.54	4.54	5.16	5.1	5.18
5MHz 16QAM	4.54	4.52	4.54	5.14	5.14	5.18
10MHz QPSK	8.96	9	9	9.72	9.92	9.88
10MHz 16QAM	8.96	8.96	9	9.6	9.76	9.72

Note: The test plots please refer to the Plots of Occupied Bandwidth

**FCC §2.1051, §27.53:Spurious Emissions at Antenna Terminal**

<b>Result:</b>	<b>Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.</b>
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<b>FCC §2.1051, §27.53: Out of band emission, Band Edge</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>

<b>FCC §2.1055, §27.54: Frequency Stability</b>						
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	699.516	699.00	715.492	716.00
	-20	12	699.504	699.00	715.507	716.00
	-10	12	699.491	699.00	715.481	716.00
	0	12	699.504	699.00	715.482	716.00
	10	12	699.517	699.00	715.488	716.00
	20	12	699.520	699.00	715.480	716.00
	30	12	699.500	699.00	715.502	716.00
	40	12	699.520	699.00	715.500	716.00
Frequency Stability vs. Voltage	20	6	699.516	699.00	715.501	716.00
	20	36	699.504	699.00	715.490	716.00
					<b>Result:</b>	<b>Pass</b>

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	699.510	699.00	715.480	716.00
	-20	12	699.513	699.00	715.483	716.00
	-10	12	699.496	699.00	715.508	716.00
	0	12	699.495	699.00	715.508	716.00
	10	12	699.499	699.00	715.491	716.00
	20	12	699.520	699.00	715.480	716.00
	30	12	699.517	699.00	715.500	716.00
	40	12	699.517	699.00	715.502	716.00
Frequency Stability vs. Voltage	20	6	699.515	699.00	715.491	716.00
	20	36	699.500	699.00	715.484	716.00
					<b>Result:</b>	<b>Pass</b>



**Test Plots**(Note: The 14.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

<b>Occupied Bandwidth</b>		
<b>Channel</b>	<b>1.4MHz Bandwidth QPSK</b>	<b>1.4MHz Bandwidth 16QAM</b>
Lowest	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 0.79 dB                      *VBW 100 kHz *OSW 1.308000000 MHz                      Marker 1 [T1] 1.104000000 MHz -10.55 dBm                      Temp 1 [T1 OSW] 1.104000000 MHz                      Temp 2 [T1 OSW] 700.252000000 MHz                      Center 699.7 MHz 300 kHz/ Span 3 MHz                      Date: 30.AUG.2023 00:19:07                 </p>	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 2.11 dB                      *VBW 100 kHz *OSW 1.290000000 MHz                      Marker 1 [T1] 1.092000000 MHz -10.78 dBm                      Temp 1 [T1 OSW] 1.092000000 MHz                      Temp 2 [T1 OSW] 700.246000000 MHz                      Center 699.7 MHz 300 kHz/ Span 3 MHz                      Date: 30.AUG.2023 00:19:31                 </p>
Middle	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] -1.15 dB                      *VBW 100 kHz *OSW 1.452000000 MHz                      Marker 1 [T1] 1.098000000 MHz -10.68 dBm                      Temp 1 [T1 OSW] 1.098000000 MHz                      Temp 2 [T1 OSW] 708.048000000 MHz                      Center 707.5 MHz 300 kHz/ Span 3 MHz                      Date: 30.AUG.2023 00:19:59                 </p>	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] -1.29 dB                      *VBW 100 kHz *OSW 1.374000000 MHz                      Marker 1 [T1] 1.100000000 MHz -10.65 dBm                      Temp 1 [T1 OSW] 1.100000000 MHz                      Temp 2 [T1 OSW] 708.052000000 MHz                      Center 707.5 MHz 300 kHz/ Span 3 MHz                      Date: 30.AUG.2023 00:20:26                 </p>
Highest	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] 0.72 dB                      *VBW 100 kHz *OSW 1.308000000 MHz                      Marker 1 [T1] 1.104000000 MHz -10.20 dBm                      Temp 1 [T1 OSW] 1.104000000 MHz                      Temp 2 [T1 OSW] 715.852000000 MHz                      Center 715.3 MHz 300 kHz/ Span 3 MHz                      Date: 30.AUG.2023 00:20:46                 </p>	<p style="font-size: small;">                     Ref 30 dBm *Att 25 dB *RBW 30 kHz Delta 1 [T1] -0.07 dB                      *VBW 100 kHz *OSW 1.284000000 MHz                      Marker 1 [T1] 1.098000000 MHz -10.22 dBm                      Temp 1 [T1 OSW] 1.098000000 MHz                      Temp 2 [T1 OSW] 715.846000000 MHz                      Center 715.3 MHz 300 kHz/ Span 3 MHz                      Date: 30.AUG.2023 00:21:07                 </p>

Occupied Bandwidth

Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] 0.89 dB *VSW 300 kHz *VMW 300 kHz SWT 5 ms 5.160000000 MHz</p> <p>30 Offset 14.5 dB D1 16.92 dBm D2 10.00 dBm</p> <p>OSW 4.520000000 MHz Marker 1 [T1] Temp 1 [T1 OSW] -10.74 dBm Temp 2 [T1 OSW] -10.74 dBm</p> <p>Center 701.5 MHz 1 MHz/ Span 10 MHz</p> <p>Date: 30.AUG.2023 00:24:44</p>	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] -0.24 dB *VSW 300 kHz *VMW 300 kHz SWT 5 ms 5.140000000 MHz</p> <p>30 Offset 14.5 dB D1 15.79 dBm D2 10.00 dBm</p> <p>OSW 4.540000000 MHz Marker 1 [T1] Temp 1 [T1 OSW] -10.10 dBm Temp 2 [T1 OSW] -10.10 dBm</p> <p>Center 701.5 MHz 1 MHz/ Span 10 MHz</p> <p>Date: 30.AUG.2023 00:25:11</p>
Middle	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] 1.98 dB *VSW 300 kHz *VMW 300 kHz SWT 5 ms 5.100000000 MHz</p> <p>30 Offset 14.5 dB D1 16.44 dBm D2 10.00 dBm</p> <p>OSW 4.540000000 MHz Marker 1 [T1] Temp 1 [T1 OSW] -10.12 dBm Temp 2 [T1 OSW] -10.12 dBm</p> <p>Center 707.5 MHz 1 MHz/ Span 10 MHz</p> <p>Date: 30.AUG.2023 00:25:32</p>	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] -0.92 dB *VSW 300 kHz *VMW 300 kHz SWT 5 ms 5.140000000 MHz</p> <p>30 Offset 14.5 dB D1 15.21 dBm D2 10.00 dBm</p> <p>OSW 4.520000000 MHz Marker 1 [T1] Temp 1 [T1 OSW] -10.88 dBm Temp 2 [T1 OSW] -10.88 dBm</p> <p>Center 707.5 MHz 1 MHz/ Span 10 MHz</p> <p>Date: 30.AUG.2023 00:25:53</p>
Highest	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] 0.09 dB *VSW 300 kHz *VMW 300 kHz SWT 5 ms 5.180000000 MHz</p> <p>30 Offset 14.5 dB D1 16 dBm D2 10.00 dBm</p> <p>OSW 4.540000000 MHz Marker 1 [T1] Temp 1 [T1 OSW] -10.82 dBm Temp 2 [T1 OSW] -10.82 dBm</p> <p>Center 713.5 MHz 1 MHz/ Span 10 MHz</p> <p>Date: 30.AUG.2023 00:26:17</p>	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz Delta 1 [T1] -0.46 dB *VSW 300 kHz *VMW 300 kHz SWT 5 ms 5.180000000 MHz</p> <p>30 Offset 14.5 dB D1 15.15 dBm D2 10.00 dBm</p> <p>OSW 4.540000000 MHz Marker 1 [T1] Temp 1 [T1 OSW] -10.78 dBm Temp 2 [T1 OSW] -10.78 dBm</p> <p>Center 713.5 MHz 1 MHz/ Span 10 MHz</p> <p>Date: 30.AUG.2023 00:26:41</p>

Occupied Bandwidth

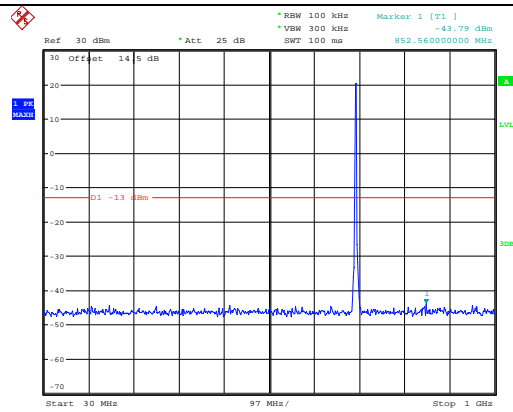
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

### Spurious Emissions at Antenna Terminal

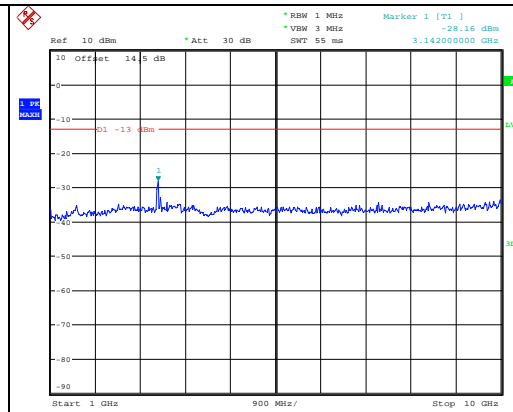
Channel

1.4MHz Bandwidth QPSK

Lowest

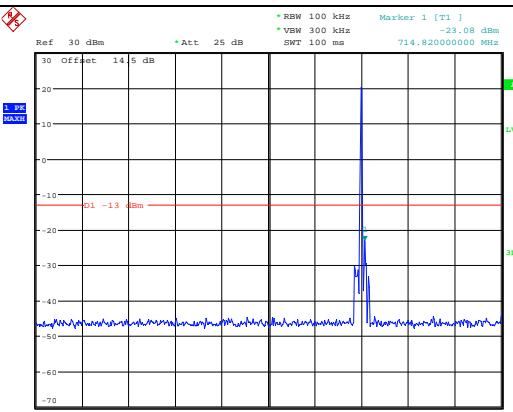


Date: 30.AUG.2023 18:14:32

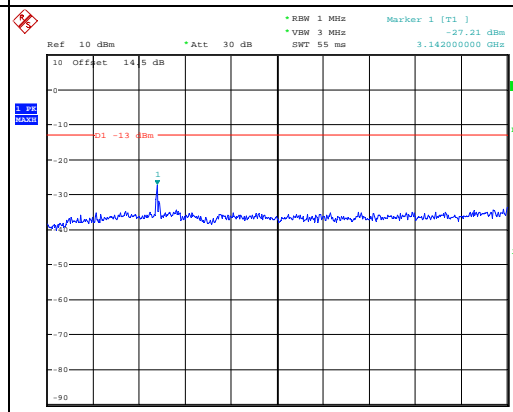


Date: 30.AUG.2023 18:14:43

Middle

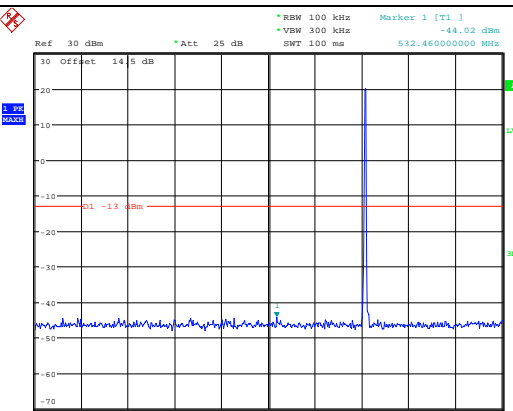


Date: 30.AUG.2023 18:14:59

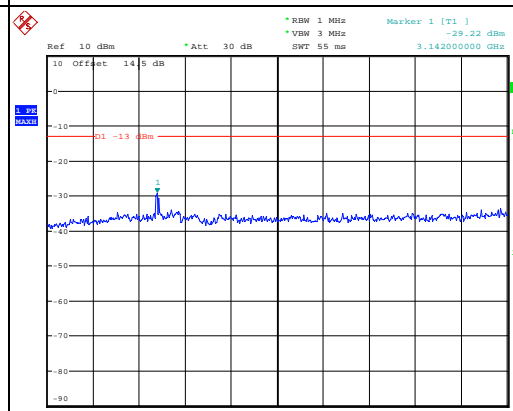


Date: 30.AUG.2023 18:15:11

Highest



Date: 30.AUG.2023 18:15:27



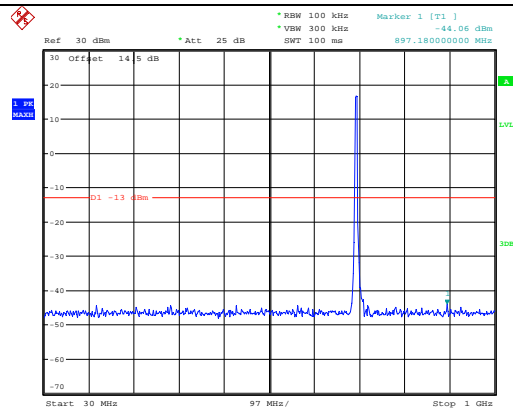
Date: 30.AUG.2023 18:15:38

Spurious Emissions at Antenna Terminal

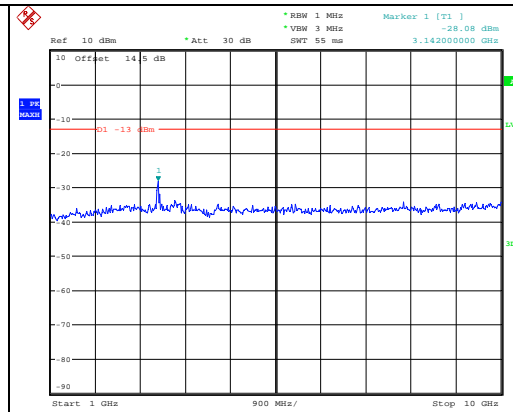
Channel

3MHz Bandwidth QPSK

Lowest

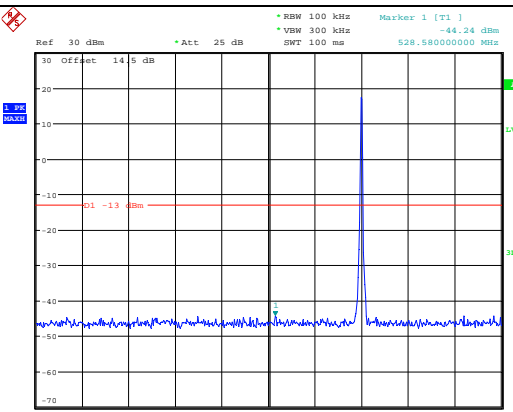


Date: 30.AUG.2023 18:16:33

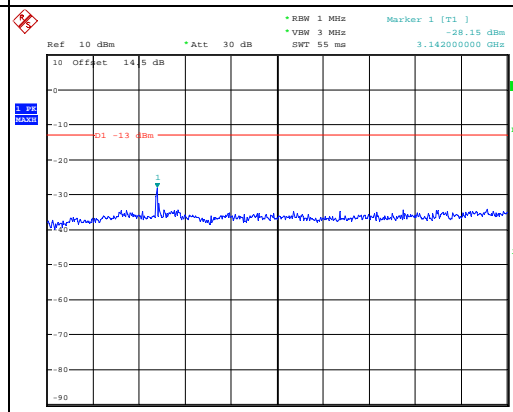


Date: 30.AUG.2023 18:16:44

Middle

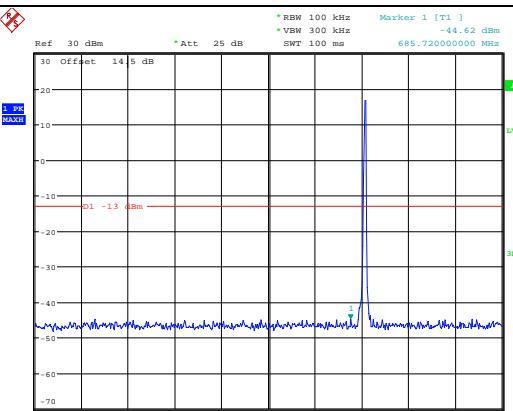


Date: 30.AUG.2023 18:17:01

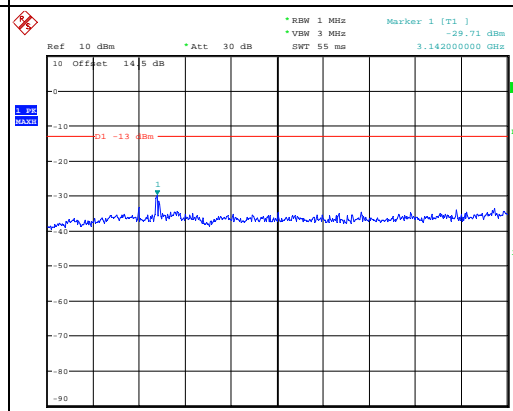


Date: 30.AUG.2023 18:17:13

Highest



Date: 30.AUG.2023 18:17:26



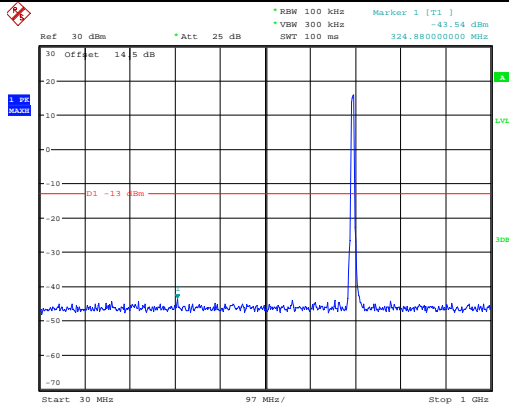
Date: 30.AUG.2023 18:17:37

Spurious Emissions at Antenna Terminal

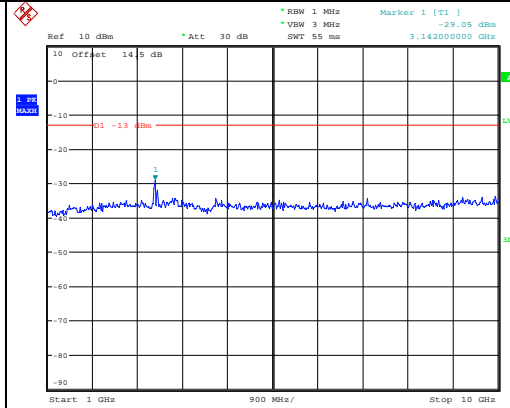
Channel

5MHz Bandwidth QPSK

Lowest

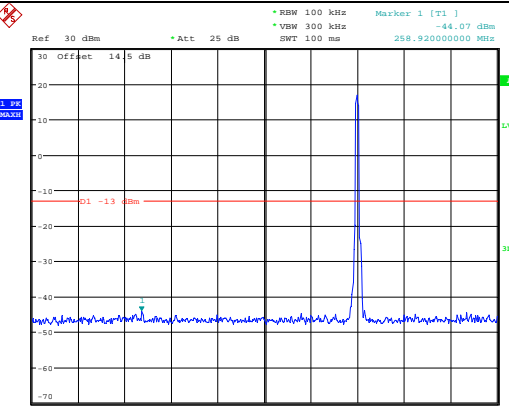


Date: 30.AUG.2023 18:18:36

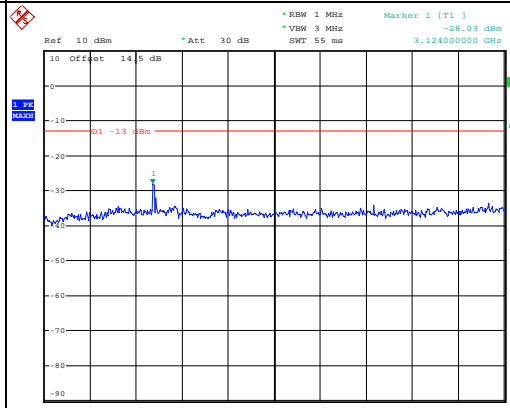


Date: 30.AUG.2023 18:18:47

Middle

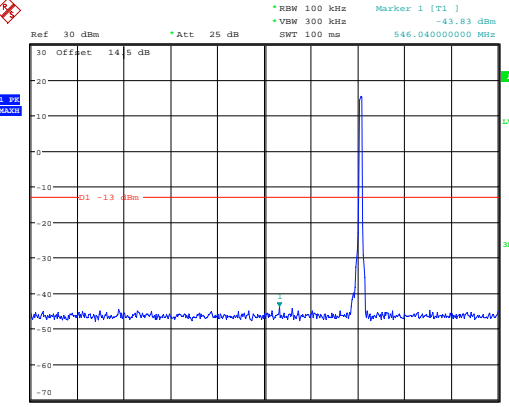


Date: 30.AUG.2023 18:19:01

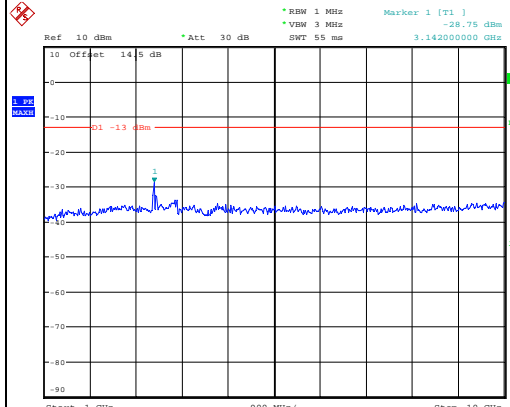


Date: 30.AUG.2023 18:19:12

Highest



Date: 30.AUG.2023 18:19:29



Date: 30.AUG.2023 18:19:40

Spurious Emissions at Antenna Terminal

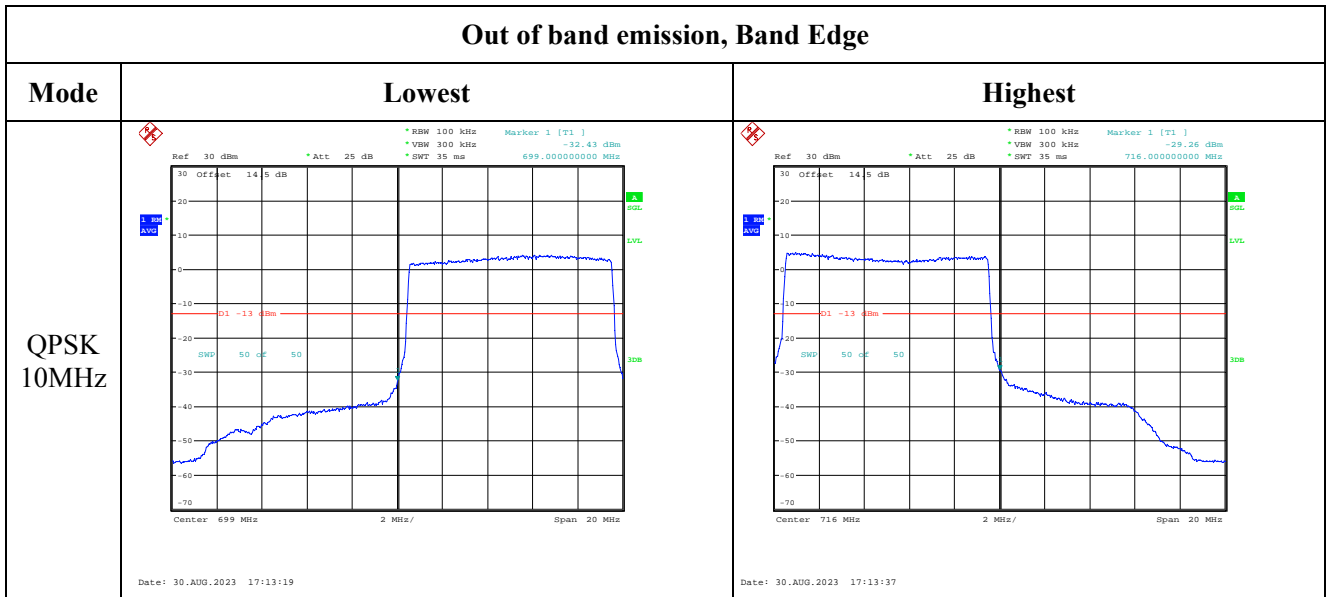
Channel	10MHz Bandwidth QPSK	
Lowest	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz *VSW 300 kHz *SWT 100 ms Marker 1 [T1] -43.44 dBm 253.10000000 MHz</p> <p>Date: 30.AUG.2023 18:20:36</p>	<p>Ref 10 dBm *Att 30 dB *RBW 1 MHz *VSW 3 MHz *SWT 55 ms Marker 1 [T1] -28.36 dBm 3.142000000 GHz</p> <p>Date: 30.AUG.2023 18:20:47</p>
Middle	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz *VSW 300 kHz *SWT 100 ms Marker 1 [T1] -44.59 dBm 414.12000000 MHz</p> <p>Date: 30.AUG.2023 18:21:00</p>	<p>Ref 10 dBm *Att 30 dB *RBW 1 MHz *VSW 3 MHz *SWT 55 ms Marker 1 [T1] -29.06 dBm 3.142000000 GHz</p> <p>Date: 30.AUG.2023 18:21:11</p>
Highest	<p>Ref 30 dBm *Att 25 dB *RBW 100 kHz *VSW 300 kHz *SWT 100 ms Marker 1 [T1] -13.23 dBm 714.82000000 MHz</p> <p>Date: 30.AUG.2023 18:21:25</p>	<p>Ref 10 dBm *Att 30 dB *RBW 1 MHz *VSW 3 MHz *SWT 55 ms Marker 1 [T1] -28.52 dBm 3.142000000 GHz</p> <p>Date: 30.AUG.2023 18:21:36</p>



Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	<p>Date: 30.AUG.2023 17:09:38</p>	<p>Date: 30.AUG.2023 17:09:53</p>
QPSK 3MHz	<p>Date: 30.AUG.2023 17:10:50</p>	<p>Date: 30.AUG.2023 17:11:06</p>
QPSK 5MHz	<p>Date: 30.AUG.2023 17:12:04</p>	<p>Date: 30.AUG.2023 17:12:21</p>

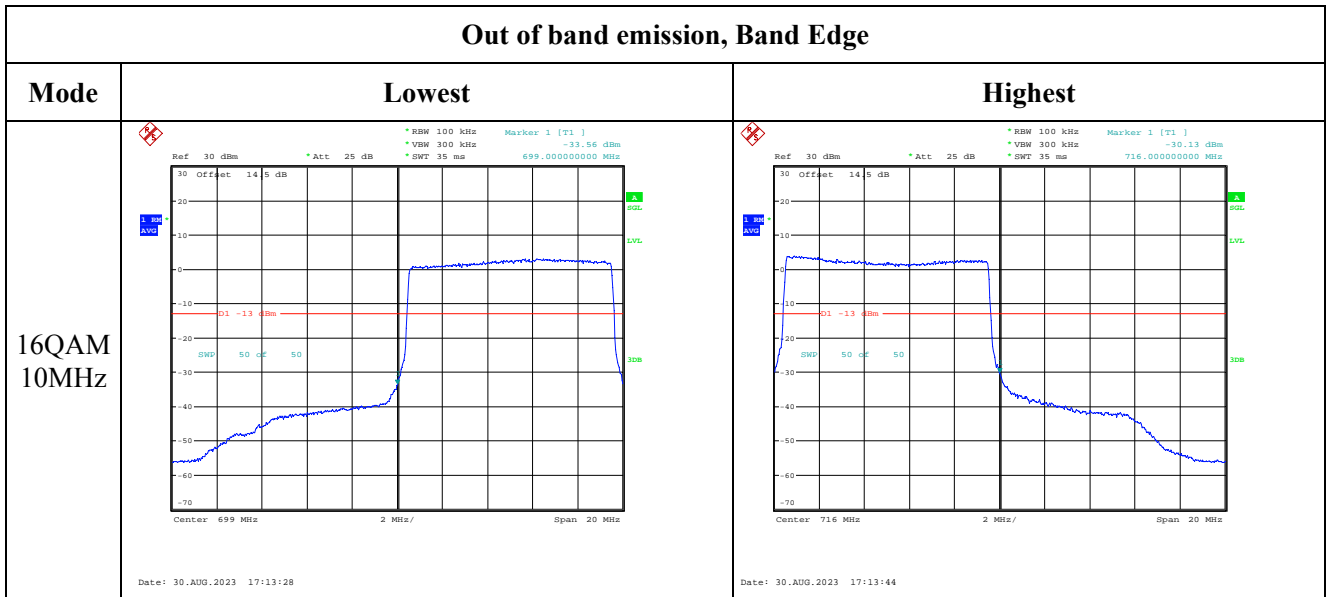
Out of band emission, Band Edge



Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	<p>Date: 30.AUG.2023 17:09:45</p>	<p>Date: 30.AUG.2023 17:10:00</p>
16QAM 3MHz	<p>Date: 30.AUG.2023 17:10:59</p>	<p>Date: 30.AUG.2023 17:11:13</p>
16QAM 5MHz	<p>Date: 30.AUG.2023 17:12:13</p>	<p>Date: 30.AUG.2023 17:12:28</p>

Out of band emission, Band Edge



**4.11 Antenna Port Test Data and Results for LTE Band 17**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Frequency for Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	706.5	710	713.5
10MHz	709	710	711

**Test Data:**

FCC§2.1046;§ 27.50(c) (10)						
RF Output Power:						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
5MHz QPSK	RB1#0	25.06	25.05	24.99	28.13	34.77
	RB1#13	25.13	25.11	25.02		
	RB1#24	25.05	24.98	24.88		
	RB15#0	24.2	24.31	24.11		
	RB15#10	24.17	24.09	24.09		
	RB25#0	24.12	24.14	24.06		
5MHz 16QAM	RB1#0	24.4	24.15	23.92	27.48	34.77
	RB1#13	24.48	24.19	23.95		
	RB1#24	24.38	24.05	23.78		
	RB15#0	23.15	23.31	23.15		
	RB15#10	23.13	23.12	23.14		
	RB25#0	23.1	23.21	23.13		
10MHz QPSK	RB1#0	25.12	25.09	25.09	28.23	34.77
	RB1#25	25.23	25.16	25.18		
	RB1#49	25.02	24.94	24.98		
	RB25#0	24.25	24.31	24.36		
	RB25#25	24.08	24.15	24.16		
	RB50#0	24.19	24.26	24.25		
10MHz 16QAM	RB1#0	24.2	24.73	24.28	27.78	34.77
	RB1#25	24.29	24.78	24.4		
	RB1#49	24.06	24.56	24.11		
	RB25#0	23.32	23.41	23.37		
	RB25#25	23.18	23.16	23.18		
	RB50#0	23.21	23.28	23.25		

Note:

ERP= Conducted Power(dBm) - Lc(dB) + Gr(dBd)

Gr(dBd)=Gr(dBi)-2.15

**Result:****Pass****Peak-to-average Ratio(PAR)**

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	3.75	3.72	3.85	13
	RB50#0	5.45	5.58	5.51	13
10MHz 16QAM	RB1#0	4.58	4.71	4.84	13
	RB50#0	6.25	6.35	6.41	13
<b>Result:</b>					<b>Pass</b>

<b>FCC §2.1049, §27.53:Occupied Bandwidth</b>						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
5MHz QPSK	4.52	4.54	4.54	5.12	5.1	5.08
5MHz 16QAM	4.52	4.54	4.52	5.16	5.22	5.14
10MHz QPSK	9	9	9	9.84	9.84	9.88
10MHz 16QAM	9	8.96	8.96	9.84	9.76	9.92

Note: The test plots please refer to the Plots of Occupied Bandwidth

<b>FCC §2.1051, §27.53:Spurious Emissions at Antenna Terminal</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.</b>

<b>FCC §2.1051, §27.53:Out of band emission, Band Edge</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>

<b>FCC §2.1055, §27.54: Frequency Stability</b>						
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	704.460	704.00	715.505	716.00
	-20	12	704.453	704.00	715.492	716.00
	-10	12	704.464	704.00	715.493	716.00
	0	12	704.472	704.00	715.485	716.00
	10	12	704.473	704.00	715.508	716.00
	20	12	704.480	704.00	715.480	716.00
	30	12	704.460	704.00	715.506	716.00
	40	12	704.476	704.00	715.485	716.00
Frequency Stability vs. Voltage	20	6	704.455	704.00	715.490	716.00
	20	36	704.470	704.00	715.480	716.00
					<b>Result:</b>	<b>Pass</b>

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	12	704.467	704.00	715.486	716.00
	-20	12	704.465	704.00	715.502	716.00
	-10	12	704.477	704.00	715.501	716.00
	0	12	704.457	704.00	715.497	716.00

	10	12	704.469	704.00	715.495	716.00
	20	12	704.480	704.00	715.480	716.00
	30	12	704.461	704.00	715.505	716.00
	40	12	704.456	704.00	715.508	716.00
	50	12	704.474	704.00	715.495	716.00
Frequency Stability vs. Voltage	20	6	704.454	704.00	715.504	716.00
	20	36	704.455	704.00	715.495	716.00
					<b>Result:</b>	<b>Pass</b>



**Test Plots**(Note: The 14.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

**Occupied Bandwidth**

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

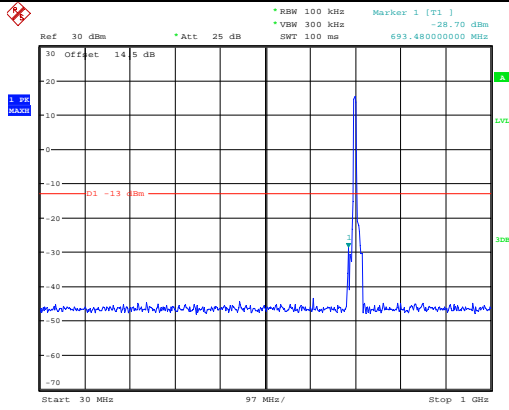
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal

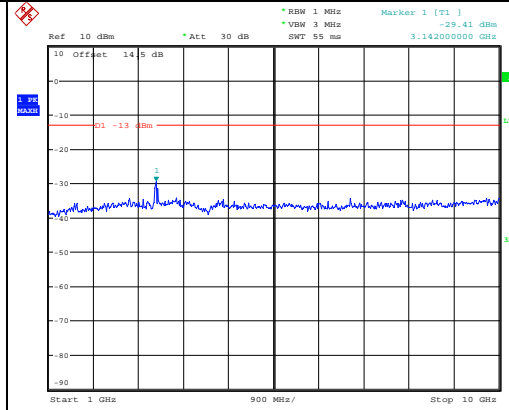
Channel

5MHz Bandwidth QPSK

Lowest

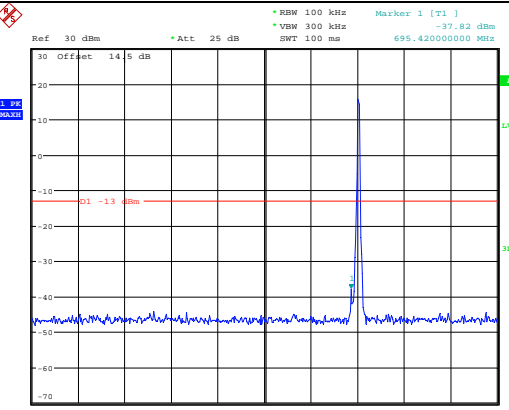


Date: 30.AUG.2023 18:21:55

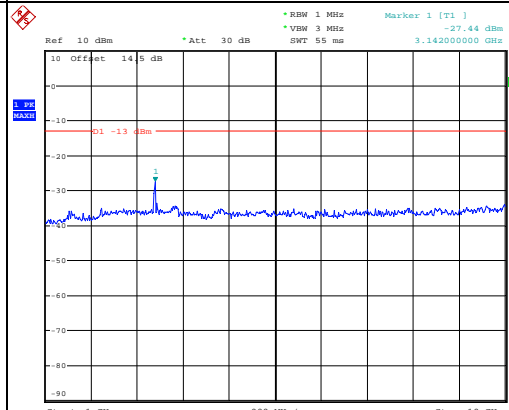


Date: 30.AUG.2023 18:22:06

Middle

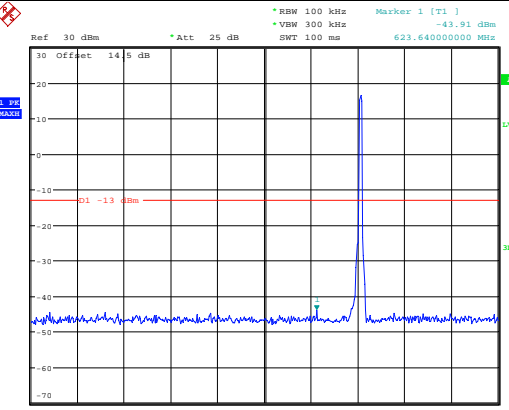


Date: 30.AUG.2023 18:22:19

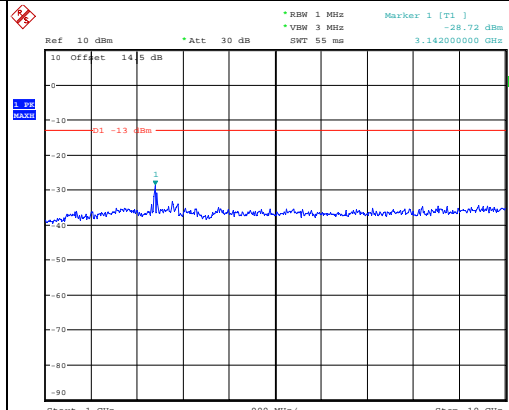


Date: 30.AUG.2023 18:22:31

Highest



Date: 30.AUG.2023 18:22:44



Date: 30.AUG.2023 18:22:55

Spurious Emissions at Antenna Terminal

Channel	10MHz Bandwidth QPSK	
Lowest	<p>Ref 30 dBm    Att 25 dB    RBW 100 kHz    Marker 1 [T1]    -44.21 dBm                      VSW 300 kHz    SWT 100 ms    559.28800000 MHz</p> <p>Date: 30.AUG.2023 18:23:50</p>	<p>Ref 10 dBm    Att 30 dB    RBW 1 MHz    Marker 1 [T1]    -29.16 dBm                      VSW 3 MHz    SWT 55 ms    3.142000000 GHz</p> <p>Date: 30.AUG.2023 18:24:01</p>
	Middle	<p>Ref 30 dBm    Att 25 dB    RBW 100 kHz    Marker 1 [T1]    -44.14 dBm                      VSW 300 kHz    SWT 100 ms    959.26000000 MHz</p> <p>Date: 30.AUG.2023 18:24:18</p>
Highest		<p>Ref 30 dBm    Att 25 dB    RBW 100 kHz    Marker 1 [T1]    -44.64 dBm                      VSW 300 kHz    SWT 100 ms    540.22000000 MHz</p> <p>Date: 30.AUG.2023 18:24:43</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 5MHz		
QPSK 10MHz		

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 5MHz	<p>Date: 30.AUG.2023 17:14:06</p>	<p>Date: 30.AUG.2023 17:14:22</p>
16QAM 10MHz	<p>Date: 30.AUG.2023 17:15:22</p>	<p>Date: 30.AUG.2023 17:15:38</p>

**4.12 Antenna Port Test Data and Results for LTE Band 25**

Serial Number:	28LK-1	Test Date:	2023/8/29-2023/8/31
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.5-26.3	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	99.7-100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Unknown	Coaxial tee connector	Unknown	2204005	Each time	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Frequency for Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	1850.7	1882.5	1914.3
3MHz	1851.5	1882.5	1913.5
5MHz	1852.5	1882.5	1912.5
10MHz	1855	1882.5	1910
15MHz	1857.5	1882.5	1907.5
20MHz	1860	1882.5	1905

**Test Data:**

FCC§2.1046;§ 24.232						
RF Output Power:						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	20.88	21.03	20.51	23.91	33
	RB1#3	21.05	21.24	20.63		
	RB1#5	20.94	21.02	20.47		
	RB3#0	20.94	21.19	20.61		
	RB3#3	20.97	21.17	20.58		
	RB6#0	19.98	20.11	19.58		
1.4MHz 16QAM	RB1#0	20.02	20.08	19.49	22.93	33
	RB1#3	20.16	20.26	19.68		
	RB1#5	19.98	20.04	19.47		
	RB3#0	19.95	20.26	19.73		
	RB3#3	19.95	20.24	19.77		
	RB6#0	18.97	19.07	18.57		
3MHz QPSK	RB1#0	21.45	20.96	20.68	24.12	33
	RB1#8	21.42	21.01	20.66		
	RB1#14	21.41	20.91	20.64		
	RB6#0	20.37	19.95	19.65		
	RB6#9	20.39	19.94	19.62		
	RB15#0	20.45	20.01	19.65		
3MHz 16QAM	RB1#0	20.52	20.64	19.81	23.31	33
	RB1#8	20.45	20.56	19.84		
	RB1#14	20.37	20.51	19.76		
	RB6#0	19.33	19.07	18.65		
	RB6#9	19.34	18.99	18.66		
	RB15#0	19.49	19.07	18.61		
5MHz QPSK	RB1#0	21.42	21.09	20.4	24.1	33
	RB1#13	21.43	21.11	20.53		
	RB1#24	21.35	20.98	20.37		
	RB15#0	20.42	20.16	19.49		
	RB15#10	20.49	20.08	19.48		
	RB25#0	20.42	20.1	19.45		
5MHz 16QAM	RB1#0	20.46	19.96	19.77	23.19	33
	RB1#13	20.52	20.03	19.82		
	RB1#24	20.35	19.89	19.67		
	RB15#0	19.46	19.2	18.45		
	RB15#10	19.52	19.11	18.46		
	RB25#0	19.49	19.15	18.48		
10MHz QPSK	RB1#0	21.48	21.09	20.74	24.15	33
	RB1#25	21.46	21.17	20.91		
	RB1#49	21.44	20.96	20.7		