



中认信通

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



TEST REPORT

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FCC ID: 2AQ8S-KW2

IC: 24395-KW2

HVIN: KW2

Product Name: Smart Watch

Standard(s): 47 CFR Part 2, 47 CFR Part 22, Subpart H

47 CFR Part 24, Subpart E

47 CFR Part 27

RSS-132 Issue 4, January 31,2023

RSS-133 Issue 6, January 2018, Amendment

RSS-139 Issue 4, September 29, 2022

RSS-Gen, Issue 5, February 2021 Amendment 2

ANSI C63.26-2015

KDB 971168 D01 Power Meas License Digital Systems
v03r01

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

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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.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230742166-00B	Original Report	2023/8/10

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Smart Watch
Trade Name:	Easyfone
EUT Model:	KW2
Operation Bands and modes:	GSM/GPRS: 850/1900 WCDMA: Band 2/5 LTE: Band 2/4
Modulation Type:	GMSK, BPSK, QPSK, 16QAM
Rated Input Voltage:	DC 5V from adapter (for charging) or 3.8V from battery
Serial Number:	28L4-1
EUT Received Date:	2023/7/22
EUT Received Status:	Good

Operation Voltage (V_{DC}) ▲:

Lowest:	3.5	Normal:	3.8	Highest:	4.4
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Transmission Antenna Information ▲:

Antenna Type	Operation Bands	Antenna Frequency Range (MHz)	Antenna Gain (G_T) (dBi)	L_c (dB)
LDS Antenna	GSM850	824-849	-5.81	0
	PCS1900	1850-1910	-4.35	0
	WCDMA B2	1850-1910	-4.35	0
	WCDMA B5	824-849	-5.81	0
	LTE B2	1850-1910	-4.35	0
	LTE B4	1710-1755	-4.53	0

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in each operation mode.
Equipment Modifications:	No
EUT Exercise Software:	No
<p>The maximum power was configured per 3GPP Standard for each operation modes as below setting:</p> <p>GSM/GPRS/EGPRS</p> <p>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)</p> <p>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</p>	

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		4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/ 5	0
	β_{ec}	209/225	12/15	30 15	2/15	5/15
	β_c/β_d	11/15	6/15	15/9	2/15	-
	β_{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	
HSDPA Specific Settings	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				
HSUPA Specific Settings	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 ps	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 ¹	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_s) 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_s = 1/(15000 x 2048) seconds

1.2.2 Support Equipment List and Details

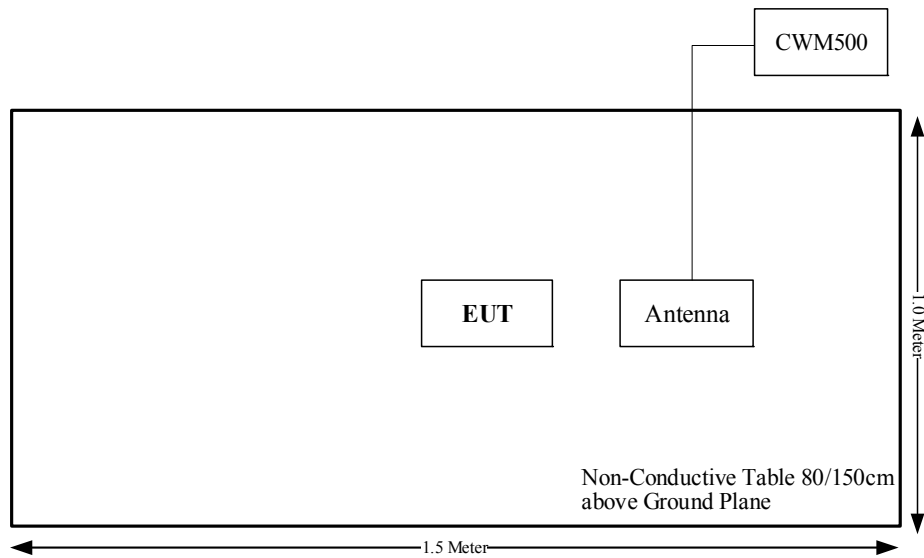
Manufacturer	Description	Model	Serial Number
R&S	Wideband Radio Communication Tester	CMW500	143458
Unknown	Antenna	Unknown	Unknown

1.2.3 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Antenna Cable	No	No	3	CMW500	Antenna

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 ⁻⁶

2. SUMMARY OF TEST RESULTS

Cellular Band: GSM 850/WCDMA Band 5:

FCC Standard Rule(s)	ISED Standard Rule(s)	Description of Test	Result	Section
/	RSS-132 Clause 5.1	Frequency Sub-bands	Compliant	3.5.1.2
/	RSS-132 Clause 5.2	Types of Modulation	Compliant	3.5.2.2
§ 2.1055, § 22.355	RSS-132 Clause 5.3	Frequency stability	Compliant	4.1, 4.4, 4.6
§2.1046; § 22.913 (a)	RSS-132 Clause 5.4	Transmitter output power and effective radiated power (e.r.p.)	Compliant	4.1, 4.4, 4.6
§ 2.1051, § 22.917 (a)	RSS-132 Clause 5.5	Transmitter unwanted emissions- at Antenna Terminal	Compliant	4.1, 4.4, 4.6
§ 22.917 (a)	RSS-132 Clause 5.5	Transmitter unwanted emissions- Out of band emission	Compliant	4.1, 4.4, 4.6
§ 2.1053, § 22.917 (a)	RSS-132 Clause 5.5,	Transmitter unwanted emissions- Radiated Spurious emissions	Compliant	4.10
§ 2.1049; § 22.905	RSS-Gen Clause 6.7	Occupied Bandwidth	Compliant	4.1, 4.4, 4.6

PCS Band: GSM 1900/WCDMA Band 2/LTE Band 2:

FCC Standard Rule(s)	ISED Standard Rule(s)	Description of Test	Result	Section
/	RSS-133 Clause 6.1	Frequency Plan	Compliant	3.6.1.2
/	RSS-133 Clause 6.2	Types of Modulation	Compliant	3.6.2.2
§ 2.1055, § 24.235	RSS-133 Clause 6.3	Frequency stability	Compliant	4.2, 4.3, 4.5
§2.1046, § 24.232 (c)	RSS-133 Clause 6.4	Transmitter Output Power and Equivalent Isotropically Radiated Power	Compliant	4.2, 4.3, 4.5
§ 2.1051, § 24.238 (a)	RSS-133 Clause 6.5	Transmitter unwanted emissions- at Antenna Terminal	Compliant	4.2, 4.3, 4.5
§ 24.238 (a)	RSS-133 Clause 6.5	Transmitter unwanted emissions- Out of band emission	Compliant	4.2, 4.3, 4.5
§ 2.1053, § 24.238 (a)	RSS-133 Clause 6.5	Transmitter unwanted emissions- Radiated Spurious emissions	Compliant	4.10
§ 2.1049, § 24.238	RSS-Gen Clause 6.7	Occupied Bandwidth	Compliant	4.2, 4.3, 4.5

AWS Band: LTE Band 4:

FCC Standard Rule(s)	ISED Standard Rule(s)	Description of Test	Result	Section
/	RSS-139 Clause 5.2	Frequency Plan	Compliant	3.8.1.2
/	RSS-139 Clause 5.3	Types of Modulation	Compliant	3.8.2.2
/	RSS-139 Clause 5.7	Additional Requirements for Subscriber Equipment	Compliant	3.8.6.2
	RSS-139 Clause 5.4	Frequency stability	Compliant	4.4, 4.7, 4.18
§2.1046; §27.50	RSS-139 Clause 5.5	Transmitter Output Power	Compliant	4.4, 4.7, 4.18
§ 2.1051, §27.53	RSS-139 Clause 5.6	Transmitter unwanted emissions- at Antenna Terminal	Compliant	4.4, 4.7, 4.18
§27.53	RSS-139 Clause 5.6	Transmitter unwanted emissions- Bandedge	Compliant	4.4, 4.7, 4.18
§ 2.1053, §27.53	RSS-139 Clause 5.6	Transmitter unwanted emissions- Radiated Spurious emissions	Compliant	4.20
§ 2.1049, §27.53	RSS-Gen Clause 6.7	Occupied Bandwidth	Compliant	4.4, 4.7, 4.18

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-toaverage 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 rmsequivalent 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

Frequency range (MHz)	Base, fixed (ppm)	Mobile >3 watts (ppm)	Mobile \leq3 watts (ppm)
25 to 50	20	20	50
50 to 450	5	5	50
450 to 512	2.5	5	5
821 to 896	1.5	2.5	2.5
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.

3.4 Applicable Standard For RSS-132 Issue 4, January 31, 2023:

3.4.1 Frequency Sub-bands

3.4.1.1 Applicable Standard

RSS-132 clause 5.1

The frequency bands 824-849 MHz and 869-894 MHz are divided into sub-bands as described in SRSP-503. These sub-bands are:

824-835 MHz, 835-845 MHz, 845-846.5 MHz, and 846.5-849 MHz for mobile and portable transmission; and

869-880 MHz, 880-890 MHz, 890-891.5 MHz, and 891.5-894 MHz for base station transmission.

3.4.1.2 Judgment

Compliant, the device operates in this band is divided into sub-bands as described in SRSP-503.

3.4.2 Types of Modulation

3.4.2.1 Applicable Standard

RSS-132 clause 5.2

Equipment certified under this standard shall use digital modulation.

3.4.2.2 Judgment

Compliant, the device operates under this standard use digital modulation.

3.4.3 Frequency stability

3.4.3.1 Applicable Standard

RSS-132 clause 5.3

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within each of the sub-bands when tested at the temperature and supply voltage variations specified in RSS-Gen.

3.4.4 Transmitter output power and effective radiated power (e.r.p.)

3.4.4.1 Applicable Standard

RSS-132 clause 5.4

The transmitter output power shall be measured in terms of average power. The equivalent radiated power (e.r.p.) shall not exceed 7 watts for mobile equipment and 3 watts for portable equipment.

The effective isotropic radiated power (e.i.r.p.) shall not exceed the limits specified in SRSP-503 for base station equipment.

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

3.4.5 Transmitter unwanted emissions

3.4.5.1 Applicable Standard

RSS-132 clause 5.5

Equipment shall meet the unwanted emission limits specified below:

- i. In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated below the transmitter output power P (dBW) by at least $43 + 10 \log(p)$ dB.
- ii. After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated below the transmitter output power P (dBW) by at least $43 + 10 \log(p)$ dB. If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

p is the output power specified in watts.

3.5 Applicable Standard For RSS-133 Issue 6, January 2018 Amendment:

3.5.1 Frequency Plan

3.5.1.1 Applicable Standard

RSS-133 clause 6.1

The frequency plan is described in SRSP-510.

3.5.1.2 Judgment

Compliant, the device operates in this band is Compliant with SRSP-510.

3.5.2 Types of Modulation

3.5.2.1 Applicable Standard

RSS-133 clause 6.2

The devices shall employ digital modulation techniques.

3.5.2.2 Judgment

Compliant, the device operates under this standard use digital modulation.

3.5.3 Frequency stability

3.5.3.1 Applicable Standard

RSS-133 clause 6.3

The carrier frequency shall not depart from the reference frequency, in excess of ± 2.5 ppm for mobile stations and ± 1.0 ppm for base stations.

In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

3.5.4 Transmitter Output Power and Equivalent Isotropically Radiated Power

3.5.4.1 Applicable Standard

RSS-133 clause 6.4

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510.

In addition, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

3.5.5 Transmitter unwanted emissions

3.5.5.1 Applicable Standard

RSS-132 clause 6.5.1 Out-of-Block Emissions

Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p(\text{watts})$.

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p(\text{watts})$. If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

3.6 Applicable Standard For RSS-139 issue 4 September 29, 2022:

3.6.1 Band plan

3.6.1.1 Applicable Standard

RSS-139 clause 5.2

The bands 1710-1780 MHz and 2110-2180 MHz are divided into 11 paired blocks as shown in table 1. Standard Radio System Plan SRSP-513, Technical Requirements for Advanced Wireless Services in the Bands 1710-1780 MHz and 2110-2180 MHz, contains the detailed band plan.

Table 1: Frequency blocks in the bands 1710-1780 MHz and 2110-2180 MHz			
Block	Lower sub-band (MHz)	Upper sub-band (MHz)	Total block size (MHz)
Block A	1710-1720	2110-2120	20
Block B	1720-1730	2120-2130	20
Block C	1730-1735	2130-2135	10
Block D	1735-1740	2135-2140	10
Block E	1740-1745	2140-2145	10
Block F	1745-1755	2145-2155	20
Block G	1755-1760	2155-2160	10
Block H	1760-1765	2160-2165	10
Block I	1765-1770	2165-2170	10
Block J1	1770-1775	2170-2175	10
Block J2	1775-1780	2175-2180	10

The band 2180-2200 MHz is divided into two downlink-only blocks, as shown in table 2. SRSP-519, Technical Requirements for the Ancillary Terrestrial Component of Mobile-Satellite Service Systems Operating in the Bands 2000-2020 MHz and 2180-2200 MHz, contains the detailed band plan. In this RSS, AWS-4 is referred to as ATC band 2180-2200 MHz.

Table 2: Frequency blocks in the bands 2180-2200 MHz		
Block	Frequency range (MHz)	Block size (MHz)
Block C	2180-2190	10
Block D	2190-2200	10

The blocks listed in tables 1 and 2 can be aggregated to form a larger channel.

3.6.1.2 Judgment

Compliant, the device operates in this band is Compliant with SRSP-513.

3.6.2 Types of Modulation

3.6.2.1 Applicable Standard

RSS-139 clause 5.3

Devices may use any type of modulation technique. The type of modulation shall be documented in the test report.

3.6.2.2 Judgment

Compliant, the device operates under this standard use digital modulation.

3.6.3 Frequency stability

3.6.3.1 Applicable Standard

RSS-139 clause 5.4

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block or frequency block group when tested to the temperature and supply voltage variations specified in RSS-Gen.

3.6.4 Transmitter Output Power

3.6.4.1 Applicable Standard

RSS-139 clause 5.5

The maximum output power of the equipment shall comply with the limits specified below. In the tables, maximum power refers to the equivalent isotropically radiated power (e.i.r.p.) or total radiated power (TRP), measured in terms of average values.

The limits in this RSS are specified for the purpose of certification and may not apply to all deployment scenarios. Consult SRSP-513 and SRSP-519 for more details on the bands 2110-2180 MHz and 2180-2200 MHz respectively.

Table 3: Maximum power of equipment in the band 1710-1780 MHz

Equipment type	Maximum power
Fixed station and base station	30 dBm e.i.r.p./channel bandwidth
Subscriber equipment	30 dBm e.i.r.p./channel bandwidth

Table 4: Maximum power of equipment in the band 2110-2180 MHz

Equipment type	Maximum power
Non-AAS fixed station and base station	65 dBm e.i.r.p./MHz
AAS fixed station and base station	46 dBm TRP/MHz
Subscriber equipment	30 dBm e.i.r.p./channel bandwidth

Table 5: Maximum power of equipment in the band 2180-2200 MHz

Equipment type	Maximum power
Non-AAS base station	65 dBm e.i.r.p./MHz
AAS base station	46 dBm TRP/MHz

In addition, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

3.6.5 Transmitter unwanted emissions

3.6.5.1 Applicable Standard

RSS-139 clause 5.6

Unwanted emissions shall be measured in terms of average values. For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors) of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in table 4.

Table 6: Unwanted emission limits	
Offset from the edge of the frequency block or frequency block group	Unwanted emission limits
≤1 MHz	-13 dBm/(1% of B*)
>1 MHz	-13 dBm/MHz

*B is the frequency block or frequency block group.

In addition to complying with the above limits, equipment operating in the band 2180-2200 MHz may require additional filtering (see SRSP-519).

3.6.6 Additional requirements for subscriber equipment

3.6.6.1 Applicable Standard

RSS-139 clause 5.7

Subscriber equipment other than fixed subscriber equipment shall use transmitter power control to limit power. The applicant shall include, with the application for certification, a declaration of compliance that confirms the control requirement was met and that includes a description of how the requirement was met. The declaration of compliance may be included as a separate document or attached (e.g. as an annex) to the test report.

Subscriber equipment operating in the band 1755-1780 MHz shall operate only when under the control of a base station. The applicant shall include, with the application for certification, a declaration of compliance that confirms the control requirement was met and that includes a description of how the requirement was met. The declaration of compliance may be included as a separate document or attached (e.g., as an annex) to the test report.

3.6.6.2 Judgment

Compliant, the devices use transmitter power control to limit power and operate under the control of a base station.

4. Test DATA AND RESULTS

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

Serial Number:	28L4-1	Test Date:	2023/8/2~2023/8/4
Test Site:	RF	Test Mode:	Transmitting
Tester:	One Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.2~26.8	Relative Humidity: (%)	42~55	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	FSV40	101474	2023/7/15	2024/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2023/7/15	2024/7/14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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

Test Data:

RF Output Power					
Test Mode	Conducted Peak Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
GSM	32.32	32.3	32.13	24.36	38.45
GPRS 1 Slot	31.07	31.29	30.84	23.33	38.45
GPRS 2 Slots	29.11	29.24	28.8	21.28	38.45
GPRS 3 Slots	27.16	27.31	26.72	19.35	38.45
GPRS 4 Slots	25.1	25.34	24.63	17.38	38.45

Note:
 ERP= Conducted Power(dBm) - L_c (dB) + G_T(dBd)
 G_T(dBd)=G_T(dBi)-2.15

Result:	Pass
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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
GSM	0.242	0.240	0.240	0.310	0.304	0.317
GPRS	0.242	0.247	0.240	0.320	0.318	0.313

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

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

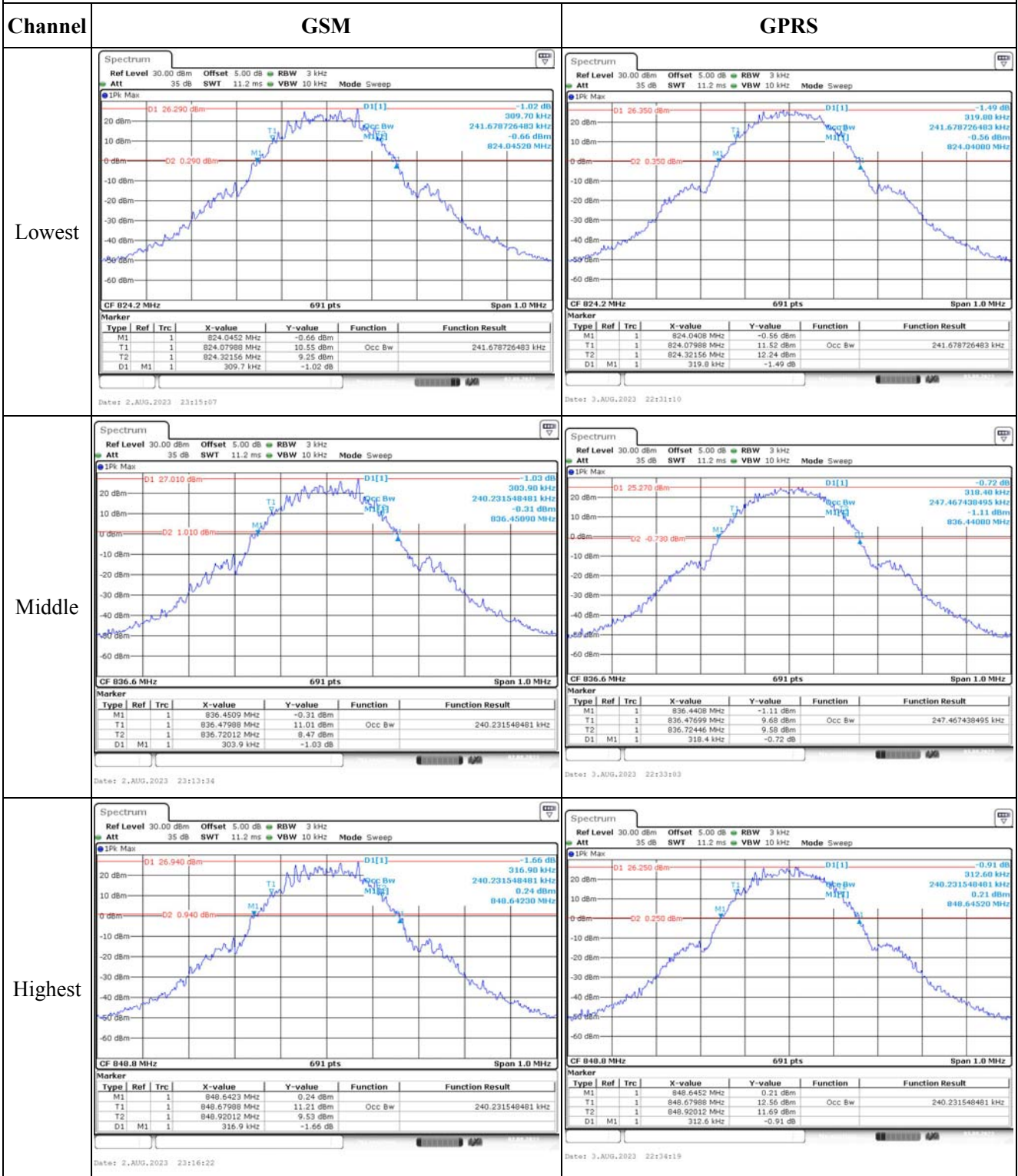
Out of band emission, Band Edge	
Result:	Pass, please refer to the test plots of Out of band emission, Band Edge.

Frequency Stability for FCC Rules					
Test Modulation:	GMSK		Test Channel:	836.6	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.8	7.11	0.008	2.5
	-20	3.8	-8.71	-0.010	2.5
	-10	3.8	5.75	0.007	2.5
	0	3.8	9.16	0.011	2.5
	10	3.8	-8.55	-0.010	2.5
	20	3.8	7.55	0.009	2.5
	30	3.8	-7.96	-0.010	2.5
	40	3.8	-5.45	-0.007	2.5
	50	3.8	8.44	0.010	2.5
Frequency Stability vs. Voltage	20	3.5	-7.74	-0.009	2.5
	20	4.4	5.82	0.007	2.5
				Result:	Pass

Frequency Stability for ISED Rules						
Test Mode:	GMSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	824.045	824.000	848.966	849.000
	-20	3.8	824.053	824.000	848.964	849.000
	-10	3.8	824.033	824.000	848.958	849.000
	0	3.8	824.054	824.000	848.980	849.000
	10	3.8	824.046	824.000	848.988	849.000
	20	3.8	824.056	824.000	848.970	849.000
	30	3.8	824.063	824.000	848.987	849.000
	40	3.8	824.065	824.000	848.989	849.000
	50	3.8	824.069	824.000	848.964	849.000
Frequency Stability vs. Voltage	20	3.5	824.040	824.000	848.976	849.000
	20	4.4	824.061	824.000	848.967	849.000
				Result:	Pass	

Test Plots: (Note: The 5.0 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

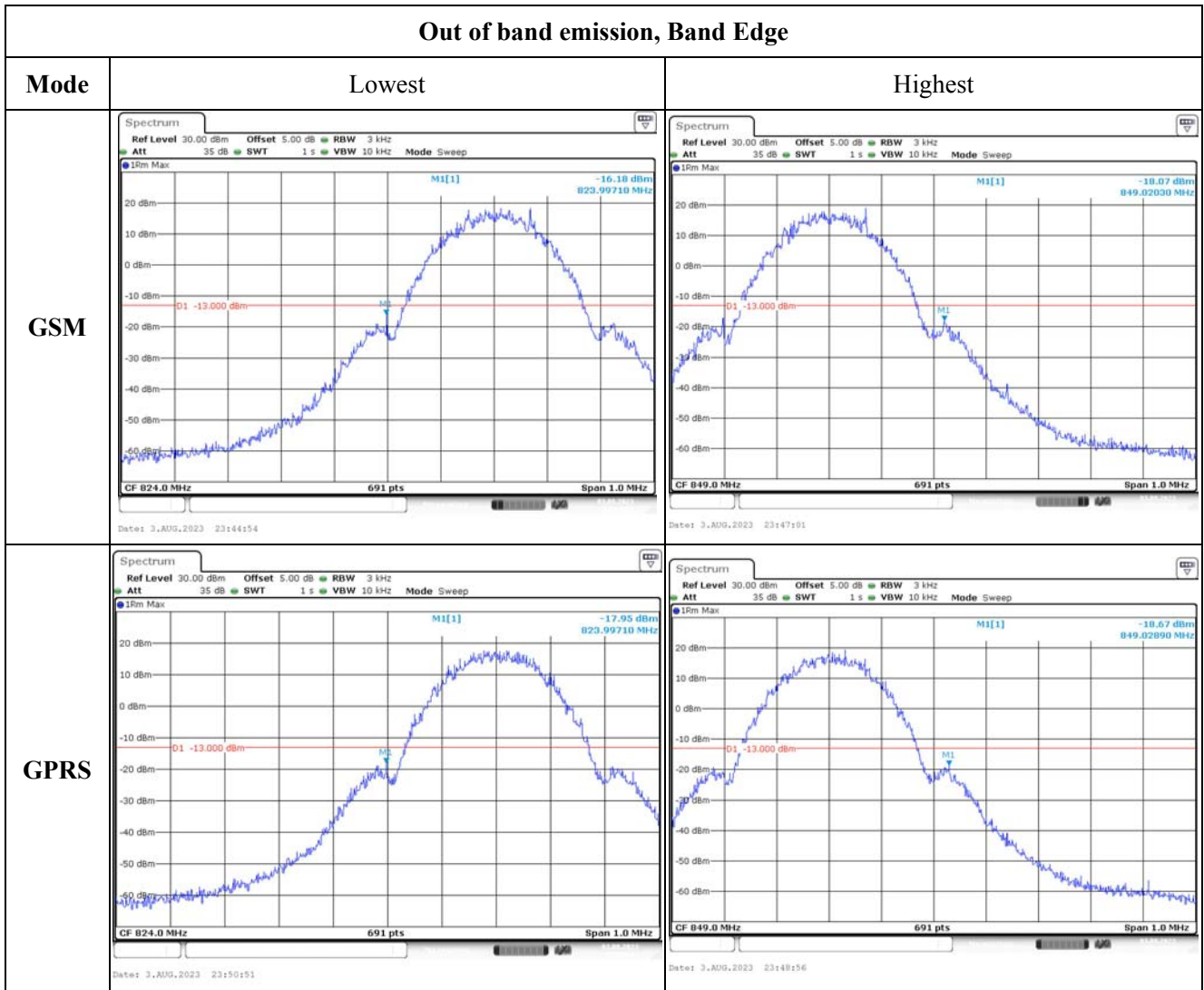
Occupied Bandwidth



Spurious Emissions at Antenna Terminal

Channel	GSM	
Lowest	<p>Spectrum 2 Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1Pk Max MI[1] -44.19 dBm 721.90 MHz 01 -13.000 dBm Start 30.0 MHz 691 pts Stop 1.0 GHz Date: 3.AUG.2023 00:12:36</p>	<p>Spectrum 2 Ref Level 30.00 dBm Offset 5.00 dB RBW 1 MHz Att 35 dB SWT 36 ms VBW 3 MHz Mode Sweep 1Pk Max MI[1] -31.15 dBm 1.6450 GHz 01 -13.000 dBm Start 1.0 GHz 691 pts Stop 10.0 GHz Date: 3.AUG.2023 00:12:12</p>
Middle	<p>Spectrum 2 Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1Pk Max MI[1] -44.80 dBm 888.40 MHz 01 -13.000 dBm Start 30.0 MHz 691 pts Stop 1.0 GHz Date: 3.AUG.2023 00:11:49</p>	<p>Spectrum 2 Ref Level 30.00 dBm Offset 5.00 dB RBW 1 MHz Att 35 dB SWT 36 ms VBW 3 MHz Mode Sweep 1Pk Max MI[1] -30.57 dBm 1.6710 GHz 01 -13.000 dBm Start 1.0 GHz 691 pts Stop 10.0 GHz Date: 3.AUG.2023 00:11:21</p>
Highest	<p>Spectrum 2 Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1Pk Max MI[1] -44.34 dBm 901.00 MHz 01 -13.000 dBm Start 30.0 MHz 691 pts Stop 1.0 GHz Date: 3.AUG.2023 00:10:38</p>	<p>Spectrum 2 Ref Level 30.00 dBm Offset 5.00 dB RBW 1 MHz Att 35 dB SWT 36 ms VBW 3 MHz Mode Sweep 1Pk Max MI[1] -30.30 dBm 1.6970 GHz 01 -13.000 dBm Start 1.0 GHz 691 pts Stop 10.0 GHz Date: 3.AUG.2023 00:10:59</p>

Out of band emission, Band Edge



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

Serial Number:	28L4-1	Test Date:	2023/8/2~2023/8/4
Test Site:	RF	Test Mode:	Transmitting
Tester:	One Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.2~26.8	Relative Humidity: (%)	42~55	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	FSV40	101474	2023/7/15	2024/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2023/7/15	2024/7/14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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

Test Data:

RF Output Power						
Test Mode	Conducted Peak Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)	
	Lowest Channel	Middle Channel	Highest Channel			
GSM	30.23	30.42	30.58	26.23	33	
GPRS 1 Slot	28.95	29.33	29.43	25.08	33	
GPRS 2 Slots	26.99	27.25	27.43	23.08	33	
GPRS 3 Slots	25.07	25.23	25.4	21.05	33	
GPRS 4 Slots	23.07	23.17	23.37	19.02	33	
Note: EIRP=Conducted Power(dBm) - Lc(dB) + G _T (dBi)						
					Result:	Pass

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
GSM	0.243	0.245	0.245	0.304	0.303	0.306
GPRS	0.243	0.240	0.245	0.318	0.317	0.316
Note: The test plots please refer to the Plots of Occupied Bandwidth						

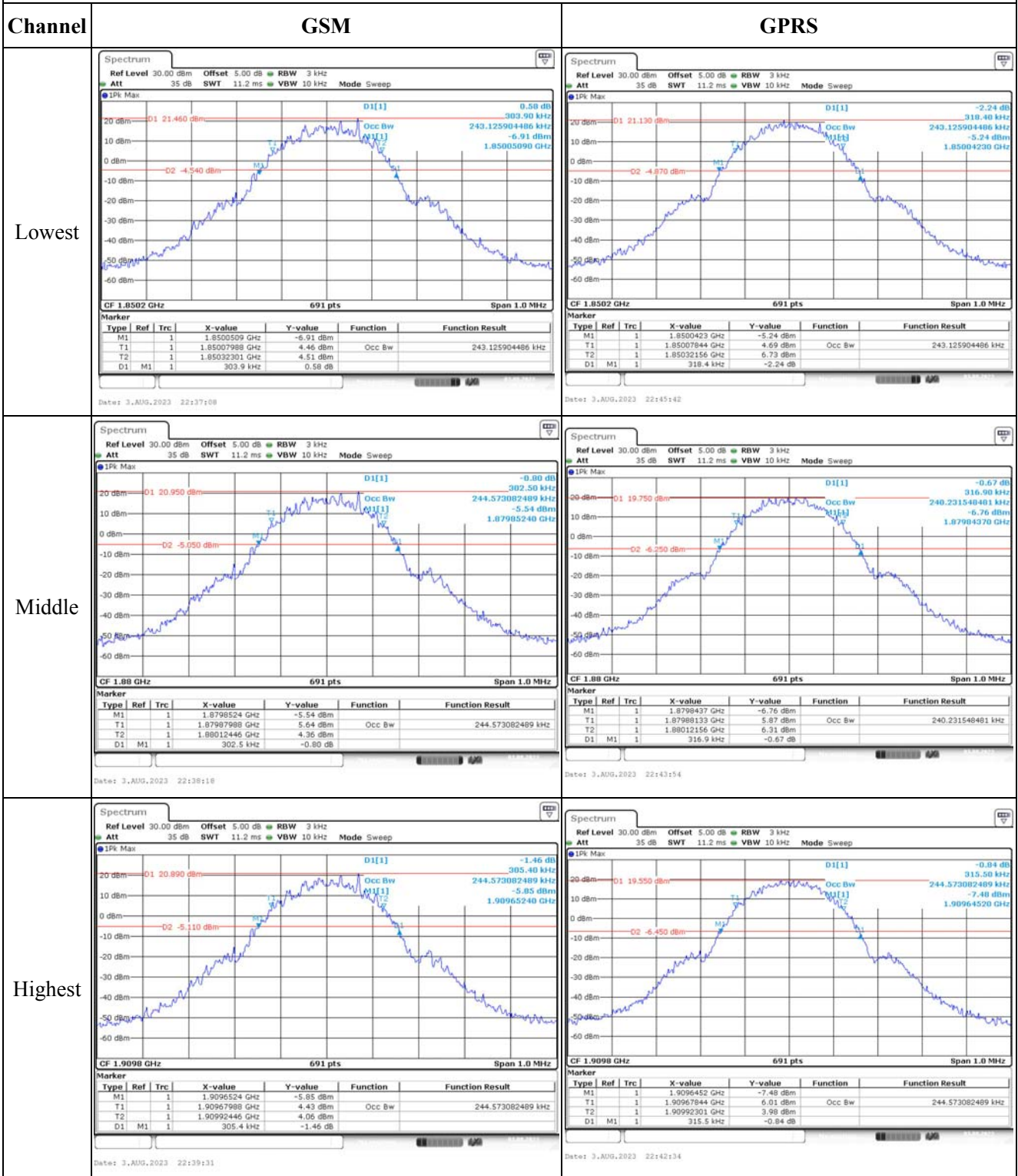
Spurious Emissions at Antenna Terminal	
Result:	Pass, please refer to the test plots of Spurious Emissions at Antenna Terminal.

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

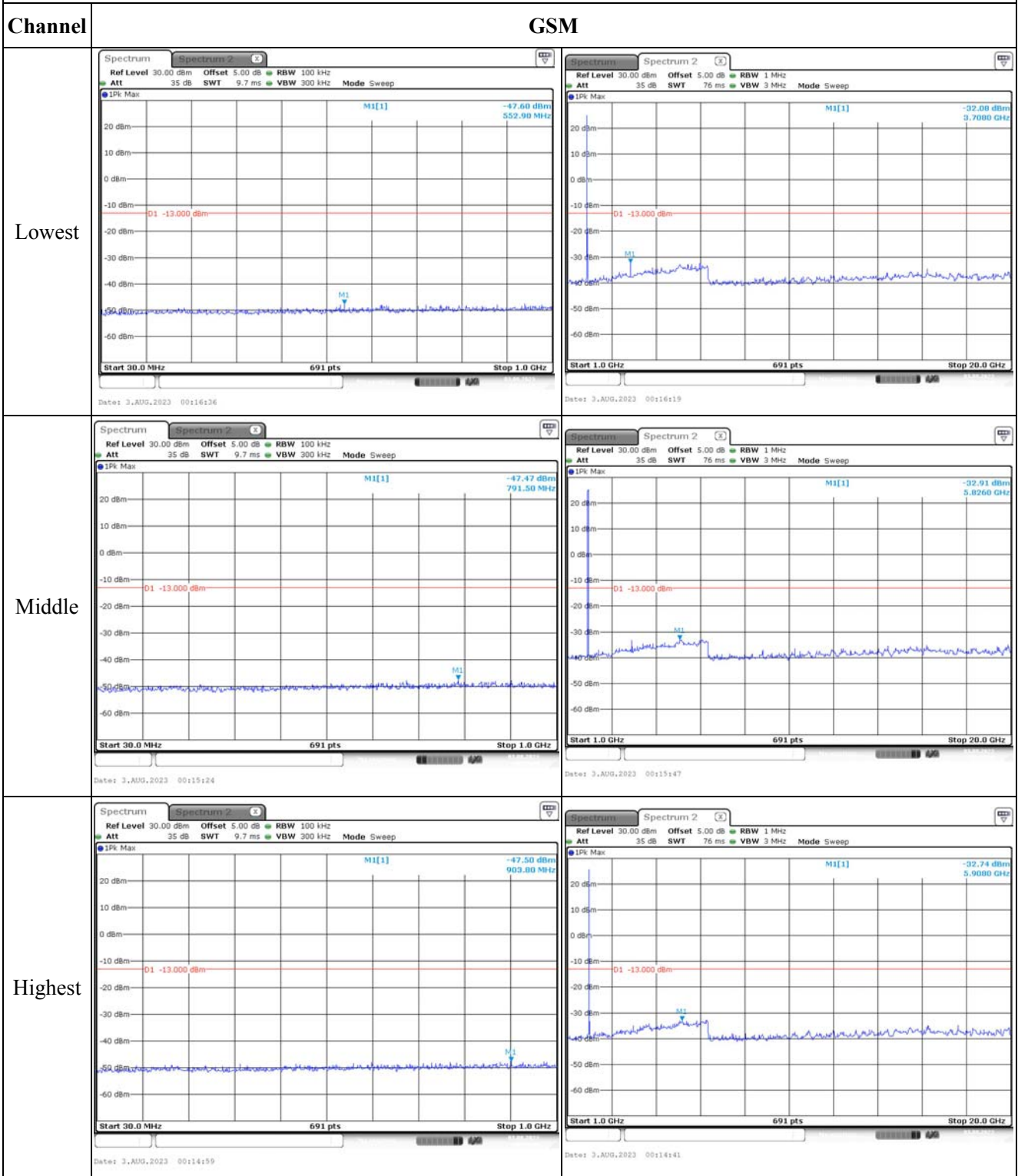
Frequency Stability						
Test Mode:	GMSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1850.068	1850.000	1909.946	1910.000
	-20	3.8	1850.063	1850.000	1909.999	1910.000
	-10	3.8	1850.087	1850.000	1909.948	1910.000
	0	3.8	1850.053	1850.000	1909.965	1910.000
	10	3.8	1850.025	1850.000	1909.909	1910.000
	20	3.8	1850.079	1850.000	1909.925	1910.000
	30	3.8	1850.076	1850.000	1909.933	1910.000
	40	3.8	1850.023	1850.000	1909.975	1910.000
	50	3.8	1850.059	1850.000	1909.958	1910.000
Frequency Stability vs. Voltage	20	3.5	1850.096	1850.000	1909.921	1910.000
	20	4.4	1850.096	1850.000	1909.931	1910.000
					Result:	Pass

Test Plots: (Note: The 5.0 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer)

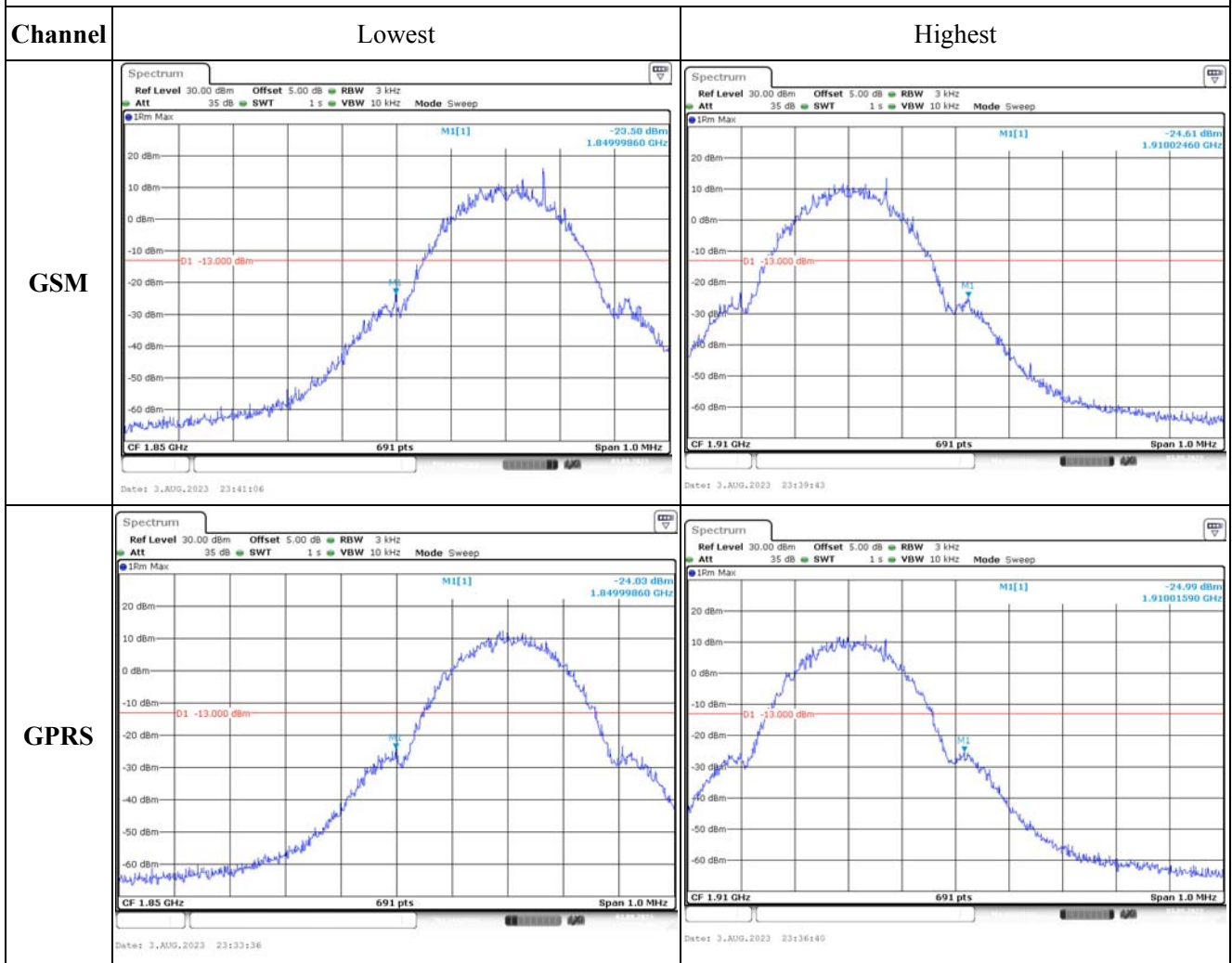
Occupied Bandwidth



Spurious Emissions at Antenna Terminal



Out of band emission, Band Edge



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

Serial Number:	28L4-1	Test Date:	2023/8/2~2023/8/4
Test Site:	RF	Test Mode:	Transmitting
Tester:	One Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.2~26.8	Relative Humidity: (%)	42~55	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	FSV40	101474	2023/7/15	2024/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2023/7/15	2024/7/14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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	1852.4	1880	1907.6

Test Data:

RF Output Power:					
Test Mode	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
WCDMA R99	22.1	22.1	22.42	18.07	33
HSDPA Subtest 1	21.92	22.3	21.99	17.95	33
HSDPA Subtest 2	21.89	22.25	22.02	17.9	33
HSDPA Subtest 3	21.84	22.16	22.31	17.96	33
HSDPA Subtest 4	21.72	22.23	21.76	17.88	33
HSUPA Subtest 1	21.6	21.65	22.02	17.67	33
HSUPA Subtest 2	21.46	21.5	21.65	17.30	33
HSUPA Subtest 3	21.46	21.66	21.67	17.32	33
HSUPA Subtest 4	21.39	21.82	21.67	17.47	33
HSUPA Subtest 5	21.29	21.77	21.77	17.42	33
DC-HSDPA Subtest 1	21.41	21.77	21.47	17.42	33
DC-HSDPA Subtest 2	21.32	21.36	21.37	17.02	33
DC-HSDPA Subtest 3	21.2	21.16	21.26	16.91	33
DC-HSDPA Subtest 4	21.05	21.56	21.05	17.21	33
HSPA+ Subtest 1	20.98	21.41	21.14	17.06	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	3.45	3.04	3.01	13	
HSDPA	4.7	4.72	4.7	13	
HSUPA	5.68	5.54	5.65	13	
				Result:	Pass

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	4.168	4.153	4.153	4.704	4.703	4.703
HSDPA	4.153	4.139	4.153	4.703	4.703	4.703
HSUPA	4.139	4.153	4.153	4.703	4.703	4.689
Note: The test plots please refer to the Plots of Occupied Bandwidth						

Spurious Emissions at Antenna Terminal

Result:	Pass, please refer to the test plots of Spurious Emissions at Antenna Terminal.
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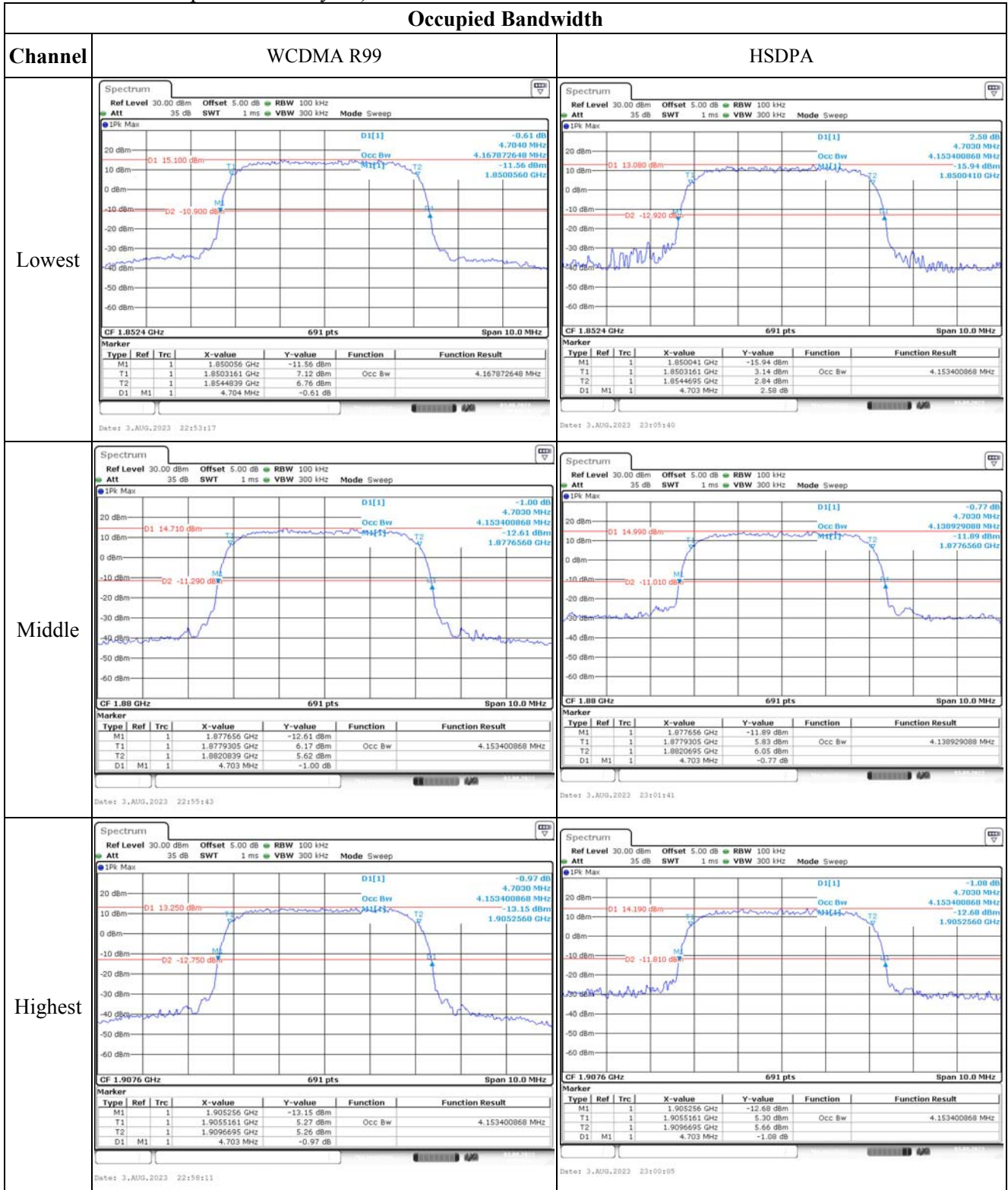
Out of band emission, Band Edge

Result:	Pass, please refer to the test plots of Out of band emission, Band Edge.
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Frequency Stability

Test Mode:	WCDMA R99	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1850.379	1850.000	1909.694	1910.000
	-20	3.8	1850.354	1850.000	1909.685	1910.000
	-10	3.8	1850.369	1850.000	1909.629	1910.000
	0	3.8	1850.396	1850.000	1909.641	1910.000
	10	3.8	1850.320	1850.000	1909.634	1910.000
	20	3.8	1850.316	1850.000	1909.670	1910.000
	30	3.8	1850.400	1850.000	1909.676	1910.000
	40	3.8	1850.363	1850.000	1909.658	1910.000
	50	3.8	1850.360	1850.000	1909.694	1910.000
Frequency Stability vs. Voltage	20	3.5	1850.397	1850.000	1909.697	1910.000
	20	4.4	1850.308	1850.000	1909.643	1910.000
					Result:	Pass

Test Plots: (Note: The 5.0 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer)

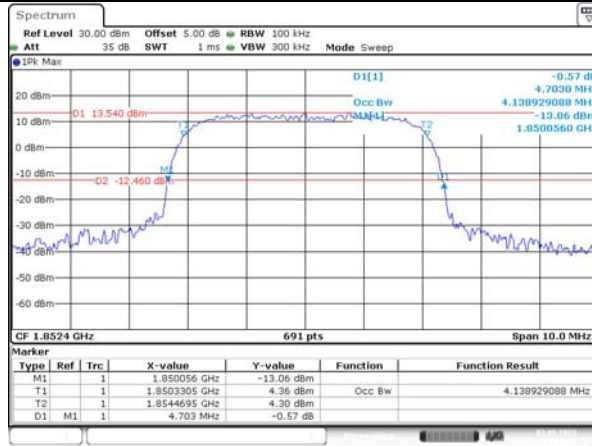


Occupied Bandwidth

Channel

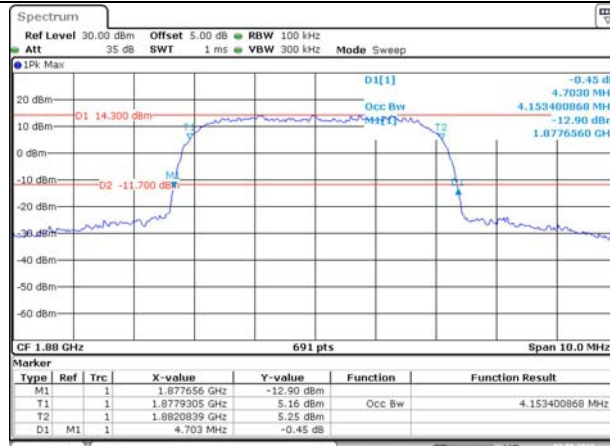
HSUPA

Lowest



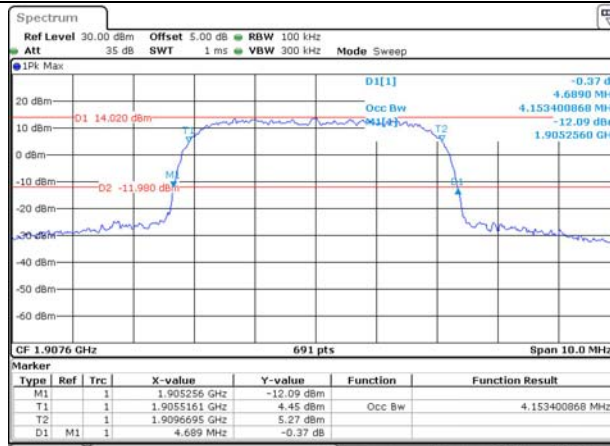
Date: 3.AUG.2023 23:06:19

Middle



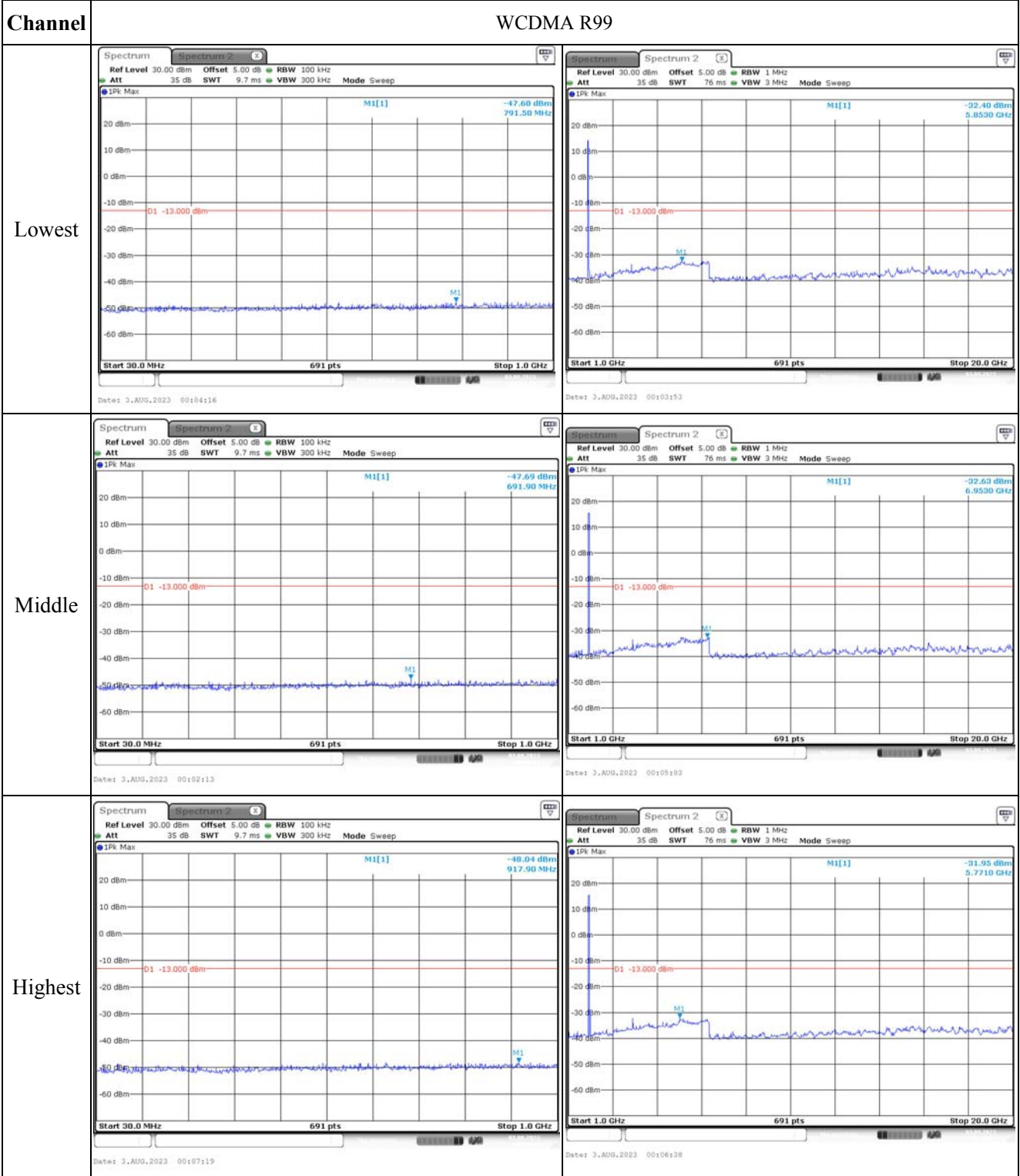
Date: 3.AUG.2023 23:09:27

Highest



Date: 3.AUG.2023 23:10:48

Spurious Emissions at Antenna Terminal



Out of band emission, Band Edge

Mode	Lowest	Highest
R99	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 1 s VBW 300 kHz Mode Sweep M1[1] -33.37 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 691 pts Span 10.0 MHz Date: 3.AUG.2023 00:32:55</p>	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 1 s VBW 300 kHz Mode Sweep M1[1] -30.24 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 691 pts Span 10.0 MHz Date: 3.AUG.2023 00:33:41</p>
HSUPA	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 1 s VBW 300 kHz Mode Sweep M1[1] -29.75 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 691 pts Span 10.0 MHz Date: 3.AUG.2023 23:56:32</p>	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 1 s VBW 300 kHz Mode Sweep M1[1] -28.44 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 691 pts Span 10.0 MHz Date: 3.AUG.2023 23:55:02</p>
HSDPA	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 1 s VBW 300 kHz Mode Sweep M1[1] -30.76 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 691 pts Span 10.0 MHz Date: 3.AUG.2023 23:53:40</p>	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 1 s VBW 300 kHz Mode Sweep M1[1] -28.58 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 691 pts Span 10.0 MHz Date: 3.AUG.2023 23:58:07</p>

4.4 Antenna Port Test Data and Results for WCDMA Band 5:

Serial Number:	28L4-1	Test Date:	2023/8/2~2023/8/4
Test Site:	RF	Test Mode:	Transmitting
Tester:	One Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.2~26.8	Relative Humidity: (%)	42~55	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	FSV40	101474	2023/7/15	2024/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2023/7/15	2024/7/14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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	826.4	836.6	846.6

Test Data:

RF Output Power:					
Test Mode	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
WCDMA R99	22.56	22.57	22.91	14.95	38.45
HSDPA Subtest 1	22.46	22.83	22.5	14.87	38.45
HSDPA Subtest 2	22.44	22.98	22.96	15.02	38.45
HSDPA Subtest 3	22.25	22.26	22.26	14.30	38.45
HSDPA Subtest 4	22.16	22.69	22.26	14.73	38.45
HSUPA Subtest 1	22.38	22.85	22.54	14.89	38.45
HSUPA Subtest 2	22.22	22.24	22.7	14.74	38.45
HSUPA Subtest 3	22.07	22.44	22.1	14.48	38.45
HSUPA Subtest 4	21.93	22.17	22.23	14.27	38.45
HSUPA Subtest 5	21.81	22.13	22.13	14.17	38.45
DC-HSDPA Subtest 1	22.23	22.48	22.37	14.52	38.45
DC-HSDPA Subtest 2	22.15	22.58	22.37	14.62	38.45
DC-HSDPA Subtest 3	22.01	22.25	22.37	14.41	38.45
DC-HSDPA Subtest 4	21.92	22.36	22.39	14.43	38.45
HSPA+ Subtest 1	21.87	22.11	22.12	14.16	38.45

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

Result:	Pass
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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	3.16	3.22	3.13	13
HSDPA	4.7	4.99	4.52	13
HSUPA	5.33	5.91	5.30	13

Result:	Pass
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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	4.153	4.168	4.153	4.718	4.703	4.703
HSDPA	4.124	4.168	4.153	4.674	4.732	4.689
HSUPA	4.124	4.153	4.153	4.689	4.689	4.689

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

Spurious Emissions at Antenna Terminal

Result:	Pass, please refer to the test plots of Spurious Emissions at Antenna Terminal.
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Out of band emission, Band Edge

Result:	Pass, please refer to the test plots of Out of band emission, Band Edge.
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Frequency Stability for FCC Rules

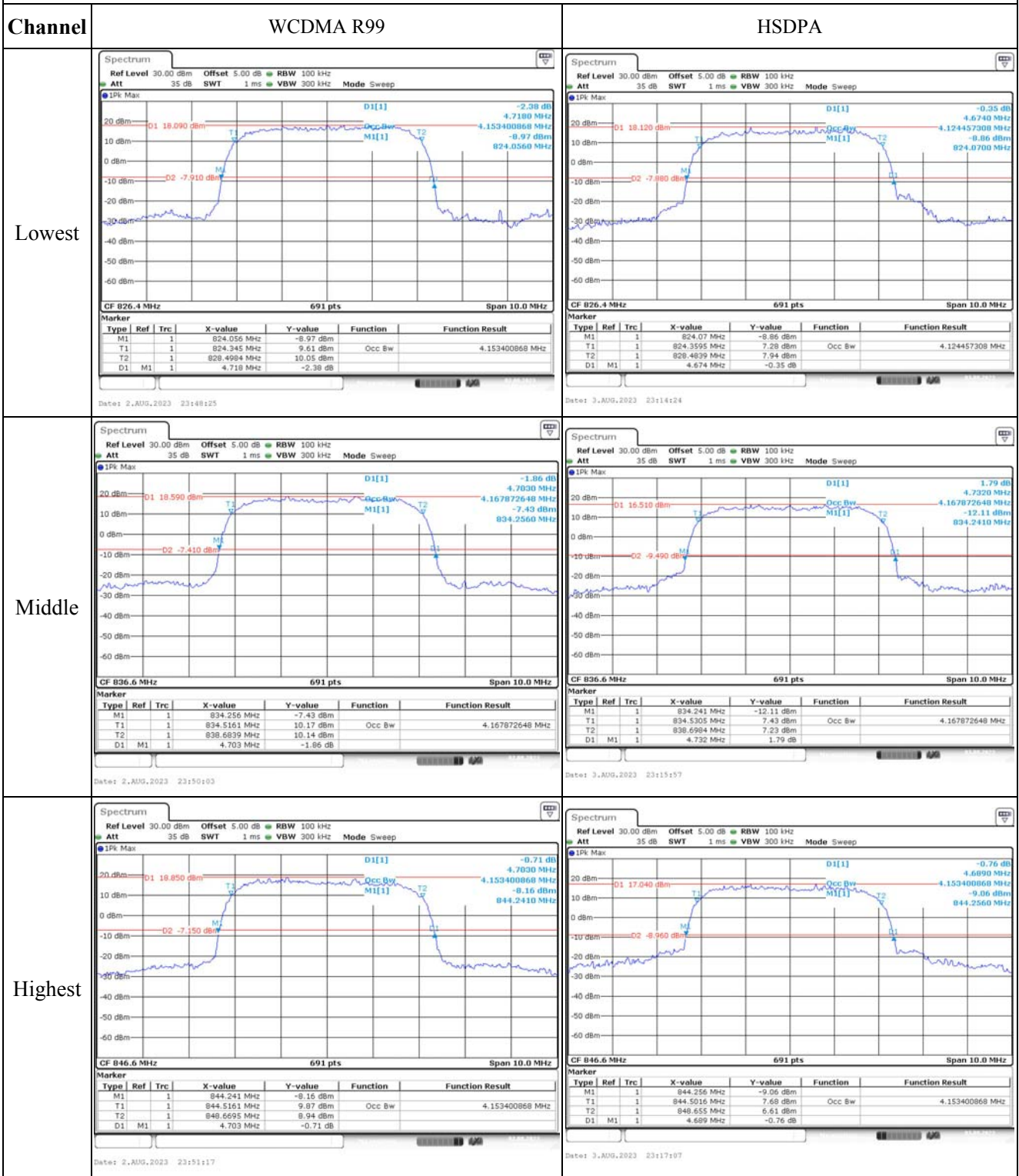
Test Modulation:	WCDMA R99		Test Channel:	836.6	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.8	8.72	0.010	2.5
	-20	3.8	-7.35	-0.009	2.5
	-10	3.8	6.94	0.008	2.5
	0	3.8	7.91	0.009	2.5
	10	3.8	7.81	0.009	2.5
	20	3.8	-9.45	-0.011	2.5
	30	3.8	-7.73	-0.009	2.5
	40	3.8	-5.55	-0.007	2.5
Frequency Stability vs. Voltage	50	3.8	-8.81	-0.011	2.5
	20	3.5	-6.68	-0.008	2.5
	20	4.4	6.45	0.008	2.5
Result:					Pass

Frequency Stability for ISED Rules

Test Mode:	WCDMA R99	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (VDC)	Lower Edge		Upper Edge	
			(MHz)		(MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	824.069	824.000	848.977	849.000
	-20	3.8	824.025	824.000	848.944	849.000
	-10	3.8	824.041	824.000	848.93	849.000
	0	3.8	824.029	824.000	848.977	849.000
	10	3.8	824.046	824.000	848.954	849.000
	20	3.8	824.061	824.000	848.932	849.000
	30	3.8	824.070	824.000	848.966	849.000
	40	3.8	824.071	824.000	848.953	849.000
Frequency Stability vs. Voltage	50	3.8	824.075	824.000	848.909	849.000
	20	3.5	824.056	824.000	848.945	849.000
	20	4.4	824.047	824.000	848.969	849.000
Result:						Pass

Test Plots: (Note: The 5.0 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer)

Occupied Bandwidth

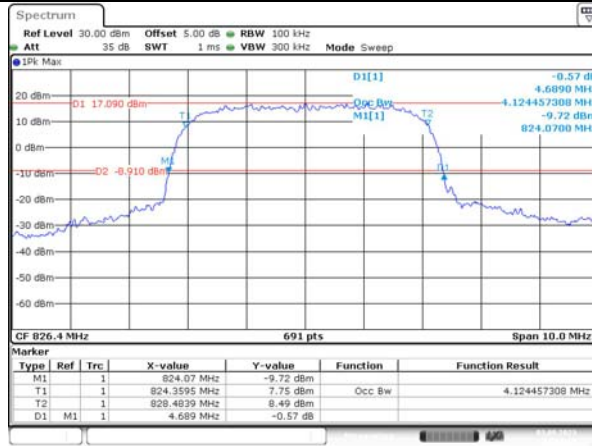


Occupied Bandwidth

Channel

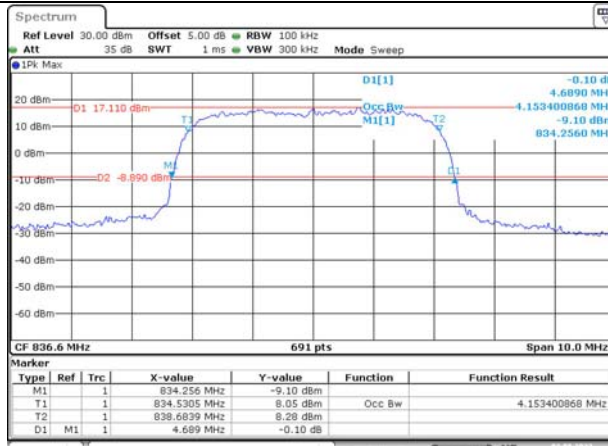
HSUPA

Lowest



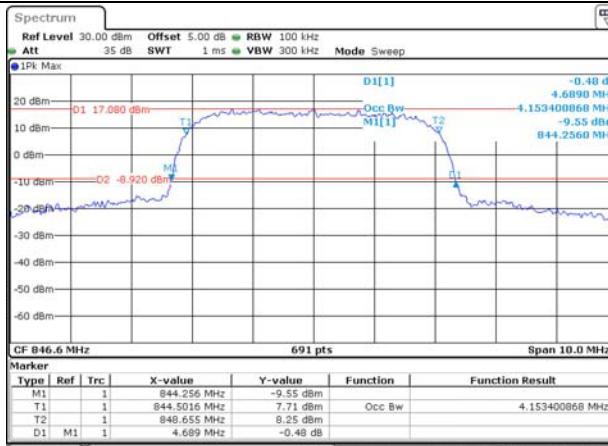
Date: 3.AUG.2023 23:21:26

Middle



Date: 3.AUG.2023 23:20:11

Highest



Date: 3.AUG.2023 23:18:53

Spurious Emissions at Antenna Terminal

Channel	WCDMA R99	
Lowest	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1Pk Max M1[1] -37.11 dBm 847.78 MHz -13.000 dBm Start 30.0 MHz 691 pts Stop 1.0 GHz Date: 2.AUG.2023 23:57:25</p>	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 1 MHz Att 35 dB SWT 36 ms VBW 3 MHz Mode Sweep 1Pk Max M1[1] -32.43 dBm 5.8390 GHz -13.000 dBm Start 1.0 GHz 691 pts Stop 10.0 GHz Date: 3.AUG.2023 00:28:30</p>
Middle	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1Pk Max M1[1] -47.36 dBm 735.40 MHz -13.000 dBm Start 30.0 MHz 691 pts Stop 1.0 GHz Date: 2.AUG.2023 23:56:24</p>	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 1 MHz Att 35 dB SWT 36 ms VBW 3 MHz Mode Sweep 1Pk Max M1[1] -32.41 dBm 6.9680 GHz -13.000 dBm Start 1.0 GHz 691 pts Stop 10.0 GHz Date: 3.AUG.2023 00:18:57</p>
Highest	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 100 kHz Att 35 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1Pk Max M1[1] -40.84 dBm 823.80 MHz -13.000 dBm Start 30.0 MHz 691 pts Stop 1.0 GHz Date: 2.AUG.2023 23:54:47</p>	<p>Ref Level 30.00 dBm Offset 5.00 dB RBW 1 MHz Att 35 dB SWT 36 ms VBW 3 MHz Mode Sweep 1Pk Max M1[1] -32.49 dBm 6.8680 GHz -13.000 dBm Start 1.0 GHz 691 pts Stop 10.0 GHz Date: 3.AUG.2023 00:18:38</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
R99		
HSUPA		
HSDPA		

4.5 Antenna Port Test Data and Results for LTE Band 2

Serial Number:	28L4-1	Test Date:	2023/8/2~2023/8/4
Test Site:	RF	Test Mode:	Transmitting
Tester:	One Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.2~26.8	Relative Humidity: (%)	42~55	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	FSV40	101474	2023/7/15	2024/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2023/7/15	2024/7/14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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:**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	21.36	19.28	20.33	17.01	33
	RB1#3	19.37	19.28	20.37		
	RB1#5	18.72	19.3	20.33		
	RB3#0	18.42	19.38	20.45		
	RB3#3	18.41	19.4	20.37		
	RB6#0	17.89	18.85	19.87		
1.4MHz 16QAM	RB1#0	19.02	18.91	21.05	16.76	33
	RB1#3	18.98	18.92	21.1		
	RB1#5	19.08	18.99	21.11		
	RB3#0	18.14	19.3	20.51		
	RB3#3	18.13	19.25	20.57		
	RB6#0	17.38	18.36	19.62		
3MHz QPSK	RB1#0	18.43	19.36	20.3	15.97	33
	RB1#8	18.43	19.43	20.32		
	RB1#14	18.45	19.48	20.29		
	RB6#0	17.92	18.93	19.86		
	RB6#9	17.98	18.97	19.85		
	RB15#0	17.92	18.98	19.89		
3MHz 16QAM	RB1#0	19.09	19.17	20.8	16.45	33
	RB1#8	19.16	19.24	20.78		
	RB1#14	19.12	19.38	20.79		
	RB6#0	17.41	18.49	19.33		
	RB6#9	17.54	18.62	19.4		
	RB15#0	17.45	18.62	19.51		
5MHz QPSK	RB1#0	18.39	19.34	20.2	16.04	33
	RB1#13	18.5	19.42	20.29		
	RB1#24	18.61	19.51	20.39		
	RB15#0	17.82	18.92	19.88		
	RB15#10	18.03	19.06	19.83		
	RB25#0	17.99	18.98	19.87		
5MHz 16QAM	RB1#0	18.48	19.09	19.46	15.23	33
	RB1#13	18.63	19.14	19.52		
	RB1#24	18.75	19.3	19.58		
	RB15#0	17.42	18.5	19.48		
	RB15#10	17.47	18.65	19.52		
	RB25#0	17.5	18.46	19.51		
10MHz QPSK	RB1#0	18.45	19.19	20.08	16	33
	RB1#25	18.64	19.41	20.2		
	RB1#49	18.82	19.71	20.35		
	RB25#0	17.86	18.83	19.72		

	RB25#25	18.12	19.16	19.83		
	RB50#0	18.04	18.91	19.85		
10MHz 16QAM	RB1#0	18.56	18.75	20.39	16.32	33
	RB1#25	18.75	19.03	20.52		
	RB1#49	18.85	19.18	20.67		
	RB25#0	17.62	18.56	19.25		
	RB25#25	17.8	18.8	19.47		
	RB50#0	17.72	18.58	19.45		
15MHz QPSK	RB1#0	18.46	19.2	19.97	16.05	33
	RB1#38	18.71	19.54	20.19		
	RB1#74	18.98	19.9	20.4		
	RB36#0	18.08	18.92	19.64		
	RB36#39	18.27	19.17	19.93		
	RB75#0	18.15	18.85	19.82		
15MHz 16QAM	RB1#0	18.53	19.62	20.22	16.27	33
	RB1#38	18.79	19.93	20.5		
	RB1#74	19.06	20.25	20.62		
	RB36#0	17.64	18.42	19.32		
	RB36#39	17.95	18.82	19.55		
	RB75#0	17.74	18.63	19.3		
20MHz QPSK	RB1#0	18.44	19.21	19.94	16.18	33
	RB1#50	18.85	19.56	20.21		
	RB1#99	19.22	19.95	20.53		
	RB50#0	18.09	18.76	19.48		
	RB50#50	18.43	19.33	19.88		
	RB100#0	18.25	18.96	19.65		
20MHz 16QAM	RB1#0	18.42	19.88	20.03	16.32	33
	RB1#50	18.82	20.29	20.3		
	RB1#99	19.25	20.67	20.6		
	RB50#0	17.65	18.38	19.1		
	RB50#50	17.96	19	19.49		
	RB100#0	17.91	18.67	19.31		

Note: EIRP=Conducted Power(dBm) - Lc(dB) + G_T(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	5.91	5.65	5.68	13
	RB100#0	4.43	4.38	4.35	13
20MHz 16QAM	RB1#0	6.52	6.00	6.17	13
	RB100#0	5.94	5.86	5.88	13
Result:					Pass

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	1.102	1.102	1.096	1.26	1.254	1.254
1.4MHz 16QAM	1.090	1.102	1.102	1.248	1.254	1.266
3MHz QPSK	2.695	2.695	2.695	3.012	3.012	3.00
3MHz 16QAM	2.683	2.683	2.695	3.00	3.024	3.012
5MHz QPSK	4.511	4.511	4.531	5.00	4.98	5.00
5MHz 16QAM	4.531	4.551	4.511	5.04	5.04	5.00
10MHz QPSK	8.942	8.942	8.982	9.76	9.80	9.76
10MHz 16QAM	8.982	8.942	8.942	9.88	9.88	9.80
15MHz QPSK	13.473	13.533	13.533	14.76	14.88	14.76
15MHz 16QAM	13.533	13.473	13.533	14.82	14.76	14.76
20MHz QPSK	17.964	17.964	18.044	19.60	19.84	19.52
20MHz 16QAM	18.044	17.964	18.044	19.76	19.76	19.68

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

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

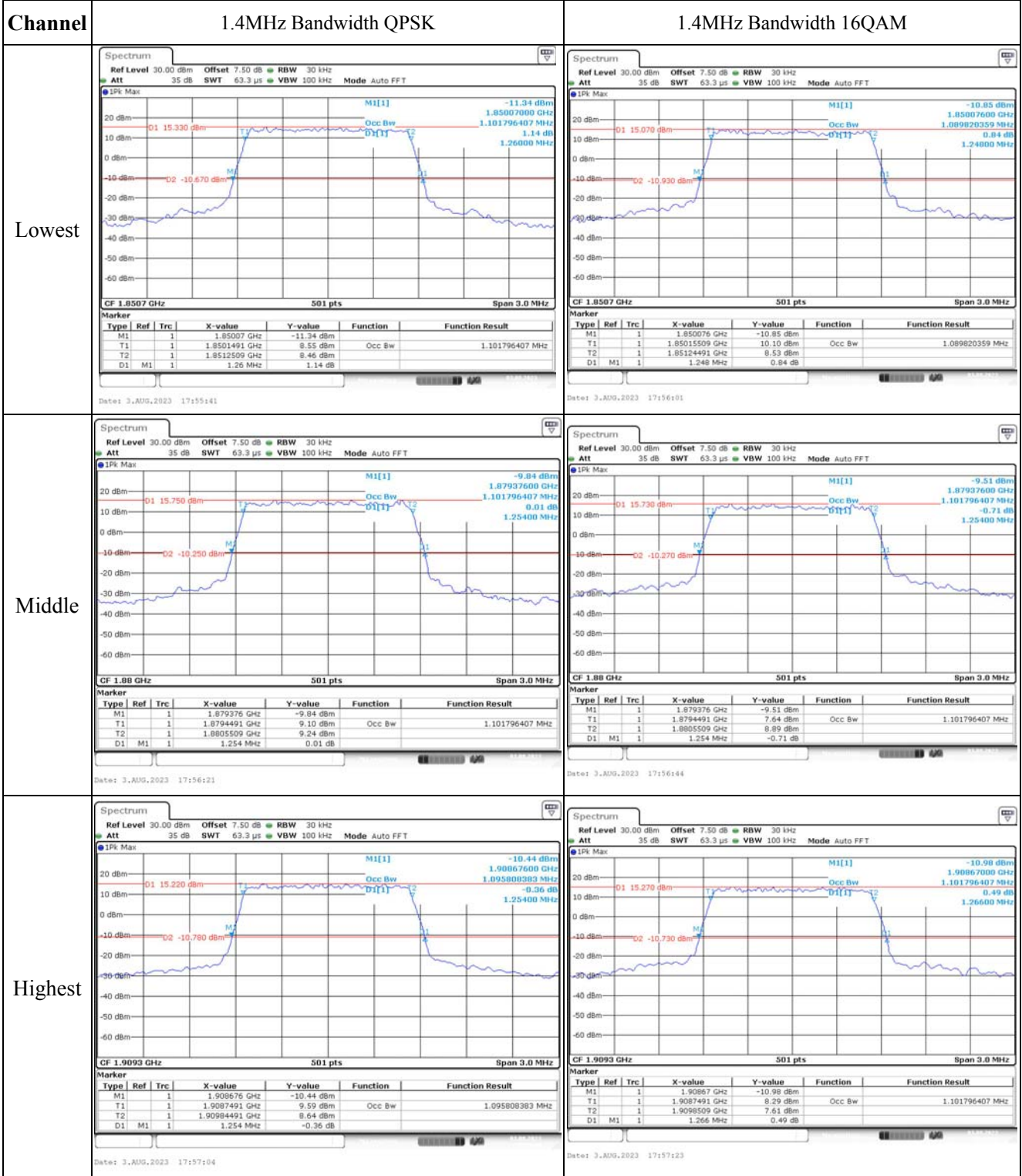
Out of band emission, Band Edge	
Result:	Pass, please refer to the test plots of Out of band emission, Band Edge.

Frequency Stability						
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1851.067	1850.000	1909.045	1910.000
	-20	3.8	1851.010	1850.000	1909.051	1910.000
	-10	3.8	1851.032	1850.000	1909.071	1910.000
	0	3.8	1851.041	1850.000	1909.037	1910.000
	10	3.8	1851.067	1850.000	1909.048	1910.000
	20	3.8	1851.058	1850.000	1909.022	1910.000
	30	3.8	1851.048	1850.000	1909.045	1910.000
	40	3.8	1851.089	1850.000	1909.069	1910.000
	50	3.8	1851.052	1850.000	1909.046	1910.000
Frequency Stability vs. Voltage	20	3.5	1851.038	1850.000	1909.059	1910.000
	20	4.4	1851.055	1850.000	1909.085	1910.000
					Result:	Pass

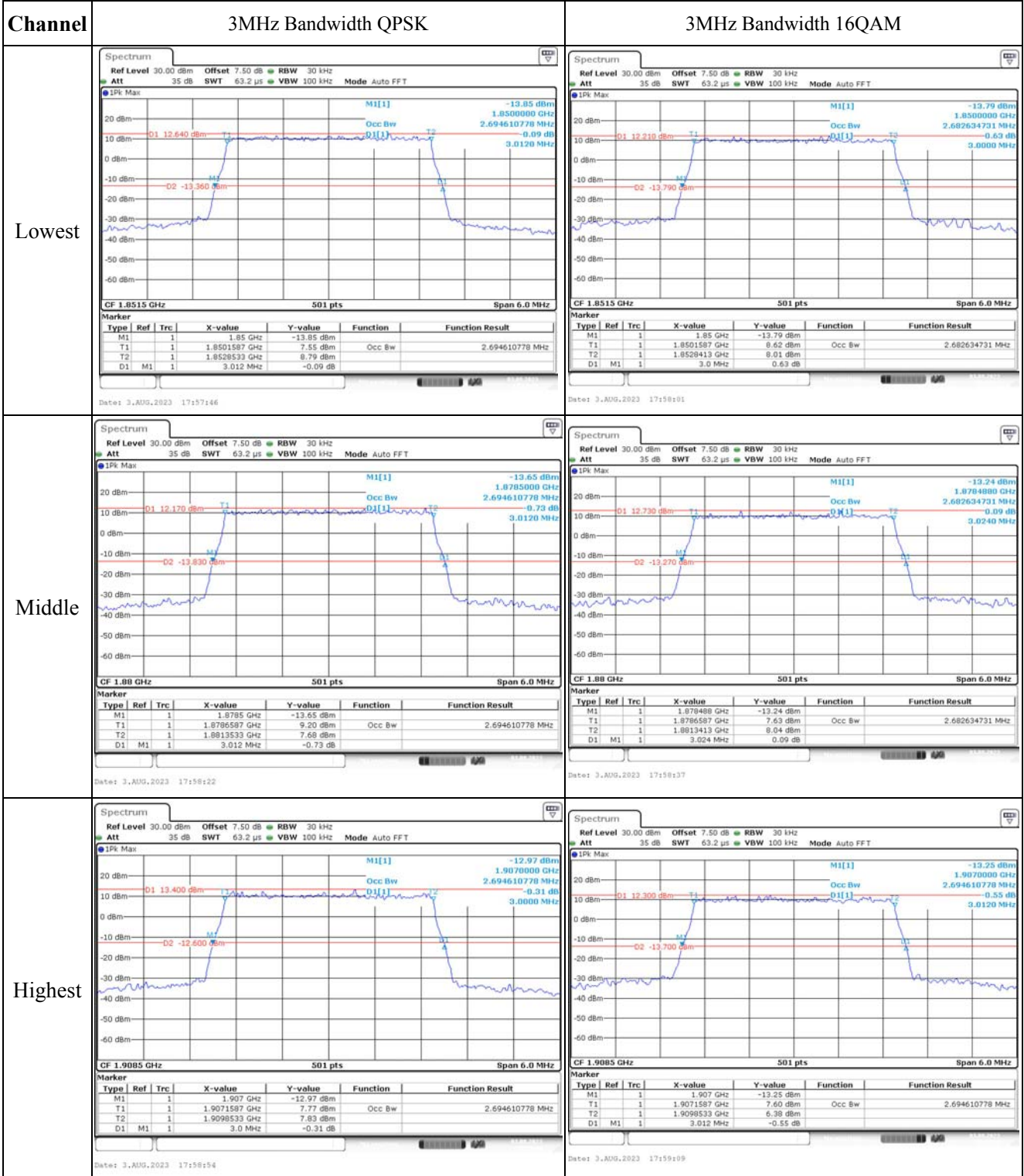
Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1850.936	1850.000	1909.012	1910.000
	-20	3.8	1850.920	1850.000	1909.046	1910.000
	-10	3.8	1850.902	1850.000	1909.040	1910.000
	0	3.8	1850.902	1850.000	1909.015	1910.000
	10	3.8	1850.999	1850.000	1909.003	1910.000
	20	3.8	1850.978	1850.000	1909.022	1910.000
	30	3.8	1850.958	1850.000	1909.032	1910.000
	40	3.8	1850.999	1850.000	1909.087	1910.000
	50	3.8	1850.973	1850.000	1909.008	1910.000
Frequency Stability vs. Voltage	20	3.5	1850.922	1850.000	1909.083	1910.000
	20	4.4	1850.932	1850.000	1909.042	1910.000
					Result:	Pass

Test Plots: (Note: The 7.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

Occupied Bandwidth



Occupied Bandwidth



Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM																																																																						
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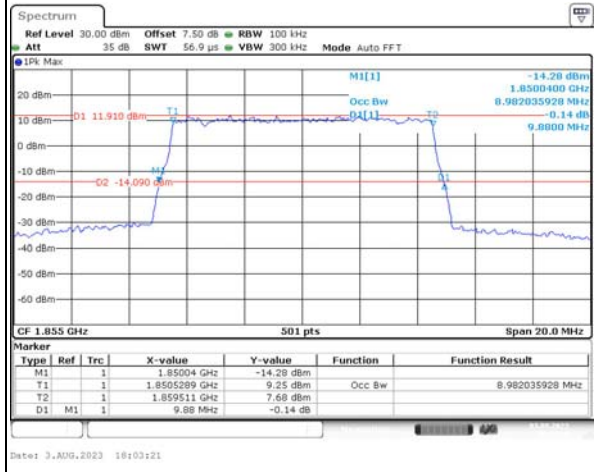
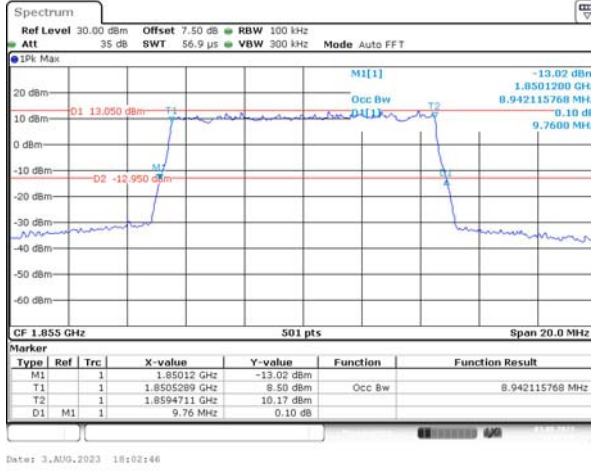
Occupied Bandwidth

Channel

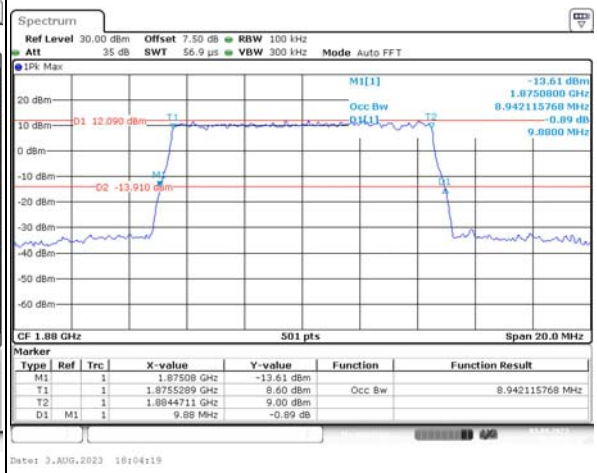
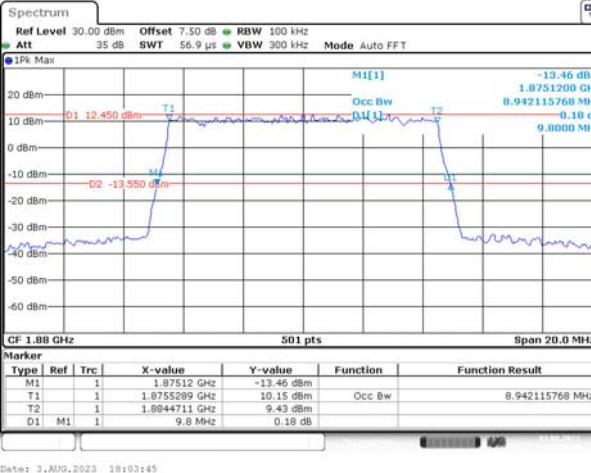
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

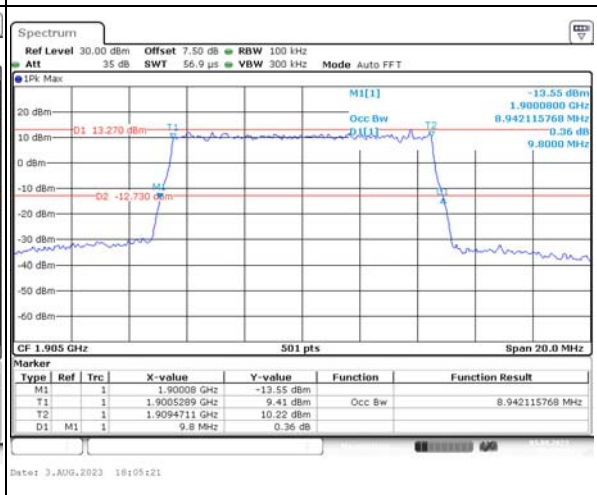
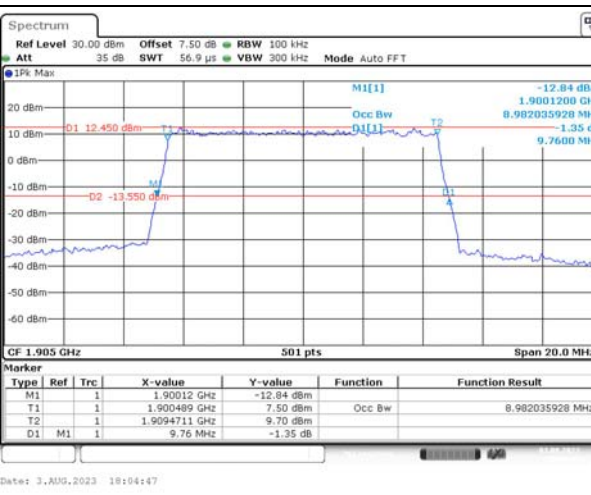
Lowest



Middle



Highest



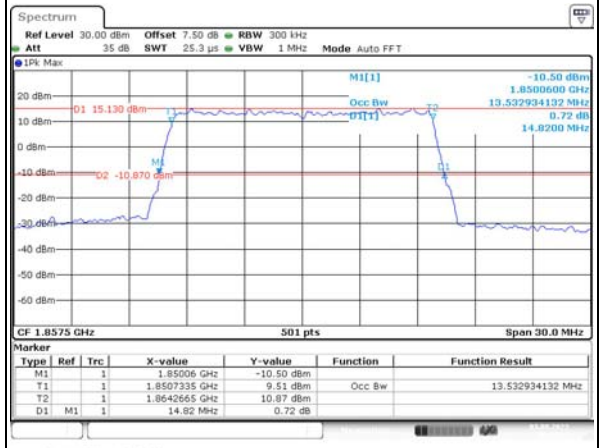
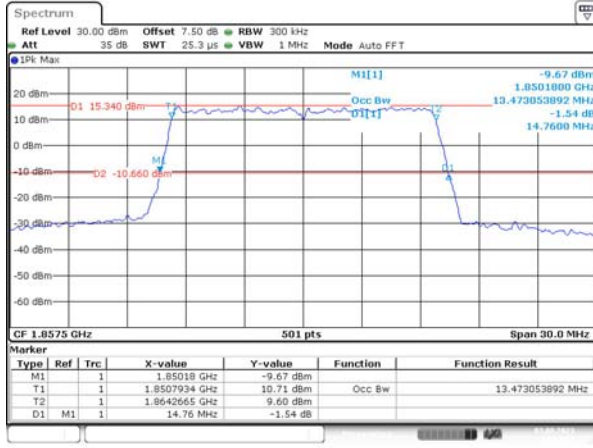
Occupied Bandwidth

Channel

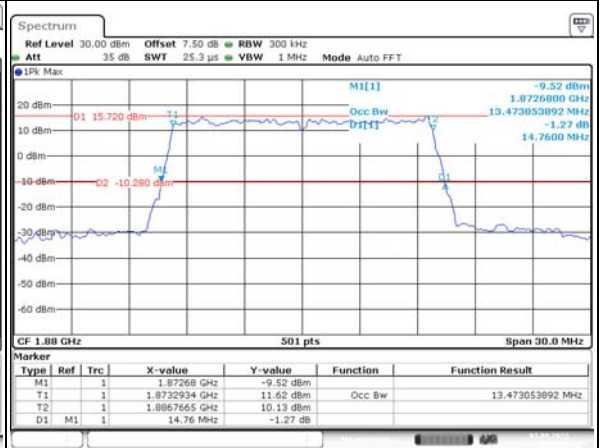
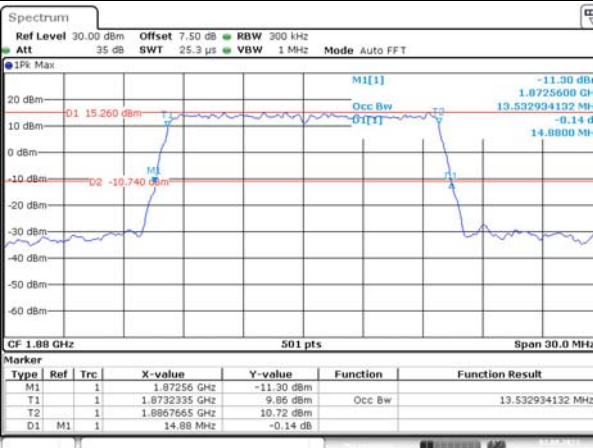
15MHz Bandwidth QPSK

15MHz Bandwidth 16QAM

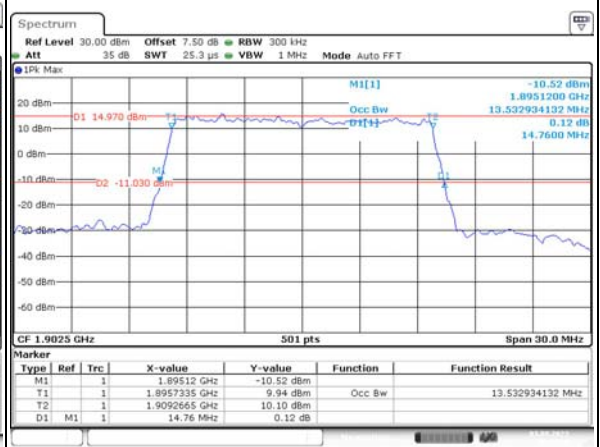
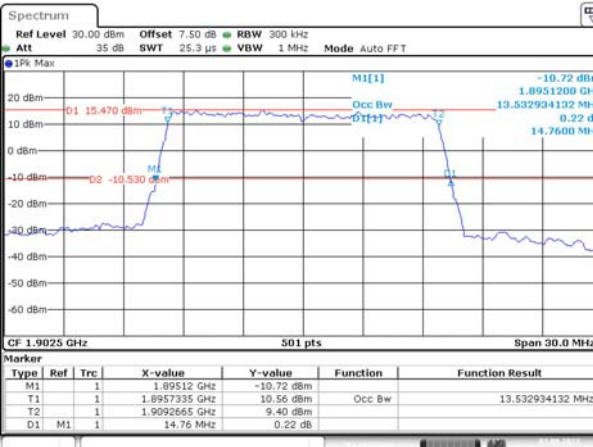
Lowest



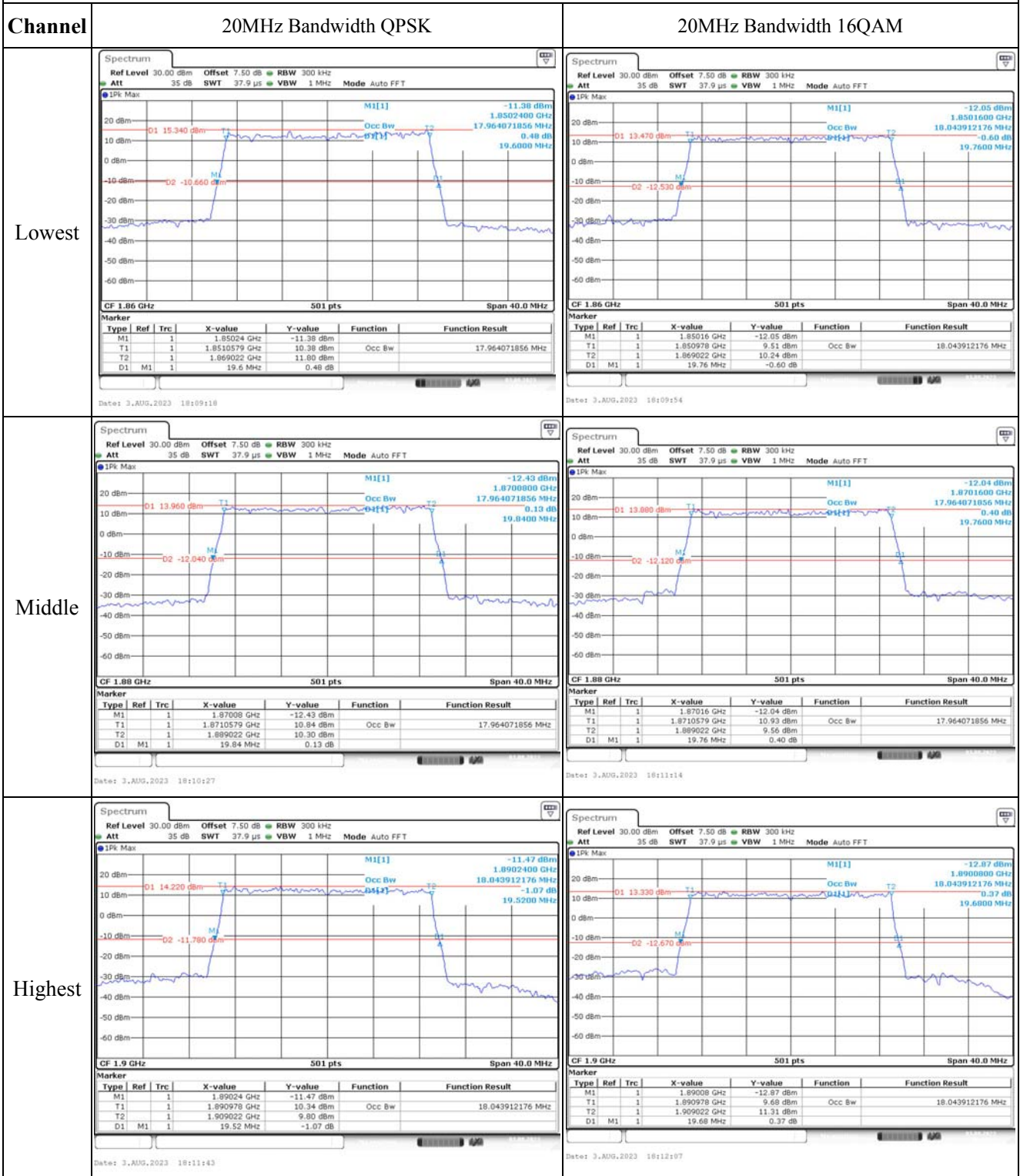
Middle



Highest



Occupied Bandwidth

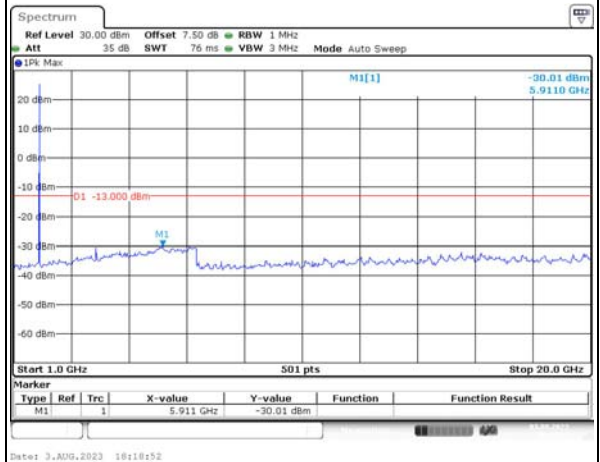
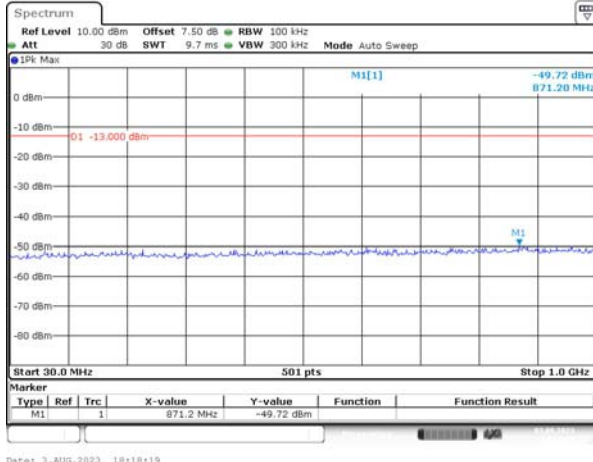


Spurious Emissions at Antenna Terminal

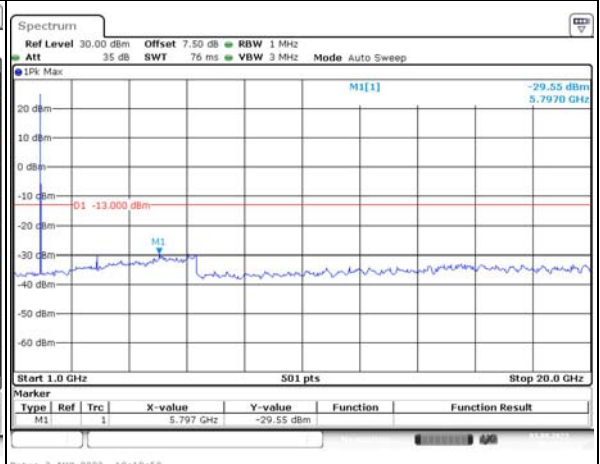
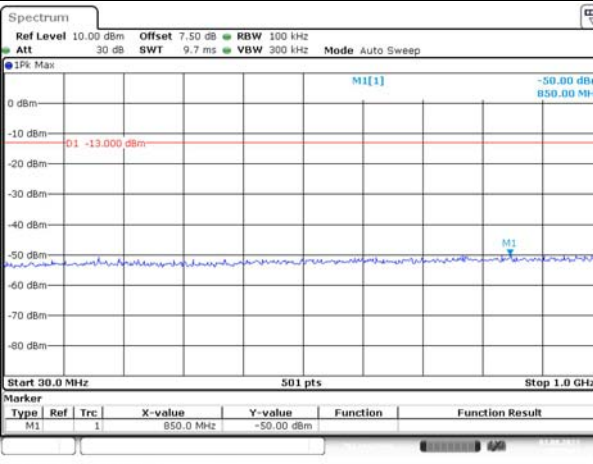
Channel

1.4MHz Bandwidth QPSK

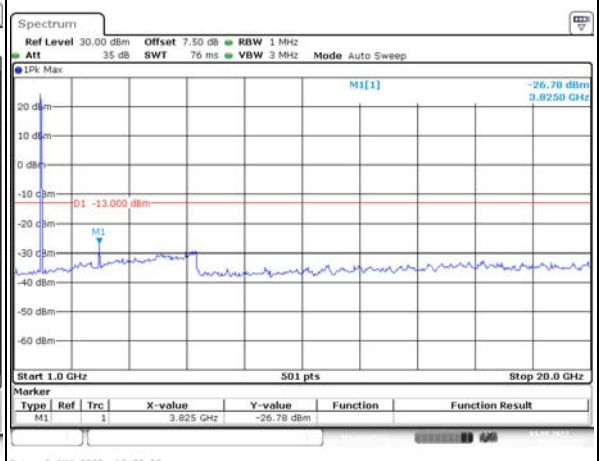
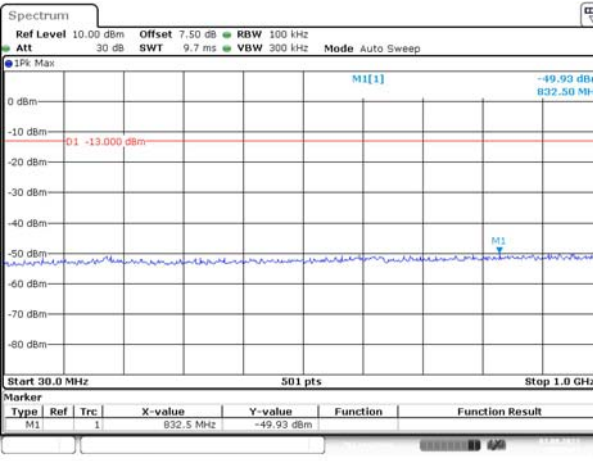
Lowest



Middle



Highest

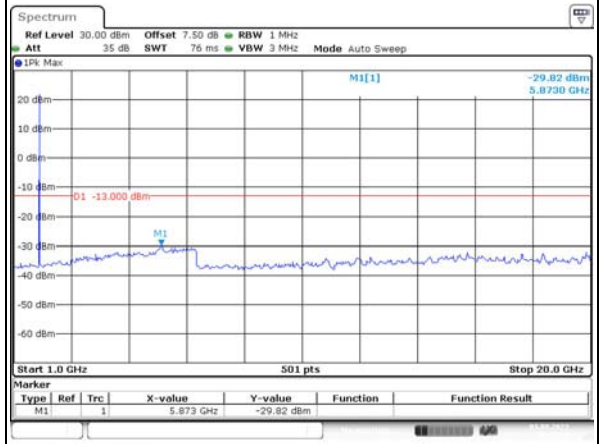
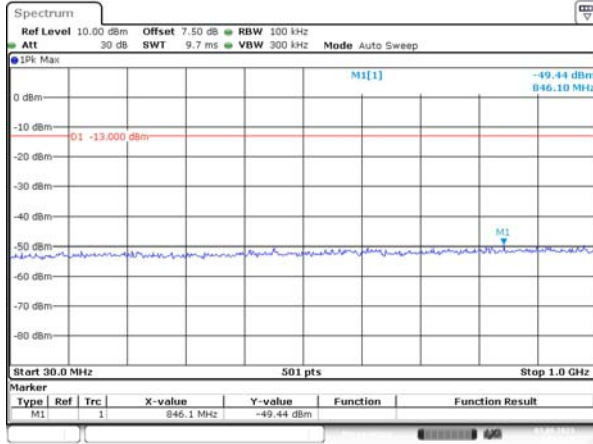


Spurious Emissions at Antenna Terminal

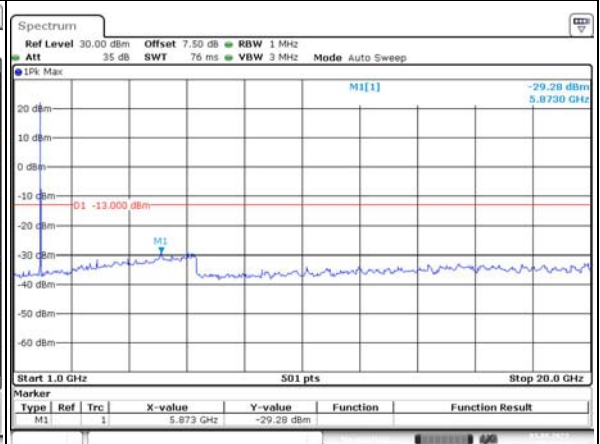
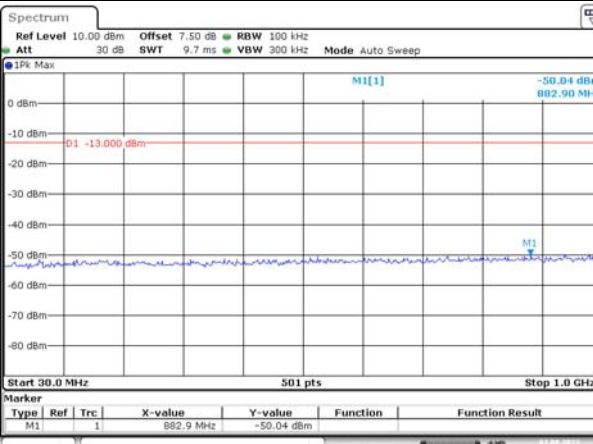
Channel

3MHz Bandwidth QPSK

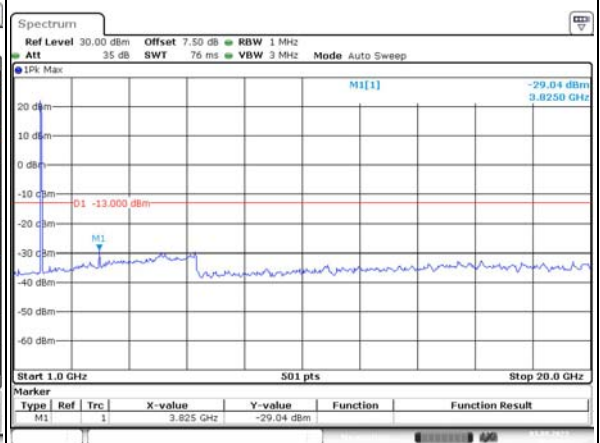
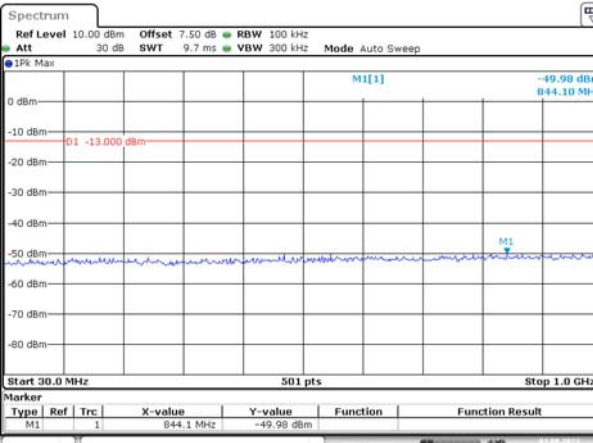
Lowest



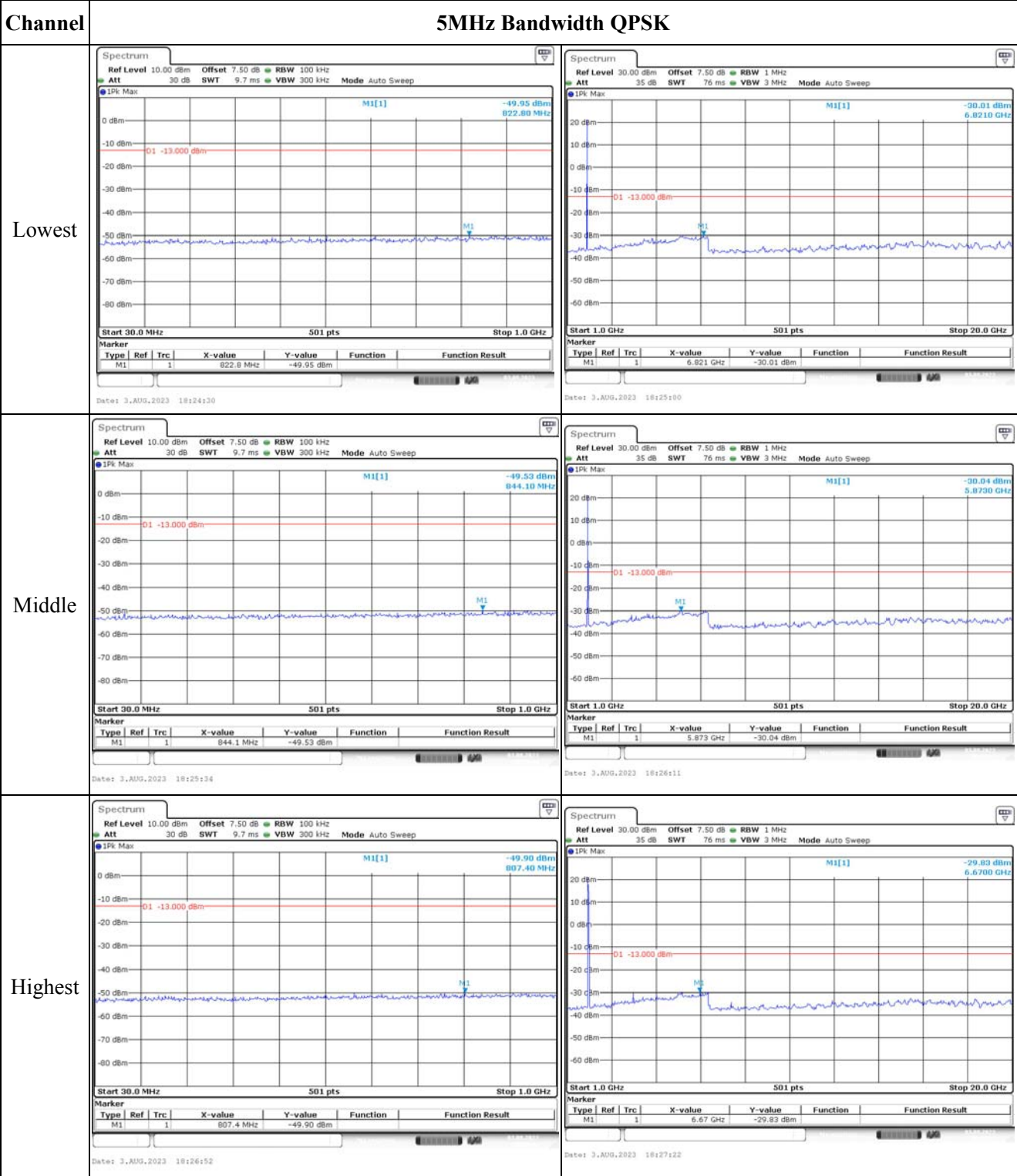
Middle



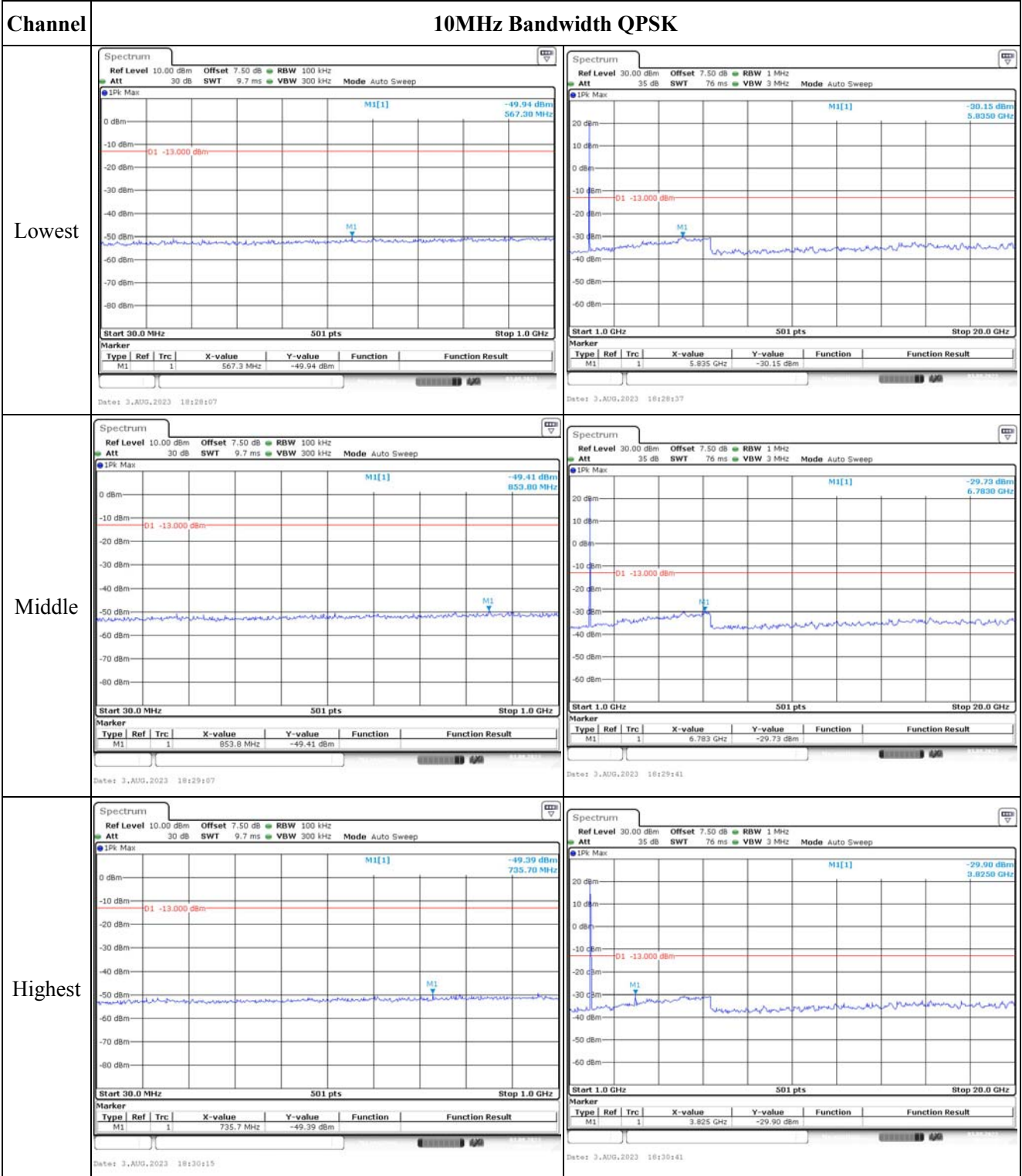
Highest



Spurious Emissions at Antenna Terminal



Spurious Emissions at Antenna Terminal

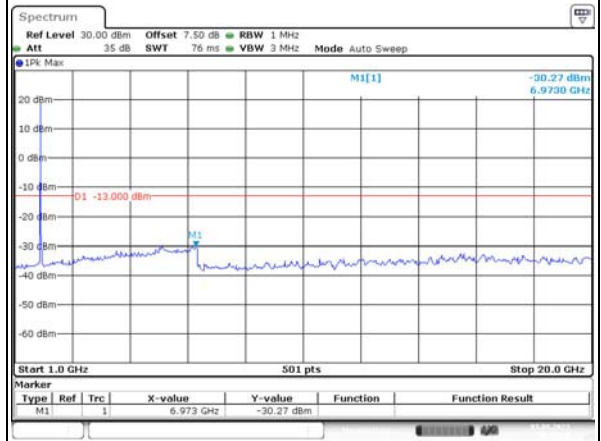
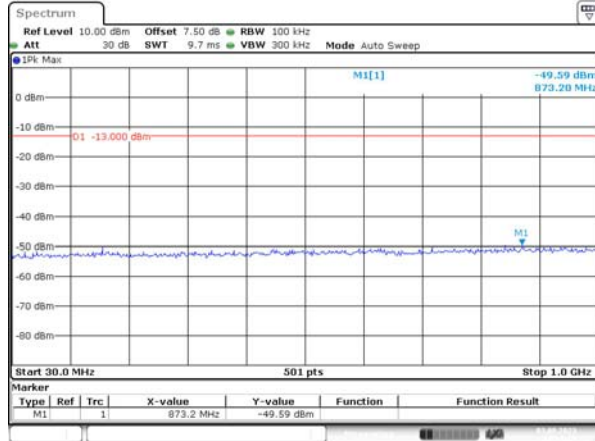


Spurious Emissions at Antenna Terminal

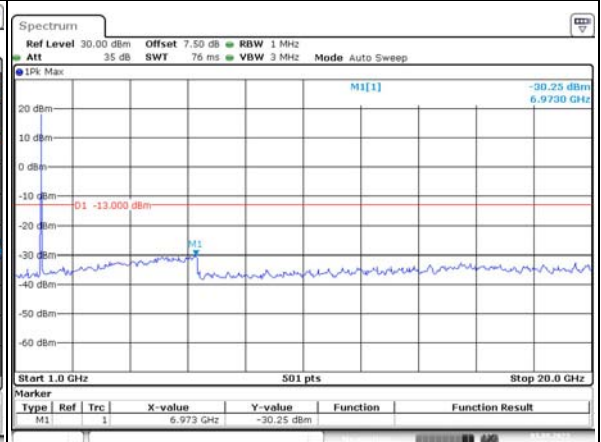
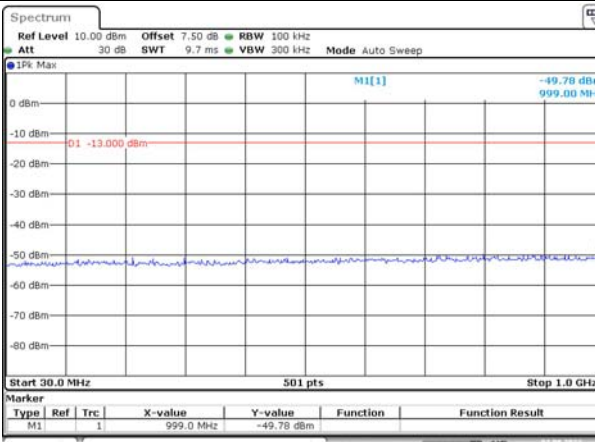
Channel

15MHz Bandwidth QPSK

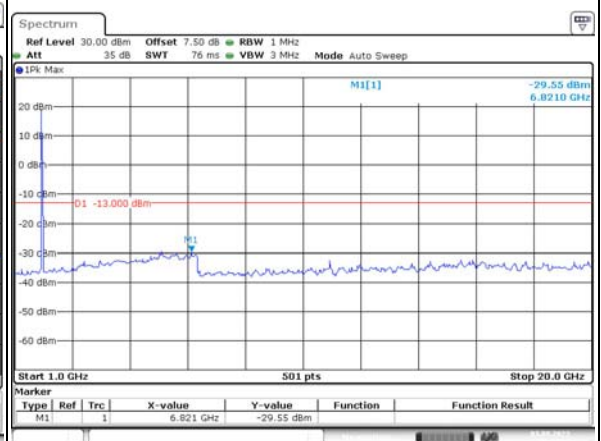
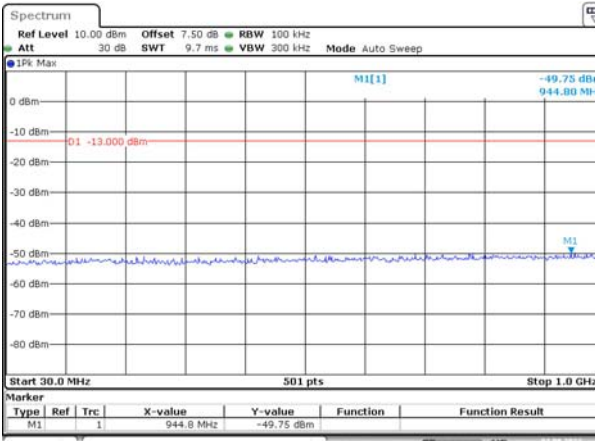
Lowest



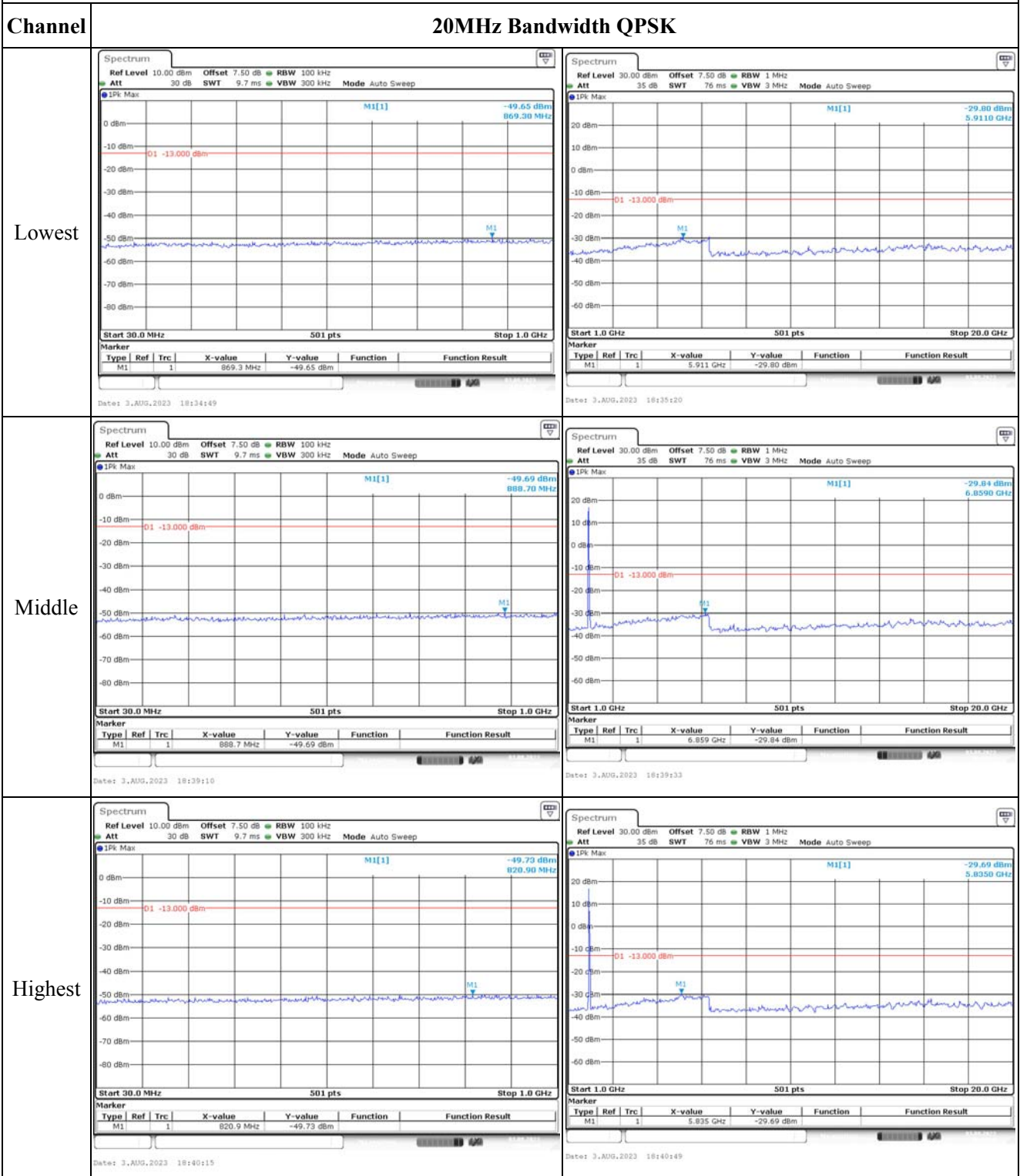
Middle



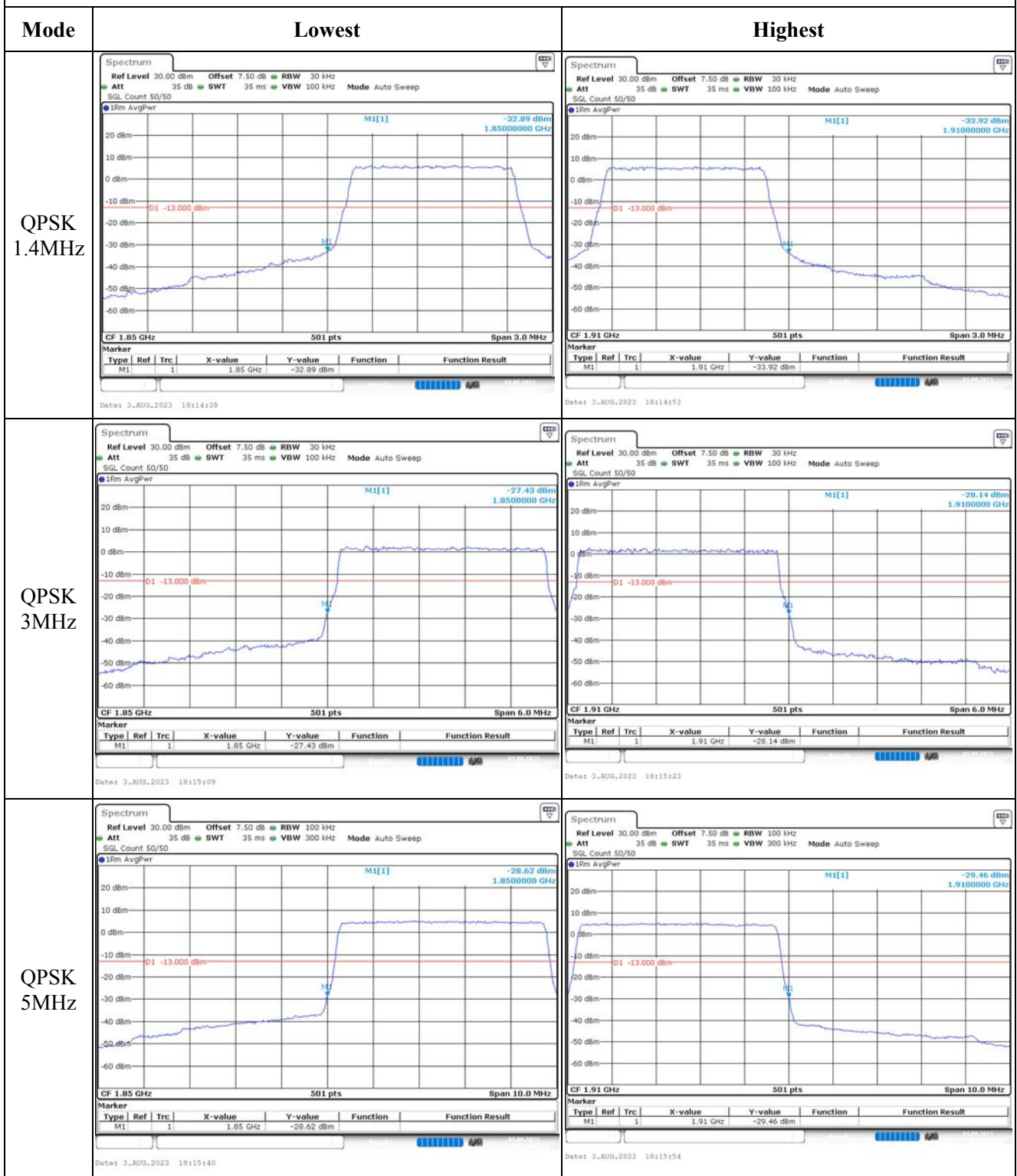
Highest



Spurious Emissions at Antenna Terminal



Out of band emission, Band Edge



Out of band emission, Band Edge

