



RF MEASUREMENT REPORT

FCC ID: HD5-EDA521

Application: Honeywell International Inc
Honeywell Safety and Productivity Solutions

Product: Mobile Computer

Model No.: EDA52-1

Brand Name: Honeywell

FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part(s): Part 2, 22, 24, 27

Test Procedure(s): ANSI C63.26: 2015

Test Date: December 14, 2021 ~ February 28, 2022

Reviewed By:

Jame Yuan

Approved By:

Robin Wu



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.26-2015. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2112RSU039-U8	Rev. 01	Initial Report	02-28-2022	Valid

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1. General Information

1.1. Applicant

Honeywell International Inc
Honeywell Safety and Productivity Solutions
9680 Old Bailes Rd. Fort Mill, SC 29707 United States

1.2. Manufacturer

Honeywell International Inc
Honeywell Safety and Productivity Solutions
9680 Old Bailes Rd. Fort Mill, SC 29707 United States

1.3. Testing Facility

☒	Test Site – MRT Suzhou Laboratory				
	Laboratory Location (Suzhou - Wuzhong)				
	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China				
	Laboratory Location (Suzhou - SIP)				
	4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China				
	Laboratory Accreditations				
A2LA: 3628.01		CNAS: L10551			
FCC: CN1166		ISED: CN0001			
VCCI:	☐ R-20025	☐ G-20034	☐ C-20020	☐ T-20020	
	☐ R-20141	☐ G-20134	☐ C-20103	☐ T-20104	
☐	Test Site – MRT Shenzhen Laboratory				
	Laboratory Location (Shenzhen)				
	1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China				
	Laboratory Accreditations				
	A2LA: 3628.02		CNAS: L10551		
	FCC: CN1284		ISED: CN0105		
☐	Test Site – MRT Taiwan Laboratory				
	Laboratory Location (Taiwan)				
	No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)				
	Laboratory Accreditations				
	TAF: L3261-190725				
FCC: 291082, TW3261		ISED: TW3261			

1.4. Product Information

Product Name	Mobile Computer
Model No.	EDA52-1
IMEI	Conducted Measurement: 990017701062131 Radiated Measurement: 990017701732584
Wi-Fi Specification	802.11a/b/g/n/ac
Bluetooth Specification	v5.0 dual mode
NFC Specification	Active, 13.56MHz
GNSS Specification	GPS/Galileo/BDS/GLONASS
3GPP Specification	GSM 850/1900 WCDMA Band 2/4/5 LTE Band 2/4/5/7/12/13/17/25/26/30/38/40/41/66
Working Voltage	3.45 ~ 4.35Vdc
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification

FDD T _x Frequency Range:	Band 2: 1850 ~ 1910 MHz; Band 4: 1710 ~ 1755 MHz Band 5: 824 ~ 849 MHz; Band 7: 2500 ~ 2570 MHz Band 12: 699 ~ 716 MHz; Band 13: 777 ~ 787 MHz Band 17: 704 ~ 716 MHz; Band 25: 1850 ~ 1915 MHz Band 26: 814 ~ 849 MHz; Band 30: 2305 ~ 2315 MHz Band 66: 1710 ~ 1780 MHz
FDD R _x Frequency Range:	Band 2: 1930 ~ 1990 MHz; Band 4: 2110 ~ 2155 MHz Band 5: 869 ~ 894 MHz; Band 7: 2620 ~ 2690 MHz Band 12: 729 ~ 746 MHz; Band 13: 746 ~ 756 MHz Band 17: 734 ~ 746 MHz; Band 25: 1930 ~ 1995 MHz Band 26: 859 ~ 894 MHz; Band 30: 2350 ~ 2360 MHz Band 66: 2110 ~ 2200 MHz
TDD T _x & R _x Frequency Range:	Band 38: 2570 ~ 2620 MHz; Band 41: 2496 ~ 2690 MHz Band 40: 2300 ~ 2400 MHz
Modulation	Uplink & Downlink up to 64QAM

Note 1: For other features of this EUT, test report will be issued separately.

Note 2: LTE band 26 transmit frequency for part 90 rule is 814 ~ 824MHz and part 22 rule is 824 ~ 849MHz. ERP over 15MHz bandwidth complies the ERP limit line of part 22 rule, therefore ERP of the partial frequency spectrum which falls within part 22 also complies.

1.6. Antenna Details

Technology	Frequency Range (MHz)	Antenna Type	Max Peak Gain (dBi)
LTE Band 2	1850 ~ 1910	PIFA	2.66
LTE Band 4	1710 ~ 1755		0.94
LTE Band 5	824 ~ 849		-0.12
LTE Band 7	2500 ~ 2570		-0.33
LTE Band 12	699 ~ 716		-0.74
LTE Band 13	777 ~ 787		-1.64
LTE Band 17	704 ~ 716		-1.06
LTE Band 25	1850 ~ 1915		2.66
LTE Band 26	814 ~ 849		0.18
LTE Band 30	2305 ~ 2315		0.48
LTE Band 38	2570 ~ 2620		0.20
LTE Band 40	2300 ~ 2400		0.55
LTE Band 41	2500 ~ 2690		0.94
LTE Band 66	1710 ~ 1780		1.27

Note: All antenna information (Antenna type and Peak Gain) is provided by the manufacturer.

1.7. Device Capabilities

This device contains the following capabilities:

Working on LTE Band 2, 4, 5, 7, 12, 13, 17, 25, 26, 30, 38, 40, 41, 66.

LTE Band 66 (1710 ~ 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 ~ 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.

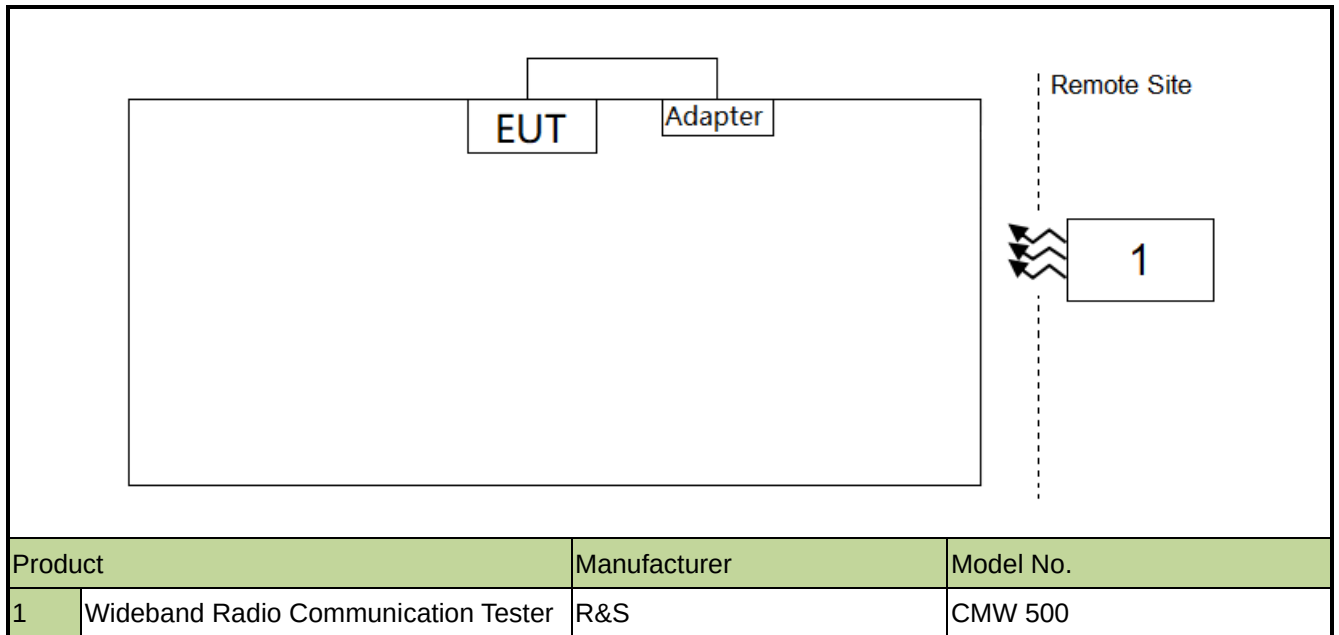
LTE Band 25 (1850 ~ 1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 ~ 1910 MHz). Therefore, test data provided in this report covers Band 2 as well as Band 25.

LTE Band 26 (814 ~ 849 MHz) overlaps the entire frequency range of LTE Band 5 (824 ~ 849 MHz). Therefore, test data provided in this report covers Band 5 as well as Band 26.

LTE Band 41 (2496 ~ 2690 MHz) overlaps the entire frequency range of LTE Band 38 (2570 ~ 2620 MHz). Therefore, test data provided in this report covers Band 38 as well as Band 41.

2. Test Configuration

2.1. Configuration of Tested System



2.2. Test Methodology

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ANSI C63.26:2015
- FCC CFR 47 Part 2, Part 22, Part 24, Part 27
- FCC KDB 971168 D01 v03r01: Power Meas License Digital Systems
- FCC KDB 971168 D02 v02r01: Misc Rev Approv License Devices
- FCC KDB 412172 D01 v01r01: Determining ERP and EIRP

2.3. Test Environment Condition

Ambient Temperature	15 ~ 35°C
Relative Humidity	20 ~ 75%RH

3. Test Equipment Calibration Date

Instrument Name	Manufacturer	Model No.	Asset No.	Cali. Interval	Cal. Due Date	Test Site
Communication Tester	R&S	CMU 200	MRTSUE06009	1 year	2022/9/7	SIP-SR1
Communication Tester	R&S	CMW500	MRTSUE06243	1 year	2022/10/10	SIP-SR1
Signal Generator	Keysight	E8257D	MRTSUE06453	1 year	2022/6/24	SIP-SR1
Thermohygrometer	testo	622	MRTSUE06629	1 year	2022/11/2	SIP-SR1
Signal Generator	Keysight	E8257D	MRTSUE06904	1 year	2022/11/23	SIP-SR1
DC POWER MODULE	Keysight	N6743B	MRTSUE06905	/	/	SIP-SR1
DC POWER MODULE	Keysight	N6743B	MRTSUE06906	/	/	SIP-SR1
Low-Profile Modular Power System Mainframe	Keysight	N6700C	MRTSUE06907	/	/	SIP-SR1
Signal Analyzer	Keysight	N9021B	MRTSUE06915	1 year	2022/12/19	SIP-SR1
Temperature Chamber	BAOYT	BYG-80CL	MRTSUE06932	1 year	2022/3/16	SIP-SR1
Shielding Room	MIX-BEP	SIP-SR1	MRTSUE06948	/	/	SIP-SR1
Anechoic Chamber	RIKEN	SIP-AC1	MRTSUE06554	1 year	2022/12/23	SIP-AC1
Preamplifier	EMCI	EMC051845SE	MRTSUE06600	1 year	2022/11/8	SIP-AC1
Horn Antenna	R&S	HF907	MRTSUE06610	1 year	2022/8/5	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06616	1 year	2022/11/2	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06620	1 year	2022/11/28	SIP-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06645	1 year	2022/8/26	SIP-AC1
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022/12/29	SIP-AC2
Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2022/6/24	SIP-AC2
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06599	1 year	2022/10/20	SIP-AC2
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2022/10/11	SIP-AC2
Signal Analyzer	Keysight	N9010B	MRTSUE06603	1 year	2022/10/31	SIP-AC2
Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2022/9/7	SIP-AC2
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2022/6/24	SIP-AC2
Thermohygrometer	testo	608-H1	MRTSUE06623	1 year	2022/11/28	SIP-AC2
Thermohygrometer	testo	608-H1	MRTSUE06624	1 year	2022/11/28	SIP-AC2
Preamplifier	EMCI	EMC001330	MRTSUE06643	1 year	2022/1/12	SIP-AC2
				1 year	2023/1/13	SIP-AC2
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06647	1 year	2022/8/5	SIP-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06648	1 year	2022/11/9	SIP-AC2
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2022/12/23	SIP-AC2
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2022/3/9	SIP-AC2

Instrument Name	Manufacturer	Model No.	Asset No.	Cali. Interval	Cal. Due Date	Test Site
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2022/6/9	SIP-AC3
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06598	1 year	2022/11/9	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2022/9/12	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2022/11/2	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2022/11/28	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2022/1/12	SIP-AC3
				1 year	2023/1/13	SIP-AC3
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06646	1 year	2022/8/26	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2022/12/23	SIP-AC3

Software	Version	Function
EMI Software	V3	EMI Test Software

4. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

Radiated Spurious Emissions
Measurement Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): Horizontal: 9kHz ~ 300MHz: 5.04dB 300MHz ~ 1GHz: 4.95dB 1GHz ~ 40GHz: 6.40dB Vertical: 9kHz ~ 300MHz: 5.24dB 300MHz ~ 1GHz: 6.03dB 1GHz ~ 40GHz: 6.40dB
Conducted Spurious Emissions
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 1.13dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 0.28%
Frequency Stability
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 76.2Hz

5. Test Result

5.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	Conducted	Pass	Section 5.2
2.1055, 22.355 24.235, 27.54	Frequency Stability	< 2.5 ppm		Pass	Section 5.3
22.913(a)(5)	Equivalent Radiated Power (Band 5/26)	< 7 Watts Max ERP		Pass	Section 5.4
27.50(b)(10) 27.50(c)(10)	Equivalent Radiated Power (Band 12, 13, 17)	< 3 Watts Max ERP			
24.232(c) 27.50(h)(2)	Equivalent Isotropic Radiated Power (Band 2/25, 7, 38/41)	< 2 Watts Max EIRP			
27.50(d)(4) 27.50(j)(3)	Equivalent Isotropic Radiated Power (Band 4/66)	< 1 Watts Max EIRP			
2.1051, 22.917(a) 24.238(a), 27.53(c), (g), (h), (m)	Band Edge	Refer to section 5.5		Pass	Section 5.5
24.232(d), 27.50(d)(5)	Peak to Average Ratio	< 13dB		Pass	Section 5.6
2.1051, 22.917(a) 24.238(a), 27.53(c), (g), (h), (m)	Spurious Emission	Refer to section 5.7		Pass	Section 5.7
2.1051, 22.917(a) 24.238(a), 27.53(c), (g), (h), (m)	Spurious Emission	Refer to section 5.8	Radiated	Pass	Section 5.8

Notes:

- 1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 2) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.
- 3) All supported modulation types were evaluated. The worst-case emission of modulation was selected. Therefore, the Frequency Stability, Channel Band Edge, Conducted Spurious Emission, Radiated Spurious Emission (include the Intr-Band CA Mode) were presented the worst-case in the test report.

5.2. Occupied Bandwidth Measurement

5.2.1. Test Limit

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

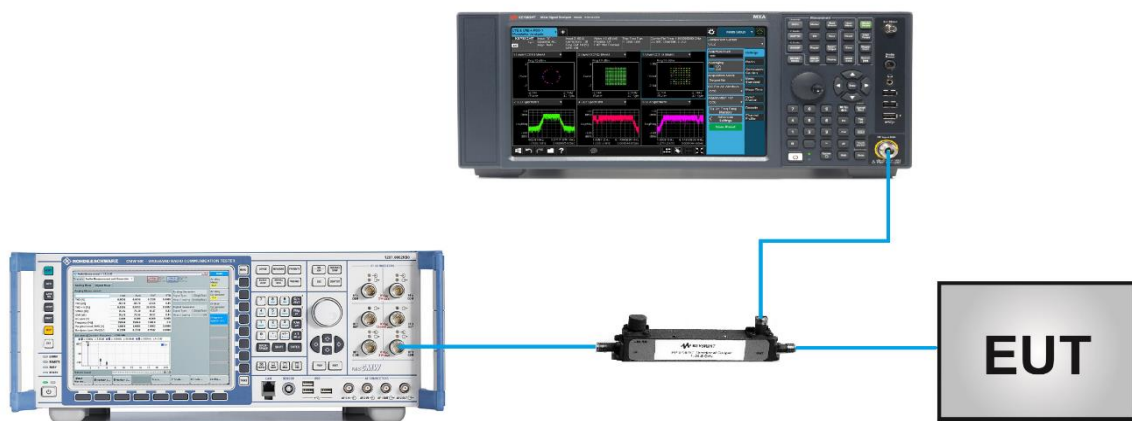
5.2.2. Test Procedure

ANSI C63.26-2015 - Section 5.4

5.2.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency
2. RBW = The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize
8. Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

5.2.4. Test Setup



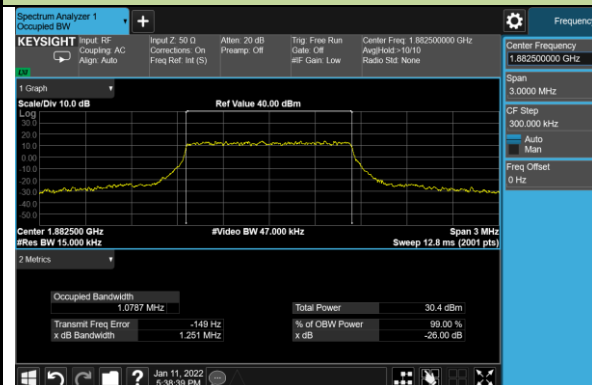
5.2.5.Test Result

Product	Mobile Computer	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2022/01/11 ~ 2022/01/12
Test Band	Band 2/25		

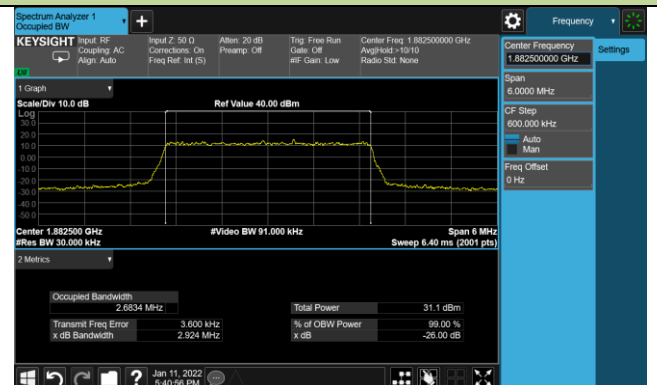
Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
26365	1882.5	1.4	1.08
		3	2.68
		5	4.47
		10	8.94
		15	13.38
		20	17.82
16QAM			
26365	1882.5	1.4	1.08
		3	2.68
		5	4.46
		10	8.93
		15	13.36
		20	17.84
64QAM			
26365	1882.5	1.4	1.08
		3	2.69
		5	4.46
		10	8.92
		15	13.33
		20	17.78

99% Bandwidth - QPSK

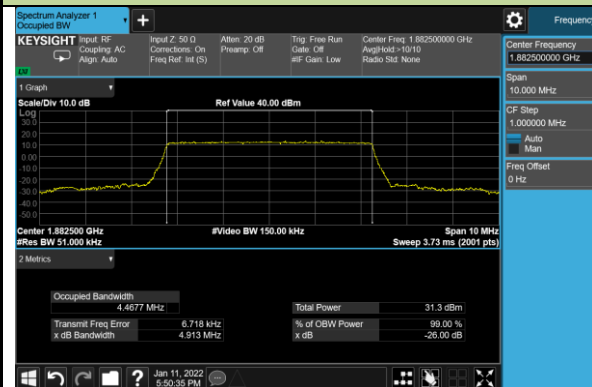
1.4MHz Channel Bandwidth



3MHz Channel Bandwidth



5MHz Channel Bandwidth



10MHz Channel Bandwidth



15MHz Channel Bandwidth



20MHz Channel Bandwidth



99% Bandwidth - 16QAM

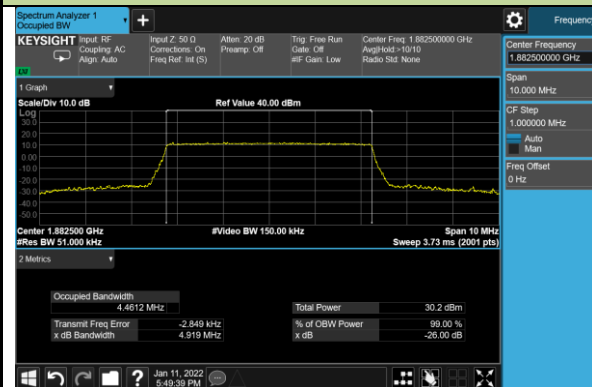
1.4MHz Channel Bandwidth



3MHz Channel Bandwidth



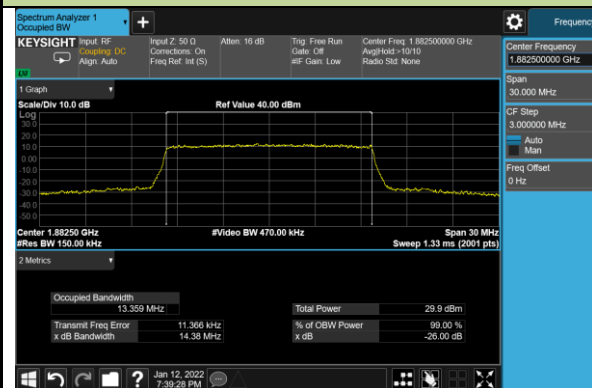
5MHz Channel Bandwidth



10MHz Channel Bandwidth



15MHz Channel Bandwidth



20MHz Channel Bandwidth



99% Bandwidth - 64QAM

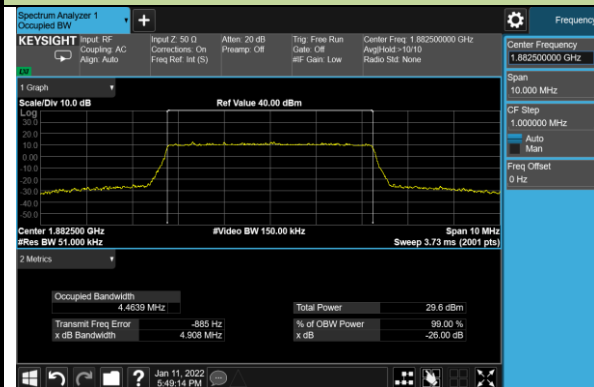
1.4MHz Channel Bandwidth



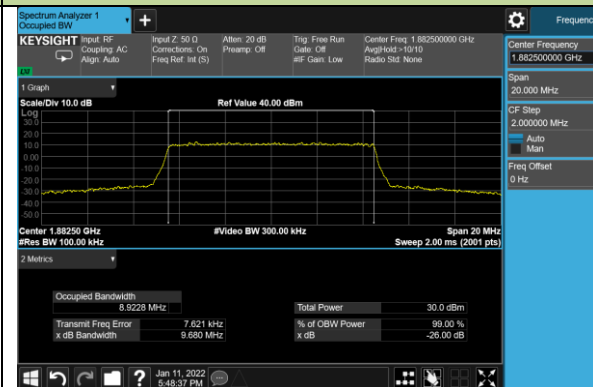
3MHz Channel Bandwidth



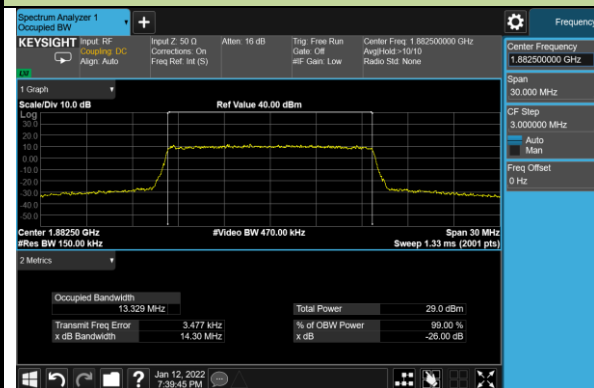
5MHz Channel Bandwidth



10MHz Channel Bandwidth



15MHz Channel Bandwidth



20MHz Channel Bandwidth

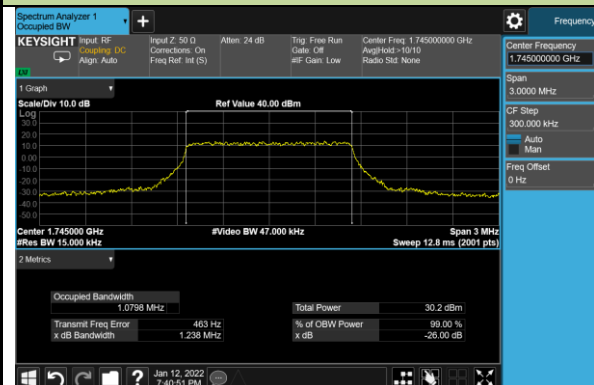


Product	Mobile Computer	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2022/01/11 ~ 2022/01/12
Test Band	Band 4/66		

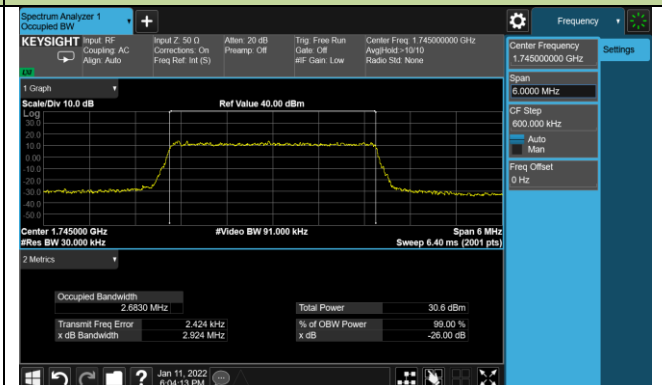
Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
20300	1745.0	1.4	1.08
		3	2.68
		5	4.48
		10	8.93
		15	13.37
		20	17.83
16QAM			
20300	1745.0	1.4	1.08
		3	2.68
		5	4.46
		10	8.93
		15	13.37
		20	17.85
64QAM			
20300	1745.0	1.4	1.08
		3	2.69
		5	4.46
		10	8.93
		15	13.33
		20	17.81

99% Bandwidth - QPSK

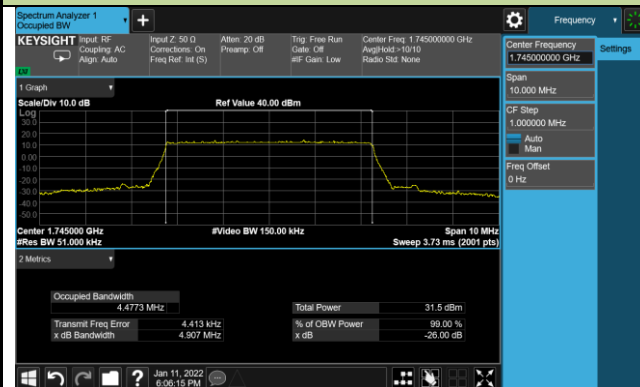
1.4MHz Channel Bandwidth



3MHz Channel Bandwidth



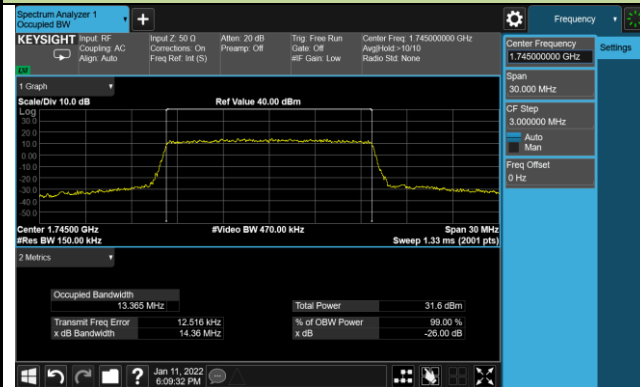
5MHz Channel Bandwidth



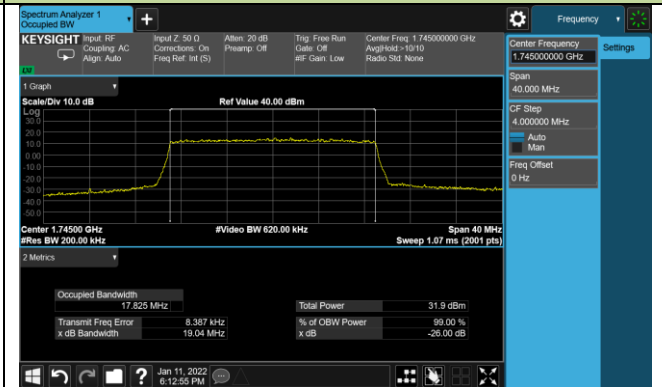
10MHz Channel Bandwidth



15MHz Channel Bandwidth

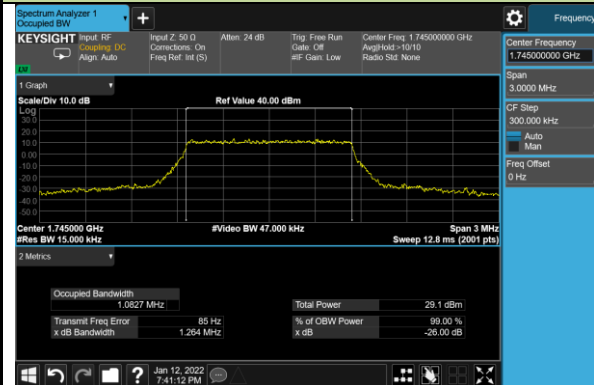


20MHz Channel Bandwidth



99% Bandwidth - 16QAM

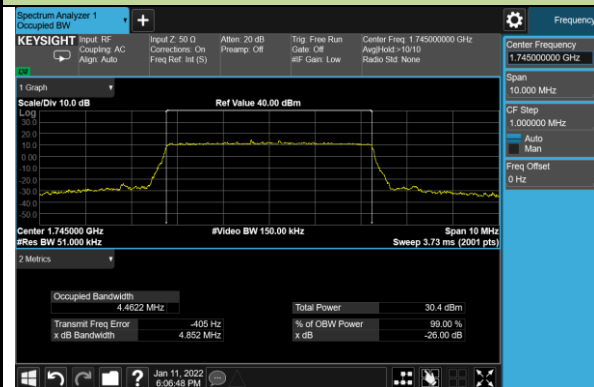
1.4MHz Channel Bandwidth



3MHz Channel Bandwidth



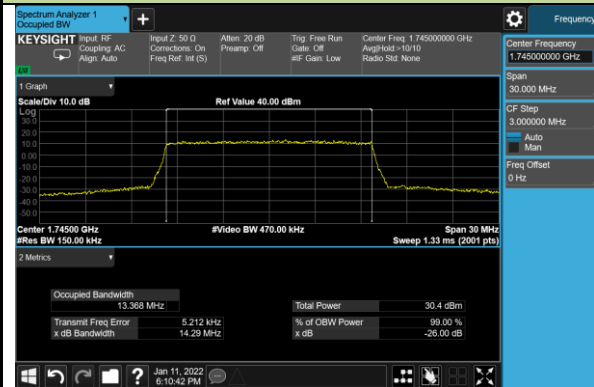
5MHz Channel Bandwidth



10MHz Channel Bandwidth



15MHz Channel Bandwidth

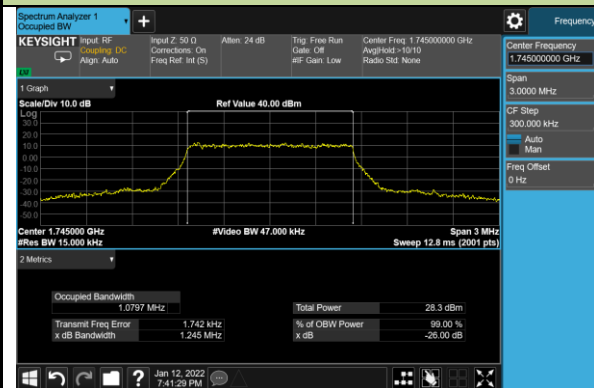


20MHz Channel Bandwidth



99% Bandwidth - 64QAM

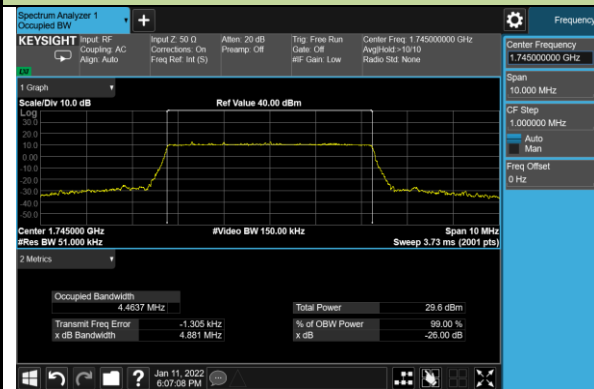
1.4MHz Channel Bandwidth



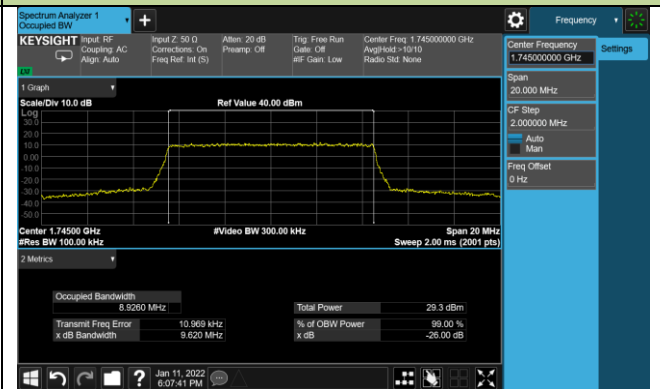
3MHz Channel Bandwidth



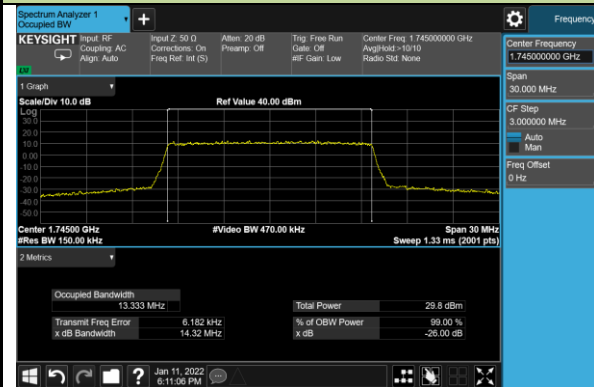
5MHz Channel Bandwidth



10MHz Channel Bandwidth



15MHz Channel Bandwidth



20MHz Channel Bandwidth

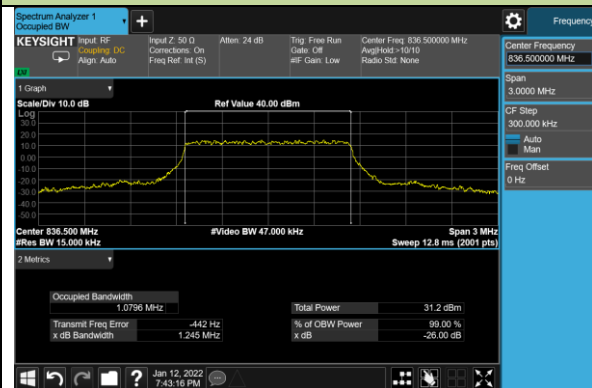


Product	Mobile Computer	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2022/01/11 ~ 2022/01/12
Test Band	LTE Band 5/26		

Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
20525	836.5	1.4	1.08
		3	2.68
		5	4.48
		10	8.93
		15	13.38
27185	821.5	15	13.37
16QAM			
20525	836.5	1.4	1.08
		3	2.68
		5	4.46
		10	8.93
		15	13.38
27185	821.5	15	13.37
64QAM			
20525	836.5	1.4	1.08
		3	2.69
		5	4.47
		10	8.92
		15	13.35
27185	821.5	15	13.36

99% Bandwidth - QPSK

1.4MHz Channel Bandwidth



3MHz Channel Bandwidth



5MHz Channel Bandwidth



10MHz Channel Bandwidth



15MHz Channel Bandwidth

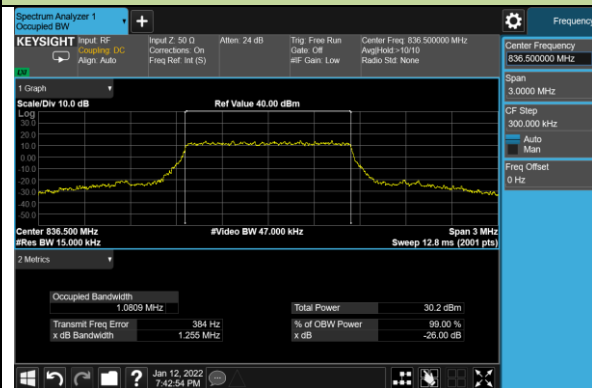


821.5MHz



99% Bandwidth -16QAM

1.4MHz Channel Bandwidth



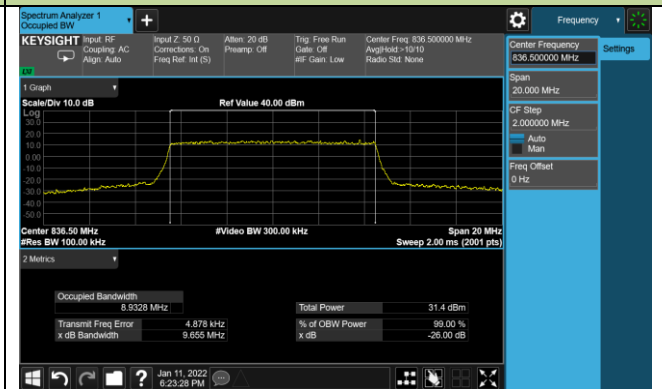
3MHz Channel Bandwidth



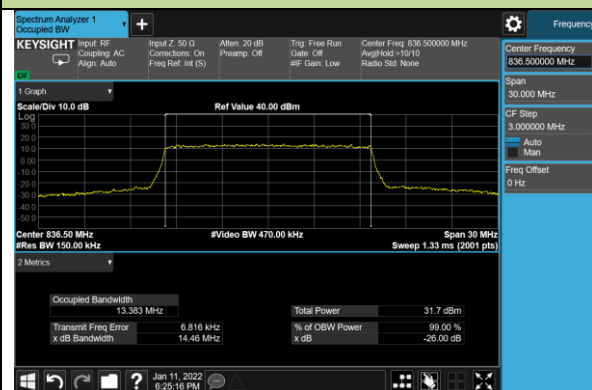
5MHz Channel Bandwidth



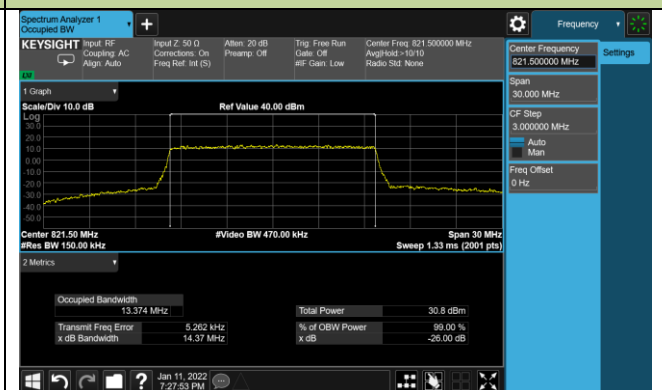
10MHz Channel Bandwidth



15MHz Channel Bandwidth

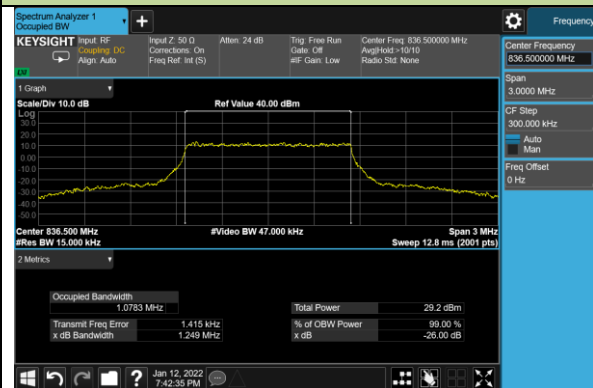


821.5MHz



99% Bandwidth -64QAM

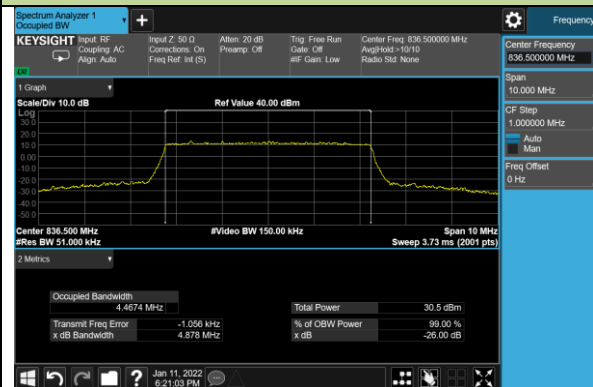
1.4MHz Channel Bandwidth



3MHz Channel Bandwidth



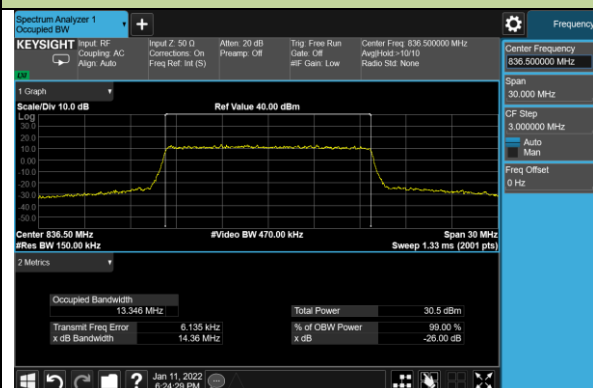
5MHz Channel Bandwidth



10MHz Channel Bandwidth



15MHz Channel Bandwidth



821.5MHz

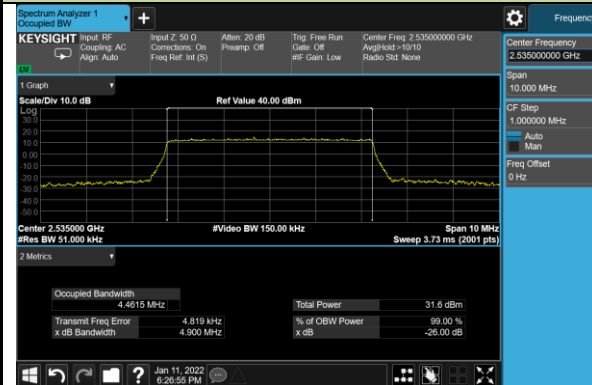


Product	Mobile Computer	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2022/01/11
Test Band	LTE Band 7		

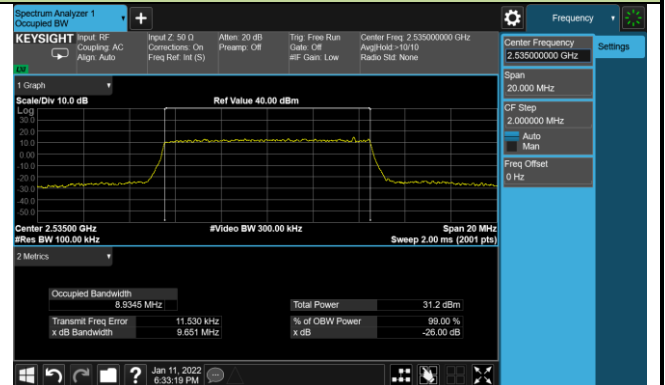
Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
21100	2535.0	5	4.46
		10	8.93
		15	13.40
		20	17.84
16QAM			
21100	2535.0	5	4.47
		10	8.93
		15	13.37
		20	17.86
64QAM			
21100	2535.0	5	4.46
		10	8.91
		15	13.34
		20	17.82

99% Bandwidth - QPSK

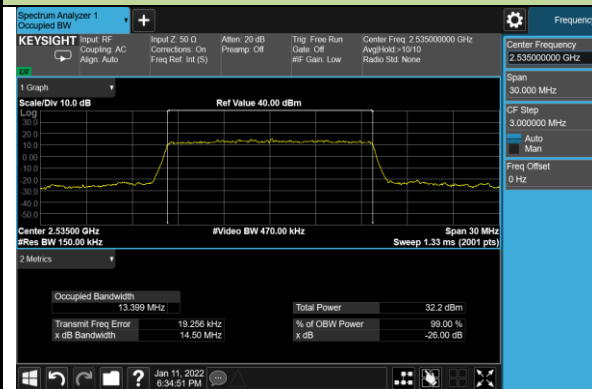
5MHz Channel Bandwidth



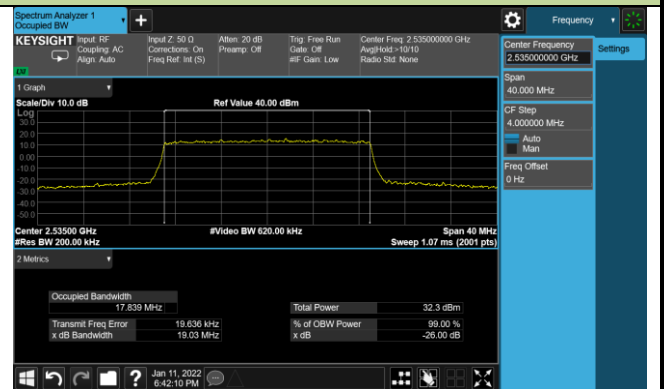
10MHz Channel Bandwidth

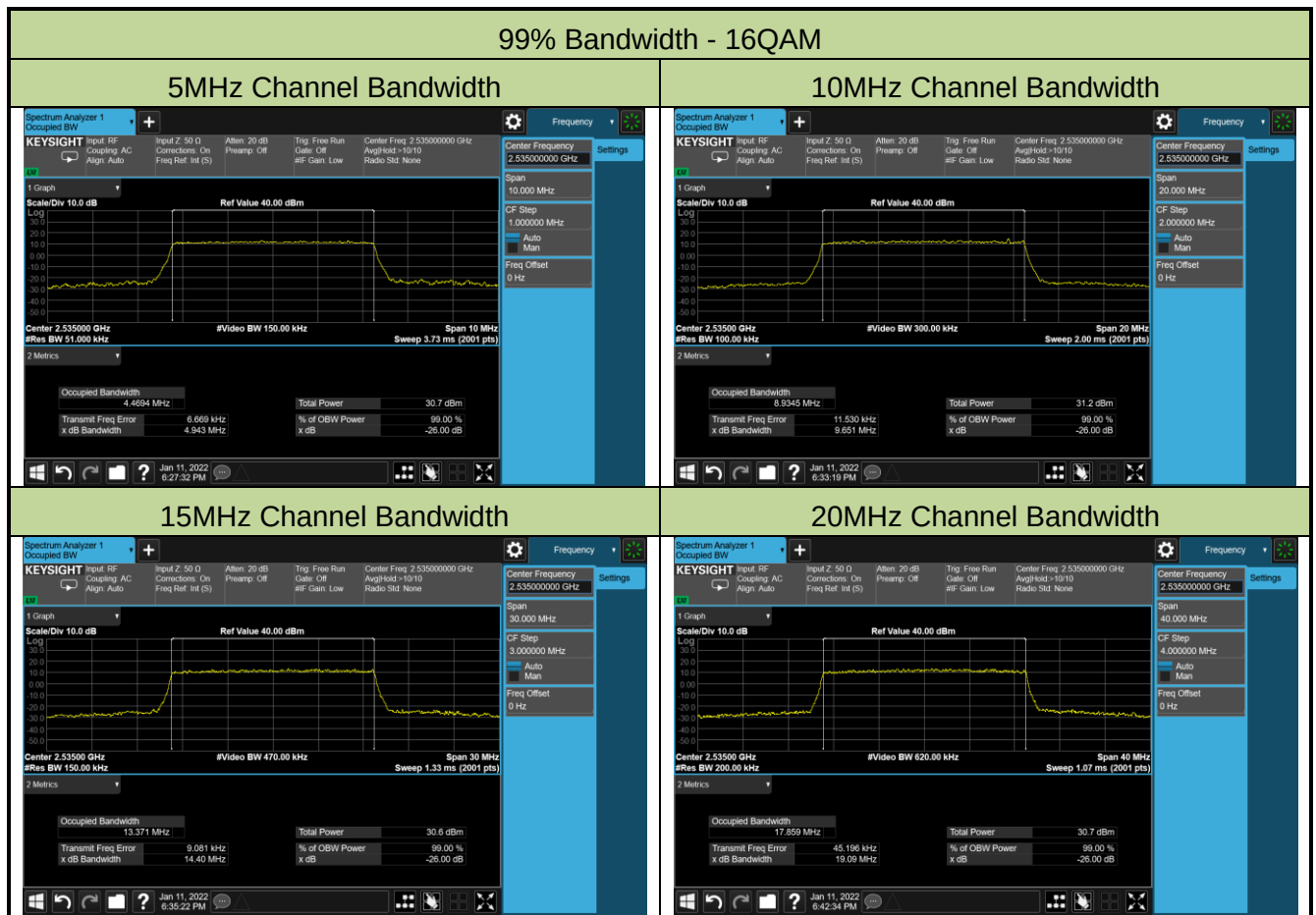


15MHz Channel Bandwidth



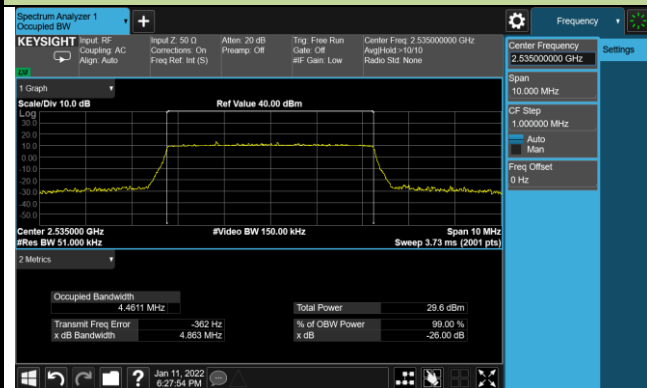
20MHz Channel Bandwidth



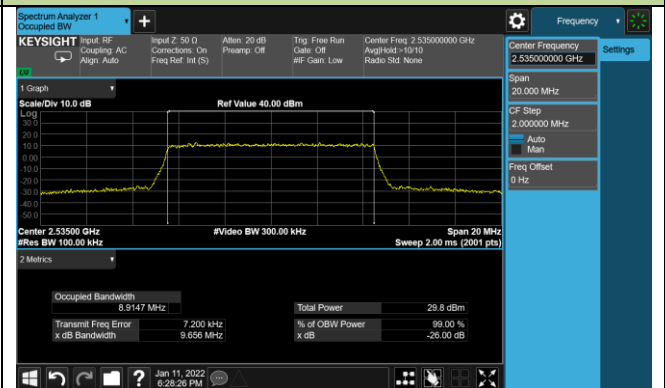


99% Bandwidth - 64QAM

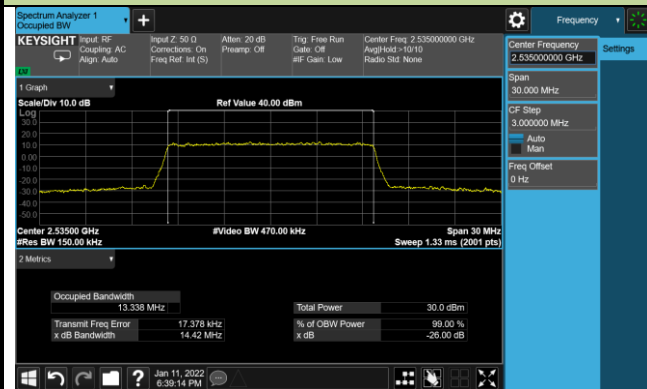
5MHz Channel Bandwidth



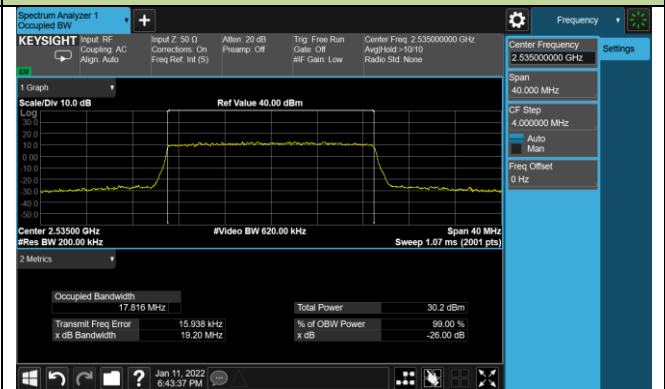
10MHz Channel Bandwidth



15MHz Channel Bandwidth



20MHz Channel Bandwidth

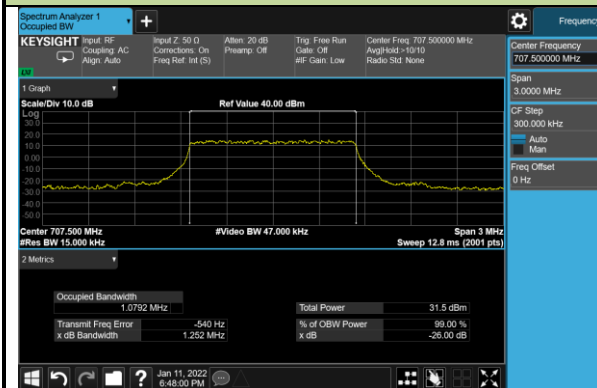


Product	Mobile Computer	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2022/01/11
Test Band	LTE Band 12		

Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
23095	707.5	1.4	1.08
		3	2.68
		5	4.48
		10	8.95
16QAM			
23095	707.5	1.4	1.08
		3	2.68
		5	4.47
		10	8.93
64QAM			
23095	707.5	1.4	1.08
		3	2.69
		5	4.47
		10	8.93

99% Bandwidth - QPSK

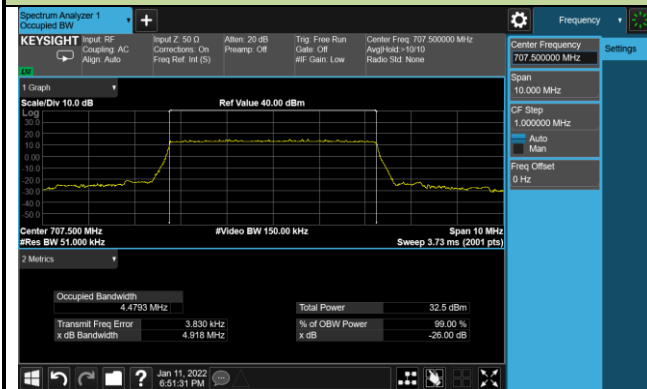
1.4MHz Channel Bandwidth



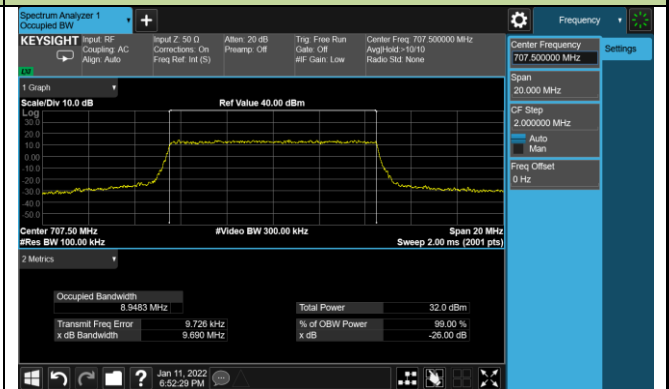
3MHz Channel Bandwidth



5MHz Channel Bandwidth



10MHz Channel Bandwidth

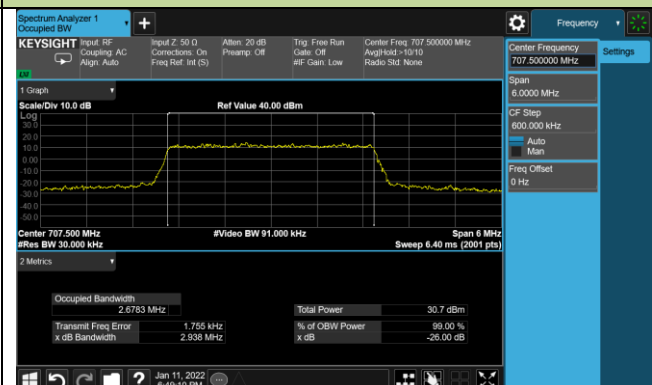


99% Bandwidth - 16QAM

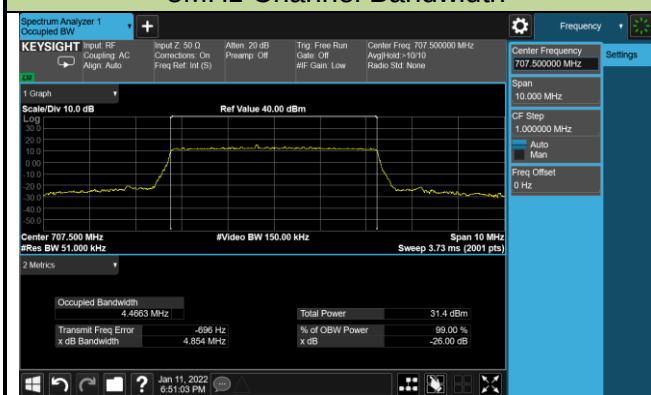
1.4MHz Channel Bandwidth



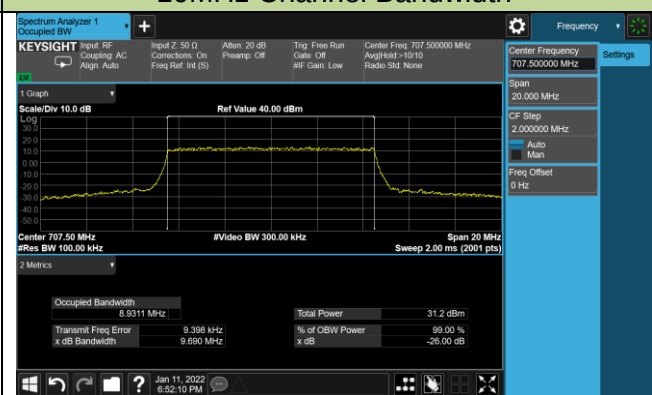
3MHz Channel Bandwidth



5MHz Channel Bandwidth

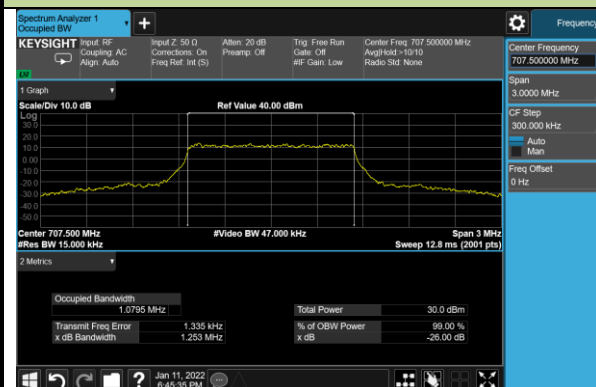


10MHz Channel Bandwidth



99% Bandwidth - 64QAM

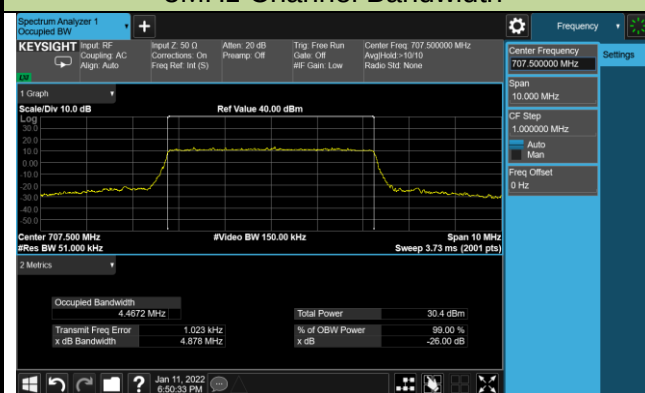
1.4MHz Channel Bandwidth



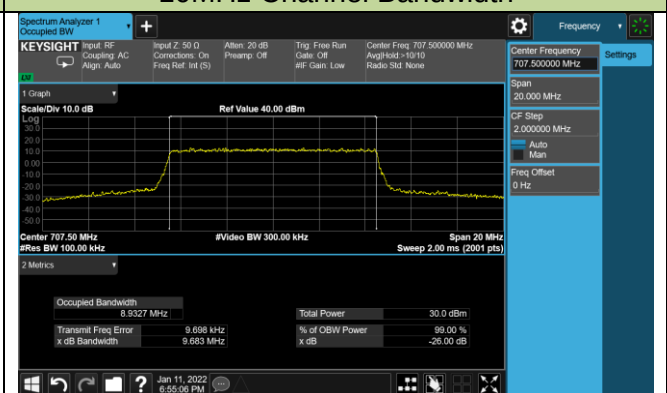
3MHz Channel Bandwidth



5MHz Channel Bandwidth

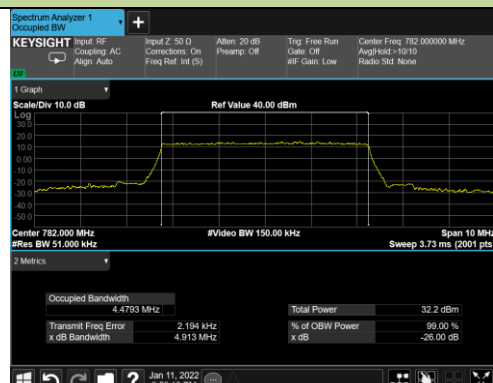
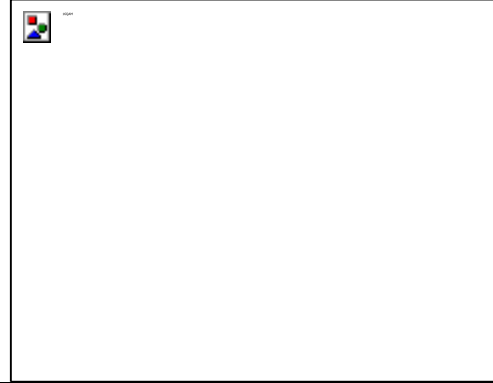
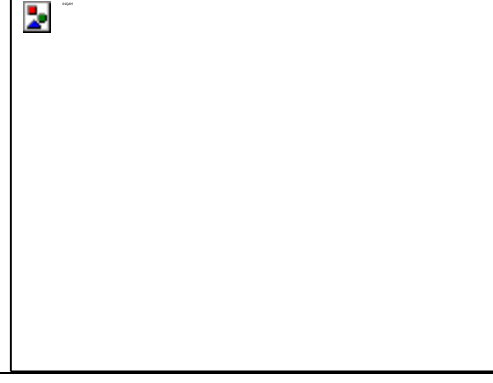


10MHz Channel Bandwidth



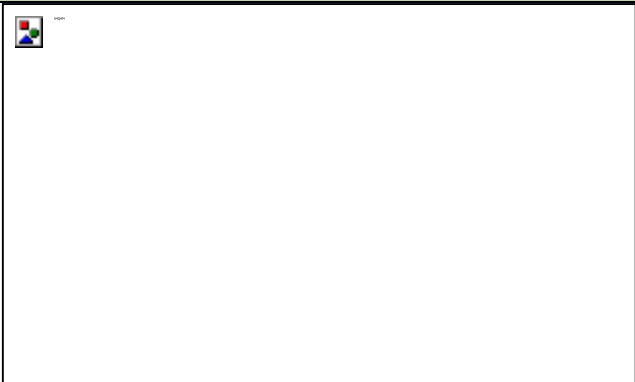
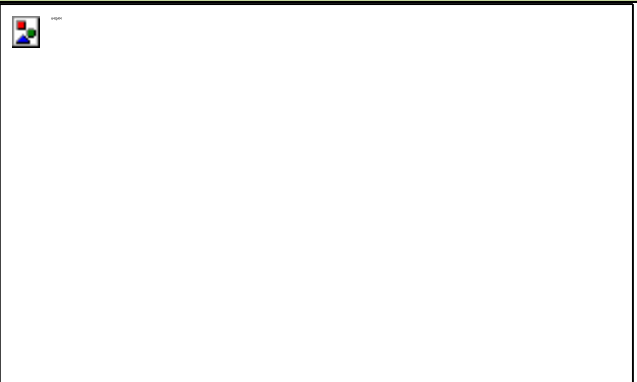
Product	Mobile Computer	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2022/01/11
Test Band	LTE Band 13		

Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
23230	782.0	5	4.48
		10	8.92
16QAM			
23230	782.0	5	4.46
		10	8.93
64QAM			
23230	782.0	5	4.46
		10	8.91

99% Bandwidth - QPSK	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
99% Bandwidth - 16QAM	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
99% Bandwidth - 64QAM	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	

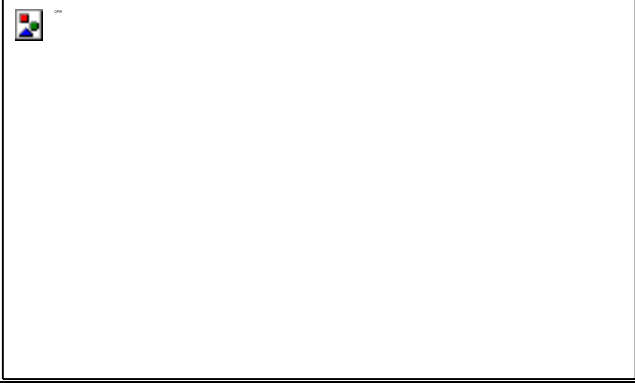
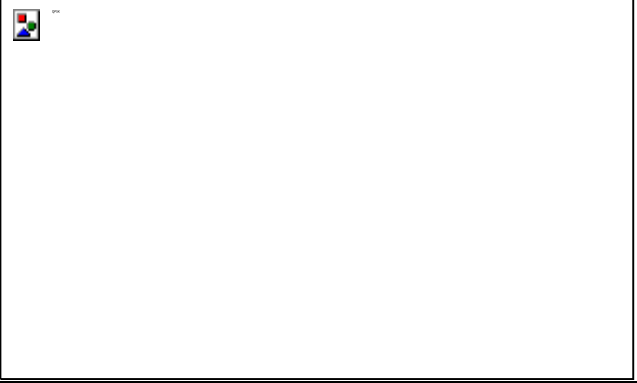
Product	Mobile Computer	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2022/01/11
Test Band	LTE Band 17		

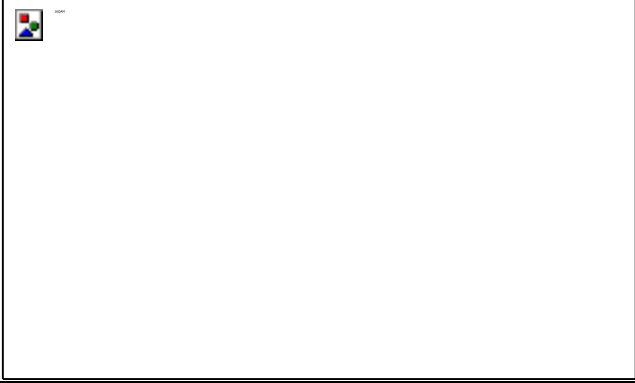
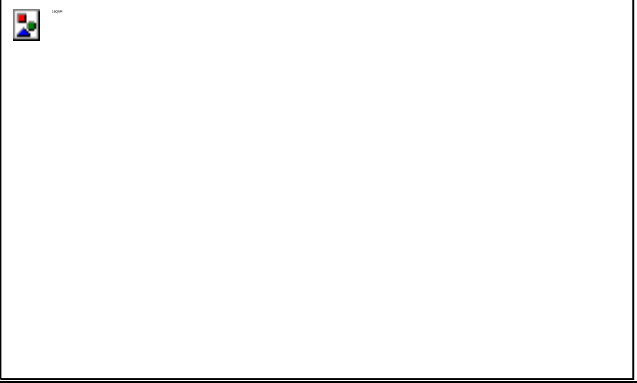
Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
23790	710.0	5	4.46
		10	8.93
16QAM			
23790	710.0	5	4.47
		10	8.93
64QAM			
23790	710.0	5	4.47
		10	8.93

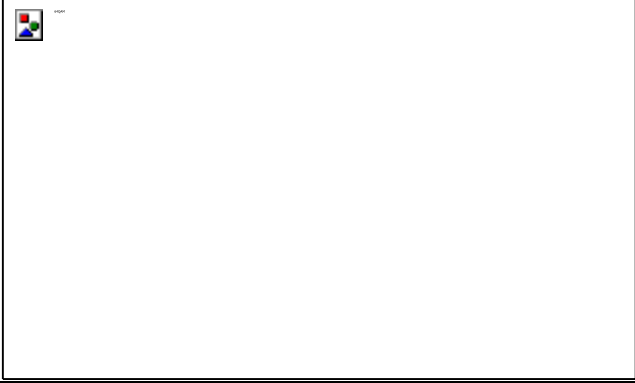
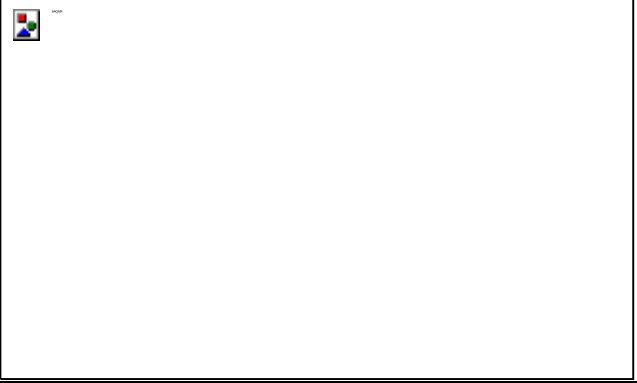
99% Bandwidth - QPSK	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
99% Bandwidth - 16QAM	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
99% Bandwidth - 64QAM	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	

Product	Mobile Computer	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2022/01/11
Test Band	LTE Band 38/41		

Channel	Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK			
37980	2593.0	5	4.46
		10	8.93
		15	13.39
		20	17.87
16QAM			
37980	2593.0	5	4.46
		10	8.92
		15	13.39
		20	17.83
64QAM			
37980	2593.0	5	4.47
		10	8.92
		15	13.36
		20	17.80

99% Bandwidth - QPSK	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	20MHz Channel Bandwidth
	

99% Bandwidth - 16QAM	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	20MHz Channel Bandwidth
	

99% Bandwidth - 64QAM	
5MHz Channel Bandwidth	10MHz Channel Bandwidth
	
15MHz Channel Bandwidth	20MHz Channel Bandwidth
	

5.3. Frequency Stability Measurement

5.3.1. Test Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

5.3.2. Test Procedure

ANSI C63.26-2015 - Section 5.6

5.3.3. Test Setting

Frequency Stability Under Temperature Variations:

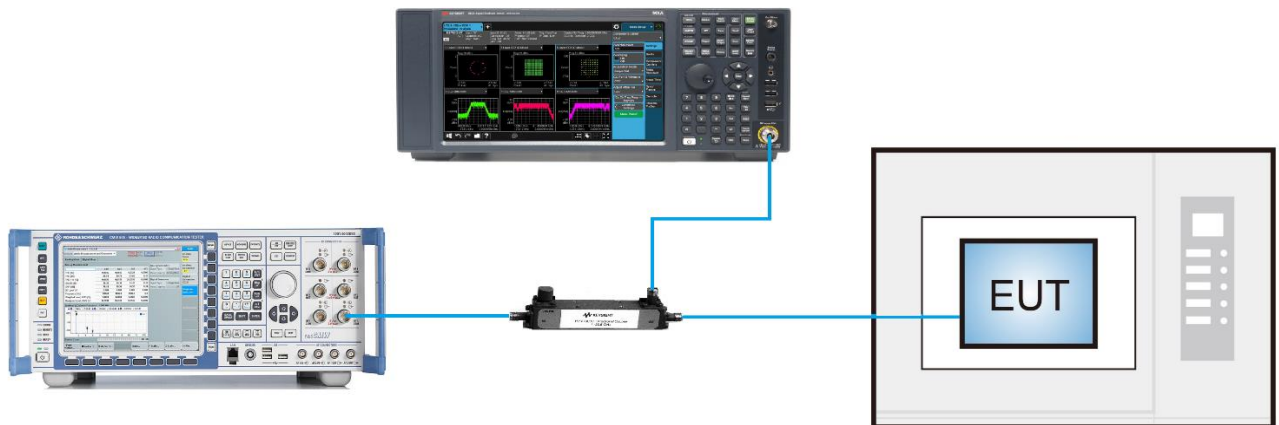
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

5.3.4.Test Setup



5.3.5.Test Result

Product	Mobile Computer	Test Site	SIP-TR1
Test Engineer	Candy Luo	Test Date	2022/01/18
Test Band	LTE Band 2/25		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.80	- 30	0.0051
	- 20	-0.0028
	- 10	-0.0057
	0	-0.0051
	+ 10	-0.0045
	+ 20	-0.0046
	+ 30	0.0023
	+ 40	0.0007
	+ 50	-0.0031
4.37	+ 20	-0.0039
3.23	+ 20	-0.0036

Product	Mobile Computer	Test Site	SIP-TR1
Test Engineer	Candy Luo	Test Date	2022/01/18
Test Band	LTE Band 4/66		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.80	- 30	0.0025
	- 20	0.0015
	- 10	0.0071
	0	0.0025
	+ 10	0.0060
	+ 20	-0.0030
	+ 30	-0.0010
	+ 40	-0.0023
	+ 50	0.0015
4.37	+ 20	0.0047
3.23	+ 20	-0.0097

Product	Mobile Computer	Test Site	SIP-TR1
Test Engineer	Candy Luo	Test Date	2022/01/18
Test Band	LTE Band 5/26		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.80	- 30	0.0053
	- 20	0.0040
	- 10	0.0059
	0	-0.0128
	+ 10	-0.0058
	+ 20	0.0024
	+ 30	0.0156
	+ 40	-0.0146
	+ 50	0.0013
4.37	+ 20	0.0115
3.23	+ 20	-0.0074

Product	Mobile Computer	Test Site	SIP-TR1
Test Engineer	Candy Luo	Test Date	2022/01/18
Test Band	LTE Band 7		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.80	- 30	-0.0008
	- 20	-0.0062
	- 10	-0.0021
	0	0.0008
	+ 10	-0.0009
	+ 20	-0.0081
	+ 30	-0.0003
	+ 40	-0.0052
	+ 50	0.0015
4.37	+ 20	0.0007
3.23	+ 20	-0.0044

Product	Mobile Computer	Test Site	SIP-TR1
Test Engineer	Candy Luo	Test Date	2022/01/18
Test Band	LTE Band 12		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.80	- 30	-0.0105
	- 20	0.0044
	- 10	0.0050
	0	-0.0033
	+ 10	-0.0012
	+ 20	0.0071
	+ 30	0.0065
	+ 40	-0.0084
	+ 50	0.0028
4.37	+ 20	-0.0102
3.23	+ 20	0.0077

Product	Mobile Computer	Test Site	SIP-TR1
Test Engineer	Candy Luo	Test Date	2022/01/18
Test Band	LTE Band 13		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.80	- 30	-0.0006
	- 20	-0.0010
	- 10	-0.0179
	0	-0.0104
	+ 10	-0.0044
	+ 20	-0.0200
	+ 30	0.0021
	+ 40	0.0163
	+ 50	0.0004
4.37	+ 20	-0.0120
3.23	+ 20	0.0060

Product	Mobile Computer	Test Site	SIP-TR1
Test Engineer	Candy Luo	Test Date	2022/01/18
Test Band	LTE Band 17		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.80	- 30	0.0032
	- 20	0.0127
	- 10	0.0100
	0	0.0025
	+ 10	0.0162
	+ 20	-0.0008
	+ 30	-0.0154
	+ 40	0.0084
	+ 50	-0.0039
4.37	+ 20	0.0034
3.23	+ 20	0.0185

Product	Mobile Computer	Test Site	SIP-TR1
Test Engineer	Candy Luo	Test Date	2022/01/18
Test Band	LTE Band 38/41		

Power (Vdc)	Temp (°C)	Frequency Tolerance (ppm)
3.80	- 30	0.0033
	- 20	0.0031
	- 10	-0.0045
	0	-0.0119
	+ 10	0.0001
	+ 20	-0.0001
	+ 30	0.0028
	+ 40	0.0024
	+ 50	-0.0124
4.37	+ 20	0.0044
3.23	+ 20	-0.0015