FCC 47 CFR PART 27 SUBPART L, M, F
&
INDUSTRY CANADA RSS-130 & RSS-139 & RSS-199

TEST REPORT

For

Tablet PC

Model No.:
FCC: AIM-75S-6; AIM-75H-6; AIM-75S-6XXXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXXX (where "X" may be any alphanumeric character, "-" or blank)

IC: AIM-75S-6; AIM-75H-6

Trade Name: ADVANTECH

Issued to

Advantech Co., Ltd.
No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.

Issued by

Compliance Certification Services Inc.
Wugu Laboratory
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
Issued Date: September 7, 2021

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	September 7, 2021	Initial Issue	ALL	Doris Chu

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1. TEST RESULT CERTIFICATION

Applicant:	Advantech Co., Ltd. No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
Manufacturer:	Advantech Co., Ltd. No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.
Equipment Under Test:	Tablet PC
Trade Name:	ADVANTECH
Model No.:	FCC: AIM-75S-6; AIM-75H-6; AIM-75S-6XXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXX (where “X” may be any alphanumeric character, “-” or blank) IC: AIM-75S-6; AIM-75H-6
Date of Test:	December 14, 2020 ~ August 27, 2021

APPLICABLE STANDARDS	
Standard	**TEST RESULT**
FCC Part 27, Subpart C, L, M, F FCC Part 2 & RSS-130 Issue 2 February 2019 & RSS-139 Issue 3 July 2015 & RSS-199 Issue 3 December 2016	No non-compliance noted
Statements of Conformity	
Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.	

The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Kevin Tsai
Deputy Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Tablet PC
Model No.	FCC: AIM-75S-6; AIM-75H-6; AIM-75S-6XXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXXX (where “X” may be any alphanumeric character, “-” or blank) IC: AIM-75S-6; AIM-75H-6
Model Discrepancy	Please see remark as below.
Trade	ADVANTECH
Received Date	November 2, 2020
Power Supply	1. EUT Power by Adapter. (1) FSP / FSP045-A1BR I/P: 100-240Vac, 50-60Hz, 1.2A O/P: 5Vdc, 3.0A, 15.0W; 9.0Vdc, 3.0A, 27.0W; 12.0Vdc, 3.0A, 36.0W; 15.0Vdc, 3.0A, 45.0W; 20.0Vdc, 2.25A, 45.0W (2) GlobTek, Inc / GTM96605-GEN2-A1-T2 I/P: 100-240Vac, 50-60Hz, 1.5A O/P: 5Vdc, 4.6A; 5.8Vdc, 4.6A; 9Vdc, 4.4A; 12Vdc, 4A; 15Vdc, 3.6A; 20Vdc, 3A (3) DELTA / MEA-045AA2C I/P: 100-240V~1.0A Max. 50-60Hz O/P: 5VDC, 3A; 9VDC, 3A; 10VDC, 3A; 12VDC, 3A; 15VDC, 3A; 20VDC, 2.25A 2. EUT Power by Rechargeable Li-ion Battery. ADVANTECH / AIM-BAT-8 Rating: 3.8Vdc, 4900mAh, 18.62Wh

Modulation Technology	LTE Band 13	QPSK, 16QAM, 64QAM
	LTE Band 7	QPSK, 16QAM, 64QAM
	LTE Band 4	QPSK, 16QAM, 64QAM
Frequency Range	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
	LTE Band 13 Channel Bandwidth: 10MHz	782MHz
	LTE Band 7 Channel Bandwidth: 5MHz	2502.5MHz ~2567.5MHz
	LTE Band 7 Channel Bandwidth: 10MHz	2505.0MHz ~2565.0MHz
	LTE Band 7 Channel Bandwidth: 15MHz	2507.5MHz ~2562.5MHz
	LTE Band 7 Channel Bandwidth: 20MHz	2510.0MHz ~2560.0MHz
	LTE Band 4 Channel Bandwidth: 1.4MHz	1710.7MHz ~1754.3MHz
	LTE Band 4 Channel Bandwidth: 3MHz	1711.5MHz ~ 1753.5MHz
	LTE Band 4 Channel Bandwidth: 5MHz	1712.5MHz ~1752.5MHz
	LTE Band 4 Channel Bandwidth: 10MHz	1715.0MHz ~1750.0MHz
	LTE Band 4 Channel Bandwidth: 15MHz	1717.5MHz ~ 1747.5MHz
	LTE Band 4 Channel Bandwidth: 20MHz	1720MHz ~1745MHz

Transmit Power (ERP & EIRP Power)	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK:	24.92	dBm
		16QAM:	24.16	dBm
		64QAM	24.08	dBm
	LTE Band 4 Channel Bandwidth: 3MHz	QPSK:	24.93	dBm
		16QAM:	24.17	dBm
		64QAM	23.89	dBm
	LTE Band 4 Channel Bandwidth: 5MHz	QPSK:	24.94	dBm
		16QAM:	24.18	dBm
		64QAM	24.07	dBm
	LTE Band 4 Channel Bandwidth: 10MHz	QPSK:	24.95	dBm
		16QAM:	24.19	dBm
		64QAM	24.10	dBm
	LTE Band 4 Channel Bandwidth: 15MHz	QPSK:	24.97	dBm
		16QAM:	24.21	dBm
		64QAM	24.08	dBm
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK:	24.99	dBm
		16QAM:	24.23	dBm
		64QAM	23.94	dBm
	LTE Band 7 Channel Bandwidth: 5MHz	QPSK	25.35	dBm
		16QAM	24.43	dBm
		64QAM	23.80	dBm
	LTE Band 7 Channel Bandwidth: 10MHz	QPSK	25.37	dBm
		16QAM	24.45	dBm
		64QAM	23.77	dBm
	LTE Band 7 Channel Bandwidth: 15MHz	QPSK	25.38	dBm
		16QAM	24.46	dBm
		64QAM	23.67	dBm
	LTE Band 7 Channel Bandwidth: 20MHz	QPSK	25.41	dBm
		16QAM	24.49	dBm
		64QAM	23.86	dBm
	LTE Band 13 Channel Bandwidth: 5MHz	QPSK:	20.37	dBm
		16QAM:	19.46	dBm
		64QAM	18.68	dBm
	LTE Band 13 Channel Bandwidth: 10MHz	QPSK:	20.52	dBm
		16QAM:	19.59	dBm
		64QAM	18.77	dBm

Antenna Specification	Antenna type: PIFA 1. YAGEO / 6036B0281601 / Main (TX) Band 4: 2.14 dBi Band 7: 2.14 dBi Band 13: -0.97 dBi 2. YAGEO / 6036B0281701 / Aux Band 4: 0.76 dBi Band 7: 0.76 dBi Band 13: 0.38 dBi
HW Version	AX2
SW Version	0.3.6.9_20201021.021551
EUT Serial #	200CT32E00162
Module	Quectel / EM06-A

Remark:

1. For more details, refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
3. Disclaimer: Variant information between/among model numbers / trademarks are provided by the applicant, test results of this report are applicable to the sample EUT received of main test model name.
4. Model Discrepancy:

Model	Adapter	Tablet color
AIM-75H-6	1. GlobTek, Inc / GTM96605-GEN2-A1-T2 I/P: 100-240VAC, 50-60Hz, 1.5A O/P: 5VDC, 4.6A; 5.8VDC, 4.6A; 9VDC, 4.4A; 12VDC, 4A; 15VDC, 3.6A; 20VDC, 3A 2. DELTA / MEA-045AA2C IP: 100-240V~1.0A Max. 50-60Hz O/P: 5VDC, 3A; 9VDC, 3A; 10VDC, 3A; 12VDC, 3A; 15VDC, 3A; 20VDC, 2.25A	White
AIM-75S-6	1. FSP / FSP045-A1BR I/P: 100-240VAC, 50-60Hz, 1.2A O/P: 5.0VDC, 3.0A 15.0W; 9.0VDC, 3.0A 27.0W; 12.0VDC, 3.0A 36.0W; 15.0VDC, 3.0A 45.0W; 20.0VDC, 2.25A 45.0W	Black
AIM-75S-6XXXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXXX (where "X" may be any alphanumeric character, "-" or blank)	All the above models are identical except for the designation of model numbers. The suffix of (where "X" may be any alphanumeric character , "-" or blank) on model number is just for marketing purpose only.	

3. TEST METHODOLOGY

3.1 DESCRIPTION OF TEST TYPE

The EUT (model: AIM-75S-6) had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

LTE Band 13: 777 MHz ~ 787 MHz

Three channels had been tested for each channel bandwidth.

Channel	5MHz		10MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Low CH	23205	779.5	-	-
Middle CH	23230	782.0	23230	782.0
High CH	23255	784.5	-	-

LTE Band 7: 2500 MHz ~ 2570 MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	5MHz		10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	20775	2502.5	20800	2505.0	20825	2507.5	20850	2510.0
Middle channel (M)	21100	2535.0	21100	2535.0	21100	2535.0	21100	2535.0
High channel (H)	21425	2567.5	21400	2565.0	21375	2562.5	21350	2560.0

LTE Band 4: 1710MHz ~ 1755MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	1.4MHz		3MHz		5MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	19957	1710.7	19965	1711.5	19975	1712.5
Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
High CH	20393	1754.3	20385	1753.5	20375	1752.5
Channel Bandwidth	**10MHz**		**15MHz**		**20MHz**	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	20000	1715.0	20025	1717.5	20050	1720.00
Middle CH	20175	1732.5	20175	1732.5	20175	1732.50
High CH	20350	1750.0	20325	1747.5	20300	1745.00

3.2 THE WORST MODE OF MEASUREMENT

3.2.1 The worst mode of measurement

Radiated Emission Measurement Above 1G	
Test Condition	**Radiated Emission Above 1G**
Power supply Mode	**Mode 1: EUT power by Adapter. (GlobTek)** **Mode 2: EUT power by Adapter. (FSP)** **Mode 3: EUT power by Adapter. (DELTA)** **Mode 4: EUT power by Battery**
Worst Mode	☐ **Mode 1** ☒ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**
Worst Position	☐ **Placed in fixed position.** ☒ **Placed in fixed position at X-Plane (E2-Plane)** ☐ **Placed in fixed position at Y-Plane (E1-Plane)** ☐ **Placed in fixed position at Z-Plane (H-Plane)**

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Power supply Mode	**Mode 1: EUT power by Adapter. (GlobTek)** **Mode 2: EUT power by Adapter. (FSP)** **Mode 3: EUT power by Adapter. (DELTA)** **Mode 4: EUT power by Battery**
Worst Mode	☐ **Mode 1** ☒ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**

Remark:
1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(X-Plane) were recorded in this report

4. TEST SUMMARY

FCC Standard Section	IC Standard Section	Report Section	Test Item	Result
-	-	2	Antenna Requirement	Pass
27.50(d), 27.50(b), 27.50(h)	RSS-130, section 4.6 RSS-139, section 6.5 RSS-199 section 4.4	8.1	ERP and EIRP Measurement	Pass
2.1055, 27.54	RSS-130 section 4.5 RSS-139 section 6.4 RSS-199 section 4.3	8.2	Frequency Stability v.s. temperature measurement	Pass
2.1049	RSS-GEN 6.7	8.3	Occupied Bandwidth Measurement	Pass
27.50(d)	RSS-130 section 4.6 RSS-133, section 6.4 RSS-199 section 4.4	8.4	Peak to Average Ratio	Pass
27.53(c), 27.53(m), 27.53(h)	RSS-130 section 4.7 RSS-139 section 6.6 RSS-199 section 4.5	8.5	Out of Band Emission at Antenna Terminals	Pass
27.53(c), 27.53(m), 27.53(h)	RSS-130 section 4.7 RSS-139 section 6.6 RSS-199 section 4.5	8.6	Spurious Radiation Measurement	Pass

5. INSTRUMENT CALIBRATION

5.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

5.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: *Each piece of equipment is scheduled for calibration once a year.*

RF Conducted Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Coaxial Cable	Woken	WC12	CC003	06/29/2020	06/28/2021
Power Divider	Solvang Technology	STI08-0015	008	08/05/2020	08/04/2021
Radio Communication Analyzer	Anritsu	MT-8820C	6201240043	07/17/2020	07/16/2021
Thermostatic/Humidity Chamber	TAICHY	MHG-150LF	930619	09/24/2020	09/23/2021
EXA Signal Analyzer	KEYSIGHT	N9010B	MY55460167	09/07/2020	09/06/2021
Software	N/A				

Test date for August 26 ~ 27, 2021

RF Conducted Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Coaxial Cable	Woken	WC12	CC003	06/28/2021	06/27/2022
Coaxial Cable	Woken	WC12	CC001	06/28/2021	06/27/2022
Power Divider	Solvang Technology	STI08-0015	008	07/26/2021	07/25/2022
Thermostatic/Humidity Chamber	TAICHY	MHG-150LF	930619	09/24/2020	09/23/2021
EXA Signal Analyzer	KEYSIGHT	N9010B	MY55460167	09/07/2020	09/06/2021
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/06/2021	07/05/2022
Software	E3 6.11-20180413 & Radio Test Software Ver.21 & LTE Measurement_Power-Ver. 21				

3M 966 Chamber Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/25/2020	02/24/2021
Bilog Antenna	Sunol Sciences	JB3	A030105	07/24/2020	07/23/2021
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/25/2020	02/24/2021
Coaxial Cable	EMCI	EMC105	190914+327109/4	09/19/2020	09/18/2021
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/15/2020	01/14/2021
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	09/30/2020	09/29/2021
Loop Ant	COM-POWER	AL-130	121051	03/27/2020	03/26/2021
Pre-Amplifier	EMEC	EM330	060609	02/25/2020	02/24/2021
Pre-Amplifier	EMEC	EM01G26G	060570	06/29/2020	06/28/2021
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	07/24/2020	07/23/2021
S.G.	Agilent	E8257C	US42340383	07/21/2020	07/20/2021
Bilog Antenna	Sunol Sciences	JB1	A052609	07/24/2020	07/23/2021
Horn Antenna	ETS LINDGREN	3117	00055165	07/22/2020	07/21/2021
Horn Antenna	EMCO	3116	2487	05/11/2020	05/10/2021
Horn Antenna	ETS LINDGREN	3116	00026370	12/11/2020	12/10/2021
K Type Cable	Huber+Suhner	SUCOFLEX 102	29406/2	12/09/2020	12/08/2021
K Type Cable	Huber+Suhner	SUCOFLEX 102	22470/2	12/09/2020	12/08/2021
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	e3 6.11-20180413				

5.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87

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

6. FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

Canada Regisreation number: 2324G

The lab has been recognized as the FCC accredited lad under the KDB 974614 D01 and is listed in the FCC pubic Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10: 2013 and CISPR Publication 22.

6.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

7. SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

7.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID	IC
1	NB(J)	TOSHIBA	PT345T-00L002	N/A	PD97260H	1000M-7260H

Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

8. TEST PROCEDURE AND RESULT

8.1 ERP & EIRP MEASUREMENT

LIMIT

According to FCC §2.1046

FCC 27.50 (d) (4): Fixed, mobile, and portable (handheld)stations operating in the 1710-1755MHz band and mobile and portable stations operating in the 1695-1710MHz and 1755-1780MHz bands are limited to 1 watt EIRP.

FCC 27.50 (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.

FCC 27.50 (h): 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.

RSS-130 § 4.4,

The e.i.r.p. shall not exceed 50 watts for mobile equipment or for outdoor fixed subscriber equipment, nor shall it exceed 5 watts for portable equipment or for indoor fixed subscriber equipment.

RSS-139 § 6.5,

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt.

RSS-199 § 4.5,

For mobile subscriber equipment, the e.i.r.p. shall not exceed 2 W. For fixed subscriber equipment, the transmitter output power shall not exceed 2 W and the e.i.r.p. shall be limited to 40 W.

TEST PROCEDURES

CONDUCTED POWER MEASUREMENT:

1. The transmitter output power was connected to the call box.
2. Set EUT at maximum output power via call box.
3. Set Call box at lowest, middle and highest channels for each band and modulation.

TEST RESULTS

No non-compliance noted.

TEST RESULTS

Temperature:	25℃	**Humidity:**	57% RH
Tested by:	Jerry Chang	**Test Date:**	May 25, 2021

LTE Band 4

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 19957 1710.7 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20393 1754.3 MHz	CH-Low 19957 1710.7 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20393 1754.3 MHz	CH-Low 19957 1710.7 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20393 1754.3 MHz
1.4	1	0	22.53	22.63	**22.78**	21.71	21.89	**22.02**	21.72	21.57	21.71
	1	5	22.26	22.43	22.65	21.38	21.47	21.69	21.59	21.53	21.81
	3	2	22.21	22.25	22.61	21.31	21.45	21.82	21.76	**21.94**	21.8
	6	0	21.7	21.69	21.86	20.39	20.5	20.81	20.62	20.96	20.8

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 19957 1710.7 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20393 1754.3 MHz	CH-Low 19957 1710.7 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20393 1754.3 MHz	CH-Low 19957 1710.7 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20393 1754.3 MHz
1.4	1	0	24.67	24.77	**24.92**	23.85	24.03	**24.16**	23.86	23.71	23.85
	1	5	24.4	24.57	24.79	23.52	23.61	23.83	23.73	23.67	23.95
	3	2	24.35	24.39	24.75	23.45	23.59	23.96	23.9	**24.08**	23.94
	6	0	23.84	23.83	24	22.53	22.64	22.95	22.76	23.1	22.94

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 19965 1711.5 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20385 1753.5 MHz	CH-Low 19965 1711.5 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20385 1753.5 MHz	CH-Low 19965 1711.5 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20385 1753.5 MHz
3	1	0	22.54	22.64	**22.79**	21.72	21.9	**22.03**	21.51	21.69	**21.75**
	1	14	22.27	22.44	22.66	21.39	21.48	21.7	20.9	21.47	21.69
	8	4	21.51	21.48	21.82	20.48	20.47	20.81	20.73	20.86	20.82
	15	0	21.71	21.7	21.87	20.4	20.51	20.82	20.66	20.93	20.76

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 19965 1711.5 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20385 1753.5 MHz	CH-Low 19965 1711.5 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20385 1753.5 MHz	CH-Low 19965 1711.5 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20385 1753.5 MHz
3	1	0	24.68	24.78	**24.93**	23.86	24.04	**24.17**	23.65	23.83	**23.89**
	1	14	24.41	24.58	24.8	23.53	23.62	23.84	23.04	23.61	23.83
	8	4	23.65	23.62	23.96	22.62	22.61	22.95	22.87	23	22.96
	15	0	23.85	23.84	24.01	22.54	22.65	22.96	22.8	23.07	22.9

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 19975	CH-Mid 20175	CH-High 20375	CH-Low 19975	CH-Mid 20175	CH-High 20375	CH-Low 19975	CH-Mid 20175	CH-High 20375
			1712.5 MHz	1732.5 MHz	1752.5 MHz	1712.5 MHz	1732.5 MHz	1752.5 MHz	1712.5 MHz	1732.5 MHz	1752.5 MHz
5	1	0	22.56	22.65	**22.8**	21.74	21.91	**22.04**	21.92	21.9	**21.93**
	1	24	22.29	22.45	22.67	21.41	21.49	21.71	21.71	21.62	21.82
	12	6	21.53	21.49	21.83	20.5	20.48	20.82	20.82	20.84	20.79
	25	0	21.73	21.71	21.88	20.42	20.52	20.83	20.76	20.81	20.89

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 19975	CH-Mid 20175	CH-High 20375	CH-Low 19975	CH-Mid 20175	CH-High 20375	CH-Low 19975	CH-Mid 20175	CH-High 20375
			1712.5 MHz	1732.5 MHz	1752.5 MHz	1712.5 MHz	1732.5 MHz	1752.5 MHz	1712.5 MHz	1732.5 MHz	1752.5 MHz
5	1	0	24.7	24.79	**24.94**	23.88	24.05	**24.18**	24.06	24.04	**24.07**
	1	24	24.43	24.59	24.81	23.55	23.63	23.85	23.85	23.76	23.96
	12	6	23.67	23.63	23.97	22.64	22.62	22.96	22.96	22.98	22.93
	25	0	23.87	23.85	24.02	22.56	22.66	22.97	22.9	22.95	23.03

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20000	CH-Mid 20175	CH-High 20350	CH-Low 20000	CH-Mid 20175	CH-High 20350	CH-Low 20000	CH-Mid 20175	CH-High 20350
			1715 MHz	1732.5 MHz	1750 MHz	1715 MHz	1732.5 MHz	1750 MHz	1715 MHz	1732.5 MHz	1750 MHz
10	1	0	22.57	22.67	**22.81**	21.75	21.93	**22.05**	21.87	21.75	21.37
	1	49	22.3	22.47	22.7	21.42	21.51	21.74	**21.96**	21.88	21.93
	25	12	21.54	21.51	21.86	20.51	20.5	20.85	20.86	20.8	20.76
	50	0	21.74	21.73	21.91	20.43	20.54	20.86	20.89	20.83	20.8

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20000	CH-Mid 20175	CH-High 20350	CH-Low 20000	CH-Mid 20175	CH-High 20350	CH-Low 20000	CH-Mid 20175	CH-High 20350
			1715 MHz	1732.5 MHz	1750 MHz	1715 MHz	1732.5 MHz	1750 MHz	1715 MHz	1732.5 MHz	1750 MHz
10	1	0	24.71	24.81	**24.95**	23.89	24.07	**24.19**	24.01	23.89	23.51
	1	49	24.44	24.61	24.84	23.56	23.65	23.88	**24.1**	24.02	24.07
	25	12	23.68	23.65	24	22.65	22.64	22.99	23	22.94	22.9
	50	0	23.88	23.87	24.05	22.57	22.68	23	23.03	22.97	22.94

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20025	CH-Mid 20175	CH-High 20325	CH-Low 20025	CH-Mid 20175	CH-High 20325	CH-Low 20025	CH-Mid 20175	CH-High 20325
			1717.5 MHz	1732.5 MHz	1747.5 MHz	1717.5 MHz	1732.5 MHz	1747.5 MHz	1717.5 MHz	1732.5 MHz	1747.5 MHz
15	1	0	22.6	22.69	**22.83**	21.78	21.95	**22.07**	21.9	**21.94**	21.88
	1	74	22.33	22.49	22.72	21.45	21.53	21.76	21.63	21.64	21.49
	36	18	21.57	21.53	21.88	20.54	20.52	20.87	20.46	20.59	20.65
	75	0	21.77	21.75	21.93	20.46	20.56	20.88	19.45	20.72	20.58

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20025	CH-Mid 20175	CH-High 20325	CH-Low 20025	CH-Mid 20175	CH-High 20325	CH-Low 20025	CH-Mid 20175	CH-High 20325
			1717.5 MHz	1732.5 MHz	1747.5 MHz	1717.5 MHz	1732.5 MHz	1747.5 MHz	1717.5 MHz	1732.5 MHz	1747.5 MHz
15	1	0	24.74	24.83	**24.97**	23.92	24.09	**24.21**	24.04	**24.08**	24.02
	1	74	24.47	24.63	24.86	23.59	23.67	23.9	23.77	23.78	23.63
	36	18	23.71	23.67	24.02	22.68	22.66	23.01	22.6	22.73	22.79
	75	0	23.91	23.89	24.07	22.6	22.7	23.02	21.59	22.86	22.72

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20050 1720 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20300 1745 MHz	CH-Low 20050 1720 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20300 1745 MHz	CH-Low 20050 1720 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20300 1745 MHz
20	1	0	22.68	22.75	**22.85**	21.86	22.01	**22.09**	21.52	**21.8**	21.64
	1	99	22.41	22.55	22.77	21.53	21.59	21.81	21.16	21.64	20.2
	50	24	21.65	21.59	21.93	20.62	20.58	20.92	20.61	20.69	20.52
	100	0	21.85	21.81	21.98	20.54	20.62	20.93	19.57	20.7	20.44

LTE Band 4_Uplink frequency band : 1710 to 1755 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20050 1720 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20300 1745 MHz	CH-Low 20050 1720 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20300 1745 MHz	CH-Low 20050 1720 MHz	CH-Mid 20175 1732.5 MHz	CH-High 20300 1745 MHz
20	1	0	24.82	24.89	**24.99**	24	24.15	**24.23**	23.66	**23.94**	23.78
	1	99	24.55	24.69	24.91	23.67	23.73	23.95	23.3	23.78	22.34
	50	24	23.79	23.73	24.07	22.76	22.72	23.06	22.75	22.83	22.66
	100	0	23.99	23.95	24.12	22.68	22.76	23.07	21.71	22.84	22.58

LTE Band 7

LTE Band 7_Uplink frequency band : 2500 to 2570 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20775	CH-Mid 21100	CH-High 21425	CH-Low 20775	CH-Mid 21100	CH-High 21425	CH-Low 20775	CH-Mid 21100	CH-High 21425
			2502.5 MHz	2535 MHz	2567.5 MHz	2502.5 MHz	2535 MHz	2567.5 MHz	2502.5 MHz	2535 MHz	2567.5 MHz
5	1	0	**23.21**	23.1	23	**22.29**	22.23	22.02	21.38	21.45	**21.66**
	1	24	22.58	22.98	22.44	21.62	22.06	21.51	21.5	21.19	21.6
	12	6	21.56	21.64	21.24	20.48	20.59	20.18	20.38	20.24	20.11
	25	0	22.25	22.16	22.04	20.71	21.1	20.55	20.37	20.22	20.29

LTE Band 7_Uplink frequency band : 2500 to 2570 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20775	CH-Mid 21100	CH-High 21425	CH-Low 20775	CH-Mid 21100	CH-High 21425	CH-Low 20775	CH-Mid 21100	CH-High 21425
			2502.5 MHz	2535 MHz	2567.5 MHz	2502.5 MHz	2535 MHz	2567.5 MHz	2502.5 MHz	2535 MHz	2567.5 MHz
5	1	0	**25.35**	25.24	25.14	**24.43**	24.37	24.16	23.52	23.59	**23.8**
	1	24	24.72	25.12	24.58	23.76	24.2	23.65	23.64	23.33	23.74
	12	6	23.7	23.78	23.38	22.62	22.73	22.32	22.52	22.38	22.25
	25	0	24.39	24.3	24.18	22.85	23.24	22.69	22.51	22.36	22.43

LTE Band 7_Uplink frequency band : 2500 to 2570 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20800 2505 MHz	CH-Mid 21100 2535 MHz	CH-High 21400 2565 MHz	CH-Low 20800 2505 MHz	CH-Mid 21100 2535 MHz	CH-High 21400 2565 MHz	CH-Low 20800 2505 MHz	CH-Mid 21100 2535 MHz	CH-High 21400 2565 MHz
10	1	0	**23.23**	23.12	23.03	**22.31**	22.25	22.05	21.56	**21.63**	21.25
	1	49	22.6	23	22.47	21.64	22.08	21.54	21.23	21.39	20.45
	25	12	21.58	21.66	21.27	20.5	20.61	20.21	20.36	20.32	20.33
	50	0	22.27	22.18	22.07	20.73	21.12	20.58	20.28	20.28	20.22

LTE Band 7_Uplink frequency band : 2500 to 2570 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20800 2505 MHz	CH-Mid 21100 2535 MHz	CH-High 21400 2565 MHz	CH-Low 20800 2505 MHz	CH-Mid 21100 2535 MHz	CH-High 21400 2565 MHz	CH-Low 20800 2505 MHz	CH-Mid 21100 2535 MHz	CH-High 21400 2565 MHz
10	1	0	**25.37**	25.26	25.17	**24.45**	24.39	24.19	23.7	**23.77**	23.39
	1	49	24.74	25.14	24.61	23.78	24.22	23.68	23.37	23.53	22.59
	25	12	23.72	23.8	23.41	22.64	22.75	22.35	22.5	22.46	22.47
	50	0	24.41	24.32	24.21	22.87	23.26	22.72	22.42	22.42	22.36

LTE Band 7_Uplink frequency band : 2500 to 2570 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20825	CH-Mid 21100	CH-High 21375	CH-Low 20825	CH-Mid 21100	CH-High 21375	CH-Low 20825	CH-Mid 21100	CH-High 21375
			2507.5 MHz	2535 MHz	2562.5 MHz	2507.5 MHz	2535 MHz	2562.5 MHz	2507.5 MHz	2535 MHz	2562.5 MHz
15	1	0	**23.24**	23.13	23.04	**22.32**	22.26	22.06	21.47	**21.53**	21.42
	1	74	22.61	23.01	22.48	21.65	22.09	21.55	20.81	21.2	20.87
	36	18	21.59	21.67	21.28	20.51	20.62	20.22	19.99	19.9	19.75
	75	0	22.28	22.19	22.08	20.74	21.13	20.59	19.95	20.01	19.97

LTE Band 7_Uplink frequency band : 2500 to 2570 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20825	CH-Mid 21100	CH-High 21375	CH-Low 20825	CH-Mid 21100	CH-High 21375	CH-Low 20825	CH-Mid 21100	CH-High 21375
			2507.5 MHz	2535 MHz	2562.5 MHz	2507.5 MHz	2535 MHz	2562.5 MHz	2507.5 MHz	2535 MHz	2562.5 MHz
15	1	0	**25.38**	25.27	25.18	**24.46**	24.4	24.2	23.61	**23.67**	23.56
	1	74	24.75	25.15	24.62	23.79	24.23	23.69	22.95	23.34	23.01
	36	18	23.73	23.81	23.42	22.65	22.76	22.36	22.13	22.04	21.89
	75	0	24.42	24.33	24.22	22.88	23.27	22.73	22.09	22.15	22.11

LTE Band 7_Uplink frequency band : 2500 to 2570 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20850	CH-Mid 21100	CH-High 21350	CH-Low 20850	CH-Mid 21100	CH-High 21350	CH-Low 20850	CH-Mid 21100	CH-High 21350
			2510 MHz	2535 MHz	2560 MHz	2510 MHz	2535 MHz	2560 MHz	2510 MHz	2535 MHz	2560 MHz
20	1	0	**23.27**	23.19	23.11	**22.35**	22.32	22.13	**21.72**	21.37	21.64
	1	99	22.64	23.07	22.55	21.68	22.15	21.62	21.58	21.69	21.05
	50	24	21.62	21.73	21.35	20.54	20.68	20.29	20.23	20.17	19.76
	100	0	22.31	22.25	22.15	20.77	21.19	20.66	19.39	19.23	20.1

LTE Band 7_Uplink frequency band : 2500 to 2570 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 20850	CH-Mid 21100	CH-High 21350	CH-Low 20850	CH-Mid 21100	CH-High 21350	CH-Low 20850	CH-Mid 21100	CH-High 21350
			2510 MHz	2535 MHz	2560 MHz	2510 MHz	2535 MHz	2560 MHz	2510 MHz	2535 MHz	2560 MHz
20	1	0	**25.41**	25.33	25.25	**24.49**	24.46	24.27	**23.86**	23.51	23.78
	1	99	24.78	25.21	24.69	23.82	24.29	23.76	23.72	23.83	23.19
	50	24	23.76	23.87	23.49	22.68	22.82	22.43	22.37	22.31	21.9
	100	0	24.45	24.39	24.29	22.91	23.33	22.8	21.53	21.37	22.24

LTE Band 13

LTE Band 13_Uplink frequency band : 777 to 787 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 23205 779.5 MHz	CH-Mid 23230 782 MHz	CH-High 23255 784.5 MHz	CH-Low 23205 779.5 MHz	CH-Mid 23230 782 MHz	CH-High 23255 784.5 MHz	CH-Low 23205 779.5 MHz	CH-Mid 23230 782 MHz	CH-High 23255 784.5 MHz
5	1	0	**23.49**	23.46	23.35	22.43	**22.58**	22.35	21.78	21.63	21.64
	1	24	23.45	23.44	23.19	22.46	22.46	22.35	**21.8**	21.64	21.56
	12	6	22.64	22.58	22.39	21.62	21.44	21.4	20.83	20.66	20.62
	25	0	22.57	22.57	22.33	21.54	21.43	21.32	20.76	20.63	20.63

LTE Band 13_Uplink frequency band : 777 to 787 MHz											
BW (MHz)	RB Size	RB Offset	ERP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 23205 779.5 MHz	CH-Mid 23230 782 MHz	CH-High 23255 784.5 MHz	CH-Low 23205 779.5 MHz	CH-Mid 23230 782 MHz	CH-High 23255 784.5 MHz	CH-Low 23205 779.5 MHz	CH-Mid 23230 782 MHz	CH-High 23255 784.5 MHz
5	1	0	**20.37**	20.34	20.23	19.31	**19.46**	19.23	18.66	18.51	18.52
	1	24	20.33	20.32	20.07	19.34	19.34	19.23	**18.68**	18.52	18.44
	12	6	19.52	19.46	19.27	18.5	18.32	18.28	17.71	17.54	17.5
	25	0	19.45	19.45	19.21	18.42	18.31	18.2	17.64	17.51	17.51

LTE Band 13_Uplink frequency band : 777 to 787 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low	CH-Mid 23230	CH-High	CH-Low	CH-Mid 23230	CH-High	CH-Low	CH-Mid 23230	CH-High
			MHz	782 MHz	MHz	MHz	782 MHz	MHz	MHz	782 MHz	MHz
10	1	0		**23.64**			22.68			**21.89**	
	1	49		23.5			**22.71**			21.78	
	25	12		22.82			21.81			20.75	
	50	0		22.86			21.76			20.73	

LTE Band 13_Uplink frequency band : 777 to 787 MHz											
BW (MHz)	RB Size	RB Offset	ERP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low	CH-Mid 23230	CH-High	CH-Low	CH-Mid 23230	CH-High	CH-Low	CH-Mid 23230	CH-High
			MHz	782 MHz	MHz	MHz	782 MHz	MHz	MHz	782 MHz	MHz
10	1	0		**20.52**			19.56			**18.77**	
	1	49		20.38			**19.59**			18.66	
	25	12		19.7			18.69			17.63	
	50	0		19.74			18.64			17.61	

8.2 FREQUENCY STABILITY MEASUREMENT

LIMIT

According to the FCC part 27.54 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

According to RSS -133 section 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.

According to RSS -139 section 6.4,

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

TEST PROCEDURE

Use Anritsu 8820 with frequency Error measurement capability.
Temp = -30 to +50℃
Voltage= 85% to 115% of the nominal value for AC powered equipment.

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

TEST RESULTS

Temperature:	25℃	**Humidity:**	57% RH
Tested by:	Jerry Chang	**Test Date:**	May 25, 2021

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:
LTE Band 4

Reference Freq.:	LTE B4 Mid Channel		1732.5 MHz	10M QPSK CH 20175
Power Supply Vdc	Temp. (℃)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
Freq. ERROR vs. VOLTAGE				
5.5	25	1732.500026	26	4331
5	25	1732.500049	49	4331
4.75	25	1732.499979	-21	4331
3.7 (End Point)	25	1732.499945	-55	4331
Freq. ERROR vs. Temp.				
5	-30	1732.500040	40	4331
5	-20	1732.500021	21	4331
5	-10	1732.499946	-54	4331
5	0	1732.500026	26	4331
5	10	1732.499997	-3	4331
5	20	1732.500034	34	4331
5	30	1732.500032	32	4331
5	40	1732.500076	76	4331
5	50	1732.500027	27	4331

LTE Band 7

Reference Freq.:	LTE B7 Mid Channel		2535 MHz	10M QPSK CH 21100
Power Supply Vdc	Temp. (℃)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
Freq. ERROR vs. VOLTAGE				
5.5	25	2535.000006	6	6338
5	25	2535.000015	15	6338
4.75	25	2534.999987	-13	6338
3.7 (End Point)	25	2534.999997	-3	6338
Freq. ERROR vs. Temp.				
5	-30	2535.000026	26	6338
5	-20	2535.000045	45	6338
5	-10	2534.999946	-54	6338
5	0	2535.000041	41	6338
5	10	2535.000027	27	6338
5	20	2535.000037	37	6338
5	30	2534.999965	-35	6338
5	40	2535.000006	6	6338
5	50	2534.999978	-22	6338

LTE Band 13

Reference Freq.:	LTE B13 Mid Channel	782	MHz	10M QPSK CH 23230
Power Supply Vdc	Temp. (℃)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
Freq. ERROR vs. VOLTAGE				
5.5	25	782.000019	19	1955
5	25	782.000023	23	1955
4.75	25	782.000016	16	1955
3.7 (End Point)	25	781.999997	-3	1955
Freq. ERROR vs. Temp.				
5	-30	781.999985	-15	1955
5	-20	782.000016	16	1955
5	-10	782.000030	30	1955
5	0	781.999986	-14	1955
5	10	782.000014	14	1955
5	20	782.000015	15	1955
5	30	781.999985	-15	1955
5	40	781.999989	-11	1955
5	50	781.999947	-53	1955

8.3 OCCUPIED BANDWIDTH MEASUREMENT

LIMITS

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

TEST PROCEDURES

KDB 971168 D01 Power Meas License Digital Systems – Section 4.2

1. The occupied bandwidth was measured with the spectrum analyzer at the lowest, middle and highest channels in each band and different modulation. The 99% and -26dB bandwidth was measured and recorded.
2. RBW = 1-5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max. hold

TEST RESULTS

Temperature: 23.2 ~ 24.1℃ **Humidity:** 56.9 ~ 58.3% RH

Tested by: Jerry Chang **Test Date:** March 3 ~ 4, 2021

LTE Band 4

LTE BAND 4 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1710.7	19957	1.0856	1.0859	1.0845	1.230	1.224	1.221
1732.5	20175	**1.0859**	**1.0864**	**1.0852**	**1.238**	**1.239**	**1.226**
1754.3	20393	1.0845	1.0861	1.0843	1.232	1.222	1.225

LTE BAND 4 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1711.5	19965	**2.6881**	**2.6912**	2.6943	2.962	2.973	2.980
1732.5	20175	2.6857	2.6904	**2.6960**	**2.978**	2.979	2.992
1753.5	20385	2.6854	2.6909	2.6955	2.969	**2.982**	**3.000**

LTE BAND 4 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1712.5	19975	**4.4860**	4.4897	**4.4893**	**4.968**	**4.978**	4.942
1732.5	20175	4.4853	**4.4914**	4.4840	4.943	4.964	**4.949**
1752.5	20375	4.4818	4.4874	4.4833	4.936	4.971	4.932

LTE BAND 4 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1715.0	20000	**8.9852**	**8.9449**	8.9514	9.745	**9.741**	9.739
1732.5	20175	8.9729	8.9334	8.9494	**9.782**	9.732	**9.804**
1750.0	20350	8.9837	8.9426	**8.9637**	9.778	9.704	9.724

LTE BAND 4 Channel bandwidth: 15MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1717.5	20025	13.443	13.440	13.455	**14.59**	14.56	14.57
1732.5	20175	13.440	13.423	13.422	14.54	14.61	14.52
1747.5	20325	**13.479**	**13.446**	**13.464**	14.55	**14.71**	**14.60**

LTE BAND 4 Channel bandwidth: 20MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
1720.0	20050	17.882	17.898	17.891	19.31	19.35	19.31
1732.5	20175	17.869	17.892	17.876	19.31	19.28	19.24
1745.0	20300	**17.930**	**17.937**	**17.931**	**19.42**	**19.39**	**19.33**

LTE Band 7

LTE BAND 7 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2502.5	20775	4.4997	4.4853	4.4855	4.919	**4.954**	4.920
2535.0	21100	4.4995	4.4843	**4.4865**	**4.933**	4.926	4.925
2567.5	21425	**4.5041**	**4.4866**	4.4823	4.880	4.943	**4.935**

LTE BAND 7 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2505.0	20800	8.9598	**8.9319**	**8.9572**	9.745	9.652	9.741
2535.0	21100	**8.9667**	8.9317	8.9562	9.742	9.691	**9.791**
2565.0	21400	8.9665	8.9290	8.9428	**9.759**	**9.694**	9.765

LTE BAND 7 Channel bandwidth: 15MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2507.5	20825	13.438	13.427	13.441	**14.59**	14.63	14.58
2535.0	21100	13.449	**13.440**	**13.451**	14.54	14.72	**14.65**
2562.5	21375	**13.459**	13.428	13.440	14.47	**14.74**	14.62

LTE BAND 7 Channel bandwidth: 20MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2510.0	20850	**17.901**	**17.932**	17.896	19.32	19.38	19.29
2535.0	21100	17.898	17.920	**17.900**	**19.35**	**19.40**	**19.36**
2560.0	21350	17.888	17.910	17.882	19.34	19.36	19.34

LTE Band 13

LTE BAND 13 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
779.5	23205	4.4765	4.4816	4.4791	4.930	4.907	4.898
782.0	23230	4.4802	4.4839	4.4817	4.966	4.926	**4.909**
784.5	23255	**4.4813**	**4.4856**	**4.4842**	**4.971**	**4.931**	**4.909**

LTE BAND 13 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
782.0	23230	**8.9591**	**8.9126**	**8.9454**	**9.675**	**9.668**	**9.751**

LTE Band 4

CHANNEL BANDWIDTH: 1.4MHz / QPSK / RB =6, RB Offset = 0

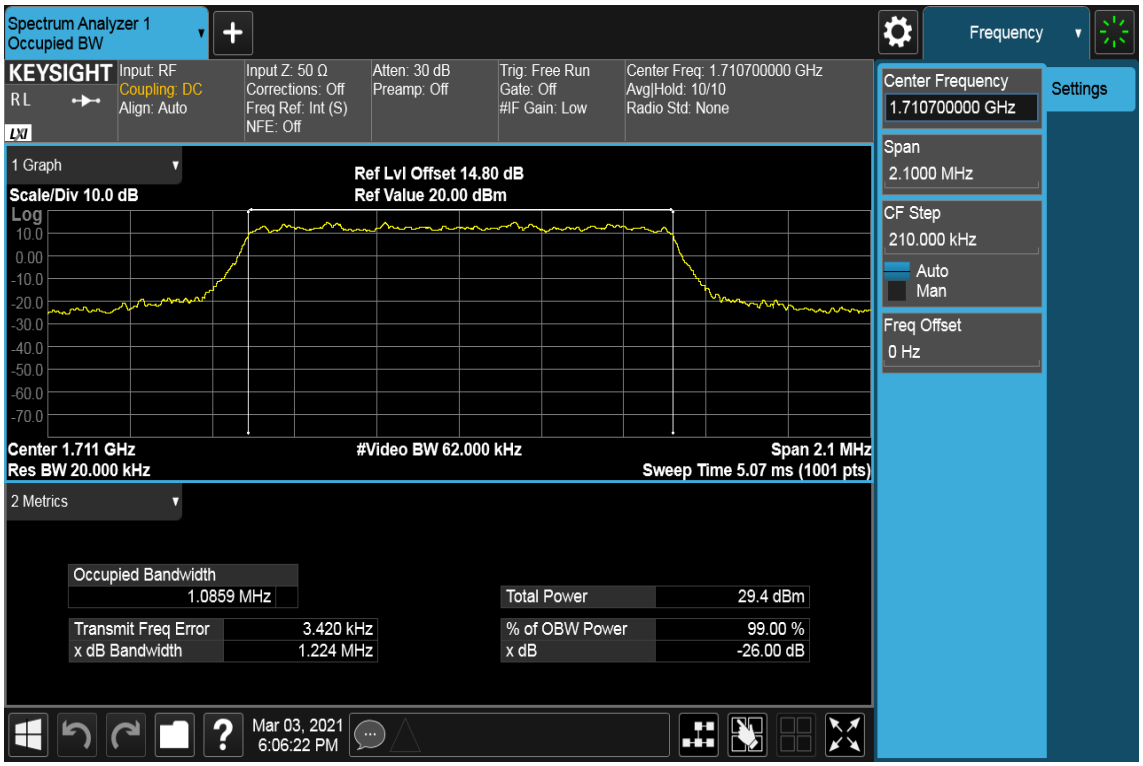
CH Low

CH Mid

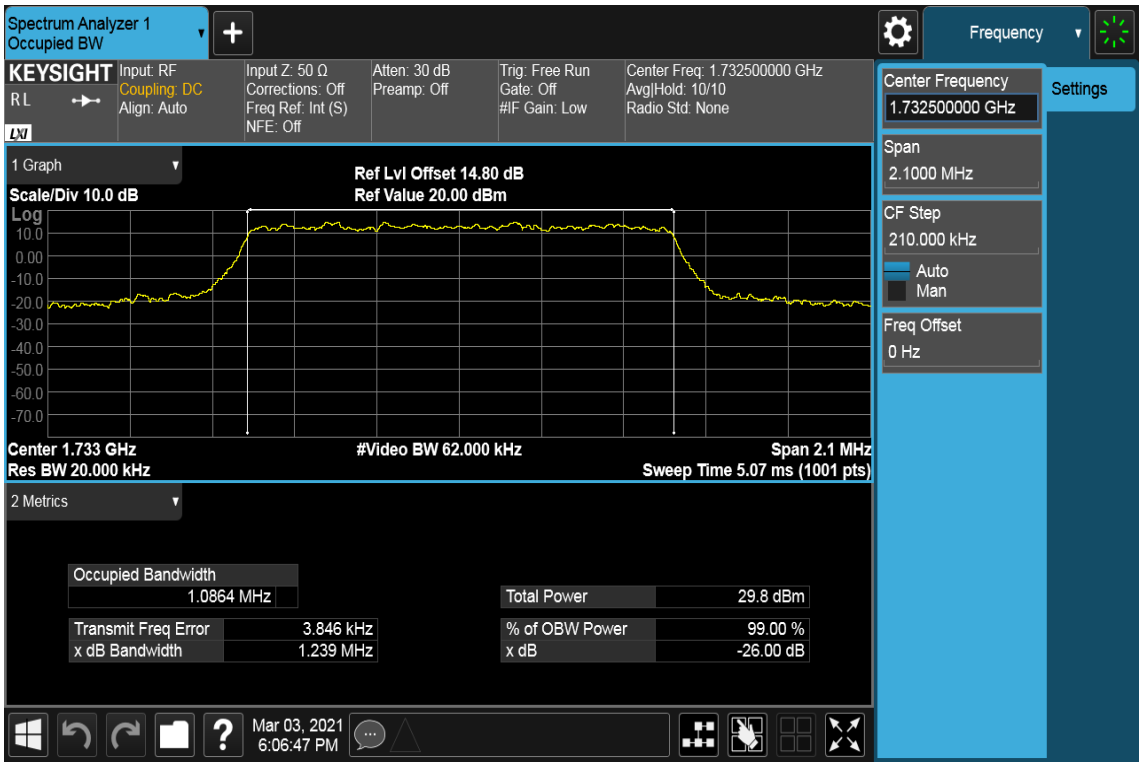
CH High

CHANNEL BANDWIDTH: 1.4MHz / 16QAM / RB =6, RB Offset = 0

CH Low



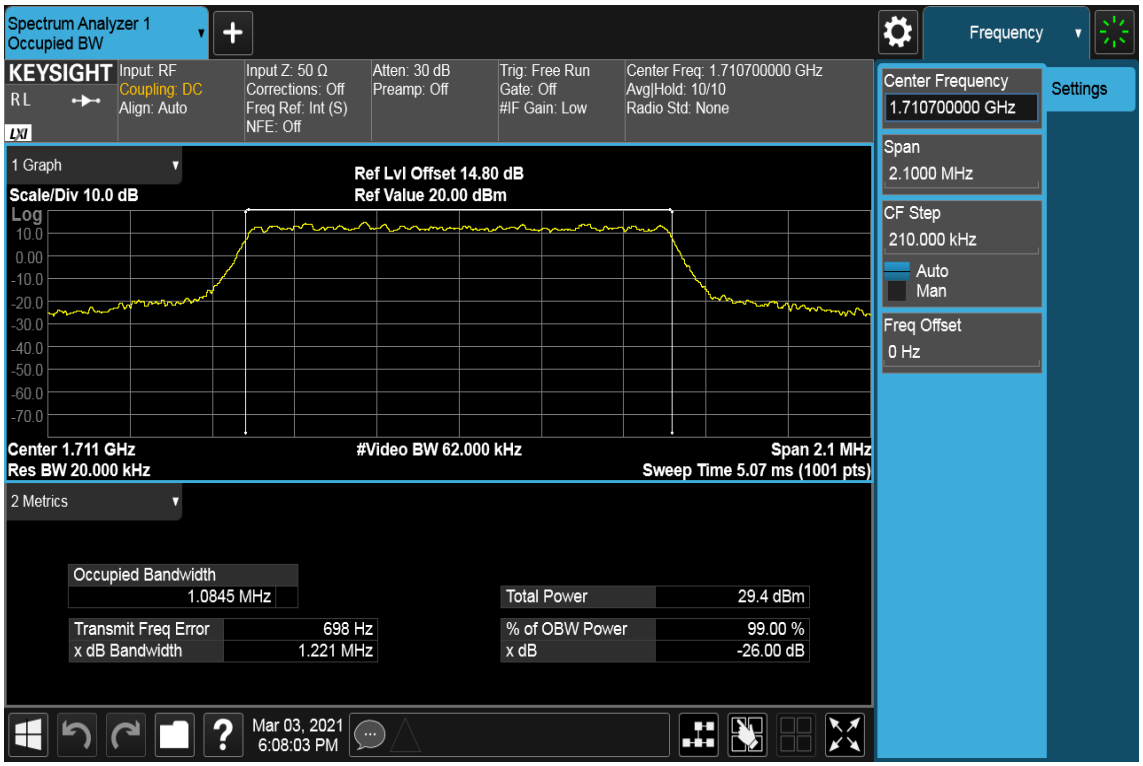
CH Mid



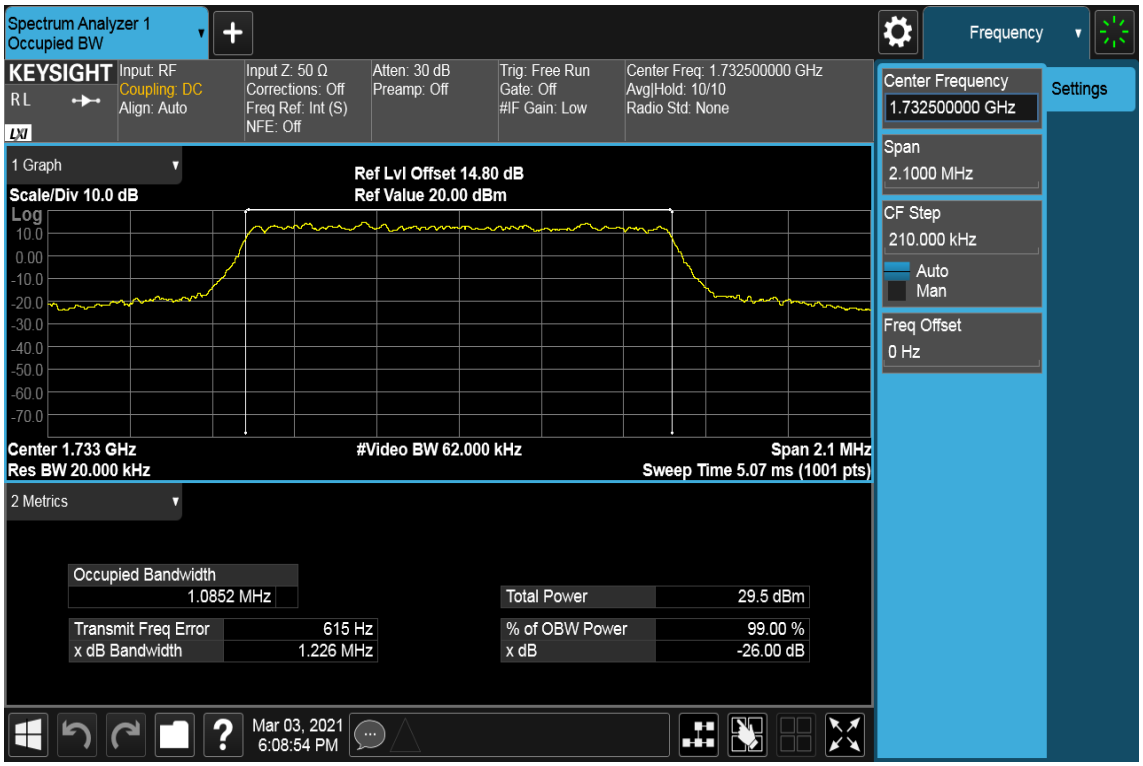
CH High

CHANNEL BANDWIDTH: 1.4MHz / 64QAM / RB =6, RB Offset = 0

CH Low



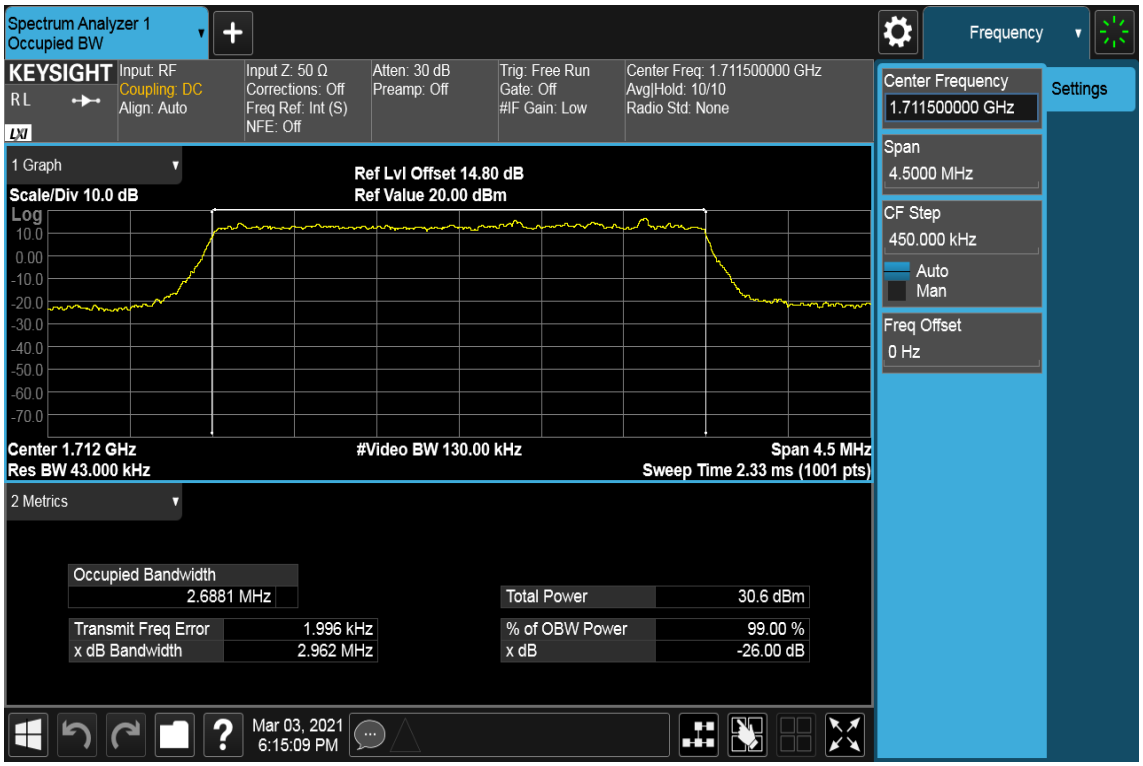
CH Mid



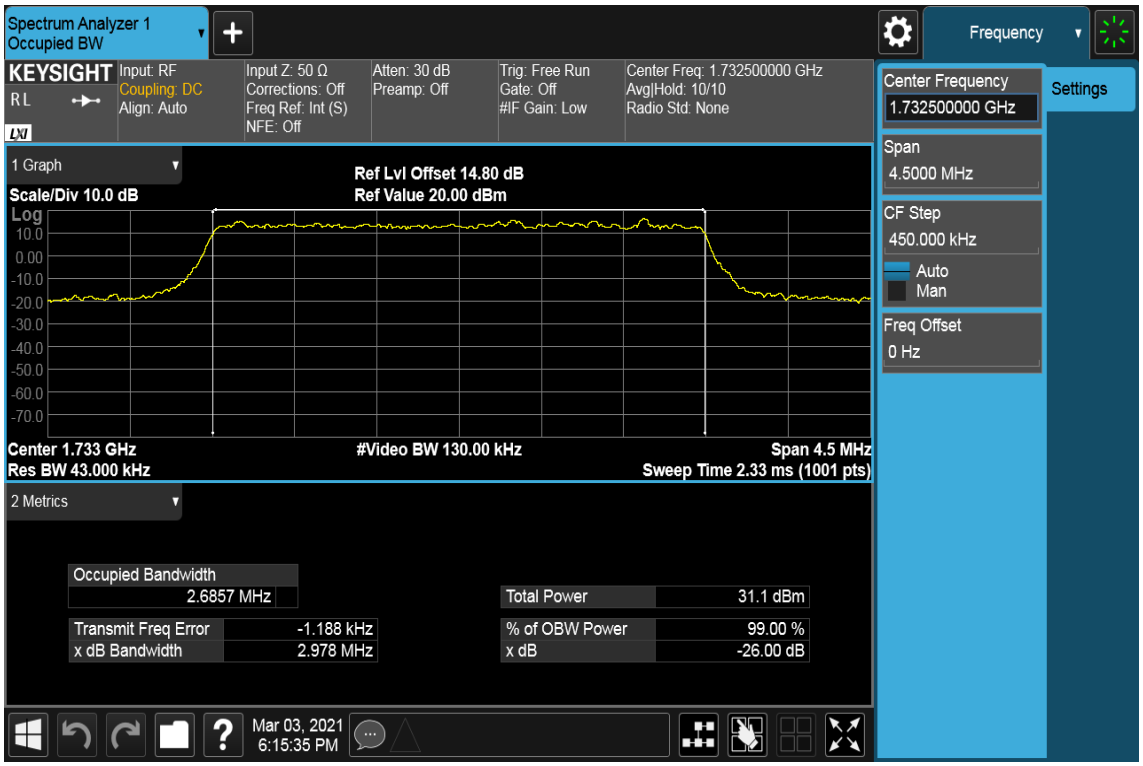
CH High

CHANNEL BANDWIDTH: 3MHz / QPSK / RB =15, RB Offset = 0

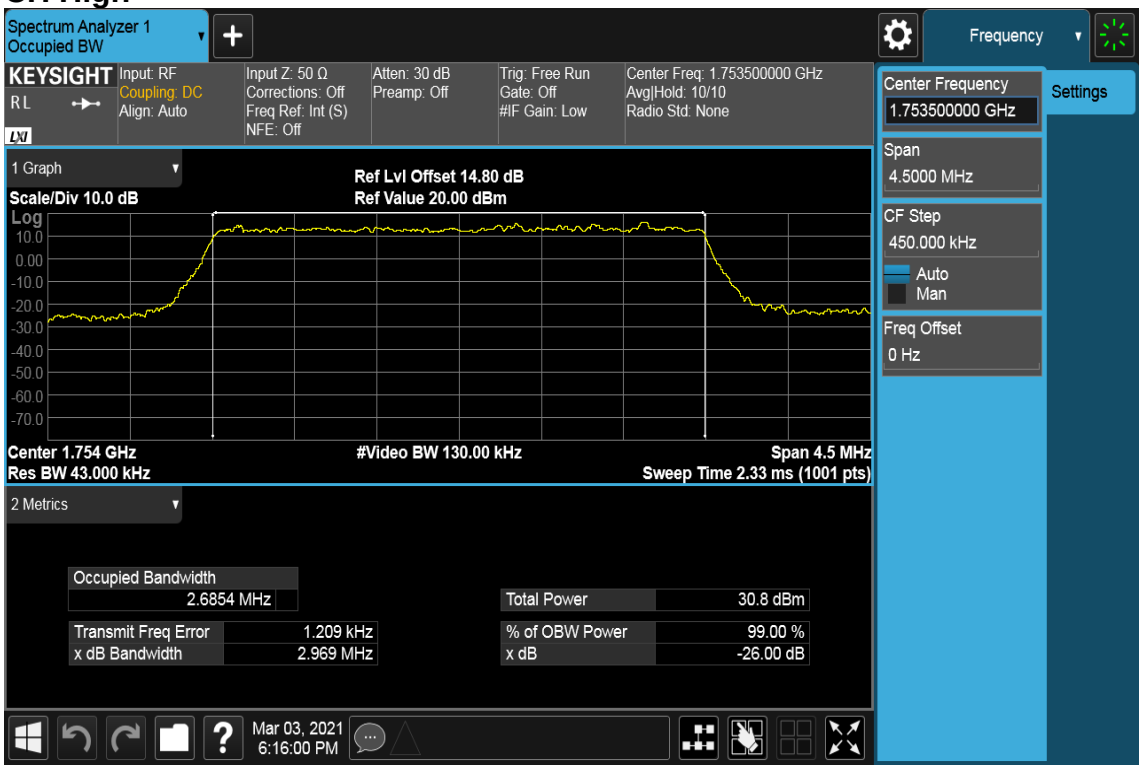
CH Low



CH Mid

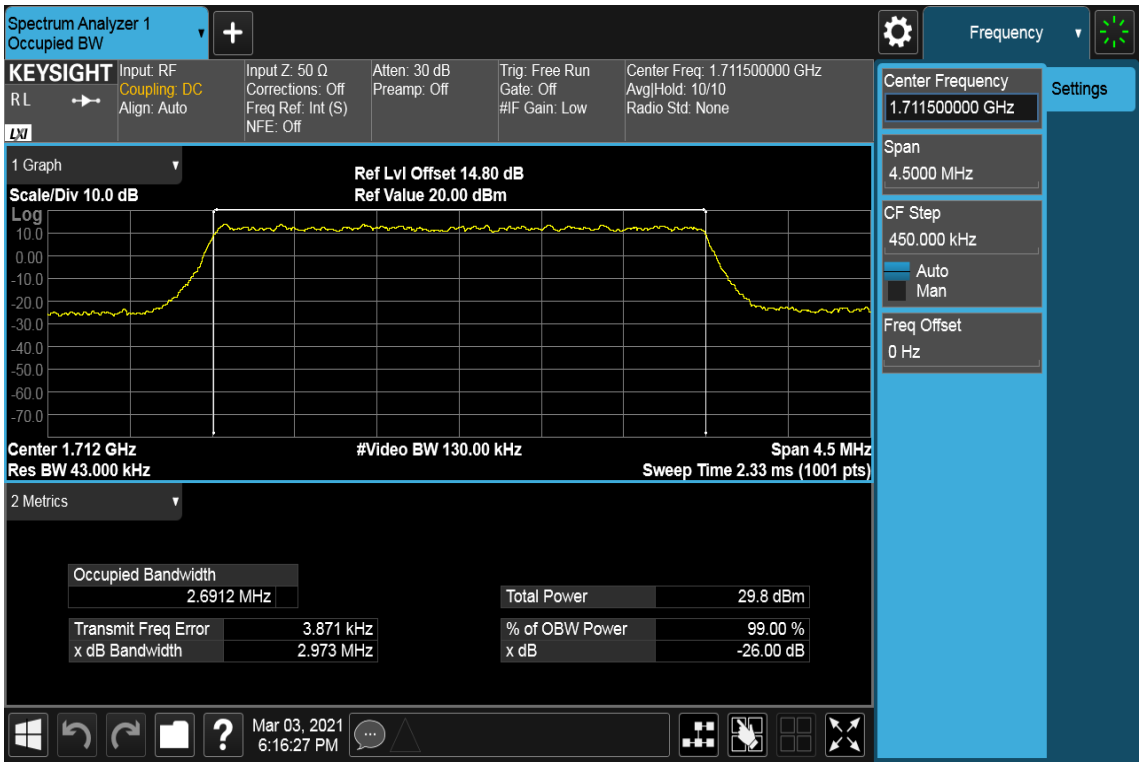


CH High

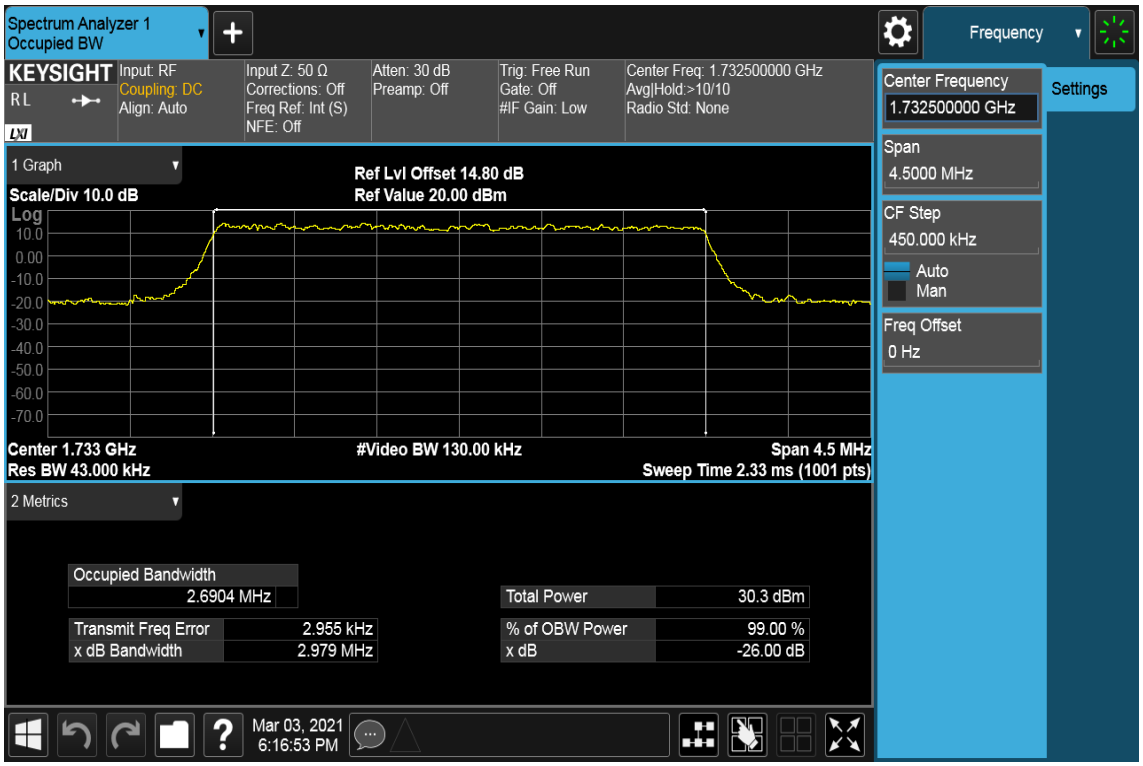


CHANNEL BANDWIDTH: 3MHz / 16QAM / RB =15, RB Offset = 0

CH Low



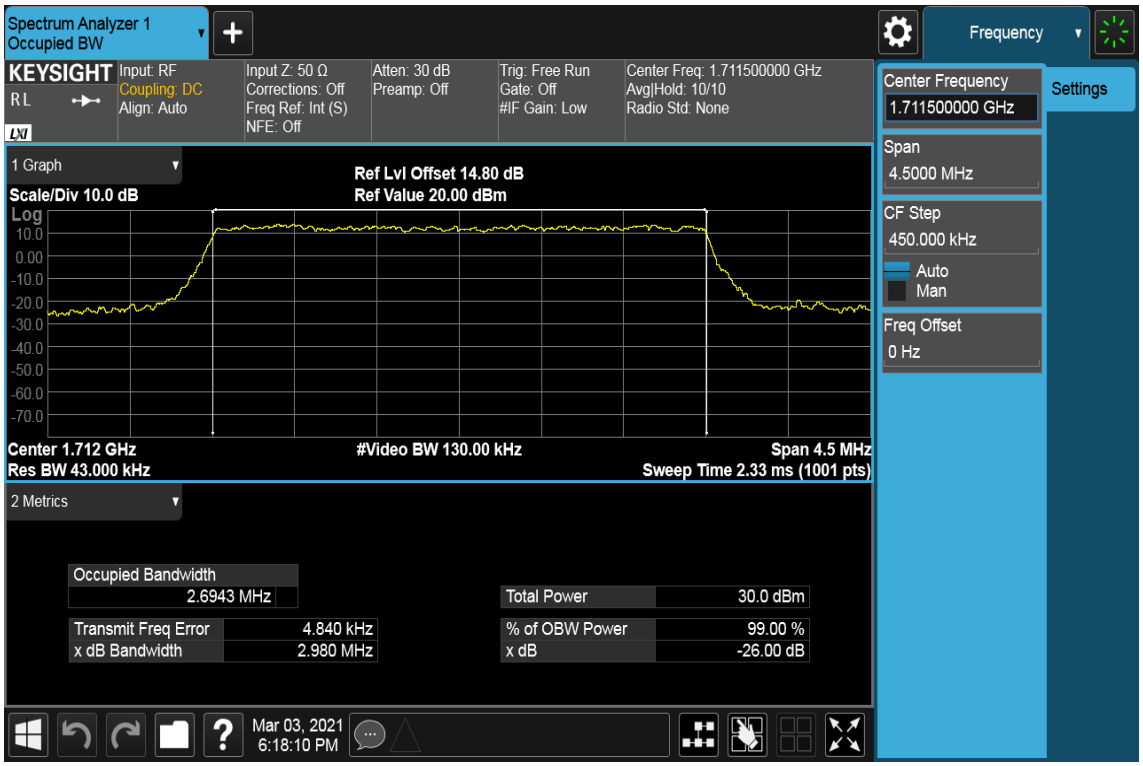
CH Mid



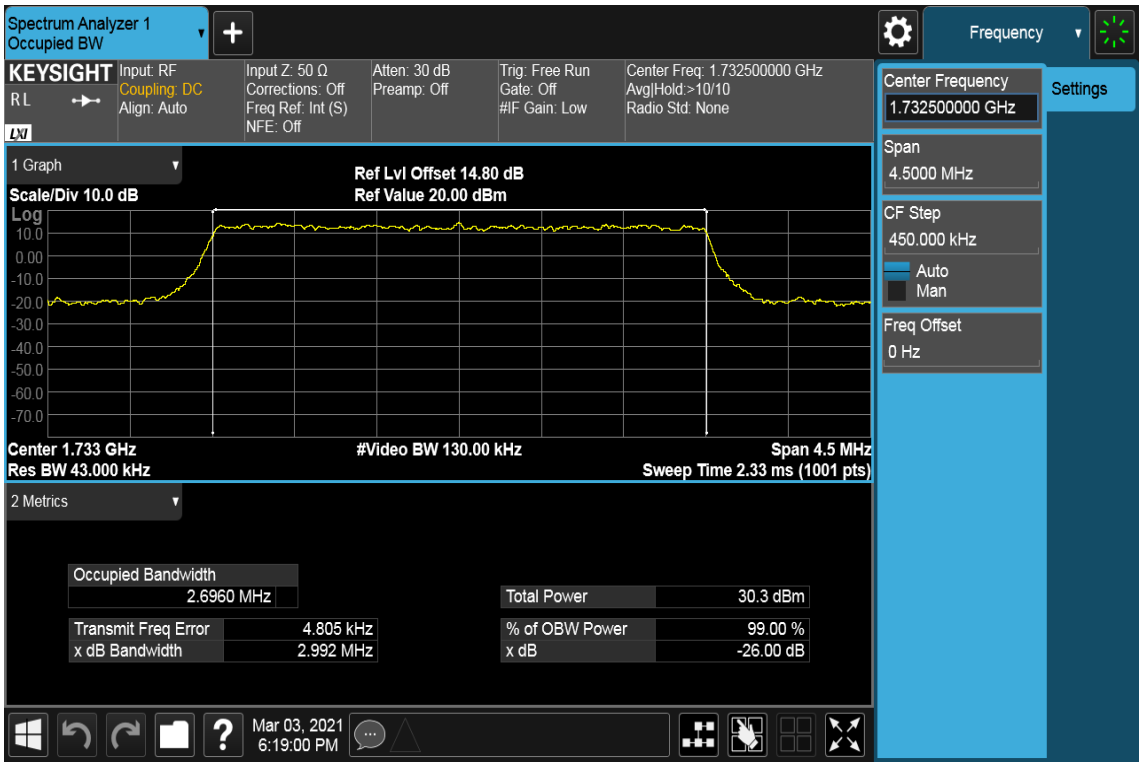
CH High

CHANNEL BANDWIDTH: 3MHz / 64QAM / RB =15, RB Offset = 0

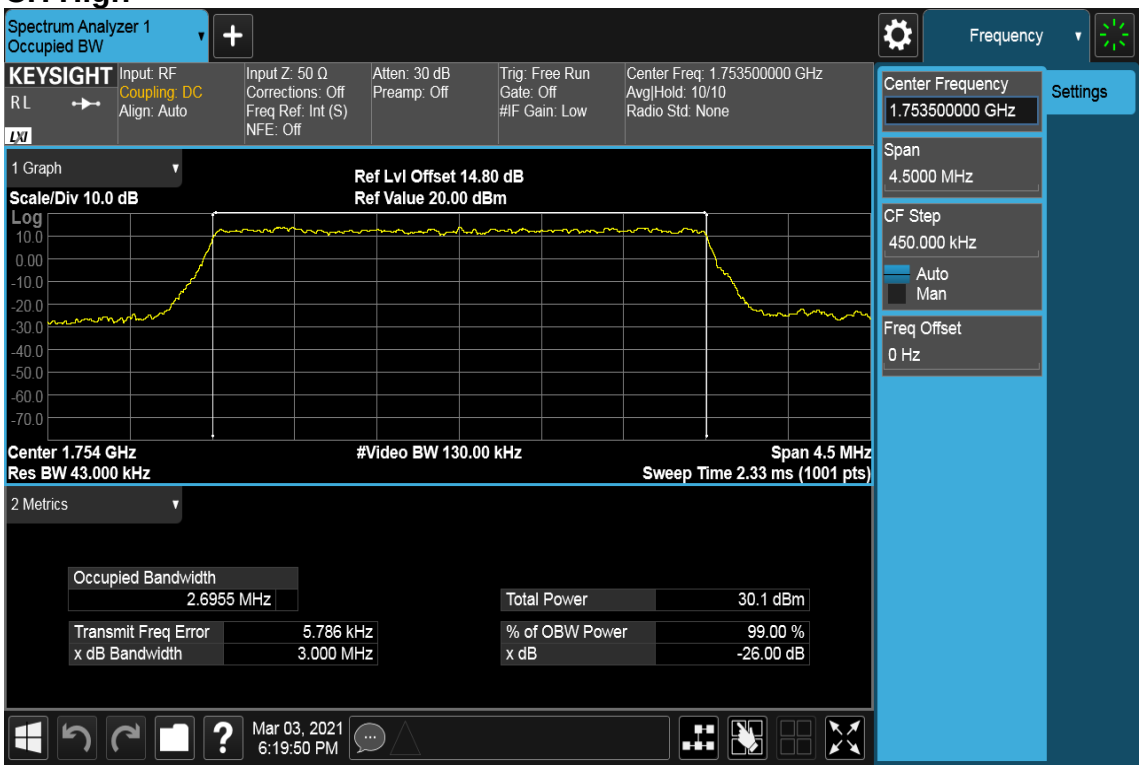
CH Low



CH Mid

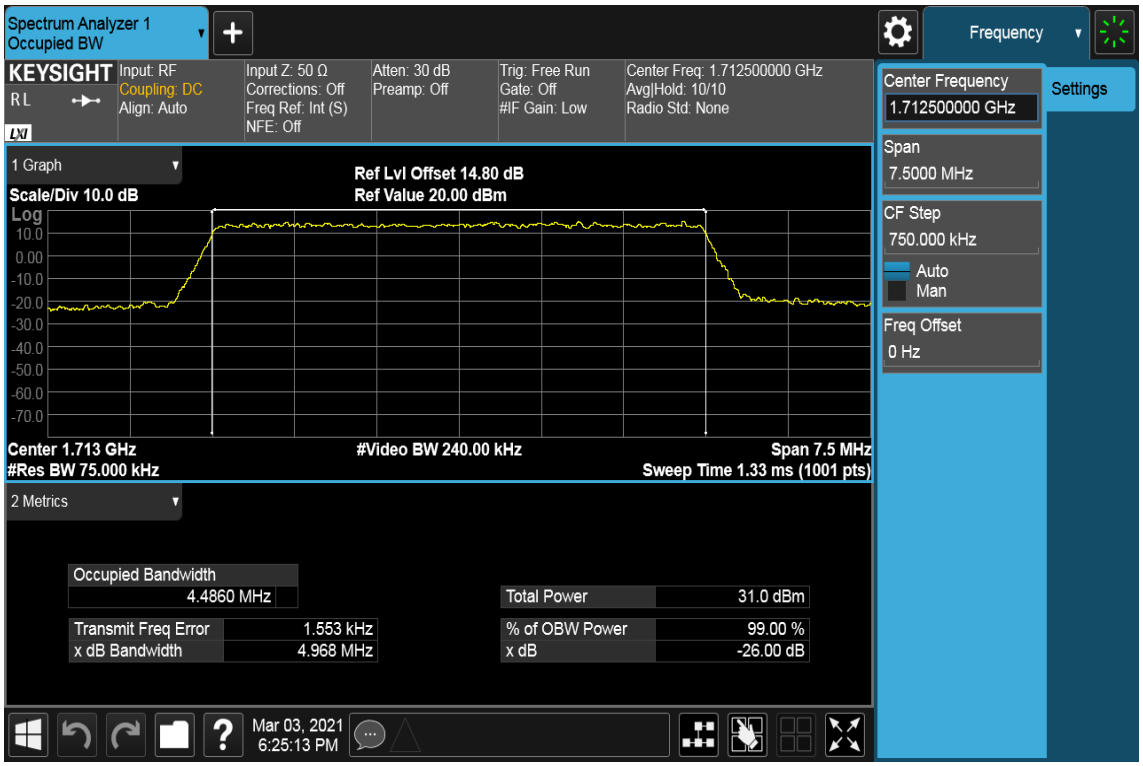


CH High

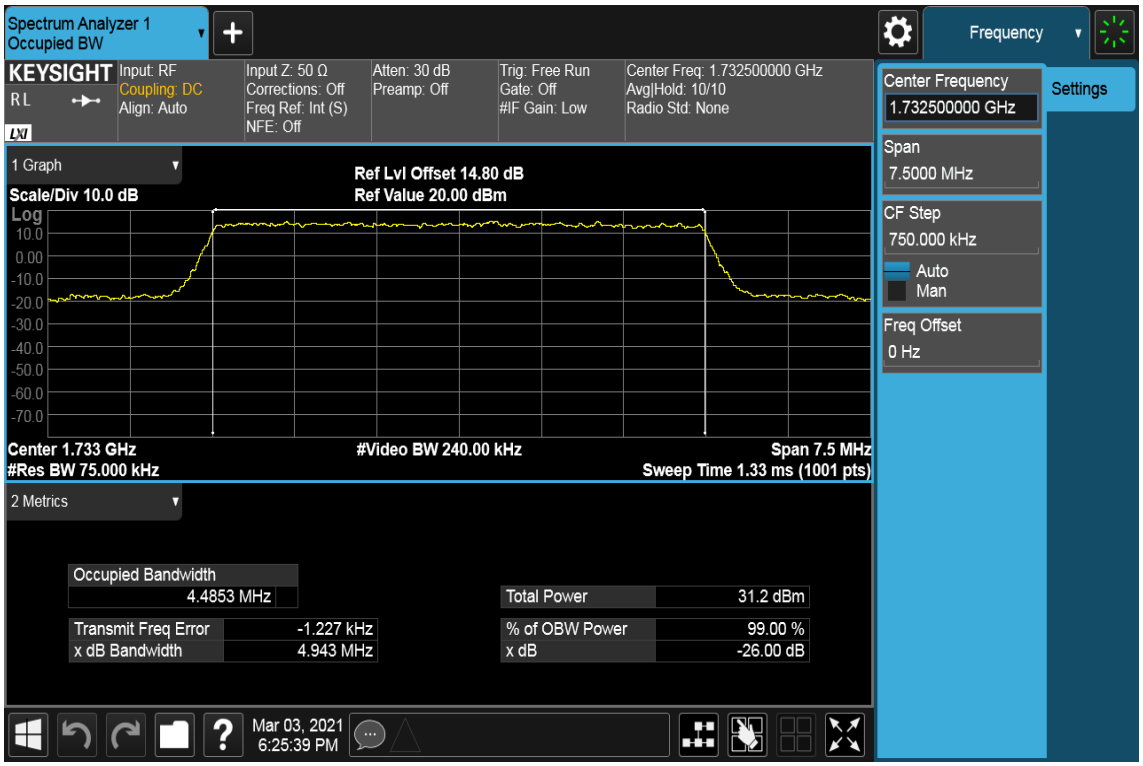


CHANNEL BANDWIDTH: 5MHz / QPSK / RB =25, RB Offset = 0

CH Low



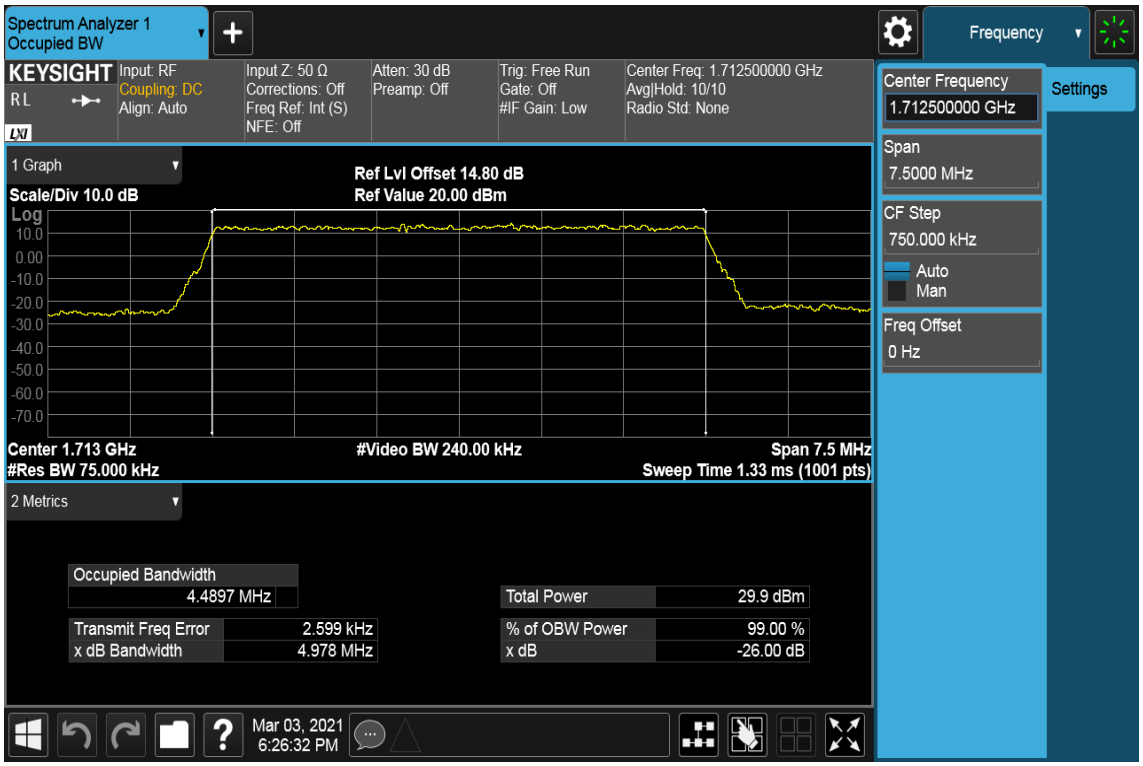
CH Mid



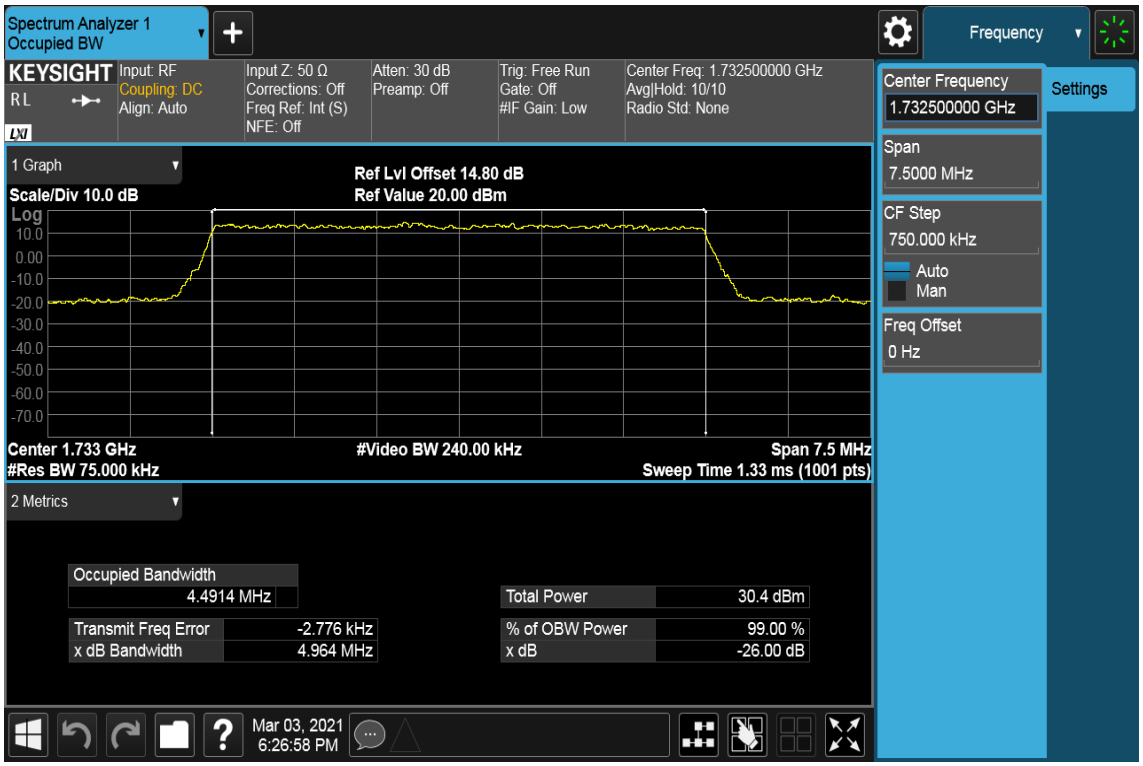
CH High

CHANNEL BANDWIDTH: 5MHz / 16QAM / RB =25, RB Offset = 0

CH Low



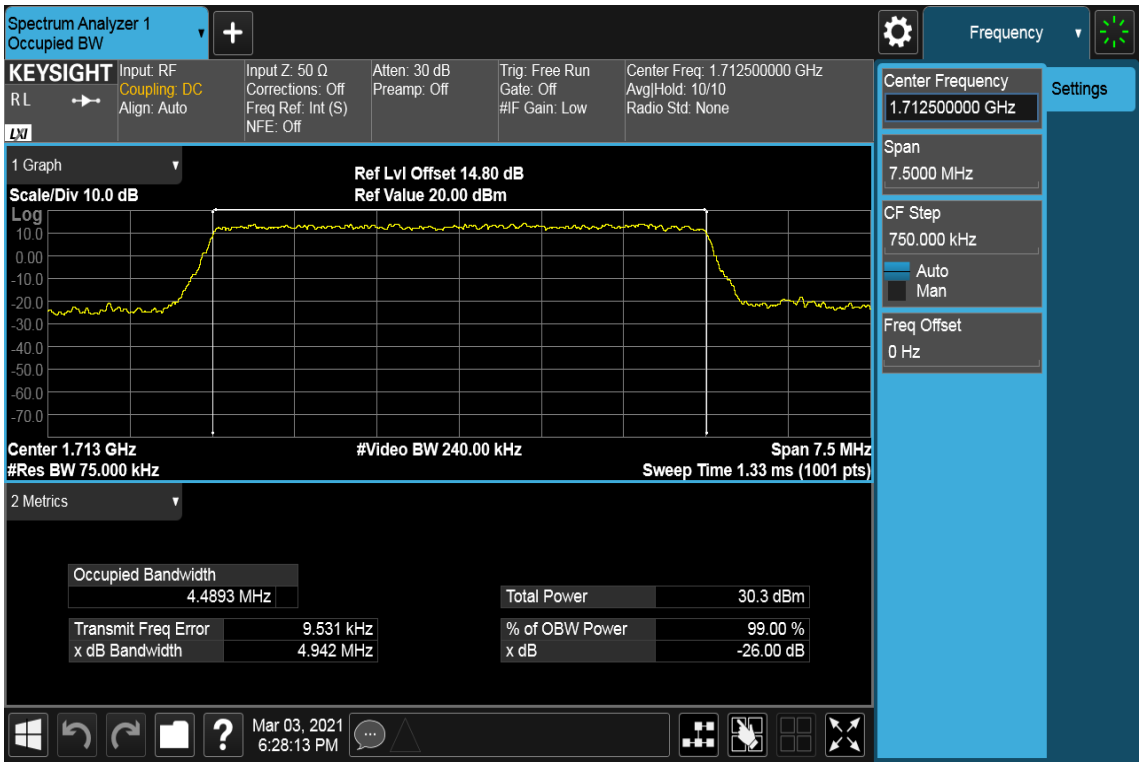
CH Mid



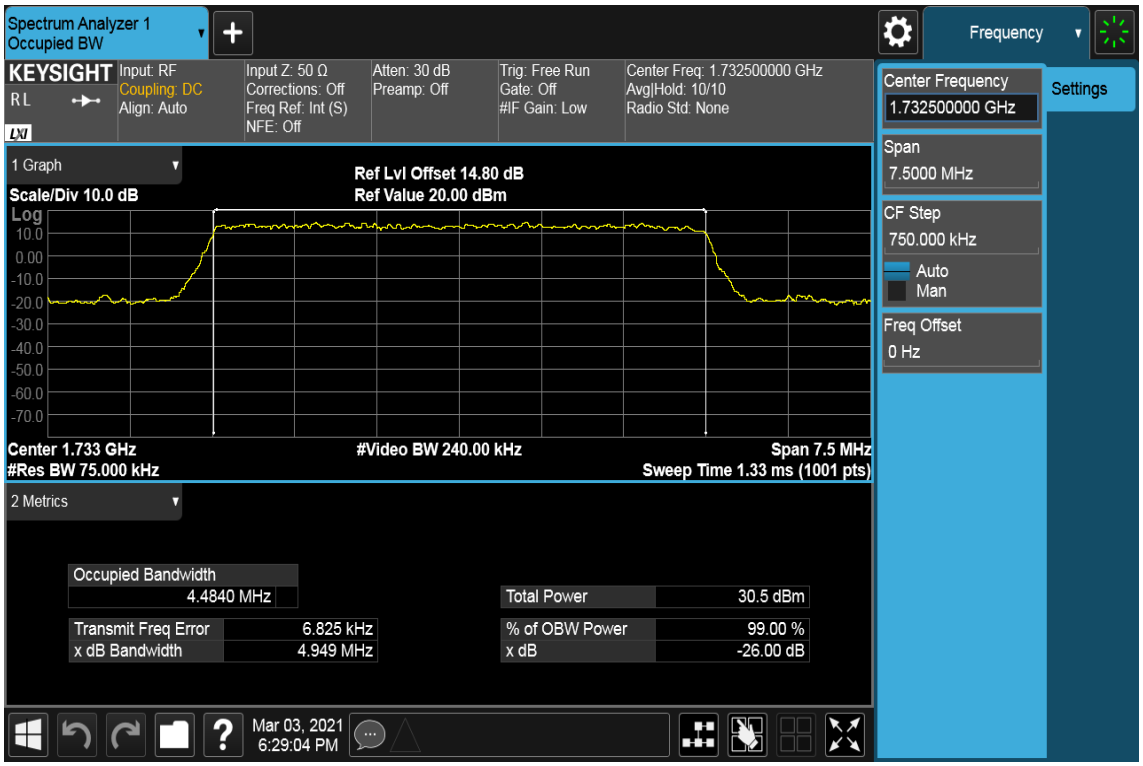
CH High

CHANNEL BANDWIDTH: 5MHz / 64QAM / RB =25, RB Offset = 0

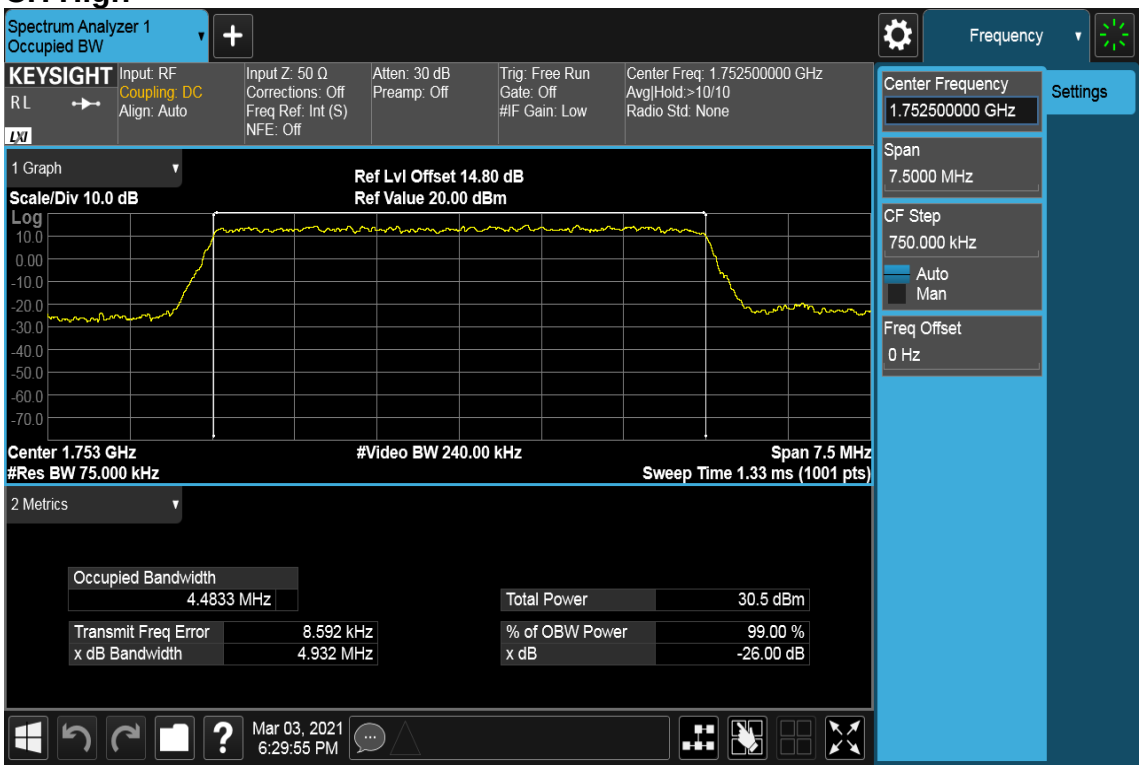
CH Low



CH Mid

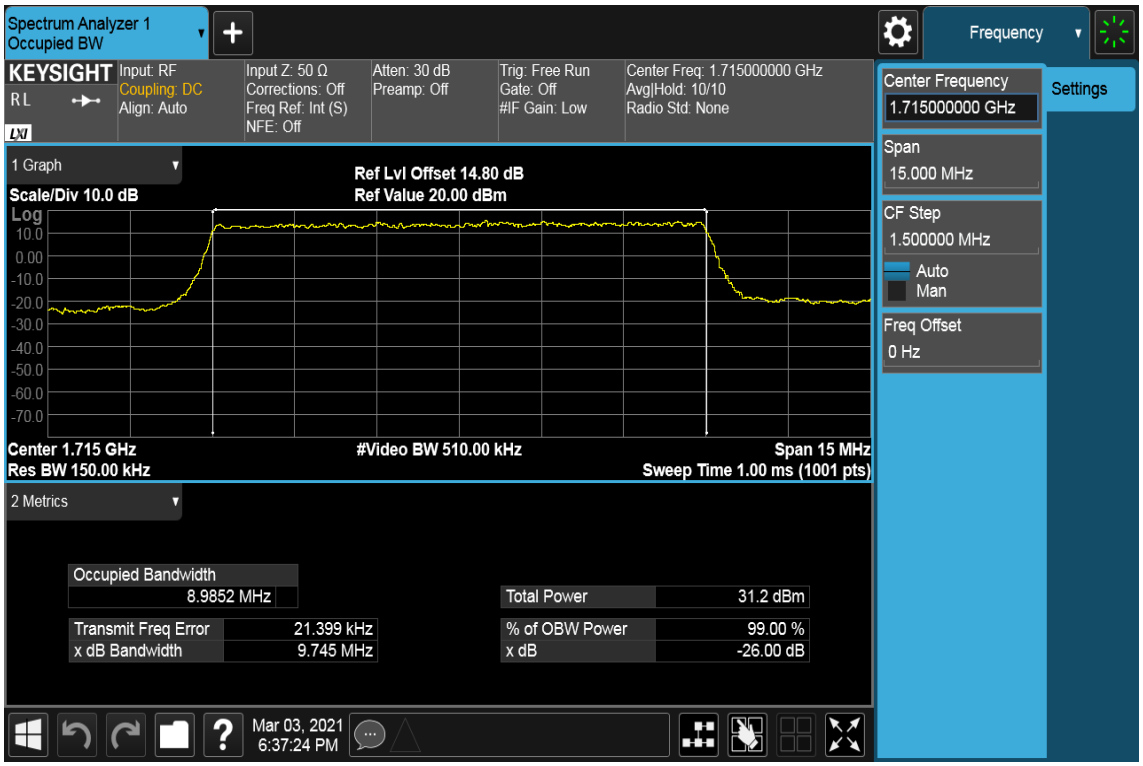


CH High

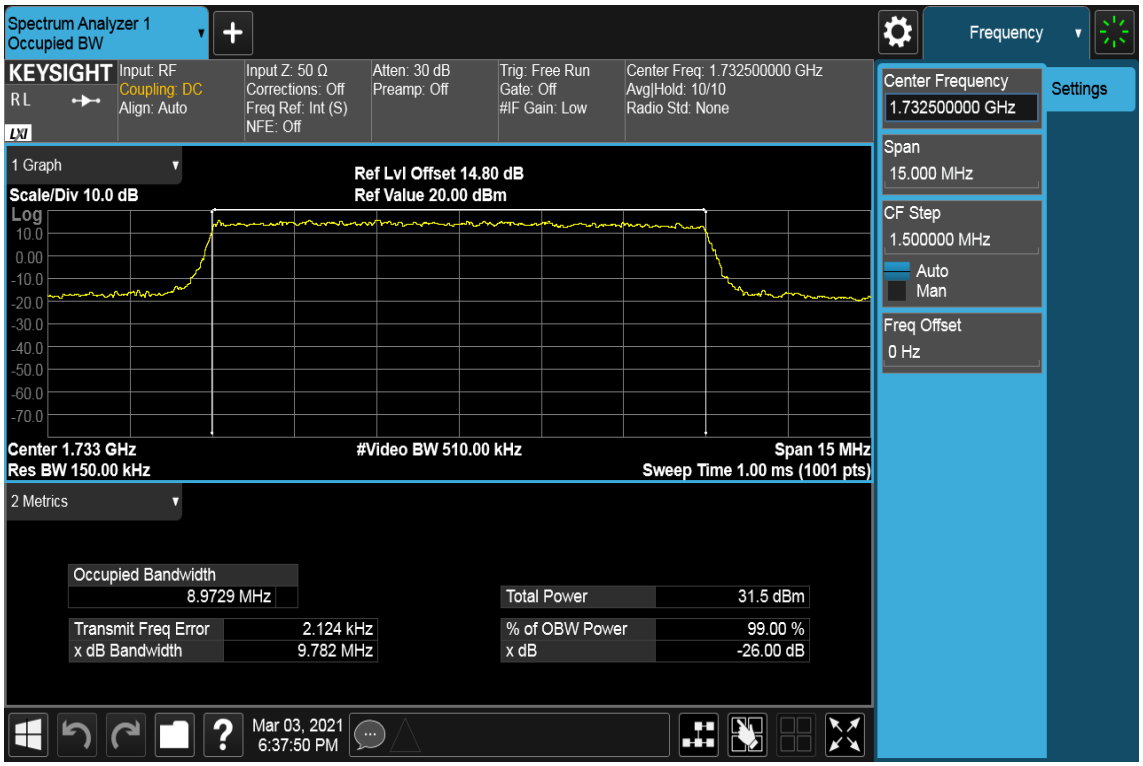


CHANNEL BANDWIDTH: 10MHz / QPSK / RB =50, RB Offset = 0

CH Low



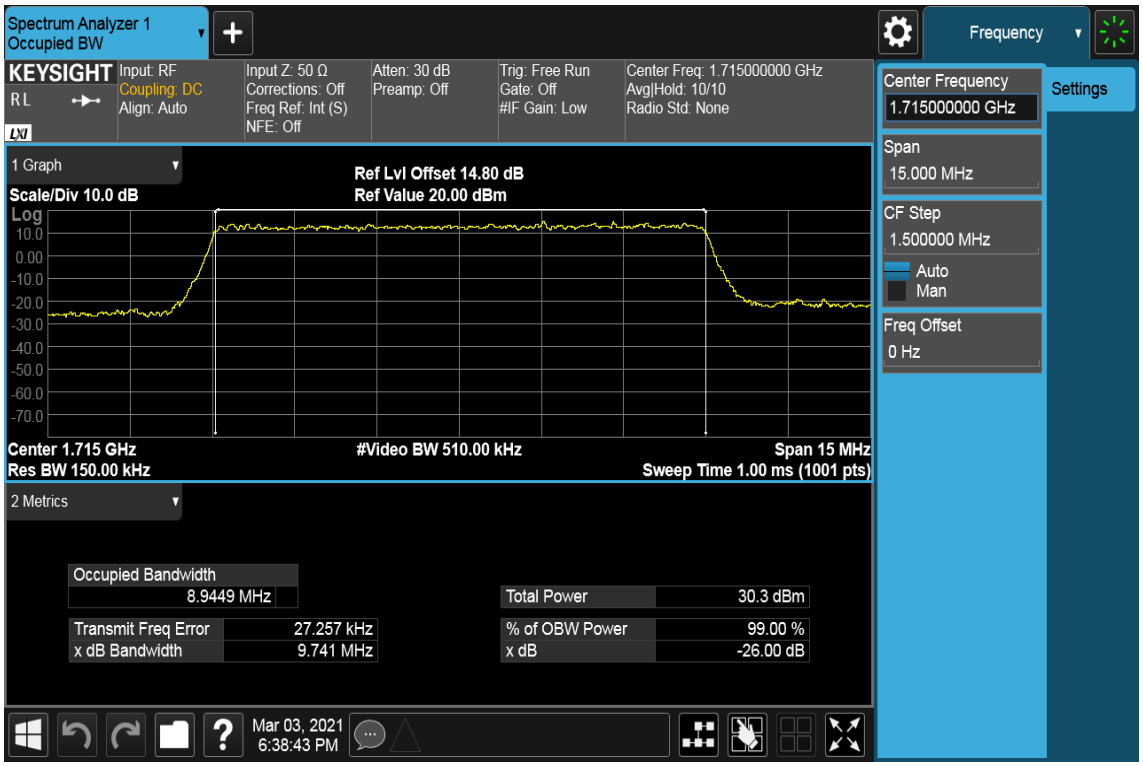
CH Mid



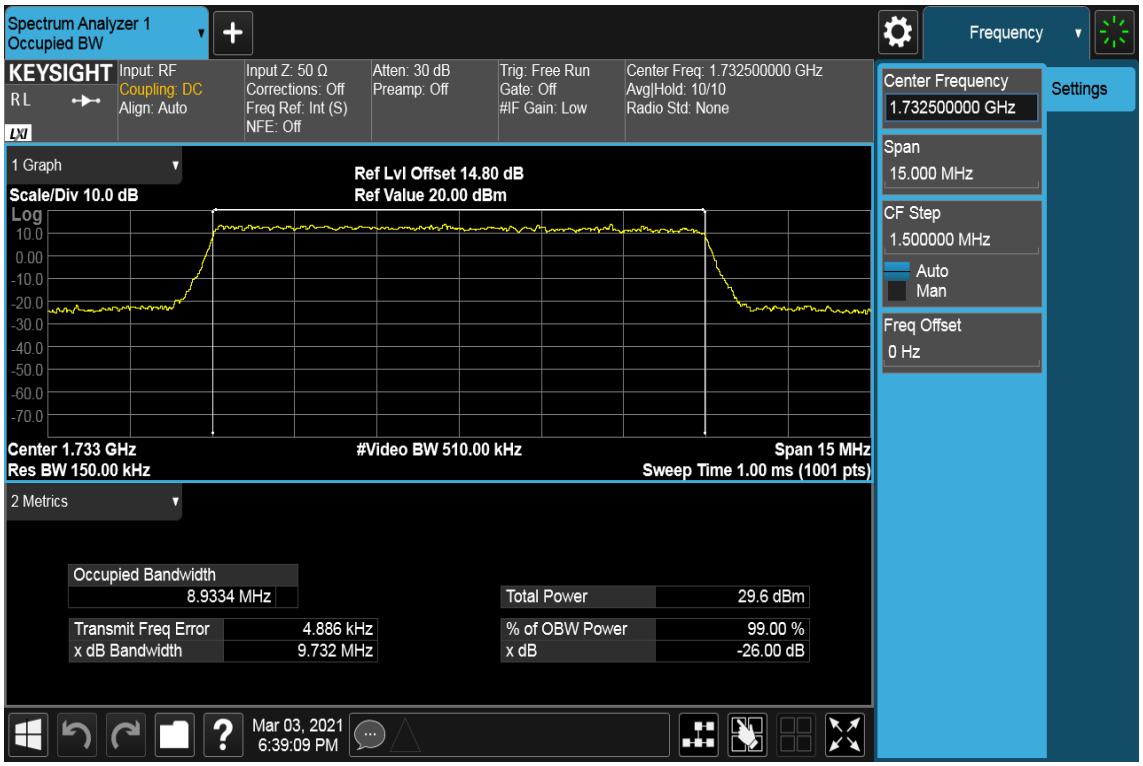
CH High

CHANNEL BANDWIDTH: 10MHz / 16QAM / RB =50, RB Offset = 0

CH Low



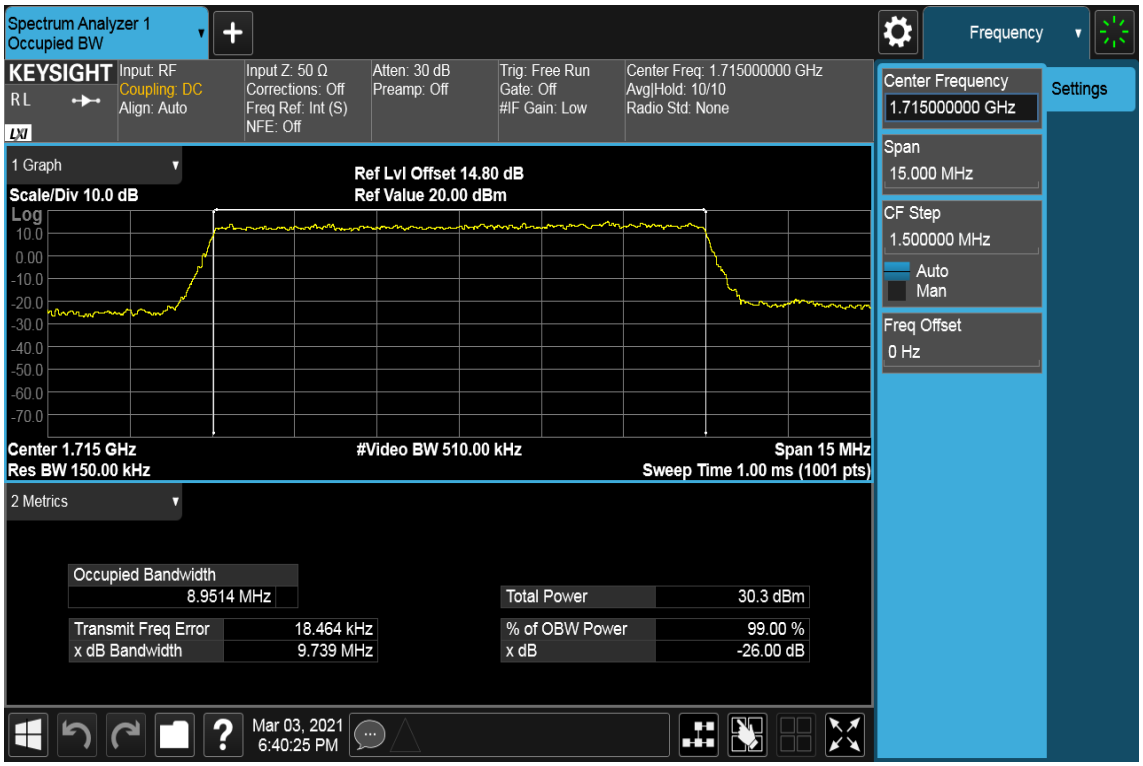
CH Mid



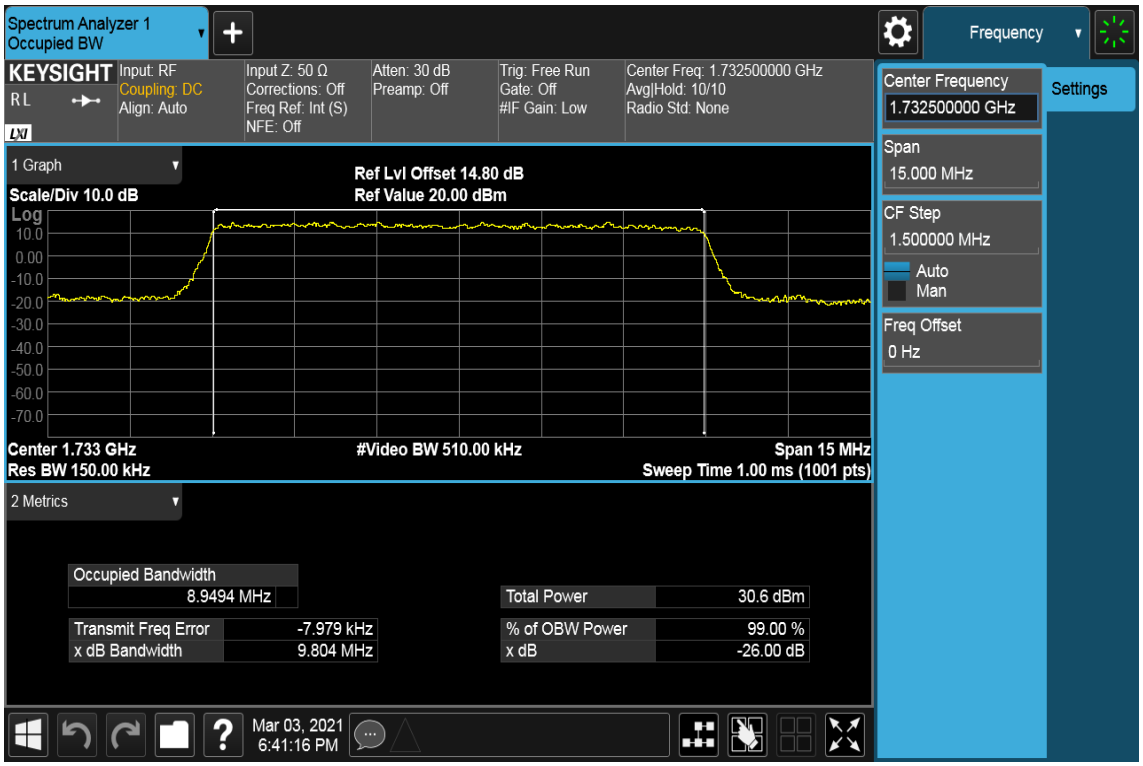
CH High

CHANNEL BANDWIDTH: 10MHz / 64QAM / RB =50, RB Offset = 0

CH Low



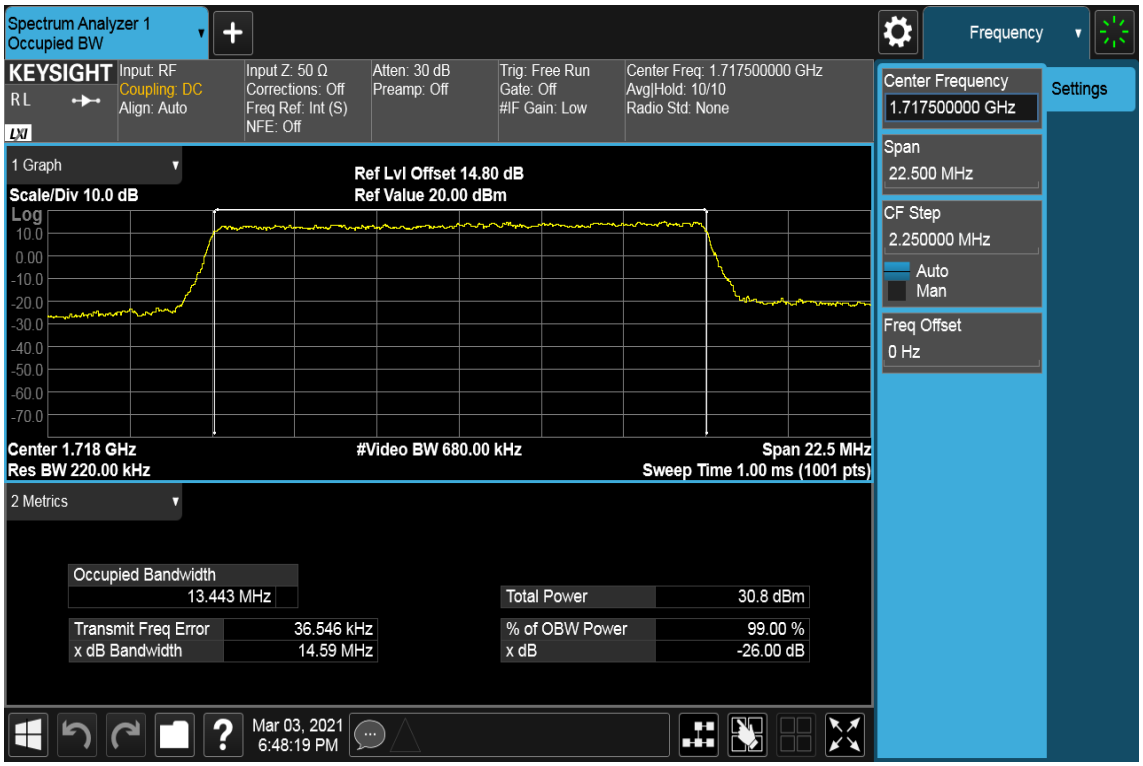
CH Mid



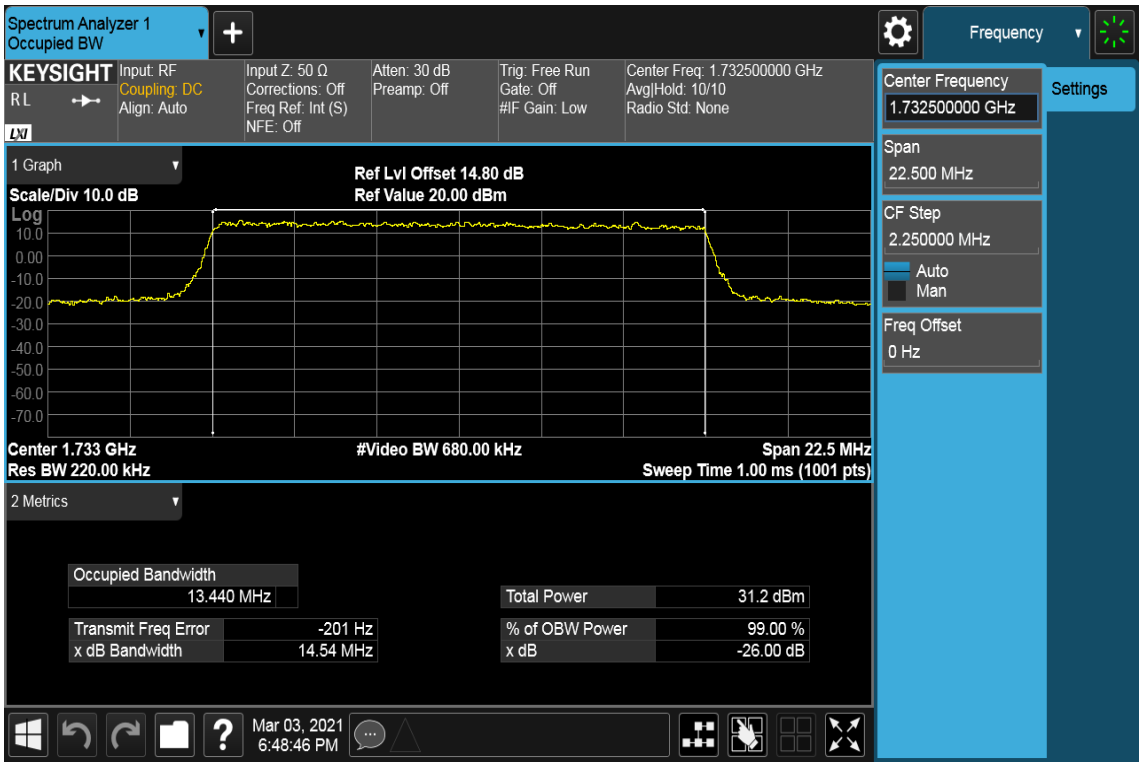
CH High

CHANNEL BANDWIDTH: 15MHz / QPSK / RB =75, RB Offset = 0

CH Low



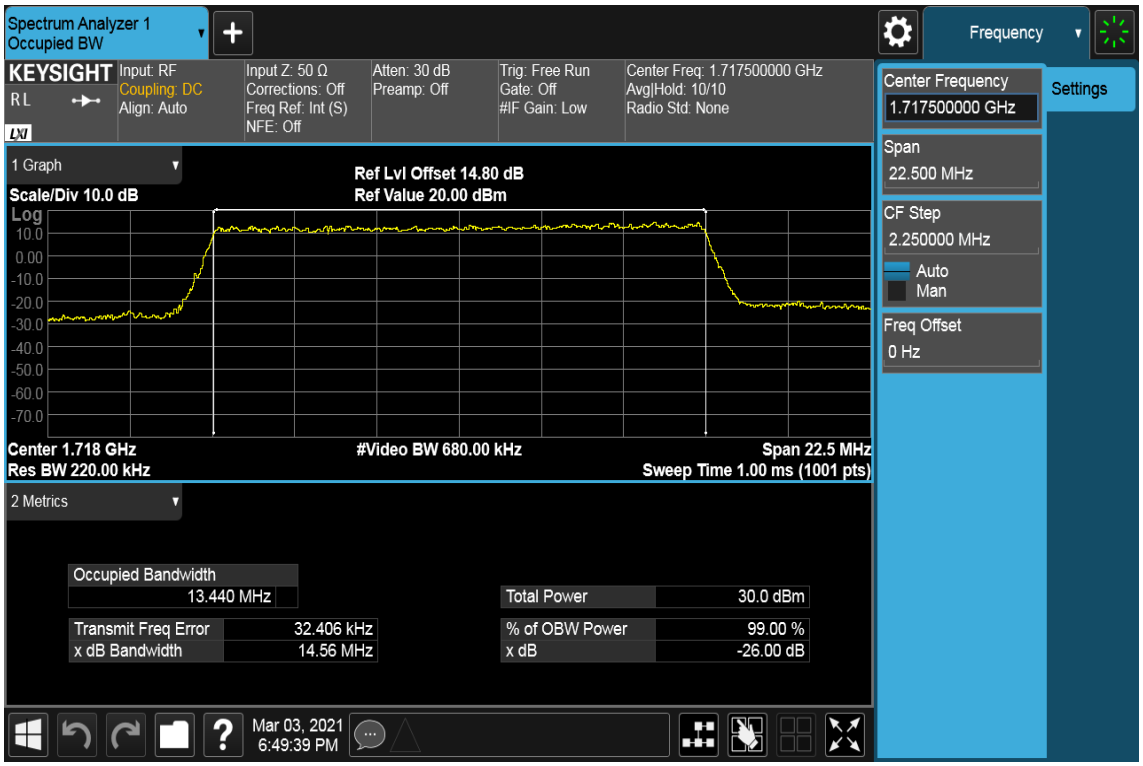
CH Mid



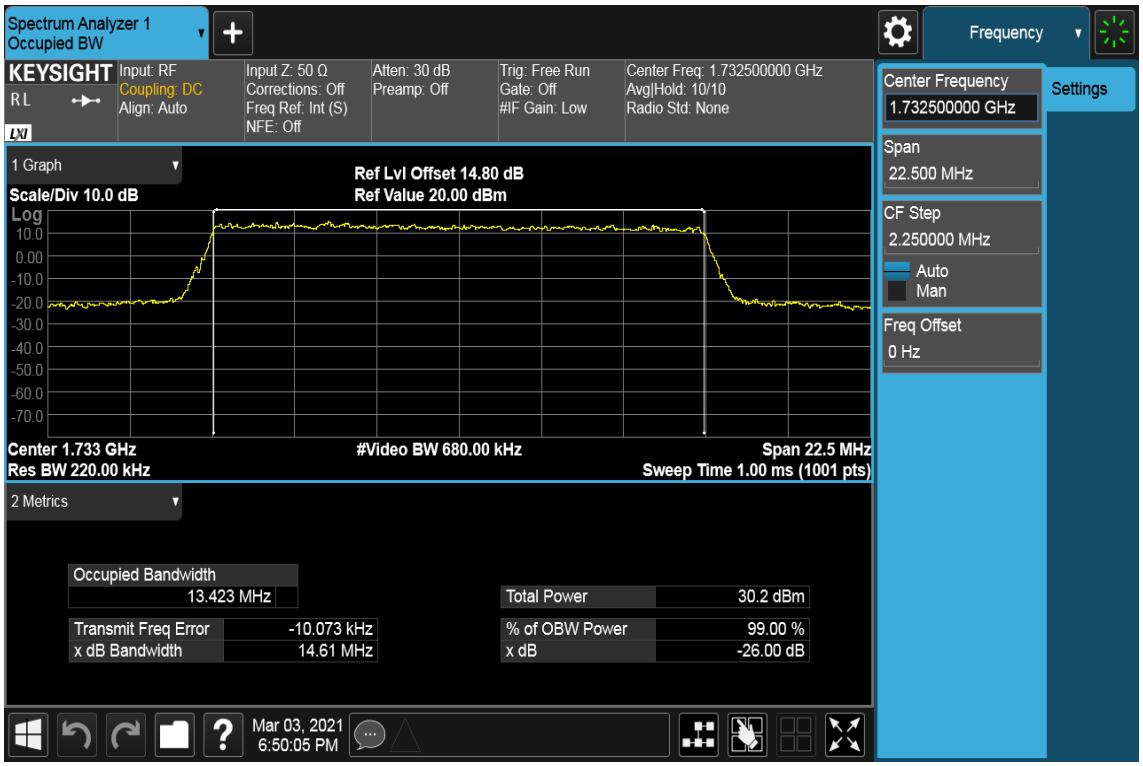
CH High

CHANNEL BANDWIDTH: 15MHz / 16QAM / RB =75, RB Offset = 0

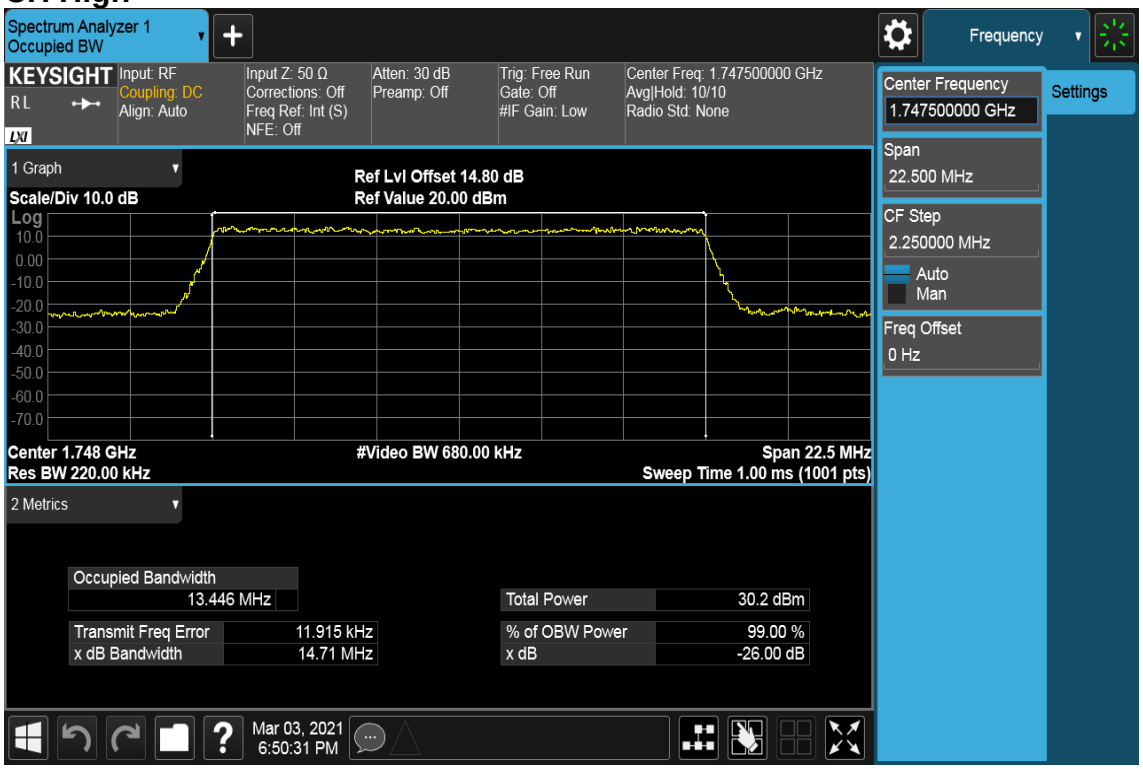
CH Low



CH Mid

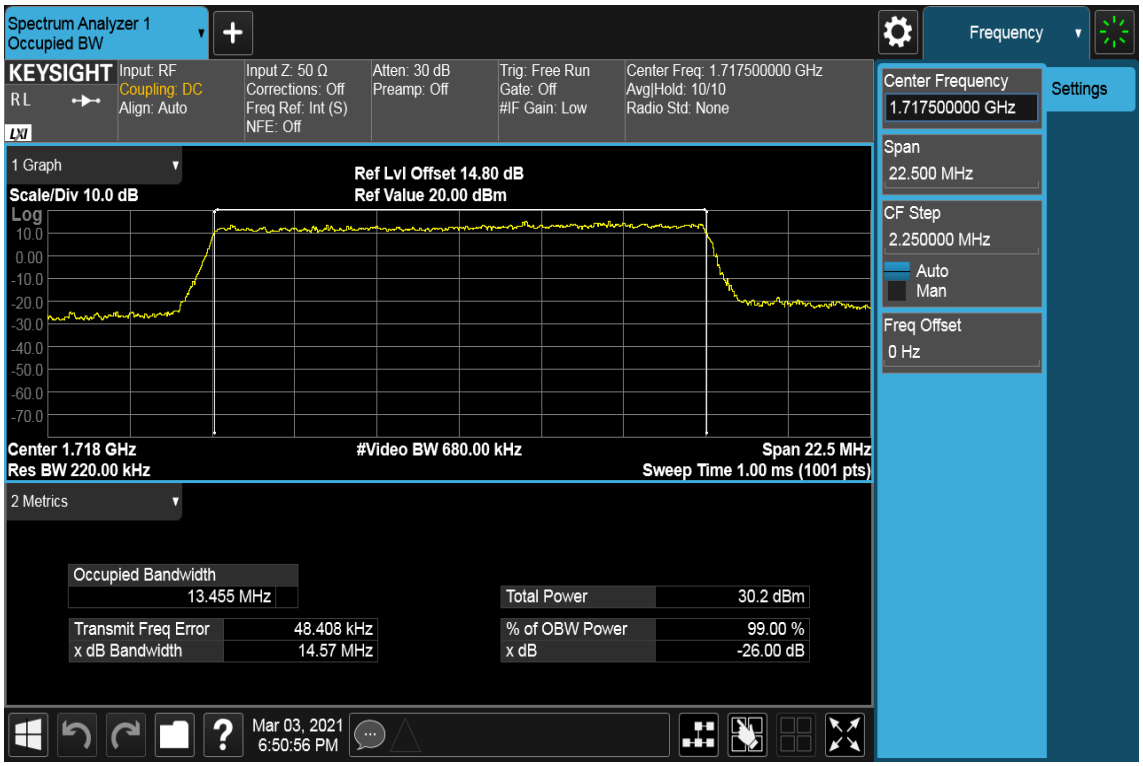


CH High

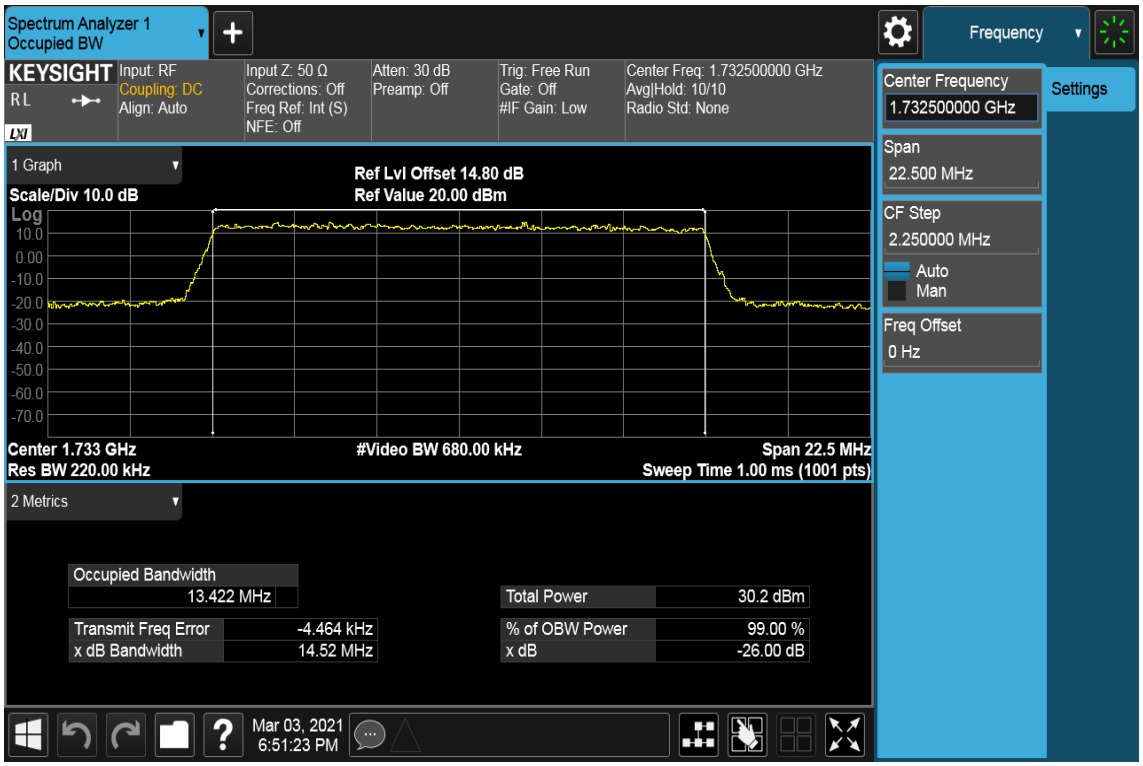


CHANNEL BANDWIDTH: 15MHz / 64QAM / RB =75, RB Offset = 0

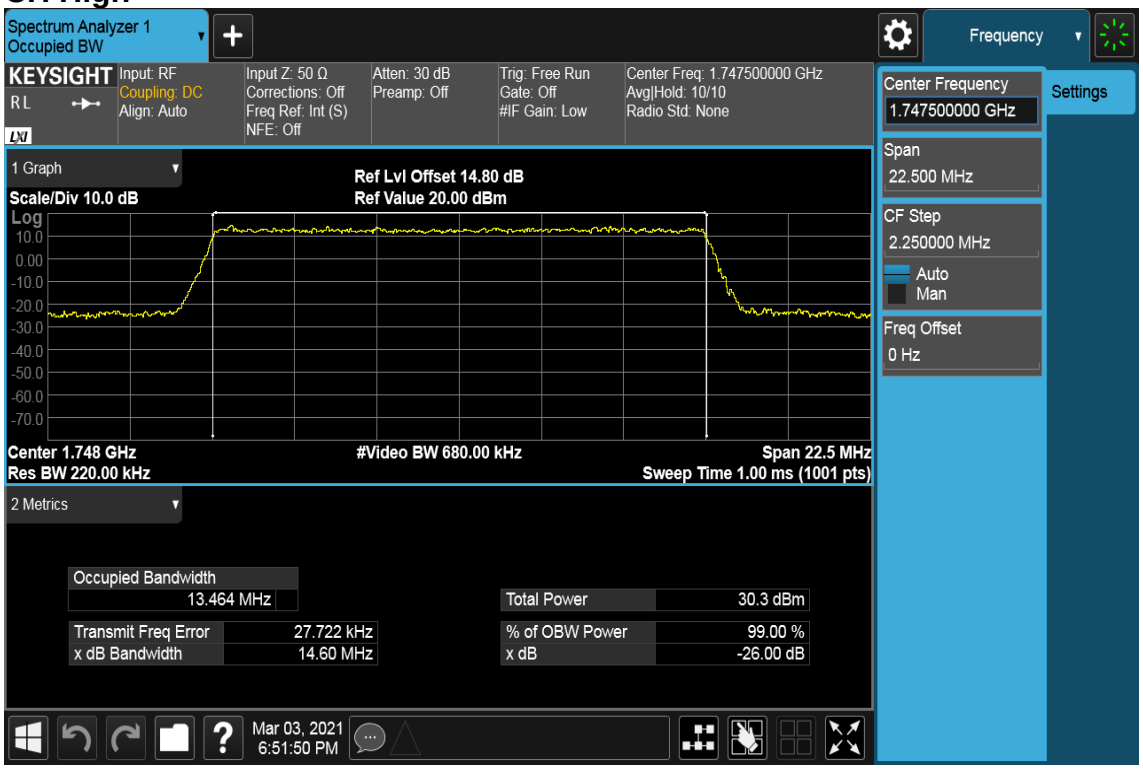
CH Low



CH Mid

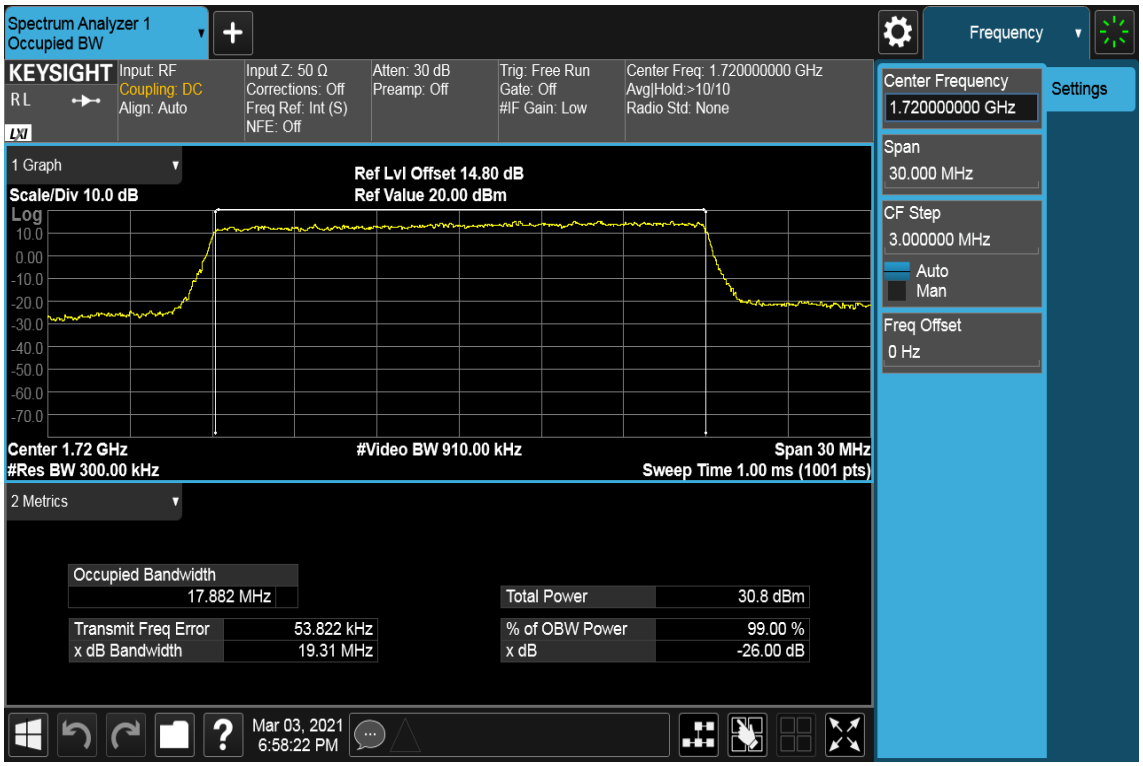


CH High

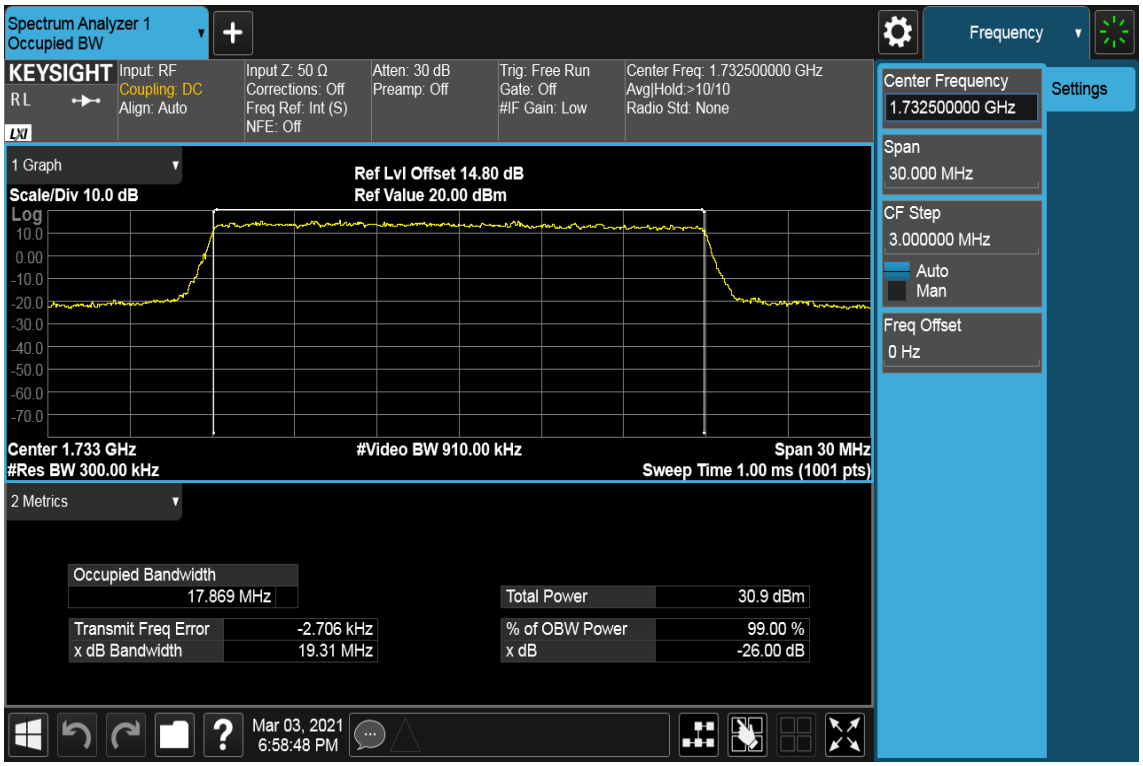


CHANNEL BANDWIDTH: 20MHz / QPSK / RB =100, RB Offset = 0

CH Low



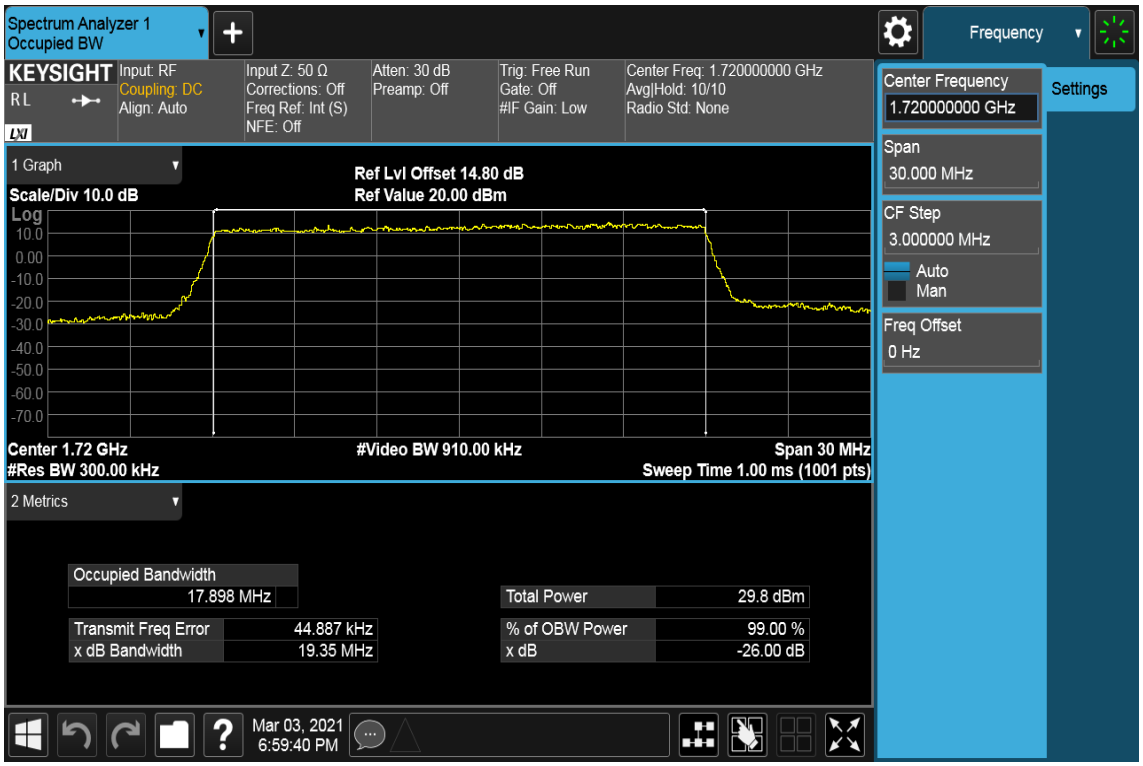
CH Mid



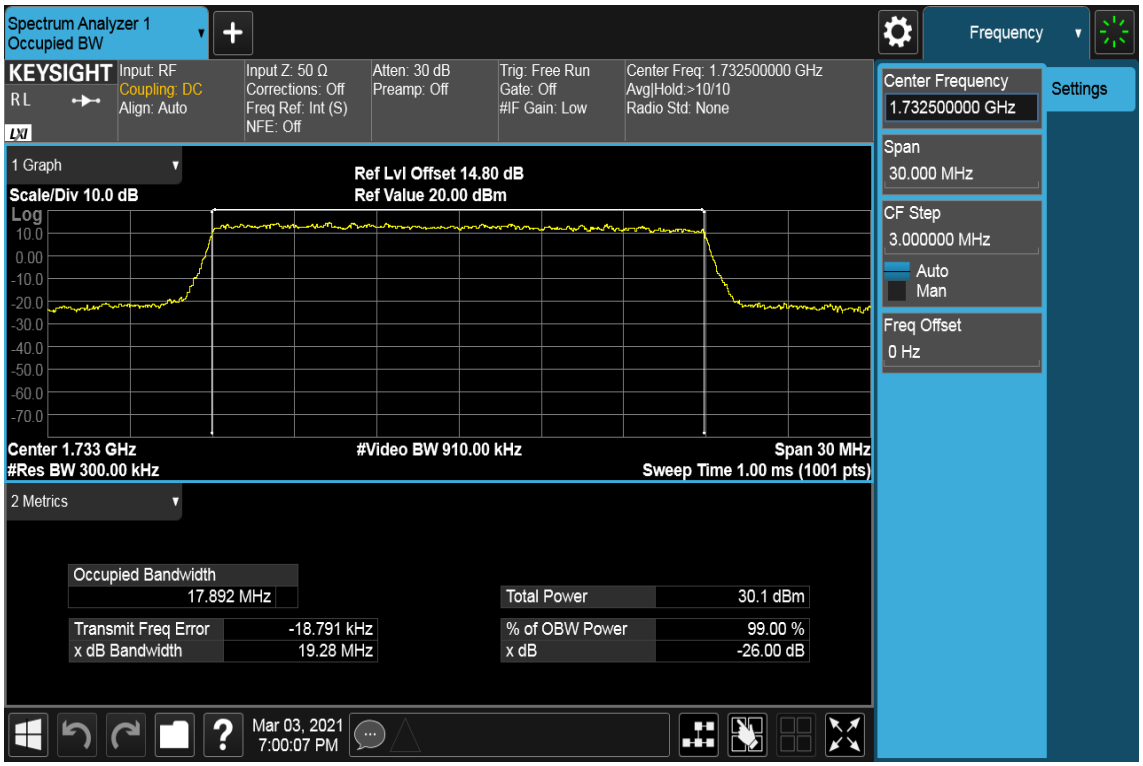
CH High

CHANNEL BANDWIDTH: 20MHz / 16QAM / RB =100, RB Offset = 0

CH Low



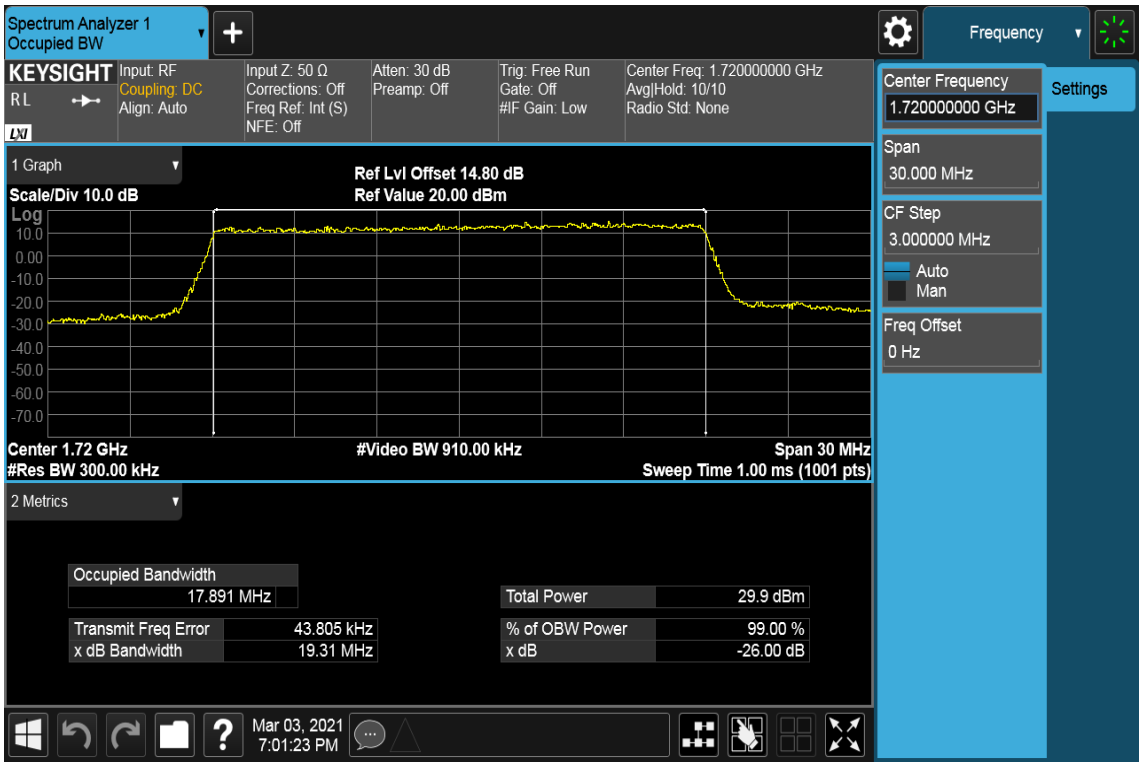
CH Mid



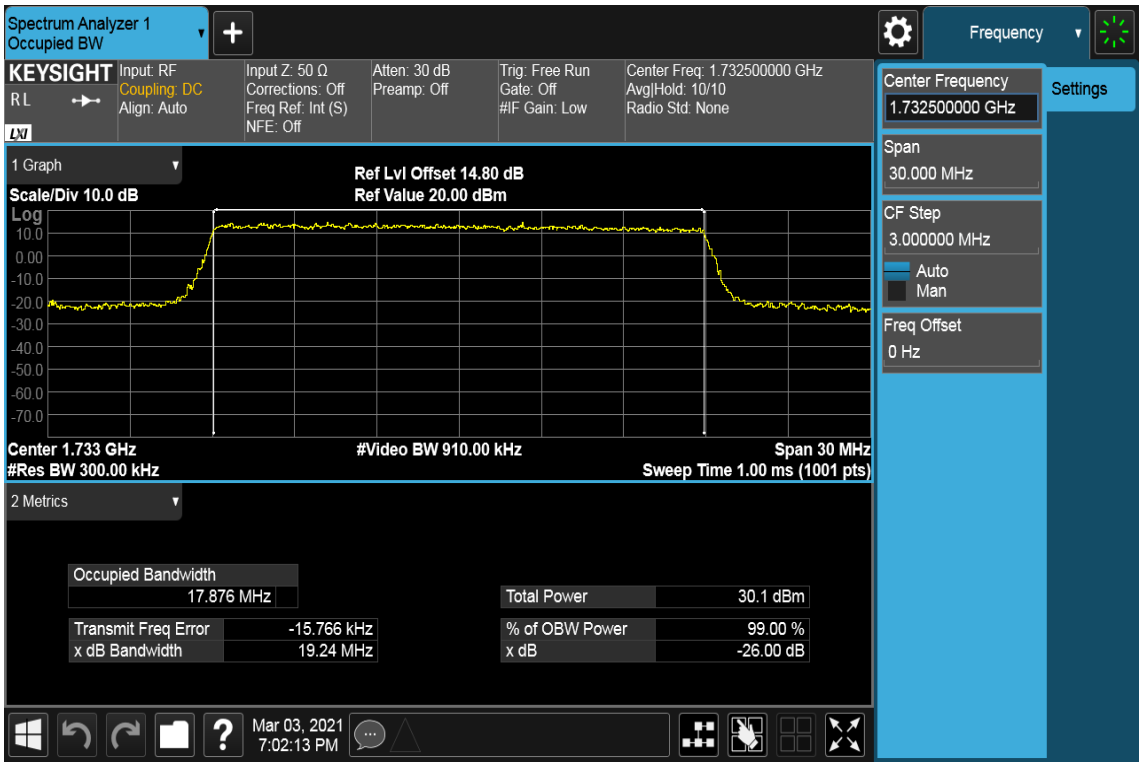
CH High

CHANNEL BANDWIDTH: 20MHz / 64QAM / RB =100, RB Offset = 0

CH Low



CH Mid

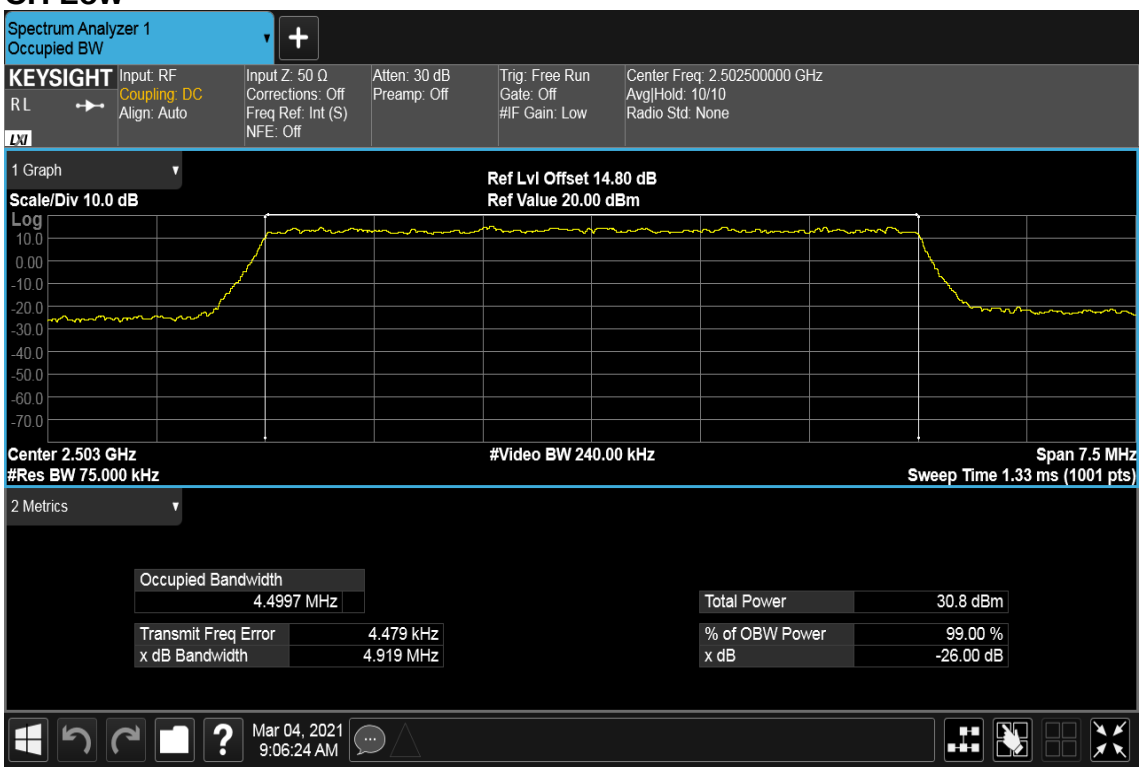


CH High

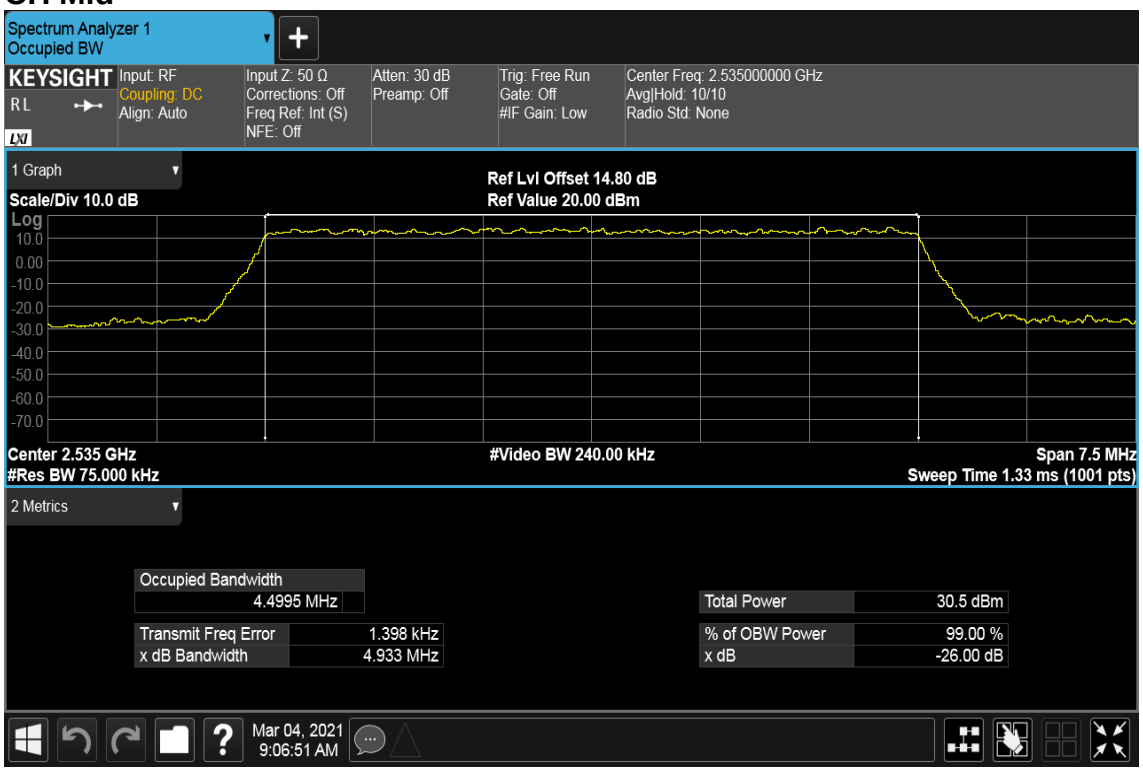
LTE Band 7

CHANNEL BANDWIDTH: 5MHz / QPSK / RB =25, RB Offset = 0

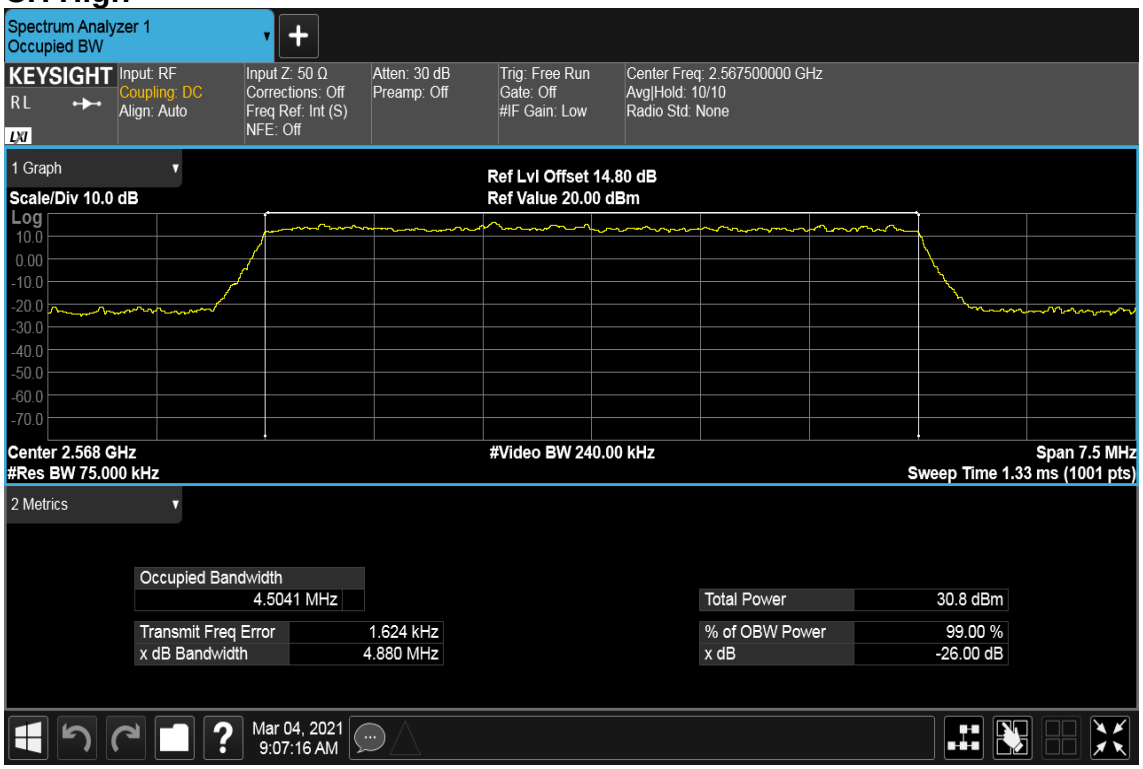
CH Low



CH Mid

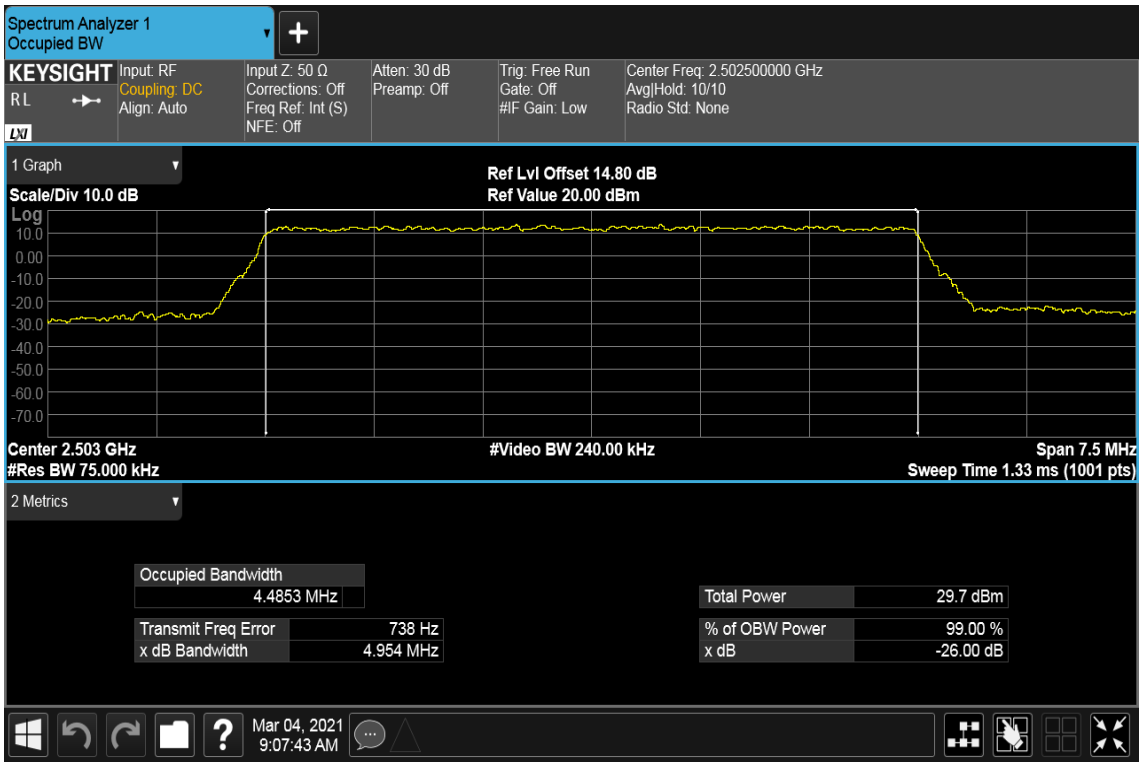


CH High

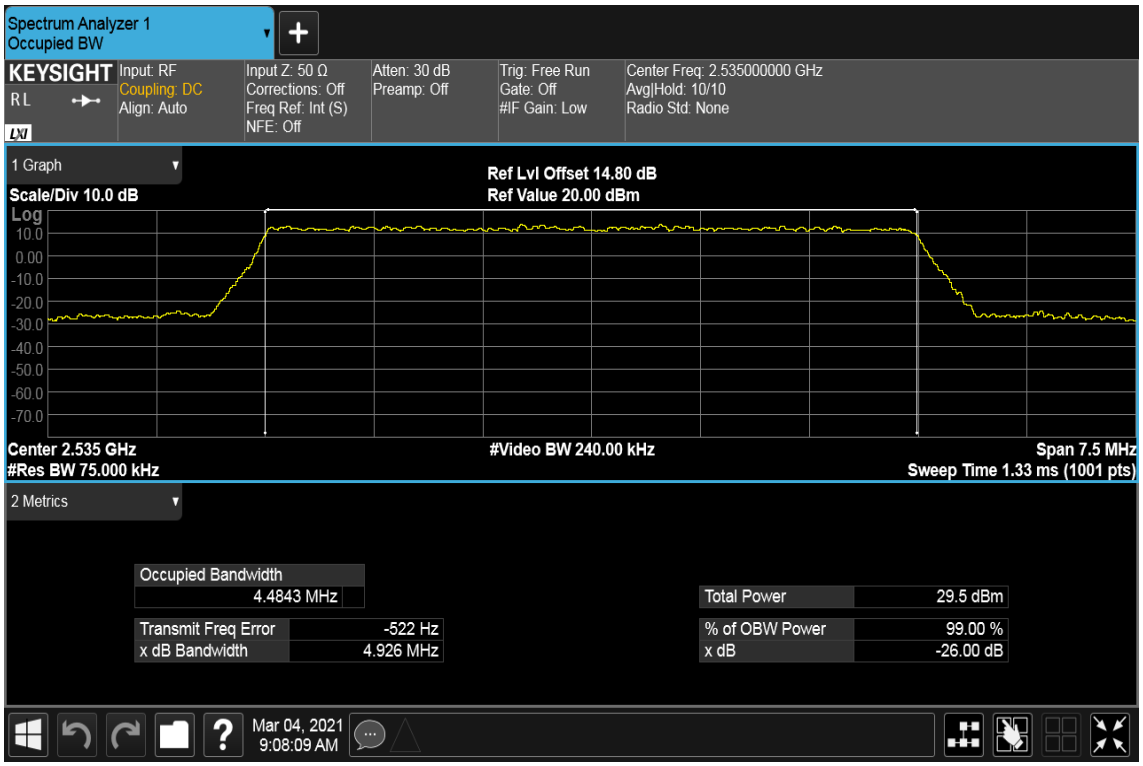


CHANNEL BANDWIDTH: 5MHz / 16QAM / RB =25, RB Offset = 0

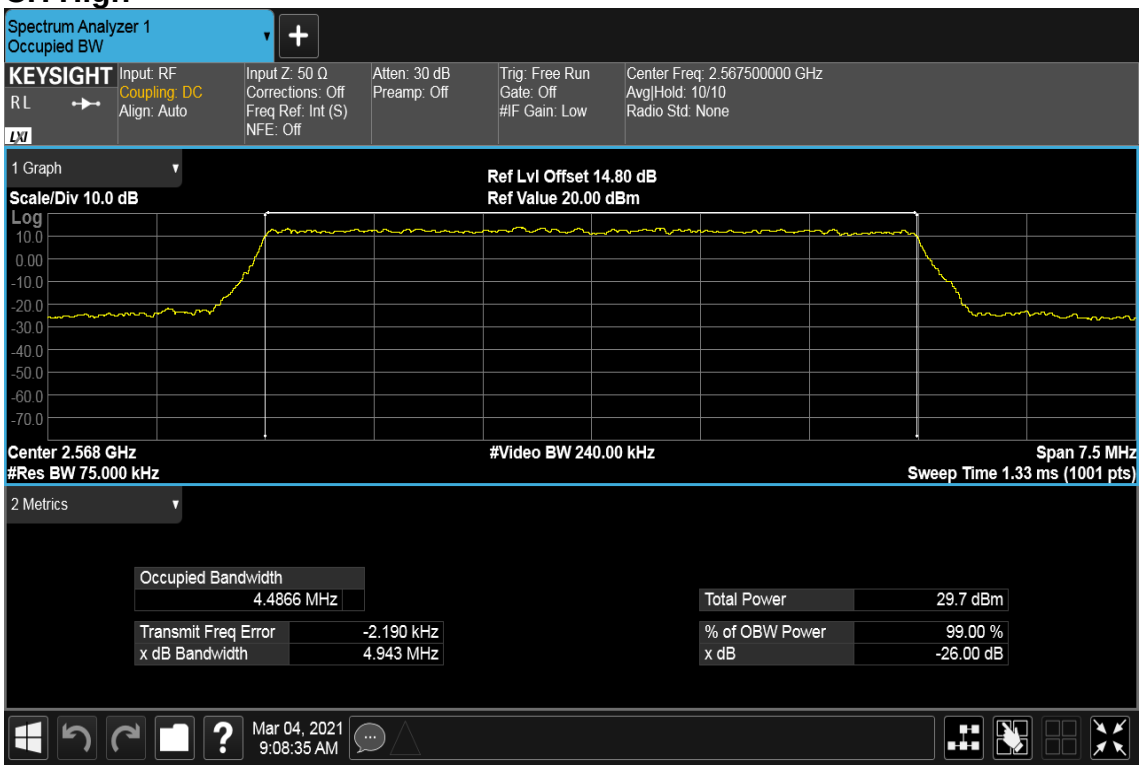
CH Low



CH Mid

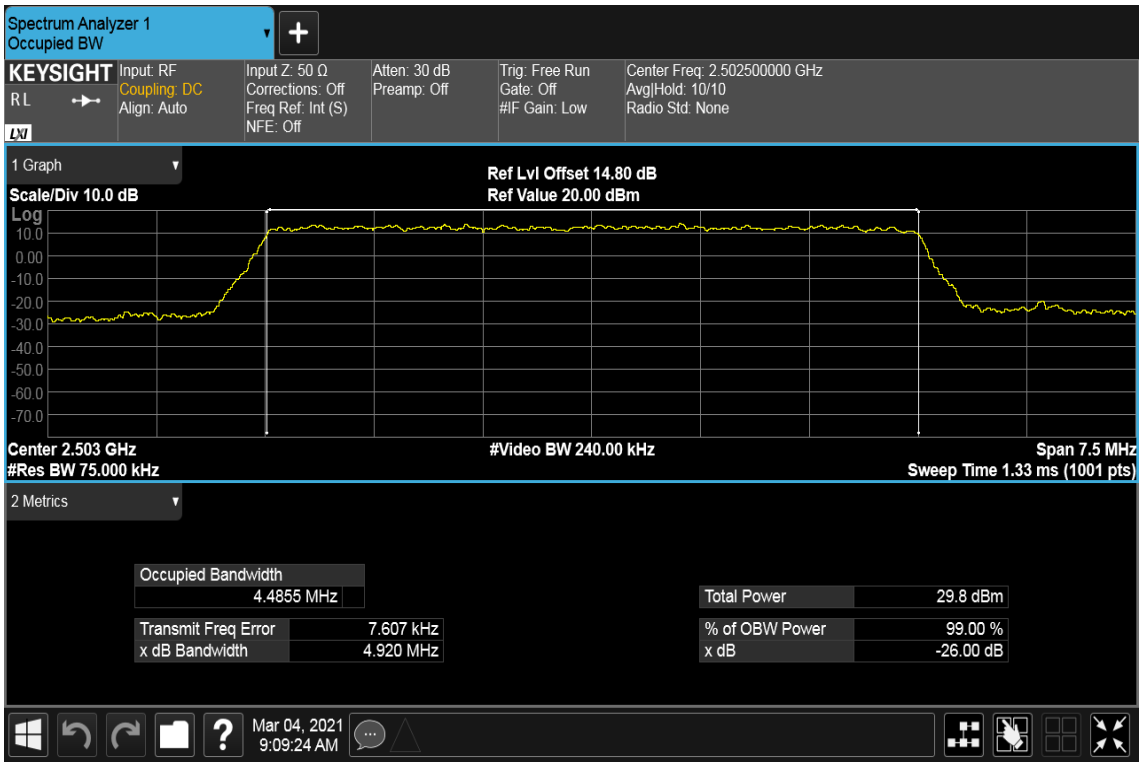


CH High

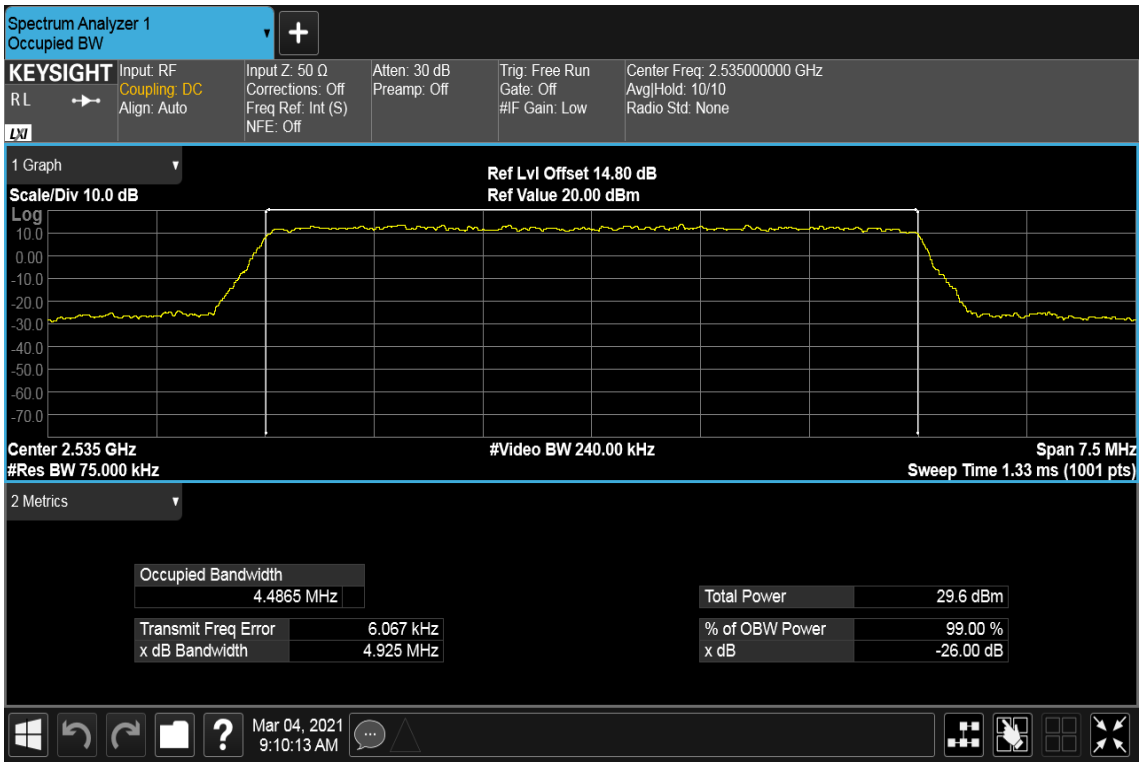


CHANNEL BANDWIDTH: 5MHz / 64QAM / RB =25, RB Offset = 0

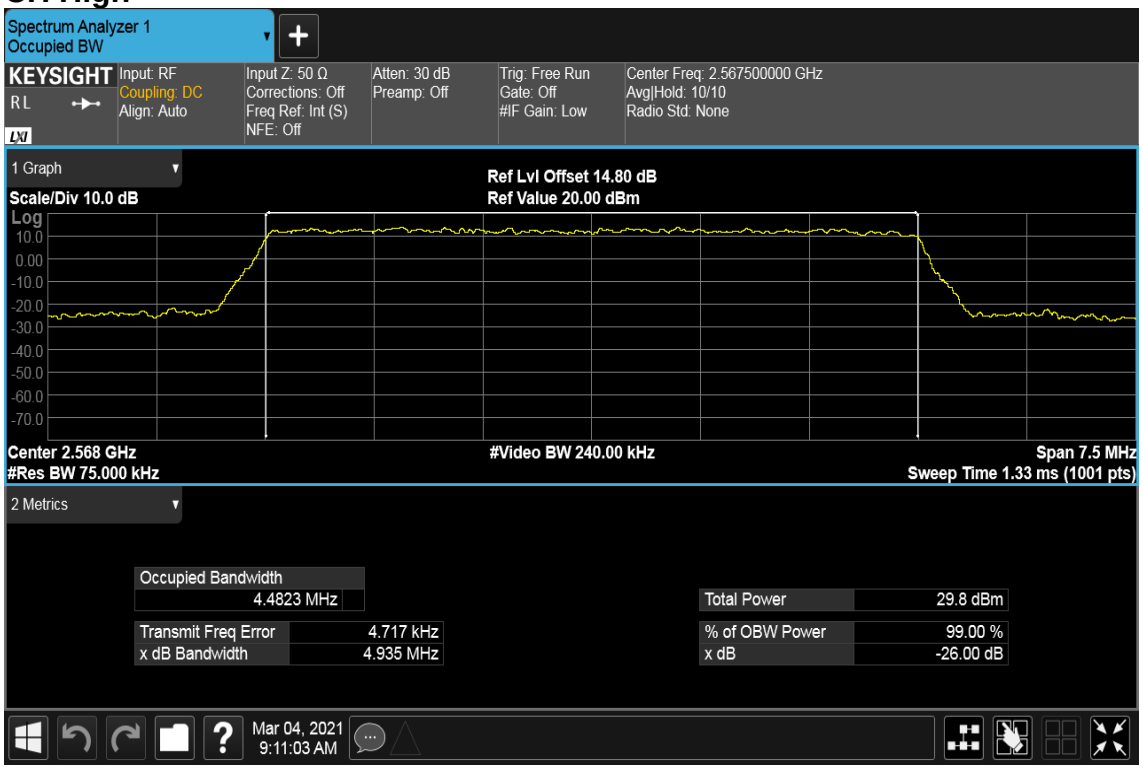
CH Low



CH Mid

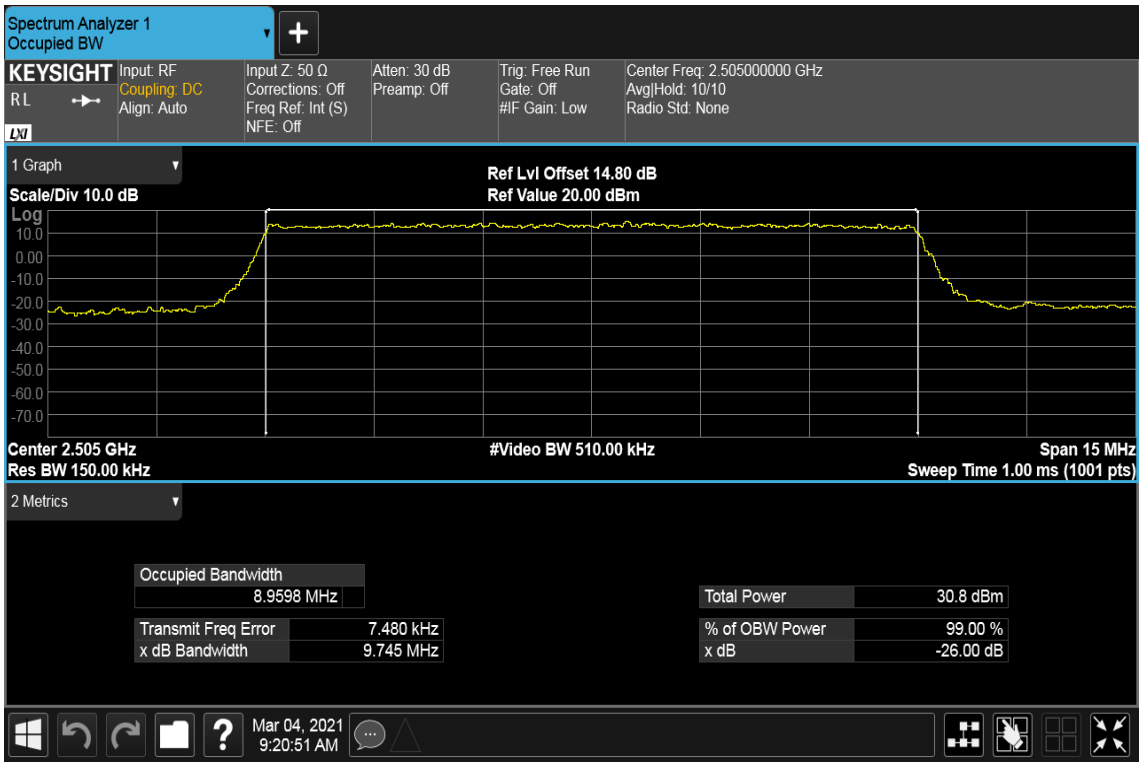


CH High

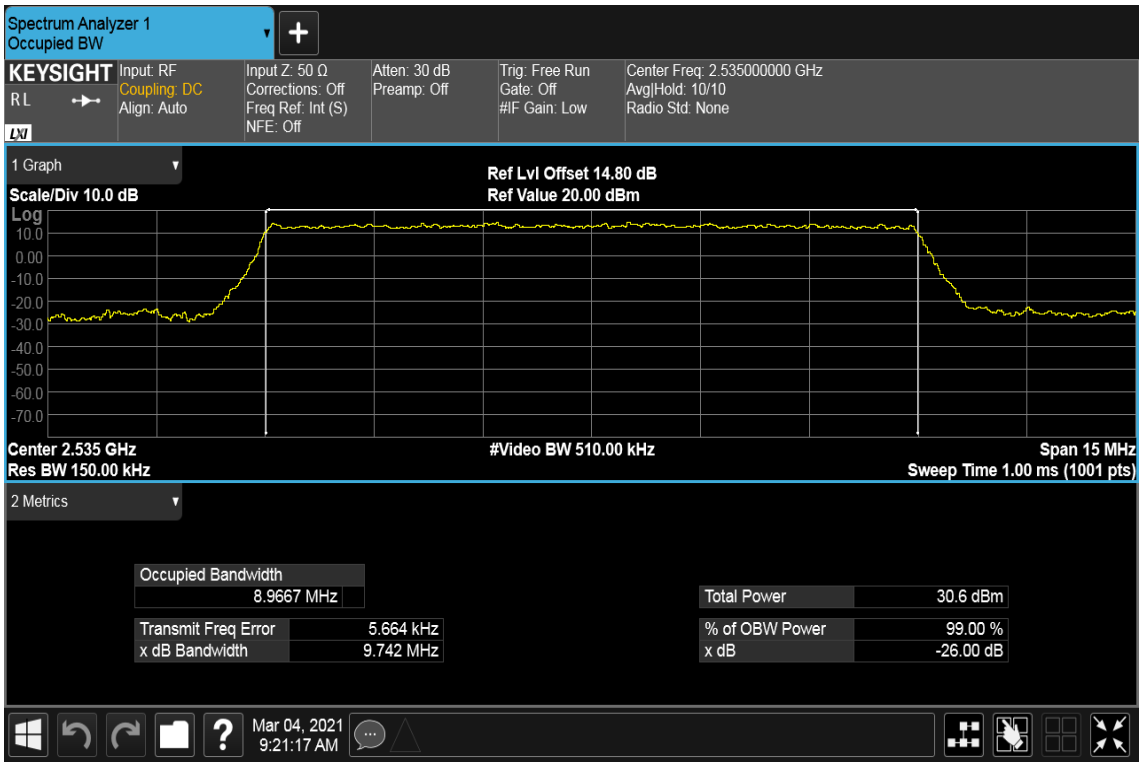


CHANNEL BANDWIDTH: 10MHz / QPSK / RB =50, RB Offset = 0

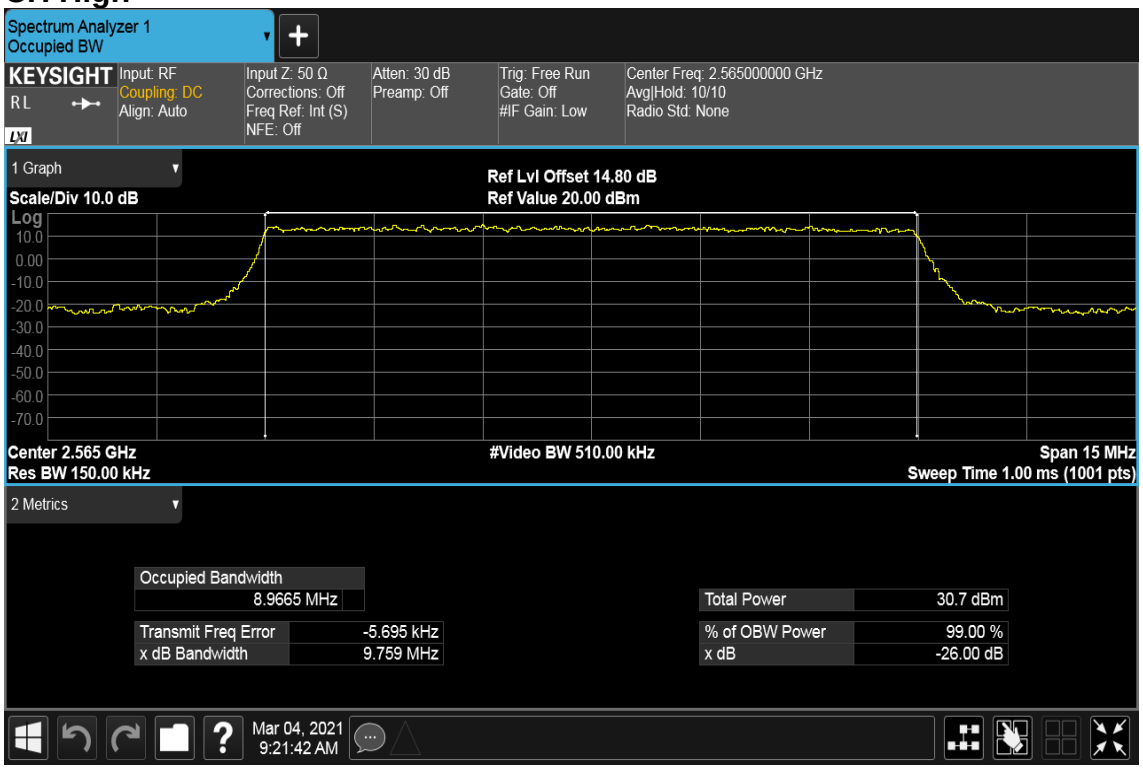
CH Low



CH Mid

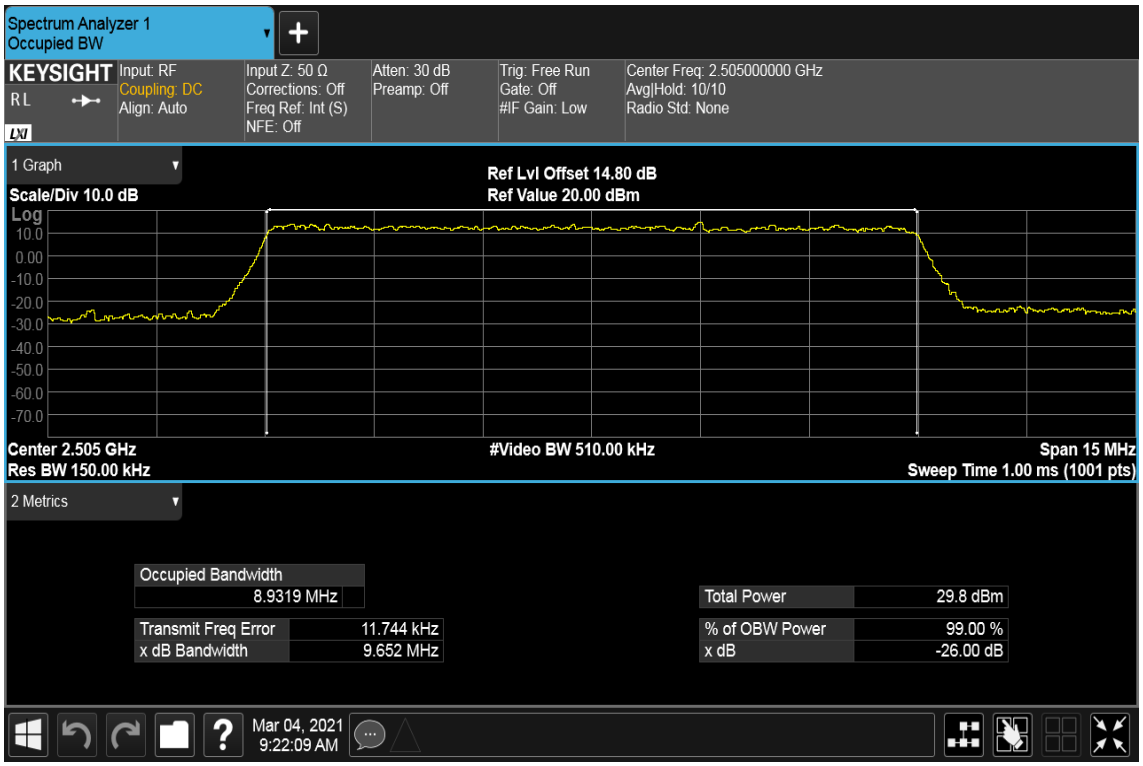


CH High

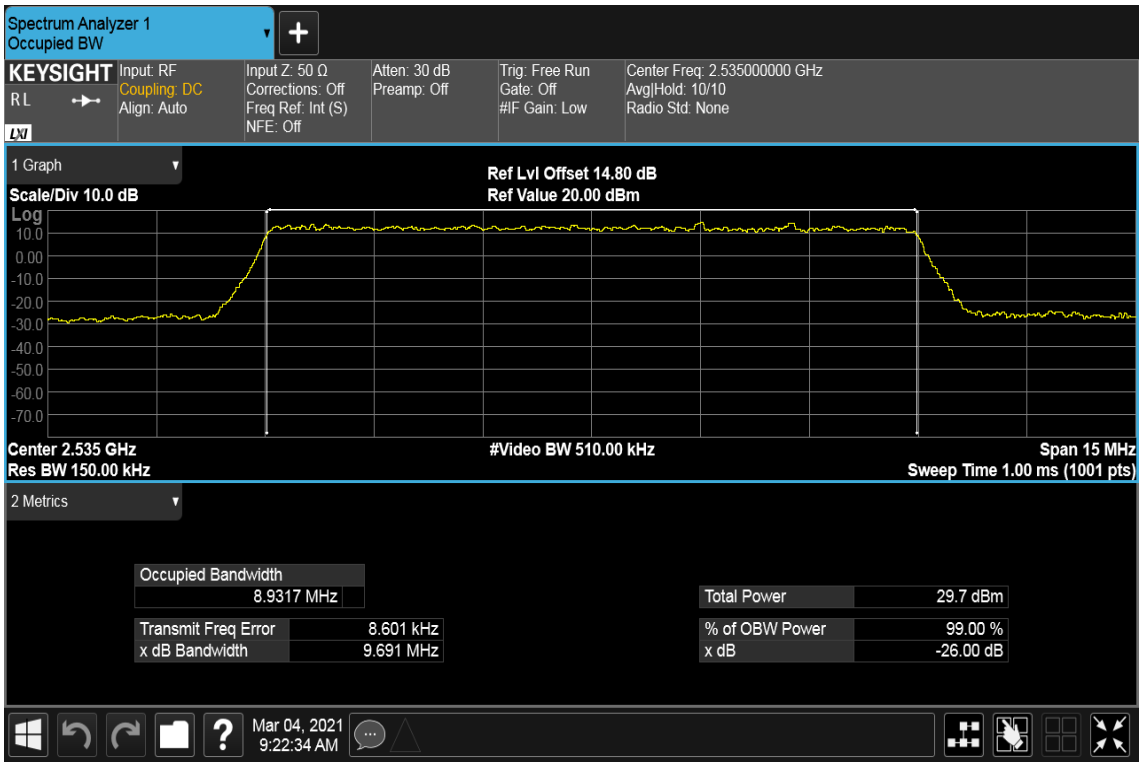


CHANNEL BANDWIDTH: 10MHz / 16QAM / RB =50, RB Offset = 0

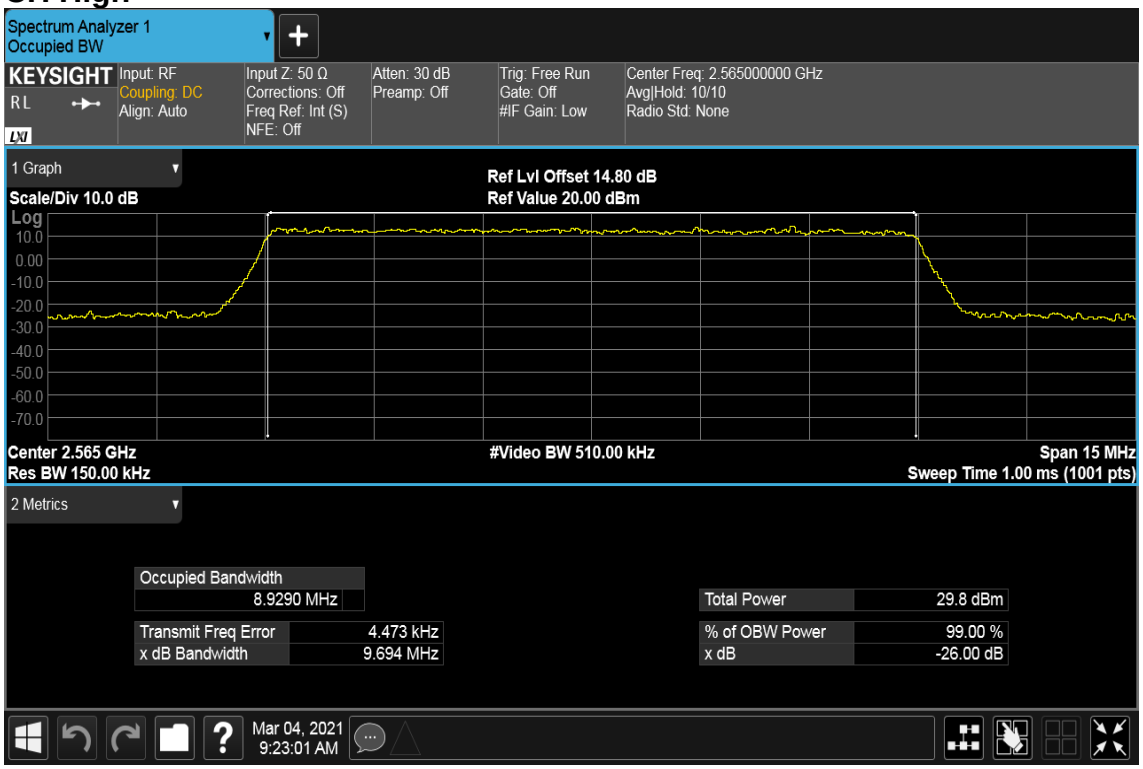
CH Low



CH Mid

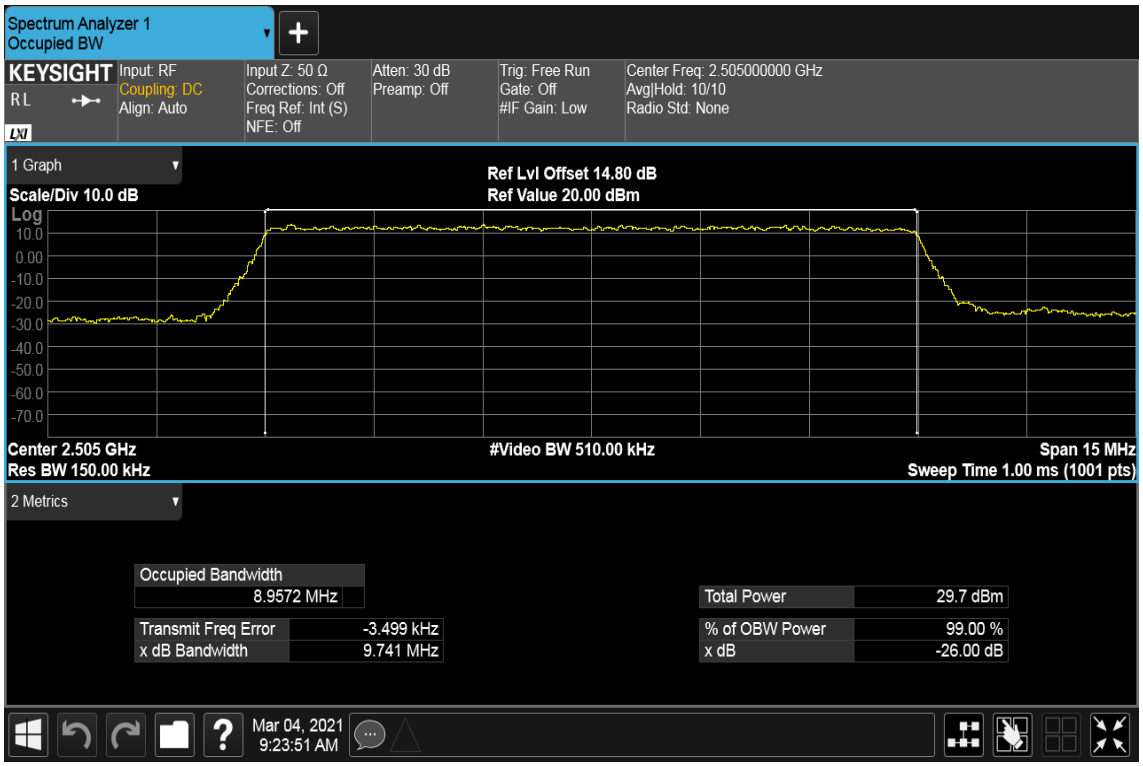


CH High

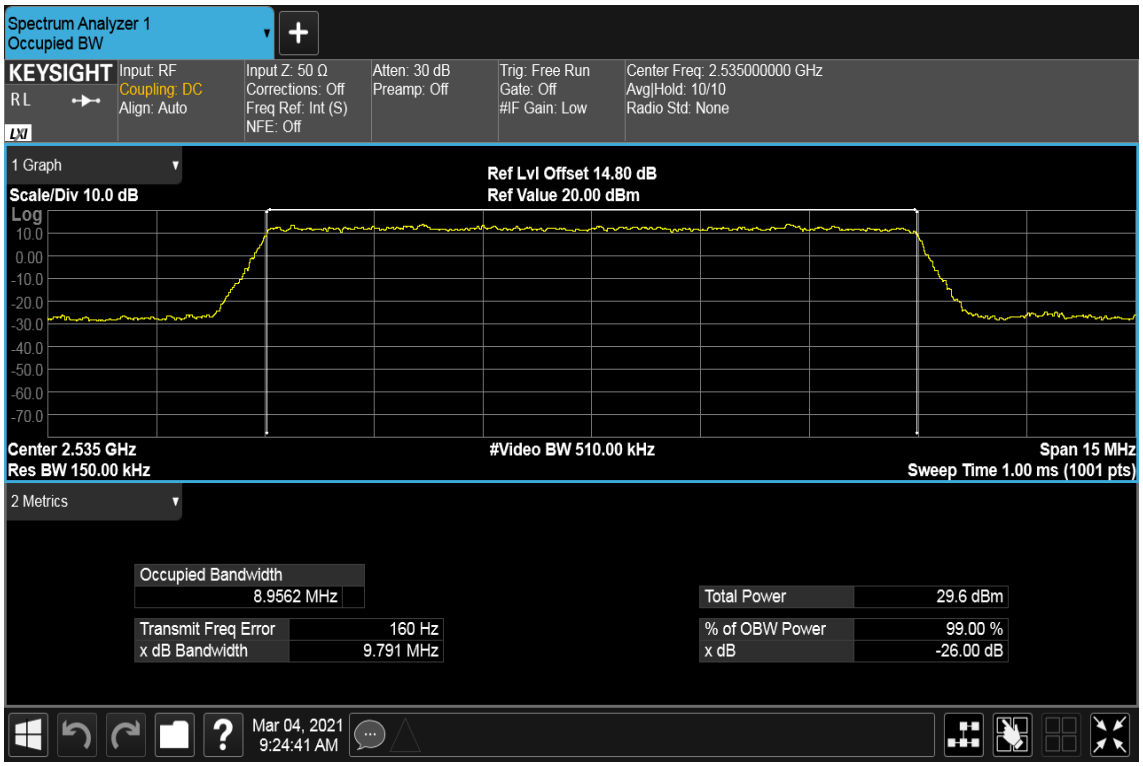


CHANNEL BANDWIDTH: 10MHz / 64QAM / RB =50, RB Offset = 0

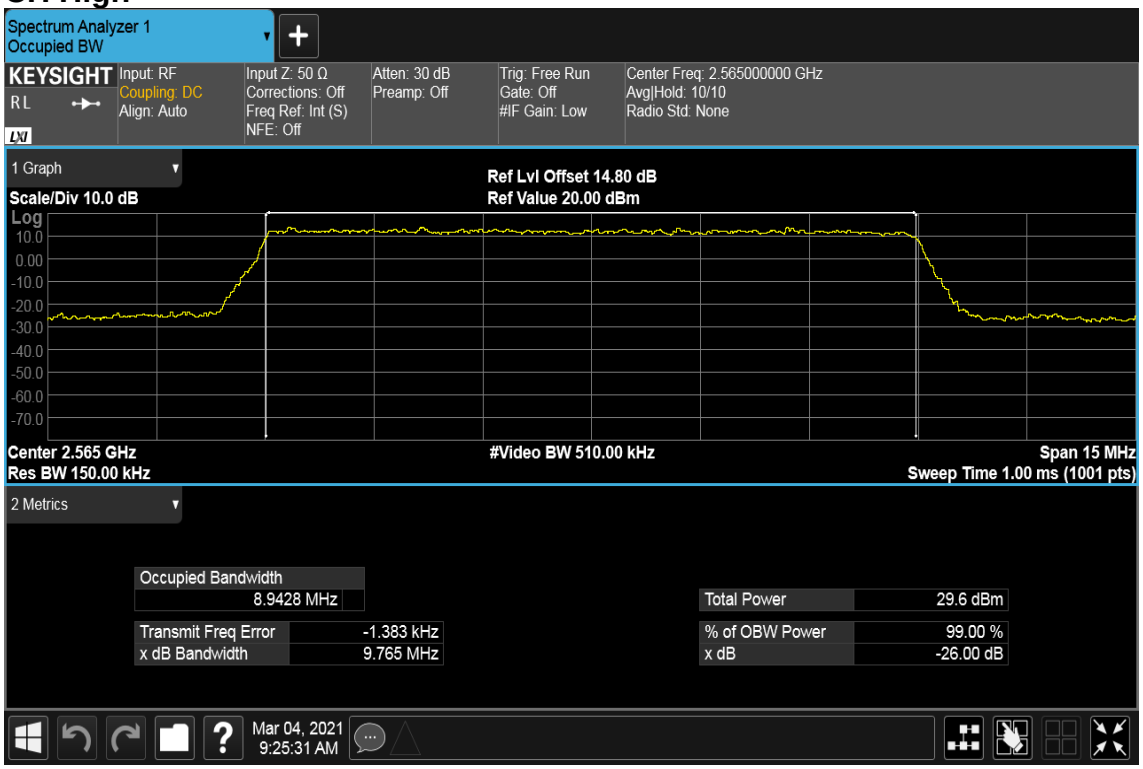
CH Low



CH Mid

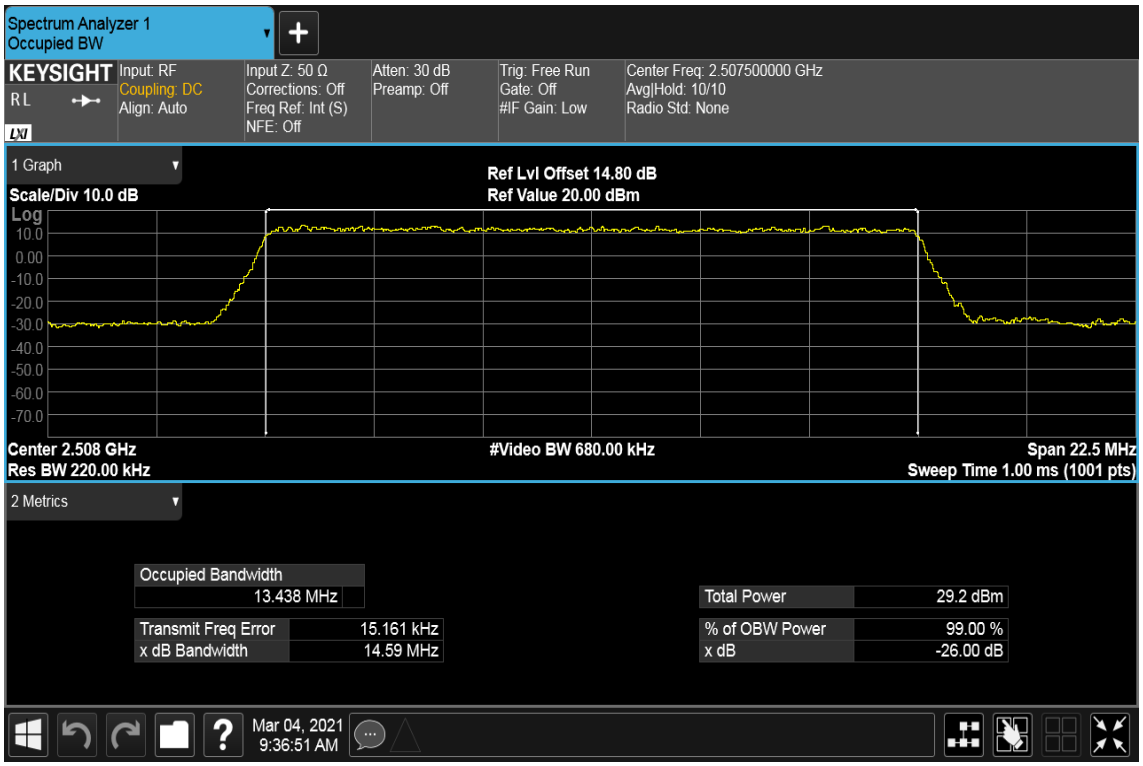


CH High



CHANNEL BANDWIDTH: 15MHz / QPSK / RB =75, RB Offset = 0

CH Low



CH Mid