



FCC ID: M82-AIM75L
Report No.: T201102D09-RP14

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FCC 47 CFR PART 90 S

TEST REPORT

For

Tablet PC

Model No.:

AIM-75S-6; AIM-75H-6; AIM-75S-6XXXXXXXXXXXXXXXXXX;
AIM-75H-6XXXXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXXXX;
AIM75H-6XXXXXXXXXXXXXXXXXX (where "X" may be any alphanumeric
character, "-" or blank)

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
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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.: AIM-75S-6; AIM-75H-6; AIM-75S-6XXXXXXXXXXXXXXXXXX;
AIM-75H-6XXXXXXXXXXXXXXXXXX;
AIM75S-6XXXXXXXXXXXXXXXXXX;
AIM75H-6XXXXXXXXXXXXXXXXXX (where "X" may be any
alphanumeric character, "-" or blank)

Date of Test: March 24 ~ August 26, 2021



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APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR PART 90 S	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.	

We hereby certify that:

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.



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2. EUT DESCRIPTION

Product	Tablet PC	
Model No.	AIM-75S-6; AIM-75H-6; AIM-75S-6XXXXXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXXXXX (where "X" may be any alphanumeric character, "-" or blank)	
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	
Frequency Range	LTE Band 26 Channel Bandwidth: 1.4MHz	814.7MHz ~ 823.3MHz
	LTE Band 26 Channel Bandwidth: 3MHz	815.5MHz ~ 822.5MHz
	LTE Band 26 Channel Bandwidth: 5MHz	816.5MHz ~ 821.5MHz
	LTE Band 26 Channel Bandwidth: 10MHz	819MHz
Modulation Technique	LTE Band 26	QPSK, 16QAM, 64QAM
Antenna Specification	Antenna type: PIFA 1. YAGEO / 6036B0281601 / Main (TX) Band 26: -0.97 dBi 2. YAGEO / 6036B0281701 / Aux Band 26: 0.38 dBi	

Transmit Power (ERP Power)	LTE Band 26 Channel Bandwidth: 1.4MHz	QPSK: 19.45 dBm 16QAM: 18.83 dBm 64QAM 18.63 dBm
	LTE Band 26 Channel Bandwidth: 3MHz	QPSK: 19.45 dBm 16QAM: 18.48 dBm 64QAM 18.57 dBm
	LTE Band 26 Channel Bandwidth: 5MHz	QPSK: 19.62 dBm 16QAM: 18.78 dBm 64QAM 18.77 dBm
	LTE Band 26 Channel Bandwidth: 10MHz	QPSK: 19.48 dBm 16QAM: 18.90 dBm 64QAM 18.87 dBm
HW Version	AX2	
SW Version	0.3.6.9_20201021.021551	
EUT Serial #	200CT32E00162	
Module	Quectel / EM06-A	

Remark:

- For more details, refer to the User's manual of the EUT.
- Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
- 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.
- 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-6XXXXXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXXXXX (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

Both conducted and radiated testing were performed according to the procedures document on chapter 13 of TIA-603-E and FCC CFR 47, Part 2 and Part 90, KDB 971168 D01 Power Meas License Digital Systems.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 DESCRIPTION OF TEST MODES

The EUT (Model: AIM-75S-6) had been tested under operating condition.
The EUT be set in maximum power transmission via call box during testing.

LTE Band 26: 814 MHz ~ 824 MHz

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 channel (L)	26697	814.7	26705	815.5	26715	816.5
Middle channel (M)	26740	819	26740	819	26740	819
High channel (H)	26783	823.3	26775	822.5	26765	821.5
Channel Bandwidth	10MHz					
	Channel	Frequency (MHz)				
Low channel (L)	-	-				
Middle channel (M)	26740	819				
High channel (H)	-	-				

3.3 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



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4. TEST SUMMERY

FCC Standard Sec.	Report Section	Test Item	Result
-	2	Antenna Requirement	Pass
90.635(b)	8.1	ERP Measurement	Pass
90.213	8.2	Frequency Stability v.s. temperature measurement	Pass
2.1049	8.3	Occupied Bandwidth Measurement	Pass
90.691	8.4	Peak to Average Ratio	Pass
90.691	8.5	Out of Band Emission at Antenna Terminals	Pass
90.691	8.7	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, 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	02/08/2021	02/07/2022
Bilog Antenna	Sunol Sciences	JB1	A100209	10/14/2020	10/13/2021
Horn Antenna	ETS LINDGREN	3116	00026370	12/11/2020	12/10/2021
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/24/2021	02/23/2022
Coaxial Cable	EMCI	EMC105	190914+327109/4	09/19/2020	09/18/2021
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
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/06/2021	01/05/2022
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	09/30/2020	09/29/2021
Loop Ant	COM-POWER	AL-130	121051	04/07/2021	04/06/2022
Pre-Amplifier	EMEC	EM330	060609	02/24/2021	02/23/2022
Pre-Amplifier	HP	8449B	3008A00965	12/25/2020	12/24/2021
Pre-Amplifier	MITEQ	AMF-6F-180040 00-37-8P	985646	09/02/2020	09/01/2021
S.G.	Agilent	E8257C	US42340162	05/09/2021	05/08/2022
Bilog Antenna	Sunol Sciences	JB1	A052609	02/22/2021	02/21/2022
Horn Antenna	EMCO	3117	00055165	11/23/2020	11/22/2021
Horn Antenna	EMCO	3116	2487	05/12/2021	05/11/2022
Signal Analyzer	R&S	FSV 40	101073	09/17/2020	09/16/2021
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
Radio Communication Analyzer	Anritsu	MT-8820C	6201240043	07/17/2020	07/16/2021
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 $k=2$.



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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."

6.3 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 0824-01 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC 2324G-1 for 3M Semi Anechoic Chamber A, 2324G-2 for 3M Semi Anechoic Chamber B.



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7. SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix II 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.



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8. FCC PART 22 REQUIREMENTS

8.1 ERP MEASUREMENT

LIMIT

According to FCC §2.1046

FCC 90.635(b): The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

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.

Temperature: 25°C

Humidity: 57% RH

Tested by: Jerry Chang

Test Date: May 25, 2021

LTE Band 26

LTE Band 26_Part90_Uplink frequency band : 814 to 824 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 26697	CH-Mid 26740	CH-High 26783	CH-Low 26697	CH-Mid 26740	CH-High 26783	CH-Low 26697	CH-Mid 26740	CH-High 26783
			814.7 MHz	819 MHz	823.3 MHz	814.7 MHz	819 MHz	823.3 MHz	814.7 MHz	819 MHz	823.3 MHz
1.4	1	0	22.43	22.53	22.43	21.94	21.95	21.64	21.69	21.55	21.47
	1	5	22.33	22.47	22.4	21.88	21.68	21.65	21.75	21.51	21.47
	3	2	22.52	22.57	22.57	21.66	21.45	21.7	21.62	21.66	21.66
	6	0	21.65	21.54	21.57	20.86	20.63	20.69	20.52	20.54	20.6

LTE Band 26_Part90_Uplink frequency band : 814 to 824 MHz											
BW (MHz)	RB Size	RB Offset	ERP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 26697	CH-Mid 26740	CH-High 26783	CH-Low 26697	CH-Mid 26740	CH-High 26783	CH-Low 26697	CH-Mid 26740	CH-High 26783
			814.7 MHz	819 MHz	823.3 MHz	814.7 MHz	819 MHz	823.3 MHz	814.7 MHz	819 MHz	823.3 MHz
1.4	1	0	19.31	19.41	19.31	18.82	18.83	18.52	18.57	18.43	18.35
	1	5	19.21	19.35	19.28	18.76	18.56	18.53	18.63	18.39	18.35
	3	2	19.4	19.45	19.45	18.54	18.33	18.58	18.5	18.54	18.54
	6	0	18.53	18.42	18.45	17.74	17.51	17.57	17.4	17.42	17.48

LTE Band 26_Part90_Uplink frequency band : 814 to 824 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 26705	CH-Mid 26740	CH-High 26775	CH-Low 26705	CH-Mid 26740	CH-High 26775	CH-Low 26705	CH-Mid 26740	CH-High 26775
			815.5 MHz	819 MHz	822.5 MHz	815.5 MHz	819 MHz	822.5 MHz	815.5 MHz	819 MHz	822.5 MHz
3	1	0	22.57	22.51	22.48	21.6	21.39	21.48	21.59	21.5	20.65
	1	14	22.56	22.51	22.47	21.45	21.32	21.32	21.69	21.68	20.66
	8	4	21.6	21.65	21.64	20.79	20.74	20.73	20.65	20.74	19.72
	15	0	21.61	21.6	21.63	20.66	20.61	20.74	20.68	20.65	19.71

LTE Band 26_Part90_Uplink frequency band : 814 to 824 MHz											
BW (MHz)	RB Size	RB Offset	ERP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 26705	CH-Mid 26740	CH-High 26775	CH-Low 26705	CH-Mid 26740	CH-High 26775	CH-Low 26705	CH-Mid 26740	CH-High 26775
			815.5 MHz	819 MHz	822.5 MHz	815.5 MHz	819 MHz	822.5 MHz	815.5 MHz	819 MHz	822.5 MHz
3	1	0	19.45	19.39	19.36	18.48	18.27	18.36	18.47	18.38	17.53
	1	14	19.44	19.39	19.35	18.33	18.2	18.2	18.57	18.56	17.54
	8	4	18.48	18.53	18.52	17.67	17.62	17.61	17.53	17.62	16.6
	15	0	18.49	18.48	18.51	17.54	17.49	17.62	17.56	17.53	16.59

LTE Band 26_Part90_Uplink frequency band : 814 to 824 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low	CH-Mid	CH-High	CH-Low	CH-Mid	CH-High	CH-Low	CH-Mid	CH-High
			26715	26740	26765	26715	26740	26765	26715	26740	26765
			816.5 MHz	819 MHz	821.5 MHz	816.5 MHz	819 MHz	821.5 MHz	816.5 MHz	819 MHz	821.5 MHz
5	1	0	22.66	22.74	22.52	21.75	21.75	21.8	21.61	21.69	21.89
	1	24	22.56	22.62	22.47	21.71	21.72	21.9	21.54	21.72	21.89
	12	6	21.54	21.68	21.65	20.64	20.67	20.68	20.79	20.66	20.67
	25	0	21.54	21.61	21.62	20.63	20.63	20.59	20.58	20.65	20.67

LTE Band 26_Part90_Uplink frequency band : 814 to 824 MHz											
BW (MHz)	RB Size	RB Offset	ERP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low	CH-Mid	CH-High	CH-Low	CH-Mid	CH-High	CH-Low	CH-Mid	CH-High
			26715	26740	26765	26715	26740	26765	26715	26740	26765
			816.5 MHz	819 MHz	821.5 MHz	816.5 MHz	819 MHz	821.5 MHz	816.5 MHz	819 MHz	821.5 MHz
5	1	0	19.54	19.62	19.4	18.63	18.63	18.68	18.49	18.57	18.77
	1	24	19.44	19.5	19.35	18.59	18.6	18.78	18.42	18.6	18.77
	12	6	18.42	18.56	18.53	17.52	17.55	17.56	17.67	17.54	17.55
	25	0	18.42	18.49	18.5	17.51	17.51	17.47	17.46	17.53	17.55

LTE Band 26_Part90_Uplink frequency band : 814 to 824 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low	CH-Mid	CH-High	CH-Low	CH-Mid	CH-High	CH-Low	CH-Mid	CH-High
				26740			26740			26740	
				819			819			819	
			MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz
10	1	0		22.6			22.02			21.95	
	1	49		22.55			21.95			21.99	
	25	12		21.69			20.04			20.71	
	50	0		21.59			20.62			20.59	

LTE Band 26_Part90_Uplink frequency band : 814 to 824 MHz											
BW (MHz)	RB Size	RB Offset	ERP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low	CH-Mid	CH-High	CH-Low	CH-Mid	CH-High	CH-Low	CH-Mid	CH-High
				26740			26740			26740	
				819			819			819	
			MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz
10	1	0		19.48			18.9			18.83	
	1	49		19.43			18.83			18.87	
	25	12		18.57			16.92			17.59	
	50	0		18.47			17.5			17.47	



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8.2 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

LIMIT

According to FCC §2.1055, FCC §90.213.

Frequency Tolerance: +/- 2.5ppm

TEST PROCEDURE

Use Anritsu 8820 with frequency Error measurement capability.

Temp = -30°C to +50°C

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

No non-compliance noted.



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Test Results

Temperature: 25°C

Humidity: 57% RH

Tested by: Jerry Chang

Test Date: May 25, 2021

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

LTE Band 26

Reference Freq.: Part 90 LTE B26 Mid Channel 819 MHz 10M QPSK CH 26740				
Power Supply Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
Freq. ERROR vs. VOLTAGE (LTE B26 for Part 90S)				
5.5	25	819.000015	15	2048
5	25	819.000034	34	2048
4.75	25	818.999953	-47	2048
3.7 (End Point)	25	819.000008	8	2048
Freq. ERROR vs. Temp.				
5	-30	818.999975	-25	2048
5	-20	819.000019	19	2048
5	-10	818.999973	-27	2048
5	0	819.000049	49	2048
5	10	819.000055	55	2048
5	20	818.999974	-26	2048
5	30	819.000034	34	2048
5	40	818.999975	-25	2048
5	50	819.000032	32	2048



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8.3 OCCUPIED BANDWIDTH MEASUREMENT

Limits

For Reporting purposes only.

TEST PROCEDURES

KDB 971168 D01

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 $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max. hold

Temperature: 23.1°C

Humidity: 53.2% RH

Tested by: Jerry Chang

Test Date: March 24, 2021

LTE Band 26

LTE BAND 26 for part 90S Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
814.7	26697	1.0873	1.0878	1.0840	1.235	1.236	1.221
819.0	26740	1.0868	1.0873	1.0836	1.236	1.225	1.219
823.3	26783	1.0860	1.0859	1.0840	1.232	1.221	1.221

LTE BAND 26 for part 90S Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
815.5	26705	2.6905	2.6914	2.6950	2.977	2.960	2.973
819.0	26740	2.6879	2.6931	2.6966	2.971	2.981	2.981
822.5	26775	2.6878	2.6911	2.6959	2.961	2.980	2.972

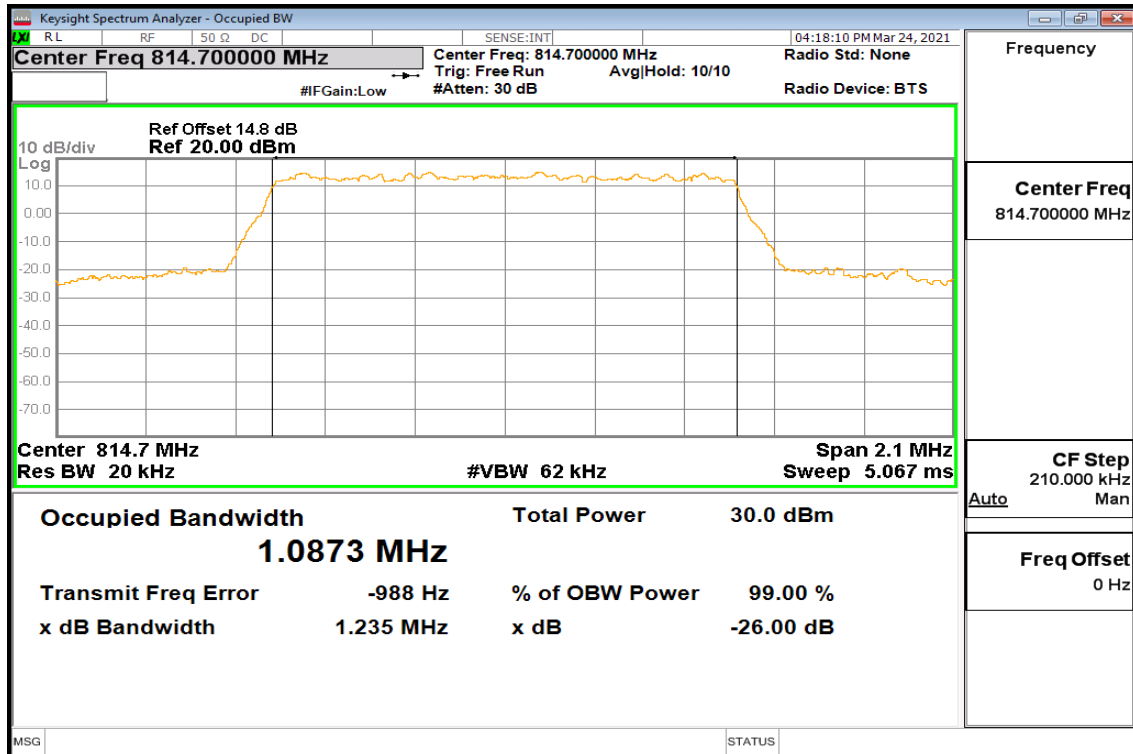
LTE BAND 26 for part 90S Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
816.5	26715	4.5003	4.4882	4.4867	4.972	4.931	4.921
819.0	26740	4.4978	4.4899	4.4787	4.958	4.961	4.913
821.5	26765	4.4984	4.4913	4.4868	4.968	4.937	4.919

LTE BAND 26 for part 90S Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
819.0	26740	8.9959	8.9696	8.9798	9.847	9.744	9.785

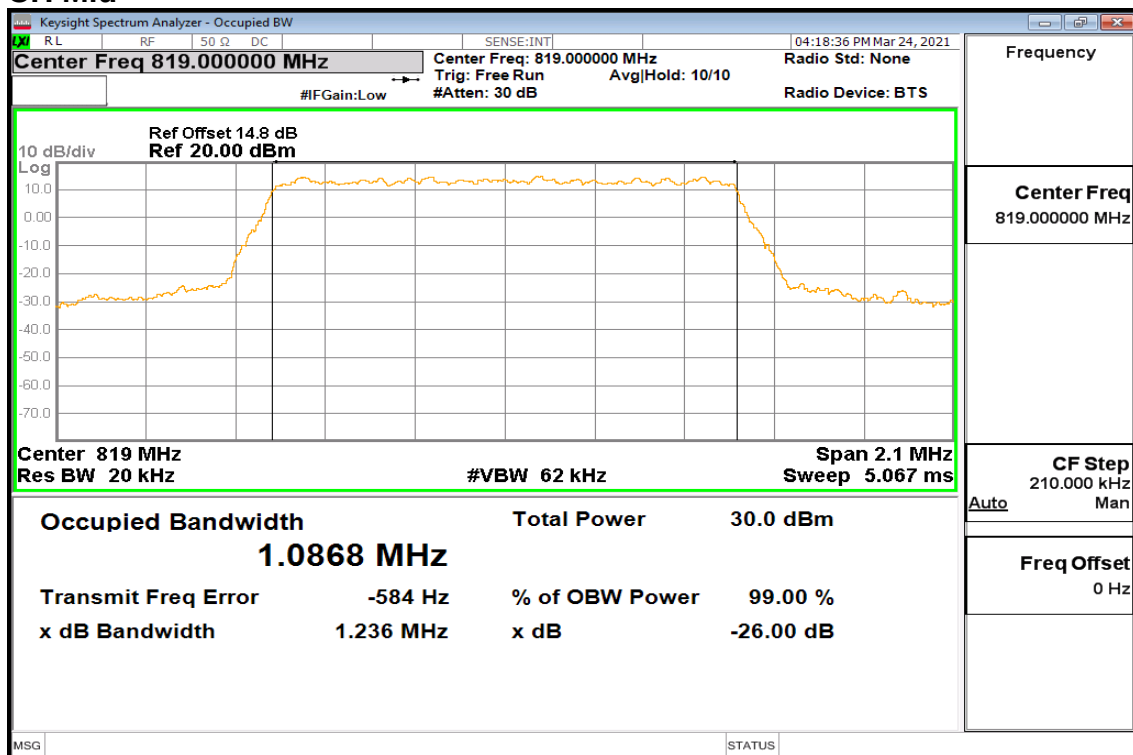
LTE Band 26

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

CH Low



CH Mid



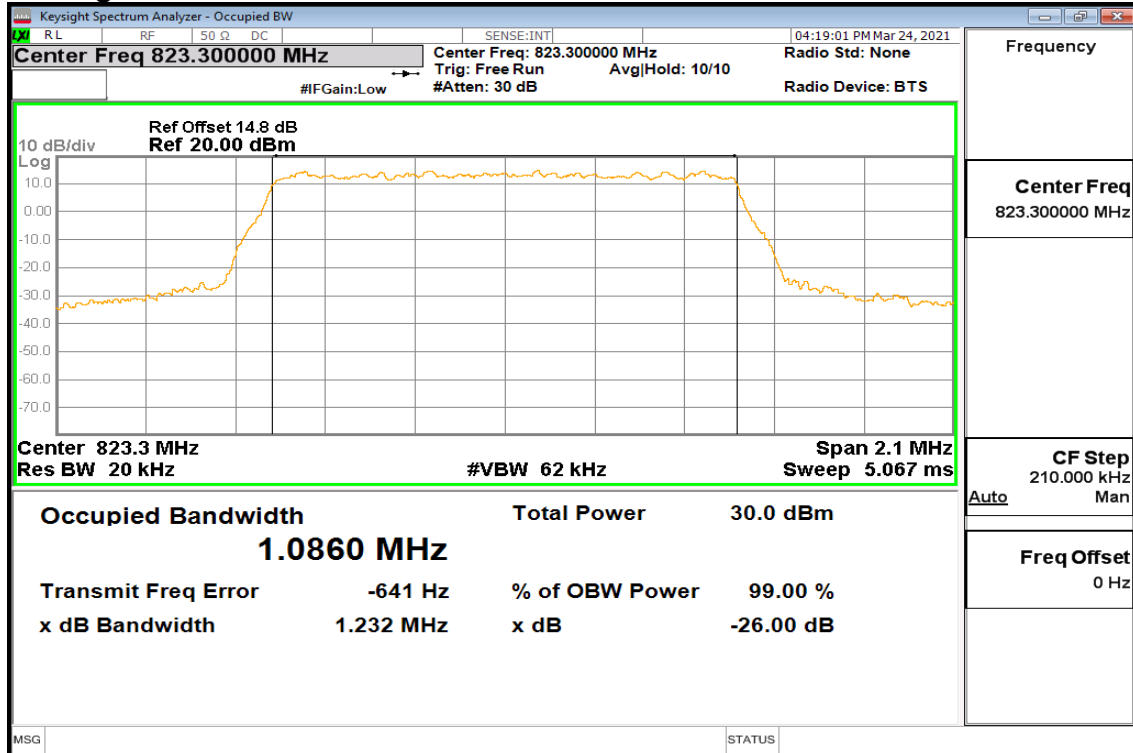


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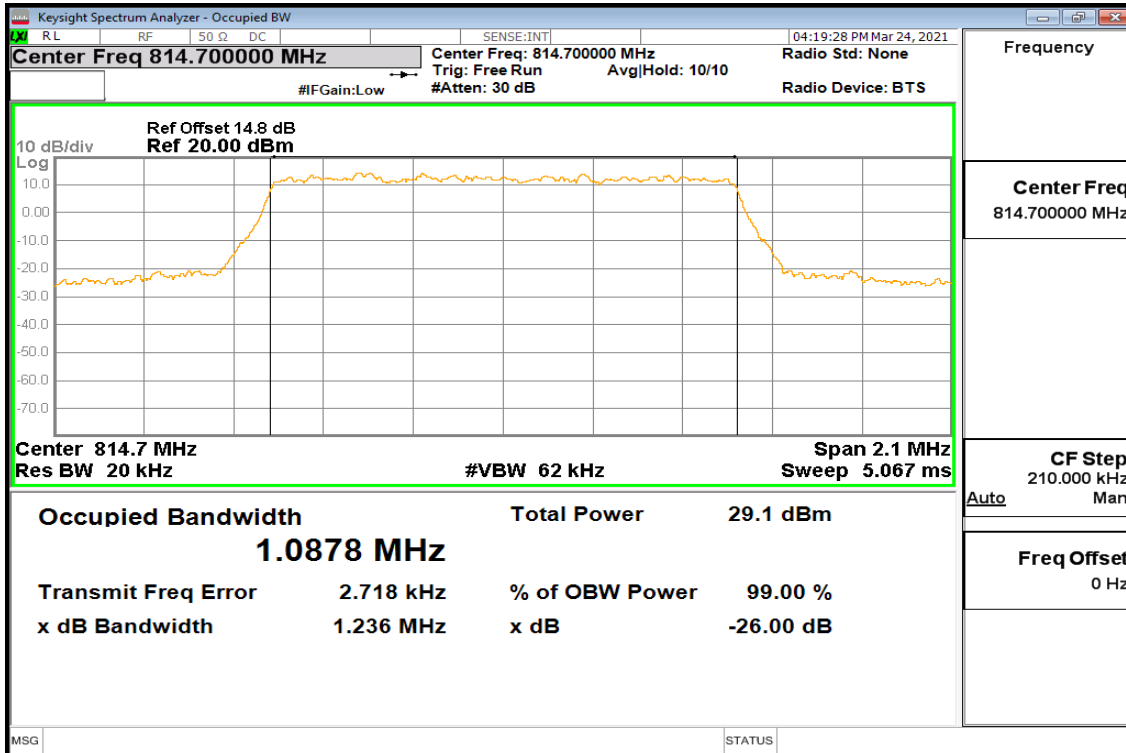
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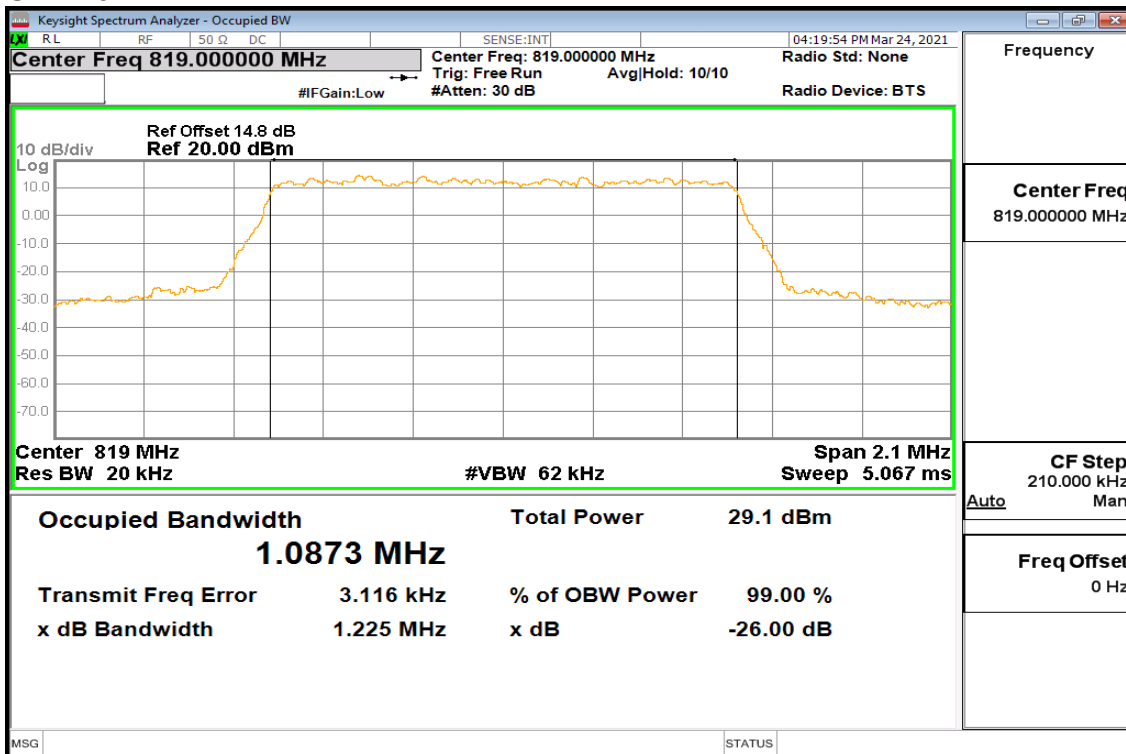
CH High



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



CH Mid



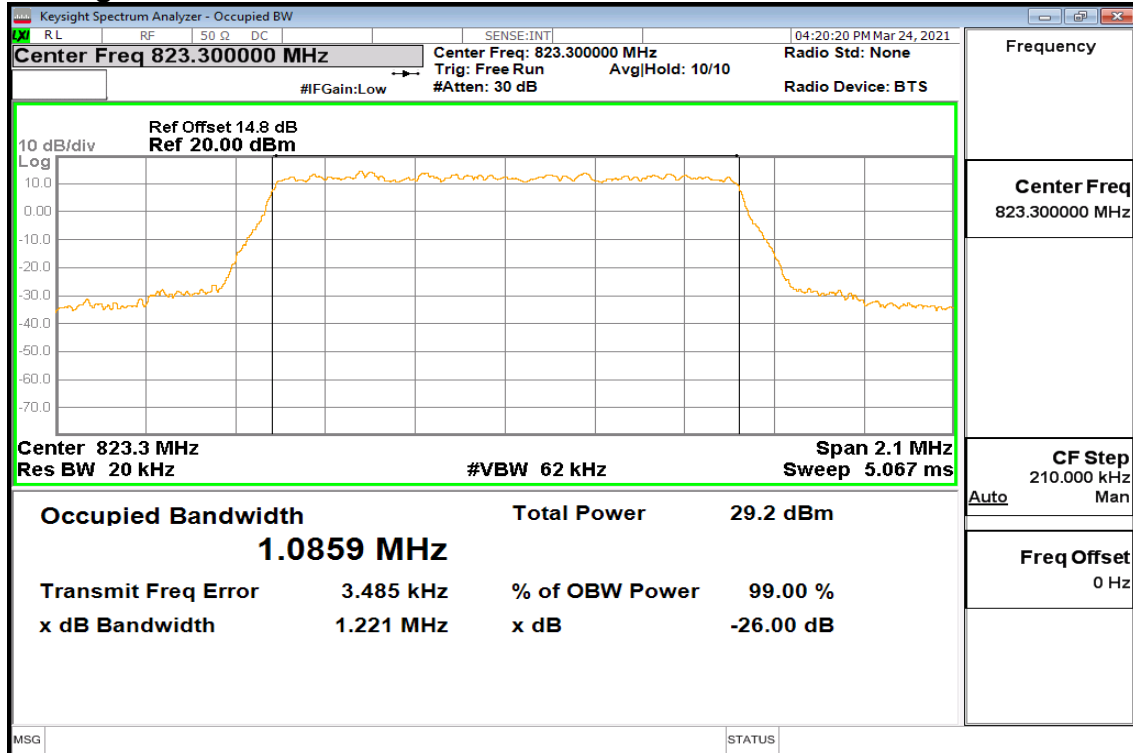


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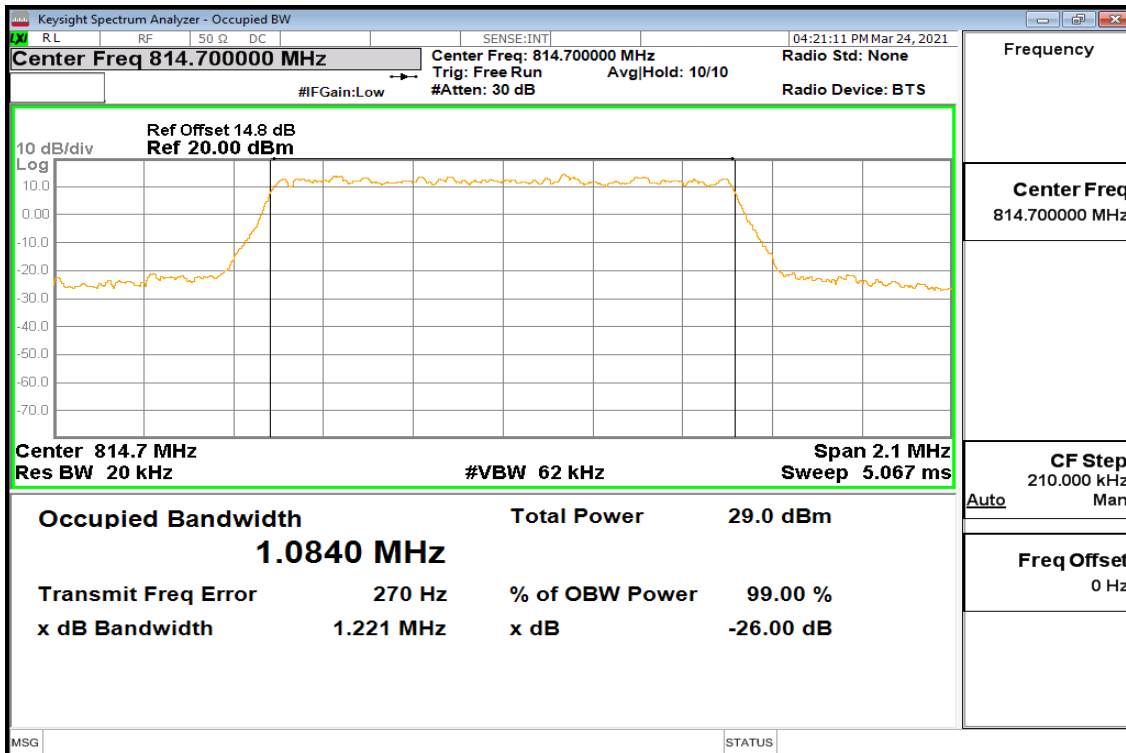
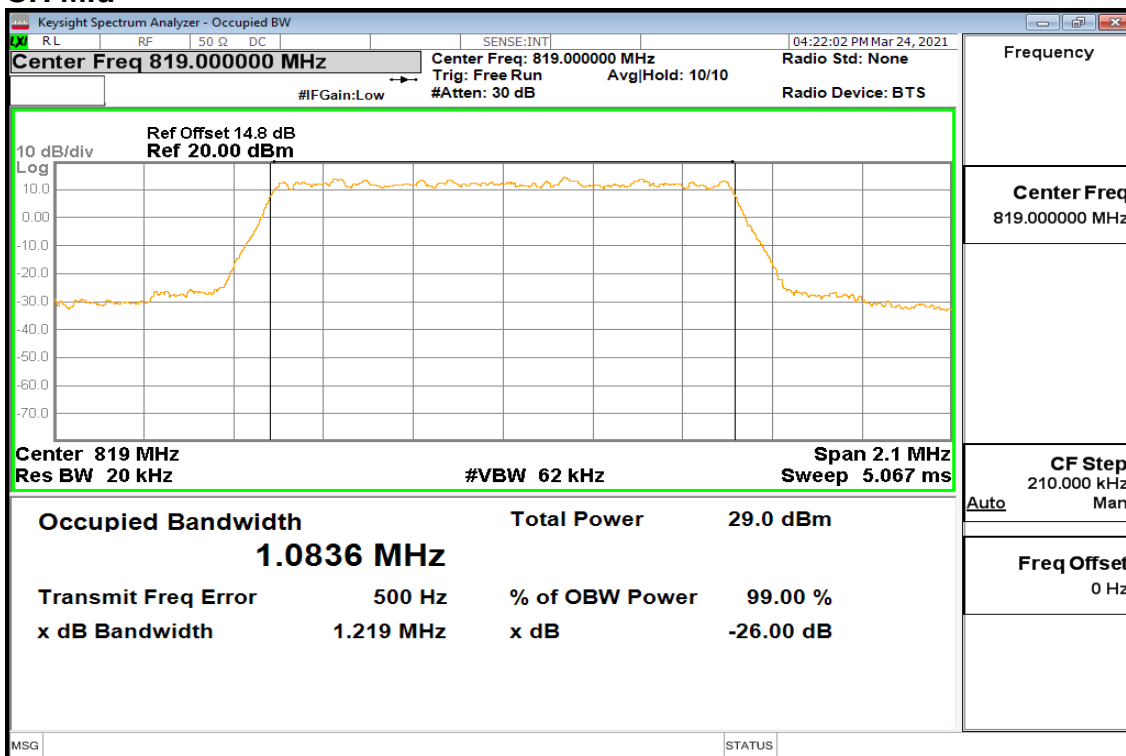
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CH High





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CHANNEL BANDWIDTH: 1.4MHz / 64QAM / RB =6, RB Offset = 0
CH Low**CH Mid**

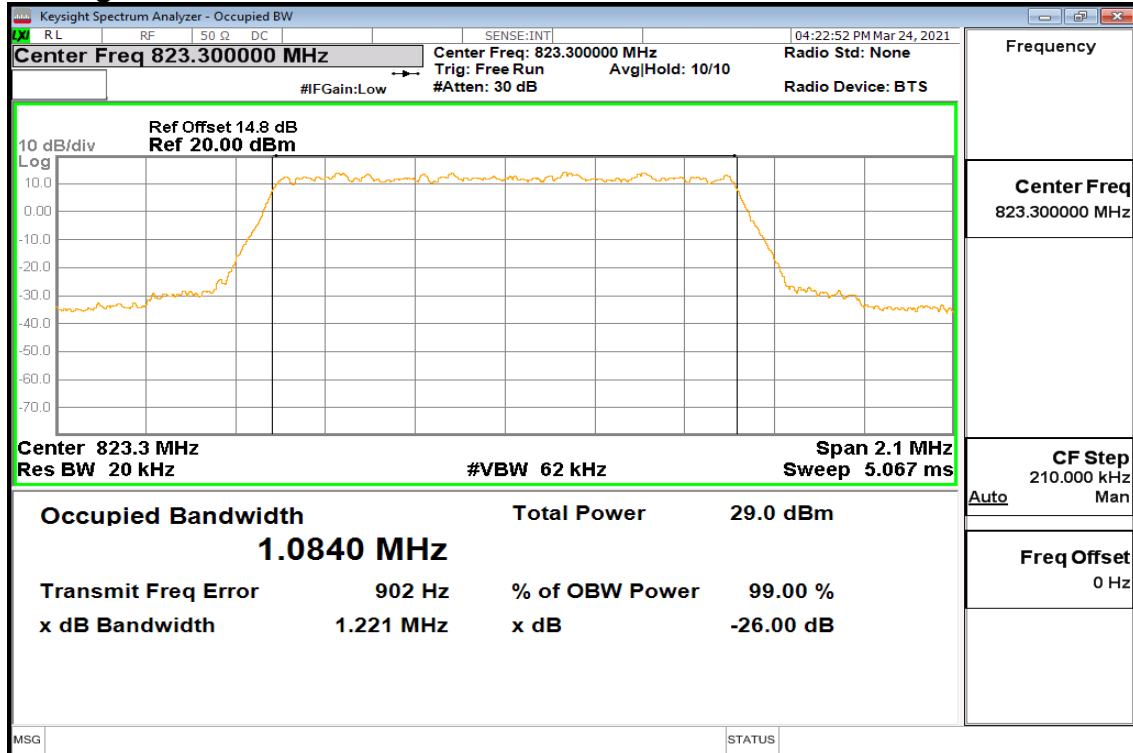


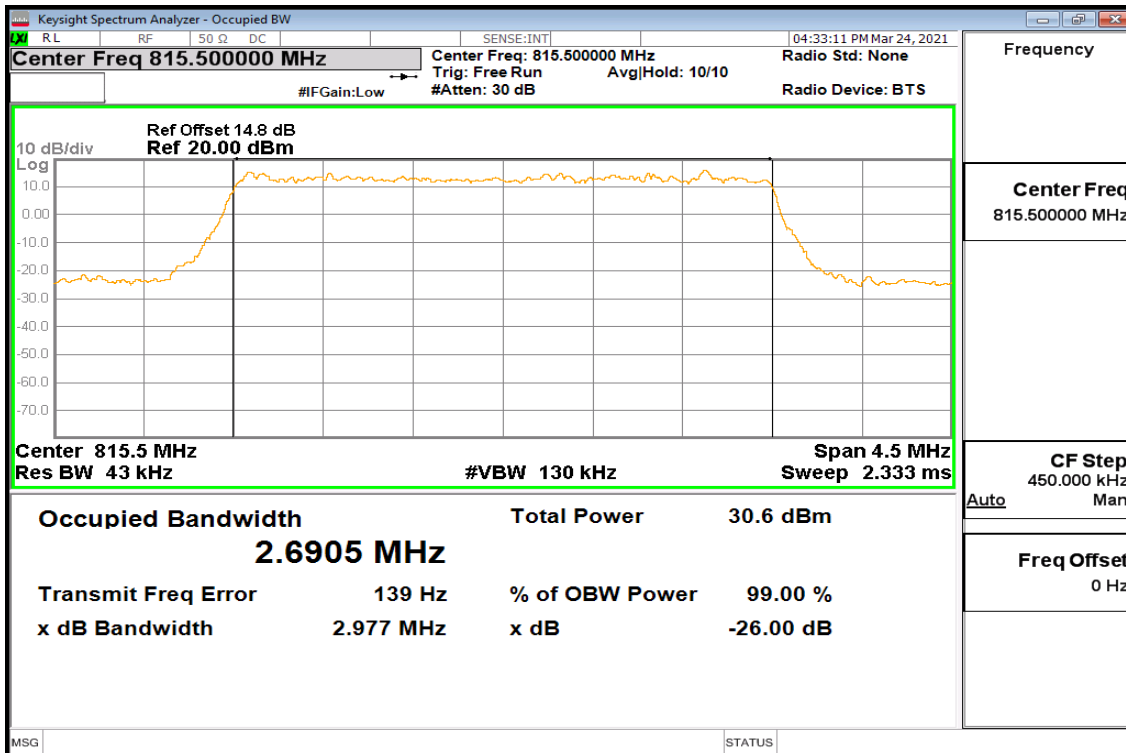
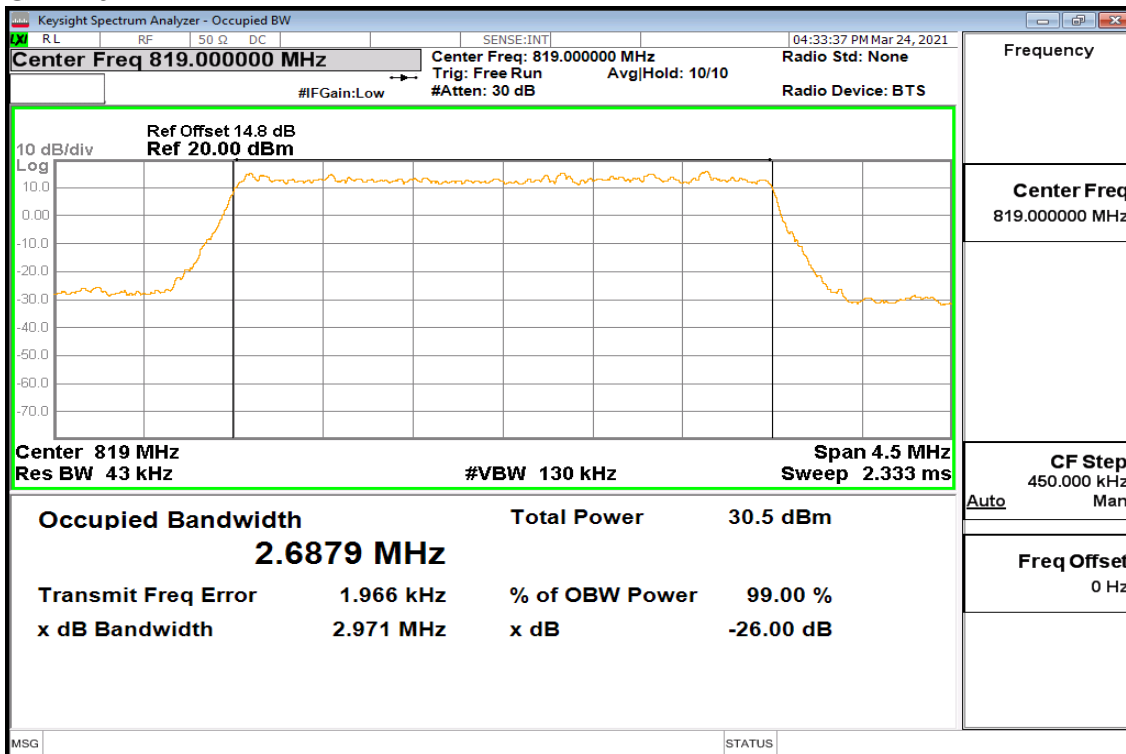
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CH High



CHANNEL BANDWIDTH: 3MHz / QPSK / RB =15, RB Offset = 0
CH Low**CH Mid**

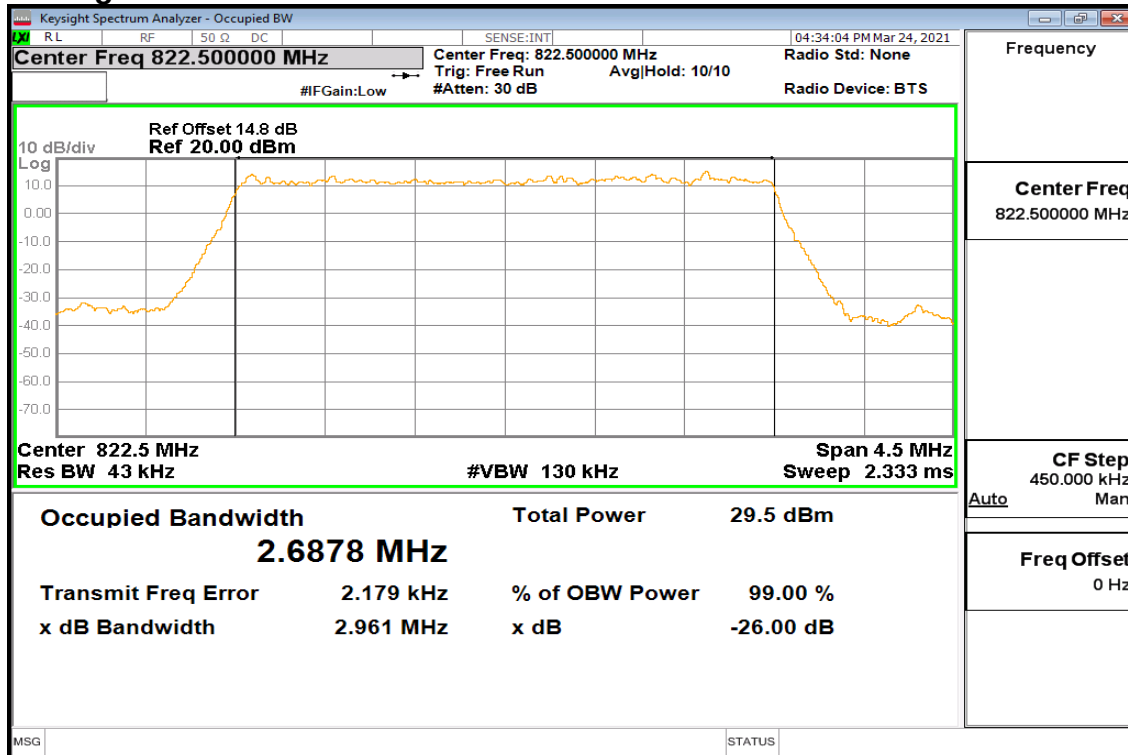


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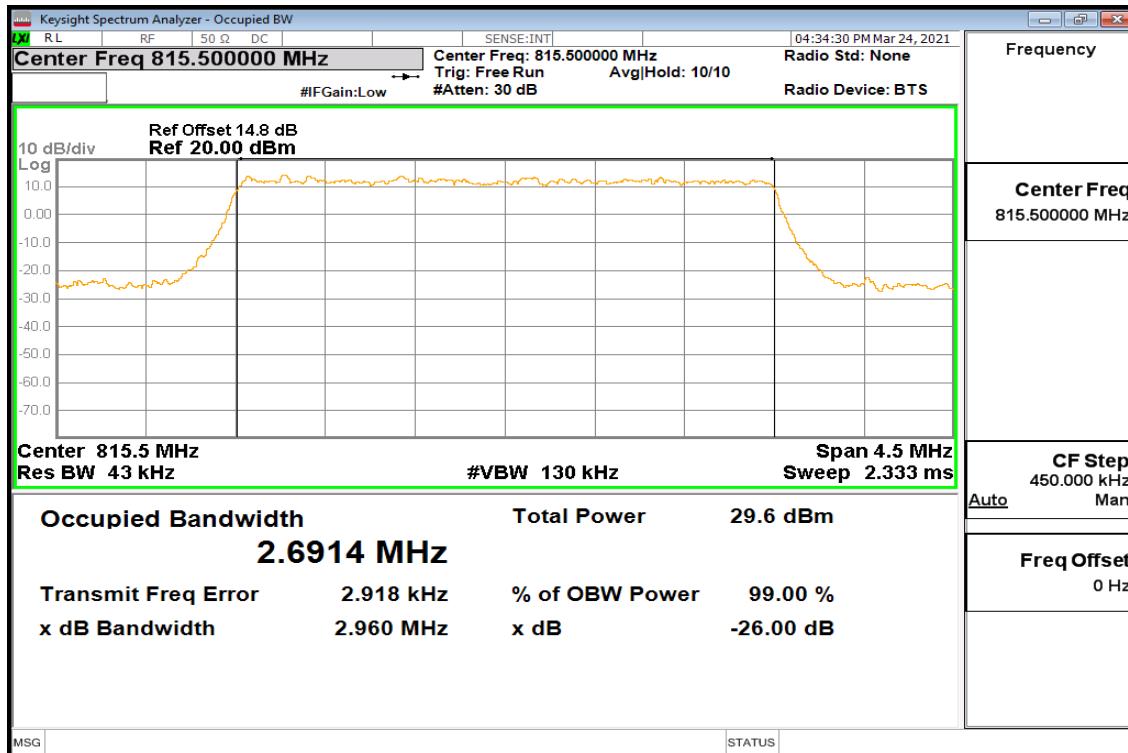
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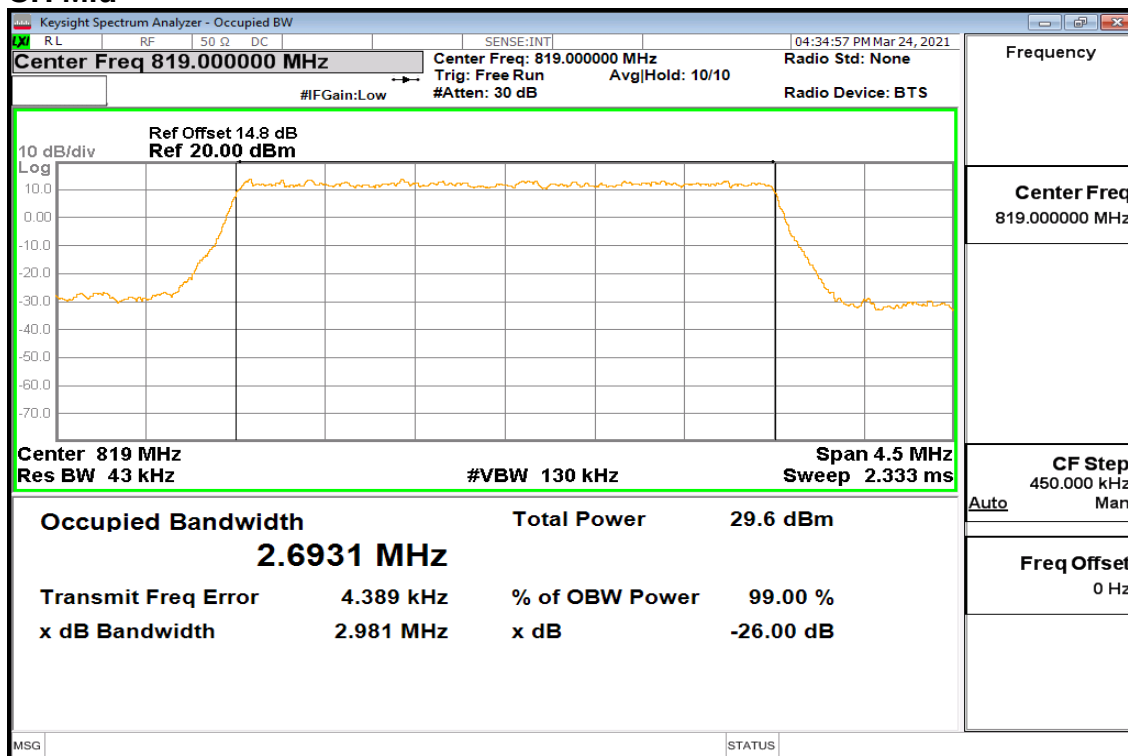
CH High



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



CH Mid



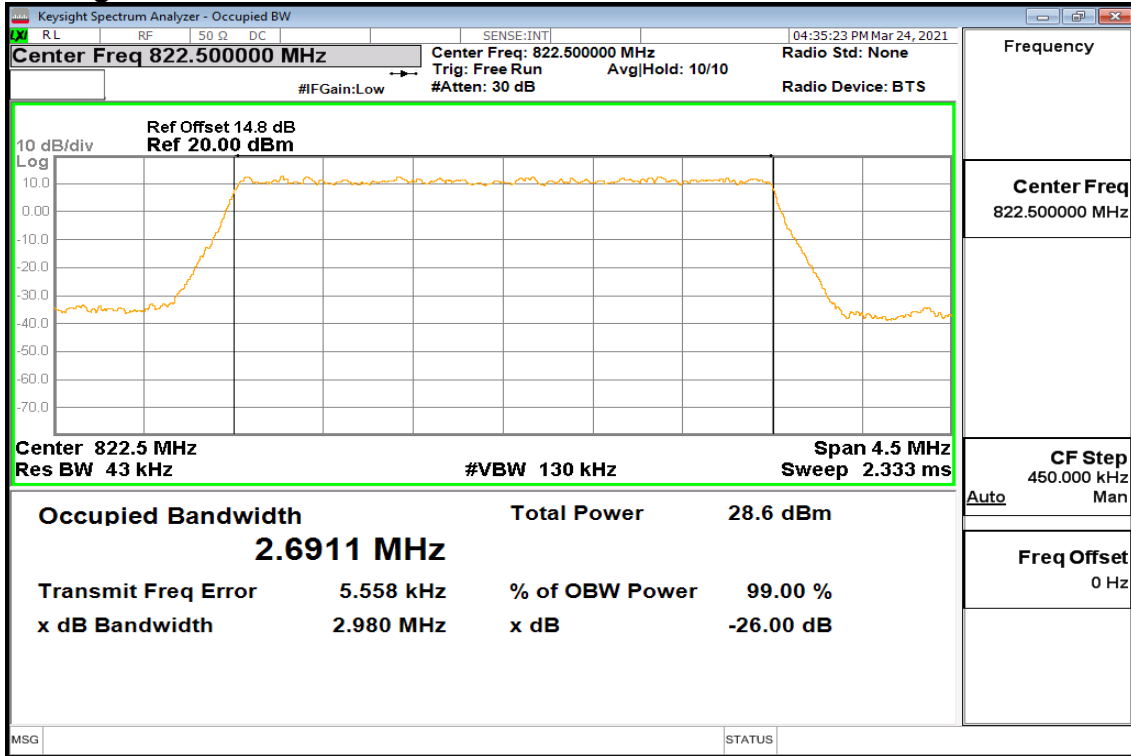


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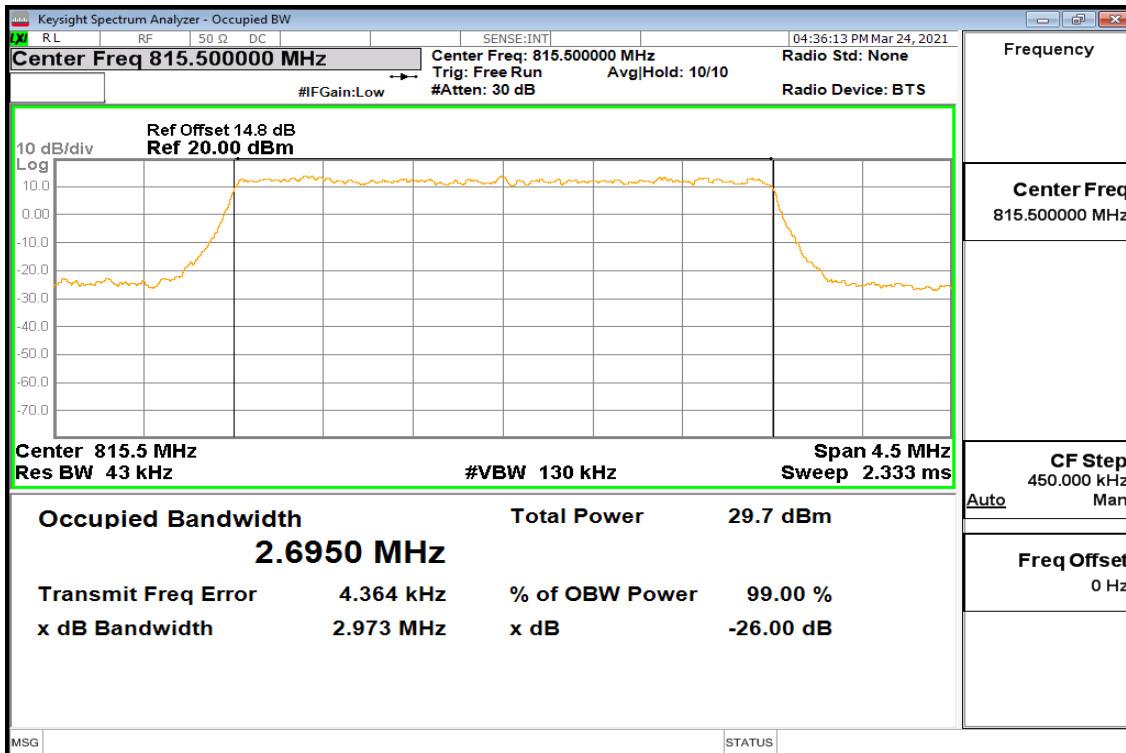
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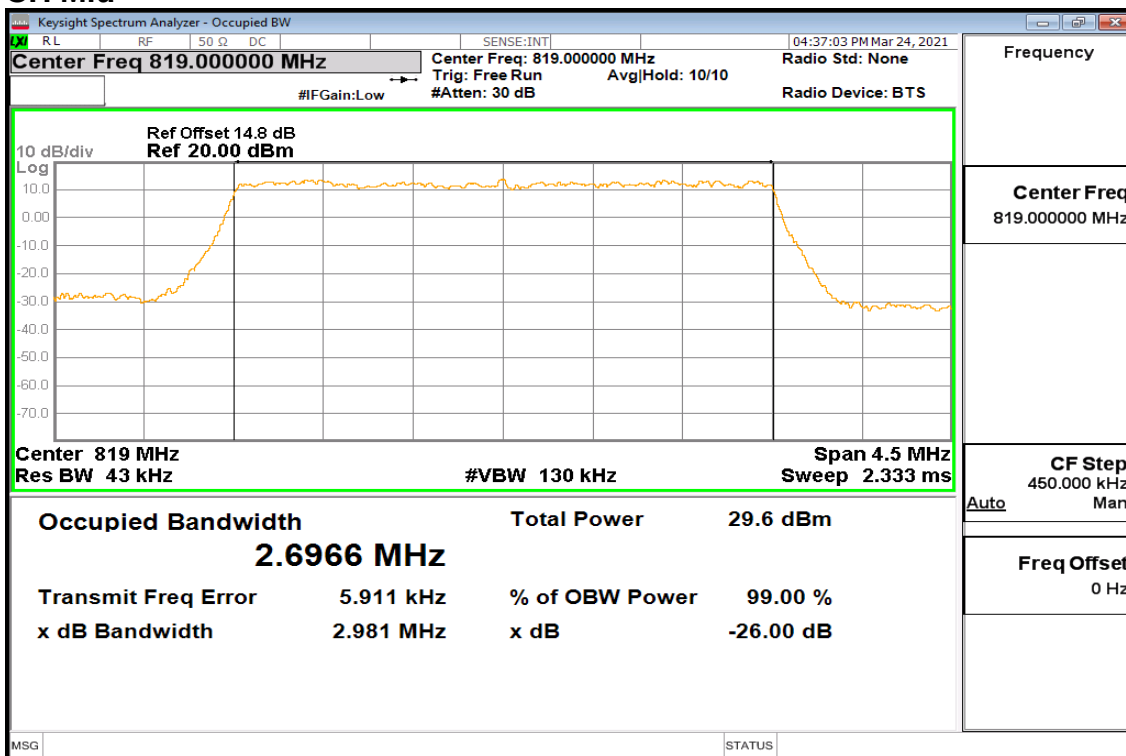
CH High



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



CH Mid



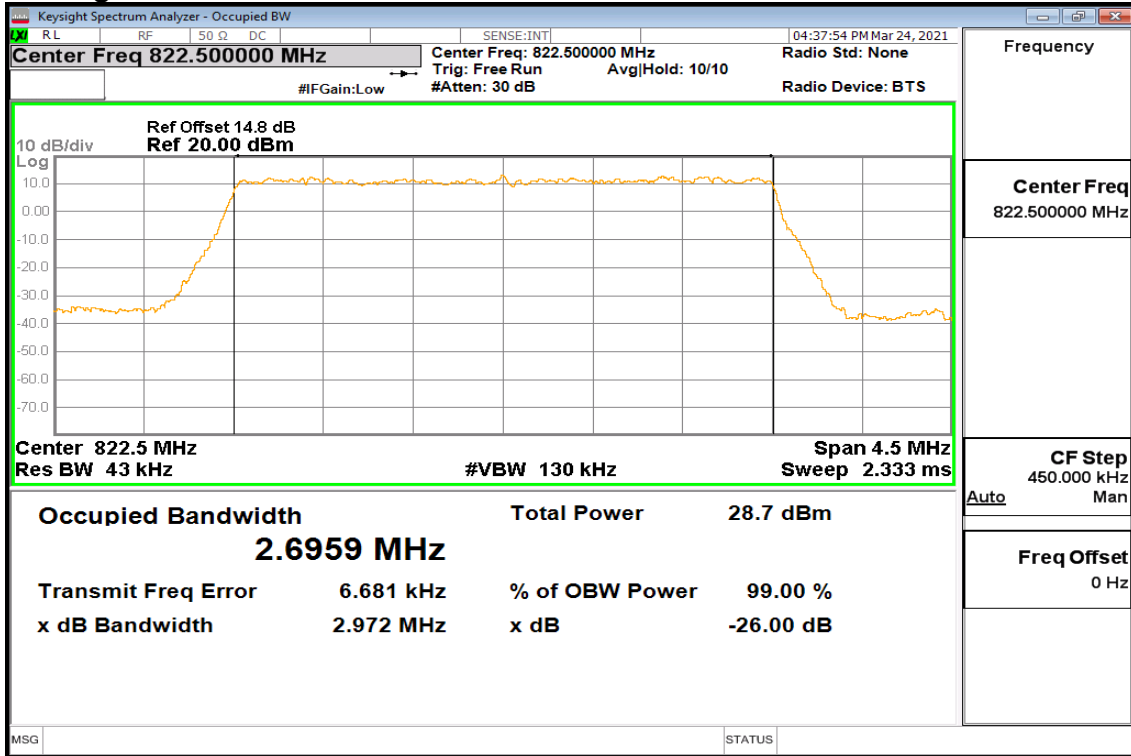


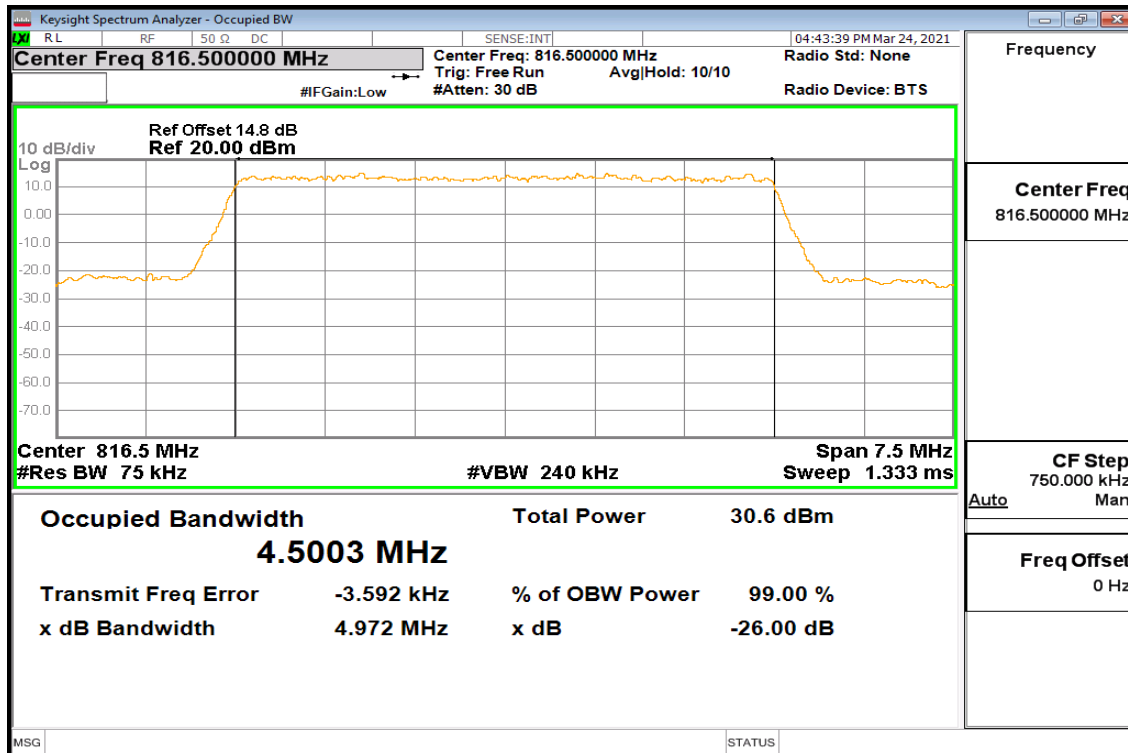
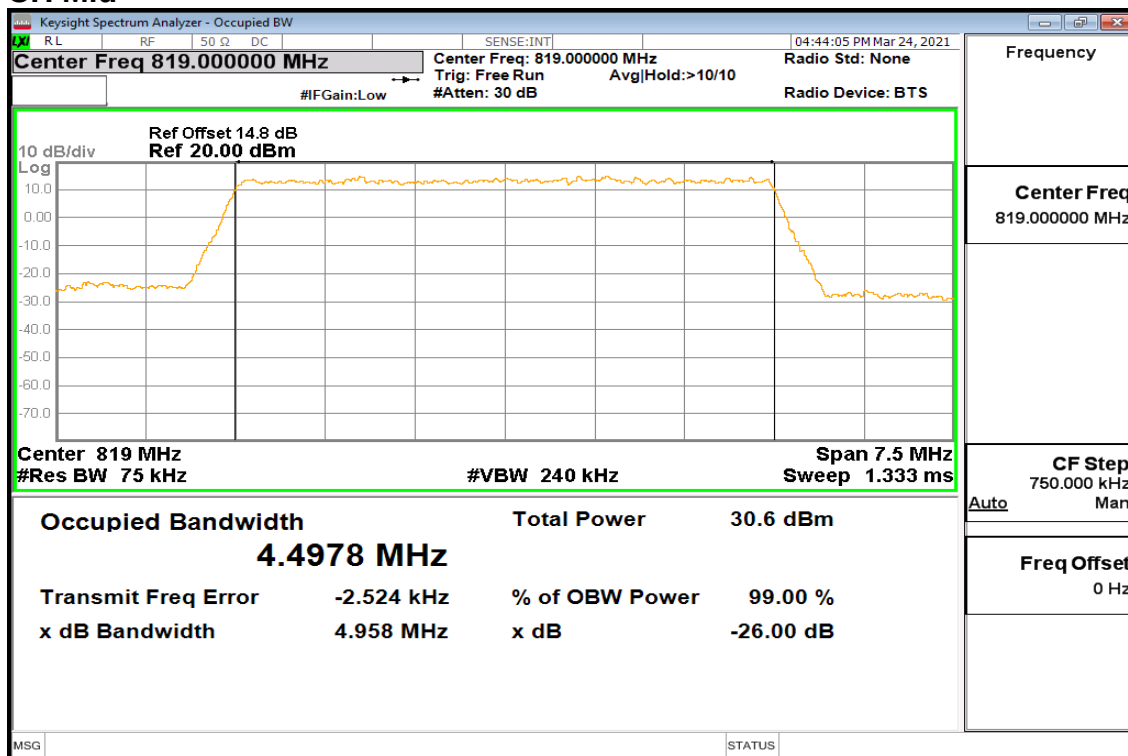
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CH High



CHANNEL BANDWIDTH: 5MHz / QPSK / RB =25, RB Offset = 0
CH Low**CH Mid**

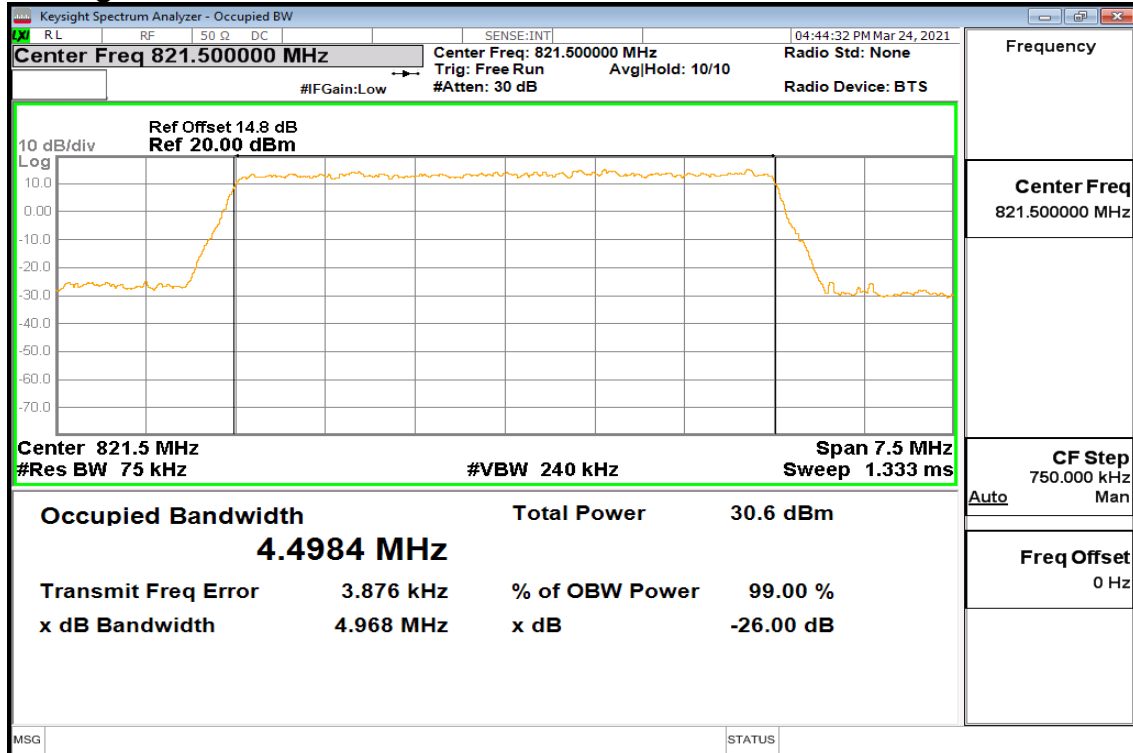


Report No.: T201102D09-RP14

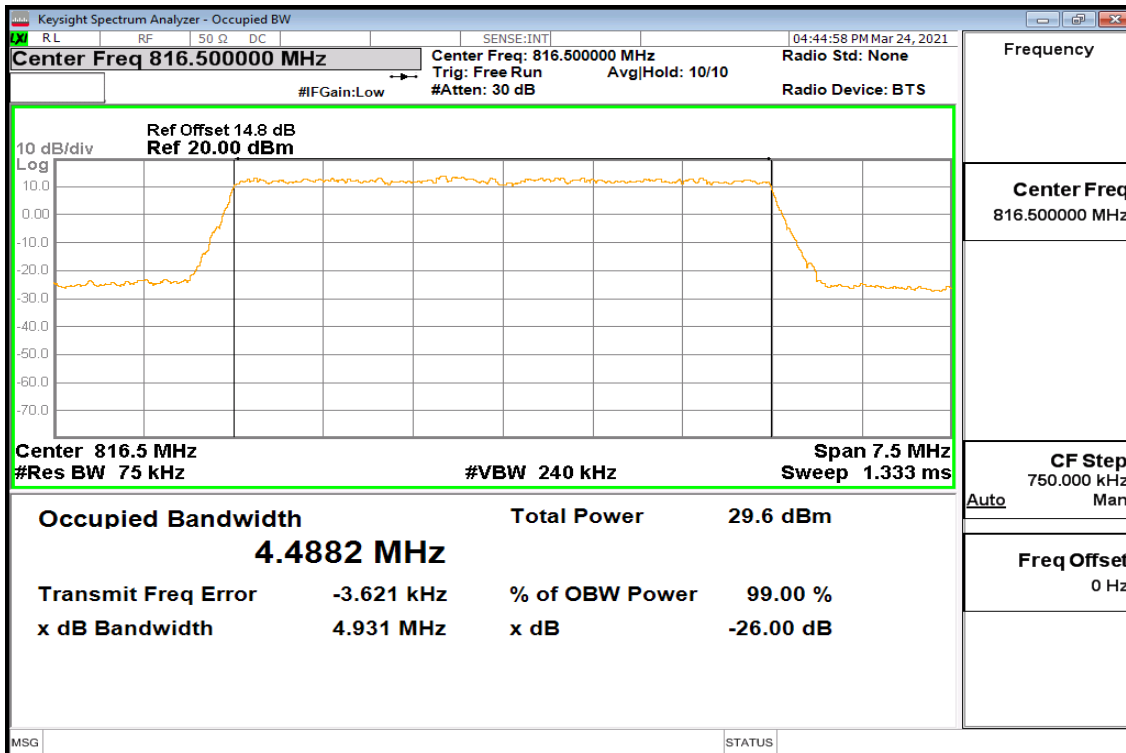
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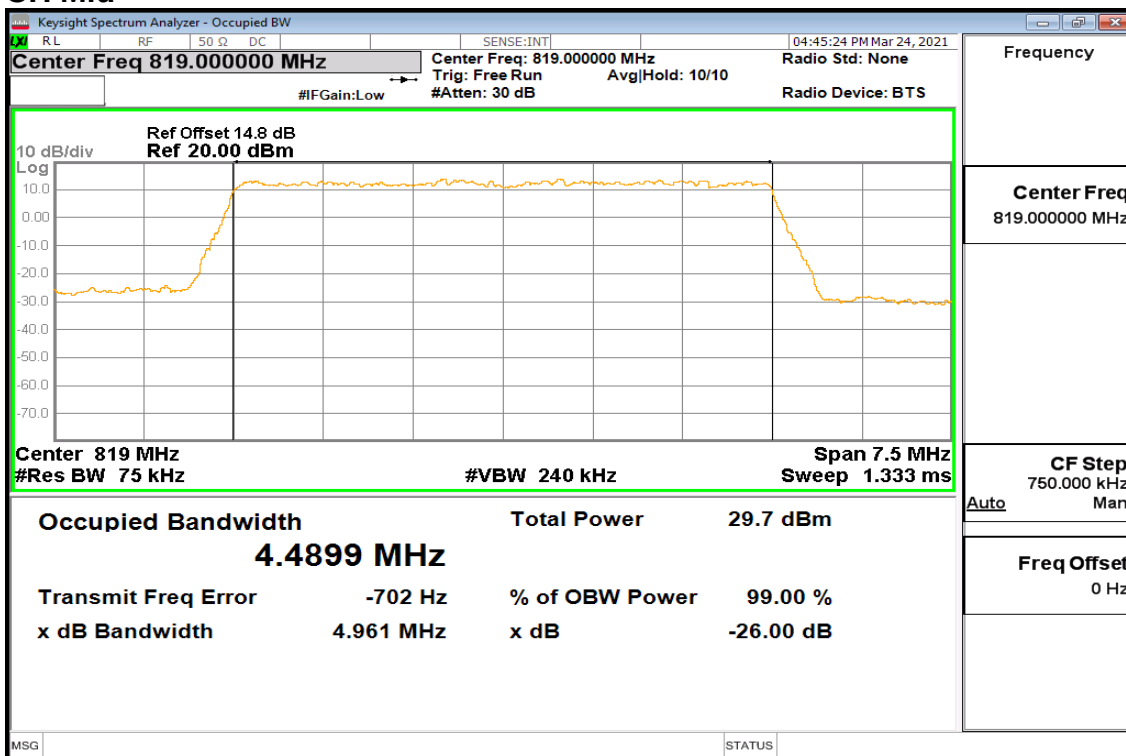
CH High



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



CH Mid



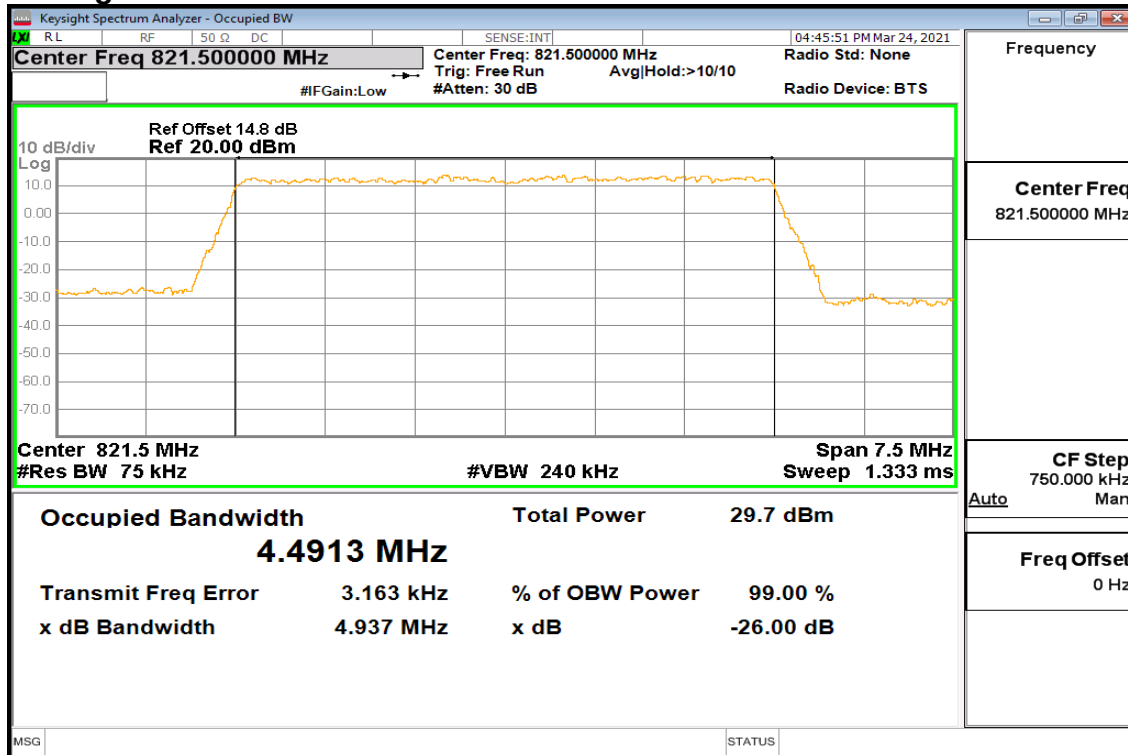


Report No.: T201102D09-RP14

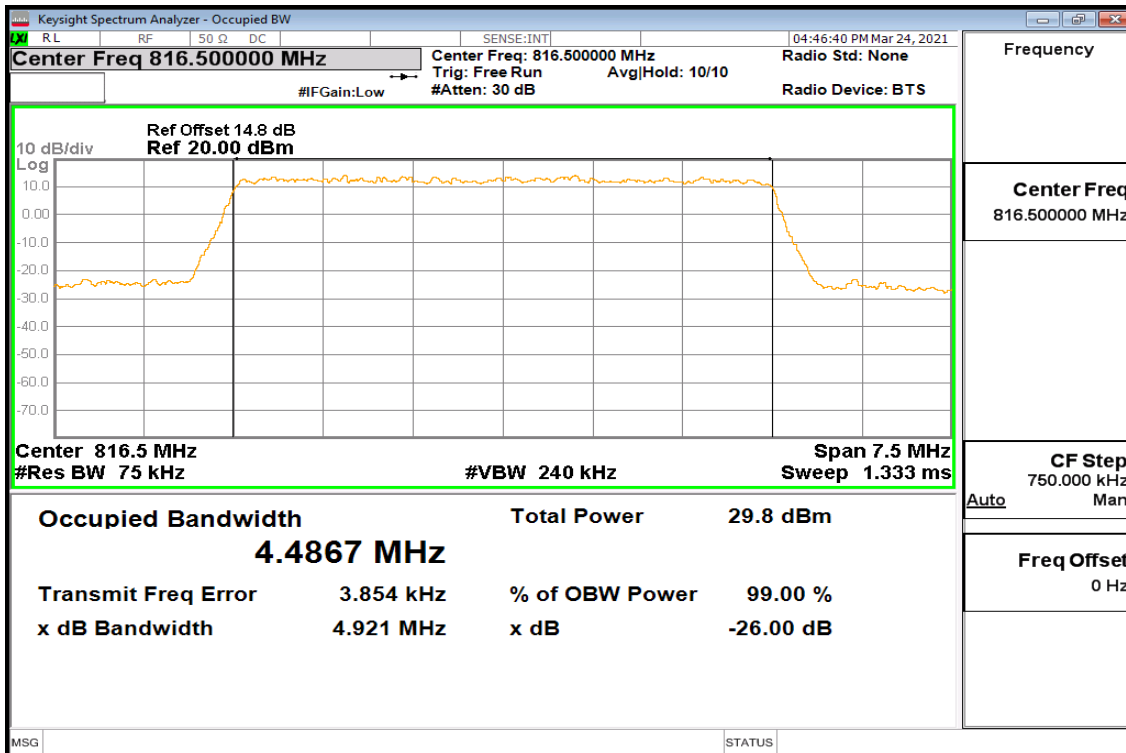
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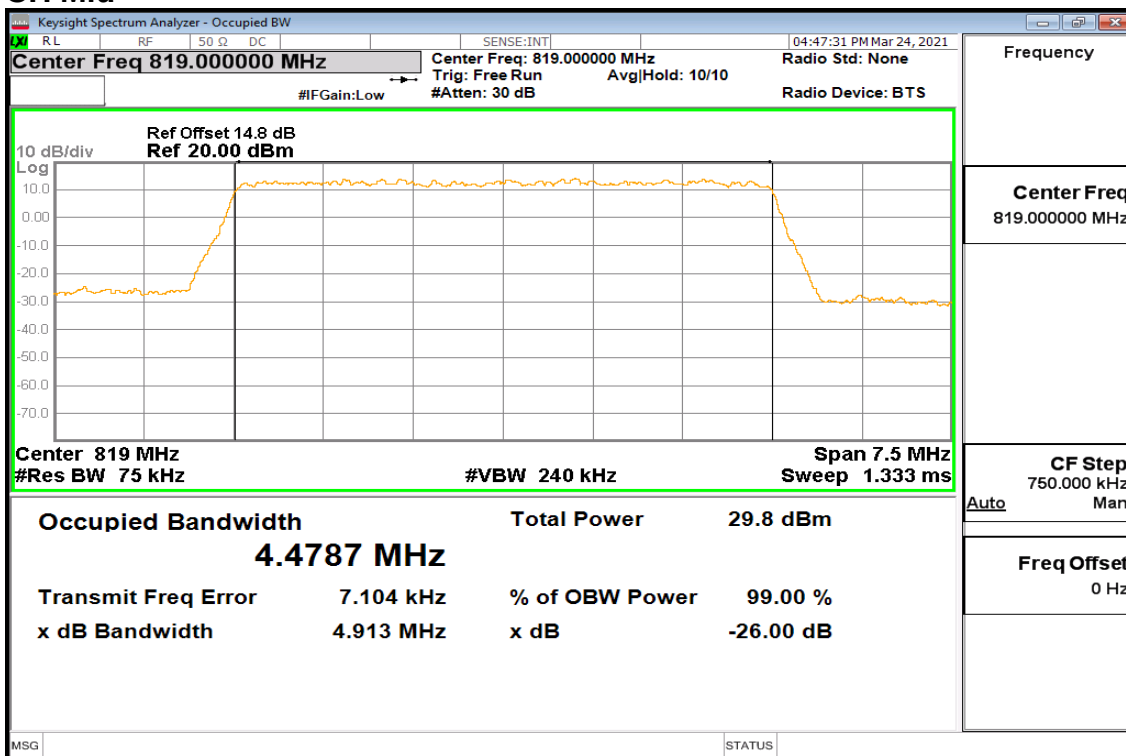
CH High



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



CH Mid



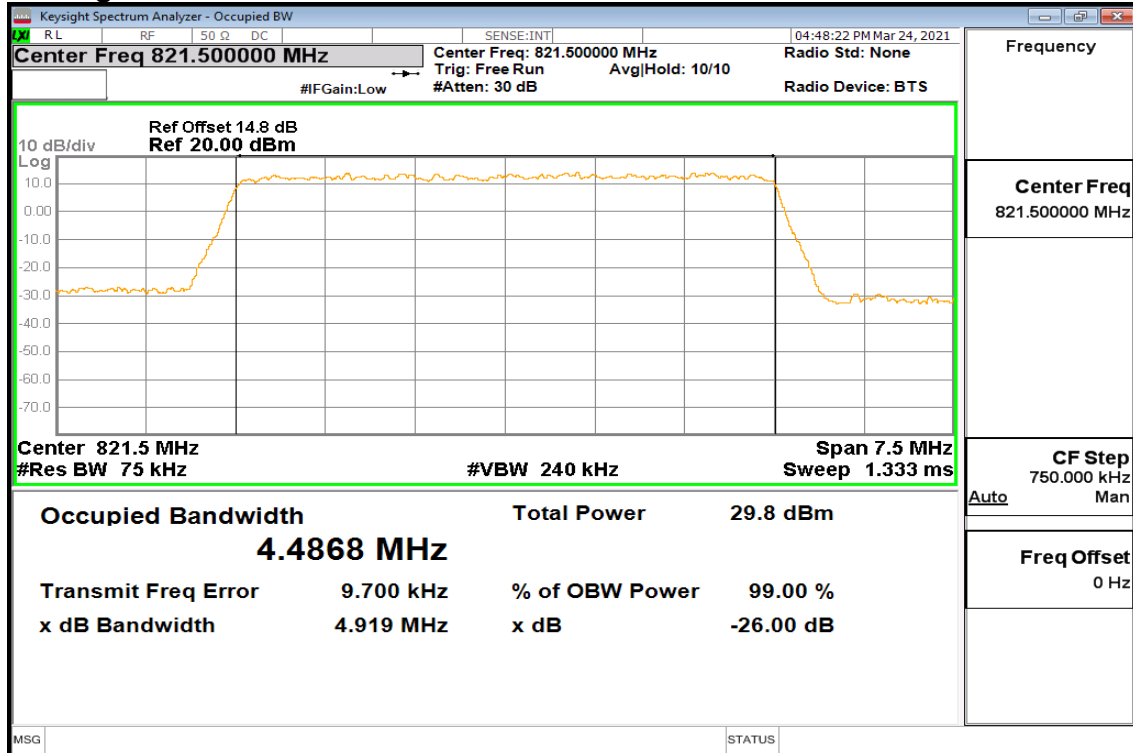


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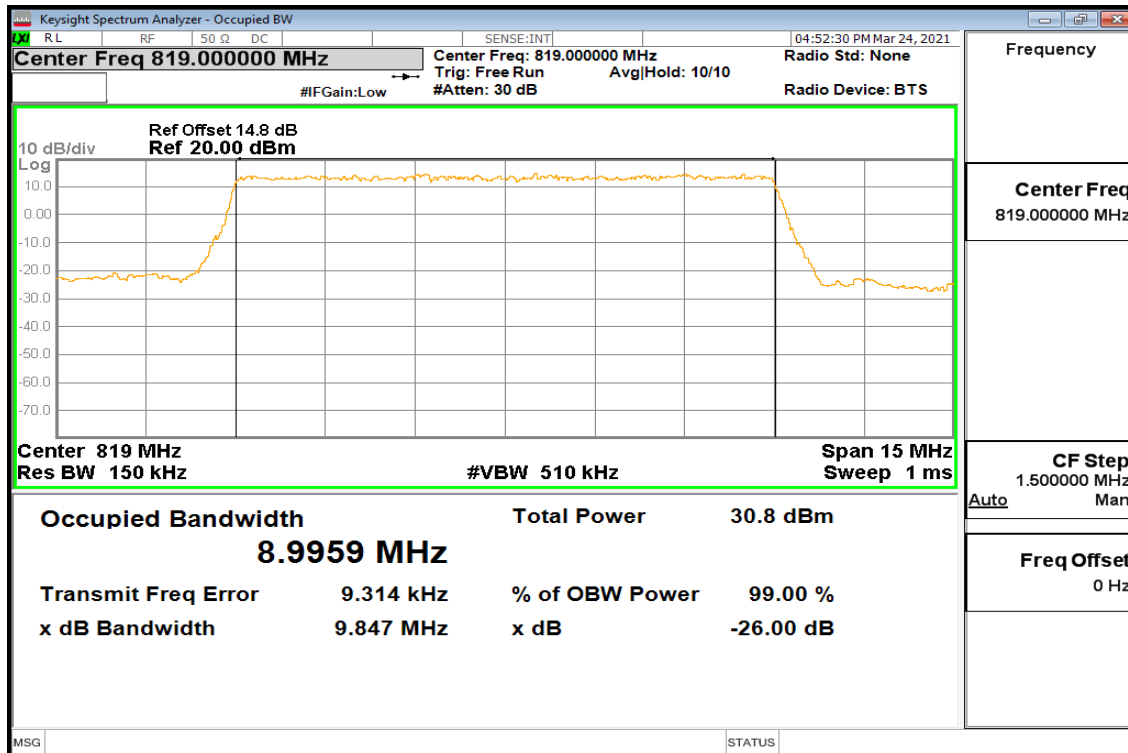
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CH High

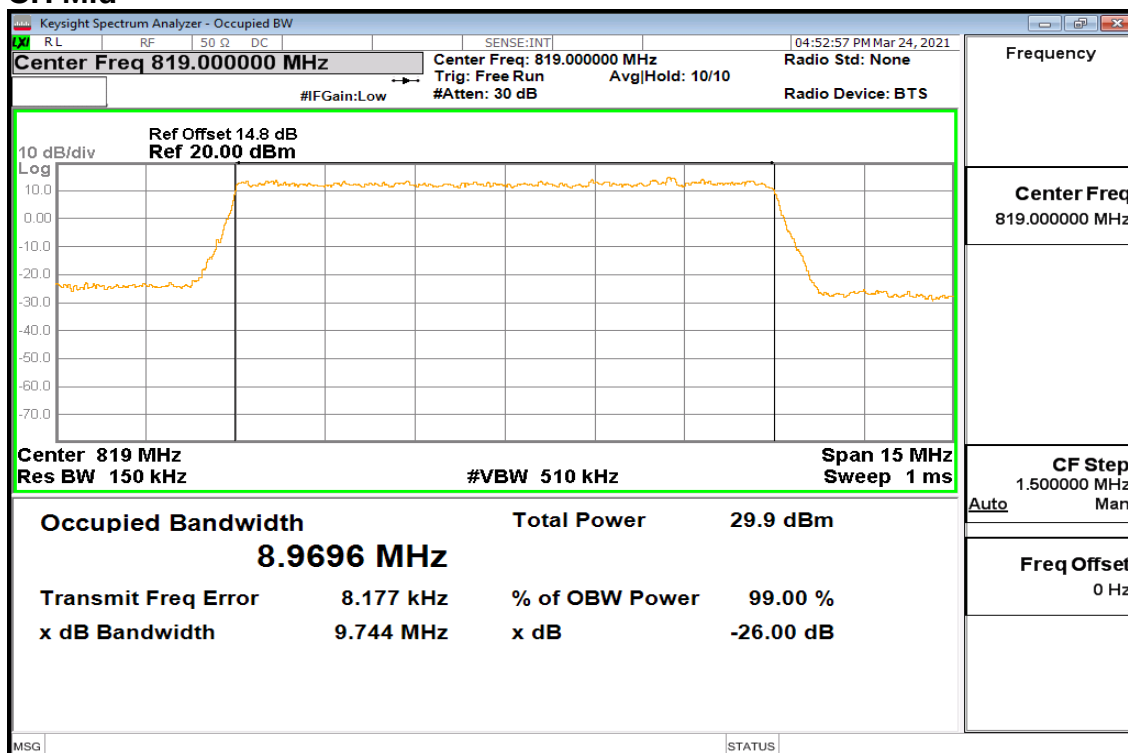


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CHANNEL BANDWIDTH: 10MHz / QPSK / RB =50, RB Offset = 0
CH Mid



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



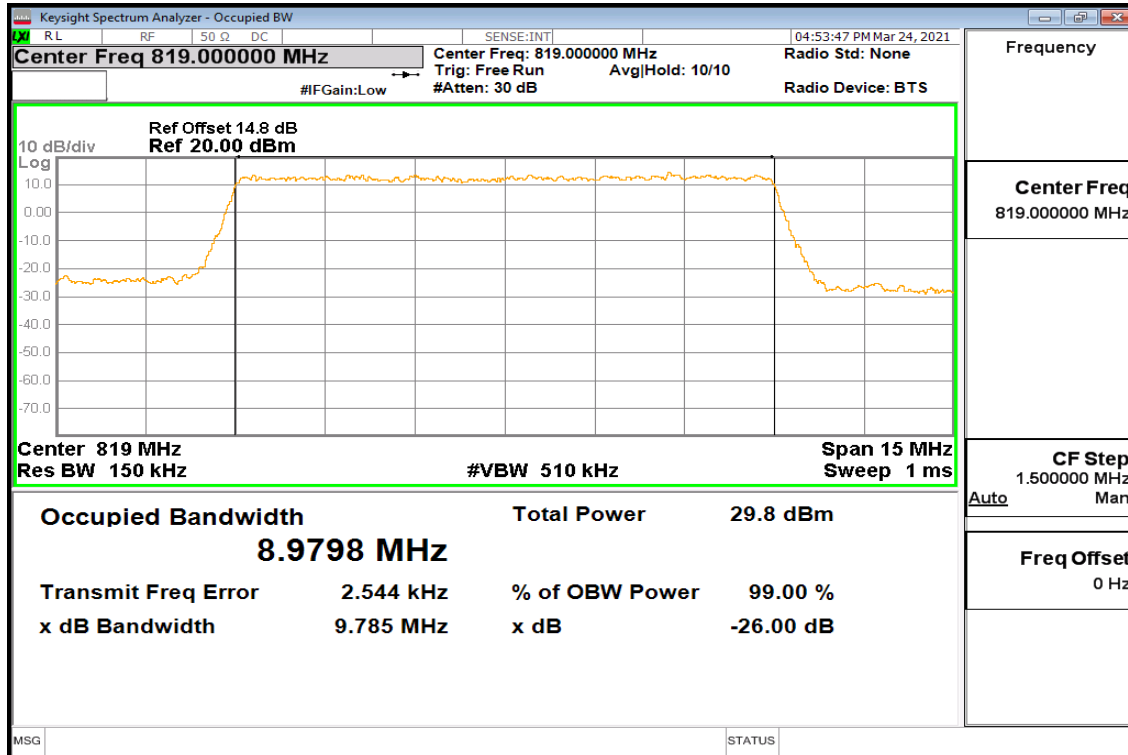


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CHANNEL BANDWIDTH: 10MHz / 64QAM / RB =50, RB Offset = 0
CH Mid





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8.4 PEAK TO AVERAGE POWER RATIO

Limit

In measuring transmissions in this band using an average power technique, the peak to average power ratio (PAPR) of the transmission may not exceed 13 dB.

Test Procedures

1. According to KDB 971168 D01,
2. The EUT was connect to spectrum analyzer and call box.
3. Set the CCDF function in spectrum analyzer.
4. The highest RF output power were measured and recorded the maximum PAPR level associated with a probability of 0.1%.
5. Record the Peak to Average Power Ratio.

Note: We selected worst case to performed test in middle channel, the results can be meet other channel.



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Test Results

Temperature: 23.1°C

Humidity: 53.2% RH

Tested by: Jerry Chang

Test Date: March 24, 2021

Temperature: 25.8°C

Humidity: 57.4% RH

Tested by: Jerry Chang

Test Date: August 26, 2021

LTE Band 26

LTE BAND 26 for part 90S							
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
814.7	26697	5.12	13	815.5	26705	5.76	13
819.0	26740	5.48	13	819	26740	5.85	13
823.3	26783	5.89	13	822.5	26775	5.87	13

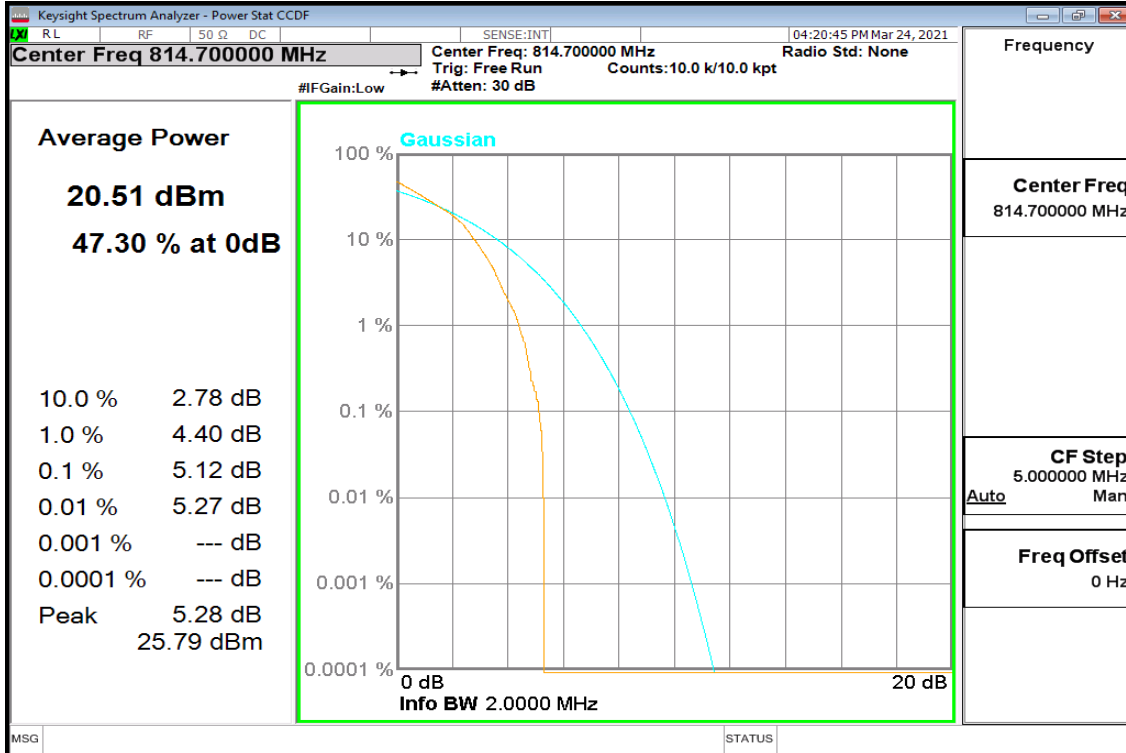
LTE BAND 26 for part 90S							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
816.5	26715	5.65	13	819.0	26740	5.82	13
819.0	26740	5.75	13				
821.5	26765	5.81	13				

Note: We selected worst case to performed test in middle channel, the results can be meet other channel.

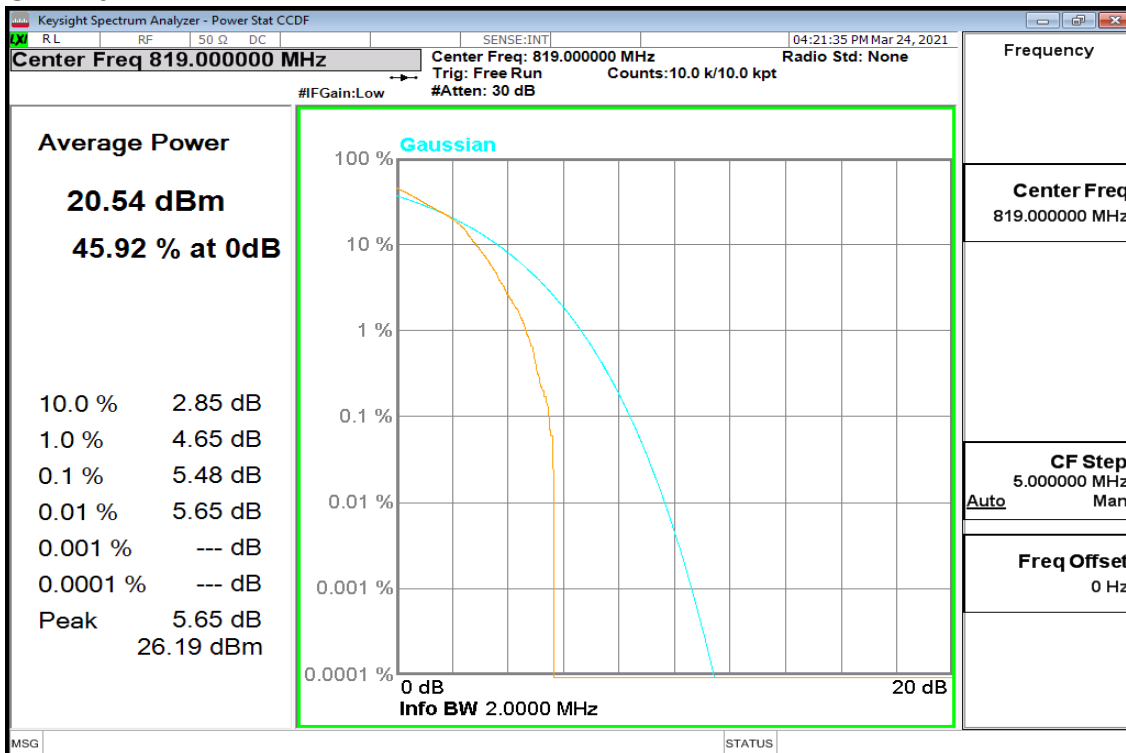
LTE Band 26

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

CH Low



CH Mid



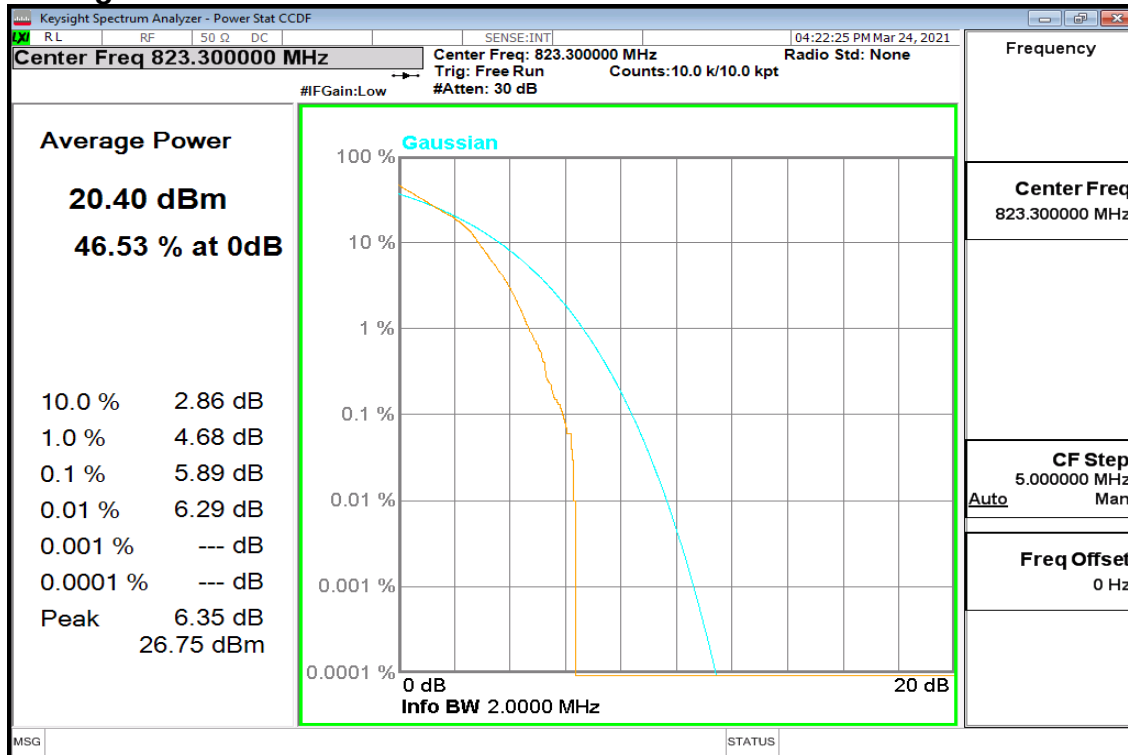


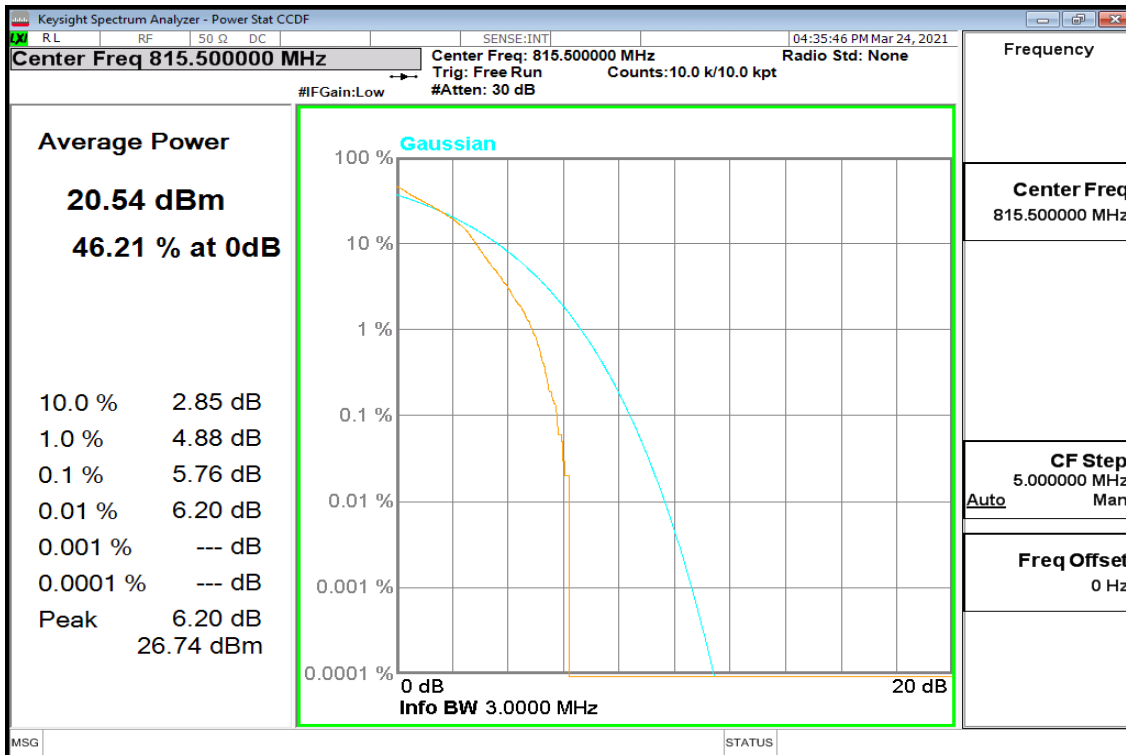
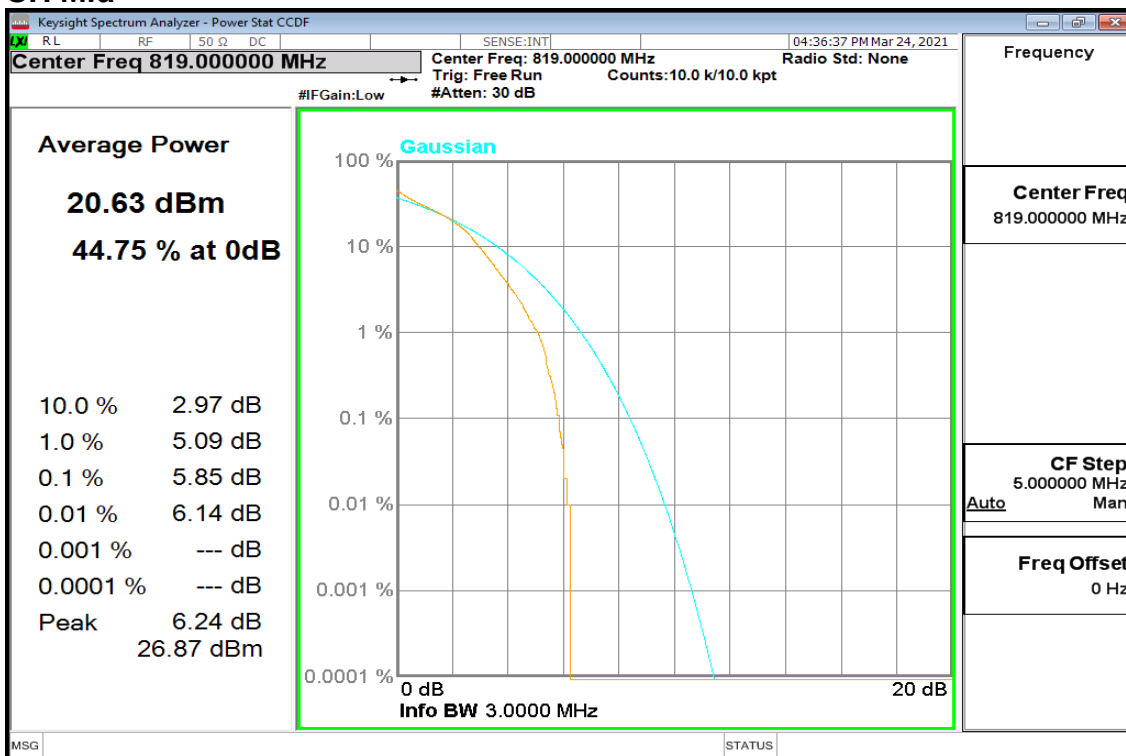
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CH High



CHANNEL BANDWIDTH: 3MHz / 64QAM / RB =15, RB Offset = 0
CH Low**CH Mid**

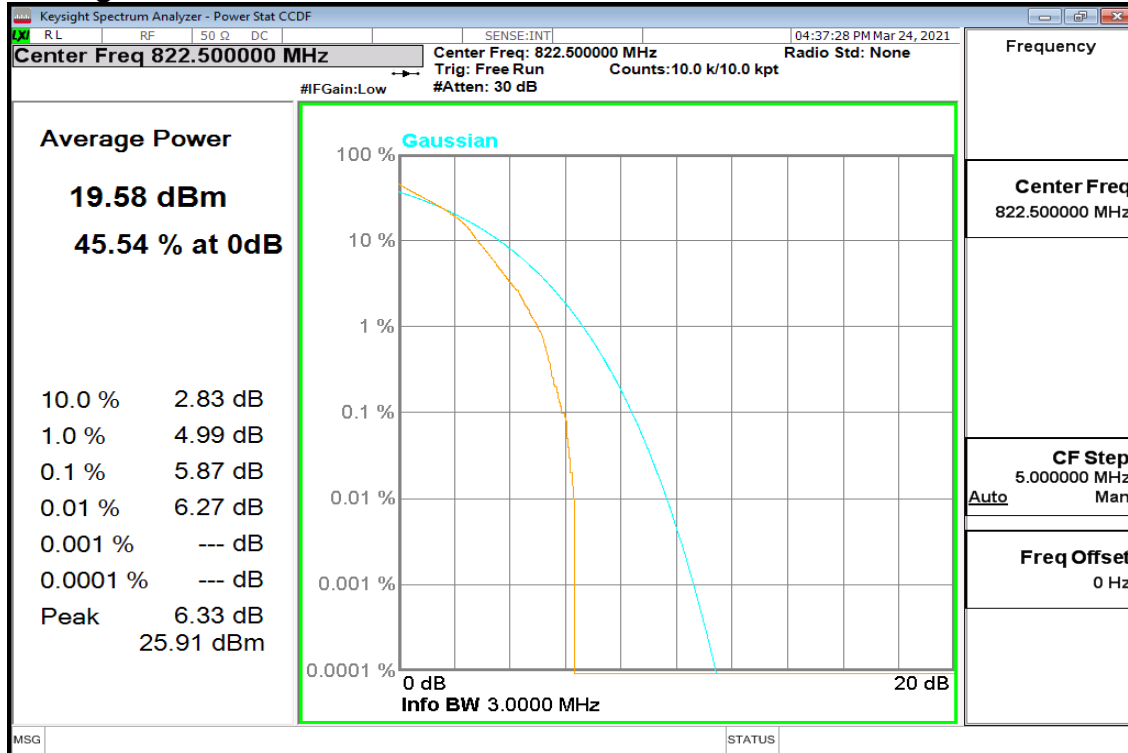


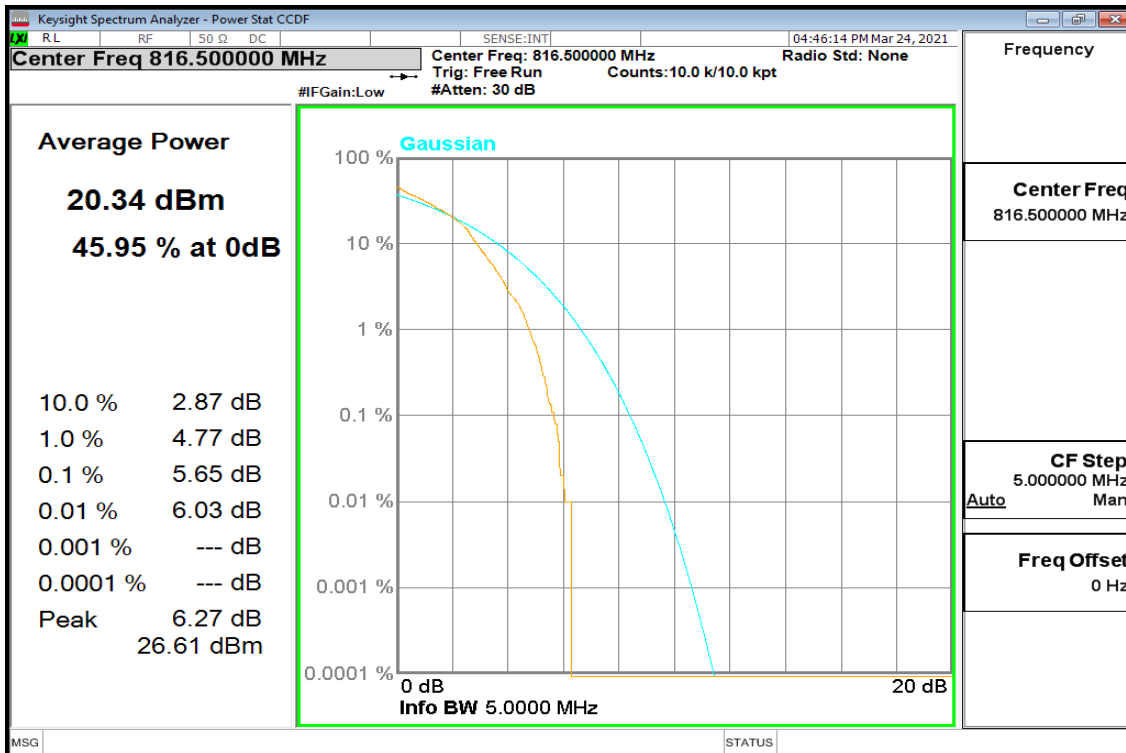
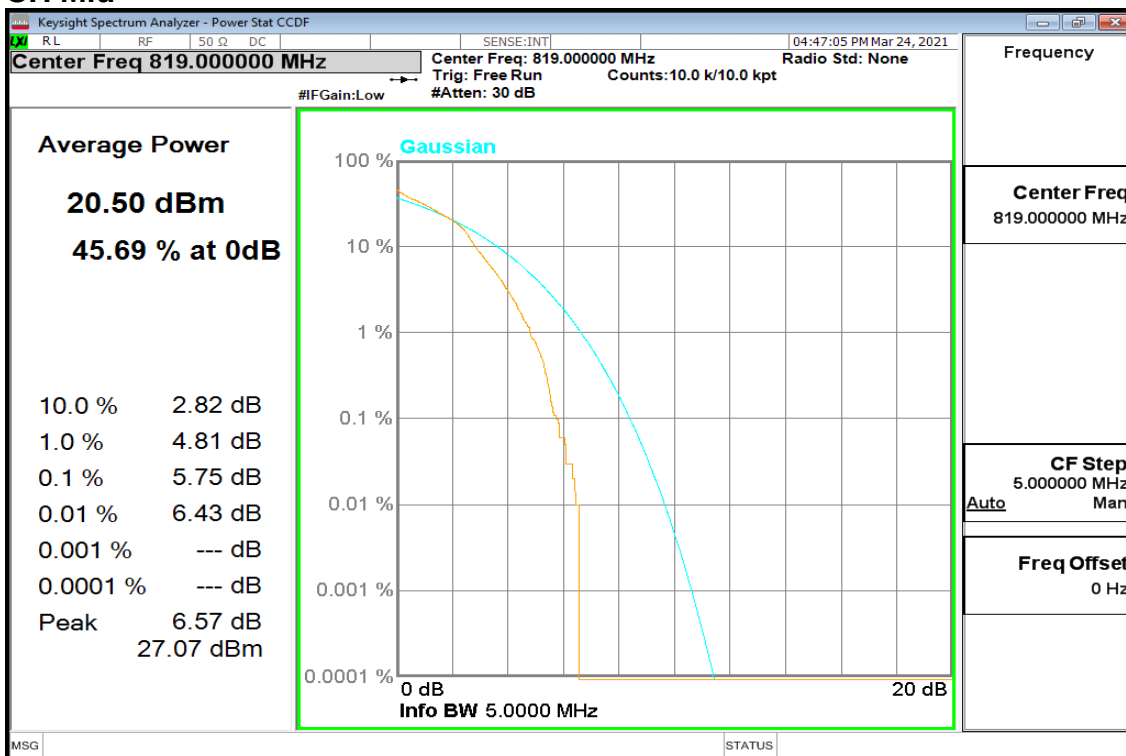
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CH High



CHANNEL BANDWIDTH: 5MHz / 64QAM / RB =25, RB Offset = 0
CH Low**CH Mid**

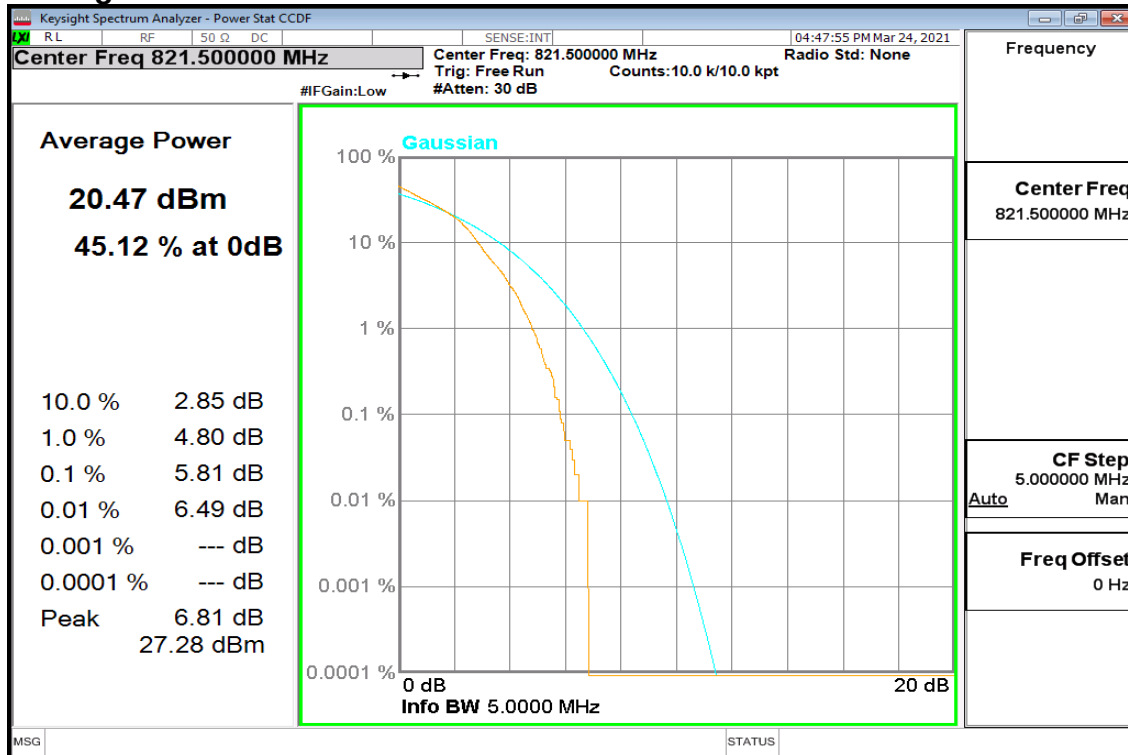


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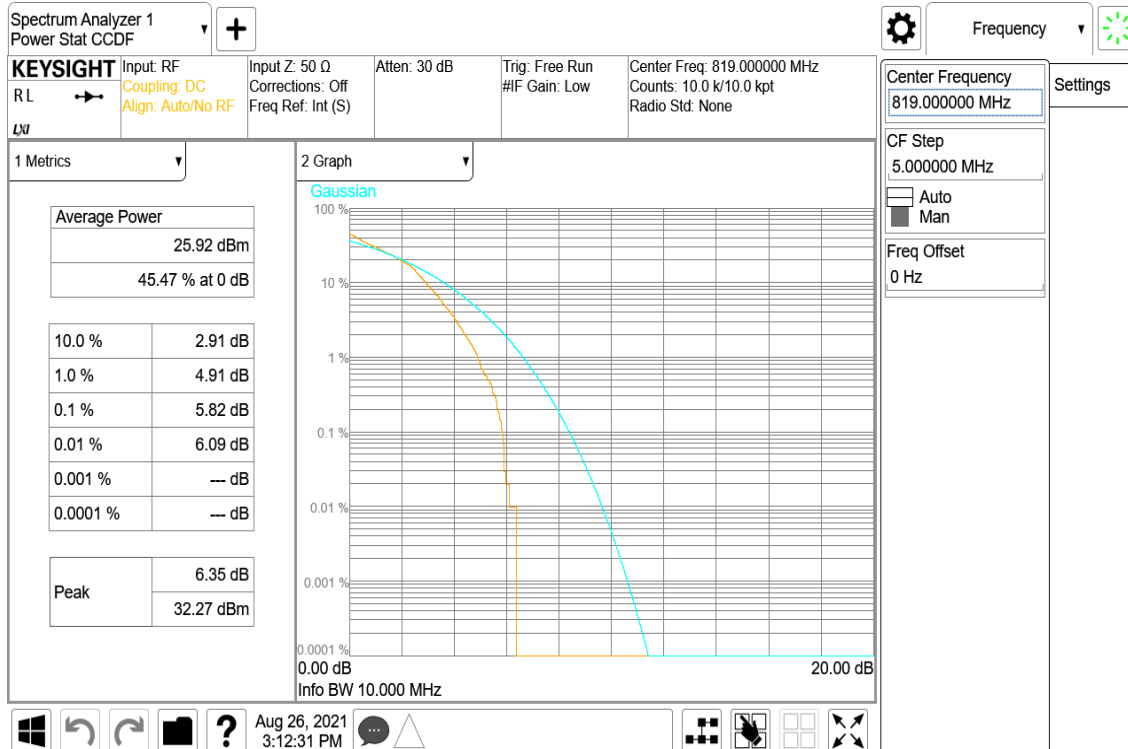
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CH High





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



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8.5 OUT OF BAND EMISSION AT ANTENNA TERMINALS

Limit

FCC Part 90.691

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.

Test Procedures

KDB 971168 D01,

1. RBW $\geq$ 1% of the emission bandwidth
2. VBW $\geq$ 3 x RBW
3. Span was set large enough so as to capture all out of emissions near the band edge.

Test Results:

Temperature: 23.1°C

Humidity: 53.2% RH

Tested by: Jerry Chang

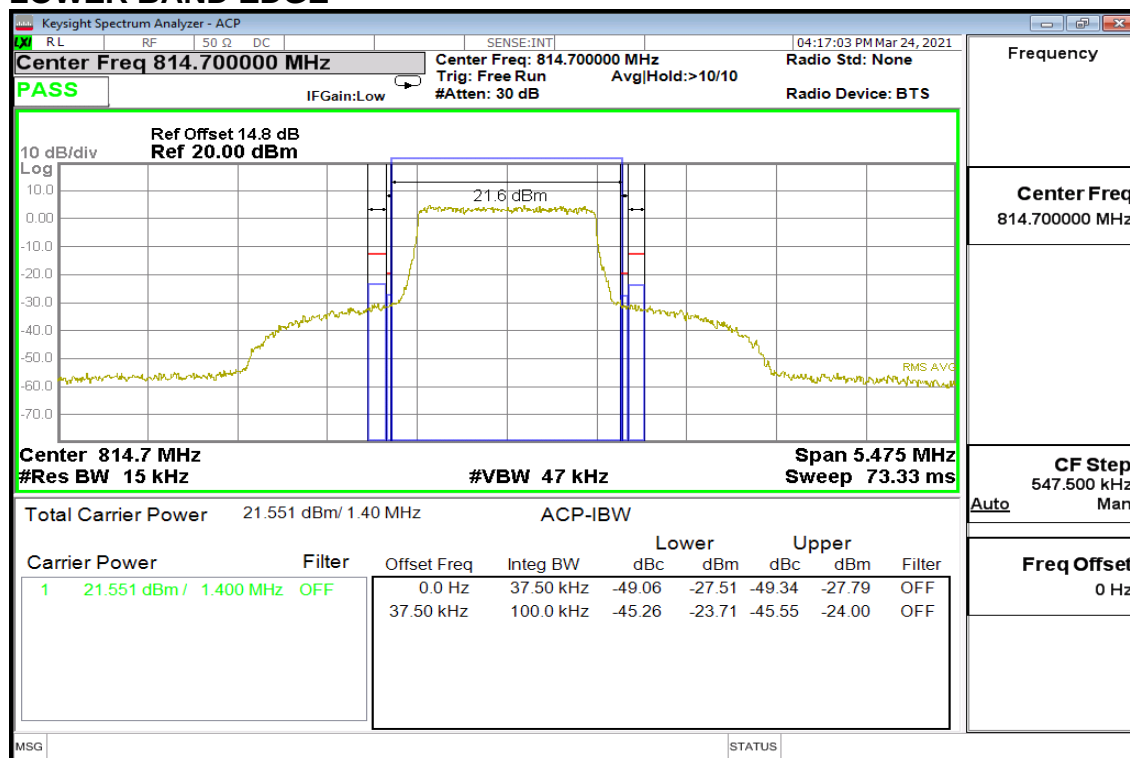
Test Date: March 24, 2021

Emission Mask

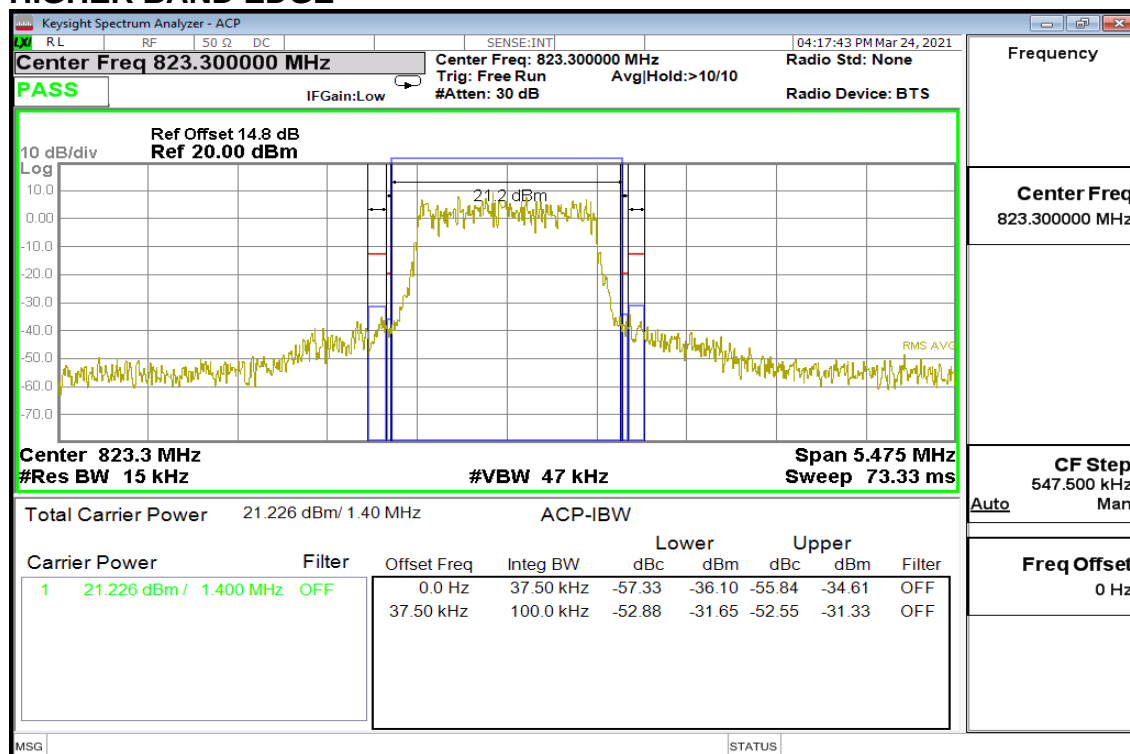
LTE Band 26

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

LOWER BAND EDGE

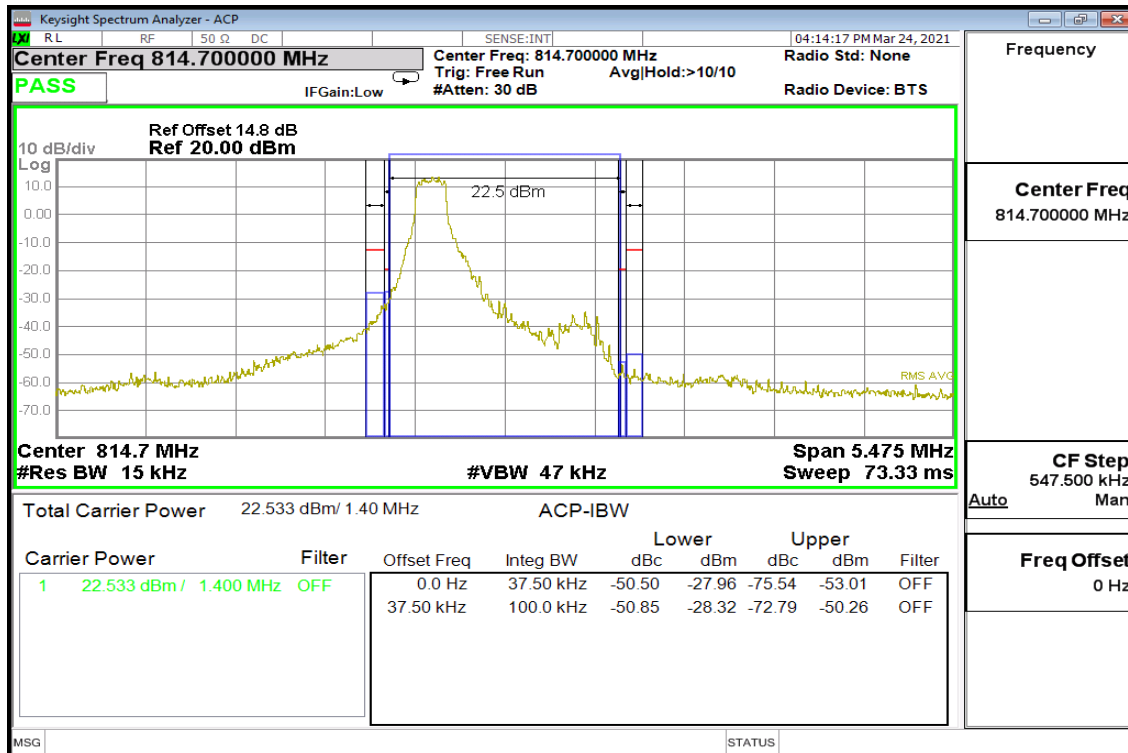
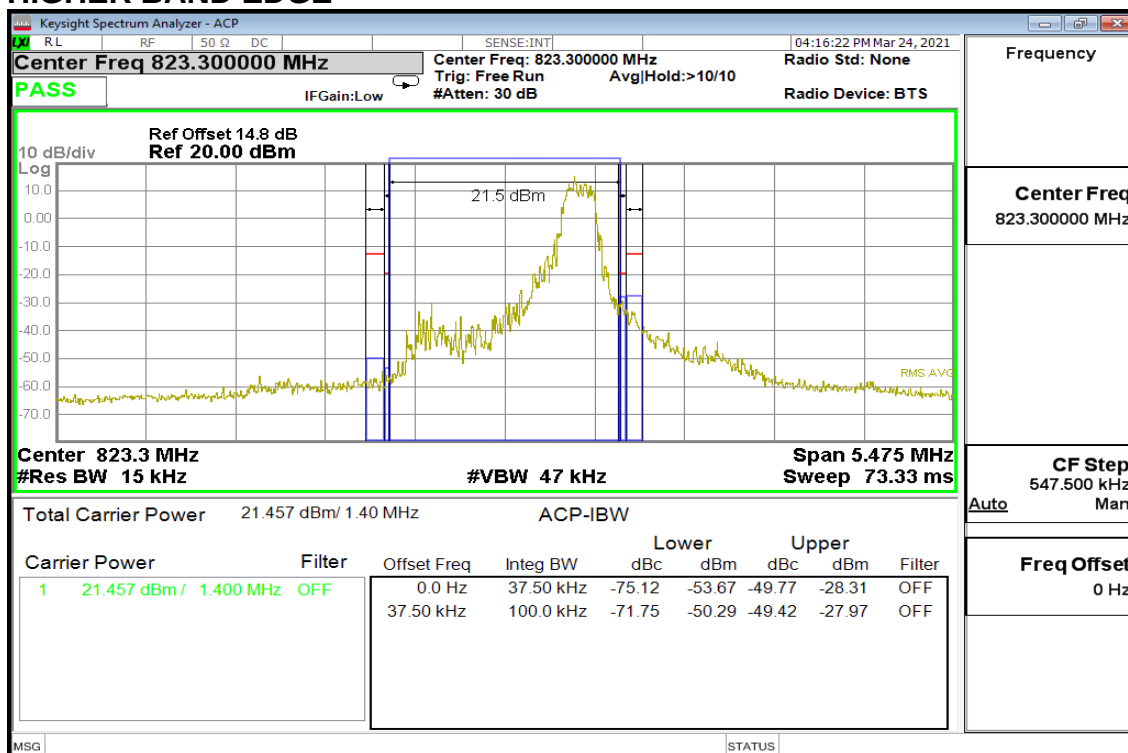


HIGHER BAND EDGE



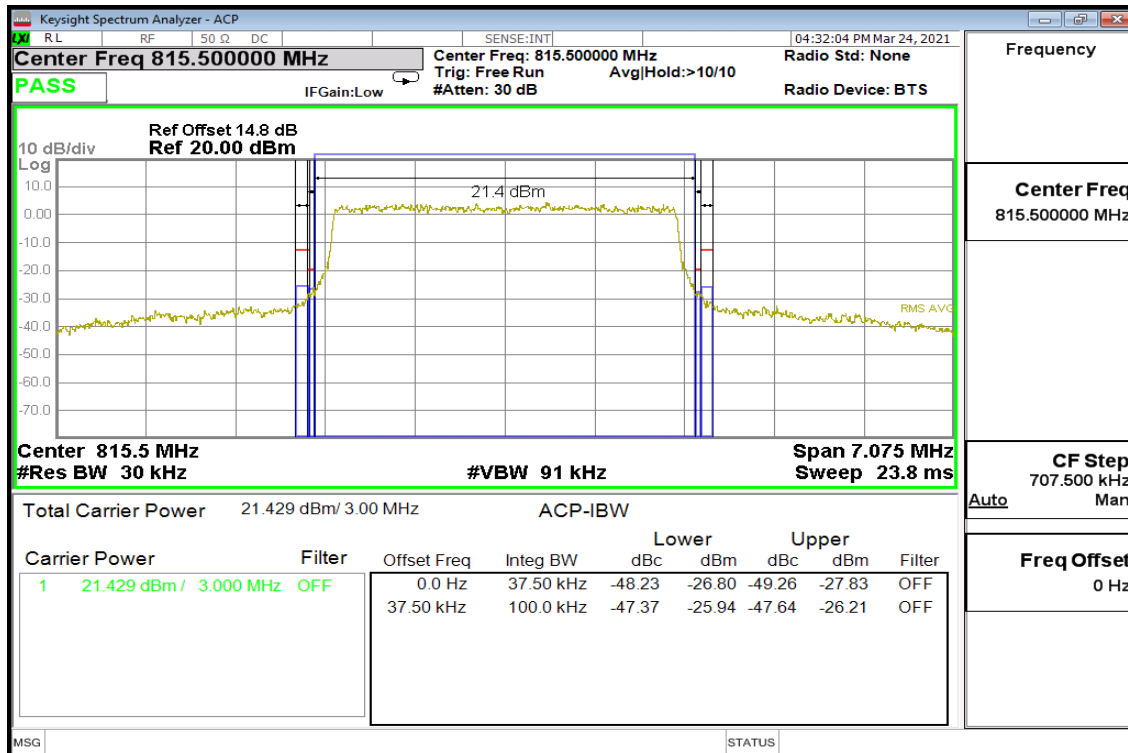
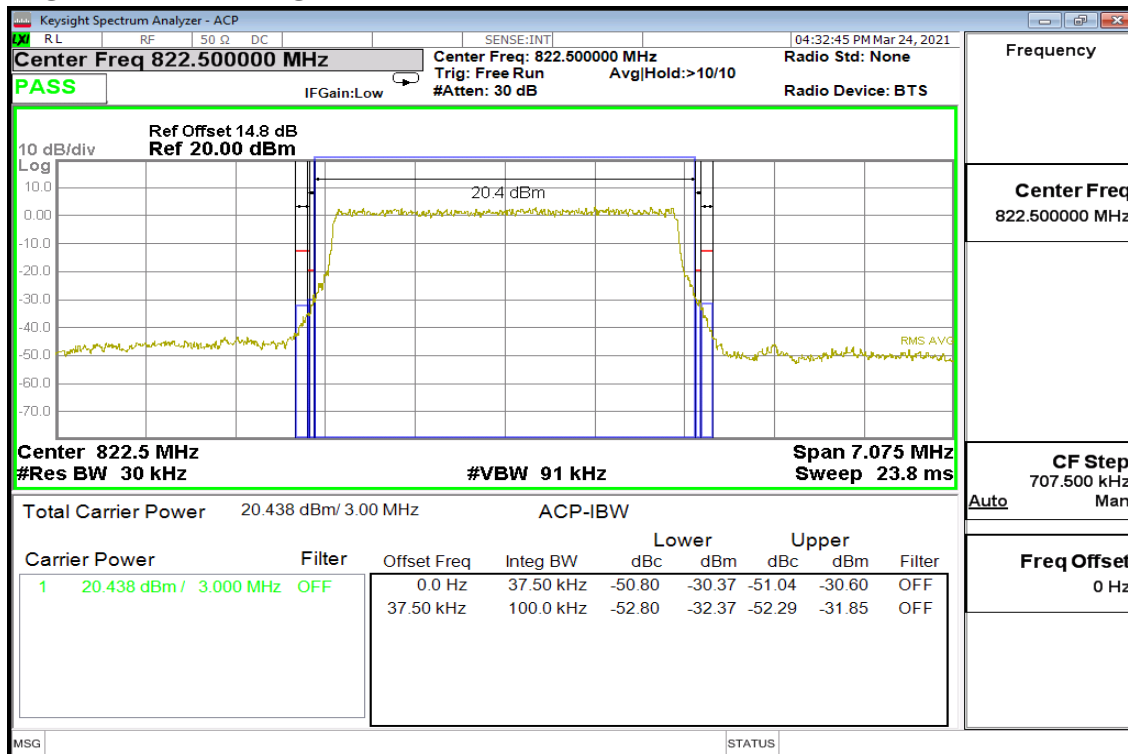


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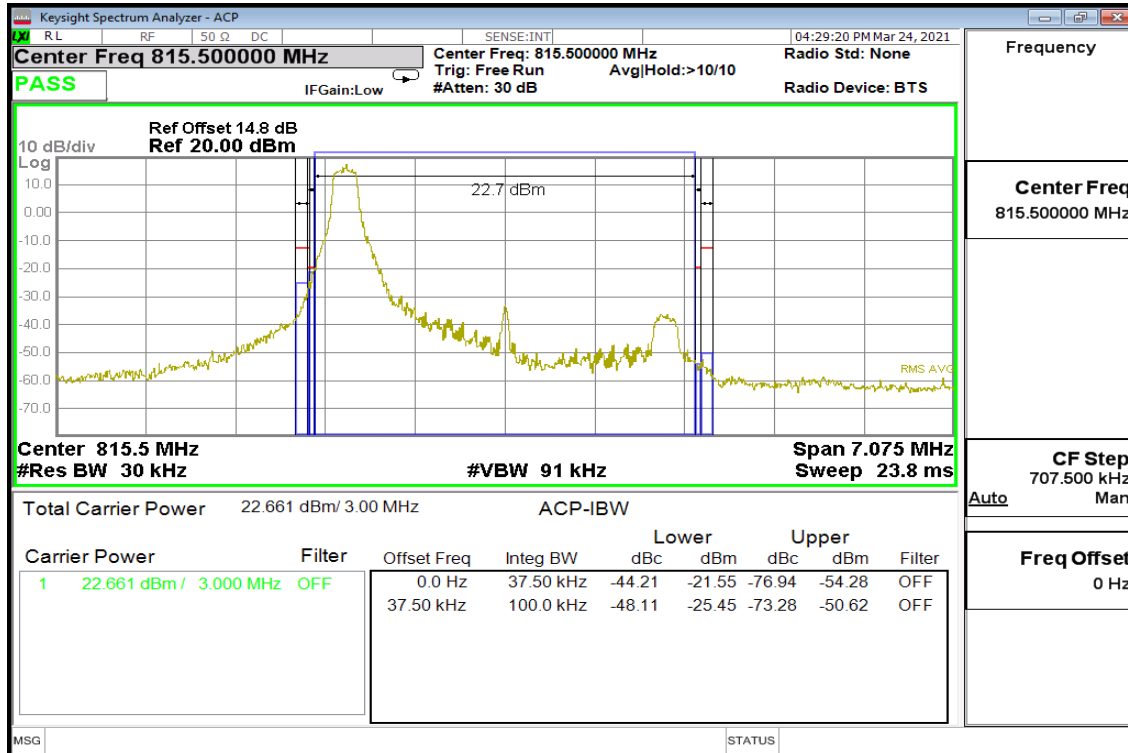
**CHANNEL BANDWIDTH: 1.4MHz / QPSK / RB =1, RB Offset = 0
LOWER BAND EDGE****CHANNEL BANDWIDTH: 1.4MHz / QPSK / RB =1, RB Offset = 5
HIGHER BAND EDGE**



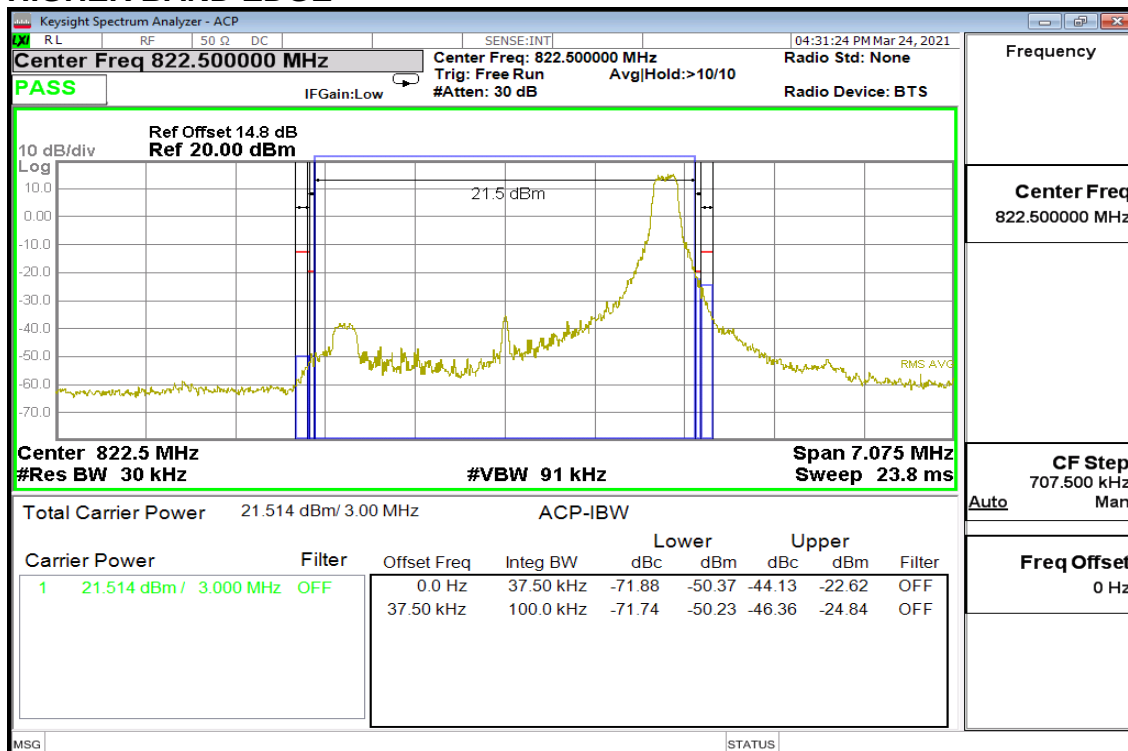
Report No.: T201102D09-RP14

**CHANNEL BANDWIDTH: 3MHz / QPSK / RB =15, RB Offset = 0
LOWER BAND EDGE****HIGHER BAND EDGE**

CHANNEL BANDWIDTH: 3MHz / QPSK / RB =1, RB Offset = 0 LOWER BAND EDGE

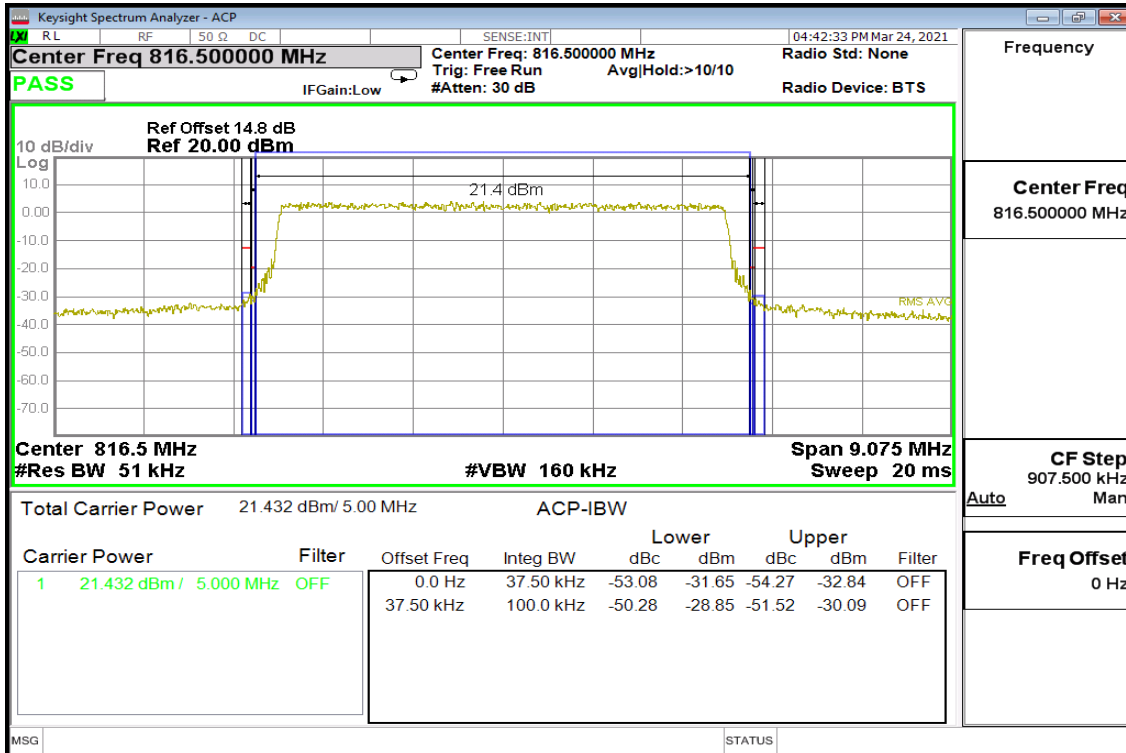


CHANNEL BANDWIDTH: 3MHz / QPSK / RB =1, RB Offset = 14 HIGHER BAND EDGE

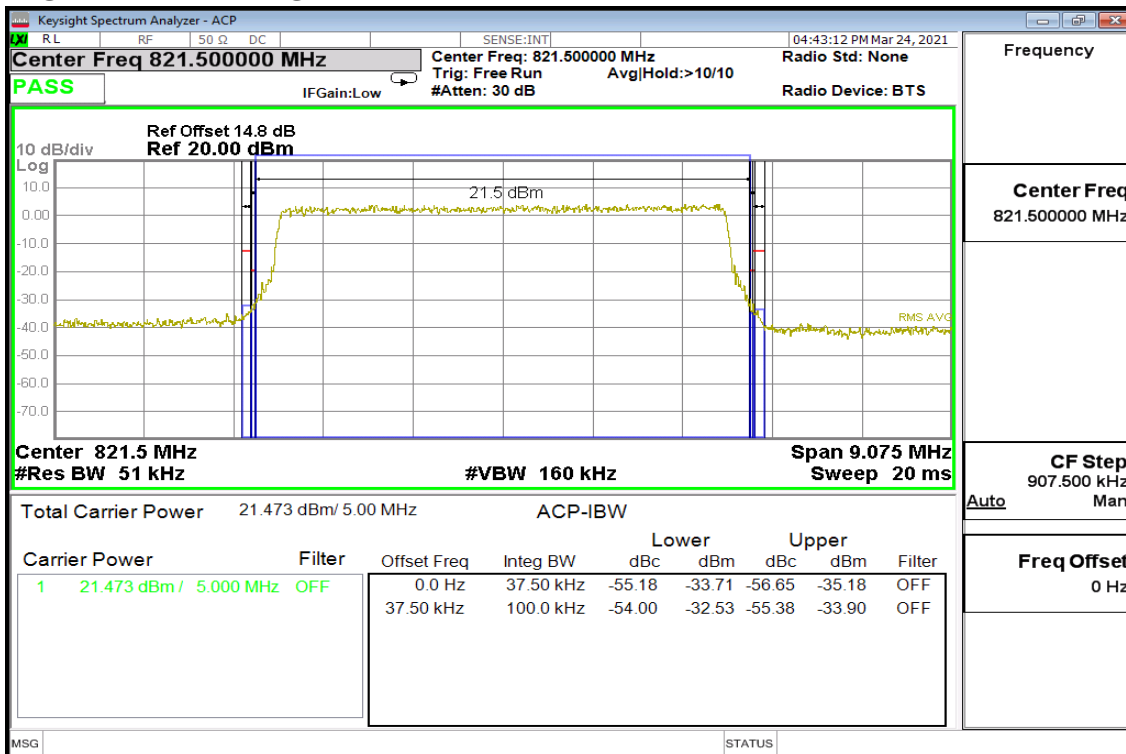


Report No.: T201102D09-RP14

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

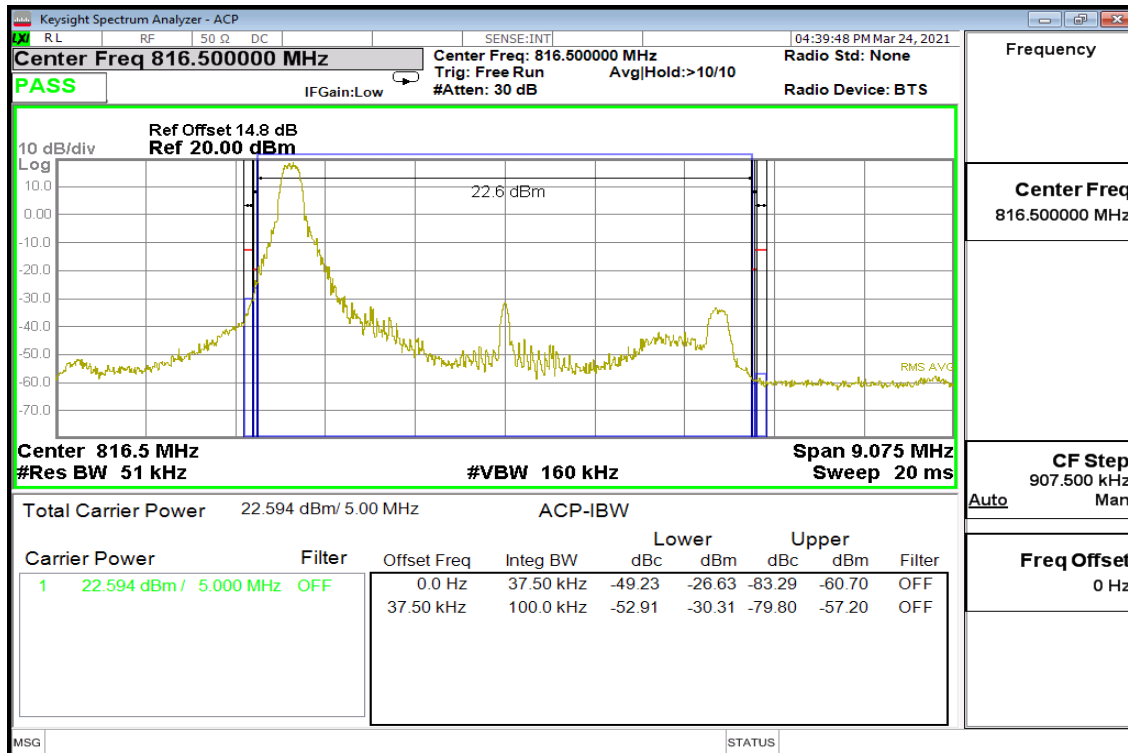


HIGHER BAND EDGE

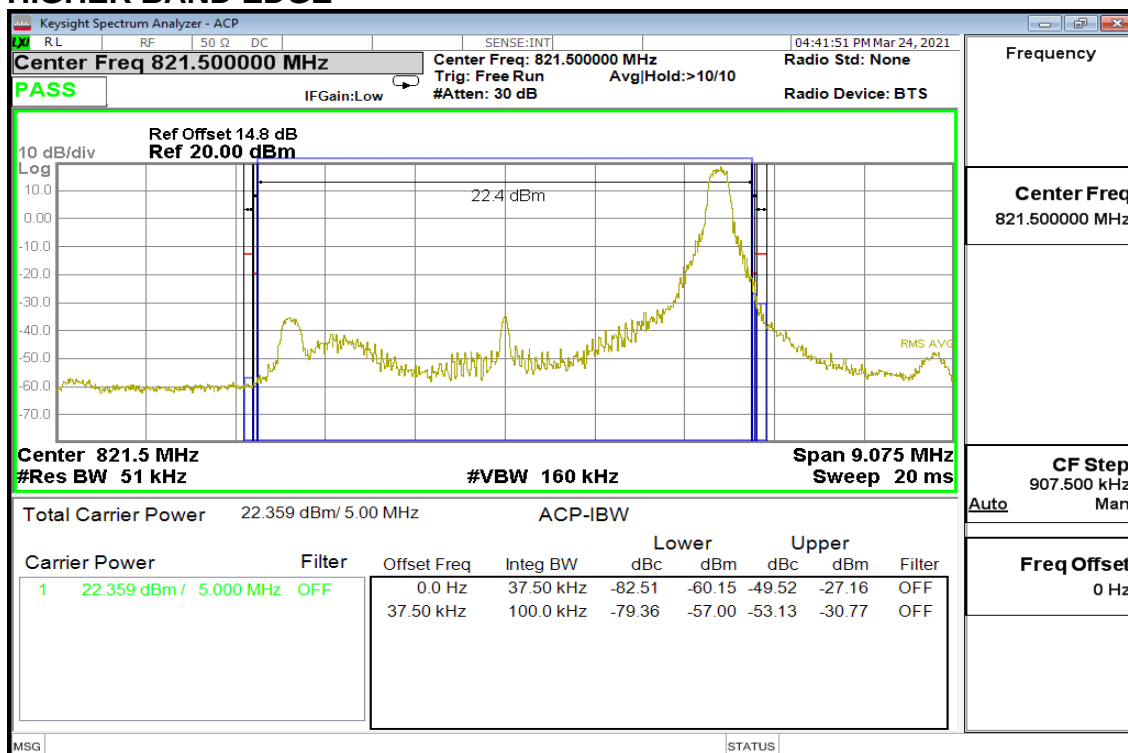


Report No.: T201102D09-RP14

CHANNEL BANDWIDTH: 5MHz / QPSK / RB =1, RB Offset = 0 LOWER BAND EDGE



CHANNEL BANDWIDTH: 5MHz / QPSK / RB =1, RB Offset = 24 HIGHER BAND EDGE



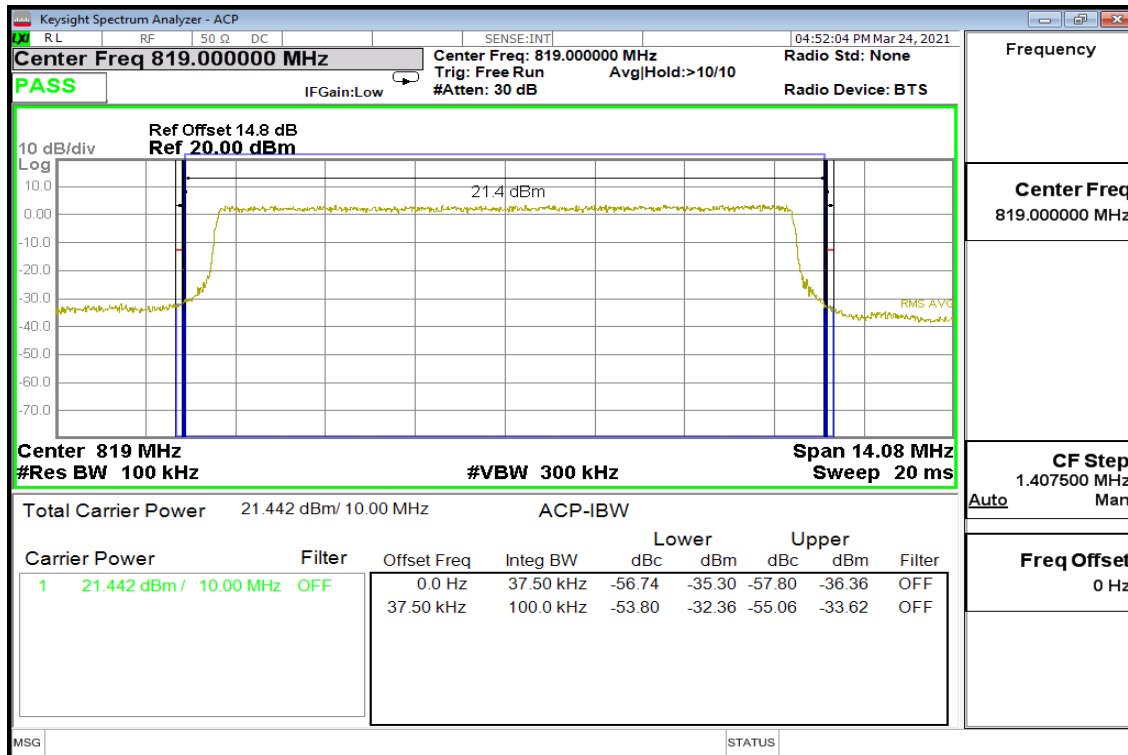


Report No.: T201102D09-RP14

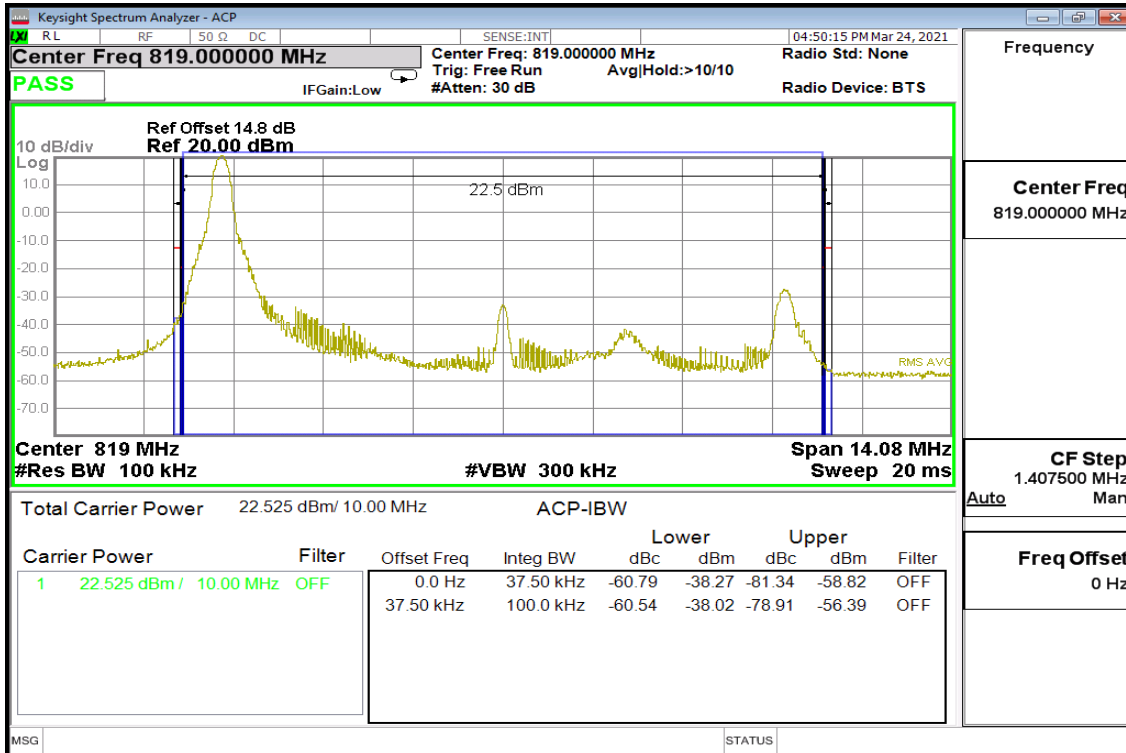
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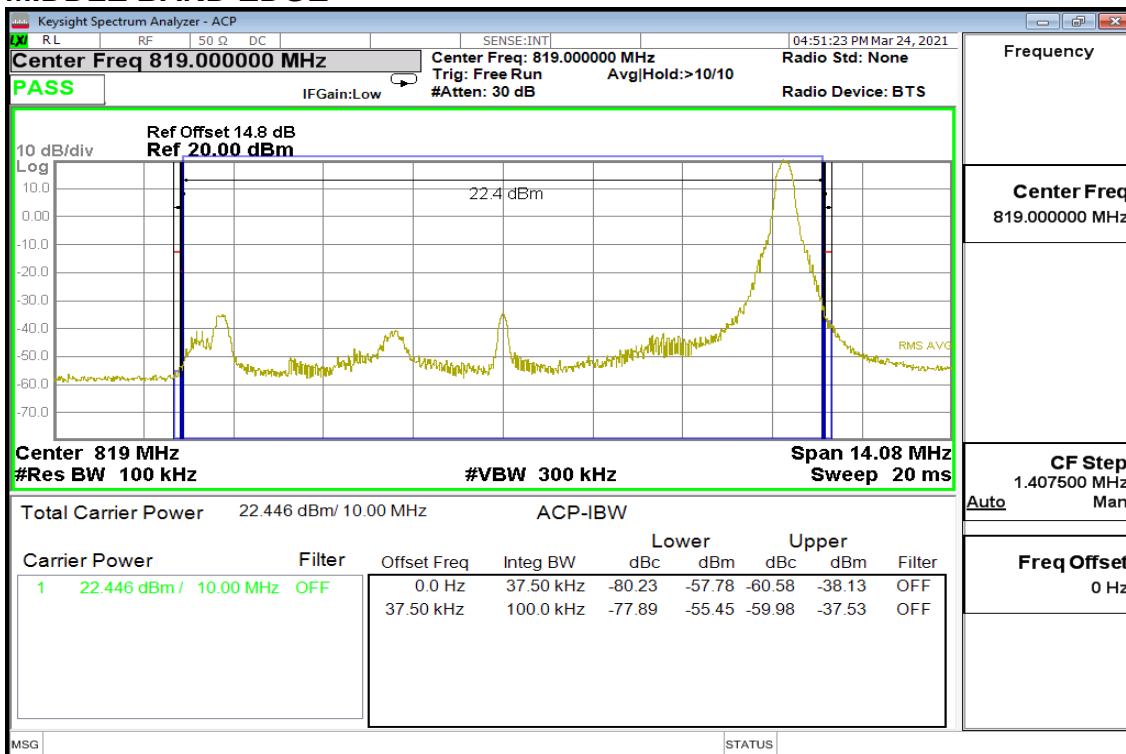
CHANNEL BANDWIDTH: 10MHz / QPSK / RB =50, RB Offset = 0
MIDDLE BAND EDGE



CHANNEL BANDWIDTH: 10MHz / QPSK / RB =1, RB Offset = 0 MIDDLE BAND EDGE



CHANNEL BANDWIDTH: 10MHz / QPSK / RB =1, RB Offset = 49 MIDDLE BAND EDGE



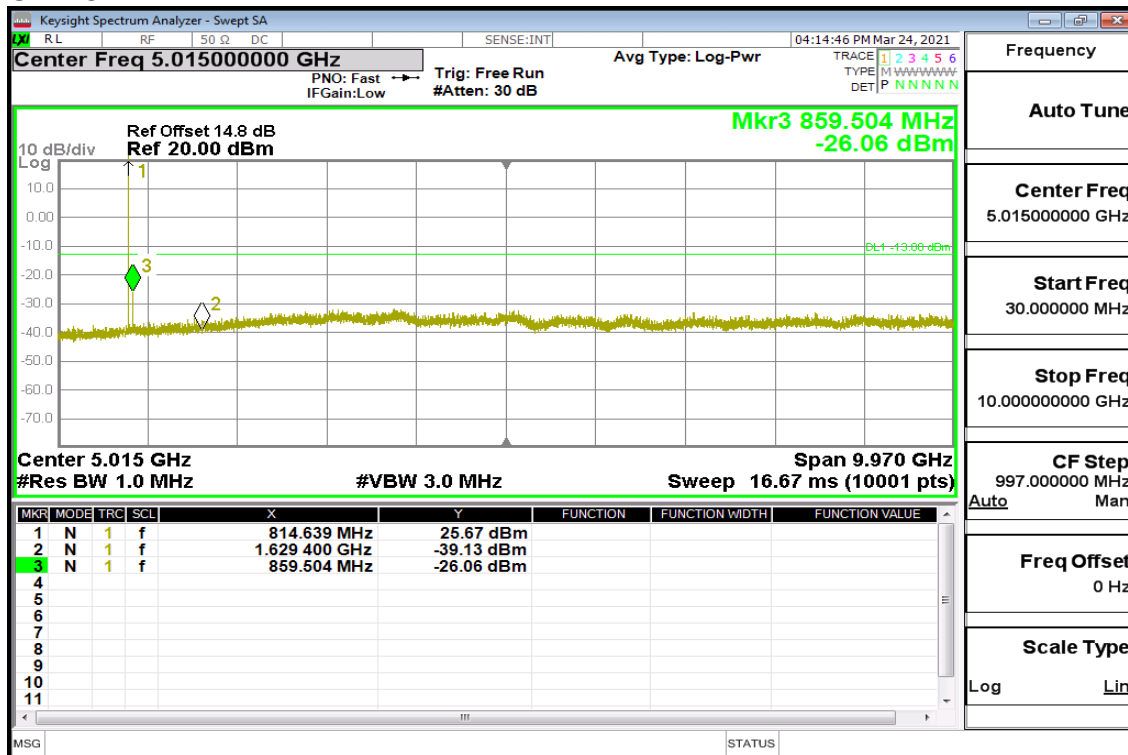
Report No.: T201102D09-RP14

Spurious Emission

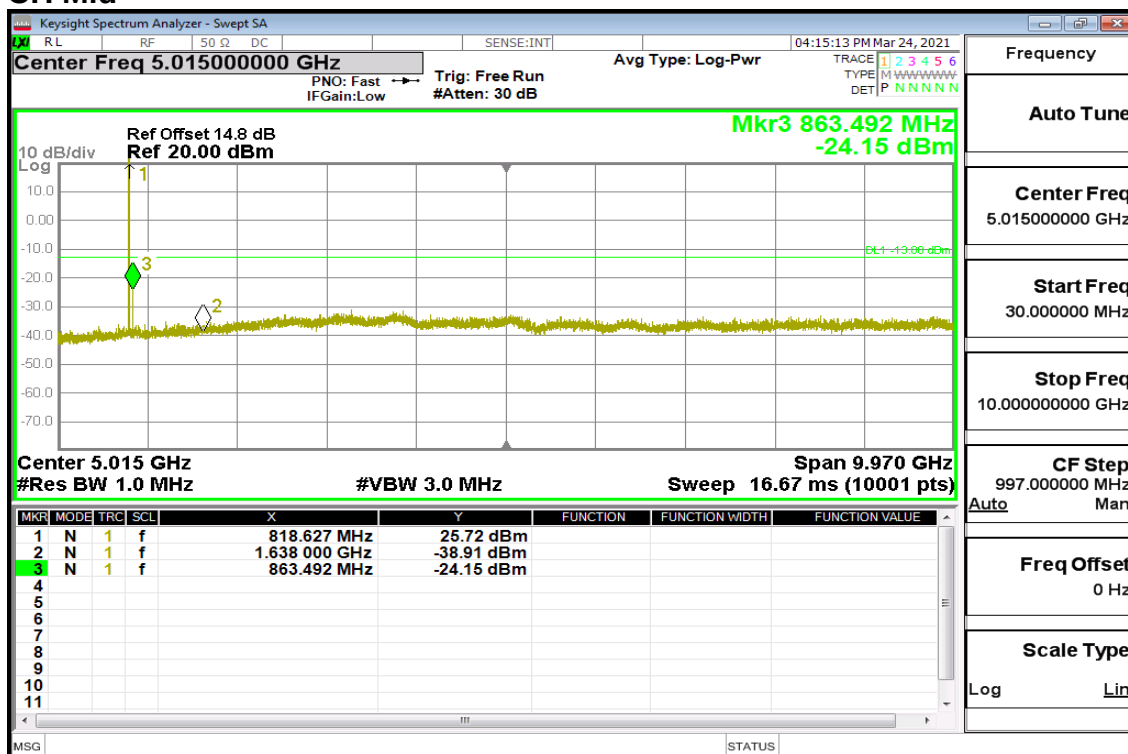
LTE Band 26

CHANNEL BANDWIDTH: 1.4MHz / QPSK / RB =1, RB Offset = 0

CH Low



CH Mid



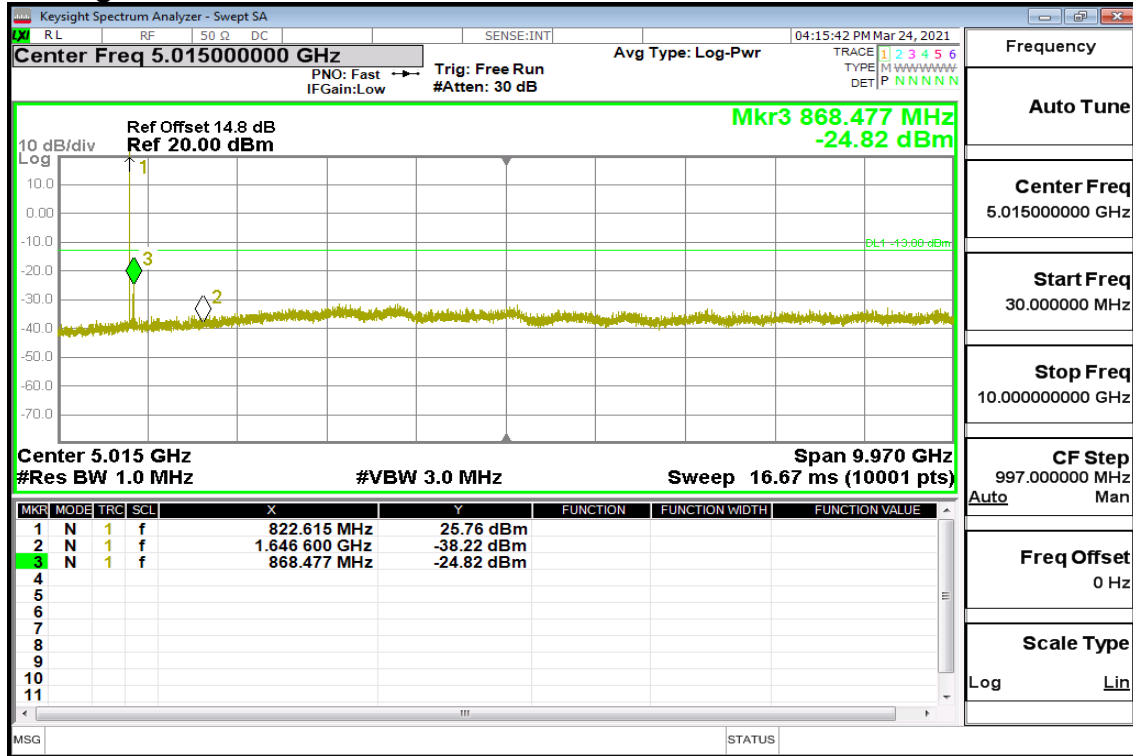


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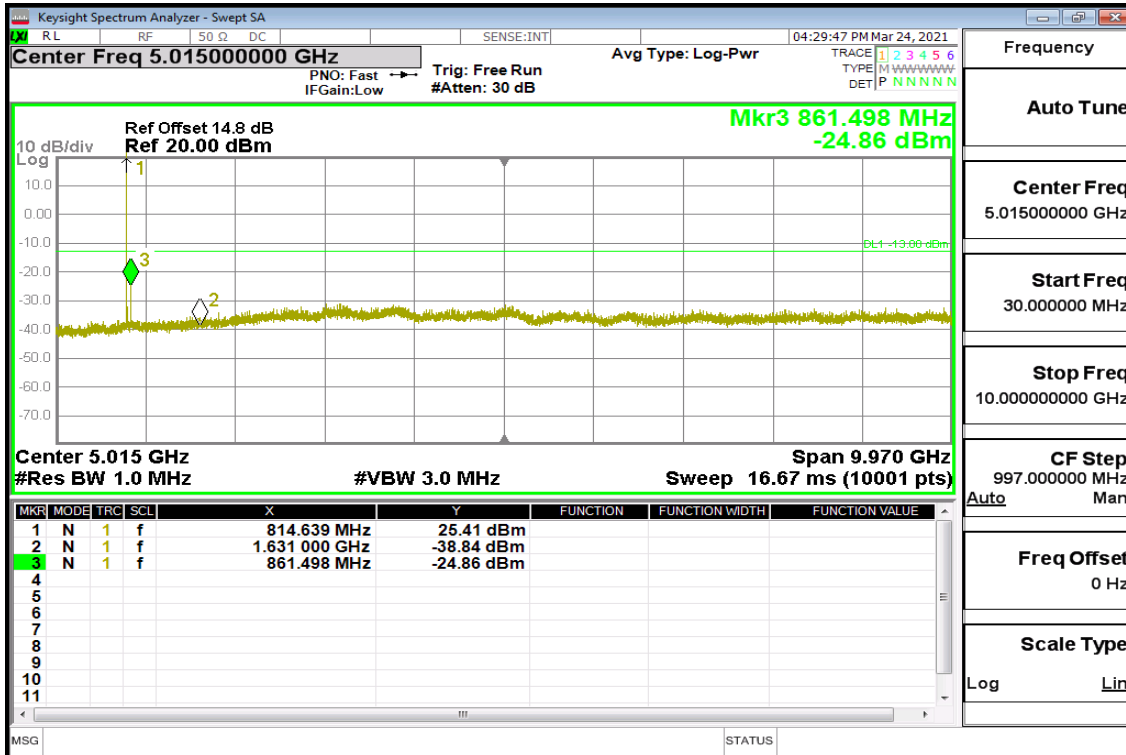
Rev.: 00

CH High

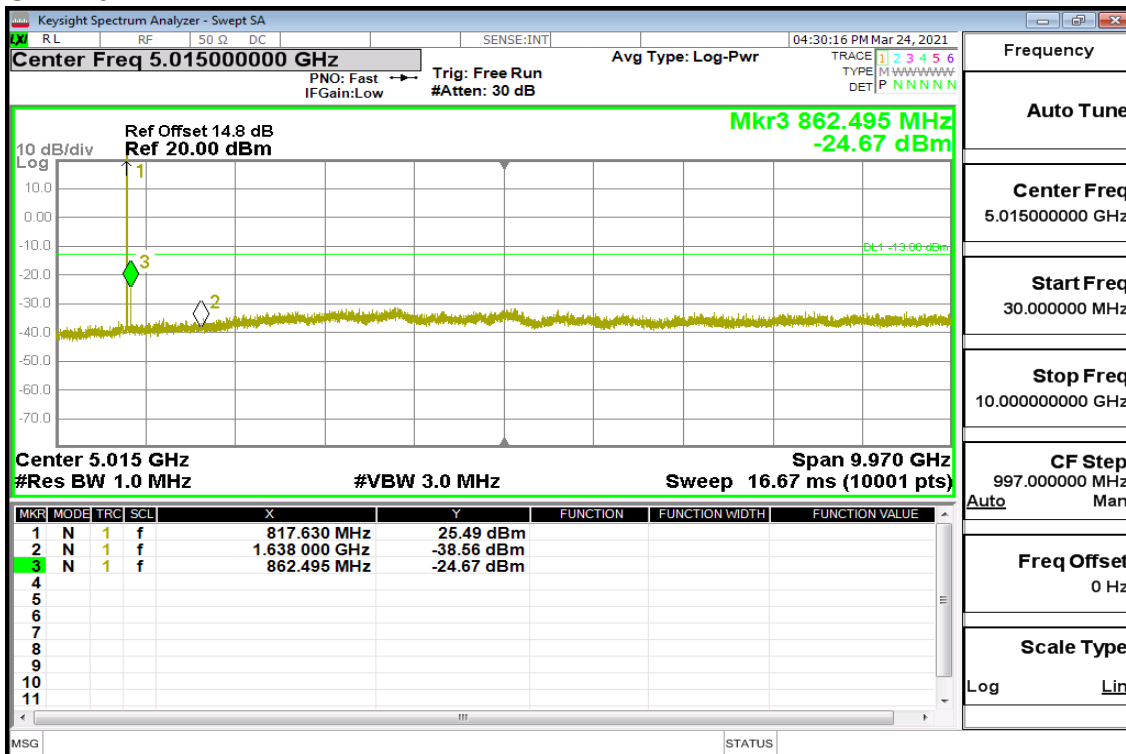


Report No.: T201102D09-RP14

CHANNEL BANDWIDTH: 3MHz / QPSK / RB =1, RB Offset = 0
CH Low



CH Mid



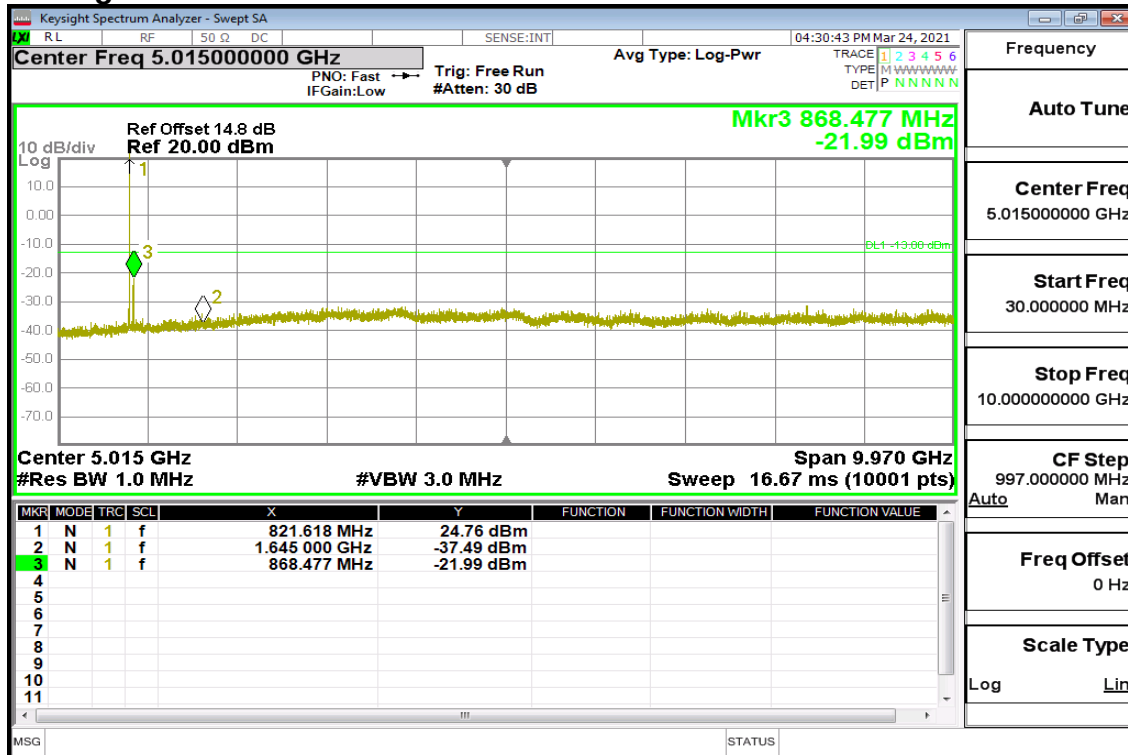


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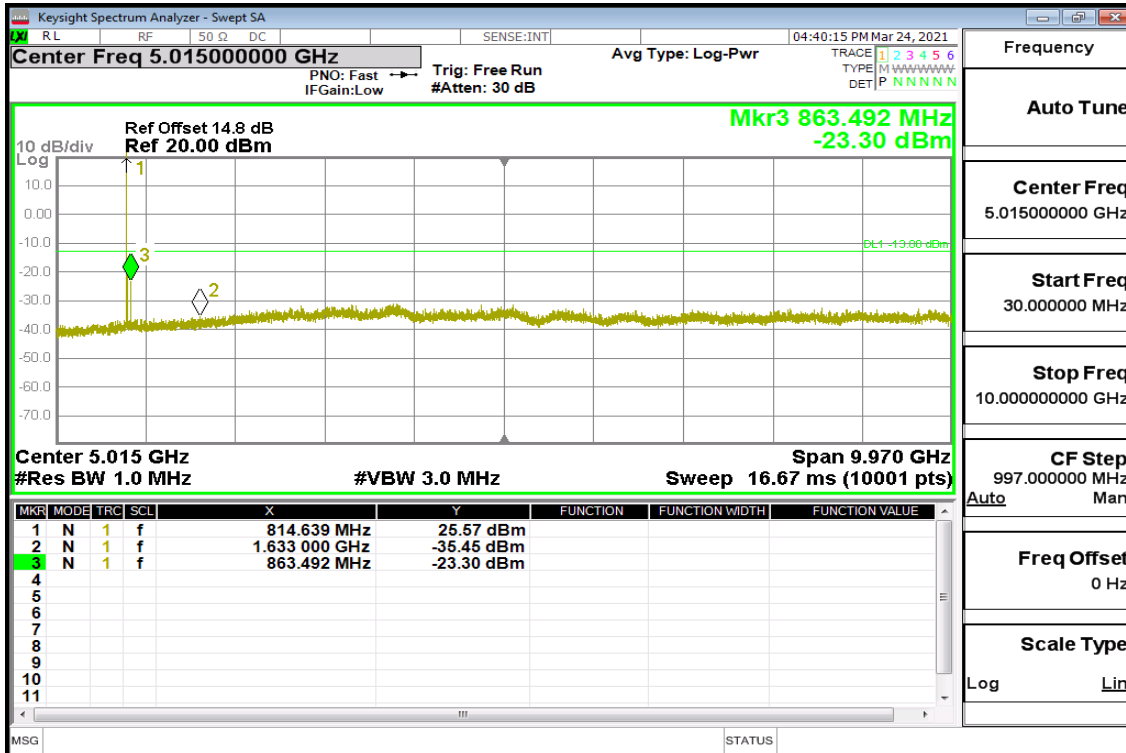
CH High



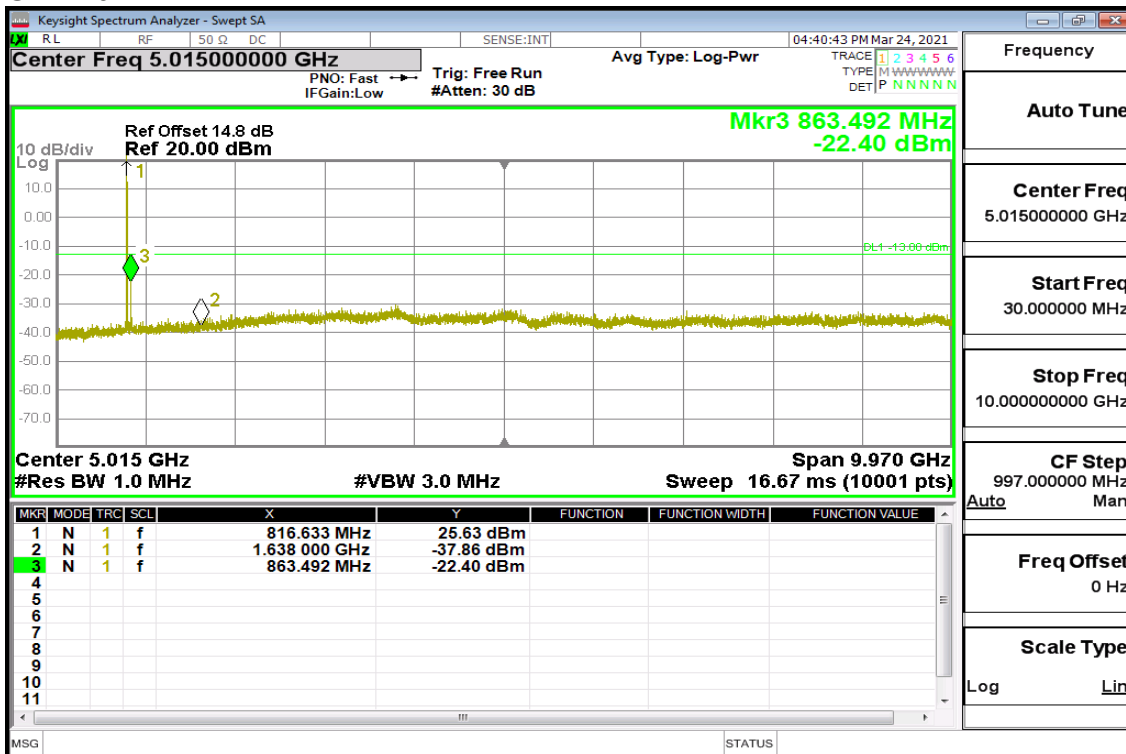


Report No.: T201102D09-RP14

CHANNEL BANDWIDTH: 5MHz / QPSK / RB =1, RB Offset = 0
CH Low



CH Mid



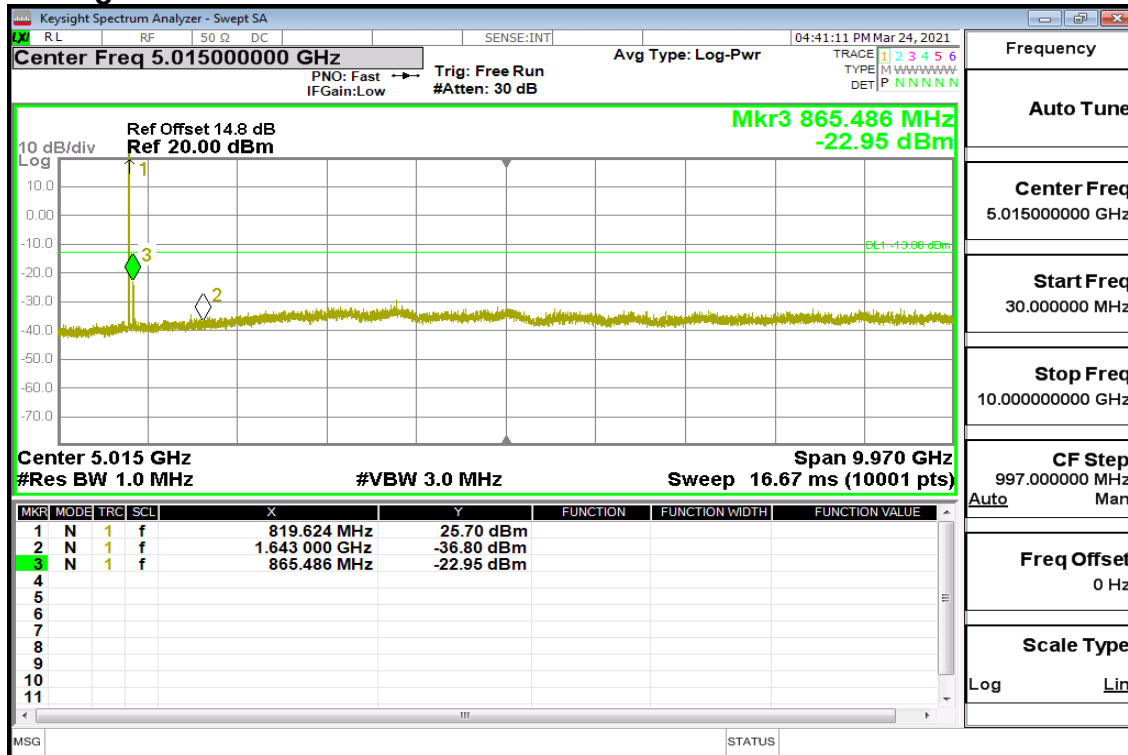


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CH High



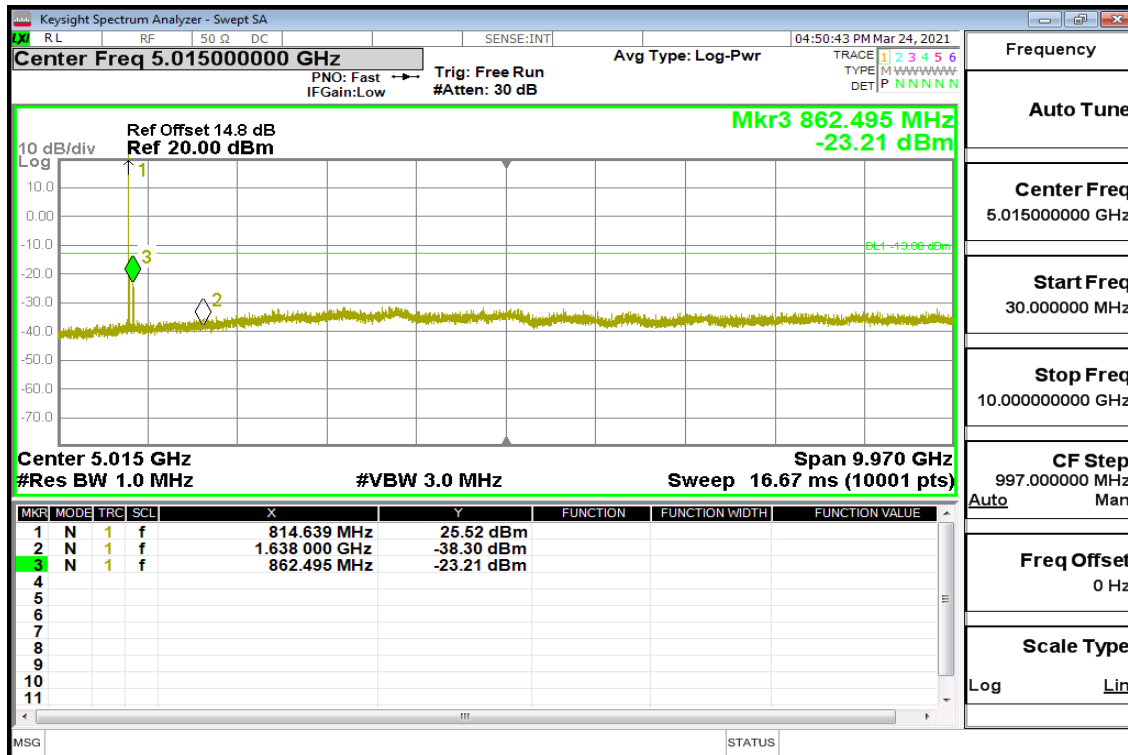


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CHANNEL BANDWIDTH: 10MHz / QPSK / RB =1, RB Offset = 0
CH Mid



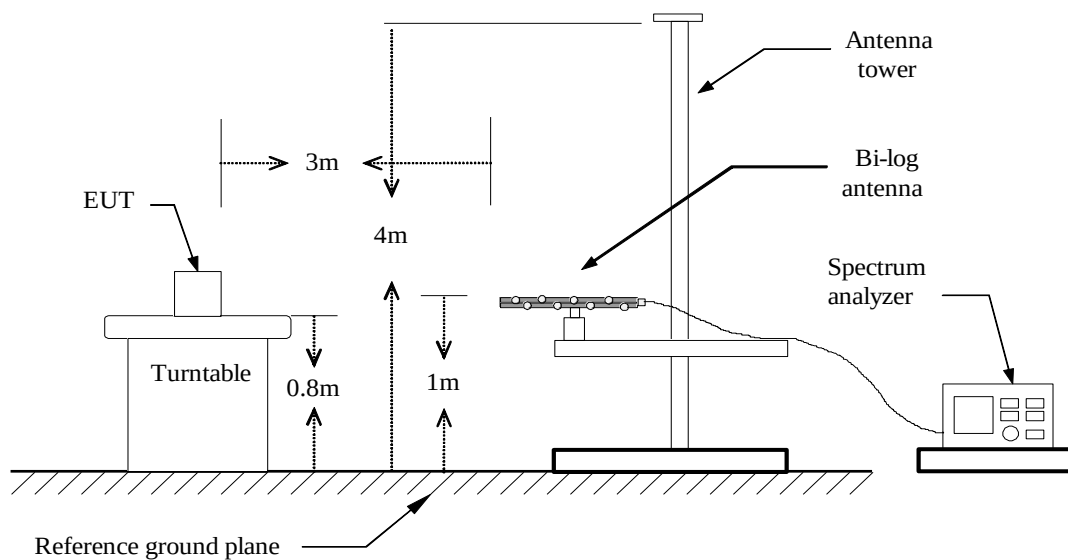
8.6 SPURIOUS RADIATION MEASUREMENT

LIMIT

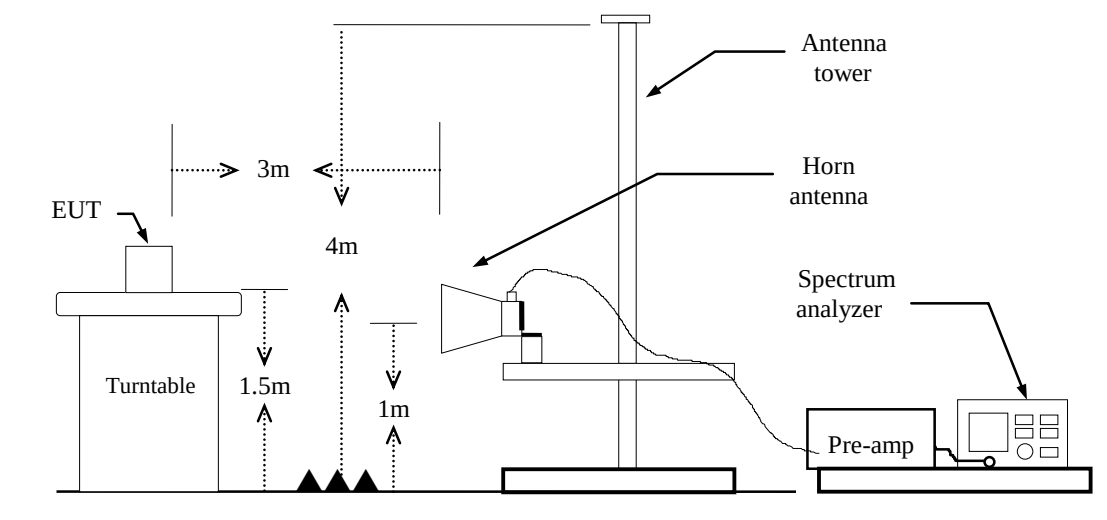
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

Test Configuration

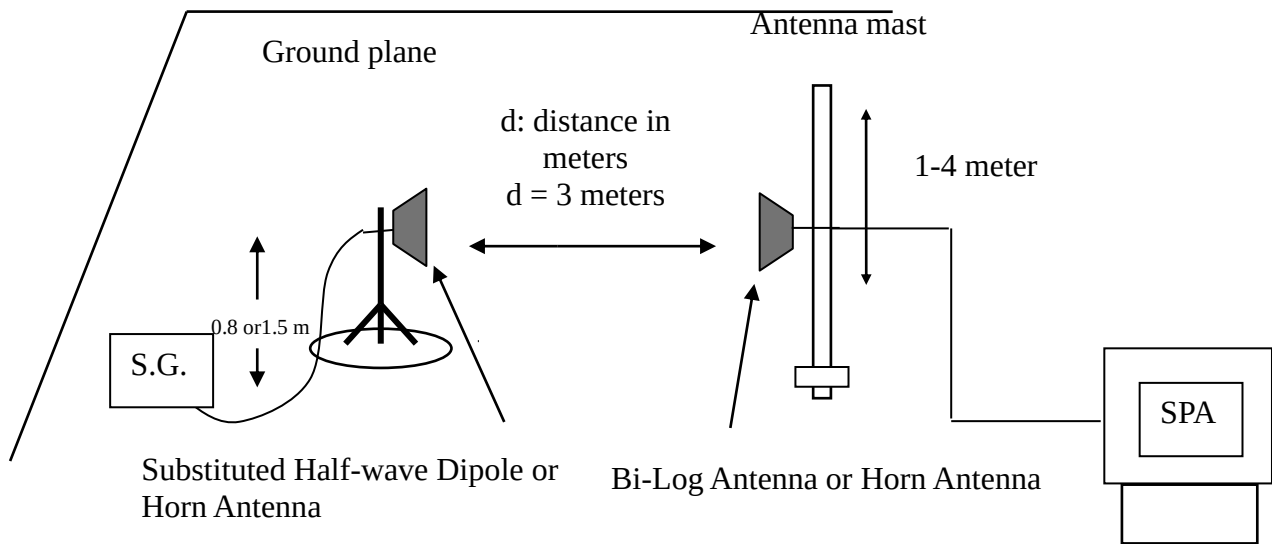
Below 1 GHz



Above 1 GHz



Substituted Method Test Set-up



TEST PROCEDURE

1. According to KDB 971168 D01 and ANSI C63.26.
2. The EUT was placed on a turntable
 - (1) Below 1G : 0.8m
 - (2) Above 1G : 1.5m
 - (3) EUT set 3m from the receiving antenna
 - (4) The table was rotated 360 degrees of the highest spurious emission to determine the position.
3. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
4. A horn antenna was driven by a signal generator.
5. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission

Test Results**LTE Band 26 / BW: 10MHz / QPSK / RB =1, RB Offset = 0****Operation Mode:** Tx / Mid CH**Test Date:**

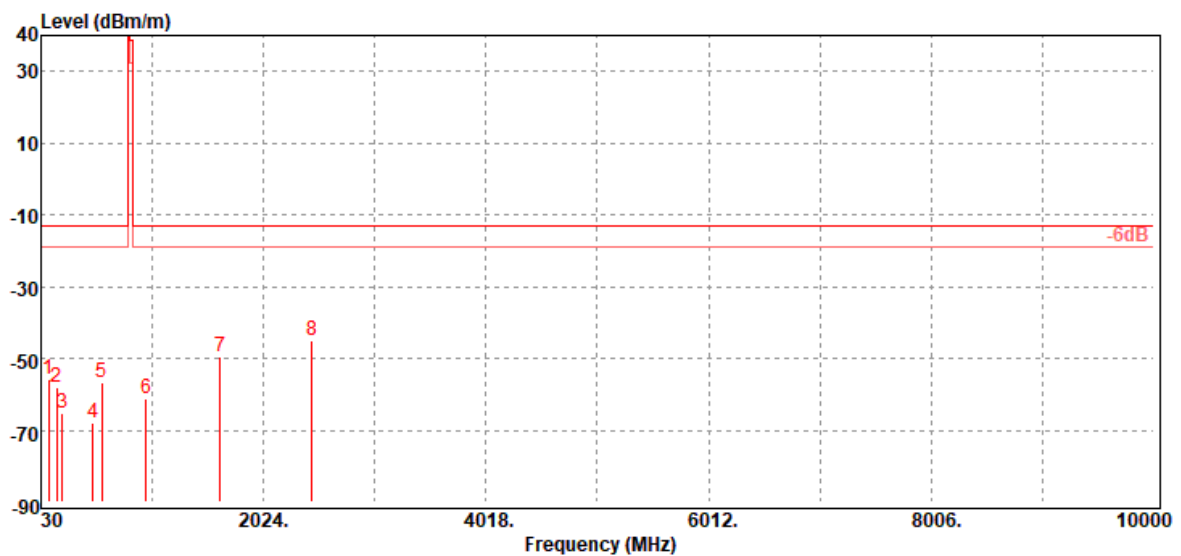
June 18, 2021

Temperature: 20.6°C**Tested by:**

Ray Li

Humidity: 65% RH**Polarity:**

Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
94.99	-55.75	-47.65	-7.30	-0.80	-13.00	-42.75	V
172.59	-58.20	-51.98	-5.14	-1.08	-13.00	-45.20	V
219.15	-65.04	-61.80	-2.02	-1.22	-13.00	-52.04	V
493.66	-67.77	-63.87	-2.05	-1.85	-13.00	-54.77	V
575.14	-56.84	-53.43	-1.40	-2.01	-13.00	-43.84	V
968.96	-61.19	-57.25	-1.30	-2.64	-13.00	-48.19	V
1638.00	-49.47	-52.20	5.82	-3.09	-13.00	-36.47	V
2457.00	-44.98	-46.88	5.73	-3.83	-13.00	-31.98	V

Operation Mode: Tx / Mid CH

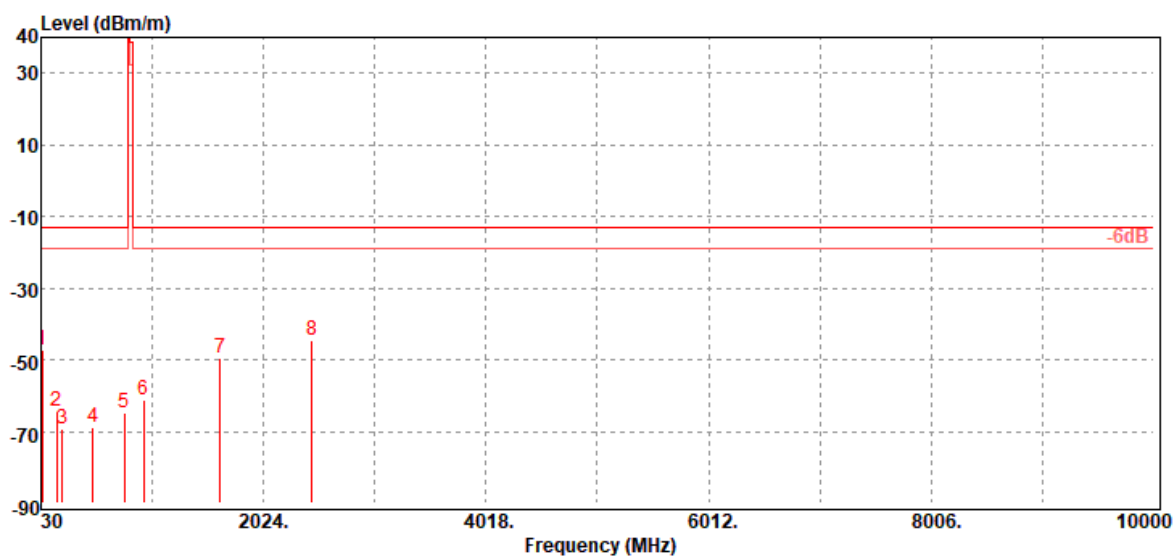
Test Date: June 18, 2021

Temperature: 20.6°C

Tested by: Ray Li

Humidity: 65% RH

Polarity: Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
41.64	-47.30	-28.16	-18.62	-0.52	-13.00	-34.30	H
172.59	-64.56	-58.34	-5.14	-1.08	-13.00	-51.56	H
219.15	-69.34	-66.10	-2.02	-1.22	-13.00	-56.34	H
498.51	-69.05	-65.18	-2.00	-1.87	-13.00	-56.05	H
773.99	-64.86	-61.12	-1.40	-2.34	-13.00	-51.86	H
946.65	-61.23	-57.42	-1.20	-2.61	-13.00	-48.23	H
1638.00	-49.42	-52.15	5.82	-3.09	-13.00	-36.42	H
2457.00	-44.73	-46.63	5.73	-3.83	-13.00	-31.73	H

- End of Test Report -