



FCC ID: M82-AIM75L
Report No.: T201102D09-RP15

IC: 9404A-AIM75L

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Rev.: 00

**FCC 47 CFR PART 27 SUBPART D
&
INDUSTRY CANADA RSS-195**

TEST REPORT

For

Tablet PC

Model No.:

**FCC: 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)**

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**

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.: FCC: 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)
IC: AIM-75S-6; AIM-75H-6

Date of Test: March 5 ~ August 26, 2021

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR PART 27 SUBPART D & RSS-195 Issue 2	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 was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.26-2015 and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rule FCC PART 27 Subpart D, and IC RSS-195 Issue 2.

The test results of this report relate only to the tested sample identified in this report.

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-6XXXXXXXXXXXXXXXXXX; AIM-75H-6XXXXXXXXXXXXXXXXXX; AIM75S-6XXXXXXXXXXXXXXXXXX; AIM75H-6XXXXXXXXXXXXXXXXXX (where "X" may be any alphanumeric character, "-" or blank) IC: AIM-75S-6; AIM-75H-6			
Model Discrepancy	Please see remark as below.			
Model:	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 30 Channel Bandwidth: 5MHz	2307.5MHz ~2312.5MHz		
	LTE Band 30 Channel Bandwidth: 10MHz	2310 MHz		
Modulation Technique	LTE Band 30	QPSK, 16QAM, 64QAM		
Transmit Power (EIRP Power)	LTE Band 30 Channel Bandwidth: 5MHz	QPSK	25.73	dBm
		16QAM	24.78	dBm
		64QAM	23.65	dBm
	LTE Band 30 Channel Bandwidth: 10MHz	QPSK	25.75	dBm
		16QAM	24.80	dBm
		64QAM	23.79	dBm

Antenna Specification	Antenna type: PIFA 1. YAGEO / 6036B0281601/ Main (TX) Band 30: 2.14 dBi 2. YAGEO / 6036B0281701/ Aux Band 30: 0.76 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-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 of ANSI C63.26: 2015, FCC CFR 47, Part 2 and Part 27 Subpart D.

The tests documented in this report were performed in accordance with IC RSS-195.

3.3 DESCRIPTION OF TEST TYPE

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.

3.4 DESCRIPTION OF TEST MODES

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 30: 2307.5MHz ~ 2312.5MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	5MHz		10MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	27685	2307.5		
Middle channel (M)	27710	2310	27710	2310
High channel (H)	27735	2312.5		

3.5 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 SUMMERY

FCC Rules	IC Rules	Report Section	Description Of Test	Result
-	-	2	Antenna Requirement	Pass
§27.50(a)(3)	RSS-195 §5.5	8.1	EIRP measurement	Pass
§2.1055(a)(1) §27.54	RSS-195 §5.4	8.2	Frequency Stability v.s. temperature measurement	Pass
§2.1049(h)	RSS-GEN §6.7	8.3	Occupied Bandwidth Measurement	Pass
§27.50(a)(1)(B)	RSS-195 §5.5	8.4	Peak to Average Ratio	Pass
§2.1051 §27.53(a)(4)	RSS-GEN §6.13 RSS-195 §5.6	8.5	Out of Band Emission at Antenna Terminals	Pass
§2.1053 §27.53(a)(4)	RSS-GEN §6.13 RSS-195 §5.6	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, 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 $k=2$.

6. FACILITIES AND ACCREDITATIONS

6.3 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 Registration number: 2324G

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

6.4 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

7.3 SETUP CONFIGURATION OF EUT

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

7.4 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 EIRP MEASUREMENT

LIMIT

According to FCC §2.1046

FCC 27.50 (a) LTE 30

(3) for mobile and portable stations compliant with 3GPP LTE standards transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band are limited to 250 mW/ 5MHz EIRP but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth.

RSS-195 §5.5

The e.i.r.p. of mobile or portable equipment transmitting in the band 2305-2315 MHz or the band 2350-2360 MHz, employing 3GPP LTE (Third Generation Part-nership Project Long Term Evolution) standards, shall not exceed 250 mW within any 5 MHz bandwidth. For other technologies, the e.i.r.p. shall not exceed 50 mW within any 1 MHz bandwidth

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.

Report No.: T201102D09-RP15

TEST RESULTS

Temperature: 25°C

Humidity: 57% RH

Tested by: Jerry Chang

Test Date: May 25, 2021

LTE Band 30

LTE Band 30_Uplink frequency band : 2305 to 2315 MHz											
BW (MHz)	RB Size	RB Offset	Conducted power(dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 27685	CH-Mid 27710	CH-High 27735	CH-Low 27685	CH-Mid 27710	CH-High 27735	CH-Low 27685	CH-Mid 27710	CH-High 27735
			2307.5 MHz	2310 MHz	2312.5 MHz	2307.5 MHz	2310 MHz	2312.5 MHz	2307.5 MHz	2310 MHz	2312.5 MHz
5	1	0	23.55	23.53	23.59	22.6	22.61	22.64	21.42	21.51	21.35
	1	24	23.06	23.04	23.1	22.25	22.23	22.29	21.21	21.29	21.02
	12	6	22.15	22.13	22.19	21.15	21.13	21.19	20.12	20.15	20.16
	25	0	22.58	22.56	22.62	21.29	21.27	21.33	20.11	20.15	20.07

LTE Band 30_Uplink frequency band : 2305 to 2315 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low 27685	CH-Mid 27710	CH-High 27735	CH-Low 27685	CH-Mid 27710	CH-High 27735	CH-Low 27685	CH-Mid 27710	CH-High 27735
			2307.5 MHz	2310 MHz	2312.5 MHz	2307.5 MHz	2310 MHz	2312.5 MHz	2307.5 MHz	2310 MHz	2312.5 MHz
5	1	0	25.69	25.67	25.73	24.74	24.75	24.78	23.56	23.65	23.49
	1	24	25.2	25.18	25.24	24.39	24.37	24.43	23.35	23.43	23.16
	12	6	24.29	24.27	24.33	23.29	23.27	23.33	22.26	22.29	22.3
	25	0	24.72	24.7	24.76	23.43	23.41	23.47	22.25	22.29	22.21

LTE Band 30_Uplink frequency band : 2305 to 2315 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
				27710			27710			27710	
			MHz	2310 MHz	MHz	MHz	2310 MHz	MHz	MHz	2310 MHz	MHz
10	1	0		23.61			22.66			21.65	
	1	49		23.12			22.31			21.47	
	25	12		22.21			21.21			20.17	
	50	0		22.64			21.35			20.23	

LTE Band 30_Uplink frequency band : 2305 to 2315 MHz											
BW (MHz)	RB Size	RB Offset	EIRP (dBm)								
			QPSK			16QAM			64QAM		
			CH-Low	CH-Mid	CH-High	CH-Low	CH-Mid	CH-High	CH-Low	CH-Mid	CH-High
				27710			27710			27710	
			MHz	2310 MHz	MHz	MHz	2310 MHz	MHz	MHz	2310 MHz	MHz
10	1	0		25.75			24.8			23.79	
	1	49		25.26			24.45			23.61	
	25	12		24.35			23.35			22.31	
	50	0		24.78			23.49			22.37	

8.2 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

LIMIT

According to FCC §2.1055, FCC §27.54

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

According to RSS-195,

The applicant shall ensure frequency stability by showing that the occupied bandwidth is maintained within the range of the operating frequency blocks when testing under the temperature and supply voltage variations specified for the frequency stability measurement in RSS-Gen.

Test Procedure

Use Anritsu 8820 with frequency Error measurement capability.

Temp = -30 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

Temperature: 25°C

Humidity: 57% RH

Tested by: Jerry Chang

Test Date: May 25, 2021

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:**LTE Band 30**

Reference Freq.:		LTE B30 Mid Channel		2310 MHz	10M QPSK CH 27710
Power Supply Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)	
Freq. ERROR vs. VOLTAGE					
5.5	25	2309.999959	-41	5775	
5	25	2310.000058	58	5775	
4.75	25	2310.000006	6	5775	
3.7 (End Point)	25	2310.000013	13	5775	
Freq. ERROR vs. Temp.					
5	-30	2310.000034	34	5775	
5	-20	2310.000067	67	5775	
5	-10	2310.000008	8	5775	
5	0	2309.999952	-48	5775	
5	10	2309.999942	-58	5775	
5	20	2309.999995	-5	5775	
5	30	2309.999940	-60	5775	
5	40	2310.000022	22	5775	
5	50	2310.000026	26	5775	

8.3 OCCUPIED BANDWIDTH MEASUREMENT

LIMIT

For Reporting purposes only.

TEST PROCEDURES

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

TEST RESULTS

Temperature: 25.3°C

Humidity: 57.6% RH

Tested by: Jerry Chang

Test Date: March 5, 2021

LTE Band 30

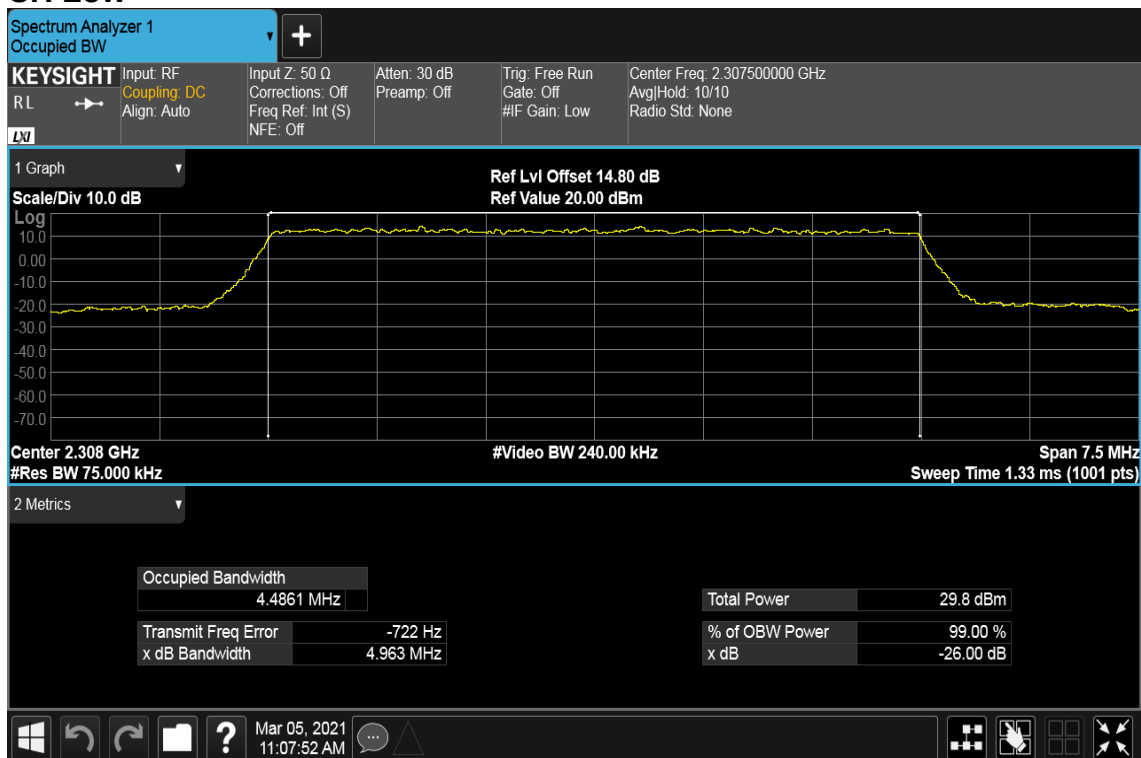
LTE BAND 30 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2307.5	27685	4.4861	4.4880	4.4843	4.963	4.949	4.937
2310.0	27710	4.4844	4.4872	4.4891	4.955	4.948	4.934
2312.5	27735	4.4834	4.4860	4.4833	4.968	4.955	4.934

LTE BAND 30 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2310.0	27710	8.9834	8.9325	8.9667	9.750	9.734	9.779

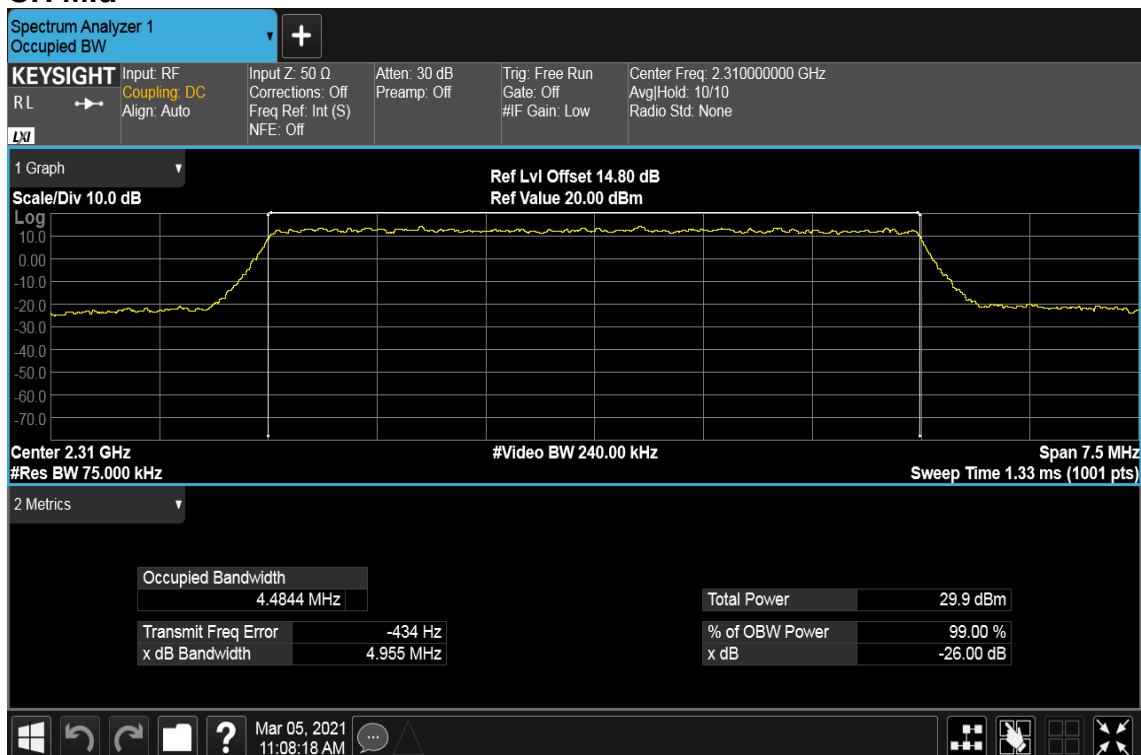
LTE Band 30

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

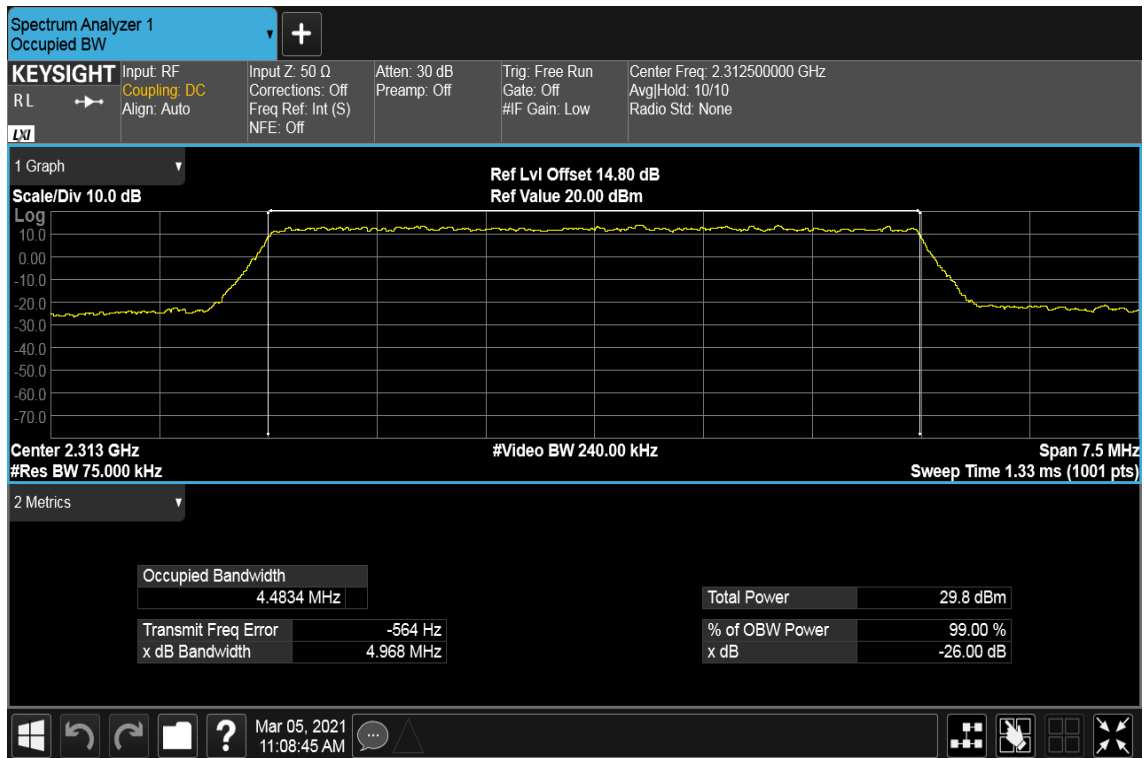
CH Low



CH Mid

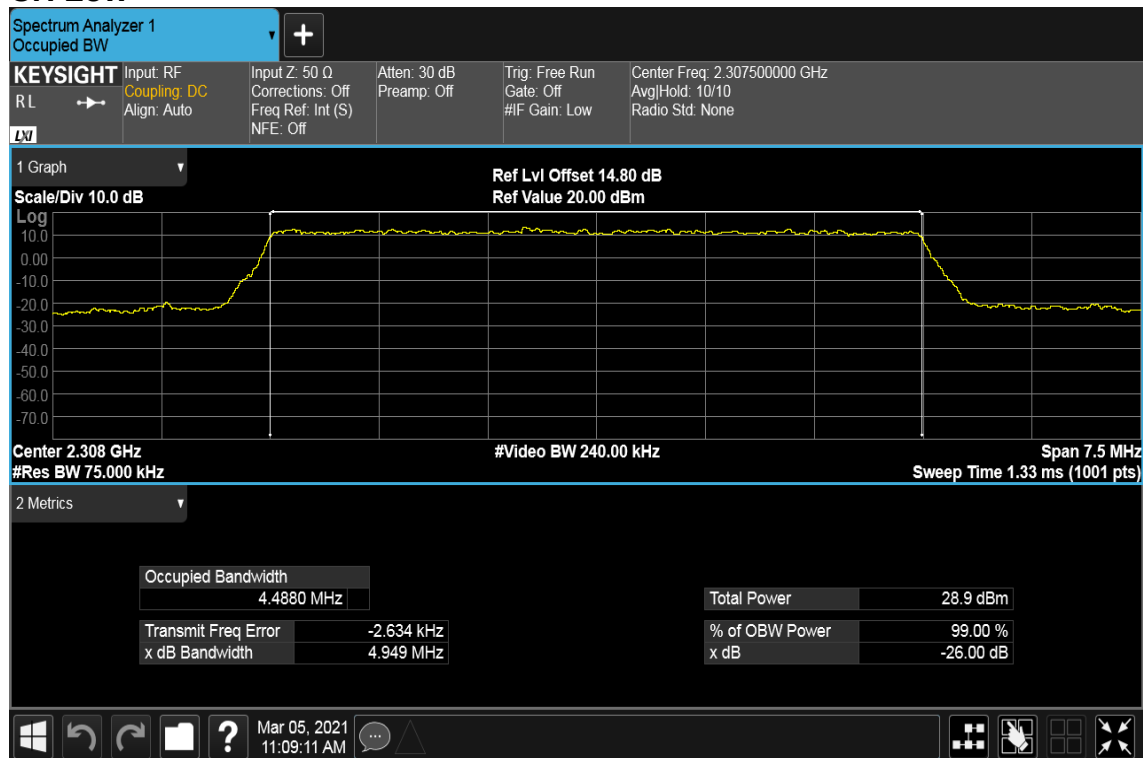


CH High

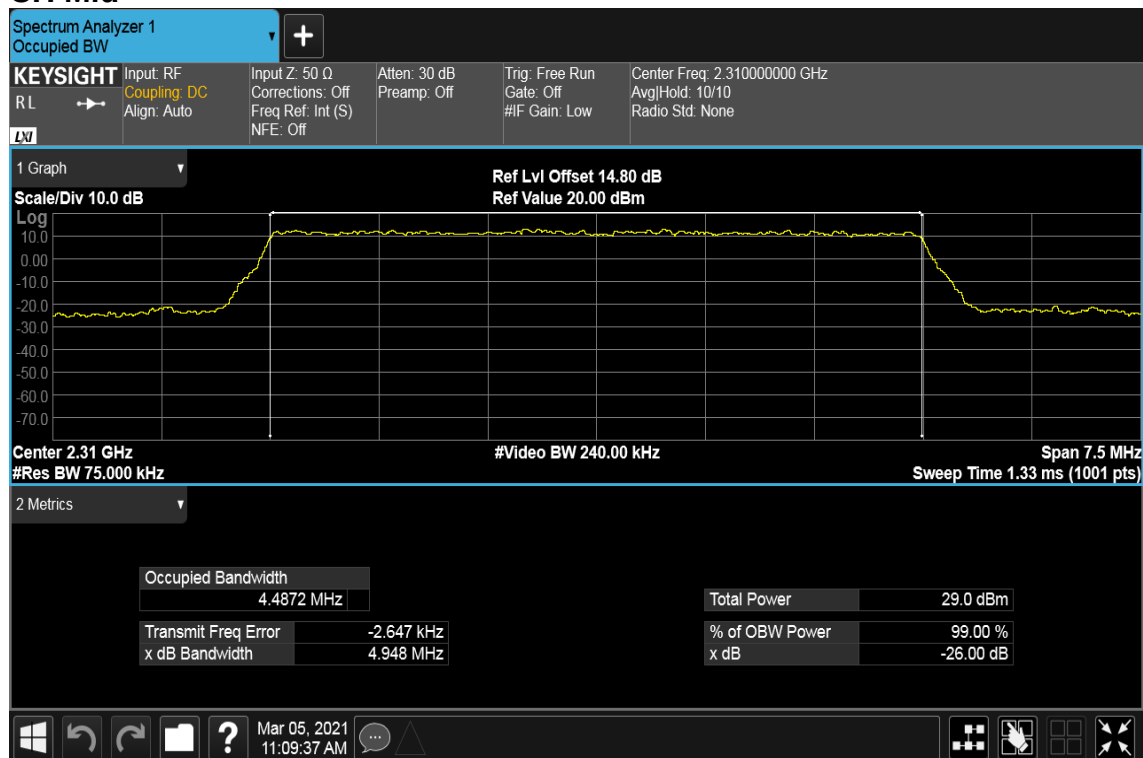


CHANNEL BANDWIDTH: 5MHz / 16QAM / RB =25, RB Offset = 0

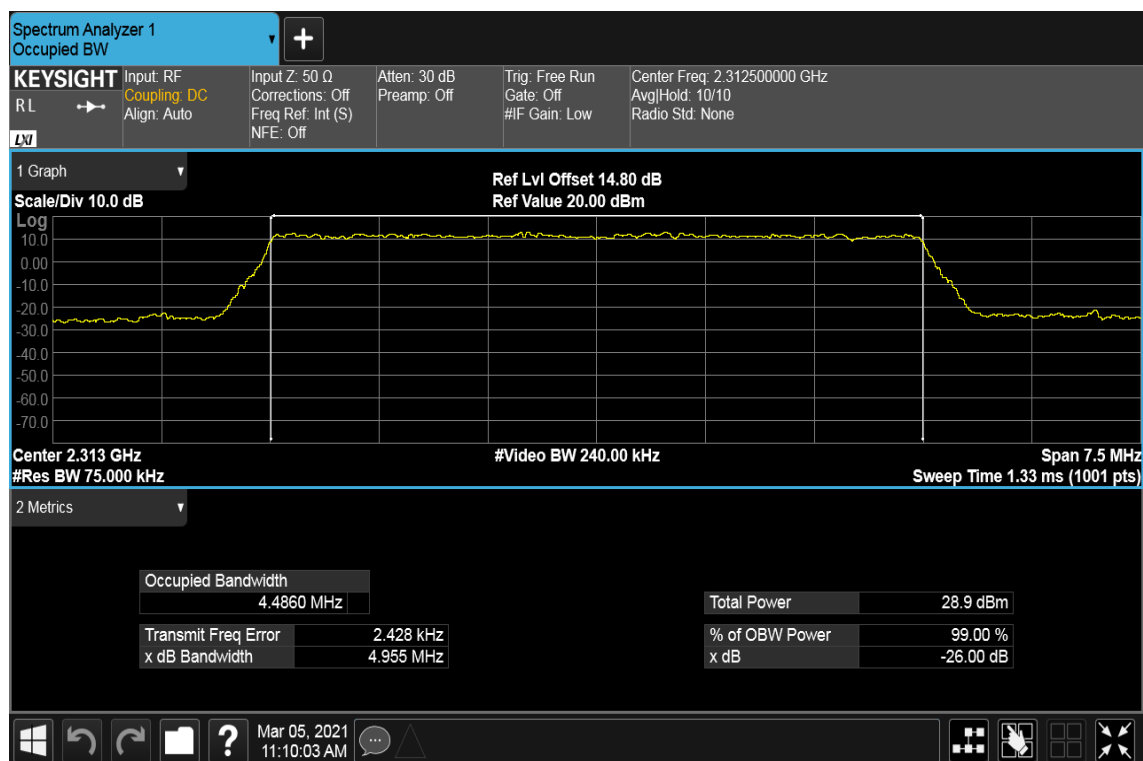
CH Low



CH Mid

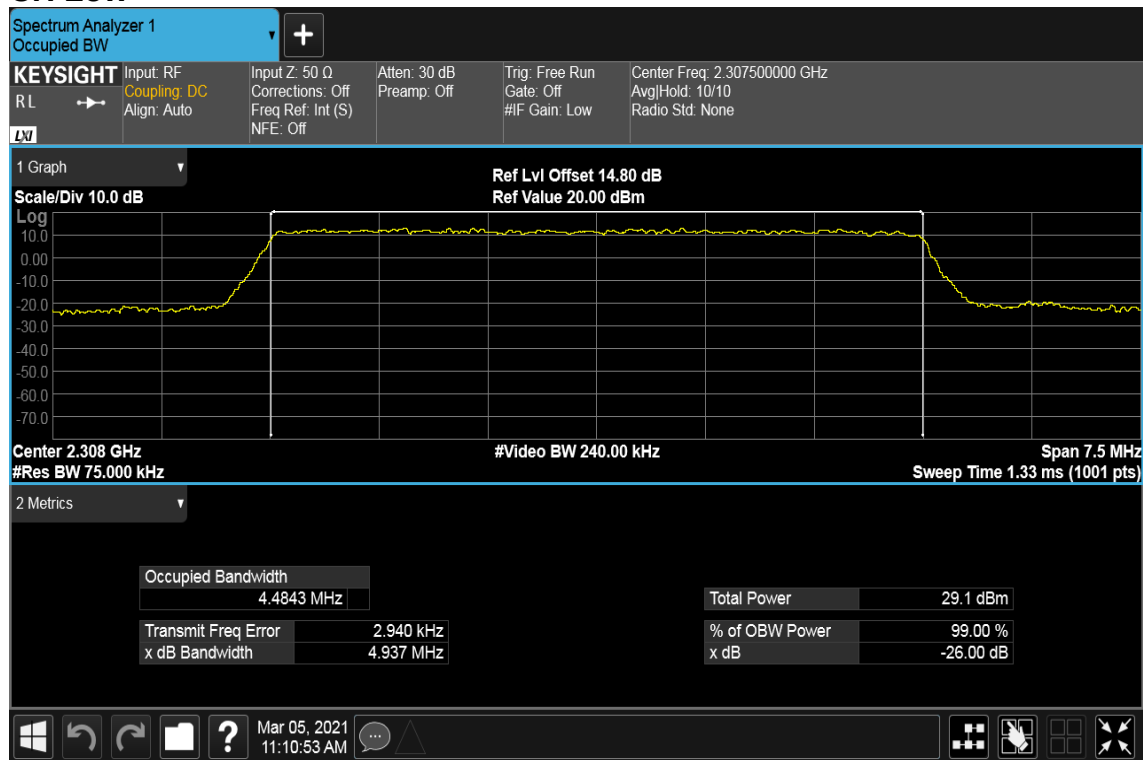


CH High

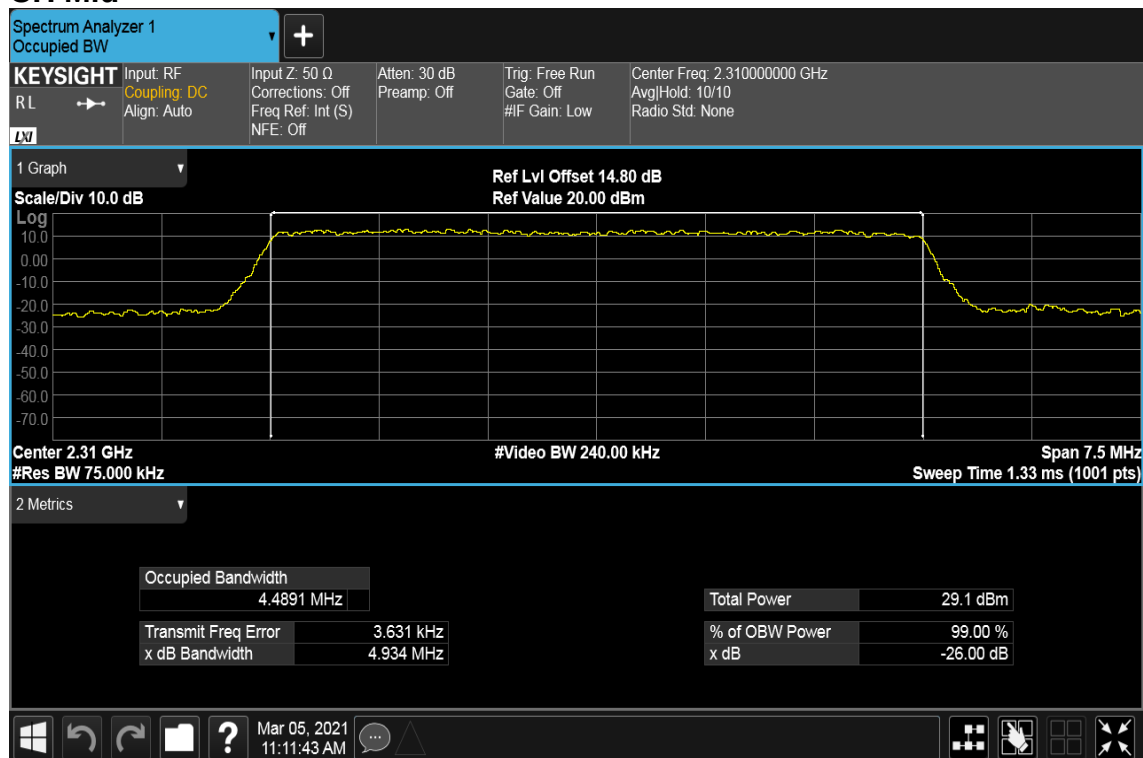


CHANNEL BANDWIDTH: 5MHz / 64QAM / RB =25, RB Offset = 0

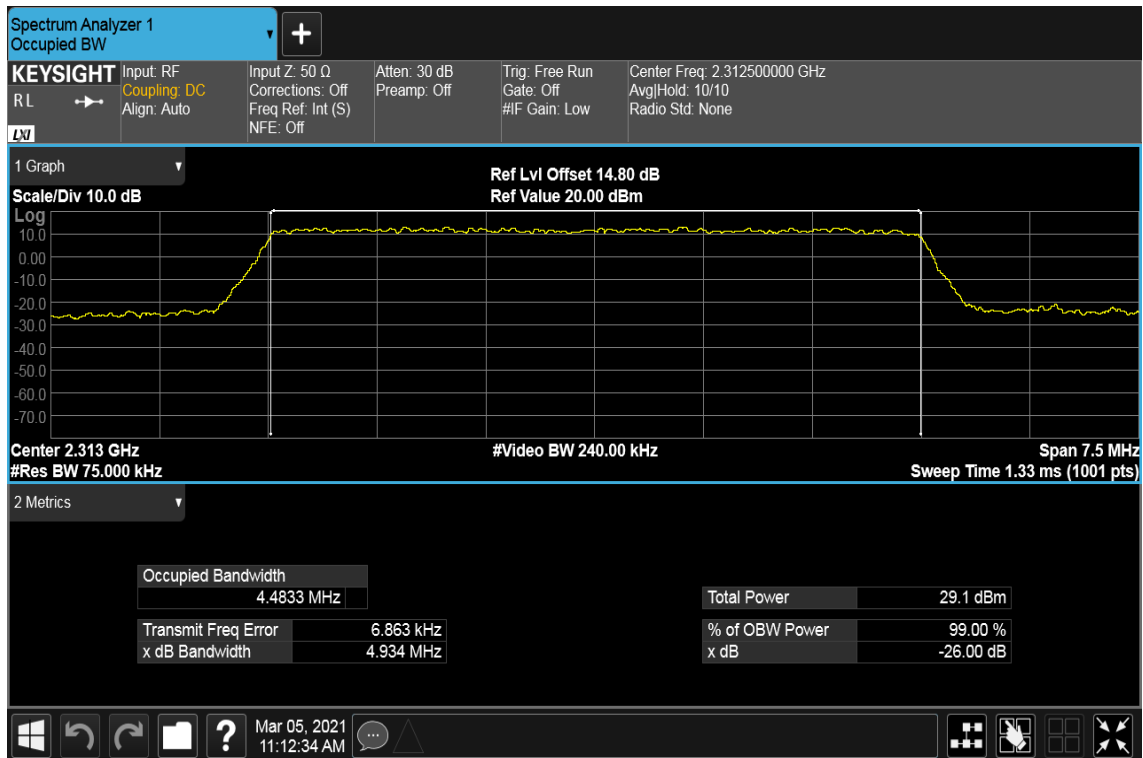
CH Low



CH Mid

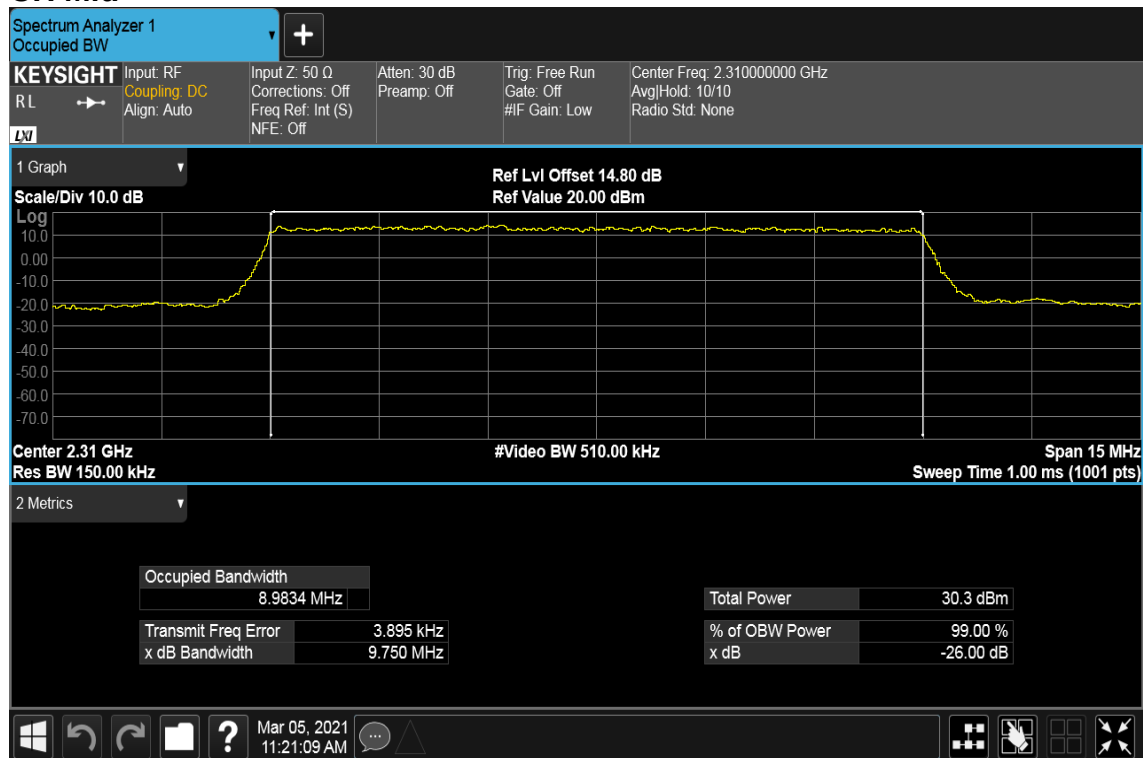


CH High



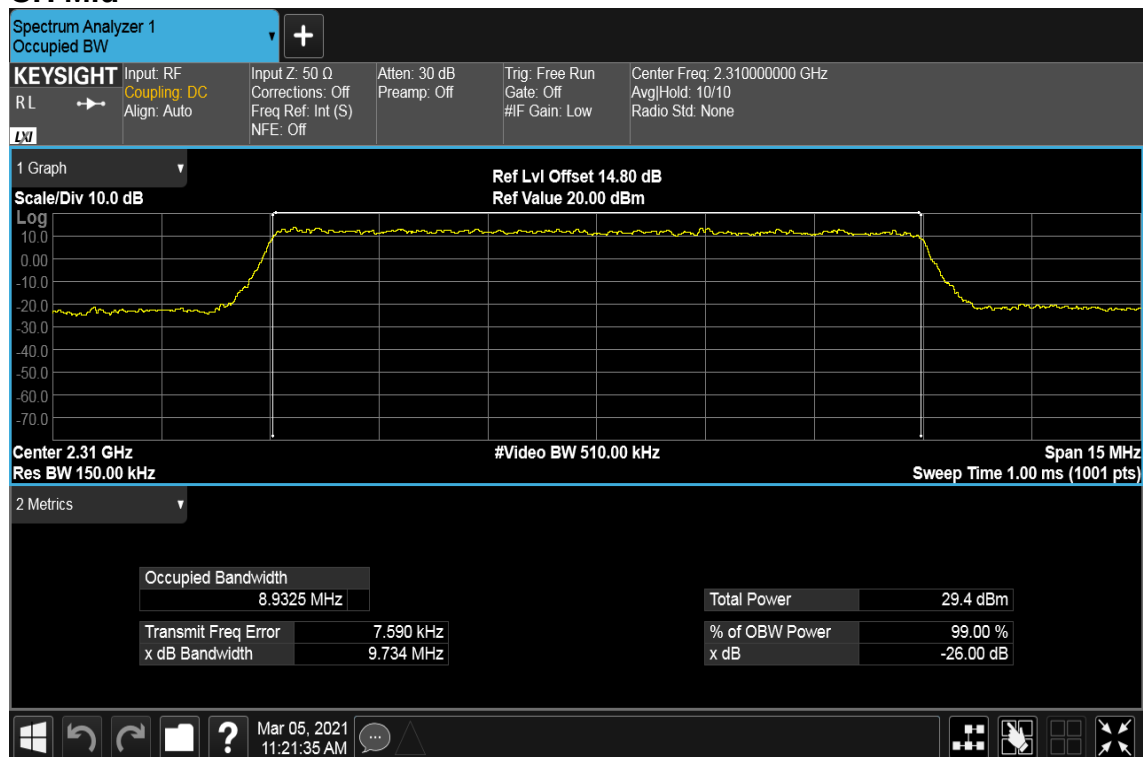
CHANNEL BANDWIDTH: 10MHz / QPSK / RB =50, RB Offset = 0

CH Mid



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

CH Mid

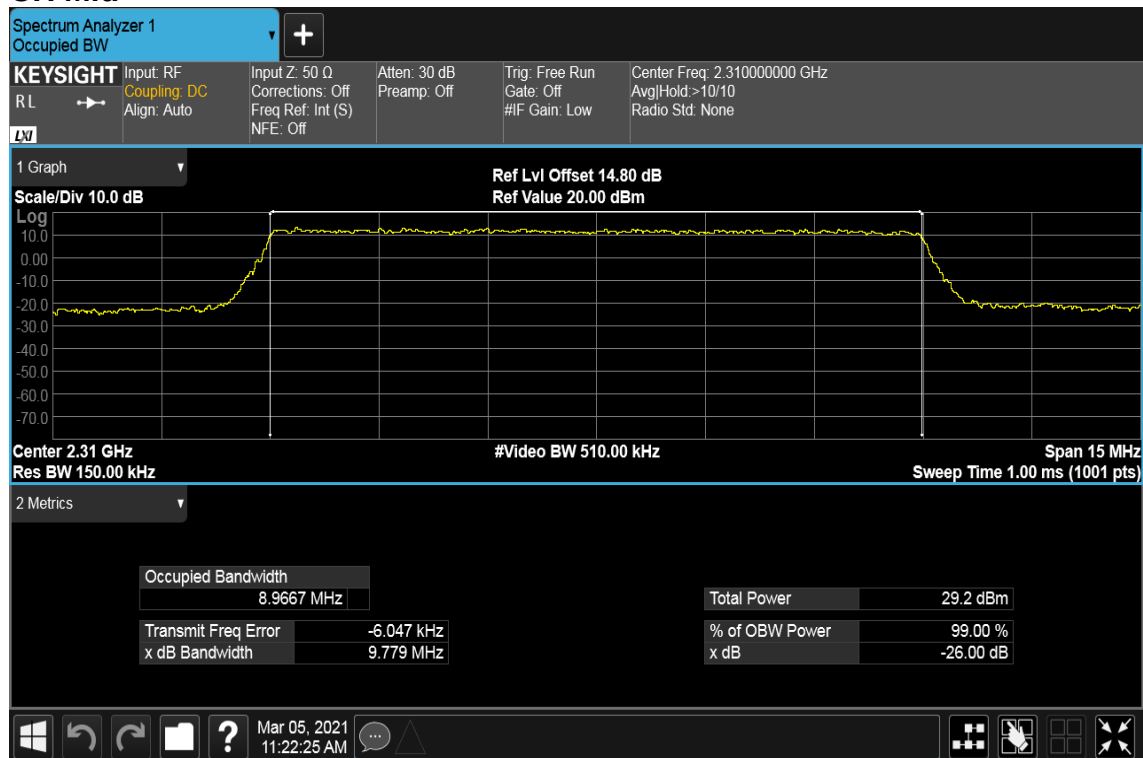


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CHANNEL BANDWIDTH: 10MHz / 64QAM / RB =50, RB Offset = 0

CH Mid



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

Test Results**Temperature:** 25.3°C**Humidity:** 57.6% RH**Tested by:** Jerry Chang**Test Date:** March 5, 2021**Temperature:** 25.8°C**Humidity:** 57.4% RH**Tested by:** Jerry Chang**Test Date:** August 26, 2021**LTE Band 30**

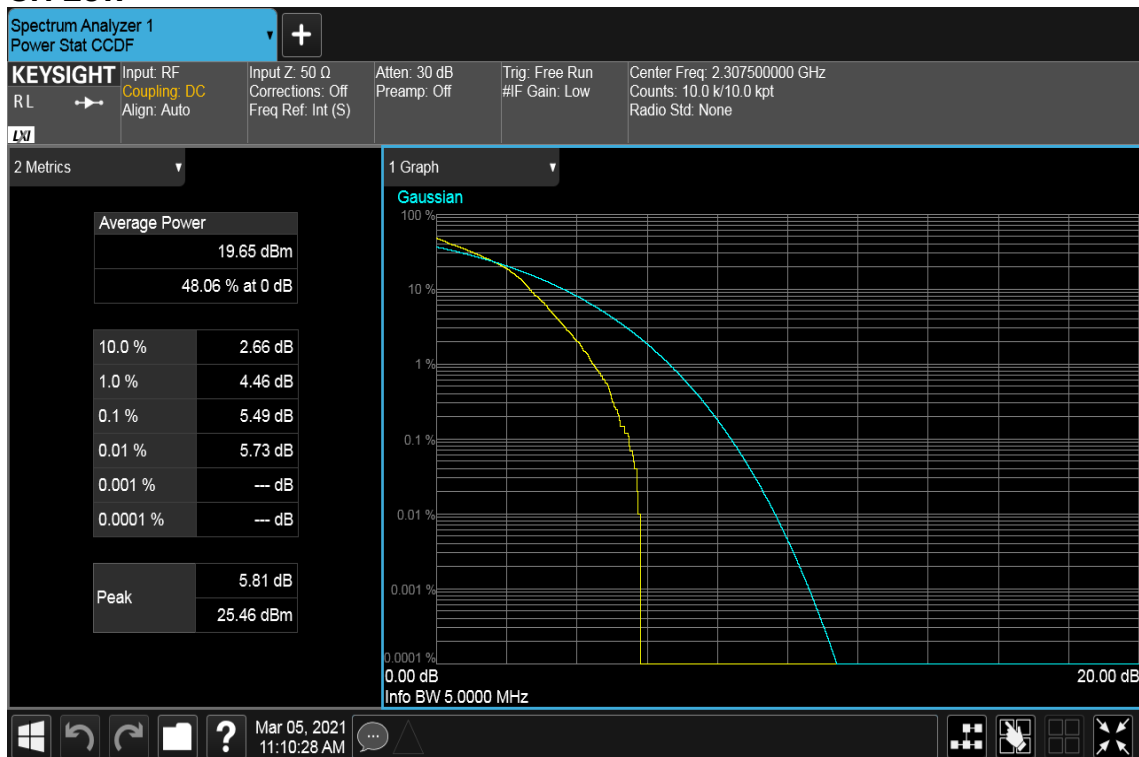
LTE BAND 30							
Channel bandwidth: 5MHz				Channel bandwidth: 10MHz			
Freq. (MHz)	CH	PAPR (dB)		Freq. (MHz)	CH	PAPR (dB)	
		64QAM	Limit			64QAM	Limit
2307.5	27685	5.49	13	2310.0	27710	5.07	13
2310.0	27710	5.47	13				
2312.5	27735	5.73	13				

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

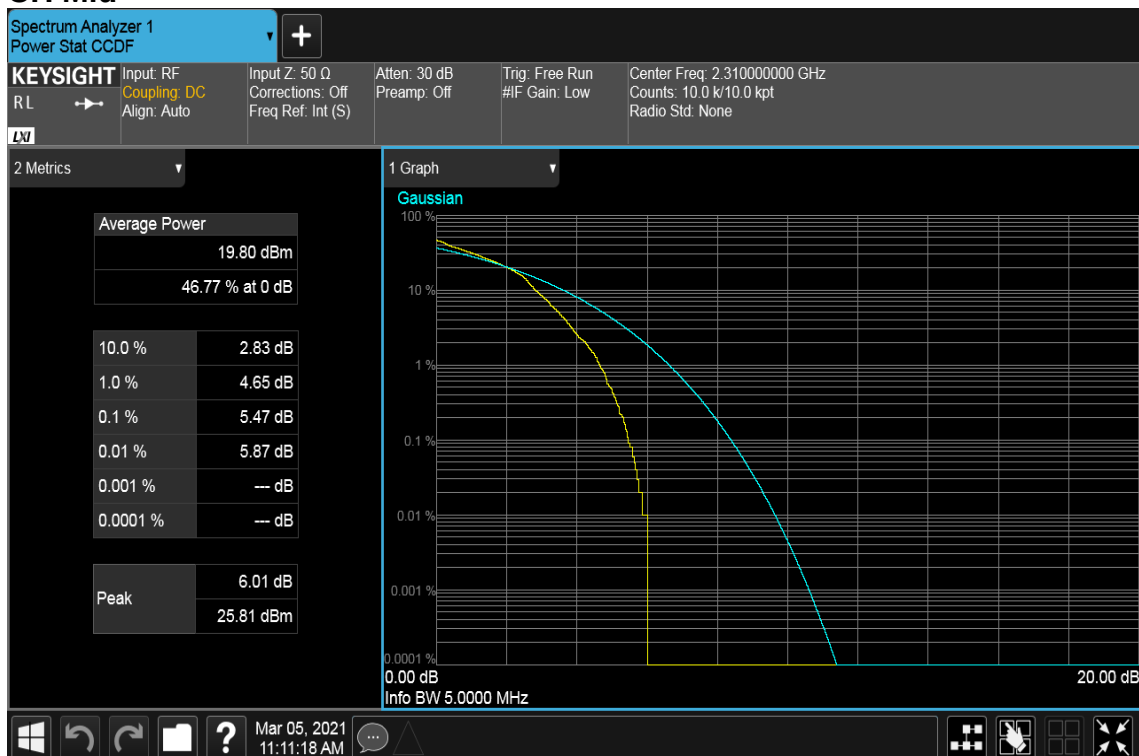
LTE Band 30

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

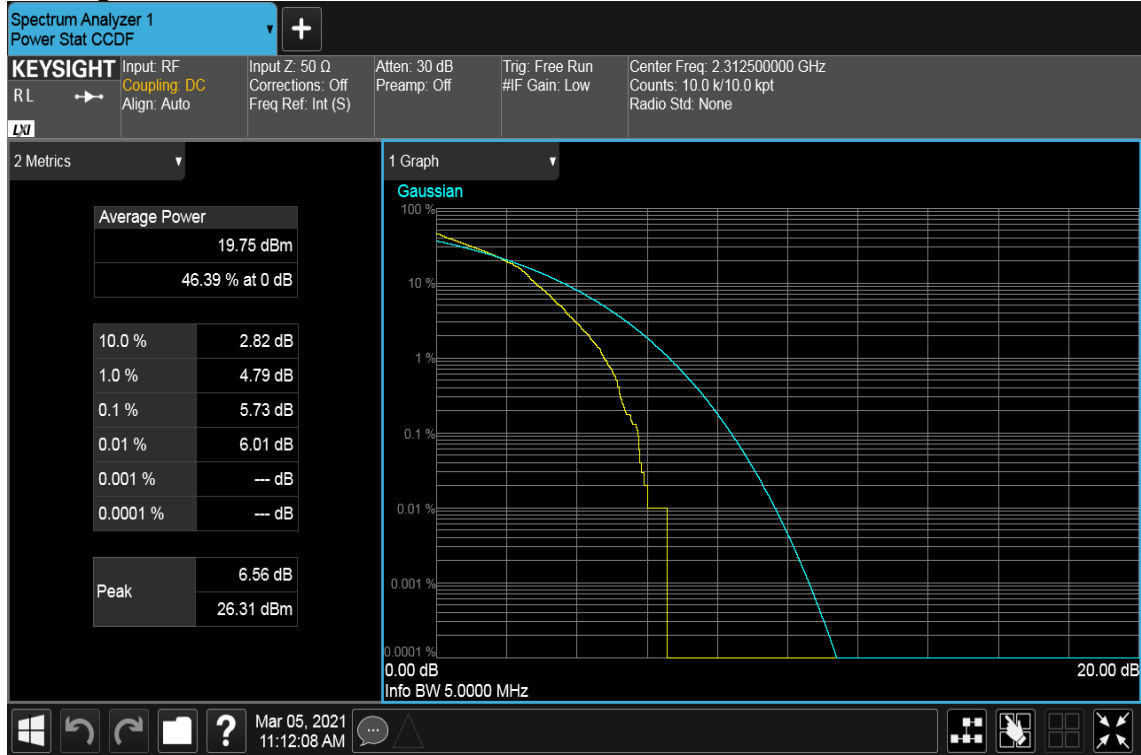
CH Low



CH Mid



CH High

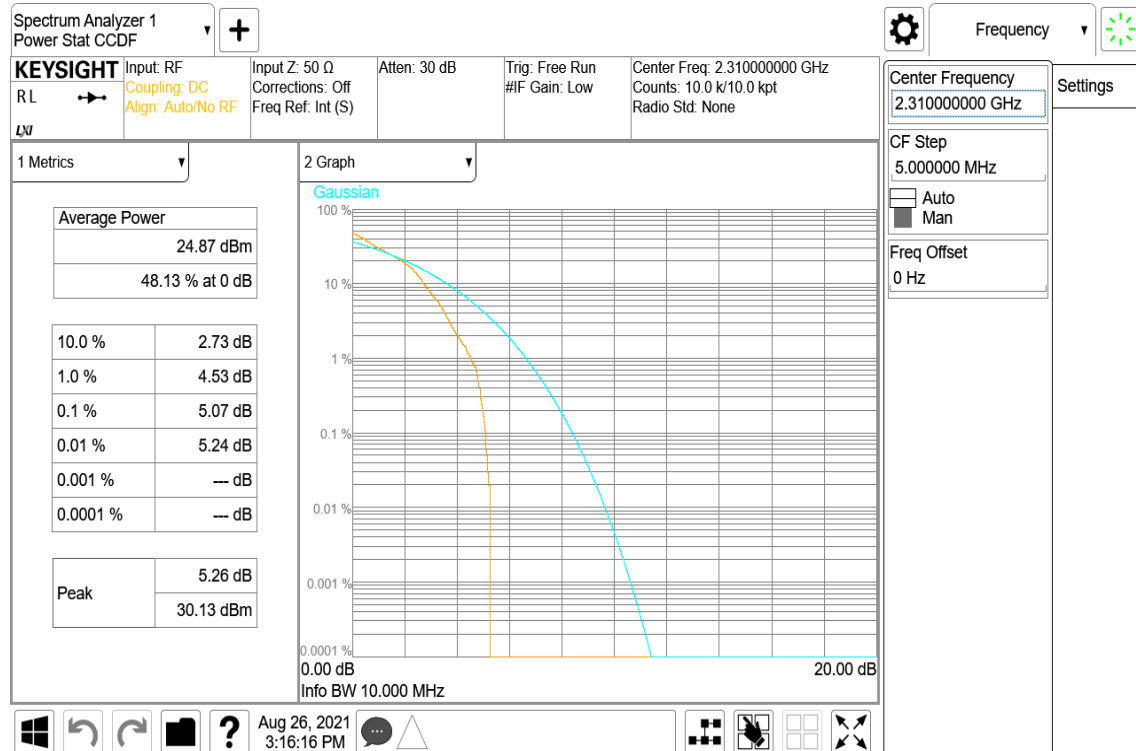


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CHANNEL BANDWIDTH: 10MHz / 64QAM / RB =50, RB Offset = 0

CH Mid



8.5 OUT OF BAND EMISSION AT ANTENNA TERMINALS

Limit

FCC §27.53(a)(4) for LTE B30

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

- (i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;
- (ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;
- (iii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log (P)$ dB above 2365 MHz.

ISED RSS-195 §5.6 for LTE B30

The power of any emission outside the frequency range(s) in which the equipment operates shall be attenuated below the transmitter power, P(dBW), by the amount indicated in Table 2, where p is the transmitter output power measured in watts.

Table 2 — Unwanted Emissions for Mobile, Portable and Low-Power Fixed Subscriber Equipment			
Frequency (MHz)	Attenuation (dB)	Frequency (MHz)	Attenuation (dB)
<2200	$43 + 10 \log_{10}(p)$	2324 - 2328	$61 + 10 \log_{10}(p)$
2200 - 2288	$70 + 10 \log_{10}(p)$	2328 - 2337	$67 + 10 \log_{10}(p)$
2288 - 2292	$67 + 10 \log_{10}(p)$	2337 - 2341	$61 + 10 \log_{10}(p)$
2292 - 2296	$61 + 10 \log_{10}(p)$	2341 - 2345	$55 + 10 \log_{10}(p)$
2296 - 2300	$55 + 10 \log_{10}(p)$	2345 - 2360	$43 + 10 \log_{10}(p)$
2300 - 2305	$43 + 10 \log_{10}(p)$	2360 - 2365	$43 + 10 \log_{10}(p)$
2305 - 2320	$43 + 10 \log_{10}(p)$ FootnoteNote	2365 - 2395	$70 + 10 \log_{10}(p)$
2320 - 2324	$55 + 10 \log_{10}(p)$	>2395	$43 + 10 \log_{10}(p)$

Note -- Mobile and portable equipment are prohibited from transmitting in the bands 2315-2320 MHz and 2345-2350 MHz. In addition, mobile and portable equipment employing FDD technology shall be restricted to transmitting in the band 2305-2315 MHz.

Test Procedures

For Conducted Emission

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

1. To connect Antenna Port of EUT to Spectrum.
2. Set RBW = 1MHz & VBW = 1MHz on Spectrum.
3. Allow trace to fully stabilize
4. Repeat above procedures until all default test channel measured were complete.

For Band Edge

1. To connect Antenna Port of EUT to Spectrum.
2. The band edge of low and high channels for the highest RF powers was measured. Setting RBW $\geq$ 1% EBW.
3. Allow trace to fully stabilize
4. Repeat above procedures until all default test channel measured were complete.

Test Results:

Temperature: 25.3°C

Humidity: 57.6% RH

Tested by: Jerry Chang

Test Date: March 5, 2021

Temperature: 25.8°C

Humidity: 57.4% RH

Tested by: Jerry Chang

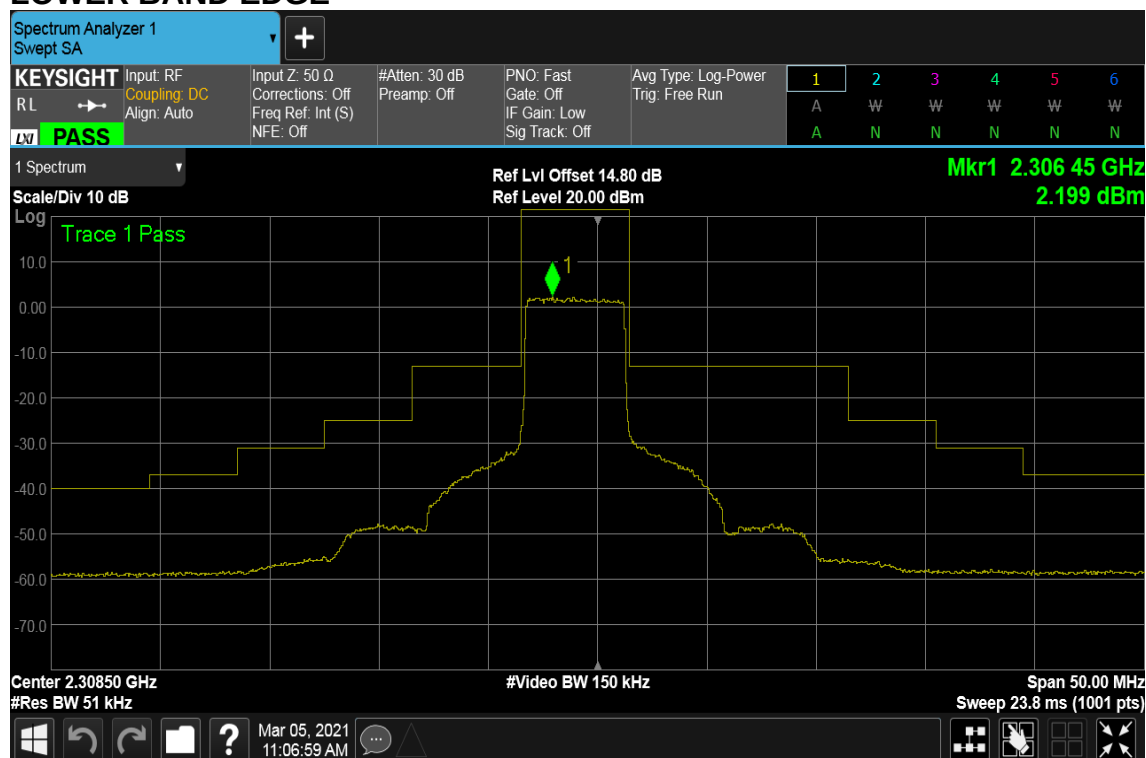
Test Date: August 26, 2021

Emission Mask

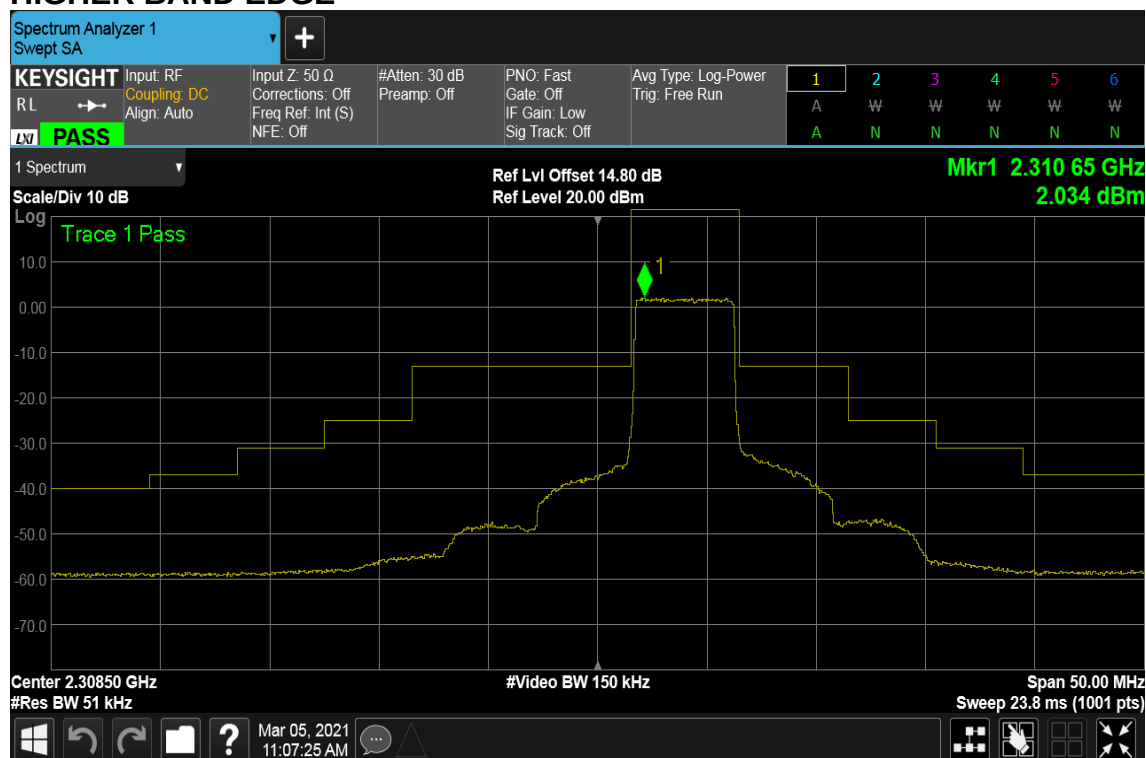
LTE Band 30

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

LOWER BAND EDGE



HIGHER BAND EDGE



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

LOWER BAND EDGE

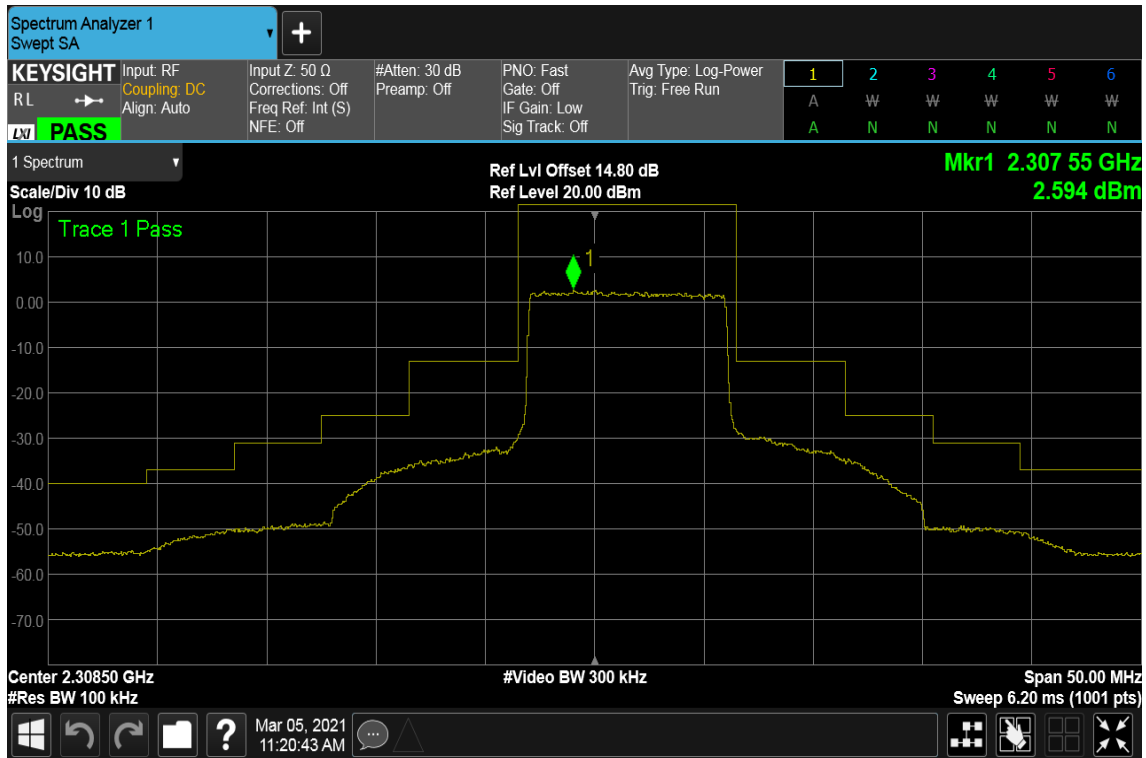


CHANNEL BANDWIDTH: 5MHz / QPSK / RB =1, RB Offset = 24

HIGHER BAND EDGE

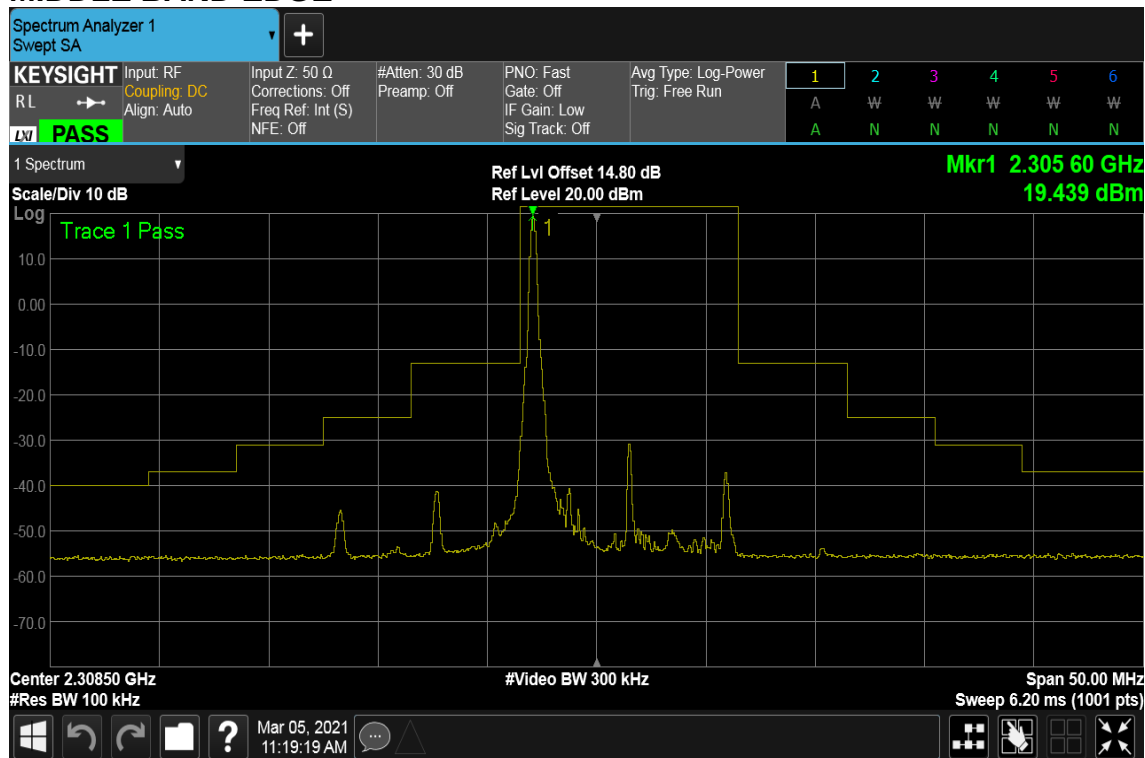


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Rev.: 00**CHANNEL BANDWIDTH: 10MHz / QPSK / RB =50, RB Offset = 0**
MIDDLE BAND EDGE

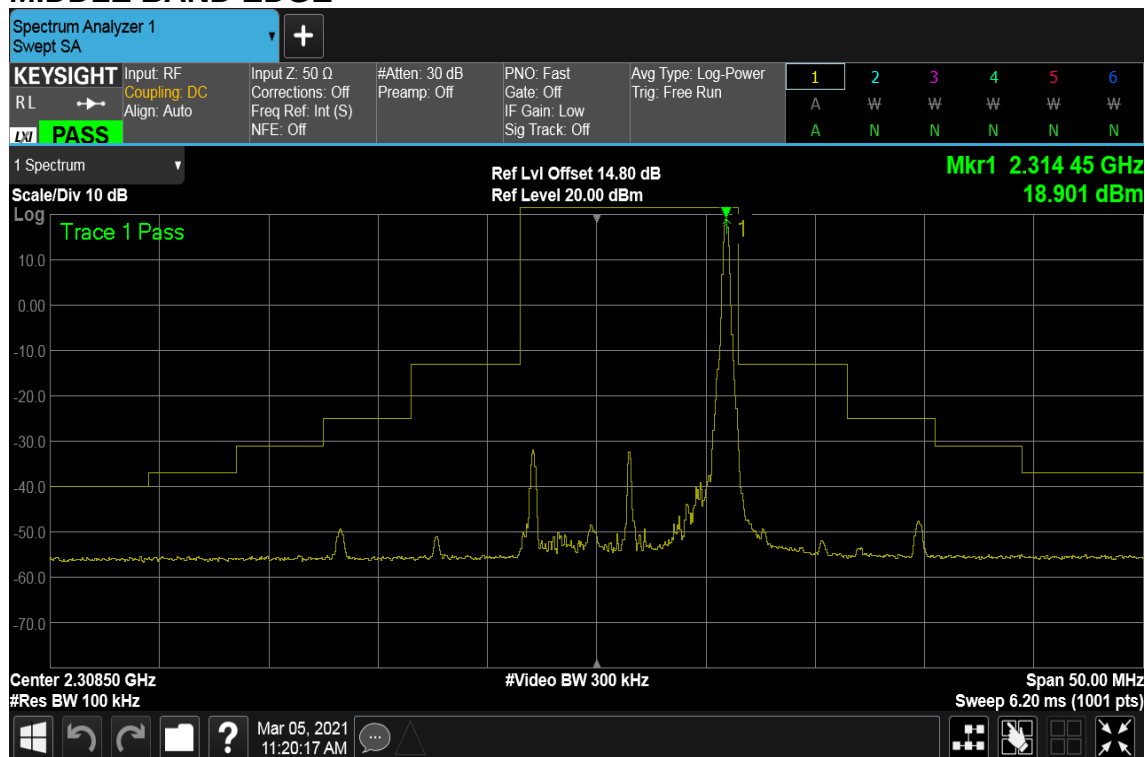
CHANNEL BANDWIDTH: 10MHz / QPSK / RB =1, RB Offset = 0

MIDDLE BAND EDGE



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

MIDDLE BAND EDGE

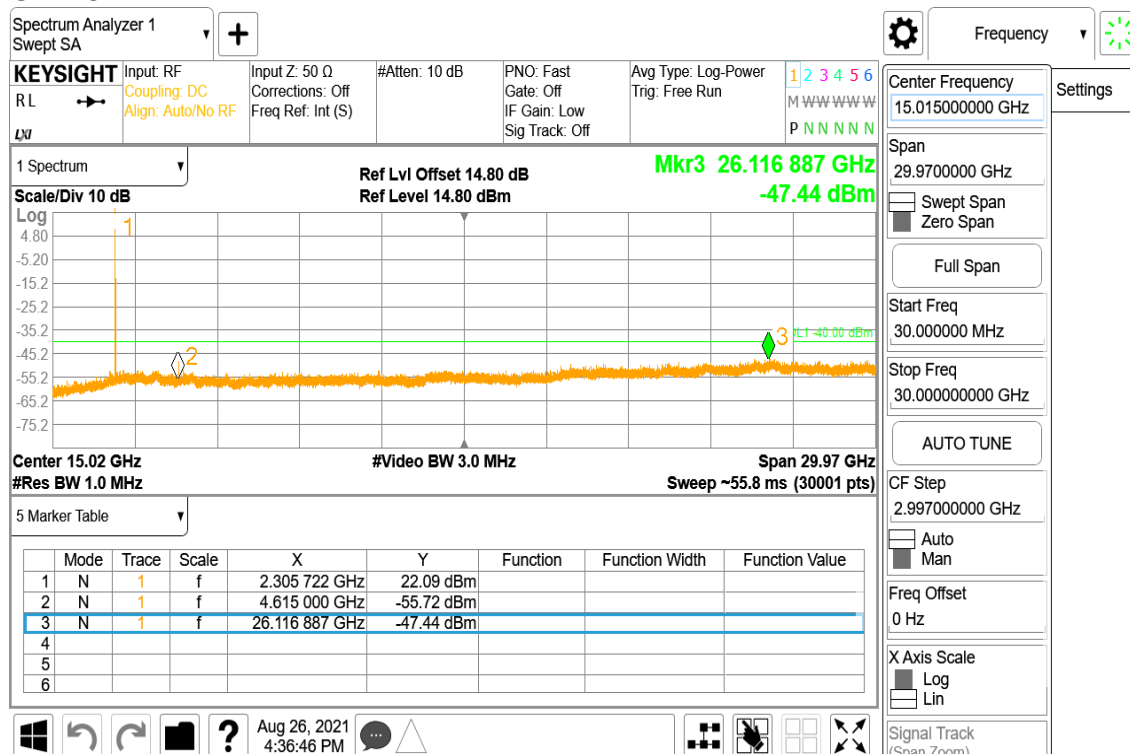


Spurious Emission

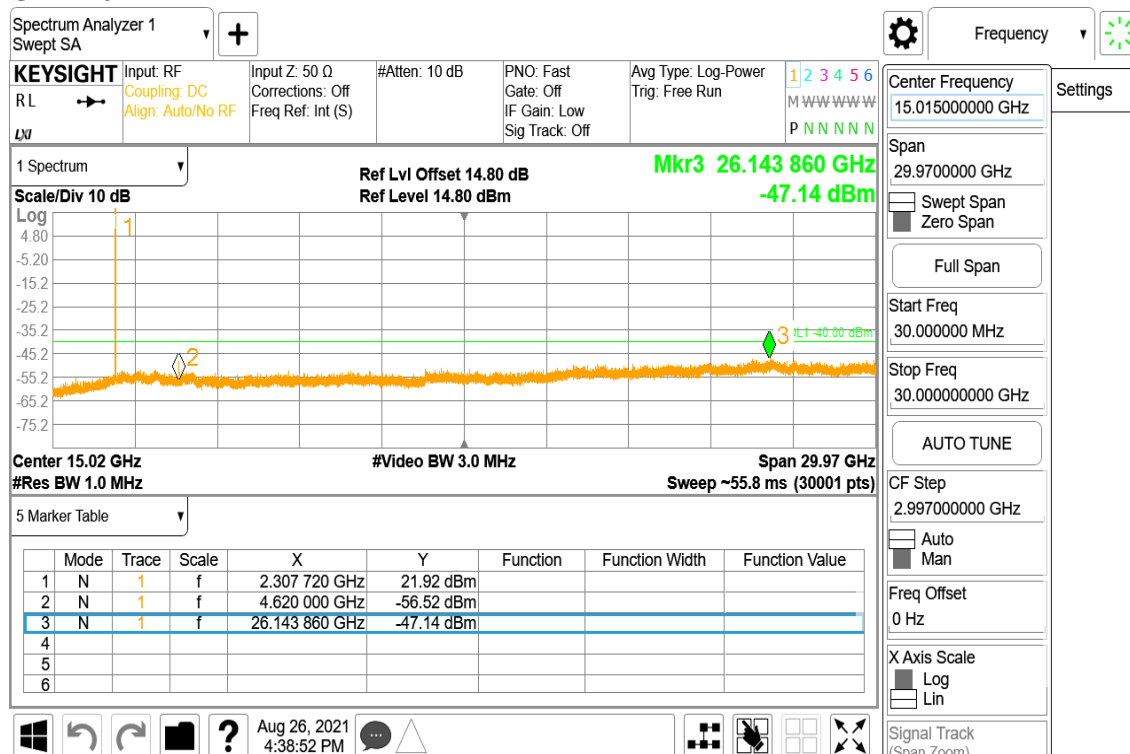
LTE Band 30

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

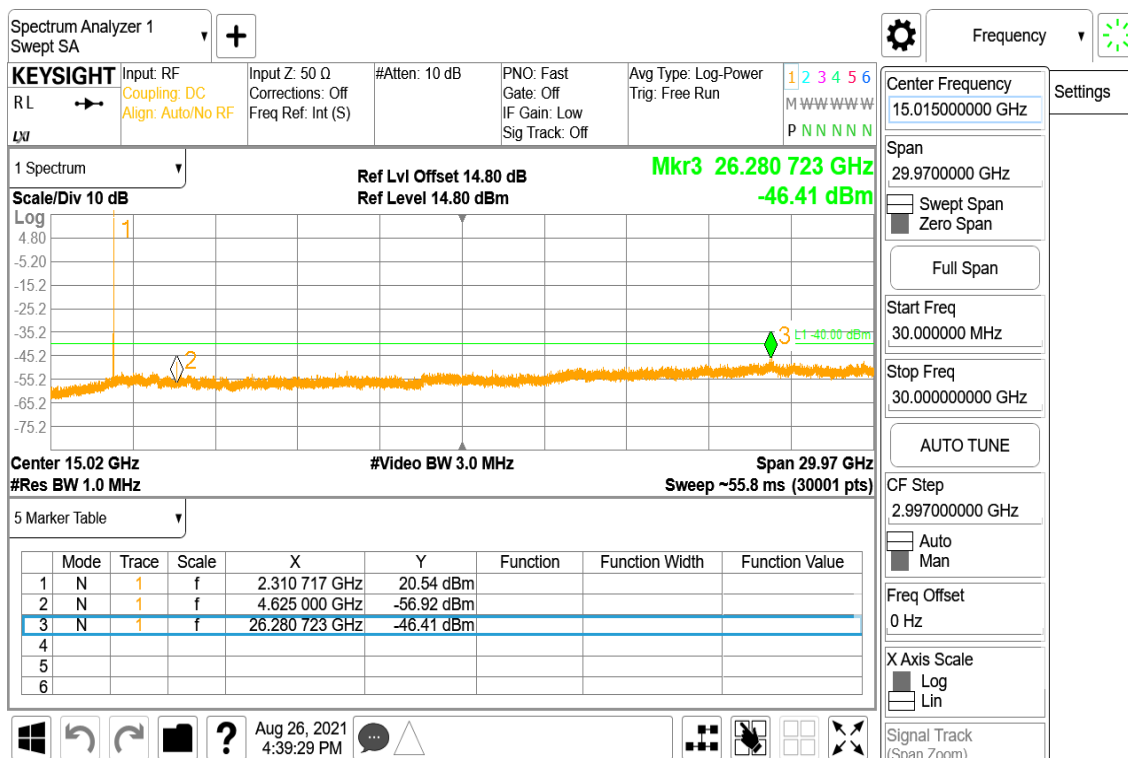
CH Low



CH Mid

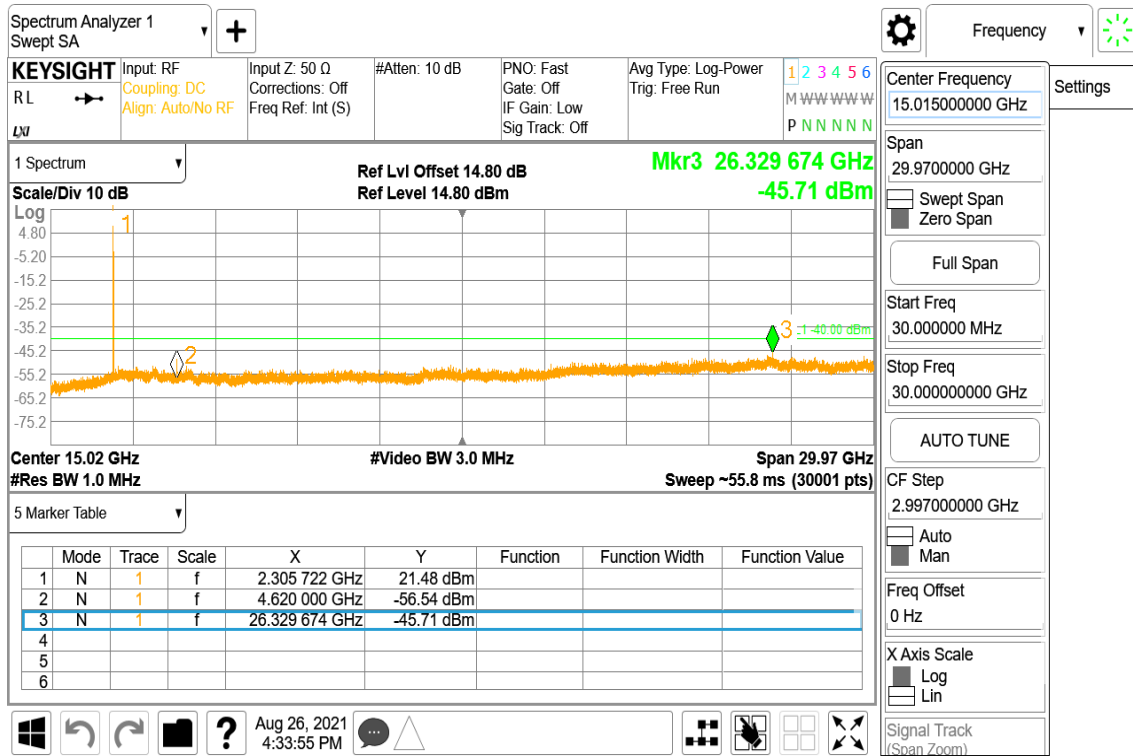


CH High



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

CH Mid



8.6 SPURIOUS RADIATION MEASUREMENT

LIMIT

FCC §27.53(a)(4) for LTE B30

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

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

- (ii) By a factor of not less than $70 + 10 \log(P)$ dB below 2288 MHz;
- (iii) By a factor of not less than $70 + 10 \log(P)$ dB above 2365 MHz.

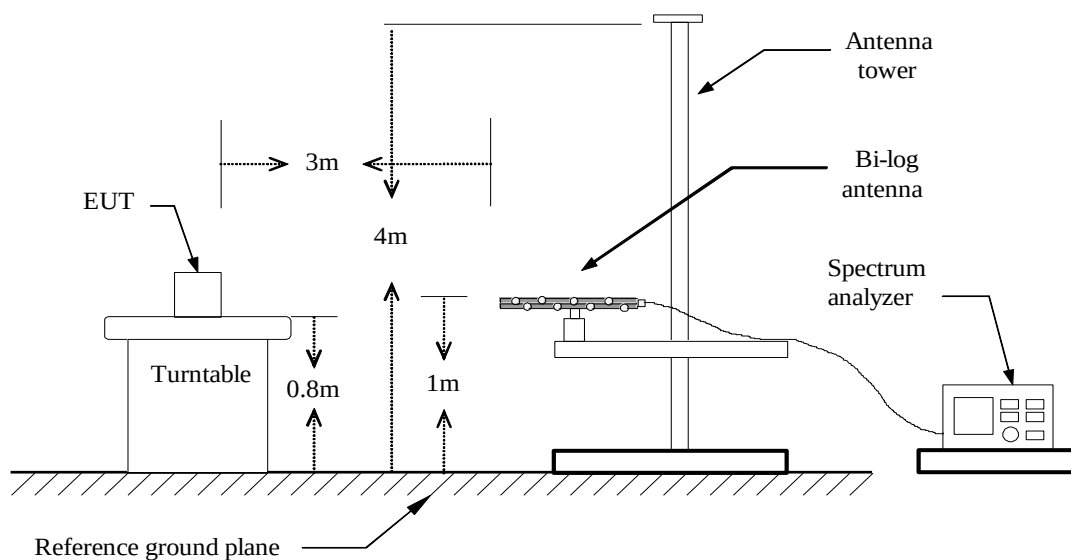
ISED RSS-195 §5.6 for LTE B30

The power of any emission outside the frequency range(s) in which the equipment operates shall be attenuated below the transmitter power, P(dBW), by the amount indicated in Table 2, where p is the transmitter output power measured in watts.

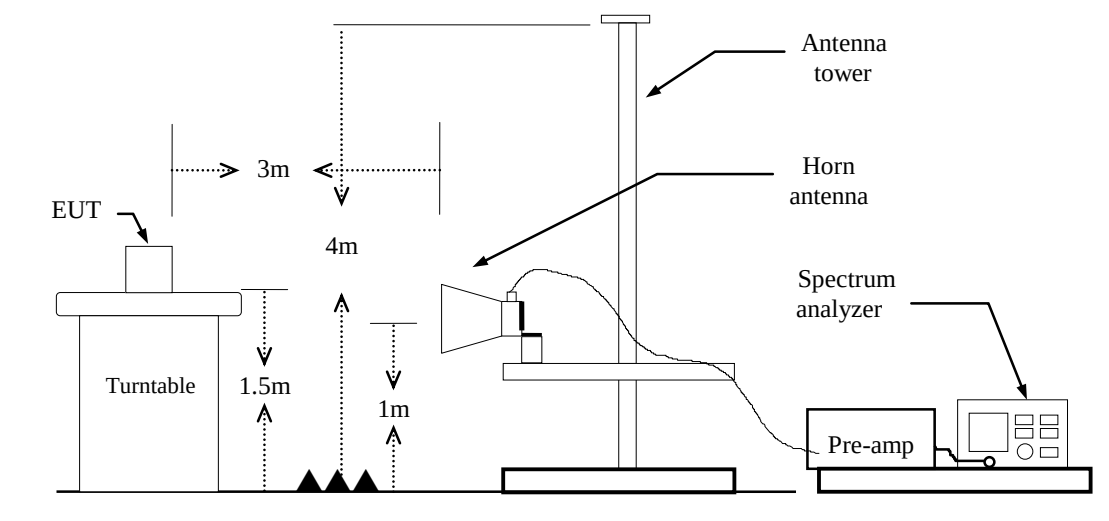
Table 2 — Unwanted Emissions for Mobile, Portable and Low-Power Fixed Subscriber Equipment			
Frequency (MHz)	Attenuation (dB)	Frequency (MHz)	Attenuation (dB)
<2200	$43 + 10 \log_{10}(p)$	2324 - 2328	$61 + 10 \log_{10}(p)$
2200 - 2288	$70 + 10 \log_{10}(p)$	2328 - 2337	$67 + 10 \log_{10}(p)$
2288 - 2292	$67 + 10 \log_{10}(p)$	2337 - 2341	$61 + 10 \log_{10}(p)$
2292 - 2296	$61 + 10 \log_{10}(p)$	2341 - 2345	$55 + 10 \log_{10}(p)$
2296 - 2300	$55 + 10 \log_{10}(p)$	2345 - 2360	$43 + 10 \log_{10}(p)$ FootnoteNote
2300 - 2305	$43 + 10 \log_{10}(p)$	2360 - 2365	$43 + 10 \log_{10}(p)$
2305 - 2320	$43 + 10 \log_{10}(p)$ FootnoteNote	2365 - 2395	$70 + 10 \log_{10}(p)$
2320 - 2324	$55 + 10 \log_{10}(p)$	>2395	$43 + 10 \log_{10}(p)$
Note -- Mobile and portable equipment are prohibited from transmitting in the bands 2315-2320 MHz and 2345-2350 MHz. In addition, mobile and portable equipment employing FDD technology shall be restricted to transmitting in the band 2305-2315 MHz.			

Test Configuration

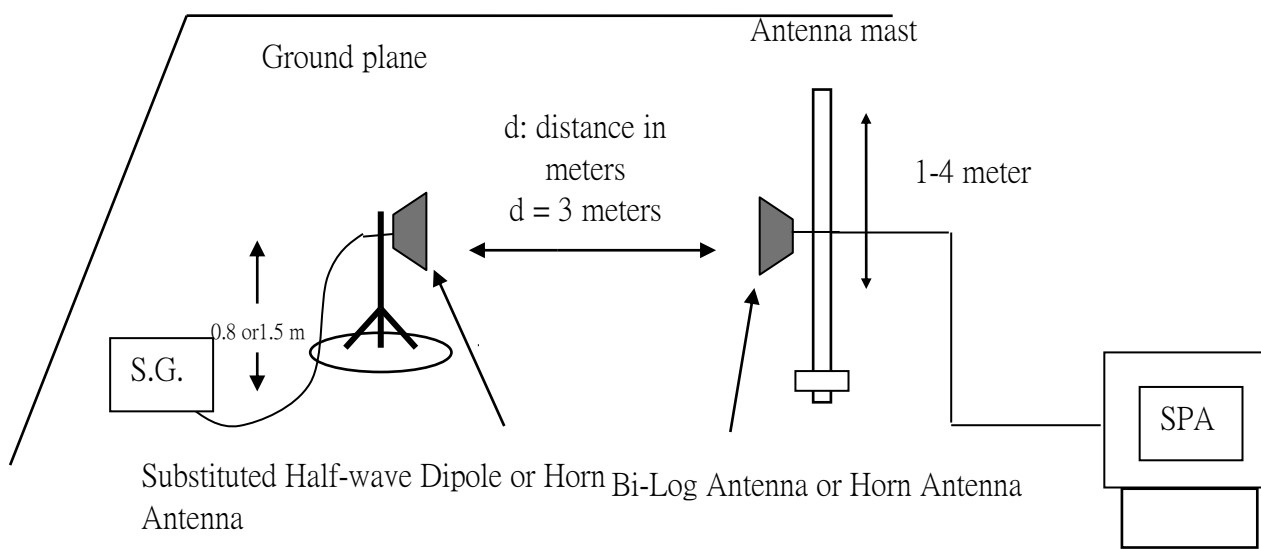
Below 1 GHz



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 30 / BW: 10MHz / QPSK / RB =1, RB Offset = 0

Operation Mode: Tx / Mid CH

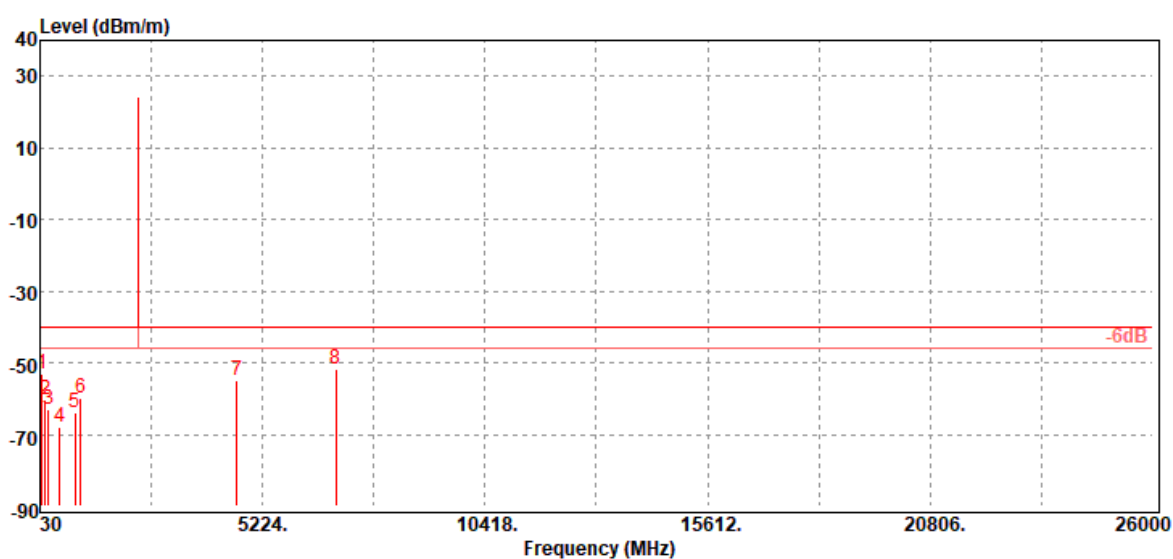
Test Date: June 2, 2021

Temperature: 22.3°C

Tested by: Ray Li

Humidity: 53% 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)
86.26	-52.99	-44.68	-7.55	-0.76	-40.00	-12.99	V
153.19	-60.24	-52.50	-6.72	-1.02	-40.00	-20.24	V
219.15	-62.98	-59.74	-2.02	-1.22	-40.00	-22.98	V
481.05	-68.13	-63.93	-2.38	-1.82	-40.00	-28.13	V
847.71	-63.93	-60.13	-1.35	-2.45	-40.00	-23.93	V
977.69	-60.01	-56.01	-1.35	-2.65	-40.00	-20.01	V
4620.00	-54.81	-58.82	9.30	-5.29	-40.00	-14.81	V
6930.00	-51.70	-56.51	11.36	-6.55	-40.00	-11.70	V

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Operation Mode: Tx / Mid CH

Test Date:

June 2, 2021

Temperature: 22.3°C

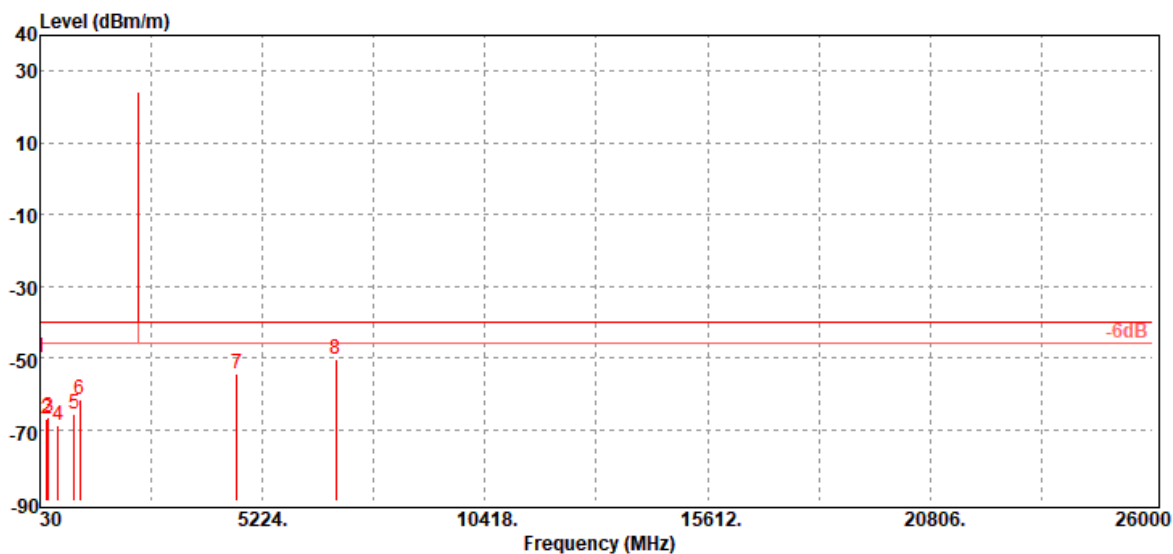
Tested by:

Ray Li

Humidity: 53% 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	-49.88	-30.74	-18.62	-0.52	-40.00	-9.88	H
180.35	-66.85	-61.39	-4.36	-1.10	-40.00	-26.85	H
221.09	-66.64	-63.44	-1.98	-1.22	-40.00	-26.64	H
449.04	-69.04	-65.18	-2.10	-1.76	-40.00	-29.04	H
833.16	-65.68	-61.75	-1.50	-2.43	-40.00	-25.68	H
958.29	-61.66	-57.77	-1.27	-2.62	-40.00	-21.66	H
4620.00	-54.45	-58.46	9.30	-5.29	-40.00	-14.45	H
6930.00	-50.19	-55.00	11.36	-6.55	-40.00	-10.19	H

--End of Test Report--