

TEST REPORT

FCC Test for RFV01U-D2A

Class II Permissive Change

APPLICANT

SAMSUNG Electronics Co., Ltd.

REPORT NO.

HCT-RF-2008-FC021-R3

DATE OF ISSUE

August 28, 2020

Tested by

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고객비밀
CUSTOMER SECRET

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Additional Model

-

Applicant

SAMSUNG Electronics Co., Ltd.

129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

EUT Type

RRU(RFV01U)

Model Name

RFV01U-D2A

FCC ID

A3LRFV01U-D2A

Date of Test

July 17, 2020 ~ August 28, 2020

FCC Rule Parts:

CFR 47 Part 2, Part 22

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test results were applied only to the test methods required by the standard.

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	August 06, 2020	Initial Release
1	August 12, 2020	Added 'LTE 10 MHz' test results.
2	August 26, 2020	We modified the test diagrams. We modified the Modulation type. We separated the PAPR section.
3	August 28, 2020	We added the Worst Case result of LTE 5MHz for comparison with Original Data.

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

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1. GENERAL INFORMATION

1.1. APPLICANT INFORMATION

Company Name	Samsung Electronics Co., Ltd.
Company Address	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

1.2. PRODUCT INFORMATION

EUT Type	RRU(RFV01U)			
EUT Serial Number	S613636024			
Power Supply	-48 VDC			
Channel Bandwidths& Output Power	Port 0, 1, 2, 3 : DSS Mode LTE 9 to NR 1, 10 MHz, DSS Mode LTE 8 to NR 2, 10 MHz, 5G NR n5, LTE Band 5.			
	Band	Bandwidth	Power	
	DSS Mode LTE 9 to NR 1	10 MHz	46 dBm/path 40 W, Total: 160 W	
	DSS Mode LTE 8 to NR 2	10 MHz	46 dBm/path 40 W, Total: 160 W	
	DSS Mode LTE 7 to NR 3	10 MHz	46 dBm/path 40 W, Total: 160 W	
	DSS Mode LTE 6 to NR 4	10 MHz	46 dBm/path 40 W, Total: 160 W	
	DSS Mode LTE 5 to NR 5	10 MHz	46 dBm/path 40 W, Total: 160 W	
	DSS Mode LTE 4 to NR 6	10 MHz	46 dBm/path 40 W, Total: 160 W	
	DSS Mode LTE 3 to NR 7	10 MHz	46 dBm/path 40 W, Total: 160 W	
	DSS Mode LTE 2 to NR 8	10 MHz	46 dBm/path 40 W, Total: 160 W	
	5G NR n5	10 MHz	46 dBm/path 40 W, Total: 160 W	
	LTE Band 5	10 MHz	46 dBm/path 40 W, Total: 160 W	
	Frequency Range	869 ~ 894 MHz		

Emission Designator	Emission Designator				
	Mode	Bandwidth	LTE (QPSK) / NR (CP-OFDM QPSK) (G7D)	QPSK Max Conducted Output Power [W]	LTE (16QAM) / NR (CP-OFDM 16QAM) / LTE (64QAM) / NR (CP-OFDM 64QAM) / LTE (256QAM) / NR (CP-OFDM 256QAM) Max Conducted Output Power [W]
	DSS Mode LTE 9 to NR 1	10 MHz	9M31G7D	155.36	9M24W7D 156.31
	DSS Mode LTE 8 to NR 2	10 MHz	9M30G7D	155.80	9M29W7D 156.23
	DSS Mode LTE 7 to NR 3	10 MHz	9M29G7D	154.88	9M32W7D 155.38
	DSS Mode LTE 6 to NR 4	10 MHz	9M31G7D	155.26	9M32W7D 154.95
	DSS Mode LTE 5 to NR 5	10 MHz	9M30G7D	154.30	9M33W7D 154.37
	DSS Mode LTE 4 to NR 6	10 MHz	9M32G7D	155.27	9M34W7D 154.92
	DSS Mode LTE 3 to NR 7	10 MHz	9M33G7D	155.92	9M34W7D 155.12
	DSS Mode LTE 2 to NR 8	10 MHz	9M32G7D	155.42	9M33W7D 154.85
	5G NR	10 MHz	9M33G7D	156.57	9M34W7D 157.24
	LTE Band 5	10 MHz	9M01G7D	153.97	9M03W7D 155.44
Channel Bandwidths	10 MHz				
Modulation Type	LTE: QPSK, 16QAM, 64QAM, 256QAM NR: CP-OFDM QPSK, CP-OFDM 16QAM, CP-OFDM 64QAM, CP-OFDM 256 QAM				
Subcarrier Spacing (SCS)	15 kHz				
Antenna Specification	Manufacturer does not provide an antenna.				

1.3. TEST INFORMATION

FCC Rule Parts	CFR 47 Part 2, Part 22
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Measurement Standards	ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 935210 D05 v01r04
Place of Test	HCT CO., LTD. 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

2. FACILITIES AND ACCREDITATIONS

2.1. FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA.

The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2018 (Registration Number: KR0032).

2.2. EQUIPMENT

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

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."

3. TEST SPECIFICATIONS

3.1. STANDARDS

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 2, Part 22

Description	Reference	Results
RF Output Power	§2.1046, §22.913	Compliant ^{Note}
PAPR	§22.913	Compliant ^{Note}
Occupied Bandwidth	§2.1049	Compliant ^{Note}
Unwanted Conducted Emissions	§2.1051, §22.917	Compliant ^{Note}
Radiated Emissions	§2.1053, §22.917	Compliant ^{Note}
Frequency Stability	§2.1055, §22.355	Compliant ^{Note}

Note:

All of the LTE Band 13 10 MHz, LTE Band 5 5 MHz, 10 MHz, 5 MHz + 5 MHz, 10 MHz + 10 MHz, 10 MHz + 5 MHz + 10 MHz data contained herein is tested from the reference FCC ID: A3LRFV01U-D2A report. (Report No. HCT-R-1707-F009-2)

3.2. ADDITIONAL DESCRIPTIONS ABOUT TEST

- The EUT was operated in a manner representative of the typical usage of the equipment.
- During all testing, system components were manipulated within the confines of typical usage to maximize each emission.
- All LTE(QPSK, 16QAM, 64QAM, 256QAM) and NR(CP-OFDM QPSK, CP-OFDM 16QAM, CP-OFDM 64QAM, CP-OFDM 256 QAM) modulation types supported by the EUT have been tested.
- All tests are performed in Full RB size as worst case since the base station is occupied the widest bandwidths and max. output power in Full RB size. (LTE: Full RB(50), NR: Full RB(52), DSS: Full RB(NR and LTE Ratio)
- The dummy loads were connected to the RF output ports for radiated spurious emission testing.
- The tests results in plots are already including the actual value of loss for the attenuator and cable combination. Please check correction factors below table.

Correction factor table			
Frequency (MHz)	Factor (dB)	Frequency (MHz)	Factor (dB)
500	30.301	2200	31.534
600	30.055	2300	31.409
700	30.184	2400	31.480
800	30.243	2500	31.368
900	30.567	2600	31.277
1000	30.647	2700	31.278
1100	30.746	2800	31.676
1200	30.801	2900	31.683
1300	30.832	3000	32.035
1400	30.888	4000	32.115
1500	30.921	5000	32.789
1600	31.101	6000	33.052
1700	31.280	7000	33.739
1800	31.498	8000	34.338
1900	31.599	9000	34.731
2000	31.707	10000	35.406
2100	31.783	-	-

3.3. MAXIMUM MEASUREMENT UNCERTAINTY

The value of the measurement uncertainty for the measurement of each parameter.

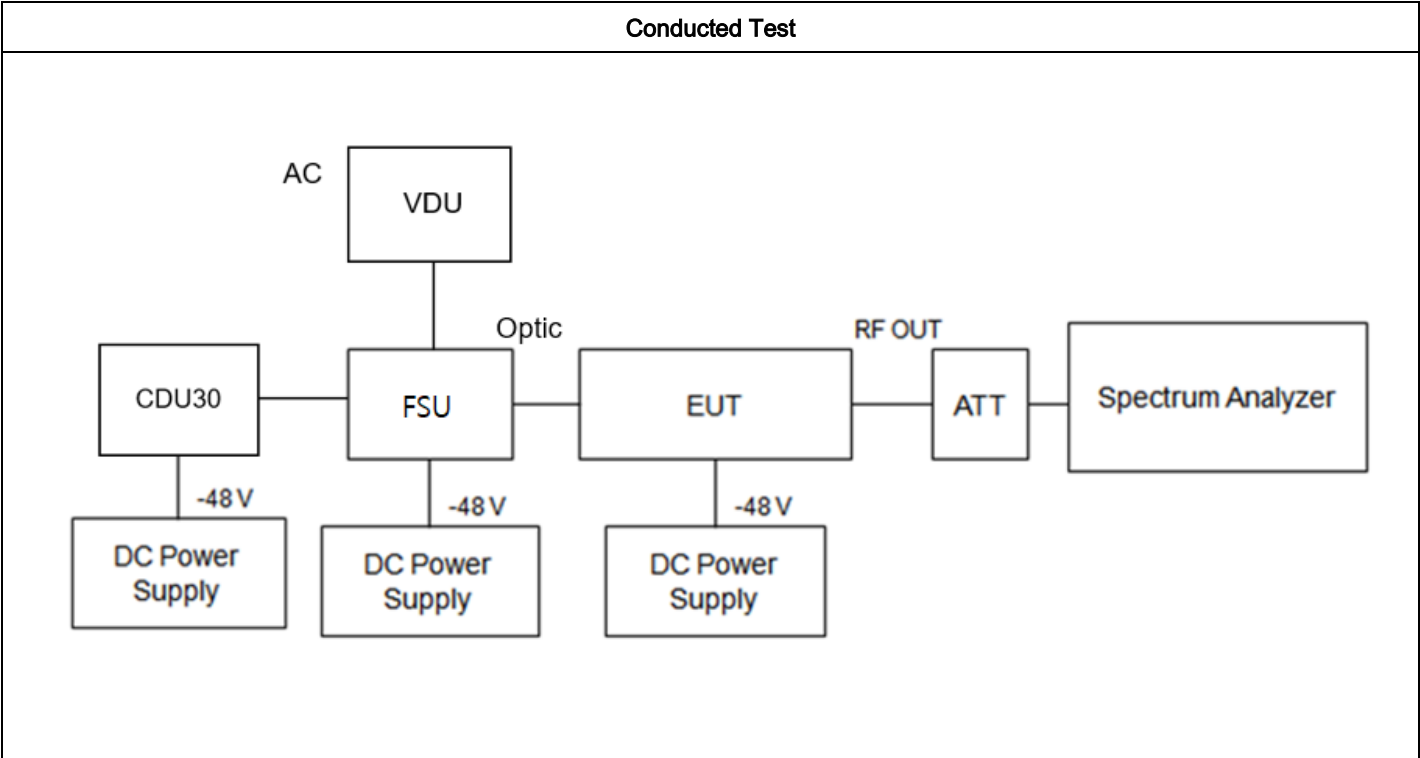
Coverage factor $k = 2$, Confidence levels of 95 %

Description	Condition	Uncertainty
RF Output Power	-	± 0.72 dB
PAPR	-	± 0.72 dB
Occupied Bandwidth	$OBW \leq 20$ MHz	± 52 kHz
Unwanted Conducted Emissions	-	± 1.08 dB
Radiated Emissions	$f \leq 1$ GHz	± 4.80 dB
	$f > 1$ GHz	± 6.07 dB
Frequency Stability	-	$\pm 1.22 \times 10^{-6}$

3.4. STANDARDS ENVIRONMENTAL TEST CONDITIONS

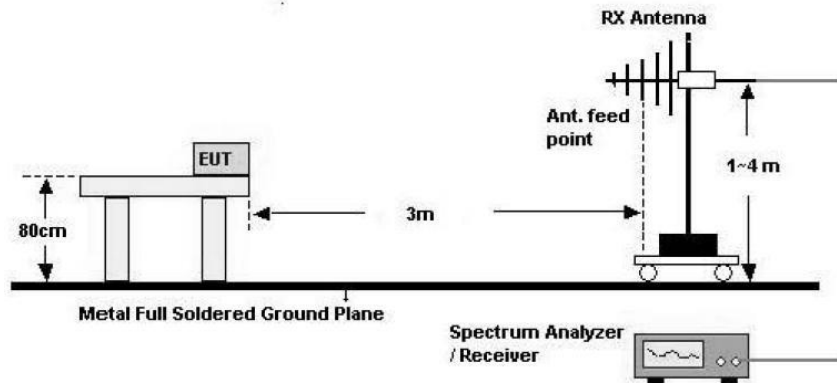
Temperature :	+15 °C to +35 °C
Relative humidity:	30 % to 60 %
Air pressure	860 mbar to 1 060 mbar

3.5. TEST DIAGRAMS

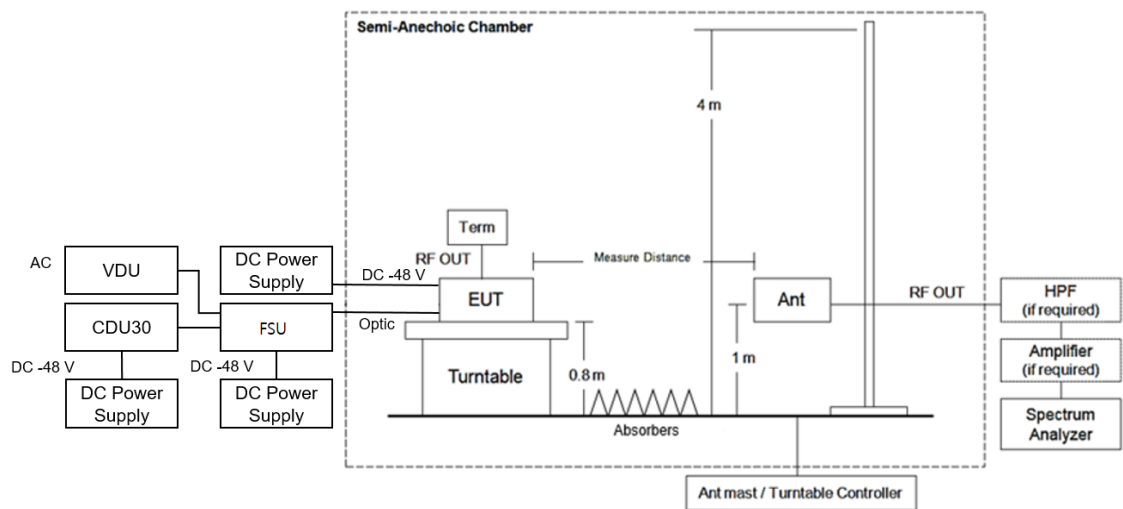


Radiated Test

30 MHz ~ 1 GHz



Above 1 GHz

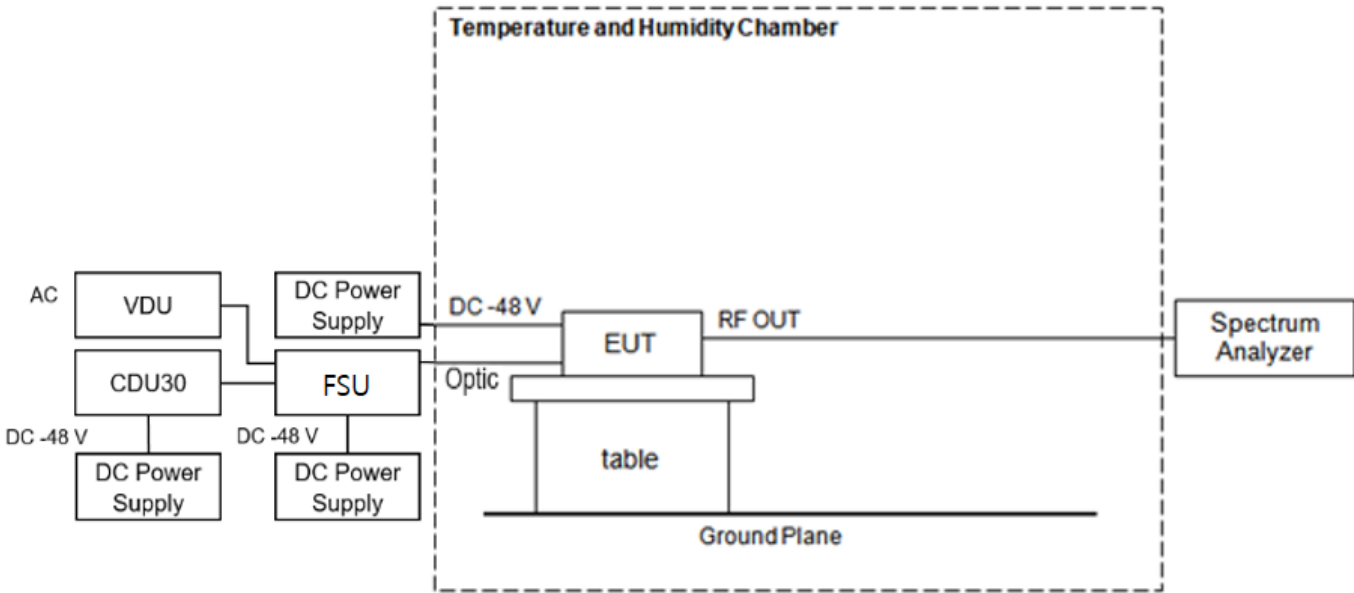


※ EUT position is adopted by placement of floor-standing refer to section 5.5.2.3.2 of ANSI C63.26-2015

Note:

Test distance for Above 1 GHz: 3 m

Frequency Stability



Note:

- All LTE(QPSK, 16QAM, 64QAM, 256QAM) and NR(CP-OFDM QPSK, CP-OFDM 16QAM, CP-OFDM 64QAM, CP-OFDM 256 QAM) were investigated and the worst case configuration channel results are reported.

4. TEST EQUIPMENTS

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Agilent	N9020A / Spectrum Analyzer	2020-04-10	Annual	US46220219
Agilent	N9030B / PXA Signal Analyzer	2020-06-04	Annual	MY55480167
MCLI	FAS-23-20 / Attenuator	2020-01-22	Annual	103756
AGILENT	WA67-30-33 / 30 dB ATTENUATOR	2019-08-28	Annual	WA67-30-33-2
AGILENT	E3632A / DC Power Supply	2020-06-05	Annual	MY40010967
KIKUSUI	PWR800L / DC Power Supply	2020-02-19	Annual	RE001149
Koreae ngineering	KR-1005L / Temperature and Humidity Chamber	2019-11-07	Annual	KRAC05063-3
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Emco	2090 / Controller	N/A	N/A	060520
Ets	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	2020-05-12	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	2018-08-31	Biennial	9168-0895
Schwarzbeck	BBHA 9120D / Horn Antenna	2019-06-28	Biennial	9120D-1300
Rohde & Schwarz	FSP / Spectrum Analyzer	2019-09-11	Annual	836650/016
Wainwright Instruments	WHKX10-900-1000-15000-40SS	2020-06-24	Annual	5
CERNEX	CBLU1183540B-01 / LOW NOISE AMP	2020-01-21	Annual	25539

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.



5. TEST RESULT

5.1. RF OUTPUT POWER

Test Requirements:

§ 2.1046 Measurements required: RF power output.

- (a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in §2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.
- (b) For single sideband, independent sideband, and single channel, controlled carrier radiotelephone transmitters the procedure specified in paragraph (a) of this section shall be employed and, in addition, the transmitter shall be modulated during the test as specified and applicable in § 2.1046 (b) (1-5). In all tests, the input level of the modulating signal shall be such as to develop rated peak envelope power or carrier power, as appropriate, for the transmitter.
- (c) For measurements conducted pursuant to paragraphs (a) and (b) of this section, all calculations and methods used by the applicant for determining carrier power or peak envelope power, as appropriate, on the basis of measured power in the radio frequency load attached to the transmitter output terminals shall be shown. Under the test conditions specified, no components of the emission spectrum shall exceed the limits specified in the applicable rule parts as necessary for meeting occupied bandwidth or emission limitations.

§ 22.913 Effective radiated power limits.

Licensees in the Cellular Radiotelephone Service are subject to the effective radiated power (ERP) limits and other requirements in this Section. *See also* §22.169.

- (a) *Maximum ERP.* The ERP of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.
 - (1) Except as described in paragraphs (a)(2), (3), and (4) of this section, the ERP of base stations and repeaters must not exceed—
 - (i) 500 watts per emission; or
 - (ii) 400 watts/MHz (PSD) per sector.
 - (2) Except as described in paragraphs (a)(3) and (4) of this section, for systems operating in areas more than 72 kilometers (45 miles) from international borders that:
 - (i) Are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census; or
 - (ii) Extend coverage into Unserved Area on a secondary basis (*see* §22.949), the ERP of base transmitters and repeaters must not exceed—
 - (A) 1000 watts per emission; or
 - (B) 800 watts/MHz (PSD) per sector.
 - (3) Provided that they also comply with paragraphs (b) and (c) of this section, licensees are permitted to operate their base transmitters and repeaters with an ERP greater than 400 watts/MHz (PSD) per sector, up to a maximum ERP of 1000 watts/MHz (PSD) per sector unless they meet the conditions in paragraph (a)(4) of this section.
 - (4) Provided that they also comply with paragraphs (b) and (c) of this section, licensees of systems operating in areas more than 72 kilometers (45 miles) from international borders that:
 - (i) Are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census; or
 - (ii) Extend coverage into Unserved Area on a secondary basis (*see* §22.949), are permitted to operate base transmitters and

repeaters with an ERP greater than 800 watts/MHz (PSD) per sector, up to a maximum of 2000 watts/MHz (PSD) per sector.

(5) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

(d) *Power measurement.* Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

Test Procedures:

The measurement is performed in accordance with Section 5.2.4.4.1 of ANSI C63.26.

- a) Set span to $2 \times$ to $3 \times$ the OBW.
- b) Set RBW = 1 % to 5 % of the OBW.
- c) Set VBW $\geq 3 \times$ RBW.
- d) Set number of measurement points in sweep $\geq 2 \times$ span / RBW.
- e) Sweep time:
 - 1) Set = auto-couple, or
 - 2) Set $\geq [10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})]$ for single sweep (automation-compatible) measurement.
- f) Detector = power averaging (rms).
- g) If the EUT can be configured to transmit continuously, then set the trigger to free run.
- h) If the EUT cannot be configured to transmit continuously, then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Verify that the sweep time is less than or equal to the transmission burst duration. Time gating can also be used under similar constraints (i.e., configured such that measurement data is collected only during active full-power transmissions).
- i) Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over multiple symbols, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.
- j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

Note:

- 1) The conducted emission level is measured at each antenna port and then summed mathematically to determine the total emission level from the device.
- 2) Sum data is in a tolerance of specification provided from manufacturer.
- 3) The results of the RF output power test shown above the frequency measured values are very small and similar trend for each port, so we are attached only the worst case plot.

Test Results:

Tabular Data of RF output power

DSS Mode LTE 9 to NR 1, 10 MHz

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
0		Low	874.00	46.20	41.67
		Middle	881.50	46.16	41.28

1	LTE (QPSK) / NR (CP-OFDM QPSK)	High	889.00	46.28	42.41
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.18	41.48
		Middle	881.50	46.31	42.74
		High	889.00	46.29	42.51
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	46.17	41.36
		Middle	881.50	46.24	42.02
		High	889.00	46.25	42.14
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	46.18	41.46
		Middle	881.50	46.24	42.04
		High	889.00	46.30	42.70
	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.86	38.58
		Middle	881.50	45.97	39.53
		High	889.00	45.77	37.77
1	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.90	38.92
		Middle	881.50	45.95	39.32
		High	889.00	45.80	37.99
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.88	38.70
		Middle	881.50	45.93	39.14
		High	889.00	45.86	38.57
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.84	38.41
		Middle	881.50	45.96	39.47
		High	889.00	45.81	38.14

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.85	38.42
		Middle	881.50	45.79	37.94
		High	889.00	45.82	38.17
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.82	38.19
		Middle	881.50	45.83	38.26
		High	889.00	45.79	37.90
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.88	38.73
		Middle	881.50	45.79	37.97
		High	889.00	45.74	37.48
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.82	38.22
		Middle	881.50	45.68	37.01
		High	889.00	45.74	37.51
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.65	36.69
		Middle	881.50	45.57	36.07
		High	889.00	45.59	36.19
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.59	36.24
		Middle	881.50	45.56	35.99
		High	889.00	45.54	35.83
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.63	36.58
		Middle	881.50	45.53	35.71
		High	889.00	45.53	35.76
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.56	35.97
		Middle	881.50	45.58	36.17
		High	889.00	45.56	35.93

Sum Data of Port 0, Port 1, Port 2 and Port 3

Frequency (MHz)	Output Power			
	LTE (QPSK) / NR (CP-OFDM QPSK)	LTE (16QAM) / NR (CP-OFDM 16QAM)	LTE (64QAM) / NR (CP-OFDM 64QAM)	LTE (256QAM) / NR (CP-OFDM 256QAM)
	W			
874.00	155.36	154.83	155.36	154.05
881.50	154.82	156.31	154.84	154.69
889.00	154.55	154.23	153.96	154.28

DSS Mode LTE 8 to NR 2, 10 MHz

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	46.19	41.55
		Middle	881.50	46.31	42.76
		High	889.00	46.23	41.99
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.22	41.83
		Middle	881.50	46.25	42.22
		High	889.00	46.17	41.36
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	46.20	41.69
		Middle	881.50	46.25	42.19
		High	889.00	46.22	41.83
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	46.16	41.34
		Middle	881.50	46.29	42.61
		High	889.00	46.22	41.86
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.89	38.80
		Middle	881.50	45.91	38.95
		High	889.00	45.86	38.52
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.87	38.65
		Middle	881.50	45.88	38.70
		High	889.00	45.84	38.34
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.87	38.59
		Middle	881.50	45.91	38.95
		High	889.00	45.80	37.99
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.84	38.34
		Middle	881.50	45.98	39.66
		High	889.00	45.82	38.22

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.84	38.36
		Middle	881.50	45.85	38.49
		High	889.00	45.79	37.91
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.85	38.45
		Middle	881.50	45.83	38.26
		High	889.00	45.74	37.49
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.89	38.85
		Middle	881.50	45.80	38.00
		High	889.00	45.73	37.39
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.91	39.01
		Middle	881.50	45.74	37.54
		High	889.00	45.74	37.53
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.69	37.03
		Middle	881.50	45.51	35.60
		High	889.00	45.54	35.82
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.59	36.22
		Middle	881.50	45.55	35.93
		High	889.00	45.51	35.56
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.54	35.84
		Middle	881.50	45.60	36.31
		High	889.00	45.54	35.78
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.59	36.22
		Middle	881.50	45.61	36.42
		High	889.00	45.56	35.97

Sum Data of Port 0, Port 1, Port 2 and Port 3

Frequency (MHz)	Output Power			
	LTE (QPSK) / NR (CP-OFDM QPSK)	LTE (16QAM) / NR (CP-OFDM 16QAM)	LTE (64QAM) / NR (CP-OFDM 64QAM)	LTE (256QAM) / NR (CP-OFDM 256QAM)
	W			
874.00	155.74	155.15	154.97	154.91
881.50	155.80	155.10	155.45	156.23
889.00	154.23	152.75	152.99	153.58

DSS Mode LTE 7 to NR 3, 10 MHz

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	46.16	41.32
		Middle	881.50	46.19	41.61
		High	889.00	46.26	42.26
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.15	41.24
		Middle	881.50	46.19	41.63
		High	889.00	46.28	42.43
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	46.22	41.92
		Middle	881.50	46.18	41.49
		High	889.00	46.24	42.10
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	46.22	41.89
		Middle	881.50	46.19	41.62
		High	889.00	46.25	42.22
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.85	38.50
		Middle	881.50	45.89	38.85
		High	889.00	45.78	37.84
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.84	38.38
		Middle	881.50	45.87	38.65
		High	889.00	45.83	38.29
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	45.84	38.34
		Middle	881.50	45.85	38.46
		High	889.00	45.90	38.90
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.83	38.29
		Middle	881.50	45.83	38.28
		High	889.00	45.81	38.14

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.88	38.70
		Middle	881.50	45.75	37.59
		High	889.00	45.85	38.43
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.87	38.64
		Middle	881.50	45.78	37.85
		High	889.00	45.79	37.95
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.88	38.70
		Middle	881.50	45.81	38.08
		High	889.00	45.80	38.05
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.86	38.57
		Middle	881.50	45.77	37.79
		High	889.00	45.83	38.27
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.61	36.35
		Middle	881.50	45.48	35.33
		High	889.00	45.55	35.89
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.58	36.12
		Middle	881.50	45.52	35.60
		High	889.00	45.58	36.16
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.59	36.23
		Middle	881.50	45.39	34.55
		High	889.00	45.60	36.33
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.52	35.63
		Middle	881.50	45.45	35.06
		High	889.00	45.51	35.52

Sum Data of Port 0, Port 1, Port 2 and Port 3

Frequency (MHz)	Output Power			
	LTE (QPSK) / NR (CP-OFDM QPSK)	LTE (16QAM) / NR (CP-OFDM 16QAM)	LTE (64QAM) / NR (CP-OFDM 64QAM)	LTE (256QAM) / NR (CP-OFDM 256QAM)
	W			
874.00	154.88	154.37	155.19	154.38
881.50	153.38	153.74	152.58	152.75
889.00	154.42	154.83	155.38	154.16

DSS Mode LTE 6 to NR 4, 10 MHz

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	46.17	41.42
		Middle	881.50	46.17	41.35
		High	889.00	46.21	41.80
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.18	41.47
		Middle	881.50	46.11	40.86
		High	889.00	46.19	41.61
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	46.15	41.24
		Middle	881.50	46.18	41.48
		High	889.00	46.22	41.86
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	46.17	41.40
		Middle	881.50	46.15	41.16
		High	889.00	46.24	42.06
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.90	38.89
		Middle	881.50	45.75	37.62
		High	889.00	45.85	38.45
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.80	38.06
		Middle	881.50	45.87	38.64
		High	889.00	45.86	38.51
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.80	38.03
		Middle	881.50	45.77	37.79
		High	889.00	45.83	38.26
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.72	37.36
		Middle	881.50	45.80	37.98
		High	889.00	45.89	38.80

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.87	38.59
		Middle	881.50	45.76	37.65
		High	889.00	45.78	37.83
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.83	38.30
		Middle	881.50	45.66	36.85
		High	889.00	45.81	38.14
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.79	37.94
		Middle	881.50	45.69	37.07
		High	889.00	45.75	37.61
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.81	38.15
		Middle	881.50	45.71	37.21
		High	889.00	45.76	37.71
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.61	36.36
		Middle	881.50	45.49	35.41
		High	889.00	45.53	35.75
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.62	36.48
		Middle	881.50	45.40	34.63
		High	889.00	45.64	36.69
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.60	36.32
		Middle	881.50	45.45	35.04
		High	889.00	45.51	35.56
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.58	36.12
		Middle	881.50	45.43	34.90
		High	889.00	45.54	35.78

Sum Data of Port 0, Port 1, Port 2 and Port 3

Frequency (MHz)	Output Power			
	LTE (QPSK) / NR (CP-OFDM QPSK)	LTE (16QAM) / NR (CP-OFDM 16QAM)	LTE (64QAM) / NR (CP-OFDM 64QAM)	LTE (256QAM) / NR (CP-OFDM 256QAM)
	W			
874.00	155.26	154.31	153.52	153.03
881.50	152.03	150.98	151.38	151.26
889.00	153.83	154.95	153.30	154.36

DSS Mode LTE 5 to NR 5, 10 MHz

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	46.18	41.48
		Middle	881.50	46.18	41.50
		High	889.00	46.23	41.93
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.22	41.90
		Middle	881.50	46.15	41.24
		High	889.00	46.21	41.74
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	46.16	41.29
		Middle	881.50	46.14	41.15
		High	889.00	46.15	41.19
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	46.18	41.47
		Middle	881.50	46.13	41.00
		High	889.00	46.24	42.05
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.87	38.61
		Middle	881.50	45.84	38.41
		High	889.00	45.89	38.82
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.83	38.30
		Middle	881.50	45.82	38.23
		High	889.00	45.84	38.34
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.85	38.45
		Middle	881.50	45.85	38.47
		High	889.00	45.87	38.64
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.77	37.75
		Middle	881.50	45.82	38.19
		High	889.00	45.83	38.26

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.83	38.26
		Middle	881.50	45.77	37.76
		High	889.00	45.79	37.91
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.83	38.29
		Middle	881.50	45.85	38.41
		High	889.00	45.79	37.98
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.80	38.02
		Middle	881.50	45.80	38.03
		High	889.00	45.76	37.68
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.82	38.23
		Middle	881.50	45.74	37.49
		High	889.00	45.72	37.33
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.50	35.50
		Middle	881.50	45.49	35.36
		High	889.00	45.52	35.65
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.54	35.80
		Middle	881.50	45.51	35.53
		High	889.00	45.60	36.31
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.60	36.27
		Middle	881.50	45.58	36.11
		High	889.00	45.60	36.27
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.54	35.78
		Middle	881.50	45.46	35.13
		High	889.00	45.55	35.91

Sum Data of Port 0, Port 1, Port 2 and Port 3

Frequency (MHz)	Output Power			
	LTE (QPSK) / NR (CP-OFDM QPSK)	LTE (16QAM) / NR (CP-OFDM 16QAM)	LTE (64QAM) / NR (CP-OFDM 64QAM)	LTE (256QAM) / NR (CP-OFDM 256QAM)
	W			
874.00	153.85	154.29	154.02	153.22
881.50	153.02	153.41	153.76	151.82
889.00	154.30	154.37	153.77	153.55

DSS Mode LTE 4 to NR 6, 10 MHz

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	46.23	41.97
		Middle	881.50	46.17	41.37
		High	889.00	46.22	41.90
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.31	42.81
		Middle	881.50	46.16	41.29
		High	889.00	46.28	42.46
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	46.22	41.88
		Middle	881.50	46.15	41.24
		High	889.00	46.28	42.47
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	46.14	41.14
		Middle	881.50	46.17	41.40
		High	889.00	46.15	41.20
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.87	38.65
		Middle	881.50	45.85	38.47
		High	889.00	45.84	38.41
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.85	38.44
		Middle	881.50	45.86	38.53
		High	889.00	45.85	38.48
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.91	38.99
		Middle	881.50	45.89	38.79
		High	889.00	45.81	38.11
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.85	38.43
		Middle	881.50	45.80	37.98
		High	889.00	45.83	38.31

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.89	38.77
		Middle	881.50	45.77	37.78
		High	889.00	45.74	37.53
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.79	37.90
		Middle	881.50	45.75	37.63
		High	889.00	45.75	37.61
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.86	38.56
		Middle	881.50	45.74	37.45
		High	889.00	45.73	37.39
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.88	38.71
		Middle	881.50	45.73	37.44
		High	889.00	45.73	37.39
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.55	35.88
		Middle	881.50	45.48	35.33
		High	889.00	45.57	36.10
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.52	35.61
		Middle	881.50	45.54	35.80
		High	889.00	45.54	35.78
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.50	35.49
		Middle	881.50	45.46	35.16
		High	889.00	45.54	35.78
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.52	35.66
		Middle	881.50	45.44	34.99
		High	889.00	45.53	35.73

Sum Data of Port 0, Port 1, Port 2 and Port 3

Frequency (MHz)	Output Power			
	LTE (QPSK) / NR (CP-OFDM QPSK)	LTE (16QAM) / NR (CP-OFDM 16QAM)	LTE (64QAM) / NR (CP-OFDM 64QAM)	LTE (256QAM) / NR (CP-OFDM 256QAM)
	W			
874.00	155.27	154.76	154.92	153.95
881.50	152.96	153.24	152.64	151.81
889.00	153.94	154.33	153.75	152.63

DSS Mode LTE 3 to NR 7, 10 MHz

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	46.19	41.56
		Middle	881.50	46.17	41.41
		High	889.00	46.27	42.36
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.20	41.66
		Middle	881.50	46.18	41.46
		High	889.00	46.26	42.31
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	46.20	41.73
		Middle	881.50	46.25	42.19
		High	889.00	46.29	42.52
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	46.19	41.55
		Middle	881.50	46.08	40.58
		High	889.00	46.27	42.36
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.87	38.61
		Middle	881.50	45.84	38.41
		High	889.00	45.83	38.29
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.91	39.03
		Middle	881.50	45.77	37.77
		High	889.00	45.92	39.11
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.86	38.53
		Middle	881.50	45.86	38.57
		High	889.00	45.84	38.41
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.74	37.49
		Middle	881.50	45.85	38.42
		High	889.00	45.83	38.29

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.88	38.73
		Middle	881.50	45.85	38.45
		High	889.00	45.83	38.27
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.83	38.33
		Middle	881.50	45.73	37.39
		High	889.00	45.80	38.02
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.86	38.55
		Middle	881.50	45.73	37.39
		High	889.00	45.79	37.96
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.81	38.07
		Middle	881.50	45.67	36.91
		High	889.00	45.79	37.96
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.48	35.33
		Middle	881.50	45.56	35.95
		High	889.00	45.68	36.99
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.52	35.66
		Middle	881.50	45.56	35.95
		High	889.00	45.52	35.69
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.50	35.46
		Middle	881.50	45.53	35.70
		High	889.00	45.52	35.68
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.45	35.07
		Middle	881.50	45.60	36.32
		High	889.00	45.49	35.36

Sum Data of Port 0, Port 1, Port 2 and Port 3

Frequency (MHz)	Output Power			
	LTE (QPSK) / NR (CP-OFDM QPSK)	LTE (16QAM) / NR (CP-OFDM 16QAM)	LTE (64QAM) / NR (CP-OFDM 64QAM)	LTE (256QAM) / NR (CP-OFDM 256QAM)
	W			
874.00	154.22	154.68	154.26	152.18
881.50	154.22	152.56	153.85	152.24
889.00	155.92	155.12	154.57	153.97

DSS Mode LTE 2 to NR 8, 10 MHz

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	46.14	41.14
		Middle	881.50	46.19	41.54
		High	889.00	46.14	41.14
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.20	41.70
		Middle	881.50	46.19	41.58
		High	889.00	46.19	41.56
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	46.12	40.89
		Middle	881.50	46.16	41.30
		High	889.00	46.24	42.03
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	46.11	40.79
		Middle	881.50	46.06	40.36
		High	889.00	46.25	42.16
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.90	38.93
		Middle	881.50	45.98	39.66
		High	889.00	45.90	38.95
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.84	38.37
		Middle	881.50	45.94	39.26
		High	889.00	45.91	38.96
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	45.83	38.27
		Middle	881.50	45.85	38.50
		High	889.00	45.78	37.85
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.79	37.91
		Middle	881.50	45.79	37.95
		High	889.00	45.83	38.28

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.78	37.87
		Middle	881.50	45.76	37.68
		High	889.00	45.95	39.33
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.78	37.84
		Middle	881.50	45.68	36.95
		High	889.00	45.87	38.62
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.82	38.18
		Middle	881.50	45.75	37.55
		High	889.00	45.92	39.08
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.74	37.46
		Middle	881.50	45.66	36.82
		High	889.00	45.77	37.76
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.50	35.47
		Middle	881.50	45.63	36.53
		High	889.00	45.49	35.44
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.56	35.97
		Middle	881.50	45.56	36.01
		High	889.00	45.53	35.69
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.57	36.07
		Middle	881.50	45.50	35.49
		High	889.00	45.55	35.88
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.47	35.20
		Middle	881.50	45.48	35.28
		High	889.00	45.51	35.58

Sum Data of Port 0, Port 1, Port 2 and Port 3

Frequency (MHz)	Output Power			
	LTE (QPSK) / NR (CP-OFDM QPSK)	LTE (16QAM) / NR (CP-OFDM 16QAM)	LTE (64QAM) / NR (CP-OFDM 64QAM)	LTE (256QAM) / NR (CP-OFDM 256QAM)
	W			
874.00	153.41	153.89	153.41	151.38
881.50	155.42	153.80	152.84	150.40
889.00	154.86	154.83	154.85	153.78

5G NR 10 MHz 1 Carrier

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	46.30	42.63
		Middle	881.50	46.16	41.35
		High	889.00	46.25	42.22
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.18	41.53
		Middle	881.50	46.07	40.41
		High	889.00	46.21	41.80
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	46.27	42.35
		Middle	881.50	46.11	40.79
		High	889.00	46.24	42.10
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	46.32	42.82
		Middle	881.50	46.05	40.25
		High	889.00	46.27	42.40
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.99	39.73
		Middle	881.50	45.78	37.80
		High	889.00	45.87	38.62
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.02	39.97
		Middle	881.50	45.80	37.98
		High	889.00	45.79	37.92
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	46.00	39.80
		Middle	881.50	45.85	38.48
		High	889.00	45.90	38.91
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.99	39.76
		Middle	881.50	45.74	37.45
		High	889.00	45.66	36.85

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.85	38.48
		Middle	881.50	45.89	38.81
		High	889.00	45.84	38.35
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.87	38.62
		Middle	881.50	45.75	37.56
		High	889.00	45.80	38.01
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.88	38.71
		Middle	881.50	45.81	38.06
		High	889.00	45.80	38.05
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.85	38.50
		Middle	881.50	45.76	37.71
		High	889.00	45.70	37.17
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.53	35.74
		Middle	881.50	45.59	36.18
		High	889.00	45.44	34.95
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.46	35.20
		Middle	881.50	45.53	35.75
		High	889.00	45.49	35.36
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.61	36.37
		Middle	881.50	45.54	35.81
		High	889.00	45.45	35.08
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.55	35.88
		Middle	881.50	45.44	35.02
		High	889.00	45.42	34.85

Sum Data of Port 0, Port 1, Port 2 and Port 3

Frequency (MHz)	Output Power			
	LTE (QPSK) / NR (CP-OFDM QPSK)	LTE (16QAM) / NR (CP-OFDM 16QAM)	LTE (64QAM) / NR (CP-OFDM 64QAM)	LTE (256QAM) / NR (CP-OFDM 256QAM)
	W			
874.00	156.57	155.32	157.24	156.96
881.50	154.14	151.70	153.14	150.43
889.00	154.14	153.09	154.15	151.27

LTE Band 5 10 MHz 1 Carrier

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	46.11	40.85
		Middle	881.50	46.13	40.98
		High	889.00	46.14	41.09
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	46.03	40.12
		Middle	881.50	46.24	42.06
		High	889.00	46.20	41.67
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	46.07	40.49
		Middle	881.50	46.19	41.63
		High	889.00	46.17	41.44
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	46.16	41.33
		Middle	881.50	46.23	41.99
		High	889.00	46.13	40.97
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.82	38.23
		Middle	881.50	45.87	38.63
		High	889.00	45.75	37.62
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.72	37.33
		Middle	881.50	45.80	38.02
		High	889.00	45.78	37.83
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.81	38.11
		Middle	881.50	45.89	38.80
		High	889.00	45.73	37.38
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.83	38.33
		Middle	881.50	45.80	38.05
		High	889.00	45.81	38.09

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.84	38.40
		Middle	881.50	45.84	38.41
		High	889.00	45.84	38.39
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.83	38.27
		Middle	881.50	45.83	38.30
		High	889.00	45.85	38.45
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.88	38.69
		Middle	881.50	45.91	38.96
		High	889.00	45.78	37.83
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.80	38.04
		Middle	881.50	45.84	38.33
		High	889.00	45.80	38.04
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	45.53	35.69
		Middle	881.50	45.56	35.95
		High	889.00	45.56	36.00
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	45.55	35.86
		Middle	881.50	45.51	35.58
		High	889.00	45.52	35.62
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	45.52	35.61
		Middle	881.50	45.57	36.06
		High	889.00	45.53	35.75
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	45.57	36.07
		Middle	881.50	45.62	36.46
		High	889.00	45.53	35.70

Sum Data of Port 0, Port 1, Port 2 and Port 3

Frequency (MHz)	Output Power			
	LTE (QPSK) / NR (CP-OFDM QPSK)	LTE (16QAM) / NR (CP-OFDM 16QAM)	LTE (64QAM) / NR (CP-OFDM 64QAM)	LTE (256QAM) / NR (CP-OFDM 256QAM)
	W			
874.00	153.17	151.58	152.89	153.77
881.50	153.97	153.96	155.44	154.82
889.00	153.09	153.57	152.39	152.80

LTE Band 5 5 MHz 1 Carrier

Ant.	Mod.	Channel	Frequency (MHz)	Measured Value (dBm)	Calculated (W)
3	LTE (64QAM)	Middle	881.50	42.47	17.66

***Note:**

1. Only the data tested in the worst mode in the original data was inserted for comparison.

5.2. PAPR

Test Requirements:

§ 22.913 Effective radiated power limits.

- (d) *Power measurement.* Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

Test Procedures:

The measurement is performed in accordance with Section 5.2.3.4 of ANSI C63.26.

The following guidelines are offered for performing a CCDF measurement.

- a) Set resolution/measurement bandwidth $\geq$ OBW or specified reference bandwidth.
- b) Set the number of counts to a value that stabilizes the measured CCDF curve.
- c) Set the measurement interval as follows:
 - 1) For continuous transmissions, set to the greater of $[10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})]$ or 1 ms.
 - 2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration.
 - 3) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers.
- d) Record the maximum PAPR level associated with a probability of 0.1%.
- e) The peak power level is calculated from the sum of the PAPR value from step d) to the measured average power.

Note:

- 1) The results of the RF output power test shown above the frequency measured values are very small and similar trend for each port, so we are attached only the worst case plot.

Tabular data of PAPR

DSS Mode LTE 9 to NR 1, 10 MHz

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.96
		Middle	881.50	8.33
		High	889.00	7.98
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	7.99
		Middle	881.50	7.99
		High	889.00	7.98
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.94
		Middle	881.50	7.99
		High	889.00	8.05
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.96
		Middle	881.50	7.98
		High	889.00	8.00
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.97
		Middle	881.50	7.96
		High	889.00	7.98
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	7.98
		Middle	881.50	7.99
		High	889.00	7.94
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	8.00
		Middle	881.50	7.95
		High	889.00	7.99
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.99
		Middle	881.50	7.96
		High	889.00	8.00
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.97
		Middle	881.50	7.98
		High	889.00	7.99
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	7.98
		Middle	881.50	7.99
		High	889.00	8.00
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.97
		Middle	881.50	7.96
		High	889.00	7.98
		Low	874.00	7.96
		Middle	881.50	8.03



Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
	LTE (256QAM) / NR (CP-OFDM 256QAM)	High	889.00	7.99
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.98
		Middle	881.50	7.97
		High	889.00	7.99
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	7.99
		Middle	881.50	8.00
		High	889.00	7.96
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	7.94
		Middle	881.50	7.97
		High	889.00	7.99
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.01
		Middle	881.50	7.98
		High	889.00	7.99

DSS Mode LTE 8 to NR 2, 10 MHz

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.98
		Middle	881.50	7.98
		High	889.00	7.99
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.01
		Middle	881.50	8.00
		High	889.00	8.00
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.95
		Middle	881.50	7.97
		High	889.00	7.97
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.00
		Middle	881.50	7.98
		High	889.00	7.97
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.96
		Middle	881.50	7.99
		High	889.00	7.99
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.00
		Middle	881.50	7.98
		High	889.00	7.97
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.96
		Middle	881.50	7.94
		High	889.00	7.99
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.03
		Middle	881.50	7.97
		High	889.00	7.99
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.96
		Middle	881.50	8.00
		High	889.00	7.99
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.00
		Middle	881.50	8.01
		High	889.00	7.98
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.96
		Middle	881.50	8.00
		High	889.00	7.97
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.99
		Middle	881.50	8.00
		High	889.00	7.99



Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.97
		Middle	881.50	7.98
		High	889.00	7.99
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	7.98
		Middle	881.50	7.99
		High	889.00	8.00
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	7.94
		Middle	881.50	7.96
		High	889.00	7.96
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.97
		Middle	881.50	7.99
		High	889.00	7.98

DSS Mode LTE 7 to NR 3, 10 MHz

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.95
		Middle	881.50	8.01
		High	889.00	8.00
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	7.98
		Middle	881.50	8.01
		High	889.00	7.98
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.97
		Middle	881.50	8.01
		High	889.00	7.98
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.99
		Middle	881.50	7.98
		High	889.00	7.99
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.97
		Middle	881.50	7.98
		High	889.00	8.00
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	7.97
		Middle	881.50	8.00
		High	889.00	7.97
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.97
		Middle	881.50	7.95
		High	889.00	7.95
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.96
		Middle	881.50	7.97
		High	889.00	7.99
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.96
		Middle	881.50	7.97
		High	889.00	8.00
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	7.99
		Middle	881.50	7.97
		High	889.00	7.99
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.94
		Middle	881.50	7.96
		High	889.00	7.95
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.98
		Middle	881.50	7.98
		High	889.00	8.00

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.95
		Middle	881.50	7.96
		High	889.00	8.00
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.01
		Middle	881.50	8.03
		High	889.00	7.97
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.94
		Middle	881.50	7.98
		High	889.00	8.00
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.96
		Middle	881.50	7.96
		High	889.00	8.01

DSS Mode LTE 6 to NR 4, 10 MHz

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.99
		Middle	881.50	7.98
		High	889.00	8.06
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.02
		Middle	881.50	8.04
		High	889.00	7.99
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.96
		Middle	881.50	7.96
		High	889.00	7.99
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.01
		Middle	881.50	7.97
		High	889.00	8.01
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.02
		Middle	881.50	7.97
		High	889.00	7.99
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	7.99
		Middle	881.50	8.00
		High	889.00	7.99
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.98
		Middle	881.50	7.95
		High	889.00	7.98
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.99
		Middle	881.50	7.95
		High	889.00	8.02
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.98
		Middle	881.50	7.97
		High	889.00	8.01
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.02
		Middle	881.50	8.02
		High	889.00	8.01
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.96
		Middle	881.50	7.96
		High	889.00	7.99
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.98
		Middle	881.50	8.02
		High	889.00	8.00



Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.98
		Middle	881.50	7.96
		High	889.00	8.01
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.00
		Middle	881.50	8.01
		High	889.00	8.00
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	7.97
		Middle	881.50	7.94
		High	889.00	7.98
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.00
		Middle	881.50	7.97
		High	889.00	7.99

DSS Mode LTE 5 to NR 5, 10 MHz

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.41
		Middle	881.50	7.97
		High	889.00	8.00
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.00
		Middle	881.50	8.01
		High	889.00	8.01
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.95
		Middle	881.50	7.99
		High	889.00	7.98
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.98
		Middle	881.50	8.00
		High	889.00	7.99
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.98
		Middle	881.50	7.97
		High	889.00	7.98
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.00
		Middle	881.50	8.01
		High	889.00	8.00
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.95
		Middle	881.50	7.94
		High	889.00	7.97
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.99
		Middle	881.50	7.97
		High	889.00	7.97
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.99
		Middle	881.50	8.00
		High	889.00	8.01
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.02
		Middle	881.50	8.00
		High	889.00	8.00
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.96
		Middle	881.50	7.96
		High	889.00	8.00
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.97
		Middle	881.50	7.97
		High	889.00	8.02



Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.99
		Middle	881.50	7.98
		High	889.00	8.01
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.00
		Middle	881.50	8.01
		High	889.00	8.01
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	7.97
		Middle	881.50	7.95
		High	889.00	7.97
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.99
		Middle	881.50	8.03
		High	889.00	8.01

DSS Mode LTE 4 to NR 6, 10 MHz

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.03
		Middle	881.50	7.95
		High	889.00	8.02
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.00
		Middle	881.50	8.02
		High	889.00	8.01
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	8.01
		Middle	881.50	7.94
		High	889.00	8.00
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.98
		Middle	881.50	7.98
		High	889.00	8.01
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.00
		Middle	881.50	7.98
		High	889.00	8.00
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.03
		Middle	881.50	8.02
		High	889.00	8.02
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.97
		Middle	881.50	7.93
		High	889.00	7.96
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.97
		Middle	881.50	7.96
		High	889.00	7.98
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.01
		Middle	881.50	7.97
		High	889.00	8.01
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.02
		Middle	881.50	8.05
		High	889.00	8.00
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.97
		Middle	881.50	7.94
		High	889.00	7.96
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.96
		Middle	881.50	7.95
		High	889.00	8.01

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.00
		Middle	881.50	7.98
		High	889.00	8.03
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.02
		Middle	881.50	8.05
		High	889.00	8.01
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	7.97
		Middle	881.50	7.94
		High	889.00	7.94
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.01
		Middle	881.50	7.96
		High	889.00	7.99

DSS Mode LTE 3 to NR 7, 10 MHz

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.00
		Middle	881.50	7.98
		High	889.00	8.01
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.04
		Middle	881.50	8.03
		High	889.00	8.02
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	8.00
		Middle	881.50	7.94
		High	889.00	7.97
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.95
		Middle	881.50	7.97
		High	889.00	8.00
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.99
		Middle	881.50	8.02
		High	889.00	8.01
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.01
		Middle	881.50	8.03
		High	889.00	8.02
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.99
		Middle	881.50	7.94
		High	889.00	7.96
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.01
		Middle	881.50	7.93
		High	889.00	7.98
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.99
		Middle	881.50	8.00
		High	889.00	8.01
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.02
		Middle	881.50	8.03
		High	889.00	8.03
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.96
		Middle	881.50	7.95
		High	889.00	8.01
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.03
		Middle	881.50	7.98
		High	889.00	7.99



Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.01
		Middle	881.50	7.98
		High	889.00	8.00
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.02
		Middle	881.50	8.03
		High	889.00	8.03
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	7.98
		Middle	881.50	7.95
		High	889.00	7.95
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.97
		Middle	881.50	7.95
		High	889.00	8.04

DSS Mode LTE 2 to NR 8, 10 MHz

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.02
		Middle	881.50	7.98
		High	889.00	8.01
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.02
		Middle	881.50	8.03
		High	889.00	8.02
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.99
		Middle	881.50	7.96
		High	889.00	7.96
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.04
		Middle	881.50	7.97
		High	889.00	8.01
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.99
		Middle	881.50	7.99
		High	889.00	8.00
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.01
		Middle	881.50	8.00
		High	889.00	8.01
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.99
		Middle	881.50	8.01
		High	889.00	7.97
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.97
		Middle	881.50	7.97
		High	889.00	8.03
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.99
		Middle	881.50	8.00
		High	889.00	8.01
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.00
		Middle	881.50	8.01
		High	889.00	8.03
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.97
		Middle	881.50	7.93
		High	889.00	7.94
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.97
		Middle	881.50	7.97
		High	889.00	7.98



Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.03
		Middle	881.50	7.97
		High	889.00	8.02
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.01
		Middle	881.50	8.02
		High	889.00	8.01
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	7.98
		Middle	881.50	7.93
		High	889.00	7.95
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.98
		Middle	881.50	7.97
		High	889.00	8.00

5G NR 10 MHz 1 Carrier

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.03
		Middle	881.50	8.03
		High	889.00	8.05
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.07
		Middle	881.50	8.05
		High	889.00	8.03
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	8.04
		Middle	881.50	7.93
		High	889.00	7.92
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.04
		Middle	881.50	8.06
		High	889.00	8.08
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.04
		Middle	881.50	8.04
		High	889.00	8.04
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.09
		Middle	881.50	8.04
		High	889.00	8.03
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	8.02
		Middle	881.50	7.93
		High	889.00	8.07
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.04
		Middle	881.50	8.05
		High	889.00	8.06
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.03
		Middle	881.50	8.04
		High	889.00	8.04
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.05
		Middle	881.50	8.10
		High	889.00	8.03
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	8.03
		Middle	881.50	7.93
		High	889.00	7.89
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.04
		Middle	881.50	8.06
		High	889.00	8.06



Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.03
		Middle	881.50	8.03
		High	889.00	8.02
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.05
		Middle	881.50	8.04
		High	889.00	8.03
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	8.00
		Middle	881.50	7.94
		High	889.00	7.90
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.05
		Middle	881.50	8.10
		High	889.00	8.07

LTE Band 5 10 MHz 1 Carrier

Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.26
		Middle	881.50	7.98
		High	889.00	7.96
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	7.99
		Middle	881.50	7.98
		High	889.00	7.96
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.95
		Middle	881.50	7.95
		High	889.00	7.98
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.98
		Middle	881.50	7.97
		High	889.00	7.97
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.96
		Middle	881.50	7.95
		High	889.00	7.98
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.01
		Middle	881.50	7.99
		High	889.00	7.94
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.96
		Middle	881.50	7.93
		High	889.00	7.98
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.98
		Middle	881.50	7.94
		High	889.00	7.99
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.98
		Middle	881.50	7.95
		High	889.00	7.98
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.00
		Middle	881.50	8.01
		High	889.00	7.98
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.96
		Middle	881.50	7.97
		High	889.00	8.00
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	7.99
		Middle	881.50	7.97
		High	889.00	7.99



Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	7.97
		Middle	881.50	7.97
		High	889.00	8.00
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	8.01
		Middle	881.50	8.02
		High	889.00	8.01
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	7.98
		Middle	881.50	7.99
		High	889.00	8.00
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.00
		Middle	881.50	7.96
		High	889.00	7.98

LTE Band 5 5 MHz 1 Carrier

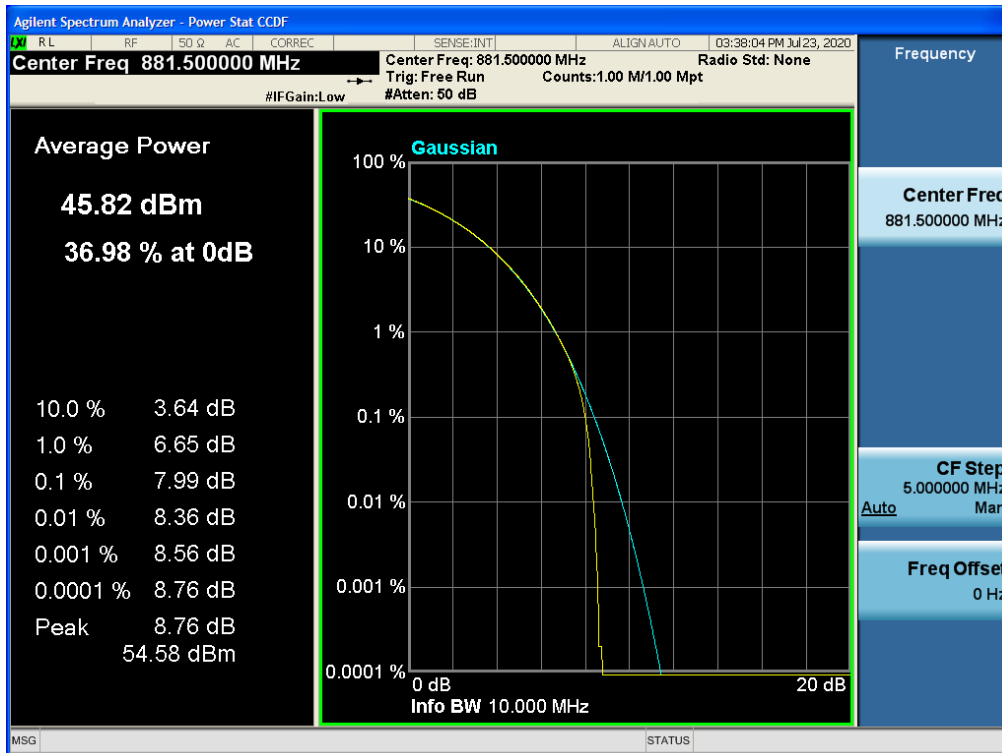
Ant.	Modulation	Channel	Frequency (MHz)	0.1 % PAPR (dB)
4	LTE (64QAM)	Low	881.5	8.45

***Note:**

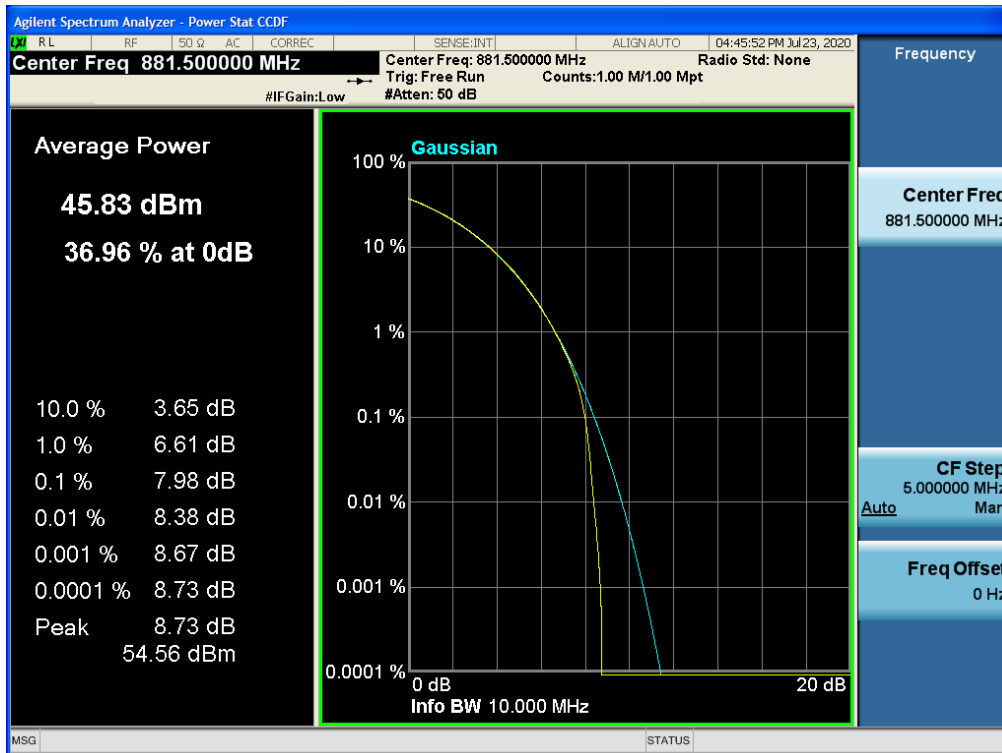
1. Only the data tested in the worst mode in the original data was inserted for comparison.

Plot Data of PAPR

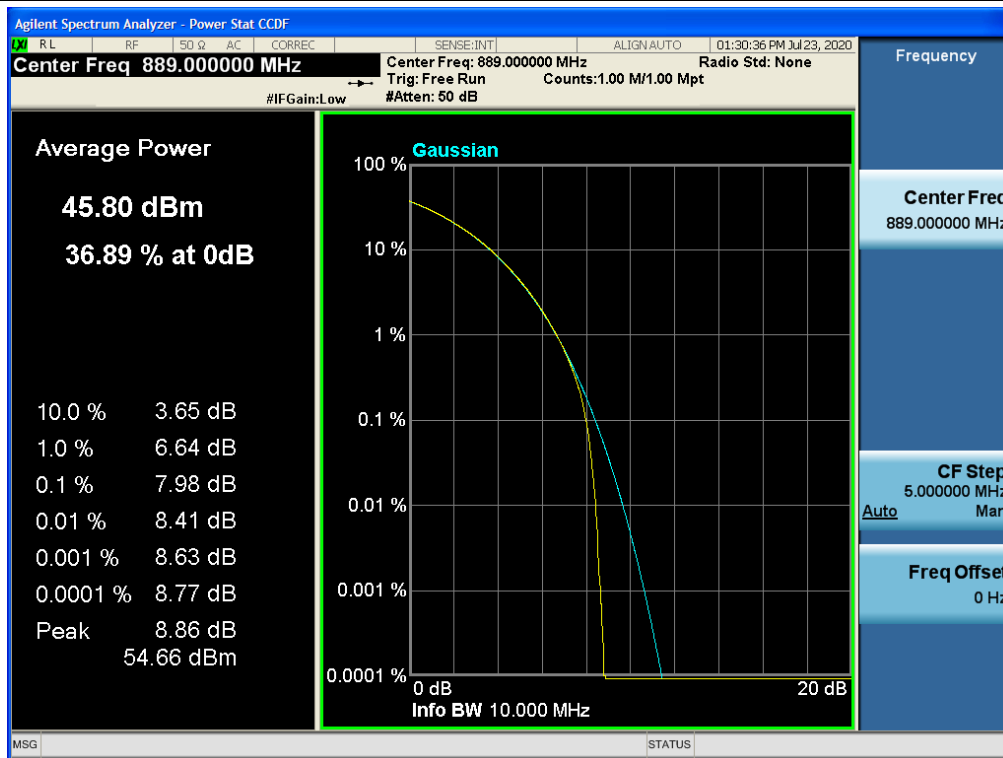
Antenna 0 / DSS Mode LTE 9 to NR 1, 10 MHz / LTE (16QAM) / NR (CP-OFDM 16QAM) / Middle



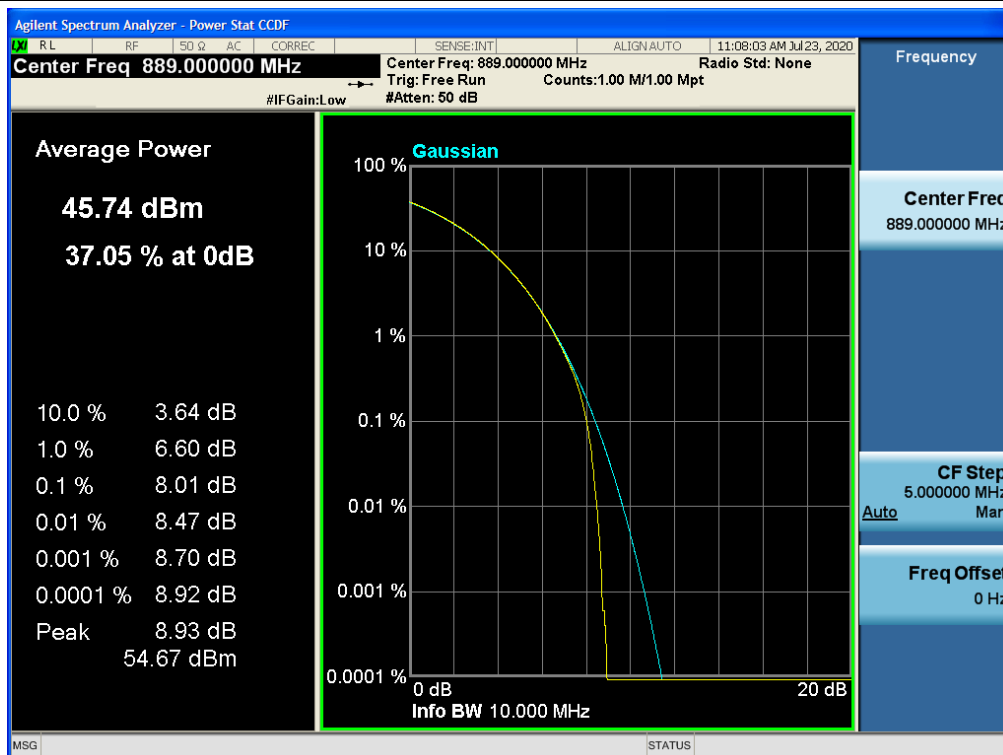
Antenna 0 / DSS Mode LTE 8 to NR 2, 10 MHz / LTE (QPSK) / NR (CP-OFDM QPSK) / Middle



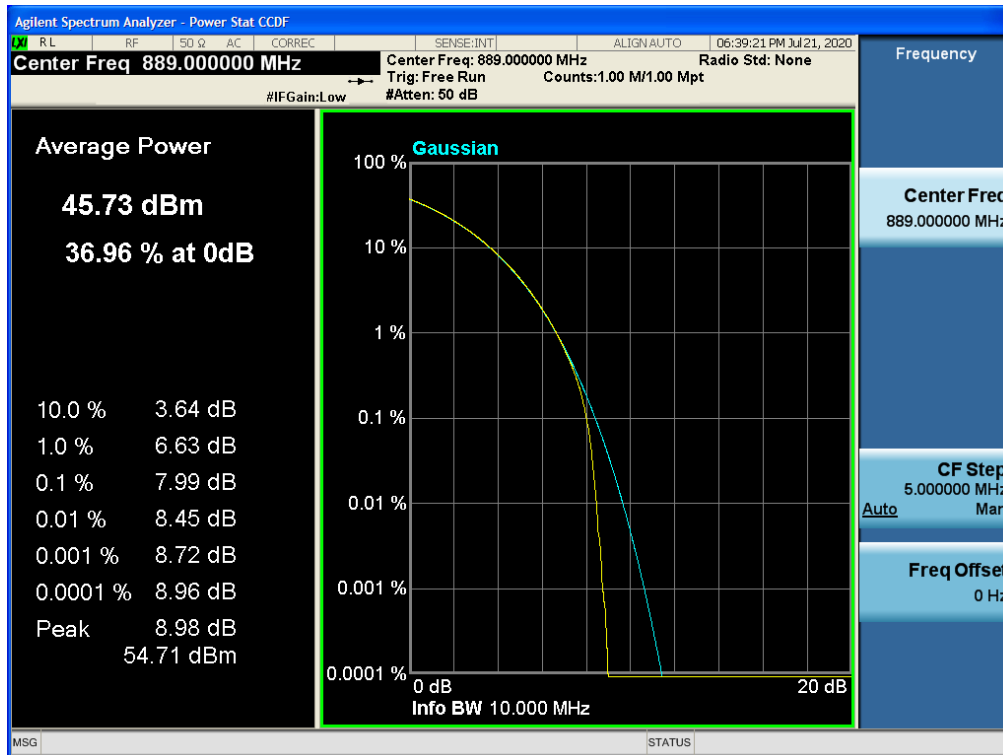
Antenna 0 / DSS Mode LTE 7 to NR 3, 10 MHz / LTE (16QAM) / NR (CP-OFDM 16QAM) / High



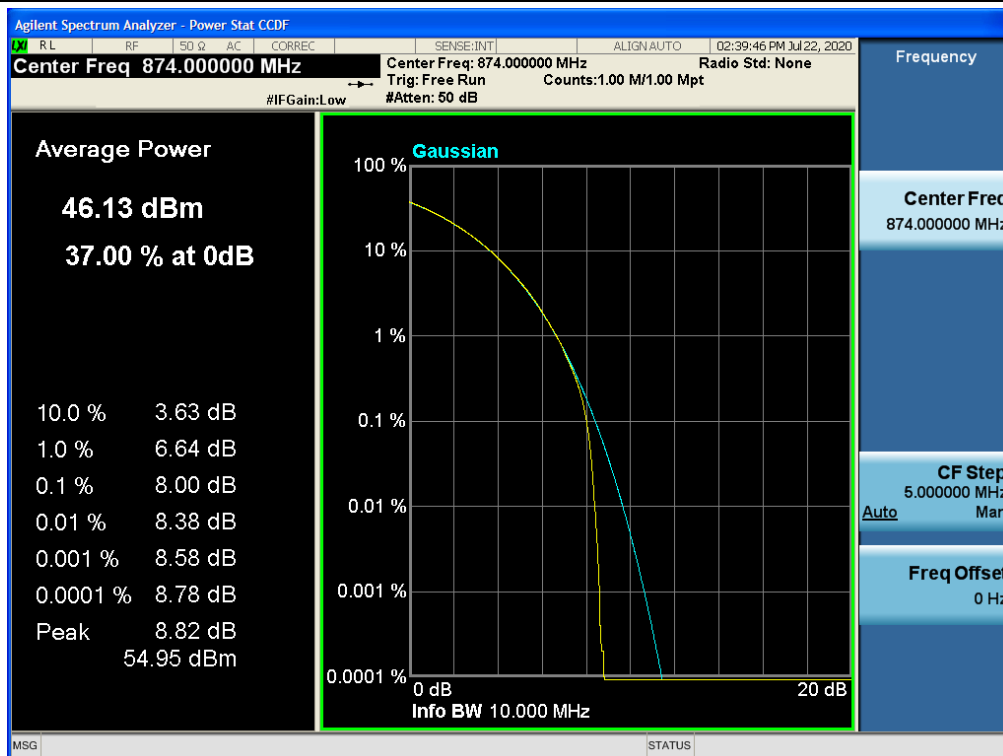
Antenna 0 / DSS Mode LTE 6 to NR 4, 10 MHz / LTE (256QAM) / NR (CP-OFDM 256QAM) / High



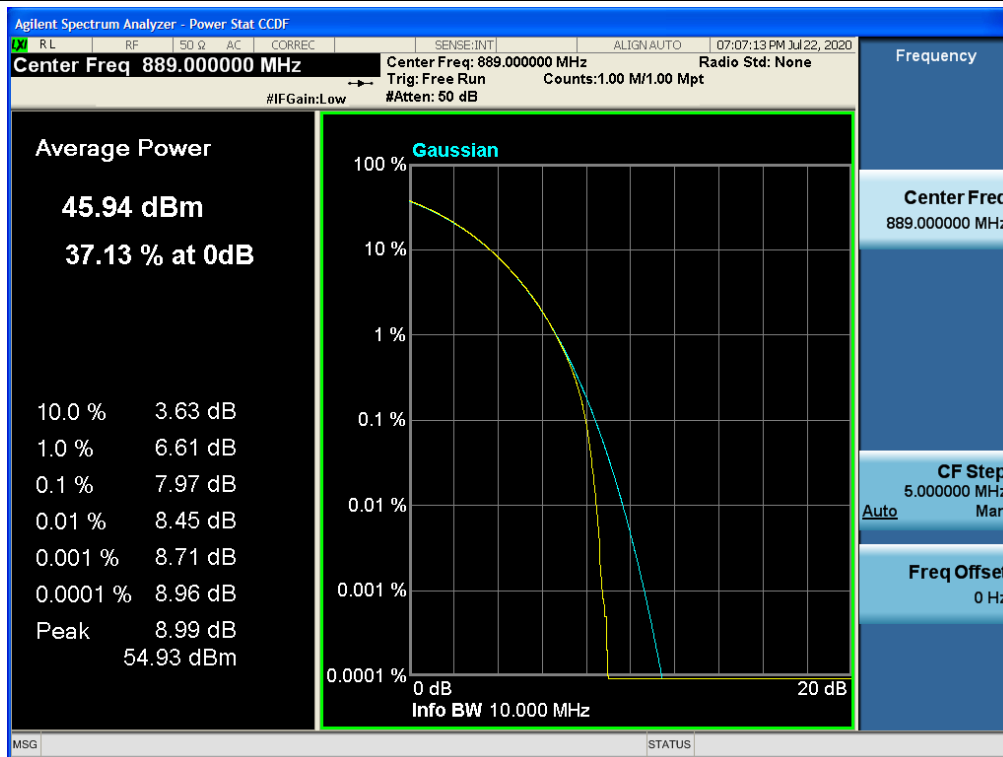
Antenna 0 / DSS Mode LTE 5 to NR 5, 10 MHz / LTE (256QAM) / NR (CP-OFDM 256QAM) / High



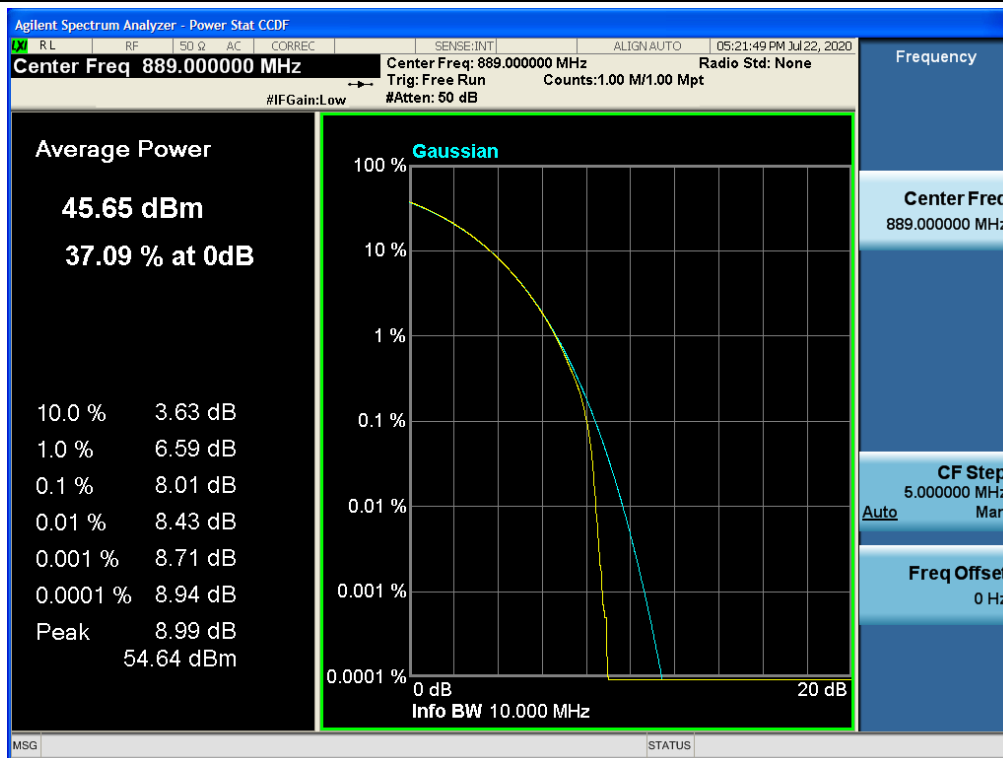
Antenna 0 / DSS Mode LTE 4 to NR 6, 10 MHz / LTE (16QAM) / NR (CP-OFDM 16QAM) / Low



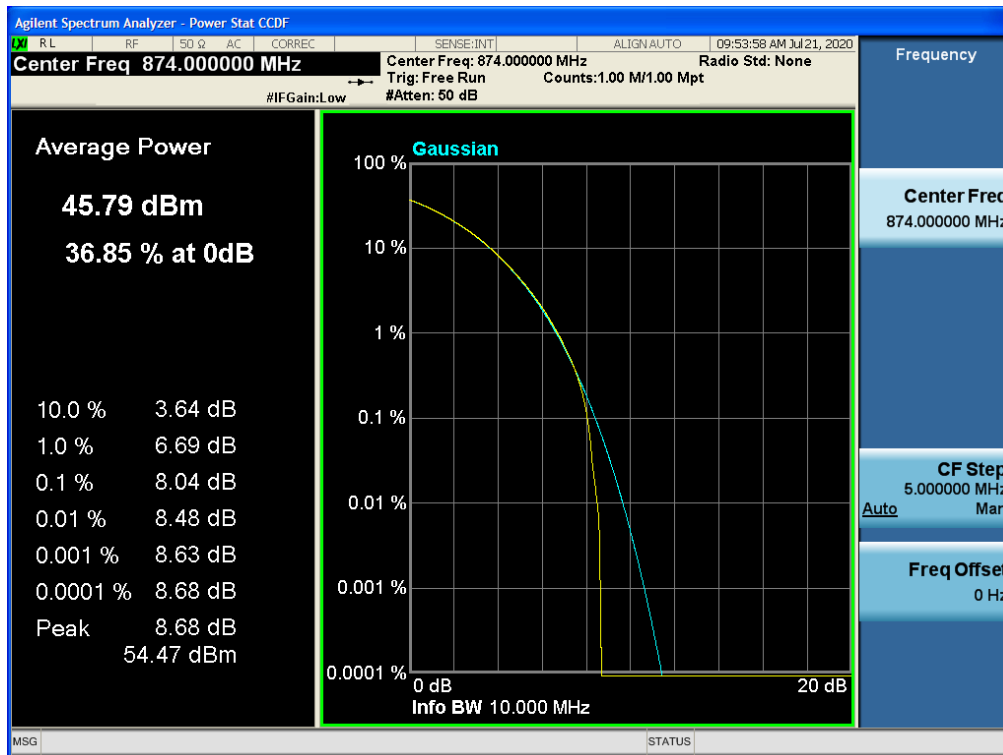
Antenna 0 / DSS Mode LTE 3 to NR 7, 10 MHz / LTE (64QAM) / NR (CP-OFDM 64QAM) / High



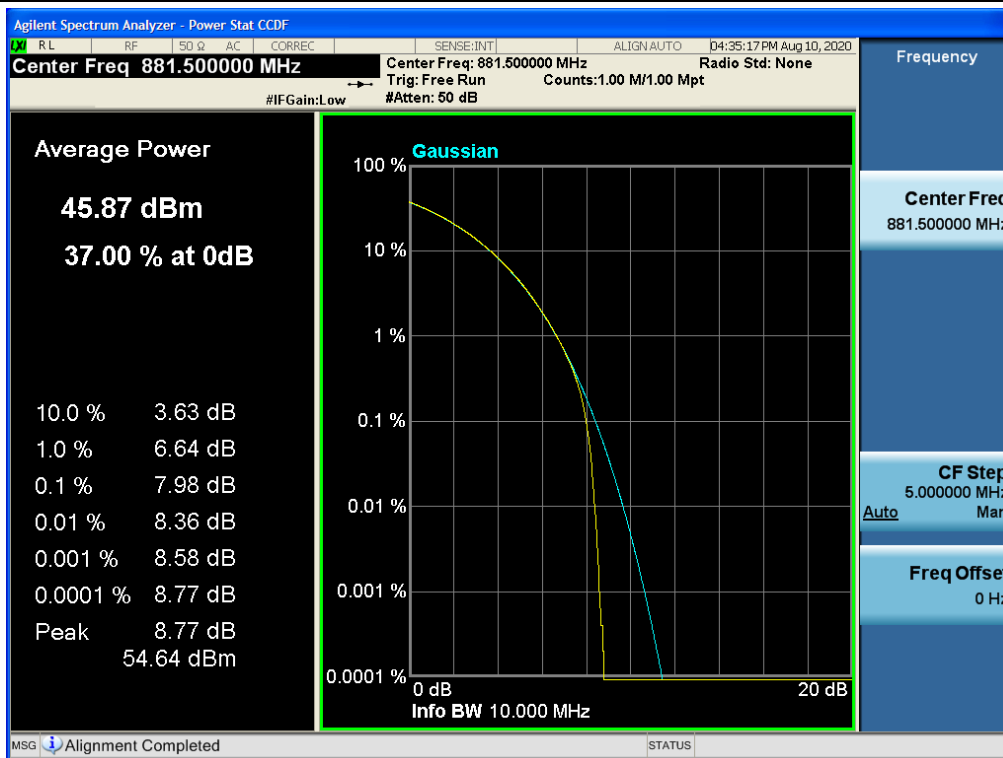
Antenna 0 / DSS Mode LTE 2 to NR 8, 10 MHz / LTE (256QAM) / NR (CP-OFDM 256QAM) / High



Antenna 0 / 5G NR 10 MHz 1 Carrier / LTE (256QAM) / NR (CP-OFDM 256QAM) / Low



Antenna 0 / LTE Band 5 10 MHz 1 Carrier / LTE (16QAM) / NR (CP-OFDM 16QAM) / Middle



5.3. OCCUPIED BANDWIDTH

Test Requirements:

§ 2.1049 Measurements required: Occupied bandwidth.

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the specified conditions of § 2.1049 (a) through (i) as applicable.

Test Procedures:

The measurement is performed in accordance with Section 5.4.3 and 5.4.4 of ANSI C63.26.

5.4.3 Occupied bandwidth—Relative measurement procedure

- The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
- The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$.
- Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.

NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances.

- The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “-X dB” requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.
- Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
- Determine the reference value by either of the following:
 - Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the Highest level of the displayed trace (this is the reference value).
 - Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier.
- Determine the “-X dB amplitude” as equal to (Reference Value - X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function.
- If the reference value was determined using an unmodulated carrier, turn the EUT modulation on, then either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise the trace from step f) shall be used for step i).
- Place two markers, one at the lowest and the other at the Highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB amplitude” determined in step f). If a marker is below this “-X dB amplitude” value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers. The spectral envelope can cross the “-X dB amplitude” at multiple points. The lowest or Highest frequency shall be selected as the frequencies that are the farthest away from the center frequency at which the spectral envelope crosses the “-X dB amplitude.”
- The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

5.4.4 Occupied bandwidth—Power bandwidth (99%) measurement procedure

- The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of 1.5



× OBW is sufficient).

b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$.

c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.

NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances.

d) Set the detection mode to peak, and the trace mode to max-hold.

e) If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies.

f) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

Note:

The results of the Occupied Bandwidth test shown above the frequency measured values are very small and similar trend for each port, so we are attached only the worst case plot.

Test Results:
Tabular Data of Occupied Bandwidth

DSS Mode LTE 9 to NR 1, 10 MHz

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.1963
		Middle	881.50	9.1718
		High	889.00	9.2729
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1428
		Middle	881.50	9.1422
		High	889.00	9.1200
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.1804
		Middle	881.50	9.2441
		High	889.00	9.1493
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.1948
		Middle	881.50	9.1799
		High	889.00	9.2099
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.1761
		Middle	881.50	9.1635
		High	889.00	9.2002
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1627
		Middle	881.50	9.1275
		High	889.00	9.1547
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.1778
		Middle	881.50	9.1697
		High	889.00	9.2065
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.1458
		Middle	881.50	9.1578
		High	889.00	9.1636
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2213
		Middle	881.50	9.2519
		High	889.00	9.1758
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1182
		Middle	881.50	9.1158
		High	889.00	9.1135
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.1876
		Middle	881.50	9.2045
		High	889.00	9.2100
		Low	874.00	9.1799

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Middle	881.50	9.1445
		High	889.00	9.1805
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2241
		Middle	881.50	9.2185
		High	889.00	9.3069
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1396
		Middle	881.50	9.1913
		High	889.00	9.1160
	LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	874.00	9.1854
		Middle	881.50	9.1664
		High	889.00	9.2368
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2304
		Middle	881.50	9.1710
		High	889.00	9.1328

DSS Mode LTE 8 to NR 2, 10 MHz

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2957
		Middle	881.50	9.2451
		High	889.00	9.2481
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1261
		Middle	881.50	9.1139
		High	889.00	9.1353
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2465
		Middle	881.50	9.2618
		High	889.00	9.2625
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2624
		Middle	881.50	9.2388
		High	889.00	9.2504
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2708
		Middle	881.50	9.2621
		High	889.00	9.2608
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1449
		Middle	881.50	9.1543
		High	889.00	9.1702
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2462
		Middle	881.50	9.2932
		High	889.00	9.2864
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2248
		Middle	881.50	9.2474
		High	889.00	9.2101
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2374
		Middle	881.50	9.2488
		High	889.00	9.2246
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1181
		Middle	881.50	9.1406
		High	889.00	9.1723
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2151
		Middle	881.50	9.2338
		High	889.00	9.2677
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2150
		Middle	881.50	9.1894
		High	889.00	9.2473



Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2741
		Middle	881.50	9.2493
		High	889.00	9.2326
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1619
		Middle	881.50	9.1527
		High	889.00	9.1342
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.1842
		Middle	881.50	9.2608
		High	889.00	9.2682
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2702
		Middle	881.50	9.2533
		High	889.00	9.2330

DSS Mode LTE 7 to NR 3, 10 MHz

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2517
		Middle	881.50	9.2935
		High	889.00	9.2458
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.2599
		Middle	881.50	9.1310
		High	889.00	9.1399
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3102
		Middle	881.50	9.2836
		High	889.00	9.2831
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2448
		Middle	881.50	9.2679
		High	889.00	9.2541
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2764
		Middle	881.50	9.2593
		High	889.00	9.2348
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1164
		Middle	881.50	9.1577
		High	889.00	9.1768
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3125
		Middle	881.50	9.2386
		High	889.00	9.2771
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2518
		Middle	881.50	9.2688
		High	889.00	9.2456
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2689
		Middle	881.50	9.2780
		High	889.00	9.2509
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1302
		Middle	881.50	9.2471
		High	889.00	9.1834
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3172
		Middle	881.50	9.2547
		High	889.00	9.3032
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2521
		Middle	881.50	9.2441
		High	889.00	9.2635



Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2849
		Middle	881.50	9.2328
		High	889.00	9.2429
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1217
		Middle	881.50	9.1959
		High	889.00	9.2634
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2526
		Middle	881.50	9.2307
		High	889.00	9.2776
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2426
		Middle	881.50	9.2669
		High	889.00	9.3052

DSS Mode LTE 6 to NR 4, 10 MHz

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2839
		Middle	881.50	9.2909
		High	889.00	9.2884
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1553
		Middle	881.50	9.1640
		High	889.00	9.1616
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2741
		Middle	881.50	9.2479
		High	889.00	9.2924
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2667
		Middle	881.50	9.2588
		High	889.00	9.2680
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2895
		Middle	881.50	9.2652
		High	889.00	9.2791
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1305
		Middle	881.50	9.1307
		High	889.00	9.1943
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3158
		Middle	881.50	9.2536
		High	889.00	9.2575
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2802
		Middle	881.50	9.2617
		High	889.00	9.2669
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2811
		Middle	881.50	9.2724
		High	889.00	9.2890
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1990
		Middle	881.50	9.1611
		High	889.00	9.1333
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3089
		Middle	881.50	9.2600
		High	889.00	9.3036
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2724
		Middle	881.50	9.2860
		High	889.00	9.2307

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2820
		Middle	881.50	9.2716
		High	889.00	9.3127
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1644
		Middle	881.50	9.1733
		High	889.00	9.1481
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2526
		Middle	881.50	9.2433
		High	889.00	9.2989
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2768
		Middle	881.50	9.2758
		High	889.00	9.2578

DSS Mode LTE 5 to NR 5, 10 MHz

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2722
		Middle	881.50	9.2817
		High	889.00	9.2964
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1640
		Middle	881.50	9.1749
		High	889.00	9.2159
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2724
		Middle	881.50	9.2408
		High	889.00	9.3131
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2976
		Middle	881.50	9.3239
		High	889.00	9.2863
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2838
		Middle	881.50	9.2874
		High	889.00	9.2686
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1631
		Middle	881.50	9.2021
		High	889.00	9.1688
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3307
		Middle	881.50	9.2666
		High	889.00	9.3061
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2891
		Middle	881.50	9.2789
		High	889.00	9.2801
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.3002
		Middle	881.50	9.2609
		High	889.00	9.2789
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1691
		Middle	881.50	9.1622
		High	889.00	9.1724
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3185
		Middle	881.50	9.2800
		High	889.00	9.2820
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2824
		Middle	881.50	9.2756
		High	889.00	9.2546



Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2794
		Middle	881.50	9.2968
		High	889.00	9.2934
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1334
		Middle	881.50	9.1546
		High	889.00	9.1657
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2725
		Middle	881.50	9.2953
		High	889.00	9.3129
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2751
		Middle	881.50	9.2719
		High	889.00	9.2845

DSS Mode LTE 4 to NR 6, 10 MHz

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2822
		Middle	881.50	9.2693
		High	889.00	9.3005
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1828
		Middle	881.50	9.2067
		High	889.00	9.1990
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3358
		Middle	881.50	9.2983
		High	889.00	9.2638
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.3021
		Middle	881.50	9.2714
		High	889.00	9.3071
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2933
		Middle	881.50	9.2771
		High	889.00	9.3180
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1512
		Middle	881.50	9.1893
		High	889.00	9.1573
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3306
		Middle	881.50	9.2788
		High	889.00	9.2870
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2961
		Middle	881.50	9.2844
		High	889.00	9.2867
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2850
		Middle	881.50	9.2820
		High	889.00	9.3026
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1744
		Middle	881.50	9.1783
		High	889.00	9.1898
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3004
		Middle	881.50	9.2975
		High	889.00	9.3057
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2814
		Middle	881.50	9.2983
		High	889.00	9.2902



Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.3045
		Middle	881.50	9.2778
		High	889.00	9.2871
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.2002
		Middle	881.50	9.1738
		High	889.00	9.2127
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2883
		Middle	881.50	9.2825
		High	889.00	9.2872
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.3022
		Middle	881.50	9.3030
		High	889.00	9.3174

DSS Mode LTE 3 to NR 7, 10 MHz

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2875
		Middle	881.50	9.2702
		High	889.00	9.3144
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1479
		Middle	881.50	9.1993
		High	889.00	9.2168
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3139
		Middle	881.50	9.2692
		High	889.00	9.3067
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2843
		Middle	881.50	9.3041
		High	889.00	9.2954
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2973
		Middle	881.50	9.3232
		High	889.00	9.2931
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1802
		Middle	881.50	9.2048
		High	889.00	9.1683
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3080
		Middle	881.50	9.2979
		High	889.00	9.2956
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2922
		Middle	881.50	9.3011
		High	889.00	9.2871
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.3054
		Middle	881.50	9.3304
		High	889.00	9.2664
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1944
		Middle	881.50	9.1888
		High	889.00	9.1928
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3222
		Middle	881.50	9.3346
		High	889.00	9.2903
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2631
		Middle	881.50	9.3028
		High	889.00	9.2902



Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.3091
		Middle	881.50	9.2999
		High	889.00	9.2936
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.2028
		Middle	881.50	9.1759
		High	889.00	9.1894
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2972
		Middle	881.50	9.2893
		High	889.00	9.2930
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.3042
		Middle	881.50	9.2797
		High	889.00	9.3305

DSS Mode LTE 2 to NR 8, 10 MHz

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2785
		Middle	881.50	9.3182
		High	889.00	9.2966
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.2049
		Middle	881.50	9.2003
		High	889.00	9.2089
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2847
		Middle	881.50	9.3091
		High	889.00	9.3243
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2984
		Middle	881.50	9.2831
		High	889.00	9.3108
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2877
		Middle	881.50	9.3116
		High	889.00	9.2880
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1903
		Middle	881.50	9.2368
		High	889.00	9.2059
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3280
		Middle	881.50	9.3011
		High	889.00	9.3105
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2986
		Middle	881.50	9.3145
		High	889.00	9.3138
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.2951
		Middle	881.50	9.3054
		High	889.00	9.2892
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.1899
		Middle	881.50	9.2066
		High	889.00	9.2080
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.2721
		Middle	881.50	9.3248
		High	889.00	9.3133
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2954
		Middle	881.50	9.3078
		High	889.00	9.2973

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.3102
		Middle	881.50	9.2996
		High	889.00	9.2938
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.2106
		Middle	881.50	9.2014
		High	889.00	9.2206
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3028
		Middle	881.50	9.2754
		High	889.00	9.2728
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.3033
		Middle	881.50	9.2923
		High	889.00	9.3120

5G NR 10 MHz 1 Carrier

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.3251
		Middle	881.50	9.3063
		High	889.00	9.3087
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.2540
		Middle	881.50	9.2365
		High	889.00	9.2381
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3138
		Middle	881.50	9.2914
		High	889.00	9.3168
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2921
		Middle	881.50	9.2870
		High	889.00	9.2909
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.3047
		Middle	881.50	9.3113
		High	889.00	9.3146
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.2473
		Middle	881.50	9.2307
		High	889.00	9.2529
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3295
		Middle	881.50	9.3357
		High	889.00	9.3275
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2997
		Middle	881.50	9.2848
		High	889.00	9.2871
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.3260
		Middle	881.50	9.3311
		High	889.00	9.3083
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.2420
		Middle	881.50	9.2359
		High	889.00	9.2340
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3064
		Middle	881.50	9.3089
		High	889.00	9.3231
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.2912
		Middle	881.50	9.2901
		High	889.00	9.3088

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	9.3332
		Middle	881.50	9.3333
		High	889.00	9.3107
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.2421
		Middle	881.50	9.2642
		High	889.00	9.2402
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.3111
		Middle	881.50	9.3011
		High	889.00	9.3341
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	9.3340
		Middle	881.50	9.3115
		High	889.00	9.2988

LTE Band 5 10 MHz 1 Carrier

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
0	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.9907
		Middle	881.50	8.9726
		High	889.00	9.0099
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.0103
		Middle	881.50	9.0061
		High	889.00	9.0017
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.0248
		Middle	881.50	8.9955
		High	889.00	9.0077
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.9830
		Middle	881.50	8.9788
		High	889.00	8.9751
1	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.9981
		Middle	881.50	8.9892
		High	889.00	8.9927
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.0087
		Middle	881.50	9.0096
		High	889.00	9.0093
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	8.9942
		Middle	881.50	8.9877
		High	889.00	8.9742
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.9797
		Middle	881.50	8.9708
		High	889.00	8.9875
2	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.9978
		Middle	881.50	8.9801
		High	889.00	8.9865
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.0011
		Middle	881.50	8.9914
		High	889.00	8.9920
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	8.9929
		Middle	881.50	8.9949
		High	889.00	9.0112
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.9882
		Middle	881.50	8.9882
		High	889.00	8.9978

Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
3	LTE (QPSK) / NR (CP-OFDM QPSK)	Low	874.00	8.9912
		Middle	881.50	9.0094
		High	889.00	8.9755
	LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	874.00	9.0165
		Middle	881.50	9.0292
		High	889.00	9.0043
	LTE (64QAM) /NR (CP-OFDM 64QAM)	Low	874.00	9.0323
		Middle	881.50	8.9719
		High	889.00	8.9825
	LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	874.00	8.9819
		Middle	881.50	8.9907
		High	889.00	9.0074

LTE Band 5 5 MHz 1 Carrier

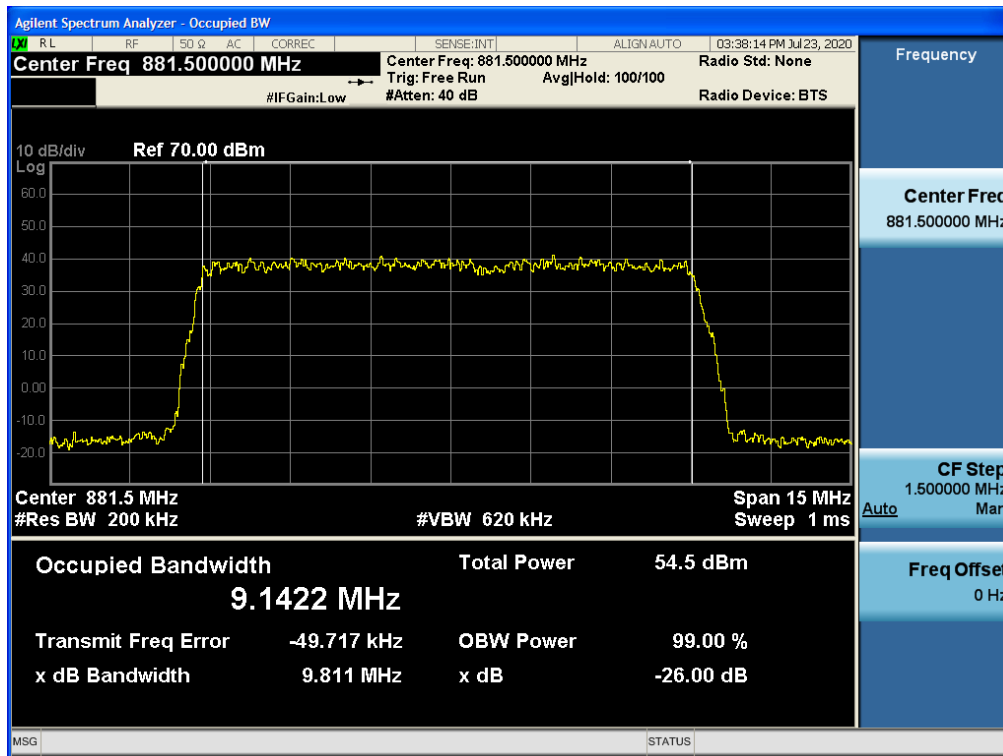
Ant	Mod	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
4	LTE (64QAM)	Mid	881.50	4.5324

***Note:**

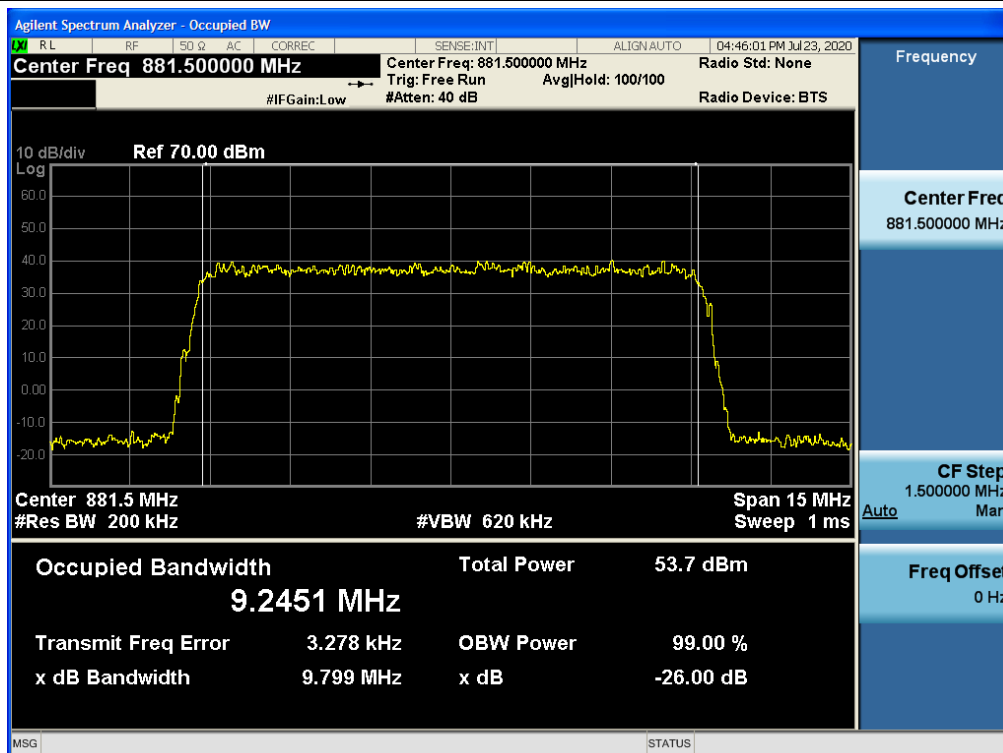
1. Only the data tested in the worst mode in the original data was inserted for comparison.

Plot Data of Occupied bandwidth

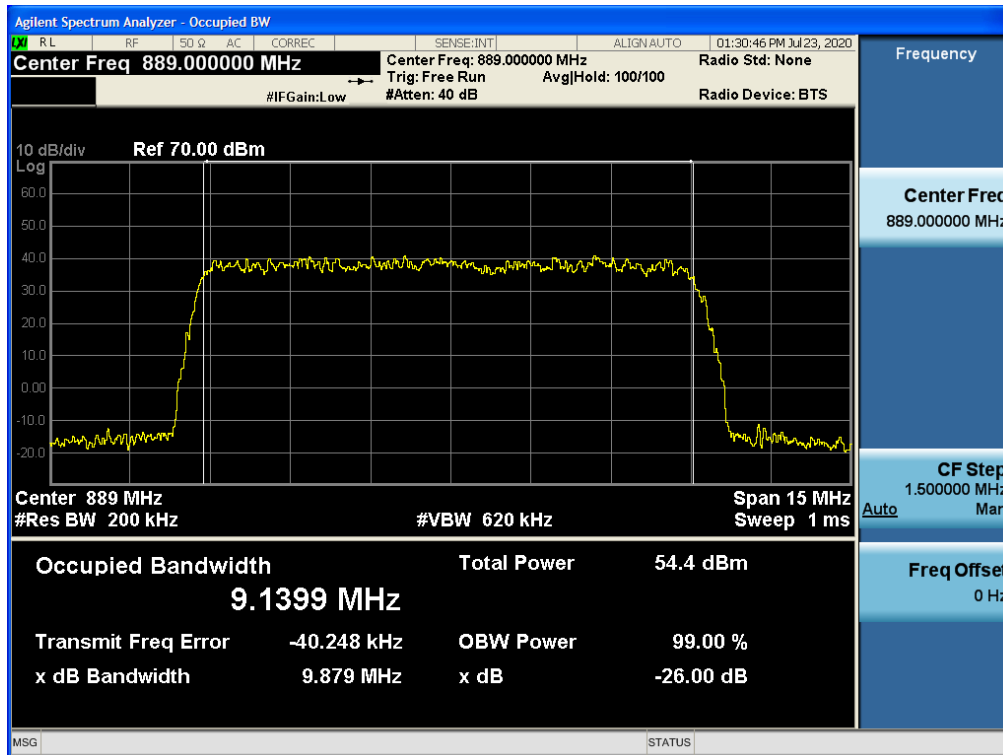
Antenna 0 / DSS Mode LTE 9 to NR 1, 10 MHz / LTE (16QAM) / NR (CP-OFDM 16QAM) / Middle



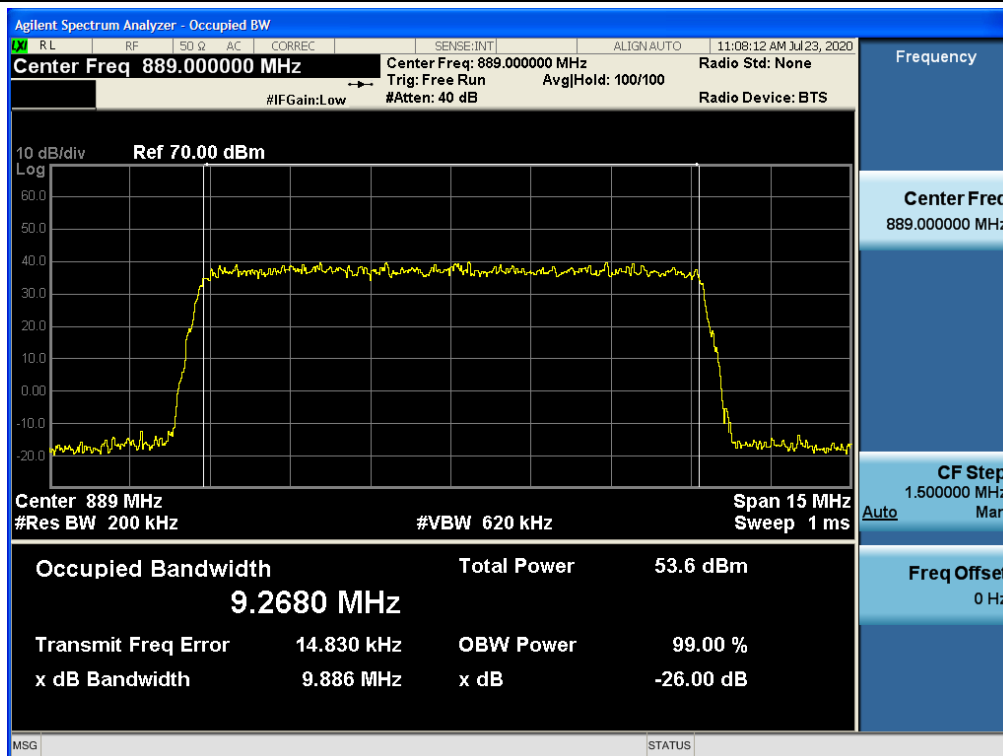
Antenna 0 / DSS Mode LTE 8 to NR 2, 10 MHz / LTE (QPSK) / NR (CP-OFDM QPSK) / Middle



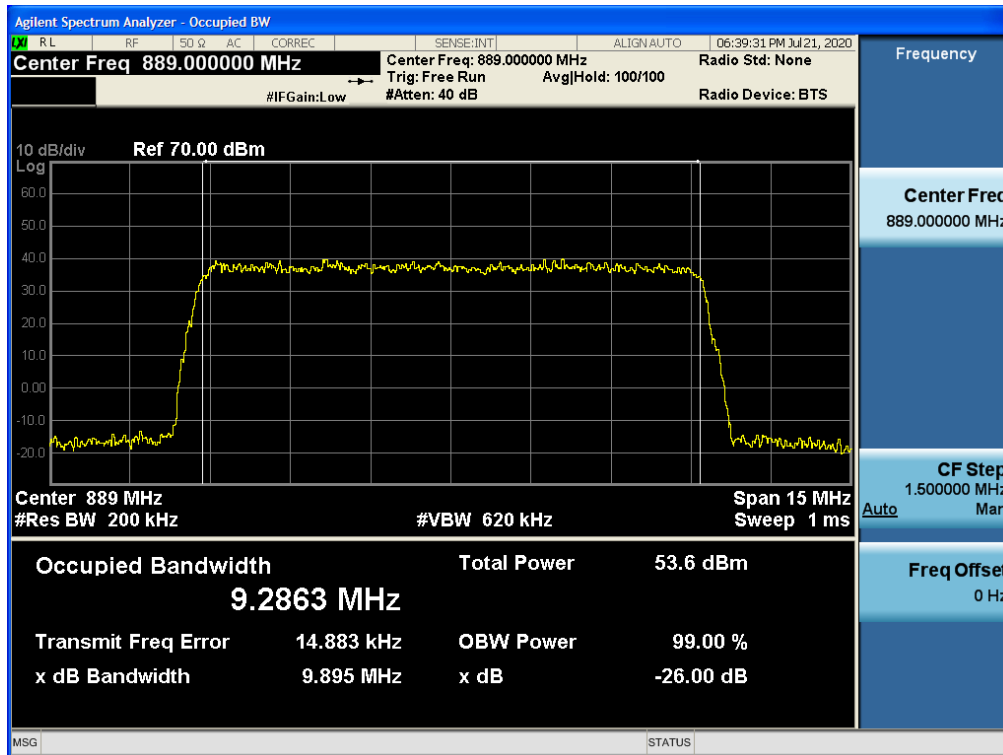
Antenna 0 / DSS Mode LTE 7 to NR 3, 10 MHz / LTE (16QAM) / NR (CP-OFDM 16QAM) / High



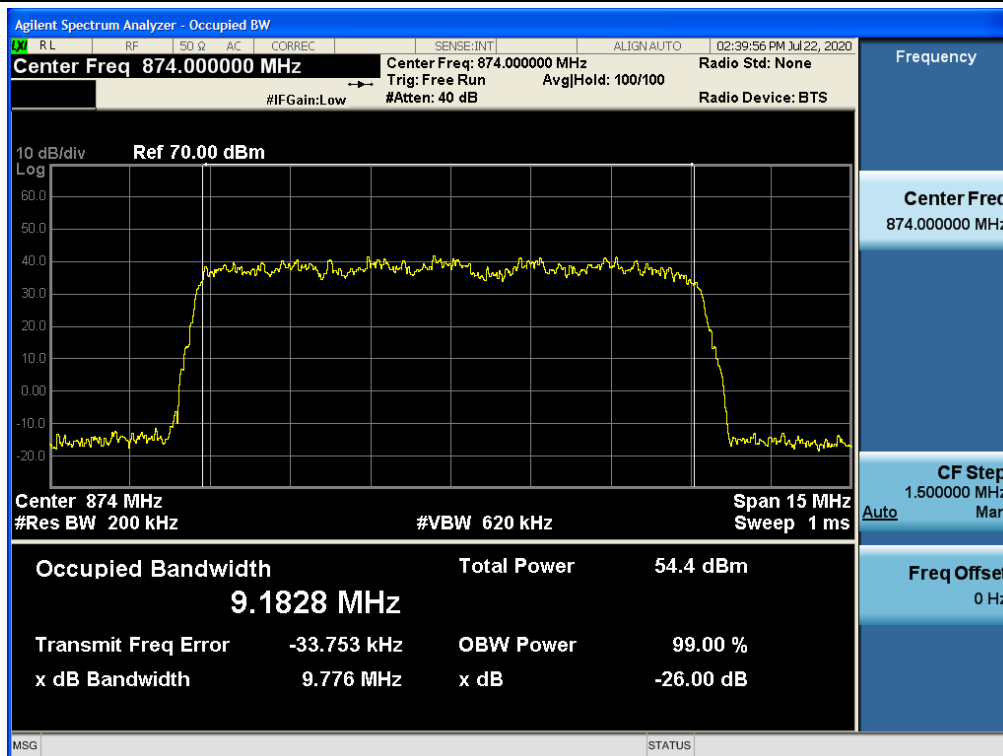
Antenna 0 / DSS Mode LTE 6 to NR 4, 10 MHz / LTE (256QAM) / NR (CP-OFDM 256QAM) / High



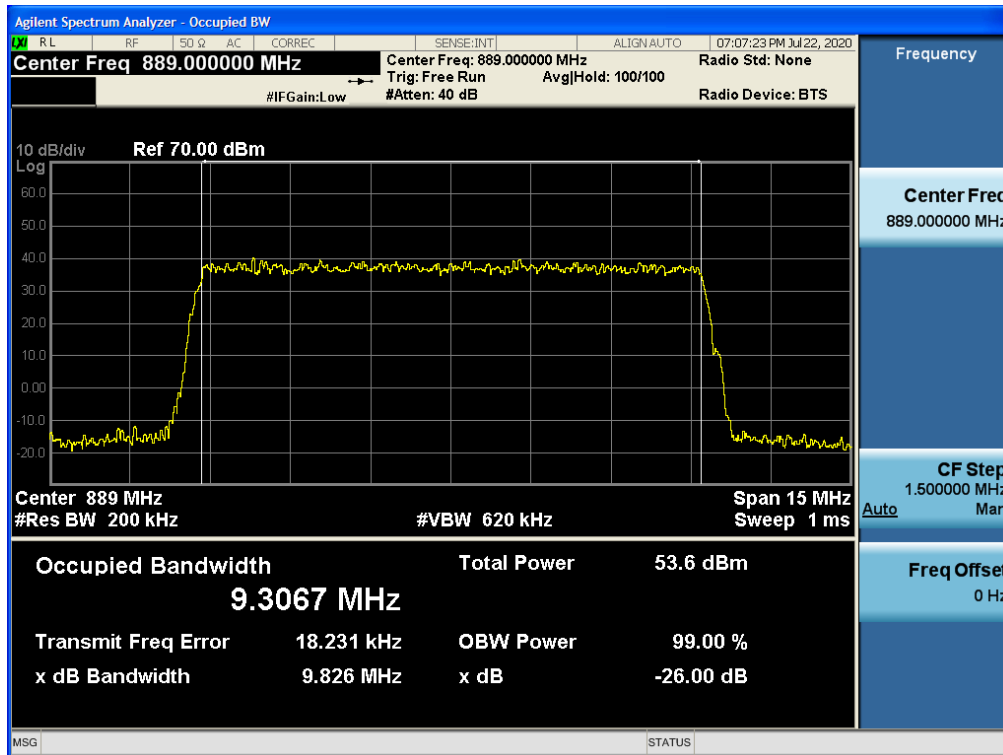
Antenna 0 / DSS Mode LTE 5 to NR 5, 10 MHz / LTE (256QAM) / NR (CP-OFDM 256QAM) / High



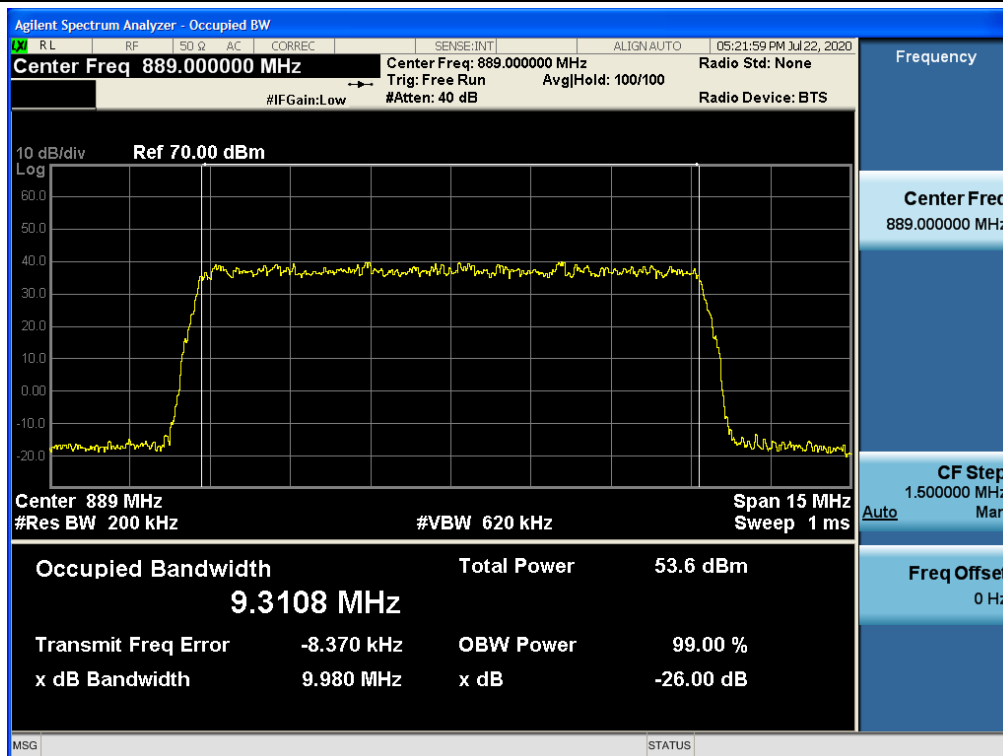
Antenna 0 / DSS Mode LTE 4 to NR 6, 10 MHz / LTE (16QAM) / NR (CP-OFDM 16QAM) / Low



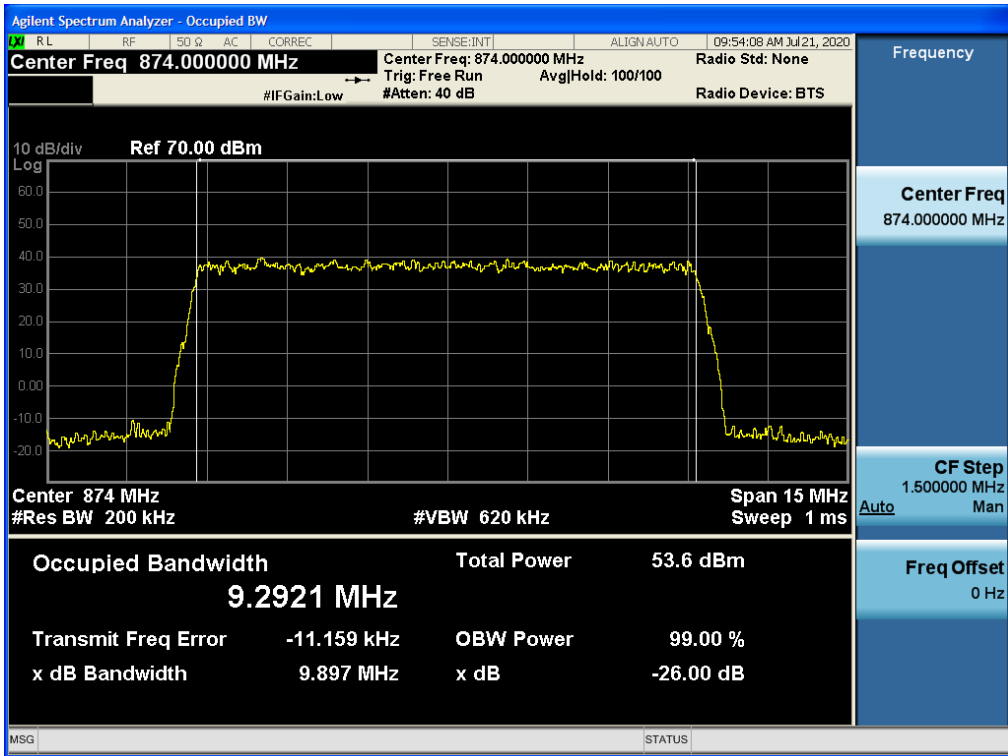
Antenna 0 / DSS Mode LTE 3 to NR 7, 10 MHz / LTE (64QAM) / NR (CP-OFDM 64QAM) / High



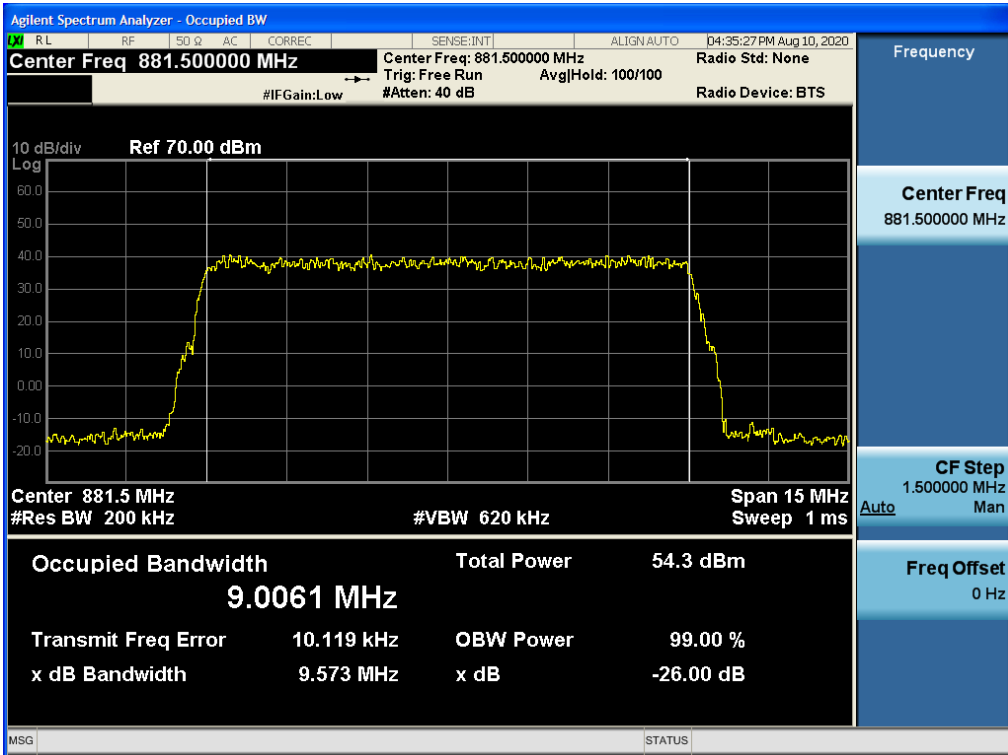
Antenna 0 / DSS Mode LTE 2 to NR 8, 10 MHz / LTE (256QAM) / NR (CP-OFDM 256QAM) / High



Antenna 0 / 5G NR 10 MHz 1 Carrier / LTE (256QAM) / NR (CP-OFDM 256QAM) / Low



Antenna 0 / LTE Band 5 10 MHz 1 Carrier / LTE (16QAM) / NR (CP-OFDM 16QAM) / Middle



5.4. UNWANTED CONDUCTED EMISSIONS

Test Requirements:

§ 2.1051 Measurements required: Spurious emissions at antenna terminals.

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

§22.917 Emission limitations for cellular equipment.

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

- (a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.
- (b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a reference bandwidth as follows:
 - (1) In the spectrum below 1 GHz, instrumentation should employ a reference bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy, provided that the measured power is integrated over the full required reference bandwidth (i.e., 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
 - (2) In the spectrum above 1 GHz, instrumentation should employ a reference bandwidth of 1 MHz.
- (c) *Alternative out of band emission limit.* Licensees in this service may establish an alternative out of band emission limit to be used at specified band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.
- (d) *Interference caused by out of band emissions.* If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.

Test Procedures:

The measurement is performed in accordance with Section 5.7.3 and 5.7.4 of ANSI C63.26.

5.7.3 Out-of-band unwanted emissions measurements

- a) Set the spectrum analyzer center frequency to the block, band, or channel edge frequency.
- b) Set the span wide enough to capture the fundamental emission closest to the authorized block or band edge, and to include all modulation products that spill into the immediately adjacent frequency band. In some cases, it may be possible to set the center frequency and span so as to encompass the fundamental emission and the unwanted out-of-band (band-edge) emissions on either side of the authorized block, band, or channel. This can be accomplished with a single (slow) sweep, if adequate overload protection and sufficient dynamic range can be maintained.
- c) Set the number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$.
- d) Sweep time should be auto for peak detection. For rms detection the sweep time should be set as follows:
 - 1) If the device can be configured to transmit continuously (duty cycle $\geq 98\%$), set the (sweep time) $> (\text{number of points in sweep}) \times (\text{symbol period})$ (e.g., by a factor of $10 \times \text{symbol period} \times \text{number of points}$). Increasing the sweep time (i.e., slowing the sweep speed) will allow for averaging over multiple symbols
 - 2) If the device cannot be configured to transmit continuously (duty cycle $< 98\%$) and a freerunning sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time $> (\text{number of points in sweep}) \times (\text{transmitter period})$ (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by $[10 \log (1/\text{duty cycle})]$. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation $\leq \pm 2\%$).
 - 3) If the device cannot be configured to transmit continuously (duty cycle $< 98\%$) and a freerunning sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time $> (\text{number of points in sweep}) \times (\text{transmitter period})$ (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by $[10 \log (1/\text{duty cycle})]$. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation $\leq \pm 2\%$).
 - 4) If the device cannot be configured to transmit continuously and a free-running sweep must be used, and if the transmissions exhibit a non-constant duty cycle (duty cycle variations $> \pm 2\%$), set the sweep time so that the averaging is performed over the on-period by setting the sweep time $> (\text{symbol period}) \times (\text{number of points})$, while also maintaining the sweep time $< (\text{transmitter on-time})$. The trace mode shall be set to max hold, since not every display point will be averaged only over just the on-time. Thus, multiple sweeps (e.g., 100) in maximum hold are necessary to ensure that the maximum power is measured.
- e) The test report shall include the plots of the measuring instrument display and the measured data.
- f) See Annex I for example emission mask plots.

5.7.4 Spurious unwanted emission measurements

- a) Set the spectrum analyzer start frequency to the lowest frequency generated by the EUT, without going below 9 kHz, and the stop frequency to the lower frequency covered by the measurements previously performed in 5.7.3. As an alternative, the stop frequency can be set to the value specified in 5.1.1, depending on the EUT operating range, if the resulting plot can clearly demonstrate compliance for all frequencies not addressed by the out-of-band emissions measurements performed as per 5.7.3.
- b) When using an average power (rms) detector, ensure that the number of points in the sweep $\geq 2 \times (\text{span} / \text{RBW})$. This may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the spectrum analyzer capabilities. This requirement does not apply to peak-detected power measurements. When average power is specified by the applicable regulation, a peak-detector can be utilized for preliminary measurements to accommodate wider frequency spans. Any emissions found in the preliminary measurement to exceed the applicable limit(s) shall be further examined using a power

averaging (rms) detector with the minimum number of measurement points as defined above.

- c) The sweep time should be set to auto-couple for performing peak-detector measurements. For measurements that use a power averaging (rms) detector, the sweep time shall be set as described for out-of-band emissions measurements in item d) of 5.7.3.
- d) Identify and measure the Highest spurious emission levels in each frequency range. It is not necessary to re-measure the out-of-band emissions as a part of this test. Record the frequencies and amplitudes corresponding to the measured emissions and capture the data plots.
- e) Repeat step b) through step d) for the upper spurious emission frequency range if not already captured by a wide span measurement performed as per the alternative provided in step a). The upper frequency for this measurement is defined in 5.1.1 as a function of the EUT operating range.
- f) Compare the results with the corresponding limit in the applicable regulation.
- g) The test report shall include the data plots of the measuring instrument display and the measured data.

Note:

- 1) In 9 kHz to 30 MHz band, RBW narrower than reference bandwidth is used. So following correction factor is applied.

- $10 \log [(reference\ bandwidth)/(resolution\ bandwidth)]$

- 9 kHz to 150 kHz applied 1 kHz RBW, $10 \log (1\ kHz / 100\ kHz) = -20\ dB$

$$10 \log (1\ kHz / 1\ MHz) = -30\ dB$$

- 150 kHz to 30 MHz applied 10 kHz RBW, $10 \log (10\ kHz / 100\ kHz) = -10\ dB$

$$10 \log (10\ kHz / 1\ MHz) = -20\ dB$$

- 2) Due to MIMO operations, a correction has been added to the limit according to KDB 662911 D01 v02r01.

- 4Tx MIMO correction: $10 \log(N_{ANT}) = 10 \log(4) = 6.02\ dB / -19.02\ dBm (-13\ dBm - 10 \log(4))$

- 2Tx MIMO correction: $10 \log(N_{ANT}) = 10 \log(2) = 3.01\ dB / -16.01\ dBm (-13\ dBm - 10 \log(2))$

Note:

The results of the Band Edge test shown above the frequency measured values are very small and similar trend for each port, so we are attached only the worst case plot.

Test Results:

Tabular Data of Radiated Spurious Emissions

DSS Mode LTE 9 to NR 1, 10 MHz

Test Result for Output Port 0

Mod.	Channel	Measured Level (dBm)				
		9 kHz ~ 150 kHz	150 kHz ~ 30 MHz	30 MHz ~ Low Edge-100	Low Edge- 100 ~ Low Edge	High edge ~ 1 GHz
LTE (QPSK) / NR (CP-OFDM QPSK)	Low	-25.042	-23.891	-46.455	-24.935	-30.320
	Middle	-24.742	-25.367	-46.633	-28.237	-29.004
	High	-24.419	-24.203	-46.803	-30.707	-25.926

LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	-24.287	-24.063	-46.085	-25.283	-30.675
	Middle	-23.986	-24.453	-46.676	-30.476	-30.308
	High	-23.542	-23.024	-46.665	-30.961	-25.889
LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	-24.254	-24.178	-46.136	-23.506	-29.205
	Middle	-24.174	-24.364	-46.759	-31.288	-30.336
	High	-24.496	-25.692	-46.552	-29.739	-25.126
LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	-25.080	-24.204	-46.254	-25.209	-30.204
	Middle	-25.109	-25.329	-46.825	-31.101	-30.768
	High	-24.385	-24.787	-46.497	-31.016	-25.822

Mod.	Channel	Measured Level (dBm)				
		1 GHz ~ 2 GHz	2 GHz ~ 4 GHz	4 GHz ~ 6 GHz	6 GHz ~ 8 GHz	8 GHz ~ 10 GHz
LTE (QPSK) / NR (CP-OFDM QPSK)	Low	-34.611	-24.803	-34.833	-35.822	-33.530
	Middle	-32.465	-25.236	-35.390	-36.077	-33.864
	High	-31.019	-25.019	-36.142	-35.718	-33.540
LTE (16QAM) / NR (CP-OFDM 16QAM)	Low	-33.786	-26.045	-35.295	-35.734	-33.428
	Middle	-33.410	-25.984	-36.049	-35.207	-33.876
	High	-31.897	-26.564	-36.097	-35.957	-33.027
LTE (64QAM) / NR (CP-OFDM 64QAM)	Low	-34.226	-25.488	-35.106	-35.786	-33.320
	Middle	-33.732	-26.239	-36.108	-35.177	-34.058
	High	-31.434	-25.325	-36.101	-35.766	-33.141
LTE (256QAM) / NR (CP-OFDM 256QAM)	Low	-34.011	-25.848	-35.816	-35.301	-32.765
	Middle	-33.507	-25.173	-35.501	-35.132	-33.618
	High	-29.640	-25.202	-35.655	-35.685	-33.453