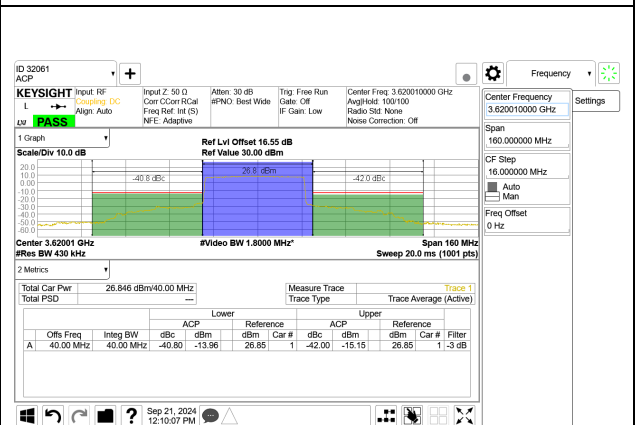
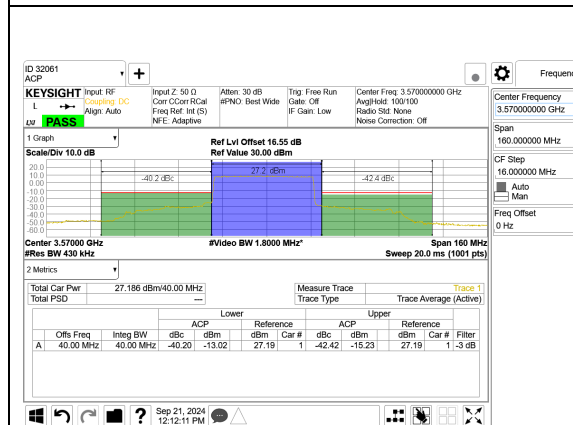
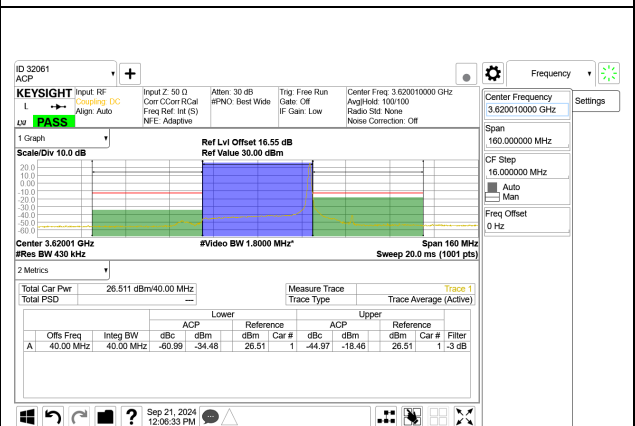
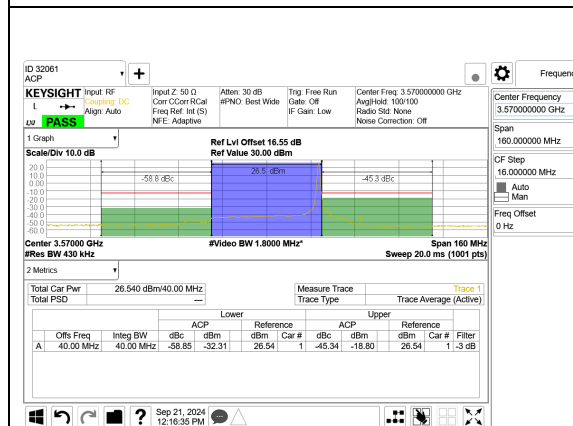
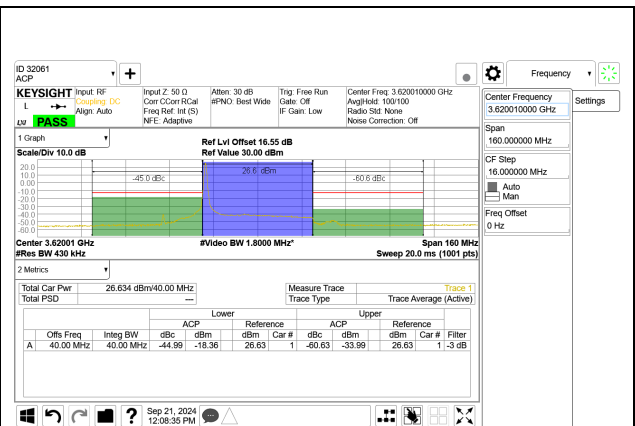
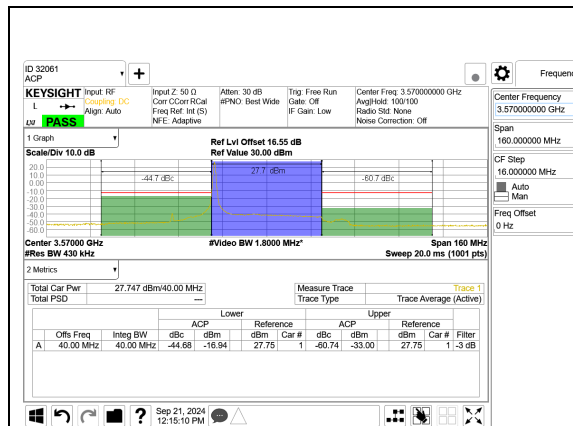


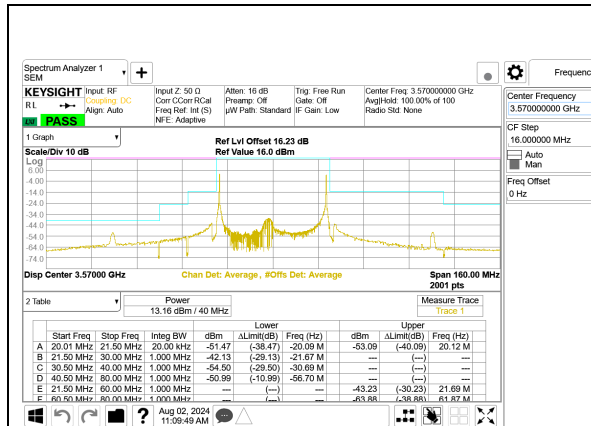




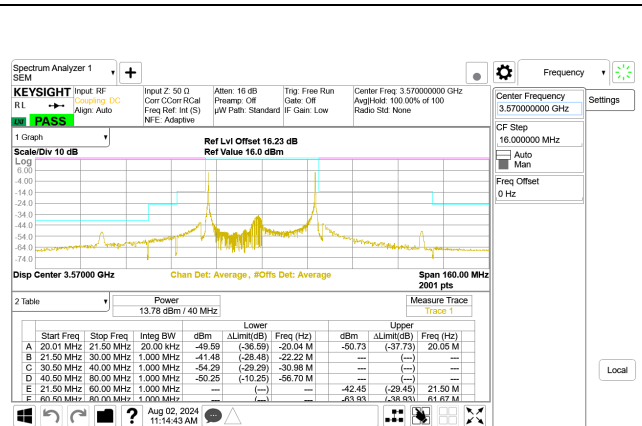
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9.2.2. LTE ULCA BAND 48

LTE ULCA BAND 48 EMISSION MASK



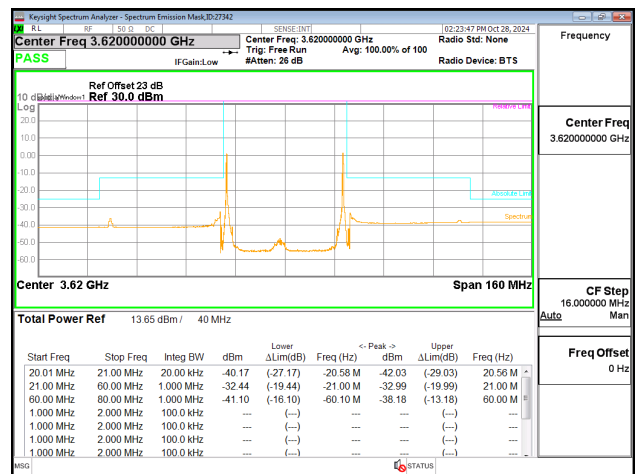
LTE B48 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99, ID:25780



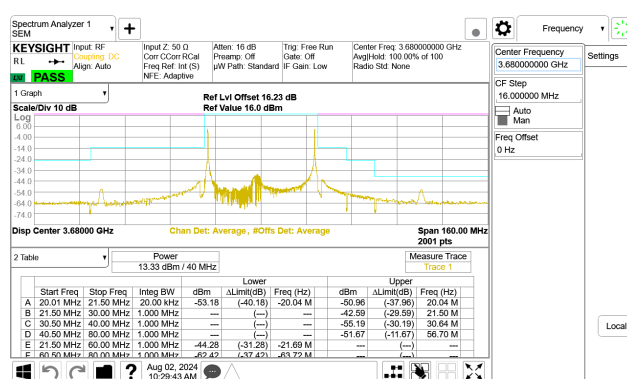
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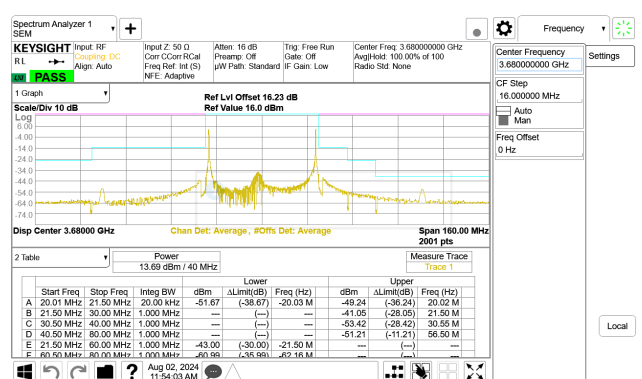
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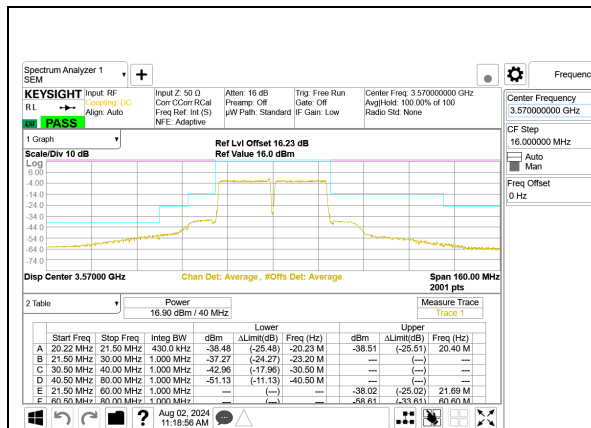
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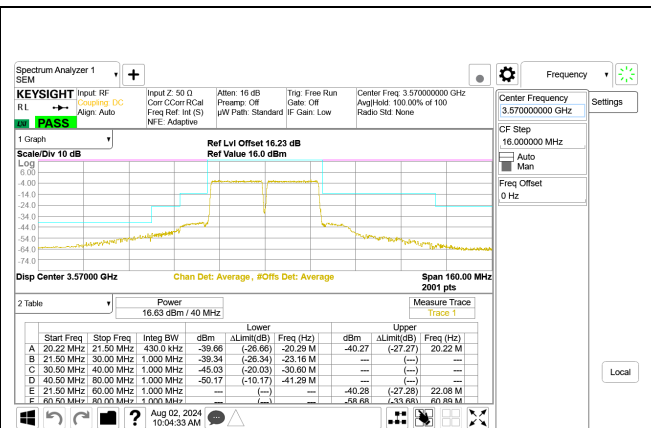
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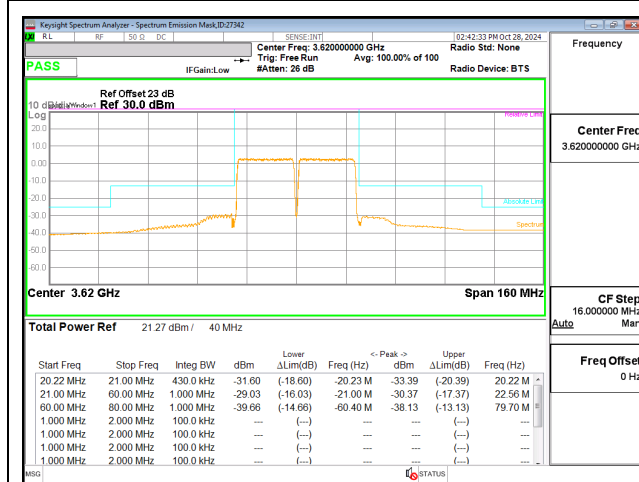
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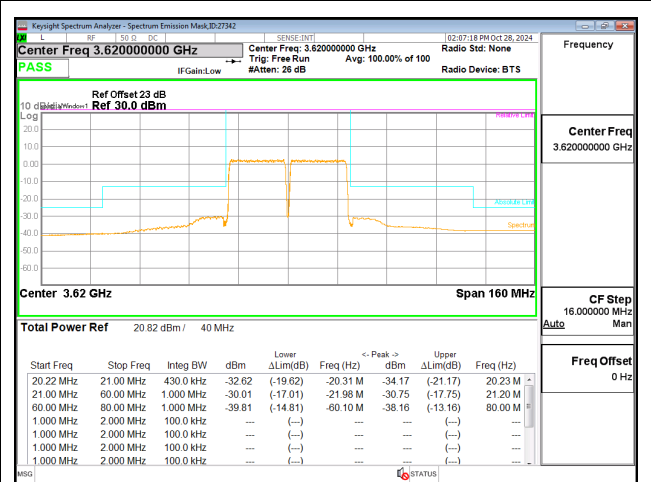
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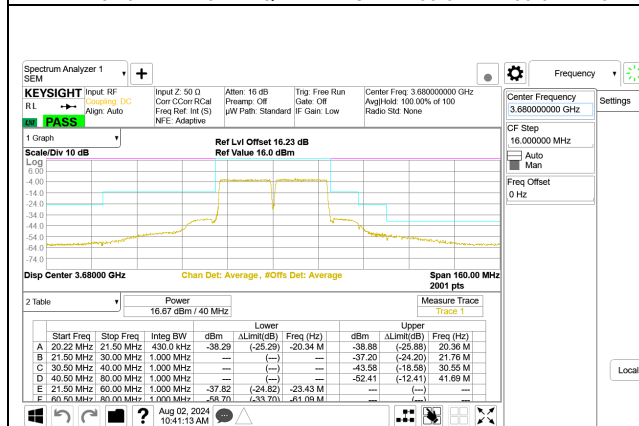
LTE B48 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0 ID:25780



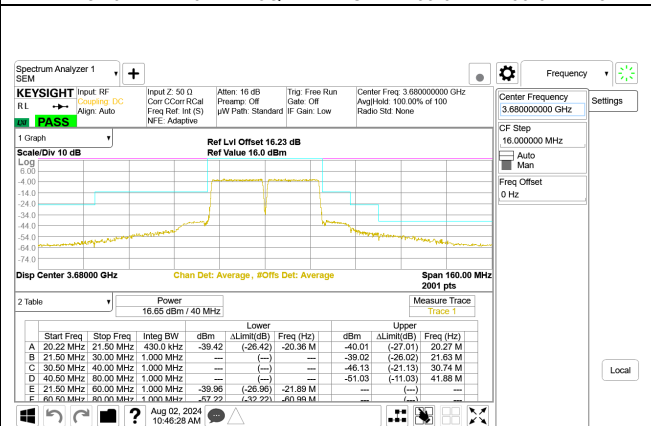
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LTE B48 20MHz + 20MHz 16QAM Mid Ch RB100-0 + RB100-0 ID:27342

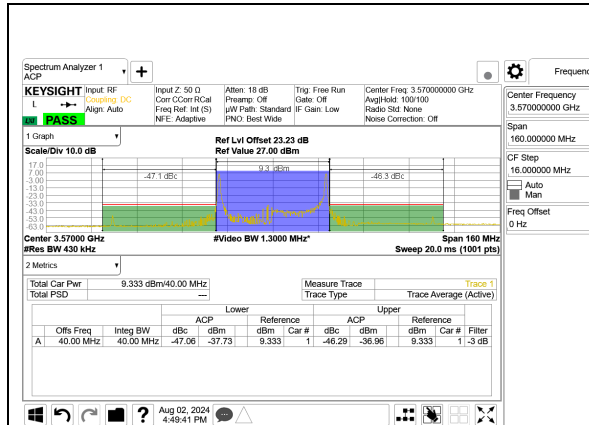


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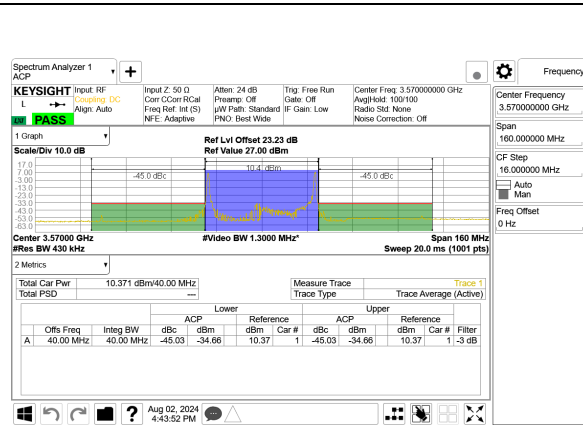


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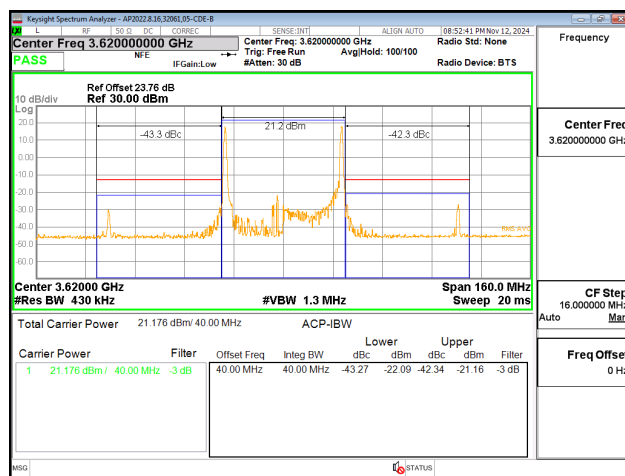
LTE BAND 48 ADJACENT CHANNEL POWER



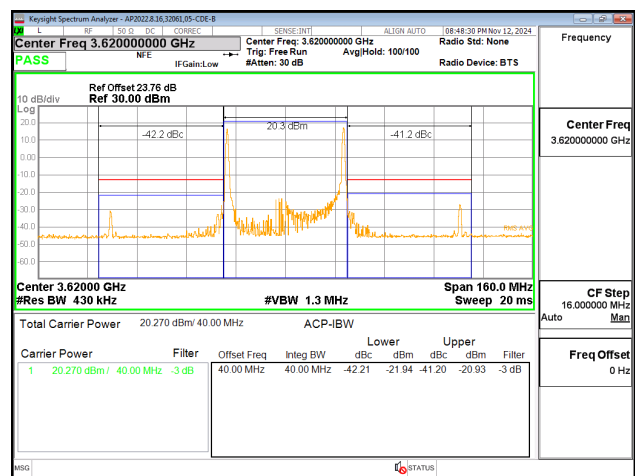
LTE B48 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99, ID:25780



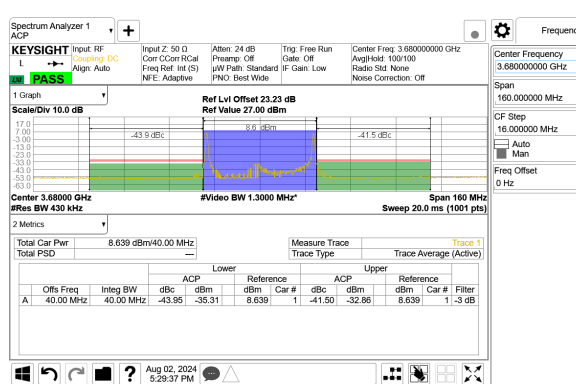
LTE B48 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



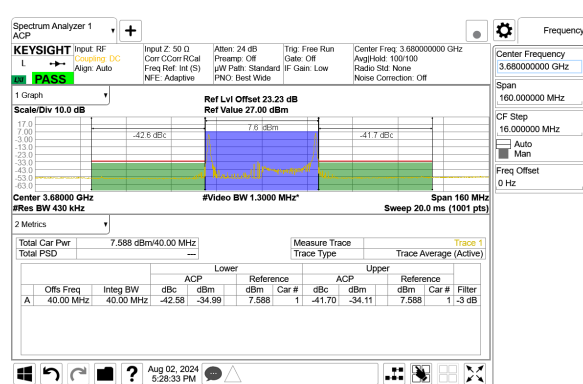
LTE B48 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



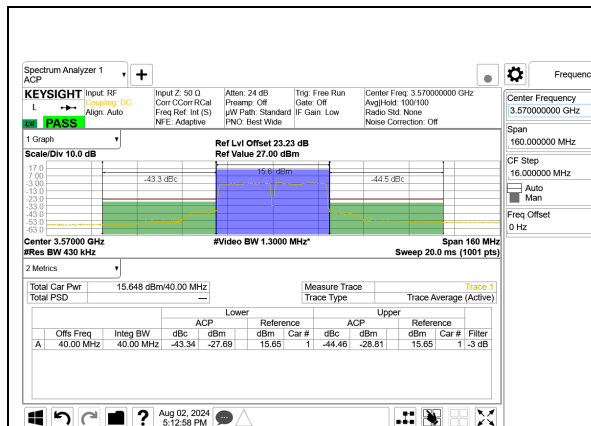
LTE B48 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



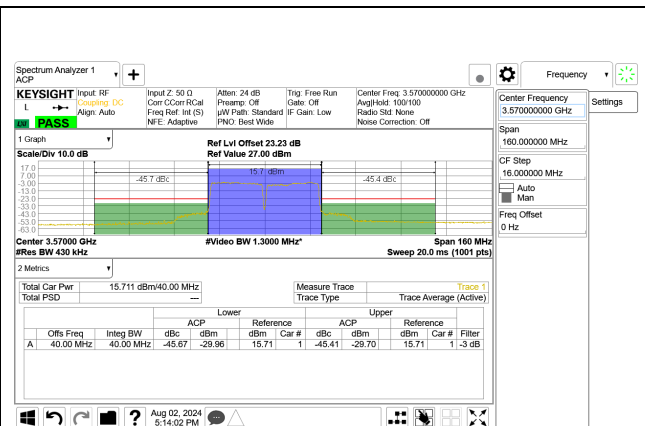
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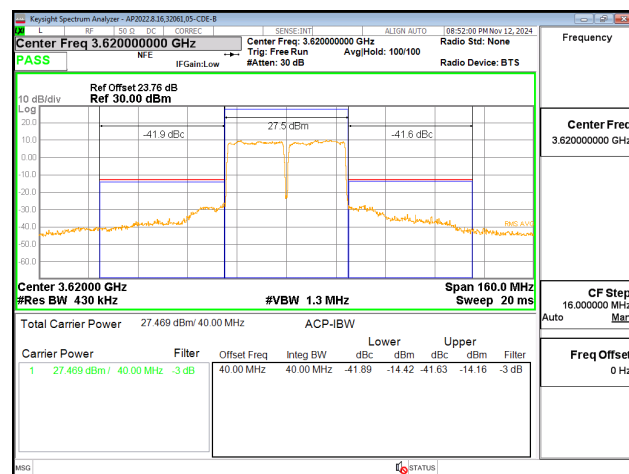
LTE B48 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99, ID:25780



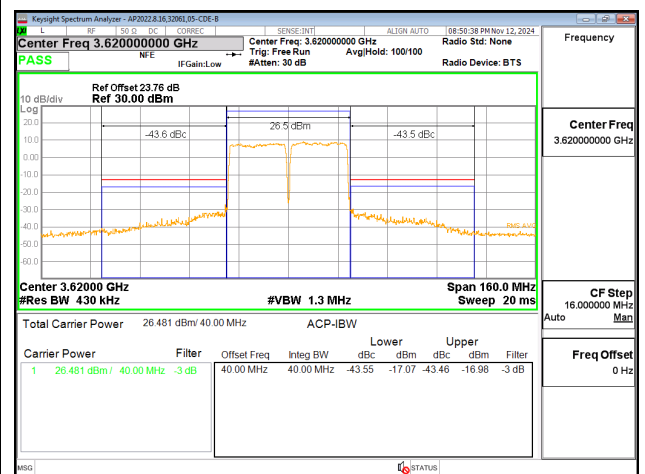
LTE B48 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0, ID:25780



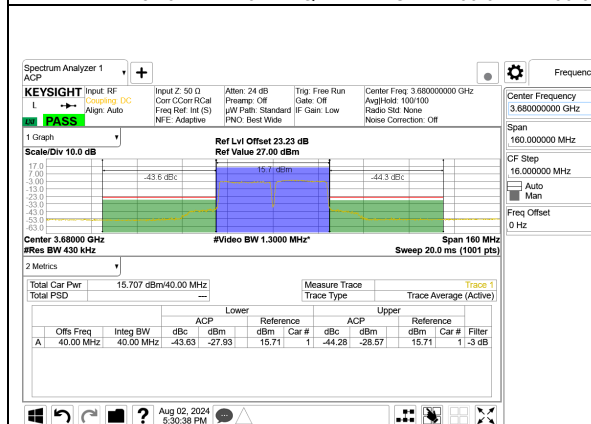
LTE B48 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0, ID:25780



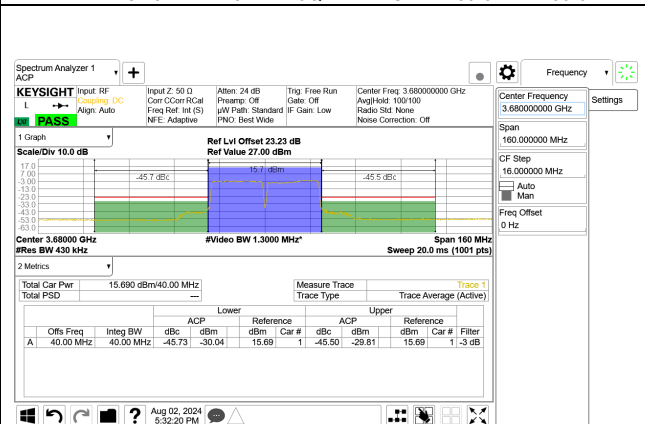
LTE B48 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



LTE B48 20MHz + 20MHz 16QAM Mid Ch RB100-0 + RB100-0



LTE B48 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0, ID:25780



LTE B48 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0, ID:25780

9.3. OUT OF BAND EMISSIONS

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

- Set display line at -13 dBm, -25dBm and -40dBm according to the band Limit.
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.
(NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

RESULTS

9.3.1. LTE BAND 48 AND 5G NR n48

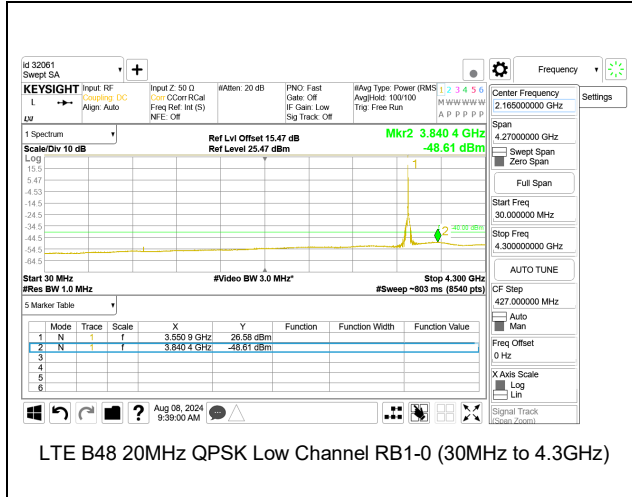
LIMITS

FCC: §96.41

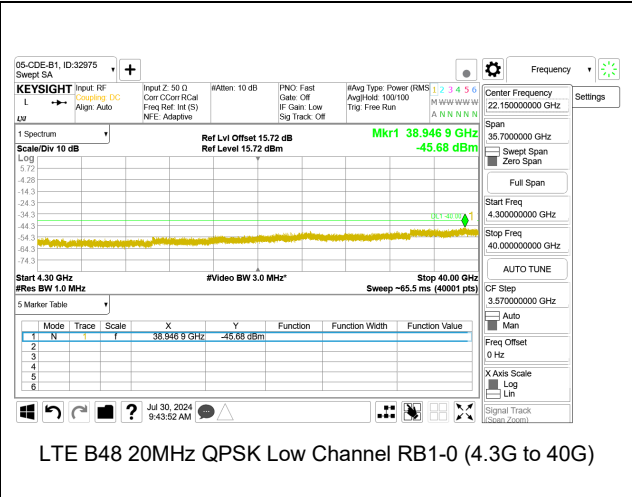
(e) 3.5 GHz Emissions and Interference Limits—

(2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

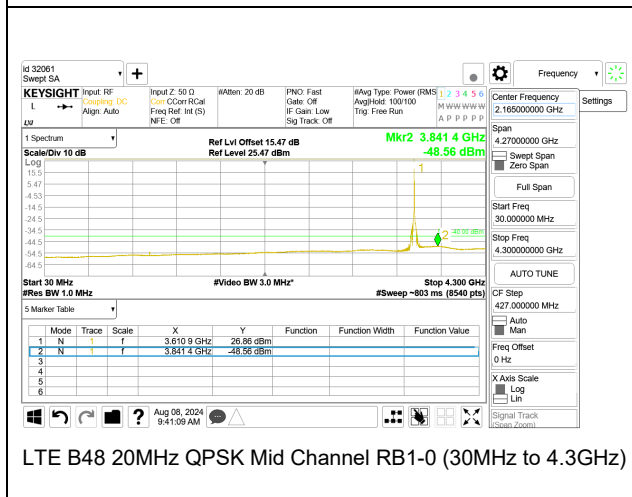
LTE BAND 48



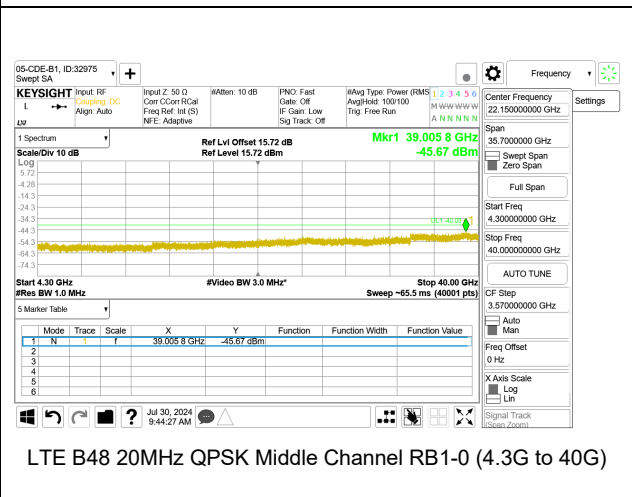
LTE B48 20MHz QPSK Low Channel RB1-0 (30MHz to 4.3GHz)



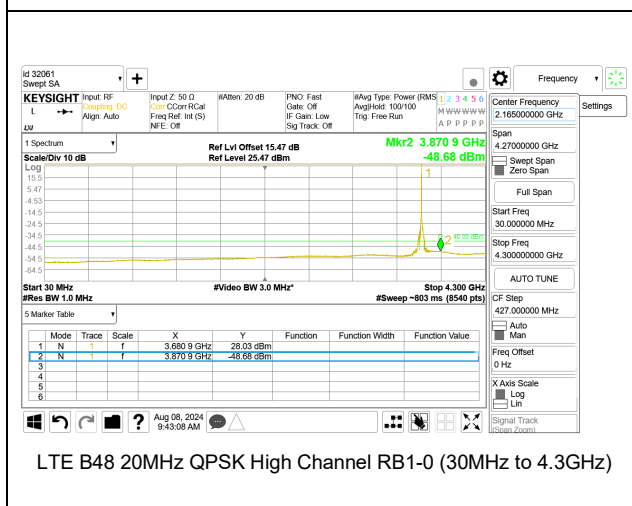
LTE B48 20MHz QPSK Low Channel RB1-0 (4.3G to 40G)



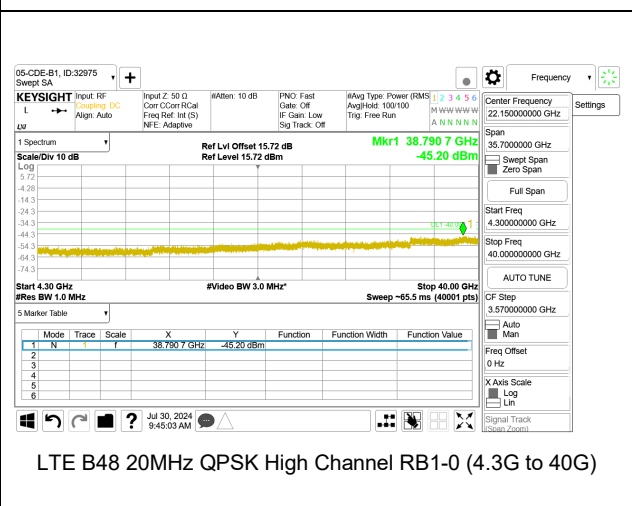
LTE B48 20MHz QPSK Mid Channel RB1-0 (30MHz to 4.3GHz)



LTE B48 20MHz QPSK Middle Channel RB1-0 (4.3G to 40G)



LTE B48 20MHz QPSK High Channel RB1-0 (30MHz to 4.3GHz)

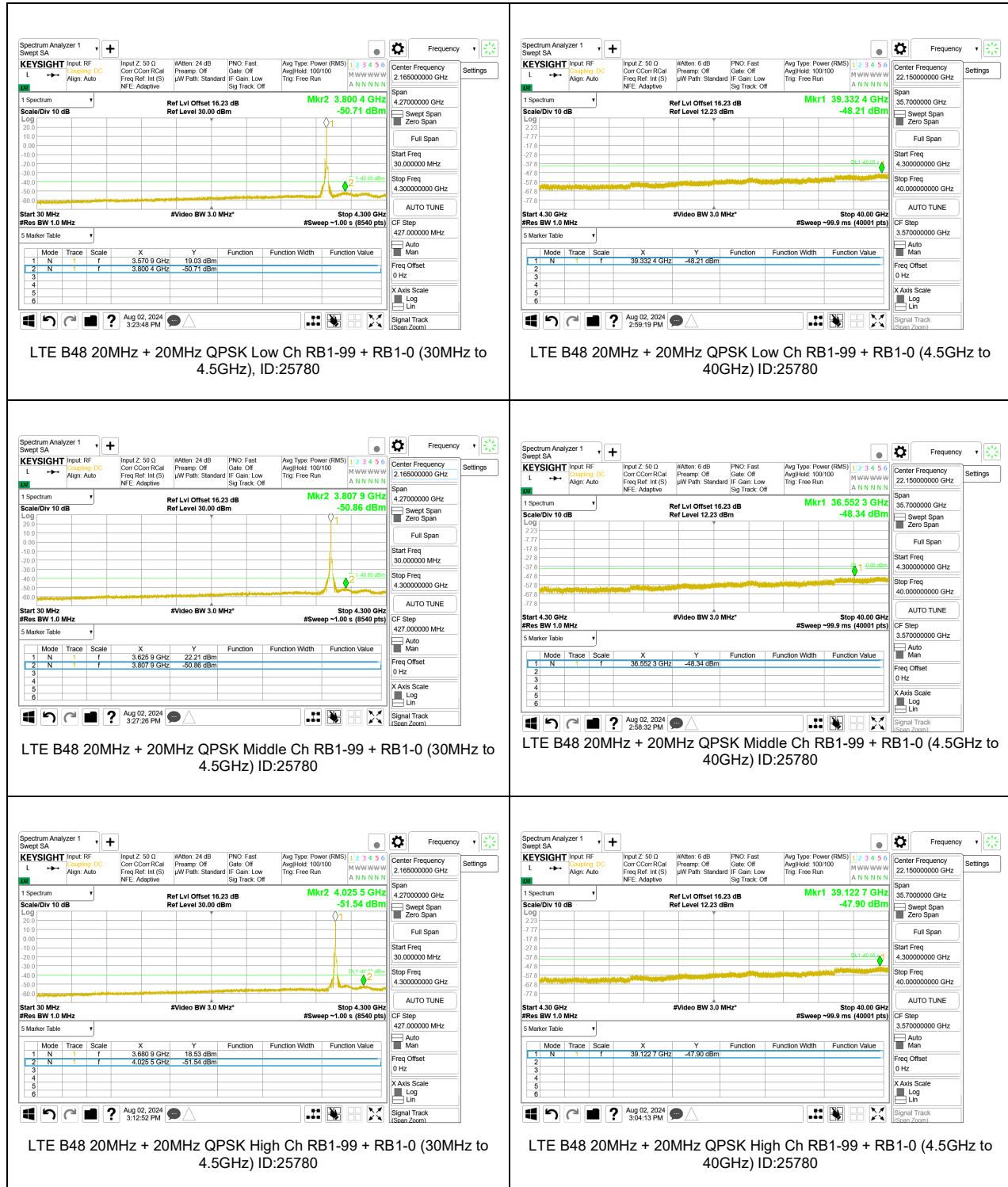


LTE B48 20MHz QPSK High Channel RB1-0 (4.3G to 40G)

5G NR n48



9.3.2. LTE ULCA BAND 48



9.4. FREQUENCY STABILITY

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = -30°C to +50°C
- Voltage = (85% - 115%)

Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.
End Voltage, 3.2VDC.

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

RESULTS

See the following pages.

9.4.1. LTE BAND 48 AND 5G NR n48

Test Engineer ID:	12482	Test Date:	2024-08-26
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LTE BAND 48 QPSK (20MHz BANDWIDTH)

Band	48	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		3550	3700			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	3551.0064	3698.9949			
Extreme (50°C)		3551.0064	3698.9949	7.1	0.002	Yes
Extreme (40°C)		3551.0064	3698.9949	7.5	0.002	Yes
Extreme (30°C)		3551.0064	3698.9949	-7.0	-0.002	Yes
Extreme (10°C)		3551.0064	3698.9949	6.6	0.002	Yes
Extreme (0°C)		3551.0064	3698.9949	7.9	0.002	Yes
Extreme (-10°C)		3551.0064	3698.9949	7.0	0.002	Yes
Extreme (-20°C)		3551.0064	3698.9949	7.5	0.002	Yes
Extreme (-30°C)		3551.0064	3698.9949	8.2	0.002	Yes
20°C	15%	3551.0064	3698.9949	-9.8	-0.003	Yes
	-15%	3551.0064	3698.9949	7.4	0.002	Yes
	End Point Voltage	3551.0064	3698.9949	10.3	0.003	Yes

5G NR n48 BPSK (40MHz BANDWIDTH)

Test Engineer ID:	27342	Test Date:	2024-08-19
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Band	48	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		3550	3699.98			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	3550.9652	3696.7774			
Extreme (50°C)		3550.9652	3696.7774	1.76	0.000	Yes
Extreme (40°C)		3550.9652	3696.7774	-1.2	0.000	Yes
Extreme (30°C)		3550.9652	3696.7774	1.51	0.000	Yes
Extreme (10°C)		3550.9652	3696.7774	2.05	0.001	Yes
Extreme (0°C)		3550.9652	3696.7774	-2.99	-0.001	Yes
Extreme (-10°C)		3550.9652	3696.7774	-2.57	-0.001	Yes
Extreme (-20°C)		3550.9652	3696.7774	-1.94	-0.001	Yes
Extreme (-30°C)		3550.9652	3696.7774	4.12	0.001	Yes
20°C	15%	3550.9652	3696.7774	1.56	0.000	Yes
	-15%	3550.9652	3696.7774	-3.87	-0.001	Yes
	End Point Voltage	3550.9652	3696.7774	-3.69	-0.001	Yes

9.4.2. LTE ULCA BAND 48

Test Engineer ID:	12482	Test Date:	2024-09-06
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LTE ULCA B48 QPSK (20MHz + 20MHz BANDWIDTH)

Band	48	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		3550	3700			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	3551.0596	3699.0753			
Extreme (50°C)		3551.0596	3699.0753	7.3	0.002	Yes
Extreme (40°C)		3551.0596	3699.0753	8.1	0.002	Yes
Extreme (30°C)		3551.0596	3699.0753	8.6	0.002	Yes
Extreme (10°C)		3551.0596	3699.0753	7.4	0.002	Yes
Extreme (0°C)		3551.0596	3699.0753	8.6	0.002	Yes
Extreme (-10°C)		3551.0596	3699.0753	7.9	0.002	Yes
Extreme (-20°C)		3551.0596	3699.0753	2.7	0.001	Yes
Extreme (-30°C)		3551.0596	3699.0753	3.6	0.001	Yes
20°C	15%	3551.0596	3699.0753	7.7	0.002	Yes
	-15%	3551.0596	3699.0753	7.9	0.002	Yes
	End Point Voltage	3551.0596	3699.0753	-0.4	0.000	Yes

9.5. PEAK-TO-AVERAGE POWER RATIO

LIMIT

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

RESULT

Antenna 1 was used to measure as the worst case; full resource block (FRB) for each bandwidth was used to measure as the worst case. The results from all CCDF measurements are passed with 13dB peak-to-average power ratio criteria.

9.5.1. LTE BAND 48 AND 5G NR n48

Test Engineer ID:	32061	Test Date:	2024-08-23
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Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
Band 48	5MHz	3625.0	25	0	QPSK	32.21	19.65	*5.57
					16QAM	32.05	18.63	*6.43
	10MHz		50	0	QPSK	32.51	19.48	*6.04
					16QAM	32.75	18.73	*7.03
	15MHz		75	0	QPSK	32.01	19.34	*5.68
					16QAM	31.94	18.45	*6.5
	20MHz		100	0	QPSK	32.43	19.87	*5.57
					16QAM	32.45	18.48	*6.98
5G NR n48	10MHz		24	0	BPSK	30.48	25.71	4.77
					16QAM	30.96	24.41	6.55
	15MHz		36	0	BPSK	30.40	25.85	4.55
					16QAM	30.90	24.43	6.47
	20MHz	50	0	BPSK	30.51	25.89	4.62	
				16QAM	31.09	24.5	6.59	
	30MHz	75	0	BPSK	30.52	25.76	4.76	
				16QAM	30.94	24.6	6.34	
	40MHz	100	0	BPSK	30.16	25.08	5.08	
				16QAM	30.85	23.53	7.32	

* Duty Cycle Correction Factor (dB) : 6.99

Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor

9.5.2. LTE ULCA BAND 48

Test Engineer ID:	25780	Test Date:	2024-08-23
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Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 48 (FCC)	5MHz / 20MHz	3615.8	3627.5	QPSK	33.30	19.13	7.18
				16QAM	30.44	17.62	5.83
	20MHz / 5MHz	3622.5	3634.2	QPSK	31.08	20.12	3.97
				16QAM	33.07	19.36	6.72
	10MHz / 20MHz	3615.6	3630.0	QPSK	34.41	22.28	5.14
				16QAM	31.14	20.08	4.07
	20MHz / 10MHz	3620.1	3634.5	QPSK	35.38	19.35	9.04
				16QAM	35.14	19.55	8.60
	15MHz / 20MHz	3615.3	3632.4	QPSK	33.59	21.78	4.82
				16QAM	30.83	19.37	4.47
	20MHz / 15MHz	3617.6	3634.7	QPSK	33.24	20.15	6.10
				16QAM	34.60	19.52	8.09
	20MHz / 20MHz	3615.1	3634.9	QPSK	35.81	20.60	8.22
				16QAM	30.47	19.03	4.45
Duty Cycle Correction Factor (dB) =			6.99				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

10. RADIATED TEST RESULTS

Radiated measurement using the Field Strength Method

Using the test configuration shown in Figure 6 below, We measure the radiated emissions directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits. As stated in 5.5.1 of ANSI C63.26-2015, the field strength measurement method using a test site validated to the requirements of ANSI C63.4 is an alternative to the substitution measurement method.

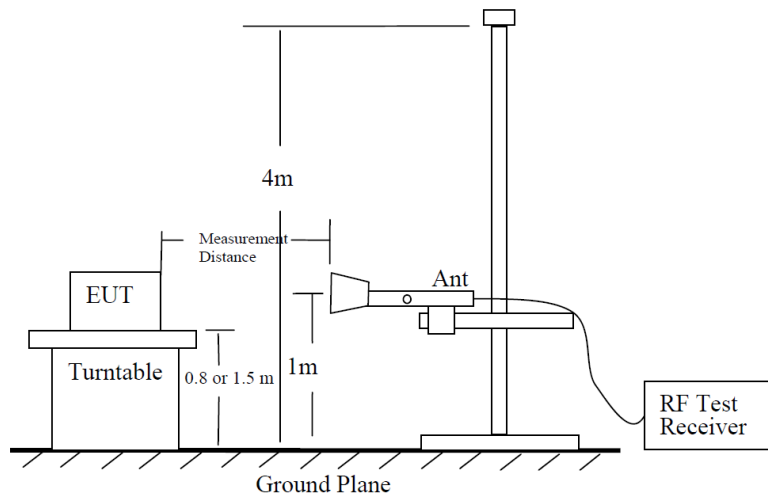


Figure 6 —Test site-up for radiated ERP and/or EIRP measurements

Radiated Power Measurement Calculation According to ANSI C63.26-2015

- a) $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$.
- b) $E \text{ (dB}\mu\text{V/m)} = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$.
- c) $E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20\log(D) + 104.8$; where D is the measurement distance (in the far field region) in m.
- d) $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.

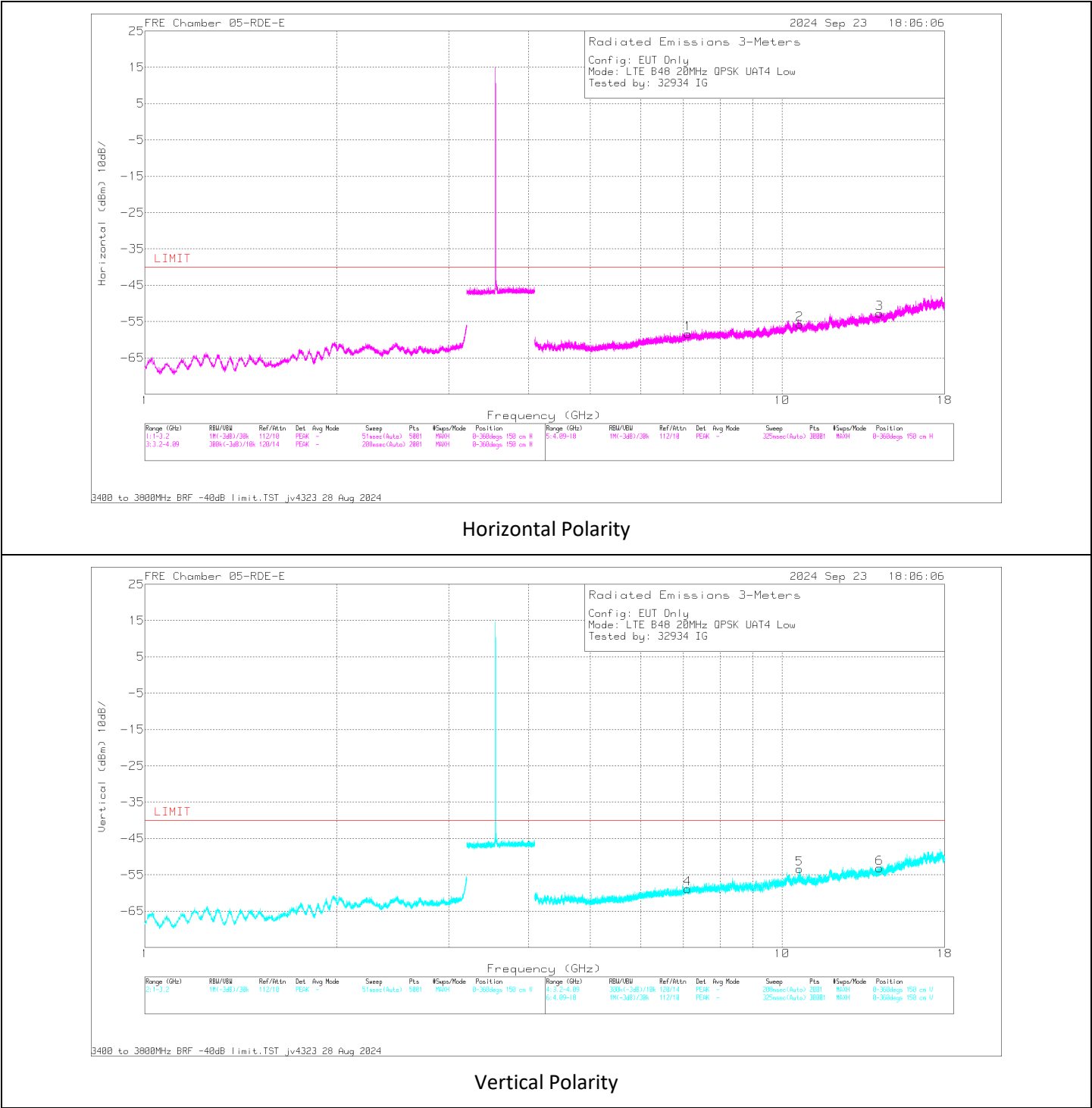
So, from d)

The measuring distance is usually at 3m, then $20\log(3)=9.5424$

Then, $\text{EIRP (dBm)} = E \text{ (dB}\mu\text{V/m)} + 9.5424 - 104.8 = E \text{ (dB}\mu\text{V/m)} - 95.2576$

Note: Confidence check of each chamber is performed daily to see if any degradation from expected/normal reading reference data. Ambient check of each chamber is performed monthly.

Example Plot



Trace Markers

Frequency (GHz)	Meter Reading (dBuV)	Det	80404 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
10.668971	40.54	RMS	37.9	-95.2	-41.50	-58.26	-40	-18.26	H
10.653605	42.35	RMS	37.9	-95.2	-41.90	-56.85	-40	-16.85	V
7.106618	41.37	RMS	35.7	-95.2	-43.26	-61.39	-40	-21.39	V
7.127946	41.47	RMS	35.7	-95.2	-43.10	-61.13	-40	-21.13	H
14.216951	42.41	RMS	39.2	-95.2	-42.20	-55.79	-40	-15.79	V
14.226688	42.42	RMS	39.1	-95.2	-42.10	-55.78	-40	-15.78	H

TEST PROCEDURE

KDB 971168 D01 /D02

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

10.1. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 4

10.1.1. LTE BAND 48 AND 5G NR n48

LIMITS

FCC: §96.41

(e) 3.5 GHz Emissions and Interference Limits—

(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-24
Test Engineer:	32934
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	05-RDE-E

Frequency (GHz)	Meter Reading (dBuV)	Det	80404 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz									
10.696327	40.94	RMS	37.9	-95.2	-41.83	-58.19	-40	-18.19	H
10.674999	40.73	RMS	37.9	-95.2	-41.60	-58.17	-40	-18.17	V
7.117746	41.36	RMS	35.7	-95.2	-43.13	-61.27	-40	-21.27	H
7.126555	41.44	RMS	35.7	-95.2	-43.14	-61.20	-40	-21.20	V
14.255899	42.76	RMS	39.2	-95.2	-42.01	-55.25	-40	-15.25	H
14.259145	42.76	RMS	39.2	-95.2	-41.91	-55.15	-40	-15.15	V
Mid Channel, 3620MHz									
7.254064	41.33	RMS	35.6	-95.2	-42.60	-60.87	-40	-20.87	H
10.895704	41.15	RMS	37.9	-95.2	-42.47	-58.62	-40	-18.62	H
10.853047	41.58	RMS	37.9	-95.2	-42.01	-57.73	-40	-17.73	V
7.209088	41.24	RMS	35.7	-95.2	-42.60	-60.86	-40	-20.86	V
14.465940	42.16	RMS	39.3	-95.2	-42.20	-55.94	-40	-15.94	V
14.528999	42.01	RMS	39.3	-95.2	-42.40	-56.29	-40	-16.29	H
High Channel, 3690MHz									
7.382963	41.00	RMS	35.6	-95.2	-42.40	-61.00	-40	-21.00	H
11.089053	41.00	RMS	37.9	-95.2	-41.20	-57.50	-40	-17.50	H
7.388063	41.05	RMS	35.6	-95.2	-42.20	-60.75	-40	-20.75	V
11.092299	40.89	RMS	37.9	-95.2	-41.20	-57.61	-40	-17.61	V
14.745068	42.27	RMS	39.6	-95.2	-42.00	-55.33	-40	-15.33	V
14.771033	42.32	RMS	39.6	-95.2	-42.00	-55.28	-40	-15.28	H

BPSK 5G NR n48 (40.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-18
Test Engineer:	32934
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	05-RDE-F

Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3570MHz									
7.130728	43.86	RMS	35.6	-95.2	-46.21	-61.95	-40	-21.95	H
10.716729	43.72	RMS	37.7	-95.2	-45.17	-58.95	-40	-18.95	H
14.263781	42.44	RMS	38.8	-95.2	-44.22	-58.18	-40	-18.18	H
7.104299	43.89	RMS	35.6	-95.2	-46.25	-61.96	-40	-21.96	V
10.703282	43.78	RMS	37.7	-95.2	-45.24	-58.96	-40	-18.96	V
14.240134	42.30	RMS	38.8	-95.2	-43.68	-57.78	-40	-17.78	V
Mid Channel, 3625MHz									
7.245254	44.22	RMS	35.6	-95.2	-47.03	-62.41	-40	-22.41	H
10.892922	43.55	RMS	37.8	-95.2	-45.67	-59.52	-40	-19.52	H
14.489587	43.14	RMS	39.2	-95.2	-44.07	-56.93	-40	-16.93	H
7.204451	43.95	RMS	35.6	-95.2	-46.71	-62.36	-40	-22.36	V
10.818736	43.73	RMS	37.8	-95.2	-45.56	-59.23	-40	-19.23	V
14.478459	42.93	RMS	39.2	-95.2	-44.16	-57.23	-40	-17.23	V
High Channel, 3680MHz									
7.365807	43.77	RMS	35.6	-95.2	-46.12	-61.95	-40	-21.95	H
11.063088	44.07	RMS	37.9	-95.2	-45.23	-58.46	-40	-18.46	H
14.727912	42.72	RMS	39.5	-95.2	-43.58	-56.56	-40	-16.56	H
7.338915	43.92	RMS	35.6	-95.2	-45.92	-61.60	-40	-21.60	V
11.036195	43.93	RMS	37.8	-95.2	-45.47	-58.94	-40	-18.94	V
14.666708	42.97	RMS	39.5	-95.2	-44.12	-56.85	-40	-16.85	V

10.1.2. QPSK LTE ULCA BAND 48 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-20
Test Engineer:	32934
Configuration:	EUT only
Mode	LTE B48 QPSK 20MHz + 20MHz
Chamber #:	05-RDE-E

Frequency (GHz)	Meter Reading (dBuV)	Det	80404 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz									
10.694473	40.76	RMS	37.9	-95.2	-41.85	-58.39	-40	-18.39	H
10.687054	40.52	RMS	37.9	-95.2	-41.51	-58.29	-40	-18.29	V
7.087144	41.65	RMS	35.7	-95.2	-42.94	-60.79	-40	-20.79	V
7.087375	41.60	RMS	35.7	-95.2	-43.01	-60.91	-40	-20.91	H
14.237352	42.51	RMS	39.2	-95.2	-42.20	-55.69	-40	-15.69	V
14.257754	42.73	RMS	39.2	-95.2	-42.00	-55.27	-40	-15.27	H
Mid Channel, 3615.1MHz + 3634.9MHz									
10.857684	41.52	RMS	37.9	-95.2	-42.2	-57.98	-40	-17.98	H
10.877621	41.32	RMS	37.9	-95.2	-42.3	-58.28	-40	-18.28	V
7.226244	41.03	RMS	35.7	-95.2	-42.5	-60.97	-40	-20.97	V
7.240617	41.17	RMS	35.6	-95.2	-42.5	-60.93	-40	-20.93	H
14.418182	42.27	RMS	39.2	-95.2	-41.9	-55.63	-40	-15.63	V
14.465940	42.13	RMS	39.3	-95.2	-42.2	-55.97	-40	-15.97	H
High Channel, 3670.2MHz + 3690MHz									
7.358389	41.03	RMS	35.6	-95.2	-42.36	-60.93	-40	-20.93	H
11.027849	41.13	RMS	37.9	-95.2	-41.52	-57.69	-40	-17.69	H
7.355607	40.98	RMS	35.6	-95.2	-42.50	-61.12	-40	-21.12	V
11.008375	41.17	RMS	37.9	-95.2	-41.94	-58.07	-40	-18.07	V
14.61385	42.08	RMS	39.4	-95.2	-41.80	-55.52	-40	-15.52	V
14.688964	42.05	RMS	39.5	-95.2	-41.60	-55.25	-40	-15.25	H

10.2. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 7

10.2.1. LTE BAND 48 AND 5G NR n48

LIMITS

FCC: §96.41

(e) 3.5 GHz Emissions and Interference Limits—

(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-24
Test Engineer:	32934
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	05-RDE-E

Frequency (GHz)	Meter Reading (dBuV)	Det	80404 ACF 3m (dB)	EIRP CF	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz									
10.698646	40.91	RMS	37.9	-95.2	-41.84	-58.23	-40	-18.23	H
10.688445	40.62	RMS	37.9	-95.2	-41.56	-58.24	-40	-18.24	V
7.118209	41.41	RMS	35.7	-95.2	-43.14	-61.23	-40	-21.23	H
7.134901	41.39	RMS	35.7	-95.2	-43.09	-61.20	-40	-21.20	V
14.224833	42.48	RMS	39.2	-95.2	-42.20	-55.72	-40	-15.72	V
14.262854	42.76	RMS	39.2	-95.2	-41.90	-55.14	-40	-15.14	H
Mid Channel, 3620MHz									
10.872985	41.52	RMS	37.9	-95.2	-42.30	-58.08	-40	-18.08	H
14.499788	42.08	RMS	39.3	-95.2	-42.40	-56.22	-40	-16.22	H
10.834964	41.53	RMS	37.9	-95.2	-42.31	-58.08	-40	-18.08	V
7.221143	41.17	RMS	35.7	-95.2	-42.50	-60.83	-40	-20.83	V
7.248036	41.35	RMS	35.6	-95.2	-42.51	-60.76	-40	-20.76	H
14.461767	42.11	RMS	39.3	-95.2	-42.10	-55.89	-40	-15.89	V
High Channel, 3690MHz									
7.387600	41.01	RMS	35.6	-95.2	-42.24	-60.83	-40	-20.83	H
11.081635	40.87	RMS	37.9	-95.2	-41.44	-57.87	-40	-17.87	H
7.350506	41.06	RMS	35.6	-95.2	-42.45	-60.99	-40	-20.99	V
11.042223	41.25	RMS	37.9	-95.2	-41.52	-57.57	-40	-17.57	V
14.768715	42.25	RMS	39.6	-95.2	-42.00	-55.35	-40	-15.35	H
14.777524	42.27	RMS	39.6	-95.2	-42.00	-55.33	-40	-15.33	V

BPSK 5G NR n48 (40.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-19
Test Engineer:	32934
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	05-RDE-F

Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3570MHz									
10.726002	40.62	RMS	37.9	-95.2	-42.00	-58.68	-40	-18.68	H
10.689836	40.60	RMS	37.9	-95.2	-41.67	-58.37	-40	-18.37	V
7.112645	41.40	RMS	35.7	-95.2	-43.24	-61.34	-40	-21.34	V
7.145566	41.36	RMS	35.7	-95.2	-42.90	-61.04	-40	-21.04	H
14.276300	42.64	RMS	39.2	-95.2	-41.70	-55.06	-40	-15.06	H
14.290674	42.58	RMS	39.2	-95.2	-41.70	-55.12	-40	-15.12	V
Mid Channel, 3625MHz									
7.257773	44.15	RMS	35.6	-95.2	-47.00	-62.45	-40	-22.45	H
10.869275	43.64	RMS	37.8	-95.2	-45.64	-59.4	-40	-19.40	H
14.553573	43.22	RMS	39.3	-95.2	-43.89	-56.57	-40	-16.57	H
7.225780	44.07	RMS	35.6	-95.2	-46.84	-62.37	-40	-22.37	V
10.897559	43.43	RMS	37.8	-95.2	-45.69	-59.66	-40	-19.66	V
14.592521	42.71	RMS	39.4	-95.2	-44.04	-57.13	-40	-17.13	V
High Channel, 3680MHz									
7.350043	43.69	RMS	35.6	-95.2	-45.86	-61.77	-40	-21.77	H
11.058451	43.96	RMS	37.9	-95.2	-45.29	-58.63	-40	-18.63	H
14.728839	42.72	RMS	39.5	-95.2	-43.55	-56.53	-40	-16.53	H
7.344942	43.71	RMS	35.6	-95.2	-45.83	-61.72	-40	-21.72	V
11.013939	43.67	RMS	37.8	-95.2	-45.63	-59.36	-40	-19.36	V
14.758050	42.25	RMS	39.6	-95.2	-43.79	-57.14	-40	-17.14	V

10.2.2. QPSK LTE ULCA BAND 48 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-20
Test Engineer:	32934
Configuration:	EUT only
Mode	LTE B48 QPSK 20MHz + 20MHz
Chamber #:	05-RDE-E

Frequency (GHz)	Meter Reading (dBuV)	Det	80404 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz									
10.692154	40.75	RMS	37.9	-95.2	-41.7	-58.25	-40	-18.25	H
10.707919	40.68	RMS	37.9	-95.2	-42.1	-58.72	-40	-18.72	V
7.097808	41.47	RMS	35.7	-95.2	-43.1	-61.13	-40	-21.13	V
7.128410	41.41	RMS	35.7	-95.2	-43.1	-61.19	-40	-21.19	H
14.230861	42.45	RMS	39.1	-95.2	-42.19	-55.84	-40	-15.84	V
14.247089	42.61	RMS	39.2	-95.2	-42.11	-55.50	-40	-15.50	H
Mid Channel, 3615.1MHz + 3634.9MHz									
10.868348	41.54	RMS	37.9	-95.2	-42.13	-57.89	-40	-17.89	H
10.911933	41.06	RMS	37.9	-95.2	-42.11	-58.35	-40	-18.35	V
7.239226	41.17	RMS	35.6	-95.2	-42.42	-60.85	-40	-20.85	V
7.245254	41.27	RMS	35.6	-95.2	-42.60	-60.93	-40	-20.93	H
14.436265	42.24	RMS	39.3	-95.2	-42.03	-55.69	-40	-15.69	V
14.454348	42.12	RMS	39.3	-95.2	-42.10	-55.88	-40	-15.88	H
High Channel, 3670.2MHz + 3690MHz									
7.326859	41.36	RMS	35.6	-95.2	-42.40	-60.64	-40	-20.64	H
11.026922	41.30	RMS	37.9	-95.2	-41.60	-57.60	-40	-17.60	H
7.301358	41.27	RMS	35.6	-95.2	-42.36	-60.69	-40	-20.69	V
11.042223	41.28	RMS	37.9	-95.2	-41.52	-57.54	-40	-17.54	V
14.688964	41.97	RMS	39.5	-95.2	-41.60	-55.33	-40	-15.33	H
14.713538	42.17	RMS	39.5	-95.2	-42.00	-55.53	-40	-15.53	V

10.3. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 8

10.3.1. LTE BAND 48 AND 5G NR n48

LIMITS

FCC: §96.41

(e) 3.5 GHz Emissions and Interference Limits—

(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-23
Test Engineer:	32934
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	05-RDE-E

Frequency (GHz)	Meter Reading (dBuV)	Det	80404 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz									
10.668971	40.54	RMS	37.9	-95.2	-41.50	-58.26	-40	-18.26	H
10.653605	42.35	RMS	37.9	-95.2	-41.90	-56.85	-40	-16.85	V
7.106618	41.37	RMS	35.7	-95.2	-43.26	-61.39	-40	-21.39	V
7.127946	41.47	RMS	35.7	-95.2	-43.10	-61.13	-40	-21.13	H
14.216951	42.41	RMS	39.2	-95.2	-42.20	-55.79	-40	-15.79	V
14.226688	42.42	RMS	39.1	-95.2	-42.10	-55.78	-40	-15.78	H
Mid Channel, 3620MHz									
7.269365	41.41	RMS	35.6	-95.2	-42.56	-60.75	-40	-20.75	H
10.880403	41.36	RMS	37.9	-95.2	-42.40	-58.34	-40	-18.34	H
7.259628	41.49	RMS	35.6	-95.2	-42.70	-60.81	-40	-20.81	V
10.886431	41.29	RMS	37.9	-95.2	-42.44	-58.45	-40	-18.45	V
14.526217	41.94	RMS	39.3	-95.2	-42.40	-56.36	-40	-16.36	H
14.626369	41.97	RMS	39.4	-95.2	-41.70	-55.53	-40	-15.53	V
High Channel, 3690MHz									
7.395482	40.79	RMS	35.6	-95.2	-42.25	-61.06	-40	-21.06	H
11.083953	40.85	RMS	37.9	-95.2	-41.40	-57.85	-40	-17.85	H
7.400119	40.86	RMS	35.6	-95.2	-42.30	-61.04	-40	-21.04	V
11.075607	41.03	RMS	37.9	-95.2	-41.64	-57.91	-40	-17.91	V
14.745995	42.16	RMS	39.6	-95.2	-42.00	-55.44	-40	-15.44	V
14.771033	42.30	RMS	39.6	-95.2	-42.00	-55.30	-40	-15.30	H

BPSK 5G NR n48 (40.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-23
Test Engineer:	32934
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	05-RDE-E

Frequency (GHz)	Meter Reading (dBuV)	Det	80404 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3570MHz									
10.701891	40.78	RMS	37.9	-95.2	-41.81	-58.33	-40	-18.33	H
10.662016	41.90	RMS	37.9	-95.2	-41.80	-57.20	-40	-17.20	V
7.092244	41.56	RMS	35.7	-95.2	-43.18	-61.12	-40	-21.12	V
7.115427	41.42	RMS	35.7	-95.2	-43.20	-61.28	-40	-21.28	H
14.273982	42.63	RMS	39.2	-95.2	-41.70	-55.07	-40	-15.07	V
14.282792	42.59	RMS	39.2	-95.2	-41.70	-55.11	-40	-15.11	H
Mid Channel, 3625MHz									
7.257773	41.33	RMS	35.6	-95.2	-42.70	-60.97	-40	-20.97	H
10.896168	41.03	RMS	37.9	-95.2	-42.48	-58.75	-40	-18.75	H
14.498397	42.06	RMS	39.3	-95.2	-42.4	-56.24	-40	-16.24	H
10.826828	46.64	RMS	37.9	-95.2	-42.42	-53.08	-40	-13.08	V
7.238299	41.17	RMS	35.6	-95.2	-42.40	-60.83	-40	-20.83	V
14.570265	41.89	RMS	39.4	-95.2	-42.30	-56.21	-40	-16.21	V
High Channel, 3680MHz									
7.348188	41.15	RMS	35.6	-95.2	-42.42	-60.87	-40	-20.87	H
10.992206	42.47	RMS	37.9	-95.2	-42.02	-56.85	-40	-16.85	H
7.328250	41.44	RMS	35.6	-95.2	-42.43	-60.59	-40	-20.59	V
10.991723	45.64	RMS	37.9	-95.2	-41.97	-53.63	-40	-13.63	V
14.720493	42.11	RMS	39.5	-95.2	-42.00	-55.59	-40	-15.59	V
14.734403	42.18	RMS	39.6	-95.2	-42.00	-55.42	-40	-15.42	H

10.3.2. QPSK LTE ULCA BAND 48 (20.0MHZ + 20.0MHZ BANDWIDTH)

QPSK LTE BAND 48 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-20
Test Engineer:	32934
Configuration:	EUT only
Mode	LTE B48 QPSK 20MHz + 20MHz
Chamber #:	05-RDE-E

Frequency (GHz)	Meter Reading (dBuV)	Det	80404 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz									
10.695400	40.82	RMS	37.9	-95.2	-41.86	-58.34	-40	-18.34	H
10.666189	40.48	RMS	37.9	-95.2	-41.70	-58.52	-40	-18.52	V
7.115891	41.40	RMS	35.7	-95.2	-43.20	-61.30	-40	-21.30	V
7.139538	41.40	RMS	35.7	-95.2	-43.00	-61.10	-40	-21.10	H
14.274446	42.66	RMS	39.2	-95.2	-41.70	-55.04	-40	-15.04	H
14.274909	42.63	RMS	39.2	-95.2	-41.70	-55.07	-40	-15.07	V
Mid Channel, 3615.1MHz + 3634.9MHz									
7.257309	41.32	RMS	35.6	-95.2	-42.70	-60.98	-40	-20.98	H
10.849801	41.36	RMS	37.9	-95.2	-42.20	-58.14	-40	-18.14	H
14.483559	42.08	RMS	39.3	-95.2	-42.40	-56.22	-40	-16.22	H
10.872057	41.40	RMS	37.9	-95.2	-42.39	-58.29	-40	-18.29	V
14.490978	42.15	RMS	39.3	-95.2	-42.40	-56.15	-40	-16.15	V
7.236444	41.16	RMS	35.6	-95.2	-42.50	-60.94	-40	-20.94	V
High Channel, 3670.2MHz + 3690MHz									
7.356534	41.04	RMS	35.6	-95.2	-42.45	-61.01	-40	-21.01	H
7.356534	41.05	RMS	35.6	-95.2	-42.45	-61.00	-40	-21.00	H
10.983769	42.45	RMS	37.9	-95.2	-41.85	-56.70	-40	-16.70	H
10.984003	43.48	RMS	37.9	-95.2	-41.80	-55.62	-40	-15.62	H
14.682009	42.05	RMS	39.5	-95.2	-41.70	-55.35	-40	-15.35	H
14.682009	42.06	RMS	39.5	-95.2	-41.70	-55.34	-40	-15.34	H

10.4. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 9

10.4.1. LTE BAND 48 AND 5G NR n48

LIMITS

FCC: §96.41

(e) 3.5 GHz Emissions and Interference Limits—

(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm

QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-23
Test Engineer:	32934
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	05-RDE-E

Frequency (GHz)	Meter Reading (dBuV)	Det	80404 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz									
10.674535	40.59	RMS	37.9	-95.2	-41.55	-58.26	-40	-18.26	H
10.681954	40.90	RMS	37.9	-95.2	-41.41	-57.81	-40	-17.81	V
7.132119	41.34	RMS	35.7	-95.2	-43.00	-61.16	-40	-21.16	H
7.143247	41.45	RMS	35.7	-95.2	-42.90	-60.95	-40	-20.95	V
14.244307	42.58	RMS	39.2	-95.2	-42.17	-55.59	-40	-15.59	H
14.257754	42.68	RMS	39.2	-95.2	-42.00	-55.32	-40	-15.32	V
Mid Channel, 3620MHz									
7.255918	41.30	RMS	35.6	-95.2	-42.69	-60.99	-40	-20.99	H
10.878085	41.35	RMS	37.9	-95.2	-42.31	-58.26	-40	-18.26	H
7.251745	41.33	RMS	35.6	-95.2	-42.67	-60.94	-40	-20.94	V
10.895241	41.29	RMS	37.9	-95.2	-42.42	-58.43	-40	-18.43	V
14.516016	41.98	RMS	39.3	-95.2	-42.40	-56.32	-40	-16.32	V
14.569338	41.90	RMS	39.4	-95.2	-42.30	-56.20	-40	-16.20	H
High Channel, 3690MHz									
7.368589	41.08	RMS	35.6	-95.2	-42.40	-60.92	-40	-20.92	H
11.084417	40.85	RMS	37.9	-95.2	-41.40	-57.85	-40	-17.85	H
7.344942	41.12	RMS	35.6	-95.2	-42.49	-60.97	-40	-20.97	V
11.089053	40.90	RMS	37.9	-95.2	-41.20	-57.60	-40	-17.60	V
14.747386	42.19	RMS	39.6	-95.2	-42.00	-55.41	-40	-15.41	V
14.779843	42.25	RMS	39.6	-95.2	-42.00	-55.35	-40	-15.35	H

BPSK 5G NR n48 (40.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-19
Test Engineer:	32934
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	05-RDE-F

Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3570MHz									
7.147884	43.76	RMS	35.6	-95.2	-46.50	-62.34	-40	-22.34	H
10.713019	43.81	RMS	37.7	-95.2	-45.18	-58.87	-40	-18.87	H
14.2661	42.23	RMS	38.9	-95.2	-44.26	-58.33	-40	-18.33	H
7.143247	43.84	RMS	35.6	-95.2	-46.39	-62.15	-40	-22.15	V
10.726929	43.52	RMS	37.7	-95.2	-45.30	-59.28	-40	-19.28	V
14.225761	42.19	RMS	38.8	-95.2	-43.70	-57.91	-40	-17.91	V
Mid Channel, 3625MHz									
7.258237	44.29	RMS	35.6	-95.2	-47.00	-62.31	-40	-22.31	H
10.879012	43.74	RMS	37.8	-95.2	-45.59	-59.25	-40	-19.25	H
14.500251	43.08	RMS	39.3	-95.2	-43.72	-56.54	-40	-16.54	H
7.247109	44.28	RMS	35.6	-95.2	-47.08	-62.40	-40	-22.40	V
10.877158	43.70	RMS	37.8	-95.2	-45.59	-59.29	-40	-19.29	V
14.51277	42.94	RMS	39.3	-95.2	-43.56	-56.52	-40	-16.52	V
High Channel, 3680MHz									
7.351897	43.81	RMS	35.6	-95.2	-45.88	-61.67	-40	-21.67	H
14.721884	42.99	RMS	39.5	-95.2	-43.62	-56.33	-40	-16.33	H
10.991689	50.80	RMS	37.8	-95.2	-45.64	-52.24	-40	-12.24	H
7.353752	43.79	RMS	35.6	-95.2	-45.90	-61.71	-40	-21.71	V
10.992147	43.82	RMS	37.8	-95.2	-45.65	-59.23	-40	-19.23	V
14.726521	42.87	RMS	39.5	-95.2	-43.56	-56.39	-40	-16.39	V

10.4.2. QPSK LTE ULCA BAND 48 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	15173542
Date:	2024-09-20
Test Engineer:	32934
Configuration:	EUT only
Mode	LTE B48 QPSK 20MHz + 20MHz
Chamber #:	05-RDE-E

Frequency (GHz)	Meter Reading (dBuV)	Det	80404 ACF 3m (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz									
10.682417	40.59	RMS	37.9	-95.2	-41.48	-58.19	-40	-18.19	H
10.634660	40.61	RMS	37.9	-95.2	-41.73	-58.42	-40	-18.42	V
7.1455660	41.33	RMS	35.7	-95.2	-42.90	-61.07	-40	-21.07	H
7.155766	41.31	RMS	35.7	-95.2	-42.92	-61.11	-40	-21.11	V
14.254508	42.74	RMS	39.2	-95.2	-42.10	-55.36	-40	-15.36	H
14.268882	42.72	RMS	39.2	-95.2	-41.81	-55.09	-40	-15.09	V
Mid Channel, 3615.1MHz + 3634.9MHz									
10.852120	41.38	RMS	37.9	-95.2	-42.09	-58.01	-40	-18.01	H
10.799725	41.18	RMS	37.9	-95.2	-42.3	-58.42	-40	-18.42	V
7.220680	41.11	RMS	35.7	-95.2	-42.5	-60.89	-40	-20.89	V
7.223462	41.07	RMS	35.7	-95.2	-42.5	-60.93	-40	-20.93	H
14.451566	42.18	RMS	39.3	-95.2	-42.1	-55.82	-40	-15.82	V
14.463158	42.17	RMS	39.3	-95.2	-42.18	-55.91	-40	-15.91	H
High Channel, 3670.2MHz + 3690MHz									
7.325005	41.29	RMS	35.6	-95.2	-42.40	-60.71	-40	-20.71	H
11.042808	41.30	RMS	37.9	-95.2	-41.58	-57.58	-40	-17.58	H
10.983796	43.50	RMS	37.9	-95.2	-41.84	-55.64	-40	-15.64	V
7.248500	41.30	RMS	35.6	-95.2	-42.60	-60.90	-40	-20.90	V
14.61385	42.05	RMS	39.4	-95.2	-41.80	-55.55	-40	-15.55	V
14.677836	42.10	RMS	39.5	-95.2	-41.60	-55.20	-40	-15.20	H

11. SETUP PHOTOS

Please refer to 15173542-EP1V1 for Setup Photo Report for setup photos.

END OF REPORT