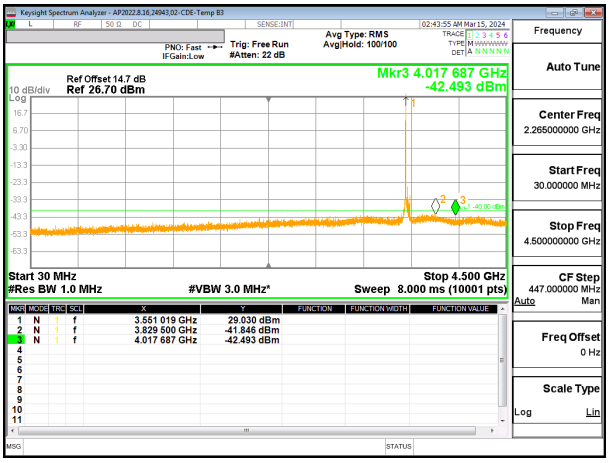
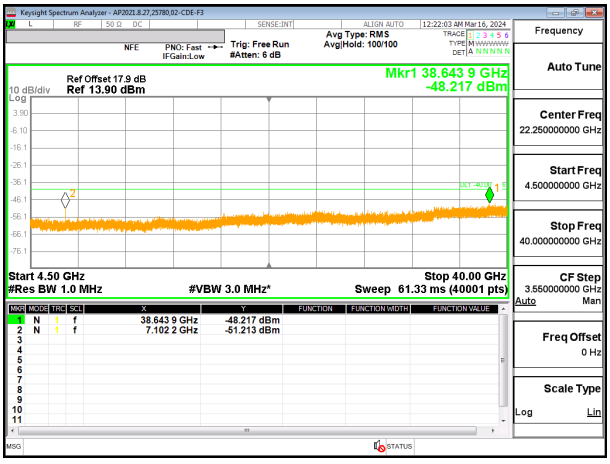
5G NR n48

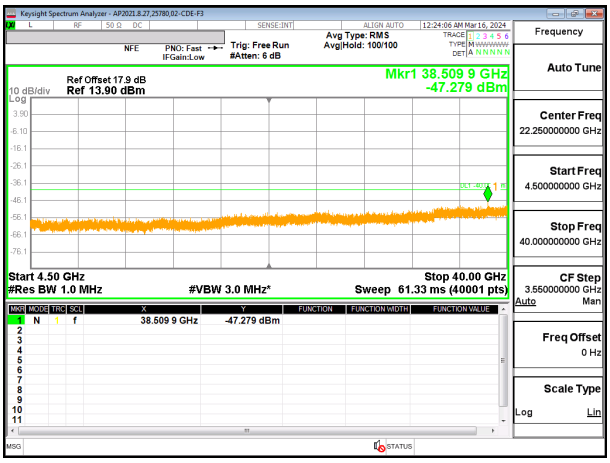


5G NR n48 40MHz BPSK Low Channel RB1-0 (30MHz to 4GHz)



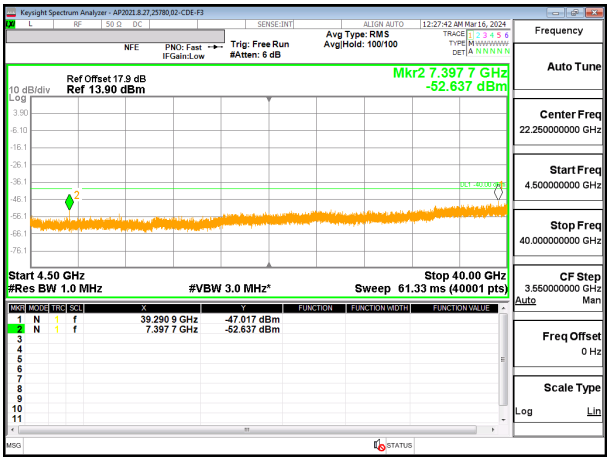
5G NR n48 40MHz BPSK Low Channel RB1-0 (4G to 40G)

5G NR n48 40MHz BPSK Mid Channel RB1-1 (30MHz to 4GHz)



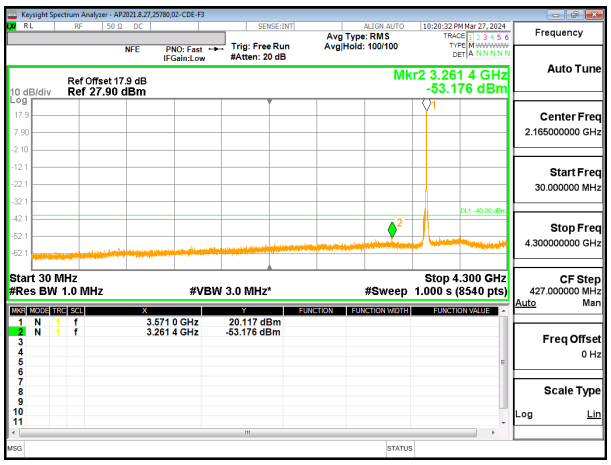
5G NR n48 40MHz BPSK Middle Channel RB1-1 (4G to 40G)

5G NR n48 40MHz BPSK High Channel RB1-105 (30MHz to 4GHz)

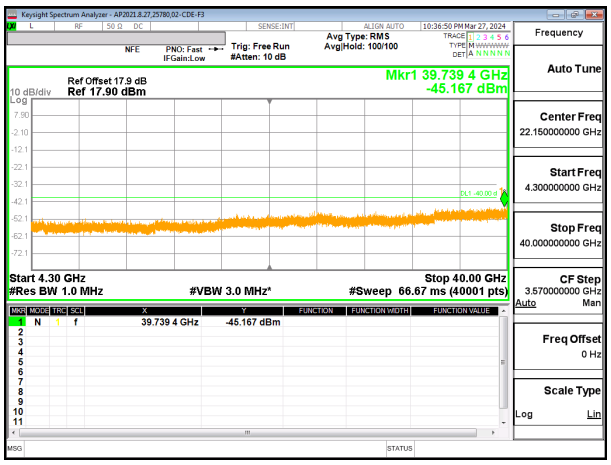


5G NR n48 40MHz BPSK High Channel RB1-105 (4G to 40G)

9.3.2. LTE ULCA BAND 48

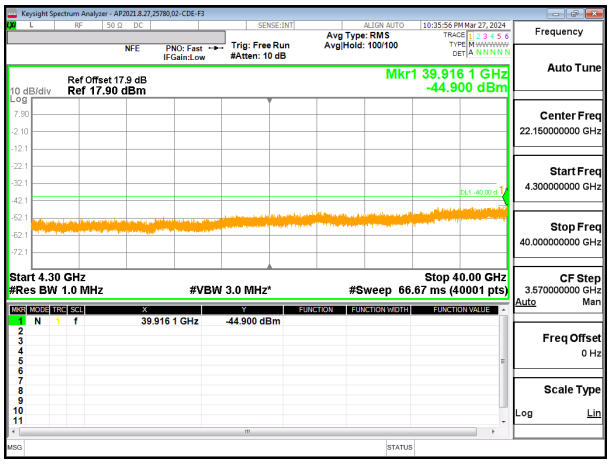


LTE B48 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0 (30MHz to 4.5GHz)

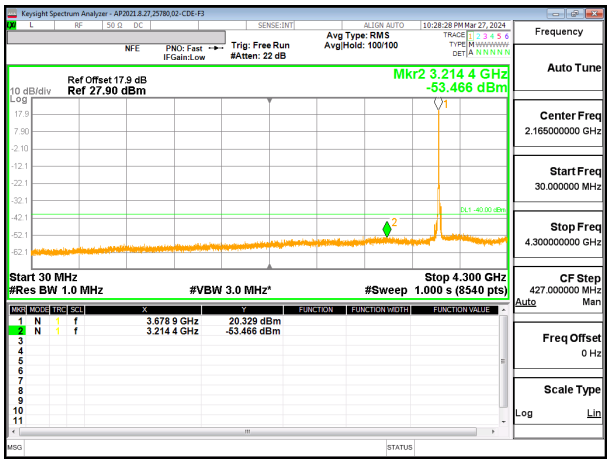


LTE B48 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0 (4.5GHz to 40GHz)

LTE B48 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0 (30MHz to 4.5GHz)



LTE B48 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0 (4.5GHz to 40GHz)



LTE B48 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0 (30MHz to 4.5GHz)

LTE B48 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0 (4.5GHz to 40GHz)

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 place inside a temperature chamber. The temperature is set to 20ºC 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 +50ºC 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:	25780	Test Date:	3/24/2024

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)		3550.9655	3669.2590			
Extreme (50°C)		3550.9655	3669.2590	-10.0	-0.003	Yes
Extreme (40°C)		3550.9655	3669.2590	9.2	0.003	Yes
Extreme (30°C)		3550.9655	3669.2590	8.6	0.002	Yes
Extreme (10°C)	Normal	3550.9655	3669.2590	-9.3	-0.003	Yes
Extreme (0°C)		3550.9655	3669.2590	-8.6	-0.002	Yes
Extreme (-10°C)		3550.9655	3669.2590	-8.7	-0.002	Yes
Extreme (-20°C)		3550.9655	3669.2590	-10.9	-0.003	Yes
Extreme (-30°C)		3550.9655	3669.2590	-8.2	-0.002	Yes
20°C	15%	3550.9655	3669.2590	-9.4	-0.003	Yes
	-15%	3550.9655	3669.2590	7.9	0.002	Yes
	End Point Voltage	3550.9655	3669.2590	-9.0	-0.002	Yes

5G NR n48 BPSK (40MHz BANDWIDTH)

Test Engineer ID:	32546	Test Date:	5/14/2024

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)		3550.9783	3696.8371			
Extreme (50°C)		3550.9782	3696.8371	-16.3	-0.005	Yes
Extreme (40°C)		3550.9782	3696.8371	-11.1	-0.003	Yes
Extreme (30°C)		3550.9783	3696.8371	6.6	0.002	Yes
Extreme (10°C)	Normal	3550.9782	3696.8371	-10.2	-0.003	Yes
Extreme (0°C)		3550.9782	3696.8371	-12.3	-0.003	Yes
Extreme (-10°C)		3550.9782	3696.8371	-14.8	-0.004	Yes
Extreme (-20°C)		3550.9782	3696.8371	-11.7	-0.003	Yes
Extreme (-30°C)		3550.9782	3696.8371	-12.5	-0.003	Yes
20°C	15%	3550.9782	3696.8371	-10.9	-0.003	Yes
	-15%	3550.9782	3696.8371	-10.4	-0.003	Yes
	End Point Voltage	3550.9782	3696.8371	-10.3	-0.003	Yes

9.4.2. LTE ULCA BAND 48

Test Engineer ID:	32546	Test Date:	3/26/2024

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	3500.7040	3699.2540			
Extreme (50°C)		3500.7041	3699.2541	58.7	0.016	Yes
Extreme (40°C)		3500.7041	3699.2541	65.3	0.018	Yes
Extreme (30°C)		3500.7041	3699.2541	65.1	0.018	Yes
Extreme (10°C)		3500.7040	3699.2540	21.3	0.006	Yes
Extreme (0°C)		3500.7040	3699.2540	-24.2	-0.007	Yes
Extreme (-10°C)		3500.7039	3699.2539	-53.8	-0.015	Yes
Extreme (-20°C)		3500.7039	3699.2539	-57.3	-0.016	Yes
Extreme (-30°C)		3500.7039	3699.2539	-76.0	-0.021	Yes
20°C	15%	3500.7039	3699.2539	-68.9	-0.019	Yes
	-15%	3500.7039	3699.2539	-67.9	-0.019	Yes
	End Point Voltage	3500.7039	3699.2539	-67.6	-0.019	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:	2024-03-13

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	30.91	20.50	*3.42
					16QAM	32.39	21.28	*4.12
	10MHz		50	0	QPSK	31.79	20.17	*4.63
					16QAM	32.65	19.96	*5.7
	15MHz		75	0	QPSK	31.13	19.67	*4.47
					16QAM	36.33	19.21	*10.13
	20MHz		100	0	QPSK	43.49	19.69	*16.81
					16QAM	32.18	20.62	*4.57
5G NR n48	10MHz		24	0	BPSK	31.04	26.57	4.47
					16QAM	32.83	25.93	6.90
	15MHz		36	0	BPSK	31.18	26.84	4.34
					16QAM	32.86	26.14	6.72
	20MHz		50	0	BPSK	31.13	26.83	4.30
					16QAM	32.89	26.1	6.79
	30MHz		75	0	BPSK	28.90	24.2	4.70
					16QAM	29.63	22.79	6.84
	40MHz		100	0	BPSK	27.45	23.06	4.39
					16QAM	29.31	21.61	7.70
* 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:	39004	Test Date:	2024-03-28

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	32.31	19.77	5.55
				16QAM	32.31	18.78	6.54
	20MHz / 5MHz	3622.5	3634.2	QPSK	32.30	19.76	5.55
				16QAM	32.36	18.78	6.59
	10MHz / 20MHz	3615.6	3630.0	QPSK	34.85	20.00	7.86
				16QAM	32.32	19.78	5.55
	20MHz / 10MHz	3620.1	3634.5	QPSK	32.30	19.76	5.55
				16QAM	32.32	18.79	6.54
	15MHz / 20MHz	3615.3	3632.4	QPSK	32.30	19.76	5.55
				16QAM	32.31	18.77	6.55
	20MHz / 15MHz	3617.6	3634.7	QPSK	32.30	19.78	5.53
				16QAM	32.31	18.79	6.53
	20MHz / 20MHz	3615.1	3634.9	QPSK	32.30	19.78	5.53
				16QAM	32.30	18.78	6.53
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.

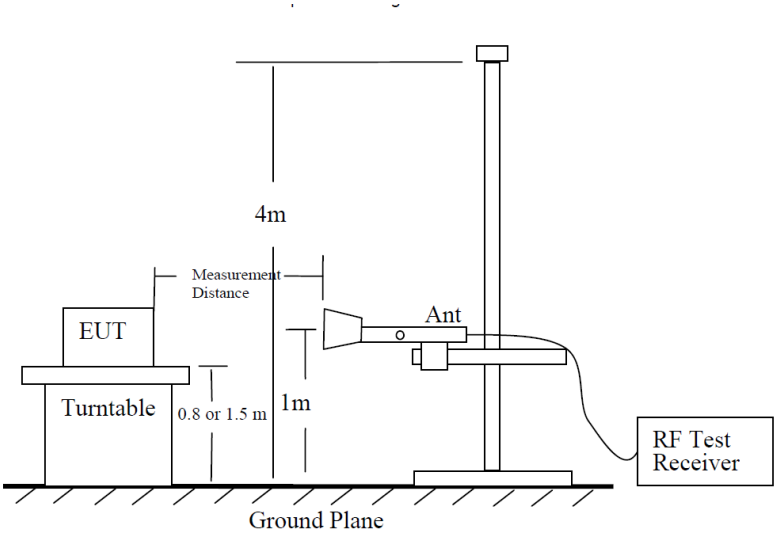


Figure 6—Test site-up for radiated ERP and/or EIRP measurements

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

a) E (dBμV/m) = Measured amplitude level (dBμV) + Cable Loss (dB) + Antenna Factor (dB/m).

b) E (dBμV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m).

c) E (dBμV/m) = EIRP (dBm) − 20log(D) + 104.8; where D is the measurement distance (in the far field region) in m.

d) EIRP (dBm) = E (dBμV/m) + 20log(D) − 104.8; where D is the measurement distance (in the far field region) in m.

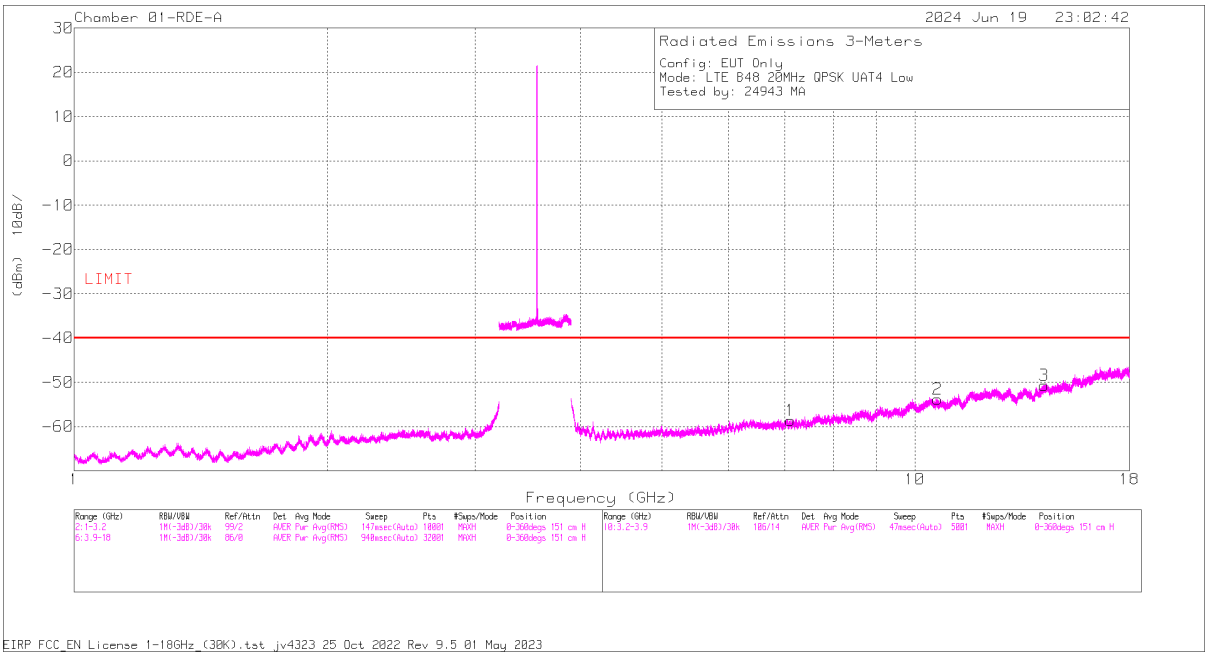
So, from d)

The measuring distance is usually at 3m, then 20Log(3)=9.5424

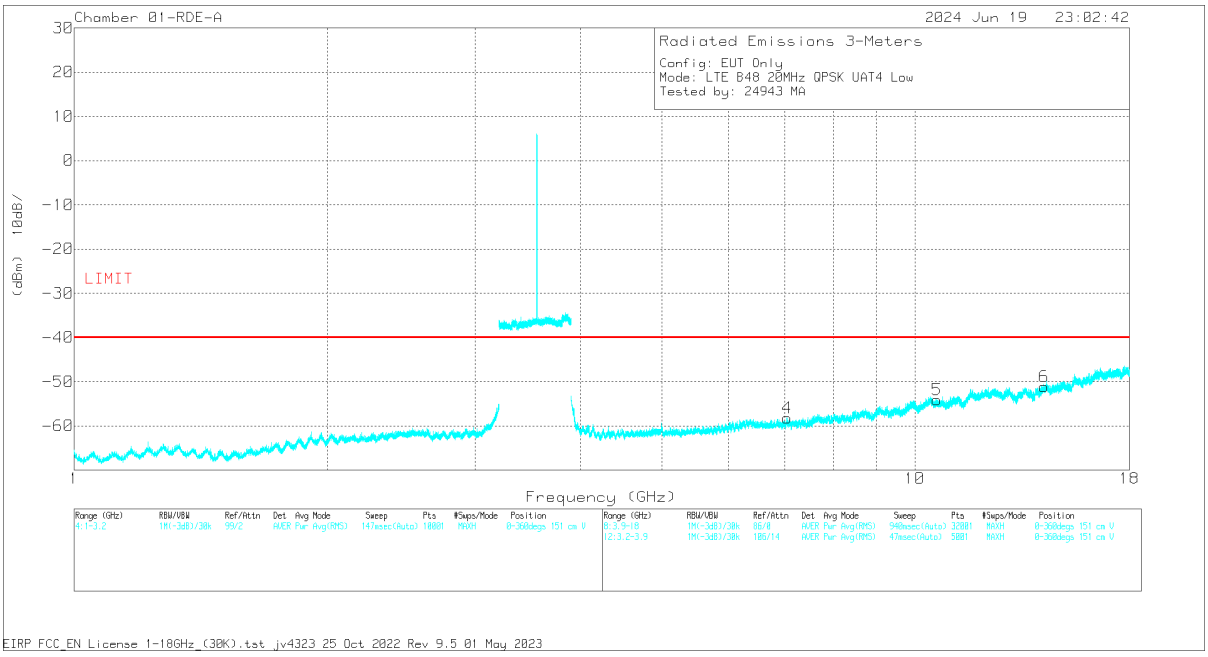
Then, EIRP (dBm) = E (dBμV/m) + 9.5424 − 104.8 = E (dBμV/m) – 95.2576

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



Horizontal Polarity



Vertical Polarity

Trace Markers

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
7.051350	19.51	RMS	35.6	.9	-95.2	-19.04	-58.23	-40	-18.23	V
7.105988	19.19	RMS	35.6	.5	-95.2	-18.70	-58.61	-40	-18.61	H
10.621734	17.54	RMS	37.9	.6	-95.2	-14.93	-54.09	-40	-14.09	V
10.647731	17.91	RMS	37.9	.6	-95.2	-15.00	-53.79	-40	-13.79	H
14.241909	17.72	RMS	39.3	.8	-95.2	-13.31	-50.69	-40	-10.69	H
14.247197	17.35	RMS	39.3	.8	-95.2	-13.32	-51.07	-40	-11.07	V

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 #:	14982484
Date:	2024-06-19
Test Engineer:	24943
Configuration:	EUT only
Mode	LTE 48 QPSK 20MHz
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMT	Margin (dB)	Polarity
Low Channel, 3560MHz										
7.051350	19.51	RMS	35.6	.9	-95.2	-19.04	-58.23	-40	-18.23	V
7.105988	19.19	RMS	35.6	.5	-95.2	-18.70	-58.61	-40	-18.61	H
10.621734	17.54	RMS	37.9	.6	-95.2	-14.93	-54.09	-40	-14.09	V
10.647731	17.91	RMS	37.9	.6	-95.2	-15.00	-53.79	-40	-13.79	H
14.241909	17.72	RMS	39.3	.8	-95.2	-13.31	-50.69	-40	-10.69	H
14.247197	17.35	RMS	39.3	.8	-95.2	-13.32	-51.07	-40	-11.07	V
Mid Channel, 3625MHz										
7.240819	19.11	RMS	35.6	.5	-95.2	-18.50	-58.49	-40	-18.49	H
7.291931	18.91	RMS	35.5	.6	-95.2	-18.10	-58.29	-40	-18.29	V
10.798866	17.35	RMS	37.9	.6	-95.2	-14.59	-53.94	-40	-13.94	V
10.803272	17.73	RMS	37.9	.6	-95.2	-14.60	-53.57	-40	-13.57	H
14.572819	17.10	RMS	39.8	.9	-95.2	-13.22	-50.62	-40	-10.62	V
14.586038	16.29	RMS	39.8	.9	-95.2	-12.8	-51.01	-40	-11.01	H
High Channel, 3690MHz										
7.282678	18.60	RMS	35.6	.5	-95.2	-18.20	-58.70	-40	-18.70	H
7.306031	19.14	RMS	35.6	.6	-95.2	-18.30	-58.16	-40	-18.16	V
11.033719	17.57	RMS	37.9	.6	-95.2	-14.4	-53.53	-40	-13.53	V
11.040328	17.67	RMS	37.9	.6	-95.2	-14.37	-53.40	-40	-13.40	H
14.734528	17.20	RMS	40.0	.9	-95.2	-13.50	-50.60	-40	-10.60	H
14.736291	16.66	RMS	40.0	.9	-95.2	-13.43	-51.07	-40	-11.07	V

BPSK 5G NR n48 (40.0MHZ BANDWIDTH)

Project #:	14982484
Date:	2024-06-16
Test Engineer:	106018
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3570MHz										
7.143000	18.85	RMS	35.6	.6	-95.2	-18.50	-58.65	-40	-18.65	H
7.144763	18.78	RMS	35.6	.6	-95.2	-18.60	-58.82	-40	-18.82	V
10.705894	17.76	RMS	37.9	.5	-95.2	-15.00	-54.04	-40	-14.04	V
10.726163	17.78	RMS	37.9	.6	-95.2	-14.90	-53.82	-40	-13.82	H
14.263500	18.23	RMS	39.3	.8	-95.2	-13.55	-50.42	-40	-10.42	H
14.278481	18.24	RMS	39.4	.7	-95.2	-13.65	-50.51	-40	-10.51	V
Mid Channel, 3625MHz										
7.241259	18.74	RMS	35.6	.5	-95.2	-18.50	-58.86	-40	-18.86	H
7.265934	18.72	RMS	35.6	.6	-95.2	-18.40	-58.68	-40	-18.68	V
10.864959	17.27	RMS	37.9	.4	-95.2	-14.60	-54.23	-40	-14.23	H
10.880381	17.13	RMS	37.9	.5	-95.2	-14.76	-54.43	-40	-14.43	V
14.507606	17.82	RMS	39.7	.8	-95.2	-14.04	-50.92	-40	-10.92	V
14.532281	17.46	RMS	39.7	.8	-95.2	-13.80	-51.04	-40	-11.04	H
High Channel, 3680MHz										
7.340400	18.93	RMS	35.6	.6	-95.2	-18.10	-58.17	-40	-18.17	H
7.355822	18.58	RMS	35.6	.7	-95.2	-18.20	-58.52	-40	-18.52	V
11.046497	17.49	RMS	37.9	.6	-95.2	-14.45	-53.66	-40	-13.66	V
11.049141	17.66	RMS	37.8	.6	-95.2	-14.50	-53.64	-40	-13.64	H
14.709853	17.16	RMS	40.0	.9	-95.2	-13.40	-50.54	-40	-10.54	V
14.730563	17.28	RMS	40.0	.9	-95.2	-13.51	-50.53	-40	-10.53	H

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

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

Project #:	14982484
Date:	2024-06-24
Test Engineer:	32934
Configuration:	EUT only
Mode	Band 48 QPSK 20MHz + 20MHz
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.122731	18.59	RMS	35.6	.5	-95.2	-18.9	-59.41	-40	-19.41	H
10.682981	17.83	RMS	37.9	.6	-95.2	-15.1	-53.97	-40	-13.97	H
14.254688	18.23	RMS	39.3	.8	-95.2	-13.4	-50.27	-40	-10.27	H
7.087041	18.81	RMS	35.6	.5	-95.2	-19.0	-59.29	-40	-19.29	V
10.722197	17.69	RMS	37.9	.5	-95.2	-14.9	-54.01	-40	-14.01	V
14.246756	18.10	RMS	39.3	.8	-95.2	-13.4	-50.35	-40	-10.35	V
Mid Channel, 3615.1MHz + 3634.9MHz										
7.256241	18.24	RMS	35.6	.6	-95.2	-18.3	-59.06	-40	-19.06	H
10.839403	17.25	RMS	37.9	.6	-95.2	-14.6	-54.05	-40	-14.05	H
14.479406	17.81	RMS	39.7	.7	-95.2	-14.0	-50.95	-40	-10.95	H
7.224516	18.88	RMS	35.6	.5	-95.2	-18.5	-58.72	-40	-18.72	V
10.874213	17.14	RMS	37.9	.5	-95.2	-14.7	-54.36	-40	-14.36	V
14.488659	17.95	RMS	39.7	.7	-95.2	-14.0	-50.85	-40	-10.85	V
High Channel, 3670.2MHz + 3690MHz										
7.339078	18.59	RMS	35.6	.6	-95.2	-18.10	-58.51	-40	-18.51	H
11.028431	17.40	RMS	37.9	.6	-95.2	-14.34	-53.64	-40	-13.64	H
14.668875	17.18	RMS	39.9	.9	-95.2	-13.11	-50.33	-40	-10.33	H
7.301625	18.14	RMS	35.6	.6	-95.2	-18.16	-59.02	-40	-19.02	V
10.999791	17.46	RMS	37.9	.7	-95.2	-14.80	-53.94	-40	-13.94	V
14.680772	17.31	RMS	39.9	.9	-95.2	-13.30	-50.39	-40	-10.39	V

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 #:	14982484
Date:	2024-08-01
Test Engineer:	32145
Configuration:	EUT only
Mode	LTE 48 QPSK 20MHz
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMT	Margin (dB)	Polarity
Low Channel, 3560MHz										
7.123172	19.62	RMS	35.6	.5	-95.2	-18.88	-58.36	-40	-18.36	H
7.128019	19.64	RMS	35.6	.5	-95.2	-18.80	-58.26	-40	-18.26	V
10.623938	18.11	RMS	37.9	.6	-95.2	-14.90	-53.49	-40	-13.49	V
10.646409	18.26	RMS	37.9	.6	-95.2	-15.00	-53.44	-40	-13.44	H
14.218997	18.45	RMS	39.3	.8	-95.2	-13.30	-49.95	-40	-9.95	V
14.248078	18.46	RMS	39.3	.8	-95.2	-13.41	-50.05	-40	-10.05	H
Mid Channel, 3625MHz										
7.240819	19.27	RMS	35.6	.5	-95.2	-18.50	-58.33	-40	150	H
10.83015	17.66	RMS	37.9	.6	-95.2	-14.62	-53.66	-40	150	H
14.476763	18.16	RMS	39.7	.7	-95.2	-14.00	-50.64	-40	150	H
7.194553	19.50	RMS	35.6	.6	-95.2	-18.54	-58.04	-40	150	V
7.194553	19.53	RMS	35.6	.6	-95.2	-18.54	-58.01	-40	150	V
10.891397	17.51	RMS	37.9	.6	-95.2	-14.66	-53.85	-40	150	V
High Channel, 3690MHz										
7.363753	19.97	RMS	35.6	.7	-95.2	-18.20	-57.13	-40	-17.13	V
7.370363	20.00	RMS	35.6	.7	-95.2	-18.30	-57.20	-40	-17.20	H
11.076459	18.40	RMS	37.8	.7	-95.2	-14.40	-52.70	-40	-12.70	V
11.088797	18.17	RMS	37.8	.7	-95.2	-14.30	-52.83	-40	-12.83	H
14.664909	17.24	RMS	39.9	.9	-95.2	-13.11	-50.27	-40	-10.27	V
14.744222	17.53	RMS	40.0	.8	-95.2	-13.42	-50.29	-40	-10.29	H

BPSK 5G NR n48 (40.0MHZ BANDWIDTH)

Project #:	14982484
Date:	2024-06-16
Test Engineer:	106018
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3570MHz										
7.139034	18.85	RMS	35.6	.6	-95.2	-18.60	-58.75	-40	-18.75	H
7.140797	18.84	RMS	35.6	.6	-95.2	-18.60	-58.76	-40	-18.76	V
10.710741	17.88	RMS	37.9	.5	-95.2	-15.00	-53.92	-40	-13.92	H
10.715147	17.80	RMS	37.9	.5	-95.2	-14.90	-53.90	-40	-13.90	V
14.281566	18.32	RMS	39.4	.7	-95.2	-13.56	-50.34	-40	-10.34	H
14.282888	18.26	RMS	39.4	.7	-95.2	-13.60	-50.44	-40	-10.44	V
Mid Channel, 3625MHz										
7.226278	19.19	RMS	35.6	.5	-95.2	-18.50	-58.41	-40	-18.41	V
7.243903	18.68	RMS	35.6	.5	-95.2	-18.50	-58.92	-40	-18.92	H
10.861434	17.25	RMS	37.9	.4	-95.2	-14.44	-54.09	-40	-14.09	V
10.882144	17.25	RMS	37.9	.5	-95.2	-14.80	-54.35	-40	-14.35	H
14.495709	17.94	RMS	39.7	.7	-95.2	-14.10	-50.96	-40	-10.96	H
14.508928	17.83	RMS	39.7	.8	-95.2	-14.09	-50.96	-40	-10.96	V
High Channel, 3680MHz										
7.373888	18.58	RMS	35.6	.7	-95.2	-18.30	-58.62	-40	-18.62	V
7.374328	18.64	RMS	35.6	.7	-95.2	-18.30	-58.56	-40	-18.56	H
11.039888	17.55	RMS	37.9	.6	-95.2	-14.40	-53.55	-40	-13.55	V
11.040769	17.63	RMS	37.9	.6	-95.2	-14.32	-53.39	-40	-13.39	H
14.720648	17.25	RMS	40.0	.9	-95.2	-13.50	-50.55	-40	-10.55	H
14.723953	17.30	RMS	40.0	.9	-95.2	-13.40	-50.40	-40	-10.40	V

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

Project #:	14982484
Date:	2024-06-24
Test Engineer:	32934
Configuration:	EUT only
Mode	Band 48 QPSK 20MHz + 20MHz
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.122731	18.59	RMS	35.6	.5	-95.2	-18.9	-59.41	-40	-19.41	H
10.682981	17.83	RMS	37.9	.6	-95.2	-15.1	-53.97	-40	-13.97	H
14.254688	18.23	RMS	39.3	.8	-95.2	-13.4	-50.27	-40	-10.27	H
7.087041	18.81	RMS	35.6	.5	-95.2	-19.0	-59.29	-40	-19.29	V
10.722197	17.69	RMS	37.9	.5	-95.2	-14.9	-54.01	-40	-14.01	V
14.246756	18.10	RMS	39.3	.8	-95.2	-13.4	-50.35	-40	-10.35	V
Mid Channel, 3615.1MHz + 3634.9MHz										
7.256241	18.24	RMS	35.6	.6	-95.2	-18.3	-59.06	-40	-19.06	H
10.839403	17.25	RMS	37.9	.6	-95.2	-14.6	-54.05	-40	-14.05	H
14.479406	17.81	RMS	39.7	.7	-95.2	-14.0	-50.95	-40	-10.95	H
7.224516	18.88	RMS	35.6	.5	-95.2	-18.5	-58.72	-40	-18.72	V
10.874213	17.14	RMS	37.9	.5	-95.2	-14.7	-54.36	-40	-14.36	V
14.488659	17.95	RMS	39.7	.7	-95.2	-14.0	-50.85	-40	-10.85	V
High Channel, 3670.2MHz + 3690MHz										
7.339078	18.59	RMS	35.6	.6	-95.2	-18.10	-58.51	-40	-18.51	H
11.028431	17.40	RMS	37.9	.6	-95.2	-14.34	-53.64	-40	-13.64	H
14.668875	17.18	RMS	39.9	.9	-95.2	-13.11	-50.33	-40	-10.33	H
7.301625	18.14	RMS	35.6	.6	-95.2	-18.16	-59.02	-40	-19.02	V
10.999791	17.46	RMS	37.9	.7	-95.2	-14.80	-53.94	-40	-13.94	V
14.680772	17.31	RMS	39.9	.9	-95.2	-13.30	-50.39	-40	-10.39	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 #:	14982484
Date:	2024-06-19
Test Engineer:	32934
Configuration:	EUT only
Mode	LTE 48 QPSK 20MHz
Chamber #:	05-RDE-F

Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB)	EIRP CF	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMT	Margin (dB)	Polarity
Low Channel, 3560MHz									
7.107545	44.05	RMS	35.6	-95.2	-46.25	-61.80	-40	-21.80	H
14.237352	42.76	RMS	38.8	-95.2	-43.59	-57.23	-40	-17.23	H
10.654329	45.10	RMS	37.7	-95.2	-45.70	-58.10	-40	-18.10	H
7.100590	43.98	RMS	35.6	-95.2	-46.27	-61.89	-40	-21.89	V
14.169193	43.00	RMS	38.7	-95.2	-43.58	-57.08	-40	-17.08	V
10.654477	50.74	RMS	37.7	-95.2	-45.71	-52.47	-40	-12.47	V
Mid Channel, 3625MHz									
7.236444	44.43	RMS	35.6	-95.2	-47.00	-62.17	-40	-22.17	H
10.848410	44.09	RMS	37.8	-95.2	-45.58	-58.89	-40	-18.89	H
14.506279	43.61	RMS	39.3	-95.2	-43.73	-56.02	-40	-16.02	H
7.226244	44.37	RMS	35.6	-95.2	-46.85	-62.08	-40	-22.08	V
14.484023	43.42	RMS	39.2	-95.2	-44.07	-56.65	-40	-16.65	V
10.849492	50.17	RMS	37.8	-95.2	-45.61	-52.84	-40	-12.84	V
High Channel, 3690MHz									
7.373226	44.01	RMS	35.6	-95.2	-46.22	-61.81	-40	-21.81	H
11.049642	44.50	RMS	37.9	-95.2	-45.30	-58.10	-40	-18.10	H
14.766860	42.92	RMS	39.6	-95.2	-43.68	-56.36	-40	-16.36	H
7.382499	44.14	RMS	35.6	-95.2	-46.24	-61.70	-40	-21.70	V
14.739040	43.19	RMS	39.5	-95.2	-43.55	-56.06	-40	-16.06	V
11.044295	49.76	RMS	37.9	-95.2	-45.37	-52.91	-40	-12.91	V

BPSK 5G NR n48 (40.0MHZ BANDWIDTH)

Project #:	14982484
Date:	2024-06-19
Test Engineer:	32934
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	05-RDE-F

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3570MHz										
7.139916	18.79	RMS	35.6	.6	-95.2	-18.6	-58.81	-40	-18.81	V
7.142559	18.92	RMS	35.6	.6	-95.2	-18.5	-58.62	-40	-18.62	H
10.726163	17.83	RMS	37.9	.6	-95.2	-14.9	-53.77	-40	-13.77	H
10.741584	17.70	RMS	37.9	.6	-95.2	-14.9	-53.90	-40	-13.90	V
14.262178	18.24	RMS	39.3	.8	-95.2	-13.5	-50.36	-40	-10.36	V
14.283769	18.28	RMS	39.4	.7	-95.2	-13.6	-50.42	-40	-10.42	H
Mid Channel, 3625MHz										
7.255800	18.61	RMS	35.6	.6	-95.2	-18.3	-58.69	-40	-18.69	H
7.256241	18.52	RMS	35.6	.6	-95.2	-18.3	-58.78	-40	-18.78	V
10.874653	17.15	RMS	37.9	.5	-95.2	-14.7	-54.35	-40	-14.35	V
10.875975	17.27	RMS	37.9	.5	-95.2	-14.7	-54.23	-40	-14.23	H
14.506725	17.89	RMS	39.7	.8	-95.2	-14.1	-50.91	-40	-10.91	H
14.511131	17.75	RMS	39.7	.8	-95.2	-14.0	-50.95	-40	-10.95	V
High Channel, 3680MHz										
7.357584	18.68	RMS	35.6	.7	-95.2	-18.2	-58.42	-40	-18.42	V
7.358906	18.68	RMS	35.6	.7	-95.2	-18.2	-58.42	-40	-18.42	H
11.038345	17.53	RMS	37.9	.6	-95.2	-14.3	-53.50	-40	-13.50	V
11.044734	17.62	RMS	37.9	.6	-95.2	-14.4	-53.45	-40	-13.45	H
14.722191	17.25	RMS	40.0	.9	-95.2	-13.4	-50.45	-40	-10.45	H
14.724834	17.32	RMS	40.0	.9	-95.2	-13.3	-50.30	-40	-10.30	V

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

Project #:	14982484
Date:	2024-06-24
Test Engineer:	32934
Configuration:	EUT only
Mode	Band 48 QPSK 20MHz + 20MHz
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.106428	19.21	RMS	35.6	.5	-95.2	-18.70	-58.59	-40	-18.59	V
7.114359	18.93	RMS	35.6	.5	-95.2	-18.80	-58.97	-40	-18.97	H
10.688269	17.86	RMS	37.9	.6	-95.2	-15.13	-53.97	-40	-13.97	H
10.698844	17.86	RMS	37.9	.5	-95.2	-15.10	-54.04	-40	-14.04	V
14.243231	18.09	RMS	39.3	.8	-95.2	-13.32	-50.33	-40	-10.33	H
14.426972	17.70	RMS	39.6	.8	-95.2	-13.10	-50.20	-40	-10.20	V
Mid Channel, 3615.1MHz + 3634.9MHz										
7.238175	18.53	RMS	35.6	.5	-95.2	-18.58	-59.15	-40	-19.15	H
10.851300	17.24	RMS	37.9	.5	-95.2	-14.50	-54.06	-40	-14.06	H
14.476322	17.82	RMS	39.7	.7	-95.2	-14.00	-50.98	-40	-10.98	H
7.214381	18.87	RMS	35.6	.6	-95.2	-18.40	-58.53	-40	-18.53	V
10.818694	17.42	RMS	37.9	.6	-95.2	-14.63	-53.91	-40	-13.91	V
14.503200	18.01	RMS	39.7	.8	-95.2	-14.02	-50.71	-40	-10.71	V
High Channel, 3670.2MHz + 3690MHz										
7.339959	18.83	RMS	35.6	.6	-95.2	-18.10	-58.27	-40	-18.27	V
7.344366	18.85	RMS	35.6	.6	-95.2	-18.14	-58.29	-40	-18.29	H
11.038125	17.62	RMS	37.9	.6	-95.2	-14.31	-53.39	-40	-13.39	V
11.039447	17.60	RMS	37.9	.6	-95.2	-14.40	-53.50	-40	-13.50	H
14.681653	17.40	RMS	40.0	.9	-95.2	-13.30	-50.20	-40	-10.20	V
14.682975	17.42	RMS	40.0	.9	-95.2	-13.30	-50.18	-40	-10.18	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 #:	14982484
Date:	2024-04-03
Test Engineer:	32545
Configuration:	EUT only
Mode	LTE 48 QPSK 20MHz
Chamber #:	02-RDE-E

Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB)	EIRP CF	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMT	Margin (dB)	Polarity
Low Channel, 3560MHz									
7.250336	43.92	RMS	35.6	-95.2	-44.93	-60.61	-40	-20.61	H
11.040138	43.17	RMS	37.9	-95.2	-41.87	-56.00	-40	-16.00	H
11.040138	42.18	RMS	37.9	-95.2	-41.87	-56.99	-40	-16.99	V
7.249869	44.67	RMS	35.6	-95.2	-44.93	-59.86	-40	-19.86	V
14.720274	44.24	RMS	39.7	-95.2	-42.69	-53.95	-40	-13.95	H
14.720274	44.08	RMS	39.7	-95.2	-42.69	-54.11	-40	-14.11	V
Mid Channel, 3625MHz									
7.250336	44.32	RMS	35.6	-95.2	-44.93	-60.21	-40	-20.21	H
11.040138	42.26	RMS	37.9	-95.2	-41.87	-56.91	-40	-16.91	H
7.251269	43.84	RMS	35.6	-95.2	-44.94	-60.7	-40	-20.70	V
11.041538	42.90	RMS	37.9	-95.2	-41.91	-56.31	-40	-16.31	V
14.721208	44.61	RMS	39.7	-95.2	-42.70	-53.59	-40	-13.59	H
14.721674	43.55	RMS	39.7	-95.2	-42.71	-54.66	-40	-14.66	V
High Channel, 3690MHz									
7.360936	44.76	RMS	35.6	-95.2	-45.67	-60.51	-40	-20.51	H
11.040605	42.83	RMS	37.9	-95.2	-41.89	-56.36	-40	-16.36	H
7.360469	44.95	RMS	35.6	-95.2	-45.67	-60.32	-40	-20.32	V
11.040605	42.04	RMS	37.9	-95.2	-41.89	-57.15	-40	-17.15	V
14.720274	43.98	RMS	39.7	-95.2	-42.69	-54.21	-40	-14.21	H
14.720274	43.65	RMS	39.7	-95.2	-42.69	-54.54	-40	-14.54	V

BPSK 5G NR n48 (40.0MHZ BANDWIDTH)

Project #:	14982484
Date:	2024-06-15
Test Engineer:	106018
Configuration:	EUT only
Mode	5G NR n48 BPSK 40MHz
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3570MHz										
7.120308	19.05	RMS	35.6	.5	-95.2	-18.80	-58.85	-40	-18.85	H
7.149169	19.03	RMS	35.6	.6	-95.2	-18.58	-58.55	-40	-18.55	V
10.776394	17.59	RMS	37.9	.6	-95.2	-14.66	-53.77	-40	-13.77	H
10.801509	17.49	RMS	37.9	.6	-95.2	-14.60	-53.81	-40	-13.81	V
14.276719	18.29	RMS	39.4	.7	-95.2	-13.67	-50.48	-40	-10.48	H
14.281125	18.24	RMS	39.4	.7	-95.2	-13.51	-50.37	-40	-10.37	V
Mid Channel, 3625MHz										
7.247869	18.57	RMS	35.6	.6	-95.2	-18.40	-58.83	-40	-18.83	H
10.898447	17.14	RMS	37.9	.6	-95.2	-14.60	-54.16	-40	-14.16	H
14.502759	17.91	RMS	39.7	.8	-95.2	-14.02	-50.81	-40	-10.81	H
7.250513	18.49	RMS	35.6	.6	-95.2	-18.30	-58.81	-40	-18.81	V
10.874653	17.21	RMS	37.9	.5	-95.2	-14.70	-54.29	-40	-14.29	V
14.510691	17.78	RMS	39.7	.8	-95.2	-14.03	-50.95	-40	-10.95	V
High Channel, 3680MHz										
7.361550	18.58	RMS	35.6	.7	-95.2	-18.2	-58.52	-40	-18.52	H
11.047819	17.67	RMS	37.8	.6	-95.2	-14.5	-53.63	-40	-13.63	H
14.723072	17.27	RMS	40.0	.9	-95.2	-13.4	-50.43	-40	-10.43	H
11.039888	17.51	RMS	37.9	.6	-95.2	-14.4	-53.59	-40	-13.59	V
14.733206	17.25	RMS	40.0	.9	-95.2	-13.5	-50.55	-40	-10.55	V
7.340400	18.88	RMS	35.6	.6	-95.2	-18.1	-58.22	-40	-18.22	V

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

Project #:	14982484
Date:	2024-06-24
Test Engineer:	32934
Configuration:	EUT only
Mode	Band 48 QPSK 20MHz + 20MHz
Chamber #:	01-RDE-A

Frequency (GHz)	Meter Reading (dBuV)	Det	81886 ACF 3m (dB/m)	T1792 3400-3800MHz BRF (dB)	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.0517910	19.21	RMS	35.6	.9	-95.2	-19.08	-58.57	-40	-18.57	V
7.091888	19.08	RMS	35.6	.5	-95.2	-18.9	-58.92	-40	-18.92	H
10.670203	17.92	RMS	37.9	.6	-95.2	-14.92	-53.70	-40	-13.70	V
10.674609	17.91	RMS	37.9	.6	-95.2	-14.96	-53.75	-40	-13.75	H
14.262178	18.34	RMS	39.3	.8	-95.2	-13.50	-50.26	-40	-10.26	V
14.267025	18.32	RMS	39.3	.8	-95.2	-13.60	-50.38	-40	-10.38	H
Mid Channel, 3615.1MHz + 3634.9MHz										
7.249631	18.32	RMS	35.6	.6	-95.2	-18.34	-59.02	-40	-19.02	H
10.837200	17.37	RMS	37.9	.6	-95.2	-14.60	-53.93	-40	-13.93	H
14.480288	17.89	RMS	39.7	.7	-95.2	-13.93	-50.84	-40	-10.84	H
7.214381	18.97	RMS	35.6	.6	-95.2	-18.40	-58.43	-40	-18.43	V
10.843369	17.29	RMS	37.9	.5	-95.2	-14.60	-54.11	-40	-14.11	V
14.482931	17.95	RMS	39.7	.7	-95.2	-14.00	-50.85	-40	-10.85	V
High Channel, 3670.2MHz + 3690MHz										
7.359788	18.31	RMS	35.6	.7	-95.2	-18.20	-58.79	-40	-18.79	H
11.013891	17.39	RMS	37.9	.6	-95.2	-14.49	-53.8	-40	-13.8	H
14.668875	17.23	RMS	39.9	.9	-95.2	-13.11	-50.28	-40	-10.28	H
7.342163	18.81	RMS	35.6	.6	-95.2	-18.12	-58.31	-40	-18.31	V
11.014331	17.41	RMS	37.9	.6	-95.2	-14.50	-53.79	-40	-13.79	V
14.726597	17.38	RMS	40.0	.9	-95.2	-13.46	-50.38	-40	-10.38	V

11. SETUP PHOTOS

Please refer to 14982484-EP1V1 for Setup Photo Report for setup photos.

END OF REPORT