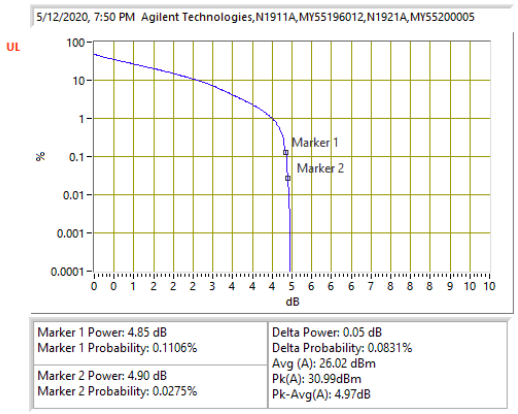
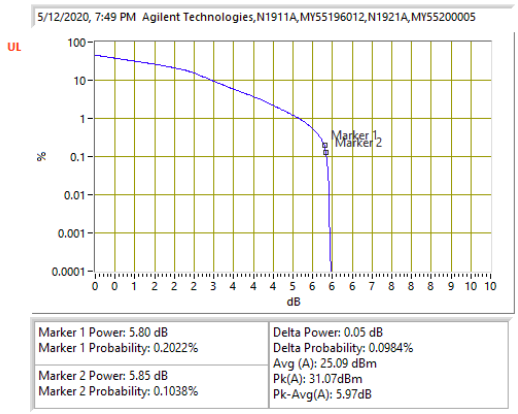
8.5.4. LTE BAND 12 AND 5G NR BAND n12

LTE BAND 12

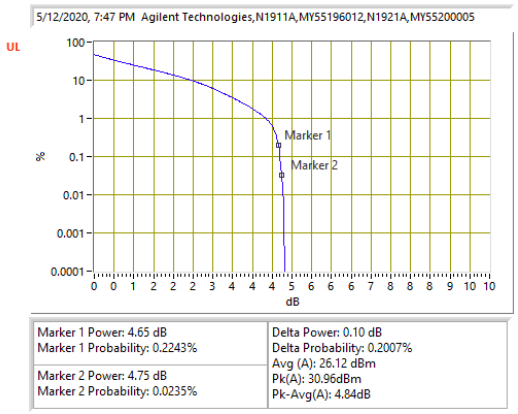
Test Engineer ID:	10646	Test Date:	5/12/2020



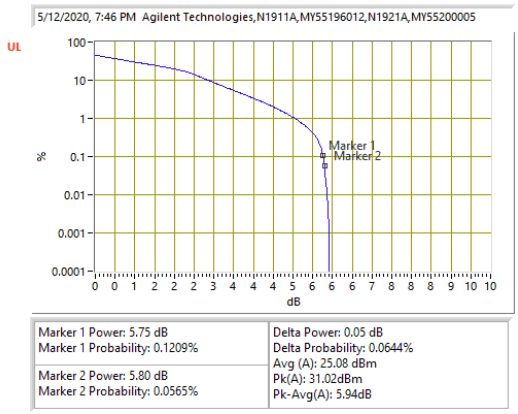
LTE B12 1.4MHz QPSK Middle Channel



LTE B12 1.4MHz 16QAM Middle Channel



LTE B12 3MHz QPSK Middle Channel



LTE B12 3MHz 16QAM Middle Channel

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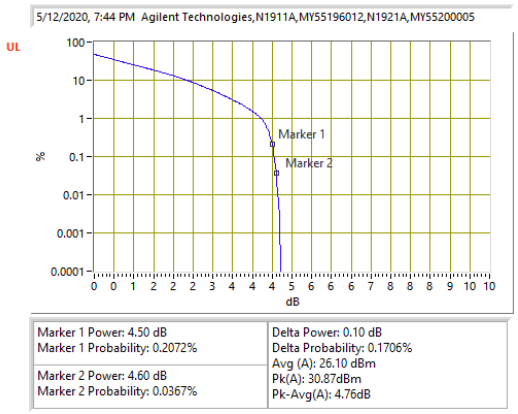
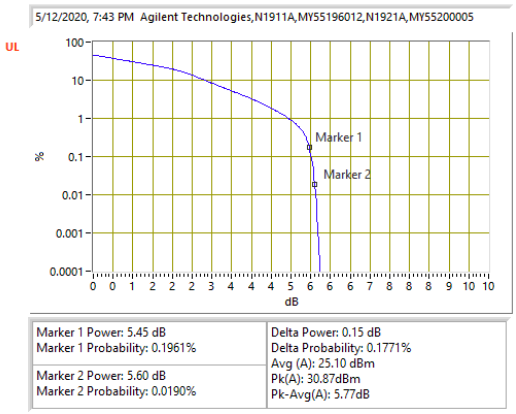
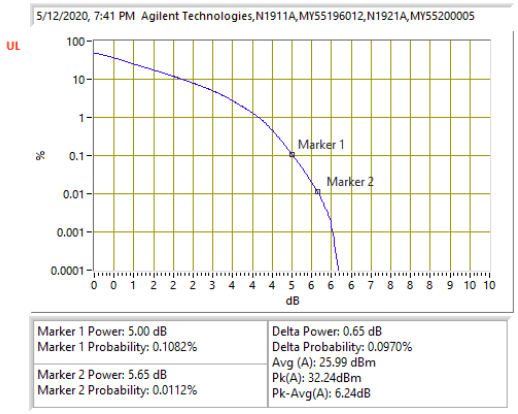


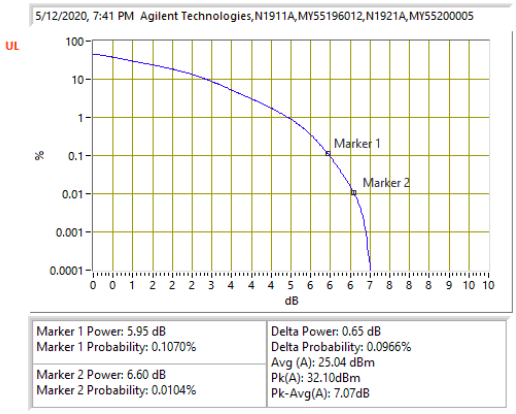
LTE B12 5MHz QPSK Middle Channel



LTE B12 5MHz 16QAM Middle Channel



LTE B12 10MHz QPSK Middle Channel



LTE B12 10MHz 16QAM Middle Channel

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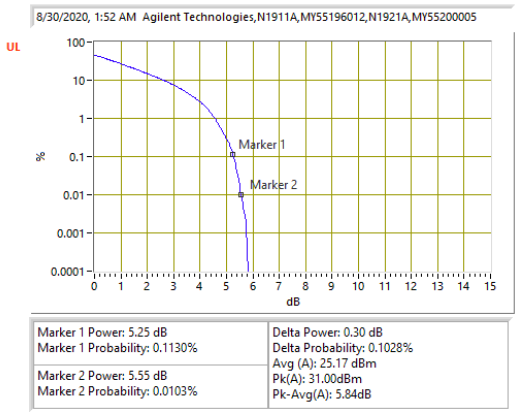
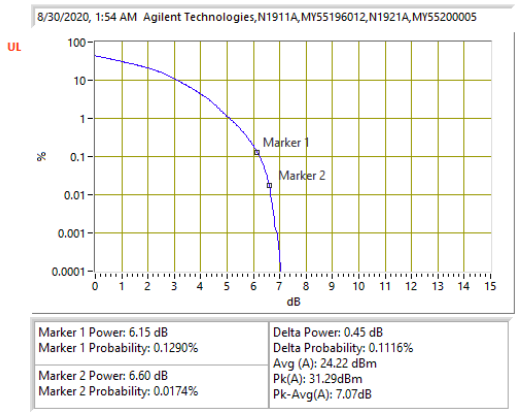
5G NR BAND n12

Test Engineer ID:	10646	Test Date:	8/30/2020



5G NR Bn12 15MHz QPSK Middle Channel



5G NR Bn12 15MHz 16QAM Middle Channel

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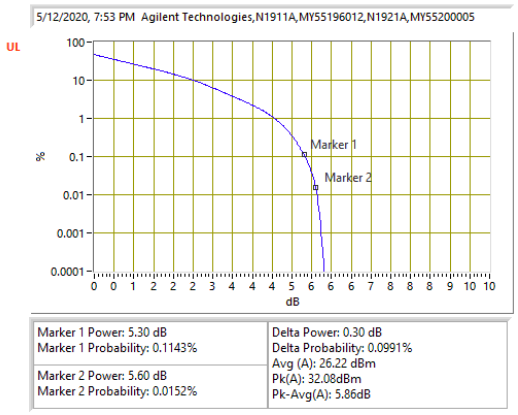
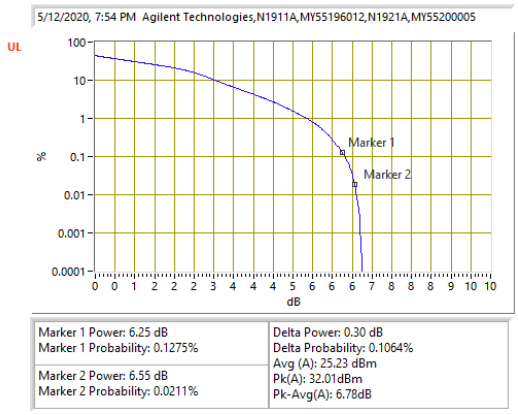
8.5.5. LTE BAND 13

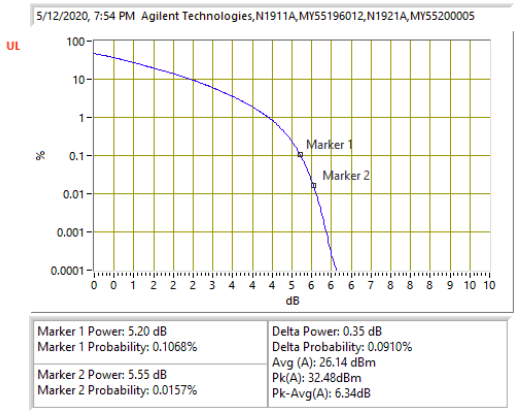
Test Engineer ID:	10646	Test Date:	5/12/2020



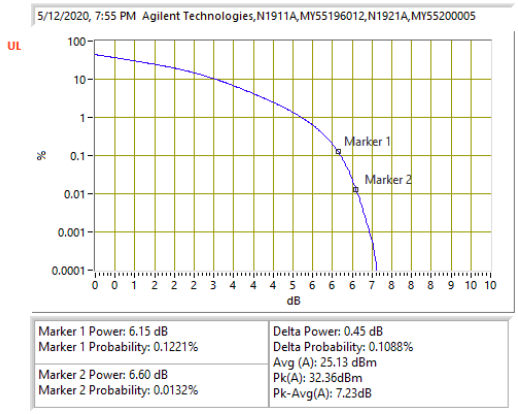
LTE B13 5MHz QPSK Middle Channel



LTE B13 5MHz 16QAM Middle Channel



LTE B13 10MHz QPSK Middle Channel



LTE B13 10MHz 16QAM Middle Channel

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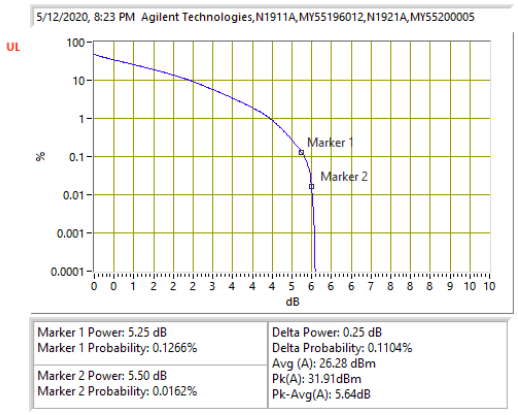
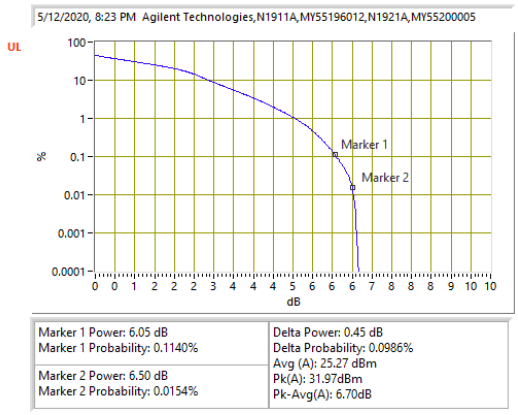
8.5.6. LTE BAND 14

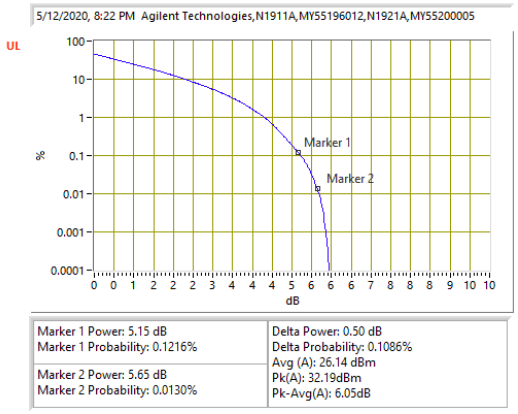
Test Engineer ID:	10646	Test Date:	5/12/2020



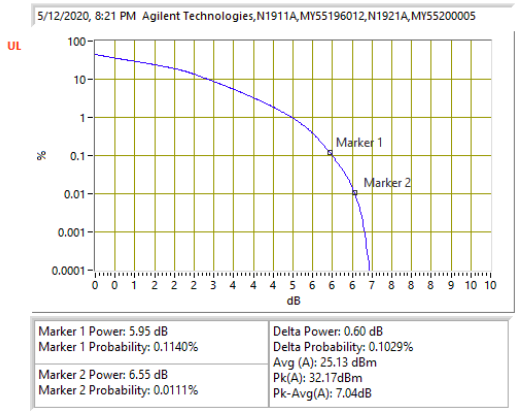
LTE B14 5MHz QPSK Middle Channel



LTE B14 5MHz 16QAM Middle Channel



LTE B14 10MHz QPSK Middle Channel



LTE B14 10MHz 16QAM Middle Channel

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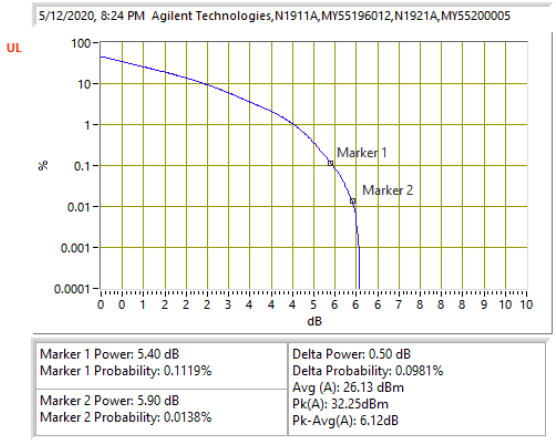
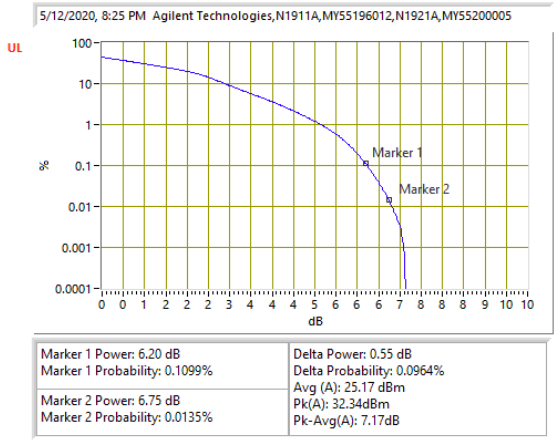
8.5.7. LTE BAND 17

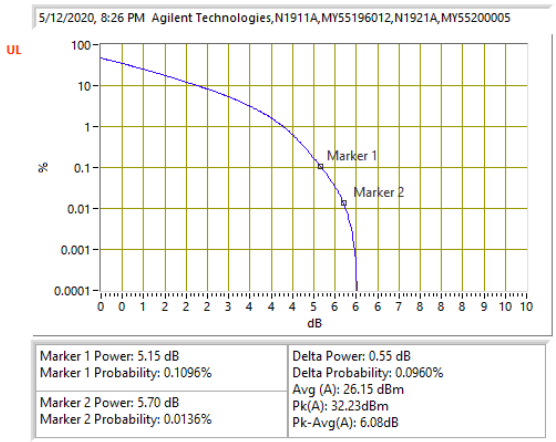
Test Engineer ID:	10646	Test Date:	5/12/2020



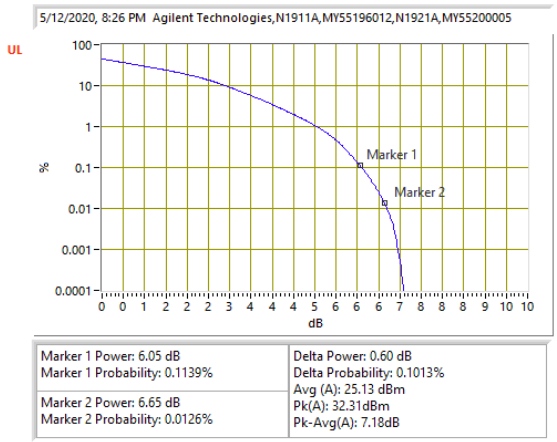
LTE B17 5MHz QPSK Middle Channel



LTE B17 5MHz 16QAM Middle Channel



LTE B17 10MHz QPSK Middle Channel



LTE B17 10MHz 16QAM Middle Channel

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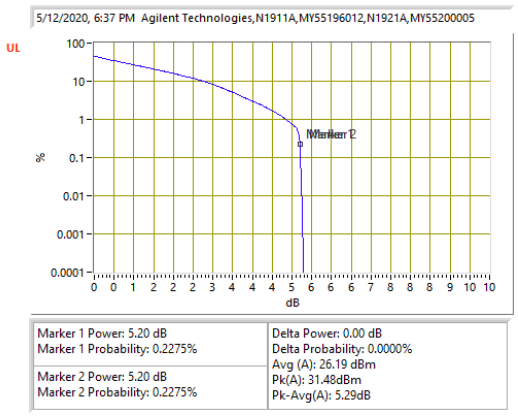
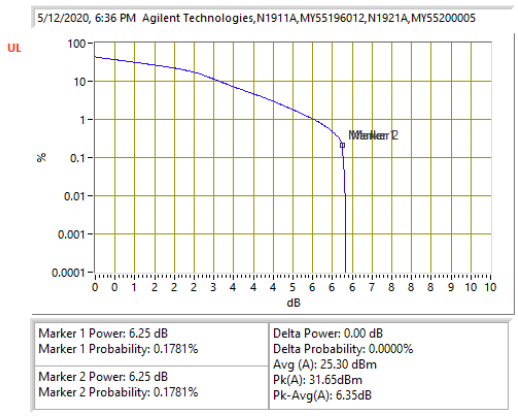
8.5.8. LTE BAND 25

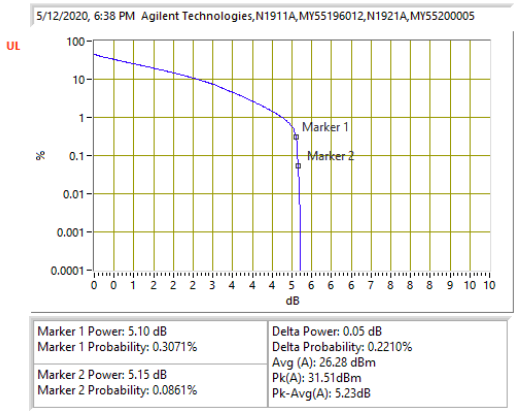
Test Engineer ID:	10646	Test Date:	5/12/2020



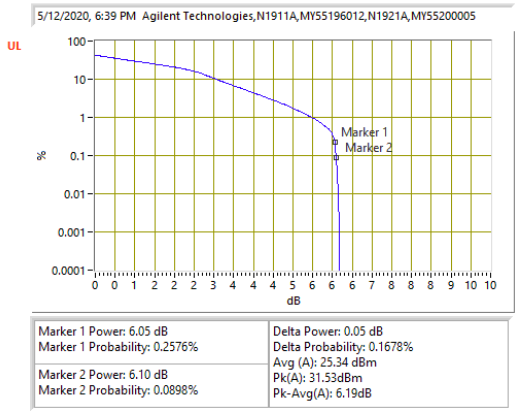
LTE B25 1.4MHz QPSK Middle Channel



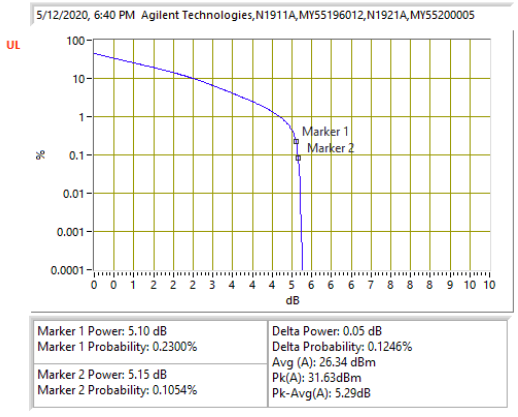
LTE B25 1.4MHz 16QAM Middle Channel



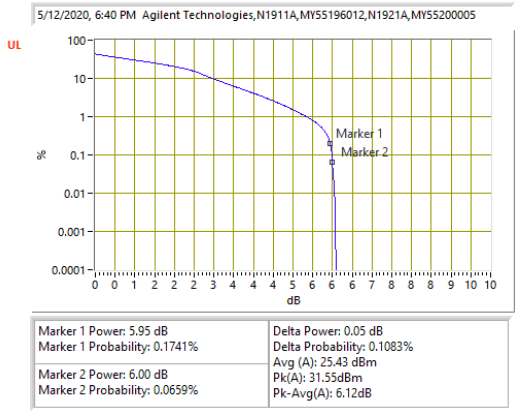
LTE B25 3MHz QPSK Middle Channel



LTE B25 3MHz 16QAM Middle Channel



LTE B2 5MHz QPSK Middle Channel



LTE B2 5MHz 16QAM Middle Channel

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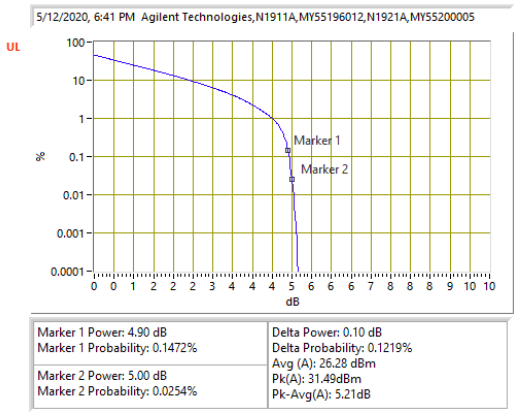
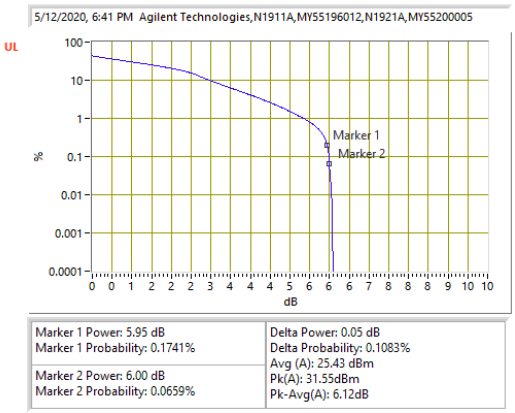
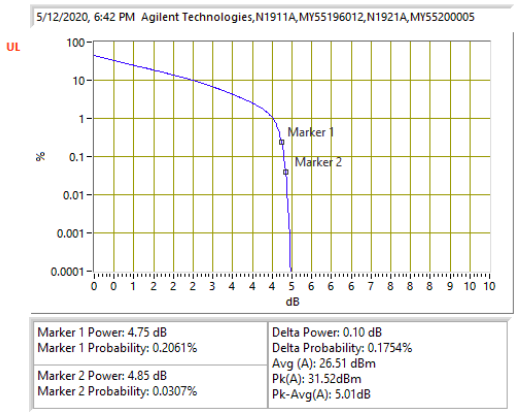


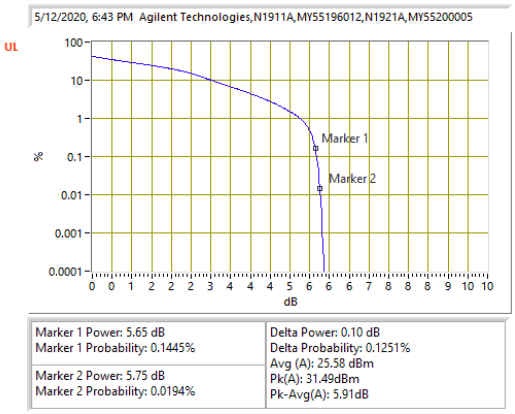
LTE B25 10MHz QPSK Middle Channel



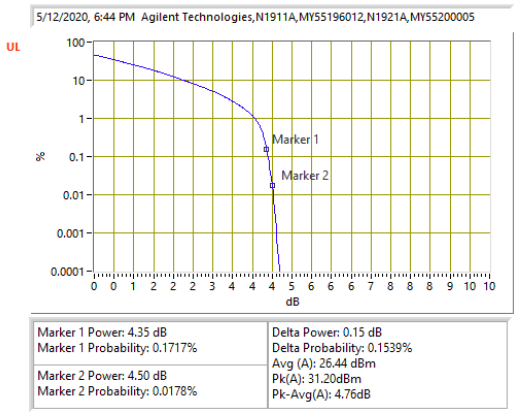
LTE B25 10MHz 16QAM Middle Channel



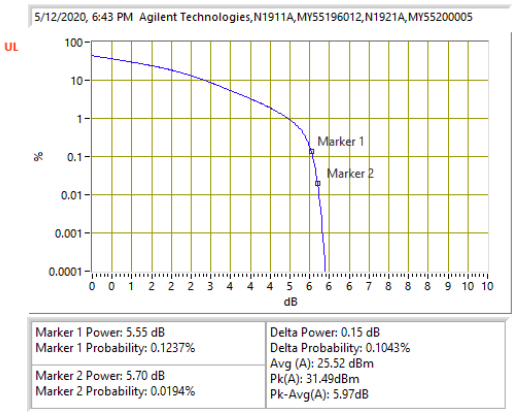
LTE B25 15MHz QPSK Middle Channel



LTE B25 15MHz 16QAM Middle Channel



LTE B25 20MHz QPSK Middle Channel



LTE B25 20MHz 16QAM Middle Channel

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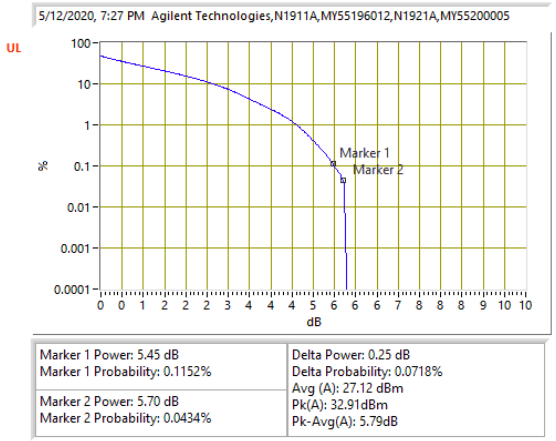
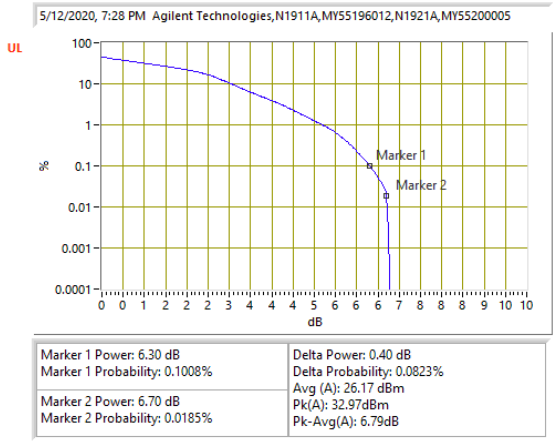
8.5.9. LTE BAND 26 (PART 90S)

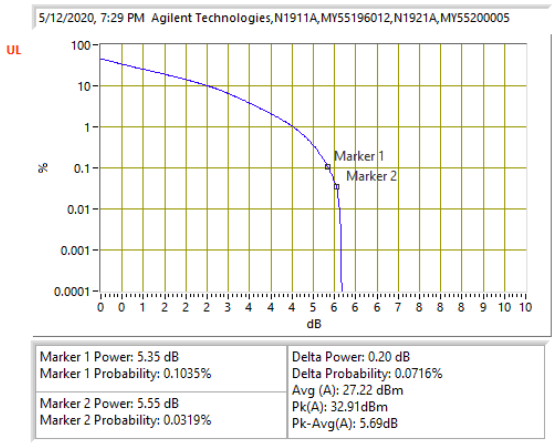
Test Engineer ID:	10646	Test Date:	5/12/2020



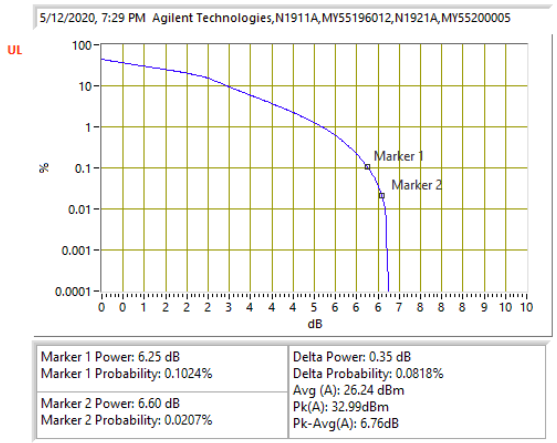
LTE B26 1.4MHz QPSK Middle Channel



LTE B26 1.4MHz 16QAM Middle Channel



LTE B26 3MHz QPSK Middle Channel



LTE B26 3MHz 16QAM Middle Channel

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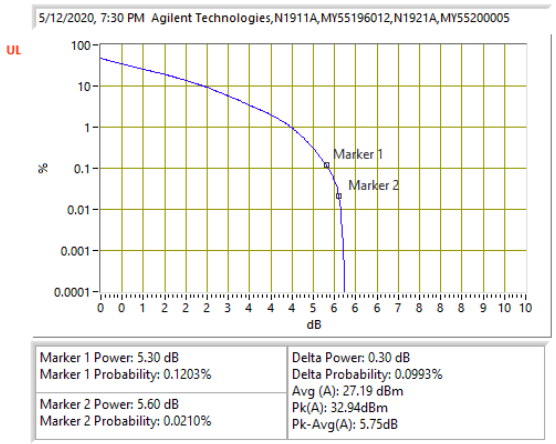
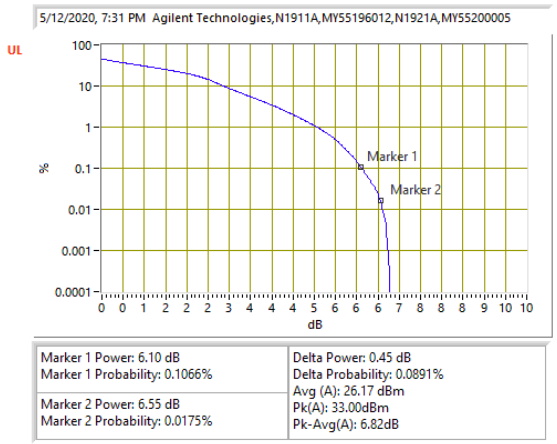
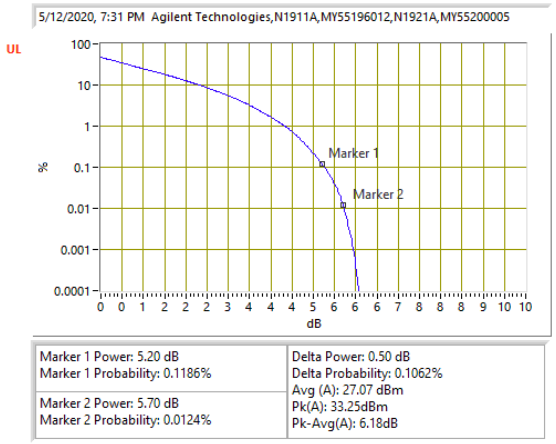


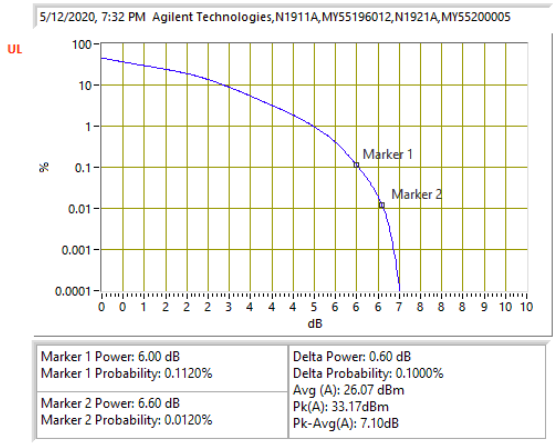
LTE B26 5MHz QPSK Middle Channel



LTE B26 5MHz 16QAM Middle Channel



LTE B26 10MHz QPSK Middle Channel



LTE B26 10MHz 16QAM Middle Channel

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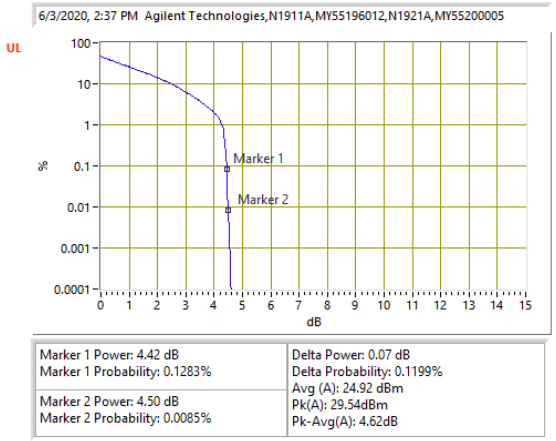
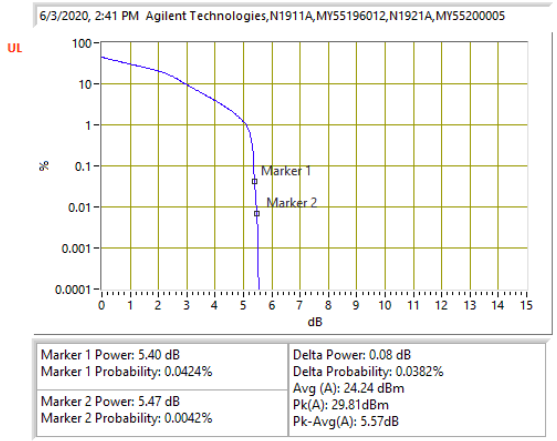
8.5.10. LTE BAND 30

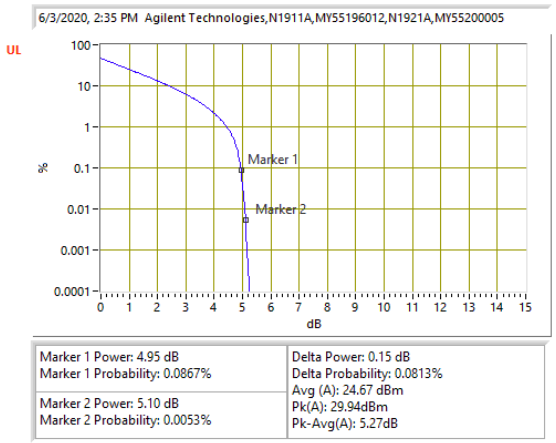
Test Engineer ID:	20769	Test Date:	6/3/2020



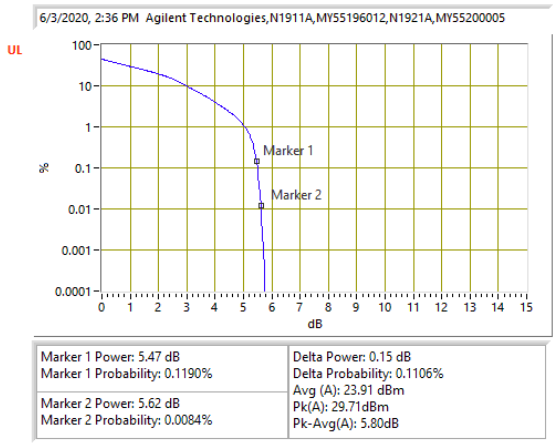
LTE B30 5MHz QPSK Middle Channel



LTE B30 5MHz 16QAM Middle Channel



LTE B30 10MHz QPSK Middle Channel



LTE B30 10MHz 16QAM Middle Channel

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8.5.11. LTE BAND 41 AND 5G NR BAND n41

Test Engineer ID:	20679 and 19480	Test Date:	6/5/2020 & 9/3/2020

Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
Band 41	5MHz	2593.0	25	0	QPSK	28.21	21.30	4.69
					16QAM	28.20	20.32	5.66
	10MHz		50	0	QPSK	26.85	21.19	3.44
					16QAM	26.71	20.37	4.12
	15MHz		75	0	QPSK	28.35	21.43	4.70
					16QAM	28.35	20.38	5.75
	20MHz		100	0	QPSK	28.61	21.39	5.00
					16QAM	26.64	20.59	3.83
Band n41	40MHz		100	0	QPSK	31.35	27.07	4.28
					16QAM	31.44	26.15	5.29
	50MHz		128	0	QPSK	31.40	27.12	4.28
					16QAM	31.50	26.1	5.40
	60MHz		162	0	QPSK	31.13	27.02	4.11
					16QAM	31.42	26.04	5.38
	80MHz		216	0	QPSK	30.96	26.85	4.11
					16QAM	31.32	25.88	5.44
	90MHz		240	0	QPSK	30.86	26.86	4.00
					16QAM	31.27	25.87	5.40
	100MHz		270	0	QPSK	30.71	26.71	4.00
					16QAM	30.97	25.79	5.18
Duty Cycle Correction Factor (dB) =			2.22					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

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8.5.12. LTE BAND 48

Test Engineer ID:	20769	Test Date:	9/9/2020

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	31.81	23.79	1.03
					16QAM	33.58	23.84	2.75
	10MHz		50	0	QPSK	35.15	24.85	3.31
					16QAM	35.14	22.55	5.60
	15MHz		75	0	QPSK	35.10	24.87	3.24
					16QAM	35.52	24.89	3.64
	20MHz		100	0	QPSK	34.96	24.88	3.09
					16QAM	35.80	24.95	3.86
Duty Cycle Correction Factor (dB) =			6.99					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

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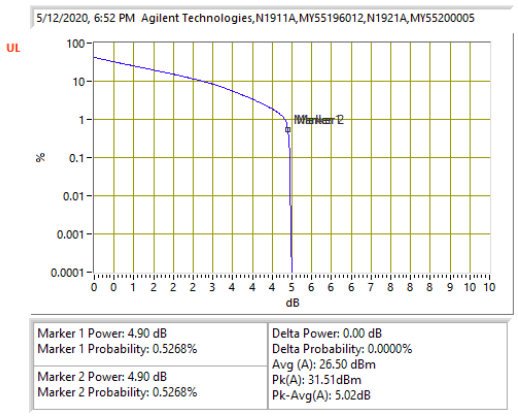
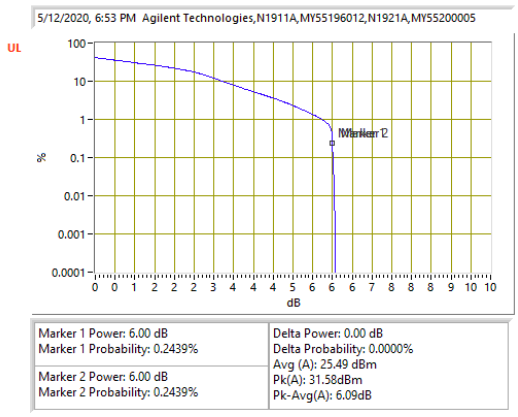
8.5.13. LTE BAND 66

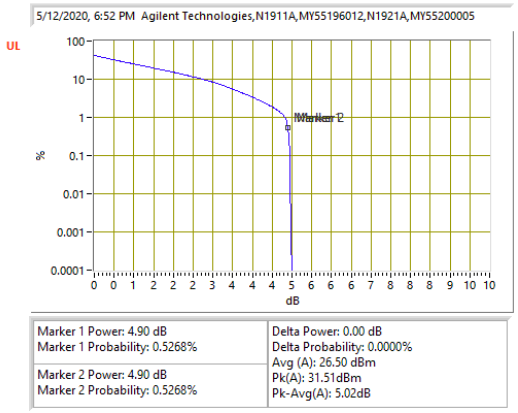
Test Engineer ID:	10646	Test Date:	5/12/2020



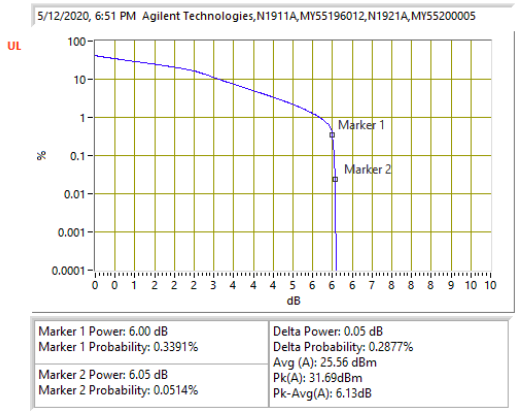
LTE B66 1.4MHz QPSK Middle Channel



LTE B66 1.4MHz 16QAM Middle Channel



LTE B66 3MHz QPSK Middle Channel



LTE B66 3MHz 16QAM Middle Channel

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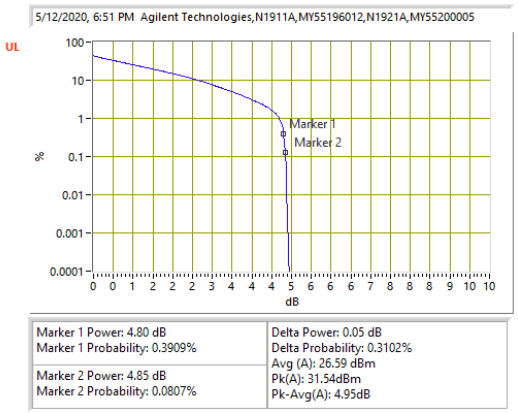
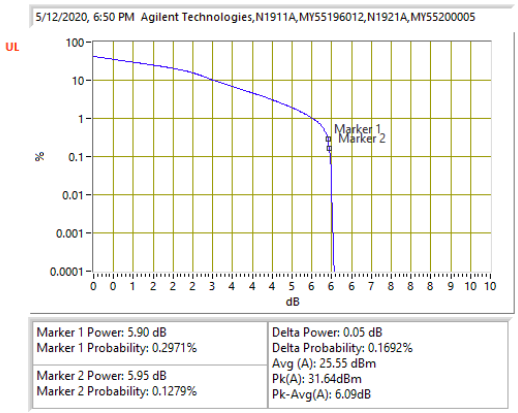
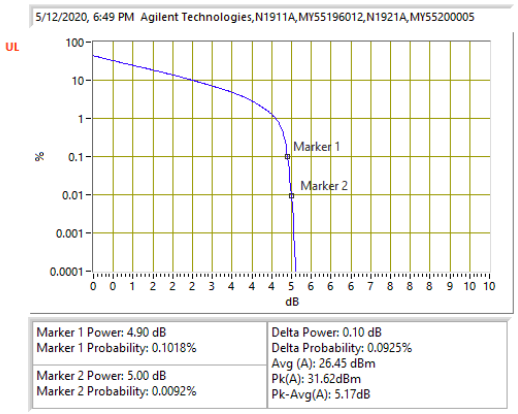


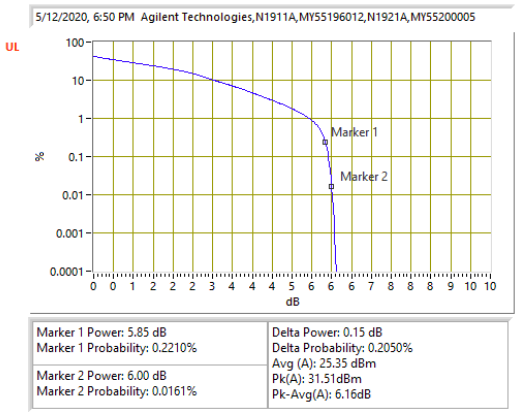
LTE B66 5MHz QPSK Middle Channel



LTE B66 5MHz 16QAM Middle Channel



LTE B66 10MHz QPSK Middle Channel



LTE B66 10MHz 16QAM Middle Channel

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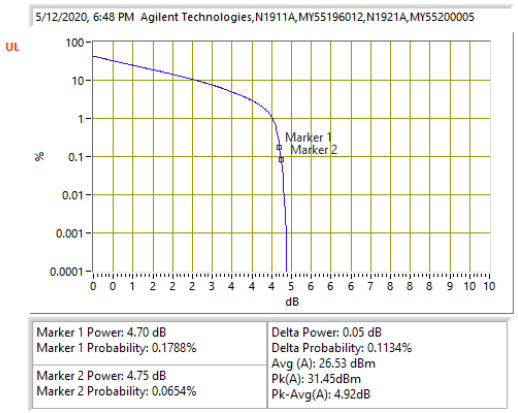
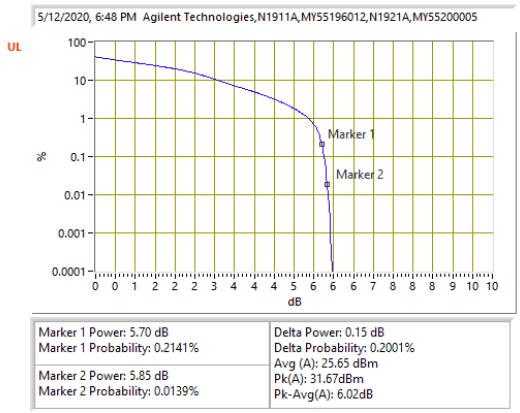
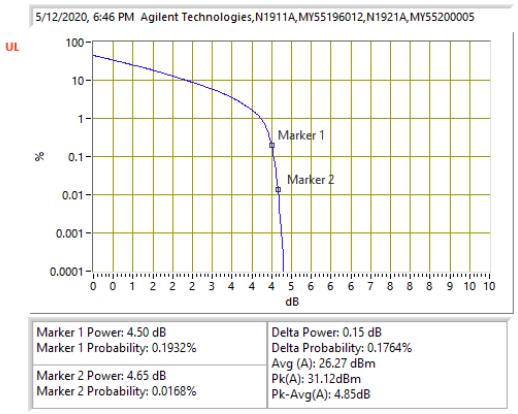


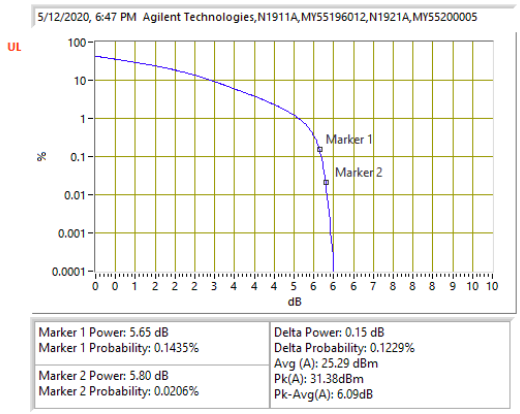
LTE B66 15MHz QPSK Middle Channel



LTE B66 15MHz 16QAM Middle Channel



LTE B66 20MHz QPSK Middle Channel



LTE B66 20MHz 16QAM Middle Channel

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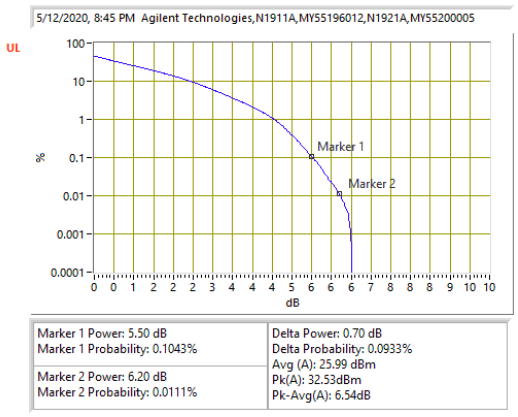
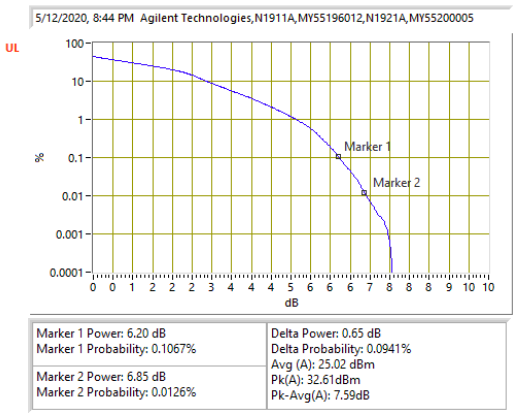
8.5.14. LTE BAND 71

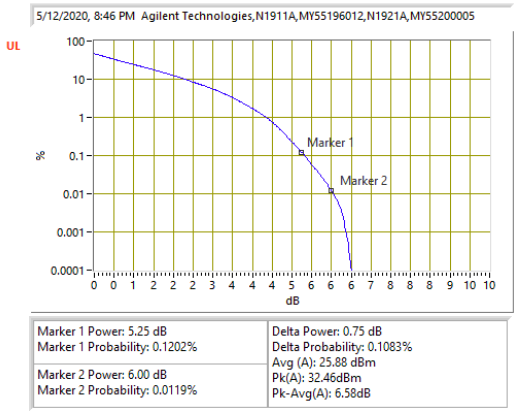
Test Engineer ID:	10646	Test Date:	5/12/2020



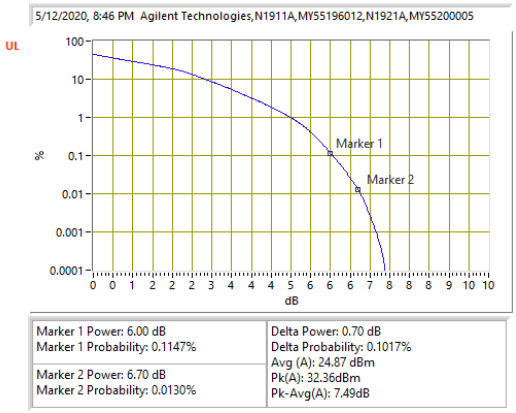
LTE B71 5MHz QPSK Middle Channel



LTE B71 5MHz 16QAM Middle Channel



LTE B71 10MHz QPSK Middle Channel



LTE B71 10MHz 16QAM Middle Channel

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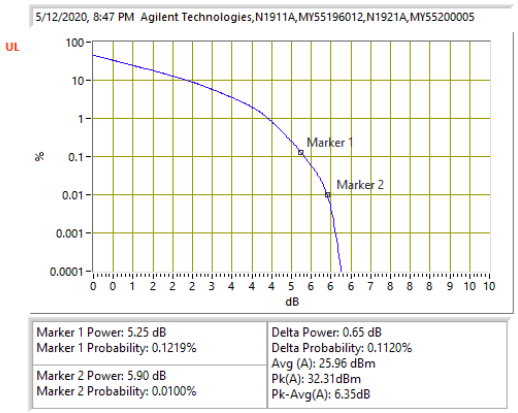
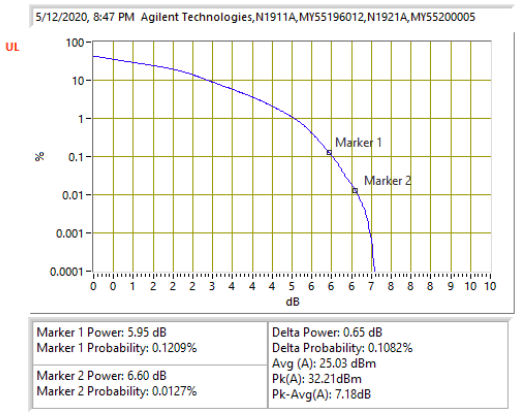
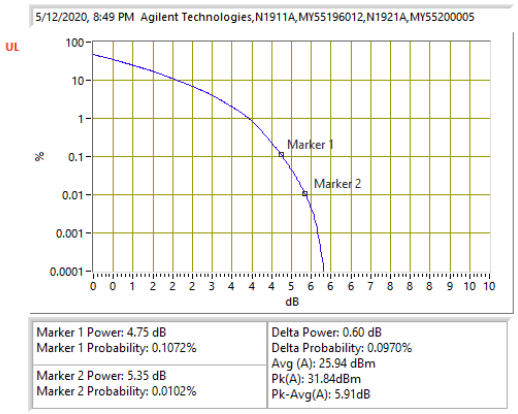


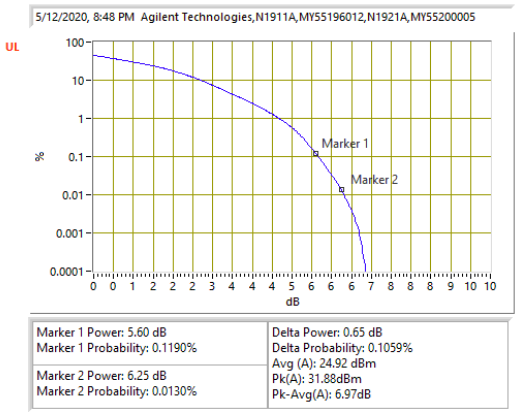
LTE B71 15MHz QPSK Middle Channel



LTE B71 15MHz 16QAM Middle Channel



LTE B71 20MHz QPSK Middle Channel



LTE B71 20MHz 16QAM Middle Channel

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8.5.15. 5G NR BAND n77

Test Engineer ID:	19480	Test Date:	8/30/2020

Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
Band n77	20MHz	3840.0	50	0	QPSK	32.20	26.79	5.41
					16QAM	32.04	25.91	6.13
	40MHz		100	0	QPSK	31.65	26.58	5.07
					16QAM	31.91	25.56	6.35
	50MHz		128	0	QPSK	31.28	26.66	4.62
					16QAM	31.71	25.66	6.05
	60MHz		162	0	QPSK	31.32	26.61	4.71
					16QAM	31.55	25.64	5.91
	80MHz		216	0	QPSK	30.77	26.45	4.32
					16QAM	31.34	25.5	5.84
	90MHz		240	0	QPSK	30.71	26.68	4.03
					16QAM	31.30	25.52	5.78
	100MHz		270	0	QPSK	30.09	26.33	3.76
					16QAM	30.93	25.53	5.40

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9. 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.

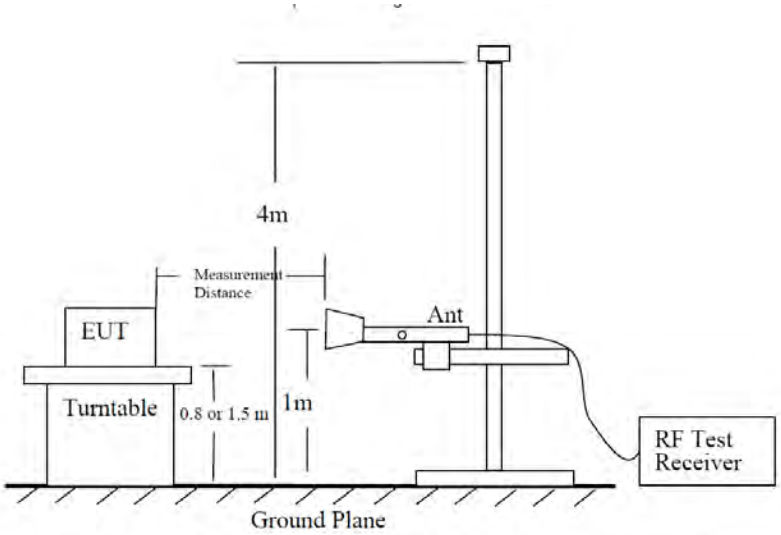

Figure 6 —Test site-up for radiated ERP and/or EIRP measurements

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 20*Log(3)=9.5424

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

Note that: we do confidence check to our chambers every day to see if any degradation from expected/normal reading reference data. Also we do ambient check to all our chambers every month.

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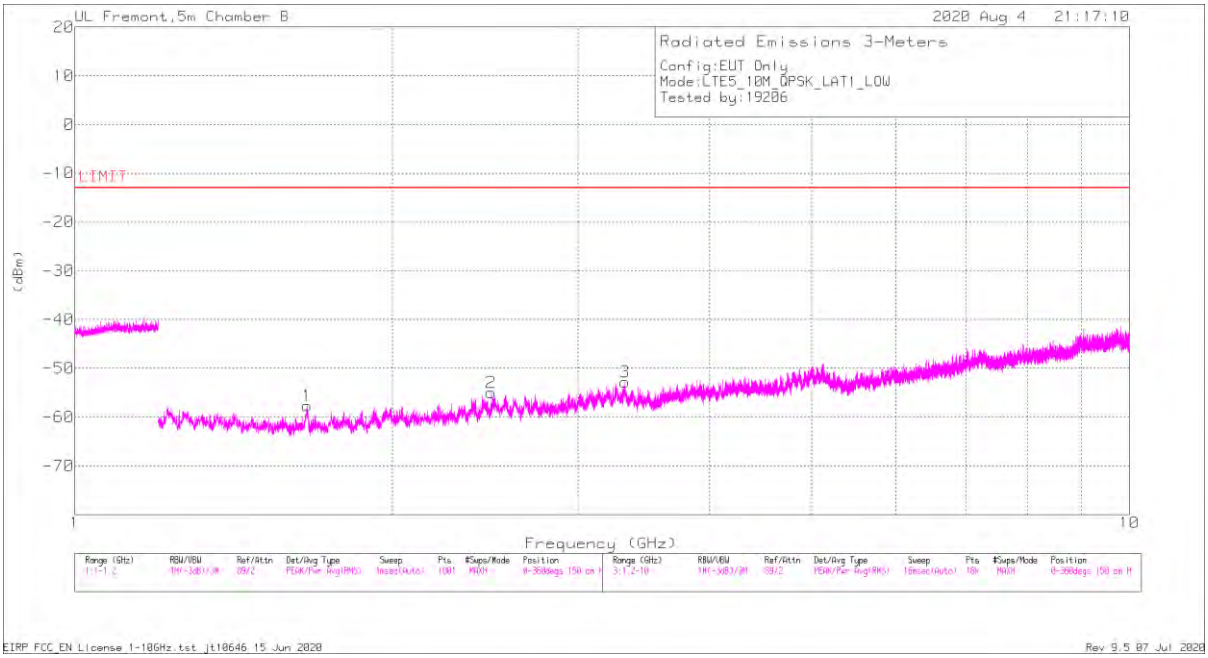
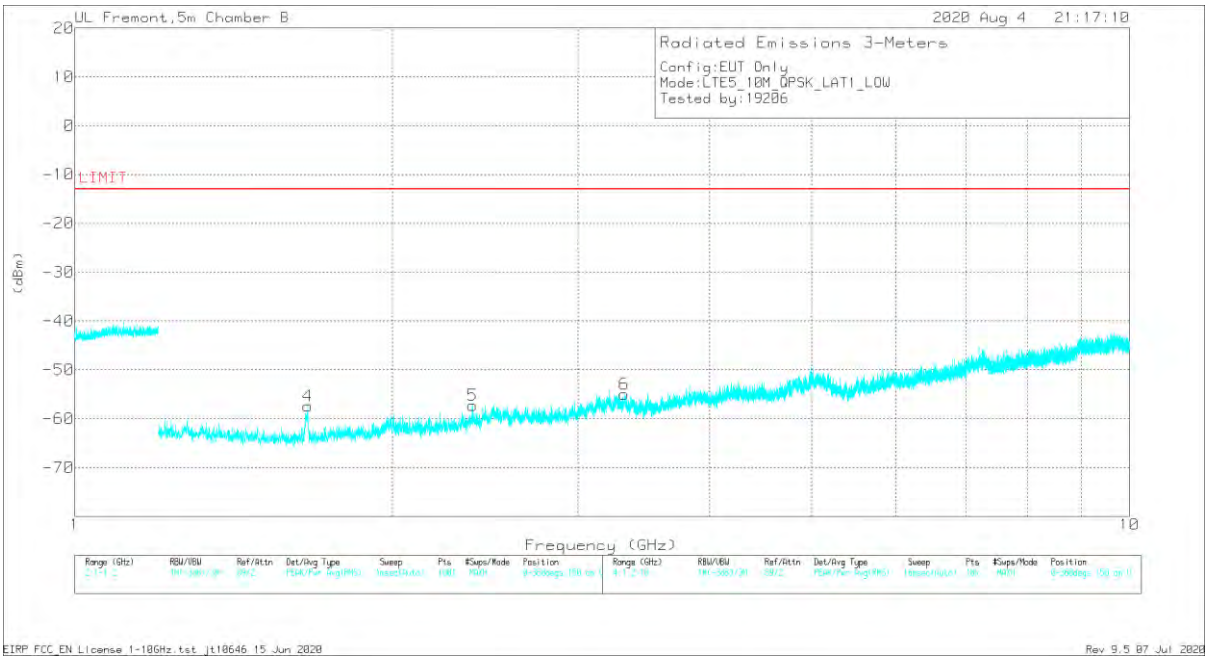
9.1. Example Plot



Horizontal Polarity



Vertical Polarity

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Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	HPF 1.2GHz T1737 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
1	1.66053	42.18	Pk	25	-30.4	.8	-95.2	-57.62	-13	-44.62	H
2	2.48187	40.04	Pk	29	-29.3	.5	-95.2	-54.96	-13	-41.96	H
3	3.32471	38.84	Pk	31.1	-28.1	.6	-95.2	-52.76	-13	-39.76	H
4	1.66249	42.34	Pk	25	-30.4	.8	-95.2	-57.46	-13	-44.46	V
5	2.38213	38.46	Pk	28.4	-29.5	.6	-95.2	-57.24	-13	-44.24	V
6	3.3208	36.57	Pk	31.2	-28.1	.6	-95.2	-54.93	-13	-41.93	V

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	HPF 1.2GHz T1737 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
1.6586	40.74	Pk	25	-30.4	.8	-95.2	-59.06	-13	-46.06	H
2.48604	39.22	Pk	29	-29.2	.5	-95.2	-55.68	-13	-42.68	H
3.32233	39.41	Pk	31.2	-28.1	.6	-95.2	-52.09	-13	-39.09	H
1.66064	41.37	Pk	25	-30.4	.8	-95.2	-58.43	-13	-45.43	V
2.38585	41.21	Pk	28.4	-29.5	.6	-95.2	-54.49	-13	-41.49	V
3.32506	39.25	Pk	31.1	-28.1	.6	-95.2	-52.35	-13	-39.35	V

Pk - Peak detector

EIRP FCC_EN License 1-10GHz.tst jt10646 15 Jun 2020
Rev 9.5 07 Jul 2020

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9.2. FIELD STRENGTH OF SPURIOUS RADIATION, ANT1

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

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

All tests below 1GHz were done with a Resolution Bandwidth of 100kHz, and a Video Bandwidth of 300kHz.

RESULTS

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9.2.1. LTE BAND 2

LIMITS

FCC: §24.238(a)
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.

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QPSK LTE BAND 2 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/13/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode	LTE Band 2 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1860MHz									
3.69034	40.15	Pk	33.2	-30.2	-95.2	-52.05	-13	-39.05	V
3.71649	40.9	Pk	33.3	-29.9	-95.2	-50.9	-13	-37.9	H
5.57811	39.08	Pk	34.9	-28	-95.2	-49.22	-13	-36.22	H
5.57836	39.32	Pk	34.9	-28	-95.2	-48.98	-13	-35.98	V
7.74285	36.61	Pk	35.9	-24.1	-95.2	-46.79	-13	-33.79	H
7.86834	37.01	Pk	35.9	-23.9	-95.2	-46.19	-13	-33.19	V
Mid Channel, 1880MHz									
3.75433	40.61	Pk	33.5	-30.2	-95.2	-51.29	-13	-38.29	V
3.76786	40.77	Pk	33.6	-30.1	-95.2	-50.93	-13	-37.93	H
5.6357	39.01	Pk	34.8	-28	-95.2	-49.39	-13	-36.39	H
5.64721	39.17	Pk	34.9	-28	-95.2	-49.13	-13	-36.13	V
7.4741	36.71	Pk	35.8	-24.7	-95.2	-47.39	-13	-34.39	V
7.53879	37.15	Pk	35.7	-24.7	-95.2	-47.05	-13	-34.05	H
High Channel, 1900MHz									
3.76707	40.36	Pk	33.6	-30.1	-95.2	-51.34	-13	-38.34	V
3.78576	41.13	Pk	33.6	-30.2	-95.2	-50.67	-13	-37.67	H
5.70137	39.56	Pk	34.9	-28.2	-95.2	-48.94	-13	-35.94	H
5.7489	39.38	Pk	34.9	-28.1	-95.2	-49.02	-13	-36.02	V
7.59971	36.6	Pk	35.7	-24.5	-95.2	-47.4	-13	-34.4	H
7.67781	37.01	Pk	35.8	-24	-95.2	-46.39	-13	-33.39	V

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9.2.2. LTE BAND 5 AND 5G NR BAND n5

LIMITS

FCC: §22.917(a)
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.

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QPSK LTE BAND 5 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/13/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode:	LTE Band 5 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 829MHz									
1.6586	40.74	Pk	25	-30.4	-95.2	-59.06	-13	-46.06	H
1.66064	41.37	Pk	25	-30.4	-95.2	-58.43	-13	-45.43	V
2.38585	41.21	Pk	28.4	-29.5	-95.2	-54.49	-13	-41.49	V
2.48604	39.22	Pk	29	-29.2	-95.2	-55.68	-13	-42.68	H
3.32233	39.41	Pk	31.2	-28.1	-95.2	-52.09	-13	-39.09	H
3.32506	39.25	Pk	31.1	-28.1	-95.2	-52.35	-13	-39.35	V
Mid Channel, 836.5MHz									
1.67308	46.77	Pk	25	-30.4	-95.2	-53.13	-13	-40.13	V
1.67829	40.87	Pk	24.9	-30.4	-95.2	-59.13	-13	-46.13	H
2.49883	40.38	Pk	29	-29.2	-95.2	-54.42	-13	-41.42	V
2.49899	40.7	Pk	29	-29.2	-95.2	-54.1	-13	-41.1	H
3.20781	39.25	Pk	31.3	-28.4	-95.2	-52.55	-13	-39.55	H
3.27505	38.83	Pk	31.3	-28.1	-95.2	-52.47	-13	-39.47	V
High Channel, 844MHz									
1.68628	41.62	Pk	25	-30.4	-95.2	-58.28	-13	-45.28	V
1.69244	43.24	Pk	25	-30.4	-95.2	-56.66	-13	-43.66	H
2.52921	39.55	Pk	29.2	-29.4	-95.2	-55.05	-13	-42.05	V
2.56865	39.5	Pk	29.4	-29.2	-95.2	-55	-13	-42	H
3.20451	39.85	Pk	31.3	-28.4	-95.2	-51.85	-13	-38.85	V
3.31545	39.96	Pk	31.1	-28	-95.2	-51.54	-13	-38.54	H

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QPSK 5G NR BAND n5 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/25/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n5 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 834MHz									
1.6693	42.2	Pk	28.9	-32.2	-95.2	-55.6	-13	-42.6	H
1.67107	41.63	Pk	29	-32.2	-95.2	-56.07	-13	-43.07	V
2.49554	40.75	Pk	33.5	-31.3	-95.2	-51.65	-13	-38.65	H
2.5009	40.98	Pk	33.5	-31.3	-95.2	-51.42	-13	-38.42	V
3.33566	40.22	Pk	33	-30.2	-95.2	-51.68	-13	-38.68	H
3.34501	40.55	Pk	33	-30.1	-95.2	-51.25	-13	-38.25	V
Mid Channel, 836.5									
1.67192	40.94	Pk	29	-32.2	-95.2	-56.76	-13	-43.76	V
1.67318	37.85	Pk	29	-32.2	-95.2	-59.85	-13	-46.85	H
2.509	40.01	Pk	33.5	-31.4	-95.2	-52.39	-13	-39.39	V
2.50942	47.12	Pk	33.5	-31.4	-95.2	-45.28	-13	-32.28	H
3.34607	39.7	Pk	33	-30.1	-95.2	-52.1	-13	-39.1	H
3.34857	40.38	Pk	33	-30.1	-95.2	-51.42	-13	-38.42	V
High Channel, 839MHz									
1.67911	41.53	Pk	28.9	-32.2	-95.2	-56.27	-13	-43.27	H
1.67981	42.17	Pk	28.9	-32.2	-95.2	-55.63	-13	-42.63	V
2.51467	40.4	Pk	33.5	-31.4	-95.2	-52	-13	-39	V
2.51851	41.03	Pk	33.5	-31.3	-95.2	-51.17	-13	-38.17	H
3.35418	39.97	Pk	33	-30.1	-95.2	-51.73	-13	-38.73	V
3.35583	40.11	Pk	33	-30.1	-95.2	-51.59	-13	-38.59	H

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9.2.3. LTE BAND 7

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

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QPSK LTE BAND 7 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/15/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode	LTE Band 7 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 2510MHz									
5.01894	38.83	Pk	34.3	-28.9	-95.2	-50.97	-25	-25.97	V
5.0222	38.63	Pk	34.3	-28.9	-95.2	-51.17	-25	-26.17	H
7.53085	35.77	Pk	35.8	-24.6	-95.2	-48.23	-25	-23.23	V
7.53136	35.69	Pk	35.8	-24.6	-95.2	-48.31	-25	-23.31	H
10.04084	34.53	Pk	37.1	-22.2	-95.2	-45.77	-25	-20.77	H
10.0422	34.05	Pk	37.1	-22.1	-95.2	-46.15	-25	-21.15	V
Mid Channel, 2535MHz									
5.071	39.01	Pk	34.3	-28.6	-95.2	-50.49	-25	-25.49	H
5.07164	38.93	Pk	34.3	-28.6	-95.2	-50.57	-25	-25.57	V
7.6057	35.92	Pk	35.8	-24.6	-95.2	-48.08	-25	-23.08	V
7.60642	36.07	Pk	35.8	-24.6	-95.2	-47.93	-25	-22.93	H
10.13958	34.92	Pk	37.2	-22	-95.2	-45.08	-25	-20.08	H
10.14096	34.01	Pk	37.2	-22	-95.2	-45.99	-25	-20.99	V
High Channel, 2560MHz									
5.11889	38.36	Pk	34.5	-28.8	-95.2	-51.14	-25	-26.14	H
5.1211	38.44	Pk	34.6	-28.7	-95.2	-50.86	-25	-25.86	V
7.67893	33.03	Pk	35.8	-23.9	-95.2	-50.27	-25	-25.27	V
7.68207	34.96	Pk	35.8	-23.8	-95.2	-48.24	-25	-23.24	H
10.23933	33.07	Pk	37.3	-21.6	-95.2	-46.43	-25	-21.43	V
10.24075	34.06	Pk	37.3	-21.6	-95.2	-45.44	-25	-20.44	H

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9.2.4. LTE BAND 12 AND 5G NR BAND n12

LIMITS

FCC: §27.53 (g)
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.

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QPSK LTE BAND 12 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/12/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode	LTE Band 12 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 704MHz									
1.40943	41.6	Pk	28.7	-33.1	-95.2	-58	-13	-45	V
1.41074	41.22	Pk	28.7	-33.1	-95.2	-58.38	-13	-45.38	H
2.11152	41.42	Pk	31.7	-32.2	-95.2	-54.28	-13	-41.28	H
2.11334	42.03	Pk	31.7	-32.2	-95.2	-53.67	-13	-40.67	V
2.8171	40.49	Pk	32.5	-31.3	-95.2	-53.51	-13	-40.51	V
2.81774	40.71	Pk	32.5	-31.3	-95.2	-53.29	-13	-40.29	H
Mid Channel, 707.5MHz									
1.4152	41.51	Pk	28.6	-33.1	-95.2	-58.19	-13	-45.19	V
1.41639	42.05	Pk	28.6	-33.1	-95.2	-57.65	-13	-44.65	H
2.12289	40.95	Pk	31.7	-32.2	-95.2	-54.75	-13	-41.75	H
2.12406	40.6	Pk	31.7	-32.2	-95.2	-55.1	-13	-42.1	V
2.83005	39.88	Pk	32.4	-31.2	-95.2	-54.12	-13	-41.12	V
2.83211	40.34	Pk	32.4	-31.2	-95.2	-53.66	-13	-40.66	H
High Channel, 711MHz									
1.42084	42.13	Pk	28.6	-33	-95.2	-57.47	-13	-44.47	H
1.42212	41.99	Pk	28.6	-33	-95.2	-57.61	-13	-44.61	V
2.13112	40.91	Pk	31.7	-32.1	-95.2	-54.69	-13	-41.69	V
2.13261	40.92	Pk	31.7	-32.1	-95.2	-54.68	-13	-41.68	H
2.84322	40.14	Pk	32.4	-31.1	-95.2	-53.76	-13	-40.76	V
2.84596	40.33	Pk	32.4	-31.1	-95.2	-53.57	-13	-40.57	H

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QPSK 5G NR BAND n12 (15.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/20/2020
Test Engineer:	30606
Configuration:	EUT Only
Mode	5G NR Band n12 QPSK 15MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 706.5MHz									
1.41332	41.55	Pk	29.1	-32.7	-95.2	-56.35	-13	-43.35	V
1.41497	42.01	Pk	29.1	-32.7	-95.2	-55.89	-13	-42.89	H
2.1176	42.15	Pk	31.6	-31.8	-95.2	-52.75	-13	-39.75	V
2.11848	40.78	Pk	31.6	-31.8	-95.2	-54.12	-13	-41.12	H
2.82499	40.13	Pk	32.6	-30.7	-95.2	-52.47	-13	-39.47	V
2.82739	39.86	Pk	32.5	-30.6	-95.2	-52.74	-13	-39.74	H
Mid Channel, 707.5MHz									
1.41429	42.44	Pk	29.1	-32.7	-95.2	-55.46	-13	-42.46	V
1.41693	41.85	Pk	29.1	-32.7	-95.2	-56.05	-13	-43.05	H
2.12268	41.04	Pk	31.6	-31.7	-95.2	-53.76	-13	-40.76	H
2.12307	42.38	Pk	31.6	-31.7	-95.2	-52.42	-13	-39.42	V
2.82864	39.94	Pk	32.5	-30.6	-95.2	-52.66	-13	-39.66	V
2.83024	39.88	Pk	32.5	-30.6	-95.2	-52.72	-13	-39.72	H
High Channel, 708.5MHz									
1.4169	41.77	Pk	29.1	-32.7	-95.2	-56.13	-13	-43.13	V
1.41871	42.95	Pk	29.1	-32.6	-95.2	-54.85	-13	-41.85	H
2.12485	40.92	Pk	31.6	-31.7	-95.2	-53.88	-13	-40.88	V
2.1251	41.29	Pk	31.6	-31.7	-95.2	-53.51	-13	-40.51	H
2.8334	39.58	Pk	32.5	-30.6	-95.2	-53.02	-13	-40.02	V
2.83394	39.66	Pk	32.5	-30.6	-95.2	-52.94	-13	-39.94	H

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9.2.5. LTE BAND 13

LIMITS

FCC: §27.53
(c) 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.
(f) Emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

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QPSK LTE BAND 13 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/12/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode	LTE Band 13 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 782MHz									
1.56297	41.11	Pk	28	-33	-95.2	-59.09	-40	-19.09	H
1.56456	41.8	Pk	28	-33	-95.2	-58.4	-40	-18.4	V
2.34448	40.84	Pk	31.9	-31.9	-95.2	-54.36	-13	-41.36	V
2.34454	40.88	Pk	31.9	-31.9	-95.2	-54.32	-13	-41.32	H
3.1288	40.56	Pk	33.1	-31	-95.2	-52.54	-13	-39.54	V
3.13018	40.52	Pk	33.1	-31	-95.2	-52.58	-13	-39.58	H

*** Emissions in the GPS band were wideband emissions therefore the -40dBm/MHz limit was used.**

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9.2.6. LTE BAND 14

LIMITS

FCC: §90.543 Emission Limitations. (Band 14)
(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation

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QPSK LTE BAND 14 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	6/16/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode	LTE Band 14 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 793MHz									
1.57732	40.92	Pk	24.9	-30.5	-95.2	-58.98	-40	-18.98	V
1.57734	41.62	Pk	24.9	-30.5	-95.2	-58.28	-40	-18.28	H
2.27494	39.92	Pk	27.4	-29.5	-95.2	-56.88	-13	-43.88	H
2.36359	38.75	Pk	28.2	-29.5	-95.2	-57.15	-13	-44.15	V
3.1155	38.65	Pk	30.6	-28.4	-95.2	-53.65	-13	-40.65	H
3.13797	40.13	Pk	30.8	-28.6	-95.2	-52.27	-13	-39.27	V

*** Emissions in the GPS band were wideband emissions therefore the -40dBm/MHz limit was used.**

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9.2.7. LTE BAND 17

LIMITS

FCC: §27.53 (g)
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.

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QPSK LTE BAND 17 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/12/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode	LTE Band 17 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 793MHz									
1.42386	42.21	Pk	28.5	-33.1	-95.2	-57.59	-13	-44.59	H
1.42879	42.63	Pk	28.5	-33	-95.2	-57.07	-13	-44.07	V
2.14321	56.49	Pk	31.7	-32	-95.2	-39.01	-13	-26.01	V
2.14326	57.88	Pk	31.7	-32	-95.2	-37.62	-13	-24.62	H
2.83715	40.28	Pk	32.4	-31.2	-95.2	-53.72	-13	-40.72	H
2.86802	40.75	Pk	32.5	-31.2	-95.2	-53.15	-13	-40.15	V

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9.2.8. LTE BAND 25

LIMITS

FCC: §24.238(a)
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.

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QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/13/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode	LTE Band 25 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1860MHz									
3.69034	40.15	Pk	33.2	-30.2	-95.2	-52.05	-13	-39.05	V
3.71649	40.9	Pk	33.3	-29.9	-95.2	-50.9	-13	-37.9	H
5.57811	39.08	Pk	34.9	-28	-95.2	-49.22	-13	-36.22	H
5.57836	39.32	Pk	34.9	-28	-95.2	-48.98	-13	-35.98	V
7.74285	36.61	Pk	35.9	-24.1	-95.2	-46.79	-13	-33.79	H
7.86834	37.01	Pk	35.9	-23.9	-95.2	-46.19	-13	-33.19	V
Mid Channel, 1882.5MHz									
3.77652	42	Pk	33.6	-30.1	-95.2	-49.7	-13	-36.7	H
3.81065	40.07	Pk	33.7	-30.2	-95.2	-51.63	-13	-38.63	V
5.62091	43.6	Pk	34.8	-27.7	-95.2	-44.5	-13	-31.5	V
5.62104	40.38	Pk	34.8	-27.7	-95.2	-47.72	-13	-34.72	H
7.48323	36.62	Pk	35.6	-24.7	-95.2	-47.68	-13	-34.68	V
7.5319	36.5	Pk	35.8	-24.6	-95.2	-47.5	-13	-34.5	H
High Channel, 1905MHz									
3.80555	40.01	Pk	33.7	-30.3	-95.2	-51.79	-13	-38.79	H
3.82127	40.71	Pk	33.7	-30	-95.2	-50.79	-13	-37.79	V
5.65244	38.58	Pk	34.8	-28	-95.2	-49.82	-13	-36.82	V
5.73853	38.38	Pk	34.9	-28.1	-95.2	-50.02	-13	-37.02	H
7.56268	36.2	Pk	35.7	-24.6	-95.2	-47.9	-13	-34.9	V
7.61139	36.05	Pk	35.8	-24.5	-95.2	-47.85	-13	-34.85	H

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9.2.9. LTE BAND 26 (PART 90S)

LIMITS

FCC: §90.691
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.

QPSK LTE BAND 26 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/13/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode	LTE Band 26 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T34 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 819MHz									
1.65744	41.58	Pk	28.7	-32.8	-95.2	-57.72	-13	-44.72	H
1.67489	41.76	Pk	28.9	-32.8	-95.2	-57.34	-13	-44.34	V
2.48134	51.25	Pk	32.6	-31.9	-95.2	-43.25	-13	-30.25	H
2.48138	48.96	Pk	32.6	-31.9	-95.2	-45.54	-13	-32.54	V
3.33598	40.86	Pk	32.8	-30.8	-95.2	-52.34	-13	-39.34	H
3.33682	39.52	Pk	32.8	-30.8	-95.2	-53.68	-13	-40.68	V

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9.2.10. LTE BAND 30

LIMITS

FCC: §27.53 (a)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

QPSK LTE BAND 30 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/12/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode	LTE Band 30 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 2310MHz									
4.61975	39.58	Pk	34.3	-28.7	-95.2	-50.02	-40	-10.02	H
4.62232	38.76	Pk	34.3	-28.7	-95.2	-50.84	-40	-10.84	V
6.9313	36.45	Pk	36	-24.8	-95.2	-47.55	-40	-7.55	V
6.93267	36.06	Pk	36	-24.8	-95.2	-47.94	-40	-7.94	H
9.23866	35.34	Pk	36.3	-22.3	-95.2	-45.86	-40	-5.86	V
9.23958	34.35	Pk	36.3	-22.3	-95.2	-46.85	-40	-6.85	H

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9.2.11. LTE BAND 41 and 5G NR BAND n41

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

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QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/11/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE Band 41 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2506MHz									
5.01064	24.04	Pk	34.3	-24.3	-95.2	-61.16	-25	-36.16	H
7.51766	22.43	Pk	35.5	-22	-95.2	-59.27	-25	-34.27	H
10.02252	21.84	Pk	37	-19.4	-95.2	-55.76	-25	-30.76	H
5.01319	23.81	Pk	34.3	-24.2	-95.2	-61.29	-25	-36.29	V
7.5189	22.01	Pk	35.5	-22	-95.2	-59.69	-25	-34.69	V
10.02421	21.79	Pk	37.1	-19.4	-95.2	-55.71	-25	-30.71	V
Mid Channel, 2593MHz									
5.18474	34.5	Pk	34.4	-24.1	-95.2	-50.4	-25	-25.4	H
7.77942	31.25	Pk	35.7	-21.5	-95.2	-49.75	-25	-24.75	H
10.37118	31.14	Pk	37.4	-19	-95.2	-45.66	-25	-20.66	H
5.18632	35.22	Pk	34.4	-24.1	-95.2	-49.68	-25	-24.68	V
7.78012	32.04	Pk	35.7	-21.5	-95.2	-48.96	-25	-23.96	V
10.37481	31.68	Pk	37.5	-19	-95.2	-45.02	-25	-20.02	V
High Channel, 2680MHz									
5.36318	39.44	Pk	35	-28.8	-95.2	-49.56	-25	-24.56	H
5.38097	38.43	Pk	35	-28.7	-95.2	-50.47	-25	-25.47	V
8.04595	36.21	Pk	35.8	-23.8	-95.2	-46.99	-25	-21.99	H
8.12462	36.57	Pk	35.8	-24	-95.2	-46.83	-25	-21.83	V
10.73639	35.24	Pk	38	-21.3	-95.2	-43.26	-25	-18.26	H
10.78997	35.77	Pk	37.9	-20.9	-95.2	-42.43	-25	-17.43	V

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QPSK 5G NR BAND n41 (100.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/24/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n41 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2546MHz									
5.09206	38.66	Pk	34.4	-27.8	-95.2	-49.14	-25	-24.14	V
5.09328	39.52	Pk	34.4	-27.8	-95.2	-48.28	-25	-23.28	H
7.63633	36.54	Pk	35.9	-23.6	-95.2	-45.96	-25	-20.96	H
7.63895	37.62	Pk	35.9	-23.6	-95.2	-44.88	-25	-19.88	V
10.18351	35.39	Pk	37.5	-20.9	-95.2	-42.61	-25	-17.61	V
10.18546	35.32	Pk	37.5	-20.9	-95.2	-42.68	-25	-17.68	H
Mid Channel, 2593MHz									
5.186	38.63	Pk	34.6	-27.7	-95.2	-48.87	-25	-23.87	H
5.18708	38.76	Pk	34.6	-27.7	-95.2	-48.74	-25	-23.74	V
7.77961	37.1	Pk	35.9	-23.4	-95.2	-45.3	-25	-20.3	V
7.78018	36.41	Pk	35.9	-23.4	-95.2	-45.99	-25	-20.99	H
10.37017	34.73	Pk	37.7	-20.2	-95.2	-42.17	-25	-17.17	H
10.37369	34.68	Pk	37.7	-20.2	-95.2	-42.22	-25	-17.22	V
High Channel, 2640MHz									
5.27943	38.61	Pk	34.7	-27.9	-95.2	-49.49	-25	-24.49	V
5.28129	39.19	Pk	34.7	-27.9	-95.2	-48.91	-25	-23.91	H
7.92017	37.04	Pk	36.2	-23.4	-95.2	-45.16	-25	-20.16	H
7.92125	37.25	Pk	36.2	-23.4	-95.2	-44.95	-25	-19.95	V
10.55863	35.59	Pk	37.7	-20.5	-95.2	-41.71	-25	-16.71	V
10.5619	35.42	Pk	37.8	-20.5	-95.2	-41.78	-25	-16.78	H

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9.2.12. LTE BAND 66

LIMITS

FCC: §27.53 (h)
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.

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QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/13/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode	LTE Band 66 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1720MHz									
3.43867	40.34	Pk	32.8	-30.4	-95.2	-52.46	-13	-39.46	V
3.44143	40.04	Pk	32.8	-30.4	-95.2	-52.76	-13	-39.76	H
5.15912	38.89	Pk	34.5	-28.6	-95.2	-50.41	-13	-37.41	V
5.16012	38.75	Pk	34.5	-28.6	-95.2	-50.55	-13	-37.55	H
6.88173	36.22	Pk	35.9	-25.1	-95.2	-48.18	-13	-35.18	H
6.88242	36.55	Pk	35.9	-25.1	-95.2	-47.85	-13	-34.85	V
Mid Channel, 1745MHz									
3.48979	39.73	Pk	33.1	-30.1	-95.2	-52.47	-13	-39.47	H
3.49221	39.66	Pk	33.2	-30.2	-95.2	-52.54	-13	-39.54	V
5.23474	38.68	Pk	34.7	-28.9	-95.2	-50.72	-13	-37.72	V
5.23619	38.73	Pk	34.7	-28.9	-95.2	-50.67	-13	-37.67	H
6.98032	36.24	Pk	36	-25.5	-95.2	-48.46	-13	-35.46	V
6.98207	36.17	Pk	35.9	-25.5	-95.2	-48.63	-13	-35.63	H
High Channel, 1770MHz									
3.53924	39.85	Pk	33.2	-30.4	-95.2	-52.55	-13	-39.55	H
3.53989	40.2	Pk	33.2	-30.4	-95.2	-52.2	-13	-39.2	V
5.31123	38.85	Pk	35	-28.9	-95.2	-50.25	-13	-37.25	H
5.31221	38.38	Pk	35	-28.9	-95.2	-50.72	-13	-37.72	V
7.07862	35.98	Pk	36	-25.2	-95.2	-48.42	-13	-35.42	V
7.07982	37.25	Pk	36	-25.3	-95.2	-47.25	-13	-34.25	H

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9.2.13. LTE BAND 71

LIMITS

FCC: §27.53 (g)
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.

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QPSK LTE BAND 71 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/12/2020
Test Engineer:	45258
Configuration:	EUT Only
Mode	LTE Band 71 QPSK 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 673.0MHz									
1.34792	40.23	Pk	25.3	-30.8	-95.2	-60.47	-13	-47.47	H
1.34854	39.69	Pk	25.3	-30.8	-95.2	-61.01	-13	-48.01	V
2.01818	39.34	Pk	27.2	-29.8	-95.2	-58.46	-13	-45.46	V
2.01908	39.26	Pk	27.2	-29.8	-95.2	-58.54	-13	-45.54	H
2.6913	38.71	Pk	29.1	-29	-95.2	-56.39	-13	-43.39	H
2.69154	38.96	Pk	29.1	-29	-95.2	-56.14	-13	-43.14	V
Mid Channel, 680.5MHz									
1.361	41.49	Pk	25.3	-30.9	-95.2	-59.31	-13	-46.31	V
1.3612	40.41	Pk	25.3	-30.8	-95.2	-60.29	-13	-47.29	H
2.04004	40	Pk	27	-29.7	-95.2	-57.9	-13	-44.9	V
2.0429	39.36	Pk	27	-29.7	-95.2	-58.54	-13	-45.54	H
2.72199	39.38	Pk	29	-28.9	-95.2	-55.72	-13	-42.72	H
2.72205	38.71	Pk	29	-28.9	-95.2	-56.39	-13	-43.39	V
High Channel, 688.0MHz									
1.47599	40.46	Pk	24.9	-30.6	-95.2	-60.44	-13	-47.44	V
1.4769	40.78	Pk	24.9	-30.6	-95.2	-60.12	-13	-47.12	H
2.06473	39.33	Pk	27	-29.6	-95.2	-58.47	-13	-45.47	H
2.0653	39	Pk	27	-29.6	-95.2	-58.8	-13	-45.8	V
2.7524	38.37	Pk	29	-28.9	-95.2	-56.73	-13	-43.73	H
2.75365	38.38	Pk	29	-28.9	-95.2	-56.72	-13	-43.72	V

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9.3. FIELD STRENGTH OF SPURIOUS RADIATION, ANT2

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

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

RESULTS

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9.3.1. LTE BAND 2

LIMITS

FCC: §24.238(a)
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.

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QPSK LTE BAND 2 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/14/2020
Test Engineer:	20792
Configuration:	EUT only
Mode	LTE Band 2 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1860MHz									
3.7195	40.29	Pk	33.3	-29.9	-95.2	-51.51	-13	-38.51	H
3.7213	40.07	Pk	33.3	-29.9	-95.2	-51.73	-13	-38.73	V
5.57892	38.68	Pk	34.9	-28	-95.2	-49.62	-13	-36.62	H
5.58019	38.53	Pk	34.9	-28	-95.2	-49.77	-13	-36.77	V
7.44074	35.96	Pk	35.8	-24.9	-95.2	-48.34	-13	-35.34	V
7.44193	35.71	Pk	35.7	-24.8	-95.2	-48.59	-13	-35.59	H
Mid Channel, 1880MHz									
3.75967	40.34	Pk	33.5	-30.2	-95.2	-51.56	-13	-38.56	V
3.76101	40.13	Pk	33.6	-30.1	-95.2	-51.57	-13	-38.57	H
5.63896	38.23	Pk	34.8	-28	-95.2	-50.17	-13	-37.17	H
5.64165	38	Pk	34.9	-28	-95.2	-50.3	-13	-37.3	V
7.52195	35.97	Pk	35.7	-24.5	-95.2	-48.03	-13	-35.03	V
7.52212	36.45	Pk	35.7	-24.5	-95.2	-47.55	-13	-34.55	H
High Channel, 1900MHz									
3.79989	39.7	Pk	33.7	-30.4	-95.2	-52.2	-13	-39.2	V
3.80042	40.04	Pk	33.7	-30.4	-95.2	-51.86	-13	-38.86	H
5.69885	38.45	Pk	34.8	-28.3	-95.2	-50.25	-13	-37.25	H
5.70153	37.68	Pk	34.9	-28.2	-95.2	-50.82	-13	-37.82	V
7.59917	35.8	Pk	35.7	-24.5	-95.2	-48.2	-13	-35.2	H
7.60054	36.1	Pk	35.7	-24.6	-95.2	-48	-13	-35	V

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9.3.2. LTE BAND 5 AND 5G NR BAND n5

LIMITS

FCC: §22.917(a)
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.

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QPSK LTE BAND 5 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/13/2020
Test Engineer:	20792
Configuration:	EUT only
Mode	LTE Band 5 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 829MHz									
1.65857	41.44	Pk	28.8	-32.8	-95.2	-57.76	-13	-44.76	H
1.65991	41.34	Pk	28.8	-32.8	-95.2	-57.86	-13	-44.86	V
2.4866	40.67	Pk	32.6	-32	-95.2	-53.93	-13	-40.93	V
2.48788	40.84	Pk	32.6	-31.9	-95.2	-53.66	-13	-40.66	H
3.31477	39.99	Pk	32.8	-30.6	-95.2	-53.01	-13	-40.01	H
3.3169	39.96	Pk	32.8	-30.6	-95.2	-53.04	-13	-40.04	V
Mid Channel, 836.5MHz									
1.67134	42.49	Pk	28.9	-32.8	-95.2	-56.61	-13	-43.61	H
1.67301	41.5	Pk	28.9	-32.8	-95.2	-57.6	-13	-44.6	V
2.5083	40.58	Pk	32.6	-31.8	-95.2	-53.82	-13	-40.82	H
2.50988	40.75	Pk	32.6	-31.8	-95.2	-53.65	-13	-40.65	V
3.34485	40.29	Pk	32.8	-30.8	-95.2	-52.91	-13	-39.91	V
3.34729	40.27	Pk	32.8	-30.7	-95.2	-52.83	-13	-39.83	H
High Channel, 844MHz									
1.68829	41.53	Pk	28.9	-32.7	-95.2	-57.47	-13	-44.47	H
1.68921	41.57	Pk	28.9	-32.7	-95.2	-57.43	-13	-44.43	V
2.53182	41	Pk	32.6	-31.7	-95.2	-53.3	-13	-40.3	H
2.53255	40.52	Pk	32.6	-31.6	-95.2	-53.68	-13	-40.68	V
3.37602	40.26	Pk	32.8	-30.7	-95.2	-52.84	-13	-39.84	H
3.37829	39.51	Pk	32.8	-30.7	-95.2	-53.59	-13	-40.59	V

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QPSK 5G NR BAND n5 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/25/2020
Test Engineer:	19169
Configuration:	EUT only
Mode	5G NR Band n5 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 834MHz									
1.66651	41.69	Pk	28.9	-32.2	-95.2	-56.11	-13	-43.11	V
1.66817	41.51	Pk	28.9	-32.2	-95.2	-56.29	-13	-43.29	H
2.50017	40.42	Pk	33.5	-31.3	-95.2	-51.98	-13	-38.98	V
2.50219	40.37	Pk	33.5	-31.3	-95.2	-52.03	-13	-39.03	H
3.3364	40.47	Pk	33	-30.2	-95.2	-51.43	-13	-38.43	H
3.33768	40.61	Pk	33	-30.2	-95.2	-51.29	-13	-38.29	V
Mid Channel, 836.5MHz									
1.67281	42.19	Pk	29	-32.2	-95.2	-55.51	-13	-42.51	H
1.67431	41.47	Pk	29	-32.2	-95.2	-56.23	-13	-43.23	V
2.51039	40.96	Pk	33.5	-31.4	-95.2	-51.44	-13	-38.44	V
2.51164	40.81	Pk	33.5	-31.4	-95.2	-51.59	-13	-38.59	H
3.34494	40.14	Pk	32.9	-30.1	-95.2	-51.76	-13	-38.76	H
3.34741	40.28	Pk	33	-30.1	-95.2	-51.52	-13	-38.52	V
High Channel, 839MHz									
1.67758	41.95	Pk	28.9	-32.2	-95.2	-55.85	-13	-42.85	V
1.6795	41.78	Pk	28.9	-32.2	-95.2	-56.02	-13	-43.02	H
2.51805	40.18	Pk	33.5	-31.3	-95.2	-52.02	-13	-39.02	H
2.51896	40.73	Pk	33.5	-31.3	-95.2	-51.47	-13	-38.47	V
3.35404	40.35	Pk	33	-30.1	-95.2	-51.35	-13	-38.35	V
3.35428	40.24	Pk	33	-30.1	-95.2	-51.46	-13	-38.46	H

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9.3.3. LTE BAND 7

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

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QPSK LTE BAND 7 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/15/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode	LTE Band 7 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 2510MHz									
5.01925	33.27	Pk	34.3	-28.9	-95.2	-56.53	-25	-31.53	V
5.01941	33.38	Pk	34.3	-28.9	-95.2	-56.42	-25	-31.42	H
7.53029	32.89	Pk	35.8	-24.5	-95.2	-51.01	-25	-26.01	V
7.53236	32.64	Pk	35.8	-24.6	-95.2	-51.36	-25	-26.36	H
10.04023	32.2	Pk	37.1	-22.2	-95.2	-48.1	-25	-23.1	V
10.04108	32.62	Pk	37.1	-22.2	-95.2	-47.68	-25	-22.68	H
Mid Channel, 2535MHz									
5.07013	38.65	Pk	34.3	-28.6	-95.2	-50.85	-25	-25.85	H
5.07048	34.61	Pk	34.3	-28.6	-95.2	-54.89	-25	-29.89	V
7.60407	35.48	Pk	35.8	-24.6	-95.2	-48.52	-25	-23.52	V
7.60476	33.71	Pk	35.8	-24.6	-95.2	-50.29	-25	-25.29	H
10.13952	33.19	Pk	37.2	-22	-95.2	-46.81	-25	-21.81	H
10.1398	33.19	Pk	37.2	-22	-95.2	-46.81	-25	-21.81	V
High Channel, 2560MHz									
5.11865	33.26	Pk	34.5	-28.8	-95.2	-56.24	-25	-31.24	V
5.12194	33.06	Pk	34.6	-28.7	-95.2	-56.24	-25	-31.24	H
7.67968	33.29	Pk	35.8	-23.9	-95.2	-50.01	-25	-25.01	H
7.68013	32.71	Pk	35.8	-23.9	-95.2	-50.59	-25	-25.59	V
10.23956	33.16	Pk	37.3	-21.6	-95.2	-46.34	-25	-21.34	V
10.24078	34.31	Pk	37.3	-21.6	-95.2	-45.19	-25	-20.19	H

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9.3.4. LTE BAND 12 AND 5G NR BAND n12

LIMITS

FCC: §27.53 (g)
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.

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QPSK LTE BAND 12 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/20/2020
Test Engineer:	31300
Configuration:	EUT only
Mode	5G NR Band n12 QPSK 15MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 704MHz									
1.40736	41.23	Pk	28.8	-33.1	-95.2	-58.27	-13	-45.27	V
1.41045	41.49	Pk	28.7	-33.1	-95.2	-58.11	-13	-45.11	H
2.11092	41.59	Pk	31.7	-32.2	-95.2	-54.11	-13	-41.11	H
2.11272	41.79	Pk	31.7	-32.2	-95.2	-53.91	-13	-40.91	V
2.81569	41.36	Pk	32.5	-31.2	-95.2	-52.54	-13	-39.54	H
2.81786	40.57	Pk	32.5	-31.3	-95.2	-53.43	-13	-40.43	V
Mid Channel, 707.5MHz									
1.41647	41.2	Pk	28.6	-33.1	-95.2	-58.5	-13	-45.5	V
1.41724	41.99	Pk	28.6	-33.1	-95.2	-57.71	-13	-44.71	H
2.12197	41.4	Pk	31.7	-32.2	-95.2	-54.3	-13	-41.3	H
2.12391	41.34	Pk	31.7	-32.2	-95.2	-54.36	-13	-41.36	V
2.8291	40.99	Pk	32.4	-31.2	-95.2	-53.01	-13	-40.01	V
2.83202	40.13	Pk	32.4	-31.2	-95.2	-53.87	-13	-40.87	H
High Channel, 711MHz									
1.42235	41.71	Pk	28.6	-33	-95.2	-57.89	-13	-44.89	V
1.42389	42.12	Pk	28.5	-33.1	-95.2	-57.68	-13	-44.68	H
2.13357	41.13	Pk	31.7	-32.1	-95.2	-54.47	-13	-41.47	H
2.13411	40.82	Pk	31.7	-32.1	-95.2	-54.78	-13	-41.78	V
2.84467	40.16	Pk	32.4	-31.1	-95.2	-53.74	-13	-40.74	V
2.84589	40.25	Pk	32.4	-31.1	-95.2	-53.65	-13	-40.65	H

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QPSK 5G NR BAND n12 (15.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/29/2020
Test Engineer:	50820
Configuration:	EUT only
Mode	5G NR Band n12 QPSK 15MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 706.5MHz									
1.50768	41.48	Pk	24.8	-30.6	-95.2	-58.72	-13	-45.72	V
1.50873	41.97	Pk	24.8	-30.6	-95.2	-58.23	-13	-45.23	H
2.17958	40.01	Pk	27.1	-29.6	-95.2	-57.09	-13	-44.09	H
2.2015	40.02	Pk	27.2	-29.6	-95.2	-56.98	-13	-43.98	V
2.79115	39.6	Pk	28.9	-28.8	-95.2	-55	-13	-42	V
2.80913	38.71	Pk	28.8	-28.7	-95.2	-55.79	-13	-42.79	H
Mid Channel, 707.5MHz									
1.46385	41.64	Pk	25	-30.6	-95.2	-58.26	-13	-45.26	H
1.46899	41.38	Pk	25	-30.6	-95.2	-58.52	-13	-45.52	V
2.61159	40.48	Pk	29.2	-29	-95.2	-54.02	-13	-41.02	V
2.61282	40.96	Pk	29.2	-29	-95.2	-53.44	-13	-40.44	H
3.4877	38.92	Pk	30.2	-27.8	-95.2	-52.98	-13	-39.98	H
3.51189	38.34	Pk	30.2	-27.7	-95.2	-53.66	-13	-40.66	V
High Channel, 708.5MHz									
1.52242	41.28	Pk	24.8	-30.6	-95.2	-58.92	-13	-45.92	H
1.52623	41.46	Pk	24.8	-30.6	-95.2	-58.74	-13	-45.74	V
2.44118	40.02	Pk	28.8	-29.4	-95.2	-55.28	-13	-42.28	V
2.44408	40.91	Pk	28.8	-29.4	-95.2	-54.39	-13	-41.39	H
3.19979	40.07	Pk	31.2	-28.5	-95.2	-51.83	-13	-38.83	V
3.26533	39.02	Pk	31.4	-28.2	-95.2	-52.38	-13	-39.38	H

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9.3.5. LTE BAND 13

LIMITS

FCC: §27.53
(c) 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.
(f) Emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

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QPSK LTE BAND 13 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/14/2020
Test Engineer:	20792
Configuration:	EUT only
Mode	LTE Band 13 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 782MHz									
1.56589	41.28	Pk	28	-33	-95.2	-58.92	-40	-18.92	H
1.56599	40.65	Pk	28	-33	-95.2	-59.55	-40	-19.55	V
2.34626	40.46	Pk	31.9	-31.9	-95.2	-54.74	-13	-41.74	V
2.34761	40.77	Pk	31.9	-31.9	-95.2	-54.43	-13	-41.43	H
3.12729	40.4	Pk	33.1	-31	-95.2	-52.7	-13	-39.7	V
3.12841	40.19	Pk	33.1	-31	-95.2	-52.91	-13	-39.91	H

*** Emissions in the GPS band were wideband emissions therefore the -40dBm/MHz limit was used.**

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9.3.6. LTE BAND 14

LIMITS

FCC: §90.543 Emission Limitations. (Band 14)
(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation

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QPSK LTE BAND 14 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	6/16/2020
Test Engineer:	19206
Configuration:	EUT Only
Mode	LTE Band 14 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 793MHz									
1.50853	40.82	Pk	24.8	-30.6	-95.2	-59.38	-40	-19.38	V
1.53723	39.9	Pk	24.9	-30.6	-95.2	-60.2	-40	-20.2	H
2.3618	38.69	Pk	28.2	-29.5	-95.2	-57.21	-13	-44.21	H
2.3682	38.47	Pk	28.3	-29.5	-95.2	-57.33	-13	-44.33	V
3.20241	38.94	Pk	31.2	-28.4	-95.2	-52.86	-13	-39.86	H
3.20746	39.1	Pk	31.3	-28.4	-95.2	-52.7	-13	-39.7	V

*** Emissions in the GPS band were wideband emissions therefore the -40dBm/MHz limit was used.**

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9.3.7. LTE BAND 17

LIMITS

FCC: §27.53 (g)
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.

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QPSK LTE BAND 17 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/14/2020
Test Engineer:	20792
Configuration:	EUT only
Mode	LTE Band 17 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 793MHz									
1.42101	42.68	Pk	28.6	-33	-95.2	-56.92	-13	-43.92	H
1.42132	41.86	Pk	28.6	-33	-95.2	-57.74	-13	-44.74	V
2.13039	41.22	Pk	31.7	-32.2	-95.2	-54.48	-13	-41.48	V
2.13208	40.54	Pk	31.7	-32.1	-95.2	-55.06	-13	-42.06	H
2.83856	39.75	Pk	32.4	-31.2	-95.2	-54.25	-13	-41.25	H
2.84004	39.9	Pk	32.4	-31.1	-95.2	-54	-13	-41	V

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9.3.8. LTE BAND 25

LIMITS

FCC: §24.238(a)
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.

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QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/15/2020
Test Engineer:	50822
Configuration:	EUT only
Mode	LTE Band 25 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1860MHz									
3.69684	38.93	Pk	33.2	-30.1	-95.2	-53.17	-13	-40.17	V
3.72472	39.8	Pk	33.4	-30	-95.2	-52	-13	-39	H
5.55322	43.32	Pk	34.8	-27.8	-95.2	-44.88	-13	-31.88	H
5.55334	43.02	Pk	34.8	-27.8	-95.2	-45.18	-13	-32.18	V
7.4408	35.12	Pk	35.7	-24.8	-95.2	-49.18	-13	-36.18	V
7.44777	35.43	Pk	35.7	-24.7	-95.2	-48.77	-13	-35.77	H
Mid Channel, 1882.5MHz									
3.7642	39.91	Pk	33.6	-30.1	-95.2	-51.79	-13	-38.79	V
3.76621	39.7	Pk	33.6	-30.1	-95.2	-52	-13	-39	H
5.6476	37.95	Pk	34.9	-28	-95.2	-50.35	-13	-37.35	H
5.64885	38.45	Pk	34.8	-28	-95.2	-49.95	-13	-36.95	V
7.52908	35.94	Pk	35.8	-24.5	-95.2	-47.96	-13	-34.96	H
7.53163	36.09	Pk	35.8	-24.6	-95.2	-47.91	-13	-34.91	V
High Channel, 1905MHz									
3.79893	40.32	Pk	33.7	-30.4	-95.2	-51.58	-13	-38.58	V
3.82179	40.13	Pk	33.7	-30	-95.2	-51.37	-13	-38.37	H
5.68804	40.16	Pk	34.8	-28.1	-95.2	-48.34	-13	-35.34	H
5.68811	38.43	Pk	34.8	-28.1	-95.2	-50.07	-13	-37.07	V
7.63086	35.37	Pk	35.8	-24.1	-95.2	-48.13	-13	-35.13	H
7.63413	36.27	Pk	35.8	-24.1	-95.2	-47.23	-13	-34.23	V

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9.3.9. LTE BAND 26 (PART 90S)

LIMITS

FCC: §90.691
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.

QPSK LTE BAND 26 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/14/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode	LTE Band 26 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 819MHz									
1.63841	41.76	Pk	28.5	-32.8	-95.2	-57.74	-13	-44.74	V
1.63845	41.48	Pk	28.5	-32.8	-95.2	-58.02	-13	-45.02	H
2.45602	41.23	Pk	32.5	-31.9	-95.2	-53.37	-13	-40.37	V
2.45713	41.2	Pk	32.5	-31.9	-95.2	-53.4	-13	-40.4	H
3.27608	40.36	Pk	32.9	-30.8	-95.2	-52.74	-13	-39.74	H
3.27718	40.15	Pk	32.9	-30.8	-95.2	-52.95	-13	-39.95	V

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9.3.10. LTE BAND 30

LIMITS

FCC: §27.53 (a)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

QPSK LTE BAND 30 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/19/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode:	LTE Band 30 QPSK 10MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 2310MHz									
4.61908	39.32	Pk	34.3	-28.7	-95.2	-50.28	-40	-10.28	V
4.62188	39.23	Pk	34.3	-28.7	-95.2	-50.37	-40	-10.37	H
6.93048	35.86	Pk	36	-24.8	-95.2	-48.14	-40	-8.14	V
6.93058	36.55	Pk	36	-24.8	-95.2	-47.45	-40	-7.45	H
9.2415	34.44	Pk	36.3	-22.3	-95.2	-46.76	-40	-6.76	H
9.2423	34.94	Pk	36.3	-22.3	-95.2	-46.26	-40	-6.26	V

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9.3.11. LTE BAND 41 AND 5G NR BAND n41

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

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QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/15/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode	LTE Band 41 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2506MHz									
5.09071	39.45	Pk	34.4	-27.8	-95.2	-48.35	-25	-23.35	V
5.09392	39.21	Pk	34.4	-27.7	-95.2	-48.49	-25	-23.49	H
7.63723	36.23	Pk	35.9	-23.6	-95.2	-46.27	-25	-21.27	H
7.63733	38.18	Pk	35.9	-23.6	-95.2	-44.32	-25	-19.32	V
10.18211	35.58	Pk	37.5	-20.9	-95.2	-42.42	-25	-17.42	V
10.18323	35.55	Pk	37.5	-20.9	-95.2	-42.45	-25	-17.45	H
Mid Channel, 2593MHz									
5.1568	39.04	Pk	34.6	-28.6	-95.2	-50.16	-25	-25.16	V
5.18925	38.67	Pk	34.6	-28.5	-95.2	-50.43	-25	-25.43	H
7.78173	36.97	Pk	35.8	-24.4	-95.2	-46.83	-25	-21.83	H
7.79447	36.79	Pk	35.9	-24.1	-95.2	-46.61	-25	-21.61	V
10.37392	35.23	Pk	37.5	-21.4	-95.2	-43.87	-25	-18.87	H
10.42065	34.83	Pk	37.6	-21.3	-95.2	-44.07	-25	-19.07	V
High Channel, 2680MHz									
5.28061	38.79	Pk	34.7	-27.9	-95.2	-49.31	-25	-24.31	H
5.28154	38.93	Pk	34.7	-27.9	-95.2	-49.17	-25	-24.17	V
7.91944	36.19	Pk	36.2	-23.4	-95.2	-46.01	-25	-21.01	V
7.9218	36.39	Pk	36.2	-23.4	-95.2	-45.81	-25	-20.81	H
10.55816	35.38	Pk	37.8	-20.5	-95.2	-41.82	-25	-16.82	H
10.56125	34.88	Pk	37.8	-20.5	-95.2	-42.32	-25	-17.32	V

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QPSK 5G NR BAND n41 (100.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/24/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n41 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2546MHz									
4.99401	39.29	Pk	34.3	-29.2	-95.2	-50.81	-25	-25.81	V
5.01948	39.34	Pk	34.3	-28.9	-95.2	-50.46	-25	-25.46	H
7.531	36.7	Pk	35.8	-24.6	-95.2	-47.3	-25	-22.3	H
7.60297	35.99	Pk	35.8	-24.6	-95.2	-48.01	-25	-23.01	V
10.19786	35.2	Pk	37.2	-21.9	-95.2	-44.7	-25	-19.7	V
10.19821	35.3	Pk	37.2	-21.9	-95.2	-44.6	-25	-19.6	H
Mid Channel, 2593MHz									
5.1568	39.04	Pk	34.6	-28.6	-95.2	-50.16	-25	-25.16	V
5.18925	38.67	Pk	34.6	-28.5	-95.2	-50.43	-25	-25.43	H
7.78173	36.97	Pk	35.8	-24.4	-95.2	-46.83	-25	-21.83	H
7.79447	36.79	Pk	35.9	-24.1	-95.2	-46.61	-25	-21.61	V
10.37392	35.23	Pk	37.5	-21.4	-95.2	-43.87	-25	-18.87	H
10.42065	34.83	Pk	37.6	-21.3	-95.2	-44.07	-25	-19.07	V
High Channel, 2640MHz									
5.34474	38.59	Pk	35	-28.9	-95.2	-50.51	-25	-25.51	V
5.36429	39.31	Pk	35	-28.8	-95.2	-49.69	-25	-24.69	H
7.99881	36.34	Pk	35.9	-24.1	-95.2	-47.06	-25	-22.06	V
8.04423	36.77	Pk	35.8	-23.8	-95.2	-46.43	-25	-21.43	H
10.68213	35.14	Pk	37.9	-21.2	-95.2	-43.36	-25	-18.36	V
10.73172	35.28	Pk	37.9	-21.4	-95.2	-43.42	-25	-18.42	H

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9.3.12. LTE BAND 66

LIMITS

FCC: §27.53 (h)
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.

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QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/13/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode	LTE Band 66 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1720MHz									
3.4392	39.92	Pk	32.8	-30.4	-95.2	-52.88	-13	-39.88	V
3.44153	40.23	Pk	32.8	-30.4	-95.2	-52.57	-13	-39.57	H
5.16066	39.45	Pk	34.5	-28.6	-95.2	-49.85	-13	-36.85	H
5.16115	38.31	Pk	34.5	-28.6	-95.2	-50.99	-13	-37.99	V
6.87873	36.82	Pk	35.9	-25.1	-95.2	-47.58	-13	-34.58	V
6.87972	36.99	Pk	35.9	-25.1	-95.2	-47.41	-13	-34.41	H
Mid Channel, 1745MHz									
3.48989	39.75	Pk	33.1	-30.1	-95.2	-52.45	-13	-39.45	H
3.49026	40.27	Pk	33.1	-30.1	-95.2	-51.93	-13	-38.93	V
5.23593	38.68	Pk	34.7	-28.9	-95.2	-50.72	-13	-37.72	H
5.23631	39.24	Pk	34.7	-28.9	-95.2	-50.16	-13	-37.16	V
6.98085	36.45	Pk	36	-25.5	-95.2	-48.25	-13	-35.25	H
6.98252	35.97	Pk	36	-25.4	-95.2	-48.63	-13	-35.63	V
High Channel, 1770MHz									
3.53951	39.67	Pk	33.2	-30.4	-95.2	-52.73	-13	-39.73	H
3.54115	40.03	Pk	33.1	-30.4	-95.2	-52.47	-13	-39.47	V
5.3087	38.56	Pk	35	-28.9	-95.2	-50.54	-13	-37.54	V
5.30928	39.04	Pk	35	-28.9	-95.2	-50.06	-13	-37.06	H
7.07978	36.22	Pk	36	-25.3	-95.2	-48.28	-13	-35.28	V
7.08113	35.92	Pk	36	-25.3	-95.2	-48.58	-13	-35.58	H

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9.3.13. LTE BAND 71

LIMITS

FCC: §27.53 (g)
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.

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QPSK LTE BAND 71 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	6/12/2020
Test Engineer:	45258
Configuration:	EUT Only
Mode	LTE Band 71 QPSK 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 673.0MHz									
1.34595	40.92	Pk	25.3	-30.8	-95.2	-59.78	-13	-46.78	V
1.34695	40.08	Pk	25.3	-30.8	-95.2	-60.62	-13	-47.62	H
2.01745	39.49	Pk	27.2	-29.8	-95.2	-58.31	-13	-45.31	V
2.0187	40.34	Pk	27.2	-29.8	-95.2	-57.46	-13	-44.46	H
2.69065	39.63	Pk	29.2	-29	-95.2	-55.37	-13	-42.37	V
2.69424	39.6	Pk	29.1	-29	-95.2	-55.5	-13	-42.5	H
Mid Channel, 680.5MHz									
1.35955	40.46	Pk	25.3	-30.8	-95.2	-60.24	-13	-47.24	H
1.36241	40.28	Pk	25.3	-30.8	-95.2	-60.42	-13	-47.42	H
2.03941	39.45	Pk	27	-29.7	-95.2	-58.45	-13	-45.45	H
2.04269	39.09	Pk	27	-29.7	-95.2	-58.81	-13	-45.81	H
2.72331	38.52	Pk	29	-28.9	-95.2	-56.58	-13	-43.58	H
2.72397	38.86	Pk	29	-28.9	-95.2	-56.24	-13	-43.24	H
High Channel, 688.0MHz									
1.37512	41.82	Pk	25.4	-30.8	-95.2	-58.78	-13	-45.78	H
1.37551	41.8	Pk	25.4	-30.8	-95.2	-58.8	-13	-45.8	V
2.06367	39.83	Pk	27	-29.6	-95.2	-57.97	-13	-44.97	V
2.06486	39.51	Pk	27	-29.6	-95.2	-58.29	-13	-45.29	H
2.75138	38.8	Pk	29	-28.9	-95.2	-56.3	-13	-43.3	H
2.75343	38.29	Pk	29	-28.9	-95.2	-56.81	-13	-43.81	V

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9.4. FIELD STRENGTH OF SPURIOUS RADIATION, ANT3

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

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

RESULTS

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9.4.1. LTE BAND 2

LIMITS

FCC: §24.238(a)
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.

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QPSK LTE BAND 2 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/15/2020
Test Engineer:	20792
Configuration:	EUT only
Mode	LTE Band 2 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1860MHz									
3.72021	39.47	Pk	33.3	-29.9	-95.2	-52.33	-13	-39.33	H
3.72079	39.65	Pk	33.3	-29.9	-95.2	-52.15	-13	-39.15	V
5.57987	37.25	Pk	34.9	-28	-95.2	-51.05	-13	-38.05	H
5.5815	37.58	Pk	34.9	-28	-95.2	-50.72	-13	-37.72	V
7.43825	32.36	Pk	35.8	-24.9	-95.2	-51.94	-13	-38.94	V
7.44165	32.81	Pk	35.7	-24.8	-95.2	-51.49	-13	-38.49	H
Mid Channel, 1880MHz									
3.75982	34.77	Pk	33.5	-30.2	-95.2	-57.13	-13	-44.13	V
3.76024	34.19	Pk	33.6	-30.2	-95.2	-57.61	-13	-44.61	H
5.63847	37.43	Pk	34.8	-28	-95.2	-50.97	-13	-37.97	H
5.64124	37.91	Pk	34.9	-28	-95.2	-50.39	-13	-37.39	V
7.52172	35.52	Pk	35.7	-24.4	-95.2	-48.38	-13	-35.38	H
7.5218	33.07	Pk	35.7	-24.4	-95.2	-50.83	-13	-37.83	V
High Channel, 1900MHz									
3.7983	39.51	Pk	33.7	-30.4	-95.2	-52.39	-13	-39.39	H
3.79891	40.05	Pk	33.7	-30.4	-95.2	-51.85	-13	-38.85	V
5.70139	37.98	Pk	34.9	-28.2	-95.2	-50.52	-13	-37.52	V
5.70145	37.86	Pk	34.9	-28.2	-95.2	-50.64	-13	-37.64	H
7.60068	35.48	Pk	35.8	-24.6	-95.2	-48.52	-13	-35.52	V
7.60202	33.3	Pk	35.8	-24.6	-95.2	-50.7	-13	-37.7	H

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9.4.2. LTE BAND 7

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

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QPSK LTE BAND 7 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/20/2020
Test Engineer:	50822
Configuration:	EUT only
Mode	LTE Band 7 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 2510MHz									
5.00422	31.78	Pk	34.3	-28.4	-95.2	-57.52	-25	-32.52	V
5.02664	38.76	Pk	34.3	-28.1	-95.2	-50.24	-25	-25.24	H
7.54409	36.1	Pk	35.8	-23.9	-95.2	-47.2	-25	-22.2	V
7.56589	37.05	Pk	35.8	-23.8	-95.2	-46.15	-25	-21.15	H
10.32326	34.93	Pk	37.5	-20.7	-95.2	-43.47	-25	-18.47	H
10.32335	35.02	Pk	37.5	-20.7	-95.2	-43.38	-25	-18.38	V
Mid Channel, 2535MHz									
5.06334	39.16	Pk	34.4	-28	-95.2	-49.64	-25	-24.64	V
5.06693	40.5	Pk	34.3	-28	-95.2	-48.4	-25	-23.4	H
7.61	36.29	Pk	35.8	-23.6	-95.2	-46.71	-25	-21.71	H
7.70226	36.85	Pk	35.8	-23.5	-95.2	-46.05	-25	-21.05	V
10.08878	34.8	Pk	37.1	-21.1	-95.2	-44.4	-25	-19.4	V
10.14113	35.51	Pk	37.2	-21.1	-95.2	-43.59	-25	-18.59	H
High Channel, 2560MHz									
5.12664	39.12	Pk	34.5	-27.9	-95.2	-49.48	-25	-24.48	H
5.13219	39.17	Pk	34.5	-27.8	-95.2	-49.33	-25	-24.33	V
7.66119	36.21	Pk	35.8	-23.4	-95.2	-46.59	-25	-21.59	V
7.68961	35.69	Pk	35.8	-23.4	-95.2	-47.11	-25	-22.11	H
10.17728	34.81	Pk	37.2	-20.9	-95.2	-44.09	-25	-19.09	V
10.2467	35.24	Pk	37.3	-20.5	-95.2	-43.16	-25	-18.16	H

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9.4.3. LTE BAND 25

LIMITS

FCC: §24.238(a)
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.

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QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/15/2020
Test Engineer:	20792
Configuration:	EUT only
Mode	LTE Band 25 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1860MHz									
3.71865	34.59	Pk	33.3	-29.9	-95.2	-57.21	-13	-44.21	V
3.71994	34.77	Pk	33.3	-29.9	-95.2	-57.03	-13	-44.03	H
5.58064	33.1	Pk	34.9	-28	-95.2	-55.2	-13	-42.2	H
5.58118	33.43	Pk	34.9	-28	-95.2	-54.87	-13	-41.87	V
7.44033	33.24	Pk	35.8	-24.9	-95.2	-51.06	-13	-38.06	H
7.44039	32.14	Pk	35.8	-24.9	-95.2	-52.16	-13	-39.16	V
Mid Channel, 1882.5MHz									
3.76557	40.64	Pk	33.6	-30.1	-95.2	-51.06	-13	-38.06	V
3.76584	40.3	Pk	33.6	-30.1	-95.2	-51.4	-13	-38.4	H
5.6475	38.23	Pk	34.9	-28	-95.2	-50.07	-13	-37.07	H
5.64819	32.6	Pk	34.8	-28	-95.2	-55.8	-13	-42.8	V
7.53078	35.95	Pk	35.8	-24.6	-95.2	-48.05	-13	-35.05	H
7.53103	32.71	Pk	35.8	-24.6	-95.2	-51.29	-13	-38.29	V
High Channel, 1905MHz									
3.80915	39.87	Pk	33.7	-30.2	-95.2	-51.83	-13	-38.83	V
3.81217	39.72	Pk	33.7	-30.2	-95.2	-51.98	-13	-38.98	H
5.71387	37.87	Pk	34.9	-28.2	-95.2	-50.63	-13	-37.63	V
5.71451	38.4	Pk	34.9	-28.2	-95.2	-50.1	-13	-37.1	H
7.62078	36.09	Pk	35.8	-24.3	-95.2	-47.61	-13	-34.61	V
7.62238	35.95	Pk	35.8	-24.2	-95.2	-47.65	-13	-34.65	H

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9.4.4. LTE BAND 30

LIMITS

FCC: §27.53 (a)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

QPSK LTE BAND 30 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/19/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode:	LTE Band 30 QPSK 10MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 2310MHz									
4.61897	39.79	Pk	34.3	-28.7	-95.2	-49.81	-40	-9.81	H
4.62162	39.31	Pk	34.3	-28.7	-95.2	-50.29	-40	-10.29	V
6.92915	36.76	Pk	35.9	-24.8	-95.2	-47.34	-40	-7.34	V
6.92942	36.43	Pk	36	-24.8	-95.2	-47.57	-40	-7.57	H
9.23867	34.66	Pk	36.3	-22.3	-95.2	-46.54	-40	-6.54	H
9.23946	34.67	Pk	36.3	-22.3	-95.2	-46.53	-40	-6.53	V

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9.4.5. LTE BAND 41 AND 5G NR BAND n41

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

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QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	6/20/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode:	LTE Band 41 QPSK 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2506MHz									
5.00592	40.12	Pk	34.3	-28.3	-95.2	-49.08	-25	-24.08	V
5.00945	39.56	Pk	34.3	-28.3	-95.2	-49.64	-25	-24.64	H
7.51739	37.07	Pk	35.7	-23.9	-95.2	-46.33	-25	-21.33	H
7.56307	36.34	Pk	35.7	-23.8	-95.2	-46.96	-25	-21.96	V
9.96717	34.91	Pk	37	-20.6	-95.2	-43.89	-25	-18.89	V
10.02745	34.69	Pk	37.1	-21.1	-95.2	-44.51	-25	-19.51	H
Mid Channel, 2593MHz									
5.14327	38.09	Pk	34.5	-27.7	-95.2	-50.31	-25	-25.31	V
5.18222	38.96	Pk	34.6	-27.7	-95.2	-49.34	-25	-24.34	H
7.73079	36.08	Pk	35.9	-23.4	-95.2	-46.62	-25	-21.62	V
7.78194	36.48	Pk	35.8	-23.4	-95.2	-46.32	-25	-21.32	H
10.37353	34.66	Pk	37.5	-20.2	-95.2	-43.24	-25	-18.24	H
10.3757	34.69	Pk	37.5	-20.2	-95.2	-43.21	-25	-18.21	V
High Channel, 2680MHz									
5.35873	38.92	Pk	35	-27.9	-95.2	-49.18	-25	-24.18	V
5.3591	39.57	Pk	35	-27.9	-95.2	-48.53	-25	-23.53	H
8.04541	35.95	Pk	35.8	-23.2	-95.2	-46.65	-25	-21.65	H
8.06256	36.93	Pk	35.8	-23.2	-95.2	-45.67	-25	-20.67	V
10.73204	35.33	Pk	37.9	-20.3	-95.2	-42.27	-25	-17.27	H
10.74213	34.8	Pk	37.9	-20.4	-95.2	-42.9	-25	-17.9	V

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QPSK 5G NR BAND n41 (100.0MHZ BANDWIDTH)

Project #:	13335182
Date:	6/24/2020
Test Engineer:	19479
Configuration:	EUT Only
Mode	5G NR Band n41 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2546MHz									
5.0903	39.93	Pk	34.4	-27.8	-95.2	-47.87	-25	-22.87	H
5.09278	39.73	Pk	34.4	-27.8	-95.2	-48.07	-25	-23.07	V
7.63737	36.69	Pk	35.9	-23.6	-95.2	-45.81	-25	-20.81	H
7.63843	36.13	Pk	35.9	-23.6	-95.2	-46.37	-25	-21.37	V
10.18226	35.46	Pk	37.5	-20.9	-95.2	-42.54	-25	-17.54	H
10.18525	35.18	Pk	37.5	-20.9	-95.2	-42.82	-25	-17.82	V
Mid Channel, 2593MHz									
5.17511	31.64	Pk	34.6	-27.8	-95.2	-56.06	-25	-31.06	V
5.19635	38.66	Pk	34.6	-27.6	-95.2	-48.74	-25	-23.74	H
7.77965	29.86	Pk	35.9	-23.4	-95.2	-52.54	-25	-27.54	V
7.7895	36.53	Pk	36	-23.4	-95.2	-45.67	-25	-20.67	H
10.36687	28.08	Pk	37.7	-20.2	-95.2	-48.82	-25	-23.82	V
10.36916	35.92	Pk	37.7	-20.2	-95.2	-40.98	-25	-15.98	H
High Channel, 2640MHz									
5.27989	39.33	Pk	34.7	-27.9	-95.2	-48.77	-25	-23.77	H
5.29117	31.81	Pk	34.7	-28.1	-95.2	-56.39	-25	-31.39	V
7.92176	29.37	Pk	36.2	-23.4	-95.2	-52.83	-25	-27.83	V
7.93211	36.53	Pk	36.1	-23.5	-95.2	-45.97	-25	-20.97	H
10.57643	35.98	Pk	37.8	-20.5	-95.2	-41.02	-25	-16.02	H
10.58986	28.1	Pk	37.8	-20.3	-95.2	-48.7	-25	-23.7	V

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9.4.6. LTE BAND 66

LIMITS

FCC: §27.53 (h)
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.

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QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	8/11/2020
Test Engineer:	30606
Configuration:	EUT Only
Mode	LTE Band 66 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1720MHz									
3.90303	38.22	Pk	31.4	-26.8	-95.2	-52.38	-13	-39.38	H
3.96536	38.25	Pk	31.6	-26.8	-95.2	-52.15	-13	-39.15	V
5.07293	37.25	Pk	33.8	-24.9	-95.2	-49.05	-13	-36.05	V
5.10309	37.37	Pk	34	-24.6	-95.2	-48.43	-13	-35.43	H
7.20403	35.21	Pk	37.1	-22.8	-95.2	-45.69	-13	-32.69	H
7.33068	37.12	Pk	37	-23.8	-95.2	-44.88	-13	-31.88	V
Mid Channel, 1745MHz									
3.49116	39.48	Pk	33.1	-29.6	-95.2	-52.22	-13	-39.22	H
3.50875	39.13	Pk	33.8	-29.7	-95.2	-51.97	-13	-38.97	V
5.22357	38.11	Pk	34.7	-27.6	-95.2	-49.99	-13	-36.99	V
5.24335	38.3	Pk	34.8	-27.9	-95.2	-50	-13	-37	H
6.93177	36.82	Pk	36	-24.8	-95.2	-47.18	-13	-34.18	V
6.9847	36.81	Pk	36	-24.8	-95.2	-47.19	-13	-34.19	H
High Channel, 1770MHz									
3.78089	39.46	Pk	30.8	-27.4	-95.2	-52.34	-13	-39.34	H
3.80264	39.33	Pk	30.9	-27.4	-95.2	-52.37	-13	-39.37	V
5.04679	37.52	Pk	33.8	-24.9	-95.2	-48.78	-13	-35.78	H
5.09791	37.87	Pk	33.9	-24.7	-95.2	-48.13	-13	-35.13	V
7.1972	36.02	Pk	37.1	-22.8	-95.2	-44.88	-13	-31.88	V
7.21786	35.69	Pk	37.2	-22.6	-95.2	-44.91	-13	-31.91	H

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9.5. FIELD STRENGTH OF SPURIOUS RADIATION, ANT4

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

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

RESULTS

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9.5.1. LTE BAND 2

LIMITS

FCC: §24.238(a)
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.

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QPSK LTE BAND 2 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/18/2020
Test Engineer:	20792
Configuration:	EUT only
Mode	LTE Band 2 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1860MHz									
3.72239	39.75	Pk	33.3	-29.4	-95.2	-51.55	-13	-38.55	H
3.72286	39.73	Pk	33.3	-29.4	-95.2	-51.57	-13	-38.57	V
5.57946	38.75	Pk	34.9	-27	-95.2	-48.55	-13	-35.55	H
5.58019	37.58	Pk	34.9	-27	-95.2	-49.72	-13	-36.72	V
7.43947	34.54	Pk	35.8	-23.9	-95.2	-48.76	-13	-35.76	V
7.43959	35.2	Pk	35.8	-23.9	-95.2	-48.1	-13	-35.1	H
Mid Channel, 1880MHz									
3.76069	39.61	Pk	33.6	-29.6	-95.2	-51.59	-13	-38.59	H
3.76128	40.32	Pk	33.6	-29.6	-95.2	-50.88	-13	-37.88	V
5.63859	38.66	Pk	34.8	-27.1	-95.2	-48.84	-13	-35.84	H
5.63887	37.39	Pk	34.8	-27.1	-95.2	-50.11	-13	-37.11	V
7.51982	35.87	Pk	35.7	-23.9	-95.2	-47.53	-13	-34.53	H
7.52062	35.81	Pk	35.7	-23.9	-95.2	-47.59	-13	-34.59	V
High Channel, 1900MHz									
3.79826	40.74	Pk	33.7	-29.5	-95.2	-50.26	-13	-37.26	H
3.79831	40.87	Pk	33.7	-29.5	-95.2	-50.13	-13	-37.13	V
5.69917	37.8	Pk	34.9	-27.3	-95.2	-49.8	-13	-36.8	V
5.70104	37.35	Pk	34.9	-27.2	-95.2	-50.15	-13	-37.15	H
7.59875	35.16	Pk	35.7	-23.7	-95.2	-48.04	-13	-35.04	V
7.60031	36.48	Pk	35.7	-23.6	-95.2	-46.62	-13	-33.62	H

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9.5.2. LTE BAND 7

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

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QPSK LTE BAND 7 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/20/2020
Test Engineer:	45258
Configuration:	EUT only
Mode	LTE Band 7 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 2510MHz									
5.0191	39.05	Pk	34.3	-28.2	-95.2	-50.05	-25	-25.05	H
5.02072	38.83	Pk	34.3	-28.2	-95.2	-50.27	-25	-25.27	V
7.5304	36.59	Pk	35.8	-23.9	-95.2	-46.71	-25	-21.71	V
7.53052	36.85	Pk	35.8	-23.9	-95.2	-46.45	-25	-21.45	H
10.04033	35.2	Pk	37.1	-21.2	-95.2	-44.1	-25	-19.1	V
10.04044	35.48	Pk	37.1	-21.2	-95.2	-43.82	-25	-18.82	H
Mid Channel, 2535MHz									
5.06935	39.61	Pk	34.3	-28	-95.2	-49.29	-25	-24.29	H
5.07135	39.84	Pk	34.3	-27.9	-95.2	-48.96	-25	-23.96	V
7.60377	36.41	Pk	35.8	-23.6	-95.2	-46.59	-25	-21.59	H
7.60496	36.58	Pk	35.8	-23.6	-95.2	-46.42	-25	-21.42	V
10.13852	36.02	Pk	37.2	-21.1	-95.2	-43.08	-25	-18.08	V
10.13856	35.25	Pk	37.2	-21.1	-95.2	-43.85	-25	-18.85	H
High Channel, 2560MHz									
5.11817	39.49	Pk	34.5	-27.9	-95.2	-49.11	-25	-24.11	V
5.11913	39.78	Pk	34.6	-27.9	-95.2	-48.72	-25	-23.72	H
7.67898	35.78	Pk	35.8	-23.3	-95.2	-46.92	-25	-21.92	H
7.68155	36.01	Pk	35.8	-23.3	-95.2	-46.69	-25	-21.69	V
10.24036	35.27	Pk	37.3	-20.6	-95.2	-43.23	-25	-18.23	H
10.24043	34.82	Pk	37.3	-20.6	-95.2	-43.68	-25	-18.68	V

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9.5.3. LTE BAND 25

LIMITS

FCC: §24.238(a)
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.

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QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/18/2020
Test Engineer:	20792
Configuration:	EUT only
Mode	LTE Band 25 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1860MHz									
3.72122	39.17	Pk	33.3	-29.4	-95.2	-52.13	-13	-39.13	V
3.72198	39.12	Pk	33.3	-29.4	-95.2	-52.18	-13	-39.18	H
5.64565	38.02	Pk	34.9	-27.1	-95.2	-49.38	-13	-36.38	H
5.6487	37.42	Pk	34.8	-27.1	-95.2	-50.08	-13	-37.08	V
7.52905	35.12	Pk	35.8	-23.9	-95.2	-48.18	-13	-35.18	V
7.53205	35.05	Pk	35.8	-23.9	-95.2	-48.25	-13	-35.25	H
Mid Channel, 1882.5MHz									
3.76435	38.96	Pk	33.6	-29.6	-95.2	-52.24	-13	-39.24	V
3.76657	39.87	Pk	33.6	-29.6	-95.2	-51.33	-13	-38.33	H
5.64715	37.26	Pk	34.9	-27.1	-95.2	-50.14	-13	-37.14	V
5.64881	38.05	Pk	34.8	-27.1	-95.2	-49.45	-13	-36.45	H
7.52875	34.9	Pk	35.8	-23.9	-95.2	-48.4	-13	-35.4	V
7.5304	36.08	Pk	35.8	-23.9	-95.2	-47.22	-13	-34.22	H
High Channel, 1905MHz									
3.80989	39.4	Pk	33.7	-29.5	-95.2	-51.6	-13	-38.6	H
3.81021	39.8	Pk	33.7	-29.5	-95.2	-51.2	-13	-38.2	V
5.71411	37.4	Pk	34.9	-27.3	-95.2	-50.2	-13	-37.2	H
5.71637	37.79	Pk	35	-27.3	-95.2	-49.71	-13	-36.71	V
7.62201	35.54	Pk	35.8	-23.5	-95.2	-47.36	-13	-34.36	H
7.62242	35.5	Pk	35.8	-23.5	-95.2	-47.4	-13	-34.4	V

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9.5.4. LTE BAND 30

LIMITS

FCC: §27.53 (a)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

QPSK LTE BAND 30 (10.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/19/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode:	LTE Band 30 QPSK 10MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 2310MHz									
4.61908	39.01	Pk	34.3	-28.7	-95.2	-50.59	-40	-10.59	V
4.62129	39.82	Pk	34.3	-28.7	-95.2	-49.78	-40	-9.78	H
6.93189	36.3	Pk	36	-24.8	-95.2	-47.7	-40	-7.7	H
6.93268	36.4	Pk	36	-24.8	-95.2	-47.6	-40	-7.6	V
9.24132	34.49	Pk	36.3	-22.3	-95.2	-46.71	-40	-6.71	H
9.24184	35.09	Pk	36.3	-22.3	-95.2	-46.11	-40	-6.11	V

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9.5.5. LTE BAND 41 AND 5G NR BAND n41

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

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QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/20/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode:	LTE Band 41 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2506MHz									
5.01027	39.24	Pk	34.3	-28.3	-95.2	-49.96	-25	-24.96	V
5.01037	38.88	Pk	34.3	-28.3	-95.2	-50.32	-25	-25.32	H
7.51622	36.2	Pk	35.7	-23.9	-95.2	-47.2	-25	-22.2	H
7.51953	36.38	Pk	35.7	-23.9	-95.2	-47.02	-25	-22.02	V
10.02295	34.83	Pk	37.1	-21	-95.2	-44.27	-25	-19.27	H
10.02546	34.43	Pk	37.1	-21.1	-95.2	-44.77	-25	-19.77	V
Mid Channel, 2593MHz									
5.18643	38.94	Pk	34.6	-27.7	-95.2	-49.36	-25	-24.36	H
5.18653	39.09	Pk	34.6	-27.7	-95.2	-49.21	-25	-24.21	V
7.77779	36.42	Pk	35.9	-23.4	-95.2	-46.28	-25	-21.28	V
7.78004	36.29	Pk	35.8	-23.4	-95.2	-46.51	-25	-21.51	H
10.37169	34.96	Pk	37.4	-20.2	-95.2	-43.04	-25	-18.04	V
10.37368	34.98	Pk	37.5	-20.2	-95.2	-42.92	-25	-17.92	H
High Channel, 2680MHz									
5.35966	39.36	Pk	35	-27.9	-95.2	-48.74	-25	-23.74	H
5.36012	38.52	Pk	35	-27.9	-95.2	-49.58	-25	-24.58	V
8.03847	36.43	Pk	35.8	-23.1	-95.2	-46.07	-25	-21.07	H
8.04115	36.06	Pk	35.8	-23.1	-95.2	-46.44	-25	-21.44	V
10.71931	34.93	Pk	37.9	-20.2	-95.2	-42.57	-25	-17.57	V
10.72033	35.44	Pk	37.9	-20.2	-95.2	-42.06	-25	-17.06	H

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QPSK 5G NR BAND n41 (100.0MHZ BANDWIDTH)

Project #:	13335182
Date:	6/23/2020
Test Engineer:	19479
Configuration:	EUT Only
Mode	5G NR Band n41 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2546MHz									
5.09897	38.36	Pk	34.5	-27.7	-95.2	-49.24	-25	-24.24	V
5.10489	32.28	Pk	34.5	-27.8	-95.2	-55.42	-25	-30.42	H
7.65603	29.46	Pk	35.8	-23.5	-95.2	-53.14	-25	-28.14	H
7.65917	36.62	Pk	35.8	-23.4	-95.2	-45.88	-25	-20.88	V
10.19561	35.69	Pk	37.6	-20.9	-95.2	-42.11	-25	-17.11	V
10.19979	35.55	Pk	37.6	-20.9	-95.2	-42.15	-25	-17.15	H
Mid Channel, 2593MHz									
5.17049	39.4	Pk	34.6	-27.8	-95.2	-48.3	-25	-23.3	H
5.17286	39.07	Pk	34.6	-27.8	-95.2	-48.63	-25	-23.63	V
7.78024	36.81	Pk	35.9	-23.4	-95.2	-45.59	-25	-20.59	V
7.7898	36.58	Pk	36	-23.4	-95.2	-45.62	-25	-20.62	H
10.3607	35.51	Pk	37.7	-20.2	-95.2	-41.39	-25	-16.39	H
10.38424	34.93	Pk	37.7	-20.3	-95.2	-42.07	-25	-17.07	V
High Channel, 2640MHz									
5.27038	32.08	Pk	34.7	-27.9	-95.2	-56.02	-25	-31.02	H
5.27895	39.37	Pk	34.7	-27.9	-95.2	-48.73	-25	-23.73	V
7.89592	37.19	Pk	36.1	-23.4	-95.2	-44.81	-25	-19.81	H
7.89777	36.71	Pk	36.1	-23.4	-95.2	-45.29	-25	-20.29	V
10.53735	36.12	Pk	37.8	-20.4	-95.2	-41.18	-25	-16.18	V
10.53936	35.41	Pk	37.8	-20.4	-95.2	-41.89	-25	-16.89	H

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9.5.6. LTE BAND 48

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.

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QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	5/14/2020
Test Engineer:	20972
Configuration:	EUT Only
Mode:	LTE Band 48 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3560MHz									
6.95479	37.02	Pk	36	-25.6	-95.2	-47.78	-40	-7.78	H
6.99733	35.82	Pk	35.9	-25.3	-95.2	-48.78	-40	-8.78	V
9.47729	35.15	Pk	36.6	-22	-95.2	-45.45	-40	-5.45	H
9.57176	34.17	Pk	36.6	-22.5	-95.2	-46.93	-40	-6.93	V
12.17163	31.89	Pk	38.9	-20.2	-95.2	-44.61	-40	-4.61	V
12.22703	33.4	Pk	39	-20.5	-95.2	-43.3	-40	-3.3	H
Mid Channel, 3625MHz									
7.23405	36.3	Pk	36	-24.8	-95.2	-47.7	-40	-7.7	H
7.26739	37.19	Pk	35.8	-24.7	-95.2	-46.91	-40	-6.91	V
9.04931	35.19	Pk	36.3	-23.1	-95.2	-46.81	-40	-6.81	H
9.09706	34.7	Pk	36.3	-22.8	-95.2	-47.00	-40	-7.0	V
13.17957	32.39	Pk	39	-21	-95.2	-44.81	-40	-4.81	V
13.26393	33.6	Pk	39	-20.4	-95.2	-43.00	-40	-3.0	H
High Channel, 3690MHz									
7.36113	35.48	Pk	35.8	-24.7	-95.2	-48.62	-40	-8.62	V
7.57767	35.1	Pk	35.7	-24.4	-95.2	-48.8	-40	-8.8	H
9.63464	33.05	Pk	36.8	-22.6	-95.2	-47.95	-40	-7.95	V
9.73396	34.66	Pk	36.9	-22.2	-95.2	-45.84	-40	-5.84	H
12.7293	33.55	Pk	39.1	-20.8	-95.2	-43.35	-40	-3.35	V
12.87534	32.5	Pk	39.2	-20.6	-95.2	-44.1	-40	-4.1	H

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9.5.7. LTE BAND 66

LIMITS

FCC: §27.53 (h)
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.

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QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	8/10/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode	LTE Band 66 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1720MHz									
3.44013	38.86	Pk	32.8	-29.9	-95.2	-53.44	-13	-40.44	H
3.44241	38.64	Pk	32.8	-29.9	-95.2	-53.66	-13	-40.66	V
5.1593	38.17	Pk	34.5	-27.7	-95.2	-50.23	-13	-37.23	H
5.16168	37.9	Pk	34.5	-27.7	-95.2	-50.5	-13	-37.5	V
6.87951	34.83	Pk	35.9	-24.5	-95.2	-48.97	-13	-35.97	V
6.88199	36.26	Pk	35.9	-24.5	-95.2	-47.54	-13	-34.54	H
Mid Channel, 1745MHz									
3.49079	38.62	Pk	33.1	-29.6	-95.2	-53.08	-13	-40.08	V
3.49166	38.65	Pk	33.2	-29.6	-95.2	-52.95	-13	-39.95	H
5.23464	37.92	Pk	34.7	-27.8	-95.2	-50.38	-13	-37.38	H
5.23515	37.65	Pk	34.7	-27.8	-95.2	-50.65	-13	-37.65	V
6.97901	36.13	Pk	36	-24.8	-95.2	-47.87	-13	-34.87	V
6.98037	36.52	Pk	36	-24.8	-95.2	-47.48	-13	-34.48	H
High Channel, 1770MHz									
3.54018	39.23	Pk	33.2	-29.8	-95.2	-52.57	-13	-39.57	V
3.54074	39.04	Pk	33.1	-29.8	-95.2	-52.86	-13	-39.86	H
5.31162	38.17	Pk	35	-28.1	-95.2	-50.13	-13	-37.13	H
5.31242	37.41	Pk	35	-28	-95.2	-50.79	-13	-37.79	V
7.07858	36.37	Pk	36	-24.6	-95.2	-47.43	-13	-34.43	H
7.08107	35.73	Pk	36	-24.6	-95.2	-48.07	-13	-35.07	V

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9.5.18. 5G NR BAND n77

LIMITS

FCC: §27.53
(l) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

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QPSK 5G NR BAND n77 (100.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/24/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n77 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3750MHz									
7.5015	37.12	Pk	36	-23.2	-95.2	-45.28	-13	-32.28	V
7.50194	36.22	Pk	36	-23.2	-95.2	-46.18	-13	-33.18	H
11.2485	34.52	Pk	38	-19.6	-95.2	-42.28	-13	-29.28	H
11.2509	35.76	Pk	38	-19.6	-95.2	-41.04	-13	-28.04	V
14.99882	35.27	Pk	39.9	-19.5	-95.2	-39.53	-13	-26.53	H
14.99898	34.74	Pk	39.8	-19.5	-95.2	-40.16	-13	-27.16	V
Mid Channel, 3840MHz									
7.67881	36.7	Pk	35.9	-22.9	-95.2	-45.5	-13	-32.5	V
7.68008	36.75	Pk	35.9	-22.9	-95.2	-45.45	-13	-32.45	H
11.5206	34.8	Pk	38.4	-19.6	-95.2	-41.6	-13	-28.6	V
11.52136	35.27	Pk	38.4	-19.6	-95.2	-41.13	-13	-28.13	H
15.35811	35.17	Pk	41	-20.1	-95.2	-39.13	-13	-26.13	H
15.35939	35.09	Pk	41	-20.1	-95.2	-39.21	-13	-26.21	V
High Channel, 3930MHz									
7.85972	36.48	Pk	36	-23.6	-95.2	-46.32	-13	-33.32	V
7.85992	36.36	Pk	36	-23.6	-95.2	-46.44	-13	-33.44	H
11.79113	34.36	Pk	38.8	-19.4	-95.2	-41.44	-13	-28.44	H
11.79126	34.75	Pk	38.8	-19.4	-95.2	-41.05	-13	-28.05	V
15.71946	34.07	Pk	40.7	-18.8	-95.2	-39.23	-13	-26.23	H
15.71973	34.97	Pk	40.7	-18.8	-95.2	-38.33	-13	-25.33	V

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9.6. FIELD STRENGTH OF SPURIOUS RADIATION, ANT7

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

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

All tests below 1GHz were done with a Resolution Bandwidth of 100kHz, and a Video Bandwidth of 300kHz.

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9.6.1. LTE BAND 48

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.

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QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	9/12/2020
Test Engineer:	19480
Configuration:	EUT Only
Mode	LTE Band 48 QPSK 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3560MHz									
7.09866	28.51	RMS	36.7	-23	-95.2	-52.99	-40	-12.99	H
7.10503	28.65	RMS	36.7	-23	-95.2	-52.85	-40	-12.85	V
10.64675	27.48	RMS	39.4	-19	-95.2	-47.32	-40	-7.32	H
10.6526	28.28	RMS	39.4	-19.1	-95.2	-46.62	-40	-6.62	V
14.20117	29.63	RMS	41	-20.7	-95.2	-45.27	-40	-5.27	H
14.20842	29.43	RMS	41.1	-20.4	-95.2	-45.07	-40	-5.07	V
Mid Channel, 3625MHz									
7.22279	28.7	RMS	37.1	-23	-95.2	-52.4	-40	-12.4	H
7.24253	28.54	RMS	37.1	-23.1	-95.2	-52.66	-40	-12.66	V
10.85297	27.76	RMS	39.3	-19.3	-95.2	-47.44	-40	-7.44	V
10.85396	27.38	RMS	39.3	-19.3	-95.2	-47.82	-40	-7.82	H
14.4592	28.89	RMS	41.5	-20.8	-95.2	-45.61	-40	-5.61	H
14.46227	29.21	RMS	41.5	-20.7	-95.2	-45.19	-40	-5.19	V
High Channel, 3690MHz									
7.35924	28.5	RMS	37	-23	-95.2	-52.7	-40	-12.7	V
7.36068	27.96	RMS	37	-23	-95.2	-53.24	-40	-13.24	H
11.0417	27.57	RMS	39.4	-19.1	-95.2	-47.33	-40	-7.33	H
11.04311	27.47	RMS	39.4	-19.1	-95.2	-47.43	-40	-7.43	V
14.72461	28.78	RMS	42.1	-20.2	-95.2	-44.52	-40	-4.52	V
14.72568	29.25	RMS	42.1	-20.3	-95.2	-44.15	-40	-4.15	H

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9.6.2. 5G NR BAND n77

LIMITS

FCC: §27.53
(l) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

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QPSK 5G NR BAND n77 (100.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/24/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n77 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3750MHz									
7.50072	35.97	Pk	36	-23.2	-95.2	-46.43	-13	-33.43	V
7.50192	35.9	Pk	36	-23.2	-95.2	-46.5	-13	-33.5	H
11.24826	34.57	Pk	38	-19.6	-95.2	-42.23	-13	-29.23	H
11.25079	34.89	Pk	38	-19.6	-95.2	-41.91	-13	-28.91	V
14.99984	35.38	Pk	39.9	-19.5	-95.2	-39.42	-13	-26.42	V
15.00125	36.19	Pk	39.9	-19.5	-95.2	-38.61	-13	-25.61	H
Mid Channel, 3840MHz									
7.67945	38.03	Pk	35.9	-22.9	-95.2	-44.17	-13	-31.17	H
7.67996	37.74	Pk	35.9	-22.9	-95.2	-44.46	-13	-31.46	V
11.51855	35.32	Pk	38.4	-19.6	-95.2	-41.08	-13	-28.08	V
11.52039	35.56	Pk	38.4	-19.6	-95.2	-40.84	-13	-27.84	H
15.36004	35.78	Pk	41	-20.1	-95.2	-38.52	-13	-25.52	V
15.36157	35.89	Pk	41	-20.1	-95.2	-38.41	-13	-25.41	H
High Channel, 3930MHz									
7.85984	37.05	Pk	36	-23.6	-95.2	-45.75	-13	-32.75	V
7.86095	36.42	Pk	36	-23.6	-95.2	-46.38	-13	-33.38	H
11.78981	34.48	Pk	38.8	-19.4	-95.2	-41.32	-13	-28.32	V
11.79029	34.4	Pk	38.8	-19.4	-95.2	-41.4	-13	-28.4	H
15.71916	34.76	Pk	40.7	-18.8	-95.2	-38.54	-13	-25.54	V
15.72024	34.7	Pk	40.7	-18.8	-95.2	-38.6	-13	-25.6	H

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9.7. FIELD STRENGTH OF SPURIOUS RADIATION, ANT8

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

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

All tests below 1GHz were done with a Resolution Bandwidth of 100kHz, and a Video Bandwidth of 300kHz.

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9.7.1. LTE BAND 48

LIMITS

FCC: §96.41

(b) 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.

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QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	9/13/2020
Test Engineer:	19480
Configuration:	EUT Only
Mode:	LTE Band 48 QPSK 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3560MHz									
7.09696	28.69	RMS	36.6	-23	-95.2	-52.91	-40	-12.91	H
7.09929	28.69	RMS	36.7	-23	-95.2	-52.81	-40	-12.81	V
10.65058	27.91	RMS	39.4	-19.1	-95.2	-46.99	-40	-6.99	V
10.65373	27.73	RMS	39.4	-19.1	-95.2	-47.17	-40	-7.17	H
14.19953	29.63	RMS	41	-20.7	-95.2	-45.27	-40	-5.27	V
14.20925	29.29	RMS	41	-20.4	-95.2	-45.31	-40	-5.31	H
Mid Channel, 3625MHz									
7.23156	28.42	RMS	37.2	-23	-95.2	-52.58	-40	-12.58	V
7.23496	28.75	RMS	37.2	-23.1	-95.2	-52.35	-40	-12.35	H
10.85187	26.87	RMS	39.3	-19.3	-95.2	-48.33	-40	-8.33	H
10.85474	27.2	RMS	39.3	-19.3	-95.2	-48	-40	-8	V
14.46664	28.21	RMS	41.4	-20.7	-95.2	-46.29	-40	-6.29	H
14.47162	29.09	RMS	41.5	-20.7	-95.2	-45.31	-40	-5.31	V
High Channel, 3690MHz									
7.36725	27.75	RMS	36.9	-23	-95.2	-53.55	-40	-13.55	H
7.37039	28.9	RMS	36.9	-23.1	-95.2	-52.5	-40	-12.5	V
11.04171	27.84	RMS	39.4	-19.1	-95.2	-47.06	-40	-7.06	H
11.04426	27.86	RMS	39.4	-19.1	-95.2	-47.04	-40	-7.04	V
14.7251	29.09	RMS	42.1	-20.2	-95.2	-44.21	-40	-4.21	V
14.73013	28.74	RMS	42	-20.3	-95.2	-44.76	-40	-4.76	H

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9.7.2. 5G NR BAND n77

LIMITS

FCC: §27.53
(l) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

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QPSK 5G NR BAND n77 (100.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/24/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n77 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3750MHz									
7.49927	36.4	Pk	36	-23.2	-95.2	-46	-13	-33	V
7.50169	36.01	Pk	36	-23.2	-95.2	-46.39	-13	-33.39	H
11.24898	34.75	Pk	38	-19.6	-95.2	-42.05	-13	-29.05	H
11.25077	34.81	Pk	38	-19.6	-95.2	-41.99	-13	-28.99	V
14.99835	34.89	Pk	39.9	-19.5	-95.2	-39.91	-13	-26.91	H
15.00121	34.48	Pk	39.9	-19.5	-95.2	-40.32	-13	-27.32	V
Mid Channel, 3840MHz									
7.68001	39.86	Pk	35.9	-22.9	-95.2	-42.34	-13	-29.34	V
7.68017	38.78	Pk	35.9	-22.9	-95.2	-43.42	-13	-30.42	H
11.51805	35.4	Pk	38.4	-19.6	-95.2	-41	-13	-28	H
11.52042	34.47	Pk	38.4	-19.6	-95.2	-41.93	-13	-28.93	V
15.35892	35.38	Pk	41	-20.1	-95.2	-38.92	-13	-25.92	V
15.36108	35.44	Pk	41	-20.1	-95.2	-38.86	-13	-25.86	H
High Channel, 3930MHz									
7.86018	36.08	Pk	36	-23.6	-95.2	-46.72	-13	-33.72	H
7.86043	36.12	Pk	36	-23.6	-95.2	-46.68	-13	-33.68	V
11.78884	34.54	Pk	38.8	-19.4	-95.2	-41.26	-13	-28.26	H
11.79064	34.65	Pk	38.8	-19.4	-95.2	-41.15	-13	-28.15	V
15.72004	34.74	Pk	40.7	-18.8	-95.2	-38.56	-13	-25.56	H
15.72014	34.3	Pk	40.7	-18.8	-95.2	-39	-13	-26	V

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9.8. FIELD STRENGTH OF SPURIOUS RADIATION, ANT9

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

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

All tests below 1GHz were done with a Resolution Bandwidth of 100kHz, and a Video Bandwidth of 300kHz.

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9.8.1. LTE BAND 48

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.

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QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	13335182
Date:	9/1/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode:	LTE Band 48 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3560MHz									
7.21553	29.67	RMS	37.2	-23.6	-95.2	-51.33	-40	-11.33	H
7.26716	29.62	RMS	37.2	-23.4	-95.2	-51.18	-40	-11.18	V
8.93156	28.9	RMS	38.1	-21.5	-95.2	-49.1	-40	-9.1	H
8.98853	28.68	RMS	38.4	-21.4	-95.2	-48.72	-40	-8.72	V
11.09033	27.79	RMS	39.3	-19.5	-95.2	-46.91	-40	-6.91	H
11.98211	27.34	RMS	39.5	-20.1	-95.2	-47.56	-40	-7.56	V
Mid Channel, 3625MHz									
7.23176	28.28	RMS	37.2	-23	-95.2	-52.72	-40	-12.72	V
7.23693	29.13	RMS	37.2	-23	-95.2	-51.87	-40	-11.87	H
10.84515	27.87	RMS	39.3	-19.2	-95.2	-47.23	-40	-7.23	V
10.85242	27.15	RMS	39.3	-19.3	-95.2	-48.05	-40	-8.05	H
14.46742	29.53	RMS	41.4	-20.7	-95.2	-44.97	-40	-4.97	V
14.46795	29.11	RMS	41.4	-20.7	-95.2	-45.39	-40	-5.39	H
High Channel, 3690MHz									
7.35969	27.86	RMS	37	-23	-95.2	-53.34	-40	-13.34	H
7.36111	28.43	RMS	37	-23	-95.2	-52.77	-40	-12.77	V
11.03991	27.54	RMS	39.4	-19.1	-95.2	-47.36	-40	-7.36	H
11.04671	27.92	RMS	39.4	-19.1	-95.2	-46.98	-40	-6.98	V
14.72685	28.86	RMS	42	-20.3	-95.2	-44.64	-40	-4.64	H
14.73	28.63	RMS	42	-20.3	-95.2	-44.87	-40	-4.87	V

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9.8.2. 5G NR BAND n77

LIMITS

FCC: §27.53
(l) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

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QPSK 5G NR BAND n77 (100.0MHZ BANDWIDTH)

Project #:	13335182
Date:	7/24/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n77 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3750MHz									
7.50128	36.36	Pk	36	-23.2	-95.2	-46.04	-13	-33.04	V
7.50177	36.25	Pk	36	-23.2	-95.2	-46.15	-13	-33.15	H
11.25103	34.19	Pk	38	-19.6	-95.2	-42.61	-13	-29.61	H
11.25105	34.74	Pk	38	-19.6	-95.2	-42.06	-13	-29.06	V
15.0006	34.68	Pk	39.9	-19.5	-95.2	-40.12	-13	-27.12	H
15.00188	35.21	Pk	39.9	-19.5	-95.2	-39.59	-13	-26.59	V
Mid Channel, 3840MHz									
7.67802	36.38	Pk	35.9	-23	-95.2	-45.92	-13	-32.92	H
7.67977	37.65	Pk	35.9	-22.9	-95.2	-44.55	-13	-31.55	V
11.519	35.08	Pk	38.4	-19.6	-95.2	-41.32	-13	-28.32	V
11.51915	35.1	Pk	38.4	-19.6	-95.2	-41.3	-13	-28.3	H
15.35865	34.81	Pk	41	-20.1	-95.2	-39.49	-13	-26.49	V
15.36092	35.4	Pk	41	-20.1	-95.2	-38.9	-13	-25.9	H
High Channel, 3930MHz									
7.85814	36.54	Pk	36	-23.6	-95.2	-46.26	-13	-33.26	H
7.85986	36.46	Pk	36	-23.6	-95.2	-46.34	-13	-33.34	V
11.78903	35.06	Pk	38.8	-19.4	-95.2	-40.74	-13	-27.74	H
11.79145	34.71	Pk	38.8	-19.4	-95.2	-41.09	-13	-28.09	V
15.71804	35.11	Pk	40.7	-18.7	-95.2	-38.09	-13	-25.09	H
15.72184	34.81	Pk	40.7	-18.7	-95.2	-38.39	-13	-25.39	V

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10. SETUP PHOTOS

Please refer to 13335182-EP1V1 for setup photos

END OF REPORT

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4031B
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