

**16QAM LTE BAND 13 (10.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/7/2020
Test Engineer:	17051
Configuration:	EUT + Support Equipment
Mode	LTE 13 16QAM 10MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB(m)]	Amp/Cbl/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
782 MHz													
1	1.57947*	-63.05	Pk	28.1	-35.8	.5	11.8	-58.45	-40	-18.45	0-360	100	H
2	2.04144	-62.51	Pk	31.3	-34.9	.4	11.8	-53.91	-13	-40.91	0-360	198	H
3	3.79134	-64.07	Pk	33.4	-32.7	.5	11.8	-51.07	-13	-38.07	0-360	298	H
4	6.3382	-66.69	Pk	35.5	-30.7	.4	11.8	-49.69	-13	-36.69	0-360	298	H
5	1.60397*	-62.86	Pk	28.2	-35.7	.5	11.8	-58.06	-40	-18.06	0-360	102	V
6	2.05694	-63.05	Pk	31.3	-34.8	.4	11.8	-54.35	-13	-41.35	0-360	102	V
7	4.5433	-64.89	Pk	34	-32.6	.4	11.8	-51.29	-13	-38.29	0-360	298	V
8	7.06116	-67.43	Pk	35.6	-29.6	.3	11.8	-49.33	-13	-36.33	0-360	102	V

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

**9.1.7. 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

**QPSK LTE BAND 14 (10.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/7/2020
Test Engineer:	17051
Configuration:	EUT + Support Equipment
Mode	LTE 14 QPSK 10MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB/(m)]	Amp/Cb/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
793 MHz													
1	1.57647*	-63.32	Pk	28.1	-35.8	.5	11.8	-58.72	-40	-18.72	0-360	298	H
2	2.36542	-63.4	Pk	31.8	-34.1	.4	11.8	-53.5	-13	-40.5	0-360	198	H
3	3.94284	-58.2	Pk	33.4	-32.8	.5	11.8	-45.3	-13	-32.3	0-360	298	H
4	5.65974	-64.31	Pk	34.7	-32	.3	11.8	-49.51	-13	-36.51	0-360	198	H
5	1.57647*	-63.56	Pk	28.1	-35.8	.5	11.8	-58.96	-40	-18.96	0-360	202	V
6	1.63896	-62.58	Pk	28.7	-35.7	.5	11.8	-57.28	-13	-44.28	0-360	102	V
7	3.94284	-61.82	Pk	33.4	-32.8	.5	11.8	-48.92	-13	-35.92	0-360	202	V
8	6.21971	-65.61	Pk	35.5	-31.5	.4	11.8	-49.41	-13	-36.41	0-360	202	V
9	7.60713	-67.74	Pk	35.7	-29.2	.3	11.8	-49.14	-13	-36.14	0-360	298	V

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

**16QAM LTE BAND 14 (10.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/7/2020
Test Engineer:	17051
Configuration:	EUT + Support Equipment
Mode	LTE 14 16QAM 10MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB/m]	Amp/Cbl/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
793 MHz													
1	1.58497*	-63.3	Pk	28.1	-35.8	.5	11.8	-58.7	-40	-18.7	0-360	298	H
2	1.96545	-62.04	Pk	31	-34.9	.4	11.8	-53.74	-13	-40.74	0-360	198	H
3	2.43142	-63.01	Pk	32.2	-34.2	.4	11.8	-52.81	-13	-39.81	0-360	100	H
4	3.94284	-60.12	Pk	33.4	-32.8	.5	11.8	-47.22	-13	-34.22	0-360	198	H
5	9.53052	-66.89	Pk	36.7	-27.8	.4	11.8	-45.79	-13	-32.79	0-360	198	H
6	1.58147*	-63.42	Pk	28.1	-35.8	.5	11.8	-58.82	-40	-18.82	0-360	298	V
7	1.80846	-61.46	Pk	30.1	-35.3	.5	11.8	-54.36	-13	-41.36	0-360	298	V
8	3.94234	-63.47	Pk	33.4	-32.8	.5	11.8	-50.57	-13	-37.57	0-360	201	V
9	6.50969	-66.04	Pk	35.4	-30.7	.4	11.8	-49.14	-13	-36.14	0-360	102	V

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

### 9.1.8. 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.

#### QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Company:	Microsoft
Project #:	13129294
Date:	4/3/2020
Test Engineer:	11993
Configuration:	EUT + Support Equipment
Mode	LTE 25 QPSK 20MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB/(m)]	Amp/Cbi/Filt/Pad (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1860 MHz												
1	5.55341	-48.98	Pk	34.6	-31.8	11.8	-34.38	-13	-21.38	0-360	298	H
2	9.25529	-61.25	Pk	36.5	-27.8	11.8	-40.75	-13	-27.75	0-360	100	H
3	16.89003	-70.02	Pk	41.7	-22.8	11.8	-39.32	-13	-26.32	0-360	198	H
4	5.55291	-50.03	Pk	34.6	-31.8	11.8	-35.43	-13	-22.43	0-360	298	V
5	9.25529	-66.05	Pk	36.5	-27.8	11.8	-45.55	-13	-32.55	0-360	102	V
6	16.27205	-69.02	Pk	41	-23.9	11.8	-40.12	-13	-27.12	0-360	298	V
1882.5 MHz												
1	5.62066	-45.69	Pk	34.7	-31.5	11.8	-30.69	-13	-17.69	0-360	100	H
2	9.36728	-62.15	Pk	36.6	-27.7	11.8	-41.45	-13	-28.45	0-360	198	H
3	16.95003	-70.74	Pk	41.6	-23.1	11.8	-40.44	-13	-27.44	0-360	198	H
4	5.62041	-49.07	Pk	34.7	-31.5	11.8	-34.07	-13	-21.07	0-360	298	V
5	9.36778	-66.94	Pk	36.6	-27.7	11.8	-46.24	-13	-33.24	0-360	298	V
6	17.00052	-69.21	Pk	41.5	-23.8	11.8	-39.71	-13	-26.71	0-360	298	V
1905 MHz												
1	5.68791	-52.45	Pk	34.7	-30.7	11.8	-36.65	-13	-23.65	0-360	100	H
2	9.48028	-61.29	Pk	36.7	-27.5	11.8	-40.29	-13	-27.29	0-360	198	H
3	16.76603	-70.22	Pk	41.7	-24.3	11.8	-41.02	-13	-28.02	0-360	100	H
4	5.68841	-54.35	Pk	34.7	-30.7	11.8	-38.55	-13	-25.55	0-360	298	V
5	9.48028	-66.57	Pk	36.7	-27.5	11.8	-45.57	-13	-32.57	0-360	102	V
6	16.91453	-71.36	Pk	41.6	-22.3	11.8	-40.26	-13	-27.26	0-360	102	V

**16QAM LTE BAND 25 (20.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/3/2020
Test Engineer:	11993
Configuration:	EUT + Support Equipment
Mode	LTE 25 16QAM 20MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB/(m)]	Amp/Cbl/Filtr/Pad (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1860 MHz												
1	5.55291	-48.08	Pk	34.6	-31.8	11.8	-33.48	-13	-20.48	0-360	298	H
2	9.25529	-61.19	Pk	36.5	-27.8	11.8	-40.69	-13	-27.69	0-360	100	H
3	14.52961	-67.49	Pk	39.2	-26.6	11.8	-43.09	-13	-30.09	0-360	298	H
4	5.55341	-50.78	Pk	34.6	-31.8	11.8	-36.18	-13	-23.18	0-360	298	V
5	9.25529	-66.92	Pk	36.5	-27.8	11.8	-46.42	-13	-33.42	0-360	202	V
6	16.98552	-70.68	Pk	41.5	-23.6	11.8	-40.98	-13	-27.98	0-360	102	V
1882.5 MHz												
1	5.62091	-45.66	Pk	34.7	-31.5	11.8	-30.66	-13	-17.66	0-360	100	H
2	7.49435	-66.32	Pk	35.6	-28.6	11.8	-47.52	-13	-34.52	0-360	100	H
3	9.36778	-60.75	Pk	36.6	-27.7	11.8	-40.05	-13	-27.05	0-360	100	H
4	5.62041	-47.64	Pk	34.7	-31.5	11.8	-32.64	-13	-19.64	0-360	298	V
5	7.49435	-65.48	Pk	35.6	-28.6	11.8	-46.68	-13	-33.68	0-360	102	V
6	9.36778	-65.56	Pk	36.6	-27.7	11.8	-44.86	-13	-31.86	0-360	102	V
1905 MHz												
1	5.68791	-50.95	Pk	34.7	-30.7	11.8	-35.15	-13	-22.15	0-360	100	H
2	9.47978	-61.98	Pk	36.7	-27.5	11.8	-40.98	-13	-27.98	0-360	198	H
3	16.72153	-71.28	Pk	41.7	-22.9	11.8	-40.68	-13	-27.68	0-360	198	H
4	5.68791	-54.8	Pk	34.7	-30.7	11.8	-39	-13	-26	0-360	298	V
5	9.47978	-68.49	Pk	36.7	-27.5	11.8	-47.49	-13	-34.49	0-360	102	V
6	16.93603	-71.52	Pk	41.6	-22.9	11.8	-41.02	-13	-28.02	0-360	298	V

### 9.1.9. LTE BAND 26 (FCC 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)

Company:	Microsoft
Project #:	13129294
Date:	4/7/2020
Test Engineer:	11993
Configuration:	EUT + Support Equipment
Mode	LTE 26 QPSK 10MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB(m)]	Amp/Cbl/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
819 MHz													
1	3.11388	-64.8	Pk	33.7	-33.2	.5	11.8	-52	-13	-39	0-360	100	H
2	4.07233	-61.65	Pk	33.4	-32.7	.5	11.8	-48.65	-13	-35.65	0-360	100	H
3	9.873	-68.6	Pk	37	-27.4	.5	11.8	-46.7	-13	-33.7	0-360	198	H
4	2.42642	-62.64	Pk	32.2	-34.2	.4	11.8	-52.44	-13	-39.44	0-360	102	V
5	3.25887	-63.45	Pk	32.9	-33.1	.5	11.8	-51.35	-13	-38.35	0-360	298	V
6	9.32203	-68.63	Pk	36.6	-28.3	.4	11.8	-48.13	-13	-35.13	0-360	298	V

**16QAM LTE BAND 26 (10.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/7/2020
Test Engineer:	11993
Configuration:	EUT + Support Equipment
Mode	LTE 26 16QAM 10MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB/(m)]	Amp/Cbl/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
819 MHz													
1	4.07233	-62.67	Pk	33.4	-32.7	.5	11.8	-49.67	-13	-36.67	0-360	100	H
2	5.05777	-63.98	Pk	34.1	-32.6	.3	11.8	-50.38	-13	-37.38	0-360	198	H
3	8.90506	-66.9	Pk	36.1	-28.5	.4	11.8	-47.1	-13	-34.1	0-360	198	H
4	4.07283	-64.19	Pk	33.4	-32.7	.5	11.8	-51.19	-13	-38.19	0-360	102	V
5	4.78529	-64.38	Pk	34	-32.2	.3	11.8	-50.48	-13	-37.48	0-360	102	V
6	9.15254	-67.74	Pk	36.4	-28.2	.4	11.8	-47.34	-13	-34.34	0-360	202	V

**9.1.10. LTE BAND 26 (FCC PART 22)**

**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.

**QPSK LTE BAND 26 (15.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/7/2020
Test Engineer:	11993
Configuration:	EUT + Support Equipment
Mode	LTE 26 QPSK 15MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB/m]	Amp/Cbl/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
831.5 MHz													
1	1.67196	-60.96	Pk	28.7	-35.6	.5	11.8	-55.56	-13	-42.56	0-360	298	H
2	4.12383	-60.68	Pk	33.4	-32.6	.4	11.8	-47.68	-13	-34.68	0-360	198	H
3	9.65102	-68.42	Pk	36.8	-27.8	.4	11.8	-47.22	-13	-34.22	0-360	198	H
4	2.68841	-63.05	Pk	32.1	-33.7	.4	11.8	-52.45	-13	-39.45	0-360	202	V
5	4.12433	-63.81	Pk	33.4	-32.6	.4	11.8	-50.81	-13	-37.81	0-360	102	V
6	7.13816	-66.41	Pk	35.6	-29.9	.3	11.8	-48.61	-13	-35.61	0-360	298	V
836.5 MHz													
1	3.09338	-63.95	Pk	33.8	-33.3	.5	11.8	-51.15	-13	-38.15	0-360	198	H
2	5.70874	-65.02	Pk	34.7	-32.1	.4	11.8	-50.22	-13	-37.22	0-360	198	H
3	9.51902	-68.47	Pk	36.7	-27.9	.4	11.8	-47.47	-13	-34.47	0-360	198	H
4	3.11338	-64.94	Pk	33.7	-33.2	.5	11.8	-52.14	-13	-39.14	0-360	298	V
5	6.3522	-66.18	Pk	35.5	-31	.4	11.8	-49.48	-13	-36.48	0-360	298	V
6	9.76751	-68.53	Pk	36.9	-27.8	.4	11.8	-47.23	-13	-34.23	0-360	202	V
841.5 MHz													
1	1.66971	-60.38	Pk	28.7	-35.6	.5	11.8	-54.98	-13	-41.98	0-360	198	H
2	4.17432	-62.13	Pk	33.3	-32.4	.4	11.8	-49.03	-13	-36.03	0-360	198	H
3	8.74307	-67.98	Pk	36	-28.5	.4	11.8	-48.28	-13	-35.28	0-360	100	H
4	3.12338	-63.71	Pk	33.6	-33.1	.5	11.8	-50.91	-13	-37.91	0-360	298	V
5	4.17382	-63.89	Pk	33.3	-32.3	.4	11.8	-50.69	-13	-37.69	0-360	102	V
6	9.72051	-68.29	Pk	36.8	-27.7	.4	11.8	-46.99	-13	-33.99	0-360	102	V



**16QAM LTE BAND 26 (15.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/7/2020
Test Engineer:	11993
Configuration:	EUT + Support Equipment
Mode	LTE 26 16QAM 15MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB(m)]	Amp/Cbl/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
831.5 MHz													
1	3.15538	-63.51	Pk	33.3	-33.4	.5	11.8	-51.31	-13	-38.31	0-360	100	H
2	4.12433	-61.54	Pk	33.4	-32.6	.4	11.8	-48.54	-13	-35.54	0-360	100	H
3	8.77507	-67.92	Pk	36	-28.6	.4	11.8	-48.32	-13	-35.32	0-360	100	H
4	3.11638	-63.7	Pk	33.7	-33.2	.5	11.8	-50.9	-13	-37.9	0-360	298	V
5	6.08672	-66.38	Pk	35.4	-31.1	.4	11.8	-49.88	-13	-36.88	0-360	102	V
6	9.45553	-68.39	Pk	36.7	-28.3	.4	11.8	-47.79	-13	-34.79	0-360	202	V
836.5 MHz													
1	1.65996	-60.3	Pk	28.4	-34.8	.5	11.8	-54.4	-13	-41.4	0-360	299	H
2	2.48942	-60.09	Pk	32.3	-34	.4	11.8	-49.59	-13	-36.59	0-360	199	H
3	6.3552	-66.28	Pk	35.5	-29.7	.4	11.8	-48.28	-13	-35.28	0-360	101	H
4	1.65946	-62.6	Pk	28.4	-34.8	.5	11.8	-56.7	-13	-43.7	0-360	299	V
5	2.40242	-61.11	Pk	31.9	-34.1	.4	11.8	-51.11	-13	-38.11	0-360	201	V
6	6.3752	-67.46	Pk	35.5	-29.5	.4	11.8	-49.26	-13	-36.26	0-360	201	V
841.5 MHz													
1	1.66946	-61.25	Pk	28.7	-35.6	.5	11.8	-55.85	-13	-42.85	0-360	100	H
2	4.17382	-62.54	Pk	33.3	-32.3	.4	11.8	-49.34	-13	-36.34	0-360	100	H
3	9.15904	-67.99	Pk	36.4	-28.3	.4	11.8	-47.69	-13	-34.69	0-360	198	H
4	1.76146	-61.51	Pk	29.6	-35.5	.5	11.8	-55.11	-13	-42.11	0-360	202	V
5	4.17382	-63.01	Pk	33.3	-32.3	.4	11.8	-49.81	-13	-36.81	0-360	102	V
6	9.71801	-69.22	Pk	36.8	-27.7	.4	11.8	-47.92	-13	-34.92	0-360	202	V

**9.1.11. 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)**

Company:	Microsoft
Project #:	13129294
Date:	5/20/2020
Test Engineer:	17051
Configuration:	EUT + Support Equipment
Mode	LTE 30 QPSK 10MHz, RB8-0
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0072 dB(m)	Amp/Cbl/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2310 MHz													
1	4.6125	-58.51	RMS	34.2	-32.3	.6	11.8	-44.21	-40	-4.21	75	100	H
2	6.91838	-67.81	RMS	35.7	-30.1	.6	11.8	-49.81	-40	-9.81	341	200	H
3	9.22431	-68.58	Pk	36.4	-28.3	.6	11.8	-48.08	-40	-8.08	0-360	102	H
4	4.61257	-61.04	RMS	34.2	-32.3	.6	11.8	-46.74	-40	-6.74	301	100	V
5	6.91856	-70.28	RMS	35.7	-30.1	.6	11.8	-52.28	-40	-12.28	168	300	V
6	9.22531	-71.18	Pk	36.4	-28.3	.6	11.8	-50.68	-40	-10.68	0-360	102	V
1	4.6125	-58.51	RMS	34.2	-32.3	.6	11.8	-44.21	-40	-4.21	75	100	H

**16QAM LTE BAND 30 (10.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	5/20/2020
Test Engineer:	17051
Configuration:	EUT + Support Equipment
Mode	LTE 30 16QAM 10MHz, RB8-0
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0072 dB(m)	Amp/Cbl/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2310 MHz													
1	4.61258	-59.7	RMS	34.2	-32.3	.6	11.8	-45.4	-40	-5.4	77	100	H
2	6.91842	-68.7	RMS	35.7	-30.1	.6	11.8	-50.7	-40	-10.7	340	200	H
3	9.22481	-67.84	Pk	36.4	-28.3	.6	11.8	-47.34	-40	-7.34	0-360	202	H
4	4.61259	-62.31	RMS	34.2	-32.3	.6	11.8	-48.01	-40	-8.01	298	100	V
5	6.9186	-71.1	RMS	35.7	-30.1	.6	11.8	-53.1	-40	-13.1	167	300	V
6	9.22581	-69.71	Pk	36.4	-28.3	.6	11.8	-49.21	-40	-9.21	0-360	198	V

**9.1.12. LTE BAND 41**

**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.

**QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/6/2020
Test Engineer:	11993
Configuration:	EUT + Support Equipment
Mode	LTE 41 QPSK 20MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB(m)]	Amp/Cbl/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2506 MHz													
1	7.49137	-64.13	Pk	35.6	-28.9	.6	11.8	-45.03	-25	-20.03	0-360	100	H
2	9.98828	-62.68	Pk	37.2	-27.4	.6	11.8	-40.48	-25	-15.48	0-360	198	H
3	17.71851	-71.5	Pk	41.1	-22.7	1.1	11.8	-40.2	-25	-15.2	0-360	298	H
4	9.98828	-66.5	Pk	37.2	-27.4	.6	11.8	-44.3	-25	-19.3	0-360	102	V
5	12.3342	-70.04	Pk	38.8	-25.4	.7	11.8	-44.14	-25	-19.14	0-360	298	V
6	17.839	-71.46	Pk	41.1	-22.9	1.1	11.8	-40.36	-25	-15.36	0-360	102	V
2593 MHz													
1	7.75237	-62.59	Pk	35.8	-28.9	.6	11.8	-43.29	-25	-18.29	0-360	298	H
2	10.33627	-64.52	Pk	37.4	-26.3	.6	11.8	-41.02	-25	-16.02	0-360	198	H
3	16.99953	-69.58	Pk	41.5	-24.9	.8	11.8	-40.38	-25	-15.38	0-360	100	H
4	7.75187	-66.96	Pk	35.8	-28.9	.6	11.8	-47.66	-25	-22.66	0-360	298	V
5	10.33577	-68.62	Pk	37.4	-26.3	.6	11.8	-45.12	-25	-20.12	0-360	102	V
6	16.78404	-69.33	Pk	41.7	-25	.8	11.8	-40.03	-25	-15.03	0-360	102	V
2680 MHz													
1	5.34195	-57.47	Pk	34.4	-31.5	.7	11.8	-42.07	-25	-17.07	0-360	102	H
2	8.01336	-62.68	Pk	35.8	-28.6	.6	11.8	-43.08	-25	-18.08	0-360	102	H
3	10.68426	-66.51	Pk	37.8	-25.7	.6	11.8	-42.01	-25	-17.01	0-360	202	H
4	16.82554	-70.26	Pk	41.7	-24.3	.8	11.8	-40.26	-25	-15.26	0-360	102	H
5	5.34195	-58.09	Pk	34.4	-31.5	.7	11.8	-42.69	-25	-17.69	0-360	298	V
6	8.01286	-66.43	Pk	35.8	-28.6	.6	11.8	-46.83	-25	-21.83	0-360	102	V
7	10.68376	-65.76	Pk	37.8	-25.7	.6	11.8	-41.26	-25	-16.26	0-360	102	V
8	16.82804	-69.46	Pk	41.7	-24.2	.8	11.8	-39.36	-25	-14.36	0-360	102	V

**16QAM LTE BAND 41 (20.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/6/2020
Test Engineer:	11993
Configuration:	EUT + Support Equipment
Mode	LTE 41 16QAM 20MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB(m)]	Amp/Cbl/Filtr /Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2506 MHz													
1	7.49087	-66.32	Pk	35.6	-28.9	.6	11.8	-47.22	-25	-22.22	0-360	100	H
2	9.98828	-63.38	Pk	37.2	-27.4	.6	11.8	-41.18	-25	-16.18	0-360	198	H
3	17.04303	-68.66	Pk	41.5	-25.1	.8	11.8	-39.66	-25	-14.66	0-360	298	H
4	7.49137	-68.52	Pk	35.6	-28.9	.6	11.8	-49.42	-25	-24.42	0-360	202	V
5	9.98828	-64.12	Pk	37.2	-27.4	.6	11.8	-41.92	-25	-16.92	0-360	102	V
6	17.814	-70.55	Pk	41.2	-23.3	1.1	11.8	-39.75	-25	-14.75	0-360	298	V
2593 MHz													
1	7.75187	-63.69	Pk	35.8	-28.9	.6	11.8	-44.39	-25	-19.39	0-360	198	H
2	10.33627	-63.77	Pk	37.4	-26.3	.6	11.8	-40.27	-25	-15.27	0-360	198	H
3	16.88654	-70.05	Pk	41.7	-24.2	.8	11.8	-39.95	-25	-14.95	0-360	298	H
4	7.75187	-67.69	Pk	35.8	-28.9	.6	11.8	-48.39	-25	-23.39	0-360	202	V
5	10.33627	-69.53	Pk	37.4	-26.3	.6	11.8	-46.03	-25	-21.03	0-360	102	V
6	17.8335	-70.7	Pk	41.1	-22.9	1.1	11.8	-39.6	-25	-14.6	0-360	202	V
2680 MHz													
1	5.34195	-58.01	Pk	34.4	-31.5	.7	11.8	-42.61	-25	-17.61	0-360	98	H
2	8.01336	-65.12	Pk	35.8	-28.6	.6	11.8	-45.52	-25	-20.52	0-360	98	H
3	10.68426	-68.13	Pk	37.8	-25.7	.6	11.8	-43.63	-25	-18.63	0-360	198	H
4	17.72851	-71.6	Pk	41.1	-22.7	1.1	11.8	-40.3	-25	-15.3	0-360	98	H
5	5.34195	-58.42	Pk	34.4	-31.5	.7	11.8	-43.02	-25	-18.02	0-360	298	V
6	8.01336	-66.56	Pk	35.8	-28.6	.6	11.8	-46.96	-25	-21.96	0-360	202	V
7	10.68426	-65.23	Pk	37.8	-25.7	.6	11.8	-40.73	-25	-15.73	0-360	102	V
8	17.66901	-71.77	Pk	41.1	-22.5	1.1	11.8	-40.27	-25	-15.27	0-360	202	V

**9.1.13. 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.

**QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/3/2020
Test Engineer:	11993
Configuration:	EUT + Support Equipment
Mode	LTE 66 QPSK 20MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB/(m)]	Amp/Cbi/Fitr/Pad (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1720 MHz												
1	5.13293	-50.11	Pk	34.2	-31	11.8	-35.11	-13	-22.11	0-360	298	H
2	6.84437	-54.56	Pk	35.5	-29.9	11.8	-37.16	-13	-24.16	0-360	100	H
3	8.55531	-56.16	Pk	35.9	-28	11.8	-36.46	-13	-23.46	0-360	100	H
4	10.26575	-62.59	Pk	37.4	-26.1	11.8	-39.49	-13	-26.49	0-360	198	H
5	5.13343	-50.8	Pk	34.2	-31	11.8	-35.8	-13	-22.8	0-360	202	V
6	6.84387	-62.14	Pk	35.5	-29.9	11.8	-44.74	-13	-31.74	0-360	298	V
7	8.55531	-60.04	Pk	35.9	-28	11.8	-40.34	-13	-27.34	0-360	102	V
8	10.26675	-66.96	Pk	37.4	-26.1	11.8	-43.86	-13	-30.86	0-360	102	V
1745 MHz												
1	5.20793	-48.94	Pk	34.2	-31.8	11.8	-34.74	-13	-21.74	0-360	298	H
2	6.94412	-59.16	Pk	35.7	-28.9	11.8	-40.56	-13	-27.56	0-360	98	H
3	8.68031	-58.08	Pk	36	-27.8	11.8	-38.08	-13	-25.08	0-360	98	H
4	10.41575	-68.3	Pk	37.5	-25.5	11.8	-44.5	-13	-31.5	0-360	198	H
5	5.20843	-53.26	Pk	34.2	-31.8	11.8	-39.06	-13	-26.06	0-360	102	V
6	6.94437	-61.75	Pk	35.7	-28.9	11.8	-43.15	-13	-30.15	0-360	298	V
7	8.68031	-63.17	Pk	36	-27.8	11.8	-43.17	-13	-30.17	0-360	102	V
8	10.41575	-67.95	Pk	37.5	-25.5	11.8	-44.15	-13	-31.15	0-360	102	V
1770 MHz												
1	5.28342	-56.99	Pk	34.3	-31.2	11.8	-42.09	-13	-29.09	0-360	102	H
2	7.04411	-58.21	Pk	35.6	-28.3	11.8	-39.11	-13	-26.11	0-360	102	H
3	8.8053	-59.93	Pk	36	-27.7	11.8	-39.83	-13	-26.83	0-360	102	H
4	5.28292	-53.77	Pk	34.3	-31.2	11.8	-38.87	-13	-25.87	0-360	198	V
5	7.04436	-63.16	Pk	35.6	-28.3	11.8	-44.06	-13	-31.06	0-360	298	V
6	8.8048	-66.07	Pk	36	-27.7	11.8	-45.97	-13	-32.97	0-360	198	V

**16QAM LTE BAND 66 (20.0MHZ BANDWIDTH)**

Company:	Microsoft
Project #:	13129294
Date:	4/3/2020
Test Engineer:	11993
Configuration:	EUT + Support Equipment
Mode	LTE 66 16QAM 20MHz
Chamber #:	N-SAC

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0069 [dB/(m)]	Amp/Cbl/Filtr/Pad (dB)	CF (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1720 MHz												
1	5.13343	-49.73	Pk	34.2	-31	11.8	-34.73	-13	-21.73	0-360	298	H
2	6.84437	-56.55	Pk	35.5	-29.9	11.8	-39.15	-13	-26.15	0-360	100	H
3	8.55531	-56.8	Pk	35.9	-28	11.8	-37.1	-13	-24.1	0-360	100	H
4	10.26625	-65.31	Pk	37.4	-26.1	11.8	-42.21	-13	-29.21	0-360	100	H
5	5.13293	-49.73	Pk	34.2	-31	11.8	-34.73	-13	-21.73	0-360	202	V
6	6.84437	-61.74	Pk	35.5	-29.9	11.8	-44.34	-13	-31.34	0-360	298	V
7	8.55531	-61.21	Pk	35.9	-28	11.8	-41.51	-13	-28.51	0-360	102	V
8	10.26625	-66.9	Pk	37.4	-26.1	11.8	-43.8	-13	-30.8	0-360	102	V
1745 MHz												
1	5.20843	-50.57	Pk	34.2	-31.8	11.8	-36.37	-13	-23.37	0-360	298	H
2	6.94437	-59.63	Pk	35.7	-28.9	11.8	-41.03	-13	-28.03	0-360	100	H
3	8.68031	-57.3	Pk	36	-27.8	11.8	-37.3	-13	-24.3	0-360	198	H
4	16.98702	-69.2	Pk	41.5	-23.7	11.8	-39.6	-13	-26.6	0-360	298	H
5	5.20793	-53.23	Pk	34.2	-31.8	11.8	-39.03	-13	-26.03	0-360	102	V
6	6.94387	-62.01	Pk	35.7	-28.9	11.8	-43.41	-13	-30.41	0-360	298	V
7	8.68031	-62.67	Pk	36	-27.8	11.8	-42.67	-13	-29.67	0-360	298	V
8	17.01202	-70.48	Pk	41.5	-23.7	11.8	-40.88	-13	-27.88	0-360	298	V
1770 MHz												
1	5.28342	-57.54	Pk	34.3	-31.2	11.8	-42.64	-13	-29.64	0-360	100	H
2	7.04436	-60.54	Pk	35.6	-28.3	11.8	-41.44	-13	-28.44	0-360	100	H
3	8.8048	-61.81	Pk	36	-27.7	11.8	-41.71	-13	-28.71	0-360	198	H
4	5.28342	-57.33	Pk	34.3	-31.2	11.8	-42.43	-13	-29.43	0-360	102	V
5	7.04386	-64.38	Pk	35.6	-28.3	11.8	-45.28	-13	-32.28	0-360	202	V
6	8.8053	-65.85	Pk	36	-27.7	11.8	-45.75	-13	-32.75	0-360	102	V
7	15.77007	-68.73	Pk	40.5	-24	11.8	-40.43	-13	-27.43	0-360	102	V