LTE Band 7

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 7 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2502.5									
5005.00	-18.3	V	3.0	33.2	1.0	-50.6	-25.0	-25.6	
7507.50	-16.3	V	3.0	32.8	1.0	-48.1	-25.0	-23.1	
10010.00	-16.0	V	3.0	32.8	1.0	-47.8	-25.0	-22.8	
5005.00	-18.2	H	3.0	33.2	1.0	-50.5	-25.0	-25.5	
7507.50	-17.5	H	3.0	32.8	1.0	-49.4	-25.0	-24.4	
10010.00	-15.9	H	3.0	32.8	1.0	-47.6	-25.0	-22.6	
Mid Ch, 2535									
5070.00	-18.7	V	3.0	33.2	1.0	-50.9	-25.0	-25.9	
7605.00	-15.9	V	3.0	32.8	1.0	-47.8	-25.0	-22.8	
10140.00	-15.6	V	3.0	32.7	1.0	-47.3	-25.0	-22.3	
5070.00	-15.7	H	3.0	33.2	1.0	-47.9	-25.0	-22.9	
7605.00	-15.8	H	3.0	32.8	1.0	-47.7	-25.0	-22.7	
10140.00	-15.1	H	3.0	32.7	1.0	-46.8	-25.0	-21.8	
High Ch, 2567.5									
5135.00	-16.9	V	3.0	33.2	1.0	-49.1	-25.0	-24.1	
7702.50	-16.8	V	3.0	32.8	1.0	-48.6	-25.0	-23.6	
10270.00	-18.6	V	3.0	32.6	1.0	-50.2	-25.0	-25.2	
5135.00	-13.4	H	3.0	33.2	1.0	-45.6	-25.0	-20.6	
7702.50	-17.5	H	3.0	32.8	1.0	-49.4	-25.0	-24.4	
10270.00	-17.0	H	3.0	32.6	1.0	-48.6	-25.0	-23.6	

LTE B7 5MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 7 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2502.5									
5005.00	-17.6	V	3.0	33.2	1.0	-49.8	-25.0	-24.8	
7507.50	-16.0	V	3.0	32.8	1.0	-47.8	-25.0	-22.8	
10010.00	-15.9	V	3.0	32.8	1.0	-47.6	-25.0	-22.6	
5005.00	-18.6	H	3.0	33.2	1.0	-50.8	-25.0	-25.8	
7507.50	-16.7	H	3.0	32.8	1.0	-48.6	-25.0	-23.6	
10010.00	-15.3	H	3.0	32.8	1.0	-47.1	-25.0	-22.1	
Mid Ch, 2535									
5070.00	-18.7	V	3.0	33.2	1.0	-50.9	-25.0	-25.9	
7605.00	-16.3	V	3.0	32.8	1.0	-48.1	-25.0	-23.1	
10140.00	-14.9	V	3.0	32.7	1.0	-46.6	-25.0	-21.6	
5070.00	-16.5	H	3.0	33.2	1.0	-48.8	-25.0	-23.8	
7605.00	-17.0	H	3.0	32.8	1.0	-48.8	-25.0	-23.8	
10140.00	-15.3	H	3.0	32.7	1.0	-47.0	-25.0	-22.0	
High Ch, 2567.5									
5135.00	-16.7	V	3.0	33.2	1.0	-48.9	-25.0	-23.9	
7702.50	-17.4	V	3.0	32.8	1.0	-49.3	-25.0	-24.3	
10270.00	-17.2	V	3.0	32.6	1.0	-48.8	-25.0	-23.8	
5135.00	-13.6	H	3.0	33.2	1.0	-45.8	-25.0	-20.8	
7702.50	-17.9	H	3.0	32.8	1.0	-49.7	-25.0	-24.7	
10270.00	-18.5	H	3.0	32.6	1.0	-50.1	-25.0	-25.1	

LTE B7 5MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC + Headset
Location: Chamber C
Mode: LTE_QPSK Band 7 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2505									
5010.00	-17.6	V	3.0	33.2	1.0	-49.9	-25.0	-24.9	
7515.00	-18.2	V	3.0	32.8	1.0	-50.1	-25.0	-25.1	
10020.00	-15.6	V	3.0	32.8	1.0	-47.4	-25.0	-22.4	
5010.00	-16.0	H	3.0	33.2	1.0	-48.3	-25.0	-23.3	
7515.00	-18.9	H	3.0	32.8	1.0	-50.8	-25.0	-25.8	
10020.00	-19.2	H	3.0	32.8	1.0	-50.9	-25.0	-25.9	
Mid Ch, 2535									
5070.00	-18.7	V	3.0	33.2	1.0	-50.9	-25.0	-25.9	
7605.00	-17.1	V	3.0	32.8	1.0	-49.0	-25.0	-24.0	
10140.00	-17.4	V	3.0	32.7	1.0	-49.1	-25.0	-24.1	
5070.00	-15.9	H	3.0	33.2	1.0	-48.1	-25.0	-23.1	
7605.00	-18.9	H	3.0	32.8	1.0	-50.7	-25.0	-25.7	
10140.00	-19.9	H	3.0	32.7	1.0	-51.5	-25.0	-26.5	
High Ch, 2565									
5130.00	-15.8	V	3.0	33.2	1.0	-48.0	-25.0	-23.0	
7695.00	-16.6	V	3.0	32.8	1.0	-48.4	-25.0	-23.4	
10260.00	-16.1	V	3.0	32.6	1.0	-47.7	-25.0	-22.7	
5130.00	-17.0	H	3.0	33.2	1.0	-49.2	-25.0	-24.2	
7695.00	-19.2	H	3.0	32.8	1.0	-51.1	-25.0	-26.1	
10260.00	-18.6	H	3.0	32.6	1.0	-50.2	-25.0	-25.2	

LTE B7 10MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC + Headset
Location: Chamber C
Mode: LTE_16QAM Band 7 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2505									
5010.00	-18.9	V	3.0	33.2	1.0	-51.1	-25.0	-26.1	
7515.00	-18.8	V	3.0	32.8	1.0	-50.6	-25.0	-25.6	
10020.00	-17.9	V	3.0	32.8	1.0	-49.6	-25.0	-24.6	
5010.00	-17.1	H	3.0	33.2	1.0	-49.4	-25.0	-24.4	
7515.00	-19.0	H	3.0	32.8	1.0	-50.9	-25.0	-25.9	
10020.00	-19.7	H	3.0	32.8	1.0	-51.4	-25.0	-26.4	
Mid Ch, 2535									
5070.00	-20.0	V	3.0	33.2	1.0	-52.2	-25.0	-27.2	
7605.00	-17.8	V	3.0	32.8	1.0	-49.6	-25.0	-24.6	
10140.00	-17.3	V	3.0	32.7	1.0	-49.0	-25.0	-24.0	
5070.00	-16.5	H	3.0	33.2	1.0	-48.7	-25.0	-23.7	
7605.00	-17.6	H	3.0	32.8	1.0	-49.4	-25.0	-24.4	
10140.00	-19.9	H	3.0	32.7	1.0	-51.6	-25.0	-26.6	
High Ch, 2565									
5130.00	-16.9	V	3.0	33.2	1.0	-49.1	-25.0	-24.1	
7695.00	-15.8	V	3.0	32.8	1.0	-47.6	-25.0	-22.6	
10260.00	-15.3	V	3.0	32.6	1.0	-46.9	-25.0	-21.9	
5130.00	-17.1	H	3.0	33.2	1.0	-49.3	-25.0	-24.3	
7695.00	-18.7	H	3.0	32.8	1.0	-50.5	-25.0	-25.5	
10260.00	-17.4	H	3.0	32.6	1.0	-49.0	-25.0	-24.0	

LTE B7 10MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC + Headset
Location: Chamber C
Mode: LTE_QPSK Band 7 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2507.5									
5015.00	-18.3	V	3.0	33.2	1.0	-50.5	-25.0	-25.5	
7522.50	-14.1	V	3.0	32.8	1.0	-45.9	-25.0	-20.9	
10030.00	-17.5	V	3.0	32.8	1.0	-49.2	-25.0	-24.2	
5015.00	-15.0	H	3.0	33.2	1.0	-47.2	-25.0	-22.2	
7522.50	-18.3	H	3.0	32.8	1.0	-50.1	-25.0	-25.1	
10030.00	-18.8	H	3.0	32.8	1.0	-50.5	-25.0	-25.5	
Mid Ch, 2535									
5070.00	-19.4	V	3.0	33.2	1.0	-51.6	-25.0	-26.6	
7605.00	-18.4	V	3.0	32.8	1.0	-50.3	-25.0	-25.3	
10140.00	-18.0	V	3.0	32.7	1.0	-49.7	-25.0	-24.7	
5070.00	-14.7	H	3.0	33.2	1.0	-46.9	-25.0	-21.9	
7605.00	-18.5	H	3.0	32.8	1.0	-50.4	-25.0	-25.4	
10140.00	-18.9	H	3.0	32.7	1.0	-50.6	-25.0	-25.6	
High Ch, 2562.5									
5125.00	-17.6	V	3.0	33.2	1.0	-49.8	-25.0	-24.8	
7687.50	-17.4	V	3.0	32.8	1.0	-49.2	-25.0	-24.2	
10250.00	-19.0	V	3.0	32.6	1.0	-50.6	-25.0	-25.6	
5125.00	-12.5	H	3.0	33.2	1.0	-44.7	-25.0	-19.7	
7687.50	-18.5	H	3.0	32.8	1.0	-50.3	-25.0	-25.3	
10250.00	-18.2	H	3.0	32.6	1.0	-49.8	-25.0	-24.8	

LTE B7 15MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC + Headset
Location: Chamber C
Mode: LTE_16QAM Band 7 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2507.5									
5015.00	-19.0	V	3.0	33.2	1.0	-51.2	-25.0	-26.2	
7522.50	-15.9	V	3.0	32.8	1.0	-47.7	-25.0	-22.7	
10030.00	-18.9	V	3.0	32.8	1.0	-50.7	-25.0	-25.7	
5015.00	-15.7	H	3.0	33.2	1.0	-47.9	-25.0	-22.9	
7522.50	-17.1	H	3.0	32.8	1.0	-48.9	-25.0	-23.9	
10030.00	-18.9	H	3.0	32.8	1.0	-50.7	-25.0	-25.7	
Mid Ch, 2535									
5070.00	-19.8	V	3.0	33.2	1.0	-52.0	-25.0	-27.0	
7605.00	-16.4	V	3.0	32.8	1.0	-48.3	-25.0	-23.3	
10140.00	-18.6	V	3.0	32.7	1.0	-50.3	-25.0	-25.3	
5070.00	-15.9	H	3.0	33.2	1.0	-48.2	-25.0	-23.2	
7605.00	-18.4	H	3.0	32.8	1.0	-50.3	-25.0	-25.3	
10140.00	-18.4	H	3.0	32.7	1.0	-50.1	-25.0	-25.1	
High Ch, 2562.5									
5125.00	-17.9	V	3.0	33.2	1.0	-50.1	-25.0	-25.1	
7687.50	-18.3	V	3.0	32.8	1.0	-50.2	-25.0	-25.2	
10250.00	-18.7	V	3.0	32.6	1.0	-50.3	-25.0	-25.3	
5125.00	-14.5	H	3.0	33.2	1.0	-46.7	-25.0	-21.7	
7687.50	-18.4	H	3.0	32.8	1.0	-50.3	-25.0	-25.3	
10250.00	-19.1	H	3.0	32.6	1.0	-50.7	-25.0	-25.7	

LTE B7 15MHz 16QAM

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC + Headset
Location: Chamber C
Mode: LTE_QPSK Band 7 Harmonics, 20MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2510									
5020.00	-19.1	V	3.0	33.2	1.0	-51.3	-25.0	-26.3	
7530.00	-17.9	V	3.0	32.8	1.0	-49.7	-25.0	-24.7	
10040.00	-16.7	V	3.0	32.7	1.0	-48.4	-25.0	-23.4	
5020.00	-25.0	H	3.0	33.2	1.0	-57.2	-25.0	-32.2	
7530.00	-18.8	H	3.0	32.8	1.0	-50.7	-25.0	-25.7	
10040.00	-18.7	H	3.0	32.7	1.0	-50.4	-25.0	-25.4	
Mid Ch, 2535									
5070.00	-19.6	V	3.0	33.2	1.0	-51.8	-25.0	-26.8	
7605.00	-19.0	V	3.0	32.8	1.0	-50.9	-25.0	-25.9	
10140.00	-18.3	V	3.0	32.7	1.0	-49.9	-25.0	-24.9	
5070.00	-16.3	H	3.0	33.2	1.0	-48.5	-25.0	-23.5	
7605.00	-19.0	H	3.0	32.8	1.0	-50.9	-25.0	-25.9	
10140.00	-19.6	H	3.0	32.7	1.0	-51.3	-25.0	-26.3	
High Ch, 2560									
5120.00	-19.0	V	3.0	33.2	1.0	-51.2	-25.0	-26.2	
7680.00	-17.3	V	3.0	32.8	1.0	-49.2	-25.0	-24.2	
10240.00	-17.8	V	3.0	32.6	1.0	-49.4	-25.0	-24.4	
5120.00	-13.2	H	3.0	33.2	1.0	-45.4	-25.0	-20.4	
7680.00	-19.4	H	3.0	32.8	1.0	-51.2	-25.0	-26.2	
10240.00	-18.9	H	3.0	32.6	1.0	-50.6	-25.0	-25.6	

LTE B7 20MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC + Headset
Location: Chamber C
Mode: LTE_16QAM Band 7 Harmonics, 20MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2510									
5020.00	-18.2	V	3.0	33.2	1.0	-50.4	-25.0	-25.4	
7530.00	-18.1	V	3.0	32.8	1.0	-49.9	-25.0	-24.9	
10040.00	-17.5	V	3.0	32.7	1.0	-49.3	-25.0	-24.3	
5020.00	-15.6	H	3.0	33.2	1.0	-47.8	-25.0	-22.8	
7530.00	-18.7	H	3.0	32.8	1.0	-50.6	-25.0	-25.6	
10040.00	-19.1	H	3.0	32.7	1.0	-50.8	-25.0	-25.8	
Mid Ch, 2535									
5070.00	-20.2	V	3.0	33.2	1.0	-52.4	-25.0	-27.4	
7605.00	-18.3	V	3.0	32.8	1.0	-50.2	-25.0	-25.2	
10140.00	-18.6	V	3.0	32.7	1.0	-50.3	-25.0	-25.3	
5070.00	-16.7	H	3.0	33.2	1.0	-48.9	-25.0	-23.9	
7605.00	-19.0	H	3.0	32.8	1.0	-50.9	-25.0	-25.9	
10140.00	-18.7	H	3.0	32.7	1.0	-50.3	-25.0	-25.3	
High Ch, 2560									
5120.00	-19.7	V	3.0	33.2	1.0	-51.9	-25.0	-26.9	
7680.00	-17.4	V	3.0	32.8	1.0	-49.3	-25.0	-24.3	
10240.00	-18.2	V	3.0	32.6	1.0	-49.8	-25.0	-24.8	
5120.00	-14.6	H	3.0	33.2	1.0	-46.8	-25.0	-21.8	
7680.00	-18.3	H	3.0	32.8	1.0	-50.2	-25.0	-25.2	
10240.00	-18.7	H	3.0	32.6	1.0	-50.3	-25.0	-25.3	

LTE B7 20MHz 16QAM

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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LTE Band 12

Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 699.7									
1399.40	-26.3	V	3.0	36.5	1.0	-61.8	-13.0	-48.8	
2099.10	-22.1	V	3.0	35.6	1.0	-56.7	-13.0	-43.7	
2798.80	-22.0	V	3.0	34.7	1.0	-55.8	-13.0	-42.8	
1399.40	-25.4	H	3.0	36.5	1.0	-60.9	-13.0	-47.9	
2099.10	-22.7	H	3.0	35.6	1.0	-57.4	-13.0	-44.4	
2798.80	-22.4	H	3.0	34.7	1.0	-56.1	-13.0	-43.1	
Mid Ch, 707.5									
1415.00	-26.5	V	3.0	36.5	1.0	-62.1	-13.0	-49.1	
2122.50	-18.5	V	3.0	35.6	1.0	-53.1	-13.0	-40.1	
2830.00	-22.2	V	3.0	34.7	1.0	-55.9	-13.0	-42.9	
1415.00	-28.0	H	3.0	36.5	1.0	-63.6	-13.0	-50.6	
2122.50	-21.0	H	3.0	35.6	1.0	-55.6	-13.0	-42.6	
2830.00	-23.0	H	3.0	34.7	1.0	-56.7	-13.0	-43.7	
High Ch, 715.3									
1430.60	-25.5	V	3.0	36.5	1.0	-61.1	-13.0	-48.1	
2145.90	-19.7	V	3.0	35.6	1.0	-54.3	-13.0	-41.3	
2861.20	-22.5	V	3.0	34.7	1.0	-56.1	-13.0	-43.1	
1430.60	-26.2	H	3.0	36.5	1.0	-61.8	-13.0	-48.8	
2145.90	-22.2	H	3.0	35.6	1.0	-56.8	-13.0	-43.8	
2861.20	-22.0	H	3.0	34.7	1.0	-55.7	-13.0	-42.7	

LTE B12 1.4MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 699.7									
1399.40	-26.3	V	3.0	36.5	1.0	-61.8	-13.0	-48.8	
2099.10	-21.8	V	3.0	35.6	1.0	-56.4	-13.0	-43.4	
2798.80	-22.1	V	3.0	34.7	1.0	-55.9	-13.0	-42.9	
1399.40	-25.6	H	3.0	36.5	1.0	-61.1	-13.0	-48.1	
2099.10	-23.1	H	3.0	35.6	1.0	-57.7	-13.0	-44.7	
2798.80	-22.6	H	3.0	34.7	1.0	-56.4	-13.0	-43.4	
Mid Ch, 707.5									
1415.00	-27.3	V	3.0	36.5	1.0	-62.8	-13.0	-49.8	
2122.50	-18.8	V	3.0	35.6	1.0	-53.4	-13.0	-40.4	
2830.00	-22.2	V	3.0	34.7	1.0	-55.9	-13.0	-42.9	
1415.00	-26.6	H	3.0	36.5	1.0	-62.2	-13.0	-49.2	
2122.50	-20.9	H	3.0	35.6	1.0	-55.6	-13.0	-42.6	
2830.00	-22.0	H	3.0	34.7	1.0	-55.7	-13.0	-42.7	
High Ch, 715.3									
1430.60	-25.4	V	3.0	36.5	1.0	-60.9	-13.0	-47.9	
2145.90	-18.4	V	3.0	35.6	1.0	-53.0	-13.0	-40.0	
2861.20	-22.2	V	3.0	34.7	1.0	-55.8	-13.0	-42.8	
1430.60	-26.4	H	3.0	36.5	1.0	-61.9	-13.0	-48.9	
2145.90	-22.4	H	3.0	35.6	1.0	-56.9	-13.0	-43.9	
2861.20	-22.1	H	3.0	34.7	1.0	-55.8	-13.0	-42.8	

LTE B12 1.4MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 700.5									
1401.00	-24.5	V	3.0	36.5	1.0	-60.0	-13.0	-47.0	
2101.50	-19.7	V	3.0	35.6	1.0	-54.3	-13.0	-41.3	
2802.00	-21.3	V	3.0	34.7	1.0	-55.0	-13.0	-42.0	
1401.00	-21.2	H	3.0	36.5	1.0	-56.8	-13.0	-43.8	
2101.50	-21.9	H	3.0	35.6	1.0	-56.5	-13.0	-43.5	
2802.00	-22.6	H	3.0	34.7	1.0	-56.3	-13.0	-43.3	
Mid Ch, 707.5									
1415.00	-27.4	V	3.0	36.5	1.0	-62.9	-13.0	-49.9	
2122.50	-19.1	V	3.0	35.6	1.0	-53.7	-13.0	-40.7	
2830.00	-21.9	V	3.0	34.7	1.0	-55.6	-13.0	-42.6	
1415.00	-26.9	H	3.0	36.5	1.0	-62.5	-13.0	-49.5	
2122.50	-20.6	H	3.0	35.6	1.0	-55.2	-13.0	-42.2	
2830.00	-22.3	H	3.0	34.7	1.0	-56.0	-13.0	-43.0	
High Ch, 714.5									
1429.00	-26.1	V	3.0	36.5	1.0	-61.6	-13.0	-48.6	
2143.50	-20.3	V	3.0	35.6	1.0	-54.9	-13.0	-41.9	
2858.00	-20.7	V	3.0	34.7	1.0	-54.4	-13.0	-41.4	
1429.00	-25.1	H	3.0	36.5	1.0	-60.7	-13.0	-47.7	
2143.50	-21.7	H	3.0	35.6	1.0	-56.3	-13.0	-43.3	
2858.00	-22.7	H	3.0	34.7	1.0	-56.4	-13.0	-43.4	

LTE B12 3MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 700.5									
1401.00	-26.9	V	3.0	36.5	1.0	-62.4	-13.0	-49.4	
2101.50	-20.2	V	3.0	35.6	1.0	-54.8	-13.0	-41.8	
2802.00	-21.7	V	3.0	34.7	1.0	-55.4	-13.0	-42.4	
1401.00	-20.4	H	3.0	36.5	1.0	-55.9	-13.0	-42.9	
2101.50	-21.8	H	3.0	35.6	1.0	-56.5	-13.0	-43.5	
2802.00	-21.5	H	3.0	34.7	1.0	-55.2	-13.0	-42.2	
Mid Ch, 707.5									
1415.00	-26.5	V	3.0	36.5	1.0	-62.0	-13.0	-49.0	
2122.50	-19.0	V	3.0	35.6	1.0	-53.6	-13.0	-40.6	
2830.00	-22.3	V	3.0	34.7	1.0	-56.0	-13.0	-43.0	
1415.00	-28.1	H	3.0	36.5	1.0	-63.7	-13.0	-50.7	
2122.50	-21.2	H	3.0	35.6	1.0	-55.8	-13.0	-42.8	
2830.00	-22.8	H	3.0	34.7	1.0	-56.5	-13.0	-43.5	
High Ch, 714.5									
1429.00	-26.6	V	3.0	36.5	1.0	-62.1	-13.0	-49.1	
2143.50	-20.1	V	3.0	35.6	1.0	-54.7	-13.0	-41.7	
2858.00	-21.8	V	3.0	34.7	1.0	-55.5	-13.0	-42.5	
1429.00	-24.9	H	3.0	36.5	1.0	-60.4	-13.0	-47.4	
2143.50	-21.2	H	3.0	35.6	1.0	-55.8	-13.0	-42.8	
2858.00	-22.5	H	3.0	34.7	1.0	-56.2	-13.0	-43.2	

LTE B12 3MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 701.5									
1403.00	-26.5	V	3.0	36.5	1.0	-62.0	-13.0	-49.0	
2104.50	-19.1	V	3.0	35.6	1.0	-53.8	-13.0	-40.8	
2806.00	-22.1	V	3.0	34.7	1.0	-55.8	-13.0	-42.8	
1403.00	-22.0	H	3.0	36.5	1.0	-57.5	-13.0	-44.5	
2104.50	-21.0	H	3.0	35.6	1.0	-55.6	-13.0	-42.6	
2806.00	-22.1	H	3.0	34.7	1.0	-55.8	-13.0	-42.8	
Mid Ch, 707.5									
1415.00	-26.7	V	3.0	36.5	1.0	-62.2	-13.0	-49.2	
2122.50	-18.7	V	3.0	35.6	1.0	-53.3	-13.0	-40.3	
2830.00	-21.9	V	3.0	34.7	1.0	-55.6	-13.0	-42.6	
1415.00	-26.9	H	3.0	36.5	1.0	-62.4	-13.0	-49.4	
2122.50	-20.8	H	3.0	35.6	1.0	-55.4	-13.0	-42.4	
2830.00	-22.9	H	3.0	34.7	1.0	-56.6	-13.0	-43.6	
High Ch, 713.5									
1427.00	-25.8	V	3.0	36.5	1.0	-61.3	-13.0	-48.3	
2140.50	-19.7	V	3.0	35.6	1.0	-54.3	-13.0	-41.3	
2854.00	-22.4	V	3.0	34.7	1.0	-56.1	-13.0	-43.1	
1427.00	-25.9	H	3.0	36.5	1.0	-61.4	-13.0	-48.4	
2140.50	-20.9	H	3.0	35.6	1.0	-55.5	-13.0	-42.5	
2854.00	-22.1	H	3.0	34.7	1.0	-55.8	-13.0	-42.8	

LTE B12 5MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 701.5									
1403.00	-26.5	V	3.0	36.5	1.0	-62.0	-13.0	-49.0	
2104.50	-18.2	V	3.0	35.6	1.0	-52.8	-13.0	-39.8	
2806.00	-22.3	V	3.0	34.7	1.0	-56.1	-13.0	-43.1	
1403.00	-22.4	H	3.0	36.5	1.0	-57.9	-13.0	-44.9	
2104.50	-21.5	H	3.0	35.6	1.0	-56.1	-13.0	-43.1	
2806.00	-21.6	H	3.0	34.7	1.0	-55.4	-13.0	-42.4	
Mid Ch, 707.5									
1415.00	-26.1	V	3.0	36.5	1.0	-61.6	-13.0	-48.6	
2122.50	-17.3	V	3.0	35.6	1.0	-51.9	-13.0	-38.9	
2830.00	-21.9	V	3.0	34.7	1.0	-55.6	-13.0	-42.6	
1415.00	-27.3	H	3.0	36.5	1.0	-62.8	-13.0	-49.8	
2122.50	-20.2	H	3.0	35.6	1.0	-54.8	-13.0	-41.8	
2830.00	-22.6	H	3.0	34.7	1.0	-56.3	-13.0	-43.3	
High Ch, 713.5									
1427.00	-26.9	V	3.0	36.5	1.0	-62.5	-13.0	-49.5	
2140.50	-20.2	V	3.0	35.6	1.0	-54.8	-13.0	-41.8	
2854.00	-22.1	V	3.0	34.7	1.0	-55.8	-13.0	-42.8	
1427.00	-25.4	H	3.0	36.5	1.0	-60.9	-13.0	-47.9	
2140.50	-21.1	H	3.0	35.6	1.0	-55.6	-13.0	-42.6	
2854.00	-22.1	H	3.0	34.7	1.0	-55.8	-13.0	-42.8	

LTE B12 5MHz 16QAM

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 12 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 704									
1408.00	-25.7	V	3.0	36.5	1.0	-51.2	-13.0	-48.2	
2112.00	-18.6	V	3.0	35.6	1.0	-53.2	-13.0	-40.2	
2816.00	-21.3	V	3.0	34.7	1.0	-55.0	-13.0	-42.0	
1408.00	-25.3	H	3.0	36.5	1.0	-60.8	-13.0	-47.8	
2112.00	-20.1	H	3.0	35.6	1.0	-54.7	-13.0	-41.7	
2816.00	-22.3	H	3.0	34.7	1.0	-56.0	-13.0	-43.0	
Mid Ch, 707.5									
1415.00	-26.6	V	3.0	36.5	1.0	-62.1	-13.0	-49.1	
2122.50	-18.1	V	3.0	35.6	1.0	-52.7	-13.0	-39.7	
2830.00	-22.2	V	3.0	34.7	1.0	-55.9	-13.0	-42.9	
1415.00	-26.3	H	3.0	36.5	1.0	-61.8	-13.0	-48.8	
2122.50	-20.1	H	3.0	35.6	1.0	-54.7	-13.0	-41.7	
2830.00	-22.5	H	3.0	34.7	1.0	-56.2	-13.0	-43.2	
High Ch, 711									
1422.00	-27.3	V	3.0	36.5	1.0	-62.8	-13.0	-49.8	
2133.00	-19.5	V	3.0	35.6	1.0	-54.1	-13.0	-41.1	
2844.00	-22.0	V	3.0	34.7	1.0	-55.7	-13.0	-42.7	
1422.00	-27.5	H	3.0	36.5	1.0	-63.0	-13.0	-50.0	
2133.00	-21.9	H	3.0	35.6	1.0	-56.4	-13.0	-43.4	
2844.00	-21.8	H	3.0	34.7	1.0	-55.5	-13.0	-42.5	

LTE B12 10MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 12 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 704									
1408.00	-27.0	V	3.0	36.5	1.0	-62.5	-13.0	-49.5	
2112.00	-18.5	V	3.0	35.6	1.0	-53.1	-13.0	-40.1	
2816.00	-21.3	V	3.0	34.7	1.0	-55.0	-13.0	-42.0	
1408.00	-25.8	H	3.0	36.5	1.0	-61.3	-13.0	-48.3	
2112.00	-20.2	H	3.0	35.6	1.0	-54.8	-13.0	-41.8	
2816.00	-22.4	H	3.0	34.7	1.0	-56.1	-13.0	-43.1	
Mid Ch, 707.5									
1415.00	-26.7	V	3.0	36.5	1.0	-62.2	-13.0	-49.2	
2122.50	-16.8	V	3.0	35.6	1.0	-51.4	-13.0	-38.4	
2830.00	-21.2	V	3.0	34.7	1.0	-54.9	-13.0	-41.9	
1415.00	-27.4	H	3.0	36.5	1.0	-63.0	-13.0	-50.0	
2122.50	-20.2	H	3.0	35.6	1.0	-54.8	-13.0	-41.8	
2830.00	-22.0	H	3.0	34.7	1.0	-55.7	-13.0	-42.7	
High Ch, 711									
1422.00	-27.0	V	3.0	36.5	1.0	-62.5	-13.0	-49.5	
2133.00	-18.3	V	3.0	35.6	1.0	-52.9	-13.0	-39.9	
2844.00	-21.9	V	3.0	34.7	1.0	-55.6	-13.0	-42.6	
1422.00	-27.1	H	3.0	36.5	1.0	-62.6	-13.0	-49.6	
2133.00	-20.2	H	3.0	35.6	1.0	-54.8	-13.0	-41.8	
2844.00	-22.3	H	3.0	34.7	1.0	-56.0	-13.0	-43.0	

LTE B12 10MHz 16QAM

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LTE Band 13

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 13 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 779.5									
1559.00	-23.2	V	3.0	36.5	1.0	-58.7	-40.0	-18.7	
2338.50	-19.3	V	3.0	35.2	1.0	-53.6	-13.0	-40.6	
3118.00	-20.8	V	3.0	34.5	1.0	-54.3	-13.0	-41.3	
1559.00	-25.5	H	3.0	36.5	1.0	-61.0	-40.0	-21.0	
2338.50	-22.9	H	3.0	35.2	1.0	-57.1	-13.0	-44.1	
3118.00	-21.9	H	3.0	34.5	1.0	-55.3	-13.0	-42.3	
Mid Ch, 782									
1564.00	-25.9	V	3.0	36.5	1.0	-61.4	-40.0	-21.4	
2346.00	-22.6	V	3.0	35.2	1.0	-56.8	-13.0	-43.8	
3128.00	-21.4	V	3.0	34.4	1.0	-54.9	-13.0	-41.9	
1564.00	-26.1	H	3.0	36.5	1.0	-61.5	-40.0	-21.5	
2346.00	-23.0	H	3.0	35.2	1.0	-57.3	-13.0	-44.3	
3128.00	-22.3	H	3.0	34.4	1.0	-55.8	-13.0	-42.8	
High Ch, 784.5									
1569.00	-22.6	V	3.0	36.5	1.0	-58.1	-40.0	-18.1	
2353.50	-19.1	V	3.0	35.2	1.0	-53.3	-13.0	-40.3	
3138.00	-21.6	V	3.0	34.4	1.0	-55.1	-13.0	-42.1	
1569.00	-24.4	H	3.0	36.5	1.0	-59.9	-40.0	-19.9	
2353.50	-22.5	H	3.0	35.2	1.0	-56.7	-13.0	-43.7	
3138.00	-21.8	H	3.0	34.4	1.0	-55.3	-13.0	-42.3	

LTE B13 5MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 13 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 779.5									
1559.00	-22.8	V	3.0	36.5	1.0	-58.3	-40.0	-18.3	
2338.50	-19.9	V	3.0	35.2	1.0	-54.1	-13.0	-41.1	
3118.00	-21.5	V	3.0	34.5	1.0	-55.0	-13.0	-42.0	
1559.00	-25.6	H	3.0	36.5	1.0	-61.1	-40.0	-21.1	
2338.50	-23.0	H	3.0	35.2	1.0	-57.2	-13.0	-44.2	
3118.00	-21.4	H	3.0	34.5	1.0	-54.8	-13.0	-41.8	
Mid Ch, 782									
1564.00	-25.9	V	3.0	36.5	1.0	-61.4	-40.0	-21.4	
2346.00	-23.0	V	3.0	35.2	1.0	-57.2	-13.0	-44.2	
3128.00	-21.4	V	3.0	34.4	1.0	-54.9	-13.0	-41.9	
1564.00	-26.2	H	3.0	36.5	1.0	-61.7	-40.0	-21.7	
2346.00	-23.0	H	3.0	35.2	1.0	-57.2	-13.0	-44.2	
3128.00	-22.3	H	3.0	34.4	1.0	-55.8	-13.0	-42.8	
High Ch, 784.5									
1569.00	-22.4	V	3.0	36.5	1.0	-57.9	-40.0	-17.9	
2353.50	-19.9	V	3.0	35.2	1.0	-54.1	-13.0	-41.1	
3138.00	-20.6	V	3.0	34.4	1.0	-54.0	-13.0	-41.0	
1569.00	-24.6	H	3.0	36.5	1.0	-60.1	-40.0	-20.1	
2353.50	-22.5	H	3.0	35.2	1.0	-56.7	-13.0	-43.7	
3138.00	-21.7	H	3.0	34.4	1.0	-55.1	-13.0	-42.1	

LTE B13 5MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 13 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 782									
Mid Ch, 782									
1564.00	-26.0	V	3.0	36.5	1.0	-61.5	-40.0	-21.5	
2346.00	-22.2	V	3.0	35.2	1.0	-56.4	-13.0	-43.4	
3128.00	-21.6	V	3.0	34.4	1.0	-55.0	-13.0	-42.0	
1564.00	-26.8	H	3.0	36.5	1.0	-62.3	-40.0	-22.3	
2346.00	-23.6	H	3.0	35.2	1.0	-57.8	-13.0	-44.8	
3128.00	-22.6	H	3.0	34.4	1.0	-56.0	-13.0	-43.0	

LTE B13 10MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 13 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, 782									
1564.00	-25.5	V	3.0	36.5	1.0	-61.0	-40.0	-21.0	
2346.00	-22.2	V	3.0	35.2	1.0	-56.4	-13.0	-43.4	
3128.00	-21.2	V	3.0	34.4	1.0	-54.6	-13.0	-41.6	
1564.00	-26.7	H	3.0	36.5	1.0	-62.2	-40.0	-22.2	
2346.00	-22.2	H	3.0	35.2	1.0	-56.4	-13.0	-43.4	
3128.00	-22.0	H	3.0	34.4	1.0	-55.5	-13.0	-42.5	

LTE B13 10MHz 16QAM

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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LTE Band 26

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 26 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 814.7									
1629.40	-25.0	V	3.0	36.4	1.0	-60.4	-13.0	-47.4	
2444.10	-20.2	V	3.0	35.0	1.0	-54.3	-13.0	-41.3	
3258.80	-17.5	V	3.0	34.3	1.0	-50.8	-13.0	-37.8	
1629.40	-24.8	H	3.0	36.4	1.0	-60.2	-13.0	-47.2	
2444.10	-20.5	H	3.0	35.0	1.0	-54.5	-13.0	-41.5	
3258.80	-19.7	H	3.0	34.3	1.0	-53.0	-13.0	-40.0	
Mid Ch, 831.5									
1663.00	-25.9	V	3.0	36.3	1.0	-61.3	-13.0	-48.3	
2494.50	-22.9	V	3.0	34.9	1.0	-56.8	-13.0	-43.8	
3326.00	-21.5	V	3.0	34.2	1.0	-54.8	-13.0	-41.8	
1663.00	-24.8	H	3.0	36.3	1.0	-60.2	-13.0	-47.2	
2494.50	-22.3	H	3.0	34.9	1.0	-56.3	-13.0	-43.3	
3326.00	-22.1	H	3.0	34.2	1.0	-55.4	-13.0	-42.4	
High Ch, 848.3									
1696.60	-24.9	V	3.0	36.3	1.0	-60.2	-13.0	-47.2	
2544.90	-22.9	V	3.0	34.9	1.0	-56.8	-13.0	-43.8	
3393.20	-21.0	V	3.0	34.2	1.0	-54.2	-13.0	-41.2	
1696.60	-24.4	H	3.0	36.3	1.0	-59.7	-13.0	-46.7	
2544.90	-20.0	H	3.0	34.9	1.0	-53.9	-13.0	-40.9	
3393.20	-19.2	H	3.0	34.2	1.0	-52.3	-13.0	-39.3	

LTE B26 1.4MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 26 Harmonics, 1.4MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 814.7									
1629.40	-23.6	V	3.0	36.4	1.0	-59.0	-13.0	-46.0	
2444.10	-20.4	V	3.0	35.0	1.0	-54.5	-13.0	-41.5	
3258.80	-18.2	V	3.0	34.3	1.0	-51.6	-13.0	-38.6	
1629.40	-24.4	H	3.0	36.4	1.0	-59.8	-13.0	-46.8	
2444.10	-21.0	H	3.0	35.0	1.0	-55.0	-13.0	-42.0	
3258.80	-18.7	H	3.0	34.3	1.0	-52.0	-13.0	-39.0	
Mid Ch, 831.5									
1663.00	-24.3	V	3.0	36.3	1.0	-59.7	-13.0	-46.7	
2494.50	-22.4	V	3.0	34.9	1.0	-56.3	-13.0	-43.3	
3326.00	-21.1	V	3.0	34.2	1.0	-54.4	-13.0	-41.4	
1663.00	-25.8	H	3.0	36.3	1.0	-61.1	-13.0	-48.1	
2494.50	-22.9	H	3.0	34.9	1.0	-56.9	-13.0	-43.9	
3326.00	-21.6	H	3.0	34.2	1.0	-54.9	-13.0	-41.9	
High Ch, 848.3									
1696.60	-24.2	V	3.0	36.3	1.0	-59.5	-13.0	-46.5	
2544.90	-22.2	V	3.0	34.9	1.0	-56.1	-13.0	-43.1	
3393.20	-21.2	V	3.0	34.2	1.0	-54.4	-13.0	-41.4	
1696.60	-24.2	H	3.0	36.3	1.0	-59.5	-13.0	-46.5	
2544.90	-20.9	H	3.0	34.9	1.0	-54.8	-13.0	-41.8	
3393.20	-20.2	H	3.0	34.2	1.0	-53.3	-13.0	-40.3	

LTE B26 1.4MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 26 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 815.5									
1631.00	-25.7	V	3.0	36.4	1.0	-61.0	-13.0	-48.0	
2446.50	-22.6	V	3.0	35.0	1.0	-56.6	-13.0	-43.6	
3262.00	-21.4	V	3.0	34.3	1.0	-54.8	-13.0	-41.8	
1631.00	-24.7	H	3.0	36.4	1.0	-60.1	-13.0	-47.1	
2446.50	-22.5	H	3.0	35.0	1.0	-56.6	-13.0	-43.6	
3262.00	-21.7	H	3.0	34.3	1.0	-55.0	-13.0	-42.0	
Mid Ch, 831.5									
1663.00	-24.9	V	3.0	36.3	1.0	-60.2	-13.0	-47.2	
2494.50	-22.4	V	3.0	34.9	1.0	-56.3	-13.0	-43.3	
3326.00	-20.9	V	3.0	34.2	1.0	-54.1	-13.0	-41.1	
1663.00	-23.7	H	3.0	36.3	1.0	-59.0	-13.0	-46.0	
2494.50	-23.4	H	3.0	34.9	1.0	-57.3	-13.0	-44.3	
3326.00	-21.9	H	3.0	34.2	1.0	-55.2	-13.0	-42.2	
High Ch, 847.5									
1695.00	-22.7	V	3.0	36.3	1.0	-57.9	-13.0	-44.9	
2542.50	-21.6	V	3.0	34.9	1.0	-55.5	-13.0	-42.5	
3390.00	-20.7	V	3.0	34.2	1.0	-53.9	-13.0	-40.9	
1695.00	-23.9	H	3.0	36.3	1.0	-59.2	-13.0	-46.2	
2542.50	-22.4	H	3.0	34.9	1.0	-56.3	-13.0	-43.3	
3390.00	-21.7	H	3.0	34.2	1.0	-54.8	-13.0	-41.8	

LTE B26 3MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 26 Harmonics, 3MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 815.5									
1631.00	-25.6	V	3.0	36.4	1.0	-61.0	-13.0	-48.0	
2446.50	-22.5	V	3.0	35.0	1.0	-56.6	-13.0	-43.6	
3262.00	-21.6	V	3.0	34.3	1.0	-54.9	-13.0	-41.9	
1631.00	-25.5	H	3.0	36.4	1.0	-60.9	-13.0	-47.9	
2446.50	-22.6	H	3.0	35.0	1.0	-56.7	-13.0	-43.7	
3262.00	-21.5	H	3.0	34.3	1.0	-54.9	-13.0	-41.9	
Mid Ch, 831.5									
1663.00	-24.4	V	3.0	36.3	1.0	-59.7	-13.0	-46.7	
2494.50	-23.1	V	3.0	34.9	1.0	-57.1	-13.0	-44.1	
3326.00	-21.1	V	3.0	34.2	1.0	-54.3	-13.0	-41.3	
1663.00	-23.5	H	3.0	36.3	1.0	-58.9	-13.0	-45.9	
2494.50	-22.8	H	3.0	34.9	1.0	-56.7	-13.0	-43.7	
3326.00	-21.7	H	3.0	34.2	1.0	-54.9	-13.0	-41.9	
High Ch, 847.5									
1695.00	-24.0	V	3.0	36.3	1.0	-59.3	-13.0	-46.3	
2542.50	-21.1	V	3.0	34.9	1.0	-55.0	-13.0	-42.0	
3390.00	-21.3	V	3.0	34.2	1.0	-54.4	-13.0	-41.4	
1695.00	-24.5	H	3.0	36.3	1.0	-59.8	-13.0	-46.8	
2542.50	-22.4	H	3.0	34.9	1.0	-56.4	-13.0	-43.4	
3390.00	-21.4	H	3.0	34.2	1.0	-54.6	-13.0	-41.6	

LTE B26 3MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 26 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 816.5									
1633.00	-25.2	V	3.0	36.4	1.0	-60.6	-13.0	-47.6	
2449.50	-22.9	V	3.0	35.0	1.0	-56.9	-13.0	-43.9	
3266.00	-21.2	V	3.0	34.3	1.0	-54.5	-13.0	-41.5	
1633.00	-25.5	H	3.0	36.4	1.0	-60.9	-13.0	-47.9	
2449.50	-22.8	H	3.0	35.0	1.0	-56.8	-13.0	-43.8	
3266.00	-22.2	H	3.0	34.3	1.0	-55.5	-13.0	-42.5	
Mid Ch, 831.5									
1663.00	-25.2	V	3.0	36.3	1.0	-60.6	-13.0	-47.6	
2494.50	-23.4	V	3.0	34.9	1.0	-57.4	-13.0	-44.4	
3326.00	-21.2	V	3.0	34.2	1.0	-54.4	-13.0	-41.4	
1663.00	-25.1	H	3.0	36.3	1.0	-60.4	-13.0	-47.4	
2494.50	-23.2	H	3.0	34.9	1.0	-57.2	-13.0	-44.2	
3326.00	-21.8	H	3.0	34.2	1.0	-55.0	-13.0	-42.0	
High Ch, 846.5									
1693.00	-25.0	V	3.0	36.3	1.0	-60.3	-13.0	-47.3	
2539.50	-22.8	V	3.0	34.9	1.0	-56.8	-13.0	-43.8	
3386.00	-21.1	V	3.0	34.2	1.0	-54.3	-13.0	-41.3	
1693.00	-24.1	H	3.0	36.3	1.0	-59.4	-13.0	-46.4	
2539.50	-22.7	H	3.0	34.9	1.0	-56.6	-13.0	-43.6	
3386.00	-21.6	H	3.0	34.2	1.0	-54.8	-13.0	-41.8	

LTE B26 5MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 26 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 816.5									
1633.00	-25.9	V	3.0	36.4	1.0	-61.3	-13.0	-48.3	
2449.50	-22.3	V	3.0	35.0	1.0	-56.4	-13.0	-43.4	
3266.00	-21.7	V	3.0	34.3	1.0	-55.0	-13.0	-42.0	
1633.00	-24.8	H	3.0	36.4	1.0	-60.2	-13.0	-47.2	
2449.50	-22.8	H	3.0	35.0	1.0	-56.8	-13.0	-43.8	
3266.00	-21.4	H	3.0	34.3	1.0	-54.7	-13.0	-41.7	
Mid Ch, 831.5									
1663.00	-25.2	V	3.0	36.3	1.0	-60.5	-13.0	-47.5	
2494.50	-22.5	V	3.0	34.9	1.0	-56.5	-13.0	-43.5	
3326.00	-21.3	V	3.0	34.2	1.0	-54.5	-13.0	-41.5	
1663.00	-25.0	H	3.0	36.3	1.0	-60.4	-13.0	-47.4	
2494.50	-22.6	H	3.0	34.9	1.0	-56.6	-13.0	-43.6	
3326.00	-21.7	H	3.0	34.2	1.0	-55.0	-13.0	-42.0	
High Ch, 846.5									
1693.00	-24.3	V	3.0	36.3	1.0	-59.6	-13.0	-46.6	
2539.50	-22.9	V	3.0	34.9	1.0	-56.8	-13.0	-43.8	
3386.00	-21.1	V	3.0	34.2	1.0	-54.3	-13.0	-41.3	
1693.00	-23.9	H	3.0	36.3	1.0	-59.2	-13.0	-46.2	
2539.50	-22.6	H	3.0	34.9	1.0	-56.6	-13.0	-43.6	
3386.00	-21.3	H	3.0	34.2	1.0	-54.5	-13.0	-41.5	

LTE B26 5MHz 16QAM

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 26 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 819									
1638.00	-25.1	V	3.0	36.4	1.0	-60.5	-13.0	-47.5	
2457.00	-22.3	V	3.0	35.0	1.0	-56.3	-13.0	-43.3	
3276.00	-21.2	V	3.0	34.3	1.0	-54.5	-13.0	-41.5	
1638.00	-26.5	H	3.0	36.4	1.0	-61.8	-13.0	-48.8	
2457.00	-22.9	H	3.0	35.0	1.0	-57.0	-13.0	-44.0	
3276.00	-22.3	H	3.0	34.3	1.0	-55.6	-13.0	-42.6	
Mid Ch, 831.5									
1663.00	-24.7	V	3.0	36.3	1.0	-60.0	-13.0	-47.0	
2494.50	-22.4	V	3.0	34.9	1.0	-56.3	-13.0	-43.3	
3326.00	-20.9	V	3.0	34.2	1.0	-54.2	-13.0	-41.2	
1663.00	-26.0	H	3.0	36.3	1.0	-61.3	-13.0	-48.3	
2494.50	-23.6	H	3.0	34.9	1.0	-57.5	-13.0	-44.5	
3326.00	-22.1	H	3.0	34.2	1.0	-55.4	-13.0	-42.4	
High Ch, 844									
1688.00	-27.1	V	3.0	36.3	1.0	-62.4	-13.0	-49.4	
2532.00	-22.3	V	3.0	34.9	1.0	-56.2	-13.0	-43.2	
3376.00	-21.3	V	3.0	34.2	1.0	-54.5	-13.0	-41.5	
1688.00	-24.5	H	3.0	36.3	1.0	-59.9	-13.0	-46.9	
2532.00	-22.9	H	3.0	34.9	1.0	-56.8	-13.0	-43.8	
3376.00	-21.5	H	3.0	34.2	1.0	-54.7	-13.0	-41.7	

LTE B26 10MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 26 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 819									
1638.00	-24.6	V	3.0	36.4	1.0	-60.0	-13.0	-47.0	
2457.00	-22.6	V	3.0	35.0	1.0	-56.6	-13.0	-43.6	
3276.00	-20.9	V	3.0	34.3	1.0	-54.2	-13.0	-41.2	
1638.00	-26.6	H	3.0	36.4	1.0	-62.0	-13.0	-49.0	
2457.00	-23.1	H	3.0	35.0	1.0	-57.1	-13.0	-44.1	
3276.00	-22.6	H	3.0	34.3	1.0	-55.9	-13.0	-42.9	
Mid Ch, 831.5									
1663.00	-25.0	V	3.0	36.3	1.0	-60.3	-13.0	-47.3	
2494.50	-23.5	V	3.0	34.9	1.0	-57.4	-13.0	-44.4	
3326.00	-21.2	V	3.0	34.2	1.0	-54.5	-13.0	-41.5	
1663.00	-25.9	H	3.0	36.3	1.0	-61.2	-13.0	-48.2	
2494.50	-23.1	H	3.0	34.9	1.0	-57.1	-13.0	-44.1	
3326.00	-21.8	H	3.0	34.2	1.0	-55.0	-13.0	-42.0	
High Ch, 844									
1688.00	-24.9	V	3.0	36.3	1.0	-60.2	-13.0	-47.2	
2532.00	-22.4	V	3.0	34.9	1.0	-56.3	-13.0	-43.3	
3376.00	-21.4	V	3.0	34.2	1.0	-54.6	-13.0	-41.6	
1688.00	-23.6	H	3.0	36.3	1.0	-58.9	-13.0	-45.9	
2532.00	-22.7	H	3.0	34.9	1.0	-56.6	-13.0	-43.6	
3376.00	-21.6	H	3.0	34.2	1.0	-54.8	-13.0	-41.8	

LTE B26 10MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 26 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 831.5									
1663.00	-23.3	V	3.0	36.3	1.0	-58.6	-13.0	-45.6	
2494.50	-22.8	V	3.0	34.9	1.0	-56.7	-13.0	-43.7	
3326.00	-21.8	V	3.0	34.2	1.0	-55.0	-13.0	-42.0	
1663.00	-24.6	H	3.0	36.3	1.0	-60.0	-13.0	-47.0	
2494.50	-23.2	H	3.0	34.9	1.0	-57.1	-13.0	-44.1	
3326.00	-21.9	H	3.0	34.2	1.0	-55.1	-13.0	-42.1	
Mid Ch, 836.5									
1673.00	-24.3	V	3.0	36.3	1.0	-59.6	-13.0	-46.6	
2509.50	-22.6	V	3.0	34.9	1.0	-56.5	-13.0	-43.5	
3346.00	-21.0	V	3.0	34.2	1.0	-54.2	-13.0	-41.2	
1673.00	-25.4	H	3.0	36.3	1.0	-60.8	-13.0	-47.8	
2509.50	-23.0	H	3.0	34.9	1.0	-56.9	-13.0	-43.9	
3346.00	-21.5	H	3.0	34.2	1.0	-54.7	-13.0	-41.7	
High Ch, 841.5									
1683.00	-25.0	V	3.0	36.3	1.0	-60.3	-13.0	-47.3	
2524.50	-22.7	V	3.0	34.9	1.0	-56.6	-13.0	-43.6	
3366.00	-20.2	V	3.0	34.2	1.0	-53.4	-13.0	-40.4	
1683.00	-23.8	H	3.0	36.3	1.0	-59.1	-13.0	-46.1	
2524.50	-21.7	H	3.0	34.9	1.0	-55.6	-13.0	-42.6	
3366.00	-21.8	H	3.0	34.2	1.0	-55.0	-13.0	-42.0	

LTE B26 15MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/14/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 26 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 831.5									
1663.00	-23.0	V	3.0	36.3	1.0	-58.3	-13.0	-45.3	
2494.50	-22.8	V	3.0	34.9	1.0	-56.8	-13.0	-43.8	
3326.00	-21.0	V	3.0	34.2	1.0	-54.2	-13.0	-41.2	
1663.00	-23.9	H	3.0	36.3	1.0	-59.3	-13.0	-46.3	
2494.50	-23.1	H	3.0	34.9	1.0	-57.0	-13.0	-44.0	
3326.00	-20.5	H	3.0	34.2	1.0	-53.8	-13.0	-40.8	
Mid Ch, 836.5									
1673.00	-22.3	V	3.0	36.3	1.0	-57.6	-13.0	-44.6	
2509.50	-23.4	V	3.0	34.9	1.0	-57.3	-13.0	-44.3	
3346.00	-21.3	V	3.0	34.2	1.0	-54.5	-13.0	-41.5	
1673.00	-25.3	H	3.0	36.3	1.0	-60.7	-13.0	-47.7	
2509.50	-23.2	H	3.0	34.9	1.0	-57.2	-13.0	-44.2	
3346.00	-22.1	H	3.0	34.2	1.0	-55.3	-13.0	-42.3	
High Ch, 841.5									
1683.00	-24.3	V	3.0	36.3	1.0	-59.6	-13.0	-46.6	
2524.50	-23.1	V	3.0	34.9	1.0	-57.0	-13.0	-44.0	
3366.00	-21.0	V	3.0	34.2	1.0	-54.2	-13.0	-41.2	
1683.00	-25.5	H	3.0	36.3	1.0	-60.8	-13.0	-47.8	
2524.50	-22.9	H	3.0	34.9	1.0	-56.8	-13.0	-43.8	
3366.00	-21.8	H	3.0	34.2	1.0	-55.0	-13.0	-42.0	

LTE B26 15MHz 16QAM

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

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LTE Band 30

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/31/2017
Test Engineer: 39703 KK
Configuration: EUT + AC
Location: Chamber B
Mode: LTE_QPSK Band 30 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2307.5									
4615.00	-18.0	V	3.0	33.4	1.0	-50.4	-40.0	-10.4	
6922.50	-17.5	V	3.0	32.9	1.0	-49.4	-40.0	-9.4	
9230.00	-18.1	V	3.0	32.8	1.0	-49.9	-40.0	-9.9	
4615.00	-15.5	H	3.0	33.4	1.0	-47.8	-40.0	-7.8	
6922.50	-16.1	H	3.0	32.9	1.0	-48.0	-40.0	-8.0	
9230.00	-17.5	H	3.0	32.8	1.0	-49.3	-40.0	-9.3	
Mid Ch, 2310									
4620.00	-18.3	V	3.0	33.4	1.0	-50.7	-40.0	-10.7	
6930.00	-16.4	V	3.0	32.9	1.0	-48.3	-40.0	-8.3	
9240.00	-18.7	V	3.0	32.8	1.0	-50.5	-40.0	-10.5	
4620.00	-15.7	H	3.0	33.4	1.0	-48.0	-40.0	-8.0	
6930.00	-14.9	H	3.0	32.9	1.0	-46.8	-40.0	-6.8	
9240.00	-19.0	H	3.0	32.8	1.0	-50.8	-40.0	-10.8	
High Ch, 2312.5									
4625.00	-18.4	V	3.0	33.4	1.0	-50.8	-40.0	-10.8	
6937.50	-16.7	V	3.0	32.9	1.0	-48.6	-40.0	-8.6	
9250.00	-17.5	V	3.0	32.8	1.0	-49.3	-40.0	-9.3	
4625.00	-14.6	H	3.0	33.4	1.0	-47.0	-40.0	-7.0	
6937.50	-14.7	H	3.0	32.9	1.0	-46.6	-40.0	-6.6	
9250.00	-18.2	H	3.0	32.8	1.0	-50.0	-40.0	-10.0	

LTE B30 5MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/31/2017
Test Engineer: 39703 Kk
Configuration: EUT + AC
Location: Chamber B
Mode: LTE_16QAM Band 30 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2307.5									
4615.00	-18.2	V	3.0	33.4	1.0	-50.6	-40.0	-10.6	
6922.50	-18.3	V	3.0	32.9	1.0	-50.2	-40.0	-10.2	
9230.00	-17.4	V	3.0	32.8	1.0	-49.2	-40.0	-9.2	
4615.00	-17.8	H	3.0	33.4	1.0	-50.2	-40.0	-10.2	
6922.50	-17.6	H	3.0	32.9	1.0	-49.4	-40.0	-9.4	
9230.00	-17.8	H	3.0	32.8	1.0	-49.6	-40.0	-9.6	
Mid Ch, 2310									
4620.00	-16.5	V	3.0	33.4	1.0	-48.9	-40.0	-8.9	
6930.00	-16.3	V	3.0	32.9	1.0	-48.2	-40.0	-8.2	
9240.00	-18.2	V	3.0	32.8	1.0	-50.0	-40.0	-10.0	
4620.00	-17.8	H	3.0	33.4	1.0	-50.2	-40.0	-10.2	
6930.00	-16.2	H	3.0	32.9	1.0	-48.1	-40.0	-8.1	
9240.00	-18.4	H	3.0	32.8	1.0	-50.2	-40.0	-10.2	
High Ch, 2312.5									
4625.00	-18.4	V	3.0	33.4	1.0	-50.8	-40.0	-10.8	
6937.50	-16.7	V	3.0	32.9	1.0	-48.6	-40.0	-8.6	
9250.00	-17.5	V	3.0	32.8	1.0	-49.3	-40.0	-9.3	
4625.00	-14.7	H	3.0	33.4	1.0	-47.1	-40.0	-7.1	
6937.50	-14.1	H	3.0	32.9	1.0	-46.0	-40.0	-6.0	
9250.00	-18.0	H	3.0	32.8	1.0	-49.8	-40.0	-9.8	

LTE B30 5MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/31/2017
Test Engineer: 39703 KK
Configuration: EUT + AC
Location: Chamber B
Mode: LTE_QPSK Band 30 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, 2310									
4620.00	-16.2	V	3.0	33.4	1.0	-48.6	-40.0	-8.6	
6930.00	-17.3	V	3.0	32.9	1.0	-49.2	-40.0	-9.2	
9240.00	-18.0	V	3.0	32.8	1.0	-49.8	-40.0	-9.8	
4620.00	-15.5	H	3.0	33.4	1.0	-47.8	-40.0	-7.8	
6930.00	-14.5	H	3.0	32.9	1.0	-46.4	-40.0	-6.4	
9240.00	-18.5	H	3.0	32.8	1.0	-50.3	-40.0	-10.3	

LTE B30 10MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/31/2017
Test Engineer: 39703 KK
Configuration: EUT + AC
Location: Chamber B
Mode: LTE_16QAM Band 30 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, 2310									
4620.00	-17.0	V	3.0	33.4	1.0	-49.4	-40.0	-9.4	
6930.00	-17.6	V	3.0	32.9	1.0	-49.5	-40.0	-9.5	
9240.00	-19.0	V	3.0	32.8	1.0	-50.8	-40.0	-10.8	
4620.00	-15.4	H	3.0	33.4	1.0	-47.8	-40.0	-7.8	
6930.00	-16.4	H	3.0	32.9	1.0	-48.3	-40.0	-8.3	
9240.00	-18.2	H	3.0	32.8	1.0	-50.0	-40.0	-10.0	

LTE B30 10MHz 16QAM

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LTE Band 41

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 41 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2498.5									
4997.00	-18.8	V	3.0	33.2	1.0	-51.1	-25.0	-26.1	
7495.50	-18.2	V	3.0	32.8	1.0	-50.1	-25.0	-25.1	
9994.00	-18.2	V	3.0	32.8	1.0	-49.9	-25.0	-24.9	
4997.00	-18.9	H	3.0	33.2	1.0	-51.1	-25.0	-26.1	
7495.50	-19.0	H	3.0	32.8	1.0	-50.8	-25.0	-25.8	
9994.00	-19.0	H	3.0	32.8	1.0	-50.8	-25.0	-25.8	
Mid Ch, 2593									
5186.00	-19.2	V	3.0	33.2	1.0	-51.4	-25.0	-26.4	
7779.00	-16.9	V	3.0	32.8	1.0	-48.7	-25.0	-23.7	
10372.00	-18.6	V	3.0	32.5	1.0	-50.1	-25.0	-25.1	
5186.00	-17.0	H	3.0	33.2	1.0	-49.2	-25.0	-24.2	
7779.00	-17.8	H	3.0	32.8	1.0	-48.9	-25.0	-23.9	
10372.00	-18.6	H	3.0	32.5	1.0	-50.1	-25.0	-25.1	
High Ch, 2687.5									
5375.00	-20.5	V	3.0	33.1	1.0	-52.7	-25.0	-27.7	
8062.50	-18.0	V	3.0	32.8	1.0	-49.8	-25.0	-24.8	
10750.00	-19.6	V	3.0	32.3	1.0	-50.9	-25.0	-25.9	
5375.00	-19.0	H	3.0	33.1	1.0	-51.1	-25.0	-26.1	
8062.50	-17.3	H	3.0	32.8	1.0	-49.1	-25.0	-24.1	
10750.00	-14.5	H	3.0	32.3	1.0	-45.8	-25.0	-20.8	

LTE B41 5MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 41 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2498.5									
4997.00	-19.1	V	3.0	33.2	1.0	-51.3	-25.0	-26.3	
7495.50	-17.8	V	3.0	32.8	1.0	-49.6	-25.0	-24.6	
9994.00	-18.6	V	3.0	32.8	1.0	-50.4	-25.0	-25.4	
4997.00	-17.6	H	3.0	33.2	1.0	-49.8	-25.0	-24.8	
7495.50	-19.0	H	3.0	32.8	1.0	-50.9	-25.0	-25.9	
9994.00	-18.4	H	3.0	32.8	1.0	-50.2	-25.0	-25.2	
Mid Ch, 2593									
5186.00	-18.3	V	3.0	33.2	1.0	-50.5	-25.0	-25.5	
7779.00	-18.3	V	3.0	32.8	1.0	-50.1	-25.0	-25.1	
10372.00	-18.4	V	3.0	32.5	1.0	-49.9	-25.0	-24.9	
5186.00	-16.5	H	3.0	33.2	1.0	-48.6	-25.0	-23.6	
7779.00	-18.1	H	3.0	32.8	1.0	-50.0	-25.0	-25.0	
10372.00	-17.9	H	3.0	32.5	1.0	-49.4	-25.0	-24.4	
High Ch, 2687.5									
5375.00	-19.9	V	3.0	33.1	1.0	-52.0	-25.0	-27.0	
8062.50	-17.8	V	3.0	32.8	1.0	-49.7	-25.0	-24.7	
10750.00	-20.2	V	3.0	32.3	1.0	-51.5	-25.0	-26.5	
5375.00	-15.4	H	3.0	33.1	1.0	-47.5	-25.0	-22.5	
8062.50	-16.4	H	3.0	32.8	1.0	-48.3	-25.0	-23.3	
10750.00	-14.7	H	3.0	32.3	1.0	-46.0	-25.0	-21.0	

LTE B41 5MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 41 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2501									
5002.00	-19.6	V	3.0	33.2	1.0	-51.8	-25.0	-26.8	
7503.00	-18.7	V	3.0	32.8	1.0	-50.5	-25.0	-25.5	
10004.00	-16.7	V	3.0	32.8	1.0	-48.5	-25.0	-23.5	
5002.00	-18.5	H	3.0	33.2	1.0	-50.8	-25.0	-25.8	
7503.00	-18.9	H	3.0	32.8	1.0	-50.7	-25.0	-25.7	
10004.00	-18.3	H	3.0	32.8	1.0	-50.1	-25.0	-25.1	
Mid Ch, 2593									
5186.00	-18.4	V	3.0	33.2	1.0	-50.6	-25.0	-25.6	
7779.00	-17.3	V	3.0	32.8	1.0	-49.1	-25.0	-24.1	
10372.00	-17.8	V	3.0	32.5	1.0	-49.3	-25.0	-24.3	
5186.00	-17.2	H	3.0	33.2	1.0	-49.4	-25.0	-24.4	
7779.00	-18.4	H	3.0	32.8	1.0	-50.2	-25.0	-25.2	
10372.00	-19.0	H	3.0	32.5	1.0	-50.6	-25.0	-25.6	
High Ch, 2685									
5370.00	-18.5	V	3.0	33.1	1.0	-50.7	-25.0	-25.7	
8055.00	-17.5	V	3.0	32.8	1.0	-49.4	-25.0	-24.4	
10740.00	-17.7	V	3.0	32.3	1.0	-49.0	-25.0	-24.0	
5370.00	-19.3	H	3.0	33.1	1.0	-51.4	-25.0	-26.4	
8055.00	-17.4	H	3.0	32.8	1.0	-49.3	-25.0	-24.3	
10740.00	-17.2	H	3.0	32.3	1.0	-48.5	-25.0	-23.5	

LTE B41 10MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 41 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2501									
5002.00	-19.2	V	3.0	33.2	1.0	-51.4	-25.0	-26.4	
7503.00	-18.8	V	3.0	32.8	1.0	-50.7	-25.0	-25.7	
10004.00	-17.0	V	3.0	32.8	1.0	-48.7	-25.0	-23.7	
5002.00	-19.3	H	3.0	33.2	1.0	-51.5	-25.0	-26.5	
7503.00	-19.3	H	3.0	32.8	1.0	-51.2	-25.0	-26.2	
10004.00	-18.3	H	3.0	32.8	1.0	-50.1	-25.0	-25.1	
Mid Ch, 2593									
5186.00	-19.3	V	3.0	33.2	1.0	-51.5	-25.0	-26.5	
7779.00	-18.4	V	3.0	32.8	1.0	-50.3	-25.0	-25.3	
10372.00	-18.1	V	3.0	32.5	1.0	-49.6	-25.0	-24.6	
5186.00	-17.4	H	3.0	33.2	1.0	-49.6	-25.0	-24.6	
7779.00	-18.1	H	3.0	32.8	1.0	-50.0	-25.0	-25.0	
10372.00	-19.3	H	3.0	32.5	1.0	-50.8	-25.0	-25.8	
High Ch, 2685									
5370.00	-19.4	V	3.0	33.1	1.0	-51.6	-25.0	-26.6	
8055.00	-16.3	V	3.0	32.8	1.0	-48.1	-25.0	-23.1	
10740.00	-18.1	V	3.0	32.3	1.0	-49.3	-25.0	-24.3	
5370.00	-19.6	H	3.0	33.1	1.0	-51.8	-25.0	-26.8	
8055.00	-18.0	H	3.0	32.8	1.0	-49.9	-25.0	-24.9	
10740.00	-18.0	H	3.0	32.3	1.0	-49.3	-25.0	-24.3	

LTE B41 10MHz 16QAM

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 41 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2503.5									
5007.00	-18.9	V	3.0	33.2	1.0	-51.1	-25.0	-26.1	
7510.50	-19.4	V	3.0	32.8	1.0	-51.2	-25.0	-26.2	
10014.00	-18.6	V	3.0	32.8	1.0	-50.3	-25.0	-25.3	
5007.00	-19.2	H	3.0	33.2	1.0	-51.5	-25.0	-26.5	
7510.50	-19.3	H	3.0	32.8	1.0	-51.2	-25.0	-26.2	
10014.00	-20.3	H	3.0	32.8	1.0	-52.1	-25.0	-27.1	
Mid Ch, 2593									
5186.00	-18.9	V	3.0	33.2	1.0	-51.1	-25.0	-26.1	
7779.00	-17.5	V	3.0	32.8	1.0	-49.4	-25.0	-24.4	
10372.00	-19.0	V	3.0	32.5	1.0	-50.5	-25.0	-25.5	
5186.00	-17.2	H	3.0	33.2	1.0	-49.3	-25.0	-24.3	
7779.00	-18.4	H	3.0	32.8	1.0	-50.2	-25.0	-25.2	
10372.00	-20.2	H	3.0	32.5	1.0	-51.7	-25.0	-26.7	
High Ch, 2682.5									
5365.00	-20.0	V	3.0	33.1	1.0	-52.2	-25.0	-27.2	
8047.50	-16.3	V	3.0	32.8	1.0	-48.1	-25.0	-23.1	
10730.00	-17.7	V	3.0	32.3	1.0	-48.9	-25.0	-23.9	
5365.00	-19.1	H	3.0	33.1	1.0	-51.2	-25.0	-26.2	
8047.50	-17.3	H	3.0	32.8	1.0	-49.1	-25.0	-24.1	
10730.00	-18.1	H	3.0	32.3	1.0	-49.3	-25.0	-24.3	

LTE B41 15MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 41 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2503.5									
5007.00	-19.5	V	3.0	33.2	1.0	-51.7	-25.0	-26.7	
7510.50	-19.1	V	3.0	32.8	1.0	-50.9	-25.0	-25.9	
10014.00	-18.7	V	3.0	32.8	1.0	-50.4	-25.0	-25.4	
5007.00	-18.6	H	3.0	33.2	1.0	-50.8	-25.0	-25.8	
7510.50	-19.8	H	3.0	32.8	1.0	-51.7	-25.0	-26.7	
10014.00	-20.5	H	3.0	32.8	1.0	-52.3	-25.0	-27.3	
Mid Ch, 2593									
5186.00	-19.6	V	3.0	33.2	1.0	-51.8	-25.0	-26.8	
7779.00	-18.5	V	3.0	32.8	1.0	-50.3	-25.0	-25.3	
10372.00	-18.6	V	3.0	32.5	1.0	-50.1	-25.0	-25.1	
5186.00	-16.1	H	3.0	33.2	1.0	-48.2	-25.0	-23.2	
7779.00	-19.1	H	3.0	32.8	1.0	-50.9	-25.0	-25.9	
10372.00	-21.0	H	3.0	32.5	1.0	-52.5	-25.0	-27.5	
High Ch, 2682.5									
5365.00	-18.7	V	3.0	33.1	1.0	-50.9	-25.0	-25.9	
8047.50	-17.6	V	3.0	32.8	1.0	-49.4	-25.0	-24.4	
10730.00	-18.0	V	3.0	32.3	1.0	-49.3	-25.0	-24.3	
5365.00	-19.6	H	3.0	33.1	1.0	-51.7	-25.0	-26.7	
8047.50	-18.0	H	3.0	32.8	1.0	-49.9	-25.0	-24.9	
10730.00	-18.1	H	3.0	32.3	1.0	-49.4	-25.0	-24.4	

LTE B41 15MHz 16QAM

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_QPSK Band 41 Harmonics, 20MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2506									
5012.00	-18.5	V	3.0	33.2	1.0	-50.7	-25.0	-25.7	
7518.00	-18.9	V	3.0	32.8	1.0	-50.7	-25.0	-25.7	
10024.00	-18.8	V	3.0	32.8	1.0	-50.6	-25.0	-25.6	
5012.00	-19.2	H	3.0	33.2	1.0	-51.4	-25.0	-26.4	
7518.00	-18.4	H	3.0	32.8	1.0	-50.2	-25.0	-25.2	
10024.00	-19.5	H	3.0	32.8	1.0	-51.3	-25.0	-26.3	
Mid Ch, 2593									
5186.00	-16.6	V	3.0	33.2	1.0	-48.8	-25.0	-23.8	
7779.00	-18.6	V	3.0	32.8	1.0	-50.4	-25.0	-25.4	
10372.00	-20.1	V	3.0	32.5	1.0	-51.6	-25.0	-26.6	
5186.00	-19.3	H	3.0	33.2	1.0	-51.5	-25.0	-26.5	
7779.00	-19.2	H	3.0	32.8	1.0	-51.0	-25.0	-26.0	
10372.00	-19.5	H	3.0	32.5	1.0	-51.0	-25.0	-26.0	
High Ch, 2680									
5360.00	-20.2	V	3.0	33.1	1.0	-52.3	-25.0	-27.3	
8040.00	-16.5	V	3.0	32.8	1.0	-48.3	-25.0	-23.3	
10720.00	-19.5	V	3.0	32.3	1.0	-50.8	-25.0	-25.8	
5360.00	-19.6	H	3.0	33.1	1.0	-51.8	-25.0	-26.8	
8040.00	-17.0	H	3.0	32.8	1.0	-48.8	-25.0	-23.8	
10720.00	-17.6	H	3.0	32.3	1.0	-48.9	-25.0	-23.9	

LTE B41 20MHz QPSK

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Microsoft
Project #: 11735596
Date: 8/11/2017
Test Engineer: 43575 OS
Configuration: EUT + AC
Location: Chamber C
Mode: LTE_16QAM Band 41 Harmonics, 20MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2506									
5012.00	-19.0	V	3.0	33.2	1.0	-51.2	-25.0	-26.2	
7518.00	-18.2	V	3.0	32.8	1.0	-50.0	-25.0	-25.0	
10024.00	-19.6	V	3.0	32.8	1.0	-51.4	-25.0	-26.4	
5012.00	-19.2	H	3.0	33.2	1.0	-51.4	-25.0	-26.4	
7518.00	-18.5	H	3.0	32.8	1.0	-50.4	-25.0	-25.4	
10024.00	-20.2	H	3.0	32.8	1.0	-52.0	-25.0	-27.0	
Mid Ch, 2593									
5186.00	-17.4	V	3.0	33.2	1.0	-49.6	-25.0	-24.6	
7779.00	-18.9	V	3.0	32.8	1.0	-50.7	-25.0	-25.7	
10372.00	-20.0	V	3.0	32.5	1.0	-51.5	-25.0	-26.5	
5186.00	-19.8	H	3.0	33.2	1.0	-52.0	-25.0	-27.0	
7779.00	-18.1	H	3.0	32.8	1.0	-49.9	-25.0	-24.9	
10372.00	-19.9	H	3.0	32.5	1.0	-51.4	-25.0	-26.4	
High Ch, 2680									
5360.00	-20.7	V	3.0	33.1	1.0	-52.9	-25.0	-27.9	
8040.00	-18.7	V	3.0	32.8	1.0	-50.5	-25.0	-25.5	
10720.00	-19.8	V	3.0	32.3	1.0	-51.1	-25.0	-26.1	
5360.00	-19.2	H	3.0	33.1	1.0	-51.3	-25.0	-26.3	
8040.00	-17.7	H	3.0	32.8	1.0	-49.6	-25.0	-24.6	
10720.00	-17.2	H	3.0	32.3	1.0	-48.4	-25.0	-23.4	

LTE B41 20MHz 16QAM

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701H
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