

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1710.70	8.67	V	0.5	8.6	16.74	30.0	-13.3	
1710.70	12.36	H	0.5	8.6	20.43	30.0	-9.6	
Mid Ch								
1732.50	9.23	V	0.5	8.6	17.28	30.0	-12.7	
1732.50	12.72	H	0.5	8.6	20.78	30.0	-9.2	
High Ch								
1754.30	8.58	V	0.5	8.6	16.65	30.0	-13.4	
1754.30	13.13	H	0.5	8.6	21.20	30.0	-8.8	

LTE B4 1.4MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1710.70	6.18	V	0.5	8.6	14.25	30.0	-15.7	
1710.70	10.40	H	0.5	8.6	18.47	30.0	-11.5	
Mid Ch								
1732.50	8.50	V	0.5	8.6	16.55	30.0	-13.4	
1732.50	12.41	H	0.5	8.6	20.47	30.0	-9.5	
High Ch								
1754.30	8.58	V	0.5	8.6	16.65	30.0	-13.4	
1754.30	12.98	H	0.5	8.6	21.05	30.0	-9.0	

LTE B4 1.4MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 4 Fundamentals, 3MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1711.50	7.48	V	0.5	8.6	15.55	30.0	-14.4	
1711.50	11.66	H	0.5	8.6	19.73	30.0	-10.3	
Mid Ch								
1732.50	7.74	V	0.5	8.6	15.79	30.0	-14.2	
1732.50	13.27	H	0.5	8.6	21.33	30.0	-8.7	
High Ch								
1753.50	9.52	V	0.5	8.6	17.59	30.0	-12.4	
1753.50	13.65	H	0.5	8.6	21.72	30.0	-8.3	

LTE B4 3MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 4 Fundamentals, 3MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1711.50	6.70	V	0.5	8.6	14.77	30.0	-15.2	
1711.50	10.90	H	0.5	8.6	18.97	30.0	-11.0	
Mid Ch								
1732.50	6.96	V	0.5	8.6	15.01	30.0	-15.0	
1732.50	12.37	H	0.5	8.6	20.43	30.0	-9.6	
High Ch								
1753.50	8.68	V	0.5	8.6	16.75	30.0	-13.3	
1753.50	12.80	H	0.5	8.6	20.87	30.0	-9.1	

LTE B4 3MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 4 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.50	8.01	V	0.5	8.6	16.08	30.0	-13.9	
1712.50	11.83	H	0.5	8.6	19.90	30.0	-10.1	
Mid Ch								
1732.50	9.09	V	0.5	8.6	17.14	30.0	-12.9	
1732.50	12.28	H	0.5	8.6	20.34	30.0	-9.7	
High Ch								
1752.50	9.62	V	0.5	8.6	17.68	30.0	-12.3	
1752.50	13.48	H	0.5	8.6	21.55	30.0	-8.5	

LTE B4 5MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 4 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.50	7.29	V	0.5	8.6	15.36	30.0	-14.6	
1712.50	10.92	H	0.5	8.6	18.99	30.0	-11.0	
Mid Ch								
1732.50	8.38	V	0.5	8.6	16.43	30.0	-13.6	
1732.50	11.45	H	0.5	8.6	19.51	30.0	-10.5	
High Ch								
1752.50	8.75	V	0.5	8.6	16.81	30.0	-13.2	
1752.50	12.80	H	0.5	8.6	20.87	30.0	-9.1	

LTE B4 5MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 4 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	8.20	V	0.5	8.6	16.27	30.0	-13.7	
1715.00	10.93	H	0.5	8.6	19.00	30.0	-11.0	
Mid Ch								
1732.50	0.53	V	0.5	8.6	8.58	30.0	-21.4	
1732.50	12.45	H	0.5	8.6	20.51	30.0	-9.5	
High Ch								
1750.00	8.12	V	0.5	8.6	16.19	30.0	-13.8	
1750.00	12.48	H	0.5	8.6	20.56	30.0	-8.4	

LTE B4 10MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 4 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	7.39	V	0.5	8.6	15.46	30.0	-14.5	
1715.00	10.13	H	0.5	8.6	18.20	30.0	-11.8	
Mid Ch								
1732.50	-0.37	V	0.5	8.6	7.68	30.0	-22.3	
1732.50	11.52	H	0.5	8.6	19.98	30.0	-10.4	
High Ch								
1750.00	7.42	V	0.5	8.6	15.49	30.0	-14.5	
1750.00	11.66	H	0.5	8.6	19.74	30.0	-10.3	

LTE B4 10MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 4 Fundamentals, 15MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	6.86	V	0.5	8.6	14.92	30.0	-15.1	
1717.50	11.74	H	0.5	8.6	19.80	30.0	-10.2	
Mid Ch								
1732.50	8.32	V	0.5	8.6	16.37	30.0	-13.6	
1732.50	13.24	H	0.5	8.6	21.30	30.0	-8.7	
High Ch								
1747.50	8.53	V	0.5	8.6	16.62	30.0	-13.4	
1747.50	12.61	H	0.5	8.6	20.70	30.0	-8.3	

LTE B4 15MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 4 Fundamentals, 15MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	6.08	V	0.5	8.6	14.14	30.0	-15.9	
1717.50	10.82	H	0.5	8.6	18.88	30.0	-11.1	
Mid Ch								
1732.50	7.45	V	0.5	8.6	15.50	30.0	-14.5	
1732.50	12.26	H	0.5	8.6	20.32	30.0	-9.7	
High Ch								
1747.50	7.62	V	0.5	8.6	15.71	30.0	-14.3	
1747.50	11.90	H	0.5	8.6	19.99	30.0	-10.0	

LTE B4 15MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 4 Fundamentals, 20MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	8.59	V	0.6	8.6	16.64	30.0	-13.4	
1720.00	10.92	H	0.6	8.6	18.97	30.0	-11.0	
Mid Ch								
1732.50	-0.33	V	0.5	8.6	7.72	30.0	-22.3	
1732.50	13.03	H	0.5	8.6	21.09	30.0	-8.9	
High Ch								
1745.00	1.32	V	0.5	8.6	9.41	30.0	-20.6	
1745.00	12.71	H	0.5	8.6	20.81	30.0	-8.2	

LTE B4 20MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 4 Fundamentals, 20MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T59, 6ft N-type Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	7.79	V	0.6	8.6	15.84	30.0	-14.2	
1720.00	10.11	H	0.6	8.6	18.16	30.0	-11.8	
Mid Ch								
1732.50	-1.07	V	0.5	8.6	6.98	30.0	-23.0	
1732.50	12.45	H	0.5	8.6	20.51	30.0	-9.5	
High Ch								
1745.00	0.53	V	0.5	8.6	8.62	30.0	-21.4	
1745.00	11.99	H	0.5	8.6	20.09	30.0	-9.9	

LTE B4 20MHz 16QAM

**LTE Band 5**

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
1.4	QPSK	1/0	824.7	19.03	79.98
		1/0	836.5	19.71	93.54
		1/0	848.3	19.41	87.30
	16QAM	1/0	824.7	17.89	61.52
		1/0	836.5	18.61	72.61
		1/0	848.3	18.34	68.23
3	QPSK	1/0	825.5	19.01	79.62
		1/0	836.5	19.46	88.31
		1/0	847.5	19.39	86.90
	16QAM	1/0	825.5	18.30	67.61
		1/0	836.5	18.64	73.11
		1/0	847.5	18.58	72.11
5	QPSK	1/0	826.5	19.07	80.72
		1/0	836.5	19.54	89.95
		1/0	846.5	19.40	87.10
	16QAM	1/0	826.5	18.26	66.99
		1/0	836.5	18.73	74.64
		1/0	846.5	18.53	71.29
10	QPSK	1/0	829	19.13	81.85
		1/0	836.5	19.43	87.70
		1/0	844	19.39	86.90
	16QAM	1/0	829	18.41	69.34
		1/0	836.5	18.57	71.94
		1/0	844	18.44	69.82

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_QPSK Band 5 Fundamentals, 1MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	13.02	V	0.4	0.0	12.65	38.5	-25.8	
824.70	19.40	H	0.4	0.0	19.03	38.5	-19.5	
Mid Ch								
836.50	12.20	V	0.4	0.0	11.82	38.5	-26.7	
836.50	20.99	H	0.4	0.0	19.71	38.5	-18.8	
High Ch								
848.30	11.96	V	0.4	0.0	11.58	38.5	-26.9	
848.30	19.79	H	0.4	0.0	19.41	38.5	-19.1	

LTE B5 1.4MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_16QAM Band 5 Fundamentals, 1MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	12.09	V	0.4	0.0	11.72	38.5	-26.8	
824.70	18.26	H	0.4	0.0	17.89	38.5	-20.6	
Mid Ch								
836.50	11.23	V	0.4	0.0	10.85	38.5	-27.6	
836.50	18.99	H	0.4	0.0	18.61	38.5	-19.9	
High Ch								
848.30	10.97	V	0.4	0.0	10.59	38.5	-27.9	
848.30	18.72	H	0.4	0.0	18.34	38.5	-20.2	

LTE B5 1.4MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_QPSK Band 5 Fundamentals, 3MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	12.98	V	0.4	0.0	12.61	38.5	-25.9	
825.50	19.38	H	0.4	0.0	19.01	38.5	-19.5	
Mid Ch								
836.50	12.31	V	0.4	0.0	11.93	38.5	-26.6	
836.50	19.84	H	0.4	0.0	19.46	38.5	-19.0	
High Ch								
847.50	12.04	V	0.4	0.0	11.66	38.5	-26.8	
847.50	19.77	H	0.4	0.0	19.39	38.5	-19.1	

LTE B5 3MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_16QAM Band 5 Fundamentals, 3MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	12.07	V	0.4	0.0	11.70	38.5	-26.8	
825.50	18.67	H	0.4	0.0	18.30	38.5	-20.2	
Mid Ch								
836.50	11.38	V	0.4	0.0	11.00	38.5	-27.5	
836.50	19.02	H	0.4	0.0	18.64	38.5	-19.9	
High Ch								
847.50	11.03	V	0.4	0.0	10.65	38.5	-27.8	
847.50	18.96	H	0.4	0.0	18.58	38.5	-19.9	

LTE B5 3MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_QPSK Band 5 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	12.88	V	0.4	0.0	12.51	38.5	-26.0	
826.50	19.44	H	0.4	0.0	19.07	38.5	-19.4	
Mid Ch								
836.50	12.52	V	0.4	0.0	12.14	38.5	-26.4	
836.50	19.92	H	0.4	0.0	19.54	38.5	-19.0	
High Ch								
846.50	12.29	V	0.4	0.0	11.91	38.5	-26.6	
846.50	19.78	H	0.4	0.0	19.40	38.5	-19.1	

LTE B5 5MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_16QAM Band 5 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	11.78	V	0.4	0.0	11.41	38.5	-27.1	
826.50	18.63	H	0.4	0.0	18.26	38.5	-20.2	
Mid Ch								
836.50	11.40	V	0.4	0.0	11.02	38.5	-27.5	
836.50	19.11	H	0.4	0.0	18.73	38.5	-19.8	
High Ch								
846.50	10.89	V	0.4	0.0	10.51	38.5	-28.0	
846.50	18.91	H	0.4	0.0	18.53	38.5	-20.0	

LTE B5 5MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

**Company:** SOMC  
**Project #:** 11626381  
**Date:** 3/10/2017  
**Test Engineer:** GE43578  
**Configuration:** EUT Only (Y-Pos)  
**Location:** Chamber A  
**Mode:** LTE\_QPSK Band 5 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	12.50	V	0.4	0.0	12.13	38.5	-26.4	
829.00	19.50	H	0.4	0.0	19.13	38.5	-19.4	
Mid Ch								
836.50	12.18	V	0.4	0.0	11.80	38.5	-26.7	
836.50	19.81	H	0.4	0.0	19.43	38.5	-19.1	
High Ch								
844.00	11.67	V	0.4	0.0	11.29	38.5	-27.2	
844.00	19.77	H	0.4	0.0	19.39	38.5	-19.1	

LTE B5 10MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

**Company:** SOMC  
**Project #:** 11626381  
**Date:** 3/10/2017  
**Test Engineer:** GE43578  
**Configuration:** EUT Only (Y-Pos)  
**Location:** Chamber A  
**Mode:** LTE\_16QAM Band 5 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	11.71	V	0.4	0.0	11.34	38.5	-27.2	
829.00	18.78	H	0.4	0.0	18.41	38.5	-20.1	
Mid Ch								
836.50	11.40	V	0.4	0.0	11.02	38.5	-27.5	
836.50	18.95	H	0.4	0.0	18.57	38.5	-19.9	
High Ch								
844.00	10.86	V	0.4	0.0	10.48	38.5	-28.0	
844.00	18.82	H	0.4	0.0	18.44	38.5	-20.1	

LTE B5 10MHz 16QAM

**LTE Band 7**

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
5	QPSK	1/0	2502.5	26.67	464.52
		1/0	2535	27.48	559.76
		1/0	2567.5	26.23	419.76
	16QAM	1/0	2502.5	26.68	465.59
		1/0	2535	27.36	544.50
		1/0	2567.5	26.35	431.52
10	QPSK	1/0	2505	25.29	338.06
		1/0	2535	25.51	355.63
		1/0	2565	24.59	287.74
	16QAM	1/0	2505	26.79	477.53
		1/0	2535	24.71	295.80
		1/0	2565	25.37	344.35
15	QPSK	1/0	2507.5	25.05	319.89
		1/0	2535	25.38	345.14
		1/0	2562.5	22.18	165.20
	16QAM	1/0	2507.5	25.19	330.37
		1/0	2535	25.60	363.08
		1/0	2562.5	22.18	165.20
20	QPSK	1/0	2510	24.19	262.42
		1/0	2535	25.86	385.48
		1/0	2560	25.02	317.69
	16QAM	1/0	2510	24.47	279.90
		1/0	2535	25.95	393.55
		1/0	2560	25.12	325.09

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 7 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2502.50	8.47	V	0.7	10.3	18.10	33.0	-14.9	
2502.50	17.04	H	0.7	10.3	26.67	33.0	-6.3	
Mid Ch								
2535.00	7.44	V	0.7	10.3	17.02	33.0	-16.0	
2535.00	17.90	H	0.7	10.3	27.48	33.0	-5.5	
High Ch								
2567.50	16.19	V	0.7	10.3	25.84	33.0	-7.2	
2567.50	16.58	H	0.7	10.3	26.23	33.0	-6.8	

LTE B7 5MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 7 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2502.50	8.50	V	0.7	10.3	18.13	33.0	-14.9	
2502.50	17.05	H	0.7	10.3	26.68	33.0	-6.3	
Mid Ch								
2535.00	7.25	V	0.7	10.3	16.83	33.0	-16.2	
2535.00	17.78	H	0.7	10.3	27.36	33.0	-5.6	
High Ch								
2567.50	16.23	V	0.7	10.3	25.88	33.0	-7.1	
2567.50	16.70	H	0.7	10.3	26.35	33.0	-6.7	

LTE B7 5MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 7 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2505.00	14.33	V	0.7	10.3	23.98	33.0	-9.0	
2505.00	15.65	H	0.7	10.3	25.29	33.0	-7.7	
Mid Ch								
2535.00	15.00	V	0.7	10.3	24.58	33.0	-8.4	
2535.00	15.93	H	0.7	10.3	25.51	33.0	-7.5	
High Ch								
2565.00	14.95	V	0.7	10.3	24.59	33.0	-8.4	
2565.00	14.12	H	0.7	10.3	23.76	33.0	-9.2	

LTE B7 10MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 7 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2505.00	14.70	V	0.7	10.3	24.35	33.0	-8.7	
2505.00	17.15	H	0.7	10.3	26.79	33.0	-6.2	
Mid Ch								
2535.00	15.46	V	0.7	10.3	25.04	33.0	-8.0	
2535.00	15.13	H	0.7	10.3	24.71	33.0	-8.3	
High Ch								
2565.00	15.31	V	0.7	10.3	24.95	33.0	-8.0	
2565.00	15.73	H	0.7	10.3	25.37	33.0	-7.6	

LTE B7 10MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 7 Fundamentals, 15MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2507.50	15.39	V	0.6	10.3	25.05	33.0	-7.9	
2507.50	11.97	H	0.6	10.3	21.63	33.0	-11.4	
Mid Ch								
2535.00	14.73	V	0.7	10.3	24.31	33.0	-8.7	
2535.00	15.80	H	0.7	10.3	25.38	33.0	-7.6	
High Ch								
2562.50	2.03	V	0.7	10.3	11.67	33.0	-21.3	
2562.50	12.54	H	0.7	10.3	22.18	33.0	-10.8	

LTE B7 15MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 7 Fundamentals, 15MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2507.50	15.53	V	0.6	10.3	25.19	33.0	-7.8	
2507.50	12.31	H	0.6	10.3	21.97	33.0	-11.0	
Mid Ch								
2535.00	14.97	V	0.7	10.3	24.55	33.0	-8.4	
2535.00	16.02	H	0.7	10.3	25.60	33.0	-7.4	
High Ch								
2562.50	1.96	V	0.7	10.3	11.60	33.0	-21.4	
2562.50	12.54	H	0.7	10.3	22.18	33.0	-10.8	

LTE B7 15MHz 16QAM

UL Verification Services, Inc. High Frequency Substitution Measurement								
<b>Company:</b> SOMAC <b>Project #:</b> 11626381 <b>Date:</b> 3/10/2017 <b>Test Engineer:</b> 43575 OS <b>Configuration:</b> ELUT Only <b>Location:</b> Chamber B <b>Mode:</b> LTE_QPSK Band 7 Fundamentals, 20MHz Bandwidth								
<b>Test Equipment:</b> Receiving: Horn T345, and Chamber B SMA Cables Substitution: Horn T72, 6ft N-type Cable T1086								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2510.00	14.31	V	0.6	10.3	23.98	33.0	-9.0	
2510.00	14.53	H	0.6	10.3	24.19	33.0	-8.8	
Mid Ch								
2535.00	14.38	V	0.7	10.3	23.96	33.0	-9.0	
2535.00	16.28	H	0.7	10.3	25.86	33.0	-7.1	
High Ch								
2560.00	15.39	V	0.7	10.3	25.02	33.0	-8.0	
2560.00	14.66	H	0.7	10.3	24.29	33.0	-8.7	
LTE B7 20MHz QPSK								

UL Verification Services, Inc. High Frequency Substitution Measurement								
<b>Company:</b> SOMAC <b>Project #:</b> 11626381 <b>Date:</b> 3/10/2017 <b>Test Engineer:</b> 43575 OS <b>Configuration:</b> ELUT Only <b>Location:</b> Chamber B <b>Mode:</b> LTE_16QAM Band 7 Fundamentals, 20MHz Bandwidth								
<b>Test Equipment:</b> Receiving: Horn T345, and Chamber B SMA Cables Substitution: Horn T72, 6ft N-type Cable T1086								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2510.00	13.93	V	0.6	10.3	23.60	33.0	-9.4	
2510.00	14.81	H	0.6	10.3	24.47	33.0	-8.5	
Mid Ch								
2535.00	14.52	V	0.7	10.3	24.10	33.0	-8.9	
2535.00	16.37	H	0.7	10.3	25.95	33.0	-7.0	
High Ch								
2560.00	15.49	V	0.7	10.3	25.12	33.0	-7.9	
2560.00	14.89	H	0.7	10.3	24.52	33.0	-8.5	
LTE B7 20MHz 16QAM								

**LTE Band 12**

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
1.4	QPSK	1/0	699.7	15.61	36.39
		1/0	707.5	16.47	44.36
		1/0	715.3	17.32	53.95
	16QAM	1/0	699.7	15.03	31.84
		1/0	707.5	15.71	37.24
		1/0	715.3	16.49	44.57
3	QPSK	1/0	700.5	15.82	38.19
		1/0	707.5	16.71	46.88
		1/0	714.5	17.49	56.10
	16QAM	1/0	700.5	15.16	32.81
		1/0	707.5	15.81	38.11
		1/0	714.5	16.73	47.10
5	QPSK	1/0	701.5	16.06	40.36
		1/0	707.5	16.68	46.56
		1/0	713.5	16.25	42.17
	16QAM	1/0	701.5	15.23	33.34
		1/0	707.5	15.80	38.02
		1/0	713.5	15.55	35.89
10	QPSK	1/0	704	16.37	43.35
		1/0	707.5	16.59	45.60
		1/0	711	17.28	53.46
	16QAM	1/0	704	15.55	35.89
		1/0	707.5	15.81	38.11
		1/0	711	16.70	46.77

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_QPSK BAND 12 Fundamentals 1.4MHz

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
698.70	7.95	V	0.4	0.0	7.59	34.8	-27.2	
699.70	15.97	H	0.4	0.0	15.61	34.8	-19.2	
Mid Ch								
707.50	9.67	V	0.3	0.0	9.33	34.8	-25.5	
707.50	16.81	H	0.3	0.0	16.47	34.8	-18.3	
High Ch								
715.30	8.76	V	0.3	0.0	8.41	34.8	-26.4	
715.30	17.67	H	0.3	0.0	17.32	34.8	-17.5	

LTE B12 1.4MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_16QAM BAND 12 Fundamentals 1.4MHz

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
698.70	7.22	V	0.4	0.0	6.86	34.8	-27.9	
699.70	15.39	H	0.4	0.0	15.03	34.8	-19.8	
Mid Ch								
707.50	8.75	V	0.3	0.0	8.41	34.8	-26.4	
707.50	16.95	H	0.3	0.0	16.60	34.8	-18.2	
High Ch								
715.30	8.02	V	0.3	0.0	7.67	34.8	-27.1	
715.30	16.84	H	0.3	0.0	16.49	34.8	-18.3	

LTE B12 1.4MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_QPSK Band 12 Fundamentals, 3MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
700.50	8.16	V	0.4	0.0	7.80	34.8	-27.0	
700.50	16.18	H	0.4	0.0	15.82	34.8	-19.0	
Mid Ch								
707.50	9.67	V	0.3	0.0	9.33	34.8	-25.5	
707.50	17.95	H	0.3	0.0	17.61	34.8	-18.1	
High Ch								
714.50	9.18	V	0.3	0.0	8.84	34.8	-26.0	
714.50	17.83	H	0.3	0.0	17.49	34.8	-17.3	

LTE B12 3MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_16QAM Band 12 Fundamentals, 3MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
700.50	7.29	V	0.4	0.0	6.93	34.8	-27.9	
700.50	15.52	H	0.4	0.0	15.16	34.8	-19.6	
Mid Ch								
707.50	8.92	V	0.3	0.0	8.58	34.8	-26.2	
707.50	16.15	H	0.3	0.0	15.81	34.8	-19.0	
High Ch								
714.50	8.39	V	0.3	0.0	8.05	34.8	-26.8	
714.50	17.07	H	0.3	0.0	16.73	34.8	-18.1	

LTE B12 3MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_QPSK Band 12 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	8.34	V	0.4	0.0	7.98	34.8	-26.8	
701.50	16.42	H	0.4	0.0	16.06	34.8	-18.7	
Mid Ch								
707.50	9.77	V	0.3	0.0	9.43	34.8	-25.4	
707.50	17.02	H	0.3	0.0	16.68	34.8	-18.1	
High Ch								
713.50	8.26	V	0.3	0.0	7.92	34.8	-26.9	
713.50	16.59	H	0.3	0.0	16.25	34.8	-18.6	

LTE B12 5MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_16QAM Band 12 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	7.71	V	0.4	0.0	7.35	34.8	-27.4	
701.50	15.59	H	0.4	0.0	15.23	34.8	-19.6	
Mid Ch								
707.50	9.05	V	0.3	0.0	8.71	34.8	-26.1	
707.50	16.14	H	0.3	0.0	15.80	34.8	-19.0	
High Ch								
713.50	7.39	V	0.3	0.0	7.05	34.8	-27.8	
713.50	15.89	H	0.3	0.0	15.55	34.8	-19.3	

LTE B12 5MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

**Company:** SOMC  
**Project #:** 11626381  
**Date:** 3/10/2017  
**Test Engineer:** GE43578  
**Configuration:** EUT Only (Y-Pos)  
**Location:** Chamber A  
**Mode:** LTE\_QPSK Band 12 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	8.41	V	0.4	0.0	8.06	34.8	-26.7	
704.00	16.72	H	0.4	0.0	16.37	34.8	-18.4	
Mid Ch								
707.50	9.75	V	0.3	0.0	9.41	34.8	-25.4	
707.50	16.93	H	0.3	0.0	16.59	34.8	-18.2	
High Ch								
711.00	9.28	V	0.3	0.0	8.94	34.8	-25.9	
711.00	17.62	H	0.3	0.0	17.28	34.8	-17.5	

LTE B12 10MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

**Company:** SOMC  
**Project #:** 11626381  
**Date:** 3/10/2017  
**Test Engineer:** GE43578  
**Configuration:** EUT Only (Y-Pos)  
**Location:** Chamber A  
**Mode:** LTE\_16QAM Band 12 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	7.75	V	0.4	0.0	7.40	34.8	-27.4	
704.00	15.90	H	0.4	0.0	15.55	34.8	-19.3	
Mid Ch								
707.50	8.95	V	0.3	0.0	8.61	34.8	-26.2	
707.50	16.15	H	0.3	0.0	15.81	34.8	-19.0	
High Ch								
711.00	8.56	V	0.3	0.0	8.22	34.8	-26.6	
711.00	17.04	H	0.3	0.0	16.70	34.8	-18.1	

LTE B12 10MHz 16QAM

**LTE Band 13**

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
5	QPSK	1/0	779.5	20.23	105.44
		1/0	782	20.46	111.17
		1/0	784.5	20.73	118.30
	16QAM	1/0	779.5	19.46	88.31
		1/0	782	19.53	89.74
		1/0	784.5	20.02	100.46
10	QPSK	1/0	782	20.41	109.90
	16QAM	1/0	782	19.54	89.95

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

**Company:** SOMC  
**Project #:** 11626381  
**Date:** 3/13/2017  
**Test Engineer:** GE43578  
**Configuration:** EUT Only  
**Location:** Chamber A  
**Mode:** LTE\_QPSK Band 13 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
779.50	13.46	V	0.4	0.0	13.10	34.8	-21.7	
779.50	20.59	H	0.4	0.0	20.23	34.8	-14.5	
Mid Ch								
782.00	14.05	V	0.4	0.0	13.69	34.8	-21.1	
782.00	20.82	H	0.4	0.0	20.46	34.8	-14.3	
High Ch								
784.50	14.40	V	0.4	0.0	14.04	34.8	-20.7	
784.50	21.09	H	0.4	0.0	20.73	34.8	-14.0	

LTE B13 5MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

**Company:** SOMC  
**Project #:** 11626381  
**Date:** 3/13/2017  
**Test Engineer:** GE43578  
**Configuration:** EUT Only (Y-Pos)  
**Location:** Chamber A  
**Mode:** LTE\_16QAM Band 13 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
779.50	12.74	V	0.4	0.0	12.38	34.8	-22.4	
779.50	19.82	H	0.4	0.0	19.46	34.8	-15.3	
Mid Ch								
782.00	13.12	V	0.4	0.0	12.76	34.8	-22.0	
782.00	19.89	H	0.4	0.0	19.53	34.8	-15.2	
High Ch								
784.50	13.59	V	0.4	0.0	13.23	34.8	-21.5	
784.50	20.38	H	0.4	0.0	20.02	34.8	-14.8	

LTE B13 5MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

**Company:** SOMC  
**Project #:** 11626381  
**Date:** 3/13/2017  
**Test Engineer:** GE43578  
**Configuration:** EUT Only (Y-Pos)  
**Location:** Chamber A  
**Mode:** LTE\_QPSK Band 13 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
782.00	13.55	V	0.4	0.0	13.19	34.8	-21.6	
782.00	20.77	H	0.4	0.0	20.41	34.8	-14.4	
High Ch								

LTE B13 10MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

**Company:** SOMC  
**Project #:** 11626381  
**Date:** 3/13/2017  
**Test Engineer:** GE43578  
**Configuration:** EUT Only (Y-Pos)  
**Location:** Chamber A  
**Mode:** LTE\_16QAM Band 13 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T130, and Chamber A SMA Cables  
 Substitution: Dipole T273, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
782.00	12.73	V	0.4	0.0	12.37	34.8	-22.4	
782.00	19.90	H	0.4	0.0	19.54	34.8	-15.2	
High Ch								

LTE B13 10MHz 16QAM

**LTE Band 17**

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
5	QPSK	1/0	706.5	18.22	66.37
		1/0	710	17.26	53.21
		1/0	713.5	18.37	68.71
	16QAM	1/0	706.5	17.33	54.08
		1/0	710	16.59	45.60
		1/0	713.5	17.71	59.02
10	QPSK	1/0	709	15.61	36.39
		1/0	710	17.48	55.98
		1/0	711	15.27	33.65
	16QAM	1/0	709	15.24	33.42
		1/0	710	16.60	45.71
		1/0	711	14.60	28.84

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: 11626381  
 Project #: SOMC  
 Date: 3/15/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 17 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T243, and Chamber B SMA Cables  
 Substitution: Dipole T416, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
706.50	7.90	V	0.3	0.0	7.55	34.8	-27.2	
706.50	18.57	H	0.3	0.0	18.22	34.8	-16.5	
Mid Ch								
710.00	6.49	V	0.3	0.0	6.15	34.8	-28.6	
710.00	17.69	H	0.3	0.0	17.26	34.8	-17.5	
High Ch								
713.50	10.52	V	0.3	0.0	10.18	34.8	-24.6	
713.50	18.72	H	0.3	0.0	18.37	34.8	-16.4	

LTE B17 5MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: 11626381  
 Project #: SOMC  
 Date: 3/15/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 17 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T243, and Chamber B SMA Cables  
 Substitution: Dipole T416, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
706.50	7.03	V	0.3	0.0	6.68	34.8	-28.1	
706.50	17.68	H	0.3	0.0	17.33	34.8	-17.4	
Mid Ch								
710.00	5.85	V	0.3	0.0	5.51	34.8	-29.3	
710.00	16.93	H	0.3	0.0	16.59	34.8	-18.2	
High Ch								
713.50	9.69	V	0.3	0.0	9.35	34.8	-25.4	
713.50	18.06	H	0.3	0.0	17.71	34.8	-17.1	

LTE B17 5MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/15/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 17 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T243, and Chamber B SMA Cables  
 Substitution: Dipole T416, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
709.00	7.89	V	0.3	0.0	7.54	34.8	-27.2	
709.00	15.96	H	0.3	0.0	15.61	34.8	-19.2	
Mid Ch								
710.00	7.95	V	0.3	0.0	7.61	34.8	-27.2	
710.00	17.82	H	0.3	0.0	17.48	34.8	-17.3	
High Ch								
711.00	8.35	V	0.3	0.0	8.01	34.8	-26.8	
711.00	15.62	H	0.3	0.0	15.27	34.8	-19.5	

LTE B17 10MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMC  
 Project #: 11626381  
 Date: 3/15/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 17 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Hybrid T243, and Chamber B SMA Cables  
 Substitution: Dipole T416, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
709.00	7.39	V	0.3	0.0	7.04	34.8	-27.7	
709.00	15.99	H	0.3	0.0	15.24	34.8	-19.5	
Mid Ch								
710.00	7.29	V	0.3	0.0	6.95	34.8	-27.8	
710.00	16.94	H	0.3	0.0	16.60	34.8	-18.2	
High Ch								
711.00	7.84	V	0.3	0.0	7.50	34.8	-27.3	
711.00	14.95	H	0.3	0.0	14.60	34.8	-20.2	

LTE B17 10MHz 16QAM

**LTE Band 41**

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
5	QPSK	1/0	2498.5	24.59	287.74
		1/0	2593	24.95	312.61
		1/0	2687.5	23.40	218.78
	16QAM	1/0	2498.5	24.38	274.16
		1/0	2593	24.98	314.77
		1/0	2687.5	23.77	238.23
10	QPSK	1/0	2501	23.29	213.30
		1/0	2593	24.09	256.45
		1/0	2685	24.60	288.40
	16QAM	1/0	2501	23.33	215.28
		1/0	2593	24.68	293.76
		1/0	2685	24.60	288.40
15	QPSK	1/0	2503.5	22.92	195.88
		1/0	2593	23.29	213.30
		1/0	2682.5	22.55	179.89
	16QAM	1/0	2503.5	23.02	200.45
		1/0	2593	23.86	243.22
		1/0	2682.5	23.44	220.80
20	QPSK	1/0	2506	24.29	268.53
		1/0	2593	23.47	222.33
		1/0	2680	25.54	358.10
	16QAM	1/0	2506	24.53	283.79
		1/0	2593	23.79	239.33
		1/0	2680	25.45	350.75

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMAC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 41 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2498.50	15.67	V	0.7	9.5	24.48	33.0	-8.5	
2498.50	15.78	H	0.7	9.5	24.59	33.0	-8.4	
Mid Ch								
2593.00	5.24	V	0.7	9.5	14.02	33.0	-19.0	
2593.00	16.17	H	0.7	9.5	24.95	33.0	-8.1	
High Ch								
2687.50	3.96	V	0.7	9.5	12.77	33.0	-20.2	
2687.50	14.59	H	0.7	9.5	23.40	33.0	-9.6	

LTE B41 5MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMAC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 41 Fundamentals, 5MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2498.50	15.54	V	0.7	9.5	24.35	33.0	-8.6	
2498.50	15.57	H	0.7	9.5	24.38	33.0	-8.6	
Mid Ch								
2593.00	5.28	V	0.7	9.5	14.06	33.0	-18.9	
2593.00	16.20	H	0.7	9.5	24.98	33.0	-8.0	
High Ch								
2687.50	4.33	V	0.7	9.5	13.14	33.0	-19.9	
2687.50	14.96	H	0.7	9.5	23.77	33.0	-9.2	

LTE B41 5MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMAC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 41 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2501.00	2.69	V	0.7	9.5	11.52	33.0	-21.5	
2501.00	14.47	H	0.7	9.5	23.29	33.0	-9.7	
Mid Ch								
2593.00	14.93	V	0.7	9.5	23.71	33.0	-9.3	
2593.00	15.31	H	0.7	9.5	24.09	33.0	-8.9	
High Ch								
2685.00	15.50	V	0.7	9.5	24.32	33.0	-8.7	
2685.00	15.79	H	0.7	9.5	24.60	33.0	-8.4	

LTE B41 10MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMAC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 41 Fundamentals, 10MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2501.00	2.71	V	0.7	9.5	11.54	33.0	-21.5	
2501.00	14.51	H	0.7	9.5	23.33	33.0	-9.7	
Mid Ch								
2593.00	15.32	V	0.7	9.5	24.10	33.0	-8.9	
2593.00	15.90	H	0.7	9.5	24.68	33.0	-8.3	
High Ch								
2685.00	16.20	V	0.7	9.5	25.02	33.0	-8.0	
2685.00	15.79	H	0.7	9.5	24.60	33.0	-8.4	

LTE B41 10MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMAC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 41 Fundamentals, 15MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2503.50	13.93	V	0.7	9.5	22.77	33.0	-10.2	
2503.50	14.08	H	0.7	9.5	22.92	33.0	-10.1	
Mid Ch								
2593.00	2.49	V	0.7	9.5	11.27	33.0	-21.7	
2593.00	14.51	H	0.7	9.5	23.29	33.0	-9.7	
High Ch								
2682.50	14.65	V	0.7	9.5	23.47	33.0	-9.5	
2682.50	13.73	H	0.7	9.5	22.55	33.0	-10.5	

LTE B41 15MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

Company: SOMAC  
 Project #: 11626381  
 Date: 3/10/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 41 Fundamentals, 15MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1096

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2503.50	14.10	V	0.7	9.5	22.94	33.0	-10.1	
2503.50	14.18	H	0.7	9.5	23.02	33.0	-10.0	
Mid Ch								
2593.00	2.77	V	0.7	9.5	11.55	33.0	-21.5	
2593.00	15.08	H	0.7	9.5	23.86	33.0	-9.1	
High Ch								
2682.50	14.62	V	0.7	9.5	23.44	33.0	-9.6	
2682.50	14.08	H	0.7	9.5	22.90	33.0	-10.1	

LTE B41 15MHz 16QAM

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

**Company:** SOMAC  
**Project #:** 11626381  
**Date:** 3/10/2017  
**Test Engineer:** 43575 OS  
**Configuration:** ELUT Only  
**Location:** Chamber B  
**Mode:** LTE\_QPSK Band 41 Fundamentals, 20MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1086

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2506.00	3.07	V	0.6	9.5	11.93	33.0	-21.1	
2506.00	15.44	H	0.6	9.5	24.29	33.0	-8.7	
Mid Ch								
2593.00	14.65	V	0.7	9.5	23.43	33.0	-9.6	
2593.00	14.65	H	0.7	9.5	23.43	33.0	-9.6	
High Ch								
2680.00	16.09	V	0.7	9.5	24.91	33.0	-8.1	
2680.00	16.73	H	0.7	9.5	25.54	33.0	-7.5	

LTE B41 20MHz QPSK

**UL Verification Services, Inc.**  
**High Frequency Substitution Measurement**

**Company:** SOMAC  
**Project #:** 11626381  
**Date:** 3/10/2017  
**Test Engineer:** 43575 OS  
**Configuration:** ELUT Only  
**Location:** Chamber B  
**Mode:** LTE\_16QAM Band 41 Fundamentals, 20MHz Bandwidth

**Test Equipment:**  
 Receiving: Horn T345, and Chamber B SMA Cables  
 Substitution: Horn T72, 6ft N-type Cable T1086

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2506.00	3.16	V	0.6	9.5	12.02	33.0	-21.0	
2506.00	15.68	H	0.6	9.5	24.53	33.0	-8.5	
Mid Ch								
2593.00	15.02	V	0.7	9.5	23.80	33.0	-9.2	
2593.00	15.01	H	0.7	9.5	23.79	33.0	-9.2	
High Ch								
2680.00	16.24	V	0.7	9.5	25.06	33.0	-7.9	
2680.00	16.64	H	0.7	9.5	25.45	33.0	-7.5	

LTE B41 20MHz 16QAM

## 17.2. FIELD STRENGTH OF SPURIOUS RADIATION

### RULE PART(S)

FCC: §2.1053, §22.917, §24.238, and §27.53.

### LIMIT

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.

Part 27: (m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the Channel edge and 5 megahertz from the Channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the Channel edge, and  $55 + 10 \log (P)$  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. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on Channel BRS Channel 1 on the same terms and conditions as adjacent Channel BRS or EBS licensees.

### TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

### 17.2.1. SPURIOUS RADIATION PLOTS

#### GSM

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company: SOMC Project #: 11626381 Date: 3/15/2017 Test Engineer: 43574 JS Configuration: EUT + Charger Location: Chamber A Mode: GPRS 850 MHz Harmonics										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
<b>Low Ch, 824.2</b>										
1648.40	-23.3	V	3.0	37.0	1.0	-59.3	-13.0	-46.3		
2472.60	-19.2	V	3.0	36.4	1.0	-54.6	-13.0	-41.6		
3296.80	-16.5	V	3.0	36.2	1.0	-51.6	-13.0	-38.6		
1648.40	-23.9	H	3.0	37.0	1.0	-59.9	-13.0	-46.9		
2472.60	-21.3	H	3.0	36.4	1.0	-56.7	-13.0	-43.7		
3296.80	-17.5	H	3.0	36.2	1.0	-52.7	-13.0	-39.7		
<b>Mid Ch, 836.6</b>										
1673.20	-22.8	V	3.0	37.0	1.0	-58.8	-13.0	-45.8		
2509.80	-18.9	V	3.0	36.4	1.0	-54.3	-13.0	-41.3		
3346.40	-16.3	V	3.0	36.1	1.0	-51.4	-13.0	-38.4		
1673.20	-22.4	H	3.0	37.0	1.0	-58.4	-13.0	-45.4		
2509.80	-21.6	H	3.0	36.4	1.0	-57.0	-13.0	-44.0		
3346.40	-16.4	H	3.0	36.1	1.0	-51.5	-13.0	-38.5		
<b>High Ch, 848.8</b>										
1697.60	-22.8	V	3.0	37.0	1.0	-58.8	-13.0	-45.8		
2546.40	-19.1	V	3.0	36.4	1.0	-54.5	-13.0	-41.5		
3395.20	-16.2	V	3.0	36.1	1.0	-51.3	-13.0	-38.3		
1697.60	-23.6	H	3.0	37.0	1.0	-59.5	-13.0	-46.5		
2546.40	-21.2	H	3.0	36.4	1.0	-56.6	-13.0	-43.6		
3395.20	-17.3	H	3.0	36.1	1.0	-52.4	-13.0	-39.4		

GSM850 GPRS

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company: SOMC Project #: 11626381 Date: 3/15/2017 Test Engineer: 43574 JS Configuration: EUT + Charger Location: Chamber A Mode: EGPRS 850 MHz Harmonics										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
<b>Low Ch, 824.2</b>										
1648.40	-23.7	V	3.0	37.0	1.0	-59.7	-13.0	-46.7		
2472.60	-19.7	V	3.0	36.4	1.0	-55.2	-13.0	-42.2		
3296.80	-17.0	V	3.0	36.2	1.0	-52.1	-13.0	-39.1		
1648.40	-23.8	H	3.0	37.0	1.0	-59.8	-13.0	-46.8		
2472.60	-21.7	H	3.0	36.4	1.0	-57.3	-13.0	-44.3		
3296.80	-17.2	H	3.0	36.2	1.0	-52.4	-13.0	-39.4		
<b>Mid Ch, 836.6</b>										
1673.20	-22.8	V	3.0	37.0	1.0	-58.8	-13.0	-45.8		
2509.80	-19.1	V	3.0	36.4	1.0	-54.5	-13.0	-41.5		
3346.40	-17.4	V	3.0	36.1	1.0	-52.6	-13.0	-39.6		
1673.20	-23.0	H	3.0	37.0	1.0	-59.0	-13.0	-46.0		
2509.80	-21.9	H	3.0	36.4	1.0	-57.3	-13.0	-44.3		
3346.40	-16.5	H	3.0	36.1	1.0	-51.6	-13.0	-38.6		
<b>High Ch, 848.8</b>										
1697.60	-22.8	V	3.0	37.0	1.0	-58.8	-13.0	-45.8		
2546.40	-19.6	V	3.0	36.4	1.0	-55.0	-13.0	-42.0		
3395.20	-16.5	V	3.0	36.1	1.0	-51.6	-13.0	-38.6		
1697.60	-23.2	H	3.0	37.0	1.0	-59.1	-13.0	-46.1		
2546.40	-21.5	H	3.0	36.4	1.0	-56.9	-13.0	-43.9		
3395.20	-17.0	H	3.0	36.1	1.0	-52.1	-13.0	-39.1		

GSM850 EGPRS

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company: SOMC Project #: 11626381 Date: 3/15/2017 Test Engineer: 43574 JS Configuration: EUT + AC Charger Location: Chamber A Mode: GPRS 1900 MHz Harmonics										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
<b>Low Ch, 1850.2</b>										
3780.40	-11.2	V	3.0	35.9	1.0	-46.0	-13.0	-33.0		
5550.60	-10.5	V	3.0	35.5	1.0	-45.4	-13.0	-32.4		
7400.80	-9.3	V	3.0	35.7	1.0	-44.0	-13.0	-31.0		
3780.40	-11.6	H	3.0	35.9	1.0	-46.4	-13.0	-33.4		
5550.60	-10.2	H	3.0	35.5	1.0	-44.6	-13.0	-31.6		
7400.80	-7.8	H	3.0	35.7	1.0	-42.5	-13.0	-29.5		
<b>Mid Ch, 1880</b>										
3760.00	-11.6	V	3.0	35.8	1.0	-46.4	-13.0	-33.4		
5640.00	-10.2	V	3.0	35.5	1.0	-44.7	-13.0	-31.7		
7520.00	-8.9	V	3.0	35.7	1.0	-43.6	-13.0	-30.6		
3760.00	-11.4	H	3.0	35.8	1.0	-46.2	-13.0	-33.2		
5640.00	-9.8	H	3.0	35.5	1.0	-44.3	-13.0	-31.3		
7520.00	-7.7	H	3.0	35.7	1.0	-42.5	-13.0	-29.5		
<b>High Ch, 1909.8</b>										
3819.60	-11.0	V	3.0	35.8	1.0	-45.7	-13.0	-32.7		
5729.40	-10.4	V	3.0	35.5	1.0	-45.9	-13.0	-31.9		
7639.20	-8.6	V	3.0	35.8	1.0	-43.3	-13.0	-30.3		
3819.60	-11.0	H	3.0	35.8	1.0	-45.8	-13.0	-32.8		
5729.40	-9.4	H	3.0	35.5	1.0	-43.9	-13.0	-30.9		
7639.20	-7.0	H	3.0	35.8	1.0	-41.7	-13.0	-28.7		

GSM1900 GPRS

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company: SOMC Project #: 11626381 Date: 3/15/2017 Test Engineer: 43574 JS Configuration: EUT + AC Charger Location: Chamber A Mode: EGPRS 1900 MHz Harmonics										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
<b>Low Ch, 1850.2</b>										
3780.40	-12.6	V	3.0	35.9	1.0	-47.5	-13.0	-34.5		
5550.60	-9.5	V	3.0	35.5	1.0	-44.3	-13.0	-31.3		
7400.80	-8.7	V	3.0	35.7	1.0	-43.5	-13.0	-30.5		
3780.40	-12.4	H	3.0	35.9	1.0	-47.2	-13.0	-34.2		
5550.60	-8.8	H	3.0	35.5	1.0	-43.3	-13.0	-30.3		
7400.80	-7.1	H	3.0	35.7	1.0	-41.8	-13.0	-28.8		
<b>Mid Ch, 1880</b>										
3760.00	-11.9	V	3.0	35.8	1.0	-46.7	-13.0	-33.7		
5640.00	-9.6	V	3.0	35.5	1.0	-44.1	-13.0	-31.1		
7520.00	-8.4	V	3.0	35.7	1.0	-43.2	-13.0	-30.2		
3760.00	-12.3	H	3.0	35.8	1.0	-47.1	-13.0	-34.1		
5640.00	-9.8	H	3.0	35.5	1.0	-44.3	-13.0	-31.3		
7520.00	-7.6	H	3.0	35.7	1.0	-42.3	-13.0	-29.3		
<b>High Ch, 1909.8</b>										
3819.60	-11.8	V	3.0	35.8	1.0	-46.6	-13.0	-33.6		
5729.40	-9.4	V	3.0	35.5	1.0	-43.9	-13.0	-30.9		
7639.20	-8.2	V	3.0	35.8	1.0	-43.0	-13.0	-30.0		
3819.60	-12.2	H	3.0	35.8	1.0	-47.0	-13.0	-34.0		
5729.40	-8.9	H	3.0	35.5	1.0	-43.4	-13.0	-30.4		
7639.20	-7.0	H	3.0	35.8	1.0	-41.7	-13.0	-28.7		

GSM1900 EGPRS

**WCDMA**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:		SOMC								
Project #:		11626381								
Date:		3/16/2017								
Test Engineer:		43574 JS								
Configuration:		EUT + AC Charger								
Location:		Chamber C								
Mode:		Rat99 Band 5 Harmonics								
F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch, 826.4										
1652.80	-24.1	V	3.0	37.0	1.0	-60.1	-13.0	-47.1		
2479.20	-20.2	V	3.0	36.4	1.0	-55.6	-13.0	-42.6		
3305.60	-18.2	V	3.0	36.1	1.0	-53.4	-13.0	-40.4		
1652.80	-22.0	H	3.0	37.0	1.0	-59.1	-13.0	-46.1		
2479.20	-22.8	H	3.0	36.4	1.0	-58.2	-13.0	-45.2		
3305.60	-18.6	H	3.0	36.1	1.0	-53.7	-13.0	-40.7		
Mid Ch, 836.6										
1673.20	-23.9	V	3.0	37.0	1.0	-59.9	-13.0	-46.9		
2509.80	-20.0	V	3.0	36.4	1.0	-55.4	-13.0	-42.4		
3346.40	-18.1	V	3.0	36.1	1.0	-53.2	-13.0	-40.2		
1673.20	-23.3	H	3.0	37.0	1.0	-59.3	-13.0	-46.3		
2509.80	-21.7	H	3.0	36.4	1.0	-57.1	-13.0	-44.1		
3346.40	-19.0	H	3.0	36.1	1.0	-54.1	-13.0	-41.1		
High Ch, 846.6										
1693.20	-23.8	V	3.0	37.0	1.0	-59.7	-13.0	-46.7		
2539.80	-19.9	V	3.0	36.4	1.0	-55.3	-13.0	-42.3		
3386.40	-18.0	V	3.0	36.1	1.0	-53.1	-13.0	-40.1		
1693.20	-23.5	H	3.0	37.0	1.0	-59.5	-13.0	-46.5		
2539.80	-21.5	H	3.0	36.4	1.0	-56.9	-13.0	-43.9		
3386.40	-18.5	H	3.0	36.1	1.0	-53.6	-13.0	-40.6		

B5 REL99

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement										
Company:		SOMC								
Project #:		11626381								
Date:		3/16/2017								
Test Engineer:		43574 JS								
Configuration:		EUT + AC Charger								
Location:		Chamber C								
Mode:		HSDPA Band 5 Harmonics								
F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch, 826.4										
1652.80	-24.3	V	3.0	37.0	1.0	-60.3	-13.0	-47.3		
2479.20	-21.3	V	3.0	36.4	1.0	-56.7	-13.0	-43.7		
3305.60	-17.5	V	3.0	36.1	1.0	-52.6	-13.0	-39.6		
1652.80	-24.5	H	3.0	37.0	1.0	-60.5	-13.0	-47.5		
2479.20	-22.6	H	3.0	36.4	1.0	-58.1	-13.0	-45.1		
3305.60	-17.6	H	3.0	36.1	1.0	-52.8	-13.0	-39.8		
Mid Ch, 836.6										
1673.20	-24.1	V	3.0	37.0	1.0	-60.1	-13.0	-47.1		
2509.80	-20.3	V	3.0	36.4	1.0	-55.8	-13.0	-42.8		
3346.40	-18.1	V	3.0	36.1	1.0	-53.2	-13.0	-40.2		
1673.20	-24.4	H	3.0	37.0	1.0	-60.4	-13.0	-47.4		
2509.80	-21.6	H	3.0	36.4	1.0	-57.0	-13.0	-44.0		
3346.40	-18.0	H	3.0	36.1	1.0	-53.1	-13.0	-40.1		
High Ch, 846.6										
1693.20	-23.9	V	3.0	37.0	1.0	-60.8	-13.0	-47.8		
2539.80	-20.3	V	3.0	36.4	1.0	-55.7	-13.0	-42.7		
3386.40	-17.8	V	3.0	36.1	1.0	-52.9	-13.0	-39.9		
1693.20	-24.3	H	3.0	37.0	1.0	-60.3	-13.0	-47.3		
2539.80	-21.6	H	3.0	36.4	1.0	-57.0	-13.0	-44.0		
3386.40	-17.8	H	3.0	36.1	1.0	-52.8	-13.0	-39.8		

B5 HSDPA

**LTE Band 4**

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 4 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
<b>Low Ch, 1710.7MHz</b>									
3421.40	-26.1	V	3.0	36.1	1.0	-61.2	-13.0	-48.2	
5132.10	-23.8	V	3.0	35.4	1.0	-58.2	-13.0	-45.2	
6842.80	-22.2	V	3.0	35.7	1.0	-56.9	-13.0	-43.9	
3421.40	-25.4	H	3.0	36.1	1.0	-60.5	-13.0	-47.5	
5132.10	-22.5	H	3.0	35.4	1.0	-56.9	-13.0	-43.9	
6842.80	-21.8	H	3.0	35.7	1.0	-56.5	-13.0	-43.5	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-26.2	V	3.0	36.0	1.0	-61.2	-13.0	-48.2	
5197.50	-22.2	V	3.0	35.4	1.0	-56.7	-13.0	-43.7	
6930.00	-23.6	V	3.0	35.7	1.0	-58.2	-13.0	-45.2	
3465.00	-24.2	H	3.0	36.0	1.0	-59.1	-13.0	-46.1	
5197.50	-22.4	H	3.0	35.4	1.0	-56.8	-13.0	-43.8	
6930.00	-21.6	H	3.0	35.7	1.0	-56.2	-13.0	-43.2	
<b>High Ch, 1754.3MHz</b>									
3508.60	-25.9	V	3.0	36.0	1.0	-60.9	-13.0	-47.9	
5262.90	-23.0	V	3.0	35.4	1.0	-57.4	-13.0	-44.4	
7017.20	-21.7	V	3.0	35.7	1.0	-56.4	-13.0	-43.4	
3508.60	-23.5	H	3.0	36.0	1.0	-58.5	-13.0	-45.5	
5262.90	-23.1	H	3.0	35.4	1.0	-57.5	-13.0	-44.5	
7017.20	-21.9	H	3.0	35.7	1.0	-56.6	-13.0	-43.6	

LTE B4 1.4MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 4 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
<b>Low Ch, 1710.7MHz</b>									
3421.40	-26.0	V	3.0	36.1	1.0	-61.1	-13.0	-48.1	
5132.10	-23.3	V	3.0	35.4	1.0	-57.7	-13.0	-44.7	
6842.80	-23.0	V	3.0	35.7	1.0	-57.6	-13.0	-44.6	
3421.40	-25.0	H	3.0	36.1	1.0	-60.1	-13.0	-47.1	
5132.10	-22.0	H	3.0	35.4	1.0	-56.4	-13.0	-43.4	
6842.80	-22.2	H	3.0	35.7	1.0	-56.8	-13.0	-43.8	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-25.4	V	3.0	36.0	1.0	-60.4	-13.0	-47.4	
5197.50	-23.6	V	3.0	35.4	1.0	-58.0	-13.0	-45.0	
6930.00	-23.6	V	3.0	35.7	1.0	-58.3	-13.0	-45.3	
3465.00	-24.0	H	3.0	36.0	1.0	-59.0	-13.0	-46.0	
5197.50	-22.2	H	3.0	35.4	1.0	-56.6	-13.0	-43.6	
6930.00	-21.8	H	3.0	35.7	1.0	-56.5	-13.0	-43.5	
<b>High Ch, 1754.3MHz</b>									
3508.60	-26.3	V	3.0	36.0	1.0	-61.3	-13.0	-48.3	
5262.90	-22.8	V	3.0	35.4	1.0	-57.2	-13.0	-44.2	
7017.20	-23.3	V	3.0	35.7	1.0	-58.0	-13.0	-45.0	
3508.60	-24.1	H	3.0	36.0	1.0	-59.1	-13.0	-46.1	
5262.90	-23.5	H	3.0	35.4	1.0	-57.9	-13.0	-44.9	
7017.20	-22.4	H	3.0	35.7	1.0	-57.0	-13.0	-44.0	

LTE B4 1.4MHz 16QAM

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 4 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
<b>Low Ch, 1711.5MHz</b>									
3423.00	-26.5	V	3.0	36.1	1.0	-61.5	-13.0	-48.5	
5134.50	-22.9	V	3.0	35.4	1.0	-57.3	-13.0	-44.3	
6846.00	-22.1	V	3.0	35.7	1.0	-56.8	-13.0	-43.8	
3423.00	-25.5	H	3.0	36.1	1.0	-60.5	-13.0	-47.5	
5134.50	-22.9	H	3.0	35.4	1.0	-57.3	-13.0	-44.3	
6846.00	-20.8	H	3.0	35.7	1.0	-55.5	-13.0	-42.5	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-25.1	V	3.0	36.0	1.0	-60.1	-13.0	-47.1	
5197.50	-22.4	V	3.0	35.4	1.0	-56.9	-13.0	-43.9	
6930.00	-22.4	V	3.0	35.7	1.0	-57.1	-13.0	-44.1	
3465.00	-23.1	H	3.0	36.0	1.0	-58.1	-13.0	-45.1	
5197.50	-23.0	H	3.0	35.4	1.0	-57.4	-13.0	-44.4	
6930.00	-22.1	H	3.0	35.7	1.0	-56.8	-13.0	-43.8	
<b>High Ch, 1753.5MHz</b>									
3507.00	-25.2	V	3.0	36.0	1.0	-60.2	-13.0	-47.2	
5260.50	-22.9	V	3.0	35.4	1.0	-57.4	-13.0	-44.4	
7014.00	-23.2	V	3.0	35.7	1.0	-57.9	-13.0	-44.9	
3507.00	-24.3	H	3.0	36.0	1.0	-59.3	-13.0	-46.3	
5260.50	-23.7	H	3.0	35.4	1.0	-58.2	-13.0	-45.2	
7014.00	-21.8	H	3.0	35.7	1.0	-56.4	-13.0	-43.4	

LTE B4 3MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 4 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
<b>Low Ch, 1711.5MHz</b>									
3423.00	-26.2	V	3.0	36.1	1.0	-63.2	-13.0	-50.2	
5134.50	-22.9	V	3.0	35.4	1.0	-57.4	-13.0	-44.4	
6846.00	-21.0	V	3.0	35.7	1.0	-55.6	-13.0	-42.6	
3423.00	-25.5	H	3.0	36.1	1.0	-60.5	-13.0	-47.5	
5134.50	-22.9	H	3.0	35.4	1.0	-57.3	-13.0	-44.3	
6846.00	-20.1	H	3.0	35.7	1.0	-54.8	-13.0	-41.8	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-26.1	V	3.0	36.0	1.0	-61.1	-13.0	-48.1	
5197.50	-22.9	V	3.0	35.4	1.0	-57.3	-13.0	-44.3	
6930.00	-22.7	V	3.0	35.7	1.0	-57.4	-13.0	-44.4	
3465.00	-23.9	H	3.0	36.0	1.0	-59.0	-13.0	-46.0	
5197.50	-22.5	H	3.0	35.4	1.0	-56.9	-13.0	-43.9	
6930.00	-21.8	H	3.0	35.7	1.0	-56.4	-13.0	-43.4	
<b>High Ch, 1753.5MHz</b>									
3507.00	-26.5	V	3.0	36.0	1.0	-61.5	-13.0	-48.5	
5260.50	-24.2	V	3.0	35.4	1.0	-58.6	-13.0	-45.6	
7014.00	-23.6	V	3.0	35.7	1.0	-58.2	-13.0	-45.2	
3507.00	-24.3	H	3.0	36.0	1.0	-59.3	-13.0	-46.3	
5260.50	-23.1	H	3.0	35.4	1.0	-57.6	-13.0	-44.6	
7014.00	-22.4	H	3.0	35.7	1.0	-57.1	-13.0	-44.1	

LTE B4 3MHz 16QAM

Version 1.2.4 updated 3/13/17

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 4 Harmonics, 5MHz Bandwidth

F Mhz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 1712.5MHz</b>									
3425.00	-26.4	V	3.0	36.1	1.0	-61.4	-13.0	-48.4	
5137.50	-22.7	V	3.0	35.4	1.0	-57.1	-13.0	-44.1	
6850.00	-22.1	V	3.0	35.7	1.0	-56.7	-13.0	-43.7	
3425.00	-24.6	H	3.0	36.1	1.0	-59.7	-13.0	-46.7	
5137.50	-22.7	H	3.0	35.4	1.0	-57.1	-13.0	-44.1	
6850.00	-20.9	H	3.0	35.7	1.0	-55.6	-13.0	-42.6	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-26.4	V	3.0	36.0	1.0	-61.4	-13.0	-48.4	
5197.50	-23.6	V	3.0	35.4	1.0	-58.1	-13.0	-45.1	
6930.00	-22.7	V	3.0	35.7	1.0	-57.4	-13.0	-44.4	
3465.00	-23.8	H	3.0	36.0	1.0	-58.8	-13.0	-45.8	
5197.50	-22.7	H	3.0	35.4	1.0	-57.1	-13.0	-44.1	
6930.00	-21.4	H	3.0	35.7	1.0	-56.0	-13.0	-43.0	
<b>High Ch, 1752.5MHz</b>									
3505.00	-25.4	V	3.0	36.0	1.0	-60.4	-13.0	-47.4	
5257.50	-23.0	V	3.0	35.4	1.0	-57.4	-13.0	-44.4	
7010.00	-21.7	V	3.0	35.7	1.0	-56.4	-13.0	-43.4	
3505.00	-24.2	H	3.0	36.0	1.0	-59.2	-13.0	-46.2	
5257.50	-22.0	H	3.0	35.4	1.0	-56.5	-13.0	-43.5	
7010.00	-21.2	H	3.0	35.7	1.0	-55.9	-13.0	-42.9	

LTE B4 5MHz QPSK

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 4 Harmonics, 5MHz Bandwidth

F Mhz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 1712.5MHz</b>									
3425.00	-26.5	V	3.0	36.1	1.0	-61.6	-13.0	-48.6	
5137.50	-23.5	V	3.0	35.4	1.0	-57.0	-13.0	-44.0	
6850.00	-22.3	V	3.0	35.7	1.0	-57.0	-13.0	-44.0	
3425.00	-25.6	H	3.0	36.1	1.0	-60.6	-13.0	-47.6	
5137.50	-26.5	H	3.0	35.4	1.0	-54.9	-13.0	-41.9	
6850.00	-22.2	H	3.0	35.7	1.0	-56.8	-13.0	-43.8	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-25.7	V	3.0	36.0	1.0	-60.7	-13.0	-47.7	
5197.50	-23.0	V	3.0	35.4	1.0	-57.4	-13.0	-44.4	
6930.00	-23.1	V	3.0	35.7	1.0	-57.8	-13.0	-44.8	
3465.00	-24.1	H	3.0	36.0	1.0	-59.1	-13.0	-46.1	
5197.50	-23.1	H	3.0	35.4	1.0	-57.6	-13.0	-44.6	
6930.00	-22.0	H	3.0	35.7	1.0	-56.7	-13.0	-43.7	
<b>High Ch, 1752.5MHz</b>									
3505.00	-25.9	V	3.0	36.0	1.0	-60.9	-13.0	-47.9	
5257.50	-23.6	V	3.0	35.4	1.0	-58.0	-13.0	-45.0	
7010.00	-23.5	V	3.0	35.7	1.0	-58.2	-13.0	-45.2	
3505.00	-24.2	H	3.0	36.0	1.0	-59.2	-13.0	-46.2	
5257.50	-23.8	H	3.0	35.4	1.0	-58.3	-13.0	-45.3	
7010.00	-21.2	H	3.0	35.7	1.0	-55.9	-13.0	-42.9	

LTE B4 5MHz 16QAM

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 4 Harmonics, 10MHz Bandwidth

F Mhz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 1715MHz</b>									
3430.00	-26.8	V	3.0	36.1	1.0	-61.9	-13.0	-48.9	
5145.00	-23.2	V	3.0	35.4	1.0	-57.6	-13.0	-44.6	
6860.00	-22.4	V	3.0	35.7	1.0	-57.1	-13.0	-44.1	
3430.00	-25.3	H	3.0	36.1	1.0	-60.3	-13.0	-47.3	
5145.00	-21.9	H	3.0	35.4	1.0	-56.3	-13.0	-43.3	
6860.00	-22.1	H	3.0	35.7	1.0	-56.8	-13.0	-43.8	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-25.7	V	3.0	36.0	1.0	-60.8	-13.0	-47.8	
5197.50	-23.0	V	3.0	35.4	1.0	-57.4	-13.0	-44.4	
6930.00	-22.7	V	3.0	35.7	1.0	-57.4	-13.0	-44.4	
3465.00	-26.3	H	3.0	36.0	1.0	-61.3	-13.0	-48.3	
5197.50	-22.1	H	3.0	35.4	1.0	-56.6	-13.0	-43.6	
6930.00	-22.4	H	3.0	35.7	1.0	-57.1	-13.0	-44.1	
<b>High Ch, 1750MHz</b>									
3500.00	-26.1	V	3.0	36.0	1.0	-61.1	-13.0	-48.1	
5250.00	-24.4	V	3.0	35.4	1.0	-58.8	-13.0	-45.8	
7000.00	-23.3	V	3.0	35.7	1.0	-57.9	-13.0	-44.9	
3500.00	-24.7	H	3.0	36.0	1.0	-59.8	-13.0	-46.8	
5250.00	-23.2	H	3.0	35.4	1.0	-57.7	-13.0	-44.7	
7000.00	-22.4	H	3.0	35.7	1.0	-57.1	-13.0	-44.1	

LTE B4 10MHz QPSK

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 4 Harmonics, 10MHz Bandwidth

F Mhz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 1715MHz</b>									
3430.00	-26.5	V	3.0	36.1	1.0	-61.6	-13.0	-48.6	
5145.00	-23.3	V	3.0	35.4	1.0	-57.7	-13.0	-44.7	
6860.00	-22.3	V	3.0	35.7	1.0	-56.9	-13.0	-43.9	
3430.00	-24.7	H	3.0	36.1	1.0	-59.8	-13.0	-46.8	
5145.00	-23.0	H	3.0	35.4	1.0	-57.4	-13.0	-44.4	
6860.00	-21.4	H	3.0	35.7	1.0	-56.0	-13.0	-43.0	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-26.5	V	3.0	36.0	1.0	-61.5	-13.0	-48.5	
5197.50	-23.4	V	3.0	35.4	1.0	-57.8	-13.0	-44.8	
6930.00	-23.3	V	3.0	35.7	1.0	-58.0	-13.0	-45.0	
3465.00	-24.9	H	3.0	36.0	1.0	-59.9	-13.0	-46.9	
5197.50	-21.9	H	3.0	35.4	1.0	-56.3	-13.0	-43.3	
6930.00	-21.8	H	3.0	35.7	1.0	-56.5	-13.0	-43.5	
<b>High Ch, 1750MHz</b>									
3500.00	-26.2	V	3.0	36.0	1.0	-61.2	-13.0	-48.2	
5250.00	-23.6	V	3.0	35.4	1.0	-58.0	-13.0	-45.0	
7000.00	-23.5	V	3.0	35.7	1.0	-58.2	-13.0	-45.2	
3500.00	-25.4	H	3.0	36.0	1.0	-60.4	-13.0	-47.4	
5250.00	-22.9	H	3.0	35.4	1.0	-57.3	-13.0	-44.3	
7000.00	-22.1	H	3.0	35.7	1.0	-56.8	-13.0	-43.8	

LTE B4 10MHz 16QAM

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 4 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
<b>Low Ch, 1717.5MHz</b>									
3435.00	-24.9	V	3.0	36.1	1.0	-60.0	-13.0	-47.0	
5152.50	-23.1	V	3.0	35.4	1.0	-57.5	-13.0	-44.5	
6870.00	-21.9	V	3.0	35.7	1.0	-56.6	-13.0	-43.6	
3435.00	-23.6	H	3.0	36.1	1.0	-58.7	-13.0	-45.7	
5152.50	-23.1	H	3.0	35.4	1.0	-57.6	-13.0	-44.6	
6870.00	-21.6	H	3.0	35.7	1.0	-56.2	-13.0	-43.2	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-24.9	V	3.0	36.0	1.0	-59.9	-13.0	-46.9	
5197.50	-23.8	V	3.0	35.4	1.0	-58.2	-13.0	-45.2	
6930.00	-22.5	V	3.0	35.7	1.0	-58.1	-13.0	-45.1	
3465.00	-26.1	H	3.0	36.0	1.0	-61.1	-13.0	-48.1	
5197.50	-19.7	H	3.0	35.4	1.0	-54.1	-13.0	-41.1	
6930.00	-21.7	H	3.0	35.7	1.0	-56.4	-13.0	-43.4	
<b>High Ch, 1747.5MHz</b>									
3495.00	-25.7	V	3.0	36.0	1.0	-60.7	-13.0	-47.7	
5242.50	-24.1	V	3.0	35.4	1.0	-58.5	-13.0	-45.5	
6990.00	-21.5	V	3.0	35.7	1.0	-56.2	-13.0	-43.2	
3495.00	-25.3	H	3.0	36.0	1.0	-60.3	-13.0	-47.3	
5242.50	-22.7	H	3.0	35.4	1.0	-57.1	-13.0	-44.1	
6990.00	-21.9	H	3.0	35.7	1.0	-56.6	-13.0	-43.6	

LTE B4 15MHz QPSK

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 4 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
<b>Low Ch, 1717.5MHz</b>									
3435.00	-26.1	V	3.0	36.1	1.0	-61.1	-13.0	-48.1	
5152.50	-22.9	V	3.0	35.4	1.0	-57.4	-13.0	-44.4	
6870.00	-22.9	V	3.0	35.7	1.0	-57.5	-13.0	-44.5	
3435.00	-24.7	H	3.0	36.1	1.0	-59.7	-13.0	-46.7	
5152.50	-22.9	H	3.0	35.4	1.0	-57.3	-13.0	-44.3	
6870.00	-21.6	H	3.0	35.7	1.0	-56.3	-13.0	-43.3	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-25.8	V	3.0	36.0	1.0	-60.8	-13.0	-47.8	
5197.50	-23.4	V	3.0	35.4	1.0	-57.7	-13.0	-44.7	
6930.00	-22.6	V	3.0	35.7	1.0	-57.2	-13.0	-44.2	
3465.00	-25.6	H	3.0	36.0	1.0	-60.7	-13.0	-47.7	
5197.50	-24.4	H	3.0	35.4	1.0	-58.8	-13.0	-45.8	
6930.00	-20.6	H	3.0	35.7	1.0	-55.3	-13.0	-42.3	
<b>High Ch, 1747.5MHz</b>									
3495.00	-26.3	V	3.0	36.0	1.0	-61.4	-13.0	-48.4	
5242.50	-23.9	V	3.0	35.4	1.0	-58.3	-13.0	-45.3	
6990.00	-22.4	V	3.0	35.7	1.0	-57.1	-13.0	-44.1	
3495.00	-25.4	H	3.0	36.0	1.0	-60.4	-13.0	-47.4	
5242.50	-23.4	H	3.0	35.4	1.0	-57.9	-13.0	-44.9	
6990.00	-22.2	H	3.0	35.7	1.0	-56.8	-13.0	-43.8	

LTE B4 15MHz 16QAM

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 4 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
<b>Low Ch, 1720MHz</b>									
3440.00	-26.3	V	3.0	36.0	1.0	-61.4	-13.0	-48.4	
5160.00	-23.5	V	3.0	35.4	1.0	-57.9	-13.0	-44.9	
6880.00	-23.0	V	3.0	35.7	1.0	-57.7	-13.0	-44.7	
3440.00	-23.7	H	3.0	36.0	1.0	-58.8	-13.0	-45.8	
5160.00	-22.4	H	3.0	35.4	1.0	-56.8	-13.0	-43.8	
6880.00	-21.4	H	3.0	35.7	1.0	-56.1	-13.0	-43.1	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-26.3	V	3.0	36.0	1.0	-61.3	-13.0	-48.3	
5197.50	-24.5	V	3.0	35.4	1.0	-58.9	-13.0	-45.9	
6930.00	-23.1	V	3.0	35.7	1.0	-57.8	-13.0	-44.8	
3465.00	-24.9	H	3.0	36.0	1.0	-60.0	-13.0	-47.0	
5197.50	-22.0	H	3.0	35.4	1.0	-56.4	-13.0	-43.4	
6930.00	-20.7	H	3.0	35.7	1.0	-55.4	-13.0	-42.4	
<b>High Ch, 1745MHz</b>									
3490.00	-26.6	V	3.0	36.0	1.0	-61.6	-13.0	-48.6	
5235.00	-23.5	V	3.0	35.4	1.0	-57.9	-13.0	-44.9	
6980.00	-22.2	V	3.0	35.7	1.0	-56.9	-13.0	-43.9	
3490.00	-25.1	H	3.0	36.0	1.0	-60.1	-13.0	-47.1	
5235.00	-23.9	H	3.0	35.4	1.0	-58.3	-13.0	-45.3	
6980.00	-20.9	H	3.0	35.7	1.0	-55.5	-13.0	-42.5	

LTE B4 20MHz QPSK

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 4 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
<b>Low Ch, 1720MHz</b>									
3440.00	-26.6	V	3.0	36.0	1.0	-61.6	-13.0	-48.6	
5160.00	-23.3	V	3.0	35.4	1.0	-57.7	-13.0	-44.7	
6880.00	-21.2	V	3.0	35.7	1.0	-55.8	-13.0	-42.8	
3440.00	-24.4	H	3.0	36.0	1.0	-59.4	-13.0	-46.4	
5160.00	-22.9	H	3.0	35.4	1.0	-57.3	-13.0	-44.3	
6880.00	-21.5	H	3.0	35.7	1.0	-56.2	-13.0	-43.2	
<b>Mid Ch, 1732.5MHz</b>									
3465.00	-25.9	V	3.0	36.0	1.0	-61.0	-13.0	-48.0	
5197.50	-23.6	V	3.0	35.4	1.0	-58.0	-13.0	-45.0	
6930.00	-22.4	V	3.0	35.7	1.0	-57.1	-13.0	-44.1	
3465.00	-25.3	H	3.0	36.0	1.0	-60.4	-13.0	-47.4	
5197.50	-22.1	H	3.0	35.4	1.0	-56.5	-13.0	-43.5	
6930.00	-21.3	H	3.0	35.7	1.0	-56.0	-13.0	-43.0	
<b>High Ch, 1745MHz</b>									
3490.00	-25.9	V	3.0	36.0	1.0	-60.9	-13.0	-47.9	
5235.00	-22.0	V	3.0	35.4	1.0	-56.4	-13.0	-43.4	
6980.00	-23.2	V	3.0	35.7	1.0	-57.9	-13.0	-44.9	
3490.00	-24.8	H	3.0	36.0	1.0	-59.8	-13.0	-46.8	
5235.00	-24.0	H	3.0	35.4	1.0	-58.4	-13.0	-45.4	
6980.00	-21.6	H	3.0	35.7	1.0	-56.3	-13.0	-43.3	

LTE B4 20MHz 16QAM

**LTE Band 5**

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 5 Harmonics, 1MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1649.40	-19.0	V	3.0	37.0	1.0	-55.0	-13.0	-42.0	
2474.10	-34.2	V	3.0	36.4	1.0	-69.7	-13.0	-56.7	
3298.80	-34.1	V	3.0	36.2	1.0	-69.2	-13.0	-56.2	
1649.40	-10.7	H	3.0	37.0	1.0	-46.7	-13.0	-33.7	
2474.10	-36.9	H	3.0	36.4	1.0	-72.3	-13.0	-59.3	
3298.80	-34.1	H	3.0	36.2	1.0	-69.3	-13.0	-56.3	
Mid Ch.									
1673.00	-22.9	V	3.0	37.0	1.0	-58.9	-13.0	-45.9	
2509.50	-34.8	V	3.0	36.4	1.0	-70.2	-13.0	-57.2	
3346.00	-33.6	V	3.0	36.1	1.0	-68.8	-13.0	-55.8	
1673.00	-17.7	H	3.0	37.0	1.0	-53.7	-13.0	-40.7	
2509.50	-36.0	H	3.0	36.4	1.0	-71.4	-13.0	-58.4	
3346.00	-33.7	H	3.0	36.1	1.0	-68.8	-13.0	-55.8	
High Ch.									
1695.60	-30.3	V	3.0	37.0	1.0	-66.2	-13.0	-53.2	
2544.90	-35.1	V	3.0	36.4	1.0	-70.6	-13.0	-57.6	
3393.20	-33.3	V	3.0	36.1	1.0	-68.4	-13.0	-55.4	
1695.60	-24.5	H	3.0	37.0	1.0	-60.5	-13.0	-47.5	
2544.90	-37.4	H	3.0	36.4	1.0	-72.8	-13.0	-59.8	
3393.20	-33.2	H	3.0	36.1	1.0	-68.3	-13.0	-55.3	

LTE B5 1.4MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 5 Harmonics, 1MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1649.40	-20.1	V	3.0	37.0	1.0	-56.1	-13.0	-43.1	
2474.10	-34.4	V	3.0	36.4	1.0	-69.9	-13.0	-56.9	
3298.80	-33.9	V	3.0	36.2	1.0	-69.0	-13.0	-56.0	
1649.40	-10.9	H	3.0	37.0	1.0	-46.9	-13.0	-33.9	
2474.10	-37.0	H	3.0	36.4	1.0	-72.4	-13.0	-59.4	
3298.80	-34.1	H	3.0	36.2	1.0	-69.3	-13.0	-56.3	
Mid Ch.									
1673.00	-23.8	V	3.0	37.0	1.0	-59.8	-13.0	-46.8	
2509.50	-34.9	V	3.0	36.4	1.0	-70.3	-13.0	-57.3	
3346.00	-33.6	V	3.0	36.1	1.0	-68.8	-13.0	-55.8	
1673.00	-18.2	H	3.0	37.0	1.0	-54.2	-13.0	-41.2	
2509.50	-36.9	H	3.0	36.4	1.0	-72.3	-13.0	-59.3	
3346.00	-33.7	H	3.0	36.1	1.0	-68.8	-13.0	-55.8	
High Ch.									
1695.60	-30.7	V	3.0	37.0	1.0	-66.6	-13.0	-53.6	
2544.90	-35.4	V	3.0	36.4	1.0	-70.9	-13.0	-57.9	
3393.20	-33.2	V	3.0	36.1	1.0	-68.3	-13.0	-55.3	
1695.60	-25.5	H	3.0	37.0	1.0	-61.5	-13.0	-48.5	
2544.90	-37.4	H	3.0	36.4	1.0	-72.8	-13.0	-59.8	
3393.20	-33.3	H	3.0	36.1	1.0	-68.4	-13.0	-55.4	

LTE B5 1.4MHz 16QAM

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 5 Harmonics, 3MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1651.00	-19.5	V	3.0	37.0	1.0	-55.5	-13.0	-42.5	
2476.50	-34.1	V	3.0	36.4	1.0	-69.5	-13.0	-56.5	
3302.00	-33.9	V	3.0	36.2	1.0	-69.1	-13.0	-56.1	
1651.00	-12.1	H	3.0	37.0	1.0	-48.1	-13.0	-35.1	
2476.50	-36.7	H	3.0	36.4	1.0	-72.1	-13.0	-59.1	
3302.00	-34.2	H	3.0	36.2	1.0	-69.4	-13.0	-56.4	
Mid Ch.									
1673.00	-24.4	V	3.0	37.0	1.0	-60.4	-13.0	-47.4	
2509.50	-34.7	V	3.0	36.4	1.0	-70.1	-13.0	-57.1	
3346.00	-33.5	V	3.0	36.1	1.0	-68.7	-13.0	-55.7	
1673.00	-17.9	H	3.0	37.0	1.0	-53.9	-13.0	-40.9	
2509.50	-36.5	H	3.0	36.4	1.0	-71.9	-13.0	-58.9	
3346.00	-33.6	H	3.0	36.1	1.0	-68.7	-13.0	-55.7	
High Ch.									
1695.00	-30.5	V	3.0	37.0	1.0	-66.5	-13.0	-53.5	
2542.50	-35.4	V	3.0	36.4	1.0	-70.8	-13.0	-57.8	
3390.00	-33.0	V	3.0	36.1	1.0	-68.1	-13.0	-55.1	
1695.00	-25.7	H	3.0	37.0	1.0	-61.7	-13.0	-48.7	
2542.50	-36.5	H	3.0	36.4	1.0	-71.9	-13.0	-58.9	
3390.00	-33.3	H	3.0	36.1	1.0	-68.4	-13.0	-55.4	

LTE B5 3MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 5 Harmonics, 3MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1651.00	-20.2	V	3.0	37.0	1.0	-56.2	-13.0	-43.2	
2476.50	-34.6	V	3.0	36.4	1.0	-70.0	-13.0	-57.0	
3302.00	-34.0	V	3.0	36.2	1.0	-69.2	-13.0	-56.2	
1651.00	-11.8	H	3.0	37.0	1.0	-47.8	-13.0	-34.8	
2476.50	-36.8	H	3.0	36.4	1.0	-72.2	-13.0	-59.2	
3302.00	-34.2	H	3.0	36.2	1.0	-69.4	-13.0	-56.4	
Mid Ch.									
1673.00	-25.6	V	3.0	37.0	1.0	-61.6	-13.0	-48.6	
2509.50	-34.9	V	3.0	36.4	1.0	-70.3	-13.0	-57.3	
3346.00	-33.5	V	3.0	36.1	1.0	-68.7	-13.0	-55.7	
1673.00	-19.1	H	3.0	37.0	1.0	-55.1	-13.0	-42.1	
2509.50	-36.8	H	3.0	36.4	1.0	-72.2	-13.0	-59.2	
3346.00	-33.7	H	3.0	36.1	1.0	-68.8	-13.0	-55.8	
High Ch.									
1695.00	-31.5	V	3.0	37.0	1.0	-67.5	-13.0	-54.5	
2542.50	-35.5	V	3.0	36.4	1.0	-70.9	-13.0	-57.9	
3390.00	-33.1	V	3.0	36.1	1.0	-68.2	-13.0	-55.2	
1695.00	-26.0	H	3.0	37.0	1.0	-62.0	-13.0	-49.0	
2542.50	-37.5	H	3.0	36.4	1.0	-72.9	-13.0	-59.9	
3390.00	-33.3	H	3.0	36.1	1.0	-68.4	-13.0	-55.4	

LTE B5 3MHz 16QAM

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 5 Harmonics, 5MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1653.00	-19.7	V	3.0	37.0	1.0	-55.7	-13.0	42.7	
2479.50	-34.7	V	3.0	36.4	1.0	-78.1	-13.0	-57.1	
3306.00	-34.0	V	3.0	36.1	1.0	-69.2	-13.0	-56.2	
1653.00	-10.7	H	3.0	37.0	1.0	-46.8	-13.0	-33.8	
2479.50	-36.7	H	3.0	36.4	1.0	-72.1	-13.0	-59.1	
3306.00	-34.3	H	3.0	36.1	1.0	-69.5	-13.0	-56.5	
Mid Ch.									
1673.00	-24.3	V	3.0	37.0	1.0	-60.3	-13.0	-47.3	
2509.50	-34.5	V	3.0	36.4	1.0	-68.9	-13.0	-56.5	
3346.00	-33.4	V	3.0	36.1	1.0	-66.6	-13.0	-55.6	
1673.00	-33.2	H	3.0	37.0	1.0	-69.2	-13.0	-56.2	
2509.50	-35.9	H	3.0	36.4	1.0	-71.3	-13.0	-58.3	
3346.00	-33.6	H	3.0	36.1	1.0	-68.7	-13.0	-55.7	
High Ch.									
1693.00	-30.6	V	3.0	37.0	1.0	-66.6	-13.0	-53.6	
2539.50	-35.4	V	3.0	36.4	1.0	-70.8	-13.0	-57.8	
3386.00	-33.1	V	3.0	36.1	1.0	-68.2	-13.0	-55.2	
1693.00	-30.9	H	3.0	37.0	1.0	-66.9	-13.0	-53.9	
2539.50	-36.2	H	3.0	36.4	1.0	-71.6	-13.0	-58.6	
3386.00	-33.3	H	3.0	36.1	1.0	-68.4	-13.0	-55.4	

LTE B5 5MHz QPSK

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 5 Harmonics, 5MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1653.00	-20.7	V	3.0	37.0	1.0	-56.7	-13.0	43.7	
2479.50	-34.9	V	3.0	36.4	1.0	-78.3	-13.0	-57.3	
3306.00	-34.0	V	3.0	36.1	1.0	-69.2	-13.0	-56.2	
1653.00	-12.5	H	3.0	37.0	1.0	-48.6	-13.0	-35.6	
2479.50	-36.8	H	3.0	36.4	1.0	-72.2	-13.0	-59.2	
3306.00	-34.1	H	3.0	36.1	1.0	-69.3	-13.0	-56.3	
Mid Ch.									
1673.00	-25.3	V	3.0	37.0	1.0	-61.3	-13.0	-48.3	
2509.50	-34.7	V	3.0	36.4	1.0	-70.1	-13.0	-57.1	
3346.00	-33.4	V	3.0	36.1	1.0	-66.6	-13.0	-55.6	
1673.00	-33.8	H	3.0	37.0	1.0	-69.8	-13.0	-56.8	
2509.50	-36.3	H	3.0	36.4	1.0	-71.7	-13.0	-58.7	
3346.00	-33.6	H	3.0	36.1	1.0	-68.7	-13.0	-55.7	
High Ch.									
1693.00	-31.0	V	3.0	37.0	1.0	-67.0	-13.0	-54.0	
2539.50	-35.4	V	3.0	36.4	1.0	-70.8	-13.0	-57.8	
3386.00	-33.0	V	3.0	36.1	1.0	-68.1	-13.0	-55.1	
1693.00	-31.2	H	3.0	37.0	1.0	-67.2	-13.0	-54.2	
2539.50	-36.0	H	3.0	36.4	1.0	-71.4	-13.0	-58.4	
3386.00	-33.2	H	3.0	36.1	1.0	-68.3	-13.0	-55.3	

LTE B5 5MHz 16QAM

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 5 Harmonics, 10MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1658.00	-25.0	V	3.0	37.0	1.0	-61.0	-13.0	-48.0	
2487.00	-33.3	V	3.0	36.4	1.0	-68.7	-13.0	-55.7	
3316.00	-34.0	V	3.0	36.1	1.0	-69.2	-13.0	-56.2	
1658.00	-21.5	H	3.0	37.0	1.0	-57.5	-13.0	-44.5	
2487.00	-36.7	H	3.0	36.4	1.0	-72.1	-13.0	-59.1	
3316.00	-34.2	H	3.0	36.1	1.0	-69.3	-13.0	-56.3	
Mid Ch.									
1673.00	-33.8	V	3.0	37.0	1.0	-69.8	-13.0	-56.8	
2509.50	-34.3	V	3.0	36.4	1.0	-69.7	-13.0	-56.7	
3346.00	-33.4	V	3.0	36.1	1.0	-66.6	-13.0	-55.6	
1673.00	-28.0	H	3.0	37.0	1.0	-64.0	-13.0	-51.0	
2509.50	-36.8	H	3.0	36.4	1.0	-72.2	-13.0	-59.2	
3346.00	-33.6	H	3.0	36.1	1.0	-68.7	-13.0	-55.7	
High Ch.									
1688.00	-30.3	V	3.0	37.0	1.0	-66.3	-13.0	-53.3	
2532.00	-32.9	V	3.0	36.4	1.0	-68.3	-13.0	-55.3	
3376.00	-33.0	V	3.0	36.1	1.0	-68.1	-13.0	-55.1	
1688.00	-29.9	H	3.0	37.0	1.0	-65.9	-13.0	-52.9	
2532.00	-37.1	H	3.0	36.4	1.0	-72.5	-13.0	-59.5	
3376.00	-33.2	H	3.0	36.1	1.0	-68.3	-13.0	-55.3	

LTE B5 10MHz QPSK

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 5 Harmonics, 10MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1658.00	-26.3	V	3.0	37.0	1.0	-62.3	-13.0	-49.3	
2487.00	-33.7	V	3.0	36.4	1.0	-69.1	-13.0	-56.1	
3316.00	-34.1	V	3.0	36.1	1.0	-69.3	-13.0	-56.3	
1658.00	-22.4	H	3.0	37.0	1.0	-58.4	-13.0	-45.4	
2487.00	-36.4	H	3.0	36.4	1.0	-71.8	-13.0	-58.8	
3316.00	-34.3	H	3.0	36.1	1.0	-69.4	-13.0	-56.4	
Mid Ch.									
1673.00	-34.2	V	3.0	37.0	1.0	-70.2	-13.0	-57.2	
2509.50	-34.8	V	3.0	36.4	1.0	-70.2	-13.0	-57.2	
3346.00	-33.4	V	3.0	36.1	1.0	-66.6	-13.0	-55.6	
1673.00	-29.1	H	3.0	37.0	1.0	-65.1	-13.0	-52.1	
2509.50	-36.6	H	3.0	36.4	1.0	-72.0	-13.0	-59.0	
3346.00	-33.7	H	3.0	36.1	1.0	-68.8	-13.0	-55.8	
High Ch.									
1688.00	-31.6	V	3.0	37.0	1.0	-67.6	-13.0	-54.6	
2532.00	-33.5	V	3.0	36.4	1.0	-68.9	-13.0	-55.9	
3376.00	-33.2	V	3.0	36.1	1.0	-68.3	-13.0	-55.3	
1688.00	-31.3	H	3.0	37.0	1.0	-67.3	-13.0	-54.3	
2532.00	-37.2	H	3.0	36.4	1.0	-72.6	-13.0	-59.6	
3376.00	-33.2	H	3.0	36.1	1.0	-68.3	-13.0	-55.3	

LTE B5 10MHz 16QAM

**LTE Band 7**

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/14/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + charger  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 7 Harmonics, 5MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2502.5</b>									
5005.00	-14.8	V	3.0	33.2	1.0	-47.1	-25.0	-22.1	
7507.50	-13.1	V	3.0	32.8	1.0	-44.9	-25.0	-19.9	
10010.00	-10.9	V	3.0	32.8	1.0	-42.7	-25.0	-17.7	
5005.00	-13.8	H	3.0	33.2	1.0	-46.0	-25.0	-21.0	
7507.50	-13.5	H	3.0	32.8	1.0	-45.4	-25.0	-20.4	
10010.00	-11.8	H	3.0	32.8	1.0	-43.6	-25.0	-18.6	
<b>Mid Ch, 2535</b>									
5070.00	-15.6	V	3.0	33.2	1.0	-47.8	-25.0	-22.8	
7605.00	-13.5	V	3.0	32.8	1.0	-45.4	-25.0	-20.4	
10140.00	-11.7	V	3.0	32.7	1.0	-43.3	-25.0	-18.3	
5070.00	-14.7	H	3.0	33.2	1.0	-46.8	-25.0	-21.8	
7605.00	-13.6	H	3.0	32.8	1.0	-45.5	-25.0	-20.5	
10140.00	-11.2	H	3.0	32.7	1.0	-42.8	-25.0	-17.8	
<b>High Ch, 2567.5</b>									
5135.00	-15.4	V	3.0	33.2	1.0	-47.5	-25.0	-22.5	
7702.50	-13.2	V	3.0	32.8	1.0	-45.1	-25.0	-20.1	
10270.00	-11.4	V	3.0	32.6	1.0	-43.0	-25.0	-18.0	
5135.00	-14.3	H	3.0	33.2	1.0	-46.5	-25.0	-21.5	
7702.50	-13.2	H	3.0	32.8	1.0	-45.0	-25.0	-20.0	
10270.00	-11.8	H	3.0	32.6	1.0	-43.4	-25.0	-18.4	

LTE B7 5MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/14/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + charger  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 7 Harmonics, 5MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2502.5</b>									
5005.00	-13.9	V	3.0	33.2	1.0	-46.2	-25.0	-21.2	
7507.50	-10.9	V	3.0	32.8	1.0	-42.7	-25.0	-17.7	
10010.00	-10.1	V	3.0	32.8	1.0	-41.8	-25.0	-16.8	
5005.00	-12.8	H	3.0	33.2	1.0	-45.1	-25.0	-20.1	
7507.50	-11.5	H	3.0	32.8	1.0	-43.3	-25.0	-18.3	
10010.00	-9.7	H	3.0	32.8	1.0	-41.4	-25.0	-16.4	
<b>Mid Ch, 2535</b>									
5070.00	-14.0	V	3.0	33.2	1.0	-46.2	-25.0	-21.2	
7605.00	-11.1	V	3.0	32.8	1.0	-42.9	-25.0	-17.9	
10140.00	-9.2	V	3.0	32.7	1.0	-40.9	-25.0	-15.9	
5070.00	-13.5	H	3.0	33.2	1.0	-45.7	-25.0	-20.7	
7605.00	-11.8	H	3.0	32.8	1.0	-43.6	-25.0	-18.6	
10140.00	-9.6	H	3.0	32.7	1.0	-41.3	-25.0	-16.3	
<b>High Ch, 2567.5</b>									
5135.00	-13.0	V	3.0	33.2	1.0	-45.2	-25.0	-20.2	
7702.50	-9.8	V	3.0	32.8	1.0	-41.6	-25.0	-16.6	
10270.00	-9.7	V	3.0	32.6	1.0	-41.2	-25.0	-16.2	
5135.00	-12.5	H	3.0	33.2	1.0	-44.7	-25.0	-19.7	
7702.50	-11.2	H	3.0	32.8	1.0	-43.0	-25.0	-18.0	
10270.00	-9.4	H	3.0	32.6	1.0	-41.0	-25.0	-16.0	

LTE B7 5MHz 16QAM

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/14/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + AC Charger  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 7 Harmonics, 5MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2502.5</b>									
5005.00	-14.7	V	3.0	33.2	1.0	-46.9	-25.0	-21.9	
7507.50	-13.0	V	3.0	32.8	1.0	-44.8	-25.0	-19.8	
10010.00	-10.9	V	3.0	32.8	1.0	-42.7	-25.0	-17.7	
5005.00	-14.5	H	3.0	33.2	1.0	-46.7	-25.0	-21.7	
7507.50	-13.4	H	3.0	32.8	1.0	-45.3	-25.0	-20.3	
10010.00	-11.3	H	3.0	32.8	1.0	-43.0	-25.0	-18.0	
<b>Mid Ch, 2535</b>									
5070.00	-14.9	V	3.0	33.2	1.0	-47.1	-25.0	-22.1	
7605.00	-12.9	V	3.0	32.8	1.0	-44.7	-25.0	-19.7	
10140.00	-10.6	V	3.0	32.7	1.0	-42.3	-25.0	-17.3	
5070.00	-14.5	H	3.0	33.2	1.0	-46.7	-25.0	-21.7	
7605.00	-13.6	H	3.0	32.8	1.0	-45.5	-25.0	-20.5	
10140.00	-10.9	H	3.0	32.7	1.0	-42.6	-25.0	-17.6	
<b>High Ch, 2567.5</b>									
5135.00	-13.8	V	3.0	33.2	1.0	-46.0	-25.0	-21.0	
7702.50	-12.2	V	3.0	32.8	1.0	-44.1	-25.0	-19.1	
10270.00	-11.3	V	3.0	32.6	1.0	-42.9	-25.0	-17.9	
5135.00	-14.0	H	3.0	33.2	1.0	-46.2	-25.0	-21.2	
7702.50	-13.5	H	3.0	32.8	1.0	-45.3	-25.0	-20.3	
10270.00	-11.6	H	3.0	32.6	1.0	-43.2	-25.0	-18.2	

LTE B7 10MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/14/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + AC Charger  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 7 Harmonics, 10MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2505</b>									
5010.00	-13.8	V	3.0	33.2	1.0	-46.1	-25.0	-21.1	
7515.00	-10.9	V	3.0	32.8	1.0	-42.7	-25.0	-17.7	
10020.00	-9.7	V	3.0	32.8	1.0	-41.5	-25.0	-16.5	
5010.00	-13.0	H	3.0	33.2	1.0	-45.3	-25.0	-20.3	
7515.00	-11.3	H	3.0	32.8	1.0	-43.1	-25.0	-18.1	
10020.00	-9.6	H	3.0	32.8	1.0	-41.4	-25.0	-16.4	
<b>Mid Ch, 2535</b>									
5070.00	-14.1	V	3.0	33.2	1.0	-46.3	-25.0	-21.3	
7605.00	-10.7	V	3.0	32.8	1.0	-42.5	-25.0	-17.5	
10140.00	-9.4	V	3.0	32.7	1.0	-41.1	-25.0	-16.1	
5070.00	-13.8	H	3.0	33.2	1.0	-46.0	-25.0	-21.0	
7605.00	-11.8	H	3.0	32.8	1.0	-43.6	-25.0	-18.6	
10140.00	-9.5	H	3.0	32.7	1.0	-41.1	-25.0	-16.1	
<b>High Ch, 2565</b>									
5130.00	-13.9	V	3.0	33.2	1.0	-46.1	-25.0	-21.1	
7695.00	-10.3	V	3.0	32.8	1.0	-42.1	-25.0	-17.1	
10260.00	-9.4	V	3.0	32.6	1.0	-41.0	-25.0	-16.0	
5130.00	-13.1	H	3.0	33.2	1.0	-45.3	-25.0	-20.3	
7695.00	-10.5	H	3.0	32.8	1.0	-42.3	-25.0	-17.3	
10260.00	-9.0	H	3.0	32.6	1.0	-40.6	-25.0	-15.6	

LTE B7 10MHz 16QAM

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

Company: SQAC  
 Project #: 11626381  
 Date: 3/14/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + AC Charger  
 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
<b>Low Ch, 2507.5</b>									
5015.00	-15.6	V	3.0	33.2	1.0	-47.8	-25.0	-22.8	
7522.50	-12.9	V	3.0	32.8	1.0	-44.7	-25.0	-19.7	
10030.00	-10.8	V	3.0	32.8	1.0	-42.6	-25.0	-17.6	
5015.00	-15.3	H	3.0	33.2	1.0	-47.6	-25.0	-22.6	
7522.50	-12.4	H	3.0	32.8	1.0	-44.3	-25.0	-19.3	
10030.00	-10.5	H	3.0	32.8	1.0	-42.2	-25.0	-17.2	
<b>Mid Ch, 2535</b>									
5070.00	-15.5	V	3.0	33.2	1.0	-47.8	-25.0	-22.8	
7605.00	-13.6	V	3.0	32.8	1.0	-45.5	-25.0	-20.5	
10140.00	-10.8	V	3.0	32.7	1.0	-42.5	-25.0	-17.5	
5070.00	-15.6	H	3.0	33.2	1.0	-47.8	-25.0	-22.8	
7605.00	-12.9	H	3.0	32.8	1.0	-44.7	-25.0	-19.7	
10140.00	-11.5	H	3.0	32.7	1.0	-43.2	-25.0	-18.2	
<b>High Ch, 2562.5</b>									
5125.00	-15.3	V	3.0	33.2	1.0	-47.5	-25.0	-22.5	
7687.50	-12.2	V	3.0	32.8	1.0	-44.0	-25.0	-19.0	
10250.00	-10.6	V	3.0	32.6	1.0	-42.2	-25.0	-17.2	
5125.00	-14.9	H	3.0	33.2	1.0	-47.1	-25.0	-22.1	
7687.50	-12.4	H	3.0	32.8	1.0	-44.2	-25.0	-19.2	
10250.00	-11.5	H	3.0	32.6	1.0	-43.1	-25.0	-18.1	

LTE B7 15MHz QPSK

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

Company: SQAC  
 Project #: 11626381  
 Date: 3/14/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + AC Charger  
 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
<b>Low Ch, 2507.5</b>									
5015.00	-13.9	V	3.0	33.2	1.0	-46.1	-25.0	-21.1	
7522.50	-10.6	V	3.0	32.8	1.0	-42.4	-25.0	-17.4	
10030.00	-9.4	V	3.0	32.8	1.0	-41.1	-25.0	-16.1	
5015.00	-12.8	H	3.0	33.2	1.0	-45.1	-25.0	-20.1	
7522.50	-11.6	H	3.0	32.8	1.0	-43.5	-25.0	-18.5	
10030.00	-9.8	H	3.0	32.8	1.0	-41.6	-25.0	-16.6	
<b>Mid Ch, 2535</b>									
5070.00	-14.1	V	3.0	33.2	1.0	-46.3	-25.0	-21.3	
7605.00	-10.2	V	3.0	32.8	1.0	-42.0	-25.0	-17.0	
10140.00	-9.2	V	3.0	32.7	1.0	-40.8	-25.0	-15.8	
5070.00	-13.2	H	3.0	33.2	1.0	-45.4	-25.0	-20.4	
7605.00	-11.9	H	3.0	32.8	1.0	-43.7	-25.0	-18.7	
10140.00	-9.7	H	3.0	32.7	1.0	-40.9	-25.0	-15.9	
<b>High Ch, 2562.5</b>									
5125.00	-13.6	V	3.0	33.2	1.0	-45.8	-25.0	-20.8	
7687.50	-9.7	V	3.0	32.8	1.0	-41.8	-25.0	-16.8	
10250.00	-8.8	V	3.0	32.7	1.0	-40.5	-25.0	-15.5	
5125.00	-12.9	H	3.0	33.2	1.0	-45.1	-25.0	-20.1	
7687.50	-10.8	H	3.0	32.8	1.0	-42.6	-25.0	-17.6	
10250.00	-9.1	H	3.0	32.6	1.0	-40.7	-25.0	-15.7	

LTE B7 15MHz 16QAM

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

Company: SQAC  
 Project #: 11626381  
 Date: 3/14/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + AC Charger  
 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
<b>Low Ch, 2510</b>									
5020.00	-14.7	V	3.0	33.2	1.0	-46.9	-25.0	-21.9	
7530.00	-12.9	V	3.0	32.8	1.0	-44.8	-25.0	-19.8	
10040.00	-10.8	V	3.0	32.7	1.0	-42.6	-25.0	-17.6	
5020.00	-14.4	H	3.0	33.2	1.0	-46.6	-25.0	-21.6	
7530.00	-13.0	H	3.0	32.8	1.0	-44.9	-25.0	-19.9	
10040.00	-11.7	H	3.0	32.7	1.0	-43.4	-25.0	-18.4	
<b>Mid Ch, 2535</b>									
5070.00	-15.2	V	3.0	33.2	1.0	-47.4	-25.0	-22.4	
7605.00	-12.6	V	3.0	32.8	1.0	-44.4	-25.0	-19.4	
10140.00	-9.4	V	3.0	32.7	1.0	-41.1	-25.0	-16.1	
5070.00	-15.0	H	3.0	33.2	1.0	-47.2	-25.0	-22.2	
7605.00	-12.7	H	3.0	32.8	1.0	-44.5	-25.0	-19.5	
10140.00	-10.7	H	3.0	32.7	1.0	-42.4	-25.0	-17.4	
<b>High Ch, 2560</b>									
5120.00	-14.4	V	3.0	33.2	1.0	-46.6	-25.0	-21.6	
7680.00	-12.3	V	3.0	32.8	1.0	-44.2	-25.0	-19.2	
10240.00	-10.1	V	3.0	32.6	1.0	-41.7	-25.0	-16.7	
5120.00	-14.0	H	3.0	33.2	1.0	-46.2	-25.0	-21.2	
7680.00	-12.9	H	3.0	32.8	1.0	-44.8	-25.0	-19.8	
10240.00	-10.6	H	3.0	32.6	1.0	-42.2	-25.0	-17.2	

LTE B7 20MHz QPSK

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

Company: SQAC  
 Project #: 11626381  
 Date: 3/14/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + AC Charger  
 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
<b>Low Ch, 2510</b>									
5020.00	-13.9	V	3.0	33.2	1.0	-46.1	-25.0	-21.1	
7530.00	-10.3	V	3.0	32.8	1.0	-42.2	-25.0	-17.2	
10040.00	-9.7	V	3.0	32.7	1.0	-41.4	-25.0	-16.4	
5020.00	-13.0	H	3.0	33.2	1.0	-45.3	-25.0	-20.3	
7530.00	-10.9	H	3.0	32.8	1.0	-42.7	-25.0	-17.7	
10040.00	-9.5	H	3.0	32.7	1.0	-41.2	-25.0	-16.2	
<b>Mid Ch, 2535</b>									
5070.00	-14.3	V	3.0	33.2	1.0	-46.5	-25.0	-21.5	
7605.00	-10.7	V	3.0	32.8	1.0	-42.6	-25.0	-17.6	
10140.00	-9.3	V	3.0	32.7	1.0	-41.0	-25.0	-16.0	
5070.00	-13.6	H	3.0	33.2	1.0	-45.9	-25.0	-20.9	
7605.00	-11.5	H	3.0	32.8	1.0	-43.4	-25.0	-18.4	
10140.00	-8.6	H	3.0	32.7	1.0	-40.3	-25.0	-15.3	
<b>High Ch, 2560</b>									
5120.00	-13.4	V	3.0	33.2	1.0	-45.6	-25.0	-20.6	
7680.00	-10.7	V	3.0	32.8	1.0	-42.8	-25.0	-17.8	
10240.00	-9.8	V	3.0	32.6	1.0	-41.4	-25.0	-16.4	
5120.00	-12.7	H	3.0	33.2	1.0	-44.9	-25.0	-19.9	
7680.00	-11.1	H	3.0	32.8	1.0	-42.9	-25.0	-17.9	
10240.00	-9.2	H	3.0	32.6	1.0	-40.8	-25.0	-15.8	

LTE B7 20MHz 16QAM

**LTE Band 12**

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/15/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 12 Harmonics, 1.4MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1399.40	-16.9	V	3.0	37.4	1.0	-53.3	-13.0	-40.3	
2099.10	-29.1	V	3.0	36.6	1.0	-64.7	-13.0	-51.7	
2798.80	-34.7	V	3.0	36.4	1.0	-70.1	-13.0	-57.1	
1399.40	-17.3	H	3.0	37.4	1.0	-53.7	-13.0	-40.7	
2099.10	-34.8	H	3.0	36.6	1.0	-70.4	-13.0	-57.4	
2798.80	-35.0	H	3.0	36.4	1.0	-70.4	-13.0	-57.4	
Mid Ch.									
1415.00	-9.2	V	3.0	37.4	1.0	-45.6	-13.0	-32.6	
2122.50	-26.4	V	3.0	36.6	1.0	-62.0	-13.0	-49.0	
2830.00	-33.9	V	3.0	36.4	1.0	-69.3	-13.0	-56.3	
1415.00	-13.3	H	3.0	37.4	1.0	-49.1	-13.0	-36.7	
2122.50	-35.2	H	3.0	36.6	1.0	-70.8	-13.0	-57.8	
2830.00	-34.4	H	3.0	36.4	1.0	-69.8	-13.0	-56.8	
High Ch.									
1430.60	-9.5	V	3.0	37.3	1.0	-45.8	-13.0	-32.8	
2145.90	-25.2	V	3.0	36.6	1.0	-60.7	-13.0	-47.7	
2861.20	-34.1	V	3.0	36.4	1.0	-69.5	-13.0	-56.5	
1430.60	-10.9	H	3.0	37.3	1.0	-47.5	-13.0	-34.5	
2145.90	-33.6	H	3.0	36.6	1.0	-69.1	-13.0	-56.1	
2861.20	-35.0	H	3.0	36.4	1.0	-70.4	-13.0	-57.4	

LTE B12 1.4MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/15/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 12 Harmonics, 1MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1399.40	-18.2	V	3.0	37.4	1.0	-54.6	-13.0	-41.6	
2099.10	-29.9	V	3.0	36.6	1.0	-65.5	-13.0	-52.5	
2798.80	-34.7	V	3.0	36.4	1.0	-70.1	-13.0	-57.1	
1399.40	-18.1	H	3.0	37.4	1.0	-54.5	-13.0	-41.5	
2099.10	-35.4	H	3.0	36.6	1.0	-71.0	-13.0	-58.0	
2798.80	-35.5	H	3.0	36.4	1.0	-70.9	-13.0	-57.9	
Mid Ch.									
1415.00	-15.1	V	3.0	37.4	1.0	-51.5	-13.0	-38.5	
2122.50	-25.8	V	3.0	36.6	1.0	-61.4	-13.0	-48.4	
2830.00	-34.2	V	3.0	36.4	1.0	-69.6	-13.0	-56.6	
1415.00	-14.4	H	3.0	37.4	1.0	-50.8	-13.0	-37.8	
2122.50	-34.9	H	3.0	36.6	1.0	-70.5	-13.0	-57.5	
2830.00	-34.8	H	3.0	36.4	1.0	-70.2	-13.0	-57.2	
High Ch.									
1430.60	-11.3	V	3.0	37.3	1.0	-47.6	-13.0	-34.6	
2145.90	-25.2	V	3.0	36.6	1.0	-60.7	-13.0	-47.7	
2861.20	-34.5	V	3.0	36.4	1.0	-69.9	-13.0	-56.9	
1430.60	-11.9	H	3.0	37.3	1.0	-48.3	-13.0	-35.3	
2145.90	-33.7	H	3.0	36.6	1.0	-69.2	-13.0	-56.2	
2861.20	-35.1	H	3.0	36.4	1.0	-70.5	-13.0	-57.5	

LTE B12 1.4MHz 16QAM

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/15/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_QPSK Band 12 Harmonics, 3MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1401.00	-15.6	V	3.0	37.4	1.0	-52.0	-13.0	-39.0	
2101.50	-28.9	V	3.0	36.6	1.0	-64.5	-13.0	-51.5	
2802.00	-34.5	V	3.0	36.4	1.0	-69.9	-13.0	-56.9	
1401.00	-17.0	H	3.0	37.4	1.0	-53.3	-13.0	-40.3	
2101.50	-34.7	H	3.0	36.6	1.0	-70.3	-13.0	-57.3	
2802.00	-34.9	H	3.0	36.4	1.0	-70.3	-13.0	-57.3	
Mid Ch.									
1415.00	-13.8	V	3.0	37.4	1.0	-50.2	-13.0	-37.2	
2122.50	-27.4	V	3.0	36.6	1.0	-63.0	-13.0	-50.0	
2830.00	-34.3	V	3.0	36.4	1.0	-69.7	-13.0	-56.7	
1415.00	-13.6	H	3.0	37.4	1.0	-50.8	-13.0	-37.8	
2122.50	-34.6	H	3.0	36.6	1.0	-70.2	-13.0	-57.2	
2830.00	-34.3	H	3.0	36.4	1.0	-69.7	-13.0	-56.7	
High Ch.									
1429.00	-11.4	V	3.0	37.3	1.0	-47.7	-13.0	-34.7	
2143.50	-24.7	V	3.0	36.6	1.0	-60.2	-13.0	-47.2	
2858.00	-34.3	V	3.0	36.4	1.0	-69.7	-13.0	-56.7	
1429.00	-11.6	H	3.0	37.3	1.0	-48.0	-13.0	-35.0	
2143.50	-33.3	H	3.0	36.6	1.0	-68.8	-13.0	-55.8	
2858.00	-35.1	H	3.0	36.4	1.0	-70.5	-13.0	-57.5	

LTE B12 3MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/15/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 Mode: LTE\_16QAM Band 12 Harmonics, 3MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch.									
1401.00	-17.3	V	3.0	37.4	1.0	-53.7	-13.0	-40.7	
2101.50	-29.7	V	3.0	36.6	1.0	-65.3	-13.0	-52.3	
2802.00	-34.4	V	3.0	36.4	1.0	-69.8	-13.0	-56.8	
1401.00	-17.6	H	3.0	37.4	1.0	-53.9	-13.0	-40.9	
2101.50	-34.4	H	3.0	36.6	1.0	-70.0	-13.0	-57.0	
2802.00	-35.5	H	3.0	36.4	1.0	-70.9	-13.0	-57.9	
Mid Ch.									
1415.00	-14.5	V	3.0	37.4	1.0	-50.9	-13.0	-37.9	
2122.50	-28.4	V	3.0	36.6	1.0	-64.0	-13.0	-51.0	
2830.00	-34.3	V	3.0	36.4	1.0	-69.7	-13.0	-56.7	
1415.00	-14.5	H	3.0	37.4	1.0	-50.9	-13.0	-37.9	
2122.50	-34.8	H	3.0	36.6	1.0	-70.4	-13.0	-57.4	
2830.00	-34.7	H	3.0	36.4	1.0	-70.1	-13.0	-57.1	
High Ch.									
1429.00	-12.0	V	3.0	37.3	1.0	-48.3	-13.0	-35.3	
2143.50	-25.6	V	3.0	36.6	1.0	-61.1	-13.0	-48.1	
2858.00	-34.2	V	3.0	36.4	1.0	-69.6	-13.0	-56.6	
1429.00	-12.9	H	3.0	37.3	1.0	-49.3	-13.0	-36.3	
2143.50	-33.7	H	3.0	36.6	1.0	-69.2	-13.0	-56.2	
2858.00	-35.1	H	3.0	36.4	1.0	-70.5	-13.0	-57.5	

LTE B12 3MHz 16QAM

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 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.									
1403.00	-17.5	V	3.0	37.4	1.0	-53.9	-13.0	40.9	
2194.50	-29.7	V	3.0	36.6	1.0	-65.3	-13.0	32.3	
2806.00	-34.7	V	3.0	36.4	1.0	-78.1	-13.0	-57.1	
1403.00	-17.5	H	3.0	37.4	1.0	-53.9	-13.0	40.9	
2194.50	-35.1	H	3.0	36.6	1.0	-70.7	-13.0	-57.7	
2806.00	-34.5	H	3.0	36.4	1.0	-69.9	-13.0	-56.9	
Mid Ch.									
1415.00	-14.2	V	3.0	37.4	1.0	-50.6	-13.0	37.6	
2122.50	-27.0	V	3.0	36.6	1.0	-62.6	-13.0	49.6	
2830.00	-34.2	V	3.0	36.4	1.0	-68.6	-13.0	-56.6	
1415.00	-14.0	H	3.0	37.4	1.0	-50.4	-13.0	37.4	
2122.50	-31.3	H	3.0	36.6	1.0	-66.9	-13.0	-53.9	
2830.00	-34.6	H	3.0	36.4	1.0	-70.0	-13.0	-57.0	
High Ch.									
1427.00	-12.3	V	3.0	37.3	1.0	-48.6	-13.0	35.6	
2140.50	-24.0	V	3.0	36.6	1.0	-59.5	-13.0	46.5	
2854.00	-34.3	V	3.0	36.4	1.0	-69.6	-13.0	-56.6	
1427.00	-12.5	H	3.0	37.3	1.0	-48.8	-13.0	35.8	
2140.50	-33.8	H	3.0	36.6	1.0	-69.3	-13.0	-56.3	
2854.00	-34.8	H	3.0	36.4	1.0	-70.2	-13.0	-57.2	

LTE B12 5MHz QPSK

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 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.									
1403.00	-18.2	V	3.0	37.4	1.0	-54.6	-13.0	41.6	
2194.50	-29.9	V	3.0	36.6	1.0	-65.5	-13.0	32.5	
2806.00	-33.5	V	3.0	36.4	1.0	-68.9	-13.0	-55.9	
1403.00	-17.7	H	3.0	37.4	1.0	-54.1	-13.0	41.1	
2194.50	-34.8	H	3.0	36.6	1.0	-70.4	-13.0	-57.4	
2806.00	-35.1	H	3.0	36.4	1.0	-70.5	-13.0	-57.5	
Mid Ch.									
1415.00	-14.1	V	3.0	37.4	1.0	-50.5	-13.0	37.5	
2122.50	-27.7	V	3.0	36.6	1.0	-63.3	-13.0	50.3	
2830.00	-33.8	V	3.0	36.4	1.0	-69.2	-13.0	-56.2	
1415.00	-14.6	H	3.0	37.4	1.0	-51.0	-13.0	38.0	
2122.50	-33.9	H	3.0	36.6	1.0	-69.5	-13.0	-56.5	
2830.00	-34.9	H	3.0	36.4	1.0	-70.3	-13.0	-57.3	
High Ch.									
1427.00	-11.1	V	3.0	37.3	1.0	-47.4	-13.0	34.4	
2140.50	-24.3	V	3.0	36.6	1.0	-59.8	-13.0	46.8	
2854.00	-34.3	V	3.0	36.4	1.0	-69.6	-13.0	-56.6	
1427.00	-12.1	H	3.0	37.3	1.0	-48.4	-13.0	35.4	
2140.50	-33.8	H	3.0	36.6	1.0	-69.3	-13.0	-56.3	
2854.00	-34.9	H	3.0	36.4	1.0	-70.3	-13.0	-57.3	

LTE B12 5MHz 16QAM

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 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.									
1408.00	-16.0	V	3.0	37.4	1.0	-52.3	-13.0	39.3	
2112.00	-27.9	V	3.0	36.6	1.0	-63.5	-13.0	50.5	
2816.00	-34.4	V	3.0	36.4	1.0	-69.8	-13.0	-56.8	
1408.00	-16.2	H	3.0	37.4	1.0	-52.6	-13.0	39.6	
2112.00	-35.0	H	3.0	36.6	1.0	-70.6	-13.0	-57.6	
2816.00	-34.8	H	3.0	36.4	1.0	-70.2	-13.0	-57.2	
Mid Ch.									
1415.00	-14.0	V	3.0	37.4	1.0	-50.4	-13.0	37.4	
2122.50	-26.3	V	3.0	36.6	1.0	-61.9	-13.0	48.9	
2830.00	-32.9	V	3.0	36.4	1.0	-68.3	-13.0	-55.3	
1415.00	-13.6	H	3.0	37.4	1.0	-50.0	-13.0	37.0	
2122.50	-34.5	H	3.0	36.6	1.0	-70.1	-13.0	-57.1	
2830.00	-34.5	H	3.0	36.4	1.0	-69.9	-13.0	-56.9	
High Ch.									
1422.00	-12.5	V	3.0	37.3	1.0	-48.8	-13.0	35.8	
2133.00	-24.7	V	3.0	36.6	1.0	-60.3	-13.0	47.3	
2844.00	-34.3	V	3.0	36.4	1.0	-69.7	-13.0	-56.7	
1422.00	-12.0	H	3.0	37.3	1.0	-48.3	-13.0	35.3	
2133.00	-34.2	H	3.0	36.6	1.0	-69.7	-13.0	-56.7	
2844.00	-34.2	H	3.0	36.4	1.0	-69.7	-13.0	-56.7	

LTE B12 10MHz QPSK

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

Company: SOAC  
 Project #: 11626381  
 Date: 3/11/2017  
 Test Engineer: 43575 OS  
 Configuration: EUT + AC Charger  
 Location: Chamber B  
 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.									
1408.00	-16.3	V	3.0	37.4	1.0	-52.6	-13.0	39.6	
2112.00	-27.9	V	3.0	36.6	1.0	-63.5	-13.0	50.5	
2816.00	-34.6	V	3.0	36.4	1.0	-70.0	-13.0	-57.0	
1408.00	-16.5	H	3.0	37.4	1.0	-52.9	-13.0	39.9	
2112.00	-34.8	H	3.0	36.6	1.0	-70.4	-13.0	-57.4	
2816.00	-35.8	H	3.0	36.4	1.0	-71.2	-13.0	-58.2	
Mid Ch.									
1415.00	-15.8	V	3.0	37.4	1.0	-52.2	-13.0	39.2	
2122.50	-27.4	V	3.0	36.6	1.0	-63.0	-13.0	50.0	
2830.00	-33.8	V	3.0	36.4	1.0	-69.2	-13.0	-56.2	
1415.00	-14.5	H	3.0	37.4	1.0	-50.9	-13.0	37.9	
2122.50	-34.8	H	3.0	36.6	1.0	-70.4	-13.0	-57.4	
2830.00	-34.9	H	3.0	36.4	1.0	-70.3	-13.0	-57.3	
High Ch.									
1422.00	-13.0	V	3.0	37.3	1.0	-49.3	-13.0	36.3	
2133.00	-24.5	V	3.0	36.6	1.0	-60.1	-13.0	47.1	
2844.00	-34.2	V	3.0	36.4	1.0	-69.6	-13.0	-56.6	
1422.00	-13.0	H	3.0	37.3	1.0	-49.3	-13.0	36.3	
2133.00	-34.7	H	3.0	36.6	1.0	-70.2	-13.0	-57.2	
2844.00	-34.3	H	3.0	36.4	1.0	-69.7	-13.0	-56.7	

LTE B12 10MHz 16QAM

**LTE Band 13**

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: GE43578  
 Configuration: EUT + AC Adapter + Headset  
 Location: Chamber A  
 Mode: LTE\_QPSK Band 13 Harmonics, 5MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 779.5</b>									
1559.00	-10.8	V	3.0	37.1	1.0	-46.9	-13.0	-33.9	
2338.50	-20.3	V	3.0	36.5	1.0	-55.8	-13.0	-42.8	
3118.00	-22.6	V	3.0	36.3	1.0	-57.9	-13.0	-44.9	
1559.00	-7.7	H	3.0	37.1	1.0	-43.8	-13.0	-30.8	
2338.50	-18.3	H	3.0	36.5	1.0	-53.8	-13.0	-40.8	
3118.00	-22.5	H	3.0	36.3	1.0	-57.8	-13.0	-44.8	
<b>Mid Ch, 782 MHz</b>									
1564.00	-10.7	V	3.0	37.1	1.0	-46.9	-13.0	-33.9	
2346.00	-20.9	V	3.0	36.5	1.0	-56.4	-13.0	-43.4	
3128.00	-23.2	V	3.0	36.3	1.0	-58.5	-13.0	-45.5	
1564.00	-7.8	H	3.0	37.1	1.0	-43.9	-13.0	-30.9	
2346.00	-19.8	H	3.0	36.5	1.0	-55.3	-13.0	-42.3	
3128.00	-23.4	H	3.0	36.3	1.0	-58.7	-13.0	-45.7	
<b>High Ch, 784.5</b>									
1569.00	-10.5	V	3.0	37.1	1.0	-46.6	-13.0	-33.6	
2353.50	-21.8	V	3.0	36.5	1.0	-57.3	-13.0	-44.3	
3138.00	-23.4	V	3.0	36.3	1.0	-58.7	-13.0	-45.7	
1569.00	-7.4	H	3.0	37.1	1.0	-43.5	-13.0	-30.5	
2353.50	-19.8	H	3.0	36.5	1.0	-55.3	-13.0	-42.3	
3138.00	-22.8	H	3.0	36.3	1.0	-58.1	-13.0	-45.1	

LTE B13 5MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only  
 Location: Chamber A  
 Mode: LTE\_16QAM Band 13 Harmonics, 5MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 779.5</b>									
1559.00	-11.6	V	3.0	37.1	1.0	-47.7	-13.0	-34.7	
2338.50	-20.3	V	3.0	36.5	1.0	-55.8	-13.0	-42.8	
3118.00	-23.8	V	3.0	36.3	1.0	-59.1	-13.0	-46.1	
1559.00	-8.0	H	3.0	37.1	1.0	-44.2	-13.0	-31.2	
2338.50	-18.5	H	3.0	36.5	1.0	-54.0	-13.0	-41.0	
3118.00	-23.4	H	3.0	36.3	1.0	-58.7	-13.0	-45.7	
<b>Mid Ch, 782</b>									
1564.00	-11.0	V	3.0	37.1	1.0	-47.1	-13.0	-34.1	
2346.00	-21.4	V	3.0	36.5	1.0	-56.9	-13.0	-43.9	
3128.00	-23.6	V	3.0	36.3	1.0	-58.9	-13.0	-45.9	
1564.00	-8.6	H	3.0	37.1	1.0	-44.7	-13.0	-31.7	
2346.00	-20.3	H	3.0	36.5	1.0	-55.8	-13.0	-42.8	
3128.00	-23.7	H	3.0	36.3	1.0	-59.0	-13.0	-46.0	
<b>High Ch, 784.5</b>									
1569.00	-11.2	V	3.0	37.1	1.0	-47.3	-13.0	-34.3	
2353.50	-22.0	V	3.0	36.5	1.0	-57.5	-13.0	-44.5	
3138.00	-23.6	V	3.0	36.3	1.0	-58.9	-13.0	-45.9	
1569.00	-7.8	H	3.0	37.1	1.0	-44.0	-13.0	-31.0	
2353.50	-20.3	H	3.0	36.5	1.0	-55.8	-13.0	-42.8	
3138.00	-23.2	H	3.0	36.3	1.0	-58.5	-13.0	-45.5	

LTE B13 5MHz 16QAM

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_QPSK Band 13 Harmonics, 10MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Mid Ch, 782 MHz</b>									
1564.00	-9.3	V	3.0	37.1	1.0	-45.4	-13.0	-32.4	
2346.00	-18.7	V	3.0	36.5	1.0	-54.2	-13.0	-41.2	
3128.00	-21.4	V	3.0	36.3	1.0	-56.7	-13.0	-43.7	
1564.00	-6.8	H	3.0	37.1	1.0	-42.9	-13.0	-29.9	
2346.00	-19.6	H	3.0	36.5	1.0	-55.1	-13.0	-42.1	
3128.00	-21.9	H	3.0	36.3	1.0	-57.2	-13.0	-44.2	

LTE B13 10MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: GE43578  
 Configuration: EUT Only (Y-Pos)  
 Location: Chamber A  
 Mode: LTE\_16QAM Band 13 Harmonics, 10MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Mid Ch, 782 MHz</b>									
1564.00	-10.3	V	3.0	37.1	1.0	-46.5	-13.0	-33.5	
2346.00	-19.7	V	3.0	36.5	1.0	-55.2	-13.0	-42.2	
3128.00	-22.7	V	3.0	36.3	1.0	-58.0	-13.0	-45.0	
1564.00	-7.0	H	3.0	37.1	1.0	-43.1	-13.0	-30.1	
2346.00	-20.9	H	3.0	36.5	1.0	-56.4	-13.0	-43.4	
3128.00	-22.1	H	3.0	36.3	1.0	-57.4	-13.0	-44.4	

LTE B13 10MHz 16QAM

**LTE Band 17**

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/16/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + AC Charger  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 17 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 706.5</b>									
1413.00	-27.6	V	3.0	37.4	1.0	64.0	-13.0	-51.0	
2119.50	-19.4	V	3.0	36.6	1.0	55.0	-13.0	-42.0	
2826.00	-29.2	V	3.0	36.4	1.0	54.0	-13.0	-42.6	
1413.00	-27.5	H	3.0	37.4	1.0	63.9	-13.0	-50.9	
2119.50	-20.2	H	3.0	36.6	1.0	55.8	-13.0	-42.8	
2826.00	-20.1	H	3.0	36.4	1.0	55.4	-13.0	-42.4	
<b>Mid Ch, 710</b>									
1420.00	-27.7	V	3.0	37.3	1.0	64.0	-13.0	-51.0	
2130.00	-19.8	V	3.0	36.6	1.0	55.4	-13.0	-42.4	
2840.00	-19.5	V	3.0	36.4	1.0	54.9	-13.0	-41.9	
1420.00	-27.7	H	3.0	37.3	1.0	64.1	-13.0	-51.1	
2130.00	-20.7	H	3.0	36.6	1.0	56.3	-13.0	-43.3	
2840.00	-20.1	H	3.0	36.4	1.0	55.5	-13.0	-42.5	
<b>High Ch, 713.5</b>									
1427.00	-27.5	V	3.0	37.3	1.0	63.8	-13.0	-50.8	
2140.50	-19.5	V	3.0	36.6	1.0	55.1	-13.0	-42.1	
2854.00	-19.3	V	3.0	36.4	1.0	54.7	-13.0	-41.7	
1427.00	-27.6	H	3.0	37.3	1.0	63.9	-13.0	-50.9	
2140.50	-20.2	H	3.0	36.6	1.0	55.8	-13.0	-42.8	
2854.00	-19.7	H	3.0	36.4	1.0	55.0	-13.0	-42.0	

LTE B17 5MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/16/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + AC Charger  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 17 Harmonics, 5MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 706.5</b>									
1413.00	-27.6	V	3.0	37.4	1.0	63.9	-13.0	-50.9	
2119.50	-19.5	V	3.0	36.6	1.0	55.0	-13.0	-42.0	
2826.00	-29.2	V	3.0	36.4	1.0	55.6	-13.0	-42.6	
1413.00	-27.8	H	3.0	37.4	1.0	64.2	-13.0	-51.2	
2119.50	-20.3	H	3.0	36.6	1.0	55.8	-13.0	-42.8	
2826.00	-20.7	H	3.0	36.4	1.0	56.1	-13.0	-43.1	
<b>Mid Ch, 710</b>									
1420.00	-27.5	V	3.0	37.3	1.0	63.9	-13.0	-50.9	
2130.00	-19.8	V	3.0	36.6	1.0	55.4	-13.0	-42.4	
2840.00	-20.1	V	3.0	36.4	1.0	55.5	-13.0	-42.5	
1420.00	-27.9	H	3.0	37.3	1.0	64.3	-13.0	-51.3	
2130.00	-20.4	H	3.0	36.6	1.0	55.9	-13.0	-42.9	
2840.00	-20.7	H	3.0	36.4	1.0	56.1	-13.0	-43.1	
<b>High Ch, 713.5</b>									
1427.00	-27.5	V	3.0	37.3	1.0	63.9	-13.0	-50.9	
2140.50	-19.7	V	3.0	36.6	1.0	55.3	-13.0	-42.3	
2854.00	-20.4	V	3.0	36.4	1.0	55.7	-13.0	-42.7	
1427.00	-27.6	H	3.0	37.3	1.0	63.9	-13.0	-50.9	
2140.50	-20.6	H	3.0	36.6	1.0	56.1	-13.0	-43.1	
2854.00	-20.7	H	3.0	36.4	1.0	56.1	-13.0	-43.1	

LTE B17 5MHz 16QAM

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/16/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + AC Charger  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 17 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 709</b>									
1418.00	-28.1	V	3.0	37.4	1.0	64.4	-13.0	-51.4	
2127.00	-19.7	V	3.0	36.6	1.0	55.2	-13.0	-42.2	
2836.00	-19.8	V	3.0	36.4	1.0	55.2	-13.0	-42.2	
1418.00	-27.0	H	3.0	37.4	1.0	63.3	-13.0	-50.3	
2127.00	-21.5	H	3.0	36.6	1.0	57.1	-13.0	-44.1	
2836.00	-20.3	H	3.0	36.4	1.0	55.7	-13.0	-42.7	
<b>Mid Ch, 710</b>									
1420.00	-28.4	V	3.0	37.3	1.0	64.7	-13.0	-51.7	
2130.00	-19.7	V	3.0	36.6	1.0	55.3	-13.0	-42.3	
2840.00	-20.1	V	3.0	36.4	1.0	55.5	-13.0	-42.5	
1420.00	-27.0	H	3.0	37.3	1.0	63.3	-13.0	-50.3	
2130.00	-21.2	H	3.0	36.6	1.0	56.8	-13.0	-43.8	
2840.00	-20.6	H	3.0	36.4	1.0	55.9	-13.0	-42.9	
<b>High Ch, 711</b>									
1422.00	-27.5	V	3.0	37.3	1.0	63.9	-13.0	-50.9	
2133.00	-19.6	V	3.0	36.6	1.0	55.1	-13.0	-42.1	
2844.00	-19.7	V	3.0	36.4	1.0	55.1	-13.0	-42.1	
1422.00	-26.7	H	3.0	37.3	1.0	63.0	-13.0	-50.0	
2133.00	-21.2	H	3.0	36.6	1.0	56.7	-13.0	-43.7	
2844.00	-20.1	H	3.0	36.4	1.0	55.5	-13.0	-42.5	

LTE B17 10MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/16/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT + AC Charger  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 17 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 709</b>									
1418.00	-27.8	V	3.0	37.4	1.0	64.2	-13.0	-51.2	
2127.00	-20.3	V	3.0	36.6	1.0	55.8	-13.0	-42.8	
2836.00	-19.8	V	3.0	36.4	1.0	55.2	-13.0	-42.2	
1418.00	-27.4	H	3.0	37.4	1.0	63.7	-13.0	-50.7	
2127.00	-20.5	H	3.0	36.6	1.0	56.1	-13.0	-43.1	
2836.00	-20.0	H	3.0	36.4	1.0	55.4	-13.0	-42.4	
<b>Mid Ch, 710</b>									
1420.00	-28.3	V	3.0	37.3	1.0	64.7	-13.0	-51.7	
2130.00	-20.4	V	3.0	36.6	1.0	56.0	-13.0	-43.0	
2840.00	-20.3	V	3.0	36.4	1.0	55.7	-13.0	-42.7	
1420.00	-27.5	H	3.0	37.3	1.0	63.8	-13.0	-50.8	
2130.00	-21.0	H	3.0	36.6	1.0	56.6	-13.0	-43.6	
2840.00	-20.3	H	3.0	36.4	1.0	55.7	-13.0	-42.7	
<b>High Ch, 711</b>									
1422.00	-27.9	V	3.0	37.3	1.0	64.3	-13.0	-51.3	
2133.00	-20.3	V	3.0	36.6	1.0	55.9	-13.0	-42.9	
2844.00	-20.1	V	3.0	36.4	1.0	55.4	-13.0	-42.4	
1422.00	-27.4	H	3.0	37.3	1.0	63.7	-13.0	-50.7	
2133.00	-20.7	H	3.0	36.6	1.0	56.3	-13.0	-43.3	
2844.00	-20.4	H	3.0	36.4	1.0	55.7	-13.0	-42.7	

LTE B17 10MHz 16QAM

**LTE Band 41**

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 41 Harmonics, 5MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2498.50</b>									
4997.00	-12.2	V	3.0	35.5	1.0	-46.6	-25.0	-21.6	
7495.50	-9.7	V	3.0	35.7	1.0	-44.4	-25.0	-19.4	
9994.00	-6.7	V	3.0	36.0	1.0	-41.7	-25.0	-16.7	
4997.00	-12.1	H	3.0	35.5	1.0	-46.6	-25.0	-21.6	
7495.50	-8.5	H	3.0	35.7	1.0	-43.3	-25.0	-18.3	
9994.00	-5.8	H	3.0	36.0	1.0	-40.8	-25.0	-15.8	
<b>Mid Ch, 2593</b>									
5186.00	-12.2	V	3.0	35.4	1.0	-46.7	-25.0	-21.7	
7779.00	-8.9	V	3.0	35.8	1.0	-43.7	-25.0	-18.7	
10372.00	-4.7	V	3.0	35.8	1.0	-41.5	-25.0	-16.5	
5186.00	-11.8	H	3.0	35.4	1.0	-46.2	-25.0	-21.2	
7779.00	-8.3	H	3.0	35.8	1.0	-43.1	-25.0	-18.1	
10372.00	-6.2	H	3.0	35.8	1.0	-41.1	-25.0	-16.1	
<b>High Ch, 2687.50</b>									
5375.00	-12.6	V	3.0	35.4	1.0	-47.0	-25.0	-22.0	
8062.50	-7.8	V	3.0	35.8	1.0	-42.6	-25.0	-17.6	
10750.00	-5.4	V	3.0	35.7	1.0	-40.1	-25.0	-15.1	
5375.00	-11.9	H	3.0	35.4	1.0	-45.4	-25.0	-20.4	
8062.50	-7.2	H	3.0	35.8	1.0	-42.0	-25.0	-17.0	
10750.00	-5.5	H	3.0	35.7	1.0	-40.2	-25.0	-15.2	

LTE B41 5MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT Only  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 41 Harmonics, 5MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2498.50</b>									
4997.00	-11.9	V	3.0	35.5	1.0	-46.4	-25.0	-21.4	
7495.50	-9.1	V	3.0	35.7	1.0	-43.9	-25.0	-18.9	
9994.00	-5.3	V	3.0	36.0	1.0	-40.3	-25.0	-15.3	
4997.00	-10.6	H	3.0	35.5	1.0	-45.1	-25.0	-20.1	
7495.50	-8.4	H	3.0	35.7	1.0	-43.1	-25.0	-18.1	
9994.00	-5.0	H	3.0	36.0	1.0	-40.0	-25.0	-15.0	
<b>Mid Ch, 2593</b>									
5186.00	-11.2	V	3.0	35.4	1.0	-45.7	-25.0	-20.7	
7779.00	-8.1	V	3.0	35.8	1.0	-42.9	-25.0	-17.9	
10372.00	-5.9	V	3.0	35.8	1.0	-40.8	-25.0	-15.8	
5186.00	-11.0	H	3.0	35.4	1.0	-45.4	-25.0	-20.4	
7779.00	-7.6	H	3.0	35.8	1.0	-42.4	-25.0	-17.4	
10372.00	-5.5	H	3.0	35.8	1.0	-40.3	-25.0	-15.3	
<b>High Ch, 2687.50</b>									
5375.00	-11.9	V	3.0	35.4	1.0	-46.3	-25.0	-21.3	
8062.50	-7.9	V	3.0	35.8	1.0	-42.7	-25.0	-17.7	
10750.00	-6.0	V	3.0	35.7	1.0	-40.7	-25.0	-15.7	
5375.00	-11.2	H	3.0	35.4	1.0	-45.6	-25.0	-20.6	
8062.50	-8.0	H	3.0	35.8	1.0	-42.8	-25.0	-17.8	
10750.00	-5.7	H	3.0	35.7	1.0	-40.3	-25.0	-15.3	

LTE B41 5MHz 16QAM

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT only  
 Location: Chamber C  
 Mode: LTE\_QPSK Band 41 Harmonics, 10MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2591</b>									
5002.00	-12.1	V	3.0	35.5	1.0	-46.6	-25.0	-21.6	
7503.00	-8.8	V	3.0	35.7	1.0	-43.6	-25.0	-18.6	
10040.00	-4.0	V	3.0	36.0	1.0	-41.0	-25.0	-16.0	
5002.00	-11.4	H	3.0	35.5	1.0	-45.8	-25.0	-20.8	
7503.00	-8.5	H	3.0	35.7	1.0	-43.3	-25.0	-18.3	
10040.00	-6.4	H	3.0	36.0	1.0	-41.4	-25.0	-16.4	
<b>Mid Ch, 2593</b>									
5186.00	-11.8	V	3.0	35.4	1.0	-46.2	-25.0	-21.2	
7779.00	-8.5	V	3.0	35.8	1.0	-43.2	-25.0	-18.2	
10372.00	-4.2	V	3.0	35.8	1.0	-41.0	-25.0	-16.0	
5186.00	-11.3	H	3.0	35.4	1.0	-45.7	-25.0	-20.7	
7779.00	-8.0	H	3.0	35.8	1.0	-42.8	-25.0	-17.8	
10372.00	-6.1	H	3.0	35.8	1.0	-40.9	-25.0	-15.9	
<b>High Ch, 2685</b>									
5370.00	-11.8	V	3.0	35.4	1.0	-46.2	-25.0	-21.2	
8055.00	-8.0	V	3.0	35.8	1.0	-42.8	-25.0	-17.8	
10740.00	-5.5	V	3.0	35.7	1.0	-40.2	-25.0	-15.2	
5370.00	-11.1	H	3.0	35.4	1.0	-45.6	-25.0	-20.6	
8055.00	-7.5	H	3.0	35.8	1.0	-42.3	-25.0	-17.3	
10740.00	-6.2	H	3.0	35.7	1.0	-40.9	-25.0	-15.9	

LTE B41 10MHz QPSK

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

Company: SOMC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT only  
 Location: Chamber C  
 Mode: LTE\_16QAM Band 41 Harmonics, 10MHz Bandwidth

F MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2591</b>									
5002.00	-12.5	V	3.0	35.5	1.0	-46.9	-25.0	-21.9	
7503.00	-8.0	V	3.0	35.7	1.0	-42.7	-25.0	-17.7	
10040.00	-7.0	V	3.0	36.0	1.0	-42.0	-25.0	-17.0	
5002.00	-11.4	H	3.0	35.5	1.0	-45.8	-25.0	-20.8	
7503.00	-8.5	H	3.0	35.7	1.0	-43.3	-25.0	-18.3	
10040.00	-6.8	H	3.0	36.0	1.0	-41.8	-25.0	-16.8	
<b>Mid Ch, 2593</b>									
5186.00	-12.0	V	3.0	35.4	1.0	-46.4	-25.0	-21.4	
7779.00	-8.3	V	3.0	35.8	1.0	-43.0	-25.0	-18.0	
10372.00	-6.8	V	3.0	35.8	1.0	-41.6	-25.0	-16.6	
5186.00	-10.9	H	3.0	35.4	1.0	-45.3	-25.0	-20.3	
7779.00	-7.5	H	3.0	35.8	1.0	-42.2	-25.0	-17.2	
10372.00	-5.8	H	3.0	35.8	1.0	-40.6	-25.0	-15.6	
<b>High Ch, 2685</b>									
5370.00	-12.7	V	3.0	35.4	1.0	-47.2	-25.0	-22.2	
8055.00	-8.9	V	3.0	35.8	1.0	-43.7	-25.0	-18.7	
10740.00	-6.3	V	3.0	35.7	1.0	-40.9	-25.0	-15.9	
5370.00	-11.2	H	3.0	35.4	1.0	-45.7	-25.0	-20.7	
8055.00	-8.6	H	3.0	35.8	1.0	-43.4	-25.0	-18.4	
10740.00	-5.5	H	3.0	35.7	1.0	-40.1	-25.0	-15.1	

LTE B41 10MHz 16QAM

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

Company: SQAC  
 Project #: 11626381  
 Date: 03/13/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT only  
 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)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2503</b>									
5006.00	-11.1	V	3.0	35.5	1.0	-45.6	-25.0	-20.6	
7509.00	-9.2	V	3.0	35.7	1.0	-44.2	-25.0	-19.2	
10012.00	-6.9	V	3.0	36.0	1.0	-41.9	-25.0	-16.9	
5006.00	-10.7	H	3.0	35.5	1.0	-45.2	-25.0	-20.2	
7509.00	-8.5	H	3.0	35.7	1.0	-43.2	-25.0	-18.2	
10012.00	-5.8	H	3.0	36.0	1.0	-40.8	-25.0	-15.8	
<b>Mid Ch, 2593</b>									
5186.00	-11.7	V	3.0	35.4	1.0	-46.2	-25.0	-21.2	
7779.00	-8.6	V	3.0	35.8	1.0	-43.3	-25.0	-18.3	
10372.00	-6.2	V	3.0	35.8	1.0	-41.0	-25.0	-16.0	
5186.00	-10.1	H	3.0	35.4	1.0	-44.6	-25.0	-19.6	
7779.00	-7.9	H	3.0	35.8	1.0	-42.7	-25.0	-17.7	
10372.00	-5.7	H	3.0	35.8	1.0	-41.5	-25.0	-16.5	
<b>High Ch, 2682.50</b>									
5365.00	-11.6	V	3.0	35.4	1.0	-46.0	-25.0	-21.0	
8047.50	-9.1	V	3.0	35.8	1.0	-43.9	-25.0	-18.9	
10730.00	-7.4	V	3.0	35.7	1.0	-42.1	-25.0	-17.1	
5365.00	-10.1	H	3.0	35.4	1.0	-44.6	-25.0	-19.6	
8047.50	-8.6	H	3.0	35.8	1.0	-43.4	-25.0	-18.4	
10730.00	-6.9	H	3.0	35.7	1.0	-41.6	-25.0	-16.6	

LTE B41 15MHz QPSK

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

Company: SQAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT only  
 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)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2503</b>									
5006.00	-11.3	V	3.0	35.5	1.0	-45.8	-25.0	-20.8	
7509.00	-9.2	V	3.0	35.7	1.0	-44.0	-25.0	-19.0	
10012.00	-6.4	V	3.0	36.0	1.0	-41.5	-25.0	-16.5	
5006.00	-10.4	H	3.0	35.5	1.0	-44.9	-25.0	-19.9	
7509.00	-8.3	H	3.0	35.7	1.0	-43.0	-25.0	-18.0	
10012.00	-5.8	H	3.0	36.0	1.0	-40.8	-25.0	-15.8	
<b>Mid Ch, 2593</b>									
5186.00	-11.8	V	3.0	35.4	1.0	-46.2	-25.0	-21.2	
7779.00	-9.9	V	3.0	35.8	1.0	-44.7	-25.0	-19.7	
10372.00	-7.2	V	3.0	35.8	1.0	-42.0	-25.0	-17.0	
5186.00	-9.3	H	3.0	35.4	1.0	-43.8	-25.0	-18.8	
7779.00	-9.3	H	3.0	35.8	1.0	-44.1	-25.0	-19.1	
10372.00	-5.4	H	3.0	35.8	1.0	-40.3	-25.0	-15.3	
<b>High Ch, 2682.50</b>									
5365.00	-10.6	V	3.0	35.4	1.0	-45.0	-25.0	-20.0	
8047.50	-10.0	V	3.0	35.8	1.0	-44.8	-25.0	-19.8	
10730.00	-6.6	V	3.0	35.8	1.0	-41.3	-25.0	-16.3	
5365.00	-9.1	H	3.0	35.4	1.0	-43.6	-25.0	-18.6	
8047.50	-7.9	H	3.0	35.8	1.0	-42.7	-25.0	-17.7	
10730.00	-6.3	H	3.0	35.7	1.0	-41.0	-25.0	-16.0	

LTE B41 15MHz 16QAM

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

Company: SQAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT only  
 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)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2506</b>									
5012.00	-11.3	V	3.0	35.5	1.0	-45.7	-25.0	-20.7	
7518.00	-10.1	V	3.0	35.7	1.0	-44.8	-25.0	-19.8	
10024.00	-7.7	V	3.0	36.0	1.0	-42.7	-25.0	-17.7	
5012.00	-9.8	H	3.0	35.5	1.0	-44.2	-25.0	-19.2	
7518.00	-8.8	H	3.0	35.7	1.0	-43.6	-25.0	-18.6	
10024.00	-6.4	H	3.0	36.0	1.0	-41.4	-25.0	-16.4	
<b>Mid Ch, 2593</b>									
5186.00	-12.0	V	3.0	35.4	1.0	-46.4	-25.0	-21.4	
7779.00	-8.6	V	3.0	35.8	1.0	-43.4	-25.0	-18.4	
10372.00	-6.5	V	3.0	35.8	1.0	-41.3	-25.0	-16.3	
5186.00	-10.8	H	3.0	35.4	1.0	-45.2	-25.0	-20.2	
7779.00	-7.7	H	3.0	35.8	1.0	-42.5	-25.0	-17.5	
10372.00	-5.8	H	3.0	35.8	1.0	-40.7	-25.0	-15.7	
<b>High Ch, 2680</b>									
5360.00	-11.2	V	3.0	35.4	1.0	-45.7	-25.0	-20.7	
8040.00	-9.6	V	3.0	35.8	1.0	-44.4	-25.0	-19.4	
10720.00	-7.3	V	3.0	35.7	1.0	-42.0	-25.0	-17.0	
5360.00	-10.0	H	3.0	35.4	1.0	-44.4	-25.0	-19.4	
8040.00	-8.3	H	3.0	35.8	1.0	-43.1	-25.0	-18.1	
10720.00	-6.0	H	3.0	35.7	1.0	-40.7	-25.0	-15.7	

LTE B41 20MHz QPSK

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

Company: SQAC  
 Project #: 11626381  
 Date: 3/13/2017  
 Test Engineer: 43574 JS  
 Configuration: EUT only  
 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)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 2506</b>									
5012.00	-12.1	V	3.0	35.5	1.0	-46.6	-25.0	-21.6	
7518.00	-10.2	V	3.0	35.7	1.0	-45.0	-25.0	-20.0	
10024.00	-7.4	V	3.0	36.0	1.0	-42.4	-25.0	-17.4	
5012.00	-10.7	H	3.0	35.5	1.0	-45.2	-25.0	-20.2	
7518.00	-8.0	H	3.0	35.7	1.0	-42.7	-25.0	-17.7	
10024.00	-5.8	H	3.0	36.0	1.0	-40.8	-25.0	-15.8	
<b>Mid Ch, 2593</b>									
5186.00	-12.1	V	3.0	35.4	1.0	-46.5	-25.0	-21.5	
7779.00	-9.1	V	3.0	35.8	1.0	-44.9	-25.0	-19.9	
10372.00	-6.4	V	3.0	35.8	1.0	-41.3	-25.0	-16.3	
5186.00	-11.1	H	3.0	35.4	1.0	-45.6	-25.0	-20.6	
7779.00	-7.5	H	3.0	35.8	1.0	-42.3	-25.0	-17.3	
10372.00	-6.1	H	3.0	35.8	1.0	-41.0	-25.0	-16.0	
<b>High Ch, 2680</b>									
5360.00	-10.9	V	3.0	35.4	1.0	-45.4	-25.0	-20.4	
8040.00	-9.9	V	3.0	35.8	1.0	-44.7	-25.0	-19.7	
10720.00	-7.1	V	3.0	35.7	1.0	-41.8	-25.0	-16.8	
5360.00	-9.6	H	3.0	35.4	1.0	-44.0	-25.0	-19.0	
8040.00	-7.1	H	3.0	35.8	1.0	-41.9	-25.0	-16.9	
10720.00	-6.7	H	3.0	35.7	1.0	-41.3	-25.0	-16.3	

LTE B41 20MHz 16QAM