

High Frequency Substitution Measurement
 UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kievra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 7, 15MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2507.5MHz)										
5.02	61.7	H	3.0	-9.9	40.3	1.0	48.3	-25.0	-23.3	
7.52	64.2	H	3.0	-7.7	38.9	1.0	45.6	-25.0	-20.6	
10.03	65.2	H	3.0	-6.8	38.3	1.0	43.3	-25.0	-18.3	
5.02	60.7	V	3.0	-8.2	40.3	1.0	47.4	-25.0	-22.4	
7.52	63.5	V	3.0	-7.2	38.9	1.0	45.2	-25.0	-20.2	
10.03	63.9	V	3.0	-4.7	38.3	1.0	42.0	-25.0	-17.8	
Mid Channel (2530MHz)										
5.07	59.6	H	3.0	-4.9	40.3	1.0	44.2	-25.0	-19.2	
7.61	64.5	H	3.0	-7.9	38.9	1.0	45.8	-25.0	-20.8	
10.14	64.5	H	3.0	-5.1	38.3	1.0	42.5	-25.0	-17.5	
5.07	58.8	V	3.0	-5.1	40.3	1.0	43.4	-25.0	-20.4	
7.61	64.6	V	3.0	-8.2	38.9	1.0	46.2	-25.0	-21.2	
10.14	65.0	V	3.0	-5.7	38.3	1.0	43.0	-25.0	-18.0	
High Channel (2562.5MHz)										
5.15	61.6	H	3.0	-8.8	40.3	1.0	48.1	-25.0	-23.1	
7.69	63.4	H	3.0	-6.7	38.9	1.0	44.6	-25.0	-19.6	
10.25	65.0	H	3.0	-5.5	38.3	1.0	42.9	-25.0	-17.9	
5.15	62.4	V	3.0	-9.7	40.3	1.0	49.0	-25.0	-24.0	
7.69	63.0	V	3.0	-7.4	38.9	1.0	45.3	-25.0	-20.3	
10.25	64.7	V	3.0	-5.3	38.3	1.0	42.6	-25.0	-17.6	

Rev: 10.28.15

LTE B7 15MHz QPSK

High Frequency Substitution Measurement
 UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kievra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 7, 15MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2507.5MHz)										
5.02	61.4	H	3.0	-8.7	40.3	1.0	48.0	-25.0	-23.0	
7.52	64.3	H	3.0	-7.8	38.9	1.0	45.7	-25.0	-20.7	
10.03	64.9	H	3.0	-5.7	38.3	1.0	43.0	-25.0	-18.0	
5.02	61.2	V	3.0	-8.6	40.3	1.0	47.9	-25.0	-22.9	
7.52	63.8	V	3.0	-7.6	38.9	1.0	45.5	-25.0	-20.5	
10.03	64.4	V	3.0	-5.2	38.3	1.0	42.5	-25.0	-17.5	
Mid Channel (2530MHz)										
5.07	58.7	H	3.0	-6.0	40.3	1.0	45.3	-25.0	-20.3	
7.61	63.9	H	3.0	-7.3	38.9	1.0	45.2	-25.0	-20.2	
10.14	64.5	H	3.0	-5.2	38.3	1.0	42.5	-25.0	-17.5	
5.07	59.6	V	3.0	-6.9	40.3	1.0	46.2	-25.0	-21.2	
7.61	63.8	V	3.0	-7.4	38.9	1.0	45.4	-25.0	-20.4	
10.14	64.6	V	3.0	-5.3	38.3	1.0	42.6	-25.0	-17.6	
High Channel (2562.5MHz)										
5.15	61.9	H	3.0	-9.1	40.3	1.0	48.4	-25.0	-23.4	
7.69	64.0	H	3.0	-7.3	38.9	1.0	45.2	-25.0	-20.2	
10.25	64.9	H	3.0	-5.4	38.3	1.0	42.7	-25.0	-17.7	
5.15	61.9	V	3.0	-9.2	40.3	1.0	48.5	-25.0	-23.5	
7.69	63.7	V	3.0	-7.3	38.9	1.0	45.1	-25.0	-20.1	
10.25	64.9	V	3.0	-5.4	38.3	1.0	42.7	-25.0	-17.7	

Rev: 10.28.15

LTE B7 15MHz 16QAM

High Frequency Substitution Measurement
 UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kievra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 7, 20MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.82	62.4	H	3.0	-9.7	40.3	1.0	49.0	-25.0	-24.0	
7.53	62.8	H	3.0	-6.3	38.9	1.0	44.2	-25.0	-19.2	
10.04	65.2	H	3.0	-6.8	38.3	1.0	43.3	-25.0	-18.3	
5.82	60.8	V	3.0	-8.2	40.3	1.0	47.5	-25.0	-22.5	
7.53	64.6	V	3.0	-8.4	38.9	1.0	46.3	-25.0	-21.3	
10.04	64.3	V	3.0	-5.1	38.3	1.0	42.4	-25.0	-17.4	
Mid Channel (2535MHz)										
5.07	59.0	H	3.0	-6.3	40.3	1.0	45.6	-25.0	-20.6	
7.61	63.9	H	3.0	-7.3	38.9	1.0	45.3	-25.0	-20.3	
10.14	64.9	H	3.0	-5.6	38.3	1.0	42.9	-25.0	-17.9	
5.07	61.6	V	3.0	-9.0	40.3	1.0	48.3	-25.0	-23.3	
7.61	63.7	V	3.0	-7.4	38.9	1.0	45.3	-25.0	-20.3	
10.14	64.9	V	3.0	-5.5	38.3	1.0	42.8	-25.0	-17.8	
High Channel (2560MHz)										
5.12	62.4	H	3.0	-9.5	40.3	1.0	48.9	-25.0	-23.9	
7.68	63.1	H	3.0	-6.4	38.9	1.0	44.3	-25.0	-19.3	
10.24	64.5	H	3.0	-5.1	38.3	1.0	42.4	-25.0	-17.4	
5.12	61.9	V	3.0	-8.2	40.3	1.0	48.5	-25.0	-23.5	
7.68	64.0	V	3.0	-7.5	38.9	1.0	45.4	-25.0	-20.4	
10.24	64.5	V	3.0	-5.1	38.3	1.0	42.4	-25.0	-17.4	

Rev: 10.28.15

LTE B7 20MHz QPSK

High Frequency Substitution Measurement
 UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kievra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 7, 20MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.82	61.6	H	3.0	-9.0	40.3	1.0	48.3	-25.0	-23.3	
7.53	62.9	H	3.0	-6.4	38.9	1.0	44.3	-25.0	-19.3	
10.04	64.7	H	3.0	-5.5	38.3	1.0	42.8	-25.0	-17.8	
5.82	60.8	V	3.0	-8.2	40.3	1.0	47.5	-25.0	-22.5	
7.53	63.7	V	3.0	-7.5	38.9	1.0	45.4	-25.0	-20.4	
10.04	64.8	V	3.0	-5.6	38.3	1.0	42.9	-25.0	-17.9	
Mid Channel (2535MHz)										
5.07	59.5	H	3.0	-6.8	40.3	1.0	46.1	-25.0	-21.1	
7.61	64.1	H	3.0	-7.5	38.9	1.0	45.1	-25.0	-20.1	
10.14	64.9	H	3.0	-5.5	38.3	1.0	42.9	-25.0	-17.9	
5.07	61.2	V	3.0	-8.6	40.3	1.0	47.8	-25.0	-22.8	
7.61	63.9	V	3.0	-7.6	38.9	1.0	45.3	-25.0	-20.3	
10.14	64.0	V	3.0	-4.7	38.3	1.0	42.0	-25.0	-17.0	
High Channel (2560MHz)										
5.12	62.4	H	3.0	-9.6	40.3	1.0	48.9	-25.0	-23.9	
7.68	63.9	H	3.0	-7.2	38.9	1.0	45.1	-25.0	-20.1	
10.24	64.9	H	3.0	-5.3	38.3	1.0	42.8	-25.0	-17.8	
5.12	62.3	V	3.0	-9.6	40.3	1.0	48.9	-25.0	-23.9	
7.68	63.2	V	3.0	-6.8	38.9	1.0	44.7	-25.0	-19.7	
10.24	64.5	V	3.0	-5.1	38.3	1.0	42.4	-25.0	-17.4	

Rev: 10.28.15

LTE B7 20MHz 16QAM

LTE Band 12

**High Frequency Substitution Measurement
UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 12, 1.4MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (89.7MHz)										
1.40	41.7	H	3.0	-19.8	39.9	1.0	-58.7	-13.0	45.7	
2.10	53.3	H	3.0	-7.3	40.2	1.0	-46.4	-13.0	-33.4	
2.80	64.1	H	3.0	-16.2	39.3	1.0	-54.5	-13.0	41.5	
1.40	42.6	V	3.0	-19.2	39.9	1.0	-58.2	-13.0	45.2	
2.10	53.8	V	3.0	-6.3	40.2	1.0	-45.5	-13.0	-32.5	
2.80	64.1	V	3.0	-15.1	39.3	1.0	-53.3	-13.0	40.3	
Mid Channel (70.75MHz)										
1.42	42.3	H	3.0	-20.3	39.9	1.0	-59.2	-13.0	46.2	
2.12	52.0	H	3.0	-5.9	40.1	1.0	-45.1	-13.0	-32.1	
2.83	43.9	H	3.0	-15.9	39.3	1.0	-54.2	-13.0	41.2	
1.42	42.5	V	3.0	-19.0	39.9	1.0	-57.9	-13.0	44.9	
2.12	51.9	V	3.0	-4.4	40.1	1.0	-43.6	-13.0	-30.6	
2.83	43.6	V	3.0	-14.4	39.3	1.0	-52.7	-13.0	39.7	
High Channel (715.3MHz)										
1.43	41.9	H	3.0	-19.8	39.9	1.0	-58.7	-13.0	45.7	
2.15	51.5	H	3.0	-5.5	40.1	1.0	-44.5	-13.0	-31.5	
2.86	63.9	H	3.0	-15.8	39.3	1.0	-54.0	-13.0	41.0	
1.43	42.7	V	3.0	-19.2	39.9	1.0	-58.0	-13.0	45.0	
2.15	53.0	V	3.0	-5.6	40.1	1.0	-44.7	-13.0	-31.7	
2.86	64.1	V	3.0	-14.8	39.3	1.0	-53.1	-13.0	40.1	

Rev: 10/28/15

LTE B12 1.4MHz QPSK

**High Frequency Substitution Measurement
UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 12, 1.4MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (89.7MHz)										
1.40	41.7	H	3.0	-19.8	39.9	1.0	-58.7	-13.0	45.7	
2.10	53.3	H	3.0	-7.3	40.2	1.0	-46.4	-13.0	-33.4	
2.80	63.8	H	3.0	-15.9	39.3	1.0	-54.2	-13.0	41.2	
1.40	42.5	V	3.0	-19.1	39.9	1.0	-58.0	-13.0	45.0	
2.10	54.2	V	3.0	-6.8	40.2	1.0	-45.8	-13.0	-32.9	
2.80	64.0	V	3.0	-15.0	39.3	1.0	-53.3	-13.0	40.3	
Mid Channel (70.75MHz)										
1.42	41.5	H	3.0	-19.6	39.9	1.0	-58.5	-13.0	45.5	
2.12	52.2	H	3.0	-6.2	40.1	1.0	-45.3	-13.0	-32.3	
2.83	44.2	H	3.0	-16.2	39.3	1.0	-54.5	-13.0	41.5	
1.42	42.2	V	3.0	-18.7	39.9	1.0	-57.6	-13.0	44.6	
2.12	51.8	V	3.0	-4.3	40.1	1.0	-43.5	-13.0	-30.5	
2.83	43.7	V	3.0	-14.5	39.3	1.0	-52.8	-13.0	39.8	
High Channel (715.3MHz)										
1.43	41.7	H	3.0	-19.7	39.9	1.0	-58.6	-13.0	45.6	
2.15	50.6	H	3.0	-4.5	40.1	1.0	-43.6	-13.0	-30.6	
2.86	64.5	H	3.0	-16.4	39.3	1.0	-54.7	-13.0	41.7	
1.43	42.4	V	3.0	-18.8	39.9	1.0	-57.7	-13.0	44.7	
2.15	53.3	V	3.0	-5.9	40.1	1.0	-44.0	-13.0	-31.9	
2.86	63.9	V	3.0	-14.7	39.3	1.0	-52.9	-13.0	39.9	

Rev: 10/28/15

LTE B12 1.4MHz 16QAM

**High Frequency Substitution Measurement
UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 12, 3MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (70.5MHz)										
1.40	41.5	H	3.0	-19.6	39.9	1.0	-58.5	-13.0	45.5	
2.10	53.1	H	3.0	-7.1	40.2	1.0	-46.2	-13.0	-33.2	
2.80	43.2	H	3.0	-15.3	39.3	1.0	-53.8	-13.0	40.6	
1.40	42.3	V	3.0	-19.0	39.9	1.0	-57.9	-13.0	44.9	
2.10	53.9	V	3.0	-6.5	40.2	1.0	-45.6	-13.0	-32.6	
2.80	44.1	V	3.0	-15.1	39.3	1.0	-53.4	-13.0	40.4	
Mid Channel (70.75MHz)										
1.42	42.1	H	3.0	-20.2	39.9	1.0	-59.1	-13.0	46.1	
2.12	52.1	H	3.0	-6.1	40.1	1.0	-45.2	-13.0	-32.2	
2.83	43.5	H	3.0	-15.5	39.3	1.0	-53.0	-13.0	40.8	
1.42	42.8	V	3.0	-19.3	39.9	1.0	-58.2	-13.0	45.2	
2.12	52.1	V	3.0	-4.7	40.1	1.0	-43.8	-13.0	-30.8	
2.83	44.2	V	3.0	-15.0	39.3	1.0	-53.3	-13.0	40.3	
High Channel (714.5MHz)										
1.43	41.8	H	3.0	-19.8	39.9	1.0	-58.6	-13.0	45.6	
2.14	51.9	H	3.0	-5.9	40.1	1.0	-44.9	-13.0	-31.9	
2.86	44.4	H	3.0	-16.3	39.3	1.0	-54.6	-13.0	41.6	
1.43	42.4	V	3.0	-18.8	39.9	1.0	-57.7	-13.0	44.7	
2.14	53.6	V	3.0	-6.1	40.1	1.0	-45.2	-13.0	-32.2	
2.86	43.7	V	3.0	-14.5	39.3	1.0	-52.7	-13.0	39.7	

Rev: 10/28/15

LTE B12 3MHz QPSK

**High Frequency Substitution Measurement
UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 12, 3MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (70.5MHz)										
1.40	41.2	H	3.0	-19.3	39.9	1.0	-58.3	-13.0	45.3	
2.10	53.2	H	3.0	-7.2	40.2	1.0	-46.4	-13.0	-33.4	
2.80	44.4	H	3.0	-16.5	39.3	1.0	-54.8	-13.0	41.8	
1.40	42.1	V	3.0	-18.7	39.9	1.0	-57.6	-13.0	44.6	
2.10	53.1	V	3.0	-5.6	40.2	1.0	-44.8	-13.0	-31.8	
2.80	43.5	V	3.0	-14.5	39.3	1.0	-52.7	-13.0	39.7	
Mid Channel (70.75MHz)										
1.42	41.9	H	3.0	-19.9	39.9	1.0	-58.8	-13.0	45.8	
2.12	52.1	H	3.0	-6.1	40.1	1.0	-45.2	-13.0	-32.2	
2.83	43.6	H	3.0	-15.6	39.3	1.0	-53.9	-13.0	40.9	
1.42	42.5	V	3.0	-19.0	39.9	1.0	-57.9	-13.0	44.9	
2.12	51.9	V	3.0	-4.5	40.1	1.0	-43.6	-13.0	-30.6	
2.83	44.0	V	3.0	-14.9	39.3	1.0	-53.1	-13.0	40.1	
High Channel (714.5MHz)										
1.43	42.0	H	3.0	-20.0	39.9	1.0	-58.9	-13.0	45.9	
2.14	52.1	H	3.0	-6.0	40.1	1.0	-45.1	-13.0	-32.1	
2.86	43.6	H	3.0	-15.5	39.3	1.0	-53.8	-13.0	40.8	
1.43	42.8	V	3.0	-18.5	39.9	1.0	-57.3	-13.0	44.3	
2.14	53.6	V	3.0	-6.2	40.1	1.0	-45.3	-13.0	-32.3	
2.86	43.8	V	3.0	-14.5	39.3	1.0	-52.8	-13.0	39.8	

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LTE B12 3MHz 16QAM

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 12, 5MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (707.5MHz)										
1.40	-61.2	H	3.0	-19.3	39.9	1.0	-58.2	-13.0	-45.2	
2.10	-53.1	H	3.0	-7.1	40.2	1.0	-46.2	-13.0	-33.2	
2.81	-63.8	H	3.0	-15.9	39.3	1.0	-54.1	-13.0	-41.1	
Low Channel (713.5MHz)										
1.40	-62.6	V	3.0	-19.2	39.9	1.0	-58.1	-13.0	-45.1	
2.10	-53.2	V	3.0	-5.7	40.2	1.0	-44.9	-13.0	-31.9	
2.81	-63.7	V	3.0	-14.6	39.3	1.0	-52.9	-13.0	-39.9	
Mid Channel (707.5MHz)										
1.42	-61.7	H	3.0	-19.7	39.9	1.0	-58.6	-13.0	-45.6	
2.12	-52.2	H	3.0	-6.2	40.1	1.0	-45.3	-13.0	-32.3	
2.83	-63.8	H	3.0	-15.8	39.3	1.0	-54.1	-13.0	-41.1	
Mid Channel (713.5MHz)										
1.42	-62.3	V	3.0	-18.9	39.9	1.0	-57.7	-13.0	-44.7	
2.12	-52.8	V	3.0	-5.5	40.1	1.0	-43.7	-13.0	-30.7	
2.83	-64.3	V	3.0	-15.1	39.3	1.0	-53.4	-13.0	-40.4	
High Channel (713.5MHz)										
1.43	-61.9	H	3.0	-19.9	39.9	1.0	-58.8	-13.0	-45.8	
2.14	-52.2	H	3.0	-6.2	40.1	1.0	-45.2	-13.0	-32.2	
2.85	-64.6	H	3.0	-16.5	39.3	1.0	-54.8	-13.0	-41.8	
High Channel (713.5MHz)										
1.43	-62.3	V	3.0	-18.8	39.9	1.0	-57.7	-13.0	-44.7	
2.14	-54.7	V	3.0	-7.2	40.1	1.0	-46.3	-13.0	-33.3	
2.85	-63.7	V	3.0	-14.5	39.3	1.0	-52.7	-13.0	-39.7	

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LTE B12 5MHz QPSK

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 12, 5MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (707.5MHz)										
1.40	-61.0	H	3.0	-19.1	39.9	1.0	-58.0	-13.0	-45.0	
2.10	-53.6	H	3.0	-7.6	40.2	1.0	-46.7	-13.0	-33.7	
2.81	-63.4	H	3.0	-15.5	39.3	1.0	-53.7	-13.0	-40.7	
Low Channel (713.5MHz)										
1.40	-62.3	V	3.0	-18.9	39.9	1.0	-57.8	-13.0	-44.8	
2.10	-53.3	V	3.0	-5.8	40.2	1.0	-45.0	-13.0	-32.0	
2.81	-63.9	V	3.0	-14.8	39.3	1.0	-53.1	-13.0	-40.1	
Mid Channel (707.5MHz)										
1.42	-61.9	H	3.0	-19.9	39.9	1.0	-58.8	-13.0	-45.8	
2.12	-51.9	H	3.0	-4.4	40.1	1.0	-45.0	-13.0	-32.0	
2.83	-63.8	H	3.0	-15.8	39.3	1.0	-54.1	-13.0	-41.1	
Mid Channel (713.5MHz)										
1.42	-62.8	V	3.0	-19.3	39.9	1.0	-58.2	-13.0	-45.2	
2.12	-52.9	V	3.0	-6.1	40.1	1.0	-43.5	-13.0	-30.5	
2.83	-64.0	V	3.0	-14.8	39.3	1.0	-53.1	-13.0	-40.1	
High Channel (713.5MHz)										
1.43	-61.8	H	3.0	-19.8	39.9	1.0	-58.7	-13.0	-45.7	
2.14	-53.0	H	3.0	-7.0	40.1	1.0	-46.0	-13.0	-33.0	
2.85	-64.0	H	3.0	-15.8	39.3	1.0	-54.1	-13.0	-41.1	
High Channel (713.5MHz)										
1.43	-62.2	V	3.0	-18.7	39.9	1.0	-57.5	-13.0	-44.5	
2.14	-55.3	V	3.0	-7.8	40.1	1.0	-46.9	-13.0	-33.9	
2.85	-63.7	V	3.0	-14.5	39.3	1.0	-52.7	-13.0	-39.7	

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LTE B12 5MHz 16QAM

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 12, 10MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (704MHz)										
1.41	-61.6	H	3.0	-19.7	39.9	1.0	-58.6	-13.0	-45.6	
2.11	-50.9	H	3.0	-4.8	40.1	1.0	-44.0	-13.0	-31.0	
2.82	-63.2	H	3.0	-15.2	39.3	1.0	-53.5	-13.0	-40.5	
Low Channel (710MHz)										
1.41	-61.9	V	3.0	-18.4	39.9	1.0	-57.3	-13.0	-44.3	
2.11	-52.8	V	3.0	-5.3	40.1	1.0	-44.4	-13.0	-31.4	
2.82	-64.3	V	3.0	-15.2	39.3	1.0	-53.5	-13.0	-40.5	
Mid Channel (707.5MHz)										
1.42	-62.2	H	3.0	-20.3	39.9	1.0	-59.2	-13.0	-46.2	
2.12	-52.1	H	3.0	-6.1	40.1	1.0	-45.2	-13.0	-32.2	
2.83	-63.8	H	3.0	-15.8	39.3	1.0	-54.1	-13.0	-41.1	
Mid Channel (713.5MHz)										
1.42	-62.4	V	3.0	-18.9	39.9	1.0	-57.8	-13.0	-44.8	
2.12	-52.3	V	3.0	-4.8	40.1	1.0	-43.9	-13.0	-30.9	
2.83	-64.4	V	3.0	-15.3	39.3	1.0	-53.5	-13.0	-40.5	
High Channel (711MHz)										
1.42	-61.9	H	3.0	-19.9	39.9	1.0	-57.9	-13.0	-44.9	
2.13	-52.7	H	3.0	-5.7	40.1	1.0	-43.7	-13.0	-30.7	
2.84	-64.3	H	3.0	-16.2	39.3	1.0	-54.5	-13.0	-41.5	
High Channel (711MHz)										
1.42	-63.0	V	3.0	-19.5	39.9	1.0	-58.3	-13.0	-45.3	
2.13	-54.8	V	3.0	-7.3	40.1	1.0	-46.4	-13.0	-33.4	
2.84	-64.2	V	3.0	-15.0	39.3	1.0	-53.2	-13.0	-40.2	

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LTE B12 10MHz QPSK

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 12, 10MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (704MHz)										
1.41	-61.5	H	3.0	-19.6	39.9	1.0	-58.5	-13.0	-45.5	
2.11	-50.8	H	3.0	-4.8	40.1	1.0	-44.0	-13.0	-31.0	
2.82	-63.8	H	3.0	-15.8	39.3	1.0	-54.1	-13.0	-41.1	
Low Channel (710MHz)										
1.41	-61.6	V	3.0	-18.2	39.9	1.0	-57.1	-13.0	-44.1	
2.11	-52.4	V	3.0	-4.9	40.1	1.0	-44.1	-13.0	-31.1	
2.82	-63.9	V	3.0	-14.8	39.3	1.0	-53.0	-13.0	-40.0	
Mid Channel (707.5MHz)										
1.42	-61.8	H	3.0	-19.8	39.9	1.0	-58.7	-13.0	-45.7	
2.12	-52.1	H	3.0	-6.1	40.1	1.0	-45.2	-13.0	-32.2	
2.83	-63.4	H	3.0	-15.4	39.3	1.0	-53.7	-13.0	-40.7	
Mid Channel (713.5MHz)										
1.42	-62.3	V	3.0	-18.8	39.9	1.0	-57.7	-13.0	-44.7	
2.12	-51.9	V	3.0	-4.4	40.1	1.0	-43.5	-13.0	-30.5	
2.83	-64.2	V	3.0	-15.1	39.3	1.0	-53.4	-13.0	-40.4	
High Channel (711MHz)										
1.42	-61.8	H	3.0	-19.8	39.9	1.0	-58.7	-13.0	-45.7	
2.13	-52.5	H	3.0	-6.5	40.1	1.0	-46.1	-13.0	-33.1	
2.84	-63.7	H	3.0	-15.6	39.3	1.0	-53.9	-13.0	-40.9	
High Channel (711MHz)										
1.42	-62.6	V	3.0	-19.1	39.9	1.0	-58.0	-13.0	-45.0	
2.13	-54.7	V	3.0	-7.3	40.1	1.0	-46.3	-13.0	-33.3	
2.84	-64.4	V	3.0	-15.2	39.3	1.0	-53.4	-13.0	-40.4	

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LTE B12 10MHz 16QAM

LTE Band 13

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/15/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 13, 5MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B13

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (779.5MHz)										
1.56	41.7	H	3.0	-19.0	39.7	1.0	-17.7	-40.0	-17.7	
2.35	43.8	H	3.0	-17.6	39.6	1.0	-16.2	-13.0	-43.2	
3.12	64.6	H	3.0	-15.7	39.4	1.0	-14.1	-13.0	-41.1	
Mid Channel (782MHz)										
1.56	40.9	V	3.0	-16.5	39.7	1.0	-15.3	-40.0	-15.3	
2.35	43.3	V	3.0	-15.9	39.6	1.0	-14.5	-13.0	-41.5	
3.12	64.9	V	3.0	-14.9	39.4	1.0	-13.3	-13.0	-40.3	
High Channel (784.5MHz)										
1.57	40.7	H	3.0	-17.9	39.8	1.0	-16.6	-40.0	-16.6	
2.35	44.3	H	3.0	-18.1	39.6	1.0	-16.7	-13.0	-43.7	
3.14	64.7	H	3.0	-15.7	39.4	1.0	-14.1	-13.0	-41.1	
Low Channel (1)										
		H								
		H								
		H								
		H								
		V								
		V								
		V								
		V								
		V								
		V								
		V								
Mid Channel (782MHz)										
1.56	40.7	H	3.0	-17.9	39.8	1.0	-16.7	-40.0	-16.7	
2.35	44.3	H	3.0	-18.1	39.6	1.0	-16.7	-13.0	-43.7	
3.13	65.0	H	3.0	-16.0	39.4	1.0	-14.4	-13.0	-41.4	
1.56	59.7	V	3.0	-15.3	39.8	1.0	-14.0	-40.0	-14.0	
2.35	43.5	V	3.0	-16.1	39.6	1.0	-14.7	-13.0	-41.7	
3.13	64.7	V	3.0	-14.7	39.4	1.0	-13.1	-13.0	-40.1	
High Channel (1)										
		H								
		H								
		H								
		H								
		V								
		V								
		V								
		V								
		V								
		V								

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LTE B13 5MHz QPSK

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/15/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 13, 5MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B13

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (779.5MHz)										
1.56	41.3	H	3.0	-18.6	39.7	1.0	-17.3	-40.0	-17.3	
2.35	43.7	H	3.0	-17.5	39.6	1.0	-16.1	-13.0	-43.1	
3.12	64.7	H	3.0	-15.7	39.4	1.0	-14.1	-13.0	-41.1	
Mid Channel (782MHz)										
1.56	40.9	V	3.0	-15.7	39.7	1.0	-14.4	-40.0	-14.4	
2.35	43.8	V	3.0	-16.4	39.6	1.0	-15.0	-13.0	-42.0	
3.12	64.5	V	3.0	-14.5	39.4	1.0	-12.8	-13.0	-39.8	
High Channel (784.5MHz)										
1.57	40.8	H	3.0	-17.8	39.8	1.0	-16.5	-40.0	-16.5	
2.35	44.3	H	3.0	-18.1	39.6	1.0	-16.4	-13.0	-43.7	
3.14	64.7	H	3.0	-15.8	39.4	1.0	-14.1	-13.0	-41.1	
Low Channel (1)										
		H								
		H								
		H								
		H								
		V								
		V								
		V								
		V								
		V								
		V								
		V								
Mid Channel (782MHz)										
1.56	40.8	H	3.0	-17.3	39.8	1.0	-16.0	-40.0	-16.0	
2.35	44.2	H	3.0	-18.1	39.6	1.0	-16.7	-13.0	-43.7	
3.13	64.6	H	3.0	-15.6	39.4	1.0	-14.0	-13.0	-41.0	
1.56	59.9	V	3.0	-15.5	39.8	1.0	-14.2	-40.0	-14.2	
2.35	43.4	V	3.0	-16.0	39.6	1.0	-14.6	-13.0	-41.6	
3.13	64.6	V	3.0	-14.5	39.4	1.0	-12.9	-13.0	-39.9	
High Channel (1)										
		H								
		H								
		H								
		H								
		V								
		V								
		V								
		V								
		V								
		V								

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LTE B13 5MHz 16QAM

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/15/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 13, 10MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B13

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1)										
		H								
		H								
		H								
		H								
		V								
		V								
		V								
		V								
		V								
		V								
		V								
Mid Channel (782MHz)										
1.56	40.7	H	3.0	-17.9	39.8	1.0	-16.7	-40.0	-16.7	
2.35	44.3	H	3.0	-18.1	39.6	1.0	-16.7	-13.0	-43.7	
3.13	65.0	H	3.0	-16.0	39.4	1.0	-14.4	-13.0	-41.4	
1.56	59.7	V	3.0	-15.3	39.8	1.0	-14.0	-40.0	-14.0	
2.35	43.5	V	3.0	-16.1	39.6	1.0	-14.7	-13.0	-41.7	
3.13	64.7	V	3.0	-14.7	39.4	1.0	-13.1	-13.0	-40.1	
High Channel (1)										
		H								
		H								
		H								
		H								
		V								
		V								
		V								
		V								
		V								
		V								

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LTE B13 10MHz QPSK

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/15/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 13, 10MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B13

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1)										
		H								
		H								
		H								
		H								
		V								
		V								
		V								
		V								
		V								
		V								
		V								
Mid Channel (782MHz)										
1.56	40.8	H	3.0	-17.3	39.8	1.0	-16.0	-40.0	-16.0	
2.35	44.2	H	3.0	-18.1	39.6	1.0	-16.7	-13.0	-43.7	
3.13	64.6	H	3.0	-15.6	39.4	1.0	-14.0	-13.0	-41.0	
1.56	59.9	V	3.0	-15.5	39.8	1.0	-14.2	-40.0	-14.2	
2.35	43.4	V	3.0	-16.0	39.6	1.0	-14.6	-13.0	-41.6	
3.13	64.6	V	3.0	-14.5	39.4	1.0	-12.9	-13.0	-39.9	
High Channel (1)										
		H								
		H								
		H								
		H								
		V								
		V								
		V								
		V								
		V								
		V								

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LTE B13 10MHz 16QAM

LTE Band 17

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/19/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 17, 5MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (706.5MHz)										
1.41	60.8	H	3.0	-18.9	39.9	1.0	-57.8	-13.0	-44.8	
2.12	-53.2	V	3.0	-7.2	40.1	1.0	-46.3	-13.0	-33.3	
2.83	-64.1	H	3.0	-16.1	39.3	1.0	-54.4	-13.0	-41.4	
1.41	63.3	V	3.0	-18.9	39.9	1.0	-57.8	-13.0	-44.8	
2.12	-53.2	V	3.0	-5.7	40.1	1.0	-44.9	-13.0	-31.9	
2.83	-64.1	V	3.0	-15.0	39.3	1.0	-53.3	-13.0	-40.3	
Mid Channel (710MHz)										
1.42	60.7	H	3.0	-18.8	39.9	1.0	-57.5	-13.0	-44.6	
2.13	-55.0	H	3.0	-8.9	40.1	1.0	-48.0	-13.0	-35.0	
2.84	-63.9	H	3.0	-15.9	39.3	1.0	-54.2	-13.0	-41.2	
1.42	63.0	V	3.0	-19.5	39.9	1.0	-58.4	-13.0	-45.4	
2.13	-54.4	V	3.0	-7.0	40.1	1.0	-46.1	-13.0	-33.1	
2.84	-64.0	V	3.0	-14.8	39.3	1.0	-53.1	-13.0	-40.1	
High Channel (713.5)										
1.43	59.8	H	3.0	-17.8	39.9	1.0	-56.7	-13.0	-43.7	
2.14	-54.7	H	3.0	-8.6	40.1	1.0	-47.7	-13.0	-34.7	
2.85	-64.5	H	3.0	-16.4	39.3	1.0	-54.7	-13.0	-41.7	
1.43	61.4	V	3.0	-17.9	39.9	1.0	-56.8	-13.0	-43.8	
2.14	-54.5	V	3.0	-7.0	40.1	1.0	-46.1	-13.0	-33.1	
2.85	-64.6	V	3.0	-15.4	39.3	1.0	-53.6	-13.0	-40.6	

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LTE B17 5MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/19/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 17, 5MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (706.5MHz)										
1.41	66.4	H	3.0	-18.5	39.9	1.0	-57.4	-13.0	-44.4	
2.12	-52.6	H	3.0	-6.5	40.1	1.0	-45.7	-13.0	-32.7	
2.83	-63.5	H	3.0	-15.5	39.3	1.0	-53.8	-13.0	-40.8	
1.41	63.2	V	3.0	-18.7	39.9	1.0	-57.6	-13.0	-44.6	
2.12	-53.0	V	3.0	-5.5	40.1	1.0	-44.7	-13.0	-31.7	
2.83	-63.7	V	3.0	-14.6	39.3	1.0	-52.8	-13.0	-39.8	
Mid Channel (710MHz)										
1.42	66.3	H	3.0	-18.3	39.9	1.0	-57.2	-13.0	-44.2	
2.13	-55.1	H	3.0	-9.0	40.1	1.0	-48.1	-13.0	-35.1	
2.84	-64.1	H	3.0	-16.1	39.3	1.0	-54.4	-13.0	-41.4	
1.42	62.2	V	3.0	-18.7	39.9	1.0	-57.6	-13.0	-44.6	
2.13	-54.3	V	3.0	-6.9	40.1	1.0	-46.0	-13.0	-33.0	
2.84	-63.9	V	3.0	-14.7	39.3	1.0	-53.0	-13.0	-40.0	
High Channel (713.5)										
1.43	59.7	H	3.0	-17.7	39.9	1.0	-56.6	-13.0	-43.6	
2.14	-55.1	H	3.0	-9.0	40.1	1.0	-48.1	-13.0	-35.1	
2.85	-64.6	H	3.0	-16.5	39.3	1.0	-54.8	-13.0	-41.8	
1.43	61.4	V	3.0	-17.9	39.9	1.0	-56.8	-13.0	-43.8	
2.14	-54.6	V	3.0	-7.1	40.1	1.0	-46.2	-13.0	-33.2	
2.85	-64.6	V	3.0	-15.3	39.3	1.0	-53.6	-13.0	-40.6	

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LTE B17 5MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/19/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 17, 10MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (709MHz)										
1.42	60.9	H	3.0	-19.0	39.9	1.0	-57.9	-13.0	-44.9	
2.13	-54.0	H	3.0	-7.9	40.1	1.0	-47.0	-13.0	-34.0	
2.84	-64.5	H	3.0	-16.4	39.3	1.0	-54.7	-13.0	-41.7	
1.42	63.5	V	3.0	-19.0	39.9	1.0	-57.9	-13.0	-44.9	
2.13	-53.8	V	3.0	-6.4	40.1	1.0	-45.5	-13.0	-32.5	
2.84	-63.7	V	3.0	-14.5	39.3	1.0	-52.8	-13.0	-39.8	
Mid Channel (710MHz)										
1.42	60.4	H	3.0	-18.4	39.9	1.0	-57.3	-13.0	-44.3	
2.13	-54.8	H	3.0	-8.8	40.1	1.0	-47.9	-13.0	-34.9	
2.84	-64.1	H	3.0	-16.0	39.3	1.0	-54.3	-13.0	-41.3	
1.42	62.3	V	3.0	-18.8	39.9	1.0	-57.7	-13.0	-44.7	
2.13	-54.6	V	3.0	-7.1	40.1	1.0	-46.2	-13.0	-33.2	
2.84	-64.0	V	3.0	-14.8	39.3	1.0	-53.1	-13.0	-40.1	
High Channel (711)										
1.42	60.3	H	3.0	-18.3	39.9	1.0	-57.2	-13.0	-44.2	
2.13	-55.2	H	3.0	-9.2	40.1	1.0	-48.2	-13.0	-35.2	
2.84	-64.4	H	3.0	-16.4	39.3	1.0	-54.6	-13.0	-41.6	
1.42	63.6	V	3.0	-19.1	39.9	1.0	-58.0	-13.0	-45.0	
2.13	-54.6	V	3.0	-7.1	40.1	1.0	-46.2	-13.0	-33.2	
2.84	-64.3	V	3.0	-15.0	39.3	1.0	-53.3	-13.0	-40.3	

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LTE B17 10MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/19/2016
 Test Engineer: Mark Nolting
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 17, 10MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (709MHz)										
1.42	66.2	H	3.0	-18.2	39.9	1.0	-57.1	-13.0	-44.1	
2.13	-53.9	H	3.0	-7.9	40.1	1.0	-47.0	-13.0	-34.0	
2.84	-63.8	H	3.0	-15.7	39.3	1.0	-54.0	-13.0	-41.0	
1.42	62.9	V	3.0	-19.4	39.9	1.0	-58.3	-13.0	-45.3	
2.13	-53.9	V	3.0	-6.5	40.1	1.0	-45.6	-13.0	-32.6	
2.84	-64.3	V	3.0	-15.1	39.3	1.0	-53.4	-13.0	-40.4	
Mid Channel (710MHz)										
1.42	61.0	H	3.0	-19.1	39.9	1.0	-57.9	-13.0	-44.9	
2.13	-55.1	H	3.0	-9.0	40.1	1.0	-48.1	-13.0	-35.1	
2.84	-63.8	H	3.0	-15.8	39.3	1.0	-54.1	-13.0	-41.1	
1.42	62.3	V	3.0	-18.8	39.9	1.0	-57.7	-13.0	-44.7	
2.13	-54.4	V	3.0	-7.0	40.1	1.0	-46.1	-13.0	-33.1	
2.84	-64.5	V	3.0	-15.3	39.3	1.0	-53.6	-13.0	-40.6	
High Channel (711MHz)										
1.42	60.5	H	3.0	-18.5	39.9	1.0	-57.4	-13.0	-44.4	
2.13	-55.4	H	3.0	-9.3	40.1	1.0	-48.4	-13.0	-35.4	
2.84	-64.6	H	3.0	-16.5	39.3	1.0	-54.8	-13.0	-41.8	
1.42	62.2	V	3.0	-18.7	39.9	1.0	-57.6	-13.0	-44.6	
2.13	-54.4	V	3.0	-7.0	40.1	1.0	-46.1	-13.0	-33.1	
2.84	-64.0	V	3.0	-14.8	39.3	1.0	-53.1	-13.0	-40.1	

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LTE B17 10MHz 16QAM

LTE Band 41

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kiewra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 41, 5MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (249.5MHz)										
5.00	59.3	H	3.0	-6.7	40.3	1.0	-46.0	-25.0	-21.0	
7.50	64.7	H	3.0	-8.3	38.9	1.0	-46.2	-25.0	-21.2	
9.99	65.2	H	3.0	-6.0	38.3	1.0	-43.3	-25.0	-18.3	
Mid Channel (250MHz)										
5.00	59.3	V	3.0	-6.7	40.3	1.0	-46.0	-25.0	-21.0	
7.50	64.9	V	3.0	-8.7	38.9	1.0	-46.6	-25.0	-21.6	
9.99	64.9	V	3.0	-5.7	38.3	1.0	-43.0	-25.0	-18.0	
High Channel (268.75MHz)										
5.38	63.6	H	3.0	-10.3	40.2	1.0	-49.5	-25.0	-24.5	
8.06	63.8	H	3.0	-6.8	38.8	1.0	-44.6	-25.0	-19.6	
10.75	65.0	H	3.0	-4.9	38.3	1.0	-42.2	-25.0	-17.2	
5.38	63.4	V	3.0	-10.3	40.2	1.0	-49.6	-25.0	-24.6	
8.06	63.9	V	3.0	-7.1	38.8	1.0	-44.8	-25.0	-19.8	
10.75	65.4	V	3.0	-5.4	38.3	1.0	-42.7	-25.0	-17.7	

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LTE B41 5MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kiewra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 41, 5MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (249.5MHz)										
5.00	59.9	H	3.0	-7.3	40.3	1.0	-46.5	-25.0	-21.5	
7.50	64.8	H	3.0	-8.4	38.9	1.0	-46.3	-25.0	-21.3	
9.99	64.8	H	3.0	-5.7	38.3	1.0	-43.0	-25.0	-18.0	
Mid Channel (250MHz)										
5.00	59.4	V	3.0	-6.9	40.3	1.0	-46.1	-25.0	-21.1	
7.50	64.7	V	3.0	-8.5	38.9	1.0	-46.5	-25.0	-21.5	
9.99	64.7	V	3.0	-5.5	38.3	1.0	-42.9	-25.0	-17.9	
High Channel (268.75MHz)										
5.38	64.9	H	3.0	-9.0	40.3	1.0	-48.3	-25.0	-23.3	
7.78	64.4	H	3.0	-7.6	38.9	1.0	-45.5	-25.0	-20.5	
10.37	64.4	H	3.0	-4.8	38.3	1.0	-42.1	-25.0	-17.1	
5.38	61.7	V	3.0	-8.9	40.3	1.0	-48.2	-25.0	-23.2	
7.78	64.7	V	3.0	-8.1	38.9	1.0	-46.0	-25.0	-21.0	
10.37	65.3	V	3.0	-5.7	38.3	1.0	-43.0	-25.0	-18.0	
High Channel (268.75MHz)										
5.38	64.0	H	3.0	-10.8	40.2	1.0	-50.0	-25.0	-25.0	
8.06	64.3	H	3.0	-7.2	38.8	1.0	-45.0	-25.0	-20.0	
10.75	65.4	H	3.0	-5.3	38.3	1.0	-42.6	-25.0	-17.6	
5.38	63.6	V	3.0	-10.5	40.2	1.0	-49.7	-25.0	-24.7	
8.06	63.8	V	3.0	-6.9	38.8	1.0	-44.7	-25.0	-19.7	
10.75	65.3	V	3.0	-5.4	38.3	1.0	-42.7	-25.0	-17.7	

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LTE B41 5MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kiewra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 41, 10MHz QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (249.5MHz)										
5.00	62.5	H	3.0	-9.9	40.3	1.0	-49.1	-25.0	-24.1	
7.50	64.9	H	3.0	-8.5	38.9	1.0	-46.4	-25.0	-21.4	
10.00	65.0	H	3.0	-5.8	38.3	1.0	-43.1	-25.0	-18.1	
Mid Channel (250MHz)										
5.00	61.9	V	3.0	-9.3	40.3	1.0	-48.6	-25.0	-23.6	
7.50	64.8	V	3.0	-8.6	38.9	1.0	-46.5	-25.0	-21.5	
10.00	65.0	V	3.0	-5.8	38.3	1.0	-43.2	-25.0	-18.2	
High Channel (268.75MHz)										
5.38	61.4	H	3.0	-8.5	40.3	1.0	-47.8	-25.0	-22.8	
7.78	64.2	H	3.0	-7.4	38.9	1.0	-45.3	-25.0	-20.3	
10.37	65.5	H	3.0	-5.9	38.3	1.0	-43.2	-25.0	-18.2	
5.38	61.4	V	3.0	-8.6	40.3	1.0	-47.9	-25.0	-22.9	
7.78	64.7	V	3.0	-8.1	38.9	1.0	-46.0	-25.0	-21.0	
10.37	65.4	V	3.0	-5.9	38.3	1.0	-43.2	-25.0	-18.2	
High Channel (268.75MHz)										
5.37	63.6	H	3.0	-10.4	40.2	1.0	-49.6	-25.0	-24.6	
8.06	64.4	H	3.0	-7.3	38.8	1.0	-45.1	-25.0	-20.1	
10.74	65.2	H	3.0	-5.1	38.3	1.0	-42.4	-25.0	-17.4	
5.37	63.5	V	3.0	-10.4	40.2	1.0	-49.7	-25.0	-24.7	
8.06	64.7	V	3.0	-7.8	38.8	1.0	-45.6	-25.0	-20.6	
10.74	64.9	V	3.0	-5.0	38.3	1.0	-42.5	-25.0	-17.5	

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LTE B41 10MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kiewra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 41, 10MHz 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (249.5MHz)										
5.00	61.4	H	3.0	-8.7	40.3	1.0	-48.0	-25.0	-23.0	
7.50	64.7	H	3.0	-8.3	38.9	1.0	-46.2	-25.0	-21.2	
10.00	65.4	H	3.0	-6.3	38.3	1.0	-43.6	-25.0	-18.6	
Mid Channel (250MHz)										
5.00	61.5	V	3.0	-8.9	40.3	1.0	-48.2	-25.0	-23.2	
7.50	64.6	V	3.0	-8.4	38.9	1.0	-46.4	-25.0	-21.4	
10.00	65.0	V	3.0	-5.8	38.3	1.0	-43.1	-25.0	-18.1	
High Channel (268.75MHz)										
5.38	62.1	H	3.0	-9.2	40.3	1.0	-48.5	-25.0	-23.5	
7.78	64.4	H	3.0	-7.7	38.9	1.0	-45.5	-25.0	-20.5	
10.37	65.1	H	3.0	-5.4	38.3	1.0	-42.7	-25.0	-17.7	
5.38	62.2	V	3.0	-9.4	40.3	1.0	-48.7	-25.0	-23.7	
7.78	64.7	V	3.0	-8.2	38.9	1.0	-46.0	-25.0	-21.0	
10.37	65.2	V	3.0	-5.6	38.3	1.0	-42.9	-25.0	-17.9	
High Channel (268.75MHz)										
5.37	63.6	H	3.0	-10.3	40.2	1.0	-49.5	-25.0	-24.5	
8.06	64.3	H	3.0	-7.3	38.8	1.0	-45.1	-25.0	-20.1	
10.74	65.2	H	3.0	-5.1	38.3	1.0	-42.4	-25.0	-17.4	
5.37	63.5	V	3.0	-10.4	40.2	1.0	-49.6	-25.0	-24.6	
8.06	64.5	V	3.0	-7.7	38.8	1.0	-45.5	-25.0	-20.5	
10.74	64.9	V	3.0	-5.0	38.3	1.0	-42.3	-25.0	-17.3	

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LTE B41 10MHz 16QAM

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kiewra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 41, 15MHz, QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2503.5MHz)										
5.01	61.8	H	3.0	-0.1	40.3	1.0	-84.4	25.0	-23.4	
7.51	64.9	H	3.0	-8.4	38.9	1.0	-46.3	25.0	-21.3	
10.01	65.5	H	3.0	-6.3	38.3	1.0	-43.6	25.0	-18.6	
Mid Channel (2593MHz)										
5.19	61.8	H	3.0	-8.9	40.3	1.0	-82.2	25.0	-23.2	
7.78	64.3	H	3.0	-7.5	38.9	1.0	-45.4	25.0	-20.4	
10.37	65.1	H	3.0	-5.4	38.3	1.0	-42.7	25.0	-17.7	
High Channel (2682.5MHz)										
5.19	61.3	V	3.0	-8.5	40.3	1.0	-47.8	25.0	-22.8	
7.78	64.5	V	3.0	-7.9	38.9	1.0	-45.8	25.0	-20.8	
10.37	65.0	V	3.0	-5.5	38.3	1.0	-42.8	25.0	-17.8	

Rev: 10.28.15

LTE B41 15MHz QPSK

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kiewra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 41, 15MHz, 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2503.5MHz)										
5.01	59.5	H	3.0	-6.8	40.3	1.0	-46.1	25.0	-21.1	
7.51	64.9	H	3.0	-8.4	38.9	1.0	-46.3	25.0	-21.3	
10.01	64.9	H	3.0	-5.8	38.3	1.0	-43.1	25.0	-18.1	
Mid Channel (2593MHz)										
5.19	59.4	V	3.0	-6.9	40.3	1.0	-46.1	25.0	-21.1	
7.78	64.2	V	3.0	-8.8	38.9	1.0	-45.9	25.0	-20.9	
10.37	65.0	V	3.0	-5.8	38.3	1.0	-43.1	25.0	-18.1	
High Channel (2682.5MHz)										
5.19	61.2	V	3.0	-8.4	40.3	1.0	-47.7	25.0	-22.7	
7.78	64.1	V	3.0	-7.8	38.9	1.0	-45.6	25.0	-20.6	
10.37	64.7	V	3.0	-5.1	38.3	1.0	-42.5	25.0	-17.5	

Rev: 10.28.15

LTE B41 15MHz 16QAM

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kiewra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 41, 20MHz, QPSK

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2596MHz)										
5.01	61.6	H	3.0	-8.9	40.3	1.0	-48.2	25.0	-23.2	
7.52	64.8	H	3.0	-8.3	38.9	1.0	-46.3	25.0	-21.3	
10.02	65.2	H	3.0	-6.0	38.3	1.0	-43.4	25.0	-18.4	
Mid Channel (2593MHz)										
5.01	61.7	V	3.0	-9.1	40.3	1.0	-48.4	25.0	-23.4	
7.52	64.7	V	3.0	-8.5	38.9	1.0	-46.4	25.0	-21.4	
10.02	65.1	V	3.0	-5.9	38.3	1.0	-43.2	25.0	-18.2	
High Channel (2680MHz)										
5.36	63.7	H	3.0	-10.5	40.2	1.0	-49.7	25.0	-24.7	
8.04	63.8	H	3.0	-6.7	38.9	1.0	-44.5	25.0	-19.5	
10.72	65.5	H	3.0	-3.4	38.3	1.0	-42.7	25.0	-17.7	

Rev: 10.28.15

LTE B41 20MHz QPSK

**High Frequency Substitution Measurement
 UL RTP Radiated Chamber**

Company: SOMC
 Project #: 16J23633
 Date: 08/12/2016
 Test Engineer: Brian Kiewra / John Manser
 Configuration: Unit with ear-buds and charger (LTE #1)
 Mode: LTE Band 41, 20MHz, 16QAM

Test Equipment:
 Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (HV)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2596MHz)										
5.01	60.4	H	3.0	-7.8	40.3	1.0	-47.0	25.0	-22.0	
7.52	64.1	H	3.0	-7.7	38.9	1.0	-45.6	25.0	-20.6	
10.02	65.1	H	3.0	-5.9	38.3	1.0	-43.2	25.0	-18.2	
Mid Channel (2593MHz)										
5.01	61.2	V	3.0	-8.7	40.3	1.0	-47.9	25.0	-22.9	
7.52	64.8	V	3.0	-8.6	38.9	1.0	-46.6	25.0	-21.6	
10.02	65.2	V	3.0	-6.0	38.3	1.0	-43.3	25.0	-18.3	
High Channel (2680MHz)										
5.36	64.1	H	3.0	-10.9	40.2	1.0	-50.1	25.0	-25.1	
8.04	64.5	H	3.0	-7.4	38.8	1.0	-45.3	25.0	-20.3	
10.72	65.6	H	3.0	-5.6	38.3	1.0	-42.9	25.0	-17.9	

Rev: 10.28.15

LTE B41 20MHz 16QAM