

9.1.12. LTE BAND 66

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date:
Test Engineer:
Configuration:
Mode:

AA1713A
04/03/18
04410
EUT only
LTE Band 66, 20MHz QPSK

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

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 (1720.0MHz)										
3.44	47.8	H	3.0	-17.7	38.5	1.0	-55.2	-13.0	-42.2	
5.16	43.4	H	3.0	-18.2	38.7	1.0	-47.9	-13.0	-34.9	
6.88	64.7	H	3.0	-7.8	38.1	1.0	-44.9	-13.0	-31.9	
3.44	45.6	V	3.0	-16.5	38.5	1.0	-54.0	-13.0	-41.0	
5.16	43.8	V	3.0	-18.9	38.7	1.0	-48.6	-13.0	-35.6	
6.88	66.5	V	3.0	-9.8	38.1	1.0	-47.8	-13.0	-34.8	
Mid Channel (1745.0MHz)										
3.49	46.2	H	3.0	-16.8	38.5	1.0	-54.3	-13.0	-41.3	
5.24	45.1	H	3.0	-11.7	38.7	1.0	-49.4	-13.0	-36.4	
6.98	65.6	H	3.0	-8.5	38.1	1.0	-45.6	-13.0	-32.6	
3.49	45.8	V	3.0	-16.5	38.5	1.0	-54.1	-13.0	-41.1	
5.24	44.8	V	3.0	-11.8	38.7	1.0	-49.5	-13.0	-36.5	
6.98	65.4	V	3.0	-8.4	38.1	1.0	-45.5	-13.0	-32.5	
High Channel (1770.0MHz)										
3.54	45.8	H	3.0	-16.3	38.6	1.0	-53.8	-13.0	-40.8	
5.31	44.2	H	3.0	-10.7	38.6	1.0	-48.3	-13.0	-35.3	
7.08	65.9	H	3.0	-8.6	38.0	1.0	-45.7	-13.0	-32.7	
3.54	46.6	V	3.0	-17.2	38.6	1.0	-54.7	-13.0	-41.7	
5.31	45.7	V	3.0	-12.5	38.6	1.0	-50.1	-13.0	-37.1	
7.08	64.6	V	3.0	-7.5	38.0	1.0	-44.6	-13.0	-31.6	

Rev: 02.24.17

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date:
Test Engineer:
Configuration:
Mode:

AA1713A
04/03/18
04410
EUT only
LTE Band 66, 20MHz 16QAM, RB 1/0

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

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 (1720.0MHz)										
3.44	46.5	H	3.0	-17.2	38.5	1.0	-54.7	-13.0	-41.7	
5.16	43.3	H	3.0	-18.1	38.7	1.0	-47.8	-13.0	-34.8	
6.88	64.8	H	3.0	-7.1	38.1	1.0	-44.2	-13.0	-31.2	
3.44	46.8	V	3.0	-16.9	38.5	1.0	-54.4	-13.0	-41.4	
5.16	43.0	V	3.0	-18.1	38.7	1.0	-47.8	-13.0	-34.8	
6.88	65.1	V	3.0	-8.4	38.1	1.0	-45.5	-13.0	-32.5	
Mid Channel (1745.0MHz)										
3.49	44.7	H	3.0	-15.3	38.5	1.0	-52.8	-13.0	-39.8	
5.24	45.1	H	3.0	-11.7	38.7	1.0	-49.4	-13.0	-36.4	
6.98	65.3	H	3.0	-8.2	38.1	1.0	-45.3	-13.0	-32.3	
3.49	45.8	V	3.0	-15.7	38.5	1.0	-53.3	-13.0	-40.3	
5.24	44.3	V	3.0	-11.3	38.7	1.0	-49.0	-13.0	-36.0	
6.98	64.3	V	3.0	-7.4	38.1	1.0	-44.5	-13.0	-31.5	
High Channel (1770.0MHz)										
3.54	47.1	H	3.0	-17.5	38.6	1.0	-55.1	-13.0	-42.1	
5.31	46.1	H	3.0	-12.6	38.6	1.0	-50.2	-13.0	-37.2	
7.08	66.2	H	3.0	-8.9	38.0	1.0	-45.9	-13.0	-32.9	
3.54	47.2	V	3.0	-17.8	38.6	1.0	-55.3	-13.0	-42.3	
5.31	43.6	V	3.0	-18.4	38.6	1.0	-48.0	-13.0	-35.0	
7.08	64.9	V	3.0	-7.8	38.0	1.0	-44.8	-13.0	-31.8	

Rev: 02.24.17

LTE B66 20MHz QPSK

LTE B66 20MHz 16QAM

9.2. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 2

9.2.1. LTE BAND 2

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/18 Test Engineer: 10641 Configuration: EUT Only Mode: LTE Band 2, 20MHz QPSK Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	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 (1800MHz)										
3.72	63.9	H	3.0	-13.9	38.6	1.0	-51.5	-13.0	-38.5	
5.58	65.5	H	3.0	-11.4	38.6	1.0	-49.0	-13.0	-36.0	
7.44	62.1	H	3.0	-9.5	37.8	1.0	-46.3	-13.0	-33.3	
3.72	61.8	V	3.0	-11.9	38.6	1.0	-49.5	-13.0	-36.5	
5.58	63.7	V	3.0	-9.9	38.6	1.0	-47.4	-13.0	-34.4	
7.44	66.7	V	3.0	-9.2	37.8	1.0	-46.0	-13.0	-33.0	
Mid Channel (1800MHz)										
3.76	62.2	H	3.0	-12.1	38.6	1.0	-49.7	-13.0	-36.7	
5.64	64.8	H	3.0	-10.6	38.5	1.0	-48.1	-13.0	-35.1	
7.52	66.3	H	3.0	-8.5	37.7	1.0	-45.3	-13.0	-32.3	
3.76	62.7	V	3.0	-12.6	38.6	1.0	-50.3	-13.0	-37.3	
5.64	64.5	V	3.0	-10.6	38.5	1.0	-48.1	-13.0	-35.1	
7.52	68.4	V	3.0	-8.4	37.7	1.0	-45.6	-13.0	-32.6	
High Channel (1900MHz)										
3.80	62.9	H	3.0	-12.7	38.6	1.0	-50.4	-13.0	-37.4	
5.70	63.2	H	3.0	-8.8	38.5	1.0	-46.3	-13.0	-33.3	
7.60	66.6	H	3.0	-8.7	37.7	1.0	-45.4	-13.0	-32.4	
3.80	62.7	V	3.0	-12.0	38.6	1.0	-49.6	-13.0	-36.6	
5.70	65.1	V	3.0	-11.1	38.5	1.0	-48.6	-13.0	-35.6	
7.60	67.1	V	3.0	-8.4	37.7	1.0	-46.1	-13.0	-33.1	

LTE B2 20MHz QPSK

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/18 Test Engineer: 10641 Configuration: EUT Only Mode: LTE Band 2, 20MHz 16QAM Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	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 (1800MHz)										
3.72	63.1	H	3.0	-13.1	38.6	1.0	-50.7	-13.0	-37.7	
5.58	63.9	H	3.0	-9.8	38.6	1.0	-47.3	-13.0	-34.3	
7.44	66.2	H	3.0	-8.5	37.8	1.0	-45.3	-13.0	-32.3	
3.72	62.7	V	3.0	-12.8	38.6	1.0	-50.4	-13.0	-37.4	
5.58	64.3	V	3.0	-10.5	38.6	1.0	-48.0	-13.0	-35.0	
7.44	67.0	V	3.0	-8.5	37.8	1.0	-46.3	-13.0	-33.3	
Mid Channel (1800MHz)										
3.76	62.5	H	3.0	-12.4	38.6	1.0	-50.0	-13.0	-37.0	
5.64	65.2	H	3.0	-11.0	38.5	1.0	-48.5	-13.0	-35.5	
7.52	66.9	H	3.0	-9.1	37.7	1.0	-45.9	-13.0	-32.9	
3.76	63.0	V	3.0	-12.9	38.6	1.0	-50.6	-13.0	-37.6	
5.64	64.5	V	3.0	-10.5	38.5	1.0	-48.1	-13.0	-35.1	
7.52	68.4	V	3.0	-8.8	37.7	1.0	-45.5	-13.0	-32.5	
High Channel (1900MHz)										
3.80	63.1	H	3.0	-12.9	38.6	1.0	-50.5	-13.0	-37.5	
5.70	63.4	H	3.0	-9.1	38.5	1.0	-46.6	-13.0	-33.6	
7.60	67.1	H	3.0	-8.2	37.7	1.0	-45.9	-13.0	-32.9	
3.80	62.6	V	3.0	-12.4	38.6	1.0	-50.1	-13.0	-37.1	
5.70	64.1	V	3.0	-10.0	38.5	1.0	-47.5	-13.0	-34.5	
7.60	66.0	V	3.0	-8.3	37.7	1.0	-46.0	-13.0	-33.0	

LTE B2 20MHz 16QAM

9.2.2. LTE BAND 5

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/18 Test Engineer: 10649 Configuration: EUT Only Mode: LTE Band 5, 10MHz QPSK Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	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 (825MHz)										
1.66	56.6	H	3.0	-14.2	37.8	1.0	-51.0	-13.0	-38.0	
2.49	64.5	H	3.0	-19.4	38.5	1.0	-56.9	-13.0	-43.9	
3.32	64.8	H	3.0	-15.8	38.5	1.0	-53.3	-13.0	-40.3	
1.66	55.5	V	3.0	-13.3	37.8	1.0	-50.2	-13.0	-37.2	
2.49	64.1	V	3.0	-18.9	38.5	1.0	-56.4	-13.0	-43.4	
3.32	65.7	V	3.0	-17.0	38.5	1.0	-54.5	-13.0	-41.5	
Mid Channel (825MHz)										
1.67	56.8	H	3.0	-14.3	37.8	1.0	-51.2	-13.0	-38.2	
2.51	65.2	H	3.0	-20.1	38.6	1.0	-57.6	-13.0	-44.6	
3.35	65.4	H	3.0	-16.3	38.5	1.0	-53.8	-13.0	-40.8	
1.67	53.0	V	3.0	-10.7	37.8	1.0	-47.6	-13.0	-34.6	
2.51	64.6	V	3.0	-19.3	38.6	1.0	-56.8	-13.0	-43.8	
3.35	65.7	V	3.0	-16.9	38.5	1.0	-54.4	-13.0	-41.4	
High Channel (840MHz)										
1.69	54.7	H	3.0	-12.1	37.9	1.0	-49.0	-13.0	-36.0	
2.53	68.5	H	3.0	-15.1	38.6	1.0	-52.7	-13.0	-39.7	
3.38	65.6	H	3.0	-10.4	38.5	1.0	-53.9	-13.0	-40.9	
1.69	53.1	V	3.0	-10.7	37.9	1.0	-47.6	-13.0	-34.6	
2.53	64.1	V	3.0	-18.6	38.6	1.0	-56.2	-13.0	-43.2	
3.38	65.3	V	3.0	-16.4	38.5	1.0	-53.9	-13.0	-40.9	

LTE B5 10MHz QPSK

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/18 Test Engineer: 10649 Configuration: EUT Only Mode: LTE Band 5, 10MHz 16QAM Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	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 (825MHz)										
1.66	53.6	H	3.0	-12.1	37.8	1.0	-49.0	-13.0	-36.0	
2.49	62.3	H	3.0	-19.1	38.5	1.0	-56.6	-13.0	-43.6	
3.32	65.9	H	3.0	-20.0	38.5	1.0	-57.4	-13.0	-44.4	
1.66	54.1	V	3.0	-12.4	37.8	1.0	-49.2	-13.0	-36.2	
2.49	61.4	V	3.0	-17.3	38.5	1.0	-54.8	-13.0	-41.8	
3.32	64.4	V	3.0	-16.5	38.5	1.0	-55.9	-13.0	-42.9	
Mid Channel (825MHz)										
1.67	55.7	H	3.0	-14.2	37.8	1.0	-51.0	-13.0	-38.0	
2.51	61.6	H	3.0	-18.3	38.6	1.0	-55.9	-13.0	-42.9	
3.35	65.2	H	3.0	-19.2	38.5	1.0	-56.7	-13.0	-43.7	
1.67	51.3	V	3.0	-9.5	37.8	1.0	-46.3	-13.0	-33.3	
2.51	62.1	V	3.0	-18.9	38.6	1.0	-56.4	-13.0	-43.4	
3.35	65.4	V	3.0	-19.3	38.5	1.0	-56.8	-13.0	-43.8	
High Channel (840MHz)										
1.69	53.9	H	3.0	-12.4	37.9	1.0	-49.2	-13.0	-36.2	
2.53	62.7	H	3.0	-19.4	38.6	1.0	-57.0	-13.0	-44.0	
3.38	64.7	H	3.0	-16.6	38.5	1.0	-56.1	-13.0	-43.1	
1.69	53.0	V	3.0	-11.2	37.9	1.0	-48.0	-13.0	-35.0	
2.53	63.9	V	3.0	-19.7	38.6	1.0	-57.2	-13.0	-44.2	
3.38	65.0	V	3.0	-18.9	38.5	1.0	-56.4	-13.0	-43.4	

LTE B5 10MHz 16QAM

9.2.3. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/04/18
Test Engineer: 10546
Configuration: EUT Only
Mode: LTE Band 7, 20MHz QPSK

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.02	80.6	H	3.0	27.7	38.7	1.0	-65.4	-25.0	-40.4	
7.53	82.2	H	3.0	24.4	37.7	1.0	-61.1	-25.0	-36.1	
10.04	83.5	H	3.0	22.7	36.2	1.0	-57.8	-25.0	-32.8	
5.02	80.6	V	3.0	27.7	38.7	1.0	-65.4	-25.0	-40.4	
7.53	82.2	V	3.0	25.0	37.7	1.0	-61.8	-25.0	-36.8	
10.04	82.8	V	3.0	21.9	36.2	1.0	-57.1	-25.0	-32.1	
Mid Channel (2530MHz)										
5.07	80.4	H	3.0	27.4	38.7	1.0	-65.1	-25.0	-40.1	
7.61	82.8	H	3.0	24.9	37.7	1.0	-61.6	-25.0	-36.6	
10.14	81.5	H	3.0	21.0	36.2	1.0	-56.2	-25.0	-31.2	
5.07	80.2	V	3.0	27.5	38.7	1.0	-65.2	-25.0	-40.2	
7.61	82.6	V	3.0	24.9	37.7	1.0	-61.6	-25.0	-36.6	
10.14	82.6	V	3.0	21.1	36.2	1.0	-56.3	-25.0	-31.3	
High Channel (2560MHz)										
5.12	81.7	H	3.0	28.6	38.7	1.0	-66.3	-25.0	-41.3	
7.68	80.9	H	3.0	22.9	37.6	1.0	-59.5	-25.0	-34.5	
10.24	82.8	H	3.0	21.8	36.3	1.0	-57.1	-25.0	-32.1	
5.12	79.7	V	3.0	26.9	38.7	1.0	-64.5	-25.0	-39.5	
7.68	81.7	V	3.0	23.8	37.6	1.0	-60.5	-25.0	-35.5	
10.24	81.1	V	3.0	20.1	36.3	1.0	-55.4	-25.0	-30.4	

Rev 05.21.15

LTE B7 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/04/18
Test Engineer: 10546
Configuration: EUT Only
Mode: LTE Band 7, 20MHz 16QAM

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.02	80.7	H	3.0	27.8	38.7	1.0	-65.5	-25.0	-40.5	
7.53	81.1	H	3.0	23.3	37.7	1.0	-60.0	-25.0	-35.0	
10.04	83.8	H	3.0	23.8	36.2	1.0	-58.1	-25.0	-33.1	
5.02	79.9	V	3.0	27.3	38.7	1.0	-65.0	-25.0	-40.0	
7.53	81.7	V	3.0	24.8	37.7	1.0	-60.8	-25.0	-35.8	
10.04	81.6	V	3.0	22.8	36.2	1.0	-57.9	-25.0	-32.9	
Mid Channel (2530MHz)										
5.07	79.1	H	3.0	26.1	38.7	1.0	-63.8	-25.0	-38.8	
7.61	83.5	H	3.0	25.5	37.7	1.0	-62.2	-25.0	-37.2	
10.14	86.5	H	3.0	19.5	36.2	1.0	-54.7	-25.0	-29.7	
5.07	81.4	V	3.0	29.6	38.7	1.0	-66.3	-25.0	-41.3	
7.61	82.7	V	3.0	25.8	37.7	1.0	-61.6	-25.0	-36.6	
10.14	81.4	V	3.0	20.4	36.2	1.0	-55.7	-25.0	-30.7	
High Channel (2560MHz)										
5.12	81.1	H	3.0	28.0	38.7	1.0	-65.7	-25.0	-40.7	
7.68	82.1	H	3.0	24.1	37.6	1.0	-60.7	-25.0	-35.7	
10.24	82.8	H	3.0	21.8	36.3	1.0	-57.1	-25.0	-32.1	
5.12	82.8	V	3.0	29.1	38.7	1.0	-66.8	-25.0	-41.8	
7.68	82.3	V	3.0	24.5	37.6	1.0	-61.1	-25.0	-36.1	
10.24	78.4	V	3.0	17.3	36.3	1.0	-52.6	-25.0	-27.6	

Rev 05.21.15

LTE B7 20MHz 16QAM

9.2.4. LTE BAND 12

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/04/18
Test Engineer: 10549
Configuration: EUT Only
Mode: LTE Band 12, 10MHz QPSK

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
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	63.8	H	3.0	21.4	38.1	1.0	-58.4	-13.0	45.4	
2.11	64.6	H	3.0	21.2	38.0	1.0	-58.2	-13.0	45.2	
2.82	64.5	H	3.0	17.4	38.4	1.0	-54.9	-13.0	41.9	
1.41	62.8	V	3.0	21.8	38.1	1.0	-58.9	-13.0	45.9	
2.11	63.6	V	3.0	19.5	38.0	1.0	-56.4	-13.0	43.4	
2.82	65.2	V	3.0	18.3	38.4	1.0	-55.8	-13.0	42.8	
Mid Channel (767.5MHz)										
1.42	64.6	H	3.0	23.0	38.0	1.0	-60.0	-13.0	47.0	
2.12	64.6	H	3.0	20.9	38.0	1.0	-57.9	-13.0	44.9	
2.83	65.3	H	3.0	18.1	38.4	1.0	-55.6	-13.0	42.6	
1.42	64.3	V	3.0	23.3	38.0	1.0	-60.3	-13.0	47.3	
2.12	63.9	V	3.0	19.8	38.0	1.0	-56.8	-13.0	43.8	
2.83	65.2	V	3.0	18.3	38.4	1.0	-55.7	-13.0	42.7	
High Channel (711MHz)										
1.42	64.0	H	3.0	22.3	38.0	1.0	-59.3	-13.0	46.3	
2.13	64.3	H	3.0	20.7	38.0	1.0	-57.7	-13.0	44.7	
2.84	65.3	H	3.0	18.1	38.4	1.0	-55.5	-13.0	42.5	
1.42	64.0	V	3.0	23.0	38.0	1.0	-60.0	-13.0	47.0	
2.13	63.9	V	3.0	19.7	38.0	1.0	-56.7	-13.0	43.7	
2.84	65.2	V	3.0	18.2	38.4	1.0	-55.6	-13.0	42.6	

Rev. 05.21.15

LTE B12 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/04/18
Test Engineer: 10549
Configuration: EUT Only
Mode: LTE Band 12, 10MHz 16QAM

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
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	63.8	H	3.0	-22.1	38.1	1.0	-59.2	-13.0	46.2	
2.11	64.3	H	3.0	-20.8	38.0	1.0	-57.8	-13.0	44.8	
2.82	65.4	H	3.0	-18.3	38.4	1.0	-55.8	-13.0	42.8	
1.41	63.5	V	3.0	-22.5	38.1	1.0	-59.6	-13.0	46.6	
2.11	63.6	V	3.0	-19.5	38.0	1.0	-56.5	-13.0	43.5	
2.82	65.3	V	3.0	-18.4	38.4	1.0	-55.9	-13.0	42.9	
Mid Channel (767.5MHz)										
1.42	64.4	H	3.0	-22.7	38.0	1.0	-59.7	-13.0	46.7	
2.12	64.2	H	3.0	-20.5	38.0	1.0	-57.5	-13.0	44.5	
2.83	64.8	H	3.0	-17.7	38.4	1.0	-55.1	-13.0	42.1	
1.42	64.0	V	3.0	-23.0	38.0	1.0	-60.1	-13.0	47.1	
2.12	64.8	V	3.0	-20.7	38.0	1.0	-57.7	-13.0	44.7	
2.83	64.8	V	3.0	-17.9	38.4	1.0	-55.3	-13.0	42.3	
High Channel (711MHz)										
1.42	63.9	H	3.0	-22.2	38.0	1.0	-59.2	-13.0	46.2	
2.13	65.2	H	3.0	-21.5	38.0	1.0	-58.5	-13.0	45.5	
2.84	64.9	H	3.0	-17.7	38.4	1.0	-55.1	-13.0	42.1	
1.42	64.6	V	3.0	-22.6	38.0	1.0	-60.6	-13.0	47.6	
2.13	63.7	V	3.0	-19.8	38.0	1.0	-56.6	-13.0	43.6	
2.84	64.9	V	3.0	-17.8	38.4	1.0	-55.3	-13.0	42.3	

Rev. 05.21.15

LTE B12 10MHz 16QAM

9.2.5. LTE BAND 13

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/05/18
Test Engineer: 10549
Configuration: EUT Only
Mode: LTE Band 13, 10MHz QPSK

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
LTE B13

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (728MHz)										
1.56	55.7	H	3.0	-13.5	37.8	1.0	-50.3	-40.0	-10.3	
2.35	64.6	H	3.0	-20.2	38.1	1.0	-57.3	-13.0	44.3	
3.13	64.8	H	3.0	-16.2	38.4	1.0	-53.6	-13.0	40.6	
1.56	47.9	V	3.0	-5.3	37.8	1.0	-42.1	-40.0	-2.1	
2.35	65.4	V	3.0	-20.8	38.1	1.0	-57.9	-13.0	44.9	
3.13	65.0	V	3.0	-16.8	38.4	1.0	-54.2	-13.0	41.2	

Rev. 05.21.15

LTE B13 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/05/18
Test Engineer: 10549
Configuration: EUT Only
Mode: LTE Band 13, 10MHz 16QAM

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
LTE B13

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (728MHz)										
1.56	55.7	H	3.0	-13.4	37.8	1.0	-50.2	-40.0	-10.2	
2.35	64.9	H	3.0	-20.5	38.1	1.0	-57.6	-13.0	44.6	
3.13	64.8	H	3.0	-16.3	38.4	1.0	-53.7	-13.0	40.7	
1.56	51.4	V	3.0	-9.7	37.8	1.0	-46.5	-40.0	-6.5	
2.35	63.9	V	3.0	-19.3	38.1	1.0	-56.4	-13.0	43.4	
3.13	65.5	V	3.0	-17.3	38.4	1.0	-54.7	-13.0	41.7	

Rev. 05.21.15

LTE B13 10MHz 16QAM

9.2.6. LTE BAND 14

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/18 Test Engineer: 10649 Configuration: EUT Only Mode: LTE Band 14, 10MHz QPSK										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber E		3m Chamber E		Filter		LTE B14				
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (750MHz) BW 10MHz										
1.59	-57.8	H	3.0	-35.5	37.8	1.0	-52.3	-40.0	-12.3	
2.38	-59.3	H	3.0	-34.6	38.2	1.0	-51.9	-33.0	-18.9	
3.17	-65.5	H	3.0	-36.9	38.4	1.0	-64.3	-33.0	-31.3	
1.59	-56.2	V	3.0	-34.4	37.8	1.0	-51.2	-40.0	-11.2	
2.38	-59.5	V	3.0	-34.6	38.2	1.0	-51.9	-33.0	-18.9	
3.17	-65.4	V	3.0	-37.3	38.4	1.0	-64.5	-33.0	-31.5	

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/18 Test Engineer: 10649 Configuration: EUT Only Mode: LTE Band 14, 10MHz 16QAM										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber E		3m Chamber E		Filter		LTE B14				
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (750MHz) BW 10MHz										
1.59	-58.2	H	3.0	-35.9	37.8	1.0	-52.7	-40.0	-12.7	
2.38	-59.6	H	3.0	-34.1	38.2	1.0	-51.2	-33.0	-18.2	
3.17	-65.9	H	3.0	-38.4	38.4	1.0	-53.8	-33.0	-24.8	
1.59	-57.1	V	3.0	-35.3	37.8	1.0	-52.1	-40.0	-12.1	
2.38	-59.2	V	3.0	-34.5	38.2	1.0	-51.7	-33.0	-18.7	
3.17	-65.7	V	3.0	-37.4	38.4	1.0	-54.8	-33.0	-31.8	

9.2.7. LTE BAND 17

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/07/18 Test Engineer: 52275 Configuration: EUT Mode: LTE Band 17, 10MHz QPSK										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber E		3m Chamber E		Filter		EIRP				
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (710MHz)										
1.42	-63.8	H	3.0	-22.1	38.8	1.0	-59.1	-33.0	-26.1	
2.13	-65.8	H	3.0	-21.3	38.8	1.0	-58.3	-33.0	-25.3	
2.84	-66.9	H	3.0	-19.7	38.4	1.0	-57.1	-33.0	-24.1	
1.42	-63.9	V	3.0	-22.0	38.8	1.0	-60.0	-33.0	-27.0	
2.13	-66.4	V	3.0	-22.2	38.8	1.0	-59.2	-33.0	-26.2	
2.84	-66.1	V	3.0	-19.1	38.4	1.0	-56.6	-33.0	-23.6	

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/07/18 Test Engineer: 52275 Configuration: EUT only Mode: LTE Band 17, 10MHz 16QAM										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber E		3m Chamber E		Filter		EIRP				
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (710MHz)										
1.42	-63.3	H	3.0	-21.5	38.8	1.0	-58.6	-33.0	-25.6	
2.13	-64.8	H	3.0	-22.4	38.8	1.0	-59.4	-33.0	-26.4	
2.84	-64.3	H	3.0	-19.1	38.4	1.0	-56.5	-33.0	-23.5	
1.42	-64.3	V	3.0	-23.3	38.8	1.0	-60.4	-33.0	-27.4	
2.13	-65.5	V	3.0	-21.3	38.8	1.0	-58.3	-33.0	-25.3	
2.84	-66.7	V	3.0	-19.7	38.4	1.0	-57.1	-33.0	-24.1	

9.2.10. LTE BAND 30

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/18 Test Engineer: 44410 Configuration: EUT only Mode: LTE Band 30, 10MHz QPSK Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	Filter	LTE B30							
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (2310MHz)										
4.62	-66.2	H	3.0	-12.4	37.9	1.0	-48.3	-40.0	-8.3	
6.93	-68.8	H	3.0	-10.2	36.5	1.0	-45.7	-40.0	-5.7	
9.24	-70.4	H	3.0	-8.8	34.9	1.0	-42.7	-40.0	-2.7	
4.62	-66.3	V	3.0	-12.6	37.9	1.0	-48.9	-40.0	-8.9	
6.93	-68.8	V	3.0	-8.3	36.5	1.0	-44.7	-40.0	-4.7	
9.24	-71.1	V	3.0	-9.3	34.9	1.0	-43.2	-40.0	-3.2	
Rev: 05.21.15										
LTE B30 10MHz QPSK										

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/18 Test Engineer: 44410 Configuration: EUT only Mode: LTE Band 30, 10MHz 16QAM Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	Filter	LTE B30							
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (2310MHz)										
4.62	-65.9	H	3.0	-12.2	37.9	1.0	-48.1	-40.0	-8.1	
6.93	-69.3	H	3.0	-10.7	36.5	1.0	-46.2	-40.0	-6.2	
9.24	-72.8	H	3.0	-10.5	34.9	1.0	-44.4	-40.0	-4.4	
4.62	-66.1	V	3.0	-12.4	37.9	1.0	-49.3	-40.0	-9.3	
6.93	-69.2	V	3.0	-8.8	36.5	1.0	-45.2	-40.0	-5.2	
9.24	-71.0	V	3.0	-9.2	34.9	1.0	-43.1	-40.0	-3.1	
Rev: 05.21.15										
LTE B30 10MHz 16QAM										

9.2.11. LTE BAND 41

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/18 Test Engineer: 10641 Configuration: EUT Only Mode: LTE Band 41, 20MHz QPSK Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	Filter	LTE B41							
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2500MHz)										
5.01	-64.0	H	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.52	-65.9	H	3.0	-8.1	37.7	1.0	-44.8	-25.0	-19.8	
10.02	-66.8	H	3.0	-6.9	36.1	1.0	-41.1	-25.0	-16.1	
5.01	-64.5	V	3.0	-11.9	38.7	1.0	-49.6	-25.0	-24.6	
7.52	-66.5	V	3.0	-8.9	37.7	1.0	-45.6	-25.0	-20.6	
10.02	-67.8	V	3.0	-7.8	36.1	1.0	-42.1	-25.0	-17.1	
Mid Channel (2593MHz)										
5.19	-64.5	H	3.0	-11.6	38.7	1.0	-49.3	-25.0	-24.3	
7.78	-65.1	H	3.0	-6.9	37.6	1.0	-43.5	-25.0	-18.5	
10.37	-66.9	H	3.0	-5.8	36.4	1.0	-41.2	-25.0	-16.2	
5.19	-63.7	V	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.78	-64.8	V	3.0	-6.9	37.6	1.0	-43.4	-25.0	-18.4	
10.37	-67.3	V	3.0	-6.1	36.4	1.0	-41.5	-25.0	-16.5	
High Channel (2680MHz)										
5.36	-64.8	H	3.0	-11.2	38.6	1.0	-48.8	-25.0	-23.8	
8.04	-65.3	H	3.0	-6.9	37.4	1.0	-43.3	-25.0	-18.3	
10.72	-66.7	H	3.0	-5.3	36.6	1.0	-40.9	-25.0	-15.9	
5.36	-65.0	V	3.0	-11.7	38.6	1.0	-49.4	-25.0	-24.4	
8.04	-65.1	V	3.0	-7.3	37.4	1.0	-43.7	-25.0	-18.7	
10.72	-66.5	V	3.0	-4.9	36.6	1.0	-40.5	-25.0	-15.5	
Rev: 05.21.15										
LTE B41 20MHz QPSK										

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/18 Test Engineer: 10641 Configuration: EUT Only Mode: LTE Band 41, 20MHz 16QAM Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	Filter	LTE B41							
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2500MHz)										
5.01	-65.4	H	3.0	-12.6	38.7	1.0	-50.2	-25.0	-25.2	
7.52	-66.6	H	3.0	-8.8	37.7	1.0	-45.5	-25.0	-20.5	
10.02	-68.0	H	3.0	-7.2	36.1	1.0	-42.3	-25.0	-17.3	
5.01	-64.5	V	3.0	-11.9	38.7	1.0	-49.6	-25.0	-24.6	
7.52	-66.5	V	3.0	-8.9	37.7	1.0	-45.7	-25.0	-20.7	
10.02	-67.8	V	3.0	-7.8	36.1	1.0	-42.2	-25.0	-17.2	
Mid Channel (2593MHz)										
5.19	-65.2	H	3.0	-11.9	38.7	1.0	-49.6	-25.0	-24.6	
7.78	-66.0	H	3.0	-7.9	37.6	1.0	-44.5	-25.0	-19.5	
10.37	-67.7	H	3.0	-6.6	36.4	1.0	-41.9	-25.0	-16.9	
5.19	-66.2	V	3.0	-13.3	38.7	1.0	-50.9	-25.0	-25.9	
7.78	-65.5	V	3.0	-7.5	37.6	1.0	-44.1	-25.0	-19.1	
10.37	-67.5	V	3.0	-6.3	36.4	1.0	-41.7	-25.0	-16.7	
High Channel (2680MHz)										
5.36	-66.5	H	3.0	-12.8	38.6	1.0	-50.5	-25.0	-25.5	
8.04	-66.2	H	3.0	-7.7	37.4	1.0	-44.1	-25.0	-19.1	
10.72	-67.3	H	3.0	-5.9	36.6	1.0	-41.5	-25.0	-16.5	
5.36	-66.5	V	3.0	-13.2	38.6	1.0	-50.9	-25.0	-25.9	
8.04	-66.9	V	3.0	-8.7	37.4	1.0	-45.1	-25.0	-20.1	
10.72	-67.5	V	3.0	-5.9	36.6	1.0	-41.5	-25.0	-16.5	
Rev: 05.21.15										
LTE B41 20MHz 16QAM										

9.2.12. LTE BAND 66

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9.3. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 3

9.3.1. LTE BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #: 04/04/18
Date: 10641
Test Engineer: EUT Only
Configuration: LTE Band 2, 20MHz QPSK
Mode:

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1800MHz)										
3.72	61.2	H	3.0	-11.2	38.6	1.0	-48.8	-13.0	-35.8	
5.58	63.8	H	3.0	-9.7	38.6	1.0	-47.3	-13.0	-34.3	
7.44	64.5	H	3.0	-8.8	37.8	1.0	-43.6	-13.0	-30.6	
3.72	61.5	V	3.0	-11.6	38.6	1.0	-49.2	-13.0	-36.2	
5.58	64.1	V	3.0	-10.3	38.6	1.0	-47.8	-13.0	-34.8	
7.44	66.4	V	3.0	-8.5	37.8	1.0	-45.7	-13.0	-32.7	
Mid Channel (1800MHz)										
3.76	61.6	H	3.0	-11.5	38.6	1.0	-49.1	-13.0	-36.1	
5.64	63.9	H	3.0	-9.7	38.5	1.0	-47.2	-13.0	-34.2	
7.52	66.5	H	3.0	-8.7	37.7	1.0	-45.4	-13.0	-32.4	
3.76	62.6	V	3.0	-12.5	38.6	1.0	-50.1	-13.0	-37.1	
5.64	64.2	V	3.0	-10.2	38.5	1.0	-47.8	-13.0	-34.8	
7.52	66.6	V	3.0	-8.6	37.7	1.0	-45.8	-13.0	-32.8	
High Channel (1900MHz)										
3.80	61.3	H	3.0	-11.1	38.6	1.0	-48.7	-13.0	-35.7	
5.70	63.0	H	3.0	-8.6	38.5	1.0	-46.1	-13.0	-33.1	
7.60	66.4	H	3.0	-8.5	37.7	1.0	-45.1	-13.0	-32.1	
3.80	61.8	V	3.0	-11.6	38.6	1.0	-49.3	-13.0	-36.3	
5.70	63.2	V	3.0	-9.2	38.5	1.0	-46.7	-13.0	-33.7	
7.60	66.8	V	3.0	-8.2	37.7	1.0	-44.8	-13.0	-31.8	

Rev. 05.21.15

LTE B2 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #: 04/04/18
Date: 10641
Test Engineer: EUT Only
Configuration: LTE Band 2, 20MHz 16QAM
Mode:

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1800MHz)										
3.72	62.5	H	3.0	-12.5	38.6	1.0	-50.2	-13.0	-37.2	
5.58	65.3	H	3.0	-11.2	38.6	1.0	-48.8	-13.0	-35.8	
7.44	68.8	H	3.0	-8.3	37.8	1.0	-45.1	-13.0	-32.1	
3.72	62.6	V	3.0	-12.7	38.6	1.0	-50.3	-13.0	-37.3	
5.58	64.9	V	3.0	-11.1	38.6	1.0	-48.7	-13.0	-35.7	
7.44	66.1	V	3.0	-8.6	37.8	1.0	-45.4	-13.0	-32.4	
Mid Channel (1800MHz)										
3.76	61.9	H	3.0	-11.8	38.6	1.0	-49.4	-13.0	-36.4	
5.64	65.4	H	3.0	-11.1	38.5	1.0	-48.7	-13.0	-35.7	
7.52	66.5	H	3.0	-8.7	37.7	1.0	-45.4	-13.0	-32.4	
3.76	62.7	V	3.0	-12.7	38.6	1.0	-50.3	-13.0	-37.3	
5.64	64.1	V	3.0	-10.2	38.5	1.0	-47.7	-13.0	-34.7	
7.52	66.4	V	3.0	-8.7	37.7	1.0	-45.5	-13.0	-32.5	
High Channel (1900MHz)										
3.80	62.4	H	3.0	-12.2	38.6	1.0	-49.9	-13.0	-36.9	
5.70	63.8	H	3.0	-9.5	38.5	1.0	-47.0	-13.0	-34.8	
7.60	66.8	H	3.0	-8.9	37.7	1.0	-45.6	-13.0	-32.6	
3.80	63.8	V	3.0	-10.6	38.6	1.0	-48.3	-13.0	-35.3	
5.70	63.8	V	3.0	-9.7	38.5	1.0	-47.2	-13.0	-34.2	
7.60	66.5	V	3.0	-8.8	37.7	1.0	-45.5	-13.0	-32.5	

Rev. 05.21.15

LTE B2 20MHz 16QAM

9.3.2. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #: 04/04/18
Date: 10641
Test Engineer: EUT Only
Configuration: LTE Band 7, 20MHz QPSK
Mode:

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2515MHz)										
5.02	63.5	H	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.53	65.6	H	3.0	-7.8	37.7	1.0	-44.5	-25.0	-19.5	
10.04	66.9	H	3.0	-6.1	36.2	1.0	-41.2	-25.0	-16.2	
5.02	64.2	V	3.0	-11.6	38.7	1.0	-49.3	-25.0	-24.3	
7.53	65.8	V	3.0	-8.1	37.7	1.0	-44.9	-25.0	-19.9	
10.04	67.5	V	3.0	-6.7	36.2	1.0	-41.8	-25.0	-16.8	
Mid Channel (2515MHz)										
5.07	63.4	H	3.0	-10.4	38.7	1.0	-48.0	-25.0	-23.0	
7.61	66.2	H	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.14	66.9	H	3.0	-6.8	36.2	1.0	-41.2	-25.0	-16.2	
5.07	64.6	V	3.0	-11.9	38.7	1.0	-49.6	-25.0	-24.6	
7.61	66.0	V	3.0	-8.3	37.7	1.0	-45.0	-25.0	-20.0	
10.14	67.6	V	3.0	-6.7	36.2	1.0	-41.9	-25.0	-16.9	
High Channel (2560MHz)										
5.12	62.4	H	3.0	-8.5	38.7	1.0	-47.2	-25.0	-22.2	
7.68	64.2	H	3.0	-8.3	37.8	1.0	-42.9	-25.0	-17.9	
10.24	65.7	H	3.0	-4.7	36.3	1.0	-40.0	-25.0	-15.0	
5.12	64.1	V	3.0	-11.3	38.7	1.0	-48.9	-25.0	-23.9	
7.68	65.2	V	3.0	-7.4	37.6	1.0	-44.0	-25.0	-19.0	
10.24	66.5	V	3.0	-5.5	36.3	1.0	-40.8	-25.0	-15.8	

Rev. 05.21.15

LTE B7 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #: 04/04/18
Date: 10641
Test Engineer: EUT Only
Configuration: LTE Band 7, 20MHz 16QAM
Mode:

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2515MHz)										
5.02	62.6	H	3.0	-9.7	38.7	1.0	-47.4	-25.0	-22.4	
7.53	66.7	H	3.0	-8.8	37.7	1.0	-45.6	-25.0	-20.6	
10.04	67.6	H	3.0	-6.8	36.2	1.0	-41.9	-25.0	-16.9	
5.02	64.3	V	3.0	-11.7	38.7	1.0	-49.3	-25.0	-24.3	
7.53	66.7	V	3.0	-9.0	37.7	1.0	-45.8	-25.0	-20.8	
10.04	68.2	V	3.0	-7.4	36.2	1.0	-42.5	-25.0	-17.5	
Mid Channel (2515MHz)										
5.07	63.5	H	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.61	66.0	H	3.0	-8.1	37.7	1.0	-44.7	-25.0	-19.7	
10.14	66.2	H	3.0	-5.3	36.2	1.0	-40.5	-25.0	-15.5	
5.07	63.8	V	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.61	67.5	V	3.0	-8.8	37.7	1.0	-46.5	-25.0	-21.5	
10.14	67.9	V	3.0	-7.0	36.2	1.0	-42.2	-25.0	-17.2	
High Channel (2560MHz)										
5.12	62.4	H	3.0	-9.3	38.7	1.0	-47.0	-25.0	-22.0	
7.68	65.7	H	3.0	-7.7	37.6	1.0	-44.3	-25.0	-19.3	
10.24	66.7	H	3.0	-5.7	36.3	1.0	-41.0	-25.0	-16.0	
5.12	62.8	V	3.0	-9.9	38.7	1.0	-47.6	-25.0	-22.6	
7.68	66.7	V	3.0	-8.4	37.6	1.0	-45.1	-25.0	-20.1	
10.24	67.9	V	3.0	-6.9	36.3	1.0	-42.2	-25.0	-17.2	

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LTE B7 20MHz 16QAM

9.4. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 4

9.4.1. LTE BAND 2

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: 04/05/18 Date: 44410 Test Engineer: EUT only Configuration: LTE Band 2, 20MHz QPSK Mode:										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	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 (1800MHz)										
3.72	64.8	H	3.0	14.8	38.6	1.0	52.4	-13.0	-39.4	
5.58	67.1	H	3.0	13.0	38.6	1.0	50.6	-13.0	-37.6	
7.44	69.2	H	3.0	11.4	37.8	1.0	48.2	-13.0	-35.2	
3.72	65.3	V	3.0	15.4	38.6	1.0	53.0	-13.0	-40.0	
5.58	66.4	V	3.0	12.6	38.6	1.0	50.1	-13.0	-37.1	
7.44	68.1	V	3.0	11.6	37.8	1.0	48.4	-13.0	-35.4	
Mid Channel (1800MHz)										
3.76	66.2	H	3.0	16.1	38.6	1.0	53.7	-13.0	-40.7	
5.64	67.7	H	3.0	13.5	38.5	1.0	51.0	-13.0	-38.0	
7.52	70.4	H	3.0	12.5	37.7	1.0	49.3	-13.0	-36.3	
3.76	65.5	V	3.0	15.4	38.6	1.0	53.0	-13.0	-40.0	
5.64	67.3	V	3.0	13.3	38.5	1.0	50.9	-13.0	-37.9	
7.52	70.7	V	3.0	13.1	37.7	1.0	49.8	-13.0	-36.8	
High Channel (1800MHz)										
3.80	65.2	H	3.0	15.0	38.6	1.0	52.7	-13.0	-39.7	
5.70	66.5	H	3.0	12.1	38.5	1.0	49.6	-13.0	-36.6	
7.60	68.5	H	3.0	10.6	37.7	1.0	47.3	-13.0	-34.3	
3.80	66.6	V	3.0	16.4	38.6	1.0	54.1	-13.0	-41.1	
5.70	67.9	V	3.0	13.8	38.5	1.0	51.4	-13.0	-38.4	
7.60	68.4	V	3.0	10.7	37.7	1.0	47.4	-13.0	-34.4	
Rev: 05.21.15										
LTE B2 20MHz QPSK										

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: 04/05/18 Date: 44410 Test Engineer: EUT only Configuration: LTE Band 2, 20MHz 16QAM Mode:										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	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 (1800MHz)										
3.72	65.2	H	3.0	15.2	38.6	1.0	52.8	-13.0	-39.8	
5.58	66.8	H	3.0	12.7	38.6	1.0	50.3	-13.0	-37.3	
7.44	68.7	H	3.0	11.9	37.8	1.0	47.8	-13.0	-34.8	
3.72	65.9	V	3.0	16.0	38.6	1.0	53.6	-13.0	-40.6	
5.58	67.5	V	3.0	13.7	38.6	1.0	51.3	-13.0	-38.3	
7.44	69.2	V	3.0	11.7	37.8	1.0	48.5	-13.0	-35.5	
Mid Channel (1800MHz)										
3.76	66.5	H	3.0	16.4	38.6	1.0	54.1	-13.0	-41.1	
5.64	68.2	H	3.0	12.0	38.5	1.0	49.5	-13.0	-36.5	
7.52	69.7	H	3.0	11.9	37.7	1.0	48.6	-13.0	-35.6	
3.76	66.6	V	3.0	16.5	38.6	1.0	54.2	-13.0	-41.2	
5.64	67.8	V	3.0	13.0	38.5	1.0	50.6	-13.0	-37.6	
7.52	69.6	V	3.0	12.0	37.7	1.0	48.7	-13.0	-35.7	
High Channel (1800MHz)										
3.80	65.6	H	3.0	15.4	38.6	1.0	53.1	-13.0	-40.1	
5.70	67.8	H	3.0	13.4	38.5	1.0	51.0	-13.0	-38.0	
7.60	69.8	H	3.0	11.8	37.7	1.0	48.5	-13.0	-35.5	
3.80	64.9	V	3.0	14.7	38.6	1.0	52.3	-13.0	-39.3	
5.70	66.5	V	3.0	12.5	38.5	1.0	50.0	-13.0	-37.0	
7.60	68.3	V	3.0	11.6	37.7	1.0	48.3	-13.0	-35.3	
Rev: 05.21.15										
LTE B2 20MHz 16QAM										

9.4.2. LTE BAND 7

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: 04/05/18 Date: 44410 Test Engineer: EUT only Configuration: LTE Band 7, 20MHz QPSK Mode:										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	Filter	LTE B7							
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2515MHz)										
5.02	66.9	H	3.0	14.0	38.7	1.0	51.7	-25.0	-26.7	
7.53	70.7	H	3.0	12.9	37.7	1.0	48.6	-25.0	-24.6	
10.04	72.1	H	3.0	11.3	36.2	1.0	46.4	-25.0	-21.4	
5.02	67.3	V	3.0	14.7	38.7	1.0	52.4	-25.0	-27.4	
7.53	70.6	V	3.0	13.0	37.7	1.0	48.7	-25.0	-24.7	
10.04	71.8	V	3.0	11.0	36.2	1.0	46.1	-25.0	-21.1	
Mid Channel (2515MHz)										
5.07	67.5	H	3.0	14.5	38.7	1.0	52.2	-25.0	-27.2	
7.61	71.8	H	3.0	13.1	37.7	1.0	48.8	-25.0	-24.8	
10.14	72.5	H	3.0	11.6	36.2	1.0	46.6	-25.0	-21.6	
5.07	67.2	V	3.0	14.4	38.7	1.0	52.1	-25.0	-27.1	
7.61	70.2	V	3.0	12.5	37.7	1.0	48.2	-25.0	-24.2	
10.14	73.1	V	3.0	12.2	36.2	1.0	47.4	-25.0	-22.4	
High Channel (2560MHz)										
5.12	66.3	H	3.0	13.2	38.7	1.0	50.9	-25.0	-25.9	
7.68	69.3	H	3.0	11.3	37.8	1.0	47.9	-25.0	-22.9	
10.24	71.8	H	3.0	8.9	36.3	1.0	45.2	-25.0	-20.2	
5.12	67.2	V	3.0	14.4	38.7	1.0	52.1	-25.0	-27.1	
7.68	68.4	V	3.0	10.7	37.8	1.0	47.4	-25.0	-22.4	
10.24	71.2	V	3.0	10.2	36.3	1.0	45.5	-25.0	-20.5	
Rev: 05.21.15										
LTE B7 20MHz QPSK										

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: 04/05/18 Date: 44410 Test Engineer: EUT only Configuration: LTE Band 7, 20MHz 16QAM Mode:										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber	Pre-amplifier	Filter	Limit							
3m Chamber E	3m Chamber E	Filter	LTE B7							
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2515MHz)										
5.02	67.5	H	3.0	14.6	38.7	1.0	52.3	-25.0	-27.3	
7.53	70.6	H	3.0	12.8	37.7	1.0	48.5	-25.0	-24.5	
10.04	71.9	H	3.0	11.1	36.2	1.0	46.2	-25.0	-21.2	
5.02	66.7	V	3.0	14.1	38.7	1.0	51.8	-25.0	-26.8	
7.53	70.7	V	3.0	13.1	37.7	1.0	48.8	-25.0	-24.8	
10.04	72.0	V	3.0	11.2	36.2	1.0	46.4	-25.0	-21.4	
Mid Channel (2515MHz)										
5.07	66.8	H	3.0	13.8	38.7	1.0	51.5	-25.0	-26.5	
7.61	69.9	H	3.0	10.9	37.7	1.0	47.6	-25.0	-22.6	
10.14	72.1	H	3.0	11.2	36.2	1.0	46.4	-25.0	-21.4	
5.07	67.6	V	3.0	14.9	38.7	1.0	52.6	-25.0	-27.6	
7.61	68.6	V	3.0	11.9	37.7	1.0	48.6	-25.0	-23.6	
10.14	71.8	V	3.0	10.9	36.2	1.0	46.1	-25.0	-21.1	
High Channel (2560MHz)										
5.12	67.5	H	3.0	14.4	38.7	1.0	52.1	-25.0	-27.1	
7.68	69.4	H	3.0	11.4	37.8	1.0	48.0	-25.0	-23.0	
10.24	71.7	H	3.0	10.7	36.3	1.0	45.9	-25.0	-20.9	
5.12	66.6	V	3.0	13.8	38.7	1.0	51.5	-25.0	-26.5	
7.68	68.6	V	3.0	11.8	37.8	1.0	48.4	-25.0	-23.4	
10.24	72.2	V	3.0	11.2	36.3	1.0	46.4	-25.0	-21.4	
Rev: 05.21.15										
LTE B7 20MHz 16QAM										

9.4.3. LTE BAND 25

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date: 04/06/18

Test Engineer: 10649

Configuration: EUT Only

Mode: LTE Band 25, 20MHz QPSK

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

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 (1900MHz)										
3.72	62.3	H	3.0	-12.3	38.6	1.0	-49.9	-13.0	-36.9	
5.58	64.6	H	3.0	-10.5	38.6	1.0	-48.0	-13.0	-35.0	
7.44	65.1	H	3.0	-7.4	37.8	1.0	-44.2	-13.0	-31.2	
3.72	56.5	V	3.0	-6.5	38.6	1.0	-44.2	-13.0	-31.2	
5.58	64.2	V	3.0	-10.4	38.6	1.0	-48.0	-13.0	-35.0	
7.44	66.8	V	3.0	-8.4	37.8	1.0	-45.2	-13.0	-32.2	
Mid Channel (1882.5MHz)										
3.77	61.4	H	3.0	-11.3	38.6	1.0	-49.0	-13.0	-36.0	
5.65	63.7	H	3.0	-9.4	38.5	1.0	-47.0	-13.0	-34.0	
7.53	65.7	H	3.0	-7.9	37.7	1.0	-44.6	-13.0	-31.6	
3.77	61.2	V	3.0	-11.1	38.6	1.0	-48.8	-13.0	-35.8	
5.65	63.2	V	3.0	-9.3	38.5	1.0	-46.8	-13.0	-33.8	
7.53	65.3	V	3.0	-7.6	37.7	1.0	-44.4	-13.0	-31.4	
High Channel (1905MHz)										
3.81	62.8	H	3.0	-11.8	38.6	1.0	-49.5	-13.0	-36.5	
5.72	64.2	H	3.0	-9.8	38.5	1.0	-47.3	-13.0	-34.3	
7.62	65.7	H	3.0	-7.8	37.7	1.0	-44.5	-13.0	-31.5	
3.81	61.6	V	3.0	-11.4	38.6	1.0	-49.1	-13.0	-36.1	
5.72	62.9	V	3.0	-8.9	38.5	1.0	-46.4	-13.0	-33.4	
7.62	66.8	V	3.0	-9.1	37.7	1.0	-45.8	-13.0	-32.8	

Rev: 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date: 04/06/18

Test Engineer: 10649

Configuration: EUT Only

Mode: LTE Band 25, 20MHz 16QAM

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

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 (1900MHz)										
3.72	62.0	H	3.0	-12.0	38.6	1.0	-49.6	-13.0	-36.6	
5.58	64.8	H	3.0	-10.6	38.6	1.0	-48.2	-13.0	-35.2	
7.44	65.3	H	3.0	-7.5	37.8	1.0	-44.3	-13.0	-31.3	
3.72	52.3	V	3.0	-12.4	38.6	1.0	-50.8	-13.0	-37.8	
5.58	61.9	V	3.0	-11.1	38.6	1.0	-45.6	-13.0	-32.6	
7.44	66.8	V	3.0	-8.5	37.8	1.0	-45.3	-13.0	-32.3	
Mid Channel (1882.5MHz)										
3.77	61.1	H	3.0	-11.0	38.6	1.0	-48.6	-13.0	-35.6	
5.65	60.2	H	3.0	-9.5	38.5	1.0	-43.5	-13.0	-30.5	
7.53	66.2	H	3.0	-8.3	37.7	1.0	-45.1	-13.0	-32.1	
3.77	60.7	V	3.0	-10.6	38.6	1.0	-48.3	-13.0	-35.3	
5.65	63.8	V	3.0	-9.9	38.5	1.0	-47.4	-13.0	-34.4	
7.53	65.8	V	3.0	-8.2	37.7	1.0	-44.9	-13.0	-31.9	
High Channel (1905MHz)										
3.81	61.1	H	3.0	-10.9	38.6	1.0	-48.6	-13.0	-35.6	
5.72	64.0	H	3.0	-9.6	38.5	1.0	-47.1	-13.0	-34.1	
7.62	66.0	H	3.0	-8.1	37.7	1.0	-44.8	-13.0	-31.8	
3.81	61.0	V	3.0	-10.8	38.6	1.0	-48.4	-13.0	-35.4	
5.72	64.6	V	3.0	-9.5	38.5	1.0	-46.8	-13.0	-33.8	
7.62	65.8	V	3.0	-8.1	37.7	1.0	-44.8	-13.0	-31.8	

Rev: 05.21.15

LTE B25 20MHz QPSK

LTE B25 20MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/06/18
Test Engineer: 10649
Configuration: EUT Only
Mode: LTE Band 25, 20MHz 16QAM

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber E	3m Chamber E	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 (1900MHz)										
3.72	62.9	H	3.0	-12.9	38.6	1.0	-49.6	-13.0	-36.6	
5.58	64.8	H	3.0	-10.6	38.6	1.0	-48.2	-13.0	-35.2	
7.44	65.3	H	3.0	-7.5	37.8	1.0	-44.3	-13.0	-31.3	
3.72	62.3	V	3.0	-12.4	38.6	1.0	-50.0	-13.0	-37.0	
5.58	61.9	V	3.0	-8.1	38.6	1.0	-45.6	-13.0	-32.6	
7.44	66.8	V	3.0	-8.5	37.8	1.0	-45.3	-13.0	-32.3	
Mid Channel (1882.5MHz)										
3.77	61.1	H	3.0	-11.8	38.6	1.0	-48.6	-13.0	-35.6	
5.65	63.2	H	3.0	-9.9	38.5	1.0	-45.5	-13.0	-32.5	
7.53	66.2	H	3.0	-8.3	37.7	1.0	-45.1	-13.0	-32.1	
3.77	60.7	V	3.0	-10.6	38.6	1.0	-48.3	-13.0	-35.3	
5.65	63.8	V	3.0	-9.9	38.5	1.0	-47.4	-13.0	-34.4	
7.53	65.8	V	3.0	-8.2	37.7	1.0	-44.9	-13.0	-31.9	
High Channel (1905MHz)										
3.81	61.1	H	3.0	-10.9	38.6	1.0	-48.6	-13.0	-35.6	
5.72	64.8	H	3.0	-9.6	38.5	1.0	-47.1	-13.0	-34.1	
7.62	66.8	H	3.0	-8.1	37.7	1.0	-44.8	-13.0	-31.8	
3.81	61.0	V	3.0	-10.8	38.6	1.0	-48.4	-13.0	-35.4	
5.72	64.6	V	3.0	-10.5	38.5	1.0	-46.9	-13.0	-33.9	
7.62	65.9	V	3.0	-8.1	37.7	1.0	-44.8	-13.0	-31.8	

Rev: 05.21.15

9.4.4. LTE BAND 30

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date:
Test Engineer:
Configuration:
Mode:

04/27/18
10641
EUT Only
LTE Band 30, 10MHz QPSK

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

Filter

LTE B30

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (2310MHz)										
4.62	-67.8	H	3.0	-13.2	37.9	1.0	-50.1	-40.0	-10.1	
6.83	-70.1	H	3.0	-11.5	36.5	1.0	-46.9	-40.0	-6.9	
9.24	-72.4	H	3.0	-10.9	34.9	1.0	-44.8	-40.0	-4.8	
4.62	-66.7	V	3.0	-12.9	37.9	1.0	-49.9	-40.0	-9.9	
6.83	-68.9	V	3.0	-8.4	36.5	1.0	-44.9	-40.0	-4.9	
9.24	-72.8	V	3.0	-10.2	34.9	1.0	-44.1	-40.0	-4.1	

Rev: 05.21.15

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date:
Test Engineer:
Configuration:
Mode:

04/27/18
10641
EUT only
LTE Band 30, 10MHz 16QAM

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

Filter

LTE B30

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (2310MHz)										
4.62	-67.7	H	3.0	-13.9	37.9	1.0	-50.8	-40.0	-10.8	
6.83	-69.9	H	3.0	-11.3	36.5	1.0	-46.8	-40.0	-6.8	
9.24	-73.4	H	3.0	-11.8	34.9	1.0	-45.7	-40.0	-5.7	
4.62	-67.4	V	3.0	-13.7	37.9	1.0	-50.6	-40.0	-10.6	
6.83	-69.5	V	3.0	-10.8	36.5	1.0	-45.5	-40.0	-5.5	
9.24	-72.9	V	3.0	-10.2	34.9	1.0	-44.0	-40.0	-4.0	

Rev: 05.21.15

LTE B30 10MHz QPSK

LTE B30 10MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/27/18
Test Engineer: 10641
Configuration: EUT only
Mode: LTE Band 30, 10MHz 16QAM

Test Equipment:
Substitution: Horn T59 Substitution, and 8R SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber E	3m Chamber E	Filter	LTE B30

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (2310MHz)										
4.62	-67.7	H	3.0	-13.9	37.9	1.0	-50.8	-40.0	-10.8	
6.93	-69.8	H	3.0	-11.3	36.5	1.0	-46.8	-40.0	-6.8	
9.24	-71.4	H	3.0	-11.8	34.9	1.0	-45.7	-40.0	-5.7	
4.62	-67.4	V	3.0	-13.7	37.9	1.0	-50.6	-40.0	-10.6	
6.93	-69.5	V	3.0	-10.0	36.5	1.0	-45.5	-40.0	-5.5	
9.24	-72.8	V	3.0	-10.2	34.9	1.0	-44.0	-40.0	-4.0	

Rev: 05.21.15

9.4.5. LTE BAND 41

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/06/18

10549

EUT Only

LTE Band 41, 20MHz QPSK

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2500MHz)										
5.91	63.5	H	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.52	66.1	H	3.0	-8.3	37.7	1.0	-45.1	-25.0	-20.1	
10.02	67.6	H	3.0	-8.8	36.1	1.0	-41.9	-25.0	-16.9	
5.91	63.7	V	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.52	65.9	V	3.0	-8.3	37.7	1.0	-45.0	-25.0	-20.0	
10.02	66.4	V	3.0	-5.6	36.1	1.0	-40.7	-25.0	-15.7	
Mid Channel (2550MHz)										
5.19	63.4	H	3.0	-10.1	38.7	1.0	-47.8	-25.0	-22.8	
7.78	65.4	H	3.0	-7.3	37.6	1.0	-43.9	-25.0	-18.9	
10.37	66.9	H	3.0	-5.8	36.4	1.0	-41.2	-25.0	-16.2	
5.19	63.6	V	3.0	-10.7	38.7	1.0	-46.3	-25.0	-21.3	
7.78	65.4	V	3.0	-7.4	37.6	1.0	-44.0	-25.0	-19.0	
10.37	67.6	V	3.0	-6.4	36.4	1.0	-41.8	-25.0	-16.8	
High Channel (2600MHz)										
5.36	65.1	H	3.0	-11.5	38.6	1.0	-49.1	-25.0	-24.1	
8.04	65.3	H	3.0	-6.9	37.4	1.0	-43.3	-25.0	-18.3	
10.72	67.4	H	3.0	-5.8	36.6	1.0	-41.5	-25.0	-16.5	
5.36	63.2	V	3.0	-9.9	38.6	1.0	-47.5	-25.0	-22.5	
8.04	65.4	V	3.0	-7.1	37.4	1.0	-43.5	-25.0	-18.5	
10.72	66.3	V	3.0	-4.8	36.6	1.0	-40.4	-25.0	-15.4	

Rev: 05.21.15

LTE B41 20MHz QPSK

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/06/18

10549

EUT Only

LTE Band 41, 20MHz 16QAM

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2500MHz)										
5.91	63.6	H	3.0	-10.7	38.7	1.0	-48.4	-25.0	-23.4	
7.52	66.5	H	3.0	-8.6	37.7	1.0	-45.4	-25.0	-20.4	
10.02	67.1	H	3.0	-6.3	36.1	1.0	-41.5	-25.0	-16.5	
5.91	63.9	V	3.0	-11.3	38.7	1.0	-48.9	-25.0	-23.9	
7.52	65.8	V	3.0	-8.2	37.7	1.0	-45.0	-25.0	-20.0	
10.02	67.9	V	3.0	-6.3	36.1	1.0	-41.4	-25.0	-16.4	
Mid Channel (2550MHz)										
5.19	63.4	H	3.0	-10.2	38.7	1.0	-47.9	-25.0	-22.9	
7.78	64.8	H	3.0	-6.7	37.6	1.0	-43.3	-25.0	-18.3	
10.37	67.4	H	3.0	-6.3	36.4	1.0	-41.6	-25.0	-16.6	
5.19	63.1	V	3.0	-10.1	38.7	1.0	-47.8	-25.0	-22.8	
7.78	66.0	V	3.0	-8.1	37.6	1.0	-44.7	-25.0	-19.7	
10.37	66.6	V	3.0	-5.5	36.4	1.0	-40.8	-25.0	-15.8	
High Channel (2600MHz)										
5.36	63.4	H	3.0	-9.7	38.6	1.0	-47.3	-25.0	-22.3	
8.04	65.4	H	3.0	-6.9	37.4	1.0	-43.3	-25.0	-18.3	
10.72	66.3	H	3.0	-4.9	36.6	1.0	-40.5	-25.0	-15.5	
5.36	63.4	V	3.0	-10.5	38.6	1.0	-47.7	-25.0	-22.7	
8.04	65.4	V	3.0	-7.1	37.4	1.0	-43.5	-25.0	-18.5	
10.72	66.5	V	3.0	-4.9	36.6	1.0	-40.5	-25.0	-15.5	

Rev: 05.21.15

LTE B41 20MHz 16QAM

Company: 10549
Project #: 04/06/18
Date: 04/06/18
Test Engineer: EUT Only
Configuration: LTE Band 41, 20MHz 16QAM
Mode:

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber		Pre-amplifier		Filter		Limit					
3m Chamber E		3m Chamber E		Filter		LTE B41					

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2500MHz)										
5.91	63.6	H	3.0	-10.7	38.7	1.0	-48.4	-25.0	-23.4	
7.52	66.5	H	3.0	-8.6	37.7	1.0	-45.4	-25.0	-20.4	
10.02	67.1	H	3.0	-4.3	36.1	1.0	-41.5	-25.0	-16.5	
5.91	63.9	V	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.52	65.8	V	3.0	-8.2	37.7	1.0	-45.0	-25.0	-20.0	
10.02	67.0	V	3.0	-5.3	36.1	1.0	-41.4	-25.0	-16.4	
Mid Channel (2550MHz)										
5.19	63.4	H	3.0	-10.2	38.7	1.0	-47.9	-25.0	-22.9	
7.78	64.8	H	3.0	-7.7	37.6	1.0	-43.3	-25.0	-18.3	
10.37	67.4	H	3.0	-6.3	36.4	1.0	-41.6	-25.0	-16.6	
5.19	63.1	V	3.0	-10.1	38.7	1.0	-47.8	-25.0	-22.8	
7.78	66.0	V	3.0	-7.1	37.6	1.0	-44.7	-25.0	-19.7	
10.37	68.6	V	3.0	-5.5	36.4	1.0	-40.8	-25.0	-15.8	
High Channel (2600MHz)										
5.36	63.4	H	3.0	-9.7	38.6	1.0	-47.3	-25.0	-22.3	
8.04	65.4	H	3.0	-6.9	37.4	1.0	-43.3	-25.0	-18.3	
10.72	66.3	H	3.0	-4.9	36.6	1.0	-40.5	-25.0	-15.5	
5.36	63.4	V	3.0	-10.1	38.6	1.0	-47.7	-25.0	-22.7	
8.04	65.3	V	3.0	-7.1	37.4	1.0	-43.5	-25.0	-18.5	
10.72	66.5	V	3.0	-4.9	36.6	1.0	-40.5	-25.0	-15.5	

Rev: 05.21.15

9.4.6. LTE BAND 66

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/06/18

44410

EUT only

LTE Band 66, 20MHz QPSK

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1720.0MHz)										
3.44	68.8	H	3.0	-19.5	38.5	1.0	-57.0	-13.0	-44.0	
5.16	67.1	H	3.0	-13.9	38.7	1.0	-51.6	-13.0	-38.6	
6.88	67.1	H	3.0	-10.1	38.1	1.0	-47.1	-13.0	-34.3	
3.44	67.1	V	3.0	-18.0	38.5	1.0	-55.5	-13.0	-42.5	
5.16	66.2	V	3.0	-13.3	38.7	1.0	-51.0	-13.0	-38.0	
6.88	69.1	V	3.0	-12.4	38.1	1.0	-49.6	-13.0	-36.6	
Mid Channel (1745.0MHz)										
3.49	67.8	H	3.0	-18.4	38.5	1.0	-55.9	-13.0	-42.9	
5.24	66.8	H	3.0	-13.5	38.7	1.0	-51.1	-13.0	-38.1	
6.98	69.2	H	3.0	-12.0	38.1	1.0	-49.1	-13.0	-36.1	
3.49	67.4	V	3.0	-18.1	38.5	1.0	-55.6	-13.0	-42.6	
5.24	66.9	V	3.0	-13.9	38.7	1.0	-51.6	-13.0	-38.6	
6.98	69.6	V	3.0	-12.7	38.1	1.0	-49.8	-13.0	-36.8	
High Channel (1770.0MHz)										
3.54	66.6	H	3.0	-17.8	38.6	1.0	-54.6	-13.0	-41.6	
5.31	68.7	H	3.0	-15.2	38.6	1.0	-52.9	-13.0	-39.9	
7.08	69.6	H	3.0	-12.3	38.0	1.0	-49.3	-13.0	-36.3	
3.54	67.1	V	3.0	-17.7	38.6	1.0	-55.3	-13.0	-42.3	
5.31	67.1	V	3.0	-13.9	38.6	1.0	-51.6	-13.0	-38.6	
7.08	68.6	V	3.0	-11.5	38.0	1.0	-48.5	-13.0	-35.5	

Rev: 02.24.17

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/06/18

44410

EUT only

LTE Band 66, 20MHz 16QAM

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1720.0MHz)										
3.44	67.8	H	3.0	-18.6	38.5	1.0	-56.1	-13.0	-43.1	
5.16	66.9	H	3.0	-13.7	38.7	1.0	-51.4	-13.0	-38.4	
6.88	68.6	H	3.0	-11.6	38.1	1.0	-48.8	-13.0	-35.8	
3.44	67.3	V	3.0	-18.2	38.5	1.0	-55.8	-13.0	-42.8	
5.16	66.4	V	3.0	-13.5	38.7	1.0	-51.2	-13.0	-38.2	
6.88	68.5	V	3.0	-11.8	38.1	1.0	-48.9	-13.0	-35.9	
Mid Channel (1745.0MHz)										
3.49	66.9	H	3.0	-17.3	38.5	1.0	-54.9	-13.0	-41.9	
5.24	67.5	H	3.0	-14.1	38.7	1.0	-51.8	-13.0	-38.8	
6.98	69.1	H	3.0	-12.6	38.1	1.0	-49.7	-13.0	-36.7	
3.49	67.4	V	3.0	-18.1	38.5	1.0	-55.7	-13.0	-42.7	
5.24	67.5	V	3.0	-14.5	38.7	1.0	-52.2	-13.0	-39.2	
6.98	69.5	V	3.0	-12.8	38.1	1.0	-49.7	-13.0	-36.7	
High Channel (1770.0MHz)										
3.54	61.7	H	3.0	-12.1	38.6	1.0	-49.7	-13.0	-36.7	
5.31	67.4	H	3.0	-13.9	38.6	1.0	-51.5	-13.0	-38.5	
7.08	67.6	H	3.0	-10.4	38.0	1.0	-47.4	-13.0	-34.4	
3.54	66.6	V	3.0	-17.2	38.6	1.0	-54.7	-13.0	-41.7	
5.31	67.6	V	3.0	-14.4	38.6	1.0	-52.0	-13.0	-39.0	
7.08	67.7	V	3.0	-10.7	38.0	1.0	-47.7	-13.0	-34.7	

Rev: 02.24.17

LTE B66 20MHz QPSK

LTE B66 20MHz 16QAM

Company:

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04/06/18

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5.16	66.9	H	3.0	-13.7	38.7	1.0	-51.4	-13.0	-38.4	
6.88	68.6	H	3.0	-11.6	38.1	1.0	-48.8	-13.0	-35.8	
3.44	67.3	V	3.0	-18.2	38.5	1.0	-55.8	-13.0	-42.8	
5.16	66.4	V	3.0	-13.5	38.7	1.0	-51.2	-13.0	-38.2	
6.88	68.5	V	3.0	-11.8	38.1	1.0	-48.9	-13.0	-35.9	
Mid Channel (1745.0MHz)										
3.49	68.8	H	3.0	-17.3	38.5	1.0	-54.9	-13.0	-41.9	
5.29	67.5	H	3.0	-14.1	38.7	1.0	-51.8	-13.0	-38.8	
6.90	69.7	H	3.0	-12.6	38.1	1.0	-49.7	-13.0	-36.7	
3.49	67.4	V	3.0	-18.1	38.5	1.0	-55.7	-13.0	-42.7	
5.29	67.5	V	3.0	-14.5	38.7	1.0	-52.2	-13.0	-39.2	
6.90	69.5	V	3.0	-12.6	38.1	1.0	-49.7	-13.0	-36.7	
High Channel (1770.0MHz)										
3.54	67.7	H	3.0	-12.1	38.6	1.0	-49.7	-13.0	-36.7	
5.31	67.4	H	3.0	-13.9	38.6	1.0	-51.5	-13.0	-38.5	
7.00	67.6	H	3.0	-10.4	38.0	1.0	-47.4	-13.0	-34.4	
3.54	66.6	V	3.0	-17.2	38.6	1.0	-54.7	-13.0	-41.7	
5.31	67.6	V	3.0	-14.4	38.6	1.0	-52.0	-13.0	-39.0	
7.01	67.3	V	3.0	-10.7	38.0	1.0	-47.7	-13.0	-34.7	

10. SETUP PHOTOS

Please refer to 12204512-EP1V1 for setup photos