9.2.12. LTE BAND 66

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 02/20/18
Test Engineer: 36648
Configuration: EUT
Mode: LTE Band 66, 20MHz QPSK

Test Equipment:

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1720MHz)										
3.42	-65.2	H	3.0	-15.9	38.5	1.0	-53.4	-13.0	-40.4	
5.13	-63.1	H	3.0	-9.9	38.7	1.0	-47.6	-13.0	-34.6	
6.84	-63.7	H	3.0	-6.7	38.1	1.0	-43.8	-13.0	-30.8	
3.42	-66.4	V	3.0	-17.3	38.5	1.0	-54.9	-13.0	-41.9	
5.13	-64.5	V	3.0	-11.6	38.7	1.0	-49.3	-13.0	-36.3	
6.84	-65.5	V	3.0	-8.8	38.1	1.0	-46.0	-13.0	-33.0	
Mid Channel (1745MHz)										
3.49	-65.9	H	3.0	-16.5	38.5	1.0	-54.1	-13.0	-41.1	
5.24	-63.7	H	3.0	-10.5	38.7	1.0	-48.2	-13.0	-35.2	
6.98	-64.6	H	3.0	-7.6	38.1	1.0	-44.7	-13.0	-31.7	
3.49	-65.7	V	3.0	-16.5	38.5	1.0	-54.1	-13.0	-41.1	
5.24	-62.9	V	3.0	-9.9	38.7	1.0	-47.6	-13.0	-34.6	
6.98	-64.1	V	3.0	-7.3	38.1	1.0	-44.4	-13.0	-31.4	
High Channel (1770MHz)										
3.56	-66.4	H	3.0	-16.9	38.5	1.0	-54.5	-13.0	-41.5	
5.34	-65.3	H	3.0	-11.9	38.7	1.0	-49.6	-13.0	-36.6	
7.12	-64.6	H	3.0	-7.4	38.1	1.0	-44.5	-13.0	-31.5	
3.56	-66.2	V	3.0	-16.9	38.5	1.0	-54.4	-13.0	-41.4	
5.34	-65.6	V	3.0	-12.5	38.7	1.0	-50.2	-13.0	-37.2	
7.12	-65.2	V	3.0	-8.3	38.1	1.0	-45.4	-13.0	-32.4	

Rev. 02.24.17

LTE B66 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 02/20/18
Test Engineer: 36648
Configuration: EUT
Mode: LTE Band 66, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1720MHz)										
3.42	-65.8	H	3.0	-16.6	34.5	1.0	-50.1	-13.0	-37.1	
5.13	-63.3	H	3.0	-10.2	33.4	1.0	-42.6	-13.0	-29.6	
6.84	-63.9	H	3.0	-7.3	33.1	1.0	-39.5	-13.0	-26.5	
3.42	-65.6	V	3.0	-15.9	34.5	1.0	-49.4	-13.0	-36.4	
5.13	-63.6	V	3.0	-10.5	33.4	1.0	-42.9	-13.0	-29.9	
6.84	-64.5	V	3.0	-7.9	33.1	1.0	-40.1	-13.0	-27.1	
Mid Channel (1745MHz)										
3.49	-66.2	H	3.0	-16.8	34.4	1.0	-50.2	-13.0	-37.2	
5.24	-63.6	H	3.0	-10.3	33.3	1.0	-42.7	-13.0	-29.7	
6.98	-64.4	H	3.0	-7.5	33.1	1.0	-39.6	-13.0	-26.6	
3.49	-65.9	V	3.0	-16.1	34.4	1.0	-49.5	-13.0	-36.5	
5.24	-63.0	V	3.0	-9.8	33.3	1.0	-42.1	-13.0	-29.1	
6.98	-63.7	V	3.0	-6.9	33.1	1.0	-39.0	-13.0	-26.0	
High Channel (1770MHz)										
3.56	-66.2	H	3.0	-16.7	34.3	1.0	-50.0	-13.0	-37.0	
5.34	-62.6	H	3.0	-9.0	33.3	1.0	-41.3	-13.0	-28.3	
7.12	-64.2	H	3.0	-7.1	33.1	1.0	-39.2	-13.0	-26.2	
3.56	-65.4	V	3.0	-15.4	34.3	1.0	-48.7	-13.0	-35.7	
5.34	-65.2	V	3.0	-11.7	33.3	1.0	-44.1	-13.0	-31.1	
7.12	-65.4	V	3.0	-8.4	33.1	1.0	-40.5	-13.0	-27.5	

Rev. 02.24.17

LTE B66 20MHz 16QAM

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4031B
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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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 #:
Date: 02/28/18
Test Engineer: 36648
Configuration: EUT
Mode: LTE Band 2, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1860MHz)										
3.72	-65.16	H	3.0	-15.1	34.1	1.0	-48.3	-13.0	-35.3	
5.58	-66.71	H	3.0	-12.7	33.3	1.0	-45.0	-13.0	-32.0	
7.74	-65.92	H	3.0	-8.0	33.0	1.0	-40.1	-13.0	-27.1	
3.72	-65.86	V	3.0	-15.5	34.1	1.0	-48.6	-13.0	-35.6	
5.58	-66.48	V	3.0	-12.5	33.3	1.0	-44.8	-13.0	-31.8	
7.74	-66.38	V	3.0	-8.5	33.0	1.0	-40.5	-13.0	-27.5	
Mid Channel (1880MHz)										
3.76	-63.9	H	3.0	-13.8	34.1	1.0	-46.9	-13.0	-33.9	
5.64	-66.9	H	3.0	-12.7	33.3	1.0	-45.0	-13.0	-32.0	
7.52	-65.7	H	3.0	-8.1	33.0	1.0	-40.1	-13.0	-27.1	
3.76	-64.7	V	3.0	-14.2	34.1	1.0	-47.3	-13.0	-34.3	
5.64	-66.9	V	3.0	-12.8	33.3	1.0	-45.1	-13.0	-32.1	
7.52	-65.6	V	3.0	-8.0	33.0	1.0	-40.0	-13.0	-27.0	
High Channel (1900MHz)										
3.80	-64.4	H	3.0	-14.2	34.0	1.0	-47.2	-13.0	-34.2	
5.70	-67.2	H	3.0	-12.9	33.3	1.0	-45.2	-13.0	-32.2	
7.60	-65.2	H	3.0	-7.6	33.0	1.0	-39.6	-13.0	-26.6	
3.80	-65.4	V	3.0	-14.9	34.0	1.0	-47.9	-13.0	-34.9	
5.70	-67.3	V	3.0	-13.1	33.3	1.0	-45.4	-13.0	-32.4	
7.60	-65.8	V	3.0	-8.1	33.0	1.0	-40.1	-13.0	-27.1	

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LTE B2 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 02/28/18
Test Engineer: 36648
Configuration: EUT
Mode: LTE Band 2, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1860MHz)										
3.72	-65.45	H	3.0	-15.4	34.1	1.0	-48.6	-13.0	-35.6	
5.58	-66.78	H	3.0	-12.7	33.3	1.0	-45.0	-13.0	-32.0	
7.74	-65.23	H	3.0	-7.4	33.0	1.0	-39.4	-13.0	-26.4	
3.72	-65.84	V	3.0	-15.5	34.1	1.0	-48.6	-13.0	-35.6	
5.58	-66.38	V	3.0	-12.4	33.3	1.0	-44.7	-13.0	-31.7	
7.74	-66.89	V	3.0	-9.0	33.0	1.0	-41.0	-13.0	-28.0	
Mid Channel (1880MHz)										
3.76	-64.2	H	3.0	-14.1	34.1	1.0	-47.2	-13.0	-34.2	
5.64	-66.5	H	3.0	-12.3	33.3	1.0	-44.6	-13.0	-31.6	
7.52	-65.2	H	3.0	-7.7	33.0	1.0	-39.7	-13.0	-26.7	
3.76	-64.7	V	3.0	-14.2	34.1	1.0	-47.3	-13.0	-34.3	
5.64	-66.9	V	3.0	-12.8	33.3	1.0	-45.1	-13.0	-32.1	
7.52	-65.6	V	3.0	-8.0	33.0	1.0	-40.0	-13.0	-27.0	
High Channel (1900MHz)										
3.80	-64.2	H	3.0	-13.9	34.0	1.0	-47.0	-13.0	-34.0	
5.70	-66.2	H	3.0	-11.9	33.3	1.0	-44.2	-13.0	-31.2	
7.60	-66.2	H	3.0	-8.5	33.0	1.0	-40.6	-13.0	-27.6	
3.80	-63.5	V	3.0	-13.0	34.0	1.0	-46.0	-13.0	-33.0	
5.70	-66.1	V	3.0	-11.9	33.3	1.0	-44.2	-13.0	-31.2	
7.60	-66.7	V	3.0	-9.0	33.0	1.0	-41.0	-13.0	-28.0	

Rev. 05.21.15

LTE B2 20MHz 16QAM

9.3.2. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/01/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 7, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (2510MHz)										
5.02	-61.2	H	3.0	-8.3	33.4	1.0	-40.7	-25.0	-16.7	
7.53	-61.5	H	3.0	-3.9	33.0	1.0	-35.9	-25.0	-10.9	
10.04	-62.2	H	3.0	-1.4	32.6	1.0	-33.0	-25.0	-8.0	
5.02	-62.3	V	3.0	-9.4	33.4	1.0	-41.8	-25.0	-16.8	
7.53	-61.7	V	3.0	-4.1	33.0	1.0	-36.2	-25.0	-11.2	
10.04	-60.9	V	3.0	0.2	32.6	1.0	-31.5	-25.0	-6.5	
Mid Channel (2535MHz)										
5.07	-62.7	H	3.0	-9.7	33.4	1.0	-42.1	-25.0	-17.1	
7.61	-62.7	H	3.0	-5.0	33.0	1.0	-37.1	-25.0	-12.1	
10.14	-61.5	H	3.0	-0.6	32.6	1.0	-32.2	-25.0	-7.2	
5.07	-62.1	V	3.0	-9.1	33.4	1.0	-41.5	-25.0	-16.5	
7.61	-62.5	V	3.0	-4.7	33.0	1.0	-36.8	-25.0	-11.8	
10.14	-62.2	V	3.0	-1.0	32.6	1.0	-32.6	-25.0	-7.6	
High Channel (2560MHz)										
5.12	-63.1	H	3.0	-10.0	33.4	1.0	-42.4	-25.0	-17.4	
7.68	-62.7	H	3.0	-4.9	33.0	1.0	-36.9	-25.0	-11.9	
10.24	-62.7	H	3.0	-1.7	32.5	1.0	-33.2	-25.0	-8.2	
5.12	-62.2	V	3.0	-9.2	33.4	1.0	-41.6	-25.0	-16.6	
7.68	-62.9	V	3.0	-5.1	33.0	1.0	-37.1	-25.0	-12.1	
10.24	-61.8	V	3.0	-0.5	32.5	1.0	-32.1	-25.0	-7.1	

Rev. 05.21.15

LTE B7 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/01/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 7, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (2510MHz)										
5.02	-62.0	H	3.0	-9.1	33.4	1.0	-41.5	-25.0	-16.5	
7.53	-61.9	H	3.0	-4.3	33.0	1.0	-36.3	-25.0	-11.3	
10.04	-61.4	H	3.0	-0.6	32.6	1.0	-32.3	-25.0	-7.3	
5.02	-60.8	V	3.0	-7.9	33.4	1.0	-40.3	-25.0	-15.3	
7.53	-61.9	V	3.0	-4.3	33.0	1.0	-36.3	-25.0	-11.3	
10.04	-62.2	V	3.0	-1.1	32.6	1.0	-32.8	-25.0	-7.8	
Mid Channel (2535MHz)										
5.07	-62.3	H	3.0	-9.3	33.4	1.0	-41.7	-25.0	-16.7	
7.61	-63.4	H	3.0	-5.7	33.0	1.0	-37.7	-25.0	-12.7	
10.14	-61.1	H	3.0	-0.2	32.6	1.0	-31.8	-25.0	-6.8	
5.07	-62.1	V	3.0	-9.2	33.4	1.0	-41.6	-25.0	-16.6	
7.61	-61.3	V	3.0	-3.6	33.0	1.0	-35.6	-25.0	-10.6	
10.14	-60.8	V	3.0	0.3	32.6	1.0	-31.3	-25.0	-6.3	
High Channel (2560MHz)										
5.12	-63.0	H	3.0	-8.9	33.4	1.0	-42.3	-25.0	-17.3	
7.68	-62.8	H	3.0	-5.0	33.0	1.0	-37.0	-25.0	-12.0	
10.24	-62.3	H	3.0	-1.2	32.5	1.0	-32.8	-25.0	-7.8	
5.12	-62.3	V	3.0	-9.3	33.4	1.0	-41.7	-25.0	-16.7	
7.68	-62.0	V	3.0	-4.2	33.0	1.0	-36.2	-25.0	-11.2	
10.24	-61.8	V	3.0	-0.6	32.5	1.0	-32.1	-25.0	-7.1	

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LTE B7 20MHz 16QAM

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9.3.3. LTE BAND 25

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 02/28/18
Test Engineer: 36648
Configuration: EUT
Mode: LTE Band 25, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1860MHz)										
3.72	-65.5	H	3.0	-15.5	34.1	1.0	-48.6	-13.0	-35.6	
5.58	-66.6	H	3.0	-12.6	33.3	1.0	-44.9	-13.0	-31.9	
7.44	-64.7	H	3.0	-7.2	33.1	1.0	-39.2	-13.0	-26.2	
3.72	-65.1	V	3.0	-14.8	34.1	1.0	-47.9	-13.0	-34.9	
5.58	-66.8	V	3.0	-12.8	33.3	1.0	-45.1	-13.0	-32.1	
7.44	-65.6	V	3.0	-8.1	33.1	1.0	-40.1	-13.0	-27.1	
Mid Channel (1882.5MHz)										
3.75	-62.9	H	3.0	-12.8	34.1	1.0	-45.9	-13.0	-32.9	
5.62	-65.8	H	3.0	-11.6	33.3	1.0	-43.9	-13.0	-30.9	
7.53	-66.9	H	3.0	-9.3	33.0	1.0	-41.3	-13.0	-28.3	
3.75	-64.1	V	3.0	-13.6	34.1	1.0	-46.7	-13.0	-33.7	
5.62	-67.6	V	3.0	-13.5	33.3	1.0	-45.8	-13.0	-32.8	
7.53	-65.7	V	3.0	-8.1	33.0	1.0	-40.1	-13.0	-27.1	
High Channel (1905MHz)										
3.80	-64.8	H	3.0	-14.6	34.0	1.0	-47.6	-13.0	-34.6	
5.69	-67.0	H	3.0	-12.7	33.3	1.0	-45.0	-13.0	-32.0	
7.62	-65.8	H	3.0	-8.0	33.0	1.0	-40.1	-13.0	-27.1	
3.80	-65.2	V	3.0	-14.7	34.0	1.0	-47.7	-13.0	-34.7	
5.69	-67.5	V	3.0	-13.3	33.3	1.0	-45.5	-13.0	-32.5	
7.62	-65.9	V	3.0	-8.2	33.0	1.0	-40.2	-13.0	-27.2	

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LTE B25 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 02/28/18
Test Engineer: 36648
Configuration: EUT
Mode: LTE Band 25, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1860MHz)										
3.72	-64.9	H	3.0	-14.9	34.1	1.0	-48.1	-13.0	-35.1	
5.58	-66.9	H	3.0	-12.8	33.3	1.0	-45.1	-13.0	-32.1	
7.44	-65.9	H	3.0	-8.4	33.1	1.0	-40.5	-13.0	-27.5	
3.72	-65.5	V	3.0	-15.1	34.1	1.0	-48.2	-13.0	-35.2	
5.58	-66.8	V	3.0	-12.8	33.3	1.0	-45.1	-13.0	-32.1	
7.44	-65.4	V	3.0	-7.9	33.1	1.0	-40.0	-13.0	-27.0	
Mid Channel (1882.5MHz)										
3.77	-63.4	H	3.0	-13.2	34.1	1.0	-46.3	-13.0	-33.3	
5.65	-66.9	H	3.0	-12.7	33.3	1.0	-45.0	-13.0	-32.0	
7.53	-65.3	H	3.0	-7.7	33.0	1.0	-39.7	-13.0	-26.7	
3.77	-65.4	V	3.0	-15.0	34.1	1.0	-48.0	-13.0	-35.0	
5.65	-66.9	V	3.0	-12.8	33.3	1.0	-45.0	-13.0	-32.0	
7.53	-61.8	V	3.0	-4.1	33.0	1.0	-36.2	-13.0	-23.2	
High Channel (1905MHz)										
3.81	-64.6	H	3.0	-14.4	34.0	1.0	-47.4	-13.0	-34.4	
5.72	-69.0	H	3.0	-14.7	33.3	1.0	-47.0	-13.0	-34.0	
7.62	-65.8	H	3.0	-8.1	33.0	1.0	-40.1	-13.0	-27.1	
3.81	-64.8	V	3.0	-14.3	34.0	1.0	-47.3	-13.0	-34.3	
5.72	-66.9	V	3.0	-12.7	33.3	1.0	-45.0	-13.0	-32.0	
7.62	-65.4	V	3.0	-7.7	33.0	1.0	-39.7	-13.0	-26.7	

Rev. 05.21.15

LTE B25 20MHz 16QAM

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9.3.4. LTE BAND 30

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/01/18
Test Engineer: 31300
Configuration: EUT only
Mode: LTE Band 30, 10MHz QPSK

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

Chamber	Pre-amplifer	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	-65.2	H	3.0	-11.4	37.9	1.0	-48.3	-40.0	-8.3	
6.93	-69.3	H	3.0	-10.7	36.5	1.0	-46.1	-40.0	-6.1	
8.50	-70.5	H	3.0	-9.9	35.4	1.0	-44.2	-40.0	-4.2	
4.62	-66.4	V	3.0	-12.7	37.9	1.0	-49.6	-40.0	-9.6	
6.93	-69.1	V	3.0	-9.7	36.5	1.0	-45.1	-40.0	-5.1	
8.50	-69.5	V	3.0	-8.4	35.4	1.0	-42.8	-40.0	-2.8	

Rev. 05.21.15

LTE B30 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/01/18
Test Engineer: 31300
Configuration: EUT only
Mode: LTE Band 30, 10MHz 16QAM

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

Chamber	Pre-amplifer	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	-66.7	H	3.0	-12.9	37.9	1.0	-49.8	-40.0	-9.8	
6.93	-68.8	H	3.0	-10.2	36.5	1.0	-45.6	-40.0	-5.6	
8.50	-72.3	H	3.0	-11.1	34.9	1.0	-44.9	-40.0	-4.9	
4.62	-65.8	V	3.0	-12.1	37.9	1.0	-49.0	-40.0	-9.0	
6.93	-69.2	V	3.0	-9.7	36.5	1.0	-45.2	-40.0	-5.2	
8.50	-70.6	V	3.0	-9.1	34.9	1.0	-42.9	-40.0	-2.9	

Rev. 05.21.15

LTE B30 10MHz 16QAM

9.3.5. LTE BAND 41

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/01/18
Test Engineer: 10649
Configuration: EUT
Mode: LTE Band 41, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (2506MHz)										
5.01	-64.3	H	3.0	-11.4	33.4	1.0	-43.8	-30.0	-13.8	
7.52	-66.2	H	3.0	-8.6	33.0	1.0	-40.7	-30.0	-10.7	
10.02	-65.6	H	3.0	-4.8	32.7	1.0	-36.5	-30.0	-6.5	
5.01	-65.7	V	3.0	-12.8	33.4	1.0	-45.3	-30.0	-15.3	
7.52	-66.3	V	3.0	-8.7	33.0	1.0	-40.8	-30.0	-10.8	
10.02	-65.5	V	3.0	-4.4	32.7	1.0	-36.1	-30.0	-6.1	
Mid Channel (2593MHz)										
5.19	-66.3	H	3.0	-13.1	33.4	1.0	-45.4	-30.0	-15.4	
7.78	-66.2	H	3.0	-8.3	33.0	1.0	-40.3	-30.0	-10.3	
10.37	-65.6	H	3.0	-4.5	32.4	1.0	-35.9	-30.0	-5.9	
5.19	-65.7	V	3.0	-12.5	33.4	1.0	-44.8	-30.0	-14.8	
7.78	-65.6	V	3.0	-7.7	33.0	1.0	-39.7	-30.0	-9.7	
10.37	-64.2	V	3.0	-2.9	32.4	1.0	-34.3	-30.0	-4.3	
High Channel (2680MHz)										
5.36	-66.9	H	3.0	-13.3	33.3	1.0	-45.6	-30.0	-15.6	
8.04	-65.6	H	3.0	-7.4	33.0	1.0	-39.3	-30.0	-9.3	
10.72	-64.6	H	3.0	-3.1	32.2	1.0	-34.3	-30.0	-4.3	
5.36	-68.1	V	3.0	-14.5	33.3	1.0	-46.9	-30.0	-16.9	
8.04	-65.6	V	3.0	-7.3	33.0	1.0	-39.2	-30.0	-9.2	
10.72	-65.9	V	3.0	-4.4	32.2	1.0	-35.6	-30.0	-5.6	

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LTE B41 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/01/18
Test Engineer: 10649
Configuration: EUT
Mode: LTE Band 41, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (2506MHz)										
5.01	-64.9	H	3.0	-12.0	33.4	1.0	-44.4	-25.0	-19.4	
7.52	-65.7	H	3.0	-8.1	33.0	1.0	-40.1	-25.0	-15.1	
10.02	-65.3	H	3.0	-4.5	32.7	1.0	-36.1	-25.0	-11.1	
5.01	-64.6	V	3.0	-11.8	33.4	1.0	-44.2	-25.0	-19.2	
7.52	-65.7	V	3.0	-8.1	33.0	1.0	-40.2	-25.0	-15.2	
10.02	-66.0	V	3.0	-4.9	32.7	1.0	-36.5	-25.0	-11.5	
Mid Channel (2593MHz)										
5.19	-66.0	H	3.0	-12.7	33.4	1.0	-45.1	-25.0	-20.1	
7.78	-67.0	H	3.0	-9.1	33.0	1.0	-41.1	-25.0	-16.1	
10.37	-64.8	H	3.0	-3.7	32.4	1.0	-35.1	-25.0	-10.1	
5.19	-65.7	V	3.0	-12.6	33.4	1.0	-44.9	-25.0	-19.9	
7.78	-66.6	V	3.0	-8.6	33.0	1.0	-40.6	-25.0	-15.6	
10.37	-65.6	V	3.0	-4.3	32.4	1.0	-35.8	-25.0	-10.8	
High Channel (2680MHz)										
5.36	-68.1	H	3.0	-14.5	33.3	1.0	-46.8	-25.0	-21.8	
8.04	-66.0	H	3.0	-7.8	33.0	1.0	-39.7	-25.0	-14.7	
10.72	-65.5	H	3.0	-4.0	32.2	1.0	-35.3	-25.0	-10.3	
5.36	-66.6	V	3.0	-13.1	33.3	1.0	-45.4	-25.0	-20.4	
8.04	-66.4	V	3.0	-8.1	33.0	1.0	-40.1	-25.0	-15.1	
10.72	-65.8	V	3.0	-4.2	32.2	1.0	-35.5	-25.0	-10.5	

Rev. 05.21.15

LTE B41 20MHz 16QAM

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9.3.6. LTE BAND 66

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/01/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 66, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1720MHz)										
3.44	-66.1	H	3.0	-16.8	38.5	1.0	-54.4	-13.0	-41.4	
5.16	-63.0	H	3.0	-9.8	38.7	1.0	-47.5	-13.0	-34.5	
6.88	-63.7	H	3.0	-6.8	38.1	1.0	-43.9	-13.0	-30.9	
3.44	-64.2	V	3.0	-15.1	38.5	1.0	-52.6	-13.0	-39.6	
5.16	-63.2	V	3.0	-10.4	38.7	1.0	-48.0	-13.0	-35.0	
6.88	-63.2	V	3.0	-6.5	38.1	1.0	-43.6	-13.0	-30.6	
Mid Channel (1745MHz)										
3.49	-66.6	H	3.0	-17.2	38.5	1.0	-54.8	-13.0	-41.8	
5.24	-61.3	H	3.0	-8.0	38.7	1.0	-45.7	-13.0	-32.7	
6.98	-61.8	H	3.0	-4.8	38.1	1.0	-41.9	-13.0	-28.9	
3.49	-67.4	V	3.0	-18.3	38.5	1.0	-55.8	-13.0	-42.8	
5.24	-60.2	V	3.0	-7.2	38.7	1.0	-44.9	-13.0	-31.9	
6.98	-61.5	V	3.0	-4.7	38.1	1.0	-41.8	-13.0	-28.8	
High Channel (1770MHz)										
3.54	-64.7	H	3.0	-15.3	38.5	1.0	-52.8	-13.0	-39.8	
5.31	-62.8	H	3.0	-9.4	38.7	1.0	-47.1	-13.0	-34.1	
7.08	-62.4	H	3.0	-5.2	38.1	1.0	-42.3	-13.0	-29.3	
3.54	-65.5	V	3.0	-16.2	38.5	1.0	-53.8	-13.0	-40.8	
5.31	-62.2	V	3.0	-9.2	38.7	1.0	-46.9	-13.0	-33.9	
7.08	-62.4	V	3.0	-5.5	38.1	1.0	-42.6	-13.0	-29.6	

LTE B66 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/01/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 66, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1720MHz)										
3.44	-66.5	H	3.0	-17.2	38.5	1.0	-54.7	-13.0	-41.7	
5.16	-63.1	H	3.0	-9.9	38.7	1.0	-47.6	-13.0	-34.6	
6.88	-62.5	H	3.0	-5.6	38.1	1.0	-42.7	-13.0	-29.7	
3.44	-66.9	V	3.0	-17.7	38.5	1.0	-55.3	-13.0	-42.3	
5.16	-63.4	V	3.0	-10.5	38.7	1.0	-48.2	-13.0	-35.2	
6.88	-62.9	V	3.0	-6.2	38.1	1.0	-43.3	-13.0	-30.3	
Mid Channel (1745MHz)										
3.49	-66.9	H	3.0	-17.5	38.5	1.0	-55.0	-13.0	-42.0	
5.24	-61.7	H	3.0	-8.5	38.7	1.0	-46.1	-13.0	-33.1	
6.98	-62.2	H	3.0	-5.2	38.1	1.0	-42.3	-13.0	-29.3	
3.49	-67.0	V	3.0	-17.8	38.5	1.0	-55.4	-13.0	-42.4	
5.24	-60.1	V	3.0	-7.2	38.7	1.0	-44.9	-13.0	-31.9	
6.98	-61.5	V	3.0	-4.7	38.1	1.0	-41.8	-13.0	-28.8	
High Channel (1770MHz)										
3.54	-66.1	H	3.0	-16.7	38.5	1.0	-54.2	-13.0	-41.2	
5.31	-63.5	H	3.0	-10.1	38.7	1.0	-47.8	-13.0	-34.8	
7.08	-63.1	H	3.0	-5.9	38.1	1.0	-43.0	-13.0	-30.0	
3.54	-66.2	V	3.0	-16.9	38.5	1.0	-54.5	-13.0	-41.5	
5.31	-62.9	V	3.0	-9.9	38.7	1.0	-47.6	-13.0	-34.6	
7.08	-63.6	V	3.0	-6.7	38.1	1.0	-43.8	-13.0	-30.8	

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LTE B66 20MHz 16QAM

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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 #:
Date: 03/01/18
Test Engineer: 10646
Configuration: EUT
Mode: LTE Band 2, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1860MHz)										
3.72	-65.81	H	3.0	-15.8	34.1	1.0	-48.9	-13.0	-35.9	
5.58	-66.56	H	3.0	-12.5	33.3	1.0	-44.8	-13.0	-31.8	
7.74	-66.59	H	3.0	-8.7	33.0	1.0	-40.7	-13.0	-27.7	
3.72	-66.44	V	3.0	-16.1	34.1	1.0	-49.2	-13.0	-36.2	
5.58	-66.95	V	3.0	-13.0	33.3	1.0	-45.3	-13.0	-32.3	
7.74	-65.78	V	3.0	-7.9	33.0	1.0	-39.9	-13.0	-26.9	
Mid Channel (1880MHz)										
3.76	-64.8	H	3.0	-14.7	34.1	1.0	-47.7	-13.0	-34.7	
5.64	-65.9	H	3.0	-11.7	33.3	1.0	-44.0	-13.0	-31.0	
7.52	-65.8	H	3.0	-8.2	33.0	1.0	-40.2	-13.0	-27.2	
3.76	-64.8	V	3.0	-14.3	34.1	1.0	-47.4	-13.0	-34.4	
5.64	-66.9	V	3.0	-12.8	33.3	1.0	-45.1	-13.0	-32.1	
7.52	-65.8	V	3.0	-8.2	33.0	1.0	-40.3	-13.0	-27.3	
High Channel (1900MHz)										
3.80	-63.6	H	3.0	-13.4	34.0	1.0	-46.4	-13.0	-33.4	
5.70	-65.6	H	3.0	-11.3	33.3	1.0	-43.6	-13.0	-30.6	
7.60	-67.1	H	3.0	-9.4	33.0	1.0	-41.4	-13.0	-28.4	
3.80	-63.9	V	3.0	-13.3	34.0	1.0	-46.4	-13.0	-33.4	
5.70	-66.6	V	3.0	-12.4	33.3	1.0	-44.7	-13.0	-31.7	
7.60	-66.9	V	3.0	-9.2	33.0	1.0	-41.2	-13.0	-28.2	

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LTE B2 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/01/18
Test Engineer: 10646
Configuration: EUT
Mode: LTE Band 2, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1860MHz)										
3.72	-65.51	H	3.0	-15.5	34.1	1.0	-48.6	-13.0	-35.6	
5.58	-67.35	H	3.0	-13.3	33.3	1.0	-45.6	-13.0	-32.6	
7.74	-66.56	H	3.0	-8.7	33.0	1.0	-40.7	-13.0	-27.7	
3.72	-65.94	V	3.0	-15.6	34.1	1.0	-48.7	-13.0	-35.7	
5.58	-66.78	V	3.0	-12.8	33.3	1.0	-45.1	-13.0	-32.1	
7.74	-66.13	V	3.0	-8.2	33.0	1.0	-40.2	-13.0	-27.2	
Mid Channel (1880MHz)										
3.76	-64.2	H	3.0	-14.0	34.1	1.0	-47.1	-13.0	-34.1	
5.64	-67.1	H	3.0	-12.9	33.3	1.0	-45.2	-13.0	-32.2	
7.52	-65.3	H	3.0	-7.7	33.0	1.0	-39.7	-13.0	-26.7	
3.76	-63.3	V	3.0	-12.8	34.1	1.0	-45.9	-13.0	-32.9	
5.64	-67.0	V	3.0	-12.9	33.3	1.0	-45.2	-13.0	-32.2	
7.52	-65.8	V	3.0	-8.2	33.0	1.0	-40.3	-13.0	-27.3	
High Channel (1900MHz)										
3.80	-63.9	H	3.0	-13.7	34.0	1.0	-46.7	-13.0	-33.7	
5.70	-65.8	H	3.0	-11.5	33.3	1.0	-43.8	-13.0	-30.8	
7.60	-67.4	H	3.0	-9.7	33.0	1.0	-41.7	-13.0	-28.7	
3.80	-63.4	V	3.0	-12.9	34.0	1.0	-45.9	-13.0	-32.9	
5.70	-65.9	V	3.0	-11.6	33.3	1.0	-43.9	-13.0	-30.9	
7.60	-66.9	V	3.0	-9.2	33.0	1.0	-41.2	-13.0	-28.2	

Rev. 05.21.15

LTE B2 20MHz 16QAM

9.4.2. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/02/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 7, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (2510MHz)										
5.02	-65.6	H	3.0	-12.7	33.4	1.0	-45.2	-25.0	-20.2	
7.53	-65.7	H	3.0	-8.1	33.0	1.0	-40.1	-25.0	-15.1	
10.04	-66.8	H	3.0	-6.0	32.6	1.0	-37.7	-25.0	-12.7	
5.02	-65.5	V	3.0	-12.6	33.4	1.0	-45.0	-25.0	-20.0	
7.53	-66.4	V	3.0	-8.8	33.0	1.0	-40.8	-25.0	-15.8	
10.04	-67.5	V	3.0	-6.4	32.6	1.0	-38.1	-25.0	-13.1	
Mid Channel (2535MHz)										
5.07	-66.6	H	3.0	-13.6	33.4	1.0	-46.0	-25.0	-21.0	
7.61	-67.1	H	3.0	-9.4	33.0	1.0	-41.5	-25.0	-16.5	
10.14	-66.1	H	3.0	-5.2	32.6	1.0	-36.8	-25.0	-11.8	
5.07	-64.7	V	3.0	-11.8	33.4	1.0	-44.2	-25.0	-19.2	
7.61	-66.3	V	3.0	-8.6	33.0	1.0	-40.6	-25.0	-15.6	
10.14	-66.7	V	3.0	-5.5	32.6	1.0	-37.1	-25.0	-12.1	
High Channel (2560MHz)										
5.12	-65.5	H	3.0	-12.3	33.4	1.0	-44.7	-25.0	-19.7	
7.68	-66.9	H	3.0	-9.1	33.0	1.0	-41.1	-25.0	-16.1	
10.24	-65.9	H	3.0	-4.9	32.5	1.0	-36.4	-25.0	-11.4	
5.12	-66.6	V	3.0	-13.6	33.4	1.0	-46.0	-25.0	-21.0	
7.68	-66.6	V	3.0	-8.8	33.0	1.0	-40.8	-25.0	-15.8	
10.24	-67.1	V	3.0	-5.9	32.5	1.0	-37.4	-25.0	-12.4	

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LTE B7 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/02/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 7, 20MHz 16-QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (2510MHz)										
5.02	-66.3	H	3.0	-13.4	33.4	1.0	-45.8	-25.0	-20.8	
7.53	-65.7	H	3.0	-8.1	33.0	1.0	-40.1	-25.0	-15.1	
10.04	-66.4	H	3.0	-5.6	32.6	1.0	-37.2	-25.0	-12.2	
5.02	-66.0	V	3.0	-13.2	33.4	1.0	-45.6	-25.0	-20.6	
7.53	-66.9	V	3.0	-9.2	33.0	1.0	-41.3	-25.0	-16.3	
10.04	-67.0	V	3.0	-5.9	32.6	1.0	-37.6	-25.0	-12.6	
Mid Channel (2535MHz)										
5.07	-65.1	H	3.0	-12.1	33.4	1.0	-44.5	-25.0	-19.5	
7.61	-67.4	H	3.0	-9.7	33.0	1.0	-41.7	-25.0	-16.7	
10.14	-65.9	H	3.0	-5.0	32.6	1.0	-36.6	-25.0	-11.6	
5.07	-66.3	V	3.0	-13.3	33.4	1.0	-45.7	-25.0	-20.7	
7.61	-67.3	V	3.0	-9.6	33.0	1.0	-41.6	-25.0	-16.6	
10.14	-66.7	V	3.0	-5.6	32.6	1.0	-37.2	-25.0	-12.2	
High Channel (2560MHz)										
5.12	-67.2	H	3.0	-14.1	33.4	1.0	-46.5	-25.0	-21.5	
7.68	-65.8	H	3.0	-8.0	33.0	1.0	-40.0	-25.0	-15.0	
10.24	-67.5	H	3.0	-6.6	32.5	1.0	-38.2	-25.0	-13.2	
5.12	-66.8	V	3.0	-13.7	33.4	1.0	-46.1	-25.0	-21.1	
7.68	-66.3	V	3.0	-8.4	33.0	1.0	-40.5	-25.0	-15.5	
10.24	-66.3	V	3.0	-5.1	32.5	1.0	-36.6	-25.0	-11.6	

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LTE B7 20MHz 16QAM

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9.4.3. LTE BAND 25

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/02/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 25, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1860MHz)										
3.72	-65.1	H	3.0	-15.1	34.1	1.0	-48.2	-13.0	-35.2	
5.58	-65.9	H	3.0	-11.8	33.3	1.0	-44.1	-13.0	-31.1	
7.44	-66.5	H	3.0	-9.0	33.1	1.0	-41.0	-13.0	-28.0	
3.72	-66.1	V	3.0	-15.8	34.1	1.0	-48.9	-13.0	-35.9	
5.58	-66.5	V	3.0	-12.5	33.3	1.0	-44.9	-13.0	-31.9	
7.44	-66.0	V	3.0	-8.5	33.1	1.0	-40.6	-13.0	-27.6	
Mid Channel (1882.5MHz)										
3.77	-63.7	H	3.0	-13.6	34.1	1.0	-46.7	-13.0	-33.7	
5.65	-67.2	H	3.0	-13.0	33.3	1.0	-45.3	-13.0	-32.3	
7.53	-65.4	H	3.0	-7.8	33.0	1.0	-39.8	-13.0	-26.8	
3.75	-65.6	V	3.0	-15.2	34.1	1.0	-48.2	-13.0	-35.2	
5.62	-65.9	V	3.0	-11.9	33.3	1.0	-44.2	-13.0	-31.2	
7.53	-66.4	V	3.0	-8.8	33.0	1.0	-40.8	-13.0	-27.8	
High Channel (1905MHz)										
3.81	-65.1	H	3.0	-14.9	34.0	1.0	-47.9	-13.0	-34.9	
5.72	-66.7	H	3.0	-12.4	33.3	1.0	-44.7	-13.0	-31.7	
7.62	-66.8	H	3.0	-9.1	33.0	1.0	-41.1	-13.0	-28.1	
3.80	-64.6	V	3.0	-14.1	34.0	1.0	-47.2	-13.0	-34.2	
5.69	-67.1	V	3.0	-12.9	33.3	1.0	-45.2	-13.0	-32.2	
7.62	-67.6	V	3.0	-9.9	33.0	1.0	-41.9	-13.0	-28.9	

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LTE B25 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/02/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 25, 20MHz 16-QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1860MHz)										
3.72	-66.3	H	3.0	-16.3	34.1	1.0	-48.4	-13.0	-35.4	
5.58	-66.2	H	3.0	-12.1	33.3	1.0	-44.4	-13.0	-31.4	
7.44	-66.7	H	3.0	-9.2	33.1	1.0	-41.2	-13.0	-28.2	
3.72	-66.0	V	3.0	-15.6	34.1	1.0	-48.7	-13.0	-35.7	
5.58	-65.9	V	3.0	-12.0	33.3	1.0	-44.3	-13.0	-31.3	
7.44	-66.1	V	3.0	-8.6	33.1	1.0	-40.6	-13.0	-27.6	
Mid Channel (1882.5MHz)										
3.77	-64.8	H	3.0	-14.6	34.1	1.0	-47.7	-13.0	-34.7	
5.65	-65.5	H	3.0	-11.3	33.3	1.0	-43.6	-13.0	-30.6	
7.53	-65.5	H	3.0	-7.9	33.0	1.0	-39.9	-13.0	-26.9	
3.77	-64.9	V	3.0	-14.5	34.1	1.0	-47.6	-13.0	-34.6	
5.65	-67.3	V	3.0	-13.2	33.3	1.0	-45.5	-13.0	-32.5	
7.53	-66.1	V	3.0	-8.5	33.0	1.0	-40.5	-13.0	-27.5	
High Channel (1905MHz)										
3.81	-64.5	H	3.0	-14.3	34.0	1.0	-47.3	-13.0	-34.3	
5.72	-65.8	H	3.0	-11.5	33.3	1.0	-43.8	-13.0	-30.8	
7.62	-66.5	H	3.0	-8.8	33.0	1.0	-40.9	-13.0	-27.9	
3.81	-64.5	V	3.0	-13.9	34.0	1.0	-47.0	-13.0	-34.0	
5.72	-65.8	V	3.0	-11.5	33.3	1.0	-43.8	-13.0	-30.8	
7.62	-66.5	V	3.0	-8.7	33.0	1.0	-40.8	-13.0	-27.8	

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LTE B25 20MHz 16QAM

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9.4.4. LTE BAND 30

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/02/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 30, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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	-49.3	-40.0	-9.3	
6.93	-66.4	H	3.0	-7.8	36.5	1.0	-43.3	-40.0	-3.3	
8.50	-69.0	H	3.0	-8.4	35.4	1.0	-42.7	-40.0	-2.7	
4.62	-65.8	V	3.0	-12.1	37.9	1.0	-49.0	-40.0	-9.0	
6.93	-66.6	V	3.0	-7.1	36.5	1.0	-42.5	-40.0	-2.5	
8.50	-69.7	V	3.0	-8.6	35.4	1.0	-43.0	-40.0	-3.0	

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LTE B30 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/02/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 30, 10MHz 16-QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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	-66.8	H	3.0	-13.0	37.9	1.0	-49.9	-40.0	-9.9	
6.93	-66.3	H	3.0	-7.7	36.5	1.0	-43.1	-40.0	-3.1	
8.50	-69.6	H	3.0	-8.3	34.9	1.0	-42.2	-40.0	-2.2	
4.62	-67.2	V	3.0	-13.5	37.9	1.0	-50.4	-40.0	-10.4	
6.93	-67.4	V	3.0	-7.9	36.5	1.0	-43.4	-40.0	-3.4	
8.50	-69.9	V	3.0	-8.4	34.9	1.0	-42.3	-40.0	-2.3	

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LTE B30 10MHz 16QAM

9.4.5. LTE BAND 41

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/02/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 41, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (2506MHz)										
5.01	-64.9	H	3.0	-12.1	33.4	1.0	-44.5	-25.0	-19.5	
7.52	-65.7	H	3.0	-8.1	33.0	1.0	-40.2	-25.0	-15.2	
10.02	-65.9	H	3.0	-6.1	32.7	1.0	-38.8	-25.0	-13.8	
5.01	-65.7	V	3.0	-12.8	33.4	1.0	-45.2	-25.0	-20.2	
7.52	-65.9	V	3.0	-8.3	33.0	1.0	-40.4	-25.0	-15.4	
10.02	-67.1	V	3.0	-6.0	32.7	1.0	-37.7	-25.0	-12.7	
Mid Channel (2593MHz)										
5.19	-65.5	H	3.0	-12.3	33.4	1.0	-44.7	-25.0	-19.7	
7.78	-67.8	H	3.0	-9.9	33.0	1.0	-41.9	-25.0	-16.9	
10.37	-65.8	H	3.0	-4.7	32.4	1.0	-36.1	-25.0	-11.1	
5.19	-66.0	V	3.0	-12.9	33.4	1.0	-45.2	-25.0	-20.2	
7.78	-66.8	V	3.0	-8.8	33.0	1.0	-40.8	-25.0	-15.8	
10.37	-66.3	V	3.0	-4.0	32.4	1.0	-35.4	-25.0	-10.4	
High Channel (2680MHz)										
5.36	-67.2	H	3.0	-13.6	33.3	1.0	-46.0	-25.0	-21.0	
8.04	-66.0	H	3.0	-7.7	33.0	1.0	-39.7	-25.0	-14.7	
10.72	-67.0	H	3.0	-5.5	32.2	1.0	-36.7	-25.0	-11.7	
5.36	-67.2	V	3.0	-13.6	33.3	1.0	-46.0	-25.0	-21.0	
8.04	-66.2	V	3.0	-7.8	33.0	1.0	-39.8	-25.0	-14.8	
10.72	-64.5	V	3.0	-2.9	32.2	1.0	-34.2	-25.0	-9.2	

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LTE B41 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/02/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 41, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (2506MHz)										
5.01	-65.4	H	3.0	-12.5	33.4	1.0	-45.0	-25.0	-20.0	
7.52	-66.5	H	3.0	-8.9	33.0	1.0	-40.9	-25.0	-15.9	
10.02	-67.4	H	3.0	-6.7	32.7	1.0	-38.3	-25.0	-13.3	
5.01	-65.9	V	3.0	-13.0	33.4	1.0	-45.4	-25.0	-20.4	
7.52	-66.3	V	3.0	-8.6	33.0	1.0	-40.7	-25.0	-15.7	
10.02	-68.1	V	3.0	-7.0	32.7	1.0	-38.7	-25.0	-13.7	
Mid Channel (2593MHz)										
5.19	-65.1	H	3.0	-11.8	33.4	1.0	-44.2	-25.0	-19.2	
7.78	-66.9	H	3.0	-8.9	33.0	1.0	-40.9	-25.0	-15.9	
10.37	-65.8	H	3.0	-4.6	32.4	1.0	-36.1	-25.0	-11.1	
5.19	-66.0	V	3.0	-12.8	33.4	1.0	-45.2	-25.0	-20.2	
7.78	-66.6	V	3.0	-8.7	33.0	1.0	-40.7	-25.0	-15.7	
10.37	-66.3	V	3.0	-4.0	32.4	1.0	-35.4	-25.0	-10.4	
High Channel (2680MHz)										
5.36	-66.6	H	3.0	-13.0	33.3	1.0	-45.3	-25.0	-20.3	
8.04	-66.4	H	3.0	-8.1	33.0	1.0	-40.1	-25.0	-15.1	
10.72	-65.8	H	3.0	-4.3	32.2	1.0	-35.5	-25.0	-10.5	
5.36	-66.7	V	3.0	-13.2	33.3	1.0	-45.5	-25.0	-20.5	
8.04	-65.0	V	3.0	-6.7	33.0	1.0	-38.7	-25.0	-13.7	
10.72	-65.1	V	3.0	-3.5	32.2	1.0	-34.8	-25.0	-9.8	

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LTE B41 20MHz 16QAM

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4031B
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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9.4.6. LTE BAND 66

UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/02/18
Test Engineer: 12491
Configuration: EUT ONLY
Mode: LTE Band 66, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1720MHz)										
3.44	-66.8	H	3.0	-17.5	38.5	1.0	-55.0	-13.0	-42.0	
5.16	-66.6	H	3.0	-13.4	38.7	1.0	-51.0	-13.0	-38.0	
6.88	-66.0	H	3.0	-9.0	38.1	1.0	-46.2	-13.0	-33.2	
3.44	-68.0	V	3.0	-18.9	38.5	1.0	-56.4	-13.0	-43.4	
5.16	-65.7	V	3.0	-12.8	38.7	1.0	-50.5	-13.0	-37.5	
6.88	-67.9	V	3.0	-11.3	38.1	1.0	-48.4	-13.0	-35.4	
Mid Channel (1745MHz)										
3.49	-67.6	H	3.0	-18.2	38.5	1.0	-55.7	-13.0	-42.7	
5.24	-65.0	H	3.0	-11.7	38.7	1.0	-49.4	-13.0	-36.4	
6.98	-66.6	H	3.0	-9.5	38.1	1.0	-46.6	-13.0	-33.6	
3.49	-69.1	V	3.0	-19.9	38.5	1.0	-57.4	-13.0	-44.4	
5.24	-66.2	V	3.0	-13.2	38.7	1.0	-50.9	-13.0	-37.9	
6.98	-64.9	V	3.0	-8.1	38.1	1.0	-45.2	-13.0	-32.2	
High Channel (1770MHz)										
3.54	-68.2	H	3.0	-18.8	38.5	1.0	-56.3	-13.0	-43.3	
5.31	-66.5	H	3.0	-13.1	38.7	1.0	-50.8	-13.0	-37.8	
7.08	-66.4	H	3.0	-9.2	38.1	1.0	-46.3	-13.0	-33.3	
3.54	-68.1	V	3.0	-18.9	38.5	1.0	-56.4	-13.0	-43.4	
5.31	-66.9	V	3.0	-13.9	38.7	1.0	-51.6	-13.0	-38.6	
7.08	-67.2	V	3.0	-10.3	38.1	1.0	-47.4	-13.0	-34.4	

Rev. 02.24.17

LTE B66 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/01/18
Test Engineer: 12491
Configuration: EUT
Mode: LTE Band 66, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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 (1720MHz)										
3.44	-66.1	H	3.0	-16.8	38.6	1.0	-54.4	-13.0	-41.4	
6.16	-63.0	H	3.0	-9.8	38.7	1.0	-47.5	-13.0	-34.5	
6.88	-63.7	H	3.0	-6.8	38.1	1.0	-43.9	-13.0	-30.9	
3.44	-64.2	V	3.0	-15.1	38.6	1.0	-52.6	-13.0	-39.6	
5.16	-63.2	V	3.0	-10.4	38.7	1.0	-48.0	-13.0	-35.0	
6.88	-63.2	V	3.0	-6.5	38.1	1.0	-43.6	-13.0	-30.6	
Mid Channel (1745MHz)										
3.49	-66.9	H	3.0	-17.5	38.6	1.0	-55.0	-13.0	-42.0	
5.24	-61.7	H	3.0	-8.5	38.7	1.0	-46.1	-13.0	-33.1	
6.98	-62.2	H	3.0	-5.2	38.1	1.0	-42.3	-13.0	-29.3	
3.49	-67.0	V	3.0	-17.8	38.6	1.0	-56.4	-13.0	-42.4	
5.24	-60.1	V	3.0	-7.2	38.7	1.0	-44.9	-13.0	-31.9	
6.98	-61.6	V	3.0	-4.7	38.1	1.0	-41.8	-13.0	-28.8	
High Channel (1770MHz)										
3.54	-66.1	H	3.0	-16.7	38.6	1.0	-54.2	-13.0	-41.2	
5.31	-63.6	H	3.0	-10.1	38.7	1.0	-47.8	-13.0	-34.8	
7.08	-63.1	H	3.0	-5.9	38.1	1.0	-43.0	-13.0	-30.0	
3.54	-66.2	V	3.0	-16.9	38.6	1.0	-54.5	-13.0	-41.5	
5.31	-62.9	V	3.0	-9.9	38.7	1.0	-47.6	-13.0	-34.6	
7.08	-63.6	V	3.0	-6.7	38.1	1.0	-43.8	-13.0	-30.8	

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LTE B66 20MHz 16QAM

END OF REPORT

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4031B
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11. SETUP PHOTOS

Please refer to 12204447-EP1V1 for setup photos

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