8.5. PEAK-TO-AVERAGE POWER RATIO

LIMIT

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

RESULT

Test was performed on Port A; full resource block (FRB) for each bandwidth was used to measure as the worst case. The results from all CCDF measurements are passed with 13dB peak-to-average ratio criteria.

8.5.1. LTE BAND 7

ID:	50820	Date:	3/13/18

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 7	10MHz / 20MHz	2525.6	2540.0	QPSK	30.81	22.83	7.98
				16QAM	30.81	21.86	8.95
	15 MHz / 15MHz	2527.5	2542.5	QPSK	30.66	22.82	7.84
				16QAM	30.54	21.81	8.73
	15MHz / 20MHz	2525.3	2542.4	QPSK	30.74	22.91	7.83
				16QAM	30.72	21.90	8.82
	20MHz / 10MHz	2530.1	2544.5	QPSK	30.68	22.83	7.85
				16QAM	30.67	21.83	8.84
	20MHz / 15MHz	2527.6	2544.7	QPSK	30.76	22.91	7.85
				16QAM	30.76	21.90	8.86
	20MHz / 20MHz	2525.1	2544.9	QPSK	30.64	22.99	7.65
				16QAM	30.57	21.97	8.60
Duty Cycle Correction Factor (dB) =							
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

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8.5.2. LTE BAND 41

ID:	10646	Date:	3/12/18

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 41 (FCC)	5MHz / 20MHz	2583.8	2595.5	QPSK	31.16	15.91	8.22
				16QAM	31.27	14.95	9.29
	10MHz / 20MHz	2583.6	2598.0	QPSK	31.19	15.85	8.31
				16QAM	31.27	14.90	9.34
	15MHz / 15MHz	2585.5	2600.5	QPSK	31.11	15.85	8.23
				16QAM	31.18	14.88	9.27
	15MHz / 20MHz	2583.3	2600.4	QPSK	31.08	15.84	8.21
				16QAM	31.16	14.90	9.23
	20MHz / 5MHz	2590.5	2602.2	QPSK	31.24	15.91	8.30
				16QAM	31.25	14.93	9.29
	20MHz / 10MHz	2588.1	2602.5	QPSK	31.24	15.85	8.36
				16QAM	31.24	14.89	9.32
	20MHz / 15MHz	2585.6	2602.7	QPSK	31.14	15.89	8.22
				16QAM	31.21	14.91	9.27
	20MHz / 20MHz	2583.1	2602.9	QPSK	31.08	15.93	8.12
				16QAM	31.06	14.9	9.13
Duty Cycle Correction Factor (dB) =			7.03				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9. RADIATED TEST RESULTS

RULE PART(S)

§2.1053, §27.53

LIMIT

§27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

TEST PROCEDURE

KDB 971168 D01 v03r01/ D02 v02r01

MODES TESTED

- LTE Band 7
- LTE Band 41

RESULTS

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9.1. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 1

9.1.1. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/23/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, QPSK UL CA 20/10

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+2524.4MHz										
5.03	-63.9	H	3.0	-10.9	38.7	1.0	-48.6	-25.0	-23.6	
7.55	-66.2	H	3.0	-8.3	37.7	1.0	-45.1	-25.0	-20.1	
10.07	-68.1	H	3.0	-7.3	36.2	1.0	-42.5	-25.0	-17.5	
5.03	-62.0	V	3.0	-9.4	38.7	1.0	-47.0	-25.0	-22.0	
7.55	-65.6	V	3.0	-8.0	37.7	1.0	-44.7	-25.0	-19.7	
10.07	-67.4	V	3.0	-6.6	36.2	1.0	-41.8	-25.0	-16.8	
Mid Channel (2530.1MHz)+2544.5MHz										
5.07	-64.0	H	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.61	-66.7	H	3.0	-8.8	37.7	1.0	-45.5	-25.0	-20.5	
10.15	-67.0	H	3.0	-6.1	36.2	1.0	-41.3	-25.0	-16.3	
5.07	-63.9	V	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.61	-66.0	V	3.0	-8.3	37.7	1.0	-45.0	-25.0	-20.0	
10.15	-67.9	V	3.0	-7.0	36.2	1.0	-42.2	-25.0	-17.2	
High Channel (2550.1MHz)+2564.5MHz										
5.11	-65.1	H	3.0	-12.0	38.7	1.0	-49.7	-25.0	-24.7	
7.67	-67.0	H	3.0	-9.0	37.6	1.0	-45.6	-25.0	-20.6	
10.23	-67.2	H	3.0	-6.2	36.3	1.0	-41.5	-25.0	-16.5	
5.11	-63.0	V	3.0	-10.2	38.7	1.0	-47.9	-25.0	-22.9	
7.67	-65.3	V	3.0	-7.5	37.6	1.0	-44.2	-25.0	-19.2	
10.23	-66.5	V	3.0	-5.5	36.3	1.0	-40.8	-25.0	-15.8	

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LTE B7 20MHz + 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/23/18
Test Engineer: 10649
Configuration: EUT Only
Mode: LTE Band 7, 16QAM UL CA 20/10

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+2524.4MHz 1-99 1-0										
5.03	-63.8	H	3.0	-10.9	38.7	1.0	-48.6	-25.0	-23.6	
7.55	-66.0	H	3.0	-8.1	37.7	1.0	-44.8	-25.0	-19.8	
10.07	-67.3	H	3.0	-6.4	36.2	1.0	-41.6	-25.0	-16.6	
5.03	-63.2	V	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.55	-66.0	V	3.0	-8.4	37.7	1.0	-45.1	-25.0	-20.1	
10.07	-67.8	V	3.0	-7.0	36.2	1.0	-42.2	-25.0	-17.2	
Mid Channel (2530.1MHz)+2544.5MHz										
5.07	-63.9	H	3.0	-10.9	38.7	1.0	-48.5	-25.0	-23.5	
7.61	-66.5	H	3.0	-8.6	37.7	1.0	-45.2	-25.0	-20.2	
10.15	-67.5	H	3.0	-6.5	36.2	1.0	-41.7	-25.0	-16.7	
5.07	-64.0	V	3.0	-11.2	38.7	1.0	-48.9	-25.0	-23.9	
7.61	-66.3	V	3.0	-8.6	37.7	1.0	-45.3	-25.0	-20.3	
10.15	-67.5	V	3.0	-6.6	36.2	1.0	-41.8	-25.0	-16.8	
High Channel (2550.1MHz)+2564.5MHz										
5.11	-62.5	H	3.0	-9.4	38.7	1.0	-47.1	-25.0	-22.1	
7.67	-66.0	H	3.0	-8.0	37.6	1.0	-44.6	-25.0	-19.6	
10.23	-66.9	H	3.0	-5.9	36.3	1.0	-41.2	-25.0	-16.2	
5.11	-63.7	V	3.0	-10.9	38.7	1.0	-48.6	-25.0	-23.6	
7.67	-66.3	V	3.0	-8.5	37.6	1.0	-45.2	-25.0	-20.2	
10.23	-67.4	V	3.0	-6.4	36.3	1.0	-41.7	-25.0	-16.7	

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LTE B7 20MHz + 10MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/23/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, QPSK UL CA 20/20

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+ 2529.8MHz										
5.04	-63.6	H	3.0	-15.5	36.1	1.0	-50.6	-25.0	-25.6	
7.56	-66.2	H	3.0	-16.5	36.3	1.0	-51.8	-25.0	-26.8	
10.08	-68.6	H	3.0	-13.2	33.4	1.0	-45.7	-25.0	-20.7	
5.04	-63.3	V	3.0	-13.8	36.3	1.0	-49.0	-25.0	-24.0	
7.56	-66.3	V	3.0	-12.7	34.8	1.0	-46.5	-25.0	-21.5	
10.08	-67.4	V	3.0	-11.4	32.1	1.0	-42.4	-25.0	-17.4	
Mid Channel (2525.1MHz)+2544.9MHz										
5.07	-63.5	H	3.0	-12.5	36.0	1.0	-47.4	-25.0	-22.4	
7.61	-66.9	H	3.0	-13.9	35.2	1.0	-48.1	-25.0	-23.1	
10.14	-68.3	H	3.0	-10.0	32.0	1.0	-41.0	-25.0	-16.0	
5.07	-64.7	V	3.0	-17.0	36.1	1.0	-52.1	-25.0	-27.1	
7.61	-66.2	V	3.0	-8.5	37.7	1.0	-45.2	-25.0	-20.2	
10.14	-67.3	V	3.0	-6.4	36.2	1.0	-41.6	-25.0	-16.6	
High Channel (2540.2MHz)+2560MHz										
5.10	-64.5	H	3.0	-15.4	36.2	1.0	-50.6	-25.0	-25.6	
7.65	-65.8	H	3.0	-15.2	36.0	1.0	-50.2	-25.0	-25.2	
10.20	-67.4	H	3.0	-11.1	32.0	1.0	-42.2	-25.0	-17.2	
5.10	-64.4	V	3.0	-17.3	36.3	1.0	-52.6	-25.0	-27.6	
7.65	-66.6	V	3.0	-15.3	35.8	1.0	-50.2	-25.0	-25.2	
10.20	-66.8	V	3.0	-5.8	36.3	1.0	-41.0	-25.0	-16.0	

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LTE B7 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/23/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, 16QAM UL CA 20/20

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+ 2529.8MHz										
5.04	-61.7	H	3.0	-8.8	38.7	1.0	-46.5	-25.0	-21.5	
7.56	-66.4	H	3.0	-8.6	37.7	1.0	-45.3	-25.0	-20.3	
10.08	-68.5	H	3.0	-7.6	36.2	1.0	-42.8	-25.0	-17.8	
5.04	-64.1	V	3.0	-11.4	38.7	1.0	-49.1	-25.0	-24.1	
7.56	-66.3	V	3.0	-8.6	37.7	1.0	-45.3	-25.0	-20.3	
10.08	-67.0	V	3.0	-6.2	36.2	1.0	-41.4	-25.0	-16.4	
Mid Channel (2525.1MHz)+2544.9MHz										
5.07	-63.3	H	3.0	-10.3	38.7	1.0	-47.9	-25.0	-22.9	
7.61	-66.2	H	3.0	-8.3	37.7	1.0	-45.0	-25.0	-20.0	
10.14	-66.2	H	3.0	-5.3	36.2	1.0	-40.5	-25.0	-15.5	
5.07	-62.3	V	3.0	-9.6	38.7	1.0	-47.3	-25.0	-22.3	
7.61	-65.7	V	3.0	-8.0	37.7	1.0	-44.7	-25.0	-19.7	
10.14	-67.5	V	3.0	-6.6	36.2	1.0	-41.8	-25.0	-16.8	
High Channel (2540.2MHz)+2560Mhz										
5.10	-62.9	H	3.0	-9.8	38.7	1.0	-47.5	-25.0	-22.5	
7.65	-66.2	H	3.0	-8.2	37.7	1.0	-44.8	-25.0	-19.8	
10.20	-67.0	H	3.0	-6.0	36.3	1.0	-41.3	-25.0	-16.3	
5.10	-64.0	V	3.0	-11.3	38.7	1.0	-48.9	-25.0	-23.9	
7.65	-66.0	V	3.0	-8.2	37.7	1.0	-44.8	-25.0	-19.8	
10.20	-67.7	V	3.0	-6.7	36.3	1.0	-42.0	-25.0	-17.0	

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LTE B7 20MHz + 20MHz 16QAM

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9.1.2. LTE BAND 41

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/23/18
Test Engineer: 10649
Configuration: EUT Only
Mode: LTE Band 41, QPSK UL CA 20/5

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

Chamber	Pre-amplifer	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 (2506MHz) +2517.7MHz 1-99, 1-0										
5.02	-66.1	H	3.0	-13.2	38.7	1.0	-50.9	-25.0	-25.9	
7.54	-69.6	H	3.0	-11.7	37.7	1.0	-48.5	-25.0	-23.5	
10.47	-72.1	H	3.0	-10.9	36.4	1.0	-46.4	-25.0	-21.4	
5.02	-67.0	V	3.0	-14.4	38.7	1.0	-52.1	-25.0	-27.1	
7.54	-70.3	V	3.0	-12.7	37.7	1.0	-49.4	-25.0	-24.4	
10.47	-70.9	V	3.0	-9.6	36.4	1.0	-45.1	-25.0	-20.1	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.19	-65.7	H	3.0	-12.4	38.7	1.0	-50.1	-25.0	-25.1	
7.80	-69.3	H	3.0	-11.1	37.6	1.0	-47.7	-25.0	-22.7	
10.39	-72.5	H	3.0	-11.4	36.4	1.0	-46.7	-25.0	-21.7	
5.19	-65.9	V	3.0	-13.0	38.7	1.0	-50.7	-25.0	-25.7	
7.80	-67.8	V	3.0	-9.8	37.6	1.0	-46.4	-25.0	-21.4	
10.39	-71.5	V	3.0	-10.3	36.4	1.0	-45.6	-25.0	-20.6	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.36	-67.7	H	3.0	-14.1	38.6	1.0	-51.7	-25.0	-26.7	
8.04	-69.6	H	3.0	-11.2	37.4	1.0	-47.6	-25.0	-22.6	
10.72	-71.8	H	3.0	-10.4	36.6	1.0	-46.0	-25.0	-21.0	
5.36	-68.4	V	3.0	-15.1	38.6	1.0	-52.8	-25.0	-27.8	
8.04	-70.0	V	3.0	-11.7	37.4	1.0	-48.1	-25.0	-23.1	
10.72	-72.4	V	3.0	-10.8	36.6	1.0	-46.4	-25.0	-21.4	

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LTE B41 20MHz + 5MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/22/18
Test Engineer: 10646
Configuration: EUT only
Mode: LTE Band 41, 16QAM UL CA 20/5

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

Chamber	Pre-amplifer	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 (2506MHz) +2517.7MHz 1-99, 1-0										
5.02	-66.6	H	3.0	-13.7	38.7	1.0	-51.3	-25.0	-26.3	
7.54	-69.0	H	3.0	-11.2	37.7	1.0	-47.9	-25.0	-22.9	
10.05	-72.0	H	3.0	-11.2	36.2	1.0	-46.3	-25.0	-21.3	
5.02	-66.1	V	3.0	-13.5	38.7	1.0	-51.1	-25.0	-26.1	
7.55	-62.8	V	3.0	-5.2	37.7	1.0	-41.9	-25.0	-16.9	
10.05	-71.7	V	3.0	-10.9	36.2	1.0	-46.1	-25.0	-21.1	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.18	-65.2	H	3.0	-12.0	38.7	1.0	-49.6	-25.0	-24.6	
7.79	-69.7	H	3.0	-11.6	37.6	1.0	-48.1	-25.0	-23.1	
10.39	-71.2	H	3.0	-10.1	36.4	1.0	-45.4	-25.0	-20.4	
5.18	-68.9	V	3.0	-16.0	38.7	1.0	-53.7	-25.0	-28.7	
7.79	-68.8	V	3.0	-10.9	37.6	1.0	-47.5	-25.0	-22.5	
10.39	-71.8	V	3.0	-10.6	36.4	1.0	-45.9	-25.0	-20.9	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.36	-67.0	H	3.0	-13.4	38.6	1.0	-51.0	-25.0	-26.0	
8.04	-69.0	H	3.0	-10.6	37.4	1.0	-47.0	-25.0	-22.0	
10.72	-71.1	H	3.0	-9.7	36.6	1.0	-45.2	-25.0	-20.2	
5.36	-67.8	V	3.0	-14.5	38.6	1.0	-52.1	-25.0	-27.1	
8.04	-68.3	V	3.0	-10.1	37.4	1.0	-46.5	-25.0	-21.5	
10.72	-72.8	V	3.0	-11.3	36.6	1.0	-46.9	-25.0	-21.9	

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LTE B41 20MHz + 5MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/22/18
Test Engineer: 10649
Configuration: EUT ONLY
Mode: LTE Band 41, QPSK UL CA 20/20

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

Chamber	Pre-amplifer	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 (2506MHz) + 2525.8MHz 1-99 1-0										
5.03	-63.2	H	3.0	-10.3	38.7	1.0	-48.0	-25.0	-23.0	
7.55	-66.0	H	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.06	-66.4	H	3.0	-5.6	36.2	1.0	-40.7	-25.0	-15.7	
5.03	-62.9	V	3.0	-10.3	38.7	1.0	-48.0	-25.0	-23.0	
7.55	-65.2	V	3.0	-7.6	37.7	1.0	-44.3	-25.0	-19.3	
10.06	-67.4	V	3.0	-6.5	36.2	1.0	-41.7	-25.0	-16.7	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.19	-62.4	H	3.0	-9.1	38.7	1.0	-46.8	-25.0	-21.8	
7.78	-64.4	H	3.0	-6.3	37.6	1.0	-42.9	-25.0	-17.9	
10.37	-65.5	H	3.0	-4.4	36.4	1.0	-39.7	-25.0	-14.7	
5.19	-62.9	V	3.0	-10.0	38.7	1.0	-47.7	-25.0	-22.7	
7.78	-64.1	V	3.0	-6.1	37.6	1.0	-42.7	-25.0	-17.7	
10.37	-66.1	V	3.0	-4.9	36.4	1.0	-40.2	-25.0	-15.2	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.34	-63.5	H	3.0	-9.9	38.6	1.0	-47.6	-25.0	-22.6	
8.01	-64.4	H	3.0	-6.0	37.4	1.0	-42.4	-25.0	-17.4	
10.68	-66.9	H	3.0	-5.5	36.6	1.0	-41.1	-25.0	-16.1	
5.34	-65.8	V	3.0	-12.5	38.6	1.0	-50.1	-25.0	-25.1	
8.01	-65.3	V	3.0	-7.1	37.4	1.0	-43.5	-25.0	-18.5	
10.68	-66.8	V	3.0	-5.3	36.6	1.0	-40.8	-25.0	-15.8	

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LTE B41 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/22/18
Test Engineer: 10649
Configuration: EUT ONLY
Mode: LTE Band 41, 16QAM UL CA 20/20

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

Chamber	Pre-amplifer	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 (2506MHz) + 2525.8MHz 1-99 1-0										
5.03	-63.2	H	3.0	-10.3	38.7	1.0	-48.0	-25.0	-23.0	
7.55	-65.8	H	3.0	-8.0	37.7	1.0	-44.7	-25.0	-19.7	
10.06	-66.6	H	3.0	-5.7	36.2	1.0	-40.9	-25.0	-15.9	
5.03	-63.5	V	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.55	-65.8	V	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.06	-66.7	V	3.0	-5.8	36.2	1.0	-41.0	-25.0	-16.0	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.19	-63.3	H	3.0	-10.1	38.7	1.0	-47.7	-25.0	-22.7	
7.78	-65.1	H	3.0	-6.9	37.6	1.0	-43.5	-25.0	-18.5	
10.37	-65.8	H	3.0	-4.7	36.4	1.0	-40.1	-25.0	-15.1	
5.19	-62.6	V	3.0	-9.6	38.7	1.0	-47.3	-25.0	-22.3	
7.78	-65.3	V	3.0	-7.4	37.6	1.0	-44.0	-25.0	-19.0	
10.37	-66.6	V	3.0	-5.4	36.4	1.0	-40.7	-25.0	-15.7	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.34	-65.1	H	3.0	-11.5	38.6	1.0	-49.1	-25.0	-24.1	
8.01	-64.6	H	3.0	-6.2	37.4	1.0	-42.6	-25.0	-17.6	
10.68	-66.0	H	3.0	-4.7	36.6	1.0	-40.2	-25.0	-15.2	
5.34	-63.9	V	3.0	-10.6	38.6	1.0	-48.3	-25.0	-23.3	
8.01	-65.4	V	3.0	-7.1	37.4	1.0	-43.6	-25.0	-18.6	
10.68	-66.4	V	3.0	-4.9	36.6	1.0	-40.5	-25.0	-15.5	

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LTE B41 20MHz + 20MHz 16QAM

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9.2. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 2

9.2.1. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/27/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, QPSK UL CA 20/10

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber: 3m Chamber E | Pre-amplifer: 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)+2524.4MHz										
5.03	-62.4	H	3.0	-9.4	38.7	1.0	-47.1	-25.0	-22.1	
7.55	-66.3	H	3.0	-8.5	37.7	1.0	-45.2	-25.0	-20.2	
10.07	-67.0	H	3.0	-6.1	36.2	1.0	-41.3	-25.0	-16.3	
5.03	-63.4	V	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.55	-66.5	V	3.0	-8.8	37.7	1.0	-45.6	-25.0	-20.6	
10.07	-68.5	V	3.0	-7.6	36.2	1.0	-42.8	-25.0	-17.8	
Mid Channel (2530.1MHz)+2544.5MHz										
5.07	-64.6	H	3.0	-11.6	38.7	1.0	-49.3	-25.0	-24.3	
7.61	-65.6	H	3.0	-7.7	37.7	1.0	-44.4	-25.0	-19.4	
10.15	-67.6	H	3.0	-6.7	36.2	1.0	-41.9	-25.0	-16.9	
5.07	-63.8	V	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.61	-67.1	V	3.0	-9.4	37.7	1.0	-46.1	-25.0	-21.1	
10.15	-68.3	V	3.0	-7.4	36.2	1.0	-42.6	-25.0	-17.6	
High Channel (2550.1MHz)+2564.5MHz										
5.11	-63.8	H	3.0	-10.7	38.7	1.0	-48.4	-25.0	-23.4	
7.67	-65.6	H	3.0	-7.6	37.6	1.0	-44.2	-25.0	-19.2	
10.23	-67.1	H	3.0	-6.1	36.3	1.0	-41.4	-25.0	-16.4	
5.11	-64.0	V	3.0	-11.2	38.7	1.0	-48.9	-25.0	-23.9	
7.67	-66.5	V	3.0	-8.7	37.6	1.0	-45.3	-25.0	-20.3	
10.23	-67.9	V	3.0	-6.8	36.3	1.0	-42.1	-25.0	-17.1	

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LTE B7 20MHz + 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/27/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, 16QAM UL CA 20/10

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber: 3m Chamber E | Pre-amplifer: 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)+2524.4MHz 1-99 1-0										
5.03	-64.4	H	3.0	-11.5	38.7	1.0	-49.1	-25.0	-24.1	
7.55	-66.8	H	3.0	-8.9	37.7	1.0	-45.7	-25.0	-20.7	
10.07	-67.4	H	3.0	-6.8	36.2	1.0	-41.7	-25.0	-16.7	
5.03	-63.2	V	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.55	-66.2	V	3.0	-8.5	37.7	1.0	-45.3	-25.0	-20.3	
10.07	-67.5	V	3.0	-6.6	36.2	1.0	-41.8	-25.0	-16.8	
Mid Channel (2530.1MHz)+2544.5MHz										
5.07	-64.3	H	3.0	-11.2	38.7	1.0	-48.9	-25.0	-23.9	
7.61	-67.2	H	3.0	-9.3	37.7	1.0	-46.0	-25.0	-21.0	
10.15	-67.5	H	3.0	-6.6	36.2	1.0	-41.8	-25.0	-16.8	
5.07	-64.4	V	3.0	-11.7	38.7	1.0	-49.4	-25.0	-24.4	
7.61	-66.5	V	3.0	-8.8	37.7	1.0	-45.4	-25.0	-20.4	
10.15	-67.3	V	3.0	-6.4	36.2	1.0	-41.6	-25.0	-16.6	
High Channel (2550.1MHz)+2564.5MHz										
5.11	-63.6	H	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.67	-66.1	H	3.0	-8.1	37.6	1.0	-44.8	-25.0	-19.8	
10.23	-66.4	H	3.0	-5.4	36.3	1.0	-40.7	-25.0	-15.7	
5.11	-63.5	V	3.0	-10.7	38.7	1.0	-48.4	-25.0	-23.4	
7.67	-66.4	V	3.0	-8.6	37.6	1.0	-45.2	-25.0	-20.2	
10.23	-67.7	V	3.0	-6.7	36.3	1.0	-42.0	-25.0	-17.0	

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LTE B7 20MHz + 10MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/27/18
Test Engineer: 10649
Configuration: EUT Only
Mode: LTE Band 7, QPSK UL CA 20/20

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber: 3m Chamber E | Pre-amplifer: 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)+ 2529.8MHz										
5.04	-63.4	H	3.0	-15.3	36.1	1.0	-50.4	-25.0	-25.4	
7.56	-65.4	H	3.0	-15.7	36.3	1.0	-50.9	-25.0	-25.9	
10.08	-66.9	H	3.0	-11.5	33.4	1.0	-43.9	-25.0	-18.9	
5.04	-63.0	V	3.0	-13.5	36.3	1.0	-48.7	-25.0	-23.7	
7.56	-65.0	V	3.0	-11.4	34.8	1.0	-45.2	-25.0	-20.2	
10.08	-66.1	V	3.0	-10.1	32.1	1.0	-41.1	-25.0	-16.1	
Mid Channel (2525.1MHz)+2544.9MHz										
5.07	-64.1	H	3.0	-13.1	36.0	1.0	-48.1	-25.0	-23.1	
7.61	-66.2	H	3.0	-13.1	35.2	1.0	-47.3	-25.0	-22.3	
10.14	-66.6	H	3.0	-10.3	32.0	1.0	-41.3	-25.0	-16.3	
5.07	-64.5	V	3.0	-16.8	36.1	1.0	-51.9	-25.0	-26.9	
7.61	-66.7	V	3.0	-9.8	37.7	1.0	-45.7	-25.0	-20.7	
10.14	-67.2	V	3.0	-6.3	36.2	1.0	-41.5	-25.0	-16.5	
High Channel (2540.2MHz)+2560MHz										
5.10	-62.9	H	3.0	-13.8	36.2	1.0	-49.0	-25.0	-24.0	
7.65	-65.0	H	3.0	-14.3	36.0	1.0	-49.3	-25.0	-24.3	
10.20	-65.9	H	3.0	-9.6	32.0	1.0	-40.6	-25.0	-15.6	
5.10	-64.7	V	3.0	-17.7	36.3	1.0	-52.9	-25.0	-27.9	
7.65	-66.3	V	3.0	-15.1	35.8	1.0	-49.9	-25.0	-24.9	
10.20	-66.6	V	3.0	-5.7	36.3	1.0	-40.9	-25.0	-15.9	

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LTE B7 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/27/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, 16QAM UL CA 20/20

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber: 3m Chamber E | Pre-amplifer: 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)+ 2529.8MHz										
5.04	-64.3	H	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.56	-66.1	H	3.0	-8.3	37.7	1.0	-45.0	-25.0	-20.0	
10.08	-67.1	H	3.0	-6.2	36.2	1.0	-41.4	-25.0	-16.4	
5.04	-62.9	V	3.0	-10.2	38.7	1.0	-47.9	-25.0	-22.9	
7.56	-65.7	V	3.0	-8.1	37.7	1.0	-44.8	-25.0	-19.8	
10.08	-67.9	V	3.0	-7.0	36.2	1.0	-42.2	-25.0	-17.2	
Mid Channel (2525.1MHz)+2544.9MHz										
5.07	-63.8	H	3.0	-10.7	38.7	1.0	-48.4	-25.0	-23.4	
7.61	-66.3	H	3.0	-8.3	37.7	1.0	-45.0	-25.0	-20.0	
10.14	-67.2	H	3.0	-6.3	36.2	1.0	-41.5	-25.0	-16.5	
5.07	-63.3	V	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.61	-66.6	V	3.0	-8.8	37.7	1.0	-45.5	-25.0	-20.5	
10.14	-67.1	V	3.0	-6.2	36.2	1.0	-41.4	-25.0	-16.4	
High Channel (2540.2MHz)+2560Mhz										
5.10	-64.0	H	3.0	-10.9	38.7	1.0	-48.6	-25.0	-23.6	
7.65	-66.6	H	3.0	-8.6	37.7	1.0	-45.2	-25.0	-20.2	
10.20	-67.8	H	3.0	-6.8	36.3	1.0	-42.1	-25.0	-17.1	
5.10	-63.8	V	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.65	-65.7	V	3.0	-7.9	37.7	1.0	-44.6	-25.0	-19.6	
10.20	-66.0	V	3.0	-5.0	36.3	1.0	-40.2	-25.0	-15.2	

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LTE B7 20MHz + 20MHz 16QAM

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9.2.2. LTE BAND 41

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 41, QPSK UL CA 20/5

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

Chamber	Pre-amplifer	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 (2506MHz) +2517.7MHz										
5.02	-63.1	H	3.0	-10.2	38.7	1.0	-47.9	-25.0	-22.9	
7.54	-67.2	H	3.0	-9.4	37.7	1.0	-46.1	-25.0	-21.1	
10.47	-67.1	H	3.0	-5.9	36.4	1.0	-41.3	-25.0	-16.3	
5.02	-63.6	V	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.54	-66.4	V	3.0	-8.8	37.7	1.0	-45.5	-25.0	-20.5	
10.47	-67.8	V	3.0	-6.5	36.4	1.0	-41.9	-25.0	-16.9	
Mid Channel (2590.5MHz)+2602.2MHz										
5.19	-63.9	H	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.80	-66.3	H	3.0	-8.1	37.6	1.0	-44.7	-25.0	-19.7	
10.39	-66.3	H	3.0	-5.2	36.4	1.0	-40.6	-25.0	-15.6	
5.19	-64.6	V	3.0	-11.6	38.7	1.0	-49.3	-25.0	-24.3	
7.80	-65.8	V	3.0	-7.9	37.6	1.0	-44.4	-25.0	-19.4	
10.39	-67.5	V	3.0	-6.3	36.4	1.0	-41.7	-25.0	-16.7	
High Channel (2675MHz)+2686.7MHz										
5.36	-64.9	H	3.0	-11.3	38.6	1.0	-48.9	-25.0	-23.9	
8.04	-65.3	H	3.0	-6.9	37.4	1.0	-43.3	-25.0	-18.3	
10.72	-68.1	H	3.0	-6.7	36.6	1.0	-42.3	-25.0	-17.3	
5.36	-64.1	V	3.0	-10.8	38.6	1.0	-48.4	-25.0	-23.4	
8.04	-66.1	V	3.0	-7.8	37.4	1.0	-44.2	-25.0	-19.2	
10.72	-67.1	V	3.0	-5.5	36.6	1.0	-41.1	-25.0	-16.1	

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LTE B41 20MHz + 5MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10641
Configuration: EUT only
Mode: LTE Band 41, 16QAM UL CA 20/5

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

Chamber	Pre-amplifer	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 (2506MHz) +2517.7MHz										
5.02	-64.9	H	3.0	-12.0	38.7	1.0	-49.7	-25.0	-24.7	
7.54	-65.5	H	3.0	-7.7	37.7	1.0	-44.4	-25.0	-19.4	
10.05	-67.2	H	3.0	-6.4	36.2	1.0	-41.5	-25.0	-16.5	
5.02	-63.6	V	3.0	-10.9	38.7	1.0	-48.6	-25.0	-23.6	
7.55	-65.9	V	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.05	-67.1	V	3.0	-6.3	36.2	1.0	-41.4	-25.0	-16.4	
Mid Channel (2590.5MHz)+2602.2MHz										
5.18	-64.7	H	3.0	-11.5	38.7	1.0	-49.2	-25.0	-24.2	
7.79	-65.7	H	3.0	-7.6	37.6	1.0	-44.2	-25.0	-19.2	
10.39	-67.2	H	3.0	-6.1	36.4	1.0	-41.5	-25.0	-16.5	
5.18	-63.1	V	3.0	-10.2	38.7	1.0	-47.9	-25.0	-22.9	
7.79	-65.1	V	3.0	-7.1	37.6	1.0	-43.7	-25.0	-18.7	
10.39	-66.7	V	3.0	-5.5	36.4	1.0	-40.9	-25.0	-15.9	
High Channel (2675MHz)+2686.7MHz										
5.36	-65.7	H	3.0	-12.0	38.6	1.0	-49.7	-25.0	-24.7	
8.04	-65.5	H	3.0	-7.0	37.4	1.0	-43.4	-25.0	-18.4	
10.72	-66.2	H	3.0	-4.8	36.6	1.0	-40.4	-25.0	-15.4	
5.36	-67.2	V	3.0	-13.9	38.6	1.0	-51.5	-25.0	-26.5	
8.04	-67.1	V	3.0	-8.9	37.4	1.0	-45.3	-25.0	-20.3	
10.72	-68.1	V	3.0	-6.5	36.6	1.0	-42.1	-25.0	-17.1	

Rev. 05.21.15

LTE B41 20MHz + 5MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10641
Configuration: EUT ONLY
Mode: LTE Band 41, QPSK UL CA 20/20

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

Chamber	Pre-amplifer	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 (2506MHz) + 2525.8MHz										
5.03	-63.7	H	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.55	-66.7	H	3.0	-8.9	37.7	1.0	-45.6	-25.0	-20.6	
10.06	-67.4	H	3.0	-6.5	36.2	1.0	-41.7	-25.0	-16.7	
5.03	-63.1	V	3.0	-10.4	38.7	1.0	-48.1	-25.0	-23.1	
7.55	-65.5	V	3.0	-7.8	37.7	1.0	-44.5	-25.0	-19.5	
10.06	-67.6	V	3.0	-6.7	36.2	1.0	-41.9	-25.0	-16.9	
Mid Channel (2583.1MHz) + 2602.9MHz										
5.19	-64.4	H	3.0	-11.2	38.7	1.0	-48.9	-25.0	-23.9	
7.78	-66.6	H	3.0	-8.5	37.6	1.0	-45.0	-25.0	-20.0	
10.37	-66.9	H	3.0	-5.8	36.4	1.0	-41.1	-25.0	-16.1	
5.19	-63.5	V	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.78	-66.0	V	3.0	-8.1	37.6	1.0	-44.7	-25.0	-19.7	
10.37	-66.8	V	3.0	-5.6	36.4	1.0	-41.0	-25.0	-16.0	
High Channel (2660.2MHz) + 2680MHz										
5.34	-63.5	H	3.0	-9.9	38.6	1.0	-47.5	-25.0	-22.5	
8.01	-65.4	H	3.0	-7.0	37.4	1.0	-43.4	-25.0	-18.4	
10.68	-67.0	H	3.0	-5.6	36.6	1.0	-41.2	-25.0	-16.2	
5.34	-64.5	V	3.0	-11.3	38.6	1.0	-48.9	-25.0	-23.9	
8.01	-66.2	V	3.0	-8.0	37.4	1.0	-44.4	-25.0	-19.4	
10.68	-66.6	V	3.0	-5.1	36.6	1.0	-40.6	-25.0	-15.6	

Rev. 05.21.15

LTE B41 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10641
Configuration: EUT ONLY
Mode: LTE Band 41, 16QAM UL CA 20/20

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

Chamber	Pre-amplifer	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 (2506MHz) + 2525.8MHz										
5.03	-64.2	H	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.55	-66.3	H	3.0	-8.4	37.7	1.0	-45.1	-25.0	-20.1	
10.06	-66.5	H	3.0	-5.6	36.2	1.0	-40.8	-25.0	-15.8	
5.03	-65.4	V	3.0	-12.8	38.7	1.0	-50.4	-25.0	-25.4	
7.55	-67.1	V	3.0	-9.5	37.7	1.0	-46.2	-25.0	-21.2	
10.06	-67.4	V	3.0	-6.6	36.2	1.0	-41.7	-25.0	-16.7	
Mid Channel (2583.1MHz) + 2602.9MHz										
5.19	-65.0	H	3.0	-11.8	38.7	1.0	-49.5	-25.0	-24.5	
7.78	-66.3	H	3.0	-8.1	37.6	1.0	-44.7	-25.0	-19.7	
10.37	-67.8	H	3.0	-6.7	36.4	1.0	-42.1	-25.0	-17.1	
5.19	-64.6	V	3.0	-11.6	38.7	1.0	-49.3	-25.0	-24.3	
7.78	-66.8	V	3.0	-8.9	37.6	1.0	-45.4	-25.0	-20.4	
10.37	-67.0	V	3.0	-5.8	36.4	1.0	-41.2	-25.0	-16.2	
High Channel (2660.2MHz) + 2680MHz										
5.34	-64.3	H	3.0	-10.7	38.6	1.0	-48.3	-25.0	-23.3	
8.01	-65.2	H	3.0	-6.8	37.4	1.0	-43.2	-25.0	-18.2	
10.68	-67.6	H	3.0	-6.3	36.6	1.0	-41.8	-25.0	-16.8	
5.34	-64.4	V	3.0	-11.1	38.6	1.0	-48.7	-25.0	-23.7	
8.01	-66.1	V	3.0	-7.9	37.4	1.0	-44.3	-25.0	-19.3	
10.68	-67.0	V	3.0	-5.5	36.6	1.0	-41.0	-25.0	-16.0	

Rev. 05.21.15

LTE B41 20MHz + 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 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, QPSK UL CA 20/10

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+2524.4MHz										
5.03	-63.6	H	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.55	-65.0	H	3.0	-7.1	37.7	1.0	-43.8	-25.0	-18.8	
10.07	-67.7	H	3.0	-6.8	36.2	1.0	-42.0	-25.0	-17.0	
5.03	-64.1	V	3.0	-11.5	38.7	1.0	-49.2	-25.0	-24.2	
7.55	-65.4	V	3.0	-7.8	37.7	1.0	-44.5	-25.0	-19.5	
10.07	-68.5	V	3.0	-7.7	36.2	1.0	-42.9	-25.0	-17.9	
Mid Channel (2530.1MHz)+2544.5MHz										
5.07	-63.7	H	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.61	-66.4	H	3.0	-8.5	37.7	1.0	-45.2	-25.0	-20.2	
10.15	-68.1	H	3.0	-7.1	36.2	1.0	-42.3	-25.0	-17.3	
5.07	-64.3	V	3.0	-11.5	38.7	1.0	-49.2	-25.0	-24.2	
7.61	-65.8	V	3.0	-8.1	37.7	1.0	-44.8	-25.0	-19.8	
10.15	-67.5	V	3.0	-6.6	36.2	1.0	-41.8	-25.0	-16.8	
High Channel (2550.1MHz)+2564.5MHz										
5.11	-62.7	H	3.0	-9.6	38.7	1.0	-47.3	-25.0	-22.3	
7.67	-66.1	H	3.0	-8.1	37.6	1.0	-44.7	-25.0	-19.7	
10.23	-67.8	H	3.0	-6.8	36.3	1.0	-42.1	-25.0	-17.1	
5.11	-64.3	V	3.0	-11.5	38.7	1.0	-49.2	-25.0	-24.2	
7.67	-65.2	V	3.0	-7.4	37.6	1.0	-44.0	-25.0	-19.0	
10.23	-66.7	V	3.0	-5.7	36.3	1.0	-40.9	-25.0	-15.9	

Rev. 05.21.15

LTE B7 20MHz + 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, 16QAM UL CA 20/10

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+2524.4MHz 1-99 1-0										
5.03	-64.0	H	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.55	-66.6	H	3.0	-8.7	37.7	1.0	-45.4	-25.0	-20.4	
10.07	-66.3	H	3.0	-5.4	36.2	1.0	-40.6	-25.0	-15.6	
5.03	-64.0	V	3.0	-11.4	38.7	1.0	-49.0	-25.0	-24.0	
7.55	-65.6	V	3.0	-8.0	37.7	1.0	-44.7	-25.0	-19.7	
10.07	-67.8	V	3.0	-6.9	36.2	1.0	-42.1	-25.0	-17.1	
Mid Channel (2530.1MHz)+2544.5MHz										
5.07	-63.2	H	3.0	-10.2	38.7	1.0	-47.9	-25.0	-22.9	
7.61	-65.3	H	3.0	-7.4	37.7	1.0	-44.1	-25.0	-19.1	
10.15	-67.2	H	3.0	-6.3	36.2	1.0	-41.5	-25.0	-16.5	
5.07	-64.1	V	3.0	-11.4	38.7	1.0	-49.1	-25.0	-24.1	
7.61	-65.8	V	3.0	-8.1	37.7	1.0	-44.8	-25.0	-19.8	
10.15	-67.6	V	3.0	-6.7	36.2	1.0	-41.9	-25.0	-16.9	
High Channel (2550.1MHz)+2564.5MHz										
5.11	-63.6	H	3.0	-10.6	38.7	1.0	-48.2	-25.0	-23.2	
7.67	-66.1	H	3.0	-8.1	37.6	1.0	-44.7	-25.0	-19.7	
10.23	-66.1	H	3.0	-5.1	36.3	1.0	-40.3	-25.0	-15.3	
5.11	-63.4	V	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.67	-65.8	V	3.0	-8.0	37.6	1.0	-44.6	-25.0	-19.6	
10.23	-66.4	V	3.0	-5.4	36.3	1.0	-40.7	-25.0	-15.7	

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LTE B7 20MHz + 10MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, QPSK UL CA 20/20

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+ 2529.8MHz										
5.04	-62.6	H	3.0	-14.6	36.1	1.0	-49.6	-25.0	-24.6	
7.56	-65.6	H	3.0	-15.9	36.3	1.0	-51.2	-25.0	-26.2	
10.08	-67.5	H	3.0	-12.1	33.4	1.0	-44.6	-25.0	-19.6	
5.04	-63.8	V	3.0	-14.2	36.3	1.0	-49.5	-25.0	-24.5	
7.56	-66.2	V	3.0	-12.7	34.8	1.0	-46.4	-25.0	-21.4	
10.08	-68.1	V	3.0	-12.1	32.1	1.0	-43.1	-25.0	-18.1	
Mid Channel (2525.1MHz)+2544.9MHz										
5.07	-63.7	H	3.0	-12.7	36.0	1.0	-47.6	-25.0	-22.6	
7.61	-65.1	H	3.0	-12.0	35.2	1.0	-46.2	-25.0	-21.2	
10.14	-67.0	H	3.0	-10.7	32.0	1.0	-41.7	-25.0	-16.7	
5.07	-64.2	V	3.0	-16.5	36.1	1.0	-51.6	-25.0	-26.6	
7.61	-66.8	V	3.0	-9.0	37.7	1.0	-45.7	-25.0	-20.7	
10.14	-66.8	V	3.0	-5.9	36.2	1.0	-41.1	-25.0	-16.1	
High Channel (2540.2MHz)+2560MHz										
5.10	-64.0	H	3.0	-14.9	36.2	1.0	-50.1	-25.0	-25.1	
7.65	-66.7	H	3.0	-16.0	36.0	1.0	-51.1	-25.0	-26.1	
10.20	-67.4	H	3.0	-11.1	32.0	1.0	-42.1	-25.0	-17.1	
5.10	-63.2	V	3.0	-16.2	36.3	1.0	-51.5	-25.0	-26.5	
7.65	-66.0	V	3.0	-14.8	35.8	1.0	-49.6	-25.0	-24.6	
10.20	-66.3	V	3.0	-5.3	36.3	1.0	-40.6	-25.0	-15.6	

Rev. 05.21.15

LTE B7 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, 16QAM UL CA 20/20

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+ 2529.8MHz										
5.04	-64.0	H	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.56	-66.3	H	3.0	-8.4	37.7	1.0	-45.2	-25.0	-20.2	
10.08	-66.8	H	3.0	-6.0	36.2	1.0	-41.1	-25.0	-16.1	
5.04	-64.0	V	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.56	-66.4	V	3.0	-8.8	37.7	1.0	-45.5	-25.0	-20.5	
10.08	-67.6	V	3.0	-6.8	36.2	1.0	-41.9	-25.0	-16.9	
Mid Channel (2525.1MHz)+2544.9MHz										
5.07	-64.0	H	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.61	-66.2	H	3.0	-8.3	37.7	1.0	-45.0	-25.0	-20.0	
10.14	-67.1	H	3.0	-6.2	36.2	1.0	-41.4	-25.0	-16.4	
5.07	-64.8	V	3.0	-12.1	38.7	1.0	-49.8	-25.0	-24.8	
7.61	-66.7	V	3.0	-9.0	37.7	1.0	-45.6	-25.0	-20.6	
10.14	-66.6	V	3.0	-5.7	36.2	1.0	-40.9	-25.0	-15.9	
High Channel (2540.2MHz)+2560Mhz										
5.10	-64.3	H	3.0	-11.2	38.7	1.0	-48.9	-25.0	-23.9	
7.65	-65.9	H	3.0	-7.9	37.7	1.0	-44.6	-25.0	-19.6	
10.20	-67.6	H	3.0	-6.6	36.3	1.0	-41.9	-25.0	-16.9	
5.10	-63.8	V	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.65	-66.3	V	3.0	-8.5	37.7	1.0	-45.2	-25.0	-20.2	
10.20	-66.7	V	3.0	-5.7	36.3	1.0	-41.0	-25.0	-16.0	

Rev. 05.21.15

LTE B7 20MHz + 20MHz 16QAM

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9.3.2. LTE BAND 41

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company: 1306
Project #: AA1712
Date: 03/24/18
Test Engineer: 10649
Configuration: EUT Only
Mode: LTE Band 41, QPSK UL CA 20/5

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

Chamber	Pre-amplifer	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 (2506MHz) +2517.7MHz 1-99, 1-0										
5.02	-63.4	H	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.54	-65.6	H	3.0	-7.8	37.7	1.0	-44.5	-25.0	-19.5	
10.47	-66.9	H	3.0	-5.7	36.4	1.0	-41.1	-25.0	-16.1	
5.02	-63.7	V	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.54	-65.0	V	3.0	-7.4	37.7	1.0	-44.1	-25.0	-19.1	
10.47	-67.2	V	3.0	-5.9	36.4	1.0	-41.3	-25.0	-16.3	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.19	-62.9	H	3.0	-9.6	38.7	1.0	-47.3	-25.0	-22.3	
7.80	-64.8	H	3.0	-6.6	37.6	1.0	-43.2	-25.0	-18.2	
10.39	-65.5	H	3.0	-4.4	36.4	1.0	-39.7	-25.0	-14.7	
5.19	-63.5	V	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.80	-66.2	V	3.0	-8.2	37.6	1.0	-44.8	-25.0	-19.8	
10.39	-66.6	V	3.0	-5.4	36.4	1.0	-40.8	-25.0	-15.8	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.36	-64.9	H	3.0	-11.2	38.6	1.0	-48.8	-25.0	-23.8	
8.04	-66.2	H	3.0	-7.8	37.4	1.0	-44.2	-25.0	-19.2	
10.72	-66.4	H	3.0	-5.0	36.6	1.0	-40.6	-25.0	-15.6	
5.36	-65.4	V	3.0	-12.1	38.6	1.0	-49.8	-25.0	-24.8	
8.04	-65.4	V	3.0	-7.1	37.4	1.0	-43.5	-25.0	-18.5	
10.72	-66.6	V	3.0	-5.1	36.6	1.0	-40.7	-25.0	-15.7	

Rev. 05.21.15

LTE B41 20MHz + 5MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/23/18
Test Engineer: 10646
Configuration: EUT only
Mode: LTE Band 41, 16QAM UL CA 20/5

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

Chamber	Pre-amplifer	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 (2506MHz) +2517.7MHz 1-99, 1-0										
5.02	-63.2	H	3.0	-10.3	38.7	1.0	-48.0	-25.0	-23.0	
7.54	-65.5	H	3.0	-7.7	37.7	1.0	-44.4	-25.0	-19.4	
10.05	-67.0	H	3.0	-6.1	36.2	1.0	-41.3	-25.0	-16.3	
5.02	-63.4	V	3.0	-10.7	38.7	1.0	-48.4	-25.0	-23.4	
7.55	-66.0	V	3.0	-8.4	37.7	1.0	-45.1	-25.0	-20.1	
10.05	-65.6	V	3.0	-4.8	36.2	1.0	-39.9	-25.0	-14.9	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.18	-63.6	H	3.0	-10.3	38.7	1.0	-48.0	-25.0	-23.0	
7.79	-65.6	H	3.0	-7.4	37.6	1.0	-44.0	-25.0	-19.0	
10.39	-67.4	H	3.0	-6.3	36.4	1.0	-41.7	-25.0	-16.7	
5.18	-64.2	V	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.79	-64.7	V	3.0	-6.8	37.6	1.0	-43.3	-25.0	-18.3	
10.39	-65.8	V	3.0	-4.6	36.4	1.0	-40.0	-25.0	-15.0	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.36	-65.7	H	3.0	-12.0	38.6	1.0	-49.7	-25.0	-24.7	
8.04	-65.7	H	3.0	-7.3	37.4	1.0	-43.7	-25.0	-18.7	
10.72	-67.2	H	3.0	-5.8	36.6	1.0	-41.4	-25.0	-16.4	
5.36	-64.6	V	3.0	-11.3	38.6	1.0	-48.9	-25.0	-23.9	
8.04	-66.3	V	3.0	-8.0	37.4	1.0	-44.4	-25.0	-19.4	
10.72	-65.7	V	3.0	-4.1	36.6	1.0	-39.7	-25.0	-14.7	

Rev. 05.21.15

LTE B41 20MHz + 5MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/23/18
Test Engineer: 10649
Configuration: EUT ONLY
Mode: LTE Band 41, QPSK UL CA 20/20

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

Chamber	Pre-amplifer	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 (2506MHz) + 2525.8MHz 1-99 1-0										
5.03	-64.0	H	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.55	-64.6	H	3.0	-6.7	37.7	1.0	-43.4	-25.0	-18.4	
10.06	-66.6	H	3.0	-5.8	36.2	1.0	-40.9	-25.0	-15.9	
5.03	-63.6	V	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.55	-65.6	V	3.0	-8.0	37.7	1.0	-44.7	-25.0	-19.7	
10.06	-66.6	V	3.0	-5.8	36.2	1.0	-40.9	-25.0	-15.9	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.19	-63.8	H	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.78	-65.3	H	3.0	-7.2	37.6	1.0	-43.8	-25.0	-18.8	
10.37	-65.4	H	3.0	-4.3	36.4	1.0	-39.7	-25.0	-14.7	
5.19	-64.2	V	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.78	-64.6	V	3.0	-6.6	37.6	1.0	-43.2	-25.0	-18.2	
10.37	-67.0	V	3.0	-5.9	36.4	1.0	-41.2	-25.0	-16.2	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.34	-65.2	H	3.0	-11.6	38.6	1.0	-49.2	-25.0	-24.2	
8.01	-66.7	H	3.0	-8.3	37.4	1.0	-44.7	-25.0	-19.7	
10.68	-67.5	H	3.0	-6.1	36.6	1.0	-41.7	-25.0	-16.7	
5.34	-66.1	V	3.0	-12.8	38.6	1.0	-50.5	-25.0	-25.5	
8.01	-66.3	V	3.0	-8.0	37.4	1.0	-44.5	-25.0	-19.5	
10.68	-64.9	V	3.0	-3.4	36.6	1.0	-39.0	-25.0	-14.0	

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LTE B41 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/23/18
Test Engineer: 10649
Configuration: EUT ONLY
Mode: LTE Band 41, 16QAM UL CA 20/20

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

Chamber	Pre-amplifer	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 (2506MHz) + 2525.8MHz 1-99 1-0										
5.03	-61.3	H	3.0	-8.4	38.7	1.0	-46.0	-25.0	-21.0	
7.55	-65.4	H	3.0	-7.5	37.7	1.0	-44.3	-25.0	-19.3	
10.06	-67.3	H	3.0	-6.4	36.2	1.0	-41.6	-25.0	-16.6	
5.03	-63.2	V	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.55	-65.2	V	3.0	-7.6	37.7	1.0	-44.3	-25.0	-19.3	
10.06	-67.7	V	3.0	-6.9	36.2	1.0	-42.1	-25.0	-17.1	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.19	-64.1	H	3.0	-10.9	38.7	1.0	-48.6	-25.0	-23.6	
7.78	-65.5	H	3.0	-7.4	37.6	1.0	-44.0	-25.0	-19.0	
10.37	-66.0	H	3.0	-4.9	36.4	1.0	-40.2	-25.0	-15.2	
5.19	-64.0	V	3.0	-11.1	38.7	1.0	-48.7	-25.0	-23.7	
7.78	-65.1	V	3.0	-7.2	37.6	1.0	-43.7	-25.0	-18.7	
10.37	-67.1	V	3.0	-5.9	36.4	1.0	-41.3	-25.0	-16.3	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.34	-64.8	H	3.0	-11.0	38.6	1.0	-48.7	-25.0	-23.7	
8.01	-66.0	H	3.0	-7.6	37.4	1.0	-44.0	-25.0	-19.0	
10.68	-66.3	H	3.0	-5.0	36.6	1.0	-40.5	-25.0	-15.5	
5.34	-65.8	V	3.0	-12.6	38.6	1.0	-50.2	-25.0	-25.2	
8.01	-65.2	V	3.0	-7.0	37.4	1.0	-43.4	-25.0	-18.4	
10.68	-66.7	V	3.0	-5.2	36.6	1.0	-40.8	-25.0	-15.8	

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LTE B41 20MHz + 20MHz 16QAM

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9.4. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 4

9.4.1. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/27/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, QPSK UL CA 20/10

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+2524.4MHz										
5.03	-64.4	H	3.0	-11.5	38.7	1.0	-49.2	-25.0	-24.2	
7.55	-66.1	H	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.07	-67.4	H	3.0	-6.5	36.2	1.0	-41.7	-25.0	-16.7	
5.03	-64.2	V	3.0	-11.6	38.7	1.0	-49.3	-25.0	-24.3	
7.55	-67.1	V	3.0	-9.5	37.7	1.0	-46.2	-25.0	-21.2	
10.07	-67.0	V	3.0	-6.2	36.2	1.0	-41.4	-25.0	-16.4	
Mid Channel (2530.1MHz)+2544.5MHz										
5.07	-64.2	H	3.0	-11.2	38.7	1.0	-48.9	-25.0	-23.9	
7.61	-66.7	H	3.0	-8.7	37.7	1.0	-45.4	-25.0	-20.4	
10.15	-67.7	H	3.0	-6.8	36.2	1.0	-42.0	-25.0	-17.0	
5.07	-63.8	V	3.0	-11.1	38.7	1.0	-48.7	-25.0	-23.7	
7.61	-67.3	V	3.0	-9.6	37.7	1.0	-46.3	-25.0	-21.3	
10.15	-67.2	V	3.0	-6.3	36.2	1.0	-41.5	-25.0	-16.5	
High Channel (2550.1MHz)+2564.5MHz										
5.11	-64.2	H	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.67	-66.1	H	3.0	-8.1	37.6	1.0	-44.8	-25.0	-19.8	
10.23	-67.1	H	3.0	-6.1	36.3	1.0	-41.4	-25.0	-16.4	
5.11	-63.7	V	3.0	-10.9	38.7	1.0	-48.6	-25.0	-23.6	
7.67	-66.0	V	3.0	-8.2	37.6	1.0	-44.8	-25.0	-19.8	
10.23	-67.6	V	3.0	-6.6	36.3	1.0	-41.9	-25.0	-16.9	

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LTE B7 20MHz + 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/27/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, 16QAM UL CA 20/10

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+2524.4MHz										
5.03	-63.3	H	3.0	-10.4	38.7	1.0	-48.1	-25.0	-23.1	
7.55	-66.1	H	3.0	-8.3	37.7	1.0	-45.0	-25.0	-20.0	
10.07	-67.1	H	3.0	-6.2	36.2	1.0	-41.4	-25.0	-16.4	
5.03	-63.8	V	3.0	-11.2	38.7	1.0	-48.9	-25.0	-23.9	
7.55	-66.1	V	3.0	-6.4	37.7	1.0	-45.1	-25.0	-20.1	
10.07	-67.2	V	3.0	-6.3	36.2	1.0	-41.5	-25.0	-16.5	
Mid Channel (2530.1MHz)+2544.5MHz										
5.07	-64.5	H	3.0	-11.5	38.7	1.0	-49.2	-25.0	-24.2	
7.61	-66.9	H	3.0	-9.0	37.7	1.0	-45.7	-25.0	-20.7	
10.15	-67.3	H	3.0	-6.3	36.2	1.0	-41.6	-25.0	-16.6	
5.07	-63.7	V	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.61	-67.2	V	3.0	-9.5	37.7	1.0	-46.2	-25.0	-21.2	
10.15	-67.1	V	3.0	-6.1	36.2	1.0	-41.3	-25.0	-16.3	
High Channel (2550.1MHz)+2564.5MHz										
5.11	-64.6	H	3.0	-11.5	38.7	1.0	-49.2	-25.0	-24.2	
7.67	-66.3	H	3.0	-8.3	37.6	1.0	-44.9	-25.0	-19.9	
10.23	-66.8	H	3.0	-5.8	36.3	1.0	-41.1	-25.0	-16.1	
5.11	-63.7	V	3.0	-11.0	38.7	1.0	-48.6	-25.0	-23.6	
7.67	-65.9	V	3.0	-8.1	37.6	1.0	-44.8	-25.0	-19.8	
10.23	-66.7	V	3.0	-5.7	36.3	1.0	-40.9	-25.0	-15.9	

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LTE B7 20MHz + 10MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/27/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, QPSK UL CA 20/20

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+ 2529.8MHz										
5.04	-63.2	H	3.0	-15.1	36.1	1.0	-50.2	-25.0	-25.2	
7.56	-66.5	H	3.0	-16.8	36.3	1.0	-52.1	-25.0	-27.1	
10.08	-67.7	H	3.0	-12.3	33.4	1.0	-44.7	-25.0	-19.7	
5.04	-63.8	V	3.0	-14.3	36.3	1.0	-49.5	-25.0	-24.5	
7.56	-66.0	V	3.0	-12.4	34.8	1.0	-46.2	-25.0	-21.2	
10.08	-66.6	V	3.0	-10.7	32.1	1.0	-41.7	-25.0	-16.7	
Mid Channel (2525.1MHz)+2544.9MHz										
5.07	-64.6	H	3.0	-13.6	36.0	1.0	-48.6	-25.0	-23.6	
7.61	-65.6	H	3.0	-12.5	35.2	1.0	-46.7	-25.0	-21.7	
10.14	-67.4	H	3.0	-11.1	32.0	1.0	-42.1	-25.0	-17.1	
5.07	-64.3	V	3.0	-16.6	36.1	1.0	-51.7	-25.0	-26.7	
7.61	-66.5	V	3.0	-8.8	37.7	1.0	-45.5	-25.0	-20.5	
10.14	-67.7	V	3.0	-6.8	36.2	1.0	-42.0	-25.0	-17.0	
High Channel (2540.2MHz)+2560MHz										
5.10	-62.0	H	3.0	-12.9	36.2	1.0	-48.1	-25.0	-23.1	
7.65	-65.9	H	3.0	-15.2	36.0	1.0	-50.2	-25.0	-25.2	
10.20	-66.1	H	3.0	-9.8	32.0	1.0	-40.9	-25.0	-15.9	
5.10	-64.5	V	3.0	-17.5	36.3	1.0	-52.8	-25.0	-27.8	
7.65	-66.2	V	3.0	-14.9	35.8	1.0	-49.8	-25.0	-24.8	
10.20	-66.5	V	3.0	-5.5	36.3	1.0	-40.8	-25.0	-15.8	

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LTE B7 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/27/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 7, 16QAM UL CA 20/20

Test Equipment:
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	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 (2510MHz)+ 2529.8MHz										
5.04	-63.8	H	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.56	-66.9	H	3.0	-9.0	37.7	1.0	-45.7	-25.0	-20.7	
10.08	-67.2	H	3.0	-6.4	36.2	1.0	-41.5	-25.0	-16.5	
5.04	-63.7	V	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.56	-66.6	V	3.0	-8.9	37.7	1.0	-45.6	-25.0	-20.6	
10.08	-68.3	V	3.0	-7.4	36.2	1.0	-42.6	-25.0	-17.6	
Mid Channel (2525.1MHz)+2544.9MHz										
5.07	-64.1	H	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.61	-66.6	H	3.0	-8.7	37.7	1.0	-45.4	-25.0	-20.4	
10.14	-66.3	H	3.0	-5.4	36.2	1.0	-40.6	-25.0	-15.6	
5.07	-64.1	V	3.0	-11.4	38.7	1.0	-49.0	-25.0	-24.0	
7.61	-66.9	V	3.0	-9.2	37.7	1.0	-45.9	-25.0	-20.9	
10.14	-67.1	V	3.0	-6.2	36.2	1.0	-41.4	-25.0	-16.4	
High Channel (2540.2MHz)+2560Mhz										
5.10	-64.3	H	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.65	-67.1	H	3.0	-9.1	37.7	1.0	-45.8	-25.0	-20.8	
10.20	-67.6	H	3.0	-6.6	36.3	1.0	-41.9	-25.0	-16.9	
5.10	-64.4	V	3.0	-11.7	38.7	1.0	-49.4	-25.0	-24.4	
7.65	-67.5	V	3.0	-9.7	37.7	1.0	-46.4	-25.0	-21.4	
10.20	-66.3	V	3.0	-5.3	36.3	1.0	-40.6	-25.0	-15.6	

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LTE B7 20MHz + 20MHz 16QAM

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9.4.2. LTE BAND 41

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10641
Configuration: EUT Only
Mode: LTE Band 41, QPSK UL CA 20/5

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

Chamber	Pre-amplifer	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 (2506MHz) +2517.7MHz										
5.02	-63.0	H	3.0	-10.1	38.7	1.0	-47.8	-25.0	-22.8	
7.54	-65.8	H	3.0	-8.0	37.7	1.0	-44.7	-25.0	-19.7	
10.47	-67.2	H	3.0	-6.0	36.4	1.0	-41.4	-25.0	-16.4	
5.02	-62.5	V	3.0	-9.9	38.7	1.0	-47.6	-25.0	-22.6	
7.54	-65.2	V	3.0	-7.5	37.7	1.0	-44.3	-25.0	-19.3	
10.47	-64.6	V	3.0	-3.4	36.4	1.0	-38.8	-25.0	-13.8	
Mid Channel (2590.5MHz)+2602.2MHz										
5.19	-63.8	H	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.80	-63.0	H	3.0	-4.8	37.6	1.0	-41.4	-25.0	-16.4	
10.39	-66.2	H	3.0	-5.0	36.4	1.0	-40.4	-25.0	-15.4	
5.19	-63.9	V	3.0	-10.9	38.7	1.0	-48.6	-25.0	-23.6	
7.80	-59.6	V	3.0	-1.6	37.6	1.0	-38.2	-25.0	-13.2	
10.39	-67.3	V	3.0	-6.1	36.4	1.0	-41.5	-25.0	-16.5	
High Channel (2675MHz)+2686.7MHz										
5.36	-66.1	H	3.0	-12.5	38.6	1.0	-50.1	-25.0	-25.1	
8.04	-66.1	H	3.0	-7.7	37.4	1.0	-44.1	-25.0	-19.1	
10.72	-66.8	H	3.0	-5.4	36.6	1.0	-41.0	-25.0	-16.0	
5.36	-65.0	V	3.0	-11.7	38.6	1.0	-49.3	-25.0	-24.3	
8.04	-65.2	V	3.0	-6.9	37.4	1.0	-43.3	-25.0	-18.3	
10.72	-67.2	V	3.0	-5.6	36.6	1.0	-41.2	-25.0	-16.2	

Rev. 05.21.15

LTE B41 20MHz + 5MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10649
Configuration: EUT only
Mode: LTE Band 41, 16QAM UL CA 20/5

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

Chamber	Pre-amplifer	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 (2506MHz) +2517.7MHz										
5.02	-63.6	H	3.0	-10.7	38.7	1.0	-48.4	-25.0	-23.4	
7.54	-63.8	H	3.0	-5.9	37.7	1.0	-42.7	-25.0	-17.7	
10.05	-66.0	H	3.0	-5.1	36.2	1.0	-40.3	-25.0	-15.3	
5.02	-63.9	V	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.55	-65.5	V	3.0	-7.8	37.7	1.0	-44.5	-25.0	-19.5	
10.05	-67.7	V	3.0	-6.9	36.2	1.0	-42.1	-25.0	-17.1	
Mid Channel (2590.5MHz)+2602.2MHz										
5.18	-62.7	H	3.0	-9.5	38.7	1.0	-47.2	-25.0	-22.2	
7.79	-59.9	H	3.0	-1.7	37.6	1.0	-38.3	-25.0	-13.3	
10.39	-66.1	H	3.0	-5.0	36.4	1.0	-40.4	-25.0	-15.4	
5.18	-63.7	V	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.79	-64.1	V	3.0	-6.2	37.6	1.0	-42.7	-25.0	-17.7	
10.39	-66.4	V	3.0	-5.2	36.4	1.0	-40.5	-25.0	-15.5	
High Channel (2675MHz)+2686.7MHz										
5.36	-65.5	H	3.0	-11.9	38.6	1.0	-49.5	-25.0	-24.5	
8.04	-65.6	H	3.0	-7.2	37.4	1.0	-43.6	-25.0	-18.6	
10.72	-66.5	H	3.0	-5.1	36.6	1.0	-40.7	-25.0	-15.7	
5.36	-64.1	V	3.0	-10.8	38.6	1.0	-48.4	-25.0	-23.4	
8.04	-64.6	V	3.0	-6.3	37.4	1.0	-42.7	-25.0	-17.7	
10.72	-66.6	V	3.0	-5.1	36.6	1.0	-40.7	-25.0	-15.7	

Rev. 05.21.15

LTE B41 20MHz + 5MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10646
Configuration: EUT ONLY
Mode: LTE Band 41, QPSK UL CA 20/20

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

Chamber	Pre-amplifer	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 (2506MHz) + 2525.8MHz										
5.03	-63.0	H	3.0	-10.1	38.7	1.0	-47.7	-25.0	-22.7	
7.55	-56.7	H	3.0	1.1	37.7	1.0	-35.6	-25.0	-10.6	
10.06	-66.5	H	3.0	-5.6	36.2	1.0	-40.8	-25.0	-15.8	
5.03	-63.3	V	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.55	-63.1	V	3.0	-5.5	37.7	1.0	-42.2	-25.0	-17.2	
10.06	-67.1	V	3.0	-6.3	36.2	1.0	-41.4	-25.0	-16.4	
Mid Channel (2583.1MHz) + 2602.9MHz										
5.19	-63.5	H	3.0	-10.3	38.7	1.0	-47.9	-25.0	-22.9	
7.78	-61.6	H	3.0	-3.5	37.6	1.0	-40.1	-25.0	-15.1	
10.37	-66.9	H	3.0	-5.8	36.4	1.0	-41.2	-25.0	-16.2	
5.19	-63.0	V	3.0	-10.1	38.7	1.0	-47.8	-25.0	-22.8	
7.78	-63.1	V	3.0	-5.1	37.6	1.0	-41.7	-25.0	-16.7	
10.37	-66.8	V	3.0	-5.7	36.4	1.0	-41.0	-25.0	-16.0	
High Channel (2660.2MHz) + 2680MHz										
5.34	-63.0	H	3.0	-9.4	38.6	1.0	-47.1	-25.0	-22.1	
8.01	-63.4	H	3.0	-5.0	37.4	1.0	-41.4	-25.0	-16.4	
10.68	-66.8	H	3.0	-5.4	36.6	1.0	-40.9	-25.0	-15.9	
5.34	-62.7	V	3.0	-9.4	38.6	1.0	-47.0	-25.0	-22.0	
8.01	-64.4	V	3.0	-6.1	37.4	1.0	-42.5	-25.0	-17.5	
10.68	-66.8	V	3.0	-5.2	36.6	1.0	-40.8	-25.0	-15.8	

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LTE B41 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/26/18
Test Engineer: 10646
Configuration: EUT ONLY
Mode: LTE Band 41, 16QAM UL CA 20/20

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

Chamber	Pre-amplifer	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 (2506MHz) + 2525.8MHz										
5.03	-63.0	H	3.0	-10.0	38.7	1.0	-47.7	-25.0	-22.7	
7.55	-60.0	H	3.0	-2.1	37.7	1.0	-38.8	-25.0	-13.8	
10.06	-66.9	H	3.0	-6.0	36.2	1.0	-41.2	-25.0	-16.2	
5.03	-63.7	V	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.55	-65.3	V	3.0	-7.7	37.7	1.0	-44.4	-25.0	-19.4	
10.06	-67.4	V	3.0	-6.6	36.2	1.0	-41.7	-25.0	-16.7	
Mid Channel (2583.1MHz) + 2602.9MHz										
5.19	-62.7	H	3.0	-9.4	38.7	1.0	-47.1	-25.0	-22.1	
7.78	-61.4	H	3.0	-3.3	37.6	1.0	-39.9	-25.0	-14.9	
10.37	-65.9	H	3.0	-4.8	36.4	1.0	-40.2	-25.0	-15.2	
5.19	-62.6	V	3.0	-9.6	38.7	1.0	-47.3	-25.0	-22.3	
7.78	-65.1	V	3.0	-7.1	37.6	1.0	-43.7	-25.0	-18.7	
10.37	-64.8	V	3.0	-3.7	36.4	1.0	-39.0	-25.0	-14.0	
High Channel (2660.2MHz) + 2680MHz										
5.34	-63.9	H	3.0	-10.3	38.6	1.0	-47.9	-25.0	-22.9	
8.01	-63.3	H	3.0	-4.9	37.4	1.0	-41.3	-25.0	-16.3	
10.68	-67.0	H	3.0	-5.7	36.6	1.0	-41.2	-25.0	-16.2	
5.34	-62.4	V	3.0	-9.1	38.6	1.0	-46.7	-25.0	-21.7	
8.01	-65.2	V	3.0	-7.0	37.4	1.0	-43.4	-25.0	-18.4	
10.68	-64.7	V	3.0	-3.2	36.6	1.0	-38.8	-25.0	-13.8	

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LTE B41 20MHz + 20MHz 16QAM

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10. SETUP PHOTOS

Please refer to 12124121-EP1V1

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