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 Antenna 1; 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:	39004	Date:	5/14/18

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	31.30	23.53	7.77
				16QAM	31.30	22.49	8.81
	15 MHz / 15MHz	2527.5	2542.5	QPSK	31.07	23.18	7.89
				16QAM	30.98	22.27	8.71
	15MHz / 20MHz	2525.3	2542.4	QPSK	31.00	23.20	7.80
				16QAM	31.09	22.30	8.79
	20MHz / 10MHz	2530.1	2544.5	QPSK	32.67	23.54	9.13
				16QAM	32.67	22.40	10.27
	20MHz / 15MHz	2527.6	2544.7	QPSK	32.80	23.66	9.14
				16QAM	32.83	22.56	10.27
	20MHz / 20MHz	2525.1	2544.9	QPSK	32.85	23.60	9.25
				16QAM	32.96	22.59	10.37
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:	10643	Date:	5/14/18

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	31.64	15.59	9.06
				16QAM	31.17	14.62	9.56
	10MHz / 20MHz	2583.6	2598.0	QPSK	31.48	15.84	8.65
				16QAM	31.42	14.84	9.59
	15MHz / 15MHz	2585.5	2600.5	QPSK	31.24	15.85	8.40
				16QAM	31.63	14.88	9.76
	15MHz / 20MHz	2583.3	2600.4	QPSK	31.33	15.78	8.56
				16QAM	31.21	14.83	9.39
	20MHz / 5MHz	2590.5	2602.2	QPSK	31.43	15.89	8.55
				16QAM	31.34	14.96	9.39
	20MHz / 10MHz	2588.1	2602.5	QPSK	31.28	15.82	8.47
				16QAM	31.26	14.88	9.39
	20MHz / 15MHz	2585.6	2602.7	QPSK	31.39	15.86	8.54
				16QAM	31.39	14.89	9.51
	20MHz / 20MHz	2583.1	2602.9	QPSK	31.17	15.88	8.30
				16QAM	31.36	14.94	9.43
Duty Cycle Correction Factor (dB) =			6.99				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9. RADIATED TEST RESULTS

9.1. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 1

RULE PART(S)

§2.1053, §27.53

LIMIT

FCC: §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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9.1.1. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/02/18
Test Engineer: 12491
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 G | Pre-amplifer: 3m Chamber G | 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	-70.2	H	3.0	-20.7	36.2	1.0	-56.0	-25.0	-31.0	
7.55	-72.3	H	3.0	-19.1	35.1	1.0	-53.2	-25.0	-28.2	
10.07	-72.2	H	3.0	-16.6	33.3	1.0	-49.0	-25.0	-24.0	
5.03	-70.7	V	3.0	-21.4	36.2	1.0	-56.7	-25.0	-31.7	
7.55	-73.4	V	3.0	-20.2	35.1	1.0	-54.3	-25.0	-29.3	
10.07	-73.3	V	3.0	-17.9	33.3	1.0	-50.3	-25.0	-25.3	
Mid Channel (2530.1MHz)+2544.5MHz 1-99 1-0										
5.07	-71.1	H	3.0	-21.6	36.3	1.0	-56.8	-25.0	-31.8	
7.61	-72.0	H	3.0	-18.8	35.1	1.0	-52.8	-25.0	-27.8	
10.15	-73.3	H	3.0	-17.7	33.3	1.0	-50.0	-25.0	-25.0	
5.07	-71.2	V	3.0	-21.9	36.3	1.0	-57.1	-25.0	-32.1	
7.61	-72.0	V	3.0	-18.8	35.1	1.0	-52.9	-25.0	-27.9	
10.15	-73.5	V	3.0	-18.1	33.3	1.0	-50.4	-25.0	-25.4	
High Channel (2550.1MHz)+2564.5MHz 1-99 1-0										
5.11	-70.4	H	3.0	-20.8	36.3	1.0	-58.1	-25.0	-31.1	
7.67	-72.3	H	3.0	-18.9	35.0	1.0	-53.0	-25.0	-28.0	
10.23	-72.8	H	3.0	-17.2	33.2	1.0	-49.4	-25.0	-24.4	
5.11	-70.3	V	3.0	-20.9	36.3	1.0	-56.2	-25.0	-31.2	
7.67	-73.5	V	3.0	-20.2	35.0	1.0	-54.2	-25.0	-29.2	
10.23	-73.8	V	3.0	-18.4	33.2	1.0	-50.6	-25.0	-25.6	

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LTE B7 20MHz + 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/02/18
Test Engineer: 12491
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 G | Pre-amplifer: 3m Chamber G | 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	-71.2	H	3.0	-21.8	36.2	1.0	-57.0	-25.0	-32.0	
7.55	-72.9	H	3.0	-19.6	35.1	1.0	-53.7	-25.0	-28.7	
10.07	-72.7	H	3.0	-17.1	33.3	1.0	-49.4	-25.0	-24.4	
5.03	-70.3	V	3.0	-21.0	36.2	1.0	-56.2	-25.0	-31.2	
7.55	-72.5	V	3.0	-19.4	35.1	1.0	-53.5	-25.0	-28.5	
10.07	-73.2	V	3.0	-17.8	33.3	1.0	-50.1	-25.0	-25.1	
Mid Channel (2530.1MHz)+2544.5MHz 1-99 1-0										
5.07	-71.4	H	3.0	-21.9	36.3	1.0	-57.2	-25.0	-32.2	
7.61	-71.9	H	3.0	-18.6	35.1	1.0	-52.6	-25.0	-27.6	
10.15	-73.3	H	3.0	-17.7	33.3	1.0	-50.0	-25.0	-25.0	
5.07	-71.1	V	3.0	-21.7	36.3	1.0	-57.0	-25.0	-32.0	
7.61	-71.8	V	3.0	-18.6	35.1	1.0	-52.7	-25.0	-27.7	
10.15	-73.5	V	3.0	-18.1	33.3	1.0	-50.4	-25.0	-25.4	
High Channel (2550.1MHz)+2564.5MHz 1-99 1-0										
5.11	-70.0	H	3.0	-20.4	36.3	1.0	-55.7	-25.0	-30.7	
7.67	-72.0	H	3.0	-18.7	35.0	1.0	-52.7	-25.0	-27.7	
10.23	-72.6	H	3.0	-17.0	33.2	1.0	-49.2	-25.0	-24.2	
5.11	-70.5	V	3.0	-21.1	36.3	1.0	-56.4	-25.0	-31.4	
7.67	-71.9	V	3.0	-18.6	35.0	1.0	-52.6	-25.0	-27.6	
10.23	-73.5	V	3.0	-18.1	33.2	1.0	-50.3	-25.0	-25.3	

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LTE B7 20MHz + 10MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/02/18
Test Engineer: 12491
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 G | Pre-amplifer: 3m Chamber G | 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 1-99 1-0										
5.03	-69.8	H	3.0	-16.9	36.1	1.0	-51.9	-25.0	-26.9	
7.56	-73.0	H	3.0	-15.1	36.3	1.0	-50.4	-25.0	-25.4	
10.08	-72.9	H	3.0	-12.0	33.4	1.0	-44.5	-25.0	-19.5	
5.04	-70.2	V	3.0	-17.5	36.3	1.0	-52.8	-25.0	-27.8	
7.56	-72.4	V	3.0	-14.7	34.8	1.0	-48.5	-25.0	-23.5	
10.08	-72.9	V	3.0	-12.0	32.1	1.0	-43.1	-25.0	-18.1	
Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0										
5.07	-70.4	H	3.0	-17.4	36.0	1.0	-52.3	-25.0	-27.3	
7.61	-71.6	H	3.0	-13.7	35.2	1.0	-47.9	-25.0	-22.9	
10.14	-72.8	H	3.0	-11.9	32.0	1.0	-42.9	-25.0	-17.9	
5.07	-69.9	V	3.0	-17.2	36.1	1.0	-52.3	-25.0	-27.3	
7.61	-71.9	V	3.0	-14.2	35.1	1.0	-48.2	-25.0	-23.2	
10.14	-74.2	V	3.0	-13.3	33.3	1.0	-45.6	-25.0	-20.6	
High Channel (2540.2MHz)+2560Mhz 1-99 1-0										
5.11	-69.5	H	3.0	-16.4	36.2	1.0	-51.6	-25.0	-26.6	
7.67	-71.5	H	3.0	-13.5	36.0	1.0	-48.5	-25.0	-23.5	
10.23	-72.3	H	3.0	-11.3	32.0	1.0	-42.4	-25.0	-17.4	
5.11	-70.4	V	3.0	-17.6	36.3	1.0	-52.9	-25.0	-27.9	
7.67	-71.3	V	3.0	-13.5	35.8	1.0	-48.3	-25.0	-23.3	
10.23	-73.1	V	3.0	-12.1	33.2	1.0	-44.3	-25.0	-19.3	

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LTE B7 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/02/18
Test Engineer: 12491
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 G | Pre-amplifer: 3m Chamber G | 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 1-99 1-0										
5.04	-70.2	H	3.0	-17.3	36.1	1.0	-52.3	-25.0	-27.3	
7.56	-72.3	H	3.0	-14.4	36.3	1.0	-49.7	-25.0	-24.7	
10.08	-72.5	H	3.0	-11.6	33.4	1.0	-44.1	-25.0	-19.1	
5.04	-70.5	V	3.0	-17.8	36.3	1.0	-53.1	-25.0	-28.1	
7.56	-72.3	V	3.0	-14.6	34.8	1.0	-48.4	-25.0	-23.4	
10.08	-72.8	V	3.0	-11.9	32.1	1.0	-43.0	-25.0	-18.0	
Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0										
5.07	-72.0	H	3.0	-19.0	36.0	1.0	-53.9	-25.0	-28.9	
7.61	-71.5	H	3.0	-13.6	35.2	1.0	-47.8	-25.0	-22.8	
10.14	-71.9	H	3.0	-11.0	32.0	1.0	-42.0	-25.0	-17.0	
5.07	-70.6	V	3.0	-17.9	36.1	1.0	-53.0	-25.0	-28.0	
7.61	-70.8	V	3.0	-13.1	37.7	1.0	-49.8	-25.0	-24.8	
10.14	-73.7	V	3.0	-12.8	36.2	1.0	-48.0	-25.0	-23.0	
High Channel (2540.2MHz)+2560Mhz 1-99 1-0										
5.11	-70.0	H	3.0	-16.9	36.2	1.0	-52.1	-25.0	-27.1	
7.67	-71.5	H	3.0	-13.5	36.0	1.0	-48.5	-25.0	-23.5	
10.23	-72.8	H	3.0	-11.8	32.0	1.0	-42.9	-25.0	-17.9	
5.11	-70.8	V	3.0	-18.0	36.3	1.0	-53.3	-25.0	-28.3	
7.67	-71.7	V	3.0	-13.9	35.8	1.0	-48.7	-25.0	-23.7	
10.23	-72.8	V	3.0	-11.8	36.3	1.0	-47.1	-25.0	-22.1	

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LTE B7 20MHz + 20MHz 16QAM

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9.1.2. LTE BAND 41 (FCC)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 4/19/2018
Test Engineer: 12492.0
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 H	3m Chamber H	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										
5.01	-69.7	H	3.0	-19.7	36.9	1.0	-55.6	-25.0	-30.6	
7.52	-74.3	H	3.0	-20.4	35.9	1.0	-55.3	-25.0	-30.3	
10.02	-75.5	H	3.0	-18.9	33.7	1.0	-51.6	-25.0	-26.6	
5.01	-68.7	V	3.0	-18.5	36.9	1.0	-54.3	-25.0	-29.3	
7.52	-72.2	V	3.0	-18.6	35.9	1.0	-53.5	-25.0	-28.5	
10.02	-75.2	V	3.0	-19.0	33.7	1.0	-51.7	-25.0	-26.7	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.18	-70.2	H	3.0	-19.8	36.8	1.0	-55.6	-25.0	-30.6	
7.77	-73.8	H	3.0	-19.6	35.7	1.0	-54.3	-25.0	-29.3	
10.36	-74.9	H	3.0	-18.2	33.7	1.0	-50.9	-25.0	-25.9	
5.18	-70.0	V	3.0	-19.5	36.8	1.0	-55.3	-25.0	-30.3	
7.77	-72.3	V	3.0	-18.4	35.7	1.0	-53.1	-25.0	-28.1	
10.36	-73.6	V	3.0	-17.3	33.7	1.0	-50.0	-25.0	-25.0	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.35	-69.8	H	3.0	-19.1	36.8	1.0	-54.9	-25.0	-29.9	
8.03	-71.8	H	3.0	-17.4	35.5	1.0	-51.9	-25.0	-26.9	
10.70	-73.5	H	3.0	-16.6	33.7	1.0	-49.4	-25.0	-24.4	
5.35	-68.7	V	3.0	-17.9	36.8	1.0	-53.7	-25.0	-28.7	
8.03	-72.4	V	3.0	-18.2	35.5	1.0	-52.7	-25.0	-27.7	
10.70	-74.7	V	3.0	-18.3	33.7	1.0	-51.0	-25.0	-26.0	

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LTE B41 20MHz + 5MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 4/19/2018
Test Engineer: 12492
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 H	3m Chamber H	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										
5.01	-68.2	H	3.0	-18.2	36.9	1.0	-54.1	-25.0	-29.1	
7.52	-71.3	H	3.0	-17.5	35.9	1.0	-52.4	-25.0	-27.4	
10.02	-74.3	H	3.0	-17.7	33.7	1.0	-50.4	-25.0	-25.4	
5.01	-68.5	V	3.0	-18.3	36.9	1.0	-54.2	-25.0	-29.2	
7.52	-73.1	V	3.0	-19.4	35.9	1.0	-54.4	-25.0	-29.4	
10.02	-74.7	V	3.0	-18.5	33.7	1.0	-51.2	-25.0	-26.2	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.18	-68.9	H	3.0	-18.5	36.8	1.0	-54.4	-25.0	-29.4	
7.77	-72.1	H	3.0	-18.0	35.7	1.0	-52.7	-25.0	-27.7	
10.36	-73.8	H	3.0	-17.1	33.7	1.0	-49.8	-25.0	-24.8	
5.18	-68.3	V	3.0	-17.7	36.8	1.0	-53.6	-25.0	-28.6	
7.77	-72.0	V	3.0	-18.1	35.7	1.0	-52.8	-25.0	-27.8	
10.36	-72.7	V	3.0	-16.4	33.7	1.0	-49.1	-25.0	-24.1	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.35	-67.7	H	3.0	-17.1	36.8	1.0	-52.9	-25.0	-27.9	
8.03	-71.7	H	3.0	-17.3	35.5	1.0	-51.7	-25.0	-26.7	
10.70	-73.1	H	3.0	-16.2	33.7	1.0	-48.9	-25.0	-23.9	
5.35	-69.0	V	3.0	-18.2	36.8	1.0	-54.0	-25.0	-29.0	
8.03	-71.1	V	3.0	-16.9	35.5	1.0	-51.4	-25.0	-26.4	
10.70	-74.8	V	3.0	-18.3	33.7	1.0	-51.1	-25.0	-26.1	

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LTE B41 20MHz + 5MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 4/19/2018
Test Engineer: 12492
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 H	3m Chamber H	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										
5.01	-70.7	H	3.0	-20.7	36.9	1.0	-56.5	-25.0	-31.5	
7.52	-73.4	H	3.0	-19.5	35.9	1.0	-54.5	-25.0	-29.5	
10.02	-73.9	H	3.0	-17.4	33.7	1.0	-50.1	-25.0	-25.1	
5.01	-69.1	V	3.0	-18.9	36.9	1.0	-54.8	-25.0	-29.8	
7.52	-71.6	V	3.0	-18.0	35.9	1.0	-52.9	-25.0	-27.9	
10.02	-74.2	V	3.0	-18.0	33.7	1.0	-50.7	-25.0	-25.7	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.17	-70.2	H	3.0	-19.9	36.8	1.0	-55.8	-25.0	-30.8	
7.75	-72.3	H	3.0	-18.2	35.7	1.0	-53.0	-25.0	-28.0	
10.33	-74.5	H	3.0	-17.8	33.7	1.0	-50.5	-25.0	-25.5	
5.17	-70.4	V	3.0	-19.9	36.8	1.0	-55.7	-25.0	-30.7	
7.75	-74.0	V	3.0	-20.2	35.7	1.0	-54.9	-25.0	-29.9	
10.33	-75.6	V	3.0	-19.3	33.7	1.0	-52.0	-25.0	-27.0	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.32	-70.9	H	3.0	-20.3	36.8	1.0	-56.1	-25.0	-31.1	
7.98	-73.7	H	3.0	-19.3	35.5	1.0	-53.8	-25.0	-28.8	
10.64	-76.8	H	3.0	-19.9	33.7	1.0	-52.7	-25.0	-27.7	
5.32	-69.4	V	3.0	-18.6	36.8	1.0	-54.4	-25.0	-29.4	
7.98	-73.6	V	3.0	-19.5	35.5	1.0	-54.0	-25.0	-29.0	
10.64	-74.8	V	3.0	-18.4	33.7	1.0	-51.2	-25.0	-26.2	

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LTE B41 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 4/19/2018
Test Engineer: 12492
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 H	3m Chamber H	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										
5.01	-69.0		3.0	-18.8	36.9	1.0	-54.7	-25.0	-29.7	
7.52	-71.4		3.0	-17.8	35.9	1.0	-52.7	-25.0	-27.7	
10.02	-75.2		3.0	-19.0	33.7	1.0	-51.7	-25.0	-26.7	
5.01	-69.7		3.0	-19.5	36.9	1.0	-55.4	-25.0	-30.4	
7.52	-74.4		3.0	-20.8	35.9	1.0	-55.7	-25.0	-30.7	
10.02	-75.4		3.0	-19.2	33.7	1.0	-51.9	-25.0	-26.9	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.17	-69.4		3.0	-18.9	36.8	1.0	-54.8	-25.0	-29.8	
7.75	-73.2		3.0	-19.3	35.7	1.0	-54.1	-25.0	-29.1	
10.33	-73.8		3.0	-17.5	33.7	1.0	-50.2	-25.0	-25.2	
5.17	-68.9		3.0	-18.4	36.8	1.0	-54.2	-25.0	-29.2	
7.75	-71.9		3.0	-18.0	35.7	1.0	-52.7	-25.0	-27.7	
10.33	-73.7		3.0	-17.4	33.7	1.0	-50.1	-25.0	-25.1	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.32	-70.4		3.0	-19.6	36.8	1.0	-55.4	-25.0	-30.4	
7.98	-73.8		3.0	-19.7	35.5	1.0	-54.2	-25.0	-29.2	
10.64	-75.2		3.0	-18.8	33.7	1.0	-51.6	-25.0	-26.6	
5.32	-70.3		3.0	-19.6	36.8	1.0	-55.4	-25.0	-30.4	
7.98	-72.6		3.0	-18.5	35.5	1.0	-53.0	-25.0	-28.0	
10.64	-73.0		3.0	-16.6	33.7	1.0	-49.3	-25.0	-24.3	

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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: 04/20/18
Test Engineer: 52275
Configuration: EUT Only
Mode: LTE Band 7, MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber H	3m Chamber H	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 (2502.5MHz)										
5.01	-70.4	H	3.0	-20.4	36.9	1.0	-56.3	-25.0	-31.3	
7.51	-74.5	H	3.0	-20.7	35.9	1.0	-55.6	-25.0	-30.6	
10.01	-77.6	H	3.0	-21.1	33.7	1.0	-53.7	-25.0	-28.7	
5.01	-71.2	V	3.0	-21.0	36.9	1.0	-56.9	-25.0	-31.9	
7.51	-75.9	V	3.0	-22.3	35.9	1.0	-57.2	-25.0	-32.2	
10.01	-76.5	V	3.0	-20.3	33.7	1.0	-53.0	-25.0	-28.0	
Mid Channel (2535MHz)										
5.07	-72.4	H	3.0	-22.3	36.9	1.0	-58.1	-25.0	-33.1	
7.61	-77.0	H	3.0	-23.1	35.8	1.0	-57.9	-25.0	-32.9	
10.14	-76.7	H	3.0	-20.1	33.7	1.0	-52.8	-25.0	-27.8	
5.07	-72.2	V	3.0	-21.9	36.9	1.0	-57.7	-25.0	-32.7	
7.61	-75.0	V	3.0	-21.3	35.8	1.0	-56.1	-25.0	-31.1	
10.14	-77.6	V	3.0	-21.3	33.7	1.0	-54.0	-25.0	-29.0	
High Channel (2567.5MHz)										
5.14	-71.3	H	3.0	-21.1	36.8	1.0	-56.9	-25.0	-31.9	
7.70	-75.2	H	3.0	-21.2	35.8	1.0	-55.9	-25.0	-30.9	
10.27	-76.7	H	3.0	-20.1	33.7	1.0	-52.8	-25.0	-27.8	
5.14	-72.2	V	3.0	-21.7	36.8	1.0	-57.6	-25.0	-32.6	
7.70	-76.6	V	3.0	-22.8	35.8	1.0	-57.5	-25.0	-32.5	
10.27	-77.4	V	3.0	-21.1	33.7	1.0	-53.8	-25.0	-28.8	

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LTE B7 20MHz + 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/20/18
Test Engineer: 52275
Configuration: EUT Only
Mode: LTE Band 7, 5MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber H	3m Chamber H	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 (2502.5MHz)										
5.01	-73.0	H	3.0	-23.0	36.9	1.0	-58.9	-25.0	-33.9	
7.51	-75.1	H	3.0	-21.3	35.9	1.0	-56.2	-25.0	-31.2	
10.01	-75.9	H	3.0	-19.4	33.7	1.0	-52.0	-25.0	-27.0	
5.01	-72.3	V	3.0	-22.1	36.9	1.0	-58.0	-25.0	-33.0	
7.51	-75.8	V	3.0	-22.2	35.9	1.0	-57.1	-25.0	-32.1	
10.01	-76.7	V	3.0	-20.5	33.7	1.0	-53.2	-25.0	-28.2	
Mid Channel (2535MHz)										
5.07	-71.1	H	3.0	-21.0	36.9	1.0	-56.8	-25.0	-31.8	
7.61	-76.0	H	3.0	-22.1	35.8	1.0	-56.9	-25.0	-31.9	
10.14	-77.2	H	3.0	-20.6	33.7	1.0	-53.3	-25.0	-28.3	
5.07	-70.5	V	3.0	-20.2	36.9	1.0	-56.1	-25.0	-31.1	
7.61	-76.0	V	3.0	-22.3	35.8	1.0	-57.2	-25.0	-32.2	
10.14	-76.1	V	3.0	-19.9	33.7	1.0	-52.5	-25.0	-27.5	
High Channel (2567.5MHz)										
5.14	-71.5	H	3.0	-21.3	36.8	1.0	-57.1	-25.0	-32.1	
7.70	-75.9	H	3.0	-21.8	35.8	1.0	-56.6	-25.0	-31.6	
10.27	-74.8	H	3.0	-18.1	33.7	1.0	-50.8	-25.0	-25.8	
5.14	-71.2	V	3.0	-20.8	36.8	1.0	-56.6	-25.0	-31.6	
7.70	-75.6	V	3.0	-21.7	35.8	1.0	-56.5	-25.0	-31.5	
10.27	-78.0	V	3.0	-21.7	33.7	1.0	-54.4	-25.0	-29.4	

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LTE B7 20MHz + 10MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/26/18
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 1-99 1-0										
5.04	-64.3	H	3.0	-11.3	36.1	1.0	-46.4	-25.0	-21.4	
7.56	-67.0	H	3.0	-9.2	36.3	1.0	-44.4	-25.0	-19.4	
10.08	-66.0	H	3.0	-5.2	33.4	1.0	-37.6	-25.0	-12.6	
5.04	-64.3	V	3.0	-11.6	36.3	1.0	-46.9	-25.0	-21.9	
7.56	-66.9	V	3.0	-9.3	34.8	1.0	-43.0	-25.0	-18.0	
10.08	-66.9	V	3.0	-6.1	32.1	1.0	-37.1	-25.0	-12.1	
Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0										
5.07	-64.0	H	3.0	-11.0	36.0	1.0	-46.0	-25.0	-21.0	
7.61	-67.3	H	3.0	-9.3	35.2	1.0	-43.6	-25.0	-18.6	
10.14	-68.0	H	3.0	-7.1	32.0	1.0	-38.1	-25.0	-13.1	
5.07	-63.7	V	3.0	-11.0	36.1	1.0	-46.1	-25.0	-21.1	
7.61	-66.0	V	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.14	-67.3	V	3.0	-6.3	36.2	1.0	-41.6	-25.0	-16.6	
High Channel (2540.2MHz)+2560Mhz 1-99 1-0										
5.11	-64.0	H	3.0	-10.9	36.2	1.0	-46.1	-25.0	-21.1	
7.67	-65.5	H	3.0	-7.6	36.0	1.0	-42.6	-25.0	-17.6	
10.23	-67.3	H	3.0	-6.3	32.0	1.0	-37.3	-25.0	-12.3	
5.11	-63.4	V	3.0	-10.7	36.3	1.0	-45.9	-25.0	-20.9	
7.67	-65.8	V	3.0	-8.0	35.8	1.0	-42.8	-25.0	-17.8	
10.23	-67.5	V	3.0	-6.5	36.3	1.0	-41.8	-25.0	-16.8	

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LTE B7 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/26/18
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 1-99 1-0										
5.04	-62.5	H	3.0	-9.6	36.1	1.0	-44.7	-25.0	-19.7	
7.56	-67.0	H	3.0	-9.1	36.3	1.0	-44.4	-25.0	-19.4	
10.08	-68.7	H	3.0	-7.8	33.4	1.0	-40.3	-25.0	-15.3	
5.04	-63.6	V	3.0	-10.9	36.3	1.0	-46.2	-25.0	-21.2	
7.56	-66.7	V	3.0	-9.1	34.8	1.0	-42.8	-25.0	-17.8	
10.08	-67.9	V	3.0	-7.1	32.1	1.0	-38.1	-25.0	-13.1	
Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0										
5.07	-62.9	H	3.0	-8.9	36.0	1.0	-44.8	-25.0	-19.8	
7.61	-66.2	H	3.0	-8.2	35.2	1.0	-42.5	-25.0	-17.5	
10.14	-67.5	H	3.0	-6.6	32.0	1.0	-37.6	-25.0	-12.6	
5.07	-62.8	V	3.0	-10.1	36.1	1.0	-45.2	-25.0	-20.2	
7.61	-67.2	V	3.0	-9.5	37.7	1.0	-46.2	-25.0	-21.2	
10.14	-68.4	V	3.0	-5.5	36.2	1.0	-40.7	-25.0	-15.7	
High Channel (2540.2MHz)+2560Mhz 1-99 1-0										
5.11	-64.5	H	3.0	-11.4	36.2	1.0	-46.6	-25.0	-21.6	
7.67	-66.9	H	3.0	-8.9	36.0	1.0	-44.0	-25.0	-19.0	
10.23	-67.9	H	3.0	-6.9	32.0	1.0	-37.9	-25.0	-12.9	
5.11	-65.1	V	3.0	-12.3	36.3	1.0	-47.6	-25.0	-22.6	
7.67	-66.3	V	3.0	-8.5	35.8	1.0	-43.3	-25.0	-18.3	
10.23	-67.0	V	3.0	-6.0	36.3	1.0	-41.3	-25.0	-16.3	

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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 #: 12204512
Date: 4/20/2018
Test Engineer: 10643
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 H	3m Chamber H	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										
5.01	-70.4	H	3.0	-20.4	36.9	1.0	-56.3	-25.0	-31.3	
7.52	-74.0	H	3.0	-20.1	35.9	1.0	-55.0	-25.0	-30.0	
10.02	-75.3	H	3.0	-18.8	33.7	1.0	-51.4	-25.0	-26.4	
5.01	-70.0	V	3.0	-19.8	36.9	1.0	-55.6	-25.0	-30.6	
7.52	-74.5	V	3.0	-20.9	35.9	1.0	-55.9	-25.0	-30.9	
10.02	-75.7	V	3.0	-19.5	33.7	1.0	-52.2	-25.0	-27.2	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.18	-71.8	H	3.0	-21.5	36.8	1.0	-57.3	-25.0	-32.3	
7.77	-73.1	H	3.0	-19.0	35.7	1.0	-53.7	-25.0	-28.7	
10.36	-74.9	H	3.0	-18.2	33.7	1.0	-50.9	-25.0	-25.9	
5.18	-71.4	V	3.0	-20.9	36.8	1.0	-56.8	-25.0	-31.8	
7.77	-72.6	V	3.0	-18.7	35.7	1.0	-53.4	-25.0	-28.4	
10.36	-74.4	V	3.0	-18.1	33.7	1.0	-50.8	-25.0	-25.8	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.35	-72.7	H	3.0	-22.1	36.8	1.0	-57.8	-25.0	-32.8	
8.03	-74.1	H	3.0	-19.8	35.5	1.0	-54.2	-25.0	-29.2	
10.70	-75.3	H	3.0	-18.4	33.7	1.0	-51.1	-25.0	-26.1	
5.35	-72.8	V	3.0	-22.1	36.8	1.0	-57.9	-25.0	-32.9	
8.03	-73.0	V	3.0	-18.8	35.5	1.0	-53.3	-25.0	-28.3	
10.70	-75.1	V	3.0	-18.6	33.7	1.0	-51.4	-25.0	-26.4	

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LTE B41 20MHz + 5MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #: 12204512
Date: 4/20/2018
Test Engineer: 10643
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 H	3m Chamber H	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										
5.01	-69.0	H	3.0	-19.0	36.9	1.0	-54.9	-25.0	-29.9	
7.52	-73.0	H	3.0	-19.2	35.9	1.0	-54.1	-25.0	-29.1	
10.02	-75.0	H	3.0	-18.4	33.7	1.0	-51.1	-25.0	-26.1	
5.01	-69.4	V	3.0	-19.2	36.9	1.0	-55.1	-25.0	-30.1	
7.52	-73.8	V	3.0	-20.2	35.9	1.0	-55.1	-25.0	-30.1	
10.02	-75.6	V	3.0	-19.4	33.7	1.0	-52.1	-25.0	-27.1	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.18	-72.0	H	3.0	-21.7	36.8	1.0	-57.5	-25.0	-32.5	
7.77	-71.1	H	3.0	-17.0	35.7	1.0	-51.7	-25.0	-26.7	
10.36	-75.0	H	3.0	-18.3	33.7	1.0	-51.0	-25.0	-26.0	
5.18	-71.3	V	3.0	-20.8	36.8	1.0	-56.6	-25.0	-31.6	
7.77	-72.4	V	3.0	-18.5	35.7	1.0	-53.2	-25.0	-28.2	
10.36	-74.6	V	3.0	-18.3	33.7	1.0	-51.0	-25.0	-26.0	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.35	-72.3	H	3.0	-21.7	36.8	1.0	-57.5	-25.0	-32.5	
8.03	-74.3	H	3.0	-19.9	35.5	1.0	-54.4	-25.0	-29.4	
10.70	-75.7	H	3.0	-18.8	33.7	1.0	-51.6	-25.0	-26.6	
5.35	-72.0	V	3.0	-21.2	36.8	1.0	-57.0	-25.0	-32.0	
8.03	-74.5	V	3.0	-20.3	35.5	1.0	-54.8	-25.0	-29.8	
10.70	-75.4	V	3.0	-19.0	33.7	1.0	-51.7	-25.0	-26.7	

Rev. 05.21.15

LTE B41 20MHz + 5MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #: 12204512
Date: 4/20/2018
Test Engineer: 10643
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 H	3m Chamber H	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										
5.01	-70.3	H	3.0	-20.3	36.9	1.0	-56.2	-25.0	-31.2	
7.52	-73.8	H	3.0	-19.9	35.9	1.0	-54.9	-25.0	-29.9	
10.02	-75.4	H	3.0	-18.9	33.7	1.0	-51.5	-25.0	-26.5	
5.01	-68.8	V	3.0	-18.6	36.9	1.0	-54.5	-25.0	-29.5	
7.52	-72.6	V	3.0	-19.0	35.9	1.0	-53.9	-25.0	-28.9	
10.02	-76.1	V	3.0	-19.9	33.7	1.0	-52.6	-25.0	-27.6	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.17	-70.8	H	3.0	-20.5	36.8	1.0	-56.4	-25.0	-31.4	
7.75	-72.3	H	3.0	-18.2	35.7	1.0	-52.9	-25.0	-27.9	
10.33	-74.6	H	3.0	-17.9	33.7	1.0	-50.6	-25.0	-25.6	
5.17	-70.1	V	3.0	-19.7	36.8	1.0	-55.5	-25.0	-30.5	
7.75	-71.5	V	3.0	-17.7	35.7	1.0	-52.4	-25.0	-27.4	
10.33	-73.2	V	3.0	-16.9	33.7	1.0	-49.6	-25.0	-24.6	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.32	-70.8	H	3.0	-20.2	36.8	1.0	-56.0	-25.0	-31.0	
7.98	-72.2	H	3.0	-17.8	35.5	1.0	-52.3	-25.0	-27.3	
10.64	-74.9	H	3.0	-18.1	33.7	1.0	-50.8	-25.0	-25.8	
5.32	-71.5	V	3.0	-20.8	36.8	1.0	-56.6	-25.0	-31.6	
7.98	-71.5	V	3.0	-17.4	35.5	1.0	-51.9	-25.0	-26.9	
10.64	-74.5	V	3.0	-18.1	33.7	1.0	-50.8	-25.0	-25.8	

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LTE B41 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #: 12204512
Date: 4/20/2018
Test Engineer: 10643
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 H	3m Chamber H	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										
5.01	-69.3	H	3.0	-19.3	36.9	1.0	-55.2	-25.0	-30.2	
7.52	-74.3	H	3.0	-20.5	35.9	1.0	-55.4	-25.0	-30.4	
10.02	-76.0	H	3.0	-19.5	33.7	1.0	-52.2	-25.0	-27.2	
5.01	-70.3	V	3.0	-20.1	36.9	1.0	-55.9	-25.0	-30.9	
7.52	-73.3	V	3.0	-19.7	35.9	1.0	-54.6	-25.0	-29.6	
10.02	-76.0	V	3.0	-19.8	33.7	1.0	-52.5	-25.0	-27.5	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.17	-70.6	H	3.0	-20.3	36.8	1.0	-56.1	-25.0	-31.1	
7.75	-74.5	H	3.0	-20.5	35.7	1.0	-55.2	-25.0	-30.2	
10.33	-76.7	H	3.0	-20.0	33.7	1.0	-52.7	-25.0	-27.7	
5.17	-71.7	V	3.0	-21.2	36.8	1.0	-57.0	-25.0	-32.0	
7.75	-74.8	V	3.0	-21.0	35.7	1.0	-55.7	-25.0	-30.7	
10.33	-74.5	V	3.0	-18.2	33.7	1.0	-50.9	-25.0	-25.9	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.32	-71.7	H	3.0	-21.1	36.8	1.0	-56.9	-25.0	-31.9	
7.98	-74.9	H	3.0	-20.5	35.5	1.0	-55.0	-25.0	-30.0	
10.64	-76.2	H	3.0	-19.3	33.7	1.0	-52.0	-25.0	-27.0	
5.32	-71.7	V	3.0	-21.0	36.8	1.0	-56.8	-25.0	-31.8	
7.98	-74.3	V	3.0	-20.2	35.5	1.0	-54.8	-25.0	-29.8	
10.64	-76.0	V	3.0	-19.6	33.7	1.0	-52.3	-25.0	-27.3	

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LTE B41 20MHz + 20MHz 16QAM

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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: 04/25/18
Test Engineer: 10649
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 1-99 1-0										
5.03	-63.8	H	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.55	-66.2	H	3.0	-8.3	37.7	1.0	-45.1	-25.0	-20.1	
10.07	-67.1	H	3.0	-6.3	36.2	1.0	-41.5	-25.0	-16.5	
5.03	-63.2	V	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.55	-66.3	V	3.0	-8.7	37.7	1.0	-45.4	-25.0	-20.4	
10.07	-67.3	V	3.0	-6.4	36.2	1.0	-41.6	-25.0	-16.6	
Mid Channel (2530.1MHz)+2544.5MHz 1-99 1-0										
5.07	-64.1	H	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.61	-65.4	H	3.0	-7.5	37.7	1.0	-44.2	-25.0	-19.2	
10.15	-66.9	H	3.0	-6.0	36.2	1.0	-41.2	-25.0	-16.2	
5.07	-63.8	V	3.0	-11.1	38.7	1.0	-48.7	-25.0	-23.7	
7.61	-66.4	V	3.0	-8.7	37.7	1.0	-45.4	-25.0	-20.4	
10.15	-66.6	V	3.0	-5.7	36.2	1.0	-40.9	-25.0	-15.9	
High Channel (2550.1MHz)+2564.5MHz 1-99 1-0										
5.11	-63.4	H	3.0	-10.3	38.7	1.0	-47.9	-25.0	-22.9	
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	-41.3	-25.0	-16.3	
5.11	-63.5	V	3.0	-10.7	38.7	1.0	-48.4	-25.0	-23.4	
7.67	-65.7	V	3.0	-7.9	37.6	1.0	-44.5	-25.0	-19.5	
10.23	-65.7	V	3.0	-4.7	36.3	1.0	-38.9	-25.0	-14.9	

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LTE B7 20MHz + 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/25/18
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	-63.0	H	3.0	-10.1	38.7	1.0	-47.7	-25.0	-22.7	
7.55	-65.1	H	3.0	-7.3	37.7	1.0	-44.0	-25.0	-19.0	
10.07	-66.6	H	3.0	-5.7	36.2	1.0	-40.9	-25.0	-15.9	
5.03	-62.9	V	3.0	-10.3	38.7	1.0	-48.0	-25.0	-23.0	
7.55	-66.2	V	3.0	-8.5	37.7	1.0	-45.2	-25.0	-20.2	
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 1-99 1-0										
5.07	-63.6	H	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.61	-66.5	H	3.0	-8.6	37.7	1.0	-45.3	-25.0	-20.3	
10.15	-66.8	H	3.0	-5.9	36.2	1.0	-41.1	-25.0	-16.1	
5.07	-63.2	V	3.0	-10.4	38.7	1.0	-48.1	-25.0	-23.1	
7.61	-66.2	V	3.0	-8.4	37.7	1.0	-45.1	-25.0	-20.1	
10.15	-66.3	V	3.0	-5.4	36.2	1.0	-40.6	-25.0	-15.6	
High Channel (2550.1MHz)+2564.5MHz 1-99 1-0										
5.11	-63.7	H	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.67	-65.9	H	3.0	-7.9	37.6	1.0	-44.5	-25.0	-19.5	
10.23	-66.0	H	3.0	-5.0	36.3	1.0	-40.3	-25.0	-15.3	
5.11	-62.7	V	3.0	-9.9	38.7	1.0	-47.6	-25.0	-22.6	
7.67	-65.5	V	3.0	-7.7	37.6	1.0	-44.3	-25.0	-19.3	
10.23	-67.2	V	3.0	-6.1	36.3	1.0	-41.4	-25.0	-16.4	

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LTE B7 20MHz + 10MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/25/18
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	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 1-99 1-0										
5.04	-63.7	H	3.0	-10.8	36.1	1.0	-45.9	-25.0	-20.9	
7.56	-65.9	H	3.0	-8.0	36.3	1.0	-43.3	-25.0	-18.3	
10.08	-66.1	H	3.0	-5.2	33.4	1.0	-37.7	-25.0	-12.7	
5.04	-63.2	V	3.0	-10.5	36.3	1.0	-45.8	-25.0	-20.8	
7.56	-66.8	V	3.0	-9.1	34.8	1.0	-42.9	-25.0	-17.9	
10.08	-67.6	V	3.0	-6.8	32.1	1.0	-37.8	-25.0	-12.8	
Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0										
5.07	-63.6	H	3.0	-10.6	36.0	1.0	-45.5	-25.0	-20.5	
7.61	-66.4	H	3.0	-8.4	35.2	1.0	-42.7	-25.0	-17.7	
10.14	-66.9	H	3.0	-6.0	32.0	1.0	-37.0	-25.0	-12.0	
5.07	-63.3	V	3.0	-10.6	36.1	1.0	-45.7	-25.0	-20.7	
7.61	-65.8	V	3.0	-8.1	37.7	1.0	-44.7	-25.0	-19.7	
10.14	-68.0	V	3.0	-7.0	36.2	1.0	-42.2	-25.0	-17.2	
High Channel (2540.2MHz)+2560Mhz 1-99 1-0										
5.12	-63.6	H	3.0	-10.4	36.2	1.0	-45.7	-25.0	-20.7	
7.68	-65.9	H	3.0	-7.9	36.0	1.0	-42.9	-25.0	-17.9	
10.25	-66.8	H	3.0	-5.8	32.0	1.0	-36.8	-25.0	-11.8	
5.12	-62.6	V	3.0	-9.8	36.3	1.0	-45.1	-25.0	-20.1	
7.68	-64.7	V	3.0	-6.9	35.8	1.0	-41.8	-25.0	-16.8	
10.25	-66.4	V	3.0	-5.3	36.3	1.0	-40.6	-25.0	-15.6	

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LTE B7 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/25/18
Test Engineer: 10649
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 1-99 1-0										
5.04	-63.2	H	3.0	-10.3	36.1	1.0	-45.4	-25.0	-20.4	
7.56	-65.3	H	3.0	-7.5	36.3	1.0	-42.7	-25.0	-17.7	
10.08	-67.4	H	3.0	-6.5	33.4	1.0	-39.0	-25.0	-14.0	
5.04	-63.4	V	3.0	-10.8	36.3	1.0	-46.1	-25.0	-21.1	
7.56	-65.7	V	3.0	-8.0	34.8	1.0	-41.8	-25.0	-16.8	
10.08	-66.3	V	3.0	-5.4	32.1	1.0	-36.5	-25.0	-11.5	
Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0										
5.07	-64.0	H	3.0	-11.0	36.0	1.0	-45.9	-25.0	-20.9	
7.61	-66.0	H	3.0	-8.0	35.2	1.0	-42.3	-25.0	-17.3	
10.14	-67.9	H	3.0	-7.0	32.0	1.0	-38.0	-25.0	-13.0	
5.07	-63.8	V	3.0	-11.1	36.1	1.0	-46.2	-25.0	-21.2	
7.61	-65.9	V	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.14	-66.8	V	3.0	-5.8	36.2	1.0	-41.1	-25.0	-16.1	
High Channel (2540.2MHz)+2560Mhz 1-99 1-0										
5.12	-63.6	H	3.0	-10.5	36.2	1.0	-45.7	-25.0	-20.7	
7.68	-65.7	H	3.0	-7.7	36.0	1.0	-42.7	-25.0	-17.7	
10.25	-66.5	H	3.0	-5.5	32.0	1.0	-36.5	-25.0	-11.5	
5.12	-63.7	V	3.0	-10.9	36.3	1.0	-46.1	-25.0	-21.1	
7.68	-66.2	V	3.0	-8.4	35.8	1.0	-43.2	-25.0	-18.2	
10.25	-65.4	V	3.0	-4.4	36.3	1.0	-39.7	-25.0	-14.7	

Rev. 05.21.15

LTE B7 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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9.3.2. LTE BAND 41

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/25/18
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 1-99, 1-0										
5.03	-63.6	H	3.0	-10.7	38.7	1.0	-48.4	-25.0	-23.4	
7.54	-66.1	H	3.0	-8.2	37.7	1.0	-45.0	-25.0	-20.0	
10.06	-68.1	H	3.0	-7.2	36.2	1.0	-42.4	-25.0	-17.4	
5.03	-62.9	V	3.0	-10.3	38.7	1.0	-48.0	-25.0	-23.0	
7.54	-65.9	V	3.0	-8.2	37.7	1.0	-45.0	-25.0	-20.0	
10.06	-67.8	V	3.0	-7.0	36.2	1.0	-42.1	-25.0	-17.1	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.19	-64.5	H	3.0	-11.2	38.7	1.0	-48.9	-25.0	-23.9	
7.79	-65.1	H	3.0	-6.9	37.6	1.0	-43.5	-25.0	-18.5	
10.39	-68.1	H	3.0	-6.9	36.4	1.0	-42.3	-25.0	-17.3	
5.19	-64.2	V	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.79	-66.1	V	3.0	-8.2	37.6	1.0	-44.7	-25.0	-19.7	
10.39	-67.8	V	3.0	-6.6	36.4	1.0	-42.0	-25.0	-17.0	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.36	-66.4	H	3.0	-12.7	38.6	1.0	-50.4	-25.0	-25.4	
8.04	-65.4	H	3.0	-7.0	37.4	1.0	-43.4	-25.0	-18.4	
10.72	-67.5	H	3.0	-6.1	36.6	1.0	-41.7	-25.0	-16.7	
5.36	-66.4	V	3.0	-13.1	38.6	1.0	-50.8	-25.0	-25.8	
8.04	-66.0	V	3.0	-7.7	37.4	1.0	-44.1	-25.0	-19.1	
10.72	-67.3	V	3.0	-5.8	36.6	1.0	-41.3	-25.0	-16.3	

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LTE B41 20MHz + 5MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/25/18
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 1-99, 1-0										
5.03	-63.5	H	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.54	-66.6	H	3.0	-8.8	37.7	1.0	-45.5	-25.0	-20.5	
10.06	-69.0	H	3.0	-8.2	36.2	1.0	-43.3	-25.0	-18.3	
5.03	-64.4	V	3.0	-11.8	38.7	1.0	-49.5	-25.0	-24.5	
7.54	-66.0	V	3.0	-8.4	37.7	1.0	-45.1	-25.0	-20.1	
10.06	-67.6	V	3.0	-6.8	36.2	1.0	-41.9	-25.0	-16.9	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.19	-64.7	H	3.0	-11.4	38.7	1.0	-49.1	-25.0	-24.1	
7.79	-66.3	H	3.0	-8.2	37.6	1.0	-44.8	-25.0	-19.8	
10.39	-67.5	H	3.0	-6.3	36.4	1.0	-41.7	-25.0	-16.7	
5.19	-64.7	V	3.0	-11.7	38.7	1.0	-49.4	-25.0	-24.4	
7.79	-65.8	V	3.0	-7.9	37.6	1.0	-44.4	-25.0	-19.4	
10.39	-68.0	V	3.0	-6.8	36.4	1.0	-42.2	-25.0	-17.2	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.36	-67.5	H	3.0	-13.9	38.6	1.0	-51.5	-25.0	-26.5	
8.04	-65.7	H	3.0	-7.3	37.4	1.0	-43.7	-25.0	-18.7	
10.72	-67.4	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	-50.8	-25.0	-25.8	
8.04	-66.8	V	3.0	-8.5	37.4	1.0	-44.9	-25.0	-19.9	
10.72	-66.2	V	3.0	-4.8	36.6	1.0	-40.2	-25.0	-15.2	

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LTE B41 20MHz + 5MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/25/18
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 1-99 1-0										
5.03	-61.7	H	3.0	-8.7	38.7	1.0	-46.4	-25.0	-21.4	
7.55	-66.0	H	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.06	-68.1	H	3.0	-7.3	36.2	1.0	-42.4	-25.0	-17.4	
5.03	-63.3	V	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.55	-65.8	V	3.0	-8.1	37.7	1.0	-44.9	-25.0	-19.9	
10.06	-67.2	V	3.0	-6.3	36.2	1.0	-41.5	-25.0	-16.5	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.19	-63.7	H	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.78	-65.0	H	3.0	-6.8	37.6	1.0	-43.4	-25.0	-18.4	
10.37	-66.0	H	3.0	-4.9	36.4	1.0	-40.3	-25.0	-15.3	
5.19	-63.5	V	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.78	-65.0	V	3.0	-7.0	37.6	1.0	-43.6	-25.0	-18.6	
10.37	-66.3	V	3.0	-5.1	36.4	1.0	-40.5	-25.0	-15.5	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.34	-66.6	H	3.0	-13.0	38.6	1.0	-50.7	-25.0	-25.7	
8.01	-64.7	H	3.0	-6.3	37.4	1.0	-42.7	-25.0	-17.7	
10.68	-68.3	H	3.0	-7.0	36.6	1.0	-42.5	-25.0	-17.5	
5.34	-67.5	V	3.0	-14.2	38.6	1.0	-51.8	-25.0	-26.8	
8.01	-67.1	V	3.0	-8.9	37.4	1.0	-45.3	-25.0	-20.3	
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 QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/25/18
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 1-99 1-0										
5.03	-64.2	H	3.0	-11.2	38.7	1.0	-48.9	-25.0	-23.9	
7.55	-66.3	H	3.0	-8.5	37.7	1.0	-45.2	-25.0	-20.2	
10.06	-67.6	H	3.0	-6.7	36.2	1.0	-41.9	-25.0	-16.9	
5.03	-64.2	V	3.0	-11.6	38.7	1.0	-49.3	-25.0	-24.3	
7.55	-65.8	V	3.0	-8.1	37.7	1.0	-44.9	-25.0	-19.9	
10.06	-68.0	V	3.0	-7.2	36.2	1.0	-42.4	-25.0	-17.4	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.19	-65.1	H	3.0	-11.8	38.7	1.0	-49.5	-25.0	-24.5	
7.78	-65.1	H	3.0	-7.0	37.6	1.0	-43.6	-25.0	-18.6	
10.37	-67.9	H	3.0	-4.8	36.4	1.0	-42.1	-25.0	-17.1	
5.19	-64.0	V	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.78	-65.8	V	3.0	-7.8	37.6	1.0	-44.4	-25.0	-19.4	
10.37	-67.0	V	3.0	-5.8	36.4	1.0	-41.1	-25.0	-16.1	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.34	-65.0	H	3.0	-11.4	38.6	1.0	-49.1	-25.0	-24.1	
8.01	-65.5	H	3.0	-7.1	37.4	1.0	-43.5	-25.0	-18.5	
10.68	-65.8	H	3.0	-4.5	36.6	1.0	-40.0	-25.0	-15.0	
5.34	-66.4	V	3.0	-13.1	38.6	1.0	-50.8	-25.0	-25.8	
8.01	-66.4	V	3.0	-8.2	37.4	1.0	-44.6	-25.0	-19.6	
10.68	-67.7	V	3.0	-6.2	36.6	1.0	-41.7	-25.0	-16.7	

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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: 04/27/18
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 1-99 1-0										
5.03	-64.0	H	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.55	-66.6	H	3.0	-8.7	37.7	1.0	-45.4	-25.0	-20.4	
10.07	-66.8	H	3.0	-6.0	36.2	1.0	-41.1	-25.0	-16.1	
5.03	-63.4	V	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.55	-65.6	V	3.0	-7.9	37.7	1.0	-44.7	-25.0	-19.7	
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 1-99 1-0										
5.07	-63.6	H	3.0	-10.6	38.7	1.0	-48.3	-25.0	-23.3	
7.61	-66.9	H	3.0	-9.0	37.7	1.0	-45.7	-25.0	-20.7	
10.15	-66.8	H	3.0	-5.9	36.2	1.0	-41.1	-25.0	-16.1	
5.07	-64.8	V	3.0	-12.1	38.7	1.0	-49.8	-25.0	-24.8	
7.61	-66.5	V	3.0	-8.7	37.7	1.0	-45.4	-25.0	-20.4	
10.15	-67.4	V	3.0	-6.5	36.2	1.0	-41.7	-25.0	-16.7	
High Channel (2550.1MHz)+2564.5MHz 1-99 1-0										
5.11	-64.9	H	3.0	-11.8	38.7	1.0	-49.5	-25.0	-24.5	
7.67	-65.8	H	3.0	-7.8	37.6	1.0	-44.4	-25.0	-19.4	
10.23	-67.2	H	3.0	-6.2	36.3	1.0	-41.5	-25.0	-16.5	
5.11	-63.9	V	3.0	-11.2	38.7	1.0	-48.8	-25.0	-23.8	
7.67	-65.6	V	3.0	-7.6	37.6	1.0	-44.5	-25.0	-19.5	
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: 04/27/18
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 1-99 1-0										
5.03	-64.3	H	3.0	-11.4	38.7	1.0	-49.0	-25.0	-24.0	
7.55	-65.6	H	3.0	-7.8	37.7	1.0	-44.5	-25.0	-19.5	
10.07	-67.6	H	3.0	-6.8	36.2	1.0	-41.9	-25.0	-16.9	
5.03	-64.1	V	3.0	-11.4	38.7	1.0	-49.1	-25.0	-24.1	
7.55	-67.0	V	3.0	-9.3	37.7	1.0	-46.0	-25.0	-21.0	
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 1-99 1-0										
5.07	-65.2	H	3.0	-12.2	38.7	1.0	-49.9	-25.0	-24.9	
7.61	-67.0	H	3.0	-9.1	37.7	1.0	-45.7	-25.0	-20.7	
10.15	-67.2	H	3.0	-6.3	36.2	1.0	-41.5	-25.0	-16.5	
5.07	-64.3	V	3.0	-11.6	38.7	1.0	-49.2	-25.0	-24.2	
7.61	-66.2	V	3.0	-8.5	37.7	1.0	-45.2	-25.0	-20.2	
10.15	-65.9	V	3.0	-5.0	36.2	1.0	-40.2	-25.0	-15.2	
High Channel (2550.1MHz)+2564.5MHz 1-99 1-0										
5.11	-63.3	H	3.0	-10.2	38.7	1.0	-47.9	-25.0	-22.9	
7.67	-66.0	H	3.0	-8.0	37.6	1.0	-44.6	-25.0	-19.6	
10.23	-66.0	H	3.0	-5.0	36.3	1.0	-40.3	-25.0	-15.3	
5.11	-64.4	V	3.0	-11.6	38.7	1.0	-49.3	-25.0	-24.3	
7.67	-65.9	V	3.0	-8.1	37.6	1.0	-44.8	-25.0	-19.8	
10.23	-66.9	V	3.0	-5.8	36.3	1.0	-41.1	-25.0	-16.1	

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LTE B7 20MHz + 10MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/26/18
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 1-99 1-0										
5.04	-64.3	H	3.0	-16.2	36.1	1.0	-51.3	-25.0	-26.3	
7.56	-67.0	H	3.0	-17.3	36.3	1.0	-52.6	-25.0	-27.6	
10.08	-66.0	H	3.0	-10.6	33.4	1.0	-43.1	-25.0	-18.1	
5.04	-64.3	V	3.0	-14.7	36.3	1.0	-50.0	-25.0	-25.0	
7.56	-66.9	V	3.0	-13.4	34.8	1.0	-47.1	-25.0	-22.1	
10.08	-66.9	V	3.0	-10.9	32.1	1.0	-42.0	-25.0	-17.0	
Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0										
5.07	-64.0	H	3.0	-13.0	36.0	1.0	-48.0	-25.0	-23.0	
7.61	-67.3	H	3.0	-14.2	35.2	1.0	-48.4	-25.0	-23.4	
10.14	-68.0	H	3.0	-11.7	32.0	1.0	-42.7	-25.0	-17.7	
5.07	-63.7	V	3.0	-16.0	36.1	1.0	-51.1	-25.0	-26.1	
7.61	-66.0	V	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.14	-67.3	V	3.0	-6.3	36.2	1.0	-41.6	-25.0	-16.6	
High Channel (2540.2MHz)+2560Mhz 1-99 1-0										
5.11	-64.0	H	3.0	-14.8	36.2	1.0	-50.0	-25.0	-25.0	
7.67	-65.5	H	3.0	-14.9	36.0	1.0	-49.9	-25.0	-24.9	
10.23	-67.3	H	3.0	-11.0	32.0	1.0	-42.0	-25.0	-17.0	
5.11	-63.4	V	3.0	-16.4	36.3	1.0	-51.7	-25.0	-26.7	
7.67	-65.8	V	3.0	-14.5	35.8	1.0	-49.4	-25.0	-24.4	
10.23	-67.5	V	3.0	-6.5	36.3	1.0	-41.8	-25.0	-16.8	

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LTE B7 20MHz + 20MHz QPSK compare the two

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/26/18
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 1-99 1-0										
5.04	-62.5	H	3.0	-9.6	38.7	1.0	-47.3	-25.0	-22.3	
7.56	-67.0	H	3.0	-9.1	37.7	1.0	-45.9	-25.0	-20.9	
10.08	-68.7	H	3.0	-7.8	36.2	1.0	-43.0	-25.0	-18.0	
5.04	-63.6	V	3.0	-10.9	38.7	1.0	-48.6	-25.0	-23.6	
7.56	-66.7	V	3.0	-8.1	37.7	1.0	-45.8	-25.0	-20.8	
10.08	-67.9	V	3.0	-7.1	36.2	1.0	-42.2	-25.0	-17.2	
Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0										
5.07	-62.9	H	3.0	-9.9	38.7	1.0	-47.6	-25.0	-22.6	
7.61	-66.2	H	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.14	-67.5	H	3.0	-6.6	36.2	1.0	-41.8	-25.0	-16.8	
5.07	-62.8	V	3.0	-10.1	38.7	1.0	-47.7	-25.0	-22.7	
7.61	-67.2	V	3.0	-9.5	37.7	1.0	-46.2	-25.0	-21.2	
10.14	-66.4	V	3.0	-5.5	36.2	1.0	-40.7	-25.0	-15.7	
High Channel (2540.2MHz)+2560Mhz 1-99 1-0										
5.11	-64.5	H	3.0	-11.4	38.7	1.0	-49.0	-25.0	-24.0	
7.67	-66.9	H	3.0	-8.9	37.6	1.0	-45.6	-25.0	-20.6	
10.23	-67.9	H	3.0	-6.9	36.3	1.0	-42.1	-25.0	-17.1	
5.11	-65.1	V	3.0	-12.3	38.7	1.0	-50.0	-25.0	-25.0	
7.67	-66.3	V	3.0	-8.5	37.6	1.0	-45.1	-25.0	-20.1	
10.23	-67.0	V	3.0	-6.0	36.3	1.0	-41.3	-25.0	-16.3	

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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: 04/27/18
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	-63.2	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	-66.5	H	3.0	-5.6	36.2	1.0	-40.8	-25.0	-15.8	
5.02	-63.7	V	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.54	-66.2	V	3.0	-8.5	37.7	1.0	-45.3	-25.0	-20.3	
10.05	-67.2	V	3.0	-6.4	36.2	1.0	-41.6	-25.0	-16.6	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.19	-63.2	H	3.0	-9.9	38.7	1.0	-47.6	-25.0	-22.6	
7.79	-64.9	H	3.0	-6.8	37.6	1.0	-43.3	-25.0	-18.3	
10.39	-66.8	H	3.0	-5.7	36.4	1.0	-41.1	-25.0	-16.1	
5.19	-64.0	V	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.79	-65.8	V	3.0	-7.9	37.6	1.0	-44.5	-25.0	-19.5	
10.39	-66.1	V	3.0	-4.9	36.4	1.0	-40.3	-25.0	-15.3	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.36	-62.3	H	3.0	-8.7	38.6	1.0	-46.3	-25.0	-21.3	
8.04	-64.8	H	3.0	-6.4	37.4	1.0	-42.8	-25.0	-17.8	
10.72	-67.0	H	3.0	-5.6	36.6	1.0	-41.2	-25.0	-16.2	
5.36	-64.0	V	3.0	-10.7	38.6	1.0	-48.3	-25.0	-23.3	
8.04	-64.8	V	3.0	-6.6	37.4	1.0	-43.0	-25.0	-18.0	
10.72	-66.7	V	3.0	-5.1	36.6	1.0	-40.7	-25.0	-15.7	

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LTE B41 20MHz + 5MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/27/18
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 1-99, 1-0										
5.02	-63.3	H	3.0	-10.4	38.7	1.0	-48.1	-25.0	-23.1	
7.54	-66.3	H	3.0	-8.4	37.7	1.0	-45.2	-25.0	-20.2	
10.05	-67.4	H	3.0	-6.5	36.2	1.0	-41.7	-25.0	-16.7	
5.02	-63.4	V	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.54	-66.3	V	3.0	-8.7	37.7	1.0	-45.4	-25.0	-20.4	
10.05	-67.4	V	3.0	-6.5	36.2	1.0	-41.7	-25.0	-16.7	
Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0										
5.19	-63.8	H	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.79	-63.9	H	3.0	-5.8	37.6	1.0	-42.3	-25.0	-17.3	
10.39	-67.2	H	3.0	-6.1	36.4	1.0	-41.5	-25.0	-16.5	
5.19	-63.0	V	3.0	-10.0	38.7	1.0	-47.7	-25.0	-22.7	
7.79	-64.9	V	3.0	-6.9	37.6	1.0	-43.5	-25.0	-18.5	
10.39	-67.3	V	3.0	-6.1	36.4	1.0	-41.5	-25.0	-16.5	
High Channel (2675MHz)+2686.7MHz 1-99, 1-0										
5.36	-63.1	H	3.0	-9.4	38.6	1.0	-47.1	-25.0	-22.1	
8.04	-65.3	H	3.0	-6.8	37.4	1.0	-43.2	-25.0	-18.2	
10.72	-67.3	H	3.0	-5.9	36.6	1.0	-41.4	-25.0	-16.4	
5.36	-63.7	V	3.0	-10.4	38.6	1.0	-48.0	-25.0	-23.0	
8.04	-65.4	V	3.0	-7.2	37.4	1.0	-43.6	-25.0	-18.6	
10.72	-66.4	V	3.0	-4.9	36.6	1.0	-40.5	-25.0	-15.5	

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LTE B41 20MHz + 5MHz 16QAM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/26/18
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	-63.7	H	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.55	-66.5	H	3.0	-8.6	37.7	1.0	-45.4	-25.0	-20.4	
10.06	-66.5	H	3.0	-5.6	36.2	1.0	-40.8	-25.0	-15.8	
5.03	-62.7	V	3.0	-10.0	38.7	1.0	-47.7	-25.0	-22.7	
7.55	-65.5	V	3.0	-7.8	37.7	1.0	-44.6	-25.0	-19.6	
10.06	-67.3	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	-63.7	H	3.0	-10.4	38.7	1.0	-48.1	-25.0	-23.1	
7.78	-65.4	H	3.0	-7.3	37.6	1.0	-43.9	-25.0	-18.9	
10.37	-66.5	H	3.0	-5.4	36.4	1.0	-40.7	-25.0	-15.7	
5.19	-63.6	V	3.0	-10.7	38.7	1.0	-48.4	-25.0	-23.4	
7.78	-66.0	V	3.0	-8.0	37.6	1.0	-44.6	-25.0	-19.6	
10.37	-66.8	V	3.0	-5.6	36.4	1.0	-41.0	-25.0	-16.0	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.34	-65.4	H	3.0	-11.8	38.6	1.0	-49.5	-25.0	-24.5	
8.01	-65.5	H	3.0	-7.1	37.4	1.0	-43.5	-25.0	-18.5	
10.68	-67.0	H	3.0	-5.6	36.6	1.0	-41.2	-25.0	-16.2	
5.34	-65.4	V	3.0	-12.2	38.6	1.0	-49.8	-25.0	-24.8	
8.01	-66.5	V	3.0	-8.2	37.4	1.0	-44.6	-25.0	-19.6	
10.68	-67.6	V	3.0	-6.1	36.6	1.0	-41.7	-25.0	-16.7	

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LTE B41 20MHz + 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/26/18
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	-64.0	H	3.0	-11.1	38.7	1.0	-48.8	-25.0	-23.8	
7.55	-65.0	H	3.0	-7.1	37.7	1.0	-43.9	-25.0	-18.9	
10.06	-66.8	H	3.0	-5.9	36.2	1.0	-41.1	-25.0	-16.1	
5.03	-63.5	V	3.0	-10.9	38.7	1.0	-48.6	-25.0	-23.6	
7.55	-65.9	V	3.0	-8.3	37.7	1.0	-45.0	-25.0	-20.0	
10.06	-67.1	V	3.0	-6.2	36.2	1.0	-41.4	-25.0	-16.4	
Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0										
5.19	-63.3	H	3.0	-10.1	38.7	1.0	-47.8	-25.0	-22.8	
7.78	-65.8	H	3.0	-7.7	37.6	1.0	-44.3	-25.0	-19.3	
10.37	-66.6	H	3.0	-5.5	36.4	1.0	-40.8	-25.0	-15.8	
5.19	-63.6	V	3.0	-10.7	38.7	1.0	-48.3	-25.0	-23.3	
7.78	-65.4	V	3.0	-7.4	37.6	1.0	-44.0	-25.0	-19.0	
10.37	-67.2	V	3.0	-6.0	36.4	1.0	-41.4	-25.0	-16.4	
High Channel (2660.2MHz) + 2680MHz 1-99 1-0										
5.34	-65.4	H	3.0	-11.8	38.6	1.0	-49.5	-25.0	-24.5	
8.01	-65.5	H	3.0	-7.1	37.4	1.0	-43.5	-25.0	-18.5	
10.68	-67.0	H	3.0	-5.6	36.6	1.0	-41.2	-25.0	-16.2	
5.34	-65.4	V	3.0	-12.2	38.6	1.0	-49.8	-25.0	-24.8	
8.01	-66.5	V	3.0	-8.2	37.4	1.0	-44.6	-25.0	-19.6	
10.68	-67.6	V	3.0	-6.1	36.6	1.0	-41.7	-25.0	-16.7	

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LTE B41 20MHz + 20MHz 16QAM

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10. SETUP PHOTOS

Please refer to 12204512-EP1V1 setup photo

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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