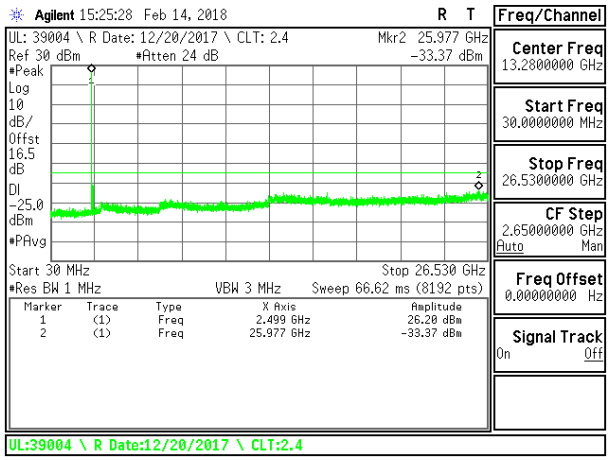
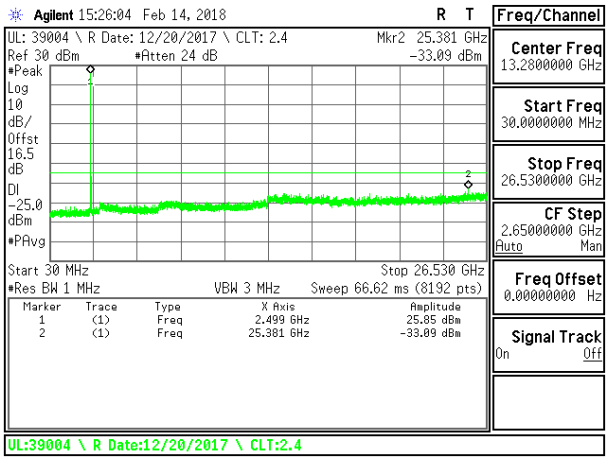
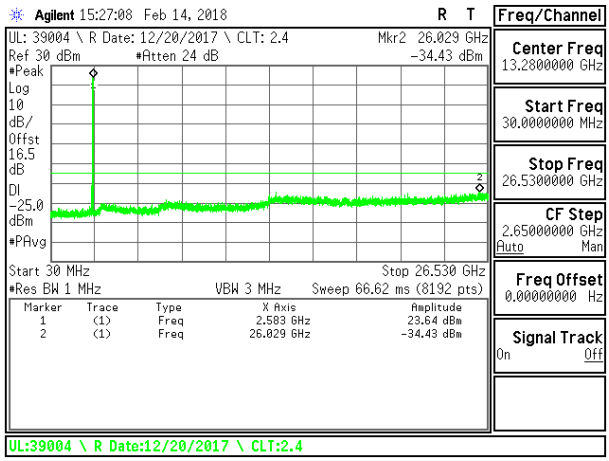


LTE B41 20MHz QPSK Low Channel RB1-0



LTE B41 20MHz 16QAM Low Channel RB1-0



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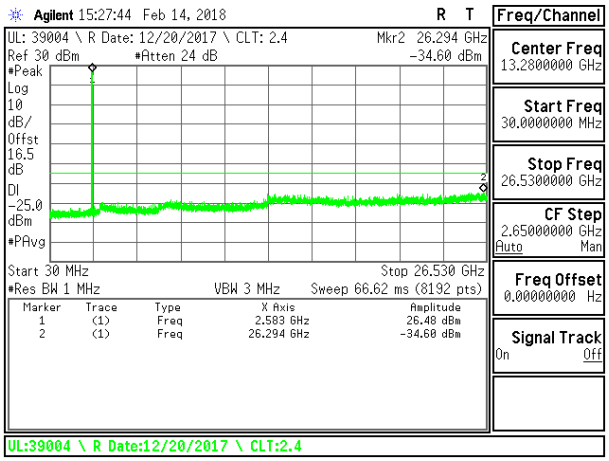

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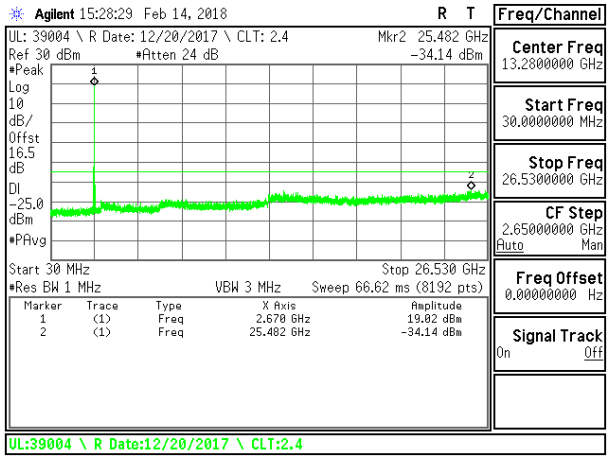

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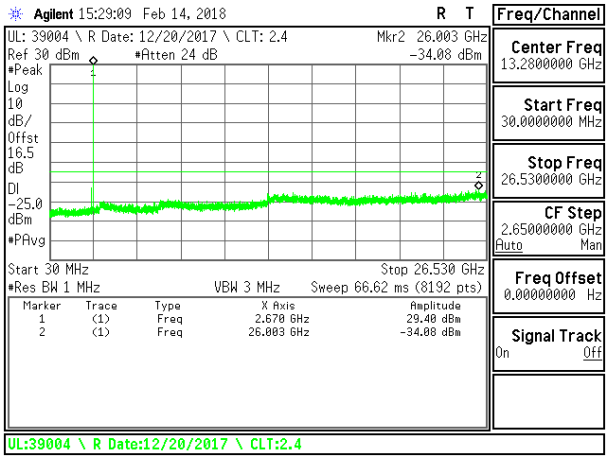

LTE B41 20MHz 16QAM High Channel RB1-0

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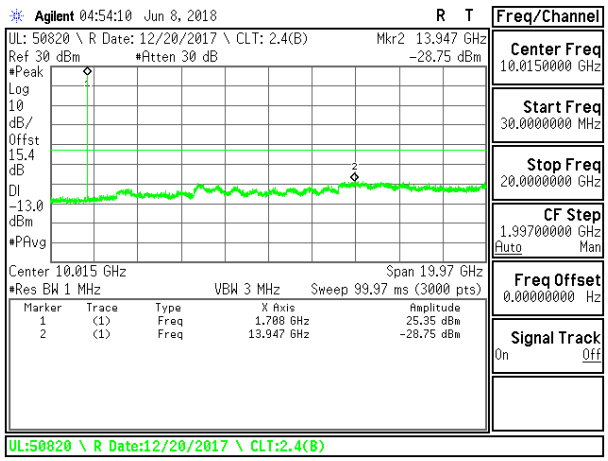
8.3.12. ANT 1, LTE BAND 66



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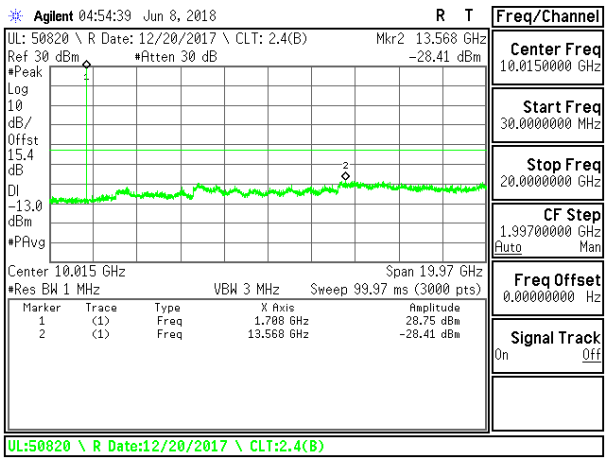

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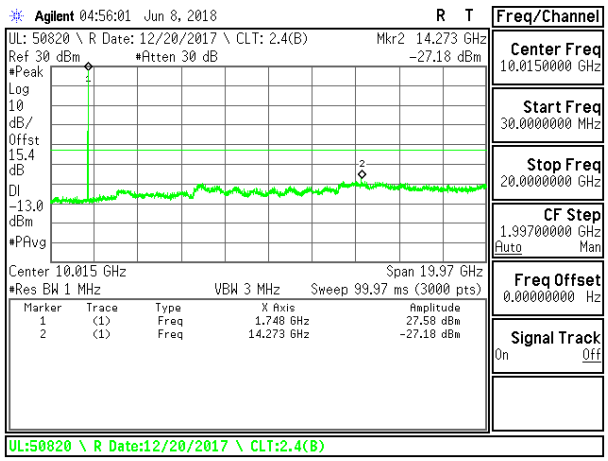

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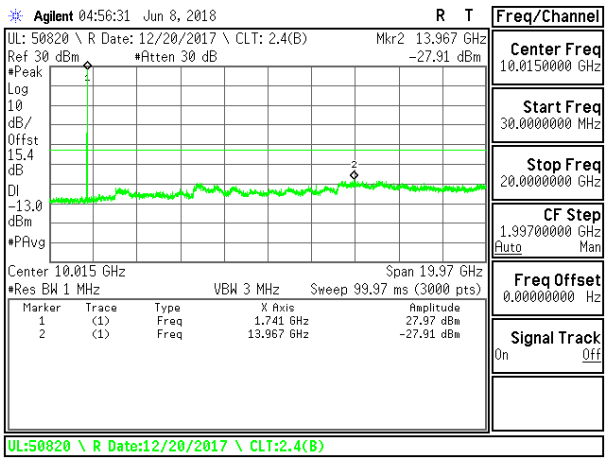

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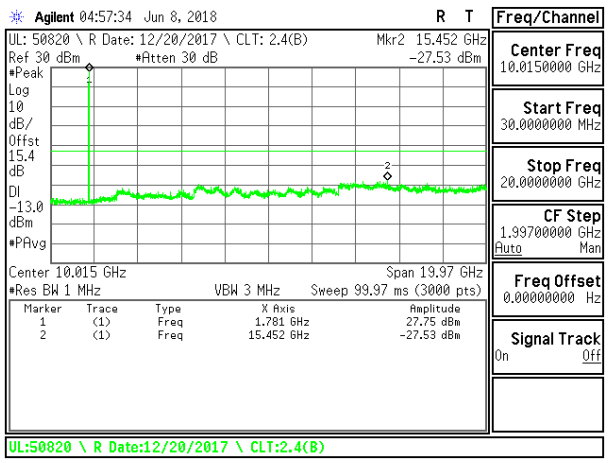
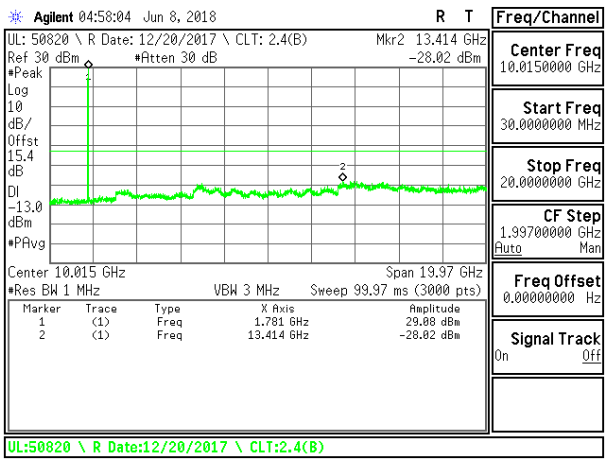


LTE B66 1.4MHz QPSK High Channel RB1-0



LTE B66 1.4MHz 16QAM High Channel RB1-0

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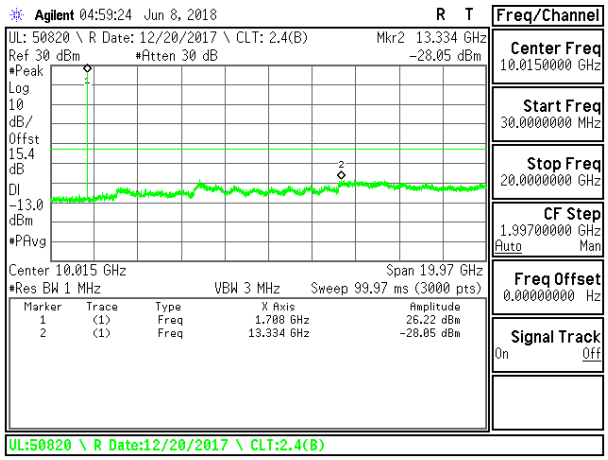
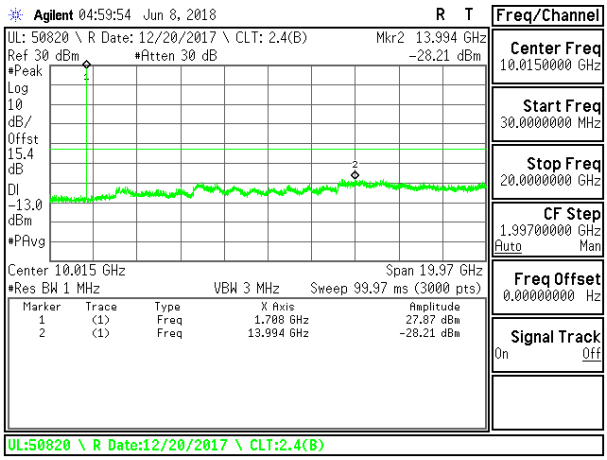


LTE B66 3MHz QPSK Low Channel RB1-0



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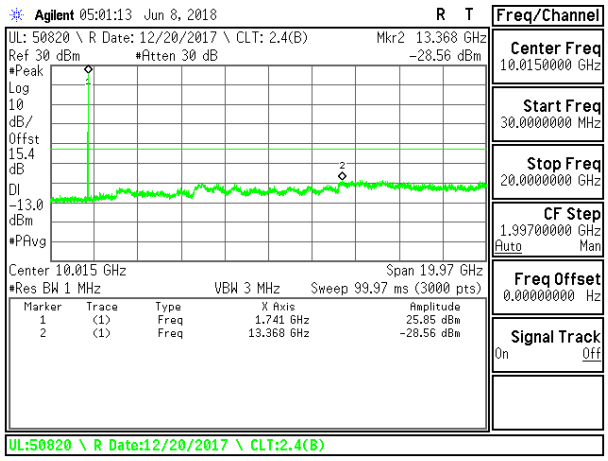

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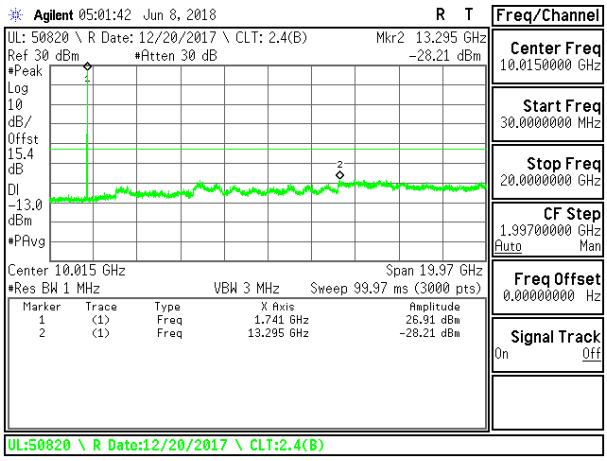

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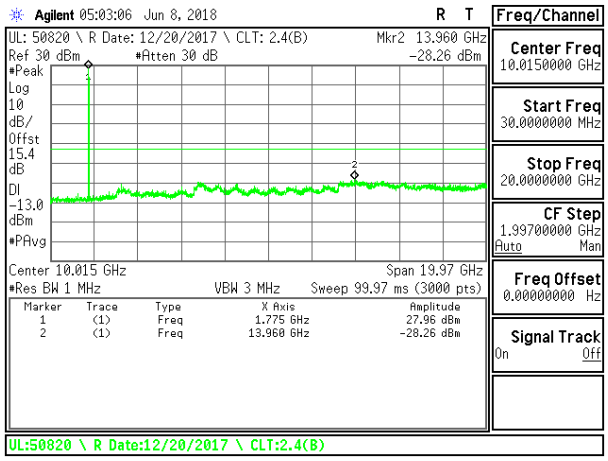

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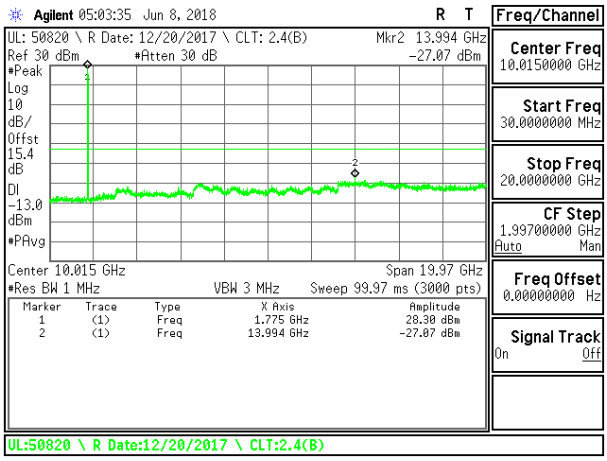

LTE B66 3MHz 16QAM High Channel RB1-0

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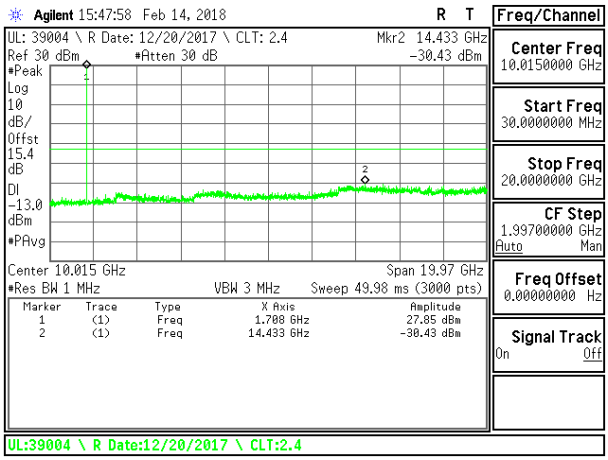
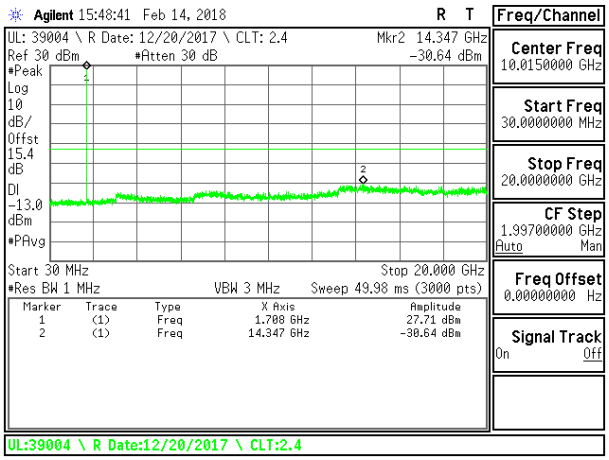


LTE B66 5MHz QPSK Low Channel RB1-0



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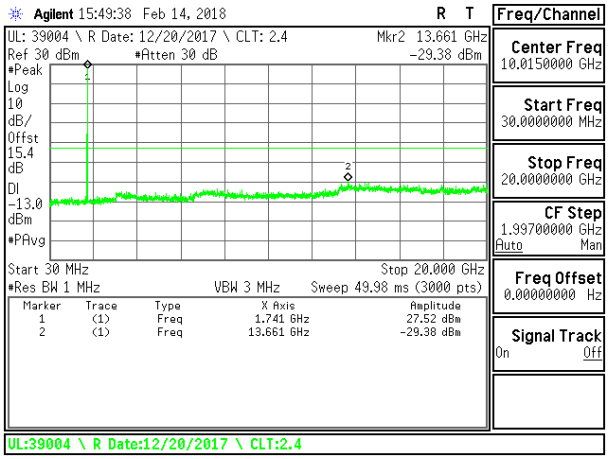

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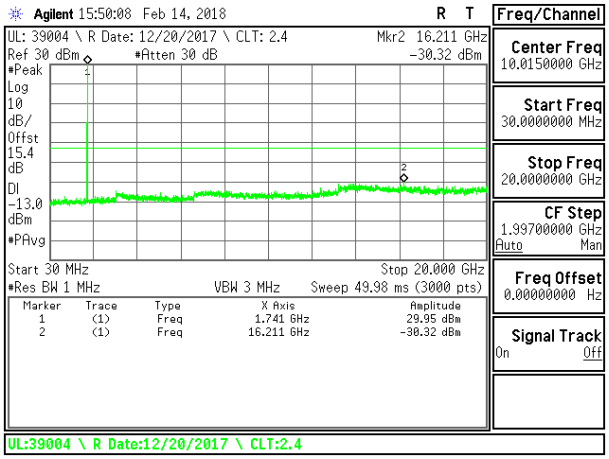

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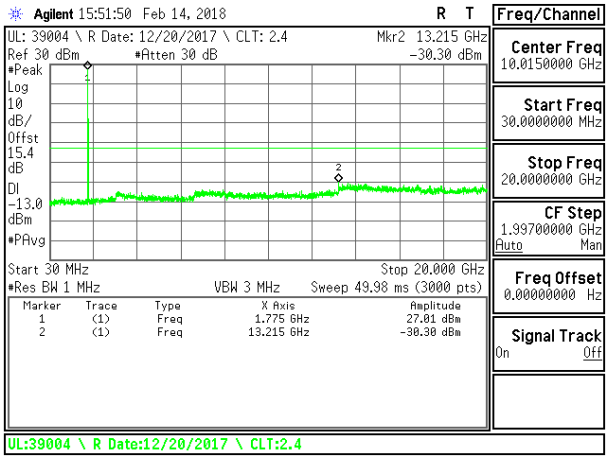
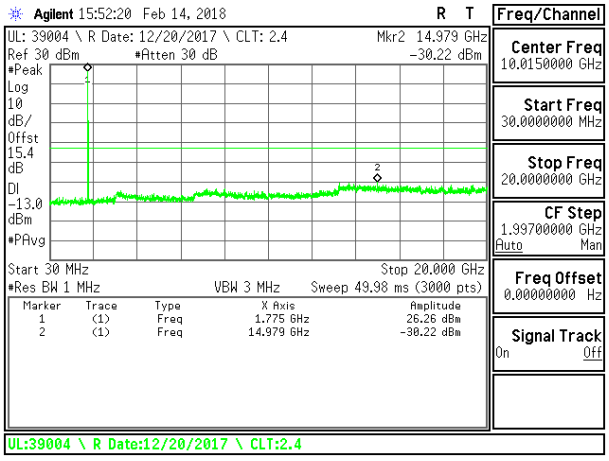


LTE B66 5MHz QPSK High Channel RB1-0



LTE B66 5MHz 16QAM High Channel RB1-0

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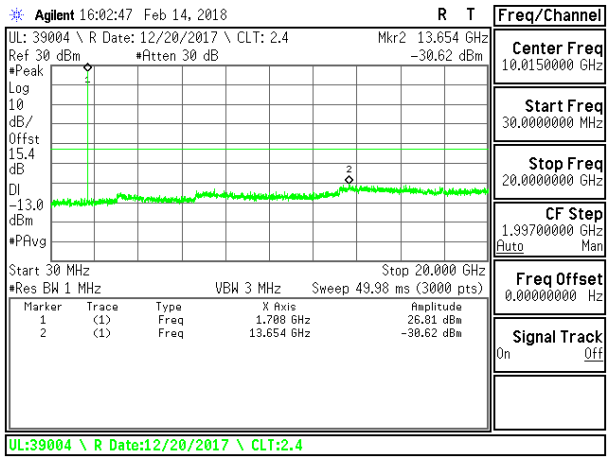
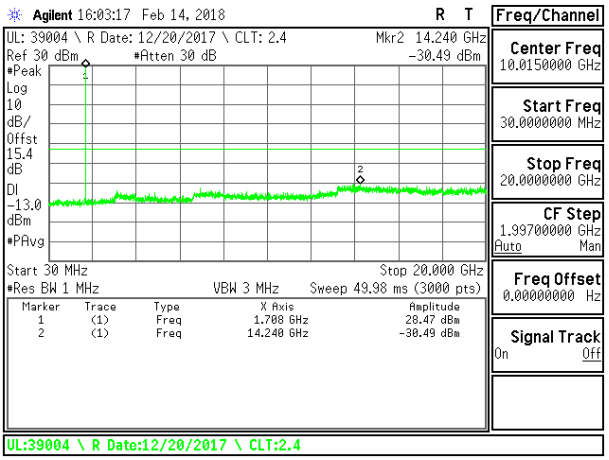


LTE B66 10MHz QPSK Low Channel RB1-0



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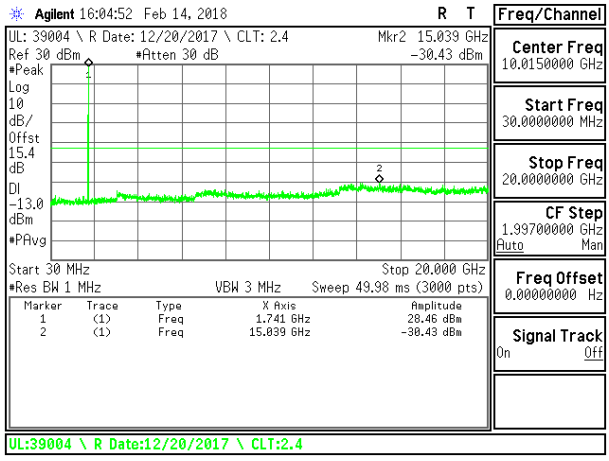

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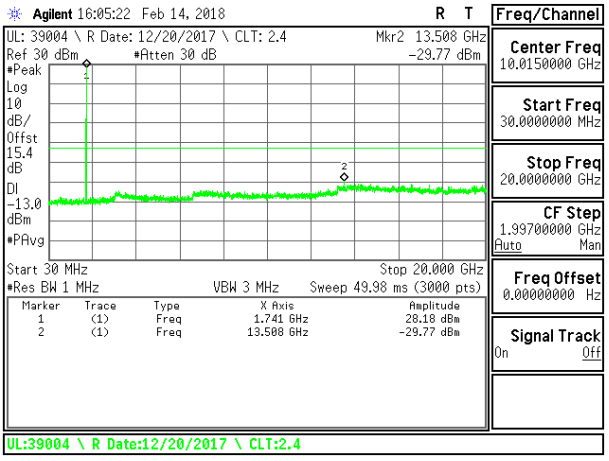

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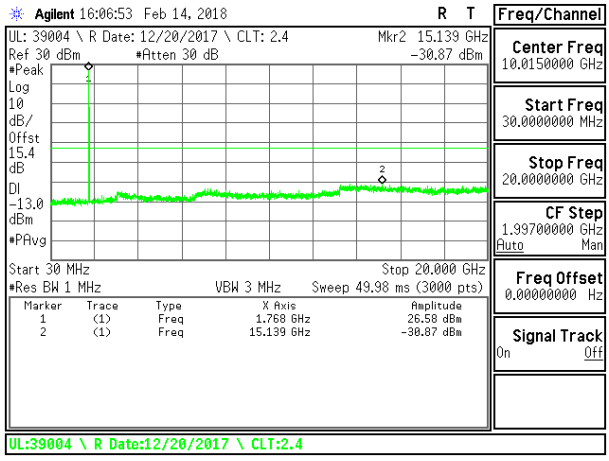
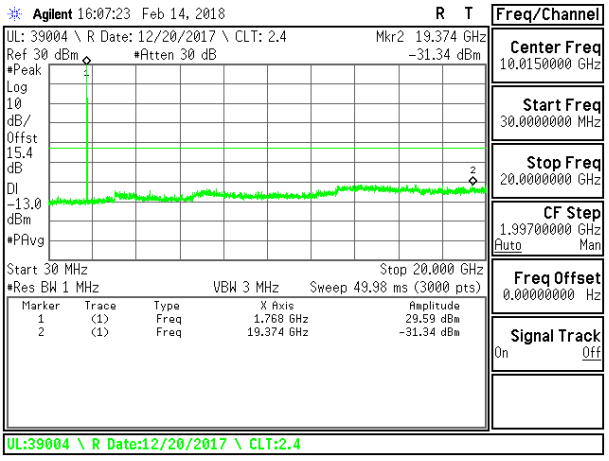


LTE B66 10MHz QPSK High Channel RB1-0



LTE B66 10MHz 16QAM High Channel RB1-0

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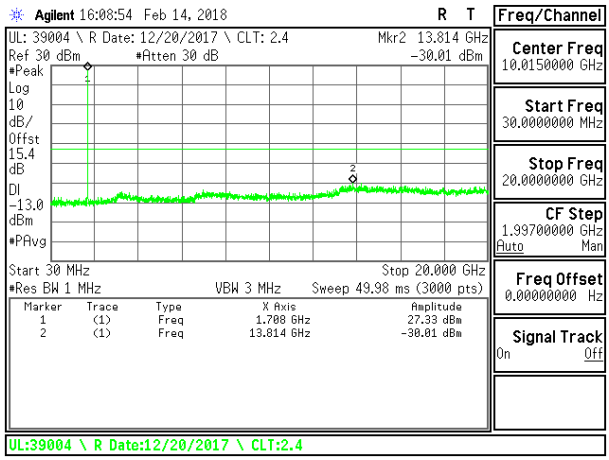
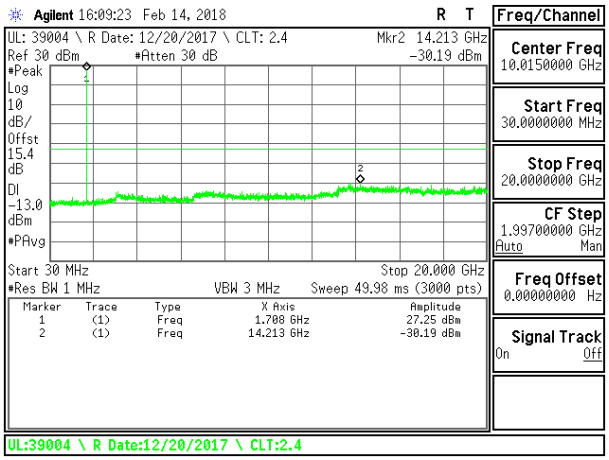
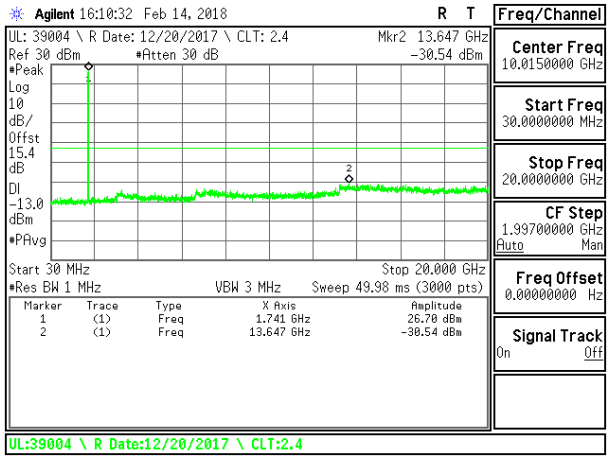


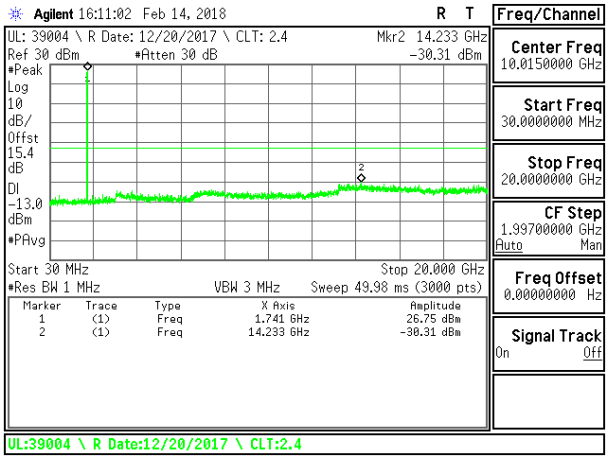
LTE B66 15MHz QPSK Low Channel RB1-0



LTE B66 15MHz 16QAM Low Channel RB1-0



LTE B66 15MHz QPSK Middle Channel RB1-0



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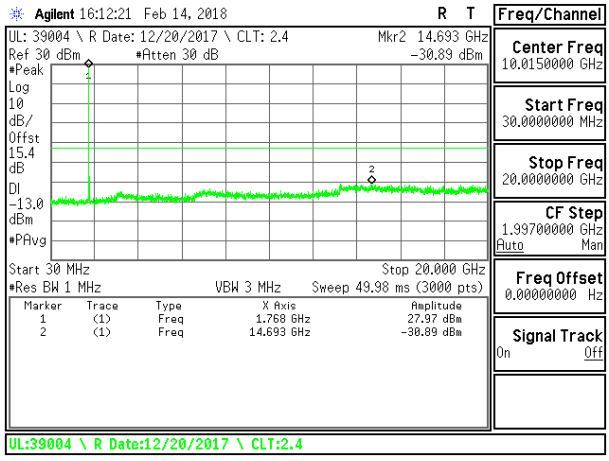

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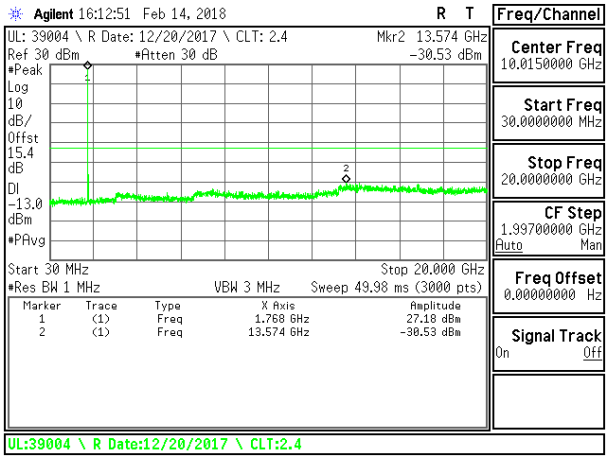

LTE B66 15MHz 16QAM High Channel RB1-0

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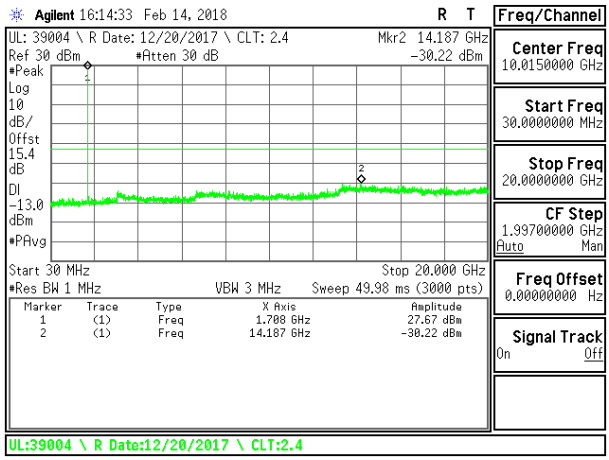
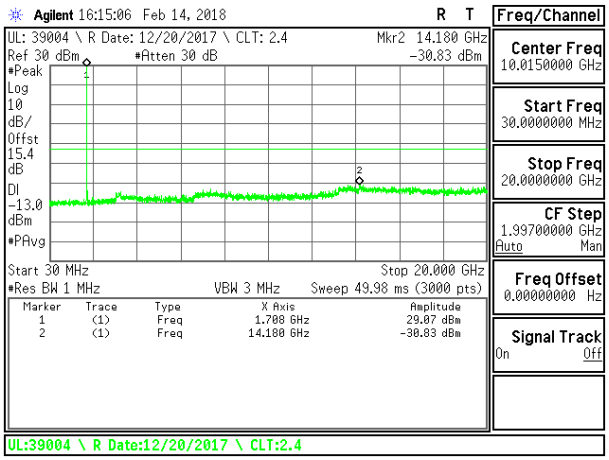
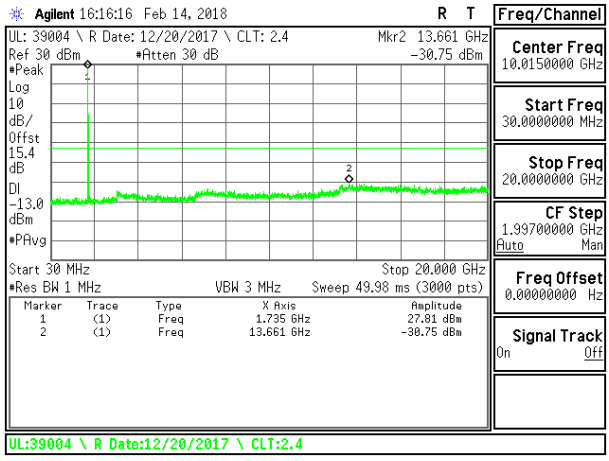


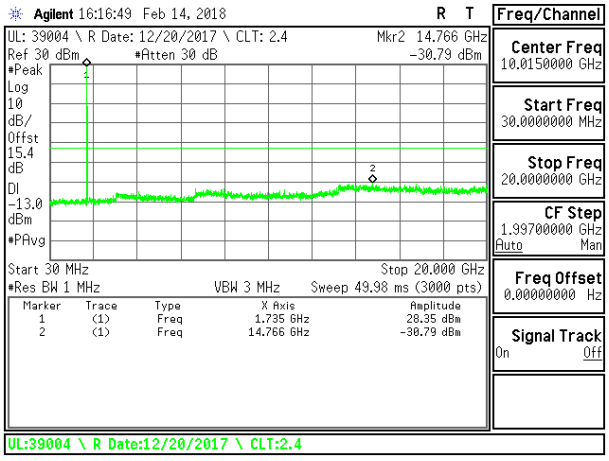
LTE B66 20MHz QPSK Low Channel RB1-0



LTE B66 20MHz 16QAM Low Channel RB1-0



LTE B66 20MHz QPSK Middle Channel RB1-0



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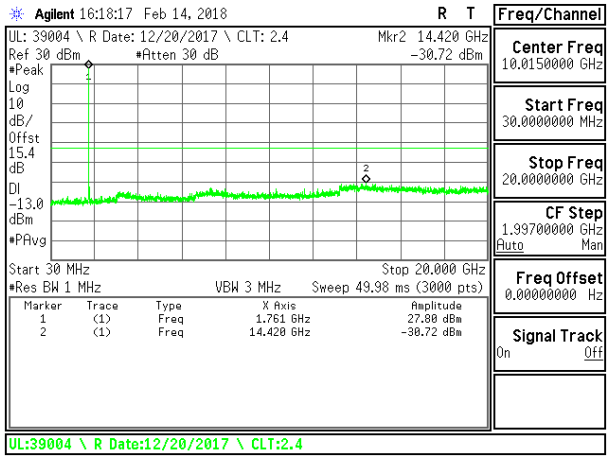
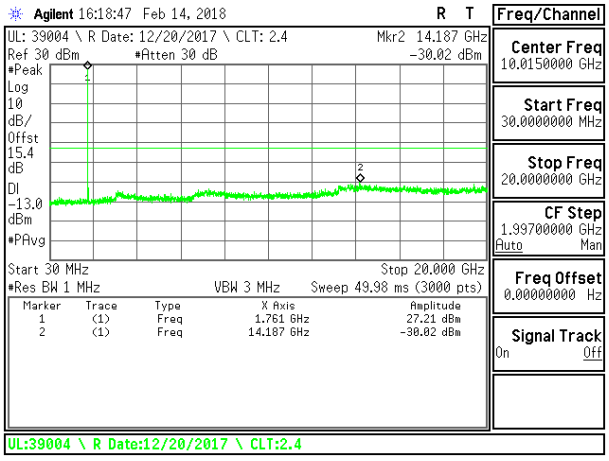


LTE B66 20MHz QPSK High Channel RB1-0



LTE B66 20MHz 16QAM High Channel RB1-0

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8.4. FREQUENCY STABILITY

RULE PART(S)

§2.1055, §22.355, §24.235, §27.54, §90.213 and §90.539

LIMITS

FCC: §22.355, §90.213

The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

FCC: §90.539

(e) The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 ppm or better when AFC is locked to a base station, and 5 ppm or better when AFC is not locked.

FCC: §24.235 & §27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = −30°C to +50°C
- Voltage = (85% - 115%)

  Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.
  End Voltage, 2.72VDC.

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to 20ºC and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50ºC is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

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MODES TESTED

- LTE Band 2
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 14
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 30
- LTE Band 41
- LTE Band 66

RESULTS

See the following pages.

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8.4.1. LTE BAND 2

ID:	44410	Date:	3/6/18

QPSK, (20MHz BANDWIDTH)

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1851.0103	1908.9898		
Extreme (50C)		1851.0102	1908.9898	-52.5	-0.028
Extreme (40C)		1851.0102	1908.9898	-52.0	-0.028
Extreme (30C)		1851.0102	1908.9898	-59.6	-0.032
Extreme (10C)		1851.0102	1908.9898	-42.1	-0.022
Extreme (0C)		1851.0102	1908.9898	-55.4	-0.029
Extreme (-10C)		1851.0102	1908.9898	-62.8	-0.033
Extreme (-20C)		1851.0102	1908.9897	-85.8	-0.046
Extreme (-30C)		1851.0102	1908.9898	-79.0	-0.042
20C	15%	1851.0102	1908.9898	-80.1	-0.043
	-15%	1851.0102	1908.9898	-67.5	-0.036
	End Point	1851.0102	1908.9898	-65.3	-0.035

8.4.2. LTE BAND 5

ID:	44410	Date:	3/6/18

QPSK, (10MHz BANDWIDTH)

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.4943	848.5074		
Extreme (50C)		824.4943	848.5074	8.2	0.010
Extreme (40C)		824.4943	848.5074	8.1	0.010
Extreme (30C)		824.4943	848.5074	8.5	0.010
Extreme (10C)		824.4943	848.5074	8.6	0.010
Extreme (0C)		824.4943	848.5074	8.3	0.010
Extreme (-10C)		824.4943	848.5074	9.1	0.011
Extreme (-20C)		824.4943	848.5074	-8.1	-0.010
Extreme (-30C)		824.4943	848.5074	-12.9	-0.015
20C	15%	824.4943	848.5074	12.4	0.015
	-15%	824.4943	848.5074	10.0	0.012
	End Point	824.4943	848.5074	13.9	0.017

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8.4.3. LTE BAND 7

ID:	44410	Date:	3/6/18

QPSK, (20MHz BANDWIDTH)

Limit		2500	2570	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2501.0111	2569.0412		
Extreme (50C)		2501.0111	2569.0412	-58.9	-0.023
Extreme (40C)		2501.0111	2569.0412	-63.6	-0.025
Extreme (30C)		2501.0111	2569.0412	-50.7	-0.020
Extreme (10C)		2501.0112	2569.0413	58.9	0.023
Extreme (0C)		2501.0112	2569.0413	66.0	0.026
Extreme (-10C)		2501.0112	2569.0413	77.4	0.031
Extreme (-20C)		2501.0112	2569.0413	80.8	0.032
Extreme (-30C)		2501.0112	2569.0413	108.0	0.043
20C	15%	2501.0112	2569.0413	79.2	0.031
	-15%	2501.0112	2569.0413	82.1	0.032
	End Point	2501.0110	2569.0411	-90.4	-0.036

8.4.4. LTE BAND 12

ID:	44410	Date:	3/6/18	Unit:	C39VW001JM1P

QPSK, (10MHz BANDWIDTH)

Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	699.4911	715.5278		
Extreme (50C)		699.4912	715.5278	9.4	0.013
Extreme (40C)		699.4912	715.5278	10.7	0.015
Extreme (30C)		699.4912	715.5278	11.4	0.016
Extreme (10C)		699.4912	715.5278	13.2	0.019
Extreme (0C)		699.4912	715.5278	11.2	0.016
Extreme (-10C)		699.4912	715.5278	11.1	0.016
Extreme (-20C)		699.4912	715.5278	14.3	0.020
Extreme (-30C)		699.4912	715.5278	17.8	0.025
20C	15%	699.4912	715.5278	12.9	0.018
	-15%	699.4912	715.5278	11.3	0.016
	End Point	699.4912	715.5278	11.3	0.016

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8.4.5. LTE BAND 13

ID:	44410	Date:	3/6/18

QPSK, (10MHz BANDWIDTH)

Limit		777	787	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	777.1993	786.5587		
Extreme (50C)		777.1993	786.5587	14.1	0.018
Extreme (40C)		777.1993	786.5587	15.0	0.019
Extreme (30C)		777.1993	786.5587	13.2	0.017
Extreme (10C)		777.1993	786.5587	14.4	0.018
Extreme (0C)		777.1993	786.5587	14.2	0.018
Extreme (-10C)		777.1993	786.5587	13.1	0.017
Extreme (-20C)		777.1993	786.5587	12.0	0.015
Extreme (-30C)		777.1993	786.5587	15.1	0.019
20C	15%	777.1993	786.5587	12.6	0.016
	-15%	777.1993	786.5587	11.6	0.015
	End Point	777.1993	786.5587	13.1	0.017

8.4.6. LTE BAND 14

ID:	44410	Date:	3/6/18

QPSK, (10MHz BANDWIDTH)

Limit		788	798	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	788.4622	797.5009		
Extreme (50C)		788.4622	797.5009	12.9	0.016
Extreme (40C)		788.4622	797.5009	11.3	0.014
Extreme (30C)		788.4622	797.5009	10.3	0.013
Extreme (10C)		788.4622	797.5009	15.9	0.020
Extreme (0C)		788.4622	797.5009	15.4	0.019
Extreme (-10C)		788.4622	797.5009	12.5	0.016
Extreme (-20C)		788.4622	797.5009	10.0	0.013
Extreme (-30C)		788.4622	797.5009	-9.8	-0.012
20C	15%	788.4622	797.5009	16.0	0.020
	-15%	788.4622	797.5009	-15.5	-0.020
	End Point	788.4622	797.5009	-13.9	-0.018

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8.4.7. LTE BAND 17

ID:	10646	Date:	5/30/18

QPSK, (10MHz BANDWIDTH)

Limit		704	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	704.3266	715.6921		
Extreme (50C)		704.3267	715.6921	9.4	0.013
Extreme (40C)		704.3267	715.6921	10.7	0.015
Extreme (30C)		704.3267	715.6921	11.4	0.016
Extreme (10C)		704.3267	715.6921	13.2	0.019
Extreme (0C)		704.3267	715.6921	11.2	0.016
Extreme (-10C)		704.3267	715.6921	11.1	0.016
Extreme (-20C)		704.3267	715.6921	14.3	0.020
Extreme (-30C)		704.3267	715.6921	17.8	0.025
20C	15%	704.3267	715.6921	12.9	0.018
	-15%	704.3267	715.6921	11.3	0.016
	End Point	704.3267	715.6921	11.3	0.016

8.4.8. LTE BAND 25

ID:	10646	Date:	5/30/18

QPSK, (20MHz BANDWIDTH)

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.8715	1914.1919		
Extreme (50C)		1850.8714	1914.1919	-52.5	-0.028
Extreme (40C)		1850.8714	1914.1919	-52.0	-0.028
Extreme (30C)		1850.8714	1914.1918	-59.6	-0.032
Extreme (10C)		1850.8714	1914.1919	-42.1	-0.022
Extreme (0C)		1850.8714	1914.1919	-55.4	-0.029
Extreme (-10C)		1850.8714	1914.1918	-62.8	-0.033
Extreme (-20C)		1850.8714	1914.1918	-85.8	-0.046
Extreme (-30C)		1850.8714	1914.1918	-79.0	-0.042
20C	15%	1850.8714	1914.1918	-80.1	-0.043
	-15%	1850.8714	1914.1918	-67.5	-0.036
	End Point	1850.8714	1914.1918	-65.3	-0.035

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8.4.9. LTE BAND 26 (PART 90S)

ID:	10646	Date:	5/30/18

QPSK, (10MHz BANDWIDTH)

Limit		814	824	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	814.3133	823.6779		
Extreme (50C)		814.3133	823.6779	8.2	0.010
Extreme (40C)		814.3133	823.6779	8.1	0.010
Extreme (30C)		814.3133	823.6779	8.5	0.010
Extreme (10C)		814.3133	823.6779	8.6	0.011
Extreme (0C)		814.3133	823.6779	8.3	0.010
Extreme (-10C)		814.3133	823.6779	9.1	0.011
Extreme (-20C)		814.3133	823.6779	-8.1	-0.010
Extreme (-30C)		814.3133	823.6779	-12.9	-0.016
20C	15%	814.3133	823.6779	12.4	0.015
	-15%	814.3133	823.6779	10.0	0.012
	End Point	814.3133	823.6779	13.9	0.017

8.4.10. LTE BAND 30

ID:	44410	Date:	3/6/18

QPSK, (10MHz BANDWIDTH)

Limit		2305	2315	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2305.4947	2314.5109		
Extreme (50C)		2305.4948	2314.5110	68.9	0.030
Extreme (40C)		2305.4948	2314.5110	93.7	0.041
Extreme (30C)		2305.4948	2314.5110	70.7	0.031
Extreme (10C)		2305.4948	2314.5110	78.2	0.034
Extreme (0C)		2305.4948	2314.5110	69.9	0.030
Extreme (-10C)		2305.4948	2314.5110	74.0	0.032
Extreme (-20C)		2305.4947	2314.5109	-79.1	-0.034
Extreme (-30C)		2305.4947	2314.5109	-84.5	-0.037
20C	15%	2305.4947	2314.5109	-76.4	-0.033
	-15%	2305.4947	2314.5109	-77.2	-0.033
	End Point	2305.4947	2314.5109	-68.8	-0.030

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8.4.11. LTE BAND 41

ID:	44410	Date:	3/6/18

QPSK, (20MHz BANDWIDTH)

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.4009	2690.1983		
Extreme (50C)		2496.4008	2690.1983	-54.1	-0.021
Extreme (40C)		2496.4008	2690.1983	-67.1	-0.026
Extreme (30C)		2496.4008	2690.1983	-55.9	-0.022
Extreme (10C)		2496.4008	2690.1983	-64.4	-0.025
Extreme (0C)		2496.4008	2690.1983	-57.1	-0.022
Extreme (-10C)		2496.4008	2690.1983	-46.5	-0.018
Extreme (-20C)		2496.4008	2690.1983	-56.9	-0.022
Extreme (-30C)		2496.4008	2690.1983	-69.0	-0.027
20C	15%	2496.4008	2690.1982	-84.8	-0.033
	-15%	2496.4008	2690.1982	-78.3	-0.030
	End Point	2496.4008	2690.1982	-79.4	-0.031

8.4.12. LTE BAND 66

ID:	44410	Date:	3/6/18

QPSK, (20MHz BANDWIDTH)

Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1711.0160	1779.0073		
Extreme (50C)		1711.0160	1779.0072	-20.7	-0.012
Extreme (40C)		1711.0160	1779.0072	-25.0	-0.014
Extreme (30C)		1711.0160	1779.0072	-23.9	-0.014
Extreme (10C)		1711.0160	1779.0072	-23.6	-0.014
Extreme (0C)		1711.0160	1779.0072	-17.8	-0.010
Extreme (-10C)		1711.0160	1779.0073	23.7	0.014
Extreme (-20C)		1711.0160	1779.0073	23.2	0.013
Extreme (-30C)		1711.0160	1779.0072	-23.9	-0.014
20C	15%	1711.0159	1779.0072	-31.8	-0.018
	-15%	1711.0160	1779.0073	33.6	0.019
	End Point	1711.0159	1779.0072	-32.8	-0.019

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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.

MODES TESTED

- LTE Band 2
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 14
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 30
- LTE Band 41
- LTE Band 66

RESULT

Antenna 1 was used to measure as the worst case; 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 power ratio criteria.

ID:	50820	**Date:**	3/7/18

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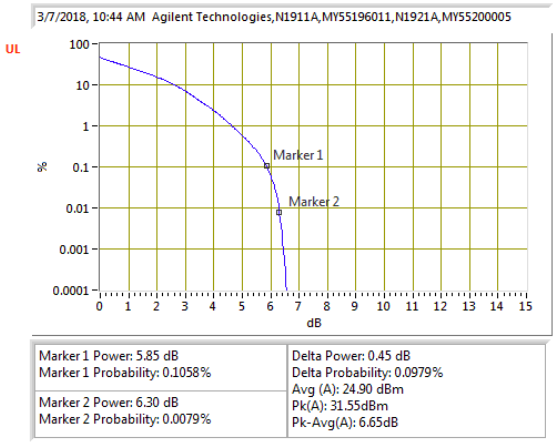
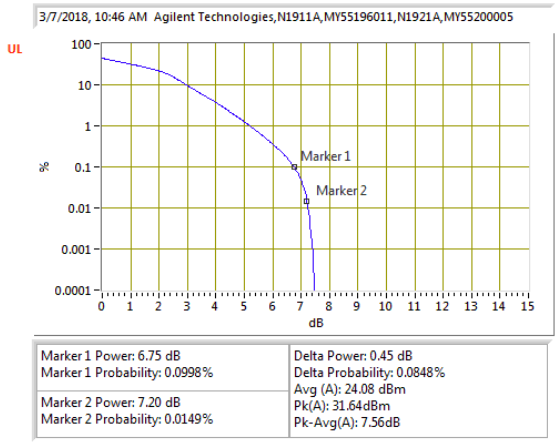
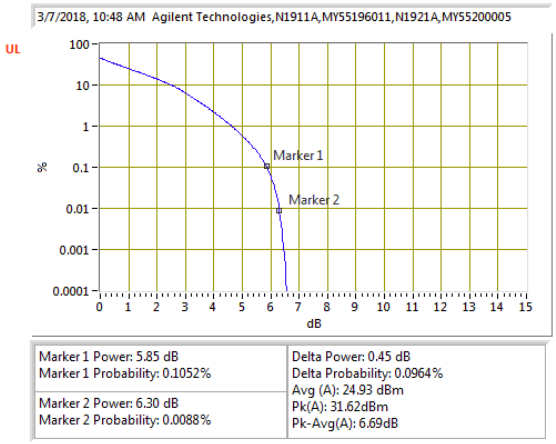
8.5.1. LTE BAND 2



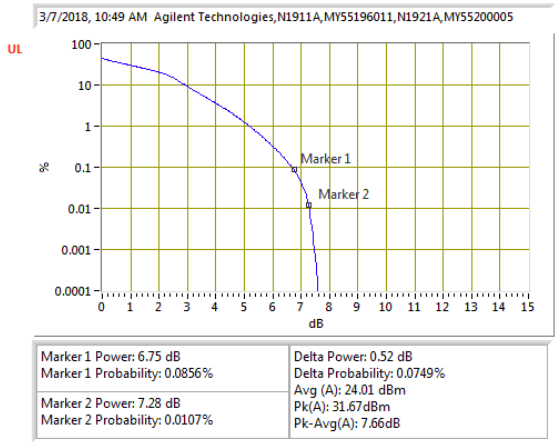
LTE B2 1.4MHz QPSK Middle Channel



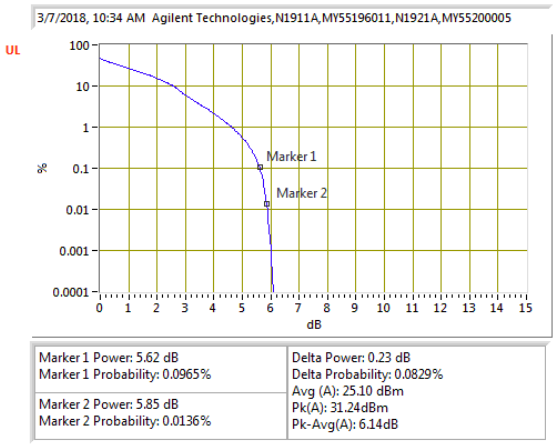
LTE B2 1.4MHz 16QAM Middle Channel



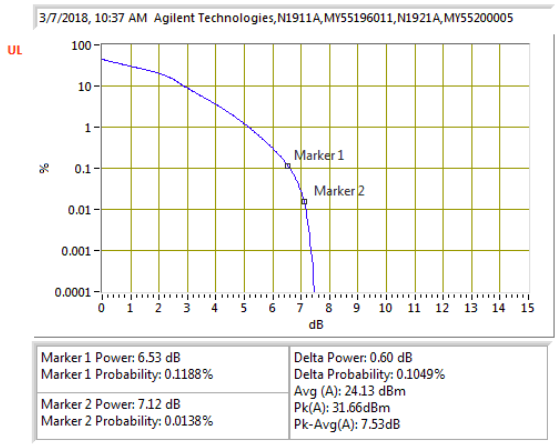
LTE B2 3MHz QPSK Middle Channel



LTE B2 3MHz 16QAM Middle Channel



LTE B2 5MHz QPSK Middle Channel



LTE B2 5MHz 16QAM Middle Channel

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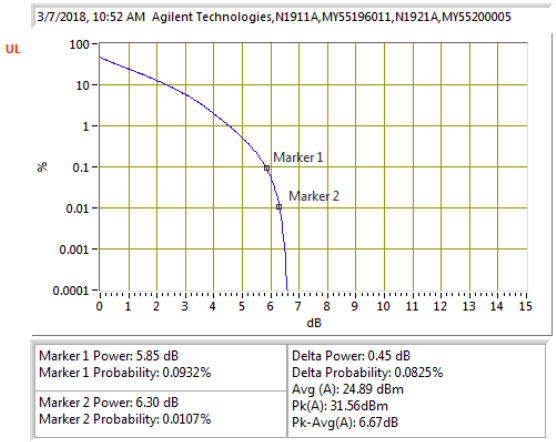
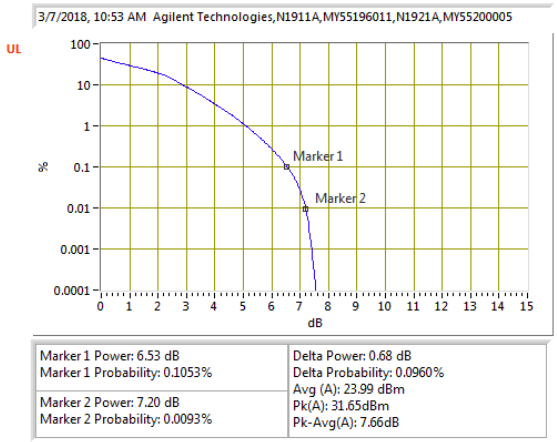
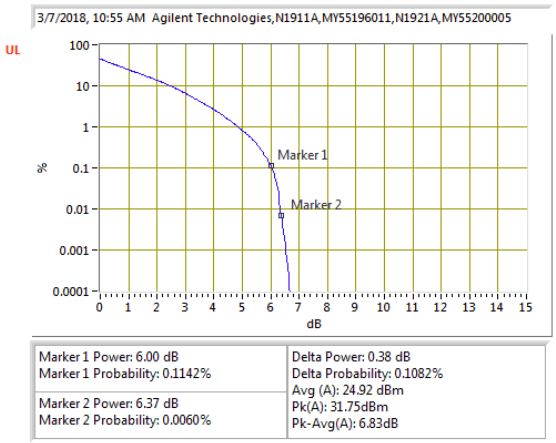


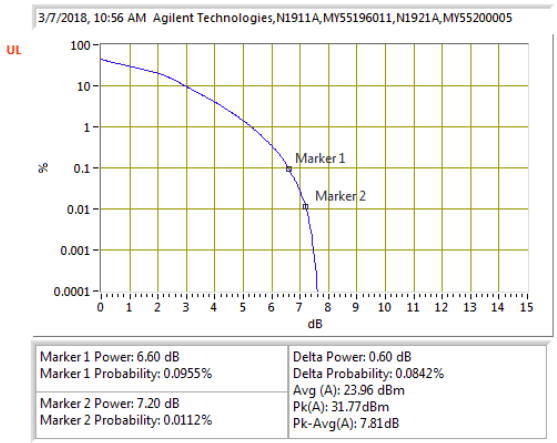
LTE B2 10MHz QPSK Middle Channel



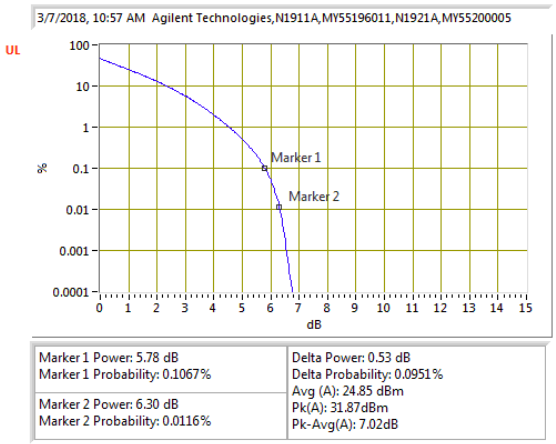
LTE B2 10MHz 16QAM Middle Channel



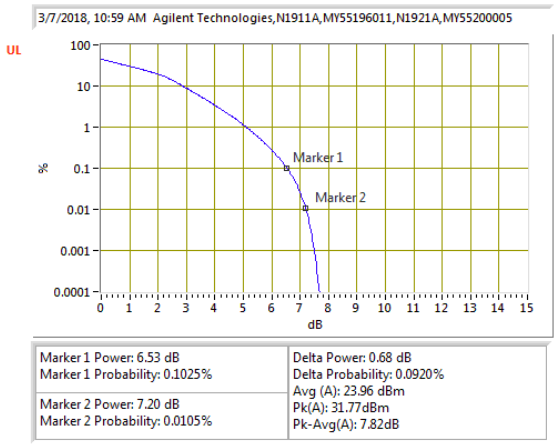
LTE B2 15MHz QPSK Middle Channel



LTE B2 15MHz 16QAM Middle Channel



LTE B2 20MHz QPSK Middle Channel



LTE B2 20MHz 16QAM Middle Channel

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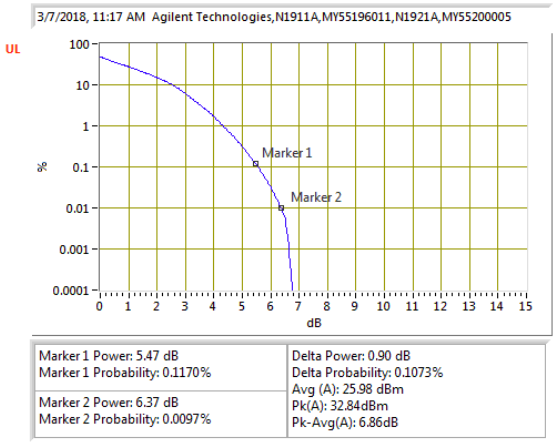
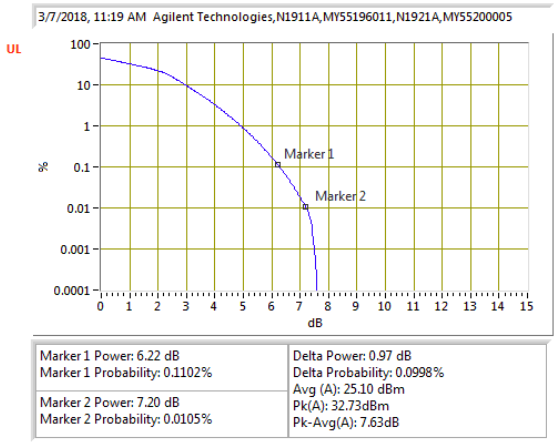
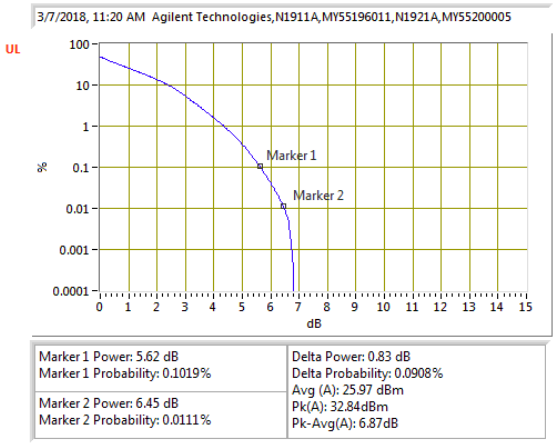
8.5.2. LTE BAND 5



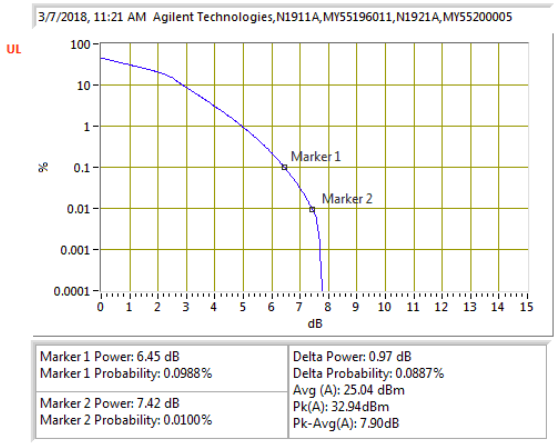
LTE B5 1.4MHz QPSK Middle Channel



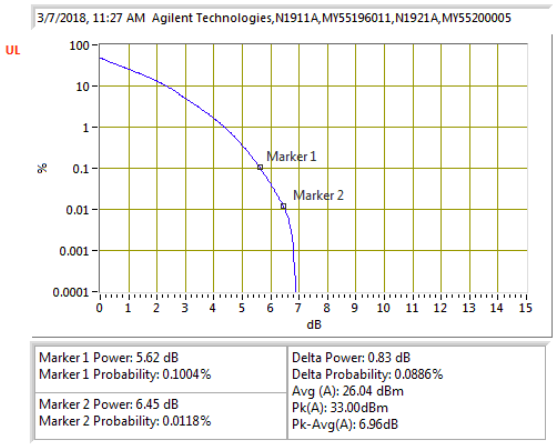
LTE B5 1.4MHz 16QAM Middle Channel



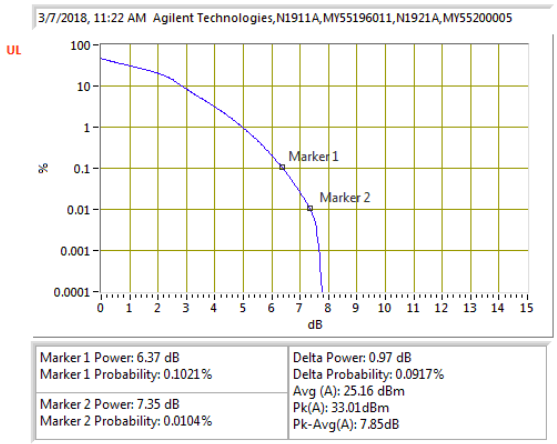
LTE B5 3MHz QPSK Middle Channel



LTE B5 3MHz 16QAM Middle Channel



LTE B5 5MHz QPSK Middle Channel



LTE B5 5MHz 16QAM Middle Channel

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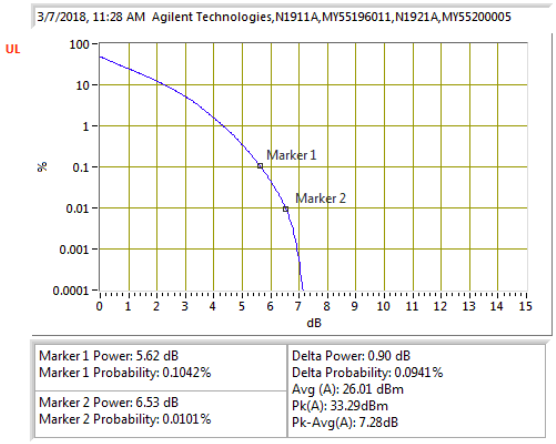
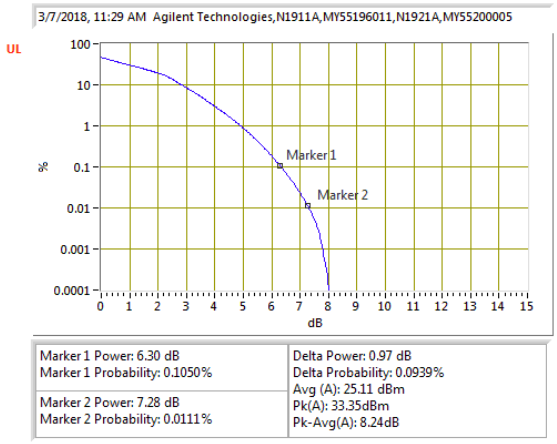


LTE B5 10MHz QPSK Middle Channel



LTE B5 10MHz 16QAM Middle Channel

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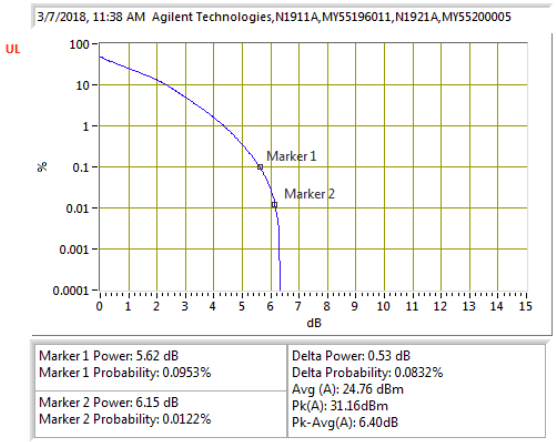
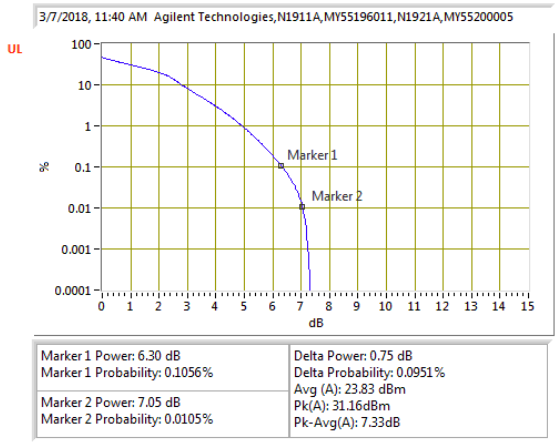
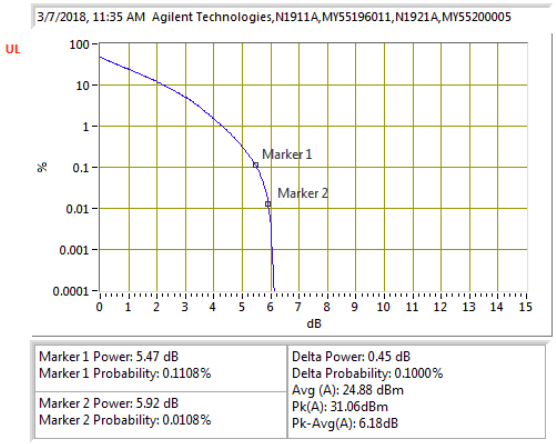
8.5.3. LTE BAND 7



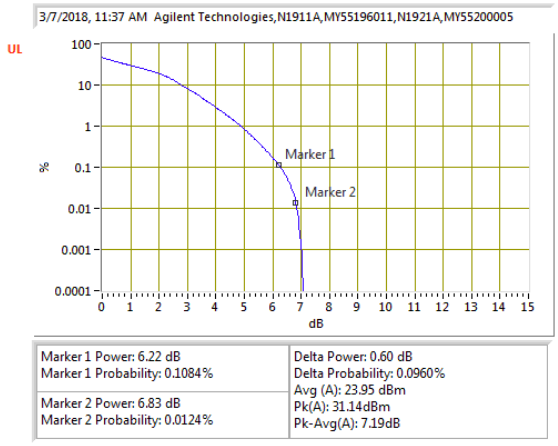
LTE B7 5MHz QPSK Middle Channel



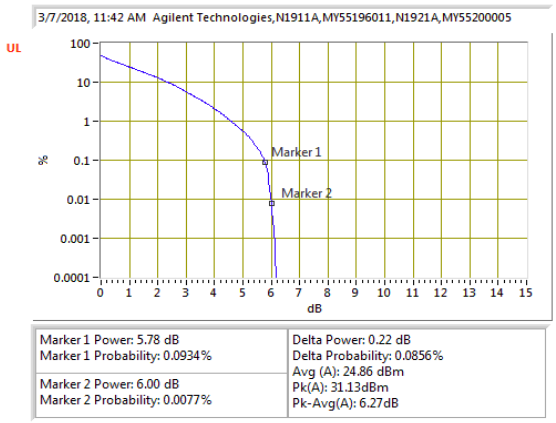
LTE B7 5MHz 16QAM Middle Channel



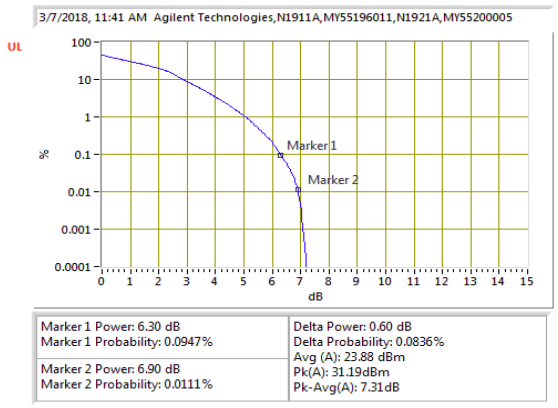
LTE B7 10MHz QPSK Middle Channel



LTE B7 10MHz 16QAM Middle Channel



LTE B7 15MHz QPSK Middle Channel



LTE B7 15MHz 16QAM Middle Channel

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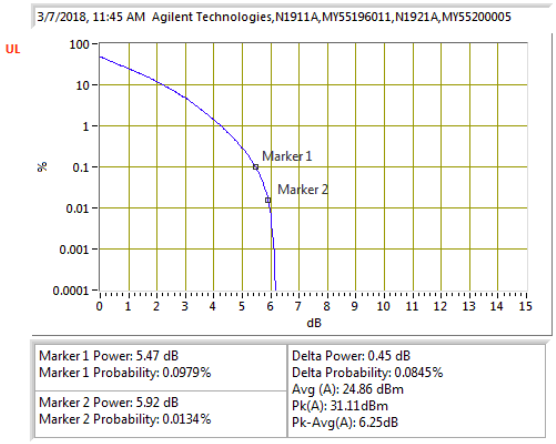
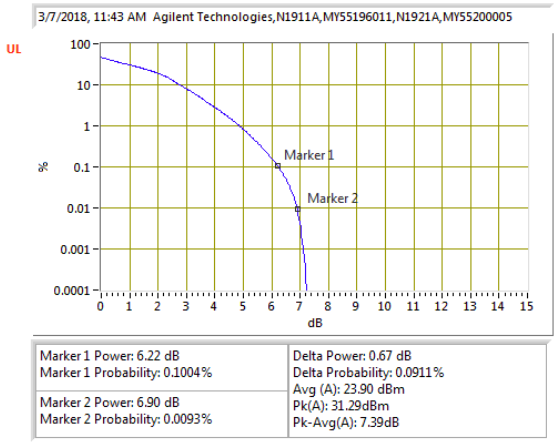


LTE B7 20MHz QPSK Middle Channel



LTE B7 20MHz 16QAM Middle Channel

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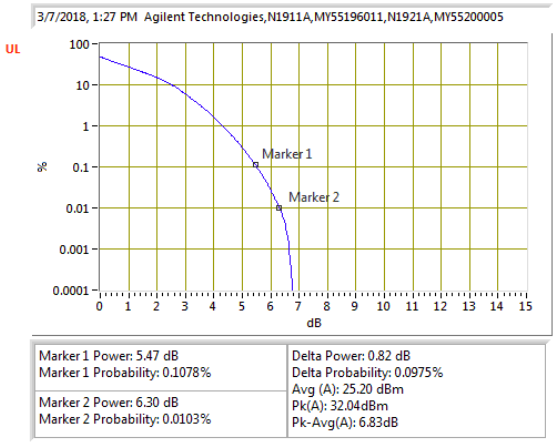
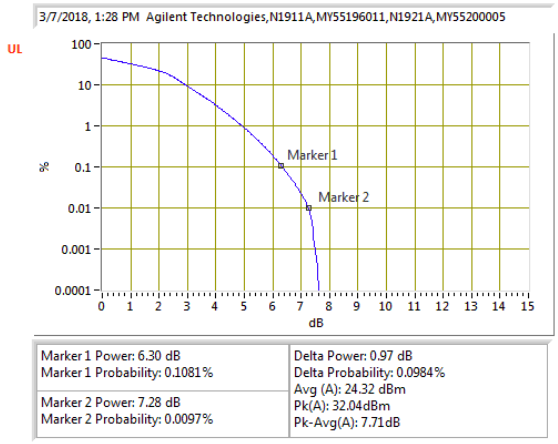
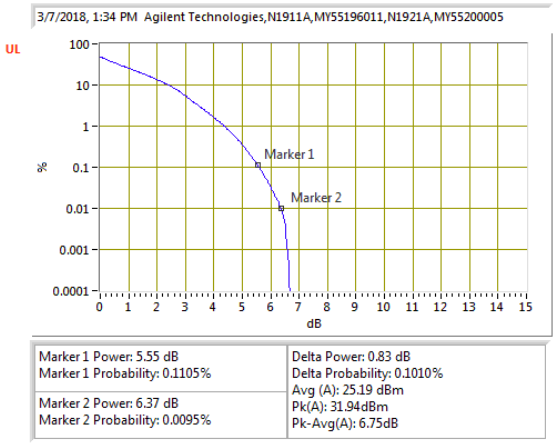
8.5.4. LTE BAND 12



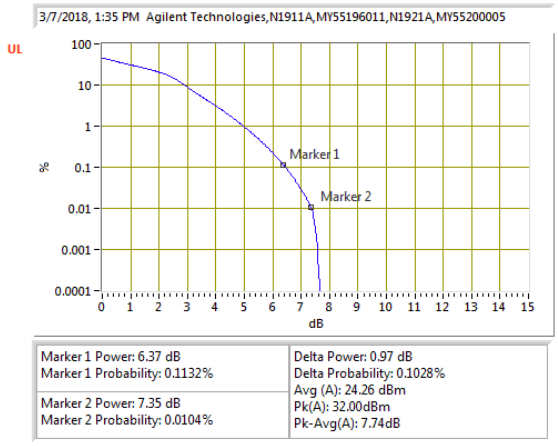
LTE B12 1.4MHz QPSK Middle Channel



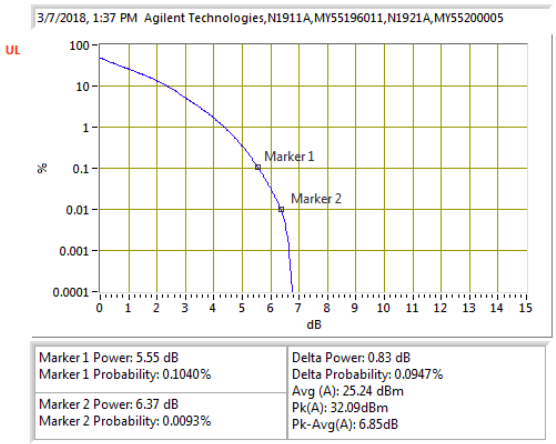
LTE B12 1.4MHz 16QAM Middle Channel



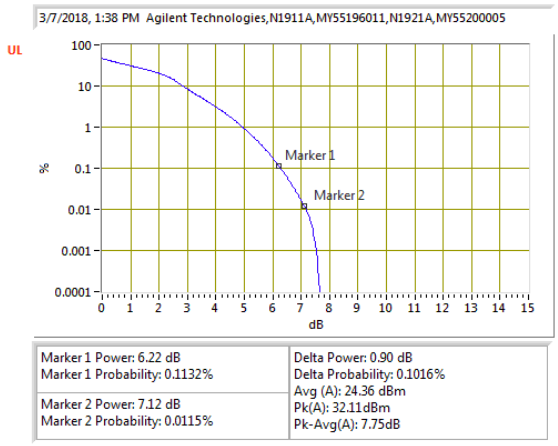
LTE B12 3MHz QPSK Middle Channel



LTE B12 3MHz 16QAM Middle Channel



LTE B12 5MHz QPSK Middle Channel



LTE B12 5MHz 16QAM Middle Channel

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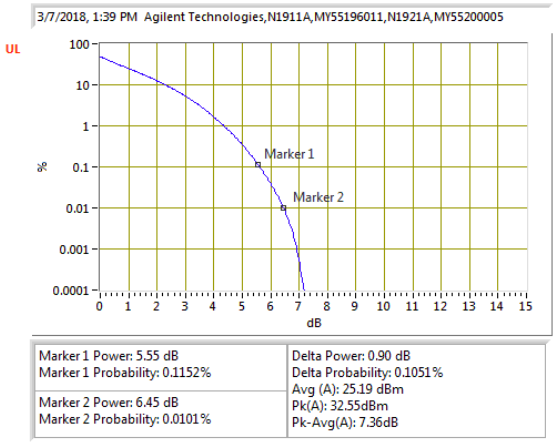
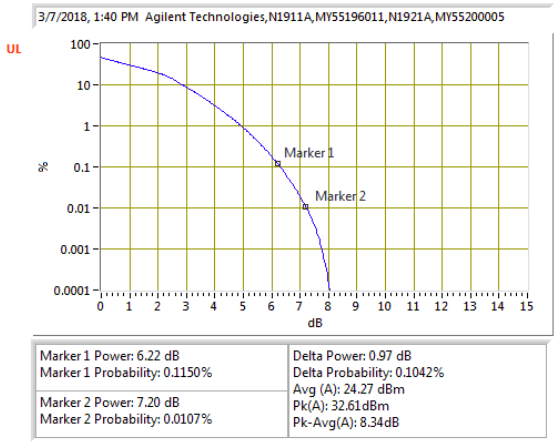


LTE B12 10MHz QPSK Middle Channel



LTE B12 10MHz 16QAM Middle Channel

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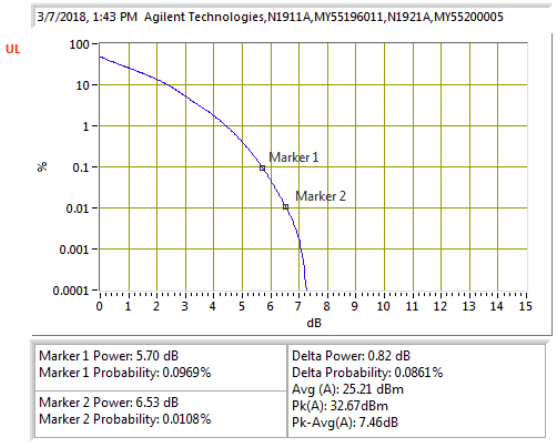
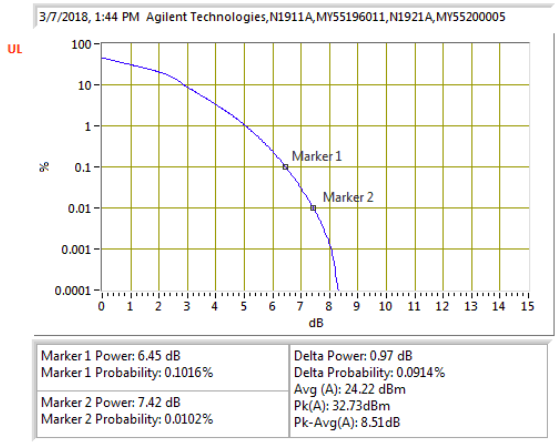
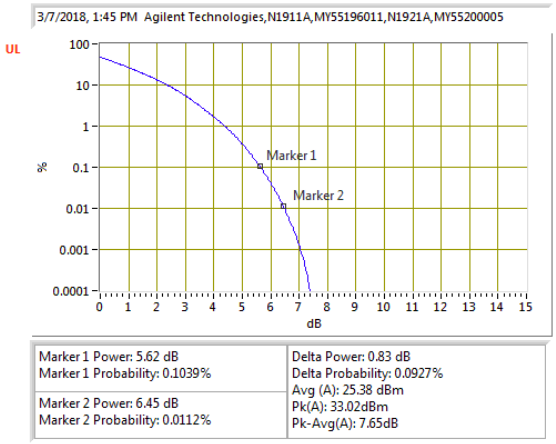
8.5.5. LTE BAND 13



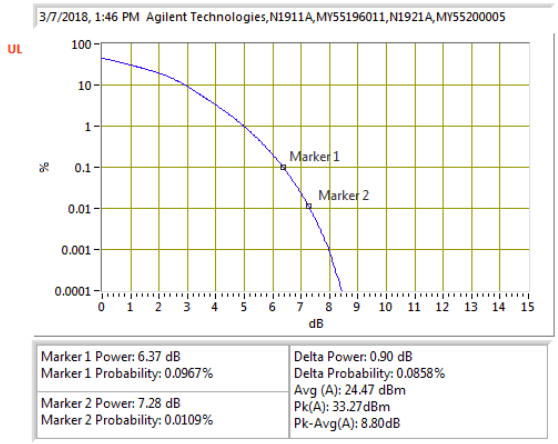
LTE B13 5MHz QPSK Middle Channel



LTE B13 5MHz 16QAM Middle Channel



LTE B13 10MHz QPSK Middle Channel



LTE B13 10MHz 16QAM Middle Channel

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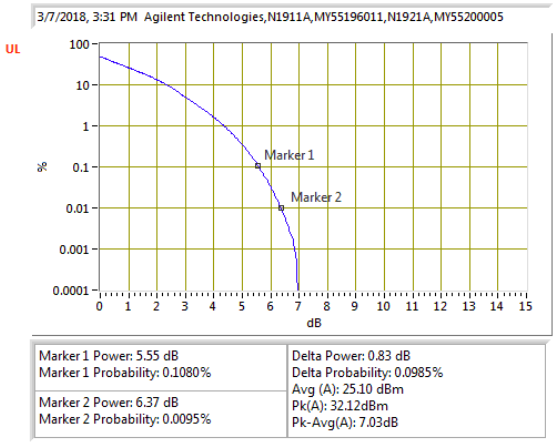
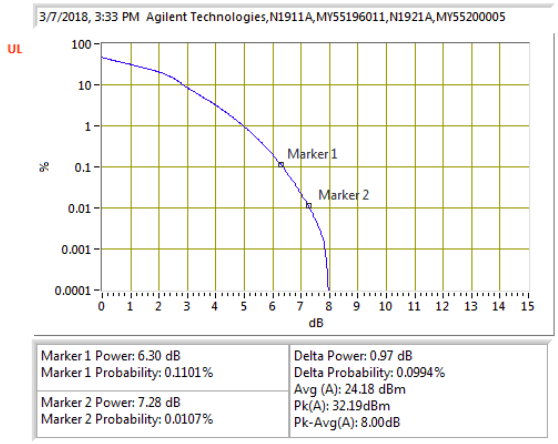
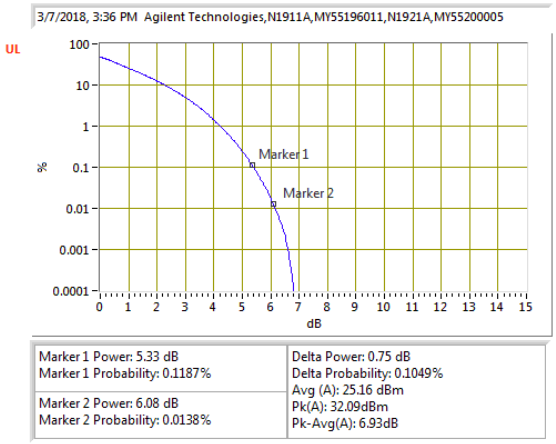
8.5.6. LTE BAND 14



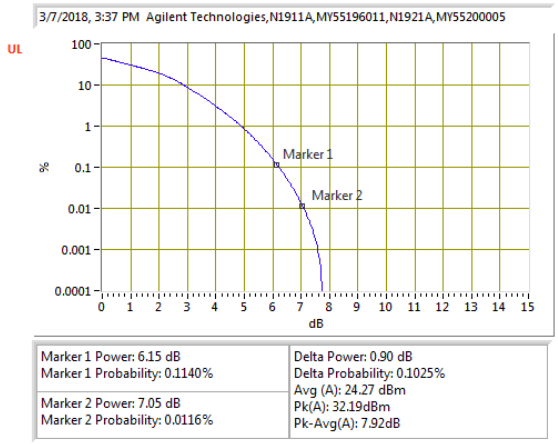
LTE B14 5MHz QPSK Middle Channel



LTE B14 5MHz 16QAM Middle Channel



LTE B14 10MHz QPSK Middle Channel



LTE B14 10MHz 16QAM Middle Channel

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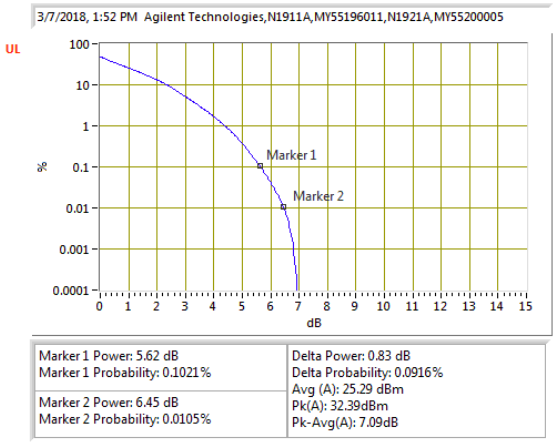
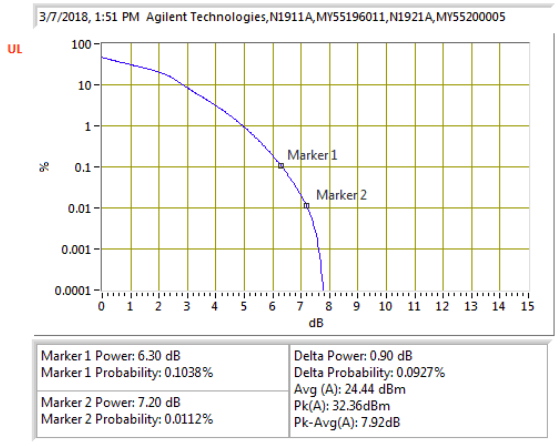
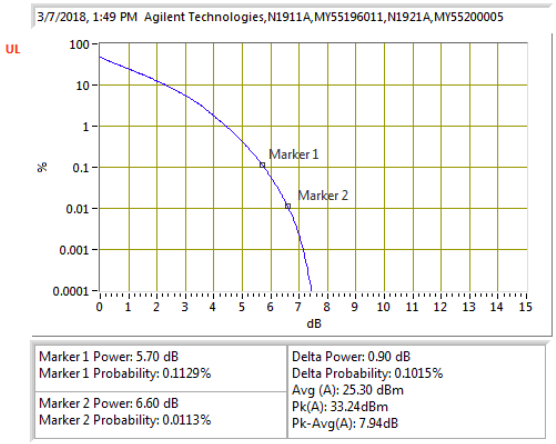
8.5.7. LTE BAND 17



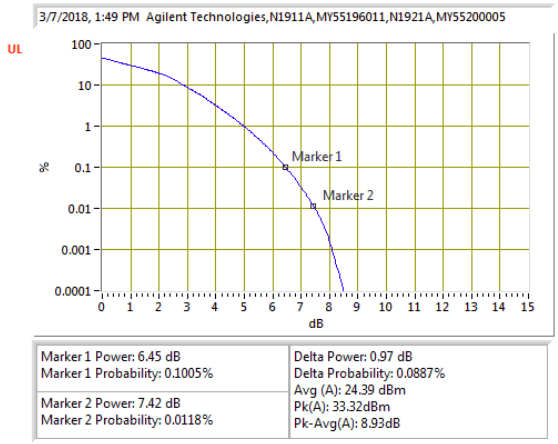
LTE B17 5MHz QPSK Middle Channel



LTE B17 5MHz 16QAM Middle Channel



LTE B17 10MHz QPSK Middle Channel



LTE B17 10MHz 16QAM Middle Channel

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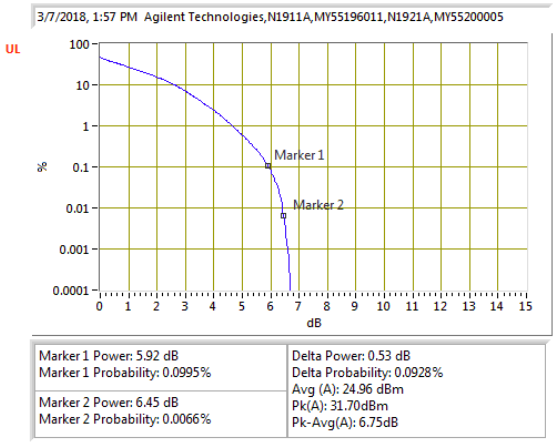
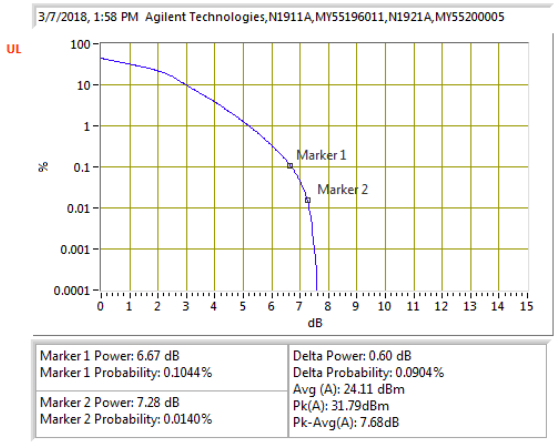
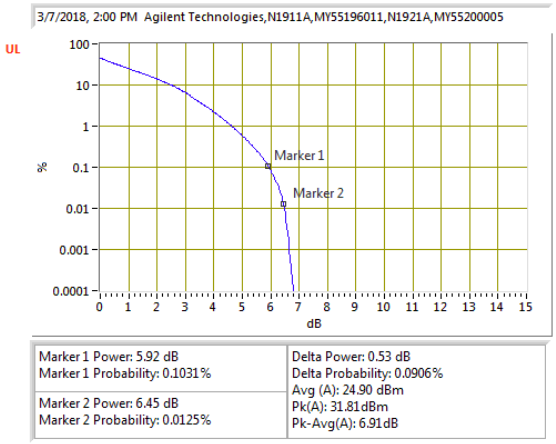
8.5.8. LTE BAND 25



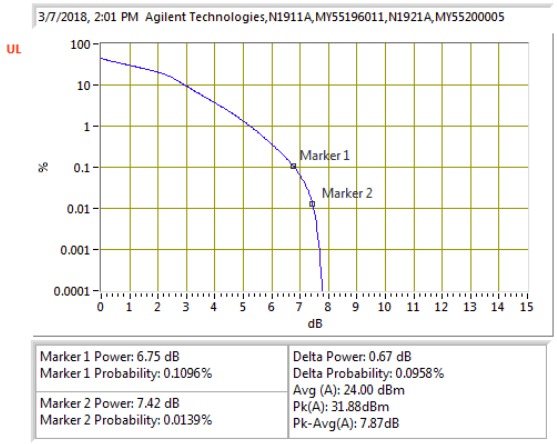
LTE B25 1.4MHz QPSK Middle Channel



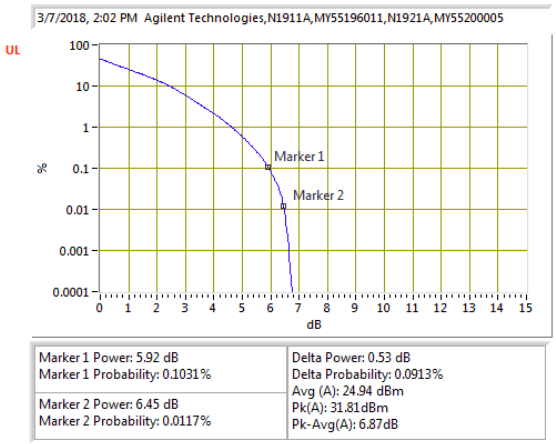
LTE B25 1.4MHz 16QAM Middle Channel



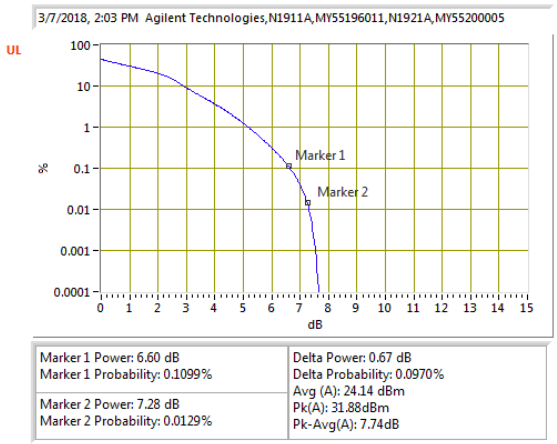
LTE B25 3MHz QPSK Middle Channel



LTE B25 3MHz 16QAM Middle Channel



LTE B2 5MHz QPSK Middle Channel



LTE B2 5MHz 16QAM Middle Channel

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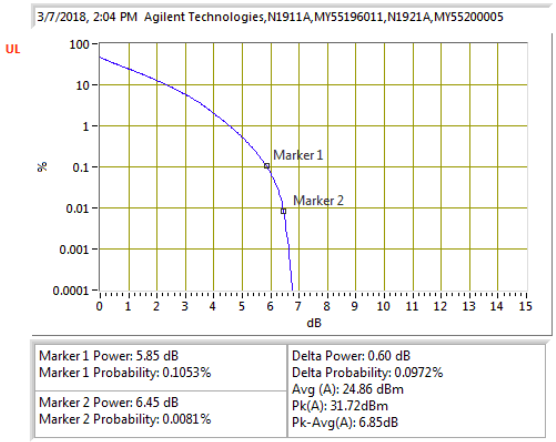
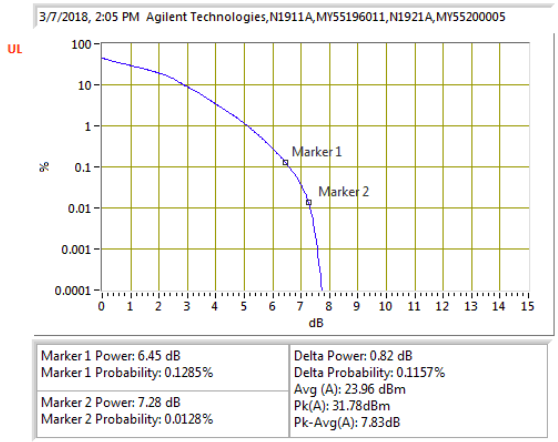
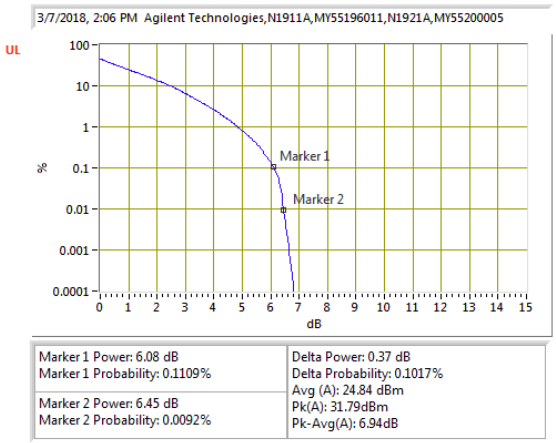


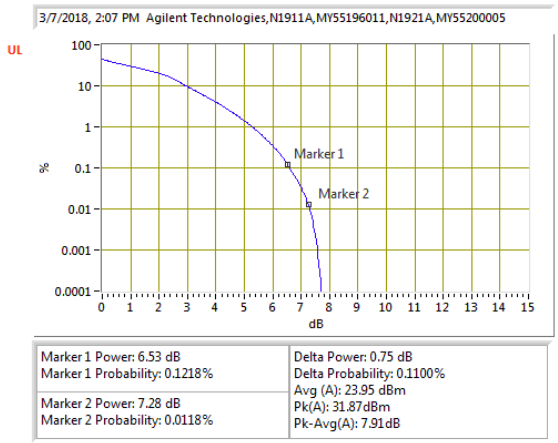
LTE B25 10MHz QPSK Middle Channel



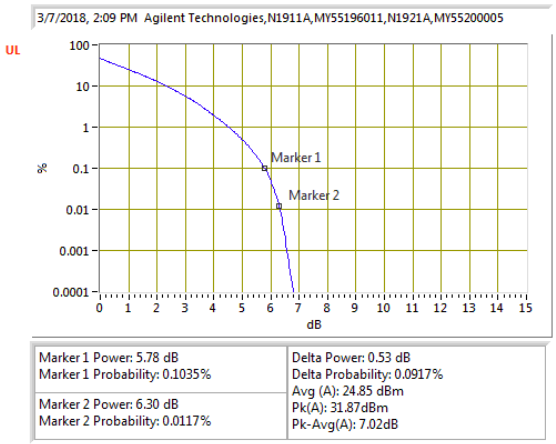
LTE B25 10MHz 16QAM Middle Channel



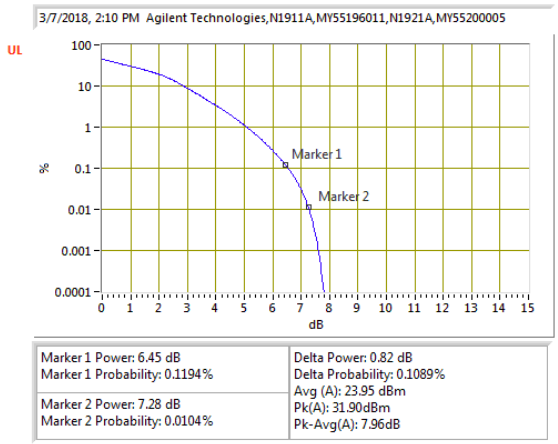
LTE B25 15MHz QPSK Middle Channel



LTE B25 15MHz 16QAM Middle Channel



LTE B25 20MHz QPSK Middle Channel



LTE B25 20MHz 16QAM Middle Channel

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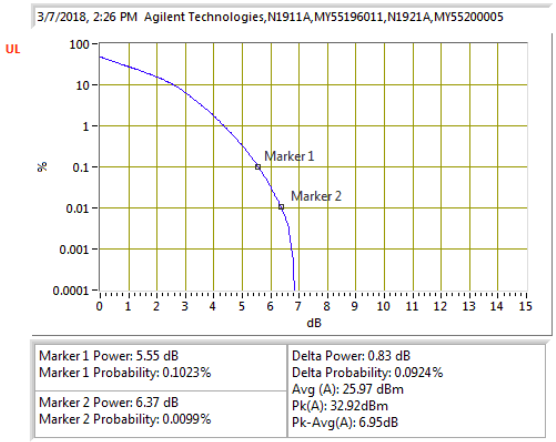
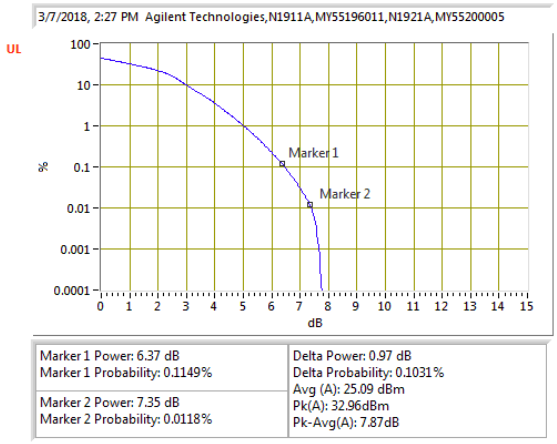
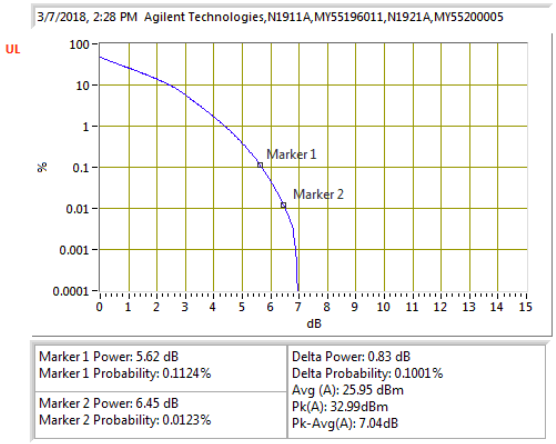
8.5.9. LTE BAND 26 (PART 90S)



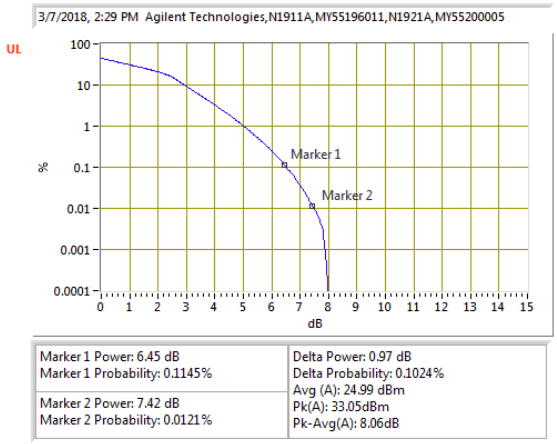
LTE B26 1.4MHz QPSK Middle Channel



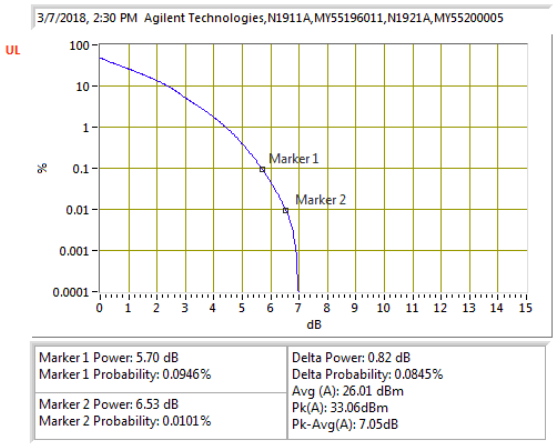
LTE B26 1.4MHz 16QAM Middle Channel



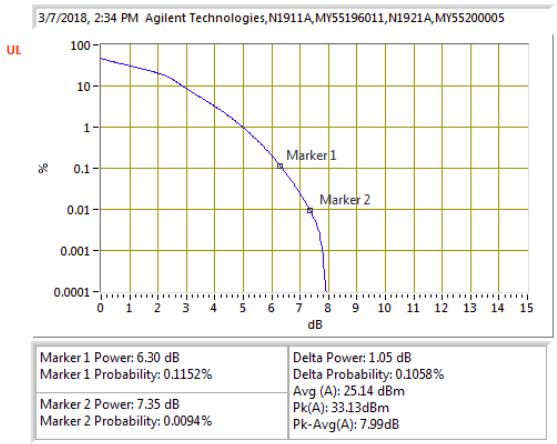
LTE B26 3MHz QPSK Middle Channel



LTE B26 3MHz 16QAM Middle Channel



LTE B26 5MHz QPSK Middle Channel



LTE B26 5MHz 16QAM Middle Channel

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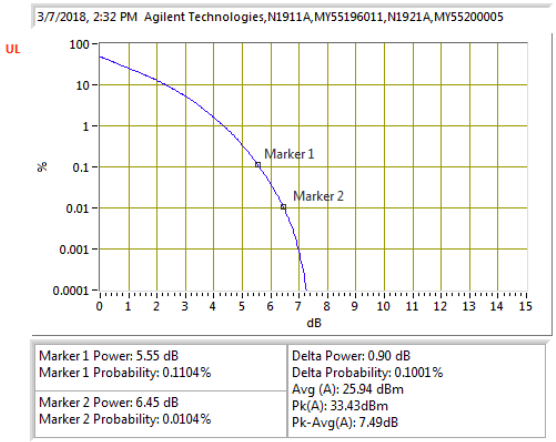
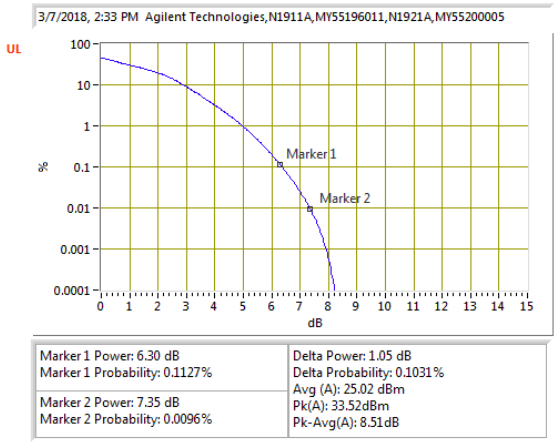


LTE B26 10MHz QPSK Middle Channel



LTE B26 10MHz 16QAM Middle Channel

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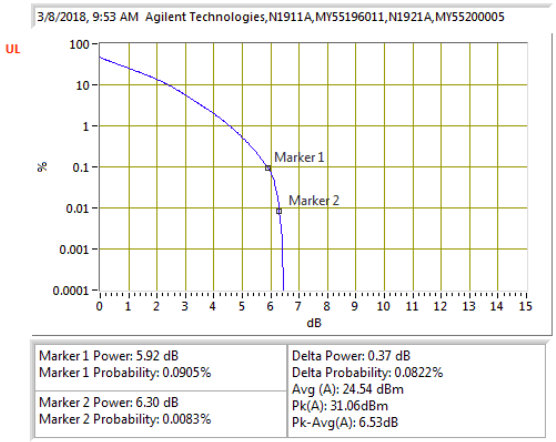
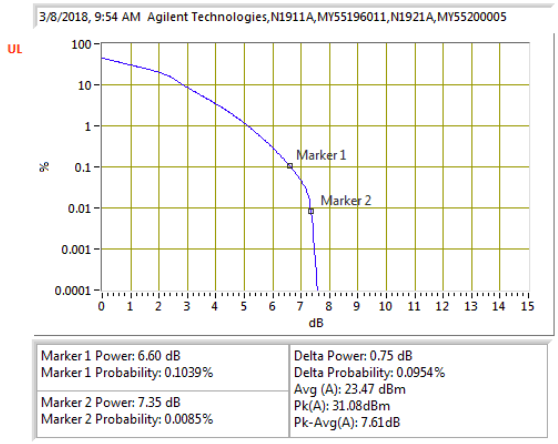
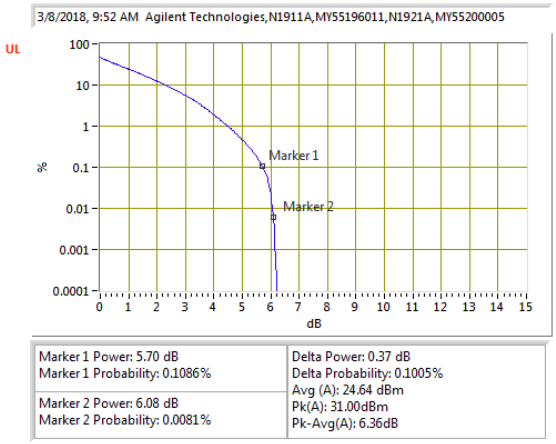
8.5.10. LTE BAND 30



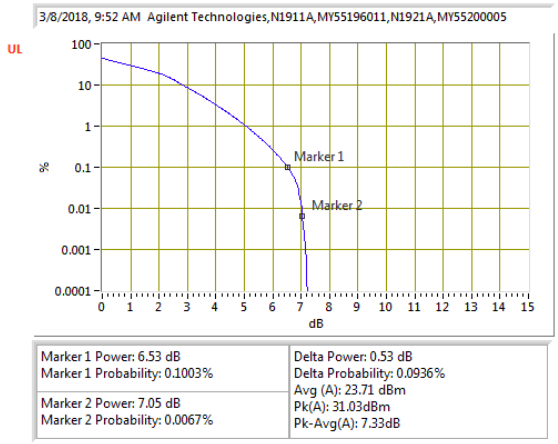
LTE B30 5MHz QPSK Middle Channel



LTE B30 5MHz 16QAM Middle Channel



LTE B30 10MHz QPSK Middle Channel



LTE B30 10MHz 16QAM Middle Channel

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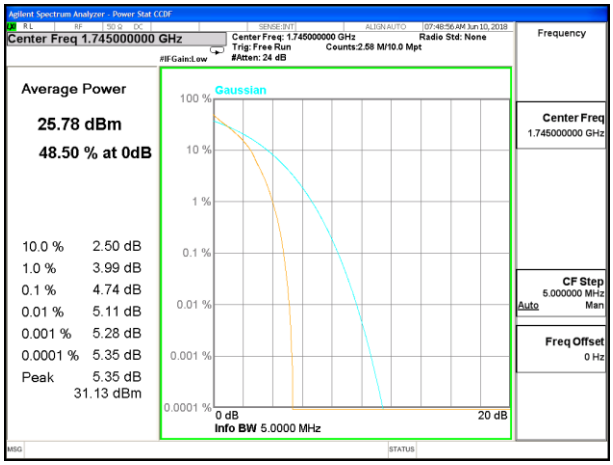
8.5.11. LTE BAND 41

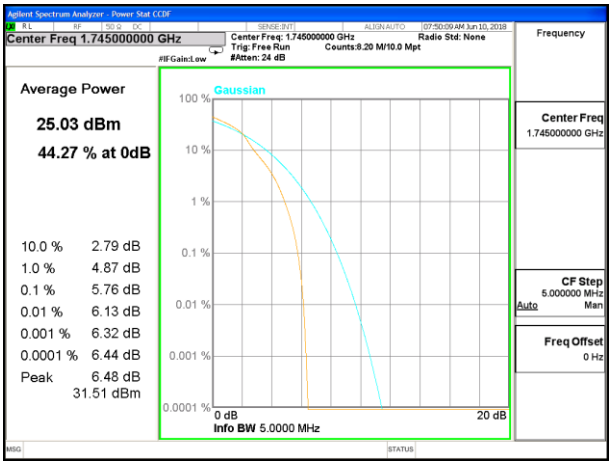
ID:	39004	Date:	3/8/18

Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
Band 41	5MHz	2593.0	25	0	QPSK	32.30	22.14	3.17
					16QAM	32.32	21.14	4.19
	10MHz		50	0	QPSK	32.31	22.16	3.16
					16QAM	32.38	21.25	4.14
	15MHz		75	0	QPSK	32.50	22.16	3.35
					16QAM	32.48	21.23	4.26
	20MHz		100	0	QPSK	32.54	22.17	3.38
					16QAM	32.55	21.25	4.31
Duty Cycle Correction Factor (dB) =			6.99					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

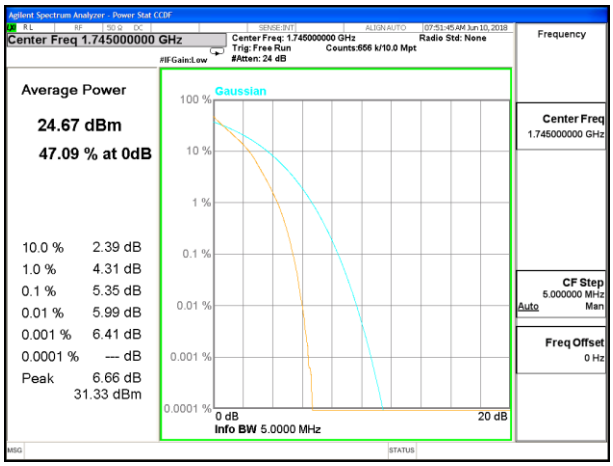
8.5.12. LTE BAND 66



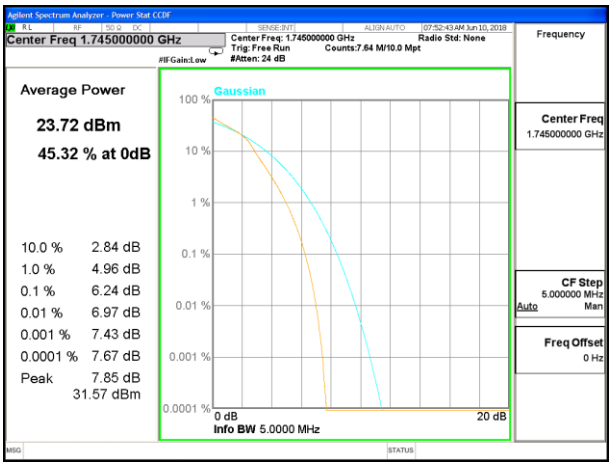
LTE B66 1.4MHz QPSK Middle Channel



LTE B66 1.4MHz 16QAM Middle Channel



LTE B66 3MHz QPSK Middle Channel



LTE B66 3MHz 16QAM Middle Channel

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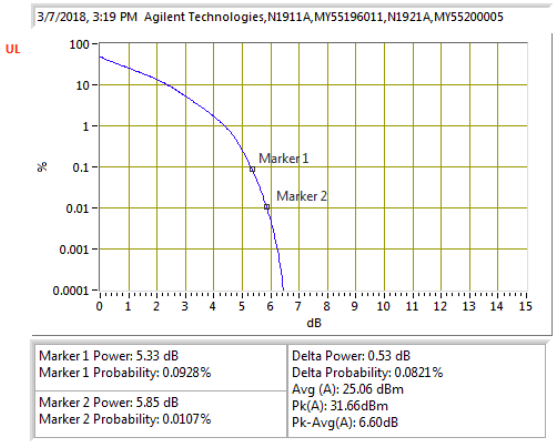
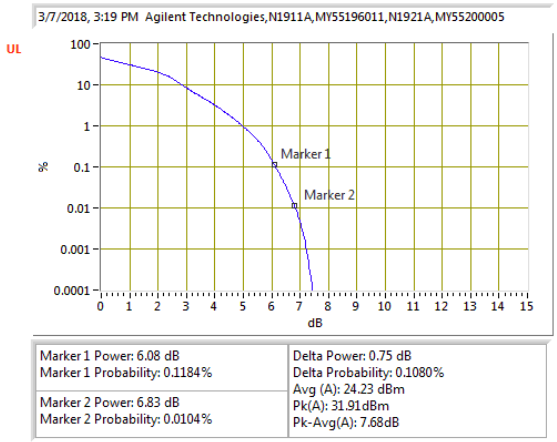
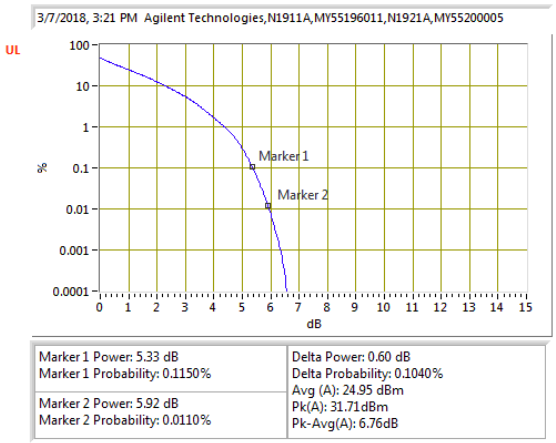


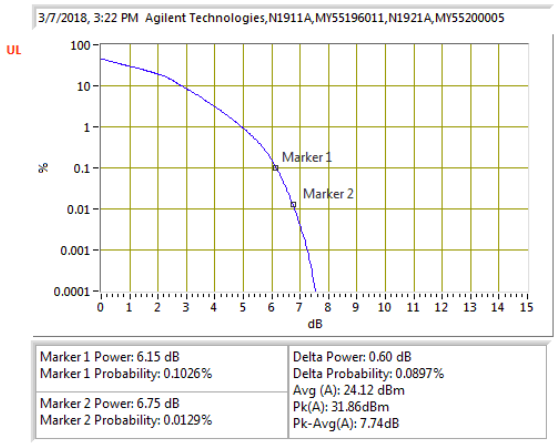
LTE B66 5MHz QPSK Middle Channel



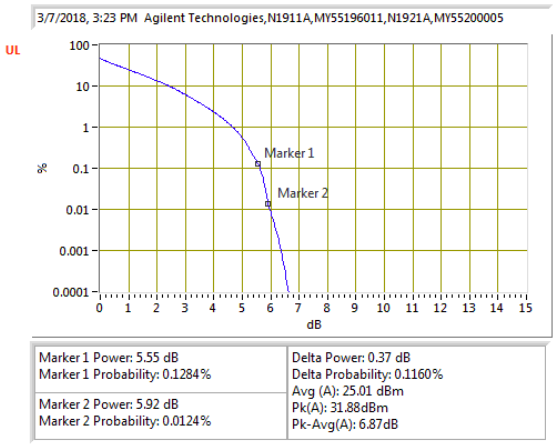
LTE B66 5MHz 16QAM Middle Channel



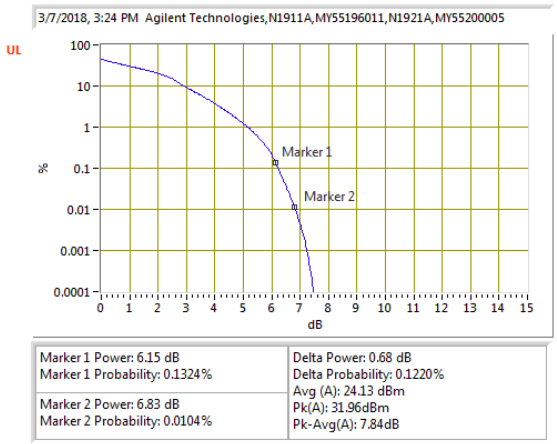
LTE B66 10MHz QPSK Middle Channel



LTE B66 10MHz 16QAM Middle Channel



LTE B66 15MHz QPSK Middle Channel



LTE B66 15MHz 16QAM Middle Channel

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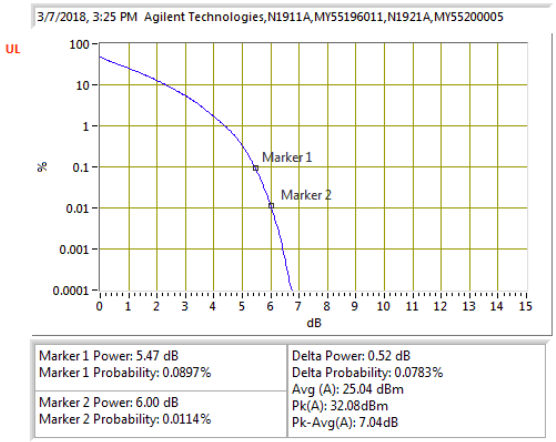
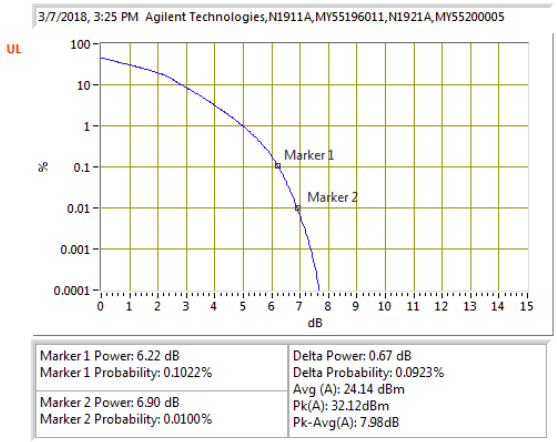


LTE B66 20MHz QPSK Middle Channel



LTE B66 20MHz 16QAM Middle Channel

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9. RADIATED TEST RESULTS

9.1. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 1

RULE PART(S)

§2.1053, §22.917, §24.238, §27.53, §90.691 and §90.543

LIMIT

§22.917(a), §24.238(a), §27.53 (g), (h), §90.691
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

§27.53 (Band 13)
(c) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.
(f) Emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals. (-70 dBW/MHz = -40dBm/MHz).

§90.543(Band 14)
(e) (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.
(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

§27.53 (a) (Band 30)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

§27.53 (m) (Band 7, 41)
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.

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TEST PROCEDURE

KDB 971168 v03r01/ D02 v02r01

MODES TESTED

- LTE Band 2
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 14
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 30
- LTE Band 41
- LTE Band 66

RESULTS

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9.1.1. LTE BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 2, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1860MHz)										
3.72	-66.2	H	3.0	-16.2	34.1	1.0	-49.3	-13.0	-36.3	
5.58	-67.0	H	3.0	-12.9	33.3	1.0	-45.2	-13.0	-32.2	
7.44	-67.9	H	3.0	-10.4	33.1	1.0	-42.5	-13.0	-29.5	
3.72	-66.6	V	3.0	-16.2	34.1	1.0	-49.3	-13.0	-36.3	
5.58	-67.0	V	3.0	-13.0	33.3	1.0	-45.3	-13.0	-32.3	
7.44	-67.7	V	3.0	-10.2	33.1	1.0	-42.3	-13.0	-29.3	
Mid Channel (1880MHz)										
3.76	-66.3	H	3.0	-16.2	34.1	1.0	-49.3	-13.0	-36.3	
5.64	-67.0	H	3.0	-12.9	33.3	1.0	-45.2	-13.0	-32.2	
7.52	-68.0	H	3.0	-10.4	33.0	1.0	-42.5	-13.0	-29.5	
3.76	-65.5	V	3.0	-15.1	34.1	1.0	-48.1	-13.0	-35.1	
5.64	-67.5	V	3.0	-13.4	33.3	1.0	-45.7	-13.0	-32.7	
7.52	-67.4	V	3.0	-9.8	33.0	1.0	-41.8	-13.0	-28.8	
High Channel (1900MHz)										
3.80	-66.1	H	3.0	-15.8	34.0	1.0	-48.9	-13.0	-35.9	
5.70	-66.5	H	3.0	-12.2	33.3	1.0	-44.5	-13.0	-31.5	
7.60	-67.9	H	3.0	-10.2	33.0	1.0	-42.2	-13.0	-29.2	
3.80	-66.0	V	3.0	-15.5	34.0	1.0	-48.5	-13.0	-35.5	
5.70	-66.9	V	3.0	-12.6	33.3	1.0	-44.9	-13.0	-31.9	
7.60	-67.4	V	3.0	-9.7	33.0	1.0	-41.7	-13.0	-28.7	

Rev. 05.21.15

LTE B2 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 2, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1860MHz)										
3.72	-67.2	H	3.0	-17.2	34.1	1.0	-50.3	-13.0	-37.3	
5.58	-67.2	H	3.0	-13.1	33.3	1.0	-45.4	-13.0	-32.4	
7.44	-68.2	H	3.0	-10.7	33.1	1.0	-42.8	-13.0	-29.8	
3.72	-66.8	V	3.0	-16.5	34.1	1.0	-49.6	-13.0	-36.6	
5.58	-67.0	V	3.0	-13.1	33.3	1.0	-45.4	-13.0	-32.4	
7.44	-68.2	V	3.0	-10.8	33.1	1.0	-42.8	-13.0	-29.8	
Mid Channel (1880MHz)										
3.76	-66.1	H	3.0	-15.9	34.1	1.0	-49.0	-13.0	-36.0	
5.64	-66.8	H	3.0	-12.6	33.3	1.0	-44.9	-13.0	-31.9	
7.52	-66.7	H	3.0	-9.1	33.0	1.0	-41.2	-13.0	-28.2	
3.76	-66.8	V	3.0	-16.3	34.1	1.0	-49.4	-13.0	-36.4	
5.64	-67.1	V	3.0	-13.1	33.3	1.0	-45.3	-13.0	-32.3	
7.52	-68.0	V	3.0	-10.4	33.0	1.0	-42.5	-13.0	-29.5	
High Channel (1900MHz)										
3.80	-66.9	H	3.0	-16.7	34.0	1.0	-49.7	-13.0	-36.7	
5.70	-67.7	H	3.0	-13.4	33.3	1.0	-45.7	-13.0	-32.7	
7.60	-68.6	H	3.0	-10.9	33.0	1.0	-43.0	-13.0	-30.0	
3.80	-66.9	V	3.0	-16.4	34.0	1.0	-49.4	-13.0	-36.4	
5.70	-68.0	V	3.0	-13.8	33.3	1.0	-46.0	-13.0	-33.0	
7.60	-67.8	V	3.0	-10.1	33.0	1.0	-42.1	-13.0	-29.1	

Rev. 05.21.15

LTE B2 20MHz 16QAM

9.1.2. LTE BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 5, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (829MHz)										
1.66	-65.3	H	3.0	-23.4	36.5	1.0	-58.9	-13.0	-45.9	
2.49	-65.1	H	3.0	-19.3	35.2	1.0	-53.5	-13.0	-40.5	
3.32	-65.0	H	3.0	-16.1	34.6	1.0	-49.7	-13.0	-36.7	
1.66	-65.1	V	3.0	-22.4	36.5	1.0	-57.9	-13.0	-44.9	
2.49	-65.4	V	3.0	-19.6	35.2	1.0	-53.7	-13.0	-40.7	
3.32	-65.1	V	3.0	-15.6	34.6	1.0	-49.2	-13.0	-36.2	
Mid Channel (836.5MHz)										
1.67	-65.5	H	3.0	-23.5	36.5	1.0	-59.0	-13.0	-46.0	
2.51	-65.2	H	3.0	-19.3	35.1	1.0	-53.4	-13.0	-40.4	
3.35	-65.1	H	3.0	-16.1	34.6	1.0	-49.7	-13.0	-36.7	
1.67	-65.2	V	3.0	-22.4	36.5	1.0	-57.9	-13.0	-44.9	
2.51	-65.6	V	3.0	-19.7	35.1	1.0	-53.8	-13.0	-40.8	
3.35	-65.2	V	3.0	-15.6	34.6	1.0	-49.2	-13.0	-36.2	
High Channel (844MHz)										
1.69	-66.1	H	3.0	-24.0	36.4	1.0	-59.4	-13.0	-46.4	
2.53	-65.0	H	3.0	-19.0	35.1	1.0	-53.1	-13.0	-40.1	
3.38	-65.3	H	3.0	-16.2	34.5	1.0	-49.8	-13.0	-36.8	
1.69	-65.6	V	3.0	-22.7	36.4	1.0	-58.1	-13.0	-45.1	
2.53	-65.1	V	3.0	-19.0	35.1	1.0	-53.2	-13.0	-40.2	
3.38	-64.8	V	3.0	-15.2	34.5	1.0	-48.7	-13.0	-35.7	

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LTE B5 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 5, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (829MHz)										
1.66	-65.7	H	3.0	-24.2	36.5	1.0	-59.7	-13.0	-46.7	
2.49	-64.6	H	3.0	-21.4	35.2	1.0	-55.6	-13.0	-42.6	
3.32	-64.2	H	3.0	-18.2	34.6	1.0	-51.8	-13.0	-38.8	
1.66	-65.7	V	3.0	-23.9	36.5	1.0	-59.4	-13.0	-46.4	
2.49	-65.2	V	3.0	-21.1	35.2	1.0	-55.2	-13.0	-42.2	
3.32	-65.4	V	3.0	-19.4	34.6	1.0	-53.1	-13.0	-40.1	
Mid Channel (836.5MHz)										
1.67	-66.1	H	3.0	-24.6	36.5	1.0	-60.1	-13.0	-47.1	
2.51	-65.6	H	3.0	-22.4	35.1	1.0	-56.5	-13.0	-43.5	
3.35	-65.4	H	3.0	-19.4	34.6	1.0	-52.9	-13.0	-39.9	
1.67	-65.9	V	3.0	-24.1	36.5	1.0	-59.6	-13.0	-46.6	
2.51	-65.5	V	3.0	-21.3	35.1	1.0	-55.4	-13.0	-42.4	
3.35	-65.6	V	3.0	-19.6	34.6	1.0	-53.1	-13.0	-40.1	
High Channel (844MHz)										
1.69	-66.2	H	3.0	-24.7	36.4	1.0	-60.1	-13.0	-47.1	
2.53	-65.1	H	3.0	-21.8	35.1	1.0	-55.9	-13.0	-42.9	
3.38	-64.8	H	3.0	-18.7	34.5	1.0	-52.2	-13.0	-39.2	
1.69	-65.7	V	3.0	-23.9	36.4	1.0	-59.4	-13.0	-46.4	
2.53	-65.1	V	3.0	-20.8	35.1	1.0	-55.0	-13.0	-42.0	
3.38	-65.2	V	3.0	-19.1	34.5	1.0	-52.6	-13.0	-39.6	

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LTE B5 10MHz 16QAM

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9.1.3. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 7, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.02	-66.0	H	3.0	-13.1	33.4	1.0	-45.5	-25.0	-20.5	
7.53	-67.4	H	3.0	-9.8	33.0	1.0	-41.9	-25.0	-16.9	
10.04	-68.9	H	3.0	-8.1	32.6	1.0	-39.8	-25.0	-14.8	
5.02	-66.6	V	3.0	-13.8	33.4	1.0	-46.2	-25.0	-21.2	
7.53	-67.9	V	3.0	-10.3	33.0	1.0	-42.3	-25.0	-17.3	
10.04	-68.7	V	3.0	-7.6	32.6	1.0	-39.2	-25.0	-14.2	
Mid Channel (2535MHz)										
5.07	-67.8	H	3.0	-14.8	33.4	1.0	-47.2	-25.0	-22.2	
7.61	-67.9	H	3.0	-10.2	33.0	1.0	-42.3	-25.0	-17.3	
10.14	-69.1	H	3.0	-8.2	32.6	1.0	-39.8	-25.0	-14.8	
5.07	-66.7	V	3.0	-13.7	33.4	1.0	-46.1	-25.0	-21.1	
7.61	-67.4	V	3.0	-9.7	33.0	1.0	-41.7	-25.0	-16.7	
10.14	-67.6	V	3.0	-6.4	32.6	1.0	-38.0	-25.0	-13.0	
High Channel (2560MHz)										
5.12	-67.7	H	3.0	-14.6	33.4	1.0	-47.0	-25.0	-22.0	
7.68	-67.6	H	3.0	-9.8	33.0	1.0	-41.8	-25.0	-16.8	
10.24	-68.6	H	3.0	-7.6	32.5	1.0	-39.1	-25.0	-14.1	
5.12	-65.9	V	3.0	-12.9	33.4	1.0	-45.2	-25.0	-20.2	
7.68	-67.4	V	3.0	-9.5	33.0	1.0	-41.6	-25.0	-16.6	
10.24	-68.8	V	3.0	-7.6	32.5	1.0	-39.1	-25.0	-14.1	

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LTE B7 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 7, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.02	-66.7	H	3.0	-13.8	33.4	1.0	-46.2	-25.0	-21.2	
7.53	-67.4	H	3.0	-9.8	33.0	1.0	-41.9	-25.0	-16.9	
10.04	-68.8	H	3.0	-8.0	32.6	1.0	-39.7	-25.0	-14.7	
5.02	-67.5	V	3.0	-14.7	33.4	1.0	-47.1	-25.0	-22.1	
7.53	-67.6	V	3.0	-9.9	33.0	1.0	-42.0	-25.0	-17.0	
10.04	-69.2	V	3.0	-8.1	32.6	1.0	-39.8	-25.0	-14.8	
Mid Channel (2535MHz)										
5.07	-67.9	H	3.0	-14.9	33.4	1.0	-47.3	-25.0	-22.3	
7.61	-68.2	H	3.0	-10.5	33.0	1.0	-42.5	-25.0	-17.5	
10.14	-68.9	H	3.0	-8.0	32.6	1.0	-39.6	-25.0	-14.6	
5.07	-68.3	V	3.0	-15.4	33.4	1.0	-47.8	-25.0	-22.8	
7.61	-67.4	V	3.0	-9.7	33.0	1.0	-41.7	-25.0	-16.7	
10.14	-67.9	V	3.0	-6.8	32.6	1.0	-38.4	-25.0	-13.4	
High Channel (2560MHz)										
5.12	-67.3	H	3.0	-14.2	33.4	1.0	-46.6	-25.0	-21.6	
7.68	-67.9	H	3.0	-10.1	33.0	1.0	-42.1	-25.0	-17.1	
10.24	-68.7	H	3.0	-7.7	32.5	1.0	-39.2	-25.0	-14.2	
5.12	-67.0	V	3.0	-13.9	33.4	1.0	-46.3	-25.0	-21.3	
7.68	-67.5	V	3.0	-9.7	33.0	1.0	-41.7	-25.0	-16.7	
10.24	-68.7	V	3.0	-7.5	32.5	1.0	-39.0	-25.0	-14.0	

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LTE B7 20MHz 16QAM

9.1.4. LTE BAND 12

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 12, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (704MHz)										
1.41	-65.4	H	3.0	-25.2	36.7	1.0	-60.9	-13.0	-47.9	
2.11	-65.6	H	3.0	-20.7	35.8	1.0	-55.5	-13.0	-42.5	
2.82	-66.1	H	3.0	-18.9	35.0	1.0	-52.9	-13.0	-39.9	
1.41	-65.7	V	3.0	-25.0	36.7	1.0	-60.7	-13.0	-47.7	
2.11	-65.9	V	3.0	-20.2	35.8	1.0	-54.9	-13.0	-41.9	
2.82	-66.0	V	3.0	-18.2	35.0	1.0	-52.3	-13.0	-39.3	
Mid Channel (707.5MHz)										
1.42	-66.2	H	3.0	-26.0	36.7	1.0	-61.6	-13.0	-48.6	
2.12	-66.7	H	3.0	-21.8	35.7	1.0	-56.5	-13.0	-43.5	
2.83	-66.0	H	3.0	-18.7	35.0	1.0	-52.8	-13.0	-39.8	
1.42	-65.8	V	3.0	-25.1	36.7	1.0	-60.7	-13.0	-47.7	
2.12	-65.8	V	3.0	-20.1	35.7	1.0	-54.8	-13.0	-41.8	
2.83	-66.4	V	3.0	-18.6	35.0	1.0	-52.6	-13.0	-39.6	
High Channel (711MHz)										
1.42	-66.5	H	3.0	-26.2	36.7	1.0	-61.9	-13.0	-48.9	
2.13	-65.6	H	3.0	-20.7	35.7	1.0	-55.4	-13.0	-42.4	
2.84	-66.2	H	3.0	-18.9	35.0	1.0	-52.9	-13.0	-39.9	
1.42	-65.8	V	3.0	-25.0	36.7	1.0	-60.7	-13.0	-47.7	
2.13	-66.0	V	3.0	-20.3	35.7	1.0	-55.0	-13.0	-42.0	
2.84	-66.1	V	3.0	-18.2	35.0	1.0	-52.2	-13.0	-39.2	

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LTE B12 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 12, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (704MHz)										
1.41	-65.8	H	3.0	-25.6	36.7	1.0	-61.3	-13.0	-48.3	
2.11	-65.5	H	3.0	-20.6	35.8	1.0	-55.4	-13.0	-42.4	
2.82	-65.5	H	3.0	-18.3	35.0	1.0	-52.3	-13.0	-39.3	
1.41	-66.5	V	3.0	-25.8	36.7	1.0	-61.5	-13.0	-48.5	
2.11	-65.7	V	3.0	-20.0	35.8	1.0	-54.7	-13.0	-41.7	
2.82	-66.3	V	3.0	-18.5	35.0	1.0	-52.6	-13.0	-39.6	
Mid Channel (707.5MHz)										
1.42	-66.1	H	3.0	-25.9	36.7	1.0	-61.5	-13.0	-48.5	
2.12	-65.5	H	3.0	-20.6	35.7	1.0	-55.3	-13.0	-42.3	
2.83	-66.0	H	3.0	-18.7	35.0	1.0	-52.8	-13.0	-39.8	
1.42	-65.6	V	3.0	-24.9	36.7	1.0	-60.5	-13.0	-47.5	
2.12	-65.9	V	3.0	-20.2	35.7	1.0	-54.9	-13.0	-41.9	
2.83	-66.3	V	3.0	-18.5	35.0	1.0	-52.5	-13.0	-39.5	
High Channel (711MHz)										
1.42	-66.4	H	3.0	-26.1	36.7	1.0	-61.8	-13.0	-48.8	
2.13	-66.1	H	3.0	-21.2	35.7	1.0	-55.9	-13.0	-42.9	
2.84	-65.7	H	3.0	-18.4	35.0	1.0	-52.4	-13.0	-39.4	
1.42	-66.0	V	3.0	-25.2	36.7	1.0	-60.9	-13.0	-47.9	
2.13	-66.1	V	3.0	-20.4	35.7	1.0	-55.1	-13.0	-42.1	
2.84	-66.0	V	3.0	-18.1	35.0	1.0	-52.1	-13.0	-39.1	

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LTE B12 10MHz 16QAM

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9.1.5. LTE BAND 13

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 13, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B13

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (782MHz)										
1.56	-65.0	H	3.0	-23.9	36.6	1.0	-59.6	-40.0	-19.6	
2.35	-65.4	H	3.0	-20.1	35.3	1.0	-54.4	-13.0	-41.4	
3.13	-65.0	H	3.0	-16.6	34.8	1.0	-50.5	-13.0	-37.5	
1.56	-66.0	V	3.0	-24.2	36.6	1.0	-59.8	-40.0	-19.8	
2.35	-65.7	V	3.0	-20.1	35.3	1.0	-54.4	-13.0	-41.4	
3.13	-65.1	V	3.0	-16.0	34.8	1.0	-49.8	-13.0	-36.8	

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LTE B13 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 13, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B13

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (782MHz)										
1.56	-65.7	H	3.0	-24.6	36.6	1.0	-60.3	-40.0	-20.3	
2.35	-65.4	H	3.0	-20.1	35.3	1.0	-54.4	-13.0	-41.4	
3.13	-65.3	H	3.0	-16.9	34.8	1.0	-50.8	-13.0	-37.8	
1.56	-65.5	V	3.0	-23.7	36.6	1.0	-59.3	-40.0	-19.3	
2.35	-65.0	V	3.0	-19.4	35.3	1.0	-53.7	-13.0	-40.7	
3.13	-65.3	V	3.0	-16.2	34.8	1.0	-50.0	-13.0	-37.0	

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LTE B13 10MHz 16QAM

9.1.6. LTE BAND 14

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/12/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 14, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B14

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (793MHz) [BW 10MHz]										
1.59	-66.6	H	3.0	-25.3	36.6	1.0	-60.9	-40.0	-20.9	
2.38	-67.4	H	3.0	-22.0	35.2	1.0	-56.2	-13.0	-43.2	
3.17	-66.5	H	3.0	-18.0	34.8	1.0	-51.8	-13.0	-38.8	
1.59	-66.2	V	3.0	-24.2	36.6	1.0	-59.8	-40.0	-19.8	
2.38	-67.0	V	3.0	-21.5	35.2	1.0	-55.7	-13.0	-42.7	
3.17	-66.8	V	3.0	-17.6	34.8	1.0	-51.3	-13.0	-38.3	

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LTE B14 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/12/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 14, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B14

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (793MHz) [BW 10MHz]										
1.59	-66.3	H	3.0	-25.0	36.6	1.0	-60.6	-40.0	-20.6	
2.38	-67.6	H	3.0	-22.2	35.2	1.0	-56.4	-13.0	-43.4	
3.17	-67.0	H	3.0	-18.5	34.8	1.0	-52.3	-13.0	-39.3	
1.59	-66.1	V	3.0	-24.1	36.6	1.0	-59.7	-40.0	-19.7	
2.38	-67.0	V	3.0	-21.5	35.2	1.0	-55.7	-13.0	-42.7	
3.17	-67.0	V	3.0	-17.8	34.8	1.0	-51.5	-13.0	-38.5	

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LTE B14 10MHz 16QAM

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9.1.7. LTE BAND 17

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 17, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (710MHz)										
1.42	-65.4	H	3.0	-25.1	36.7	1.0	-60.8	-13.0	-47.8	
2.13	-64.9	H	3.0	-20.0	35.7	1.0	-54.7	-13.0	-41.7	
2.84	-65.5	H	3.0	-18.2	35.0	1.0	-52.2	-13.0	-39.2	
1.42	-63.8	V	3.0	-23.0	36.7	1.0	-58.7	-13.0	-45.7	
2.13	-65.7	V	3.0	-20.0	35.7	1.0	-54.7	-13.0	-41.7	
2.84	-65.4	V	3.0	-17.5	35.0	1.0	-51.5	-13.0	-38.5	

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LTE B17 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 17, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (710MHz)										
1.42	-65.1	H	3.0	-24.8	36.7	1.0	-60.5	-13.0	-47.5	
2.13	-66.0	H	3.0	-21.1	35.7	1.0	-55.8	-13.0	-42.8	
2.84	-65.4	H	3.0	-18.1	35.0	1.0	-52.1	-13.0	-39.1	
1.42	-66.0	V	3.0	-25.2	36.7	1.0	-60.9	-13.0	-47.9	
2.13	-65.9	V	3.0	-20.2	35.7	1.0	-54.9	-13.0	-41.9	
2.84	-66.1	V	3.0	-18.2	35.0	1.0	-52.2	-13.0	-39.2	

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LTE B17 10MHz 16QAM

9.1.8. LTE BAND 25

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 25, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1860MHz)										
3.72	-67.0	H	3.0	-17.0	34.1	1.0	-50.1	-13.0	-37.1	
5.58	-67.5	H	3.0	-13.5	33.3	1.0	-45.8	-13.0	-32.8	
7.44	-68.3	H	3.0	-10.8	33.1	1.0	-42.8	-13.0	-29.8	
3.72	-66.2	V	3.0	-15.9	34.1	1.0	-49.0	-13.0	-36.0	
5.58	-68.2	V	3.0	-14.3	33.3	1.0	-46.6	-13.0	-33.6	
7.44	-67.4	V	3.0	-9.9	33.1	1.0	-42.0	-13.0	-29.0	
Mid Channel (1882.5MHz)										
3.77	-66.3	H	3.0	-16.1	34.1	1.0	-49.2	-13.0	-36.2	
5.65	-68.2	H	3.0	-14.0	33.3	1.0	-46.3	-13.0	-33.3	
7.53	-67.3	H	3.0	-9.7	33.0	1.0	-41.8	-13.0	-28.8	
3.77	-66.2	V	3.0	-15.7	34.1	1.0	-48.8	-13.0	-35.8	
5.65	-67.7	V	3.0	-13.6	33.3	1.0	-45.9	-13.0	-32.9	
7.53	-68.0	V	3.0	-10.4	33.0	1.0	-42.4	-13.0	-29.4	
High Channel (1905MHz)										
3.81	-66.7	H	3.0	-16.4	34.0	1.0	-49.5	-13.0	-36.5	
5.72	-67.8	H	3.0	-13.5	33.3	1.0	-45.8	-13.0	-32.8	
7.62	-67.8	H	3.0	-10.1	33.0	1.0	-42.1	-13.0	-29.1	
3.81	-66.7	V	3.0	-16.2	34.0	1.0	-49.2	-13.0	-36.2	
5.72	-68.0	V	3.0	-13.7	33.3	1.0	-46.0	-13.0	-33.0	
7.62	-68.0	V	3.0	-10.3	33.0	1.0	-42.3	-13.0	-29.3	

Rev. 05.21.15

LTE B25 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 25, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1860MHz)										
3.72	-67.2	H	3.0	-17.2	34.1	1.0	-50.3	-13.0	-37.3	
5.58	-66.9	H	3.0	-12.8	33.3	1.0	-45.1	-13.0	-32.1	
7.44	-68.2	H	3.0	-10.7	33.1	1.0	-42.8	-13.0	-29.8	
3.72	-66.7	V	3.0	-16.4	34.1	1.0	-49.5	-13.0	-36.5	
5.58	-66.7	V	3.0	-12.7	33.3	1.0	-45.0	-13.0	-32.0	
7.44	-67.1	V	3.0	-9.6	33.1	1.0	-41.6	-13.0	-28.6	
Mid Channel (1882.5MHz)										
3.77	-66.6	H	3.0	-16.5	34.1	1.0	-49.6	-13.0	-36.6	
5.65	-66.3	H	3.0	-12.1	33.3	1.0	-44.4	-13.0	-31.4	
7.53	-67.5	H	3.0	-9.9	33.0	1.0	-41.9	-13.0	-28.9	
3.77	-66.0	V	3.0	-15.5	34.1	1.0	-48.6	-13.0	-35.6	
5.65	-67.9	V	3.0	-13.8	33.3	1.0	-46.1	-13.0	-33.1	
7.53	-67.2	V	3.0	-9.5	33.0	1.0	-41.6	-13.0	-28.6	
High Channel (1905MHz)										
3.81	-67.1	H	3.0	-16.9	34.0	1.0	-49.9	-13.0	-36.9	
5.72	-67.1	H	3.0	-12.7	33.3	1.0	-45.0	-13.0	-32.0	
7.62	-67.4	H	3.0	-9.7	33.0	1.0	-41.7	-13.0	-28.7	
3.81	-65.8	V	3.0	-15.3	34.0	1.0	-48.3	-13.0	-35.3	
5.72	-68.3	V	3.0	-14.1	33.3	1.0	-46.3	-13.0	-33.3	
7.62	-67.6	V	3.0	-9.9	33.0	1.0	-41.9	-13.0	-28.9	

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LTE B25 20MHz 16QAM

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9.1.9. LTE BAND 26 (FCC PART 90S)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 26 (90S), 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (819MHz)										
1.64	-66.0	H	3.0	-24.3	36.5	1.0	-59.8	-13.0	-46.8	
2.46	-64.7	H	3.0	-19.0	35.2	1.0	-53.2	-13.0	-40.2	
3.28	-65.5	H	3.0	-16.7	34.7	1.0	-50.4	-13.0	-37.4	
1.64	-64.8	V	3.0	-22.3	36.5	1.0	-57.8	-13.0	-44.8	
2.46	-65.5	V	3.0	-19.8	35.2	1.0	-54.0	-13.0	-41.0	
3.28	-65.2	V	3.0	-15.8	34.7	1.0	-49.4	-13.0	-36.4	

Rev. 05.21.15

LTE B26 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 26 (90S), 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (819MHz)										
1.64	-65.6	H	3.0	-23.9	36.5	1.0	-59.4	-13.0	-46.4	
2.46	-65.0	H	3.0	-19.3	35.2	1.0	-53.5	-13.0	-40.5	
3.28	-64.6	H	3.0	-15.8	34.7	1.0	-49.5	-13.0	-36.5	
1.64	-65.5	V	3.0	-23.0	36.5	1.0	-58.5	-13.0	-45.5	
2.46	-65.1	V	3.0	-19.4	35.2	1.0	-53.6	-13.0	-40.6	
3.28	-65.4	V	3.0	-16.0	34.7	1.0	-49.6	-13.0	-36.6	

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LTE B26 10MHz 16QAM

9.1.10. LTE BAND 30

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 30, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B30

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (2310MHz)										
4.62	-64.1	H	3.0	-10.3	37.9	1.0	-47.2	-40.0	-7.2	
6.93	-65.3	H	3.0	-6.7	36.5	1.0	-42.1	-40.0	-2.1	
9.24	-68.7	H	3.0	-7.2	34.9	1.0	-41.0	-40.0	-1.0	
4.62	-66.6	V	3.0	-12.9	37.9	1.0	-49.8	-40.0	-9.8	
6.93	-67.2	V	3.0	-7.7	36.5	1.0	-43.2	-40.0	-3.2	
9.24	-68.6	V	3.0	-6.8	34.9	1.0	-40.7	-40.0	-0.7	

Rev. 05.21.15

LTE B30 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 30, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B30

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (2310MHz)										
4.62	-66.8	H	3.0	-13.0	37.9	1.0	-49.9	-40.0	-9.9	
6.93	-67.7	H	3.0	-9.1	36.5	1.0	-44.5	-40.0	-4.5	
9.24	-68.3	H	3.0	-6.8	34.9	1.0	-40.6	-40.0	-0.6	
4.62	-66.9	V	3.0	-13.2	37.9	1.0	-50.1	-40.0	-10.1	
6.93	-67.5	V	3.0	-8.0	36.5	1.0	-43.5	-40.0	-3.5	
9.24	-68.5	V	3.0	-6.7	34.9	1.0	-40.6	-40.0	-0.6	

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LTE B30 10MHz 16QAM

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9.1.11. LTE BAND 41

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/12/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 41, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2506MHz)										
5.01	-65.5	H	3.0	-12.6	33.4	1.0	-45.0	-25.0	-20.0	
7.52	-67.5	H	3.0	-9.9	33.0	1.0	-42.0	-25.0	-17.0	
10.02	-67.4	H	3.0	-6.6	32.7	1.0	-38.3	-25.0	-13.3	
5.01	-66.3	V	3.0	-13.5	33.4	1.0	-45.9	-25.0	-20.9	
7.52	-67.2	V	3.0	-9.6	33.0	1.0	-41.6	-25.0	-16.6	
10.02	-67.5	V	3.0	-6.4	32.7	1.0	-38.1	-25.0	-13.1	
Mid Channel (2593MHz)										
5.19	-66.2	H	3.0	-13.0	33.4	1.0	-45.3	-25.0	-20.3	
7.78	-67.0	H	3.0	-9.1	33.0	1.0	-41.1	-25.0	-16.1	
10.37	-67.7	H	3.0	-6.6	32.4	1.0	-38.0	-25.0	-13.0	
5.19	-65.5	V	3.0	-12.3	33.4	1.0	-44.7	-25.0	-19.7	
7.78	-66.9	V	3.0	-8.9	33.0	1.0	-40.9	-25.0	-15.9	
10.37	-67.0	V	3.0	-5.7	32.4	1.0	-37.1	-25.0	-12.1	
High Channel (2680MHz)										
5.36	-67.0	H	3.0	-13.4	33.3	1.0	-45.7	-25.0	-20.7	
8.04	-67.2	H	3.0	-8.9	33.0	1.0	-40.9	-25.0	-15.9	
10.72	-66.9	H	3.0	-5.4	32.2	1.0	-36.6	-25.0	-11.6	
5.36	-66.3	V	3.0	-12.8	33.3	1.0	-45.1	-25.0	-20.1	
8.04	-66.5	V	3.0	-8.2	33.0	1.0	-40.1	-25.0	-15.1	
10.72	-67.1	V	3.0	-5.6	32.2	1.0	-36.8	-25.0	-11.8	

Rev. 05.21.15

LTE B41 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/12/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 41, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2506MHz)										
5.01	-65.7	H	3.0	-12.8	33.4	1.0	-45.2	-25.0	-20.2	
7.52	-66.9	H	3.0	-9.3	33.0	1.0	-41.4	-25.0	-16.4	
10.02	-67.7	H	3.0	-6.9	32.7	1.0	-38.6	-25.0	-13.6	
5.01	-65.5	V	3.0	-12.7	33.4	1.0	-45.1	-25.0	-20.1	
7.52	-67.2	V	3.0	-9.6	33.0	1.0	-41.6	-25.0	-16.6	
10.02	-67.9	V	3.0	-6.8	32.7	1.0	-38.5	-25.0	-13.5	
Mid Channel (2593MHz)										
5.19	-65.4	H	3.0	-12.2	33.4	1.0	-44.5	-25.0	-19.5	
7.78	-66.6	H	3.0	-8.7	33.0	1.0	-40.7	-25.0	-15.7	
10.37	-66.6	H	3.0	-5.5	32.4	1.0	-36.9	-25.0	-11.9	
5.19	-65.7	V	3.0	-12.5	33.4	1.0	-44.9	-25.0	-19.9	
7.78	-67.0	V	3.0	-9.0	33.0	1.0	-41.0	-25.0	-16.0	
10.37	-67.9	V	3.0	-6.6	32.4	1.0	-38.0	-25.0	-13.0	
High Channel (2680MHz)										
5.36	-66.2	H	3.0	-12.6	33.3	1.0	-44.9	-25.0	-19.9	
8.04	-67.2	H	3.0	-8.9	33.0	1.0	-40.9	-25.0	-15.9	
10.72	-66.5	H	3.0	-5.0	32.2	1.0	-36.2	-25.0	-11.2	
5.36	-66.8	V	3.0	-13.3	33.3	1.0	-45.6	-25.0	-20.6	
8.04	-66.5	V	3.0	-8.2	33.0	1.0	-40.1	-25.0	-15.1	
10.72	-67.1	V	3.0	-5.6	32.2	1.0	-36.8	-25.0	-11.8	

Rev. 05.21.15

LTE B41 20MHz 16QAM

9.1.12. LTE BAND 66

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 66, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1720.0MHz)										
3.42	-67.2	H	3.0	-18.0	34.5	1.0	-51.5	-13.0	-38.5	
5.13	-66.0	H	3.0	-12.8	33.4	1.0	-45.2	-13.0	-32.2	
6.84	-67.2	H	3.0	-10.6	33.1	1.0	-42.8	-13.0	-29.8	
3.42	-68.0	V	3.0	-18.2	34.5	1.0	-51.7	-13.0	-38.7	
5.13	-67.1	V	3.0	-14.0	33.4	1.0	-46.4	-13.0	-33.4	
6.84	-69.0	V	3.0	-12.4	33.1	1.0	-44.5	-13.0	-31.5	
Mid Channel (1745.0MHz)										
3.49	-67.3	H	3.0	-17.9	34.4	1.0	-51.3	-13.0	-38.3	
5.24	-66.0	H	3.0	-12.6	33.3	1.0	-45.0	-13.0	-32.0	
6.98	-67.3	H	3.0	-10.4	33.1	1.0	-42.5	-13.0	-29.5	
3.49	-67.8	V	3.0	-17.9	34.4	1.0	-51.3	-13.0	-38.3	
5.24	-66.2	V	3.0	-12.9	33.3	1.0	-45.3	-13.0	-32.3	
6.98	-68.5	V	3.0	-11.7	33.1	1.0	-43.8	-13.0	-30.8	
High Channel (1770.0MHz)										
3.56	-68.5	H	3.0	-19.0	34.3	1.0	-52.3	-13.0	-39.3	
5.34	-68.5	H	3.0	-14.9	33.3	1.0	-47.3	-13.0	-34.3	
7.12	-67.2	H	3.0	-10.2	33.1	1.0	-42.3	-13.0	-29.3	
3.56	-67.9	V	3.0	-17.8	34.3	1.0	-51.1	-13.0	-38.1	
5.34	-68.4	V	3.0	-14.9	33.3	1.0	-47.2	-13.0	-34.2	
7.12	-67.3	V	3.0	-10.3	33.1	1.0	-42.4	-13.0	-29.4	

Rev. 02.24.17

LTE B66 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/09/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 66, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1720.0MHz)										
3.42	-68.7	H	3.0	-19.5	34.5	1.0	-53.0	-13.0	-40.0	
5.13	-67.4	H	3.0	-14.3	33.4	1.0	-46.7	-13.0	-33.7	
6.84	-68.5	H	3.0	-11.9	33.1	1.0	-44.1	-13.0	-31.1	
3.42	-67.8	V	3.0	-18.0	34.5	1.0	-51.5	-13.0	-38.5	
5.13	-67.2	V	3.0	-14.1	33.4	1.0	-46.5	-13.0	-33.5	
6.84	-68.0	V	3.0	-11.5	33.1	1.0	-43.6	-13.0	-30.6	
Mid Channel (1745.0MHz)										
3.49	-67.7	H	3.0	-18.4	34.4	1.0	-51.8	-13.0	-38.8	
5.24	-66.6	H	3.0	-13.3	33.3	1.0	-45.6	-13.0	-32.6	
6.98	-68.3	H	3.0	-11.4	33.1	1.0	-43.6	-13.0	-30.6	
3.49	-66.1	V	3.0	-16.2	34.4	1.0	-49.6	-13.0	-36.6	
5.24	-66.6	V	3.0	-13.4	33.3	1.0	-45.7	-13.0	-32.7	
6.98	-67.8	V	3.0	-11.0	33.1	1.0	-43.1	-13.0	-30.1	
High Channel (1770.0MHz)										
3.56	-67.5	H	3.0	-17.9	34.3	1.0	-51.2	-13.0	-38.2	
5.34	-68.1	H	3.0	-14.5	33.3	1.0	-46.9	-13.0	-33.9	
7.12	-66.7	H	3.0	-9.7	33.1	1.0	-41.8	-13.0	-28.8	
3.56	-67.7	V	3.0	-17.6	34.3	1.0	-51.0	-13.0	-38.0	
5.34	-68.1	V	3.0	-14.6	33.3	1.0	-46.9	-13.0	-33.9	
7.12	-67.0	V	3.0	-9.9	33.1	1.0	-42.0	-13.0	-29.0	

Rev. 02.24.17

LTE B66 20MHz 16QAM

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9.2. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 2

9.2.1. LTE BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 2, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1860MHz)										
3.72	-66.1	H	3.0	-16.1	34.1	1.0	-49.2	-13.0	-36.2	
5.58	-67.0	H	3.0	-13.0	33.3	1.0	-45.3	-13.0	-32.3	
7.44	-67.8	H	3.0	-10.3	33.1	1.0	-42.4	-13.0	-29.4	
3.72	-66.3	V	3.0	-15.9	34.1	1.0	-49.1	-13.0	-36.1	
5.58	-67.0	V	3.0	-13.0	33.3	1.0	-45.3	-13.0	-32.3	
7.44	-67.3	V	3.0	-9.8	33.1	1.0	-41.9	-13.0	-28.9	
Mid Channel (1880MHz)										
3.76	-66.0	H	3.0	-15.9	34.1	1.0	-49.0	-13.0	-36.0	
5.64	-66.8	H	3.0	-12.6	33.3	1.0	-44.9	-13.0	-31.9	
7.52	-67.2	H	3.0	-9.6	33.0	1.0	-41.7	-13.0	-28.7	
3.76	-65.6	V	3.0	-15.2	34.1	1.0	-48.2	-13.0	-35.2	
5.64	-67.1	V	3.0	-13.0	33.3	1.0	-45.3	-13.0	-32.3	
7.52	-66.1	V	3.0	-8.5	33.0	1.0	-40.5	-13.0	-27.5	
High Channel (1900MHz)										
3.80	-65.5	H	3.0	-15.3	34.0	1.0	-48.3	-13.0	-35.3	
5.70	-66.1	H	3.0	-11.8	33.3	1.0	-44.1	-13.0	-31.1	
7.60	-67.4	H	3.0	-9.7	33.0	1.0	-41.7	-13.0	-28.7	
3.80	-65.9	V	3.0	-15.4	34.0	1.0	-48.4	-13.0	-35.4	
5.70	-67.0	V	3.0	-12.8	33.3	1.0	-45.1	-13.0	-32.1	
7.60	-67.3	V	3.0	-9.6	33.0	1.0	-41.6	-13.0	-28.6	

Rev. 05.21.15

LTE B2 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 2, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1860MHz)										
3.72	-66.4	H	3.0	-16.4	34.1	1.0	-49.5	-13.0	-36.5	
5.58	-67.5	H	3.0	-13.5	33.3	1.0	-45.8	-13.0	-32.8	
7.44	-67.2	H	3.0	-9.7	33.1	1.0	-41.8	-13.0	-28.8	
3.72	-65.6	V	3.0	-15.2	34.1	1.0	-48.4	-13.0	-35.4	
5.58	-67.4	V	3.0	-13.4	33.3	1.0	-45.7	-13.0	-32.7	
7.44	-67.5	V	3.0	-10.0	33.1	1.0	-42.1	-13.0	-29.1	
Mid Channel (1880MHz)										
3.76	-65.9	H	3.0	-15.8	34.1	1.0	-48.9	-13.0	-35.9	
5.64	-67.0	H	3.0	-12.8	33.3	1.0	-45.1	-13.0	-32.1	
7.52	-67.1	H	3.0	-9.5	33.0	1.0	-41.6	-13.0	-28.6	
3.76	-65.7	V	3.0	-15.3	34.1	1.0	-48.3	-13.0	-35.3	
5.64	-67.0	V	3.0	-12.9	33.3	1.0	-45.2	-13.0	-32.2	
7.52	-66.9	V	3.0	-9.3	33.0	1.0	-41.3	-13.0	-28.3	
High Channel (1900MHz)										
3.80	-65.5	H	3.0	-15.3	34.0	1.0	-48.3	-13.0	-35.3	
5.70	-66.6	H	3.0	-12.3	33.3	1.0	-44.6	-13.0	-31.6	
7.60	-67.2	H	3.0	-9.5	33.0	1.0	-41.5	-13.0	-28.5	
3.80	-65.2	V	3.0	-14.7	34.0	1.0	-47.7	-13.0	-34.7	
5.70	-66.2	V	3.0	-12.0	33.3	1.0	-44.3	-13.0	-31.3	
7.60	-67.7	V	3.0	-10.0	33.0	1.0	-42.0	-13.0	-29.0	

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LTE B2 20MHz 16QAM

9.2.2. LTE BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 5, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (829MHz)										
1.66	-66.5	H	3.0	-24.6	36.5	1.0	-60.1	-13.0	-47.1	
2.49	-66.6	H	3.0	-20.8	35.2	1.0	-55.0	-13.0	-42.0	
3.32	-66.1	H	3.0	-17.2	34.6	1.0	-50.8	-13.0	-37.8	
1.66	-67.1	V	3.0	-24.4	36.5	1.0	-59.9	-13.0	-46.9	
2.49	-67.0	V	3.0	-21.2	35.2	1.0	-55.3	-13.0	-42.3	
3.32	-67.1	V	3.0	-17.6	34.6	1.0	-51.2	-13.0	-38.2	
Mid Channel (836.5MHz)										
1.67	-66.7	H	3.0	-24.7	36.5	1.0	-60.2	-13.0	-47.2	
2.51	-66.6	H	3.0	-20.7	35.1	1.0	-54.8	-13.0	-41.8	
3.35	-67.0	H	3.0	-18.0	34.6	1.0	-51.6	-13.0	-38.6	
1.67	-66.6	V	3.0	-23.8	36.5	1.0	-59.3	-13.0	-46.3	
2.51	-66.5	V	3.0	-20.6	35.1	1.0	-54.7	-13.0	-41.7	
3.35	-67.7	V	3.0	-18.1	34.6	1.0	-51.7	-13.0	-38.7	
High Channel (844MHz)										
1.69	-66.6	H	3.0	-24.5	36.4	1.0	-59.9	-13.0	-46.9	
2.53	-66.3	H	3.0	-20.3	35.1	1.0	-54.4	-13.0	-41.4	
3.38	-66.5	H	3.0	-17.4	34.5	1.0	-51.0	-13.0	-38.0	
1.69	-65.7	V	3.0	-22.8	36.4	1.0	-58.2	-13.0	-45.2	
2.53	-66.5	V	3.0	-20.4	35.1	1.0	-54.6	-13.0	-41.6	
3.38	-67.8	V	3.0	-18.2	34.5	1.0	-51.7	-13.0	-38.7	

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LTE B5 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 5, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (829MHz)										
1.66	-66.2	H	3.0	-24.7	36.5	1.0	-60.2	-13.0	-47.2	
2.49	-66.8	H	3.0	-23.6	35.2	1.0	-57.8	-13.0	-44.8	
3.32	-67.3	H	3.0	-21.3	34.6	1.0	-54.9	-13.0	-41.9	
1.66	-67.4	V	3.0	-25.6	36.5	1.0	-61.1	-13.0	-48.1	
2.49	-67.1	V	3.0	-23.0	35.2	1.0	-57.1	-13.0	-44.1	
3.32	-67.6	V	3.0	-21.6	34.6	1.0	-55.3	-13.0	-42.3	
Mid Channel (836.5MHz)										
1.67	-65.5	H	3.0	-24.0	36.5	1.0	-59.5	-13.0	-46.5	
2.51	-66.5	H	3.0	-23.3	35.1	1.0	-57.4	-13.0	-44.4	
3.35	-67.2	H	3.0	-21.2	34.6	1.0	-54.7	-13.0	-41.7	
1.67	-67.1	V	3.0	-25.3	36.5	1.0	-60.8	-13.0	-47.8	
2.51	-67.0	V	3.0	-22.8	35.1	1.0	-56.9	-13.0	-43.9	
3.35	-67.5	V	3.0	-21.5	34.6	1.0	-55.0	-13.0	-42.0	
High Channel (844MHz)										
1.69	-66.3	H	3.0	-24.8	36.4	1.0	-60.2	-13.0	-47.2	
2.53	-67.1	H	3.0	-23.8	35.1	1.0	-57.9	-13.0	-44.9	
3.38	-66.2	H	3.0	-20.1	34.5	1.0	-53.6	-13.0	-40.6	
1.69	-67.0	V	3.0	-25.2	36.4	1.0	-60.7	-13.0	-47.7	
2.53	-66.8	V	3.0	-22.5	35.1	1.0	-56.7	-13.0	-43.7	
3.38	-67.3	V	3.0	-21.2	34.5	1.0	-54.7	-13.0	-41.7	

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LTE B5 10MHz 16QAM

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9.2.3. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/12/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 7, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.02	-67.8	H	3.0	-14.9	33.4	1.0	-47.3	-25.0	-22.3	
7.53	-68.4	H	3.0	-10.8	33.0	1.0	-42.8	-25.0	-17.8	
10.04	-68.5	H	3.0	-7.7	32.6	1.0	-39.3	-25.0	-14.3	
5.02	-68.2	V	3.0	-15.3	33.4	1.0	-47.7	-25.0	-22.7	
7.53	-68.7	V	3.0	-11.0	33.0	1.0	-43.1	-25.0	-18.1	
10.04	-68.5	V	3.0	-7.4	32.6	1.0	-39.1	-25.0	-14.1	
Mid Channel (2535MHz)										
5.07	-66.3	H	3.0	-13.3	33.4	1.0	-45.7	-25.0	-20.7	
7.61	-67.0	H	3.0	-9.3	33.0	1.0	-41.3	-25.0	-16.3	
10.14	-67.8	H	3.0	-6.9	32.6	1.0	-38.5	-25.0	-13.5	
5.07	-67.4	V	3.0	-14.4	33.4	1.0	-46.8	-25.0	-21.8	
7.61	-67.4	V	3.0	-9.7	33.0	1.0	-41.7	-25.0	-16.7	
10.14	-67.2	V	3.0	-6.0	32.6	1.0	-37.6	-25.0	-12.6	
High Channel (2560MHz)										
5.12	-67.0	H	3.0	-13.9	33.4	1.0	-46.3	-25.0	-21.3	
7.68	-69.0	H	3.0	-11.3	33.0	1.0	-43.3	-25.0	-18.3	
10.24	-68.2	H	3.0	-7.2	32.5	1.0	-38.7	-25.0	-13.7	
5.12	-68.0	V	3.0	-14.9	33.4	1.0	-47.3	-25.0	-22.3	
7.68	-68.7	V	3.0	-10.9	33.0	1.0	-42.9	-25.0	-17.9	
10.24	-69.2	V	3.0	-7.9	32.5	1.0	-39.5	-25.0	-14.5	

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LTE B7 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 7, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.02	-67.6	H	3.0	-14.7	33.4	1.0	-47.2	-25.0	-22.2	
7.53	-68.5	H	3.0	-10.9	33.0	1.0	-43.0	-25.0	-18.0	
10.04	-68.3	H	3.0	-7.5	32.6	1.0	-39.2	-25.0	-14.2	
5.02	-65.8	V	3.0	-13.0	33.4	1.0	-45.4	-25.0	-20.4	
7.53	-67.5	V	3.0	-9.9	33.0	1.0	-41.9	-25.0	-16.9	
10.04	-67.9	V	3.0	-6.8	32.6	1.0	-38.5	-25.0	-13.5	
Mid Channel (2535MHz)										
5.07	-66.5	H	3.0	-13.5	33.4	1.0	-45.9	-25.0	-20.9	
7.61	-67.8	H	3.0	-10.1	33.0	1.0	-42.1	-25.0	-17.1	
10.14	-68.5	H	3.0	-7.6	32.6	1.0	-39.2	-25.0	-14.2	
5.07	-66.1	V	3.0	-13.1	33.4	1.0	-45.5	-25.0	-20.5	
7.61	-67.4	V	3.0	-9.7	33.0	1.0	-41.7	-25.0	-16.7	
10.14	-67.8	V	3.0	-6.6	32.6	1.0	-38.2	-25.0	-13.2	
High Channel (2560MHz)										
5.12	-67.8	H	3.0	-14.7	33.4	1.0	-47.1	-25.0	-22.1	
7.68	-67.8	H	3.0	-10.0	33.0	1.0	-42.0	-25.0	-17.0	
10.24	-68.7	H	3.0	-7.6	32.5	1.0	-39.2	-25.0	-14.2	
5.12	-67.7	V	3.0	-14.7	33.4	1.0	-47.1	-25.0	-22.1	
7.68	-67.5	V	3.0	-9.6	33.0	1.0	-41.7	-25.0	-16.7	
10.24	-67.7	V	3.0	-6.5	32.5	1.0	-38.0	-25.0	-13.0	

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LTE B7 20MHz 16QAM

9.2.4. LTE BAND 12

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 12, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (704MHz)										
1.41	-66.6	H	3.0	-26.4	36.7	1.0	-62.1	-13.0	-49.1	
2.11	-67.0	H	3.0	-22.1	35.8	1.0	-56.9	-13.0	-43.9	
2.82	-67.1	H	3.0	-19.9	35.0	1.0	-53.9	-13.0	-40.9	
1.41	-66.6	V	3.0	-25.9	36.7	1.0	-61.6	-13.0	-48.6	
2.11	-66.7	V	3.0	-21.0	35.8	1.0	-55.7	-13.0	-42.7	
2.82	-67.5	V	3.0	-19.7	35.0	1.0	-53.8	-13.0	-40.8	
Mid Channel (707.5MHz)										
1.42	-67.2	H	3.0	-27.0	36.7	1.0	-62.6	-13.0	-49.6	
2.12	-67.1	H	3.0	-22.2	35.7	1.0	-56.9	-13.0	-43.9	
2.83	-67.3	H	3.0	-20.0	35.0	1.0	-54.1	-13.0	-41.1	
1.42	-66.7	V	3.0	-26.0	36.7	1.0	-61.6	-13.0	-48.6	
2.12	-67.2	V	3.0	-21.5	35.7	1.0	-56.2	-13.0	-43.2	
2.83	-67.2	V	3.0	-19.4	35.0	1.0	-53.4	-13.0	-40.4	
High Channel (711MHz)										
1.42	-67.6	H	3.0	-27.3	36.7	1.0	-63.0	-13.0	-50.0	
2.13	-66.9	H	3.0	-22.0	35.7	1.0	-56.7	-13.0	-43.7	
2.84	-66.4	H	3.0	-19.1	35.0	1.0	-53.1	-13.0	-40.1	
1.42	-66.6	V	3.0	-25.8	36.7	1.0	-61.5	-13.0	-48.5	
2.13	-66.2	V	3.0	-20.5	35.7	1.0	-55.2	-13.0	-42.2	
2.84	-67.1	V	3.0	-19.2	35.0	1.0	-53.2	-13.0	-40.2	

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LTE B12 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 12, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (704MHz)										
1.41	-66.4	H	3.0	-26.2	36.7	1.0	-61.9	-13.0	-48.9	
2.11	-66.8	H	3.0	-21.9	35.8	1.0	-56.7	-13.0	-43.7	
2.82	-67.0	H	3.0	-19.8	35.0	1.0	-53.8	-13.0	-40.8	
1.41	-66.7	V	3.0	-26.0	36.7	1.0	-61.7	-13.0	-48.7	
2.11	-67.3	V	3.0	-21.6	35.8	1.0	-56.3	-13.0	-43.3	
2.82	-67.3	V	3.0	-19.5	35.0	1.0	-53.6	-13.0	-40.6	
Mid Channel (707.5MHz)										
1.42	-67.0	H	3.0	-26.8	36.7	1.0	-62.4	-13.0	-49.4	
2.12	-66.9	H	3.0	-22.0	35.7	1.0	-56.7	-13.0	-43.7	
2.83	-67.0	H	3.0	-19.7	35.0	1.0	-53.8	-13.0	-40.8	
1.42	-67.3	V	3.0	-26.6	36.7	1.0	-62.2	-13.0	-49.2	
2.12	-66.4	V	3.0	-20.7	35.7	1.0	-55.4	-13.0	-42.4	
2.83	-67.6	V	3.0	-19.8	35.0	1.0	-53.8	-13.0	-40.8	
High Channel (711MHz)										
1.42	-66.9	H	3.0	-26.6	36.7	1.0	-62.3	-13.0	-49.3	
2.13	-66.8	H	3.0	-21.9	35.7	1.0	-56.6	-13.0	-43.6	
2.84	-66.3	H	3.0	-19.0	35.0	1.0	-53.0	-13.0	-40.0	
1.42	-66.9	V	3.0	-26.1	36.7	1.0	-61.8	-13.0	-48.8	
2.13	-67.1	V	3.0	-21.4	35.7	1.0	-56.1	-13.0	-43.1	
2.84	-67.2	V	3.0	-19.3	35.0	1.0	-53.3	-13.0	-40.3	

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LTE B12 10MHz 16QAM

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9.2.5. LTE BAND 13

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 13, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B13

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (782MHz)										
1.56	-67.0	H	3.0	-25.9	36.6	1.0	-61.6	-40.0	-21.6	
2.35	-66.0	H	3.0	-20.7	35.3	1.0	-55.0	-13.0	-42.0	
3.13	-66.3	H	3.0	-17.9	34.8	1.0	-51.8	-13.0	-38.8	
1.56	-66.7	V	3.0	-24.9	36.6	1.0	-60.5	-40.0	-20.5	
2.35	-67.0	V	3.0	-21.4	35.3	1.0	-55.7	-13.0	-42.7	
3.13	-66.2	V	3.0	-17.1	34.8	1.0	-50.9	-13.0	-37.9	

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LTE B13 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 13, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B13

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (782MHz)										
1.56	-66.9	H	3.0	-25.8	36.6	1.0	-61.5	-40.0	-21.5	
2.35	-66.3	H	3.0	-21.0	35.3	1.0	-55.3	-13.0	-42.3	
3.13	-66.1	H	3.0	-17.7	34.8	1.0	-51.6	-13.0	-38.6	
1.56	-67.2	V	3.0	-25.4	36.6	1.0	-61.0	-40.0	-21.0	
2.35	-66.3	V	3.0	-20.7	35.3	1.0	-55.0	-13.0	-42.0	
3.13	-66.5	V	3.0	-17.4	34.8	1.0	-51.2	-13.0	-38.2	

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LTE B13 10MHz 16QAM

9.2.6. LTE BAND 14

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/14/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 14, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (793MHz) [BW 10MHz]										
1.59	-66.3	H	3.0	-25.0	36.6	1.0	-60.6	-40.0	-20.6	
2.38	-66.1	H	3.0	-20.7	35.2	1.0	-54.9	-13.0	-41.9	
3.17	-67.0	H	3.0	-18.5	34.8	1.0	-52.3	-13.0	-39.3	
1.59	-66.5	V	3.0	-24.5	36.6	1.0	-60.1	-40.0	-20.1	
2.38	-66.6	V	3.0	-21.1	35.2	1.0	-55.3	-13.0	-42.3	
3.17	-66.2	V	3.0	-17.0	34.8	1.0	-50.7	-13.0	-37.7	

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LTE B14 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/14/18
Test Engineer: 38602
Configuration: EUT ONLY
Mode: LTE Band 14, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (793MHz) [BW 10MHz]										
1.59	-66.6	H	3.0	-25.3	36.6	1.0	-60.9	-40.0	-20.9	
2.38	-66.7	H	3.0	-21.3	35.2	1.0	-55.5	-13.0	-42.5	
3.17	-67.0	H	3.0	-18.5	34.8	1.0	-52.3	-13.0	-39.3	
1.59	-66.5	V	3.0	-24.5	36.6	1.0	-60.1	-40.0	-20.1	
2.38	-67.1	V	3.0	-21.6	35.2	1.0	-55.8	-13.0	-42.8	
3.17	-66.7	V	3.0	-17.5	34.8	1.0	-51.2	-13.0	-38.2	

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LTE B14 10MHz 16QAM

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9.2.7. LTE BAND 17

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 17, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (710MHz)										
1.42	-66.0	H	3.0	-25.7	36.7	1.0	-61.4	-13.0	-48.4	
2.13	-65.9	H	3.0	-21.0	35.7	1.0	-55.7	-13.0	-42.7	
2.84	-67.2	H	3.0	-19.9	35.0	1.0	-53.9	-13.0	-40.9	
1.42	-67.0	V	3.0	-26.2	36.7	1.0	-61.9	-13.0	-48.9	
2.13	-66.9	V	3.0	-21.2	35.7	1.0	-55.9	-13.0	-42.9	
2.84	-66.9	V	3.0	-19.0	35.0	1.0	-53.0	-13.0	-40.0	

Rev. 05.21.15

LTE B17 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 17, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (710MHz)										
1.42	-66.5	H	3.0	-26.2	36.7	1.0	-61.9	-13.0	-48.9	
2.13	-66.7	H	3.0	-21.8	35.7	1.0	-56.5	-13.0	-43.5	
2.84	-66.6	H	3.0	-19.3	35.0	1.0	-53.3	-13.0	-40.3	
1.42	-66.8	V	3.0	-26.0	36.7	1.0	-61.7	-13.0	-48.7	
2.13	-67.0	V	3.0	-21.3	35.7	1.0	-56.0	-13.0	-43.0	
2.84	-67.1	V	3.0	-19.2	35.0	1.0	-53.2	-13.0	-40.2	

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LTE B17 10MHz 16QAM

9.2.8. LTE BAND 25

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 25, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1860MHz)										
3.72	-65.7	H	3.0	-15.7	34.1	1.0	-48.8	-13.0	-35.8	
5.58	-67.3	H	3.0	-13.3	33.3	1.0	-45.6	-13.0	-32.6	
7.44	-69.1	H	3.0	-11.6	33.1	1.0	-43.6	-13.0	-30.6	
3.72	-66.2	V	3.0	-15.9	34.1	1.0	-49.0	-13.0	-36.0	
5.58	-67.5	V	3.0	-13.5	33.3	1.0	-45.8	-13.0	-32.8	
7.44	-68.6	V	3.0	-11.1	33.1	1.0	-43.1	-13.0	-30.1	
Mid Channel (1882.5MHz)										
3.77	-65.8	H	3.0	-15.7	34.1	1.0	-48.8	-13.0	-35.8	
5.65	-67.9	H	3.0	-13.8	33.3	1.0	-46.1	-13.0	-33.1	
7.53	-67.5	H	3.0	-9.9	33.0	1.0	-41.9	-13.0	-28.9	
3.77	-65.6	V	3.0	-15.2	34.1	1.0	-48.2	-13.0	-35.2	
5.65	-68.0	V	3.0	-13.9	33.3	1.0	-46.2	-13.0	-33.2	
7.53	-67.9	V	3.0	-10.3	33.0	1.0	-42.4	-13.0	-29.4	
High Channel (1905MHz)										
3.81	-66.7	H	3.0	-16.5	34.0	1.0	-49.5	-13.0	-36.5	
5.72	-67.3	H	3.0	-13.0	33.3	1.0	-45.3	-13.0	-32.3	
7.62	-68.4	H	3.0	-10.7	33.0	1.0	-42.7	-13.0	-29.7	
3.81	-65.6	V	3.0	-15.1	34.0	1.0	-48.1	-13.0	-35.1	
5.72	-67.8	V	3.0	-13.6	33.3	1.0	-45.8	-13.0	-32.8	
7.62	-68.8	V	3.0	-11.0	33.0	1.0	-43.0	-13.0	-30.0	

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LTE B25 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 25, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1860MHz)										
3.72	-66.2	H	3.0	-16.2	34.1	1.0	-49.4	-13.0	-36.4	
5.58	-67.4	H	3.0	-13.3	33.3	1.0	-45.6	-13.0	-32.6	
7.44	-68.9	H	3.0	-11.4	33.1	1.0	-43.5	-13.0	-30.5	
3.72	-66.7	V	3.0	-16.4	34.1	1.0	-49.5	-13.0	-36.5	
5.58	-67.2	V	3.0	-13.2	33.3	1.0	-45.5	-13.0	-32.5	
7.44	-68.1	V	3.0	-10.6	33.1	1.0	-42.6	-13.0	-29.6	
Mid Channel (1882.5MHz)										
3.77	-65.4	H	3.0	-15.3	34.1	1.0	-48.4	-13.0	-35.4	
5.65	-67.8	H	3.0	-13.6	33.3	1.0	-45.9	-13.0	-32.9	
7.53	-67.5	H	3.0	-9.9	33.0	1.0	-42.0	-13.0	-29.0	
3.77	-66.8	V	3.0	-16.3	34.1	1.0	-49.4	-13.0	-36.4	
5.65	-67.7	V	3.0	-13.6	33.3	1.0	-45.9	-13.0	-32.9	
7.53	-67.5	V	3.0	-9.9	33.0	1.0	-41.9	-13.0	-28.9	
High Channel (1905MHz)										
3.81	-65.7	H	3.0	-15.5	34.0	1.0	-48.5	-13.0	-35.5	
5.72	-66.7	H	3.0	-12.4	33.3	1.0	-44.7	-13.0	-31.7	
7.62	-68.4	H	3.0	-10.7	33.0	1.0	-42.7	-13.0	-29.7	
3.81	-66.4	V	3.0	-15.8	34.0	1.0	-48.8	-13.0	-35.8	
5.72	-66.7	V	3.0	-12.5	33.3	1.0	-44.8	-13.0	-31.8	
7.62	-68.7	V	3.0	-11.0	33.0	1.0	-43.0	-13.0	-30.0	

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LTE B25 20MHz 16QAM

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9.2.9. LTE BAND 26 (FCC PART 90S)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 26 (90S), 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (819MHz)										
1.64	-66.9	H	3.0	-25.2	36.5	1.0	-60.7	-13.0	-47.7	
2.46	-66.2	H	3.0	-20.5	35.2	1.0	-54.7	-13.0	-41.7	
3.28	-67.1	H	3.0	-18.3	34.7	1.0	-52.0	-13.0	-39.0	
1.64	-66.4	V	3.0	-23.9	36.5	1.0	-59.4	-13.0	-46.4	
2.46	-66.3	V	3.0	-20.6	35.2	1.0	-54.8	-13.0	-41.8	
3.28	-66.7	V	3.0	-17.3	34.7	1.0	-50.9	-13.0	-37.9	

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LTE B26 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 26 (90S), 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (819MHz)										
1.64	-67.0	H	3.0	-25.3	36.5	1.0	-60.8	-13.0	-47.8	
2.46	-66.7	H	3.0	-21.0	35.2	1.0	-55.2	-13.0	-42.2	
3.28	-67.0	H	3.0	-18.2	34.7	1.0	-51.9	-13.0	-38.9	
1.64	-66.4	V	3.0	-23.9	36.5	1.0	-59.4	-13.0	-46.4	
2.46	-67.4	V	3.0	-21.7	35.2	1.0	-55.9	-13.0	-42.9	
3.28	-67.9	V	3.0	-18.5	34.7	1.0	-52.1	-13.0	-39.1	

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LTE B26 10MHz 16QAM

9.2.10. LTE BAND 30

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 30, 10MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B30

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (2310MHz)										
4.62	-66.6	H	3.0	-12.8	37.9	1.0	-49.7	-40.0	-9.7	
6.93	-67.1	H	3.0	-8.5	36.5	1.0	-43.9	-40.0	-3.9	
9.24	-68.3	H	3.0	-6.8	34.9	1.0	-40.6	-40.0	-0.6	
4.62	-66.7	V	3.0	-13.0	37.9	1.0	-49.9	-40.0	-9.9	
6.93	-67.6	V	3.0	-8.1	36.5	1.0	-43.6	-40.0	-3.6	
9.24	-68.4	V	3.0	-6.6	34.9	1.0	-40.5	-40.0	-0.5	

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LTE B30 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 38602
Configuration: EUT only
Mode: LTE Band 30, 10MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B30

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (2310MHz)										
4.62	-66.6	H	3.0	-12.8	37.9	1.0	-49.7	-40.0	-9.7	
6.93	-67.5	H	3.0	-8.9	36.5	1.0	-44.3	-40.0	-4.3	
9.24	-68.6	H	3.0	-7.1	34.9	1.0	-40.9	-40.0	-0.9	
4.62	-67.0	V	3.0	-13.3	37.9	1.0	-50.2	-40.0	-10.2	
6.93	-66.6	V	3.0	-7.1	36.5	1.0	-42.6	-40.0	-2.6	
9.24	-68.3	V	3.0	-6.5	34.9	1.0	-40.4	-40.0	-0.4	

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LTE B30 10MHz 16QAM

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9.2.11. LTE BAND 41

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/13/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 41, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2506MHz)										
5.01	-66.9	H	3.0	-14.1	33.4	1.0	-46.5	-25.0	-21.5	
7.52	-68.2	H	3.0	-10.6	33.0	1.0	-42.6	-25.0	-17.6	
10.02	-68.9	H	3.0	-8.2	32.7	1.0	-39.8	-25.0	-14.8	
5.01	-65.9	V	3.0	-13.1	33.4	1.0	-45.5	-25.0	-20.5	
7.52	-67.9	V	3.0	-10.3	33.0	1.0	-42.4	-25.0	-17.4	
10.02	-68.9	V	3.0	-7.8	32.7	1.0	-39.5	-25.0	-14.5	
Mid Channel (2593MHz)										
5.19	-66.9	H	3.0	-13.6	33.4	1.0	-46.0	-25.0	-21.0	
7.78	-68.7	H	3.0	-10.8	33.0	1.0	-42.8	-25.0	-17.8	
10.37	-67.7	H	3.0	-6.6	32.4	1.0	-38.0	-25.0	-13.0	
5.19	-65.6	V	3.0	-12.4	33.4	1.0	-44.8	-25.0	-19.8	
7.78	-67.5	V	3.0	-9.5	33.0	1.0	-41.5	-25.0	-16.5	
10.37	-68.3	V	3.0	-7.0	32.4	1.0	-38.5	-25.0	-13.5	
High Channel (2680MHz)										
5.36	-69.2	H	3.0	-15.6	33.3	1.0	-47.9	-25.0	-22.9	
8.04	-67.7	H	3.0	-9.4	33.0	1.0	-41.4	-25.0	-16.4	
10.72	-68.2	H	3.0	-6.7	32.2	1.0	-37.9	-25.0	-12.9	
5.36	-62.2	V	3.0	-8.7	33.3	1.0	-41.1	-25.0	-16.1	
8.04	-68.2	V	3.0	-9.9	33.0	1.0	-41.9	-25.0	-16.9	
10.72	-68.0	V	3.0	-6.5	32.2	1.0	-37.7	-25.0	-12.7	

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LTE B41 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/12/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 41, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2506MHz)										
5.01	-66.2	H	3.0	-13.3	33.4	1.0	-45.7	-25.0	-20.7	
7.52	-68.3	H	3.0	-10.7	33.0	1.0	-42.7	-25.0	-17.7	
10.02	-67.0	H	3.0	-6.2	32.7	1.0	-37.9	-25.0	-12.9	
5.01	-66.1	V	3.0	-13.2	33.4	1.0	-45.6	-25.0	-20.6	
7.52	-69.0	V	3.0	-11.4	33.0	1.0	-43.4	-25.0	-18.4	
10.02	-67.3	V	3.0	-6.2	32.7	1.0	-37.9	-25.0	-12.9	
Mid Channel (2593MHz)										
5.19	-66.5	H	3.0	-13.2	33.4	1.0	-45.6	-25.0	-20.6	
7.78	-68.8	H	3.0	-10.9	33.0	1.0	-42.9	-25.0	-17.9	
10.37	-68.7	H	3.0	-7.6	32.4	1.0	-39.0	-25.0	-14.0	
5.19	-66.8	V	3.0	-13.7	33.4	1.0	-46.0	-25.0	-21.0	
7.78	-68.5	V	3.0	-10.6	33.0	1.0	-42.6	-25.0	-17.6	
10.37	-68.5	V	3.0	-7.2	32.4	1.0	-38.6	-25.0	-13.6	
High Channel (2680MHz)										
5.36	-67.5	H	3.0	-13.9	33.3	1.0	-46.2	-25.0	-21.2	
8.04	-68.4	H	3.0	-10.1	33.0	1.0	-42.1	-25.0	-17.1	
10.72	-67.2	H	3.0	-5.7	32.2	1.0	-36.9	-25.0	-11.9	
5.36	-68.5	V	3.0	-14.9	33.3	1.0	-47.3	-25.0	-22.3	
8.04	-67.2	V	3.0	-8.9	33.0	1.0	-40.9	-25.0	-15.9	
10.72	-67.5	V	3.0	-5.9	32.2	1.0	-37.2	-25.0	-12.2	

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LTE B41 20MHz 16QAM

9.2.12. LTE BAND 66

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/15/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 66, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1720.0MHz)										
3.42	-67.1	H	3.0	-17.9	34.5	1.0	-51.4	-13.0	-38.4	
5.13	-66.5	H	3.0	-13.4	33.4	1.0	-45.8	-13.0	-32.8	
6.84	-66.6	H	3.0	-10.0	33.1	1.0	-42.1	-13.0	-29.1	
3.42	-67.8	V	3.0	-18.1	34.5	1.0	-51.5	-13.0	-38.5	
5.13	-67.0	V	3.0	-13.9	33.4	1.0	-46.3	-13.0	-33.3	
6.84	-67.2	V	3.0	-10.6	33.1	1.0	-42.8	-13.0	-29.8	
Mid Channel (1745.0MHz)										
3.49	-67.1	H	3.0	-17.7	34.4	1.0	-51.1	-13.0	-38.1	
5.24	-68.9	H	3.0	-15.6	33.3	1.0	-47.9	-13.0	-34.9	
6.98	-67.6	H	3.0	-10.7	33.1	1.0	-42.8	-13.0	-29.8	
3.49	-67.5	V	3.0	-17.6	34.4	1.0	-51.0	-13.0	-38.0	
5.24	-67.7	V	3.0	-14.4	33.3	1.0	-46.8	-13.0	-33.8	
6.98	-67.9	V	3.0	-11.1	33.1	1.0	-43.2	-13.0	-30.2	
High Channel (1770.0MHz)										
3.56	-66.2	H	3.0	-16.6	34.3	1.0	-49.9	-13.0	-36.9	
5.34	-68.9	H	3.0	-15.3	33.3	1.0	-47.7	-13.0	-34.7	
7.12	-67.5	H	3.0	-10.4	33.1	1.0	-42.5	-13.0	-29.5	
3.56	-67.6	V	3.0	-17.6	34.3	1.0	-50.9	-13.0	-37.9	
5.34	-68.4	V	3.0	-14.9	33.3	1.0	-47.3	-13.0	-34.3	
7.12	-67.3	V	3.0	-10.3	33.1	1.0	-42.4	-13.0	-29.4	

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LTE B66 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/15/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 66, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1720.0MHz)										
3.42	-67.5	H	3.0	-18.2	38.5	1.0	-55.8	-13.0	-42.8	
5.13	-66.8	H	3.0	-13.7	38.7	1.0	-51.4	-13.0	-38.4	
6.84	-66.9	H	3.0	-10.1	38.1	1.0	-47.2	-13.0	-34.2	
3.42	-68.2	V	3.0	-19.2	38.5	1.0	-56.7	-13.0	-43.7	
5.13	-67.4	V	3.0	-14.6	38.7	1.0	-52.3	-13.0	-39.3	
6.84	-67.6	V	3.0	-11.0	38.1	1.0	-48.1	-13.0	-35.1	
Mid Channel (1745.0MHz)										
3.49	-67.8	H	3.0	-18.4	38.5	1.0	-55.9	-13.0	-42.9	
5.24	-66.0	H	3.0	-12.6	38.7	1.0	-50.3	-13.0	-37.3	
6.98	-68.3	H	3.0	-11.2	38.1	1.0	-48.2	-13.0	-35.2	
3.49	-68.1	V	3.0	-18.8	38.5	1.0	-56.4	-13.0	-43.4	
5.24	-66.3	V	3.0	-13.3	38.7	1.0	-50.9	-13.0	-37.9	
6.98	-68.1	V	3.0	-11.2	38.1	1.0	-48.3	-13.0	-35.3	
High Channel (1770.0MHz)										
3.56	-68.2	H	3.0	-18.6	38.6	1.0	-56.2	-13.0	-43.2	
5.34	-66.6	H	3.0	-13.0	38.6	1.0	-50.6	-13.0	-37.6	
7.12	-68.5	H	3.0	-11.2	38.0	1.0	-48.2	-13.0	-35.2	
3.56	-67.8	V	3.0	-18.3	38.6	1.0	-55.9	-13.0	-42.9	
5.34	-68.1	V	3.0	-14.8	38.6	1.0	-52.5	-13.0	-39.5	
7.12	-67.7	V	3.0	-10.6	38.0	1.0	-47.6	-13.0	-34.6	

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9.3. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 3

9.3.1. LTE BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/14/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 2, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1860MHz)										
3.72	-67.1	H	3.0	-17.1	34.1	1.0	-50.2	-13.0	-37.2	
5.58	-67.5	H	3.0	-13.4	33.3	1.0	-45.7	-13.0	-32.7	
7.44	-68.3	H	3.0	-10.8	33.1	1.0	-42.9	-13.0	-29.9	
3.72	-66.3	V	3.0	-16.0	34.1	1.0	-49.1	-13.0	-36.1	
5.58	-66.5	V	3.0	-12.5	33.3	1.0	-44.8	-13.0	-31.8	
7.44	-68.3	V	3.0	-10.8	33.1	1.0	-42.9	-13.0	-29.9	
Mid Channel (1880MHz)										
3.76	-67.0	H	3.0	-16.9	34.1	1.0	-49.9	-13.0	-36.9	
5.64	-67.9	H	3.0	-13.7	33.3	1.0	-46.0	-13.0	33.0	
7.52	-68.3	H	3.0	-10.8	33.0	1.0	-42.8	-13.0	-29.8	
3.76	-66.2	V	3.0	-15.8	34.1	1.0	-48.9	-13.0	-35.9	
5.64	-67.8	V	3.0	-13.7	33.3	1.0	-46.0	-13.0	33.0	
7.52	-67.5	V	3.0	-9.8	33.0	1.0	-41.9	-13.0	-28.9	
High Channel (1900MHz)										
3.80	-65.3	H	3.0	-15.1	34.0	1.0	-48.1	-13.0	-35.1	
5.70	-66.9	H	3.0	-12.6	33.3	1.0	-44.9	-13.0	-31.9	
7.60	-67.2	H	3.0	-9.5	33.0	1.0	-41.5	-13.0	-28.5	
3.80	-66.0	V	3.0	-15.4	34.0	1.0	-48.5	-13.0	-35.5	
5.70	-66.7	V	3.0	-12.5	33.3	1.0	-44.8	-13.0	-31.8	
7.60	-67.7	V	3.0	-10.0	33.0	1.0	-42.0	-13.0	-29.0	

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LTE B2 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/14/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 2, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1860MHz)										
3.72	-66.8	H	3.0	-16.8	34.1	1.0	-49.9	-13.0	-36.9	
5.58	-67.5	H	3.0	-13.4	33.3	1.0	-45.8	-13.0	-32.8	
7.44	-68.0	H	3.0	-10.6	33.1	1.0	-42.6	-13.0	-29.6	
3.72	-67.0	V	3.0	-16.6	34.1	1.0	-49.7	-13.0	-36.7	
5.58	-66.9	V	3.0	-12.9	33.3	1.0	-45.2	-13.0	-32.2	
7.44	-67.3	V	3.0	-9.9	33.1	1.0	-41.9	-13.0	-28.9	
Mid Channel (1880MHz)										
3.76	-66.4	H	3.0	-16.3	34.1	1.0	-49.4	-13.0	-36.4	
5.64	-67.5	H	3.0	-13.4	33.3	1.0	-45.6	-13.0	-32.6	
7.52	-67.8	H	3.0	-10.2	33.0	1.0	-42.2	-13.0	-29.2	
3.76	-65.8	V	3.0	-15.4	34.1	1.0	-48.5	-13.0	-35.5	
5.64	-67.5	V	3.0	-13.4	33.3	1.0	-45.7	-13.0	-32.7	
7.52	-68.0	V	3.0	-10.4	33.0	1.0	-42.5	-13.0	-29.5	
High Channel (1900MHz)										
3.80	-65.6	H	3.0	-15.4	34.0	1.0	-48.4	-13.0	-35.4	
5.70	-67.5	H	3.0	-13.2	33.3	1.0	-45.5	-13.0	-32.5	
7.60	-67.6	H	3.0	-10.0	33.0	1.0	-42.0	-13.0	-29.0	
3.80	-66.9	V	3.0	-16.4	34.0	1.0	-49.4	-13.0	-36.4	
5.70	-68.1	V	3.0	-13.8	33.3	1.0	-46.1	-13.0	33.1	
7.60	-67.7	V	3.0	-10.0	33.0	1.0	-42.0	-13.0	-29.0	

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9.3.2. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/14/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 7, 20MHz QPSK

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.02	-66.3	H	3.0	-13.4	33.4	1.0	-45.8	-25.0	-20.8	
7.53	-67.1	H	3.0	-9.5	33.0	1.0	-41.6	-25.0	-16.6	
10.04	-69.3	H	3.0	-8.5	32.6	1.0	-40.1	-25.0	-15.1	
5.02	-64.7	V	3.0	-11.8	33.4	1.0	-44.3	-25.0	-19.3	
7.53	-68.0	V	3.0	-10.3	33.0	1.0	-42.4	-25.0	-17.4	
10.04	-69.4	V	3.0	-8.3	32.6	1.0	-40.0	-25.0	-15.0	
Mid Channel (2535MHz)										
5.07	-67.5	H	3.0	-14.5	33.4	1.0	-46.9	-25.0	-21.9	
7.61	-67.7	H	3.0	-10.0	33.0	1.0	-42.1	-25.0	-17.1	
10.14	-68.6	H	3.0	-7.7	32.6	1.0	-39.3	-25.0	-14.3	
5.07	-67.4	V	3.0	-14.4	33.4	1.0	-46.8	-25.0	-21.8	
7.61	-68.6	V	3.0	-10.9	33.0	1.0	-42.9	-25.0	-17.9	
10.14	-68.2	V	3.0	-7.1	32.6	1.0	-38.7	-25.0	-13.7	
High Channel (2560MHz)										
5.12	-67.2	H	3.0	-14.1	33.4	1.0	-46.5	-25.0	-21.5	
7.68	-67.9	H	3.0	-10.1	33.0	1.0	-42.1	-25.0	-17.1	
10.24	-69.5	H	3.0	-8.5	32.5	1.0	-40.0	-25.0	-15.0	
5.12	-67.5	V	3.0	-14.4	33.4	1.0	-46.8	-25.0	-21.8	
7.68	-68.6	V	3.0	-10.8	33.0	1.0	-42.8	-25.0	-17.8	
10.24	-68.6	V	3.0	-7.4	32.5	1.0	-38.9	-25.0	-13.9	

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LTE B7 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 03/14/18
Test Engineer: 36648
Configuration: EUT only
Mode: LTE Band 7, 20MHz 16QAM

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.02	-67.0	H	3.0	-14.1	33.4	1.0	-46.5	-25.0	-21.5	
7.53	-67.0	H	3.0	-9.4	33.0	1.0	-41.4	-25.0	-16.4	
10.04	-68.8	H	3.0	-8.0	32.6	1.0	-39.6	-25.0	-14.6	
5.02	-66.4	V	3.0	-13.6	33.4	1.0	-46.0	-25.0	-21.0	
7.53	-68.6	V	3.0	-11.0	33.0	1.0	-43.1	-25.0	-18.1	
10.04	-68.9	V	3.0	-7.8	32.6	1.0	-39.5	-25.0	-14.5	
Mid Channel (2535MHz)										
5.07	-67.4	H	3.0	-14.4	33.4	1.0	-46.8	-25.0	-21.8	
7.61	-68.4	H	3.0	-10.7	33.0	1.0	-42.7	-25.0	-17.7	
10.14	-68.8	H	3.0	-7.9	32.6	1.0	-39.5	-25.0	-14.5	
5.07	-67.3	V	3.0	-14.4	33.4	1.0	-46.8	-25.0	-21.8	
7.61	-69.1	V	3.0	-11.4	33.0	1.0	-43.4	-25.0	-18.4	
10.14	-69.5	V	3.0	-8.3	32.6	1.0	-39.9	-25.0	-14.9	
High Channel (2560MHz)										
5.12	-68.1	H	3.0	-15.0	33.4	1.0	-47.4	-25.0	-22.4	
7.68	-67.4	H	3.0	-9.7	33.0	1.0	-41.7	-25.0	-16.7	
10.24	-69.5	H	3.0	-8.5	32.5	1.0	-40.0	-25.0	-15.0	
5.12	-68.4	V	3.0	-15.3	33.4	1.0	-47.7	-25.0	-22.7	
7.68	-68.5	V	3.0	-10.7	33.0	1.0	-42.7	-25.0	-17.7	
10.24	-68.7	V	3.0	-7.4	32.5	1.0	-39.0	-25.0	-14.0	

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