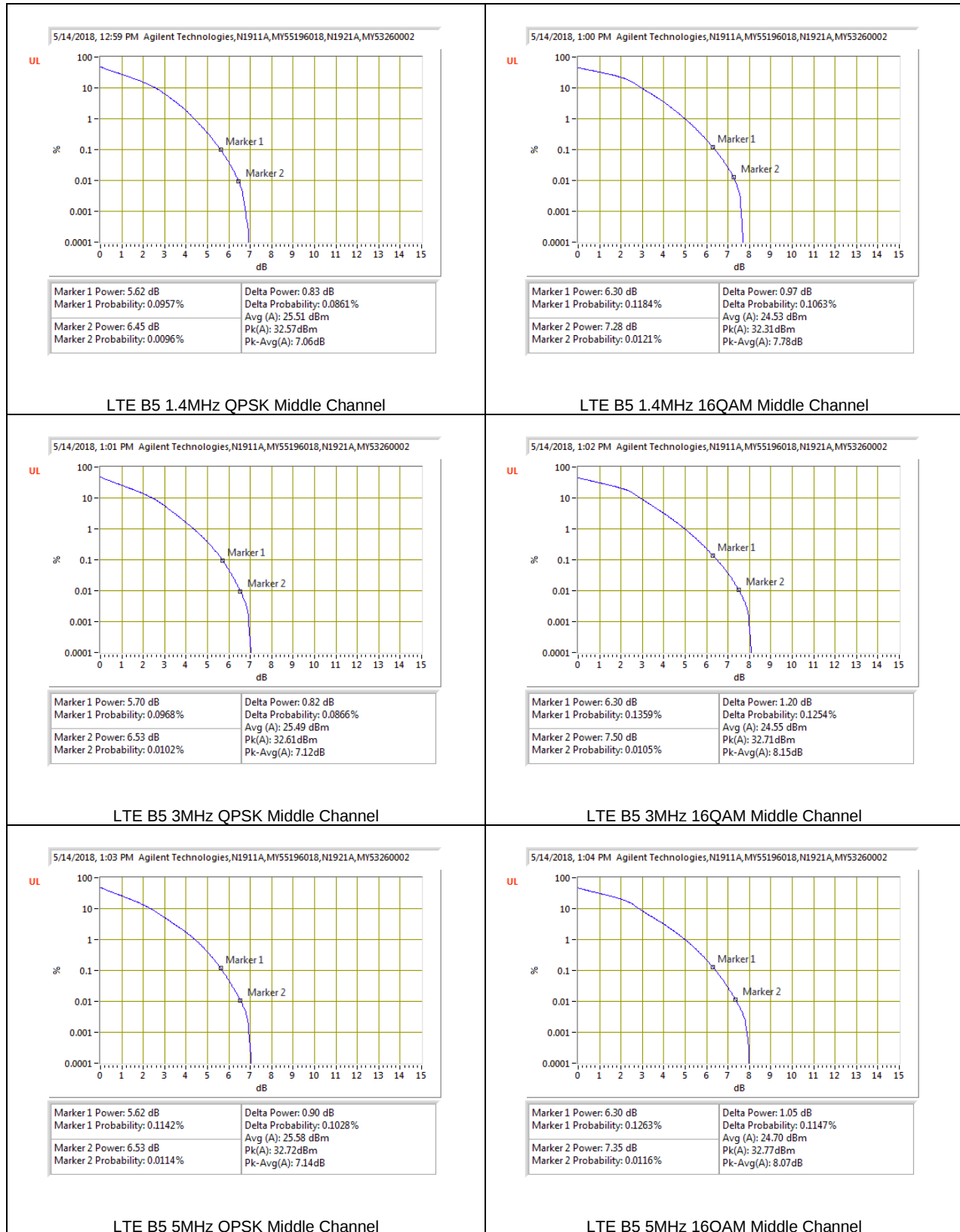
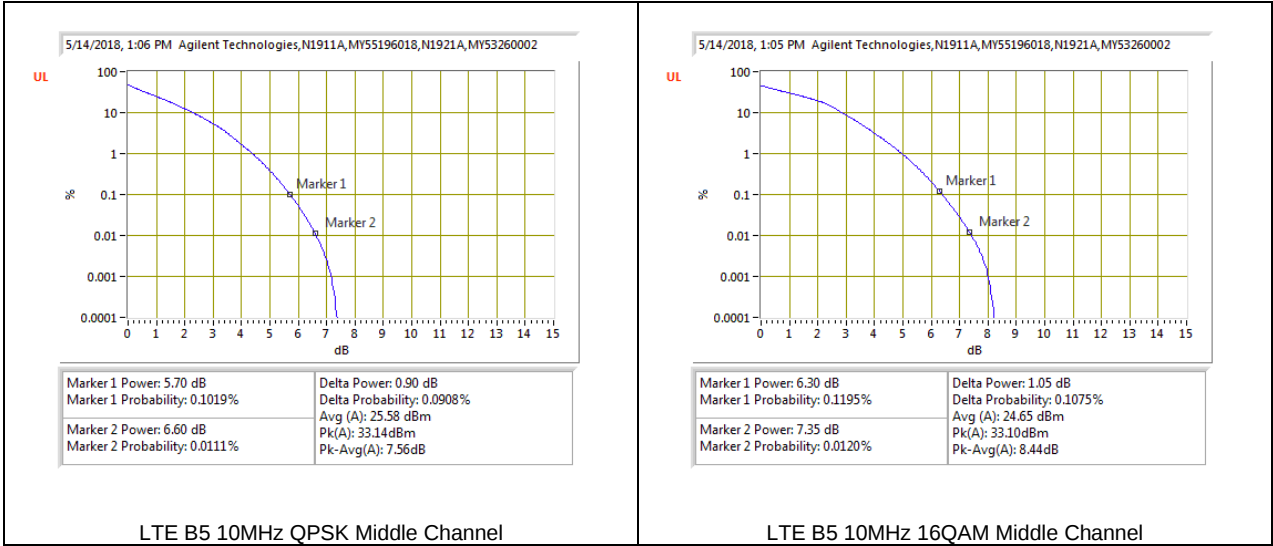


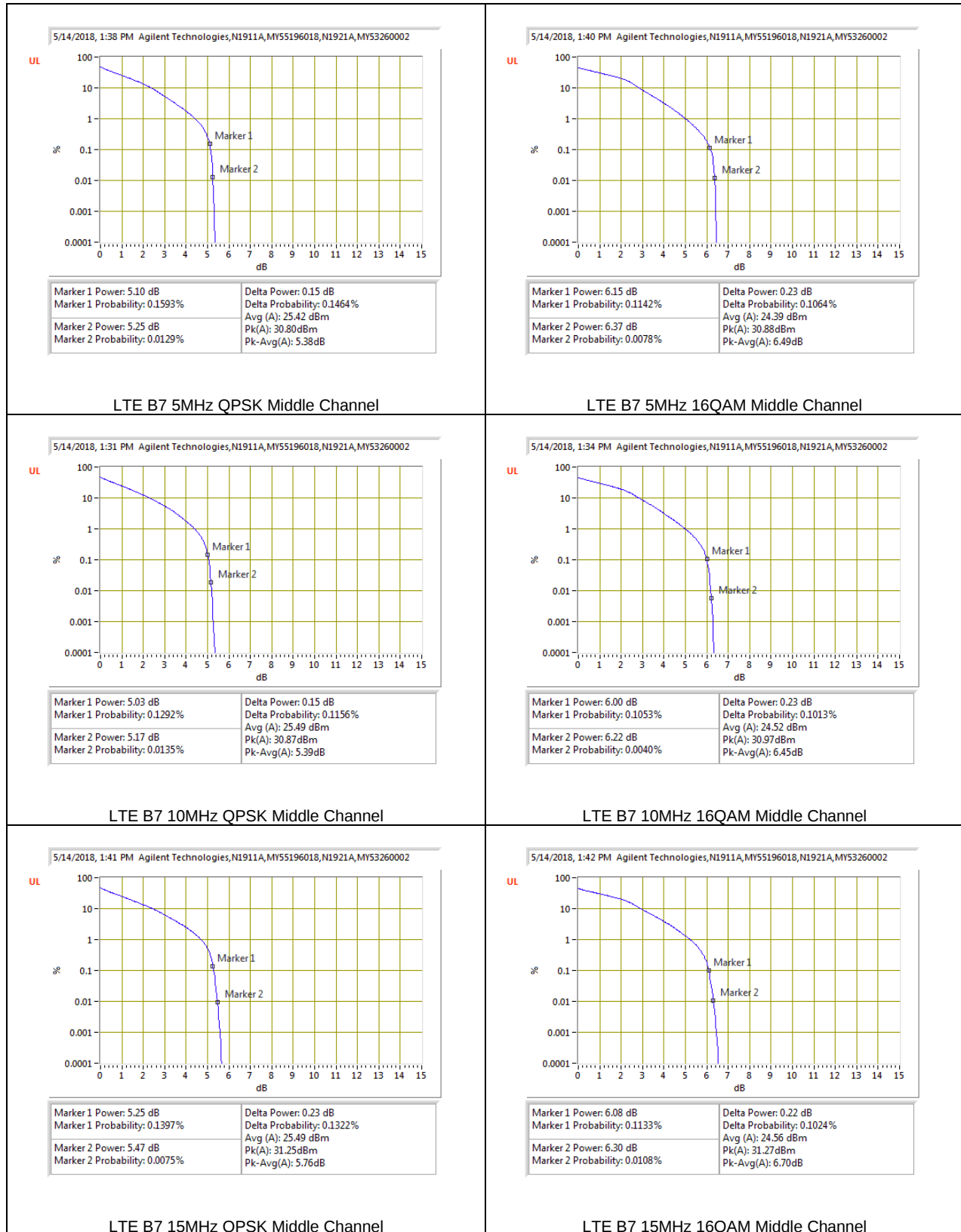


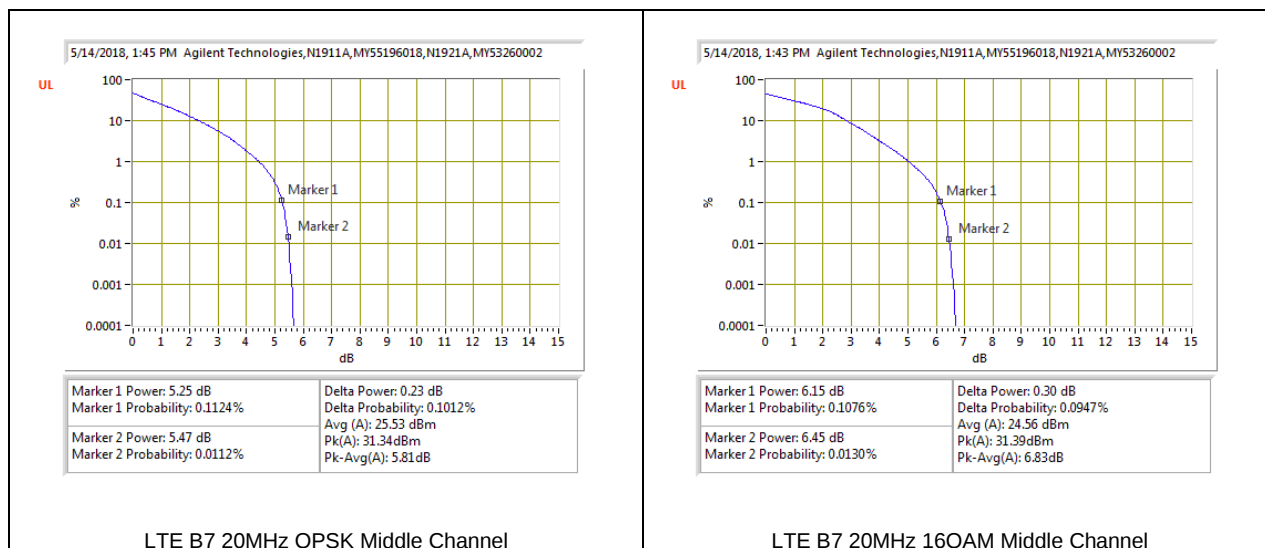
8.5.2. LTE BAND 5



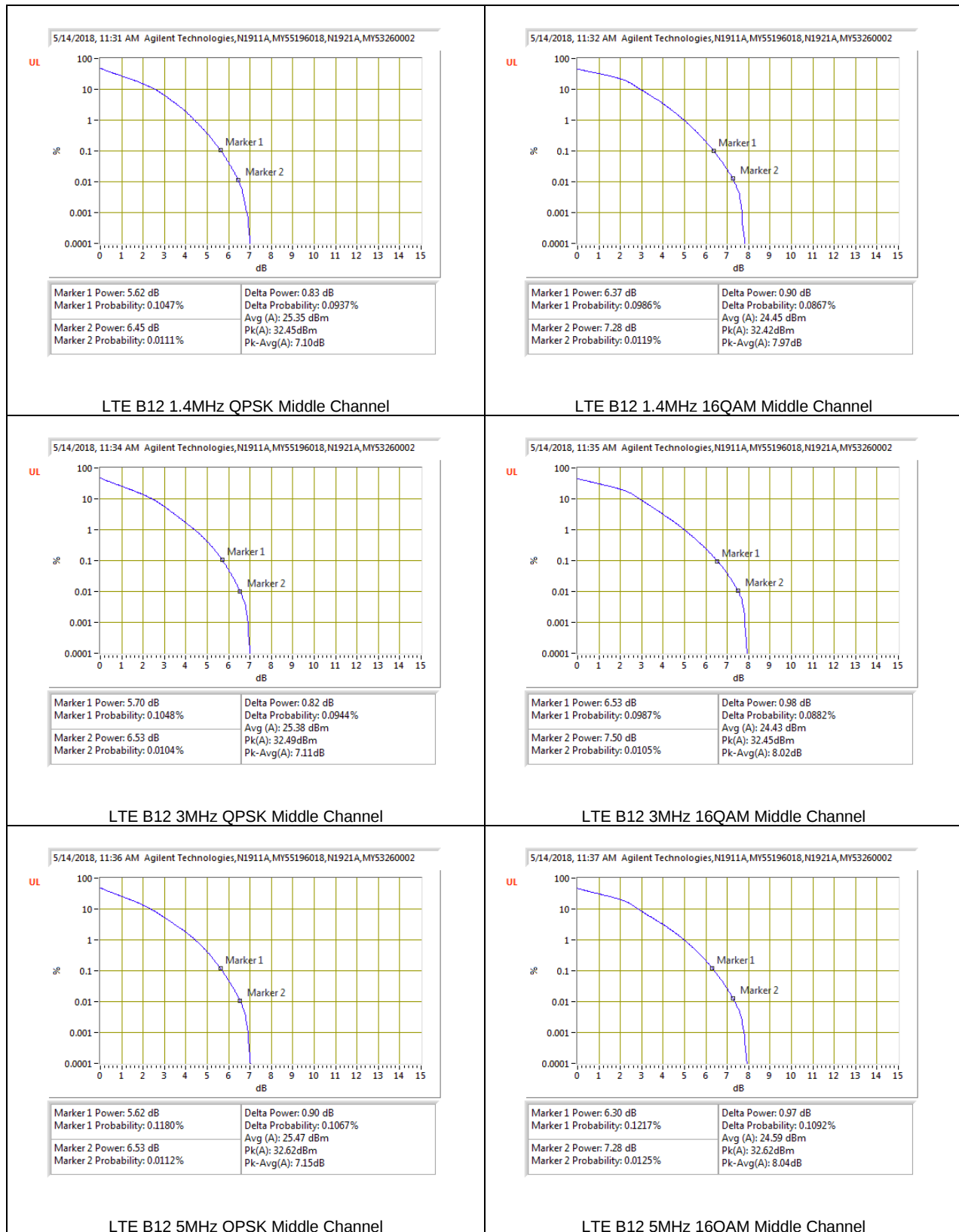


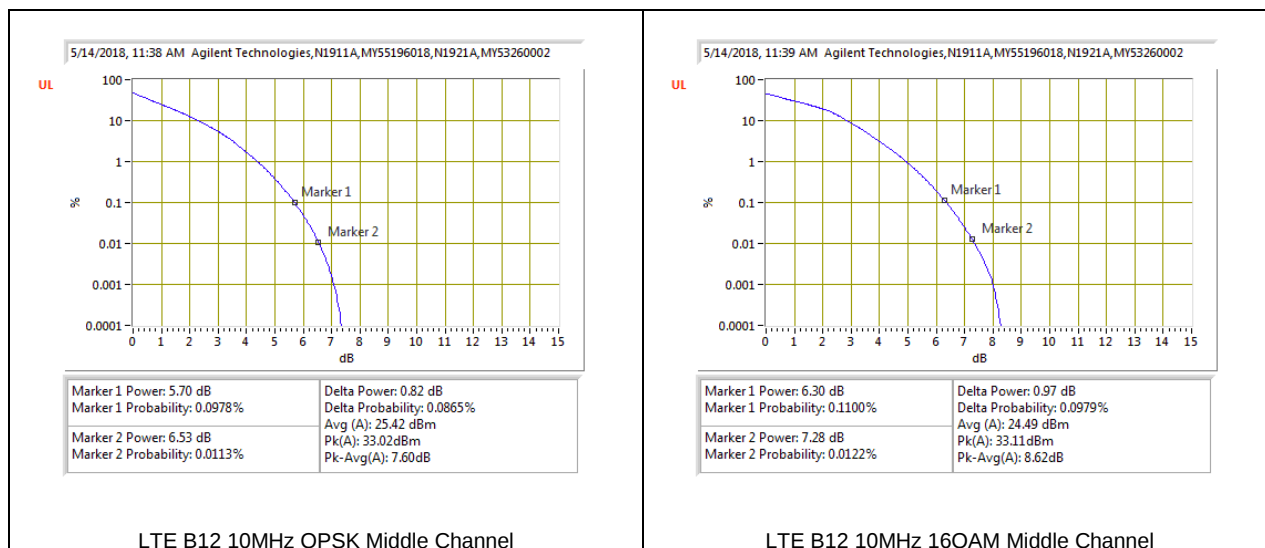
8.5.3. LTE BAND 7



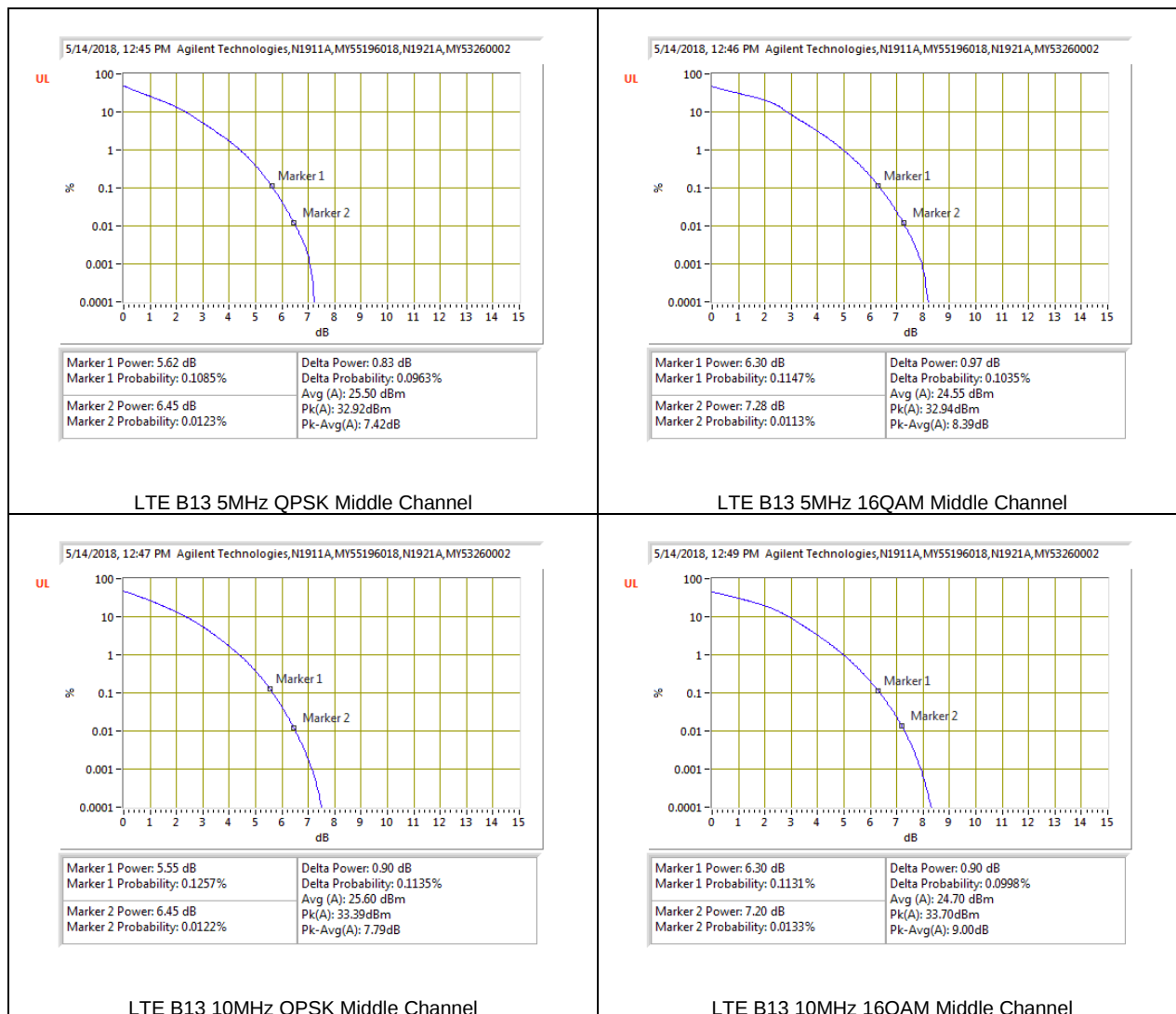


8.5.4. LTE BAND 12

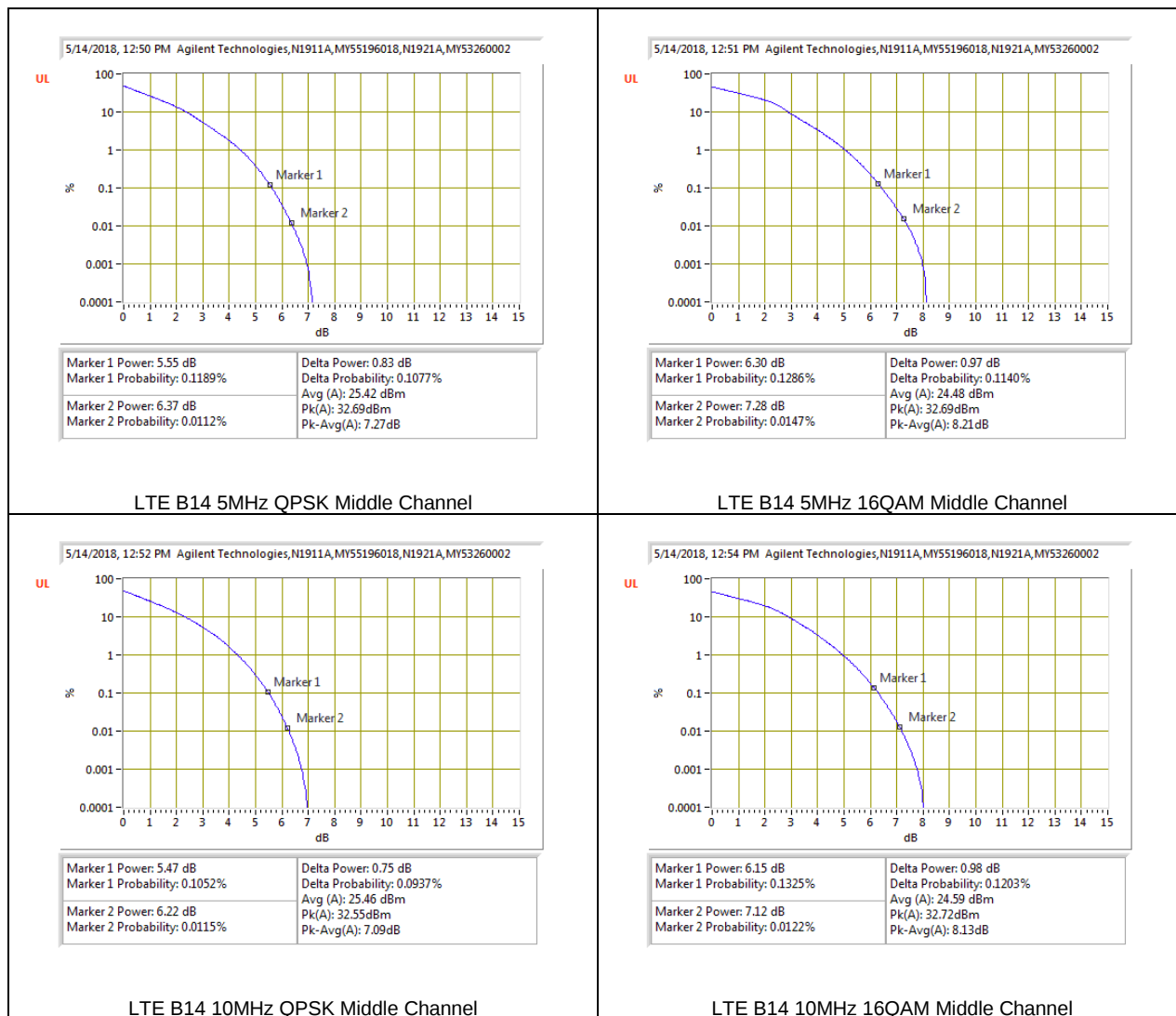




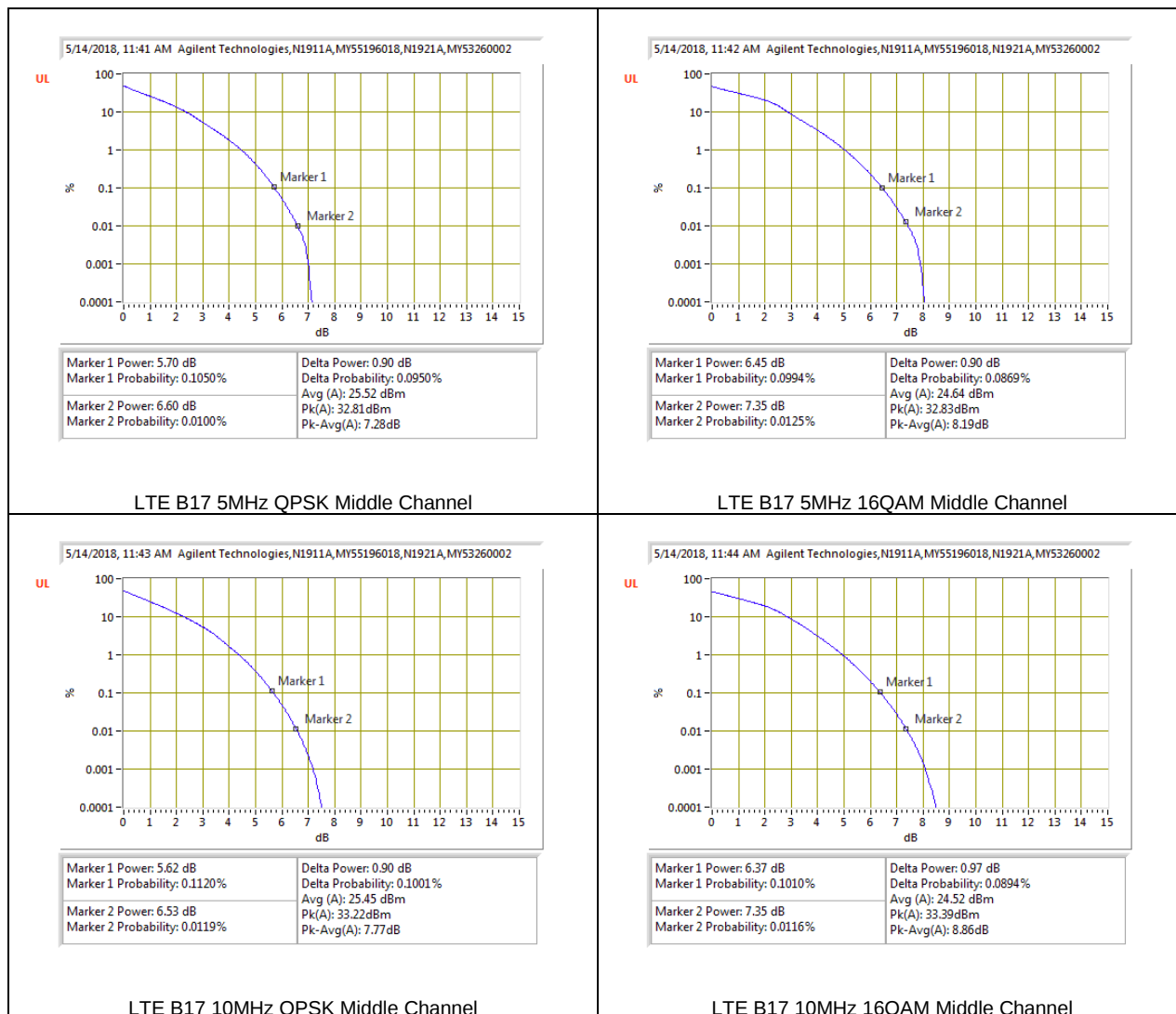
8.5.5. LTE BAND 13



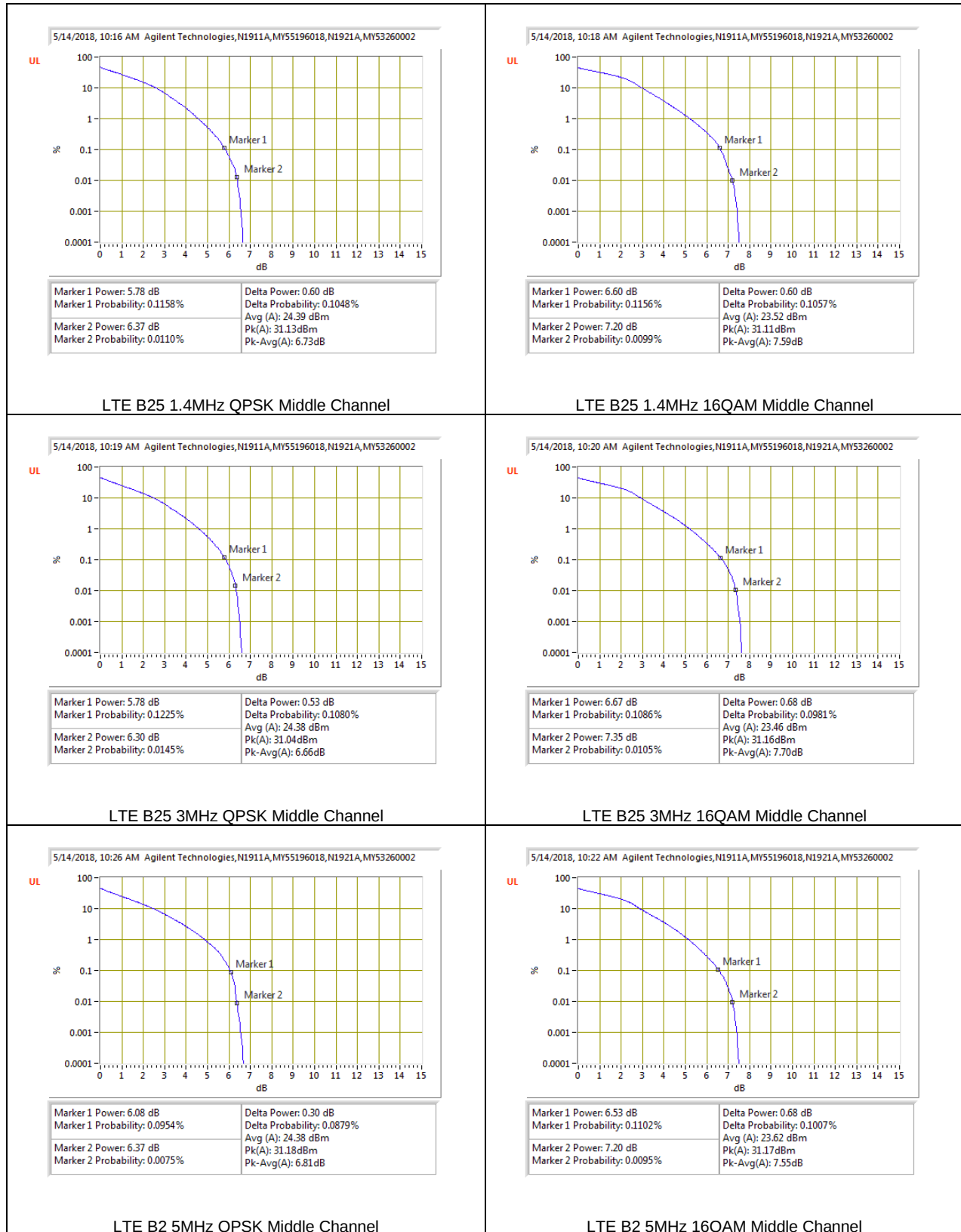
8.5.6. LTE BAND 14



8.5.7. LTE BAND 17

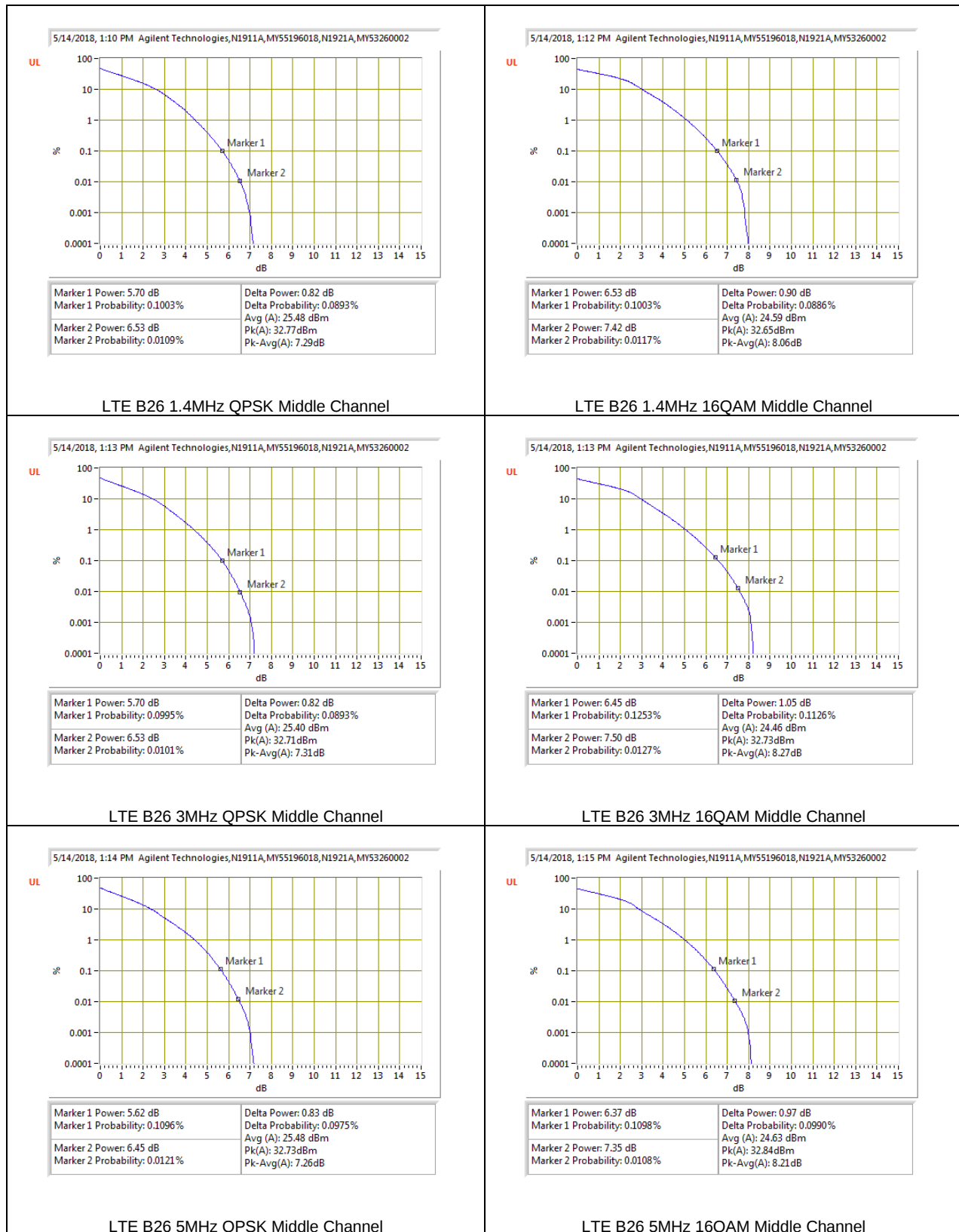


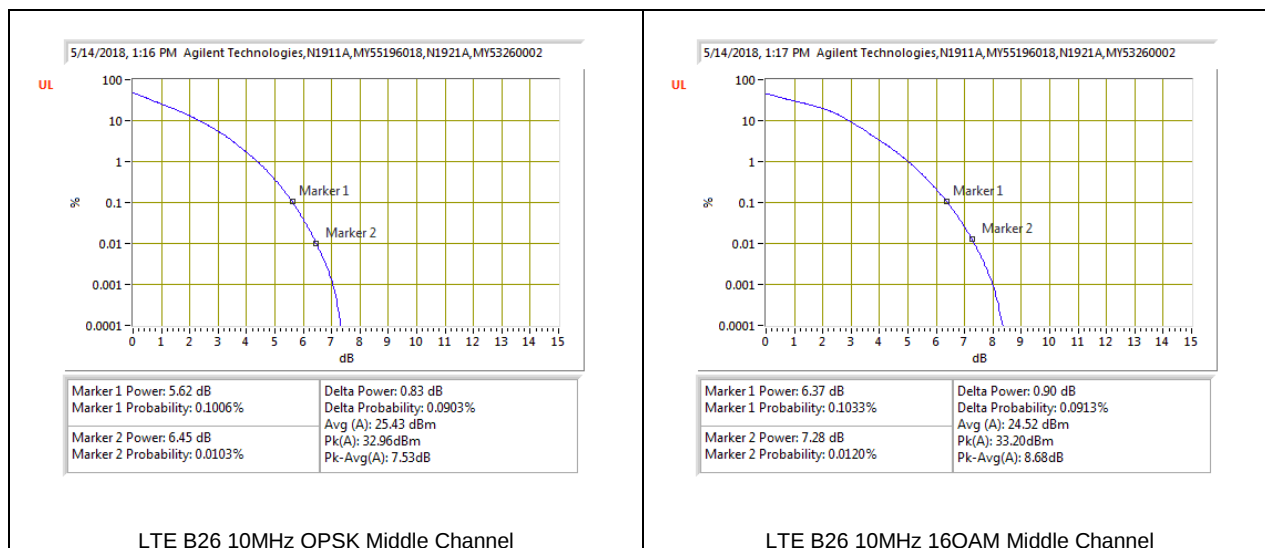
8.5.8. LTE BAND 25



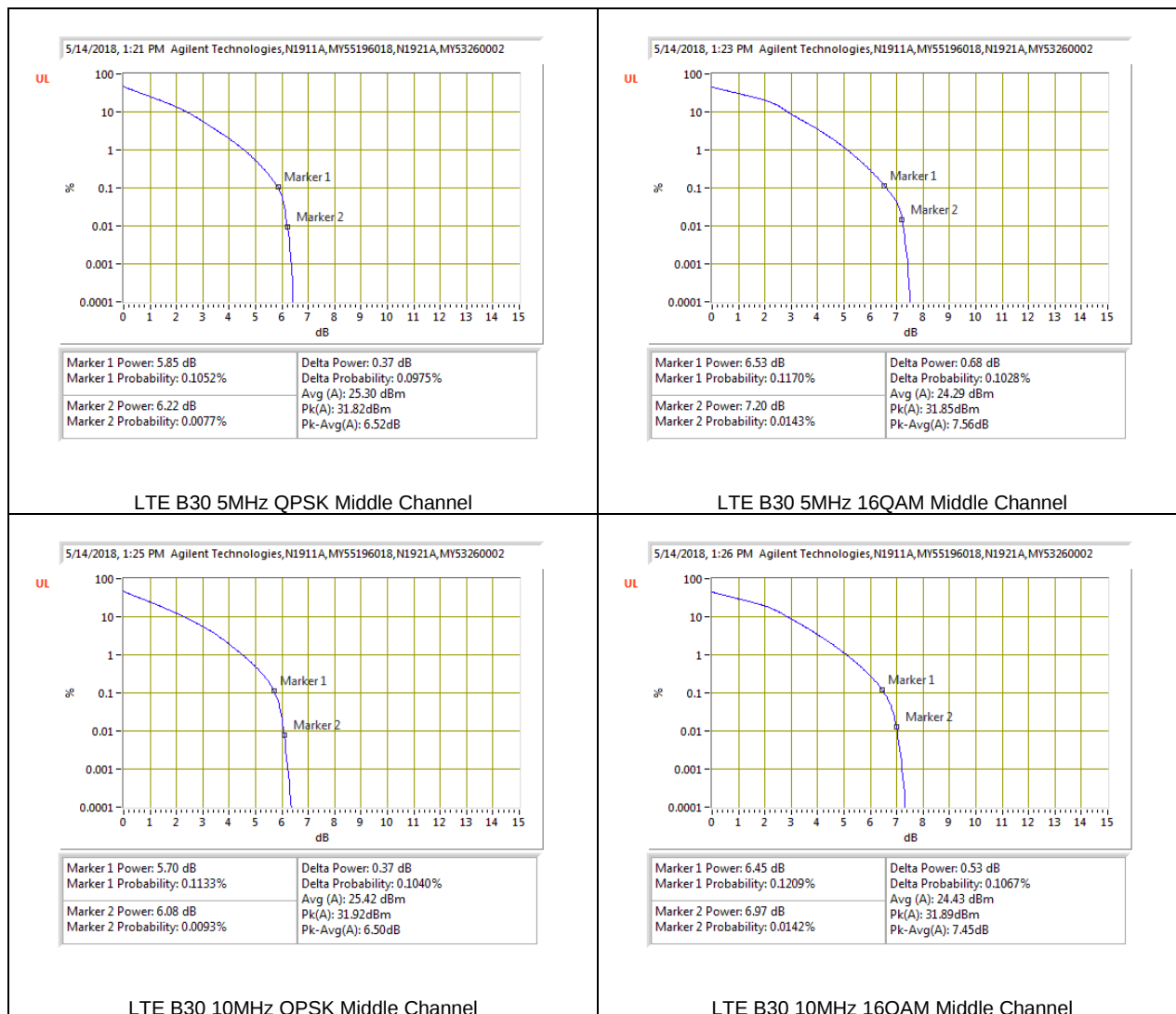


8.5.9. LTE BAND 26 (PART 90S)





8.5.10. LTE BAND 30

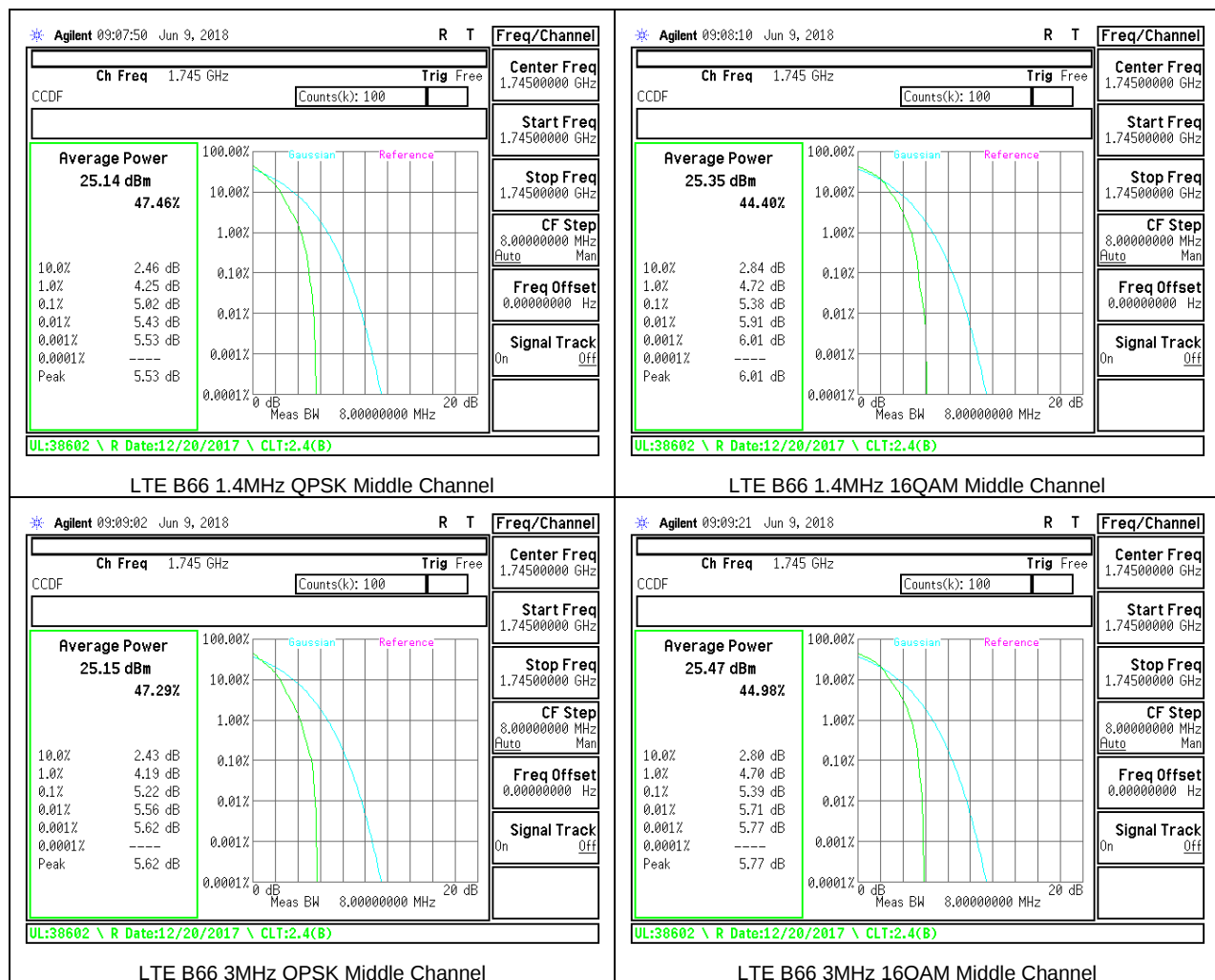


8.5.11. LTE BAND 41

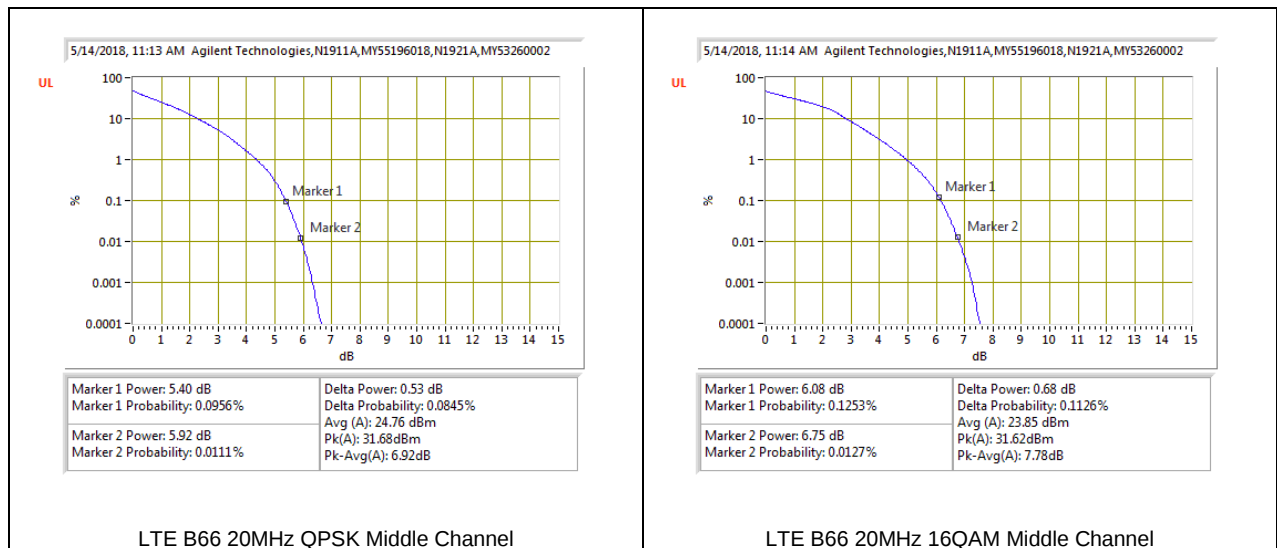
ID:	39004	Date:	5/14/18
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Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
Band 41	5MHz	2593.0	25	0	QPSK	32.39	22.94	2.46
					16QAM	32.32	21.87	3.46
	10MHz		50	0	QPSK	32.31	22.84	2.48
					16QAM	32.39	21.94	3.46
	15MHz		75	0	QPSK	32.32	22.88	2.45
					16QAM	32.32	21.93	3.40
	20MHz		100	0	QPSK	32.27	22.89	2.39
					16QAM	32.31	21.94	3.38
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







9. RADIATED TEST RESULTS

9.1. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 1

RULE PART(S)

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

LIMIT

FCC: §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.

FCC: §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).

FCC: §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.

FCC: §27.53 (a) (Band 30, Band 40)

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.

FCC: §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.

TEST PROCEDURE

KDB 971168 D01/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

9.1.1. LTE BAND 2

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date: 04/03/18

Test Engineer: 44410

Configuration: EUT only

Mode: LTE Band 2, 20MHz QPSK

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1800MHz)										
3.72	61.8	H	3.0	11.8	38.6	1.0	49.4	-13.0	-36.4	
5.58	63.4	H	3.0	-3.3	38.6	1.0	46.8	-13.0	-33.8	
7.44	66.4	H	3.0	8.7	37.8	1.0	45.5	-13.0	-32.5	
3.72	61.8	V	3.0	11.8	38.6	1.0	49.5	-13.0	-36.5	
5.58	63.8	V	3.0	-10.0	38.6	1.0	47.5	-13.0	-34.5	
7.44	65.4	V	3.0	-7.9	37.8	1.0	44.7	-13.0	-31.7	
Mid Channel (1800MHz)										
3.76	62.2	H	3.0	-12.1	38.6	1.0	49.7	-13.0	-36.7	
5.64	64.2	H	3.0	9.5	38.5	1.0	47.5	-13.0	-34.5	
7.52	65.8	H	3.0	8.0	37.7	1.0	44.7	-13.0	-31.7	
3.76	61.8	V	3.0	-11.7	38.6	1.0	49.4	-13.0	-36.4	
5.64	63.9	V	3.0	-10.0	38.5	1.0	47.5	-13.0	-34.5	
7.52	65.5	V	3.0	-7.9	37.7	1.0	44.7	-13.0	-31.7	
High Channel (1900MHz)										
3.80	62.6	H	3.0	-12.3	38.6	1.0	50.0	-13.0	-37.0	
5.70	64.4	H	3.0	10.1	38.5	1.0	47.5	-13.0	-34.5	
7.60	66.0	H	3.0	8.1	37.7	1.0	44.7	-13.0	-31.7	
3.80	61.3	V	3.0	-11.1	38.6	1.0	48.8	-13.0	-35.8	
5.70	64.7	V	3.0	-10.7	38.5	1.0	48.2	-13.0	-35.2	
7.60	66.2	V	3.0	8.5	37.7	1.0	45.2	-13.0	-32.2	

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High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date: 04/03/18

Test Engineer: 44410

Configuration: EUT only

Mode: LTE Band 2, 20MHz 16QAM

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1800MHz)										
3.72	62.7	H	3.0	-12.6	38.6	1.0	50.3	-13.0	-37.3	
5.58	64.4	H	3.0	-10.3	38.6	1.0	47.8	-13.0	-34.8	
7.44	66.6	H	3.0	-8.9	37.8	1.0	45.7	-13.0	-32.7	
3.72	61.7	V	3.0	-11.8	38.6	1.0	49.4	-13.0	-36.4	
5.58	63.3	V	3.0	-9.5	38.6	1.0	47.9	-13.0	-34.8	
7.44	66.4	V	3.0	-8.9	37.8	1.0	45.7	-13.0	-32.7	
Mid Channel (1800MHz)										
3.76	62.8	H	3.0	-12.5	38.6	1.0	50.1	-13.0	-37.1	
5.64	64.8	H	3.0	-10.6	38.5	1.0	48.1	-13.0	-35.1	
7.52	64.8	H	3.0	-7.8	37.7	1.0	43.7	-13.0	-30.7	
3.76	62.0	V	3.0	-12.0	38.6	1.0	49.6	-13.0	-36.6	
5.64	63.5	V	3.0	-9.6	38.5	1.0	47.2	-13.0	-34.2	
7.52	65.1	V	3.0	-7.5	37.7	1.0	44.3	-13.0	-31.3	
High Channel (1900MHz)										
3.80	63.8	H	3.0	-12.8	38.6	1.0	50.4	-13.0	-37.4	
5.70	64.4	H	3.0	-10.0	38.5	1.0	47.5	-13.0	-34.5	
7.60	65.9	H	3.0	-8.0	37.7	1.0	44.7	-13.0	-31.7	
3.80	62.6	V	3.0	-12.4	38.6	1.0	50.1	-13.0	-37.1	
5.70	64.7	V	3.0	-10.8	38.5	1.0	48.1	-13.0	-35.1	
7.60	67.2	V	3.0	-8.5	37.7	1.0	46.1	-13.0	-33.1	

Rev. 05.21.15

LTE B2 20MHz QPSK

LTE B2 20MHz 16QAM

9.1.2. LTE BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/03/18
Test Engineer: 10649
Configuration: EUT Only
Mode: LTE Band 5, 10MHz QPSK
Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

Filter

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (825MHz)										
1.66	-72.4	H	3.0	-30.0	37.8	1.0	-66.8	-13.0	-53.8	
2.49	-69.6	H	3.0	-24.5	38.5	1.0	-62.1	-13.0	-49.1	
3.32	-68.5	H	3.0	-19.5	38.5	1.0	-57.0	-13.0	-44.0	
1.66	-72.6	V	3.0	-30.4	37.8	1.0	-67.3	-13.0	-54.3	
2.49	-69.9	V	3.0	-24.6	38.5	1.0	-62.2	-13.0	-49.2	
3.32	-68.4	V	3.0	-19.6	38.5	1.0	-57.1	-13.0	-44.1	
Mid Channel (836.5MHz)										
1.67	-71.2	H	3.0	-28.6	37.8	1.0	-65.5	-13.0	-52.5	
2.51	-69.5	H	3.0	-24.3	37.8	1.0	-61.9	-13.0	-48.9	
3.35	-68.2	H	3.0	-19.1	38.5	1.0	-56.6	-13.0	-43.6	
1.67	-72.7	V	3.0	-30.5	37.8	1.0	-67.3	-13.0	-54.3	
2.51	-70.2	V	3.0	-24.8	38.6	1.0	-62.4	-13.0	-49.4	
3.35	-69.5	V	3.0	-20.7	38.5	1.0	-58.2	-13.0	-45.2	
High Channel (844MHz)										
1.69	-72.3	H	3.0	-29.7	37.9	1.0	-66.6	-13.0	-53.6	
2.53	-68.7	H	3.0	-23.4	38.6	1.0	-61.0	-13.0	-48.0	
3.38	-69.2	H	3.0	-20.1	38.5	1.0	-57.6	-13.0	-44.6	
1.69	-72.4	V	3.0	-29.1	37.9	1.0	-66.9	-13.0	-53.9	
2.53	-68.7	V	3.0	-23.2	38.6	1.0	-60.8	-13.0	-47.8	
3.38	-69.2	V	3.0	-20.3	38.5	1.0	-57.8	-13.0	-44.8	

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High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/03/18
Test Engineer: 10649
Configuration: EUT Only
Mode: LTE Band 5, 10MHz 16QAM
Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

Filter

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (825MHz)										
1.66	-72.2	H	3.0	-30.8	37.8	1.0	-67.6	-13.0	-54.6	
2.49	-70.3	H	3.0	-27.1	38.6	1.0	-64.7	-13.0	-51.7	
3.32	-68.4	H	3.0	-22.4	38.6	1.0	-59.9	-13.0	-46.9	
1.66	-72.8	V	3.0	-30.9	37.8	1.0	-67.7	-13.0	-54.7	
2.49	-70.0	V	3.0	-26.9	38.5	1.0	-63.4	-13.0	-50.4	
3.32	-69.6	V	3.0	-23.7	38.5	1.0	-61.2	-13.0	-48.2	
Mid Channel (836.5MHz)										
1.67	-72.5	H	3.0	-30.8	37.8	1.0	-67.7	-13.0	-54.7	
2.51	-69.6	H	3.0	-26.4	38.6	1.0	-64.0	-13.0	-51.0	
3.35	-69.7	H	3.0	-23.6	38.6	1.0	-61.1	-13.0	-48.1	
1.67	-72.4	V	3.0	-30.7	37.8	1.0	-67.6	-13.0	-54.6	
2.51	-70.6	V	3.0	-26.4	38.6	1.0	-64.0	-13.0	-51.0	
3.35	-69.2	V	3.0	-24.1	38.5	1.0	-61.6	-13.0	-48.6	
High Channel (844MHz)										
1.69	-72.4	H	3.0	-30.9	37.9	1.0	-67.7	-13.0	-54.7	
2.53	-70.2	H	3.0	-26.9	38.6	1.0	-64.6	-13.0	-51.6	
3.38	-70.2	H	3.0	-24.1	38.6	1.0	-61.6	-13.0	-48.6	
1.69	-72.6	V	3.0	-31.2	37.9	1.0	-68.1	-13.0	-55.1	
2.53	-70.0	V	3.0	-26.7	38.6	1.0	-63.3	-13.0	-50.3	
3.38	-69.7	V	3.0	-23.8	38.6	1.0	-61.1	-13.0	-48.1	

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LTE B5 10MHz QPSK

LTE B5 10MHz 16QAM

9.1.3. LTE BAND 7

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/03/18
Test Engineer: 44410
Configuration: EUT only
Mode: LTE Band 7, 20MHz QPSK

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

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.02	62.7	H	3.0	-8.8	38.7	1.0	-47.5	-25.0	-22.5	
7.53	66.4	H	3.0	-8.6	37.7	1.0	-45.4	-25.0	-20.4	
10.04	66.4	H	3.0	-5.6	36.2	1.0	-40.7	-25.0	-15.7	
5.02	63.2	V	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.53	66.0	V	3.0	-8.4	37.7	1.0	-45.1	-25.0	-20.1	
10.04	66.7	V	3.0	-5.9	36.2	1.0	-41.1	-25.0	-16.1	
Mid Channel (2535MHz)										
5.07	64.3	H	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.61	66.9	H	3.0	-9.0	37.7	1.0	-45.7	-25.0	-20.7	
10.14	66.0	H	3.0	-7.8	36.2	1.0	-42.3	-25.0	-17.3	
5.07	64.6	V	3.0	-11.9	38.7	1.0	-49.6	-25.0	-24.6	
7.61	66.9	V	3.0	-8.1	37.7	1.0	-45.8	-25.0	-20.8	
10.14	67.8	V	3.0	-6.9	36.2	1.0	-42.1	-25.0	-17.1	
High Channel (2560MHz)										
5.12	63.6	H	3.0	-10.5	38.7	1.0	-48.2	-25.0	-23.2	
7.68	66.3	H	3.0	-8.3	37.6	1.0	-45.0	-25.0	-20.0	
10.24	66.4	H	3.0	-5.4	36.3	1.0	-40.7	-25.0	-15.7	
5.12	64.5	V	3.0	-11.7	38.7	1.0	-49.4	-25.0	-24.4	
7.68	63.4	V	3.0	-5.5	37.6	1.0	-42.2	-25.0	-17.2	
10.24	67.6	V	3.0	-6.6	36.3	1.0	-41.9	-25.0	-16.9	

LTE B7 20MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/03/18
Test Engineer: 44410
Configuration: EUT only
Mode: LTE Band 7, 20MHz 16QAM

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

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2510MHz)										
5.02	63.9	H	3.0	-11.0	38.7	1.0	-48.7	-25.0	-23.7	
7.53	66.4	H	3.0	-8.6	37.7	1.0	-45.3	-25.0	-20.3	
10.04	66.4	H	3.0	-5.6	36.2	1.0	-40.8	-25.0	-15.8	
5.02	63.4	V	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.53	65.8	V	3.0	-8.2	37.7	1.0	-44.9	-25.0	-19.9	
10.04	67.7	V	3.0	-6.9	36.2	1.0	-42.1	-25.0	-17.1	
Mid Channel (2535MHz)										
5.07	63.8	H	3.0	-10.8	38.7	1.0	-48.5	-25.0	-23.5	
7.61	66.5	H	3.0	-8.6	37.7	1.0	-45.3	-25.0	-20.3	
10.14	66.3	H	3.0	-5.3	36.2	1.0	-40.6	-25.0	-15.6	
5.07	64.1	V	3.0	-11.4	38.7	1.0	-49.0	-25.0	-24.0	
7.61	66.3	V	3.0	-8.6	37.7	1.0	-45.3	-25.0	-20.3	
10.14	66.9	V	3.0	-5.9	36.2	1.0	-41.2	-25.0	-16.2	
High Channel (2560MHz)										
5.12	64.5	H	3.0	-11.3	38.7	1.0	-49.0	-25.0	-24.0	
7.68	64.5	H	3.0	-6.5	37.6	1.0	-43.2	-25.0	-18.2	
10.24	67.4	H	3.0	-6.4	36.3	1.0	-41.7	-25.0	-16.7	
5.12	64.4	V	3.0	-11.6	38.7	1.0	-49.3	-25.0	-24.3	
7.68	66.5	V	3.0	-8.6	37.6	1.0	-45.3	-25.0	-20.3	
10.24	66.6	V	3.0	-5.6	36.3	1.0	-40.8	-25.0	-15.8	

LTE B7 20MHz 16QAM

9.1.4. LTE BAND 12

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/03/18
Test Engineer: 10549
Configuration: EUT Only
Mode: LTE Band 12, 10MHz QPSK

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

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

Filter

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (704MHz)										
1.41	-73.0	H	3.0	-31.3	38.1	1.0	-68.4	-13.0	-55.4	
2.11	-71.7	H	3.0	-28.1	38.0	1.0	-65.1	-13.0	-52.1	
2.82	-70.0	H	3.0	-22.9	38.4	1.0	-60.3	-13.0	-47.3	
1.41	-72.4	V	3.0	-31.5	38.1	1.0	-68.5	-13.0	-55.5	
2.11	-71.6	V	3.0	-27.5	38.0	1.0	-64.5	-13.0	-51.5	
2.82	-69.2	V	3.0	-22.3	38.4	1.0	-59.7	-13.0	-46.7	
Mid Channel (767.5MHz)										
1.42	-72.2	H	3.0	-30.5	38.0	1.0	-67.5	-13.0	-54.5	
2.12	-71.8	H	3.0	-28.2	38.0	1.0	-65.2	-13.0	-52.2	
2.83	-69.9	H	3.0	-22.7	38.4	1.0	-60.1	-13.0	-47.1	
1.42	-71.5	V	3.0	-30.9	38.0	1.0	-66.0	-13.0	-53.0	
2.12	-71.8	V	3.0	-27.6	38.0	1.0	-64.6	-13.0	-51.6	
2.83	-69.3	V	3.0	-22.3	38.4	1.0	-59.8	-13.0	-46.8	
High Channel (711MHz)										
1.42	-72.4	H	3.0	-30.7	38.0	1.0	-67.7	-13.0	-54.7	
2.13	-71.7	H	3.0	-28.1	38.0	1.0	-65.1	-13.0	-52.1	
2.84	-70.0	H	3.0	-22.7	38.4	1.0	-60.2	-13.0	-47.2	
1.42	-71.3	V	3.0	-30.3	38.0	1.0	-67.3	-13.0	-54.3	
2.13	-71.4	V	3.0	-27.2	38.0	1.0	-64.2	-13.0	-51.2	
2.84	-70.3	V	3.0	-23.3	38.4	1.0	-60.7	-13.0	-47.7	

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High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/03/18
Test Engineer: 10549
Configuration: EUT Only
Mode: LTE Band 12, 10MHz 16QAM

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

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

Filter

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (704MHz)										
1.41	-73.2	H	3.0	-31.6	38.1	1.0	-68.6	-13.0	-55.6	
2.11	-71.1	H	3.0	-27.5	38.0	1.0	-64.5	-13.0	-51.5	
2.82	-70.3	H	3.0	-23.3	38.4	1.0	-60.7	-13.0	-47.7	
1.41	-73.2	V	3.0	-32.3	38.1	1.0	-69.3	-13.0	-56.3	
2.11	-71.4	V	3.0	-27.3	38.0	1.0	-64.2	-13.0	-51.2	
2.82	-68.6	V	3.0	-21.7	38.4	1.0	-59.2	-13.0	-46.2	
Mid Channel (767.5MHz)										
1.42	-73.1	H	3.0	-31.4	38.0	1.0	-68.5	-13.0	-55.5	
2.12	-70.9	H	3.0	-27.3	38.0	1.0	-64.3	-13.0	-51.3	
2.83	-70.9	H	3.0	-23.8	38.4	1.0	-61.2	-13.0	-48.2	
1.42	-74.0	V	3.0	-33.0	38.0	1.0	-70.1	-13.0	-57.1	
2.12	-71.1	V	3.0	-27.8	38.0	1.0	-63.9	-13.0	-50.9	
2.83	-70.8	V	3.0	-23.9	38.4	1.0	-61.3	-13.0	-48.3	
High Channel (711MHz)										
1.42	-71.2	H	3.0	-29.5	38.0	1.0	-66.5	-13.0	-53.5	
2.13	-71.9	H	3.0	-28.2	38.0	1.0	-65.2	-13.0	-52.2	
2.84	-69.5	H	3.0	-22.2	38.4	1.0	-59.7	-13.0	-46.7	
1.42	-73.4	V	3.0	-32.4	38.0	1.0	-69.4	-13.0	-56.4	
2.13	-70.5	V	3.0	-26.3	38.0	1.0	-63.3	-13.0	-50.3	
2.84	-69.0	V	3.0	-22.0	38.4	1.0	-59.5	-13.0	-46.5	

Rev: 05.21.15

LTE B12 10MHz QPSK

LTE B12 10MHz 16QAM

9.1.5. LTE BAND 13

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9.1.6. LTE BAND 14

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/03/18
Test Engineer: 10549
Configuration: EUT Only
Mode: LTE Band 14, 10MHz QPSK

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

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
LTE B14

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (750MHz) BW 10MHz										
1.59	-72.5	H	3.0	-30.2	37.8	1.0	-67.0	-40.0	-27.0	
2.38	-70.5	H	3.0	-28.5	38.2	1.0	-63.1	-13.0	-50.1	
3.17	-68.1	H	3.0	-18.4	38.4	1.0	-66.9	-13.0	-43.9	
1.59	-73.4	V	3.0	-31.6	37.8	1.0	-68.4	-40.0	-28.4	
2.38	-70.8	V	3.0	-26.1	38.2	1.0	-63.2	-13.0	-50.2	
3.17	-68.9	V	3.0	-20.6	38.4	1.0	-68.0	-13.0	-45.0	

Rev. 05.21.15

LTE B14 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/03/18
Test Engineer: 10549
Configuration: EUT Only
Mode: LTE Band 14, 10MHz 16QAM

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

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
LTE B14

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (750MHz) BW 10MHz										
1.59	-72.2	H	3.0	-29.9	37.8	1.0	-66.7	-40.0	-26.7	
2.38	-70.7	H	3.0	-25.1	38.2	1.0	-63.3	-13.0	-50.3	
3.17	-68.9	H	3.0	-20.3	38.4	1.0	-67.7	-13.0	-44.7	
1.59	-71.7	V	3.0	-29.9	37.8	1.0	-66.7	-40.0	-26.7	
2.38	-71.2	V	3.0	-26.4	38.2	1.0	-63.6	-13.0	-50.6	
3.17	-69.6	V	3.0	-21.3	38.4	1.0	-68.7	-13.0	-45.7	

Rev. 05.21.15

LTE B14 10MHz 16QAM

9.1.7. LTE BAND 17

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 05/08/18
Test Engineer: 10822
Configuration: EUT Only
Mode: LTE Band 17, 10MHz QPSK

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

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (710MHz)										
1.42	-65.7	H	3.0	-14.0	38.0	1.0	-51.1	-13.0	-38.1	
2.13	-62.5	H	3.0	-18.9	38.0	1.0	-55.8	-13.0	-42.8	
2.84	-64.4	H	3.0	-18.7	38.4	1.0	-55.6	-13.0	-42.6	
1.42	-63.1	V	3.0	-22.1	38.0	1.0	-59.1	-13.0	-46.1	
2.13	-64.8	V	3.0	-20.6	38.0	1.0	-57.6	-13.0	-44.6	
2.84	-65.3	V	3.0	-18.3	38.4	1.0	-55.7	-13.0	-42.7	

Rev. 05.21.15

LTE B17 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/03/18
Test Engineer: 10549
Configuration: EUT Only
Mode: LTE Band 17, 10MHz 16QAM

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

Chamber
3m Chamber E

Pre-amplifier
3m Chamber E

Filter
Filter

Limit
EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (710MHz)										
1.42	-57.5	H	3.0	-18.8	38.0	1.0	-62.8	-13.0	-39.8	
2.13	-63.1	H	3.0	-19.5	38.0	1.0	-66.5	-13.0	-43.5	
2.84	-66.0	H	3.0	-18.8	38.4	1.0	-66.2	-13.0	-43.2	
1.42	-63.8	V	3.0	-22.8	38.0	1.0	-69.8	-13.0	-46.8	
2.13	-65.6	V	3.0	-21.4	38.0	1.0	-68.4	-13.0	-45.4	
2.84	-66.1	V	3.0	-18.1	38.4	1.0	-66.5	-13.0	-43.5	

Rev. 05.21.15

LTE B17 10MHz 16QAM

9.1.8. LTE BAND 25

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date: 04/03/18

Test Engineer: 44410

Configuration: EUT only

Mode: LTE Band 25, 20MHz QPSK

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1900MHz)										
3.72	62.8	H	3.0	-12.0	38.6	1.0	-49.6	-13.0	-36.6	
5.58	63.7	H	3.0	9.6	38.6	1.0	-47.1	-13.0	-34.1	
7.44	66.5	H	3.0	5.2	37.8	1.0	-46.0	-13.0	-33.8	
3.72	62.4	V	3.0	-12.4	38.6	1.0	-50.0	-13.0	-37.0	
5.58	63.4	V	3.0	9.6	38.6	1.0	-47.2	-13.0	-34.2	
7.44	66.2	V	3.0	4.7	37.8	1.0	-45.5	-13.0	-32.5	
Mid Channel (1882.5MHz)										
3.77	62.5	H	3.0	-12.4	38.6	1.0	-50.0	-13.0	-37.8	
5.65	63.8	H	3.0	9.5	38.5	1.0	-47.1	-13.0	-34.1	
7.53	66.7	H	3.0	8.9	37.7	1.0	-45.6	-13.0	-32.6	
3.77	63.2	V	3.0	-13.1	38.6	1.0	-50.8	-13.0	-37.8	
5.65	65.0	V	3.0	11.0	38.5	1.0	-48.6	-13.0	-35.6	
7.53	67.8	V	3.0	9.4	37.7	1.0	-46.1	-13.0	-33.1	
High Channel (1905MHz)										
3.81	62.8	H	3.0	-12.5	38.6	1.0	-50.2	-13.0	-37.2	
5.72	64.3	H	3.0	9.9	38.5	1.0	-47.4	-13.0	-34.4	
7.62	68.0	H	3.0	8.1	37.7	1.0	-44.7	-13.0	-31.7	
3.81	61.7	V	3.0	-11.5	38.6	1.0	-49.2	-13.0	-36.2	
5.72	65.5	V	3.0	11.4	38.5	1.0	-48.9	-13.0	-35.9	
7.62	68.8	V	3.0	9.0	37.7	1.0	-45.7	-13.0	-32.7	

Rev: 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date: 04/03/18

Test Engineer: 44410

Configuration: EUT only

Mode: LTE Band 25, 20MHz 16QAM

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1900MHz)										
3.72	61.7	H	3.0	-11.7	38.6	1.0	-49.3	-13.0	-36.3	
5.58	64.8	H	3.0	-10.7	38.6	1.0	-48.2	-13.0	-35.2	
7.44	66.8	H	3.0	-8.3	37.8	1.0	-45.1	-13.0	-32.1	
3.72	63.2	V	3.0	-13.2	38.6	1.0	-50.9	-13.0	-37.9	
5.58	64.6	V	3.0	-10.8	38.6	1.0	-48.4	-13.0	-35.4	
7.44	66.6	V	3.0	-8.1	37.8	1.0	-45.9	-13.0	-32.9	
Mid Channel (1882.5MHz)										
3.77	63.3	H	3.0	-13.2	38.6	1.0	-50.8	-13.0	-37.8	
5.65	64.5	H	3.0	-10.3	38.5	1.0	-47.8	-13.0	-34.8	
7.53	66.3	H	3.0	-8.5	37.7	1.0	-45.2	-13.0	-32.2	
3.77	62.1	V	3.0	-12.9	38.6	1.0	-49.7	-13.0	-36.7	
5.65	64.3	V	3.0	-10.4	38.5	1.0	-47.9	-13.0	-34.9	
7.53	66.3	V	3.0	-8.6	37.7	1.0	-45.4	-13.0	-32.4	
High Channel (1905MHz)										
3.81	62.6	H	3.0	-12.4	38.6	1.0	-50.0	-13.0	-37.0	
5.72	63.8	H	3.0	-8.6	38.5	1.0	-46.1	-13.0	-33.1	
7.62	65.6	H	3.0	-7.7	37.7	1.0	-44.4	-13.0	-31.4	
3.81	62.1	V	3.0	-11.9	38.6	1.0	-49.5	-13.0	-36.5	
5.72	64.9	V	3.0	-10.8	38.5	1.0	-48.3	-13.0	-35.3	
7.62	66.6	V	3.0	-8.8	37.7	1.0	-45.5	-13.0	-32.5	

Rev: 05.21.15

LTE B25 20MHz QPSK

LTE B25 20MHz 16QAM

9.1.9. LTE BAND 26 (PART 90S)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/03/18
Test Engineer: 10649
Configuration: EUT Only
Mode: LTE Band 26 (90S), 10MHz QPSK

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

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (810MHz)										
1.64	72.5	H	3.0	-30.0	37.8	1.0	-66.9	-13.0	-53.9	
2.46	69.9	H	3.0	-25.0	38.4	1.0	-62.4	-13.0	-49.4	
3.28	68.9	H	3.0	-20.0	38.5	1.0	-57.5	-13.0	-44.5	
1.64	71.5	V	3.0	-29.4	37.8	1.0	-66.3	-13.0	-53.3	
2.46	69.8	V	3.0	-24.7	38.4	1.0	-62.2	-13.0	-49.2	
3.28	70.2	V	3.0	-21.6	38.5	1.0	-59.1	-13.0	-46.1	

Rev: 05.21.15

LTE B26 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/03/18
Test Engineer: 10649
Configuration: EUT Only
Mode: LTE Band 26 (90S), 10MHz 16QAM

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

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Mid Channel (810MHz)										
1.64	72.4	H	3.0	-29.9	37.8	1.0	-66.8	-13.0	-53.8	
2.46	69.7	H	3.0	-24.8	38.4	1.0	-62.2	-13.0	-49.2	
3.28	68.3	H	3.0	-19.4	38.5	1.0	-56.8	-13.0	-43.8	
1.64	72.9	V	3.0	-38.8	37.8	1.0	-67.6	-13.0	-54.6	
2.46	69.3	V	3.0	-24.2	38.4	1.0	-61.6	-13.0	-48.6	
3.28	69.2	V	3.0	-20.6	38.5	1.0	-58.0	-13.0	-45.0	

Rev: 05.21.15

LTE B26 10MHz 16QAM

9.1.10. LTE BAND 30

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

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

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

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

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

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	-47.4	H	3.0	-13.6	37.9	1.0	-50.6	-40.0	-10.6	
6.93	-48.1	H	3.0	-10.5	36.5	1.0	-45.9	-40.0	-5.9	
9.24	-71.3	H	3.0	-8.7	34.9	1.0	-43.6	-40.0	-3.6	
4.62	-46.8	V	3.0	-13.2	37.9	1.0	-50.1	-40.0	-10.1	
6.93	-49.6	V	3.0	-10.1	36.5	1.0	-45.6	-40.0	-5.6	
9.24	-71.3	V	3.0	-8.5	34.9	1.0	-43.4	-40.0	-3.4	

Rev. 05.21.15

LTE B30 10MHz QPSK

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

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

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

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

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

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	-47.1	H	3.0	-13.3	37.9	1.0	-50.2	-40.0	-10.2	
6.93	-48.4	H	3.0	-10.8	36.5	1.0	-46.3	-40.0	-6.3	
9.24	-72.4	H	3.0	-10.8	34.9	1.0	-46.7	-40.0	-6.7	
4.62	-46.8	V	3.0	-12.0	37.9	1.0	-48.9	-40.0	-8.9	
6.93	-49.4	V	3.0	-9.9	36.5	1.0	-45.4	-40.0	-5.4	
9.24	-71.7	V	3.0	-9.9	34.9	1.0	-43.8	-40.0	-3.8	

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LTE B30 10MHz 16QAM

9.1.11. LTE BAND 41

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date: 04/03/18

Test Engineer: 10649

Configuration: EUT Only

Mode: LTE Band 41, 20MHz QPSK

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2500MHz)										
5.01	-67.0	H	3.0	-14.1	38.7	1.0	-51.8	-25.0	-26.8	
7.52	-68.6	H	3.0	-10.8	37.7	1.0	-47.6	-25.0	-22.6	
10.02	-68.2	H	3.0	-7.4	36.1	1.0	-42.5	-25.0	-17.5	
5.01	-66.3	V	3.0	-13.7	38.7	1.0	-51.4	-25.0	-26.4	
7.52	-68.1	V	3.0	-10.5	37.7	1.0	-47.2	-25.0	-22.2	
10.02	-68.6	V	3.0	-7.0	36.1	1.0	-43.0	-25.0	-18.0	
Mid Channel (2550MHz)										
5.19	-65.8	H	3.0	-12.5	38.7	1.0	-50.2	-25.0	-25.2	
7.78	-67.9	H	3.0	-9.8	37.6	1.0	-46.4	-25.0	-21.4	
10.37	-69.0	H	3.0	-7.9	36.4	1.0	-43.2	-25.0	-18.2	
5.19	-66.6	V	3.0	-13.7	38.7	1.0	-51.4	-25.0	-26.4	
7.78	-67.7	V	3.0	-9.7	37.6	1.0	-46.3	-25.0	-21.3	
10.37	-67.7	V	3.0	-6.5	36.4	1.0	-41.9	-25.0	-16.9	
High Channel (2600MHz)										
5.36	-66.9	H	3.0	-13.3	38.6	1.0	-50.9	-25.0	-25.9	
8.04	-69.1	H	3.0	-10.6	37.4	1.0	-47.0	-25.0	-22.0	
10.72	-68.5	H	3.0	-7.0	36.6	1.0	-42.6	-25.0	-17.6	
5.36	-66.5	V	3.0	-13.2	38.6	1.0	-50.9	-25.0	-25.9	
8.04	-67.6	V	3.0	-9.3	37.4	1.0	-45.7	-25.0	-20.7	
10.72	-69.0	V	3.0	-7.4	36.6	1.0	-43.0	-25.0	-18.0	

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High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date: 4/4/2018

Test Engineer: 10649

Configuration: EUT Only

Mode: LTE Band 41, 20MHz 16QAM

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

LTE B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2500MHz)										
5.01	-66.4	H	3.0	-13.5	38.7	1.0	-51.2	-25.0	-26.2	
7.52	-68.6	H	3.0	-10.7	37.7	1.0	-47.5	-25.0	-22.5	
10.02	-68.5	H	3.0	-7.6	36.1	1.0	-42.0	-25.0	-17.0	
5.01	-66.3	V	3.0	-13.7	38.7	1.0	-51.4	-25.0	-26.4	
7.52	-68.0	V	3.0	-10.4	37.7	1.0	-47.1	-25.0	-22.1	
10.02	-68.8	V	3.0	-6.0	36.1	1.0	-43.2	-25.0	-18.2	
Mid Channel (2550MHz)										
5.19	-65.5	H	3.0	-12.3	38.7	1.0	-50.0	-25.0	-25.0	
7.78	-67.7	H	3.0	-9.6	37.6	1.0	-46.1	-25.0	-21.1	
10.37	-68.3	H	3.0	-7.2	36.4	1.0	-42.6	-25.0	-17.6	
5.19	-66.5	V	3.0	-13.6	38.7	1.0	-51.3	-25.0	-26.3	
7.78	-67.7	V	3.0	-9.8	37.6	1.0	-46.3	-25.0	-21.3	
10.37	-68.3	V	3.0	-7.2	36.4	1.0	-42.5	-25.0	-17.5	
High Channel (2600MHz)										
5.36	-67.7	H	3.0	-14.1	38.6	1.0	-51.7	-25.0	-26.7	
8.04	-68.5	H	3.0	-8.0	37.4	1.0	-44.4	-25.0	-19.4	
10.72	-67.9	H	3.0	-6.9	36.6	1.0	-42.1	-25.0	-17.1	
5.36	-69.0	V	3.0	-15.7	38.6	1.0	-53.4	-25.0	-28.4	
8.04	-67.7	V	3.0	-9.4	37.4	1.0	-45.0	-25.0	-20.0	
10.72	-68.0	V	3.0	-6.4	36.6	1.0	-42.0	-25.0	-17.0	

Rev. 05.21.15

LTE B41 20MHz QPSK

LTE B41 20MHz 16QAM