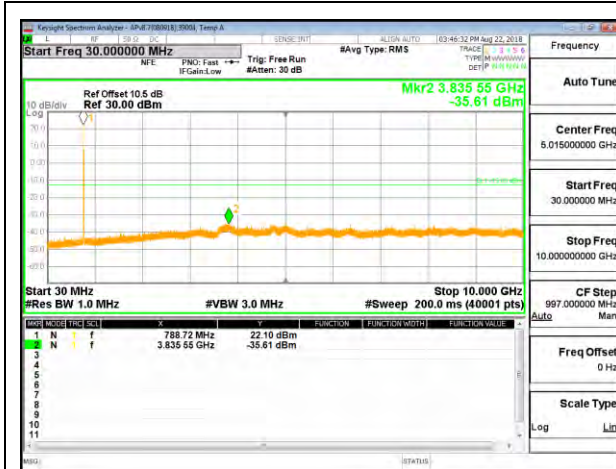
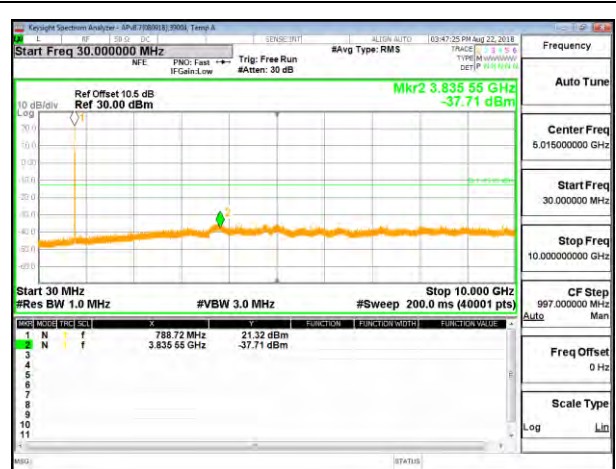


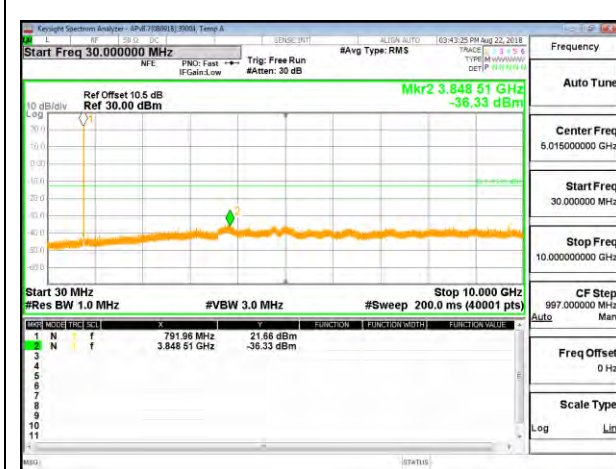
8.3.6. LTE BAND 14



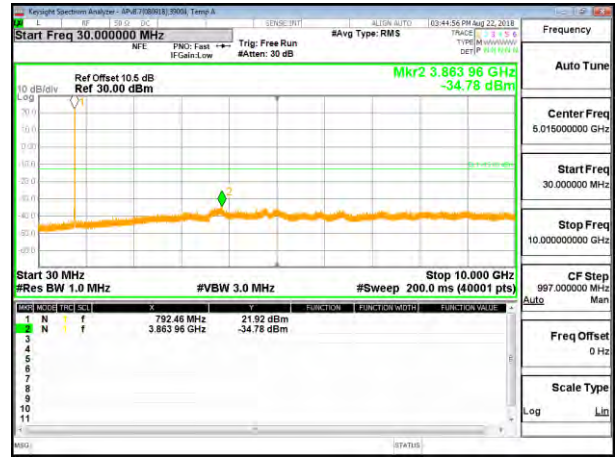
LTE B14 5MHz QPSK Low Channel RB1-0



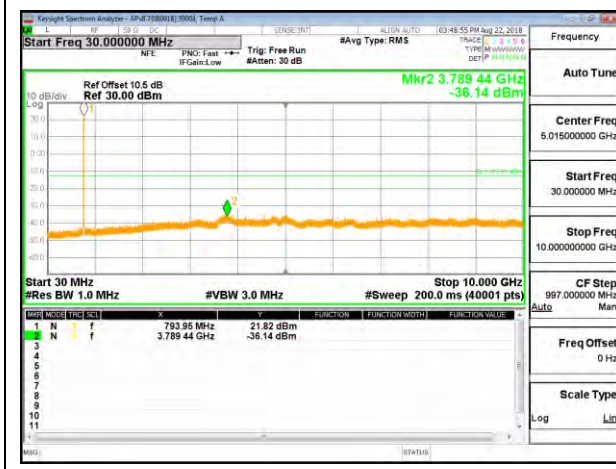
LTE B14 5MHz 16QAM Low Channel RB1-0



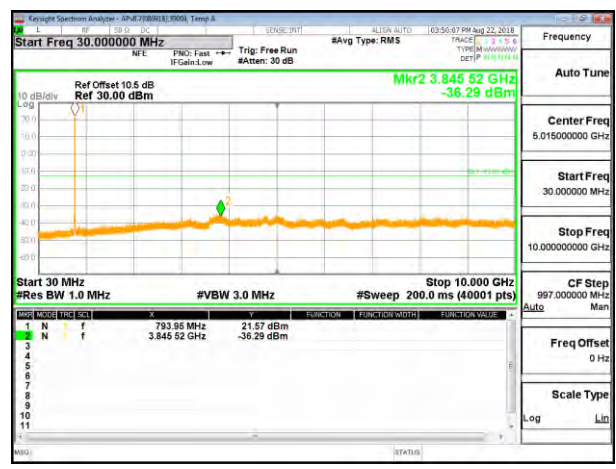
LTE B14 5MHz QPSK Middle Channel RB1-0



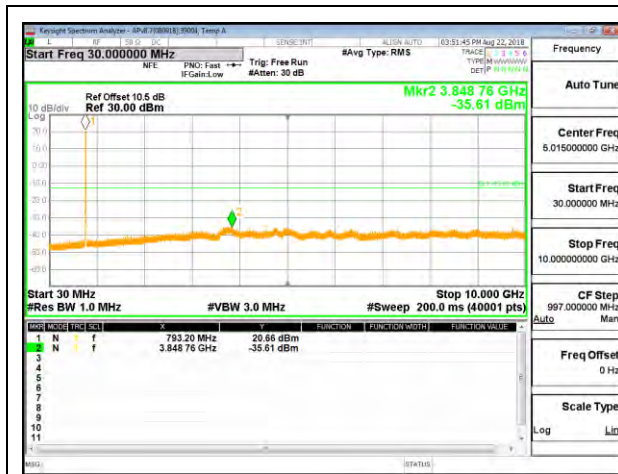
LTE B14 5MHz 16QAM Middle Channel RB1-0



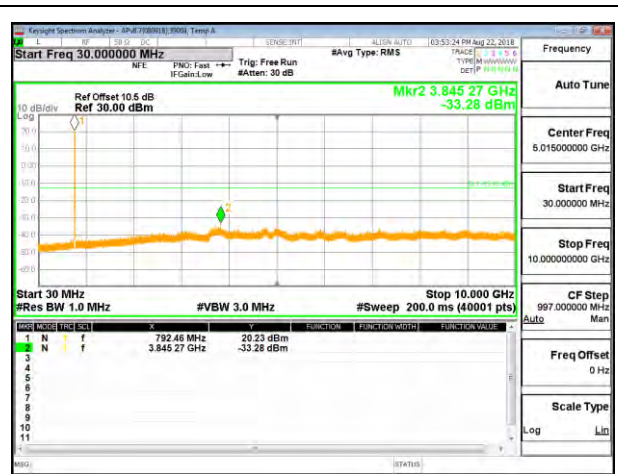
LTE B14 5MHz QPSK High Channel RB1-0



LTE B14 5MHz 16QAM High Channel RB1-0

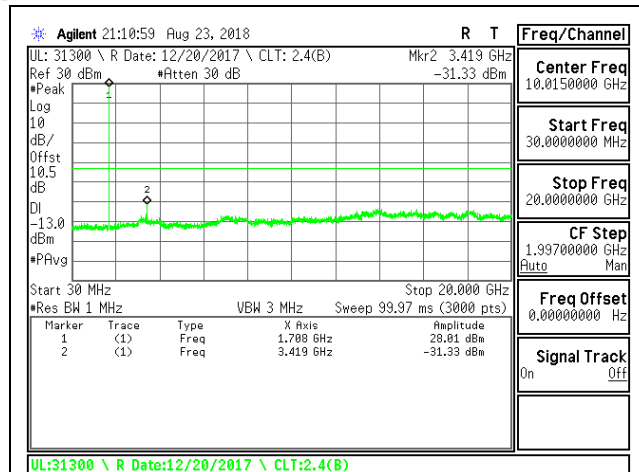


LTE B14 10MHz QPSK Middle Channel RB1-0

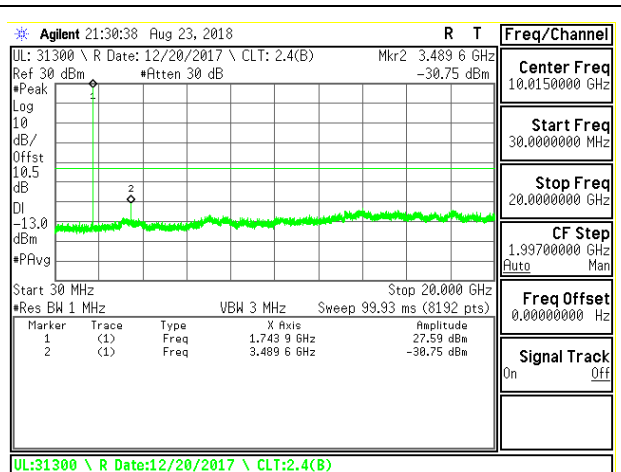


LTE B14 10MHz 16QAM Middle Channel RB1-0

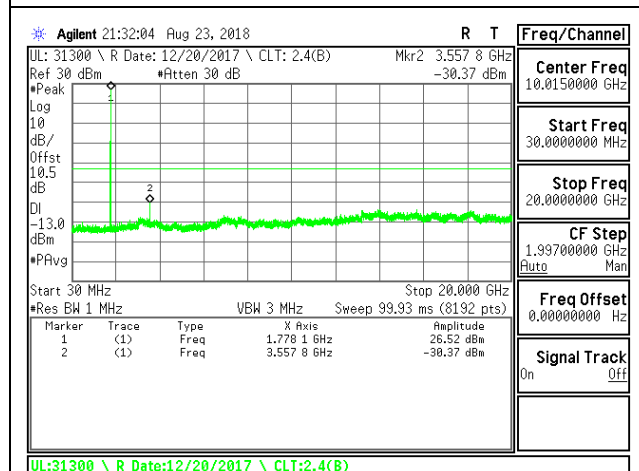
8.3.7. LTE BAND 66



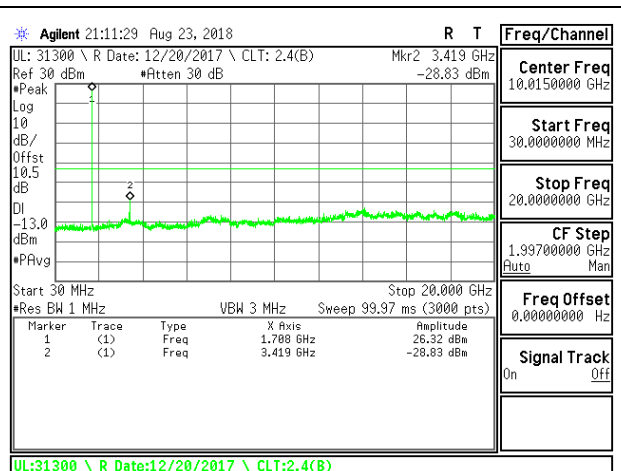
LTE B66 1.4MHz QPSK Low Channel RB1-0



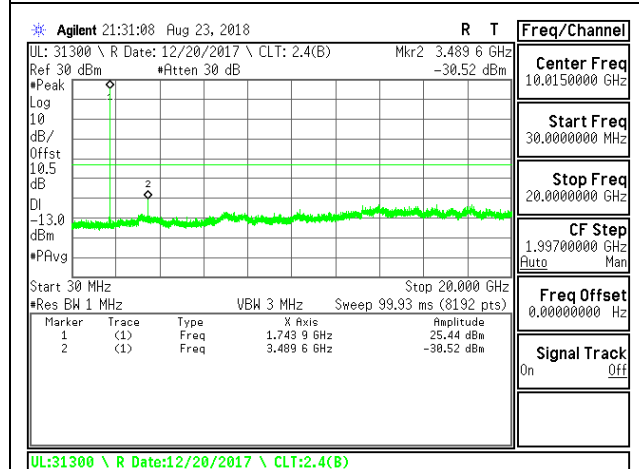
LTE B66 1.4MHz QPSK Mid Channel RB1-0



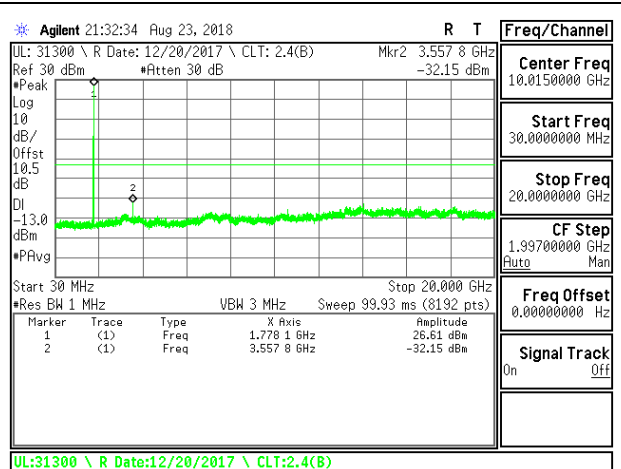
LTE B66 1.4MHz QPSK High Channel RB1-0



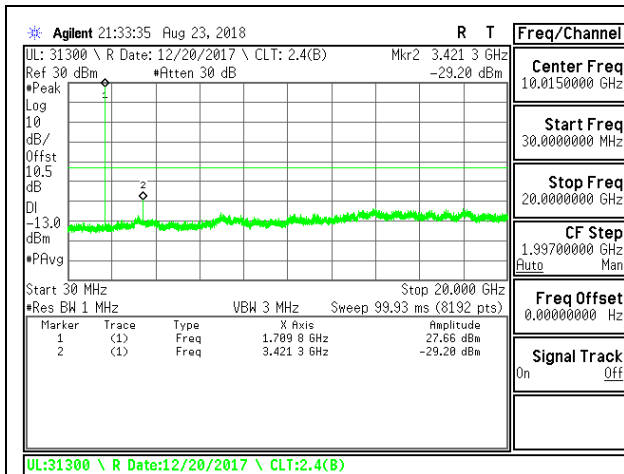
LTE B66 1.4MHz 16QAM Low Channel RB1-0



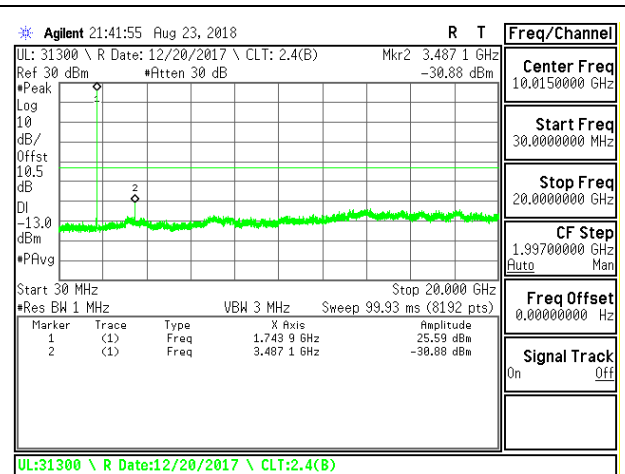
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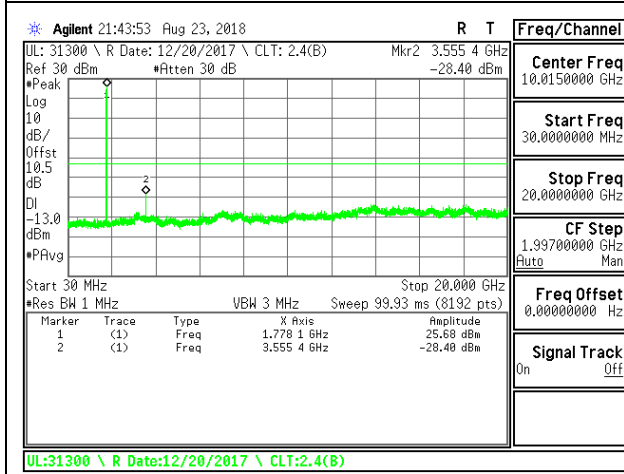
LTE B66 1.4MHz 16QAM High Channel RB1-0



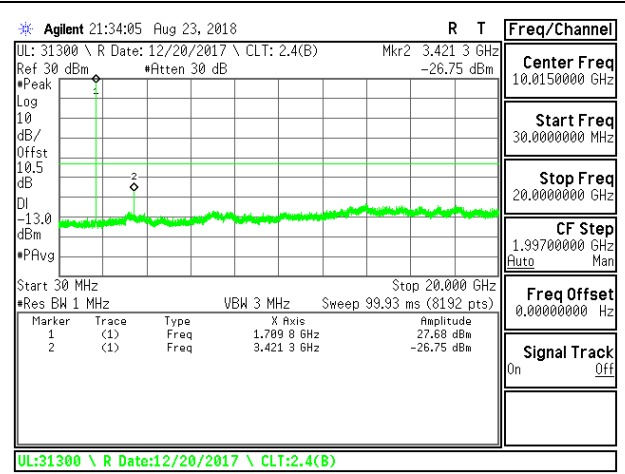
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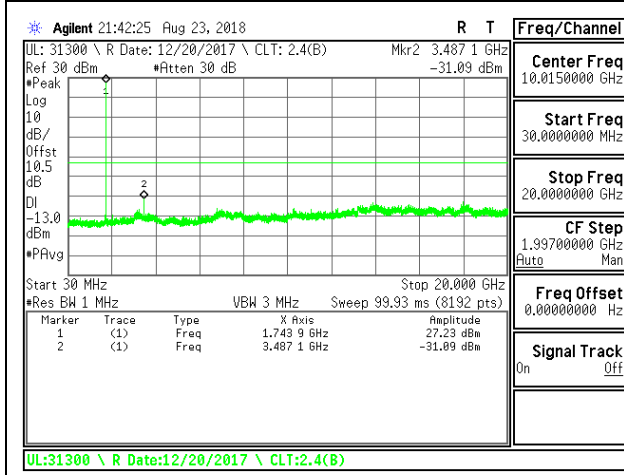
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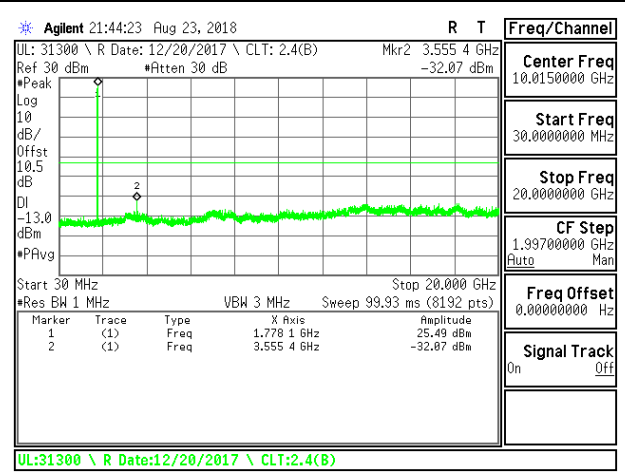
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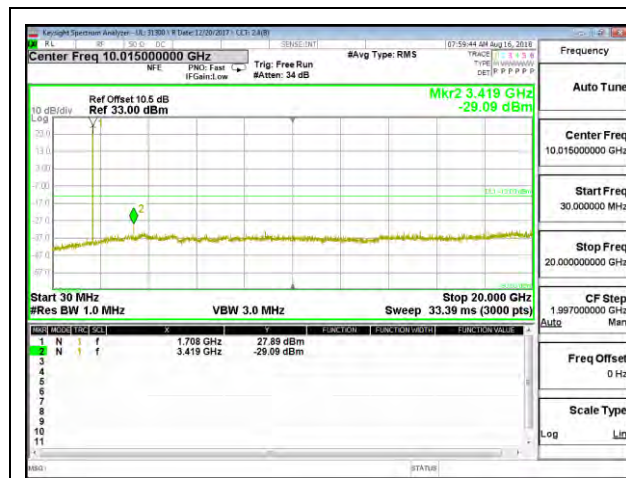
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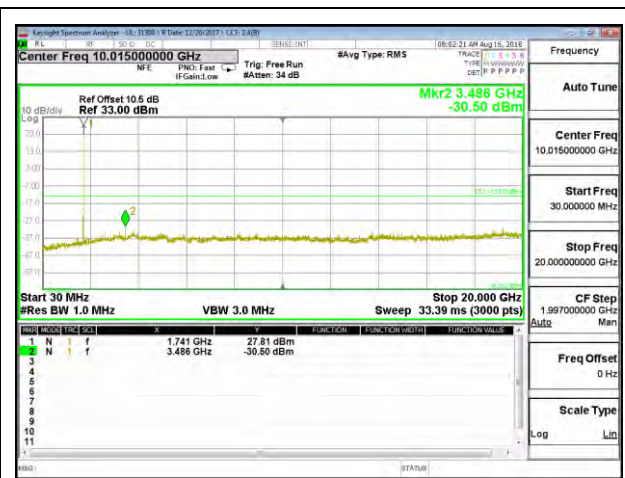
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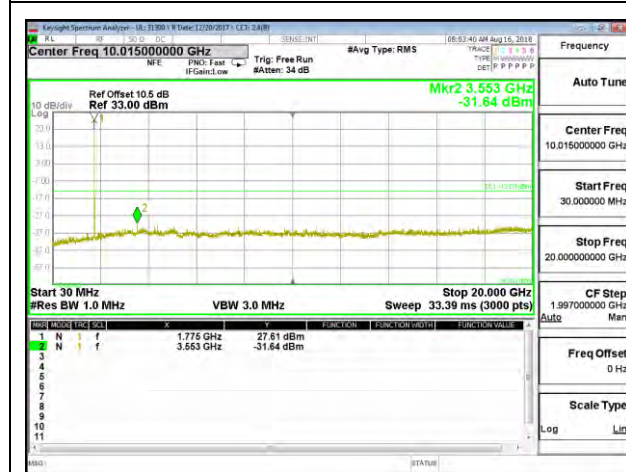
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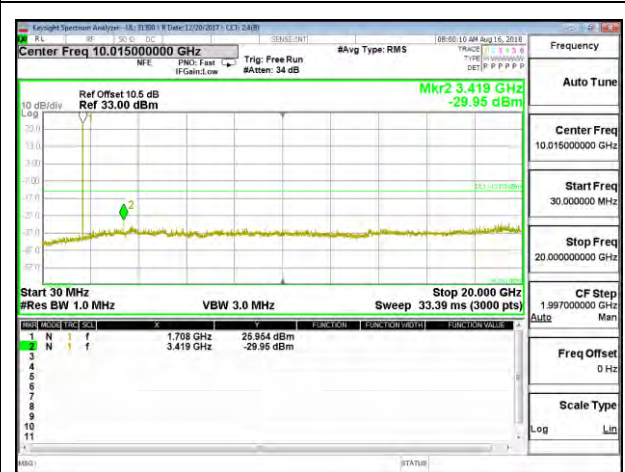
LTE B66 5MHz QPSK Low Channel RB1-0



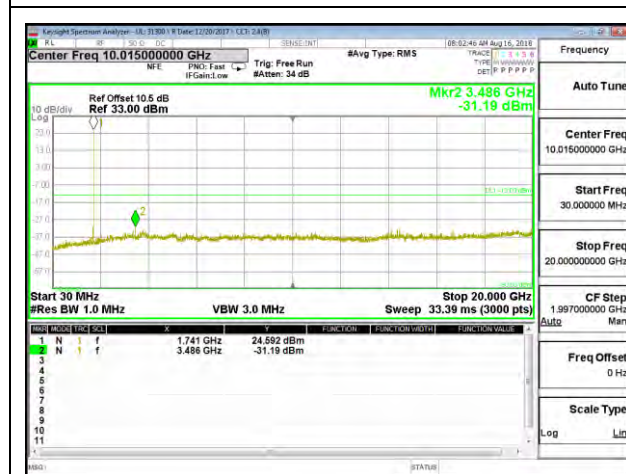
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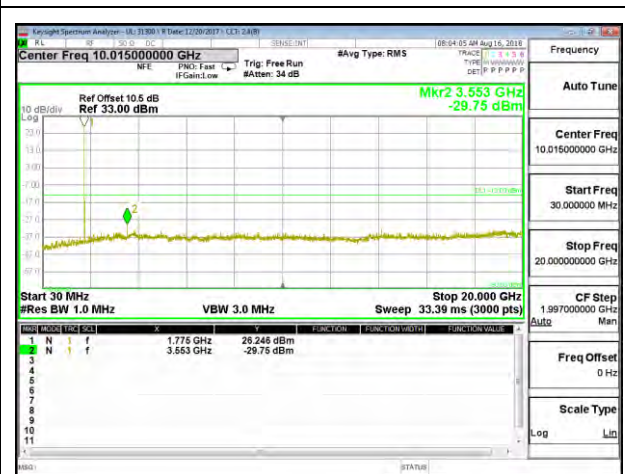
LTE B66 5MHz QPSK High Channel RB1-0



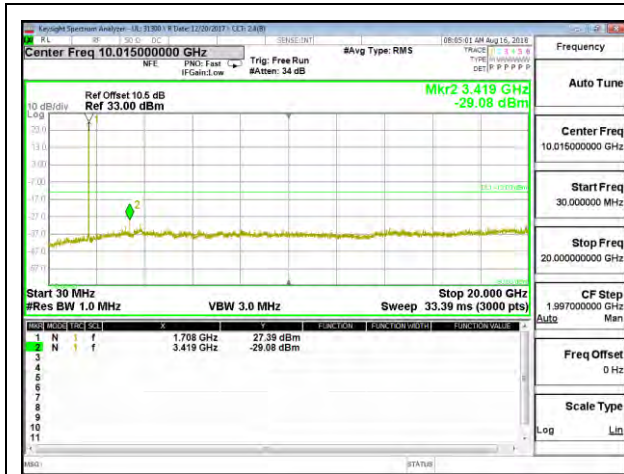
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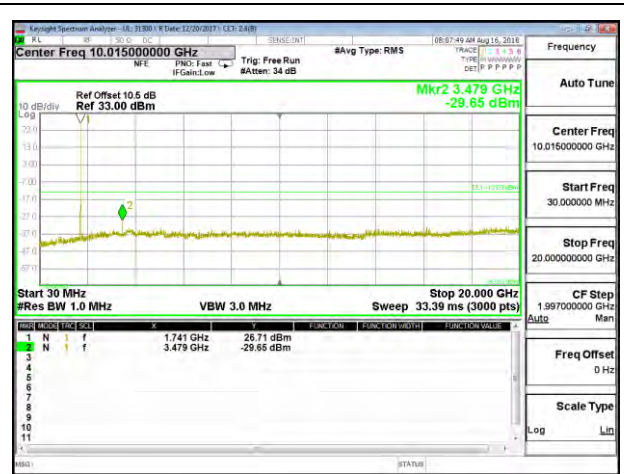
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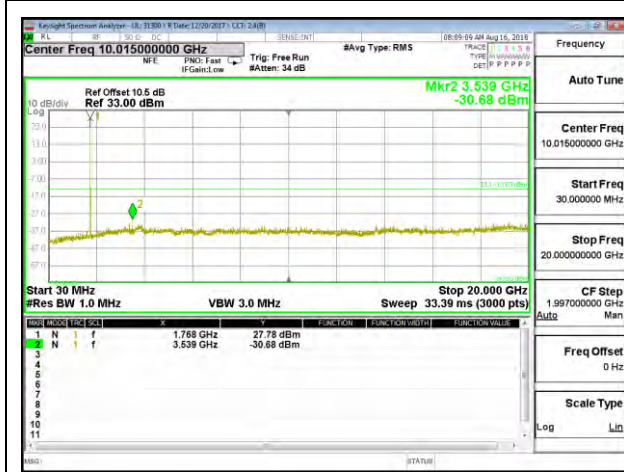
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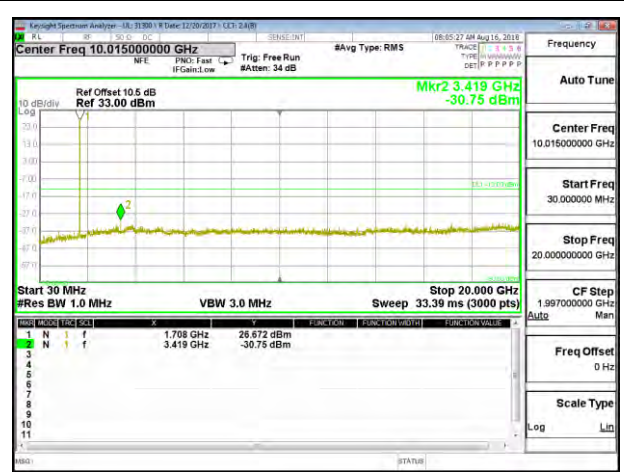
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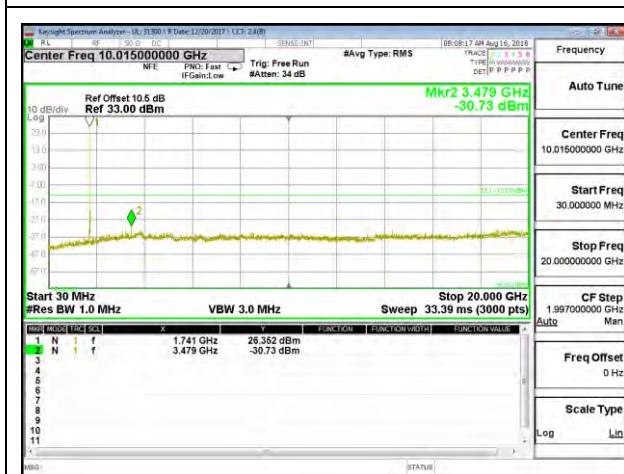
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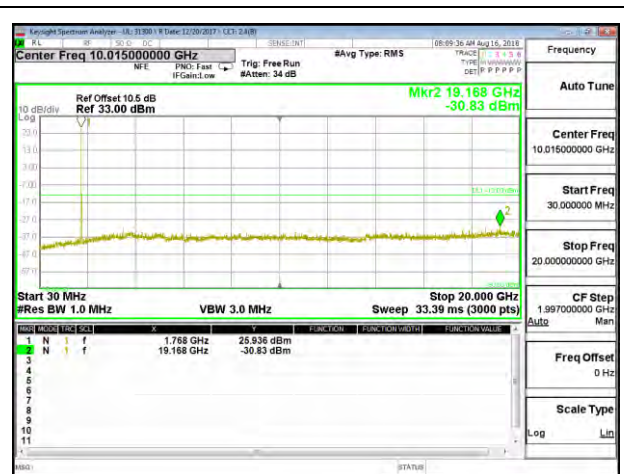
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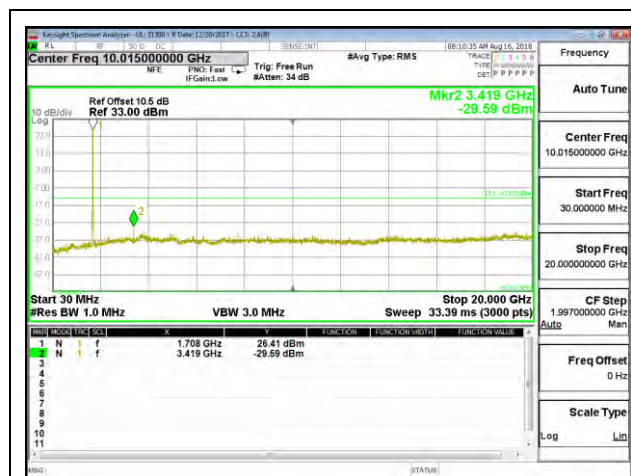
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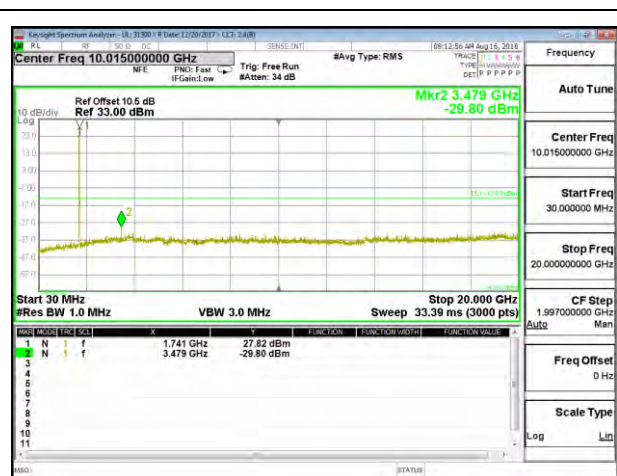
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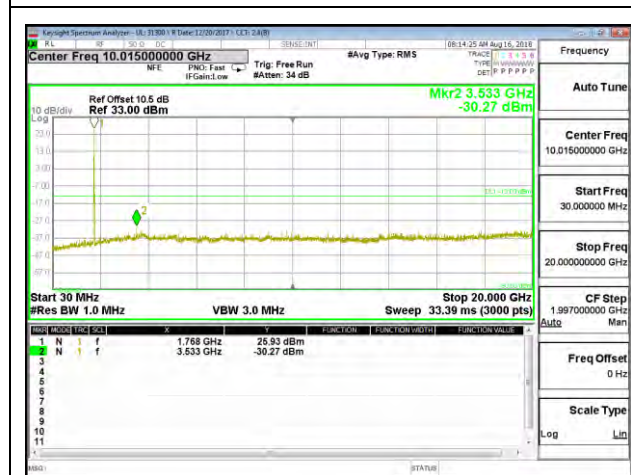
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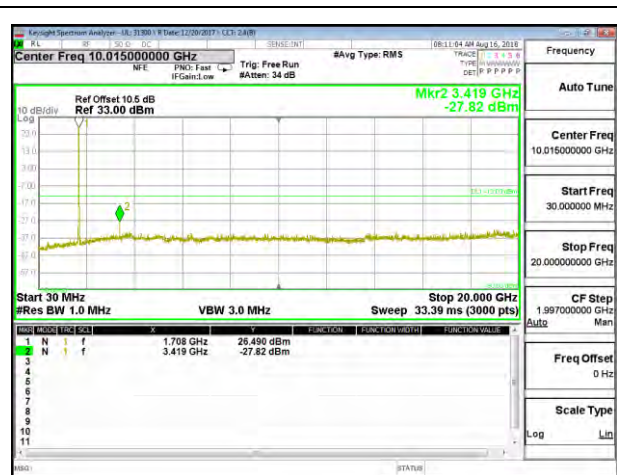
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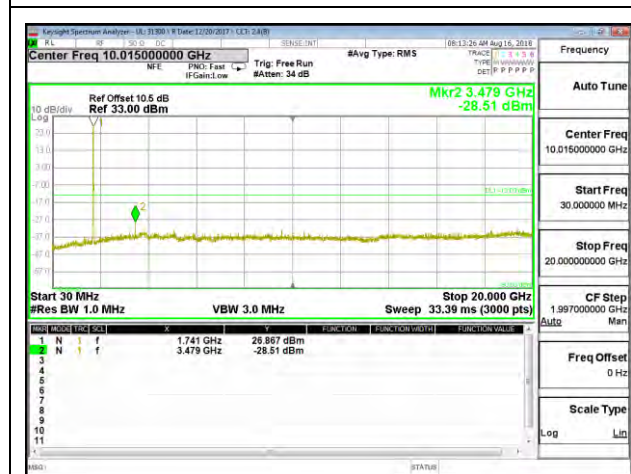
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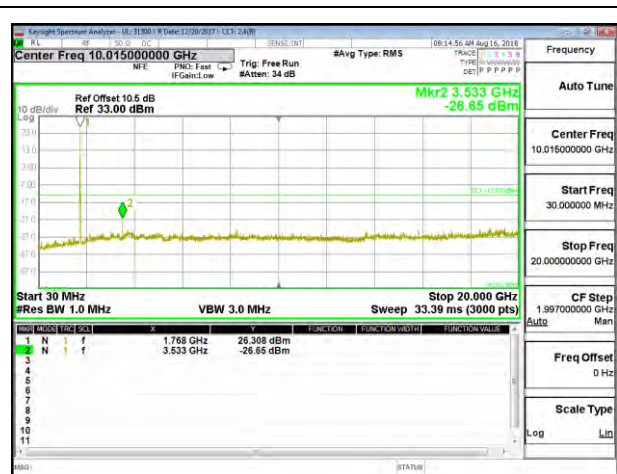
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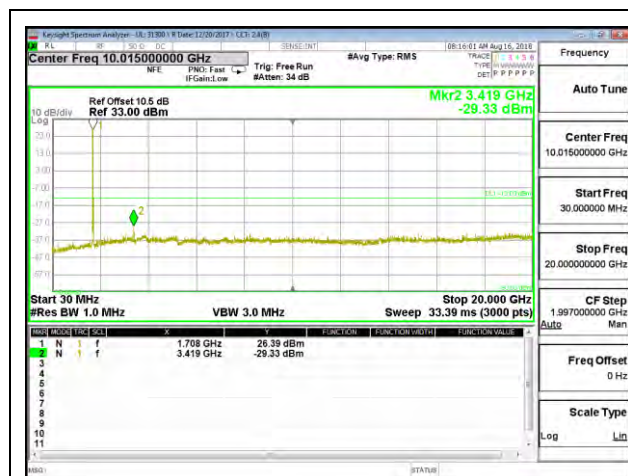
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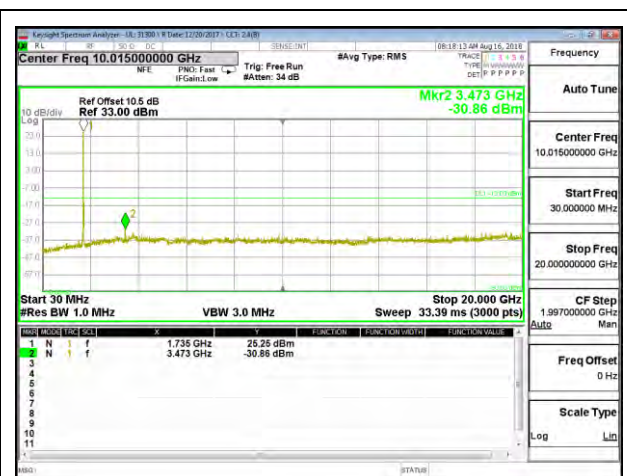
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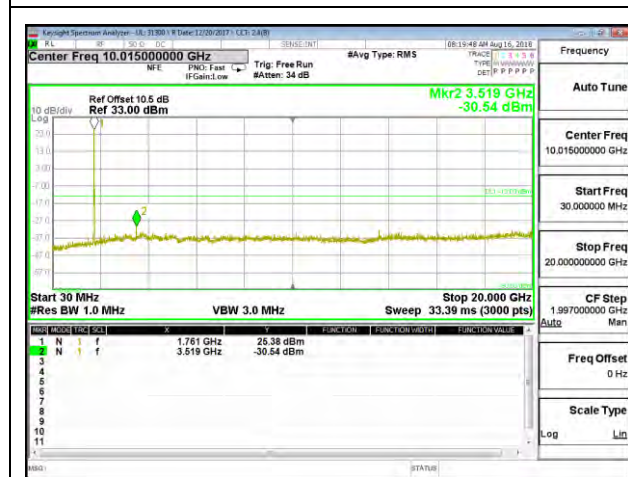
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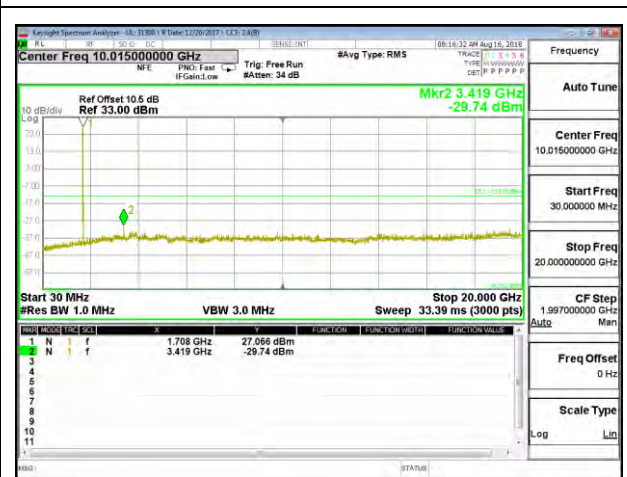
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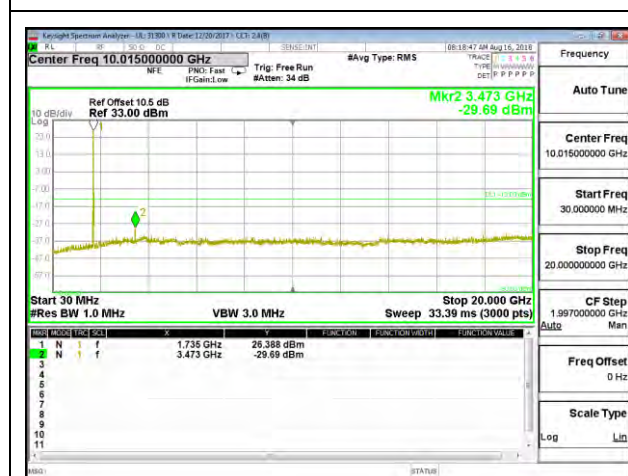
LTE B66 20MHz QPSK Mid Channel RB1-0



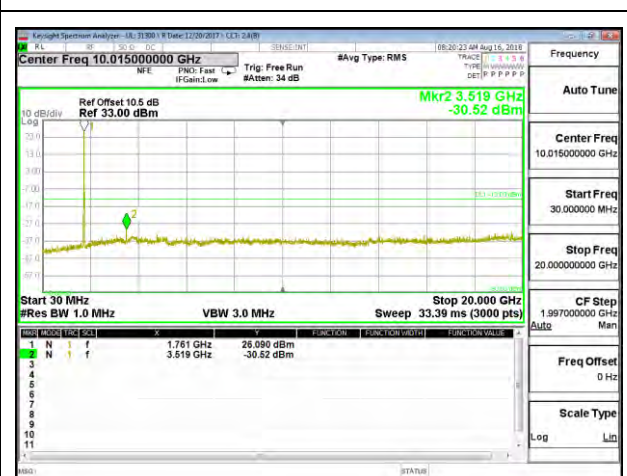
LTE B66 20MHz QPSK High Channel RB1-0



LTE B66 20MHz 16QAM Low Channel RB1-0



LTE B66 20MHz 16QAM Mid Channel RB1-0



LTE B66 20MHz 16QAM High Channel RB1-0

8.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54 and §90.539

LIMITS

FCC: §22.355

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 $+50^{\circ}\text{C}$
- Voltage = (85% - 115%)
Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.
End Voltage, 3.2VDC.

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C 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 $+50^{\circ}\text{C}$ is reached.

Frequency Stability vs Voltage:

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

MODES TESTED

- WCDMA Band 5
- WCDMA Band 2
- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 12
- LTE Band 14
- LTE Band 66

RESULTS

See the following pages.

8.4.1. WCDMA BAND 5

ID:	39004	Date:	8/20/18
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Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	824.1334	848.8750		
Extreme (50C)		824.1334	848.8750	-3.5	0.00
Extreme (40C)		824.1334	848.8750	-3.6	0.00
Extreme (30C)		824.1334	848.8750	-4.4	-0.01
Extreme (10C)		824.1334	848.8750	-4.6	-0.01
Extreme (0C)		824.1334	848.8750	-3.9	0.00
Extreme (-10C)		824.1334	848.8750	-4.2	0.00
Extreme (-20C)		824.1334	848.8750	-3.7	0.00
Extreme (-30C)		824.1334	848.8750	-4.6	-0.01
20C	15%	824.1334	848.8750	-3.9	0.00
	-15%	824.1334	848.8750	-4.3	-0.01
	End Point	824.1334	848.8750	-3.0	0.00

8.4.2. WCDMA BAND 2

ID:	39004	Date:	8/20/18
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Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1850.1174	1909.8753		
Extreme (50C)		1850.1174	1909.8753	-5.4	0.00
Extreme (40C)		1850.1174	1909.8753	-5.4	0.00
Extreme (30C)		1850.1174	1909.8753	-5.7	0.00
Extreme (10C)		1850.1174	1909.8753	-5.1	0.00
Extreme (0C)		1850.1174	1909.8753	-5.3	0.00
Extreme (-10C)		1850.1174	1909.8753	-3.7	0.00
Extreme (-20C)		1850.1174	1909.8753	-4.4	0.00
Extreme (-30C)		1850.1174	1909.8753	-4.2	0.00
20C	15%	1850.1174	1909.8753	-4.5	0.00
	-15%	1850.1174	1909.8753	-3.8	0.00
	End Point	1850.1174	1909.8753	-5.5	0.00

8.4.3. LTE BAND 2

ID:	39004	Date:	8/20/18
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Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1850.8370	1909.1600		
Extreme (50C)		1850.8370	1909.1600	7.7	0.004
Extreme (40C)		1850.8370	1909.1600	6.3	0.003
Extreme (30C)		1850.8370	1909.1600	6.6	0.003
Extreme (10C)		1850.8370	1909.1600	6.0	0.003
Extreme (0C)		1850.8370	1909.1600	6.3	0.003
Extreme (-10C)		1850.8370	1909.1600	7.5	0.004
Extreme (-20C)		1850.8370	1909.1600	8.4	0.004
Extreme (-30C)		1850.8370	1909.1600	8.5	0.004
20C	15%	1850.8370	1909.1600	7.0	0.004
	-15%	1850.8370	1909.1600	7.3	0.004
	End Point	1850.8370	1909.1600	8.3	0.004

8.4.4. LTE BAND 4

ID:	39004	Date:	8/20/18
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Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1710.8400	1754.1730		
Extreme (50C)		1710.8400	1754.1730	7.2	0.004
Extreme (40C)		1710.8400	1754.1730	6.3	0.004
Extreme (30C)		1710.8400	1754.1730	5.9	0.003
Extreme (10C)		1710.8400	1754.1730	8.2	0.005
Extreme (0C)		1710.8400	1754.1730	7.4	0.004
Extreme (-10C)		1710.8400	1754.1730	6.3	0.004
Extreme (-20C)		1710.8400	1754.1730	8.0	0.005
Extreme (-30C)		1710.8400	1754.1730	7.0	0.004
20C	15%	1710.8400	1754.1730	7.0	0.004
	-15%	1710.8400	1754.1730	7.6	0.004
	End Point	1710.8400	1754.1730	6.5	0.004

8.4.5. LTE BAND 5

ID:	39004	Date:	8/21/18
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Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	824.4130	848.5870		
Extreme (50C)		824.4130	848.5870	4.0	0.005
Extreme (40C)		824.4130	848.5870	5.3	0.006
Extreme (30C)		824.4130	848.5870	4.4	0.005
Extreme (10C)		824.4130	848.5870	4.5	0.005
Extreme (0C)		824.4130	848.5870	4.0	0.005
Extreme (-10C)		824.4130	848.5870	5.4	0.006
Extreme (-20C)		824.4130	848.5870	3.6	0.004
Extreme (-30C)		824.4130	848.5870	4.8	0.006
20C	15%	824.4130	848.5870	4.3	0.005
	-15%	824.4130	848.5870	3.8	0.004
	End Point	824.4130	848.5870	5.0	0.006

8.4.6. LTE BAND 12

ID:	39004	Date:	8/21/18
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Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	699.4200	715.5870		
Extreme (50C)		699.4200	715.5870	2.0	0.00
Extreme (40C)		699.4200	715.5870	-1.6	0.00
Extreme (30C)		699.4200	715.5870	-2.0	0.00
Extreme (10C)		699.4200	715.5870	-2.4	0.00
Extreme (0C)		699.4200	715.5870	1.7	0.00
Extreme (-10C)		699.4200	715.5870	3.6	0.01
Extreme (-20C)		699.4200	715.5870	3.6	0.01
Extreme (-30C)		699.4200	715.5870	3.0	0.00
20C	15%	699.4200	715.5870	3.3	0.00
	-15%	699.4200	715.5870	3.2	0.00
	End Point	699.4200	715.5870	-1.6	0.00

8.4.7. LTE BAND 14

ID:	39004	Date:	8/23/18
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Limit		788	798	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	788.1417	797.8500		
Extreme (50C)		788.1417	797.8500	3.8	0.005
Extreme (40C)		788.1417	797.8500	3.3	0.004
Extreme (30C)		788.1417	797.8500	3.5	0.004
Extreme (10C)		788.1417	797.8500	3.3	0.004
Extreme (0C)		788.1417	797.8500	3.0	0.004
Extreme (-10C)		788.1417	797.8500	4.2	0.005
Extreme (-20C)		788.1417	797.8500	4.0	0.005
Extreme (-30C)		788.1417	797.8500	4.2	0.005
20C	15%	788.1417	797.8500	4.6	0.006
	-15%	788.1417	797.8500	4.4	0.005
	End Point	788.1417	797.8500	3.6	0.004

8.4.8. LTE BAND 66

ID:	39004	Date:	8/22/18
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Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1710.8270	1779.1670		
Extreme (50C)		1710.8270	1779.1670	4.3	0.002
Extreme (40C)		1710.8270	1779.1670	5.1	0.003
Extreme (30C)		1710.8270	1779.1670	5.1	0.003
Extreme (10C)		1710.8270	1779.1670	4.3	0.002
Extreme (0C)		1710.8270	1779.1670	4.9	0.003
Extreme (-10C)		1710.8270	1779.1670	4.7	0.003
Extreme (-20C)		1710.8270	1779.1670	5.4	0.003
Extreme (-30C)		1710.8270	1779.1670	5.1	0.003
20C	15%	1710.8270	1779.1670	5.4	0.003
	-15%	1710.8270	1779.1670	6.3	0.004
	End Point	1710.8270	1779.1670	5.3	0.003

8.5. PEAK TO AVERAGE RATIO

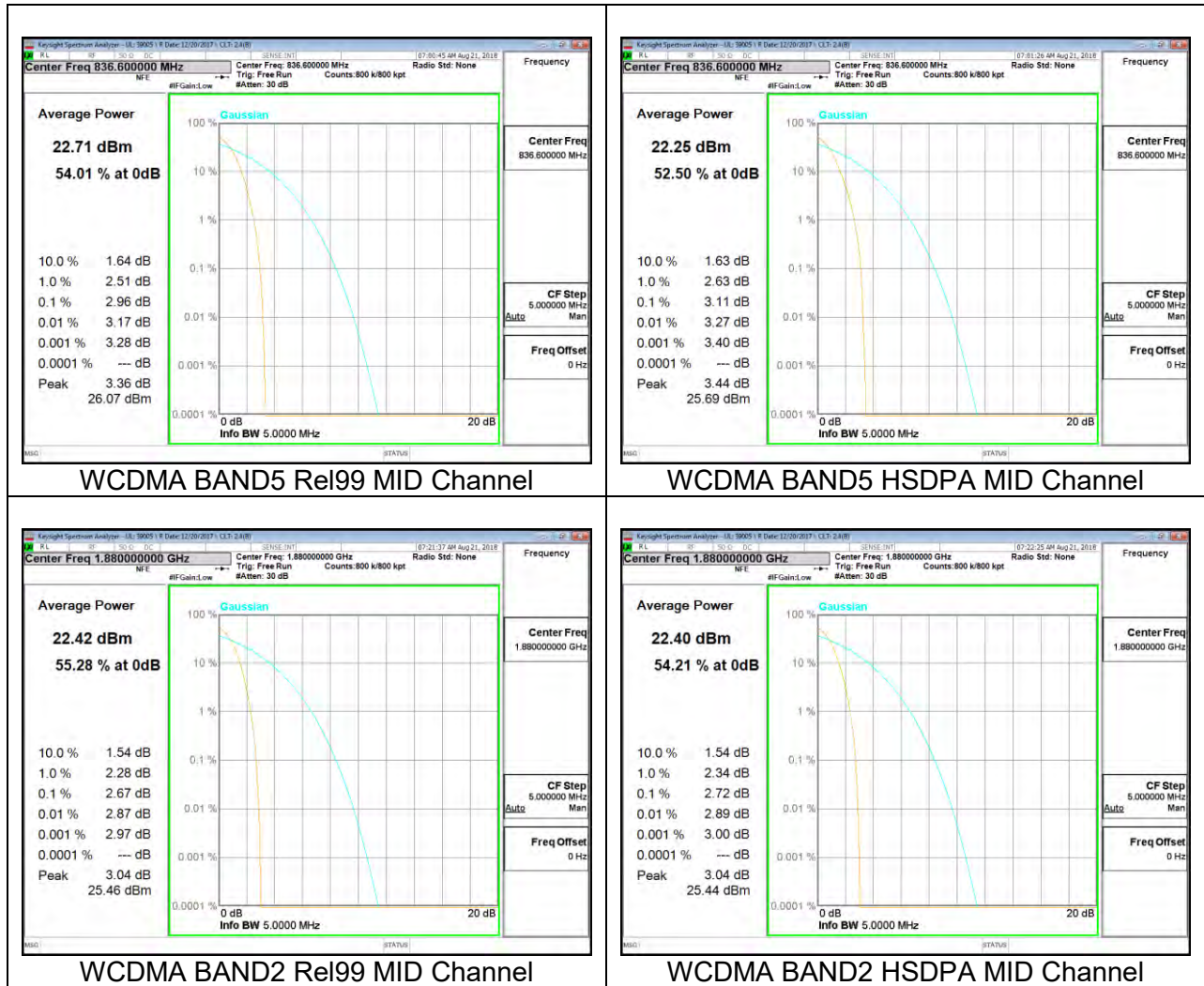
LIMIT

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

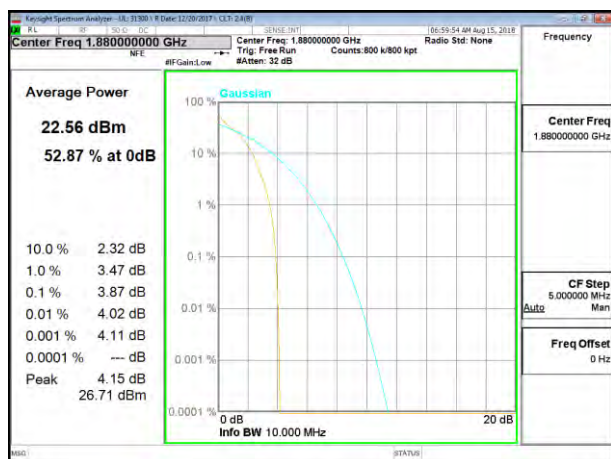
RESULT

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.

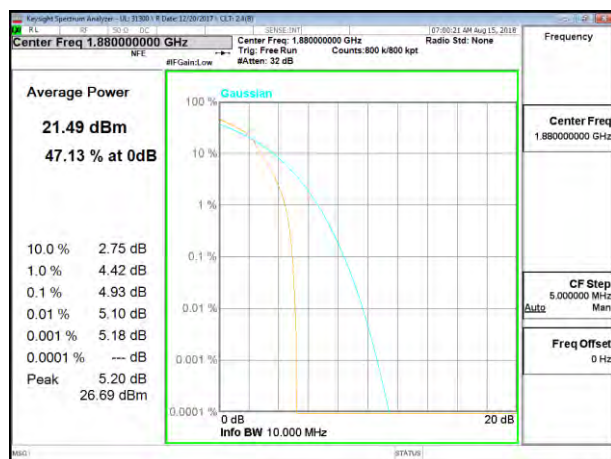
8.5.1. WCDMA



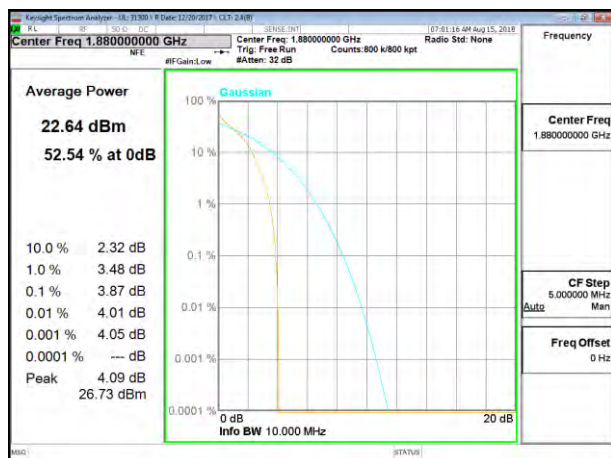
8.5.2. LTE BAND 2



LTE B2 1.4MHz QPSK Mid Channel



LTE B2 1.4MHz 16QAM Mid Channel



LTE B2 3MHz QPSK Mid Channel



LTE B2 3MHz 16QAM Mid Channel



LTE B2 5MHz QPSK Mid Channel



LTE B2 5MHz 16QAM Mid Channel



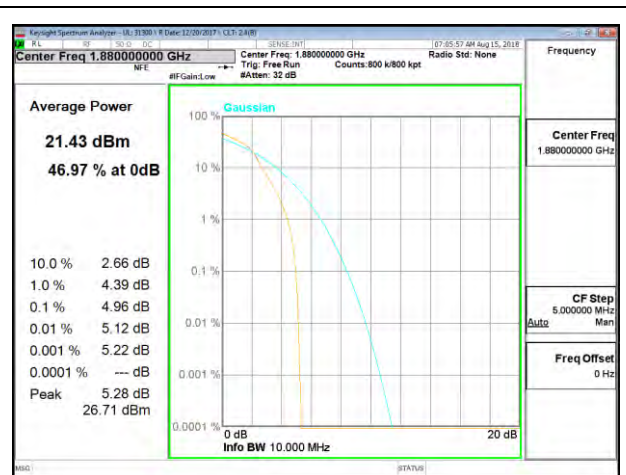
LTE B2 10MHz QPSK Mid Channel



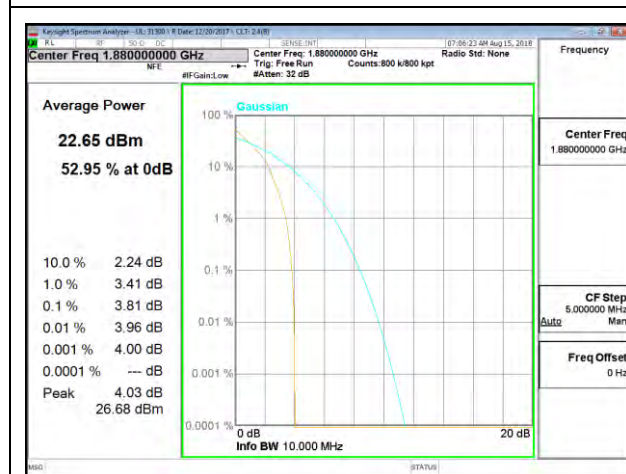
LTE B2 10MHz 16QAM Mid Channel



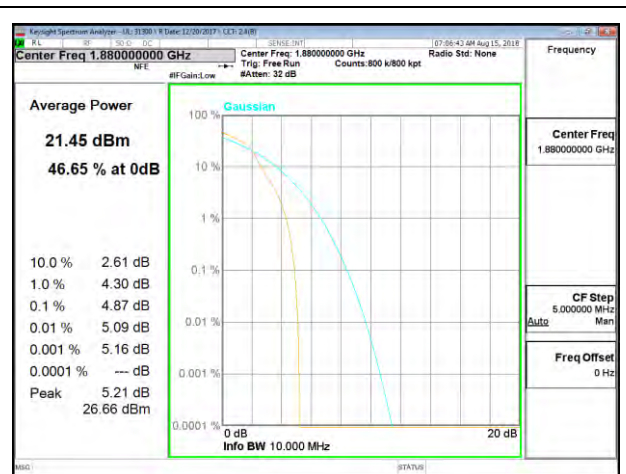
LTE B2 15MHz QPSK Mid Channel



LTE B2 15MHz 16QAM Mid Channel

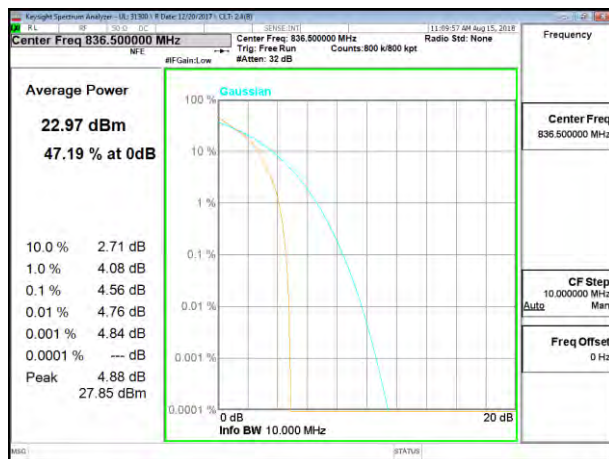


LTE B2 20MHz QPSK Mid Channel

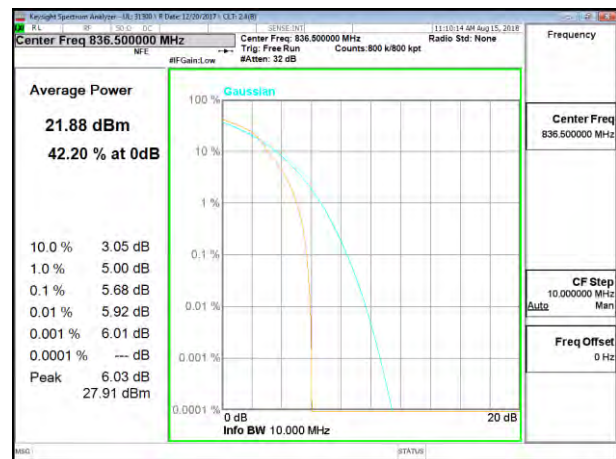


LTE B2 20MHz 16QAM Mid Channel

8.5.3. LTE BAND 5



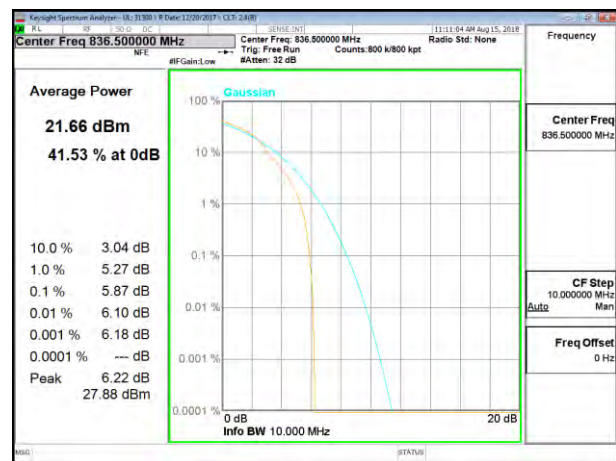
LTE B5 1.4MHz QPSK Mid Channel



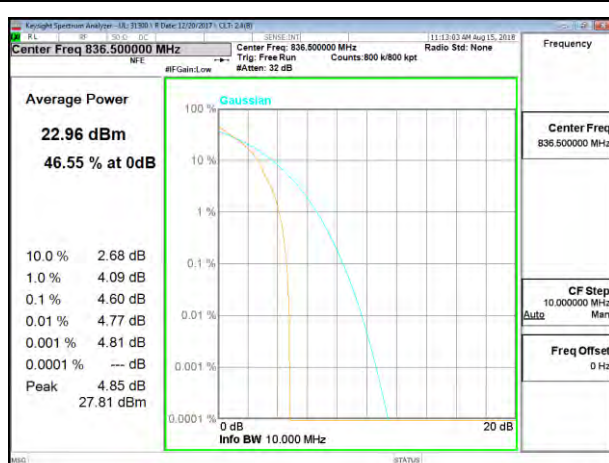
LTE B5 1.4MHz 16QAM Mid Channel



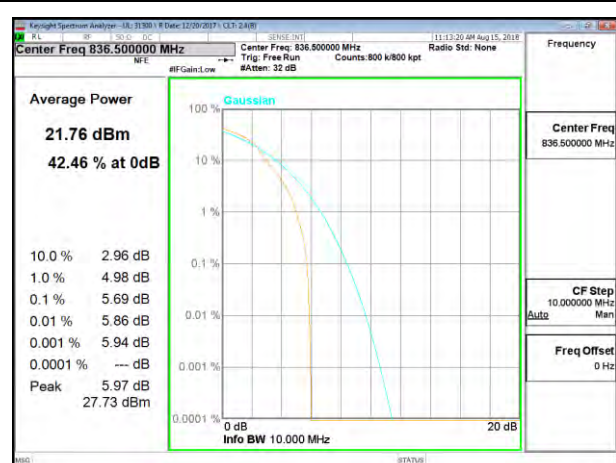
LTE B5 3MHz QPSK Mid Channel



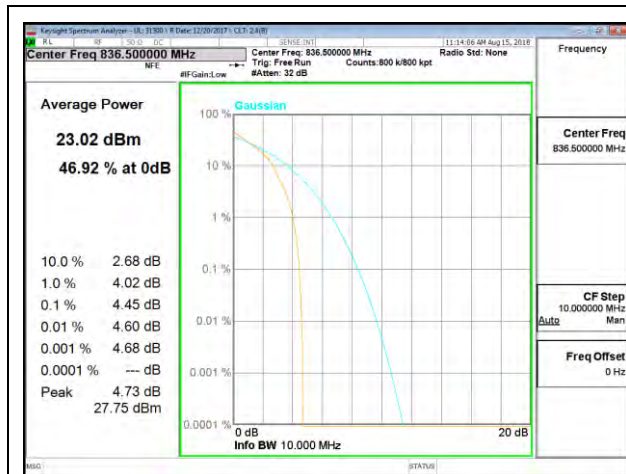
LTE B5 3MHz 16QAM Mid Channel



LTE B5 5MHz QPSK Mid Channel



LTE B5 5MHz 16QAM Mid Channel

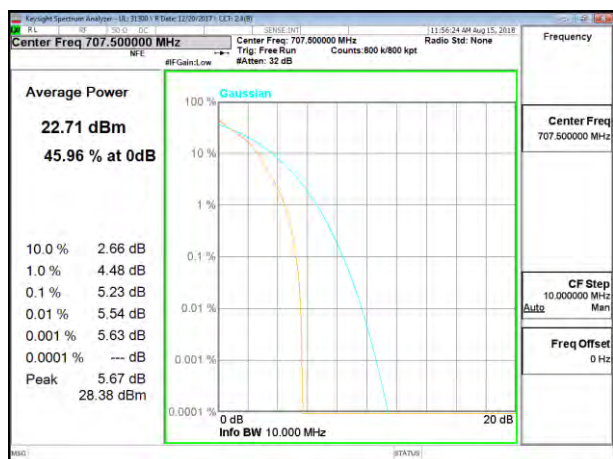


LTE B5 10MHz QPSK Mid Channel



LTE B5 10MHz 16QAM Mid Channel

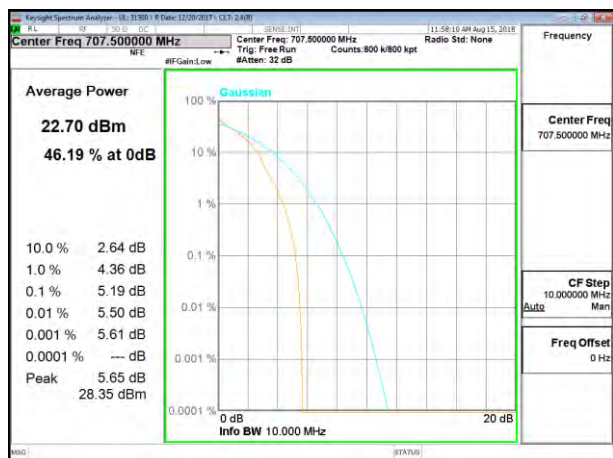
8.5.4. LTE BAND 12



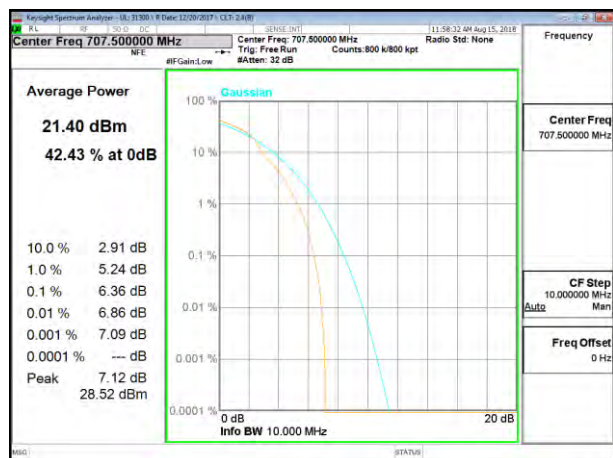
LTE B12 1.4MHz QPSK Mid Channel



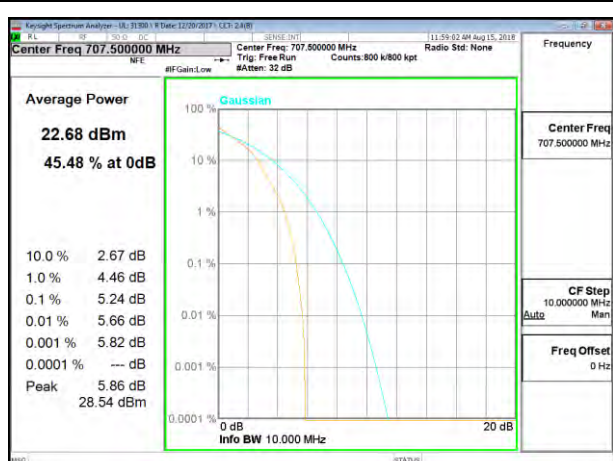
LTE B12 1.4MHz 16QAM Mid Channel



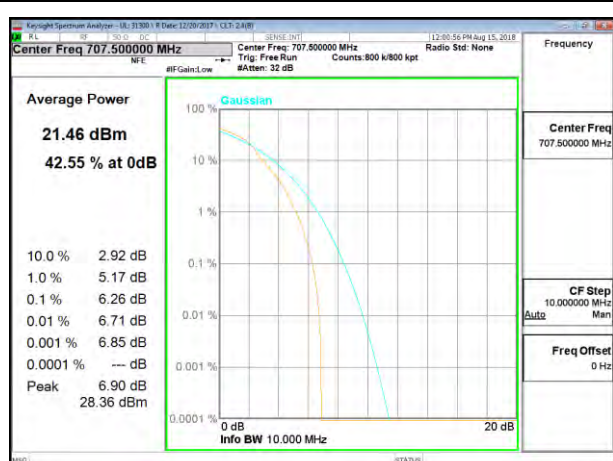
LTE B12 3MHz QPSK Mid Channel



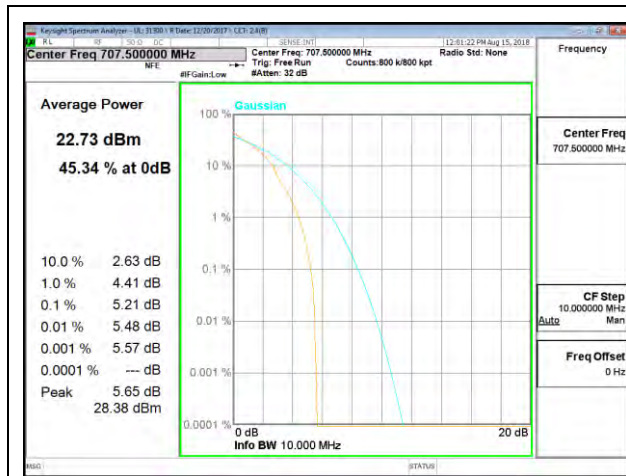
LTE B12 3MHz 16QAM Mid Channel



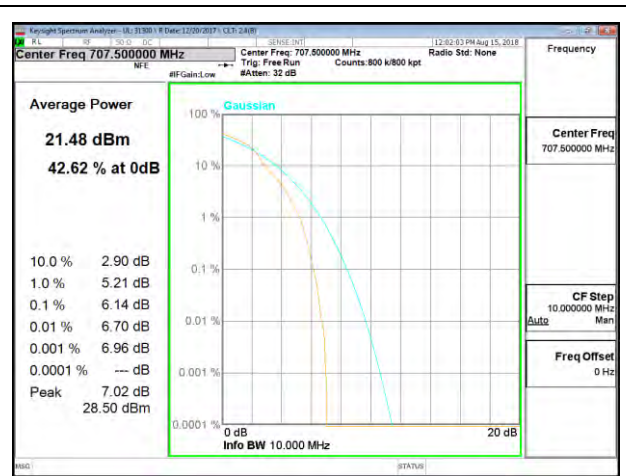
LTE B12 5MHz QPSK Mid Channel



LTE B12 5MHz 16QAM Mid Channel

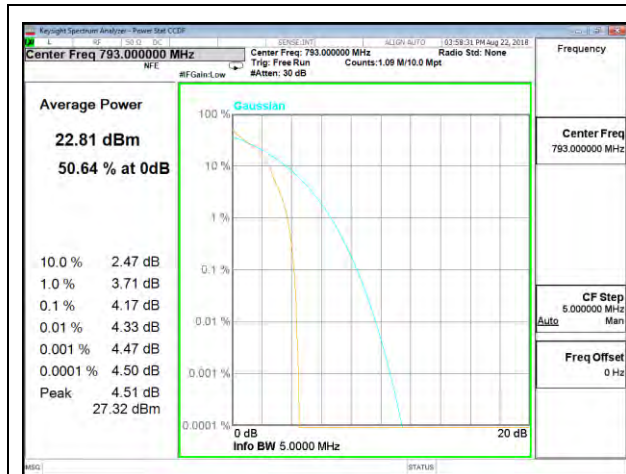


LTE B12 10MHz QPSK Mid Channel

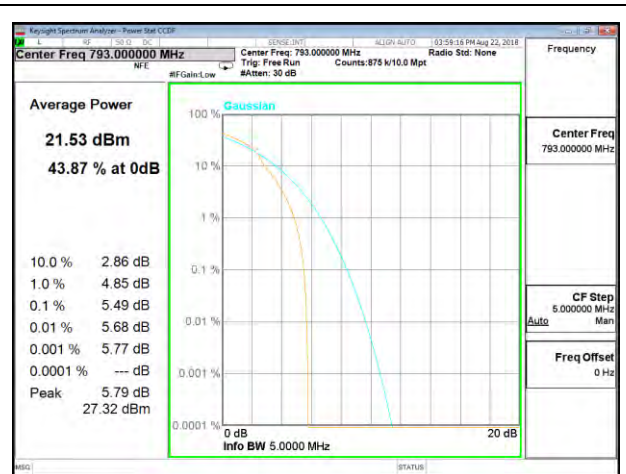


LTE B12 10MHz 16QAM Mid Channel

8.5.5. LTE BAND 14



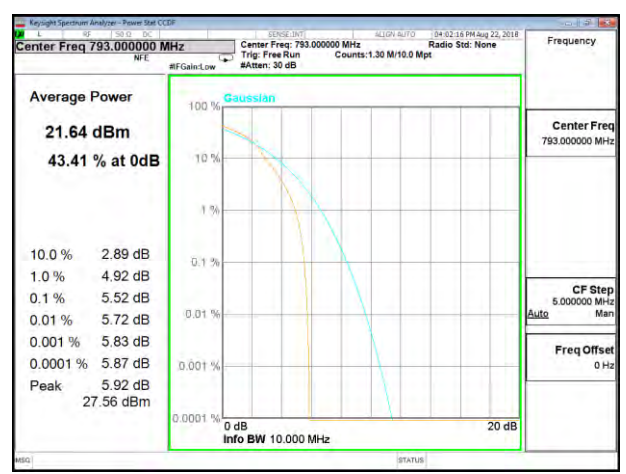
LTE B14 5MHz QPSK Mid Channel



LTE B14 5MHz 16QAM Mid Channel

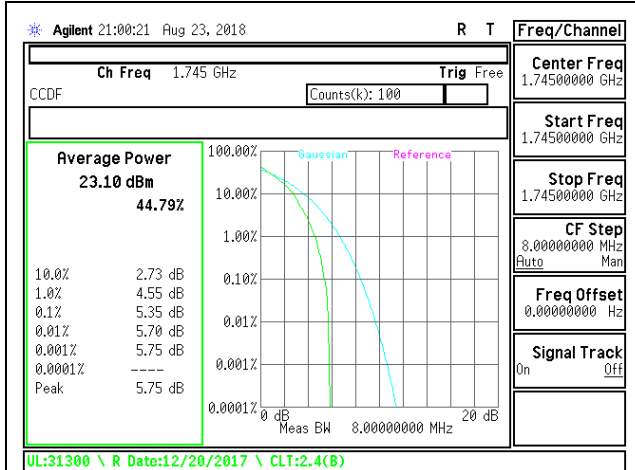


LTE B14 10MHz QPSK Mid Channel

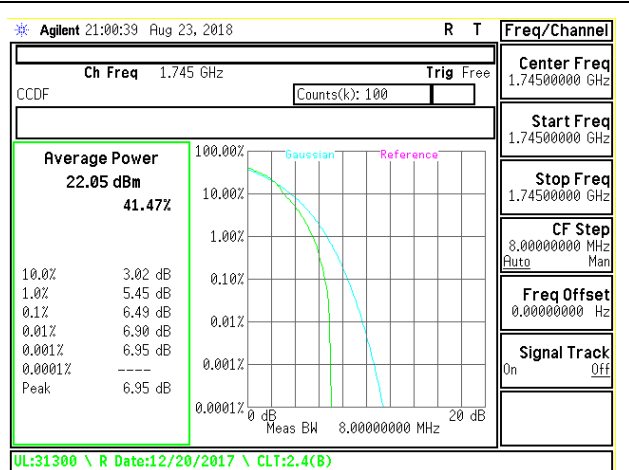


LTE B14 10MHz 16QAM Mid Channel

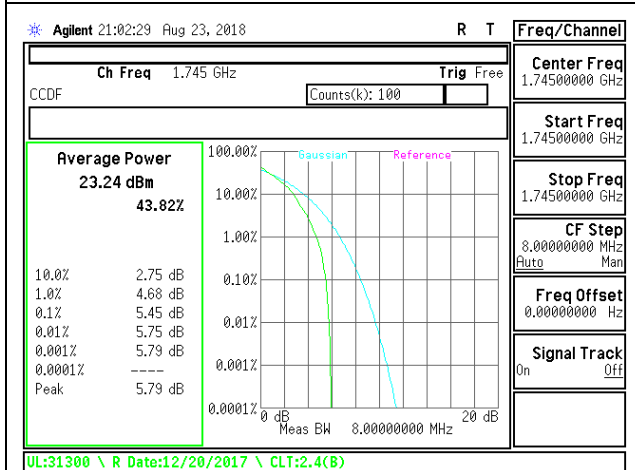
8.5.6. LTE BAND 66



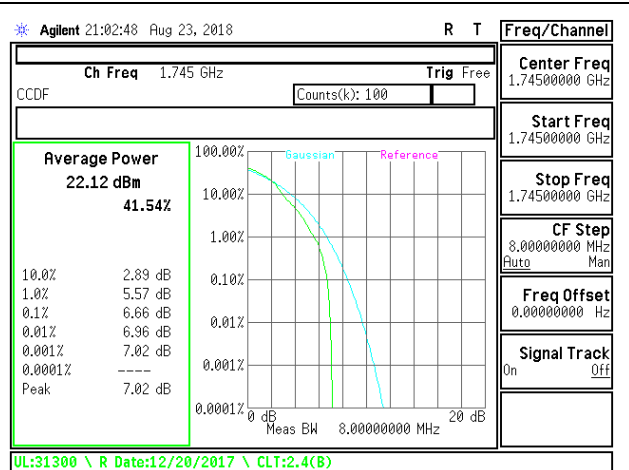
LTE B66 1.4MHz QPSK Mid Channel



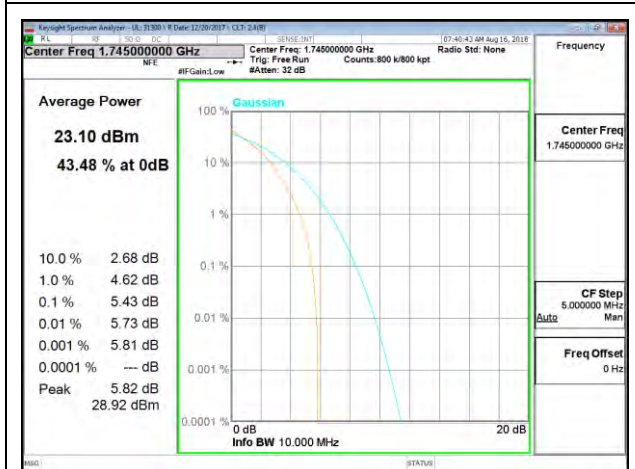
LTE B66 1.4MHz 16QAM Mid Channel



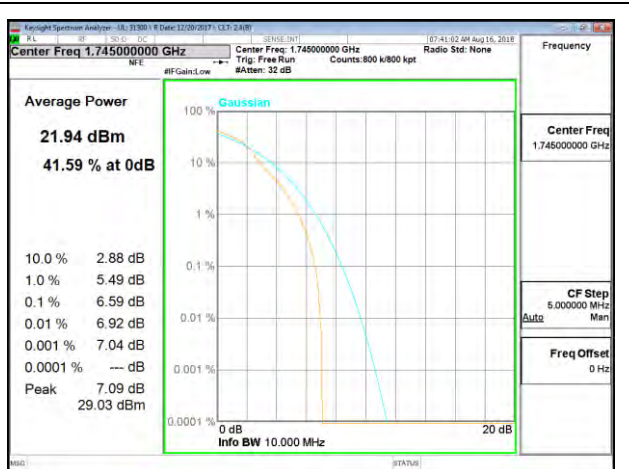
LTE B66 3MHz QPSK Mid Channel



LTE B66 3MHz 16QAM Mid Channel



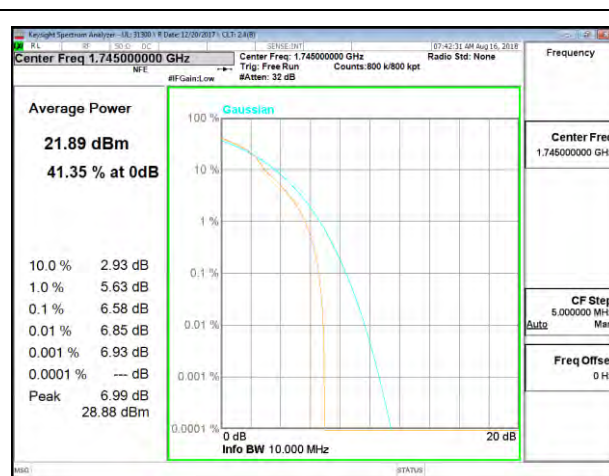
LTE B66 5MHz QPSK Mid Channel



LTE B66 5MHz 16QAM Mid Channel



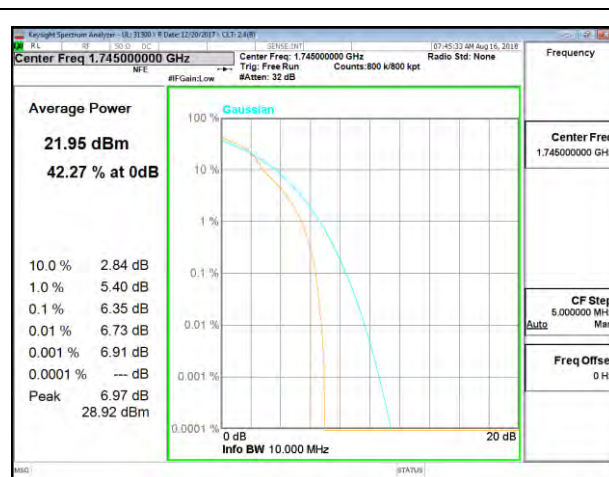
LTE B66 10MHz QPSK Mid Channel



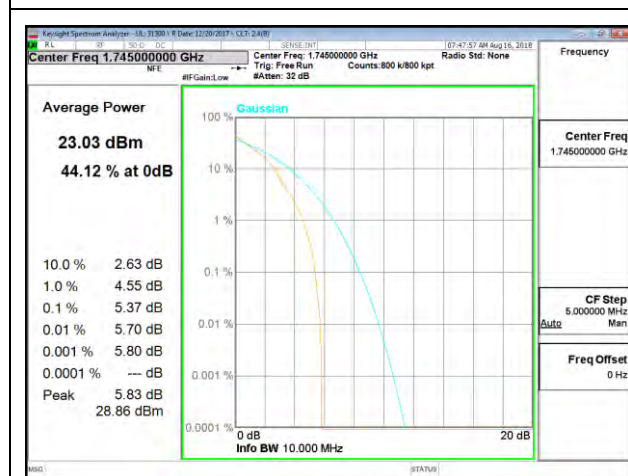
LTE B66 10MHz 16QAM Mid Channel



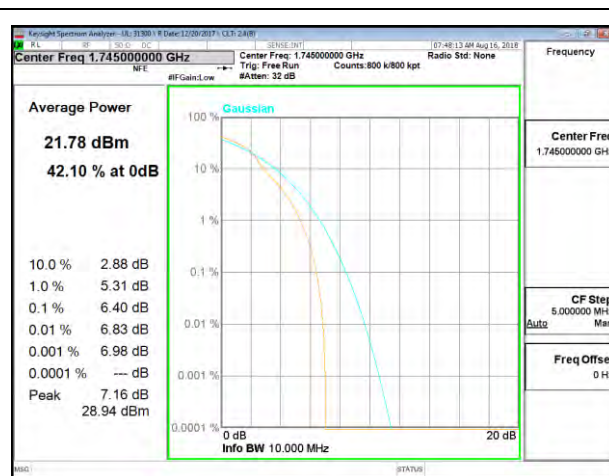
LTE B66 15MHz QPSK Mid Channel



LTE B66 15MHz 16QAM Mid Channel



LTE B66 20MHz QPSK Mid Channel



LTE B66 20MHz 16QAM Mid Channel

9. RADIATED TEST RESULTS

9.1. EFFECTIVE RADIATED POWER ERP/EIRP

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53 and §90.541

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50(c) - (10) Portable stations (hand-held devices) are limited to 3 watts ERP; (LTE B12)

27.50(d) - (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.(Band 66)

90.541(d) -The transmitting power of a portable (hand-held) unit must not exceed 3 watts ERP.(band 14)

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17; PSA setting reference to 971168 D01 v02r02

For peak power measurement with a PSA:

a) Set the RBW \geq OBW; b) Set VBW $\geq 3 \times$ RBW; c) Set span $\geq 2 \times$ RBW; d) Sweep time = auto couple; e) Detector = peak; f) Ensure that the number of measurement points \geq span/RBW; g) Trace mode = max hold;

For average power measurement with a PSA:

a) Set span to at least 1.5 times the OBW; b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz; c) Set VBW $\geq 3 \times$ RBW; d) Set number of points in sweep $\geq 2 \times$ span / RBW; e) Sweep time = auto-couple; f) Detector = RMS (power averaging); g) Use free run trigger If burst duty cycle ≥ 98 ; h) Use trigger to capture bursts If burst duty cycle < 98 ; i) Trace average at least 100 traces in power averaging (i.e., RMS) mode. j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

MODES TESTED

- WCDMA Band 5
- WCDMA Band 2
- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 12
- LTE Band 14

LTE Band 66Note: Measured ERP/EIRP test results are for reference only. Please refer to Section 5.2 for the final ERP/EIRP results.

Note: This testing was performed to confirm that the measured radiated powers were consistent with the calculated ERP/EIRP test data given device-to-device variations in output power and the measurement uncertainties associated with the radiated tests. Measured ERP/EIRP test results are for reference only. Please refer to Section 5.2 for the final ERP/EIRP results.

TEST RESULTS

WCDMA

Band	Mode	Channel	f(MHz)	ERP/EIRP	
				dBm	mW
Band 2	REL99	9262	1852.4	26.65	462.38
		9400	1880	25.98	396.28
		9538	1907.6	25.65	367.28
	HSDPA	9262	1852.4	26.63	460.26
		9400	1880.0	26.15	412.10
		9538	1907.6	25.63	365.59
Band 5	REL99	4132	826.4	22.03	159.59
		4183	836.6	21.91	155.24
		4233	846.6	21.87	153.82
	HSDPA	4132	826.4	22.02	159.22
		4183	836.6	21.93	155.96
		4233	846.6	21.83	152.41

LTE Band 2

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
20	QPSK	1/0	1860	26.79	477.53
		1/0	1880	27.38	547.02
		1/0	1900	24.69	294.44
	16QAM	1/0	1860	25.72	373.25
		1/0	1880	26.35	431.52
		1/0	1900	23.68	233.35
15	16QAM	1/0	1857.5	25.82	381.94
		1/0	1880	26.21	417.83
		1/0	1902.5	23.96	248.89
1.4	QPSK	1/0	1850.7	26.83	481.95
		1/0	1880	27.23	528.45
		1/0	1909.3	24.96	313.33

LTE Band 5

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
10	QPSK	1/0	829	22.27	168.66
		1/0	836.5	21.94	156.31
		1/0	844	22.34	171.40
	16QAM	1/0	829	21.14	130.02
		1/0	836.5	20.89	122.74
		1/0	844	21.33	135.83
1.4	QPSK	1/0	824.7	22.28	169.04
		1/0	836.5	22.25	167.88
		1/0	848.30	22.25	167.88
3	16QAM	1/0	825.5	21.23	132.74
		1/0	836.5	20.93	123.88
		1/0	847.5	21.36	136.77

LTE Band 12

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
10	QPSK	1/0	704	20.79	119.95
		1/0	707.5	20.72	118.03
		1/0	711	21.05	127.35
	16QAM	1/0	704	19.83	96.16
		1/0	707.5	19.80	95.50
		1/0	711	20.06	101.39
3	QPSK	1/0	700.5	20.97	125.03
		1/0	707.5	20.87	122.18
		1/0	714.5	21.04	127.06
	16QAM	1/0	700.5	19.86	96.83
		1/0	707.5	19.76	94.62
		1/0	714.5	20.15	103.51

LTE Band 14

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
10	QPSK	1/0	793	22.84	192.31
	16QAM	1/0	793	21.76	149.97
5	QPSK	1/0	790.5	22.79	190.11
		1/0	793	22.74	187.93
		1/0	795.5	22.84	192.31
	16QAM	1/0	790.5	21.86	153.46
		1/0	793	21.73	148.94
		1/0	795.5	21.95	156.68

LTE Band 66

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
20	QPSK	1/0	1720	26.36	432.51
		1/0	1745	26.52	448.75
		1/0	1770	26.94	494.31
	16QAM	1/0	1720	25.55	358.92
		1/0	1745	25.76	376.70
		1/0	1770	26.00	398.11
10	QPSK	1/0	1717.5	26.39	435.51
		1/0	1745	26.51	447.71
		1/0	1772.5	27.51	563.64
1.4	16QAM	1/0	1710.7	25.42	348.34
		1/0	1745	25.48	353.18
		1/0	1779.3	26.51	447.71

9.1.1. WCDMA

B2 REL99									B2 HSDPA								
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/7/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: Rel99 Band 2 Fundamentals Test Equipment: Receiving: Horn T346, and Chamber C SMA Cables Substitution: Horn T60,									UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/7/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: HSDPA Band 2 Fundamentals Test Equipment: Receiving: Horn T346, and Chamber C SMA Cables Substitution: Horn T60,								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch									Low Ch								
1852.40	9.23	V	2.1	9.3	16.41	33.0	-16.6		1852.40	8.97	V	2.1	9.3	16.16	33.0	-16.8	
1852.40	19.46	H	2.1	9.3	26.65	33.0	-6.4		1852.40	19.44	H	2.1	9.3	26.63	33.0	-6.4	
Mid Ch									Mid Ch								
1880.00	9.56	V	2.1	9.1	16.52	33.0	-16.5		1880.00	9.52	V	2.1	9.1	16.48	33.0	-16.5	
1880.00	19.02	H	2.1	9.1	25.98	33.0	-7.0		1880.00	19.19	H	2.1	9.1	26.15	33.0	-6.9	
High Ch									High Ch								
1907.60	10.63	V	2.1	8.9	17.39	33.0	-15.6		1907.60	10.70	V	2.1	8.9	17.46	33.0	-15.5	
1907.60	18.89	H	2.1	8.9	25.65	33.0	-7.3		1907.60	18.87	H	2.1	8.9	25.63	33.0	-7.4	
B5 REL99									B5 HSDPA								
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: Rel99 Band 5 Fundamentals Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,									UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: HSDPA Band 5 Fundamentals Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch									Low Ch								
826.40	16.52	V	1.3	0.0	15.26	38.5	-23.2		826.40	16.47	V	1.3	0.0	15.21	38.5	-23.3	
826.40	23.29	H	1.3	0.0	22.03	38.5	-16.5		826.40	23.28	H	1.3	0.0	22.02	38.5	-16.5	
Mid Ch									Mid Ch								
836.60	16.71	V	1.3	0.0	15.45	38.5	-23.1		836.60	16.70	V	1.3	0.0	15.44	38.5	-23.1	
836.60	23.17	H	1.3	0.0	21.91	38.5	-16.6		836.60	23.19	H	1.3	0.0	21.93	38.5	-16.6	
High Ch									High Ch								
846.80	17.00	V	1.3	0.0	15.74	38.5	-22.8		846.80	17.00	V	1.3	0.0	15.74	38.5	-22.8	
846.80	23.13	H	1.3	0.0	21.87	38.5	-16.6		846.80	23.09	H	1.3	0.0	21.83	38.5	-16.7	

9.1.2. LTE Band 2

20MHz QPSK										20MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/7/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth Test Equipment: Receiving: Horn T346, and Chamber C SMA Cables Substitution: Horn T60,										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/7/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth Test Equipment: Receiving: Horn T346, and Chamber C SMA Cables Substitution: Horn T60,										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
Low Ch										Low Ch										
1860.00	11.72	V	2.1	9.2	18.85	33.0	-14.2			1860.00	10.48	V	2.1	9.2	17.61	33.0	-15.4			
1860.00	19.67	H	2.1	9.2	26.79	33.0	-6.2			1860.00	18.60	H	2.1	9.2	25.72	33.0	-7.3			
Mid Ch										Mid Ch										
1880.00	12.30	V	2.1	9.1	19.26	33.0	-13.7			1880.00	11.26	V	2.1	9.1	18.22	33.0	-14.8			
1880.00	20.42	H	2.1	9.1	27.38	33.0	-5.6			1880.00	19.39	H	2.1	9.1	26.35	33.0	-6.7			
High Ch										High Ch										
1900.00	13.02	V	2.1	8.9	19.82	33.0	-13.2			1900.00	12.06	V	2.1	8.9	18.86	33.0	-14.1			
1900.00	17.89	H	2.1	8.9	24.69	33.0	-8.3			1900.00	16.88	H	2.1	8.9	23.68	33.0	-9.3			
1.4MHz QPSK										15MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/7/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Horn T346, and Chamber C SMA Cables Substitution: Horn T60,										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/7/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_16QAM Band 2 Fundamentals, 15MHz Bandwidth Test Equipment: Receiving: Horn T346, and Chamber C SMA Cables Substitution: Horn T60,										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
Low Ch										Low Ch										
1850.70	16.53	V	2.1	9.3	17.73	33.0	-15.3			1857.50	11.47	V	2.1	9.2	18.62	33.0	-14.4			
1850.70	19.83	H	2.1	9.3	26.83	33.0	-6.2			1857.50	18.68	H	2.1	9.2	25.82	33.0	-7.2			
Mid Ch										Mid Ch										
1880.00	11.23	V	2.1	9.1	18.19	33.0	-14.8			1880.00	12.31	V	2.1	9.1	19.27	33.0	-13.7			
1880.00	20.27	H	2.1	9.1	27.23	33.0	-5.8			1880.00	19.25	H	2.1	9.1	26.21	33.0	-6.8			
High Ch										High Ch										
1909.30	11.96	V	2.1	8.8	18.71	33.0	-14.3			1902.50	13.01	V	2.1	8.9	19.80	33.0	-13.2			
1909.30	18.21	H	2.1	8.8	24.96	33.0	-8.0			1902.50	17.17	H	2.1	8.9	23.96	33.0	-9.0			

9.1.3. LTE Band 5

10MHz QPSK										10MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_16QAM Band 5 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
Low Ch										Low Ch										
829.00	16.20	V	1.3	0.0	16.94	38.5	-21.6			829.00	17.29	V	1.3	0.0	16.03	38.5	-22.5			
829.00	23.53	H	1.3	0.0	22.27	38.5	-16.2			829.00	22.40	H	1.3	0.0	21.14	38.5	-17.4			
Mid Ch										Mid Ch										
836.50	16.45	V	1.3	0.0	17.19	38.5	-21.3			836.50	17.66	V	1.3	0.0	16.40	38.5	-22.1			
836.50	23.20	H	1.3	0.0	21.94	38.5	-16.6			836.50	22.15	H	1.3	0.0	20.89	38.5	-17.6			
High Ch										High Ch										
844.00	18.56	V	1.3	0.0	17.30	38.5	-21.2			844.00	17.40	V	1.3	0.0	16.14	38.5	-22.4			
844.00	23.60	H	1.3	0.0	22.34	38.5	-16.2			844.00	22.59	H	1.3	0.0	21.33	38.5	-17.2			
1.4MHz QPSK										3MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
Low Ch										Low Ch										
824.70	18.41	V	1.3	0.0	17.15	38.5	-21.4			825.50	17.41	V	1.3	0.0	16.15	38.5	-22.4			
824.70	23.54	H	1.3	0.0	22.28	38.5	-16.2			825.50	22.49	H	1.3	0.0	21.23	38.5	-17.3			
Mid Ch										Mid Ch										
836.50	16.45	V	1.3	0.0	17.19	38.5	-21.3			836.50	17.66	V	1.3	0.0	16.40	38.5	-22.1			
836.50	23.51	H	1.3	0.0	22.25	38.5	-16.3			836.50	22.19	H	1.3	0.0	20.93	38.5	-17.6			
High Ch										High Ch										
848.30	18.56	V	1.3	0.0	17.30	38.5	-21.2			847.50	17.40	V	1.3	0.0	16.14	38.5	-22.4			
848.30	23.51	H	1.3	0.0	22.25	38.5	-16.3			847.50	22.62	H	1.3	0.0	21.36	38.5	-17.1			

9.1.4. LTE Band 12

10MHz QPSK										10MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
Low Ch										Low Ch										
704.00	17.65	V	1.2	0.0	16.50	34.8	-18.3			704.00	16.62	V	1.2	0.0	15.47	34.8	-19.3			
704.00	21.94	H	1.2	0.0	20.79	34.8	-14.0			704.00	20.98	H	1.2	0.0	19.83	34.8	-15.0			
Mid Ch										Mid Ch										
707.50	16.84	V	1.2	0.0	15.69	34.8	-19.1			707.50	15.88	V	1.2	0.0	14.73	34.8	-20.1			
707.50	21.87	H	1.2	0.0	20.72	34.8	-14.1			707.50	20.95	H	1.2	0.0	19.80	34.8	-15.0			
High Ch										High Ch										
711.00	17.67	V	1.2	0.0	16.52	34.8	-18.3			711.00	16.73	V	1.2	0.0	15.58	34.8	-19.2			
711.00	22.20	H	1.2	0.0	21.05	34.8	-13.8			711.00	21.21	H	1.2	0.0	20.06	34.8	-14.7			
3MHz QPSK										3MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
Low Ch										Low Ch										
700.50	16.94	V	1.2	0.0	15.79	34.8	-19.0			700.50	16.50	V	1.2	0.0	15.44	34.8	-19.4			
700.50	22.12	H	1.2	0.0	20.97	34.8	-13.8			700.50	21.01	H	1.2	0.0	19.86	34.8	-14.9			
Mid Ch										Mid Ch										
707.50	16.88	V	1.2	0.0	15.73	34.8	-19.1			707.50	15.88	V	1.2	0.0	14.73	34.8	-20.1			
707.50	22.02	H	1.2	0.0	20.87	34.8	-13.9			707.50	20.91	H	1.2	0.0	19.76	34.8	-15.0			
High Ch										High Ch										
714.50	17.00	V	1.2	0.0	15.85	34.8	-19.0			714.50	16.73	V	1.2	0.0	15.58	34.8	-19.2			
714.50	22.19	H	1.2	0.0	21.04	34.8	-13.8			714.50	21.30	H	1.2	0.0	20.15	34.8	-14.7			

9.1.5. LTE Band 14

10MHz QPSK										10MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_QPSK Band 14 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_16QAM Band 14 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
Low Ch										Low Ch										
793.00	0.00	V	1.2	0.0	0.00	34.8	0.0			793.00	0.00	V	1.2	0.0	0.00	34.8	0.0			
793.00	0.00	H	1.2	0.0	0.00	34.8	0.0			793.00	0.00	H	1.2	0.0	0.00	34.8	0.0			
Mid Ch										Mid Ch										
793.00	16.28	V	1.2	0.0	15.05	34.8	-19.8			793.00	15.35	V	1.2	0.0	14.12	34.8	-20.7			
793.00	24.07	H	1.2	0.0	22.84	34.8	-12.0			793.00	22.99	H	1.2	0.0	21.76	34.8	-13.0			
High Ch										High Ch										
793.00	0.00	V	1.2	0.0	0.00	34.8	0.0			793.00	0.00	V	1.2	0.0	0.00	34.8	0.0			
793.00	0.00	H	1.2	0.0	0.00	34.8	0.0			793.00	0.00	H	1.2	0.0	0.00	34.8	0.0			
5MHz QPSK										5MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_QPSK Band 14 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/6/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_16QAM Band 14 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Hybrid T900, and Chamber C SMA Cables Substitution: Dipole T416,										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
Low Ch										Low Ch										
790.50	16.55	V	1.2	0.0	15.32	34.8	-19.5			790.50	15.01	V	1.2	0.0	13.78	34.8	-21.0			
790.50	24.02	H	1.2	0.0	22.79	34.8	-12.0			790.50	23.09	H	1.2	0.0	21.86	34.8	-12.9			
Mid Ch										Mid Ch										
793.00	16.28	V	1.2	0.0	15.05	34.8	-19.8			793.00	15.28	V	1.2	0.0	14.05	34.8	-20.8			
793.00	23.97	H	1.2	0.0	22.74	34.8	-12.1			793.00	22.96	H	1.2	0.0	21.73	34.8	-13.1			
High Ch										High Ch										
795.50	16.65	V	1.2	0.0	15.42	34.8	-18.4			795.50	15.47	V	1.2	0.0	14.24	34.8	-20.6			
795.50	24.07	H	1.2	0.0	22.84	34.8	-12.0			795.50	23.16	H	1.2	0.0	21.95	34.8	-12.9			

9.1.6. LTE Band 66

20MHz QPSK										20MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/10/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_QPSK Band 66 Fundamentals, 20MHz Bandwidth Test Equipment: Receiving: Horn T346, and Chamber C SMA Cables Substitution: Horn T60,										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/10/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_16QAM Band 66 Fundamentals, 20MHz Bandwidth Test Equipment: Receiving: Horn T346, and Chamber C SMA Cables Substitution: Horn T60,										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
Low Ch										Low Ch										
1720.00	17.01	V	2.1	8.5	23.49	30.0	-6.5			1720.00	16.01	V	2.1	8.5	22.49	30.0	-7.5			
1720.00	19.87	H	2.1	8.5	26.36	30.0	-3.6			1720.00	19.06	H	2.1	8.5	25.55	30.0	-4.4			
Mid Ch										Mid Ch										
1745.00	16.95	V	2.1	8.9	23.80	30.0	-6.2			1745.00	15.93	V	2.1	8.9	22.78	30.0	-7.2			
1745.00	19.67	H	2.1	8.9	26.52	30.0	-3.5			1745.00	18.91	H	2.1	8.9	25.76	30.0	-4.2			
High Ch										High Ch										
1770.00	16.55	V	2.1	9.3	23.77	30.0	-6.2			1770.00	15.47	V	2.1	9.3	22.69	30.0	-7.3			
1770.00	19.72	H	2.1	9.3	26.94	30.0	-3.1			1770.00	18.78	H	2.1	9.3	26.00	30.0	-4.0			
10MHz QPSK										1.4MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/10/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_QPSK Band 66 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Horn T346, and Chamber C SMA Cables Substitution: Horn T60,										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12530276 Date: 12/10/2018 Test Engineer: 39005 Configuration: EUT Location: Chamber C Mode: LTE_16QAM Band 66 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Horn T346, and Chamber C SMA Cables Substitution: Horn T60,										
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes		
Low Ch										Low Ch										
1715.00	16.97	V	2.1	8.5	23.38	30.0	-6.6			1710.70	15.80	V	2.1	8.4	22.15	30.0	-7.9			
1715.00	19.97	H	2.1	8.5	26.39	30.0	-3.6			1710.70	19.06	H	2.1	8.4	25.42	30.0	-4.6			
Mid Ch										Mid Ch										
1745.00	16.55	V	2.1	8.9	23.80	30.0	-6.2			1745.00	15.85	V	2.1	8.9	22.70	30.0	-7.3			
1745.00	19.66	H	2.1	8.9	26.51	30.0	-3.5			1745.00	18.63	H	2.1	8.9	25.48	30.0	-4.5			
High Ch										High Ch										
1775.00	16.57	V	2.1	9.3	23.85	30.0	-6.1			1779.30	15.42	V	2.1	9.4	22.77	30.0	-7.2			
1775.00	20.22	H	2.1	9.3	27.51	30.0	-2.5			1779.30	19.16	H	2.1	9.4	26.51	30.0	-3.5			

9.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

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

LIMIT

FCC: §22.917(a), §24.238(a), §27.53 (g), (h)

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.

§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.

TEST PROCEDURE

KDB 971168 D01 v02r02/D02 v01
TIA-603-E, Section 2.2.12.

MODES TESTED

- WCDMA Band 5
- WCDMA Band 2
- LTE Band 2
- LTE Band 5
- LTE Band 12
- LTE Band 14
- LTE Band 66

NOTE: All bandwidths were tested but only highest bandwidth recorded on the report as worst case.

RESULTS

9.2.1. WCDMA

Company:		Samsung										
Project #:		12449904										
Date:		8/17/18										
Test Engineer:		43575										
Configuration:		EUT+ Support Equipment										
Mode:		REL99 B5										
Chamber #:		Chamber L										
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity	
Low Channel												
1.655	-60.59	Pk	28.7	-34.3	10.3	-55.89	-13	-42.89	0-360	150	H	
2.482	-63.07	Pk	32.3	-32.7	10.4	-53.07	-13	-40.07	0-360	150	H	
3.316	-69.34	Pk	32.9	-31.5	10.9	-57.04	-13	-44.04	0-360	150	H	
1.655	-59.28	Pk	28.7	-34.3	11.1	-53.78	-13	-40.78	0-360	150	V	
2.475	-61.69	Pk	32.3	-32.7	11	-51.09	-13	-38.09	0-360	150	V	
3.304	-70.66	Pk	32.9	-31.4	11.2	-57.96	-13	-44.96	0-360	150	V	
Mid Channel												
1.671	-59.87	Pk	28.8	-34.1	10	-55.17	-13	-42.17	0-360	150	H	
2.513	-58.87	Pk	32.3	-32.7	10.2	-49.07	-13	-36.07	0-360	150	H	
3.345	-70.25	Pk	32.9	-31.5	10.6	-58.25	-13	-45.25	0-360	150	H	
1.67	-60.93	Pk	28.8	-34.1	11.2	-55.03	-13	-42.03	0-360	150	V	
2.512	-58.1	Pk	32.3	-32.7	11.4	-47.1	-13	-34.1	0-360	150	V	
3.344	-70.25	Pk	32.9	-31.5	10.8	-58.05	-13	-45.05	0-360	150	V	
High Channel												
1.691	-59.87	Pk	28.9	-34.2	11	-54.17	-13	-41.17	0-360	150	H	
2.543	-53.35	Pk	32.3	-32.7	10	-43.75	-13	-30.75	0-360	150	H	
3.381	-70.26	Pk	32.8	-31.7	11	-58.16	-13	-45.16	0-360	150	H	
1.691	-61.95	Pk	28.9	-34.2	11.9	-55.35	-13	-42.35	0-360	150	V	
2.536	-54.72	Pk	32.3	-32.7	10.6	-44.52	-13	-31.52	0-360	150	V	
3.391	-70.49	Pk	32.8	-31.7	11.1	-58.29	-13	-45.29	0-360	150	V	

Company:		Samsung										
Project #:		12449904										
Date:		8/17/18										
Test Engineer:		43575										
Configuration:		EUT+ Support Equipment										
Mode:		HSDPA B5										
Chamber #:		Chamber L										
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity	
Low Channel												
1.654	-60.06	Pk	28.7	-34.3	10.2	-55.46	-13	-42.46	0-360	150	H	
2.476	-67.57	Pk	32.3	-32.8	10.8	-57.27	-13	-44.27	0-360	150	H	
3.303	-69.2	Pk	32.9	-31.4	10.7	-57	-13	-44	0-360	150	H	
1.655	-60.29	Pk	28.7	-34.3	11.1	-54.79	-13	-41.79	0-360	150	V	
2.476	-67.53	Pk	32.3	-32.8	10.9	-57.13	-13	-44.13	0-360	150	V	
3.307	-70.42	Pk	32.9	-31.4	11.3	-57.62	-13	-44.62	0-360	150	V	
Mid Channel												
1.672	-62.63	Pk	28.8	-34.1	9.9	-58.03	-13	-45.03	0-360	150	H	
3.34	-70.29	Pk	32.9	-31.4	10.7	-58.09	-13	-45.09	0-360	150	H	
1.67	-64.05	Pk	28.8	-34.1	11.2	-58.15	-13	-45.15	0-360	150	V	
2.507	-63.81	Pk	32.3	-32.7	11.3	-52.91	-13	-39.91	0-360	150	V	
2.507	-63.81	Pk	32.3	-32.7	11.3	-52.91	-13	-39.91	0-360	150	V	
3.346	-69.08	Pk	32.9	-31.5	10.8	-56.88	-13	-43.88	0-360	150	V	
High Channel												
1.691	-63.29	Pk	28.9	-34.2	11	-57.59	-13	-44.59	0-360	150	H	
2.544	-67.5	Pk	32.3	-32.7	10	-57.9	-13	-44.9	0-360	150	H	
3.39	-70.59	Pk	32.8	-31.7	11.1	-58.39	-13	-45.39	0-360	150	H	
1.691	-61.95	Pk	28.9	-34.2	11.9	-55.35	-13	-42.35	0-360	150	V	
2.536	-66.71	Pk	32.3	-32.7	10.6	-56.51	-13	-43.51	0-360	150	V	
3.376	-70.03	Pk	32.8	-31.7	11.1	-57.83	-13	-44.83	0-360	150	V	

Company:		Samsung									
Project #:		12449904									
Date:		8/17/18									
Test Engineer:		43575									
Configuration:		EUT+ Support Equipment									
Mode:		REL99 B2									
Chamber #:		Chamber L									
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
Low Channel											
3.715	-70.18	Pk	33.2	-31.1	10.5	-57.58	-13	-44.58	0-360	150	H
5.56	-61.13	Pk	34.7	-28.3	10.9	-43.83	-13	-30.83	0-360	150	H
7.41	-74.77	Pk	35.7	-26	10.3	-54.77	-13	-41.77	0-360	150	H
3.701	-70.88	Pk	33.1	-30.9	11	-57.68	-13	-44.68	0-360	150	V
5.554	-60.44	Pk	34.7	-28.2	10.9	-43.04	-13	-30.04	0-360	150	V
7.403	-74.41	Pk	35.7	-26	10.6	-54.11	-13	-41.11	0-360	150	V
Mid Channel											
3.761	-69.06	Pk	33.5	-30.7	10.3	-55.96	-13	-42.96	0-360	150	H
5.637	-56.68	Pk	34.8	-28.4	10.4	-39.88	-13	-26.88	0-360	150	H
7.5	-74.53	Pk	35.7	-25.5	10.5	-53.83	-13	-40.83	0-360	150	H
3.758	-68.9	Pk	33.5	-30.7	10.7	-55.4	-13	-42.4	0-360	150	V
5.644	-54.9	Pk	34.8	-28.5	10.4	-38.2	-13	-25.2	0-360	150	V
7.512	-75.22	Pk	35.7	-25.4	10.8	-54.12	-13	-41.12	0-360	150	V
High Channel											
3.814	-69.8	Pk	33.7	-30.8	10.2	-56.7	-13	-43.7	0-360	150	H
5.724	-52.16	Pk	34.9	-28.6	10.3	-35.56	-13	-22.56	0-360	150	H
7.635	-73.86	Pk	35.8	-25.4	10.4	-53.06	-13	-40.06	0-360	150	H
3.815	-69.43	Pk	33.7	-30.8	10.3	-56.23	-13	-43.23	0-360	150	V
5.726	-53.22	Pk	34.9	-28.6	10.5	-36.42	-13	-23.42	0-360	150	V
7.631	-74.46	Pk	35.8	-25.4	10.6	-53.46	-13	-40.46	0-360	150	V

Company:		Samsung									
Project #:		12449904									
Date:		8/17/18									
Test Engineer:		43575									
Configuration:		EUT+ Support Equipment									
Mode:		HSDPA B2									
Chamber #:		Chamber L									
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
Low Channel											
3.696	-70.82	Pk	33.1	-30.9	10.9	-57.72	-13	-44.72	0-360	150	H
5.546	-72.33	Pk	34.6	-28.3	10.7	-55.33	-13	-42.33	0-360	150	H
7.399	-74.44	Pk	35.7	-26	10.5	-54.24	-13	-41.24	0-360	150	H
3.707	-69.45	Pk	33.2	-31	10.9	-56.35	-13	-43.35	0-360	150	V
5.562	-73.82	Pk	34.7	-28.3	11	-56.42	-13	-43.42	0-360	150	V
7.418	-74.54	Pk	35.7	-26	10.6	-54.24	-13	-41.24	0-360	150	V
Mid Channel											
3.758	-68.42	Pk	33.5	-30.7	10.4	-55.22	-13	-42.22	0-360	150	H
5.635	-72.9	Pk	34.8	-28.4	10.5	-56	-13	-43	0-360	150	H
7.523	-74.38	Pk	35.7	-25.4	10.5	-53.58	-13	-40.58	0-360	150	H
3.761	-68.83	Pk	33.5	-30.7	10.6	-55.43	-13	-42.43	0-360	150	V
5.639	-70.73	Pk	34.8	-28.5	10.6	-53.83	-13	-40.83	0-360	150	V
7.516	-74.71	Pk	35.7	-25.4	10.8	-53.61	-13	-40.61	0-360	150	V
High Channel											
3.817	-68.51	Pk	33.7	-30.7	10.1	-55.41	-13	-42.41	0-360	150	H
5.723	-71.41	Pk	34.9	-28.6	10.3	-54.81	-13	-41.81	0-360	150	H
7.64	-74.13	Pk	35.8	-25.4	10.3	-53.43	-13	-40.43	0-360	150	H
3.817	-69.45	Pk	33.7	-30.7	10.3	-56.15	-13	-43.15	0-360	150	V
5.723	-71.21	Pk	34.9	-28.6	10.4	-54.51	-13	-41.51	0-360	150	V
7.619	-74.12	Pk	35.7	-25.5	10.5	-53.42	-13	-40.42	0-360	150	V

9.2.2. LTE BAND 2

Company:		Samsung									
Project #:		12449904									
Date:		8/16/18									
Test Engineer:		39004									
Configuration:		EUT+ Support Equipment									
Mode:		LTE 2 QPSK 20MHz									
Chamber #:		Chamber L									
Frequency (MHz)	Meter Reading (dBm)	Det	AFT477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
Low Channel											
3.7	-70.84	Pk	33.1	-30.9	10.8	-57.84	-13	-44.84	0-360	150	H
5.553	-73.07	Pk	34.6	-28.2	10.7	-55.97	-13	-42.97	0-360	150	H
7.44	-72.92	Pk	35.7	-25.9	10.4	-52.72	-13	-39.72	0-360	150	H
3.728	-71.33	Pk	33.3	-31.2	10.7	-58.53	-13	-45.53	0-360	150	V
5.563	-72.99	Pk	34.7	-28.3	11	-55.59	-13	-42.59	0-360	150	V
7.44	-72.72	Pk	35.7	-25.8	10.6	-52.22	-13	-39.22	0-360	150	V
Mid Channel											
3.777	-68.32	Pk	33.4	-33	10.7	-57.22	-13	-44.22	0-360	150	H
5.656	-68.11	Pk	34.6	-30	10.2	-53.31	-13	-40.31	0-360	150	H
7.543	-71.34	Pk	35.6	-27.4	10.2	-52.94	-13	-39.94	0-360	150	H
3.763	-66.5	Pk	33.3	-33	10.5	-55.7	-13	-42.7	0-360	150	V
5.65	-69.83	Pk	34.6	-30	10.6	-54.63	-13	-41.63	0-360	150	V
7.51	-71.63	Pk	35.6	-27.4	10.8	-52.63	-13	-39.63	0-360	150	V
High Channel											
3.802	-70.21	Pk	33.7	-31	10.3	-57.21	-13	-44.21	0-360	150	H
5.722	-71.35	Pk	34.9	-28.6	10.2	-54.85	-13	-41.85	0-360	150	H
7.6	-74.49	Pk	35.7	-25.5	10.3	-53.99	-13	-40.99	0-360	150	H
3.799	-69.53	Pk	33.7	-31	10.4	-56.43	-13	-43.43	0-360	150	V
5.688	-72.44	Pk	34.9	-28.4	10.5	-55.44	-13	-42.44	0-360	150	V
7.58	-74.63	Pk	35.7	-25.4	10.5	-53.83	-13	-40.83	0-360	150	V

Company:		Samsung									
Project #:		12449904									
Date:		8/16/18									
Test Engineer:		39004									
Configuration:		EUT+ Support Equipment									
Mode:		LTE 2 16QAM 20MHz									
Chamber #:		Chamber L									
Frequency (MHz)	Meter Reading (dBm)	Det	AFT477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
Low Channel											
3.692	-68.65	Pk	33.1	-30.9	10.9	-55.55	-13	-42.55	0-360	150	H
5.495	-71.63	Pk	34.5	-28.6	10.8	-54.93	-13	-41.93	0-360	150	H
7.496	-74.21	Pk	35.7	-25.5	10.4	-53.61	-13	-40.61	0-360	150	H
3.694	-70.4	Pk	33.1	-30.9	11.2	-57	-13	-44	0-360	150	V
5.501	-71.5	Pk	34.5	-28.6	11.2	-54.4	-13	-41.4	0-360	150	V
9.019	-73.19	Pk	36.3	-23.2	10.7	-49.39	-13	-36.39	0-360	150	V
Mid Channel											
3.543	-69.21	Pk	33.2	-30.8	10.5	-56.31	-13	-43.31	0-360	150	H
5.129	-70.19	Pk	34.4	-29.2	10.3	-54.69	-13	-41.69	0-360	150	H
7.13	-72.83	Pk	35.7	-26	10.2	-52.93	-13	-39.93	0-360	150	H
3.548	-68.75	Pk	33.2	-30.8	10.1	-56.25	-13	-43.25	0-360	150	V
5.45	-71.32	Pk	34.5	-29	11.5	-54.32	-13	-41.32	0-360	150	V
7.101	-73.46	Pk	35.7	-26.4	10.6	-53.56	-13	-40.56	0-360	150	V
High Channel											
3.807	-67.88	Pk	33.7	-30.9	10.2	-54.88	-13	-41.88	0-360	150	H
5.694	-69.58	Pk	34.9	-28.4	10.1	-52.98	-13	-39.98	0-360	150	H
7.634	-73.72	Pk	35.8	-25.4	10.5	-52.82	-13	-39.82	0-360	150	H
3.81	-68.71	Pk	33.7	-30.8	10.3	-55.51	-13	-42.51	0-360	150	V
5.688	-70.03	Pk	34.9	-28.4	10.5	-53.03	-13	-40.03	0-360	150	V
7.619	-73.67	Pk	35.7	-25.5	10.5	-52.97	-13	-39.97	0-360	150	V

9.2.3. LTE BAND 5

Company:		Samsung									
Project #:		12449904									
Date:		8/17/18									
Test Engineer:		39004									
Configuration:		EUT+ Support Equipment									
Mode:		LTE 5 QPSK 10MHz									
Chamber #:		Chamber L									
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
Low Channel											
1.835	-67.97	Pk	30.7	-33.8	11.9	-59.17	-13	-46.17	0-360	150	H
2.527	-67.99	Pk	32.3	-32.6	10.1	-58.19	-13	-45.19	0-360	150	H
3.374	-67.79	Pk	32.8	-31.7	10.8	-55.89	-13	-42.89	0-360	150	H
1.823	-68.1	Pk	30.6	-33.7	11.3	-59.9	-13	-46.9	0-360	150	V
2.522	-68.7	Pk	32.3	-32.6	11.2	-57.8	-13	-44.8	0-360	150	V
3.402	-68.39	Pk	32.8	-31.6	11.1	-56.09	-13	-43.09	0-360	150	V
Mid Channel											
1.618	-67.31	Pk	28.2	-34.3	10.4	-63.01	-13	-50.01	0-360	150	H
2.523	-68.09	Pk	32.3	-32.6	10.4	-57.99	-13	-44.99	0-360	150	H
3.394	-69.33	Pk	32.8	-31.7	11.1	-57.13	-13	-44.13	0-360	150	H
1.62	-68.55	Pk	28.2	-34.4	12	-62.75	-13	-49.75	0-360	150	V
2.519	-67.77	Pk	32.3	-32.7	11.2	-56.97	-13	-43.97	0-360	150	V
3.381	-69.76	Pk	32.8	-31.7	11.2	-57.46	-13	-44.46	0-360	150	V
High Channel											
1.77	-69.52	Pk	30	-33.8	12.7	-60.62	-13	-47.62	0-360	150	H
2.522	-67.95	Pk	32.3	-32.6	10.4	-57.85	-13	-44.85	0-360	150	H
3.381	-69.09	Pk	32.8	-31.7	11	-56.99	-13	-43.99	0-360	150	H
1.729	-69.93	Pk	29.4	-33.9	12.7	-61.73	-13	-48.73	0-360	150	V
2.511	-68.08	Pk	32.3	-32.7	11.4	-57.08	-13	-44.08	0-360	150	V
3.383	-67.88	Pk	32.8	-31.8	11.1	-55.78	-13	-42.78	0-360	150	V

Company:		Samsung									
Project #:		12449904									
Date:		8/17/18									
Test Engineer:		39004									
Configuration:		EUT+ Support Equipment									
Mode:		LTE 5 16QAM 10MHz									
Chamber #:		Chamber L									
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
Low Channel											
1.642	-67.03	Pk	28.5	-34.4	10.6	-62.33	-13	-49.33	0-360	150	H
2.511	-68.66	Pk	32.3	-32.7	10.2	-58.86	-13	-45.86	0-360	150	H
3.399	-69.01	Pk	32.8	-31.6	10.9	-56.91	-13	-43.91	0-360	150	H
1.631	-66.91	Pk	28.4	-34.4	12.2	-60.71	-13	-47.71	0-360	150	V
2.508	-68.97	Pk	32.3	-32.7	11.4	-57.97	-13	-44.97	0-360	150	V
3.386	-68.91	Pk	32.8	-31.8	11.1	-56.81	-13	-43.81	0-360	150	V
Mid Channel											
1.82	-67.76	Pk	30.6	-33.8	11	-59.96	-13	-46.96	0-360	150	H
2.524	-68.89	Pk	32.3	-32.6	10.3	-58.89	-13	-45.89	0-360	150	H
3.224	-68.58	Pk	32.9	-31.5	10.7	-56.48	-13	-43.48	0-360	150	H
1.8	-68.15	Pk	30.4	-33.9	11.1	-60.55	-13	-47.55	0-360	150	V
2.524	-68.53	Pk	32.3	-32.6	11.1	-57.73	-13	-44.73	0-360	150	V
3.234	-69.65	Pk	32.9	-31.5	10.9	-57.35	-13	-44.35	0-360	150	V
High Channel											
1.63	-68.1	Pk	28.4	-34.4	11.3	-62.8	-13	-49.8	0-360	150	H
2.533	-67.39	Pk	32.3	-32.7	9.9	-57.89	-13	-44.89	0-360	150	H
3.221	-68.13	Pk	32.9	-31.5	10.8	-55.93	-13	-42.93	0-360	150	H
1.631	-68.27	Pk	28.4	-34.4	12.3	-61.97	-13	-48.97	0-360	150	V
2.497	-68.24	Pk	32.3	-32.8	10.9	-57.84	-13	-44.84	0-360	150	V
3.235	-69.58	Pk	32.9	-31.5	10.9	-57.28	-13	-44.28	0-360	150	V

9.2.4. LTE BAND 12

Company:		Samsung									
Project #:		12449904									
Date:		8/17/18									
Test Engineer:		39004									
Configuration:		EUT+ Support Equipment									
Mode:		LTE 12 QPSK 10MHz									
Chamber #:		Chamber L									
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
Low Channel											
1.274	-67.19	Pk	28.9	-34.9	11.4	-61.79	-13	-48.79	0-360	150	H
2.183	-67.25	Pk	31.3	-33.1	11.8	-57.25	-13	-44.25	0-360	150	H
2.872	-68.7	Pk	32.4	-32.2	11.2	-57.3	-13	-44.3	0-360	150	H
1.27	-67.34	Pk	28.9	-34.9	11.4	-61.94	-13	-48.94	0-360	150	V
2.187	-68.38	Pk	31.4	-33.1	11.1	-58.98	-13	-45.98	0-360	150	V
2.875	-68.35	Pk	32.4	-32.3	11	-57.25	-13	-44.25	0-360	150	V
Mid Channel											
1.444	-66.8	Pk	28.5	-34.6	10.3	-62.6	-13	-49.6	0-360	151	H
1.544	-69.85	Pk	28.1	-34.2	12.6	-63.35	-13	-50.35	0-360	151	H
2.192	-68.32	Pk	31.4	-33.1	11.3	-58.72	-13	-45.72	0-360	151	H
1.448	-67.78	Pk	28.5	-34.5	11.1	-62.68	-13	-49.68	0-360	151	V
1.536	-69.48	Pk	28.1	-34.2	10.6	-64.98	-13	-51.98	0-360	151	V
2.185	-67.62	Pk	31.3	-33.1	11.2	-58.22	-13	-45.22	0-360	151	V
High Channel											
1.274	-66.77	Pk	28.9	-34.9	11.4	-61.37	-13	-48.37	0-360	150	H
2.16	-67.59	Pk	31.2	-33.3	11.3	-58.39	-13	-45.39	0-360	150	H
2.687	-68.34	Pk	32.6	-32.2	11.2	-56.74	-13	-43.74	0-360	150	H
1.258	-67.61	Pk	28.8	-34.8	12.2	-61.41	-13	-48.41	0-360	150	V
2.18	-67.43	Pk	31.3	-33.1	11.2	-58.03	-13	-45.03	0-360	150	V
2.693	-68.2	Pk	32.6	-32.1	11	-56.7	-13	-43.7	0-360	150	V

Company:		Samsung									
Project #:		12449904									
Date:		8/17/18									
Test Engineer:		39004									
Configuration:		EUT+ Support Equipment									
Mode:		LTE 12 16QAM 10MHz									
Chamber #:		Chamber L									

Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
Low Channel											
1.274	-66.13	Pk	28.9	-34.9	11.4	-60.73	-13	-47.73	0-360	150	H
2.184	-67.65	Pk	31.3	-33.1	11.8	-57.65	-13	-44.65	0-360	150	H
2.88	-67.7	Pk	32.4	-32.1	11.1	-56.3	-13	-43.3	0-360	150	H
1.332	-68.26	Pk	29.4	-34.7	10.2	-63.36	-13	-50.36	0-360	150	V
2.177	-69.33	Pk	31.3	-33	11.2	-59.83	-13	-46.83	0-360	150	V
2.896	-68.77	Pk	32.4	-32	11	-57.37	-13	-44.37	0-360	150	V
Mid Channel											
1.507	-67.74	Pk	28	-34.5	11.8	-62.44	-13	-49.44	0-360	150	H
2.182	-68.75	Pk	31.3	-33.1	11.7	-58.85	-13	-45.85	0-360	150	H
2.873	-68.24	Pk	32.4	-32.2	11.2	-56.84	-13	-43.84	0-360	150	H
1.478	-67.55	Pk	28.2	-34.4	11.3	-62.45	-13	-49.45	0-360	150	V
2.18	-69.58	Pk	31.3	-33	11.1	-60.18	-13	-47.18	0-360	150	V
2.886	-69.08	Pk	32.4	-32	11.1	-57.58	-13	-44.58	0-360	150	V
High Channel											
1.477	-68.01	Pk	28.2	-34.4	10.9	-63.31	-13	-50.31	0-360	150	H
2.169	-67.95	Pk	31.3	-33.1	11.1	-58.65	-13	-45.65	0-360	150	H
2.872	-67.91	Pk	32.4	-32.2	11.2	-56.51	-13	-43.51	0-360	150	H
1.455	-67.01	Pk	28.4	-34.4	11	-62.01	-13	-49.01	0-360	150	V
2.174	-68.26	Pk	31.3	-33.1	11.1	-58.96	-13	-45.96	0-360	150	V
2.886	-68.78	Pk	32.4	-32	11.1	-57.28	-13	-44.28	0-360	150	V

9.2.5. LTE BAND 14

Company:		Samsung										
Project #:		12449904										
Date:		8/17/18										
Test Engineer:		39004										
Configuration:		EUT+ Support Equipment										
Mode:		LTE 14 QPSK 10MHz										
Chamber #:		Chamber L										
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity	
Mid Channel												
1.607	-69.16	Pk	28	-34.2	10.8	-64.56	-40	-24.56	0-360	150	H	
2.356	-68.03	Pk	31.6	-33	10.8	-58.63	-13	-45.63	0-360	150	H	
3.173	-70.32	Pk	32.9	-31.7	10.5	-58.62	-13	-45.62	0-360	150	H	
1.608	-68.91	Pk	28	-34.2	11.5	-63.61	-40	-23.61	0-360	150	V	
2.342	-68.3	Pk	31.5	-33.1	11.6	-58.3	-13	-45.3	0-360	150	V	
3.197	-70.71	Pk	33	-31.7	11	-58.41	-13	-45.41	0-360	150	V	

Company:		Samsung										
Project #:		12449904										
Date:		8/17/18										
Test Engineer:		39004										
Configuration:		EUT+ Support Equipment										
Mode:		LTE 14 16QAM 10MHz										
Chamber #:		Chamber L										
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity	
Mid Channel												
1.607	-70.22	Pk	28.1	-34.2	12.5	-63.82	-40	-23.82	0-360	150	H	
2.338	-67.33	Pk	31.5	-33	11	-57.83	-13	-44.83	0-360	150	H	
3.216	-69.88	Pk	32.9	-31.5	11	-57.48	-13	-44.48	0-360	150	H	
1.607	-68.69	Pk	28	-34.5	11.3	-63.89	-40	-23.89	0-360	150	V	
2.331	-68.45	Pk	31.5	-33	11.7	-58.25	-13	-45.25	0-360	150	V	
3.225	-69.53	Pk	32.9	-31.5	11.3	-56.83	-13	-43.83	0-360	150	V	

9.2.6. LTE BAND 66

Company:		Samsung									
Project #:		12449904									
Date:		8/17/18									
Test Engineer:		39004									
Configuration:		EUT+ Support Equipment									
Mode:		LTE 66 QPSK 20MHz									
Chamber #:		Chamber L									
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
Low Channel											
3.69	-67.85	Pk	33.1	-30.9	11	-54.65	-13	-41.65	0-360	150	H
5.113	-71.01	Pk	34.4	-29.4	10.6	-55.41	-13	-42.41	0-360	150	H
6.817	-72.41	Pk	35.6	-26.9	10.6	-53.11	-13	-40.11	0-360	150	H
3.689	-70.19	Pk	33.1	-30.9	11.2	-56.79	-13	-43.79	0-360	150	V
5.107	-71.03	Pk	34.4	-29.6	10.7	-55.53	-13	-42.53	0-360	150	V
6.787	-72.77	Pk	35.6	-26.6	10.4	-53.37	-13	-40.37	0-360	150	V
Mid Channel											
3.555	-69.21	Pk	33.3	-30.7	10.4	-56.21	-13	-43.21	0-360	150	H
5.111	-71.01	Pk	34.4	-29.5	10.6	-55.51	-13	-42.51	0-360	150	H
6.813	-72.66	Pk	35.6	-26.9	10.6	-53.36	-13	-40.36	0-360	150	H
3.543	-69.68	Pk	33.2	-30.8	10.2	-57.08	-13	-44.08	0-360	150	V
5.119	-70.24	Pk	34.4	-29.3	10.5	-54.64	-13	-41.64	0-360	150	V
6.936	-73.07	Pk	35.7	-26.4	10.5	-53.27	-13	-40.27	0-360	150	V
High Channel											
3.555	-69.65	Pk	33.3	-30.7	10.4	-56.65	-13	-43.65	0-360	150	H
5.144	-69.75	Pk	34.4	-29.2	10.2	-54.35	-13	-41.35	0-360	150	H
6.73	-71.01	Pk	35.6	-26.7	10.2	-51.91	-13	-38.91	0-360	150	H
3.552	-69.23	Pk	33.3	-30.7	10.1	-56.53	-13	-43.53	0-360	150	V
5.143	-70.67	Pk	34.4	-29.2	10.5	-54.97	-13	-41.97	0-360	150	V
6.697	-72.97	Pk	35.6	-26.8	10.5	-53.67	-13	-40.67	0-360	150	V

Company:		Samsung									
Project #:		12449904									
Date:		8/17/18									
Test Engineer:		39004									
Configuration:		EUT+ Support Equipment									
Mode:		LTE 66 16QAM 20MHz									
Chamber #:		Chamber L									
Frequency (MHz)	Meter Reading (dBm)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	ETSI 417 TX Below 1GHz	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
Low Channel											
3.392	-68.84	Pk	32.8	-31.7	11.1	-56.64	-13	-43.64	0-360	150	H
4.777	-70.26	Pk	34.1	-29	10.9	-54.26	-13	-41.26	0-360	150	H
6.85	-73.3	Pk	35.6	-26.5	10.5	-53.7	-13	-40.7	0-360	150	H
3.384	-69.2	Pk	32.8	-31.8	11.1	-57.1	-13	-44.1	0-360	150	V
4.79	-71.35	Pk	34.2	-28.9	10.1	-55.95	-13	-42.95	0-360	150	V
6.861	-73.46	Pk	35.6	-26.6	10.6	-53.86	-13	-40.86	0-360	150	V
Mid Channel											
3.543	-69.67	Pk	33.2	-30.8	10.5	-56.77	-13	-43.77	0-360	151	H
5.167	-71.04	Pk	34.4	-29.5	10.6	-55.54	-13	-42.54	0-360	151	H
7.075	-72.94	Pk	35.7	-26.2	10.1	-53.34	-13	-40.34	0-360	151	H
3.543	-69.55	Pk	33.2	-30.8	10.2	-56.95	-13	-43.95	0-360	151	V
5.157	-70.75	Pk	34.4	-29.5	10.5	-55.35	-13	-42.35	0-360	151	V
7.05	-73.86	Pk	35.7	-26.4	10.6	-53.96	-13	-40.96	0-360	151	V
High Channel											
3.557	-68.96	Pk	33.3	-30.7	10.5	-55.86	-13	-42.86	0-360	150	H
5.489	-71.23	Pk	34.5	-28.6	10.6	-54.73	-13	-41.73	0-360	150	H
6.865	-72.07	Pk	35.6	-26.6	10.5	-52.57	-13	-39.57	0-360	150	H
3.556	-68.62	Pk	33.3	-30.7	10.1	-55.92	-13	-42.92	0-360	150	V
5.456	-72	Pk	34.5	-29	11.5	-55	-13	-42	0-360	150	V
6.887	-72.48	Pk	35.7	-26.9	10.7	-52.98	-13	-39.98	0-360	150	V