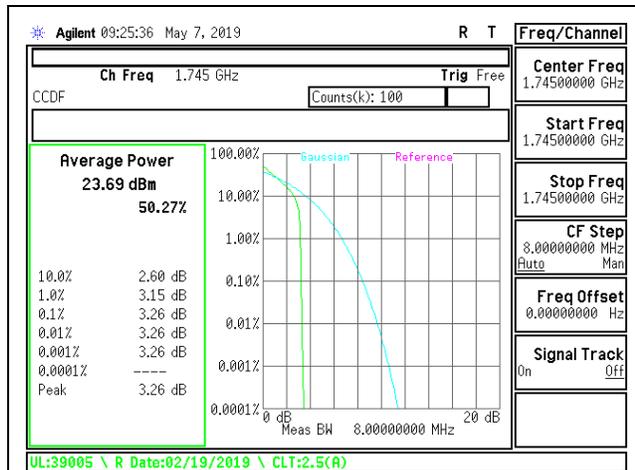
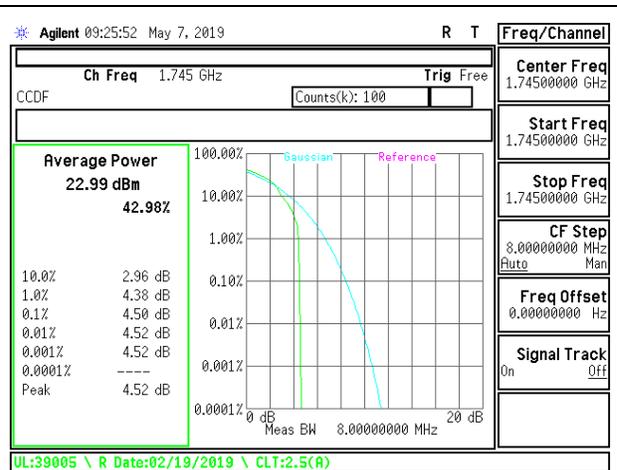


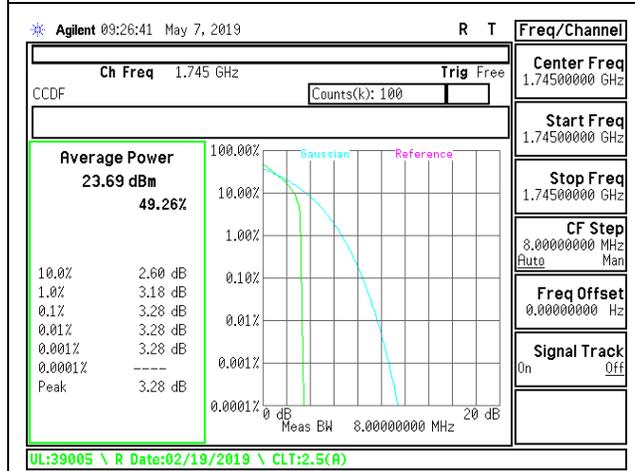
8.5.12. LTE BAND 66



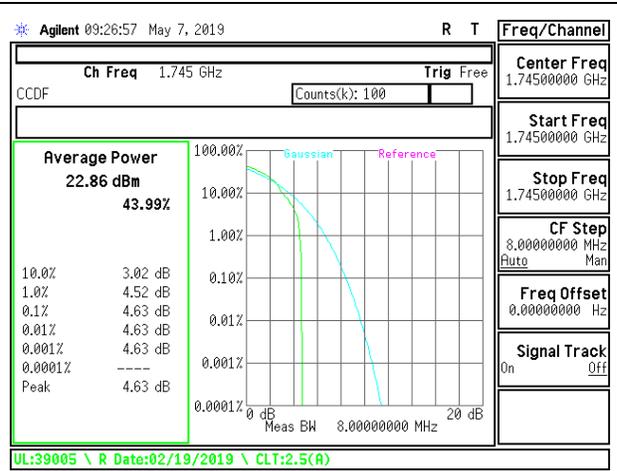
LTE B66 1.4MHz QPSK Mid Channel



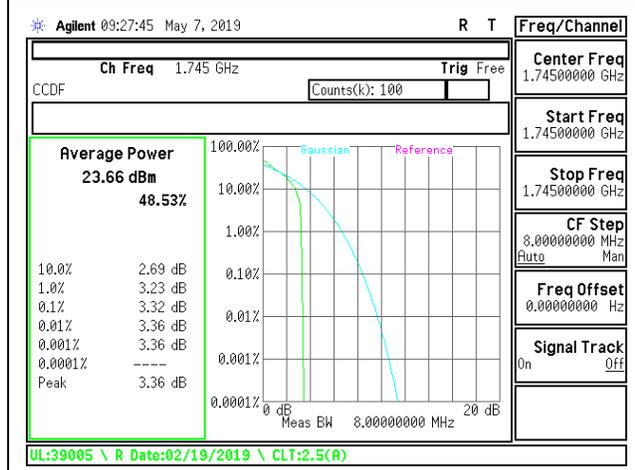
LTE B66 1.4MHz 16QAM Mid Channel



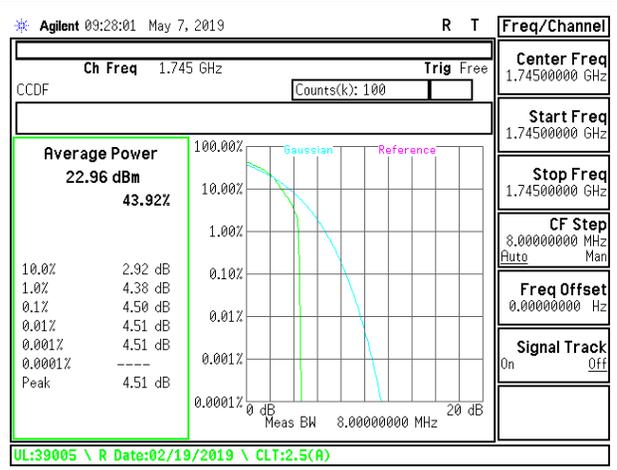
LTE B66 3MHz QPSK Mid Channel



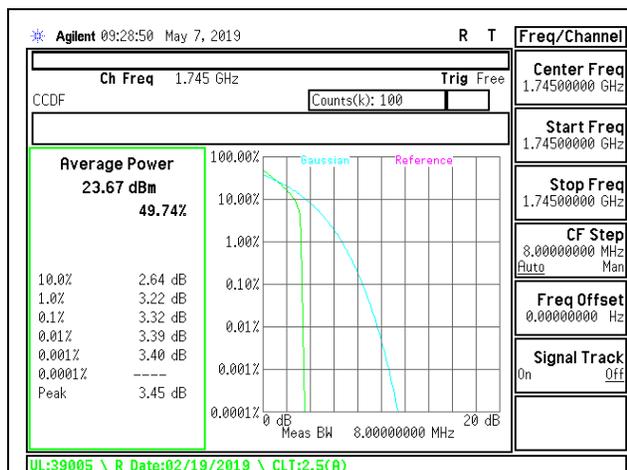
LTE B66 3MHz 16QAM Mid Channel



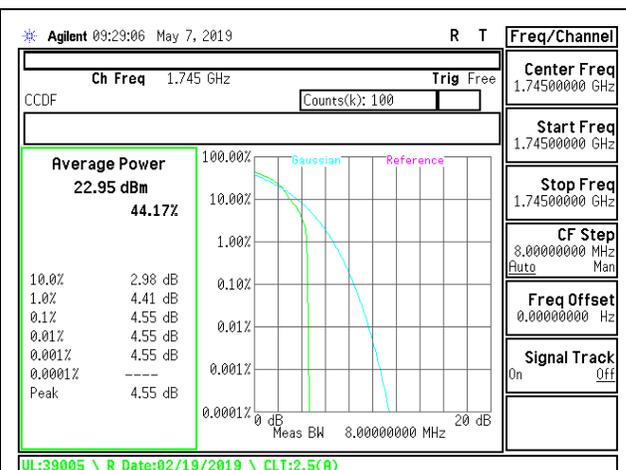
LTE B66 5MHz QPSK Mid Channel



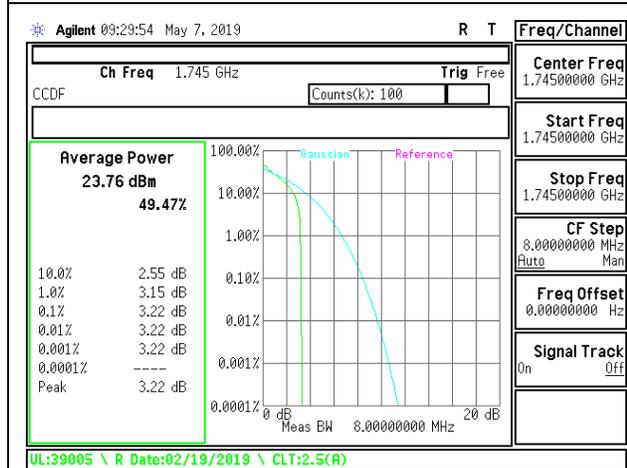
LTE B66 5MHz 16QAM Mid Channel



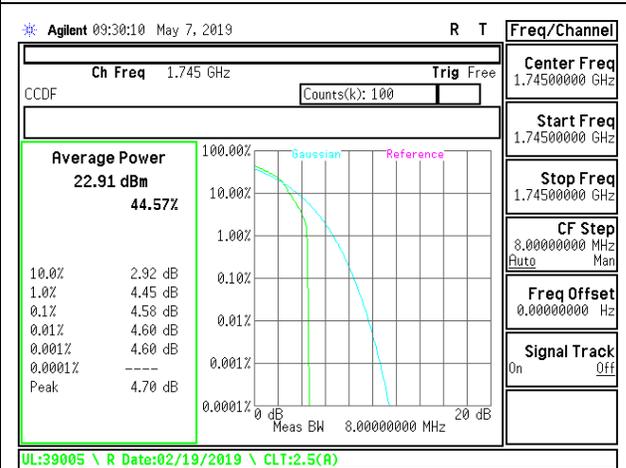
LTE B66 10MHz QPSK Mid Channel



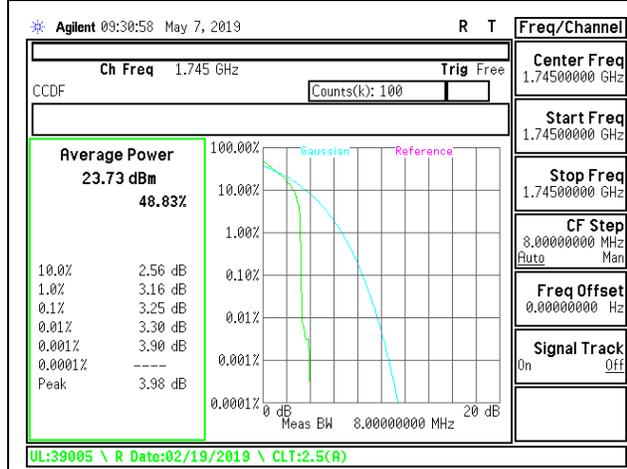
LTE B66 10MHz 16QAM Mid Channel



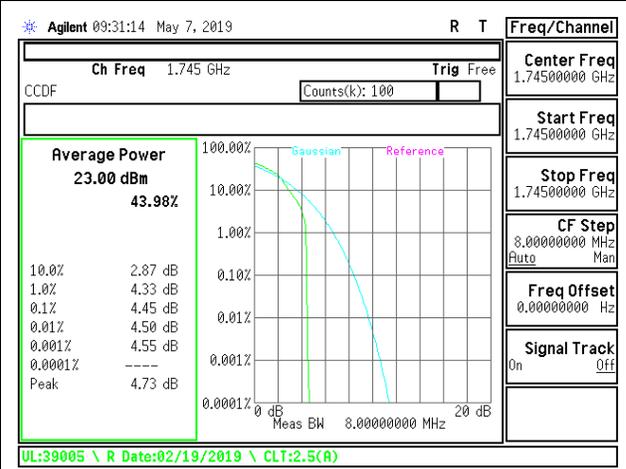
LTE B66 15MHz QPSK Mid Channel



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, §27.50 and §90.691

#### 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)

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 603-E (2016), Clause 2.2.17; PSA setting reference to 971168 D01 v03r01

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  $\geq 98$ ; 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

GSM, WCMDA, and LTE

#### TEST RESULTS

**GSM**

Band	Mode	Channel	f(MHz)	ERP/EIRP	
				dBm	W
GSM 850	GPRS	128	824.2	30.37	1.0889
		190	836.6	20.26	0.1062
		251	848.8	30.01	1.0023
	EGPRS	128	824.2	24.80	0.3020
		190	836.6	23.86	0.2432
		251	848.8	24.33	0.2710
GSM 1900	GPRS	512	1850.2	28.56	0.7178
		661	1880.0	29.13	0.8185
		810	1909.8	28.53	0.7129
	EGPRS	512	1850.2	25.65	0.3673
		661	1880.0	26.00	0.3981
		810	1909.8	26.57	0.4539

**WCDMA**

Band	Mode	Channel	f(MHz)	ERP/EIRP	
				dBm	W
Band 2	REL99	9262	1852.4	23.63	0.2307
		9400	1880	23.38	0.2178
		9538	1907.6	23.44	0.2208
	HSDPA	9262	1852.4	21.56	0.1432
		9400	1880.0	21.33	0.1358
		9538	1907.6	21.36	0.1368
Band 5	REL99	4132	826.4	21.05	0.1274
		4183	836.6	19.93	0.0984
		4233	846.6	20.88	0.1225
	HSDPA	4132	826.4	19.89	0.0975
		4183	836.6	18.85	0.0767
		4233	846.6	19.71	0.0935
Band 4	REL99	1312	1712.4	20.63	0.1156
		1413	1732.6	21.63	0.1455
		1513	1752.6	22.32	0.1706
	HSDPA	1312	1712.4	20.79	0.1199
		1413	1732.6	21.73	0.1489
		1513	1752.6	22.37	0.1726

**LTE Band 2**

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	W
20	QPSK	1/0	1860	23.53	0.2254
		1/0	1880	23.26	0.2118
		1/0	1900	23.61	0.2296
	16QAM	1/0	1860	22.66	0.1845
		1/0	1880	22.57	0.1807
		1/0	1900	22.76	0.1888
15	QPSK	1/0	1857.5	23.60	0.2291
		1/0	1880	23.47	0.2223
		1/0	1902.5	24.04	0.2535
	16QAM	1/0	1857.5	22.71	0.1866
		1/0	1880	22.68	0.1854
		1/0	1902.5	22.91	0.1954
10	QPSK	1/0	1855	23.55	0.2265
		1/0	1880	23.56	0.2270
		1/0	1905	22.62	0.1828
	16QAM	1/0	1855	22.57	0.1807
		1/0	1880	22.68	0.1854
		1/0	1905	21.93	0.1560
5	QPSK	1/0	1852.5	23.79	0.2393
		1/0	1880	23.20	0.2089
		1/0	1907.5	22.79	0.1901
	16QAM	1/0	1852.5	22.94	0.1968
		1/0	1880	22.37	0.1726
		1/0	1907.5	21.78	0.1507
3	QPSK	1/0	1851.5	23.56	0.2270
		1/0	1880	22.91	0.1954
		1/0	1908.5	23.17	0.2075
	16QAM	1/0	1851.5	22.61	0.1824
		1/0	1880	22.06	0.1607
		1/0	1908.5	22.10	0.1622
1.4	QPSK	1/0	1850.7	22.91	0.1954
		1/0	1880	23.32	0.2148
		1/0	1909.3	22.90	0.1950
	16QAM	1/0	1850.7	21.90	0.1549
		1/0	1880	22.44	0.1754
		1/0	1909.3	21.91	0.1552

**LTE Band 4**

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	W
20	QPSK	1/0	1720	21.79	0.1510
		1/0	1732.5	22.53	0.1791
		1/0	1745	21.97	0.1574
	16QAM	1/0	1720	21.05	0.1274
		1/0	1732.5	21.69	0.1476
		1/0	1745	21.13	0.1297
15	QPSK	1/0	1717.5	21.68	0.1472
		1/0	1732.5	22.6	0.1820
		1/0	1747.5	22.47	0.1766
	16QAM	1/0	1717.5	20.83	0.1211
		1/0	1732.5	21.71	0.1483
		1/0	1747.5	21.61	0.1449
10	QPSK	1/0	1715	21.11	0.1291
		1/0	1732.5	22.68	0.1854
		1/0	1750	22.52	0.1786
	16QAM	1/0	1715	20.37	0.1089
		1/0	1732.5	21.71	0.1483
		1/0	1750	21.68	0.1472
5	QPSK	1/0	1712.5	21.27	0.1340
		1/0	1732.5	22.58	0.1811
		1/0	1752.5	22.32	0.1706
	16QAM	1/0	1712.5	20.6	0.1148
		1/0	1732.5	21.68	0.1472
		1/0	1752.5	21.56	0.1432
3	QPSK	1/0	1711.5	21.31	0.1352
		1/0	1732.5	22.55	0.1799
		1/0	1753.5	22.41	0.1742
	16QAM	1/0	1711.5	20.53	0.1130
		1/0	1732.5	21.62	0.1452
		1/0	1753.5	21.58	0.1439
1.4	QPSK	1/0	1710.7	21.15	0.1303
		1/0	1732.5	22.15	0.1641
		1/0	1754.3	22.55	0.1799
	16QAM	1/0	1710.7	20.34	0.1081
		1/0	1732.5	21.16	0.1306
		1/0	1754.3	21.79	0.1510

**LTE Band 5**

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
10	QPSK	1/0	829	21.02	0.1265
		1/0	836.5	20.27	0.1064
		1/0	844	20.70	0.1175
	16QAM	1/0	829	20.22	0.1052
		1/0	836.5	19.43	0.0877
		1/0	844	19.81	0.0957
5	QPSK	1/0	826.5	20.86	0.1219
		1/0	836.5	20.21	0.1050
		1/0	846.5	20.75	0.1189
	16QAM	1/0	826.5	20.15	0.1035
		1/0	836.5	19.34	0.0859
		1/0	846.5	19.88	0.0973
3	QPSK	1/0	825.5	20.98	0.1253
		1/0	836.5	20.01	0.1002
		1/0	847.5	20.29	0.1069
	16QAM	1/0	825.5	20.17	0.1040
		1/0	836.5	19.02	0.0798
		1/0	847.5	19.45	0.0881
1.4	QPSK	1/0	824.7	20.45	0.1109
		1/0	836.5	19.19	0.0830
		1/0	848.3	20.23	0.1054
	16QAM	1/0	824.7	19.59	0.0910
		1/0	836.5	18.18	0.0658
		1/0	848.3	19.29	0.0849

**LTE Band 7**

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	W
20	QPSK	1/0	2510	20.92	0.1236
		1/0	2535	20.31	0.1074
		1/0	2560	19.34	0.0859
	16QAM	1/0	2510	20.14	0.1033
		1/0	2535	19.54	0.0899
		1/0	2560	18.65	0.0733
15	QPSK	1/0	2507.5	21.13	0.1297
		1/0	2535	20.43	0.1104
		1/0	2562.5	19.28	0.0847
	16QAM	1/0	2507.5	20.28	0.1067
		1/0	2535	19.45	0.0881
		1/0	2562.5	18.58	0.0721
10	QPSK	1/0	2505.0	20.52	0.1127
		1/0	2535.0	20.36	0.1086
		1/0	2565.0	19.53	0.0897
	16QAM	1/0	2505.0	19.66	0.0925
		1/0	2535.0	19.33	0.0857
		1/0	2565.0	18.72	0.0745
5	QPSK	1/0	2502.5	20.52	0.1127
		1/0	2535.0	19.96	0.0991
		1/0	2567.5	19.53	0.0897
	16QAM	1/0	2502.5	19.72	0.0938
		1/0	2535.0	19.00	0.0794
		1/0	2567.5	18.69	0.0740

**LTE Band 12**

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
10	QPSK	1/0	704	20.37	0.1089
		1/0	707.5	20.58	0.1143
		1/0	711	19.95	0.0989
	16QAM	1/0	704	19.50	0.0891
		1/0	707.5	19.72	0.0938
		1/0	711	19.01	0.0796
5	QPSK	1/0	701.5	20.51	0.1125
		1/0	707.5	20.61	0.1151
		1/0	713.5	20.72	0.1180
	16QAM	1/0	701.5	19.72	0.0938
		1/0	707.5	19.78	0.0951
		1/0	713.5	19.91	0.0979
3	QPSK	1/0	700.5	20.21	0.1050
		1/0	707.5	20.41	0.1099
		1/0	714.5	20.83	0.1211
	16QAM	1/0	700.5	19.36	0.0863
		1/0	707.5	19.50	0.0891
		1/0	714.5	19.97	0.0993
1.4	QPSK	1/0	699.7	20.03	0.1007
		1/0	707.5	20.53	0.1130
		1/0	715.3	20.10	0.1023
	16QAM	1/0	699.7	19.16	0.0824
		1/0	707.5	19.59	0.0910
		1/0	715.3	19.20	0.0832

**LTE Band 13**

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
10	QPSK	1/0	782	19.86	0.0968
	16QAM	1/0	782	19.02	0.0798
5	QPSK	1/0	779.5	20.04	0.1009
		1/0	782	19.99	0.0998
		1/0	784.5	20.14	0.1033
	16QAM	1/0	779.5	19.25	0.0841
		1/0	782	19.09	0.0811
		1/0	784.5	19.18	0.0828

**LTE Band 26 (FCC PART 90S)**

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
15	QPSK	1/0	821.5	19.82	0.0959
	16QAM	1/0	821.5	18.89	0.0774
10	QPSK	1/0	819	19.44	0.0879
	16QAM	1/0	819	18.51	0.0710
5	QPSK	1/0	816.5	19.67	0.0927
		1/0	819	19.70	0.0933
		1/0	821.5	19.73	0.0940
	16QAM	1/0	816.5	18.84	0.0766
		1/0	819	18.83	0.0764
		1/0	821.5	19.07	0.0807
3	QPSK	1/0	815.5	19.10	0.0813
		1/0	819	19.53	0.0897
		1/0	822.5	19.54	0.0899
	16QAM	1/0	815.5	18.21	0.0662
		1/0	819	18.71	0.0743
		1/0	822.5	18.74	0.0748
1.4	QPSK	1/0	814.7	19.28	0.0847
		1/0	819	18.89	0.0774
		1/0	823.3	19.06	0.0805
	16QAM	1/0	814.7	18.37	0.0687
		1/0	819	18.00	0.0631
		1/0	823.3	18.26	0.0670

**LTE Band 26 (FCC PART 22)**

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
15	QPSK	1/0	831.5	20.04	0.1009
		1/0	836.5	19.56	0.0904
		1/0	841.5	20.04	0.1009
	16QAM	1/0	831.5	19.25	0.0841
		1/0	836.5	18.79	0.0757
		1/0	841.5	19.19	0.0830
10	QPSK	1/0	829.0	19.96	0.0991
		1/0	836.5	19.31	0.0853
		1/0	844.0	19.83	0.0962
	16QAM	1/0	829.0	19.19	0.0830
		1/0	836.5	18.49	0.0706
		1/0	844.0	19.06	0.0805
5	QPSK	1/0	826.5	20.09	0.1021
		1/0	836.5	19.03	0.0800
		1/0	846.5	19.65	0.0923
	16QAM	1/0	826.5	19.43	0.0877
		1/0	836.5	18.22	0.0664
		1/0	846.5	18.88	0.0773
3	QPSK	1/0	825.5	19.40	0.0871
		1/0	836.5	18.93	0.0782
		1/0	847.5	19.67	0.0927
	16QAM	1/0	825.5	18.64	0.0731
		1/0	836.5	18.06	0.0640
		1/0	847.5	18.88	0.0773
1.4	QPSK	1/0	824.7	19.30	0.0851
		1/0	836.5	18.15	0.0653
		1/0	848.3	19.25	0.0841
	16QAM	1/0	824.7	18.45	0.0700
		1/0	836.5	17.29	0.0536
		1/0	848.3	18.40	0.0692

**LTE Band 41 (FCC)**

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	W
20	QPSK	1/0	2506	19.16	0.0824
		1/0	2593	18.18	0.0658
		1/0	2680	17.17	0.0521
	16QAM	1/0	2506	18.27	0.0671
		1/0	2593	17.49	0.0561
		1/0	2680	16.33	0.0430
15	QPSK	1/0	2503.5	18.64	0.0731
		1/0	2593	18.15	0.0653
		1/0	2682.5	17.78	0.0600
	16QAM	1/0	2503.5	17.73	0.0593
		1/0	2593	17.27	0.0533
		1/0	2682.5	16.72	0.0470
10	QPSK	1/0	2501	18.38	0.0689
		1/0	2593	18.17	0.0656
		1/0	2685	17.47	0.0558
	16QAM	1/0	2501	17.51	0.0564
		1/0	2593	17.18	0.0522
		1/0	2685	16.58	0.0455
5	QPSK	1/0	2498.5	18.20	0.0661
		1/0	2593	18.13	0.0650
		1/0	2687.5	17.25	0.0531
	16QAM	1/0	2498.5	17.41	0.0551
		1/0	2593	17.23	0.0528
		1/0	2687.5	16.35	0.0432

**LTE Band 66**

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	W
20	QPSK	1/0	1720	21.49	0.1409
		1/0	1745	21.53	0.1422
		1/0	1770	21.6	0.1445
	16QAM	1/0	1720	20.75	0.1189
		1/0	1745	20.81	0.1205
		1/0	1770	20.83	0.1211
15	QPSK	1/0	1717.5	21.73	0.1489
		1/0	1745	21.85	0.1531
		1/0	1772.5	22.26	0.1683
	16QAM	1/0	1717.5	20.94	0.1242
		1/0	1745	21.03	0.1268
		1/0	1772.5	21.39	0.1377
10	QPSK	1/0	1715	21.13	0.1297
		1/0	1745	21.6	0.1445
		1/0	1775	21.98	0.1578
	16QAM	1/0	1715	20.33	0.1079
		1/0	1745	20.77	0.1194
		1/0	1775	21.1	0.1288
5	QPSK	1/0	1712.5	21.25	0.1334
		1/0	1745	21.33	0.1358
		1/0	1777.5	22.2	0.1660
	16QAM	1/0	1712.5	20.56	0.1138
		1/0	1745	20.54	0.1132
		1/0	1777.5	21.36	0.1368
3	QPSK	1/0	1711.5	21.13	0.1297
		1/0	1745	21.64	0.1459
		1/0	1778.5	21.96	0.1570
	16QAM	1/0	1711.5	20.35	0.1084
		1/0	1745	20.85	0.1216
		1/0	1778.5	21.11	0.1291
1.4	QPSK	1/0	1710.7	20.69	0.1172
		1/0	1745	21.44	0.1393
		1/0	1779.3	21.82	0.1521
	16QAM	1/0	1710.7	19.87	0.0971
		1/0	1745	20.58	0.1143
		1/0	1779.3	20.98	0.1253

9.1.1. GSM

GPRS 850										EGPRS 850									
UL Verification Services, Inc. High Frequency Substitution Measurement										UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung					Project #: 12726917					Company: Samsung					Project #: 12726917				
Date: 4/29/2019					Test Engineer: 19480 BS					Date: 4/29/2019					Test Engineer: 19480 BS				
Configuration: EUT Only					Location: Chamber I					Configuration: EUT Only					Location: Chamber I				
Mode: GPRS 850 MHz Fundamentals					Test Equipment:					Mode: EGPRS 850 MHz Fundamentals					Test Equipment:				
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables										Receiving: Hybrid PRE0184971, and Chamber I SMA Cables									
Substitution: Dipole T416, Chamber I Passthrough Cables										Substitution: Dipole T416, Chamber I Passthrough Cables									
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch										Low Ch									
824.20	26.46	V	3.1	0.1	23.47	38.5	-15.0			824.20	20.99	V	3.1	0.1	18.00	38.5	-20.5		
824.20	33.27	H	3.1	0.2	30.37	38.5	-8.1			824.20	27.70	H	3.1	0.2	24.80	38.5	-13.7		
Mid Ch										Mid Ch									
836.60	25.20	V	3.1	0.1	22.13	38.5	-16.4			836.60	19.68	V	3.1	0.1	16.61	38.5	-21.9		
836.60	32.33	H	3.1	0.2	29.36	38.5	-9.1			836.60	26.83	H	3.1	0.2	23.86	38.5	-14.6		
High Ch										High Ch									
848.80	24.61	V	3.2	0.0	21.46	38.5	-17.0			848.80	18.38	V	3.2	0.0	15.23	38.5	-23.3		
848.80	33.06	H	3.2	0.1	30.01	38.5	-8.5			848.80	27.38	H	3.2	0.1	24.33	38.5	-14.2		
GPRS 1900										EGPRS 1900									
UL Verification Services, Inc. High Frequency Substitution Measurement										UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung					Project #: 12726917					Company: Samsung					Project #: 12726917				
Date: 4/26/2019					Test Engineer: 19480 BS					Date: 4/26/2019					Test Engineer: 19480 BS				
Configuration: EUT Only					Location: Chamber K					Configuration: EUT Only					Location: Chamber K				
Mode: GPRS 1900 MHz Fundamentals					Test Equipment:					Mode: EGPRS 1900 MHz Fundamentals					Test Equipment:				
Receiving: Horn T344, and Chamber K SMA Cables										Receiving: Horn T344, and Chamber K SMA Cables									
Substitution: Horn PRE0181259, Chamber K Passthrough Cables										Substitution: Horn PRE0181259, Chamber K Passthrough Cables									
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch										Low Ch									
1850.20	19.11	V	5.0	9.8	23.88	33.0	-9.1			1850.20	16.11	V	5.0	9.8	20.88	33.0	-12.1		
1850.20	23.79	H	5.0	9.8	28.56	33.0	-4.4			1850.20	20.88	H	5.0	9.8	25.65	33.0	-7.3		
Mid Ch										Mid Ch									
1880.00	20.30	V	5.1	10.0	25.18	33.0	-7.8			1880.00	17.21	V	5.1	10.0	22.09	33.0	-10.9		
1880.00	24.25	H	5.1	10.0	29.13	33.0	-3.9			1880.00	21.12	H	5.1	10.0	26.00	33.0	-7.0		
High Ch										High Ch									
1909.80	20.71	V	5.2	10.1	25.66	33.0	-7.3			1909.80	18.51	V	5.2	10.1	23.46	33.0	-9.5		
1909.80	23.58	H	5.2	10.1	28.53	33.0	-4.5			1909.80	21.62	H	5.2	10.1	26.57	33.0	-6.4		

9.1.2. WCDMA

B2 REL99										B2 HSDPA																																																																																																																																																																																													
<p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung                      Project #: 12726917                      Date: 4/26/2019                      Test Engineer: 19480 BS                      Configuration: EUT Only                      Location: Chamber K                      Mode: Rel99 Band 2 Fundamentals</p> <p>Test Equipment:                      Receiving: Horn T344, and Chamber K SMA Cables                      Substitution: Horn PRE0181259, Chamber K Passthrough Cables</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td colspan="9">Low Ch</td></tr> <tr><td>1852.40</td><td>13.98</td><td>V</td><td>5.0</td><td>9.8</td><td>18.76</td><td>33.0</td><td>-14.2</td><td></td></tr> <tr><td>1852.40</td><td>18.85</td><td>H</td><td>5.0</td><td>9.8</td><td>23.63</td><td>33.0</td><td>-9.4</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>1880.00</td><td>14.85</td><td>V</td><td>5.1</td><td>10.0</td><td>19.73</td><td>33.0</td><td>-13.3</td><td></td></tr> <tr><td>1880.00</td><td>18.50</td><td>H</td><td>5.1</td><td>10.0</td><td>23.38</td><td>33.0</td><td>-9.6</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>1907.60</td><td>15.92</td><td>V</td><td>5.2</td><td>10.1</td><td>20.87</td><td>33.0</td><td>-12.1</td><td></td></tr> <tr><td>1907.60</td><td>18.49</td><td>H</td><td>5.2</td><td>10.1</td><td>23.44</td><td>33.0</td><td>-9.6</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1852.40	13.98	V	5.0	9.8	18.76	33.0	-14.2		1852.40	18.85	H	5.0	9.8	23.63	33.0	-9.4		Mid Ch									1880.00	14.85	V	5.1	10.0	19.73	33.0	-13.3		1880.00	18.50	H	5.1	10.0	23.38	33.0	-9.6		High Ch									1907.60	15.92	V	5.2	10.1	20.87	33.0	-12.1		1907.60	18.49	H	5.2	10.1	23.44	33.0	-9.6		<p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung                      Project #: 12726917                      Date: 4/26/2019                      Test Engineer: 19480 BS                      Configuration: EUT Only                      Location: Chamber K                      Mode: HSDPA Band 2 Fundamentals</p> <p>Test Equipment:                      Receiving: Horn T344, and Chamber K SMA Cables                      Substitution: Horn PRE0181259, Chamber K Passthrough Cables</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td colspan="9">Low Ch</td></tr> <tr><td>1852.40</td><td>11.74</td><td>V</td><td>5.0</td><td>9.8</td><td>16.52</td><td>33.0</td><td>-16.5</td><td></td></tr> <tr><td>1852.40</td><td>16.78</td><td>H</td><td>5.0</td><td>9.8</td><td>21.56</td><td>33.0</td><td>-11.4</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>1880.00</td><td>12.82</td><td>V</td><td>5.1</td><td>10.0</td><td>17.70</td><td>33.0</td><td>-15.3</td><td></td></tr> <tr><td>1880.00</td><td>16.45</td><td>H</td><td>5.1</td><td>10.0</td><td>21.33</td><td>33.0</td><td>-11.7</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>1907.60</td><td>13.69</td><td>V</td><td>5.2</td><td>10.1</td><td>18.64</td><td>33.0</td><td>-14.4</td><td></td></tr> <tr><td>1907.60</td><td>16.41</td><td>H</td><td>5.2</td><td>10.1</td><td>21.36</td><td>33.0</td><td>-11.6</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1852.40	11.74	V	5.0	9.8	16.52	33.0	-16.5		1852.40	16.78	H	5.0	9.8	21.56	33.0	-11.4		Mid Ch									1880.00	12.82	V	5.1	10.0	17.70	33.0	-15.3		1880.00	16.45	H	5.1	10.0	21.33	33.0	-11.7		High Ch									1907.60	13.69	V	5.2	10.1	18.64	33.0	-14.4		1907.60	16.41	H	5.2	10.1	21.36	33.0	-11.6	
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<p>B5 REL99</p> <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung                      Project #: 12726917                      Date: 4/26/2019                      Test Engineer: 19480 BS                      Configuration: EUT Only                      Location: Chamber I                      Mode: Rel99 Band 5 Fundamentals</p> <p>Test Equipment:                      Receiving: Hybrid PRE0184971, and Chamber I SMA Cables                      Substitution: Dipole T416, Chamber I Passthrough Cables</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td colspan="9">Low Ch</td></tr> <tr><td>826.40</td><td>17.28</td><td>V</td><td>3.1</td><td>0.1</td><td>14.27</td><td>38.5</td><td>-24.2</td><td></td></tr> <tr><td>826.40</td><td>23.96</td><td>H</td><td>3.1</td><td>0.2</td><td>21.05</td><td>38.5</td><td>-17.4</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>836.60</td><td>15.76</td><td>V</td><td>3.1</td><td>0.1</td><td>12.69</td><td>38.5</td><td>-25.8</td><td></td></tr> <tr><td>836.60</td><td>22.90</td><td>H</td><td>3.1</td><td>0.2</td><td>19.93</td><td>38.5</td><td>-18.6</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>846.60</td><td>16.06</td><td>V</td><td>3.1</td><td>0.0</td><td>12.93</td><td>38.5</td><td>-25.6</td><td></td></tr> <tr><td>846.60</td><td>23.91</td><td>H</td><td>3.1</td><td>0.1</td><td>20.88</td><td>38.5</td><td>-17.6</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									826.40	17.28	V	3.1	0.1	14.27	38.5	-24.2		826.40	23.96	H	3.1	0.2	21.05	38.5	-17.4		Mid Ch									836.60	15.76	V	3.1	0.1	12.69	38.5	-25.8		836.60	22.90	H	3.1	0.2	19.93	38.5	-18.6		High Ch									846.60	16.06	V	3.1	0.0	12.93	38.5	-25.6		846.60	23.91	H	3.1	0.1	20.88	38.5	-17.6		<p>B5 HSDPA</p> <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung                      Project #: 12726917                      Date: 4/26/2019                      Test Engineer: 19480 BS                      Configuration: EUT Only                      Location: Chamber I                      Mode: HSDPA Band 5 Fundamentals</p> <p>Test Equipment:                      Receiving: Hybrid PRE0184971, and Chamber I SMA Cables                      Substitution: Dipole T416, Chamber I Passthrough Cables</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td colspan="9">Low Ch</td></tr> <tr><td>826.40</td><td>16.24</td><td>V</td><td>3.1</td><td>0.1</td><td>13.23</td><td>38.5</td><td>-25.3</td><td></td></tr> <tr><td>826.40</td><td>22.80</td><td>H</td><td>3.1</td><td>0.2</td><td>19.89</td><td>38.5</td><td>-18.6</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>836.60</td><td>14.69</td><td>V</td><td>3.1</td><td>0.1</td><td>11.62</td><td>38.5</td><td>-26.9</td><td></td></tr> <tr><td>836.60</td><td>21.82</td><td>H</td><td>3.1</td><td>0.2</td><td>18.85</td><td>38.5</td><td>-19.7</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>846.60</td><td>15.06</td><td>V</td><td>3.1</td><td>0.0</td><td>11.93</td><td>38.5</td><td>-26.6</td><td></td></tr> <tr><td>846.60</td><td>22.74</td><td>H</td><td>3.1</td><td>0.1</td><td>19.71</td><td>38.5</td><td>-18.8</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									826.40	16.24	V	3.1	0.1	13.23	38.5	-25.3		826.40	22.80	H	3.1	0.2	19.89	38.5	-18.6		Mid Ch									836.60	14.69	V	3.1	0.1	11.62	38.5	-26.9		836.60	21.82	H	3.1	0.2	18.85	38.5	-19.7		High Ch									846.60	15.06	V	3.1	0.0	11.93	38.5	-26.6		846.60	22.74	H	3.1	0.1	19.71	38.5	-18.8	
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<p>B4 REL99</p> <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung                      Project #: 12726917                      Date: 4/27/2019                      Test Engineer: 19480 BS                      Configuration: EUT Only                      Location: Chamber K                      Mode: Rel99 Band 4 Fundamentals</p> <p>Test Equipment:                      Receiving: Horn T344, and Chamber K SMA Cables                      Substitution: Horn PRE0181259, Chamber K Passthrough Cables</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td colspan="9">Low Ch</td></tr> <tr><td>1712.40</td><td>12.63</td><td>V</td><td>4.8</td><td>9.3</td><td>17.15</td><td>30.0</td><td>-12.8</td><td></td></tr> <tr><td>1712.40</td><td>16.11</td><td>H</td><td>4.8</td><td>9.3</td><td>20.63</td><td>30.0</td><td>-9.4</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>1732.60</td><td>13.74</td><td>V</td><td>4.8</td><td>9.3</td><td>18.23</td><td>30.0</td><td>-11.8</td><td></td></tr> <tr><td>1732.60</td><td>17.14</td><td>H</td><td>4.8</td><td>9.3</td><td>21.63</td><td>30.0</td><td>-8.4</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>1752.60</td><td>14.28</td><td>V</td><td>4.8</td><td>9.3</td><td>18.75</td><td>30.0</td><td>-11.2</td><td></td></tr> <tr><td>1752.60</td><td>17.85</td><td>H</td><td>4.8</td><td>9.3</td><td>22.32</td><td>30.0</td><td>-7.7</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1712.40	12.63	V	4.8	9.3	17.15	30.0	-12.8		1712.40	16.11	H	4.8	9.3	20.63	30.0	-9.4		Mid Ch									1732.60	13.74	V	4.8	9.3	18.23	30.0	-11.8		1732.60	17.14	H	4.8	9.3	21.63	30.0	-8.4		High Ch									1752.60	14.28	V	4.8	9.3	18.75	30.0	-11.2		1752.60	17.85	H	4.8	9.3	22.32	30.0	-7.7		<p>B4 HSDPA</p> <p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung                      Project #: 12726917                      Date: 4/27/2019                      Test Engineer: 19480 BS                      Configuration: EUT Only                      Location: Chamber K                      Mode: HSDPA Band 4 Fundamentals</p> <p>Test Equipment:                      Receiving: Horn T344, and Chamber K SMA Cables                      Substitution: Horn PRE0181259, Chamber K Passthrough Cables</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td colspan="9">Low Ch</td></tr> <tr><td>1712.40</td><td>12.51</td><td>V</td><td>4.8</td><td>9.3</td><td>17.03</td><td>30.0</td><td>-13.0</td><td></td></tr> <tr><td>1712.40</td><td>16.27</td><td>H</td><td>4.8</td><td>9.3</td><td>20.79</td><td>30.0</td><td>-9.2</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>1732.60</td><td>13.80</td><td>V</td><td>4.8</td><td>9.3</td><td>18.09</td><td>30.0</td><td>-11.9</td><td></td></tr> <tr><td>1732.60</td><td>17.24</td><td>H</td><td>4.8</td><td>9.3</td><td>21.73</td><td>30.0</td><td>-8.3</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>1752.60</td><td>14.12</td><td>V</td><td>4.8</td><td>9.3</td><td>18.59</td><td>30.0</td><td>-11.4</td><td></td></tr> <tr><td>1752.60</td><td>17.90</td><td>H</td><td>4.8</td><td>9.3</td><td>22.37</td><td>30.0</td><td>-7.6</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1712.40	12.51	V	4.8	9.3	17.03	30.0	-13.0		1712.40	16.27	H	4.8	9.3	20.79	30.0	-9.2		Mid Ch									1732.60	13.80	V	4.8	9.3	18.09	30.0	-11.9		1732.60	17.24	H	4.8	9.3	21.73	30.0	-8.3		High Ch									1752.60	14.12	V	4.8	9.3	18.59	30.0	-11.4		1752.60	17.90	H	4.8	9.3	22.37	30.0	-7.6	
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9.1.3. LTE Band 2

20MHz QPSK										20MHz 16QAM																																																																																																																																																																																																																	
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Low Ch										Low Ch									
1852.50	14.22	V	5.0	9.8	19.00	33.0	-14.0			1852.50	13.37	V	5.0	9.8	18.15	33.0	-14.9		
1852.50	19.01	H	5.0	9.8	23.79	33.0	-9.2			1852.50	18.16	H	5.0	9.8	22.94	33.0	-10.1		
Mid Ch										Mid Ch									
1880.00	13.31	V	5.1	10.0	18.19	33.0	-14.8			1880.00	12.46	V	5.1	10.0	17.34	33.0	-15.7		
1880.00	18.32	H	5.1	10.0	23.20	33.0	-9.8			1880.00	17.49	H	5.1	10.0	22.37	33.0	-10.6		
High Ch										High Ch									
1907.50	14.59	V	5.1	10.1	19.54	33.0	-13.5			1907.50	13.52	V	5.1	10.1	18.47	33.0	-14.5		
1907.50	17.94	H	5.1	10.1	22.79	33.0	-10.2			1907.50	16.83	H	5.1	10.1	21.78	33.0	-11.2		
3MHz QPSK										3MHz 16QAM									
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12726917 Date: 4/26/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: Horn PRE0181259, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12726917 Date: 4/26/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: Horn PRE0181259, Chamber K Passthrough Cables									
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Low Ch										Low Ch									
1851.50	13.99	V	5.0	9.8	18.77	33.0	-14.2			1851.50	13.03	V	5.0	9.8	17.81	33.0	-15.2		
1851.50	18.78	H	5.0	9.8	23.56	33.0	-9.4			1851.50	17.83	H	5.0	9.8	22.61	33.0	-10.4		
Mid Ch										Mid Ch									
1880.00	14.25	V	5.1	10.0	19.13	33.0	-13.9			1880.00	13.40	V	5.1	10.0	18.28	33.0	-14.7		
1880.00	18.03	H	5.1	10.0	22.91	33.0	-10.1			1880.00	17.18	H	5.1	10.0	22.06	33.0	-10.9		
High Ch										High Ch									
1908.50	15.30	V	5.2	10.1	20.25	33.0	-12.8			1908.50	14.19	V	5.2	10.1	19.14	33.0	-13.9		
1908.50	18.22	H	5.2	10.1	23.17	33.0	-9.8			1908.50	17.15	H	5.2	10.1	22.10	33.0	-10.9		
1.4MHz QPSK										1.4MHz 16QAM									
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12726917 Date: 4/26/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: Horn PRE0181259, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12726917 Date: 4/26/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: Horn PRE0181259, Chamber K Passthrough Cables									
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch										Low Ch									
1850.70	14.15	V	5.0	9.8	18.92	33.0	-14.1			1850.70	13.11	V	5.0	9.8	17.88	33.0	-15.1		
1850.70	18.14	H	5.0	9.8	22.91	33.0	-10.1			1850.70	17.13	H	5.0	9.8	21.90	33.0	-11.1		
Mid Ch										Mid Ch									
1880.00	14.20	V	5.1	10.0	19.08	33.0	-13.9			1880.00	13.33	V	5.1	10.0	18.21	33.0	-14.8		
1880.00	18.44	H	5.1	10.0	23.32	33.0	-9.7			1880.00	17.56	H	5.1	10.0	22.44	33.0	-10.6		
High Ch										High Ch									
1909.30	14.76	V	5.2	10.1	19.71	33.0	-13.3			1909.30	13.75	V	5.2	10.1	18.70	33.0	-14.3		
1909.30	17.95	H	5.2	10.1	22.90	33.0	-10.1			1909.30	16.96	H	5.2	10.1	21.91	33.0	-11.1		

9.1.4. LTE Band 4

20MHz QPSK										20MHz 16QAM																																																																																																																																																																																													
<p>UL Verification Services, Inc.                      High Frequency Substitution Measurement</p> <p>Company: Samsung                      Project #: 12726917                      Date: 5/7/2019                      Test Engineer: 19480 BS                      Configuration: EUT Only                      Location: Chamber I                      Mode: LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth</p> <p>Test Equipment:                      Receiving: Horn T862, and Chamber I SMA Cables                      Substitution: Horn PRE0181259, Chamber I Passthrough Cables</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1720.00</td><td>13.62</td><td>V</td><td>4.8</td><td>9.3</td><td>18.13</td><td>30.0</td><td>-11.9</td><td></td></tr> <tr><td>1720.00</td><td>17.28</td><td>H</td><td>4.8</td><td>9.3</td><td>21.79</td><td>30.0</td><td>-8.2</td><td></td></tr> <tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1732.50</td><td>14.39</td><td>V</td><td>4.8</td><td>9.3</td><td>18.88</td><td>30.0</td><td>-11.1</td><td></td></tr> <tr><td>1732.50</td><td>18.04</td><td>H</td><td>4.8</td><td>9.3</td><td>22.53</td><td>30.0</td><td>-7.5</td><td></td></tr> <tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1745.00</td><td>13.78</td><td>V</td><td>4.8</td><td>9.3</td><td>18.25</td><td>30.0</td><td>-11.8</td><td></td></tr> <tr><td>1745.00</td><td>17.59</td><td>H</td><td>4.8</td><td>9.3</td><td>21.97</td><td>30.0</td><td>-8.0</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1720.00	13.62	V	4.8	9.3	18.13	30.0	-11.9		1720.00	17.28	H	4.8	9.3	21.79	30.0	-8.2		Mid Ch									1732.50	14.39	V	4.8	9.3	18.88	30.0	-11.1		1732.50	18.04	H	4.8	9.3	22.53	30.0	-7.5		High Ch									1745.00	13.78	V	4.8	9.3	18.25	30.0	-11.8		1745.00	17.59	H	4.8	9.3	21.97	30.0	-8.0		<p>UL Verification Services, Inc.                      High Frequency Substitution Measurement</p> <p>Company: Samsung                      Project #: 12726917                      Date: 5/7/2019                      Test Engineer: 19480 BS                      Configuration: EUT Only                      Location: Chamber I                      Mode: LTE_16QAM Band 4 Fundamentals, 20MHz Bandwidth</p> <p>Test Equipment:                      Receiving: Horn T862, and Chamber I SMA Cables                      Substitution: Horn PRE0181259, Chamber I Passthrough Cables</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1720.00</td><td>12.86</td><td>V</td><td>4.8</td><td>9.3</td><td>17.37</td><td>30.0</td><td>-12.6</td><td></td></tr> <tr><td>1720.00</td><td>16.54</td><td>H</td><td>4.8</td><td>9.3</td><td>21.05</td><td>30.0</td><td>-8.9</td><td></td></tr> <tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1732.50</td><td>13.61</td><td>V</td><td>4.8</td><td>9.3</td><td>18.10</td><td>30.0</td><td>-11.9</td><td></td></tr> <tr><td>1732.50</td><td>17.20</td><td>H</td><td>4.8</td><td>9.3</td><td>21.69</td><td>30.0</td><td>-8.3</td><td></td></tr> <tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1745.00</td><td>12.91</td><td>V</td><td>4.8</td><td>9.3</td><td>17.38</td><td>30.0</td><td>-12.6</td><td></td></tr> <tr><td>1745.00</td><td>16.66</td><td>H</td><td>4.8</td><td>9.3</td><td>21.13</td><td>30.0</td><td>-8.9</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1720.00	12.86	V	4.8	9.3	17.37	30.0	-12.6		1720.00	16.54	H	4.8	9.3	21.05	30.0	-8.9		Mid Ch									1732.50	13.61	V	4.8	9.3	18.10	30.0	-11.9		1732.50	17.20	H	4.8	9.3	21.69	30.0	-8.3		High Ch									1745.00	12.91	V	4.8	9.3	17.38	30.0	-12.6		1745.00	16.66	H	4.8	9.3	21.13	30.0	-8.9	
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<p>UL Verification Services, Inc.                      High Frequency Substitution Measurement</p> <p>Company: Samsung                      Project #: 12726917                      Date: 5/7/2019                      Test Engineer: 19480 BS                      Configuration: EUT Only                      Location: Chamber I                      Mode: LTE_QPSK Band 4 Fundamentals, 10MHz Bandwidth</p> <p>Test Equipment:                      Receiving: Horn T862, and Chamber I SMA Cables                      Substitution: Horn PRE0181259, Chamber I Passthrough Cables</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1715.00</td><td>13.43</td><td>V</td><td>4.8</td><td>9.3</td><td>17.95</td><td>30.0</td><td>-12.1</td><td></td></tr> <tr><td>1715.00</td><td>16.59</td><td>H</td><td>4.8</td><td>9.3</td><td>21.11</td><td>30.0</td><td>-8.9</td><td></td></tr> <tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1732.50</td><td>13.70</td><td>V</td><td>4.8</td><td>9.3</td><td>18.19</td><td>30.0</td><td>-11.8</td><td></td></tr> <tr><td>1732.50</td><td>18.19</td><td>H</td><td>4.8</td><td>9.3</td><td>22.68</td><td>30.0</td><td>-7.3</td><td></td></tr> <tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1750.00</td><td>12.98</td><td>V</td><td>4.8</td><td>9.3</td><td>17.44</td><td>30.0</td><td>-12.6</td><td></td></tr> <tr><td>1750.00</td><td>18.06</td><td>H</td><td>4.8</td><td>9.3</td><td>22.52</td><td>30.0</td><td>-7.5</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1715.00	13.43	V	4.8	9.3	17.95	30.0	-12.1		1715.00	16.59	H	4.8	9.3	21.11	30.0	-8.9		Mid Ch									1732.50	13.70	V	4.8	9.3	18.19	30.0	-11.8		1732.50	18.19	H	4.8	9.3	22.68	30.0	-7.3		High Ch									1750.00	12.98	V	4.8	9.3	17.44	30.0	-12.6		1750.00	18.06	H	4.8	9.3	22.52	30.0	-7.5		<p>UL Verification Services, Inc.                      High Frequency Substitution Measurement</p> <p>Company: Samsung                      Project #: 12726917                      Date: 5/7/2019                      Test Engineer: 19480 BS                      Configuration: EUT Only                      Location: Chamber I                      Mode: LTE_16QAM Band 4 Fundamentals, 10MHz Bandwidth</p> <p>Test Equipment:                      Receiving: Horn T862, and Chamber I SMA Cables                      Substitution: Horn PRE0181259, Chamber I Passthrough Cables</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1715.00</td><td>12.68</td><td>V</td><td>4.8</td><td>9.3</td><td>17.20</td><td>30.0</td><td>-12.8</td><td></td></tr> <tr><td>1715.00</td><td>16.85</td><td>H</td><td>4.8</td><td>9.3</td><td>20.37</td><td>30.0</td><td>-9.6</td><td></td></tr> <tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1732.50</td><td>12.78</td><td>V</td><td>4.8</td><td>9.3</td><td>17.27</td><td>30.0</td><td>-12.7</td><td></td></tr> <tr><td>1732.50</td><td>17.22</td><td>H</td><td>4.8</td><td>9.3</td><td>21.71</td><td>30.0</td><td>-8.3</td><td></td></tr> <tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>1750.00</td><td>12.14</td><td>V</td><td>4.8</td><td>9.3</td><td>16.60</td><td>30.0</td><td>-13.4</td><td></td></tr> <tr><td>1750.00</td><td>17.22</td><td>H</td><td>4.8</td><td>9.3</td><td>21.68</td><td>30.0</td><td>-8.3</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									1715.00	12.68	V	4.8	9.3	17.20	30.0	-12.8		1715.00	16.85	H	4.8	9.3	20.37	30.0	-9.6		Mid Ch									1732.50	12.78	V	4.8	9.3	17.27	30.0	-12.7		1732.50	17.22	H	4.8	9.3	21.71	30.0	-8.3		High Ch									1750.00	12.14	V	4.8	9.3	16.60	30.0	-13.4		1750.00	17.22	H	4.8	9.3	21.68	30.0	-8.3	
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																																																																																																																															
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1732.50	17.22	H	4.8	9.3	21.71	30.0	-8.3																																																																																																																																																																																																
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5MHz QPSK									5MHz 16QAM								
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12726917 Date: 5/7/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: Horn PRE0181259, Chamber I Passthrough Cables									UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12726917 Date: 5/7/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: Horn PRE0181259, Chamber I Passthrough Cables								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch 1712.50 13.13 V 4.8 9.3 17.65 30.0 -12.3 1712.50 16.75 H 4.8 9.3 21.27 30.0 -8.7 Mid Ch 1732.50 13.38 V 4.8 9.3 17.87 30.0 -12.1 1732.50 18.09 H 4.8 9.3 22.58 30.0 -7.4 High Ch 1752.50 12.73 V 4.8 9.3 17.20 30.0 -12.8 1752.50 17.85 H 4.8 9.3 22.32 30.0 -7.7									Low Ch 1712.50 12.42 V 4.8 9.3 16.94 30.0 -13.1 1712.50 16.08 H 4.8 9.3 20.60 30.0 -9.4 Mid Ch 1732.50 12.46 V 4.8 9.3 16.85 30.0 -13.0 1732.50 17.19 H 4.8 9.3 21.68 30.0 -8.3 High Ch 1752.50 11.97 V 4.8 9.3 16.44 30.0 -13.6 1752.50 17.09 H 4.8 9.3 21.56 30.0 -8.4								
3MHz QPSK									3MHz 16QAM								
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12726917 Date: 5/7/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: Horn PRE0181259, Chamber I Passthrough Cables									UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12726917 Date: 5/7/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: Horn PRE0181259, Chamber I Passthrough Cables								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch 1711.50 12.57 V 4.8 9.3 17.09 30.0 -12.9 1711.50 16.79 H 4.8 9.3 21.31 30.0 -8.7 Mid Ch 1732.50 13.69 V 4.8 9.3 18.18 30.0 -11.8 1732.50 18.06 H 4.8 9.3 22.55 30.0 -7.4 High Ch 1753.50 12.47 V 4.8 9.3 16.95 30.0 -13.1 1753.50 17.93 H 4.8 9.3 22.41 30.0 -7.6									Low Ch 1711.50 11.77 V 4.8 9.3 16.29 30.0 -13.7 1711.50 16.01 H 4.8 9.3 20.53 30.0 -9.5 Mid Ch 1732.50 12.73 V 4.8 9.3 17.22 30.0 -12.8 1732.50 17.13 H 4.8 9.3 21.62 30.0 -8.4 High Ch 1753.50 11.66 V 4.8 9.3 16.14 30.0 -13.9 1753.50 17.10 H 4.8 9.3 21.58 30.0 -8.4								
1.4MHz QPSK									1.4MHz 16QAM								
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12726917 Date: 5/7/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: Horn PRE0181259, Chamber I Passthrough Cables									UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 12726917 Date: 5/7/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: Horn PRE0181259, Chamber I Passthrough Cables								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch 1710.70 13.19 V 4.8 9.3 17.72 30.0 -12.3 1710.70 16.62 H 4.8 9.3 21.15 30.0 -8.9 Mid Ch 1732.50 12.85 V 4.8 9.3 17.34 30.0 -12.7 1732.50 17.66 H 4.8 9.3 22.15 30.0 -7.8 High Ch 1754.30 12.89 V 4.8 9.3 17.37 30.0 -12.6 1754.30 18.07 H 4.8 9.3 22.55 30.0 -7.4									Low Ch 1710.70 12.38 V 4.8 9.3 16.91 30.0 -13.1 1710.70 15.81 H 4.8 9.3 20.34 30.0 -9.7 Mid Ch 1732.50 11.86 V 4.8 9.3 16.35 30.0 -13.6 1732.50 16.67 H 4.8 9.3 21.16 30.0 -8.8 High Ch 1754.30 12.10 V 4.8 9.3 16.58 30.0 -13.4 1754.30 17.31 H 4.8 9.3 21.79 30.0 -8.2								

9.1.5. LTE Band 5

10MHz QPSK										10MHz 16QAM									
UL Verification Services, Inc. High Frequency Substitution Measurement										UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables					Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 5 Fundamentals, 10MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables				
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch										Low Ch									
829.00	15.78	V	3.1	0.1	12.76	38.5	-25.7			829.00	14.96	V	3.1	0.1	11.94	38.5	-26.6		
829.00	23.94	H	3.1	0.2	21.02	38.5	-17.5			829.00	23.14	H	3.1	0.2	20.22	38.5	-18.3		
Mid Ch										Mid Ch									
836.50	15.48	V	3.1	0.1	12.41	38.5	-26.1			836.50	14.67	V	3.1	0.1	11.60	38.5	-26.9		
836.50	23.24	H	3.1	0.2	20.27	38.5	-18.2			836.50	22.40	H	3.1	0.2	19.43	38.5	-19.1		
High Ch										High Ch									
844.00	16.18	V	3.1	0.0	13.06	38.5	-25.4			844.00	15.29	V	3.1	0.0	12.17	38.5	-26.3		
844.00	23.72	H	3.1	0.1	20.70	38.5	-17.8			844.00	22.83	H	3.1	0.1	19.81	38.5	-18.7		
5MHz QPSK										5MHz 16QAM									
UL Verification Services, Inc. High Frequency Substitution Measurement										UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 5 Fundamentals, 5MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables					Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 5 Fundamentals, 5MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables				
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch										Low Ch									
826.50	15.10	V	3.1	0.1	12.09	38.5	-26.4			826.50	14.30	V	3.1	0.1	11.29	38.5	-27.2		
826.50	23.77	H	3.1	0.2	20.86	38.5	-17.6			826.50	23.06	H	3.1	0.2	20.15	38.5	-18.3		
Mid Ch										Mid Ch									
836.50	15.24	V	3.1	0.1	12.17	38.5	-26.3			836.50	14.44	V	3.1	0.1	11.37	38.5	-27.1		
836.50	23.18	H	3.1	0.2	20.21	38.5	-18.3			836.50	22.31	H	3.1	0.2	19.34	38.5	-19.2		
High Ch										High Ch									
846.50	15.65	V	3.1	0.0	12.52	38.5	-26.0			846.50	14.93	V	3.1	0.0	11.80	38.5	-26.7		
846.50	23.78	H	3.1	0.1	20.75	38.5	-17.8			846.50	22.91	H	3.1	0.1	19.88	38.5	-18.6		
3MHz QPSK										3MHz 16QAM									
UL Verification Services, Inc. High Frequency Substitution Measurement										UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables					Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables				
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch										Low Ch									
825.50	16.20	V	3.1	0.1	13.20	38.5	-25.3			825.50	15.38	V	3.1	0.1	12.38	38.5	-26.1		
825.50	23.88	H	3.1	0.2	20.88	38.5	-17.5			825.50	23.07	H	3.1	0.2	20.17	38.5	-18.3		
Mid Ch										Mid Ch									
836.50	15.25	V	3.1	0.1	12.18	38.5	-26.3			836.50	14.36	V	3.1	0.1	11.29	38.5	-27.2		
836.50	22.98	H	3.1	0.2	20.01	38.5	-18.5			836.50	21.99	H	3.1	0.2	19.02	38.5	-19.5		
High Ch										High Ch									
847.50	14.78	V	3.1	0.0	11.64	38.5	-26.9			847.50	13.97	V	3.1	0.0	10.83	38.5	-27.7		
847.50	23.33	H	3.1	0.1	20.29	38.5	-18.2			847.50	22.49	H	3.1	0.1	19.45	38.5	-19.0		
1.4MHz QPSK										1.4MHz 16QAM									
UL Verification Services, Inc. High Frequency Substitution Measurement										UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables					Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 5 Fundamentals, 1.4MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables				
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch										Low Ch									
824.70	14.82	V	3.1	0.1	11.82	38.5	-26.7			824.70	13.99	V	3.1	0.1	10.99	38.5	-27.5		
824.70	23.35	H	3.1	0.2	20.45	38.5	-18.0			824.70	22.49	H	3.1	0.2	19.59	38.5	-18.9		
Mid Ch										Mid Ch									
836.50	14.77	V	3.1	0.1	11.70	38.5	-26.8			836.50	13.85	V	3.1	0.1	10.78	38.5	-27.7		
836.50	22.16	H	3.1	0.2	19.19	38.5	-19.3			836.50	21.15	H	3.1	0.2	18.18	38.5	-20.3		
High Ch										High Ch									
848.30	14.66	V	3.2	0.0	11.52	38.5	-27.0			848.30	13.73	V	3.2	0.0	10.59	38.5	-27.9		
848.30	23.27	H	3.2	0.1	20.23	38.5	-18.3			848.30	22.33	H	3.2	0.1	19.29	38.5	-19.2		

9.1.6. LTE Band 7

20MHz QPSK										20MHz 16QAM																																																																																																																																																																																																																	
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9.1.7. LTE Band 12

10MHz QPSK										10MHz 16QAM									
UL Verification Services, Inc. High Frequency Substitution Measurement										UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung Project #: 12726917 Date: 4/30/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables					Company: Samsung Project #: 12726917 Date: 4/30/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables				
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Low Ch										Low Ch									
704.00	12.74	V	2.8	1.2	11.06	34.8	-23.7			704.00	11.86	V	2.8	1.2	10.18	34.8	-24.6		
704.00	21.67	H	2.8	1.6	20.37	34.8	-14.4			704.00	20.80	H	2.8	1.6	19.50	34.8	-15.3		
Mid Ch										Mid Ch									
707.50	13.09	V	2.9	1.1	11.38	34.8	-23.4			707.50	12.25	V	2.9	1.1	10.54	34.8	-24.3		
707.50	21.92	H	2.9	1.5	20.58	34.8	-14.2			707.50	21.06	H	2.9	1.5	19.72	34.8	-15.1		
High Ch										High Ch									
711.00	13.46	V	2.9	1.1	11.71	34.8	-23.1			711.00	12.56	V	2.9	1.1	10.81	34.8	-24.0		
711.00	21.34	H	2.9	1.5	19.85	34.8	-14.9			711.00	20.40	H	2.9	1.5	19.01	34.8	-15.8		
5MHz QPSK										5MHz 16QAM									
UL Verification Services, Inc. High Frequency Substitution Measurement										UL Verification Services, Inc. High Frequency Substitution Measurement									
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Low Ch										Low Ch									
701.50	13.27	V	2.8	1.2	11.62	34.8	-23.2			701.50	12.43	V	2.8	1.2	10.78	34.8	-24.0		
701.50	21.77	H	2.8	1.6	20.51	34.8	-14.3			701.50	20.98	H	2.8	1.6	19.72	34.8	-15.1		
Mid Ch										Mid Ch									
707.50	13.09	V	2.9	1.1	11.38	34.8	-23.4			707.50	12.28	V	2.9	1.1	10.57	34.8	-24.2		
707.50	21.95	H	2.9	1.5	20.61	34.8	-14.2			707.50	21.12	H	2.9	1.5	19.78	34.8	-15.0		
High Ch										High Ch									
713.50	13.08	V	2.9	1.1	11.31	34.8	-23.5			713.50	12.35	V	2.9	1.1	10.58	34.8	-24.2		
713.50	22.15	H	2.9	1.4	20.72	34.8	-14.1			713.50	21.34	H	2.9	1.4	19.91	34.8	-14.9		
3MHz QPSK										3MHz 16QAM									
UL Verification Services, Inc. High Frequency Substitution Measurement										UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung Project #: 12726917 Date: 4/30/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables					Company: Samsung Project #: 12726917 Date: 4/30/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth					Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables				
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch										Low Ch									
700.50	13.34	V	2.8	1.2	11.70	34.8	-23.1			700.50	12.49	V	2.8	1.2	10.85	34.8	-24.0		
700.50	21.46	H	2.8	1.6	20.21	34.8	-14.6			700.50	20.61	H	2.8	1.6	19.36	34.8	-15.4		
Mid Ch										Mid Ch									
707.50	13.21	V	2.9	1.1	11.50	34.8	-23.3			707.50	12.30	V	2.9	1.1	10.59	34.8	-24.2		
707.50	21.75	H	2.9	1.5	20.41	34.8	-14.4			707.50	20.84	H	2.9	1.5	19.50	34.8	-15.3		
High Ch										High Ch									
714.50	12.72	V	2.9	1.1	10.94	34.8	-23.9			714.50	11.86	V	2.9	1.1	10.08	34.8	-24.7		
714.50	22.27	H	2.9	1.4	20.83	34.8	-14.0			714.50	21.41	H	2.9	1.4	19.97	34.8	-14.8		

1.4MHz QPSK									1.4MHz 16QAM								
UL Verification Services, Inc. High Frequency Substitution Measurement									UL Verification Services, Inc. High Frequency Substitution Measurement								
Company: Samsung Project #: 12726917 Date: 4/30/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth									Company: Samsung Project #: 12726917 Date: 4/30/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth								
Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables									Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch									Low Ch								
699.70	12.65	V	2.8	1.2	11.01	34.8	-23.8		699.70	11.76	V	2.8	1.2	10.12	34.8	-24.7	
699.70	21.27	H	2.8	1.6	20.03	34.8	-14.8		699.70	20.40	H	2.8	1.6	19.16	34.8	-15.6	
Mid Ch									Mid Ch								
707.50	12.65	V	2.9	1.1	10.94	34.8	-23.9		707.50	11.78	V	2.9	1.1	10.07	34.8	-24.7	
707.50	21.87	H	2.9	1.5	20.53	34.8	-14.3		707.50	20.93	H	2.9	1.5	19.59	34.8	-15.2	
High Ch									High Ch								
715.30	12.56	V	2.9	1.1	10.77	34.8	-24.0		715.30	11.60	V	2.9	1.1	9.81	34.8	-25.0	
715.30	21.55	H	2.9	1.4	20.10	34.8	-14.7		715.30	20.65	H	2.9	1.4	19.20	34.8	-15.6	

9.1.8. LTE Band 13

10MHz QPSK									10MHz 16QAM								
UL Verification Services, Inc. High Frequency Substitution Measurement									UL Verification Services, Inc. High Frequency Substitution Measurement								
Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 13 Fundamentals, 10MHz Bandwidth  Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables									Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 13 Fundamentals, 10MHz Bandwidth  Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch									Low Ch								
782.00	0.00	V	3.0	0.3	0.00	34.8	0.0		782.00	0.00	V	3.0	0.3	0.00	34.8	0.0	
782.00	0.00	H	3.0	0.5	0.00	34.8	0.0		782.00	0.00	H	3.0	0.5	0.00	34.8	0.0	
Mid Ch									Mid Ch								
782.00	15.20	V	3.0	0.3	12.54	34.8	-22.2		782.00	14.12	V	3.0	0.3	11.46	34.8	-23.3	
782.00	22.38	H	3.0	0.5	19.86	34.8	-14.9		782.00	21.54	H	3.0	0.5	19.02	34.8	-15.7	
High Ch									High Ch								
782.00	0.00	V	3.0	0.3	0.00	34.8	0.0		782.00	0.00	V	3.0	0.3	0.00	34.8	0.0	
782.00	0.00	H	3.0	0.5	0.00	34.8	0.0		782.00	0.00	H	3.0	0.5	0.00	34.8	0.0	

5MHz QPSK									5MHz 16QAM								
UL Verification Services, Inc. High Frequency Substitution Measurement									UL Verification Services, Inc. High Frequency Substitution Measurement								
Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 13 Fundamentals, 5MHz Bandwidth  Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables									Company: Samsung Project #: 12726917 Date: 4/29/2019 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 13 Fundamentals, 5MHz Bandwidth  Test Equipment: Receiving: Hybrid PRE0184971, and Chamber I SMA Cables Substitution: Dipole T416, Chamber I Passthrough Cables								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch									Low Ch								
779.50	15.82	V	3.0	0.4	13.19	34.8	-21.6		779.50	14.87	V	3.0	0.4	12.24	34.8	-22.5	
779.50	22.51	H	3.0	0.5	20.04	34.8	-14.7		779.50	21.72	H	3.0	0.5	19.25	34.8	-15.5	
Mid Ch									Mid Ch								
782.00	15.22	V	3.0	0.3	12.56	34.8	-22.2		782.00	14.10	V	3.0	0.3	11.44	34.8	-23.3	
782.00	22.51	H	3.0	0.5	19.99	34.8	-14.8		782.00	21.61	H	3.0	0.5	19.09	34.8	-15.7	
High Ch									High Ch								
784.50	14.92	V	3.0	0.3	12.24	34.8	-22.5		784.50	13.87	V	3.0	0.3	11.19	34.8	-23.6	
784.50	22.70	H	3.0	0.4	20.14	34.8	-14.6		784.50	21.74	H	3.0	0.4	19.18	34.8	-15.6	



UL Verification Services, Inc. High Frequency Substitution Measurement								
<b>Company:</b> Samsung								
<b>Project #:</b> 12726917								
<b>Date:</b> 4/30/2019								
<b>Test Engineer:</b> 19480 BS								
<b>Configuration:</b> EUT Only								
<b>Location:</b> Chamber I								
<b>Mode:</b> LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth								
<b>Test Equipment:</b>								
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables								
Substitution: Dipole T416, Chamber I Passthrough Cables								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
814.70	14.86	V	3.1	0.1	11.83	50.0	-38.1	Part 90
814.70	22.15	H	3.1	0.2	19.28	50.0	-30.7	Part 90
Mid Ch								
819.00	13.81	V	3.1	0.1	10.85	50.0	-39.1	Part 90
819.00	21.77	H	3.1	0.2	18.89	50.0	-31.1	Part 90
High Ch								
823.30	14.56	V	3.1	0.1	11.57	50.0	-38.4	Part 90
823.30	21.95	H	3.1	0.2	19.06	50.0	-30.9	Part 90

UL Verification Services, Inc. High Frequency Substitution Measurement								
<b>Company:</b> Samsung								
<b>Project #:</b> 12726917								
<b>Date:</b> 4/30/2019								
<b>Test Engineer:</b> 19480 BS								
<b>Configuration:</b> EUT Only								
<b>Location:</b> Chamber I								
<b>Mode:</b> LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth								
<b>Test Equipment:</b>								
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables								
Substitution: Dipole T416, Chamber I Passthrough Cables								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
814.70	13.97	V	3.1	0.1	11.84	50.0	-39.0	Part 90
814.70	21.24	H	3.1	0.2	18.37	50.0	-31.6	Part 90
Mid Ch								
819.00	12.96	V	3.1	0.1	10.00	50.0	-40.0	Part 90
819.00	20.88	H	3.1	0.2	18.00	50.0	-32.0	Part 90
High Ch								
823.30	13.72	V	3.1	0.1	10.73	50.0	-39.3	Part 90
823.30	21.15	H	3.1	0.2	18.26	50.0	-31.7	Part 90