

LTE Band 71

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
20	QPSK	1/0	673	17.78	0.0600
		1/0	680.5	19.43	0.0877
		1/0	688	17.68	0.0586
	16QAM	1/0	673	17.15	0.0519
		1/0	680.5	18.17	0.0656
		1/0	688	16.99	0.0500
15	QPSK	1/0	670.5	18.04	0.0637
		1/0	680.5	19.31	0.0853
		1/0	690.5	19.06	0.0805
	16QAM	1/0	670.5	17.34	0.0542
		1/0	680.5	18.12	0.0649
		1/0	690.5	17.74	0.0594
10	QPSK	1/0	668	18.26	0.0670
		1/0	680.5	19.47	0.0885
		1/0	693	18.85	0.0767
	16QAM	1/0	668	17.02	0.0504
		1/0	680.5	18.09	0.0644
		1/0	693	17.67	0.0585
5	QPSK	1/0	665.5	18.08	0.0643
		1/0	680.5	19.14	0.0820
		1/0	695.5	18.88	0.0773
	16QAM	1/0	665.5	16.87	0.0486
		1/0	680.5	17.95	0.0624
		1/0	695.5	17.67	0.0585

9.1.1. GSM

GPRS 850									EGPRS 850																																																																																																																																																																																												
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9.1.2. CDMA

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Mid Ch																																																																																																																																																																																																							
1880.00	18.63	V	5.7	4.6	17.53	33.0	-15.5																																																																																																																																																																																																
1880.00	23.89	H	5.7	4.6	22.79	33.0	-10.2																																																																																																																																																																																																
High Ch																																																																																																																																																																																																							
1908.75	19.14	V	5.7	4.5	18.00	33.0	-15.0																																																																																																																																																																																																
1908.75	21.91	H	5.7	4.5	20.77	33.0	-12.2																																																																																																																																																																																																
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1851.25	20.15	V	5.6	4.5	19.00	33.0	-14.0																																																																																																																																																																																																
1851.25	23.38	H	5.6	4.5	22.23	33.0	-10.8																																																																																																																																																																																																
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1880.00	19.06	V	5.7	4.6	17.96	33.0	-15.0																																																																																																																																																																																																
1880.00	23.77	H	5.7	4.6	22.67	33.0	-10.3																																																																																																																																																																																																
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1908.75	19.32	V	5.7	4.5	18.18	33.0	-14.8																																																																																																																																																																																																
1908.75	22.17	H	5.7	4.5	21.03	33.0	-12.0																																																																																																																																																																																																

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9.1.4. LTE Band 5

10MHz QPSK										10MHz 16QAM																																																																																																																																																																																													
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9.1.5. LTE Band 7

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2502.50	22.18	V	6.6	5.7	21.32	33.0	-11.7																																																																																																																																																																																														
2502.50	23.86	H	6.6	5.7	23.00	33.0	-10.0																																																																																																																																																																																														
Mid Ch																																																																																																																																																																																																					
2535.00	21.99	V	6.7	5.8	21.09	33.0	-11.9																																																																																																																																																																																														
2535.00	23.77	H	6.7	5.8	22.87	33.0	-10.1																																																																																																																																																																																														
High Ch																																																																																																																																																																																																					
2567.50	20.49	V	6.8	5.9	19.57	33.0	-13.4																																																																																																																																																																																														
2567.50	22.16	H	6.8	5.9	21.24	33.0	-11.8																																																																																																																																																																																														
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																																																																																																																													
Low Ch																																																																																																																																																																																																					
2502.50	21.08	V	6.6	5.7	20.22	33.0	-12.8																																																																																																																																																																																														
2502.50	22.71	H	6.6	5.7	21.85	33.0	-11.2																																																																																																																																																																																														
Mid Ch																																																																																																																																																																																																					
2535.00	20.88	V	6.7	5.8	19.98	33.0	-13.0																																																																																																																																																																																														
2535.00	22.64	H	6.7	5.8	21.74	33.0	-11.3																																																																																																																																																																																														
High Ch																																																																																																																																																																																																					
2567.50	19.43	V	6.8	5.9	18.51	33.0	-14.5																																																																																																																																																																																														
2567.50	21.07	H	6.8	5.9	20.15	33.0	-12.8																																																																																																																																																																																														

9.1.6. LTE Band 12

10MHz QPSK										10MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/12/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/12/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K 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										
704.00	13.94	V	3.7	1.3	11.48	34.8	-23.3			704.00	12.94	V	3.7	1.3	10.48	34.8	-24.3			
704.00	21.47	H	3.7	1.4	19.09	34.8	-15.7			704.00	20.50	H	3.7	1.4	18.12	34.8	-16.7			
Mid Ch										Mid Ch										
707.50	13.63	V	3.7	1.2	11.13	34.8	-23.7			707.50	12.29	V	3.7	1.2	9.79	34.8	-25.0			
707.50	21.38	H	3.7	1.3	18.95	34.8	-15.9			707.50	20.06	H	3.7	1.3	17.63	34.8	-17.2			
High Ch										High Ch										
711.00	13.08	V	3.8	1.2	10.54	34.8	-24.3			711.00	11.96	V	3.8	1.2	9.42	34.8	-25.4			
711.00	21.44	H	3.8	1.3	18.96	34.8	-15.8			711.00	20.30	H	3.8	1.3	17.82	34.8	-17.0			
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/12/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/12/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K 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										
701.50	13.90	V	3.7	1.3	11.46	34.8	-23.3			701.50	12.68	V	3.7	1.3	10.24	34.8	-24.6			
701.50	21.41	H	3.7	1.4	19.07	34.8	-15.7			701.50	20.15	H	3.7	1.4	17.81	34.8	-17.0			
Mid Ch										Mid Ch										
707.50	13.35	V	3.7	1.2	10.85	34.8	-24.0			707.50	12.04	V	3.7	1.2	9.54	34.8	-25.3			
707.50	21.19	H	3.7	1.3	18.76	34.8	-16.0			707.50	18.89	H	3.7	1.3	17.46	34.8	-17.3			
High Ch										High Ch										
713.50	13.02	V	3.8	1.2	10.45	34.8	-24.3			713.50	11.86	V	3.8	1.2	9.29	34.8	-25.5			
713.50	21.61	H	3.8	1.2	19.09	34.8	-15.7			713.50	20.37	H	3.8	1.2	17.85	34.8	-17.0			
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/12/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/12/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K 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	13.70	V	3.7	1.3	11.27	34.8	-23.5			700.50	12.66	V	3.7	1.3	10.23	34.8	-24.6			
700.50	21.33	H	3.7	1.4	19.00	34.8	-15.8			700.50	20.28	H	3.7	1.4	17.95	34.8	-16.8			
Mid Ch										Mid Ch										
707.50	13.23	V	3.7	1.2	10.73	34.8	-24.1			707.50	12.08	V	3.7	1.2	9.58	34.8	-25.2			
707.50	20.85	H	3.7	1.3	18.42	34.8	-16.4			707.50	19.83	H	3.7	1.3	17.20	34.8	-17.6			
High Ch										High Ch										
714.50	13.38	V	3.8	1.2	10.80	34.8	-24.0			714.50	12.11	V	3.8	1.2	9.53	34.8	-25.3			
714.50	21.23	H	3.8	1.2	18.89	34.8	-16.1			714.50	19.98	H	3.8	1.2	17.44	34.8	-17.4			
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/12/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/12/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K 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	12.60	V	3.7	1.3	10.18	34.8	-24.8			699.70	11.39	V	3.7	1.3	8.96	34.8	-25.8			
699.70	20.92	H	3.7	1.4	18.60	34.8	-16.2			699.70	19.78	H	3.7	1.4	17.46	34.8	-17.3			
Mid Ch										Mid Ch										
707.50	12.33	V	3.7	1.2	9.83	34.8	-25.0			707.50	11.25	V	3.7	1.2	8.75	34.8	-26.1			
707.50	20.91	H	3.7	1.3	18.48	34.8	-16.3			707.50	19.95	H	3.7	1.3	17.52	34.8	-17.3			
High Ch										High Ch										
715.30	12.05	V	3.8	1.2	9.46	34.8	-25.3			715.30	11.08	V	3.8	1.2	8.49	34.8	-26.3			
715.30	21.18	H	3.8	1.2	18.63	34.8	-16.2			715.30	20.05	H	3.8	1.2	17.50	34.8	-17.3			

9.1.7. LTE Band 13

10MHz QPSK										10MHz 16QAM																																																																																																																																																																																													
<p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 13171837 Date: 1/3/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 13 Fundamentals, 10MHz Bandwidth</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 (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>782.00</td> <td>13.22</td> <td>V</td> <td>3.6</td> <td>0.7</td> <td>10.37</td> <td>34.8</td> <td>-24.4</td> <td></td> </tr> <tr> <td>782.00</td> <td>20.06</td> <td>H</td> <td>3.6</td> <td>0.5</td> <td>16.99</td> <td>34.8</td> <td>-17.8</td> <td></td> </tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Mid Ch									782.00	13.22	V	3.6	0.7	10.37	34.8	-24.4		782.00	20.06	H	3.6	0.5	16.99	34.8	-17.8		<p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 13171837 Date: 1/3/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 13 Fundamentals, 10MHz Bandwidth</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 (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>782.00</td> <td>11.97</td> <td>V</td> <td>3.6</td> <td>0.7</td> <td>9.12</td> <td>34.8</td> <td>-25.6</td> <td></td> </tr> <tr> <td>782.00</td> <td>18.85</td> <td>H</td> <td>3.6</td> <td>0.5</td> <td>15.78</td> <td>34.8</td> <td>-19.0</td> <td></td> </tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Mid Ch									782.00	11.97	V	3.6	0.7	9.12	34.8	-25.6		782.00	18.85	H	3.6	0.5	15.78	34.8	-19.0																																																																																																													
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779.50	13.14	V	3.6	0.8	10.32	34.8	-24.4																																																																																																																																																																																																
779.50	20.06	H	3.6	0.5	17.02	34.8	-17.7																																																																																																																																																																																																
Mid Ch																																																																																																																																																																																																							
782.00	13.24	V	3.6	0.7	10.39	34.8	-24.4																																																																																																																																																																																																
782.00	20.16	H	3.6	0.5	17.08	34.8	-17.7																																																																																																																																																																																																
High Ch																																																																																																																																																																																																							
784.50	13.39	V	3.6	0.7	10.52	34.8	-24.3																																																																																																																																																																																																
784.50	20.12	H	3.6	0.5	17.01	34.8	-17.8																																																																																																																																																																																																
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779.50	11.86	V	3.6	0.8	9.04	34.8	-25.7																																																																																																																																																																																																
779.50	18.99	H	3.6	0.5	15.55	34.8	-19.2																																																																																																																																																																																																
Mid Ch																																																																																																																																																																																																							
782.00	11.97	V	3.6	0.7	9.12	34.8	-25.6																																																																																																																																																																																																
782.00	18.72	H	3.6	0.5	15.65	34.8	-19.1																																																																																																																																																																																																
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784.50	12.17	V	3.6	0.7	9.30	34.8	-25.5																																																																																																																																																																																																
784.50	18.81	H	3.6	0.5	15.70	34.8	-19.1																																																																																																																																																																																																

9.1.8. LTE Band 14

10MHz QPSK										10MHz 16QAM																																																																																																																																																																																													
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795.50	20.17	H	3.6	0.4	16.90	34.8	-17.9																																																																																																																																																																																																

9.1.9. LTE Band 25

20MHz QPSK									20MHz 16QAM																																																																																																																																																																																												
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1882.50	14.42	H	0.3	4.7	18.80	33.0	-14.2																																																																																																																																																																																														
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1905.00	11.37	V	0.3	4.7	15.78	33.0	-17.2																																																																																																																																																																																														
1905.00	14.05	H	0.3	4.7	18.48	33.0	-14.5																																																																																																																																																																																														
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1860.00	11.83	V	0.3	4.7	16.24	33.0	-16.8																																																																																																																																																																																														
1860.00	15.06	H	0.3	4.7	19.42	33.0	-13.6																																																																																																																																																																																														
Mid Ch																																																																																																																																																																																																					
1882.50	10.85	V	0.3	4.7	15.36	33.0	-17.6																																																																																																																																																																																														
1882.50	13.92	H	0.3	4.7	18.30	33.0	-14.7																																																																																																																																																																																														
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1905.00	11.17	V	0.3	4.7	15.58	33.0	-17.4																																																																																																																																																																																														
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9.1.10. LTE Band 26 (FCC PART 90S)

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Low Ch										Low Ch									
815.50	12.37	V	3.7	0.5	9.23	50.0	-40.8			815.50	11.22	V	3.7	0.5	8.08	50.0	-41.9		
815.50	20.61	H	3.7	0.3	17.23	50.0	-32.8			815.50	19.53	H	3.7	0.3	16.15	50.0	-33.8		
Mid Ch										Mid Ch									
819.00	13.23	V	3.7	0.5	10.07	50.0	-39.9			819.00	11.93	V	3.7	0.5	8.77	50.0	-41.2		
819.00	20.80	H	3.7	0.3	17.42	50.0	-32.6			819.00	19.53	H	3.7	0.3	16.15	50.0	-33.9		
High Ch										High Ch									
822.50	13.98	V	3.7	0.5	10.80	50.0	-39.2			822.50	13.07	V	3.7	0.5	9.89	50.0	-40.1		
822.50	21.44	H	3.7	0.3	18.95	50.0	-32.0			822.50	20.53	H	3.7	0.3	17.14	50.0	-32.9		
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 #: 13171837 Date: 1/2/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth										Company: Samsung Project #: 13171837 Date: 1/2/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth									
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Low Ch										Low Ch									
814.70	12.07	V	3.7	0.5	8.94	50.0	-41.1			814.70	11.06	V	3.7	0.5	7.93	50.0	-42.1		
814.70	20.02	H	3.7	0.3	16.65	50.0	-33.4			814.70	18.84	H	3.7	0.3	15.47	50.0	-34.5		
Mid Ch										Mid Ch									
819.00	12.87	V	3.7	0.5	9.71	50.0	-40.3			819.00	11.61	V	3.7	0.5	8.45	50.0	-41.5		
819.00	20.47	H	3.7	0.3	17.09	50.0	-32.9			819.00	19.52	H	3.7	0.3	16.14	50.0	-33.9		
High Ch										High Ch									
823.30	13.51	V	3.7	0.5	10.32	50.0	-39.7			823.30	12.37	V	3.7	0.5	9.18	50.0	-40.8		
823.30	21.35	H	3.7	0.3	17.96	50.0	-32.0			823.30	20.11	H	3.7	0.3	16.72	50.0	-33.3		

9.1.11. LTE Band 26 (FCC PART 22)

15MHz QPSK										15MHz 16QAM																																																																																																																																																																																													
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9.1.12. LTE Band 30 (FCC)

10MHz QPSK									10MHz 16QAM								
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 1/6/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 30 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: T120, Chamber I Passthrough Cables									UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 1/6/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 30 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: T120, Chamber I Passthrough Cables								
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Low Ch 2310.00 0.00 V 6.5 5.7 0.00 24.0 0.0 2310.00 0.00 H 6.5 5.7 0.00 24.0 0.0 Mid Ch 2310.00 19.37 V 6.5 5.7 18.60 24.0 -5.4 2310.00 21.54 H 6.5 5.7 20.77 24.0 -3.2 High Ch 2310.00 0.00 V 6.5 5.7 0.00 24.0 0.0 2310.00 0.00 H 6.5 5.7 0.00 24.0 0.0									Low Ch 2310.00 0.00 V 6.5 5.7 0.00 24.0 0.0 2310.00 0.00 H 6.5 5.7 0.00 24.0 0.0 Mid Ch 2310.00 18.47 V 6.5 5.7 17.70 24.0 -6.3 2310.00 20.43 H 6.5 5.7 19.66 24.0 -4.3 High Ch 2310.00 0.00 V 6.5 5.7 0.00 24.0 0.0 2310.00 0.00 H 6.5 5.7 0.00 24.0 0.0								
5MHz QPSK									5MHz 16QAM								
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 1/6/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 30 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: T120, Chamber I Passthrough Cables									UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 1/6/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 30 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: T120, Chamber I Passthrough Cables								
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Low Ch 2307.50 18.79 V 6.5 5.7 18.04 24.0 -6.0 2307.50 20.98 H 6.5 5.7 20.23 24.0 -3.8 Mid Ch 2310.00 18.90 V 6.5 5.7 18.13 24.0 -5.9 2310.00 21.46 H 6.5 5.7 20.69 24.0 -3.3 High Ch 2312.50 18.85 V 6.5 5.7 17.85 24.0 -6.1 2312.50 21.52 H 6.5 5.7 20.72 24.0 -3.3									Low Ch 2307.50 17.80 V 6.5 5.7 17.05 24.0 -6.9 2307.50 19.90 H 6.5 5.7 19.15 24.0 -4.8 Mid Ch 2310.00 17.97 V 6.5 5.7 17.20 24.0 -6.8 2310.00 20.51 H 6.5 5.7 19.74 24.0 -4.3 High Ch 2312.50 17.64 V 6.5 5.7 16.84 24.0 -7.2 2312.50 20.56 H 6.5 5.7 19.76 24.0 -4.2								

9.1.13. LTE Band 38 (IC)

20MHz QPSK										20MHz 16QAM																																																																																																																																																																																													
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9.1.14. LTE Band 41 (FCC) HPUE

20MHz QPSK										20MHz 16QAM																																																																																																																																																																																													
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2501.00	22.79	V	6.6	5.7	21.94	33.0	-11.1																																																																																																																																																																																																
2501.00	24.64	H	6.6	5.7	23.79	33.0	-9.2																																																																																																																																																																																																
Mid Ch																																																																																																																																																																																																							
2593.00	20.23	V	6.9	5.8	19.13	33.0	-13.9																																																																																																																																																																																																
2593.00	22.33	H	6.9	5.8	21.23	33.0	-11.8																																																																																																																																																																																																
High Ch																																																																																																																																																																																																							
2685.00	12.42	V	6.9	6.0	11.49	33.0	-21.5																																																																																																																																																																																																
2685.00	15.44	H	6.9	6.0	14.51	33.0	-18.5																																																																																																																																																																																																
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																																																																																																																															
Low Ch																																																																																																																																																																																																							
2501.00	21.85	V	6.6	5.7	21.00	33.0	-12.0																																																																																																																																																																																																
2501.00	23.47	H	6.6	5.7	22.62	33.0	-10.4																																																																																																																																																																																																
Mid Ch																																																																																																																																																																																																							
2593.00	19.42	V	6.9	5.8	18.32	33.0	-14.7																																																																																																																																																																																																
2593.00	21.12	H	6.9	5.8	20.02	33.0	-13.0																																																																																																																																																																																																
High Ch																																																																																																																																																																																																							
2685.00	11.27	V	6.9	6.0	10.34	33.0	-22.7																																																																																																																																																																																																
2685.00	14.05	H	6.9	6.0	13.12	33.0	-19.9																																																																																																																																																																																																
<p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 13171837 Date: 1/7/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_QPSK Band 41(FCC) Fundamentals, 5MHz Bandwidth</p> <p>Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: T120, 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>EIRP (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>2498.50</td><td>22.40</td><td>V</td><td>6.6</td><td>5.7</td><td>21.52</td><td>33.0</td><td>-11.5</td><td></td></tr> <tr><td>2498.50</td><td>24.12</td><td>H</td><td>6.6</td><td>5.7</td><td>23.24</td><td>33.0</td><td>-9.8</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>2593.00</td><td>20.06</td><td>V</td><td>6.9</td><td>5.8</td><td>18.96</td><td>33.0</td><td>-14.0</td><td></td></tr> <tr><td>2593.00</td><td>21.96</td><td>H</td><td>6.9</td><td>5.8</td><td>20.86</td><td>33.0</td><td>-12.1</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>2687.50</td><td>11.19</td><td>V</td><td>6.9</td><td>6.0</td><td>10.26</td><td>33.0</td><td>-22.7</td><td></td></tr> <tr><td>2687.50</td><td>14.61</td><td>H</td><td>6.9</td><td>6.0</td><td>13.68</td><td>33.0</td><td>-19.3</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									2498.50	22.40	V	6.6	5.7	21.52	33.0	-11.5		2498.50	24.12	H	6.6	5.7	23.24	33.0	-9.8		Mid Ch									2593.00	20.06	V	6.9	5.8	18.96	33.0	-14.0		2593.00	21.96	H	6.9	5.8	20.86	33.0	-12.1		High Ch									2687.50	11.19	V	6.9	6.0	10.26	33.0	-22.7		2687.50	14.61	H	6.9	6.0	13.68	33.0	-19.3		<p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 13171837 Date: 1/7/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber I Mode: LTE_16QAM Band 41(FCC) Fundamentals, 5MHz Bandwidth</p> <p>Test Equipment: Receiving: Horn T862, and Chamber I SMA Cables Substitution: T120, 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>EIRP (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>2498.50</td><td>21.01</td><td>V</td><td>6.6</td><td>5.7</td><td>20.13</td><td>33.0</td><td>-12.9</td><td></td></tr> <tr><td>2498.50</td><td>22.72</td><td>H</td><td>6.6</td><td>5.7</td><td>21.84</td><td>33.0</td><td>-11.2</td><td></td></tr> <tr><td colspan="9">Mid Ch</td></tr> <tr><td>2593.00</td><td>19.27</td><td>V</td><td>6.9</td><td>5.8</td><td>18.17</td><td>33.0</td><td>-14.8</td><td></td></tr> <tr><td>2593.00</td><td>21.01</td><td>H</td><td>6.9</td><td>5.8</td><td>19.91</td><td>33.0</td><td>-13.1</td><td></td></tr> <tr><td colspan="9">High Ch</td></tr> <tr><td>2687.50</td><td>10.31</td><td>V</td><td>6.9</td><td>6.0</td><td>9.38</td><td>33.0</td><td>-23.6</td><td></td></tr> <tr><td>2687.50</td><td>13.55</td><td>H</td><td>6.9</td><td>6.0</td><td>12.62</td><td>33.0</td><td>-20.4</td><td></td></tr> </tbody> </table>										f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch									2498.50	21.01	V	6.6	5.7	20.13	33.0	-12.9		2498.50	22.72	H	6.6	5.7	21.84	33.0	-11.2		Mid Ch									2593.00	19.27	V	6.9	5.8	18.17	33.0	-14.8		2593.00	21.01	H	6.9	5.8	19.91	33.0	-13.1		High Ch									2687.50	10.31	V	6.9	6.0	9.38	33.0	-23.6		2687.50	13.55	H	6.9	6.0	12.62	33.0	-20.4	
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																																																																																																																															
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2498.50	22.40	V	6.6	5.7	21.52	33.0	-11.5																																																																																																																																																																																																
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2498.50	21.01	V	6.6	5.7	20.13	33.0	-12.9																																																																																																																																																																																																
2498.50	22.72	H	6.6	5.7	21.84	33.0	-11.2																																																																																																																																																																																																
Mid Ch																																																																																																																																																																																																							
2593.00	19.27	V	6.9	5.8	18.17	33.0	-14.8																																																																																																																																																																																																
2593.00	21.01	H	6.9	5.8	19.91	33.0	-13.1																																																																																																																																																																																																
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2687.50	10.31	V	6.9	6.0	9.38	33.0	-23.6																																																																																																																																																																																																
2687.50	13.55	H	6.9	6.0	12.62	33.0	-20.4																																																																																																																																																																																																

9.1.15. LTE Band 41 (IC)

20MHz QPSK										20MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/27/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 41 (IC) Fundamentals, 20MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: T120, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/27/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 41 (IC) Fundamentals, 20MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: T120, Chamber K Passthrough Cables										
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										
2510.00	20.91	V	7.3	5.8	19.42	33.0	-13.6			2510.00	19.73	V	7.3	5.8	18.24	33.0	-14.8			
2510.00	25.85	H	7.3	5.8	24.36	33.0	-8.6			2510.00	25.03	H	7.3	5.8	23.54	33.0	-9.5			
Mid Ch										Mid Ch										
2595.00	16.27	V	7.3	5.8	14.80	33.0	-18.2			2595.00	15.55	V	7.3	5.8	14.08	33.0	-18.9			
2595.00	20.86	H	7.3	5.8	19.39	33.0	-13.6			2595.00	19.90	H	7.3	5.8	18.43	33.0	-14.6			
High Ch										High Ch										
2680.00	11.55	V	7.7	6.0	9.86	33.0	-23.1			2680.00	10.40	V	7.7	6.0	8.71	33.0	-24.3			
2680.00	16.29	H	7.7	6.0	14.60	33.0	-18.4			2680.00	15.27	H	7.7	6.0	13.58	33.0	-19.4			
15MHz QPSK										15MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/27/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 41 (IC) Fundamentals, 15MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: T120, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/27/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 41 (IC) Fundamentals, 15MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: T120, Chamber K Passthrough Cables										
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										
2507.50	23.18	V	7.3	5.7	21.67	33.0	-11.3			2507.50	22.21	V	7.3	5.7	20.70	33.0	-12.3			
2507.50	25.43	H	7.3	5.7	23.92	33.0	-9.1			2507.50	24.56	H	7.3	5.7	23.05	33.0	-9.9			
Mid Ch										Mid Ch										
2595.00	18.19	V	7.3	5.8	16.72	33.0	-16.3			2595.00	17.42	V	7.3	5.8	15.95	33.0	-17.0			
2595.00	20.65	H	7.3	5.8	19.18	33.0	-13.8			2595.00	20.02	H	7.3	5.8	18.55	33.0	-14.4			
High Ch										High Ch										
2682.50	14.35	V	7.7	6.0	12.64	33.0	-20.4			2682.50	13.36	V	7.7	6.0	11.65	33.0	-21.4			
2682.50	17.44	H	7.7	6.0	15.73	33.0	-17.3			2682.50	16.62	H	7.7	6.0	14.91	33.0	-18.1			
10MHz QPSK										10MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/27/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 41 (IC) Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: T120, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/27/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 41 (IC) Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: T120, Chamber K Passthrough Cables										
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										
2505.00	22.81	V	7.3	5.7	21.29	33.0	-11.7			2505.00	21.85	V	7.3	5.7	20.33	33.0	-12.7			
2505.00	25.35	H	7.3	5.7	23.83	33.0	-9.2			2505.00	24.35	H	7.3	5.7	22.83	33.0	-10.2			
Mid Ch										Mid Ch										
2595.00	16.33	V	7.3	5.8	16.86	33.0	-16.1			2595.00	17.35	V	7.3	5.8	15.88	33.0	-17.1			
2595.00	20.33	H	7.3	5.8	18.86	33.0	-14.1			2595.00	19.54	H	7.3	5.8	18.07	33.0	-14.9			
High Ch										High Ch										
2685.00	13.91	V	7.7	6.0	12.18	33.0	-20.8			2685.00	12.92	V	7.7	6.0	11.19	33.0	-21.8			
2685.00	16.12	H	7.7	6.0	14.39	33.0	-18.6			2685.00	15.29	H	7.7	6.0	13.56	33.0	-19.4			
5MHz QPSK										5MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/27/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 41 (IC) Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: T120, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/27/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 41 (IC) Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Horn T344, and Chamber K SMA Cables Substitution: T120, Chamber K Passthrough Cables										
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										
2502.50	23.33	V	7.3	5.7	21.80	33.0	-11.2			2502.50	22.26	V	7.3	5.7	20.73	33.0	-12.3			
2502.50	24.75	H	7.3	5.7	23.22	33.0	-9.8			2502.50	23.67	H	7.3	5.7	22.14	33.0	-10.9			
Mid Ch										Mid Ch										
2595.00	17.73	V	7.3	5.8	16.26	33.0	-16.7			2595.00	16.64	V	7.3	5.8	15.17	33.0	-17.8			
2595.00	19.00	H	7.3	5.8	17.53	33.0	-15.5			2595.00	17.82	H	7.3	5.8	16.35	33.0	-16.6			
High Ch										High Ch										
2687.50	13.42	V	7.7	6.0	11.67	33.0	-21.3			2687.50	12.24	V	7.7	6.0	10.49	33.0	-22.5			
2687.50	15.31	H	7.7	6.0	13.56	33.0	-19.4			2687.50	14.17	H	7.7	6.0	12.42	33.0	-20.6			

9.1.16. LTE Band 66

20MHz QPSK										20MHz 16QAM																																																																																																																																																																																													
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9.1.17. LTE Band 71

20MHz QPSK										20MHz 16QAM										
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/11/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 71 Fundamentals, 20MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/11/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 71 Fundamentals, 20MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										
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Low Ch										Low Ch										
673.00	9.64	V	3.7	1.1	7.07	34.8	-27.7			673.00	9.01	V	3.7	1.1	6.44	34.8	-28.3			
673.00	20.14	H	3.7	1.3	17.78	34.8	-17.0			673.00	19.51	H	3.7	1.3	17.15	34.8	-17.6			
Mid Ch										Mid Ch										
680.50	10.03	V	3.7	1.1	7.50	34.8	-27.3			680.50	8.83	V	3.7	1.1	6.30	34.8	-28.5			
680.50	21.78	H	3.7	1.3	19.43	34.8	-15.3			680.50	20.52	H	3.7	1.3	18.17	34.8	-16.6			
High Ch										High Ch										
688.00	9.23	V	3.7	1.2	6.74	34.8	-28.0			688.00	8.52	V	3.7	1.2	6.03	34.8	-28.7			
688.00	20.02	H	3.7	1.4	17.68	34.8	-17.1			688.00	19.33	H	3.7	1.4	16.99	34.8	-17.8			
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/11/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 71 Fundamentals, 15MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/11/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 71 Fundamentals, 15MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										
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Low Ch										Low Ch										
670.50	10.77	V	3.7	1.1	8.20	34.8	-26.6			670.50	10.07	V	3.7	1.1	7.50	34.8	-27.3			
670.50	20.39	H	3.7	1.3	18.04	34.8	-16.7			670.50	19.69	H	3.7	1.3	17.34	34.8	-17.4			
Mid Ch										Mid Ch										
680.50	12.40	V	3.7	1.1	9.87	34.8	-24.9			680.50	11.25	V	3.7	1.1	8.72	34.8	-26.1			
680.50	21.66	H	3.7	1.3	19.31	34.8	-15.5			680.50	20.47	H	3.7	1.3	18.12	34.8	-16.7			
High Ch										High Ch										
690.50	13.91	V	3.7	1.2	10.54	34.8	-24.2			690.50	12.02	V	3.7	1.2	9.55	34.8	-25.2			
690.50	21.40	H	3.7	1.4	19.06	34.8	-15.7			690.50	20.08	H	3.7	1.4	17.74	34.8	-17.0			
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/11/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 71 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/11/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 71 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										
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Low Ch										Low Ch										
668.00	11.57	V	3.6	1.1	9.00	34.8	-25.8			668.00	10.31	V	3.6	1.1	7.74	34.8	-27.0			
668.00	20.61	H	3.6	1.3	18.26	34.8	-16.5			668.00	19.37	H	3.6	1.3	17.02	34.8	-17.7			
Mid Ch										Mid Ch										
680.50	12.66	V	3.7	1.1	10.13	34.8	-24.6			680.50	11.24	V	3.7	1.1	8.71	34.8	-26.1			
680.50	21.82	H	3.7	1.3	19.47	34.8	-15.3			680.50	20.44	H	3.7	1.3	18.09	34.8	-16.7			
High Ch										High Ch										
693.00	13.42	V	3.7	1.2	10.96	34.8	-23.8			693.00	12.24	V	3.7	1.2	9.78	34.8	-25.0			
693.00	21.18	H	3.7	1.4	18.85	34.8	-15.9			693.00	20.00	H	3.7	1.4	17.67	34.8	-17.1			
UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/11/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_QPSK Band 71 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K Passthrough Cables										UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 13171837 Date: 2/11/2020 Test Engineer: 19480 BS Configuration: EUT Only Location: Chamber K Mode: LTE_16QAM Band 71 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Hybrid PRE0181574, and Chamber K SMA Cables Substitution: Dipole T416, Chamber K 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										
665.50	11.46	V	3.6	1.1	8.88	34.8	-25.9			665.50	10.23	V	3.6	1.1	7.65	34.8	-27.1			
665.50	20.42	H	3.6	1.3	18.08	34.8	-16.7			665.50	19.21	H	3.6	1.3	16.87	34.8	-17.9			
Mid Ch										Mid Ch										
680.50	12.52	V	3.7	1.1	9.99	34.8	-24.8			680.50	11.30	V	3.7	1.1	8.77	34.8	-26.0			
680.50	21.49	H	3.7	1.3	19.14	34.8	-15.6			680.50	20.30	H	3.7	1.3	17.95	34.8	-16.8			
High Ch										High Ch										
695.50	13.29	V	3.7	1.3	10.84	34.8	-23.9			695.50	12.03	V	3.7	1.3	9.58	34.8	-25.2			
695.50	21.21	H	3.7	1.4	18.88	34.8	-15.9			695.50	20.00	H	3.7	1.4	17.67	34.8	-17.1			

9.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

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

ISED: RSS130§4.7, RSS132§5.5; RSS133§6.5, RSS139§6.6, RSS140§4.4, RSS199§4.5.

LIMITS

FCC: §22.917(a), §24.238(a), §27.53 (g), (h), §90.691

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

FCC: §27.53 (Band 13)

(c) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

(f) Emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

FCC: §90.543 Emission Limitations. (Band 14)

(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC: §27.53 (a) (Band 30)

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

FCC: §27.53 (m) (Band 7, 41)

At least $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

RSS130§4.7

4.7.1 General unwanted emissions limits

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits

In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:

- i. $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment and
- ii. $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment

(b) the e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

RSS132§5.5

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

- (iii) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).
- (iv) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

RSS133§6.5

Equipment shall comply with the limits in (i) and (ii) below.

- (iii) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).
- (iv) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS139§6.6

- (iii) (i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, Footnote 2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.
- (iv) (ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.

RSS140§4.4 (Band 14)

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

- a. For any frequency between 769-775 MHz and 799-806 MHz:
 - i. $76 + 10 \log(p)$, dB in a 6.25 kHz band for fixed and base station equipment
 - ii. $65 + 10 \log(p)$, dB in a 6.25 kHz band for mobile and portable/hand-held equipment
- b. For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: $43 + 10 \log(p)$, dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed -70 dBW/MHz for wideband emissions, and -80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

RSS199§4.5

Equipment shall comply with the following unwanted emission limits:

- a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$
- b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
 - i. $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away
 - ii. $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and

- iii. $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than $43 + 10 \log_{10} p$ on all frequencies between 2490.5 MHz and 2496 MHz, and $55 + 10 \log_{10} p$ at or below 2490.5 MHz.

In (a) and (b), **p** is the transmitter power measured in watts and **X** is 6 MHz or the equipment occupied bandwidth, whichever is greater.

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

No spurious emissions were detected above system noise floor from 18-26GHz.

9.2.1. GSM 850

GPRS MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	GPRS 850
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
824.2 MHz												
1	1.64813	-64.32	Pk	28.5	-31.7	12.5	-55.02	-13	-42.02	0-360	149	H
2	2.47263	-58.37	Pk	32.3	-30.4	11.3	-45.17	-13	-32.17	0-360	149	H
3	3.29978	-71.36	Pk	32.7	-29.2	11.7	-56.16	-13	-43.16	0-360	149	H
4	1.64759	-64.55	Pk	28.5	-31.7	11.4	-56.35	-13	-43.35	0-360	149	V
5	2.47263	-56.47	Pk	32.3	-30.4	11.6	-42.97	-13	-29.97	0-360	149	V
6	3.30084	-70.99	Pk	32.7	-29.3	12	-55.59	-13	-42.59	0-360	149	V
836.6 MHz												
1	1.67256	-57.02	Pk	28.8	-31.6	11.6	-48.22	-13	-35.22	0-360	149	H
2	2.50981	-58.07	Pk	32.3	-30.1	11.4	-44.47	-13	-31.47	0-360	149	H
3	3.34441	-71.78	Pk	32.7	-29.2	11.5	-56.78	-13	-43.78	0-360	149	H
4	1.67256	-59.2	Pk	28.8	-31.6	10.9	-51.1	-13	-38.1	0-360	149	V
5	2.50928	-61.85	Pk	32.3	-30.2	11.4	-48.35	-13	-35.35	0-360	149	V
6	3.34813	-71.32	Pk	32.7	-29.2	11.9	-55.92	-13	-42.92	0-360	149	V
848.8 MHz												
1	1.69753	-49.85	Pk	29.2	-31.5	11.2	-40.95	-13	-27.95	0-360	149	H
2	2.54647	-68.45	Pk	32.3	-30.1	12	-54.25	-13	-41.25	0-360	149	H
3	3.39966	-71.65	Pk	32.7	-29.2	11.9	-56.25	-13	-43.25	0-360	149	H
4	1.697	-59.62	Pk	29.2	-31.5	12.2	-49.72	-13	-36.72	0-360	149	V
5	2.54647	-65.67	Pk	32.3	-30.1	11.8	-51.67	-13	-38.67	0-360	149	V
6	3.40125	-71.55	Pk	32.7	-29.2	11.7	-56.35	-13	-43.35	0-360	149	V

EGPRS MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	EGPRS 850
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
824.2 MHz												
1	1.64813	-54.23	Pk	28.5	-31.7	12.5	-44.93	-13	-31.93	0-360	149	H
2	2.47209	-59.3	Pk	32.3	-30.4	11.3	-46.1	-13	-33.1	0-360	149	H
3	3.29766	-70.73	Pk	32.7	-29.2	11.9	-55.33	-13	-42.33	0-360	149	H
4	1.64813	-58.87	Pk	28.5	-31.7	11.4	-50.67	-13	-37.67	0-360	149	V
5	2.47209	-58.09	Pk	32.3	-30.4	11.6	-44.59	-13	-31.59	0-360	149	V
6	3.29872	-70.55	Pk	32.7	-29.2	12	-55.05	-13	-42.05	0-360	149	V
836.6 MHz												
1	1.67309	-52.57	Pk	28.8	-31.6	11.6	-43.77	-13	-30.77	0-360	149	H
2	2.50981	-53.56	Pk	32.3	-30.1	11.4	-39.96	-13	-26.96	0-360	149	H
3	3.34972	-70.96	Pk	32.7	-29.2	11.4	-56.06	-13	-43.06	0-360	149	H
4	1.67256	-61.37	Pk	28.8	-31.6	10.9	-53.27	-13	-40.27	0-360	149	V
5	2.50981	-58.03	Pk	32.3	-30.1	11.4	-44.43	-13	-31.43	0-360	149	V
6	3.34919	-71.17	Pk	32.7	-29.2	11.9	-55.77	-13	-42.77	0-360	149	V
848.8 MHz												
1	1.69753	-64.84	Pk	29.2	-31.5	11.2	-55.94	-13	-42.94	0-360	149	H
2	2.54381	-73	Pk	32.2	-30.1	12.2	-58.7	-13	-45.7	0-360	149	H
3	3.39541	-71.28	Pk	32.6	-29.2	11.8	-56.08	-13	-43.08	0-360	149	H
4	1.697	-62.31	Pk	29.2	-31.5	12.2	-52.41	-13	-39.41	0-360	149	V
5	2.54488	-70.82	Pk	32.2	-30.1	11.8	-56.92	-13	-43.92	0-360	149	V
6	3.39806	-71.28	Pk	32.7	-29.2	11.7	-56.08	-13	-43.08	0-360	149	V

9.2.2. GSM 1900

GPRS MODE

Company:	Samsung
Project #:	13171837
Date:	12/28/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	GPRS 1900
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1850.2 MHz												
1	3.70034	-71.82	Pk	33	-28.7	11.9	-55.62	-13	-42.62	0-360	150	H
2	5.55016	-76.42	Pk	35.1	-26.8	12	-56.12	-13	-43.12	0-360	150	H
3	7.38297	-78.16	Pk	35.6	-24.2	12	-54.76	-13	-41.76	0-360	150	H
4	3.70034	-71.82	Pk	33	-28.7	11.9	-55.62	-13	-42.62	0-360	150	H
5	5.55016	-76.42	Pk	35.1	-26.8	12	-56.12	-13	-43.12	0-360	150	H
6	7.38297	-78.16	Pk	35.6	-24.2	12	-54.76	-13	-41.76	0-360	150	H
1880 MHz												
1	3.75878	-75.51	Pk	32.9	-28.4	11.8	-59.21	-13	-46.21	0-360	149	H
2	5.63409	-76.05	Pk	35	-26.6	11.7	-55.95	-13	-42.95	0-360	149	H
3	7.51153	-78.28	Pk	35.6	-23.8	12.1	-54.38	-13	-41.38	0-360	149	H
4	3.76091	-75.22	Pk	33	-28.4	11.8	-58.82	-13	-45.82	0-360	149	V
5	5.64259	-76.6	Pk	35.1	-26.6	11.9	-56.2	-13	-43.2	0-360	149	V
6	7.52641	-77.53	Pk	35.6	-23.9	11.7	-54.13	-13	-41.13	0-360	149	V
1909.8 MHz												
1	3.81669	-76.57	Pk	32.9	-28.3	11.7	-60.27	-13	-47.27	0-360	149	H
2	5.72813	-77.13	Pk	34.9	-26.6	11.8	-57.03	-13	-44.03	0-360	149	H
3	7.64647	-77.5	Pk	35.6	-24.1	11.6	-54.4	-13	-41.4	0-360	149	H
4	3.81456	-75.75	Pk	32.9	-28.4	11.4	-59.85	-13	-46.85	0-360	149	V
5	5.72441	-75.74	Pk	34.9	-26.7	11.8	-55.74	-13	-42.74	0-360	149	V
6	7.63903	-78.2	Pk	35.6	-24.1	11.8	-54.9	-13	-41.9	0-360	149	V

EGPRS MODE

Company:	Samsung
Project #:	13171837
Date:	12/28/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	EGPRS 1900
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1850.2 MHz												
1	3.70566	-75.05	Pk	33	-28.6	11.8	-58.85	-13	-45.85	0-360	149	H
2	5.55653	-76.3	Pk	35.1	-26.8	11.9	-56.1	-13	-43.1	0-360	149	H
3	7.40741	-77.83	Pk	35.5	-24.4	11.6	-55.13	-13	-42.13	0-360	149	H
4	3.69663	-75.23	Pk	33	-28.8	12.1	-58.93	-13	-45.93	0-360	149	V
5	5.55016	-75.7	Pk	35.1	-26.8	12.2	-55.2	-13	-42.2	0-360	149	V
6	7.39891	-78.3	Pk	35.6	-24.3	11.8	-55.2	-13	-42.2	0-360	149	V
1880 MHz												
1	3.75081	-75.08	Pk	33	-28.4	11.7	-58.78	-13	-45.78	0-360	149	H
2	5.62825	-76.16	Pk	35.2	-26.6	11.4	-56.16	-13	-43.16	0-360	149	H
3	7.51844	-77.87	Pk	35.5	-23.9	12	-54.27	-13	-41.27	0-360	149	H
4	3.76303	-76.48	Pk	33	-28.3	11.8	-59.98	-13	-46.98	0-360	149	V
5	5.64047	-76.64	Pk	35.1	-26.7	11.9	-56.34	-13	-43.34	0-360	149	V
6	7.51206	-78.64	Pk	35.6	-23.9	12.2	-54.74	-13	-41.74	0-360	149	V
1909.8 MHz												
1	3.82413	-75.52	Pk	32.9	-28.2	11.4	-59.42	-13	-46.42	0-360	149	H
2	5.72866	-76.71	Pk	34.9	-26.6	11.8	-56.61	-13	-43.61	0-360	149	H
3	7.65922	-78.53	Pk	35.7	-24	11.7	-55.13	-13	-42.13	0-360	149	H
4	3.82147	-76.62	Pk	32.9	-28.2	11.2	-60.72	-13	-47.72	0-360	149	V
5	5.72972	-76.46	Pk	34.9	-26.6	11.6	-56.56	-13	-43.56	0-360	149	V
6	7.63106	-78.71	Pk	35.6	-24.1	12	-55.21	-13	-42.21	0-360	149	V

9.2.3. CDMA BC10

1xRTT MODE

Company:	Samsung
Project #:	13171837
Date:	1/13/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xRTT BC10
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
817.25 MHz												
1	1.63431	-66.16	Pk	28.4	-31.6	12.2	-57.16	-13	-44.16	0-360	149	H
2	2.45084	-68.83	Pk	32.2	-30.4	11.4	-55.63	-13	-42.63	0-360	149	H
3	3.26791	-72.16	Pk	32.8	-29.2	12	-56.56	-13	-43.56	0-360	149	H
4	1.63378	-69.29	Pk	28.4	-31.6	11.4	-61.09	-13	-48.09	0-360	149	V
5	2.45138	-70.78	Pk	32.2	-30.4	11.5	-57.48	-13	-44.48	0-360	149	V
6	3.26738	-73.77	Pk	32.9	-29.2	11.7	-58.37	-13	-45.37	0-360	149	V
820 MHz												
1	1.63963	-67.57	Pk	28.4	-31.7	12.3	-58.57	-13	-45.57	0-360	149	H
2	2.45988	-71.06	Pk	32.3	-30.4	11.5	-57.66	-13	-44.66	0-360	149	H
3	3.28172	-73.34	Pk	32.8	-29.2	12.1	-57.64	-13	-44.64	0-360	149	H
4	1.63963	-68.24	Pk	28.4	-31.7	11.6	-59.94	-13	-46.94	0-360	149	V
5	2.45403	-70.81	Pk	32.2	-30.4	11.3	-57.71	-13	-44.71	0-360	149	V
6	3.28544	-70.27	Pk	32.8	-29.1	12	-54.57	-13	-41.57	0-360	149	V
822.75 MHz												
1	1.64547	-66.26	Pk	28.5	-31.7	12.4	-57.06	-13	-44.06	0-360	149	H
2	2.46731	-67.88	Pk	32.3	-30.4	11.3	-54.68	-13	-41.68	0-360	149	H
3	3.28916	-71.12	Pk	32.8	-29.2	12.2	-55.32	-13	-42.32	0-360	149	H
4	1.64547	-68.73	Pk	28.5	-31.7	11.4	-60.53	-13	-47.53	0-360	149	V
5	2.47103	-71.28	Pk	32.3	-30.4	11.6	-57.78	-13	-44.78	0-360	149	V
6	3.28916	-71.86	Pk	32.8	-29.2	12	-56.26	-13	-43.26	0-360	149	V

1xEV-DO REV A MODE

Company:	Samsung
Project #:	13171837
Date:	1/13/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xEV-DO REV A BC10
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
817.25 MHz												
1	1.63484	-61.86	Pk	28.4	-31.6	12.2	-52.86	-13	-39.86	0-360	149	H
2	2.45244	-68.56	Pk	32.2	-30.4	11.6	-55.16	-13	-42.16	0-360	149	H
3	3.26844	-71.21	Pk	32.8	-29.2	12	-55.61	-13	-42.61	0-360	149	H
4	1.63431	-66.03	Pk	28.4	-31.6	11.5	-57.73	-13	-44.73	0-360	149	V
5	2.45244	-67.71	Pk	32.2	-30.4	11.5	-54.41	-13	-41.41	0-360	149	V
6	3.26472	-71.28	Pk	32.9	-29.2	11.8	-55.78	-13	-42.78	0-360	149	V
820 MHz												
1	1.64016	-65.09	Pk	28.5	-31.8	12.3	-56.09	-13	-43.09	0-360	149	H
2	2.46041	-68.19	Pk	32.3	-30.4	11.5	-54.79	-13	-41.79	0-360	149	H
3	3.28013	-71.86	Pk	32.8	-29.2	12.1	-56.16	-13	-43.16	0-360	149	H
4	1.64069	-67.5	Pk	28.5	-31.8	11.5	-59.3	-13	-46.3	0-360	149	V
5	2.46094	-69.49	Pk	32.3	-30.4	11.1	-56.49	-13	-43.49	0-360	149	V
6	3.28172	-71.64	Pk	32.8	-29.2	11.9	-56.14	-13	-43.14	0-360	149	V
822.75 MHz												
1	1.64441	-63.57	Pk	28.5	-31.7	12.3	-54.47	-13	-41.47	0-360	149	H
2	2.46891	-67.25	Pk	32.3	-30.4	11.3	-54.05	-13	-41.05	0-360	149	H
3	3.29288	-72.11	Pk	32.8	-29.2	12.1	-56.41	-13	-43.41	0-360	149	H
4	1.64494	-68.68	Pk	28.5	-31.7	11.4	-60.48	-13	-47.48	0-360	149	V
5	2.46784	-70.1	Pk	32.3	-30.4	11.4	-56.8	-13	-43.8	0-360	149	V
6	3.29181	-73.08	Pk	32.8	-29.2	11.9	-57.58	-13	-44.58	0-360	149	V

9.2.4. CDMA BC0

1xRTT MODE

Company:	Samsung
Project #:	13171837
Date:	1/08/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xRTT BC0
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
824.7 MHz												
1	1.64441	-67.2	Pk	28.5	-31.7	12.3	-58.1	-13	-45.1	0-360	149	H
2	2.47422	-68.5	Pk	32.3	-30.4	11.3	-55.3	-13	-42.3	0-360	149	H
3	3.30456	-70.98	Pk	32.7	-29.3	11.6	-55.98	-13	-42.98	0-360	149	H
4	1.64228	-68.83	Pk	28.5	-31.7	11.5	-60.53	-13	-47.53	0-360	149	V
5	2.47422	-69.63	Pk	32.3	-30.4	11.5	-56.23	-13	-43.23	0-360	149	V
6	3.29925	-72.43	Pk	32.7	-29.2	12	-56.93	-13	-43.93	0-360	149	V
836.52 MHz												
1	1.67309	-68.73	Pk	28.8	-31.6	11.6	-59.93	-13	-46.93	0-360	149	H
2	2.50822	-69.62	Pk	32.3	-30.2	11.4	-56.12	-13	-43.12	0-360	149	H
3	3.34281	-69.52	Pk	32.7	-29.3	11.5	-54.62	-13	-41.62	0-360	149	H
4	1.67734	-69.53	Pk	28.9	-31.6	11	-61.23	-13	-48.23	0-360	149	V
5	2.51406	-70.75	Pk	32.3	-30.1	11.3	-57.25	-13	-44.25	0-360	149	V
6	3.35184	-70.17	Pk	32.6	-29.2	11.8	-54.97	-13	-41.97	0-360	149	V
848.3 MHz												
1	1.69647	-68.76	Pk	29.1	-31.5	11.2	-59.96	-13	-46.96	0-360	149	H
2	2.54222	-69.78	Pk	32.2	-30.1	12.3	-55.38	-13	-42.38	0-360	149	H
3	3.39169	-71.52	Pk	32.6	-29.2	11.7	-56.42	-13	-43.42	0-360	149	H
4	1.69913	-69.39	Pk	29.2	-31.6	12	-59.79	-13	-46.79	0-360	149	V
5	2.54966	-69.66	Pk	32.3	-30.1	11.7	-55.76	-13	-42.76	0-360	149	V
6	3.39222	-70.69	Pk	32.6	-29.2	11.9	-55.39	-13	-42.39	0-360	149	V

1xEV-DO REV A MODE

Company:	Samsung
Project #:	13171837
Date:	1/08/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xEV-DO REV A BC0
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
824.7 MHz												
1	1.64972	-68.52	Pk	28.5	-31.7	12.5	-59.22	-13	-46.22	0-360	149	H
2	2.47369	-69.04	Pk	32.3	-30.4	11.3	-55.84	-13	-42.84	0-360	149	H
3	3.29234	-71.48	Pk	32.8	-29.2	12.1	-55.78	-13	-42.78	0-360	149	H
4	1.64972	-69.62	Pk	28.5	-31.7	11.4	-61.42	-13	-48.42	0-360	149	V
5	2.47422	-69.44	Pk	32.3	-30.4	11.5	-56.04	-13	-43.04	0-360	149	V
6	3.29022	-71.43	Pk	32.8	-29.2	12	-55.83	-13	-42.83	0-360	149	V
836.52 MHz												
1	1.67203	-67.09	Pk	28.8	-31.5	11.6	-58.19	-13	-45.19	0-360	149	H
2	2.50822	-69.26	Pk	32.3	-30.2	11.4	-55.76	-13	-42.76	0-360	149	H
3	3.34759	-71.41	Pk	32.7	-29.2	11.4	-56.51	-13	-43.51	0-360	149	H
4	1.67256	-69.06	Pk	28.8	-31.6	10.9	-60.96	-13	-47.96	0-360	149	V
5	2.51034	-69.27	Pk	32.3	-30.1	11.4	-55.67	-13	-42.67	0-360	149	V
6	3.35291	-71.11	Pk	32.6	-29.2	11.8	-55.91	-13	-42.91	0-360	149	V
848.3 MHz												
1	1.697	-69.4	Pk	29.2	-31.5	11.2	-60.5	-13	-47.5	0-360	149	H
2	2.54647	-70.4	Pk	32.3	-30.1	12	-56.2	-13	-43.2	0-360	149	H
3	3.39169	-71.75	Pk	32.6	-29.2	11.7	-56.65	-13	-43.65	0-360	149	H
4	1.697	-70.31	Pk	29.2	-31.5	12.2	-60.41	-13	-47.41	0-360	149	V
5	2.547	-71.18	Pk	32.3	-30	11.8	-57.08	-13	-44.08	0-360	149	V
6	3.39275	-70.77	Pk	32.6	-29.3	11.8	-55.67	-13	-42.67	0-360	149	V

9.2.5. CDMA BC1

1xRTT MODE

Company:	Samsung
Project #:	13171837
Date:	1/09/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xRTT BC1
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1851.25 MHz												
1	3.69503	-75.96	Pk	33	-28.8	11.9	-59.86	-13	-46.86	0-360	149	H
2	5.55866	-76.52	Pk	35.1	-26.8	11.9	-56.32	-13	-43.32	0-360	149	H
3	7.39253	-78.85	Pk	35.5	-24.3	12.1	-55.55	-13	-42.55	0-360	149	H
4	3.70672	-75.62	Pk	33	-28.6	11.9	-59.32	-13	-46.32	0-360	149	V
5	5.55441	-77.69	Pk	35.1	-26.8	12.1	-57.29	-13	-44.29	0-360	149	V
6	7.39838	-77.98	Pk	35.5	-24.3	11.9	-54.88	-13	-41.88	0-360	149	V
1880 MHz												
1	3.74922	-76.4	Pk	33	-28.4	11.6	-60.2	-13	-47.2	0-360	149	H
2	5.64844	-76.13	Pk	35.1	-26.6	12	-55.63	-13	-42.63	0-360	149	H
3	7.50409	-78.81	Pk	35.5	-23.8	12.2	-54.91	-13	-41.91	0-360	149	H
4	3.74922	-76.39	Pk	33	-28.4	11.8	-59.99	-13	-46.99	0-360	149	V
5	5.64366	-77.38	Pk	35.1	-26.6	12	-56.88	-13	-43.88	0-360	149	V
6	7.51047	-78.67	Pk	35.6	-23.9	12.3	-54.67	-13	-41.67	0-360	149	V
1908.75 MHz												
1	3.81775	-76.78	Pk	32.9	-28.3	11.7	-60.48	-13	-47.48	0-360	149	H
2	5.72016	-76.71	Pk	35	-26.7	12	-56.41	-13	-43.41	0-360	149	H
3	7.64647	-77.52	Pk	35.6	-24.1	11.6	-54.42	-13	-41.42	0-360	149	H
4	3.82041	-76.2	Pk	32.9	-28.2	11.2	-60.3	-13	-47.3	0-360	149	V
5	5.73291	-77.38	Pk	35	-26.5	11.5	-57.38	-13	-44.38	0-360	149	V
6	7.6385	-78.57	Pk	35.6	-24.1	11.8	-55.27	-13	-42.27	0-360	149	V

1xEV-DO REV A MODE

Company:	Samsung
Project #:	13171837
Date:	1/09/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xEV-DO REV A BC1
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1851.25 MHz												
1	3.71097	-76.11	Pk	33	-28.5	11.7	-59.91	-13	-46.91	0-360	149	H
2	5.56609	-76.79	Pk	35.2	-26.7	11.6	-56.69	-13	-43.69	0-360	149	H
3	7.38775	-78.58	Pk	35.5	-24.2	12	-55.28	-13	-42.28	0-360	149	H
4	3.69716	-75.98	Pk	33	-28.8	12.1	-59.68	-13	-46.68	0-360	149	V
5	5.556	-76.27	Pk	35.1	-26.8	12	-55.97	-13	-42.97	0-360	149	V
6	7.39519	-78.8	Pk	35.5	-24.2	12	-55.5	-13	-42.5	0-360	149	V
1880 MHz												
1	3.75666	-76.29	Pk	32.9	-28.3	11.8	-59.89	-13	-46.89	0-360	149	H
2	5.64631	-76.13	Pk	35.1	-26.6	11.9	-55.73	-13	-42.73	0-360	149	H
3	7.49878	-78.77	Pk	35.5	-23.8	12.1	-54.97	-13	-41.97	0-360	149	H
4	3.75506	-76.69	Pk	32.9	-28.4	11.8	-60.39	-13	-47.39	0-360	149	V
5	5.64525	-77.03	Pk	35.1	-26.5	12	-56.43	-13	-43.43	0-360	149	V
6	7.5195	-77.08	Pk	35.5	-23.9	12	-53.48	-13	-40.48	0-360	149	V
1908.75 MHz												
1	3.82041	-76.58	Pk	32.9	-28.2	11.5	-60.38	-13	-47.38	0-360	149	H
2	5.71909	-77.73	Pk	35	-26.7	12	-57.43	-13	-44.43	0-360	149	H
3	7.63638	-78.18	Pk	35.6	-24.1	11.8	-54.88	-13	-41.88	0-360	149	H
4	3.81934	-76.78	Pk	32.9	-28.3	11.3	-60.88	-13	-47.88	0-360	149	V
5	5.71803	-77.72	Pk	35	-26.7	11.7	-57.72	-13	-44.72	0-360	149	V
6	7.63159	-78.57	Pk	35.6	-24.1	12	-55.07	-13	-42.07	0-360	149	V

9.2.6. WCDMA BAND 5

REL 99 MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	REL 99 Band 5
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
826.4 MHz												
1	1.65344	-65.84	Pk	28.5	-31.7	12.2	-56.84	-13	-43.84	0-360	149	H
2	2.48059	-68.48	Pk	32.4	-30.5	11.3	-55.28	-13	-42.28	0-360	149	H
3	3.30456	-71.64	Pk	32.7	-29.3	11.6	-56.64	-13	-43.64	0-360	149	H
4	1.65131	-69.02	Pk	28.5	-31.7	11.3	-60.92	-13	-47.92	0-360	149	V
5	2.48113	-67.46	Pk	32.4	-30.5	11.3	-54.26	-13	-41.26	0-360	149	V
6	3.30563	-71.4	Pk	32.7	-29.3	11.9	-56.1	-13	-43.1	0-360	149	V
836.6 MHz												
1	1.67097	-69.5	Pk	28.8	-31.5	11.6	-60.6	-13	-47.6	0-360	149	H
2	2.50716	-70.42	Pk	32.3	-30.2	11.4	-56.92	-13	-43.92	0-360	149	H
3	3.34866	-71.53	Pk	32.7	-29.2	11.4	-56.63	-13	-43.63	0-360	149	H
4	1.67044	-70.29	Pk	28.8	-31.5	11.1	-61.89	-13	-48.89	0-360	149	V
5	2.50875	-70.65	Pk	32.3	-30.2	11.4	-57.15	-13	-44.15	0-360	149	V
6	3.34441	-72.13	Pk	32.7	-29.2	12	-56.63	-13	-43.63	0-360	149	V
846.6 MHz												
1	1.69434	-63.24	Pk	29.1	-31.6	11.4	-54.34	-13	-41.34	0-360	149	H
2	2.53531	-69.88	Pk	32.2	-30.2	12.7	-55.18	-13	-42.18	0-360	149	H
3	3.39063	-70.84	Pk	32.6	-29.3	11.6	-55.94	-13	-42.94	0-360	149	H
4	1.69488	-61.43	Pk	29.1	-31.6	12.4	-51.53	-13	-38.53	0-360	149	V
5	2.53691	-71.68	Pk	32.2	-30.1	11.5	-58.08	-13	-45.08	0-360	149	V
6	3.38691	-71.64	Pk	32.7	-29.2	12	-56.14	-13	-43.14	0-360	149	V

HSDPA MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	HSDPA Band 5
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
826.4 MHz												
1	1.6545	-68.35	Pk	28.6	-31.7	12.2	-59.25	-13	-46.25	0-360	149	H
2	2.479	-70.91	Pk	32.3	-30.5	11.2	-57.91	-13	-44.91	0-360	149	H
3	3.30244	-71.96	Pk	32.7	-29.2	11.6	-56.86	-13	-43.86	0-360	149	H
4	1.65609	-69.7	Pk	28.6	-31.7	11.3	-61.5	-13	-48.5	0-360	149	V
5	2.47634	-71.17	Pk	32.3	-30.4	11.4	-57.87	-13	-44.87	0-360	149	V
6	3.30934	-72.23	Pk	32.7	-29.3	11.9	-56.93	-13	-43.93	0-360	149	V
836.6 MHz												
1	1.67681	-70.49	Pk	28.9	-31.6	11.8	-61.39	-13	-48.39	0-360	149	H
2	2.51247	-70.28	Pk	32.3	-30.1	11.5	-56.58	-13	-43.58	0-360	149	H
3	3.34175	-71.21	Pk	32.7	-29.2	11.6	-56.11	-13	-43.11	0-360	149	H
4	1.68213	-69.97	Pk	29	-31.5	11.6	-60.87	-13	-47.87	0-360	149	V
5	2.50928	-69.91	Pk	32.3	-30.2	11.4	-56.41	-13	-43.41	0-360	149	V
6	3.33697	-70.75	Pk	32.8	-29.2	12.1	-55.05	-13	-42.05	0-360	149	V
846.6 MHz												
1	1.69009	-66.9	Pk	29.2	-31.6	11.4	-57.9	-13	-44.9	0-360	149	H
2	2.53638	-70.19	Pk	32.2	-30.2	12.7	-55.49	-13	-42.49	0-360	149	H
3	3.39009	-70.73	Pk	32.6	-29.3	11.6	-55.83	-13	-42.83	0-360	149	H
4	1.69488	-64.64	Pk	29.1	-31.6	12.4	-54.74	-13	-41.74	0-360	149	V
5	2.54169	-71.06	Pk	32.2	-30.1	11.7	-57.26	-13	-44.26	0-360	149	V
6	3.38266	-71.45	Pk	32.7	-29.3	12.1	-55.95	-13	-42.95	0-360	149	V

9.2.7. WCDMA BAND 2

REL 99 MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	REL 99 Band 2
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1852.4 MHz												
1	3.70619	-75.18	Pk	33	-28.6	11.8	-58.98	-13	-45.98	0-360	149	H
2	5.54909	-76.29	Pk	35.1	-26.8	12	-55.99	-13	-42.99	0-360	149	H
3	7.42388	-77.49	Pk	35.5	-24.3	11.7	-54.59	-13	-41.59	0-360	149	H
4	3.70884	-75.3	Pk	33	-28.5	11.9	-58.9	-13	-45.9	0-360	149	V
5	5.56131	-76.4	Pk	35.1	-26.8	12	-56.1	-13	-43.1	0-360	149	V
6	7.39838	-78.87	Pk	35.5	-24.3	11.9	-55.77	-13	-42.77	0-360	149	V
1880 MHz												
1	3.76569	-75.85	Pk	33	-28.2	11.6	-59.45	-13	-46.45	0-360	149	H
2	5.65588	-76.42	Pk	35	-26.7	12.2	-55.92	-13	-42.92	0-360	149	H
3	7.52109	-76.86	Pk	35.5	-23.9	11.9	-53.36	-13	-40.36	0-360	149	H
4	3.75931	-75.57	Pk	32.9	-28.3	11.8	-59.17	-13	-46.17	0-360	149	V
5	5.63409	-75.38	Pk	35	-26.6	12	-54.98	-13	-41.98	0-360	149	V
6	7.51047	-78	Pk	35.6	-23.9	12.3	-54	-13	-41	0-360	149	V
1907.6 MHz												
1	3.81403	-75.31	Pk	32.9	-28.4	11.8	-59.01	-13	-46.01	0-360	149	H
2	5.72866	-75.91	Pk	34.9	-26.6	11.8	-55.81	-13	-42.81	0-360	149	H
3	7.62363	-78.04	Pk	35.7	-24.1	11.9	-54.54	-13	-41.54	0-360	149	H
4	3.81403	-75.37	Pk	32.9	-28.4	11.4	-59.47	-13	-46.47	0-360	149	V
5	5.7175	-75.75	Pk	35	-26.7	11.7	-55.75	-13	-42.75	0-360	149	V
6	7.63531	-78.21	Pk	35.6	-24.1	12	-54.71	-13	-41.71	0-360	149	V

HSDPA MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	HSDPA Band 2
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1852.4 MHz												
1	3.69769	-75.73	Pk	33	-28.8	11.9	-59.63	-13	-46.63	0-360	149	H
2	5.54697	-75.82	Pk	35.1	-26.9	12	-55.62	-13	-42.62	0-360	149	H
3	7.42122	-77.69	Pk	35.6	-24.4	11.6	-54.89	-13	-41.89	0-360	149	H
4	3.70141	-74.32	Pk	33	-28.7	12.1	-57.92	-13	-44.92	0-360	149	V
5	5.556	-77.04	Pk	35.1	-26.8	12	-56.74	-13	-43.74	0-360	149	V
6	7.41219	-77.35	Pk	35.5	-24.4	11.6	-54.65	-13	-41.65	0-360	149	V
1880 MHz												
1	3.76303	-75.16	Pk	33	-28.3	11.7	-58.76	-13	-45.76	0-360	149	H
2	5.65269	-76.28	Pk	35	-26.7	12.2	-55.78	-13	-42.78	0-360	149	H
3	7.50994	-77.78	Pk	35.6	-23.9	12.1	-53.98	-13	-40.98	0-360	149	H
4	3.75719	-76.5	Pk	32.9	-28.3	11.8	-60.1	-13	-47.1	0-360	149	V
5	5.6495	-75.96	Pk	35	-26.6	12.2	-55.36	-13	-42.36	0-360	149	V
6	7.51738	-78.73	Pk	35.5	-23.9	12.1	-55.03	-13	-42.03	0-360	149	V
1907.6 MHz												
1	3.82147	-75.2	Pk	32.9	-28.2	11.4	-59.1	-13	-46.1	0-360	149	H
2	5.72175	-76.24	Pk	35	-26.6	12	-55.84	-13	-42.84	0-360	149	H
3	7.65178	-77.88	Pk	35.6	-24.1	11.7	-54.68	-13	-41.68	0-360	149	H
4	3.81191	-76.14	Pk	32.9	-28.4	11.4	-60.24	-13	-47.24	0-360	149	V
5	5.71272	-77.29	Pk	34.9	-26.7	11.9	-57.19	-13	-44.19	0-360	149	V
6	7.63372	-78.11	Pk	35.6	-24.1	12	-54.61	-13	-41.61	0-360	149	V

9.2.8. WCDMA BAND 4

REL 99 MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	REL 99 Band 4
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1712.4 MHz												
1	3.43419	-74.34	Pk	32.7	-29.3	11.9	-59.04	-13	-46.04	0-360	149	H
2	5.13313	-77.33	Pk	34.4	-26.9	11.8	-58.03	-13	-45.03	0-360	149	H
3	6.86234	-77.25	Pk	35.7	-25.2	11.8	-54.95	-13	-41.95	0-360	149	H
4	3.42834	-74.68	Pk	32.7	-29.3	11.7	-59.58	-13	-46.58	0-360	149	V
5	5.14056	-76.82	Pk	34.4	-27	12	-57.42	-13	-44.42	0-360	149	V
6	6.84747	-77.38	Pk	35.5	-25.3	11.6	-55.58	-13	-42.58	0-360	149	V
1732.6 MHz												
1	3.47191	-75.41	Pk	32.8	-29	11.8	-59.81	-13	-46.81	0-360	149	H
2	5.19422	-76.85	Pk	34.4	-26.9	12.1	-57.25	-13	-44.25	0-360	149	H
3	6.93194	-76.45	Pk	35.7	-24.7	11.7	-53.75	-13	-40.75	0-360	149	H
4	3.45863	-76.34	Pk	32.8	-29.1	11.5	-61.14	-13	-48.14	0-360	149	V
5	5.19741	-77.38	Pk	34.4	-27	12.4	-57.58	-13	-44.58	0-360	149	V
6	6.92769	-77.36	Pk	35.6	-24.8	12.1	-54.46	-13	-41.46	0-360	149	V
1752.6 MHz												
1	3.50006	-76.03	Pk	32.9	-28.8	12.1	-59.83	-13	-46.83	0-360	149	H
2	5.27284	-77.37	Pk	34.5	-26.7	12.1	-57.47	-13	-44.47	0-360	149	H
3	7.00047	-76.89	Pk	35.6	-24.7	11.7	-54.29	-13	-41.29	0-360	149	H
4	3.50963	-76.23	Pk	32.8	-28.7	11.8	-60.33	-13	-47.33	0-360	149	V
5	5.25691	-77.59	Pk	34.5	-26.7	12.3	-57.49	-13	-44.49	0-360	149	V
6	7.00259	-75.98	Pk	35.6	-24.8	11.8	-53.38	-13	-40.38	0-360	149	V

HSDPA MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	HSDPA Band 4
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1712.4 MHz												
1	3.43313	-74.73	Pk	32.7	-29.3	11.9	-59.43	-13	-46.43	0-360	149	H
2	5.14588	-76.75	Pk	34.3	-27	11.9	-57.55	-13	-44.55	0-360	149	H
3	6.82941	-76.86	Pk	35.5	-25.2	11.6	-54.96	-13	-41.96	0-360	149	H
4	3.42463	-75.52	Pk	32.7	-29.3	11.8	-60.32	-13	-47.32	0-360	149	V
5	5.14109	-77.03	Pk	34.4	-27	12	-57.63	-13	-44.63	0-360	149	V
6	6.84641	-77.79	Pk	35.5	-25.3	11.6	-55.99	-13	-42.99	0-360	149	V
1732.6 MHz												
1	3.46447	-76	Pk	32.8	-29.2	12	-60.4	-13	-47.4	0-360	149	H
2	5.19741	-77.17	Pk	34.4	-27	12.2	-57.57	-13	-44.57	0-360	149	H
3	6.91866	-77.42	Pk	35.6	-24.8	11.8	-54.82	-13	-41.82	0-360	149	H
4	3.46341	-75.39	Pk	32.8	-29.2	11.6	-60.19	-13	-47.19	0-360	149	V
5	5.19103	-77.1	Pk	34.4	-27	12.3	-57.4	-13	-44.4	0-360	149	V
6	6.93194	-77.37	Pk	35.7	-24.7	11.9	-54.47	-13	-41.47	0-360	149	V
1752.6 MHz												
1	3.50272	-76.73	Pk	32.9	-28.7	11.9	-60.63	-13	-47.63	0-360	152	H
2	5.26009	-76.71	Pk	34.5	-26.7	12	-56.91	-13	-43.91	0-360	152	H
3	6.99728	-78.29	Pk	35.6	-24.8	11.8	-55.69	-13	-42.69	0-360	152	H
4	3.50006	-76.11	Pk	32.9	-28.8	11.9	-60.11	-13	-47.11	0-360	152	V
5	5.25266	-76.87	Pk	34.5	-26.9	12.4	-56.87	-13	-43.87	0-360	152	V
6	6.99569	-77.05	Pk	35.6	-24.8	11.9	-54.35	-13	-41.35	0-360	152	V

9.2.9. LTE BAND 5

LIMITS

FCC: §22.917(a)

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.

RSS132§5.5

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

- (i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p (watts).
- (ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least43 + 10 log10 p (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

QPSK LTE BAND 5 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 5 QPSK 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
829 MHz												
1	1.64919	-57.41	Pk	28.5	-31.7	12.5	-48.11	-13	-35.11	0-360	149	H
2	2.47369	-66.15	Pk	32.3	-30.4	11.3	-52.95	-13	-39.95	0-360	149	H
3	3.27056	-70.25	Pk	32.8	-29.1	12	-54.55	-13	-41.55	0-360	149	H
4	1.64919	-62.07	Pk	28.5	-31.7	11.4	-53.87	-13	-40.87	0-360	149	V
5	2.47369	-66.47	Pk	32.3	-30.4	11.5	-53.07	-13	-40.07	0-360	149	V
6	3.27906	-71.62	Pk	32.8	-29.2	11.9	-56.12	-13	-43.12	0-360	149	V
836.5 MHz												
1	1.66406	-66.54	Pk	28.7	-31.6	11.6	-57.84	-13	-44.84	0-360	149	H
2	2.496	-66.9	Pk	32.3	-30.3	11.3	-53.6	-13	-40.6	0-360	149	H
3	3.33219	-70.49	Pk	32.8	-29.1	11.6	-55.19	-13	-42.19	0-360	149	H
4	1.66406	-58.24	Pk	28.7	-31.6	11.3	-49.84	-13	-36.84	0-360	149	V
5	2.496	-66.86	Pk	32.3	-30.3	11.4	-53.46	-13	-40.46	0-360	149	V
6	3.33909	-70.92	Pk	32.7	-29.2	12.1	-55.32	-13	-42.32	0-360	149	V
844 MHz												
1	1.67894	-62.31	Pk	28.9	-31.6	12	-53.01	-13	-40.01	0-360	149	H
2	2.51831	-65.64	Pk	32.3	-30.2	11.9	-51.64	-13	-38.64	0-360	149	H
3	3.27269	-70.74	Pk	32.8	-29.2	12	-55.14	-13	-42.14	0-360	149	H
4	1.67947	-64.81	Pk	28.9	-31.6	11.3	-56.21	-13	-43.21	0-360	149	V
5	2.51884	-64.6	Pk	32.3	-30.2	11.6	-50.9	-13	-37.9	0-360	149	V
6	3.27959	-70.14	Pk	32.8	-29.2	11.9	-54.64	-13	-41.64	0-360	149	V

16QAM LTE BAND 5 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 5 16QAM 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
829 MHz												
1	1.64919	-59.42	Pk	28.5	-31.7	12.5	-50.12	-13	-37.12	0-360	149	H
2	2.47369	-67.58	Pk	32.3	-30.4	11.3	-54.38	-13	-41.38	0-360	149	H
3	3.29766	-71.22	Pk	32.7	-29.2	11.9	-55.82	-13	-42.82	0-360	149	H
4	1.64919	-63.23	Pk	28.5	-31.7	11.4	-55.03	-13	-42.03	0-360	149	V
5	2.47369	-65.17	Pk	32.3	-30.4	11.5	-51.77	-13	-38.77	0-360	149	V
6	3.28809	-71.78	Pk	32.8	-29.1	12.1	-55.98	-13	-42.98	0-360	149	V
836.5 MHz												
1	1.66406	-66.52	Pk	28.7	-31.6	11.6	-57.82	-13	-44.82	0-360	149	H
2	2.49653	-66.93	Pk	32.3	-30.3	11.3	-53.63	-13	-40.63	0-360	149	H
3	3.33484	-70.96	Pk	32.8	-29.2	11.6	-55.76	-13	-42.76	0-360	149	H
4	1.66406	-56.69	Pk	28.7	-31.6	11.3	-48.29	-13	-35.29	0-360	149	V
5	2.496	-68.44	Pk	32.3	-30.3	11.4	-55.04	-13	-42.04	0-360	149	V
6	3.34813	-69.77	Pk	32.7	-29.2	11.9	-54.37	-13	-41.37	0-360	149	V
844 MHz												
1	1.67894	-62.63	Pk	28.9	-31.6	12	-53.33	-13	-40.33	0-360	149	H
2	2.51884	-67.43	Pk	32.3	-30.2	11.9	-53.43	-13	-40.43	0-360	149	H
3	3.3375	-70.09	Pk	32.8	-29.1	11.7	-54.69	-13	-41.69	0-360	149	H
4	1.67947	-63.24	Pk	28.9	-31.6	11.3	-54.64	-13	-41.64	0-360	149	V
5	2.51884	-65.57	Pk	32.3	-30.2	11.6	-51.87	-13	-38.87	0-360	149	V
6	3.33378	-71.2	Pk	32.8	-29.1	12	-55.5	-13	-42.5	0-360	149	V

9.2.10. LTE BAND 7

LIMITS

FCC: §27.53 (m)

At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

RSS199§4.5

Equipment shall comply with the following unwanted emission limits:

- a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least 43 + 10 log₁₀ p
- b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
 - i. 40 + 10 log₁₀ p from the channel edges to 5 MHz away
 - ii. 43 + 10 log₁₀ p between 5 MHz and X MHz from the channel edges, and
 - iii. 55 + 10 log₁₀ p at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than 43 + 10 log₁₀ p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log₁₀ p at or below 2490.5 MHz.

In (a) and (b), p is the transmitter power measured in watts and X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

QPSK LTE BAND 7 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/09/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 7 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2510 MHz												
1	5.00031	-76.22	Pk	34.3	-27.2	11.5	-57.62	-25	-32.62	0-360	149	H
2	7.51684	-78.1	Pk	35.5	-23.9	12	-54.5	-25	-29.5	0-360	149	H
3	10.01744	-79.09	Pk	37	-20.8	12	-50.89	-25	-25.89	0-360	149	H
4	5.00403	-76.31	Pk	34.3	-27.2	11.9	-57.31	-25	-32.31	0-360	149	V
5	7.49878	-78.54	Pk	35.5	-23.8	12.2	-54.64	-25	-29.64	0-360	149	V
6	10.00469	-79.16	Pk	37	-20.8	11.7	-51.26	-25	-26.26	0-360	149	V
2535 MHz												
1	5.10391	-75.81	Pk	34.4	-26.9	11.7	-56.61	-25	-31.61	0-360	149	H
2	7.56147	-77.42	Pk	35.6	-23.8	12.2	-53.42	-25	-28.42	0-360	149	H
3	10.19966	-78.64	Pk	37.3	-20.1	12.3	-49.14	-25	-24.14	0-360	149	H
4	5.07256	-75.45	Pk	34.3	-27.1	11.9	-56.35	-25	-31.35	0-360	149	V
5	7.56678	-76.01	Pk	35.6	-23.9	12.2	-52.11	-25	-27.11	0-360	149	V
6	10.14388	-79.24	Pk	37.1	-20.2	12.4	-49.94	-25	-24.94	0-360	149	V
2560 MHz												
1	5.09647	-75.45	Pk	34.3	-26.8	11.9	-56.05	-25	-31.05	0-360	149	H
2	7.65603	-78.13	Pk	35.7	-24	11.7	-54.73	-25	-29.73	0-360	149	H
3	10.20178	-78.8	Pk	37.3	-20.1	12.3	-49.3	-25	-24.3	0-360	149	H
4	5.10391	-76.14	Pk	34.4	-26.9	11.7	-56.94	-25	-31.94	0-360	149	V
5	7.65391	-78.65	Pk	35.6	-24.1	11.7	-55.45	-25	-30.45	0-360	149	V
6	10.20391	-79.3	Pk	37.3	-20.1	12.3	-49.8	-25	-24.8	0-360	149	V

16QAM LTE BAND 7 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/09/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 7 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2510 MHz												
1	5.00775	-75.59	Pk	34.3	-27.2	11.7	-56.79	-25	-31.79	0-360	149	H
2	7.51313	-78.35	Pk	35.6	-23.9	12.1	-54.55	-25	-29.55	0-360	149	H
3	9.99884	-78.37	Pk	36.9	-20.9	11.6	-50.77	-25	-25.77	0-360	149	H
4	5.00084	-76.58	Pk	34.3	-27.3	11.8	-57.78	-25	-32.78	0-360	149	V
5	7.49825	-78.93	Pk	35.5	-23.9	12.2	-55.13	-25	-30.13	0-360	149	V
6	10.00841	-79.48	Pk	37	-20.8	11.9	-51.38	-25	-26.38	0-360	149	V
2535 MHz												
1	5.04866	-75.13	Pk	34.4	-27	11.4	-56.33	-25	-31.33	0-360	149	H
2	7.56519	-77.5	Pk	35.6	-23.9	12.2	-53.6	-25	-28.6	0-360	149	H
3	10.08225	-79.59	Pk	37.1	-20.8	12.1	-51.19	-25	-26.19	0-360	149	H
4	5.04813	-75.39	Pk	34.4	-27	11.7	-56.29	-25	-31.29	0-360	149	V
5	7.57847	-76.23	Pk	35.5	-24.1	12.1	-52.73	-25	-27.73	0-360	149	V
6	10.10456	-79.58	Pk	37.1	-20.7	11.8	-51.38	-25	-26.38	0-360	149	V
2560 MHz												
1	5.11134	-75.15	Pk	34.3	-26.9	11.7	-56.05	-25	-31.05	0-360	149	H
2	7.64009	-78.48	Pk	35.6	-24.1	11.7	-55.28	-25	-30.28	0-360	149	H
3	10.19859	-78.62	Pk	37.3	-20.1	12.3	-49.12	-25	-24.12	0-360	149	H
4	5.10338	-76.39	Pk	34.4	-26.9	11.7	-57.19	-25	-32.19	0-360	149	V
5	7.64913	-78.54	Pk	35.6	-24.2	11.6	-55.54	-25	-30.54	0-360	149	V
6	10.20444	-78.82	Pk	37.3	-20.2	12.3	-49.42	-25	-24.42	0-360	149	V

9.2.11. LTE BAND 12

LIMITS

FCC: §27.53 (g)

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.

RSS130§4.7

4.7.1 General unwanted emissions limits

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 log₁₀ p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits

In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

- a. the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:
 - iii. 76 + 10 log₁₀ p (watts), dB, for base and fixed equipment and
 - iv. 65 + 10 log₁₀ p (watts), dB, for mobile and portable equipment
- b. the e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

QPSK LTE BAND 12 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 12 QPSK 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
704 MHz												
1	1.39897	-69.66	Pk	28.9	-32.2	10.4	-62.56	-13	-49.56	0-360	149	H
2	2.09863	-56.23	Pk	31.1	-30.9	11.8	-44.23	-13	-31.23	0-360	149	H
3	2.80731	-74.62	Pk	32.3	-29.8	11.9	-60.22	-13	-47.22	0-360	149	H
4	1.39897	-70.91	Pk	28.9	-32.2	10.3	-63.91	-13	-50.91	0-360	149	V
5	2.09916	-62.85	Pk	31.1	-30.9	11.4	-51.25	-13	-38.25	0-360	149	V
6	2.81847	-74.32	Pk	32.2	-29.8	11.9	-60.02	-13	-47.02	0-360	149	V
707.5 MHz												
1	1.40588	-67.35	Pk	28.8	-32.3	11.3	-59.55	-13	-46.55	0-360	149	H
2	2.10925	-53.96	Pk	31.1	-30.9	12.1	-41.66	-13	-28.66	0-360	149	H
3	2.80359	-74.5	Pk	32.3	-29.8	11.9	-60.1	-13	-47.1	0-360	149	H
4	1.40588	-69.01	Pk	28.8	-32.3	11	-61.51	-13	-48.51	0-360	149	V
5	2.10925	-57.42	Pk	31.1	-30.9	11.7	-45.52	-13	-32.52	0-360	149	V
6	2.79669	-74.62	Pk	32.4	-29.9	11.9	-60.22	-13	-47.22	0-360	149	V
711 MHz												
1	1.41331	-71.51	Pk	28.8	-32.2	12	-62.91	-13	-49.91	0-360	149	H
2	2.11934	-56.16	Pk	31.1	-31.1	12.3	-43.86	-13	-30.86	0-360	149	H
3	2.80041	-73.4	Pk	32.4	-29.8	11.8	-59	-13	-46	0-360	149	H
4	1.41756	-73.17	Pk	28.7	-32.1	12.2	-64.37	-13	-51.37	0-360	149	V
5	2.11988	-61.72	Pk	31.1	-31	11.6	-50.02	-13	-37.02	0-360	149	V
6	2.81316	-73.75	Pk	32.2	-29.8	11.7	-59.65	-13	-46.65	0-360	149	V

16QAM LTE BAND 12 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 12 16QAM 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
704 MHz												
1	1.3995	-70.28	Pk	28.9	-32.2	10.4	-63.18	-13	-50.18	0-360	149	H
2	2.09916	-56.56	Pk	31.1	-30.9	11.8	-44.56	-13	-31.56	0-360	149	H
3	2.79084	-73.48	Pk	32.3	-29.9	11.9	-59.18	-13	-46.18	0-360	149	H
4	1.38622	-72.06	Pk	29.1	-32.3	10.5	-64.76	-13	-51.76	0-360	149	V
5	2.09916	-61.84	Pk	31.1	-30.9	11.4	-50.24	-13	-37.24	0-360	149	V
6	2.78925	-73.5	Pk	32.3	-30	11.9	-59.3	-13	-46.3	0-360	149	V
707.5 MHz												
1	1.42819	-72.77	Pk	28.6	-32.1	12.4	-63.87	-13	-50.87	0-360	149	H
2	2.10925	-56.04	Pk	31.1	-30.9	12.1	-43.74	-13	-30.74	0-360	149	H
3	2.78234	-72.83	Pk	32.3	-30	11.8	-58.73	-13	-45.73	0-360	149	H
4	1.42606	-72.07	Pk	28.6	-32.1	12.2	-63.37	-13	-50.37	0-360	149	V
5	2.10925	-61.1	Pk	31.1	-30.9	11.7	-49.2	-13	-36.2	0-360	149	V
6	2.80519	-73.89	Pk	32.3	-29.8	11.8	-59.59	-13	-46.59	0-360	149	V
711 MHz												
1	1.4335	-72.17	Pk	28.4	-32.1	12	-63.87	-13	-50.87	0-360	149	H
2	2.11988	-56.9	Pk	31.1	-31	12.3	-44.5	-13	-31.5	0-360	149	H
3	2.84397	-73.64	Pk	32.2	-30.1	11.4	-60.14	-13	-47.14	0-360	149	H
4	1.42288	-73.34	Pk	28.6	-32.1	12.4	-64.44	-13	-51.44	0-360	149	V
5	2.11988	-64.96	Pk	31.1	-31	11.6	-53.26	-13	-40.26	0-360	149	V
6	2.82378	-74.26	Pk	32.2	-29.9	12	-59.96	-13	-46.96	0-360	149	V

9.2.12. LTE BAND 13

LIMITS

FCC: §27.53

(c) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

(f) Emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

RSS130§4.7

4.7.1 General unwanted emissions limits

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits

In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

- a. the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:
 - i. $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment and
 - ii. $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment
- b. the e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

QPSK LTE BAND 13 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 13 QPSK 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
782MHz												
1	1.55993	-63.1	Pk	28.1	-31.8	11.5	-55.3	-40	-15.3	0-360	149	H
2	2.33238	-57.05	Pk	31.5	-30.6	12.1	-44.05	-13	-31.05	0-360	149	H
3	3.10906	-71.37	Pk	32.7	-29.3	11.6	-56.37	-13	-43.37	0-360	149	H
4	1.55994	-66.64	Pk	28	-31.8	12.1	-58.34	-40	-18.34	0-360	149	V
5	2.33238	-61.84	Pk	31.5	-30.6	11.8	-49.14	-13	-36.14	0-360	149	V
6	3.11013	-70.37	Pk	32.7	-29.3	12.2	-54.77	-13	-41.77	0-360	149	V

16QAM LTE BAND 13 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 13 16QAM 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
782MHz												
1	1.55993	-67.34	Pk	28.1	-31.8	11.5	-59.54	-40	-19.54	0-360	149	H
2	2.33238	-59.44	Pk	31.5	-30.6	12.1	-46.44	-13	-33.44	0-360	149	H
3	3.11013	-70.62	Pk	32.7	-29.3	11.6	-55.62	-13	-42.62	0-360	149	H
4	1.55994	-70.06	Pk	28.1	-31.8	12.2	-61.56	-40	-21.56	0-360	149	V
5	2.33291	-63.17	Pk	31.5	-30.6	11.8	-50.47	-13	-37.47	0-360	149	V
6	3.11066	-70.17	Pk	32.7	-29.4	12.2	-54.67	-13	-41.67	0-360	149	V

9.2.13. LTE BAND 14

LIMITS

FCC: §90.543 Emission Limitations. (Band 14)

(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(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

RSS140§4.4

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

a. For any frequency between 769-775 MHz and 799-806 MHz:

- i. $76 + 10 \log (p)$, dB in a 6.25 kHz band for fixed and base station equipment
- ii. $65 + 10 \log (p)$, dB in a 6.25 kHz band for mobile and portable/hand-held equipment

b. For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: $43 + 10 \log (p)$, dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed -70 dBW/MHz for wideband emissions, and -80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

QPSK LTE BAND 14 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/16/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 14 QPSK 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cpl (dB)	Amp/Cpl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
793MHz												
1	1.57694	-72.7	Pk	28	-31.8	10.8	-65.7	-40	-25.7	0-360	149	H
2	2.36531	-58.5	Pk	31.8	-30.6	12.6	-44.7	-13	-31.7	0-360	149	H
3	3.15422	-75.08	Pk	32.7	-28.9	12	-59.28	-13	-46.28	0-360	149	H
4	1.57694	-72.14	Pk	28	-31.8	11.1	-64.84	-40	-24.84	0-360	149	V
5	2.36584	-66.96	Pk	31.8	-30.6	13.1	-52.66	-13	-39.66	0-360	149	V
6	3.15422	-72.61	Pk	32.7	-28.9	12	-56.81	-13	-43.81	0-360	149	V

16QAM LTE BAND 14 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/16/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 14 16QAM 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
793MHz												
1	1.57694	-70.43	Pk	28	-31.8	10.8	-63.43	-40	-23.43	0-360	149	H
2	2.36531	-59.98	Pk	31.8	-30.6	12.6	-46.18	-13	-33.18	0-360	149	H
3	3.15263	-75.67	Pk	32.7	-28.9	12	-59.87	-13	-46.87	0-360	149	H
4	1.57428	-72.43	Pk	28	-31.8	11	-65.23	-40	-25.23	0-360	149	V
5	2.36531	-69.72	Pk	31.8	-30.6	13.2	-55.32	-13	-42.32	0-360	149	V
6	3.15475	-74.96	Pk	32.7	-28.9	12	-59.16	-13	-46.16	0-360	149	V

9.2.14. LTE BAND 25

LIMITS

FCC: §24.238(a)

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.

RSS133§6.5.1

Equipment shall comply with the limits in (i) and (ii) below.

- (i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts).
- (ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 25 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1860 MHz												
1	3.70141	-75.41	Pk	33	-28.7	11.9	-59.21	-13	-46.21	0-360	149	H
2	5.54431	-76.04	Pk	35.1	-26.8	12.1	-55.64	-13	-42.64	0-360	149	H
3	7.42388	-77.59	Pk	35.5	-24.3	11.7	-54.69	-13	-41.69	0-360	149	H
4	3.70725	-75.3	Pk	33	-28.6	11.9	-59	-13	-46	0-360	149	V
5	5.55228	-75.7	Pk	35.1	-26.8	12.1	-55.3	-13	-42.3	0-360	149	V
6	7.40741	-78.55	Pk	35.5	-24.4	11.7	-55.75	-13	-42.75	0-360	149	V
1882.5 MHz												
1	3.75134	-76.39	Pk	33	-28.4	11.7	-60.09	-13	-47.09	0-360	149	H
2	5.61497	-77.22	Pk	35.2	-26.8	11.9	-56.92	-13	-43.92	0-360	149	H
3	7.49666	-77.68	Pk	35.5	-24	12	-54.18	-13	-41.18	0-360	149	H
4	3.74603	-75.81	Pk	32.9	-28.4	11.9	-59.41	-13	-46.41	0-360	149	V
5	5.61975	-76.97	Pk	35.1	-26.7	12.1	-56.47	-13	-43.47	0-360	149	V
6	7.49453	-78.29	Pk	35.6	-24	12.1	-54.59	-13	-41.59	0-360	149	V
1905 MHz												
1	3.80181	-75.11	Pk	32.9	-28.3	11.5	-59.01	-13	-46.01	0-360	149	H
2	5.70156	-75.74	Pk	35	-26.6	11.9	-55.44	-13	-42.44	0-360	149	H
3	7.60238	-77.65	Pk	35.6	-24.1	11.9	-54.25	-13	-41.25	0-360	149	H
4	3.79172	-76.06	Pk	32.9	-28.3	11.4	-60.06	-13	-47.06	0-360	149	V
5	5.69519	-76.75	Pk	34.9	-26.6	11.7	-56.75	-13	-43.75	0-360	149	V
6	7.57369	-78.72	Pk	35.6	-23.9	12.2	-54.82	-13	-41.82	0-360	149	V

16QAM LTE BAND 25 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 25 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1860 MHz												
1	3.70672	-75.31	Pk	33	-28.6	11.8	-59.11	-13	-46.11	0-360	149	H
2	5.55069	-76.94	Pk	35.1	-26.8	12	-56.64	-13	-43.64	0-360	149	H
3	7.38244	-78.28	Pk	35.6	-24.2	12	-54.88	-13	-41.88	0-360	149	H
4	3.70088	-75.05	Pk	33	-28.7	12.1	-58.65	-13	-45.65	0-360	149	V
5	5.55706	-76.54	Pk	35.1	-26.8	12	-56.24	-13	-43.24	0-360	149	V
6	7.41059	-78.45	Pk	35.5	-24.4	11.6	-55.75	-13	-42.75	0-360	149	V
1882.5 MHz												
1	3.75188	-75.86	Pk	33	-28.3	11.7	-59.46	-13	-46.46	0-360	150	H
2	5.63356	-75.21	Pk	35.1	-26.6	11.7	-55.01	-13	-42.01	0-360	150	H
3	7.494	-77.38	Pk	35.6	-24	11.9	-53.88	-13	-40.88	0-360	150	H
4	3.75081	-76.09	Pk	33	-28.4	11.8	-59.69	-13	-46.69	0-360	150	V
5	5.62719	-75.87	Pk	35.2	-26.6	11.9	-55.37	-13	-42.37	0-360	150	V
6	7.49878	-77.77	Pk	35.5	-23.8	12.2	-53.87	-13	-40.87	0-360	150	V
1905 MHz												
1	3.78534	-75.06	Pk	33	-28.3	11.3	-59.06	-13	-46.06	0-360	149	H
2	5.69891	-76.63	Pk	35	-26.6	11.9	-56.33	-13	-43.33	0-360	149	H
3	7.60344	-77.84	Pk	35.7	-24.2	11.9	-54.44	-13	-41.44	0-360	149	H
4	3.79544	-75.92	Pk	32.9	-28.3	11.4	-59.92	-13	-46.92	0-360	149	V
5	5.68616	-74.56	Pk	35	-26.7	11.6	-54.66	-13	-41.66	0-360	149	V
6	7.58803	-76.54	Pk	35.6	-24.1	11.8	-53.24	-13	-40.24	0-360	149	V

9.2.15. LTE BAND 26 (FCC PART 90S)

LIMITS

FCC: §90.691

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

QPSK LTE BAND 26 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 26 QPSK 15MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
821.5 MHz												
1	1.62953	-61.87	Pk	28.4	-31.7	12.3	-52.87	-13	-39.87	0-360	149	H
2	2.44394	-63.81	Pk	32.2	-30.4	10.6	-51.41	-13	-38.41	0-360	149	H
3	3.23603	-71.31	Pk	33	-29.1	12	-55.41	-13	-42.41	0-360	149	H
4	1.629	-66.28	Pk	28.4	-31.7	11.5	-58.08	-13	-45.08	0-360	149	V
5	2.44394	-68.42	Pk	32.2	-30.4	11.3	-55.32	-13	-42.32	0-360	149	V
6	3.23178	-70.24	Pk	33.1	-29	11.6	-54.54	-13	-41.54	0-360	149	V

16QAM LTE BAND 26 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 26 16QAM 15MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
821.5 MHz												
1	1.62953	-65.32	Pk	28.4	-31.7	12.3	-56.32	-13	-43.32	0-360	149	H
2	2.44394	-68.14	Pk	32.2	-30.4	10.6	-55.74	-13	-42.74	0-360	149	H
3	3.24134	-71.18	Pk	32.9	-29.1	11.8	-55.58	-13	-42.58	0-360	149	H
4	1.629	-67.8	Pk	28.4	-31.7	11.5	-59.6	-13	-46.6	0-360	149	V
5	2.44447	-70.23	Pk	32.2	-30.4	11.3	-57.13	-13	-44.13	0-360	149	V
6	3.24984	-70.4	Pk	32.9	-29.3	11.6	-55.2	-13	-42.2	0-360	149	V

9.2.16. LTE BAND 26 (FCC PART 22)

LIMITS

FCC: §22.917(a)

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.

QPSK LTE BAND 26 (15.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/28/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 26 QPSK 15MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
831.5 MHz												
1	1.64972	-66.72	Pk	28.5	-31.7	12.5	-57.42	-13	-44.42	0-360	149	H
2	2.47422	-66.14	Pk	32.3	-30.4	11.3	-52.94	-13	-39.94	0-360	149	H
3	3.29659	-74.22	Pk	32.7	-29.2	12	-58.72	-13	-45.72	0-360	149	H
4	1.65291	-71.57	Pk	28.5	-31.7	11.3	-63.47	-13	-50.47	0-360	149	V
5	2.47369	-69.52	Pk	32.3	-30.4	11.5	-56.12	-13	-43.12	0-360	149	V
6	3.29819	-73.76	Pk	32.7	-29.2	12	-58.26	-13	-45.26	0-360	149	V
836.5 MHz												
1	1.6545	-70.61	Pk	28.6	-31.7	12.2	-61.51	-13	-48.51	0-360	149	H
2	2.48909	-70.92	Pk	32.3	-30.4	11.4	-57.62	-13	-44.62	0-360	149	H
3	3.312	-73.29	Pk	32.7	-29.3	11.4	-58.49	-13	-45.49	0-360	149	H
4	1.65928	-71.3	Pk	28.7	-31.6	11.4	-62.8	-13	-49.8	0-360	149	V
5	2.48697	-72.67	Pk	32.3	-30.4	11.6	-59.17	-13	-46.17	0-360	149	V
6	3.30934	-73.72	Pk	32.7	-29.3	11.9	-58.42	-13	-45.42	0-360	149	V
841.5 MHz												
1	1.67203	-71.66	Pk	28.8	-31.5	11.6	-62.76	-13	-49.76	0-360	149	H
2	2.50238	-72.28	Pk	32.3	-30.2	11.4	-58.78	-13	-45.78	0-360	149	H
3	3.33378	-73.01	Pk	32.8	-29.1	11.6	-57.71	-13	-44.71	0-360	149	H
4	1.66938	-69.02	Pk	28.7	-31.5	11.2	-60.62	-13	-47.62	0-360	149	V
5	2.5045	-70.81	Pk	32.3	-30.2	11.6	-57.11	-13	-44.11	0-360	149	V
6	3.33113	-73.05	Pk	32.8	-29.2	11.9	-57.55	-13	-44.55	0-360	149	V

16QAM LTE BAND 26 (15.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/28/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 26 16QAM 15MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
831.5 MHz												
1	1.64919	-68.54	Pk	28.5	-31.7	12.5	-59.24	-13	-46.24	0-360	149	H
2	2.47475	-68.21	Pk	32.3	-30.4	11.3	-55.01	-13	-42.01	0-360	149	H
3	3.29394	-73.58	Pk	32.8	-29.2	12.1	-57.88	-13	-44.88	0-360	149	H
4	1.64866	-71.65	Pk	28.5	-31.7	11.4	-63.45	-13	-50.45	0-360	149	V
5	2.47422	-70.54	Pk	32.3	-30.4	11.5	-57.14	-13	-44.14	0-360	149	V
6	3.29341	-72.32	Pk	32.8	-29.2	11.9	-56.82	-13	-43.82	0-360	149	V
836.5 MHz												
1	1.65875	-70.9	Pk	28.7	-31.6	11.9	-61.9	-13	-48.9	0-360	149	H
2	2.48909	-70.25	Pk	32.3	-30.4	11.4	-56.95	-13	-43.95	0-360	149	H
3	3.31944	-74.17	Pk	32.7	-29.3	11.3	-59.47	-13	-46.47	0-360	149	H
4	1.65928	-70.87	Pk	28.7	-31.6	11.4	-62.37	-13	-49.37	0-360	149	V
5	2.48856	-70.48	Pk	32.3	-30.4	11.6	-56.98	-13	-43.98	0-360	149	V
6	3.3205	-73.47	Pk	32.7	-29.3	11.6	-58.47	-13	-45.47	0-360	149	V
841.5 MHz												
1	1.66991	-71.87	Pk	28.8	-31.5	11.6	-62.97	-13	-49.97	0-360	149	H
2	2.50238	-72.02	Pk	32.3	-30.2	11.4	-58.52	-13	-45.52	0-360	149	H
3	3.33219	-73.38	Pk	32.8	-29.1	11.6	-58.08	-13	-45.08	0-360	149	H
4	1.66938	-67.26	Pk	28.7	-31.5	11.2	-58.86	-13	-45.86	0-360	149	V
5	2.50397	-71.55	Pk	32.3	-30.2	11.6	-57.85	-13	-44.85	0-360	149	V
6	3.33113	-74.35	Pk	32.8	-29.2	11.9	-58.85	-13	-45.85	0-360	149	V

9.2.17. LTE BAND 30

LIMITS

FCC: §27.53 (a)

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.

RSS195§5.6

The transmitter unwanted emissions shall be measured with a resolution bandwidth of 1 MHz. A smaller resolution bandwidth is permitted provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz. However, in the 1 MHz bands immediately adjacent to the edges of the frequency range(s) in which the equipment is allowed to operate, a resolution bandwidth of as close as possible to, without being less than 1% of the occupied bandwidth, shall be employed provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz.

RSS195§5.6.2 Mobile, Portable and Low-Power Fixed Subscriber Equipment

The power of any emission outside the frequency range(s) in which the equipment operates shall be attenuated below the transmitter power, P(dBW), by the amount indicated in Table 2 and graphically represented in Figure 2, where p is the transmitter output power measured in watts.

QPSK LTE BAND 30 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/23/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 30 QPSK 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2310 MHz												
1	4.621	-74.75	Pk	33.9	-27.6	11.7	-56.75	-40	-16.75	0-360	149	H
2	6.92131	-75.33	Pk	35.5	-24.8	11.8	-52.83	-40	-12.83	0-360	149	H
3	9.20675	-77.43	Pk	36.3	-21.4	12.1	-50.43	-40	-10.43	0-360	149	H
4	2.30528	-63.05	Pk	31.4	-30.8	11.4	-51.05	-40	-11.05	0-360	149	V
5	4.61144	-75.29	Pk	33.9	-27.7	11.8	-57.29	-40	-17.29	0-360	149	V
6	6.92397	-76.56	Pk	35.6	-24.8	12.1	-53.66	-40	-13.66	0-360	149	V

16QAM LTE BAND 30 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/23/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 30 16QAM 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2310 MHz												
1	4.60347	-74.76	Pk	33.9	-27.8	11.4	-57.26	-40	-17.26	0-360	149	H
2	6.91972	-76.39	Pk	35.6	-24.8	11.8	-53.79	-40	-13.79	0-360	149	H
3	9.22641	-76.78	Pk	36.3	-21.4	11.8	-50.08	-40	-10.08	0-360	149	H
4	4.61144	-74.09	Pk	33.9	-27.7	11.8	-56.09	-40	-16.09	0-360	149	V
5	6.91706	-76.47	Pk	35.6	-24.9	12.1	-53.67	-40	-13.67	0-360	149	V
6	9.21259	-78.5	Pk	36.4	-21.3	12	-51.4	-40	-11.4	0-360	149	V

9.2.18. LTE BAND 38 (IC)

LIMITS

RSS199§4.5

Equipment shall comply with the following unwanted emission limits:

- a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$
- b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
 - i. $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away
 - ii. $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and
 - iii. $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than $43 + 10 \log_{10} p$ on all frequencies between 2490.5 MHz and 2496 MHz, and $55 + 10 \log_{10} p$ at or below 2490.5 MHz.

In (a) and (b), p is the transmitter power measured in watts and X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

QPSK LTE BAND 38 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/10/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 38 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2580 MHz												
1	5.14109	-76.11	Pk	34.4	-27	11.8	-56.91	-25	-31.91	0-360	149	H
2	7.72456	-76.94	Pk	35.7	-23.6	12	-52.84	-25	-27.84	0-360	149	H
3	10.28359	-76.07	Pk	37.4	-20.5	11.8	-47.37	-25	-22.37	0-360	149	H
4	5.14375	-76.13	Pk	34.4	-27	12	-56.73	-25	-31.73	0-360	149	V
5	7.70491	-79.24	Pk	35.7	-23.8	11.6	-55.74	-25	-30.74	0-360	149	V
6	10.28413	-76.08	Pk	37.4	-20.6	11.8	-47.48	-25	-22.48	0-360	149	V
2595 MHz												
1	5.19847	-75.89	Pk	34.4	-26.9	12.2	-56.19	-25	-31.19	0-360	149	H
2	7.78088	-77.55	Pk	35.6	-23.7	12.1	-53.55	-25	-28.55	0-360	149	H
3	10.34416	-76.08	Pk	37.5	-20.3	11.8	-47.08	-25	-22.08	0-360	149	H
4	5.19528	-76.61	Pk	34.4	-27	12.4	-56.81	-25	-31.81	0-360	149	V
5	7.7915	-77.91	Pk	35.7	-23.7	12.4	-53.51	-25	-28.51	0-360	149	V
6	10.34469	-77.05	Pk	37.5	-20.3	11.7	-48.15	-25	-23.15	0-360	149	V
2610 MHz												
1	5.199	-76.54	Pk	34.4	-26.9	12.2	-56.84	-25	-31.84	0-360	149	H
2	7.79947	-78.17	Pk	35.7	-23.6	12.2	-53.87	-25	-28.87	0-360	149	H
3	10.41747	-78.85	Pk	37.6	-20.8	11.7	-50.35	-25	-25.35	0-360	149	H
4	5.19688	-76.96	Pk	34.4	-27	12.4	-57.16	-25	-32.16	0-360	149	V
5	7.8	-78.04	Pk	35.7	-23.6	12.4	-53.54	-25	-28.54	0-360	149	V
6	10.40472	-79.29	Pk	37.5	-20.7	11.7	-50.79	-25	-25.79	0-360	149	V

16QAM LTE BAND 38 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/10/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 38 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2580 MHz												
1	5.15172	-77.54	Pk	34.4	-26.9	11.9	-58.14	-25	-33.14	0-360	149	H
2	7.71288	-77.53	Pk	35.6	-23.7	11.8	-53.83	-25	-28.83	0-360	149	H
3	10.28466	-76.55	Pk	37.4	-20.5	11.8	-47.85	-25	-22.85	0-360	149	H
4	5.13844	-75.92	Pk	34.5	-27.1	12	-56.52	-25	-31.52	0-360	149	V
5	7.71288	-79.16	Pk	35.6	-23.7	11.7	-55.56	-25	-30.56	0-360	149	V
6	10.28466	-78.96	Pk	37.4	-20.5	11.8	-50.26	-25	-25.26	0-360	149	V
2595 MHz												
1	5.17775	-76.43	Pk	34.4	-27.1	11.6	-57.53	-25	-32.53	0-360	149	H
2	7.76388	-78	Pk	35.7	-23.8	11.9	-54.2	-25	-29.2	0-360	149	H
3	10.34416	-75.43	Pk	37.5	-20.3	11.8	-46.43	-25	-21.43	0-360	149	H
4	5.17084	-76.76	Pk	34.4	-27	11.8	-57.56	-25	-32.56	0-360	149	V
5	7.75272	-78.56	Pk	35.7	-23.6	11.9	-54.56	-25	-29.56	0-360	149	V
6	10.35319	-78.74	Pk	37.4	-20.2	11.9	-49.64	-25	-24.64	0-360	149	V
2610 MHz												
1	5.20644	-77.11	Pk	34.4	-26.7	12.2	-57.21	-25	-32.21	0-360	149	H
2	7.79681	-77.48	Pk	35.7	-23.7	12.2	-53.28	-25	-28.28	0-360	149	H
3	10.40419	-77.1	Pk	37.5	-20.7	11.7	-48.6	-25	-23.6	0-360	149	H
4	5.20219	-76.49	Pk	34.3	-26.9	12.4	-56.69	-25	-31.69	0-360	149	V
5	7.80744	-76.66	Pk	35.8	-23.7	12.2	-52.36	-25	-27.36	0-360	149	V
6	10.40366	-78.36	Pk	37.5	-20.7	11.8	-49.76	-25	-24.76	0-360	149	V

9.2.20. LTE BAND 41 (FCC) HPUE

LIMITS

FCC: §27.53 (m)

At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 41 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2506 MHz												
1	4.97534	-76.51	Pk	34.2	-27	12	-57.31	-25	-32.31	0-360	149	H
2	7.46478	-76.75	Pk	35.5	-24.3	11.8	-53.75	-25	-28.75	0-360	149	H
3	10.02009	-78.53	Pk	37	-20.8	12.1	-50.23	-25	-25.23	0-360	149	H
4	4.99872	-74.77	Pk	34.3	-27.2	11.8	-55.87	-25	-30.87	0-360	149	V
5	7.46744	-77.24	Pk	35.5	-24.2	11.8	-54.14	-25	-29.14	0-360	149	V
6	9.94997	-77.9	Pk	37	-20.6	12	-49.5	-25	-24.5	0-360	149	V
2593 MHz												
1	5.17084	-76.39	Pk	34.4	-27	11.6	-57.39	-25	-32.39	0-360	149	H
2	7.75272	-77.63	Pk	35.7	-23.6	11.8	-53.73	-25	-28.73	0-360	149	H
3	10.33725	-73.11	Pk	37.4	-20.2	11.8	-44.11	-25	-19.11	0-360	149	H
4	5.14163	-75.92	Pk	34.4	-27	12	-56.52	-25	-31.52	0-360	149	V
5	7.75219	-76.81	Pk	35.7	-23.6	11.9	-52.81	-25	-27.81	0-360	149	V
6	10.33672	-72.8	Pk	37.4	-20.3	11.9	-43.8	-25	-18.8	0-360	149	V
2680 MHz												
1	5.34934	-76.27	Pk	34.6	-26.7	12	-56.37	-25	-31.37	0-360	149	H
2	8.01356	-73.26	Pk	35.8	-23.3	11.9	-48.86	-25	-23.86	0-360	149	H
3	10.68522	-71.51	Pk	37.9	-20.3	11.5	-42.41	-25	-17.41	0-360	149	H
4	5.34456	-75.72	Pk	34.6	-26.7	12	-55.82	-25	-30.82	0-360	149	V
5	8.01356	-71.42	Pk	35.8	-23.3	11.9	-47.02	-25	-22.02	0-360	149	V
6	10.68469	-75.35	Pk	37.9	-20.3	11.5	-46.25	-25	-21.25	0-360	149	V

16QAM LTE BAND 41 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 41 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2506 MHz												
1	5.01838	-75.22	Pk	34.3	-27.1	12	-56.02	-25	-31.02	0-360	149	H
2	7.49081	-76.71	Pk	35.6	-24	11.9	-53.21	-25	-28.21	0-360	149	H
3	9.97122	-78.34	Pk	37	-20.6	12	-49.94	-25	-24.94	0-360	149	H
4	5.01519	-75.41	Pk	34.3	-27.1	12.2	-56.01	-25	-31.01	0-360	149	V
5	7.44619	-75.89	Pk	35.5	-24.3	12	-52.69	-25	-27.69	0-360	149	V
6	9.98875	-77.01	Pk	37	-20.8	11.7	-49.11	-25	-24.11	0-360	149	V
2593 MHz												
1	5.11825	-74.95	Pk	34.4	-27	11.5	-56.05	-25	-31.05	0-360	149	H
2	7.81009	-77.01	Pk	35.8	-23.7	12	-52.91	-25	-27.91	0-360	149	H
3	10.33672	-71.76	Pk	37.4	-20.3	11.8	-42.86	-25	-17.86	0-360	149	H
4	5.19209	-76.48	Pk	34.4	-26.9	12.3	-56.68	-25	-31.68	0-360	149	V
5	7.78513	-77.04	Pk	35.6	-23.8	12.3	-52.94	-25	-27.94	0-360	149	V
6	10.33725	-75.68	Pk	37.4	-20.2	11.8	-46.68	-25	-21.68	0-360	149	V
2680 MHz												
1	5.34244	-76.35	Pk	34.6	-26.7	11.7	-56.75	-25	-31.75	0-360	149	H
2	8.01356	-73.57	Pk	35.8	-23.3	11.9	-49.17	-25	-24.17	0-360	149	H
3	10.68469	-71.41	Pk	37.9	-20.3	11.5	-42.31	-25	-17.31	0-360	149	H
4	5.34244	-75.32	Pk	34.6	-26.7	11.9	-55.52	-25	-30.52	0-360	149	V
5	8.01303	-72.75	Pk	35.8	-23.4	11.9	-48.45	-25	-23.45	0-360	149	V
6	10.68469	-69.89	Pk	37.9	-20.3	11.5	-40.79	-25	-15.79	0-360	149	V

9.2.21. LTE BAND 41 (IC)

LIMITS

RSS199§4.5

Equipment shall comply with the following unwanted emission limits:

- a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$
- b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
 - i. $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away
 - ii. $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and
 - iii. $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than $43 + 10 \log_{10} p$ on all frequencies between 2490.5 MHz and 2496 MHz, and $55 + 10 \log_{10} p$ at or below 2490.5 MHz.

In (a) and (b), p is the transmitter power measured in watts and X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	02/27/20
Test Engineer:	19497
Configuration:	EUT + Support Equipment
Mode:	LTE 41 QPSK 20MHz
Chamber #:	Chamber J

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2510 MHz												
1	5.04866	-68.68	Pk	34.3	-31	12.1	-53.28	-25	-28.28	0-360	149	H
2	7.50303	-70.54	Pk	35.6	-27.9	12.1	-50.74	-25	-25.74	0-360	149	H
3	10.00363	-69.95	Pk	37.1	-25.1	12.4	-45.55	-25	-20.55	0-360	149	H
4	5.00138	-69.03	Pk	34.1	-31.3	11.8	-54.43	-25	-29.43	0-360	149	V
5	7.50356	-67	Pk	35.6	-27.9	11.9	-47.4	-25	-22.4	0-360	149	V
6	10.00469	-67.27	Pk	37.1	-25.1	12.2	-43.07	-25	-18.07	0-360	149	V
2595 MHz												
1	5.17138	-68.04	Pk	34.2	-31	12.2	-52.64	-25	-27.64	0-360	149	H
2	7.8085	-71.7	Pk	35.8	-27.6	12.2	-51.3	-25	-26.3	0-360	149	H
3	10.34416	-67.5	Pk	37.5	-25.4	12.4	-43	-25	-18	0-360	149	H
4	5.17297	-68.56	Pk	34.2	-31	12.2	-53.16	-25	-28.16	0-360	149	V
5	7.74581	-71.85	Pk	35.8	-27.6	12.2	-51.45	-25	-26.45	0-360	149	V
6	10.34416	-68.83	Pk	37.5	-25.4	12.1	-44.63	-25	-19.63	0-360	149	V
2680 MHz												
1	5.33341	-68.21	Pk	34.5	-31.1	12.2	-52.61	-25	-27.61	0-360	149	H
2	8.01303	-69.1	Pk	35.7	-27.4	12	-48.8	-25	-23.8	0-360	149	H
3	10.68416	-67.74	Pk	37.9	-24.8	12.4	-42.24	-25	-17.24	0-360	149	H
4	5.33606	-68.81	Pk	34.5	-31	12	-53.31	-25	-28.31	0-360	149	V
5	8.01303	-68.76	Pk	35.7	-27.4	11.9	-48.56	-25	-23.56	0-360	149	V
6	10.68416	-59.94	Pk	37.9	-24.8	12.4	-34.44	-25	-9.44	0-360	149	V

16QAM LTE BAND 41 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	02/27/20
Test Engineer:	19497
Configuration:	EUT + Support Equipment
Mode:	LTE 41 16QAM 20MHz
Chamber #:	Chamber J

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2510 MHz												
1	4.99447	-68.74	Pk	34.1	-31.3	12.3	-53.64	-25	-28.64	0-360	149	H
2	7.50303	-70.93	Pk	35.6	-27.9	12.1	-51.13	-25	-26.13	0-360	149	H
3	10.07588	-72.73	Pk	37.2	-25.2	12.5	-48.23	-25	-23.23	0-360	149	H
4	4.99288	-68.63	Pk	34.1	-31.2	11.7	-54.03	-25	-29.03	0-360	149	V
5	7.50303	-68.61	Pk	35.6	-27.9	11.9	-49.01	-25	-24.01	0-360	149	V
6	10.00416	-67.79	Pk	37.1	-25.1	12.2	-43.59	-25	-18.59	0-360	149	V
2595 MHz												
1	5.20059	-68.46	Pk	34.2	-31.1	12.1	-53.26	-25	-28.26	0-360	149	H
2	7.69588	-70.79	Pk	35.8	-27.6	12.3	-50.29	-25	-25.29	0-360	149	H
3	10.34416	-68.2	Pk	37.5	-25.4	12.4	-43.7	-25	-18.7	0-360	149	H
4	5.16819	-68.35	Pk	34.3	-31	12	-53.05	-25	-28.05	0-360	149	V
5	7.73784	-71.83	Pk	35.8	-27.6	12.1	-51.53	-25	-26.53	0-360	149	V
6	10.34416	-67.51	Pk	37.5	-25.4	12.1	-43.31	-25	-18.31	0-360	149	V
2680 MHz												
1	5.34244	-69.1	Pk	34.4	-31	12.3	-53.4	-25	-28.4	0-360	149	H
2	8.01303	-68.17	Pk	35.7	-27.4	12	-47.87	-25	-22.87	0-360	149	H
3	10.68469	-68.56	Pk	37.9	-24.7	12.4	-42.96	-25	-17.96	0-360	149	H
4	5.34775	-69.73	Pk	34.5	-30.9	12.2	-53.93	-25	-28.93	0-360	149	V
5	8.01303	-67.41	Pk	35.7	-27.4	11.9	-47.21	-25	-22.21	0-360	149	V
6	10.68416	-62.62	Pk	37.9	-24.8	12.4	-37.12	-25	-12.12	0-360	149	V

9.2.22. LTE BAND 66

LIMITS

FCC: §27.53 (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.

RSS139§6.6

- (i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, Footnote 2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log 10 p (watts) dB.
- (ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log 10 p (watts) dB.

QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 66 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1720 MHz												
1	3.41294	-74.63	Pk	32.7	-29.2	12.1	-59.03	-13	-46.03	0-360	149	H
2	5.13313	-77.29	Pk	34.4	-26.9	11.8	-57.99	-13	-44.99	0-360	149	H
3	6.85863	-77.12	Pk	35.6	-25.2	11.7	-55.02	-13	-42.02	0-360	149	H
4	3.4225	-75.86	Pk	32.7	-29.3	11.8	-60.66	-13	-47.66	0-360	149	V
5	5.13844	-77.14	Pk	34.5	-27.1	12	-57.74	-13	-44.74	0-360	149	V
6	6.83419	-77.45	Pk	35.5	-25.1	11.5	-55.55	-13	-42.55	0-360	149	V
1745 MHz												
1	3.47456	-75.3	Pk	32.8	-29	11.7	-59.8	-13	-46.8	0-360	149	H
2	5.21016	-77.74	Pk	34.4	-26.8	12.1	-58.04	-13	-45.04	0-360	149	H
3	6.93566	-77.8	Pk	35.7	-24.7	11.7	-55.1	-13	-42.1	0-360	149	H
4	3.47616	-75.71	Pk	32.8	-29	11.6	-60.31	-13	-47.31	0-360	149	V
5	5.20591	-77.57	Pk	34.3	-26.7	12.3	-57.67	-13	-44.67	0-360	149	V
6	6.95159	-76.75	Pk	35.7	-24.7	11.7	-54.05	-13	-41.05	0-360	149	V
1770 MHz												
1	3.52928	-75.44	Pk	32.9	-28.4	11.5	-59.44	-13	-46.44	0-360	149	H
2	5.28559	-75.61	Pk	34.6	-26.7	11.7	-56.01	-13	-43.01	0-360	149	H
3	7.04669	-77.86	Pk	35.7	-24.9	11.8	-55.26	-13	-42.26	0-360	149	H
4	3.52184	-75.33	Pk	32.9	-28.6	11.9	-59.13	-13	-46.13	0-360	149	V
5	5.28028	-77.16	Pk	34.6	-26.7	12.1	-57.16	-13	-44.16	0-360	149	V
6	7.04616	-78.21	Pk	35.7	-24.8	11.9	-55.41	-13	-42.41	0-360	149	V

16QAM LTE BAND 66 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 66 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1720 MHz												
1	3.41134	-74.93	Pk	32.7	-29.2	12.1	-59.33	-13	-46.33	0-360	149	H
2	5.12038	-76.85	Pk	34.4	-27	11.5	-57.95	-13	-44.95	0-360	149	H
3	6.84216	-77	Pk	35.6	-25.3	11.4	-55.3	-13	-42.3	0-360	149	H
4	3.42303	-75.38	Pk	32.7	-29.2	11.8	-60.08	-13	-47.08	0-360	149	V
5	5.13259	-77.09	Pk	34.4	-27	11.9	-57.79	-13	-44.79	0-360	149	V
6	6.83419	-77	Pk	35.5	-25.1	11.5	-55.1	-13	-42.1	0-360	149	V
1745 MHz												
1	3.47669	-74.11	Pk	32.8	-29	11.6	-58.71	-13	-45.71	0-360	149	H
2	5.21334	-76.91	Pk	34.4	-26.7	12	-57.21	-13	-44.21	0-360	149	H
3	6.93831	-77.78	Pk	35.6	-24.6	11.7	-55.08	-13	-42.08	0-360	149	H
4	3.46659	-76.09	Pk	32.8	-29.1	11.6	-60.79	-13	-47.79	0-360	149	V
5	5.21388	-76.5	Pk	34.4	-26.7	12.2	-56.6	-13	-43.6	0-360	149	V
6	6.95319	-76.92	Pk	35.7	-24.6	11.7	-54.12	-13	-41.12	0-360	149	V
1770 MHz												
1	3.52981	-75.09	Pk	32.9	-28.4	11.5	-59.09	-13	-46.09	0-360	149	H
2	5.27763	-77.15	Pk	34.6	-26.7	11.9	-57.35	-13	-44.35	0-360	149	H
3	7.05625	-77.38	Pk	35.6	-24.7	11.8	-54.68	-13	-41.68	0-360	149	H
4	3.52184	-74.28	Pk	32.9	-28.6	11.9	-58.08	-13	-45.08	0-360	149	V
5	5.28825	-76.31	Pk	34.6	-26.7	11.9	-56.51	-13	-43.51	0-360	149	V
6	7.04456	-77.89	Pk	35.7	-24.9	11.8	-55.29	-13	-42.29	0-360	149	V

9.2.23. LTE BAND 71

LIMITS

FCC: §27.53 (g)

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.

RSS130§4.7

4.7.1 General unwanted emissions limits

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 log₁₀ p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits

In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

- a. the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:
 - i. 76 + 10 log₁₀ p (watts), dB, for base and fixed equipment and
 - ii. 65 + 10 log₁₀ p (watts), dB, for mobile and portable equipment
- b. the e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

QPSK LTE BAND 71 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 71 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
673 MHz												
1	1.32406	-72.9	Pk	29.4	-32.3	13.8	-62	-13	-49	0-360	149	H
2	1.99184	-69.73	Pk	30.9	-31	11.3	-58.53	-13	-45.53	0-360	149	H
3	2.65059	-75.76	Pk	32.4	-29.9	11.7	-61.56	-13	-48.56	0-360	149	H
4	1.32034	-73.9	Pk	29.3	-32.3	13.1	-63.8	-13	-50.8	0-360	149	V
5	1.99184	-71.77	Pk	30.9	-31	11.6	-60.27	-13	-47.27	0-360	149	V
6	2.649	-74.98	Pk	32.4	-29.9	11.9	-60.58	-13	-47.58	0-360	149	V
680.5 MHz												
1	1.34266	-72.26	Pk	29.5	-32.3	10.8	-64.26	-13	-51.26	0-360	149	H
2	2.01416	-66.47	Pk	30.9	-31.1	11.4	-55.27	-13	-42.27	0-360	149	H
3	2.68406	-74.59	Pk	32.4	-29.9	11.5	-60.59	-13	-47.59	0-360	149	H
4	1.34266	-71.91	Pk	29.5	-32.3	10.1	-64.61	-13	-51.61	0-360	149	V
5	2.01469	-71.3	Pk	30.8	-31.1	12.2	-59.4	-13	-46.4	0-360	149	V
6	2.68513	-74.78	Pk	32.4	-29.9	11.3	-60.98	-13	-47.98	0-360	149	V
688 MHz												
1	1.35753	-73.91	Pk	29.7	-32.3	11.4	-65.11	-13	-52.11	0-360	149	H
2	2.037	-66.48	Pk	31	-31	10	-56.48	-13	-43.48	0-360	149	H
3	2.71169	-75.04	Pk	32.4	-30.1	11.6	-61.14	-13	-48.14	0-360	149	H
4	1.36231	-74.14	Pk	29.6	-32.2	11.4	-65.34	-13	-52.34	0-360	149	V
5	2.037	-68.69	Pk	31	-31	10.7	-57.99	-13	-44.99	0-360	149	V
6	2.70797	-75.59	Pk	32.4	-30	11.7	-61.49	-13	-48.49	0-360	149	V

16QAM LTE BAND 71 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 71 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
673 MHz												
1	1.32831	-70.96	Pk	29.3	-32.4	13.5	-60.56	-13	-47.56	0-360	149	H
2	1.99184	-65.37	Pk	30.9	-31	11.3	-54.17	-13	-41.17	0-360	149	H
3	2.65484	-74.88	Pk	32.4	-29.9	11.7	-60.68	-13	-47.68	0-360	149	H
4	1.32406	-74.35	Pk	29.4	-32.3	12.5	-64.75	-13	-51.75	0-360	149	V
5	1.99184	-70.8	Pk	30.9	-31	11.6	-59.3	-13	-46.3	0-360	149	V
6	2.65431	-75.16	Pk	32.4	-29.9	11.9	-60.76	-13	-47.76	0-360	149	V
680.5 MHz												
1	1.34266	-68.98	Pk	29.5	-32.3	10.8	-60.98	-13	-47.98	0-360	149	H
2	2.01469	-65.37	Pk	30.8	-31.1	11.4	-54.27	-13	-41.27	0-360	149	H
3	2.68778	-73.89	Pk	32.4	-29.8	11.3	-59.99	-13	-46.99	0-360	149	H
4	1.34266	-71.52	Pk	29.5	-32.3	10.1	-64.22	-13	-51.22	0-360	149	V
5	2.01469	-69.01	Pk	30.8	-31.1	12.2	-57.11	-13	-44.11	0-360	149	V
6	2.68247	-74.58	Pk	32.4	-29.9	11.2	-60.88	-13	-47.88	0-360	149	V
688 MHz												
1	1.35434	-73.62	Pk	29.7	-32.3	11	-65.22	-13	-52.22	0-360	149	H
2	2.037	-62.76	Pk	31	-31	10	-52.76	-13	-39.76	0-360	149	H
3	2.71647	-75.66	Pk	32.4	-30.1	11.8	-61.56	-13	-48.56	0-360	149	H
4	1.35275	-73.28	Pk	29.7	-32.3	10.7	-65.18	-13	-52.18	0-360	149	V
5	2.037	-66.34	Pk	31	-31	10.7	-55.64	-13	-42.64	0-360	149	V
6	2.71541	-75.62	Pk	32.4	-30.1	11.8	-61.52	-13	-48.52	0-360	149	V