

LTE Band 12 1.4MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-04 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	699.70	14.17	V	2.8	-1.6	9.79	34.8	-25.0	
	699.70	21.04	H	2.8	-1.6	16.67	34.8	-18.1	
	Mid Ch								
	707.50	14.27	V	2.8	-1.6	9.89	34.8	-24.9	
	707.50	23.13	H	2.8	-1.6	18.75	34.8	-16.1	
High Ch									
715.30	15.21	V	2.8	-1.6	10.81	34.8	-24.0		
715.30	22.15	H	2.8	-1.6	17.75	34.8	-17.0		
LTE Band 12 1.4MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-04 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 2 Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
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	Low Ch								
	699.70	12.52	V	2.8	-1.6	8.14	34.8	-26.7	
	699.70	19.97	H	2.8	-1.6	15.60	34.8	-19.2	
	Mid Ch								
	707.50	13.03	V	2.8	-1.6	8.65	34.8	-26.2	
	707.50	20.46	H	2.8	-1.6	16.08	34.8	-18.7	
High Ch									
715.30	13.72	V	2.8	-1.6	9.32	34.8	-25.5		
715.30	20.80	H	2.8	-1.6	16.40	34.8	-18.4		

LTE Band 14

LTE Band 14 10MHz QPSK	<p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p> Company: Samsung Project #: 4788768228 Date: 2019-03-04 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 14 Fundamentals, 10MHz Bandwidth </p> <p> <u>Test Equipment:</u> Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable </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>793.00</td> <td>25.50</td> <td>V</td> <td>3.0</td> <td>-1.6</td> <td>20.97</td> <td>34.8</td> <td>-13.8</td> <td></td> </tr> <tr> <td>793.00</td> <td>17.48</td> <td>H</td> <td>3.0</td> <td>-1.6</td> <td>12.96</td> <td>34.8</td> <td>-21.8</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									793.00	25.50	V	3.0	-1.6	20.97	34.8	-13.8		793.00	17.48	H	3.0	-1.6	12.96	34.8	-21.8	
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LTE Band 14 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-04 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 14 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	790.50	24.96	V	3.0	-1.6	20.44	34.8	-14.3	
	790.50	17.52	H	3.0	-1.6	13.01	34.8	-21.8	
	Mid Ch								
	793.00	25.03	V	3.0	-1.6	20.50	34.8	-14.3	
	793.00	17.37	H	3.0	-1.6	12.85	34.8	-21.9	
High Ch									
795.50	25.23	V	3.0	-1.6	20.70	34.8	-14.1		
795.50	16.95	H	3.0	-1.6	12.42	34.8	-22.4		
LTE Band 14 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-04 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 14 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	790.50	24.02	V	3.0	-1.6	19.50	34.8	-15.3	
	790.50	16.07	H	3.0	-1.6	11.56	34.8	-23.2	
	Mid Ch								
	793.00	24.12	V	3.0	-1.6	19.59	34.8	-15.2	
	793.00	16.14	H	3.0	-1.6	11.62	34.8	-23.1	
High Ch									
795.50	24.26	V	3.0	-1.6	19.73	34.8	-15.0		
795.50	16.15	H	3.0	-1.6	11.62	34.8	-23.2		

LTE Band 30

LTE Band 30 QPSK 10MHz	UL Verification Services, Inc. High Frequency Substitution Measurement																																				
	Company: Samsung Project #: 4788768228 Date: 2019-04-09 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 30 Fundamentals, 10MHz Bandwidth																																				
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable																																				
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2310.00	11.75	V	5.0	9.7	16.37	24.0	-7.6																														
2310.00	16.81	H	5.0	9.7	21.43	24.0	-2.6																														

LTE Band 30 QPSK 5MHz	<p>UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788768228 Date: 2019-04-09 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 30 Fundamentals, 5MHz Bandwidth</p> <p><u>Test Equipment:</u> Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable</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>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2307.50</td><td>13.62</td><td>V</td><td>5.0</td><td>9.6</td><td>18.24</td><td>24.0</td><td>-5.8</td><td></td></tr> <tr><td>2307.50</td><td>17.86</td><td>H</td><td>5.0</td><td>9.6</td><td>22.47</td><td>24.0</td><td>-1.5</td><td></td></tr> <tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2310.00</td><td>12.50</td><td>V</td><td>5.0</td><td>9.7</td><td>17.12</td><td>24.0</td><td>-6.9</td><td></td></tr> <tr><td>2310.00</td><td>17.70</td><td>H</td><td>5.0</td><td>9.7</td><td>22.32</td><td>24.0</td><td>-1.7</td><td></td></tr> <tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2312.50</td><td>12.05</td><td>V</td><td>5.0</td><td>9.7</td><td>16.68</td><td>24.0</td><td>-7.3</td><td></td></tr> <tr><td>2312.50</td><td>16.87</td><td>H</td><td>5.0</td><td>9.7</td><td>21.51</td><td>24.0</td><td>-2.5</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									2307.50	13.62	V	5.0	9.6	18.24	24.0	-5.8		2307.50	17.86	H	5.0	9.6	22.47	24.0	-1.5		Mid Ch									2310.00	12.50	V	5.0	9.7	17.12	24.0	-6.9		2310.00	17.70	H	5.0	9.7	22.32	24.0	-1.7		High Ch									2312.50	12.05	V	5.0	9.7	16.68	24.0	-7.3		2312.50	16.87	H	5.0	9.7	21.51	24.0	-2.5	
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LTE Band 40 (Lower side)

LTE Band 40 QPSK 10MHz Lower side	<div style="text-align: center; border: 1px solid black; margin-bottom: 10px;"> UL Verification Services, Inc. High Frequency Substitution Measurement </div> <p> Company: Samsung Project #: 4788768228 Date: 2019-05-20 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK_Band 40 Fundamentals, 10MHz Bandwidth </p> <p> Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable </p> <table border="1" style="width: 100%; border-collapse: collapse;"> <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>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2312.50</td> <td>2.07</td> <td>V</td> <td>5.0</td> <td>9.7</td> <td>6.70</td> <td>33.0</td> <td>-26.3</td> <td></td> </tr> <tr> <td>2312.50</td> <td>11.42</td> <td>H</td> <td>5.0</td> <td>9.7</td> <td>16.06</td> <td>33.0</td> <td>-16.9</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	Mid Ch									2312.50	2.07	V	5.0	9.7	6.70	33.0	-26.3		2312.50	11.42	H	5.0	9.7	16.06	33.0	-16.9	
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LTE Band 40 (Upper side)

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2357.50	12.01	H	5.1	9.9	16.82	33.0	-16.2																																																																																				
LTE Band 40 16QAM 5MHz Upper side	<p style="text-align: center;">UL Verification Services, Inc. High Frequency Substitution Measurement</p> <p> Company: Samsung Project #: 4788768228 Date: 2019-05-20 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM_Band 40 Fundamentals, 5MHz Bandwidth </p> <p> Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable </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>Low Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2352.50</td> <td>3.31</td> <td>V</td> <td>5.1</td> <td>9.9</td> <td>8.11</td> <td>33.0</td> <td>-24.9</td> <td></td> </tr> <tr> <td>2352.50</td> <td>11.14</td> <td>H</td> <td>5.1</td> <td>9.9</td> <td>15.94</td> <td>33.0</td> <td>-17.1</td> <td></td> </tr> <tr> <td>Mid Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2355.00</td> <td>5.74</td> <td>V</td> <td>5.1</td> <td>9.9</td> <td>10.54</td> <td>33.0</td> <td>-22.5</td> <td></td> </tr> <tr> <td>2355.00</td> <td>12.51</td> <td>H</td> <td>5.1</td> <td>9.9</td> <td>17.31</td> <td>33.0</td> <td>-15.7</td> <td></td> </tr> <tr> <td>High Ch</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2357.50</td> <td>3.95</td> <td>V</td> <td>5.1</td> <td>9.9</td> <td>8.76</td> <td>33.0</td> <td>-24.2</td> <td></td> </tr> <tr> <td>2357.50</td> <td>11.36</td> <td>H</td> <td>5.1</td> <td>9.9</td> <td>16.17</td> <td>33.0</td> <td>-16.8</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									2352.50	3.31	V	5.1	9.9	8.11	33.0	-24.9		2352.50	11.14	H	5.1	9.9	15.94	33.0	-17.1		Mid Ch									2355.00	5.74	V	5.1	9.9	10.54	33.0	-22.5		2355.00	12.51	H	5.1	9.9	17.31	33.0	-15.7		High Ch									2357.50	3.95	V	5.1	9.9	8.76	33.0	-24.2		2357.50	11.36	H	5.1	9.9	16.17	33.0	-16.8	
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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2352.50	3.31	V	5.1	9.9	8.11	33.0	-24.9																																																																																				
2352.50	11.14	H	5.1	9.9	15.94	33.0	-17.1																																																																																				
Mid Ch																																																																																											
2355.00	5.74	V	5.1	9.9	10.54	33.0	-22.5																																																																																				
2355.00	12.51	H	5.1	9.9	17.31	33.0	-15.7																																																																																				
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2357.50	3.95	V	5.1	9.9	8.76	33.0	-24.2																																																																																				
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LTE Band 41

LTE Band 41 20MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 45585 Configuration: EUT, Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 41 Fundamentals, 20MHz Bandwidth									
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
	Low Ch									
	2506.00	14.22	V	5.2	10.1	19.05	33.0	-14.0		
	2506.00	16.24	H	5.2	10.1	21.07	33.0	-11.9		
	Mid Ch									
	2593.00	13.50	V	5.3	10.0	18.14	33.0	-14.9		
	2593.00	15.62	H	5.3	10.0	20.26	33.0	-12.7		
	High Ch									
	2680.00	12.24	V	5.4	10.0	16.83	33.0	-16.2		
2680.00	12.73	H	5.4	10.0	17.32	33.0	-15.7			
LTE Band 41 20MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement									
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 45585 Configuration: EUT, Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 41 Fundamentals, 20MHz Bandwidth									
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
	Low Ch									
	2506.00	13.61	V	5.2	10.1	18.44	33.0	-14.6		
	2506.00	15.67	H	5.2	10.1	20.50	33.0	-12.5		
	Mid Ch									
	2593.00	11.86	V	5.3	10.0	16.50	33.0	-16.5		
	2593.00	14.17	H	5.3	10.0	18.81	33.0	-14.2		
	High Ch									
	2680.00	10.83	V	5.4	10.0	15.42	33.0	-17.6		
2680.00	11.31	H	5.4	10.0	15.90	33.0	-17.1			

LTE Band 41 15MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 45585 Configuration: EUT, Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 41 Fundamentals, 15MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	2503.50	14.81	V	5.2	10.1	19.64	33.0	-13.4	
	2503.50	16.83	H	5.2	10.1	21.66	33.0	-11.3	
	Mid Ch								
	2593.00	12.73	V	5.3	10.0	17.37	33.0	-15.6	
	2593.00	14.82	H	5.3	10.0	19.46	33.0	-13.5	
High Ch									
2682.50	11.75	V	5.4	10.0	16.35	33.0	-16.7		
2682.50	12.47	H	5.4	10.0	17.07	33.0	-15.9		
LTE Band 41 15MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 45585 Configuration: EUT, Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 41 Fundamentals, 15MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	2503.50	13.52	V	5.2	10.1	18.35	33.0	-14.6	
	2503.50	15.49	H	5.2	10.1	20.32	33.0	-12.7	
	Mid Ch								
	2593.00	12.19	V	5.3	10.0	16.83	33.0	-16.2	
	2593.00	14.14	H	5.3	10.0	18.78	33.0	-14.2	
High Ch									
2682.50	9.75	V	5.4	10.0	14.35	33.0	-18.7		
2682.50	9.82	H	5.4	10.0	14.42	33.0	-18.6		

LTE Band 41 10MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 45585 Configuration: EUT, Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 41 Fundamentals, 10MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	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	15.35	V	5.2	10.1	20.19	33.0	-12.8	
	2501.00	17.16	H	5.2	10.1	22.00	33.0	-11.0	
	Mid Ch								
	2593.00	12.65	V	5.3	10.0	17.29	33.0	-15.7	
	2593.00	14.77	H	5.3	10.0	19.41	33.0	-13.6	
High Ch									
2685.00	10.87	V	5.4	10.0	15.46	33.0	-17.5		
2685.00	12.34	H	5.4	10.0	16.93	33.0	-16.1		
LTE Band 41 10MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 45585 Configuration: EUT, Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 41 Fundamentals, 10MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	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	14.27	V	5.2	10.1	19.11	33.0	-13.9	
	2501.00	16.54	H	5.2	10.1	21.38	33.0	-11.6	
	Mid Ch								
	2593.00	11.89	V	5.3	10.0	16.53	33.0	-16.5	
	2593.00	14.51	H	5.3	10.0	19.15	33.0	-13.9	
High Ch									
2685.00	9.12	V	5.4	10.0	13.71	33.0	-19.3		
2685.00	11.14	H	5.4	10.0	15.73	33.0	-17.3		

LTE Band 41 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 45585 Configuration: EUT / Y-Position Location: Chamber 2 Mode: LTE_QPSK Band 41 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	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	16.01	V	5.2	10.1	20.85	33.0	-12.1	
	2498.50	17.38	H	5.2	10.1	22.22	33.0	-10.8	
	Mid Ch								
	2593.00	11.85	V	5.3	10.0	16.49	33.0	-16.5	
	2593.00	15.95	H	5.3	10.0	20.59	33.0	-12.4	
High Ch									
2687.50	11.62	V	5.4	10.0	16.22	33.0	-16.8		
2687.50	12.45	H	5.4	10.0	17.05	33.0	-16.0		
LTE Band 41 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 45585 Configuration: EUT, Y-Position Location: Chamber 2 Mode: LTE_16QAM Band 41 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00167451], 8.5m SMA-type Cable								
	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	14.80	V	5.2	10.1	19.64	33.0	-13.4	
	2498.50	16.22	H	5.2	10.1	21.06	33.0	-11.9	
	Mid Ch								
	2593.00	12.34	V	5.3	10.0	16.98	33.0	-16.0	
	2593.00	14.26	H	5.3	10.0	18.90	33.0	-14.1	
High Ch									
2687.50	9.76	V	5.4	10.0	14.36	33.0	-18.6		
2687.50	10.33	H	5.4	10.0	14.93	33.0	-18.1		

LTE Band 66

LTE Band 66 20MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Fundamentals, 20MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1720.00	15.86	V	4.3	9.4	20.96	30.0	-9.0	
	1720.00	20.58	H	4.3	9.4	25.69	30.0	-4.3	
	Mid Ch								
	1745.00	6.23	V	4.4	9.5	11.39	30.0	-18.6	
	1745.00	21.23	H	4.4	9.5	26.40	30.0	-3.6	
High Ch									
1770.00	16.07	V	4.4	9.6	21.24	30.0	-8.8		
1770.00	20.68	H	4.4	9.6	25.85	30.0	-4.1		
LTE Band 66 20MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 Fundamentals, 20MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1720.00	11.43	V	4.3	9.4	16.53	30.0	-13.5	
	1720.00	19.72	H	4.3	9.4	24.83	30.0	-5.2	
	Mid Ch								
	1745.00	4.91	V	4.4	9.5	10.07	30.0	-19.9	
	1745.00	19.66	H	4.4	9.5	24.83	30.0	-5.2	
High Ch									
1770.00	14.95	V	4.4	9.6	20.12	30.0	-9.9		
1770.00	19.29	H	4.4	9.6	24.46	30.0	-5.5		

LTE Band 66 15MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-04 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Fundamentals, 15MHz Bandwidth								
	Test Equipment Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1717.50	15.32	V	4.3	9.4	20.42	30.0	-9.6	
	1717.50	20.16	H	4.3	9.4	25.26	30.0	-4.7	
	Mid Ch								
	1745.00	7.27	V	4.4	9.5	12.43	30.0	-17.6	
	1745.00	21.23	H	4.4	9.5	26.40	30.0	-3.6	
High Ch									
1772.50	14.10	V	4.4	9.6	19.27	30.0	-10.7		
1772.50	20.62	H	4.4	9.6	25.79	30.0	-4.2		
LTE Band 66 15MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-04 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 Fundamentals, 15MHz Bandwidth								
	Test Equipment Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1717.50	14.35	V	4.3	9.4	19.45	30.0	-10.5	
	1717.50	19.13	H	4.3	9.4	24.23	30.0	-5.8	
	Mid Ch								
	1745.00	6.18	V	4.4	9.5	11.34	30.0	-18.7	
	1745.00	20.14	H	4.4	9.5	25.31	30.0	-4.7	
High Ch									
1772.50	12.79	V	4.4	9.6	17.96	30.0	-12.0		
1772.50	19.54	H	4.4	9.6	24.71	30.0	-5.3		

LTE Band 66 10MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Fundamentals, 10MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1715.00	8.82	V	4.3	9.4	13.91	30.0	-16.1	
	1715.00	20.12	H	4.3	9.4	25.22	30.0	-4.8	
	Mid Ch								
	1745.00	13.95	V	4.4	9.5	19.11	30.0	-10.9	
	1745.00	21.38	H	4.4	9.5	26.55	30.0	-3.5	
High Ch									
1775.00	14.11	V	4.4	9.6	19.28	30.0	-10.7		
1775.00	20.51	H	4.4	9.6	25.68	30.0	-4.3		
LTE Band 66 10MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 Fundamentals, 10MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1715.00	7.66	V	4.3	9.4	12.75	30.0	-17.2	
	1715.00	19.17	H	4.3	9.4	24.27	30.0	-5.7	
	Mid Ch								
	1745.00	12.67	V	4.4	9.5	17.83	30.0	-12.2	
	1745.00	20.01	H	4.4	9.5	25.18	30.0	-4.8	
High Ch									
1775.00	13.11	V	4.4	9.6	18.28	30.0	-11.7		
1775.00	19.42	H	4.4	9.6	24.59	30.0	-5.4		

LTE Band 66 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1712.50	8.22	V	4.3	9.4	13.31	30.0	-16.7	
	1712.50	20.42	H	4.3	9.4	25.51	30.0	-4.5	
	Mid Ch								
	1745.00	14.09	V	4.4	9.5	19.25	30.0	-10.7	
	1745.00	21.08	H	4.4	9.5	26.25	30.0	-3.8	
High Ch									
1777.50	14.43	V	4.4	9.6	19.60	30.0	-10.4		
1777.50	19.99	H	4.4	9.6	25.16	30.0	-4.8		
LTE Band 66 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 Fundamentals, 5MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1712.50	8.57	V	4.3	9.4	13.66	30.0	-16.3	
	1712.50	20.61	H	4.3	9.4	25.70	30.0	-4.3	
	Mid Ch								
	1745.00	13.16	V	4.4	9.5	18.32	30.0	-11.7	
	1745.00	19.77	H	4.4	9.5	24.94	30.0	-5.1	
High Ch									
1777.50	13.43	V	4.4	9.6	18.60	30.0	-11.4		
1777.50	18.70	H	4.4	9.6	23.87	30.0	-6.1		

LTE Band 66 3MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Fundamentals, 3MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1711.50	7.63	V	4.3	9.4	12.72	30.0	-17.3	
	1711.50	19.62	H	4.3	9.4	24.71	30.0	-5.3	
	Mid Ch								
	1745.00	13.23	V	4.4	9.5	18.39	30.0	-11.6	
	1745.00	21.40	H	4.4	9.5	26.57	30.0	-3.4	
High Ch									
1778.50	14.78	V	4.4	9.6	19.95	30.0	-10.1		
1778.50	20.32	H	4.4	9.6	25.49	30.0	-4.5		
LTE Band 66 3MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 Fundamentals, 3MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1711.50	6.53	V	4.3	9.4	11.62	30.0	-18.4	
	1711.50	19.64	H	4.3	9.4	24.73	30.0	-5.3	
	Mid Ch								
	1745.00	12.37	V	4.4	9.5	17.53	30.0	-12.5	
	1745.00	20.05	H	4.4	9.5	25.22	30.0	-4.8	
High Ch									
1778.50	13.46	V	4.4	9.6	18.63	30.0	-11.4		
1778.50	18.96	H	4.4	9.6	24.13	30.0	-5.9		

LTE Band 66 1.4MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1710.70	7.41	V	4.3	9.4	12.49	30.0	-17.5	
	1710.70	20.47	H	4.3	9.4	25.55	30.0	-4.4	
	Mid Ch								
	1745.00	13.70	V	4.4	9.5	18.86	30.0	-11.1	
	1745.00	21.41	H	4.4	9.5	26.58	30.0	-3.4	
High Ch									
1779.30	14.53	V	4.4	9.6	19.70	30.0	-10.3		
1779.30	20.10	H	4.4	9.6	25.27	30.0	-4.7		
LTE Band 66 1.4MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement								
	Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 66 Fundamentals, 1.4MHz Bandwidth								
	Test Equipment: Receiving: Horn 3117[00168717], and Chamber 1 SMA Cables Substitution: Horn 3115[00167211], 8.5m SMA-type Cable								
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch								
	1710.70	6.44	V	4.3	9.4	11.52	30.0	-18.5	
	1710.70	19.44	H	4.3	9.4	24.52	30.0	-5.5	
	Mid Ch								
	1745.00	12.60	V	4.4	9.5	17.76	30.0	-12.2	
	1745.00	20.22	H	4.4	9.5	25.39	30.0	-4.6	
High Ch									
1779.30	13.95	V	4.4	9.6	19.12	30.0	-10.9		
1779.30	19.06	H	4.4	9.6	24.23	30.0	-5.8		

10.2. RADIATED SPURIOUS EMISSION

RULE PART(S)

FCC: §2.1051, §22.917, §24.238, §27.53, §90.543 and §90.691

LIMIT

Part 22.917(a) & Part 24.238(a) & Part 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.

Part 27.53:

(a)(4) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

(i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;

(iii) 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.

(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a 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, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

(h) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

(m)(4) For mobile station, the attenuation factor shall be not less than $43 + 10 \log (P)$ dB at the channel edge and $(55 + 10 \log (P))$ dB at the 5.5 MHz from the channel edges.

Part 90.543:

(c) Out-of-band emission limit. On any frequency outside of the frequency ranges covered by the ACP tables in this section, the power of any emission must be reduced below the mean output power (P) by at least $43 + 10\log(P)$ dB measured in a 100 kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

(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.

TEST PROCEDURE

ANSI / TIA / EIA 603 E Clause 2.2.12; ESU40 setting reference to 971168 D01 v03

For peak power measurement with a ESU40:

- a) Set the RBW = 100 KHz for emission below 1GHz and 1MHz for emissions above 1GHz
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = auto couple;
- e) Detector = rms;
- f) Ensure that the number of measurement points \geq span/RBW;
- g) Trace mode = average(WCDMA, LTE), Maxhold(GSM, LTE Band 40,41);

NOTE 1: Radiated spurious emissions were investigated below 30MHz, 30MHz – 1GHz and above 1GHz. There were no emissions found on below 30MHz and 30MHz – 1GHz.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

NOTE 2: Please refer to section 5.4 for bandwidth and RB setting about LTE bands.

RESULTS

See the following pages.

10.2.1. SPURIOUS RADIATION PLOTS

GSM850

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4788768228							
Date:		2019-03-06							
Test Engineer:		47989							
Configuration:		EUT / AC Adapter / Earphone, Z-Position							
Location:		Chamber 2							
Mode:		GPRS 850 MHz Harmonics							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz									
1648.40	-13.9	V	3.0	38.2	1.0	-51.2	-13.0	-38.2	
2472.60	-11.5	V	3.0	38.8	1.0	-49.3	-13.0	-36.3	
3296.80	-9.0	V	3.0	39.4	1.0	-47.4	-13.0	-34.4	
1648.40	-15.2	H	3.0	38.2	1.0	-52.4	-13.0	-39.4	
2472.60	-12.2	H	3.0	38.8	1.0	-50.0	-13.0	-37.0	
3296.80	-9.4	H	3.0	39.4	1.0	-47.8	-13.0	-34.8	
Mid Ch, 836.6MHz									
1673.20	-14.1	V	3.0	38.2	1.0	-51.3	-13.0	-38.3	
2509.80	-11.8	V	3.0	38.8	1.0	-49.6	-13.0	-36.6	
3346.40	-9.1	V	3.0	39.5	1.0	-47.5	-13.0	-34.5	
1673.20	-15.0	H	3.0	38.2	1.0	-52.3	-13.0	-39.3	
2509.80	-12.1	H	3.0	38.8	1.0	-50.0	-13.0	-37.0	
3346.40	-9.2	H	3.0	39.5	1.0	-47.6	-13.0	-34.6	
High Ch, 848.8MHz									
1697.60	-14.1	V	3.0	38.2	1.0	-51.3	-13.0	-38.3	
2546.40	-11.4	V	3.0	38.9	1.0	-49.2	-13.0	-36.2	
3395.20	-8.7	V	3.0	39.5	1.0	-47.1	-13.0	-34.1	
1697.60	-15.1	H	3.0	38.2	1.0	-52.4	-13.0	-39.4	
2546.40	-11.8	H	3.0	38.9	1.0	-49.7	-13.0	-36.7	
3395.20	-9.1	H	3.0	39.5	1.0	-47.6	-13.0	-34.6	

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4788768228							
Date:		2019-03-06							
Test Engineer:		47989							
Configuration:		EUT / AC Adapter / Earphone, Z-Position							
Location:		Chamber 2							
Mode:		EGPRS 850 MHz Harmonics							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz									
1648.40	-14.1	V	3.0	38.2	1.0	-51.3	-13.0	-38.3	
2472.60	-11.6	V	3.0	38.8	1.0	-49.4	-13.0	-36.4	
3296.80	-9.0	V	3.0	39.4	1.0	-47.5	-13.0	-34.5	
1648.40	-15.2	H	3.0	38.2	1.0	-52.5	-13.0	-39.5	
2472.60	-12.1	H	3.0	38.8	1.0	-49.9	-13.0	-36.9	
3296.80	-9.2	H	3.0	39.4	1.0	-47.6	-13.0	-34.6	
Mid Ch, 836.6MHz									
1673.20	-13.8	V	3.0	38.2	1.0	-51.0	-13.0	-38.0	
2509.80	-11.2	V	3.0	38.8	1.0	-49.1	-13.0	-36.1	
3346.40	-8.9	V	3.0	39.5	1.0	-47.4	-13.0	-34.4	
1673.20	-15.0	H	3.0	38.2	1.0	-52.2	-13.0	-39.2	
2509.80	-12.0	H	3.0	38.8	1.0	-49.9	-13.0	-36.9	
3346.40	-9.4	H	3.0	39.5	1.0	-47.8	-13.0	-34.8	
High Ch, 848.8MHz									
1697.60	-14.0	V	3.0	38.2	1.0	-51.2	-13.0	-38.2	
2546.40	-11.3	V	3.0	38.9	1.0	-49.1	-13.0	-36.1	
3395.20	-8.7	V	3.0	39.5	1.0	-47.2	-13.0	-34.2	
1697.60	-15.0	H	3.0	38.2	1.0	-52.3	-13.0	-39.3	
2546.40	-11.9	H	3.0	38.9	1.0	-49.8	-13.0	-36.8	
3395.20	-9.0	H	3.0	39.5	1.0	-47.5	-13.0	-34.5	

GSM1900

UL Verification Services, Inc.									
Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4788768228							
Date:		2019-03-20							
Test Engineer:		47989							
Configuration:		EUT / AC Adapter / Earphone, Y-Position							
Location:		Chamber 1							
Mode:		GPRS 1900 MHz Harmonics							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3700.40	-4.3	V	3.0	43.8	1.0	-47.1	-13.0	-34.1	
5550.60	-1.0	V	3.0	43.7	1.0	-43.7	-13.0	-30.7	
7400.80	-4.8	V	3.0	42.5	1.0	-46.4	-13.0	-33.4	
3700.40	-4.8	H	3.0	43.8	1.0	-47.6	-13.0	-34.6	
5550.60	-3.3	H	3.0	43.7	1.0	-46.0	-13.0	-33.0	
7400.80	-4.9	H	3.0	42.5	1.0	-46.4	-13.0	-33.4	
Mid Ch, 1880MHz									
3760.00	-2.7	V	3.0	43.8	1.0	-45.5	-13.0	-32.5	
5640.00	-4.3	V	3.0	43.7	1.0	-47.0	-13.0	-34.0	
7520.00	-5.4	V	3.0	42.5	1.0	-46.9	-13.0	-33.9	
3760.00	-4.8	H	3.0	43.8	1.0	-47.6	-13.0	-34.6	
5640.00	-2.5	H	3.0	43.7	1.0	-45.2	-13.0	-32.2	
7520.00	-5.4	H	3.0	42.5	1.0	-46.8	-13.0	-33.8	
High Ch, 1909.8MHz									
3819.60	-4.5	V	3.0	43.8	1.0	-47.3	-13.0	-34.3	
5729.40	-5.9	V	3.0	43.7	1.0	-48.6	-13.0	-35.6	
7639.20	-5.0	V	3.0	42.4	1.0	-46.4	-13.0	-33.4	
3819.60	-6.2	H	3.0	43.8	1.0	-49.1	-13.0	-36.1	
5729.40	-4.7	H	3.0	43.7	1.0	-47.4	-13.0	-34.4	
7639.20	-4.8	H	3.0	42.4	1.0	-46.2	-13.0	-33.2	

UL Verification Services, Inc.									
Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4788768228							
Date:		2019-03-20							
Test Engineer:		47989							
Configuration:		EUT / AC Adapter / Earphone, Y-Position							
Location:		Chamber 1							
Mode:		EGPRS 1900 MHz Harmonics							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3700.40	-8.2	V	3.0	43.8	1.0	-51.0	-13.0	-38.0	
5550.60	-4.6	V	3.0	43.7	1.0	-47.3	-13.0	-34.3	
7400.80	-5.0	V	3.0	42.5	1.0	-46.5	-13.0	-33.5	
3700.40	-8.2	H	3.0	43.8	1.0	-51.0	-13.0	-38.0	
5550.60	-5.6	H	3.0	43.7	1.0	-48.3	-13.0	-35.3	
7400.80	-4.8	H	3.0	42.5	1.0	-46.3	-13.0	-33.3	
Mid Ch, 1880MHz									
3760.00	-7.4	V	3.0	43.8	1.0	-50.2	-13.0	-37.2	
5640.00	-7.5	V	3.0	43.7	1.0	-50.2	-13.0	-37.2	
7520.00	-4.9	V	3.0	42.5	1.0	-46.3	-13.0	-33.3	
3760.00	-7.6	H	3.0	43.8	1.0	-50.4	-13.0	-37.4	
5640.00	-6.1	H	3.0	43.7	1.0	-48.8	-13.0	-35.8	
7520.00	-4.8	H	3.0	42.5	1.0	-46.3	-13.0	-33.3	
High Ch, 1909.8MHz									
3819.60	-7.7	V	3.0	43.8	1.0	-50.5	-13.0	-37.5	
5729.40	-6.7	V	3.0	43.7	1.0	-49.3	-13.0	-36.3	
7639.20	-4.8	V	3.0	42.4	1.0	-46.2	-13.0	-33.2	
3819.60	-7.8	H	3.0	43.8	1.0	-50.6	-13.0	-37.6	
5729.40	-7.1	H	3.0	43.7	1.0	-49.8	-13.0	-36.8	
7639.20	-5.0	H	3.0	42.4	1.0	-46.4	-13.0	-33.4	

WCDMA Band 5

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
WCDMA Band 5 REL99		Company: Samsung Project #: 4788768228 Date: 2019-03-06 Test Engineer: 47989 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 2 Mode: Rel99 Band 5 Harmonics								
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)
		Low Ch, 826.4MHz								
		1652.80	-15.4	V	3.0	38.2	1.0	-52.6	-13.0	-39.6
		2479.20	-12.7	V	3.0	38.8	1.0	-50.5	-13.0	-37.5
		3305.60	-10.2	V	3.0	39.4	1.0	-48.6	-13.0	-35.6
		1652.80	-16.3	H	3.0	38.2	1.0	-53.5	-13.0	-40.5
		2479.20	-13.3	H	3.0	38.8	1.0	-51.1	-13.0	-38.1
		3305.60	-10.4	H	3.0	39.4	1.0	-48.9	-13.0	-35.9
		Mid Ch, 836.6MHz								
		1673.20	-15.2	V	3.0	38.2	1.0	-52.4	-13.0	-39.4
		2509.80	-12.5	V	3.0	38.8	1.0	-50.3	-13.0	-37.3
		3346.40	-10.1	V	3.0	39.5	1.0	-48.6	-13.0	-35.6
		1673.20	-16.0	H	3.0	38.2	1.0	-53.3	-13.0	-40.3
		2509.80	-12.7	H	3.0	38.8	1.0	-50.6	-13.0	-37.6
		3346.40	-10.4	H	3.0	39.5	1.0	-48.8	-13.0	-35.8
		High Ch, 846.6MHz								
		1693.20	-15.2	V	3.0	38.2	1.0	-52.4	-13.0	-39.4
		2539.80	-12.4	V	3.0	38.9	1.0	-50.3	-13.0	-37.3
		3386.40	-9.9	V	3.0	39.5	1.0	-48.4	-13.0	-35.4
		1693.20	-16.2	H	3.0	38.2	1.0	-53.4	-13.0	-40.4
		2539.80	-13.0	H	3.0	38.9	1.0	-50.9	-13.0	-37.9
		3386.40	-10.5	H	3.0	39.5	1.0	-49.0	-13.0	-36.0
		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
WCDMA Band 5 HSDPA		Company: Samsung Project #: 4788768228 Date: 2019-03-06 Test Engineer: 47989 Configuration: EUT / AC Adapter / Earphone Location: Chamber 2 Mode: HSDPA Band 5 Harmonics								
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)
		Low Ch, 826.4MHz								
		1652.80	-15.4	V	3.0	38.2	1.0	-52.6	-13.0	-39.6
		2479.20	-12.6	V	3.0	38.8	1.0	-50.4	-13.0	-37.4
		3305.60	-10.2	V	3.0	39.4	1.0	-48.6	-13.0	-35.6
		1652.80	-16.3	H	3.0	38.2	1.0	-53.5	-13.0	-40.5
		2479.20	-13.3	H	3.0	38.8	1.0	-51.1	-13.0	-38.1
		3305.60	-10.4	H	3.0	39.4	1.0	-48.8	-13.0	-35.8
		Mid Ch, 836.6MHz								
		1673.20	-15.2	V	3.0	38.2	1.0	-52.5	-13.0	-39.5
		2509.80	-12.6	V	3.0	38.8	1.0	-50.4	-13.0	-37.4
		3346.40	-10.2	V	3.0	39.5	1.0	-48.7	-13.0	-35.7
		1673.20	-16.2	H	3.0	38.2	1.0	-53.5	-13.0	-40.5
		2509.80	-13.2	H	3.0	38.8	1.0	-51.0	-13.0	-38.0
		3346.40	-10.7	H	3.0	39.5	1.0	-49.2	-13.0	-36.2
		High Ch, 846.6MHz								
		1693.20	-15.2	V	3.0	38.2	1.0	-52.4	-13.0	-39.4
		2539.80	-12.5	V	3.0	38.9	1.0	-50.3	-13.0	-37.3
		3386.40	-10.0	V	3.0	39.5	1.0	-48.4	-13.0	-35.4
		1693.20	-16.1	H	3.0	38.2	1.0	-53.4	-13.0	-40.4
		2539.80	-13.1	H	3.0	38.9	1.0	-50.9	-13.0	-37.9
		3386.40	-10.2	H	3.0	39.5	1.0	-48.7	-13.0	-35.7

WCDMA Band 4

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company: Samsung Project #: 4788768228 Date: 2019-03-06 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 2 Mode: Rel99 Band 4 Hamonics								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
WCDMA Band 4 REL99										
Low Ch, 1712.4MHz										
3424.80	-9.5	V	3.0	39.5	1.0	-48.0	-13.0	-35.0		
5137.20	-9.0	V	3.0	39.8	1.0	-47.9	-13.0	-34.9		
6849.60	-6.3	V	3.0	39.7	1.0	-45.0	-13.0	-32.0		
3424.80	-9.7	H	3.0	39.5	1.0	-48.2	-13.0	-35.2		
5137.20	-9.3	H	3.0	39.8	1.0	-48.1	-13.0	-35.1		
6849.60	-7.1	H	3.0	39.7	1.0	-45.8	-13.0	-32.8		
Mid Ch, 1732.6MHz										
3465.20	-9.1	V	3.0	39.5	1.0	-47.6	-13.0	-34.6		
5197.80	-8.8	V	3.0	39.8	1.0	-47.6	-13.0	-34.6		
6930.40	-6.2	V	3.0	39.7	1.0	-44.9	-13.0	-31.9		
3465.20	-9.3	H	3.0	39.5	1.0	-47.8	-13.0	-34.8		
5197.80	-9.2	H	3.0	39.8	1.0	-48.0	-13.0	-35.0		
6930.40	-7.1	H	3.0	39.7	1.0	-45.8	-13.0	-32.8		
High Ch, 1752.6MHz										
3505.20	-8.5	V	3.0	39.5	1.0	-47.1	-13.0	-34.1		
5257.80	-8.9	V	3.0	39.8	1.0	-47.8	-13.0	-34.8		
7010.40	-5.8	V	3.0	39.6	1.0	-44.4	-13.0	-31.4		
3505.20	-8.7	H	3.0	39.5	1.0	-47.3	-13.0	-34.3		
5257.80	-9.1	H	3.0	39.8	1.0	-48.0	-13.0	-35.0		
7010.40	-7.0	H	3.0	39.6	1.0	-45.6	-13.0	-32.6		
WCDMA Band 4 HSDPA										
		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company: Samsung Project #: 4788768228 Date: 2019-03-06 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 2 Mode: HSDPA Band 4 Hamonics								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch, 1712.4MHz										
3424.80	-8.6	V	3.0	39.5	1.0	-47.1	-13.0	-34.1		
5137.20	-8.8	V	3.0	39.8	1.0	-47.6	-13.0	-34.6		
6849.60	-6.6	V	3.0	39.7	1.0	-45.3	-13.0	-32.3		
3424.80	-9.6	H	3.0	39.5	1.0	-48.1	-13.0	-35.1		
5137.20	-9.5	H	3.0	39.8	1.0	-48.3	-13.0	-35.3		
6849.60	-6.2	H	3.0	39.7	1.0	-44.8	-13.0	-31.8		
Mid Ch, 1732.6MHz										
3465.20	-8.9	V	3.0	39.5	1.0	-47.4	-13.0	-34.4		
5197.80	-8.8	V	3.0	39.8	1.0	-47.6	-13.0	-34.6		
6930.40	-5.2	V	3.0	39.7	1.0	-43.8	-13.0	-30.8		
3465.20	-9.4	H	3.0	39.5	1.0	-47.9	-13.0	-34.9		
5197.80	-9.0	H	3.0	39.8	1.0	-47.8	-13.0	-34.8		
6930.40	-6.9	H	3.0	39.7	1.0	-45.6	-13.0	-32.6		
High Ch, 1752.6MHz										
3505.20	-7.6	V	3.0	39.5	1.0	-46.2	-13.0	-33.2		
5257.80	-8.9	V	3.0	39.8	1.0	-47.8	-13.0	-34.8		
7010.40	-5.3	V	3.0	39.6	1.0	-43.9	-13.0	-30.9		
3505.20	-8.1	H	3.0	39.5	1.0	-46.6	-13.0	-33.6		
5257.80	-8.4	H	3.0	39.8	1.0	-47.2	-13.0	-34.2		
7010.40	-6.7	H	3.0	39.6	1.0	-45.3	-13.0	-32.3		

WCDMA Band 2

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
WCDMA Band 2 REL99		Company: Samsung Project #: 4788768228 Date: 2019-03-21 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Y-Position Location: Chamber 2 Mode: Rel99 Band 2 Harmonics									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 1852.4MHz									
		3704.80	-10.9	V	3.0	39.7	1.0	-49.6	-13.0	-36.6	
		5557.20	-8.2	V	3.0	39.9	1.0	-47.1	-13.0	-34.1	
		7409.60	-5.9	V	3.0	39.4	1.0	-44.4	-13.0	-31.4	
		3704.80	-11.6	H	3.0	39.7	1.0	-50.3	-13.0	-37.3	
		5557.20	-8.6	H	3.0	39.9	1.0	-47.5	-13.0	-34.5	
		7409.60	-6.9	H	3.0	39.4	1.0	-45.4	-13.0	-32.4	
		Mid Ch, 1880MHz									
		3760.00	-10.8	V	3.0	39.7	1.0	-49.5	-13.0	-36.5	
		5640.00	-7.8	V	3.0	40.0	1.0	-46.8	-13.0	-33.8	
		7520.00	-6.2	V	3.0	39.4	1.0	-44.6	-13.0	-31.6	
		3760.00	-11.2	H	3.0	39.7	1.0	-49.9	-13.0	-36.9	
		5640.00	-8.2	H	3.0	40.0	1.0	-47.1	-13.0	-34.1	
7520.00	-7.1	H	3.0	39.4	1.0	-45.5	-13.0	-32.5			
High Ch, 1907.6MHz											
3815.20	-10.8	V	3.0	39.7	1.0	-49.6	-13.0	-36.6			
5722.80	-8.2	V	3.0	40.0	1.0	-47.2	-13.0	-34.2			
7630.40	-6.3	V	3.0	39.3	1.0	-44.6	-13.0	-31.6			
3815.20	-11.3	H	3.0	39.7	1.0	-50.0	-13.0	-37.0			
5722.80	-8.3	H	3.0	40.0	1.0	-47.3	-13.0	-34.3			
7630.40	-6.9	H	3.0	39.3	1.0	-45.3	-13.0	-32.3			
		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
WCDMA Band 2 HSDPA		Company: Samsung Project #: 4788768228 Date: 2019-03-21 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Y-Position Location: Chamber 2 Mode: HSDPA Band 2 Harmonics									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 1852.4MHz									
		3704.80	-11.4	V	3.0	39.7	1.0	-50.0	-13.0	-37.0	
		5557.20	-7.8	V	3.0	39.9	1.0	-46.7	-13.0	-33.7	
		7409.60	-5.9	V	3.0	39.4	1.0	-44.3	-13.0	-31.3	
		3704.80	-11.4	H	3.0	39.7	1.0	-50.0	-13.0	-37.0	
		5557.20	-8.4	H	3.0	39.9	1.0	-47.3	-13.0	-34.3	
		7409.60	-6.9	H	3.0	39.4	1.0	-45.3	-13.0	-32.3	
		Mid Ch, 1880MHz									
		3760.00	-10.8	V	3.0	39.7	1.0	-49.5	-13.0	-36.5	
		5640.00	-7.8	V	3.0	40.0	1.0	-46.8	-13.0	-33.8	
		7520.00	-6.1	V	3.0	39.4	1.0	-44.5	-13.0	-31.5	
		3760.00	-11.1	H	3.0	39.7	1.0	-49.8	-13.0	-36.8	
		5640.00	-8.0	H	3.0	40.0	1.0	-47.0	-13.0	-34.0	
7520.00	-6.9	H	3.0	39.4	1.0	-45.2	-13.0	-32.2			
High Ch, 1907.6MHz											
3815.20	-10.7	V	3.0	39.7	1.0	-49.4	-13.0	-36.4			
5722.80	-7.9	V	3.0	40.0	1.0	-46.9	-13.0	-33.9			
7630.40	-6.1	V	3.0	39.3	1.0	-44.4	-13.0	-31.4			
3815.20	-11.3	H	3.0	39.7	1.0	-50.0	-13.0	-37.0			
5722.80	-8.2	H	3.0	40.0	1.0	-47.2	-13.0	-34.2			
7630.40	-6.6	H	3.0	39.3	1.0	-44.9	-13.0	-31.9			

LTE Band 2

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 2 1.4MHz QPSK		Company: Samsung Project #: 4788768228 Date: 2019-03-20 Test Engineer: 47989 Configuration: EUT / AC Adpater / Earphone, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 2 Harmonics, 1.4MHz Bandwidth									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 1850.7MHz									
		3701.40	-11.7	V	3.0	43.8	1.0	-54.5	-13.0	-41.5	
		5552.10	-8.2	V	3.0	43.7	1.0	-50.9	-13.0	-37.9	
		7402.80	-5.7	V	3.0	42.5	1.0	-47.3	-13.0	-34.3	
		3701.40	-11.0	H	3.0	43.8	1.0	-53.7	-13.0	-40.7	
		5552.10	-8.4	H	3.0	43.7	1.0	-51.1	-13.0	-38.1	
		7402.80	-5.6	H	3.0	42.5	1.0	-47.1	-13.0	-34.1	
		Mid Ch, 1880MHz									
3760.00	-10.8	V	3.0	43.8	1.0	-53.6	-13.0	-40.6			
5640.00	-8.4	V	3.0	43.7	1.0	-51.1	-13.0	-38.1			
7520.00	-5.5	V	3.0	42.5	1.0	-46.9	-13.0	-33.9			
3760.00	-10.7	H	3.0	43.8	1.0	-53.5	-13.0	-40.5			
5640.00	-8.5	H	3.0	43.7	1.0	-51.2	-13.0	-38.2			
7520.00	-5.6	H	3.0	42.5	1.0	-47.1	-13.0	-34.1			
High Ch, 1909.3MHz											
3818.60	-11.2	V	3.0	43.8	1.0	-54.0	-13.0	-41.0			
5727.90	-8.1	V	3.0	43.7	1.0	-50.7	-13.0	-37.7			
7637.20	-5.8	V	3.0	42.4	1.0	-47.1	-13.0	-34.1			
3818.60	-10.8	H	3.0	43.8	1.0	-53.6	-13.0	-40.6			
5727.90	-7.9	H	3.0	43.7	1.0	-50.6	-13.0	-37.6			
7637.20	-6.0	H	3.0	42.4	1.0	-47.4	-13.0	-34.4			

LTE Band 5

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 5 3MHz QPSK		Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / AC Adapter / Earphone, Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 5 Harmonics, 3MHz Bandwidth									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 825.5MHz									
		1651.00	-15.5	V	3.0	43.6	1.0	-58.1	-13.0	-45.1	
		2476.50	-12.7	V	3.0	43.4	1.0	-55.1	-13.0	-42.1	
		3302.00	-10.9	V	3.0	43.6	1.0	-53.5	-13.0	-40.5	
		1651.00	-16.5	H	3.0	43.6	1.0	-59.1	-13.0	-46.1	
		2476.50	-13.2	H	3.0	43.4	1.0	-55.6	-13.0	-42.6	
		3302.00	-10.8	H	3.0	43.6	1.0	-53.5	-13.0	-40.5	
		Mid Ch, 836.5MHz									
1673.00	-15.6	V	3.0	43.6	1.0	-58.1	-13.0	-45.1			
2509.50	-11.1	V	3.0	43.4	1.0	-53.6	-13.0	-40.6			
3346.00	-10.7	V	3.0	43.6	1.0	-53.3	-13.0	-40.3			
1673.00	-16.4	H	3.0	43.6	1.0	-59.0	-13.0	-46.0			
2509.50	-12.6	H	3.0	43.4	1.0	-55.0	-13.0	-42.0			
3346.00	-10.9	H	3.0	43.6	1.0	-53.5	-13.0	-40.5			
High Ch, 847.5MHz											
1695.00	-15.4	V	3.0	43.6	1.0	-58.0	-13.0	-45.0			
2542.50	-11.4	V	3.0	43.4	1.0	-53.8	-13.0	-40.8			
3390.00	-10.3	V	3.0	43.7	1.0	-53.0	-13.0	-40.0			
1695.00	-16.5	H	3.0	43.6	1.0	-59.1	-13.0	-46.1			
2542.50	-12.6	H	3.0	43.4	1.0	-55.0	-13.0	-42.0			
3390.00	-10.4	H	3.0	43.7	1.0	-53.1	-13.0	-40.1			

LTE Band 7

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 7 10MHz QPSK		Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 1 Mode: LTE_QPSK Band 7 Harmonics, 10MHz Bandwidth									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 2505MHz									
		5010.00	-13.2	V	3.0	43.8	1.0	-56.0	-25.0	-31.0	
		7515.00	-17.9	V	3.0	42.5	1.0	-59.4	-25.0	-34.4	
		10020.00	-16.1	V	3.0	40.6	1.0	-55.7	-25.0	-30.7	
		5010.00	-9.2	H	3.0	43.8	1.0	-52.0	-25.0	-27.0	
		7515.00	-17.4	H	3.0	42.5	1.0	-58.9	-25.0	-33.9	
		10020.00	-16.0	H	3.0	40.6	1.0	-55.5	-25.0	-30.5	
		Mid Ch, 2535MHz									
5070.00	-13.1	V	3.0	43.8	1.0	-55.8	-25.0	-30.8			
7605.00	-18.3	V	4.0	42.4	2.0	-56.2	-25.0	-31.2			
10140.00	-15.9	V	3.0	40.6	1.0	-55.5	-25.0	-30.5			
5070.00	-11.3	H	3.0	43.8	1.0	-54.1	-25.0	-29.1			
7605.00	-17.8	H	3.0	42.4	1.0	-59.2	-25.0	-34.2			
10140.00	-15.8	H	3.0	40.6	1.0	-55.4	-25.0	-30.4			
High Ch, 2565MHz											
5130.00	-9.6	V	3.0	43.8	1.0	-52.4	-25.0	-27.4			
7695.00	-18.2	V	3.0	42.4	1.0	-59.6	-25.0	-34.6			
10260.00	-15.9	V	3.0	40.6	1.0	-55.6	-25.0	-30.6			
5130.00	-7.0	H	3.0	43.8	1.0	-49.8	-25.0	-24.8			
7695.00	-18.3	H	3.0	42.4	1.0	-59.6	-25.0	-34.6			
10260.00	-15.9	H	3.0	40.6	1.0	-55.5	-25.0	-30.5			

LTE Band 12

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 12 1.4MHz QPSK		Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / AC Adapter / Earphone, Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 Harmonics, 1.4MHz Bandwidth									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 699.7MHz									
		1399.40	-8.4	V	3.0	43.8	1.0	-51.2	-13.0	-38.2	
		2099.10	-13.7	V	3.0	43.3	1.0	-56.0	-13.0	-43.0	
		2798.80	-11.5	V	3.0	43.5	1.0	-53.9	-13.0	-40.9	
		1399.40	-11.5	H	3.0	43.8	1.0	-54.3	-13.0	-41.3	
		2099.10	-14.8	H	3.0	43.3	1.0	-57.1	-13.0	-44.1	
		2798.80	-12.2	H	3.0	43.5	1.0	-54.6	-13.0	-41.6	
		Mid Ch, 707.5MHz									
1415.00	-5.5	V	3.0	43.8	1.0	-48.2	-13.0	-35.2			
2122.50	-13.7	V	3.0	43.3	1.0	-56.1	-13.0	-43.1			
2830.00	-11.6	V	3.0	43.5	1.0	-54.1	-13.0	-41.1			
1415.00	-8.4	H	3.0	43.8	1.0	-51.2	-13.0	-38.2			
2122.50	-14.5	H	3.0	43.3	1.0	-56.9	-13.0	-43.9			
2830.00	-12.0	H	3.0	43.5	1.0	-54.5	-13.0	-41.5			
High Ch, 715.3MHz											
1430.60	-9.4	V	3.0	43.8	1.0	-52.1	-13.0	-39.1			
2145.90	-13.7	V	3.0	43.3	1.0	-56.0	-13.0	-43.0			
2861.20	-11.5	V	3.0	43.5	1.0	-54.0	-13.0	-41.0			
1430.60	-12.8	H	3.0	43.8	1.0	-55.6	-13.0	-42.6			
2145.90	-14.6	H	3.0	43.3	1.0	-56.9	-13.0	-43.9			
2861.20	-11.8	H	3.0	43.5	1.0	-54.3	-13.0	-41.3			

LTE Band 14

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 14 5MHz QPSK		Company: Samsung Project #: 4788768228 Date: 2019-03-06 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, X-Position Location: Chamber 2 Mode: LTE_QPSK Band 14 Harmonics, 5MHz Bandwidth									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 790.5MHz									
		1581.00	-27.4	V	3.0	38.2	1.0	-64.6	-40.0	-24.6	
		2371.50	-12.8	V	3.0	38.7	1.0	-50.5	-13.0	-37.5	
		3162.00	-9.7	V	3.0	39.4	1.0	-48.0	-13.0	-35.0	
		1581.00	-23.5	H	3.0	38.2	1.0	-60.7	-40.0	-20.7	
		2371.50	-13.5	H	3.0	38.7	1.0	-51.2	-13.0	-38.2	
		3162.00	-10.6	H	3.0	39.4	1.0	-48.9	-13.0	-35.9	
		Mid Ch, 793MHz									
1586.00	-25.5	V	3.0	38.2	1.0	-62.7	-40.0	-22.7			
2379.00	-12.8	V	3.0	38.7	1.0	-50.6	-13.0	-37.6			
3172.00	-10.3	V	3.0	39.4	1.0	-48.7	-13.0	-35.7			
1586.00	-23.6	H	3.0	38.2	1.0	-60.8	-40.0	-20.8			
2379.00	-13.5	H	3.0	38.7	1.0	-51.3	-13.0	-38.3			
3172.00	-10.6	H	3.0	39.4	1.0	-49.0	-13.0	-36.0			
High Ch, 795.5MHz											
1591.00	-25.3	V	3.0	38.2	1.0	-62.5	-40.0	-22.5			
2386.50	-12.7	V	3.0	38.7	1.0	-50.4	-13.0	-37.4			
3182.00	-9.8	V	3.0	39.4	1.0	-48.2	-13.0	-35.2			
1591.00	-22.8	H	3.0	38.2	1.0	-60.0	-40.0	-20.0			
2386.50	-13.2	H	3.0	38.7	1.0	-50.9	-13.0	-37.9			
3182.00	-9.9	H	3.0	39.4	1.0	-48.3	-13.0	-35.3			

LTE Band 30

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 30 5MHz QPSK		Company: Samsung Project #: 4788768228 Date: 2019-04-08 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 30 Harmonics, 5MHz Bandwidth									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 2307.5MHz									
		4615.00	-7.4	V	3.0	43.8	1.0	-50.2	-40.0	-10.2	
		6922.50	-14.9	V	3.0	42.8	1.0	-56.7	-40.0	-16.7	
		9230.00	-6.4	V	3.0	41.3	1.0	-46.6	-40.0	-6.6	
		4615.00	-7.3	H	3.0	43.8	1.0	-50.1	-40.0	-10.1	
		6922.50	-14.0	H	3.0	42.8	1.0	-55.8	-40.0	-15.8	
		9230.00	-10.1	H	3.0	41.3	1.0	-50.4	-40.0	-10.4	
		Mid Ch, 2310MHz									
4620.00	-8.1	V	3.0	43.8	1.0	-50.9	-40.0	-10.9			
6930.00	-13.9	V	3.0	42.8	1.0	-55.7	-40.0	-15.7			
9240.00	-6.5	V	3.0	41.3	1.0	-46.8	-40.0	-6.8			
4620.00	-8.5	H	3.0	43.8	1.0	-51.3	-40.0	-11.3			
6930.00	-10.3	H	3.0	42.8	1.0	-52.1	-40.0	-12.1			
9240.00	-10.5	H	3.0	41.3	1.0	-50.8	-40.0	-10.8			
High Ch, 2312.5MHz											
4625.00	-9.0	V	3.0	43.8	1.0	-51.8	-40.0	-11.8			
6937.50	-12.6	V	3.0	42.8	1.0	-54.4	-40.0	-14.4			
9250.00	-7.0	V	3.0	41.3	1.0	-47.2	-40.0	-7.2			
4625.00	-13.0	H	3.0	43.8	1.0	-55.8	-40.0	-15.8			
6937.50	-8.8	H	3.0	42.8	1.0	-50.6	-40.0	-10.6			
9250.00	-11.5	H	3.0	41.3	1.0	-51.7	-40.0	-11.7			

LTE Band 40 (Lower side)

LTE Band 40 10 MHz QPSK Lower side	<p style="text-align: center;">UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement</p> <p> Company: Samsung Project #: 4788768228 Date: 2019-05-20 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 1 Mode: LTE_QPSK_Band 40 Harmonics, 10MHz Bandwidth </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Distance (m)</th> <th>Preamp (dB)</th> <th>Filter (dB)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="10">Mid Ch, 2310MHz</td> </tr> <tr> <td>4620.00</td> <td>-17.7</td> <td>V</td> <td>3.0</td> <td>43.8</td> <td>1.0</td> <td>-60.6</td> <td>-25.0</td> <td>-35.6</td> <td></td> </tr> <tr> <td>6930.00</td> <td>-8.9</td> <td>V</td> <td>3.0</td> <td>42.8</td> <td>1.0</td> <td>-50.6</td> <td>-25.0</td> <td>-25.6</td> <td></td> </tr> <tr> <td>9240.00</td> <td>-14.2</td> <td>V</td> <td>3.0</td> <td>41.3</td> <td>1.0</td> <td>-54.5</td> <td>-25.0</td> <td>-29.5</td> <td></td> </tr> <tr> <td>4620.00</td> <td>-14.2</td> <td>H</td> <td>3.0</td> <td>43.8</td> <td>1.0</td> <td>-57.0</td> <td>-25.0</td> <td>-32.0</td> <td></td> </tr> <tr> <td>6930.00</td> <td>-7.8</td> <td>H</td> <td>3.0</td> <td>42.8</td> <td>1.0</td> <td>-49.6</td> <td>-25.0</td> <td>-24.6</td> <td></td> </tr> <tr> <td>9240.00</td> <td>-14.2</td> <td>H</td> <td>3.0</td> <td>41.3</td> <td>1.0</td> <td>-54.5</td> <td>-25.0</td> <td>-29.5</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Mid Ch, 2310MHz										4620.00	-17.7	V	3.0	43.8	1.0	-60.6	-25.0	-35.6		6930.00	-8.9	V	3.0	42.8	1.0	-50.6	-25.0	-25.6		9240.00	-14.2	V	3.0	41.3	1.0	-54.5	-25.0	-29.5		4620.00	-14.2	H	3.0	43.8	1.0	-57.0	-25.0	-32.0		6930.00	-7.8	H	3.0	42.8	1.0	-49.6	-25.0	-24.6		9240.00	-14.2	H	3.0	41.3	1.0	-54.5	-25.0	-29.5	
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LTE Band 40 10 MHz 16QAM Lower side	<p style="text-align: center;">UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement</p> <p> Company: Samsung Project #: 4788768228 Date: 2019-05-20 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 1 Mode: LTE_16QAM_Band 40 Harmonics, 10MHz Bandwidth </p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Distance (m)</th> <th>Preamp (dB)</th> <th>Filter (dB)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="10">Mid Ch, 2310MHz</td> </tr> <tr> <td>4620.00</td> <td>-15.0</td> <td>V</td> <td>3.0</td> <td>43.8</td> <td>1.0</td> <td>-57.8</td> <td>-25.0</td> <td>-32.8</td> <td></td> </tr> <tr> <td>6930.00</td> <td>-7.1</td> <td>V</td> <td>3.0</td> <td>42.8</td> <td>1.0</td> <td>-48.9</td> <td>-25.0</td> <td>-23.9</td> <td></td> </tr> <tr> <td>9240.00</td> <td>-14.6</td> <td>V</td> <td>3.0</td> <td>41.3</td> <td>1.0</td> <td>-54.9</td> <td>-25.0</td> <td>-29.9</td> <td></td> </tr> <tr> <td>4620.00</td> <td>-13.6</td> <td>H</td> <td>3.0</td> <td>43.8</td> <td>1.0</td> <td>-56.4</td> <td>-25.0</td> <td>-31.4</td> <td></td> </tr> <tr> <td>6930.00</td> <td>-7.0</td> <td>H</td> <td>3.0</td> <td>42.8</td> <td>1.0</td> <td>-48.7</td> <td>-25.0</td> <td>-23.7</td> <td></td> </tr> <tr> <td>9240.00</td> <td>-14.7</td> <td>H</td> <td>3.0</td> <td>41.3</td> <td>1.0</td> <td>-54.9</td> <td>-25.0</td> <td>-29.9</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Mid Ch, 2310MHz										4620.00	-15.0	V	3.0	43.8	1.0	-57.8	-25.0	-32.8		6930.00	-7.1	V	3.0	42.8	1.0	-48.9	-25.0	-23.9		9240.00	-14.6	V	3.0	41.3	1.0	-54.9	-25.0	-29.9		4620.00	-13.6	H	3.0	43.8	1.0	-56.4	-25.0	-31.4		6930.00	-7.0	H	3.0	42.8	1.0	-48.7	-25.0	-23.7		9240.00	-14.7	H	3.0	41.3	1.0	-54.9	-25.0	-29.9	
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UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
LTE Band 40 5 MHz QPSK Lower side	Company: Samsung Project #: 4788768228 Date: 2019-05-20 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 1 Mode: LTE_QPSK_Band 40 Harmonics, 5MHz Bandwidth									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 2307.5MHz									
	4615.00	-16.3	V	3.0	43.8	1.0	-59.2	-25.0	-34.2	
	6922.50	-9.6	V	3.0	42.8	1.0	-51.4	-25.0	-26.4	
	9230.00	-16.3	V	3.0	41.3	1.0	-56.6	-25.0	-31.6	
	4615.00	-14.1	H	3.0	43.8	1.0	-56.9	-25.0	-31.9	
	6922.50	-10.2	H	3.0	42.8	1.0	-52.0	-25.0	-27.0	
	9230.00	-15.9	H	3.0	41.3	1.0	-56.2	-25.0	-31.2	
	Mid Ch, 2310MHz									
	4620.00	-16.7	V	3.0	43.8	1.0	-59.5	-25.0	-34.5	
	6930.00	-10.0	V	3.0	42.8	1.0	-51.8	-25.0	-26.8	
	9240.00	-15.9	V	3.0	41.3	1.0	-56.2	-25.0	-31.2	
	4620.00	-13.6	H	3.0	43.8	1.0	-56.4	-25.0	-31.4	
	6930.00	-7.5	H	3.0	42.8	1.0	-49.3	-25.0	-24.3	
	9240.00	-15.9	H	3.0	41.3	1.0	-56.2	-25.0	-31.2	
	High Ch, 2312.5MHz									
	4625.00	-16.5	V	3.0	43.8	1.0	-59.3	-25.0	-34.3	
	6937.50	-10.1	V	3.0	42.8	1.0	-51.9	-25.0	-26.9	
	9250.00	-16.1	V	3.0	41.3	1.0	-56.4	-25.0	-31.4	
	4625.00	-16.1	H	3.0	43.8	1.0	-59.0	-25.0	-34.0	
	6937.50	-11.3	H	3.0	42.8	1.0	-53.1	-25.0	-28.1	
	9250.00	-15.9	H	3.0	41.3	1.0	-56.1	-25.0	-31.1	
	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	LTE Band 40 5 MHz 16QAM Lower side	Company: Samsung Project #: 4788768228 Date: 2019-05-20 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 1 Mode: LTE_16QAM_Band 40 Harmonics, 5MHz Bandwidth								
f MHz		SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 2307.5MHz										
4615.00		-16.0	V	3.0	43.8	1.0	-58.9	-25.0	-33.9	
6922.50		-8.2	V	3.0	42.8	1.0	-50.0	-25.0	-25.0	
9230.00		-16.1	V	3.0	41.3	1.0	-56.4	-25.0	-31.4	
4615.00		-14.2	H	3.0	43.8	1.0	-57.0	-25.0	-32.0	
6922.50		-8.6	H	3.0	42.8	1.0	-50.4	-25.0	-25.4	
9230.00		-16.0	H	3.0	41.3	1.0	-56.3	-25.0	-31.3	
Mid Ch, 2310MHz										
4620.00		-16.5	V	3.0	43.8	1.0	-59.4	-25.0	-34.4	
6930.00		-8.7	V	3.0	42.8	1.0	-50.5	-25.0	-25.5	
9240.00		-16.1	V	3.0	41.3	1.0	-56.4	-25.0	-31.4	
4620.00		-13.5	H	3.0	43.8	1.0	-56.3	-25.0	-31.3	
6930.00		-6.1	H	3.0	42.8	1.0	-47.9	-25.0	-22.9	
9240.00		-15.9	H	3.0	41.3	1.0	-56.1	-25.0	-31.1	
High Ch, 2312.5MHz										
4625.00		-17.3	V	3.0	43.8	1.0	-60.1	-25.0	-35.1	
6937.50		-8.8	V	3.0	42.8	1.0	-50.6	-25.0	-25.6	
9250.00		-16.3	V	3.0	41.3	1.0	-56.6	-25.0	-31.6	
4625.00		-16.1	H	3.0	43.8	1.0	-58.9	-25.0	-33.9	
6937.50		-11.5	H	3.0	42.8	1.0	-53.3	-25.0	-28.3	
9250.00		-15.9	H	3.0	41.3	1.0	-56.2	-25.0	-31.2	

LTE Band 40 (Upper side)

LTE Band 40 10 MHz QPSK Upper side	<p style="text-align: center;">UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788768228 Date: 2019-05-20 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 1 Mode: LTE_QPSK_Band 40 Harmonics, 10MHz Bandwidth</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Distance (m)</th> <th>Preamp (dB)</th> <th>Filter (dB)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="10">Mid Ch, 2355MHz</td> </tr> <tr> <td>4710.00</td> <td>-15.8</td> <td>V</td> <td>3.0</td> <td>43.8</td> <td>1.0</td> <td>-58.6</td> <td>-25.0</td> <td>-33.6</td> <td></td> </tr> <tr> <td>7065.00</td> <td>-12.2</td> <td>V</td> <td>3.0</td> <td>42.7</td> <td>1.0</td> <td>-53.9</td> <td>-25.0</td> <td>-28.9</td> <td></td> </tr> <tr> <td>9420.00</td> <td>-13.9</td> <td>V</td> <td>3.0</td> <td>41.1</td> <td>1.0</td> <td>-54.0</td> <td>-25.0</td> <td>-29.0</td> <td></td> </tr> <tr> <td>4710.00</td> <td>-15.3</td> <td>H</td> <td>3.0</td> <td>43.8</td> <td>1.0</td> <td>-58.1</td> <td>-25.0</td> <td>-33.1</td> <td></td> </tr> <tr> <td>7065.00</td> <td>-13.1</td> <td>H</td> <td>3.0</td> <td>42.7</td> <td>1.0</td> <td>-54.8</td> <td>-25.0</td> <td>-29.8</td> <td></td> </tr> <tr> <td>9420.00</td> <td>-13.5</td> <td>H</td> <td>3.0</td> <td>41.1</td> <td>1.0</td> <td>-53.6</td> <td>-25.0</td> <td>-28.6</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Mid Ch, 2355MHz										4710.00	-15.8	V	3.0	43.8	1.0	-58.6	-25.0	-33.6		7065.00	-12.2	V	3.0	42.7	1.0	-53.9	-25.0	-28.9		9420.00	-13.9	V	3.0	41.1	1.0	-54.0	-25.0	-29.0		4710.00	-15.3	H	3.0	43.8	1.0	-58.1	-25.0	-33.1		7065.00	-13.1	H	3.0	42.7	1.0	-54.8	-25.0	-29.8		9420.00	-13.5	H	3.0	41.1	1.0	-53.6	-25.0	-28.6	
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4710.00	-15.3	H	3.0	43.8	1.0	-58.1	-25.0	-33.1																																																																									
7065.00	-13.1	H	3.0	42.7	1.0	-54.8	-25.0	-29.8																																																																									
9420.00	-13.5	H	3.0	41.1	1.0	-53.6	-25.0	-28.6																																																																									
LTE Band 40 10 MHz 16QAM Upper side	<p style="text-align: center;">UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement</p> <p>Company: Samsung Project #: 4788768228 Date: 2019-05-20 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 1 Mode: LTE_16QAM_Band 40 Harmonics, 10MHz Bandwidth</p> <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Distance (m)</th> <th>Preamp (dB)</th> <th>Filter (dB)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="10">Mid Ch, 2355MHz</td> </tr> <tr> <td>4710.00</td> <td>-15.6</td> <td>V</td> <td>3.0</td> <td>43.8</td> <td>1.0</td> <td>-58.4</td> <td>-25.0</td> <td>-33.4</td> <td></td> </tr> <tr> <td>7065.00</td> <td>-10.3</td> <td>V</td> <td>3.0</td> <td>42.7</td> <td>1.0</td> <td>-52.0</td> <td>-25.0</td> <td>-27.0</td> <td></td> </tr> <tr> <td>9420.00</td> <td>-14.4</td> <td>V</td> <td>3.0</td> <td>41.1</td> <td>1.0</td> <td>-54.5</td> <td>-25.0</td> <td>-29.5</td> <td></td> </tr> <tr> <td>4710.00</td> <td>-14.9</td> <td>H</td> <td>3.0</td> <td>43.8</td> <td>1.0</td> <td>-57.7</td> <td>-25.0</td> <td>-32.7</td> <td></td> </tr> <tr> <td>7065.00</td> <td>-12.4</td> <td>H</td> <td>3.0</td> <td>42.7</td> <td>1.0</td> <td>-54.1</td> <td>-25.0</td> <td>-29.1</td> <td></td> </tr> <tr> <td>9420.00</td> <td>-13.9</td> <td>H</td> <td>3.0</td> <td>41.1</td> <td>1.0</td> <td>-54.0</td> <td>-25.0</td> <td>-29.0</td> <td></td> </tr> </tbody> </table>	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	Mid Ch, 2355MHz										4710.00	-15.6	V	3.0	43.8	1.0	-58.4	-25.0	-33.4		7065.00	-10.3	V	3.0	42.7	1.0	-52.0	-25.0	-27.0		9420.00	-14.4	V	3.0	41.1	1.0	-54.5	-25.0	-29.5		4710.00	-14.9	H	3.0	43.8	1.0	-57.7	-25.0	-32.7		7065.00	-12.4	H	3.0	42.7	1.0	-54.1	-25.0	-29.1		9420.00	-13.9	H	3.0	41.1	1.0	-54.0	-25.0	-29.0	
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UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
Company: Samsung Project #: 4788768228 Date: 2019-05-20 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 1 Mode: LTE_QPSK_Band 40 Harmonics, 5MHz Bandwidth											
LTE Band 40 5 MHz QPSK Upper side	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes	
	Low Ch, 2352.5MHz										
	4705.00	-17.3	V	3.0	43.8	1.0	-60.1	-25.0	-35.1		
	7057.50	-11.7	V	3.0	42.7	1.0	-53.4	-25.0	-28.4		
	9410.00	-15.8	V	3.0	41.1	1.0	-56.0	-25.0	-31.0		
	4705.00	-15.0	H	3.0	43.8	1.0	-57.9	-25.0	-32.9		
	7057.50	-14.2	H	3.0	42.7	1.0	-55.9	-25.0	-30.9		
	9410.00	-15.8	H	3.0	41.1	1.0	-55.9	-25.0	-30.9		
	Mid Ch, 2355MHz										
	4710.00	-16.4	V	3.0	43.8	1.0	-59.2	-25.0	-34.2		
	7065.00	-12.0	V	3.0	42.7	1.0	-53.7	-25.0	-28.7		
	9420.00	-15.7	V	3.0	41.1	1.0	-55.8	-25.0	-30.8		
	4710.00	-16.4	H	3.0	43.8	1.0	-59.2	-25.0	-34.2		
	7065.00	-14.2	H	3.0	42.7	1.0	-55.9	-25.0	-30.9		
	9420.00	-15.6	H	3.0	41.1	1.0	-55.7	-25.0	-30.7		
	High Ch, 2357.5MHz										
	4715.00	-17.0	V	3.0	43.8	1.0	-59.9	-25.0	-34.9		
	7072.50	-12.8	V	3.0	42.7	1.0	-54.5	-25.0	-29.5		
	9430.00	-15.8	V	3.0	41.1	1.0	-55.9	-25.0	-30.9		
	4715.00	-17.1	H	3.0	43.8	1.0	-59.9	-25.0	-34.9		
	7072.50	-15.3	H	3.0	42.7	1.0	-57.0	-25.0	-32.0		
	9430.00	-15.4	H	3.0	41.1	1.0	-55.5	-25.0	-30.5		
	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
	Company: Samsung Project #: 4788768228 Date: 2019-05-20 Test Engineer: 45585 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 1 Mode: LTE_16QAM_Band 40 Harmonics, 5MHz Bandwidth										
	LTE Band 40 5 MHz 16QAM Upper side	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 2352.5MHz									
		4705.00	-16.6	V	3.0	43.8	1.0	-59.4	-25.0	-34.4	
		7057.50	-10.8	V	3.0	42.7	1.0	-52.5	-25.0	-27.5	
		9410.00	-15.7	V	3.0	41.1	1.0	-55.8	-25.0	-30.8	
		4705.00	-16.6	H	3.0	43.8	1.0	-59.4	-25.0	-34.4	
7057.50		-14.2	H	3.0	42.7	1.0	-55.9	-25.0	-30.9		
9410.00		-15.9	H	3.0	41.1	1.0	-56.0	-25.0	-31.0		
Mid Ch, 2355MHz											
4710.00		-17.5	V	3.0	43.8	1.0	-60.3	-25.0	-35.3		
7065.00		-12.8	V	3.0	42.7	1.0	-54.5	-25.0	-29.5		
9420.00		-15.7	V	3.0	41.1	1.0	-55.8	-25.0	-30.8		
4710.00		-18.3	H	3.0	43.8	1.0	-61.1	-25.0	-36.1		
7065.00		-13.3	H	3.0	42.7	1.0	-55.0	-25.0	-30.0		
9420.00		-15.6	H	3.0	41.1	1.0	-55.7	-25.0	-30.7		
High Ch, 2357.5MHz											
4715.00		-16.6	V	3.0	43.8	1.0	-59.4	-25.0	-34.4		
7072.50		-11.9	V	3.0	42.7	1.0	-53.6	-25.0	-28.6		
9430.00		-15.8	V	3.0	41.1	1.0	-55.9	-25.0	-30.9		
4715.00		-16.2	H	3.0	43.8	1.0	-59.1	-25.0	-34.1		
7072.50		-14.1	H	3.0	42.7	1.0	-55.8	-25.0	-30.8		
9430.00		-15.5	H	3.0	41.1	1.0	-55.6	-25.0	-30.6		

LTE Band 41

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 41 15MHz QPSK		Company: Samsung Project #: 4788768228 Date: 2019-03-06 Test Engineer: 47989 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 41 Harmonics, 15MHz Bandwidth									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 2503.5MHz									
		5007.00	-10.0	V	3.0	39.8	1.0	-48.7	-25.0	-23.7	
		7510.50	-13.9	V	3.0	39.4	1.0	-52.3	-25.0	-27.3	
		10014.00	-13.7	V	3.0	38.6	1.0	-51.3	-25.0	-26.3	
		5007.00	-13.3	H	3.0	39.8	1.0	-52.0	-25.0	-27.0	
		7510.50	-12.7	H	3.0	39.4	1.0	-51.1	-25.0	-26.1	
		10014.00	-13.8	H	3.0	38.6	1.0	-51.4	-25.0	-26.4	
		Mid Ch, 2593MHz									
5186.00	-10.0	V	3.0	39.8	1.0	-48.8	-25.0	-23.8			
7779.00	-12.4	V	3.0	39.3	1.0	-50.7	-25.0	-25.7			
10372.00	-13.1	V	3.0	38.6	1.0	-50.6	-25.0	-25.6			
5186.00	-11.9	H	3.0	39.8	1.0	-50.8	-25.0	-25.8			
7779.00	-12.7	H	3.0	39.3	1.0	-50.9	-25.0	-25.9			
10372.00	-13.0	H	3.0	38.6	1.0	-50.5	-25.0	-25.5			
High Ch, 2682.5MHz											
5365.00	-7.2	V	3.0	39.9	1.0	-46.1	-25.0	-21.1			
8047.50	-11.1	V	3.0	39.2	1.0	-49.2	-25.0	-24.2			
10730.00	-12.2	V	3.0	38.5	1.0	-49.8	-25.0	-24.8			
5365.00	-6.5	H	3.0	39.9	1.0	-45.3	-25.0	-20.3			
8047.50	-13.4	H	3.0	39.2	1.0	-51.6	-25.0	-26.6			
10730.00	-12.2	H	3.0	38.5	1.0	-49.7	-25.0	-24.7			

LTE Band 66

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 66 15MHz QPSK		Company: Samsung Project #: 4788768228 Date: 2019-03-05 Test Engineer: 47989 Configuration: EUT / AC Adapter / Earphone, Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 66 Harmonics, 15MHz Bandwidth									
		f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
		Low Ch, 1717.5MHz									
		3435.00	-9.4	V	3.0	43.7	1.0	-52.1	-13.0	-39.1	
		5152.50	-9.3	V	3.0	43.8	1.0	-52.1	-13.0	-39.1	
		6870.00	-6.2	V	3.0	42.8	1.0	-48.0	-13.0	-35.0	
		3435.00	-9.8	H	3.0	43.7	1.0	-52.5	-13.0	-39.5	
		5152.50	-9.4	H	3.0	43.8	1.0	-52.1	-13.0	-39.1	
		6870.00	-6.1	H	3.0	42.8	1.0	-48.0	-13.0	-35.0	
		Mid Ch, 1745MHz									
3490.00	-9.0	V	3.0	43.7	1.0	-51.7	-13.0	-38.7			
5235.00	-8.8	V	3.0	43.8	1.0	-51.6	-13.0	-38.6			
6980.00	-6.0	V	3.0	42.7	1.0	-47.7	-13.0	-34.7			
3490.00	-8.0	H	3.0	43.7	1.0	-50.7	-13.0	-37.7			
5235.00	-8.9	H	3.0	43.8	1.0	-51.7	-13.0	-38.7			
6980.00	-5.9	H	3.0	42.7	1.0	-47.7	-13.0	-34.7			
High Ch, 1772.5MHz											
3545.00	-8.2	V	3.0	43.7	1.0	-50.9	-13.0	-37.9			
5317.50	-8.6	V	3.0	43.7	1.0	-51.3	-13.0	-38.3			
7090.00	-5.8	V	3.0	42.7	1.0	-47.5	-13.0	-34.5			
3545.00	-8.0	H	3.0	43.7	1.0	-50.7	-13.0	-37.7			
5317.50	-8.7	H	3.0	43.7	1.0	-51.4	-13.0	-38.4			
7090.00	-5.7	H	3.0	42.7	1.0	-47.4	-13.0	-34.4			

LTE Band 4

LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 38

LTE Band 38 (Frequency range: 2570-2620 MHz) is covered by LTE Band 41 (Frequency range: 2496-2690 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.