

LTE Band 2 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-17 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 2 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1852.50</td><td>11.61</td><td>V</td><td>4.5</td><td>9.5</td><td>16.60</td><td>33.0</td><td>-16.4</td></tr><tr><td>1852.50</td><td>14.78</td><td>H</td><td>4.5</td><td>9.5</td><td>19.77</td><td>33.0</td><td>-13.2</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1880.00</td><td>13.38</td><td>V</td><td>4.5</td><td>9.2</td><td>18.06</td><td>33.0</td><td>-14.9</td></tr><tr><td>1880.00</td><td>15.50</td><td>H</td><td>4.5</td><td>9.2</td><td>20.18</td><td>33.0</td><td>-12.8</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1907.50</td><td>12.65</td><td>V</td><td>4.6</td><td>8.9</td><td>16.99</td><td>33.0</td><td>-16.0</td></tr><tr><td>1907.50</td><td>14.62</td><td>H</td><td>4.6</td><td>8.9</td><td>18.96</td><td>33.0</td><td>-14.0</td></tr></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								1852.50	11.61	V	4.5	9.5	16.60	33.0	-16.4	1852.50	14.78	H	4.5	9.5	19.77	33.0	-13.2	Mid Ch								1880.00	13.38	V	4.5	9.2	18.06	33.0	-14.9	1880.00	15.50	H	4.5	9.2	20.18	33.0	-12.8	High Ch								1907.50	12.65	V	4.6	8.9	16.99	33.0	-16.0	1907.50	14.62	H	4.6	8.9	18.96	33.0	-14.0
	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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LTE Band 2 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-17 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1852.50</td><td>10.60</td><td>V</td><td>4.5</td><td>9.5</td><td>15.59</td><td>33.0</td><td>-17.4</td></tr><tr><td>1852.50</td><td>13.81</td><td>H</td><td>4.5</td><td>9.5</td><td>18.80</td><td>33.0</td><td>-14.2</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1880.00</td><td>12.42</td><td>V</td><td>4.5</td><td>9.2</td><td>17.10</td><td>33.0</td><td>-15.9</td></tr><tr><td>1880.00</td><td>14.49</td><td>H</td><td>4.5</td><td>9.2</td><td>19.17</td><td>33.0</td><td>-13.8</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1907.50</td><td>11.69</td><td>V</td><td>4.6</td><td>8.9</td><td>16.03</td><td>33.0</td><td>-17.0</td></tr><tr><td>1907.50</td><td>13.63</td><td>H</td><td>4.6</td><td>8.9</td><td>17.97</td><td>33.0</td><td>-15.0</td></tr></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								1852.50	10.60	V	4.5	9.5	15.59	33.0	-17.4	1852.50	13.81	H	4.5	9.5	18.80	33.0	-14.2	Mid Ch								1880.00	12.42	V	4.5	9.2	17.10	33.0	-15.9	1880.00	14.49	H	4.5	9.2	19.17	33.0	-13.8	High Ch								1907.50	11.69	V	4.6	8.9	16.03	33.0	-17.0	1907.50	13.63	H	4.6	8.9	17.97	33.0	-15.0
	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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LTE

Band 2

3MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

Samsung

4788371689

2018-03-17

45585

EUT / Z-Position

Chamber 2

LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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								
1851.50	7.99	V	4.5	9.5	12.99	33.0	-20.0	
1851.50	15.11	H	4.5	9.5	20.11	33.0	-12.9	
Mid Ch								
1880.00	9.53	V	4.5	9.2	14.21	33.0	-18.8	
1880.00	13.40	H	4.5	9.2	18.08	33.0	-14.9	
High Ch								
1908.50	12.11	V	4.6	8.9	16.43	33.0	-16.6	
1908.50	14.97	H	4.6	8.9	19.29	33.0	-13.7	

LTE

Band 2

3MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company:

Project #:

Date:

Test Engineer:

Configuration:

Location:

Mode:

Samsung

4788371689

2018-03-17

45585

EUT / Z-Position

Chamber 2

LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth

Test Equipment:

Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables

Substitution: Horn 3115[00161451], 3m N-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								
1851.50	6.92	V	4.5	9.5	11.92	33.0	-21.1	
1851.50	14.06	H	4.5	9.5	19.06	33.0	-13.9	
Mid Ch								
1880.00	8.55	V	4.5	9.2	13.23	33.0	-19.8	
1880.00	12.38	H	4.5	9.2	17.06	33.0	-15.9	
High Ch								
1908.50	11.22	V	4.6	8.9	15.54	33.0	-17.5	
1908.50	13.94	H	4.6	8.9	18.26	33.0	-14.7	

LTE Band 2 1.4MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-17 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1850.70</td><td>6.54</td><td>V</td><td>4.5</td><td>9.5</td><td>11.55</td><td>33.0</td><td>-21.5</td></tr><tr><td>1850.70</td><td>12.26</td><td>H</td><td>4.5</td><td>9.5</td><td>17.26</td><td>33.0</td><td>-15.7</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1880.00</td><td>8.47</td><td>V</td><td>4.5</td><td>9.2</td><td>13.15</td><td>33.0</td><td>-19.9</td></tr><tr><td>1880.00</td><td>13.70</td><td>H</td><td>4.5</td><td>9.2</td><td>18.38</td><td>33.0</td><td>-14.6</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1909.30</td><td>8.70</td><td>V</td><td>4.6</td><td>8.9</td><td>13.01</td><td>33.0</td><td>-20.0</td></tr><tr><td>1909.30</td><td>12.25</td><td>H</td><td>4.6</td><td>8.9</td><td>16.56</td><td>33.0</td><td>-16.4</td></tr></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								1850.70	6.54	V	4.5	9.5	11.55	33.0	-21.5	1850.70	12.26	H	4.5	9.5	17.26	33.0	-15.7	Mid Ch								1880.00	8.47	V	4.5	9.2	13.15	33.0	-19.9	1880.00	13.70	H	4.5	9.2	18.38	33.0	-14.6	High Ch								1909.30	8.70	V	4.6	8.9	13.01	33.0	-20.0	1909.30	12.25	H	4.6	8.9	16.56	33.0	-16.4
	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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	1850.70	12.26	H	4.5	9.5	17.26	33.0	-15.7																																																																																		
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	1880.00	8.47	V	4.5	9.2	13.15	33.0	-19.9																																																																																		
	1880.00	13.70	H	4.5	9.2	18.38	33.0	-14.6																																																																																		
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	1909.30	8.70	V	4.6	8.9	13.01	33.0	-20.0																																																																																		
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LTE Band 2 1.4MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-17 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth Test Equipment: Receiving: Horn 3117[00168724], and Chamber 2 SMA Cables Substitution: Horn 3115[00161451], 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1850.70</td><td>5.56</td><td>V</td><td>4.5</td><td>9.5</td><td>10.57</td><td>33.0</td><td>-22.4</td></tr><tr><td>1850.70</td><td>11.23</td><td>H</td><td>4.5</td><td>9.5</td><td>16.23</td><td>33.0</td><td>-16.8</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1880.00</td><td>7.55</td><td>V</td><td>4.5</td><td>9.2</td><td>12.23</td><td>33.0</td><td>-20.8</td></tr><tr><td>1880.00</td><td>12.73</td><td>H</td><td>4.5</td><td>9.2</td><td>17.41</td><td>33.0</td><td>-15.6</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1909.30</td><td>7.58</td><td>V</td><td>4.6</td><td>8.9</td><td>11.89</td><td>33.0</td><td>-21.1</td></tr><tr><td>1909.30</td><td>11.28</td><td>H</td><td>4.6</td><td>8.9</td><td>15.59</td><td>33.0</td><td>-17.4</td></tr></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								1850.70	5.56	V	4.5	9.5	10.57	33.0	-22.4	1850.70	11.23	H	4.5	9.5	16.23	33.0	-16.8	Mid Ch								1880.00	7.55	V	4.5	9.2	12.23	33.0	-20.8	1880.00	12.73	H	4.5	9.2	17.41	33.0	-15.6	High Ch								1909.30	7.58	V	4.6	8.9	11.89	33.0	-21.1	1909.30	11.28	H	4.6	8.9	15.59	33.0	-17.4
	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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	1850.70	11.23	H	4.5	9.5	16.23	33.0	-16.8																																																																																		
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	1880.00	7.55	V	4.5	9.2	12.23	33.0	-20.8																																																																																		
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	1909.30	7.58	V	4.6	8.9	11.89	33.0	-21.1																																																																																		
1909.30	11.28	H	4.6	8.9	15.59	33.0	-17.4																																																																																			

LTE Band 13

LTE

Band 13

10MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788371689

Date: 2018-03-25

Test Engineer: 47989

Configuration: EUT / Z-Position

Location: Chamber 2

Mode: LTE_QPSK Band 13 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: VULB9163-749, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-type Cable

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	15.62	V	0.9	-1.6	13.13	34.8	-21.6	
782.00	3.15	H	0.9	-1.6	0.66	34.8	-34.1	

LTE

Band 13

10MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788371689

Date: 2018-03-25

Test Engineer: 47989

Configuration: EUT / Z-Position

Location: Chamber 2

Mode: LTE_16QAM Band 13 Fundamentals, 10MHz Bandwidth

Test Equipment:

Receiving: VULB9163-749, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-type Cable

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	14.71	V	0.9	-1.6	12.22	34.8	-22.6	
782.00	2.26	H	0.9	-1.6	-0.23	34.8	-35.0	

LTE Band 13 5MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 47989 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 13 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>779.50</td><td>16.71</td><td>V</td><td>0.9</td><td>-1.6</td><td>14.22</td><td>34.8</td><td>-20.5</td></tr><tr><td>779.50</td><td>4.35</td><td>H</td><td>0.9</td><td>-1.6</td><td>1.85</td><td>34.8</td><td>-32.9</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>782.00</td><td>16.61</td><td>V</td><td>0.9</td><td>-1.6</td><td>14.12</td><td>34.8</td><td>-20.7</td></tr><tr><td>782.00</td><td>4.56</td><td>H</td><td>0.9</td><td>-1.6</td><td>2.07</td><td>34.8</td><td>-32.7</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>784.50</td><td>16.76</td><td>V</td><td>0.9</td><td>-1.6</td><td>14.27</td><td>34.8</td><td>-20.5</td></tr><tr><td>784.50</td><td>4.35</td><td>H</td><td>0.9</td><td>-1.6</td><td>1.85</td><td>34.8</td><td>-32.9</td></tr></table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch								779.50	16.71	V	0.9	-1.6	14.22	34.8	-20.5	779.50	4.35	H	0.9	-1.6	1.85	34.8	-32.9	Mid Ch								782.00	16.61	V	0.9	-1.6	14.12	34.8	-20.7	782.00	4.56	H	0.9	-1.6	2.07	34.8	-32.7	High Ch								784.50	16.76	V	0.9	-1.6	14.27	34.8	-20.5	784.50	4.35	H	0.9	-1.6	1.85	34.8	-32.9
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	779.50	4.35	H	0.9	-1.6	1.85	34.8	-32.9																																																																																		
	Mid Ch																																																																																									
	782.00	16.61	V	0.9	-1.6	14.12	34.8	-20.7																																																																																		
	782.00	4.56	H	0.9	-1.6	2.07	34.8	-32.7																																																																																		
	High Ch																																																																																									
	784.50	16.76	V	0.9	-1.6	14.27	34.8	-20.5																																																																																		
784.50	4.35	H	0.9	-1.6	1.85	34.8	-32.9																																																																																			
LTE Band 13 5MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-20 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 13 Fundamentals, 5MHz Bandwidth Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>779.50</td><td>15.62</td><td>V</td><td>0.9</td><td>-1.6</td><td>13.13</td><td>34.8</td><td>-21.6</td></tr><tr><td>779.50</td><td>3.41</td><td>H</td><td>0.9</td><td>-1.6</td><td>0.91</td><td>34.8</td><td>-33.9</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>782.00</td><td>15.55</td><td>V</td><td>0.9</td><td>-1.6</td><td>13.06</td><td>34.8</td><td>-21.7</td></tr><tr><td>782.00</td><td>3.49</td><td>H</td><td>0.9</td><td>-1.6</td><td>1.00</td><td>34.8</td><td>-33.8</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>784.50</td><td>16.56</td><td>V</td><td>0.9</td><td>-1.6</td><td>14.07</td><td>34.8</td><td>-20.7</td></tr><tr><td>784.50</td><td>3.15</td><td>H</td><td>0.9</td><td>-1.6</td><td>0.65</td><td>34.8</td><td>-34.1</td></tr></table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch								779.50	15.62	V	0.9	-1.6	13.13	34.8	-21.6	779.50	3.41	H	0.9	-1.6	0.91	34.8	-33.9	Mid Ch								782.00	15.55	V	0.9	-1.6	13.06	34.8	-21.7	782.00	3.49	H	0.9	-1.6	1.00	34.8	-33.8	High Ch								784.50	16.56	V	0.9	-1.6	14.07	34.8	-20.7	784.50	3.15	H	0.9	-1.6	0.65	34.8	-34.1
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																	
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LTE Band 12

LTE Band 12 10MHz QPSK	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-20 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>704.00</td><td>18.26</td><td>V</td><td>0.9</td><td>-1.6</td><td>15.79</td><td>34.8</td><td>-19.0</td></tr><tr><td>704.00</td><td>3.46</td><td>H</td><td>0.9</td><td>-1.6</td><td>1.00</td><td>34.8</td><td>-33.8</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>707.50</td><td>18.33</td><td>V</td><td>0.9</td><td>-1.6</td><td>15.86</td><td>34.8</td><td>-18.9</td></tr><tr><td>707.50</td><td>2.42</td><td>H</td><td>0.9</td><td>-1.6</td><td>-0.05</td><td>34.8</td><td>-34.8</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>711.00</td><td>18.55</td><td>V</td><td>0.9</td><td>-1.6</td><td>16.08</td><td>34.8</td><td>-18.7</td></tr><tr><td>711.00</td><td>1.33</td><td>H</td><td>0.9</td><td>-1.6</td><td>-1.14</td><td>34.8</td><td>-35.9</td></tr></table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch								704.00	18.26	V	0.9	-1.6	15.79	34.8	-19.0	704.00	3.46	H	0.9	-1.6	1.00	34.8	-33.8	Mid Ch								707.50	18.33	V	0.9	-1.6	15.86	34.8	-18.9	707.50	2.42	H	0.9	-1.6	-0.05	34.8	-34.8	High Ch								711.00	18.55	V	0.9	-1.6	16.08	34.8	-18.7	711.00	1.33	H	0.9	-1.6	-1.14	34.8	-35.9
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																	
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LTE Band 12 10MHz 16QAM	UL Verification Services, Inc. High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-20 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth Test Equipment: Receiving: VULB9163-749, and Chamber 2 SMA Cables Substitution: Dipole 3121_DB4, 3m N-type Cable <table><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><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>704.00</td><td>17.27</td><td>V</td><td>0.9</td><td>-1.6</td><td>14.80</td><td>34.8</td><td>-20.0</td></tr><tr><td>704.00</td><td>2.41</td><td>H</td><td>0.9</td><td>-1.6</td><td>-0.05</td><td>34.8</td><td>-34.9</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>707.50</td><td>17.29</td><td>V</td><td>0.9</td><td>-1.6</td><td>14.82</td><td>34.8</td><td>-20.0</td></tr><tr><td>707.50</td><td>1.41</td><td>H</td><td>0.9</td><td>-1.6</td><td>-1.06</td><td>34.8</td><td>-35.9</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>711.00</td><td>17.46</td><td>V</td><td>0.9</td><td>-1.6</td><td>14.99</td><td>34.8</td><td>-19.8</td></tr><tr><td>711.00</td><td>0.36</td><td>H</td><td>0.9</td><td>-1.6</td><td>-2.11</td><td>34.8</td><td>-36.9</td></tr></table>									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	Low Ch								704.00	17.27	V	0.9	-1.6	14.80	34.8	-20.0	704.00	2.41	H	0.9	-1.6	-0.05	34.8	-34.9	Mid Ch								707.50	17.29	V	0.9	-1.6	14.82	34.8	-20.0	707.50	1.41	H	0.9	-1.6	-1.06	34.8	-35.9	High Ch								711.00	17.46	V	0.9	-1.6	14.99	34.8	-19.8	711.00	0.36	H	0.9	-1.6	-2.11	34.8	-36.9
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes																																																																																	
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	704.00	17.27	V	0.9	-1.6	14.80	34.8	-20.0																																																																																		
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	711.00	17.46	V	0.9	-1.6	14.99	34.8	-19.8																																																																																		
711.00	0.36	H	0.9	-1.6	-2.11	34.8	-36.9																																																																																			

LTE

Band 12

5MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company:

Samsung

Project #:

4788371689

Date:

2018-03-20

Test Engineer:

45585

Configuration:

EUT / Z-Position

Location:

Chamber 2

Mode:

LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:

Receiving: VULB9163-749, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
701.50	17.81	V	0.9	-1.6	15.34	34.8	-19.5	
701.50	2.29	H	0.9	-1.6	-0.18	34.8	-35.0	
Mid Ch								
707.50	17.91	V	0.9	-1.6	15.44	34.8	-19.4	
707.50	2.60	H	0.9	-1.6	0.13	34.8	-34.7	
High Ch								
713.50	17.47	V	0.9	-1.6	15.00	34.8	-19.8	
713.50	3.95	H	0.9	-1.6	1.47	34.8	-33.3	

LTE

Band 12

5MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company:

Samsung

Project #:

4788371689

Date:

2018-03-20

Test Engineer:

45585

Configuration:

EUT / Z-Position

Location:

Chamber 2

Mode:

LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:

Receiving: VULB9163-749, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
701.50	16.77	V	0.9	-1.6	14.30	34.8	-20.5	
701.50	1.29	H	0.9	-1.6	-1.18	34.8	-36.0	
Mid Ch								
707.50	17.01	V	0.9	-1.6	14.54	34.8	-20.3	
707.50	1.67	H	0.9	-1.6	-0.80	34.8	-35.6	
High Ch								
713.50	16.58	V	0.9	-1.6	14.11	34.8	-20.7	
713.50	3.00	H	0.9	-1.6	0.52	34.8	-34.3	

LTE

Band 12

3MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company:

Samsung

Project #:

4788371689

Date:

2018-03-20

Test Engineer:

45585

Configuration:

EUT / Z-Position

Location:

Chamber 2

Mode:

LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth

Test Equipment:

Receiving: VULB9163-749, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
700.50	17.67	V	0.9	-1.6	15.21	34.8	-19.6	
700.50	2.63	H	0.9	-1.6	0.17	34.8	-34.6	
Mid Ch								
707.50	17.92	V	0.9	-1.6	15.45	34.8	-19.4	
707.50	1.86	H	0.9	-1.6	-0.61	34.8	-35.4	
High Ch								
714.50	18.09	V	0.9	-1.6	15.61	34.8	-19.2	
714.50	4.37	H	0.9	-1.6	1.89	34.8	-32.9	

LTE

Band 12

3MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company:

Samsung

Project #:

4788371689

Date:

2018-03-20

Test Engineer:

45585

Configuration:

EUT / Z-Position

Location:

Chamber 2

Mode:

LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth

Test Equipment:

Receiving: VULB9163-749, and Chamber 2 SMA Cables

Substitution: Dipole 3121_DB4, 3m N-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								
700.50	16.62	V	0.9	-1.6	14.16	34.8	-20.6	
700.50	1.65	H	0.9	-1.6	-0.81	34.8	-35.6	
Mid Ch								
707.50	16.88	V	0.9	-1.6	14.41	34.8	-20.4	
707.50	0.84	H	0.9	-1.6	-1.63	34.8	-36.4	
High Ch								
714.50	17.40	V	0.9	-1.6	14.92	34.8	-19.9	
714.50	3.37	H	0.9	-1.6	0.89	34.8	-33.9	

LTE

Band 12

1.4MHz

QPSK

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788371689

Date: 2018-03-20

Test Engineer: 45585

Configuration: EUT / Z-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, 3m N-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	15.19	V	0.9	-1.6	12.73	34.8	-22.1	
699.70	-0.37	H	0.9	-1.6	-2.84	34.8	-37.6	
Mid Ch								
707.50	15.62	V	0.9	-1.6	13.15	34.8	-21.7	
707.50	-0.90	H	0.9	-1.6	-3.37	34.8	-38.2	
High Ch								
715.30	15.51	V	0.9	-1.6	13.03	34.8	-21.8	
715.30	1.98	H	0.9	-1.6	-0.50	34.8	-35.3	

LTE

Band 12

1.4MHz

16QAM

UL Verification Services, Inc.

High Frequency Substitution Measurement

Company: Samsung

Project #: 4788371689

Date: 2018-03-20

Test Engineer: 45585

Configuration: EUT / Z-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, 3m N-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	14.24	V	0.9	-1.6	11.78	34.8	-23.0	
699.70	-1.29	H	0.9	-1.6	-3.76	34.8	-38.6	
Mid Ch								
707.50	14.56	V	0.9	-1.6	12.09	34.8	-22.7	
707.50	-1.90	H	0.9	-1.6	-4.37	34.8	-39.2	
High Ch								
715.30	14.39	V	0.9	-1.6	11.91	34.8	-22.9	
715.30	0.99	H	0.9	-1.6	-1.49	34.8	-36.3	

10.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238 and §27. 53

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: (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 27.53(f) - For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, 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. 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.

Part 27.53(c) (2) - On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB.

Part 27.53 (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.

Part 27.53 (h) AWS emission limits—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.

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 = peak;
- f) Ensure that the number of measurement points $\geq$ span/RBW;
- g) Trace mode = max hold;

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

RESULTS

GSM 1900

GSM GSM1900 GPRS	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788372835 Date: 2018-03-09 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, Z-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
GSM GSM1900 EGPRS	Low Ch, 1850.2MHz									
	3700.40	-4.9	V	3.0	43.8	1.0	-47.7	-13.0	-34.7	
	5550.60	-5.5	V	3.0	43.7	1.0	-48.2	-13.0	-35.2	
	7400.80	-5.5	V	3.0	42.5	1.0	-47.1	-13.0	-34.1	
	3700.40	-5.4	H	3.0	43.8	1.0	-48.2	-13.0	-35.2	
	5550.60	-6.0	H	3.0	43.7	1.0	-48.7	-13.0	-35.7	
	7400.80	-4.8	H	3.0	42.5	1.0	-46.4	-13.0	-33.4	
	Mid Ch, 1880MHz									
	3760.00	-4.7	V	3.0	43.8	1.0	-47.5	-13.0	-34.5	
	5640.00	-5.3	V	3.0	43.7	1.0	-48.0	-13.0	-35.0	
	7520.00	-4.4	V	3.0	42.5	1.0	-45.9	-13.0	-32.9	
	3760.00	-6.0	H	3.0	43.8	1.0	-48.8	-13.0	-35.8	
	5640.00	-5.8	H	3.0	43.7	1.0	-48.5	-13.0	-35.5	
	7520.00	-2.3	H	3.0	42.5	1.0	-43.8	-13.0	-30.8	
	High Ch, 1909.8MHz									
	3819.60	-4.6	V	3.0	43.8	1.0	-47.4	-13.0	-34.4	
	5729.40	-4.2	V	3.0	43.7	1.0	-46.9	-13.0	-33.9	
	7639.20	-3.6	V	3.0	42.4	1.0	-45.0	-13.0	-32.0	
	3819.60	-5.2	H	3.0	43.8	1.0	-48.0	-13.0	-35.0	
	5729.40	-4.8	H	3.0	43.7	1.0	-47.5	-13.0	-34.5	
	7639.20	-3.3	H	3.0	42.4	1.0	-44.7	-13.0	-31.7	
GSM GSM1900 EGPRS	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788372835 Date: 2018-03-09 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, Z-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	-7.2	V	3.0	43.8	1.0	-50.0	-13.0	-37.0	
	5550.60	-5.5	V	3.0	43.7	1.0	-48.2	-13.0	-35.2	
	7400.80	-6.0	V	3.0	42.5	1.0	-47.5	-13.0	-34.5	
	3700.40	-7.7	H	3.0	43.8	1.0	-50.4	-13.0	-37.4	
	5550.60	-5.5	H	3.0	43.7	1.0	-48.2	-13.0	-35.2	
	7400.80	-3.4	H	3.0	42.5	1.0	-45.0	-13.0	-32.0	
	Mid Ch, 1880MHz									
	3760.00	-7.1	V	3.0	43.8	1.0	-49.9	-13.0	-36.9	
	5640.00	-5.5	V	3.0	43.7	1.0	-48.2	-13.0	-35.2	
	7520.00	-5.1	V	3.0	42.5	1.0	-46.6	-13.0	-33.6	
	3760.00	-7.3	H	3.0	43.8	1.0	-50.1	-13.0	-37.1	
	5640.00	-4.6	H	3.0	43.7	1.0	-47.3	-13.0	-34.3	
	7520.00	-5.3	H	3.0	42.5	1.0	-46.7	-13.0	-33.7	
	High Ch, 1909.8MHz									
	3819.60	-5.3	V	3.0	43.8	1.0	-48.1	-13.0	-35.1	
	5729.40	-4.2	V	3.0	43.7	1.0	-46.9	-13.0	-33.9	
	7639.20	-4.5	V	3.0	42.4	1.0	-45.9	-13.0	-32.9	
	3819.60	-6.4	H	3.0	43.8	1.0	-49.2	-13.0	-36.2	
	5729.40	-4.6	H	3.0	43.7	1.0	-47.3	-13.0	-34.3	
	7639.20	-4.3	H	3.0	42.4	1.0	-45.7	-13.0	-32.7	

WCDMA Band 5

WCDMA Band 5 REL99	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788372835 Date: 2018-02-27 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone , X-Position Location: Chamber 1 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)	Notes
WCDMA Band 5 HSDPA	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788372835 Date: 2018-02-27 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone , X-Position Location: Chamber 1 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)	Notes

WCDMA Band 2

WCDMA Band 2 REL99	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788372835									
	Date: 2018-02-25									
	Test Engineer: 45585									
	Configuration: EUT / Adapter / Earphone, Z-Position									
	Location: Chamber 1									
	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	-10.7	V	3.0	43.8	1.0	-53.5	-13.0	-40.5	
	5557.20	-8.2	V	3.0	43.7	1.0	-50.9	-13.0	-37.9	
	7409.60	-8.1	V	3.0	42.5	1.0	-49.6	-13.0	-36.6	
	3704.80	-10.1	H	3.0	43.8	1.0	-52.9	-13.0	-39.9	
	5557.20	-8.3	H	3.0	43.7	1.0	-51.0	-13.0	-38.0	
	7409.60	-7.7	H	3.0	42.5	1.0	-49.2	-13.0	-36.2	
	Mid Ch, 1880MHz									
	3760.00	-9.6	V	3.0	43.8	1.0	-52.4	-13.0	-39.4	
	5640.00	-7.7	V	3.0	43.7	1.0	-50.4	-13.0	-37.4	
	7520.00	-7.4	V	3.0	42.5	1.0	-48.9	-13.0	-35.9	
3760.00	-9.2	H	3.0	43.8	1.0	-51.9	-13.0	-38.9		
5640.00	-7.9	H	3.0	43.7	1.0	-50.6	-13.0	-37.6		
7520.00	-7.0	H	3.0	42.5	1.0	-48.4	-13.0	-35.4		
High Ch, 1907.6MHz										
3815.20	-10.8	V	3.0	43.8	1.0	-53.6	-13.0	-40.6		
5722.80	-7.7	V	3.0	43.7	1.0	-50.4	-13.0	-37.4		
7630.40	-7.9	V	3.0	42.4	1.0	-49.3	-13.0	-36.3		
3815.20	-10.9	H	3.0	43.8	1.0	-53.7	-13.0	-40.7		
5722.80	-7.3	H	3.0	43.7	1.0	-50.0	-13.0	-37.0		
7630.40	-7.2	H	3.0	42.4	1.0	-48.6	-13.0	-35.6		
WCDMA Band 2 HSDPA	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788372835									
	Date: 2018-03-08									
	Test Engineer: 45585									
	Configuration: EUT / Adapter / Earphone, Z-Position									
	Location: Chamber 1									
	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	-10.6	V	3.0	43.8	1.0	-53.3	-13.0	-40.3	
	5557.20	-7.8	V	3.0	43.7	1.0	-50.5	-13.0	-37.5	
	7409.60	-8.8	V	3.0	42.5	1.0	-50.3	-13.0	-37.3	
	3704.80	-10.2	H	3.0	43.8	1.0	-53.0	-13.0	-40.0	
	5557.20	-6.4	H	3.0	43.7	1.0	-49.1	-13.0	-36.1	
	7409.60	-6.8	H	3.0	42.5	1.0	-48.4	-13.0	-35.4	
	Mid Ch, 1880MHz									
	3760.00	-9.3	V	3.0	43.8	1.0	-52.1	-13.0	-39.1	
	5640.00	-7.7	V	3.0	43.7	1.0	-50.4	-13.0	-37.4	
	7520.00	-7.7	V	3.0	42.5	1.0	-49.2	-13.0	-36.2	
3760.00	-9.9	H	3.0	43.8	1.0	-52.7	-13.0	-39.7		
5640.00	-7.8	H	3.0	43.7	1.0	-50.5	-13.0	-37.5		
7520.00	-6.5	H	3.0	42.5	1.0	-48.0	-13.0	-35.0		
High Ch, 1907.6MHz										
3815.20	-10.6	V	3.0	43.8	1.0	-53.4	-13.0	-40.4		
5722.80	-6.9	V	3.0	43.7	1.0	-49.6	-13.0	-36.6		
7630.40	-7.3	V	3.0	42.4	1.0	-48.7	-13.0	-35.7		
3815.20	-10.4	H	3.0	43.8	1.0	-53.2	-13.0	-40.2		
5722.80	-6.8	H	3.0	43.7	1.0	-49.5	-13.0	-36.5		
7630.40	-6.6	H	3.0	42.4	1.0	-48.0	-13.0	-35.0		

WCDMA Band 4

WCDMA Band 4 REL99	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-27 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, X-Position Location: Chamber 2 Mode: Rel99 Band 4 Harmonics									
	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 HSDPA	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-27 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, X-Position Location: Chamber 2 Mode: HSDPA Band 4 Harmonics									
	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 HSDPA	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-27 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, X-Position Location: Chamber 2 Mode: HSDPA Band 4 Harmonics									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes

LTE Band 5

LTE Band 5 10MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788372835 Date: 2018-03-05 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, X-Position Location: Chamber 1 Mode: LTE_QPSK Band 5 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, 829MHz									
	1658.00	-8.9	V	3.0	43.6	1.0	-51.5	-13.0	-38.5	
	2487.00	-8.4	V	3.0	43.4	1.0	-50.9	-13.0	-37.9	
	3316.00	-9.0	V	3.0	43.6	1.0	-51.6	-13.0	-38.6	
	1658.00	-8.4	H	3.0	43.6	1.0	-51.0	-13.0	-38.0	
	2487.00	-9.2	H	3.0	43.4	1.0	-51.6	-13.0	-38.6	
	3316.00	-8.1	H	3.0	43.6	1.0	-50.7	-13.0	-37.7	
	Mid Ch, 836.5MHz									
	1673.00	-10.1	V	3.0	43.6	1.0	-52.7	-13.0	-39.7	
	2509.50	-6.4	V	3.0	43.4	1.0	-48.8	-13.0	-35.8	
	3346.00	-8.4	V	3.0	43.6	1.0	-51.1	-13.0	-38.1	
	1673.00	-9.9	H	3.0	43.6	1.0	-52.4	-13.0	-39.4	
	2509.50	-7.6	H	3.0	43.4	1.0	-50.1	-13.0	-37.1	
	3346.00	-8.1	H	3.0	43.6	1.0	-50.8	-13.0	-37.8	
	High Ch, 844MHz									
	1688.00	-9.8	V	3.0	43.6	1.0	-52.4	-13.0	-39.4	
	2532.00	-9.5	V	3.0	43.4	1.0	-52.0	-13.0	-39.0	
	3376.00	-8.7	V	3.0	43.7	1.0	-51.4	-13.0	-38.4	
	1688.00	-9.4	H	3.0	43.6	1.0	-51.9	-13.0	-38.9	
	2532.00	-8.8	H	3.0	43.4	1.0	-51.2	-13.0	-38.2	
	3376.00	-8.7	H	3.0	43.7	1.0	-51.4	-13.0	-38.4	
LTE Band 5 10MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788372835 Date: 2018-03-05 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, X-Position Location: Chamber 1 Mode: LTE_16QAM Band 5 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, 829MHz									
	1658.00	-8.5	V	3.0	43.6	1.0	-51.1	-13.0	-38.1	
	2487.00	-9.3	V	3.0	43.4	1.0	-51.7	-13.0	-38.7	
	3316.00	-8.9	V	3.0	43.6	1.0	-51.6	-13.0	-38.6	
	1658.00	-7.6	H	3.0	43.6	1.0	-50.2	-13.0	-37.2	
	2487.00	-8.3	H	3.0	43.4	1.0	-50.7	-13.0	-37.7	
	3316.00	-8.2	H	3.0	43.6	1.0	-50.8	-13.0	-37.8	
	Mid Ch, 836.5MHz									
	1673.00	-9.9	V	3.0	43.6	1.0	-52.4	-13.0	-39.4	
	2509.50	-6.2	V	3.0	43.4	1.0	-48.6	-13.0	-35.6	
	3346.00	-8.3	V	3.0	43.6	1.0	-51.0	-13.0	-38.0	
	1673.00	-9.6	H	3.0	43.6	1.0	-52.2	-13.0	-39.2	
	2509.50	-7.0	H	3.0	43.4	1.0	-49.4	-13.0	-36.4	
	3346.00	-7.6	H	3.0	43.6	1.0	-50.2	-13.0	-37.2	
	High Ch, 844MHz									
	1688.00	-9.7	V	3.0	43.6	1.0	-52.2	-13.0	-39.2	
	2532.00	-9.1	V	3.0	43.4	1.0	-51.6	-13.0	-38.6	
	3376.00	-9.1	V	3.0	43.7	1.0	-51.7	-13.0	-38.7	
	1688.00	-9.5	H	3.0	43.6	1.0	-52.1	-13.0	-39.1	
	2532.00	-8.7	H	3.0	43.4	1.0	-51.2	-13.0	-38.2	
	3376.00	-8.4	H	3.0	43.7	1.0	-51.0	-13.0	-38.0	

LTE Band 5 5MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788372835									
	Date: 2018-03-05									
	Test Engineer: 45585									
	Configuration: EUT / Adapter / Earphone, X-Position									
	Location: Chamber 1									
	Mode: LTE_QPSK Band 5 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, 826.5MHz									
	1653.00	-8.8	V	3.0	43.6	1.0	-51.3	-13.0	-38.3	
	2479.50	-9.3	V	3.0	43.4	1.0	-51.7	-13.0	-38.7	
	3306.00	-8.4	V	3.0	43.6	1.0	-51.0	-13.0	-38.0	
	1653.00	-7.0	H	3.0	43.6	1.0	-49.5	-13.0	-36.5	
	2479.50	-7.9	H	3.0	43.4	1.0	-50.3	-13.0	-37.3	
	3306.00	-8.1	H	3.0	43.6	1.0	-50.8	-13.0	-37.8	
	Mid Ch, 836.5MHz									
	1673.00	-9.9	V	3.0	43.6	1.0	-52.4	-13.0	-39.4	
	2509.50	-7.0	V	3.0	43.4	1.0	-49.4	-13.0	-36.4	
	3346.00	-9.2	V	3.0	43.6	1.0	-51.9	-13.0	-38.9	
	1673.00	-9.7	H	3.0	43.6	1.0	-52.2	-13.0	-39.2	
	2509.50	-7.4	H	3.0	43.4	1.0	-49.8	-13.0	-36.8	
	3346.00	-7.8	H	3.0	43.6	1.0	-50.4	-13.0	-37.4	
High Ch, 846.5MHz										
1693.00	-11.1	V	3.0	43.6	1.0	-53.7	-13.0	-40.7		
2539.50	-8.6	V	3.0	43.4	1.0	-51.0	-13.0	-38.0		
3386.00	-7.1	V	3.0	43.7	1.0	-49.7	-13.0	-36.7		
1693.00	-11.2	H	3.0	43.6	1.0	-53.8	-13.0	-40.8		
2539.50	-8.3	H	3.0	43.4	1.0	-50.7	-13.0	-37.7		
3386.00	-8.7	H	3.0	43.7	1.0	-51.4	-13.0	-38.4		
LTE Band 5 5MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788372835									
	Date: 2018-03-05									
	Test Engineer: 45585									
	Configuration: EUT / Adapter / Earphone, X-Position									
	Location: Chamber 1									
	Mode: LTE_16QAM Band 5 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, 826.5MHz									
	1653.00	-8.1	V	3.0	43.6	1.0	-50.7	-13.0	-37.7	
	2479.50	-8.7	V	3.0	43.4	1.0	-51.1	-13.0	-38.1	
	3306.00	-8.6	V	3.0	43.6	1.0	-51.2	-13.0	-38.2	
	1653.00	-7.5	H	3.0	43.6	1.0	-50.1	-13.0	-37.1	
	2479.50	-7.6	H	3.0	43.4	1.0	-50.0	-13.0	-37.0	
	3306.00	-7.8	H	3.0	43.6	1.0	-50.4	-13.0	-37.4	
	Mid Ch, 836.5MHz									
	1673.00	-9.8	V	3.0	43.6	1.0	-52.4	-13.0	-39.4	
	2509.50	-6.9	V	3.0	43.4	1.0	-49.3	-13.0	-36.3	
	3346.00	-9.3	V	3.0	43.6	1.0	-51.9	-13.0	-38.9	
	1673.00	-9.7	H	3.0	43.6	1.0	-52.3	-13.0	-39.3	
	2509.50	-7.4	H	3.0	43.4	1.0	-49.9	-13.0	-36.9	
	3346.00	-8.2	H	3.0	43.6	1.0	-50.9	-13.0	-37.9	
High Ch, 846.5MHz										
1693.00	-11.1	V	3.0	43.6	1.0	-53.7	-13.0	-40.7		
2539.50	-8.5	V	3.0	43.4	1.0	-50.9	-13.0	-37.9		
3386.00	-8.4	V	3.0	43.7	1.0	-51.1	-13.0	-38.1		
1693.00	-10.5	H	3.0	43.6	1.0	-53.1	-13.0	-40.1		
2539.50	-8.8	H	3.0	43.4	1.0	-51.2	-13.0	-38.2		
3386.00	-9.0	H	3.0	43.7	1.0	-51.7	-13.0	-38.7		

LTE Band 5 3MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement																																																																																																																																																																																																																																					
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LTE Band 41

LTE Band 41 20MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-27 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, X-Position Location: Chamber 2 Mode: LTE_QPSK Band 41 Harmonics, 20MHz 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, 2506MHz									
	5012.00	-10.1	V	3.0	39.8	1.0	-48.9	-25.0	-23.9	
	7518.00	-8.3	V	3.0	39.4	1.0	-46.7	-25.0	-21.7	
	10024.00	-3.5	V	3.0	38.6	1.0	-41.0	-25.0	-16.0	
	5012.00	-9.7	H	3.0	39.8	1.0	-48.5	-25.0	-23.5	
	7518.00	-7.7	H	3.0	39.4	1.0	-46.1	-25.0	-21.1	
	10024.00	-7.7	H	3.0	38.6	1.0	-45.3	-25.0	-20.3	
	Mid Ch, 2593MHz									
	5186.00	-12.2	V	3.0	39.8	1.0	-51.0	-25.0	-26.0	
	7779.00	-8.7	V	3.0	39.3	1.0	-47.0	-25.0	-22.0	
	10372.00	-7.9	V	3.0	38.6	1.0	-45.5	-25.0	-20.5	
	5186.00	-12.5	H	3.0	39.8	1.0	-51.4	-25.0	-26.4	
	7779.00	-9.5	H	3.0	39.3	1.0	-47.8	-25.0	-22.8	
	10372.00	-10.3	H	3.0	38.6	1.0	-47.8	-25.0	-22.8	
	High Ch, 2680MHz									
	5360.00	-11.0	V	3.0	39.9	1.0	-49.9	-25.0	-24.9	
	8040.00	3.8	V	3.0	39.2	1.0	-34.4	-25.0	-9.4	
	10720.00	-5.8	V	3.0	38.5	1.0	-43.3	-25.0	-18.3	
	5360.00	-9.8	H	3.0	39.9	1.0	-48.7	-25.0	-23.7	
	8040.00	0.3	H	3.0	39.2	1.0	-37.9	-25.0	-12.9	
	10720.00	-7.1	H	3.0	38.5	1.0	-44.7	-25.0	-19.7	
	LTE Band 41 20MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-27 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, X-Position Location: Chamber 2 Mode: LTE_16QAM Band 41 Harmonics, 20MHz 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, 2506MHz										
5012.00		-10.0	V	3.0	39.8	1.0	-48.8	-25.0	-23.8	
7518.00		-8.8	V	3.0	39.4	1.0	-47.2	-25.0	-22.2	
10024.00		-3.5	V	3.0	38.6	1.0	-41.1	-25.0	-16.1	
5012.00		-10.0	H	3.0	39.8	1.0	-48.7	-25.0	-23.7	
7518.00		-7.5	H	3.0	39.4	1.0	-45.9	-25.0	-20.9	
10024.00		-7.2	H	3.0	38.6	1.0	-44.8	-25.0	-19.8	
Mid Ch, 2593MHz										
5186.00		-10.5	V	3.0	39.8	1.0	-49.3	-25.0	-24.3	
7779.00		-9.0	V	3.0	39.3	1.0	-47.2	-25.0	-22.2	
10372.00		-7.2	V	3.0	38.6	1.0	-44.8	-25.0	-19.8	
5186.00		-12.7	H	3.0	39.8	1.0	-51.5	-25.0	-26.5	
7779.00		-10.6	H	3.0	39.3	1.0	-48.9	-25.0	-23.9	
10372.00		-10.5	H	3.0	38.6	1.0	-48.0	-25.0	-23.0	
High Ch, 2680MHz										
5360.00		-9.6	V	3.0	39.9	1.0	-48.5	-25.0	-23.5	
8040.00		3.7	V	3.0	39.2	1.0	-34.5	-25.0	-9.5	
10720.00		-5.5	V	3.0	38.5	1.0	-43.0	-25.0	-18.0	
5360.00		-10.3	H	3.0	39.9	1.0	-49.2	-25.0	-24.2	
8040.00		-0.3	H	3.0	39.2	1.0	-38.4	-25.0	-13.4	
10720.00		-7.8	H	3.0	38.5	1.0	-45.4	-25.0	-20.4	

LTE Band 41 15MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-27 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, X-Position Location: Chamber 2 Mode: LTE_QPSK Band 41 Harmonics, 15MHz Bandwidth									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
LTE Band 41 15MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-27 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, X-Position Location: Chamber 2 Mode: LTE_16QAM Band 41 Harmonics, 15MHz Bandwidth									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes

LTE Band 41 10MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788371689									
	Date: 2018-03-27									
	Test Engineer: 45585									
	Configuration: EUT / Adapter / Earphone, X-Position									
	Location: Chamber 2									
	Mode: LTE_QPSK Band 41 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, 2501MHz									
	5002.00	-7.7	V	3.0	39.8	1.0	-46.5	-25.0	-21.5	
	7503.00	-7.5	V	3.0	39.4	1.0	-45.9	-25.0	-20.9	
	10004.00	-1.5	V	3.0	38.6	1.0	-39.1	-25.0	-14.1	
	5002.00	-11.6	H	3.0	39.8	1.0	-50.4	-25.0	-25.4	
	7503.00	-6.4	H	3.0	39.4	1.0	-44.8	-25.0	-19.8	
	10004.00	-6.1	H	3.0	38.6	1.0	-43.7	-25.0	-18.7	
	Mid Ch, 2593MHz									
	5186.00	-8.7	V	3.0	39.8	1.0	-47.5	-25.0	-22.5	
	7779.00	-5.3	V	3.0	39.3	1.0	-43.6	-25.0	-18.6	
	10372.00	-5.3	V	3.0	38.6	1.0	-42.9	-25.0	-17.9	
	5186.00	-9.3	H	3.0	39.8	1.0	-48.1	-25.0	-23.1	
	7779.00	-9.5	H	3.0	39.3	1.0	-47.8	-25.0	-22.8	
	10372.00	-7.0	H	3.0	38.6	1.0	-44.5	-25.0	-19.5	
High Ch, 2685MHz										
5370.00	-10.5	V	3.0	39.9	1.0	-49.4	-25.0	-24.4		
8055.00	8.3	V	3.0	39.2	1.0	-29.8	-25.0	-4.8		
10740.00	-5.1	V	3.0	38.5	1.0	-42.7	-25.0	-17.7		
5370.00	-11.1	H	3.0	39.9	1.0	-49.9	-25.0	-24.9		
8055.00	6.9	H	3.0	39.2	1.0	-31.2	-25.0	-6.2		
10740.00	-7.8	H	3.0	38.5	1.0	-45.3	-25.0	-20.3		
LTE Band 41 10MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788371689									
	Date: 2018-03-27									
	Test Engineer: 45585									
	Configuration: EUT / Adapter / Earphone, X-Position									
	Location: Chamber 2									
	Mode: LTE_16QAM Band 41 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, 2501MHz									
	5002.00	-8.2	V	3.0	39.8	1.0	-47.0	-25.0	-22.0	
	7503.00	-8.1	V	3.0	39.4	1.0	-46.5	-25.0	-21.5	
	10004.00	-1.6	V	3.0	38.6	1.0	-39.2	-25.0	-14.2	
	5002.00	-11.3	H	3.0	39.8	1.0	-50.1	-25.0	-25.1	
	7503.00	-6.4	H	3.0	39.4	1.0	-44.8	-25.0	-19.8	
	10004.00	-6.8	H	3.0	38.6	1.0	-44.3	-25.0	-19.3	
	Mid Ch, 2593MHz									
	5186.00	-8.8	V	3.0	39.8	1.0	-47.6	-25.0	-22.6	
	7779.00	-5.4	V	3.0	39.3	1.0	-43.6	-25.0	-18.6	
	10372.00	-5.3	V	3.0	38.6	1.0	-42.8	-25.0	-17.8	
	5186.00	-9.8	H	3.0	39.8	1.0	-48.7	-25.0	-23.7	
	7779.00	-9.1	H	3.0	39.3	1.0	-47.3	-25.0	-22.3	
	10372.00	-7.6	H	3.0	38.6	1.0	-45.2	-25.0	-20.2	
High Ch, 2685MHz										
5370.00	-10.6	V	3.0	39.9	1.0	-49.5	-25.0	-24.5		
8055.00	8.1	V	3.0	39.2	1.0	-30.0	-25.0	-5.0		
10740.00	-4.8	V	3.0	38.5	1.0	-42.3	-25.0	-17.3		
5370.00	-11.9	H	3.0	39.9	1.0	-50.7	-25.0	-25.7		
8055.00	6.6	H	3.0	39.2	1.0	-31.6	-25.0	-6.6		
10740.00	-7.3	H	3.0	38.5	1.0	-44.8	-25.0	-19.8		

LTE Band 41 5MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788371689									
	Date: 2018-03-26									
	Test Engineer: 45585									
	Configuration: EUT / Adapter / Earphone, X-Position									
	Location: Chamber 2									
	Mode: LTE_QPSK Band 41 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, 2498.5MHz									
	4997.00	-10.7	V	3.0	39.8	1.0	-49.4	-25.0	-24.4	
	7495.50	-8.5	V	3.0	39.4	1.0	-46.9	-25.0	-21.9	
	9994.00	-2.4	V	3.0	38.6	1.0	-40.0	-25.0	-15.0	
	4997.00	-11.8	H	3.0	39.8	1.0	-50.6	-25.0	-25.6	
	7495.50	-8.1	H	3.0	39.4	1.0	-46.5	-25.0	-21.5	
	9994.00	-6.4	H	3.0	38.6	1.0	-43.9	-25.0	-18.9	
	Mid Ch, 2593MHz									
	5186.00	-10.1	V	3.0	39.8	1.0	-48.9	-25.0	-23.9	
	7779.00	-7.7	V	3.0	39.3	1.0	-46.0	-25.0	-21.0	
	10372.00	-6.6	V	3.0	38.6	1.0	-44.2	-25.0	-19.2	
	5186.00	-10.7	H	3.0	39.8	1.0	-49.5	-25.0	-24.5	
	7779.00	-10.5	H	3.0	39.3	1.0	-48.8	-25.0	-23.8	
	10372.00	-5.7	H	3.0	38.6	1.0	-43.3	-25.0	-18.3	
High Ch, 2687.5MHz										
5375.00	-8.8	V	3.0	39.9	1.0	-47.7	-25.0	-22.7		
8062.50	8.1	V	3.0	39.1	1.0	-30.0	-25.0	-5.0		
10750.00	-1.9	V	3.0	38.5	1.0	-39.5	-25.0	-14.5		
5375.00	-10.4	H	3.0	39.9	1.0	-49.3	-25.0	-24.3		
8062.50	6.5	H	3.0	39.1	1.0	-31.7	-25.0	-6.7		
10750.00	-5.4	H	3.0	38.5	1.0	-42.9	-25.0	-17.9		
LTE Band 41 5MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788371689									
	Date: 2018-03-26									
	Test Engineer: 45585									
	Configuration: EUT / Adapter / Earphone, X-Position									
	Location: Chamber 2									
	Mode: LTE_16QAM Band 41 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, 2498.5MHz									
	4997.00	-11.0	V	3.0	39.8	1.0	-49.8	-25.0	-24.8	
	7495.50	-8.4	V	3.0	39.4	1.0	-46.8	-25.0	-21.8	
	9994.00	-2.6	V	3.0	38.6	1.0	-40.1	-25.0	-15.1	
	4997.00	-11.4	H	3.0	39.8	1.0	-50.2	-25.0	-25.2	
	7495.50	-8.8	H	3.0	39.4	1.0	-47.2	-25.0	-22.2	
	9994.00	-7.5	H	3.0	38.6	1.0	-45.1	-25.0	-20.1	
	Mid Ch, 2593MHz									
	5186.00	-9.8	V	3.0	39.8	1.0	-48.6	-25.0	-23.6	
	7779.00	-7.4	V	3.0	39.3	1.0	-45.7	-25.0	-20.7	
	10372.00	-6.7	V	3.0	38.6	1.0	-44.2	-25.0	-19.2	
	5186.00	-11.7	H	3.0	39.8	1.0	-50.5	-25.0	-25.5	
	7779.00	-9.2	H	3.0	39.3	1.0	-47.5	-25.0	-22.5	
	10372.00	-7.0	H	3.0	38.6	1.0	-44.6	-25.0	-19.6	
High Ch, 2687.5MHz										
5375.00	-8.1	V	3.0	39.9	1.0	-47.0	-25.0	-22.0		
8062.50	7.3	V	3.0	39.1	1.0	-30.8	-25.0	-5.8		
10750.00	-1.7	V	3.0	38.5	1.0	-39.2	-25.0	-14.2		
5375.00	-10.0	H	3.0	39.9	1.0	-48.9	-25.0	-23.9		
8062.50	6.4	H	3.0	39.1	1.0	-31.8	-25.0	-6.8		
10750.00	-5.4	H	3.0	38.5	1.0	-42.9	-25.0	-17.9		

LTE Band 66 10MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788371689									
	Date: 2018-03-25									
	Test Engineer: 45574									
	Configuration: EUT / AC Adapter / Earphone, X-Position									
	Location: Chamber 3									
	Mode: LTE_QPSK Band 66 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, 1715MHz									
	3430.00	-8.7	V	3.0	41.0	1.0	-48.8	-13.0	-35.8	
	5145.00	-11.6	V	3.0	40.1	1.0	-50.8	-13.0	-37.8	
	6860.00	-7.2	V	3.0	40.0	1.0	-46.2	-13.0	-33.2	
	3430.00	-6.9	H	3.0	41.0	1.0	-47.0	-13.0	-34.0	
	5145.00	-14.2	H	3.0	40.1	1.0	-53.3	-13.0	-40.3	
	6860.00	-11.0	H	3.0	40.0	1.0	-50.1	-13.0	-37.1	
	Mid Ch, 1745MHz									
	3490.00	-10.3	V	3.0	41.0	1.0	-50.3	-13.0	-37.3	
	5235.00	-10.8	V	3.0	40.1	1.0	-49.9	-13.0	-36.9	
6980.00	-9.0	V	3.0	40.0	1.0	-48.0	-13.0	-35.0		
3490.00	-5.0	H	3.0	41.0	1.0	-45.0	-13.0	-32.0		
5235.00	-13.8	H	3.0	40.1	1.0	-52.9	-13.0	-39.9		
6980.00	-10.0	H	3.0	40.0	1.0	-49.0	-13.0	-36.0		
High Ch, 1775MHz										
3550.00	-11.3	V	3.0	41.0	1.0	-51.2	-13.0	-38.2		
5325.00	-11.2	V	3.0	40.1	1.0	-50.3	-13.0	-37.3		
7100.00	-9.2	V	3.0	40.0	1.0	-48.2	-13.0	-35.2		
3550.00	-5.5	H	3.0	41.0	1.0	-45.5	-13.0	-32.5		
5325.00	-13.6	H	3.0	40.1	1.0	-52.7	-13.0	-39.7		
7100.00	-11.3	H	3.0	40.0	1.0	-50.4	-13.0	-37.4		
LTE Band 66 10MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788371689									
	Date: 2018-03-25									
	Test Engineer: 45574									
	Configuration: EUT / AC Adapter / Earphone, X-Position									
	Location: Chamber 3									
	Mode: LTE_16QAM Band 66 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, 1715MHz									
	3430.00	-8.5	V	3.0	41.0	1.0	-48.6	-13.0	-35.6	
	5145.00	-12.4	V	3.0	40.1	1.0	-51.5	-13.0	-38.5	
	6860.00	-7.0	V	3.0	40.0	1.0	-46.0	-13.0	-33.0	
	3430.00	-7.1	H	3.0	41.0	1.0	-47.2	-13.0	-34.2	
	5145.00	-13.2	H	3.0	40.1	1.0	-52.3	-13.0	-39.3	
	6860.00	-10.6	H	3.0	40.0	1.0	-49.6	-13.0	-36.6	
	Mid Ch, 1745MHz									
	3490.00	-10.4	V	3.0	41.0	1.0	-50.4	-13.0	-37.4	
	5235.00	-11.9	V	3.0	40.1	1.0	-51.0	-13.0	-38.0	
6980.00	-8.5	V	3.0	40.0	1.0	-47.5	-13.0	-34.5		
3490.00	-5.1	H	3.0	41.0	1.0	-45.1	-13.0	-32.1		
5235.00	-14.1	H	3.0	40.1	1.0	-53.2	-13.0	-40.2		
6980.00	-9.8	H	3.0	40.0	1.0	-48.8	-13.0	-35.8		
High Ch, 1775MHz										
3550.00	-11.3	V	3.0	41.0	1.0	-51.3	-13.0	-38.3		
5325.00	-11.7	V	3.0	40.1	1.0	-50.8	-13.0	-37.8		
7100.00	-8.8	V	3.0	40.0	1.0	-47.8	-13.0	-34.8		
3550.00	-5.4	H	3.0	41.0	1.0	-45.4	-13.0	-32.4		
5325.00	-14.3	H	3.0	40.1	1.0	-53.4	-13.0	-40.4		
7100.00	-10.9	H	3.0	40.0	1.0	-50.0	-13.0	-37.0		

LTE Band 66 5MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 45574 Configuration: EUT / AC Adapter / Earphone, X-Position Location: Chamber 3 Mode: LTE_QPSK Band 66 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
LTE Band 66 5MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 45574 Configuration: EUT / AC Adapter / Earphone, X-Position Location: Chamber 3 Mode: LTE_16QAM Band 66 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

LTE Band 66 3MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 45574 Configuration: EUT / AC Adapter / Earphone, X-Position Location: Chamber 3 Mode: LTE_QPSK Band 66 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
LTE Band 66 3MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 45574 Configuration: EUT / AC Adapter / Earphone, X-Position Location: Chamber 3 Mode: LTE_16QAM Band 66 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

LTE Band 66 1.4MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 45574 Configuration: EUT / AC Adapter / Earphone, X-Position Location: Chamber 3 Mode: LTE_QPSK Band 66 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, 1710.7MHz									
	3421.40	-9.4	V	3.0	41.0	1.0	-49.4	-13.0	-36.4	
	5132.10	-11.6	V	3.0	40.1	1.0	-50.7	-13.0	-37.7	
	6842.80	-7.9	V	3.0	40.0	1.0	-47.0	-13.0	-34.0	
	3421.40	-5.1	H	3.0	41.0	1.0	-45.2	-13.0	-32.2	
	5132.10	-12.9	H	3.0	40.1	1.0	-52.0	-13.0	-39.0	
	6842.80	-10.2	H	3.0	40.0	1.0	-49.2	-13.0	-36.2	
	Mid Ch, 1745MHz									
	3490.00	-10.6	V	3.0	41.0	1.0	-50.6	-13.0	-37.6	
	5235.00	-11.7	V	3.0	40.1	1.0	-50.8	-13.0	-37.8	
	6980.00	-8.3	V	3.0	40.0	1.0	-47.3	-13.0	-34.3	
	3490.00	-4.9	H	3.0	41.0	1.0	-44.9	-13.0	-31.9	
	5235.00	-13.4	H	3.0	40.1	1.0	-52.5	-13.0	-39.5	
	6980.00	-8.6	H	3.0	40.0	1.0	-47.6	-13.0	-34.6	
	High Ch, 1779.3MHz									
	3558.60	-11.8	V	3.0	41.0	1.0	-51.8	-13.0	-38.8	
	5337.90	-10.8	V	3.0	40.1	1.0	-49.8	-13.0	-36.8	
	7117.20	-7.8	V	3.0	40.0	1.0	-46.9	-13.0	-33.9	
3558.60	-5.5	H	3.0	41.0	1.0	-45.5	-13.0	-32.5		
5337.90	-14.0	H	3.0	40.1	1.0	-53.0	-13.0	-40.0		
7117.20	-11.8	H	3.0	40.0	1.0	-50.9	-13.0	-37.9		
LTE Band 66 1.4MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 45574 Configuration: EUT / AC Adapter / Earphone, X-Position Location: Chamber 3 Mode: LTE_16QAM Band 66 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, 1710.7MHz									
	3421.40	-9.3	V	3.0	41.0	1.0	-49.4	-13.0	-36.4	
	5132.10	-11.6	V	3.0	40.1	1.0	-50.7	-13.0	-37.7	
	6842.80	-7.1	V	3.0	40.0	1.0	-46.1	-13.0	-33.1	
	3421.40	-6.0	H	3.0	41.0	1.0	-46.1	-13.0	-33.1	
	5132.10	-13.9	H	3.0	40.1	1.0	-53.0	-13.0	-40.0	
	6842.80	-10.8	H	3.0	40.0	1.0	-49.8	-13.0	-36.8	
	Mid Ch, 1745MHz									
	3490.00	-10.4	V	3.0	41.0	1.0	-50.4	-13.0	-37.4	
	5235.00	-11.7	V	3.0	40.1	1.0	-50.8	-13.0	-37.8	
	6980.00	-8.7	V	3.0	40.0	1.0	-47.7	-13.0	-34.7	
	3490.00	-5.3	H	3.0	41.0	1.0	-45.3	-13.0	-32.3	
	5235.00	-13.2	H	3.0	40.1	1.0	-52.3	-13.0	-39.3	
	6980.00	-9.3	H	3.0	40.0	1.0	-48.4	-13.0	-35.4	
	High Ch, 1779.3MHz									
	3558.60	-11.6	V	3.0	41.0	1.0	-51.5	-13.0	-38.5	
	5337.90	-11.3	V	3.0	40.1	1.0	-50.4	-13.0	-37.4	
	7117.20	-8.6	V	3.0	40.0	1.0	-47.6	-13.0	-34.6	
3558.60	-5.3	H	3.0	41.0	1.0	-45.3	-13.0	-32.3		
5337.90	-13.6	H	3.0	40.1	1.0	-52.7	-13.0	-39.7		
7117.20	-11.4	H	3.0	40.0	1.0	-50.4	-13.0	-37.4		

LTE Band 2

LTE Band 2 20MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 45574 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 3 Mode: LTE_QPSK Band 2 Harmonics, 20MHz 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, 1860MHz									
	3720.00	-5.0	V	3.0	40.9	1.0	-44.9	-13.0	-31.9	
	5580.00	-13.9	V	3.0	40.0	1.0	-52.9	-13.0	-39.9	
	7440.00	-7.4	V	3.0	40.0	1.0	-46.4	-13.0	-33.4	
	3720.00	-9.1	H	3.0	40.9	1.0	-49.0	-13.0	-36.0	
	5580.00	-14.6	H	3.0	40.0	1.0	-53.6	-13.0	-40.6	
	7440.00	-8.3	H	3.0	40.0	1.0	-47.3	-13.0	-34.3	
	Mid Ch, 1880MHz									
	3760.00	-6.2	V	3.0	40.8	1.0	-46.0	-13.0	-33.0	
	5640.00	-13.6	V	3.0	40.0	1.0	-52.6	-13.0	-39.6	
	7520.00	-5.4	V	3.0	40.0	1.0	-44.4	-13.0	-31.4	
	3760.00	-8.3	H	3.0	40.8	1.0	-48.2	-13.0	-35.2	
	5640.00	-13.7	H	3.0	40.0	1.0	-52.7	-13.0	-39.7	
	7520.00	-5.9	H	3.0	40.0	1.0	-45.0	-13.0	-32.0	
	High Ch, 1900MHz									
	3800.00	-7.7	V	3.0	40.8	1.0	-47.5	-13.0	-34.5	
	5700.00	-13.3	V	3.0	40.0	1.0	-52.3	-13.0	-39.3	
	7600.00	-6.3	V	3.0	40.0	1.0	-45.3	-13.0	-32.3	
	3800.00	-9.8	H	3.0	40.8	1.0	-49.6	-13.0	-36.6	
	5700.00	-13.0	H	3.0	40.0	1.0	-52.0	-13.0	-39.0	
	7600.00	-6.1	H	3.0	40.0	1.0	-45.1	-13.0	-32.1	
LTE Band 2 20MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 45574 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 3 Mode: LTE_16QAM Band 2 Harmonics, 20MHz 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, 1860MHz									
	3720.00	-5.1	V	3.0	40.9	1.0	-44.9	-13.0	-31.9	
	5580.00	-14.0	V	3.0	40.0	1.0	-53.0	-13.0	-40.0	
	7440.00	-7.5	V	3.0	40.0	1.0	-46.5	-13.0	-33.5	
	3720.00	-8.7	H	3.0	40.9	1.0	-48.6	-13.0	-35.6	
	5580.00	-14.5	H	3.0	40.0	1.0	-53.6	-13.0	-40.6	
	7440.00	-8.3	H	3.0	40.0	1.0	-47.3	-13.0	-34.3	
	Mid Ch, 1880MHz									
	3760.00	-6.0	V	3.0	40.8	1.0	-45.9	-13.0	-32.9	
	5640.00	-13.6	V	3.0	40.0	1.0	-52.7	-13.0	-39.7	
	7520.00	-5.6	V	3.0	40.0	1.0	-44.6	-13.0	-31.6	
	3760.00	-8.3	H	3.0	40.8	1.0	-48.2	-13.0	-35.2	
	5640.00	-14.1	H	3.0	40.0	1.0	-53.1	-13.0	-40.1	
	7520.00	-6.5	H	3.0	40.0	1.0	-45.6	-13.0	-32.6	
	High Ch, 1900MHz									
	3800.00	-6.7	V	3.0	40.8	1.0	-46.5	-13.0	-33.5	
	5700.00	-13.1	V	3.0	40.0	1.0	-52.1	-13.0	-39.1	
	7600.00	-6.2	V	3.0	40.0	1.0	-45.2	-13.0	-32.2	
	3800.00	-9.4	H	3.0	40.8	1.0	-49.2	-13.0	-36.2	
	5700.00	-11.8	H	3.0	40.0	1.0	-50.8	-13.0	-37.8	
	7600.00	-6.3	H	3.0	40.0	1.0	-45.3	-13.0	-32.3	

LTE Band 2 15MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 45574 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 3 Mode: LTE_QPSK Band 2 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, 1857.5MHz									
	3715.00	-5.4	V	3.0	40.9	1.0	-45.2	-13.0	-32.2	
	5572.50	-12.9	V	3.0	40.0	1.0	-52.0	-13.0	-39.0	
	7430.00	-7.7	V	3.0	40.0	1.0	-46.7	-13.0	-33.7	
	3715.00	-12.0	H	3.0	40.9	1.0	-51.9	-13.0	-38.9	
	5572.50	-13.8	H	3.0	40.0	1.0	-52.8	-13.0	-39.8	
	7430.00	-8.7	H	3.0	40.0	1.0	-47.8	-13.0	-34.8	
	Mid Ch, 1880MHz									
	3760.00	-7.7	V	3.0	40.8	1.0	-47.5	-13.0	-34.5	
	5640.00	-13.8	V	3.0	40.0	1.0	-52.9	-13.0	-39.9	
	7520.00	-6.0	V	3.0	40.0	1.0	-45.1	-13.0	-32.1	
	3760.00	-11.4	H	3.0	40.8	1.0	-51.3	-13.0	-38.3	
	5640.00	-13.7	H	3.0	40.0	1.0	-52.7	-13.0	-39.7	
	7520.00	-5.8	H	3.0	40.0	1.0	-44.9	-13.0	-31.9	
	High Ch, 1902.5MHz									
	3805.00	-9.6	V	3.0	40.8	1.0	-49.4	-13.0	-36.4	
	5707.50	-12.5	V	3.0	40.0	1.0	-51.5	-13.0	-38.5	
	7610.00	-5.8	V	3.0	40.0	1.0	-44.8	-13.0	-31.8	
3805.00	-10.4	H	3.0	40.8	1.0	-50.2	-13.0	-37.2		
5707.50	-13.6	H	3.0	40.0	1.0	-52.6	-13.0	-39.6		
7610.00	-6.1	H	3.0	40.0	1.0	-45.1	-13.0	-32.1		
LTE Band 2 15MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-25 Test Engineer: 45574 Configuration: EUT / AC Adapter / Earphone, Z-Position Location: Chamber 3 Mode: LTE_16QAM Band 2 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, 1857.5MHz									
	3715.00	-5.3	V	3.0	40.9	1.0	-45.2	-13.0	-32.2	
	5572.50	-13.6	V	3.0	40.0	1.0	-52.6	-13.0	-39.6	
	7430.00	-8.0	V	3.0	40.0	1.0	-47.1	-13.0	-34.1	
	3715.00	-9.4	H	3.0	40.9	1.0	-49.2	-13.0	-36.2	
	5572.50	-13.6	H	3.0	40.0	1.0	-52.7	-13.0	-39.7	
	7430.00	-7.9	H	3.0	40.0	1.0	-47.0	-13.0	-34.0	
	Mid Ch, 1880MHz									
	3760.00	-7.3	V	3.0	40.8	1.0	-47.2	-13.0	-34.2	
	5640.00	-13.5	V	3.0	40.0	1.0	-52.5	-13.0	-39.5	
	7520.00	-6.3	V	3.0	40.0	1.0	-45.3	-13.0	-32.3	
	3760.00	-11.2	H	3.0	40.8	1.0	-51.1	-13.0	-38.1	
	5640.00	-14.2	H	3.0	40.0	1.0	-53.3	-13.0	-40.3	
	7520.00	-5.5	H	3.0	40.0	1.0	-44.5	-13.0	-31.5	
	High Ch, 1902.5MHz									
	3805.00	-8.0	V	3.0	40.8	1.0	-47.7	-13.0	-34.7	
	5707.50	-13.4	V	3.0	40.0	1.0	-52.4	-13.0	-39.4	
	7610.00	-5.5	V	3.0	40.0	1.0	-44.6	-13.0	-31.6	
3805.00	-9.8	H	3.0	40.8	1.0	-49.6	-13.0	-36.6		
5707.50	-13.1	H	3.0	40.0	1.0	-52.1	-13.0	-39.1		
7610.00	-5.9	H	3.0	40.0	1.0	-45.0	-13.0	-32.0		

LTE Band 2 5MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788371689									
	Date: 2018-03-23									
	Test Engineer: 47989									
	Configuration: EUT / Adapter / Earphone, Z-Position									
	Location: Chamber 3									
	Mode: LTE_QPSK Band 2 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, 1852.5MHz									
	3705.00	-14.5	V	3.0	40.9	1.0	-54.4	-13.0	-41.4	
	5557.50	-13.1	V	3.0	40.1	1.0	-52.1	-13.0	-39.1	
	7410.00	-5.5	V	3.0	40.0	1.0	-44.6	-13.0	-31.6	
	3705.00	-13.8	H	3.0	40.9	1.0	-53.7	-13.0	-40.7	
	5557.50	-13.5	H	3.0	40.1	1.0	-52.6	-13.0	-39.6	
	7410.00	-8.1	H	3.0	40.0	1.0	-47.1	-13.0	-34.1	
	Mid Ch, 1880MHz									
	3760.00	-14.1	V	3.0	40.8	1.0	-53.9	-13.0	-40.9	
	5640.00	-13.0	V	3.0	40.0	1.0	-52.0	-13.0	-39.0	
7520.00	-6.4	V	3.0	40.0	1.0	-45.4	-13.0	-32.4		
3760.00	-12.9	H	3.0	40.8	1.0	-52.8	-13.0	-39.8		
5640.00	-13.1	H	3.0	40.0	1.0	-52.1	-13.0	-39.1		
7520.00	-6.9	H	3.0	40.0	1.0	-45.9	-13.0	-32.9		
High Ch, 1907.5MHz										
3815.00	-13.9	V	3.0	40.8	1.0	-53.7	-13.0	-40.7		
5722.50	-12.3	V	3.0	40.0	1.0	-51.3	-13.0	-38.3		
7630.00	-6.1	V	3.0	40.0	1.0	-45.2	-13.0	-32.2		
3815.00	-12.9	H	3.0	40.8	1.0	-52.7	-13.0	-39.7		
5722.50	-13.0	H	3.0	40.0	1.0	-52.0	-13.0	-39.0		
7630.00	-5.7	H	3.0	40.0	1.0	-44.8	-13.0	-31.8		

LTE Band 2 3MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788371689									
	Date: 2018-03-23									
	Test Engineer: 47989									
	Configuration: EUT / Adapter / Earphone, Z-Position									
	Location: Chamber 3									
	Mode: LTE_QPSK Band 2 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, 1851.5MHz									
	3703.00	-14.4	V	3.0	40.9	1.0	-54.3	-13.0	-41.3	
	5554.50	-12.5	V	3.0	40.1	1.0	-51.6	-13.0	-38.6	
	7406.00	-7.4	V	3.0	40.0	1.0	-46.4	-13.0	-33.4	
	3703.00	-13.5	H	3.0	40.9	1.0	-53.4	-13.0	-40.4	
	5554.50	-12.8	H	3.0	40.1	1.0	-51.9	-13.0	-38.9	
	7406.00	-7.8	H	3.0	40.0	1.0	-46.8	-13.0	-33.8	
	Mid Ch, 1880MHz									
	3760.00	-13.9	V	3.0	40.8	1.0	-53.7	-13.0	-40.7	
	5640.00	-12.8	V	3.0	40.0	1.0	-51.8	-13.0	-38.8	
	7520.00	-5.8	V	3.0	40.0	1.0	-44.8	-13.0	-31.8	
	3760.00	-13.5	H	3.0	40.8	1.0	-53.4	-13.0	-40.4	
	5640.00	-12.7	H	3.0	40.0	1.0	-51.8	-13.0	-38.8	
	7520.00	-3.9	H	3.0	40.0	1.0	-42.9	-13.0	-29.9	
	High Ch, 1908.5MHz									
3817.00	-13.4	V	3.0	40.8	1.0	-53.2	-13.0	-40.2		
5725.50	-11.3	V	3.0	40.0	1.0	-50.4	-13.0	-37.4		
7634.00	-5.7	V	3.0	40.0	1.0	-44.8	-13.0	-31.8		
3817.00	-12.8	H	3.0	40.8	1.0	-52.5	-13.0	-39.5		
5725.50	-12.8	H	3.0	40.0	1.0	-51.8	-13.0	-38.8		
7634.00	-5.7	H	3.0	40.0	1.0	-44.8	-13.0	-31.8		
LTE Band 2 3MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
	Company: Samsung									
	Project #: 4788371689									
	Date: 2018-03-23									
	Test Engineer: 47989									
	Configuration: EUT / Adapter / Earphone, Z-Position									
	Location: Chamber 3									
	Mode: LTE_16QAM Band 2 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, 1851.5MHz									
	3703.00	-14.1	V	3.0	40.9	1.0	-54.0	-13.0	-41.0	
	5554.50	-12.4	V	3.0	40.1	1.0	-51.5	-13.0	-38.5	
	7406.00	-7.7	V	3.0	40.0	1.0	-46.7	-13.0	-33.7	
	3703.00	-14.4	H	3.0	40.9	1.0	-54.2	-13.0	-41.2	
	5554.50	-13.2	H	3.0	40.1	1.0	-52.3	-13.0	-39.3	
	7406.00	-8.2	H	3.0	40.0	1.0	-47.2	-13.0	-34.2	
	Mid Ch, 1880MHz									
	3760.00	-13.8	V	3.0	40.8	1.0	-53.6	-13.0	-40.6	
	5640.00	-12.8	V	3.0	40.0	1.0	-51.8	-13.0	-38.8	
	7520.00	-6.0	V	3.0	40.0	1.0	-45.1	-13.0	-32.1	
	3760.00	-12.9	H	3.0	40.8	1.0	-52.7	-13.0	-39.7	
	5640.00	-12.7	H	3.0	40.0	1.0	-51.7	-13.0	-38.7	
	7520.00	-6.4	H	3.0	40.0	1.0	-45.4	-13.0	-32.4	
	High Ch, 1908.5MHz									
3817.00	-13.5	V	3.0	40.8	1.0	-53.3	-13.0	-40.3		
5725.50	-12.4	V	3.0	40.0	1.0	-51.4	-13.0	-38.4		
7634.00	-6.1	V	3.0	40.0	1.0	-45.1	-13.0	-32.1		
3817.00	-15.7	H	3.0	40.8	1.0	-55.5	-13.0	-42.5		
5725.50	-12.7	H	3.0	40.0	1.0	-51.8	-13.0	-38.8		
7634.00	-6.0	H	3.0	40.0	1.0	-45.1	-13.0	-32.1		

LTE Band 2 1.4MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-23 Test Engineer: 47989 Configuration: EUT / Adapter / Earphone, Z-Position Location: Chamber 3 Mode: LTE_QPSK Band 2 Harmonics, 1.4MHz Bandwidth									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1850.7MHz									
	3701.40	-14.2	V	3.0	40.9	1.0	-54.0	-13.0	-41.0	
	5552.10	-11.9	V	3.0	40.1	1.0	-51.0	-13.0	-38.0	
	7402.80	-6.8	V	3.0	40.0	1.0	-45.8	-13.0	-32.8	
	3701.40	-13.2	H	3.0	40.9	1.0	-53.0	-13.0	-40.0	
	5552.10	-13.0	H	3.0	40.1	1.0	-52.0	-13.0	-39.0	
	7402.80	-8.1	H	3.0	40.0	1.0	-47.1	-13.0	-34.1	
	Mid Ch, 1880MHz									
	3760.00	-14.3	V	3.0	40.8	1.0	-54.1	-13.0	-41.1	
	5640.00	-11.8	V	3.0	40.0	1.0	-50.9	-13.0	-37.9	
	7520.00	-6.5	V	3.0	40.0	1.0	-45.6	-13.0	-32.6	
	3760.00	-13.7	H	3.0	40.8	1.0	-53.5	-13.0	-40.5	
	5640.00	-12.1	H	3.0	40.0	1.0	-51.1	-13.0	-38.1	
	7520.00	-7.2	H	3.0	40.0	1.0	-46.2	-13.0	-33.2	
	High Ch, 1909.3MHz									
	3818.60	-12.9	V	3.0	40.8	1.0	-52.7	-13.0	-39.7	
	5727.90	-12.3	V	3.0	40.0	1.0	-51.3	-13.0	-38.3	
	7637.20	-5.6	V	3.0	40.0	1.0	-44.7	-13.0	-31.7	
	3818.60	-12.7	H	3.0	40.8	1.0	-52.5	-13.0	-39.5	
	5727.90	-12.7	H	3.0	40.0	1.0	-51.7	-13.0	-38.7	
	7637.20	-5.9	H	3.0	40.0	1.0	-44.9	-13.0	-31.9	
LTE Band 2 1.4MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-23 Test Engineer: 47989 Configuration: EUT / Adapter / Earphone, Z-Position Location: Chamber 3 Mode: LTE_16QAM Band 2 Harmonics, 1.4MHz Bandwidth									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamplifier (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Low Ch, 1850.7MHz									
	3701.40	-14.6	V	3.0	40.9	1.0	-54.5	-13.0	-41.5	
	5552.10	-13.0	V	3.0	40.1	1.0	-52.0	-13.0	-39.0	
	7402.80	-7.4	V	3.0	40.0	1.0	-46.5	-13.0	-33.5	
	3701.40	-13.1	H	3.0	40.9	1.0	-53.0	-13.0	-40.0	
	5552.10	-12.9	H	3.0	40.1	1.0	-52.0	-13.0	-39.0	
	7402.80	-7.7	H	3.0	40.0	1.0	-46.8	-13.0	-33.8	
	Mid Ch, 1880MHz									
	3760.00	-13.6	V	3.0	40.8	1.0	-53.4	-13.0	-40.4	
	5640.00	-12.1	V	3.0	40.0	1.0	-51.2	-13.0	-38.2	
	7520.00	-5.5	V	3.0	40.0	1.0	-44.6	-13.0	-31.6	
	3760.00	-13.0	H	3.0	40.8	1.0	-52.8	-13.0	-39.8	
	5640.00	-13.4	H	3.0	40.0	1.0	-52.5	-13.0	-39.5	
	7520.00	-6.7	H	3.0	40.0	1.0	-45.7	-13.0	-32.7	
	High Ch, 1909.3MHz									
	3818.60	-13.2	V	3.0	40.8	1.0	-53.0	-13.0	-40.0	
	5727.90	-12.3	V	3.0	40.0	1.0	-51.4	-13.0	-38.4	
	7637.20	-5.7	V	3.0	40.0	1.0	-44.7	-13.0	-31.7	
	3818.60	-12.9	H	3.0	40.8	1.0	-52.7	-13.0	-39.7	
	5727.90	-12.6	H	3.0	40.0	1.0	-51.6	-13.0	-38.6	
	7637.20	-5.6	H	3.0	40.0	1.0	-44.7	-13.0	-31.7	

LTE Band 13

LTE Band 13 10MHz QPSK	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-26 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, Z-Position Location: Chamber 3 Mode: LTE_QPSK Band 13 Harmonics, 10MHz Bandwidth									
	f	SG reading	Ant. Pol.	Distance	Preamp	Filter	EIRP	Limit	Delta	Notes
	MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
	Mid Ch, 782MHz									
	1564.00	-19.3	V	3.0	41.8	1.0	-60.1	-40.0	-20.1	
	2346.00	-16.2	V	3.0	41.8	1.0	-57.0	-13.0	-44.0	
	3128.00	-16.1	V	3.0	41.2	1.0	-56.3	-13.0	-43.3	
	1564.00	-18.8	H	3.0	41.8	1.0	-59.6	-40.0	-19.6	
	2346.00	-16.3	H	3.0	41.8	1.0	-57.1	-13.0	-44.1	
	3128.00	-16.9	H	3.0	41.2	1.0	-57.1	-13.0	-44.1	
LTE Band 13 10MHz 16QAM	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-26 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, Z-Position Location: Chamber 3 Mode: LTE_16QAM Band 13 Harmonics, 10MHz Bandwidth									
	f	SG reading	Ant. Pol.	Distance	Preamp	Filter	EIRP	Limit	Delta	Notes
	MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
	Mid Ch, 782MHz									
	1564.00	-19.4	V	3.0	41.8	1.0	-60.2	-40.0	-20.2	
	2346.00	-16.3	V	3.0	41.8	1.0	-57.1	-13.0	-44.1	
	3128.00	-16.5	V	3.0	41.2	1.0	-56.7	-13.0	-43.7	
	1564.00	-19.0	H	3.0	41.8	1.0	-59.8	-40.0	-19.8	
	2346.00	-16.9	H	3.0	41.8	1.0	-57.7	-13.0	-44.7	
	3128.00	-16.2	H	3.0	41.2	1.0	-56.4	-13.0	-43.4	

LTE Band 12

LTE Band 12 10MHz QPSK		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-26 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, Z-Position Location: Chamber 3 Mode: LTE_QPSK Band 12 Harmonics, 10MHz Bandwidth									
		f	SG reading	Ant. Pol.	Distance	Preamp	Filter	EIRP	Limit	Delta	Notes
		MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
		Low Ch, 704MHz									
		1408.00	-14.4	V	3.0	41.7	1.0	-55.1	-13.0	-42.1	
		2112.00	-13.6	V	3.0	42.0	1.0	-54.6	-13.0	-41.6	
		2816.00	-16.8	V	3.0	41.5	1.0	-57.3	-13.0	-44.3	
		3520.00	-11.9	V	3.0	41.0	1.0	-51.9	-13.0	-38.9	
		1408.00	-14.2	H	3.0	41.7	1.0	-54.8	-13.0	-41.8	
		2112.00	-9.9	H	3.0	42.0	1.0	-50.9	-13.0	-37.9	
		2816.00	-17.3	H	3.0	41.5	1.0	-57.7	-13.0	-44.7	
		3520.00	-14.0	H	3.0	41.0	1.0	-54.0	-13.0	-41.0	
		Mid Ch, 707.5MHz									
		1415.00	-16.4	V	3.0	41.7	1.0	-57.1	-13.0	-44.1	
		2122.50	-13.4	V	3.0	41.9	1.0	-54.3	-13.0	-41.3	
		2830.00	-16.4	V	3.0	41.4	1.0	-56.8	-13.0	-43.8	
		3537.50	-12.9	V	3.0	41.0	1.0	-52.9	-13.0	-39.9	
		1415.00	-16.2	H	3.0	41.7	1.0	-56.9	-13.0	-43.9	
		2122.50	-19.5	H	3.0	41.9	1.0	-60.5	-13.0	-47.5	
		2830.00	-17.1	H	3.0	41.4	1.0	-57.6	-13.0	-44.6	
		3537.50	-15.5	H	3.0	41.0	1.0	-55.5	-13.0	-42.5	
		High Ch, 711MHz									
		1422.00	-18.4	V	3.0	41.7	1.0	-59.1	-13.0	-46.1	
		2133.00	-12.8	V	3.0	41.9	1.0	-53.7	-13.0	-40.7	
		2844.00	-16.7	V	3.0	41.4	1.0	-57.1	-13.0	-44.1	
		3555.00	-11.3	V	3.0	41.0	1.0	-51.3	-13.0	-38.3	
		1422.00	-17.9	H	3.0	41.7	1.0	-58.6	-13.0	-45.6	
		2133.00	-10.4	H	3.0	41.9	1.0	-51.4	-13.0	-38.4	
		2844.00	-16.6	H	3.0	41.4	1.0	-57.1	-13.0	-44.1	
		3555.00	-13.2	H	3.0	41.0	1.0	-53.1	-13.0	-40.1	
LTE Band 12 10MHz 16QAM		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement Company: Samsung Project #: 4788371689 Date: 2018-03-26 Test Engineer: 45585 Configuration: EUT / Adapter / Earphone, Z-Position Location: Chamber 3 Mode: LTE_16QAM Band 12 Harmonics, 10MHz Bandwidth									
		f	SG reading	Ant. Pol.	Distance	Preamp	Filter	EIRP	Limit	Delta	Notes
		MHz	(dBm)	(H/V)	(m)	(dB)	(dB)	(dBm)	(dBm)	(dB)	
		Low Ch, 704MHz									
		1408.00	-14.8	V	3.0	41.7	1.0	-55.5	-13.0	-42.5	
		2112.00	-12.0	V	3.0	42.0	1.0	-53.0	-13.0	-40.0	
		2816.00	-16.3	V	3.0	41.5	1.0	-56.7	-13.0	-43.7	
		3520.00	-9.5	V	3.0	41.0	1.0	-49.5	-13.0	-36.5	
		1408.00	-14.5	H	3.0	41.7	1.0	-55.1	-13.0	-42.1	
		2112.00	-8.2	H	3.0	42.0	1.0	-49.1	-13.0	-36.1	
		2816.00	-16.4	H	3.0	41.5	1.0	-56.8	-13.0	-43.8	
		3520.00	-12.6	H	3.0	41.0	1.0	-52.5	-13.0	-39.5	
		Mid Ch, 707.5MHz									
		1415.00	-16.2	V	3.0	41.7	1.0	-56.8	-13.0	-43.8	
		2122.50	-13.6	V	3.0	41.9	1.0	-54.5	-13.0	-41.5	
		2830.00	-16.4	V	3.0	41.4	1.0	-56.8	-13.0	-43.8	
		3537.50	-12.9	V	3.0	41.0	1.0	-52.8	-13.0	-39.8	
		1415.00	-17.0	H	3.0	41.7	1.0	-57.6	-13.0	-44.6	
		2122.50	-11.2	H	3.0	41.9	1.0	-52.2	-13.0	-39.2	
		2830.00	-17.2	H	3.0	41.4	1.0	-57.6	-13.0	-44.6	
		3537.50	-15.1	H	3.0	41.0	1.0	-55.1	-13.0	-42.1	
		High Ch, 711MHz									
		1422.00	-18.4	V	3.0	41.7	1.0	-59.1	-13.0	-46.1	
		2133.00	-11.7	V	3.0	41.9	1.0	-52.6	-13.0	-39.6	
		2844.00	-16.3	V	3.0	41.4	1.0	-56.7	-13.0	-43.7	
		3555.00	-9.9	V	3.0	41.0	1.0	-49.8	-13.0	-36.8	
		1422.00	-17.7	H	3.0	41.7	1.0	-58.4	-13.0	-45.4	
		2133.00	-9.5	H	3.0	41.9	1.0	-50.5	-13.0	-37.5	
		2844.00	-16.7	H	3.0	41.4	1.0	-57.1	-13.0	-44.1	
		3555.00	-13.1	H	3.0	41.0	1.0	-53.1	-13.0	-40.1	