

UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 26 Fundamentals, 10MHz Bandwidth									
<b>Test Equipment:</b> Receiving: VULB9163-750, and Chamber 1 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									
829.00	10.65	V	3.0	-1.5	6.17	38.5	-32.3		
829.00	18.70	H	3.0	-1.5	14.22	38.5	-24.3		
Mid Ch									
831.50	11.65	V	3.0	-1.4	7.18	38.5	-31.3		
831.50	18.01	H	3.0	-1.4	13.54	38.5	-25.0		
High Ch									
844.00	11.89	V	3.1	-1.4	7.44	38.5	-31.1		
844.00	17.92	H	3.1	-1.4	13.47	38.5	-25.0		
LTE Band 26 10MHz 16QAM									
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Low Ch									
819.00	11.38	V	3.0	-1.5	6.88	50.0	-43.1	Part 90	
819.00	18.59	H	3.0	-1.5	14.09	50.0	-35.9	Part 90	

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	<u>Test Equipment:</u>									
	Receiving: VULB9163-750, and Chamber 1 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										
825.50	14.58	V	3.0	-1.5	10.10	38.5	-28.4			
825.50	20.14	H	3.0	-1.5	15.66	38.5	-22.8			
Mid Ch										
831.50	13.95	V	3.0	-1.4	9.48	38.5	-29.0			
831.50	19.91	H	3.0	-1.4	15.44	38.5	-23.1			
High Ch										
847.50	13.75	V	3.1	-1.4	9.31	38.5	-29.2			
847.50	19.85	H	3.1	-1.4	15.40	38.5	-23.1			
UL Verification Services, Inc. High Frequency Substitution Measurement										
Company:		Samsung								
Project #:		4789009800								
Date:		2019-05-22								
Test Engineer:		45585								
Configuration:		EUT / X-Position								
Location:		Chamber 1								
Mode:		LTE_QPSK Band 26 Fundamentals, 3MHz Bandwidth								
<u>Test Equipment:</u>										
Receiving: VULB9163-750, and Chamber 1 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										
815.50	12.85	V	3.0	-1.5	8.35	50.0	-41.7	Part 90		
815.50	20.43	H	3.0	-1.5	15.92	50.0	-34.1	Part 90		
Mid Ch										
822.50	11.00	V	3.0	-1.5	6.51	50.0	-43.5	Part 90		
822.50	20.60	H	3.0	-1.5	16.11	50.0	-33.9	Part 90		

LTE Band 26  3MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>																																																																																																	
	<b>Company:</b>		Samsung																																																																																															
	<b>Project #:</b>		4789009800																																																																																															
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	<b>Test Engineer:</b>		45585																																																																																															
	<b>Configuration:</b>		EUT / X-Position																																																																																															
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UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth									
<b>Test Equipment:</b> Receiving: VULB9163-750, and Chamber 1 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									
824.70	10.98	V	3.0	-1.5	6.49	38.5	-32.0		
824.70	20.06	H	3.0	-1.5	15.57	38.5	-22.9		
Mid Ch									
831.50	14.15	V	3.0	-1.4	9.68	38.5	-28.8		
831.50	20.11	H	3.0	-1.4	15.64	38.5	-22.9		
High Ch									
848.30	13.75	V	3.1	-1.4	9.31	38.5	-29.2		
848.30	20.07	H	3.1	-1.4	15.63	38.5	-22.9		
LTE Band 26 1.4MHz QPSK									
UL Verification Services, Inc. High Frequency Substitution Measurement									
Company: Samsung Project #: 4789009800 Date: 2019-05-22 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth									
<b>Test Equipment:</b> Receiving: VULB9163-750, and Chamber 1 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									
814.70	13.11	V	3.0	-1.5	8.60	50.0	-41.4	Part 90	
814.70	20.70	H	3.0	-1.5	16.19	50.0	-33.8	Part 90	
Mid Ch									
823.30	14.41	V	3.0	-1.5	9.92	50.0	-40.1	Part 90	
823.30	20.67	H	3.0	-1.5	16.18	50.0	-33.8	Part 90	

UL Verification Services, Inc. High Frequency Substitution Measurement										
LTE Band 26  1.4MHz  16QAM	Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth									
	<b>Test Equipment:</b> Receiving: VULB9163-750, and Chamber 1 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									
	824.70	8.93	V	3.0	-1.5	4.44	38.5	-34.1		
	824.70	18.47	H	3.0	-1.5	13.98	38.5	-24.5		
	Mid Ch									
	831.50	11.65	V	3.0	-1.4	7.18	38.5	-31.3		
	831.50	17.91	H	3.0	-1.4	13.44	38.5	-25.1		
	High Ch									
848.30	11.65	V	3.1	-1.4	7.21	38.5	-31.3			
848.30	17.77	H	3.1	-1.4	13.33	38.5	-25.2			
UL Verification Services, Inc. High Frequency Substitution Measurement										
Company: Samsung Project #: 4789009800 Date: 2019-05-22 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth										
<b>Test Equipment:</b> Receiving: VULB9163-750, and Chamber 1 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										
814.70	11.11	V	3.0	-1.5	6.60	50.0	-43.4	Part 90		
814.70	18.80	H	3.0	-1.5	14.29	50.0	-35.7	Part 90		
Mid Ch										
823.30	12.17	V	3.0	-1.5	7.68	50.0	-42.3	Part 90		
823.30	18.47	H	3.0	-1.5	13.98	50.0	-36.0	Part 90		

**LTE Band 38**

LTE Band 38 20MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK_Band 38 Fundamentals, 20MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2580.00	17.53	V	5.3	9.8	22.03	33.0	-11.0	
	2580.00	21.18	H	5.3	9.8	25.68	33.0	-7.3	
	Mid Ch								
	2595.00	17.90	V	5.3	9.8	22.36	33.0	-10.6	
	2595.00	21.19	H	5.3	9.8	25.65	33.0	-7.3	
High Ch									
2610.00	19.31	V	5.4	9.8	23.75	33.0	-9.2		
2610.00	21.34	H	5.4	9.8	25.77	33.0	-7.2		
LTE Band 38 20MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-29 Test Engineer: 45585 Configuration: EUT/ X-Position Location: Chamber 1 Mode: LTE_16QAM_Band 38 Fundamentals, 20MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2580.00	16.58	V	5.3	9.8	21.08	33.0	-11.9	
	2580.00	20.19	H	5.3	9.8	24.69	33.0	-8.3	
	Mid Ch								
	2595.00	17.43	V	5.3	9.8	21.89	33.0	-11.1	
	2595.00	20.66	H	5.3	9.8	25.12	33.0	-7.9	
High Ch									
2610.00	18.77	V	5.4	9.8	23.21	33.0	-9.8		
2610.00	20.40	H	5.4	9.8	24.83	33.0	-8.2		

LTE Band 38 15MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK_Band 38 Fundamentals, 15MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2577.50	17.56	V	5.3	9.8	22.06	33.0	-10.9	
	2577.50	21.10	H	5.3	9.8	25.60	33.0	-7.4	
	Mid Ch								
	2595.00	18.54	V	5.3	9.8	23.00	33.0	-10.0	
	2595.00	21.77	H	5.3	9.8	26.23	33.0	-6.8	
High Ch									
2612.50	20.12	V	5.4	9.8	24.55	33.0	-8.5		
2612.50	21.67	H	5.4	9.8	26.11	33.0	-6.9		
LTE Band 38 15MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-29 Test Engineer: 45585 Configuration: EUT/ X-Position Location: Chamber 1 Mode: LTE_16QAM_Band 38 Fundamentals, 15MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2577.50	16.56	V	5.3	9.8	21.06	33.0	-11.9	
	2577.50	20.09	H	5.3	9.8	24.59	33.0	-8.4	
	Mid Ch								
	2595.00	17.55	V	5.3	9.8	22.01	33.0	-11.0	
	2595.00	20.78	H	5.3	9.8	25.24	33.0	-7.8	
High Ch									
2612.50	19.12	V	5.4	9.8	23.55	33.0	-9.5		
2612.50	20.71	H	5.4	9.8	25.15	33.0	-7.9		

LTE Band 38 10MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK_Band 38 Fundamentals, 10MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2575.00	16.91	V	5.3	9.8	21.42	33.0	-11.6	
	2575.00	20.48	H	5.3	9.8	24.99	33.0	-8.0	
	Mid Ch								
	2595.00	17.25	V	5.3	9.8	21.71	33.0	-11.3	
	2595.00	20.86	H	5.3	9.8	25.32	33.0	-7.7	
High Ch									
2615.00	17.44	V	5.4	9.8	21.87	33.0	-11.1		
2615.00	20.17	H	5.4	9.8	24.59	33.0	-8.4		
LTE Band 38 10MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-29 Test Engineer: 45585 Configuration: EUT/ X-Position Location: Chamber 1 Mode: LTE_16QAM_Band 38 Fundamentals, 10MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2575.00	15.85	V	5.3	9.8	20.36	33.0	-12.6	
	2575.00	19.45	H	5.3	9.8	23.96	33.0	-9.0	
	Mid Ch								
	2595.00	16.08	V	5.3	9.8	20.54	33.0	-12.5	
	2595.00	19.78	H	5.3	9.8	24.24	33.0	-8.8	
High Ch									
2615.00	16.44	V	5.4	9.8	20.87	33.0	-12.1		
2615.00	19.16	H	5.4	9.8	23.58	33.0	-9.4		

LTE Band 38 5MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK_Band 38 Fundamentals, 5MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2572.50	16.00	V	5.3	9.8	20.52	33.0	-12.5	
	2572.50	19.79	H	5.3	9.8	24.30	33.0	-8.7	
	Mid Ch								
	2595.00	17.35	V	5.3	9.8	21.81	33.0	-11.2	
	2595.00	21.13	H	5.3	9.8	25.59	33.0	-7.4	
High Ch									
2617.50	18.52	V	5.4	9.8	22.94	33.0	-10.1		
2617.50	20.80	H	5.4	9.8	25.23	33.0	-7.8		
LTE Band 38 5MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-29 Test Engineer: 45585 Configuration: EUT/ X-Position Location: Chamber 1 Mode: LTE_16QAM_Band 38 Fundamentals, 5MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2572.50	15.34	V	5.3	9.8	19.86	33.0	-13.1	
	2572.50	18.87	H	5.3	9.8	23.38	33.0	-9.6	
	Mid Ch								
	2595.00	16.30	V	5.3	9.8	20.76	33.0	-12.2	
	2595.00	20.08	H	5.3	9.8	24.54	33.0	-8.5	
High Ch									
2617.50	16.93	V	5.4	9.8	21.35	33.0	-11.6		
2617.50	20.10	H	5.4	9.8	24.53	33.0	-8.5		

**LTE Band 41(PC2)**

LTE Band 41 20MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 41 Fundamentals, 20MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2506.00	17.83	V	5.2	9.9	22.50	33.0	-10.5	
	2506.00	19.27	H	5.2	9.9	23.94	33.0	-9.1	
	Mid Ch								
	2593.00	19.68	V	5.3	9.8	24.14	33.0	-8.9	
	2593.00	21.92	H	5.3	9.8	26.39	33.0	-6.6	
High Ch									
2680.00	17.75	V	5.4	9.8	22.12	33.0	-10.9		
2680.00	21.90	H	5.4	9.8	26.27	33.0	-6.7		
LTE Band 41 20MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 41 Fundamentals, 20MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2506.00	16.12	V	5.2	9.9	20.79	33.0	-12.2	
	2506.00	19.06	H	5.2	9.9	23.73	33.0	-9.3	
	Mid Ch								
	2593.00	19.22	V	5.3	9.8	23.68	33.0	-9.3	
	2593.00	22.44	H	5.3	9.8	26.91	33.0	-6.1	
High Ch									
2680.00	18.26	V	5.4	9.8	22.63	33.0	-10.4		
2680.00	21.57	H	5.4	9.8	25.94	33.0	-7.1		

LTE Band 41 15MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 41 Fundamentals, 15MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2503.50	16.89	V	5.2	9.9	21.57	33.0	-11.4	
	2503.50	19.46	H	5.2	9.9	24.13	33.0	-8.9	
	Mid Ch								
	2593.00	19.75	V	5.3	9.8	24.21	33.0	-8.8	
	2593.00	22.69	H	5.3	9.8	27.16	33.0	-5.8	
High Ch									
2682.50	16.85	V	5.4	9.8	21.23	33.0	-11.8		
2682.50	21.36	H	5.4	9.8	25.73	33.0	-7.3		
LTE Band 41 15MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 41 Fundamentals, 15MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2503.50	16.69	V	5.2	9.9	21.37	33.0	-11.6	
	2503.50	19.30	H	5.2	9.9	23.97	33.0	-9.0	
	Mid Ch								
	2593.00	19.20	V	5.3	9.8	23.66	33.0	-9.3	
	2593.00	22.21	H	5.3	9.8	26.68	33.0	-6.3	
High Ch									
2682.50	16.54	V	5.4	9.8	20.92	33.0	-12.1		
2682.50	21.24	H	5.4	9.8	25.61	33.0	-7.4		

LTE Band 41 10MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 41 Fundamentals, 10MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2501.00	18.50	V	5.2	9.9	23.19	33.0	-9.8	
	2501.00	19.91	H	5.2	9.9	24.59	33.0	-8.4	
	Mid Ch								
	2593.00	20.25	V	5.3	9.8	24.71	33.0	-8.3	
	2593.00	22.12	H	5.3	9.8	26.59	33.0	-6.4	
High Ch									
2685.00	18.93	V	5.4	9.8	23.30	33.0	-9.7		
2685.00	20.51	H	5.4	9.8	24.87	33.0	-8.1		
LTE Band 41 10MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 41 Fundamentals, 10MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2501.00	17.95	V	5.2	9.9	22.64	33.0	-10.4	
	2501.00	20.14	H	5.2	9.9	24.82	33.0	-8.2	
	Mid Ch								
	2593.00	19.66	V	5.3	9.8	24.12	33.0	-8.9	
	2593.00	22.29	H	5.3	9.8	26.76	33.0	-6.2	
High Ch									
2685.00	18.80	V	5.4	9.8	23.17	33.0	-9.8		
2685.00	20.43	H	5.4	9.8	24.79	33.0	-8.2		

LTE Band 41 5MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<b>Company:</b> Samsung <b>Project #:</b> 4789009800 <b>Date:</b> 2019-05-30 <b>Test Engineer:</b> 45585 <b>Configuration:</b> EUT / X-Position <b>Location:</b> Chamber 1 <b>Mode:</b> LTE_QPSK Band 41 Fundamentals, 5MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2498.50	17.23	V	5.2	9.9	21.92	33.0	-11.1	
	2498.50	20.35	H	5.2	9.9	25.04	33.0	-8.0	
	Mid Ch								
	2593.00	20.18	V	5.3	9.8	24.64	33.0	-8.4	
	2593.00	22.54	H	5.3	9.8	27.01	33.0	-6.0	
High Ch									
2687.50	18.34	V	5.4	9.8	22.71	33.0	-10.3		
2687.50	21.53	H	5.4	9.8	25.90	33.0	-7.1		
LTE Band 41 5MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<b>Company:</b> Samsung <b>Project #:</b> 4789009800 <b>Date:</b> 2019-05-30 <b>Test Engineer:</b> 45585 <b>Configuration:</b> EUT / X-Position <b>Location:</b> Chamber 1 <b>Mode:</b> LTE_16QAM Band 41 Fundamentals, 5MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2498.50	18.65	V	5.2	9.9	23.34	33.0	-9.7	
	2498.50	19.35	H	5.2	9.9	24.04	33.0	-9.0	
	Mid Ch								
	2593.00	19.05	V	5.3	9.8	23.51	33.0	-9.5	
	2593.00	21.23	H	5.3	9.8	25.70	33.0	-7.3	
High Ch									
2687.50	18.54	V	5.4	9.8	22.91	33.0	-10.1		
2687.50	20.38	H	5.4	9.8	24.75	33.0	-8.3		

**LTE Band 41(PC3)**

LTE Band 41 20MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 41 Fundamentals, 20MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2506.00	15.48	V	5.2	9.9	20.15	33.0	-12.9	
	2506.00	18.02	H	5.2	9.9	22.69	33.0	-10.3	
	Mid Ch								
	2593.00	16.88	V	5.3	9.8	21.34	33.0	-11.7	
	2593.00	20.38	H	5.3	9.8	24.85	33.0	-8.2	
High Ch									
2680.00	17.99	V	5.4	9.8	22.36	33.0	-10.6		
2680.00	19.47	H	5.4	9.8	23.84	33.0	-9.2		
LTE Band 41 20MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 41 Fundamentals, 20MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2506.00	15.27	V	5.2	9.9	19.94	33.0	-13.1	
	2506.00	17.43	H	5.2	9.9	22.10	33.0	-10.9	
	Mid Ch								
	2593.00	17.08	V	5.3	9.8	21.54	33.0	-11.5	
	2593.00	20.57	H	5.3	9.8	25.04	33.0	-8.0	
High Ch									
2680.00	18.55	V	5.4	9.8	22.92	33.0	-10.1		
2680.00	20.17	H	5.4	9.8	24.54	33.0	-8.5		

LTE Band 41 15MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 41 Fundamentals, 15MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2503.50	15.39	V	5.2	9.9	20.07	33.0	-12.9	
	2503.50	17.04	H	5.2	9.9	21.71	33.0	-11.3	
	Mid Ch								
	2593.00	17.15	V	5.3	9.8	21.61	33.0	-11.4	
	2593.00	20.36	H	5.3	9.8	24.83	33.0	-8.2	
High Ch									
2682.50	13.85	V	5.4	9.8	18.23	33.0	-14.8		
2682.50	17.97	H	5.4	9.8	22.34	33.0	-10.7		
LTE Band 41 15MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 41 Fundamentals, 15MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2503.50	15.36	V	5.2	9.9	20.04	33.0	-13.0	
	2503.50	16.92	H	5.2	9.9	21.59	33.0	-11.4	
	Mid Ch								
	2593.00	18.01	V	5.3	9.8	22.47	33.0	-10.5	
	2593.00	20.33	H	5.3	9.8	24.80	33.0	-8.2	
High Ch									
2682.50	13.84	V	5.4	9.8	18.22	33.0	-14.8		
2682.50	17.97	H	5.4	9.8	22.34	33.0	-10.7		

LTE Band 41 10MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 41 Fundamentals, 10MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2501.00	15.32	V	5.2	9.9	20.01	33.0	-13.0	
	2501.00	17.20	H	5.2	9.9	21.88	33.0	-11.1	
	Mid Ch								
	2593.00	17.28	V	5.3	9.8	21.74	33.0	-11.3	
	2593.00	20.78	H	5.3	9.8	25.25	33.0	-7.8	
High Ch									
2685.00	17.50	V	5.4	9.8	21.87	33.0	-11.1		
2685.00	19.11	H	5.4	9.8	23.47	33.0	-9.5		
LTE Band 41 10MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 41 Fundamentals, 10MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2501.00	15.41	V	5.2	9.9	20.10	33.0	-12.9	
	2501.00	17.29	H	5.2	9.9	21.97	33.0	-11.0	
	Mid Ch								
	2593.00	17.16	V	5.3	9.8	21.62	33.0	-11.4	
	2593.00	20.67	H	5.3	9.8	25.14	33.0	-7.9	
High Ch									
2685.00	17.52	V	5.4	9.8	21.89	33.0	-11.1		
2685.00	19.14	H	5.4	9.8	23.50	33.0	-9.5		

LTE Band 41 5MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_QPSK Band 41 Fundamentals, 5MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2498.50	15.46	V	5.2	9.9	20.15	33.0	-12.9	
	2498.50	17.40	H	5.2	9.9	22.09	33.0	-10.9	
	Mid Ch								
	2593.00	16.77	V	5.3	9.8	21.23	33.0	-11.8	
	2593.00	20.58	H	5.3	9.8	25.05	33.0	-8.0	
High Ch									
2687.50	16.28	V	5.4	9.8	20.65	33.0	-12.3		
2687.50	19.06	H	5.4	9.8	23.43	33.0	-9.6		
LTE Band 41 5MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-30 Test Engineer: 45585 Configuration: EUT / X-Position Location: Chamber 1 Mode: LTE_16QAM Band 41 Fundamentals, 5MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	2498.50	15.48	V	5.2	9.9	20.17	33.0	-12.8	
	2498.50	17.18	H	5.2	9.9	21.87	33.0	-11.1	
	Mid Ch								
	2593.00	16.77	V	5.3	9.8	21.23	33.0	-11.8	
	2593.00	20.51	H	5.3	9.8	24.98	33.0	-8.0	
High Ch									
2687.50	16.39	V	5.4	9.8	20.76	33.0	-12.2		
2687.50	19.03	H	5.4	9.8	23.40	33.0	-9.6		

**LTE Band 66**

LTE Band 66 20MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>									
	Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 66 Fundamentals, 20MHz Bandwidth									
	<b>Test Equipment:</b> 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									
	1720.00	12.76	V	4.3	9.4	17.78	30.0	-12.2		
	1720.00	16.99	H	4.3	9.4	22.02	30.0	-8.0		
	Mid Ch									
	1745.00	13.75	V	4.4	9.4	18.84	30.0	-11.2		
	1745.00	17.84	H	4.4	9.4	22.92	30.0	-7.1		
	High Ch									
	1770.00	12.33	V	4.4	9.5	17.43	30.0	-12.6		
1770.00	16.53	H	4.4	9.5	21.63	30.0	-8.4			
LTE Band 66 20MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>									
	Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 66 Fundamentals, 20MHz Bandwidth									
	<b>Test Equipment:</b> 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									
	1720.00	10.16	V	4.3	9.4	15.18	30.0	-14.8		
	1720.00	14.45	H	4.3	9.4	19.48	30.0	-10.5		
	Mid Ch									
	1745.00	11.56	V	4.4	9.4	16.65	30.0	-13.4		
	1745.00	15.44	H	4.4	9.4	20.52	30.0	-9.5		
	High Ch									
	1770.00	10.29	V	4.4	9.5	15.39	30.0	-14.6		
1770.00	14.52	H	4.4	9.5	19.62	30.0	-10.4			

LTE Band 66 15MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 66 Fundamentals, 15MHz Bandwidth								
	<b>Test Equipment</b> 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								
	1717.50	12.86	V	4.3	9.3	17.89	30.0	-12.1	
	1717.50	16.70	H	4.3	9.3	21.72	30.0	-8.3	
	Mid Ch								
	1745.00	13.63	V	4.4	9.4	18.72	30.0	-11.3	
	1745.00	17.34	H	4.4	9.4	22.42	30.0	-7.6	
High Ch									
1772.50	12.52	V	4.4	9.5	17.61	30.0	-12.4		
1772.50	16.37	H	4.4	9.5	21.46	30.0	-8.5		
LTE Band 66 15MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT / Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 66 Fundamentals, 15MHz Bandwidth								
	<b>Test Equipment</b> 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								
	1717.50	10.30	V	4.3	9.3	15.33	30.0	-14.7	
	1717.50	14.57	H	4.3	9.3	19.59	30.0	-10.4	
	Mid Ch								
	1745.00	10.96	V	4.4	9.4	16.05	30.0	-14.0	
	1745.00	15.44	H	4.4	9.4	20.52	30.0	-9.5	
High Ch									
1772.50	11.15	V	4.4	9.5	16.24	30.0	-13.8		
1772.50	13.94	H	4.4	9.5	19.03	30.0	-11.0		

LTE Band 66 10MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<b>Company:</b> Samsung <b>Project #:</b> 4789009800 <b>Date:</b> 2019-05-21 <b>Test Engineer:</b> 45585 <b>Configuration:</b> EUT / Z-Position <b>Location:</b> Chamber 2 <b>Mode:</b> LTE_QPSK Band 66 Fundamentals, 10MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	1715.00	12.34	V	4.3	9.3	17.36	30.0	-12.6	
	1715.00	16.91	H	4.3	9.3	21.93	30.0	-8.1	
	Mid Ch								
	1745.00	13.44	V	4.4	9.4	18.53	30.0	-11.5	
	1745.00	17.15	H	4.4	9.4	22.23	30.0	-7.8	
High Ch									
1775.00	12.32	V	4.4	9.5	17.42	30.0	-12.6		
1775.00	16.41	H	4.4	9.5	21.50	30.0	-8.5		
LTE Band 66 10MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<b>Company:</b> Samsung <b>Project #:</b> 4789009800 <b>Date:</b> 2019-05-21 <b>Test Engineer:</b> 45585 <b>Configuration:</b> EUT / Z-Position <b>Location:</b> Chamber 2 <b>Mode:</b> LTE_16QAM Band 66 Fundamentals, 10MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	1715.00	10.85	V	4.3	9.3	15.87	30.0	-14.1	
	1715.00	14.89	H	4.3	9.3	19.91	30.0	-10.1	
	Mid Ch								
	1745.00	11.00	V	4.4	9.4	16.09	30.0	-13.9	
	1745.00	15.16	H	4.4	9.4	20.24	30.0	-9.8	
High Ch									
1775.00	10.52	V	4.4	9.5	15.62	30.0	-14.4		
1775.00	14.47	H	4.4	9.5	19.56	30.0	-10.4		

LTE Band 66 5MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT, Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 66 Fundamentals, 5MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	1712.50	12.44	V	4.3	9.3	17.46	30.0	-12.5	
	1712.50	16.36	H	4.3	9.3	21.38	30.0	-8.6	
	Mid Ch								
	1745.00	12.71	V	4.4	9.4	17.80	30.0	-12.2	
	1745.00	17.08	H	4.4	9.4	22.16	30.0	-7.8	
High Ch									
1777.50	12.58	V	4.4	9.5	17.68	30.0	-12.3		
1777.50	16.38	H	4.4	9.5	21.48	30.0	-8.5		
LTE Band 66 5MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT, Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 66 Fundamentals, 5MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	1712.50	10.56	V	4.3	9.3	15.58	30.0	-14.4	
	1712.50	14.66	H	4.3	9.3	19.68	30.0	-10.3	
	Mid Ch								
	1745.00	11.19	V	4.4	9.4	16.28	30.0	-13.7	
	1745.00	15.05	H	4.4	9.4	20.13	30.0	-9.9	
High Ch									
1777.50	10.05	V	4.4	9.5	15.15	30.0	-14.9		
1777.50	14.51	H	4.4	9.5	19.61	30.0	-10.4		

LTE Band 66 3MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT, Z-Position Location: Chamber 2 Mode: LTE_QPSK Band 66 Fundamentals, 3MHz Bandwidth								
	<b>Test Equipment</b> 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								
	1711.50	12.42	V	4.3	9.3	17.43	30.0	-12.6	
	1711.50	16.82	H	4.3	9.3	21.83	30.0	-8.2	
	Mid Ch								
	1745.00	12.75	V	4.4	9.4	17.84	30.0	-12.2	
	1745.00	17.44	H	4.4	9.4	22.52	30.0	-7.5	
High Ch									
1778.50	12.54	V	4.4	9.5	17.63	30.0	-12.4		
1778.50	16.74	H	4.4	9.5	21.84	30.0	-8.2		
LTE Band 66 3MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	Company: Samsung Project #: 4789009800 Date: 2019-05-21 Test Engineer: 45585 Configuration: EUT, Z-Position Location: Chamber 2 Mode: LTE_16QAM Band 66 Fundamentals, 3MHz Bandwidth								
	<b>Test Equipment</b> 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								
	1711.50	10.35	V	4.3	9.3	15.36	30.0	-14.6	
	1711.50	14.70	H	4.3	9.3	19.71	30.0	-10.3	
	Mid Ch								
	1745.00	10.56	V	4.4	9.4	15.65	30.0	-14.4	
	1745.00	15.32	H	4.4	9.4	20.40	30.0	-9.6	
High Ch									
1778.50	10.20	V	4.4	9.5	15.29	30.0	-14.7		
1778.50	14.74	H	4.4	9.5	19.84	30.0	-10.2		

LTE Band 66 1.4MHz QPSK	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<b>Company:</b> Samsung <b>Project #:</b> 4789009800 <b>Date:</b> 2019-05-22 <b>Test Engineer:</b> 45585 <b>Configuration:</b> EUT, Z-Position <b>Location:</b> Chamber 2 <b>Mode:</b> LTE_QPSK Band 66 Fundamentals, 1.4MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	1710.70	12.56	V	4.3	9.3	17.57	30.0	-12.4	
	1710.70	16.88	H	4.3	9.3	21.89	30.0	-8.1	
	Mid Ch								
	1745.00	12.57	V	4.4	9.4	17.66	30.0	-12.3	
	1745.00	17.46	H	4.4	9.4	22.54	30.0	-7.5	
High Ch									
1779.30	12.36	V	4.4	9.5	17.46	30.0	-12.5		
1779.30	16.85	H	4.4	9.5	21.94	30.0	-8.1		
LTE Band 66 1.4MHz 16QAM	<b>UL Verification Services, Inc.</b> <b>High Frequency Substitution Measurement</b>								
	<b>Company:</b> Samsung <b>Project #:</b> 4789009800 <b>Date:</b> 2019-05-22 <b>Test Engineer:</b> 45585 <b>Configuration:</b> EUT, Z-Position <b>Location:</b> Chamber 2 <b>Mode:</b> LTE_16QAM Band 66 Fundamentals, 1.4MHz Bandwidth								
	<b>Test Equipment:</b> 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								
	1710.70	10.45	V	4.3	9.3	15.46	30.0	-14.5	
	1710.70	14.70	H	4.3	9.3	19.71	30.0	-10.3	
	Mid Ch								
	1745.00	10.52	V	4.4	9.4	15.61	30.0	-14.4	
	1745.00	15.15	H	4.4	9.4	20.23	30.0	-9.8	
High Ch									
1779.30	10.07	V	4.4	9.5	15.17	30.0	-14.8		
1779.30	14.72	H	4.4	9.5	19.81	30.0	-10.2		

## 10.2. FIELD STRENGTH OF SPURIOUS RADIATION

### RULE PART(S)

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

(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.

(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.

(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.

(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 digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part 90.691(a):

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $116 \log_{10}(f/6.1)$  decibels or  $50 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz. (NOTE : Use 100kHz reference bandwidth)

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

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## **TEST PROCEDURE**

ANSI / TIA / EIA 603 E Clause 2.2.12; ESU40 setting reference to 971168 D01 v03r01

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  $\geq 1.5$  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 Band41);;

## **RESULTS**

See the following pages.

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

### 10.2.1. SPURIOUS RADIATION PLOTS

#### GSM850

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company:	Samsung							
		Project #:	4789009800							
		Date:	2019-06-01							
		Test Engineer:	45585							
		Configuration:	EUT / AC Adapter, Y-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	5.3	V	3.0	38.2	1.0	-32.0	-13.0	-19.0		
2472.60	0.4	V	3.0	38.8	1.0	-37.4	-13.0	-24.4		
3296.80	-3.2	V	3.0	39.4	1.0	-41.6	-13.0	-28.6		
GSM850										
GPRS										
1648.40	1.4	H	3.0	38.2	1.0	-35.8	-13.0	-22.8		
2472.60	-7.1	H	3.0	38.8	1.0	-44.9	-13.0	-31.9		
3296.80	-3.6	H	3.0	39.4	1.0	-42.0	-13.0	-29.0		
Mid Ch, 836.6MHz										
1673.20	7.3	V	3.0	38.2	1.0	-29.9	-13.0	-16.9		
2509.80	-0.1	V	3.0	38.8	1.0	-37.9	-13.0	-24.9		
3346.40	-3.6	V	3.0	39.5	1.0	-42.1	-13.0	-29.1		
1673.20	4.4	H	3.0	38.2	1.0	-32.8	-13.0	-19.8		
2509.80	-4.6	H	3.0	38.8	1.0	-42.4	-13.0	-29.4		
3346.40	-3.8	H	3.0	39.5	1.0	-42.3	-13.0	-29.3		
High Ch, 848.8MHz										
1697.60	2.8	V	3.0	38.2	1.0	-34.5	-13.0	-21.5		
2546.40	-1.8	V	3.0	38.9	1.0	-39.6	-13.0	-26.6		
3395.20	-3.2	V	3.0	39.5	1.0	-41.7	-13.0	-28.7		
1697.60	1.7	H	3.0	38.2	1.0	-35.5	-13.0	-22.5		
2546.40	-6.6	H	3.0	38.9	1.0	-44.4	-13.0	-31.4		
3395.20	-5.4	H	3.0	39.5	1.0	-43.9	-13.0	-30.9		

  

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
		Company:	Samsung							
		Project #:	4789009800							
		Date:	2019-06-01							
		Test Engineer:	45585							
		Configuration:	EUT / AC Adapter, -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	-7.9	V	3.0	38.2	1.0	-45.2	-13.0	-32.2		
2472.60	-11.1	V	3.0	38.8	1.0	-48.9	-13.0	-35.9		
3296.80	-7.5	V	3.0	39.4	1.0	-45.9	-13.0	-32.9		
GSM850										
EGPRS										
1648.40	-12.7	H	3.0	38.2	1.0	-49.9	-13.0	-36.9		
2472.60	-11.9	H	3.0	38.8	1.0	-49.7	-13.0	-36.7		
3296.80	-9.2	H	3.0	39.4	1.0	-47.7	-13.0	-34.7		
Mid Ch, 836.6MHz										
1673.20	-9.5	V	3.0	38.2	1.0	-46.7	-13.0	-33.7		
2509.80	-10.3	V	3.0	38.8	1.0	-48.1	-13.0	-35.1		
3346.40	-8.8	V	3.0	39.5	1.0	-47.3	-13.0	-34.3		
1673.20	-12.2	H	3.0	38.2	1.0	-49.4	-13.0	-36.4		
2509.80	-10.7	H	3.0	38.8	1.0	-48.5	-13.0	-35.5		
3346.40	-9.0	H	3.0	39.5	1.0	-47.5	-13.0	-34.5		
High Ch, 848.8MHz										
1697.60	-10.5	V	3.0	38.2	1.0	-47.7	-13.0	-34.7		
2546.40	-11.2	V	3.0	38.9	1.0	-49.0	-13.0	-36.0		
3395.20	-8.7	V	3.0	39.5	1.0	-47.1	-13.0	-34.1		
1697.60	-9.2	H	3.0	38.2	1.0	-46.4	-13.0	-33.4		
2546.40	-11.6	H	3.0	38.9	1.0	-49.4	-13.0	-36.4		
3395.20	-9.1	H	3.0	39.5	1.0	-47.6	-13.0	-34.6		

**GSM1900**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		Samsung							
<b>Project #:</b>		4789009800							
<b>Date:</b>		2019-06-14							
<b>Test Engineer:</b>		45585							
<b>Configuration:</b>		EUT / AC Adapter, Y-Position							
<b>Location:</b>		Chamber 1							
<b>Mode:</b>		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
<b>Low Ch, 1850.2MHz</b>									
3700.40	-0.8	V	3.0	43.8	1.0	-43.5	-13.0	-30.5	
5550.60	-3.4	V	3.0	43.7	1.0	-46.1	-13.0	-33.1	
7400.80	-5.0	V	3.0	42.5	1.0	-46.5	-13.0	-33.5	
3700.40	-3.5	H	3.0	43.8	1.0	-46.3	-13.0	-33.3	
5550.60	-4.4	H	3.0	43.7	1.0	-47.2	-13.0	-34.2	
7400.80	-5.1	H	3.0	42.5	1.0	-46.6	-13.0	-33.6	
<b>Mid Ch, 1880MHz</b>									
3760.00	0.3	V	3.0	43.8	1.0	-42.5	-13.0	-29.5	
5640.00	0.3	V	3.0	43.7	1.0	-42.4	-13.0	-29.4	
7520.00	-5.0	V	3.0	42.5	1.0	-46.4	-13.0	-33.4	
3760.00	-2.1	H	3.0	43.8	1.0	-44.9	-13.0	-31.9	
5640.00	-3.2	H	3.0	43.7	1.0	-45.9	-13.0	-32.9	
7520.00	-4.9	H	3.0	42.5	1.0	-46.3	-13.0	-33.3	
<b>High Ch, 1909.8MHz</b>									
3819.60	-1.1	V	3.0	43.8	1.0	-43.9	-13.0	-30.9	
5729.40	-1.0	V	3.0	43.7	1.0	-43.7	-13.0	-30.7	
7639.20	-4.6	V	3.0	42.4	1.0	-46.0	-13.0	-33.0	
3819.60	-1.4	H	3.0	43.8	1.0	-44.2	-13.0	-31.2	
5729.40	-2.4	H	3.0	43.7	1.0	-45.1	-13.0	-32.1	
7639.20	-4.6	H	3.0	42.4	1.0	-46.0	-13.0	-33.0	

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		Samsung							
<b>Project #:</b>		4789009800							
<b>Date:</b>		2019-06-14							
<b>Test Engineer:</b>		45585							
<b>Configuration:</b>		EUT / AC Adapter, Y-Position							
<b>Location:</b>		Chamber 1							
<b>Mode:</b>		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
<b>Low Ch, 1850.2MHz</b>									
3700.40	-6.1	V	3.0	43.8	1.0	-48.9	-13.0	-35.9	
5550.60	-7.4	V	3.0	43.7	1.0	-50.1	-13.0	-37.1	
7400.80	-5.0	V	3.0	42.5	1.0	-46.5	-13.0	-33.5	
3700.40	-10.7	H	3.0	43.8	1.0	-53.4	-13.0	-40.4	
5550.60	-6.8	H	3.0	43.7	1.0	-49.5	-13.0	-36.5	
7400.80	-4.9	H	3.0	42.5	1.0	-46.5	-13.0	-33.5	
<b>Mid Ch, 1880MHz</b>									
3760.00	-5.2	V	3.0	43.8	1.0	-48.0	-13.0	-35.0	
5640.00	-6.2	V	3.0	43.7	1.0	-48.9	-13.0	-35.9	
7520.00	-4.8	V	3.0	42.5	1.0	-46.2	-13.0	-33.2	
3760.00	-6.8	H	3.0	43.8	1.0	-49.6	-13.0	-36.6	
5640.00	-7.2	H	3.0	43.7	1.0	-49.9	-13.0	-36.9	
7520.00	-5.0	H	3.0	42.5	1.0	-46.5	-13.0	-33.5	
<b>High Ch, 1909.8MHz</b>									
3819.60	-7.0	V	3.0	43.8	1.0	-49.8	-13.0	-36.8	
5729.40	-6.9	V	3.0	43.7	1.0	-49.6	-13.0	-36.6	
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	-49.0	-13.0	-36.0	
5729.40	-7.5	H	3.0	43.7	1.0	-50.2	-13.0	-37.2	
7639.20	-4.9	H	3.0	42.4	1.0	-46.3	-13.0	-33.3	

**WCDMA Band 5**

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement								
WCDMA  Band 5 REL99	Company:	Saumsung								
	Project #:	4789009800								
	Date:	2019-06-03								
	Test Engineer:	45585								
	Configuration:	EUT / AC Adapter, X-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)	Notes
	Low Ch, 826.4MHz									
	1652.80	-15.4	V	3.0	38.2	1.0	-52.6	-13.0	-39.6	
	2479.20	-12.8	V	3.0	38.8	1.0	-50.6	-13.0	-37.6	
	3305.60	-10.3	V	3.0	39.4	1.0	-48.7	-13.0	-35.7	
	1652.80	-16.5	H	3.0	38.2	1.0	-53.7	-13.0	-40.7	
	2479.20	-13.4	H	3.0	38.8	1.0	-51.2	-13.0	-38.2	
	3305.60	-10.6	H	3.0	39.4	1.0	-49.0	-13.0	-36.0	
	Mid Ch, 836.6MHz									
	1673.20	-15.3	V	3.0	38.2	1.0	-52.5	-13.0	-39.5	
	2509.80	-12.6	V	3.0	38.8	1.0	-50.5	-13.0	-37.5	
	3346.40	-10.3	V	3.0	39.5	1.0	-48.7	-13.0	-35.7	
	1673.20	-16.4	H	3.0	38.2	1.0	-53.7	-13.0	-40.7	
	2509.80	-13.2	H	3.0	38.8	1.0	-51.1	-13.0	-38.1	
	3346.40	-10.6	H	3.0	39.5	1.0	-49.0	-13.0	-36.0	
	High Ch, 846.6MHz									
	1693.20	-15.3	V	3.0	38.2	1.0	-52.6	-13.0	-39.6	
	2539.80	-12.6	V	3.0	38.9	1.0	-50.4	-13.0	-37.4	
	3386.40	-10.1	V	3.0	39.5	1.0	-48.6	-13.0	-35.6	
	1693.20	-16.4	H	3.0	38.2	1.0	-53.6	-13.0	-40.6	
	2539.80	-13.2	H	3.0	38.9	1.0	-51.0	-13.0	-38.0	
	3386.40	-10.4	H	3.0	39.5	1.0	-48.9	-13.0	-35.9	
			UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement							
	WCDMA  Band 5 HSDPA	Company:	Samsung							
		Project #:	4789009800							
		Date:	2019-06-03							
		Test Engineer:	45585							
		Configuration:	EUT / AC Adapter, X-Position							
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)	Notes
Low Ch, 826.4MHz										
1652.80		-15.4	V	3.0	38.2	1.0	-52.7	-13.0	-39.7	
2479.20		-12.8	V	3.0	38.8	1.0	-50.6	-13.0	-37.6	
3305.60		-10.3	V	3.0	39.4	1.0	-48.8	-13.0	-35.8	
1652.80		-16.5	H	3.0	38.2	1.0	-53.7	-13.0	-40.7	
2479.20		-13.5	H	3.0	38.8	1.0	-51.3	-13.0	-38.3	
3305.60		-10.6	H	3.0	39.4	1.0	-49.1	-13.0	-36.1	
Mid Ch, 836.6MHz										
1673.20		-15.4	V	3.0	38.2	1.0	-52.6	-13.0	-39.6	
2509.80		-12.7	V	3.0	38.8	1.0	-50.5	-13.0	-37.5	
3346.40		-10.3	V	3.0	39.5	1.0	-48.8	-13.0	-35.8	
1673.20		-16.4	H	3.0	38.2	1.0	-53.6	-13.0	-40.6	
2509.80		-13.3	H	3.0	38.8	1.0	-51.2	-13.0	-38.2	
3346.40		-10.6	H	3.0	39.5	1.0	-49.1	-13.0	-36.1	
High Ch, 846.6MHz										
1693.20		-15.3	V	3.0	38.2	1.0	-52.6	-13.0	-39.6	
2539.80		-12.6	V	3.0	38.9	1.0	-50.5	-13.0	-37.5	
3386.40		-10.1	V	3.0	39.5	1.0	-48.6	-13.0	-35.6	
1693.20		-16.4	H	3.0	38.2	1.0	-53.6	-13.0	-40.6	
2539.80		-13.2	H	3.0	38.9	1.0	-51.1	-13.0	-38.1	
3386.40		-10.4	H	3.0	39.5	1.0	-48.9	-13.0	-35.9	

**WCDMA Band 4**

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
		Company:	Samsung									
		Project #:	4789009800									
		Date:	2019-06-03									
		Test Engineer:	45585									
		Configuration:	EUT / AC Adapter									
		Location:	Chamber 1									
		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 REL99	Low Ch, 1712.4MHz											
	3424.80	-9.8	V	3.0	43.7	1.0	-52.5	-13.0	-39.5			
	5137.20	-9.3	V	3.0	43.8	1.0	-52.1	-13.0	-39.1			
	6849.60	-6.3	V	3.0	42.9	1.0	-48.2	-13.0	-35.2			
	3424.80	-9.9	H	3.0	43.7	1.0	-52.6	-13.0	-39.6			
	5137.20	-9.3	H	3.0	43.8	1.0	-52.1	-13.0	-39.1			
	6849.60	-6.3	H	3.0	42.9	1.0	-48.2	-13.0	-35.2			
	Mid Ch, 1732.6MHz											
	3465.20	-9.8	V	3.0	43.7	1.0	-52.5	-13.0	-39.5			
	5197.80	-9.0	V	3.0	43.8	1.0	-51.8	-13.0	-38.8			
	6930.40	-6.2	V	3.0	42.8	1.0	-48.0	-13.0	-35.0			
	3465.20	-9.9	H	3.0	43.7	1.0	-52.6	-13.0	-39.6			
	5197.80	-9.1	H	3.0	43.8	1.0	-51.8	-13.0	-38.8			
	6930.40	-6.2	H	3.0	42.8	1.0	-48.0	-13.0	-35.0			
	High Ch, 1752.6MHz											
	3505.20	-9.2	V	3.0	43.7	1.0	-51.9	-13.0	-38.9			
	5257.80	-9.0	V	3.0	43.8	1.0	-51.7	-13.0	-38.7			
	7010.40	-5.9	V	3.0	42.7	1.0	-47.7	-13.0	-34.7			
	3505.20	-9.3	H	3.0	43.7	1.0	-52.0	-13.0	-39.0			
	5257.80	-9.0	H	3.0	43.8	1.0	-51.8	-13.0	-38.8			
	7010.40	-5.9	H	3.0	42.7	1.0	-47.6	-13.0	-34.6			
	WCDMA Band 4 HSDPA	UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
				Company:	Samsung							
				Project #:	4789009800							
		Date:	2019-06-03									
		Test Engineer:	45585									
		Configuration:	EUT / AC Adapter									
		Location:	Chamber 1									
		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		Low Ch, 1712.4MHz										
		3424.80	-9.8	V	3.0	43.7	1.0	-52.5	-13.0	-39.5		
		5137.20	-9.3	V	3.0	43.8	1.0	-52.1	-13.0	-39.1		
		6849.60	-6.3	V	3.0	42.9	1.0	-48.2	-13.0	-35.2		
		3424.80	-9.9	H	3.0	43.7	1.0	-52.6	-13.0	-39.6		
		5137.20	-9.3	H	3.0	43.8	1.0	-52.1	-13.0	-39.1		
		6849.60	-6.3	H	3.0	42.9	1.0	-48.2	-13.0	-35.2		
		Mid Ch, 1732.6MHz										
		3465.20	-9.8	V	3.0	43.7	1.0	-52.5	-13.0	-39.5		
		5197.80	-9.0	V	3.0	43.8	1.0	-51.8	-13.0	-38.8		
		6930.40	-6.2	V	3.0	42.8	1.0	-48.0	-13.0	-35.0		
		3465.20	-9.9	H	3.0	43.7	1.0	-52.6	-13.0	-39.6		
		5197.80	-9.1	H	3.0	43.8	1.0	-51.8	-13.0	-38.8		
		6930.40	-6.2	H	3.0	42.8	1.0	-48.0	-13.0	-35.0		
		High Ch, 1752.6MHz										
	3505.20	-9.2	V	3.0	43.7	1.0	-51.9	-13.0	-38.9			
	5257.80	-9.0	V	3.0	43.8	1.0	-51.7	-13.0	-38.7			
	7010.40	-6.0	V	3.0	42.7	1.0	-47.7	-13.0	-34.7			
	3505.20	-9.3	H	3.0	43.7	1.0	-52.0	-13.0	-39.0			
	5257.80	-9.0	H	3.0	43.8	1.0	-51.8	-13.0	-38.8			
	7010.40	-5.9	H	3.0	42.7	1.0	-47.7	-13.0	-34.7			

**WCDMA Band 2**

		UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
WCDMA  Band 2 REL99		Company: Samsung Project #: 4789009800 Date: 2019-05-24 Test Engineer: 45585 Configuration: EUT / AC Adapter, Z-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	-11.3	V	3.0	39.7	1.0	-50.0	-13.0	-37.0		
		5557.20	-8.3	V	3.0	39.9	1.0	-47.2	-13.0	-34.2		
		7409.60	-6.1	V	3.0	39.4	1.0	-44.5	-13.0	-31.5		
		3704.80	-11.5	H	3.0	39.7	1.0	-50.2	-13.0	-37.2		
		5557.20	-8.5	H	3.0	39.9	1.0	-47.5	-13.0	-34.5		
		7409.60	-7.0	H	3.0	39.4	1.0	-45.5	-13.0	-32.5		
		Mid Ch, 1880MHz										
		3760.00	-10.8	V	3.0	39.7	1.0	-49.5	-13.0	-36.5		
		5640.00	-7.9	V	3.0	40.0	1.0	-46.9	-13.0	-33.9		
		7520.00	-6.3	V	3.0	39.4	1.0	-44.7	-13.0	-31.7		
		3760.00	-11.2	H	3.0	39.7	1.0	-49.8	-13.0	-36.8		
		5640.00	-8.2	H	3.0	40.0	1.0	-47.2	-13.0	-34.2		
7520.00	-7.0	H	3.0	39.4	1.0	-45.4	-13.0	-32.4				
High Ch, 1907.6MHz												
3815.20	-11.0	V	3.0	39.7	1.0	-49.7	-13.0	-36.7				
5722.80	-8.1	V	3.0	40.0	1.0	-47.1	-13.0	-34.1				
7630.40	-6.2	V	3.0	39.3	1.0	-44.6	-13.0	-31.6				
3815.20	-11.2	H	3.0	39.7	1.0	-49.9	-13.0	-36.9				
5722.80	-8.4	H	3.0	40.0	1.0	-47.4	-13.0	-34.4				
7630.40	-7.0	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 #: 4789009800 Date: 2019-05-24 Test Engineer: 45585 Configuration: EUT / AC Adapter, Z-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	-11.2	V	3.0	39.7	1.0	-49.8	-13.0	-36.8		
		5557.20	-8.2	V	3.0	39.9	1.0	-47.1	-13.0	-34.1		
		7409.60	-6.1	V	3.0	39.4	1.0	-44.5	-13.0	-31.5		
		3704.80	-11.4	H	3.0	39.7	1.0	-50.1	-13.0	-37.1		
		5557.20	-8.5	H	3.0	39.9	1.0	-47.5	-13.0	-34.5		
		7409.60	-7.0	H	3.0	39.4	1.0	-45.4	-13.0	-32.4		
		Mid Ch, 1880MHz										
		3760.00	-10.9	V	3.0	39.7	1.0	-49.6	-13.0	-36.6		
		5640.00	-8.0	V	3.0	40.0	1.0	-46.9	-13.0	-33.9		
		7520.00	-6.2	V	3.0	39.4	1.0	-44.6	-13.0	-31.6		
		3760.00	-11.1	H	3.0	39.7	1.0	-49.8	-13.0	-36.8		
		5640.00	-8.1	H	3.0	40.0	1.0	-47.1	-13.0	-34.1		
7520.00	-7.0	H	3.0	39.4	1.0	-45.4	-13.0	-32.4				
High Ch, 1907.6MHz												
3815.20	-11.0	V	3.0	39.7	1.0	-49.7	-13.0	-36.7				
5722.80	-8.1	V	3.0	40.0	1.0	-47.1	-13.0	-34.1				
7630.40	-6.2	V	3.0	39.3	1.0	-44.6	-13.0	-31.6				
3815.20	-11.2	H	3.0	39.7	1.0	-49.9	-13.0	-36.9				
5722.80	-8.4	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				

**LTE Band 5**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
		<b>Company:</b>	Samsung						
		<b>Project #:</b>	4789009800						
		<b>Date:</b>	2019-06-14						
		<b>Test Engineer:</b>	45585						
		<b>Configuration:</b>	EUT / AC Adapter, X-Position						
		<b>Location:</b>	Chamber 1						
		<b>Mode:</b>	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
<b>Low Ch, 829MHz</b>									
1658.00	-15.1	V	3.0	43.6	1.0	-57.7	-13.0	-44.7	
2487.00	-12.3	V	3.0	43.4	1.0	-54.7	-13.0	-41.7	
3316.00	-10.4	V	3.0	43.6	1.0	-53.0	-13.0	-40.0	
<b>10MHz</b>									
1658.00	-16.2	H	3.0	43.6	1.0	-58.8	-13.0	-45.8	
2487.00	-12.9	H	3.0	43.4	1.0	-55.3	-13.0	-42.3	
3316.00	-10.5	H	3.0	43.6	1.0	-53.1	-13.0	-40.1	
<b>QPSK</b>									
<b>Mid Ch, 836.5MHz</b>									
1673.00	-15.1	V	3.0	43.6	1.0	-57.6	-13.0	-44.6	
2509.50	-12.2	V	3.0	43.4	1.0	-54.6	-13.0	-41.6	
3346.00	-10.2	V	3.0	43.6	1.0	-52.9	-13.0	-39.9	
1673.00	-15.8	H	3.0	43.6	1.0	-58.4	-13.0	-45.4	
2509.50	-13.0	H	3.0	43.4	1.0	-55.4	-13.0	-42.4	
3346.00	-10.4	H	3.0	43.6	1.0	-53.0	-13.0	-40.0	
<b>High Ch, 844MHz</b>									
1688.00	-15.0	V	3.0	43.6	1.0	-57.6	-13.0	-44.6	
2532.00	-12.4	V	3.0	43.4	1.0	-54.8	-13.0	-41.8	
3376.00	-10.4	V	3.0	43.7	1.0	-53.0	-13.0	-40.0	
1688.00	-16.1	H	3.0	43.6	1.0	-58.6	-13.0	-45.6	
2532.00	-13.0	H	3.0	43.4	1.0	-55.4	-13.0	-42.4	
3376.00	-10.3	H	3.0	43.7	1.0	-52.9	-13.0	-39.9	

**LTE Band 7**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4789009800							
Date:		2019-06-14							
Test Engineer:		45585							
Configuration:		EUT / AC Adapter, Y-Position							
Location:		Chamber 2							
Mode:		LTE_QPSK Band 7 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, 2510MHz									
5020.00	0.0	V	3.0	39.8	1.0	-38.8	-25.0	-13.8	
7530.00	0.0	V	3.0	39.4	1.0	-38.4	-25.0	-13.4	
10040.00	0.0	V	3.0	38.6	1.0	-37.6	-25.0	-12.6	
12550.00	0.0	V	3.0	39.0	1.0	-38.0	-25.0	-13.0	
15060.00	0.0	V	3.0	41.3	1.0	-40.3	-25.0	-15.3	
5020.00	0.0	H	3.0	39.8	1.0	-38.8	-25.0	-13.8	
7530.00	0.0	H	3.0	39.4	1.0	-38.4	-25.0	-13.4	
10040.00	0.0	H	3.0	38.6	1.0	-37.6	-25.0	-12.6	
12550.00	0.0	H	3.0	39.0	1.0	-38.0	-25.0	-13.0	
15060.00	0.0	H	3.0	41.3	1.0	-40.3	-25.0	-15.3	
Mid Ch, 2535MHz									
5070.00	0.0	V	3.0	39.8	1.0	-38.8	-25.0	-13.8	
7605.00	0.0	V	3.0	39.3	1.0	-38.3	-25.0	-13.3	
10140.00	0.0	V	3.0	38.6	1.0	-37.6	-25.0	-12.6	
12675.00	0.0	V	3.0	39.1	1.0	-38.1	-25.0	-13.1	
15210.00	0.0	V	3.0	41.2	1.0	-40.2	-25.0	-15.2	
5070.00	0.0	H	3.0	39.8	1.0	-38.8	-25.0	-13.8	
7605.00	0.0	H	3.0	39.3	1.0	-38.3	-25.0	-13.3	
10140.00	0.0	H	3.0	38.6	1.0	-37.6	-25.0	-12.6	
12675.00	0.0	H	3.0	39.1	1.0	-38.1	-25.0	-13.1	
15210.00	0.0	H	3.0	41.2	1.0	-40.2	-25.0	-15.2	
High Ch, 2560MHz									
5120.00	0.0	V	3.0	39.8	1.0	-38.8	-25.0	-13.8	
7680.00	0.0	V	3.0	39.3	1.0	-38.3	-25.0	-13.3	
10240.00	0.0	V	3.0	38.6	1.0	-37.6	-25.0	-12.6	
12800.00	0.0	V	3.0	39.2	1.0	-38.2	-25.0	-13.2	
15360.00	0.0	V	3.0	41.2	1.0	-40.2	-25.0	-15.2	
5120.00	0.0	H	3.0	39.8	1.0	-38.8	-25.0	-13.8	
7680.00	0.0	H	3.0	39.3	1.0	-38.3	-25.0	-13.3	
10240.00	0.0	H	3.0	38.6	1.0	-37.6	-25.0	-12.6	
12800.00	0.0	H	3.0	39.2	1.0	-38.2	-25.0	-13.2	
15360.00	0.0	H	3.0	41.2	1.0	-40.2	-25.0	-15.2	

LTE  
 Band 7  
 20MHz  
 QPSK

**LTE Band 12**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement											
LTE Band 12  3MHz  QPSK		Company: Samsung Project #: 4789009800 Date: 2019-05-22 Test Engineer: 45585 Configuration: EUT / AC Adapter, Y-Position Location: Chamber 1 Mode: LTE_QPSK Band 12 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, 700.5MHz									
		1401.00	-4.4	V	3.0	43.8	1.0	-47.2	-13.0	-34.2	
		2101.50	-13.0	V	3.0	43.3	1.0	-55.3	-13.0	-42.3	
		2802.00	-11.2	V	3.0	43.5	1.0	-53.7	-13.0	-40.7	
		1401.00	-2.5	H	3.0	43.8	1.0	-45.3	-13.0	-32.3	
		2101.50	-13.8	H	3.0	43.3	1.0	-56.1	-13.0	-43.1	
		2802.00	-11.6	H	3.0	43.5	1.0	-54.1	-13.0	-41.1	
		Mid Ch, 707.5MHz									
1415.00	-0.3	V	3.0	43.8	1.0	-43.1	-13.0	-30.1			
2122.50	-12.7	V	3.0	43.3	1.0	-55.0	-13.0	-42.0			
2830.00	-11.2	V	3.0	43.5	1.0	-53.7	-13.0	-40.7			
1415.00	3.4	H	3.0	43.8	1.0	-39.4	-13.0	-26.4			
2122.50	-11.1	H	3.0	43.3	1.0	-53.4	-13.0	-40.4			
2830.00	-11.6	H	3.0	43.5	1.0	-54.1	-13.0	-41.1			
High Ch, 714.5MHz											
1429.00	-3.6	V	3.0	43.8	1.0	-46.4	-13.0	-33.4			
2143.50	-13.1	V	3.0	43.3	1.0	-55.4	-13.0	-42.4			
2858.00	-11.1	V	3.0	43.5	1.0	-53.6	-13.0	-40.6			
1429.00	-2.4	H	3.0	43.8	1.0	-45.2	-13.0	-32.2			
2143.50	-13.4	H	3.0	43.3	1.0	-55.7	-13.0	-42.7			
2858.00	-11.5	H	3.0	43.5	1.0	-54.0	-13.0	-41.0			

**LTE Band 13**

LTE Band 13 10MHz QPSK	<b>UL Verification Services, Inc.</b> <b>Above 1GHz High Frequency Substitution Measurement</b>									
	<b>Company:</b> Samsung									
	<b>Project #:</b> 4789009800									
	<b>Date:</b> 2019-06-06									
	<b>Test Engineer:</b> 45585									
	<b>Configuration:</b> EUT/ AC Adapter, Z-Position									
	<b>Location:</b> Chamber 2									
	<b>Mode:</b> LTE_QPSK Band 13 Hamonics, 10MHz Bandwidth									
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
	Mid Ch, 782MHz									
1564.00	-6.4	V	3.0	38.2	1.0	-43.6	-40.0	-3.6		
2346.00	-13.1	V	3.0	38.7	1.0	-50.7	-13.0	-37.7		
3128.00	-10.9	V	3.0	39.3	1.0	-49.2	-13.0	-36.2		
1564.00	-13.8	H	3.0	38.2	1.0	-51.0	-40.0	-11.0		
2346.00	-13.8	H	3.0	38.7	1.0	-51.5	-13.0	-38.5		
3128.00	-11.0	H	3.0	39.3	1.0	-49.3	-13.0	-36.3		

NOTE : No narrowband emissions so only applied the -70dBW/MHz (-40dBm/MHz) wideband emission limit for the 1559-1610 MHz band

**LTE Band 25**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
		<b>Company:</b>	Samsung						
		<b>Project #:</b>	4789009800						
		<b>Date:</b>	2019-05-31						
		<b>Test Engineer:</b>	45585						
		<b>Configuration:</b>	EUT / AC Adapter, Z-Position						
		<b>Location:</b>	Chamber 2						
		<b>Mode:</b>	LTE_QPSK Band 25 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
<b>Low Ch, 1860MHz</b>									
3720.00	-11.2	V	3.0	39.7	1.0	-49.8	-13.0	-36.8	
5580.00	-8.2	V	3.0	39.9	1.0	-47.2	-13.0	-34.2	
7440.00	-6.1	V	3.0	39.4	1.0	-44.5	-13.0	-31.5	
<b>20MHz</b>									
3720.00	-11.4	H	3.0	39.7	1.0	-50.1	-13.0	-37.1	
5580.00	-8.6	H	3.0	39.9	1.0	-47.6	-13.0	-34.6	
7440.00	-7.1	H	3.0	39.4	1.0	-45.5	-13.0	-32.5	
<b>QPSK</b>									
<b>Mid Ch, 1882.5MHz</b>									
3765.00	-11.1	V	3.0	39.7	1.0	-49.7	-13.0	-36.7	
5647.50	-8.0	V	3.0	40.0	1.0	-47.0	-13.0	-34.0	
7530.00	-6.3	V	3.0	39.4	1.0	-44.7	-13.0	-31.7	
3765.00	-11.3	H	3.0	39.7	1.0	-50.0	-13.0	-37.0	
5647.50	-8.2	H	3.0	40.0	1.0	-47.2	-13.0	-34.2	
7530.00	-7.1	H	3.0	39.4	1.0	-45.5	-13.0	-32.5	
<b>High Ch, 1905MHz</b>									
3810.00	-11.8	V	3.0	39.7	1.0	-50.5	-13.0	-37.5	
5715.00	-8.8	V	3.0	40.0	1.0	-47.8	-13.0	-34.8	
7620.00	-6.3	V	3.0	39.3	1.0	-44.6	-13.0	-31.6	
3810.00	-11.2	H	3.0	39.7	1.0	-49.9	-13.0	-36.9	
5715.00	-8.4	H	3.0	40.0	1.0	-47.4	-13.0	-34.4	
7620.00	-6.9	H	3.0	39.3	1.0	-45.2	-13.0	-32.2	

**LTE Band 26**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		Samsung							
<b>Project #:</b>		4789009800							
<b>Date:</b>		2019-06-14							
<b>Test Engineer:</b>		45585							
<b>Configuration:</b>		EUT / AC Adapter, X-Position							
<b>Location:</b>		Chamber 1							
<b>Mode:</b>		LTE_QPSK Band 26 Hamonics, 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, 821.5MHz									
1643.00	-15.2	V	3.0	43.6	1.0	-57.8	-13.0	-44.8	
2464.50	-12.2	V	3.0	43.4	1.0	-54.6	-13.0	-41.6	
3286.00	-10.5	V	3.0	43.6	1.0	-53.2	-13.0	-40.2	
1643.00	-16.2	H	3.0	43.6	1.0	-58.8	-13.0	-45.8	
2464.50	-12.9	H	3.0	43.4	1.0	-55.3	-13.0	-42.3	
3286.00	-10.8	H	3.0	43.6	1.0	-53.4	-13.0	-40.4	
LTE Band 26 15MHz QPSK									
UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		Samsung							
<b>Project #:</b>		4789009800							
<b>Date:</b>		2019-06-14							
<b>Test Engineer:</b>		45585							
<b>Configuration:</b>		EUT / AC Adapter, X-Position							
<b>Location:</b>		Chamber 1							
<b>Mode:</b>		LTE_QPSK Band 26 Hamonics, 15MHz Bandwidth							
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, 831.5MHz									
1663.00	-15.1	V	3.0	43.6	1.0	-57.7	-13.0	-44.7	
2494.50	-12.3	V	3.0	43.4	1.0	-54.7	-13.0	-41.7	
3326.00	-10.3	V	3.0	43.6	1.0	-53.0	-13.0	-40.0	
1663.00	-16.2	H	3.0	43.6	1.0	-58.7	-13.0	-45.7	
2494.50	-13.0	H	3.0	43.4	1.0	-55.4	-13.0	-42.4	
3326.00	-10.4	H	3.0	43.6	1.0	-53.1	-13.0	-40.1	
High Ch, 841.5MHz									
1683.00	-15.0	V	3.0	43.6	1.0	-57.6	-13.0	-44.6	
2524.50	-12.3	V	3.0	43.4	1.0	-54.7	-13.0	-41.7	
3366.00	-10.4	V	3.0	43.7	1.0	-53.1	-13.0	-40.1	
1683.00	-16.2	H	3.0	43.6	1.0	-58.7	-13.0	-45.7	
2524.50	-12.9	H	3.0	43.4	1.0	-55.3	-13.0	-42.3	
3366.00	-10.5	H	3.0	43.7	1.0	-53.2	-13.0	-40.2	

**LTE Band 38**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4789009800							
Date:		2019-05-30							
Test Engineer:		45585							
Configuration:		EUT / AC Adapter, Z-Position							
Location:		Chamber 1							
Mode:		LTE_QPSK Band 38 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, 2580MHz									
5160.00	-1.3	V	3.0	43.8	1.0	-44.0	-25.0	-19.0	
7740.00	-7.9	V	3.0	42.3	1.0	-49.2	-25.0	-24.2	
10320.00	2.5	V	3.0	40.7	1.0	-37.1	-25.0	-12.1	
12900.00	-8.2	V	3.0	41.9	1.0	-49.1	-25.0	-24.1	
15480.00	-7.7	V	3.0	43.1	1.0	-49.8	-25.0	-24.8	
5160.00	-1.4	H	3.0	43.8	1.0	-44.1	-25.0	-19.1	
7740.00	-10.6	H	3.0	42.3	1.0	-52.0	-25.0	-27.0	
10320.00	0.2	H	3.0	40.7	1.0	-39.5	-25.0	-14.5	
12900.00	-7.9	H	3.0	41.9	1.0	-48.8	-25.0	-23.8	
15480.00	-7.8	H	3.0	43.1	1.0	-50.0	-25.0	-25.0	
Mid Ch, 2595MHz									
5190.00	-2.5	V	3.0	43.8	1.0	-45.3	-25.0	-20.3	
7785.00	-6.4	V	3.0	42.3	1.0	-47.8	-25.0	-22.8	
10380.00	3.4	V	3.0	40.7	1.0	-36.3	-25.0	-11.3	
12975.00	-8.7	V	3.0	42.0	1.0	-49.8	-25.0	-24.8	
15570.00	-4.8	V	3.0	43.0	1.0	-46.9	-25.0	-21.9	
5190.00	-3.4	H	3.0	43.8	1.0	-46.2	-25.0	-21.2	
7785.00	-9.8	H	3.0	42.3	1.0	-51.2	-25.0	-26.2	
10380.00	0.5	H	3.0	40.7	1.0	-39.2	-25.0	-14.2	
12975.00	-7.1	H	3.0	42.0	1.0	-48.1	-25.0	-23.1	
15570.00	-7.0	H	3.0	43.0	1.0	-49.0	-25.0	-24.0	
High Ch, 2610MHz									
5220.00	-5.1	V	3.0	43.8	1.0	-47.9	-25.0	-22.9	
7830.00	-10.7	V	3.0	42.3	1.0	-52.0	-25.0	-27.0	
10440.00	0.6	V	3.0	40.7	1.0	-39.1	-25.0	-14.1	
13050.00	-6.3	V	3.0	42.1	1.0	-47.3	-25.0	-22.3	
15660.00	-4.9	V	3.0	42.9	1.0	-46.8	-25.0	-21.8	
5220.00	-6.0	H	3.0	43.8	1.0	-48.8	-25.0	-23.8	
7830.00	-10.6	H	3.0	42.3	1.0	-51.9	-25.0	-26.9	
10440.00	-0.6	H	3.0	40.7	1.0	-40.2	-25.0	-15.2	
13050.00	-5.7	H	3.0	42.1	1.0	-46.7	-25.0	-21.7	
15660.00	-6.1	H	3.0	42.9	1.0	-48.0	-25.0	-23.0	

LTE  
 Band 38  
 20MHz  
 QPSK

**LTE Band 41(PC2)**

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement									
Company:		Samsung							
Project #:		4789009800							
Date:		2019-06-01							
Test Engineer:		45585							
Configuration:		EUT / AC Adapter, Y-Position							
Location:		Chamber 1							
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
<b>Low Ch, 2498.5MHz</b>									
4997.00	-4.1	V	3.0	43.8	1.0	-46.9	-25.0	-21.9	
7495.50	-12.3	V	3.0	42.5	1.0	-53.7	-25.0	-28.7	
9994.00	3.5	V	3.0	40.6	1.0	-36.1	-25.0	-11.1	
12492.50	-5.0	V	3.0	41.6	1.0	-45.6	-25.0	-20.6	
4997.00	-0.5	H	3.0	43.8	1.0	-43.3	-25.0	-18.3	
7495.50	-8.8	H	3.0	42.5	1.0	-50.3	-25.0	-25.3	
9994.00	5.0	H	3.0	40.6	1.0	-34.6	-25.0	-9.6	
12492.50	-6.8	H	3.0	41.6	1.0	-47.4	-25.0	-22.4	
<b>Mid Ch, 2593MHz</b>									
5186.00	-4.6	V	3.0	43.8	1.0	-47.4	-25.0	-22.4	
7779.00	-7.6	V	3.0	42.3	1.0	-48.9	-25.0	-23.9	
10372.00	3.2	V	3.0	40.7	1.0	-36.5	-25.0	-11.5	
12965.00	-7.8	V	3.0	42.0	1.0	-48.8	-25.0	-23.8	
5186.00	-0.7	H	3.0	43.8	1.0	-43.4	-25.0	-18.4	
7779.00	-7.9	H	3.0	42.3	1.0	-49.2	-25.0	-24.2	
10372.00	6.9	H	3.0	40.7	1.0	-32.7	-25.0	-7.7	
12965.00	-4.3	H	3.0	42.0	1.0	-45.3	-25.0	-20.3	
<b>High Ch, 2687.5MHz</b>									
5375.00	-6.6	V	3.0	43.7	1.0	-49.3	-25.0	-24.3	
8062.50	-16.2	V	3.0	42.2	1.0	-57.4	-25.0	-32.4	
10750.00	2.2	V	3.0	40.8	1.0	-37.5	-25.0	-12.5	
13437.50	-9.4	V	3.0	42.4	1.0	-50.8	-25.0	-25.8	
5375.00	-1.2	H	3.0	43.7	1.0	-44.0	-25.0	-19.0	
8062.50	-15.9	H	3.0	42.2	1.0	-57.1	-25.0	-32.1	
10750.00	4.2	H	3.0	40.8	1.0	-35.6	-25.0	-10.6	
13437.50	-9.7	H	3.0	42.4	1.0	-51.1	-25.0	-26.1	

LTE  
 Band 41  
 5MHz  
 QPSK