11.1.2. ERP/EIRP DATA

LTE Band 41

LTE Band 41 20MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-30-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 41, QPSK, 20MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2506.00	9.90	V	1.9	9.1	17.16	33.0	-15.8	
2506.00	14.09	H	1.9	9.1	21.35	33.0	-11.7	
Mid Ch								
2593.00	8.73	V	1.9	10.4	17.22	33.0	-15.8	
2593.00	12.15	H	1.9	10.4	20.64	33.0	-12.4	
High Ch								
2680.00	8.92	V	1.9	10.3	17.36	33.0	-15.6	
2680.00	12.18	H	1.9	10.3	20.62	33.0	-12.4	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 41 20MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-30-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 41, 16QAM, 20MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2506.00	9.43	V	1.9	9.1	16.69	33.0	-16.3	
2506.00	13.30	H	1.9	9.1	20.56	33.0	-12.4	
Mid Ch								
2593.00	7.53	V	1.9	10.4	16.02	33.0	-17.0	
2593.00	11.04	H	1.9	10.4	19.53	33.0	-13.5	
High Ch								
2680.00	7.86	V	1.9	10.3	16.30	33.0	-16.7	
2680.00	10.99	H	1.9	10.3	19.43	33.0	-13.6	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE

Band 41

15MHz

QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-30-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 41, QPSK, 15MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2503.50	9.82	V	1.9	9.1	17.08	33.0	-15.9	
2503.50	14.09	H	1.9	9.1	21.35	33.0	-11.7	
Mid Ch								
2593.00	8.37	V	1.9	10.4	16.86	33.0	-16.1	
2593.00	12.28	H	1.9	10.4	20.77	33.0	-12.2	
High Ch								
2682.50	8.64	V	1.9	10.3	17.08	33.0	-15.9	
2682.50	11.76	H	1.9	10.3	20.20	33.0	-12.8	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE

Band 41

15MHz

16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-30-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 41, 16QAM, 15MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2503.50	9.51	V	1.9	9.1	16.77	33.0	-16.2	
2503.50	13.26	H	1.9	9.1	20.51	33.0	-12.5	
Mid Ch								
2593.00	8.03	V	1.9	10.4	16.52	33.0	-16.5	
2593.00	11.15	H	1.9	10.4	19.64	33.0	-13.4	
High Ch								
2682.50	7.42	V	1.9	10.3	15.86	33.0	-17.1	
2682.50	10.74	H	1.9	10.3	19.18	33.0	-13.8	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 41 10MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-30-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 41, QPSK, 10MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2501.00	10.54	V	1.9	9.1	17.80	33.0	-15.2	
2501.00	14.39	H	1.9	9.1	21.65	33.0	-11.4	
Mid Ch								
2593.00	8.04	V	1.9	10.4	16.53	33.0	-16.5	
2593.00	13.25	H	1.9	10.4	21.74	33.0	-11.3	
High Ch								
2685.00	8.80	V	1.9	10.3	17.24	33.0	-15.8	
2685.00	12.41	H	1.9	10.3	20.85	33.0	-12.1	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 41 10MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-30-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 41 16QAM, 10MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2501.00	9.48	V	1.9	9.1	16.74	33.0	-16.3	
2501.00	13.28	H	1.9	9.1	20.54	33.0	-12.5	
Mid Ch								
2593.00	7.03	V	1.9	10.4	15.52	33.0	-17.5	
2593.00	12.15	H	1.9	10.4	20.64	33.0	-12.4	
High Ch								
2685.00	8.00	V	1.9	10.3	16.44	33.0	-16.6	
2685.00	11.40	H	1.9	10.3	19.84	33.0	-13.2	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 41 5 MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-30-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 41, QPSK , 5MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2498.50	10.93	V	1.9	9.1	18.19	33.0	-14.8	
2498.50	14.25	H	1.9	9.1	21.51	33.0	-11.5	
Mid Ch								
2593.00	6.69	V	1.9	10.4	15.18	33.0	-17.8	
2593.00	12.87	H	1.9	10.4	21.36	33.0	-11.6	
High Ch								
2687.50	8.92	V	1.9	10.3	17.36	33.0	-15.6	
2687.50	11.74	H	1.9	10.3	20.18	33.0	-12.8	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 41 5 MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-30-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 41 16QAM, 5MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2498.50	10.54	V	1.9	9.1	17.80	33.0	-15.2	
2498.50	10.52	H	1.9	9.1	17.78	33.0	-15.2	
Mid Ch								
2593.00	6.03	V	1.9	10.4	14.52	33.0	-18.5	
2593.00	11.89	H	1.9	10.4	20.38	33.0	-12.6	
High Ch								
2687.50	8.25	V	1.9	10.3	16.69	33.0	-16.3	
2687.50	10.97	H	1.9	10.3	19.41	33.0	-13.6	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 25

LTE Band 25 20MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 QPSK, 20MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1860.00	11.83	V	1.60	9.12	19.35	33.0	-13.7	
1860.00	13.02	H	1.60	9.12	20.54	33.0	-12.5	
Mid Ch								
1882.50	13.49	V	1.62	8.62	20.49	33.0	-12.5	
1882.50	13.31	H	1.62	8.62	20.31	33.0	-12.7	
High Ch								
1905.00	12.95	V	1.63	8.50	19.82	33.0	-13.2	
1905.00	13.23	H	1.63	8.50	20.10	33.0	-12.9	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 25 20MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 16QAM, 20MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1860.00	10.85	V	1.60	9.12	18.37	33.0	-14.6	
1860.00	12.02	H	1.60	9.12	19.54	33.0	-13.5	
Mid Ch								
1882.50	12.46	V	1.62	8.62	19.46	33.0	-13.5	
1882.50	12.33	H	1.62	8.62	19.33	33.0	-13.7	
High Ch								
1905.00	11.89	V	1.63	8.50	18.76	33.0	-14.2	
1905.00	12.25	H	1.63	8.50	19.12	33.0	-13.9	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE

Band 25

15MHz

QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 QPSK, 15MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1857.50	11.86	V	1.60	9.12	19.38	33.0	-13.6	
1857.50	12.82	H	1.60	9.12	20.34	33.0	-12.7	
Mid Ch								
1882.50	13.27	V	1.62	8.62	20.27	33.0	-12.7	
1882.50	13.29	H	1.62	8.62	20.29	33.0	-12.7	
High Ch								
1907.50	12.53	V	1.63	8.49	19.39	33.0	-13.6	
1907.50	13.10	H	1.63	8.49	19.96	33.0	-13.0	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE

Band 25

15MHz

16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 16QAM, 15MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1857.50	10.89	V	1.60	9.12	18.41	33.0	-14.6	
1857.50	11.80	H	1.60	9.12	19.32	33.0	-13.7	
Mid Ch								
1882.50	12.26	V	1.62	8.62	19.26	33.0	-13.7	
1882.50	12.14	H	1.62	8.62	19.14	33.0	-13.9	
High Ch								
1907.50	11.46	V	1.63	8.49	18.32	33.0	-14.7	
1907.50	12.05	H	1.63	8.49	18.91	33.0	-14.1	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 25 10MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 QPSK, 10MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1855.00	12.08	V	1.60	9.12	19.60	33.0	-13.4	
1855.00	12.56	H	1.60	9.12	20.08	33.0	-12.9	
Mid Ch								
1882.50	13.45	V	1.62	8.62	20.45	33.0	-12.5	
1882.50	13.37	H	1.62	8.62	20.37	33.0	-12.6	
High Ch								
1910.00	12.31	V	1.63	8.47	19.15	33.0	-13.8	
1910.00	12.84	H	1.63	8.47	19.68	33.0	-13.3	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 25 10MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 16QAM, 10MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1855.00	11.03	V	1.60	9.12	18.55	33.0	-14.5	
1855.00	11.55	H	1.60	9.12	19.07	33.0	-13.9	
Mid Ch								
1882.50	12.44	V	1.62	8.62	19.44	33.0	-13.6	
1882.50	12.30	H	1.62	8.62	19.30	33.0	-13.7	
High Ch								
1910.00	11.26	V	1.63	8.47	18.10	33.0	-14.9	
1910.00	11.81	H	1.63	8.47	18.65	33.0	-14.3	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 25 5MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 QPSK, 5MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.50	11.81	V	1.60	9.12	19.33	33.0	-13.7	
1852.50	12.38	H	1.60	9.12	19.90	33.0	-13.1	
Mid Ch								
1882.50	13.52	V	1.62	8.62	20.52	33.0	-12.5	
1882.50	13.38	H	1.62	8.62	20.38	33.0	-12.6	
High Ch								
1912.50	11.78	V	1.63	8.46	18.61	33.0	-14.4	
1912.50	12.77	H	1.63	8.46	19.60	33.0	-13.4	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 25 5MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 16QAM, 5MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.50	10.82	V	1.60	9.12	18.34	33.0	-14.7	
1852.50	11.35	H	1.60	9.12	18.87	33.0	-14.1	
Mid Ch								
1882.50	12.47	V	1.62	8.62	19.47	33.0	-13.5	
1882.50	12.33	H	1.62	8.62	19.33	33.0	-13.7	
High Ch								
1912.50	10.78	V	1.63	8.46	17.61	33.0	-15.4	
1912.50	11.71	H	1.63	8.46	18.54	33.0	-14.5	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 25 3MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 QPSK, 3MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1851.50	11.70	V	1.60	9.12	19.22	33.0	-13.8	
1851.50	12.35	H	1.60	9.12	19.87	33.0	-13.1	
Mid Ch								
1882.50	13.46	V	1.62	8.62	20.46	33.0	-12.5	
1882.50	13.32	H	1.62	8.62	20.32	33.0	-12.7	
High Ch								
1913.50	11.75	V	1.63	8.45	18.57	33.0	-14.4	
1913.50	12.79	H	1.63	8.45	19.61	33.0	-13.4	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 25 3MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 16QAM, 3MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1851.50	10.64	V	1.60	9.12	18.16	33.0	-14.8	
1851.50	11.31	H	1.60	9.12	18.83	33.0	-14.2	
Mid Ch								
1882.50	12.47	V	1.62	8.62	19.47	33.0	-13.5	
1882.50	12.27	H	1.62	8.62	19.27	33.0	-13.7	
High Ch								
1913.50	10.75	V	1.63	8.45	17.57	33.0	-15.4	
1913.50	11.76	H	1.63	8.45	18.58	33.0	-14.4	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 25 1.4MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 QPSK, 1.4MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.70	9.59	V	1.60	9.12	17.11	33.0	-15.9	
1850.70	10.19	H	1.60	9.12	17.71	33.0	-15.3	
Mid Ch								
1882.50	11.36	V	1.62	8.62	18.36	33.0	-14.6	
1882.50	11.32	H	1.62	8.62	18.32	33.0	-14.7	
High Ch								
1914.30	12.38	V	1.63	8.44	19.19	33.0	-13.8	
1914.30	13.47	H	1.63	8.44	20.28	33.0	-12.7	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 25 1.4MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 25 16QAM, 1.4MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1850.70	8.59	V	1.60	9.12	16.11	33.0	-16.9	
1850.70	9.50	H	1.60	9.12	17.02	33.0	-16.0	
Mid Ch								
1882.50	10.37	V	1.62	8.62	17.37	33.0	-15.6	
1882.50	10.33	H	1.62	8.62	17.33	33.0	-15.7	
High Ch								
1914.30	11.29	V	1.63	8.44	18.10	33.0	-14.9	
1914.30	12.33	H	1.63	8.44	19.14	33.0	-13.9	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 12

LTE Band 12 10MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT ONLY, Z Position
Mode: TX, LTE12, 10MHz BW,QPSK

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
704.00	17.95	V	1.1	-1.5	15.37	38.5	-23.1	
704.00	7.29	H	1.1	-1.5	4.71	38.5	-33.7	
Mid Ch								
707.50	17.98	V	1.1	-1.4	15.49	38.5	-23.0	
707.50	7.54	H	1.1	-1.4	5.05	38.5	-33.4	
High Ch								
711.00	17.88	V	1.1	-1.3	15.49	38.5	-23.0	
711.00	7.28	H	1.1	-1.3	4.86	38.5	-33.6	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE Band 12 10MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT ONLY, Z Position
Mode: LTE12 10MHz FUND 16QAM

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
704.00	16.90	V	1.1	-1.5	14.32	38.5	-24.1	
704.00	6.24	H	1.1	-1.5	3.66	38.5	-34.8	
Mid Ch								
707.50	16.92	V	1.1	-1.4	14.41	38.5	-24.0	
707.50	6.53	H	1.1	-1.4	4.02	38.5	-34.4	
High Ch								
711.00	16.83	V	1.1	-1.3	14.41	38.5	-24.0	
711.00	6.23	H	1.1	-1.3	3.81	38.5	-34.6	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

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LTE Band 12 5MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT ONLY, Z Position
Mode: LTE12 5MHz FUND QPSK

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
701.50	18.41	V	1.1	-1.5	15.81	38.5	-22.6	
701.50	7.80	H	1.1	-1.5	5.20	38.5	-33.3	
Mid Ch								
707.50	18.48	V	1.1	-1.4	15.99	38.5	-22.5	
707.50	8.17	H	1.1	-1.4	5.68	38.5	-32.8	
High Ch								
713.50	18.44	V	1.6	-1.3	15.56	38.5	-22.9	
713.50	7.72	H	1.6	-1.3	4.84	38.5	-33.6	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE Band 12 5MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT ONLY, Z Position
Mode: LTE12 5MHz FUND 16QAM

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
701.50	17.36	V	1.1	-1.5	14.76	38.5	-23.7	
701.50	6.81	H	1.1	-1.5	4.21	38.5	-34.2	
Mid Ch								
707.50	17.43	V	1.1	-1.4	14.94	38.5	-23.5	
707.50	7.14	H	1.1	-1.4	4.65	38.5	-33.8	
High Ch								
713.50	17.40	V	1.1	-1.3	15.02	38.5	-23.4	
713.50	6.68	H	1.1	-1.3	4.30	38.5	-34.2	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

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LTE Band 12 3MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT ONLY, Z Position
Mode: LTE12 3MHz FUND QPSK

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
700.50	18.40	V	1.1	-1.5	15.80	38.5	-22.7	
700.50	7.82	H	1.1	-1.5	5.22	38.5	-33.2	
Mid Ch								
707.50	18.62	V	1.1	-1.4	16.13	38.5	-22.3	
707.50	8.15	H	1.1	-1.4	5.66	38.5	-32.8	
High Ch								
714.50	18.20	V	1.6	-1.3	15.32	38.5	-23.1	
714.50	7.43	H	1.6	-1.3	4.55	38.5	-33.9	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE Band 12 3MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT ONLY, Z Position
Mode: LTE12 3MHz FUND 16QAM

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
700.50	17.35	V	1.1	-1.5	14.75	38.5	-23.7	
700.50	6.84	H	1.1	-1.5	4.24	38.5	-34.2	
Mid Ch								
707.50	17.62	V	1.1	-1.4	15.13	38.5	-23.3	
707.50	7.14	H	1.1	-1.4	4.65	38.5	-33.8	
High Ch								
714.50	17.19	V	1.1	-1.3	14.81	38.5	-23.6	
714.50	6.41	H	1.1	-1.3	4.03	38.5	-34.4	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

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LTE Band 12 1.4MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT ONLY, Z Position
Mode: LTE12 1.4MHz FUND QPSK

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
699.70	18.46	V	1.1	-1.5	15.86	38.5	-22.6	
699.70	7.63	H	1.1	-1.5	5.03	38.5	-33.4	
Mid Ch								
707.50	18.54	V	1.1	-1.4	16.05	38.5	-22.4	
707.50	8.05	H	1.1	-1.4	5.56	38.5	-32.9	
High Ch								
715.30	18.03	V	1.6	-1.3	15.15	38.5	-23.3	
715.30	7.26	H	1.6	-1.3	4.38	38.5	-34.1	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE Band 12 1.4MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT ONLY, Z Position
Mode: LTE12 1.4MHz FUND 16QAM

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
699.70	17.56	V	1.1	-1.5	14.96	38.5	-23.5	
699.70	6.63	H	1.1	-1.5	4.03	38.5	-34.4	
Mid Ch								
707.50	17.54	V	1.1	-1.4	15.05	38.5	-23.4	
707.50	7.05	H	1.1	-1.4	4.56	38.5	-33.9	
High Ch								
715.30	17.03	V	1.1	-1.3	14.65	38.5	-23.8	
715.30	6.26	H	1.1	-1.3	3.88	38.5	-34.6	

Rev. 3.17.11
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

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LTE Band 4

LTE Band 4 20MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4, QPSK, 20MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1720.00	5.20	V	1.54	9.12	12.78	30.0	-17.2	
1720.00	13.62	H	1.54	9.12	21.20	30.0	-8.8	
Mid Ch								
1732.50	4.94	V	1.55	9.31	12.70	30.0	-17.3	
1732.50	13.29	H	1.55	9.31	21.05	30.0	-9.0	
High Ch								
1745.00	5.97	V	1.56	9.37	13.78	30.0	-16.2	
1745.00	11.68	H	1.56	9.37	19.49	30.0	-10.5	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 4 20MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4, 16QAM, 20MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1720.00	4.17	V	1.54	9.12	11.75	30.0	-18.3	
1720.00	12.61	H	1.54	9.12	20.19	30.0	-9.8	
Mid Ch								
1732.50	3.84	V	1.55	9.31	11.60	30.0	-18.4	
1732.50	12.31	H	1.55	9.31	20.07	30.0	-9.9	
High Ch								
1745.00	4.90	V	1.56	9.37	12.71	30.0	-17.3	
1745.00	10.66	H	1.56	9.37	18.47	30.0	-11.5	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 4 15MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4, QPSK, 15MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1717.50	4.53	V	1.54	9.12	12.11	30.0	-17.9	
1717.50	13.84	H	1.54	9.12	21.42	30.0	-8.6	
Mid Ch								
1732.50	4.92	V	1.55	9.31	12.68	30.0	-17.3	
1732.50	13.08	H	1.55	9.31	20.84	30.0	-9.2	
High Ch								
1747.50	5.70	V	1.56	9.39	13.53	30.0	-16.5	
1747.50	10.92	H	1.56	9.39	18.75	30.0	-11.3	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 4 15MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4, 16QAM, 15MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1717.50	3.52	V	1.54	9.12	11.10	30.0	-18.9	
1717.50	12.84	H	1.54	9.12	20.42	30.0	-9.6	
Mid Ch								
1732.50	3.67	V	1.55	9.31	11.43	30.0	-18.6	
1732.50	12.01	H	1.55	9.31	19.77	30.0	-10.2	
High Ch								
1747.50	5.29	V	1.56	9.39	13.12	30.0	-16.9	
1747.50	9.88	H	1.56	9.39	17.71	30.0	-12.3	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 4 10MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4, QPSK, 10MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1715.00	6.07	V	1.54	9.12	13.65	30.0	-16.4	
1715.00	13.48	H	1.54	9.12	21.06	30.0	-8.9	
Mid Ch								
1732.50	6.25	V	1.55	9.31	14.01	30.0	-16.0	
1732.50	12.85	H	1.55	9.31	20.61	30.0	-9.4	
High Ch								
1750.00	6.35	V	1.56	9.40	14.19	30.0	-15.8	
1750.00	11.98	H	1.56	9.40	19.82	30.0	-10.2	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 4 10MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4 16QAM, 10MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1715.00	5.10	V	1.54	9.12	12.68	30.0	-17.3	
1715.00	12.46	H	1.54	9.12	20.04	30.0	-10.0	
Mid Ch								
1732.50	5.28	V	1.55	9.31	13.04	30.0	-17.0	
1732.50	12.16	H	1.55	9.31	19.92	30.0	-10.1	
High Ch								
1750.00	5.35	V	1.56	9.40	13.19	30.0	-16.8	
1750.00	10.98	H	1.56	9.40	18.82	30.0	-11.2	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 4 5MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4, QPSK , 5MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1712.50	4.31	V	1.54	9.12	11.89	30.0	-18.1	
1712.50	13.56	H	1.54	9.12	21.14	30.0	-8.9	
Mid Ch								
1732.50	4.31	V	1.55	9.31	12.07	30.0	-17.9	
1732.50	12.89	H	1.55	9.31	20.65	30.0	-9.4	
High Ch								
1752.50	4.96	V	1.56	9.39	12.79	30.0	-17.2	
1752.50	10.14	H	1.56	9.39	17.97	30.0	-12.0	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 4 5MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4 16QAM, 5MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1712.50	3.72	V	1.54	9.12	11.30	30.0	-18.7	
1712.50	12.58	H	1.54	9.12	20.16	30.0	-9.8	
Mid Ch								
1732.50	3.25	V	1.55	9.31	11.01	30.0	-19.0	
1732.50	12.19	H	1.55	9.31	19.95	30.0	-10.1	
High Ch								
1752.50	3.89	V	1.56	9.39	11.72	30.0	-18.3	
1752.50	9.15	H	1.56	9.39	16.98	30.0	-13.0	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 4 3MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4, QPSK , 3MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1711.50	4.07	V	1.54	9.12	11.65	30.0	-18.4	
1711.50	13.56	H	1.54	9.12	21.14	30.0	-8.9	
Mid Ch								
1732.50	4.18	V	1.55	9.31	11.94	30.0	-18.1	
1732.50	12.98	H	1.55	9.31	20.74	30.0	-9.3	
High Ch								
1753.50	4.65	V	1.56	9.38	12.47	30.0	-17.5	
1753.50	10.25	H	1.56	9.38	18.07	30.0	-11.9	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 4 3MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4 16QAM, 3MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1711.50	3.04	V	1.54	9.12	10.62	30.0	-19.4	
1711.50	12.64	H	1.54	9.12	20.22	30.0	-9.8	
Mid Ch								
1732.50	3.18	V	1.55	9.31	10.94	30.0	-19.1	
1732.50	11.97	H	1.55	9.31	19.73	30.0	-10.3	
High Ch								
1753.50	3.57	V	1.56	9.38	11.39	30.0	-18.6	
1753.50	9.25	H	1.56	9.38	17.07	30.0	-12.9	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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LTE Band 4 1.4MHz QPSK

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4 QPSK, 1.4MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1710.70	2.33	V	1.54	9.12	9.91	30.0	-20.1	
1710.70	11.67	H	1.54	9.12	19.25	30.0	-10.8	
Mid Ch								
1732.50	2.56	V	1.55	9.31	10.32	30.0	-19.7	
1732.50	11.01	H	1.55	9.31	18.77	30.0	-11.2	
High Ch								
1754.30	2.82	V	1.56	9.37	10.63	30.0	-19.4	
1754.30	8.39	H	1.56	9.37	16.20	30.0	-13.8	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

LTE Band 4 1.4MHz 16QAM

High Frequency Substitution Measurement
UL Korea, Ltd. Suwon Laboratory Chamber 2

Company: Samsung
Project #: 15K21156
Date: 06-26-15
Test Engineer: Steven.Kim
Configuration: EUT / X-Position
Mode: LTE Band 4 16QAM, 1.4MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1710.70	1.31	V	1.54	9.12	8.89	30.0	-21.1	
1710.70	10.61	H	1.54	9.12	18.19	30.0	-11.8	
Mid Ch								
1732.50	1.58	V	1.55	9.31	9.34	30.0	-20.7	
1732.50	9.95	H	1.55	9.31	17.71	30.0	-12.3	
High Ch								
1754.30	1.83	V	1.56	9.37	9.64	30.0	-20.4	
1754.30	7.31	H	1.56	9.37	15.12	30.0	-14.9	

Rev. 3.17.11
Note: For Band 4 EIRP limit is 30dBm

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11.2. 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) 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.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

RESULTS

LTE Band 17

Due to frequency range and same output power setting, test was carried in LTE Band 12 to cover both LTE Band 12 and LTE Band 17.

LTE Band 5

Due to frequency range and same output power setting, test was carried in LTE Band 26 to cover both LTE Band 26 and LTE Band 5.

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11.2.1. SPURIOUS RADIATION PLOTS

LTE Band 41

LTE Band 41 20MHz QPSK

Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-30-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 41, 20MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (2506 MHz)									
5.0120	-30.1	V	3.0	40.9	1.0	-70.0	-25.0	-45.0	
7.5180	-25.6	V	3.0	40.7	1.0	-65.3	-25.0	-40.3	
10.0240	-23.8	V	3.0	39.7	1.0	-62.5	-25.0	-37.5	
5.0120	-27.9	H	3.0	40.9	1.0	-67.8	-25.0	-42.8	
7.5180	-25.2	H	3.0	40.7	1.0	-64.9	-25.0	-39.9	
10.0240	-26.3	H	3.0	39.7	1.0	-65.0	-25.0	-40.0	
Mid Ch, (2593 MHz)									
5.1860	-29.6	V	3.0	40.9	1.0	-69.5	-25.0	-44.5	
7.7790	-26.8	V	3.0	40.6	1.0	-66.4	-25.0	-41.4	
10.3720	-22.8	V	3.0	39.4	1.0	-61.2	-25.0	-36.2	
5.1860	-27.6	H	3.0	40.9	1.0	-67.5	-25.0	-42.5	
7.7790	-26.2	H	3.0	40.6	1.0	-65.7	-25.0	-40.7	
10.3720	-27.4	H	3.0	39.4	1.0	-65.8	-25.0	-40.8	
High Ch, (2680 MHz)									
5.3600	-21.9	V	3.0	40.9	1.0	-61.8	-25.0	-36.8	
8.0400	-24.6	V	3.0	40.4	1.0	-64.0	-25.0	-39.0	
10.7200	-23.1	V	3.0	39.2	1.0	-61.3	-25.0	-36.3	
5.3600	-22.2	H	3.0	40.9	1.0	-62.1	-25.0	-37.1	
8.0400	-26.4	H	3.0	40.4	1.0	-65.8	-25.0	-40.8	
10.7200	-23.7	H	3.0	39.2	1.0	-61.9	-25.0	-36.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 41 20MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-30-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 41, 20MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (2506 MHz)									
5.0120	-31.0	V	3.0	40.9	1.0	-70.9	-25.0	-45.9	
7.5180	-26.4	V	3.0	40.7	1.0	-66.1	-25.0	-41.1	
10.0240	-23.5	V	3.0	39.7	1.0	-62.1	-25.0	-37.1	
5.0120	-28.7	H	3.0	40.9	1.0	-68.6	-25.0	-43.6	
7.5180	-26.1	H	3.0	40.7	1.0	-65.8	-25.0	-40.8	
10.0240	-27.1	H	3.0	39.7	1.0	-65.8	-25.0	-40.8	
Mid Ch, (2593 MHz)									
5.1860	-30.7	V	3.0	40.9	1.0	-70.6	-25.0	-45.6	
7.7790	-27.6	V	3.0	40.6	1.0	-67.2	-25.0	-42.2	
10.3720	-23.7	V	3.0	39.4	1.0	-62.2	-25.0	-37.2	
5.1860	-28.6	H	3.0	40.9	1.0	-68.5	-25.0	-43.5	
7.7790	-27.1	H	3.0	40.6	1.0	-66.7	-25.0	-41.7	
10.3720	-27.0	H	3.0	39.4	1.0	-65.4	-25.0	-40.4	
High Ch, (2680 MHz)									
5.3600	-23.6	V	3.0	40.9	1.0	-63.4	-25.0	-38.4	
8.0400	-25.3	V	3.0	40.4	1.0	-64.8	-25.0	-39.8	
10.7200	-23.4	V	3.0	39.2	1.0	-61.5	-25.0	-36.5	
5.3600	-22.9	H	3.0	40.9	1.0	-62.8	-25.0	-37.8	
8.0400	-27.0	H	3.0	40.4	1.0	-66.4	-25.0	-41.4	
10.7200	-24.0	H	3.0	39.2	1.0	-62.2	-25.0	-37.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 41 15MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-30-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 41, 15MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (2503.5 MHz)									
5.0070	-30.2	V	3.0	40.9	1.0	-70.1	-25.0	-45.1	
7.5100	-25.4	V	3.0	40.7	1.0	-65.1	-25.0	-40.1	
10.0140	-23.2	V	3.0	39.7	1.0	-61.8	-25.0	-36.8	
5.0070	-27.7	H	3.0	40.9	1.0	-67.6	-25.0	-42.6	
7.5100	-25.3	H	3.0	40.7	1.0	-65.0	-25.0	-40.0	
10.0140	-26.4	H	3.0	39.7	1.0	-65.1	-25.0	-40.1	
Mid_Ch, (2593 MHz)									
5.1860	-29.4	V	3.0	40.9	1.0	-69.3	-25.0	-44.3	
7.7790	-26.5	V	3.0	40.6	1.0	-66.1	-25.0	-41.1	
10.3720	-23.2	V	3.0	39.4	1.0	-61.6	-25.0	-36.6	
5.1860	-26.6	H	3.0	40.9	1.0	-66.5	-25.0	-41.5	
7.7790	-26.2	H	3.0	40.6	1.0	-65.8	-25.0	-40.8	
10.3720	-27.2	H	3.0	39.4	1.0	-65.6	-25.0	-40.6	
High Ch, (2682.5 MHz)									
5.3650	-22.7	V	3.0	40.9	1.0	-62.5	-25.0	-37.5	
8.0470	-24.7	V	3.0	40.4	1.0	-64.1	-25.0	-39.1	
10.7300	-22.8	V	3.0	39.2	1.0	-60.9	-25.0	-35.9	
5.3650	-22.1	H	3.0	40.9	1.0	-62.0	-25.0	-37.0	
8.0470	-26.4	H	3.0	40.4	1.0	-65.8	-25.0	-40.8	
10.7300	-24.4	H	3.0	39.2	1.0	-62.5	-25.0	-37.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 41 15MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-30-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 41, 15MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (2503.5 MHz)									
5.0070	-31.1	V	3.0	40.9	1.0	-71.1	-25.0	-46.1	
7.5100	-26.4	V	3.0	40.7	1.0	-66.1	-25.0	-41.1	
10.0140	-23.3	V	3.0	39.7	1.0	-61.9	-25.0	-36.9	
5.0070	-29.0	H	3.0	40.9	1.0	-68.9	-25.0	-43.9	
7.5100	-26.3	H	3.0	40.7	1.0	-66.0	-25.0	-41.0	
10.0140	-27.4	H	3.0	39.7	1.0	-66.1	-25.0	-41.1	
Mid_Ch, (2593 MHz)									
5.1860	-30.6	V	3.0	40.9	1.0	-70.5	-25.0	-45.5	
7.7790	-27.8	V	3.0	40.6	1.0	-67.4	-25.0	-42.4	
10.3720	-23.7	V	3.0	39.4	1.0	-62.2	-25.0	-37.2	
5.1860	-27.6	H	3.0	40.9	1.0	-67.5	-25.0	-42.5	
7.7790	-27.4	H	3.0	40.6	1.0	-66.9	-25.0	-41.9	
10.3720	-27.1	H	3.0	39.4	1.0	-65.5	-25.0	-40.5	
High Ch, (2682.5 MHz)									
5.3650	-23.4	V	3.0	40.9	1.0	-63.3	-25.0	-38.3	
8.0470	-25.4	V	3.0	40.4	1.0	-64.8	-25.0	-39.8	
10.7300	-23.6	V	3.0	39.2	1.0	-61.8	-25.0	-36.8	
5.3650	-23.0	H	3.0	40.9	1.0	-62.9	-25.0	-37.9	
8.0470	-27.2	H	3.0	40.4	1.0	-66.6	-25.0	-41.6	
10.7300	-24.6	H	3.0	39.2	1.0	-62.7	-25.0	-37.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE

Band 41

10MHz

QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-30-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 41, 10MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (2501 MHz)									
5.0020	-29.9	V	3.0	40.9	1.0	-69.9	-25.0	-44.9	
7.5030	-25.6	V	3.0	40.7	1.0	-65.3	-25.0	-40.3	
10.0040	-23.5	V	3.0	39.7	1.0	-62.1	-25.0	-37.1	
5.0020	-27.7	H	3.0	40.9	1.0	-67.7	-25.0	-42.7	
7.5030	-25.6	H	3.0	40.7	1.0	-65.3	-25.0	-40.3	
10.0040	-26.6	H	3.0	39.7	1.0	-65.3	-25.0	-40.3	
Mid Ch, (2593 MHz)									
5.1860	-29.4	V	3.0	40.9	1.0	-69.3	-25.0	-44.3	
7.7790	-26.5	V	3.0	40.6	1.0	-66.1	-25.0	-41.1	
10.3720	-22.8	V	3.0	39.4	1.0	-61.2	-25.0	-36.2	
5.1860	-26.6	H	3.0	40.9	1.0	-66.5	-25.0	-41.5	
7.7790	-26.3	H	3.0	40.6	1.0	-65.9	-25.0	-40.9	
10.3720	-26.4	H	3.0	39.4	1.0	-64.8	-25.0	-39.8	
High Ch, (2685 MHz)									
5.3700	-21.9	V	3.0	40.9	1.0	-61.7	-25.0	-36.7	
8.0550	-24.0	V	3.0	40.4	1.0	-63.4	-25.0	-38.4	
10.7400	-22.5	V	3.0	39.1	1.0	-60.6	-25.0	-35.6	
5.3700	-22.5	H	3.0	40.9	1.0	-62.3	-25.0	-37.3	
8.0550	-25.9	H	3.0	40.4	1.0	-65.3	-25.0	-40.3	
10.7400	-23.7	H	3.0	39.1	1.0	-61.8	-25.0	-36.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE

Band 41

10MHz

16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-30-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 41, 10MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (2501 MHz)									
5.0020	-31.0	V	3.0	40.9	1.0	-70.9	-25.0	-45.9	
7.5030	-26.4	V	3.0	40.7	1.0	-66.1	-25.0	-41.1	
10.0040	-24.2	V	3.0	39.7	1.0	-62.8	-25.0	-37.8	
5.0020	-28.7	H	3.0	40.9	1.0	-68.7	-25.0	-43.7	
7.5030	-26.4	H	3.0	40.7	1.0	-66.2	-25.0	-41.2	
10.0040	-27.3	H	3.0	39.7	1.0	-66.0	-25.0	-41.0	
Mid Ch, (2593 MHz)									
5.1860	-30.6	V	3.0	40.9	1.0	-70.5	-25.0	-45.5	
7.7790	-27.5	V	3.0	40.6	1.0	-67.1	-25.0	-42.1	
10.3720	-23.7	V	3.0	39.4	1.0	-62.2	-25.0	-37.2	
5.1860	-27.5	H	3.0	40.9	1.0	-67.4	-25.0	-42.4	
7.7790	-27.1	H	3.0	40.6	1.0	-66.6	-25.0	-41.6	
10.3720	-25.9	H	3.0	39.4	1.0	-64.3	-25.0	-39.3	
High Ch, (2685 MHz)									
5.3700	-22.9	V	3.0	40.9	1.0	-62.8	-25.0	-37.8	
8.0550	-25.2	V	3.0	40.4	1.0	-64.6	-25.0	-39.6	
10.7400	-23.8	V	3.0	39.1	1.0	-61.9	-25.0	-36.9	
5.3700	-23.0	H	3.0	40.9	1.0	-62.9	-25.0	-37.9	
8.0550	-27.0	H	3.0	40.4	1.0	-66.4	-25.0	-41.4	
10.7400	-24.8	H	3.0	39.1	1.0	-62.9	-25.0	-37.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 41 5 MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-30-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 41, 5MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (2498.5 MHz)									
4.9970	-27.0	V	3.0	40.9	1.0	-67.0	-25.0	-42.0	
7.4955	-21.4	V	3.0	40.7	1.0	-61.1	-25.0	-36.1	
9.9940	-23.8	V	3.0	39.7	1.0	-62.4	-25.0	-37.4	
4.9970	-28.1	H	3.0	40.9	1.0	-68.1	-25.0	-43.1	
7.4955	-21.0	H	3.0	40.7	1.0	-60.8	-25.0	-35.8	
9.9940	-26.9	H	3.0	39.7	1.0	-65.5	-25.0	-40.5	
Mid Ch, (2593 MHz)									
5.1860	-26.4	V	3.0	40.9	1.0	-66.3	-25.0	-41.3	
7.7790	-21.5	V	3.0	40.6	1.0	-61.0	-25.0	-36.0	
10.3720	-23.2	V	3.0	39.4	1.0	-61.6	-25.0	-36.6	
5.1860	-27.1	H	3.0	40.9	1.0	-67.0	-25.0	-42.0	
7.7790	-21.0	H	3.0	40.6	1.0	-60.5	-25.0	-35.5	
10.3720	-25.3	H	3.0	39.4	1.0	-63.7	-25.0	-38.7	
High Ch, (2687.5 MHz)									
5.3750	-22.3	V	3.0	40.9	1.0	-62.1	-25.0	-37.1	
8.0625	-24.5	V	3.0	40.4	1.0	-63.9	-25.0	-38.9	
10.7500	-22.5	V	3.0	39.1	1.0	-60.7	-25.0	-35.7	
5.3750	-22.2	H	3.0	40.9	1.0	-62.0	-25.0	-37.0	
8.0625	-26.3	H	3.0	40.4	1.0	-65.7	-25.0	-40.7	
10.7500	-23.5	H	3.0	39.1	1.0	-61.6	-25.0	-36.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 41 5 MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-30-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 41, 5MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (2498.5 MHz)									
4.9970	-31.1	V	3.0	40.9	1.0	-71.0	-25.0	-46.0	
7.4955	-26.4	V	3.0	40.7	1.0	-66.1	-25.0	-41.1	
9.9940	-24.2	V	3.0	39.7	1.0	-62.9	-25.0	-37.9	
4.9970	-29.1	H	3.0	40.9	1.0	-69.0	-25.0	-44.0	
7.4955	-26.3	H	3.0	40.7	1.0	-66.0	-25.0	-41.0	
9.9940	-27.5	H	3.0	39.7	1.0	-66.2	-25.0	-41.2	
Mid Ch, (2593 MHz)									
5.1860	-30.5	V	3.0	40.9	1.0	-70.4	-25.0	-45.4	
7.7790	-27.6	V	3.0	40.6	1.0	-67.2	-25.0	-42.2	
10.3720	-23.9	V	3.0	39.4	1.0	-62.4	-25.0	-37.4	
5.1860	-27.3	H	3.0	40.9	1.0	-67.2	-25.0	-42.2	
7.7790	-27.0	H	3.0	40.6	1.0	-66.5	-25.0	-41.5	
10.3720	-26.1	H	3.0	39.4	1.0	-64.5	-25.0	-39.5	
High Ch, (2687.5 MHz)									
5.3750	-22.9	V	3.0	40.9	1.0	-62.8	-25.0	-37.8	
8.0625	-25.4	V	3.0	40.4	1.0	-64.8	-25.0	-39.8	
10.7500	-23.4	V	3.0	39.1	1.0	-61.5	-25.0	-36.5	
5.3750	-23.0	H	3.0	40.9	1.0	-62.8	-25.0	-37.8	
8.0625	-27.5	H	3.0	40.4	1.0	-66.9	-25.0	-41.9	
10.7500	-24.3	H	3.0	39.1	1.0	-62.4	-25.0	-37.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 25

LTE Band 25 20MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 25, 20MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1860MHz)									
3.7200	-22.0	V	3.0	40.5	1.0	-61.5	-13.0	-48.5	
5.5800	-21.7	V	3.0	40.8	1.0	-61.5	-13.0	-48.5	
7.4400	-16.2	V	3.0	40.8	1.0	-55.9	-13.0	-42.9	
3.7200	-18.7	H	3.0	40.5	1.0	-58.2	-13.0	-45.2	
5.5800	-30.6	H	3.0	40.8	1.0	-70.4	-13.0	-57.4	
7.4400	-22.0	H	3.0	40.8	1.0	-61.8	-13.0	-48.8	
Mid Channel (1882.5MHz)									
3.7650	-21.7	V	3.0	40.5	1.0	-61.2	-13.0	-48.2	
5.6475	-23.5	V	3.0	40.8	1.0	-63.4	-13.0	-50.4	
7.5300	-17.2	V	3.0	40.7	1.0	-56.9	-13.0	-43.9	
3.7650	-19.4	H	3.0	40.5	1.0	-59.0	-13.0	-46.0	
5.6475	-31.1	H	3.0	40.8	1.0	-70.9	-13.0	-57.9	
7.5300	-24.6	H	3.0	40.7	1.0	-64.3	-13.0	-51.3	
High Channel (1905MHz)									
3.8100	-21.6	V	3.0	40.6	1.0	-61.2	-13.0	-48.2	
5.7150	-24.7	V	3.0	40.8	1.0	-64.5	-13.0	-51.5	
7.6200	-18.2	V	3.0	40.7	1.0	-57.9	-13.0	-44.9	
3.8100	-19.8	H	3.0	40.6	1.0	-59.4	-13.0	-46.4	
5.7150	-31.4	H	3.0	40.8	1.0	-71.2	-13.0	-58.2	
7.6200	-24.0	H	3.0	40.7	1.0	-63.7	-13.0	-50.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 25 20MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 25, 20MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1860MHz)									
3.7200	-22.9	V	3.0	40.5	1.0	-62.4	-13.0	-49.4	
5.5800	-22.7	V	3.0	40.8	1.0	-62.6	-13.0	-49.6	
7.4400	-17.2	V	3.0	40.8	1.0	-56.9	-13.0	-43.9	
3.7200	-19.7	H	3.0	40.5	1.0	-59.2	-13.0	-46.2	
5.5800	-31.5	H	3.0	40.8	1.0	-71.3	-13.0	-58.3	
7.4400	-23.1	H	3.0	40.8	1.0	-62.8	-13.0	-49.8	
Mid Channel (1882.5MHz)									
3.7650	-22.6	V	3.0	40.5	1.0	-62.1	-13.0	-49.1	
5.6475	-24.5	V	3.0	40.8	1.0	-64.4	-13.0	-51.4	
7.5300	-18.2	V	3.0	40.7	1.0	-57.9	-13.0	-44.9	
3.7650	-20.4	H	3.0	40.5	1.0	-60.0	-13.0	-47.0	
5.6475	-32.1	H	3.0	40.8	1.0	-71.9	-13.0	-58.9	
7.5300	-25.5	H	3.0	40.7	1.0	-65.2	-13.0	-52.2	
High Channel (1905MHz)									
3.8100	-22.5	V	3.0	40.6	1.0	-62.1	-13.0	-49.1	
5.7150	-25.7	V	3.0	40.8	1.0	-65.4	-13.0	-52.4	
7.6200	-19.2	V	3.0	40.7	1.0	-58.8	-13.0	-45.8	
3.8100	-20.8	H	3.0	40.6	1.0	-60.4	-13.0	-47.4	
5.7150	-31.9	H	3.0	40.8	1.0	-71.7	-13.0	-58.7	
7.6200	-25.2	H	3.0	40.7	1.0	-64.8	-13.0	-51.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 25 15MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 25, 15MHz BW, QPSK

Chamber: Chamber 2 | Pre-amplifer: AFS42 | Filter: Filter 1 | Limit: FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1857.5MHz)									
3.7150	-22.3	V	3.0	40.5	1.0	-61.8	-13.0	-48.8	
5.5725	-22.0	V	3.0	40.8	1.0	-61.8	-13.0	-48.8	
7.4300	-16.7	V	3.0	40.8	1.0	-56.5	-13.0	-43.5	
3.7150	-18.1	H	3.0	40.5	1.0	-57.6	-13.0	-44.6	
5.5725	-30.6	H	3.0	40.8	1.0	-70.4	-13.0	-57.4	
7.4300	-22.4	H	3.0	40.8	1.0	-62.1	-13.0	-49.1	
Mid Channel (1882.5MHz)									
3.7650	-21.7	V	3.0	40.5	1.0	-61.2	-13.0	-48.2	
5.6475	-23.1	V	3.0	40.8	1.0	-62.9	-13.0	-49.9	
7.5300	-17.5	V	3.0	40.7	1.0	-57.2	-13.0	-44.2	
3.7650	-19.5	H	3.0	40.5	1.0	-59.1	-13.0	-46.1	
5.6475	-31.5	H	3.0	40.8	1.0	-71.3	-13.0	-58.3	
7.5300	-24.0	H	3.0	40.7	1.0	-63.8	-13.0	-50.8	
High Channel (1907.5MHz)									
3.8150	-21.6	V	3.0	40.6	1.0	-61.2	-13.0	-48.2	
5.7225	-24.1	V	3.0	40.8	1.0	-63.9	-13.0	-50.9	
7.6300	-18.5	V	3.0	40.7	1.0	-58.2	-13.0	-45.2	
3.8150	-20.1	H	3.0	40.6	1.0	-59.7	-13.0	-46.7	
5.7225	-30.9	H	3.0	40.8	1.0	-70.7	-13.0	-57.7	
7.6300	-24.0	H	3.0	40.7	1.0	-63.7	-13.0	-50.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 25 15MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 25, 15MHz BW,16QAM

Chamber: Chamber 2 | Pre-amplifer: AFS42 | Filter: Filter 1 | Limit: FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1857.5MHz)									
3.7150	-22.6	V	3.0	40.5	1.0	-62.1	-13.0	-49.1	
5.5725	-22.4	V	3.0	40.8	1.0	-62.2	-13.0	-49.2	
7.4300	-17.3	V	3.0	40.8	1.0	-57.1	-13.0	-44.1	
3.7150	-19.6	H	3.0	40.5	1.0	-59.1	-13.0	-46.1	
5.5725	-31.5	H	3.0	40.8	1.0	-71.4	-13.0	-58.4	
7.4300	-23.1	H	3.0	40.8	1.0	-62.9	-13.0	-49.9	
Mid Channel (1882.5MHz)									
3.7650	-22.5	V	3.0	40.5	1.0	-62.1	-13.0	-49.1	
5.6475	-24.2	V	3.0	40.8	1.0	-64.0	-13.0	-51.0	
7.5300	-18.4	V	3.0	40.7	1.0	-58.1	-13.0	-45.1	
3.7650	-19.8	H	3.0	40.5	1.0	-59.4	-13.0	-46.4	
5.6475	-32.1	H	3.0	40.8	1.0	-71.9	-13.0	-58.9	
7.5300	-25.1	H	3.0	40.7	1.0	-64.8	-13.0	-51.8	
High Channel (1907.5MHz)									
3.8150	-22.6	V	3.0	40.6	1.0	-62.2	-13.0	-49.2	
5.7225	-25.2	V	3.0	40.8	1.0	-65.0	-13.0	-52.0	
7.6300	-19.4	V	3.0	40.7	1.0	-59.0	-13.0	-46.0	
3.8150	-20.5	H	3.0	40.6	1.0	-60.1	-13.0	-47.1	
5.7225	-31.9	H	3.0	40.8	1.0	-71.7	-13.0	-58.7	
7.6300	-25.1	H	3.0	40.7	1.0	-64.7	-13.0	-51.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 25 10MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 25, 10MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1855MHz)									
3.7100	-22.0	V	3.0	40.5	1.0	-61.5	-13.0	-48.5	
5.5650	-21.6	V	3.0	40.8	1.0	-61.5	-13.0	-48.5	
7.4450	-16.5	V	3.0	40.8	1.0	-56.3	-13.0	-43.3	
3.7100	-18.3	H	3.0	40.5	1.0	-57.8	-13.0	-44.8	
5.5650	-30.6	H	3.0	40.8	1.0	-70.4	-13.0	-57.4	
7.4450	-22.6	H	3.0	40.8	1.0	-62.3	-13.0	-49.3	
Mid Channel (1882.5MHz)									
3.7650	-21.7	V	3.0	40.5	1.0	-61.3	-13.0	-48.3	
5.6475	-23.5	V	3.0	40.8	1.0	-63.4	-13.0	-50.4	
7.5300	-17.5	V	3.0	40.7	1.0	-57.2	-13.0	-44.2	
3.7650	-18.7	H	3.0	40.5	1.0	-58.3	-13.0	-45.3	
5.6475	-31.1	H	3.0	40.8	1.0	-70.9	-13.0	-57.9	
7.5300	-24.7	H	3.0	40.7	1.0	-64.4	-13.0	-51.4	
High Channel (1910MHz)									
3.8200	-21.3	V	3.0	40.6	1.0	-60.9	-13.0	-47.9	
5.7300	-24.2	V	3.0	40.8	1.0	-64.0	-13.0	-51.0	
7.6400	-19.7	V	3.0	40.7	1.0	-59.4	-13.0	-46.4	
3.8200	-20.5	H	3.0	40.6	1.0	-60.1	-13.0	-47.1	
5.7300	-31.2	H	3.0	40.8	1.0	-71.0	-13.0	-58.0	
7.6400	-24.3	H	3.0	40.7	1.0	-64.0	-13.0	-51.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 25 10MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 25, 10MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1855MHz)									
3.7100	-23.0	V	3.0	40.5	1.0	-62.5	-13.0	-49.5	
5.5650	-21.7	V	3.0	40.8	1.0	-61.5	-13.0	-48.5	
7.4450	-17.3	V	3.0	40.8	1.0	-57.0	-13.0	-44.0	
3.7100	-19.1	H	3.0	40.5	1.0	-58.6	-13.0	-45.6	
5.5650	-31.8	H	3.0	40.8	1.0	-71.6	-13.0	-58.6	
7.4450	-23.2	H	3.0	40.8	1.0	-62.9	-13.0	-49.9	
Mid Channel (1882.5MHz)									
3.7650	-22.7	V	3.0	40.5	1.0	-62.3	-13.0	-49.3	
5.6475	-24.8	V	3.0	40.8	1.0	-64.6	-13.0	-51.6	
7.5300	-18.4	V	3.0	40.7	1.0	-58.2	-13.0	-45.2	
3.7650	-18.8	H	3.0	40.5	1.0	-58.3	-13.0	-45.3	
5.6475	-32.1	H	3.0	40.8	1.0	-71.9	-13.0	-58.9	
7.5300	-25.6	H	3.0	40.7	1.0	-65.3	-13.0	-52.3	
High Channel (1910MHz)									
3.8200	-22.3	V	3.0	40.6	1.0	-61.9	-13.0	-48.9	
5.7300	-25.3	V	3.0	40.8	1.0	-65.1	-13.0	-52.1	
7.6400	-20.3	V	3.0	40.7	1.0	-59.9	-13.0	-46.9	
3.8200	-21.7	H	3.0	40.6	1.0	-61.3	-13.0	-48.3	
5.7300	-32.0	H	3.0	40.8	1.0	-71.7	-13.0	-58.7	
7.6400	-25.1	H	3.0	40.7	1.0	-64.8	-13.0	-51.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 25 5MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-28-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 25, 5MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1852.5MHz)									
3.7050	-22.0	V	3.0	40.5	1.0	-61.5	-13.0	-48.5	
5.5575	-21.7	V	3.0	40.8	1.0	-61.5	-13.0	-48.5	
7.4100	-16.9	V	3.0	40.8	1.0	-56.7	-13.0	-43.7	
3.7050	-18.0	H	3.0	40.5	1.0	-57.5	-13.0	-44.5	
5.5575	-30.8	H	3.0	40.8	1.0	-70.6	-13.0	-57.6	
7.4100	-22.4	H	3.0	40.8	1.0	-62.2	-13.0	-49.2	
Mid Channel (1882.5MHz)									
3.7650	-21.9	V	3.0	40.5	1.0	-61.5	-13.0	-48.5	
5.6475	-23.7	V	3.0	40.8	1.0	-63.6	-13.0	-50.6	
7.5300	-17.6	V	3.0	40.7	1.0	-57.4	-13.0	-44.4	
3.7650	-19.1	H	3.0	40.5	1.0	-58.6	-13.0	-45.6	
5.6475	-31.1	H	3.0	40.8	1.0	-70.9	-13.0	-57.9	
7.5300	-24.2	H	3.0	40.7	1.0	-63.9	-13.0	-50.9	
High Channel (1912.5MHz)									
3.8250	-21.2	V	3.0	40.6	1.0	-60.8	-13.0	-47.8	
5.7375	-23.8	V	3.0	40.8	1.0	-63.6	-13.0	-50.6	
7.6500	-19.0	V	3.0	40.6	1.0	-58.6	-13.0	-45.6	
3.8250	-20.0	H	3.0	40.6	1.0	-59.6	-13.0	-46.6	
5.7375	-31.2	H	3.0	40.8	1.0	-70.9	-13.0	-57.9	
7.6500	-24.0	H	3.0	40.6	1.0	-63.7	-13.0	-50.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 25 5MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-28-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 25, 5MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1852.5MHz)									
3.7050	-23.0	V	3.0	40.5	1.0	-62.5	-13.0	-49.5	
5.5575	-22.5	V	3.0	40.8	1.0	-62.3	-13.0	-49.3	
7.4100	-17.9	V	3.0	40.8	1.0	-57.6	-13.0	-44.6	
3.7050	-19.1	H	3.0	40.5	1.0	-58.6	-13.0	-45.6	
5.5575	-31.8	H	3.0	40.8	1.0	-71.7	-13.0	-58.7	
7.4100	-23.3	H	3.0	40.8	1.0	-63.1	-13.0	-50.1	
Mid Channel (1882.5MHz)									
3.7650	-22.9	V	3.0	40.5	1.0	-62.5	-13.0	-49.5	
5.6475	-24.8	V	3.0	40.8	1.0	-64.6	-13.0	-51.6	
7.5300	-18.4	V	3.0	40.7	1.0	-58.1	-13.0	-45.1	
3.7650	-19.9	H	3.0	40.5	1.0	-59.5	-13.0	-46.5	
5.6475	-32.3	H	3.0	40.8	1.0	-72.1	-13.0	-59.1	
7.5300	-25.3	H	3.0	40.7	1.0	-65.0	-13.0	-52.0	
High Channel (1912.5MHz)									
3.8250	-22.3	V	3.0	40.6	1.0	-61.9	-13.0	-48.9	
5.7375	-22.9	V	3.0	40.8	1.0	-62.7	-13.0	-49.7	
7.6500	-19.7	V	3.0	40.6	1.0	-59.3	-13.0	-46.3	
3.8250	-20.6	H	3.0	40.6	1.0	-60.2	-13.0	-47.2	
5.7375	-31.8	H	3.0	40.8	1.0	-71.6	-13.0	-58.6	
7.6500	-25.1	H	3.0	40.6	1.0	-64.7	-13.0	-51.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 25 3MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-28-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 25, 3MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1851.5MHz)									
3.7030	-21.7	V	3.0	40.5	1.0	-61.2	-13.0	-48.2	
5.5545	-21.8	V	3.0	40.8	1.0	-61.6	-13.0	-48.6	
7.4060	-16.7	V	3.0	40.8	1.0	-56.5	-13.0	-43.5	
3.7030	-18.7	H	3.0	40.5	1.0	-58.2	-13.0	-45.2	
5.5545	-30.8	H	3.0	40.8	1.0	-70.6	-13.0	-57.6	
7.4060	-22.1	H	3.0	40.8	1.0	-61.9	-13.0	-48.9	
Mid Channel (1882.5MHz)									
3.7650	-22.0	V	3.0	40.5	1.0	-61.5	-13.0	-48.5	
5.6475	-23.1	V	3.0	40.8	1.0	-62.9	-13.0	-49.9	
7.5300	-17.6	V	3.0	40.7	1.0	-57.3	-13.0	-44.3	
3.7650	-19.2	H	3.0	40.5	1.0	-58.7	-13.0	-45.7	
5.6475	-31.4	H	3.0	40.8	1.0	-71.2	-13.0	-58.2	
7.5300	-24.5	H	3.0	40.7	1.0	-64.2	-13.0	-51.2	
High Channel (1913.5MHz)									
3.8270	-21.5	V	3.0	40.6	1.0	-61.1	-13.0	-48.1	
5.7405	-24.5	V	3.0	40.8	1.0	-64.3	-13.0	-51.3	
7.6540	-18.2	V	3.0	40.6	1.0	-57.8	-13.0	-44.8	
3.8270	-19.5	H	3.0	40.6	1.0	-59.1	-13.0	-46.1	
5.7405	-31.4	H	3.0	40.8	1.0	-71.2	-13.0	-58.2	
7.6540	-24.7	H	3.0	40.6	1.0	-64.3	-13.0	-51.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 25 3MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-28-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 25, 3MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1851.5MHz)									
3.7030	-22.7	V	3.0	40.5	1.0	-62.2	-13.0	-49.2	
5.5545	-22.4	V	3.0	40.8	1.0	-62.3	-13.0	-49.3	
7.4060	-16.7	V	3.0	40.8	1.0	-56.5	-13.0	-43.5	
3.7030	-19.0	H	3.0	40.5	1.0	-58.5	-13.0	-45.5	
5.5545	-31.8	H	3.0	40.8	1.0	-71.6	-13.0	-58.6	
7.4060	-23.2	H	3.0	40.8	1.0	-62.9	-13.0	-49.9	
Mid Channel (1882.5MHz)									
3.7650	-22.9	V	3.0	40.5	1.0	-62.4	-13.0	-49.4	
5.6475	-24.2	V	3.0	40.8	1.0	-64.0	-13.0	-51.0	
7.5300	-18.6	V	3.0	40.7	1.0	-58.3	-13.0	-45.3	
3.7650	-20.0	H	3.0	40.5	1.0	-59.5	-13.0	-46.5	
5.6475	-32.1	H	3.0	40.8	1.0	-71.9	-13.0	-58.9	
7.5300	-25.4	H	3.0	40.7	1.0	-65.1	-13.0	-52.1	
High Channel (1913.5MHz)									
3.8270	-22.4	V	3.0	40.6	1.0	-62.0	-13.0	-49.0	
5.7405	-25.5	V	3.0	40.8	1.0	-65.3	-13.0	-52.3	
7.6540	-19.1	V	3.0	40.6	1.0	-58.8	-13.0	-45.8	
3.8270	-20.5	H	3.0	40.6	1.0	-60.1	-13.0	-47.1	
5.7405	-32.1	H	3.0	40.8	1.0	-71.8	-13.0	-58.8	
7.6540	-25.6	H	3.0	40.6	1.0	-65.3	-13.0	-52.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 25 1.4MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 25, 1.4MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1850.7MHz)									
3.7014	-21.7	V	3.0	40.5	1.0	-61.2	-13.0	-48.2	
5.5521	-21.4	V	3.0	40.8	1.0	-61.2	-13.0	-48.2	
7.4028	-16.2	V	3.0	40.8	1.0	-56.0	-13.0	-43.0	
3.7014	-18.1	H	3.0	40.5	1.0	-57.6	-13.0	-44.6	
5.5521	-30.7	H	3.0	40.8	1.0	-70.5	-13.0	-57.5	
7.4028	-22.4	H	3.0	40.8	1.0	-62.2	-13.0	-49.2	
Mid Channel (1882.5MHz)									
3.7650	-21.9	V	3.0	40.5	1.0	-61.5	-13.0	-48.5	
5.6475	-23.1	V	3.0	40.8	1.0	-62.9	-13.0	-49.9	
7.5300	-17.2	V	3.0	40.7	1.0	-56.9	-13.0	-43.9	
3.7650	-18.8	H	3.0	40.5	1.0	-58.4	-13.0	-45.4	
5.6475	-31.4	H	3.0	40.8	1.0	-71.2	-13.0	-58.2	
7.5300	-24.0	H	3.0	40.7	1.0	-63.7	-13.0	-50.7	
High Channel (1914.3MHz)									
3.8286	-21.5	V	3.0	40.6	1.0	-61.1	-13.0	-48.1	
5.7429	-23.8	V	3.0	40.8	1.0	-63.6	-13.0	-50.6	
7.6572	-18.1	V	3.0	40.6	1.0	-57.8	-13.0	-44.8	
3.8286	-19.7	H	3.0	40.6	1.0	-59.3	-13.0	-46.3	
5.7429	-31.2	H	3.0	40.8	1.0	-71.0	-13.0	-58.0	
7.6572	-24.1	H	3.0	40.6	1.0	-63.7	-13.0	-50.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 25 1.4MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 25, 1.4MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1850.7MHz)									
3.7014	-22.7	V	3.0	40.5	1.0	-62.2	-13.0	-49.2	
5.5521	-21.3	V	3.0	40.8	1.0	-61.2	-13.0	-48.2	
7.4028	-17.3	V	3.0	40.8	1.0	-57.1	-13.0	-44.1	
3.7014	-19.3	H	3.0	40.5	1.0	-58.8	-13.0	-45.8	
5.5521	-31.7	H	3.0	40.8	1.0	-71.5	-13.0	-58.5	
7.4028	-23.2	H	3.0	40.8	1.0	-63.0	-13.0	-50.0	
Mid Channel (1882.5MHz)									
3.7650	-22.7	V	3.0	40.5	1.0	-62.2	-13.0	-49.2	
5.6475	-24.4	V	3.0	40.8	1.0	-64.3	-13.0	-51.3	
7.5300	-18.2	V	3.0	40.7	1.0	-57.9	-13.0	-44.9	
3.7650	-20.1	H	3.0	40.5	1.0	-59.7	-13.0	-46.7	
5.6475	-32.1	H	3.0	40.8	1.0	-71.9	-13.0	-58.9	
7.5300	-25.1	H	3.0	40.7	1.0	-64.8	-13.0	-51.8	
High Channel (1914.3MHz)									
3.8286	-22.4	V	3.0	40.6	1.0	-62.0	-13.0	-49.0	
5.7429	-25.1	V	3.0	40.8	1.0	-64.9	-13.0	-51.9	
7.6572	-19.1	V	3.0	40.6	1.0	-58.8	-13.0	-45.8	
3.8286	-21.0	H	3.0	40.6	1.0	-60.6	-13.0	-47.6	
5.7429	-31.8	H	3.0	40.8	1.0	-71.6	-13.0	-58.6	
7.6572	-25.0	H	3.0	40.6	1.0	-64.7	-13.0	-51.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 12

LTE Band 12 10MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-29-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, Z Position
Mode: TX, LTE BAND 12, 10MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (704MHz)									
1.4080	-29.5	V	3.0	39.0	1.0	-67.5	-13.0	-54.5	
2.1120	-33.2	V	3.0	39.3	1.0	-71.5	-13.0	-58.5	
2.8160	-34.7	V	3.0	39.7	1.0	-73.4	-13.0	-60.4	
1.4080	-27.2	H	3.0	39.0	1.0	-65.2	-13.0	-52.2	
2.1120	-30.9	H	3.0	39.3	1.0	-69.2	-13.0	-56.2	
2.8160	-33.7	H	3.0	39.7	1.0	-72.4	-13.0	-59.4	
Mid Channel (707.5MHz)									
1.4150	-29.5	V	3.0	39.0	1.0	-67.5	-13.0	-54.5	
2.1225	-32.6	V	3.0	39.3	1.0	-70.9	-13.0	-57.9	
2.8300	-34.9	V	3.0	39.7	1.0	-73.6	-13.0	-60.6	
1.4150	-28.8	H	3.0	39.0	1.0	-66.8	-13.0	-53.8	
2.1225	-31.5	H	3.0	39.3	1.0	-69.8	-13.0	-56.8	
2.8300	-34.7	H	3.0	39.7	1.0	-73.4	-13.0	-60.4	
High Channel (711MHz)									
1.4220	-27.3	V	3.0	39.0	1.0	-65.3	-13.0	-52.3	
2.1330	-33.6	V	3.0	39.3	1.0	-71.9	-13.0	-58.9	
2.8440	-36.0	V	3.0	39.7	1.0	-74.7	-13.0	-61.7	
1.4220	-21.6	H	3.0	39.0	1.0	-59.6	-13.0	-46.6	
2.1330	-33.6	H	3.0	39.3	1.0	-71.9	-13.0	-58.9	
2.8440	-36.2	H	3.0	39.7	1.0	-74.9	-13.0	-61.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 12 10MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-29-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, Z Position
Mode: TX, LTE BAND 12, 10MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (704MHz)									
1.4080	-30.8	V	3.0	39.0	1.0	-68.9	-13.0	-55.9	
2.1120	-34.2	V	3.0	39.3	1.0	-72.5	-13.0	-59.5	
2.8160	-36.4	V	3.0	39.7	1.0	-75.1	-13.0	-62.1	
1.4080	-28.1	H	3.0	39.0	1.0	-66.1	-13.0	-53.1	
2.1120	-31.9	H	3.0	39.3	1.0	-70.2	-13.0	-57.2	
2.8160	-35.0	H	3.0	39.7	1.0	-73.7	-13.0	-60.7	
Mid Channel (707.5MHz)									
1.4150	-30.4	V	3.0	39.0	1.0	-68.5	-13.0	-55.5	
2.1225	-32.9	V	3.0	39.3	1.0	-71.2	-13.0	-58.2	
2.8300	-38.2	V	3.0	39.7	1.0	-76.9	-13.0	-63.9	
1.4150	-29.8	H	3.0	39.0	1.0	-67.8	-13.0	-54.8	
2.1225	-31.8	H	3.0	39.3	1.0	-70.1	-13.0	-57.1	
2.8300	-35.9	H	3.0	39.7	1.0	-74.6	-13.0	-61.6	
High Channel (711MHz)									
1.4220	-28.4	V	3.0	39.0	1.0	-66.4	-13.0	-53.4	
2.1330	-34.1	V	3.0	39.3	1.0	-72.4	-13.0	-59.4	
2.8440	-37.1	V	3.0	39.7	1.0	-75.8	-13.0	-62.8	
1.4220	-23.2	H	3.0	39.0	1.0	-61.2	-13.0	-48.2	
2.1330	-33.8	H	3.0	39.3	1.0	-72.1	-13.0	-59.1	
2.8440	-36.9	H	3.0	39.7	1.0	-75.6	-13.0	-62.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 12 5MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-29-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, Z Position
Mode: TX, LTE BAND 12, 5MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (701.5MHz)									
1.4030	-29.2	V	3.0	39.0	1.0	-67.2	-13.0	-54.2	
2.1045	-33.6	V	3.0	39.3	1.0	-71.9	-13.0	-58.9	
2.8060	-34.9	V	3.0	39.7	1.0	-73.6	-13.0	-60.6	
1.4030	-27.2	H	3.0	39.0	1.0	-65.2	-13.0	-52.2	
2.1045	-31.5	H	3.0	39.3	1.0	-69.8	-13.0	-56.8	
2.8060	-34.4	H	3.0	39.7	1.0	-73.1	-13.0	-60.1	
Mid Channel (707.5MHz)									
1.4150	-29.4	V	3.0	39.0	1.0	-67.4	-13.0	-54.4	
2.1225	-31.9	V	3.0	39.3	1.0	-70.2	-13.0	-57.2	
2.8300	-34.9	V	3.0	39.7	1.0	-73.6	-13.0	-60.6	
1.4150	-28.6	H	3.0	39.0	1.0	-66.6	-13.0	-53.6	
2.1225	-30.8	H	3.0	39.3	1.0	-69.1	-13.0	-56.1	
2.8300	-35.0	H	3.0	39.7	1.0	-73.7	-13.0	-60.7	
High Channel (713.5MHz)									
1.4270	-27.8	V	3.0	39.0	1.0	-65.8	-13.0	-52.8	
2.1405	-32.9	V	3.0	39.3	1.0	-71.2	-13.0	-58.2	
2.8540	-35.9	V	3.0	39.7	1.0	-74.6	-13.0	-61.6	
1.4270	-22.1	H	3.0	39.0	1.0	-60.2	-13.0	-47.2	
2.1405	-32.8	H	3.0	39.3	1.0	-71.1	-13.0	-58.1	
2.8540	-35.8	H	3.0	39.7	1.0	-74.6	-13.0	-61.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 12 5MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-29-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, Z Position
Mode: TX, LTE BAND 12, 5MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (701.5MHz)									
1.4030	-30.9	V	3.0	39.0	1.0	-68.9	-13.0	-55.9	
2.1045	-34.1	V	3.0	39.3	1.0	-72.4	-13.0	-59.4	
2.8060	-36.4	V	3.0	39.7	1.0	-75.1	-13.0	-62.1	
1.4030	-28.1	H	3.0	39.0	1.0	-66.1	-13.0	-53.1	
2.1045	-32.1	H	3.0	39.3	1.0	-70.4	-13.0	-57.4	
2.8060	-34.9	H	3.0	39.7	1.0	-73.6	-13.0	-60.6	
Mid Channel (707.5MHz)									
1.4150	-30.1	V	3.0	39.0	1.0	-68.1	-13.0	-55.1	
2.1225	-33.6	V	3.0	39.3	1.0	-71.9	-13.0	-58.9	
2.8300	-36.2	V	3.0	39.7	1.0	-74.9	-13.0	-61.9	
1.4150	-29.8	H	3.0	39.0	1.0	-67.8	-13.0	-54.8	
2.1225	-32.3	H	3.0	39.3	1.0	-70.6	-13.0	-57.6	
2.8300	-36.4	H	3.0	39.7	1.0	-75.1	-13.0	-62.1	
High Channel (713.5MHz)									
1.4270	-28.7	V	3.0	39.0	1.0	-66.7	-13.0	-53.7	
2.1405	-34.1	V	3.0	39.3	1.0	-72.5	-13.0	-59.5	
2.8540	-37.0	V	3.0	39.7	1.0	-75.8	-13.0	-62.8	
1.4270	-23.1	H	3.0	39.0	1.0	-61.2	-13.0	-48.2	
2.1405	-34.5	H	3.0	39.3	1.0	-72.8	-13.0	-59.8	
2.8540	-36.9	H	3.0	39.7	1.0	-75.6	-13.0	-62.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 12 3MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-29-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, Z Position
Mode: TX, LTE BAND 12, 3MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (700.5MHz)									
1.4010	-29.5	V	3.0	39.0	1.0	-67.5	-13.0	-54.5	
2.1015	-32.9	V	3.0	39.3	1.0	-71.2	-13.0	-58.2	
2.8020	-34.6	V	3.0	39.7	1.0	-73.3	-13.0	-60.3	
1.4010	-26.9	H	3.0	39.0	1.0	-64.9	-13.0	-51.9	
2.1015	-31.5	H	3.0	39.3	1.0	-69.8	-13.0	-56.8	
2.8020	-34.0	H	3.0	39.7	1.0	-72.7	-13.0	-59.7	
Mid Channel (707.5MHz)									
1.4150	-29.5	V	3.0	39.0	1.0	-67.6	-13.0	-54.6	
2.1225	-32.2	V	3.0	39.3	1.0	-70.5	-13.0	-57.5	
2.8300	-34.9	V	3.0	39.7	1.0	-73.6	-13.0	-60.6	
1.4150	-29.2	H	3.0	39.0	1.0	-67.2	-13.0	-54.2	
2.1225	-31.5	H	3.0	39.3	1.0	-69.8	-13.0	-56.8	
2.8300	-34.9	H	3.0	39.7	1.0	-73.6	-13.0	-60.6	
High Channel (714.5MHz)									
1.4290	-27.8	V	3.0	39.0	1.0	-65.9	-13.0	-52.9	
2.1435	-33.6	V	3.0	39.3	1.0	-71.9	-13.0	-58.9	
2.8580	-35.9	V	3.0	39.7	1.0	-74.7	-13.0	-61.7	
1.4290	-21.5	H	3.0	39.0	1.0	-59.6	-13.0	-46.6	
2.1435	-33.3	H	3.0	39.3	1.0	-71.6	-13.0	-58.6	
2.8580	-35.9	H	3.0	39.7	1.0	-74.6	-13.0	-61.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 12 3MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-29-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, Z Position
Mode: TX, LTE BAND 12, 3MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (700.5MHz)									
1.4010	-30.2	V	3.0	39.0	1.0	-68.2	-13.0	-55.2	
2.1015	-34.1	V	3.0	39.3	1.0	-72.4	-13.0	-59.4	
2.8020	-36.3	V	3.0	39.7	1.0	-75.0	-13.0	-62.0	
1.4010	-28.1	H	3.0	39.0	1.0	-66.1	-13.0	-53.1	
2.1015	-32.5	H	3.0	39.3	1.0	-70.8	-13.0	-57.8	
2.8020	-35.2	H	3.0	39.7	1.0	-73.9	-13.0	-60.9	
Mid Channel (707.5MHz)									
1.4150	-30.9	V	3.0	39.0	1.0	-69.0	-13.0	-56.0	
2.1225	-33.4	V	3.0	39.3	1.0	-71.7	-13.0	-58.7	
2.8300	-36.0	V	3.0	39.7	1.0	-74.7	-13.0	-61.7	
1.4150	-29.8	H	3.0	39.0	1.0	-67.8	-13.0	-54.8	
2.1225	-32.6	H	3.0	39.3	1.0	-70.9	-13.0	-57.9	
2.8300	-36.2	H	3.0	39.7	1.0	-74.9	-13.0	-61.9	
High Channel (714.5MHz)									
1.4290	-28.5	V	3.0	39.0	1.0	-66.6	-13.0	-53.6	
2.1435	-34.1	V	3.0	39.3	1.0	-72.4	-13.0	-59.4	
2.8580	-37.1	V	3.0	39.7	1.0	-75.9	-13.0	-62.9	
1.4290	-23.1	H	3.0	39.0	1.0	-61.1	-13.0	-48.1	
2.1435	-34.5	H	3.0	39.3	1.0	-72.8	-13.0	-59.8	
2.8580	-37.2	H	3.0	39.7	1.0	-75.9	-13.0	-62.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 12 1.4MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-29-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, Z Position
Mode: TX, LTE BAND 12, 1.4MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (699.7MHz)									
1.3994	-29.6	V	3.0	39.0	1.0	-67.6	-13.0	-54.6	
2.0991	-33.5	V	3.0	39.3	1.0	-71.8	-13.0	-58.8	
2.7988	-34.6	V	3.0	39.7	1.0	-73.3	-13.0	-60.3	
1.3994	-27.0	H	3.0	39.0	1.0	-65.0	-13.0	-52.0	
2.0991	-30.8	H	3.0	39.3	1.0	-69.1	-13.0	-56.1	
2.7988	-34.3	H	3.0	39.7	1.0	-73.0	-13.0	-60.0	
Mid Channel (707.5MHz)									
1.4150	-29.2	V	3.0	39.0	1.0	-67.2	-13.0	-54.2	
2.1225	-32.7	V	3.0	39.3	1.0	-71.0	-13.0	-58.0	
2.8300	-34.7	V	3.0	39.7	1.0	-73.4	-13.0	-60.4	
1.4150	-28.5	H	3.0	39.0	1.0	-66.6	-13.0	-53.6	
2.1225	-31.2	H	3.0	39.3	1.0	-69.5	-13.0	-56.5	
2.8300	-34.9	H	3.0	39.7	1.0	-73.6	-13.0	-60.6	
High Channel (715.3MHz)									
1.4306	-27.2	V	3.0	39.0	1.0	-65.2	-13.0	-52.2	
2.1459	-33.6	V	3.0	39.3	1.0	-71.9	-13.0	-58.9	
2.8612	-35.8	V	3.0	39.7	1.0	-74.6	-13.0	-61.6	
1.4306	-21.8	H	3.0	39.0	1.0	-59.8	-13.0	-46.8	
2.1459	-33.5	H	3.0	39.3	1.0	-71.8	-13.0	-58.8	
2.8612	-35.6	H	3.0	39.7	1.0	-74.4	-13.0	-61.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 12 1.4MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-29-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, Z Position
Mode: TX, LTE BAND 12, 1.4MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (699.7MHz)									
1.3994	-30.6	V	3.0	39.0	1.0	-68.6	-13.0	-55.6	
2.0991	-34.5	V	3.0	39.3	1.0	-72.8	-13.0	-59.8	
2.7988	-36.0	V	3.0	39.7	1.0	-74.7	-13.0	-61.7	
1.3994	-28.1	H	3.0	39.0	1.0	-66.1	-13.0	-53.1	
2.0991	-31.8	H	3.0	39.3	1.0	-70.1	-13.0	-57.1	
2.7988	-34.9	H	3.0	39.7	1.0	-73.6	-13.0	-60.6	
Mid Channel (707.5MHz)									
1.4150	-30.6	V	3.0	39.0	1.0	-68.6	-13.0	-55.6	
2.1225	-32.9	V	3.0	39.3	1.0	-71.2	-13.0	-58.2	
2.8300	-35.8	V	3.0	39.7	1.0	-74.5	-13.0	-61.5	
1.4150	-29.7	H	3.0	39.0	1.0	-67.7	-13.0	-54.7	
2.1225	-32.5	H	3.0	39.3	1.0	-70.8	-13.0	-57.8	
2.8300	-36.2	H	3.0	39.7	1.0	-74.9	-13.0	-61.9	
High Channel (715.3MHz)									
1.4306	-28.3	V	3.0	39.0	1.0	-66.3	-13.0	-53.3	
2.1459	-34.2	V	3.0	39.3	1.0	-72.6	-13.0	-59.6	
2.8612	-37.2	V	3.0	39.7	1.0	-76.0	-13.0	-63.0	
1.4306	-22.5	H	3.0	39.0	1.0	-60.5	-13.0	-47.5	
2.1459	-34.5	H	3.0	39.3	1.0	-72.8	-13.0	-59.8	
2.8612	-37.2	H	3.0	39.7	1.0	-75.9	-13.0	-62.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 4

LTE Band 4 20MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 4, 20MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1720MHz)									
3.4400	-23.1	V	3.0	40.2	1.0	-62.3	-13.0	-49.3	
5.1600	-32.0	V	3.0	40.9	1.0	-71.9	-13.0	-58.9	
6.8800	-21.6	V	3.0	41.0	1.0	-61.6	-13.0	-48.6	
3.4400	-19.0	H	3.0	40.2	1.0	-58.2	-13.0	-45.2	
5.1600	-32.8	H	3.0	40.9	1.0	-72.7	-13.0	-59.7	
6.8800	-24.5	H	3.0	41.0	1.0	-64.5	-13.0	-51.5	
Mid Channel (1732.5MHz)									
3.4650	-23.8	V	3.0	40.3	1.0	-63.1	-13.0	-50.1	
5.1975	-30.6	V	3.0	40.9	1.0	-70.5	-13.0	-57.5	
6.9300	-21.8	V	3.0	41.0	1.0	-61.8	-13.0	-48.8	
3.4650	-22.6	H	3.0	40.3	1.0	-61.9	-13.0	-48.9	
5.1975	-30.3	H	3.0	40.9	1.0	-70.2	-13.0	-57.2	
6.9300	-26.0	H	3.0	41.0	1.0	-66.0	-13.0	-53.0	
High Channel (1745MHz)									
3.4900	-26.9	V	3.0	40.3	1.0	-66.2	-13.0	-53.2	
5.2350	-30.3	V	3.0	40.9	1.0	-70.1	-13.0	-57.1	
6.9800	-21.9	V	3.0	41.0	1.0	-61.9	-13.0	-48.9	
3.4900	-23.0	H	3.0	40.3	1.0	-62.3	-13.0	-49.3	
5.2350	-30.2	H	3.0	40.9	1.0	-70.1	-13.0	-57.1	
6.9800	-25.8	H	3.0	41.0	1.0	-65.9	-13.0	-52.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 4 20MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 4, 20MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1720MHz)									
3.4400	-24.1	V	3.0	40.2	1.0	-63.3	-13.0	-50.3	
5.1600	-32.5	V	3.0	40.9	1.0	-72.3	-13.0	-59.3	
6.8800	-22.6	V	3.0	41.0	1.0	-62.5	-13.0	-49.5	
3.4400	-20.4	H	3.0	40.2	1.0	-59.6	-13.0	-46.6	
5.1600	-32.4	H	3.0	40.9	1.0	-72.3	-13.0	-59.3	
6.8800	-25.6	H	3.0	41.0	1.0	-65.6	-13.0	-52.6	
Mid Channel (1732.5MHz)									
3.4650	-25.0	V	3.0	40.3	1.0	-64.2	-13.0	-51.2	
5.1975	-31.3	V	3.0	40.9	1.0	-71.2	-13.0	-58.2	
6.9300	-22.7	V	3.0	41.0	1.0	-62.7	-13.0	-49.7	
3.4650	-23.2	H	3.0	40.3	1.0	-62.5	-13.0	-49.5	
5.1975	-31.4	H	3.0	40.9	1.0	-71.3	-13.0	-58.3	
6.9300	-26.4	H	3.0	41.0	1.0	-66.4	-13.0	-53.4	
High Channel (1745MHz)									
3.4900	-27.7	V	3.0	40.3	1.0	-67.0	-13.0	-54.0	
5.2350	-31.3	V	3.0	40.9	1.0	-71.1	-13.0	-58.1	
6.9800	-22.5	V	3.0	41.0	1.0	-62.5	-13.0	-49.5	
3.4900	-23.9	H	3.0	40.3	1.0	-63.2	-13.0	-50.2	
5.2350	-31.1	H	3.0	40.9	1.0	-71.0	-13.0	-58.0	
6.9800	-26.4	H	3.0	41.0	1.0	-66.4	-13.0	-53.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 4 15MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-28-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 4, 15MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1717.5MHz)									
3.4350	-22.9	V	3.0	40.2	1.0	-62.1	-13.0	-49.1	
5.1525	-31.0	V	3.0	40.9	1.0	-70.9	-13.0	-57.9	
6.8700	-20.5	V	3.0	41.0	1.0	-60.5	-13.0	-47.5	
3.4350	-19.2	H	3.0	40.2	1.0	-58.4	-13.0	-45.4	
5.1525	-31.4	H	3.0	40.9	1.0	-71.3	-13.0	-58.3	
6.8700	-24.5	H	3.0	41.0	1.0	-64.5	-13.0	-51.5	
Mid Channel (1732.5MHz)									
3.4650	-24.5	V	3.0	40.3	1.0	-63.7	-13.0	-50.7	
5.1975	-30.5	V	3.0	40.9	1.0	-70.4	-13.0	-57.4	
6.9300	-20.4	V	3.0	41.0	1.0	-60.4	-13.0	-47.4	
3.4650	-22.1	H	3.0	40.3	1.0	-61.3	-13.0	-48.3	
5.1975	-30.2	H	3.0	40.9	1.0	-70.1	-13.0	-57.1	
6.9300	-25.6	H	3.0	41.0	1.0	-65.6	-13.0	-52.6	
High Channel (1747.5MHz)									
3.4950	-25.6	V	3.0	40.3	1.0	-64.9	-13.0	-51.9	
5.2425	-30.3	V	3.0	40.9	1.0	-70.2	-13.0	-57.2	
6.9900	-22.4	V	3.0	41.0	1.0	-62.5	-13.0	-49.5	
3.4950	-22.8	H	3.0	40.3	1.0	-62.0	-13.0	-49.0	
5.2425	-30.2	H	3.0	40.9	1.0	-70.1	-13.0	-57.1	
6.9900	-25.2	H	3.0	41.0	1.0	-65.2	-13.0	-52.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 4 15MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-28-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 4, 15MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1717.5MHz)									
3.4350	-24.2	V	3.0	40.2	1.0	-63.4	-13.0	-50.4	
5.1525	-31.6	V	3.0	40.9	1.0	-71.5	-13.0	-58.5	
6.8700	-21.5	V	3.0	41.0	1.0	-61.5	-13.0	-48.5	
3.4350	-20.3	H	3.0	40.2	1.0	-59.5	-13.0	-46.5	
5.1525	-32.3	H	3.0	40.9	1.0	-72.2	-13.0	-59.2	
6.8700	-25.8	H	3.0	41.0	1.0	-65.7	-13.0	-52.7	
Mid Channel (1732.5MHz)									
3.4650	-25.4	V	3.0	40.3	1.0	-64.7	-13.0	-51.7	
5.1975	-31.6	V	3.0	40.9	1.0	-71.5	-13.0	-58.5	
6.9300	-21.4	V	3.0	41.0	1.0	-61.4	-13.0	-48.4	
3.4650	-22.9	H	3.0	40.3	1.0	-62.2	-13.0	-49.2	
5.1975	-31.8	H	3.0	40.9	1.0	-71.7	-13.0	-58.7	
6.9300	-26.4	H	3.0	41.0	1.0	-66.4	-13.0	-53.4	
High Channel (1747.5MHz)									
3.4950	-26.7	V	3.0	40.3	1.0	-65.9	-13.0	-52.9	
5.2425	-31.5	V	3.0	40.9	1.0	-71.4	-13.0	-58.4	
6.9900	-23.2	V	3.0	41.0	1.0	-63.3	-13.0	-50.3	
3.4950	-24.2	H	3.0	40.3	1.0	-63.4	-13.0	-50.4	
5.2425	-31.3	H	3.0	40.9	1.0	-71.2	-13.0	-58.2	
6.9900	-26.2	H	3.0	41.0	1.0	-66.2	-13.0	-53.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 4 10MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 4, 10MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1715MHz)									
3.4300	-23.1	V	3.0	40.2	1.0	-62.4	-13.0	-49.4	
5.1450	-30.7	V	3.0	40.9	1.0	-70.6	-13.0	-57.6	
6.8600	-20.8	V	3.0	41.0	1.0	-60.8	-13.0	-47.8	
3.4300	-19.7	H	3.0	40.2	1.0	-59.0	-13.0	-46.0	
5.1450	-31.3	H	3.0	40.9	1.0	-71.2	-13.0	-58.2	
6.8600	-24.8	H	3.0	41.0	1.0	-64.8	-13.0	-51.8	
Mid Channel (1732.5MHz)									
3.4650	-23.9	V	3.0	40.3	1.0	-63.1	-13.0	-50.1	
5.1975	-30.4	V	3.0	40.9	1.0	-70.3	-13.0	-57.3	
6.9300	-21.0	V	3.0	41.0	1.0	-61.0	-13.0	-48.0	
3.4650	-20.9	H	3.0	40.3	1.0	-60.1	-13.0	-47.1	
5.1975	-30.3	H	3.0	40.9	1.0	-70.2	-13.0	-57.2	
6.9300	-25.6	H	3.0	41.0	1.0	-65.6	-13.0	-52.6	
High Channel (1750MHz)									
3.5000	-26.7	V	3.0	40.3	1.0	-66.0	-13.0	-53.0	
5.2500	-31.4	V	3.0	40.9	1.0	-71.3	-13.0	-58.3	
7.0000	-21.3	V	3.0	41.0	1.0	-61.3	-13.0	-48.3	
3.5000	-23.4	H	3.0	40.3	1.0	-62.7	-13.0	-49.7	
5.2500	-30.4	H	3.0	40.9	1.0	-70.3	-13.0	-57.3	
7.0000	-25.6	H	3.0	41.0	1.0	-65.7	-13.0	-52.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 4 10MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 4, 10MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1715MHz)									
3.4300	-23.9	V	3.0	40.2	1.0	-63.2	-13.0	-50.2	
5.1450	-31.7	V	3.0	40.9	1.0	-71.6	-13.0	-58.6	
6.8600	-21.8	V	3.0	41.0	1.0	-61.8	-13.0	-48.8	
3.4300	-20.0	H	3.0	40.2	1.0	-59.3	-13.0	-46.3	
5.1450	-32.3	H	3.0	40.9	1.0	-72.2	-13.0	-59.2	
6.8600	-25.6	H	3.0	41.0	1.0	-65.6	-13.0	-52.6	
Mid Channel (1732.5MHz)									
3.4650	-24.8	V	3.0	40.3	1.0	-64.0	-13.0	-51.0	
5.1975	-31.4	V	3.0	40.9	1.0	-71.3	-13.0	-58.3	
6.9300	-21.7	V	3.0	41.0	1.0	-61.7	-13.0	-48.7	
3.4650	-22.0	H	3.0	40.3	1.0	-61.2	-13.0	-48.2	
5.1975	-31.7	H	3.0	40.9	1.0	-71.5	-13.0	-58.5	
6.9300	-26.9	H	3.0	41.0	1.0	-66.9	-13.0	-53.9	
High Channel (1750MHz)									
3.5000	-27.7	V	3.0	40.3	1.0	-67.0	-13.0	-54.0	
5.2500	-32.2	V	3.0	40.9	1.0	-72.1	-13.0	-59.1	
7.0000	-22.3	V	3.0	41.0	1.0	-62.3	-13.0	-49.3	
3.5000	-24.0	H	3.0	40.3	1.0	-63.3	-13.0	-50.3	
5.2500	-31.4	H	3.0	40.9	1.0	-71.3	-13.0	-58.3	
7.0000	-26.5	H	3.0	41.0	1.0	-66.5	-13.0	-53.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 4 5MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 4, 5MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1712.5MHz)									
3.4250	-24.3	V	3.0	40.2	1.0	-63.5	-13.0	-50.5	
5.1375	-22.0	V	3.0	40.9	1.0	-61.9	-13.0	-48.9	
6.5800	-22.4	V	3.0	40.9	1.0	-62.3	-13.0	-49.3	
3.4250	-20.0	H	3.0	40.2	1.0	-59.2	-13.0	-46.2	
5.1375	-32.6	H	3.0	40.9	1.0	-72.5	-13.0	-59.5	
6.5800	-26.5	H	3.0	40.9	1.0	-66.4	-13.0	-53.4	
Mid Channel (1732.5MHz)									
3.4650	-24.8	V	3.0	40.3	1.0	-64.0	-13.0	-51.0	
5.1975	-31.3	V	3.0	40.9	1.0	-71.2	-13.0	-58.2	
6.9300	-21.5	V	3.0	41.0	1.0	-61.5	-13.0	-48.5	
3.4650	-21.9	H	3.0	40.3	1.0	-61.1	-13.0	-48.1	
5.1975	-31.4	H	3.0	40.9	1.0	-71.3	-13.0	-58.3	
6.9300	-26.4	H	3.0	41.0	1.0	-66.4	-13.0	-53.4	
High Channel (1752.5MHz)									
3.5050	-26.6	V	3.0	40.3	1.0	-65.9	-13.0	-52.9	
5.2575	-31.4	V	3.0	40.9	1.0	-71.3	-13.0	-58.3	
7.0100	-22.4	V	3.0	41.0	1.0	-62.4	-13.0	-49.4	
3.5050	-23.8	H	3.0	40.3	1.0	-63.1	-13.0	-50.1	
5.2575	-31.6	H	3.0	40.9	1.0	-71.5	-13.0	-58.5	
7.0100	-26.2	H	3.0	41.0	1.0	-66.2	-13.0	-53.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 4 5MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 7, 5MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1712.5MHz)									
3.4250	-23.3	V	3.0	40.2	1.0	-62.5	-13.0	-49.5	
5.1375	-21.0	V	3.0	40.9	1.0	-60.9	-13.0	-47.9	
6.5800	-21.5	V	3.0	40.9	1.0	-61.4	-13.0	-48.4	
3.4250	-19.3	H	3.0	40.2	1.0	-58.5	-13.0	-45.5	
5.1375	-31.6	H	3.0	40.9	1.0	-71.5	-13.0	-58.5	
6.5800	-25.6	H	3.0	40.9	1.0	-65.5	-13.0	-52.5	
Mid Channel (1732.5MHz)									
3.4650	-23.9	V	3.0	40.3	1.0	-63.1	-13.0	-50.1	
5.1975	-31.1	V	3.0	40.9	1.0	-71.0	-13.0	-58.0	
6.9300	-20.4	V	3.0	41.0	1.0	-60.4	-13.0	-47.4	
3.4650	-21.6	H	3.0	40.3	1.0	-60.9	-13.0	-47.9	
5.1975	-30.4	H	3.0	40.9	1.0	-70.3	-13.0	-57.3	
6.9300	-25.5	H	3.0	41.0	1.0	-65.5	-13.0	-52.5	
High Channel (1752.5MHz)									
3.5050	-26.1	V	3.0	40.3	1.0	-65.4	-13.0	-52.4	
5.2575	-30.4	V	3.0	40.9	1.0	-70.3	-13.0	-57.3	
7.0100	-21.8	V	3.0	41.0	1.0	-61.8	-13.0	-48.8	
3.5050	-23.0	H	3.0	40.3	1.0	-62.3	-13.0	-49.3	
5.2575	-30.1	H	3.0	40.9	1.0	-70.0	-13.0	-57.0	
7.0100	-25.2	H	3.0	41.0	1.0	-65.3	-13.0	-52.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 4 3MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 4, 3MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1711.5MHz)									
3.4230	-23.2	V	3.0	40.2	1.0	-62.4	-13.0	-49.4	
5.1345	-30.9	V	3.0	40.9	1.0	-70.8	-13.0	-57.8	
6.8460	-21.4	V	3.0	41.0	1.0	-61.3	-13.0	-48.3	
3.4230	-19.4	H	3.0	40.2	1.0	-58.6	-13.0	-45.6	
5.1345	-31.8	H	3.0	40.9	1.0	-71.7	-13.0	-58.7	
6.8460	-24.6	H	3.0	41.0	1.0	-64.6	-13.0	-51.6	
Mid Channel (1732.5MHz)									
3.4650	-24.3	V	3.0	40.3	1.0	-63.6	-13.0	-50.6	
5.1975	-30.6	V	3.0	40.9	1.0	-70.5	-13.0	-57.5	
6.9300	-21.1	V	3.0	41.0	1.0	-61.1	-13.0	-48.1	
3.4650	-21.3	H	3.0	40.3	1.0	-60.5	-13.0	-47.5	
5.1975	-30.9	H	3.0	40.9	1.0	-70.8	-13.0	-57.8	
6.9300	-25.6	H	3.0	41.0	1.0	-65.6	-13.0	-52.6	
High Channel (1753.5MHz)									
3.5070	-26.8	V	3.0	40.3	1.0	-66.1	-13.0	-53.1	
5.2605	-30.4	V	3.0	40.9	1.0	-70.2	-13.0	-57.2	
7.0140	-21.9	V	3.0	41.0	1.0	-61.9	-13.0	-48.9	
3.5070	-22.7	H	3.0	40.3	1.0	-62.0	-13.0	-49.0	
5.2605	-20.8	H	3.0	40.9	1.0	-60.6	-13.0	-47.6	
7.0140	-25.4	H	3.0	41.0	1.0	-65.4	-13.0	-52.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 4 3MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15K21156
Date: 06-28-15
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 4, 3MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1711.5MHz)									
3.4230	-24.2	V	3.0	40.2	1.0	-63.4	-13.0	-50.4	
5.1345	-31.7	V	3.0	40.9	1.0	-71.6	-13.0	-58.6	
6.8460	-22.4	V	3.0	41.0	1.0	-62.3	-13.0	-49.3	
3.4230	-20.1	H	3.0	40.2	1.0	-59.3	-13.0	-46.3	
5.1345	-32.5	H	3.0	40.9	1.0	-72.4	-13.0	-59.4	
6.8460	-25.7	H	3.0	41.0	1.0	-65.6	-13.0	-52.6	
Mid Channel (1732.5MHz)									
3.4650	-25.0	V	3.0	40.3	1.0	-64.2	-13.0	-51.2	
5.1975	-31.6	V	3.0	40.9	1.0	-71.5	-13.0	-58.5	
6.9300	-22.1	V	3.0	41.0	1.0	-62.1	-13.0	-49.1	
3.4650	-22.0	H	3.0	40.3	1.0	-61.2	-13.0	-48.2	
5.1975	-31.2	H	3.0	40.9	1.0	-71.1	-13.0	-58.1	
6.9300	-26.9	H	3.0	41.0	1.0	-66.9	-13.0	-53.9	
High Channel (1752.5MHz)									
3.5070	-27.8	V	3.0	40.3	1.0	-67.1	-13.0	-54.1	
5.2605	-31.4	V	3.0	40.9	1.0	-71.2	-13.0	-58.2	
7.0140	-22.2	V	3.0	41.0	1.0	-62.3	-13.0	-49.3	
3.5070	-23.7	H	3.0	40.3	1.0	-63.0	-13.0	-50.0	
5.2605	-21.3	H	3.0	40.9	1.0	-61.2	-13.0	-48.2	
7.0140	-26.4	H	3.0	41.0	1.0	-66.4	-13.0	-53.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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LTE Band 4 1.4MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-28-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 4, 1.4MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1710.7MHz)									
3.4214	-23.1	V	3.0	40.2	1.0	-62.3	-13.0	-49.3	
5.1321	-30.9	V	3.0	40.9	1.0	-70.8	-13.0	-57.8	
6.8428	-20.6	V	3.0	41.0	1.0	-60.5	-13.0	-47.5	
3.4214	-19.1	H	3.0	40.2	1.0	-58.3	-13.0	-45.3	
5.1321	-31.3	H	3.0	40.9	1.0	-71.2	-13.0	-58.2	
6.8428	-25.0	H	3.0	41.0	1.0	-64.9	-13.0	-51.9	
Mid Channel (1732.5MHz)									
3.4650	-24.1	V	3.0	40.3	1.0	-63.3	-13.0	-50.3	
5.1975	-30.5	V	3.0	40.9	1.0	-70.4	-13.0	-57.4	
6.9300	-20.7	V	3.0	41.0	1.0	-60.7	-13.0	-47.7	
3.4650	-20.9	H	3.0	40.3	1.0	-60.2	-13.0	-47.2	
5.1975	-30.5	H	3.0	40.9	1.0	-70.4	-13.0	-57.4	
6.9300	-25.4	H	3.0	41.0	1.0	-65.4	-13.0	-52.4	
High Channel (1754.3MHz)									
3.5086	-25.6	V	3.0	40.3	1.0	-64.9	-13.0	-51.9	
5.2629	-30.9	V	3.0	40.9	1.0	-70.7	-13.0	-57.7	
7.0172	-21.6	V	3.0	41.0	1.0	-61.6	-13.0	-48.6	
3.5086	-22.9	H	3.0	40.3	1.0	-62.2	-13.0	-49.2	
5.2629	-30.9	H	3.0	40.9	1.0	-70.7	-13.0	-57.7	
7.0172	-25.8	H	3.0	41.0	1.0	-65.8	-13.0	-52.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE Band 4 1.4MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company:	Samsung
Project #:	15K21156
Date:	06-28-15
Test Engineer:	Steven.Kim
Configuration:	EUT / AC Adapter / Ear Phone / X-Position
Mode:	TX, LTE BAND 4, 1.4MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1710.7MHz)									
3.4214	-24.1	V	3.0	40.2	1.0	-63.3	-13.0	-50.3	
5.1321	-31.7	V	3.0	40.9	1.0	-71.6	-13.0	-58.6	
6.8428	-21.6	V	3.0	41.0	1.0	-61.6	-13.0	-48.6	
3.4214	-20.2	H	3.0	40.2	1.0	-59.4	-13.0	-46.4	
5.1321	-32.5	H	3.0	40.9	1.0	-72.4	-13.0	-59.4	
6.8428	-26.0	H	3.0	41.0	1.0	-65.9	-13.0	-52.9	
Mid Channel (1732.5MHz)									
3.4650	-25.1	V	3.0	40.3	1.0	-64.3	-13.0	-51.3	
5.1975	-31.4	V	3.0	40.9	1.0	-71.3	-13.0	-58.3	
6.9300	-21.7	V	3.0	41.0	1.0	-61.7	-13.0	-48.7	
3.4650	-21.9	H	3.0	40.3	1.0	-61.1	-13.0	-48.1	
5.1975	-31.3	H	3.0	40.9	1.0	-71.2	-13.0	-58.2	
6.9300	-26.4	H	3.0	41.0	1.0	-66.4	-13.0	-53.4	
High Channel (1754.3MHz)									
3.5086	-26.5	V	3.0	40.3	1.0	-65.8	-13.0	-52.8	
5.2629	-31.7	V	3.0	40.9	1.0	-71.5	-13.0	-58.5	
7.0172	-22.5	V	3.0	41.0	1.0	-62.6	-13.0	-49.6	
3.5086	-23.7	H	3.0	40.3	1.0	-63.0	-13.0	-50.0	
5.2629	-31.1	H	3.0	40.9	1.0	-70.9	-13.0	-57.9	
7.0172	-26.3	H	3.0	41.0	1.0	-66.3	-13.0	-53.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

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