LTE Band 4 1.4MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-28-16
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	4.98	V	1.54	9.12	12.56	30.0	-17.4	
1710.70	10.15	H	1.54	9.12	17.73	30.0	-12.3	
Mid Ch								
1732.50	6.14	V	1.55	9.31	13.90	30.0	-16.1	
1732.50	9.66	H	1.55	9.31	17.42	30.0	-12.6	
High Ch								
1754.30	3.36	V	1.56	9.37	11.17	30.0	-18.8	
1754.30	8.67	H	1.56	9.37	16.48	30.0	-13.5	

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 #: 16K22923
Date: 02-28-16
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	4.76	V	1.54	9.12	12.34	30.0	-17.7	
1710.70	9.80	H	1.54	9.12	17.38	30.0	-12.6	
Mid Ch								
1732.50	5.86	V	1.55	9.31	13.62	30.0	-16.4	
1732.50	9.19	H	1.55	9.31	16.95	30.0	-13.1	
High Ch								
1754.30	3.01	V	1.56	9.37	10.82	30.0	-19.2	
1754.30	8.44	H	1.56	9.37	16.25	30.0	-13.8	

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

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LTE Band 2

LTE Band 2 20MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-22-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	11.16	V	1.60	9.12	18.68	33.0	-14.3	
1860.00	11.91	H	1.60	9.12	19.43	33.0	-13.6	
Mid Ch								
1880.00	11.80	V	1.62	8.62	18.80	33.0	-14.2	
1880.00	12.12	H	1.62	8.62	19.12	33.0	-13.9	
High Ch								
1900.00	12.10	V	1.63	8.50	18.97	33.0	-14.0	
1900.00	13.03	H	1.63	8.50	19.90	33.0	-13.1	

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

LTE Band 2 20MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-22-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	11.24	V	1.60	9.12	18.76	33.0	-14.2	
1860.00	12.01	H	1.60	9.12	19.53	33.0	-13.5	
Mid Ch								
1880.00	11.92	V	1.62	8.62	18.92	33.0	-14.1	
1880.00	12.15	H	1.62	8.62	19.15	33.0	-13.8	
High Ch								
1900.00	12.17	V	1.63	8.50	19.04	33.0	-14.0	
1900.00	13.03	H	1.63	8.50	19.90	33.0	-13.1	

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

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LTE Band 2 15MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	11.10	V	1.60	9.12	18.62	33.0	-14.4	
1857.50	12.16	H	1.60	9.12	19.68	33.0	-13.3	
Mid Ch								
1880.00	11.86	V	1.62	8.62	18.86	33.0	-14.1	
1880.00	12.73	H	1.62	8.62	19.73	33.0	-13.3	
High Ch								
1902.50	12.17	V	1.63	8.49	19.03	33.0	-14.0	
1902.50	13.98	H	1.63	8.49	20.84	33.0	-12.2	

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

LTE Band 2 15MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	11.21	V	1.60	9.12	18.73	33.0	-14.3	
1857.50	12.27	H	1.60	9.12	19.79	33.0	-13.2	
Mid Ch								
1880.00	11.98	V	1.62	8.62	18.98	33.0	-14.0	
1880.00	12.74	H	1.62	8.62	19.74	33.0	-13.3	
High Ch								
1902.50	12.12	V	1.63	8.49	18.98	33.0	-14.0	
1902.50	14.05	H	1.63	8.49	20.91	33.0	-12.1	

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

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LTE Band 2 10MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	10.93	V	1.60	9.12	18.45	33.0	-14.6	
1855.00	12.81	H	1.60	9.12	20.33	33.0	-12.7	
Mid Ch								
1880.00	11.93	V	1.62	8.62	18.93	33.0	-14.1	
1880.00	12.48	H	1.62	8.62	19.48	33.0	-13.5	
High Ch								
1905.00	12.19	V	1.63	8.47	19.03	33.0	-14.0	
1905.00	13.46	H	1.63	8.47	20.30	33.0	-12.7	

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

LTE Band 2 10MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	10.91	V	1.60	9.12	18.43	33.0	-14.6	
1855.00	12.77	H	1.60	9.12	20.29	33.0	-12.7	
Mid Ch								
1880.00	11.99	V	1.62	8.62	18.99	33.0	-14.0	
1880.00	12.54	H	1.62	8.62	19.54	33.0	-13.5	
High Ch								
1905.00	12.22	V	1.63	8.47	19.06	33.0	-13.9	
1905.00	13.58	H	1.63	8.47	20.42	33.0	-12.6	

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

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LTE Band 2 5MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	10.70	V	1.60	9.12	18.22	33.0	-14.8	
1852.50	12.49	H	1.60	9.12	20.01	33.0	-13.0	
Mid Ch								
1880.00	11.87	V	1.62	8.62	18.87	33.0	-14.1	
1880.00	13.08	H	1.62	8.62	20.08	33.0	-12.9	
High Ch								
1907.50	11.97	V	1.63	8.46	18.80	33.0	-14.2	
1907.50	14.02	H	1.63	8.46	20.85	33.0	-12.1	

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

LTE Band 2 5MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	10.83	V	1.60	9.12	18.35	33.0	-14.7	
1852.50	12.52	H	1.60	9.12	20.04	33.0	-13.0	
Mid Ch								
1880.00	11.90	V	1.62	8.62	18.90	33.0	-14.1	
1880.00	13.03	H	1.62	8.62	20.03	33.0	-13.0	
High Ch								
1907.50	11.86	V	1.63	8.46	18.69	33.0	-14.3	
1907.50	14.12	H	1.63	8.46	20.95	33.0	-12.0	

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

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LTE Band 2 3MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	11.04	V	1.60	9.12	18.56	33.0	-14.4	
1851.50	12.50	H	1.60	9.12	20.02	33.0	-13.0	
Mid Ch								
1880.00	12.06	V	1.62	8.62	19.06	33.0	-13.9	
1880.00	12.32	H	1.62	8.62	19.32	33.0	-13.7	
High Ch								
1908.50	12.70	V	1.63	8.45	19.52	33.0	-13.5	
1908.50	13.49	H	1.63	8.45	20.31	33.0	-12.7	

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

LTE Band 2 3MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	11.05	V	1.60	9.12	18.57	33.0	-14.4	
1851.50	12.54	H	1.60	9.12	20.06	33.0	-12.9	
Mid Ch								
1880.00	12.20	V	1.62	8.62	19.20	33.0	-13.8	
1880.00	12.44	H	1.62	8.62	19.44	33.0	-13.6	
High Ch								
1908.50	11.93	V	1.63	8.45	18.75	33.0	-14.2	
1908.50	13.77	H	1.63	8.45	20.59	33.0	-12.4	

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

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LTE Band 2 1.4MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	10.77	V	1.60	9.12	18.29	33.0	-14.7	
1850.70	12.07	H	1.60	9.12	19.59	33.0	-13.4	
Mid Ch								
1880.00	11.34	V	1.62	8.62	18.34	33.0	-14.7	
1880.00	13.07	H	1.62	8.62	20.07	33.0	-12.9	
High Ch								
1909.30	12.04	V	1.63	8.44	18.85	33.0	-14.1	
1909.30	14.81	H	1.63	8.44	21.62	33.0	-11.4	

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

LTE Band 2 1.4MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / X-Position
Mode: LTE Band 2 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	10.54	V	1.60	9.12	18.06	33.0	-14.9	
1850.70	11.97	H	1.60	9.12	19.49	33.0	-13.5	
Mid Ch								
1880.00	11.69	V	1.62	8.62	18.69	33.0	-14.3	
1880.00	12.96	H	1.62	8.62	19.96	33.0	-13.0	
High Ch								
1909.30	12.13	V	1.63	8.44	18.94	33.0	-14.1	
1909.30	14.88	H	1.63	8.44	21.69	33.0	-11.3	

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

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.

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

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11.2.1. SPURIOUS RADIATION PLOTS

GSM 850

GSM

GSM850
GPRS

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: GPRS 850 MHz

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz									
1.6484	-5.9	V	3.0	39.1	1.0	-44.0	-13.0	-31.0	
2.4726	-17.2	V	3.0	39.5	1.0	-55.7	-13.0	-42.7	
3.2968	-16.6	V	3.0	40.1	1.0	-55.7	-13.0	-42.7	
1.6484	-2.2	H	3.0	39.1	1.0	-40.3	-13.0	-27.3	
2.4726	-15.8	H	3.0	39.5	1.0	-54.3	-13.0	-41.3	
3.2968	-16.6	H	3.0	40.1	1.0	-55.7	-13.0	-42.7	
Mid Ch, 836.6MHz									
1.6730	-4.9	V	3.0	39.1	1.0	-43.0	-13.0	-30.0	
2.5098	-15.9	V	3.0	39.5	1.0	-54.4	-13.0	-41.4	
3.3464	-16.8	V	3.0	40.1	1.0	-55.9	-13.0	-42.9	
1.6730	-0.7	H	3.0	39.1	1.0	-38.8	-13.0	-25.8	
2.5098	-10.8	H	3.0	39.5	1.0	-49.4	-13.0	-36.4	
3.3464	-16.1	H	3.0	40.1	1.0	-55.3	-13.0	-42.3	
High Ch, 848.8MHz									
1.6976	-3.3	V	3.0	39.1	1.0	-41.5	-13.0	-28.5	
2.5466	-13.0	V	3.0	39.6	1.0	-51.5	-13.0	-38.5	
3.3952	-16.0	V	3.0	40.2	1.0	-55.2	-13.0	-42.2	
1.6976	1.0	H	3.0	39.1	1.0	-37.1	-13.0	-24.1	
2.5466	-11.0	H	3.0	39.6	1.0	-49.5	-13.0	-36.5	
3.3952	-16.1	H	3.0	40.2	1.0	-55.3	-13.0	-42.3	

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

GSM

GSM850
EGPRS

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: EGPRS 850 MHz

Chamber	Pre-amplifer	Filter	Limit
Chamber 1	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.2MHz									
1.6484	-16.3	V	3.0	39.1	1.0	-54.4	-13.0	-41.4	
2.4726	-19.5	V	3.0	39.5	1.0	-58.0	-13.0	-45.0	
3.2968	-18.0	V	3.0	40.1	1.0	-57.1	-13.0	-44.1	
1.6484	-14.2	H	3.0	39.1	1.0	-52.4	-13.0	-39.4	
2.4726	-19.0	H	3.0	39.5	1.0	-57.6	-13.0	-44.6	
3.2968	-18.0	H	3.0	40.1	1.0	-57.1	-13.0	-44.1	
Mid Ch, 836.6MHz									
1.6730	-17.5	V	3.0	39.1	1.0	-55.6	-13.0	-42.6	
2.5098	-19.2	V	3.0	39.5	1.0	-57.7	-13.0	-44.7	
3.3464	-17.6	V	3.0	40.1	1.0	-56.7	-13.0	-43.7	
1.6730	-13.8	H	3.0	39.1	1.0	-51.9	-13.0	-38.9	
2.5098	-18.4	H	3.0	39.5	1.0	-57.0	-13.0	-44.0	
3.3464	-17.9	H	3.0	40.1	1.0	-57.0	-13.0	-44.0	
High Ch, 848.8MHz									
1.6976	-16.2	V	3.0	39.1	1.0	-54.3	-13.0	-41.3	
2.5466	-19.3	V	3.0	39.6	1.0	-57.8	-13.0	-44.8	
3.3952	-17.4	V	3.0	40.2	1.0	-56.6	-13.0	-43.6	
1.6976	-12.6	H	3.0	39.1	1.0	-50.7	-13.0	-37.7	
2.5466	-19.4	H	3.0	39.6	1.0	-58.0	-13.0	-45.0	
3.3952	-17.9	H	3.0	40.2	1.0	-57.1	-13.0	-44.1	

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

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GSM 1900

GSM

GSM1900
GPRS

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

Company: Samsung
Project #: 16K22923
Date: 02-25-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: GPRS 1900

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3.7004	-0.4	V	3.0	40.5	1.0	-39.8	-13.0	-26.8	
5.5506	0.2	V	3.0	40.8	1.0	-39.6	-13.0	-26.6	
7.4008	-8.9	V	3.0	40.8	1.0	-48.7	-13.0	-35.7	
3.7000	0.6	H	3.0	40.5	1.0	-38.8	-13.0	-25.8	
5.5506	-5.2	H	3.0	40.8	1.0	-45.0	-13.0	-32.0	
7.4008	-8.9	H	3.0	40.8	1.0	-48.7	-13.0	-35.7	
Mid Ch, 1880.0MHz									
3.7600	0.6	V	3.0	40.5	1.0	-39.0	-13.0	-26.0	
5.6400	-3.2	V	3.0	40.8	1.0	-43.0	-13.0	-30.0	
7.5200	-8.7	V	3.0	40.7	1.0	-48.4	-13.0	-35.4	
3.7600	-0.6	H	3.0	40.5	1.0	-40.1	-13.0	-27.1	
5.6400	-4.3	H	3.0	40.8	1.0	-44.1	-13.0	-31.1	
7.5200	-8.6	H	3.0	40.7	1.0	-48.3	-13.0	-35.3	
High Ch, 1909.8 MHz									
3.8196	-0.7	V	3.0	40.6	1.0	-40.3	-13.0	-27.3	
5.7294	-5.3	V	3.0	40.8	1.0	-45.1	-13.0	-32.1	
7.6392	-8.7	V	3.0	40.7	1.0	-48.3	-13.0	-35.3	
3.8196	-1.5	H	3.0	40.6	1.0	-41.1	-13.0	-28.1	
5.7294	-5.0	H	3.0	40.8	1.0	-44.8	-13.0	-31.8	
7.6392	-8.6	H	3.0	40.7	1.0	-48.3	-13.0	-35.3	

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

GSM

GSM1900
EGPRS

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

Company: Samsung
Project #: 16K22923
Date: 02-25-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: EGPRS 1900 MHz

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3.7004	-4.6	V	3.0	40.5	1.0	-44.1	-13.0	-31.1	
5.5506	-10.3	V	3.0	40.8	1.0	-50.1	-13.0	-37.1	
7.4008	-9.0	V	3.0	40.8	1.0	-48.7	-13.0	-35.7	
3.7000	-4.9	H	3.0	40.5	1.0	-44.3	-13.0	-31.3	
5.5500	-11.6	H	3.0	40.8	1.0	-51.4	-13.0	-38.4	
7.4000	-8.9	H	3.0	40.8	1.0	-48.7	-13.0	-35.7	
Mid Ch, 1880.0MHz									
3.7600	-6.5	V	3.0	40.5	1.0	-46.1	-13.0	-33.1	
5.6400	-10.1	V	3.0	40.8	1.0	-49.9	-13.0	-36.9	
7.5200	-8.9	V	3.0	40.7	1.0	-48.6	-13.0	-35.6	
3.7600	-6.9	H	3.0	40.5	1.0	-46.4	-13.0	-33.4	
5.6400	-11.0	H	3.0	40.8	1.0	-50.8	-13.0	-37.8	
7.5200	-8.8	H	3.0	40.7	1.0	-48.5	-13.0	-35.5	
High Ch, 1909.8 MHz									
3.8196	-8.4	V	3.0	40.6	1.0	-48.0	-13.0	-35.0	
5.7294	-12.0	V	3.0	40.8	1.0	-51.8	-13.0	-38.8	
7.6392	-8.8	V	3.0	40.7	1.0	-48.5	-13.0	-35.5	
3.8196	-8.8	H	3.0	40.6	1.0	-48.4	-13.0	-35.4	
5.7294	-12.6	H	3.0	40.8	1.0	-52.4	-13.0	-39.4	
7.6392	-8.6	H	3.0	40.7	1.0	-48.2	-13.0	-35.2	

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

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WCDMA Band 5

WCDMA

Band 5
REL99

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

Company: Samsung
Project #: 16K22923
Date: 02-25-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: Tx, REL99,850MHz

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.40MHz									
1.6520	-9.1	V	3.0	39.1	1.0	-47.2	-13.0	-34.2	
2.4790	-17.5	V	3.0	39.5	1.0	-56.0	-13.0	-43.0	
3.3056	-15.9	V	3.0	40.1	1.0	-55.0	-13.0	-42.0	
1.6520	-6.4	H	3.0	39.1	1.0	-44.5	-13.0	-31.5	
2.4790	-18.0	H	3.0	39.5	1.0	-56.5	-13.0	-43.5	
3.3056	-16.1	H	3.0	40.1	1.0	-55.2	-13.0	-42.2	
Mid Ch, 836.6MHz									
1.6732	-11.0	V	3.0	39.1	1.0	-49.1	-13.0	-36.1	
2.5098	-17.5	V	3.0	39.5	1.0	-56.1	-13.0	-43.1	
3.3464	-15.7	V	3.0	40.1	1.0	-54.9	-13.0	-41.9	
1.6732	-7.7	H	3.0	39.1	1.0	-45.8	-13.0	-32.8	
2.5098	-17.5	H	3.0	39.5	1.0	-56.0	-13.0	-43.0	
3.3464	-16.0	H	3.0	40.1	1.0	-55.2	-13.0	-42.2	
High Ch, 846.6MHz									
1.6932	-16.8	V	3.0	39.1	1.0	-54.9	-13.0	-41.9	
2.5390	-17.3	V	3.0	39.6	1.0	-55.9	-13.0	-42.9	
3.3860	-15.6	V	3.0	40.2	1.0	-54.7	-13.0	-41.7	
1.6932	-10.9	H	3.0	39.1	1.0	-49.1	-13.0	-36.1	
2.5390	-17.4	H	3.0	39.6	1.0	-56.0	-13.0	-43.0	
3.3860	-16.1	H	3.0	40.2	1.0	-55.3	-13.0	-42.3	

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

WCDMA

Band 5
HSDPA

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

Company: Samsung
Project #: 16K22923
Date: 02-25-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: Tx, HSDPA,850MHz

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.40MHz									
1.6520	-10.5	V	3.0	39.1	1.0	-48.6	-13.0	-35.6	
2.4790	-17.6	V	3.0	39.5	1.0	-56.1	-13.0	-43.1	
3.3056	-16.0	V	3.0	40.1	1.0	-55.1	-13.0	-42.1	
1.6520	-8.6	H	3.0	39.1	1.0	-46.7	-13.0	-33.7	
2.4790	-18.1	H	3.0	39.5	1.0	-56.6	-13.0	-43.6	
3.3056	-16.3	H	3.0	40.1	1.0	-55.4	-13.0	-42.4	
Mid Ch, 836.6MHz									
1.6732	-11.0	V	3.0	39.1	1.0	-49.1	-13.0	-36.1	
2.5098	-17.3	V	3.0	39.5	1.0	-55.9	-13.0	-42.9	
3.3464	-15.8	V	3.0	40.1	1.0	-55.0	-13.0	-42.0	
1.6732	-10.5	H	3.0	39.1	1.0	-48.6	-13.0	-35.6	
2.5098	-17.9	H	3.0	39.5	1.0	-56.4	-13.0	-43.4	
3.3464	-16.0	H	3.0	40.1	1.0	-55.1	-13.0	-42.1	
High Ch, 846.6MHz									
1.6932	-15.3	V	3.0	39.1	1.0	-53.4	-13.0	-40.4	
2.5390	-17.4	V	3.0	39.6	1.0	-56.0	-13.0	-43.0	
3.3860	-15.8	V	3.0	40.2	1.0	-55.0	-13.0	-42.0	
1.6932	-13.6	H	3.0	39.1	1.0	-51.7	-13.0	-38.7	
2.5390	-17.8	H	3.0	39.6	1.0	-56.3	-13.0	-43.3	
3.3860	-15.9	H	3.0	40.2	1.0	-55.1	-13.0	-42.1	

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

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WCDMA Band 4

WCDMA

Band 4
REL99

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Earphone / X Position
Mode: Tx, REL99,1700MHz

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4MHz									
3.4248	-10.7	V	3.0	40.2	1.0	-50.0	-13.0	-37.0	
5.1372	-10.3	V	3.0	40.9	1.0	-50.2	-13.0	-37.2	
6.8496	-9.5	V	3.0	41.0	1.0	-49.5	-13.0	-36.5	
3.4248	-10.6	H	3.0	40.2	1.0	-49.8	-13.0	-36.8	
5.1372	-9.6	H	3.0	40.9	1.0	-49.4	-13.0	-36.4	
6.8496	-9.6	H	3.0	41.0	1.0	-49.6	-13.0	-36.6	
Mid Ch, 1732.6MHz									
3.4652	-9.0	V	3.0	40.3	1.0	-48.3	-13.0	-35.3	
5.1978	-9.3	V	3.0	40.9	1.0	-49.1	-13.0	-36.1	
6.9304	-9.5	V	3.0	41.0	1.0	-49.5	-13.0	-36.5	
3.4652	-6.1	H	3.0	40.3	1.0	-45.3	-13.0	-32.3	
5.1978	-8.9	H	3.0	40.9	1.0	-48.8	-13.0	-35.8	
6.9304	-9.5	H	3.0	41.0	1.0	-49.5	-13.0	-36.5	
High Ch, 1752.6MHz									
3.5052	-10.6	V	3.0	40.3	1.0	-49.9	-13.0	-36.9	
5.2578	-11.2	V	3.0	40.9	1.0	-51.1	-13.0	-38.1	
7.0104	-9.9	V	3.0	41.0	1.0	-49.9	-13.0	-36.9	
3.5052	-8.3	H	3.0	40.3	1.0	-47.6	-13.0	-34.6	
5.2578	-10.7	H	3.0	40.9	1.0	-50.6	-13.0	-37.6	
7.0104	-9.8	H	3.0	41.0	1.0	-49.8	-13.0	-36.8	

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

WCDMA

Band 4
HSDPA

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Earphone / X Position
Mode: Tx, HSDPA,1700MHz

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4MHz									
3.4248	-7.1	V	3.0	40.2	1.0	-46.3	-13.0	-33.3	
5.1372	-9.8	V	3.0	40.9	1.0	-49.7	-13.0	-36.7	
6.8496	-9.1	V	3.0	41.0	1.0	-49.1	-13.0	-36.1	
3.4248	-6.0	H	3.0	40.2	1.0	-45.2	-13.0	-32.2	
5.1372	-9.0	H	3.0	40.9	1.0	-48.9	-13.0	-35.9	
6.8496	-9.1	H	3.0	41.0	1.0	-49.1	-13.0	-36.1	
Mid Ch, 1732.6MHz									
3.4652	-9.0	V	3.0	40.3	1.0	-48.2	-13.0	-35.2	
5.1978	-10.4	V	3.0	40.9	1.0	-50.3	-13.0	-37.3	
6.9304	-9.3	V	3.0	41.0	1.0	-49.3	-13.0	-36.3	
3.4652	-6.2	H	3.0	40.3	1.0	-45.5	-13.0	-32.5	
5.1978	-10.4	H	3.0	40.9	1.0	-50.3	-13.0	-37.3	
6.9304	-9.2	H	3.0	41.0	1.0	-49.3	-13.0	-36.3	
High Ch, 1752.6MHz									
3.5052	-9.0	V	3.0	40.3	1.0	-48.3	-13.0	-35.3	
5.2578	-10.5	V	3.0	40.9	1.0	-50.4	-13.0	-37.4	
7.0104	-9.7	V	3.0	41.0	1.0	-49.7	-13.0	-36.7	
3.5052	-7.1	H	3.0	40.3	1.0	-46.4	-13.0	-33.4	
5.2578	-10.0	H	3.0	40.9	1.0	-49.9	-13.0	-36.9	
7.0104	-9.6	H	3.0	41.0	1.0	-49.6	-13.0	-36.6	

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

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WCDMA Band 2

WCDMA

Band 2
REL99

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

Company: Samsung
Project #: 16K22923
Date: 02-25-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Earphone / X Position
Mode: Tx, REL99,1900MHz

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.7048	-11.8	V	3.0	40.5	1.0	-51.3	-13.0	-38.3	
5.5572	-10.1	V	3.0	40.8	1.0	-50.0	-13.0	-37.0	
7.4096	-8.2	V	3.0	40.8	1.0	-48.0	-13.0	-35.0	
3.7048	-10.2	H	3.0	40.5	1.0	-49.7	-13.0	-36.7	
5.5572	-8.7	H	3.0	40.8	1.0	-48.5	-13.0	-35.5	
7.4096	-7.8	H	3.0	40.8	1.0	-47.6	-13.0	-34.6	
Mid Ch, 1880MHz									
3.7600	-10.2	V	3.0	40.5	1.0	-49.8	-13.0	-36.8	
5.6400	-8.5	V	3.0	40.8	1.0	-48.3	-13.0	-35.3	
7.5200	-8.0	V	3.0	40.7	1.0	-47.7	-13.0	-34.7	
3.7600	-7.9	H	3.0	40.5	1.0	-47.4	-13.0	-34.4	
5.6400	-7.2	H	3.0	40.8	1.0	-47.0	-13.0	-34.0	
7.5200	-8.0	H	3.0	40.7	1.0	-47.7	-13.0	-34.7	
High Ch, 1907.6MHz									
3.8152	-6.5	V	3.0	40.6	1.0	-46.0	-13.0	-33.0	
5.7228	-9.3	V	3.0	40.8	1.0	-49.0	-13.0	-36.0	
7.6304	-7.8	V	3.0	40.7	1.0	-47.4	-13.0	-34.4	
3.8152	-3.3	H	3.0	40.6	1.0	-42.9	-13.0	-29.9	
5.7228	-10.0	H	3.0	40.8	1.0	-49.8	-13.0	-36.8	
7.6304	-7.8	H	3.0	40.7	1.0	-47.4	-13.0	-34.4	

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

WCDMA

Band 2
HSDPA

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

Company: Samsung
Project #: 16K22923
Date: 02-25-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Earphone / X Position
Mode: Tx, HSDPA,1900MHz

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.7048	-11.7	V	3.0	40.5	1.0	-51.2	-13.0	-38.2	
5.5572	-9.3	V	3.0	40.8	1.0	-49.1	-13.0	-36.1	
7.4096	-8.1	V	3.0	40.8	1.0	-47.9	-13.0	-34.9	
3.7048	-9.3	H	3.0	40.5	1.0	-48.8	-13.0	-35.8	
5.5572	-8.6	H	3.0	40.8	1.0	-48.4	-13.0	-35.4	
7.4096	-8.0	H	3.0	40.8	1.0	-47.8	-13.0	-34.8	
Mid Ch, 1880MHz									
3.7600	-9.3	V	3.0	40.5	1.0	-48.9	-13.0	-35.9	
5.6400	-7.3	V	3.0	40.8	1.0	-47.1	-13.0	-34.1	
7.5200	-8.3	V	3.0	40.7	1.0	-48.0	-13.0	-35.0	
3.7600	-7.2	H	3.0	40.5	1.0	-46.7	-13.0	-33.7	
5.6400	-6.8	H	3.0	40.8	1.0	-46.6	-13.0	-33.6	
7.5200	-8.1	H	3.0	40.7	1.0	-47.8	-13.0	-34.8	
High Ch, 1907.6MHz									
3.8152	-6.8	V	3.0	40.6	1.0	-46.4	-13.0	-33.4	
5.7228	-9.6	V	3.0	40.8	1.0	-49.4	-13.0	-36.4	
7.6304	-7.8	V	3.0	40.7	1.0	-47.5	-13.0	-34.5	
3.8152	-3.6	H	3.0	40.6	1.0	-43.2	-13.0	-30.2	
5.7228	-9.9	H	3.0	40.8	1.0	-49.7	-13.0	-36.7	
7.6304	-7.7	H	3.0	40.7	1.0	-47.4	-13.0	-34.4	

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

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LTE Band 17

LTE Band 17 10MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-24-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 17, 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 (709MHz)									
1.4180	-24.7	V	3.0	39.0	1.0	-62.8	-13.0	-49.8	
2.1270	-20.6	V	3.0	39.3	1.0	-58.9	-13.0	-45.9	
2.8360	-18.0	V	3.0	39.7	1.0	-56.7	-13.0	-43.7	
1.4180	-24.2	H	3.0	39.0	1.0	-62.3	-13.0	-49.3	
2.1270	-15.3	H	3.0	39.3	1.0	-53.6	-13.0	-40.6	
2.8360	-12.5	H	3.0	39.7	1.0	-51.2	-13.0	-38.2	
Mid Channel (710MHz)									
1.4200	-23.7	V	3.0	39.0	1.0	-61.8	-13.0	-48.8	
2.1300	-22.5	V	3.0	39.3	1.0	-60.9	-13.0	-47.9	
2.8400	-16.8	V	3.0	39.7	1.0	-55.5	-13.0	-42.5	
1.4200	-17.0	H	3.0	39.0	1.0	-55.0	-13.0	-42.0	
2.1300	-18.2	H	3.0	39.3	1.0	-56.6	-13.0	-43.6	
2.8400	-13.4	H	3.0	39.7	1.0	-52.1	-13.0	-39.1	
High Channel (711MHz)									
1.4220	-22.8	V	3.0	39.0	1.0	-60.8	-13.0	-47.8	
2.1330	-20.0	V	3.0	39.3	1.0	-58.3	-13.0	-45.3	
2.8440	-15.8	V	3.0	39.7	1.0	-54.5	-13.0	-41.5	
1.4220	-18.1	H	3.0	39.0	1.0	-56.1	-13.0	-43.1	
2.1330	-19.8	H	3.0	39.3	1.0	-58.1	-13.0	-45.1	
2.8440	-9.7	H	3.0	39.7	1.0	-48.4	-13.0	-35.4	

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

LTE Band 17 10MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-24-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 17, 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 (709MHz)									
1.4180	-26.4	V	3.0	39.0	1.0	-64.4	-13.0	-51.4	
2.1270	-21.3	V	3.0	39.3	1.0	-59.6	-13.0	-46.6	
2.8360	-19.8	V	3.0	39.7	1.0	-58.5	-13.0	-45.5	
1.4180	-26.1	H	3.0	39.0	1.0	-64.1	-13.0	-51.1	
2.1270	-19.2	H	3.0	39.3	1.0	-57.5	-13.0	-44.5	
2.8360	-15.4	H	3.0	39.7	1.0	-54.1	-13.0	-41.1	
Mid Channel (710MHz)									
1.4200	-25.2	V	3.0	39.0	1.0	-63.2	-13.0	-50.2	
2.1300	-21.8	V	3.0	39.3	1.0	-60.1	-13.0	-47.1	
2.8400	-18.7	V	3.0	39.7	1.0	-57.5	-13.0	-44.5	
1.4200	-20.0	H	3.0	39.0	1.0	-58.0	-13.0	-45.0	
2.1300	-19.9	H	3.0	39.3	1.0	-58.3	-13.0	-45.3	
2.8400	-10.5	H	3.0	39.7	1.0	-49.2	-13.0	-36.2	
High Channel (711MHz)									
1.4220	-23.1	V	3.0	39.0	1.0	-61.1	-13.0	-48.1	
2.1330	-20.1	V	3.0	39.3	1.0	-58.5	-13.0	-45.5	
2.8440	-16.4	V	3.0	39.7	1.0	-55.1	-13.0	-42.1	
1.4220	-18.5	H	3.0	39.0	1.0	-56.5	-13.0	-43.5	
2.1330	-20.3	H	3.0	39.3	1.0	-58.6	-13.0	-45.6	
2.8440	-10.7	H	3.0	39.7	1.0	-49.4	-13.0	-36.4	

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

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LTE

Band 17

5MHz

QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-25-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 17, 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 (706.5MHz)									
1.4130	-20.2	V	3.0	39.0	1.0	-58.2	-13.0	-45.2	
2.1195	-15.5	V	3.0	39.3	1.0	-53.8	-13.0	-40.8	
2.8260	-14.5	V	3.0	39.7	1.0	-53.2	-13.0	-40.2	
1.4130	-22.6	H	3.0	39.0	1.0	-60.6	-13.0	-47.6	
2.1195	-18.2	H	3.0	39.3	1.0	-56.5	-13.0	-43.5	
2.8260	-9.4	H	3.0	39.7	1.0	-48.1	-13.0	-35.1	
Mid Channel (710MHz)									
1.4200	-21.7	V	3.0	39.0	1.0	-59.7	-13.0	-46.7	
2.1300	-17.7	V	3.0	39.3	1.0	-56.0	-13.0	-43.0	
2.8400	-14.9	V	3.0	39.7	1.0	-53.6	-13.0	-40.6	
1.4200	-24.0	H	3.0	39.0	1.0	-62.0	-13.0	-49.0	
2.1300	-19.5	H	3.0	39.3	1.0	-57.9	-13.0	-44.9	
2.8400	-11.1	H	3.0	39.7	1.0	-49.8	-13.0	-36.8	
High Channel (713.5MHz)									
1.4270	-25.4	V	3.0	39.0	1.0	-63.4	-13.0	-50.4	
2.1405	-18.4	V	3.0	39.3	1.0	-56.7	-13.0	-43.7	
2.8540	-13.7	V	3.0	39.7	1.0	-52.4	-13.0	-39.4	
1.4270	-27.4	H	3.0	39.0	1.0	-65.4	-13.0	-52.4	
2.1405	-19.1	H	3.0	39.3	1.0	-57.4	-13.0	-44.4	
2.8540	-10.2	H	3.0	39.7	1.0	-48.9	-13.0	-35.9	

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

LTE

Band 17

5MHz

16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-25-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 17, 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 (706.5MHz)									
1.4130	-21.1	V	3.0	39.0	1.0	-59.1	-13.0	-46.1	
2.1195	-17.9	V	3.0	39.3	1.0	-56.2	-13.0	-43.2	
2.8260	-16.0	V	3.0	39.7	1.0	-54.7	-13.0	-41.7	
1.4130	-24.0	H	3.0	39.0	1.0	-62.0	-13.0	-49.0	
2.1195	-20.2	H	3.0	39.3	1.0	-58.6	-13.0	-45.6	
2.8260	-11.6	H	3.0	39.7	1.0	-50.3	-13.0	-37.3	
Mid Channel (710MHz)									
1.4200	-22.0	V	3.0	39.0	1.0	-60.0	-13.0	-47.0	
2.1300	-19.7	V	3.0	39.3	1.0	-58.0	-13.0	-45.0	
2.8400	-16.1	V	3.0	39.7	1.0	-54.8	-13.0	-41.8	
1.4200	-23.5	H	3.0	39.0	1.0	-61.5	-13.0	-48.5	
2.1300	-20.8	H	3.0	39.3	1.0	-59.1	-13.0	-46.1	
2.8400	-13.0	H	3.0	39.7	1.0	-51.7	-13.0	-38.7	
High Channel (713.5MHz)									
1.4270	-25.4	V	3.0	39.0	1.0	-63.5	-13.0	-50.5	
2.1405	-18.6	V	3.0	39.3	1.0	-56.9	-13.0	-43.9	
2.8540	-14.2	V	3.0	39.7	1.0	-53.0	-13.0	-40.0	
1.4270	-27.0	H	3.0	39.0	1.0	-65.0	-13.0	-52.0	
2.1405	-19.3	H	3.0	39.3	1.0	-57.6	-13.0	-44.6	
2.8540	-10.9	H	3.0	39.7	1.0	-49.6	-13.0	-36.6	

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

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LTE Band 5

LTE Band 5 10MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: TX, LTE BAND 5, 10MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (829MHz)									
1.6580	-8.0	V	3.0	39.1	1.0	-46.1	-13.0	-33.1	
2.4870	-20.5	V	3.0	39.5	1.0	-59.0	-13.0	-46.0	
3.3160	-21.2	V	3.0	40.1	1.0	-60.3	-13.0	-47.3	
1.6580	-6.9	H	3.0	39.1	1.0	-45.0	-13.0	-32.0	
2.4870	-21.1	H	3.0	39.5	1.0	-59.6	-13.0	-46.6	
3.3160	-21.5	H	3.0	40.1	1.0	-60.6	-13.0	-47.6	
Mid Channel (836.5MHz)									
1.6730	-5.6	V	3.0	39.1	1.0	-43.7	-13.0	-30.7	
2.5090	-19.5	V	3.0	39.5	1.0	-58.0	-13.0	-45.0	
3.3460	-20.8	V	3.0	40.1	1.0	-59.9	-13.0	-46.9	
1.6730	-6.2	H	3.0	39.1	1.0	-44.3	-13.0	-31.3	
2.5090	-20.5	H	3.0	39.5	1.0	-59.0	-13.0	-46.0	
3.3460	-20.6	H	3.0	40.1	1.0	-59.7	-13.0	-46.7	
High Channel (844MHz)									
1.6880	-8.5	V	3.0	39.1	1.0	-46.6	-13.0	-33.6	
2.5320	-20.3	V	3.0	39.5	1.0	-58.9	-13.0	-45.9	
3.3760	-19.7	V	3.0	40.2	1.0	-58.9	-13.0	-45.9	
1.6880	-9.8	H	3.0	39.1	1.0	-47.9	-13.0	-34.9	
2.5320	-20.8	H	3.0	39.5	1.0	-59.4	-13.0	-46.4	
3.3760	-20.1	H	3.0	40.2	1.0	-59.3	-13.0	-46.3	

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

LTE Band 5 10MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: TX, LTE BAND 5, 10MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (829MHz)									
1.6580	-10.1	V	3.0	39.1	1.0	-48.2	-13.0	-35.2	
2.4870	-21.1	V	3.0	39.5	1.0	-59.7	-13.0	-46.7	
3.3160	-21.2	V	3.0	40.1	1.0	-60.3	-13.0	-47.3	
1.6580	-7.9	H	3.0	39.1	1.0	-46.0	-13.0	-33.0	
2.4870	-20.7	H	3.0	39.5	1.0	-59.2	-13.0	-46.2	
3.3160	-21.6	H	3.0	40.1	1.0	-60.7	-13.0	-47.7	
Mid Channel (836.5MHz)									
1.6730	-6.0	V	3.0	39.1	1.0	-44.1	-13.0	-31.1	
2.5090	-19.8	V	3.0	39.5	1.0	-58.4	-13.0	-45.4	
3.3460	-20.4	V	3.0	40.1	1.0	-59.5	-13.0	-46.5	
1.6730	-6.9	H	3.0	39.1	1.0	-45.0	-13.0	-32.0	
2.5090	-21.1	H	3.0	39.5	1.0	-59.6	-13.0	-46.6	
3.3460	-21.0	H	3.0	40.1	1.0	-60.1	-13.0	-47.1	
High Channel (844MHz)									
1.6880	-9.4	V	3.0	39.1	1.0	-47.5	-13.0	-34.5	
2.5320	-20.5	V	3.0	39.5	1.0	-59.0	-13.0	-46.0	
3.3760	-19.7	V	3.0	40.2	1.0	-58.9	-13.0	-45.9	
1.6880	-10.8	H	3.0	39.1	1.0	-48.9	-13.0	-35.9	
2.5320	-19.7	H	3.0	39.5	1.0	-58.2	-13.0	-45.2	
3.3760	-20.6	H	3.0	40.2	1.0	-59.7	-13.0	-46.7	

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

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LTE Band 5 5MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: TX, LTE BAND 5, 5MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (826.5MHz)									
1.6530	-8.1	V	3.0	39.1	1.0	-46.3	-13.0	-33.3	
2.4790	-20.6	V	3.0	39.5	1.0	-59.1	-13.0	-46.1	
3.3060	-21.4	V	3.0	40.1	1.0	-60.5	-13.0	-47.5	
1.6530	-7.0	H	3.0	39.1	1.0	-45.1	-13.0	-32.1	
2.4790	-21.4	H	3.0	39.5	1.0	-59.9	-13.0	-46.9	
3.3060	-21.4	H	3.0	40.1	1.0	-60.5	-13.0	-47.5	
Mid Channel (836.5MHz)									
1.6730	-5.2	V	3.0	39.1	1.0	-43.3	-13.0	-30.3	
2.5090	-19.4	V	3.0	39.5	1.0	-57.9	-13.0	-44.9	
3.3460	-20.5	V	3.0	40.1	1.0	-59.6	-13.0	-46.6	
1.6730	-5.9	H	3.0	39.1	1.0	-44.1	-13.0	-31.1	
2.5090	-20.7	H	3.0	39.5	1.0	-59.2	-13.0	-46.2	
3.3460	-20.6	H	3.0	40.1	1.0	-59.7	-13.0	-46.7	
High Channel (846.5MHz)									
1.6930	-8.5	V	3.0	39.1	1.0	-46.6	-13.0	-33.6	
2.5390	-20.3	V	3.0	39.6	1.0	-58.8	-13.0	-45.8	
3.3860	-19.5	V	3.0	40.2	1.0	-58.7	-13.0	-45.7	
1.6930	-9.7	H	3.0	39.1	1.0	-47.8	-13.0	-34.8	
2.5390	-20.5	H	3.0	39.6	1.0	-59.1	-13.0	-46.1	
3.3860	-20.3	H	3.0	40.2	1.0	-59.5	-13.0	-46.5	

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

LTE Band 5 5MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: TX, LTE BAND 5, 5MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (826.5MHz)									
1.6530	-9.9	V	3.0	39.1	1.0	-48.0	-13.0	-35.0	
2.4790	-21.3	V	3.0	39.5	1.0	-59.8	-13.0	-46.8	
3.3060	-21.4	V	3.0	40.1	1.0	-60.5	-13.0	-47.5	
1.6530	-8.3	H	3.0	39.1	1.0	-46.4	-13.0	-33.4	
2.4790	-20.7	H	3.0	39.5	1.0	-59.3	-13.0	-46.3	
3.3060	-21.3	H	3.0	40.1	1.0	-60.4	-13.0	-47.4	
Mid Channel (836.5MHz)									
1.6730	-5.8	V	3.0	39.1	1.0	-43.9	-13.0	-30.9	
2.5090	-19.5	V	3.0	39.5	1.0	-58.1	-13.0	-45.1	
3.3460	-20.5	V	3.0	40.1	1.0	-59.7	-13.0	-46.7	
1.6730	-6.8	H	3.0	39.1	1.0	-44.9	-13.0	-31.9	
2.5090	-21.0	H	3.0	39.5	1.0	-59.5	-13.0	-46.5	
3.3460	-20.8	H	3.0	40.1	1.0	-59.9	-13.0	-46.9	
High Channel (846.5MHz)									
1.6930	-9.6	V	3.0	39.1	1.0	-47.7	-13.0	-34.7	
2.5390	-20.6	V	3.0	39.6	1.0	-59.1	-13.0	-46.1	
3.3860	-19.6	V	3.0	40.2	1.0	-58.8	-13.0	-45.8	
1.6930	-10.8	H	3.0	39.1	1.0	-49.0	-13.0	-36.0	
2.5390	-19.5	H	3.0	39.6	1.0	-58.0	-13.0	-45.0	
3.3860	-20.4	H	3.0	40.2	1.0	-59.6	-13.0	-46.6	

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

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LTE

Band 5

3MHz

QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: TX LTE BAND 5, 3MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (825.5MHz)									
1.6510	-8.3	V	3.0	39.1	1.0	-46.4	-13.0	-33.4	
2.4675	-20.9	V	3.0	39.5	1.0	-59.4	-13.0	-46.4	
3.3020	-21.5	V	3.0	40.1	1.0	-60.6	-13.0	-47.6	
1.6510	-7.1	H	3.0	39.1	1.0	-45.2	-13.0	-32.2	
2.4675	-21.6	H	3.0	39.5	1.0	-60.1	-13.0	-47.1	
3.3020	-21.7	H	3.0	40.1	1.0	-60.8	-13.0	-47.8	
Mid Channel (836.5MHz)									
1.6730	-5.7	V	3.0	39.1	1.0	-43.8	-13.0	-30.8	
2.5090	-19.8	V	3.0	39.5	1.0	-58.3	-13.0	-45.3	
3.3460	-20.9	V	3.0	40.1	1.0	-60.0	-13.0	-47.0	
1.6730	-6.3	H	3.0	39.1	1.0	-44.5	-13.0	-31.5	
2.5090	-20.8	H	3.0	39.5	1.0	-59.3	-13.0	-46.3	
3.3460	-20.9	H	3.0	40.1	1.0	-60.0	-13.0	-47.0	
High Channel (847.5MHz)									
1.6950	-8.6	V	3.0	39.1	1.0	-46.7	-13.0	-33.7	
2.5425	-20.8	V	3.0	39.6	1.0	-59.3	-13.0	-46.3	
3.3900	-20.0	V	3.0	40.2	1.0	-59.1	-13.0	-46.1	
1.6950	-9.8	H	3.0	39.1	1.0	-47.9	-13.0	-34.9	
2.5425	-20.9	H	3.0	39.6	1.0	-59.4	-13.0	-46.4	
3.3900	-20.4	H	3.0	40.2	1.0	-59.6	-13.0	-46.6	

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

LTE

Band 5

3MHz

16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: TX LTE BAND 5, 3MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (825.5MHz)									
1.6510	-10.3	V	3.0	39.1	1.0	-48.4	-13.0	-35.4	
2.4675	-21.4	V	3.0	39.5	1.0	-60.0	-13.0	-47.0	
3.3020	-21.8	V	3.0	40.1	1.0	-60.9	-13.0	-47.9	
1.6510	-8.5	H	3.0	39.1	1.0	-46.6	-13.0	-33.6	
2.4675	-21.2	H	3.0	39.5	1.0	-59.7	-13.0	-46.7	
3.3020	-21.7	H	3.0	40.1	1.0	-60.8	-13.0	-47.8	
Mid Channel (836.5MHz)									
1.6730	-6.3	V	3.0	39.1	1.0	-44.4	-13.0	-31.4	
2.5090	-19.9	V	3.0	39.5	1.0	-58.5	-13.0	-45.5	
3.3460	-20.7	V	3.0	40.1	1.0	-59.9	-13.0	-46.9	
1.6730	-7.2	H	3.0	39.1	1.0	-45.3	-13.0	-32.3	
2.5090	-21.4	H	3.0	39.5	1.0	-59.9	-13.0	-46.9	
3.3460	-21.1	H	3.0	40.1	1.0	-60.2	-13.0	-47.2	
High Channel (847.5MHz)									
1.6950	-9.8	V	3.0	39.1	1.0	-47.9	-13.0	-34.9	
2.5425	-20.7	V	3.0	39.6	1.0	-59.2	-13.0	-46.2	
3.3900	-20.1	V	3.0	40.2	1.0	-59.3	-13.0	-46.3	
1.6950	-10.9	H	3.0	39.1	1.0	-49.1	-13.0	-36.1	
2.5425	-19.8	H	3.0	39.6	1.0	-58.3	-13.0	-45.3	
3.3900	-20.7	H	3.0	40.2	1.0	-59.8	-13.0	-46.8	

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

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LTE Band 5 1.4MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: TX, LTE BAND 5, 1.4MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (824.7MHz)									
1.6494	-8.6	V	3.0	39.1	1.0	-46.7	-13.0	-33.7	
2.4741	-21.2	V	3.0	39.5	1.0	-59.7	-13.0	-46.7	
3.2988	-21.8	V	3.0	40.1	1.0	-60.9	-13.0	-47.9	
1.6494	-7.2	H	3.0	39.1	1.0	-45.3	-13.0	-32.3	
2.4741	-21.7	H	3.0	39.5	1.0	-60.2	-13.0	-47.2	
3.2988	-22.0	H	3.0	40.1	1.0	-61.1	-13.0	-48.1	
Mid Channel (836.5MHz)									
1.6730	-5.9	V	3.0	39.1	1.0	-44.0	-13.0	-31.0	
2.5090	-19.9	V	3.0	39.5	1.0	-58.4	-13.0	-45.4	
3.3460	-21.0	V	3.0	40.1	1.0	-60.2	-13.0	-47.2	
1.6730	-6.5	H	3.0	39.1	1.0	-44.7	-13.0	-31.7	
2.5090	-21.2	H	3.0	39.5	1.0	-59.7	-13.0	-46.7	
3.3460	-21.4	H	3.0	40.1	1.0	-60.5	-13.0	-47.5	
High Channel (848.3MHz)									
1.6966	-8.6	V	3.0	39.1	1.0	-46.8	-13.0	-33.8	
2.5449	-21.1	V	3.0	39.6	1.0	-59.6	-13.0	-46.6	
3.3932	-20.0	V	3.0	40.2	1.0	-59.2	-13.0	-46.2	
1.6966	-10.2	H	3.0	39.1	1.0	-48.4	-13.0	-35.4	
2.5449	-21.0	H	3.0	39.6	1.0	-59.6	-13.0	-46.6	
3.3932	-20.5	H	3.0	40.2	1.0	-59.7	-13.0	-46.7	

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

LTE Band 5 1.4MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Earphone, X Position
Mode: TX, LTE BAND 5, 1.4MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (824.7MHz)									
1.6494	-10.6	V	3.0	39.1	1.0	-48.7	-13.0	-35.7	
2.4741	-21.9	V	3.0	39.5	1.0	-60.4	-13.0	-47.4	
3.2988	-21.9	V	3.0	40.1	1.0	-61.0	-13.0	-48.0	
1.6494	-8.8	H	3.0	39.1	1.0	-46.9	-13.0	-33.9	
2.4741	-21.4	H	3.0	39.5	1.0	-60.0	-13.0	-47.0	
3.2988	-22.0	H	3.0	40.1	1.0	-61.1	-13.0	-48.1	
Mid Channel (836.5MHz)									
1.6730	-6.6	V	3.0	39.1	1.0	-44.7	-13.0	-31.7	
2.5090	-20.1	V	3.0	39.5	1.0	-58.6	-13.0	-45.6	
3.3460	-21.0	V	3.0	40.1	1.0	-60.1	-13.0	-47.1	
1.6730	-7.6	H	3.0	39.1	1.0	-45.7	-13.0	-32.7	
2.5090	-21.8	H	3.0	39.5	1.0	-60.3	-13.0	-47.3	
3.3460	-21.2	H	3.0	40.1	1.0	-60.3	-13.0	-47.3	
High Channel (848.3MHz)									
1.6966	-9.9	V	3.0	39.1	1.0	-48.1	-13.0	-35.1	
2.5449	-20.8	V	3.0	39.6	1.0	-59.3	-13.0	-46.3	
3.3932	-20.3	V	3.0	40.2	1.0	-59.5	-13.0	-46.5	
1.6966	-11.0	H	3.0	39.1	1.0	-49.2	-13.0	-36.2	
2.5449	-20.1	H	3.0	39.6	1.0	-58.6	-13.0	-45.6	
3.3932	-20.8	H	3.0	40.2	1.0	-59.9	-13.0	-46.9	

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 #: 16K22923
Date: 02-29-16
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	-3.1	V	3.0	40.2	1.0	-42.3	-13.0	-29.3	
5.1600	3.0	V	3.0	40.9	1.0	-36.9	-13.0	-23.9	
6.8800	-12.5	V	3.0	41.0	1.0	-52.5	-13.0	-39.5	
3.4400	0.7	H	3.0	40.2	1.0	-38.6	-13.0	-25.6	
5.1600	6.5	H	3.0	40.9	1.0	-33.4	-13.0	-20.4	
6.8800	-12.7	H	3.0	41.0	1.0	-52.6	-13.0	-39.6	
Mid Channel (1732.5MHz)									
3.4650	-6.8	V	3.0	40.3	1.0	-46.1	-13.0	-33.1	
5.1975	-7.7	V	3.0	40.9	1.0	-47.6	-13.0	-34.6	
6.9300	-12.8	V	3.0	41.0	1.0	-52.8	-13.0	-39.8	
3.4650	-8.1	H	3.0	40.3	1.0	-47.3	-13.0	-34.3	
5.1975	-7.1	H	3.0	40.9	1.0	-46.9	-13.0	-33.9	
6.9300	-12.8	H	3.0	41.0	1.0	-52.8	-13.0	-39.8	
High Channel (1745MHz)									
3.4900	-8.8	V	3.0	40.3	1.0	-48.1	-13.0	-35.1	
5.2350	-1.1	V	3.0	40.9	1.0	-41.0	-13.0	-28.0	
6.9800	-12.3	V	3.0	41.0	1.0	-52.3	-13.0	-39.3	
3.4900	-6.8	H	3.0	40.3	1.0	-46.1	-13.0	-33.1	
5.2350	0.2	H	3.0	40.9	1.0	-39.7	-13.0	-26.7	
6.9800	-12.5	H	3.0	41.0	1.0	-52.5	-13.0	-39.5	

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 #: 16K22923
Date: 02-29-16
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	-4.3	V	3.0	40.2	1.0	-43.5	-13.0	-30.5	
5.1600	2.2	V	3.0	40.9	1.0	-37.7	-13.0	-24.7	
6.8800	-12.7	V	3.0	41.0	1.0	-52.7	-13.0	-39.7	
3.4400	-2.6	H	3.0	40.2	1.0	-41.9	-13.0	-28.9	
5.1600	4.4	H	3.0	40.9	1.0	-35.5	-13.0	-22.5	
6.8800	-12.7	H	3.0	41.0	1.0	-52.7	-13.0	-39.7	
Mid Channel (1732.5MHz)									
3.4650	-7.0	V	3.0	40.3	1.0	-46.3	-13.0	-33.3	
5.1975	-8.6	V	3.0	40.9	1.0	-48.4	-13.0	-35.4	
6.9300	-12.9	V	3.0	41.0	1.0	-52.9	-13.0	-39.9	
3.4650	-8.7	H	3.0	40.3	1.0	-48.0	-13.0	-35.0	
5.1975	-8.0	H	3.0	40.9	1.0	-47.9	-13.0	-34.9	
6.9300	-12.9	H	3.0	41.0	1.0	-52.9	-13.0	-39.9	
High Channel (1745MHz)									
3.4900	-9.7	V	3.0	40.3	1.0	-49.0	-13.0	-36.0	
5.2350	-2.3	V	3.0	40.9	1.0	-42.1	-13.0	-29.1	
6.9800	-12.9	V	3.0	41.0	1.0	-52.9	-13.0	-39.9	
3.4900	-8.0	H	3.0	40.3	1.0	-47.3	-13.0	-34.3	
5.2350	-0.7	H	3.0	40.9	1.0	-40.6	-13.0	-27.6	
6.9800	-13.0	H	3.0	41.0	1.0	-53.1	-13.0	-40.1	

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 #: 16K22923
Date: 02-29-16
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	0.3	V	3.0	40.2	1.0	-39.0	-13.0	-26.0	
5.1525	-10.4	V	3.0	40.9	1.0	-50.3	-13.0	-37.3	
6.8700	-12.8	V	3.0	41.0	1.0	-52.8	-13.0	-39.8	
3.4350	1.3	H	3.0	40.2	1.0	-37.9	-13.0	-24.9	
5.1525	-9.9	H	3.0	40.9	1.0	-49.8	-13.0	-36.8	
6.8700	-12.7	H	3.0	41.0	1.0	-52.7	-13.0	-39.7	
Mid Channel (1732.5MHz)									
3.4650	-7.7	V	3.0	40.3	1.0	-46.9	-13.0	-33.9	
5.1975	-8.3	V	3.0	40.9	1.0	-48.2	-13.0	-35.2	
6.9300	-13.0	V	3.0	41.0	1.0	-53.0	-13.0	-40.0	
3.4650	-7.2	H	3.0	40.3	1.0	-46.5	-13.0	-33.5	
5.1975	-7.8	H	3.0	40.9	1.0	-47.7	-13.0	-34.7	
6.9300	-12.7	H	3.0	41.0	1.0	-52.7	-13.0	-39.7	
High Channel (1747.5MHz)									
3.4950	-10.9	V	3.0	40.3	1.0	-50.2	-13.0	-37.2	
5.2425	-10.4	V	3.0	40.9	1.0	-50.3	-13.0	-37.3	
6.9900	-13.1	V	3.0	41.0	1.0	-53.1	-13.0	-40.1	
3.4950	-8.3	H	3.0	40.3	1.0	-47.6	-13.0	-34.6	
5.2425	-9.0	H	3.0	40.9	1.0	-48.8	-13.0	-35.8	
6.9900	-12.9	H	3.0	41.0	1.0	-52.9	-13.0	-39.9	

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 #: 16K22923
Date: 02-29-16
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	-2.6	V	3.0	40.2	1.0	-41.8	-13.0	-28.8	
5.1525	-12.2	V	3.0	40.9	1.0	-52.1	-13.0	-39.1	
6.8700	-12.9	V	3.0	41.0	1.0	-52.9	-13.0	-39.9	
3.4350	-1.4	H	3.0	40.2	1.0	-40.6	-13.0	-27.6	
5.1525	-11.4	H	3.0	40.9	1.0	-51.3	-13.0	-38.3	
6.8700	-12.9	H	3.0	41.0	1.0	-52.9	-13.0	-39.9	
Mid Channel (1732.5MHz)									
3.4650	-8.0	V	3.0	40.3	1.0	-47.2	-13.0	-34.2	
5.1975	-10.4	V	3.0	40.9	1.0	-50.3	-13.0	-37.3	
6.9300	-13.1	V	3.0	41.0	1.0	-53.1	-13.0	-40.1	
3.4650	-6.4	H	3.0	40.3	1.0	-45.7	-13.0	-32.7	
5.1975	-8.8	H	3.0	40.9	1.0	-48.7	-13.0	-35.7	
6.9300	-12.8	H	3.0	41.0	1.0	-52.8	-13.0	-39.8	
High Channel (1747.5MHz)									
3.4950	-12.0	V	3.0	40.3	1.0	-51.3	-13.0	-38.3	
5.2425	-11.2	V	3.0	40.9	1.0	-51.1	-13.0	-38.1	
6.9900	-13.2	V	3.0	41.0	1.0	-53.3	-13.0	-40.3	
3.4950	-5.3	H	3.0	40.3	1.0	-44.6	-13.0	-31.6	
5.2425	-10.0	H	3.0	40.9	1.0	-49.9	-13.0	-36.9	
6.9900	-13.0	H	3.0	41.0	1.0	-53.0	-13.0	-40.0	

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 #: 16K22923
Date: 02-29-16
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	-0.1	V	3.0	40.2	1.0	-39.3	-13.0	-26.3	
5.1450	-11.7	V	3.0	40.9	1.0	-51.6	-13.0	-38.6	
6.8600	-12.9	V	3.0	41.0	1.0	-52.8	-13.0	-39.8	
3.4300	1.0	H	3.0	40.2	1.0	-38.2	-13.0	-25.2	
5.1450	-10.2	H	3.0	40.9	1.0	-50.1	-13.0	-37.1	
6.8600	-12.7	H	3.0	41.0	1.0	-52.7	-13.0	-39.7	
Mid Channel (1732.5MHz)									
3.4650	-7.2	V	3.0	40.3	1.0	-46.5	-13.0	-33.5	
5.1975	-9.9	V	3.0	40.9	1.0	-49.8	-13.0	-36.8	
6.9300	-13.0	V	3.0	41.0	1.0	-53.0	-13.0	-40.0	
3.4650	-7.3	H	3.0	40.3	1.0	-46.6	-13.0	-33.6	
5.1975	-8.2	H	3.0	40.9	1.0	-48.1	-13.0	-35.1	
6.9300	-12.8	H	3.0	41.0	1.0	-52.8	-13.0	-39.8	
High Channel (1750MHz)									
3.5000	-9.3	V	3.0	40.3	1.0	-48.6	-13.0	-35.6	
5.2500	-8.6	V	3.0	40.9	1.0	-48.5	-13.0	-35.5	
7.0000	-12.8	V	3.0	41.0	1.0	-52.8	-13.0	-39.8	
3.5000	-4.8	H	3.0	40.3	1.0	-44.1	-13.0	-31.1	
5.2500	-0.7	H	3.0	40.9	1.0	-40.6	-13.0	-27.6	
7.0000	-12.8	H	3.0	41.0	1.0	-52.8	-13.0	-39.8	

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 #: 16K22923
Date: 02-29-16
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	-3.1	V	3.0	40.2	1.0	-42.3	-13.0	-29.3	
5.1450	-12.9	V	3.0	40.9	1.0	-52.8	-13.0	-39.8	
6.8600	-13.1	V	3.0	41.0	1.0	-53.1	-13.0	-40.1	
3.4300	-2.2	H	3.0	40.2	1.0	-41.4	-13.0	-28.4	
5.1450	-12.1	H	3.0	40.9	1.0	-52.0	-13.0	-39.0	
6.8600	-13.0	H	3.0	41.0	1.0	-53.0	-13.0	-40.0	
Mid Channel (1732.5MHz)									
3.4650	-7.2	V	3.0	40.3	1.0	-46.4	-13.0	-33.4	
5.1975	-9.1	V	3.0	40.9	1.0	-48.9	-13.0	-35.9	
6.9300	-13.1	V	3.0	41.0	1.0	-53.1	-13.0	-40.1	
3.4650	-7.0	H	3.0	40.3	1.0	-46.3	-13.0	-33.3	
5.1975	-9.0	H	3.0	40.9	1.0	-48.9	-13.0	-35.9	
6.9300	-12.9	H	3.0	41.0	1.0	-52.9	-13.0	-39.9	
High Channel (1750MHz)									
3.5000	-10.8	V	3.0	40.3	1.0	-50.0	-13.0	-37.0	
5.2500	-10.5	V	3.0	40.9	1.0	-50.4	-13.0	-37.4	
7.0000	-13.1	V	3.0	41.0	1.0	-53.1	-13.0	-40.1	
3.5000	-7.0	H	3.0	40.3	1.0	-46.3	-13.0	-33.3	
5.2500	-2.9	H	3.0	40.9	1.0	-42.8	-13.0	-29.8	
7.0000	-13.0	H	3.0	41.0	1.0	-53.1	-13.0	-40.1	

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 #: 16K22923
Date: 02-29-16
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	-5.8	V	3.0	40.2	1.0	-45.1	-13.0	-32.1	
5.1375	-9.2	V	3.0	40.9	1.0	-49.1	-13.0	-36.1	
6.8500	-13.1	V	3.0	41.0	1.0	-53.1	-13.0	-40.1	
3.4250	-2.5	H	3.0	40.2	1.0	-41.8	-13.0	-28.8	
5.1375	-6.3	H	3.0	40.9	1.0	-46.2	-13.0	-33.2	
6.8500	-13.0	H	3.0	41.0	1.0	-53.0	-13.0	-40.0	
Mid Channel (1732.5MHz)									
3.4650	-6.7	V	3.0	40.3	1.0	-46.0	-13.0	-33.0	
5.1975	-9.3	V	3.0	40.9	1.0	-49.2	-13.0	-36.2	
6.9300	-12.8	V	3.0	41.0	1.0	-52.8	-13.0	-39.8	
3.4650	-6.5	H	3.0	40.3	1.0	-45.7	-13.0	-32.7	
5.1975	-8.1	H	3.0	40.9	1.0	-47.9	-13.0	-34.9	
6.9300	-12.6	H	3.0	41.0	1.0	-52.6	-13.0	-39.6	
High Channel (1752.5MHz)									
3.5050	-7.6	V	3.0	40.3	1.0	-46.9	-13.0	-33.9	
5.2575	0.8	V	3.0	40.9	1.0	-39.1	-13.0	-26.1	
7.0100	-12.5	V	3.0	41.0	1.0	-52.5	-13.0	-39.5	
3.5050	-2.6	H	3.0	40.3	1.0	-41.9	-13.0	-28.9	
5.2575	1.2	H	3.0	40.9	1.0	-38.7	-13.0	-25.7	
7.0100	-12.3	H	3.0	41.0	1.0	-52.3	-13.0	-39.3	

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 #: 16K22923
Date: 02-29-16
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	-11.1	V	3.0	40.2	1.0	-50.3	-13.0	-37.3	
5.1375	-11.2	V	3.0	40.9	1.0	-51.1	-13.0	-38.1	
6.8500	-13.3	V	3.0	41.0	1.0	-53.3	-13.0	-40.3	
3.4250	-7.8	H	3.0	40.2	1.0	-47.0	-13.0	-34.0	
5.1375	-9.5	H	3.0	40.9	1.0	-49.3	-13.0	-36.3	
6.8500	-13.2	H	3.0	41.0	1.0	-53.2	-13.0	-40.2	
Mid Channel (1732.5MHz)									
3.4650	-7.4	V	3.0	40.3	1.0	-46.6	-13.0	-33.6	
5.1975	-9.3	V	3.0	40.9	1.0	-49.2	-13.0	-36.2	
6.9300	-13.2	V	3.0	41.0	1.0	-53.2	-13.0	-40.2	
3.4650	-6.8	H	3.0	40.3	1.0	-46.1	-13.0	-33.1	
5.1975	-9.1	H	3.0	40.9	1.0	-49.0	-13.0	-36.0	
6.9300	-13.0	H	3.0	41.0	1.0	-53.0	-13.0	-40.0	
High Channel (1752.5MHz)									
3.5050	-9.8	V	3.0	40.3	1.0	-49.0	-13.0	-36.0	
5.2575	-4.3	V	3.0	40.9	1.0	-44.1	-13.0	-31.1	
7.0100	-12.9	V	3.0	41.0	1.0	-52.9	-13.0	-39.9	
3.5050	-4.2	H	3.0	40.3	1.0	-43.5	-13.0	-30.5	
5.2575	-0.7	H	3.0	40.9	1.0	-40.6	-13.0	-27.6	
7.0100	-12.5	H	3.0	41.0	1.0	-52.5	-13.0	-39.5	

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 #: 16K22923
Date: 02-29-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / Z-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	-7.3	V	3.0	40.2	1.0	-46.5	-13.0	-33.5	
5.1345	-6.6	V	3.0	40.9	1.0	-46.5	-13.0	-33.5	
6.8460	-13.3	V	3.0	41.0	1.0	-53.2	-13.0	-40.2	
3.4230	-3.3	H	3.0	40.2	1.0	-42.5	-13.0	-29.5	
5.1345	-7.5	H	3.0	40.9	1.0	-47.4	-13.0	-34.4	
6.8460	-13.0	H	3.0	41.0	1.0	-53.0	-13.0	-40.0	
Mid Channel (1732.5MHz)									
3.4650	-7.7	V	3.0	40.3	1.0	-46.9	-13.0	-33.9	
5.1975	-7.8	V	3.0	40.9	1.0	-47.7	-13.0	-34.7	
6.9300	-12.7	V	3.0	41.0	1.0	-52.7	-13.0	-39.7	
3.4650	-8.2	H	3.0	40.3	1.0	-47.5	-13.0	-34.5	
5.1975	-7.1	H	3.0	40.9	1.0	-47.0	-13.0	-34.0	
6.9300	-12.9	H	3.0	41.0	1.0	-52.9	-13.0	-39.9	
High Channel (1753.5MHz)									
3.5070	-13.6	V	3.0	40.3	1.0	-52.9	-13.0	-39.9	
5.2605	-12.4	V	3.0	40.9	1.0	-52.2	-13.0	-39.2	
7.0140	-12.7	V	3.0	41.0	1.0	-52.7	-13.0	-39.7	
3.5070	-5.0	H	3.0	40.3	1.0	-44.3	-13.0	-31.3	
5.2605	-7.3	H	3.0	40.9	1.0	-47.2	-13.0	-34.2	
7.0140	-12.5	H	3.0	41.0	1.0	-52.5	-13.0	-39.5	

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 #: 16K22923
Date: 02-29-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / Z-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	-12.1	V	3.0	40.2	1.0	-51.3	-13.0	-38.3	
5.1345	-9.8	V	3.0	40.9	1.0	-49.7	-13.0	-36.7	
6.8460	-13.5	V	3.0	41.0	1.0	-53.5	-13.0	-40.5	
3.4230	-11.0	H	3.0	40.2	1.0	-50.3	-13.0	-37.3	
5.1345	-11.2	H	3.0	40.9	1.0	-51.1	-13.0	-38.1	
6.8460	-13.2	H	3.0	41.0	1.0	-53.1	-13.0	-40.1	
Mid Channel (1732.5MHz)									
3.4650	-7.5	V	3.0	40.3	1.0	-46.8	-13.0	-33.8	
5.1975	-8.3	V	3.0	40.9	1.0	-48.2	-13.0	-35.2	
6.9300	-13.1	V	3.0	41.0	1.0	-53.1	-13.0	-40.1	
3.4650	-8.6	H	3.0	40.3	1.0	-47.8	-13.0	-34.8	
5.1975	-8.2	H	3.0	40.9	1.0	-48.1	-13.0	-35.1	
6.9300	-12.9	H	3.0	41.0	1.0	-52.9	-13.0	-39.9	
High Channel (1752.5MHz)									
3.5070	-10.3	V	3.0	40.3	1.0	-49.5	-13.0	-36.5	
5.2605	-8.3	V	3.0	40.9	1.0	-48.1	-13.0	-35.1	
7.0140	-12.9	V	3.0	41.0	1.0	-52.9	-13.0	-39.9	
3.5070	-8.3	H	3.0	40.3	1.0	-47.6	-13.0	-34.6	
5.2605	-10.6	H	3.0	40.9	1.0	-50.5	-13.0	-37.5	
7.0140	-12.6	H	3.0	41.0	1.0	-52.6	-13.0	-39.6	

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 #: 16K22923
Date: 02-29-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / Z-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	-7.9	V	3.0	40.2	1.0	-47.1	-13.0	-34.1	
5.1321	-7.6	V	3.0	40.9	1.0	-47.5	-13.0	-34.5	
6.8428	-13.2	V	3.0	41.0	1.0	-53.1	-13.0	-40.1	
3.4214	-2.7	H	3.0	40.2	1.0	-41.9	-13.0	-28.9	
5.1321	-5.7	H	3.0	40.9	1.0	-45.6	-13.0	-32.6	
6.8428	-13.0	H	3.0	41.0	1.0	-53.0	-13.0	-40.0	
Mid Channel (1732.5MHz)									
3.4650	-7.1	V	3.0	40.3	1.0	-46.3	-13.0	-33.3	
5.1975	-7.9	V	3.0	40.9	1.0	-47.8	-13.0	-34.8	
6.9300	-13.0	V	3.0	41.0	1.0	-53.0	-13.0	-40.0	
3.4650	-6.4	H	3.0	40.3	1.0	-45.7	-13.0	-32.7	
5.1975	-7.8	H	3.0	40.9	1.0	-47.7	-13.0	-34.7	
6.9300	-12.8	H	3.0	41.0	1.0	-52.8	-13.0	-39.8	
High Channel (1754.3MHz)									
3.5086	-9.8	V	3.0	40.3	1.0	-49.1	-13.0	-36.1	
5.2629	-8.6	V	3.0	40.9	1.0	-48.5	-13.0	-35.5	
7.0172	-12.8	V	3.0	41.0	1.0	-52.8	-13.0	-39.8	
3.5086	-7.9	H	3.0	40.3	1.0	-47.2	-13.0	-34.2	
5.2629	-6.3	H	3.0	40.9	1.0	-46.2	-13.0	-33.2	
7.0172	-12.5	H	3.0	41.0	1.0	-52.5	-13.0	-39.5	

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 #: 16K22923
Date: 02-29-16
Test Engineer: Steven.Kim
Configuration: EUT / AC Adapter / Ear Phone / Z-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	-11.2	V	3.0	40.2	1.0	-50.4	-13.0	-37.4	
5.1321	-9.5	V	3.0	40.9	1.0	-49.4	-13.0	-36.4	
6.8428	-13.1	V	3.0	41.0	1.0	-53.1	-13.0	-40.1	
3.4214	-8.2	H	3.0	40.2	1.0	-47.4	-13.0	-34.4	
5.1321	-8.0	H	3.0	40.9	1.0	-47.9	-13.0	-34.9	
6.8428	-13.1	H	3.0	41.0	1.0	-53.0	-13.0	-40.0	
Mid Channel (1732.5MHz)									
3.4650	-7.2	V	3.0	40.3	1.0	-46.4	-13.0	-33.4	
5.1975	-9.8	V	3.0	40.9	1.0	-49.7	-13.0	-36.7	
6.9300	-12.9	V	3.0	41.0	1.0	-52.9	-13.0	-39.9	
3.4650	-6.7	H	3.0	40.3	1.0	-45.9	-13.0	-32.9	
5.1975	-9.6	H	3.0	40.9	1.0	-49.5	-13.0	-36.5	
6.9300	-12.8	H	3.0	41.0	1.0	-52.8	-13.0	-39.8	
High Channel (1754.3MHz)									
3.5086	-11.6	V	3.0	40.3	1.0	-50.9	-13.0	-37.9	
5.2629	-10.9	V	3.0	40.9	1.0	-50.8	-13.0	-37.8	
7.0172	-12.8	V	3.0	41.0	1.0	-52.8	-13.0	-39.8	
3.5086	-10.6	H	3.0	40.3	1.0	-49.9	-13.0	-36.9	
5.2629	-8.6	H	3.0	40.9	1.0	-48.4	-13.0	-35.4	
7.0172	-14.5	H	3.0	41.0	1.0	-54.5	-13.0	-41.5	

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

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LTE Band 2

LTE Band 2 20MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX LTE BAND 2, 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	-9.3	V	3.0	40.5	1.0	-48.8	-13.0	-35.8	
5.5800	-14.7	V	3.0	40.8	1.0	-54.5	-13.0	-41.5	
7.4400	-14.1	V	3.0	40.8	1.0	-53.9	-13.0	-40.9	
3.7200	-8.0	H	3.0	40.5	1.0	-47.5	-13.0	-34.5	
5.5800	-12.4	H	3.0	40.8	1.0	-52.2	-13.0	-39.2	
7.4400	-14.1	H	3.0	40.8	1.0	-53.8	-13.0	-40.8	
Mid Channel (1880MHz)									
3.7600	-7.3	V	3.0	40.5	1.0	-46.9	-13.0	-33.9	
5.6400	-14.0	V	3.0	40.8	1.0	-53.8	-13.0	-40.8	
7.5200	-14.0	V	3.0	40.7	1.0	-53.8	-13.0	-40.8	
3.7600	-7.2	H	3.0	40.5	1.0	-46.7	-13.0	-33.7	
5.6400	-11.8	H	3.0	40.8	1.0	-51.6	-13.0	-38.6	
7.520	-13.8	H	3.0	40.7	1.0	-53.5	-13.0	-40.5	
High Channel (1900MHz)									
3.8000	-5.9	V	3.0	40.6	1.0	-45.5	-13.0	-32.5	
5.7000	-13.1	V	3.0	40.8	1.0	-52.9	-13.0	-39.9	
7.6000	-14.0	V	3.0	40.7	1.0	-53.7	-13.0	-40.7	
3.8000	-4.4	H	3.0	40.6	1.0	-43.9	-13.0	-30.9	
5.7000	-8.4	H	3.0	40.8	1.0	-48.1	-13.0	-35.1	
7.6000	-13.8	H	3.0	40.7	1.0	-53.5	-13.0	-40.5	

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

LTE Band 2 20MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX LTE BAND 2, 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	-8.7	V	3.0	40.5	1.0	-48.2	-13.0	-35.2	
5.5800	-14.6	V	3.0	40.8	1.0	-54.4	-13.0	-41.4	
7.4400	-13.9	V	3.0	40.8	1.0	-53.7	-13.0	-40.7	
3.7200	-6.7	H	3.0	40.5	1.0	-46.2	-13.0	-33.2	
5.5800	-10.7	H	3.0	40.8	1.0	-50.5	-13.0	-37.5	
7.4400	-14.2	H	3.0	40.8	1.0	-53.9	-13.0	-40.9	
Mid Channel (1880MHz)									
3.7600	-7.1	V	3.0	40.5	1.0	-46.7	-13.0	-33.7	
5.6400	-13.1	V	3.0	40.8	1.0	-52.9	-13.0	-39.9	
7.5200	-14.2	V	3.0	40.7	1.0	-53.9	-13.0	-40.9	
3.7600	-6.0	H	3.0	40.5	1.0	-45.6	-13.0	-32.6	
5.6400	-10.1	H	3.0	40.8	1.0	-49.9	-13.0	-36.9	
7.5200	-13.9	H	3.0	40.7	1.0	-53.6	-13.0	-40.6	
High Channel (1900MHz)									
3.8000	-6.3	V	3.0	40.6	1.0	-45.9	-13.0	-32.9	
5.7000	-12.6	V	3.0	40.8	1.0	-52.4	-13.0	-39.4	
7.6000	-14.1	V	3.0	40.7	1.0	-53.8	-13.0	-40.8	
3.8000	-2.8	H	3.0	40.6	1.0	-42.3	-13.0	-29.3	
5.7000	-7.5	H	3.0	40.8	1.0	-47.3	-13.0	-34.3	
7.6000	-13.8	H	3.0	40.7	1.0	-53.5	-13.0	-40.5	

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

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LTE

Band 2

15MHz

QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX LTE BAND 2, 15MHz 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 (1857.5MHz)									
3.7150	-9.0	V	3.0	40.5	1.0	-48.5	-13.0	-35.5	
5.5725	-14.5	V	3.0	40.8	1.0	-54.4	-13.0	-41.4	
7.4300	-14.4	V	3.0	40.8	1.0	-54.2	-13.0	-41.2	
3.7150	-7.2	H	3.0	40.5	1.0	-46.7	-13.0	-33.7	
5.5725	-11.7	H	3.0	40.8	1.0	-51.5	-13.0	-38.5	
7.4300	-14.1	H	3.0	40.8	1.0	-53.9	-13.0	-40.9	
Mid Channel (1880MHz)									
3.7600	-7.1	V	3.0	40.5	1.0	-46.6	-13.0	-33.6	
5.6400	-13.8	V	3.0	40.8	1.0	-53.6	-13.0	-40.6	
7.5200	-14.3	V	3.0	40.7	1.0	-54.0	-13.0	-41.0	
3.7600	-7.2	H	3.0	40.5	1.0	-46.7	-13.0	-33.7	
5.6400	-11.0	H	3.0	40.8	1.0	-50.8	-13.0	-37.8	
7.5200	-13.9	H	3.0	40.7	1.0	-53.6	-13.0	-40.6	
High Channel (1902.5MHz)									
3.8050	-5.1	V	3.0	40.6	1.0	-44.7	-13.0	-31.7	
5.7075	-12.7	V	3.0	40.8	1.0	-52.5	-13.0	-39.5	
7.6100	-13.8	V	3.0	40.7	1.0	-53.5	-13.0	-40.5	
3.8050	-4.2	H	3.0	40.6	1.0	-43.8	-13.0	-30.8	
5.7075	-7.7	H	3.0	40.8	1.0	-47.5	-13.0	-34.5	
7.6100	-14.0	H	3.0	40.7	1.0	-53.6	-13.0	-40.6	

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

LTE

Band 2

15MHz

16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-26-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX LTE BAND 2, 15MHz 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 (1857.5MHz)									
3.7150	-7.9	V	3.0	40.5	1.0	-47.4	-13.0	-34.4	
5.5725	-14.0	V	3.0	40.8	1.0	-53.8	-13.0	-40.8	
7.4300	-14.4	V	3.0	40.8	1.0	-54.2	-13.0	-41.2	
3.7150	-6.5	H	3.0	40.5	1.0	-46.0	-13.0	-33.0	
5.5725	-10.5	H	3.0	40.8	1.0	-50.3	-13.0	-37.3	
7.4300	-14.1	H	3.0	40.8	1.0	-53.9	-13.0	-40.9	
Mid Channel (1880MHz)									
3.7600	-7.1	V	3.0	40.5	1.0	-46.6	-13.0	-33.6	
5.6400	-13.1	V	3.0	40.8	1.0	-52.9	-13.0	-39.9	
7.5200	-14.1	V	3.0	40.7	1.0	-53.8	-13.0	-40.8	
3.7600	-5.3	H	3.0	40.5	1.0	-44.8	-13.0	-31.8	
5.6400	-9.3	H	3.0	40.8	1.0	-49.1	-13.0	-36.1	
7.5200	-14.0	H	3.0	40.7	1.0	-53.7	-13.0	-40.7	
High Channel (1902.5MHz)									
3.8050	-6.1	V	3.0	40.6	1.0	-45.7	-13.0	-32.7	
5.7075	-11.7	V	3.0	40.8	1.0	-51.5	-13.0	-38.5	
7.6100	-14.1	V	3.0	40.7	1.0	-53.7	-13.0	-40.7	
3.8050	-1.8	H	3.0	40.6	1.0	-41.4	-13.0	-28.4	
5.7075	-6.9	H	3.0	40.8	1.0	-46.7	-13.0	-33.7	
7.6100	-13.9	H	3.0	40.7	1.0	-53.5	-13.0	-40.5	

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

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LTE

Band 2

10MHz

QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 2, 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	-7.6	V	3.0	40.5	1.0	-47.1	-13.0	-34.1	
5.5650	-13.7	V	3.0	40.8	1.0	-53.6	-13.0	-40.6	
7.4200	-14.1	V	3.0	40.8	1.0	-53.8	-13.0	-40.8	
3.7100	-6.6	H	3.0	40.5	1.0	-46.1	-13.0	-33.1	
5.5650	-11.1	H	3.0	40.8	1.0	-50.9	-13.0	-37.9	
7.4200	-14.0	H	3.0	40.8	1.0	-53.8	-13.0	-40.8	
Mid Channel (1880MHz)									
3.7600	-6.0	V	3.0	40.5	1.0	-45.6	-13.0	-32.6	
5.6400	-12.6	V	3.0	40.8	1.0	-52.4	-13.0	-39.4	
7.5200	-14.0	V	3.0	40.7	1.0	-53.8	-13.0	-40.8	
3.7600	-5.9	H	3.0	40.5	1.0	-45.5	-13.0	-32.5	
5.6400	-10.1	H	3.0	40.8	1.0	-49.9	-13.0	-36.9	
7.5200	-13.9	H	3.0	40.7	1.0	-53.7	-13.0	-40.7	
High Channel (1905MHz)									
3.8100	-4.2	V	3.0	40.6	1.0	-43.8	-13.0	-30.8	
5.7150	-11.3	V	3.0	40.8	1.0	-51.1	-13.0	-38.1	
7.6200	-13.9	V	3.0	40.7	1.0	-53.6	-13.0	-40.6	
3.8100	-2.8	H	3.0	40.6	1.0	-42.4	-13.0	-29.4	
5.7150	-6.9	H	3.0	40.8	1.0	-46.7	-13.0	-33.7	
7.620	-13.8	H	3.0	40.7	1.0	-53.5	-13.0	-40.5	

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

LTE

Band 2

10MHz

16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 2, 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	-7.3	V	3.0	40.5	1.0	-46.8	-13.0	-33.8	
5.5650	-12.7	V	3.0	40.8	1.0	-52.6	-13.0	-39.6	
7.4200	-14.3	V	3.0	40.8	1.0	-54.0	-13.0	-41.0	
3.7100	-5.5	H	3.0	40.5	1.0	-45.0	-13.0	-32.0	
5.5650	-9.1	H	3.0	40.8	1.0	-49.0	-13.0	-36.0	
7.4200	-14.1	H	3.0	40.8	1.0	-53.9	-13.0	-40.9	
Mid Channel (1880MHz)									
3.7600	-5.7	V	3.0	40.5	1.0	-45.2	-13.0	-32.2	
5.6400	-12.6	V	3.0	40.8	1.0	-52.4	-13.0	-39.4	
7.5200	-14.1	V	3.0	40.7	1.0	-53.8	-13.0	-40.8	
3.7600	-4.2	H	3.0	40.5	1.0	-43.7	-13.0	-30.7	
5.6400	-8.0	H	3.0	40.8	1.0	-47.8	-13.0	-34.8	
7.5200	-13.9	H	3.0	40.7	1.0	-53.6	-13.0	-40.6	
High Channel (1905MHz)									
3.8100	-6.4	V	3.0	40.6	1.0	-46.0	-13.0	-33.0	
5.7150	-12.2	V	3.0	40.8	1.0	-52.0	-13.0	-39.0	
7.6200	-14.0	V	3.0	40.7	1.0	-53.6	-13.0	-40.6	
3.8100	-1.8	H	3.0	40.6	1.0	-41.4	-13.0	-28.4	
5.7150	-7.0	H	3.0	40.8	1.0	-46.8	-13.0	-33.8	
7.6200	-13.8	H	3.0	40.7	1.0	-53.4	-13.0	-40.4	

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

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LTE

Band 2

5MHz

QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 2, 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	-10.0	V	3.0	40.5	1.0	-49.5	-13.0	-36.5	
5.5575	-15.0	V	3.0	40.8	1.0	-54.8	-13.0	-41.8	
7.4100	-14.1	V	3.0	40.8	1.0	-53.9	-13.0	-40.9	
3.7050	-8.0	H	3.0	40.5	1.0	-47.5	-13.0	-34.5	
5.5575	-11.7	H	3.0	40.8	1.0	-51.5	-13.0	-38.5	
7.4100	-14.0	H	3.0	40.8	1.0	-53.8	-13.0	-40.8	
Mid Channel (1880MHz)									
3.7600	-8.0	V	3.0	40.5	1.0	-47.6	-13.0	-34.6	
5.6400	-13.8	V	3.0	40.8	1.0	-53.6	-13.0	-40.6	
7.5200	-14.0	V	3.0	40.7	1.0	-53.7	-13.0	-40.7	
3.7600	-7.9	H	3.0	40.5	1.0	-47.4	-13.0	-34.4	
5.6400	-11.5	H	3.0	40.8	1.0	-51.3	-13.0	-38.3	
7.5200	-13.9	H	3.0	40.7	1.0	-53.6	-13.0	-40.6	
High Channel (1907.5MHz)									
3.8150	-5.7	V	3.0	40.6	1.0	-45.3	-13.0	-32.3	
5.7225	-12.9	V	3.0	40.8	1.0	-52.7	-13.0	-39.7	
7.6300	-14.1	V	3.0	40.7	1.0	-53.7	-13.0	-40.7	
3.8150	-4.7	H	3.0	40.6	1.0	-44.3	-13.0	-31.3	
5.7225	-8.4	H	3.0	40.8	1.0	-48.2	-13.0	-35.2	
7.6300	-13.8	H	3.0	40.7	1.0	-53.5	-13.0	-40.5	

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

LTE

Band 2

5MHz

16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 2, 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	-8.4	V	3.0	40.5	1.0	-47.9	-13.0	-34.9	
5.5575	-14.3	V	3.0	40.8	1.0	-54.1	-13.0	-41.1	
7.4100	-14.2	V	3.0	40.8	1.0	-54.0	-13.0	-41.0	
3.7050	-6.6	H	3.0	40.5	1.0	-46.1	-13.0	-33.1	
5.5575	-11.2	H	3.0	40.8	1.0	-51.0	-13.0	-38.0	
7.4100	-14.1	H	3.0	40.8	1.0	-53.9	-13.0	-40.9	
Mid Channel (1880MHz)									
3.7600	-7.7	V	3.0	40.5	1.0	-47.2	-13.0	-34.2	
5.6400	-14.1	V	3.0	40.8	1.0	-53.9	-13.0	-40.9	
7.5200	-14.0	V	3.0	40.7	1.0	-53.7	-13.0	-40.7	
3.7600	-5.7	H	3.0	40.5	1.0	-45.3	-13.0	-32.3	
5.6400	-10.1	H	3.0	40.8	1.0	-49.9	-13.0	-36.9	
7.5200	-13.9	H	3.0	40.7	1.0	-53.6	-13.0	-40.6	
High Channel (1907.5MHz)									
3.8150	-6.9	V	3.0	40.6	1.0	-46.5	-13.0	-33.5	
5.7225	-11.7	V	3.0	40.8	1.0	-51.5	-13.0	-38.5	
7.6300	-14.0	V	3.0	40.7	1.0	-53.7	-13.0	-40.7	
3.8150	-2.4	H	3.0	40.6	1.0	-42.0	-13.0	-29.0	
5.7225	-7.8	H	3.0	40.8	1.0	-47.6	-13.0	-34.6	
7.6300	-13.7	H	3.0	40.7	1.0	-53.3	-13.0	-40.3	

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

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LTE Band 2 3MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 2, 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	-8.1	V	3.0	40.5	1.0	-47.6	-13.0	-34.6	
5.5545	-14.3	V	3.0	40.8	1.0	-54.1	-13.0	-41.1	
7.4060	-14.3	V	3.0	40.8	1.0	-54.1	-13.0	-41.1	
3.7030	-7.0	H	3.0	40.5	1.0	-46.4	-13.0	-33.4	
5.5545	-11.5	H	3.0	40.8	1.0	-51.4	-13.0	-38.4	
7.4060	-13.9	H	3.0	40.8	1.0	-53.7	-13.0	-40.7	
Mid Channel (1880MHz)									
3.7600	-7.1	V	3.0	40.5	1.0	-46.6	-13.0	-33.6	
5.6400	-13.2	V	3.0	40.8	1.0	-53.0	-13.0	-40.0	
7.5200	-14.1	V	3.0	40.7	1.0	-53.9	-13.0	-40.9	
3.7600	-6.8	H	3.0	40.5	1.0	-46.3	-13.0	-33.3	
5.6400	-10.5	H	3.0	40.8	1.0	-50.3	-13.0	-37.3	
7.5200	-14.0	H	3.0	40.7	1.0	-53.7	-13.0	-40.7	
High Channel (1908.5MHz)									
3.8170	-4.1	V	3.0	40.6	1.0	-43.7	-13.0	-30.7	
5.7255	-12.1	V	3.0	40.8	1.0	-51.9	-13.0	-38.9	
7.6340	-13.9	V	3.0	40.7	1.0	-53.5	-13.0	-40.5	
3.8170	-3.9	H	3.0	40.6	1.0	-43.5	-13.0	-30.5	
5.7255	-7.6	H	3.0	40.8	1.0	-47.4	-13.0	-34.4	
7.6340	-13.8	H	3.0	40.7	1.0	-53.4	-13.0	-40.4	

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

LTE Band 2 3MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 2, 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)									
3.703	-7.3	V	3.0	40.5	1.0	-46.8	-13.0	-33.8	
5.555	-13.6	V	3.0	40.8	1.0	-53.5	-13.0	-40.5	
7.406	-14.1	V	3.0	40.8	1.0	-53.9	-13.0	-40.9	
3.703	-6.4	H	3.0	40.5	1.0	-45.9	-13.0	-32.9	
5.555	-9.8	H	3.0	40.8	1.0	-49.6	-13.0	-36.6	
7.406	-13.9	H	3.0	40.8	1.0	-53.7	-13.0	-40.7	
Mid Channel (1880MHz)									
3.760	-7.0	V	3.0	40.5	1.0	-46.6	-13.0	-33.6	
5.640	-12.6	V	3.0	40.8	1.0	-52.4	-13.0	-39.4	
7.520	-14.2	V	3.0	40.7	1.0	-53.9	-13.0	-40.9	
3.760	-4.8	H	3.0	40.5	1.0	-44.3	-13.0	-31.3	
5.640	-9.0	H	3.0	40.8	1.0	-48.8	-13.0	-35.8	
7.520	-14.0	H	3.0	40.7	1.0	-53.7	-13.0	-40.7	
High Channel (1908.5MHz)									
3.817	-5.5	V	3.0	40.6	1.0	-45.1	-13.0	-32.1	
5.726	-11.2	V	3.0	40.8	1.0	-50.9	-13.0	-37.9	
7.634	-13.9	V	3.0	40.7	1.0	-53.6	-13.0	-40.6	
3.817	-1.3	H	3.0	40.6	1.0	-40.9	-13.0	-27.9	
5.726	-6.6	H	3.0	40.8	1.0	-46.4	-13.0	-33.4	
7.634	-13.8	H	3.0	40.7	1.0	-53.4	-13.0	-40.4	

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

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LTE Band 2 1.4MHz QPSK

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 2, 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	-8.8	V	3.0	40.5	1.0	-48.3	-13.0	-35.3	
5.5521	-14.5	V	3.0	40.8	1.0	-54.3	-13.0	-41.3	
7.4028	-14.0	V	3.0	40.8	1.0	-53.8	-13.0	-40.8	
3.7014	-6.4	H	3.0	40.5	1.0	-45.9	-13.0	-32.9	
5.5521	-10.7	H	3.0	40.8	1.0	-50.5	-13.0	-37.5	
7.4028	-14.1	H	3.0	40.8	1.0	-53.9	-13.0	-40.9	
Mid Channel (1880MHz)									
3.7600	-6.9	V	3.0	40.5	1.0	-46.4	-13.0	-33.4	
5.6400	-13.7	V	3.0	40.8	1.0	-53.5	-13.0	-40.5	
7.5200	-14.1	V	3.0	40.7	1.0	-53.8	-13.0	-40.8	
3.7600	-6.2	H	3.0	40.5	1.0	-45.7	-13.0	-32.7	
5.6400	-10.4	H	3.0	40.8	1.0	-50.2	-13.0	-37.2	
7.5200	-13.9	H	3.0	40.7	1.0	-53.6	-13.0	-40.6	
High Channel (1909.3MHz)									
3.8186	-4.7	V	3.0	40.6	1.0	-44.3	-13.0	-31.3	
5.7279	-11.8	V	3.0	40.8	1.0	-51.6	-13.0	-38.6	
7.6372	-14.0	V	3.0	40.7	1.0	-53.7	-13.0	-40.7	
3.8186	-3.4	H	3.0	40.6	1.0	-43.0	-13.0	-30.0	
5.7279	-7.5	H	3.0	40.8	1.0	-47.3	-13.0	-34.3	
7.6372	-13.8	H	3.0	40.7	1.0	-53.5	-13.0	-40.5	

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

LTE Band 2 1.4MHz 16QAM

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

Company: Samsung
Project #: 16K22923
Date: 02-27-16
Test Engineer: Steven Kim
Configuration: EUT / AC Adapter / Ear Phone / X-Position
Mode: TX, LTE BAND 2, 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	-8.0	V	3.0	40.5	1.0	-47.4	-13.0	-34.4	
5.5521	-13.1	V	3.0	40.8	1.0	-52.9	-13.0	-39.9	
7.4028	-14.2	V	3.0	40.8	1.0	-54.0	-13.0	-41.0	
3.7014	-6.2	H	3.0	40.5	1.0	-45.6	-13.0	-32.6	
5.5521	-10.1	H	3.0	40.8	1.0	-50.0	-13.0	-37.0	
7.4028	-13.9	H	3.0	40.8	1.0	-53.7	-13.0	-40.7	
Mid Channel (1880MHz)									
3.7600	-6.9	V	3.0	40.5	1.0	-46.5	-13.0	-33.5	
5.6400	-12.2	V	3.0	40.8	1.0	-52.0	-13.0	-39.0	
7.5200	-13.9	V	3.0	40.7	1.0	-53.6	-13.0	-40.6	
3.7600	-4.6	H	3.0	40.5	1.0	-44.1	-13.0	-31.1	
5.6400	-8.9	H	3.0	40.8	1.0	-48.7	-13.0	-35.7	
7.5200	-14.1	H	3.0	40.7	1.0	-53.8	-13.0	-40.8	
High Channel (1909.3MHz)									
3.8186	-5.1	V	3.0	40.6	1.0	-44.7	-13.0	-31.7	
5.7279	-11.2	V	3.0	40.8	1.0	-51.0	-13.0	-38.0	
7.6372	-14.0	V	3.0	40.7	1.0	-53.7	-13.0	-40.7	
3.8186	-1.7	H	3.0	40.6	1.0	-41.3	-13.0	-28.3	
5.7279	-6.2	H	3.0	40.8	1.0	-46.0	-13.0	-33.0	
7.6372	-13.8	H	3.0	40.7	1.0	-53.5	-13.0	-40.5	

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

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