Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	20	QPSK	1/0	1720	24.15	260.0
			1/0	1732.5	23.86	243.2
			1/0	1745	24.25	266.1
		16QAM	1/0	1720	23.13	205.6
			1/0	1732.5	23.25	211.3
			1/0	1745	23.17	207.5

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	15	QPSK	1/0	1717.5	24.01	251.8
			1/0	1732.5	23.93	247.2
			1/0	1747.5	24.27	267.3
		16QAM	1/0	1717.5	23.21	209.4
			1/0	1732.5	23.05	201.8
			1/0	1747.5	23.09	203.7

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	10	QPSK	1/0	1715	24.1	257.0
			1/0	1732.5	24.04	253.5
			1/0	1750	24.15	260.0
		16QAM	1/0	1715	22.99	199.1
			1/0	1732.5	23.14	206.1
			1/0	1750	23.25	211.3

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	5	QPSK	1/0	1712.5	23.80	239.9
			1/0	1732.5	23.69	233.9
			1/0	1752.5	24.25	266.1
		16QAM	1/0	1712.5	23.01	200.0
			1/0	1732.5	22.83	191.9
			1/0	1752.5	23.36	216.8

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	3	QPSK	1/0	1711.5	24.10	257.0
			1/0	1732.5	24.0	251.2
			1/0	1753.5	24.22	262.2
		16QAM	1/0	1711.5	23.29	213.3
			1/0	1732.5	23.11	204.6
			1/0	1753.5	23.36	216.8

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE4	1.4	QPSK	1/0	1710.7	23.91	246.0
			1/0	1732.5	24.21	263.6
			1/0	1754.3	24.24	265.5
		16QAM	1/0	1710.7	23.13	205.6
			1/0	1732.5	23.41	219.3
			1/0	1754.3	23.48	222.8

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	20	QPSK	1/0	1860	23.11	204.6
			1/0	1880	22.55	179.9
			1/0	1900	23.62	230.1
		16QAM	1/0	1860	22.23	167.1
			1/0	1880	21.83	152.4
			1/0	1900	22.89	194.5

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	15	QPSK	1/0	1857.5	23.0	199.5
			1/0	1880	22.69	185.8
			1/0	1902.5	23.95	248.3
		16QAM	1/0	1857.5	22.24	167.5
			1/0	1880	21.92	155.6
			1/0	1902.5	23.22	209.9

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	10	QPSK	1/0	1855	22.95	197.2
			1/0	1880	22.86	193.2
			1/0	1905	23.91	246.0
		16QAM	1/0	1855	22.21	166.3
			1/0	1880	22.12	162.9
			1/0	1905	23.09	203.7

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Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	5	QPSK	1/0	1852.5	23.22	209.9
			1/0	1880	22.62	182.8
			1/0	1907.5	23.96	248.9
		16QAM	1/0	1852.5	21.50	141.3
			1/0	1880	21.03	126.8
			1/0	1907.5	22.15	164.1

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	3	QPSK	1/0	1851.5	23.05	201.8
			1/0	1880	22.94	196.8
			1/0	1908.5	23.25	211.3
		16QAM	1/0	1851.5	22.12	162.9
			1/0	1880	22.25	167.9
			1/0	1908.5	22.55	179.9

Band	BW (MHz)	Mode	RB/RB Size	f (MHz)	ERP / EIRP	
					dBm	mW
LTE2	1.4	QPSK	1/0	1850.7	23.15	206.5
			1/0	1880	22.65	184.1
			1/0	1909.3	23.33	215.3
		16QAM	1/0	1850.7	22.45	175.8
			1/0	1880	22.05	160.3
			1/0	1909.3	22.64	183.7

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11.1.3. ERP/EIRP DATA

Band

LTE5

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: LTE5 10MHz 16QAM

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft 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								
829.00	10.27	V	0.9	0.0	9.37	38.5	-29.1	
829.00	17.20	H	0.9	0.0	16.30	38.5	-22.1	
Mid Ch								
836.50	10.65	V	0.9	0.0	9.75	38.5	-28.7	
836.50	17.50	H	0.9	0.0	16.60	38.5	-21.8	
High Ch								
844.00	10.29	V	0.9	0.0	9.39	38.5	-29.1	
844.00	17.46	H	0.9	0.0	16.56	38.5	-21.9	

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

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Band

LTE5

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: LTE5 10MHz QPSK

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft 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								
829.00	11.00	V	0.9	0.0	10.10	38.5	-28.3	
829.00	17.96	H	0.9	0.0	17.06	38.5	-21.4	
Mid Ch								
836.50	11.35	V	0.9	0.0	10.45	38.5	-28.0	
836.50	18.27	H	0.9	0.0	17.37	38.5	-21.1	
High Ch								
844.00	11.12	V	0.9	0.0	10.22	38.5	-28.2	
844.00	18.24	H	0.9	0.0	17.34	38.5	-21.1	

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

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Band

LTE5

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: LTE5 5MHz 16QAM

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft 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								
826.50	10.14	V	0.9	0.0	9.24	38.5	-29.2	
826.50	17.09	H	0.9	0.0	16.19	38.5	-22.3	
Mid Ch								
836.50	10.35	V	0.9	0.0	9.45	38.5	-29.0	
836.50	17.23	H	0.9	0.0	16.33	38.5	-22.1	
High Ch								
846.50	10.33	V	0.9	0.0	9.43	38.5	-29.0	
846.50	17.37	H	0.9	0.0	16.47	38.5	-22.0	

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

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Band

LTE5

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: LTE5 5MHz QPSK

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft 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								
826.50	10.97	V	0.9	0.0	10.07	38.5	-28.4	
826.50	18.16	H	0.9	0.0	17.26	38.5	-21.2	
Mid Ch								
836.50	11.32	V	0.9	0.0	10.42	38.5	-28.0	
836.50	18.35	H	0.9	0.0	17.45	38.5	-21.0	
High Ch								
846.50	10.97	V	0.9	0.0	10.07	38.5	-28.4	
846.50	18.33	H	0.9	0.0	17.43	38.5	-21.0	

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

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Band

LTE5

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: LTE5 3MHz 16QAM

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft 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								
825.50	10.22	V	0.9	0.0	9.32	38.5	-29.1	
825.50	17.25	H	0.9	0.0	16.35	38.5	-22.1	
Mid Ch								
836.50	10.54	V	0.9	0.0	9.64	38.5	-28.8	
836.50	17.35	H	0.9	0.0	16.45	38.5	-22.0	
High Ch								
847.50	10.32	V	0.9	0.0	9.42	38.5	-29.0	
847.50	17.60	H	0.9	0.0	16.70	38.5	-21.7	

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

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Band

LTE5

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: LTE5 3MHz QPSK

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft 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								
825.50	11.11	V	0.9	0.0	10.21	38.5	-28.2	
825.50	18.10	H	0.9	0.0	17.20	38.5	-21.2	
Mid Ch								
836.50	11.56	V	0.9	0.0	10.66	38.5	-27.8	
836.50	18.27	H	0.9	0.0	17.37	38.5	-21.1	
High Ch								
847.50	11.11	V	0.9	0.0	10.21	38.5	-28.2	
847.50	18.40	H	0.9	0.0	17.50	38.5	-20.9	

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

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Band

LTE5

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: LTE5 1.4MHz 16QAM

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft 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								
824.70	10.26	V	0.9	0.0	9.36	38.5	-29.1	
824.70	17.53	H	0.9	0.0	16.63	38.5	-21.8	
Mid Ch								
836.50	10.59	V	0.9	0.0	9.69	38.5	-28.8	
836.50	17.62	H	0.9	0.0	16.72	38.5	-21.7	
High Ch								
848.30	10.41	V	0.9	0.0	9.51	38.5	-28.9	
848.30	17.48	H	0.9	0.0	16.58	38.5	-21.9	

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

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Band

LTE5

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: LTE5 1.4MHz QPSK

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft 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								
824.70	11.05	V	0.9	0.0	10.15	38.5	-28.3	
824.70	18.32	H	0.9	0.0	17.42	38.5	-21.0	
Mid Ch								
836.50	11.38	V	0.9	0.0	10.48	38.5	-28.0	
836.50	18.30	H	0.9	0.0	17.40	38.5	-21.0	
High Ch								
848.30	11.09	V	0.9	0.0	10.19	38.5	-28.3	
848.30	18.32	H	0.9	0.0	17.42	38.5	-21.0	

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

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Band

LTE2

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	6.04	V	0.9	8.0	13.20	33.0	-19.8	
1860.00	15.07	H	0.9	8.0	22.23	33.0	-10.8	
Mid Ch								
1880.00	6.17	V	0.9	8.0	13.33	33.0	-19.7	
1880.00	14.67	H	0.9	8.0	21.83	33.0	-11.2	
High Ch								
1900.00	6.47	V	0.9	8.0	13.63	33.0	-19.4	
1900.00	15.73	H	0.9	8.0	22.89	33.0	-10.1	

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Band

LTE2

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	7.15	V	0.9	8.0	14.31	33.0	-18.7	
1860.00	15.95	H	0.9	8.0	23.11	33.0	-9.9	
Mid Ch								
1880.00	7.04	V	0.9	8.0	14.20	33.0	-18.8	
1880.00	15.39	H	0.9	8.0	22.55	33.0	-10.5	
High Ch								
1900.00	7.47	V	0.9	8.0	14.63	33.0	-18.4	
1900.00	16.46	H	0.9	8.0	23.62	33.0	-9.4	

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Band

LTE2

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1857.50	5.95	V	0.9	8.0	13.11	33.0	-19.9	
1857.50	15.08	H	0.9	8.0	22.24	33.0	-10.8	
Mid Ch								
1880.00	6.28	V	0.9	8.0	13.44	33.0	-19.6	
1880.00	14.76	H	0.9	8.0	21.92	33.0	-11.1	
High Ch								
1902.50	7.25	V	0.9	8.0	14.41	33.0	-18.6	
1902.50	16.06	H	0.9	8.0	23.22	33.0	-9.8	

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Band

LTE2

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1857.50	6.82	V	0.9	8.0	13.98	33.0	-19.0	
1857.50	15.84	H	0.9	8.0	23.00	33.0	-10.0	
Mid Ch								
1880.00	6.98	V	0.9	8.0	14.14	33.0	-18.9	
1880.00	15.53	H	0.9	8.0	22.69	33.0	-10.3	
High Ch								
1902.50	7.96	V	0.9	8.0	15.12	33.0	-17.9	
1902.50	16.79	H	0.9	8.0	23.95	33.0	-9.1	

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Band

LTE2

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	6.17	V	0.9	8.0	13.33	33.0	-19.7	
1855.00	15.05	H	0.9	8.0	22.21	33.0	-10.8	
Mid Ch								
1880.00	6.38	V	0.9	8.0	13.54	33.0	-19.5	
1880.00	14.96	H	0.9	8.0	22.12	33.0	-10.9	
High Ch								
1905.00	6.81	V	0.9	8.0	13.97	33.0	-19.0	
1905.00	15.93	H	0.9	8.0	23.09	33.0	-9.9	

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Band

LTE2

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	7.13	V	0.9	8.0	14.29	33.0	-18.7	
1855.00	15.79	H	0.9	8.0	22.95	33.0	-10.1	
Mid Ch								
1880.00	7.29	V	0.9	8.0	14.45	33.0	-18.6	
1880.00	15.70	H	0.9	8.0	22.86	33.0	-10.1	
High Ch								
1905.00	7.92	V	0.9	8.0	15.08	33.0	-17.9	
1905.00	16.75	H	0.9	8.0	23.91	33.0	-9.1	

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Band

LTE2

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	5.99	V	0.9	8.0	13.15	33.0	-19.9	
1852.50	14.34	H	0.9	8.0	21.50	33.0	-11.5	
Mid Ch								
1880.00	5.18	V	0.9	8.0	12.34	33.0	-20.7	
1880.00	13.87	H	0.9	8.0	21.03	33.0	-12.0	
High Ch								
1907.50	6.44	V	0.9	8.0	13.60	33.0	-19.4	
1907.50	14.99	H	0.9	8.0	22.15	33.0	-10.9	

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Band

LTE2

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	7.35	V	0.9	8.0	14.51	33.0	-18.5	
1852.50	16.06	H	0.9	8.0	23.22	33.0	-9.8	
Mid Ch								
1880.00	7.48	V	0.9	8.0	14.64	33.0	-18.4	
1880.00	15.46	H	0.9	8.0	22.62	33.0	-10.4	
High Ch								
1907.50	8.20	V	0.9	8.0	15.36	33.0	-17.6	
1907.50	16.80	H	0.9	8.0	23.96	33.0	-9.0	

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Band

LTE2

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.50	6.48	V	0.9	8.0	13.64	33.0	-19.4	
1851.50	14.96	H	0.9	8.0	22.12	33.0	-10.9	
Mid Ch								
1880.00	6.04	V	0.9	8.0	13.20	33.0	-19.8	
1880.00	15.09	H	0.9	8.0	22.25	33.0	-10.8	
High Ch								
1908.50	6.28	V	0.9	8.0	13.44	33.0	-19.6	
1908.50	15.39	H	0.9	8.0	22.55	33.0	-10.5	

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Band

LTE2

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.50	7.18	V	0.9	8.0	14.34	33.0	-18.7	
1851.50	15.89	H	0.9	8.0	23.05	33.0	-10.0	
Mid Ch								
1880.00	6.93	V	0.9	8.0	14.09	33.0	-18.9	
1880.00	15.78	H	0.9	8.0	22.94	33.0	-10.1	
High Ch								
1908.50	7.18	V	0.9	8.0	14.34	33.0	-18.7	
1908.50	16.09	H	0.9	8.0	23.25	33.0	-9.8	

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Band

LTE2

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.70	6.49	V	0.9	8.0	13.65	33.0	-19.4	
1850.70	15.29	H	0.9	8.0	22.45	33.0	-10.6	
Mid Ch								
1880.00	6.48	V	0.9	8.0	13.64	33.0	-19.4	
1880.00	14.89	H	0.9	8.0	22.05	33.0	-11.0	
High Ch								
1909.30	6.47	V	0.9	8.0	13.63	33.0	-19.4	
1909.30	15.48	H	0.9	8.0	22.64	33.0	-10.4	

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Band

LTE2

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 2 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.70	7.15	V	0.9	8.0	14.31	33.0	-18.7	
1850.70	15.99	H	0.9	8.0	23.15	33.0	-9.9	
Mid Ch								
1880.00	7.37	V	0.9	8.0	14.53	33.0	-18.5	
1880.00	15.49	H	0.9	8.0	22.65	33.0	-10.4	
High Ch								
1909.30	7.36	V	0.9	8.0	14.52	33.0	-18.5	
1909.30	16.17	H	0.9	8.0	23.33	33.0	-9.7	

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Band

LTE4

20MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	9.28	V	0.9	8.2	16.62	30.0	-13.4	
1720.00	15.79	H	0.9	8.2	23.13	30.0	-6.9	
Mid Ch								
1732.50	8.84	V	0.9	8.2	16.11	30.0	-13.9	
1732.50	15.98	H	0.9	8.2	23.25	30.0	-6.7	
High Ch								
1745.00	8.41	V	0.9	8.1	15.61	30.0	-14.4	
1745.00	15.97	H	0.9	8.1	23.17	30.0	-6.8	

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Band

LTE4

20MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 20MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	10.05	V	0.9	8.2	17.39	30.0	-12.6	
1720.00	16.81	H	0.9	8.2	24.15	30.0	-5.8	
Mid Ch								
1732.50	9.97	V	0.9	8.2	17.24	30.0	-12.8	
1732.50	16.59	H	0.9	8.2	23.86	30.0	-6.1	
High Ch								
1745.00	8.51	V	0.9	8.1	15.71	30.0	-14.3	
1745.00	17.05	H	0.9	8.1	24.25	30.0	-5.8	

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Band

LTE4

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	8.94	V	0.9	8.2	16.28	30.0	-13.7	
1717.50	15.87	H	0.9	8.2	23.21	30.0	-6.8	
Mid Ch								
1732.50	8.87	V	0.9	8.2	16.14	30.0	-13.9	
1732.50	15.78	H	0.9	8.2	23.05	30.0	-6.9	
High Ch								
1747.50	8.52	V	0.9	8.1	15.72	30.0	-14.3	
1747.50	15.89	H	0.9	8.1	23.09	30.0	-6.9	

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Band

LTE4

15MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 15MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	9.93	V	0.9	8.2	17.27	30.0	-12.7	
1717.50	16.67	H	0.9	8.2	24.01	30.0	-6.0	
Mid Ch								
1732.50	10.19	V	0.9	8.2	17.46	30.0	-12.5	
1732.50	16.66	H	0.9	8.2	23.93	30.0	-6.1	
High Ch								
1747.50	9.68	V	0.9	8.1	16.88	30.0	-13.1	
1747.50	17.07	H	0.9	8.1	24.27	30.0	-5.7	

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Band

LTE4

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	9.27	V	0.9	8.2	16.61	30.0	-13.4	
1715.00	15.65	H	0.9	8.2	22.99	30.0	-7.0	
Mid Ch								
1732.50	9.18	V	0.9	8.2	16.45	30.0	-13.5	
1732.50	15.87	H	0.9	8.2	23.14	30.0	-6.9	
High Ch								
1750.00	8.74	V	0.9	8.1	15.94	30.0	-14.1	
1750.00	16.05	H	0.9	8.1	23.25	30.0	-6.8	

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Band

LTE4

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	10.21	V	0.9	8.2	17.55	30.0	-12.4	
1715.00	16.76	H	0.9	8.2	24.10	30.0	-5.9	
Mid Ch								
1732.50	10.06	V	0.9	8.2	17.33	30.0	-12.7	
1732.50	16.77	H	0.9	8.2	24.04	30.0	-6.0	
High Ch								
1750.00	9.56	V	0.9	8.1	16.76	30.0	-13.2	
1750.00	16.95	H	0.9	8.1	24.15	30.0	-5.9	

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Band

LTE4

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.50	9.12	V	0.9	8.2	16.46	30.0	-13.5	
1712.50	15.67	H	0.9	8.2	23.01	30.0	-7.0	
Mid Ch								
1732.50	9.42	V	0.9	8.2	16.69	30.0	-13.3	
1732.50	15.56	H	0.9	8.2	22.83	30.0	-7.2	
High Ch								
1752.50	8.65	V	0.9	8.1	15.85	30.0	-14.2	
1752.50	16.16	H	0.9	8.1	23.36	30.0	-6.6	

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Band

LTE4

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.50	10.17	V	0.9	8.2	17.51	30.0	-12.5	
1712.50	16.46	H	0.9	8.2	23.80	30.0	-6.2	
Mid Ch								
1732.50	10.04	V	0.9	8.2	17.31	30.0	-12.7	
1732.50	16.42	H	0.9	8.2	23.69	30.0	-6.3	
High Ch								
1752.50	10.07	V	0.9	8.1	17.27	30.0	-12.7	
1752.50	17.05	H	0.9	8.1	24.25	30.0	-5.8	

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Band

LTE4

3MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1711.50	9.27	V	0.9	8.2	16.61	30.0	-13.4	
1711.50	15.95	H	0.9	8.2	23.29	30.0	-6.7	
Mid Ch								
1732.50	9.26	V	0.9	8.2	16.53	30.0	-13.5	
1732.50	15.84	H	0.9	8.2	23.11	30.0	-6.9	
High Ch								
1753.50	8.52	V	0.9	8.1	15.72	30.0	-14.3	
1753.50	16.16	H	0.9	8.1	23.36	30.0	-6.6	

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Band

LTE4

3MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 3MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1711.50	10.27	V	0.9	8.2	17.61	30.0	-12.4	
1711.50	16.76	H	0.9	8.2	24.10	30.0	-5.9	
Mid Ch								
1732.50	9.96	V	0.9	8.2	17.23	30.0	-12.8	
1732.50	16.73	H	0.9	8.2	24.00	30.0	-6.0	
High Ch								
1753.50	9.54	V	0.9	8.1	16.74	30.0	-13.3	
1753.50	17.02	H	0.9	8.1	24.22	30.0	-5.8	

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Band

LTE4

1.4MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_16QAM Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1710.70	9.26	V	0.9	8.2	16.60	30.0	-13.4	
1710.70	15.79	H	0.9	8.2	23.13	30.0	-6.9	
Mid Ch								
1732.50	9.49	V	0.9	8.2	16.76	30.0	-13.2	
1732.50	16.14	H	0.9	8.2	23.41	30.0	-6.6	
High Ch								
1754.30	9.09	V	0.9	8.1	16.29	30.0	-13.7	
1754.30	16.28	H	0.9	8.1	23.48	30.0	-6.5	

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Band

LTE4

1.4MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: LTE_QPSK Band 4 Fundamentals, 1.4MHz Bandwidth

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1710.70	10.26	V	0.9	8.2	17.60	30.0	-12.4	
1710.70	16.57	H	0.9	8.2	23.91	30.0	-6.1	
Mid Ch								
1732.50	10.16	V	0.9	8.2	17.43	30.0	-12.6	
1732.50	16.94	H	0.9	8.2	24.21	30.0	-5.8	
High Ch								
1754.30	9.54	V	0.9	8.1	16.74	30.0	-13.3	
1754.30	17.04	H	0.9	8.1	24.24	30.0	-5.8	

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Band

LTE17

10MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT only
Location: Chamber B
Mode: LTE_16QAM Band 17 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
709.00	14.37	V	0.9	0.0	13.47	34.8	-21.3	
709.00	18.48	H	0.9	0.0	17.58	34.8	-17.2	
Mid Ch								
710.00	13.86	V	0.9	0.0	12.96	34.8	-21.8	
710.00	18.25	H	0.9	0.0	17.35	34.8	-17.4	
High Ch								
711.00	14.10	V	0.9	0.0	13.20	34.8	-21.6	
711.00	18.65	H	0.9	0.0	17.75	34.8	-17.0	

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Band

LTE17

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT only
Location: Chamber B
Mode: LTE_QPSK Band 17 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
709.00	14.98	V	0.9	0.0	14.08	34.8	-20.7	
709.00	19.05	H	0.9	0.0	18.15	34.8	-16.6	
Mid Ch								
710.00	14.66	V	0.9	0.0	13.76	34.8	-21.0	
710.00	18.88	H	0.9	0.0	17.98	34.8	-16.8	
High Ch								
711.00	14.94	V	0.9	0.0	14.04	34.8	-20.7	
711.00	19.26	H	0.9	0.0	18.36	34.8	-16.4	

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Band

LTE17

5MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT only
Location: Chamber B
Mode: LTE_16QAM Band 17 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
706.50	14.29	V	0.9	0.0	13.39	34.8	-21.4	
706.50	18.20	H	0.9	0.0	17.30	34.8	-17.5	
Mid Ch								
710.00	13.99	V	0.9	0.0	13.09	34.8	-21.7	
710.00	17.54	H	0.9	0.0	16.64	34.8	-18.1	
High Ch								
713.50	14.35	V	0.9	0.0	13.45	34.8	-21.3	
713.50	18.28	H	0.9	0.0	17.38	34.8	-17.4	

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Band

LTE17

5MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT only
Location: Chamber B
Mode: LTE_QPSK Band 17 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
706.50	14.90	V	0.9	0.0	14.00	34.8	-20.8	
706.50	19.04	H	0.9	0.0	18.14	34.8	-16.6	
Mid Ch								
710.00	14.88	V	0.9	0.0	13.98	34.8	-20.8	
710.00	18.69	H	0.9	0.0	17.79	34.8	-17.0	
High Ch								
713.50	15.02	V	0.9	0.0	14.12	34.8	-20.7	
713.50	19.25	H	0.9	0.0	18.35	34.8	-16.4	

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Band

Band 2

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT X-position
Mode: HSDPA 1900

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft 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								
1852.40	5.27	V	0.9	8.0	12.43	33.0	-20.6	
1852.40	15.21	H	0.9	8.0	22.37	33.0	-10.6	
Mid Ch								
1880.00	5.44	V	0.9	8.0	12.60	33.0	-20.4	
1880.00	15.19	H	0.9	8.0	22.35	33.0	-10.7	
High Ch								
1907.60	5.59	V	0.9	8.0	12.75	33.0	-20.3	
1907.60	15.45	H	0.9	8.0	22.61	33.0	-10.4	

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

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Band

Band 2

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT X-position
Mode: REL99 B2

Test Equipment:
Receiving: Horn T345, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft 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								
1852.40	6.04	V	0.9	8.0	13.20	33.0	-19.8	
1852.40	15.52	H	0.9	8.0	22.68	33.0	-10.3	
Mid Ch								
1880.00	6.52	V	0.9	8.0	13.68	33.0	-19.3	
1880.00	15.20	H	0.9	8.0	22.36	33.0	-10.6	
High Ch								
1907.60	6.45	V	0.9	8.0	13.61	33.0	-19.4	
1907.60	15.74	H	0.9	8.0	22.90	33.0	-10.1	

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

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Band

Band 5

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: HSDPA B5 FUND

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft 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								
826.40	9.11	V	0.9	0.0	8.21	38.5	-30.2	
826.40	17.94	H	0.9	0.0	17.04	38.5	-21.4	
Mid Ch								
836.60	9.48	V	0.9	0.0	8.58	38.5	-29.9	
836.60	17.65	H	0.9	0.0	16.75	38.5	-21.7	
High Ch								
846.60	9.36	V	0.9	0.0	8.46	38.5	-30.0	
846.60	17.68	H	0.9	0.0	16.78	38.5	-21.7	

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

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Band

Band 5

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: REL99 B5 FUND

Test Equipment:
Receiving: Sunol T243, and 3m Chamber B N-type Cable
Substitution: Dipole T273, 4ft 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								
826.40	9.16	V	0.9	0.0	8.26	38.5	-30.2	
826.40	18.03	H	0.9	0.0	17.13	38.5	-21.3	
Mid Ch								
836.60	9.60	V	0.9	0.0	8.70	38.5	-29.7	
836.60	17.72	H	0.9	0.0	16.82	38.5	-21.6	
High Ch								
846.60	9.46	V	0.9	0.0	8.56	38.5	-29.9	
846.60	17.82	H	0.9	0.0	16.92	38.5	-21.5	

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

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Band

Band 4

HSDPA

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: HSDPA Band 4 Fundamentals

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.40	6.68	V	0.9	8.3	14.03	30.0	-16.0	
1712.40	15.10	H	0.9	8.3	22.45	30.0	-7.5	
Mid Ch								
1732.60	6.85	V	0.9	8.2	14.12	30.0	-15.9	
1732.60	15.25	H	0.9	8.2	22.52	30.0	-7.5	
High Ch								
1752.60	6.59	V	0.9	8.1	13.78	30.0	-16.2	
1752.60	15.18	H	0.9	8.1	22.37	30.0	-7.6	

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Band

Band 4

REL99

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 2/28/2015
Test Engineer: Charles Vergonio
Configuration: EUT Only
Location: Chamber B
Mode: Rel99 Band 4 Fundamentals

Test Equpment:
Receiving: Horn T345, and Chamber B SMA Cables
Substitution: Horn T59, 4ft SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.40	9.25	V	0.9	8.3	16.60	30.0	-13.4	
1712.40	15.65	H	0.9	8.3	23.00	30.0	-7.0	
Mid Ch								
1732.60	9.63	V	0.9	8.2	16.90	30.0	-13.1	
1732.60	15.78	H	0.9	8.2	23.05	30.0	-6.9	
High Ch								
1752.60	8.83	V	0.9	8.1	16.02	30.0	-14.0	
1752.60	16.29	H	0.9	8.1	23.48	30.0	-6.5	

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Band

GSM1900

EGPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: Samsung
Project #: 15I20013
Date: 02/27/15
Test Engineer: Charles Vergonio
Configuration: EUT X-position
Mode: EGPRS 1900

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft 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								
1850.20	8.14	V	0.9	8.0	15.30	33.0	-17.7	
1850.20	19.04	H	0.9	8.0	26.20	33.0	-6.8	
Mid Ch								
1880.00	8.35	V	0.9	8.0	15.51	33.0	-17.5	
1880.00	18.78	H	0.9	8.0	25.94	33.0	-7.1	
High Ch								
1909.80	8.40	V	0.9	8.0	15.56	33.0	-17.4	
1909.80	19.26	H	0.9	8.0	26.42	33.0	-6.6	

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

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Band

GSM1900

GPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber C

Company: Samsung
Project #: 15I20013
Date: 2/27/2015
Test Engineer: Charles Vergonio
Configuration: EUT X-position
Mode: GPRS 1900

Test Equipment:
Receiving: Horn T119, and Chamber C SMA Cables
Substitution: Horn T59 Substitution, 4ft 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								
1850.20	11.93	V	0.9	8.0	19.09	33.0	-13.9	
1850.20	22.41	H	0.9	8.0	29.57	33.0	-3.4	
Mid Ch								
1880.00	12.45	V	0.9	8.0	19.61	33.0	-13.4	
1880.00	22.40	H	0.9	8.0	29.56	33.0	-3.4	
High Ch								
1909.80	12.46	V	0.9	8.0	19.62	33.0	-13.4	
1909.80	23.00	H	0.9	8.0	30.16	33.0	-2.8	

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

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Band

GSM850

EGPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: EGPRS850

Test Equipment:
Receiving: Hybrid T243, and Chamber B N-type Cable
Substitution: Dipole T273, 8ft 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								
824.20	16.37	V	0.9	0.0	15.47	38.5	-23.0	
824.20	23.55	H	0.9	0.0	22.65	38.5	-15.8	
Mid Ch								
836.60	16.60	V	0.9	0.0	15.70	38.5	-22.7	
836.60	23.91	H	0.9	0.0	23.01	38.5	-15.4	
High Ch								
848.80	16.29	V	0.9	0.0	15.39	38.5	-23.1	
848.80	24.01	H	0.9	0.0	23.11	38.5	-15.3	

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

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Band

GSM850

GPRS

High Frequency Substitution Measurement
UL Verification Services, Inc. Chamber B

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT X-position
Mode: GPRS850

Test Equipment:
Receiving: Hybrid T243, and Chamber B N-type Cable
Substitution: Dipole T273, 8ft 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								
824.20	21.12	V	0.9	0.0	20.22	38.5	-18.2	
824.20	28.60	H	0.9	0.0	27.70	38.5	-10.7	
Mid Ch								
836.60	21.41	V	0.9	0.0	20.51	38.5	-17.9	
836.60	28.60	H	0.9	0.0	27.70	38.5	-10.7	
High Ch								
848.80	21.20	V	0.9	0.0	20.30	38.5	-18.1	
848.80	28.54	H	0.9	0.0	27.64	38.5	-10.8	

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

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11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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11.2.1. SPURIOUS RADIATION DATA

UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Adaptor + HS, X-pos
Mode: LTE5 16QAM 10MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band

LTE5

10MHz

16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 829MHz									
1.658	-29.2	V	3.0	37.4	1.0	-65.6	-13.0	-52.6	
2.487	-23.6	V	3.0	36.4	1.0	-58.9	-13.0	-45.9	
3.316	-21.8	V	3.0	35.8	1.0	-56.6	-13.0	-43.6	
1.658	-27.8	H	3.0	37.4	1.0	-64.2	-13.0	-51.2	
2.487	-24.1	H	3.0	36.4	1.0	-59.5	-13.0	-46.5	
3.316	-22.8	H	3.0	35.8	1.0	-57.6	-13.0	-44.6	
Mid Ch, 836.5MHz									
1.673	-28.8	V	3.0	37.3	1.0	-65.1	-13.0	-52.1	
2.510	-24.3	V	3.0	36.4	1.0	-59.6	-13.0	-46.6	
3.346	-21.0	V	3.0	35.8	1.0	-55.8	-13.0	-42.8	
1.673	-28.4	H	3.0	37.3	1.0	-64.8	-13.0	-51.8	
2.510	-26.4	H	3.0	36.4	1.0	-61.8	-13.0	-48.8	
3.346	-21.8	H	3.0	35.8	1.0	-56.6	-13.0	-43.6	
High Ch, 844MHz									
1.688	-27.6	V	3.0	37.3	1.0	-64.0	-13.0	-51.0	
2.532	-23.4	V	3.0	36.3	1.0	-58.7	-13.0	-45.7	
3.376	-22.6	V	3.0	35.7	1.0	-57.3	-13.0	-44.3	
1.688	-27.1	H	3.0	37.3	1.0	-63.4	-13.0	-50.4	
2.532	-26.3	H	3.0	36.3	1.0	-61.6	-13.0	-48.6	
3.376	-21.9	H	3.0	35.7	1.0	-56.6	-13.0	-43.6	

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UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Adaptor + HS, X-pos
Mode: LTE5 QPSK 10MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band LTE5 10MHz QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 829MHz									
1.658	-28.4	V	3.0	37.4	1.0	-64.8	-13.0	-51.8	
2.487	-22.6	V	3.0	36.4	1.0	-58.0	-13.0	-45.0	
3.316	-22.1	V	3.0	35.8	1.0	-56.9	-13.0	-43.9	
1.658	-26.9	H	3.0	37.4	1.0	-63.3	-13.0	-50.3	
2.487	-23.8	H	3.0	36.4	1.0	-59.1	-13.0	-46.1	
3.316	-22.7	H	3.0	35.8	1.0	-57.5	-13.0	-44.5	
Mid Ch, 836.5MHz									
1.673	-28.5	V	3.0	37.3	1.0	-64.9	-13.0	-51.9	
2.510	-23.8	V	3.0	36.4	1.0	-59.2	-13.0	-46.2	
3.346	-20.2	V	3.0	35.8	1.0	-55.0	-13.0	-42.0	
1.673	-28.1	H	3.0	37.3	1.0	-64.4	-13.0	-51.4	
2.510	-25.9	H	3.0	36.4	1.0	-61.3	-13.0	-48.3	
3.346	-21.5	H	3.0	35.8	1.0	-56.2	-13.0	-43.2	
High Ch, 844MHz									
1.688	-28.6	V	3.0	37.3	1.0	-64.9	-13.0	-51.9	
2.532	-23.3	V	3.0	36.3	1.0	-58.6	-13.0	-45.6	
3.376	-22.1	V	3.0	35.7	1.0	-56.8	-13.0	-43.8	
1.688	-26.9	H	3.0	37.3	1.0	-63.2	-13.0	-50.2	
2.532	-25.2	H	3.0	36.3	1.0	-60.6	-13.0	-47.6	
3.376	-21.3	H	3.0	35.7	1.0	-56.1	-13.0	-43.1	

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UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Adaptor + HS, X-pos
Mode: LTE5 16QAM 5MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band
LTE5
5MHz
16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.5MHz									
1.653	-29.1	V	3.0	37.4	1.0	-65.5	-13.0	-52.5	
2.480	-24.1	V	3.0	36.4	1.0	-59.5	-13.0	-46.5	
3.306	-22.5	V	3.0	35.8	1.0	-57.3	-13.0	-44.3	
1.653	-27.4	H	3.0	37.4	1.0	-63.7	-13.0	-50.7	
2.480	-24.3	H	3.0	36.4	1.0	-59.7	-13.0	-46.7	
3.306	-22.9	H	3.0	35.8	1.0	-57.7	-13.0	-44.7	
Mid Ch, 836.5MHz									
1.673	-28.4	V	3.0	37.3	1.0	-64.8	-13.0	-51.8	
2.510	-24.1	V	3.0	36.4	1.0	-59.4	-13.0	-46.4	
3.346	-20.6	V	3.0	35.8	1.0	-55.4	-13.0	-42.4	
1.673	-28.5	H	3.0	37.3	1.0	-64.8	-13.0	-51.8	
2.510	-26.0	H	3.0	36.4	1.0	-61.3	-13.0	-48.3	
3.346	-22.2	H	3.0	35.8	1.0	-56.9	-13.0	-43.9	
High Ch, 846.5MHz									
1.693	-28.0	V	3.0	37.3	1.0	-64.3	-13.0	-51.3	
2.540	-23.4	V	3.0	36.3	1.0	-58.8	-13.0	-45.8	
3.386	-22.0	V	3.0	35.7	1.0	-56.7	-13.0	-43.7	
1.693	-27.4	H	3.0	37.3	1.0	-63.7	-13.0	-50.7	
2.540	-26.1	H	3.0	36.3	1.0	-61.5	-13.0	-48.5	
3.386	-22.2	H	3.0	35.7	1.0	-56.9	-13.0	-43.9	

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UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Adaptor + HS, X-pos
Mode: LTE5 QPSK 5MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band
LTE5
5MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.5MHz									
1.653	-28.5	V	3.0	37.4	1.0	-64.9	-13.0	-51.9	
2.480	-23.6	V	3.0	36.4	1.0	-59.0	-13.0	-46.0	
3.306	-21.9	V	3.0	35.8	1.0	-56.7	-13.0	-43.7	
1.653	-26.8	H	3.0	37.4	1.0	-63.2	-13.0	-50.2	
2.480	-23.8	H	3.0	36.4	1.0	-59.2	-13.0	-46.2	
3.306	-22.8	H	3.0	35.8	1.0	-57.5	-13.0	-44.5	
Mid Ch, 836.5MHz									
1.673	-28.2	V	3.0	37.3	1.0	-64.5	-13.0	-51.5	
2.510	-23.8	V	3.0	36.4	1.0	-59.1	-13.0	-46.1	
3.346	-21.1	V	3.0	35.8	1.0	-55.9	-13.0	-42.9	
1.673	-27.9	H	3.0	37.3	1.0	-64.2	-13.0	-51.2	
2.510	-25.8	H	3.0	36.4	1.0	-61.1	-13.0	-48.1	
3.346	-21.5	H	3.0	35.8	1.0	-56.3	-13.0	-43.3	
High Ch, 846.5MHz									
1.693	-28.2	V	3.0	37.3	1.0	-64.5	-13.0	-51.5	
2.540	-23.2	V	3.0	36.3	1.0	-58.5	-13.0	-45.5	
3.386	-22.0	V	3.0	35.7	1.0	-56.7	-13.0	-43.7	
1.693	-26.8	H	3.0	37.3	1.0	-63.1	-13.0	-50.1	
2.540	-25.3	H	3.0	36.3	1.0	-60.6	-13.0	-47.6	
3.386	-21.8	H	3.0	35.7	1.0	-56.5	-13.0	-43.5	

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UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Adaptor + HS
Mode: LTE5 16QAM 3MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band: LTE5 3MHz 16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 825.5MHz									
1.651	-28.1	V	3.0	37.4	1.0	-64.4	-13.0	-51.4	
2.477	-23.2	V	3.0	36.4	1.0	-58.6	-13.0	-45.6	
3.302	-22.0	V	3.0	35.8	1.0	-56.8	-13.0	-43.8	
1.651	-27.4	H	3.0	37.4	1.0	-63.8	-13.0	-50.8	
2.477	-25.5	H	3.0	36.4	1.0	-60.9	-13.0	-47.9	
3.302	-22.1	H	3.0	35.8	1.0	-56.9	-13.0	-43.9	
Mid Ch, 836.5MHz									
1.673	-28.7	V	3.0	37.3	1.0	-65.1	-13.0	-52.1	
2.510	-24.0	V	3.0	36.4	1.0	-59.3	-13.0	-46.3	
3.346	-21.1	V	3.0	35.8	1.0	-55.9	-13.0	-42.9	
1.673	-28.2	H	3.0	37.3	1.0	-64.5	-13.0	-51.5	
2.510	-26.1	H	3.0	36.4	1.0	-61.4	-13.0	-48.4	
3.346	-21.8	H	3.0	35.8	1.0	-56.5	-13.0	-43.5	
High Ch, 847.5MHz									
1.695	-27.5	V	3.0	37.3	1.0	-63.8	-13.0	-50.8	
2.543	-23.9	V	3.0	36.3	1.0	-59.2	-13.0	-46.2	
3.390	-21.1	V	3.0	35.7	1.0	-55.8	-13.0	-42.8	
1.695	-27.6	H	3.0	37.3	1.0	-63.9	-13.0	-50.9	
2.543	-25.7	H	3.0	36.3	1.0	-61.0	-13.0	-48.0	
3.390	-21.5	H	3.0	35.7	1.0	-56.2	-13.0	-43.2	

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

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UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Adaptor + HS
Mode: LTE5 QPSK 3MHz Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band: LTE5 3MHz QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 825.5MHz									
1.651	-28.4	V	3.0	37.4	1.0	-64.8	-13.0	-51.8	
2.477	-23.0	V	3.0	36.4	1.0	-58.4	-13.0	-45.4	
3.302	-21.7	V	3.0	35.8	1.0	-56.5	-13.0	-43.5	
1.651	-27.1	H	3.0	37.4	1.0	-63.5	-13.0	-50.5	
2.477	-24.3	H	3.0	36.4	1.0	-59.7	-13.0	-46.7	
3.302	-21.8	H	3.0	35.8	1.0	-56.6	-13.0	-43.6	
Mid Ch, 836.5MHz									
1.673	-28.2	V	3.0	37.3	1.0	-64.6	-13.0	-51.6	
2.510	-23.7	V	3.0	36.4	1.0	-59.1	-13.0	-46.1	
3.346	-20.3	V	3.0	35.8	1.0	-55.0	-13.0	-42.0	
1.673	-28.1	H	3.0	37.3	1.0	-64.5	-13.0	-51.5	
2.510	-25.9	H	3.0	36.4	1.0	-61.2	-13.0	-48.2	
3.346	-21.3	H	3.0	35.8	1.0	-56.1	-13.0	-43.1	
High Ch, 847.5MHz									
1.695	-28.4	V	3.0	37.3	1.0	-64.7	-13.0	-51.7	
2.543	-23.4	V	3.0	36.3	1.0	-58.7	-13.0	-45.7	
3.390	-22.1	V	3.0	35.7	1.0	-56.8	-13.0	-43.8	
1.695	-27.2	H	3.0	37.3	1.0	-63.5	-13.0	-50.5	
2.543	-25.3	H	3.0	36.3	1.0	-60.7	-13.0	-47.7	
3.390	-21.3	H	3.0	35.7	1.0	-56.0	-13.0	-43.0	

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

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UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Adaptor + HS
Mode: LTE5 1.4MHz 16QAM HARM

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band: LTE5 1.4MHz 16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7MHz									
1.649	-28.6	V	3.0	37.4	1.0	-64.9	-13.0	-51.9	
2.474	-22.9	V	3.0	36.4	1.0	-58.3	-13.0	-45.3	
3.299	-21.7	V	3.0	35.8	1.0	-56.5	-13.0	-43.5	
1.649	-28.1	H	3.0	37.4	1.0	-64.5	-13.0	-51.5	
2.474	-25.3	H	3.0	36.4	1.0	-60.7	-13.0	-47.7	
3.299	-21.2	H	3.0	35.8	1.0	-56.0	-13.0	-43.0	
Mid Ch, 836.5MHz									
1.673	-28.2	V	3.0	37.3	1.0	-64.5	-13.0	-51.5	
2.510	-23.7	V	3.0	36.4	1.0	-59.1	-13.0	-46.1	
3.346	-20.7	V	3.0	35.8	1.0	-55.5	-13.0	-42.5	
1.673	-28.0	H	3.0	37.3	1.0	-64.4	-13.0	-51.4	
2.510	-25.6	H	3.0	36.4	1.0	-61.0	-13.0	-48.0	
3.346	-21.6	H	3.0	35.8	1.0	-56.3	-13.0	-43.3	
High Ch, 848.3MHz									
1.697	-28.2	V	3.0	37.3	1.0	-64.5	-13.0	-51.5	
2.545	-22.9	V	3.0	36.3	1.0	-58.3	-13.0	-45.3	
3.393	-21.4	V	3.0	35.7	1.0	-56.1	-13.0	-43.1	
1.697	-27.5	H	3.0	37.3	1.0	-63.8	-13.0	-50.8	
2.545	-25.8	H	3.0	36.3	1.0	-61.1	-13.0	-48.1	
3.393	-21.6	H	3.0	35.7	1.0	-56.3	-13.0	-43.3	

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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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UL Verification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Adaptor + HS
Mode: LTE5 1.4MHz QPSK HARM

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band: LTE5 1.4MHz QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 824.7MHz									
1.649	-28.4	V	3.0	37.4	1.0	-64.8	-13.0	-51.8	
2.474	-22.8	V	3.0	36.4	1.0	-58.2	-13.0	-45.2	
3.299	-21.8	V	3.0	35.8	1.0	-56.6	-13.0	-43.6	
1.649	-27.4	H	3.0	37.4	1.0	-63.8	-13.0	-50.8	
2.474	-24.5	H	3.0	36.4	1.0	-59.8	-13.0	-46.8	
3.299	-21.4	H	3.0	35.8	1.0	-56.2	-13.0	-43.2	
Mid Ch, 836.5MHz									
1.673	-28.1	V	3.0	37.3	1.0	-64.5	-13.0	-51.5	
2.510	-23.4	V	3.0	36.4	1.0	-58.8	-13.0	-45.8	
3.346	-20.3	V	3.0	35.8	1.0	-55.1	-13.0	-42.1	
1.673	-28.0	H	3.0	37.3	1.0	-64.3	-13.0	-51.3	
2.510	-25.4	H	3.0	36.4	1.0	-60.8	-13.0	-47.8	
3.346	-21.7	H	3.0	35.8	1.0	-56.4	-13.0	-43.4	
High Ch, 848.3MHz									
1.697	-28.4	V	3.0	37.3	1.0	-64.7	-13.0	-51.7	
2.545	-23.8	V	3.0	36.3	1.0	-59.1	-13.0	-46.1	
3.393	-21.1	V	3.0	35.7	1.0	-55.8	-13.0	-42.8	
1.697	-27.0	H	3.0	37.3	1.0	-63.3	-13.0	-50.3	
2.545	-25.4	H	3.0	36.3	1.0	-60.7	-13.0	-47.7	
3.393	-21.4	H	3.0	35.7	1.0	-56.1	-13.0	-43.1	

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

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_20M_16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band
LTE2
20MHz
16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1860MHz									
3.720	-17.1	V	3.0	35.4	1.0	-51.5	-13.0	-38.5	
5.580	-14.3	V	3.0	34.7	1.0	-48.1	-13.0	-35.1	
7.440	-11.9	V	3.0	34.9	1.0	-45.8	-13.0	-32.8	
3.720	-17.1	H	3.0	35.4	1.0	-51.5	-13.0	-38.5	
5.580	-14.2	H	3.0	34.7	1.0	-47.9	-13.0	-34.9	
7.440	-11.2	H	3.0	34.9	1.0	-45.1	-13.0	-32.1	
Mid Ch, 1880.0MHz									
3.760	-17.0	V	3.0	35.3	1.0	-51.3	-13.0	-38.3	
5.640	-11.8	V	3.0	34.7	1.0	-45.5	-13.0	-32.5	
7.520	-11.8	V	3.0	34.9	1.0	-45.7	-13.0	-32.7	
3.760	-17.6	H	3.0	35.3	1.0	-51.9	-13.0	-38.9	
5.640	-12.7	H	3.0	34.7	1.0	-46.4	-13.0	-33.4	
7.520	-10.7	H	3.0	34.9	1.0	-44.7	-13.0	-31.7	
High Ch, 1900 MHz									
3.800	-16.7	V	3.0	35.3	1.0	-51.0	-13.0	-38.0	
5.700	-12.7	V	3.0	34.7	1.0	-46.4	-13.0	-33.4	
7.600	-12.3	V	3.0	34.9	1.0	-46.2	-13.0	-33.2	
3.800	-17.2	H	3.0	35.3	1.0	-51.5	-13.0	-38.5	
5.700	-11.9	H	3.0	34.7	1.0	-45.7	-13.0	-32.7	
7.600	-11.2	H	3.0	34.9	1.0	-45.1	-13.0	-32.1	

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

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_20M_QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band
LTE2
20MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1860MHz									
3.720	-16.9	V	3.0	35.4	1.0	-51.3	-13.0	-38.3	
5.580	-14.1	V	3.0	34.7	1.0	-47.8	-13.0	-34.8	
7.440	-11.6	V	3.0	34.9	1.0	-45.5	-13.0	-32.5	
3.720	-17.2	H	3.0	35.4	1.0	-51.5	-13.0	-38.5	
5.580	-13.5	H	3.0	34.7	1.0	-47.3	-13.0	-34.3	
7.440	-10.8	H	3.0	34.9	1.0	-44.7	-13.0	-31.7	
Mid Ch, 1880.0MHz									
3.760	-17.2	V	3.0	35.3	1.0	-51.5	-13.0	-38.5	
5.640	-12.3	V	3.0	34.7	1.0	-46.0	-13.0	-33.0	
7.520	-11.5	V	3.0	34.9	1.0	-45.4	-13.0	-32.4	
3.760	-17.3	H	3.0	35.3	1.0	-51.7	-13.0	-38.7	
5.640	-13.0	H	3.0	34.7	1.0	-46.7	-13.0	-33.7	
7.520	-11.2	H	3.0	34.9	1.0	-45.1	-13.0	-32.1	
High Ch, 1900 MHz									
3.800	-16.3	V	3.0	35.3	1.0	-50.6	-13.0	-37.6	
5.700	-11.5	V	3.0	34.7	1.0	-45.3	-13.0	-32.3	
7.600	-12.4	V	3.0	34.9	1.0	-46.4	-13.0	-33.4	
3.800	-17.4	H	3.0	35.3	1.0	-51.7	-13.0	-38.7	
5.700	-12.6	H	3.0	34.7	1.0	-46.3	-13.0	-33.3	
7.600	-11.7	H	3.0	34.9	1.0	-45.6	-13.0	-32.6	

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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_15M_16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band
LTE2
15MHz
16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1857.5MHz									
3.715	-15.5	V	3.0	35.4	1.0	-49.9	-13.0	-36.9	
5.572	-11.8	V	3.0	34.7	1.0	-45.5	-13.0	-32.5	
7.424	-8.8	V	3.0	34.9	1.0	-42.7	-13.0	-29.7	
3.715	-16.0	H	3.0	35.4	1.0	-50.4	-13.0	-37.4	
5.572	-11.4	H	3.0	34.7	1.0	-45.1	-13.0	-32.1	
7.424	-7.3	H	3.0	34.9	1.0	-41.2	-13.0	-28.2	
Mid Ch, 1880.0MHz									
3.760	-15.1	V	3.0	35.3	1.0	-49.5	-13.0	-36.5	
5.640	-12.0	V	3.0	34.7	1.0	-45.7	-13.0	-32.7	
7.520	-8.1	V	3.0	34.9	1.0	-42.0	-13.0	-29.0	
3.760	-15.4	H	3.0	35.3	1.0	-49.7	-13.0	-36.7	
5.640	-11.5	H	3.0	34.7	1.0	-45.2	-13.0	-32.2	
7.520	-6.6	H	3.0	34.9	1.0	-40.5	-13.0	-27.5	
High Ch, 1902.5 MHz									
3.805	-14.4	V	3.0	35.3	1.0	-48.7	-13.0	-35.7	
5.707	-10.0	V	3.0	34.7	1.0	-43.8	-13.0	-30.8	
7.610	-8.5	V	3.0	34.9	1.0	-42.5	-13.0	-29.5	
3.805	-16.1	H	3.0	35.3	1.0	-50.4	-13.0	-37.4	
5.707	-11.1	H	3.0	34.7	1.0	-44.8	-13.0	-31.8	
7.610	-11.0	H	3.0	34.9	1.0	-44.9	-13.0	-31.9	

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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_15M_QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band
LTE2
15MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1857.5MHz									
3.715	-16.1	V	3.0	35.4	1.0	-50.5	-13.0	-37.5	
5.572	-10.9	V	3.0	34.7	1.0	-44.6	-13.0	-31.6	
7.424	-8.3	V	3.0	34.9	1.0	-42.2	-13.0	-29.2	
3.715	-15.9	H	3.0	35.4	1.0	-50.3	-13.0	-37.3	
5.572	-11.0	H	3.0	34.7	1.0	-44.7	-13.0	-31.7	
7.424	-6.7	H	3.0	34.9	1.0	-40.6	-13.0	-27.6	
Mid Ch, 1880.0MHz									
3.760	-13.6	V	3.0	35.3	1.0	-48.0	-13.0	-35.0	
5.640	-11.9	V	3.0	34.7	1.0	-45.6	-13.0	-32.6	
7.520	-7.7	V	3.0	34.9	1.0	-41.7	-13.0	-28.7	
3.760	-15.9	H	3.0	35.3	1.0	-50.2	-13.0	-37.2	
5.640	-11.4	H	3.0	34.7	1.0	-45.2	-13.0	-32.2	
7.520	-7.7	H	3.0	34.9	1.0	-41.6	-13.0	-28.6	
High Ch, 1902.5 MHz									
3.805	-14.6	V	3.0	35.3	1.0	-48.9	-13.0	-35.9	
5.707	-10.3	V	3.0	34.7	1.0	-44.0	-13.0	-31.0	
7.610	-7.8	V	3.0	34.9	1.0	-41.8	-13.0	-28.8	
3.805	-15.6	H	3.0	35.3	1.0	-49.9	-13.0	-36.9	
5.707	-9.4	H	3.0	34.7	1.0	-43.1	-13.0	-30.1	
7.610	-7.6	H	3.0	34.9	1.0	-41.5	-13.0	-28.5	

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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_10M_16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band
LTE2
10MHz
16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1855.0MHz									
3.710	-15.3	V	3.0	35.4	1.0	-49.6	-13.0	-36.6	
5.565	-12.1	V	3.0	34.7	1.0	-45.8	-13.0	-32.8	
7.420	-9.0	V	3.0	34.9	1.0	-42.9	-13.0	-29.9	
3.710	-15.4	H	3.0	35.4	1.0	-49.7	-13.0	-36.7	
5.565	-11.5	H	3.0	34.7	1.0	-45.2	-13.0	-32.2	
7.420	-7.4	H	3.0	34.9	1.0	-41.3	-13.0	-28.3	
Mid Ch, 1880.0MHz									
3.760	-16.9	V	3.0	35.3	1.0	-51.2	-13.0	-38.2	
5.640	-12.9	V	3.0	34.7	1.0	-46.7	-13.0	-33.7	
7.520	-10.9	V	3.0	34.9	1.0	-44.9	-13.0	-31.9	
3.760	-17.2	H	3.0	35.3	1.0	-51.5	-13.0	-38.5	
5.640	-12.4	H	3.0	34.7	1.0	-46.1	-13.0	-33.1	
7.520	-10.6	H	3.0	34.9	1.0	-44.5	-13.0	-31.5	
High Ch, 1905 MHz									
3.810	-17.1	V	3.0	35.3	1.0	-51.4	-13.0	-38.4	
5.715	-13.8	V	3.0	34.7	1.0	-47.5	-13.0	-34.5	
7.620	-8.2	V	3.0	34.9	1.0	-42.1	-13.0	-29.1	
3.810	-17.0	H	3.0	35.3	1.0	-51.3	-13.0	-38.3	
5.715	-13.8	H	3.0	34.7	1.0	-47.5	-13.0	-34.5	
7.620	-7.9	H	3.0	34.9	1.0	-41.9	-13.0	-28.9	

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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_10M_QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 22

Band LTE2 10MHz QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1855.0MHz									
3.710	-15.6	V	3.0	35.4	1.0	-50.0	-13.0	-37.0	
5.565	-12.4	V	3.0	34.7	1.0	-46.1	-13.0	-33.1	
7.420	-8.1	V	3.0	34.9	1.0	-42.0	-13.0	-29.0	
3.710	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
5.565	-11.5	H	3.0	34.7	1.0	-45.2	-13.0	-32.2	
7.420	-7.7	H	3.0	34.9	1.0	-41.6	-13.0	-28.6	
Mid Ch, 1880.0MHz									
3.760	-16.7	V	3.0	35.3	1.0	-51.1	-13.0	-38.1	
5.640	-13.3	V	3.0	34.7	1.0	-47.0	-13.0	-34.0	
7.520	-10.8	V	3.0	34.9	1.0	-44.7	-13.0	-31.7	
3.760	-17.1	H	3.0	35.3	1.0	-51.4	-13.0	-38.4	
5.640	-12.5	H	3.0	34.7	1.0	-46.2	-13.0	-33.2	
7.520	-10.0	H	3.0	34.9	1.0	-43.9	-13.0	-30.9	
High Ch, 1905 MHz									
3.810	-16.9	V	3.0	35.3	1.0	-51.2	-13.0	-38.2	
5.715	-13.9	V	3.0	34.7	1.0	-47.6	-13.0	-34.6	
7.620	-9.1	V	3.0	34.9	1.0	-43.0	-13.0	-30.0	
3.810	-17.3	H	3.0	35.3	1.0	-51.5	-13.0	-38.5	
5.715	-13.0	H	3.0	34.7	1.0	-46.7	-13.0	-33.7	
7.620	-7.5	H	3.0	34.9	1.0	-41.5	-13.0	-28.5	

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

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_5M_16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band: LTE2 5MHz 16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.5MHz									
3.705	-16.7	V	3.0	35.4	1.0	-51.0	-13.0	-38.0	
5.557	-12.1	V	3.0	34.7	1.0	-45.8	-13.0	-32.8	
7.410	-11.7	V	3.0	34.9	1.0	-45.6	-13.0	-32.6	
3.705	-16.4	H	3.0	35.4	1.0	-50.8	-13.0	-37.8	
5.557	-13.4	H	3.0	34.7	1.0	-47.1	-13.0	-34.1	
7.410	-10.1	H	3.0	34.9	1.0	-44.1	-13.0	-31.1	
Mid Ch, 1880.0MHz									
3.760	-16.6	V	3.0	35.3	1.0	-51.0	-13.0	-38.0	
5.640	-9.4	V	3.0	34.7	1.0	-43.2	-13.0	-30.2	
7.520	-11.1	V	3.0	34.9	1.0	-45.0	-13.0	-32.0	
3.760	-16.4	H	3.0	35.3	1.0	-50.8	-13.0	-37.8	
5.640	-12.4	H	3.0	34.7	1.0	-46.1	-13.0	-33.1	
7.520	-9.6	H	3.0	34.9	1.0	-43.5	-13.0	-30.5	
High Ch, 1907.5 MHz									
3.815	-15.2	V	3.0	35.3	1.0	-49.5	-13.0	-36.5	
5.722	-7.4	V	3.0	34.7	1.0	-41.1	-13.0	-28.1	
7.630	-12.4	V	3.0	34.9	1.0	-46.3	-13.0	-33.3	
3.815	-16.0	H	3.0	35.3	1.0	-50.3	-13.0	-37.3	
5.722	-5.9	H	3.0	34.7	1.0	-39.6	-13.0	-26.6	
7.630	-10.4	H	3.0	34.9	1.0	-44.4	-13.0	-31.4	

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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_5M_QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band
LTE2
5MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.5MHz									
3.705	-17.3	V	3.0	35.4	1.0	-51.7	-13.0	-38.7	
5.557	-12.8	V	3.0	34.7	1.0	-46.6	-13.0	-33.6	
7.410	-10.5	V	3.0	34.9	1.0	-44.4	-13.0	-31.4	
3.705	-17.6	H	3.0	35.4	1.0	-52.0	-13.0	-39.0	
5.557	-13.4	H	3.0	34.7	1.0	-47.1	-13.0	-34.1	
7.410	-10.4	H	3.0	34.9	1.0	-44.3	-13.0	-31.3	
Mid Ch, 1880.0MHz									
3.760	-16.5	V	3.0	35.3	1.0	-50.8	-13.0	-37.8	
5.640	-10.0	V	3.0	34.7	1.0	-43.7	-13.0	-30.7	
7.520	-11.2	V	3.0	34.9	1.0	-45.1	-13.0	-32.1	
3.760	-16.9	H	3.0	35.3	1.0	-51.3	-13.0	-38.3	
5.640	-12.8	H	3.0	34.7	1.0	-46.5	-13.0	-33.5	
7.520	-10.5	H	3.0	34.9	1.0	-44.5	-13.0	-31.5	
High Ch, 1907.5 MHz									
3.815	-15.1	V	3.0	35.3	1.0	-49.3	-13.0	-36.3	
5.722	-7.4	V	3.0	34.7	1.0	-41.1	-13.0	-28.1	
7.630	-12.0	V	3.0	34.9	1.0	-45.9	-13.0	-32.9	
3.815	-14.4	H	3.0	35.3	1.0	-48.7	-13.0	-35.7	
5.722	-10.1	H	3.0	34.7	1.0	-43.9	-13.0	-30.9	
7.630	-11.6	H	3.0	34.9	1.0	-45.5	-13.0	-32.5	

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

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_3M_HARM_16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band
LTE2
3MHz
16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.5MHz									
3.703	-15.2	V	3.0	35.4	1.0	-49.6	-13.0	-36.6	
5.554	-11.9	V	3.0	34.7	1.0	-45.6	-13.0	-32.6	
7.406	-10.5	V	3.0	34.9	1.0	-44.5	-13.0	-31.5	
3.703	-16.0	H	3.0	35.4	1.0	-50.4	-13.0	-37.4	
5.554	-13.1	H	3.0	34.7	1.0	-46.8	-13.0	-33.8	
7.406	-10.6	H	3.0	34.9	1.0	-44.5	-13.0	-31.5	
Mid Ch, 1880.0MHz									
3.760	-17.0	V	3.0	35.3	1.0	-51.3	-13.0	-38.3	
5.640	-9.7	V	3.0	34.7	1.0	-43.5	-13.0	-30.5	
7.520	-11.2	V	3.0	34.9	1.0	-45.1	-13.0	-32.1	
3.760	-16.9	H	3.0	35.3	1.0	-51.2	-13.0	-38.2	
5.640	-11.0	H	3.0	34.7	1.0	-44.7	-13.0	-31.7	
7.520	-10.2	H	3.0	34.9	1.0	-44.2	-13.0	-31.2	
High Ch, 1908.5 MHz									
3.817	-16.2	V	3.0	35.3	1.0	-50.5	-13.0	-37.5	
5.725	-5.8	V	3.0	34.7	1.0	-39.5	-13.0	-26.5	
7.634	-11.7	V	3.0	34.9	1.0	-45.6	-13.0	-32.6	
3.817	-13.1	H	3.0	35.3	1.0	-47.4	-13.0	-34.4	
5.725	-9.2	H	3.0	34.7	1.0	-42.9	-13.0	-29.9	
7.634	-10.9	H	3.0	34.9	1.0	-44.8	-13.0	-31.8	

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

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_3M_HARM_QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band
LTE2
3MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.5MHz									
3.703	-15.6	V	3.0	35.4	1.0	-50.0	-13.0	-37.0	
5.554	-12.1	V	3.0	34.7	1.0	-45.8	-13.0	-32.8	
7.406	-11.2	V	3.0	34.9	1.0	-45.1	-13.0	-32.1	
3.703	-16.2	H	3.0	35.4	1.0	-50.6	-13.0	-37.6	
5.554	-13.0	H	3.0	34.7	1.0	-46.7	-13.0	-33.7	
7.406	-10.3	H	3.0	34.9	1.0	-44.2	-13.0	-31.2	
Mid Ch, 1880.0MHz									
3.760	-16.7	V	3.0	35.3	1.0	-51.0	-13.0	-38.0	
5.640	-9.9	V	3.0	34.7	1.0	-43.7	-13.0	-30.7	
7.520	-11.1	V	3.0	34.9	1.0	-45.0	-13.0	-32.0	
3.760	-16.9	H	3.0	35.3	1.0	-51.3	-13.0	-38.3	
5.640	-10.7	H	3.0	34.7	1.0	-44.4	-13.0	-31.4	
7.520	-10.0	H	3.0	34.9	1.0	-43.9	-13.0	-30.9	
High Ch, 1908.5 MHz									
3.817	-15.9	V	3.0	35.3	1.0	-50.2	-13.0	-37.2	
5.725	-5.4	V	3.0	34.7	1.0	-39.2	-13.0	-26.2	
7.634	-12.0	V	3.0	34.9	1.0	-46.0	-13.0	-33.0	
3.817	-12.8	H	3.0	35.3	1.0	-47.1	-13.0	-34.1	
5.725	-8.1	H	3.0	34.7	1.0	-41.8	-13.0	-28.8	
7.634	-11.0	H	3.0	34.9	1.0	-45.0	-13.0	-32.0	

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

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_1.4M_HARM_16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band
LTE2
1.4MHz
16QAM

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.0MHz									
3.702	-15.5	V	3.0	35.4	1.0	-49.9	-13.0	-36.9	
5.553	-10.9	V	3.0	34.7	1.0	-44.7	-13.0	-31.7	
7.404	-10.9	V	3.0	34.9	1.0	-44.8	-13.0	-31.8	
3.702	-12.1	H	3.0	35.4	1.0	-46.5	-13.0	-33.5	
5.553	-8.2	H	3.0	34.7	1.0	-41.9	-13.0	-28.9	
7.404	-10.6	H	3.0	34.9	1.0	-44.5	-13.0	-31.5	
Mid Ch, 1880.0MHz									
3.760	-16.8	V	3.0	35.3	1.0	-51.1	-13.0	-38.1	
5.640	-9.0	V	3.0	34.7	1.0	-42.8	-13.0	-29.8	
7.520	-11.0	V	3.0	34.9	1.0	-45.0	-13.0	-32.0	
3.760	-18.2	H	3.0	35.3	1.0	-52.6	-13.0	-39.6	
5.640	-15.3	H	3.0	34.7	1.0	-49.0	-13.0	-36.0	
7.520	-13.0	H	3.0	34.9	1.0	-47.0	-13.0	-34.0	
High Ch, 1908 MHz									
3.816	-16.6	V	3.0	35.3	1.0	-50.9	-13.0	-37.9	
5.724	-9.8	V	3.0	34.7	1.0	-43.5	-13.0	-30.5	
7.632	-11.1	V	3.0	34.9	1.0	-45.0	-13.0	-32.0	
3.816	-14.5	H	3.0	35.3	1.0	-48.8	-13.0	-35.8	
5.724	-5.1	H	3.0	34.7	1.0	-38.8	-13.0	-25.8	
7.632	-10.5	H	3.0	34.9	1.0	-44.4	-13.0	-31.4	

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

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 02/16/15
Test Engineer: Jude Semana
Configuration: EUT + AC Charger + Headset
Mode: LTE2_1.4M_HARM_QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T343 8449B	Filter 1	Part 24

Band
LTE2
1.4MHz
QPSK

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1851.0MHz									
3.702	-15.7	V	3.0	35.4	1.0	-50.1	-13.0	-37.1	
5.553	-11.2	V	3.0	34.7	1.0	-44.9	-13.0	-31.9	
7.404	-11.4	V	3.0	34.9	1.0	-45.3	-13.0	-32.3	
3.702	-11.8	H	3.0	35.4	1.0	-46.2	-13.0	-33.2	
5.553	-8.5	H	3.0	34.7	1.0	-42.2	-13.0	-29.2	
7.404	-10.1	H	3.0	34.9	1.0	-44.0	-13.0	-31.0	
Mid Ch, 1880.0MHz									
3.760	-16.4	V	3.0	35.3	1.0	-50.8	-13.0	-37.8	
5.640	-7.8	V	3.0	34.7	1.0	-41.6	-13.0	-28.6	
7.520	-11.0	V	3.0	34.9	1.0	-44.9	-13.0	-31.9	
3.760	-16.1	H	3.0	35.3	1.0	-50.5	-13.0	-37.5	
5.640	-12.3	H	3.0	34.7	1.0	-46.0	-13.0	-33.0	
7.520	-10.1	H	3.0	34.9	1.0	-44.0	-13.0	-31.0	
High Ch, 1908 MHz									
3.816	-16.4	V	3.0	35.3	1.0	-50.6	-13.0	-37.6	
5.724	-10.1	V	3.0	34.7	1.0	-43.8	-13.0	-30.8	
7.632	-11.5	V	3.0	34.9	1.0	-45.5	-13.0	-32.5	
3.816	-14.3	H	3.0	35.3	1.0	-48.6	-13.0	-35.6	
5.724	-4.8	H	3.0	34.7	1.0	-38.5	-13.0	-25.5	
7.632	-11.0	H	3.0	34.9	1.0	-45.0	-13.0	-32.0	

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

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT/AC Charger/HS 2058052
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 20MHz Bandwidth

Band
LTE4
20MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1720									
3440.00	-18.3	V	3.0	36.0	1.0	-53.4	-13.0	-40.4	
5160.00	-16.1	V	3.0	35.4	1.0	-50.5	-13.0	-37.5	
6880.00	-12.3	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3440.00	-18.5	H	3.0	36.0	1.0	-53.6	-13.0	-40.6	
5160.00	-16.6	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6880.00	-12.1	H	3.0	35.7	1.0	-46.7	-13.0	-33.7	
Mid Ch, 1732.5									
3465.00	-20.4	V	3.0	36.0	1.0	-55.4	-13.0	-42.4	
5197.50	-15.1	V	3.0	35.4	1.0	-49.5	-13.0	-36.5	
6930.00	-13.2	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
3465.00	-18.9	H	3.0	36.0	1.0	-53.9	-13.0	-40.9	
5197.50	-15.7	H	3.0	35.4	1.0	-50.1	-13.0	-37.1	
6930.00	-11.3	H	3.0	35.7	1.0	-46.0	-13.0	-33.0	
High Ch, 1745									
3490.00	-20.4	V	3.0	36.0	1.0	-55.4	-13.0	-42.4	
5235.00	-13.9	V	3.0	35.4	1.0	-48.3	-13.0	-35.3	
6980.00	-12.1	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3490.00	-17.6	H	3.0	36.0	1.0	-52.7	-13.0	-39.7	
5235.00	-15.8	H	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6980.00	-11.2	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT/AC Charger/HS 2058052
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 20MHz Bandwidth

Band
LTE4
20MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1720									
3440.00	-18.2	V	3.0	36.0	1.0	-53.3	-13.0	-40.3	
5160.00	-15.9	V	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6880.00	-12.2	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3440.00	-18.4	H	3.0	36.0	1.0	-53.4	-13.0	-40.4	
5160.00	-16.3	H	3.0	35.4	1.0	-50.8	-13.0	-37.8	
6880.00	-11.9	H	3.0	35.7	1.0	-46.6	-13.0	-33.6	
Mid Ch, 1732.5									
3465.00	-20.1	V	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5197.50	-14.9	V	3.0	35.4	1.0	-49.3	-13.0	-36.3	
6930.00	-12.9	V	3.0	35.7	1.0	-47.6	-13.0	-34.6	
3465.00	-18.7	H	3.0	36.0	1.0	-53.8	-13.0	-40.8	
5197.50	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-11.4	H	3.0	35.7	1.0	-46.1	-13.0	-33.1	
High Ch, 1745									
3490.00	-20.4	V	3.0	36.0	1.0	-55.4	-13.0	-42.4	
5235.00	-13.9	V	3.0	35.4	1.0	-48.3	-13.0	-35.3	
6980.00	-12.0	V	3.0	35.7	1.0	-46.7	-13.0	-33.7	
3490.00	-17.6	H	3.0	36.0	1.0	-52.6	-13.0	-39.6	
5235.00	-15.4	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6980.00	-11.1	H	3.0	35.7	1.0	-45.8	-13.0	-32.8	

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Band

LTE4

15MHz

16QAM

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT/AC Charger/HS 2058052
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 15MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1717.5									
3435.00	-18.3	V	3.0	36.1	1.0	-53.4	-13.0	-40.4	
5152.50	-16.1	V	3.0	35.4	1.0	-50.5	-13.0	-37.5	
6870.00	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3435.00	-18.6	H	3.0	36.1	1.0	-53.7	-13.0	-40.7	
5152.50	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6870.00	-12.1	H	3.0	35.7	1.0	-46.8	-13.0	-33.8	
Mid Ch, 1732.5									
3465.00	-20.4	V	3.0	36.0	1.0	-55.4	-13.0	-42.4	
5197.50	-15.0	V	3.0	35.4	1.0	-49.4	-13.0	-36.4	
6930.00	-13.2	V	3.0	35.7	1.0	-47.8	-13.0	-34.8	
3465.00	-18.6	H	3.0	36.0	1.0	-53.6	-13.0	-40.6	
5197.50	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-11.0	H	3.0	35.7	1.0	-45.7	-13.0	-32.7	
High Ch, 1747.5									
3495.00	-20.3	V	3.0	36.0	1.0	-55.3	-13.0	-42.3	
5242.50	-14.0	V	3.0	35.4	1.0	-48.4	-13.0	-35.4	
6990.00	-12.1	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3495.00	-17.3	H	3.0	36.0	1.0	-52.4	-13.0	-39.4	
5242.50	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6990.00	-11.2	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT/AC Charger/HS 2058052
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 15MHz Bandwidth

Band
LTE4
15MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1717.5									
3435.00	-18.3	V	3.0	36.1	1.0	-53.3	-13.0	-40.3	
5152.50	-15.8	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6870.00	-12.2	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3435.00	-18.6	H	3.0	36.1	1.0	-53.6	-13.0	-40.6	
5152.50	-16.6	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6870.00	-12.0	H	3.0	35.7	1.0	-46.7	-13.0	-33.7	
Mid Ch, 1732.5									
3465.00	-20.3	V	3.0	36.0	1.0	-55.3	-13.0	-42.3	
5197.50	-14.9	V	3.0	35.4	1.0	-49.3	-13.0	-36.3	
6930.00	-12.9	V	3.0	35.7	1.0	-47.6	-13.0	-34.6	
3465.00	-18.5	H	3.0	36.0	1.0	-53.5	-13.0	-40.5	
5197.50	-15.8	H	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6930.00	-11.1	H	3.0	35.7	1.0	-45.7	-13.0	-32.7	
High Ch, 1747.5									
3495.00	-20.2	V	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5242.50	-13.7	V	3.0	35.4	1.0	-48.1	-13.0	-35.1	
6990.00	-12.1	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3495.00	-17.3	H	3.0	36.0	1.0	-52.3	-13.0	-39.3	
5242.50	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6990.00	-11.2	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter, Headset, 2058052
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 10MHz Bandwidth

Band
LTE4
10MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715									
3430.00	-18.1	V	3.0	36.1	1.0	-53.2	-13.0	-40.2	
5145.00	-15.9	V	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6860.00	-12.4	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
3430.00	-18.7	H	3.0	36.1	1.0	-53.7	-13.0	-40.7	
5145.00	-16.6	H	3.0	35.4	1.0	-51.0	-13.0	-38.0	
6860.00	-12.0	H	3.0	35.7	1.0	-46.7	-13.0	-33.7	
Mid Ch, 1732.5									
3465.00	-20.2	V	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5197.50	-15.0	V	3.0	35.4	1.0	-49.5	-13.0	-36.5	
6930.00	-12.9	V	3.0	35.7	1.0	-47.6	-13.0	-34.6	
3465.00	-18.9	H	3.0	36.0	1.0	-54.0	-13.0	-41.0	
5197.50	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-11.1	H	3.0	35.7	1.0	-45.8	-13.0	-32.8	
High Ch, 1750									
3500.00	-20.6	V	3.0	36.0	1.0	-55.6	-13.0	-42.6	
5250.00	-14.2	V	3.0	35.4	1.0	-48.7	-13.0	-35.7	
7000.00	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3500.00	-17.4	H	3.0	36.0	1.0	-52.4	-13.0	-39.4	
5250.00	-15.3	H	3.0	35.4	1.0	-49.7	-13.0	-36.7	
7000.00	-11.1	H	3.0	35.7	1.0	-45.8	-13.0	-32.8	

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Band

LTE4

10MHz

QPSK

High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT/AC Charger/HS 2058052
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 10MHz Bandwidth

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1715									
3430.00	-18.1	V	3.0	36.1	1.0	-53.2	-13.0	-40.2	
5145.00	-15.8	V	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6860.00	-12.3	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3430.00	-18.5	H	3.0	36.1	1.0	-53.5	-13.0	-40.5	
5145.00	-16.6	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6860.00	-12.1	H	3.0	35.7	1.0	-46.8	-13.0	-33.8	
Mid Ch, 1732.5									
3465.00	-20.5	V	3.0	36.0	1.0	-55.5	-13.0	-42.5	
5197.50	-14.9	V	3.0	35.4	1.0	-49.4	-13.0	-36.4	
6930.00	-12.7	V	3.0	35.7	1.0	-47.4	-13.0	-34.4	
3465.00	-18.9	H	3.0	36.0	1.0	-53.9	-13.0	-40.9	
5197.50	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-11.0	H	3.0	35.7	1.0	-45.7	-13.0	-32.7	
High Ch, 1750									
3500.00	-20.4	V	3.0	36.0	1.0	-55.4	-13.0	-42.4	
5250.00	-14.2	V	3.0	35.4	1.0	-48.6	-13.0	-35.6	
7000.00	-12.0	V	3.0	35.7	1.0	-46.7	-13.0	-33.7	
3500.00	-17.2	H	3.0	36.0	1.0	-52.2	-13.0	-39.2	
5250.00	-15.4	H	3.0	35.4	1.0	-49.8	-13.0	-36.8	
7000.00	-10.9	H	3.0	35.7	1.0	-45.6	-13.0	-32.6	

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter, Headset, 2058052
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 5MHz Bandwidth

Band
LTE4
5MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.5									
3425.00	-18.4	V	3.0	36.1	1.0	-53.4	-13.0	-40.4	
5137.50	-15.9	V	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6850.00	-12.4	V	3.0	35.7	1.0	-47.0	-13.0	-34.0	
3425.00	-19.0	H	3.0	36.1	1.0	-54.1	-13.0	-41.1	
5137.50	-16.9	H	3.0	35.4	1.0	-51.4	-13.0	-38.4	
6850.00	-12.2	H	3.0	35.7	1.0	-46.8	-13.0	-33.8	
Mid Ch, 1732.5									
3465.00	-20.5	V	3.0	36.0	1.0	-55.5	-13.0	-42.5	
5197.50	-15.0	V	3.0	35.4	1.0	-49.5	-13.0	-36.5	
6930.00	-12.7	V	3.0	35.7	1.0	-47.3	-13.0	-34.3	
3465.00	-18.6	H	3.0	36.0	1.0	-53.7	-13.0	-40.7	
5197.50	-15.9	H	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6930.00	-11.2	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	
High Ch, 1752.5									
3505.00	-20.3	V	3.0	36.0	1.0	-55.3	-13.0	-42.3	
5257.50	-14.0	V	3.0	35.4	1.0	-48.5	-13.0	-35.5	
7010.00	-12.1	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3505.00	-17.7	H	3.0	36.0	1.0	-52.7	-13.0	-39.7	
5257.50	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
7010.00	-11.2	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter, Headset, 2058052
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 5MHz Bandwidth

Band
LTE4
5MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.5									
3425.00	-18.3	V	3.0	36.1	1.0	-53.4	-13.0	-40.4	
5137.50	-15.8	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6850.00	-12.3	V	3.0	35.7	1.0	-47.0	-13.0	-34.0	
3425.00	-18.4	H	3.0	36.1	1.0	-53.5	-13.0	-40.5	
5137.50	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6850.00	-12.2	H	3.0	35.7	1.0	-46.8	-13.0	-33.8	
Mid Ch, 1732.5									
3465.00	-20.4	V	3.0	36.0	1.0	-55.5	-13.0	-42.5	
5197.50	-15.0	V	3.0	35.4	1.0	-49.4	-13.0	-36.4	
6930.00	-12.6	V	3.0	35.7	1.0	-47.3	-13.0	-34.3	
3465.00	-18.7	H	3.0	36.0	1.0	-53.8	-13.0	-40.8	
5197.50	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-11.0	H	3.0	35.7	1.0	-45.7	-13.0	-32.7	
High Ch, 1752.5									
3505.00	-20.2	V	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5257.50	-13.7	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
7010.00	-12.0	V	3.0	35.7	1.0	-46.6	-13.0	-33.6	
3505.00	-17.3	H	3.0	36.0	1.0	-52.3	-13.0	-39.3	
5257.50	-15.4	H	3.0	35.4	1.0	-49.9	-13.0	-36.9	
7010.00	-11.0	H	3.0	35.7	1.0	-45.7	-13.0	-32.7	

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter, Headset, 2058052
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 3MHz Bandwidth

Band LTE4 3MHz 16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1711.5									
3423.00	-18.2	V	3.0	36.1	1.0	-53.3	-13.0	-40.3	
5134.50	-15.9	V	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6846.00	-12.5	V	3.0	35.7	1.0	-47.2	-13.0	-34.2	
3423.00	-18.6	H	3.0	36.1	1.0	-53.6	-13.0	-40.6	
5134.50	-16.8	H	3.0	35.4	1.0	-51.2	-13.0	-38.2	
6846.00	-12.2	H	3.0	35.7	1.0	-46.9	-13.0	-33.9	
Mid Ch, 1732.5									
3465.00	-20.5	V	3.0	36.0	1.0	-55.5	-13.0	-42.5	
5197.50	-14.9	V	3.0	35.4	1.0	-49.4	-13.0	-36.4	
6930.00	-12.7	V	3.0	35.7	1.0	-47.4	-13.0	-34.4	
3465.00	-18.9	H	3.0	36.0	1.0	-53.9	-13.0	-40.9	
5197.50	-15.6	H	3.0	35.4	1.0	-50.1	-13.0	-37.1	
6930.00	-11.2	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	
High Ch, 1753.5									
3507.00	-20.1	V	3.0	36.0	1.0	-55.1	-13.0	-42.1	
5260.50	-14.3	V	3.0	35.4	1.0	-48.7	-13.0	-35.7	
7014.00	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3507.00	-17.4	H	3.0	36.0	1.0	-52.4	-13.0	-39.4	
5260.50	-16.3	H	3.0	35.4	1.0	-50.7	-13.0	-37.7	
7014.00	-11.2	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter, Headset, 2058052
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 3MHz Bandwidth

Band
LTE4
3MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1711.5									
3423.00	-18.0	V	3.0	36.1	1.0	-53.1	-13.0	-40.1	
5134.50	-15.7	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6846.00	-12.4	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
3423.00	-18.5	H	3.0	36.1	1.0	-53.5	-13.0	-40.5	
5134.50	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6846.00	-12.3	H	3.0	35.7	1.0	-46.9	-13.0	-33.9	
Mid Ch, 1732.5									
3465.00	-20.3	V	3.0	36.0	1.0	-55.4	-13.0	-42.4	
5197.50	-14.8	V	3.0	35.4	1.0	-49.3	-13.0	-36.3	
6930.00	-12.6	V	3.0	35.7	1.0	-47.3	-13.0	-34.3	
3465.00	-18.7	H	3.0	36.0	1.0	-53.7	-13.0	-40.7	
5197.50	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-11.1	H	3.0	35.7	1.0	-45.8	-13.0	-32.8	
High Ch, 1753.5									
3507.00	-20.2	V	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5260.50	-14.2	V	3.0	35.4	1.0	-48.6	-13.0	-35.6	
7014.00	-12.1	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3507.00	-17.3	H	3.0	36.0	1.0	-52.3	-13.0	-39.3	
5260.50	-15.2	H	3.0	35.4	1.0	-49.6	-13.0	-36.6	
7014.00	-11.1	H	3.0	35.7	1.0	-45.7	-13.0	-32.7	

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter, Headset, 2058052
Location: Chamber C
Mode: LTE_16QAM Band 4 Harmonics, 1.4MHz Bandwidth

Band
LTE4
1.4MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1710.7									
3421.40	-18.2	V	3.0	36.1	1.0	-53.2	-13.0	-40.2	
5132.10	-15.9	V	3.0	35.4	1.0	-50.3	-13.0	-37.3	
6842.80	-12.4	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
3421.40	-18.5	H	3.0	36.1	1.0	-53.6	-13.0	-40.6	
5132.10	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6842.80	-12.2	H	3.0	35.7	1.0	-46.9	-13.0	-33.9	
Mid Ch, 1732.5									
3465.00	-20.5	V	3.0	36.0	1.0	-55.5	-13.0	-42.5	
5197.50	-15.3	V	3.0	35.4	1.0	-49.8	-13.0	-36.8	
6930.00	-12.6	V	3.0	35.7	1.0	-47.3	-13.0	-34.3	
3465.00	-19.0	H	3.0	36.0	1.0	-54.1	-13.0	-41.1	
5197.50	-15.8	H	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6930.00	-11.2	H	3.0	35.7	1.0	-45.8	-13.0	-32.8	
High Ch, 1754.3									
3508.60	-20.3	V	3.0	36.0	1.0	-55.3	-13.0	-42.3	
5262.90	-14.3	V	3.0	35.4	1.0	-48.7	-13.0	-35.7	
7017.20	-12.1	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3508.60	-17.4	H	3.0	36.0	1.0	-52.4	-13.0	-39.4	
5262.90	-16.0	H	3.0	35.4	1.0	-50.4	-13.0	-37.4	
7017.20	-11.3	H	3.0	35.7	1.0	-45.9	-13.0	-32.9	

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High Frequency Substitution Measurement
UL Verification Services, Inc.

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT , AC Adapter, Headset, 2058052
Location: Chamber C
Mode: LTE_QPSK Band 4 Harmonics, 1.4MHz Bandwidth

Band LTE4 1.4MHz QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1710.7									
3421.40	-18.0	V	3.0	36.1	1.0	-53.0	-13.0	-40.0	
5132.10	-15.8	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
6842.80	-12.4	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
3421.40	-18.4	H	3.0	36.1	1.0	-53.5	-13.0	-40.5	
5132.10	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
6842.80	-12.1	H	3.0	35.7	1.0	-46.8	-13.0	-33.8	
Mid Ch, 1732.5									
3465.00	-20.4	V	3.0	36.0	1.0	-55.4	-13.0	-42.4	
5197.50	-14.9	V	3.0	35.4	1.0	-49.3	-13.0	-36.3	
6930.00	-12.5	V	3.0	35.7	1.0	-47.2	-13.0	-34.2	
3465.00	-18.9	H	3.0	36.0	1.0	-53.9	-13.0	-40.9	
5197.50	-15.6	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
6930.00	-11.0	H	3.0	35.7	1.0	-45.7	-13.0	-32.7	
High Ch, 1754.3									
3508.60	-20.2	V	3.0	36.0	1.0	-55.2	-13.0	-42.2	
5262.90	-14.2	V	3.0	35.4	1.0	-48.7	-13.0	-35.7	
7017.20	-12.0	V	3.0	35.7	1.0	-46.7	-13.0	-33.7	
3508.60	-17.3	H	3.0	36.0	1.0	-52.3	-13.0	-39.3	
5262.90	-15.6	H	3.0	35.4	1.0	-50.1	-13.0	-37.1	
7017.20	-11.1	H	3.0	35.7	1.0	-45.8	-13.0	-32.8	

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Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 2/17/2015
Test Engineer: O. Stoelting
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber C
Mode: LTE_16QAM Band 17 Harmonics, 10MHz Bandwidth

Band
LTE17
10MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 709									
1418.00	-10.3	V	3.0	37.4	1.0	-46.6	-13.0	-33.6	
2127.00	-12.7	V	3.0	36.6	1.0	-48.3	-13.0	-35.3	
2836.00	-17.9	V	3.0	36.4	1.0	-53.3	-13.0	-40.3	
1418.00	-11.5	H	3.0	37.4	1.0	-47.9	-13.0	-34.9	
2127.00	-18.0	H	3.0	36.6	1.0	-53.5	-13.0	-40.5	
2836.00	-20.1	H	3.0	36.4	1.0	-55.5	-13.0	-42.5	
Mid Ch, 710									
1420.00	-9.8	V	3.0	37.3	1.0	-46.2	-13.0	-33.2	
2130.00	-13.0	V	3.0	36.6	1.0	-48.6	-13.0	-35.6	
2840.00	-17.7	V	3.0	36.4	1.0	-53.1	-13.0	-40.1	
1420.00	-11.7	H	3.0	37.3	1.0	-48.1	-13.0	-35.1	
2130.00	-17.3	H	3.0	36.6	1.0	-52.9	-13.0	-39.9	
2840.00	-20.1	H	3.0	36.4	1.0	-55.5	-13.0	-42.5	
High Ch, 711									
1422.00	-9.9	V	3.0	37.3	1.0	-46.3	-13.0	-33.3	
2133.00	-12.8	V	3.0	36.6	1.0	-48.3	-13.0	-35.3	
2844.00	-17.8	V	3.0	36.4	1.0	-53.2	-13.0	-40.2	
1422.00	-11.8	H	3.0	37.3	1.0	-48.2	-13.0	-35.2	
2133.00	-17.9	H	3.0	36.6	1.0	-53.5	-13.0	-40.5	
2844.00	-20.1	H	3.0	36.4	1.0	-55.5	-13.0	-42.5	

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Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 2/17/2015
Test Engineer: O. Stoelting
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber C
Mode: LTE_QPSK Band 17 Harmonics, 10MHz Bandwidth

Band LTE17 10MHz QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 709									
1418.00	-9.6	V	3.0	37.4	1.0	-46.0	-13.0	-33.0	
2127.00	-12.8	V	3.0	36.6	1.0	-48.3	-13.0	-35.3	
2836.00	-18.2	V	3.0	36.4	1.0	-53.6	-13.0	-40.6	
1418.00	-11.6	H	3.0	37.4	1.0	-48.0	-13.0	-35.0	
2127.00	-17.7	H	3.0	36.6	1.0	-53.3	-13.0	-40.3	
2836.00	-20.1	H	3.0	36.4	1.0	-55.4	-13.0	-42.4	
Mid Ch, 710									
1420.00	-9.6	V	3.0	37.3	1.0	-45.9	-13.0	-32.9	
2130.00	-12.7	V	3.0	36.6	1.0	-48.3	-13.0	-35.3	
2840.00	-17.9	V	3.0	36.4	1.0	-53.3	-13.0	-40.3	
1420.00	-11.5	H	3.0	37.3	1.0	-47.9	-13.0	-34.9	
2130.00	-17.9	H	3.0	36.6	1.0	-53.4	-13.0	-40.4	
2840.00	-20.0	H	3.0	36.4	1.0	-55.4	-13.0	-42.4	
High Ch, 711									
1422.00	-9.5	V	3.0	37.3	1.0	-45.8	-13.0	-32.8	
2133.00	-12.5	V	3.0	36.6	1.0	-48.1	-13.0	-35.1	
2844.00	-17.9	V	3.0	36.4	1.0	-53.3	-13.0	-40.3	
1422.00	-11.5	H	3.0	37.3	1.0	-47.9	-13.0	-34.9	
2133.00	-17.9	H	3.0	36.6	1.0	-53.5	-13.0	-40.5	
2844.00	-20.1	H	3.0	36.4	1.0	-55.5	-13.0	-42.5	

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Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 2/17/2015
Test Engineer: O. Stoelting
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber G
Mode: LTE_16QAM Band 17 Harmonics, 5MHz Bandwidth

Band
LTE17
5MHz
16QAM

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 706.5									
1413.00	-7.4	V	3.0	37.4	1.0	-43.7	-13.0	-30.7	
2119.50	-16.9	V	3.0	36.6	1.0	-52.5	-13.0	-39.5	
2826.00	-17.3	V	3.0	36.4	1.0	-52.7	-13.0	-39.7	
1413.00	-9.5	H	3.0	37.4	1.0	-45.9	-13.0	-32.9	
2119.50	-21.5	H	3.0	36.6	1.0	-57.1	-13.0	-44.1	
2826.00	-20.0	H	3.0	36.4	1.0	-55.4	-13.0	-42.4	
Mid Ch, 710									
1420.00	-8.9	V	3.0	37.3	1.0	-45.2	-13.0	-32.2	
2130.00	-10.6	V	3.0	36.6	1.0	-46.2	-13.0	-33.2	
2840.00	-19.6	V	3.0	36.4	1.0	-55.0	-13.0	-42.0	
1420.00	-13.8	H	3.0	37.3	1.0	-50.2	-13.0	-37.2	
2130.00	-15.8	H	3.0	36.6	1.0	-51.4	-13.0	-38.4	
2840.00	-21.3	H	3.0	36.4	1.0	-56.7	-13.0	-43.7	
High Ch, 713.5									
1427.00	-5.0	V	3.0	37.3	1.0	-41.3	-13.0	-28.3	
2140.50	-9.8	V	3.0	36.6	1.0	-45.4	-13.0	-32.4	
2854.00	-19.3	V	3.0	36.4	1.0	-54.7	-13.0	-41.7	
1427.00	-8.4	H	3.0	37.3	1.0	-44.8	-13.0	-31.8	
2140.50	-16.2	H	3.0	36.6	1.0	-51.7	-13.0	-38.7	
2854.00	-21.0	H	3.0	36.4	1.0	-56.4	-13.0	-43.4	

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Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 2/17/2015
Test Engineer: O. Stoelting
Configuration: EUT , AC Adapter, Headset, X Position
Location: Chamber G
Mode: LTE_QPSK Band 17 Harmonics, 5MHz Bandwidth

Band
LTE17
5MHz
QPSK

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 706.5									
1413.00	-7.2	V	3.0	37.4	1.0	-43.5	-13.0	-30.5	
2119.50	-16.7	V	3.0	36.6	1.0	-52.3	-13.0	-39.3	
2826.00	-17.7	V	3.0	36.4	1.0	-53.1	-13.0	-40.1	
1413.00	-9.5	H	3.0	37.4	1.0	-45.9	-13.0	-32.9	
2119.50	-21.3	H	3.0	36.6	1.0	-56.8	-13.0	-43.8	
2826.00	-19.8	H	3.0	36.4	1.0	-55.2	-13.0	-42.2	
Mid Ch, 710									
1420.00	-9.5	V	3.0	37.3	1.0	-45.9	-13.0	-32.9	
2130.00	-10.5	V	3.0	36.6	1.0	-46.0	-13.0	-33.0	
2840.00	-19.9	V	3.0	36.4	1.0	-55.3	-13.0	-42.3	
1420.00	-13.3	H	3.0	37.3	1.0	-49.6	-13.0	-36.6	
2130.00	-15.5	H	3.0	36.6	1.0	-51.1	-13.0	-38.1	
2840.00	-21.9	H	3.0	36.4	1.0	-57.3	-13.0	-44.3	
High Ch, 713.5									
1427.00	-5.6	V	3.0	37.3	1.0	-42.0	-13.0	-29.0	
2140.50	-10.2	V	3.0	36.6	1.0	-45.7	-13.0	-32.7	
2854.00	-18.7	V	3.0	36.4	1.0	-54.1	-13.0	-41.1	
1427.00	-9.1	H	3.0	37.3	1.0	-45.5	-13.0	-32.5	
2140.50	-16.5	H	3.0	36.6	1.0	-52.1	-13.0	-39.1	
2854.00	-21.1	H	3.0	36.4	1.0	-56.5	-13.0	-43.5	

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Mode: HSDPA_B2

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T34 8449B	Filter 1	Part 24

Band

Band 2

HSDPA

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									
3.705	-20.8	V	3.0	35.4	1.0	-55.2	-13.0	-42.2	
5.557	-16.4	V	3.0	34.7	1.0	-50.1	-13.0	-37.1	
7.410	-13.2	V	3.0	34.9	1.0	-47.1	-13.0	-34.1	
3.705	-21.1	H	3.0	35.4	1.0	-55.5	-13.0	-42.5	
5.557	-16.0	H	3.0	34.7	1.0	-49.7	-13.0	-36.7	
7.410	-12.8	H	3.0	34.9	1.0	-46.7	-13.0	-33.7	
Mid Ch, 1880MHz									
3.760	-20.6	V	3.0	35.3	1.0	-55.0	-13.0	-42.0	
5.640	-16.8	V	3.0	34.7	1.0	-50.6	-13.0	-37.6	
7.520	-13.3	V	3.0	34.9	1.0	-47.2	-13.0	-34.2	
3.760	-21.5	H	3.0	35.3	1.0	-55.8	-13.0	-42.8	
5.640	-15.6	H	3.0	34.7	1.0	-49.3	-13.0	-36.3	
7.520	-12.9	H	3.0	34.9	1.0	-46.9	-13.0	-33.9	
High Ch, 1907.6MHz									
3.815	-20.2	V	3.0	35.3	1.0	-54.5	-13.0	-41.5	
5.723	-16.1	V	3.0	34.7	1.0	-49.9	-13.0	-36.9	
7.630	-13.2	V	3.0	34.9	1.0	-47.2	-13.0	-34.2	
3.815	-20.4	H	3.0	35.3	1.0	-54.7	-13.0	-41.7	
5.723	-15.4	H	3.0	34.7	1.0	-49.2	-13.0	-36.2	
7.630	-12.9	H	3.0	34.9	1.0	-46.8	-13.0	-33.8	

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

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/09/15
Test Engineer: R.Alegre
Configuration: EUT w/ AC Charger + HS
Mode: Rel99_B2

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T34 8449B	Filter 1	Part 24

Band

Band 2

REL99

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									
3.705	-20.7	V	3.0	35.4	1.0	-55.1	-13.0	-42.1	
5.557	-16.2	V	3.0	34.7	1.0	-49.9	-13.0	-36.9	
7.410	-13.3	V	3.0	34.9	1.0	-47.2	-13.0	-34.2	
3.705	-21.2	H	3.0	35.4	1.0	-55.6	-13.0	-42.6	
5.557	-16.0	H	3.0	34.7	1.0	-49.7	-13.0	-36.7	
7.410	-13.0	H	3.0	34.9	1.0	-46.9	-13.0	-33.9	
Mid Ch, 1880MHz									
3.760	-20.6	V	3.0	35.3	1.0	-54.9	-13.0	-41.9	
5.640	-16.8	V	3.0	34.7	1.0	-50.5	-13.0	-37.5	
7.520	-13.0	V	3.0	34.9	1.0	-46.9	-13.0	-33.9	
3.760	-21.2	H	3.0	35.3	1.0	-55.5	-13.0	-42.5	
5.640	-15.5	H	3.0	34.7	1.0	-49.2	-13.0	-36.2	
7.520	-12.9	H	3.0	34.9	1.0	-46.8	-13.0	-33.8	
High Ch, 1907.6MHz									
3.815	-20.0	V	3.0	35.3	1.0	-54.3	-13.0	-41.3	
5.723	-16.0	V	3.0	34.7	1.0	-49.8	-13.0	-36.8	
7.630	-13.2	V	3.0	34.9	1.0	-47.1	-13.0	-34.1	
3.815	-20.3	H	3.0	35.3	1.0	-54.6	-13.0	-41.6	
5.723	-15.4	H	3.0	34.7	1.0	-49.2	-13.0	-36.2	
7.630	-12.8	H	3.0	34.9	1.0	-46.8	-13.0	-33.8	

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

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Charger + HS
Mode: HSDPA_B5

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band

Band 5

HSDPA

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4MHz									
1.653	-27.3	V	3.0	37.4	1.0	-63.6	-13.0	-50.6	
2.479	-23.7	V	3.0	36.4	1.0	-59.0	-13.0	-46.0	
3.306	-21.4	V	3.0	35.8	1.0	-56.2	-13.0	-43.2	
1.653	-28.4	H	3.0	37.4	1.0	-64.8	-13.0	-51.8	
2.479	-25.7	H	3.0	36.4	1.0	-61.1	-13.0	-48.1	
3.306	-20.9	H	3.0	35.8	1.0	-55.7	-13.0	-42.7	
Mid Ch, 836.6MHz									
1.673	-27.6	V	3.0	37.3	1.0	-64.0	-13.0	-51.0	
2.510	-24.0	V	3.0	36.4	1.0	-59.4	-13.0	-46.4	
3.346	-22.6	V	3.0	35.8	1.0	-57.4	-13.0	-44.4	
1.673	-27.4	H	3.0	37.3	1.0	-63.7	-13.0	-50.7	
2.510	-25.8	H	3.0	36.4	1.0	-61.2	-13.0	-48.2	
3.346	-21.2	H	3.0	35.8	1.0	-56.0	-13.0	-43.0	
High Ch, 846.6MHz									
1.693	-27.8	V	3.0	37.3	1.0	-64.1	-13.0	-51.1	
2.540	-23.5	V	3.0	36.3	1.0	-58.9	-13.0	-45.9	
3.386	-20.3	V	3.0	35.7	1.0	-55.0	-13.0	-42.0	
1.693	-27.0	H	3.0	37.3	1.0	-63.3	-13.0	-50.3	
2.540	-25.2	H	3.0	36.3	1.0	-60.6	-13.0	-47.6	
3.386	-21.0	H	3.0	35.7	1.0	-55.7	-13.0	-42.7	

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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Charger + HS
Mode: REL99_B5

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band

Band 5

REL99

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.4MHz									
1.653	-27.4	V	3.0	37.4	1.0	-63.8	-13.0	-50.8	
2.479	-23.2	V	3.0	36.4	1.0	-58.6	-13.0	-45.6	
3.306	-21.4	V	3.0	35.8	1.0	-56.2	-13.0	-43.2	
1.653	-27.6	H	3.0	37.4	1.0	-64.0	-13.0	-51.0	
2.479	-26.0	H	3.0	36.4	1.0	-61.4	-13.0	-48.4	
3.306	-21.2	H	3.0	35.8	1.0	-56.0	-13.0	-43.0	
Mid Ch, 836.6MHz									
1.673	-27.7	V	3.0	37.3	1.0	-64.0	-13.0	-51.0	
2.510	-23.8	V	3.0	36.4	1.0	-59.1	-13.0	-46.1	
3.346	-22.5	V	3.0	35.8	1.0	-57.3	-13.0	-44.3	
1.673	-27.3	H	3.0	37.3	1.0	-63.6	-13.0	-50.6	
2.510	-25.8	H	3.0	36.4	1.0	-61.1	-13.0	-48.1	
3.346	-21.1	H	3.0	35.8	1.0	-55.9	-13.0	-42.9	
High Ch, 846.6MHz									
1.693	-27.8	V	3.0	37.3	1.0	-64.1	-13.0	-51.1	
2.540	-23.5	V	3.0	36.3	1.0	-58.9	-13.0	-45.9	
3.386	-20.3	V	3.0	35.7	1.0	-55.0	-13.0	-42.0	
1.693	-26.9	H	3.0	37.3	1.0	-63.3	-13.0	-50.3	
2.540	-25.5	H	3.0	36.3	1.0	-60.9	-13.0	-47.9	
3.386	-21.0	H	3.0	35.7	1.0	-55.7	-13.0	-42.7	

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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 2/9/2015
Test Engineer: R.Alegre
Configuration: EUT/AC Charger/HS
Location: Chamber C
Mode: HSDPA Band 2 Harmonics

Band

Band 4

HSDPA

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4									
3424.80	-20.2	V	3.0	35.9	1.0	-55.1	-13.0	-42.1	
5137.20	-16.0	V	3.0	35.5	1.0	-50.5	-13.0	-37.5	
6849.60	-12.1	V	3.0	35.7	1.0	-46.8	-13.0	-33.8	
3424.80	-20.7	H	3.0	35.9	1.0	-55.6	-13.0	-42.6	
5137.20	-14.9	H	3.0	35.5	1.0	-49.3	-13.0	-36.3	
6849.60	-12.2	H	3.0	35.7	1.0	-46.9	-13.0	-33.9	
Mid Ch, 1732.6									
3465.20	-20.3	V	3.0	35.8	1.0	-55.1	-13.0	-42.1	
5197.80	-15.3	V	3.0	35.5	1.0	-49.8	-13.0	-36.8	
6930.04	-12.2	V	3.0	35.7	1.0	-47.0	-13.0	-34.0	
3465.20	-19.6	H	3.0	35.8	1.0	-54.4	-13.0	-41.4	
5197.80	-14.9	H	3.0	35.5	1.0	-49.4	-13.0	-36.4	
6930.04	-11.0	H	3.0	35.7	1.0	-45.7	-13.0	-32.7	
High Ch, 1752.6									
3505.20	-20.1	V	3.0	35.8	1.0	-54.8	-13.0	-41.8	
5257.80	-15.1	V	3.0	35.5	1.0	-49.6	-13.0	-36.6	
7010.40	-12.2	V	3.0	35.8	1.0	-46.9	-13.0	-33.9	
3505.20	-20.1	H	3.0	35.8	1.0	-54.9	-13.0	-41.9	
5257.80	-15.6	H	3.0	35.5	1.0	-50.1	-13.0	-37.1	
7010.40	-11.5	H	3.0	35.8	1.0	-46.2	-13.0	-33.2	

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Band

Band 4

REL99

UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 2/9/2015
Test Engineer: R.Alegre
Configuration: EUT/AC Charger/HS
Location: Chamber C
Mode: Rel 99 Band 2 Harmonics

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1712.4									
3424.80	-20.3	V	3.0	35.9	1.0	-55.1	-13.0	-42.1	
5137.20	-15.5	V	3.0	35.5	1.0	-50.0	-13.0	-37.0	
6849.60	-11.8	V	3.0	35.7	1.0	-46.5	-13.0	-33.5	
3424.80	-20.6	H	3.0	35.9	1.0	-55.5	-13.0	-42.5	
5137.20	-14.7	H	3.0	35.5	1.0	-49.2	-13.0	-36.2	
6849.60	-11.8	H	3.0	35.7	1.0	-46.5	-13.0	-33.5	
Mid Ch, 1732.6									
3465.20	-20.0	V	3.0	35.8	1.0	-54.8	-13.0	-41.8	
5197.80	-15.4	V	3.0	35.5	1.0	-49.9	-13.0	-36.9	
6930.04	-11.5	V	3.0	35.7	1.0	-46.3	-13.0	-33.3	
3465.20	-19.4	H	3.0	35.8	1.0	-54.3	-13.0	-41.3	
5197.80	-15.1	H	3.0	35.5	1.0	-49.6	-13.0	-36.6	
6930.04	-10.8	H	3.0	35.7	1.0	-45.5	-13.0	-32.5	
High Ch, 1752.6									
3505.20	-20.1	V	3.0	35.8	1.0	-54.9	-13.0	-41.9	
5257.80	-15.1	V	3.0	35.5	1.0	-49.6	-13.0	-36.6	
7010.40	-12.2	V	3.0	35.8	1.0	-47.0	-13.0	-34.0	
3505.20	-19.8	H	3.0	35.8	1.0	-54.6	-13.0	-41.6	
5257.80	-15.1	H	3.0	35.5	1.0	-49.6	-13.0	-36.6	
7010.40	-11.1	H	3.0	35.8	1.0	-45.9	-13.0	-32.9	

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT/AC Charger/HS 2058052
Mode: EGPRS1900

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T34 8449B	Filter 1	Part 24

Band	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									
GSM1900	3.700	-16.9	V	3.0	35.4	1.0	-51.3	-13.0	-38.3	
	5.551	-17.2	V	3.0	34.7	1.0	-50.9	-13.0	-37.9	
	7.401	-13.8	V	3.0	34.9	1.0	-47.7	-13.0	-34.7	
EGPRS	3.700	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
	5.551	-16.1	H	3.0	34.7	1.0	-49.8	-13.0	-36.8	
	7.401	-13.2	H	3.0	34.9	1.0	-47.1	-13.0	-34.1	
	Mid Ch, 1880.0MHz									
	3.760	-14.6	V	3.0	35.3	1.0	-48.9	-13.0	-35.9	
	5.640	-17.1	V	3.0	34.7	1.0	-50.9	-13.0	-37.9	
	7.520	-13.7	V	3.0	34.9	1.0	-47.7	-13.0	-34.7	
	3.760	-16.4	H	3.0	35.3	1.0	-50.8	-13.0	-37.8	
	5.640	-16.5	H	3.0	34.7	1.0	-50.2	-13.0	-37.2	
	7.520	-12.5	H	3.0	34.9	1.0	-46.5	-13.0	-33.5	
	High Ch, 1909.8MHz									
	3.820	-16.6	V	3.0	35.3	1.0	-50.9	-13.0	-37.9	
	5.729	-16.4	V	3.0	34.7	1.0	-50.1	-13.0	-37.1	
	7.639	-13.5	V	3.0	35.0	1.0	-47.5	-13.0	-34.5	
	3.820	-17.1	H	3.0	35.3	1.0	-51.4	-13.0	-38.4	
	5.729	-16.1	H	3.0	34.7	1.0	-49.9	-13.0	-36.9	
	7.639	-12.5	H	3.0	35.0	1.0	-46.4	-13.0	-33.4	

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

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 3/1/2015
Test Engineer: R.Alegre
Configuration: EUT/AC Charger/HS 2058052
Mode: GPRS1900

Chamber	Pre-amplifer	Filter	Limit
3m Chamber	T34 8449B	Filter 1	Part 24

Band	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									
GSM1900 GPRS	3.700	-12.3	V	3.0	35.4	1.0	-46.7	-13.0	-33.7	
	5.551	-14.9	V	3.0	34.7	1.0	-48.6	-13.0	-35.6	
	7.401	-13.1	V	3.0	34.9	1.0	-47.0	-13.0	-34.0	
	3.700	-13.1	H	3.0	35.4	1.0	-47.5	-13.0	-34.5	
	5.551	-14.6	H	3.0	34.7	1.0	-48.4	-13.0	-35.4	
	7.401	-12.1	H	3.0	34.9	1.0	-46.0	-13.0	-33.0	
	Mid Ch, 1880.0MHz									
	3.760	-10.6	V	3.0	35.3	1.0	-45.0	-13.0	-32.0	
	5.640	-16.5	V	3.0	34.7	1.0	-50.2	-13.0	-37.2	
	7.520	-12.6	V	3.0	34.9	1.0	-46.6	-13.0	-33.6	
	3.760	-12.7	H	3.0	35.3	1.0	-47.0	-13.0	-34.0	
	5.640	-14.4	H	3.0	34.7	1.0	-48.1	-13.0	-35.1	
	7.520	-12.7	H	3.0	34.9	1.0	-46.6	-13.0	-33.6	
	High Ch, 1909.8MHz									
	3.820	-12.0	V	3.0	35.3	1.0	-46.2	-13.0	-33.2	
	5.729	-13.2	V	3.0	34.7	1.0	-47.0	-13.0	-34.0	
	7.639	-13.0	V	3.0	35.0	1.0	-47.0	-13.0	-34.0	
	3.820	-12.9	H	3.0	35.3	1.0	-47.2	-13.0	-34.2	
	5.729	-14.3	H	3.0	34.7	1.0	-48.0	-13.0	-35.0	
	7.639	-12.1	H	3.0	35.0	1.0	-46.0	-13.0	-33.0	

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

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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Charger + HS
Mode: EGPRS850 Harm

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band	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									
GSM850	1.648	-23.8	V	3.0	37.4	1.0	-60.2	-13.0	-47.2	
	2.473	-19.6	V	3.0	36.4	1.0	-55.0	-13.0	-42.0	
	3.297	-22.4	V	3.0	35.8	1.0	-57.2	-13.0	-44.2	
EGPRS	1.648	-9.7	H	3.0	37.4	1.0	-46.0	-13.0	-33.0	
	2.473	-26.1	H	3.0	36.4	1.0	-61.5	-13.0	-48.5	
	3.297	-23.0	H	3.0	35.8	1.0	-57.8	-13.0	-44.8	
	Mid Ch, 836.6MHz									
	1.673	-24.3	V	3.0	37.3	1.0	-60.6	-13.0	-47.6	
	2.510	-19.0	V	3.0	36.4	1.0	-54.4	-13.0	-41.4	
	3.346	-22.5	V	3.0	35.8	1.0	-57.2	-13.0	-44.2	
	1.673	-8.9	H	3.0	37.3	1.0	-45.2	-13.0	-32.2	
	2.510	-26.0	H	3.0	36.4	1.0	-61.4	-13.0	-48.4	
	3.346	-22.6	H	3.0	35.8	1.0	-57.3	-13.0	-44.3	
	High Ch, 848.8MHz									
	1.698	-24.5	V	3.0	37.3	1.0	-60.8	-13.0	-47.8	
	2.547	-19.9	V	3.0	36.3	1.0	-55.3	-13.0	-42.3	
	3.395	-21.3	V	3.0	35.7	1.0	-56.0	-13.0	-43.0	
	1.698	-10.4	H	3.0	37.3	1.0	-46.7	-13.0	-33.7	
	2.547	-26.0	H	3.0	36.3	1.0	-61.3	-13.0	-48.3	
	3.395	-22.2	H	3.0	35.7	1.0	-56.9	-13.0	-43.9	

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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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UL Verification Services, Inc.
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 15I20013
Date: 02/12/15
Test Engineer: R. Alegre
Configuration: EUT w/ AC Charger + HS
Mode: GPRS 850

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

Band	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									
GSM850	1.648	-22.9	V	3.0	37.4	1.0	-59.2	-13.0	-46.2	
	2.473	-18.0	V	3.0	36.4	1.0	-53.4	-13.0	-40.4	
	3.297	-21.2	V	3.0	35.8	1.0	-56.1	-13.0	-43.1	
GPRS	1.648	-8.4	H	3.0	37.4	1.0	-44.7	-13.0	-31.7	
	2.473	-25.8	H	3.0	36.4	1.0	-61.2	-13.0	-48.2	
	3.297	-22.5	H	3.0	35.8	1.0	-57.3	-13.0	-44.3	
	Mid Ch, 836.6MHz									
	1.673	-22.1	V	3.0	37.3	1.0	-58.4	-13.0	-45.4	
	2.510	-17.7	V	3.0	36.4	1.0	-53.0	-13.0	-40.0	
	3.346	-21.1	V	3.0	35.8	1.0	-55.9	-13.0	-42.9	
	1.673	-7.8	H	3.0	37.3	1.0	-44.1	-13.0	-31.1	
	2.510	-25.2	H	3.0	36.4	1.0	-60.6	-13.0	-47.6	
	3.346	-22.3	H	3.0	35.8	1.0	-57.0	-13.0	-44.0	
	High Ch, 848.8MHz									
	1.698	-22.9	V	3.0	37.3	1.0	-59.2	-13.0	-46.2	
	2.547	-18.6	V	3.0	36.3	1.0	-53.9	-13.0	-40.9	
	3.395	-20.9	V	3.0	35.7	1.0	-55.6	-13.0	-42.6	
	1.698	-8.6	H	3.0	37.3	1.0	-44.9	-13.0	-31.9	
	2.547	-25.2	H	3.0	36.3	1.0	-60.6	-13.0	-47.6	
	3.395	-22.1	H	3.0	35.7	1.0	-56.8	-13.0	-43.8	

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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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