LTE Band 71

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
20	QPSK	1/0	673	17.78	0.0600
		1/0	680.5	19.43	0.0877
		1/0	688	17.68	0.0586
	16QAM	1/0	673	17.15	0.0519
		1/0	680.5	18.17	0.0656
		1/0	688	16.99	0.0500
15	QPSK	1/0	670.5	18.04	0.0637
		1/0	680.5	19.31	0.0853
		1/0	690.5	19.06	0.0805
	16QAM	1/0	670.5	17.34	0.0542
		1/0	680.5	18.12	0.0649
		1/0	690.5	17.74	0.0594
10	QPSK	1/0	668	18.26	0.0670
		1/0	680.5	19.47	0.0885
		1/0	693	18.85	0.0767
	16QAM	1/0	668	17.02	0.0504
		1/0	680.5	18.09	0.0644
		1/0	693	17.67	0.0585
5	QPSK	1/0	665.5	18.08	0.0643
		1/0	680.5	19.14	0.0820
		1/0	695.5	18.88	0.0773
	16QAM	1/0	665.5	16.87	0.0486
		1/0	680.5	17.95	0.0624
		1/0	695.5	17.67	0.0585

9.1.1. GSM

GPRS 850

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: GPRS 850 MHz Fundamentals

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.20	23.22	V	3.7	0.5	20.03	38.5	-18.5	
824.20	30.42	H	3.7	0.3	27.02	38.5	-11.5	
Mid Ch								
836.60	22.85	V	3.7	0.5	19.63	38.5	-18.9	
836.60	30.45	H	3.7	0.3	27.03	38.5	-11.5	
High Ch								
848.80	23.46	V	3.8	0.5	20.21	38.5	-18.3	
848.80	30.92	H	3.8	0.3	27.47	38.5	-11.0	

EGPRS 850

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: EGPRS 850 MHz Fundamentals

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.20	18.37	V	3.7	0.5	15.18	38.5	-23.3	
824.20	25.72	H	3.7	0.3	22.32	38.5	-16.2	
Mid Ch								
836.60	17.55	V	3.7	0.5	14.33	38.5	-24.2	
836.60	25.33	H	3.7	0.3	21.91	38.5	-16.6	
High Ch								
848.80	18.40	V	3.8	0.5	15.15	38.5	-23.4	
848.80	25.55	H	3.8	0.3	22.10	38.5	-16.4	

GPRS 1900

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/6/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: GPRS 1900 MHz Fundamentals

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.20	26.56	V	5.6	4.5	25.43	33.0	-7.6	
1850.20	28.32	H	5.6	4.5	27.19	33.0	-5.8	
Mid Ch								
1880.00	23.53	V	5.7	4.6	22.43	33.0	-10.6	
1880.00	26.90	H	5.7	4.6	25.80	33.0	-7.2	
High Ch								
1909.80	25.00	V	5.7	4.6	23.90	33.0	-9.1	
1909.80	26.79	H	5.7	4.6	25.69	33.0	-7.3	

EGPRS 1900

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/6/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: EGPRS 1900 MHz Fundamentals

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.20	22.47	V	5.6	4.5	21.34	33.0	-11.7	
1850.20	24.56	H	5.6	4.5	23.43	33.0	-9.6	
Mid Ch								
1880.00	20.22	V	5.7	4.6	19.12	33.0	-13.9	
1880.00	23.63	H	5.7	4.6	22.53	33.0	-10.5	
High Ch								
1909.80	22.04	V	5.7	4.6	20.94	33.0	-12.1	
1909.80	23.49	H	5.7	4.6	22.39	33.0	-10.6	

9.1.2. CDMA

BC10 1xRTT

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/15/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: RTT BC10 Fundamentals

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
817.25	13.45	V	3.7	0.5	10.30	38.5	-28.2	
817.25	21.38	H	3.7	0.3	18.00	38.5	-20.5	
Mid Ch								
820.00	13.29	V	3.7	0.5	10.12	38.5	-28.4	
820.00	21.46	H	3.7	0.3	18.07	38.5	-20.4	
High Ch								
822.75	13.64	V	3.7	0.5	10.46	38.5	-28.0	
822.75	21.60	H	3.7	0.3	18.21	38.5	-20.3	

BC10 EVDO

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/15/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: EVDO BC10 Fundamentals

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
817.25	13.53	V	3.7	0.5	10.38	38.5	-28.1	
817.25	21.56	H	3.7	0.3	18.18	38.5	-20.3	
Mid Ch								
820.00	13.66	V	3.7	0.5	10.49	38.5	-28.0	
820.00	21.45	H	3.7	0.3	18.06	38.5	-20.4	
High Ch								
822.75	13.50	V	3.7	0.5	10.32	38.5	-28.2	
822.75	21.67	H	3.7	0.3	18.28	38.5	-20.2	

BC0 1xRTT

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/13/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: RTT BC0 Fundamentals

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	15.15	V	3.7	0.5	11.95	38.5	-26.5	
824.70	23.22	H	3.7	0.3	19.82	38.5	-18.7	
Mid Ch								
836.52	14.42	V	3.7	0.5	11.20	38.5	-27.3	
836.52	22.32	H	3.7	0.3	18.90	38.5	-19.6	
High Ch								
848.31	15.28	V	3.8	0.5	12.03	38.5	-26.5	
848.31	23.05	H	3.8	0.3	19.60	38.5	-18.9	

BC0 EVDO

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/13/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: EVDO BC0 Fundamentals

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	15.21	V	3.7	0.5	12.01	38.5	-26.5	
824.70	23.40	H	3.7	0.3	20.00	38.5	-18.5	
Mid Ch								
836.52	14.54	V	3.7	0.5	11.32	38.5	-27.2	
836.52	22.43	H	3.7	0.3	19.01	38.5	-19.5	
High Ch								
848.31	15.39	V	3.8	0.5	12.14	38.5	-26.4	
848.31	23.17	H	3.8	0.3	19.72	38.5	-18.8	

BC1 1xRTT

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/15/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: RTT BC1 Fundamentals

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.25	19.88	V	5.6	4.5	18.73	33.0	-14.3	
1851.25	23.16	H	5.6	4.5	22.01	33.0	-11.0	
Mid Ch								
1880.00	18.63	V	5.7	4.6	17.53	33.0	-15.5	
1880.00	23.89	H	5.7	4.6	22.79	33.0	-10.2	
High Ch								
1908.75	19.14	V	5.7	4.5	18.00	33.0	-15.0	
1908.75	21.91	H	5.7	4.5	20.77	33.0	-12.2	

BC1 EVDO

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/15/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: EVDO BC1 Fundamentals

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.25	20.15	V	5.6	4.5	19.00	33.0	-14.0	
1851.25	23.38	H	5.6	4.5	22.23	33.0	-10.8	
Mid Ch								
1880.00	19.06	V	5.7	4.6	17.96	33.0	-15.0	
1880.00	23.77	H	5.7	4.6	22.67	33.0	-10.3	
High Ch								
1908.75	19.32	V	5.7	4.5	18.18	33.0	-14.8	
1908.75	22.17	H	5.7	4.5	21.03	33.0	-12.0	

9.1.3. WCDMA

B5 REL99

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: Rel99 Band 5 Fundamentals

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.40	14.90	V	3.7	0.5	11.70	38.5	-26.8	
826.40	22.08	H	3.7	0.3	18.68	38.5	-19.8	
Mid Ch								
836.60	14.36	V	3.7	0.5	11.14	38.5	-27.4	
836.60	22.13	H	3.7	0.3	18.71	38.5	-19.8	
High Ch								
846.60	15.27	V	3.7	0.5	12.02	38.5	-26.5	
846.60	22.75	H	3.7	0.3	19.30	38.5	-19.2	

B5 HSDPA

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: HSDPA Band 5 Fundamentals

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.40	13.28	V	3.7	0.5	10.08	38.5	-28.4	
826.40	20.61	H	3.7	0.3	17.21	38.5	-21.3	
Mid Ch								
836.60	12.78	V	3.7	0.5	9.56	38.5	-28.9	
836.60	20.58	H	3.7	0.3	17.16	38.5	-21.3	
High Ch								
846.60	13.88	V	3.7	0.5	10.63	38.5	-27.9	
846.60	21.38	H	3.7	0.3	17.93	38.5	-20.6	

B2 REL99

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/6/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: Rel99 Band 2 Fundamentals

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.40	11.54	V	5.6	4.5	10.36	33.0	-22.6	
1852.40	22.66	H	5.6	4.5	21.48	33.0	-11.5	
Mid Ch								
1880.00	11.76	V	5.7	4.6	10.66	33.0	-22.3	
1880.00	21.34	H	5.7	4.6	20.24	33.0	-12.8	
High Ch								
1907.60	12.12	V	5.7	4.5	10.96	33.0	-22.0	
1907.60	21.45	H	5.7	4.5	20.29	33.0	-12.7	

B2 HSDPA

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/6/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: HSDPA Band 2 Fundamentals

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.40	10.45	V	5.6	4.5	9.27	33.0	-23.7	
1852.40	21.59	H	5.6	4.5	20.41	33.0	-12.6	
Mid Ch								
1880.00	10.70	V	5.7	4.6	9.60	33.0	-23.4	
1880.00	20.18	H	5.7	4.6	19.08	33.0	-13.9	
High Ch								
1907.60	10.78	V	5.7	4.5	9.62	33.0	-23.4	
1907.60	20.29	H	5.7	4.5	19.13	33.0	-13.9	

B4 REL99

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/6/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: Rel99 Band 4 Fundamentals

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

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	22.05	V	5.4	5.7	22.37	30.0	-7.6	
1712.40	17.44	H	5.4	5.7	17.76	30.0	-12.2	
Mid Ch								
1732.60	21.25	V	5.5	5.5	21.27	30.0	-8.7	
1732.60	17.86	H	5.5	5.5	17.88	30.0	-12.1	
High Ch								
1752.60	22.54	V	5.5	5.3	22.32	30.0	-7.7	
1752.60	17.75	H	5.5	5.3	17.53	30.0	-12.5	

B4 HSDPA

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/6/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: HSDPA Band 4 Fundamentals

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

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	20.85	V	5.4	5.7	21.17	30.0	-8.8	
1712.40	16.27	H	5.4	5.7	16.59	30.0	-13.4	
Mid Ch								
1732.60	20.12	V	5.5	5.5	20.14	30.0	-9.9	
1732.60	16.65	H	5.5	5.5	16.67	30.0	-13.3	
High Ch								
1752.60	21.40	V	5.5	5.3	21.18	30.0	-8.8	
1752.60	16.63	H	5.5	5.3	16.41	30.0	-13.6	

9.1.4. LTE Band 5

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 5 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	15.28	V	3.7	0.5	12.07	38.5	-26.4	
829.00	22.53	H	3.7	0.3	19.12	38.5	-19.4	
Mid Ch								
836.50	15.07	V	3.7	0.5	11.85	38.5	-26.7	
836.50	22.22	H	3.7	0.3	18.80	38.5	-19.7	
High Ch								
844.00	15.56	V	3.7	0.5	12.32	38.5	-26.2	
844.00	22.88	H	3.7	0.3	19.44	38.5	-19.1	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 5 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	14.26	V	3.7	0.5	11.05	38.5	-27.4	
829.00	21.29	H	3.7	0.3	17.88	38.5	-20.6	
Mid Ch								
836.50	13.79	V	3.7	0.5	10.57	38.5	-27.9	
836.50	21.10	H	3.7	0.3	17.68	38.5	-20.8	
High Ch								
844.00	14.51	V	3.7	0.5	11.27	38.5	-27.2	
844.00	21.94	H	3.7	0.3	18.50	38.5	-20.0	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 5 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	15.31	V	3.7	0.5	12.11	38.5	-26.4	
826.50	22.51	H	3.7	0.3	19.11	38.5	-19.4	
Mid Ch								
836.50	14.91	V	3.7	0.5	11.69	38.5	-26.8	
836.50	22.18	H	3.7	0.3	18.76	38.5	-19.7	
High Ch								
846.50	16.09	V	3.7	0.5	12.84	38.5	-25.7	
846.50	23.54	H	3.7	0.3	20.09	38.5	-18.4	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 5 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	14.00	V	3.7	0.5	10.80	38.5	-27.7	
826.50	21.19	H	3.7	0.3	17.79	38.5	-20.7	
Mid Ch								
836.50	13.60	V	3.7	0.5	10.38	38.5	-28.1	
836.50	21.02	H	3.7	0.3	17.60	38.5	-20.9	
High Ch								
846.50	15.02	V	3.7	0.5	11.77	38.5	-26.7	
846.50	22.42	H	3.7	0.3	18.97	38.5	-19.5	

3MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 5 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	14.99	V	3.7	0.5	11.79	38.5	-26.7	
825.50	22.60	H	3.7	0.3	19.20	38.5	-19.3	
Mid Ch								
836.50	14.36	V	3.7	0.5	11.14	38.5	-27.4	
836.50	22.27	H	3.7	0.3	18.85	38.5	-19.7	
High Ch								
847.50	15.51	V	3.7	0.5	12.26	38.5	-26.2	
847.50	23.15	H	3.7	0.3	19.70	38.5	-18.8	

3MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 5 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	13.70	V	3.7	0.5	10.50	38.5	-28.0	
825.50	21.40	H	3.7	0.3	18.00	38.5	-20.5	
Mid Ch								
836.50	13.01	V	3.7	0.5	9.79	38.5	-28.7	
836.50	20.94	H	3.7	0.3	17.52	38.5	-21.0	
High Ch								
847.50	14.62	V	3.7	0.5	11.37	38.5	-27.1	
847.50	22.28	H	3.7	0.3	18.83	38.5	-19.7	

1.4MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	15.08	V	3.7	0.5	11.88	38.5	-26.6	
824.70	22.27	H	3.7	0.3	18.87	38.5	-19.6	
Mid Ch								
836.50	14.42	V	3.7	0.5	11.20	38.5	-27.3	
836.50	21.85	H	3.7	0.3	18.43	38.5	-20.1	
High Ch								
848.30	15.12	V	3.8	0.5	11.87	38.5	-26.6	
848.30	22.87	H	3.8	0.3	19.42	38.5	-19.1	

1.4MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 5 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	13.89	V	3.7	0.5	10.69	38.5	-27.8	
824.70	21.02	H	3.7	0.3	17.62	38.5	-20.9	
Mid Ch								
836.50	13.31	V	3.7	0.5	10.09	38.5	-28.4	
836.50	20.63	H	3.7	0.3	17.21	38.5	-21.3	
High Ch								
848.30	13.88	V	3.8	0.5	10.63	38.5	-27.9	
848.30	21.78	H	3.8	0.3	18.33	38.5	-20.2	

9.1.5. LTE Band 7

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 7 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2510.00	23.00	V	6.6	5.8	22.16	33.0	-10.8	
2510.00	24.77	H	6.6	5.8	23.93	33.0	-9.1	
Mid Ch								
2535.00	22.44	V	6.7	5.8	21.54	33.0	-11.5	
2535.00	24.13	H	6.7	5.8	23.23	33.0	-9.8	
High Ch								
2560.00	21.09	V	6.8	5.9	20.16	33.0	-12.8	
2560.00	23.02	H	6.8	5.9	22.09	33.0	-10.9	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 7 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2510.00	21.91	V	6.6	5.8	21.07	33.0	-11.9	
2510.00	23.64	H	6.6	5.8	22.80	33.0	-10.2	
Mid Ch								
2535.00	21.23	V	6.7	5.8	20.33	33.0	-12.7	
2535.00	22.95	H	6.7	5.8	22.05	33.0	-10.9	
High Ch								
2560.00	19.89	V	6.8	5.9	18.96	33.0	-14.0	
2560.00	21.82	H	6.8	5.9	20.89	33.0	-12.1	

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 7 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2507.50	22.67	V	6.6	5.7	21.82	33.0	-11.2	
2507.50	24.70	H	6.6	5.7	23.85	33.0	-9.2	
Mid Ch								
2535.00	22.24	V	6.7	5.8	21.34	33.0	-11.7	
2535.00	23.96	H	6.7	5.8	23.06	33.0	-9.9	
High Ch								
2562.50	20.34	V	6.8	5.9	19.41	33.0	-13.6	
2562.50	22.93	H	6.8	5.9	22.00	33.0	-11.0	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 7 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2507.50	21.69	V	6.6	5.7	20.84	33.0	-12.2	
2507.50	23.74	H	6.6	5.7	22.89	33.0	-10.1	
Mid Ch								
2535.00	21.16	V	6.7	5.8	20.26	33.0	-12.7	
2535.00	22.82	H	6.7	5.8	21.92	33.0	-11.1	
High Ch								
2562.50	19.35	V	6.8	5.9	18.42	33.0	-14.6	
2562.50	21.91	H	6.8	5.9	20.98	33.0	-12.0	

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 7 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2505.00	22.52	V	6.6	5.7	21.66	33.0	-11.3	
2505.00	24.13	H	6.6	5.7	23.27	33.0	-9.7	
Mid Ch								
2535.00	22.08	V	6.7	5.8	21.18	33.0	-11.8	
2535.00	23.91	H	6.7	5.8	23.01	33.0	-10.0	
High Ch								
2565.00	20.44	V	6.8	5.9	19.54	33.0	-13.5	
2565.00	22.49	H	6.8	5.9	21.59	33.0	-11.4	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 7 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2505.00	21.47	V	6.6	5.7	20.61	33.0	-12.4	
2505.00	23.10	H	6.6	5.7	22.24	33.0	-10.8	
Mid Ch								
2535.00	21.03	V	6.7	5.8	20.13	33.0	-12.9	
2535.00	22.84	H	6.7	5.8	21.94	33.0	-11.1	
High Ch								
2565.00	19.38	V	6.8	5.9	18.48	33.0	-14.5	
2565.00	21.42	H	6.8	5.9	20.52	33.0	-12.5	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 7 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2502.50	22.18	V	6.6	5.7	21.32	33.0	-11.7	
2502.50	23.86	H	6.6	5.7	23.00	33.0	-10.0	
Mid Ch								
2535.00	21.99	V	6.7	5.8	21.09	33.0	-11.9	
2535.00	23.77	H	6.7	5.8	22.87	33.0	-10.1	
High Ch								
2567.50	20.49	V	6.8	5.9	19.57	33.0	-13.4	
2567.50	22.16	H	6.8	5.9	21.24	33.0	-11.8	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 7 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2502.50	21.08	V	6.6	5.7	20.22	33.0	-12.8	
2502.50	22.71	H	6.6	5.7	21.85	33.0	-11.2	
Mid Ch								
2535.00	20.88	V	6.7	5.8	19.98	33.0	-13.0	
2535.00	22.64	H	6.7	5.8	21.74	33.0	-11.3	
High Ch								
2567.50	19.43	V	6.8	5.9	18.51	33.0	-14.5	
2567.50	21.07	H	6.8	5.9	20.15	33.0	-12.8	

9.1.6. LTE Band 12

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/12/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	13.94	V	3.7	1.3	11.48	34.8	-23.3	
704.00	21.47	H	3.7	1.4	19.09	34.8	-15.7	
Mid Ch								
707.50	13.63	V	3.7	1.2	11.13	34.8	-23.7	
707.50	21.38	H	3.7	1.3	18.95	34.8	-15.9	
High Ch								
711.00	13.08	V	3.8	1.2	10.54	34.8	-24.3	
711.00	21.44	H	3.8	1.3	18.96	34.8	-15.8	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/12/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 12 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
704.00	12.94	V	3.7	1.3	10.48	34.8	-24.3	
704.00	20.50	H	3.7	1.4	18.12	34.8	-16.7	
Mid Ch								
707.50	12.29	V	3.7	1.2	9.79	34.8	-25.0	
707.50	20.06	H	3.7	1.3	17.63	34.8	-17.2	
High Ch								
711.00	11.96	V	3.8	1.2	9.42	34.8	-25.4	
711.00	20.30	H	3.8	1.3	17.82	34.8	-17.0	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/12/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	13.90	V	3.7	1.3	11.46	34.8	-23.3	
701.50	21.41	H	3.7	1.4	19.07	34.8	-15.7	
Mid Ch								
707.50	13.35	V	3.7	1.2	10.85	34.8	-24.0	
707.50	21.19	H	3.7	1.3	18.76	34.8	-16.0	
High Ch								
713.50	13.02	V	3.8	1.2	10.45	34.8	-24.3	
713.50	21.61	H	3.8	1.2	19.09	34.8	-15.7	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/12/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 12 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
701.50	12.68	V	3.7	1.3	10.24	34.8	-24.6	
701.50	20.15	H	3.7	1.4	17.81	34.8	-17.0	
Mid Ch								
707.50	12.04	V	3.7	1.2	9.54	34.8	-25.3	
707.50	19.89	H	3.7	1.3	17.46	34.8	-17.3	
High Ch								
713.50	11.86	V	3.8	1.2	9.29	34.8	-25.5	
713.50	20.37	H	3.8	1.2	17.85	34.8	-17.0	

3MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/12/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 12 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
700.50	13.70	V	3.7	1.3	11.27	34.8	-23.5	
700.50	21.33	H	3.7	1.4	19.00	34.8	-15.8	
Mid Ch								
707.50	13.23	V	3.7	1.2	10.73	34.8	-24.1	
707.50	20.85	H	3.7	1.3	18.42	34.8	-16.4	
High Ch								
714.50	13.38	V	3.8	1.2	10.80	34.8	-24.0	
714.50	21.23	H	3.8	1.2	18.69	34.8	-16.1	

3MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/12/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 12 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
700.50	12.66	V	3.7	1.3	10.23	34.8	-24.6	
700.50	20.28	H	3.7	1.4	17.95	34.8	-16.8	
Mid Ch								
707.50	12.08	V	3.7	1.2	9.58	34.8	-25.2	
707.50	19.63	H	3.7	1.3	17.20	34.8	-17.6	
High Ch								
714.50	12.11	V	3.8	1.2	9.53	34.8	-25.3	
714.50	19.98	H	3.8	1.2	17.44	34.8	-17.4	

1.4MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/12/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
699.70	12.60	V	3.7	1.3	10.18	34.8	-24.6	
699.70	20.92	H	3.7	1.4	18.60	34.8	-16.2	
Mid Ch								
707.50	12.33	V	3.7	1.2	9.83	34.8	-25.0	
707.50	20.91	H	3.7	1.3	18.48	34.8	-16.3	
High Ch								
715.30	12.05	V	3.8	1.2	9.46	34.8	-25.3	
715.30	21.18	H	3.8	1.2	18.63	34.8	-16.2	

1.4MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/12/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 12 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
699.70	11.38	V	3.7	1.3	8.96	34.8	-25.8	
699.70	19.78	H	3.7	1.4	17.46	34.8	-17.3	
Mid Ch								
707.50	11.25	V	3.7	1.2	8.75	34.8	-26.1	
707.50	19.95	H	3.7	1.3	17.52	34.8	-17.3	
High Ch								
715.30	11.08	V	3.8	1.2	8.49	34.8	-26.3	
715.30	20.05	H	3.8	1.2	17.50	34.8	-17.3	

9.1.7. LTE Band 13

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 13 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch								
782.00	13.22	V	3.6	0.7	10.37	34.8	-24.4	
782.00	20.06	H	3.6	0.5	16.99	34.8	-17.8	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 13 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch								
782.00	11.97	V	3.6	0.7	9.12	34.8	-25.6	
782.00	18.85	H	3.6	0.5	15.78	34.8	-19.0	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 13 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
779.50	13.14	V	3.6	0.8	10.32	34.8	-24.4	
779.50	20.06	H	3.6	0.5	17.02	34.8	-17.7	
Mid Ch								
782.00	13.24	V	3.6	0.7	10.39	34.8	-24.4	
782.00	20.15	H	3.6	0.5	17.08	34.8	-17.7	
High Ch								
784.50	13.39	V	3.6	0.7	10.52	34.8	-24.3	
784.50	20.12	H	3.6	0.5	17.01	34.8	-17.8	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 13 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
779.50	11.86	V	3.6	0.8	9.04	34.8	-25.7	
779.50	18.59	H	3.6	0.5	15.55	34.8	-19.2	
Mid Ch								
782.00	11.97	V	3.6	0.7	9.12	34.8	-25.6	
782.00	18.72	H	3.6	0.5	15.65	34.8	-19.1	
High Ch								
784.50	12.17	V	3.6	0.7	9.30	34.8	-25.5	
784.50	18.81	H	3.6	0.5	15.70	34.8	-19.1	

9.1.8. LTE Band 14

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/16/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 14 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
793.00	13.48	V	3.6	0.7	10.52	34.8	-24.3	
793.00	21.20	H	3.6	0.4	17.96	34.8	-16.8	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/16/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 14 Fundamentals, 10MHz Bandwidth

Test Equpment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch								
793.00	12.19	V	3.6	0.7	9.23	34.8	-25.5	
793.00	19.87	H	3.6	0.4	16.63	34.8	-18.1	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/16/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 14 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
790.50	13.23	V	3.6	0.7	10.29	34.8	-24.5	
790.50	21.34	H	3.6	0.4	18.14	34.8	-16.6	
Mid Ch								
793.00	13.37	V	3.6	0.7	10.41	34.8	-24.4	
793.00	21.43	H	3.6	0.4	18.19	34.8	-16.6	
High Ch								
795.50	13.04	V	3.6	0.6	10.05	34.8	-24.7	
795.50	21.53	H	3.6	0.4	18.26	34.8	-16.5	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/16/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 14 Fundamentals, 5MHz Bandwidth

Test Equpment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
790.50	11.87	V	3.6	0.7	8.93	34.8	-25.8	
790.50	20.03	H	3.6	0.4	16.83	34.8	-17.9	
Mid Ch								
793.00	11.88	V	3.6	0.7	8.92	34.8	-25.9	
793.00	20.13	H	3.6	0.4	16.89	34.8	-17.9	
High Ch								
795.50	11.68	V	3.6	0.6	8.69	34.8	-26.1	
795.50	20.17	H	3.6	0.4	16.90	34.8	-17.9	

9.1.9. LTE Band 25

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 25 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	11.93	V	0.3	4.7	16.34	33.0	-16.7	
1860.00	15.16	H	0.3	4.7	19.52	33.0	-13.5	
Mid Ch								
1882.50	11.15	V	0.3	4.7	15.56	33.0	-17.4	
1882.50	14.42	H	0.3	4.7	18.80	33.0	-14.2	
High Ch								
1905.00	11.37	V	0.3	4.7	15.78	33.0	-17.2	
1905.00	14.05	H	0.3	4.7	18.48	33.0	-14.5	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 25 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1860.00	11.83	V	0.3	4.7	16.24	33.0	-16.8	
1860.00	15.06	H	0.3	4.7	19.42	33.0	-13.6	
Mid Ch								
1882.50	10.95	V	0.3	4.7	15.36	33.0	-17.6	
1882.50	13.92	H	0.3	4.7	18.30	33.0	-14.7	
High Ch								
1905.00	11.17	V	0.3	4.7	15.58	33.0	-17.4	
1905.00	13.75	H	0.3	4.7	18.18	33.0	-14.8	

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 25 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1857.50	12.43	V	0.3	4.7	16.84	33.0	-16.2	
1857.50	15.76	H	0.3	4.7	20.12	33.0	-12.9	
Mid Ch								
1882.50	10.65	V	0.3	4.7	15.06	33.0	-17.9	
1882.50	14.62	H	0.3	4.7	19.00	33.0	-14.0	
High Ch								
1907.50	3.07	V	0.3	4.7	7.48	33.0	-25.5	
1907.50	13.75	H	0.3	4.7	18.18	33.0	-14.8	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 25 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1857.50	12.03	V	0.3	4.7	16.44	33.0	-16.6	
1857.50	15.46	H	0.3	4.7	19.82	33.0	-13.2	
Mid Ch								
1882.50	10.55	V	0.3	4.7	14.96	33.0	-18.0	
1882.50	14.52	H	0.3	4.7	18.90	33.0	-14.1	
High Ch								
1907.50	2.77	V	0.3	4.7	7.18	33.0	-25.8	
1907.50	13.45	H	0.3	4.7	17.88	33.0	-15.1	

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 25 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	12.43	V	0.3	4.7	16.84	33.0	-16.2	
1855.00	15.96	H	0.3	4.7	20.32	33.0	-12.7	
Mid Ch								
1882.50	11.05	V	0.3	4.7	15.46	33.0	-17.5	
1882.50	14.62	H	0.3	4.7	19.00	33.0	-14.0	
High Ch								
1910.00	0.00	V	0.3	4.7	0.00	33.0	0.0	
1910.00	15.05	H	0.3	4.7	19.48	33.0	-13.5	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 25 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1855.00	12.13	V	0.3	4.7	16.54	33.0	-16.5	
1855.00	15.66	H	0.3	4.7	20.02	33.0	-13.0	
Mid Ch								
1882.50	10.75	V	0.3	4.7	15.16	33.0	-17.8	
1882.50	14.22	H	0.3	4.7	18.60	33.0	-14.4	
High Ch								
1910.00	11.57	V	0.3	4.7	15.98	33.0	-17.0	
1910.00	13.55	H	0.3	4.7	17.98	33.0	-15.0	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 25 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	14.43	V	0.3	4.7	18.84	33.0	-14.2	
1852.50	17.86	H	0.3	4.7	22.22	33.0	-10.8	
Mid Ch								
1882.50	12.45	V	0.3	4.7	16.86	33.0	-16.1	
1882.50	15.82	H	0.3	4.7	20.20	33.0	-12.8	
High Ch								
1912.50	13.67	V	0.3	4.7	18.08	33.0	-14.9	
1912.50	15.75	H	0.3	4.7	20.18	33.0	-12.8	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 25 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.50	13.03	V	0.3	4.7	17.44	33.0	-15.6	
1852.50	16.46	H	0.3	4.7	20.82	33.0	-12.2	
Mid Ch								
1882.50	11.05	V	0.3	4.7	15.46	33.0	-17.5	
1882.50	14.52	H	0.3	4.7	18.90	33.0	-14.1	
High Ch								
1912.50	12.17	V	0.3	4.7	16.58	33.0	-16.4	
1912.50	14.25	H	0.3	4.7	18.68	33.0	-14.3	

3MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 25 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.50	12.73	V	0.3	4.7	17.14	33.0	-15.9	
1851.50	17.56	H	0.3	4.7	21.92	33.0	-11.1	
Mid Ch								
1882.50	13.25	V	0.3	4.7	17.66	33.0	-15.3	
1882.50	16.42	H	0.3	4.7	20.80	33.0	-12.2	
High Ch								
1913.50	13.57	V	0.3	4.7	17.98	33.0	-15.0	
1913.50	15.85	H	0.3	4.7	20.28	33.0	-12.7	

3MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 25 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.50	11.33	V	0.3	4.7	15.74	33.0	-17.3	
1851.50	16.06	H	0.3	4.7	20.42	33.0	-12.6	
Mid Ch								
1882.50	11.75	V	0.3	4.7	16.16	33.0	-16.8	
1882.50	14.82	H	0.3	4.7	19.20	33.0	-13.8	
High Ch								
1913.50	12.07	V	0.3	4.7	16.48	33.0	-16.5	
1913.50	14.45	H	0.3	4.7	18.88	33.0	-14.1	

1.4MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 25 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.70	12.43	V	0.3	4.7	16.84	33.0	-16.2	
1850.70	17.66	H	0.3	4.7	22.02	33.0	-11.0	
Mid Ch								
1882.50	12.55	V	0.3	4.7	16.96	33.0	-16.0	
1882.50	15.82	H	0.3	4.7	20.20	33.0	-12.8	
High Ch								
1914.30	13.67	V	0.3	4.7	18.08	33.0	-14.9	
1914.30	16.45	H	0.3	4.7	20.88	33.0	-12.1	

1.4Hz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 25 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1850.70	11.23	V	0.3	4.7	15.64	33.0	-17.4	
1850.70	16.56	H	0.3	4.7	20.92	33.0	-12.1	
Mid Ch								
1882.50	11.25	V	0.3	4.7	15.66	33.0	-17.3	
1882.50	14.42	H	0.3	4.7	18.80	33.0	-14.2	
High Ch								
1914.30	12.37	V	0.3	4.7	16.78	33.0	-16.2	
1914.30	15.25	H	0.3	4.7	19.68	33.0	-13.3	

9.1.10. LTE Band 26 (FCC PART 90S)

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/13/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 26 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch								
821.50	13.35	V	3.7	0.5	10.17	38.5	-28.3	
821.50	21.89	H	3.7	0.3	18.50	38.5	-20.0	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/13/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 26 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch								
821.50	11.92	V	3.7	0.5	8.74	38.5	-29.8	
821.50	20.55	H	3.7	0.3	17.16	38.5	-21.3	

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 26 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch								
819.00	12.90	V	3.7	0.5	9.74	50.0	-40.3	
819.00	21.02	H	3.7	0.3	17.64	50.0	-32.4	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 26 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch								
819.00	11.74	V	3.7	0.5	8.58	50.0	-41.4	
819.00	19.84	H	3.7	0.3	16.46	50.0	-33.5	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 26 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
816.50	12.68	V	3.7	0.5	9.54	50.0	-40.5	
816.50	20.74	H	3.7	0.3	17.36	50.0	-32.6	
Mid Ch								
819.00	13.07	V	3.7	0.5	9.91	50.0	-40.1	
819.00	21.06	H	3.7	0.3	17.68	50.0	-32.3	
High Ch								
821.50	13.67	V	3.7	0.5	10.49	50.0	-39.5	
821.50	21.48	H	3.7	0.3	18.09	50.0	-31.9	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 26 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
816.50	11.46	V	3.7	0.5	8.32	50.0	-41.7	
816.50	19.55	H	3.7	0.3	16.17	50.0	-33.8	
Mid Ch								
819.00	11.92	V	3.7	0.5	8.76	50.0	-41.2	
819.00	19.90	H	3.7	0.3	16.52	50.0	-33.5	
High Ch								
821.50	12.50	V	3.7	0.5	9.32	50.0	-40.7	
821.50	20.34	H	3.7	0.3	16.95	50.0	-33.0	

3MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 26 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
815.50	12.37	V	3.7	0.5	9.23	50.0	-40.8	
815.50	20.61	H	3.7	0.3	17.23	50.0	-32.8	
Mid Ch								
819.00	13.23	V	3.7	0.5	10.07	50.0	-39.9	
819.00	20.80	H	3.7	0.3	17.42	50.0	-32.6	
High Ch								
822.50	13.98	V	3.7	0.5	10.80	50.0	-39.2	
822.50	21.44	H	3.7	0.3	18.05	50.0	-32.0	

3MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 26 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
815.50	11.22	V	3.7	0.5	8.08	50.0	-41.9	
815.50	19.53	H	3.7	0.3	16.15	50.0	-33.8	
Mid Ch								
819.00	11.93	V	3.7	0.5	8.77	50.0	-41.2	
819.00	19.53	H	3.7	0.3	16.15	50.0	-33.9	
High Ch								
822.50	13.07	V	3.7	0.5	9.89	50.0	-40.1	
822.50	20.53	H	3.7	0.3	17.14	50.0	-32.9	

1.4MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
814.70	12.07	V	3.7	0.5	8.94	50.0	-41.1	
814.70	20.02	H	3.7	0.3	16.65	50.0	-33.4	
Mid Ch								
819.00	12.87	V	3.7	0.5	9.71	50.0	-40.3	
819.00	20.47	H	3.7	0.3	17.09	50.0	-32.9	
High Ch								
823.30	13.51	V	3.7	0.5	10.32	50.0	-39.7	
823.30	21.35	H	3.7	0.3	17.96	50.0	-32.0	

1.4MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
814.70	11.06	V	3.7	0.5	7.93	50.0	-42.1	
814.70	18.84	H	3.7	0.3	15.47	50.0	-34.5	
Mid Ch								
819.00	11.61	V	3.7	0.5	8.45	50.0	-41.5	
819.00	19.52	H	3.7	0.3	16.14	50.0	-33.9	
High Ch								
823.30	12.37	V	3.7	0.5	9.18	50.0	-40.8	
823.30	20.11	H	3.7	0.3	16.72	50.0	-33.3	

9.1.11. LTE Band 26 (FCC PART 22)

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 26 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
831.50	14.85	V	3.7	0.5	11.64	38.5	-26.9	
831.50	22.07	H	3.7	0.3	18.66	38.5	-19.8	
Mid Ch								
836.50	14.75	V	3.7	0.5	11.53	38.5	-27.0	
836.50	21.57	H	3.7	0.3	18.15	38.5	-20.4	
High Ch								
841.50	14.94	V	3.7	0.5	11.70	38.5	-26.8	
841.50	22.15	H	3.7	0.3	18.71	38.5	-19.8	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 26 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
831.50	13.60	V	3.7	0.5	10.39	38.5	-28.1	
831.50	20.86	H	3.7	0.3	17.45	38.5	-21.1	
Mid Ch								
836.50	13.71	V	3.7	0.5	10.49	38.5	-28.0	
836.50	20.26	H	3.7	0.3	16.84	38.5	-21.7	
High Ch								
841.50	13.88	V	3.7	0.5	10.64	38.5	-27.9	
841.50	21.35	H	3.7	0.3	17.91	38.5	-20.6	

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 26 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	14.85	V	3.7	0.5	11.64	38.5	-26.9	
829.00	22.15	H	3.7	0.3	18.74	38.5	-19.8	
Mid Ch								
836.50	14.59	V	3.7	0.5	11.37	38.5	-27.1	
836.50	21.78	H	3.7	0.3	18.36	38.5	-20.1	
High Ch								
844.00	15.20	V	3.7	0.5	11.96	38.5	-26.5	
844.00	22.31	H	3.7	0.3	18.87	38.5	-19.6	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 26 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
829.00	13.58	V	3.7	0.5	10.37	38.5	-28.1	
829.00	20.87	H	3.7	0.3	17.46	38.5	-21.0	
Mid Ch								
836.50	13.37	V	3.7	0.5	10.15	38.5	-28.4	
836.50	20.52	H	3.7	0.3	17.10	38.5	-21.4	
High Ch								
844.00	14.25	V	3.7	0.5	11.01	38.5	-27.5	
844.00	21.38	H	3.7	0.3	17.94	38.5	-20.6	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 26 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	14.77	V	3.7	0.5	11.57	38.5	-26.9	
826.50	22.10	H	3.7	0.3	18.70	38.5	-19.8	
Mid Ch								
836.50	14.40	V	3.7	0.5	11.18	38.5	-27.3	
836.50	21.80	H	3.7	0.3	18.38	38.5	-20.1	
High Ch								
846.50	15.57	V	3.7	0.5	12.32	38.5	-26.2	
846.50	22.75	H	3.7	0.3	19.30	38.5	-19.2	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 26 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
826.50	13.61	V	3.7	0.5	10.41	38.5	-28.1	
826.50	20.94	H	3.7	0.3	17.54	38.5	-21.0	
Mid Ch								
836.50	13.26	V	3.7	0.5	10.04	38.5	-28.5	
836.50	20.70	H	3.7	0.3	17.28	38.5	-21.2	
High Ch								
846.50	14.29	V	3.7	0.5	11.04	38.5	-27.5	
846.50	21.49	H	3.7	0.3	18.04	38.5	-20.5	

3MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 26 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	14.63	V	3.7	0.5	11.43	38.5	-27.1	
825.50	21.90	H	3.7	0.3	18.50	38.5	-20.0	
Mid Ch								
836.50	14.13	V	3.7	0.5	10.91	38.5	-27.6	
836.50	21.59	H	3.7	0.3	18.17	38.5	-20.3	
High Ch								
847.50	15.55	V	3.7	0.5	12.30	38.5	-26.2	
847.50	22.62	H	3.7	0.3	19.17	38.5	-19.3	

3MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 26 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
825.50	13.54	V	3.7	0.5	10.34	38.5	-28.2	
825.50	20.69	H	3.7	0.3	17.29	38.5	-21.2	
Mid Ch								
836.50	12.89	V	3.7	0.5	9.67	38.5	-28.8	
836.50	20.42	H	3.7	0.3	17.00	38.5	-21.5	
High Ch								
847.50	14.61	V	3.7	0.5	11.36	38.5	-27.1	
847.50	21.65	H	3.7	0.3	18.20	38.5	-20.3	

1.4MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 26 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	14.26	V	3.7	0.5	11.06	38.5	-27.4	
824.70	21.65	H	3.7	0.3	18.25	38.5	-20.2	
Mid Ch								
836.50	13.72	V	3.7	0.5	10.50	38.5	-28.0	
836.50	21.32	H	3.7	0.3	17.90	38.5	-20.6	
High Ch								
848.30	14.67	V	3.8	0.5	11.42	38.5	-27.1	
848.30	22.30	H	3.8	0.3	18.85	38.5	-19.7	

1.4MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/2/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 26 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0184971, and Chamber I SMA Cables
Substitution: Dipole T416, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
824.70	13.12	V	3.7	0.5	9.92	38.5	-28.6	
824.70	20.55	H	3.7	0.3	17.15	38.5	-21.3	
Mid Ch								
836.50	12.56	V	3.7	0.5	9.34	38.5	-29.2	
836.50	20.22	H	3.7	0.3	16.80	38.5	-21.7	
High Ch								
848.30	13.65	V	3.8	0.5	10.40	38.5	-28.1	
848.30	21.26	H	3.8	0.3	17.81	38.5	-20.7	

9.1.12. LTE Band 30 (FCC)

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/6/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 30 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2310.00	0.00	V	6.5	5.7	0.00	24.0	0.0	
2310.00	0.00	H	6.5	5.7	0.00	24.0	0.0	
Mid Ch								
2310.00	19.37	V	6.5	5.7	18.60	24.0	-5.4	
2310.00	21.54	H	6.5	5.7	20.77	24.0	-3.2	
High Ch								
2310.00	0.00	V	6.5	5.7	0.00	24.0	0.0	
2310.00	0.00	H	6.5	5.7	0.00	24.0	0.0	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/6/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 30 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2310.00	0.00	V	6.5	5.7	0.00	24.0	0.0	
2310.00	0.00	H	6.5	5.7	0.00	24.0	0.0	
Mid Ch								
2310.00	18.47	V	6.5	5.7	17.70	24.0	-6.3	
2310.00	20.43	H	6.5	5.7	19.66	24.0	-4.3	
High Ch								
2310.00	0.00	V	6.5	5.7	0.00	24.0	0.0	
2310.00	0.00	H	6.5	5.7	0.00	24.0	0.0	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/6/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 30 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2307.50	18.79	V	6.5	5.7	18.04	24.0	-6.0	
2307.50	20.98	H	6.5	5.7	20.23	24.0	-3.8	
Mid Ch								
2310.00	18.90	V	6.5	5.7	18.13	24.0	-5.9	
2310.00	21.46	H	6.5	5.7	20.69	24.0	-3.3	
High Ch								
2312.50	18.65	V	6.5	5.7	17.85	24.0	-6.1	
2312.50	21.52	H	6.5	5.7	20.72	24.0	-3.3	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/6/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 30 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2307.50	17.80	V	6.5	5.7	17.05	24.0	-6.9	
2307.50	19.90	H	6.5	5.7	19.15	24.0	-4.8	
Mid Ch								
2310.00	17.97	V	6.5	5.7	17.20	24.0	-6.8	
2310.00	20.51	H	6.5	5.7	19.74	24.0	-4.3	
High Ch								
2312.50	17.64	V	6.5	5.7	16.84	24.0	-7.2	
2312.50	20.56	H	6.5	5.7	19.76	24.0	-4.2	

9.1.13. LTE Band 38 (IC)

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 38 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2580.00	19.99	V	6.9	5.9	19.02	33.0	-14.0	
2580.00	21.59	H	6.9	5.9	20.62	33.0	-12.4	
Mid Ch								
2595.00	19.53	V	7.0	5.8	18.42	33.0	-14.6	
2595.00	21.51	H	7.0	5.8	20.40	33.0	-12.6	
High Ch								
2610.00	18.32	V	7.0	5.8	17.19	33.0	-15.8	
2610.00	19.69	H	7.0	5.8	18.56	33.0	-14.4	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 38 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2580.00	18.79	V	6.9	5.9	17.82	33.0	-15.2	
2580.00	20.49	H	6.9	5.9	19.52	33.0	-13.5	
Mid Ch								
2595.00	18.20	V	7.0	5.8	17.09	33.0	-15.9	
2595.00	20.45	H	7.0	5.8	19.34	33.0	-13.7	
High Ch								
2610.00	17.24	V	7.0	5.8	16.11	33.0	-16.9	
2610.00	18.62	H	7.0	5.8	17.49	33.0	-15.5	

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 38 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2577.50	19.52	V	6.9	5.9	18.55	33.0	-14.5	
2577.50	21.36	H	6.9	5.9	20.39	33.0	-12.6	
Mid Ch								
2595.00	19.37	V	7.0	5.8	18.26	33.0	-14.7	
2595.00	21.32	H	7.0	5.8	20.21	33.0	-12.8	
High Ch								
2612.50	17.95	V	7.0	5.8	16.82	33.0	-16.2	
2612.50	19.52	H	7.0	5.8	18.39	33.0	-14.6	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 38 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2577.50	18.55	V	6.9	5.9	17.58	33.0	-15.4	
2577.50	20.26	H	6.9	5.9	19.29	33.0	-13.7	
Mid Ch								
2595.00	18.42	V	7.0	5.8	17.31	33.0	-15.7	
2595.00	20.11	H	7.0	5.8	19.00	33.0	-14.0	
High Ch								
2612.50	16.98	V	7.0	5.8	15.85	33.0	-17.2	
2612.50	18.58	H	7.0	5.8	17.45	33.0	-15.6	

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 38 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2575.00	19.70	V	6.9	5.9	18.70	33.0	-14.3	
2575.00	21.41	H	6.9	5.9	20.41	33.0	-12.6	
Mid Ch								
2595.00	19.25	V	7.0	5.8	18.14	33.0	-14.9	
2595.00	21.08	H	7.0	5.8	19.97	33.0	-13.0	
High Ch								
2615.00	16.89	V	7.0	5.8	15.73	33.0	-17.3	
2615.00	19.21	H	7.0	5.8	18.05	33.0	-14.9	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 38 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2575.00	18.68	V	6.9	5.9	17.68	33.0	-15.3	
2575.00	20.35	H	6.9	5.9	19.35	33.0	-13.6	
Mid Ch								
2595.00	18.13	V	7.0	5.8	17.02	33.0	-16.0	
2595.00	19.93	H	7.0	5.8	18.82	33.0	-14.2	
High Ch								
2615.00	15.97	V	7.0	5.8	14.81	33.0	-18.2	
2615.00	18.26	H	7.0	5.8	17.10	33.0	-15.9	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 38 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2572.50	19.55	V	6.9	5.8	18.54	33.0	-14.5	
2572.50	21.39	H	6.9	5.8	20.38	33.0	-12.6	
Mid Ch								
2595.00	18.89	V	7.0	5.8	17.78	33.0	-15.2	
2595.00	20.42	H	7.0	5.8	19.31	33.0	-13.7	
High Ch								
2617.50	16.30	V	7.0	5.8	15.15	33.0	-17.9	
2617.50	18.85	H	7.0	5.8	17.70	33.0	-15.3	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/14/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 38 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2572.50	18.51	V	6.9	5.8	17.50	33.0	-15.5	
2572.50	20.26	H	6.9	5.8	19.25	33.0	-13.8	
Mid Ch								
2595.00	17.73	V	7.0	5.8	16.62	33.0	-16.4	
2595.00	19.36	H	7.0	5.8	18.25	33.0	-14.7	
High Ch								
2617.50	15.50	V	7.0	5.8	14.35	33.0	-18.7	
2617.50	17.83	H	7.0	5.8	16.68	33.0	-16.3	

9.1.14. LTE Band 41 (FCC) HPUE

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/7/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 41(FCC) Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2506.00	23.10	V	6.6	5.7	22.24	33.0	-10.8	
2506.00	25.13	H	6.6	5.7	24.27	33.0	-8.7	
Mid Ch								
2593.00	20.98	V	6.9	5.8	19.88	33.0	-13.1	
2593.00	23.09	H	6.9	5.8	21.99	33.0	-11.0	
High Ch								
2680.00	13.36	V	6.9	6.0	12.45	33.0	-20.6	
2680.00	16.17	H	6.9	6.0	15.26	33.0	-17.7	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/7/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 41(FCC) Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2506.00	22.19	V	6.6	5.7	21.33	33.0	-11.7	
2506.00	24.28	H	6.6	5.7	23.42	33.0	-9.6	
Mid Ch								
2593.00	20.29	V	6.9	5.8	19.19	33.0	-13.8	
2593.00	21.97	H	6.9	5.8	20.87	33.0	-12.1	
High Ch								
2680.00	12.49	V	6.9	6.0	11.58	33.0	-21.4	
2680.00	15.07	H	6.9	6.0	14.16	33.0	-18.8	

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/7/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 41(FCC) Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2503.50	22.85	V	6.6	5.7	21.99	33.0	-11.0	
2503.50	24.88	H	6.6	5.7	24.02	33.0	-9.0	
Mid Ch								
2593.00	20.40	V	6.9	5.8	19.30	33.0	-13.7	
2593.00	22.51	H	6.9	5.8	21.41	33.0	-11.6	
High Ch								
2682.50	12.98	V	6.9	6.0	12.06	33.0	-20.9	
2682.50	14.62	H	6.9	6.0	13.70	33.0	-19.3	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/7/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 41(FCC) Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2503.50	21.84	V	6.6	5.7	20.98	33.0	-12.0	
2503.50	23.58	H	6.6	5.7	22.72	33.0	-10.3	
Mid Ch								
2593.00	19.40	V	6.9	5.8	18.30	33.0	-14.7	
2593.00	21.41	H	6.9	5.8	20.31	33.0	-12.7	
High Ch								
2682.50	12.20	V	6.9	6.0	11.28	33.0	-21.7	
2682.50	14.07	H	6.9	6.0	13.15	33.0	-19.8	

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/7/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 41(FCC) Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2501.00	22.79	V	6.6	5.7	21.94	33.0	-11.1	
2501.00	24.64	H	6.6	5.7	23.79	33.0	-9.2	
Mid Ch								
2593.00	20.23	V	6.9	5.8	19.13	33.0	-13.9	
2593.00	22.33	H	6.9	5.8	21.23	33.0	-11.8	
High Ch								
2685.00	12.42	V	6.9	6.0	11.49	33.0	-21.5	
2685.00	15.44	H	6.9	6.0	14.51	33.0	-18.5	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/7/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 41(FCC) Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2501.00	21.85	V	6.6	5.7	21.00	33.0	-12.0	
2501.00	23.47	H	6.6	5.7	22.62	33.0	-10.4	
Mid Ch								
2593.00	19.42	V	6.9	5.8	18.32	33.0	-14.7	
2593.00	21.12	H	6.9	5.8	20.02	33.0	-13.0	
High Ch								
2685.00	11.27	V	6.9	6.0	10.34	33.0	-22.7	
2685.00	14.05	H	6.9	6.0	13.12	33.0	-19.9	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/7/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_QPSK Band 41(FCC) Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2498.50	22.40	V	6.6	5.7	21.52	33.0	-11.5	
2498.50	24.12	H	6.6	5.7	23.24	33.0	-9.8	
Mid Ch								
2593.00	20.06	V	6.9	5.8	18.96	33.0	-14.0	
2593.00	21.96	H	6.9	5.8	20.86	33.0	-12.1	
High Ch								
2687.50	11.19	V	6.9	6.0	10.26	33.0	-22.7	
2687.50	14.61	H	6.9	6.0	13.68	33.0	-19.3	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/7/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber I
Mode: LTE_16QAM Band 41(FCC) Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T862, and Chamber I SMA Cables
Substitution: T120, Chamber I Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2498.50	21.01	V	6.6	5.7	20.13	33.0	-12.9	
2498.50	22.72	H	6.6	5.7	21.84	33.0	-11.2	
Mid Ch								
2593.00	19.27	V	6.9	5.8	18.17	33.0	-14.8	
2593.00	21.01	H	6.9	5.8	19.91	33.0	-13.1	
High Ch								
2687.50	10.31	V	6.9	6.0	9.38	33.0	-23.6	
2687.50	13.55	H	6.9	6.0	12.62	33.0	-20.4	

9.1.15. LTE Band 41 (IC)

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/27/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 41 (IC) Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber K SMA Cables
Substitution: T120, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2510.00	20.91	V	7.3	5.8	19.42	33.0	-13.6	
2510.00	25.85	H	7.3	5.8	24.36	33.0	-8.6	
Mid Ch								
2595.00	16.27	V	7.3	5.8	14.80	33.0	-18.2	
2595.00	20.86	H	7.3	5.8	19.39	33.0	-13.6	
High Ch								
2680.00	11.55	V	7.7	6.0	9.86	33.0	-23.1	
2680.00	16.29	H	7.7	6.0	14.60	33.0	-18.4	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/27/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 41 (IC) Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber K SMA Cables
Substitution: T120, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2510.00	19.73	V	7.3	5.8	18.24	33.0	-14.8	
2510.00	25.03	H	7.3	5.8	23.54	33.0	-9.5	
Mid Ch								
2595.00	15.55	V	7.3	5.8	14.08	33.0	-18.9	
2595.00	19.90	H	7.3	5.8	18.43	33.0	-14.6	
High Ch								
2680.00	10.40	V	7.7	6.0	8.71	33.0	-24.3	
2680.00	15.27	H	7.7	6.0	13.58	33.0	-19.4	

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/27/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 41 (IC) Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber K SMA Cables
Substitution: T120, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2507.50	23.18	V	7.3	5.7	21.67	33.0	-11.3	
2507.50	25.43	H	7.3	5.7	23.92	33.0	-9.1	
Mid Ch								
2595.00	18.19	V	7.3	5.8	16.72	33.0	-16.3	
2595.00	20.65	H	7.3	5.8	19.18	33.0	-13.8	
High Ch								
2682.50	14.35	V	7.7	6.0	12.64	33.0	-20.4	
2682.50	17.44	H	7.7	6.0	15.73	33.0	-17.3	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/27/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 41 (IC) Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber K SMA Cables
Substitution: T120, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2507.50	22.21	V	7.3	5.7	20.70	33.0	-12.3	
2507.50	24.56	H	7.3	5.7	23.05	33.0	-9.9	
Mid Ch								
2595.00	17.42	V	7.3	5.8	15.95	33.0	-17.0	
2595.00	20.02	H	7.3	5.8	18.55	33.0	-14.4	
High Ch								
2682.50	13.36	V	7.7	6.0	11.65	33.0	-21.4	
2682.50	16.62	H	7.7	6.0	14.91	33.0	-18.1	

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/27/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 41 (IC) Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber K SMA Cables
Substitution: T120, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2505.00	22.81	V	7.3	5.7	21.29	33.0	-11.7	
2505.00	25.35	H	7.3	5.7	23.83	33.0	-9.2	
Mid Ch								
2595.00	18.33	V	7.3	5.8	16.86	33.0	-16.1	
2595.00	20.33	H	7.3	5.8	18.86	33.0	-14.1	
High Ch								
2685.00	13.91	V	7.7	6.0	12.18	33.0	-20.8	
2685.00	16.12	H	7.7	6.0	14.39	33.0	-18.6	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/27/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 41 (IC) Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber K SMA Cables
Substitution: T120, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2505.00	21.85	V	7.3	5.7	20.33	33.0	-12.7	
2505.00	24.35	H	7.3	5.7	22.83	33.0	-10.2	
Mid Ch								
2595.00	17.35	V	7.3	5.8	15.88	33.0	-17.1	
2595.00	19.54	H	7.3	5.8	18.07	33.0	-14.9	
High Ch								
2685.00	12.92	V	7.7	6.0	11.19	33.0	-21.8	
2685.00	15.29	H	7.7	6.0	13.56	33.0	-19.4	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/27/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 41 (IC) Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber K SMA Cables
Substitution: T120, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2502.50	23.33	V	7.3	5.7	21.80	33.0	-11.2	
2502.50	24.75	H	7.3	5.7	23.22	33.0	-9.8	
Mid Ch								
2595.00	17.73	V	7.3	5.8	16.26	33.0	-16.7	
2595.00	19.00	H	7.3	5.8	17.53	33.0	-15.5	
High Ch								
2687.50	13.42	V	7.7	6.0	11.67	33.0	-21.3	
2687.50	15.31	H	7.7	6.0	13.56	33.0	-19.4	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/27/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 41 (IC) Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber K SMA Cables
Substitution: T120, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
2502.50	22.26	V	7.3	5.7	20.73	33.0	-12.3	
2502.50	23.67	H	7.3	5.7	22.14	33.0	-10.9	
Mid Ch								
2595.00	16.64	V	7.3	5.8	15.17	33.0	-17.8	
2595.00	17.82	H	7.3	5.8	16.35	33.0	-16.6	
High Ch								
2687.50	12.24	V	7.7	6.0	10.49	33.0	-22.5	
2687.50	14.17	H	7.7	6.0	12.42	33.0	-20.6	

9.1.16. LTE Band 66

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/13/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 66 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1720.00	13.20	V	0.3	5.6	18.53	30.0	-11.5	
1720.00	12.30	H	0.3	5.6	17.61	30.0	-12.4	
Mid Ch								
1745.00	17.90	V	0.3	5.1	22.71	30.0	-7.3	
1745.00	12.10	H	0.3	5.1	16.91	30.0	-13.1	
High Ch								
1770.00	14.90	V	0.3	4.9	19.51	30.0	-10.5	
1770.00	11.80	H	0.3	4.9	16.41	30.0	-13.6	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/8/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 66 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	12.00	V	0.3	5.6	17.33	30.0	-12.7	
1717.50	10.90	H	0.3	5.6	16.21	30.0	-13.8	
Mid Ch								
1745.00	16.50	V	0.3	5.1	21.31	30.0	-8.7	
1745.00	10.70	H	0.3	5.1	15.51	30.0	-14.5	
High Ch								
1772.50	16.20	V	0.3	4.9	20.81	30.0	-9.2	
1772.50	13.00	H	0.3	4.9	17.61	30.0	-12.4	

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/8/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 66 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	18.00	V	0.3	5.6	23.33	30.0	-6.7	
1717.50	13.30	H	0.3	5.6	18.61	30.0	-11.4	
Mid Ch								
1745.00	14.20	V	0.3	5.1	19.01	30.0	-11.0	
1745.00	14.70	H	0.3	5.1	19.51	30.0	-10.5	
High Ch								
1772.50	16.30	V	0.3	4.9	20.91	30.0	-9.1	
1772.50	14.10	H	0.3	4.9	18.71	30.0	-11.3	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/8/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 66 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1717.50	16.80	V	0.3	5.6	22.13	30.0	-7.9	
1717.50	12.00	H	0.3	5.6	17.31	30.0	-12.7	
Mid Ch								
1745.00	13.00	V	0.3	5.1	17.81	30.0	-12.2	
1745.00	13.50	H	0.3	5.1	18.31	30.0	-11.7	
High Ch								
1772.50	15.00	V	0.3	4.9	19.61	30.0	-10.4	
1772.50	12.80	H	0.3	4.9	17.41	30.0	-12.6	

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 66 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	13.70	V	0.3	5.6	19.03	30.0	-11.0	
1715.00	14.40	H	0.3	5.6	19.71	30.0	-10.3	
Mid Ch								
1745.00	14.30	V	0.3	5.1	19.11	30.0	-10.9	
1745.00	14.50	H	0.3	5.1	19.31	30.0	-10.7	
High Ch								
1775.00	16.70	V	0.3	4.9	21.31	30.0	-8.7	
1775.00	15.10	H	0.3	4.9	19.71	30.0	-10.3	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 66 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1715.00	12.40	V	0.3	5.6	17.73	30.0	-12.3	
1715.00	13.10	H	0.3	5.6	18.41	30.0	-11.6	
Mid Ch								
1745.00	13.30	V	0.3	5.1	18.11	30.0	-11.9	
1745.00	13.40	H	0.3	5.1	18.21	30.0	-11.8	
High Ch								
1775.00	15.30	V	0.3	4.9	19.91	30.0	-10.1	
1775.00	13.80	H	0.3	4.9	18.41	30.0	-11.6	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 66 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.50	13.00	V	0.3	5.6	18.33	30.0	-11.7	
1712.50	13.70	H	0.3	5.6	19.01	30.0	-11.0	
Mid Ch								
1745.00	14.50	V	0.3	5.1	19.31	30.0	-10.7	
1745.00	14.40	H	0.3	5.1	19.21	30.0	-10.8	
High Ch								
1777.50	16.00	V	0.3	4.9	20.61	30.0	-9.4	
1777.50	15.00	H	0.3	4.9	19.61	30.0	-10.4	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 66 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1712.50	11.60	V	0.3	5.6	16.93	30.0	-13.1	
1712.50	12.40	H	0.3	5.6	17.71	30.0	-12.3	
Mid Ch								
1745.00	13.10	V	0.3	5.1	17.91	30.0	-12.1	
1745.00	13.00	H	0.3	5.1	17.81	30.0	-12.2	
High Ch								
1777.50	14.70	V	0.3	4.9	19.31	30.0	-10.7	
1777.50	13.70	H	0.3	4.9	18.31	30.0	-11.7	

3MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 66 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1711.50	14.70	V	0.3	5.6	20.03	30.0	-10.0	
1711.50	14.10	H	0.3	5.6	19.41	30.0	-10.6	
Mid Ch								
1745.00	18.30	V	0.3	5.1	23.11	30.0	-6.9	
1745.00	13.50	H	0.3	5.1	18.31	30.0	-11.7	
High Ch								
1778.50	15.80	V	0.3	4.9	20.41	30.0	-9.6	
1778.50	15.00	H	0.3	4.9	19.61	30.0	-10.4	

3MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 66 Fundamentals, 3MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1711.50	13.40	V	0.3	5.6	18.73	30.0	-11.3	
1711.50	12.80	H	0.3	5.6	18.11	30.0	-11.9	
Mid Ch								
1745.00	17.30	V	0.3	5.1	22.11	30.0	-7.9	
1745.00	12.50	H	0.3	5.1	17.31	30.0	-12.7	
High Ch								
1778.50	14.60	V	0.3	4.9	19.21	30.0	-10.8	
1778.50	13.70	H	0.3	4.9	18.31	30.0	-11.7	

1.4MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_QPSK Band 66 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Horn T344, and Chamber J SMA Cables
Substitution: Horn T711, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1710.70	18.00	V	0.3	5.6	23.33	30.0	-6.7	
1710.70	13.80	H	0.3	5.6	19.11	30.0	-10.9	
Mid Ch								
1745.00	15.00	V	0.3	5.1	19.81	30.0	-10.2	
1745.00	13.70	H	0.3	5.1	18.51	30.0	-11.5	
High Ch								
1779.30	15.60	V	0.3	4.9	20.21	30.0	-9.8	
1779.30	14.70	H	0.3	4.9	19.31	30.0	-10.7	

1.4Hz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 1/3/2020
Test Engineer: 19498 ER
Configuration: EUT Only
Location: Chamber J
Mode: LTE_16QAM Band 66 Fundamentals, 1.4MHz Bandwidth

Test Equipment:
Receiving: Horn PRE0189055, and Chamber J SMA Cables
Substitution: Horn T73, Chamber J Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1710.70	17.50	V	0.3	5.6	22.83	30.0	-7.2	
1710.70	13.20	H	0.3	5.6	18.51	30.0	-11.5	
Mid Ch								
1745.00	14.51	V	0.3	5.1	19.32	30.0	-10.7	
1745.00	13.50	H	0.3	5.1	18.31	30.0	-11.7	
High Ch								
1779.30	15.10	V	0.3	4.9	19.71	30.0	-10.3	
1779.30	14.40	H	0.3	4.9	19.01	30.0	-11.0	

9.1.17. LTE Band 71

20MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/11/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 71 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
673.00	9.64	V	3.7	1.1	7.07	34.8	-27.7	
673.00	20.14	H	3.7	1.3	17.78	34.8	-17.0	
Mid Ch								
680.50	10.03	V	3.7	1.1	7.50	34.8	-27.3	
680.50	21.78	H	3.7	1.3	19.43	34.8	-15.3	
High Ch								
688.00	9.23	V	3.7	1.2	6.74	34.8	-28.0	
688.00	20.02	H	3.7	1.4	17.68	34.8	-17.1	

20MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/11/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 71 Fundamentals, 20MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
673.00	9.01	V	3.7	1.1	6.44	34.8	-28.3	
673.00	19.51	H	3.7	1.3	17.15	34.8	-17.6	
Mid Ch								
680.50	8.83	V	3.7	1.1	6.30	34.8	-28.5	
680.50	20.52	H	3.7	1.3	18.17	34.8	-16.6	
High Ch								
688.00	8.52	V	3.7	1.2	6.03	34.8	-28.7	
688.00	19.33	H	3.7	1.4	16.99	34.8	-17.8	

15MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/11/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 71 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
670.50	10.77	V	3.7	1.1	8.20	34.8	-26.6	
670.50	20.39	H	3.7	1.3	18.04	34.8	-16.7	
Mid Ch								
680.50	12.40	V	3.7	1.1	9.87	34.8	-24.9	
680.50	21.66	H	3.7	1.3	19.31	34.8	-15.5	
High Ch								
690.50	13.01	V	3.7	1.2	10.54	34.8	-24.2	
690.50	21.40	H	3.7	1.4	19.06	34.8	-15.7	

15MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/11/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 71 Fundamentals, 15MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
670.50	10.07	V	3.7	1.1	7.50	34.8	-27.3	
670.50	19.69	H	3.7	1.3	17.34	34.8	-17.4	
Mid Ch								
680.50	11.25	V	3.7	1.1	8.72	34.8	-26.1	
680.50	20.47	H	3.7	1.3	18.12	34.8	-16.7	
High Ch								
690.50	12.02	V	3.7	1.2	9.55	34.8	-25.2	
690.50	20.08	H	3.7	1.4	17.74	34.8	-17.0	

10MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/11/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 71 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
668.00	11.57	V	3.6	1.1	9.00	34.8	-25.8	
668.00	20.61	H	3.6	1.3	18.26	34.8	-16.5	
Mid Ch								
680.50	12.66	V	3.7	1.1	10.13	34.8	-24.6	
680.50	21.82	H	3.7	1.3	19.47	34.8	-15.3	
High Ch								
693.00	13.42	V	3.7	1.2	10.96	34.8	-23.8	
693.00	21.18	H	3.7	1.4	18.85	34.8	-15.9	

10MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/11/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 71 Fundamentals, 10MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
668.00	10.31	V	3.6	1.1	7.74	34.8	-27.0	
668.00	19.37	H	3.6	1.3	17.02	34.8	-17.7	
Mid Ch								
680.50	11.24	V	3.7	1.1	8.71	34.8	-26.1	
680.50	20.44	H	3.7	1.3	18.09	34.8	-16.7	
High Ch								
693.00	12.24	V	3.7	1.2	9.78	34.8	-25.0	
693.00	20.00	H	3.7	1.4	17.67	34.8	-17.1	

5MHz QPSK

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/11/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_QPSK Band 71 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
665.50	11.46	V	3.6	1.1	8.88	34.8	-25.9	
665.50	20.42	H	3.6	1.3	18.08	34.8	-16.7	
Mid Ch								
680.50	12.52	V	3.7	1.1	9.99	34.8	-24.8	
680.50	21.49	H	3.7	1.3	19.14	34.8	-15.6	
High Ch								
695.50	13.29	V	3.7	1.3	10.84	34.8	-23.9	
695.50	21.21	H	3.7	1.4	18.88	34.8	-15.9	

5MHz 16QAM

UL Verification Services, Inc.
High Frequency Substitution Measurement

Company: Samsung
Project #: 13171837
Date: 2/11/2020
Test Engineer: 19480 BS
Configuration: EUT Only
Location: Chamber K
Mode: LTE_16QAM Band 71 Fundamentals, 5MHz Bandwidth

Test Equipment:
Receiving: Hybrid PRE0181574, and Chamber K SMA Cables
Substitution: Dipole T416, Chamber K Passthrough Cables

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
665.50	10.23	V	3.6	1.1	7.65	34.8	-27.1	
665.50	19.21	H	3.6	1.3	16.87	34.8	-17.9	
Mid Ch								
680.50	11.30	V	3.7	1.1	8.77	34.8	-26.0	
680.50	20.30	H	3.7	1.3	17.95	34.8	-16.8	
High Ch								
695.50	12.03	V	3.7	1.3	9.58	34.8	-25.2	
695.50	20.00	H	3.7	1.4	17.67	34.8	-17.1	

9.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53, §90.691, §90.543
ISED: RSS130§4.7, RSS132§5.5; RSS133§6.5, RSS139§6.6, RSS140§4.4 , RSS199§4.5.

LIMITS

FCC: §22.917(a), §24.238(a), §27.53 (g), (h), §90.691
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.

FCC: §27.53 (Band 13)
(c) 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.

(f) Emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

FCC: §90.543 Emission Limitations. (Band 14)
(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC: §27.53 (a) (Band 30)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

FCC: §27.53 (m) (Band 7, 41)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

RSS130§4.7
4.7.1 General unwanted emissions limits
The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 $\log_{10}$ p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits
In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:
    i. 76 + 10 $\log_{10}$ p (watts), dB, for base and fixed equipment and
    ii. 65 + 10 $\log_{10}$ p (watts), dB, for mobile and portable equipment
(b) the e.i.r.p. in the band 1559-1610 MHz shall not exceed −70 dBW/MHz for wideband signal and −80 dBW for discrete emission with bandwidth less than 700 Hz.

RSS132§5.5

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(iii) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p (watts).

(iv) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least43 + 10 log10 p (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

RSS133§6.5

Equipment shall comply with the limits in (i) and (ii) below.

(iii) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts).

(iv) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS139§6.6

(iii) (i)In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block,Footnote2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least43 + 10 log10 p (watts) dB.

(iv) (ii)After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.

RSS140§4.4 (Band 14)

The power of any unwanted emission outside the bands 758-768 MHz and788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

a. For any frequency between 769-775 MHz and 799-806 MHz:

   i. 76 + 10 log (p), dB in a 6.25 kHz band for fixed and base station equipment
   ii. 65 + 10 log (p), dB in a 6.25 kHz band for mobile and portable/hand-held equipment

b. For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: 43 + 10 log (p), dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed −70 dBW/MHz for wideband emissions, and −80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

RSS199§4.5

Equipment shall comply with the following unwanted emission limits:

a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least 43 + 10 $\log_{10}$ p
b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
   i. 40 + 10 $\log_{10}$ p from the channel edges to 5 MHz away
   ii. 43 + 10 $\log_{10}$ p between 5 MHz and X MHz from the channel edges, and

iii. $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than $43 + 10 \log_{10} p$ on all frequencies between 2490.5 MHz and 2496 MHz, and $55 + 10 \log_{10} p$ at or below 2490.5 MHz.

In (a) and (b), **p** is the transmitter power measured in watts and **X** is 6 MHz or the equipment occupied bandwidth, whichever is greater.

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

No spurious emissions were detected above system noise floor from 18-26GHz.

9.2.1. GSM 850

GPRS MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	GPRS 850
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	824.2 MHz											
1	1.64813	-64.32	Pk	28.5	-31.7	12.5	-55.02	-13	-42.02	0-360	149	H
2	2.47263	-58.37	Pk	32.3	-30.4	11.3	-45.17	-13	-32.17	0-360	149	H
3	3.29978	-71.36	Pk	32.7	-29.2	11.7	-56.16	-13	-43.16	0-360	149	H
4	1.64759	-64.55	Pk	28.5	-31.7	11.4	-56.35	-13	-43.35	0-360	149	V
5	2.47263	-56.47	Pk	32.3	-30.4	11.6	-42.97	-13	-29.97	0-360	149	V
6	3.30084	-70.99	Pk	32.7	-29.3	12	-55.59	-13	-42.59	0-360	149	V
	836.6 MHz											
1	1.67256	-57.02	Pk	28.8	-31.6	11.6	-48.22	-13	-35.22	0-360	149	H
2	2.50981	-58.07	Pk	32.3	-30.1	11.4	-44.47	-13	-31.47	0-360	149	H
3	3.34441	-71.78	Pk	32.7	-29.2	11.5	-56.78	-13	-43.78	0-360	149	H
4	1.67256	-59.2	Pk	28.8	-31.6	10.9	-51.1	-13	-38.1	0-360	149	V
5	2.50928	-61.85	Pk	32.3	-30.2	11.4	-48.35	-13	-35.35	0-360	149	V
6	3.34813	-71.32	Pk	32.7	-29.2	11.9	-55.92	-13	-42.92	0-360	149	V
	848.8 MHz											
1	1.69753	-49.85	Pk	29.2	-31.5	11.2	-40.95	-13	-27.95	0-360	149	H
2	2.54647	-68.45	Pk	32.3	-30.1	12	-54.25	-13	-41.25	0-360	149	H
3	3.39966	-71.65	Pk	32.7	-29.2	11.9	-56.25	-13	-43.25	0-360	149	H
4	1.697	-59.62	Pk	29.2	-31.5	12.2	-49.72	-13	-36.72	0-360	149	V
5	2.54647	-65.67	Pk	32.3	-30.1	11.8	-51.67	-13	-38.67	0-360	149	V
6	3.40125	-71.55	Pk	32.7	-29.2	11.7	-56.35	-13	-43.35	0-360	149	V

EGPRS MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	EGPRS 850
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	824.2 MHz											
1	1.64813	-54.23	Pk	28.5	-31.7	12.5	-44.93	-13	-31.93	0-360	149	H
2	2.47209	-59.3	Pk	32.3	-30.4	11.3	-46.1	-13	-33.1	0-360	149	H
3	3.29766	-70.73	Pk	32.7	-29.2	11.9	-55.33	-13	-42.33	0-360	149	H
4	1.64813	-58.87	Pk	28.5	-31.7	11.4	-50.67	-13	-37.67	0-360	149	V
5	2.47209	-58.09	Pk	32.3	-30.4	11.6	-44.59	-13	-31.59	0-360	149	V
6	3.29872	-70.55	Pk	32.7	-29.2	12	-55.05	-13	-42.05	0-360	149	V
	836.6 MHz											
1	1.67309	-52.57	Pk	28.8	-31.6	11.6	-43.77	-13	-30.77	0-360	149	H
2	2.50981	-53.56	Pk	32.3	-30.1	11.4	-39.96	-13	-26.96	0-360	149	H
3	3.34972	-70.96	Pk	32.7	-29.2	11.4	-56.06	-13	-43.06	0-360	149	H
4	1.67256	-61.37	Pk	28.8	-31.6	10.9	-53.27	-13	-40.27	0-360	149	V
5	2.50981	-58.03	Pk	32.3	-30.1	11.4	-44.43	-13	-31.43	0-360	149	V
6	3.34919	-71.17	Pk	32.7	-29.2	11.9	-55.77	-13	-42.77	0-360	149	V
	848.8 MHz											
1	1.69753	-64.84	Pk	29.2	-31.5	11.2	-55.94	-13	-42.94	0-360	149	H
2	2.54381	-73	Pk	32.2	-30.1	12.2	-58.7	-13	-45.7	0-360	149	H
3	3.39541	-71.28	Pk	32.6	-29.2	11.8	-56.08	-13	-43.08	0-360	149	H
4	1.697	-62.31	Pk	29.2	-31.5	12.2	-52.41	-13	-39.41	0-360	149	V
5	2.54488	-70.82	Pk	32.2	-30.1	11.8	-56.92	-13	-43.92	0-360	149	V
6	3.39806	-71.28	Pk	32.7	-29.2	11.7	-56.08	-13	-43.08	0-360	149	V

9.2.2. GSM 1900

GPRS MODE

Company:	Samsung
Project #:	13171837
Date:	12/28/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	GPRS 1900
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1850.2 MHz											
1	3.70034	-71.82	Pk	33	-28.7	11.9	-55.62	-13	-42.62	0-360	150	H
2	5.55016	-76.42	Pk	35.1	-26.8	12	-56.12	-13	-43.12	0-360	150	H
3	7.38297	-78.16	Pk	35.6	-24.2	12	-54.76	-13	-41.76	0-360	150	H
4	3.70034	-71.82	Pk	33	-28.7	11.9	-55.62	-13	-42.62	0-360	150	H
5	5.55016	-76.42	Pk	35.1	-26.8	12	-56.12	-13	-43.12	0-360	150	H
6	7.38297	-78.16	Pk	35.6	-24.2	12	-54.76	-13	-41.76	0-360	150	H
	1880 MHz											
1	3.75878	-75.51	Pk	32.9	-28.4	11.8	-59.21	-13	-46.21	0-360	149	H
2	5.63409	-76.05	Pk	35	-26.6	11.7	-55.95	-13	-42.95	0-360	149	H
3	7.51153	-78.28	Pk	35.6	-23.8	12.1	-54.38	-13	-41.38	0-360	149	H
4	3.76091	-75.22	Pk	33	-28.4	11.8	-58.82	-13	-45.82	0-360	149	V
5	5.64259	-76.6	Pk	35.1	-26.6	11.9	-56.2	-13	-43.2	0-360	149	V
6	7.52641	-77.53	Pk	35.6	-23.9	11.7	-54.13	-13	-41.13	0-360	149	V
	1909.8 MHz											
1	3.81669	-76.57	Pk	32.9	-28.3	11.7	-60.27	-13	-47.27	0-360	149	H
2	5.72813	-77.13	Pk	34.9	-26.6	11.8	-57.03	-13	-44.03	0-360	149	H
3	7.64647	-77.5	Pk	35.6	-24.1	11.6	-54.4	-13	-41.4	0-360	149	H
4	3.81456	-75.75	Pk	32.9	-28.4	11.4	-59.85	-13	-46.85	0-360	149	V
5	5.72441	-75.74	Pk	34.9	-26.7	11.8	-55.74	-13	-42.74	0-360	149	V
6	7.63903	-78.2	Pk	35.6	-24.1	11.8	-54.9	-13	-41.9	0-360	149	V

EGPRS MODE

Company:	Samsung
Project #:	13171837
Date:	12/28/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	EGPRS 1900
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1850.2 MHz											
1	3.70566	-75.05	Pk	33	-28.6	11.8	-58.85	-13	-45.85	0-360	149	H
2	5.55653	-76.3	Pk	35.1	-26.8	11.9	-56.1	-13	-43.1	0-360	149	H
3	7.40741	-77.83	Pk	35.5	-24.4	11.6	-55.13	-13	-42.13	0-360	149	H
4	3.69663	-75.23	Pk	33	-28.8	12.1	-58.93	-13	-45.93	0-360	149	V
5	5.55016	-75.7	Pk	35.1	-26.8	12.2	-55.2	-13	-42.2	0-360	149	V
6	7.39891	-78.3	Pk	35.6	-24.3	11.8	-55.2	-13	-42.2	0-360	149	V
	1880 MHz											
1	3.75081	-75.08	Pk	33	-28.4	11.7	-58.78	-13	-45.78	0-360	149	H
2	5.62825	-76.16	Pk	35.2	-26.6	11.4	-56.16	-13	-43.16	0-360	149	H
3	7.51844	-77.87	Pk	35.5	-23.9	12	-54.27	-13	-41.27	0-360	149	H
4	3.76303	-76.48	Pk	33	-28.3	11.8	-59.98	-13	-46.98	0-360	149	V
5	5.64047	-76.64	Pk	35.1	-26.7	11.9	-56.34	-13	-43.34	0-360	149	V
6	7.51206	-78.64	Pk	35.6	-23.9	12.2	-54.74	-13	-41.74	0-360	149	V
	1909.8 MHz											
1	3.82413	-75.52	Pk	32.9	-28.2	11.4	-59.42	-13	-46.42	0-360	149	H
2	5.72866	-76.71	Pk	34.9	-26.6	11.8	-56.61	-13	-43.61	0-360	149	H
3	7.65922	-78.53	Pk	35.7	-24	11.7	-55.13	-13	-42.13	0-360	149	H
4	3.82147	-76.62	Pk	32.9	-28.2	11.2	-60.72	-13	-47.72	0-360	149	V
5	5.72972	-76.46	Pk	34.9	-26.6	11.6	-56.56	-13	-43.56	0-360	149	V
6	7.63106	-78.71	Pk	35.6	-24.1	12	-55.21	-13	-42.21	0-360	149	V

9.2.3. CDMA BC10

1xRTT MODE

Company:	Samsung
Project #:	13171837
Date:	1/13/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xRTT BC10
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	817.25 MHz											
1	1.63431	-66.16	Pk	28.4	-31.6	12.2	-57.16	-13	-44.16	0-360	149	H
2	2.45084	-68.83	Pk	32.2	-30.4	11.4	-55.63	-13	-42.63	0-360	149	H
3	3.26791	-72.16	Pk	32.8	-29.2	12	-56.56	-13	-43.56	0-360	149	H
4	1.63378	-69.29	Pk	28.4	-31.6	11.4	-61.09	-13	-48.09	0-360	149	V
5	2.45138	-70.78	Pk	32.2	-30.4	11.5	-57.48	-13	-44.48	0-360	149	V
6	3.26738	-73.77	Pk	32.9	-29.2	11.7	-58.37	-13	-45.37	0-360	149	V
	820 MHz											
1	1.63963	-67.57	Pk	28.4	-31.7	12.3	-58.57	-13	-45.57	0-360	149	H
2	2.45988	-71.06	Pk	32.3	-30.4	11.5	-57.66	-13	-44.66	0-360	149	H
3	3.28172	-73.34	Pk	32.8	-29.2	12.1	-57.64	-13	-44.64	0-360	149	H
4	1.63963	-68.24	Pk	28.4	-31.7	11.6	-59.94	-13	-46.94	0-360	149	V
5	2.45403	-70.81	Pk	32.2	-30.4	11.3	-57.71	-13	-44.71	0-360	149	V
6	3.28544	-70.27	Pk	32.8	-29.1	12	-54.57	-13	-41.57	0-360	149	V
	822.75 MHz											
1	1.64547	-66.26	Pk	28.5	-31.7	12.4	-57.06	-13	-44.06	0-360	149	H
2	2.46731	-67.88	Pk	32.3	-30.4	11.3	-54.68	-13	-41.68	0-360	149	H
3	3.28916	-71.12	Pk	32.8	-29.2	12.2	-55.32	-13	-42.32	0-360	149	H
4	1.64547	-68.73	Pk	28.5	-31.7	11.4	-60.53	-13	-47.53	0-360	149	V
5	2.47103	-71.28	Pk	32.3	-30.4	11.6	-57.78	-13	-44.78	0-360	149	V
6	3.28916	-71.86	Pk	32.8	-29.2	12	-56.26	-13	-43.26	0-360	149	V

1xEV-DO REV A MODE

Company:	Samsung
Project #:	13171837
Date:	1/13/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xEV-DO REV A BC10
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	817.25 MHz											
1	1.63484	-61.86	Pk	28.4	-31.6	12.2	-52.86	-13	-39.86	0-360	149	H
2	2.45244	-68.56	Pk	32.2	-30.4	11.6	-55.16	-13	-42.16	0-360	149	H
3	3.26844	-71.21	Pk	32.8	-29.2	12	-55.61	-13	-42.61	0-360	149	H
4	1.63431	-66.03	Pk	28.4	-31.6	11.5	-57.73	-13	-44.73	0-360	149	V
5	2.45244	-67.71	Pk	32.2	-30.4	11.5	-54.41	-13	-41.41	0-360	149	V
6	3.26472	-71.28	Pk	32.9	-29.2	11.8	-55.78	-13	-42.78	0-360	149	V
	820 MHz											
1	1.64016	-65.09	Pk	28.5	-31.8	12.3	-56.09	-13	-43.09	0-360	149	H
2	2.46041	-68.19	Pk	32.3	-30.4	11.5	-54.79	-13	-41.79	0-360	149	H
3	3.28013	-71.86	Pk	32.8	-29.2	12.1	-56.16	-13	-43.16	0-360	149	H
4	1.64069	-67.5	Pk	28.5	-31.8	11.5	-59.3	-13	-46.3	0-360	149	V
5	2.46094	-69.49	Pk	32.3	-30.4	11.1	-56.49	-13	-43.49	0-360	149	V
6	3.28172	-71.64	Pk	32.8	-29.2	11.9	-56.14	-13	-43.14	0-360	149	V
	822.75 MHz											
1	1.64441	-63.57	Pk	28.5	-31.7	12.3	-54.47	-13	-41.47	0-360	149	H
2	2.46891	-67.25	Pk	32.3	-30.4	11.3	-54.05	-13	-41.05	0-360	149	H
3	3.29288	-72.11	Pk	32.8	-29.2	12.1	-56.41	-13	-43.41	0-360	149	H
4	1.64494	-68.68	Pk	28.5	-31.7	11.4	-60.48	-13	-47.48	0-360	149	V
5	2.46784	-70.1	Pk	32.3	-30.4	11.4	-56.8	-13	-43.8	0-360	149	V
6	3.29181	-73.08	Pk	32.8	-29.2	11.9	-57.58	-13	-44.58	0-360	149	V

9.2.4. CDMA BC0

1xRTT MODE

Company:	Samsung
Project #:	13171837
Date:	1/08/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xRTT BC0
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	824.7 MHz											
1	1.64441	-67.2	Pk	28.5	-31.7	12.3	-58.1	-13	-45.1	0-360	149	H
2	2.47422	-68.5	Pk	32.3	-30.4	11.3	-55.3	-13	-42.3	0-360	149	H
3	3.30456	-70.98	Pk	32.7	-29.3	11.6	-55.98	-13	-42.98	0-360	149	H
4	1.64228	-68.83	Pk	28.5	-31.7	11.5	-60.53	-13	-47.53	0-360	149	V
5	2.47422	-69.63	Pk	32.3	-30.4	11.5	-56.23	-13	-43.23	0-360	149	V
6	3.29925	-72.43	Pk	32.7	-29.2	12	-56.93	-13	-43.93	0-360	149	V
	836.52 MHz											
1	1.67309	-68.73	Pk	28.8	-31.6	11.6	-59.93	-13	-46.93	0-360	149	H
2	2.50822	-69.62	Pk	32.3	-30.2	11.4	-56.12	-13	-43.12	0-360	149	H
3	3.34281	-69.52	Pk	32.7	-29.3	11.5	-54.62	-13	-41.62	0-360	149	H
4	1.67734	-69.53	Pk	28.9	-31.6	11	-61.23	-13	-48.23	0-360	149	V
5	2.51406	-70.75	Pk	32.3	-30.1	11.3	-57.25	-13	-44.25	0-360	149	V
6	3.35184	-70.17	Pk	32.6	-29.2	11.8	-54.97	-13	-41.97	0-360	149	V
	848.3 MHz											
1	1.69647	-68.76	Pk	29.1	-31.5	11.2	-59.96	-13	-46.96	0-360	149	H
2	2.54222	-69.78	Pk	32.2	-30.1	12.3	-55.38	-13	-42.38	0-360	149	H
3	3.39169	-71.52	Pk	32.6	-29.2	11.7	-56.42	-13	-43.42	0-360	149	H
4	1.69913	-69.39	Pk	29.2	-31.6	12	-59.79	-13	-46.79	0-360	149	V
5	2.54966	-69.66	Pk	32.3	-30.1	11.7	-55.76	-13	-42.76	0-360	149	V
6	3.39222	-70.69	Pk	32.6	-29.2	11.9	-55.39	-13	-42.39	0-360	149	V

1xEV-DO REV A MODE

Company:	Samsung
Project #:	13171837
Date:	1/08/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xEV-DO REV A BC0
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	824.7 MHz											
1	1.64972	-68.52	Pk	28.5	-31.7	12.5	-59.22	-13	-46.22	0-360	149	H
2	2.47369	-69.04	Pk	32.3	-30.4	11.3	-55.84	-13	-42.84	0-360	149	H
3	3.29234	-71.48	Pk	32.8	-29.2	12.1	-55.78	-13	-42.78	0-360	149	H
4	1.64972	-69.62	Pk	28.5	-31.7	11.4	-61.42	-13	-48.42	0-360	149	V
5	2.47422	-69.44	Pk	32.3	-30.4	11.5	-56.04	-13	-43.04	0-360	149	V
6	3.29022	-71.43	Pk	32.8	-29.2	12	-55.83	-13	-42.83	0-360	149	V
	836.52 MHz											
1	1.67203	-67.09	Pk	28.8	-31.5	11.6	-58.19	-13	-45.19	0-360	149	H
2	2.50822	-69.26	Pk	32.3	-30.2	11.4	-55.76	-13	-42.76	0-360	149	H
3	3.34759	-71.41	Pk	32.7	-29.2	11.4	-56.51	-13	-43.51	0-360	149	H
4	1.67256	-69.06	Pk	28.8	-31.6	10.9	-60.96	-13	-47.96	0-360	149	V
5	2.51034	-69.27	Pk	32.3	-30.1	11.4	-55.67	-13	-42.67	0-360	149	V
6	3.35291	-71.11	Pk	32.6	-29.2	11.8	-55.91	-13	-42.91	0-360	149	V
	848.3 MHz											
1	1.697	-69.4	Pk	29.2	-31.5	11.2	-60.5	-13	-47.5	0-360	149	H
2	2.54647	-70.4	Pk	32.3	-30.1	12	-56.2	-13	-43.2	0-360	149	H
3	3.39169	-71.75	Pk	32.6	-29.2	11.7	-56.65	-13	-43.65	0-360	149	H
4	1.697	-70.31	Pk	29.2	-31.5	12.2	-60.41	-13	-47.41	0-360	149	V
5	2.547	-71.18	Pk	32.3	-30	11.8	-57.08	-13	-44.08	0-360	149	V
6	3.39275	-70.77	Pk	32.6	-29.3	11.8	-55.67	-13	-42.67	0-360	149	V

9.2.5. CDMA BC1

1xRTT MODE

Company:	Samsung
Project #:	13171837
Date:	1/09/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xRTT BC1
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1851.25 MHz											
1	3.69503	-75.96	Pk	33	-28.8	11.9	-59.86	-13	-46.86	0-360	149	H
2	5.55866	-76.52	Pk	35.1	-26.8	11.9	-56.32	-13	-43.32	0-360	149	H
3	7.39253	-78.85	Pk	35.5	-24.3	12.1	-55.55	-13	-42.55	0-360	149	H
4	3.70672	-75.62	Pk	33	-28.6	11.9	-59.32	-13	-46.32	0-360	149	V
5	5.55441	-77.69	Pk	35.1	-26.8	12.1	-57.29	-13	-44.29	0-360	149	V
6	7.39838	-77.98	Pk	35.5	-24.3	11.9	-54.88	-13	-41.88	0-360	149	V
	1880 MHz											
1	3.74922	-76.4	Pk	33	-28.4	11.6	-60.2	-13	-47.2	0-360	149	H
2	5.64844	-76.13	Pk	35.1	-26.6	12	-55.63	-13	-42.63	0-360	149	H
3	7.50409	-78.81	Pk	35.5	-23.8	12.2	-54.91	-13	-41.91	0-360	149	H
4	3.74922	-76.39	Pk	33	-28.4	11.8	-59.99	-13	-46.99	0-360	149	V
5	5.64366	-77.38	Pk	35.1	-26.6	12	-56.88	-13	-43.88	0-360	149	V
6	7.51047	-78.67	Pk	35.6	-23.9	12.3	-54.67	-13	-41.67	0-360	149	V
	1908.75 MHz											
1	3.81775	-76.78	Pk	32.9	-28.3	11.7	-60.48	-13	-47.48	0-360	149	H
2	5.72016	-76.71	Pk	35	-26.7	12	-56.41	-13	-43.41	0-360	149	H
3	7.64647	-77.52	Pk	35.6	-24.1	11.6	-54.42	-13	-41.42	0-360	149	H
4	3.82041	-76.2	Pk	32.9	-28.2	11.2	-60.3	-13	-47.3	0-360	149	V
5	5.73291	-77.38	Pk	35	-26.5	11.5	-57.38	-13	-44.38	0-360	149	V
6	7.6385	-78.57	Pk	35.6	-24.1	11.8	-55.27	-13	-42.27	0-360	149	V

1xEV-DO REV A MODE

Company:	Samsung
Project #:	13171837
Date:	1/09/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	1xEV-DO REV A BC1
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1851.25 MHz											
1	3.71097	-76.11	Pk	33	-28.5	11.7	-59.91	-13	-46.91	0-360	149	H
2	5.56609	-76.79	Pk	35.2	-26.7	11.6	-56.69	-13	-43.69	0-360	149	H
3	7.38775	-78.58	Pk	35.5	-24.2	12	-55.28	-13	-42.28	0-360	149	H
4	3.69716	-75.98	Pk	33	-28.8	12.1	-59.68	-13	-46.68	0-360	149	V
5	5.556	-76.27	Pk	35.1	-26.8	12	-55.97	-13	-42.97	0-360	149	V
6	7.39519	-78.8	Pk	35.5	-24.2	12	-55.5	-13	-42.5	0-360	149	V
	1880 MHz											
1	3.75666	-76.29	Pk	32.9	-28.3	11.8	-59.89	-13	-46.89	0-360	149	H
2	5.64631	-76.13	Pk	35.1	-26.6	11.9	-55.73	-13	-42.73	0-360	149	H
3	7.49878	-78.77	Pk	35.5	-23.8	12.1	-54.97	-13	-41.97	0-360	149	H
4	3.75506	-76.69	Pk	32.9	-28.4	11.8	-60.39	-13	-47.39	0-360	149	V
5	5.64525	-77.03	Pk	35.1	-26.5	12	-56.43	-13	-43.43	0-360	149	V
6	7.5195	-77.08	Pk	35.5	-23.9	12	-53.48	-13	-40.48	0-360	149	V
	1908.75 MHz											
1	3.82041	-76.58	Pk	32.9	-28.2	11.5	-60.38	-13	-47.38	0-360	149	H
2	5.71909	-77.73	Pk	35	-26.7	12	-57.43	-13	-44.43	0-360	149	H
3	7.63638	-78.18	Pk	35.6	-24.1	11.8	-54.88	-13	-41.88	0-360	149	H
4	3.81934	-76.78	Pk	32.9	-28.3	11.3	-60.88	-13	-47.88	0-360	149	V
5	5.71803	-77.72	Pk	35	-26.7	11.7	-57.72	-13	-44.72	0-360	149	V
6	7.63159	-78.57	Pk	35.6	-24.1	12	-55.07	-13	-42.07	0-360	149	V

9.2.6. WCDMA BAND 5

REL 99 MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	REL 99 Band 5
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	826.4 MHz											
1	1.65344	-65.84	Pk	28.5	-31.7	12.2	-56.84	-13	-43.84	0-360	149	H
2	2.48059	-68.48	Pk	32.4	-30.5	11.3	-55.28	-13	-42.28	0-360	149	H
3	3.30456	-71.64	Pk	32.7	-29.3	11.6	-56.64	-13	-43.64	0-360	149	H
4	1.65131	-69.02	Pk	28.5	-31.7	11.3	-60.92	-13	-47.92	0-360	149	V
5	2.48113	-67.46	Pk	32.4	-30.5	11.3	-54.26	-13	-41.26	0-360	149	V
6	3.30563	-71.4	Pk	32.7	-29.3	11.9	-56.1	-13	-43.1	0-360	149	V
	836.6 MHz											
1	1.67097	-69.5	Pk	28.8	-31.5	11.6	-60.6	-13	-47.6	0-360	149	H
2	2.50716	-70.42	Pk	32.3	-30.2	11.4	-56.92	-13	-43.92	0-360	149	H
3	3.34866	-71.53	Pk	32.7	-29.2	11.4	-56.63	-13	-43.63	0-360	149	H
4	1.67044	-70.29	Pk	28.8	-31.5	11.1	-61.89	-13	-48.89	0-360	149	V
5	2.50875	-70.65	Pk	32.3	-30.2	11.4	-57.15	-13	-44.15	0-360	149	V
6	3.34441	-72.13	Pk	32.7	-29.2	12	-56.63	-13	-43.63	0-360	149	V
	846.6 MHz											
1	1.69434	-63.24	Pk	29.1	-31.6	11.4	-54.34	-13	-41.34	0-360	149	H
2	2.53531	-69.88	Pk	32.2	-30.2	12.7	-55.18	-13	-42.18	0-360	149	H
3	3.39063	-70.84	Pk	32.6	-29.3	11.6	-55.94	-13	-42.94	0-360	149	H
4	1.69488	-61.43	Pk	29.1	-31.6	12.4	-51.53	-13	-38.53	0-360	149	V
5	2.53691	-71.68	Pk	32.2	-30.1	11.5	-58.08	-13	-45.08	0-360	149	V
6	3.38691	-71.64	Pk	32.7	-29.2	12	-56.14	-13	-43.14	0-360	149	V

HSDPA MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	HSDPA Band 5
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	826.4 MHz											
1	1.6545	-68.35	Pk	28.6	-31.7	12.2	-59.25	-13	-46.25	0-360	149	H
2	2.479	-70.91	Pk	32.3	-30.5	11.2	-57.91	-13	-44.91	0-360	149	H
3	3.30244	-71.96	Pk	32.7	-29.2	11.6	-56.86	-13	-43.86	0-360	149	H
4	1.65609	-69.7	Pk	28.6	-31.7	11.3	-61.5	-13	-48.5	0-360	149	V
5	2.47634	-71.17	Pk	32.3	-30.4	11.4	-57.87	-13	-44.87	0-360	149	V
6	3.30934	-72.23	Pk	32.7	-29.3	11.9	-56.93	-13	-43.93	0-360	149	V
	836.6 MHz											
1	1.67681	-70.49	Pk	28.9	-31.6	11.8	-61.39	-13	-48.39	0-360	149	H
2	2.51247	-70.28	Pk	32.3	-30.1	11.5	-56.58	-13	-43.58	0-360	149	H
3	3.34175	-71.21	Pk	32.7	-29.2	11.6	-56.11	-13	-43.11	0-360	149	H
4	1.68213	-69.97	Pk	29	-31.5	11.6	-60.87	-13	-47.87	0-360	149	V
5	2.50928	-69.91	Pk	32.3	-30.2	11.4	-56.41	-13	-43.41	0-360	149	V
6	3.33697	-70.75	Pk	32.8	-29.2	12.1	-55.05	-13	-42.05	0-360	149	V
	846.6 MHz											
1	1.69009	-66.9	Pk	29.2	-31.6	11.4	-57.9	-13	-44.9	0-360	149	H
2	2.53638	-70.19	Pk	32.2	-30.2	12.7	-55.49	-13	-42.49	0-360	149	H
3	3.39009	-70.73	Pk	32.6	-29.3	11.6	-55.83	-13	-42.83	0-360	149	H
4	1.69488	-64.64	Pk	29.1	-31.6	12.4	-54.74	-13	-41.74	0-360	149	V
5	2.54169	-71.06	Pk	32.2	-30.1	11.7	-57.26	-13	-44.26	0-360	149	V
6	3.38266	-71.45	Pk	32.7	-29.3	12.1	-55.95	-13	-42.95	0-360	149	V

9.2.7. WCDMA BAND 2

REL 99 MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	REL 99 Band 2
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1852.4 MHz											
1	3.70619	-75.18	Pk	33	-28.6	11.8	-58.98	-13	-45.98	0-360	149	H
2	5.54909	-76.29	Pk	35.1	-26.8	12	-55.99	-13	-42.99	0-360	149	H
3	7.42388	-77.49	Pk	35.5	-24.3	11.7	-54.59	-13	-41.59	0-360	149	H
4	3.70884	-75.3	Pk	33	-28.5	11.9	-58.9	-13	-45.9	0-360	149	V
5	5.56131	-76.4	Pk	35.1	-26.8	12	-56.1	-13	-43.1	0-360	149	V
6	7.39838	-78.87	Pk	35.5	-24.3	11.9	-55.77	-13	-42.77	0-360	149	V
	1880 MHz											
1	3.76569	-75.85	Pk	33	-28.2	11.6	-59.45	-13	-46.45	0-360	149	H
2	5.65588	-76.42	Pk	35	-26.7	12.2	-55.92	-13	-42.92	0-360	149	H
3	7.52109	-76.86	Pk	35.5	-23.9	11.9	-53.36	-13	-40.36	0-360	149	H
4	3.75931	-75.57	Pk	32.9	-28.3	11.8	-59.17	-13	-46.17	0-360	149	V
5	5.63409	-75.38	Pk	35	-26.6	12	-54.98	-13	-41.98	0-360	149	V
6	7.51047	-78	Pk	35.6	-23.9	12.3	-54	-13	-41	0-360	149	V
	1907.6 MHz											
1	3.81403	-75.31	Pk	32.9	-28.4	11.8	-59.01	-13	-46.01	0-360	149	H
2	5.72866	-75.91	Pk	34.9	-26.6	11.8	-55.81	-13	-42.81	0-360	149	H
3	7.62363	-78.04	Pk	35.7	-24.1	11.9	-54.54	-13	-41.54	0-360	149	H
4	3.81403	-75.37	Pk	32.9	-28.4	11.4	-59.47	-13	-46.47	0-360	149	V
5	5.7175	-75.75	Pk	35	-26.7	11.7	-55.75	-13	-42.75	0-360	149	V
6	7.63531	-78.21	Pk	35.6	-24.1	12	-54.71	-13	-41.71	0-360	149	V

HSDPA MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	HSDPA Band 2
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1852.4 MHz											
1	3.69769	-75.73	Pk	33	-28.8	11.9	-59.63	-13	-46.63	0-360	149	H
2	5.54697	-75.82	Pk	35.1	-26.9	12	-55.62	-13	-42.62	0-360	149	H
3	7.42122	-77.69	Pk	35.6	-24.4	11.6	-54.89	-13	-41.89	0-360	149	H
4	3.70141	-74.32	Pk	33	-28.7	12.1	-57.92	-13	-44.92	0-360	149	V
5	5.556	-77.04	Pk	35.1	-26.8	12	-56.74	-13	-43.74	0-360	149	V
6	7.41219	-77.35	Pk	35.5	-24.4	11.6	-54.65	-13	-41.65	0-360	149	V
	1880 MHz											
1	3.76303	-75.16	Pk	33	-28.3	11.7	-58.76	-13	-45.76	0-360	149	H
2	5.65269	-76.28	Pk	35	-26.7	12.2	-55.78	-13	-42.78	0-360	149	H
3	7.50994	-77.78	Pk	35.6	-23.9	12.1	-53.98	-13	-40.98	0-360	149	H
4	3.75719	-76.5	Pk	32.9	-28.3	11.8	-60.1	-13	-47.1	0-360	149	V
5	5.6495	-75.96	Pk	35	-26.6	12.2	-55.36	-13	-42.36	0-360	149	V
6	7.51738	-78.73	Pk	35.5	-23.9	12.1	-55.03	-13	-42.03	0-360	149	V
	1907.6 MHz											
1	3.82147	-75.2	Pk	32.9	-28.2	11.4	-59.1	-13	-46.1	0-360	149	H
2	5.72175	-76.24	Pk	35	-26.6	12	-55.84	-13	-42.84	0-360	149	H
3	7.65178	-77.88	Pk	35.6	-24.1	11.7	-54.68	-13	-41.68	0-360	149	H
4	3.81191	-76.14	Pk	32.9	-28.4	11.4	-60.24	-13	-47.24	0-360	149	V
5	5.71272	-77.29	Pk	34.9	-26.7	11.9	-57.19	-13	-44.19	0-360	149	V
6	7.63372	-78.11	Pk	35.6	-24.1	12	-54.61	-13	-41.61	0-360	149	V

9.2.8. WCDMA BAND 4

REL 99 MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	REL 99 Band 4
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1712.4 MHz											
1	3.43419	-74.34	Pk	32.7	-29.3	11.9	-59.04	-13	-46.04	0-360	149	H
2	5.13313	-77.33	Pk	34.4	-26.9	11.8	-58.03	-13	-45.03	0-360	149	H
3	6.86234	-77.25	Pk	35.7	-25.2	11.8	-54.95	-13	-41.95	0-360	149	H
4	3.42834	-74.68	Pk	32.7	-29.3	11.7	-59.58	-13	-46.58	0-360	149	V
5	5.14056	-76.82	Pk	34.4	-27	12	-57.42	-13	-44.42	0-360	149	V
6	6.84747	-77.38	Pk	35.5	-25.3	11.6	-55.58	-13	-42.58	0-360	149	V
	1732.6 MHz											
1	3.47191	-75.41	Pk	32.8	-29	11.8	-59.81	-13	-46.81	0-360	149	H
2	5.19422	-76.85	Pk	34.4	-26.9	12.1	-57.25	-13	-44.25	0-360	149	H
3	6.93194	-76.45	Pk	35.7	-24.7	11.7	-53.75	-13	-40.75	0-360	149	H
4	3.45863	-76.34	Pk	32.8	-29.1	11.5	-61.14	-13	-48.14	0-360	149	V
5	5.19741	-77.38	Pk	34.4	-27	12.4	-57.58	-13	-44.58	0-360	149	V
6	6.92769	-77.36	Pk	35.6	-24.8	12.1	-54.46	-13	-41.46	0-360	149	V
	1752.6 MHz											
1	3.50006	-76.03	Pk	32.9	-28.8	12.1	-59.83	-13	-46.83	0-360	149	H
2	5.27284	-77.37	Pk	34.5	-26.7	12.1	-57.47	-13	-44.47	0-360	149	H
3	7.00047	-76.89	Pk	35.6	-24.7	11.7	-54.29	-13	-41.29	0-360	149	H
4	3.50963	-76.23	Pk	32.8	-28.7	11.8	-60.33	-13	-47.33	0-360	149	V
5	5.25691	-77.59	Pk	34.5	-26.7	12.3	-57.49	-13	-44.49	0-360	149	V
6	7.00259	-75.98	Pk	35.6	-24.8	11.8	-53.38	-13	-40.38	0-360	149	V

HSDPA MODE

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	HSDPA Band 4
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1712.4 MHz											
1	3.43313	-74.73	Pk	32.7	-29.3	11.9	-59.43	-13	-46.43	0-360	149	H
2	5.14588	-76.75	Pk	34.3	-27	11.9	-57.55	-13	-44.55	0-360	149	H
3	6.82941	-76.86	Pk	35.5	-25.2	11.6	-54.96	-13	-41.96	0-360	149	H
4	3.42463	-75.52	Pk	32.7	-29.3	11.8	-60.32	-13	-47.32	0-360	149	V
5	5.14109	-77.03	Pk	34.4	-27	12	-57.63	-13	-44.63	0-360	149	V
6	6.84641	-77.79	Pk	35.5	-25.3	11.6	-55.99	-13	-42.99	0-360	149	V
	1732.6 MHz											
1	3.46447	-76	Pk	32.8	-29.2	12	-60.4	-13	-47.4	0-360	149	H
2	5.19741	-77.17	Pk	34.4	-27	12.2	-57.57	-13	-44.57	0-360	149	H
3	6.91866	-77.42	Pk	35.6	-24.8	11.8	-54.82	-13	-41.82	0-360	149	H
4	3.46341	-75.39	Pk	32.8	-29.2	11.6	-60.19	-13	-47.19	0-360	149	V
5	5.19103	-77.1	Pk	34.4	-27	12.3	-57.4	-13	-44.4	0-360	149	V
6	6.93194	-77.37	Pk	35.7	-24.7	11.9	-54.47	-13	-41.47	0-360	149	V
	1752.6 MHz											
1	3.50272	-76.73	Pk	32.9	-28.7	11.9	-60.63	-13	-47.63	0-360	152	H
2	5.26009	-76.71	Pk	34.5	-26.7	12	-56.91	-13	-43.91	0-360	152	H
3	6.99728	-78.29	Pk	35.6	-24.8	11.8	-55.69	-13	-42.69	0-360	152	H
4	3.50006	-76.11	Pk	32.9	-28.8	11.9	-60.11	-13	-47.11	0-360	152	V
5	5.25266	-76.87	Pk	34.5	-26.9	12.4	-56.87	-13	-43.87	0-360	152	V
6	6.99569	-77.05	Pk	35.6	-24.8	11.9	-54.35	-13	-41.35	0-360	152	V

9.2.9. LTE BAND 5

LIMITS

FCC: §22.917(a)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

RSS132§5.5

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p (watts).

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least43 + 10 log10 p (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

QPSK LTE BAND 5 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 5 QPSK 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	829 MHz											
1	1.64919	-57.41	Pk	28.5	-31.7	12.5	-48.11	-13	-35.11	0-360	149	H
2	2.47369	-66.15	Pk	32.3	-30.4	11.3	-52.95	-13	-39.95	0-360	149	H
3	3.27056	-70.25	Pk	32.8	-29.1	12	-54.55	-13	-41.55	0-360	149	H
4	1.64919	-62.07	Pk	28.5	-31.7	11.4	-53.87	-13	-40.87	0-360	149	V
5	2.47369	-66.47	Pk	32.3	-30.4	11.5	-53.07	-13	-40.07	0-360	149	V
6	3.27906	-71.62	Pk	32.8	-29.2	11.9	-56.12	-13	-43.12	0-360	149	V
	836.5 MHz											
1	1.66406	-66.54	Pk	28.7	-31.6	11.6	-57.84	-13	-44.84	0-360	149	H
2	2.496	-66.9	Pk	32.3	-30.3	11.3	-53.6	-13	-40.6	0-360	149	H
3	3.33219	-70.49	Pk	32.8	-29.1	11.6	-55.19	-13	-42.19	0-360	149	H
4	1.66406	-58.24	Pk	28.7	-31.6	11.3	-49.84	-13	-36.84	0-360	149	V
5	2.496	-66.86	Pk	32.3	-30.3	11.4	-53.46	-13	-40.46	0-360	149	V
6	3.33909	-70.92	Pk	32.7	-29.2	12.1	-55.32	-13	-42.32	0-360	149	V
	844 MHz											
1	1.67894	-62.31	Pk	28.9	-31.6	12	-53.01	-13	-40.01	0-360	149	H
2	2.51831	-65.64	Pk	32.3	-30.2	11.9	-51.64	-13	-38.64	0-360	149	H
3	3.27269	-70.74	Pk	32.8	-29.2	12	-55.14	-13	-42.14	0-360	149	H
4	1.67947	-64.81	Pk	28.9	-31.6	11.3	-56.21	-13	-43.21	0-360	149	V
5	2.51884	-64.6	Pk	32.3	-30.2	11.6	-50.9	-13	-37.9	0-360	149	V
6	3.27959	-70.14	Pk	32.8	-29.2	11.9	-54.64	-13	-41.64	0-360	149	V

16QAM LTE BAND 5 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 5 16QAM 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	829 MHz											
1	1.64919	-59.42	Pk	28.5	-31.7	12.5	-50.12	-13	-37.12	0-360	149	H
2	2.47369	-67.58	Pk	32.3	-30.4	11.3	-54.38	-13	-41.38	0-360	149	H
3	3.29766	-71.22	Pk	32.7	-29.2	11.9	-55.82	-13	-42.82	0-360	149	H
4	1.64919	-63.23	Pk	28.5	-31.7	11.4	-55.03	-13	-42.03	0-360	149	V
5	2.47369	-65.17	Pk	32.3	-30.4	11.5	-51.77	-13	-38.77	0-360	149	V
6	3.28809	-71.78	Pk	32.8	-29.1	12.1	-55.98	-13	-42.98	0-360	149	V
	836.5 MHz											
1	1.66406	-66.52	Pk	28.7	-31.6	11.6	-57.82	-13	-44.82	0-360	149	H
2	2.49653	-66.93	Pk	32.3	-30.3	11.3	-53.63	-13	-40.63	0-360	149	H
3	3.33484	-70.96	Pk	32.8	-29.2	11.6	-55.76	-13	-42.76	0-360	149	H
4	1.66406	-56.69	Pk	28.7	-31.6	11.3	-48.29	-13	-35.29	0-360	149	V
5	2.496	-68.44	Pk	32.3	-30.3	11.4	-55.04	-13	-42.04	0-360	149	V
6	3.34813	-69.77	Pk	32.7	-29.2	11.9	-54.37	-13	-41.37	0-360	149	V
	844 MHz											
1	1.67894	-62.63	Pk	28.9	-31.6	12	-53.33	-13	-40.33	0-360	149	H
2	2.51884	-67.43	Pk	32.3	-30.2	11.9	-53.43	-13	-40.43	0-360	149	H
3	3.3375	-70.09	Pk	32.8	-29.1	11.7	-54.69	-13	-41.69	0-360	149	H
4	1.67947	-63.24	Pk	28.9	-31.6	11.3	-54.64	-13	-41.64	0-360	149	V
5	2.51884	-65.57	Pk	32.3	-30.2	11.6	-51.87	-13	-38.87	0-360	149	V
6	3.33378	-71.2	Pk	32.8	-29.1	12	-55.5	-13	-42.5	0-360	149	V

9.2.10. LTE BAND 7

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

RSS199§4.5
Equipment shall comply with the following unwanted emission limits:

a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least 43 + 10 $\log_{10}$ p
b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
   i. 40 + 10 $\log_{10}$ p from the channel edges to 5 MHz away
   ii. 43 + 10 $\log_{10}$ p between 5 MHz and X MHz from the channel edges, and
   iii. 55 + 10 $\log_{10}$ p at X MHz and beyond from the channel edges

   In addition, the attenuation shall not be less than 43 + 10 $\log_{10}$ p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 $\log_{10}$ p at or below 2490.5 MHz.

In (a) and (b), **p** is the transmitter power measured in watts and **X** is 6 MHz or the equipment occupied bandwidth, whichever is greater.

QPSK LTE BAND 7 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/09/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 7 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2510 MHz											
1	5.00031	-76.22	Pk	34.3	-27.2	11.5	-57.62	-25	-32.62	0-360	149	H
2	7.51684	-78.1	Pk	35.5	-23.9	12	-54.5	-25	-29.5	0-360	149	H
3	10.01744	-79.09	Pk	37	-20.8	12	-50.89	-25	-25.89	0-360	149	H
4	5.00403	-76.31	Pk	34.3	-27.2	11.9	-57.31	-25	-32.31	0-360	149	V
5	7.49878	-78.54	Pk	35.5	-23.8	12.2	-54.64	-25	-29.64	0-360	149	V
6	10.00469	-79.16	Pk	37	-20.8	11.7	-51.26	-25	-26.26	0-360	149	V
	2535 MHz											
1	5.10391	-75.81	Pk	34.4	-26.9	11.7	-56.61	-25	-31.61	0-360	149	H
2	7.56147	-77.42	Pk	35.6	-23.8	12.2	-53.42	-25	-28.42	0-360	149	H
3	10.19966	-78.64	Pk	37.3	-20.1	12.3	-49.14	-25	-24.14	0-360	149	H
4	5.07256	-75.45	Pk	34.3	-27.1	11.9	-56.35	-25	-31.35	0-360	149	V
5	7.56678	-76.01	Pk	35.6	-23.9	12.2	-52.11	-25	-27.11	0-360	149	V
6	10.14388	-79.24	Pk	37.1	-20.2	12.4	-49.94	-25	-24.94	0-360	149	V
	2560 MHz											
1	5.09647	-75.45	Pk	34.3	-26.8	11.9	-56.05	-25	-31.05	0-360	149	H
2	7.65603	-78.13	Pk	35.7	-24	11.7	-54.73	-25	-29.73	0-360	149	H
3	10.20178	-78.8	Pk	37.3	-20.1	12.3	-49.3	-25	-24.3	0-360	149	H
4	5.10391	-76.14	Pk	34.4	-26.9	11.7	-56.94	-25	-31.94	0-360	149	V
5	7.65391	-78.65	Pk	35.6	-24.1	11.7	-55.45	-25	-30.45	0-360	149	V
6	10.20391	-79.3	Pk	37.3	-20.1	12.3	-49.8	-25	-24.8	0-360	149	V

16QAM LTE BAND 7 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/09/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 7 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2510 MHz											
1	5.00775	-75.59	Pk	34.3	-27.2	11.7	-56.79	-25	-31.79	0-360	149	H
2	7.51313	-78.35	Pk	35.6	-23.9	12.1	-54.55	-25	-29.55	0-360	149	H
3	9.99884	-78.37	Pk	36.9	-20.9	11.6	-50.77	-25	-25.77	0-360	149	H
4	5.00084	-76.58	Pk	34.3	-27.3	11.8	-57.78	-25	-32.78	0-360	149	V
5	7.49825	-78.93	Pk	35.5	-23.9	12.2	-55.13	-25	-30.13	0-360	149	V
6	10.00841	-79.48	Pk	37	-20.8	11.9	-51.38	-25	-26.38	0-360	149	V
	2535 MHz											
1	5.04866	-75.13	Pk	34.4	-27	11.4	-56.33	-25	-31.33	0-360	149	H
2	7.56519	-77.5	Pk	35.6	-23.9	12.2	-53.6	-25	-28.6	0-360	149	H
3	10.08225	-79.59	Pk	37.1	-20.8	12.1	-51.19	-25	-26.19	0-360	149	H
4	5.04813	-75.39	Pk	34.4	-27	11.7	-56.29	-25	-31.29	0-360	149	V
5	7.57847	-76.23	Pk	35.5	-24.1	12.1	-52.73	-25	-27.73	0-360	149	V
6	10.10456	-79.58	Pk	37.1	-20.7	11.8	-51.38	-25	-26.38	0-360	149	V
	2560 MHz											
1	5.11134	-75.15	Pk	34.3	-26.9	11.7	-56.05	-25	-31.05	0-360	149	H
2	7.64009	-78.48	Pk	35.6	-24.1	11.7	-55.28	-25	-30.28	0-360	149	H
3	10.19859	-78.62	Pk	37.3	-20.1	12.3	-49.12	-25	-24.12	0-360	149	H
4	5.10338	-76.39	Pk	34.4	-26.9	11.7	-57.19	-25	-32.19	0-360	149	V
5	7.64913	-78.54	Pk	35.6	-24.2	11.6	-55.54	-25	-30.54	0-360	149	V
6	10.20444	-78.82	Pk	37.3	-20.2	12.3	-49.42	-25	-24.42	0-360	149	V

9.2.11. LTE BAND 12

LIMITS

FCC: §27.53 (g)
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.

RSS130§4.7
4.7.1 General unwanted emissions limits
The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 $\log_{10}$ p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits
In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

a. the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:
   iii. 76 + 10 $\log_{10}$ p (watts), dB, for base and fixed equipment and
   iv. 65 + 10 $\log_{10}$ p (watts), dB, for mobile and portable equipment
b. the e.i.r.p. in the band 1559-1610 MHz shall not exceed −70 dBW/MHz for wideband signal and −80 dBW for discrete emission with bandwidth less than 700 Hz.

QPSK LTE BAND 12 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 12 QPSK 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	704 MHz											
1	1.39897	-69.66	Pk	28.9	-32.2	10.4	-62.56	-13	-49.56	0-360	149	H
2	2.09863	-56.23	Pk	31.1	-30.9	11.8	-44.23	-13	-31.23	0-360	149	H
3	2.80731	-74.62	Pk	32.3	-29.8	11.9	-60.22	-13	-47.22	0-360	149	H
4	1.39897	-70.91	Pk	28.9	-32.2	10.3	-63.91	-13	-50.91	0-360	149	V
5	2.09916	-62.85	Pk	31.1	-30.9	11.4	-51.25	-13	-38.25	0-360	149	V
6	2.81847	-74.32	Pk	32.2	-29.8	11.9	-60.02	-13	-47.02	0-360	149	V
	707.5 MHz											
1	1.40588	-67.35	Pk	28.8	-32.3	11.3	-59.55	-13	-46.55	0-360	149	H
2	2.10925	-53.96	Pk	31.1	-30.9	12.1	-41.66	-13	-28.66	0-360	149	H
3	2.80359	-74.5	Pk	32.3	-29.8	11.9	-60.1	-13	-47.1	0-360	149	H
4	1.40588	-69.01	Pk	28.8	-32.3	11	-61.51	-13	-48.51	0-360	149	V
5	2.10925	-57.42	Pk	31.1	-30.9	11.7	-45.52	-13	-32.52	0-360	149	V
6	2.79669	-74.62	Pk	32.4	-29.9	11.9	-60.22	-13	-47.22	0-360	149	V
	711 MHz											
1	1.41331	-71.51	Pk	28.8	-32.2	12	-62.91	-13	-49.91	0-360	149	H
2	2.11934	-56.16	Pk	31.1	-31.1	12.3	-43.86	-13	-30.86	0-360	149	H
3	2.80041	-73.4	Pk	32.4	-29.8	11.8	-59	-13	-46	0-360	149	H
4	1.41756	-73.17	Pk	28.7	-32.1	12.2	-64.37	-13	-51.37	0-360	149	V
5	2.11988	-61.72	Pk	31.1	-31	11.6	-50.02	-13	-37.02	0-360	149	V
6	2.81316	-73.75	Pk	32.2	-29.8	11.7	-59.65	-13	-46.65	0-360	149	V

16QAM LTE BAND 12 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 12 16QAM 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	704 MHz											
1	1.3995	-70.28	Pk	28.9	-32.2	10.4	-63.18	-13	-50.18	0-360	149	H
2	2.09916	-56.56	Pk	31.1	-30.9	11.8	-44.56	-13	-31.56	0-360	149	H
3	2.79084	-73.48	Pk	32.3	-29.9	11.9	-59.18	-13	-46.18	0-360	149	H
4	1.38622	-72.06	Pk	29.1	-32.3	10.5	-64.76	-13	-51.76	0-360	149	V
5	2.09916	-61.84	Pk	31.1	-30.9	11.4	-50.24	-13	-37.24	0-360	149	V
6	2.78925	-73.5	Pk	32.3	-30	11.9	-59.3	-13	-46.3	0-360	149	V
	707.5 MHz											
1	1.42819	-72.77	Pk	28.6	-32.1	12.4	-63.87	-13	-50.87	0-360	149	H
2	2.10925	-56.04	Pk	31.1	-30.9	12.1	-43.74	-13	-30.74	0-360	149	H
3	2.78234	-72.83	Pk	32.3	-30	11.8	-58.73	-13	-45.73	0-360	149	H
4	1.42606	-72.07	Pk	28.6	-32.1	12.2	-63.37	-13	-50.37	0-360	149	V
5	2.10925	-61.1	Pk	31.1	-30.9	11.7	-49.2	-13	-36.2	0-360	149	V
6	2.80519	-73.89	Pk	32.3	-29.8	11.8	-59.59	-13	-46.59	0-360	149	V
	711 MHz											
1	1.4335	-72.17	Pk	28.4	-32.1	12	-63.87	-13	-50.87	0-360	149	H
2	2.11988	-56.9	Pk	31.1	-31	12.3	-44.5	-13	-31.5	0-360	149	H
3	2.84397	-73.64	Pk	32.2	-30.1	11.4	-60.14	-13	-47.14	0-360	149	H
4	1.42288	-73.34	Pk	28.6	-32.1	12.4	-64.44	-13	-51.44	0-360	149	V
5	2.11988	-64.96	Pk	31.1	-31	11.6	-53.26	-13	-40.26	0-360	149	V
6	2.82378	-74.26	Pk	32.2	-29.9	12	-59.96	-13	-46.96	0-360	149	V

9.2.12. LTE BAND 13

LIMITS

FCC: §27.53
(c) 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.
(f) Emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

RSS130§4.7
4.7.1 General unwanted emissions limits
The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 $\log_{10}$ p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits
In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

a. the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:
    i. 76 + 10 $\log_{10}$ p (watts), dB, for base and fixed equipment and
    ii. 65 + 10 $\log_{10}$ p (watts), dB, for mobile and portable equipment
b. the e.i.r.p. in the band 1559-1610 MHz shall not exceed −70 dBW/MHz for wideband signal and −80 dBW for discrete emission with bandwidth less than 700 Hz.

QPSK LTE BAND 13 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 13 QPSK 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	782MHz											
1	1.55993	-63.1	Pk	28.1	-31.8	11.5	-55.3	-40	-15.3	0-360	149	H
2	2.33238	-57.05	Pk	31.5	-30.6	12.1	-44.05	-13	-31.05	0-360	149	H
3	3.10906	-71.37	Pk	32.7	-29.3	11.6	-56.37	-13	-43.37	0-360	149	H
4	1.55994	-66.64	Pk	28	-31.8	12.1	-58.34	-40	-18.34	0-360	149	V
5	2.33238	-61.84	Pk	31.5	-30.6	11.8	-49.14	-13	-36.14	0-360	149	V
6	3.11013	-70.37	Pk	32.7	-29.3	12.2	-54.77	-13	-41.77	0-360	149	V

16QAM LTE BAND 13 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 13 16QAM 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	782MHz											
1	1.55993	-67.34	Pk	28.1	-31.8	11.5	-59.54	-40	-19.54	0-360	149	H
2	2.33238	-59.44	Pk	31.5	-30.6	12.1	-46.44	-13	-33.44	0-360	149	H
3	3.11013	-70.62	Pk	32.7	-29.3	11.6	-55.62	-13	-42.62	0-360	149	H
4	1.55994	-70.06	Pk	28.1	-31.8	12.2	-61.56	-40	-21.56	0-360	149	V
5	2.33291	-63.17	Pk	31.5	-30.6	11.8	-50.47	-13	-37.47	0-360	149	V
6	3.11066	-70.17	Pk	32.7	-29.4	12.2	-54.67	-13	-41.67	0-360	149	V

9.2.13. LTE BAND 14

LIMITS

FCC: §90.543 Emission Limitations. (Band 14)
(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation

RSS140§4.4
The power of any unwanted emission outside the bands 758-768 MHz and788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

a. For any frequency between 769-775 MHz and 799-806 MHz:

   i. 76 + 10 log (p), dB in a 6.25 kHz band for fixed and base station equipment
   ii. 65 + 10 log (p), dB in a 6.25 kHz band for mobile and portable/hand-held equipment

b. For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: 43 + 10 log (p), dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed −70 dBW/MHz for wideband emissions, and −80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

QPSK LTE BAND 14 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/16/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 14 QPSK 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	793MHz											
1	1.57694	-72.7	Pk	28	-31.8	10.8	-65.7	-40	-25.7	0-360	149	H
2	2.36531	-58.5	Pk	31.8	-30.6	12.6	-44.7	-13	-31.7	0-360	149	H
3	3.15422	-75.08	Pk	32.7	-28.9	12	-59.28	-13	-46.28	0-360	149	H
4	1.57694	-72.14	Pk	28	-31.8	11.1	-64.84	-40	-24.84	0-360	149	V
5	2.36584	-66.96	Pk	31.8	-30.6	13.1	-52.66	-13	-39.66	0-360	149	V
6	3.15422	-72.61	Pk	32.7	-28.9	12	-56.81	-13	-43.81	0-360	149	V

16QAM LTE BAND 14 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/16/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 14 16QAM 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	793MHz											
1	1.57694	-70.43	Pk	28	-31.8	10.8	-63.43	-40	-23.43	0-360	149	H
2	2.36531	-59.98	Pk	31.8	-30.6	12.6	-46.18	-13	-33.18	0-360	149	H
3	3.15263	-75.67	Pk	32.7	-28.9	12	-59.87	-13	-46.87	0-360	149	H
4	1.57428	-72.43	Pk	28	-31.8	11	-65.23	-40	-25.23	0-360	149	V
5	2.36531	-69.72	Pk	31.8	-30.6	13.2	-55.32	-13	-42.32	0-360	149	V
6	3.15475	-74.96	Pk	32.7	-28.9	12	-59.16	-13	-46.16	0-360	149	V

9.2.14. LTE BAND 25

LIMITS

FCC: §24.238(a)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

RSS133§6.5.1

Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 25 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1860 MHz											
1	3.70141	-75.41	Pk	33	-28.7	11.9	-59.21	-13	-46.21	0-360	149	H
2	5.54431	-76.04	Pk	35.1	-26.8	12.1	-55.64	-13	-42.64	0-360	149	H
3	7.42388	-77.59	Pk	35.5	-24.3	11.7	-54.69	-13	-41.69	0-360	149	H
4	3.70725	-75.3	Pk	33	-28.6	11.9	-59	-13	-46	0-360	149	V
5	5.55228	-75.7	Pk	35.1	-26.8	12.1	-55.3	-13	-42.3	0-360	149	V
6	7.40741	-78.55	Pk	35.5	-24.4	11.7	-55.75	-13	-42.75	0-360	149	V
	1882.5 MHz											
1	3.75134	-76.39	Pk	33	-28.4	11.7	-60.09	-13	-47.09	0-360	149	H
2	5.61497	-77.22	Pk	35.2	-26.8	11.9	-56.92	-13	-43.92	0-360	149	H
3	7.49666	-77.68	Pk	35.5	-24	12	-54.18	-13	-41.18	0-360	149	H
4	3.74603	-75.81	Pk	32.9	-28.4	11.9	-59.41	-13	-46.41	0-360	149	V
5	5.61975	-76.97	Pk	35.1	-26.7	12.1	-56.47	-13	-43.47	0-360	149	V
6	7.49453	-78.29	Pk	35.6	-24	12.1	-54.59	-13	-41.59	0-360	149	V
	1905 MHz											
1	3.80181	-75.11	Pk	32.9	-28.3	11.5	-59.01	-13	-46.01	0-360	149	H
2	5.70156	-75.74	Pk	35	-26.6	11.9	-55.44	-13	-42.44	0-360	149	H
3	7.60238	-77.65	Pk	35.6	-24.1	11.9	-54.25	-13	-41.25	0-360	149	H
4	3.79172	-76.06	Pk	32.9	-28.3	11.4	-60.06	-13	-47.06	0-360	149	V
5	5.69519	-76.75	Pk	34.9	-26.6	11.7	-56.75	-13	-43.75	0-360	149	V
6	7.57369	-78.72	Pk	35.6	-23.9	12.2	-54.82	-13	-41.82	0-360	149	V

16QAM LTE BAND 25 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/27/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 25 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1860 MHz											
1	3.70672	-75.31	Pk	33	-28.6	11.8	-59.11	-13	-46.11	0-360	149	H
2	5.55069	-76.94	Pk	35.1	-26.8	12	-56.64	-13	-43.64	0-360	149	H
3	7.38244	-78.28	Pk	35.6	-24.2	12	-54.88	-13	-41.88	0-360	149	H
4	3.70088	-75.05	Pk	33	-28.7	12.1	-58.65	-13	-45.65	0-360	149	V
5	5.55706	-76.54	Pk	35.1	-26.8	12	-56.24	-13	-43.24	0-360	149	V
6	7.41059	-78.45	Pk	35.5	-24.4	11.6	-55.75	-13	-42.75	0-360	149	V
	1882.5 MHz											
1	3.75188	-75.86	Pk	33	-28.3	11.7	-59.46	-13	-46.46	0-360	150	H
2	5.63356	-75.21	Pk	35.1	-26.6	11.7	-55.01	-13	-42.01	0-360	150	H
3	7.494	-77.38	Pk	35.6	-24	11.9	-53.88	-13	-40.88	0-360	150	H
4	3.75081	-76.09	Pk	33	-28.4	11.8	-59.69	-13	-46.69	0-360	150	V
5	5.62719	-75.87	Pk	35.2	-26.6	11.9	-55.37	-13	-42.37	0-360	150	V
6	7.49878	-77.77	Pk	35.5	-23.8	12.2	-53.87	-13	-40.87	0-360	150	V
	1905 MHz											
1	3.78534	-75.06	Pk	33	-28.3	11.3	-59.06	-13	-46.06	0-360	149	H
2	5.69891	-76.63	Pk	35	-26.6	11.9	-56.33	-13	-43.33	0-360	149	H
3	7.60344	-77.84	Pk	35.7	-24.2	11.9	-54.44	-13	-41.44	0-360	149	H
4	3.79544	-75.92	Pk	32.9	-28.3	11.4	-59.92	-13	-46.92	0-360	149	V
5	5.68616	-74.56	Pk	35	-26.7	11.6	-54.66	-13	-41.66	0-360	149	V
6	7.58803	-76.54	Pk	35.6	-24.1	11.8	-53.24	-13	-40.24	0-360	149	V

9.2.15. LTE BAND 26 (FCC PART 90S)

LIMITS

FCC: §90.691
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.

QPSK LTE BAND 26 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 26 QPSK 15MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	821.5 MHz											
1	1.62953	-61.87	Pk	28.4	-31.7	12.3	-52.87	-13	-39.87	0-360	149	H
2	2.44394	-63.81	Pk	32.2	-30.4	10.6	-51.41	-13	-38.41	0-360	149	H
3	3.23603	-71.31	Pk	33	-29.1	12	-55.41	-13	-42.41	0-360	149	H
4	1.629	-66.28	Pk	28.4	-31.7	11.5	-58.08	-13	-45.08	0-360	149	V
5	2.44394	-68.42	Pk	32.2	-30.4	11.3	-55.32	-13	-42.32	0-360	149	V
6	3.23178	-70.24	Pk	33.1	-29	11.6	-54.54	-13	-41.54	0-360	149	V

16QAM LTE BAND 26 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 26 16QAM 15MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	821.5 MHz											
1	1.62953	-65.32	Pk	28.4	-31.7	12.3	-56.32	-13	-43.32	0-360	149	H
2	2.44394	-68.14	Pk	32.2	-30.4	10.6	-55.74	-13	-42.74	0-360	149	H
3	3.24134	-71.18	Pk	32.9	-29.1	11.8	-55.58	-13	-42.58	0-360	149	H
4	1.629	-67.8	Pk	28.4	-31.7	11.5	-59.6	-13	-46.6	0-360	149	V
5	2.44447	-70.23	Pk	32.2	-30.4	11.3	-57.13	-13	-44.13	0-360	149	V
6	3.24984	-70.4	Pk	32.9	-29.3	11.6	-55.2	-13	-42.2	0-360	149	V

9.2.16. LTE BAND 26 (FCC PART 22)

LIMITS

FCC: §22.917(a)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 26 (15.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/28/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 26 QPSK 15MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	831.5 MHz											
1	1.64972	-66.72	Pk	28.5	-31.7	12.5	-57.42	-13	-44.42	0-360	149	H
2	2.47422	-66.14	Pk	32.3	-30.4	11.3	-52.94	-13	-39.94	0-360	149	H
3	3.29659	-74.22	Pk	32.7	-29.2	12	-58.72	-13	-45.72	0-360	149	H
4	1.65291	-71.57	Pk	28.5	-31.7	11.3	-63.47	-13	-50.47	0-360	149	V
5	2.47369	-69.52	Pk	32.3	-30.4	11.5	-56.12	-13	-43.12	0-360	149	V
6	3.29819	-73.76	Pk	32.7	-29.2	12	-58.26	-13	-45.26	0-360	149	V
	836.5 MHz											
1	1.6545	-70.61	Pk	28.6	-31.7	12.2	-61.51	-13	-48.51	0-360	149	H
2	2.48909	-70.92	Pk	32.3	-30.4	11.4	-57.62	-13	-44.62	0-360	149	H
3	3.312	-73.29	Pk	32.7	-29.3	11.4	-58.49	-13	-45.49	0-360	149	H
4	1.65928	-71.3	Pk	28.7	-31.6	11.4	-62.8	-13	-49.8	0-360	149	V
5	2.48697	-72.67	Pk	32.3	-30.4	11.6	-59.17	-13	-46.17	0-360	149	V
6	3.30934	-73.72	Pk	32.7	-29.3	11.9	-58.42	-13	-45.42	0-360	149	V
	841.5 MHz											
1	1.67203	-71.66	Pk	28.8	-31.5	11.6	-62.76	-13	-49.76	0-360	149	H
2	2.50238	-72.28	Pk	32.3	-30.2	11.4	-58.78	-13	-45.78	0-360	149	H
3	3.33378	-73.01	Pk	32.8	-29.1	11.6	-57.71	-13	-44.71	0-360	149	H
4	1.66938	-69.02	Pk	28.7	-31.5	11.2	-60.62	-13	-47.62	0-360	149	V
5	2.5045	-70.81	Pk	32.3	-30.2	11.6	-57.11	-13	-44.11	0-360	149	V
6	3.33113	-73.05	Pk	32.8	-29.2	11.9	-57.55	-13	-44.55	0-360	149	V

16QAM LTE BAND 26 (15.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/28/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 26 16QAM 15MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	831.5 MHz											
1	1.64919	-68.54	Pk	28.5	-31.7	12.5	-59.24	-13	-46.24	0-360	149	H
2	2.47475	-68.21	Pk	32.3	-30.4	11.3	-55.01	-13	-42.01	0-360	149	H
3	3.29394	-73.58	Pk	32.8	-29.2	12.1	-57.88	-13	-44.88	0-360	149	H
4	1.64866	-71.65	Pk	28.5	-31.7	11.4	-63.45	-13	-50.45	0-360	149	V
5	2.47422	-70.54	Pk	32.3	-30.4	11.5	-57.14	-13	-44.14	0-360	149	V
6	3.29341	-72.32	Pk	32.8	-29.2	11.9	-56.82	-13	-43.82	0-360	149	V
	836.5 MHz											
1	1.65875	-70.9	Pk	28.7	-31.6	11.9	-61.9	-13	-48.9	0-360	149	H
2	2.48909	-70.25	Pk	32.3	-30.4	11.4	-56.95	-13	-43.95	0-360	149	H
3	3.31944	-74.17	Pk	32.7	-29.3	11.3	-59.47	-13	-46.47	0-360	149	H
4	1.65928	-70.87	Pk	28.7	-31.6	11.4	-62.37	-13	-49.37	0-360	149	V
5	2.48856	-70.48	Pk	32.3	-30.4	11.6	-56.98	-13	-43.98	0-360	149	V
6	3.3205	-73.47	Pk	32.7	-29.3	11.6	-58.47	-13	-45.47	0-360	149	V
	841.5 MHz											
1	1.66991	-71.87	Pk	28.8	-31.5	11.6	-62.97	-13	-49.97	0-360	149	H
2	2.50238	-72.02	Pk	32.3	-30.2	11.4	-58.52	-13	-45.52	0-360	149	H
3	3.33219	-73.38	Pk	32.8	-29.1	11.6	-58.08	-13	-45.08	0-360	149	H
4	1.66938	-67.26	Pk	28.7	-31.5	11.2	-58.86	-13	-45.86	0-360	149	V
5	2.50397	-71.55	Pk	32.3	-30.2	11.6	-57.85	-13	-44.85	0-360	149	V
6	3.33113	-74.35	Pk	32.8	-29.2	11.9	-58.85	-13	-45.85	0-360	149	V

9.2.17. LTE BAND 30

LIMITS

FCC: §27.53 (a)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.
RSS195§5.6
The transmitter unwanted emissions shall be measured with a resolution bandwidth of 1 MHz. A smaller resolution bandwidth is permitted provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz. However, in the 1 MHz bands immediately adjacent to the edges of the frequency range(s) in which the equipment is allowed to operate, a resolution bandwidth of as close as possible to, without being less than 1% of the occupied bandwidth, shall be employed provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz.

RSS195§5.6.2 Mobile, Portable and Low-Power Fixed Subscriber Equipment
The power of any emission outside the frequency range(s) in which the equipment operates shall be attenuated below the transmitter power, P(dBW), by the amount indicated in Table 2 and graphically represented in Figure 2, where p is the transmitter output power measured in watts.

QPSK LTE BAND 30 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/23/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 30 QPSK 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2310 MHz											
1	4.621	-74.75	Pk	33.9	-27.6	11.7	-56.75	-40	-16.75	0-360	149	H
2	6.92131	-75.33	Pk	35.5	-24.8	11.8	-52.83	-40	-12.83	0-360	149	H
3	9.20675	-77.43	Pk	36.3	-21.4	12.1	-50.43	-40	-10.43	0-360	149	H
4	2.30528	-63.05	Pk	31.4	-30.8	11.4	-51.05	-40	-11.05	0-360	149	V
5	4.61144	-75.29	Pk	33.9	-27.7	11.8	-57.29	-40	-17.29	0-360	149	V
6	6.92397	-76.56	Pk	35.6	-24.8	12.1	-53.66	-40	-13.66	0-360	149	V

16QAM LTE BAND 30 (10.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/23/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 30 16QAM 10MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2310 MHz											
1	4.60347	-74.76	Pk	33.9	-27.8	11.4	-57.26	-40	-17.26	0-360	149	H
2	6.91972	-76.39	Pk	35.6	-24.8	11.8	-53.79	-40	-13.79	0-360	149	H
3	9.22641	-76.78	Pk	36.3	-21.4	11.8	-50.08	-40	-10.08	0-360	149	H
4	4.61144	-74.09	Pk	33.9	-27.7	11.8	-56.09	-40	-16.09	0-360	149	V
5	6.91706	-76.47	Pk	35.6	-24.9	12.1	-53.67	-40	-13.67	0-360	149	V
6	9.21259	-78.5	Pk	36.4	-21.3	12	-51.4	-40	-11.4	0-360	149	V

9.2.18. LTE BAND 38 (IC)

LIMITS

RSS199§4.5
Equipment shall comply with the following unwanted emission limits:

a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least 43 + 10 $\log_{10}$ p
b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
   i. 40 + 10 $\log_{10}$ p from the channel edges to 5 MHz away
   ii. 43 + 10 $\log_{10}$ p between 5 MHz and X MHz from the channel edges, and
   iii. 55 + 10 $\log_{10}$ p at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than 43 + 10 $\log_{10}$ p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 $\log_{10}$ p at or below 2490.5 MHz.

In (a) and (b), **p** is the transmitter power measured in watts and **X** is 6 MHz or the equipment occupied bandwidth, whichever is greater.

QPSK LTE BAND 38 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/10/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 38 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2580 MHz											
1	5.14109	-76.11	Pk	34.4	-27	11.8	-56.91	-25	-31.91	0-360	149	H
2	7.72456	-76.94	Pk	35.7	-23.6	12	-52.84	-25	-27.84	0-360	149	H
3	10.28359	-76.07	Pk	37.4	-20.5	11.8	-47.37	-25	-22.37	0-360	149	H
4	5.14375	-76.13	Pk	34.4	-27	12	-56.73	-25	-31.73	0-360	149	V
5	7.70491	-79.24	Pk	35.7	-23.8	11.6	-55.74	-25	-30.74	0-360	149	V
6	10.28413	-76.08	Pk	37.4	-20.6	11.8	-47.48	-25	-22.48	0-360	149	V
	2595 MHz											
1	5.19847	-75.89	Pk	34.4	-26.9	12.2	-56.19	-25	-31.19	0-360	149	H
2	7.78088	-77.55	Pk	35.6	-23.7	12.1	-53.55	-25	-28.55	0-360	149	H
3	10.34416	-76.08	Pk	37.5	-20.3	11.8	-47.08	-25	-22.08	0-360	149	H
4	5.19528	-76.61	Pk	34.4	-27	12.4	-56.81	-25	-31.81	0-360	149	V
5	7.7915	-77.91	Pk	35.7	-23.7	12.4	-53.51	-25	-28.51	0-360	149	V
6	10.34469	-77.05	Pk	37.5	-20.3	11.7	-48.15	-25	-23.15	0-360	149	V
	2610 MHz											
1	5.199	-76.54	Pk	34.4	-26.9	12.2	-56.84	-25	-31.84	0-360	149	H
2	7.79947	-78.17	Pk	35.7	-23.6	12.2	-53.87	-25	-28.87	0-360	149	H
3	10.41747	-78.85	Pk	37.6	-20.8	11.7	-50.35	-25	-25.35	0-360	149	H
4	5.19688	-76.96	Pk	34.4	-27	12.4	-57.16	-25	-32.16	0-360	149	V
5	7.8	-78.04	Pk	35.7	-23.6	12.4	-53.54	-25	-28.54	0-360	149	V
6	10.40472	-79.29	Pk	37.5	-20.7	11.7	-50.79	-25	-25.79	0-360	149	V

16QAM LTE BAND 38 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	1/10/20
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 38 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2580 MHz											
1	5.15172	-77.54	Pk	34.4	-26.9	11.9	-58.14	-25	-33.14	0-360	149	H
2	7.71288	-77.53	Pk	35.6	-23.7	11.8	-53.83	-25	-28.83	0-360	149	H
3	10.28466	-76.55	Pk	37.4	-20.5	11.8	-47.85	-25	-22.85	0-360	149	H
4	5.13844	-75.92	Pk	34.5	-27.1	12	-56.52	-25	-31.52	0-360	149	V
5	7.71288	-79.16	Pk	35.6	-23.7	11.7	-55.56	-25	-30.56	0-360	149	V
6	10.28466	-78.96	Pk	37.4	-20.5	11.8	-50.26	-25	-25.26	0-360	149	V
	2595 MHz											
1	5.17775	-76.43	Pk	34.4	-27.1	11.6	-57.53	-25	-32.53	0-360	149	H
2	7.76388	-78	Pk	35.7	-23.8	11.9	-54.2	-25	-29.2	0-360	149	H
3	10.34416	-75.43	Pk	37.5	-20.3	11.8	-46.43	-25	-21.43	0-360	149	H
4	5.17084	-76.76	Pk	34.4	-27	11.8	-57.56	-25	-32.56	0-360	149	V
5	7.75272	-78.56	Pk	35.7	-23.6	11.9	-54.56	-25	-29.56	0-360	149	V
6	10.35319	-78.74	Pk	37.4	-20.2	11.9	-49.64	-25	-24.64	0-360	149	V
	2610 MHz											
1	5.20644	-77.11	Pk	34.4	-26.7	12.2	-57.21	-25	-32.21	0-360	149	H
2	7.79681	-77.48	Pk	35.7	-23.7	12.2	-53.28	-25	-28.28	0-360	149	H
3	10.40419	-77.1	Pk	37.5	-20.7	11.7	-48.6	-25	-23.6	0-360	149	H
4	5.20219	-76.49	Pk	34.3	-26.9	12.4	-56.69	-25	-31.69	0-360	149	V
5	7.80744	-76.66	Pk	35.8	-23.7	12.2	-52.36	-25	-27.36	0-360	149	V
6	10.40366	-78.36	Pk	37.5	-20.7	11.8	-49.76	-25	-24.76	0-360	149	V

9.2.20. LTE BAND 41 (FCC) HPUE

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 41 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2506 MHz											
1	4.97534	-76.51	Pk	34.2	-27	12	-57.31	-25	-32.31	0-360	149	H
2	7.46478	-76.75	Pk	35.5	-24.3	11.8	-53.75	-25	-28.75	0-360	149	H
3	10.02009	-78.53	Pk	37	-20.8	12.1	-50.23	-25	-25.23	0-360	149	H
4	4.99872	-74.77	Pk	34.3	-27.2	11.8	-55.87	-25	-30.87	0-360	149	V
5	7.46744	-77.24	Pk	35.5	-24.2	11.8	-54.14	-25	-29.14	0-360	149	V
6	9.94997	-77.9	Pk	37	-20.6	12	-49.5	-25	-24.5	0-360	149	V
	2593 MHz											
1	5.17084	-76.39	Pk	34.4	-27	11.6	-57.39	-25	-32.39	0-360	149	H
2	7.75272	-77.63	Pk	35.7	-23.6	11.8	-53.73	-25	-28.73	0-360	149	H
3	10.33725	-73.11	Pk	37.4	-20.2	11.8	-44.11	-25	-19.11	0-360	149	H
4	5.14163	-75.92	Pk	34.4	-27	12	-56.52	-25	-31.52	0-360	149	V
5	7.75219	-76.81	Pk	35.7	-23.6	11.9	-52.81	-25	-27.81	0-360	149	V
6	10.33672	-72.8	Pk	37.4	-20.3	11.9	-43.8	-25	-18.8	0-360	149	V
	2680 MHz											
1	5.34934	-76.27	Pk	34.6	-26.7	12	-56.37	-25	-31.37	0-360	149	H
2	8.01356	-73.26	Pk	35.8	-23.3	11.9	-48.86	-25	-23.86	0-360	149	H
3	10.68522	-71.51	Pk	37.9	-20.3	11.5	-42.41	-25	-17.41	0-360	149	H
4	5.34456	-75.72	Pk	34.6	-26.7	12	-55.82	-25	-30.82	0-360	149	V
5	8.01356	-71.42	Pk	35.8	-23.3	11.9	-47.02	-25	-22.02	0-360	149	V
6	10.68469	-75.35	Pk	37.9	-20.3	11.5	-46.25	-25	-21.25	0-360	149	V

16QAM LTE BAND 41 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19498
Configuration:	EUT + Support Equipment
Mode:	LTE 41 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2506 MHz											
1	5.01838	-75.22	Pk	34.3	-27.1	12	-56.02	-25	-31.02	0-360	149	H
2	7.49081	-76.71	Pk	35.6	-24	11.9	-53.21	-25	-28.21	0-360	149	H
3	9.97122	-78.34	Pk	37	-20.6	12	-49.94	-25	-24.94	0-360	149	H
4	5.01519	-75.41	Pk	34.3	-27.1	12.2	-56.01	-25	-31.01	0-360	149	V
5	7.44619	-75.89	Pk	35.5	-24.3	12	-52.69	-25	-27.69	0-360	149	V
6	9.98875	-77.01	Pk	37	-20.8	11.7	-49.11	-25	-24.11	0-360	149	V
	2593 MHz											
1	5.11825	-74.95	Pk	34.4	-27	11.5	-56.05	-25	-31.05	0-360	149	H
2	7.81009	-77.01	Pk	35.8	-23.7	12	-52.91	-25	-27.91	0-360	149	H
3	10.33672	-71.76	Pk	37.4	-20.3	11.8	-42.86	-25	-17.86	0-360	149	H
4	5.19209	-76.48	Pk	34.4	-26.9	12.3	-56.68	-25	-31.68	0-360	149	V
5	7.78513	-77.04	Pk	35.6	-23.8	12.3	-52.94	-25	-27.94	0-360	149	V
6	10.33725	-75.68	Pk	37.4	-20.2	11.8	-46.68	-25	-21.68	0-360	149	V
	2680 MHz											
1	5.34244	-76.35	Pk	34.6	-26.7	11.7	-56.75	-25	-31.75	0-360	149	H
2	8.01356	-73.57	Pk	35.8	-23.3	11.9	-49.17	-25	-24.17	0-360	149	H
3	10.68469	-71.41	Pk	37.9	-20.3	11.5	-42.31	-25	-17.31	0-360	149	H
4	5.34244	-75.32	Pk	34.6	-26.7	11.9	-55.52	-25	-30.52	0-360	149	V
5	8.01303	-72.75	Pk	35.8	-23.4	11.9	-48.45	-25	-23.45	0-360	149	V
6	10.68469	-69.89	Pk	37.9	-20.3	11.5	-40.79	-25	-15.79	0-360	149	V

9.2.21. LTE BAND 41 (IC)

LIMITS

RSS199§4.5
Equipment shall comply with the following unwanted emission limits:

a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least 43 + 10 $\log_{10}$ p
b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
   i. 40 + 10 $\log_{10}$ p from the channel edges to 5 MHz away
   ii. 43 + 10 $\log_{10}$ p between 5 MHz and X MHz from the channel edges, and
   iii. 55 + 10 $\log_{10}$ p at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than 43 + 10 $\log_{10}$ p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 $\log_{10}$ p at or below 2490.5 MHz.

In (a) and (b), **p** is the transmitter power measured in watts and **X** is 6 MHz or the equipment occupied bandwidth, whichever is greater.

QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	02/27/20
Test Engineer:	19497
Configuration:	EUT + Support Equipment
Mode:	LTE 41 QPSK 20MHz
Chamber #:	Chamber J

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2510 MHz											
1	5.04866	-68.68	Pk	34.3	-31	12.1	-53.28	-25	-28.28	0-360	149	H
2	7.50303	-70.54	Pk	35.6	-27.9	12.1	-50.74	-25	-25.74	0-360	149	H
3	10.00363	-69.95	Pk	37.1	-25.1	12.4	-45.55	-25	-20.55	0-360	149	H
4	5.00138	-69.03	Pk	34.1	-31.3	11.8	-54.43	-25	-29.43	0-360	149	V
5	7.50356	-67	Pk	35.6	-27.9	11.9	-47.4	-25	-22.4	0-360	149	V
6	10.00469	-67.27	Pk	37.1	-25.1	12.2	-43.07	-25	-18.07	0-360	149	V
	2595 MHz											
1	5.17138	-68.04	Pk	34.2	-31	12.2	-52.64	-25	-27.64	0-360	149	H
2	7.8085	-71.7	Pk	35.8	-27.6	12.2	-51.3	-25	-26.3	0-360	149	H
3	10.34416	-67.5	Pk	37.5	-25.4	12.4	-43	-25	-18	0-360	149	H
4	5.17297	-68.56	Pk	34.2	-31	12.2	-53.16	-25	-28.16	0-360	149	V
5	7.74581	-71.85	Pk	35.8	-27.6	12.2	-51.45	-25	-26.45	0-360	149	V
6	10.34416	-68.83	Pk	37.5	-25.4	12.1	-44.63	-25	-19.63	0-360	149	V
	2680 MHz											
1	5.33341	-68.21	Pk	34.5	-31.1	12.2	-52.61	-25	-27.61	0-360	149	H
2	8.01303	-69.1	Pk	35.7	-27.4	12	-48.8	-25	-23.8	0-360	149	H
3	10.68416	-67.74	Pk	37.9	-24.8	12.4	-42.24	-25	-17.24	0-360	149	H
4	5.33606	-68.81	Pk	34.5	-31	12	-53.31	-25	-28.31	0-360	149	V
5	8.01303	-68.76	Pk	35.7	-27.4	11.9	-48.56	-25	-23.56	0-360	149	V
6	10.68416	-59.94	Pk	37.9	-24.8	12.4	-34.44	-25	-9.44	0-360	149	V

16QAM LTE BAND 41 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	02/27/20
Test Engineer:	19497
Configuration:	EUT + Support Equipment
Mode:	LTE 41 16QAM 20MHz
Chamber #:	Chamber J

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	2510 MHz											
1	4.99447	-68.74	Pk	34.1	-31.3	12.3	-53.64	-25	-28.64	0-360	149	H
2	7.50303	-70.93	Pk	35.6	-27.9	12.1	-51.13	-25	-26.13	0-360	149	H
3	10.07588	-72.73	Pk	37.2	-25.2	12.5	-48.23	-25	-23.23	0-360	149	H
4	4.99288	-68.63	Pk	34.1	-31.2	11.7	-54.03	-25	-29.03	0-360	149	V
5	7.50303	-68.61	Pk	35.6	-27.9	11.9	-49.01	-25	-24.01	0-360	149	V
6	10.00416	-67.79	Pk	37.1	-25.1	12.2	-43.59	-25	-18.59	0-360	149	V
	2595 MHz											
1	5.20059	-68.46	Pk	34.2	-31.1	12.1	-53.26	-25	-28.26	0-360	149	H
2	7.69588	-70.79	Pk	35.8	-27.6	12.3	-50.29	-25	-25.29	0-360	149	H
3	10.34416	-68.2	Pk	37.5	-25.4	12.4	-43.7	-25	-18.7	0-360	149	H
4	5.16819	-68.35	Pk	34.3	-31	12	-53.05	-25	-28.05	0-360	149	V
5	7.73784	-71.83	Pk	35.8	-27.6	12.1	-51.53	-25	-26.53	0-360	149	V
6	10.34416	-67.51	Pk	37.5	-25.4	12.1	-43.31	-25	-18.31	0-360	149	V
	2680 MHz											
1	5.34244	-69.1	Pk	34.4	-31	12.3	-53.4	-25	-28.4	0-360	149	H
2	8.01303	-68.17	Pk	35.7	-27.4	12	-47.87	-25	-22.87	0-360	149	H
3	10.68469	-68.56	Pk	37.9	-24.7	12.4	-42.96	-25	-17.96	0-360	149	H
4	5.34775	-69.73	Pk	34.5	-30.9	12.2	-53.93	-25	-28.93	0-360	149	V
5	8.01303	-67.41	Pk	35.7	-27.4	11.9	-47.21	-25	-22.21	0-360	149	V
6	10.68416	-62.62	Pk	37.9	-24.8	12.4	-37.12	-25	-12.12	0-360	149	V

9.2.22. LTE BAND 66

LIMITS

FCC: §27.53 (h)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

RSS139§6.6

(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block,Footnote2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least43 + 10 log10 p (watts) dB.

(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least 43 + 10 log10 p (watts) dB.

QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 66 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1720 MHz											
1	3.41294	-74.63	Pk	32.7	-29.2	12.1	-59.03	-13	-46.03	0-360	149	H
2	5.13313	-77.29	Pk	34.4	-26.9	11.8	-57.99	-13	-44.99	0-360	149	H
3	6.85863	-77.12	Pk	35.6	-25.2	11.7	-55.02	-13	-42.02	0-360	149	H
4	3.4225	-75.86	Pk	32.7	-29.3	11.8	-60.66	-13	-47.66	0-360	149	V
5	5.13844	-77.14	Pk	34.5	-27.1	12	-57.74	-13	-44.74	0-360	149	V
6	6.83419	-77.45	Pk	35.5	-25.1	11.5	-55.55	-13	-42.55	0-360	149	V
	1745 MHz											
1	3.47456	-75.3	Pk	32.8	-29	11.7	-59.8	-13	-46.8	0-360	149	H
2	5.21016	-77.74	Pk	34.4	-26.8	12.1	-58.04	-13	-45.04	0-360	149	H
3	6.93566	-77.8	Pk	35.7	-24.7	11.7	-55.1	-13	-42.1	0-360	149	H
4	3.47616	-75.71	Pk	32.8	-29	11.6	-60.31	-13	-47.31	0-360	149	V
5	5.20591	-77.57	Pk	34.3	-26.7	12.3	-57.67	-13	-44.67	0-360	149	V
6	6.95159	-76.75	Pk	35.7	-24.7	11.7	-54.05	-13	-41.05	0-360	149	V
	1770 MHz											
1	3.52928	-75.44	Pk	32.9	-28.4	11.5	-59.44	-13	-46.44	0-360	149	H
2	5.28559	-75.61	Pk	34.6	-26.7	11.7	-56.01	-13	-43.01	0-360	149	H
3	7.04669	-77.86	Pk	35.7	-24.9	11.8	-55.26	-13	-42.26	0-360	149	H
4	3.52184	-75.33	Pk	32.9	-28.6	11.9	-59.13	-13	-46.13	0-360	149	V
5	5.28028	-77.16	Pk	34.6	-26.7	12.1	-57.16	-13	-44.16	0-360	149	V
6	7.04616	-78.21	Pk	35.7	-24.8	11.9	-55.41	-13	-42.41	0-360	149	V

16QAM LTE BAND 66 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/31/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 66 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	1720 MHz											
1	3.41134	-74.93	Pk	32.7	-29.2	12.1	-59.33	-13	-46.33	0-360	149	H
2	5.12038	-76.85	Pk	34.4	-27	11.5	-57.95	-13	-44.95	0-360	149	H
3	6.84216	-77	Pk	35.6	-25.3	11.4	-55.3	-13	-42.3	0-360	149	H
4	3.42303	-75.38	Pk	32.7	-29.2	11.8	-60.08	-13	-47.08	0-360	149	V
5	5.13259	-77.09	Pk	34.4	-27	11.9	-57.79	-13	-44.79	0-360	149	V
6	6.83419	-77	Pk	35.5	-25.1	11.5	-55.1	-13	-42.1	0-360	149	V
	1745 MHz											
1	3.47669	-74.11	Pk	32.8	-29	11.6	-58.71	-13	-45.71	0-360	149	H
2	5.21334	-76.91	Pk	34.4	-26.7	12	-57.21	-13	-44.21	0-360	149	H
3	6.93831	-77.78	Pk	35.6	-24.6	11.7	-55.08	-13	-42.08	0-360	149	H
4	3.46659	-76.09	Pk	32.8	-29.1	11.6	-60.79	-13	-47.79	0-360	149	V
5	5.21388	-76.5	Pk	34.4	-26.7	12.2	-56.6	-13	-43.6	0-360	149	V
6	6.95319	-76.92	Pk	35.7	-24.6	11.7	-54.12	-13	-41.12	0-360	149	V
	1770 MHz											
1	3.52981	-75.09	Pk	32.9	-28.4	11.5	-59.09	-13	-46.09	0-360	149	H
2	5.27763	-77.15	Pk	34.6	-26.7	11.9	-57.35	-13	-44.35	0-360	149	H
3	7.05625	-77.38	Pk	35.6	-24.7	11.8	-54.68	-13	-41.68	0-360	149	H
4	3.52184	-74.28	Pk	32.9	-28.6	11.9	-58.08	-13	-45.08	0-360	149	V
5	5.28825	-76.31	Pk	34.6	-26.7	11.9	-56.51	-13	-43.51	0-360	149	V
6	7.04456	-77.89	Pk	35.7	-24.9	11.8	-55.29	-13	-42.29	0-360	149	V

9.2.23. LTE BAND 71

LIMITS

FCC: §27.53 (g)
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.
RSS130§4.7
4.7.1 General unwanted emissions limits
The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least 43 + 10 $\log_{10}$ p (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits
In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

a. the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:
   i. 76 + 10 $\log_{10}$ p (watts), dB, for base and fixed equipment and
   ii. 65 + 10 $\log_{10}$ p (watts), dB, for mobile and portable equipment
b. the e.i.r.p. in the band 1559-1610 MHz shall not exceed −70 dBW/MHz for wideband signal and −80 dBW for discrete emission with bandwidth less than 700 Hz.

QPSK LTE BAND 71 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 71 QPSK 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	673 MHz											
1	1.32406	-72.9	Pk	29.4	-32.3	13.8	-62	-13	-49	0-360	149	H
2	1.99184	-69.73	Pk	30.9	-31	11.3	-58.53	-13	-45.53	0-360	149	H
3	2.65059	-75.76	Pk	32.4	-29.9	11.7	-61.56	-13	-48.56	0-360	149	H
4	1.32034	-73.9	Pk	29.3	-32.3	13.1	-63.8	-13	-50.8	0-360	149	V
5	1.99184	-71.77	Pk	30.9	-31	11.6	-60.27	-13	-47.27	0-360	149	V
6	2.649	-74.98	Pk	32.4	-29.9	11.9	-60.58	-13	-47.58	0-360	149	V
	680.5 MHz											
1	1.34266	-72.26	Pk	29.5	-32.3	10.8	-64.26	-13	-51.26	0-360	149	H
2	2.01416	-66.47	Pk	30.9	-31.1	11.4	-55.27	-13	-42.27	0-360	149	H
3	2.68406	-74.59	Pk	32.4	-29.9	11.5	-60.59	-13	-47.59	0-360	149	H
4	1.34266	-71.91	Pk	29.5	-32.3	10.1	-64.61	-13	-51.61	0-360	149	V
5	2.01469	-71.3	Pk	30.8	-31.1	12.2	-59.4	-13	-46.4	0-360	149	V
6	2.68513	-74.78	Pk	32.4	-29.9	11.3	-60.98	-13	-47.98	0-360	149	V
	688 MHz											
1	1.35753	-73.91	Pk	29.7	-32.3	11.4	-65.11	-13	-52.11	0-360	149	H
2	2.037	-66.48	Pk	31	-31	10	-56.48	-13	-43.48	0-360	149	H
3	2.71169	-75.04	Pk	32.4	-30.1	11.6	-61.14	-13	-48.14	0-360	149	H
4	1.36231	-74.14	Pk	29.6	-32.2	11.4	-65.34	-13	-52.34	0-360	149	V
5	2.037	-68.69	Pk	31	-31	10.7	-57.99	-13	-44.99	0-360	149	V
6	2.70797	-75.59	Pk	32.4	-30	11.7	-61.49	-13	-48.49	0-360	149	V

16QAM LTE BAND 71 (20.0MHZ BANDWIDTH)

Company:	Samsung
Project #:	13171837
Date:	12/30/19
Test Engineer:	19480
Configuration:	EUT + Support Equipment
Mode:	LTE 71 16QAM 20MHz
Chamber #:	Chamber I

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	WWAN Harmonics Limit	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
	673 MHz											
1	1.32831	-70.96	Pk	29.3	-32.4	13.5	-60.56	-13	-47.56	0-360	149	H
2	1.99184	-65.37	Pk	30.9	-31	11.3	-54.17	-13	-41.17	0-360	149	H
3	2.65484	-74.88	Pk	32.4	-29.9	11.7	-60.68	-13	-47.68	0-360	149	H
4	1.32406	-74.35	Pk	29.4	-32.3	12.5	-64.75	-13	-51.75	0-360	149	V
5	1.99184	-70.8	Pk	30.9	-31	11.6	-59.3	-13	-46.3	0-360	149	V
6	2.65431	-75.16	Pk	32.4	-29.9	11.9	-60.76	-13	-47.76	0-360	149	V
	680.5 MHz											
1	1.34266	-68.98	Pk	29.5	-32.3	10.8	-60.98	-13	-47.98	0-360	149	H
2	2.01469	-65.37	Pk	30.8	-31.1	11.4	-54.27	-13	-41.27	0-360	149	H
3	2.68778	-73.89	Pk	32.4	-29.8	11.3	-59.99	-13	-46.99	0-360	149	H
4	1.34266	-71.52	Pk	29.5	-32.3	10.1	-64.22	-13	-51.22	0-360	149	V
5	2.01469	-69.01	Pk	30.8	-31.1	12.2	-57.11	-13	-44.11	0-360	149	V
6	2.68247	-74.58	Pk	32.4	-29.9	11.2	-60.88	-13	-47.88	0-360	149	V
	688 MHz											
1	1.35434	-73.62	Pk	29.7	-32.3	11	-65.22	-13	-52.22	0-360	149	H
2	2.037	-62.76	Pk	31	-31	10	-52.76	-13	-39.76	0-360	149	H
3	2.71647	-75.66	Pk	32.4	-30.1	11.8	-61.56	-13	-48.56	0-360	149	H
4	1.35275	-73.28	Pk	29.7	-32.3	10.7	-65.18	-13	-52.18	0-360	149	V
5	2.037	-66.34	Pk	31	-31	10.7	-55.64	-13	-42.64	0-360	149	V
6	2.71541	-75.62	Pk	32.4	-30.1	11.8	-61.52	-13	-48.52	0-360	149	V