Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/09/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Standalone (LTE sample #1)
Mode: LTE 7, 5M, QPSK

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2502.50	28.90	V	9.6	5.5	24.84	33.0	-8.2	Pk
2502.50	24.71	H	9.6	5.5	20.65	33.0	-12.3	Pk
Mid Ch								
2535.00	25.96	V	9.6	5.6	21.91	33.0	-11.1	Pk
2535.00	22.55	H	9.6	5.6	18.50	33.0	-14.5	Pk
High Ch								
2567.50	20.73	V	9.7	5.7	16.69	33.0	-16.3	Pk
2567.50	20.37	H	9.7	5.7	16.33	33.0	-16.7	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 5MHz QPSK

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/09/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Standalone (LTE sample #1)
Mode: LTE 7, 5M, 16QAM

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2502.50	28.87	V	9.6	5.5	24.81	33.0	-8.2	Pk
2502.50	24.68	H	9.6	5.5	20.62	33.0	-12.4	Pk
Mid Ch								
2535.00	25.56	V	9.6	5.6	21.51	33.0	-11.5	Pk
2535.00	22.35	H	9.6	5.6	18.30	33.0	-14.7	Pk
High Ch								
2567.50	20.47	V	9.7	5.7	16.43	33.0	-16.6	Pk
2567.50	20.20	H	9.7	5.7	16.16	33.0	-16.8	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 5MHz 16QAM

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/09/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Standalone (LTE sample #1)
Mode: LTE 7, 10M, QPSK

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2505.00	24.54	V	9.6	5.5	20.48	33.0	-12.5	Pk
2505.00	22.67	H	9.6	5.5	18.61	33.0	-14.4	Pk
Mid Ch								
2535.00	24.91	V	9.6	5.6	20.86	33.0	-12.1	Pk
2535.00	21.60	H	9.6	5.6	17.55	33.0	-15.4	Pk
High Ch								
2565.00	20.55	V	9.7	5.7	16.52	33.0	-16.5	Pk
2565.00	17.45	H	9.7	5.7	13.42	33.0	-19.6	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 10MHz QPSK

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/09/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Standalone (LTE sample #1)
Mode: LTE 7, 10M, 16QAM

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2505.00	24.48	V	9.6	5.5	20.42	33.0	-12.6	Pk
2505.00	22.66	H	9.6	5.5	18.60	33.0	-14.4	Pk
Mid Ch								
2535.00	24.86	V	9.6	5.6	20.81	33.0	-12.2	Pk
2535.00	21.59	H	9.6	5.6	17.54	33.0	-15.5	Pk
High Ch								
2565.00	20.49	V	9.7	5.7	16.46	33.0	-16.5	Pk
2565.00	17.37	H	9.7	5.7	13.34	33.0	-19.7	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 10MHz 16QAM

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/09/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Standalone (LTE sample #1)
Mode: LTE 7, 15M, QPSK

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2507.50	26.38	V	9.6	5.5	22.32	33.0	-10.7	Pk
2507.50	22.98	H	9.6	5.5	18.92	33.0	-14.1	Pk
Mid Ch								
2535.00	24.47	V	9.6	5.6	20.42	33.0	-12.6	Pk
2535.00	21.17	H	9.6	5.6	17.12	33.0	-15.9	Pk
High Ch								
2562.50	21.31	V	9.7	5.7	17.28	33.0	-15.7	Pk
2562.50	17.44	H	9.7	5.7	13.41	33.0	-19.6	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 15MHz QPSK

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/09/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Standalone (LTE sample #1)
Mode: LTE 7, 15M, 16QAM

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2507.50	26.36	V	9.6	5.5	22.30	33.0	-10.7	Pk
2507.50	22.93	H	9.6	5.5	18.87	33.0	-14.1	Pk
Mid Ch								
2535.00	24.35	V	9.6	5.6	20.30	33.0	-12.7	Pk
2535.00	21.00	H	9.6	5.6	16.95	33.0	-16.0	Pk
High Ch								
2562.50	21.20	V	9.7	5.7	17.17	33.0	-15.8	Pk
2562.50	17.32	H	9.7	5.7	13.29	33.0	-19.7	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 15MHz 16QAM

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Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/09/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Standalone (LTE sample #1)
Mode: LTE 7, 20M, QPSK

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2510.00	26.06	V	9.6	5.5	22.00	33.0	-11.0	Pk
2510.00	20.61	H	9.6	5.5	16.55	33.0	-16.4	Pk
Mid Ch								
2535.00	24.61	V	9.6	5.6	20.56	33.0	-12.4	Pk
2535.00	19.68	H	9.6	5.6	15.63	33.0	-17.4	Pk
High Ch								
2560.00	22.47	V	9.7	5.7	18.44	33.0	-14.6	Pk
2560.00	20.28	H	9.7	5.7	16.25	33.0	-16.8	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 20MHz QPSK

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/09/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Standalone (LTE sample #1)
Mode: LTE 7, 20M, 16QAM

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2510.00	26.03	V	9.6	5.5	21.97	33.0	-11.0	Pk
2510.00	20.57	H	9.6	5.5	16.51	33.0	-16.5	Pk
Mid Ch								
2535.00	24.59	V	9.6	5.6	20.54	33.0	-12.5	Pk
2535.00	19.53	H	9.6	5.6	15.48	33.0	-17.5	Pk
High Ch								
2560.00	22.42	V	9.7	5.7	18.39	33.0	-14.6	Pk
2560.00	20.24	H	9.7	5.7	16.21	33.0	-16.8	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 20MHz 16QAM

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LTE Band 12

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
1.4	QPSK	1/0	699.7	15.91	39.02
		1/0	707.5	16.38	43.48
		1/0	715.3	16.88	48.75
	16QAM	1/0	699.7	14.81	30.29
		1/0	707.5	15.40	34.70
		1/0	715.3	16.01	39.90
3	QPSK	1/0	700.5	16.05	40.28
		1/0	707.5	16.53	45.01
		1/0	714.5	16.90	49.02
	16QAM	1/0	700.5	15.15	32.74
		1/0	707.5	15.61	36.41
		1/0	714.5	15.94	39.29
5	QPSK	1/0	701.5	16.29	42.53
		1/0	707.5	16.58	45.53
		1/0	713.5	17.00	50.09
	16QAM	1/0	701.5	15.59	36.20
		1/0	707.5	15.72	37.35
		1/0	713.5	16.12	40.91
10	QPSK	1/0	704	16.66	46.32
		1/0	707.5	16.88	48.78
		1/0	711	17.14	51.78
	16QAM	1/0	704	15.77	37.74
		1/0	707.5	15.98	39.65
		1/0	711	16.03	40.10

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Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 12, 1.4MHz, QPSK

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
699.70	20.72	V	4.7	2.0	-0.15	15.91	38.5	-22.5	
699.70	8.20	H	4.7	2.0	-0.15	3.39	38.5	-35.1	
Mid Ch									
707.50	21.31	V	4.7	1.9	-0.24	16.38	38.5	-22.1	
707.50	8.89	H	4.7	1.9	-0.24	3.96	38.5	-34.5	
High Ch									
715.30	21.94	V	4.7	1.8	-0.33	16.88	38.5	-21.6	
715.30	9.18	H	4.7	1.8	-0.33	4.12	38.5	-34.3	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B12 1.4MHz QPSK

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 12, 1.4MHz, 16QAM

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
699.70	19.62	V	4.7	2.0	-0.15	14.81	38.5	-23.6	
699.70	7.08	H	4.7	2.0	-0.15	2.27	38.5	-36.2	
Mid Ch									
707.50	20.33	V	4.7	1.9	-0.24	15.40	38.5	-23.0	
707.50	7.93	H	4.7	1.9	-0.24	3.00	38.5	-35.4	
High Ch									
715.30	21.07	V	4.7	1.8	-0.33	16.01	38.5	-22.4	
715.30	8.26	H	4.7	1.8	-0.33	3.20	38.5	-35.3	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B12 1.4MHz 16QAM

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 12, 3MHz, QPSK

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
700.50	20.87	V	4.7	2.0	-0.16	16.05	38.5	-22.4	
700.50	8.12	H	4.7	2.0	-0.16	3.30	38.5	-35.1	
Mid Ch									
707.50	21.46	V	4.7	1.9	-0.24	16.53	38.5	-21.9	
707.50	8.96	H	4.7	1.9	-0.24	4.03	38.5	-34.4	
High Ch									
714.50	21.95	V	4.7	1.8	-0.32	16.90	38.5	-21.5	
714.50	9.20	H	4.7	1.8	-0.32	4.15	38.5	-34.3	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B12 3MHz QPSK

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 12, 3MHz, 16QAM

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
700.50	19.97	V	4.7	2.0	-0.16	15.15	38.5	-23.3	
700.50	7.18	H	4.7	2.0	-0.16	2.36	38.5	-36.1	
Mid Ch									
707.50	20.54	V	4.7	1.9	-0.24	15.61	38.5	-22.8	
707.50	8.11	H	4.7	1.9	-0.24	3.18	38.5	-35.3	
High Ch									
714.50	20.99	V	4.7	1.8	-0.32	15.94	38.5	-22.5	
714.50	8.11	H	4.7	1.8	-0.32	3.06	38.5	-35.4	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B12 3MHz 16QAM

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 12, 5MHz, QPSK

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
701.50	21.12	V	4.7	2.0	-0.17	16.29	38.5	-22.2	
701.50	8.44	H	4.7	2.0	-0.17	3.61	38.5	-34.8	
Mid Ch									
707.50	21.51	V	4.7	1.9	-0.24	16.58	38.5	-21.9	
707.50	9.13	H	4.7	1.9	-0.24	4.20	38.5	-34.2	
High Ch									
713.50	22.03	V	4.7	1.8	-0.31	17.00	38.5	-21.5	
713.50	9.25	H	4.7	1.8	-0.31	4.22	38.5	-34.2	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B12 5MHz QPSK

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 12, 5MHz, 16QAM

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
701.50	20.42	V	4.7	2.0	-0.17	15.59	38.5	-22.9	
701.50	7.63	H	4.7	2.0	-0.17	2.80	38.5	-35.7	
Mid Ch									
707.50	20.65	V	4.7	1.9	-0.24	15.72	38.5	-22.7	
707.50	8.22	H	4.7	1.9	-0.24	3.29	38.5	-35.2	
High Ch									
713.50	21.15	V	4.7	1.8	-0.31	16.12	38.5	-22.3	
713.50	8.26	H	4.7	1.8	-0.31	3.23	38.5	-35.2	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B12 5MHz 16QAM

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 12, 10MHz, QPSK

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
704.00	21.53	V	4.7	2.0	-0.20	16.66	38.5	-21.8	
704.00	8.81	H	4.7	2.0	-0.20	3.94	38.5	-34.5	
Mid Ch									
707.50	21.81	V	4.7	1.9	-0.24	16.88	38.5	-21.6	
707.50	9.37	H	4.7	1.9	-0.24	4.44	38.5	-34.0	
High Ch									
711.00	22.13	V	4.7	1.9	-0.28	17.14	38.5	-21.3	
711.00	9.33	H	4.7	1.9	-0.28	4.34	38.5	-34.1	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B12 10MHz QPSK

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 12, 10MHz, 16QAM

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
704.00	20.64	V	4.7	2.0	-0.20	15.77	38.5	-22.7	
704.00	7.93	H	4.7	2.0	-0.20	3.06	38.5	-35.4	
Mid Ch									
707.50	20.91	V	4.7	1.9	-0.24	15.98	38.5	-22.5	
707.50	8.48	H	4.7	1.9	-0.24	3.55	38.5	-34.9	
High Ch									
711.00	21.02	V	4.7	1.9	-0.28	16.03	38.5	-22.4	
711.00	8.35	H	4.7	1.9	-0.28	3.36	38.5	-35.1	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B12 10MHz 16QAM

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LTE Band 13

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
5	QPSK	1/0	779.5	17.96	62.49
		1/0	782	17.62	57.74
		1/0	784.5	17.38	54.71
	16QAM	1/0	779.5	17.04	50.56
		1/0	782	16.61	45.76
		1/0	784.5	16.64	46.14
10	QPSK	1/0	782	17.81	60.33
	16QAM	1/0	782	16.95	49.49

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Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 13, 5MHz, QPSK

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
779.50	24.11	V	4.9	0.9	-1.20	17.96	38.5	-20.5	
779.50	13.20	H	4.9	0.9	-1.20	7.05	38.5	-31.4	
Mid Ch									
782.00	23.81	V	5.0	0.9	-1.23	17.62	38.5	-20.8	
782.00	13.05	H	5.0	0.9	-1.23	6.86	38.5	-31.6	
High Ch									
784.50	23.62	V	5.0	0.9	-1.26	17.38	38.5	-21.1	
784.50	13.13	H	5.0	0.9	-1.26	6.89	38.5	-31.6	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B13 5MHz QPSK

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 13, 5MHz, 16QAM

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
779.50	23.19	V	4.9	0.9	-1.20	17.04	38.5	-21.4	
779.50	12.28	H	4.9	0.9	-1.20	6.13	38.5	-32.3	
Mid Ch									
782.00	22.80	V	5.0	0.9	-1.23	16.61	38.5	-21.8	
782.00	12.14	H	5.0	0.9	-1.23	5.95	38.5	-32.5	
High Ch									
784.50	22.88	V	5.0	0.9	-1.26	16.64	38.5	-21.8	
784.50	12.31	H	5.0	0.9	-1.26	6.07	38.5	-32.4	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B13 5MHz 16QAM

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 13, 10MHz, QPSK

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
	0.00	V			-2.15		38.5		
	0.00	H			-2.15		38.5		
Mid Ch									
782.00	24.00	V	5.0	0.9	-1.23	17.81	38.5	-20.6	
782.00	13.37	H	5.0	0.9	-1.23	7.18	38.5	-31.3	
High Ch									
	0.00	V			-2.15		38.5		
	0.00	H			-2.15		38.5		

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B13 10MHz QPSK

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 13, 10MHz, 16QAM

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
	0.00	V			-2.15		38.5		
	0.00	H			-2.15		38.5		
Mid Ch									
782.00	23.14	V	5.0	0.9	-1.23	16.95	38.5	-21.5	
782.00	12.40	H	5.0	0.9	-1.23	6.21	38.5	-32.2	
High Ch									
	0.00	V			-2.15		38.5		
	0.00	H			-2.15		38.5		

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B13 10MHz 16QAM

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LTE Band 17

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
5	QPSK	1/0	706.5	16.50	44.64
		1/0	710	16.71	46.86
		1/0	713.5	17.01	50.21
	16QAM	1/0	706.5	15.70	37.13
		1/0	710	15.82	38.18
		1/0	713.5	16.24	42.05
10	QPSK	1/0	709	17.00	50.17
		1/0	710	17.03	50.44
		1/0	711	17.06	50.84
	16QAM	1/0	709	16.05	40.31
		1/0	710	16.22	41.86
		1/0	711	16.08	40.57

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Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 17, 5MHz, QPSK

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
706.50	21.41	V	4.7	1.9	-0.23	16.50	38.5	-22.0	
706.50	9.06	H	4.7	1.9	-0.23	4.15	38.5	-34.3	
Mid Ch									
710.00	21.68	V	4.7	1.9	-0.27	16.71	38.5	-21.7	
710.00	9.21	H	4.7	1.9	-0.27	4.24	38.5	-34.2	
High Ch									
713.50	22.04	V	4.7	1.8	-0.31	17.01	38.5	-21.4	
713.50	9.24	H	4.7	1.8	-0.31	4.21	38.5	-34.2	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B17 5MHz QPSK

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 17, 5MHz, 16QAM

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
706.50	20.61	V	4.7	1.9	-0.23	15.70	38.5	-22.8	
706.50	8.26	H	4.7	1.9	-0.23	3.35	38.5	-35.1	
Mid Ch									
710.00	20.79	V	4.7	1.9	-0.27	15.82	38.5	-22.6	
710.00	8.29	H	4.7	1.9	-0.27	3.32	38.5	-35.1	
High Ch									
713.50	21.27	V	4.7	1.8	-0.31	16.24	38.5	-22.2	
713.50	8.44	H	4.7	1.8	-0.31	3.41	38.5	-35.0	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B17 5MHz 16QAM

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 17, 10MHz, QPSK

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
709.00	21.96	V	4.7	1.9	-0.26	17.00	38.5	-21.4	
709.00	9.44	H	4.7	1.9	-0.26	4.48	38.5	-34.0	
Mid Ch									
710.00	22.00	V	4.7	1.9	-0.27	17.03	38.5	-21.4	
710.00	9.37	H	4.7	1.9	-0.27	4.40	38.5	-34.1	
High Ch									
711.00	22.05	V	4.7	1.9	-0.28	17.06	38.5	-21.4	
711.00	9.26	H	4.7	1.9	-0.28	4.27	38.5	-34.2	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B17 10MHz QPSK

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/10/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 17, 10MHz, 16QAM

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low									
709.00	21.01	V	4.7	1.9	-0.26	16.05	38.5	-22.4	
709.00	8.56	H	4.7	1.9	-0.26	3.60	38.5	-34.8	
Mid Ch									
710.00	21.19	V	4.7	1.9	-0.27	16.22	38.5	-22.2	
710.00	8.56	H	4.7	1.9	-0.27	3.59	38.5	-34.9	
High Ch									
711.00	21.07	V	4.7	1.9	-0.28	16.08	38.5	-22.4	
711.00	8.30	H	4.7	1.9	-0.28	3.31	38.5	-35.1	

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B17 10MHz 16QAM

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LTE Band 41

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	mW
5	QPSK	1/0	2498.5	20.93	123.80
		1/0	2593	13.34	21.59
		1/0	2687.5	9.13	8.19
	16QAM	1/0	2498.5	20.95	124.43
		1/0	2593	13.33	21.55
		1/0	2687.5	9.19	8.29
10	QPSK	1/0	2501	20.71	117.69
		1/0	2593	13.24	21.09
		1/0	2685	9.17	8.26
	16QAM	1/0	2501	20.80	120.30
		1/0	2593	13.30	21.37
		1/0	2685	9.41	8.73
15	QPSK	1/0	2503.5	20.75	118.94
		1/0	2593	13.12	20.53
		1/0	2682.5	9.35	8.61
	16QAM	1/0	2503.5	20.82	120.79
		1/0	2593	13.33	21.53
		1/0	2682.5	9.63	9.18
20	QPSK	1/0	2506	20.52	112.73
		1/0	2593	13.37	21.74
		1/0	2680	9.60	9.12
	16QAM	1/0	2506	20.62	115.28
		1/0	2593	13.41	21.92
		1/0	2680	9.82	9.59

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Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/08/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #1)
Mode: LTE 41, 5M, QPSK

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2498.50	24.99	V	9.6	5.5	20.93	33.0	-12.1	Pk
2498.50	22.30	H	9.6	5.5	18.24	33.0	-14.8	Pk
Mid Ch								
2593.00	17.37	V	9.8	5.8	13.34	33.0	-19.7	Pk
2593.00	14.56	H	9.8	5.8	10.53	33.0	-22.5	Pk
High Ch								
2687.50	13.10	V	10.0	6.0	9.13	33.0	-23.9	Pk
2687.50	10.81	H	10.0	6.0	6.84	33.0	-26.2	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B41 5MHz QPSK

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/08/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #1)
Mode: LTE 41, 5M, 16QAM

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2498.50	25.01	V	9.6	5.5	20.95	33.0	-12.1	Pk
2498.50	22.37	H	9.6	5.5	18.31	33.0	-14.7	Pk
Mid Ch								
2593.00	17.37	V	9.8	5.8	13.33	33.0	-19.7	Pk
2593.00	14.61	H	9.8	5.8	10.58	33.0	-22.4	Pk
High Ch								
2687.50	13.15	V	10.0	6.0	9.19	33.0	-23.8	Pk
2687.50	10.85	H	10.0	6.0	6.89	33.0	-26.1	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B41 5MHz 16QAM

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/08/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #1)
Mode: LTE 41, 10M, QPSK

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2501.00	24.77	V	9.6	5.5	20.71	33.0	-12.3	Pk
2501.00	22.10	H	9.6	5.5	18.04	33.0	-15.0	Pk
Mid Ch								
2593.00	17.27	V	9.8	5.8	13.24	33.0	-19.8	Pk
2593.00	14.54	H	9.8	5.8	10.51	33.0	-22.5	Pk
High Ch								
2685.00	13.14	V	10.0	6.0	9.17	33.0	-23.8	Pk
2685.00	10.70	H	10.0	6.0	6.73	33.0	-26.3	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B41 10MHz QPSK

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/08/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #1)
Mode: LTE 41, 10M, 16QAM

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2501.00	24.86	V	9.6	5.5	20.80	33.0	-12.2	Pk
2501.00	22.21	H	9.6	5.5	18.15	33.0	-14.8	Pk
Mid Ch								
2593.00	17.33	V	9.8	5.8	13.30	33.0	-19.7	Pk
2593.00	14.58	H	9.8	5.8	10.55	33.0	-22.4	Pk
High Ch								
2685.00	13.38	V	10.0	6.0	9.41	33.0	-23.6	Pk
2685.00	10.88	H	10.0	6.0	6.92	33.0	-26.1	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B41 10MHz 16QAM

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/08/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #1)
Mode: LTE 41, 15M, QPSK

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2503.50	24.81	V	9.6	5.5	20.75	33.0	-12.2	Pk
2503.50	21.42	H	9.6	5.5	17.36	33.0	-15.6	Pk
Mid Ch								
2593.00	17.16	V	9.8	5.8	13.12	33.0	-19.9	Pk
2593.00	14.49	H	9.8	5.8	10.46	33.0	-22.5	Pk
High Ch								
2682.50	13.31	V	10.0	6.0	9.35	33.0	-23.6	Pk
2682.50	10.70	H	10.0	6.0	6.73	33.0	-26.3	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B41 15MHz QPSK

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/08/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #1)
Mode: LTE 41, 15M, 16QAM

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2503.50	24.88	V	9.6	5.5	20.82	33.0	-12.2	Pk
2503.50	21.48	H	9.6	5.5	17.42	33.0	-15.6	Pk
Mid Ch								
2593.00	17.36	V	9.8	5.8	13.33	33.0	-19.7	Pk
2593.00	14.66	H	9.8	5.8	10.63	33.0	-22.4	Pk
High Ch								
2682.50	13.59	V	10.0	6.0	9.63	33.0	-23.4	Pk
2682.50	11.01	H	10.0	6.0	7.05	33.0	-26.0	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B41 15MHz 16QAM

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Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/08/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #1)
Mode: LTE 41, 20M, QPSK

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2506.00	24.58	V	9.6	5.5	20.52	33.0	-12.5	Pk
2506.00	21.13	H	9.6	5.5	17.08	33.0	-15.9	Pk
Mid Ch								
2593.00	17.40	V	9.8	5.8	13.37	33.0	-19.6	Pk
2593.00	14.73	H	9.8	5.8	10.70	33.0	-22.3	Pk
High Ch								
2680.00	13.56	V	10.0	6.0	9.60	33.0	-23.4	Pk
2680.00	11.07	H	10.0	6.0	7.11	33.0	-25.9	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B41 20MHz QPSK

Fundamental Substitution Measurement (Fc > 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633
Date: 08/08/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #1)
Mode: LTE 41, 20M, 16QAM

Test Equipment:
Substitution: Horn antenna AT0078, cable CBL055, and signal-source T374

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
2506.00	24.68	V	9.6	5.5	20.62	33.0	-12.4	Pk
2506.00	21.19	H	9.6	5.5	17.13	33.0	-15.9	Pk
Mid Ch								
2593.00	17.44	V	9.8	5.8	13.41	33.0	-19.6	Pk
2593.00	14.72	H	9.8	5.8	10.69	33.0	-22.3	Pk
High Ch								
2680.00	13.78	V	10.0	6.0	9.82	33.0	-23.2	Pk
2680.00	11.09	H	10.0	6.0	7.12	33.0	-25.9	Pk

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B41 20MHz 16QAM

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14.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

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

LIMIT

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

Part 27: (m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the Channel edge and 5 megahertz from the Channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the Channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the Channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on Channel BRS Channel 1 on the same terms and conditions as adjacent Channel BRS or EBS licensees.

TEST PROCEDURE

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

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

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14.2.1. SPURIOUS RADIATION RESULTS

GSM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS)
Mode: GPRS 850MHz

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.2MHz)										
1.65	-62.8	H	3.0	-19.4	39.9	1.0	-58.3	-13.0	-45.3	
2.47	-61.2	H	3.0	-14.6	39.3	1.0	-52.8	-13.0	-39.8	
3.30	-64.4	H	3.0	-15.1	39.5	1.0	-53.6	-13.0	-40.6	
1.65	-63.3	V	3.0	-18.3	39.9	1.0	-57.2	-13.0	-44.2	
2.47	-61.4	V	3.0	-13.7	39.3	1.0	-52.0	-13.0	-39.0	
3.30	-64.7	V	3.0	-14.5	39.5	1.0	-52.9	-13.0	-39.9	
Mid Channel (836.6MHz)										
1.67	-62.3	H	3.0	-18.7	39.9	1.0	-57.6	-13.0	-44.6	
2.51	-61.5	H	3.0	-14.6	39.2	1.0	-52.9	-13.0	-39.9	
3.35	-64.4	H	3.0	-14.9	39.5	1.0	-53.4	-13.0	-40.4	
1.67	-62.4	V	3.0	-17.3	39.9	1.0	-56.2	-13.0	-43.2	
2.51	-61.3	V	3.0	-13.5	39.2	1.0	-51.7	-13.0	-38.7	
3.35	-64.2	V	3.0	-13.9	39.5	1.0	-52.4	-13.0	-39.4	
High Channel (848.8MHz)										
1.70	-62.5	H	3.0	-18.7	40.0	1.0	-57.7	-13.0	-44.7	
2.55	-61.8	H	3.0	-14.9	39.2	1.0	-53.1	-13.0	-40.1	
3.40	-64.5	H	3.0	-15.0	39.5	1.0	-53.5	-13.0	-40.5	
1.70	-62.7	V	3.0	-17.3	40.0	1.0	-56.3	-13.0	-43.3	
2.55	-61.2	V	3.0	-13.2	39.2	1.0	-51.4	-13.0	-38.4	
3.40	-64.1	V	3.0	-13.7	39.5	1.0	-52.3	-13.0	-39.3	

Rev. 03.19.15

GSM850 GPRS

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS)
Mode: EGPRS 850MHz

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.2MHz)										
1.65	-62.5	H	3.0	-19.1	39.9	1.0	-58.0	-13.0	-45.0	
2.47	-61.7	H	3.0	-15.1	39.3	1.0	-53.4	-13.0	-40.4	
3.30	-63.8	H	3.0	-14.4	39.5	1.0	-52.9	-13.0	-39.9	
1.65	-63.0	V	3.0	-18.0	39.9	1.0	-56.9	-13.0	-43.9	
2.47	-62.1	V	3.0	-14.4	39.3	1.0	-52.7	-13.0	-39.7	
3.30	-64.6	V	3.0	-14.4	39.5	1.0	-52.9	-13.0	-39.9	
Mid Channel (836.6MHz)										
1.67	-62.3	H	3.0	-18.7	39.9	1.0	-57.6	-13.0	-44.6	
2.51	-62.2	H	3.0	-15.4	39.2	1.0	-53.6	-13.0	-40.6	
3.35	-64.5	H	3.0	-15.0	39.5	1.0	-53.6	-13.0	-40.6	
1.67	-63.0	V	3.0	-17.9	39.9	1.0	-56.8	-13.0	-43.8	
2.51	-61.6	V	3.0	-13.8	39.2	1.0	-52.0	-13.0	-39.0	
3.35	-64.5	V	3.0	-14.2	39.5	1.0	-52.7	-13.0	-39.7	
High Channel (848.8MHz)										
1.70	-63.0	H	3.0	-19.3	40.0	1.0	-58.2	-13.0	-45.2	
2.55	-62.9	H	3.0	-15.9	39.2	1.0	-54.1	-13.0	-41.1	
3.40	-64.3	H	3.0	-14.8	39.5	1.0	-53.3	-13.0	-40.3	
1.70	-62.6	V	3.0	-17.3	40.0	1.0	-56.2	-13.0	-43.2	
2.55	-61.8	V	3.0	-13.8	39.2	1.0	-52.1	-13.0	-39.1	
3.40	-64.6	V	3.0	-14.3	39.5	1.0	-52.8	-13.0	-39.8	

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GSM850 EGPRS

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS)
Mode: GPRS 1900MHz

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1850.2MHz)										
3.70	-60.5	H	3.0	-10.2	39.7	1.0	-48.9	-13.0	-35.9	
5.55	-64.3	H	3.0	-10.7	40.1	1.0	-49.8	-13.0	-36.8	
7.40	-66.1	H	3.0	-9.7	39.0	1.0	-47.7	-13.0	-34.7	
3.70	-60.4	V	3.0	-9.7	39.7	1.0	-48.4	-13.0	-35.4	
5.55	-64.0	V	3.0	-10.6	40.1	1.0	-49.7	-13.0	-36.7	
7.40	-65.4	V	3.0	-9.3	39.0	1.0	-47.3	-13.0	-34.3	
Mid Channel (1880.0)										
3.76	-58.7	H	3.0	-8.3	39.8	1.0	-47.0	-13.0	-34.0	
5.64	-63.5	H	3.0	-9.8	40.0	1.0	-48.8	-13.0	-35.8	
7.52	-66.0	H	3.0	-9.5	38.9	1.0	-47.4	-13.0	-34.4	
3.76	-59.2	V	3.0	-8.4	39.8	1.0	-47.2	-13.0	-34.2	
5.64	-63.8	V	3.0	-10.3	40.0	1.0	-49.3	-13.0	-36.3	
7.52	-66.4	V	3.0	-10.2	38.9	1.0	-48.1	-13.0	-35.1	
High Channel (1909.8MHz)										
3.82	-57.8	H	3.0	-7.2	39.8	1.0	-46.0	-13.0	-33.0	
5.73	-63.6	H	3.0	-9.7	40.0	1.0	-48.7	-13.0	-35.7	
7.64	-65.2	H	3.0	-8.6	38.9	1.0	-46.5	-13.0	-33.5	
3.82	-57.8	V	3.0	-6.9	39.8	1.0	-45.7	-13.0	-32.7	
5.73	-64.0	V	3.0	-10.4	40.0	1.0	-49.3	-13.0	-36.3	
7.64	-65.8	V	3.0	-9.4	38.9	1.0	-47.3	-13.0	-34.3	

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GSM1900 GPRS

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS)
Mode: EGPRS 1900MHz

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1850.2MHz)										
3.70	-60.7	H	3.0	-10.4	39.7	1.0	-49.1	-13.0	-36.1	
5.55	-64.1	H	3.0	-10.6	40.1	1.0	-49.7	-13.0	-36.7	
7.40	-66.1	H	3.0	-9.7	39.0	1.0	-47.7	-13.0	-34.7	
3.70	-60.5	V	3.0	-9.7	39.7	1.0	-48.5	-13.0	-35.5	
5.55	-64.4	V	3.0	-11.0	40.1	1.0	-50.1	-13.0	-37.1	
7.40	-65.9	V	3.0	-9.9	39.0	1.0	-47.8	-13.0	-34.8	
Mid Channel (1880.0)										
3.76	-58.3	H	3.0	-7.8	39.8	1.0	-46.6	-13.0	-33.6	
5.64	-63.8	H	3.0	-10.2	40.0	1.0	-49.2	-13.0	-36.2	
7.52	-66.2	H	3.0	-9.7	38.9	1.0	-47.6	-13.0	-34.6	
3.76	-58.9	V	3.0	-8.0	39.8	1.0	-46.8	-13.0	-33.8	
5.64	-63.8	V	3.0	-10.3	40.0	1.0	-49.3	-13.0	-36.3	
7.52	-66.1	V	3.0	-9.9	38.9	1.0	-47.9	-13.0	-34.9	
High Channel (1909.8MHz)										
3.82	-57.9	H	3.0	-7.3	39.8	1.0	-46.1	-13.0	-33.1	
5.73	-63.7	H	3.0	-9.9	40.0	1.0	-48.9	-13.0	-35.9	
7.64	-65.6	H	3.0	-9.0	38.9	1.0	-46.9	-13.0	-33.9	
3.82	-57.2	V	3.0	-6.3	39.8	1.0	-45.1	-13.0	-32.1	
5.73	-63.9	V	3.0	-10.2	40.0	1.0	-49.2	-13.0	-36.2	
7.64	-65.7	V	3.0	-9.4	38.9	1.0	-47.3	-13.0	-34.3	

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GSM1900 EGPRS

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WCDMA

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS)
Mode: REL 99, 850MHz

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.4MHz)										
1.65	-63.6	H	3.0	-20.2	39.9	1.0	-59.1	-13.0	-46.1	
2.48	-64.8	H	3.0	-18.2	39.3	1.0	-56.4	-13.0	-43.4	
3.31	-64.8	H	3.0	-15.5	39.5	1.0	-54.0	-13.0	-41.0	
1.65	-62.5	V	3.0	-17.5	39.9	1.0	-56.4	-13.0	-43.4	
2.48	-64.6	V	3.0	-16.9	39.3	1.0	-55.2	-13.0	-42.2	
3.31	-64.6	V	3.0	-14.4	39.5	1.0	-52.9	-13.0	-39.9	
Mid Channel (836.6MHz)										
1.67	-62.9	H	3.0	-19.3	39.9	1.0	-58.2	-13.0	-45.2	
2.51	-64.9	H	3.0	-18.1	39.2	1.0	-56.3	-13.0	-43.3	
3.35	-65.9	H	3.0	-16.5	39.5	1.0	-55.0	-13.0	-42.0	
1.67	-63.2	V	3.0	-18.0	39.9	1.0	-56.9	-13.0	-43.9	
2.51	-63.9	V	3.0	-16.1	39.2	1.0	-54.3	-13.0	-41.3	
3.35	-64.8	V	3.0	-14.5	39.5	1.0	-53.0	-13.0	-40.0	
High Channel (846.6MHz)										
1.69	-62.8	H	3.0	-19.1	39.9	1.0	-58.1	-13.0	-45.1	
2.54	-65.4	H	3.0	-18.5	39.2	1.0	-56.7	-13.0	-43.7	
3.39	-65.7	H	3.0	-16.1	39.5	1.0	-54.6	-13.0	-41.6	
1.69	-63.3	V	3.0	-18.0	39.9	1.0	-56.9	-13.0	-43.9	
2.54	-63.4	V	3.0	-15.5	39.2	1.0	-53.7	-13.0	-40.7	
3.39	-64.9	V	3.0	-14.5	39.5	1.0	-53.0	-13.0	-40.0	

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B5 REL99

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS)
Mode: HSDPA 850MHz

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.4MHz)										
1.65	-63.6	H	3.0	-20.2	39.9	1.0	-59.0	-13.0	-46.0	
2.48	-64.5	H	3.0	-17.8	39.3	1.0	-56.1	-13.0	-43.1	
3.31	-65.7	H	3.0	-16.3	39.5	1.0	-54.8	-13.0	-41.8	
1.65	-63.5	V	3.0	-18.5	39.9	1.0	-57.4	-13.0	-44.4	
2.48	-65.0	V	3.0	-17.3	39.3	1.0	-55.6	-13.0	-42.6	
3.31	-65.0	V	3.0	-14.7	39.5	1.0	-53.2	-13.0	-40.2	
Mid Channel (836.6MHz)										
1.67	-63.5	H	3.0	-20.0	39.9	1.0	-58.9	-13.0	-45.9	
2.51	-65.2	H	3.0	-18.3	39.2	1.0	-56.6	-13.0	-43.6	
3.35	-65.7	H	3.0	-16.2	39.5	1.0	-54.8	-13.0	-41.8	
1.67	-63.1	V	3.0	-17.9	39.9	1.0	-56.8	-13.0	-43.8	
2.51	-64.7	V	3.0	-16.8	39.2	1.0	-55.1	-13.0	-42.1	
3.35	-64.4	V	3.0	-14.1	39.5	1.0	-52.6	-13.0	-39.6	
High Channel (846.6MHz)										
1.69	-63.4	H	3.0	-19.7	39.9	1.0	-58.6	-13.0	-45.6	
2.54	-64.5	H	3.0	-17.5	39.2	1.0	-55.8	-13.0	-42.8	
3.39	-65.4	H	3.0	-15.8	39.5	1.0	-54.4	-13.0	-41.4	
1.69	-63.1	V	3.0	-17.8	39.9	1.0	-56.7	-13.0	-43.7	
2.54	-64.1	V	3.0	-16.2	39.2	1.0	-54.4	-13.0	-41.4	
3.39	-65.2	V	3.0	-14.9	39.5	1.0	-53.4	-13.0	-40.4	

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B5 HSDPA

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LTE Band 4

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 1.4MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1710.7MHz)										
3.42	-63.9	H	3.0	-14.3	39.6	1.0	-52.8	-13.0	-39.8	
5.13	-63.9	H	3.0	-11.1	40.3	1.0	-50.4	-13.0	-37.4	
6.84	-64.4	H	3.0	-8.7	39.2	1.0	-46.9	-13.0	-33.9	
3.42	-64.4	V	3.0	-14.0	39.6	1.0	-52.5	-13.0	-39.5	
5.13	-64.1	V	3.0	-11.4	40.3	1.0	-50.7	-13.0	-37.7	
6.84	-65.7	V	3.0	-10.3	39.2	1.0	-48.5	-13.0	-35.5	
Mid Channel (1732.5MHz)										
3.47	-64.4	H	3.0	-14.7	39.6	1.0	-53.2	-13.0	-40.2	
5.20	-63.6	H	3.0	-10.6	40.3	1.0	-50.0	-13.0	-37.0	
6.93	-65.8	H	3.0	-10.0	39.1	1.0	-48.1	-13.0	-35.1	
3.47	-64.4	V	3.0	-13.9	39.6	1.0	-52.5	-13.0	-39.5	
5.20	-64.2	V	3.0	-11.4	40.3	1.0	-50.7	-13.0	-37.7	
6.93	-65.6	V	3.0	-10.1	39.1	1.0	-48.2	-13.0	-35.2	
High Channel (1754.3MHz)										
3.51	-65.1	H	3.0	-15.2	39.6	1.0	-53.8	-13.0	-40.8	
5.26	-64.8	H	3.0	-11.8	40.3	1.0	-51.1	-13.0	-38.1	
7.02	-65.2	H	3.0	-9.2	39.1	1.0	-47.3	-13.0	-34.3	
3.51	-64.7	V	3.0	-14.2	39.6	1.0	-52.8	-13.0	-39.8	
5.26	-65.5	V	3.0	-12.6	40.3	1.0	-51.9	-13.0	-38.9	
7.02	-65.3	V	3.0	-9.7	39.1	1.0	-47.8	-13.0	-34.8	

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LTE B4 1.4MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 1.4MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1710.7MHz)										
3.42	-64.1	H	3.0	-14.4	39.6	1.0	-53.0	-13.0	-40.0	
5.13	-63.4	H	3.0	-10.6	40.3	1.0	-49.9	-13.0	-36.9	
6.84	-66.0	H	3.0	-10.4	39.2	1.0	-48.5	-13.0	-35.5	
3.42	-64.4	V	3.0	-14.0	39.6	1.0	-52.6	-13.0	-39.6	
5.13	-63.5	V	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
6.84	-65.5	V	3.0	-10.2	39.2	1.0	-48.3	-13.0	-35.3	
Mid Channel (1732.5MHz)										
3.47	-64.7	H	3.0	-15.0	39.6	1.0	-53.6	-13.0	-40.6	
5.20	-64.1	H	3.0	-11.1	40.3	1.0	-50.5	-13.0	-37.5	
6.93	-64.7	H	3.0	-8.9	39.1	1.0	-47.0	-13.0	-34.0	
3.47	-64.6	V	3.0	-14.1	39.6	1.0	-52.7	-13.0	-39.7	
5.20	-63.5	V	3.0	-10.7	40.3	1.0	-50.0	-13.0	-37.0	
6.93	-65.6	V	3.0	-10.1	39.1	1.0	-48.2	-13.0	-35.2	
High Channel (1754.3MHz)										
3.51	-65.5	H	3.0	-15.7	39.6	1.0	-54.3	-13.0	-41.3	
5.26	-65.5	H	3.0	-12.4	40.3	1.0	-51.7	-13.0	-38.7	
7.02	-66.3	H	3.0	-10.3	39.1	1.0	-48.4	-13.0	-35.4	
3.51	-64.6	V	3.0	-14.1	39.6	1.0	-52.7	-13.0	-39.7	
5.26	-64.0	V	3.0	-11.1	40.3	1.0	-50.4	-13.0	-37.4	
7.02	-65.9	V	3.0	-10.3	39.1	1.0	-48.3	-13.0	-35.3	

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LTE B4 1.4MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 3MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1711.5MHz)										
3.42	-64.5	H	3.0	-14.9	39.6	1.0	-53.4	-13.0	-40.4	
5.13	-64.1	H	3.0	-11.3	40.3	1.0	-50.6	-13.0	-37.6	
6.85	-65.7	H	3.0	-10.1	39.2	1.0	-48.2	-13.0	-35.2	
3.42	-64.8	V	3.0	-14.4	39.6	1.0	-53.0	-13.0	-40.0	
5.13	-63.9	V	3.0	-11.2	40.3	1.0	-50.5	-13.0	-37.5	
6.85	-65.3	V	3.0	-10.0	39.2	1.0	-48.1	-13.0	-35.1	
Mid Channel (1732.5MHz)										
3.47	-64.3	H	3.0	-14.5	39.6	1.0	-53.1	-13.0	-40.1	
5.20	-63.5	H	3.0	-10.6	40.3	1.0	-49.9	-13.0	-36.9	
6.93	-65.4	H	3.0	-9.6	39.1	1.0	-47.7	-13.0	-34.7	
3.47	-64.2	V	3.0	-13.8	39.6	1.0	-52.4	-13.0	-39.4	
5.20	-63.6	V	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
6.93	-65.3	V	3.0	-9.8	39.1	1.0	-47.9	-13.0	-34.9	
High Channel (1753.5MHz)										
3.51	-64.2	H	3.0	-14.3	39.6	1.0	-53.0	-13.0	-40.0	
5.26	-63.9	H	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
7.01	-65.2	H	3.0	-9.3	39.1	1.0	-47.3	-13.0	-34.3	
3.51	-64.4	V	3.0	-13.9	39.6	1.0	-52.6	-13.0	-39.6	
5.26	-64.2	V	3.0	-11.3	40.3	1.0	-50.6	-13.0	-37.6	
7.01	-65.4	V	3.0	-9.7	39.1	1.0	-47.8	-13.0	-34.8	

Rev. 10.28.15

LTE B4 3MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 3MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1711.5MHz)										
3.42	-64.5	H	3.0	-14.8	39.6	1.0	-53.4	-13.0	-40.4	
5.13	-63.6	H	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
6.85	-65.8	H	3.0	-10.1	39.2	1.0	-48.3	-13.0	-35.3	
3.42	-64.6	V	3.0	-14.2	39.6	1.0	-52.8	-13.0	-39.8	
5.13	-63.7	V	3.0	-11.0	40.3	1.0	-50.3	-13.0	-37.3	
6.85	-65.8	V	3.0	-10.4	39.2	1.0	-48.6	-13.0	-35.6	
Mid Channel (1732.5MHz)										
3.47	-64.4	H	3.0	-14.7	39.6	1.0	-53.3	-13.0	-40.3	
5.20	-63.5	H	3.0	-10.5	40.3	1.0	-49.9	-13.0	-36.9	
6.93	-65.8	H	3.0	-10.0	39.1	1.0	-48.1	-13.0	-35.1	
3.47	-64.6	V	3.0	-14.1	39.6	1.0	-52.7	-13.0	-39.7	
5.20	-63.6	V	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
6.93	-66.1	V	3.0	-10.6	39.1	1.0	-48.8	-13.0	-35.8	
High Channel (1753.5MHz)										
3.51	-64.1	H	3.0	-14.3	39.6	1.0	-52.9	-13.0	-39.9	
5.26	-63.5	H	3.0	-10.5	40.3	1.0	-49.8	-13.0	-36.8	
7.01	-64.7	H	3.0	-8.8	39.1	1.0	-46.8	-13.0	-33.8	
3.51	-64.7	V	3.0	-14.2	39.6	1.0	-52.8	-13.0	-39.8	
5.26	-63.8	V	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
7.01	-65.8	V	3.0	-10.2	39.1	1.0	-48.2	-13.0	-35.2	

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LTE B4 3MHz 16QAM

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High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 5MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1712.5MHz)										
3.43	-64.7	H	3.0	-15.1	39.6	1.0	-53.6	-13.0	-40.6	
5.14	-64.2	H	3.0	-11.4	40.3	1.0	-50.7	-13.0	-37.7	
6.85	-65.6	H	3.0	-9.9	39.2	1.0	-48.1	-13.0	-35.1	
3.43	-64.7	V	3.0	-14.3	39.6	1.0	-52.9	-13.0	-39.9	
5.14	-63.5	V	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
6.85	-65.9	V	3.0	-10.5	39.2	1.0	-48.7	-13.0	-35.7	
Mid Channel (1732.5MHz)										
3.47	-64.2	H	3.0	-14.4	39.6	1.0	-53.0	-13.0	-40.0	
5.20	-63.7	H	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
6.93	-65.0	H	3.0	-9.2	39.1	1.0	-47.3	-13.0	-34.3	
3.47	-64.3	V	3.0	-13.9	39.6	1.0	-52.5	-13.0	-39.5	
5.20	-63.6	V	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
6.93	-65.8	V	3.0	-10.3	39.1	1.0	-48.4	-13.0	-35.4	
High Channel (1752.5MHz)										
3.51	-64.7	H	3.0	-14.9	39.6	1.0	-53.5	-13.0	-40.5	
5.26	-64.1	H	3.0	-11.1	40.3	1.0	-50.4	-13.0	-37.4	
7.01	-65.4	H	3.0	-9.4	39.1	1.0	-47.5	-13.0	-34.5	
3.51	-64.4	V	3.0	-13.9	39.6	1.0	-52.6	-13.0	-39.6	
5.26	-64.1	V	3.0	-11.2	40.3	1.0	-50.5	-13.0	-37.5	
7.01	-65.8	V	3.0	-10.2	39.1	1.0	-48.2	-13.0	-35.2	

Rev. 10.28.15

LTE B4 5MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 5MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1712.5MHz)										
3.43	-64.2	H	3.0	-14.5	39.6	1.0	-53.1	-13.0	-40.1	
5.14	-64.1	H	3.0	-11.3	40.3	1.0	-50.6	-13.0	-37.6	
6.85	-65.7	H	3.0	-10.0	39.2	1.0	-48.2	-13.0	-35.2	
3.43	-64.7	V	3.0	-14.3	39.6	1.0	-52.8	-13.0	-39.8	
5.14	-63.6	V	3.0	-10.9	40.3	1.0	-50.2	-13.0	-37.2	
6.85	-65.5	V	3.0	-10.1	39.2	1.0	-48.3	-13.0	-35.3	
Mid Channel (1732.5MHz)										
3.47	-64.1	H	3.0	-14.3	39.6	1.0	-52.9	-13.0	-39.9	
5.20	-63.6	H	3.0	-10.6	40.3	1.0	-50.0	-13.0	-37.0	
6.93	-64.7	H	3.0	-8.9	39.1	1.0	-47.0	-13.0	-34.0	
3.47	-64.1	V	3.0	-13.6	39.6	1.0	-52.2	-13.0	-39.2	
5.20	-63.7	V	3.0	-10.9	40.3	1.0	-50.2	-13.0	-37.2	
6.93	-64.9	V	3.0	-9.4	39.1	1.0	-47.6	-13.0	-34.6	
High Channel (1752.5MHz)										
3.51	-64.5	H	3.0	-14.7	39.6	1.0	-53.3	-13.0	-40.3	
5.26	-63.6	H	3.0	-10.5	40.3	1.0	-49.8	-13.0	-36.8	
7.01	-65.8	H	3.0	-9.9	39.1	1.0	-47.9	-13.0	-34.9	
3.51	-64.5	V	3.0	-14.0	39.6	1.0	-52.6	-13.0	-39.6	
5.26	-63.7	V	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
7.01	-65.4	V	3.0	-9.8	39.1	1.0	-47.9	-13.0	-34.9	

Rev. 10.28.15

LTE B4 5MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 10MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1715MHz)										
3.43	-64.0	H	3.0	-14.3	39.6	1.0	-52.9	-13.0	-39.9	
5.15	-63.6	H	3.0	-10.7	40.3	1.0	-50.1	-13.0	-37.1	
6.86	-65.5	H	3.0	-9.8	39.2	1.0	-48.0	-13.0	-35.0	
3.43	-64.1	V	3.0	-13.7	39.6	1.0	-52.3	-13.0	-39.3	
5.15	-63.8	V	3.0	-11.1	40.3	1.0	-50.4	-13.0	-37.4	
6.86	-65.9	V	3.0	-10.5	39.2	1.0	-48.7	-13.0	-35.7	
Mid Channel (1732.5MHz)										
3.47	-63.8	H	3.0	-14.0	39.6	1.0	-52.6	-13.0	-39.6	
5.20	-63.1	H	3.0	-10.2	40.3	1.0	-49.5	-13.0	-36.5	
6.93	-65.2	H	3.0	-9.4	39.1	1.0	-47.5	-13.0	-34.5	
3.47	-64.7	V	3.0	-14.2	39.6	1.0	-52.8	-13.0	-39.8	
5.20	-63.8	V	3.0	-11.0	40.3	1.0	-50.3	-13.0	-37.3	
6.93	-66.1	V	3.0	-10.6	39.1	1.0	-48.7	-13.0	-35.7	
High Channel (1750MHz)										
3.50	-64.7	H	3.0	-14.9	39.6	1.0	-53.5	-13.0	-40.5	
5.25	-63.9	H	3.0	-10.9	40.3	1.0	-50.2	-13.0	-37.2	
7.00	-65.7	H	3.0	-9.8	39.1	1.0	-47.8	-13.0	-34.8	
3.50	-64.2	V	3.0	-13.7	39.6	1.0	-52.3	-13.0	-39.3	
5.25	-64.1	V	3.0	-11.2	40.3	1.0	-50.5	-13.0	-37.5	
7.00	-65.1	V	3.0	-9.5	39.1	1.0	-47.6	-13.0	-34.6	

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LTE B4 10MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 10MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1715MHz)										
3.43	-64.3	H	3.0	-14.6	39.6	1.0	-53.2	-13.0	-40.2	
5.15	-63.9	H	3.0	-11.1	40.3	1.0	-50.4	-13.0	-37.4	
6.86	-65.8	H	3.0	-10.1	39.2	1.0	-48.3	-13.0	-35.3	
3.43	-64.3	V	3.0	-13.9	39.6	1.0	-52.5	-13.0	-39.5	
5.15	-64.1	V	3.0	-11.4	40.3	1.0	-50.7	-13.0	-37.7	
6.86	-65.2	V	3.0	-9.8	39.2	1.0	-48.0	-13.0	-35.0	
Mid Channel (1732.5MHz)										
3.47	-63.9	H	3.0	-14.1	39.6	1.0	-52.7	-13.0	-39.7	
5.20	-63.2	H	3.0	-10.3	40.3	1.0	-49.6	-13.0	-36.6	
6.93	-65.2	H	3.0	-9.4	39.1	1.0	-47.5	-13.0	-34.5	
3.47	-63.8	V	3.0	-13.3	39.6	1.0	-51.9	-13.0	-38.9	
5.20	-63.0	V	3.0	-10.1	40.3	1.0	-49.5	-13.0	-36.5	
6.93	-65.7	V	3.0	-10.2	39.1	1.0	-48.3	-13.0	-35.3	
High Channel (1750MHz)										
3.50	-64.1	H	3.0	-14.3	39.6	1.0	-52.9	-13.0	-39.9	
5.25	-64.1	H	3.0	-11.1	40.3	1.0	-50.4	-13.0	-37.4	
7.00	-65.2	H	3.0	-9.3	39.1	1.0	-47.3	-13.0	-34.3	
3.50	-64.1	V	3.0	-13.6	39.6	1.0	-52.2	-13.0	-39.2	
5.25	-64.2	V	3.0	-11.3	40.3	1.0	-50.6	-13.0	-37.6	
7.00	-65.5	V	3.0	-9.9	39.1	1.0	-48.0	-13.0	-35.0	

Rev. 10.28.15

LTE B4 10MHz 16QAM

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High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 15MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1717.5MHz)										
3.44	-64.1	H	3.0	-14.4	39.6	1.0	-53.0	-13.0	-40.0	
5.15	-64.0	H	3.0	-11.1	40.3	1.0	-50.4	-13.0	-37.4	
6.87	-65.7	H	3.0	-10.8	39.2	1.0	-48.1	-13.0	-35.1	
3.44	-63.6	V	3.0	-13.2	39.6	1.0	-51.8	-13.0	-38.8	
5.15	-64.0	V	3.0	-11.3	40.3	1.0	-50.6	-13.0	-37.6	
6.87	-65.3	V	3.0	-9.9	39.2	1.0	-48.1	-13.0	-35.1	
Mid Channel (1732.5MHz)										
3.47	-63.7	H	3.0	-13.9	39.6	1.0	-52.5	-13.0	-39.5	
5.20	-63.6	H	3.0	-10.7	40.3	1.0	-50.0	-13.0	-37.0	
6.93	-65.4	H	3.0	-9.6	39.1	1.0	-47.7	-13.0	-34.7	
3.47	-64.2	V	3.0	-13.8	39.6	1.0	-52.4	-13.0	-39.4	
5.20	-63.4	V	3.0	-10.5	40.3	1.0	-49.9	-13.0	-36.9	
6.93	-66.2	V	3.0	-10.7	39.1	1.0	-48.8	-13.0	-35.8	
High Channel (1747.5MHz)										
3.50	-63.9	H	3.0	-14.1	39.6	1.0	-52.7	-13.0	-39.7	
5.24	-63.8	H	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
6.99	-65.5	H	3.0	-9.6	39.1	1.0	-47.6	-13.0	-34.6	
3.50	-64.5	V	3.0	-14.0	39.6	1.0	-52.6	-13.0	-39.6	
5.24	-64.0	V	3.0	-11.1	40.3	1.0	-50.4	-13.0	-37.4	
6.99	-66.0	V	3.0	-10.4	39.1	1.0	-48.5	-13.0	-35.5	

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LTE B4 15MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 15MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1717.5MHz)										
3.44	-64.0	H	3.0	-14.3	39.6	1.0	-52.9	-13.0	-39.9	
5.15	-63.8	H	3.0	-10.9	40.3	1.0	-50.3	-13.0	-37.3	
6.87	-65.6	H	3.0	-9.8	39.2	1.0	-48.0	-13.0	-35.0	
3.44	-64.7	V	3.0	-14.3	39.6	1.0	-52.9	-13.0	-39.9	
5.15	-64.2	V	3.0	-11.4	40.3	1.0	-50.7	-13.0	-37.7	
6.87	-65.7	V	3.0	-10.3	39.2	1.0	-48.5	-13.0	-35.5	
Mid Channel (1732.5MHz)										
3.47	-63.6	H	3.0	-13.8	39.6	1.0	-52.4	-13.0	-39.4	
5.20	-63.3	H	3.0	-10.4	40.3	1.0	-49.7	-13.0	-36.7	
6.93	-65.4	H	3.0	-9.6	39.1	1.0	-47.7	-13.0	-34.7	
3.47	-64.0	V	3.0	-13.5	39.6	1.0	-52.1	-13.0	-39.1	
5.20	-64.0	V	3.0	-11.2	40.3	1.0	-50.5	-13.0	-37.5	
6.93	-65.3	V	3.0	-9.8	39.1	1.0	-47.9	-13.0	-34.9	
High Channel (1747.5MHz)										
3.50	-64.1	H	3.0	-14.3	39.6	1.0	-52.9	-13.0	-39.9	
5.24	-64.0	H	3.0	-11.0	40.3	1.0	-50.3	-13.0	-37.3	
6.99	-65.4	H	3.0	-9.5	39.1	1.0	-47.6	-13.0	-34.6	
3.50	-64.1	V	3.0	-13.6	39.6	1.0	-52.3	-13.0	-39.3	
5.24	-64.3	V	3.0	-11.4	40.3	1.0	-50.7	-13.0	-37.7	
6.99	-65.9	V	3.0	-10.4	39.1	1.0	-48.4	-13.0	-35.4	

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LTE B4 15MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 20MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1720MHz)										
3.44	-64.0	H	3.0	-14.3	39.6	1.0	-52.9	-13.0	-39.9	
5.16	-64.1	H	3.0	-11.2	40.3	1.0	-50.5	-13.0	-37.5	
6.88	-65.7	H	3.0	-9.9	39.1	1.0	-48.1	-13.0	-35.1	
3.44	-64.4	V	3.0	-14.0	39.6	1.0	-52.5	-13.0	-39.5	
5.16	-64.0	V	3.0	-11.2	40.3	1.0	-50.5	-13.0	-37.5	
6.88	-66.1	V	3.0	-10.6	39.1	1.0	-48.8	-13.0	-35.8	
Mid Channel (1732.5MHz)										
3.47	-64.2	H	3.0	-14.4	39.6	1.0	-53.0	-13.0	-40.0	
5.20	-63.9	H	3.0	-10.9	40.3	1.0	-50.3	-13.0	-37.3	
6.93	-65.8	H	3.0	-10.0	39.1	1.0	-48.1	-13.0	-35.1	
3.47	-64.2	V	3.0	-13.7	39.6	1.0	-52.3	-13.0	-39.3	
5.20	-63.5	V	3.0	-10.7	40.3	1.0	-50.1	-13.0	-37.1	
6.93	-65.3	V	3.0	-9.8	39.1	1.0	-47.9	-13.0	-34.9	
High Channel (1745MHz)										
3.49	-64.2	H	3.0	-14.4	39.6	1.0	-53.0	-13.0	-40.0	
5.24	-64.0	H	3.0	-11.0	40.3	1.0	-50.3	-13.0	-37.3	
6.98	-65.6	H	3.0	-9.7	39.1	1.0	-47.7	-13.0	-34.7	
3.49	-64.5	V	3.0	-14.0	39.6	1.0	-52.6	-13.0	-39.6	
5.24	-64.2	V	3.0	-11.4	40.3	1.0	-50.7	-13.0	-37.7	
6.98	-65.5	V	3.0	-9.9	39.1	1.0	-48.0	-13.0	-35.0	

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LTE B4 20MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 4, 20MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1720MHz)										
3.44	-63.8	H	3.0	-14.1	39.6	1.0	-52.6	-13.0	-39.6	
5.16	-63.7	H	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
6.88	-65.9	H	3.0	-10.2	39.1	1.0	-48.3	-13.0	-35.3	
3.44	-64.5	V	3.0	-14.0	39.6	1.0	-52.6	-13.0	-39.6	
5.16	-64.1	V	3.0	-11.4	40.3	1.0	-50.7	-13.0	-37.7	
6.88	-65.7	V	3.0	-10.3	39.1	1.0	-48.4	-13.0	-35.4	
Mid Channel (1732.5MHz)										
3.47	-63.8	H	3.0	-14.0	39.6	1.0	-52.6	-13.0	-39.6	
5.20	-63.6	H	3.0	-10.6	40.3	1.0	-49.9	-13.0	-36.9	
6.93	-65.0	H	3.0	-9.1	39.1	1.0	-47.3	-13.0	-34.3	
3.47	-63.7	V	3.0	-13.3	39.6	1.0	-51.9	-13.0	-38.9	
5.20	-63.7	V	3.0	-10.9	40.3	1.0	-50.2	-13.0	-37.2	
6.93	-65.3	V	3.0	-9.8	39.1	1.0	-47.9	-13.0	-34.9	
High Channel (1745MHz)										
3.49	-64.5	H	3.0	-14.7	39.6	1.0	-53.3	-13.0	-40.3	
5.24	-63.8	H	3.0	-10.8	40.3	1.0	-50.1	-13.0	-37.1	
6.98	-65.7	H	3.0	-9.8	39.1	1.0	-47.9	-13.0	-34.9	
3.49	-63.7	V	3.0	-13.2	39.6	1.0	-51.8	-13.0	-38.8	
5.24	-63.8	V	3.0	-10.9	40.3	1.0	-50.2	-13.0	-37.2	
6.98	-65.8	V	3.0	-10.2	39.1	1.0	-48.3	-13.0	-35.3	

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LTE B4 20MHz 16QAM

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LTE Band 5

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 5, 1.4MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.7MHz)										
1.65	-63.2	H	3.0	-19.8	39.9	1.0	-58.7	-13.0	-45.7	
2.47	-64.0	H	3.0	-17.3	39.3	1.0	-55.6	-13.0	-42.6	
3.30	-64.3	H	3.0	-14.9	39.5	1.0	-53.4	-13.0	-40.4	
1.65	-63.0	V	3.0	-18.0	39.9	1.0	-56.9	-13.0	-43.9	
2.47	-63.9	V	3.0	-16.2	39.3	1.0	-54.5	-13.0	-41.5	
3.30	-64.4	V	3.0	-14.1	39.5	1.0	-52.6	-13.0	-39.6	
Mid Channel (836.5MHz)										
1.67	-62.4	H	3.0	-18.8	39.9	1.0	-57.7	-13.0	-44.7	
2.51	-63.3	H	3.0	-16.5	39.2	1.0	-54.7	-13.0	-41.7	
3.35	-64.5	H	3.0	-15.0	39.5	1.0	-53.5	-13.0	-40.5	
1.67	-62.6	V	3.0	-17.4	39.9	1.0	-56.3	-13.0	-43.3	
2.51	-64.1	V	3.0	-16.3	39.2	1.0	-54.5	-13.0	-41.5	
3.35	-64.6	V	3.0	-14.3	39.5	1.0	-52.8	-13.0	-39.8	
High Channel (848.3MHz)										
1.70	-62.7	H	3.0	-18.9	40.0	1.0	-57.9	-13.0	-44.9	
2.55	-64.4	H	3.0	-17.4	39.2	1.0	-55.7	-13.0	-42.7	
3.39	-67.8	H	3.0	-18.2	39.5	1.0	-56.8	-13.0	-43.8	
1.70	-62.2	V	3.0	-16.9	40.0	1.0	-55.8	-13.0	-42.8	
2.55	-64.3	V	3.0	-16.3	39.2	1.0	-54.6	-13.0	-41.6	
3.39	-64.9	V	3.0	-14.5	39.5	1.0	-53.0	-13.0	-40.0	

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LTE B5 1.4MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 5, 1.4MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.7MHz)										
1.65	-62.4	H	3.0	-19.0	39.9	1.0	-57.9	-13.0	-44.9	
2.47	-64.3	H	3.0	-17.7	39.3	1.0	-56.0	-13.0	-43.0	
3.30	-64.8	H	3.0	-15.4	39.5	1.0	-53.9	-13.0	-40.9	
1.65	-62.3	V	3.0	-17.3	39.9	1.0	-56.2	-13.0	-43.2	
2.47	-64.5	V	3.0	-16.8	39.3	1.0	-55.1	-13.0	-42.1	
3.30	-64.7	V	3.0	-14.4	39.5	1.0	-52.9	-13.0	-39.9	
Mid Channel (836.5MHz)										
1.67	-62.6	H	3.0	-19.0	39.9	1.0	-58.0	-13.0	-45.0	
2.51	-63.9	H	3.0	-17.1	39.2	1.0	-55.3	-13.0	-42.3	
3.35	-64.8	H	3.0	-15.3	39.5	1.0	-53.8	-13.0	-40.8	
1.67	-62.8	V	3.0	-17.6	39.9	1.0	-56.6	-13.0	-43.6	
2.51	-64.0	V	3.0	-16.1	39.2	1.0	-54.4	-13.0	-41.4	
3.35	-64.9	V	3.0	-14.6	39.5	1.0	-53.1	-13.0	-40.1	
High Channel (848.3MHz)										
1.70	-62.7	H	3.0	-18.9	40.0	1.0	-57.9	-13.0	-44.9	
2.55	-63.5	H	3.0	-16.6	39.2	1.0	-54.8	-13.0	-41.8	
3.39	-65.1	H	3.0	-15.5	39.5	1.0	-54.1	-13.0	-41.1	
1.70	-62.9	V	3.0	-17.6	40.0	1.0	-56.5	-13.0	-43.5	
2.55	-64.3	V	3.0	-16.3	39.2	1.0	-54.6	-13.0	-41.6	
3.39	-64.3	V	3.0	-13.9	39.5	1.0	-52.5	-13.0	-39.5	

Rev. 10.28.15

LTE B5 1.4MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 5, 3MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (825.5MHz)										
1.65	-62.0	H	3.0	-18.6	39.9	1.0	-57.5	-13.0	-44.5	
2.48	-63.7	H	3.0	-17.0	39.3	1.0	-55.3	-13.0	-42.3	
3.30	-64.3	H	3.0	-14.9	39.5	1.0	-53.4	-13.0	-40.4	
1.65	-62.5	V	3.0	-17.5	39.9	1.0	-56.4	-13.0	-43.4	
2.48	-63.4	V	3.0	-15.7	39.3	1.0	-54.0	-13.0	-41.0	
3.30	-65.0	V	3.0	-14.7	39.5	1.0	-53.2	-13.0	-40.2	
Mid Channel (836.5MHz)										
1.67	-62.4	H	3.0	-18.8	39.9	1.0	-57.7	-13.0	-44.7	
2.51	-64.2	H	3.0	-17.4	39.2	1.0	-55.6	-13.0	-42.6	
3.35	-64.8	H	3.0	-15.3	39.5	1.0	-53.8	-13.0	-40.8	
1.67	-62.4	V	3.0	-17.2	39.9	1.0	-56.1	-13.0	-43.1	
2.51	-64.3	V	3.0	-16.5	39.2	1.0	-54.8	-13.0	-41.8	
3.35	-64.6	V	3.0	-14.3	39.5	1.0	-52.8	-13.0	-39.8	
High Channel (847.5MHz)										
1.70	-62.2	H	3.0	-18.4	40.0	1.0	-57.4	-13.0	-44.4	
2.54	-64.1	H	3.0	-17.2	39.2	1.0	-55.4	-13.0	-42.4	
3.39	-64.6	H	3.0	-15.0	39.5	1.0	-53.6	-13.0	-40.6	
1.70	-62.7	V	3.0	-17.4	40.0	1.0	-56.3	-13.0	-43.3	
2.54	-64.1	V	3.0	-16.1	39.2	1.0	-54.4	-13.0	-41.4	
3.39	-64.9	V	3.0	-14.5	39.5	1.0	-53.1	-13.0	-40.1	

Rev. 10.28.15

LTE B5 3MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 5, 3MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (825.5MHz)										
1.65	-62.6	H	3.0	-19.2	39.9	1.0	-58.1	-13.0	-45.1	
2.48	-64.4	H	3.0	-17.8	39.3	1.0	-56.1	-13.0	-43.1	
3.30	-64.6	H	3.0	-15.2	39.5	1.0	-53.7	-13.0	-40.7	
1.65	-61.9	V	3.0	-16.8	39.9	1.0	-55.7	-13.0	-42.7	
2.48	-64.1	V	3.0	-16.4	39.3	1.0	-54.7	-13.0	-41.7	
3.30	-64.7	V	3.0	-14.4	39.5	1.0	-52.9	-13.0	-39.9	
Mid Channel (836.5MHz)										
1.67	-62.1	H	3.0	-18.5	39.9	1.0	-57.4	-13.0	-44.4	
2.51	-63.3	H	3.0	-16.5	39.2	1.0	-54.7	-13.0	-41.7	
3.35	-64.0	H	3.0	-14.5	39.5	1.0	-53.0	-13.0	-40.0	
1.67	-62.4	V	3.0	-17.2	39.9	1.0	-56.1	-13.0	-43.1	
2.51	-64.5	V	3.0	-16.7	39.2	1.0	-54.9	-13.0	-41.9	
3.35	-65.2	V	3.0	-14.9	39.5	1.0	-53.4	-13.0	-40.4	
High Channel (847.5MHz)										
1.70	-62.3	H	3.0	-18.6	40.0	1.0	-57.5	-13.0	-44.5	
2.54	-64.0	H	3.0	-17.1	39.2	1.0	-55.3	-13.0	-42.3	
3.39	-64.8	H	3.0	-15.2	39.5	1.0	-53.8	-13.0	-40.8	
1.70	-62.2	V	3.0	-16.8	40.0	1.0	-55.8	-13.0	-42.8	
2.54	-64.6	V	3.0	-16.7	39.2	1.0	-54.9	-13.0	-41.9	
3.39	-64.4	V	3.0	-14.0	39.5	1.0	-52.6	-13.0	-39.6	

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LTE B5 3MHz 16QAM

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High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 5, 5MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.5MHz)										
1.65	-61.9	H	3.0	-18.5	39.9	1.0	-57.3	-13.0	-44.3	
2.48	-63.6	H	3.0	-16.9	39.3	1.0	-55.2	-13.0	-42.2	
3.31	-64.5	H	3.0	-15.1	39.5	1.0	-53.6	-13.0	-40.6	
1.65	-63.0	V	3.0	-18.0	39.9	1.0	-56.9	-13.0	-43.9	
2.48	-64.4	V	3.0	-16.7	39.3	1.0	-54.9	-13.0	-41.9	
3.31	-65.2	V	3.0	-15.0	39.5	1.0	-53.4	-13.0	-40.4	
Mid Channel (836.5MHz)										
1.67	-62.9	H	3.0	-19.3	39.9	1.0	-58.2	-13.0	-45.2	
2.51	-63.8	H	3.0	-17.0	39.2	1.0	-55.2	-13.0	-42.2	
3.35	-64.6	H	3.0	-15.1	39.5	1.0	-53.6	-13.0	-40.6	
1.67	-62.4	V	3.0	-17.2	39.9	1.0	-56.1	-13.0	-43.1	
2.51	-64.3	V	3.0	-16.5	39.2	1.0	-54.8	-13.0	-41.8	
3.35	-63.8	V	3.0	-13.5	39.5	1.0	-52.0	-13.0	-39.0	
High Channel (846.5MHz)										
1.69	-62.9	H	3.0	-19.2	39.9	1.0	-58.1	-13.0	-45.1	
2.54	-64.0	H	3.0	-17.1	39.2	1.0	-55.3	-13.0	-42.3	
3.39	-64.5	H	3.0	-14.9	39.5	1.0	-53.5	-13.0	-40.5	
1.69	-62.3	V	3.0	-17.0	39.9	1.0	-55.9	-13.0	-42.9	
2.54	-64.3	V	3.0	-16.4	39.2	1.0	-54.6	-13.0	-41.6	
3.39	-64.4	V	3.0	-14.0	39.5	1.0	-52.5	-13.0	-39.5	

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LTE B5 5MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 5, 5MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.5MHz)										
1.65	-62.7	H	3.0	-19.3	39.9	1.0	-58.2	-13.0	-45.2	
2.48	-63.7	H	3.0	-17.0	39.3	1.0	-55.3	-13.0	-42.3	
3.31	-64.3	H	3.0	-14.9	39.5	1.0	-53.4	-13.0	-40.4	
1.65	-63.0	V	3.0	-18.0	39.9	1.0	-56.8	-13.0	-43.8	
2.48	-64.4	V	3.0	-16.7	39.3	1.0	-54.9	-13.0	-41.9	
3.31	-64.9	V	3.0	-14.7	39.5	1.0	-53.2	-13.0	-40.2	
Mid Channel (836.5MHz)										
1.67	-62.7	H	3.0	-19.1	39.9	1.0	-58.0	-13.0	-45.0	
2.51	-64.3	H	3.0	-17.5	39.2	1.0	-55.7	-13.0	-42.7	
3.35	-64.5	H	3.0	-15.0	39.5	1.0	-53.5	-13.0	-40.5	
1.67	-63.0	V	3.0	-17.9	39.9	1.0	-56.8	-13.0	-43.8	
2.51	-64.5	V	3.0	-16.7	39.2	1.0	-54.9	-13.0	-41.9	
3.35	-65.1	V	3.0	-14.8	39.5	1.0	-53.3	-13.0	-40.3	
High Channel (846.5MHz)										
1.69	-62.4	H	3.0	-18.7	39.9	1.0	-57.6	-13.0	-44.6	
2.54	-64.6	H	3.0	-17.7	39.2	1.0	-55.9	-13.0	-42.9	
3.39	-65.0	H	3.0	-15.4	39.5	1.0	-53.9	-13.0	-40.9	
1.69	-62.4	V	3.0	-17.1	39.9	1.0	-56.0	-13.0	-43.0	
2.54	-64.3	V	3.0	-16.4	39.2	1.0	-54.6	-13.0	-41.6	
3.39	-64.5	V	3.0	-14.1	39.5	1.0	-52.7	-13.0	-39.7	

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LTE B5 5MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 5, 10MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (829MHz)										
1.66	-62.6	H	3.0	-19.1	39.9	1.0	-58.0	-13.0	-45.0	
2.49	-64.0	H	3.0	-17.3	39.3	1.0	-55.5	-13.0	-42.5	
3.32	-64.3	H	3.0	-14.9	39.5	1.0	-53.4	-13.0	-40.4	
1.66	-62.8	V	3.0	-17.7	39.9	1.0	-56.6	-13.0	-43.6	
2.49	-64.0	V	3.0	-16.2	39.3	1.0	-54.5	-13.0	-41.5	
3.32	-64.7	V	3.0	-14.4	39.5	1.0	-52.9	-13.0	-39.9	
Mid Channel (836.5MHz)										
1.67	-62.8	H	3.0	-19.2	39.9	1.0	-58.1	-13.0	-45.1	
2.51	-64.0	H	3.0	-17.1	39.2	1.0	-55.4	-13.0	-42.4	
3.35	-65.0	H	3.0	-15.5	39.5	1.0	-54.0	-13.0	-41.0	
1.67	-62.1	V	3.0	-16.9	39.9	1.0	-55.8	-13.0	-42.8	
2.51	-64.1	V	3.0	-16.3	39.2	1.0	-54.5	-13.0	-41.5	
3.35	-64.7	V	3.0	-14.4	39.5	1.0	-52.9	-13.0	-39.9	
High Channel (844MHz)										
1.69	-62.6	H	3.0	-18.9	39.9	1.0	-57.8	-13.0	-44.8	
2.53	-64.4	H	3.0	-17.5	39.2	1.0	-55.7	-13.0	-42.7	
3.38	-64.9	H	3.0	-15.4	39.5	1.0	-53.9	-13.0	-40.9	
1.69	-62.7	V	3.0	-17.4	39.9	1.0	-56.4	-13.0	-43.4	
2.53	-64.1	V	3.0	-16.2	39.2	1.0	-54.4	-13.0	-41.4	
3.38	-64.9	V	3.0	-14.6	39.5	1.0	-53.1	-13.0	-40.1	

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LTE B5 10MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 5, 10MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (829MHz)										
1.66	-62.9	H	3.0	-19.4	39.9	1.0	-58.3	-13.0	-45.3	
2.49	-63.8	H	3.0	-17.1	39.3	1.0	-55.4	-13.0	-42.4	
3.32	-64.5	H	3.0	-15.1	39.5	1.0	-53.6	-13.0	-40.6	
1.66	-62.2	V	3.0	-17.1	39.9	1.0	-56.0	-13.0	-43.0	
2.49	-64.1	V	3.0	-16.4	39.3	1.0	-54.6	-13.0	-41.6	
3.32	-64.7	V	3.0	-14.4	39.5	1.0	-52.9	-13.0	-39.9	
Mid Channel (836.5MHz)										
1.67	-62.2	H	3.0	-18.6	39.9	1.0	-57.6	-13.0	-44.6	
2.51	-64.0	H	3.0	-17.2	39.2	1.0	-55.4	-13.0	-42.4	
3.35	-64.5	H	3.0	-15.0	39.5	1.0	-53.5	-13.0	-40.5	
1.67	-62.5	V	3.0	-17.3	39.9	1.0	-56.2	-13.0	-43.2	
2.51	-63.9	V	3.0	-16.1	39.2	1.0	-54.4	-13.0	-41.4	
3.35	-64.9	V	3.0	-14.5	39.5	1.0	-53.1	-13.0	-40.1	
High Channel (844MHz)										
1.69	-62.9	H	3.0	-19.2	39.9	1.0	-58.1	-13.0	-45.1	
2.53	-64.4	H	3.0	-17.5	39.2	1.0	-55.7	-13.0	-42.7	
3.38	-64.7	H	3.0	-15.2	39.5	1.0	-53.7	-13.0	-40.7	
1.69	-62.5	V	3.0	-17.2	39.9	1.0	-56.2	-13.0	-43.2	
2.53	-63.9	V	3.0	-16.0	39.2	1.0	-54.2	-13.0	-41.2	
3.38	-64.4	V	3.0	-14.1	39.5	1.0	-52.6	-13.0	-39.6	

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LTE B5 10MHz 16QAM

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LTE Band 7

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 7, 5MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2502.5MHz)										
5.01	-59.8	H	3.0	-7.2	40.3	1.0	-46.5	-25.0	-21.5	
7.51	-64.5	H	3.0	-8.0	38.9	1.0	-46.0	-25.0	-21.0	
10.01	-64.4	H	3.0	-5.2	38.3	1.0	-42.5	-25.0	-17.5	
		H								
		H								
5.01	-59.2	V	3.0	-6.6	40.3	1.0	-45.9	-25.0	-20.9	
7.51	-64.8	V	3.0	-8.6	38.9	1.0	-46.6	-25.0	-21.6	
10.01	-64.9	V	3.0	-5.7	38.3	1.0	-43.0	-25.0	-18.0	
		V								
		V								
Mid Channel (2535MHz)										
5.07	-58.8	H	3.0	-6.1	40.3	1.0	-45.4	-25.0	-20.4	
7.61	-64.7	H	3.0	-8.1	38.9	1.0	-46.0	-25.0	-21.0	
10.14	-65.3	H	3.0	-6.0	38.3	1.0	-43.3	-25.0	-18.3	
		H								
		H								
5.07	-59.2	V	3.0	-6.6	40.3	1.0	-45.9	-25.0	-20.9	
7.61	-64.2	V	3.0	-7.9	38.9	1.0	-45.8	-25.0	-20.8	
10.14	-64.2	V	3.0	-4.9	38.3	1.0	-42.2	-25.0	-17.2	
		V								
		V								
High Channel (2567.5MHz)										
5.14	-61.1	H	3.0	-8.3	40.3	1.0	-47.6	-25.0	-22.6	
7.70	-64.4	H	3.0	-7.7	38.9	1.0	-45.6	-25.0	-20.6	
10.27	-64.7	H	3.0	-5.2	38.3	1.0	-42.5	-25.0	-17.5	
		H								
		H								
5.14	-62.2	V	3.0	-9.5	40.3	1.0	-48.8	-25.0	-23.8	
7.70	-63.4	V	3.0	-7.0	38.9	1.0	-44.9	-25.0	-19.9	
10.27	-64.8	V	3.0	-5.3	38.3	1.0	-42.6	-25.0	-17.6	
		V								
		V								

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LTE B7 5MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 7, 5MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2502.5MHz)										
5.01	-60.9	H	3.0	-8.3	40.3	1.0	-47.5	-25.0	-22.5	
7.51	-65.2	H	3.0	-8.7	38.9	1.0	-46.6	-25.0	-21.6	
10.01	-63.6	H	3.0	-4.4	38.3	1.0	-41.8	-25.0	-16.8	
		H								
		H								
5.01	-59.6	V	3.0	-7.1	40.3	1.0	-46.3	-25.0	-21.3	
7.51	-64.9	V	3.0	-8.7	38.9	1.0	-46.6	-25.0	-21.6	
10.01	-65.2	V	3.0	-6.0	38.3	1.0	-43.3	-25.0	-18.3	
		V								
		V								
Mid Channel (2535MHz)										
5.07	-59.6	H	3.0	-6.9	40.3	1.0	-46.2	-25.0	-21.2	
7.61	-63.5	H	3.0	-6.9	38.9	1.0	-44.8	-25.0	-19.8	
10.14	-64.7	H	3.0	-5.3	38.3	1.0	-42.6	-25.0	-17.6	
		H								
		H								
5.07	-59.7	V	3.0	-7.1	40.3	1.0	-46.4	-25.0	-21.4	
7.61	-64.3	V	3.0	-8.0	38.9	1.0	-45.9	-25.0	-20.9	
10.14	-65.1	V	3.0	-5.7	38.3	1.0	-43.0	-25.0	-18.0	
		V								
		V								
High Channel (2567.5MHz)										
5.14	-61.8	H	3.0	-9.0	40.3	1.0	-48.3	-25.0	-23.3	
7.70	-64.0	H	3.0	-7.3	38.9	1.0	-45.2	-25.0	-20.2	
10.27	-64.5	H	3.0	-5.0	38.3	1.0	-42.3	-25.0	-17.3	
		H								
		H								
5.14	-61.5	V	3.0	-8.7	40.3	1.0	-48.1	-25.0	-23.1	
7.70	-63.6	V	3.0	-7.2	38.9	1.0	-45.0	-25.0	-20.0	
10.27	-64.8	V	3.0	-5.4	38.3	1.0	-42.7	-25.0	-17.7	
		V								
		V								

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LTE B7 5MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 7, 10MHz QPSK

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2505MHz)										
5.01	-62.2	H	3.0	-9.6	40.3	1.0	-48.8	-25.0	-23.8	
7.52	-62.3	H	3.0	-5.8	38.9	1.0	-43.7	-25.0	-18.7	
10.02	-64.0	H	3.0	-4.8	38.3	1.0	-42.1	-25.0	-17.1	
		H								
		H								
5.01	-61.3	V	3.0	-8.8	40.3	1.0	-48.1	-25.0	-23.1	
7.52	-63.8	V	3.0	-7.6	38.9	1.0	-45.5	-25.0	-20.5	
10.02	-65.0	V	3.0	-5.8	38.3	1.0	-43.1	-25.0	-18.1	
		V								
		V								
Mid Channel (2535MHz)										
5.07	-58.7	H	3.0	-5.9	40.3	1.0	-45.2	-25.0	-20.2	
7.61	-64.2	H	3.0	-7.6	38.9	1.0	-45.5	-25.0	-20.5	
10.14	-64.6	H	3.0	-5.3	38.3	1.0	-42.6	-25.0	-17.6	
		H								
		H								
5.07	-59.1	V	3.0	-6.4	40.3	1.0	-45.7	-25.0	-20.7	
7.61	-64.4	V	3.0	-8.1	38.9	1.0	-46.0	-25.0	-21.0	
10.14	-64.9	V	3.0	-5.5	38.3	1.0	-42.8	-25.0	-17.8	
		V								
		V								
High Channel (2565MHz)										
5.13	-61.4	H	3.0	-8.6	40.3	1.0	-47.9	-25.0	-22.9	
7.70	-64.0	H	3.0	-7.3	38.9	1.0	-45.2	-25.0	-20.2	
10.26	-64.4	H	3.0	-5.0	38.3	1.0	-42.3	-25.0	-17.3	
		H								
		H								
5.13	-61.7	V	3.0	-9.0	40.3	1.0	-48.3	-25.0	-23.3	
7.70	-63.4	V	3.0	-7.0	38.9	1.0	-44.9	-25.0	-19.9	
10.26	-65.1	V	3.0	-5.7	38.3	1.0	-43.0	-25.0	-18.0	
		V								
		V								

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LTE B7 10MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/12/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 7, 10MHz 16QAM

Test Equipment:
Substitution: Horn AT0078 Substitution, and CBL010 SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber N-RTP	3m Chamber N-RTP	Filter	LTE B7

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2505MHz)										
5.01	-62.0	H	3.0	-9.4	40.3	1.0	-48.7	-25.0	-23.7	
7.52	-62.5	H	3.0	-6.0	38.9	1.0	-43.9	-25.0	-18.9	
10.02	-63.3	H	3.0	-4.1	38.3	1.0	-41.4	-25.0	-16.4	
		H								
		H								
5.01	-61.9	V	3.0	-9.3	40.3	1.0	-48.6	-25.0	-23.6	
7.52	-64.3	V	3.0	-8.1	38.9	1.0	-46.0	-25.0	-21.0	
10.02	-65.2	V	3.0	-6.0	38.3	1.0	-43.3	-25.0	-18.3	
		V								
		V								
Mid Channel (2535MHz)										
5.07	-59.0	H	3.0	-6.3	40.3	1.0	-45.5	-25.0	-20.5	
7.61	-64.8	H	3.0	-8.2	38.9	1.0	-46.1	-25.0	-21.1	
10.14	-65.1	H	3.0	-5.8	38.3	1.0	-43.1	-25.0	-18.1	
		H								
		H								
5.07	-59.8	V	3.0	-7.1	40.3	1.0	-46.4	-25.0	-21.4	
7.61	-63.7	V	3.0	-7.4	38.9	1.0	-45.3	-25.0	-20.3	
10.14	-65.1	V	3.0	-5.7	38.3	1.0	-43.0	-25.0	-18.0	
		V								
		V								
High Channel (2565MHz)										
5.13	-62.2	H	3.0	-9.3	40.3	1.0	-48.6	-25.0	-23.6	
7.70	-63.3	H	3.0	-6.6	38.9	1.0	-44.5	-25.0	-19.5	
10.26	-64.8	H	3.0	-5.3	38.3	1.0	-42.6	-25.0	-17.6	
		H								
		H								
5.13	-62.4	V	3.0	-9.7	40.3	1.0	-49.0	-25.0	-24.0	
7.70	-64.0	V	3.0	-7.6	38.9	1.0	-45.5	-25.0	-20.5	
10.26	-64.9	V	3.0	-5.4	38.3	1.0	-42.7	-25.0	-17.7	
		V								
		V								

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LTE B7 10MHz 16QAM

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