LTE Band 26-Part 90

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
1.4	QPSK	1/0	814.7	16.24	42.07
	16QAM	1/0	814.7	15.32	34.04
3	QPSK	1/0	815.5	16.14	41.11
	16QAM	1/0	815.5	15.09	32.28
5	QPSK	1/0	816.5	16.40	43.65
	16QAM	1/0	816.5	15.72	37.33
10	QPSK	1/0	819	16.37	43.35
	16QAM	1/0	819	15.30	33.88

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LTE Band 26-Part 22

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	mW
1.4	QPSK	1/0	824.7	16.86	48.53
		1/0	831.5	17.10	51.29
		1/0	848.3	16.33	42.95
	16QAM	1/0	824.7	15.84	38.37
		1/0	831.5	16.30	42.66
		1/0	848.3	15.32	34.04
3	QPSK	1/0	825.5	16.79	47.75
		1/0	831.5	17.03	50.47
		1/0	847.5	16.58	45.50
	16QAM	1/0	825.5	15.83	38.28
		1/0	831.5	16.19	41.59
		1/0	847.5	15.83	38.28
5	QPSK	1/0	826.5	16.84	48.31
		1/0	831.5	17.25	53.09
		1/0	846.5	16.61	45.81
	16QAM	1/0	826.5	15.98	39.63
		1/0	831.5	16.41	43.75
		1/0	846.5	15.86	38.55
10	QPSK	1/0	829	16.82	48.08
		1/0	831.5	17.13	51.64
		1/0	844	16.59	45.60
	16QAM	1/0	829	16.10	40.74
		1/0	831.5	16.32	42.85
		1/0	844	15.77	37.76
15	QPSK	1/0	831.5	17.26	53.21
		1/0	836.5	17.51	56.36
		1/0	841.5	17.09	51.17
	16QAM	1/0	831.5	16.28	42.46
		1/0	836.5	16.66	46.34
		1/0	841.5	16.28	42.46

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

Company: SOMC
Project #: 16J23633
Date: 07/18/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 26, 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
Part 90									
814.70	22.76	V	5.1	0.7	-1.45	16.24	50.0	-33.8	
814.70	13.00	H	5.1	0.7	-1.45	6.48	50.0	-43.5	
Part 22									
824.70	23.42	V	5.1	0.7	-1.45	16.86	38.5	-21.6	
824.70	14.10	H	5.1	0.7	-1.45	7.54	38.5	-30.9	
Mid Ch									
831.50	23.70	V	5.1	0.7	-1.45	17.10	38.5	-21.3	
831.50	14.33	H	5.1	0.7	-1.45	7.73	38.5	-30.7	
High Ch									
848.30	22.97	V	5.2	0.7	-1.45	16.33	38.5	-22.1	
848.30	15.10	H	5.2	0.7	-1.45	8.46	38.5	-30.0	

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

LTE B26 1.4MHz QPSK

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

Company: SOMC
Project #: 16J23633
Date: 07/18/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 26, 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
Part 90									
814.70	21.84	V	5.1	0.7	-1.45	15.32	50.0	-34.7	
814.70	12.17	H	5.1	0.7	-1.45	5.65	50.0	-44.4	
Part 22									
824.70	22.40	V	5.1	0.7	-1.45	15.84	38.5	-22.6	
824.70	13.23	H	5.1	0.7	-1.45	6.67	38.5	-31.8	
Mid Ch									
831.50	22.90	V	5.1	0.7	-1.45	16.30	38.5	-22.1	
831.50	13.37	H	5.1	0.7	-1.45	6.77	38.5	-31.7	
High Ch									
848.30	21.96	V	5.2	0.7	-1.45	15.32	38.5	-23.1	
848.30	14.19	H	5.2	0.7	-1.45	7.55	38.5	-30.9	

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

LTE B26 1.4MHz 16QAM

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

Company: SOMC
Project #: 16J23633
Date: 07/18/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 26, 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
Part 90									
815.50	22.67	V	5.1	0.7	-1.45	16.14	50.0	-33.9	
815.50	13.32	H	5.1	0.7	-1.45	6.79	50.0	-43.2	
Part 22									
825.50	23.36	V	5.1	0.7	-1.45	16.79	38.5	-21.7	
825.50	14.22	H	5.1	0.7	-1.45	7.65	38.5	-30.8	
Mid Ch									
831.50	23.63	V	5.1	0.7	-1.45	17.03	38.5	-21.4	
831.50	14.44	H	5.1	0.7	-1.45	7.84	38.5	-30.6	
High Ch									
847.50	23.22	V	5.2	0.7	-1.45	16.58	38.5	-21.9	
847.50	15.15	H	5.2	0.7	-1.45	8.51	38.5	-29.9	

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

LTE B26 3MHz QPSK

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

Company: SOMC
Project #: 16J23633
Date: 07/18/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 26, 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
Part 90									
815.50	21.62	V	5.1	0.7	-1.45	15.09	50.0	-34.9	
815.50	12.45	H	5.1	0.7	-1.45	5.92	50.0	-44.1	
Part 22									
825.50	22.40	V	5.1	0.7	-1.45	15.83	38.5	-22.6	
825.50	13.56	H	5.1	0.7	-1.45	6.99	38.5	-31.5	
Mid Ch									
831.50	22.79	V	5.1	0.7	-1.45	16.19	38.5	-22.3	
831.50	13.37	H	5.1	0.7	-1.45	6.77	38.5	-31.7	
High Ch									
847.50	22.47	V	5.2	0.7	-1.45	15.83	38.5	-22.6	
847.50	14.07	H	5.2	0.7	-1.45	7.43	38.5	-31.0	

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

LTE B26 3MHz 16QAM

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

Company: SOMC
Project #: 16J23633
Date: 07/18/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 26, 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
Part 90									
816.50	22.93	V	5.1	0.7	-1.45	16.40	50.0	-33.6	
816.50	13.39	H	5.1	0.7	-1.45	6.86	50.0	-43.1	
Part 22									
826.50	23.41	V	5.1	0.7	-1.45	16.84	38.5	-21.6	
826.50	14.41	H	5.1	0.7	-1.45	7.84	38.5	-30.6	
Mid Ch									
831.50	23.85	V	5.1	0.7	-1.45	17.25	38.5	-21.2	
831.50	14.54	H	5.1	0.7	-1.45	7.94	38.5	-30.5	
High Ch									
846.50	23.24	V	5.2	0.7	-1.45	16.61	38.5	-21.8	
846.50	15.11	H	5.2	0.7	-1.45	8.48	38.5	-30.0	

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

LTE B26 5MHz QPSK

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

Company: SOMC
Project #: 16J23633
Date: 07/18/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 26, 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
Part 90									
816.50	22.25	V	5.1	0.7	-1.45	15.72	50.0	-34.3	
816.50	12.65	H	5.1	0.7	-1.45	6.12	50.0	-43.9	
Part 22									
826.50	22.55	V	5.1	0.7	-1.45	15.98	38.5	-22.5	
826.50	13.56	H	5.1	0.7	-1.45	6.99	38.5	-31.5	
Mid Ch									
831.50	23.01	V	5.1	0.7	-1.45	16.41	38.5	-22.0	
831.50	13.56	H	5.1	0.7	-1.45	6.96	38.5	-31.5	
High Ch									
846.50	22.49	V	5.2	0.7	-1.45	15.86	38.5	-22.6	
846.50	14.26	H	5.2	0.7	-1.45	7.63	38.5	-30.8	

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

LTE B26 5MHz 16QAM

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

Company: SOMC
Project #: 16J23633
Date: 07/18/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 26, 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
Part 90									
819.00	22.91	V	5.1	0.7	-1.45	16.37	50.0	-33.6	
819.00	13.35	H	5.1	0.7	-1.45	6.81	50.0	-43.2	
Part 22									
829.00	23.40	V	5.1	0.7	-1.45	16.82	38.5	-21.6	
829.00	14.20	H	5.1	0.7	-1.45	7.62	38.5	-30.8	
Mid Ch									
831.50	23.73	V	5.1	0.7	-1.45	17.13	38.5	-21.3	
831.50	14.33	H	5.1	0.7	-1.45	7.73	38.5	-30.7	
High Ch									
844.00	23.22	V	5.2	0.7	-1.45	16.59	38.5	-21.9	
844.00	14.72	H	5.2	0.7	-1.45	8.09	38.5	-30.4	

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

LTE B26 10MHz QPSK

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

Company: SOMC
Project #: 16J23633
Date: 07/18/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 26, 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
Part 90									
819.00	21.84	V	5.1	0.7	-1.45	15.30	50.0	-34.7	
819.00	12.54	H	5.1	0.7	-1.45	6.00	50.0	-44.0	
Part 22									
829.00	22.68	V	5.1	0.7	-1.45	16.10	38.5	-22.4	
829.00	13.43	H	5.1	0.7	-1.45	6.85	38.5	-31.6	
Mid Ch									
831.50	22.92	V	5.1	0.7	-1.45	16.32	38.5	-22.1	
831.50	13.42	H	5.1	0.7	-1.45	6.82	38.5	-31.6	
High Ch									
844.00	22.40	V	5.2	0.7	-1.45	15.77	38.5	-22.7	
844.00	13.75	H	5.2	0.7	-1.45	7.12	38.5	-31.3	

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

LTE B26 10MHz 16QAM

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

Company: SOMC
Project #: 16J23633
Date: 07/18/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 26, 15MHz, 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									
831.50	23.86	V	5.1	0.7	-1.45	17.26	38.5	-21.2	
831.50	14.55	H	5.1	0.7	-1.45	7.95	38.5	-30.5	
Mid Ch									
836.50	24.13	V	5.2	0.7	-1.45	17.51	38.5	-20.9	
836.50	14.64	H	5.2	0.7	-1.45	8.02	38.5	-30.4	
High Ch									
841.50	23.72	V	5.2	0.7	-1.45	17.09	38.5	-21.4	
841.50	14.78	H	5.2	0.7	-1.45	8.15	38.5	-30.3	

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

LTE B26 15MHz QPSK

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

Company: SOMC
Project #: 16J23633
Date: 07/18/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 26, 15MHz, 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									
831.50	22.88	V	5.1	0.7	-1.45	16.28	38.5	-22.2	
831.50	13.77	H	5.1	0.7	-1.45	7.17	38.5	-31.3	
Mid Ch									
836.50	23.28	V	5.2	0.7	-1.45	16.66	38.5	-21.8	
836.50	13.69	H	5.2	0.7	-1.45	7.07	38.5	-31.4	
High Ch									
841.50	22.91	V	5.2	0.7	-1.45	16.28	38.5	-22.2	
841.50	14.11	H	5.2	0.7	-1.45	7.48	38.5	-31.0	

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

LTE B26 15MHz 16QAM

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LTE Band 41

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP (PEAK)	
				dBm	mW
5	QPSK	1/0	2498.5	25.31	339.63
		1/0	2593	26.67	464.52
		1/0	2687.5	23.42	219.79
	16QAM	1/0	2498.5	25.37	344.35
		1/0	2593	26.65	462.81
		1/0	2687.5	23.44	220.80
10	QPSK	1/0	2501	25.25	334.97
		1/0	2593	26.44	440.55
		1/0	2685	23.12	205.12
	16QAM	1/0	2501	25.23	333.43
		1/0	2593	26.44	440.55
		1/0	2685	23.33	215.28
15	QPSK	1/0	2503.5	25.03	318.42
		1/0	2593	26.63	460.26
		1/0	2682.5	23.46	221.82
	16QAM	1/0	2503.5	25.12	325.09
		1/0	2593	26.58	454.99
		1/0	2682.5	23.64	231.21
20	QPSK	1/0	2506	25.37	344.35
		1/0	2593	26.55	451.86
		1/0	2680	23.35	216.27
	16QAM	1/0	2506	25.44	349.95
		1/0	2593	26.53	449.78
		1/0	2680	23.53	225.42

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

Company: SOMC
Project #: 16J23633
Date: 07/20/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #2)
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	29.37	V	9.6	5.5	25.31	33.0	-7.7	Pk
2498.50	27.48	H	9.6	5.5	23.42	33.0	-9.6	Pk
Mid Ch								
2593.00	30.70	V	9.8	5.8	26.67	33.0	-6.3	Pk
2593.00	28.53	H	9.8	5.8	24.50	33.0	-8.5	Pk
High Ch								
2687.50	27.38	V	10.0	6.0	23.42	33.0	-9.6	Pk
2687.50	24.23	H	10.0	6.0	20.27	33.0	-12.7	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: 07/20/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #2)
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	29.43	V	9.6	5.5	25.37	33.0	-7.6	Pk
2498.50	27.53	H	9.6	5.5	23.47	33.0	-9.5	Pk
Mid Ch								
2593.00	30.69	V	9.8	5.8	26.65	33.0	-6.3	Pk
2593.00	28.59	H	9.8	5.8	24.56	33.0	-8.4	Pk
High Ch								
2687.50	27.41	V	10.0	6.0	23.44	33.0	-9.6	Pk
2687.50	24.29	H	10.0	6.0	20.33	33.0	-12.7	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: 07/20/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #2)
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	29.31	V	9.6	5.5	25.25	33.0	-7.7	Pk
2501.00	27.79	H	9.6	5.5	23.73	33.0	-9.3	Pk
Mid Ch								
2593.00	30.47	V	9.8	5.8	26.44	33.0	-6.6	Pk
2593.00	28.71	H	9.8	5.8	24.67	33.0	-8.3	Pk
High Ch								
2685.00	27.09	V	10.0	6.0	23.12	33.0	-9.9	Pk
2685.00	24.41	H	10.0	6.0	20.45	33.0	-12.6	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: 07/20/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #2)
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	29.29	V	9.6	5.5	25.23	33.0	-7.8	Pk
2501.00	27.76	H	9.6	5.5	23.70	33.0	-9.3	Pk
Mid Ch								
2593.00	30.47	V	9.8	5.8	26.44	33.0	-6.6	Pk
2593.00	28.76	H	9.8	5.8	24.73	33.0	-8.3	Pk
High Ch								
2685.00	27.29	V	10.0	6.0	23.33	33.0	-9.7	Pk
2685.00	24.58	H	10.0	6.0	20.61	33.0	-12.4	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: 07/20/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #2)
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	29.09	V	9.6	5.5	25.03	33.0	-8.0	Pk
2503.50	27.75	H	9.6	5.5	23.69	33.0	-9.3	Pk
Mid Ch								
2593.00	30.66	V	9.8	5.8	26.63	33.0	-6.4	Pk
2593.00	29.07	H	9.8	5.8	25.04	33.0	-8.0	Pk
High Ch								
2682.50	27.42	V	10.0	6.0	23.46	33.0	-9.5	Pk
2682.50	24.79	H	10.0	6.0	20.83	33.0	-12.2	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: 07/20/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #2)
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	29.18	V	9.6	5.5	25.12	33.0	-7.9	Pk
2503.50	27.77	H	9.6	5.5	23.71	33.0	-9.3	Pk
Mid Ch								
2593.00	30.62	V	9.8	5.8	26.58	33.0	-6.4	Pk
2593.00	29.02	H	9.8	5.8	24.99	33.0	-8.0	Pk
High Ch								
2682.50	27.60	V	10.0	6.0	23.64	33.0	-9.4	Pk
2682.50	24.96	H	10.0	6.0	21.00	33.0	-12.0	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: 07/20/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #2)
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	29.43	V	9.6	5.5	25.37	33.0	-7.6	Pk
2506.00	28.08	H	9.6	5.5	24.02	33.0	-9.0	Pk
Mid Ch								
2593.00	30.58	V	9.8	5.8	26.55	33.0	-6.5	Pk
2593.00	29.29	H	9.8	5.8	25.26	33.0	-7.7	Pk
High Ch								
2680.00	27.32	V	10.0	6.0	23.35	33.0	-9.6	Pk
2680.00	24.85	H	10.0	6.0	20.89	33.0	-12.1	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: 07/20/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE sample #2)
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	29.50	V	9.6	5.5	25.44	33.0	-7.6	Pk
2506.00	28.16	H	9.6	5.5	24.10	33.0	-8.9	Pk
Mid Ch								
2593.00	30.57	V	9.8	5.8	26.53	33.0	-6.5	Pk
2593.00	29.28	H	9.8	5.8	25.25	33.0	-7.7	Pk
High Ch								
2680.00	27.49	V	10.0	6.0	23.53	33.0	-9.5	Pk
2680.00	24.92	H	10.0	6.0	20.95	33.0	-12.0	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 and §90.691

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 PLOTS

GSM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/04/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (GSM/UMTS #3)
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	-18.6	39.9	1.0	-57.4	-13.0	-44.4	
2.47	-63.6	H	3.0	-17.0	39.3	1.0	-55.3	-13.0	-42.3	
3.30	-64.7	H	3.0	-15.4	39.5	1.0	-53.9	-13.0	-40.9	
		H								
		H								
1.65	-62.4	V	3.0	-17.4	39.9	1.0	-56.3	-13.0	-43.3	
2.47	-63.6	V	3.0	-16.0	39.3	1.0	-54.3	-13.0	-41.3	
3.30	-64.3	V	3.0	-14.1	39.5	1.0	-52.6	-13.0	-39.6	
		V								
		V								
Mid Channel (836.6MHz)										
1.67	-62.0	H	3.0	-18.5	39.9	1.0	-57.4	-13.0	-44.4	
2.51	-63.8	H	3.0	-17.0	39.2	1.0	-55.3	-13.0	-42.3	
3.35	-64.2	H	3.0	-14.7	39.5	1.0	-53.2	-13.0	-40.2	
		H								
		H								
1.67	-61.3	V	3.0	-16.1	39.9	1.0	-55.0	-13.0	-42.0	
2.51	-61.7	V	3.0	-13.9	39.2	1.0	-52.2	-13.0	-39.2	
3.35	-64.4	V	3.0	-14.0	39.5	1.0	-52.6	-13.0	-39.6	
		V								
		V								
High Channel (848.8MHz)										
1.70	-63.1	H	3.0	-19.4	40.0	1.0	-58.3	-13.0	-45.3	
2.55	-62.2	H	3.0	-15.3	39.2	1.0	-53.5	-13.0	-40.5	
3.40	-64.3	H	3.0	-14.7	39.5	1.0	-53.2	-13.0	-40.2	
		H								
		H								
1.70	-61.8	V	3.0	-16.5	40.0	1.0	-55.4	-13.0	-42.4	
2.55	-60.8	V	3.0	-12.8	39.2	1.0	-51.0	-13.0	-38.0	
3.40	-64.0	V	3.0	-13.6	39.5	1.0	-52.1	-13.0	-39.1	
		V								
		V								

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GSM850 GPRS

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/04/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (GSM/UMTS #3)
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	-62.4	H	3.0	-19.0	39.9	1.0	-57.9	-13.0	-44.9	
2.47	-63.4	H	3.0	-16.8	39.3	1.0	-55.1	-13.0	-42.1	
3.30	-62.8	H	3.0	-13.5	39.5	1.0	-51.9	-13.0	-38.9	
		H								
		H								
1.65	-62.1	V	3.0	-17.1	39.9	1.0	-56.0	-13.0	-43.0	
2.47	-63.5	V	3.0	-15.8	39.3	1.0	-54.1	-13.0	-41.1	
3.30	-64.4	V	3.0	-14.2	39.5	1.0	-52.7	-13.0	-39.7	
		V								
		V								
Mid Channel (836.6MHz)										
1.67	-62.2	H	3.0	-18.6	39.9	1.0	-57.6	-13.0	-44.6	
2.51	-62.6	H	3.0	-15.8	39.2	1.0	-54.0	-13.0	-41.0	
3.35	-63.6	H	3.0	-14.1	39.5	1.0	-52.6	-13.0	-39.6	
		H								
		H								
1.67	-62.0	V	3.0	-16.8	39.9	1.0	-55.7	-13.0	-42.7	
2.51	-60.7	V	3.0	-12.8	39.2	1.0	-51.1	-13.0	-38.1	
3.35	-63.4	V	3.0	-13.1	39.5	1.0	-51.6	-13.0	-38.6	
		V								
		V								
High Channel (848.8MHz)										
1.70	-62.8	H	3.0	-19.1	40.0	1.0	-58.0	-13.0	-45.0	
2.55	-63.8	H	3.0	-16.9	39.2	1.0	-55.1	-13.0	-42.1	
3.40	-64.0	H	3.0	-14.5	39.5	1.0	-53.0	-13.0	-40.0	
		H								
		H								
1.70	-62.9	V	3.0	-17.5	40.0	1.0	-56.5	-13.0	-43.5	
2.55	-63.8	V	3.0	-15.8	39.2	1.0	-54.1	-13.0	-41.1	
3.40	-64.4	V	3.0	-14.0	39.5	1.0	-52.5	-13.0	-39.5	
		V								
		V								

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GSM850 EGPRS

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/21/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS #3)
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	-62.0	H	3.0	-11.7	39.7	1.0	-50.4	-13.0	-37.4	
5.55	-64.3	H	3.0	-10.8	40.1	1.0	-49.9	-13.0	-36.9	
7.40	-65.4	H	3.0	-9.1	39.0	1.0	-47.0	-13.0	-34.0	
3.70	-61.4	V	3.0	-10.7	39.7	1.0	-49.4	-13.0	-36.4	
5.55	-64.4	V	3.0	-11.0	40.1	1.0	-50.1	-13.0	-37.1	
7.40	-65.8	V	3.0	-9.7	39.0	1.0	-47.7	-13.0	-34.7	
Mid Channel (1880.0)										
3.76	-60.3	H	3.0	-9.8	39.8	1.0	-48.6	-13.0	-35.6	
5.64	-63.5	H	3.0	-9.8	40.0	1.0	-48.8	-13.0	-35.8	
7.52	-65.9	H	3.0	-9.4	38.9	1.0	-47.3	-13.0	-34.3	
3.76	-60.5	V	3.0	-9.7	39.8	1.0	-48.5	-13.0	-35.5	
5.64	-63.3	V	3.0	-9.8	40.0	1.0	-48.9	-13.0	-35.9	
7.52	-65.9	V	3.0	-9.7	38.9	1.0	-47.6	-13.0	-34.6	
High Channel (1909.8MHz)										
3.82	-59.6	H	3.0	-9.0	39.8	1.0	-47.8	-13.0	-34.8	
5.73	-63.4	H	3.0	-9.6	40.0	1.0	-48.5	-13.0	-35.5	
7.64	-65.3	H	3.0	-8.6	38.9	1.0	-46.5	-13.0	-33.5	
3.82	-59.2	V	3.0	-8.3	39.8	1.0	-47.1	-13.0	-34.1	
5.73	-64.5	V	3.0	-10.9	40.0	1.0	-49.8	-13.0	-36.8	
7.64	-65.7	V	3.0	-9.3	38.9	1.0	-47.3	-13.0	-34.3	

Rev. 03.19.15

GSM1900 GPRS

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/21/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS #3)
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	-62.3	H	3.0	-12.0	39.7	1.0	-50.7	-13.0	-37.7	
5.55	-64.3	H	3.0	-10.7	40.1	1.0	-49.8	-13.0	-36.8	
7.40	-65.8	H	3.0	-9.4	39.0	1.0	-47.4	-13.0	-34.4	
3.70	-62.1	V	3.0	-11.4	39.7	1.0	-50.1	-13.0	-37.1	
5.55	-64.5	V	3.0	-11.1	40.1	1.0	-50.2	-13.0	-37.2	
7.40	-66.3	V	3.0	-10.2	39.0	1.0	-48.2	-13.0	-35.2	
Mid Channel (1880.0)										
3.76	-60.4	H	3.0	-9.9	39.8	1.0	-48.7	-13.0	-35.7	
5.64	-64.5	H	3.0	-10.9	40.0	1.0	-49.9	-13.0	-36.9	
7.52	-65.7	H	3.0	-9.2	38.9	1.0	-47.1	-13.0	-34.1	
3.76	-60.7	V	3.0	-9.9	39.8	1.0	-48.7	-13.0	-35.7	
5.64	-63.6	V	3.0	-10.1	40.0	1.0	-49.1	-13.0	-36.1	
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	-60.0	H	3.0	-9.4	39.8	1.0	-48.2	-13.0	-35.2	
5.73	-63.4	H	3.0	-9.6	40.0	1.0	-48.5	-13.0	-35.5	
7.64	-65.7	H	3.0	-9.0	38.9	1.0	-46.9	-13.0	-33.9	
3.82	-59.4	V	3.0	-8.5	39.8	1.0	-47.3	-13.0	-34.3	
5.73	-63.9	V	3.0	-10.3	40.0	1.0	-49.2	-13.0	-36.2	
7.64	-65.9	V	3.0	-9.5	38.9	1.0	-47.4	-13.0	-34.4	

Rev. 03.19.15

GSM1900 EGPRS

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WCDMA

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/21/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS #3)
Mode: REL 99, 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 (1852.4MHz)										
3.70	-63.3	H	3.0	-13.0	39.7	1.0	-51.7	-13.0	-38.7	
5.56	-64.7	H	3.0	-11.2	40.1	1.0	-50.2	-13.0	-37.2	
7.41	-66.8	H	3.0	-10.4	39.0	1.0	-48.4	-13.0	-35.4	
3.70	-63.4	V	3.0	-12.6	39.7	1.0	-51.4	-13.0	-38.4	
5.56	-63.6	V	3.0	-10.2	40.1	1.0	-49.3	-13.0	-36.3	
7.41	-65.5	V	3.0	-9.4	39.0	1.0	-47.4	-13.0	-34.4	
Mid Channel (1880MHz)										
3.76	-63.3	H	3.0	-12.8	39.8	1.0	-51.6	-13.0	-38.6	
5.64	-64.1	H	3.0	-10.4	40.0	1.0	-49.5	-13.0	-36.5	
7.52	-66.7	H	3.0	-10.2	38.9	1.0	-48.1	-13.0	-35.1	
3.76	-63.9	V	3.0	-13.1	39.8	1.0	-51.9	-13.0	-38.9	
5.64	-63.6	V	3.0	-10.1	40.0	1.0	-49.1	-13.0	-36.1	
7.52	-66.5	V	3.0	-10.3	38.9	1.0	-48.2	-13.0	-35.2	
High Channel (1907.6MHz)										
3.82	-62.4	H	3.0	-11.8	39.8	1.0	-50.6	-13.0	-37.6	
5.72	-63.5	H	3.0	-9.7	40.0	1.0	-48.7	-13.0	-35.7	
7.63	-64.3	H	3.0	-7.7	38.9	1.0	-45.6	-13.0	-32.6	
3.82	-63.7	V	3.0	-12.8	39.8	1.0	-51.6	-13.0	-38.6	
5.72	-64.1	V	3.0	-10.5	40.0	1.0	-49.4	-13.0	-36.4	
7.63	-66.6	V	3.0	-10.2	38.9	1.0	-48.1	-13.0	-35.1	

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B2 REL99

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/21/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS #3)
Mode: HSDPA 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 (1852.4MHz)										
3.70	-63.6	H	3.0	-13.3	39.7	1.0	-52.0	-13.0	-39.0	
5.56	-64.7	H	3.0	-11.2	40.1	1.0	-50.3	-13.0	-37.3	
7.41	-66.2	H	3.0	-9.9	39.0	1.0	-47.8	-13.0	-34.8	
3.70	-63.5	V	3.0	-12.8	39.7	1.0	-51.5	-13.0	-38.5	
5.56	-64.2	V	3.0	-10.8	40.1	1.0	-49.9	-13.0	-36.9	
7.41	-66.4	V	3.0	-10.3	39.0	1.0	-48.3	-13.0	-35.3	
Mid Channel (1880MHz)										
3.76	-63.7	H	3.0	-13.2	39.8	1.0	-52.0	-13.0	-39.0	
5.64	-64.3	H	3.0	-10.6	40.0	1.0	-49.6	-13.0	-36.6	
7.52	-65.8	H	3.0	-9.4	38.9	1.0	-47.3	-13.0	-34.3	
3.76	-63.4	V	3.0	-12.6	39.8	1.0	-51.4	-13.0	-38.4	
5.64	-63.3	V	3.0	-9.8	40.0	1.0	-48.8	-13.0	-35.8	
7.52	-66.7	V	3.0	-10.5	38.9	1.0	-48.4	-13.0	-35.4	
High Channel (1907.6MHz)										
3.82	-62.8	H	3.0	-12.2	39.8	1.0	-51.0	-13.0	-38.0	
5.72	-63.9	H	3.0	-10.1	40.0	1.0	-49.0	-13.0	-36.0	
7.63	-66.3	H	3.0	-9.7	38.9	1.0	-47.6	-13.0	-34.6	
3.82	-63.2	V	3.0	-12.3	39.8	1.0	-51.1	-13.0	-38.1	
5.72	-63.9	V	3.0	-10.3	40.0	1.0	-49.2	-13.0	-36.2	
7.63	-66.2	V	3.0	-9.8	38.9	1.0	-47.7	-13.0	-34.7	

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B2 HSDPA

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/21/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS #3)
Mode: REL 99, 1700MHz

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 (1712.4MHz)										
3.42	-67.7	H	3.0	-18.1	39.6	1.0	-56.6	-13.0	-43.6	
5.14	-64.1	H	3.0	-11.2	40.3	1.0	-50.5	-13.0	-37.5	
6.85	-65.9	H	3.0	-10.2	39.2	1.0	-48.4	-13.0	-35.4	
3.42	-64.5	V	3.0	-14.1	39.6	1.0	-52.7	-13.0	-39.7	
5.14	-63.8	V	3.0	-11.1	40.3	1.0	-50.4	-13.0	-37.4	
6.85	-65.5	V	3.0	-10.1	39.2	1.0	-48.3	-13.0	-35.3	
Mid Channel (1732.6MHz)										
3.47	-64.4	H	3.0	-14.6	39.6	1.0	-53.2	-13.0	-40.2	
5.20	-64.2	H	3.0	-11.2	40.3	1.0	-50.5	-13.0	-37.5	
6.93	-66.1	H	3.0	-10.2	39.1	1.0	-48.3	-13.0	-35.3	
3.47	-63.9	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	-66.4	V	3.0	-10.9	39.1	1.0	-49.0	-13.0	-36.0	
High Channel (1752.6MHz)										
3.51	-64.2	H	3.0	-14.4	39.6	1.0	-53.0	-13.0	-40.0	
5.26	-64.5	H	3.0	-11.5	40.3	1.0	-50.8	-13.0	-37.8	
7.01	-65.8	H	3.0	-9.8	39.1	1.0	-47.9	-13.0	-34.9	
3.51	-64.7	V	3.0	-14.2	39.6	1.0	-52.8	-13.0	-39.8	
5.26	-64.5	V	3.0	-11.6	40.3	1.0	-50.9	-13.0	-37.9	
7.01	-66.0	V	3.0	-10.4	39.1	1.0	-48.5	-13.0	-35.5	

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B4 REL99

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/21/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (GSM/UMTS #3)
Mode: HSDPA 1700MHz

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 (1712.4MHz)										
3.42	-64.4	H	3.0	-14.7	39.6	1.0	-53.3	-13.0	-40.3	
5.14	-64.2	H	3.0	-11.4	40.3	1.0	-50.7	-13.0	-37.7	
6.85	-65.8	H	3.0	-10.1	39.2	1.0	-48.3	-13.0	-35.3	
3.42	-64.2	V	3.0	-13.8	39.6	1.0	-52.3	-13.0	-39.3	
5.14	-64.2	V	3.0	-11.5	40.3	1.0	-50.8	-13.0	-37.8	
6.85	-64.3	V	3.0	-9.0	39.2	1.0	-47.1	-13.0	-34.1	
Mid Channel (1732.6MHz)										
3.47	-64.4	H	3.0	-14.6	39.6	1.0	-53.2	-13.0	-40.2	
5.20	-64.0	H	3.0	-11.0	40.3	1.0	-50.4	-13.0	-37.4	
6.93	-65.8	H	3.0	-10.0	39.1	1.0	-48.1	-13.0	-35.1	
3.47	-64.3	V	3.0	-13.8	39.6	1.0	-52.4	-13.0	-39.4	
5.20	-64.1	V	3.0	-11.2	40.3	1.0	-50.6	-13.0	-37.6	
6.93	-65.2	V	3.0	-9.7	39.1	1.0	-47.8	-13.0	-34.8	
High Channel (1752.6MHz)										
3.51	-64.2	H	3.0	-14.4	39.6	1.0	-53.0	-13.0	-40.0	
5.26	-64.1	H	3.0	-11.1	40.3	1.0	-50.4	-13.0	-37.4	
7.01	-65.6	H	3.0	-9.7	39.1	1.0	-47.7	-13.0	-34.7	
3.51	-64.9	V	3.0	-14.4	39.6	1.0	-53.0	-13.0	-40.0	
5.26	-65.8	V	3.0	-12.9	40.3	1.0	-52.2	-13.0	-39.2	
7.01	-66.9	V	3.0	-11.2	39.1	1.0	-49.3	-13.0	-36.3	

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B4 HSDPA

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High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/04/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (GSM/UMTS #3)
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	-62.8	H	3.0	-19.3	39.9	1.0	-58.2	-13.0	-45.2	
2.48	63.6	H	3.0	-16.9	39.3	1.0	-55.2	-13.0	-42.2	
3.31	-64.4	H	3.0	-15.1	39.5	1.0	-53.5	-13.0	-40.5	
		H								
		H								
1.65	-63.4	V	3.0	-18.4	39.9	1.0	-57.3	-13.0	-44.3	
2.48	-64.1	V	3.0	-16.4	39.3	1.0	-54.7	-13.0	-41.7	
3.31	-63.9	V	3.0	-13.6	39.5	1.0	-52.1	-13.0	-39.1	
		V								
		V								
Mid Channel (836.6MHz)										
1.67	-62.0	H	3.0	-18.5	39.9	1.0	-57.4	-13.0	-44.4	
2.51	63.9	H	3.0	-17.0	39.2	1.0	-55.3	-13.0	-42.3	
3.35	-63.9	H	3.0	-14.4	39.5	1.0	-52.9	-13.0	-39.9	
		H								
		H								
1.67	-62.5	V	3.0	-17.3	39.9	1.0	-56.2	-13.0	-43.2	
2.51	-63.1	V	3.0	-15.3	39.2	1.0	-53.5	-13.0	-40.5	
3.35	-64.8	V	3.0	-14.5	39.5	1.0	-53.0	-13.0	-40.0	
		V								
		V								
High Channel (846.6MHz)										
1.69	-62.4	H	3.0	-18.7	39.9	1.0	-57.7	-13.0	-44.7	
2.54	-63.8	H	3.0	-16.9	39.2	1.0	-55.1	-13.0	-42.1	
3.39	-63.9	H	3.0	-14.3	39.5	1.0	-52.9	-13.0	-39.9	
		H								
		H								
1.69	-61.9	V	3.0	-16.6	39.9	1.0	-55.5	-13.0	-42.5	
2.54	-63.8	V	3.0	-15.8	39.2	1.0	-54.1	-13.0	-41.1	
3.39	-63.8	V	3.0	-13.4	39.5	1.0	-51.9	-13.0	-38.9	
		V								
		V								

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B5 REL99

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 08/04/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (GSM/UMTS #3)
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	-62.7	H	3.0	-19.3	39.9	1.0	-58.2	-13.0	-45.2	
2.48	63.0	H	3.0	-16.3	39.3	1.0	-54.6	-13.0	-41.6	
3.31	-64.3	H	3.0	-15.0	39.5	1.0	-53.4	-13.0	-40.4	
		H								
		H								
1.65	-62.5	V	3.0	-17.5	39.9	1.0	-56.4	-13.0	-43.4	
2.48	-63.6	V	3.0	-15.9	39.3	1.0	-54.2	-13.0	-41.2	
3.31	-63.8	V	3.0	-13.6	39.5	1.0	-52.1	-13.0	-39.1	
		V								
		V								
Mid Channel (836.6MHz)										
1.67	-61.9	H	3.0	-18.4	39.9	1.0	-57.3	-13.0	-44.3	
2.51	-63.9	H	3.0	-17.0	39.2	1.0	-55.3	-13.0	-42.3	
3.35	-63.7	H	3.0	-14.3	39.5	1.0	-52.8	-13.0	-39.8	
		H								
		H								
1.67	-62.2	V	3.0	-17.0	39.9	1.0	-56.0	-13.0	-43.0	
2.51	-63.8	V	3.0	-15.9	39.2	1.0	-54.2	-13.0	-41.2	
3.35	-64.3	V	3.0	-14.0	39.5	1.0	-52.5	-13.0	-39.5	
		V								
		V								
High Channel (846.6MHz)										
1.69	-62.2	H	3.0	-18.4	39.9	1.0	-57.4	-13.0	-44.4	
2.54	-63.6	H	3.0	-16.7	39.2	1.0	-54.9	-13.0	-41.9	
3.39	-63.3	H	3.0	-13.8	39.5	1.0	-52.3	-13.0	-39.3	
		H								
		H								
1.69	-62.5	V	3.0	-17.1	39.9	1.0	-56.1	-13.0	-43.1	
2.54	-63.8	V	3.0	-15.8	39.2	1.0	-54.1	-13.0	-41.1	
3.39	-64.0	V	3.0	-13.6	39.5	1.0	-52.2	-13.0	-39.2	
		V								
		V								

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B5 HSDPA

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LTE Band 2

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/26/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1850.7MHz)										
3.70	-72.6	H	3.0	-22.3	39.7	1.0	-61.1	-13.0	-48.1	
5.55	-74.1	H	3.0	-20.6	40.1	1.0	-59.7	-13.0	-46.7	
7.40	-75.4	H	3.0	-19.0	39.0	1.0	-57.0	-13.0	-44.0	
		H								
		H								
3.70	-72.7	V	3.0	-21.9	39.7	1.0	-60.6	-13.0	-47.6	
5.55	-74.1	V	3.0	-20.8	40.1	1.0	-59.8	-13.0	-46.8	
7.40	-75.4	V	3.0	-19.3	39.0	1.0	-57.2	-13.0	-44.2	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-72.9	H	3.0	-22.5	39.8	1.0	-61.2	-13.0	-48.2	
5.64	-73.4	H	3.0	-19.7	40.0	1.0	-58.7	-13.0	-45.7	
7.52	-75.5	H	3.0	-19.1	38.9	1.0	-57.0	-13.0	-44.0	
		H								
		H								
3.76	-72.9	V	3.0	-22.0	39.8	1.0	-60.8	-13.0	-47.8	
5.64	-73.4	V	3.0	-19.9	40.0	1.0	-58.9	-13.0	-45.9	
7.52	-75.6	V	3.0	-19.4	38.9	1.0	-57.3	-13.0	-44.3	
		V								
		V								
High Channel (1909.3MHz)										
3.82	-72.2	H	3.0	-21.6	39.8	1.0	-60.4	-13.0	-47.4	
5.73	-73.4	H	3.0	-19.6	40.0	1.0	-58.5	-13.0	-45.5	
7.64	-75.1	H	3.0	-18.5	38.9	1.0	-56.4	-13.0	-43.4	
		H								
		H								
3.82	-72.4	V	3.0	-21.5	39.8	1.0	-60.3	-13.0	-47.3	
5.73	-73.4	V	3.0	-19.8	40.0	1.0	-58.8	-13.0	-45.8	
7.64	-75.1	V	3.0	-18.8	38.9	1.0	-56.7	-13.0	-43.7	
		V								
		V								

Rev. 10.28.15

LTE B2 1.4MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/26/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1850.7MHz)										
3.70	-72.7	H	3.0	-22.4	39.7	1.0	-61.1	-13.0	-48.1	
5.55	-74.2	H	3.0	-20.6	40.1	1.0	-59.7	-13.0	-46.7	
7.40	-75.5	H	3.0	-19.1	39.0	1.0	-57.0	-13.0	-44.0	
		H								
		H								
3.70	-72.7	V	3.0	-21.9	39.7	1.0	-60.7	-13.0	-47.7	
5.55	-74.2	V	3.0	-20.8	40.1	1.0	-59.9	-13.0	-46.9	
7.40	-75.4	V	3.0	-19.3	39.0	1.0	-57.3	-13.0	-44.3	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-72.9	H	3.0	-22.5	39.8	1.0	-61.3	-13.0	-48.3	
5.64	-73.4	H	3.0	-19.7	40.0	1.0	-58.8	-13.0	-45.8	
7.52	-75.5	H	3.0	-19.0	38.9	1.0	-57.0	-13.0	-44.0	
		H								
		H								
3.76	-72.9	V	3.0	-22.1	39.8	1.0	-60.8	-13.0	-47.8	
5.64	-73.4	V	3.0	-19.9	40.0	1.0	-58.9	-13.0	-45.9	
7.52	-75.6	V	3.0	-19.4	38.9	1.0	-57.3	-13.0	-44.3	
		V								
		V								
High Channel (1909.3MHz)										
3.82	-72.2	H	3.0	-21.6	39.8	1.0	-60.4	-13.0	-47.4	
5.73	-73.4	H	3.0	-19.6	40.0	1.0	-58.6	-13.0	-45.6	
7.64	-75.2	H	3.0	-18.6	38.9	1.0	-56.5	-13.0	-43.5	
		H								
		H								
3.82	-72.4	V	3.0	-21.5	39.8	1.0	-60.4	-13.0	-47.4	
5.73	-73.5	V	3.0	-19.8	40.0	1.0	-58.8	-13.0	-45.8	
7.64	-75.2	V	3.0	-18.8	38.9	1.0	-56.7	-13.0	-43.7	
		V								
		V								

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LTE B2 1.4MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/26/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1851.5MHz)										
3.70	-69.4	H	3.0	-19.1	39.7	1.0	-57.8	-13.0	-44.8	
5.55	-70.7	H	3.0	-17.2	40.1	1.0	-56.3	-13.0	-43.3	
7.41	-72.1	H	3.0	-15.7	39.0	1.0	-53.7	-13.0	-40.7	
		H								
		H								
3.70	-69.4	V	3.0	-18.6	39.7	1.0	-57.4	-13.0	-44.4	
5.55	-70.7	V	3.0	-17.3	40.1	1.0	-56.4	-13.0	-43.4	
7.41	-72.1	V	3.0	-16.0	39.0	1.0	-53.9	-13.0	-40.9	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-69.7	H	3.0	-19.2	39.8	1.0	-58.0	-13.0	-45.0	
5.64	-70.1	H	3.0	-16.4	40.0	1.0	-55.4	-13.0	-42.4	
7.52	-72.3	H	3.0	-15.8	38.9	1.0	-53.7	-13.0	-40.7	
		H								
		H								
3.76	-69.6	V	3.0	-18.8	39.8	1.0	-57.6	-13.0	-44.6	
5.64	-70.1	V	3.0	-16.6	40.0	1.0	-55.6	-13.0	-42.6	
7.52	-72.3	V	3.0	-16.1	38.9	1.0	-54.0	-13.0	-41.0	
		V								
		V								
High Channel (1908.5MHz)										
3.82	-68.9	H	3.0	-18.3	39.8	1.0	-57.1	-13.0	-44.1	
5.73	-70.2	H	3.0	-16.4	40.0	1.0	-55.4	-13.0	-42.4	
7.63	-71.9	H	3.0	-15.3	38.9	1.0	-53.2	-13.0	-40.2	
		H								
		H								
3.82	-69.3	V	3.0	-18.4	39.8	1.0	-57.2	-13.0	-44.2	
5.73	-70.2	V	3.0	-16.6	40.0	1.0	-55.5	-13.0	-42.5	
7.63	-71.8	V	3.0	-15.5	38.9	1.0	-53.4	-13.0	-40.4	
		V								
		V								

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LTE B2 3MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/26/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1851.5MHz)										
3.70	-69.4	H	3.0	-19.1	39.7	1.0	-57.8	-13.0	-44.8	
5.55	-70.7	H	3.0	-17.2	40.1	1.0	-56.3	-13.0	-43.3	
7.41	-72.1	H	3.0	-15.7	39.0	1.0	-53.7	-13.0	-40.7	
		H								
		H								
3.70	-69.4	V	3.0	-18.7	39.7	1.0	-57.4	-13.0	-44.4	
5.55	-70.7	V	3.0	-17.3	40.1	1.0	-56.4	-13.0	-43.4	
7.41	-72.1	V	3.0	-16.0	39.0	1.0	-54.0	-13.0	-41.0	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-69.7	H	3.0	-19.2	39.8	1.0	-58.0	-13.0	-45.0	
5.64	-70.1	H	3.0	-16.5	40.0	1.0	-55.5	-13.0	-42.5	
7.52	-72.3	H	3.0	-15.8	38.9	1.0	-53.8	-13.0	-40.8	
		H								
		H								
3.76	-69.7	V	3.0	-18.8	39.8	1.0	-57.6	-13.0	-44.6	
5.64	-70.1	V	3.0	-16.6	40.0	1.0	-55.6	-13.0	-42.6	
7.52	-72.3	V	3.0	-16.1	38.9	1.0	-54.0	-13.0	-41.0	
		V								
		V								
High Channel (1908.5MHz)										
3.82	-69.0	H	3.0	-18.4	39.8	1.0	-57.2	-13.0	-44.2	
5.73	-70.2	H	3.0	-16.4	40.0	1.0	-55.4	-13.0	-42.4	
7.63	-71.9	H	3.0	-15.3	38.9	1.0	-53.2	-13.0	-40.2	
		H								
		H								
3.82	-69.3	V	3.0	-18.4	39.8	1.0	-57.2	-13.0	-44.2	
5.73	-70.3	V	3.0	-16.6	40.0	1.0	-55.6	-13.0	-42.6	
7.63	-71.8	V	3.0	-15.5	38.9	1.0	-53.4	-13.0	-40.4	
		V								
		V								

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LTE B2 3MHz 16QAM

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High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/26/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1852.5MHz)										
3.71	-67.2	H	3.0	-16.8	39.7	1.0	-55.6	-13.0	-42.6	
5.56	-68.5	H	3.0	-14.9	40.1	1.0	-54.0	-13.0	-41.0	
7.41	-70.0	H	3.0	-13.6	39.0	1.0	-51.5	-13.0	-38.5	
		H								
		H								
3.71	-67.3	V	3.0	-16.5	39.7	1.0	-55.3	-13.0	-42.3	
5.56	-68.5	V	3.0	-15.1	40.1	1.0	-54.2	-13.0	-41.2	
7.41	-70.0	V	3.0	-13.9	39.0	1.0	-51.8	-13.0	-38.8	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-67.5	H	3.0	-17.0	39.8	1.0	-55.8	-13.0	-42.8	
5.64	-67.9	H	3.0	-14.3	40.0	1.0	-53.3	-13.0	-40.3	
7.52	-70.1	H	3.0	-13.6	38.9	1.0	-51.5	-13.0	-38.5	
		H								
		H								
3.76	-67.3	V	3.0	-16.5	39.8	1.0	-55.3	-13.0	-42.3	
5.64	-67.8	V	3.0	-14.3	40.0	1.0	-53.3	-13.0	-40.3	
7.52	-70.0	V	3.0	-13.8	38.9	1.0	-51.7	-13.0	-38.7	
		V								
		V								
High Channel (1907.5MHz)										
3.82	-67.0	H	3.0	-16.5	39.8	1.0	-55.3	-13.0	-42.3	
5.72	-68.1	H	3.0	-14.3	40.0	1.0	-53.2	-13.0	-40.2	
7.63	-69.7	H	3.0	-13.1	38.9	1.0	-51.0	-13.0	-38.0	
		H								
		H								
3.82	-67.1	V	3.0	-16.2	39.8	1.0	-55.0	-13.0	-42.0	
5.72	-68.1	V	3.0	-14.5	40.0	1.0	-53.5	-13.0	-40.5	
7.63	-69.7	V	3.0	-13.4	38.9	1.0	-51.3	-13.0	-38.3	
		V								
		V								

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LTE B2 5MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/26/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1852.5MHz)										
3.71	-67.2	H	3.0	-16.9	39.7	1.0	-55.6	-13.0	-42.6	
5.56	-68.4	H	3.0	-14.9	40.1	1.0	-54.0	-13.0	-41.0	
7.41	-70.0	H	3.0	-13.6	39.0	1.0	-51.5	-13.0	-38.5	
		H								
		H								
3.71	-67.3	V	3.0	-16.5	39.7	1.0	-55.3	-13.0	-42.3	
5.56	-68.5	V	3.0	-15.1	40.1	1.0	-54.2	-13.0	-41.2	
7.41	-69.9	V	3.0	-13.8	39.0	1.0	-51.8	-13.0	-38.8	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-67.4	H	3.0	-17.0	39.8	1.0	-55.7	-13.0	-42.7	
5.64	-67.9	H	3.0	-14.2	40.0	1.0	-53.3	-13.0	-40.3	
7.52	-70.0	H	3.0	-13.5	38.9	1.0	-51.5	-13.0	-38.5	
		H								
		H								
3.76	-67.2	V	3.0	-16.4	39.8	1.0	-55.2	-13.0	-42.2	
5.64	-67.5	V	3.0	-14.4	40.0	1.0	-53.4	-13.0	-40.4	
7.52	-70.0	V	3.0	-13.8	38.9	1.0	-51.7	-13.0	-38.7	
		V								
		V								
High Channel (1907.5MHz)										
3.82	-66.9	H	3.0	-16.3	39.8	1.0	-55.1	-13.0	-42.1	
5.72	-68.2	H	3.0	-14.4	40.0	1.0	-53.3	-13.0	-40.3	
7.63	-69.6	H	3.0	-13.0	38.9	1.0	-50.9	-13.0	-37.9	
		H								
		H								
3.82	-67.1	V	3.0	-16.2	39.8	1.0	-55.1	-13.0	-42.1	
5.72	-68.1	V	3.0	-14.5	40.0	1.0	-53.5	-13.0	-40.5	
7.63	-69.8	V	3.0	-13.4	38.9	1.0	-51.3	-13.0	-38.3	
		V								
		V								

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LTE B2 5MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/26/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1855MHz)										
3.71	-64.3	H	3.0	-14.0	39.7	1.0	-52.7	-13.0	-39.7	
5.57	-65.3	H	3.0	-11.7	40.1	1.0	-50.8	-13.0	-37.8	
7.42	-67.0	H	3.0	-10.6	39.0	1.0	-48.6	-13.0	-35.6	
		H								
		H								
3.71	-64.1	V	3.0	-13.4	39.7	1.0	-52.1	-13.0	-39.1	
5.57	-65.2	V	3.0	-11.8	40.1	1.0	-50.8	-13.0	-37.8	
7.42	-67.0	V	3.0	-10.9	39.0	1.0	-48.9	-13.0	-35.9	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-64.5	H	3.0	-14.1	39.8	1.0	-52.9	-13.0	-39.9	
5.64	-64.9	H	3.0	-11.2	40.0	1.0	-50.3	-13.0	-37.3	
7.52	-67.0	H	3.0	-10.5	38.9	1.0	-48.5	-13.0	-35.5	
		H								
		H								
3.76	-64.3	V	3.0	-13.5	39.8	1.0	-52.3	-13.0	-39.3	
5.64	-64.7	V	3.0	-11.2	40.0	1.0	-50.2	-13.0	-37.2	
7.52	-67.1	V	3.0	-10.8	38.9	1.0	-48.8	-13.0	-35.8	
		V								
		V								
High Channel (1905MHz)										
3.81	-64.2	H	3.0	-13.6	39.8	1.0	-52.4	-13.0	-39.4	
5.72	-65.3	H	3.0	-11.5	40.0	1.0	-50.4	-13.0	-37.4	
7.62	-66.8	H	3.0	-10.2	38.9	1.0	-48.1	-13.0	-35.1	
		H								
		H								
3.81	-64.1	V	3.0	-13.2	39.8	1.0	-52.0	-13.0	-39.0	
5.72	-65.3	V	3.0	-11.7	40.0	1.0	-50.7	-13.0	-37.7	
7.62	-66.7	V	3.0	-10.4	38.9	1.0	-48.3	-13.0	-35.3	
		V								
		V								

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LTE B2 10MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/26/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1855MHz)										
3.71	-64.4	H	3.0	-14.0	39.7	1.0	-52.8	-13.0	-39.8	
5.57	-65.3	H	3.0	-11.8	40.1	1.0	-50.9	-13.0	-37.9	
7.42	-67.1	H	3.0	-10.7	39.0	1.0	-48.6	-13.0	-35.6	
		H								
		H								
3.71	-64.2	V	3.0	-13.4	39.7	1.0	-52.1	-13.0	-39.1	
5.57	-65.2	V	3.0	-11.8	40.1	1.0	-50.9	-13.0	-37.9	
7.42	-67.0	V	3.0	-10.9	39.0	1.0	-48.9	-13.0	-35.9	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-64.4	H	3.0	-14.0	39.8	1.0	-52.8	-13.0	-39.8	
5.64	-65.0	H	3.0	-11.3	40.0	1.0	-50.3	-13.0	-37.3	
7.52	-67.0	H	3.0	-10.6	38.9	1.0	-48.5	-13.0	-35.5	
		H								
		H								
3.76	-64.3	V	3.0	-13.5	39.8	1.0	-52.2	-13.0	-39.2	
5.64	-64.7	V	3.0	-11.2	40.0	1.0	-50.2	-13.0	-37.2	
7.52	-67.0	V	3.0	-10.7	38.9	1.0	-48.7	-13.0	-35.7	
		V								
		V								
High Channel (1905MHz)										
3.81	-64.2	H	3.0	-13.6	39.8	1.0	-52.4	-13.0	-39.4	
5.72	-65.2	H	3.0	-11.4	40.0	1.0	-50.4	-13.0	-37.4	
7.62	-66.8	H	3.0	-10.2	38.9	1.0	-48.1	-13.0	-35.1	
		H								
		H								
3.81	-64.2	V	3.0	-13.3	39.8	1.0	-52.1	-13.0	-39.1	
5.72	-65.3	V	3.0	-11.7	40.0	1.0	-50.6	-13.0	-37.6	
7.62	-66.8	V	3.0	-10.4	38.9	1.0	-48.3	-13.0	-35.3	
		V								
		V								

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LTE B2 10MHz 16QAM

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High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/27/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1857.5MHz)										
3.72	-62.5	H	3.0	-12.1	39.8	1.0	-50.9	-13.0	-37.9	
5.57	-63.4	H	3.0	-9.8	40.1	1.0	-48.9	-13.0	-35.9	
7.43	-65.5	H	3.0	-9.1	39.0	1.0	-47.1	-13.0	-34.1	
		H								
		H								
3.72	-62.4	V	3.0	-11.7	39.8	1.0	-50.4	-13.0	-37.4	
5.57	-63.3	V	3.0	-9.9	40.1	1.0	-49.0	-13.0	-36.0	
7.43	-65.5	V	3.0	-9.4	39.0	1.0	-47.3	-13.0	-34.3	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-62.6	H	3.0	-12.2	39.8	1.0	-50.9	-13.0	-37.9	
5.64	-63.1	H	3.0	-9.4	40.0	1.0	-48.5	-13.0	-35.5	
7.52	-65.3	H	3.0	-8.8	38.9	1.0	-46.8	-13.0	-33.8	
		H								
		H								
3.76	-62.6	V	3.0	-11.8	39.8	1.0	-50.5	-13.0	-37.5	
5.64	-63.0	V	3.0	-9.5	40.0	1.0	-48.6	-13.0	-35.6	
7.52	-65.4	V	3.0	-9.1	38.9	1.0	-47.1	-13.0	-34.1	
		V								
		V								
High Channel (1902.5MHz)										
3.81	-62.6	H	3.0	-12.0	39.8	1.0	-50.8	-13.0	-37.8	
5.71	-63.6	H	3.0	-9.8	40.0	1.0	-48.8	-13.0	-35.8	
7.61	-65.1	H	3.0	-8.6	38.9	1.0	-46.5	-13.0	-33.5	
		H								
		H								
3.81	-62.6	V	3.0	-11.7	39.8	1.0	-50.5	-13.0	-37.5	
5.71	-63.7	V	3.0	-10.1	40.0	1.0	-49.1	-13.0	-36.1	
7.61	-65.1	V	3.0	-8.8	38.9	1.0	-46.7	-13.0	-33.7	
		V								
		V								

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LTE B2 15MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/28/2016
Test Engineer: Mark Nolting
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 41, 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 B41

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (2498.5MHz)										
5.00	-63.9	H	3.0	-11.3	40.3	1.0	-50.6	-25.0	-25.6	
7.50	-66.0	H	3.0	-9.5	38.9	1.0	-47.4	-25.0	-22.4	
9.99	-67.0	H	3.0	-7.9	38.3	1.0	-45.2	-25.0	-20.2	
5.00	-62.8	V	3.0	-10.2	40.3	1.0	-49.5	-25.0	-24.5	
7.50	-65.6	V	3.0	-9.4	38.9	1.0	-47.3	-25.0	-22.3	
9.99	-67.0	V	3.0	-7.8	38.3	1.0	-45.2	-25.0	-20.2	
Mid Channel (2593MHz)										
5.19	-61.5	H	3.0	-8.6	40.3	1.0	-47.9	-25.0	-22.9	
7.78	-64.2	H	3.0	-7.5	38.9	1.0	-45.3	-25.0	-20.3	
10.37	-67.5	H	3.0	-7.9	38.3	1.0	-45.2	-25.0	-20.2	
5.19	-59.9	V	3.0	-7.1	40.3	1.0	-46.4	-25.0	-21.4	
7.78	-63.7	V	3.0	-7.1	38.9	1.0	-45.0	-25.0	-20.0	
10.37	-67.4	V	3.0	-7.9	38.3	1.0	-45.2	-25.0	-20.2	
High Channel (2687.5MHz)										
5.38	-62.2	H	3.0	-9.0	40.2	1.0	-48.2	-25.0	-23.2	
8.06	-63.8	H	3.0	-6.7	38.8	1.0	-44.5	-25.0	-19.5	
10.75	-67.3	H	3.0	-7.2	38.3	1.0	-44.6	-25.0	-19.6	
5.38	-62.6	V	3.0	-9.5	40.2	1.0	-48.7	-25.0	-23.7	
8.06	-63.7	V	3.0	-6.8	38.8	1.0	-44.6	-25.0	-19.6	
10.75	-67.7	V	3.0	-7.7	38.3	1.0	-45.0	-25.0	-20.0	

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LTE B2 15MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/27/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1860MHz)										
3.72	-61.1	H	3.0	-10.7	39.8	1.0	-49.5	-13.0	-36.5	
5.58	-61.8	H	3.0	-8.2	40.1	1.0	-47.3	-13.0	-34.3	
7.44	-64.4	H	3.0	-7.9	39.0	1.0	-45.9	-13.0	-32.9	
		H								
		H								
3.72	-61.2	V	3.0	-10.4	39.8	1.0	-49.1	-13.0	-36.1	
5.58	-61.9	V	3.0	-8.5	40.1	1.0	-47.5	-13.0	-34.5	
7.44	-64.4	V	3.0	-8.2	39.0	1.0	-46.2	-13.0	-33.2	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-61.3	H	3.0	-10.9	39.8	1.0	-49.7	-13.0	-36.7	
5.64	-61.9	H	3.0	-8.2	40.0	1.0	-47.2	-13.0	-34.2	
7.52	-64.1	H	3.0	-7.6	38.9	1.0	-45.6	-13.0	-32.6	
		H								
		H								
3.76	-61.2	V	3.0	-10.4	39.8	1.0	-49.2	-13.0	-36.2	
5.64	-61.9	V	3.0	-8.4	40.0	1.0	-47.4	-13.0	-34.4	
7.52	-64.1	V	3.0	-7.9	38.9	1.0	-45.8	-13.0	-32.8	
		V								
		V								
High Channel (1900MHz)										
3.80	-61.3	H	3.0	-10.7	39.8	1.0	-49.5	-13.0	-36.5	
5.70	-62.2	H	3.0	-8.4	40.0	1.0	-47.4	-13.0	-34.4	
7.60	-63.8	H	3.0	-7.2	38.9	1.0	-45.2	-13.0	-32.2	
		H								
		H								
3.80	-61.2	V	3.0	-10.4	39.8	1.0	-49.2	-13.0	-36.2	
5.70	-62.2	V	3.0	-8.6	40.0	1.0	-47.6	-13.0	-34.6	
7.60	-63.8	V	3.0	-7.5	38.9	1.0	-45.4	-13.0	-32.4	
		V								
		V								

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LTE B2 20MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/27/2016
Test Engineer: Brian Kiewra / John Manser
Configuration: Unit with ear-buds and charger (LTE #1)
Mode: LTE Band 2, 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 (1860MHz)										
3.72	-61.1	H	3.0	-10.7	39.8	1.0	-49.4	-13.0	-36.4	
5.58	-61.9	H	3.0	-8.3	40.1	1.0	-47.4	-13.0	-34.4	
7.44	-64.3	H	3.0	-7.9	39.0	1.0	-45.9	-13.0	-32.9	
		H								
		H								
3.72	-61.2	V	3.0	-10.4	39.8	1.0	-49.1	-13.0	-36.1	
5.58	-62.0	V	3.0	-8.5	40.1	1.0	-47.6	-13.0	-34.6	
7.44	-64.3	V	3.0	-8.2	39.0	1.0	-46.1	-13.0	-33.1	
		V								
		V								
Mid Channel (1880MHz)										
3.76	-61.3	H	3.0	-10.9	39.8	1.0	-49.7	-13.0	-36.7	
5.64	-61.8	H	3.0	-8.1	40.0	1.0	-47.2	-13.0	-34.2	
7.52	-64.1	H	3.0	-7.6	38.9	1.0	-45.5	-13.0	-32.5	
		H								
		H								
3.76	-61.3	V	3.0	-10.4	39.8	1.0	-49.2	-13.0	-36.2	
5.64	-61.9	V	3.0	-8.4	40.0	1.0	-47.4	-13.0	-34.4	
7.52	-64.1	V	3.0	-7.9	38.9	1.0	-45.8	-13.0	-32.8	
		V								
		V								
High Channel (1900MHz)										
3.80	-61.3	H	3.0	-10.7	39.8	1.0	-49.5	-13.0	-36.5	
5.70	-62.2	H	3.0	-8.4	40.0	1.0	-47.4	-13.0	-34.4	
7.60	-63.8	H	3.0	-7.2	38.9	1.0	-45.1	-13.0	-32.1	
		H								
		H								
3.80	-61.2	V	3.0	-10.3	39.8	1.0	-49.1	-13.0	-36.1	
5.70	-62.3	V	3.0	-8.7	40.0	1.0	-47.6	-13.0	-34.6	
7.60	-63.9	V	3.0	-7.5	38.9	1.0	-45.5	-13.0	-32.5	
		V								
		V								

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LTE B2 20MHz 16QAM

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LTE Band 4

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/27/2016
Test Engineer: Brian Kiewra / John Manser
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	-74.9	H	3.0	-25.2	39.6	1.0	-63.8	-13.0	-50.8	
5.13	-73.3	H	3.0	-20.5	40.3	1.0	-59.8	-13.0	-46.8	
6.84	-75.1	H	3.0	-19.4	39.2	1.0	-57.6	-13.0	-44.6	
		H								
		H								
3.42	-74.4	V	3.0	-24.0	39.6	1.0	-62.6	-13.0	-49.6	
5.13	-73.2	V	3.0	-20.5	40.3	1.0	-59.8	-13.0	-46.8	
6.84	-75.5	V	3.0	-20.1	39.2	1.0	-58.3	-13.0	-45.3	
		V								
		V								
Mid Channel (1732.5MHz)										
3.47	-74.9	H	3.0	-25.1	39.6	1.0	-63.7	-13.0	-50.7	
5.20	-73.5	H	3.0	-20.5	40.3	1.0	-59.9	-13.0	-46.9	
6.93	-75.2	H	3.0	-19.4	39.1	1.0	-57.5	-13.0	-44.5	
		H								
		H								
3.47	-74.8	V	3.0	-24.3	39.6	1.0	-62.9	-13.0	-49.9	
5.20	-73.5	V	3.0	-20.7	40.3	1.0	-60.0	-13.0	-47.0	
6.93	-75.1	V	3.0	-19.6	39.1	1.0	-57.7	-13.0	-44.7	
		V								
		V								
High Channel (1754.3MHz)										
3.51	-75.0	H	3.0	-25.1	39.6	1.0	-63.8	-13.0	-50.8	
5.26	-74.2	H	3.0	-21.1	40.3	1.0	-60.4	-13.0	-47.4	
7.02	-75.1	H	3.0	-19.1	39.1	1.0	-57.2	-13.0	-44.2	
		H								
		H								
3.51	-74.9	V	3.0	-24.3	39.6	1.0	-63.0	-13.0	-50.0	
5.26	-74.1	V	3.0	-21.2	40.3	1.0	-60.5	-13.0	-47.5	
7.02	-75.1	V	3.0	-19.4	39.1	1.0	-57.5	-13.0	-44.5	
		V								
		V								

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LTE B4 1.4MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/27/2016
Test Engineer: Brian Kiewra / John Manser
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	-74.8	H	3.0	-25.2	39.6	1.0	-63.7	-13.0	-50.7	
5.13	-73.3	H	3.0	-20.5	40.3	1.0	-59.8	-13.0	-46.8	
6.84	-75.1	H	3.0	-19.4	39.2	1.0	-57.6	-13.0	-44.6	
		H								
		H								
3.42	-74.3	V	3.0	-23.9	39.6	1.0	-62.4	-13.0	-49.4	
5.13	-73.2	V	3.0	-20.5	40.3	1.0	-59.8	-13.0	-46.8	
6.84	-75.5	V	3.0	-20.1	39.2	1.0	-58.3	-13.0	-45.3	
		V								
		V								
Mid Channel (1732.5MHz)										
3.47	-74.9	H	3.0	-25.1	39.6	1.0	-63.7	-13.0	-50.7	
5.20	-73.5	H	3.0	-20.6	40.3	1.0	-59.9	-13.0	-46.9	
6.93	-75.2	H	3.0	-19.3	39.1	1.0	-57.4	-13.0	-44.4	
		H								
		H								
3.47	-74.8	V	3.0	-24.4	39.6	1.0	-63.0	-13.0	-50.0	
5.20	-73.5	V	3.0	-20.7	40.3	1.0	-60.0	-13.0	-47.0	
6.93	-75.1	V	3.0	-19.6	39.1	1.0	-57.7	-13.0	-44.7	
		V								
		V								
High Channel (1754.3MHz)										
3.51	-74.9	H	3.0	-25.1	39.6	1.0	-63.7	-13.0	-50.7	
5.26	-74.1	H	3.0	-21.0	40.3	1.0	-60.3	-13.0	-47.3	
7.02	-75.2	H	3.0	-19.2	39.1	1.0	-57.3	-13.0	-44.3	
		H								
		H								
3.51	-74.9	V	3.0	-24.4	39.6	1.0	-63.0	-13.0	-50.0	
5.26	-74.2	V	3.0	-21.3	40.3	1.0	-60.6	-13.0	-47.6	
7.02	-75.1	V	3.0	-19.4	39.1	1.0	-57.5	-13.0	-44.5	
		V								
		V								

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LTE B4 1.4MHz 16QAM

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/27/2016
Test Engineer: Brian Kiewra / John Manser
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	-71.5	H	3.0	-21.9	39.6	1.0	-60.4	-13.0	-47.4	
5.13	-70.1	H	3.0	-17.3	40.3	1.0	-56.6	-13.0	-43.6	
6.85	-71.8	H	3.0	-16.1	39.2	1.0	-54.3	-13.0	-41.3	
		H								
		H								
3.42	-71.6	V	3.0	-21.2	39.6	1.0	-59.8	-13.0	-46.8	
5.13	-70.1	V	3.0	-17.4	40.3	1.0	-56.7	-13.0	-43.7	
6.85	-71.8	V	3.0	-16.4	39.2	1.0	-54.6	-13.0	-41.6	
		V								
		V								
Mid Channel (1732.5MHz)										
3.47	-71.4	H	3.0	-21.7	39.6	1.0	-60.3	-13.0	-47.3	
5.20	-70.2	H	3.0	-17.2	40.3	1.0	-56.6	-13.0	-43.6	
6.93	-71.8	H	3.0	-16.0	39.1	1.0	-54.1	-13.0	-41.1	
		H								
		H								
3.47	-71.3	V	3.0	-20.9	39.6	1.0	-59.5	-13.0	-46.5	
5.20	-70.2	V	3.0	-17.4	40.3	1.0	-56.7	-13.0	-43.7	
6.93	-71.8	V	3.0	-16.3	39.1	1.0	-54.5	-13.0	-41.5	
		V								
		V								
High Channel (1753.5MHz)										
3.51	-71.7	H	3.0	-21.8	39.6	1.0	-60.4	-13.0	-47.4	
5.26	-70.9	H	3.0	-17.8	40.3	1.0	-57.1	-13.0	-44.1	
7.01	-71.9	H	3.0	-15.9	39.1	1.0	-54.0	-13.0	-41.0	
		H								
		H								
3.51	-71.5	V	3.0	-21.0	39.6	1.0	-59.6	-13.0	-46.6	
5.26	-70.7	V	3.0	-17.8	40.3	1.0	-57.1	-13.0	-44.1	
7.01	-71.8	V	3.0	-16.2	39.1	1.0	-54.2	-13.0	-41.2	
		V								
		V								

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LTE B4 3MHz QPSK

High Frequency Substitution Measurement
UL RTP Radiated Chamber

Company: SOMC
Project #: 16J23633
Date: 07/27/2016
Test Engineer: Brian Kiewra / John Manser
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	-71.6	H	3.0	-21.9	39.6	1.0	-60.5	-13.0	-47.5	
5.13	-70.0	H	3.0	-17.2	40.3	1.0	-56.5	-13.0	-43.5	
6.85	-71.8	H	3.0	-16.2	39.2	1.0	-54.3	-13.0	-41.3	
		H								
		H								
3.42	-71.7	V	3.0	-21.3	39.6	1.0	-59.9	-13.0	-46.9	
5.13	-70.1	V	3.0	-17.4	40.3	1.0	-56.7	-13.0	-43.7	
6.85	-71.9	V	3.0	-16.6	39.2	1.0	-54.7	-13.0	-41.7	
		V								
		V								
Mid Channel (1732.5MHz)										
3.47	-71.5	H	3.0	-21.7	39.6	1.0	-60.3	-13.0	-47.3	
5.20	-70.2	H	3.0	-17.2	40.3	1.0	-56.6	-13.0	-43.6	
6.93	-71.8	H	3.0	-16.0	39.1	1.0	-54.1	-13.0	-41.1	
		H								
		H								
3.47	-71.4	V	3.0	-21.0	39.6	1.0	-59.6	-13.0	-46.6	
5.20	-70.2	V	3.0	-17.4	40.3	1.0	-56.7	-13.0	-43.7	
6.93	-71.9	V	3.0	-16.4	39.1	1.0	-54.5	-13.0	-41.5	
		V								
		V								
High Channel (1753.5MHz)										
3.51	-71.7	H	3.0	-21.8	39.6	1.0	-60.4	-13.0	-47.4	
5.26	-70.8	H	3.0	-17.8	40.3	1.0	-57.1	-13.0	-44.1	
7.01	-71.8	H	3.0	-15.9	39.1	1.0	-53.9	-13.0	-40.9	
		H								
		H								
3.51	-71.5	V	3.0	-21.0	39.6	1.0	-59.6	-13.0	-46.6	
5.26	-70.8	V	3.0	-17.9	40.3	1.0	-57.2	-13.0	-44.2	
7.01	-71.8	V	3.0	-16.2	39.1	1.0	-54.3	-13.0	-41.3	
		V								
		V								

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LTE B4 3MHz 16QAM

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