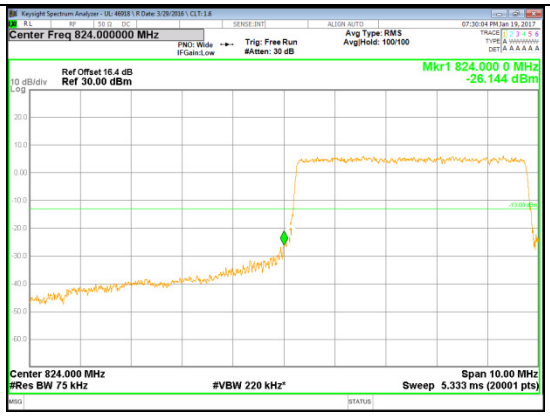
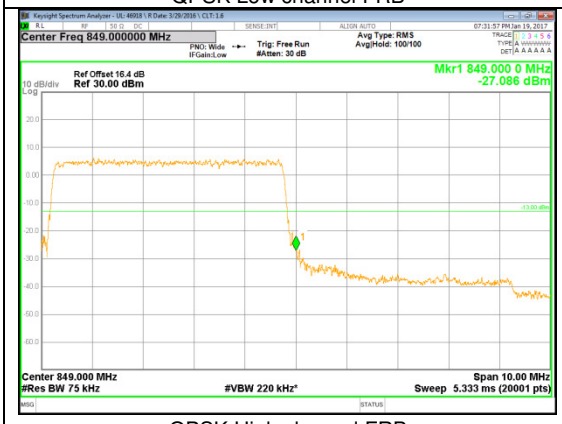
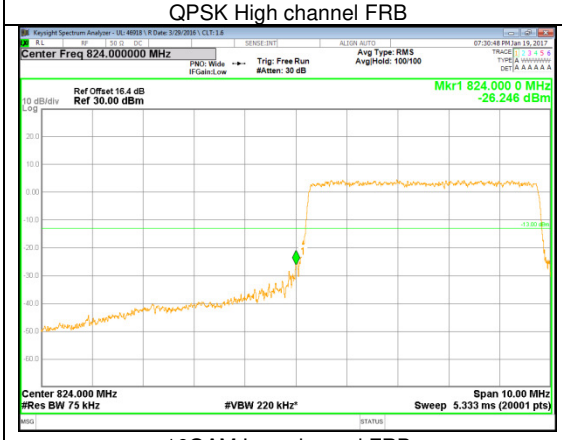
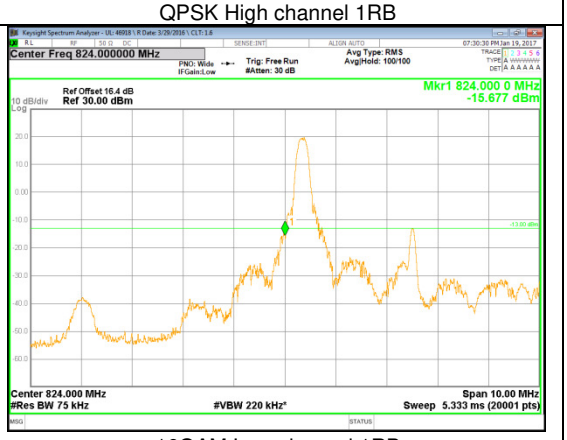
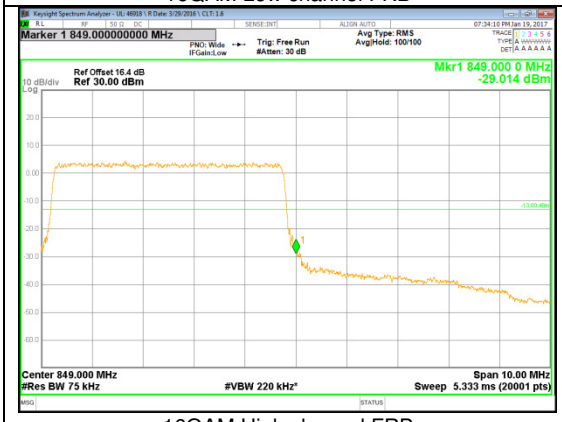
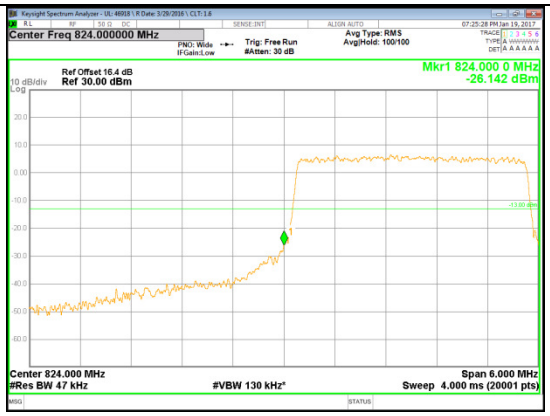
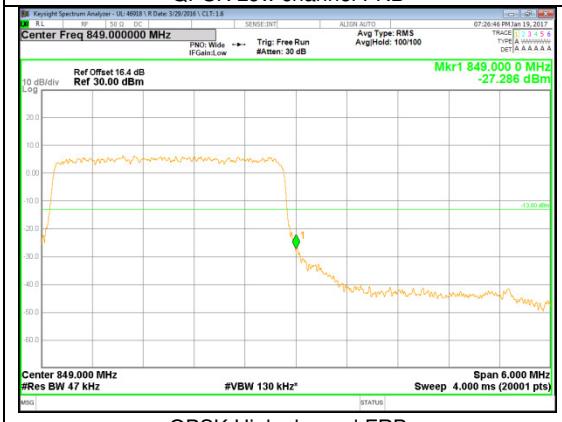
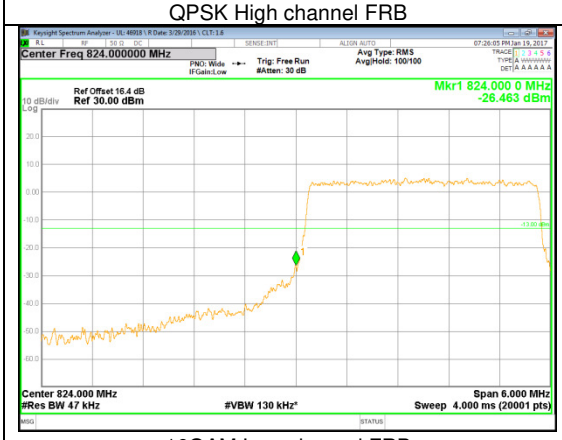
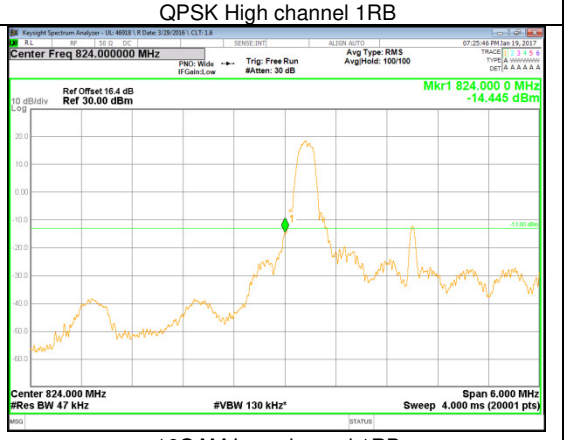
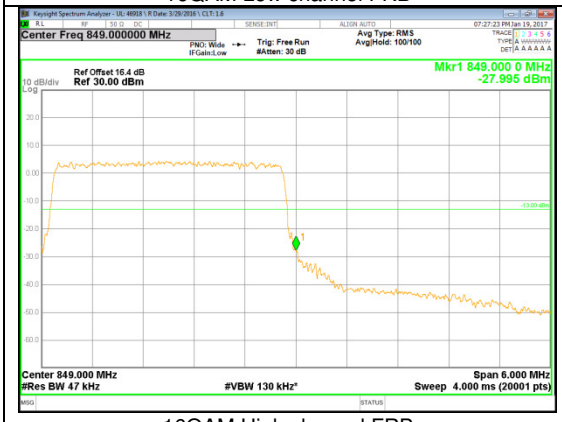
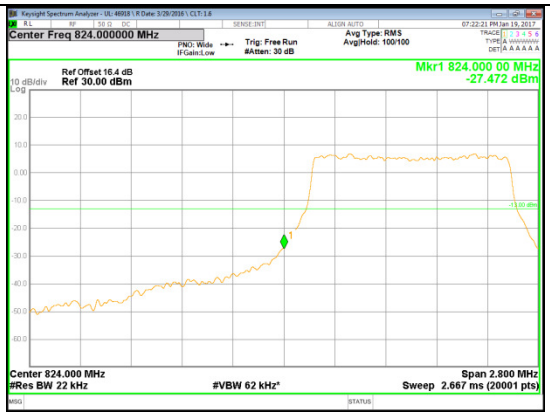
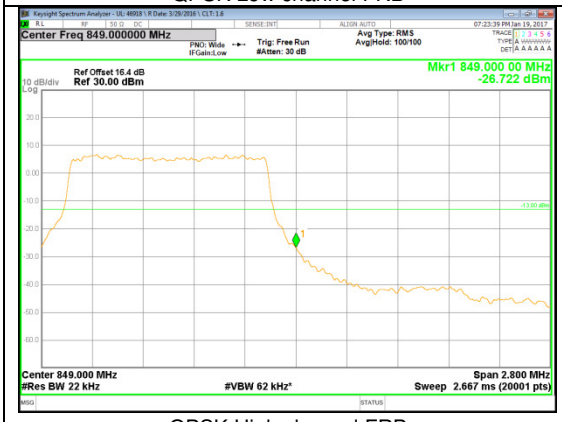
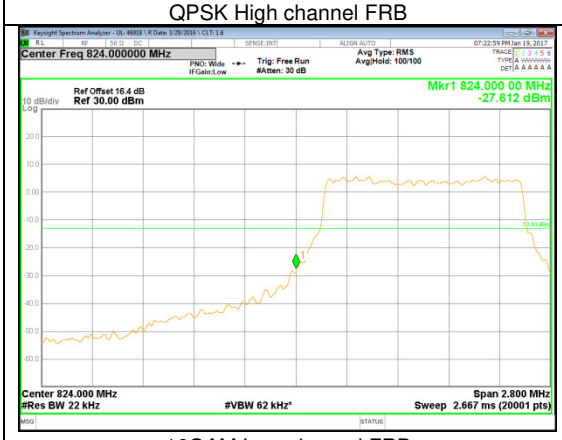
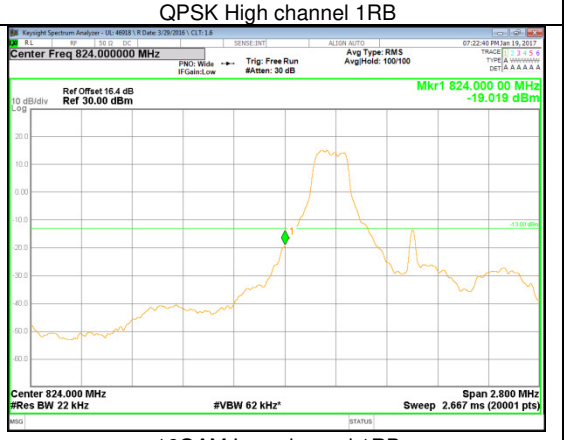
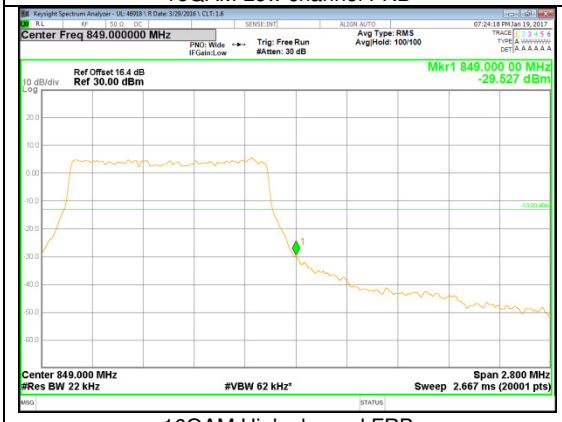
Band 5 5MHz	 QPSK Low channel FRB	 QPSK Low channel 1RB
	 QPSK High channel FRB	 QPSK High channel 1RB
	 16QAM Low channel FRB	 16QAM Low channel 1RB
	 16QAM High channel FRB	 16QAM High channel 1RB

Band 5 3MHz	 QPSK Low channel FRB	 QPSK Low channel 1RB
	 QPSK High channel FRB	 QPSK High channel 1RB
	 16QAM Low channel FRB	 16QAM Low channel 1RB
	 16QAM High channel FRB	 16QAM High channel 1RB

Band 5 1.4MHz	 QPSK Low channel FRB	 QPSK Low channel 1RB
	 QPSK High channel FRB	 QPSK High channel 1RB
	 16QAM Low channel FRB	 16QAM Low channel 1RB
	 16QAM High channel FRB	 16QAM High channel 1RB

10.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 and §27. 53

LIMITS

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

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

a) Set the RBW = 100KHz for emission below 1GHz and 1MHz for emissions above 1GHz (Tests were performed 1MHz [Worst case], to sweep 1 time for all frequency range)

b) Set VBW ≥ 3 × RBW;

c) Set span ≥ 1.5 times the OBW;

d) Sweep time = auto couple;

e) Detector = peak;

f) Ensure that the number of measurement points = Max (40001);

g) Trace mode = max hold;

RESULTS

10.3.1. OUT OF BAND EMISSIONS RESULT

WCDMA

Band	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
Band 5	REL99	826.4	-32.75	-13.00
		836.6	-32.70	
		846.6	-31.88	
	HSDPA	826.4	-33.10	
		836.6	-32.92	
		846.6	-33.38	
Band 2	REL99	1852.4	-32.00	
		1880.0	-31.77	
		1907.6	-32.21	
	HSDPA	1852.4	-32.07	
		1880.0	-32.72	
		1907.6	-32.59	

LTE 17

Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
10 MHz	QPSK	709.0	-27.14	-13.00
		710.0	-26.49	
		711.0	-26.38	
	16QAM	709.0	-26.86	
		710.0	-26.95	
		711.0	-27.20	
5 MHz	QPSK	706.5	-26.07	
		710.0	-26.14	
		713.5	-27.11	
	16QAM	706.5	-27.31	
		710.0	-26.83	
		713.5	-26.62	

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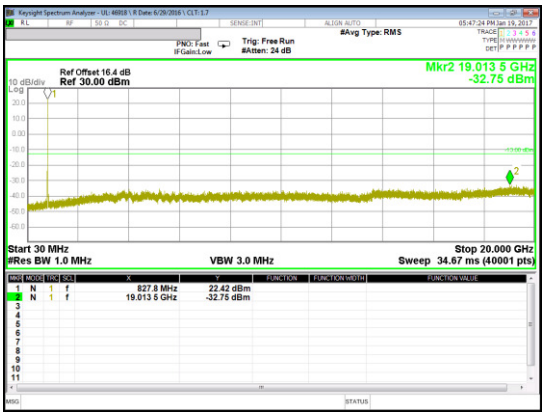
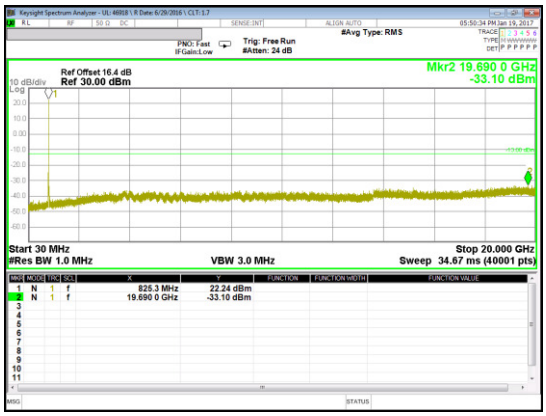
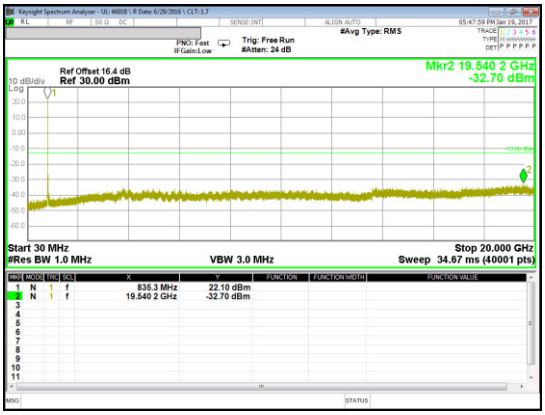
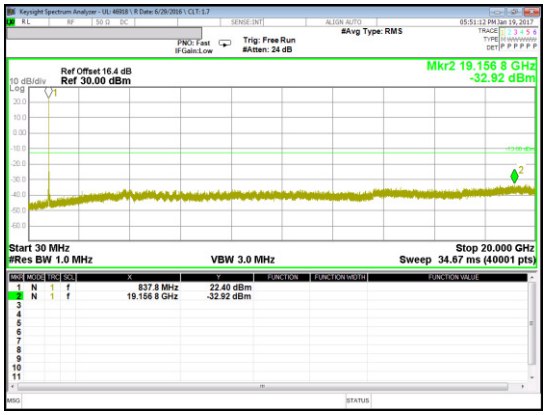
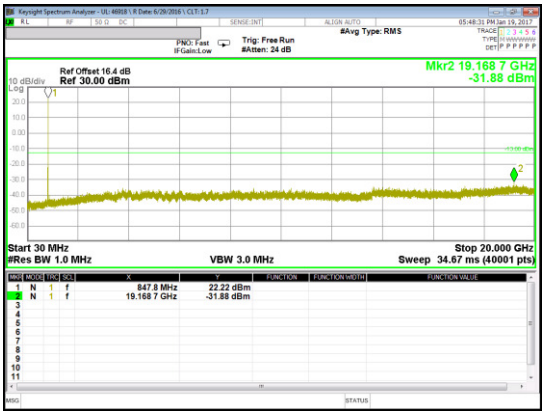
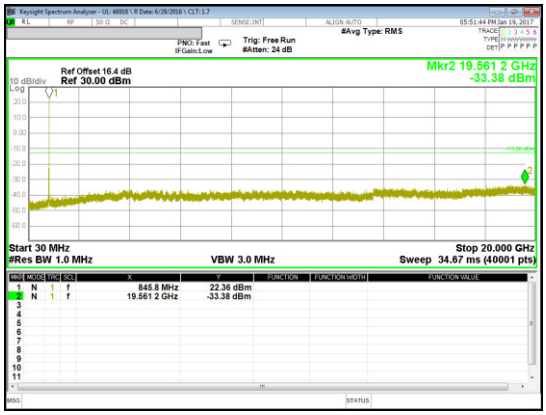
LTE 5

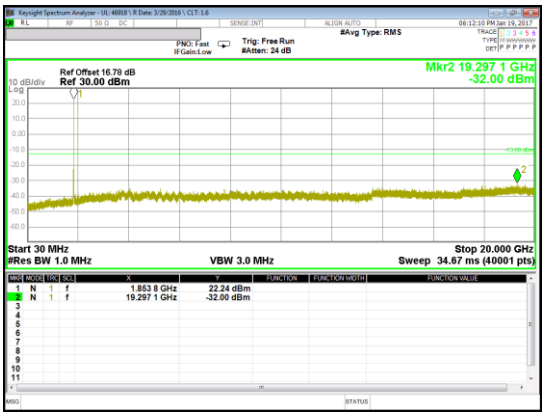
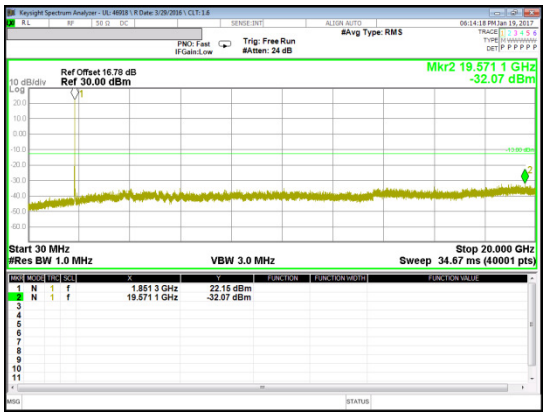
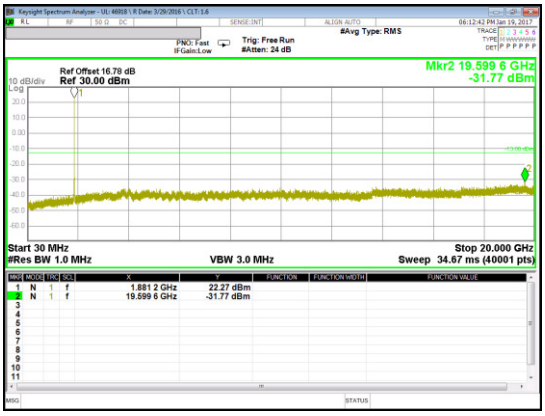
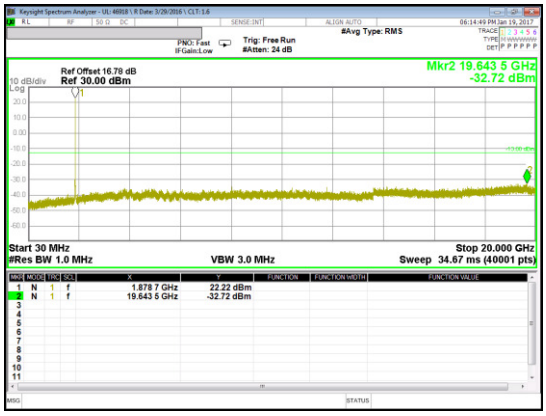
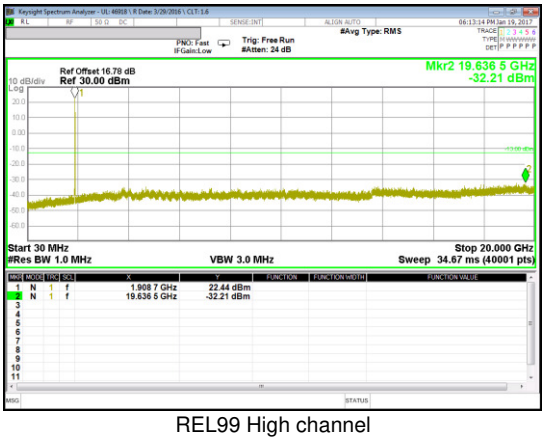
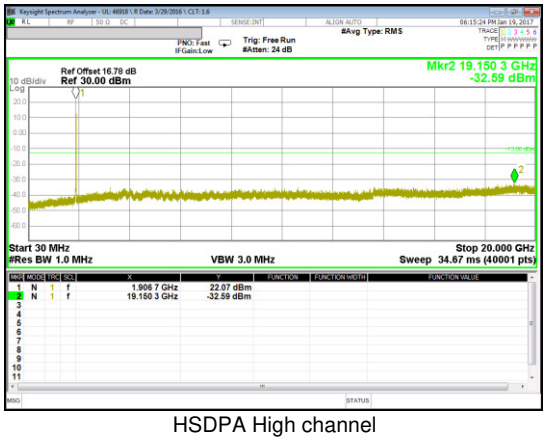
Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
10 MHz	QPSK	829.0	-27.70	-13.00
		836.5	-26.90	
		844.0	-27.34	
	16QAM	829.0	-26.83	
		836.5	-28.00	
		844.0	-26.16	
5 MHz	QPSK	826.5	-26.17	
		836.5	-27.24	
		846.5	-25.63	
	16QAM	826.5	-26.82	
		836.5	-27.04	
		846.5	-27.19	
3 MHz	QPSK	825.5	-26.32	
		836.5	-27.07	
		847.5	-26.09	
	16QAM	825.5	-27.30	
		836.5	-27.22	
		847.5	-26.25	
1.4 MHz	QPSK	824.7	-28.43	
		836.5	-28.11	
		848.3	-26.31	
	16QAM	824.7	-26.14	
		836.5	-26.92	
		848.3	-27.06	

10.3.2. OUT OF BAND EMISSIONS PLOTS

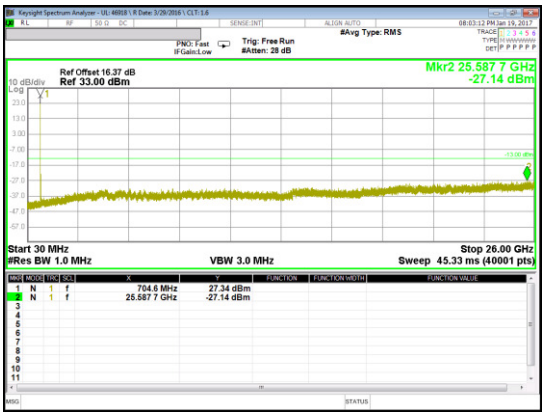
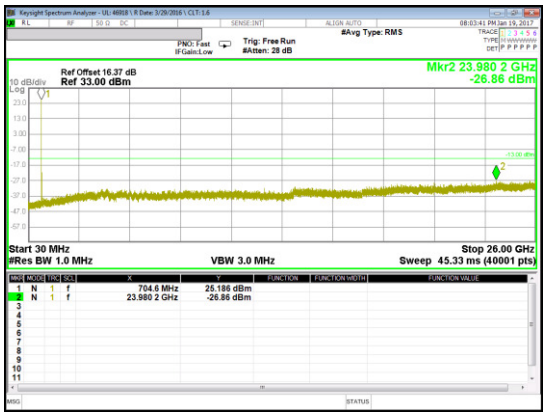
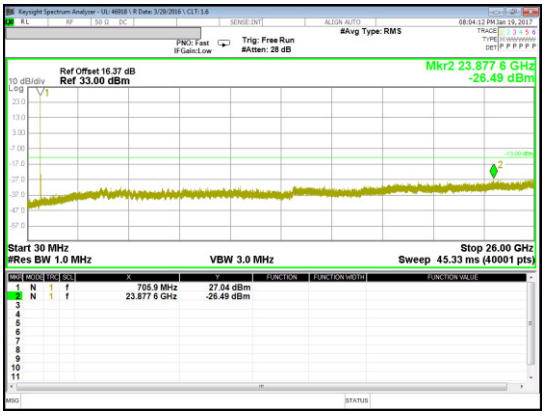
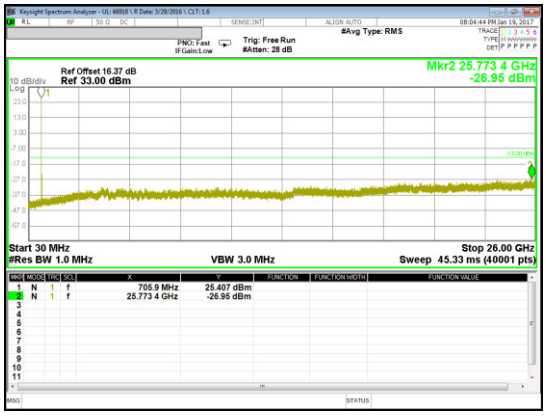
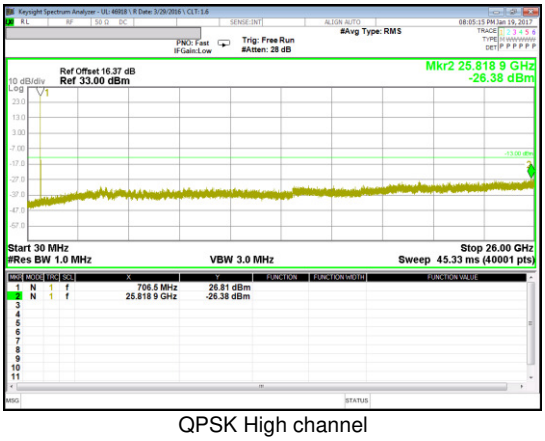
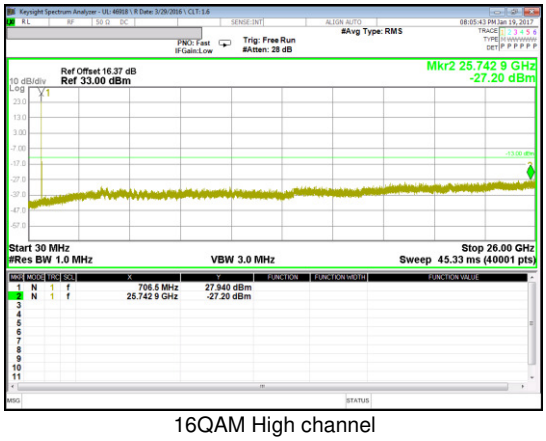
WCDMA Band 5

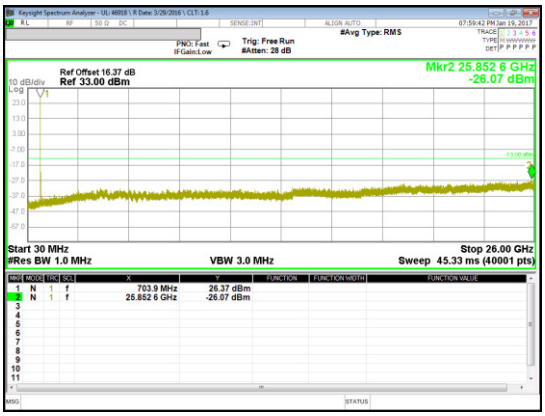
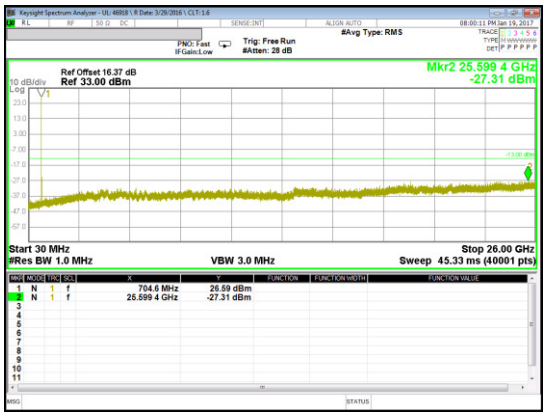
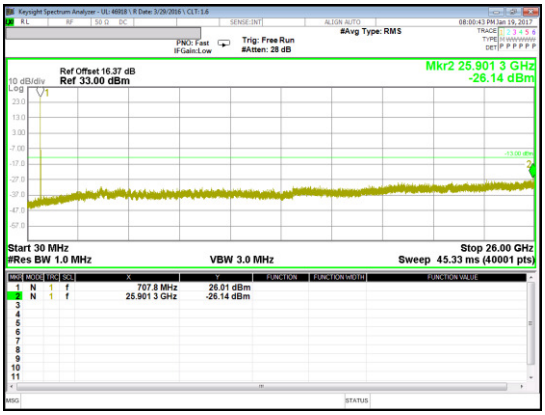
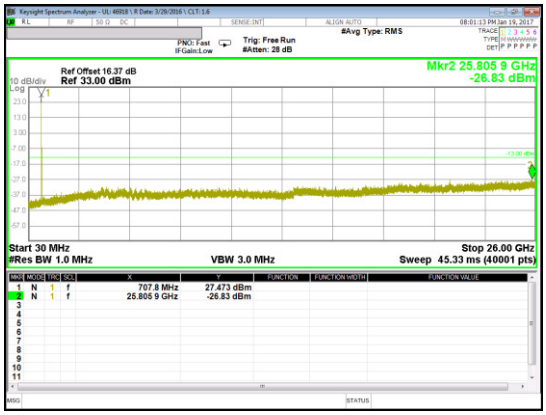
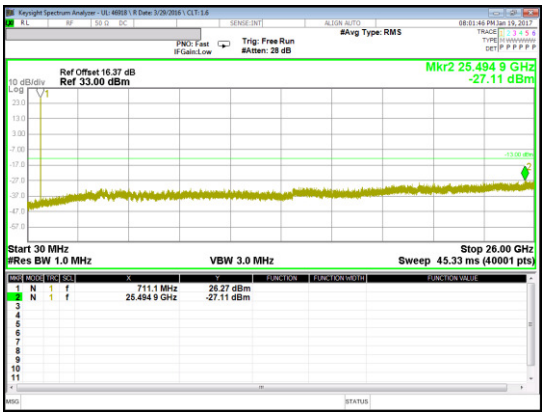
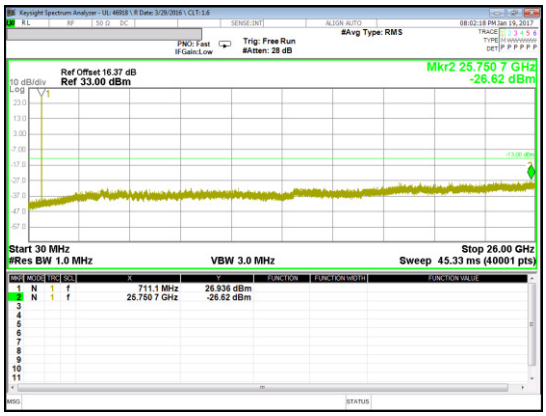
Band 5	 REL99 Low channel	 HSDPA Low channel
	 REL99 Mid channel	 HSDPA Mid channel
	 REL99 High channel	 HSDPA High channel

WCDMA Band 2

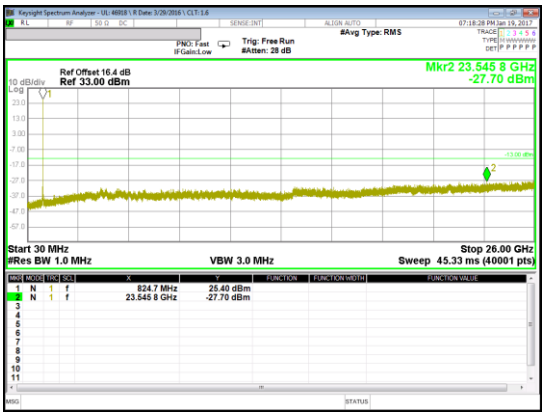
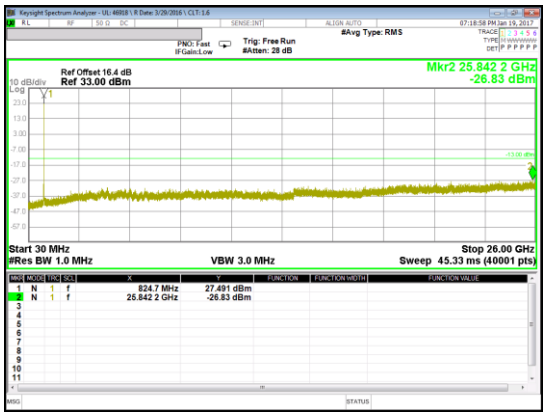
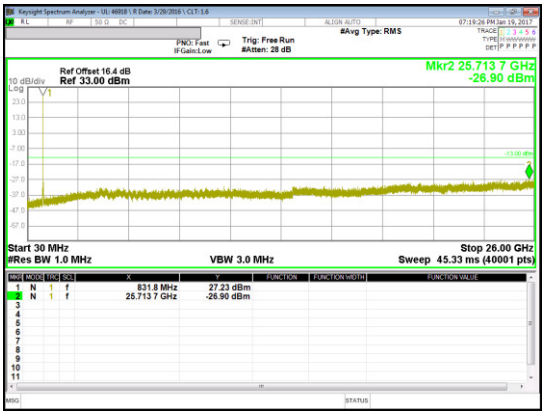
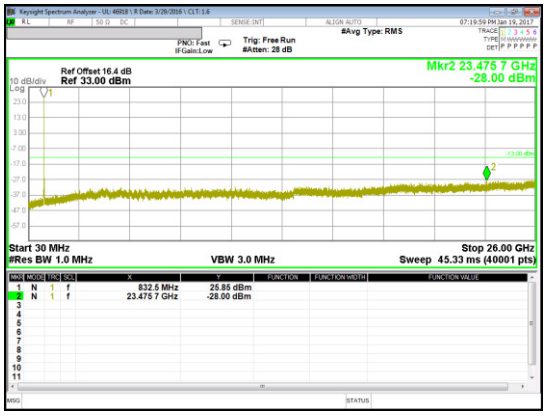
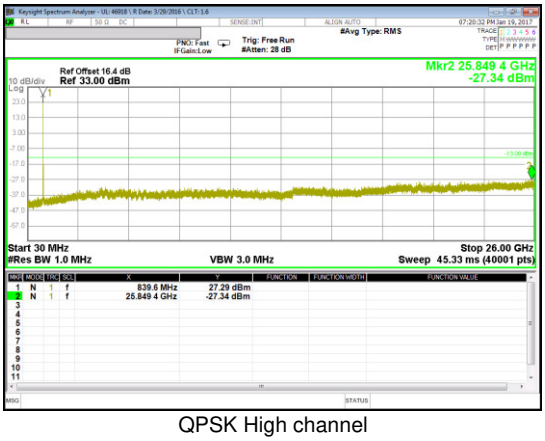
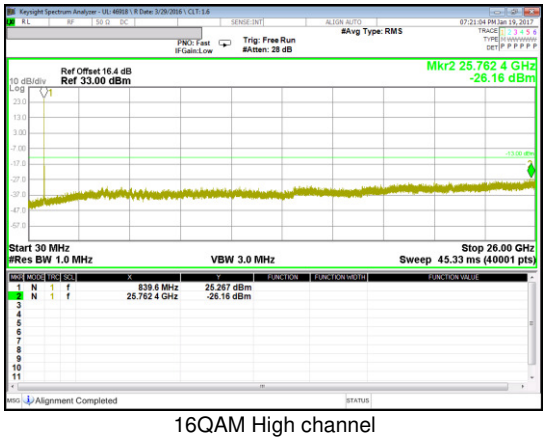
Band 2	 REL99 Low channel	 HSDPA Low channel
	 REL99 Mid channel	 HSDPA Mid channel
	 REL99 High channel	 HSDPA High channel

LTE Band 17

Band 17 10MHz	 QPSK Low channel	 16QAM Low channel
	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

	 QPSK Low channel	 16QAM Low channel
Band 17 5MHz	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

LTE Band 5

Band 5 10MHz	 QPSK Low channel	 16QAM Low channel
	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

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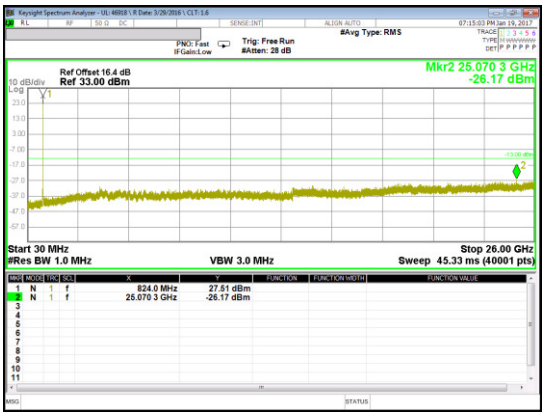
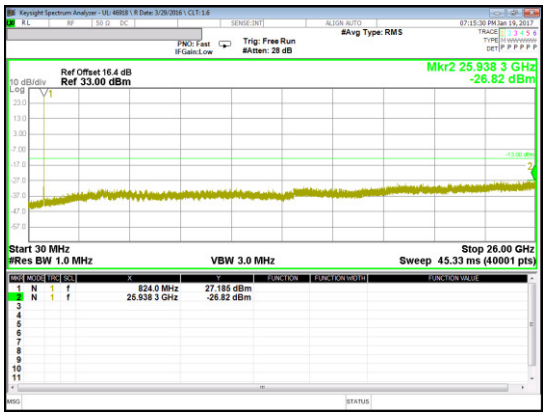
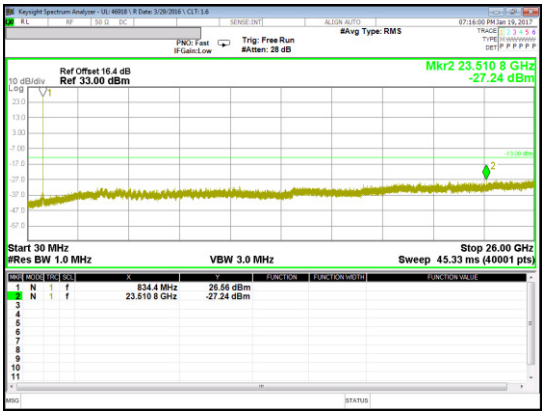
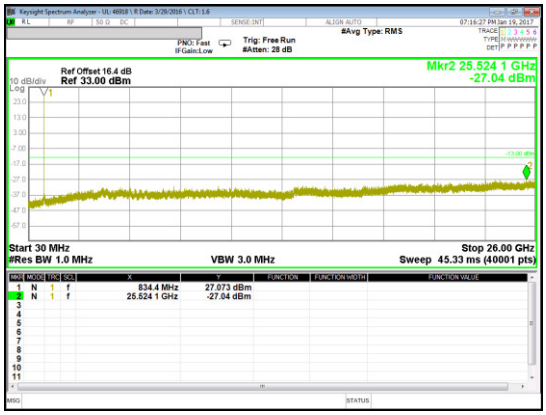
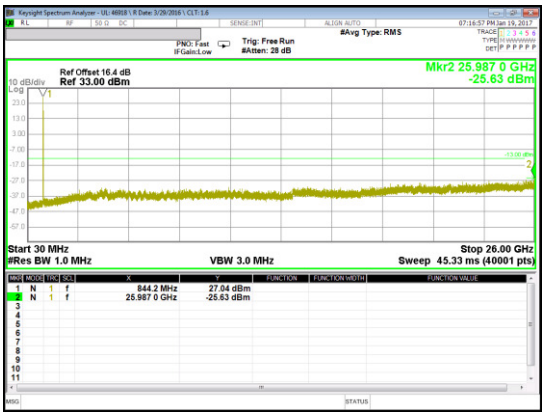
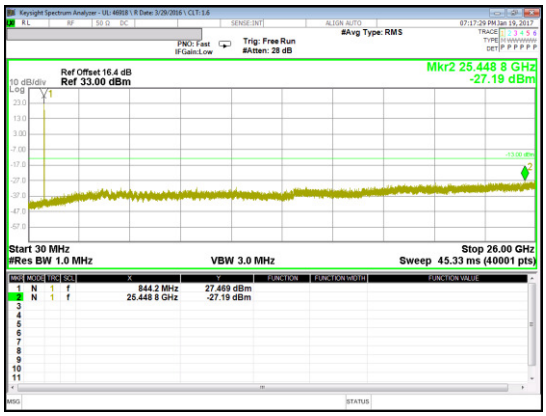
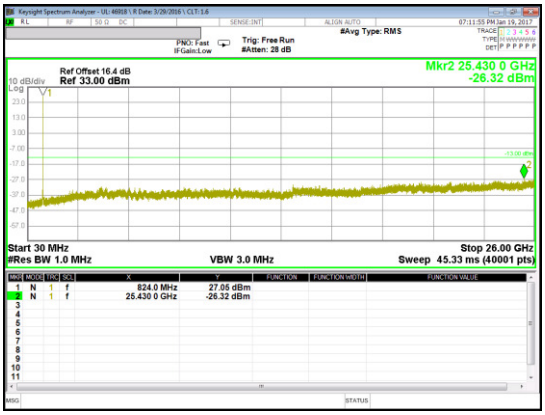
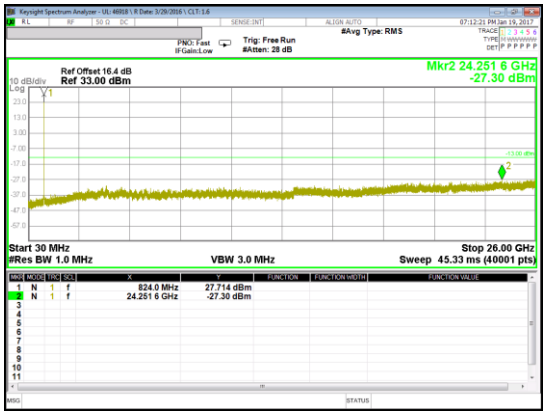
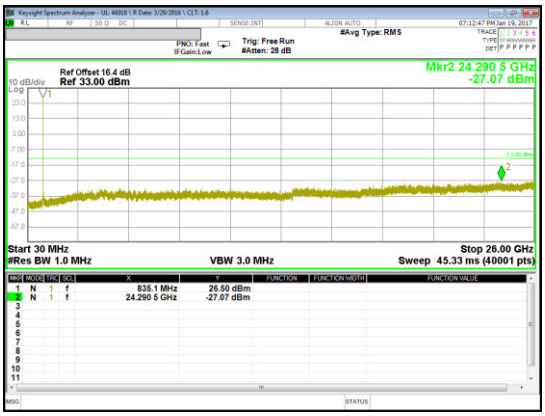
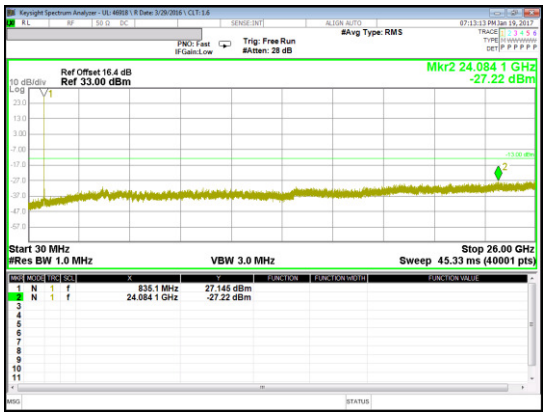
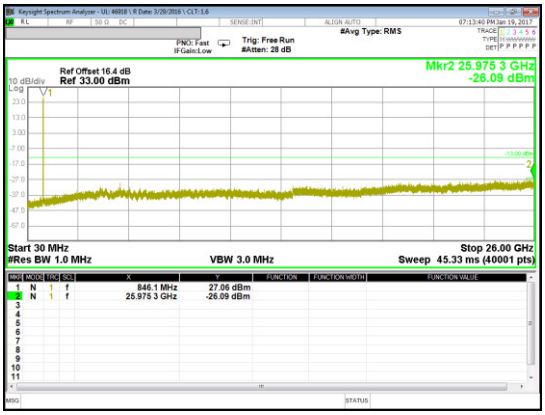
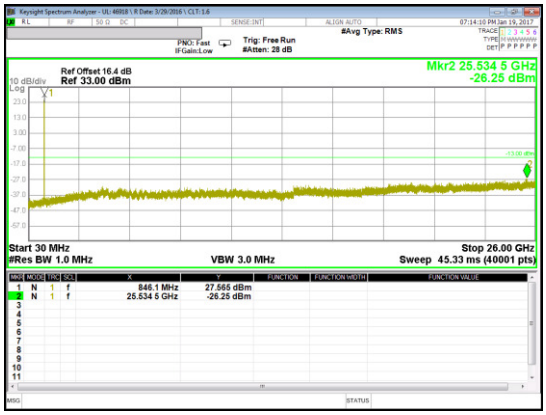
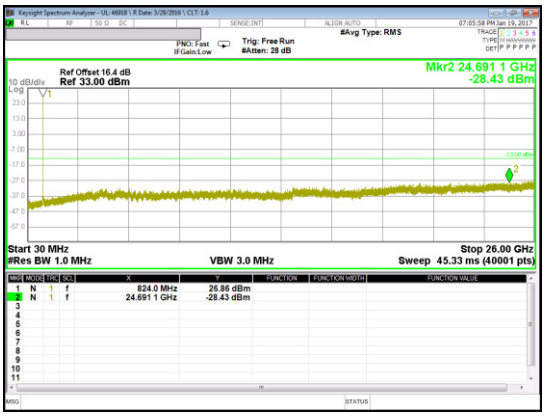
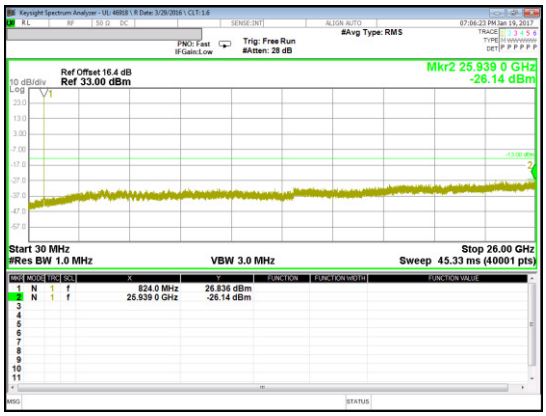
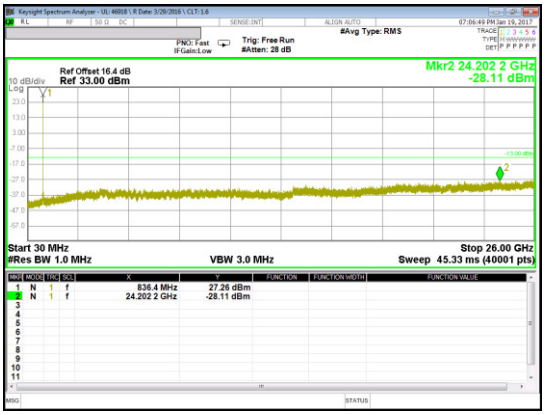
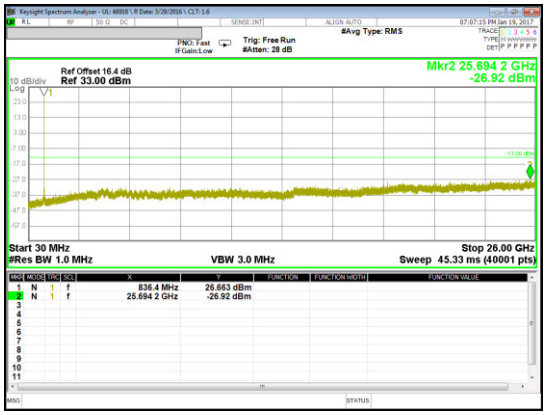
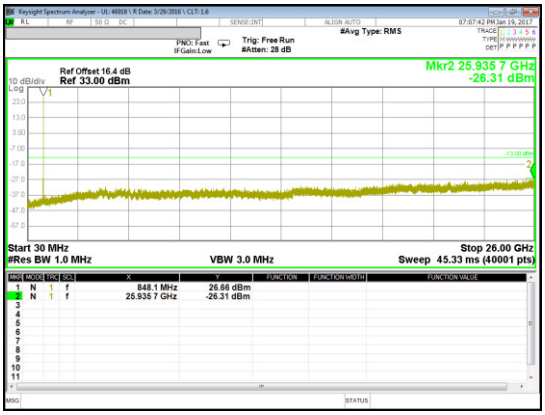
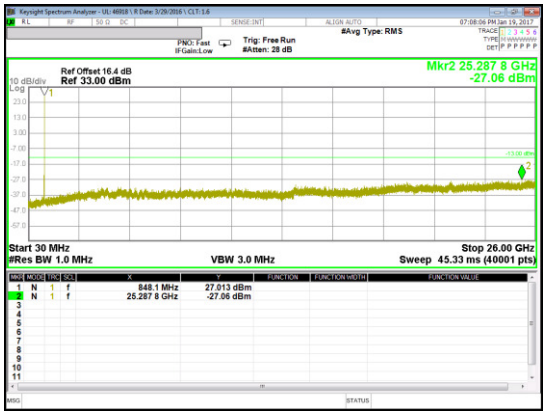
	 QPSK Low channel	 16QAM Low channel
Band 5 5MHz	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

Band 5 3MHz	 QPSK Low channel	 16QAM Low channel
	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

	 QPSK Low channel	 16QAM Low channel
Band 5 1.4MHz	 QPSK Mid channel	 16QAM Mid channel
	 QPSK High channel	 16QAM High channel

10.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235 and §27.54

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

RESULTS

See the following pages.

10.4.1. FREQUENCY STABILITY RESULTS

LTE Band 17, Channel 23790, Frequency 710.0 MHz

Reference Frequency: LTE Band 17 Mid Channel 710 MHz @ 20ºC Limit: +- 2.5 ppm = 1775.000 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
[Vdc]	**Temperature [*C]**	**[MHz]**	**Delta [ppm]**	**Limit [ppm]**
7.70	50	710.00000840	-0.002	2.5
7.70	40	710.00000705	0.000	2.5
7.70	30	710.00000689	0.001	2.5
7.70	***20***	710.00000725	***0***	***2.5***
7.70	10	710.00000770	-0.001	2.5
7.70	0	710.00000838	-0.002	2.5
7.70	-10	710.00000862	-0.002	2.5
7.70	-20	710.00000931	-0.003	2.5
7.70	-30	710.00000971	-0.003	2.5

Reference Frequency: LTE Band 17 Mid Channel 710 MHz @ 20ºC Limit: +- 2.5 ppm = 1775.000 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
[Vdc]	**Temperature [*C]**	**[MHz]**	**Delta [ppm]**	**Limit [ppm]**
7.70	***20***	**710.00000725**	***0***	***2.5***
8.80	20	710.00000768	-0.001	2.5
7.35	20	710.00000883	-0.002	2.5

LTE Band 5, Channel 20524, Frequency 836.5 MHz

Reference Frequency: LTE Band 5 Mid Channel 836.5 MHz @ 20ºC Limit: +- 2.5 ppm = 2091.250 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
[Vdc]	**Temperature [*C]**	**[MHz]**	**Delta [ppm]**	**Limit [ppm]**
7.70	50	836.49998811	0.001	2.5
7.70	40	836.49998773	0.002	2.5
7.70	30	836.49999060	-0.001	2.5
7.70	***20***	836.49998936	***0***	***2.5***
7.70	10	836.49999177	-0.003	2.5
7.70	0	836.49999063	-0.002	2.5
7.70	-10	836.49998992	-0.001	2.5
7.70	-20	836.49998955	0.000	2.5
7.70	-30	836.49999039	-0.001	2.5

Reference Frequency: LTE Band 5 Mid Channel 836.5 MHz @ 20ºC Limit: +- 2.5 ppm = 2091.250 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
[Vdc]	**Temperature [*C]**	**[MHz]**	**Delta [ppm]**	**Limit [ppm]**
7.70	***20***	**836.49998936**	***0***	***2.5***
8.80	20	836.49999085	-0.002	2.5
7.35	20	836.49998932	0.000	2.5

WCDMA Band 5, Channel 4183, Frequency 836.6 MHz

Reference Frequency: WCDMA Band 5 Mid Channel 836.6 MHz @ 20ºC Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse		
[Vdc]	Temperature [*C]	[MHz]	Delta [ppm]	Limit [ppm]
7.70	50	836.59999175	0.000	2.5
7.70	40	836.59999213	0.000	2.5
7.70	30	836.59999297	-0.001	2.5
7.70	***20***	836.59999203	***0***	***2.5***
7.70	10	836.59999126	0.001	2.5
7.70	0	836.59999174	0.000	2.5
7.70	-10	836.59998952	0.003	2.5
7.70	-20	836.59999090	0.001	2.5
7.70	-30	836.59999023	0.002	2.5

Reference Frequency: WCDMA Band 5 Mid Channel 836.6 MHz @ 20ºC Limit: +- 2.5 ppm = 2091.500 Hz				
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse		
[Vdc]	Temperature [*C]	[MHz]	Delta [ppm]	Limit [ppm]
7.70	***20***	**836.59999203**	***0***	***2.5***
8.80	20	836.59999218	0.000	2.5
7.35	20	836.59999141	0.001	2.5

WCDMA Band 2, Channel 9400, Frequency 1880.0 MHz

Reference Frequency: WCDMA Band 2 Mid Channel 1880.0 MHz @ 20ºC Limit: +- 2.5 ppm = 4700.000 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
[Vdc]	**Temperature [*C]**	**[MHz]**	**Delta [ppm]**	**Limit [ppm]**
7.70	50	1879.99998571	0.000	2.5
7.70	40	1879.99998414	0.000	2.5
7.70	30	1879.99998450	0.000	2.5
7.70	***20***	1879.99998499	***0***	***2.5***
7.70	10	1879.99998314	0.001	2.5
7.70	0	1879.99998401	0.001	2.5
7.70	-10	1879.99998171	0.002	2.5
7.70	-20	1879.99997941	0.003	2.5
7.70	-30	1879.99997866	0.003	2.5

Reference Frequency: WCDMA Band 2 Mid Channel 1880.0 MHz @ 20ºC Limit: +- 2.5 ppm = 4700.000 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
[Vdc]	**Temperature [*C]**	**[MHz]**	**Delta [ppm]**	**Limit [ppm]**
7.70	***20***	**1879.99998499**	***0***	***2.5***
8.80	20	1879.99998318	0.001	2.5
7.35	20	1879.99998424	0.000	2.5

11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232 and §27.50

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50(c) (10) - Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

TEST PROCEDURE

ANSI / TIA / EIA 603D Clause 2.2.17; ESU40 setting reference to 971168 D01 v02r02

For peak power measurement with a ESU40:

a) Set the RBW ≥ OBW; b) Set VBW ≥ 3 × RBW; c) Set span ≥ 2 x RBW; d) Sweep time = auto couple; e) Detector = peak; f) Ensure that the number of measurement points ≥ span/RBW; g) Trace mode = max hold;

For average power measurement with a ESU40:

a) Set span to at least 1.5 times the OBW; b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz; c) Set VBW ≥ 3 x RBW; d) Set number of points in sweep ≥ 2 × span / RBW; e) Sweep time = auto-couple; f) Detector = RMS (power averaging); g) Use free run trigger If burst duty cycle ≥ 98; h) Use trigger to capture bursts If burst duty cycle < 98; i) Trace average at least 100 traces in power averaging (*i.e.*, RMS) mode. j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

TEST RESULTS

11.1.1. ERP/EIRP Results

WCDMA

Band	Mode	Channel	f [MHz]	ERP / EIRP	
				[dBm]	[mW]
Band 5	REL99	4132	826.4	20.45	110.92
		4183	836.6	19.97	99.31
		4233	846.6	18.98	79.07
	HSDPA	4132	826.4	20.47	111.43
		4183	836.6	19.86	96.83
		4233	846.6	18.80	75.86
Band 2	REL99	9262	1852.4	24.13	258.82
		9400	1880.0	24.44	277.97
		9538	1907.6	23.58	228.03
	HSDPA	9262	1852.4	23.40	218.78
		9400	1880.0	24.19	262.42
		9538	1907.6	23.37	217.27

WCDMA equipped with keyboard

Band	Mode	Channel	f [MHz]	ERP / EIRP	
				[dBm]	[mW]
Band 5	HSDPA	4132	826.4	18.33	68.08
		4183	836.6	18.33	68.08
		4233	846.6	17.94	62.23
Band 2	REL99	9262	1852.4	23.16	207.01
		9400	1880.0	22.71	186.64
		9538	1907.6	20.95	124.45

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do,16675 , Korea TEL: (031) 337-9902 FAX: (031) 213-5433

LTE Band 17

Band	BW [MHz]	Mode	RB/RB Size	f [MHz]	ERP / EIRP	
			Full RB		[dBm]	[mW]
Band 17	10	QPSK	50/0	709.0	14.00	25.12
			50/0	710.0	13.78	23.88
			50/0	711.0	13.97	24.95
		16QAM	50/0	709.0	13.01	20.00
			50/0	710.0	12.79	19.01
			50/0	711.0	12.94	19.68
	5	QPSK	25/0	706.5	12.73	18.75
			25/0	710.0	13.38	21.78
			25/0	713.5	13.52	22.49
		16QAM	25/0	706.5	11.73	14.89
			25/0	710.0	12.40	17.38
			25/0	713.5	12.55	17.99

LTE Band 17 equipped with keyboard

Band	BW [MHz]	Mode	RB/RB Size	f [MHz]	ERP / EIRP	
			Full RB		[dBm]	[mW]
Band 17	10	QPSK	50/0	709.0	12.25	16.79
			50/0	710.0	11.98	15.78
			50/0	711.0	12.38	17.30

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LTE Band 5

Band	BW [MHz]	Mode	RB/RB Size	f [MHz]	ERP / EIRP	
			Full RB		[dBm]	[mW]
Band 5	10	QPSK	50/0	829.0	19.26	84.33
			50/0	836.5	19.41	87.30
			50/0	844.0	18.69	73.96
		16QAM	50/0	829.0	17.77	59.84
			50/0	836.5	17.82	60.53
			50/0	844.0	17.12	51.52
	5	QPSK	25/0	826.5	19.66	92.47
			25/0	836.5	19.35	86.10
			25/0	846.5	17.57	57.15
		16QAM	25/0	826.5	18.19	65.92
			25/0	836.5	17.83	60.67
			25/0	846.5	16.47	44.36
	3	QPSK	15/0	825.5	19.71	93.54
			15/0	836.5	18.95	78.52
			15/0	847.5	17.77	59.84
		16QAM	15/0	825.5	18.18	65.77
			15/0	836.5	17.40	54.95
			15/0	847.5	16.68	46.56
	1.4	QPSK	6/0	824.7	16.97	49.77
			6/0	836.5	17.36	54.45
			6/0	848.3	15.54	35.81
		16QAM	6/0	824.7	15.45	35.08
			6/0	836.5	15.89	38.82
			6/0	848.3	14.36	27.29

LTE Band 5 equipped with keyboard

Band	BW [MHz]	Mode	RB/RB Size	f [MHz]	ERP / EIRP	
			Full RB		[dBm]	[mW]
Band 5	3	QPSK	15/0	825.5	14.19	26.24
			15/0	836.5	14.35	27.23
			15/0	847.5	12.72	18.71

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11.1.2. ERP/EIRP DATA

WCDMA Band 5

WCDMA

Band 5
REL99

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

Company: Samsung
Project #: 4787827147
Date: 01-16-17
Test Engineer: JH Park
Configuration: EUT ONLY, X Position
Mode: Rel 99_850 MHz

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	16.97	V	1.1	-1.5	14.36	38.5	-24.1	
826.40	23.06	H	1.1	-1.5	20.45	38.5	-18.0	
Mid Ch								
836.60	16.85	V	1.1	-1.4	14.36	38.5	-24.1	
836.60	22.46	H	1.1	-1.4	19.97	38.5	-18.5	
High Ch								
846.60	15.97	V	1.1	-1.3	13.59	38.5	-24.9	
846.60	21.36	H	1.1	-1.3	18.98	38.5	-19.5	

Rev. 3.17.11

WCDMA

Band 5
HSDPA

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

Company: Samsung
Project #: 4787827147
Date: 01-16-17
Test Engineer: JH Park
Configuration: EUT ONLY, X Position
Mode: HSDPA_850 MHz

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	16.96	V	1.1	-1.5	14.35	38.5	-24.1	
826.40	23.08	H	1.1	-1.5	20.47	38.5	-18.0	
Mid Ch								
836.60	16.72	V	1.1	-1.4	14.23	38.5	-24.2	
836.60	22.35	H	1.1	-1.4	19.86	38.5	-18.6	
High Ch								
846.60	15.99	V	1.1	-1.3	13.61	38.5	-24.8	
846.60	21.18	H	1.1	-1.3	18.80	38.5	-19.7	

Rev. 3.17.11

WCDMA Band 5 equipped with keyboard

WCDMA

Band 5
HSDPA

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

Company: Samsung
Project #: 4787827147
Date: 02-16-17
Test Engineer: YH Lim
Configuration: EUT / Keyboard
Mode: HSDPA_850 MHz

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.40	20.80	V	1.1	-1.5	18.19	38.5	-20.3	
826.40	20.94	H	1.1	-1.5	18.33	38.5	-20.1	
Mid Ch								
836.60	20.68	V	1.1	-1.4	18.19	38.5	-20.3	
836.60	20.82	H	1.1	-1.4	18.33	38.5	-20.1	
High Ch								
846.60	19.16	V	1.1	-1.3	16.78	38.5	-21.7	
846.60	20.32	H	1.1	-1.3	17.94	38.5	-20.5	

Rev. 3.17.11

WCDMA Band 2

WCDMA

Band 2
REL99

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

Company: Samsung
Project #: 4787827147
Date: 01-18-17
Test Engineer: Chan Park
Configuration: EUT ONLY, X Position
Mode: REL99_1900 MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	16.94	V	1.60	8.79	24.13	33.0	-8.9	
1852.40	15.54	H	1.60	8.79	22.73	33.0	-10.3	
Mid Ch								
1880.00	17.44	V	1.62	8.62	24.44	33.0	-8.6	
1880.00	16.16	H	1.62	8.62	23.16	33.0	-9.8	
High Ch								
1907.60	16.76	V	1.63	8.45	23.58	33.0	-9.4	
1907.60	16.03	H	1.63	8.45	22.85	33.0	-10.1	

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

WCDMA

Band 2
HSDPA

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

Company: Samsung
Project #: 4787827147
Date: 01-18-17
Test Engineer: Chan Park
Configuration: EUT ONLY, X Position
Mode: HSDPA_1900 MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	16.21	V	1.60	8.79	23.40	33.0	-9.6	
1852.40	15.16	H	1.60	8.79	22.35	33.0	-10.7	
Mid Ch								
1880.00	17.19	V	1.62	8.62	24.19	33.0	-8.8	
1880.00	15.73	H	1.62	8.62	22.73	33.0	-10.3	
High Ch								
1907.60	16.55	V	1.63	8.45	23.37	33.0	-9.6	
1907.60	15.76	H	1.63	8.45	22.58	33.0	-10.4	

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

WCDMA Band 2 equipped with keyboard

WCDMA

Band 2
REL99

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

Company: Samsung
Project #: 4787827147
Date: 02-16-17
Test Engineer: YH Lim
Configuration: EUT / Keyboard
Mode: REL99_1900 MHz

Test Equipment:
Receiving: 3117[00168724] and Chamber 1 SMA Cables
Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1852.40	14.91	V	1.60	8.79	22.10	33.0	-10.9	
1852.40	15.97	H	1.60	8.79	23.16	33.0	-9.8	
Mid Ch								
1880.00	15.08	V	1.62	8.62	22.08	33.0	-10.9	
1880.00	15.71	H	1.62	8.62	22.71	33.0	-10.3	
High Ch								
1907.60	13.96	V	1.63	8.45	20.78	33.0	-12.2	
1907.60	14.13	H	1.63	8.45	20.95	33.0	-12.0	

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

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LTE Band 17

LTE Band 17 10MHz QPSK

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

Company: Samsung
Project #: 4787827147
Date: 02-13-17
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: LTE Band 17, QPSK, 10MHz

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
709.00	10.58	V	1.0	-1.6	7.98	34.8	-26.8	
709.00	16.60	H	1.0	-1.6	14.00	34.8	-20.8	
Mid Ch								
710.00	10.53	V	1.0	-1.6	7.93	34.8	-26.8	
710.00	16.38	H	1.0	-1.6	13.78	34.8	-21.0	
High Ch								
711.00	10.72	V	1.0	-1.6	8.12	34.8	-26.7	
711.00	16.57	H	1.0	-1.6	13.97	34.8	-20.8	

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

LTE Band 17 10MHz 16QAM

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

Company: Samsung
Project #: 4787827147
Date: 02-13-17
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: LTE Band 17 16QAM, 10MHz

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
709.00	9.59	V	1.0	-1.6	6.99	34.8	-27.8	
709.00	15.61	H	1.0	-1.6	13.01	34.8	-21.8	
Mid Ch								
710.00	9.50	V	1.0	-1.6	6.90	34.8	-27.9	
710.00	15.39	H	1.0	-1.6	12.79	34.8	-22.0	
High Ch								
711.00	9.68	V	1.0	-1.6	7.08	34.8	-27.7	
711.00	15.54	H	1.0	-1.6	12.94	34.8	-21.8	

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

LTE Band 17 5MHz QPSK

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

Company: Samsung
Project #: 4787827147
Date: 02-13-17
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: LTE Band 17, QPSK , 5MHz

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
706.50	9.20	V	1.0	-1.6	6.60	34.8	-28.2	
706.50	15.33	H	1.0	-1.6	12.73	34.8	-22.0	
Mid Ch								
710.00	9.53	V	1.0	-1.6	6.93	34.8	-27.8	
710.00	15.98	H	1.0	-1.6	13.38	34.8	-21.4	
High Ch								
713.50	10.20	V	1.0	-1.6	7.60	34.8	-27.2	
713.50	16.12	H	1.0	-1.6	13.52	34.8	-21.3	

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

LTE Band 17 5MHz 16QAM

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

Company: Samsung
Project #: 4787827147
Date: 02-13-17
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: LTE Band 17 16QAM, 5MHz

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
706.50	8.21	V	1.0	-1.6	5.61	34.8	-29.2	
706.50	14.33	H	1.0	-1.6	11.73	34.8	-23.0	
Mid Ch								
710.00	8.56	V	1.0	-1.6	5.96	34.8	-28.8	
710.00	15.00	H	1.0	-1.6	12.40	34.8	-22.4	
High Ch								
713.50	9.21	V	1.0	-1.6	6.61	34.8	-28.2	
713.50	15.15	H	1.0	-1.6	12.55	34.8	-22.2	

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

LTE Band 17 equipped with keyboard

LTE
Band 17
10MHz
QPSK

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

Company: Samsung
Project #: 4787827147
Date: 02-16-17
Test Engineer: YH Lim
Configuration: EUT / Keyboard
Mode: LTE Band 17, QPSK, 10MHz

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
709.00	14.85	V	1.0	-1.6	12.25	34.8	-22.5	
709.00	14.37	H	1.0	-1.6	11.77	34.8	-23.0	
Mid Ch								
710.00	14.58	V	1.0	-1.6	11.98	34.8	-22.8	
710.00	14.24	H	1.0	-1.6	11.64	34.8	-23.1	
High Ch								
711.00	14.98	V	1.0	-1.6	12.38	34.8	-22.4	
711.00	14.39	H	1.0	-1.6	11.79	34.8	-23.0	

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

LTE Band 5

LTE Band 5 10MHz QPSK

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

Company: Samsung
Project #: 4787827147
Date: 01-16-17
Test Engineer: JH Park
Configuration: EUT ONLY, X Position
Mode: TX, LTE BAND 5, 10MHz BW,QPSK

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	15.67	V	1.1	-1.5	13.09	38.5	-25.4	
829.00	21.84	H	1.1	-1.5	19.26	38.5	-19.2	
Mid Ch								
836.50	15.51	V	1.1	-1.4	13.02	38.5	-25.4	
836.50	21.90	H	1.1	-1.4	19.41	38.5	-19.0	
High Ch								
844.00	14.72	V	1.1	-1.3	12.33	38.5	-26.1	
844.00	21.11	H	1.1	-1.3	18.69	38.5	-19.8	

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

LTE Band 5 10MHz 16QAM

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

Company: Samsung
Project #: 4787827147
Date: 01-16-17
Test Engineer: JH Park
Configuration: EUT ONLY, X Position
Mode: LTE5 10MHz FUND 16QAM

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	14.16	V	1.1	-1.5	11.58	38.5	-26.9	
829.00	20.35	H	1.1	-1.5	17.77	38.5	-20.7	
Mid Ch								
836.50	13.94	V	1.1	-1.4	11.43	38.5	-27.0	
836.50	20.33	H	1.1	-1.4	17.82	38.5	-20.6	
High Ch								
844.00	13.13	V	1.1	-1.3	10.71	38.5	-27.7	
844.00	19.54	H	1.1	-1.3	17.12	38.5	-21.3	

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

LTE Band 5 5MHz QPSK

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

Company: Samsung
Project #: 4787827147
Date: 01-16-17
Test Engineer: JH Park
Configuration: EUT ONLY, X Position
Mode: LTE5 5MHz FUND QPSK

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	15.80	V	1.1	-1.5	13.20	38.5	-25.3	
826.50	22.26	H	1.1	-1.5	19.66	38.5	-18.8	
Mid Ch								
836.50	15.43	V	1.1	-1.4	12.94	38.5	-25.5	
836.50	21.84	H	1.1	-1.4	19.35	38.5	-19.1	
High Ch								
846.50	14.36	V	1.6	-1.3	11.48	38.5	-27.0	
846.50	20.45	H	1.6	-1.3	17.57	38.5	-20.9	

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

LTE Band 5 5MHz 16QAM

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

Company: Samsung
Project #: 4787827147
Date: 01-16-17
Test Engineer: JH Park
Configuration: EUT ONLY, X Position
Mode: LTE5 5MHz FUND 16QAM

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	14.32	V	1.1	-1.5	11.72	38.5	-26.7	
826.50	20.79	H	1.1	-1.5	18.19	38.5	-20.3	
Mid Ch								
836.50	13.92	V	1.1	-1.4	11.43	38.5	-27.0	
836.50	20.32	H	1.1	-1.4	17.83	38.5	-20.6	
High Ch								
846.50	12.86	V	1.1	-1.3	10.48	38.5	-28.0	
846.50	18.85	H	1.1	-1.3	16.47	38.5	-22.0	

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

LTE Band 5 3MHz QPSK

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

Company: Samsung
Project #: 4787827147
Date: 01-16-17
Test Engineer: JH Park
Configuration: EUT ONLY, X Position
Mode: LTE5 3MHz FUND QPSK

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	15.40	V	1.1	-1.5	12.80	38.5	-25.7	
825.50	22.31	H	1.1	-1.5	19.71	38.5	-18.7	
Mid Ch								
836.50	14.68	V	1.1	-1.4	12.19	38.5	-26.3	
836.50	21.44	H	1.1	-1.4	18.95	38.5	-19.5	
High Ch								
847.50	15.11	V	1.6	-1.3	12.23	38.5	-26.2	
847.50	20.65	H	1.6	-1.3	17.77	38.5	-20.7	

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

LTE Band 5 3MHz 16QAM

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

Company: Samsung
Project #: 4787827147
Date: 01-16-17
Test Engineer: JH Park
Configuration: EUT ONLY, X Position
Mode: LTE5 3MHz FUND 16QAM

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	13.97	V	1.1	-1.5	11.37	38.5	-27.1	
825.50	20.78	H	1.1	-1.5	18.18	38.5	-20.3	
Mid Ch								
836.50	13.13	V	1.1	-1.4	10.64	38.5	-27.8	
836.50	19.89	H	1.1	-1.4	17.40	38.5	-21.1	
High Ch								
847.50	13.57	V	1.1	-1.3	11.19	38.5	-27.3	
847.50	19.06	H	1.1	-1.3	16.68	38.5	-21.8	

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

LTE Band 5 1.4MHz QPSK

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

Company: Samsung
Project #: 4787827147
Date: 01-16-17
Test Engineer: JH Park
Configuration: EUT ONLY, X Position
Mode: LTE5 1.4MHz FUND QPSK

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	14.18	V	1.1	-1.5	11.58	38.5	-26.9	
824.70	19.57	H	1.1	-1.5	16.97	38.5	-21.5	
Mid Ch								
836.50	13.60	V	1.1	-1.4	11.11	38.5	-27.3	
836.50	19.85	H	1.1	-1.4	17.36	38.5	-21.1	
High Ch								
848.30	11.55	V	1.6	-1.3	8.67	38.5	-29.8	
848.30	18.42	H	1.6	-1.3	15.54	38.5	-22.9	

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

LTE Band 5 1.4MHz 16QAM

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

Company: Samsung
Project #: 4787827147
Date: 01-16-17
Test Engineer: JH Park
Configuration: EUT ONLY, X Position
Mode: LTE5 1.4MHz FUND 16QAM

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	12.67	V	1.1	-1.5	10.07	38.5	-28.4	
824.70	18.05	H	1.1	-1.5	15.45	38.5	-23.0	
Mid Ch								
836.50	12.10	V	1.1	-1.4	9.61	38.5	-28.8	
836.50	18.38	H	1.1	-1.4	15.89	38.5	-22.6	
High Ch								
848.30	9.92	V	1.1	-1.3	7.54	38.5	-30.9	
848.30	16.74	H	1.1	-1.3	14.36	38.5	-24.1	

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

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LTE Band 5 equipped with keyboard

LTE
Band 5
3MHz
QPSK

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

Company: Samsung
Project #: 4787827147
Date: 02-17-17
Test Engineer: JH Park
Configuration: EUT / Keyboard
Mode: LTE5 3MHz FUND QPSK

Test Equipment:
Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	16.79	V	1.1	-1.5	14.19	38.5	-24.3	
825.50	15.93	H	1.1	-1.5	13.33	38.5	-25.1	
Mid Ch								
836.50	16.21	V	1.1	-1.4	13.72	38.5	-24.7	
836.50	16.84	H	1.1	-1.4	14.35	38.5	-24.1	
High Ch								
847.50	14.33	V	1.6	-1.3	11.45	38.5	-27.0	
847.50	15.60	H	1.6	-1.3	12.72	38.5	-25.7	

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

11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238 and §27. 53

LIMIT

Part 22.917(a) & Part 24.238(a) & Part 27.53(g) - The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

TEST PROCEDURE

ANSI / TIA / EIA 603D Clause 2.2.12; ESU40 setting reference to 971168 D01 v02r02

a) Set the RBW = 100 KHz for emission below 1GHz and 1MHz for emissions above 1GHz

b) Set VBW ≥ 3 × RBW;

c) Set span ≥ 1.5 times the OBW;

d) Sweep time = auto couple;

e) Detector = peak (RMS for average measurement);

f) Ensure that the number of measurement points ≥ span/RBW;

g) Trace mode = max hold;

RESULTS

11.2.1. SPURIOUS RADIATION PLOTS

WCDMA Band 5

WCDMA

Band 5
REL99

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

Company: Samsung
Project #: 4787827147
Date: 01-18-17
Test Engineer: Chan Park
Configuration: EUT / AC Adapter / Earphone / X Position
Mode: Tx, REL99,850MHz

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.40MHz									
1.6520	-12.8	V	3.0	38.2	1.0	-50.0	-13.0	-37.0	
2.4790	-17.1	V	3.0	38.8	1.0	-55.0	-13.0	-42.0	
3.3056	-20.3	V	3.0	39.4	1.0	-58.7	-13.0	-45.7	
1.6520	-20.9	H	3.0	38.2	1.0	-58.1	-13.0	-45.1	
2.4790	-15.9	H	3.0	38.8	1.0	-53.7	-13.0	-40.7	
3.3056	-20.3	H	3.0	39.4	1.0	-58.7	-13.0	-45.7	
Mid Ch, 836.6MHz									
1.6732	-11.9	V	3.0	38.2	1.0	-49.2	-13.0	-36.2	
2.5098	-10.6	V	3.0	38.8	1.0	-48.4	-13.0	-35.4	
3.3464	-20.3	V	3.0	39.5	1.0	-58.8	-13.0	-45.8	
1.6732	-19.3	H	3.0	38.2	1.0	-56.6	-13.0	-43.6	
2.5098	-10.8	H	3.0	38.8	1.0	-48.6	-13.0	-35.6	
3.3464	-20.3	H	3.0	39.5	1.0	-58.7	-13.0	-45.7	
High Ch, 846.6MHz									
1.6932	-13.5	V	3.0	38.2	1.0	-50.8	-13.0	-37.8	
2.5390	-12.8	V	3.0	38.9	1.0	-50.7	-13.0	-37.7	
3.3860	-19.6	V	3.0	39.5	1.0	-58.1	-13.0	-45.1	
1.6932	-19.7	H	3.0	38.2	1.0	-57.0	-13.0	-44.0	
2.5390	-14.9	H	3.0	38.9	1.0	-52.8	-13.0	-39.8	
3.3860	-19.6	H	3.0	39.5	1.0	-58.0	-13.0	-45.0	

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

WCDMA

Band 5
HSDPA

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

Company: Samsung
Project #: 4787827147
Date: 01-18-17
Test Engineer: Chan Park
Configuration: EUT / AC Adapter / Earphone / X Position
Mode: Tx, HSDPA,850MHz

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.40MHz									
1.6520	-12.7	V	3.0	38.2	1.0	-49.9	-13.0	-36.9	
2.4790	-18.4	V	3.0	38.8	1.0	-56.2	-13.0	-43.2	
3.3056	-20.3	V	3.0	39.4	1.0	-58.8	-13.0	-45.8	
1.6520	-20.9	H	3.0	38.2	1.0	-58.1	-13.0	-45.1	
2.4790	-19.8	H	3.0	38.8	1.0	-57.6	-13.0	-44.6	
3.3056	-20.1	H	3.0	39.4	1.0	-58.5	-13.0	-45.5	
Mid Ch, 836.6MHz									
1.6732	-12.1	V	3.0	38.2	1.0	-49.3	-13.0	-36.3	
2.5098	-11.3	V	3.0	38.8	1.0	-49.1	-13.0	-36.1	
3.3464	-20.2	V	3.0	39.5	1.0	-58.6	-13.0	-45.6	
1.6732	-20.0	H	3.0	38.2	1.0	-57.3	-13.0	-44.3	
2.5098	-11.8	H	3.0	38.8	1.0	-49.6	-13.0	-36.6	
3.3464	-20.4	H	3.0	39.5	1.0	-58.8	-13.0	-45.8	
High Ch, 846.6MHz									
1.6932	-19.7	V	3.0	38.2	1.0	-56.9	-13.0	-43.9	
2.5390	-11.3	V	3.0	38.9	1.0	-49.1	-13.0	-36.1	
3.3860	-19.6	V	3.0	39.5	1.0	-58.1	-13.0	-45.1	
1.6932	-19.5	H	3.0	38.2	1.0	-56.8	-13.0	-43.8	
2.5390	-12.0	H	3.0	38.9	1.0	-49.8	-13.0	-36.8	
3.3860	-19.7	H	3.0	39.5	1.0	-58.2	-13.0	-45.2	

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

WCDMA Band 5 equipped with keyboard

WCDMA

Band 5
REL99

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

Company: Samsung
Project #: 4787827147
Date: 02-16-17
Test Engineer: YH Lim
Configuration: EUT / AC Adapter / Earphone / Keyboard
Mode: Tx, REL99,850MHz

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 826.40MHz									
1.6520	-22.0	V	3.0	38.2	1.0	-59.3	-13.0	-46.3	
2.4790	-15.4	V	3.0	38.8	1.0	-53.2	-13.0	-40.2	
3.3056	-20.4	V	3.0	39.4	1.0	-58.8	-13.0	-45.8	
1.6520	-21.9	H	3.0	38.2	1.0	-59.1	-13.0	-46.1	
2.4790	-16.9	H	3.0	38.8	1.0	-54.7	-13.0	-41.7	
3.3056	-20.5	H	3.0	39.4	1.0	-58.9	-13.0	-45.9	
Mid Ch, 836.6MHz									
1.6732	-22.7	V	3.0	38.2	1.0	-59.9	-13.0	-46.9	
2.5098	-17.0	V	3.0	38.8	1.0	-54.8	-13.0	-41.8	
3.3464	-20.6	V	3.0	39.5	1.0	-59.0	-13.0	-46.0	
1.6732	-20.9	H	3.0	38.2	1.0	-58.2	-13.0	-45.2	
2.5098	-13.1	H	3.0	38.8	1.0	-50.9	-13.0	-37.9	
3.3464	-20.2	H	3.0	39.5	1.0	-58.7	-13.0	-45.7	
High Ch, 846.6MHz									
1.6932	-22.6	V	3.0	38.2	1.0	-59.8	-13.0	-46.8	
2.5390	-11.5	V	3.0	38.9	1.0	-49.4	-13.0	-36.4	
3.3860	-20.1	V	3.0	39.5	1.0	-58.6	-13.0	-45.6	
1.6932	-22.3	H	3.0	38.2	1.0	-59.5	-13.0	-46.5	
2.5390	-17.9	H	3.0	38.9	1.0	-55.7	-13.0	-42.7	
3.3860	-20.1	H	3.0	39.5	1.0	-58.6	-13.0	-45.6	

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