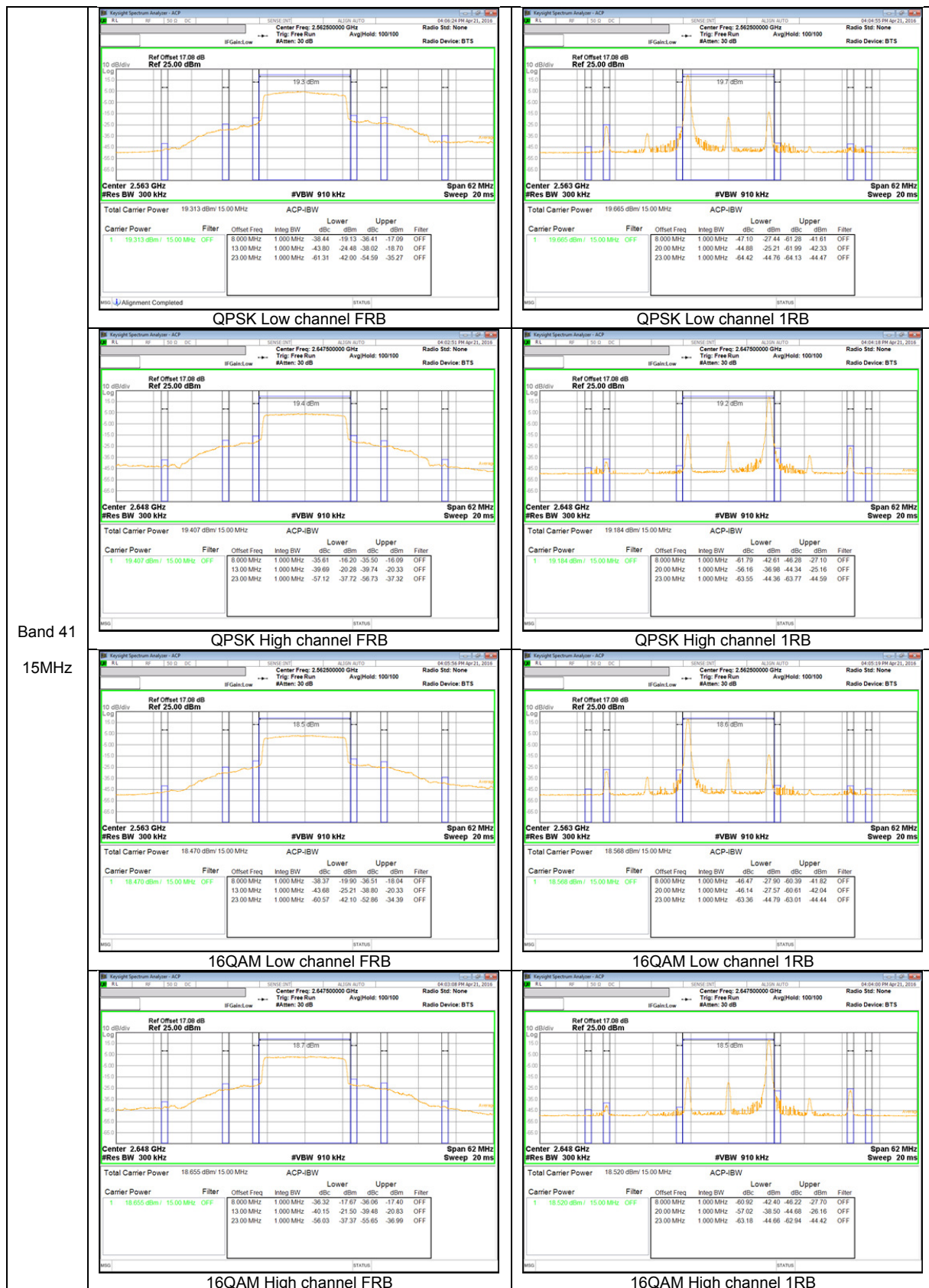
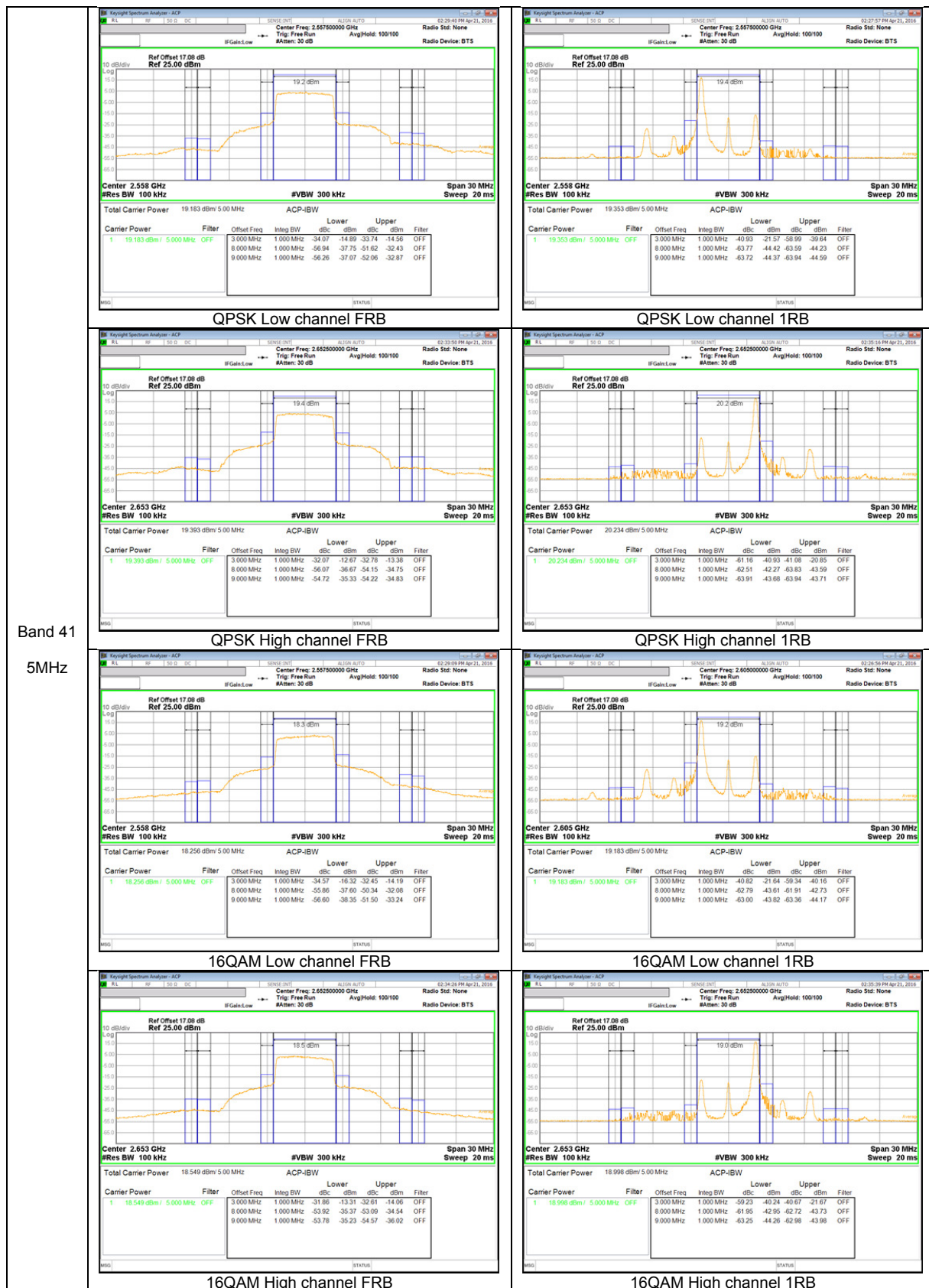








10.3 OUT OF BAND EMISSIONS

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.

Part 27: (m)(4) For mobile station, the attenuation factor shall be not less than $43 + 10 \log (P)$ dB at the channel edge and $(55 + 10 \log (P))$ dB at the 5.5 MHz from the channel edges.

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.

RESULTS

10.3.1. OUT OF BAND EMISSIONS RESULT

GSM

Band	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
GSM850	GPRS	824.2	-22.54	-13.00
		836.6	-23.11	
		848.8	-22.59	
	EGPRS	824.2	-22.91	
		836.6	-23.11	
		848.8	-23.24	
GSM1900	GPRS	1850.2	-23.04	-13.00
		1880.0	-22.16	
		1909.8	-22.11	
	EGPRS	1850.2	-22.71	
		1880.0	-22.16	
		1909.8	-22.41	

WCDMA

Band	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
Band 5	REL99	826.4	-33.15	-13.00
		836.6	-33.50	
		846.6	-32.62	
	HSDPA	826.4	-32.61	
		836.6	-32.80	
		846.6	-33.13	
Band 2	REL99	1852.4	-32.81	
		1880.0	-32.80	
		1907.6	-33.07	
	HSDPA	1852.4	-32.48	
		1880.0	-33.29	
		1907.6	-32.61	

CDMA

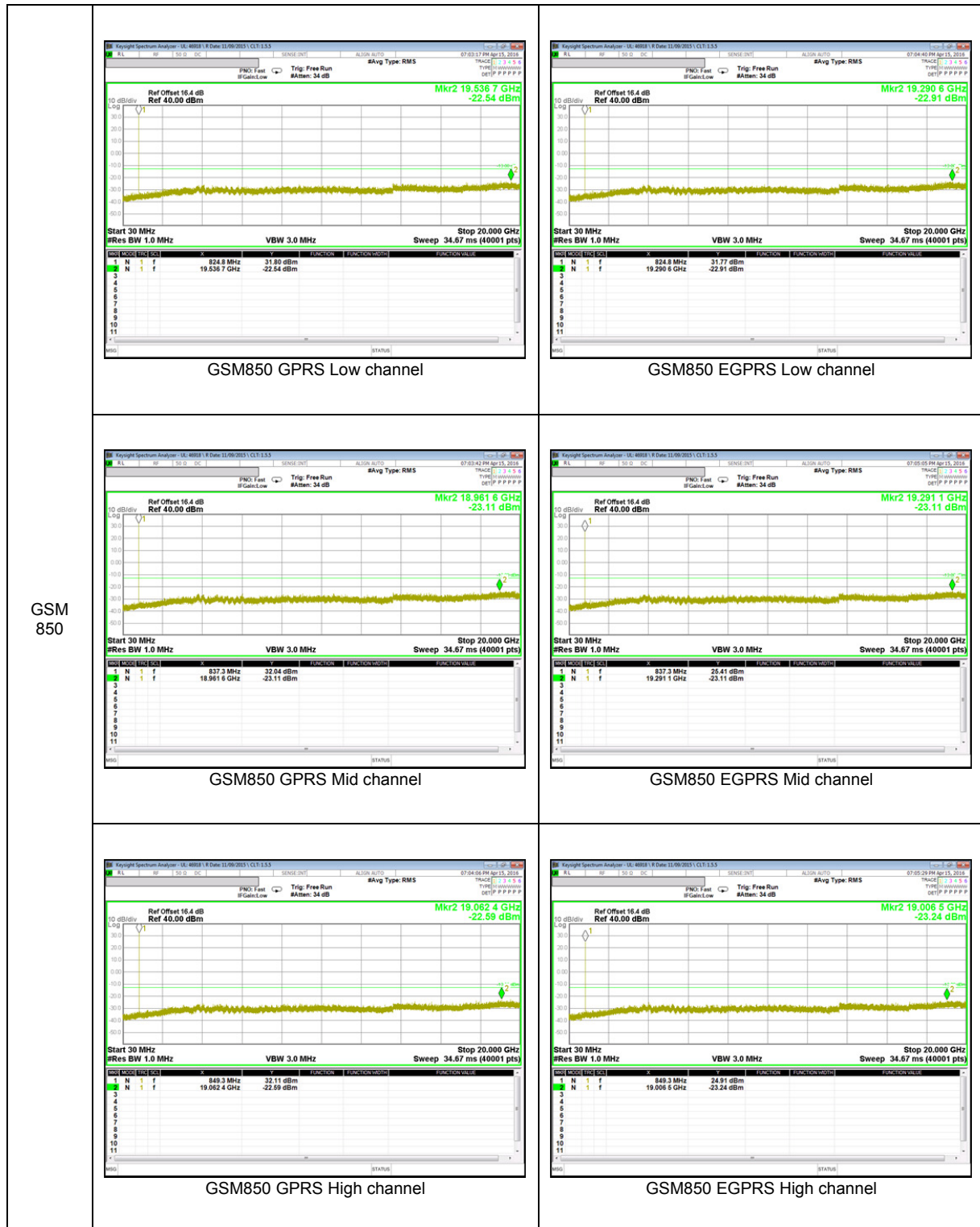
Band	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
BC0	1xRTT	1013	-33.136	-13.00
		384	-33.313	
		777	-32.653	
	EVDO Rel.0	1013	-32.973	
		384	-32.749	
		777	-32.655	

LTE 41

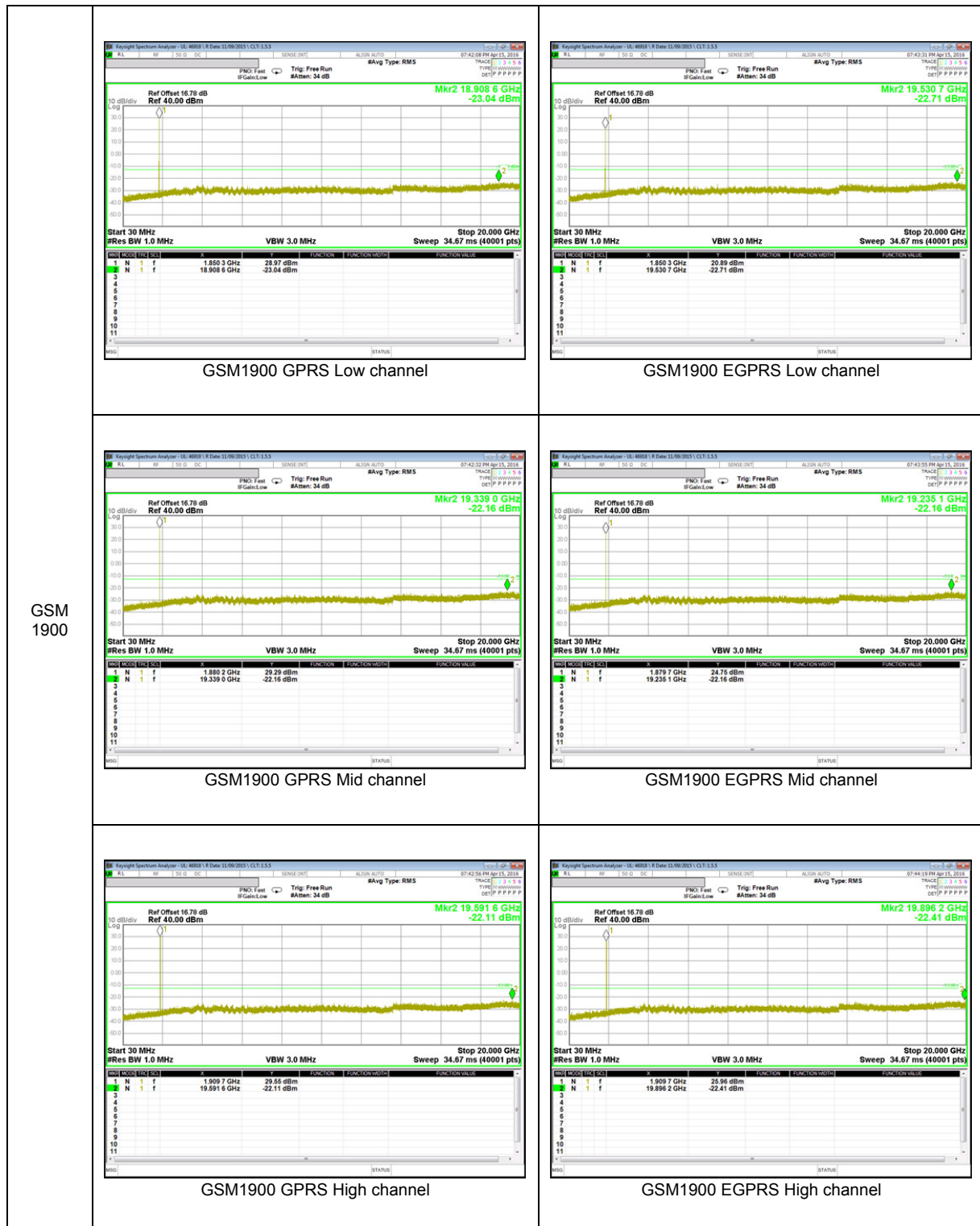
Bandwidth	Mode	f [MHz]	Spurious [dBm]	Limit [dBm]
20 MHz	QPSK	2565.0	-30.99	-25.00
		2605.0	-31.85	
		2645.0	-30.93	
	16QAM	2565.0	-31.76	
		2605.0	-31.44	
		2645.0	-31.35	
15 MHz	QPSK	2562.5	-30.50	
		2605.0	-31.43	
		2647.5	-31.70	
	16QAM	2562.5	-31.20	
		2605.0	-31.56	
		2647.5	-31.22	
10 MHz	QPSK	2560.0	-31.35	
		2605.0	-31.48	
		2650.0	-30.40	
	16QAM	2560.0	-31.00	
		2605.0	-31.42	
		2650.0	-31.65	
5 MHz	QPSK	2557.5	-30.77	
		2605.0	-31.33	
		2652.5	-31.15	
	16QAM	2557.5	-30.39	
		2605.0	-31.29	
		2652.5	-30.91	

10.3.2. OUT OF BAND EMISSIONS PLOTS

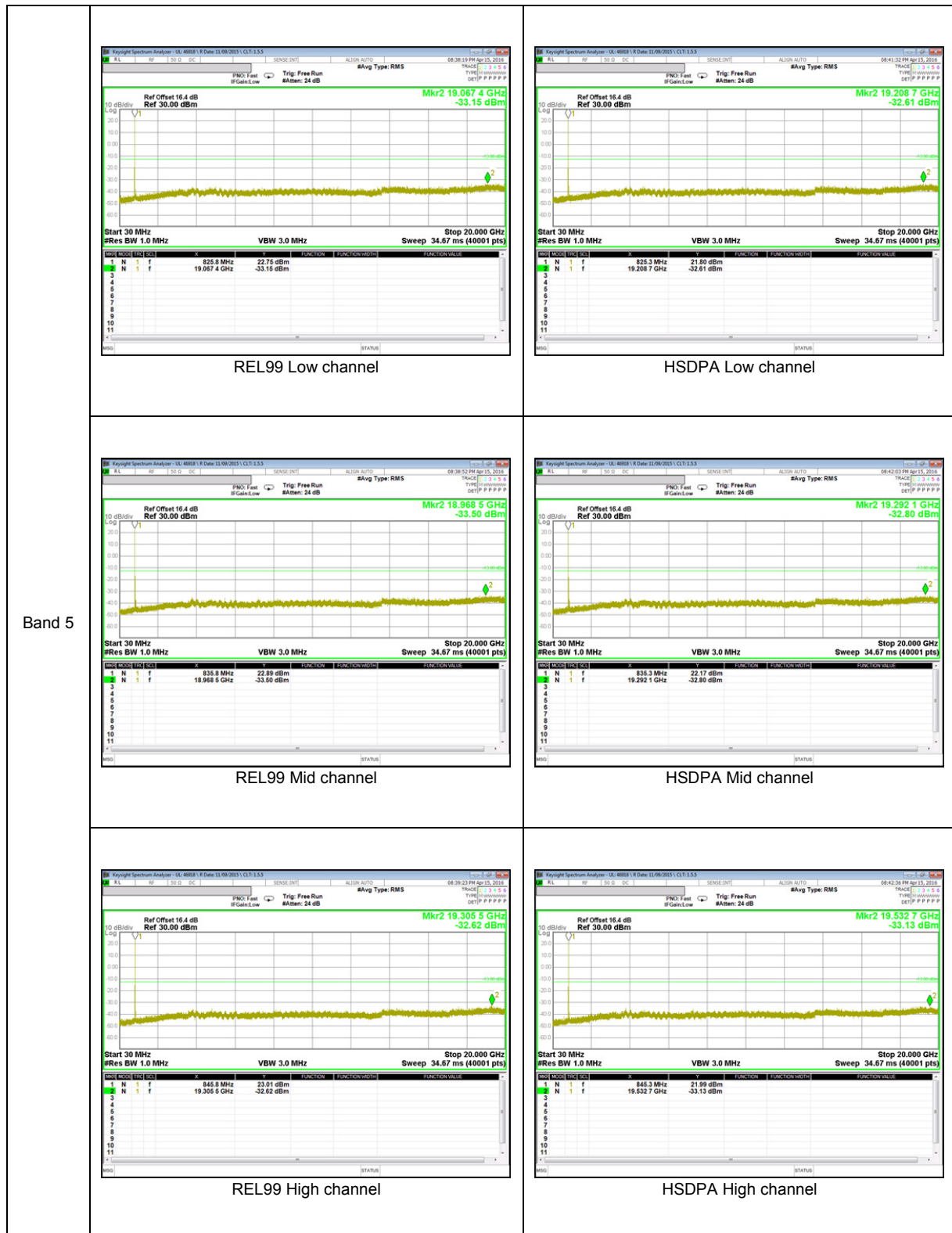
GSM 850



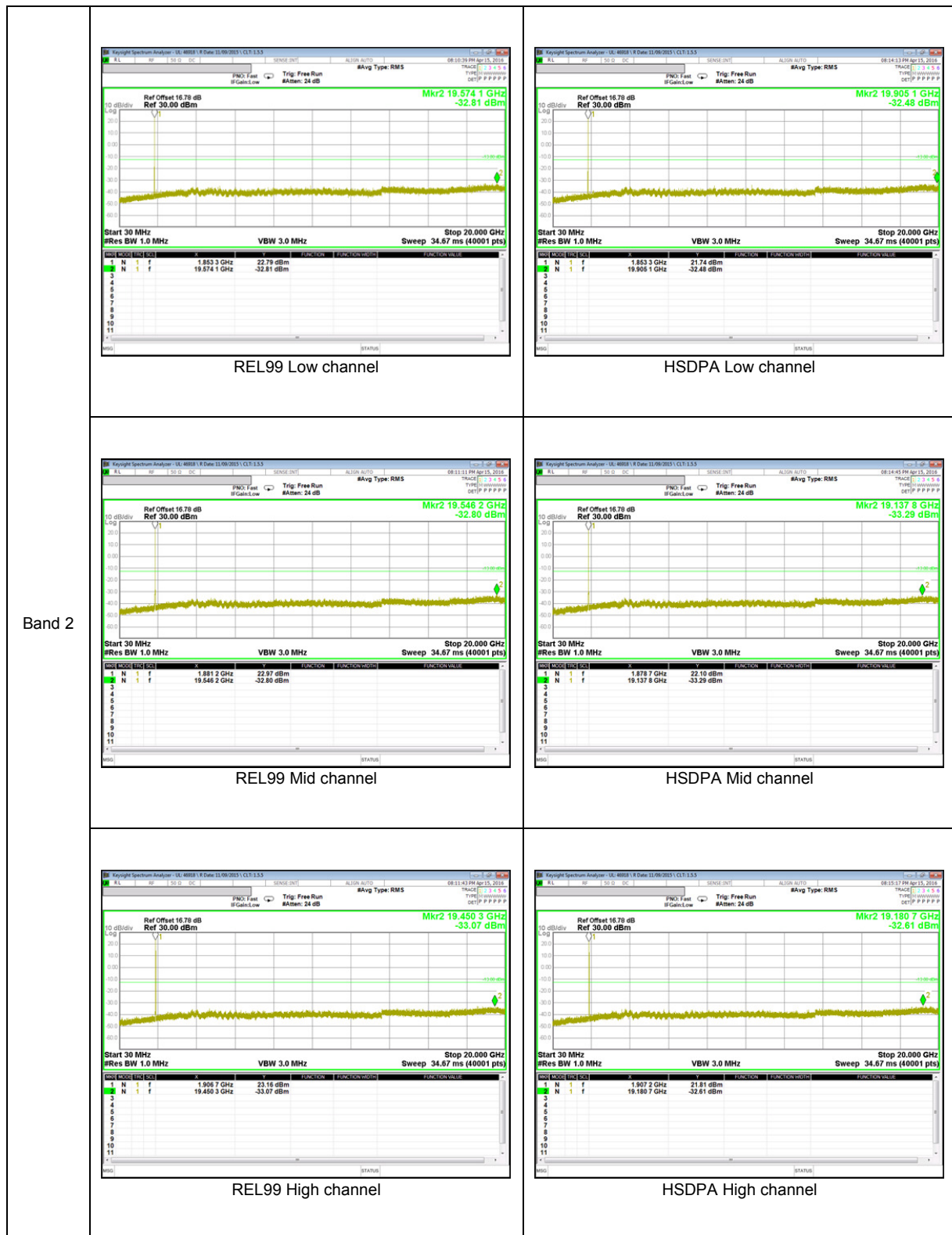
GSM 1900



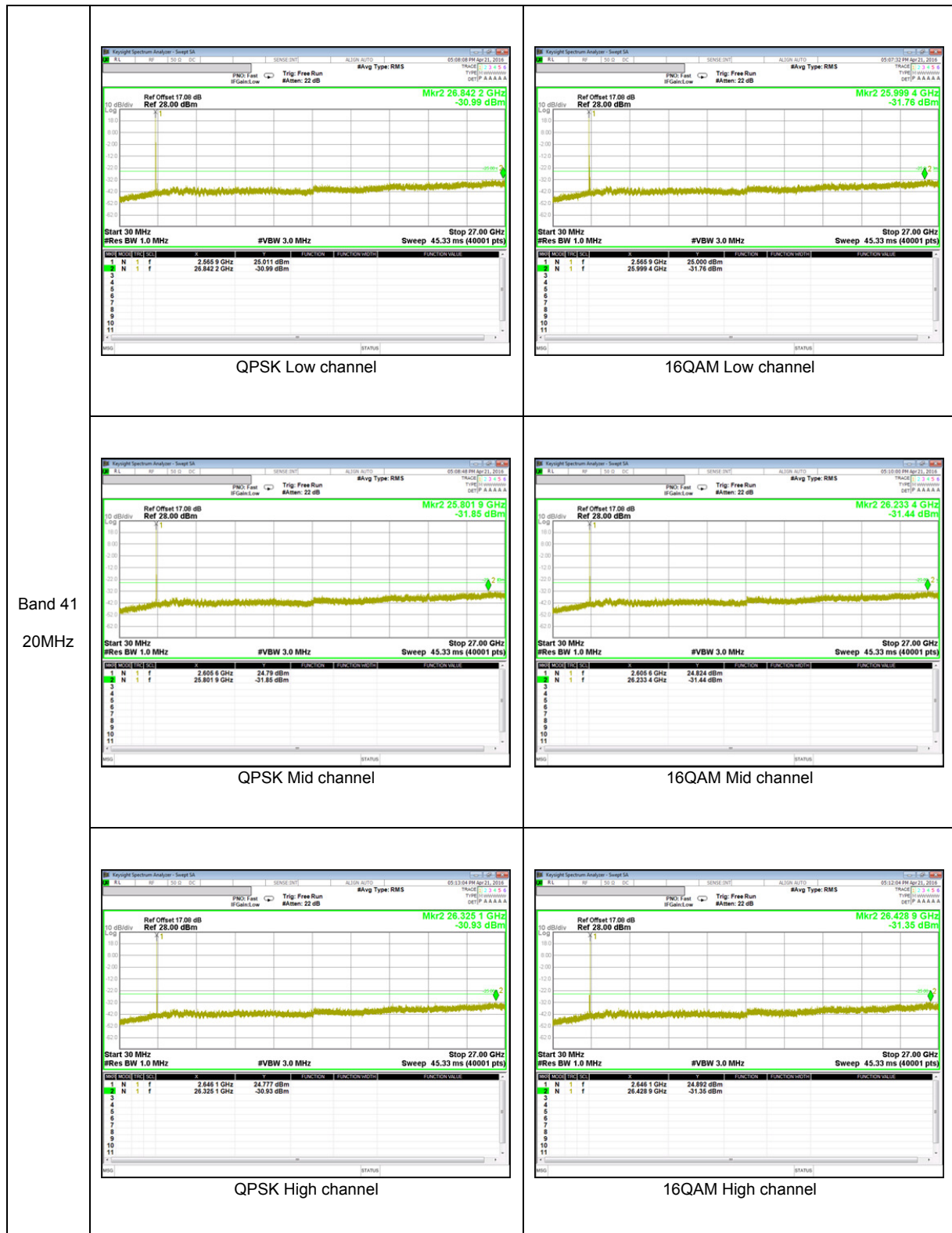
WCDMA Band 5

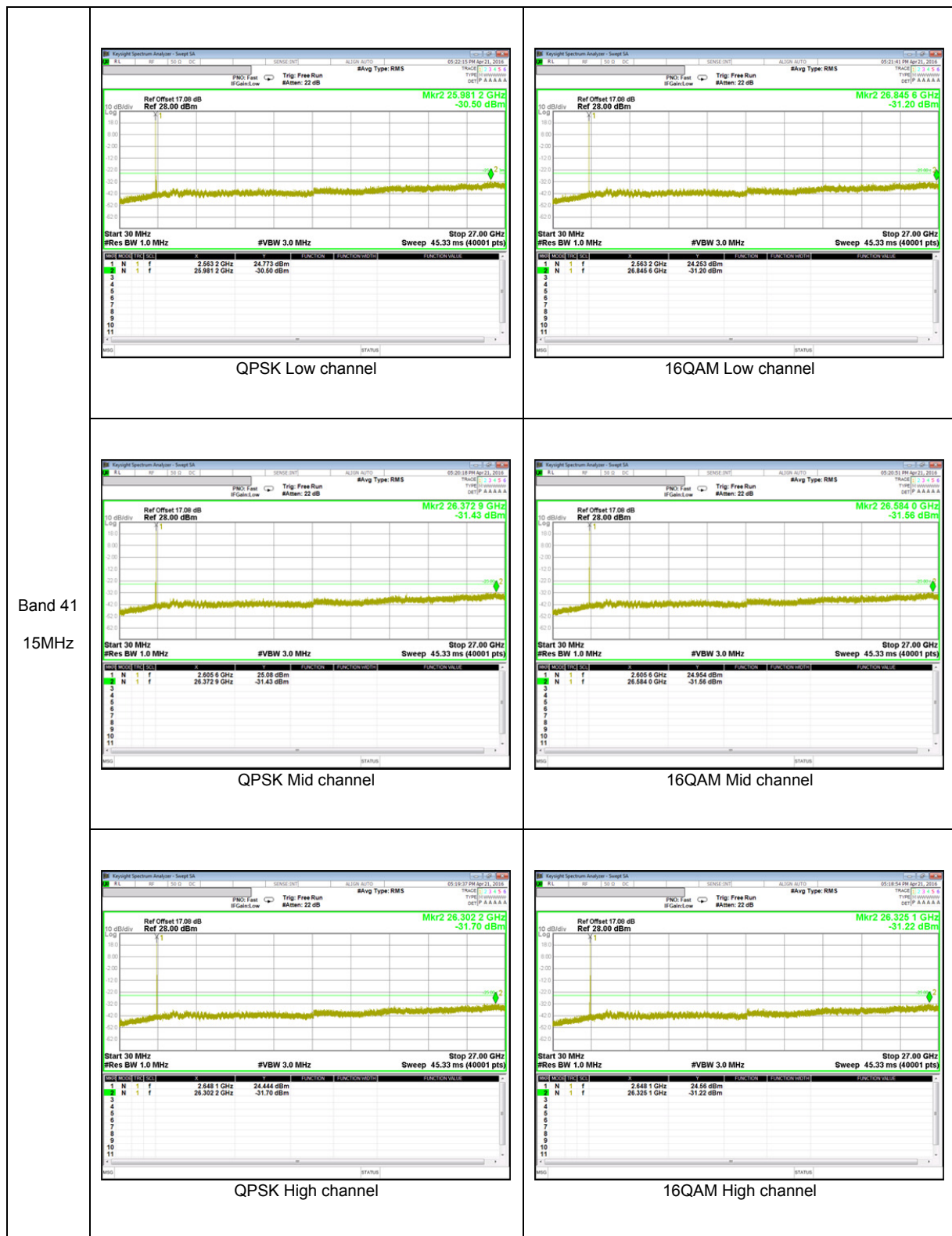


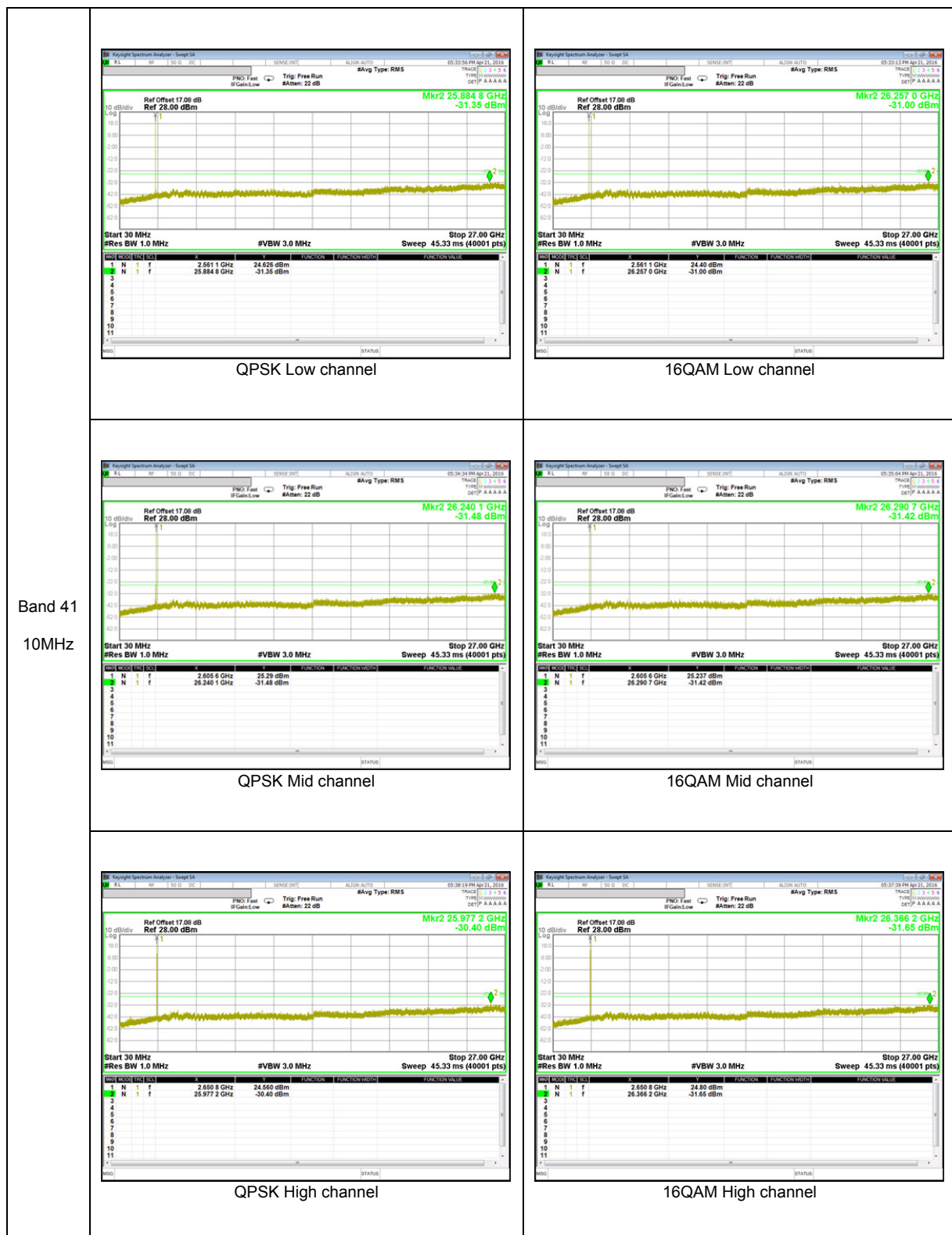
WCDMA Band 2

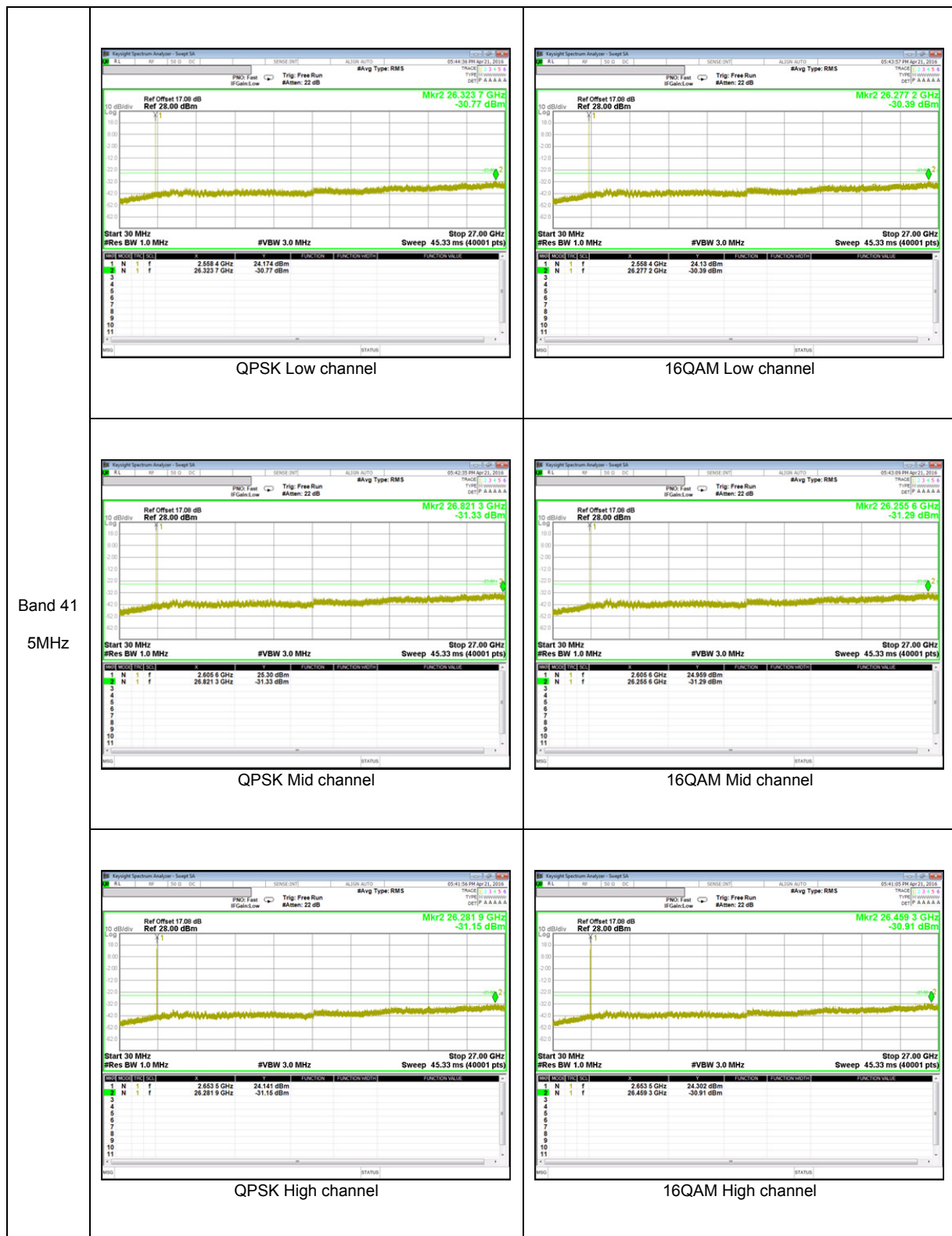


LTE Band 41

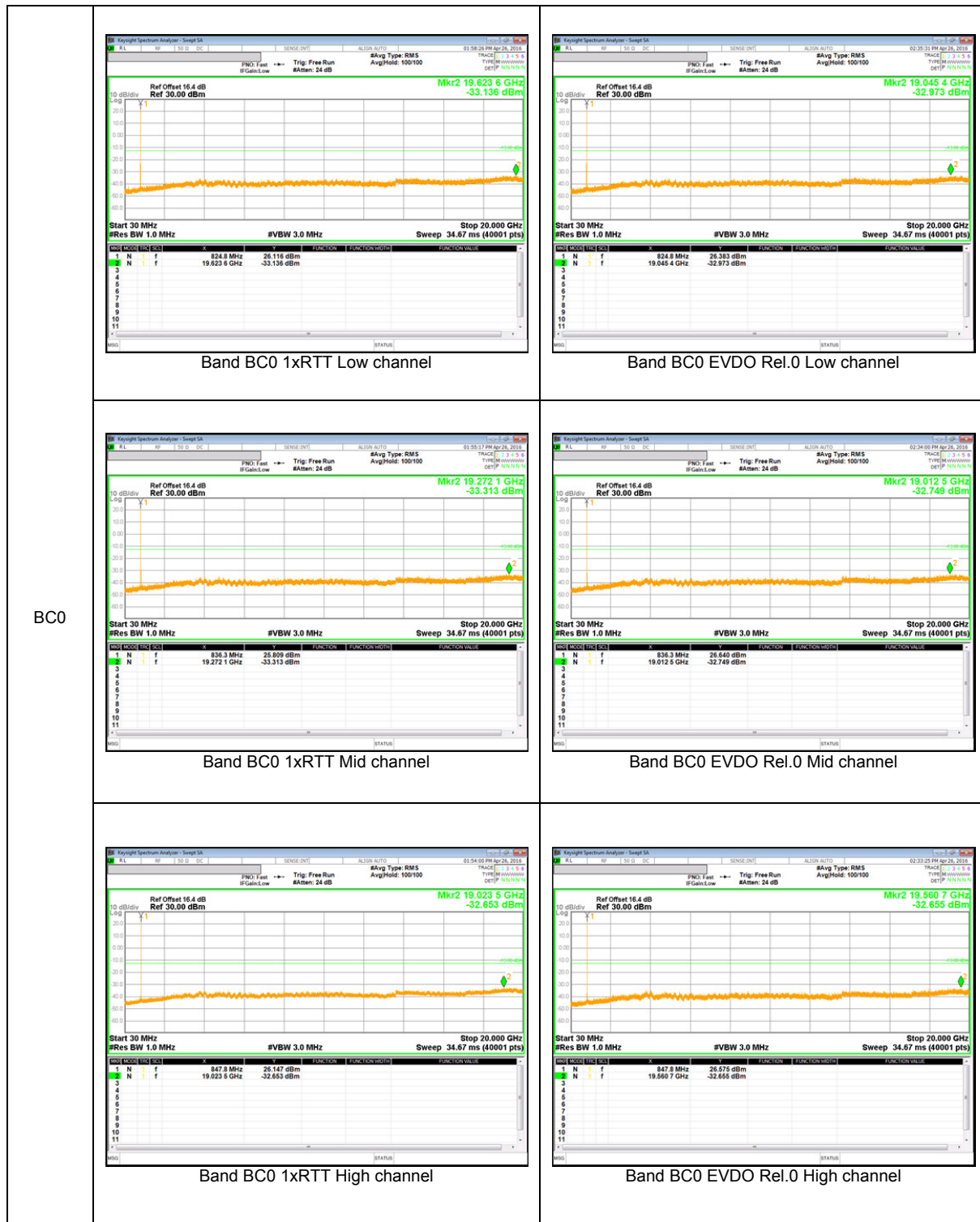








CDMA



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

WCDMA Band 5, Channel 4183, Frequency 836.6 MHz

GSM 850, Channel 190, Frequency 836.6 MHz

BC0 1xRTT, Channel 384, Frequency 836.52 MHz

BC0 EVDO Rel.0, Channel 384, Frequency 836.52 MHz

Reference Frequency: GSM850 Mid Channel 836.6 MHz @ 20°C				
Limit: ± 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.60003352	-0.003	2.5
3.80	40	836.60002765	0.004	2.5
3.80	30	836.60002473	0.008	2.5
3.80	20	836.60003115	0	2.5
3.80	10	836.60002220	0.011	2.5
3.80	0	836.60002144	0.012	2.5
3.80	-10	836.60002498	0.007	2.5
3.80	-20	836.60002223	0.011	2.5
3.80	-30	836.60002567	0.007	2.5

Reference Frequency: GSM850 Mid Channel 836.6 MHz @ 20°C				
Limit: ± 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	836.60003115	0	2.5
4.30	20	836.60002921	0.002	2.5
3.60	20	836.60002070	0.012	2.5

WCDMA Band 2, Channel 9400, Frequency 1880.0 MHz

GSM 1900, Channel 661, Frequency 1880.0 MHz

Reference Frequency: GSM1900 Mid Channel 1880 MHz @ 20°C				
Limit: ± 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1880.00003328	-0.004	2.5
3.80	40	1880.00003684	-0.006	2.5
3.80	30	1880.00002944	-0.002	2.5
3.80	20	1880.00002579	0	2.5
3.80	10	1880.00002317	0.001	2.5
3.80	0	1879.99996352	0.033	2.5
3.80	-10	1880.00003286	-0.004	2.5
3.80	-20	1879.99996683	0.031	2.5
3.80	-30	1879.99996455	0.033	2.5

Reference Frequency: GSM1900 Mid Channel 1880 MHz @ 20°C				
Limit: ± 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	1880.00002579	0	2.5
4.30	20	1880.00003212	-0.003	2.5
3.60	20	1880.00003439	-0.005	2.5

LTE Band 41, Channel 40620, Frequency 2593.0 MHz

Reference Frequency: LTE Band41 Mid Channel 2605 MHz @ 20°C				
Limit: ± 2.5 ppm = 6482.500 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	2605.00003280	-0.002	2.5
3.80	40	2605.00003555	-0.003	2.5
3.80	30	2605.00002917	0.000	2.5
3.80	20	2605.00002824	0	2.5
3.80	10	2605.00002680	0.001	2.5
3.80	0	2605.00003013	-0.001	2.5
3.80	-10	2605.00002525	0.001	2.5
3.80	-20	2605.00002097	0.003	2.5
3.80	-30	2605.00002476	0.001	2.5

Reference Frequency: LTE Band41 Mid Channel 2605 MHz @ 20°C				
Limit: ± 2.5 ppm = 6482.500 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	2605.00002824	0	2.5
4.30	20	2605.00002612	0.001	2.5
3.60	20	2605.00002398	0.002	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(h) - (2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.(LTE B41)

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; MXA setting reference to 971168 D01 v02r02

For peak power measurement with a MXA:

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

For average power measurement with a MXA:

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 $\geq 3 \times$ RBW; d) Set number of points in sweep $\geq 2 \times$ 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

GSM

Band	Mode	Channel	f [MHz]	ERP / EIRP	
				[dBm]	[mW]
GSM850	GPRS	512	824.2	28.18	657.66
		661	836.6	28.04	636.80
		810	848.8	27.74	594.29
	EGPRS	512	824.2	21.32	135.52
		661	836.6	21.00	125.89
		810	848.8	20.56	113.76
GSM1900	GPRS	512	1850.2	30.80	1202.26
		661	1880.0	30.92	1235.95
		810	1909.8	30.70	1174.90
	EGPRS	512	1850.2	26.60	457.09
		661	1880.0	26.45	441.57
		810	1909.8	25.11	324.34

CDMA

Band	Mode	Channel	f [MHz]	ERP / EIRP	
				[dBm]	[mW]
BC0	1xRTT	1013	824.70	19.40	87.10
		384	836.52	17.89	61.52
		777	848.31	16.42	43.85
	EVDO Rel.0	1013	824.70	18.67	73.62
		384	836.52	18.99	79.25
		777	848.31	16.28	42.46

WCDMA

Band	Mode	Channel	f [MHz]	ERP / EIRP	
				[dBm]	[mW]
Band 5	REL99	4132	826.4	17.92	61.94
		4183	836.6	16.89	48.87
		4233	846.6	16.35	43.15
	HSDPA	4132	826.4	16.19	41.59
		4183	836.6	15.30	33.88
		4233	846.6	15.03	31.84
Band 2	REL99	9262	1852.4	23.31	214.29
		9400	1880.0	22.62	182.81
		9538	1907.6	22.78	189.67
	HSDPA	9262	1852.4	21.97	157.40
		9400	1880.0	21.82	152.05
		9538	1907.6	21.92	155.60

LTE Band 41

Band	BW [MHz]	Mode	RB/RB Size	f [MHz]	ERP / EIRP	
			Full RB		[dBm]	[mW]
Band 41	20	QPSK	100/0	2565.0	20.37	108.89
			100/0	2605.0	22.94	196.79
			100/0	2645.0	22.11	162.55
		16QAM	100/0	2565.0	19.34	85.90
			100/0	2605.0	22.05	160.32
			100/0	2645.0	21.16	130.62
	15	QPSK	75/0	2562.5	20.72	118.03
			75/0	2605.0	22.84	192.31
			75/0	2647.5	21.19	131.52
		16QAM	75/0	2562.5	19.82	95.94
			75/0	2605.0	22.05	160.32
			75/0	2647.5	20.36	108.64
	10	QPSK	50/0	2560.0	21.27	133.97
			50/0	2605.0	22.92	195.88
			50/0	2650.0	20.65	116.14
		16QAM	50/0	2560.0	20.25	105.93
			50/0	2605.0	22.21	166.34
			50/0	2650.0	19.75	94.41
	5	QPSK	25/0	2552.5	20.51	112.46
			25/0	2605.0	23.47	222.33
			25/0	2652.5	21.08	128.23
		16QAM	25/0	2552.5	19.60	91.20
			25/0	2605.0	22.86	193.20
			25/0	2652.5	20.19	104.47

11.1.2. ERP/EIRP DATA

GSM 850

GSM GSM850 GPRS	High Frequency Substitution Measurement UL Korea, Ltd. Suwon Laboratory Chamber 2 Company: Samsung Project #: 16K23302 Date: 04-19-16 Test Engineer: Steven Kim Configuration: EUT ONLY, Y Position Mode: GPRS 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. <table><tr><th>f MHz</th><th>SG reading (dBm)</th><th>Ant. Pol. (H/V)</th><th>Cable Loss (dB)</th><th>Antenna Gain (dBd)</th><th>ERP (dBm)</th><th>Limit (dBm)</th><th>Margin (dB)</th><th>Notes</th></tr><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>824.20</td><td>30.80</td><td>V</td><td>1.1</td><td>-1.6</td><td>28.18</td><td>38.5</td><td>-10.3</td></tr><tr><td>824.20</td><td>22.53</td><td>H</td><td>1.1</td><td>-1.6</td><td>19.91</td><td>38.5</td><td>-18.5</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>836.60</td><td>30.53</td><td>V</td><td>1.1</td><td>-1.4</td><td>28.04</td><td>38.5</td><td>-10.4</td></tr><tr><td>836.60</td><td>23.45</td><td>H</td><td>1.1</td><td>-1.4</td><td>20.96</td><td>38.5</td><td>-17.5</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>848.80</td><td>30.10</td><td>V</td><td>1.1</td><td>-1.3</td><td>27.74</td><td>38.5</td><td>-10.7</td></tr><tr><td>848.80</td><td>24.40</td><td>H</td><td>1.1</td><td>-1.3</td><td>22.04</td><td>38.5</td><td>-16.4</td></tr></table> Rev. 3.17.11 Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes	Low Ch								824.20	30.80	V	1.1	-1.6	28.18	38.5	-10.3	824.20	22.53	H	1.1	-1.6	19.91	38.5	-18.5	Mid Ch								836.60	30.53	V	1.1	-1.4	28.04	38.5	-10.4	836.60	23.45	H	1.1	-1.4	20.96	38.5	-17.5	High Ch								848.80	30.10	V	1.1	-1.3	27.74	38.5	-10.7	848.80	24.40	H	1.1	-1.3	22.04	38.5	-16.4
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes																																																																																	
	Low Ch																																																																																									
	824.20	30.80	V	1.1	-1.6	28.18	38.5	-10.3																																																																																		
	824.20	22.53	H	1.1	-1.6	19.91	38.5	-18.5																																																																																		
	Mid Ch																																																																																									
	836.60	30.53	V	1.1	-1.4	28.04	38.5	-10.4																																																																																		
	836.60	23.45	H	1.1	-1.4	20.96	38.5	-17.5																																																																																		
	High Ch																																																																																									
	848.80	30.10	V	1.1	-1.3	27.74	38.5	-10.7																																																																																		
848.80	24.40	H	1.1	-1.3	22.04	38.5	-16.4																																																																																			
GSM GSM850 EGPRS	High Frequency Substitution Measurement UL Korea, Ltd. Suwon Laboratory Chamber 2 Company: Samsung Project #: 16K23302 Date: 04-19-16 Test Engineer: Steven Kim Configuration: EUT ONLY, Y Position Mode: EGPRS 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. <table><tr><th>f MHz</th><th>SG reading (dBm)</th><th>Ant. Pol. (H/V)</th><th>Cable Loss (dB)</th><th>Antenna Gain (dBd)</th><th>ERP (dBm)</th><th>Limit (dBm)</th><th>Margin (dB)</th><th>Notes</th></tr><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>824.20</td><td>23.94</td><td>V</td><td>1.1</td><td>-1.6</td><td>21.32</td><td>38.5</td><td>-17.1</td></tr><tr><td>824.20</td><td>15.60</td><td>H</td><td>1.1</td><td>-1.6</td><td>12.98</td><td>38.5</td><td>-25.5</td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>836.60</td><td>23.49</td><td>V</td><td>1.1</td><td>-1.4</td><td>21.00</td><td>38.5</td><td>-17.5</td></tr><tr><td>836.60</td><td>16.58</td><td>H</td><td>1.1</td><td>-1.4</td><td>14.09</td><td>38.5</td><td>-24.4</td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>848.80</td><td>22.92</td><td>V</td><td>1.1</td><td>-1.3</td><td>20.56</td><td>38.5</td><td>-17.9</td></tr><tr><td>848.80</td><td>17.27</td><td>H</td><td>1.1</td><td>-1.3</td><td>14.91</td><td>38.5</td><td>-23.5</td></tr></table> Rev. 3.17.11 Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm									f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes	Low Ch								824.20	23.94	V	1.1	-1.6	21.32	38.5	-17.1	824.20	15.60	H	1.1	-1.6	12.98	38.5	-25.5	Mid Ch								836.60	23.49	V	1.1	-1.4	21.00	38.5	-17.5	836.60	16.58	H	1.1	-1.4	14.09	38.5	-24.4	High Ch								848.80	22.92	V	1.1	-1.3	20.56	38.5	-17.9	848.80	17.27	H	1.1	-1.3	14.91	38.5	-23.5
	f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes																																																																																	
	Low Ch																																																																																									
	824.20	23.94	V	1.1	-1.6	21.32	38.5	-17.1																																																																																		
	824.20	15.60	H	1.1	-1.6	12.98	38.5	-25.5																																																																																		
	Mid Ch																																																																																									
	836.60	23.49	V	1.1	-1.4	21.00	38.5	-17.5																																																																																		
	836.60	16.58	H	1.1	-1.4	14.09	38.5	-24.4																																																																																		
	High Ch																																																																																									
	848.80	22.92	V	1.1	-1.3	20.56	38.5	-17.9																																																																																		
848.80	17.27	H	1.1	-1.3	14.91	38.5	-23.5																																																																																			

GSM 1900

GSM GSM1900 GPRS	High Frequency Substitution Measurement UL Korea, Ltd. Suwon Laboratory Chamber 2																																																																																																										
	Company:		Samsung																																																																																																								
	Project #:		16K23302																																																																																																								
	Date:		04-18-16																																																																																																								
	Test Engineer:		Steven Kim																																																																																																								
	Configuration:		EUT ONLY, Z Position																																																																																																								
	Mode:		GPRS 1900MHz																																																																																																								
	Test Equipment:																																																																																																										
	Receiving: 3117[00168724] and Chamber 1 SMA Cables																																																																																																										
	Substitution: 3115[00161451] Substitution, 3m SMA Cable Warehouse																																																																																																										
<table><tr><th>f</th><th>SG reading</th><th>Ant. Pol.</th><th>Cable Loss</th><th>Antenna Gain</th><th>EIRP</th><th>Limit</th><th>Delta</th><th>Notes</th></tr><tr><th>GHz</th><th>(dBm)</th><th>(H/V)</th><th>(dB)</th><th>(dBi)</th><th>(dBm)</th><th>(dBm)</th><th>(dB)</th><th></th></tr><tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1850.20</td><td>20.1</td><td>V</td><td>1.60</td><td>8.80</td><td>27.33</td><td>33.0</td><td>-5.7</td><td></td></tr><tr><td>1850.20</td><td>23.6</td><td>H</td><td>1.60</td><td>8.80</td><td>30.80</td><td>33.0</td><td>-2.2</td><td></td></tr><tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1880.00</td><td>21.2</td><td>V</td><td>1.62</td><td>8.62</td><td>28.18</td><td>33.0</td><td>-4.8</td><td></td></tr><tr><td>1880.00</td><td>23.9</td><td>H</td><td>1.62</td><td>8.62</td><td>30.92</td><td>33.0</td><td>-2.1</td><td></td></tr><tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>1909.80</td><td>20.6</td><td>V</td><td>1.63</td><td>8.44</td><td>27.39</td><td>33.0</td><td>-5.6</td><td></td></tr><tr><td>1909.80</td><td>23.9</td><td>H</td><td>1.63</td><td>8.44</td><td>30.70</td><td>33.0</td><td>-2.3</td><td></td></tr></table>									f	SG reading	Ant. Pol.	Cable Loss	Antenna Gain	EIRP	Limit	Delta	Notes	GHz	(dBm)	(H/V)	(dB)	(dBi)	(dBm)	(dBm)	(dB)		Low Ch									1850.20	20.1	V	1.60	8.80	27.33	33.0	-5.7		1850.20	23.6	H	1.60	8.80	30.80	33.0	-2.2		Mid Ch									1880.00	21.2	V	1.62	8.62	28.18	33.0	-4.8		1880.00	23.9	H	1.62	8.62	30.92	33.0	-2.1		High Ch									1909.80	20.6	V	1.63	8.44	27.39	33.0	-5.6		1909.80	23.9	H	1.63	8.44	30.70	33.0	-2.3	
f	SG reading	Ant. Pol.	Cable Loss	Antenna Gain	EIRP	Limit	Delta	Notes																																																																																																			
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1850.20	20.1	V	1.60	8.80	27.33	33.0	-5.7																																																																																																				
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GSM GSM1900 EGPRS	High Frequency Substitution Measurement UL Korea, Ltd. Suwon Laboratory Chamber 2																																																																																																										
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f	SG reading	Ant. Pol.	Cable Loss	Antenna Gain	EIRP	Limit	Delta	Notes																																																																																																			
GHz	(dBm)	(H/V)	(dB)	(dBi)	(dBm)	(dBm)	(dB)																																																																																																				
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1850.20	16.4	V	1.60	8.80	23.57	33.0	-9.4																																																																																																				
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1880.00	17.2	V	1.62	8.62	24.22	33.0	-8.8																																																																																																				
1880.00	19.5	H	1.62	8.62	26.45	33.0	-6.5																																																																																																				
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Rev. 3.17.11																																																																																																											

WCDMA Band 5

WCDMA Band 5 REL99	High Frequency Substitution Measurement UL Korea, Ltd. Suwon Laboratory Chamber 2 Company: Samsung Project #: 16K23302 Date: 04-19-16 Test Engineer: Steven Kim Configuration: EUT ONLY, Y Position Mode: Rel 99_850 MHz <u>Test Equipment:</u> Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT) Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse. <table> <tr> <th>f MHz</th><th>SG reading (dBm)</th><th>Ant. Pol. (H/V)</th><th>Cable Loss (dB)</th><th>Antenna Gain (dBd)</th><th>ERP (dBm)</th><th>Limit (dBm)</th><th>Margin (dB)</th><th>Notes</th></tr> <tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>826.40</td><td>20.53</td><td>V</td><td>1.1</td><td>-1.5</td><td>17.92</td><td>38.5</td><td>-20.5</td><td></td></tr> <tr><td>826.40</td><td>13.10</td><td>H</td><td>1.1</td><td>-1.5</td><td>10.49</td><td>38.5</td><td>-28.0</td><td></td></tr> <tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>836.60</td><td>19.38</td><td>V</td><td>1.1</td><td>-1.4</td><td>16.89</td><td>38.5</td><td>-21.6</td><td></td></tr> <tr><td>836.60</td><td>12.74</td><td>H</td><td>1.1</td><td>-1.4</td><td>10.25</td><td>38.5</td><td>-28.2</td><td></td></tr> <tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>846.60</td><td>18.73</td><td>V</td><td>1.1</td><td>-1.3</td><td>16.35</td><td>38.5</td><td>-22.1</td><td></td></tr> <tr><td>846.60</td><td>13.16</td><td>H</td><td>1.1</td><td>-1.3</td><td>10.78</td><td>38.5</td><td>-27.7</td><td></td></tr> </table> Rev. 3.17.11								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	20.53	V	1.1	-1.5	17.92	38.5	-20.5		826.40	13.10	H	1.1	-1.5	10.49	38.5	-28.0		Mid Ch									836.60	19.38	V	1.1	-1.4	16.89	38.5	-21.6		836.60	12.74	H	1.1	-1.4	10.25	38.5	-28.2		High Ch									846.60	18.73	V	1.1	-1.3	16.35	38.5	-22.1		846.60	13.16	H	1.1	-1.3	10.78	38.5	-27.7	
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	20.53	V	1.1	-1.5	17.92	38.5	-20.5																																																																																											
826.40	13.10	H	1.1	-1.5	10.49	38.5	-28.0																																																																																											
Mid Ch																																																																																																		
836.60	19.38	V	1.1	-1.4	16.89	38.5	-21.6																																																																																											
836.60	12.74	H	1.1	-1.4	10.25	38.5	-28.2																																																																																											
High Ch																																																																																																		
846.60	18.73	V	1.1	-1.3	16.35	38.5	-22.1																																																																																											
846.60	13.16	H	1.1	-1.3	10.78	38.5	-27.7																																																																																											
WCDMA Band 5 HSDPA	High Frequency Substitution Measurement UL Korea, Ltd. Suwon Laboratory Chamber 2 Company: Samsung Project #: 16K23302 Date: 04-19-16 Test Engineer: Steven Kim Configuration: EUT ONLY, Y Position Mode: HSDPA_850 MHz <u>Test Equipment:</u> Receiving: VULB9163-749, and 3m Chamber N-type Cable (Setup this one for testing EUT) Substitution: Dipole S/N: 00164753, 3m SMA Cable Warehouse. <table> <tr> <th>f MHz</th><th>SG reading (dBm)</th><th>Ant. Pol. (H/V)</th><th>Cable Loss (dB)</th><th>Antenna Gain (dBd)</th><th>ERP (dBm)</th><th>Limit (dBm)</th><th>Margin (dB)</th><th>Notes</th></tr> <tr><td>Low Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>826.40</td><td>18.80</td><td>V</td><td>1.1</td><td>-1.5</td><td>16.19</td><td>38.5</td><td>-22.3</td><td></td></tr> <tr><td>826.40</td><td>12.15</td><td>H</td><td>1.1</td><td>-1.5</td><td>9.54</td><td>38.5</td><td>-28.9</td><td></td></tr> <tr><td>Mid Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>836.60</td><td>17.79</td><td>V</td><td>1.1</td><td>-1.4</td><td>15.30</td><td>38.5</td><td>-23.2</td><td></td></tr> <tr><td>836.60</td><td>12.14</td><td>H</td><td>1.1</td><td>-1.4</td><td>9.65</td><td>38.5</td><td>-28.8</td><td></td></tr> <tr><td>High Ch</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>846.60</td><td>17.41</td><td>V</td><td>1.1</td><td>-1.3</td><td>15.03</td><td>38.5</td><td>-23.4</td><td></td></tr> <tr><td>846.60</td><td>12.55</td><td>H</td><td>1.1</td><td>-1.3</td><td>10.17</td><td>38.5</td><td>-28.3</td><td></td></tr> </table> Rev. 3.17.11								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	18.80	V	1.1	-1.5	16.19	38.5	-22.3		826.40	12.15	H	1.1	-1.5	9.54	38.5	-28.9		Mid Ch									836.60	17.79	V	1.1	-1.4	15.30	38.5	-23.2		836.60	12.14	H	1.1	-1.4	9.65	38.5	-28.8		High Ch									846.60	17.41	V	1.1	-1.3	15.03	38.5	-23.4		846.60	12.55	H	1.1	-1.3	10.17	38.5	-28.3	
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes																																																																																										
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826.40	12.15	H	1.1	-1.5	9.54	38.5	-28.9																																																																																											
Mid Ch																																																																																																		
836.60	17.79	V	1.1	-1.4	15.30	38.5	-23.2																																																																																											
836.60	12.14	H	1.1	-1.4	9.65	38.5	-28.8																																																																																											
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846.60	17.41	V	1.1	-1.3	15.03	38.5	-23.4																																																																																											
846.60	12.55	H	1.1	-1.3	10.17	38.5	-28.3																																																																																											