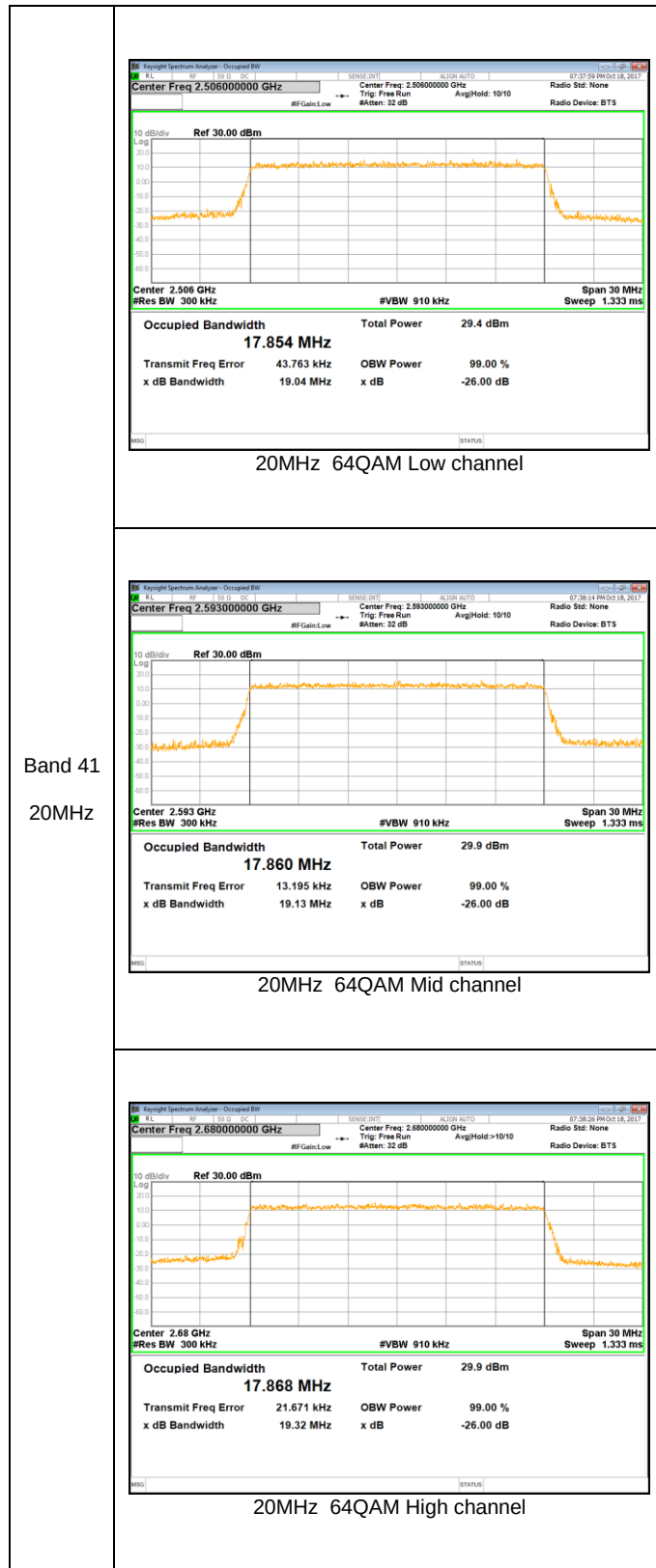
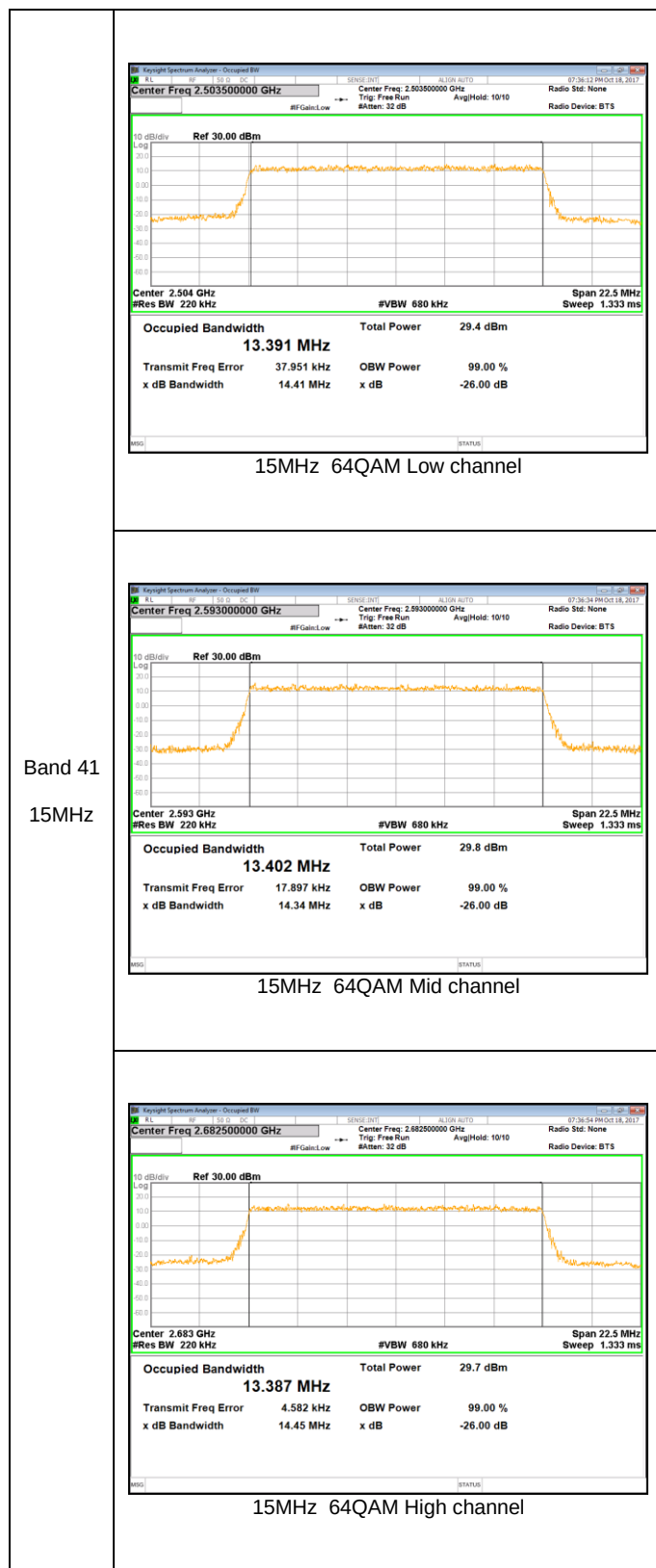
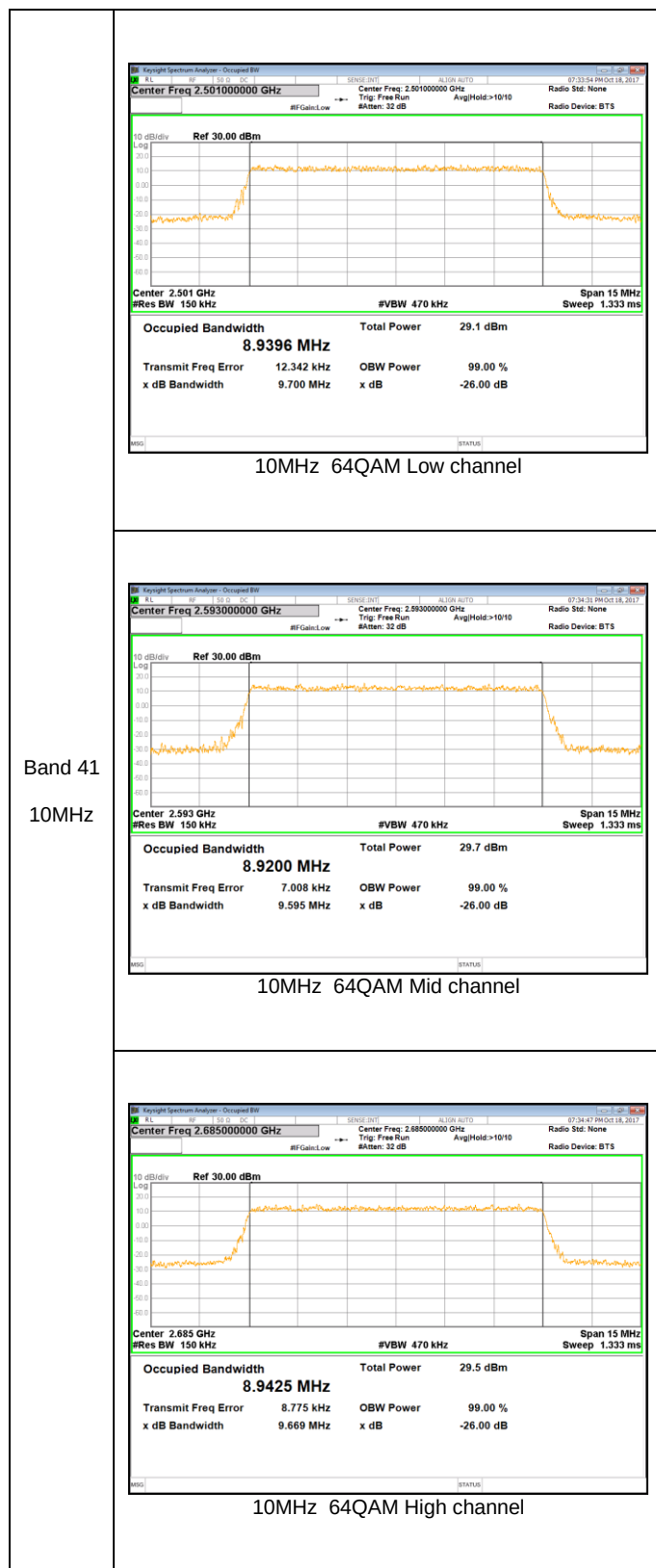
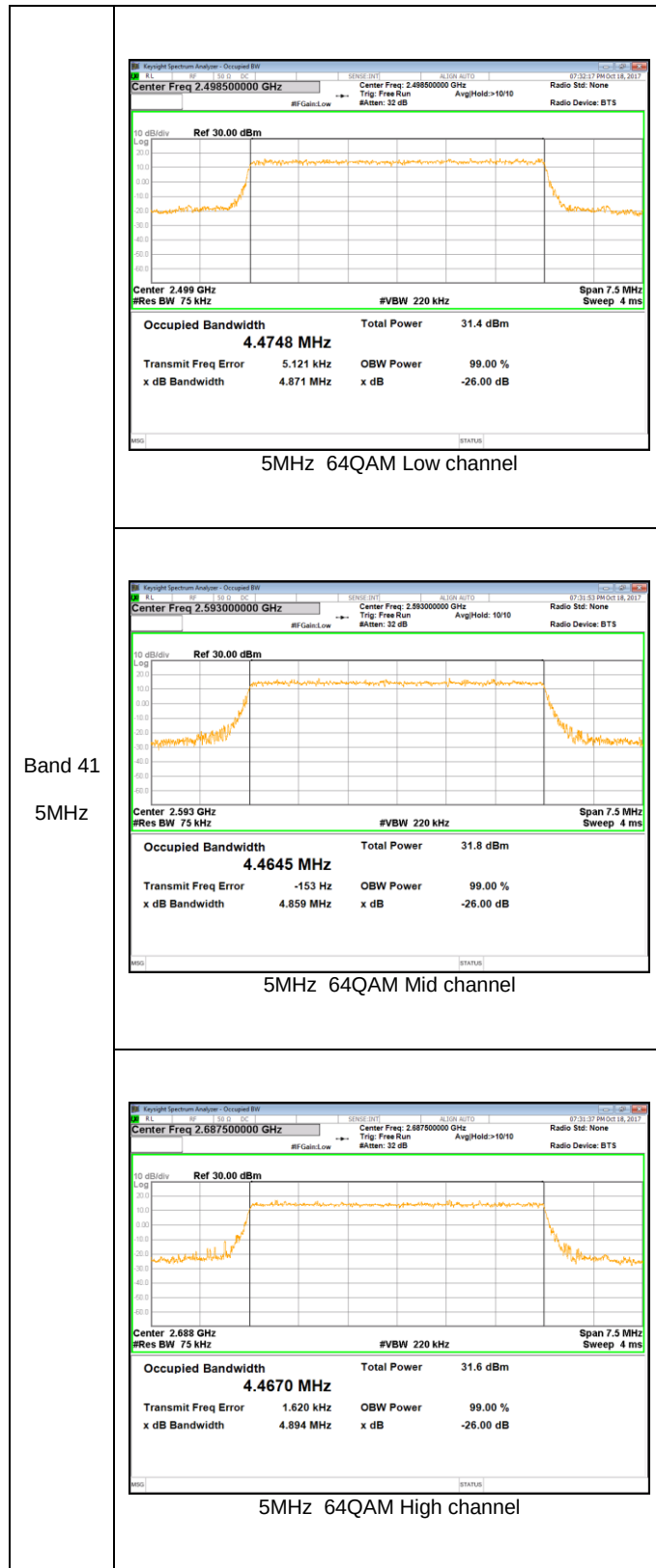










9.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238, §27.53(m) and §27.53(h)

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 27.53(m) 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 than $43 + 10 \log (P)$ 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.

(h) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v03

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

CDMA

- a) Set the RBW = 1 % of OBW(13KHz)
- b) Set VBW $\geq 3 \times$ RBW;
- c) Sweep time = Auto ;
- d) Detector = RMS;
- e) Trace mode = Average(100);
- f) Using band integration method set marker to start and stop frequency.

(Set start or stop frequency to band edge, span – 15kHz)

GSM

- b) Set the RBW = 1 ~ 5% of OBW(GSM1900 – 9.1KHz)
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = 1S ;
- e) Detector = RMS;
- f) Ensure that the number of measurement points $\geq 2 \times \text{Span} / \text{RBW}$;
- g) Trace mode = Average(100);
- h) Add duty cycle correction factor (9dB)

WCDMA/LTE

- a) Set the RBW = 1 ~ 1.5 % of OBW(Typically limited to a minimum RBW of 1% of the OBW)
- b) Set VBW $\geq 3 \times$ RBW;
- c) Set span ≥ 1.5 times the OBW;
- d) Sweep time = Auto;
- e) Detector = RMS;
- f) Ensure that the number of measurement points $\geq 2 \times \text{Span} / \text{RBW}$;
- g) Trace mode = Average (100);

NOTE

LTE Band 41 - Duty cycle correction factor(2.25dB) already applied on the plot.

RESULTS

CDMA

Band	Mode	Side	f [MHz]	Level [dBm]	Limit [dBm]
BC0	1xRTT	Lower	824	-17.169	-13.00
		Upper	849	-14.332	
	EVDO Rel.0	Lower	824	-16.856	
		Upper	849	-14.363	

GSM

Band	Mode	Side	f [MHz]	Level [dBm]	Limit [dBm]
GSM1900	GPRS	Lower	1849.982	-17.135	-13.00
		Upper	1910.018	-21.722	
	EGPRS	Lower	1849.997	-17.430	
		Upper	1910.013	-23.830	

WCDMA

Band	Mode	Side	f [MHz]	Level [dBm]	Limit [dBm]
Band 5	REL99	Lower	824.000	-26.813	-13.00
		Upper	849.000	-30.583	
	HSDPA	Lower	824.000	-30.024	
		Upper	849.000	-30.703	
Band 2	REL99	Lower	1850.000	-27.285	
		Upper	1910.000	-27.337	
	HSDPA	Lower	1850.000	-30.438	
		Upper	1910.000	-28.329	

LTE 5

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
10 MHz	QPSK	Lower	1RB	824.000	-31.083	-13.00
			FRB	824.000	-28.395	
		Upper	1RB	849.000	-32.179	
			FRB	849.000	-27.725	
	16QAM	Lower	1RB	824.000	-31.275	
			FRB	824.000	-30.384	
		Upper	1RB	849.000	-33.690	
			FRB	849.000	-28.678	
	64QAM	Lower	1RB	824.000	-39.620	
			FRB	824.000	-31.122	
		Upper	1RB	849.000	-36.048	
			FRB	849.000	-32.081	
5 MHz	QPSK	Lower	1RB	824.000	-23.226	-13.00
			FRB	824.000	-30.539	
		Upper	1RB	849.000	-23.836	
			FRB	849.000	-29.400	
	16QAM	Lower	1RB	824.000	-23.117	
			FRB	824.000	-28.822	
		Upper	1RB	849.000	-24.270	
			FRB	849.000	-31.618	
	64QAM	Lower	1RB	824.000	-25.110	
			FRB	824.000	-32.086	
		Upper	1RB	849.000	-24.210	
			FRB	849.000	-33.271	
3 MHz	QPSK	Lower	1RB	824.000	-18.003	-13.00
			FRB	824.000	-26.752	
		Upper	1RB	849.000	-19.816	
			FRB	849.000	-28.082	
	16QAM	Lower	1RB	824.000	-18.015	
			FRB	824.000	-27.904	
		Upper	1RB	849.000	-20.360	
			FRB	849.000	-27.342	
	64QAM	Lower	1RB	824.000	-22.300	
			FRB	824.000	-27.508	
		Upper	1RB	849.000	-22.184	
			FRB	849.000	-30.220	

LTE 5

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
1.4 MHz	QPSK	Lower	1RB	824.000	-25.742	-13.00
			FRB	824.000	-36.393	
		Upper	1RB	849.000	-31.632	
			FRB	849.000	-37.980	
	16QAM	Lower	1RB	824.000	-29.132	
			FRB	824.000	-40.619	
		Upper	1RB	849.000	-34.816	
			FRB	849.000	-38.252	
	64QAM	Lower	1RB	824.000	-30.899	
			FRB	824.000	-43.979	
		Upper	1RB	849.000	-35.651	
			FRB	849.000	-39.275	

LTE 4

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
20 MHz	QPSK	Lower	1RB	1710.000	-30.315	-13.00
			FRB	1710.000	-30.045	
		Upper	1RB	1755.000	-28.850	
			FRB	1755.000	-26.495	
	16QAM	Lower	1RB	1710.000	-31.923	
			FRB	1710.000	-32.154	
		Upper	1RB	1755.000	-29.020	
			FRB	1755.000	-28.045	
	64QAM	Lower	1RB	1710.000	-33.336	
			FRB	1710.000	-32.617	
		Upper	1RB	1755.000	-35.327	
			FRB	1755.000	-29.090	
15 MHz	QPSK	Lower	1RB	1710.000	-30.654	-13.00
			FRB	1710.000	-30.600	
		Upper	1RB	1755.000	-27.853	
			FRB	1755.000	-30.017	
	16QAM	Lower	1RB	1710.000	-29.716	
			FRB	1710.000	-31.978	
		Upper	1RB	1755.000	-29.002	
			FRB	1755.000	-30.898	
	64QAM	Lower	1RB	1710.000	-27.899	
			FRB	1710.000	-33.394	
		Upper	1RB	1755.000	-32.251	
			FRB	1755.000	-31.384	

LTE 4

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
10 MHz	QPSK	Lower	1RB	1710.000	-32.576	-13.00
			FRB	1710.000	-32.748	
		Upper	1RB	1755.000	-28.330	
			FRB	1755.000	-31.871	
	16QAM	Lower	1RB	1710.000	-31.019	
			FRB	1710.000	-33.742	
		Upper	1RB	1755.000	-29.715	
			FRB	1755.000	-33.248	
	64QAM	Lower	1RB	1710.000	-32.902	
			FRB	1710.000	-33.281	
		Upper	1RB	1755.000	-33.720	
			FRB	1755.000	-34.088	
5 MHz	QPSK	Lower	1RB	1710.000	-23.582	-13.00
			FRB	1710.000	-31.561	
		Upper	1RB	1755.000	-20.621	
			FRB	1755.000	-29.490	
	16QAM	Lower	1RB	1710.000	-21.693	
			FRB	1710.000	-31.485	
		Upper	1RB	1755.000	-22.731	
			FRB	1755.000	-29.535	
	64QAM	Lower	1RB	1710.000	-22.677	
			FRB	1710.000	-32.849	
		Upper	1RB	1755.000	-23.745	
			FRB	1755.000	-31.510	

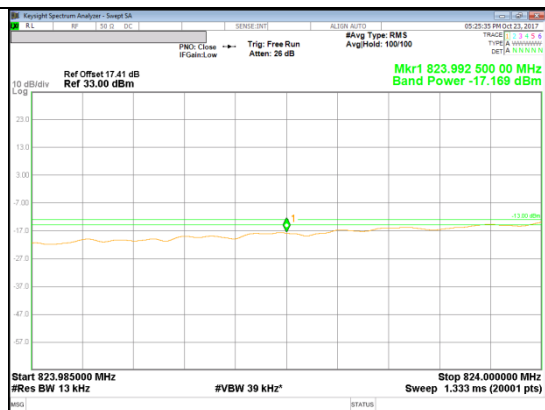
LTE 4

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
3 MHz	QPSK	Lower	1RB	1710.000	-20.788	-13.00
			FRB	1710.000	-26.789	
		Upper	1RB	1755.000	-17.727	
			FRB	1755.000	-26.941	
	16QAM	Lower	1RB	1710.000	-20.357	
			FRB	1710.000	-29.456	
		Upper	1RB	1755.000	-19.204	
			FRB	1755.000	-27.163	
	64QAM	Lower	1RB	1710.000	-21.896	
			FRB	1710.000	-28.710	
		Upper	1RB	1755.000	-21.429	
			FRB	1755.000	-28.207	
1.4 MHz	QPSK	Lower	1RB	1710.000	-32.616	-13.00
			FRB	1710.000	-38.048	
		Upper	1RB	1755.000	-27.432	
			FRB	1755.000	-33.560	
	16QAM	Lower	1RB	1710.000	-31.411	
			FRB	1710.000	-37.100	
		Upper	1RB	1755.000	-27.508	
			FRB	1755.000	-34.962	
	64QAM	Lower	1RB	1710.000	-31.016	
			FRB	1710.000	-35.451	
		Upper	1RB	1755.000	-29.656	
			FRB	1755.000	-36.247	

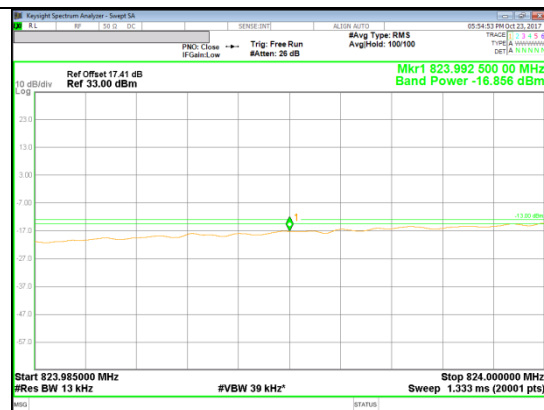
9.2.1. BAND EDGE PLOTS

CDMA

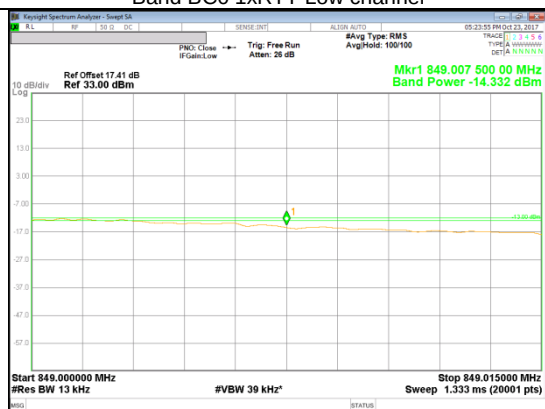
BC0



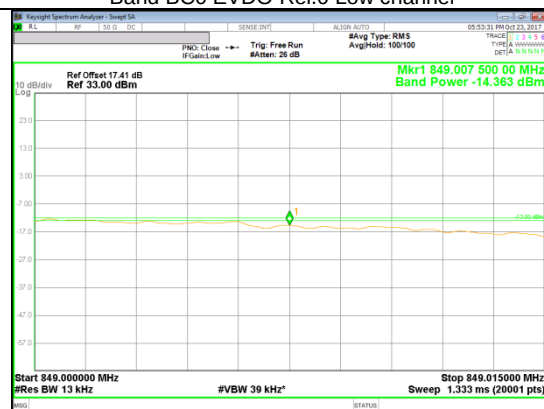
Band BC0 1xRTT Low channel



Band BC0 EVDO Rel.0 Low channel



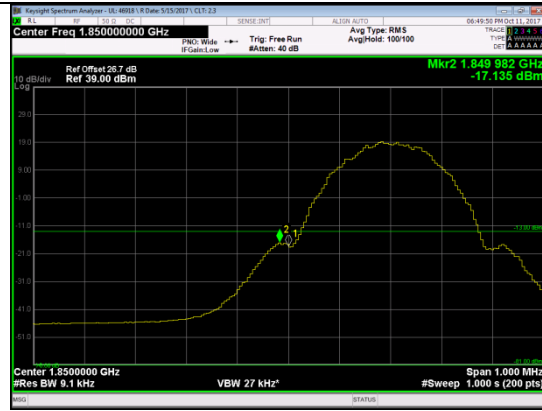
Band BC0 1xRTT High channel



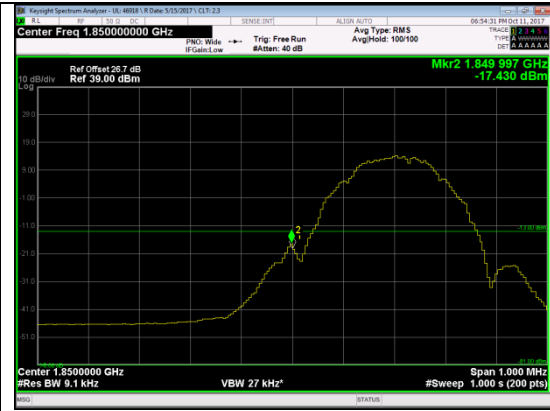
Band BC0 EVDO Rel.0 High channel

GSM

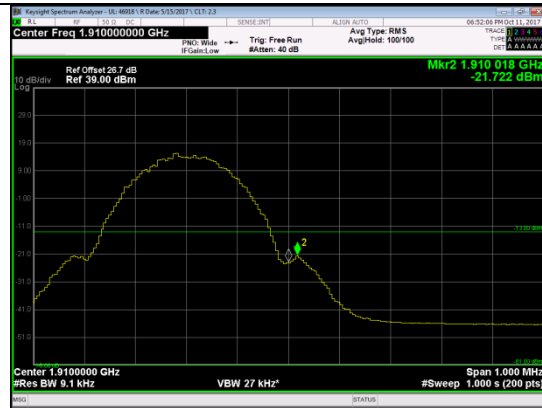
GSM
1900



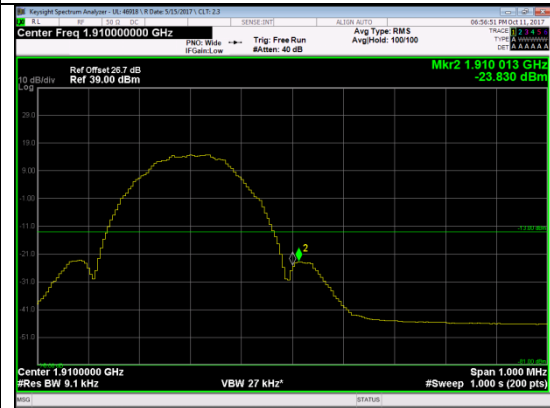
GSM1900 GPRS Low channel



GSM1900 EGPRS Low channel



GSM1900 GPRS High channel

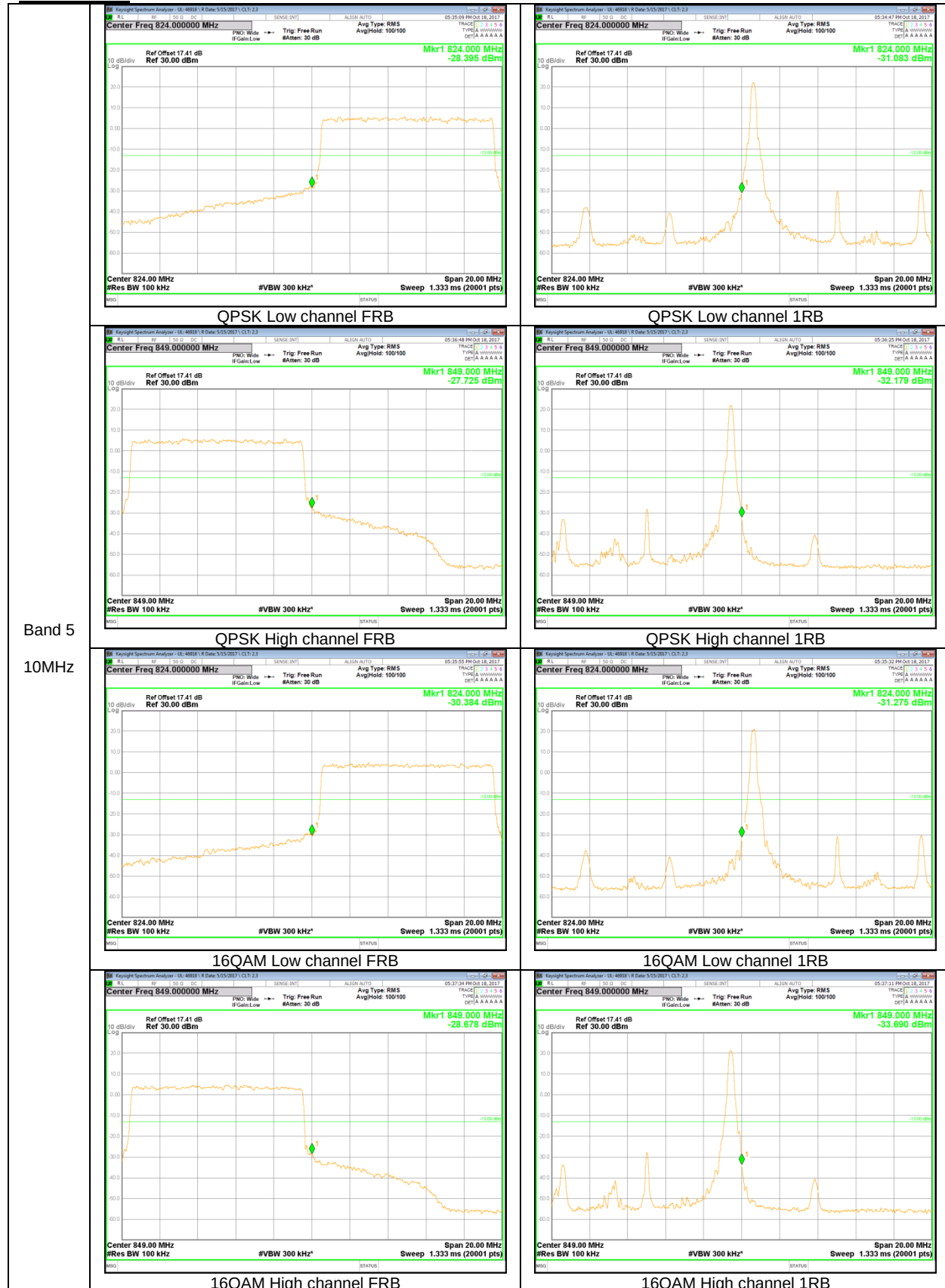


GSM1900 EGPRS High channel

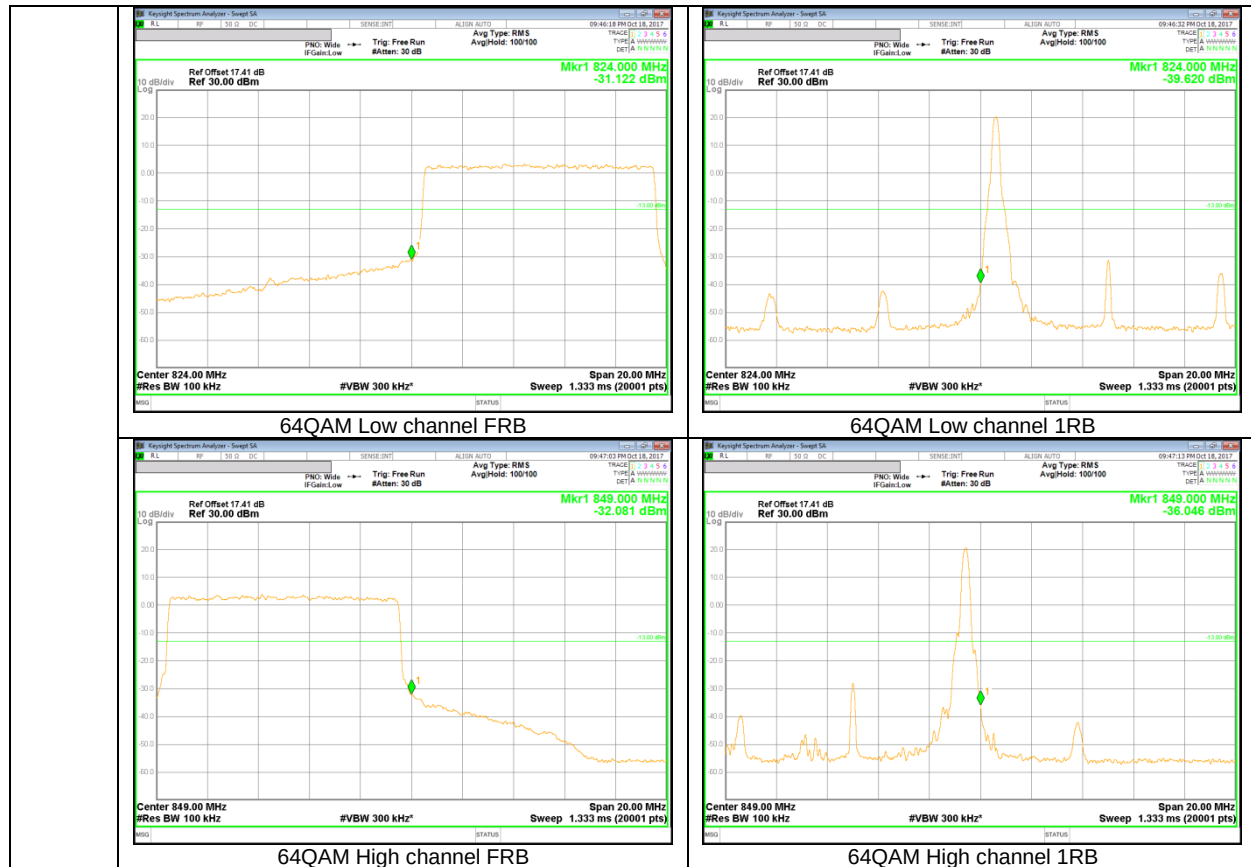
WCDMA

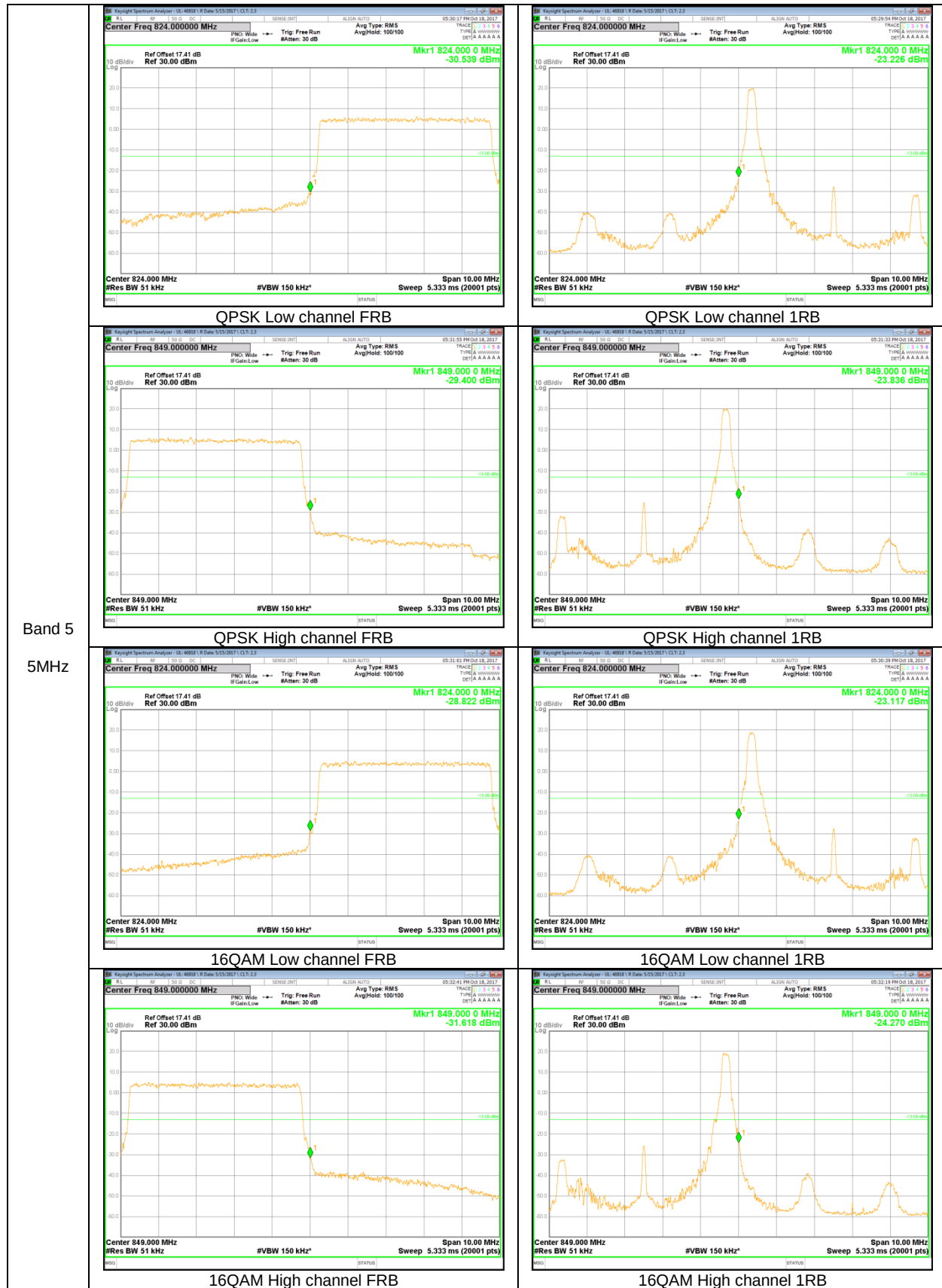


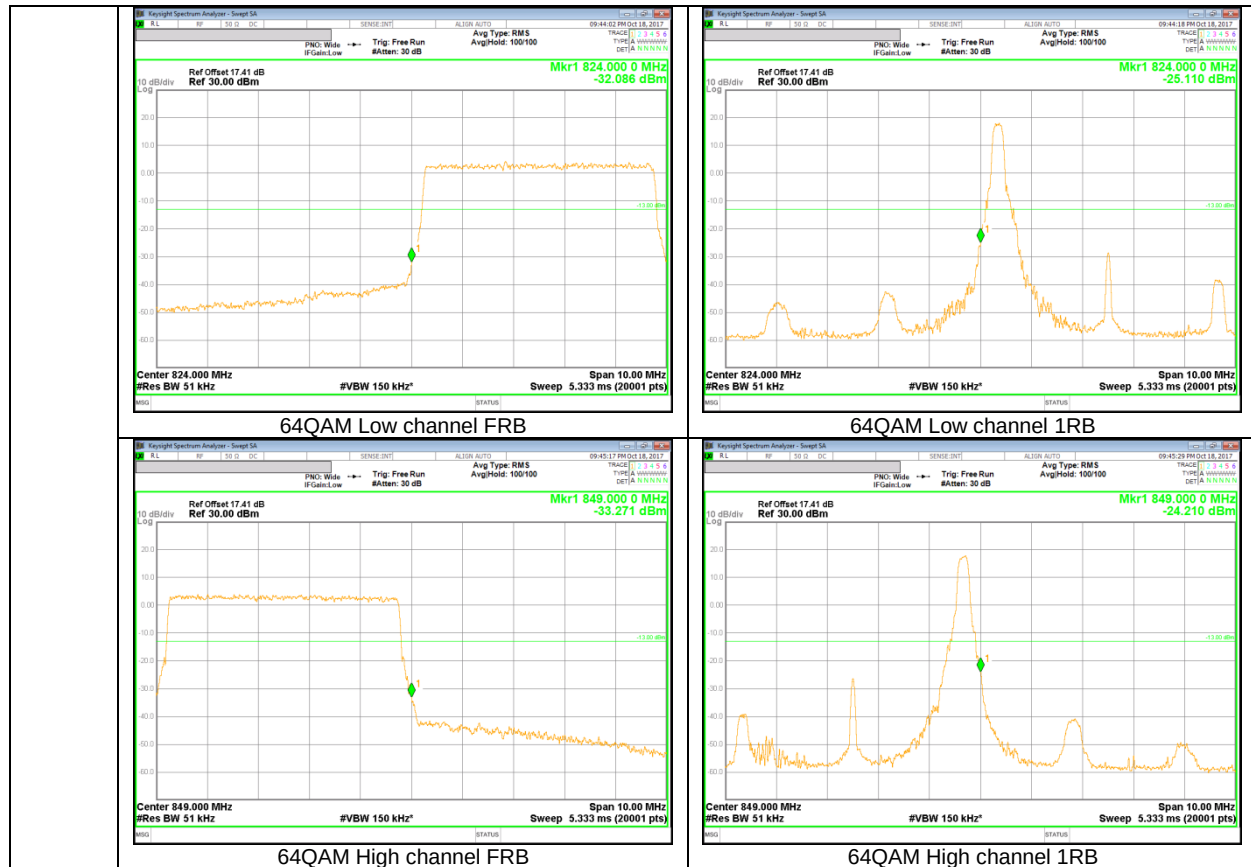
LTE Band 5

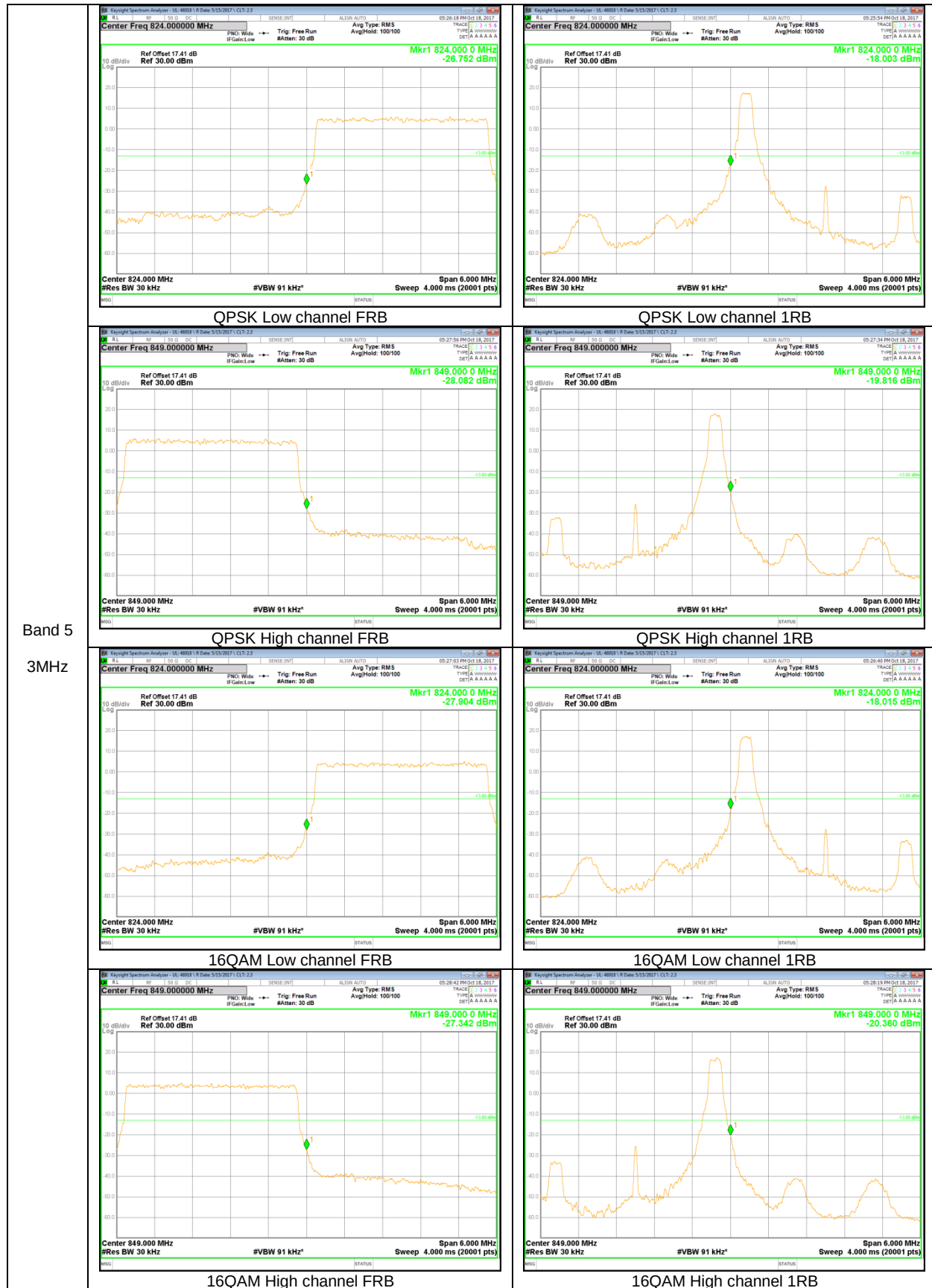


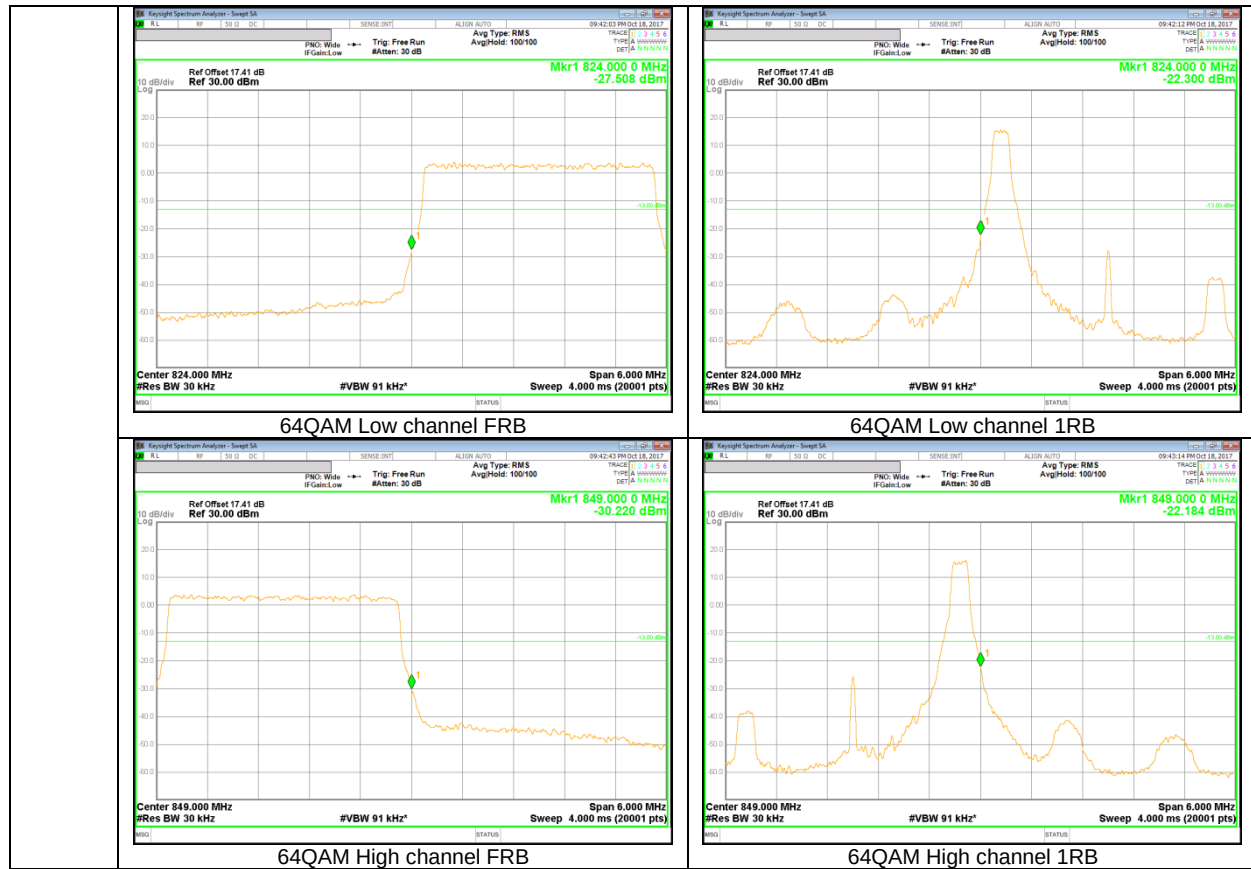
Band 5
10MHz

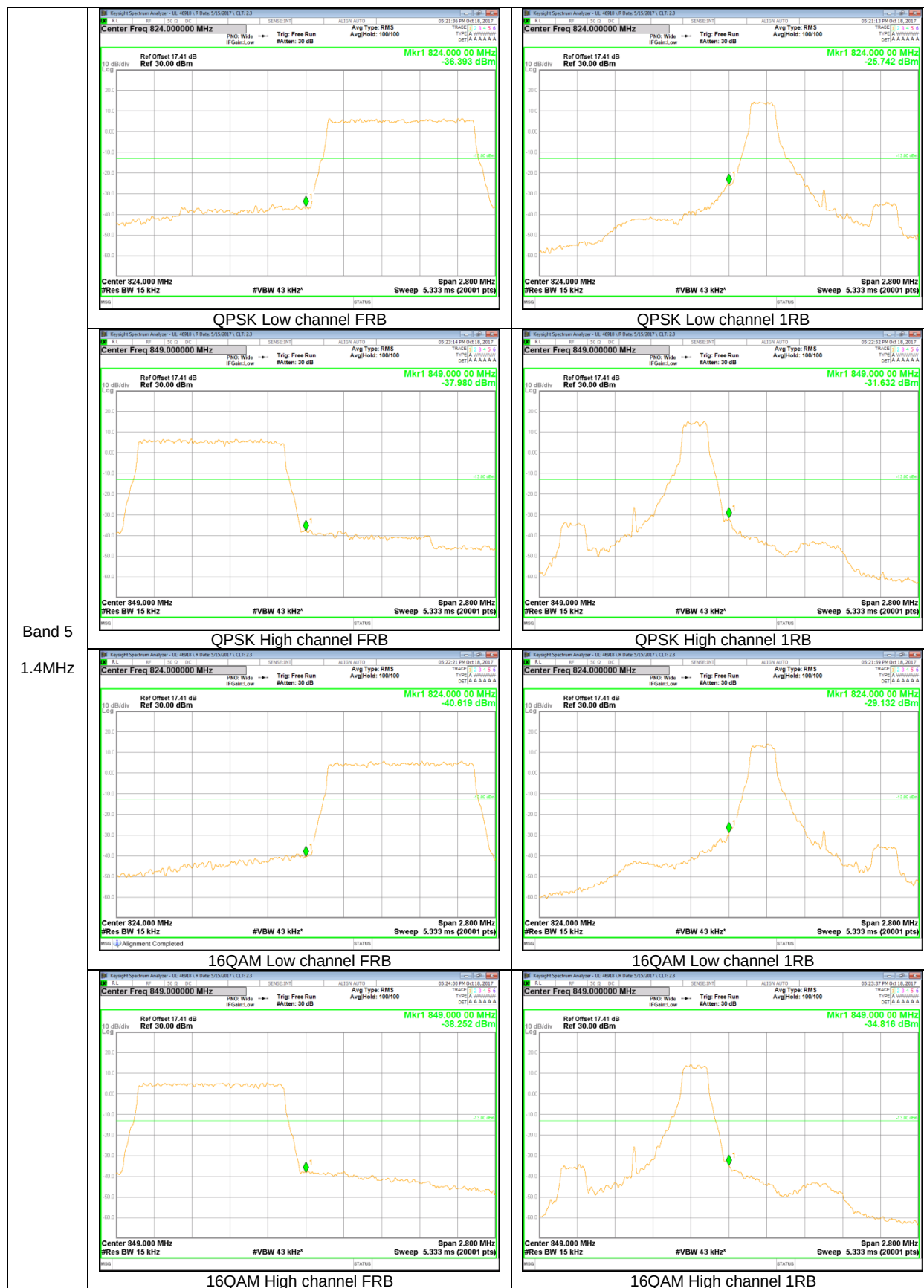


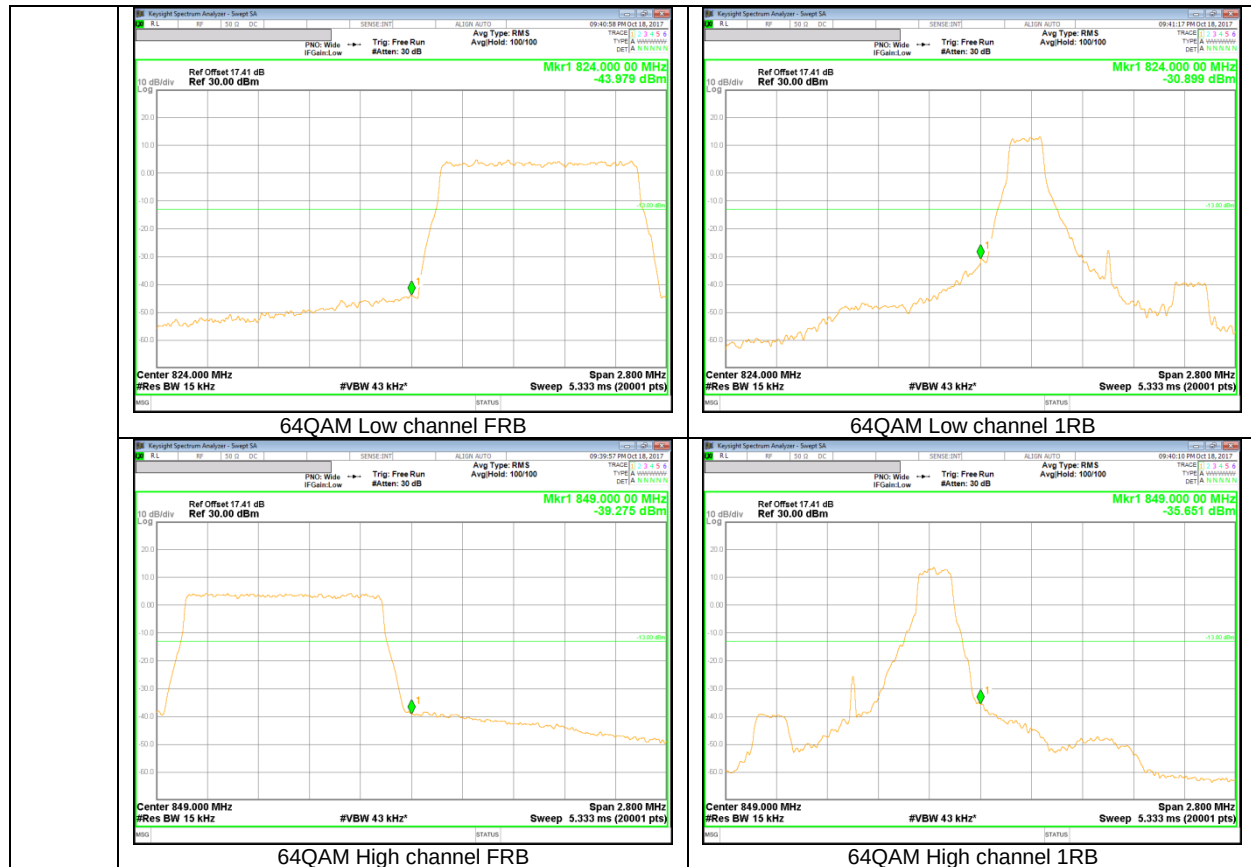




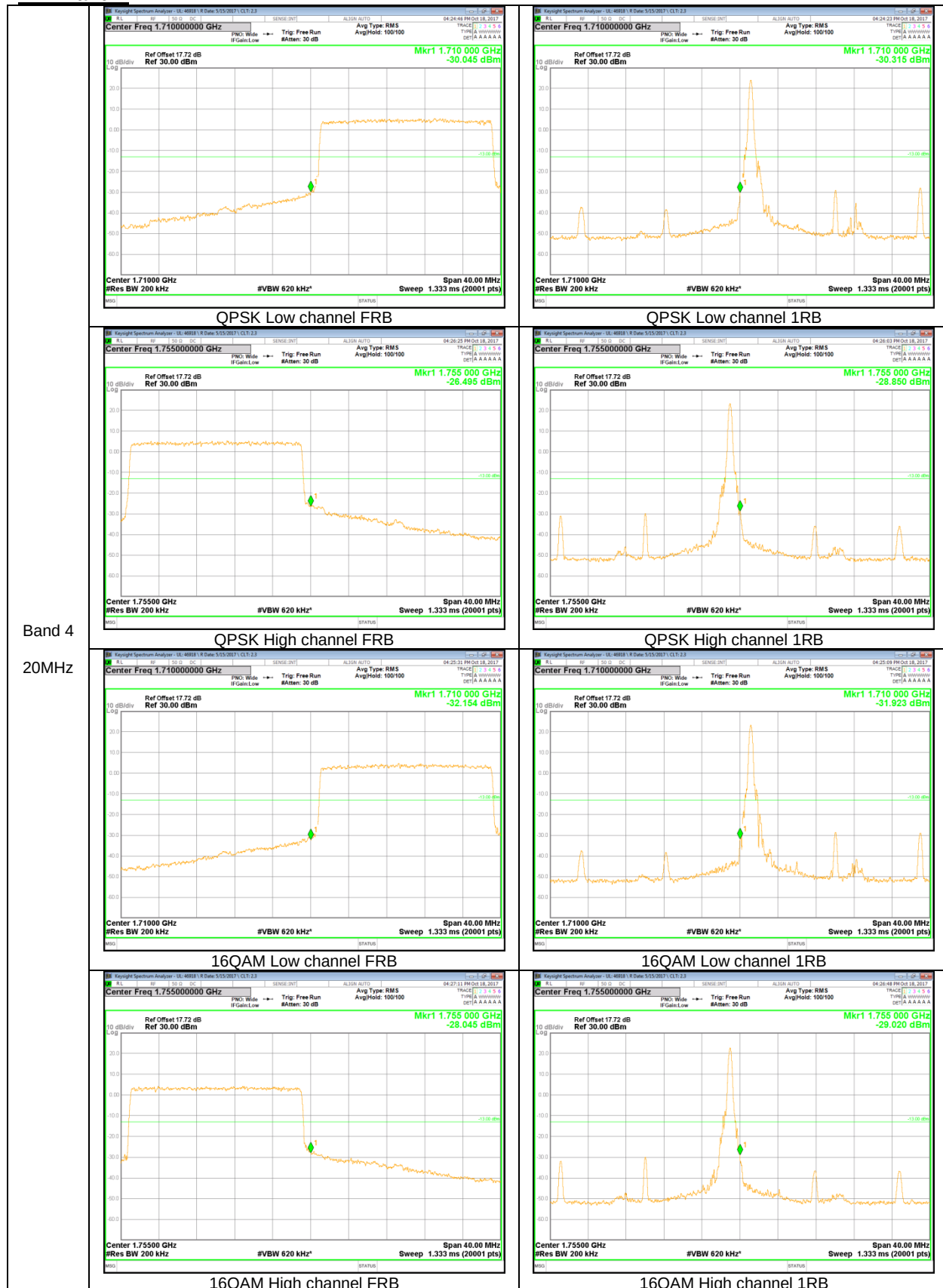








LTE Band 4



Band 4
20MHz

