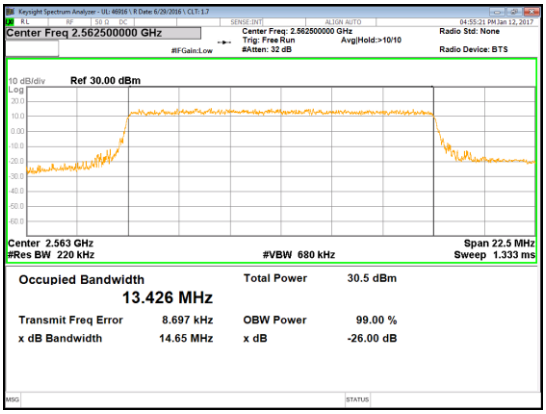
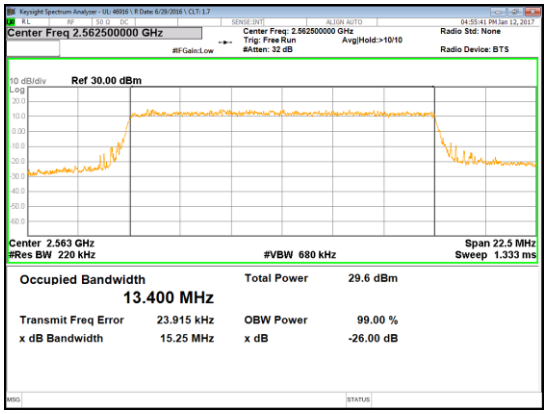
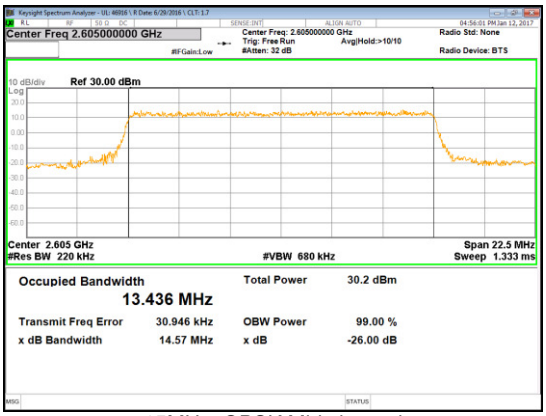
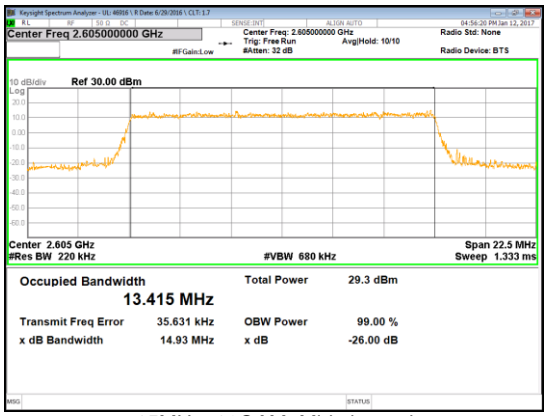
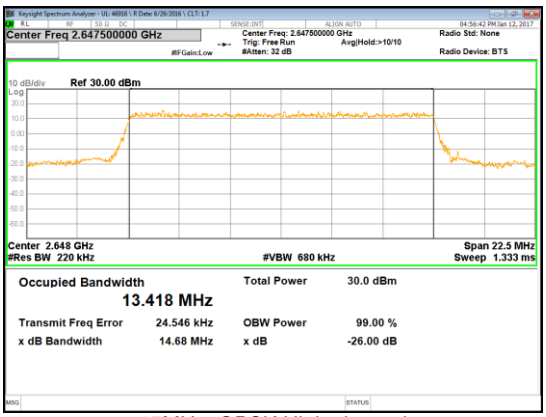
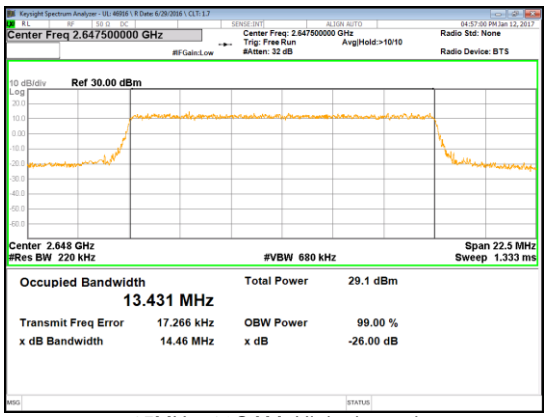
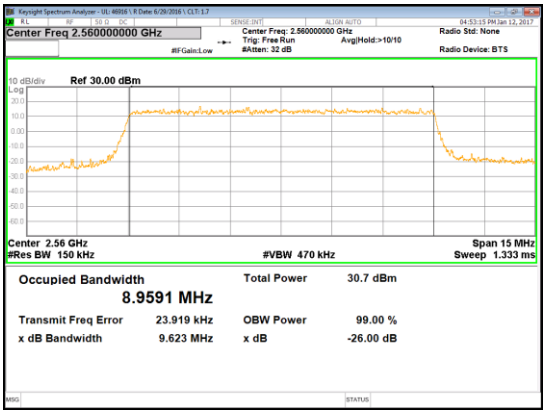
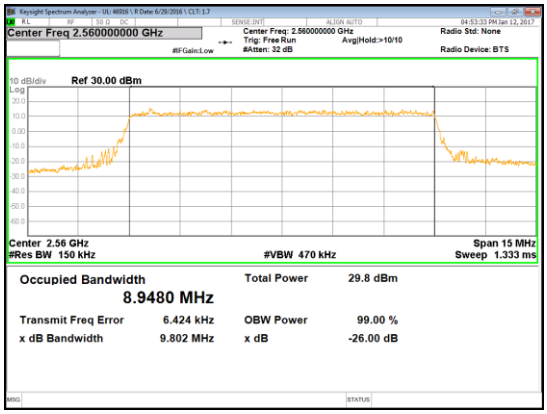
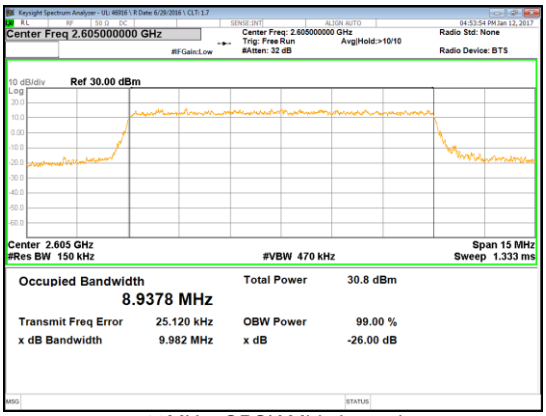
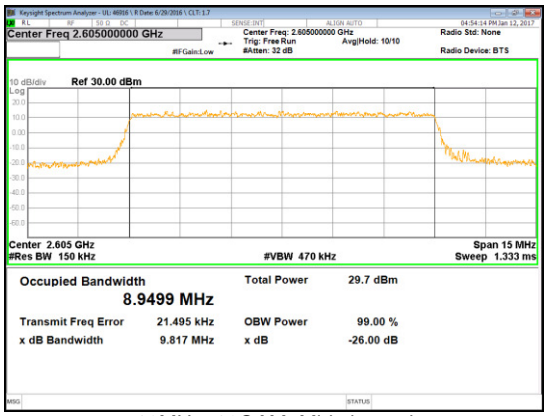
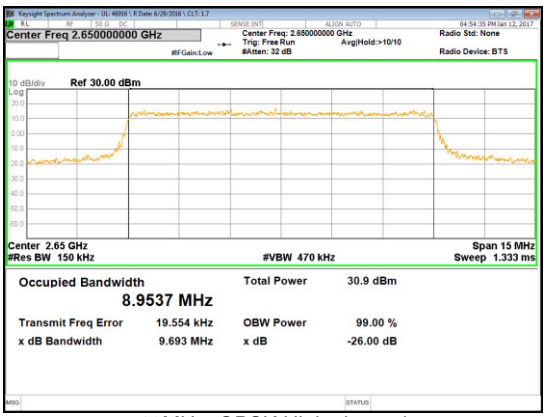
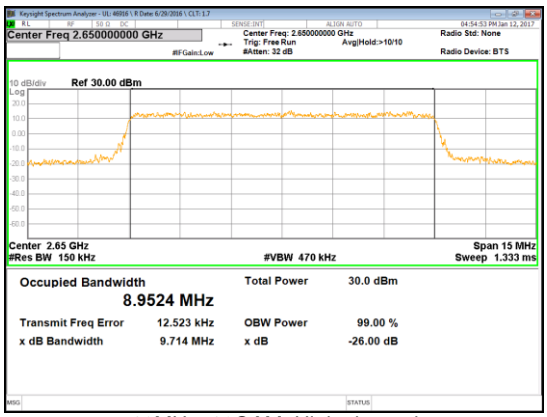
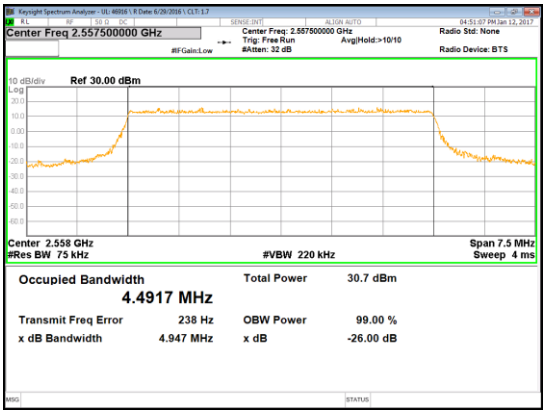
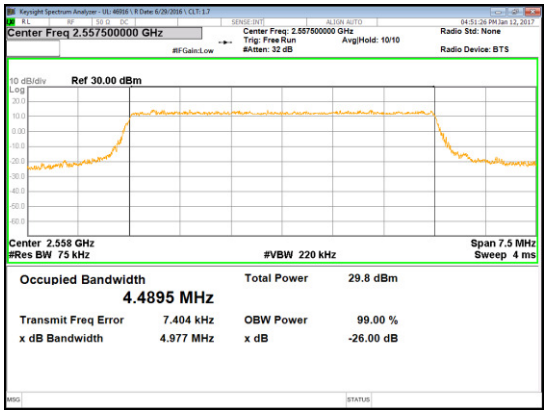
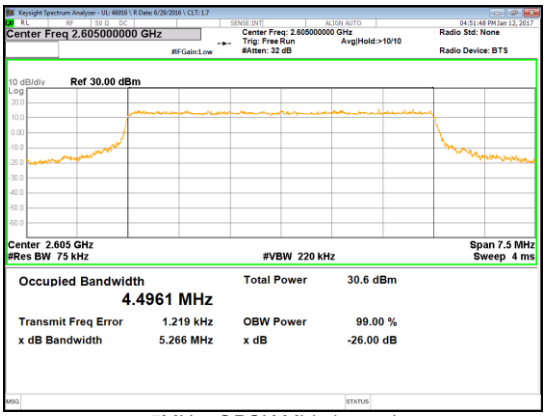
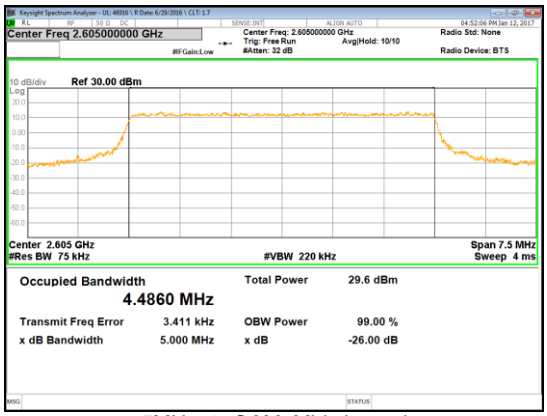
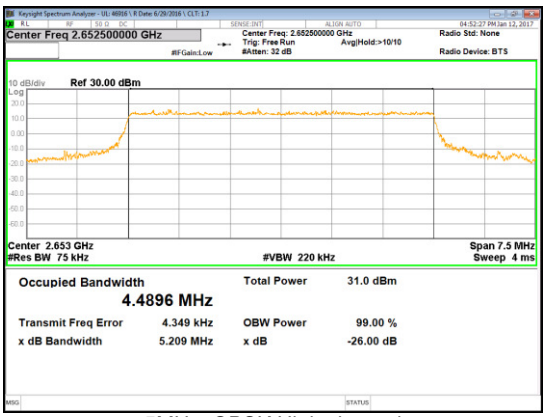
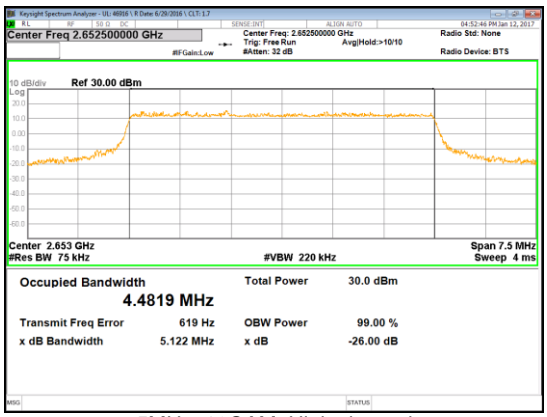
	 15MHz QPSK Low channel	 15MHz 16QAM Low channel
Band 41 15MHz	 15MHz QPSK Mid channel	 15MHz 16QAM Mid channel
	 15MHz QPSK High channel	 15MHz 16QAM High channel

Band 41 10MHz	 10MHz QPSK Low channel	 10MHz 16QAM Low channel
	 10MHz QPSK Mid channel	 10MHz 16QAM Mid channel
	 10MHz QPSK High channel	 10MHz 16QAM High channel

Band 41 5MHz	 5MHz QPSK Low channel	 5MHz 16QAM Low channel
	 5MHz QPSK Mid channel	 5MHz 16QAM Mid channel
	 5MHz QPSK High channel	 5MHz 16QAM High channel

10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §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 27.53(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 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

Per KDB 971168 D01 Power Meas License Digital Systems v02r02
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.

GSM

a) Set the RBW = 1 ~ 5% of OBW(GSM850 – 8.2KHz, GSM1900 – 9.1KHz)

b) Set VBW ≥ 3 × RBW;

c) Set span ≥ 1.5 times the OBW;

d) Sweep time = 1S ;

e) Detector = RMS;

f) Ensure that the number of measurement points ≥ 2*Span/RBW;

g) Trace mode = Average(100);

h) Add duty cycle correction factor (9dB)

WCDMA/LTE

b) Set the RBW = 1 ~ 1.5 % of OBW(Typically limited to a minimum RBW of 1% of the OBW)

b) Set VBW ≥ 3 × RBW;

c) Set span ≥ 1.5 times the OBW;

d) Sweep time = Auto;

e) Detector = RMS;

f) Ensure that the number of measurement points ≥ 2*Span/RBW;

g) Trace mode = Average (100);

NOTE

LTE 41 Reading need apply 2.24dB duty cycle factor on the plot.

RESULTS

GSM

Band	Mode	Side	f [MHz]	Level [dBm]	Limit [dBm]
GSM850	GPRS	Lower	823.997	-15.866	-13.00
		Upper	849.023	-16.389	
	EGPRS	Lower	823.987	-23.478	
		Upper	849.013	-24.782	
GSM1900	GPRS	Lower	1849.982	-18.063	
		Upper	1910.023	-18.008	
	EGPRS	Lower	1849.982	-23.144	
		Upper	1910.033	-24.770	

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

WCDMA

Band	Mode	Side	f [MHz]	Level [dBm]	Limit [dBm]
Band 5	REL99	Lower	824	-30.063	-13.00
		Upper	849	-31.225	
	HSDPA	Lower	824	-33.527	
		Upper	849	-31.588	
Band 2	REL99	Lower	1850	-29.146	
		Upper	1910	-29.455	
	HSDPA	Lower	1850	-32.170	
		Upper	1910	-30.899	

LTE 5

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
10 MHz	QPSK	Lower	1RB	824.000	-31.884	-13.00
			FRB	824.000	-29.244	
		Upper	1RB	849.000	-26.351	
			FRB	849.000	-28.515	
	16QAM	Lower	1RB	824.000	-31.367	
			FRB	824.000	-30.100	
		Upper	1RB	849.000	-31.457	
			FRB	849.000	-30.635	
5 MHz	QPSK	Lower	1RB	824.000	-19.978	
			FRB	824.000	-27.777	
		Upper	1RB	849.000	-20.338	
			FRB	849.000	-26.936	
	16QAM	Lower	1RB	824.000	-21.331	
			FRB	824.000	-28.297	
		Upper	1RB	849.000	-20.160	
			FRB	849.000	-27.673	
3 MHz	QPSK	Lower	1RB	824.000	-17.507	
			FRB	824.000	-24.119	
		Upper	1RB	849.000	-15.129	
			FRB	849.000	-24.214	
	16QAM	Lower	1RB	824.000	-19.190	
			FRB	824.000	-25.966	
		Upper	1RB	849.000	-17.579	
			FRB	849.000	-26.446	
1.4 MHz	QPSK	Lower	1RB	824.000	-28.012	
			FRB	824.000	-29.284	
		Upper	1RB	849.000	-27.407	
			FRB	849.000	-30.120	
	16QAM	Lower	1RB	824.000	-28.835	
			FRB	824.000	-31.490	
		Upper	1RB	849.000	-29.355	
			FRB	849.000	-30.025	

LTE 41

Bandwidth	Mode	f [MHz]	RB Status	Side Trace	Level [dBm]	Limit [dBm]
20 MHz	QPSK	2565.0	1RB	Lower Trace 1	-25.08	-10.00
				Lower Trace 2	-34.84	-13.00
				Lower Trace 3	-42.07	-25.00
			FRB	Lower Trace 1	-25.5	-10.00
				Lower Trace 2	-30.92	-13.00
				Lower Trace 3	-41.83	-25.00
		2645.0	1RB	Upper Trace 1	-26.21	-10.00
				Upper Trace 2	-30.86	-13.00
				Upper Trace 3	-41.86	-25.00
			FRB	Upper Trace 1	-23.35	-10.00
				Upper Trace 2	-26.03	-13.00
				Upper Trace 3	-38.99	-25.00
	16QAM	2565.0	1RB	Lower Trace 1	-25.66	-10.00
				Lower Trace 2	-35.67	-13.00
				Lower Trace 3	-42.1	-25.00
			FRB	Lower Trace 1	-27.02	-10.00
				Lower Trace 2	-32.4	-13.00
				Lower Trace 3	-41.84	-25.00
		2645.0	1RB	Upper Trace 1	-27.9	-10.00
				Upper Trace 2	-32.73	-13.00
				Upper Trace 3	-41.84	-25.00
			FRB	Upper Trace 1	-24.27	-10.00
				Upper Trace 2	-26.98	-13.00
				Upper Trace 3	-39.35	-25.00

LTE 41 (Continue)

Bandwidth	Mode	f [MHz]	RB Status	Side Trace	Level [dBm]	Limit [dBm]
15 MHz	QPSK	2562.5	1RB	Lower Trace 1	-24.66	-10.00
				Lower Trace 2	-30.64	-13.00
				Lower Trace 3	-41.86	-25.00
			FRB	Lower Trace 1	-23.76	-10.00
				Lower Trace 2	-31.23	-13.00
				Lower Trace 3	-40.66	-25.00
		2647.5	1RB	Upper Trace 1	-25.51	-10.00
				Upper Trace 2	-27.45	-13.00
				Upper Trace 3	-41.86	-25.00
			FRB	Upper Trace 1	-20.11	-10.00
				Upper Trace 2	-25.1	-13.00
				Upper Trace 3	-34.35	-25.00
	16QAM	2562.5	1RB	Lower Trace 1	-26.31	-10.00
				Lower Trace 2	-31.77	-13.00
				Lower Trace 3	-41.98	-25.00
			FRB	Lower Trace 1	-26.11	-10.00
				Lower Trace 2	-31.68	-13.00
				Lower Trace 3	-40.88	-25.00
		2647.5	1RB	Upper Trace 1	-29.86	-10.00
				Upper Trace 2	-28.92	-13.00
				Upper Trace 3	-41.99	-25.00
			FRB	Upper Trace 1	-21.93	-10.00
				Upper Trace 2	-26.66	-13.00
				Upper Trace 3	-35.06	-25.00

LTE 41 (Continue)

Bandwidth	Mode	f [MHz]	RB Status	Side Trace	Level [dBm]	Limit [dBm]
10 MHz	QPSK	2560.0	1RB	Lower Trace 1	-21.5	-10.00
				Lower Trace 2	-25.54	-13.00
				Lower Trace 3	-41.88	-25.00
			FRB	Lower Trace 1	-21.91	-10.00
				Lower Trace 2	-32.19	-13.00
				Lower Trace 3	-39.84	-25.00
		2650.0	1RB	Upper Trace 1	-23.92	-10.00
				Upper Trace 2	-21.75	-13.00
				Upper Trace 3	-41.65	-25.00
			FRB	Upper Trace 1	-16.17	-10.00
				Upper Trace 2	-22.62	-13.00
				Upper Trace 3	-30.42	-25.00
	16QAM	2560.0	1RB	Lower Trace 1	-25.3	-10.00
				Lower Trace 2	-27.06	-13.00
				Lower Trace 3	-41.94	-25.00
			FRB	Lower Trace 1	-23.51	-10.00
				Lower Trace 2	-33.45	-13.00
				Lower Trace 3	-39.57	-25.00
		2650.0	1RB	Upper Trace 1	-24.51	-10.00
				Upper Trace 2	-23.58	-13.00
				Upper Trace 3	-41.74	-25.00
			FRB	Upper Trace 1	-17.71	-10.00
				Upper Trace 2	-25.16	-13.00
				Upper Trace 3	-30.34	-25.00

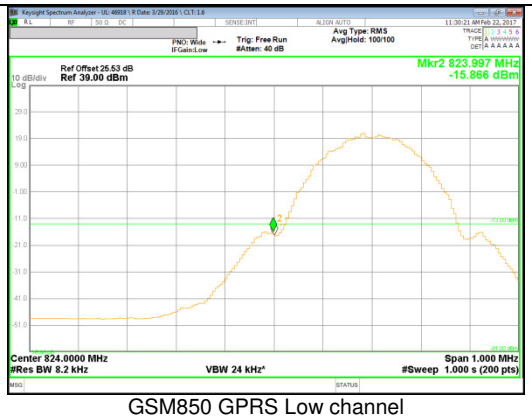
LTE 41 (Continue)

Bandwidth	Mode	f [MHz]	RB Status	Side Trace	Level [dBm]	Limit [dBm]
5 MHz	QPSK	2557.5	1RB	Lower Trace 1	-19.52	-10.00
				Lower Trace 2	-41.37	-13.00
				Lower Trace 3	-41.49	-25.00
			FRB	Lower Trace 1	-16.06	-10.00
				Lower Trace 2	-35.82	-13.00
				Lower Trace 3	-37.14	-25.00
		2652.5	1RB	Upper Trace 1	-15.34	-10.00
				Upper Trace 2	-41.43	-13.00
				Upper Trace 3	-41.53	-25.00
			FRB	Upper Trace 1	-11.46	-10.00
				Upper Trace 2	-26.31	-13.00
				Upper Trace 3	-27.07	-25.00
	16QAM	2557.5	1RB	Lower Trace 1	-19.6	-10.00
				Lower Trace 2	-41.37	-13.00
				Lower Trace 3	-41.48	-25.00
			FRB	Lower Trace 1	-17.57	-10.00
				Lower Trace 2	-36.86	-13.00
				Lower Trace 3	-38.13	-25.00
		2652.5	1RB	Upper Trace 1	-16.99	-10.00
				Upper Trace 2	-41.54	-13.00
				Upper Trace 3	-41.6	-25.00
			FRB	Upper Trace 1	-12.58	-10.00
				Upper Trace 2	-27.39	-13.00
				Upper Trace 3	-29.21	-25.00

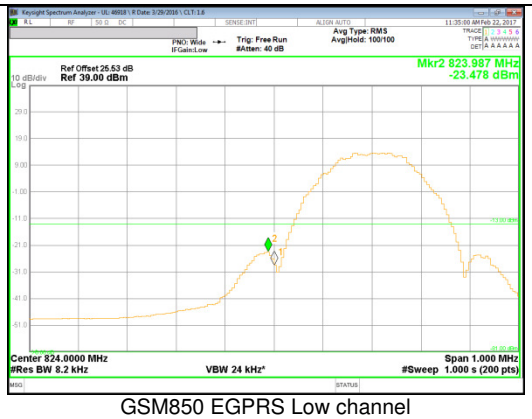
10.2.1. BAND EDGE PLOTS

GSM

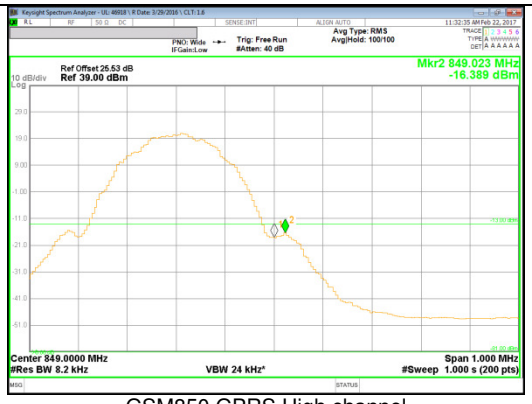
GSM 850



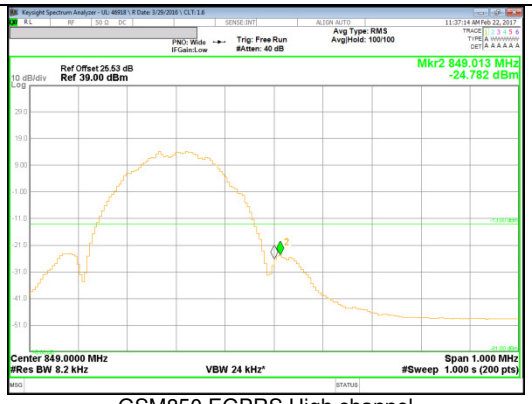
GSM850 GPRS Low channel



GSM850 EGPRS Low channel

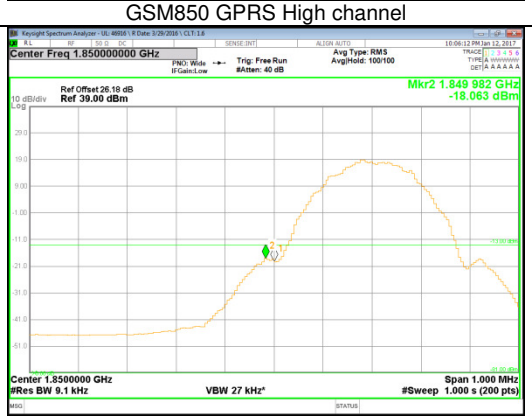


GSM850 GPRS High channel

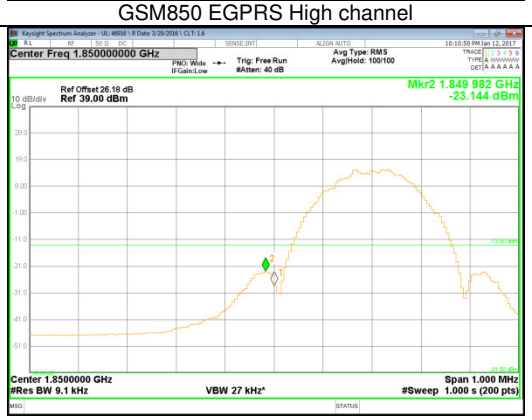


GSM850 EGPRS High channel

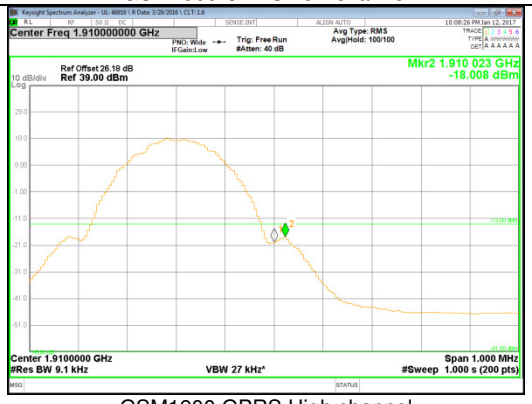
GSM 1900



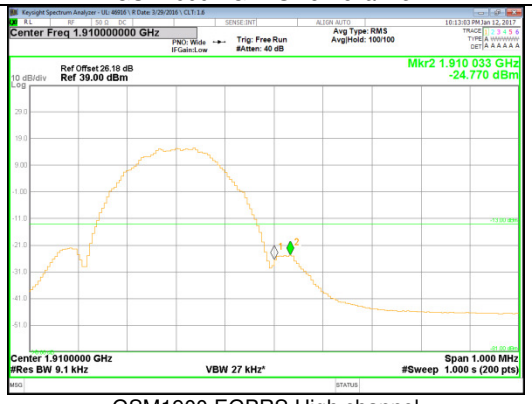
GSM1900 GPRS Low channel



GSM1900 EGPRS Low channel

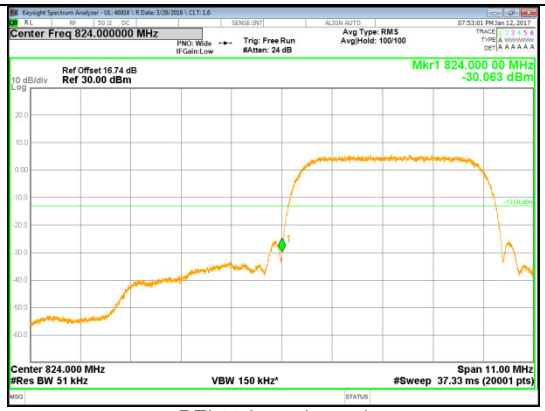
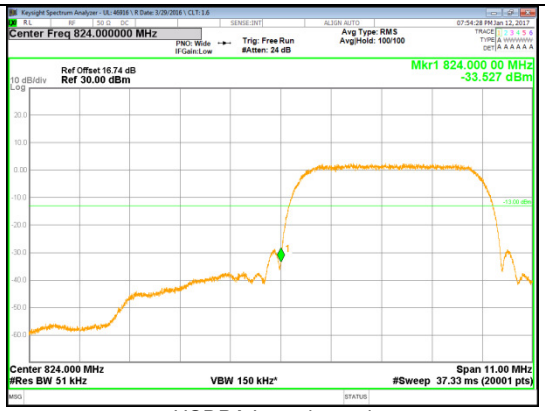
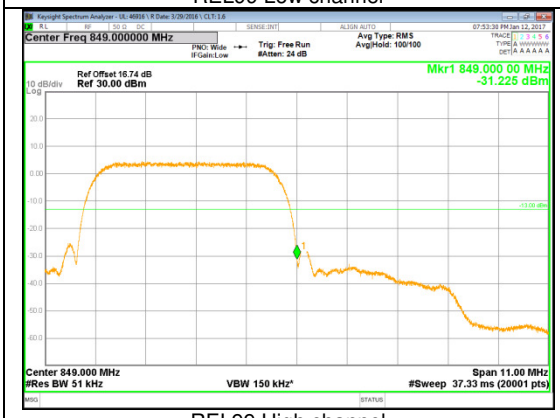
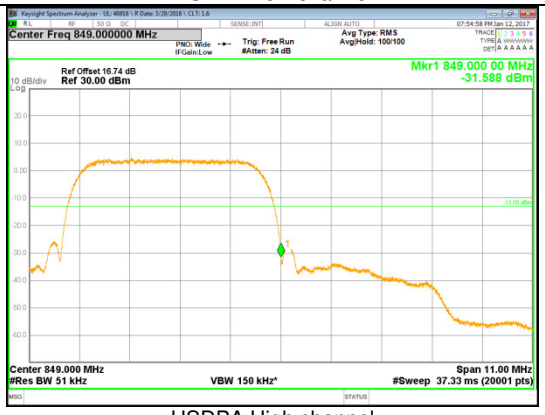
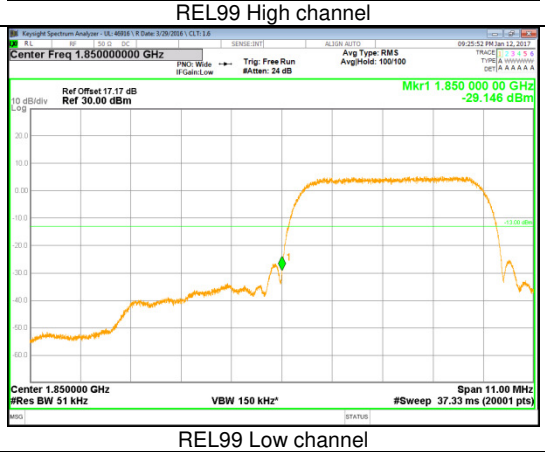
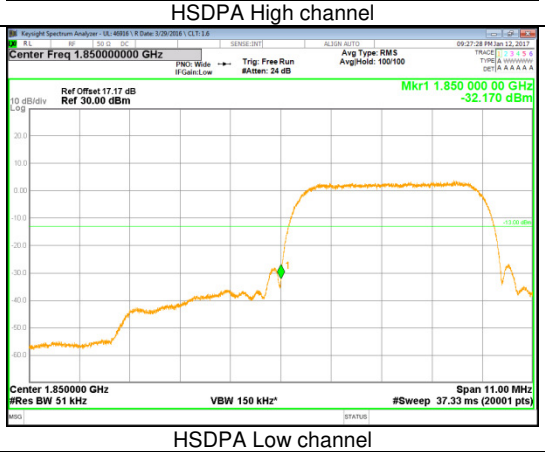
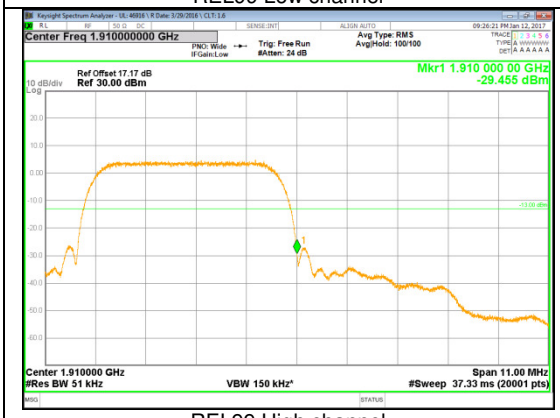
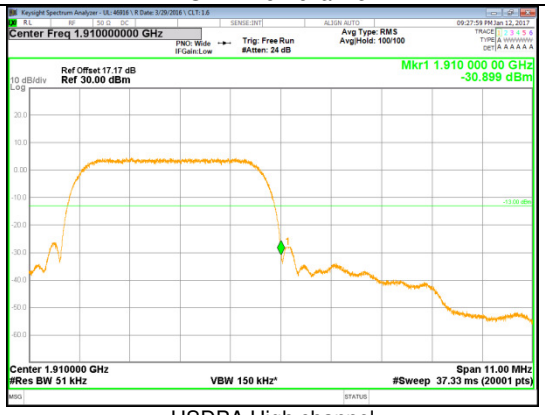


GSM1900 GPRS High channel

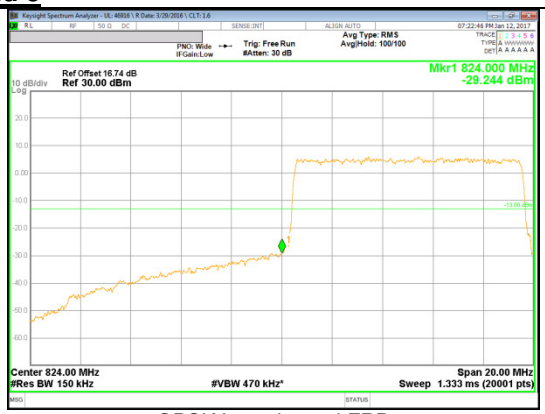
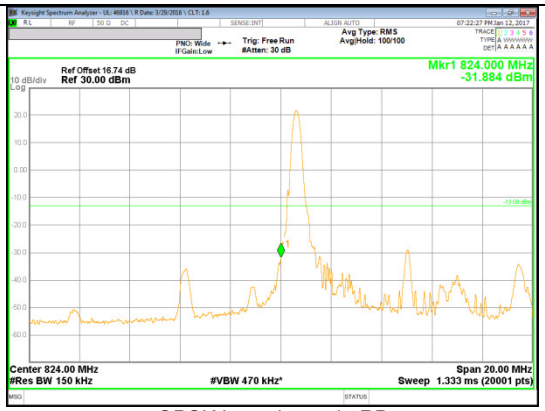
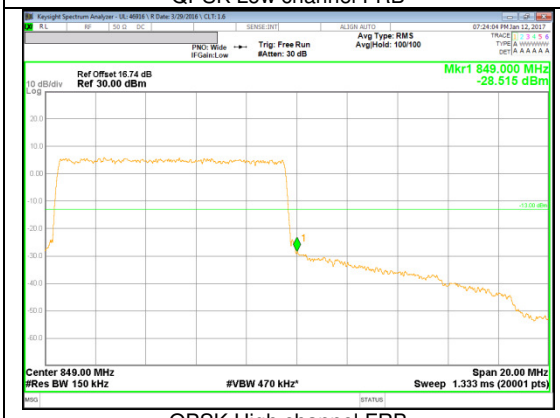
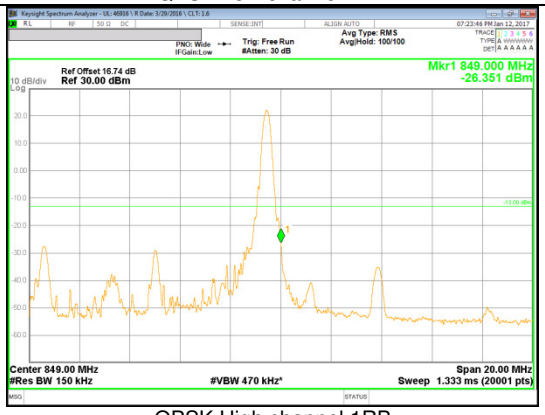
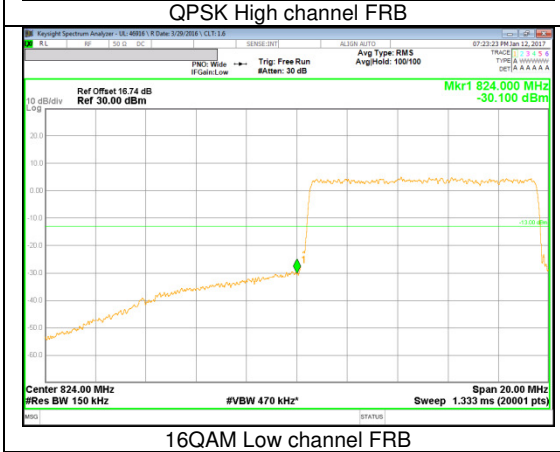
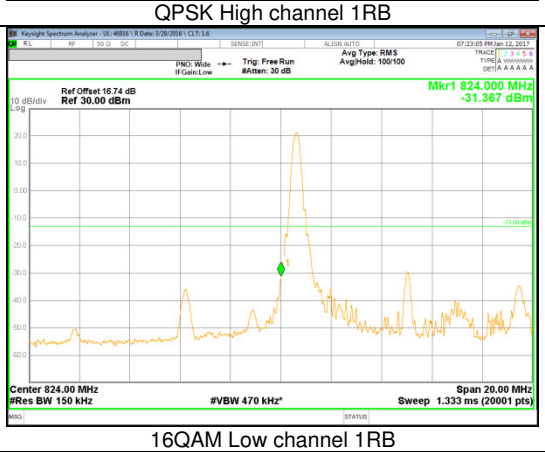
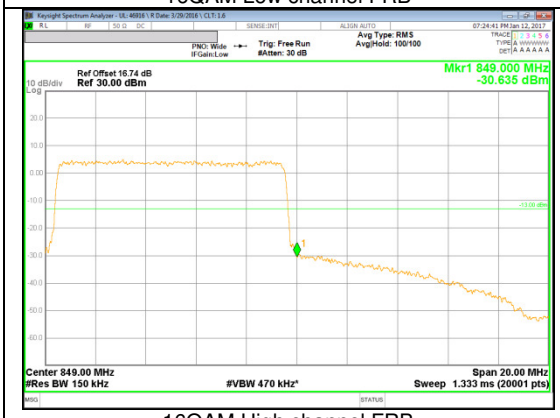
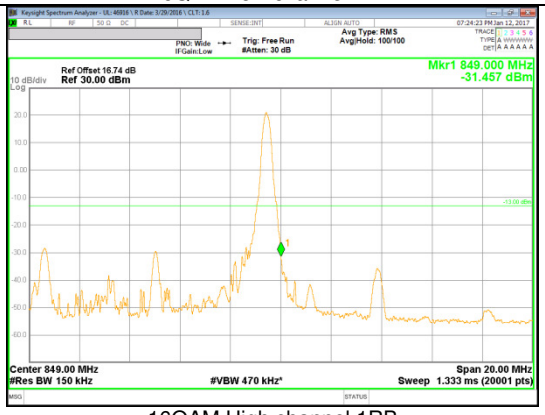


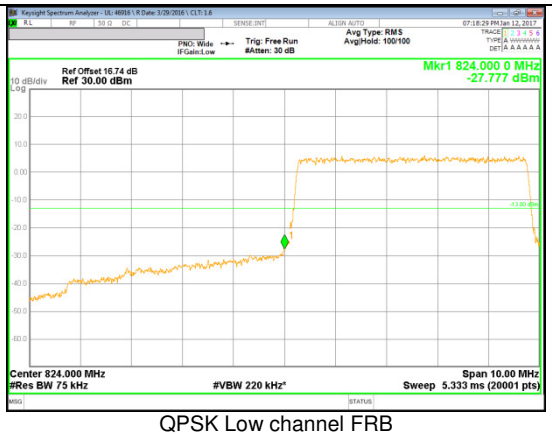
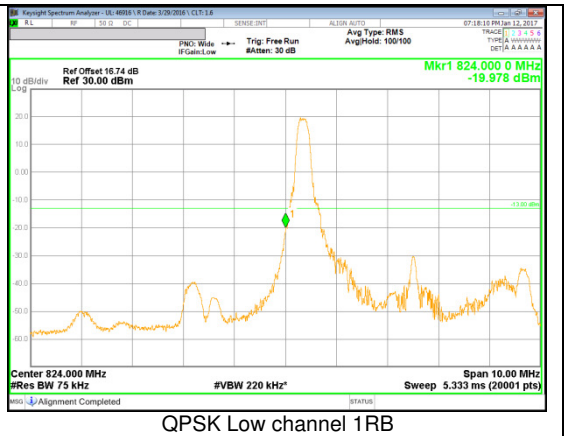
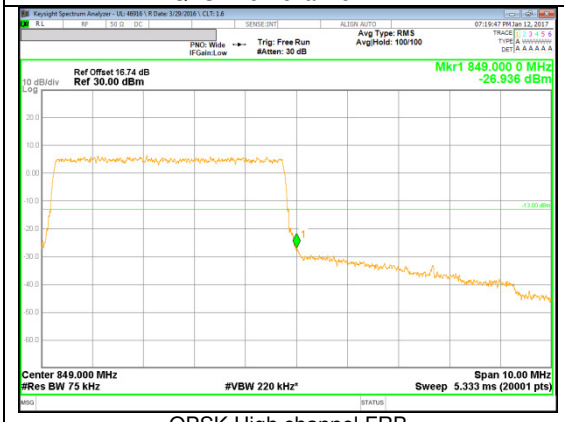
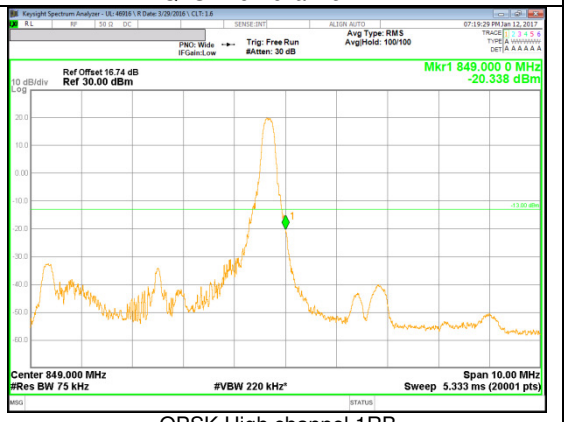
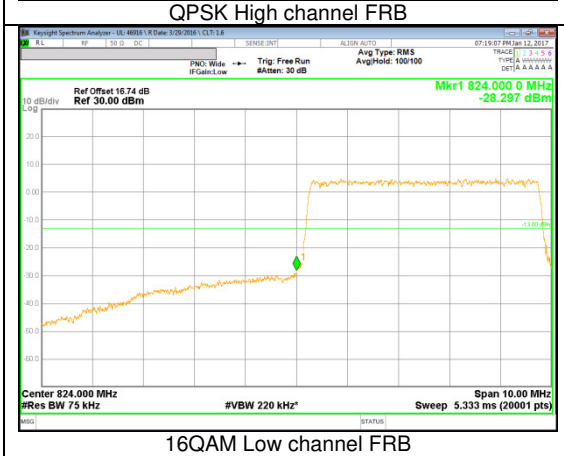
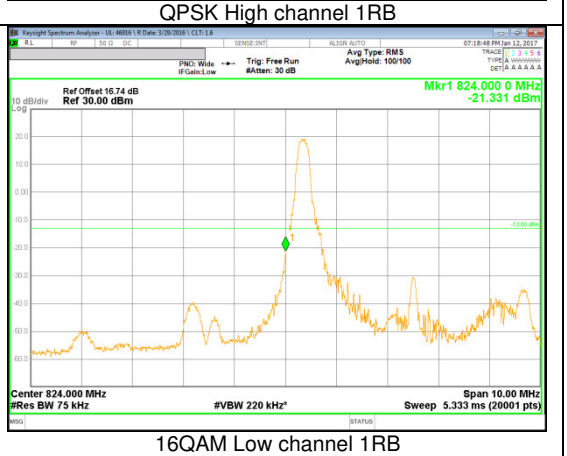
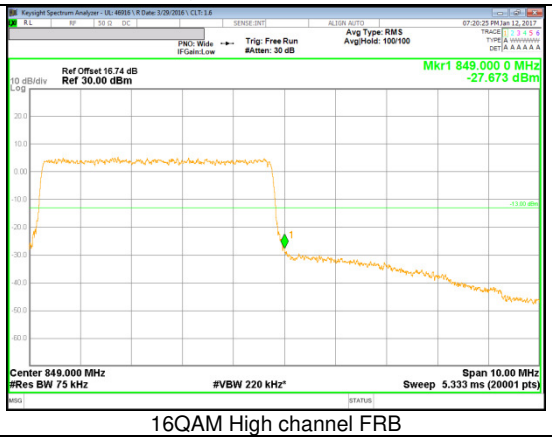
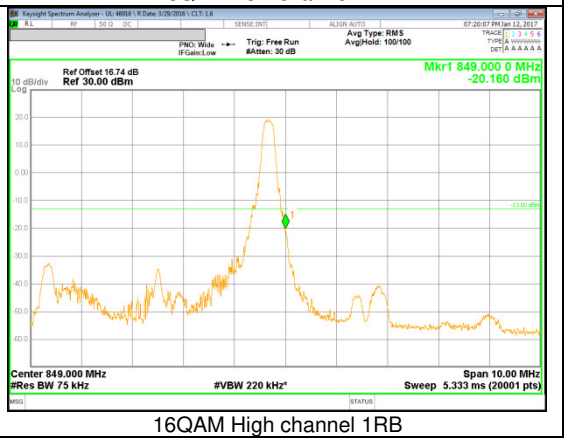
GSM1900 EGPRS High channel

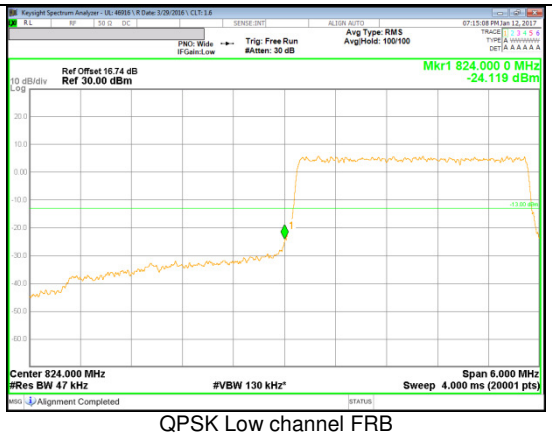
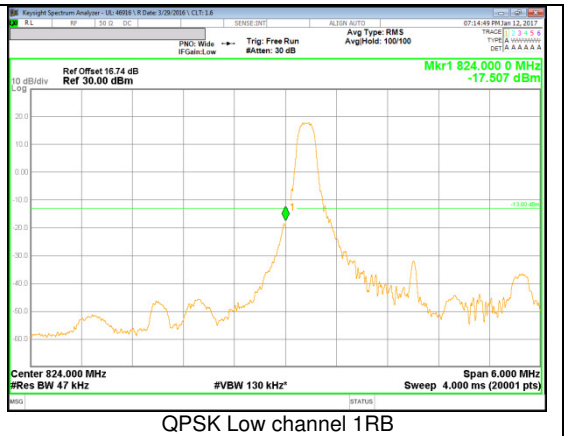
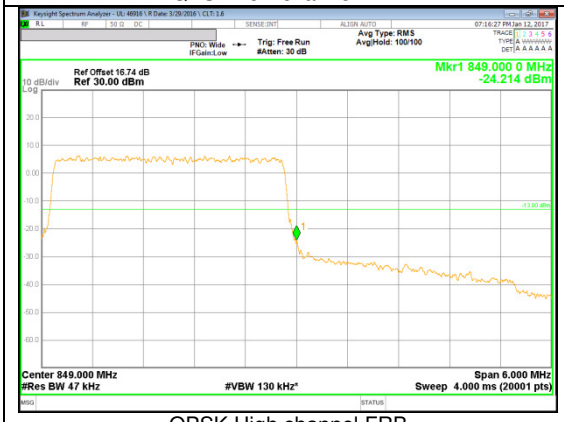
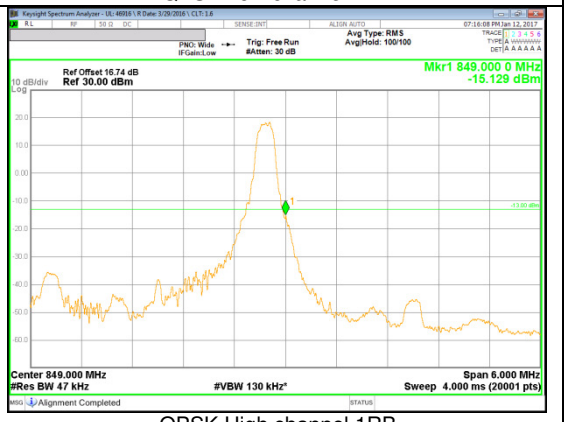
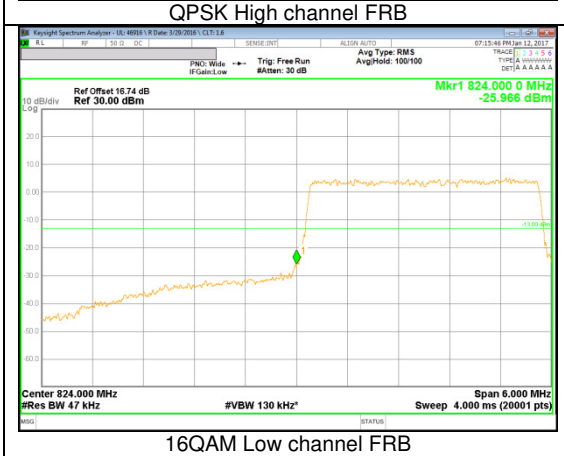
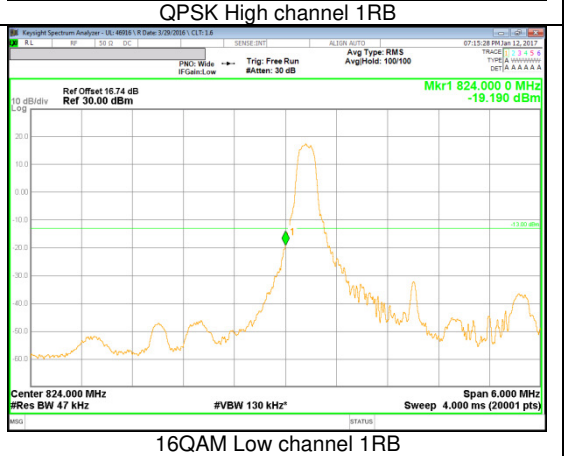
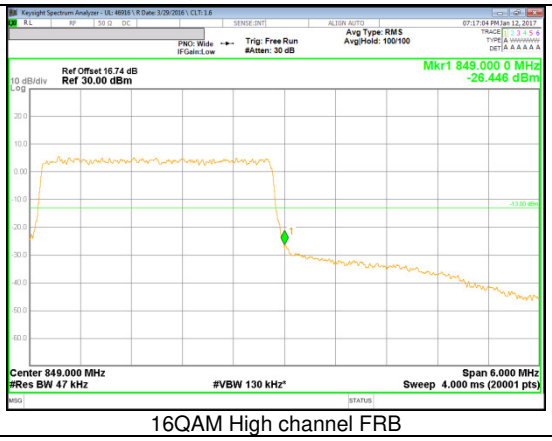
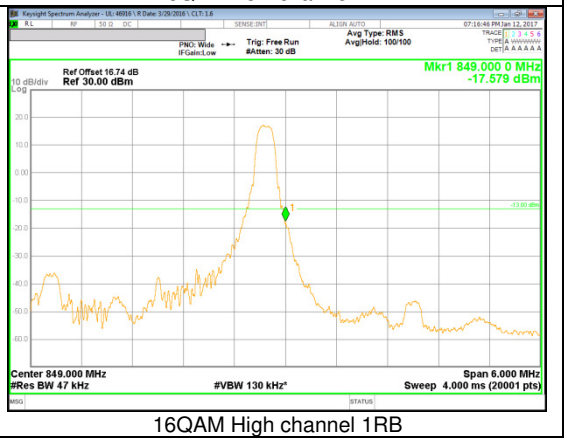
WCDMA

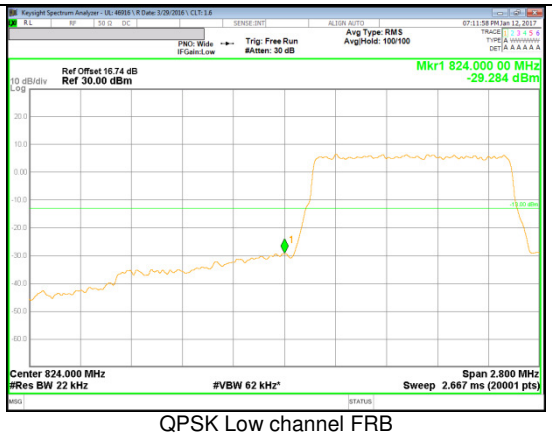
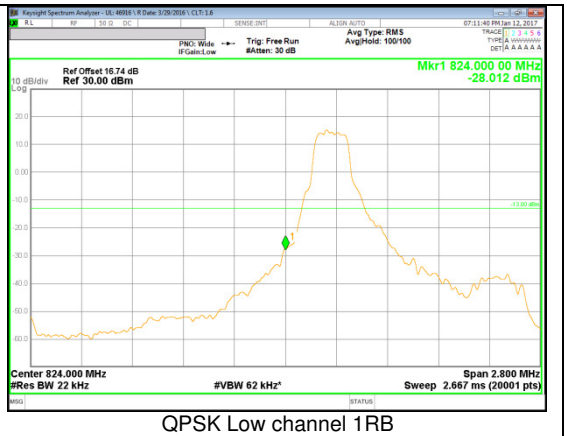
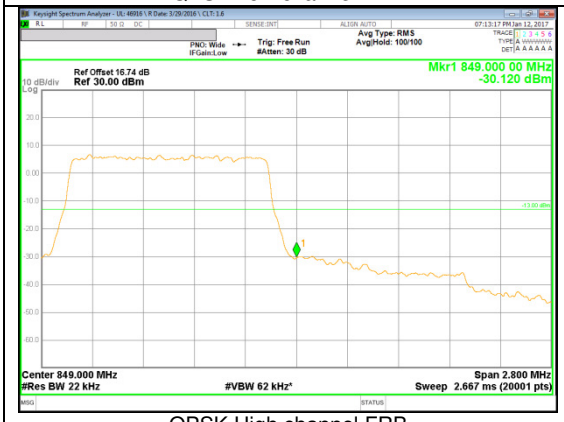
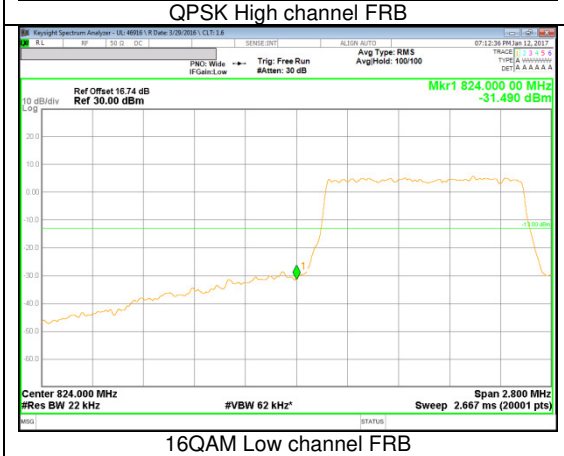
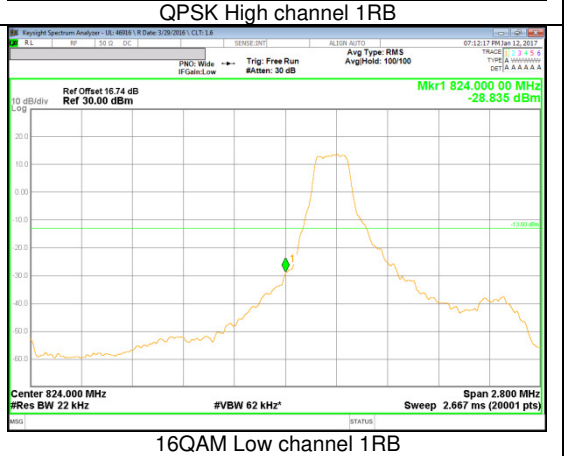
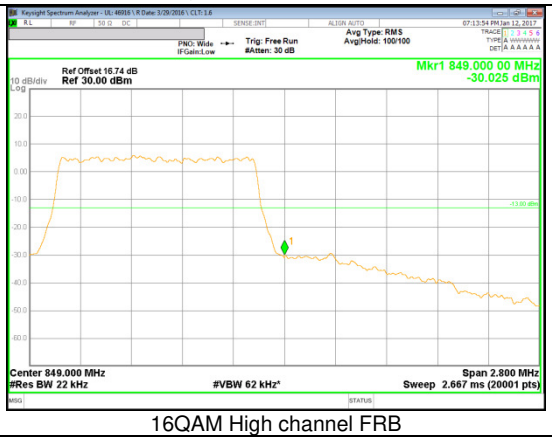
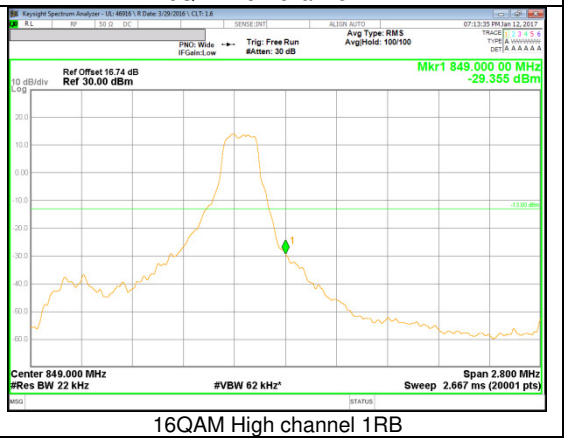
Band 5	 REL99 Low channel	 HSDPA Low channel
	 REL99 High channel	 HSDPA High channel
Band 2	 REL99 Low channel	 HSDPA Low channel
	 REL99 High channel	 HSDPA High channel

LTE Band 5

Band 5 10MHz	 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 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

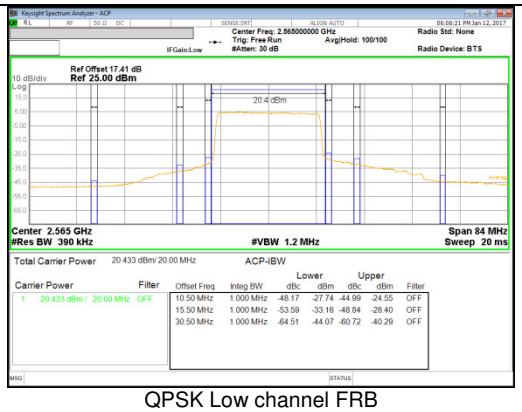
Band 5 1.4MHz	 QPSK Low channel FRB	 QPSK Low channel 1RB
	 QPSK High channel FRB	 QPSK High channel 1RB
	 16QAM Low channel FRB	 16QAM Low channel 1RB
	 16QAM High channel FRB	 16QAM High channel 1RB

10.2.2. EMISSION MASK PLOTS

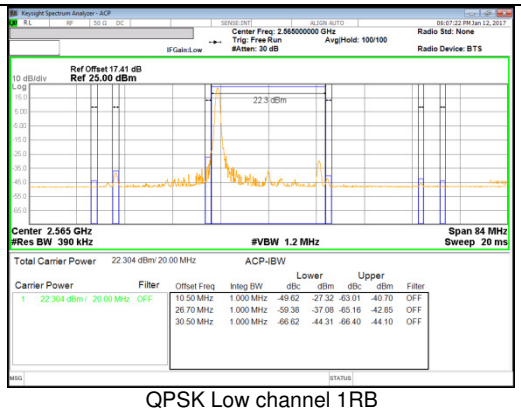
LTE Band 41

Band 41

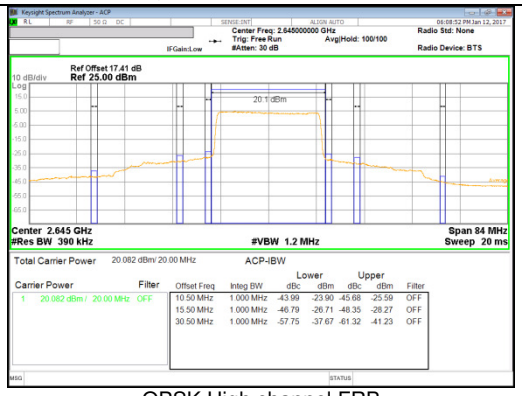
20MHz



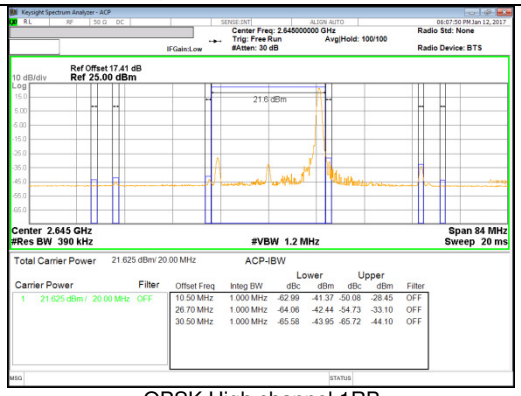
QPSK Low channel FRB



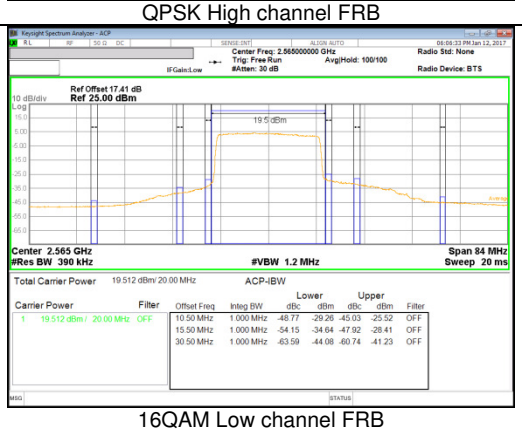
QPSK Low channel 1RB



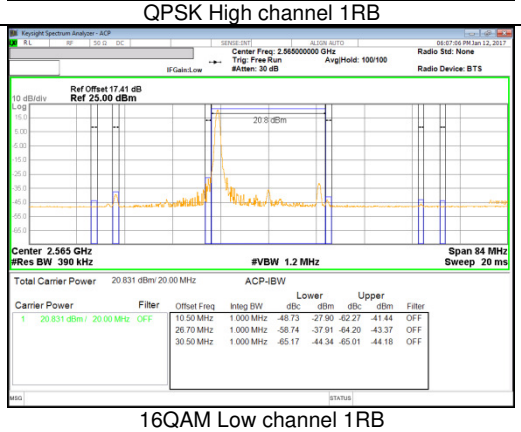
QPSK High channel FRB



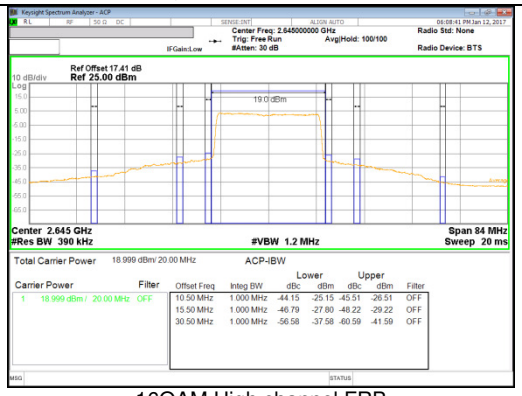
QPSK High channel 1RB



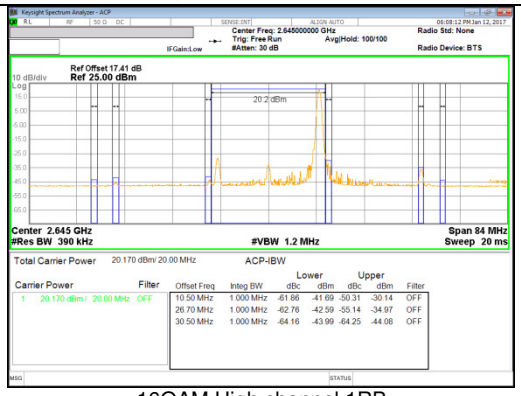
16QAM Low channel FRB



16QAM Low channel 1RB



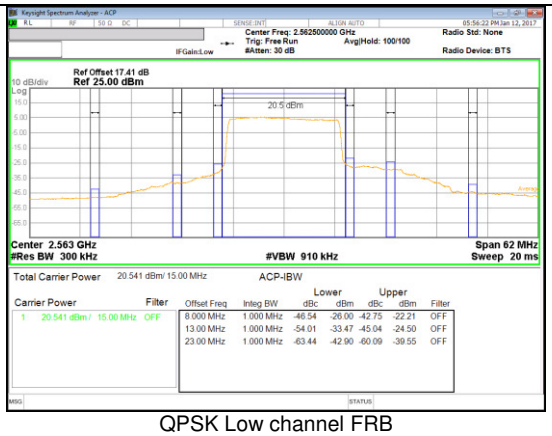
16QAM High channel FRB



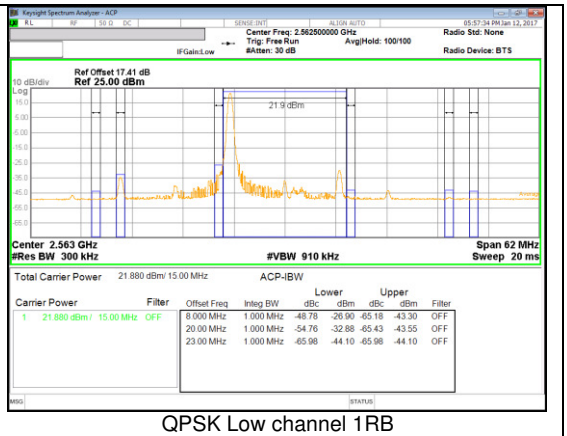
16QAM High channel 1RB

Band 41

15MHz

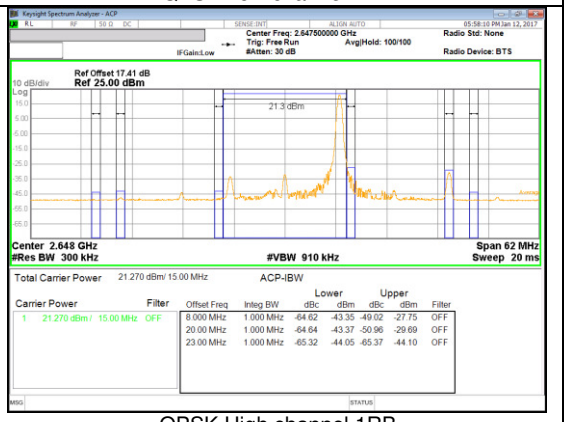


QPSK Low channel FRB

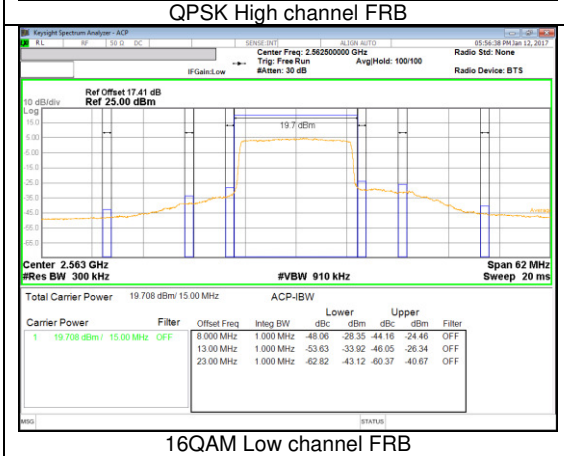


QPSK Low channel 1RB

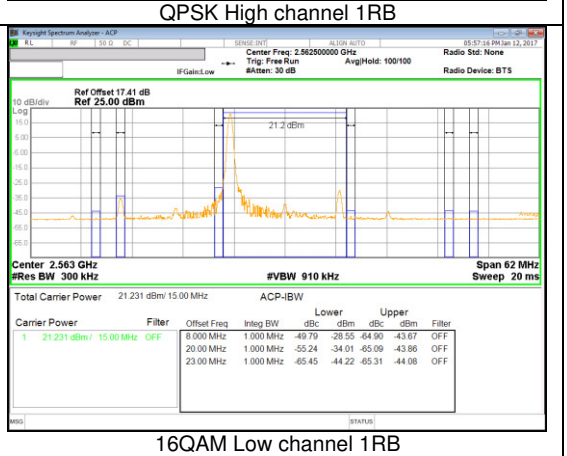
QPSK High channel FRB



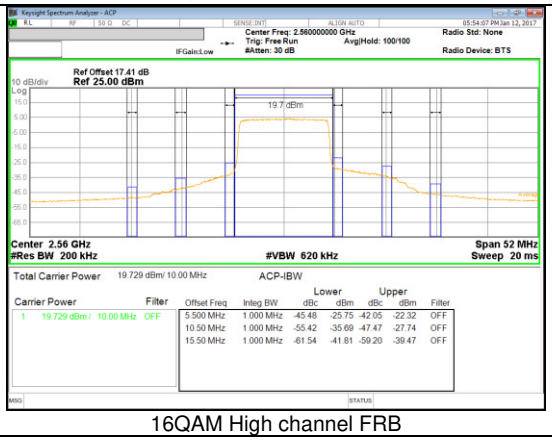
QPSK High channel 1RB



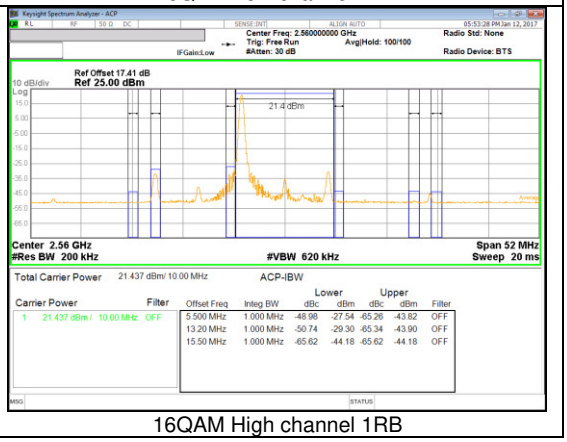
16QAM Low channel FRB



16QAM Low channel 1RB



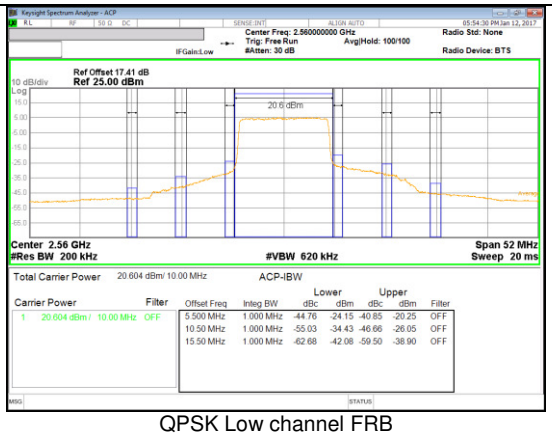
16QAM High channel FRB



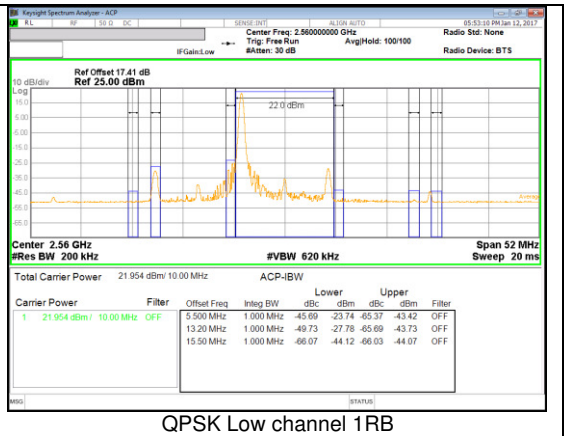
16QAM High channel 1RB

Band 41

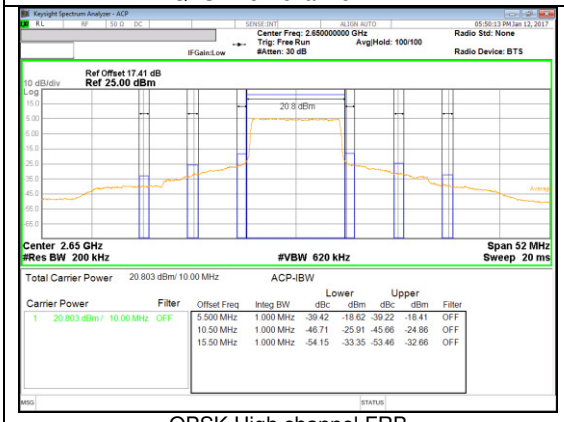
10MHz



QPSK Low channel FRB

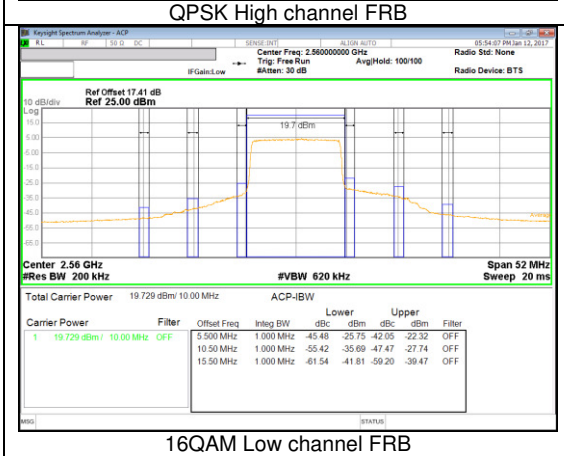


QPSK Low channel 1RB

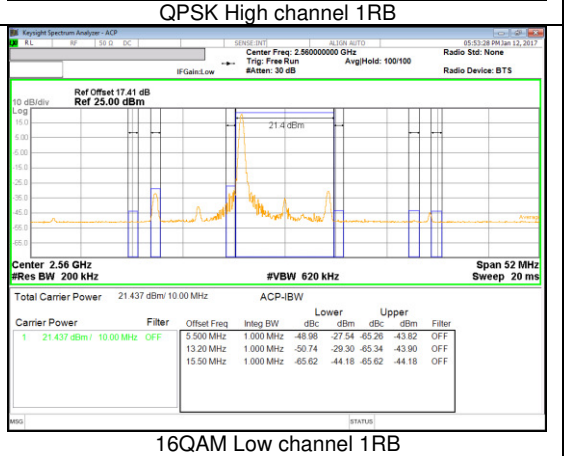


QPSK High channel FRB

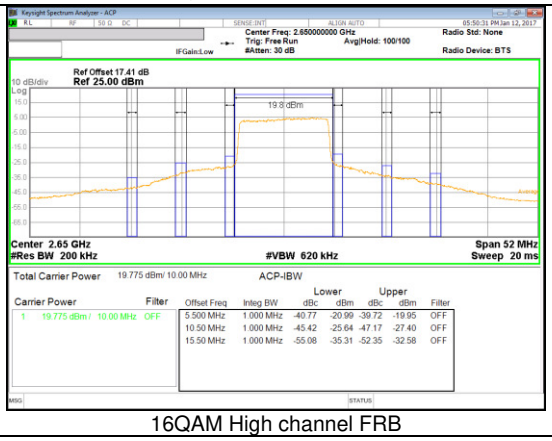
QPSK High channel 1RB



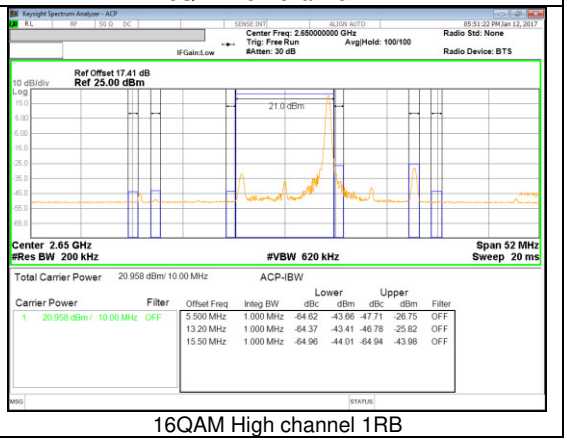
16QAM Low channel FRB



16QAM Low channel 1RB



16QAM High channel FRB



16QAM High channel 1RB