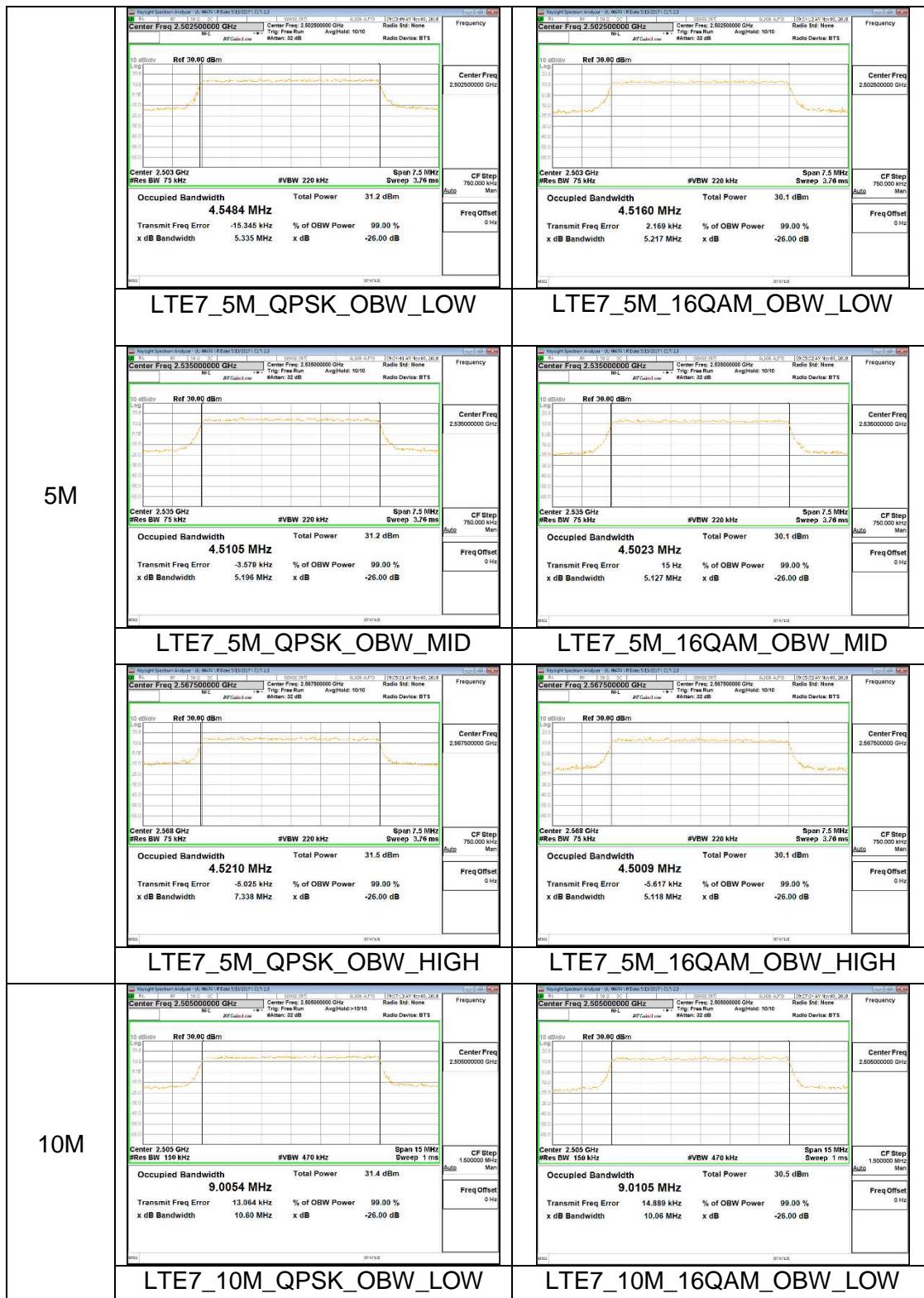
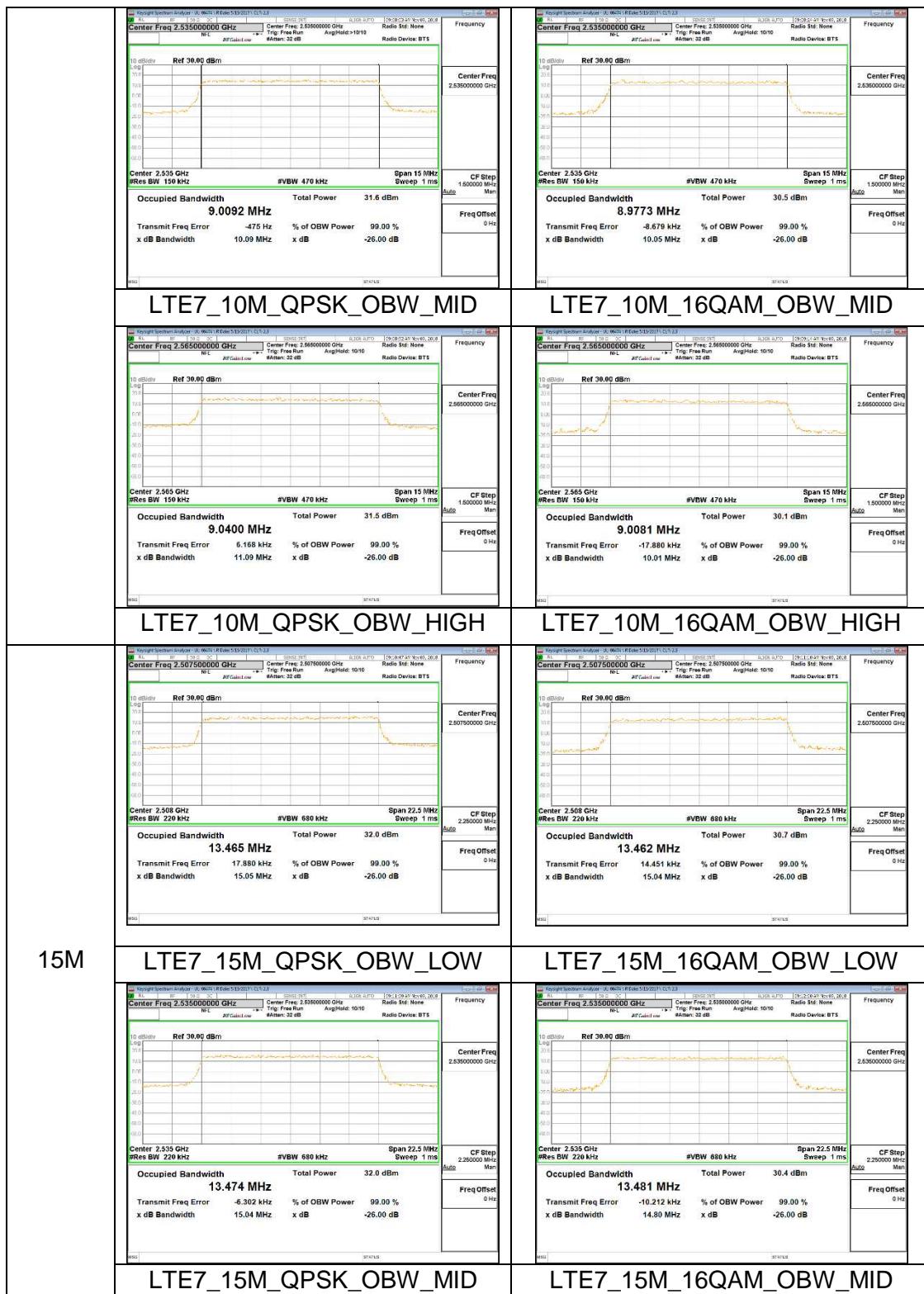




LTE Band7

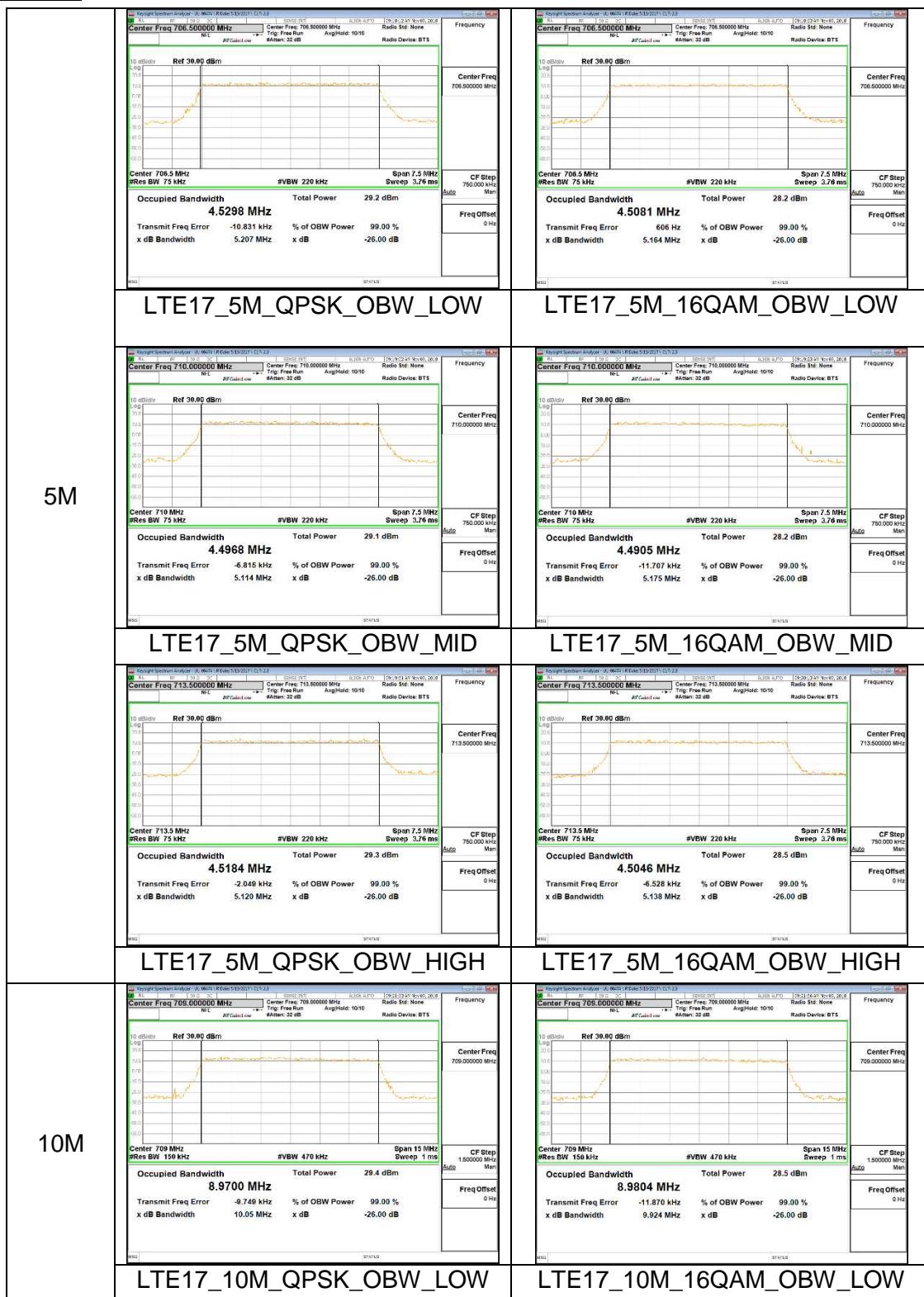


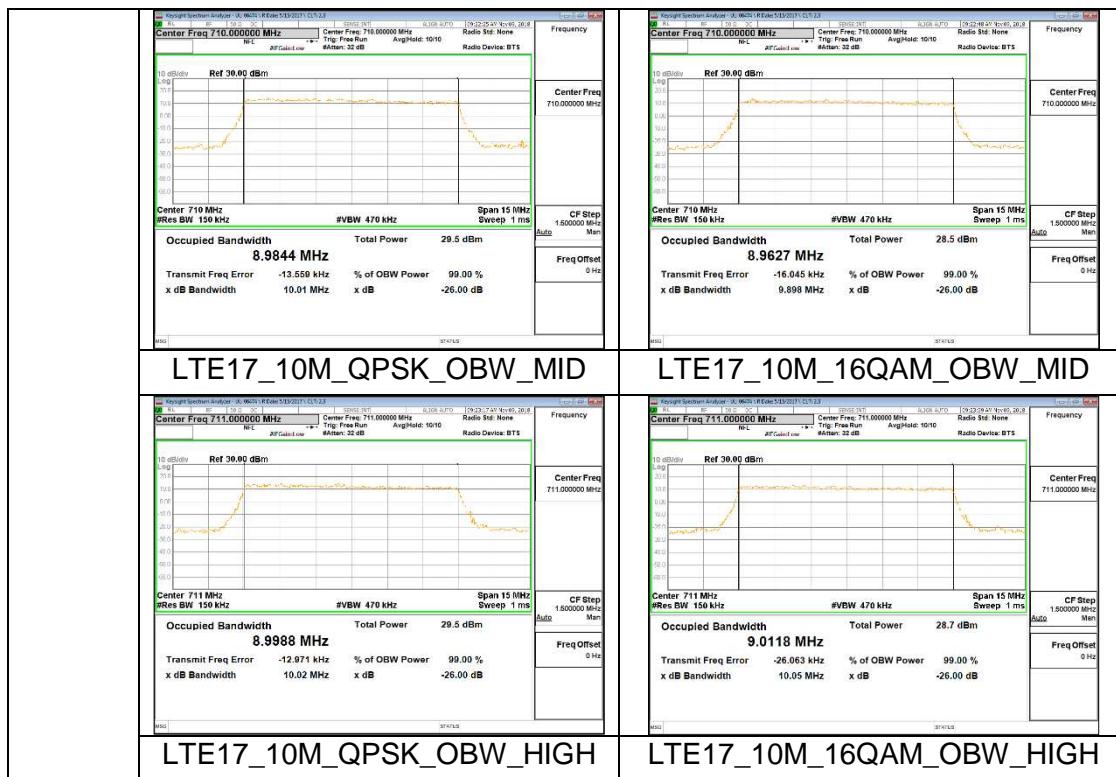




20M

LTE Band17





6.4 FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §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 and §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 v03r01

RESULTS

See the following pages. TEST RESULT

Test Mode	Test Conditions		Frequency Deviation Middle Channel		
	Power (VDC)	Temperature (°C)	Frequency Error	Frequency Error	Limit
LTE Band 2			Hz	ppm	ppm
VN	-30	6.59	0.0035	2.5	
	-20	8.32	0.0044		
	-10	-4.65	-0.0025		
	0	-7.09	-0.0038		
	+10	2.11	0.0011		
	+20	6.12	0.0033		
	+30	5.52	0.0029		
	+40	3.81	0.0020		
	+50	-6.88	-0.0037		
VL	TN	4.33	0.0023		
VH		7.22	0.0038		
End Point		5.49	0.0029		

Test Mode	Test Conditions		Frequency Deviation Middle Channel		
	Power (VDC)	Temperature (°C)	Frequency Error	Frequency Error	Limit
LTE Band 4			Hz	ppm	ppm
VN	-30	8.18	0.0047	2.5	
	-20	7.63	0.0044		
	-10	-5.17	-0.0030		
	0	-6.98	-0.0040		
	+10	3.28	0.0019		
	+20	-7.99	-0.0046		
	+30	-3.35	-0.0019		
	+40	4.63	0.0027		
	+50	7.11	0.0041		
VL	TN	-6.22	-0.0036		
VH		4.75	0.0027		
End Point		-3.34	-0.0019		

Test Mode	Test Conditions		Frequency Deviation Middle Channel		
	Power (VDC)	Temperature (°C)	Frequency Error	Frequency Error	Limit
LTE Band 5			Hz	ppm	ppm
VN	-30	-3.59	-0.0043	2.5	
	-20	-4.91	-0.0059		
	-10	3.76	0.0045		
	0	8.05	0.0096		
	+10	-6.77	-0.0081		
	+20	5.21	0.0062		
	+30	3.33	0.0040		
	+40	-4.96	-0.0059		
	+50	5.17	0.0062		
VL	TN	2.18	0.0026		
VH		-6.34	-0.0076		
End Point		3.37	0.0040		

Test Mode	Test Conditions		Frequency Deviation Middle Channel		
	Power (VDC)	Temperature (°C)	Frequency Error	Frequency Error	Limit
LTE Band 7			Hz	ppm	ppm
VN	-30	9.09	0.0036	2.5	
	-20	-3.16	-0.0038		
	-10	-8.15	-0.0097		
	0	3.28	0.0039		
	+10	4.59	0.0055		
	+20	-6.31	-0.0075		
	+30	7.28	0.0039		
	+40	-7.99	-0.0095		
	+50	5.18	0.0062		
VL	TN	-4.32	-0.0052		
VH		-4.61	-0.0055		
End Point		3.82	0.0046		

Test Mode	Test Conditions		Frequency Deviation Middle Channel		
	Power (VDC)	Temperature (°C)	Frequency Error	Frequency Error	Limit
LTE Band 17			Hz	ppm	ppm
VN	-30	5.56	0.0078	2.5	
	-20	4.83	0.0068		
	-10	-7.39	-0.0104		
	0	-8.65	-0.0122		
	+10	7.28	0.0103		
	+20	-6.69	-0.0094		
	+30	4.59	0.0065		
	+40	-9.42	-0.0133		
	+50	5.18	0.0073		
VL	TN		4.13	0.0058	2.5
		VH	-6.67	-0.0094	
		End Point	5.73	0.0081	

6.5 BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.917, §24.238, §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 v03r01

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.

- 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 $\geq 2^*\text{Span}/\text{RBW}$;
- g) Trace mode = Average (100);

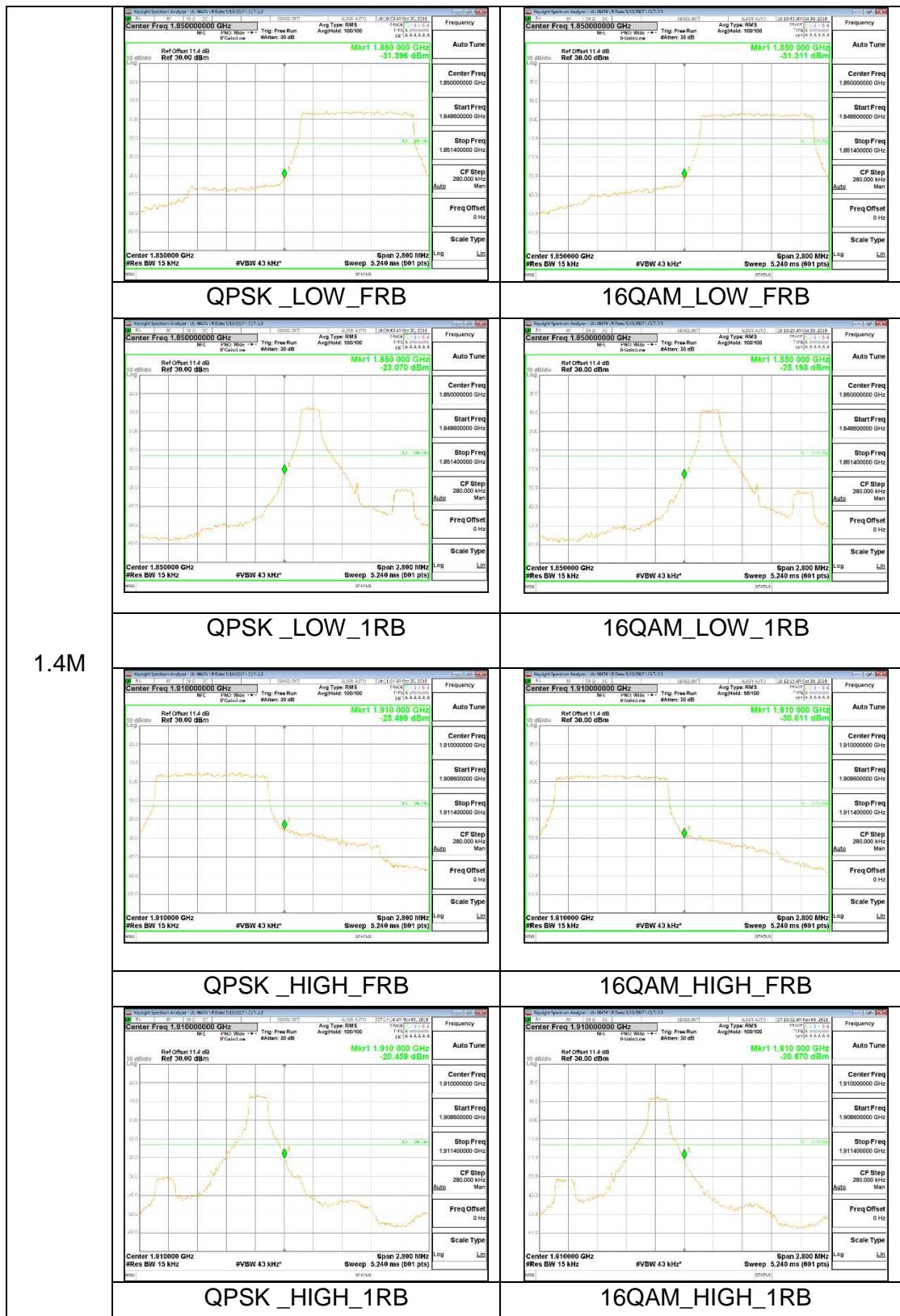
TEST PROCEDURE (LTE Band7)

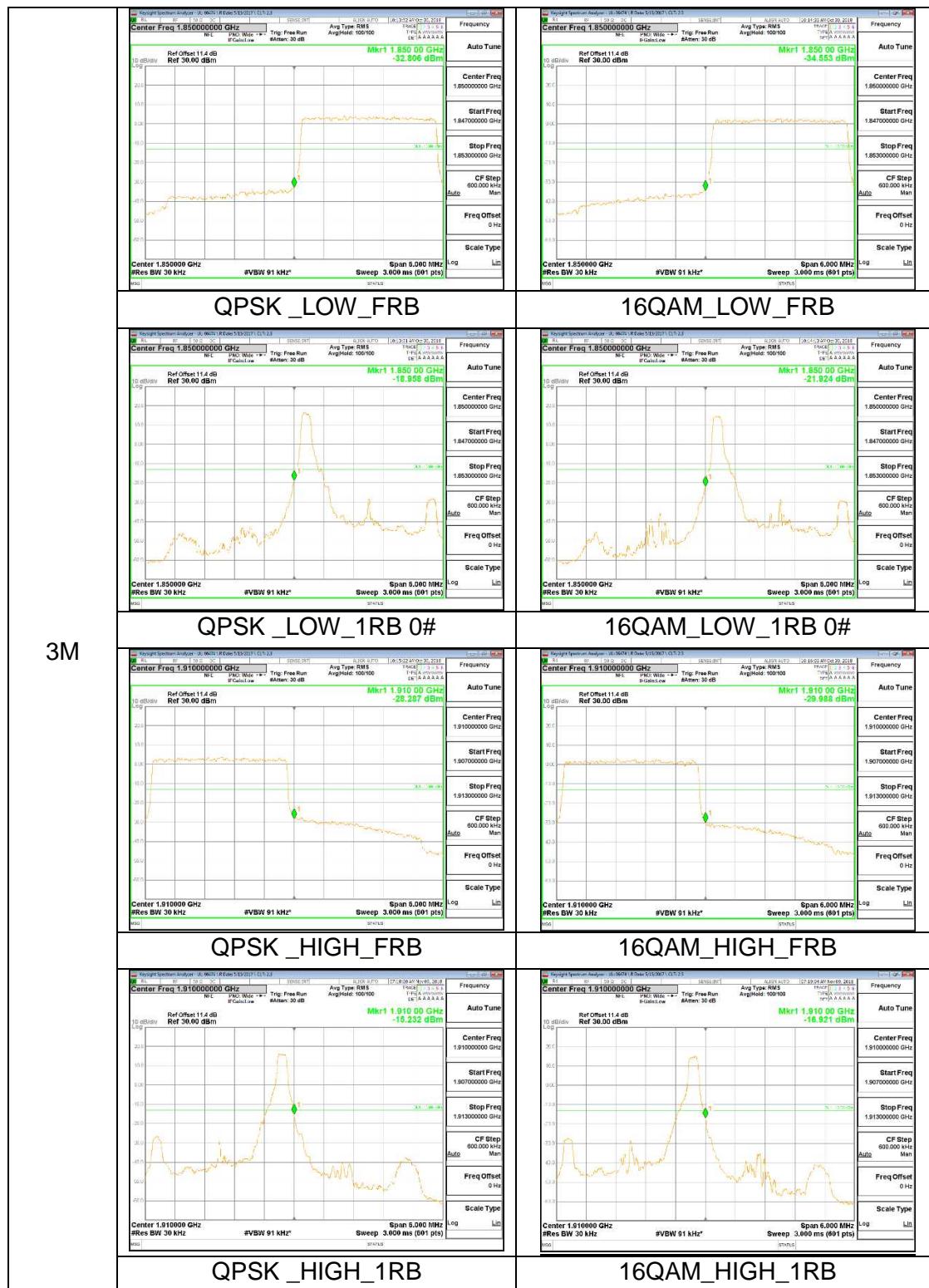
(m)(6)Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

RESULTS

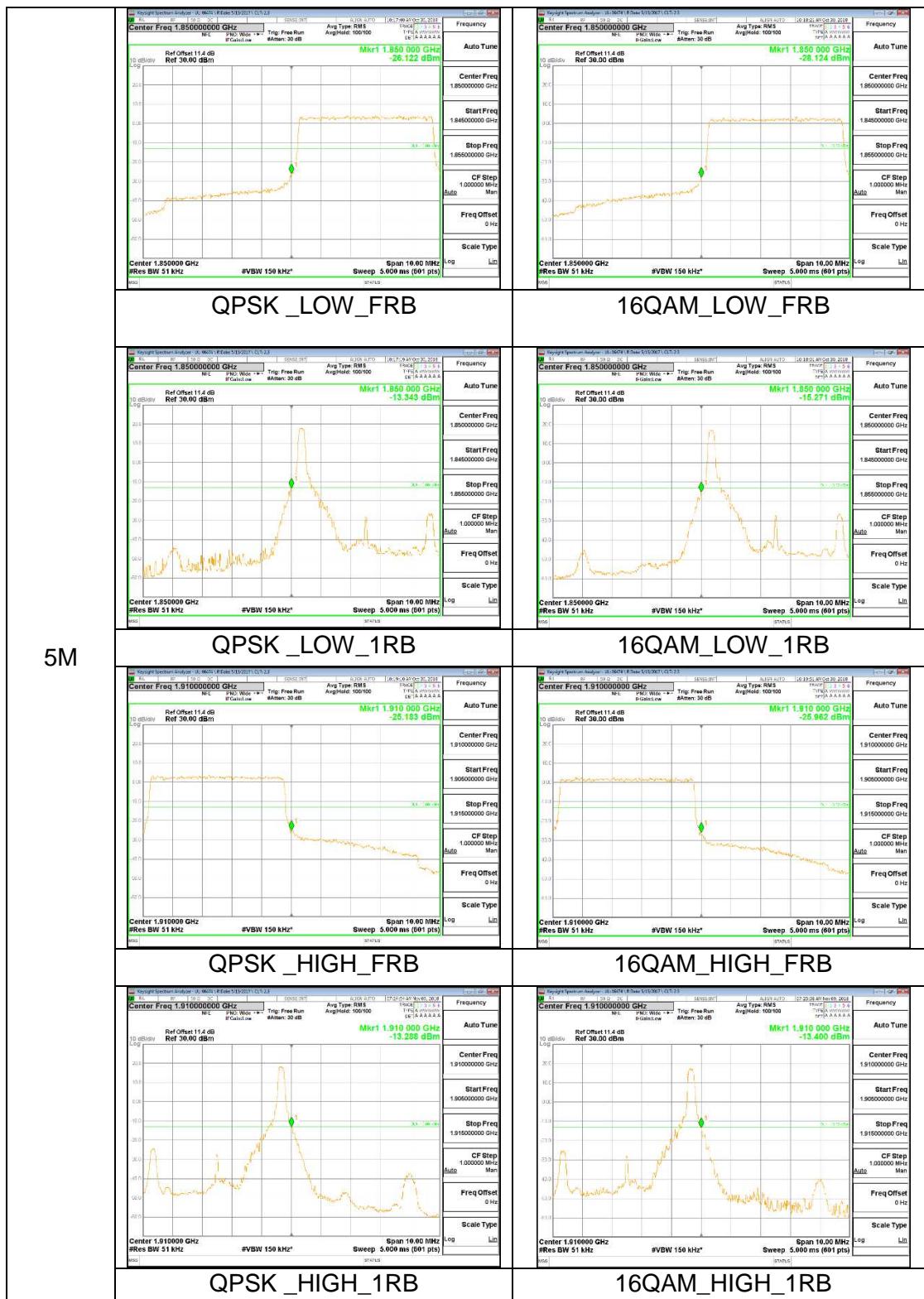
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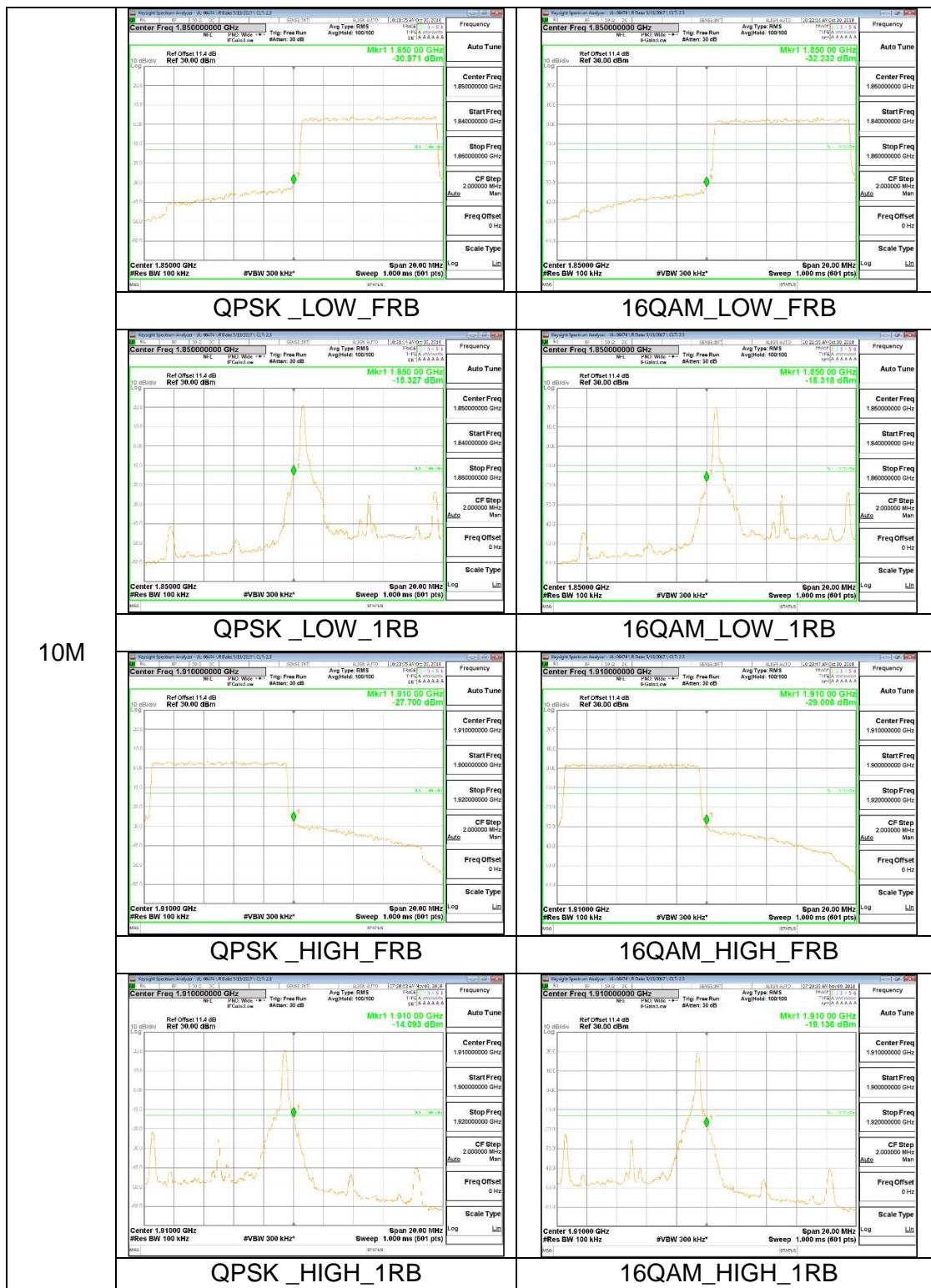
LTE Band2

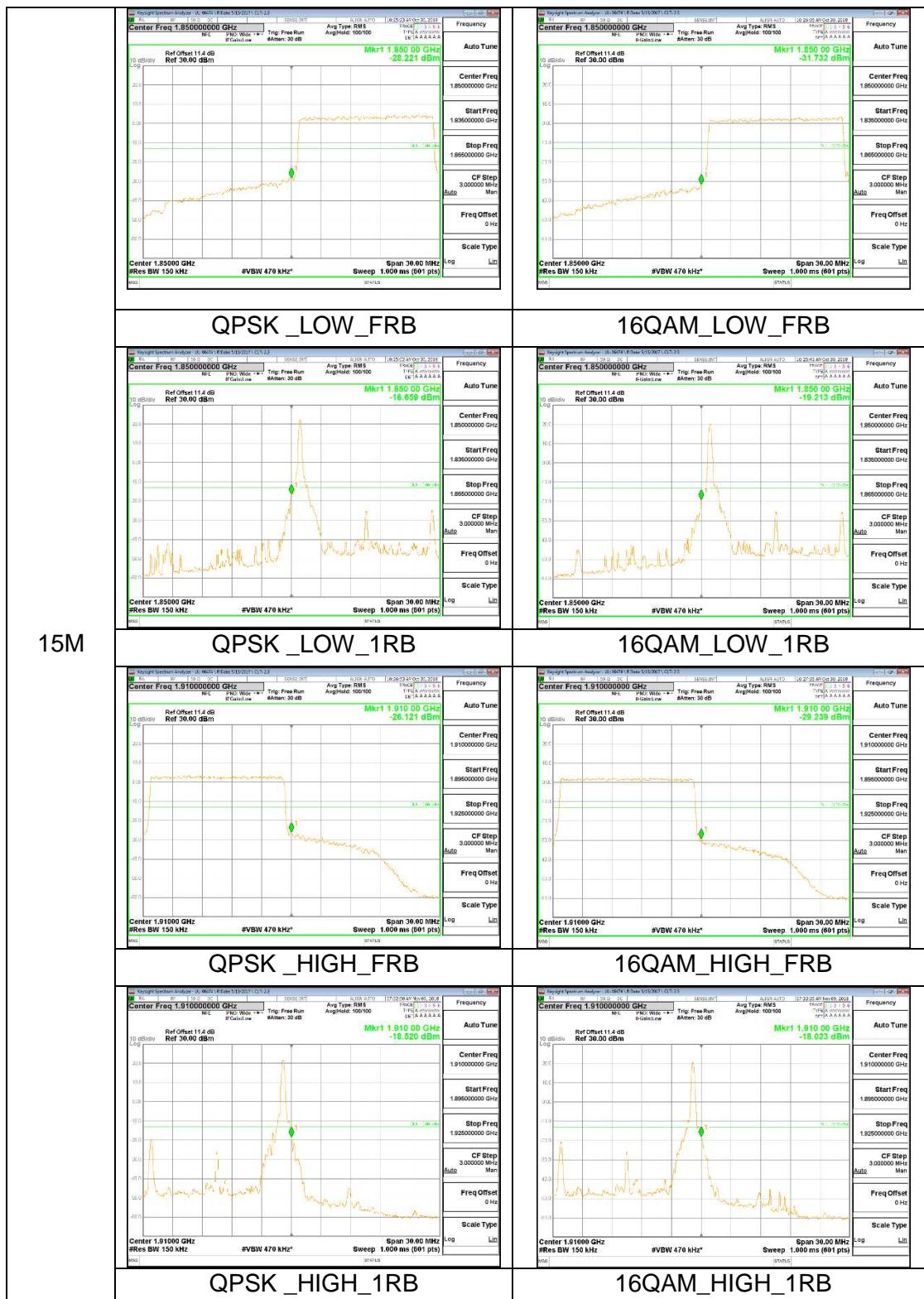


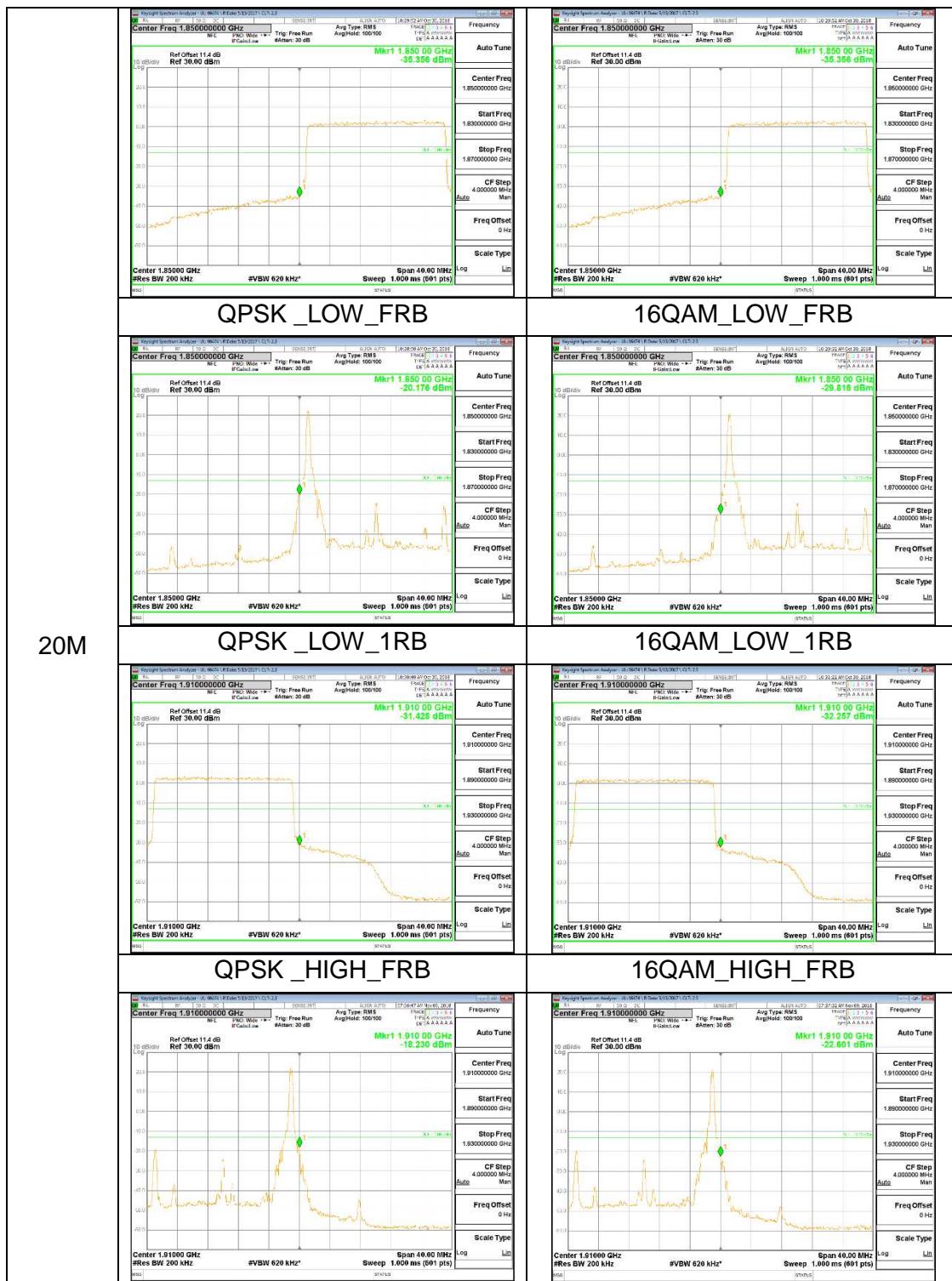


3M

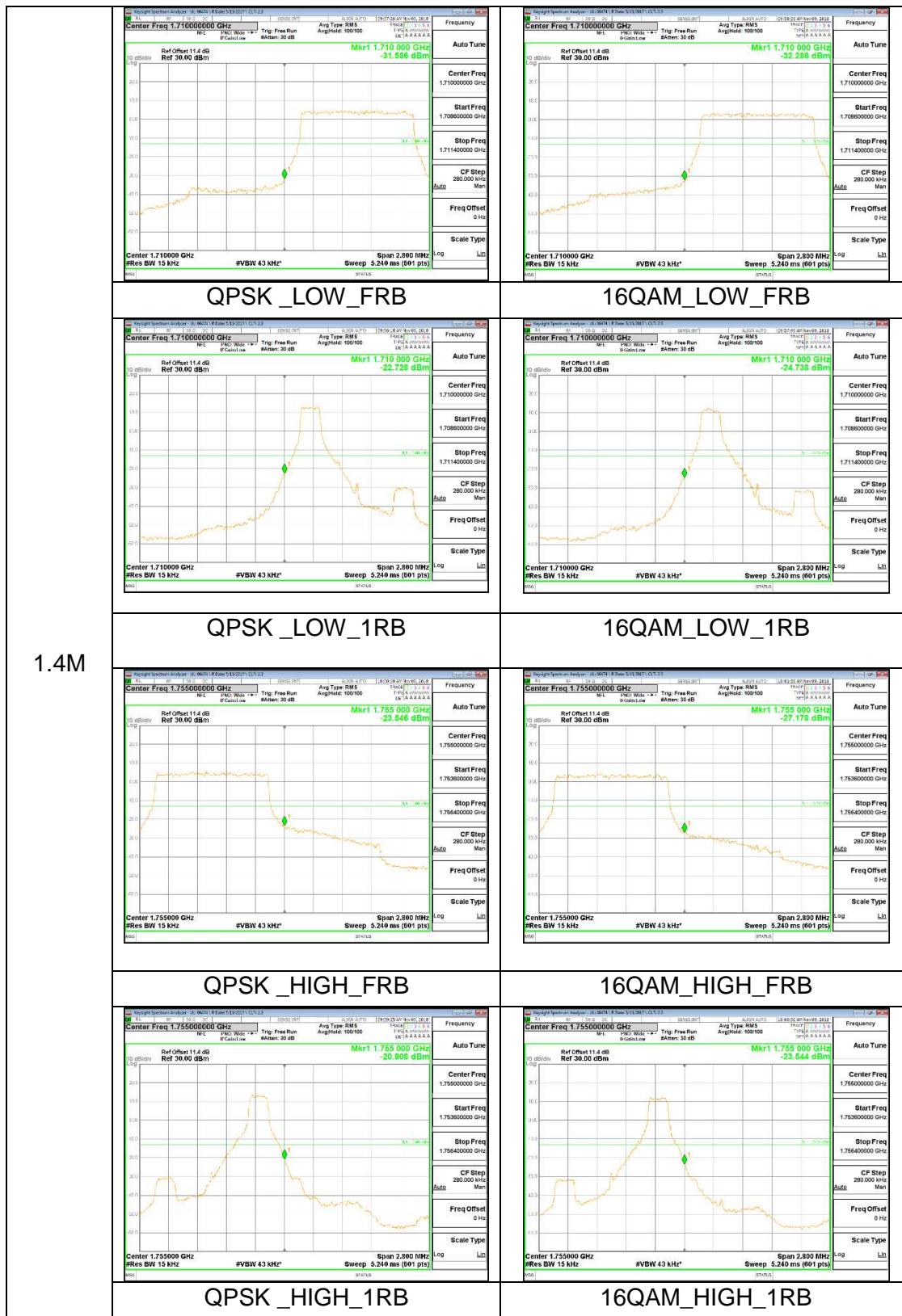




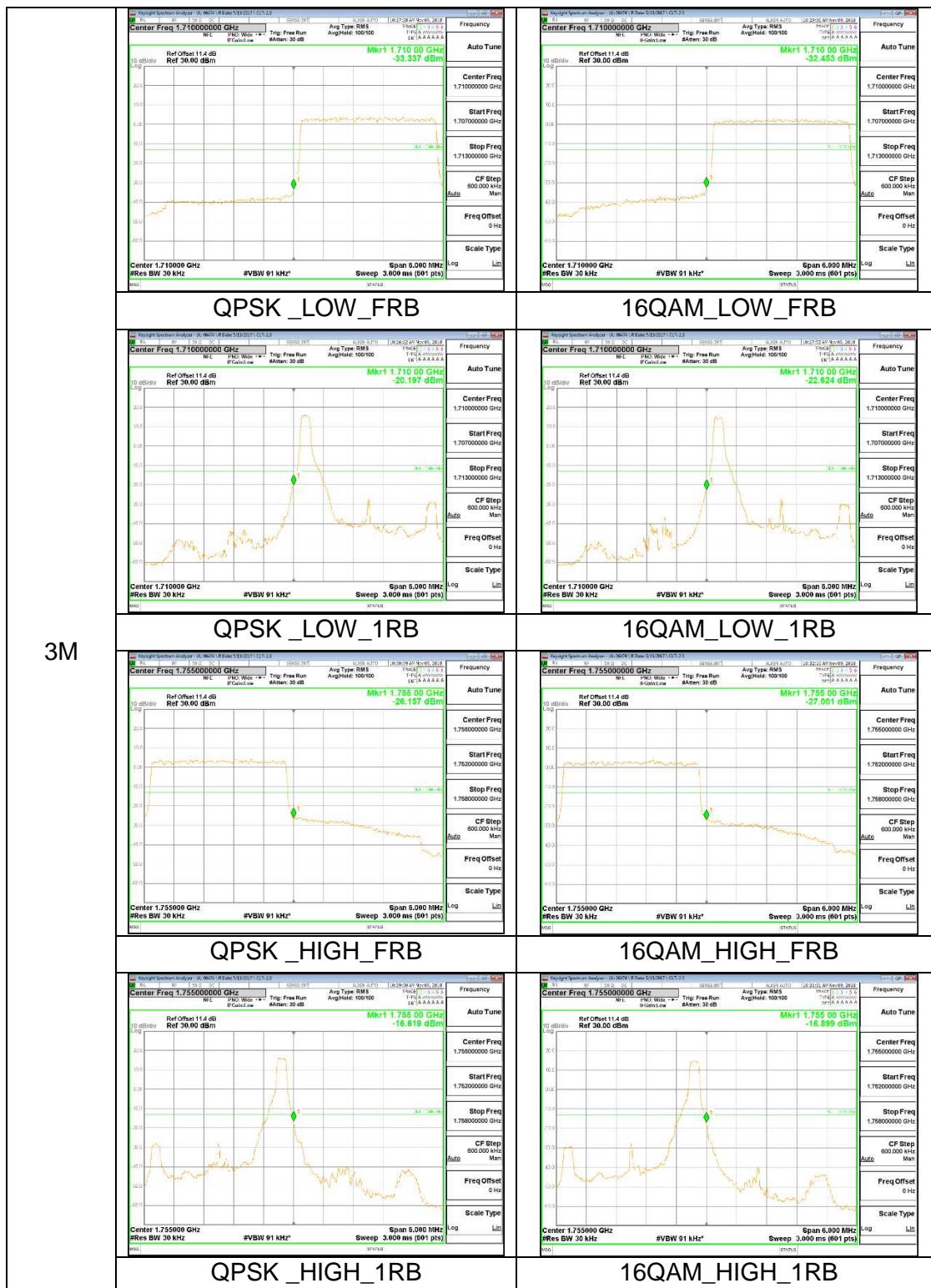




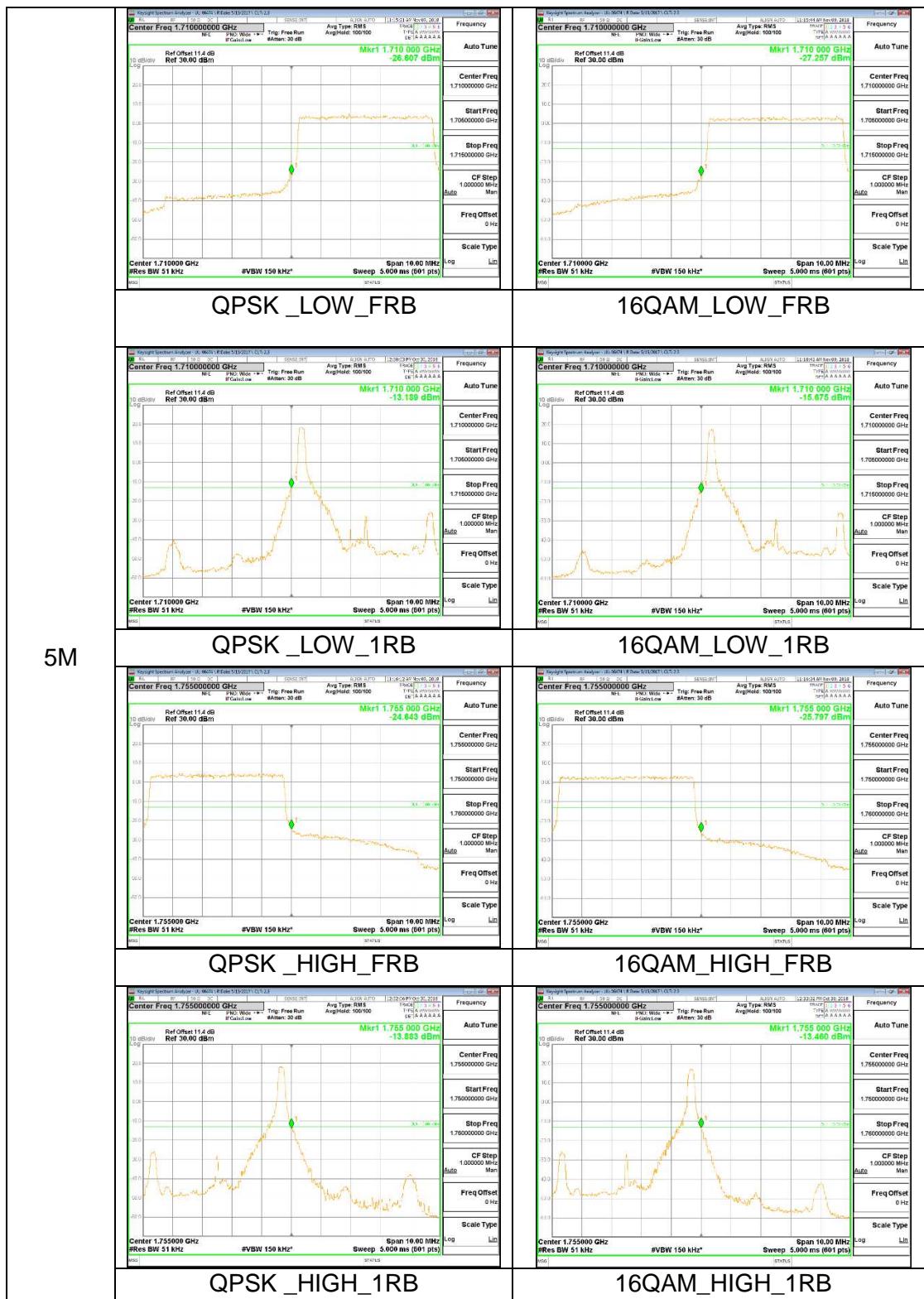
LTE Band4

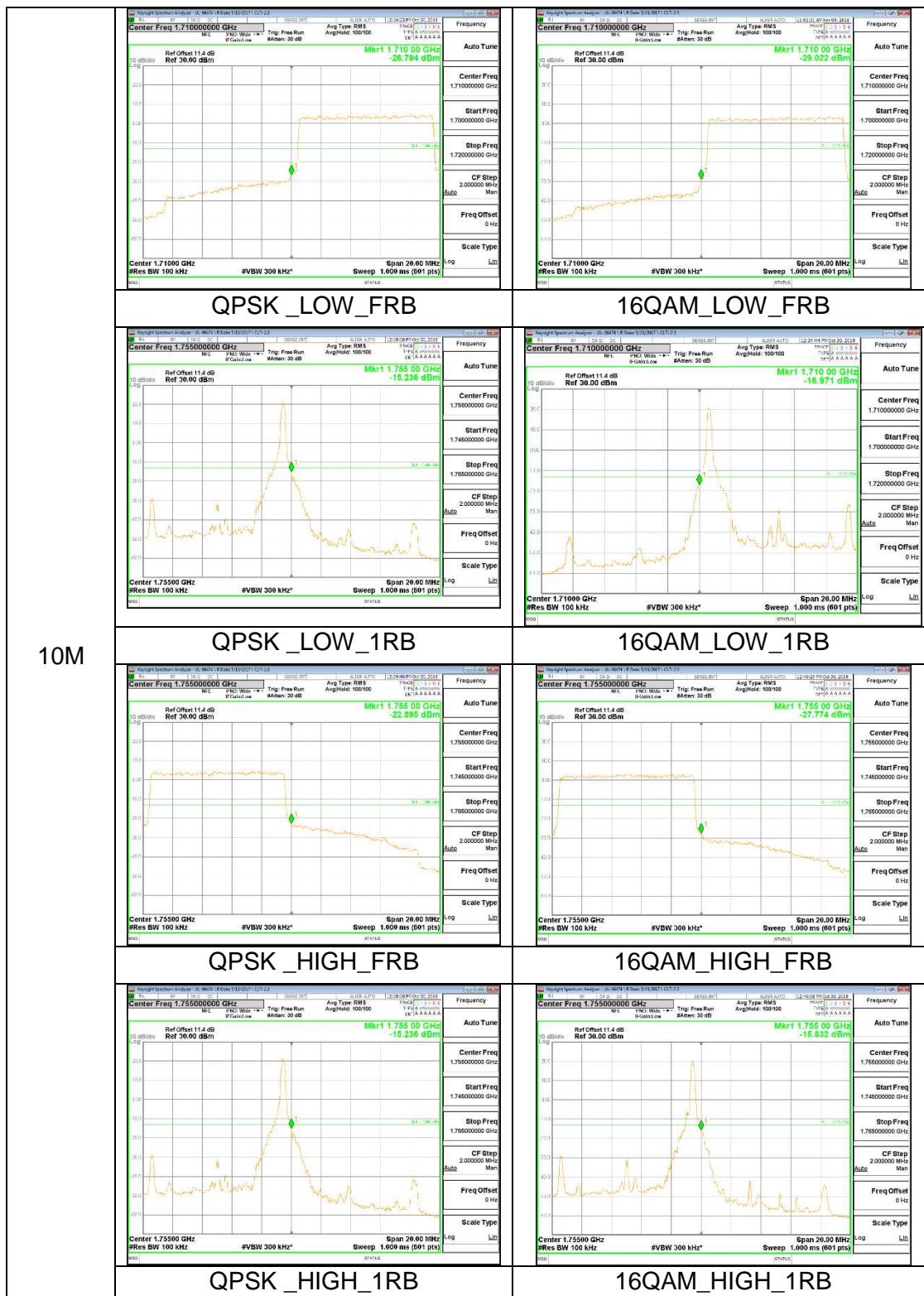


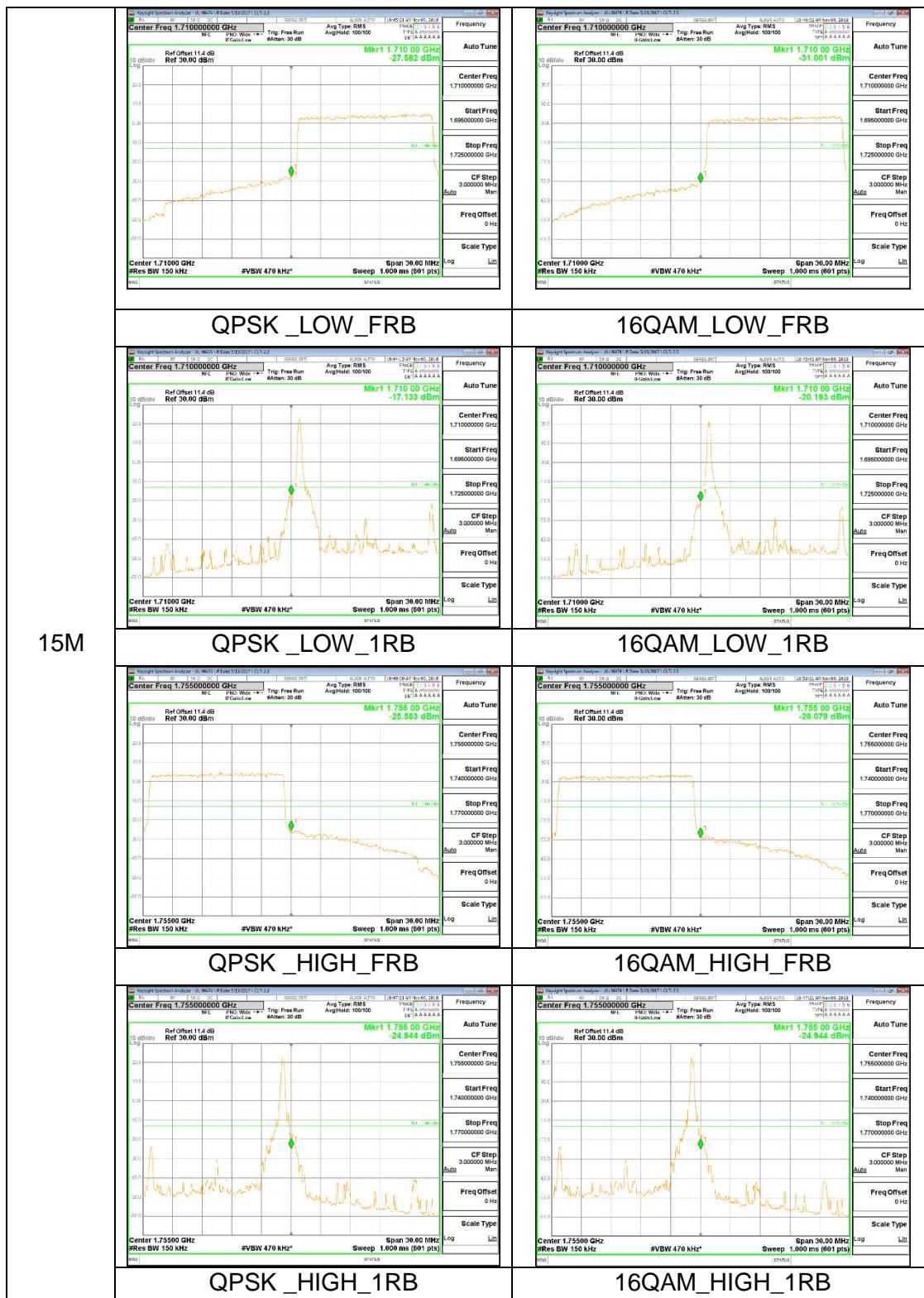
1.4M

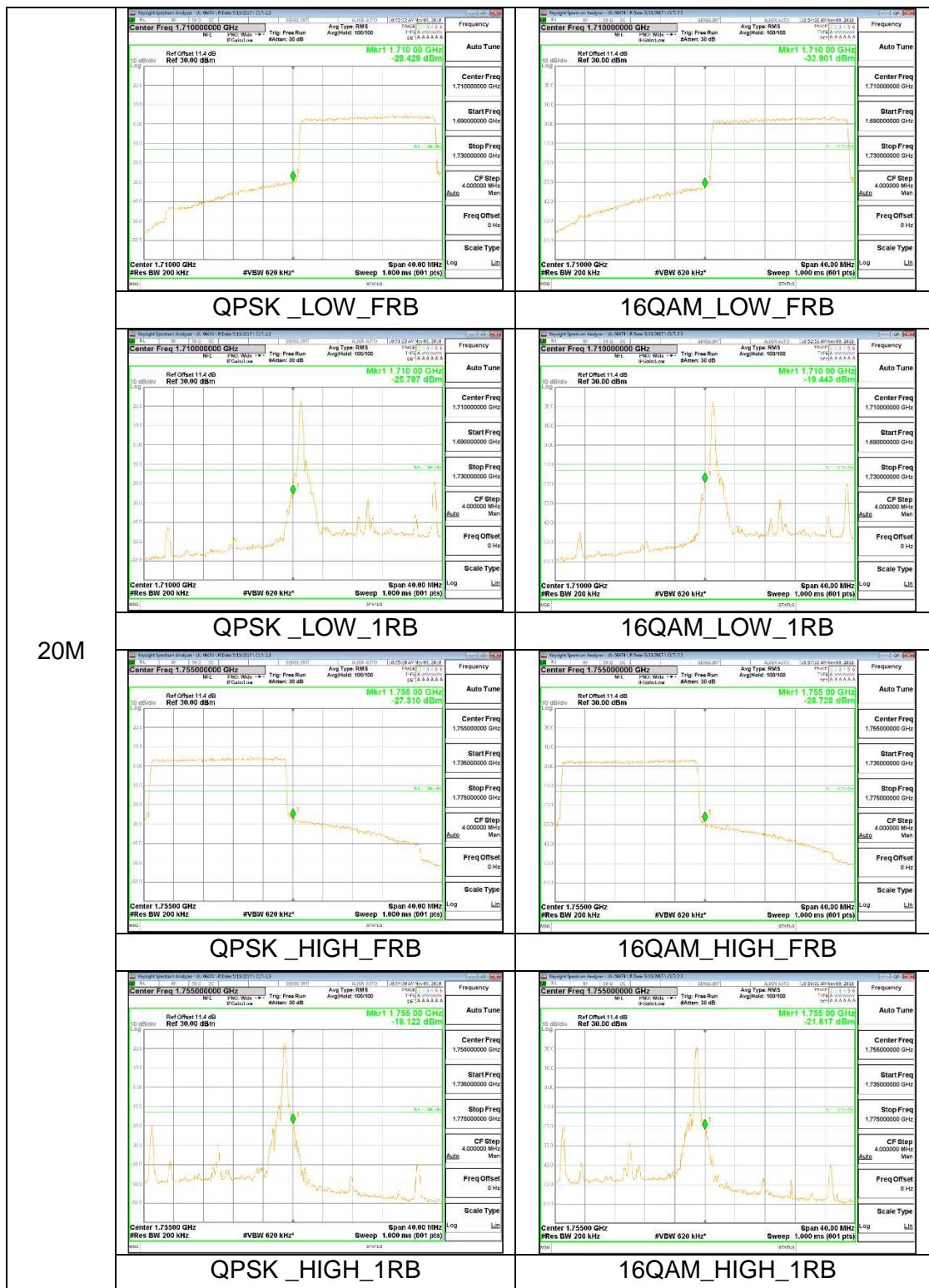


3M









LTE Band5

