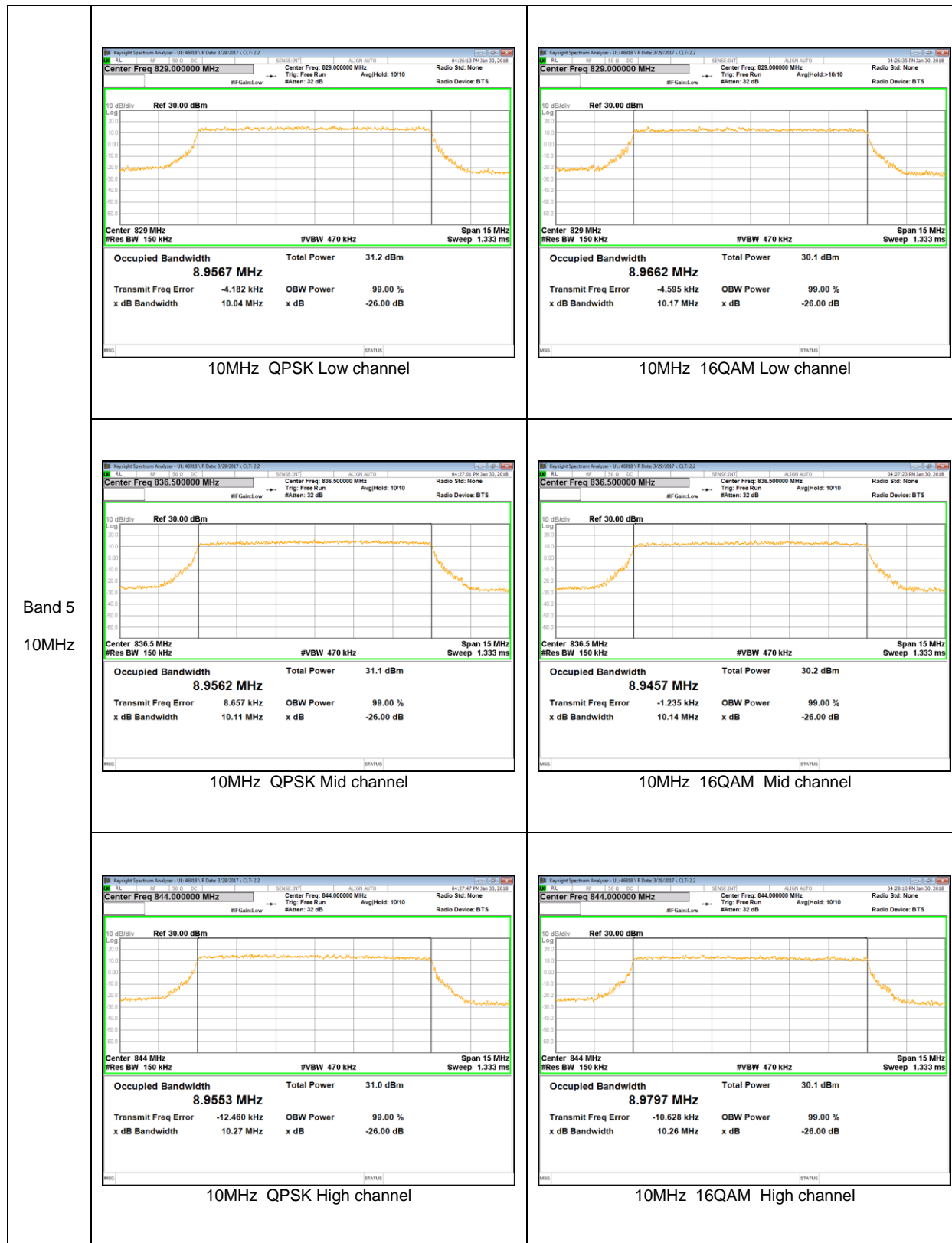
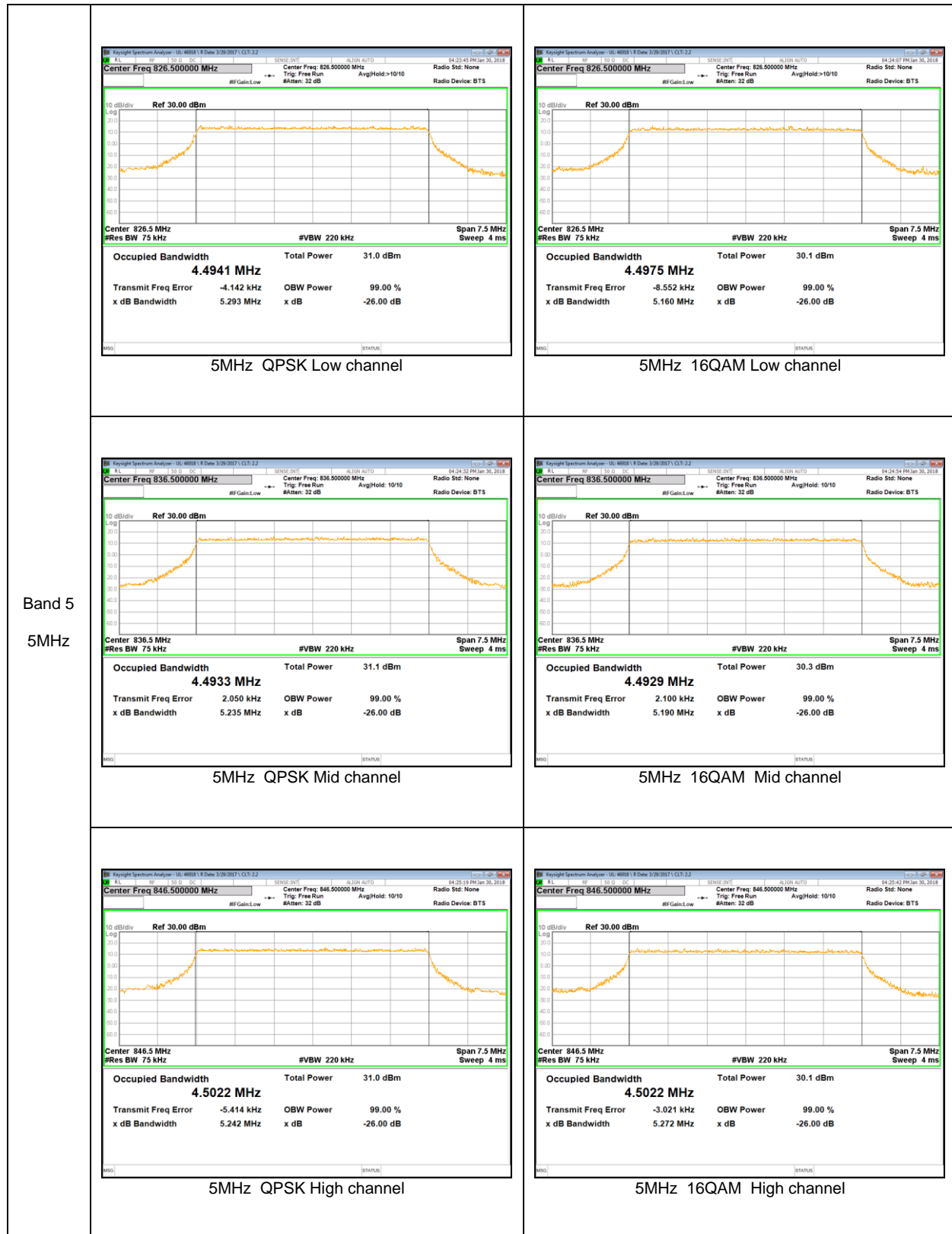
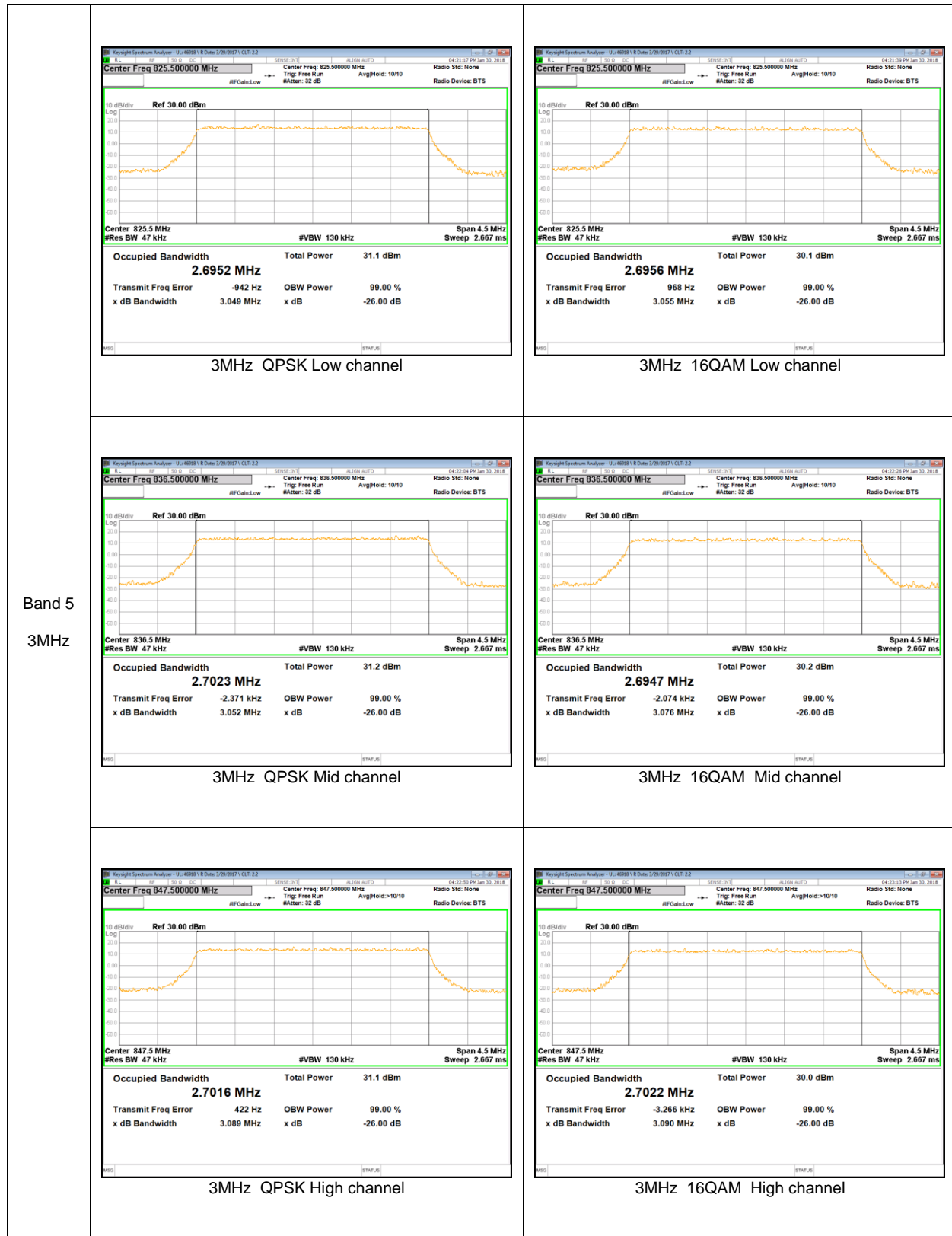
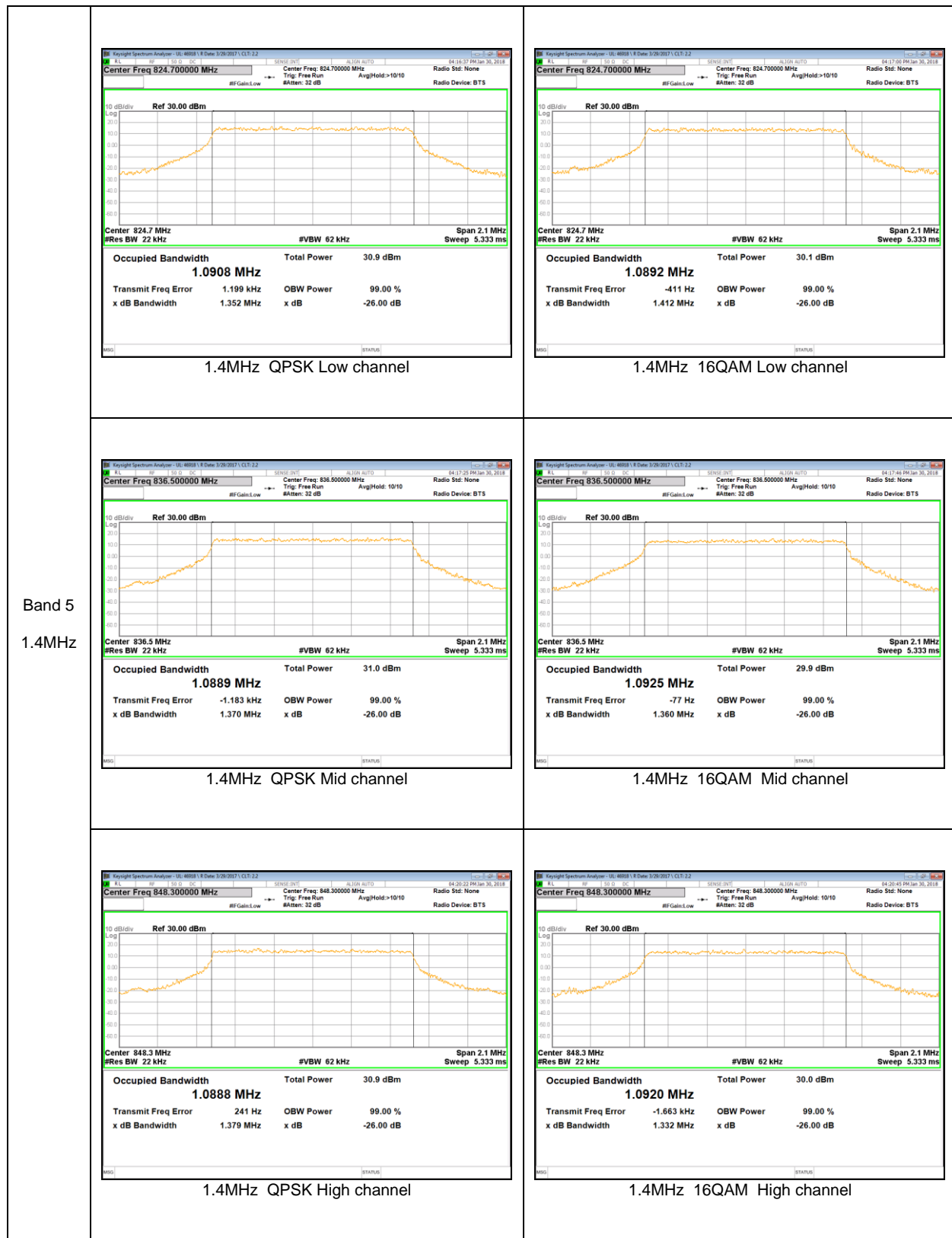


**LTE Band 5**

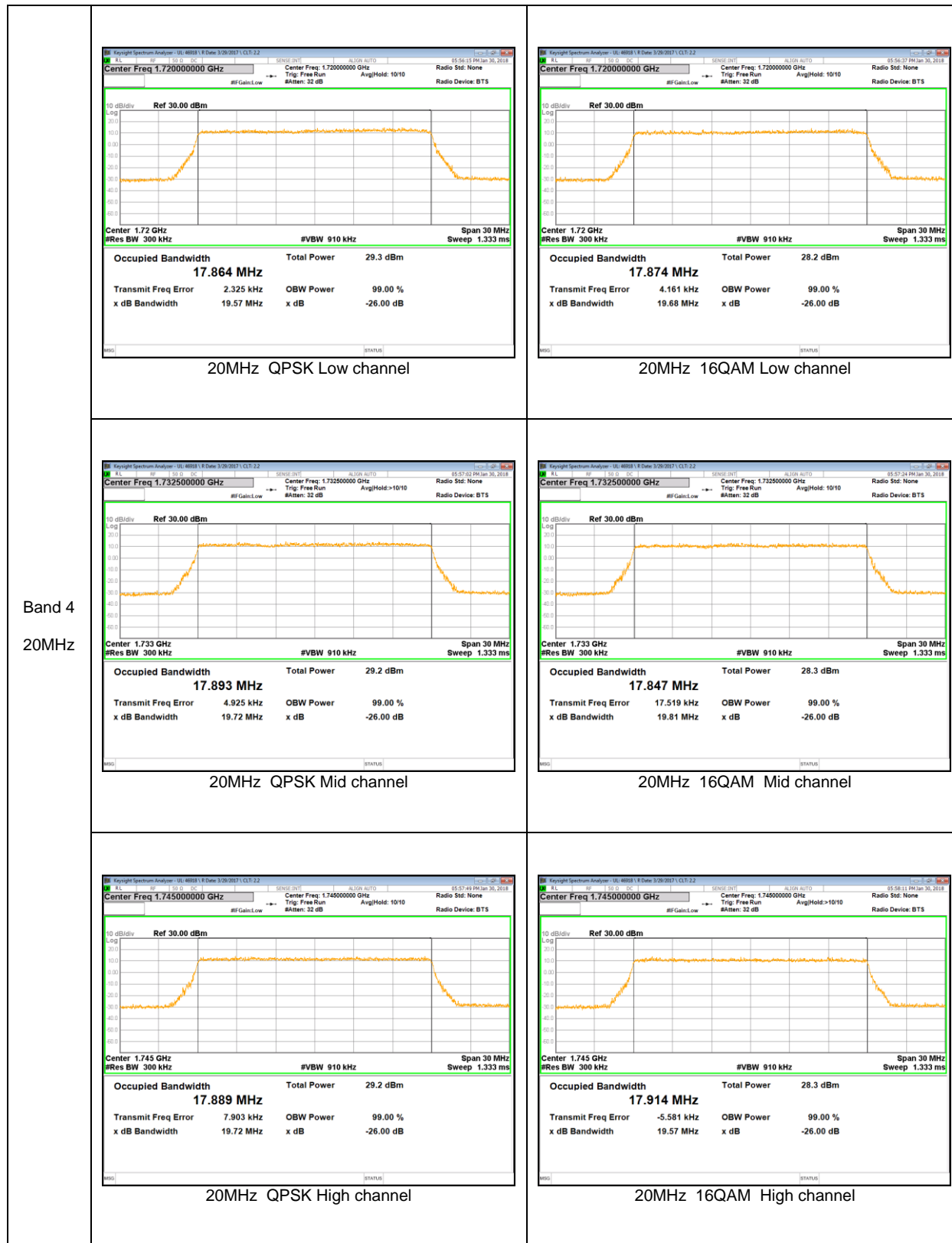


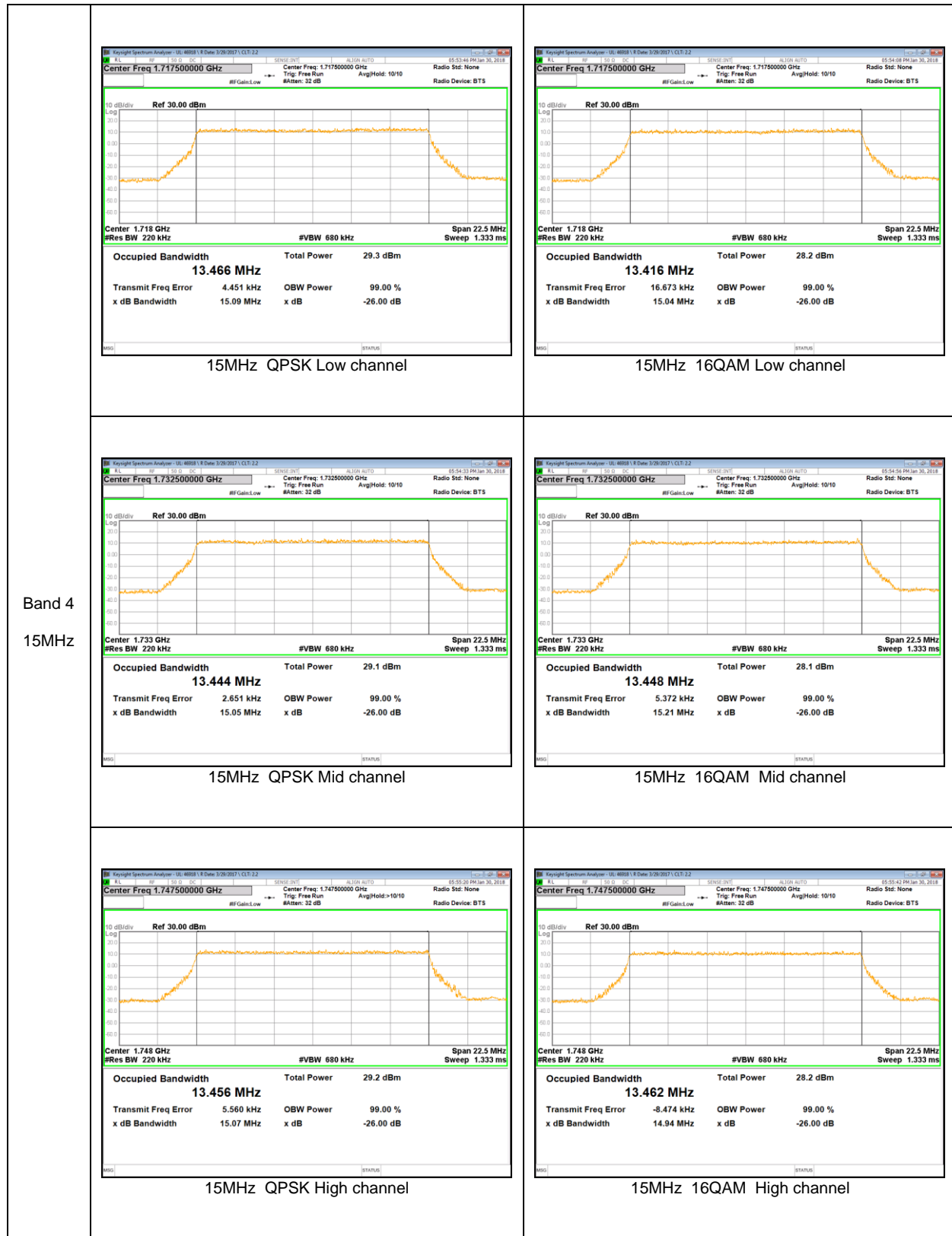


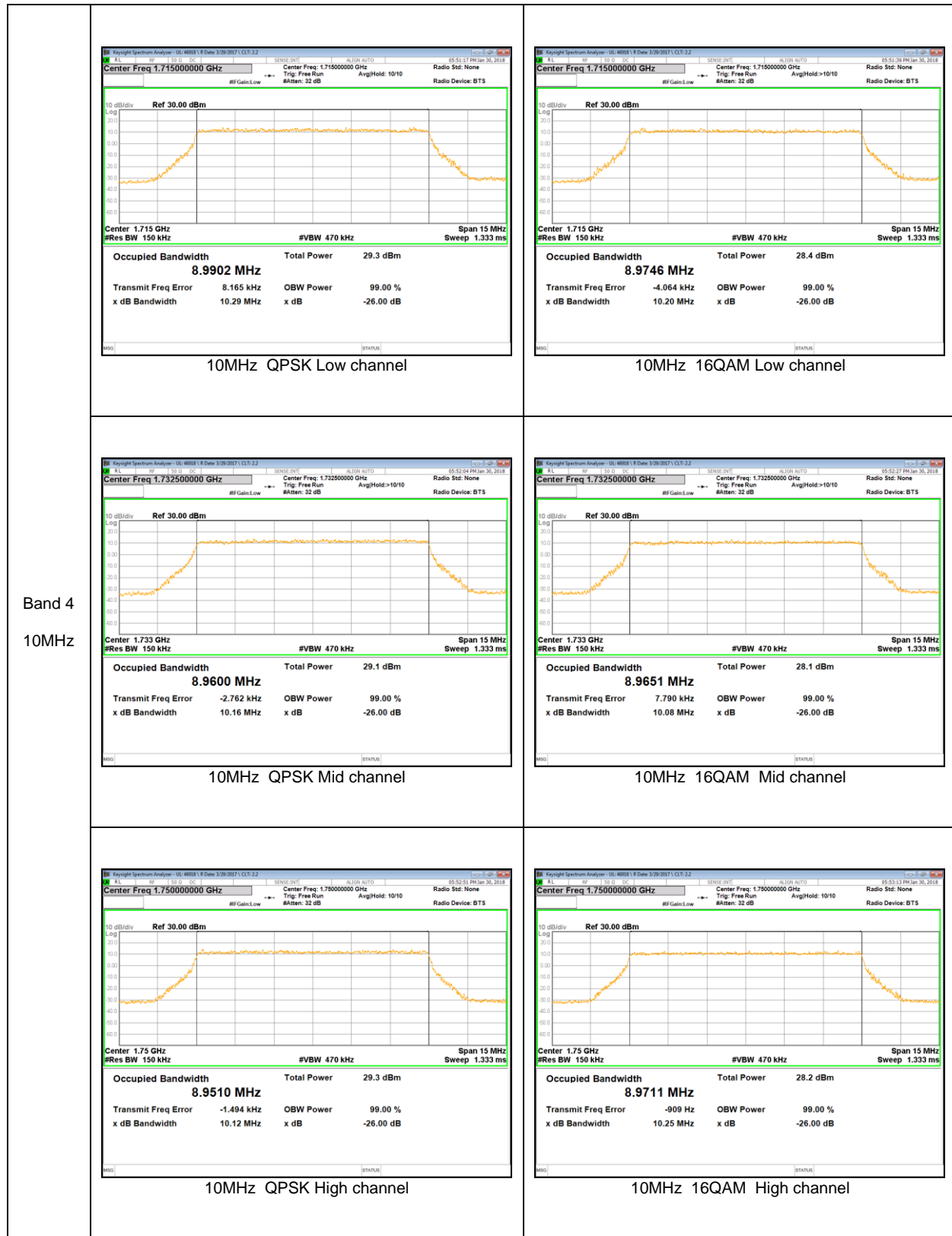


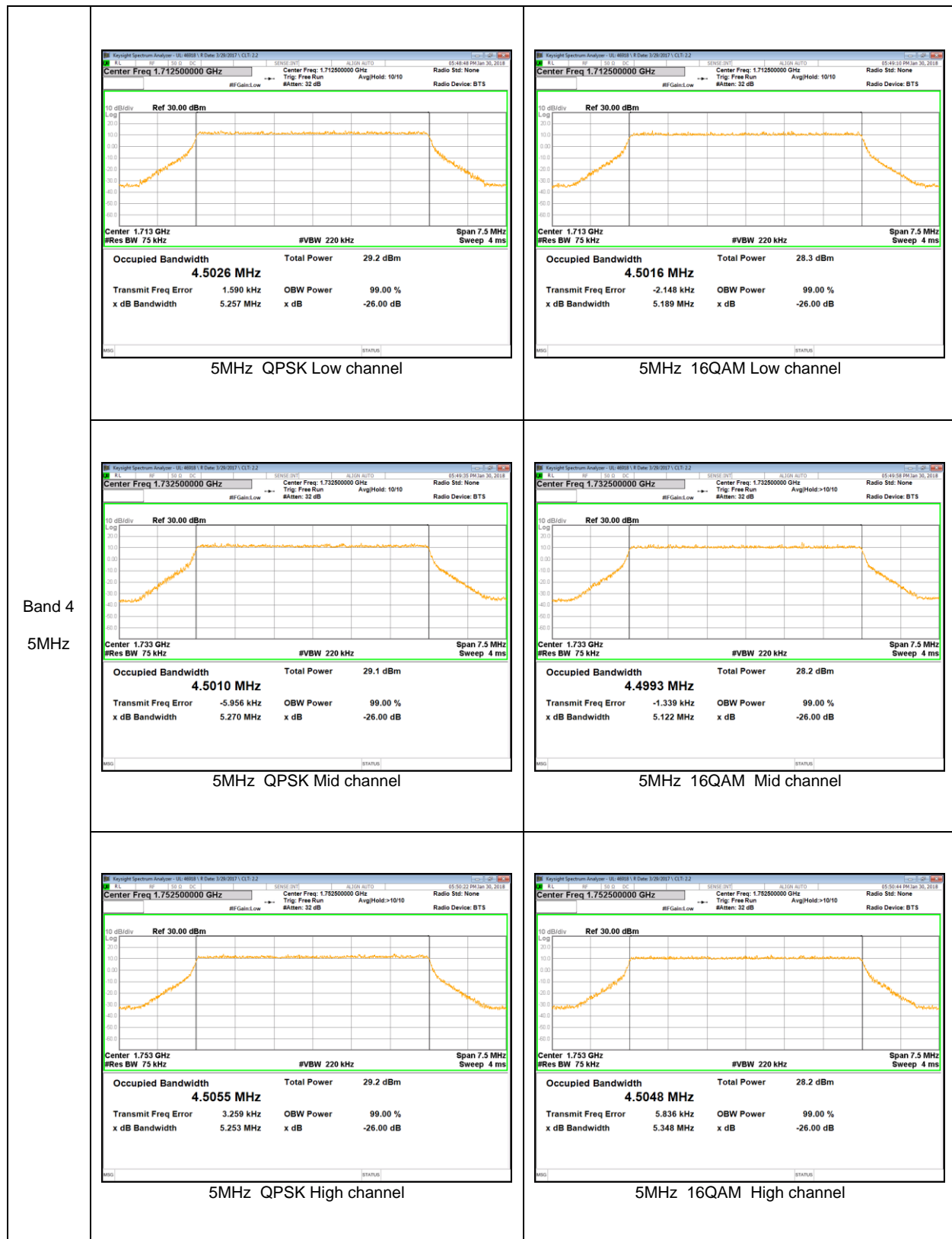


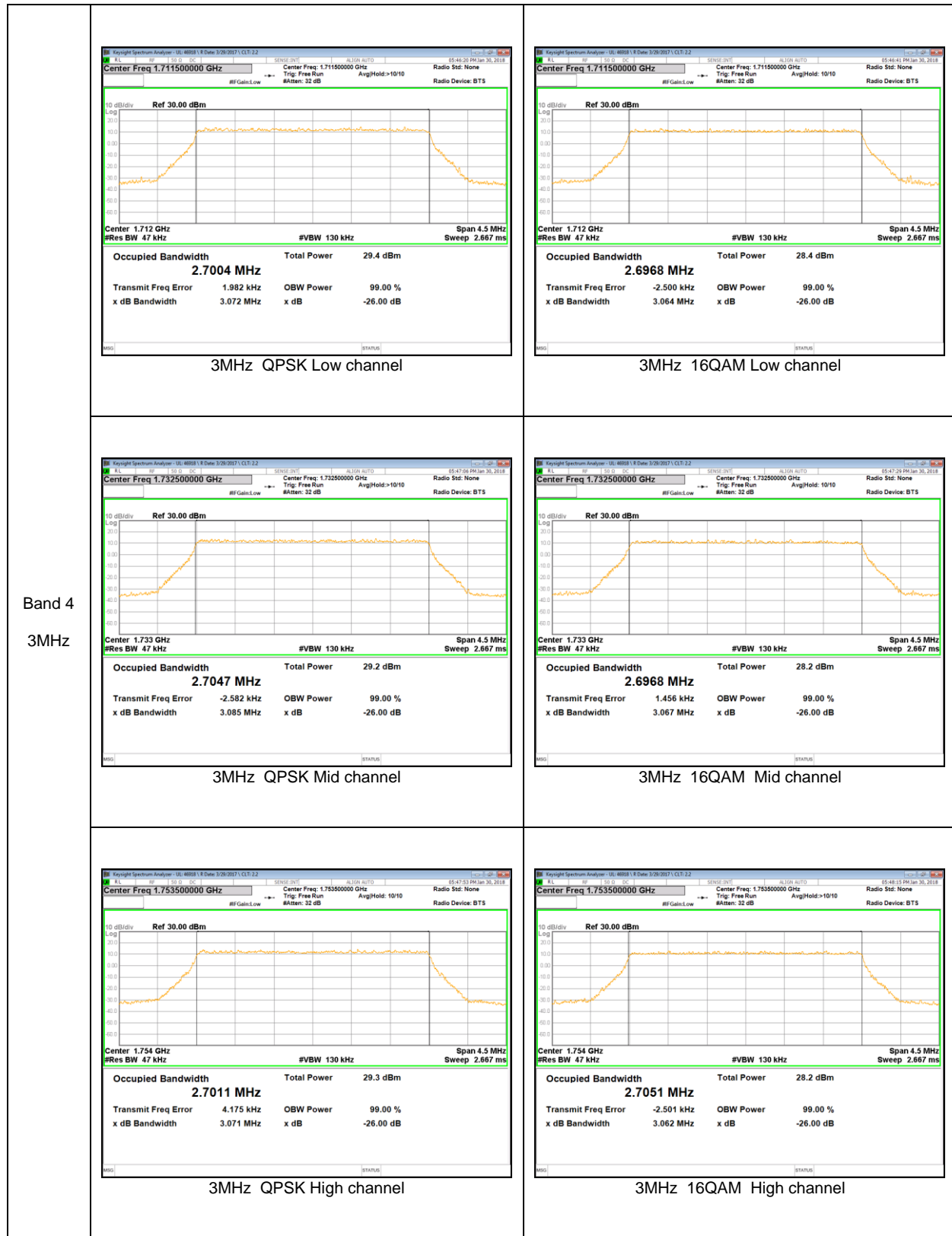
**LTE Band 4**

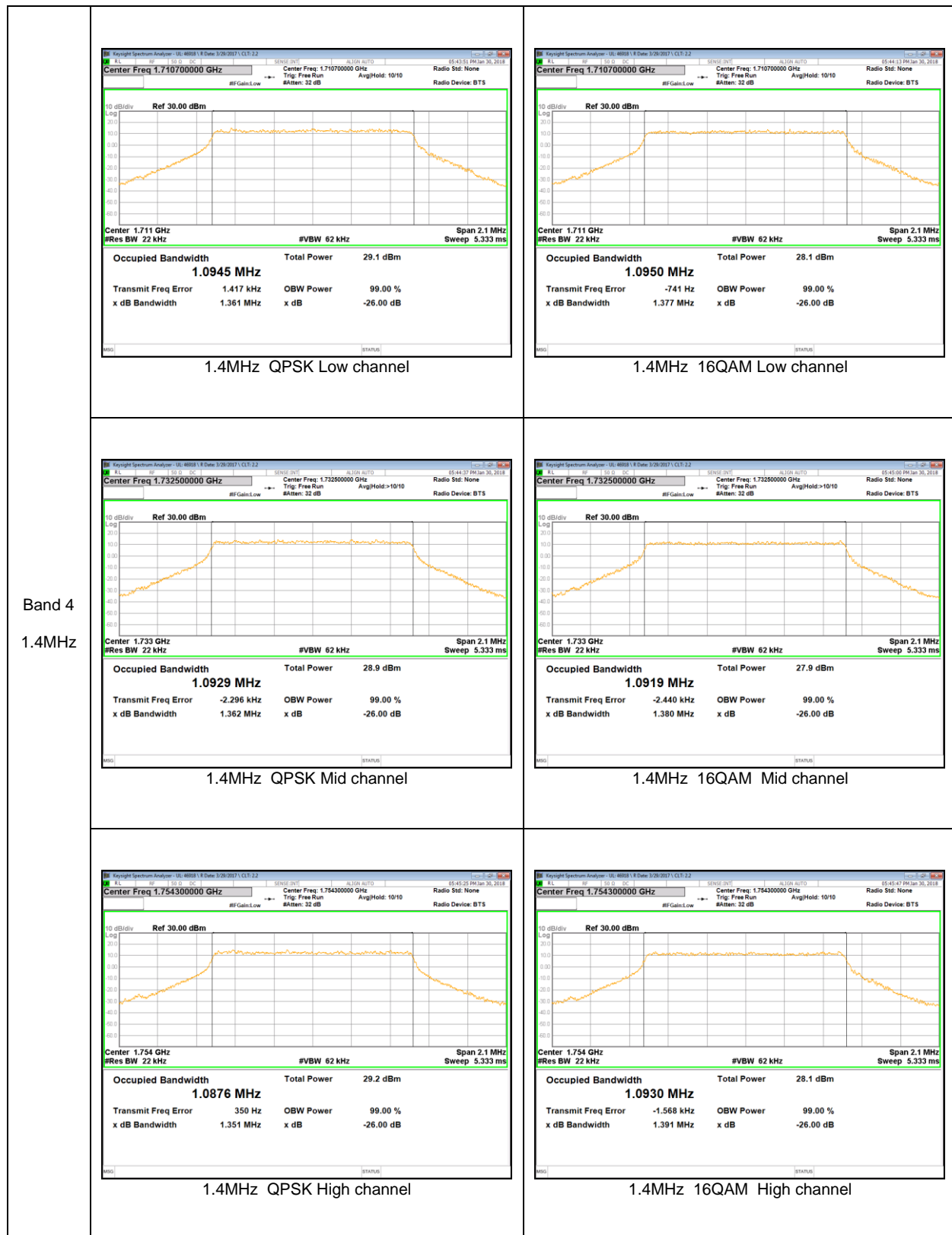




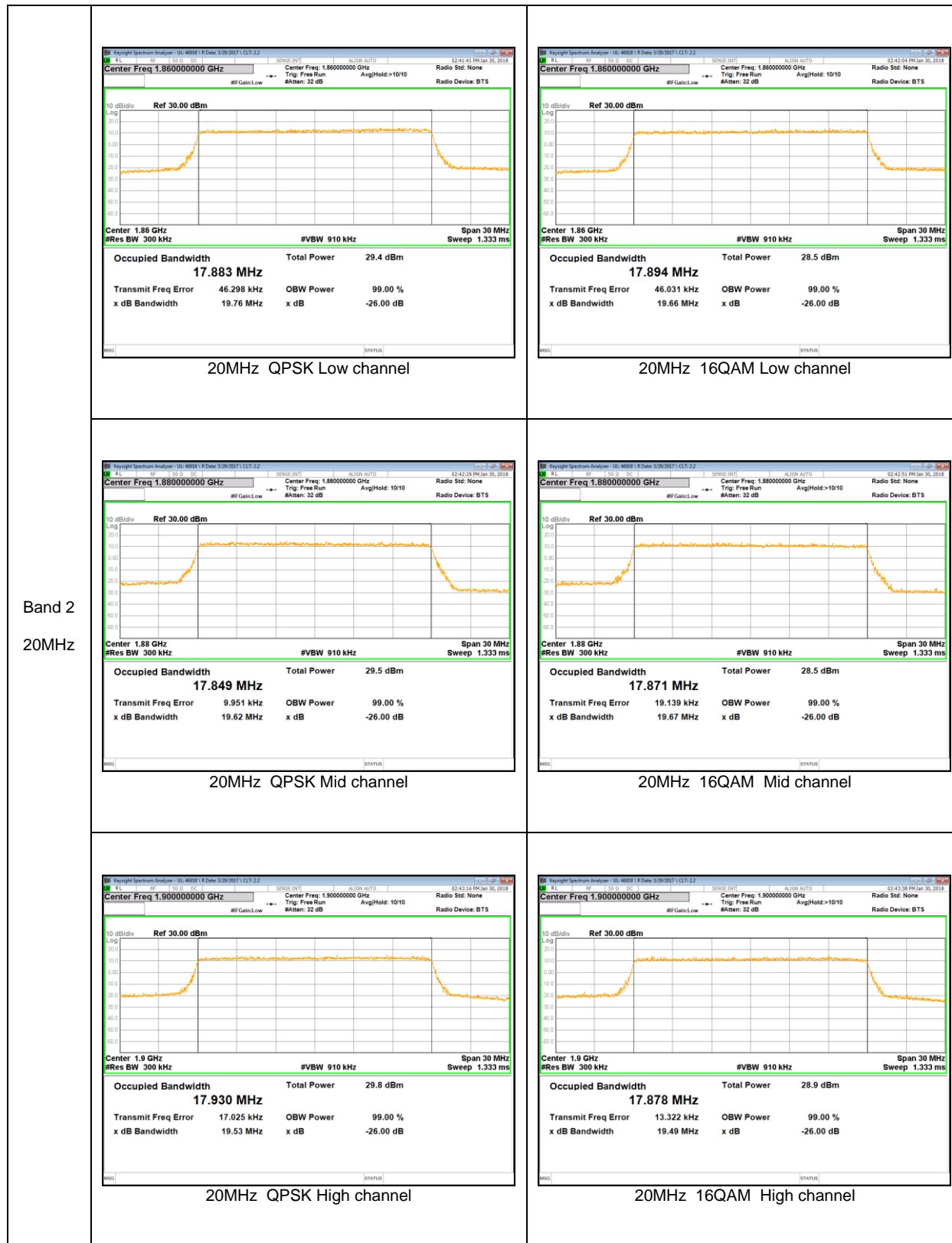


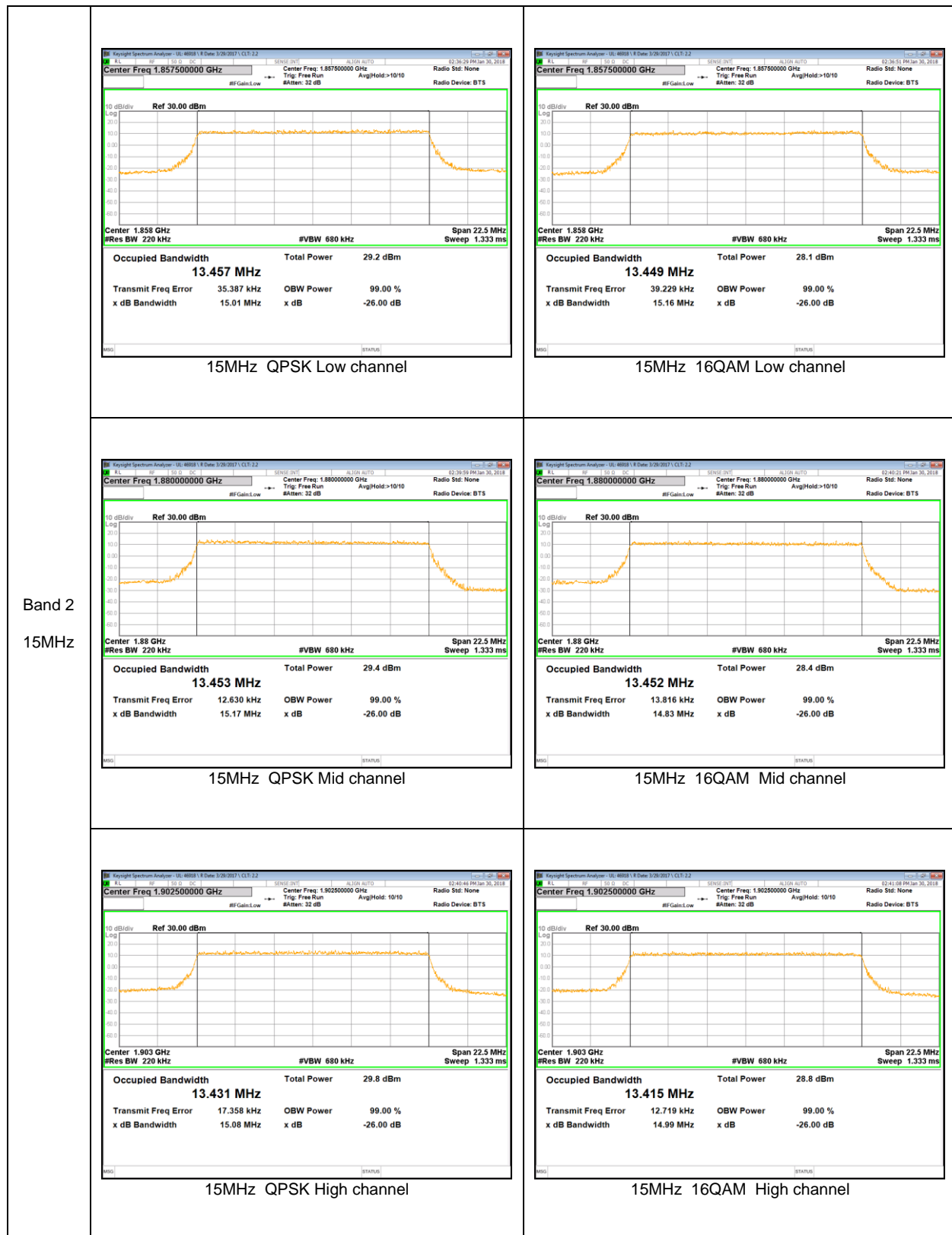


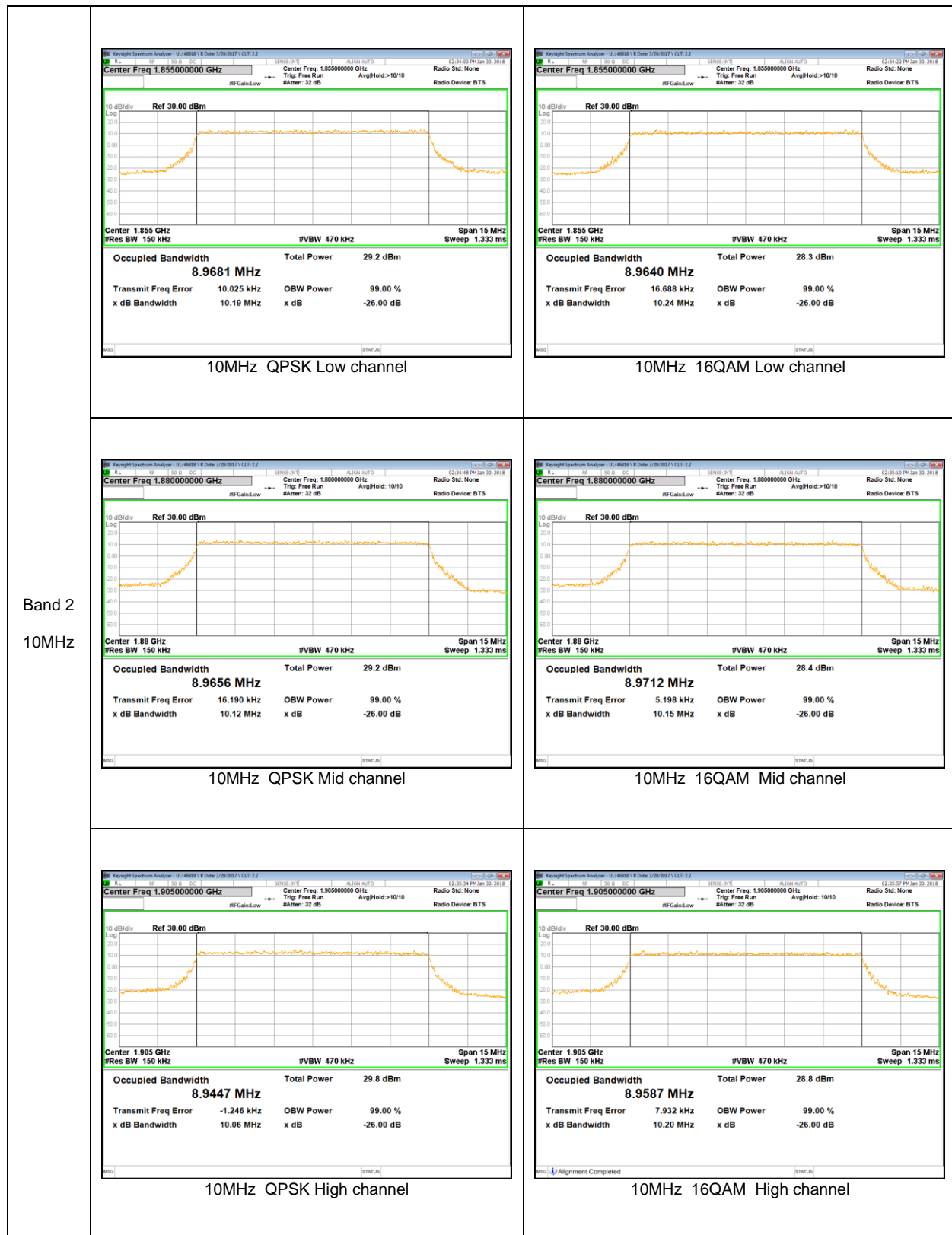


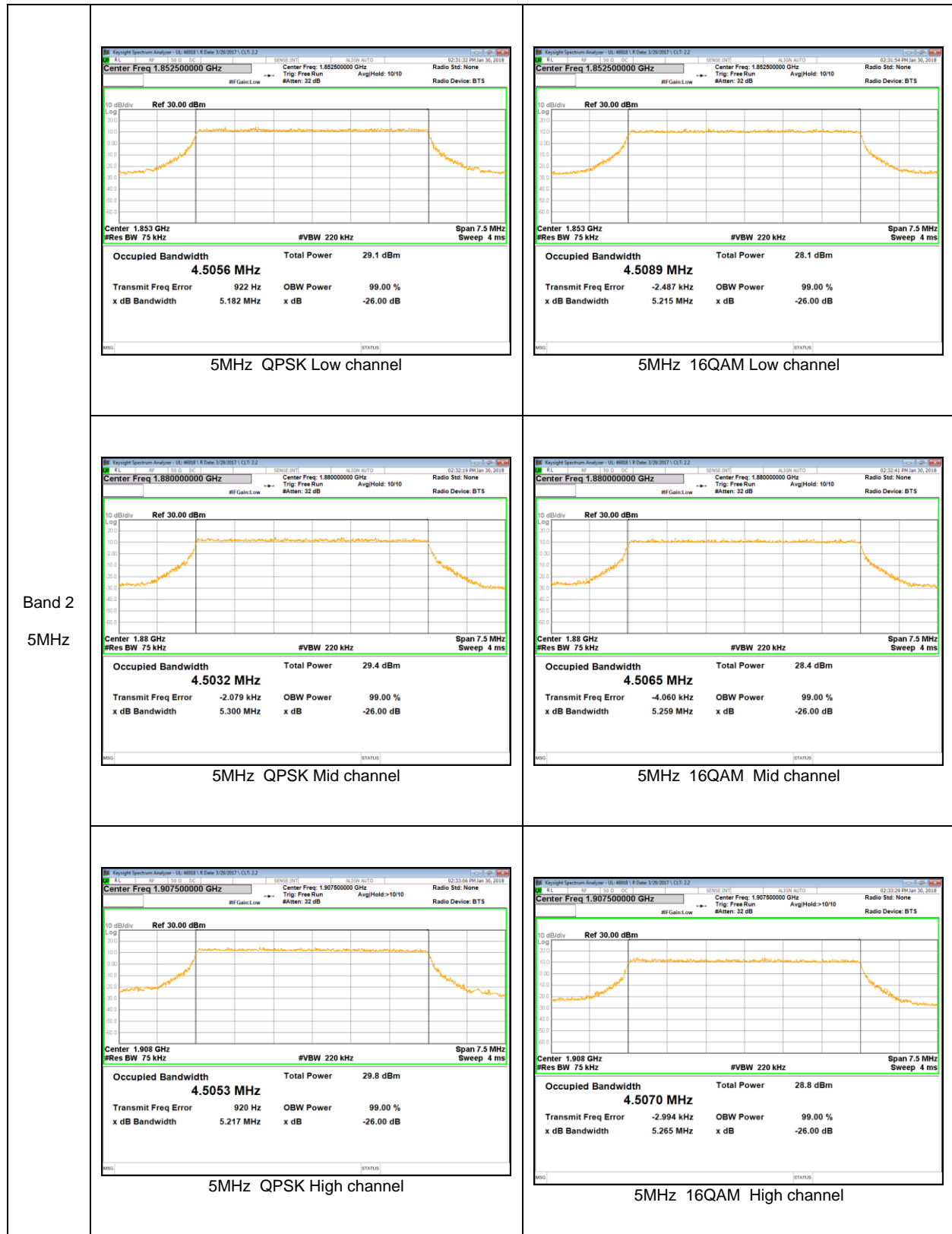


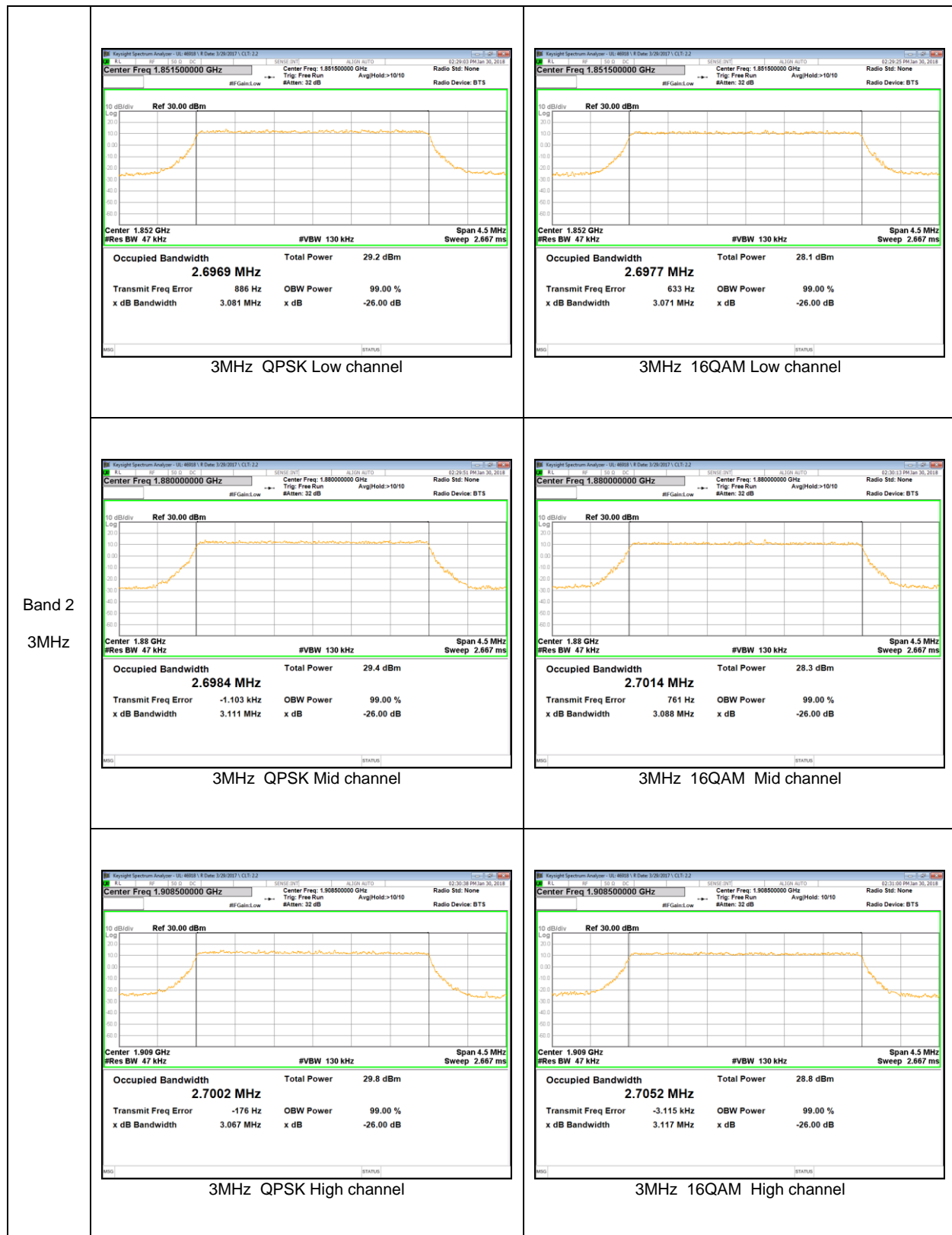
**LTE Band 2**

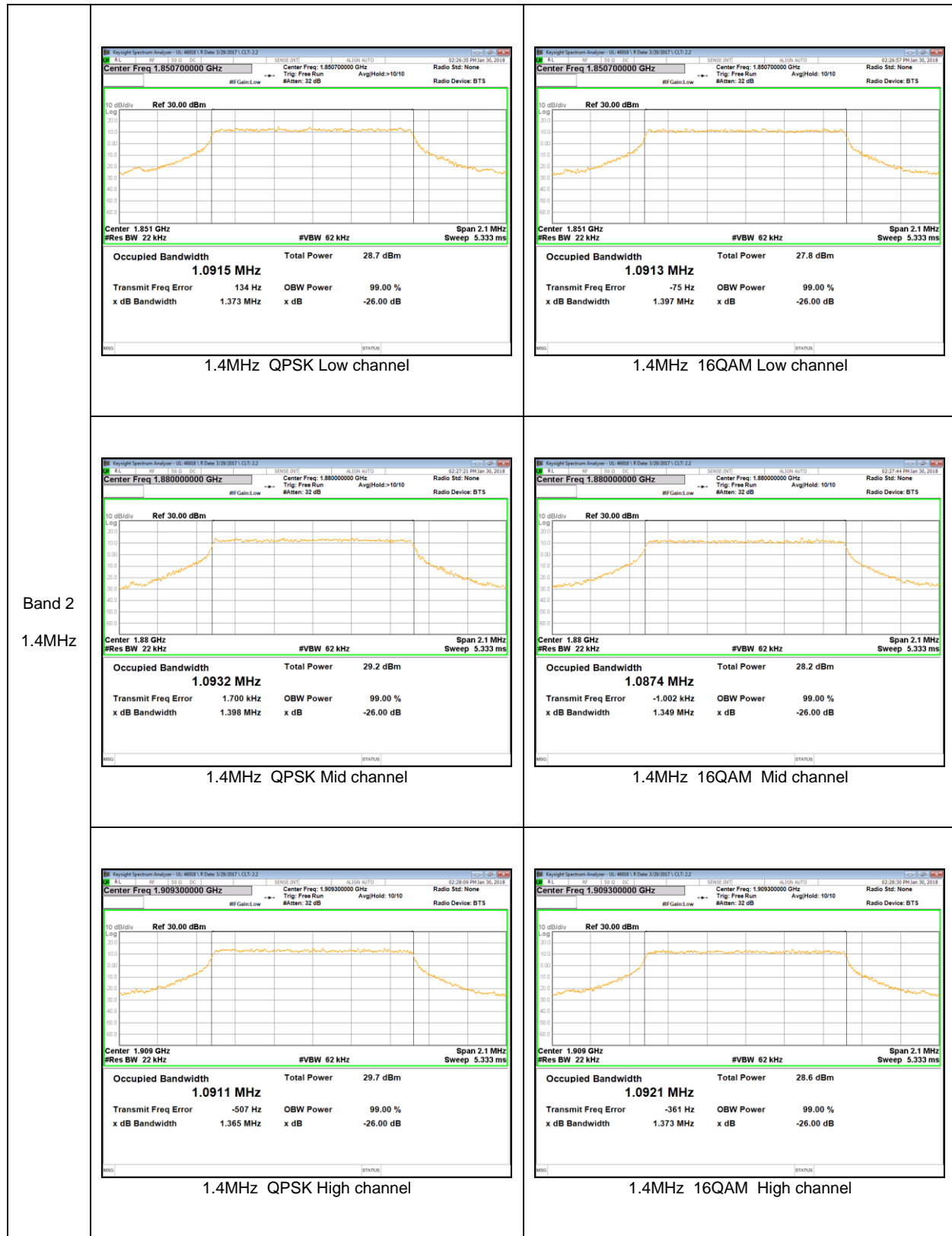












## 9.2. BAND EDGE EMISSIONS

### 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.

### 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.

#### GSM

- a) Set the RBW = 1 ~ 5% of OBW(GSM850 – 8.2KHz, GSM1900 – 9.1KHz)
- b) Set VBW  $\geq 3 \times$  RBW;
- c) Set span  $\geq 1.5$  times the OBW;
- d) Sweep time = 1S ;
- e) Detector = RMS;
- f) Ensure that the number of measurement points  $\geq 2 \times$  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  $\geq 3 \times$  RBW;
- c) Set span  $\geq 1.5$  times the OBW;
- d) Sweep time = Auto;
- e) Detector = RMS;
- f) Ensure that the number of measurement points  $\geq 2 \times$  Span/RBW;
- g) Trace mode = Average (100);

**RESULTS**

**GSM**

Band	Mode	Side	f [MHz]	Level [dBm]	Limit [dBm]
GSM850	GPRS	Lower	823.982	-15.800	-13.00
		Upper	849.023	-16.016	
	EGPRS	Lower	823.987	-24.471	
		Upper	849.008	-25.236	
GSM1900	GPRS	Lower	1849.997	-20.314	
		Upper	1910.018	-18.982	
	EGPRS	Lower	1849.982	-28.224	
		Upper	1910.018	-27.794	

**WCDMA**

Band	Mode	Side	f [MHz]	Level [dBm]	Limit [dBm]
Band 5	REL99	Lower	824.000	-24.615	-13.00
		Upper	849.000	-29.065	
	HSDPA	Lower	824.000	-26.820	
		Upper	849.000	-28.571	
Band 4	REL99	Lower	1710.000	-28.411	
		Upper	1755.000	-30.459	
	HSDPA	Lower	1710.000	-30.478	
		Upper	1755.000	-29.593	
Band 2	REL99	Lower	1850.000	-28.992	
		Upper	1910.000	-29.117	
	HSDPA	Lower	1850.000	-32.890	
		Upper	1910.000	-30.290	

**LTE 17**

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
10 MHz	QPSK	Lower	1RB	704.000	-28.869	-13.00
			FRB	704.000	-27.607	
		Upper	1RB	716.000	-30.439	
			FRB	716.000	-30.293	
	16QAM	Lower	1RB	704.000	-33.955	
			FRB	704.000	-28.214	
		Upper	1RB	716.000	-30.997	
			FRB	716.000	-30.722	
5 MHz	QPSK	Lower	1RB	704.000	-21.216	
			FRB	704.000	-23.673	
		Upper	1RB	716.000	-23.806	
			FRB	716.000	-24.421	
	16QAM	Lower	1RB	704.000	-21.874	
			FRB	704.000	-23.569	
		Upper	1RB	716.000	-23.627	
			FRB	716.000	-25.932	

**LTE 5**

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
10 MHz	QPSK	Lower	1RB	824.000	-32.300	-13.00
			FRB	824.000	-27.320	
		Upper	1RB	849.000	-31.887	
			FRB	849.000	-30.574	
	16QAM	Lower	1RB	824.000	-33.413	
			FRB	824.000	-26.581	
		Upper	1RB	849.000	-32.899	
			FRB	849.000	-32.762	
5 MHz	QPSK	Lower	1RB	824.000	-20.060	
			FRB	824.000	-23.713	
		Upper	1RB	849.000	-21.502	
			FRB	849.000	-23.330	
	16QAM	Lower	1RB	824.000	-26.382	
			FRB	824.000	-27.191	
		Upper	1RB	849.000	-20.877	
			FRB	849.000	-27.390	
3 MHz	QPSK	Lower	1RB	824.000	-19.968	
			FRB	824.000	-23.701	
		Upper	1RB	849.000	-17.912	
			FRB	849.000	-23.499	
	16QAM	Lower	1RB	824.000	-21.886	
			FRB	824.000	-25.859	
		Upper	1RB	849.000	-19.882	
			FRB	849.000	-25.088	
1.4 MHz	QPSK	Lower	1RB	824.000	-24.289	
			FRB	824.000	-24.185	
		Upper	1RB	849.000	-23.082	
			FRB	849.000	-23.140	
	16QAM	Lower	1RB	824.000	-23.918	
			FRB	824.000	-25.041	
		Upper	1RB	849.000	-23.907	
			FRB	849.000	-26.076	

**LTE 4**

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
20 MHz	QPSK	Lower	1RB	1710.000	-36.641	-13.00
			FRB	1710.000	-37.066	
		Upper	1RB	1755.000	-36.090	
			FRB	1755.000	-34.940	
	16QAM	Lower	1RB	1710.000	-35.443	
			FRB	1710.000	-34.796	
		Upper	1RB	1755.000	-40.485	
			FRB	1755.000	-36.777	
15 MHz	QPSK	Lower	1RB	1710.000	-30.587	-13.00
			FRB	1710.000	-32.432	
		Upper	1RB	1755.000	-26.776	
			FRB	1755.000	-36.004	
	16QAM	Lower	1RB	1710.000	-28.343	
			FRB	1710.000	-30.932	
		Upper	1RB	1755.000	-27.194	
			FRB	1755.000	-33.853	
10 MHz	QPSK	Lower	1RB	1710.000	-34.995	-13.00
			FRB	1710.000	-34.084	
		Upper	1RB	1755.000	-35.085	
			FRB	1755.000	-32.215	
	16QAM	Lower	1RB	1710.000	-36.201	
			FRB	1710.000	-31.517	
		Upper	1RB	1755.000	-36.687	
			FRB	1755.000	-35.036	
5 MHz	QPSK	Lower	1RB	1710.000	-23.659	-13.00
			FRB	1710.000	-28.620	
		Upper	1RB	1755.000	-24.062	
			FRB	1755.000	-27.064	
	16QAM	Lower	1RB	1710.000	-25.594	
			FRB	1710.000	-27.947	
		Upper	1RB	1755.000	-26.233	
			FRB	1755.000	-28.534	

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
3 MHz	QPSK	Lower	1RB	1710.000	-21.176	-13.00
			FRB	1710.000	-26.838	
		Upper	1RB	1755.000	-21.538	
			FRB	1755.000	-25.158	
	16QAM	Lower	1RB	1710.000	-21.692	
			FRB	1710.000	-28.219	
		Upper	1RB	1755.000	-22.644	
			FRB	1755.000	-28.274	
1.4 MHz	QPSK	Lower	1RB	1710.000	-26.302	-13.00
			FRB	1710.000	-25.129	
		Upper	1RB	1755.000	-27.063	
			FRB	1755.000	-26.287	
	16QAM	Lower	1RB	1710.000	-27.766	
			FRB	1710.000	-26.844	
		Upper	1RB	1755.000	-28.986	
			FRB	1755.000	-26.732	

**LTE 2**

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
20 MHz	QPSK	Lower	1RB	1850.000	-36.607	-13.00
			FRB	1850.000	-30.933	
		Upper	1RB	1910.000	-35.408	
			FRB	1910.000	-29.016	
	16QAM	Lower	1RB	1850.000	-36.673	
			FRB	1850.000	-32.309	
		Upper	1RB	1910.000	-32.984	
			FRB	1910.000	-30.015	
15 MHz	QPSK	Lower	1RB	1850.000	-24.316	-13.00
			FRB	1850.000	-29.275	
		Upper	1RB	1910.000	-25.477	
			FRB	1910.000	-29.874	
	16QAM	Lower	1RB	1850.000	-26.991	
			FRB	1850.000	-31.963	
		Upper	1RB	1910.000	-27.123	
			FRB	1910.000	-29.778	

Bandwidth	Mode	Side	RB Status	f [MHz]	Level [dBm]	Limit [dBm]
10 MHz	QPSK	Lower	1RB	1850.000	-32.877	-13.00
			FRB	1850.000	-27.063	
		Upper	1RB	1910.000	-30.803	
			FRB	1910.000	-29.348	
	16QAM	Lower	1RB	1850.000	-35.504	
			FRB	1850.000	-29.264	
		Upper	1RB	1910.000	-31.239	
			FRB	1910.000	-30.568	
5 MHz	QPSK	Lower	1RB	1850.000	-23.306	-13.00
			FRB	1850.000	-26.117	
		Upper	1RB	1910.000	-21.507	
			FRB	1910.000	-26.739	
	16QAM	Lower	1RB	1850.000	-25.692	
			FRB	1850.000	-26.983	
		Upper	1RB	1910.000	-24.382	
			FRB	1910.000	-26.688	
3 MHz	QPSK	Lower	1RB	1850.000	-22.871	-13.00
			FRB	1850.000	-24.565	
		Upper	1RB	1910.000	-19.903	
			FRB	1910.000	-26.964	
	16QAM	Lower	1RB	1850.000	-22.482	
			FRB	1850.000	-26.776	
		Upper	1RB	1910.000	-20.411	
			FRB	1910.000	-26.236	
1.4 MHz	QPSK	Lower	1RB	1850.000	-27.129	-13.00
			FRB	1850.000	-24.365	
		Upper	1RB	1910.000	-23.861	
			FRB	1910.000	-26.548	
	16QAM	Lower	1RB	1850.000	-26.362	
			FRB	1850.000	-25.034	
		Upper	1RB	1910.000	-24.295	
			FRB	1910.000	-25.488	