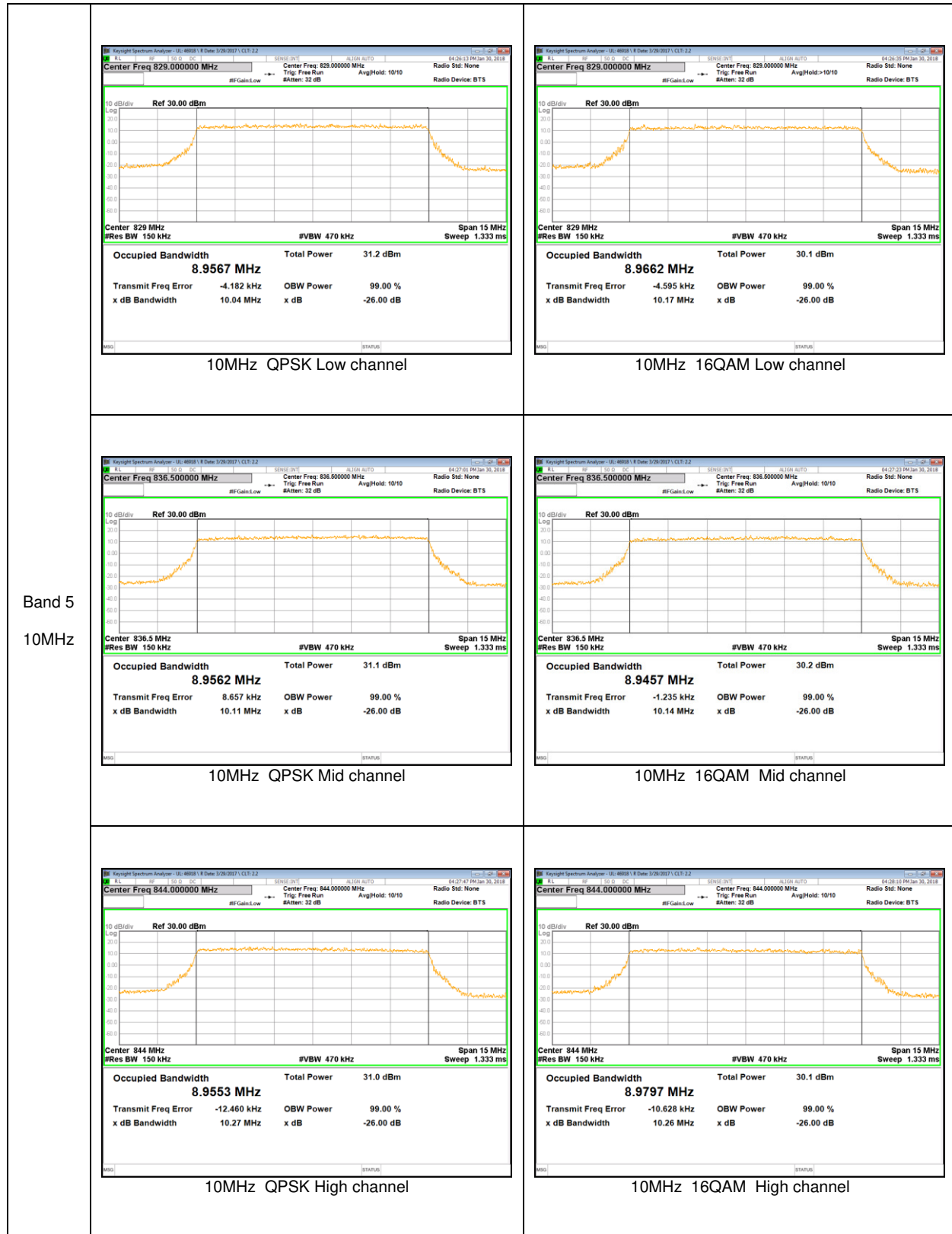
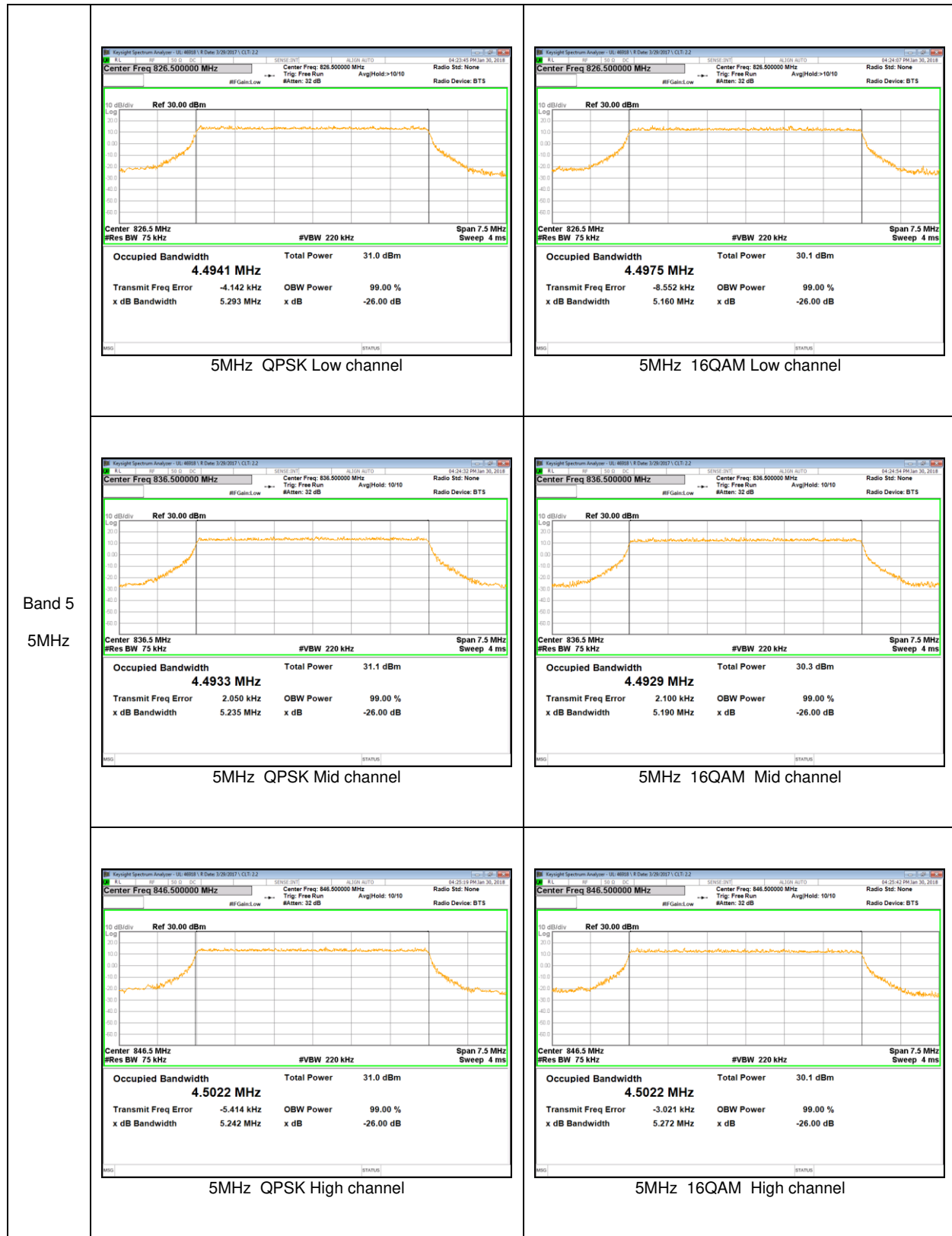
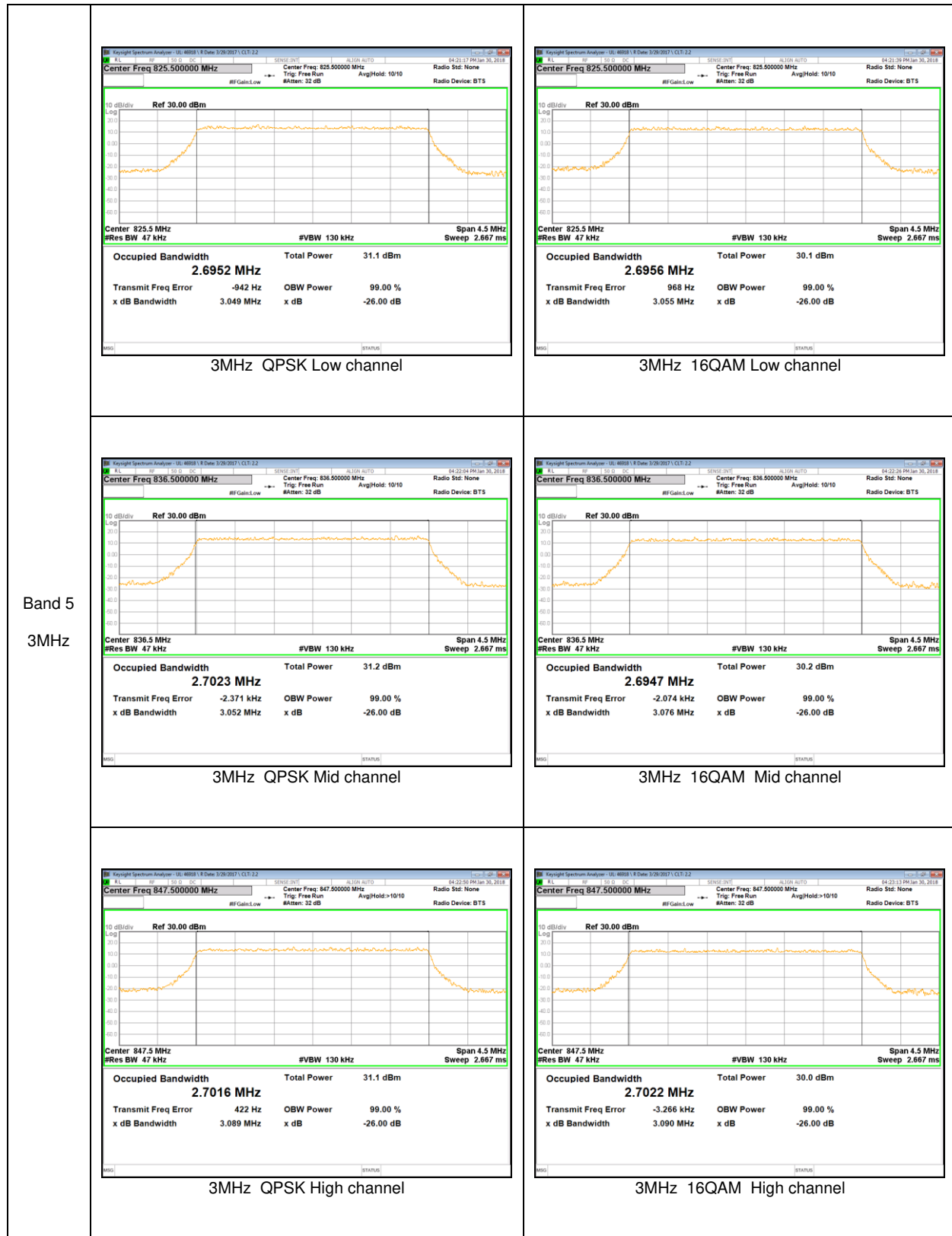
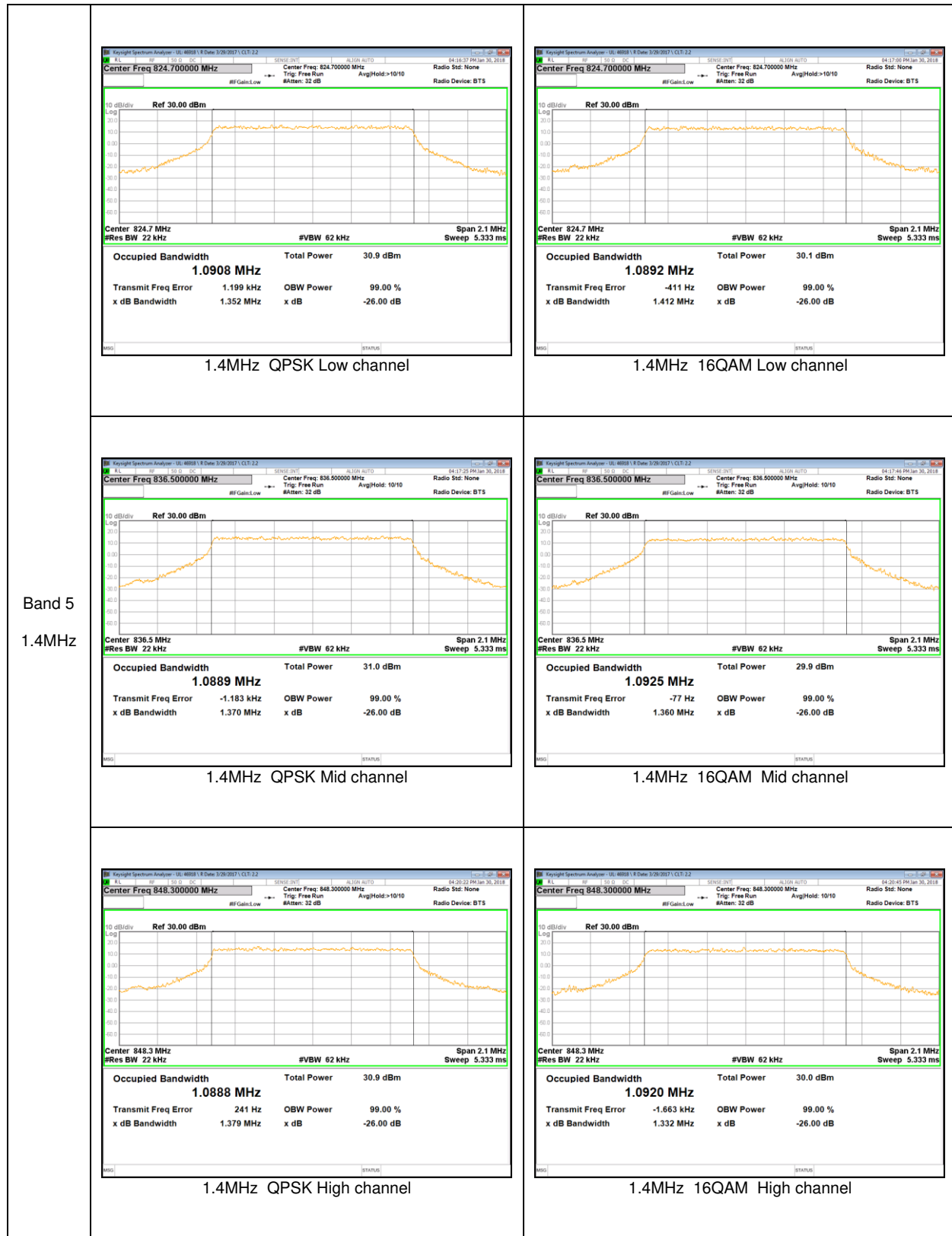


LTE Band 5

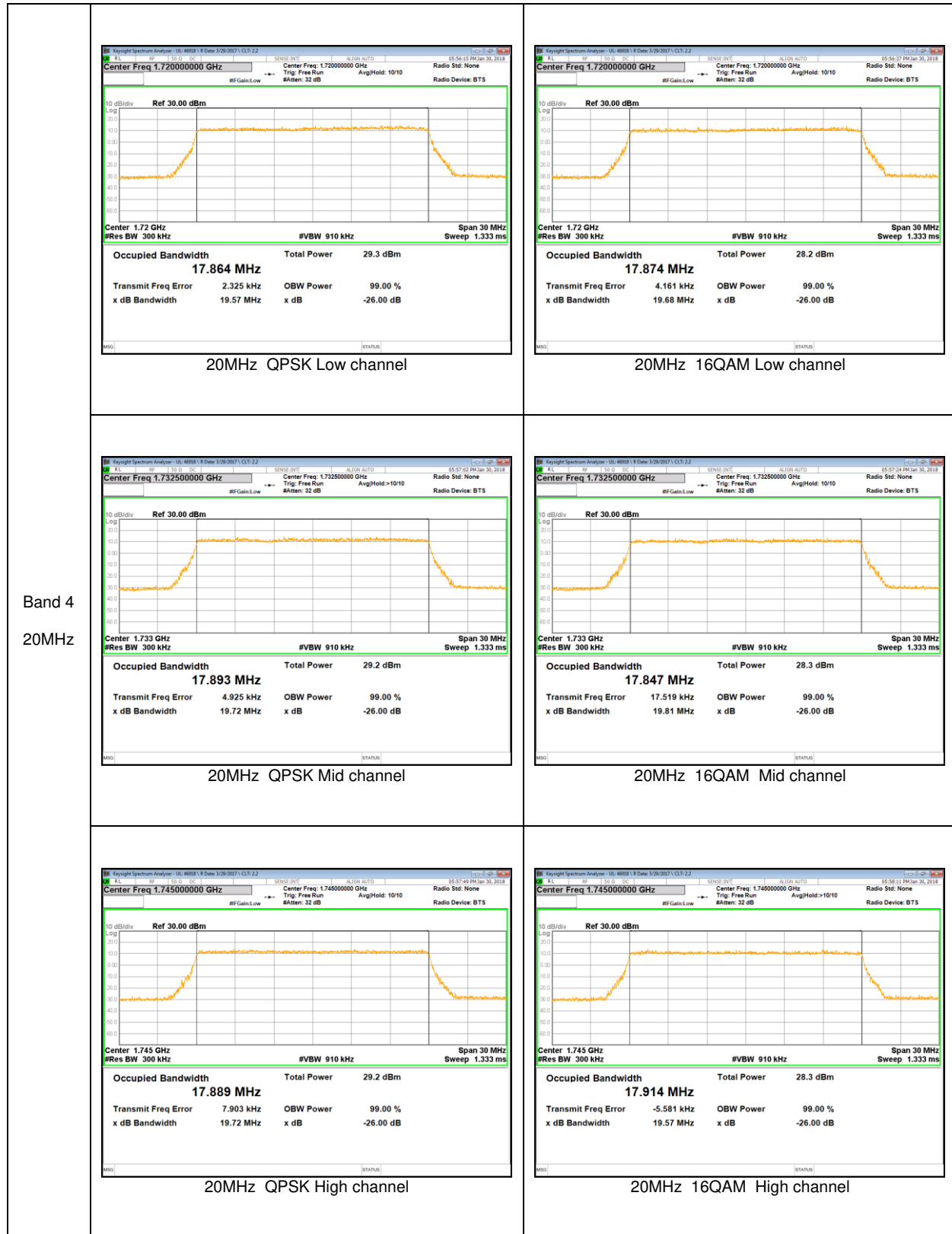


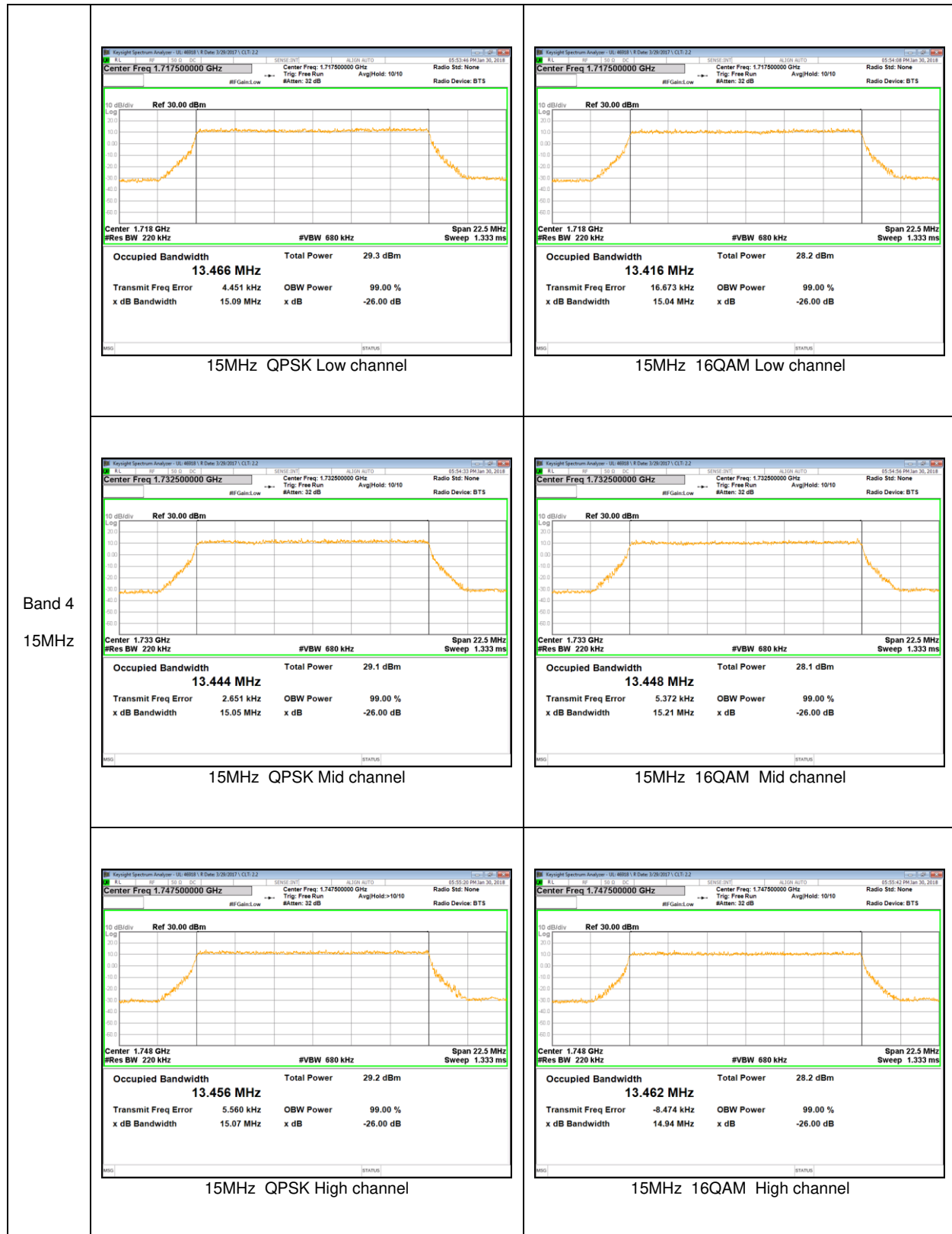


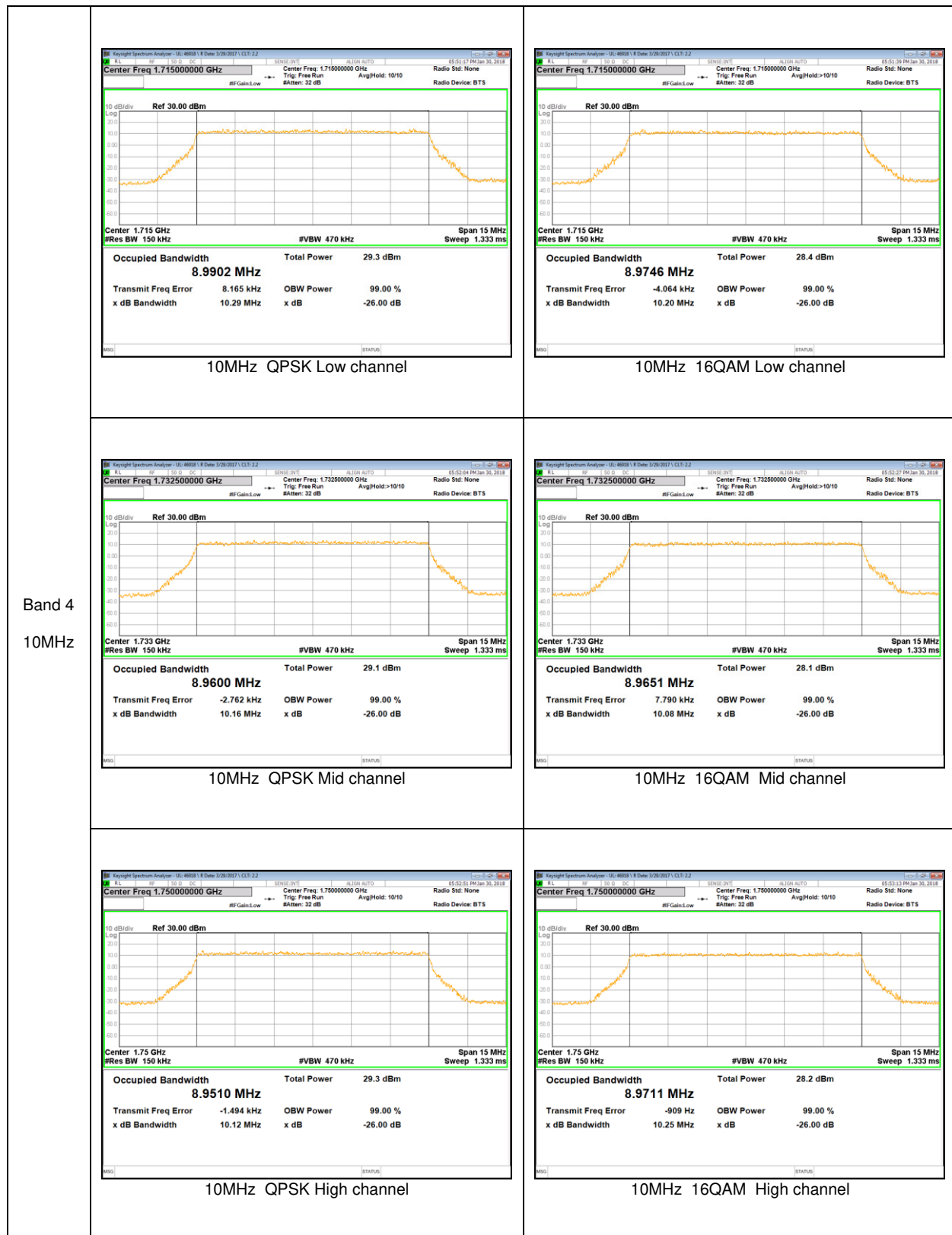


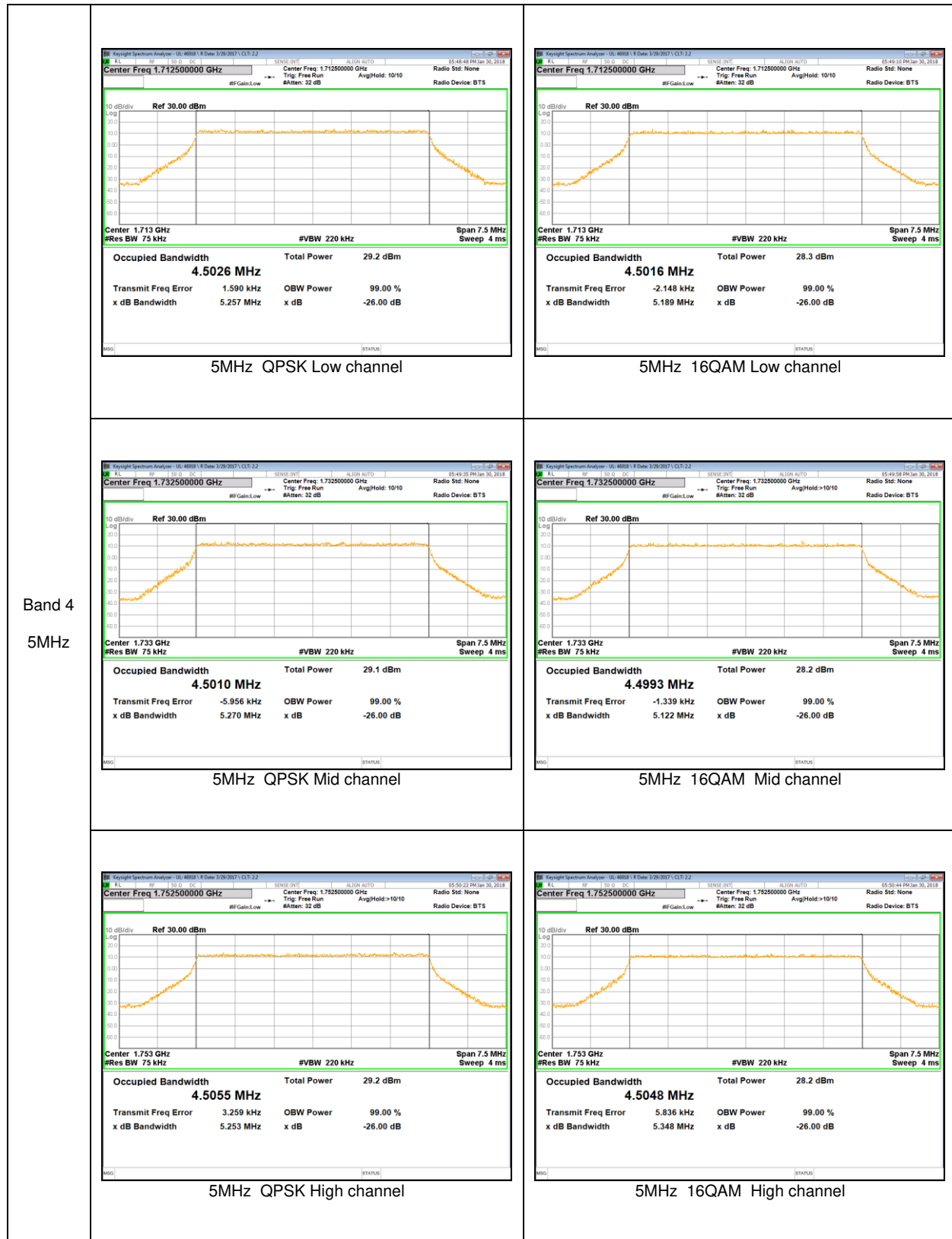


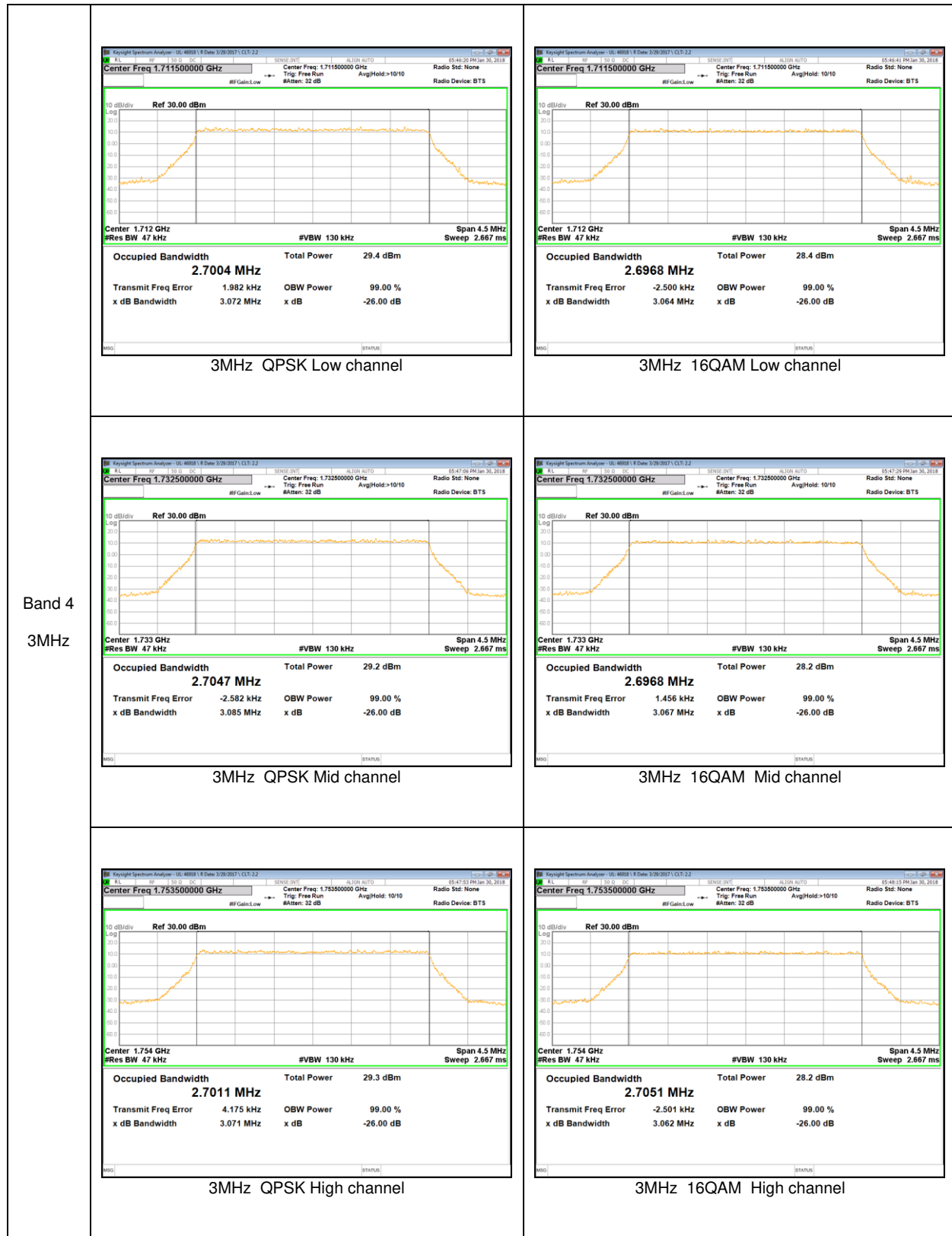
LTE Band 4

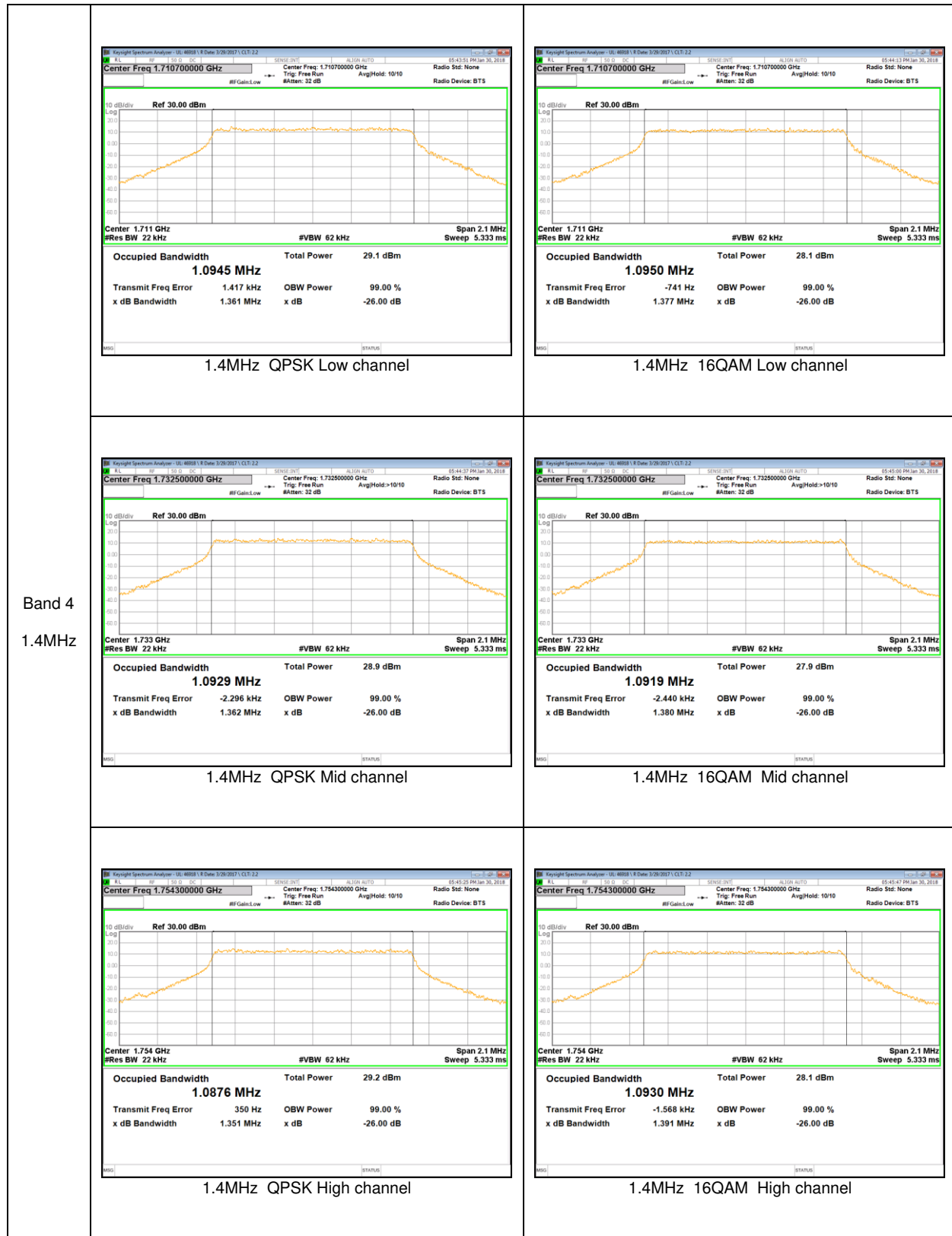




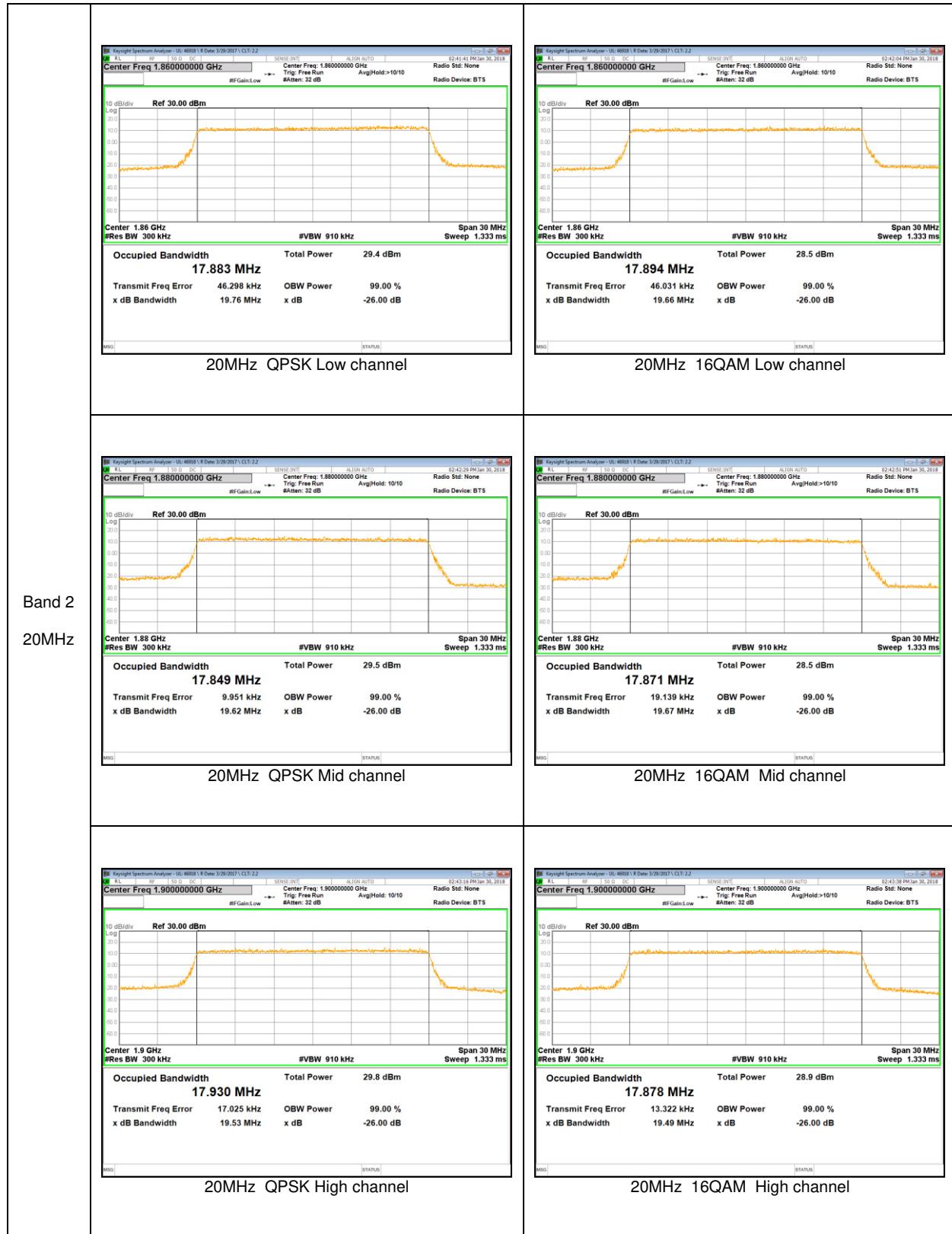


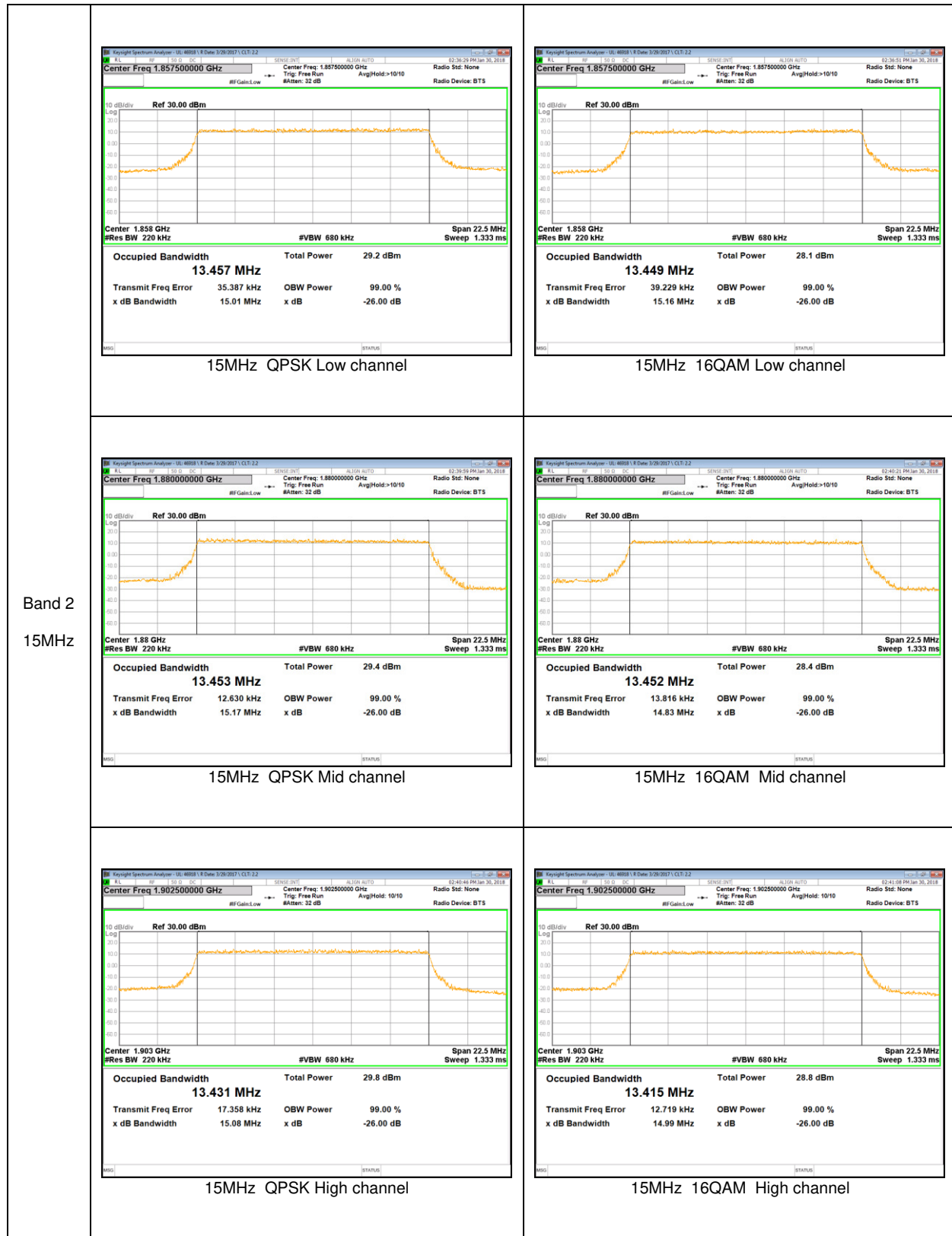


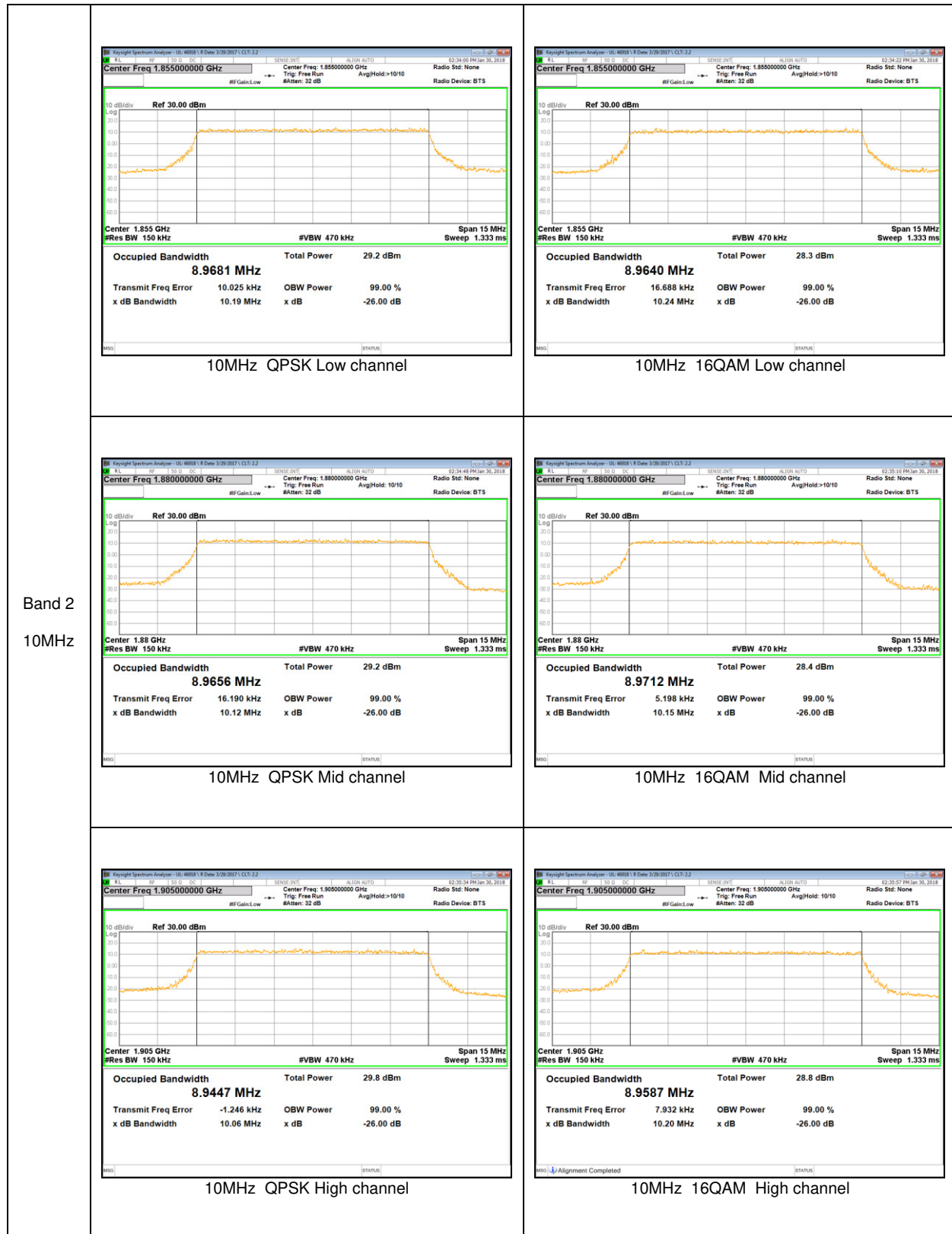


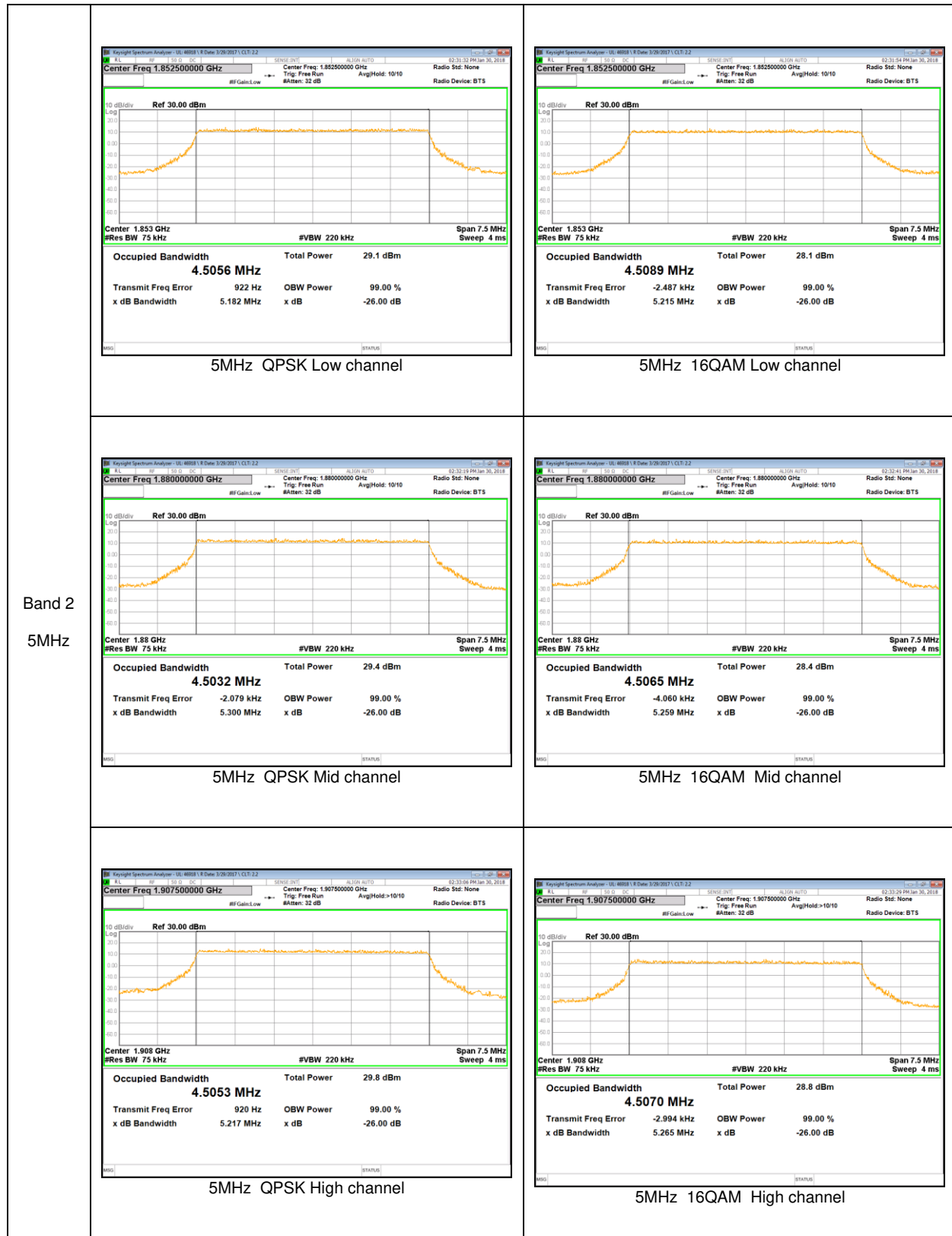


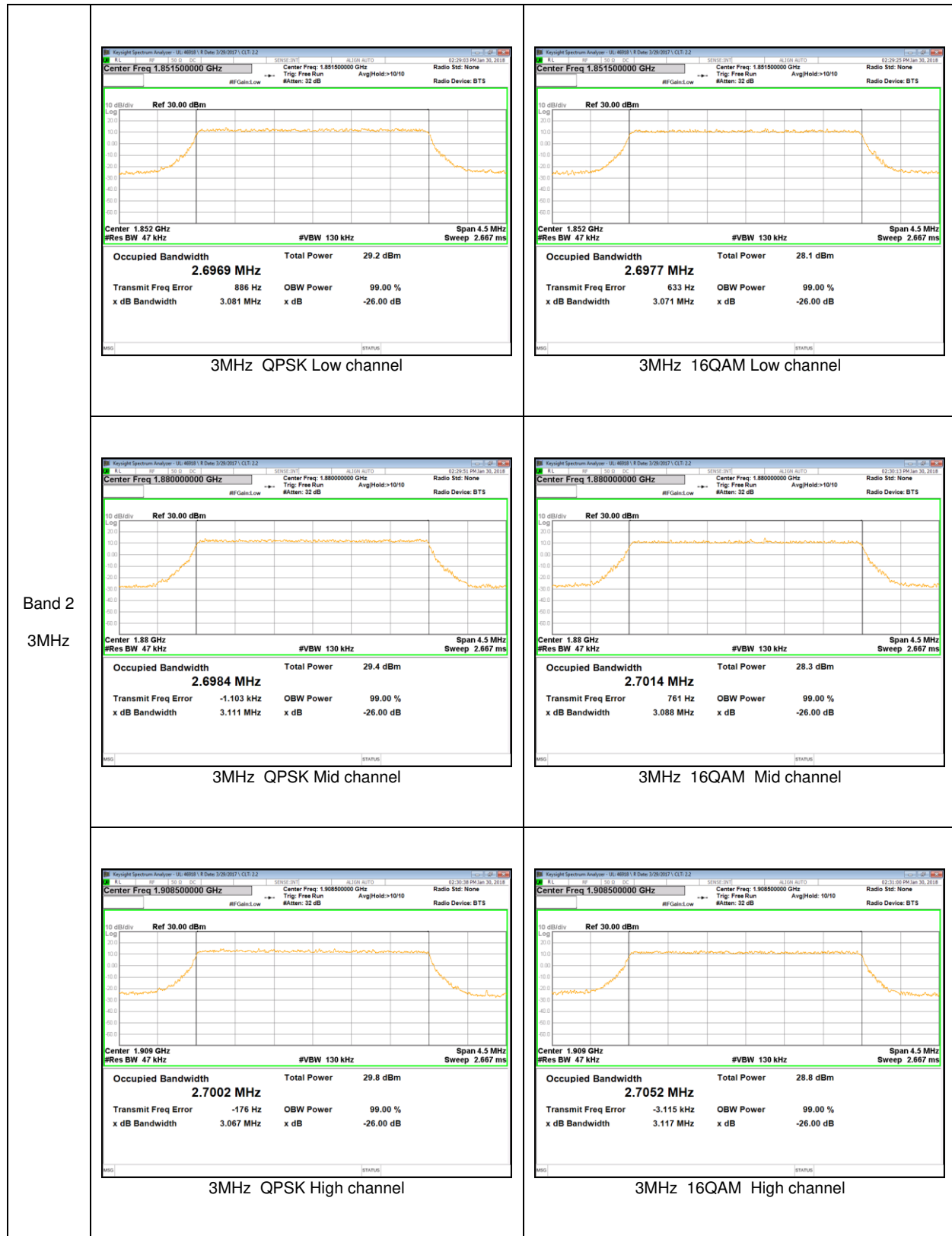
LTE Band 2

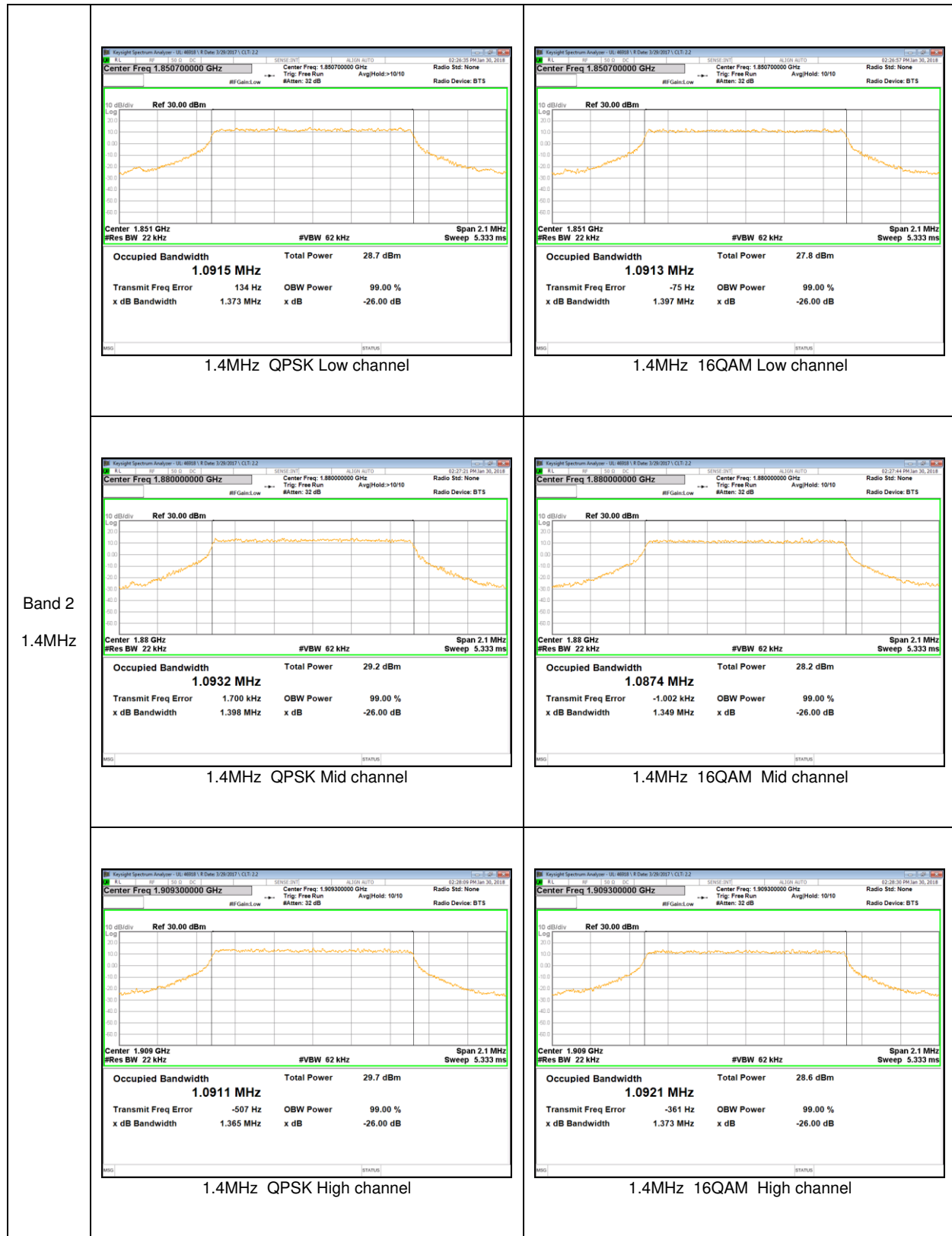












9.2. BAND EDGE EMISSIONS

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 ≥ 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 ≥ 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 | |