



CERTIFICATION TEST REPORT

Report Number. : 11626381M-E1V2

Applicant : SONY MOBILE COMMUNICATIONS INC.
4-12-3 HIGASHI-SHINAGAWA,
SHINAGAWA -KU,TOKYO, 140-0002, JAPAN

FCC ID : PY7-66475M

EUT Description : GSM/WCDMA/LTE Phone with BT,DTS/UNII a/b/g/n/ac, GPS & NFC

Test Standard(s) : FCC CFR47 PART 27 SUBPART M

Date Of Issue:

May 18, 2017

Prepared by:

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NVLAP LAB CODE 200065-0

Revision History

| <u>Rev.</u> | <u>Issue Date</u> | <u>Revisions</u> | <u>Revised By</u> |
|-------------|-------------------|--|-------------------|
| V1 | 04/13/17 | Initial Issue | C. Vergonio |
| V2 | 05/18/17 | Updated FCC ID in Cover page. Updated EUT Description in Section 5.1. Updated C2PC statement in Section 5.2. | C. Vergonio |

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SONY MOBILE COMMUNICATIONS, INC.
4-12-3 HIGASHI-SHINAGAWA,
SHINAGAWA –KU, TOKYO, 140-0002, JAPAN

EUT DESCRIPTION: GSM/WCDMA/LTE PHONE with BT, DTS/UNII a/b/g/n/ac & NFC

SERIAL NUMBER: CB512DRH6B,CB512DRH8W, CB512DJPE6, CB512DJQEX

DATE TESTED: March 22-April 12, 2017

| APPLICABLE STANDARDS | |
|----------------------|--------------|
| STANDARD | TEST RESULTS |
| FCC PART 27M | PASS |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-D, FCC CFR 47 Part 27.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 47173 Benicia Street | 47266 Benicia Street |
|--|---|
| <input type="checkbox"/> Chamber A(IC: 2324B-1) | <input type="checkbox"/> Chamber D(IC: 22541-1) |
| <input checked="" type="checkbox"/> Chamber B(IC: 2324B-2) | <input type="checkbox"/> Chamber E(IC: 22541-2) |
| <input checked="" type="checkbox"/> Chamber C(IC: 2324B-3) | <input type="checkbox"/> Chamber F(IC: 22541-3) |
| | <input type="checkbox"/> Chamber G(IC: 22541-4) |
| | <input type="checkbox"/> Chamber H(IC: 22541-5) |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0.

Chambers A through C are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively and Chambers D through H are covered under Industry Canada company address code 22541 with site numbers 22541 -1 through 22541-5, respectively.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$EIRP = \text{PSA reading with EUT worst orientation (dBm)} + \text{Path loss (dB)} - \text{cable loss (between the SG and substitution antenna)} + \text{Substitution Antenna Factor (dBi)}$

$ERP = \text{PSA reading with EUT worst orientation (dBm)} + \text{Path loss (dB)} - \text{cable loss (between the SG and substitution antenna)}$

(Path loss = Signal generator output – PSA reading with substitution antenna)

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER | UNCERTAINTY |
|-----------------------------------|-------------|
| Occupied Channel Bandwidth | ±1.1 % |
| RF output power, conducted | ±0.35 dB |
| Power Spectral Density, conducted | ±0.39 dB |
| Unwanted Emissions, conducted | ±2.9 dB |
| All emissions, radiated | ±5.36 dB |
| Temperature | ±0.9 °C |
| Humidity | ±2.26% RH |
| Supply Voltages | ±0.45 % |
| Time | ±0.2 % |

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

This EUT is a GSM/WCDMA/LTE Phone with BT,DTS/UNII a/b/g/n/ac, GPS & NFC.

5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The purpose of this C2PC: Changed the LTE band 7, LTE Band 38 and LTE Band 41 antenna matching circuit.

Note(s):

LTE Band 38 Measured Results

LTE Band 38 (Frequency range: 2570-2620 MHz) is covered by LTE Band 41 (Frequency range: 2496-2690 MHz) and no testing is necessary due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth and same modulations.

6. MAXIMUM OUTPUT POWER

6.1. MAXIMUM OUTPUT POWER (LTE)

The transmitter has a maximum peak conducted and radiated ERP/EIRP output powers as follows:

LTE Band 7

| FCC Part 27 | | | | | | | |
|-------------|----------------------|-----------------|------------|-----------|---------|-----------|----------|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | PEAK(dBm) | PEAK(mW) |
| LTE7 | 2500~2570 | 5MHz | QPSK | 21.1 | 128.82 | 28.04 | 636.80 |
| | | | 16QAM | 20.5 | 112.20 | 28.00 | 630.96 |
| | | 10MHz | QPSK | 21.1 | 128.82 | 27.56 | 570.16 |
| | | | 16QAM | 20.3 | 107.15 | 27.71 | 590.20 |
| | | 15MHz | QPSK | 21.2 | 131.83 | 26.78 | 476.43 |
| | | | 16QAM | 20.4 | 109.65 | 27.31 | 538.27 |
| | | 20MHz | QPSK | 21.2 | 131.83 | 26.61 | 458.14 |
| | | | 16QAM | 20.5 | 112.20 | 26.67 | 464.52 |

LTE Band 41

| FCC Part 27 | | | | | | | |
|-------------|----------------------|-----------------|------------|-----------|---------|-----------|----------|
| Band | Frequency Range(MHz) | BandWidth (MHz) | Modulation | Conducted | | Radiated | |
| | | | | AVG(dBm) | AVG(mW) | PEAK(dBm) | PEAK(mW) |
| LTE41 | 2496~2690 | 5MHz | QPSK | 22.4 | 173.78 | 28.55 | 716.14 |
| | | | 16QAM | 21.2 | 131.83 | 28.83 | 763.84 |
| | | 10MHz | QPSK | 22.5 | 177.83 | 28.02 | 633.87 |
| | | | 16QAM | 21.3 | 134.90 | 28.04 | 636.80 |
| | | 15MHz | QPSK | 22.5 | 177.83 | 27.03 | 504.66 |
| | | | 16QAM | 21.4 | 138.04 | 27.21 | 526.02 |
| | | 20MHz | QPSK | 21.9 | 154.88 | 29.42 | 874.98 |
| | | | 16QAM | 20.6 | 114.82 | 27.40 | 549.54 |

7. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna for the [List the bands supported] with a maximum peak gain as follow:

| Frequency (MHz) | Peak Gain (dBi) |
|---------------------------|-----------------|
| LTE Band 7, 2500~2570MHz | -1.3 |
| LTE Band 41, 2496~2690MHz | -0.4 |

8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

| Support Equipment List | | | | |
|------------------------|--------------|-------------|---------------|--------|
| Description | Manufacturer | Model | Serial Number | FCC ID |
| AC Adapter | SONY | 1300-7137.1 | 4016W40310044 | NA |
| Earphone | SONY | N/A | N/A | N/A |

I/O CABLES (CONDUCTED SETUP)

| I/O Cable List | | | | | | |
|----------------|--------------|----------------------|------------------------|-------------|------------------|---------|
| Cable No | Port | # of Identical ports | Connector Type | Serial Type | Cable Length (m) | Remarks |
| 1 | RF Out | 1 | Spectrum Analyzer | Shielded | None | NA |
| 2 | Antenna Port | 1 | EUT | Shielded | 0.1m | NA |
| 3 | RF In/Out | 1 | Communication Test Set | Shielded | 1m | NA |

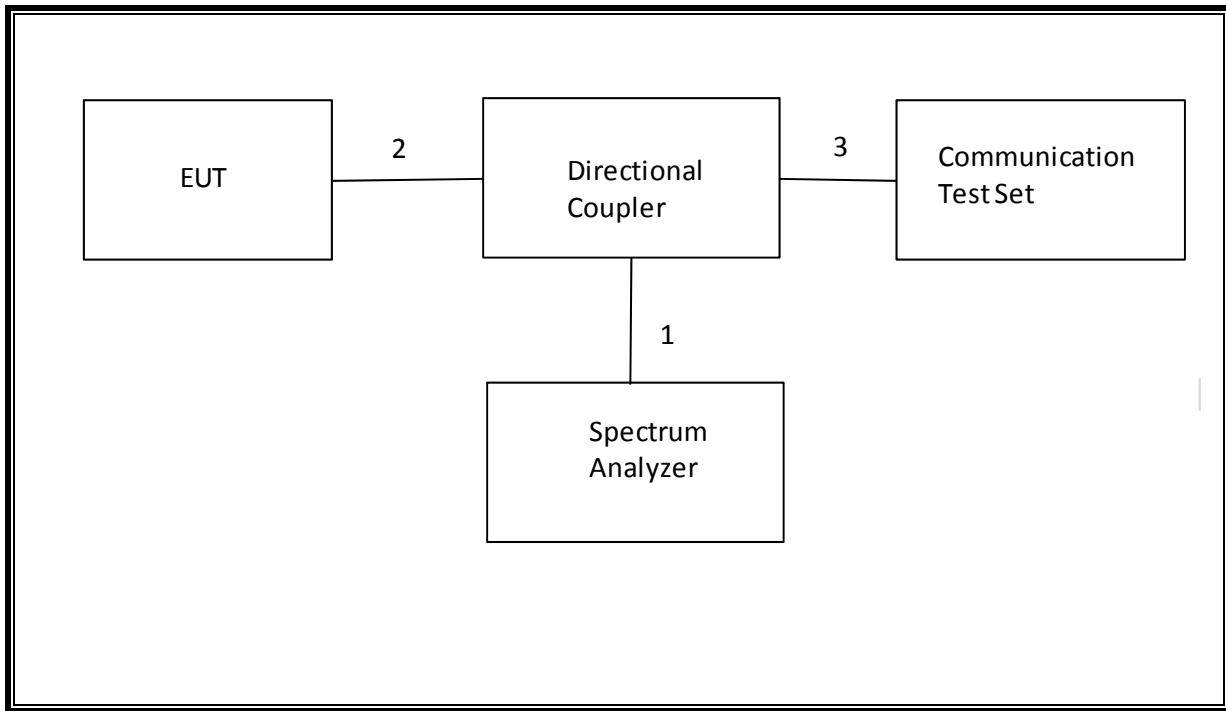
I/O CABLES (RADIATED SETUP)

| I/O Cable List | | | | | | |
|----------------|-----------|----------------------|------------------------|-------------|------------------|---------|
| Cable No | Port | # of Identical ports | Connector Type | Serial Type | Cable Length (m) | Remarks |
| 1 | USB | 1 | AC Adapter | Un-shielded | 1.2m | No |
| 2 | Jack | 1 | Headset | Shielded | 1m | No |
| 3 | RF In/out | 1 | Communication Test Set | Un-shielded | 2m | Yes |

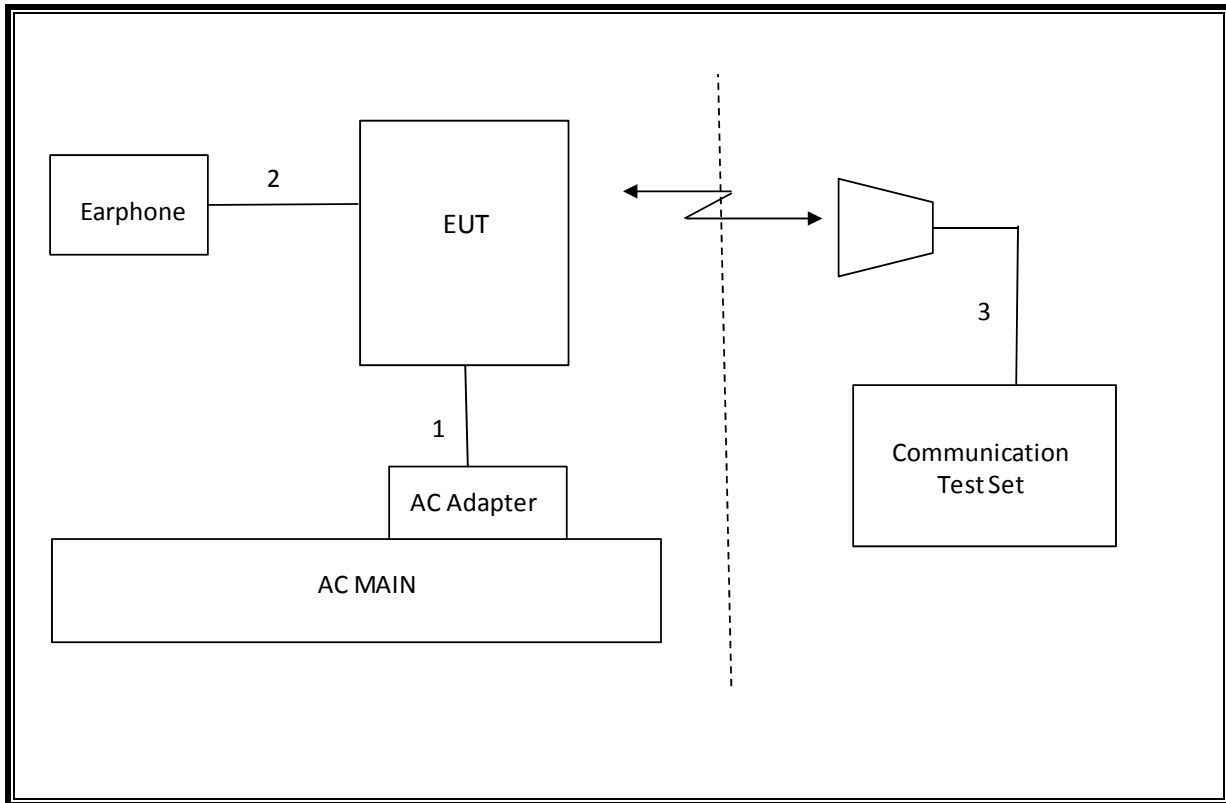
TEST SETUP

The EUT is continuously communicated to the call box during the tests.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



9. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Test Equipment List | | | | | |
|---|----------------|------------------------|----------|----------|----------|
| Description | Manufacturer | Model | T Number | Cal Date | Cal Due |
| Amplifier, 1 to 18 GHz | Miteq | AFS43-00101800-25-S-42 | 493 | 02/15/17 | 02/15/18 |
| Amplifier, 1 to 8 GHz | Miteq | AMF-4D-01000800-30-29P | 1156 | 02/15/17 | 02/15/18 |
| Amplifier, 10KHz to 1GHz, 32dB | Keysight | 8447D | 10 | 02/15/17 | 02/15/18 |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz | Sunol Sciences | JB3 | 477 | 06/22/16 | 06/22/17 |
| Spectrum Analyzer, PXA 3Hz to 44GHz | Keysight | N9030A | 907 | 01/23/17 | 01/23/18 |
| Amplifier, 10KHz to 1GHz, 32dB | Keysight | 8447D | 10 | 02/15/17 | 02/15/18 |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz | Sunol Sciences | JB3 | 477 | 06/22/16 | 06/22/17 |
| Highpass Filter, 4GHz | Micro-Tronics | HPM13351 | T1241 | 7/19/16 | 7/19/17 |
| Amplifier, 1-18GHz | Miteq | AFS42-00101800-25-S-42 | 931 | 08/26/16 | 08/26/17 |
| Amplifier, 1 to 8GHz | Miteq | AMF-4D-01000800-30-29P | 1170 | 04/28/16 | 04/28/17 |
| Amplifier, 10KHz to 1GHz, 32dB | Keysight | 8447D | 15 | 08/26/16 | 08/26/17 |
| Antenna, Broadband Hybrid 30MHz to 2000MHz | Sunol Sciences | JB3 | 408 | 11/10/16 | 11/10/17 |
| Antenna, Horn 1-18GHz | ETS Lindgren | 3117 | 712 | 01/30/17 | 01/30/18 |
| Spectrum Analyzer, PXA, 3Hz to 44GHz | Keysight | N9030A | 905 | 01/11/17 | 01/11/18 |
| DC power supply, 8 V @ 3 A or 15 V @ 2 A | Agilent / HP | E3610A | None | CNR | None |
| Antenna, Tuned Dipole 400~1000 MHz | ETS | 3121C DB4 | T273 | 5/16/16 | 5/16/17 |
| Directional Coupler | Mini-Circuits | ZUDC10-183+ | T1136 | 5/25/16 | 5/25/17 |

| Test Equipment List | | | |
|-----------------------|--------------|--------|------------------------|
| Description | Manufacturer | Model | T Number |
| Radiated Software | UL | UL EMC | Ver 9.5, June 24, 2015 |
| Conducted Software | UL | UL EMC | Ver 9.5, May 26, 2015 |
| CLT Software | UL | UL RF | Ver 1.0, Feb 2, 2015 |
| Antenna Port Software | UL | UL RF | Ver 3.7, Nov 12, 2015 |

10. SUMMARY TABLE

| FCC Part Section | Test Description | Test Limit | Test Condition | Test Result |
|------------------|---|--|----------------|-------------|
| 2.1049 | Occupied Bandwidth (99%) | N/A | Conducted | Pass |
| 27.53(g) | Band Edge / Conducted Spurious Emission | -13dBm | | Pass |
| 27.53(m) | | -25dBm | | Pass |
| 2.1046 | Conducted output power | N/A | | Pass |
| 27.53(m) | Emission Mask | Please refer to limit under section 14 | | Pass |
| 27.54 | Frequency Stability | 2.5PPM | | Pass |
| 27.50(h)(2) | Equivalent Isotropic Radiated Power | 33dBm | | Pass |
| 27.53(m) | Radiated Spurious Emission | -25dBm | | Pass |

11. RF POWER OUTPUT VERIFICATION

11.1. LTE OUTPUT POWER RESULT

Note(s):

LTE Band 38 Measured Results

LTE Band 38 (Frequency range: 2570-2620 MHz) is covered by LTE Band 41 (Frequency range: 2496-2690 MHz) and no testing is necessary due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth and same modulations.

| | |
|-----------|------------------------------|
| Tested By | AJ Newcomer/ Coltyce Sanders |
| Date | 3/22/2017- 3/24/2017 |

LTE Band 7

| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Avg Pwr (dBm) | | |
|------------|----------|-------|---------------|-----------|-----|---------------|----------|------------|
| | | | | | | 20850 | 21100 | 21350 |
| | | | | | | 2510 MHz | 2535 MHz | 2560 MHz |
| LTE Band 7 | 20 | QPSK | 1 | 0 | 0 | 21.0 | 21.2 | 21.0 |
| | | | 1 | 49 | 0 | 20.7 | 20.8 | 20.9 |
| | | | 1 | 99 | 0 | 20.5 | 20.6 | 21.1 |
| | | | 50 | 0 | 1 | 19.9 | 20.0 | 20.1 |
| | | | 50 | 24 | 1 | 19.8 | 19.9 | 20.1 |
| | | | 50 | 50 | 1 | 19.6 | 19.7 | 20.1 |
| | | | 100 | 0 | 1 | 19.7 | 19.8 | 20.1 |
| | | 16QAM | 1 | 0 | 1 | 20.4 | 20.5 | 20.4 |
| | | | 1 | 49 | 1 | 20.2 | 20.1 | 20.4 |
| | | | 1 | 99 | 1 | 20.0 | 19.8 | 20.5 |
| | | | 50 | 0 | 2 | 18.9 | 19.0 | 19.0 |
| | | | 50 | 24 | 2 | 18.8 | 18.9 | 19.1 |
| | | | 50 | 50 | 2 | 18.6 | 18.7 | 19.1 |
| | | | 100 | 0 | 2 | 18.8 | 18.8 | 19.1 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Avg Pwr (dBm) | | |
| | | | | | | 20825 | 21100 | 21375 |
| | | | | | | 2507.5 MHz | 2535 MHz | 2562.5 MHz |
| LTE Band 7 | 15 | QPSK | 1 | 0 | 0 | 21.0 | 21.0 | 21.1 |
| | | | 1 | 37 | 0 | 20.8 | 20.7 | 21.0 |
| | | | 1 | 74 | 0 | 20.7 | 20.5 | 21.2 |
| | | | 36 | 0 | 1 | 20.0 | 19.9 | 20.1 |
| | | | 36 | 20 | 1 | 20.0 | 19.8 | 20.1 |
| | | | 36 | 39 | 1 | 19.9 | 19.7 | 20.1 |
| | | | 75 | 0 | 1 | 19.9 | 19.8 | 20.1 |
| | | 16QAM | 1 | 0 | 1 | 19.9 | 20.4 | 20.4 |
| | | | 1 | 37 | 1 | 19.7 | 20.0 | 20.4 |
| | | | 1 | 74 | 1 | 19.6 | 19.9 | 20.5 |
| | | | 36 | 0 | 2 | 19.0 | 19.0 | 19.0 |
| | | | 36 | 20 | 2 | 19.0 | 18.8 | 19.1 |
| | | | 36 | 39 | 2 | 18.9 | 18.7 | 19.1 |
| | | | 75 | 0 | 2 | 18.9 | 18.8 | 19.1 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Avg Pwr (dBm) | | |
|------------|----------|-------|---------------|-----------|-----|---------------|----------|------------|
| | | | | | | 20800 | 21100 | 21400 |
| | | | | | | 2505 MHz | 2535 MHz | 2565 MHz |
| LTE Band 7 | 10 | QPSK | 1 | 0 | 0 | 20.8 | 20.9 | 21.0 |
| | | | 1 | 25 | 0 | 20.7 | 20.8 | 21.0 |
| | | | 1 | 49 | 0 | 20.7 | 20.6 | 21.1 |
| | | | 25 | 0 | 1 | 19.9 | 19.9 | 20.1 |
| | | | 25 | 12 | 1 | 19.9 | 19.9 | 20.2 |
| | | | 25 | 25 | 1 | 19.8 | 19.8 | 20.2 |
| | | 16QAM | 50 | 0 | 1 | 19.9 | 19.8 | 20.2 |
| | | | 1 | 0 | 1 | 19.8 | 20.3 | 20.1 |
| | | | 1 | 25 | 1 | 19.7 | 20.1 | 20.1 |
| | | | 1 | 49 | 1 | 19.6 | 20.0 | 20.2 |
| | | | 25 | 0 | 2 | 18.9 | 18.9 | 19.2 |
| | | | 25 | 12 | 2 | 18.9 | 18.9 | 19.3 |
| | | | 25 | 25 | 2 | 18.9 | 18.8 | 19.2 |
| | | | 50 | 0 | 2 | 18.9 | 18.8 | 19.2 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Avg Pwr (dBm) | | |
| | | | | | | 20775 | 21100 | 21425 |
| | | | | | | 2502.5 MHz | 2535 MHz | 2567.5 MHz |
| LTE Band 7 | 5 | QPSK | 1 | 0 | 0 | 21.1 | 20.8 | 21.0 |
| | | | 1 | 12 | 0 | 21.1 | 20.7 | 21.1 |
| | | | 1 | 24 | 0 | 21.1 | 20.6 | 21.1 |
| | | | 12 | 0 | 1 | 20.1 | 19.9 | 20.2 |
| | | | 12 | 7 | 1 | 20.1 | 19.8 | 20.2 |
| | | | 12 | 13 | 1 | 20.1 | 19.8 | 20.2 |
| | | 16QAM | 25 | 0 | 1 | 20.1 | 19.8 | 20.2 |
| | | | 1 | 0 | 1 | 20.5 | 19.9 | 20.3 |
| | | | 1 | 12 | 1 | 20.5 | 19.8 | 20.4 |
| | | | 1 | 24 | 1 | 20.5 | 19.8 | 20.4 |
| | | | 12 | 0 | 2 | 19.3 | 18.9 | 19.3 |
| | | | 12 | 7 | 2 | 19.3 | 18.9 | 19.3 |
| | | | 12 | 13 | 2 | 19.3 | 18.8 | 19.3 |
| | | | 25 | 0 | 2 | 19.2 | 18.8 | 19.2 |

LTE Band 41

| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Avg Pwr (dBm) | | | | |
|-------------|----------|-------|---------------|-----------|-----|---------------|------------|----------|------------|----------|
| | | | | | | 39750 | 40185 | 40620 | 41055 | 41490 |
| | | | | | | 2506 MHz | 2549.5 MHz | 2593 MHz | 2636.5 MHz | 2680 MHz |
| LTE Band 41 | 20 | QPSK | 1 | 0 | 0 | 21.8 | 21.9 | 21.8 | 21.7 | 21.6 |
| | | | 1 | 49 | 0 | 21.6 | 21.7 | 21.5 | 21.5 | 21.3 |
| | | | 1 | 99 | 0 | 21.5 | 21.6 | 21.4 | 21.4 | 21.2 |
| | | | 50 | 0 | 1 | 20.7 | 20.7 | 20.6 | 20.6 | 20.4 |
| | | | 50 | 24 | 1 | 20.6 | 20.7 | 20.5 | 20.6 | 20.4 |
| | | | 50 | 50 | 1 | 20.6 | 20.6 | 20.5 | 20.5 | 20.3 |
| | | | 100 | 0 | 1 | 20.6 | 20.7 | 20.5 | 20.6 | 20.4 |
| | | 16QAM | 1 | 0 | 1 | 20.6 | 20.6 | 20.4 | 20.4 | 20.5 |
| | | | 1 | 49 | 1 | 20.3 | 20.4 | 20.1 | 20.2 | 20.2 |
| | | | 1 | 99 | 1 | 20.2 | 20.3 | 20.0 | 20.1 | 20.1 |
| | | | 50 | 0 | 2 | 19.7 | 19.7 | 19.6 | 19.6 | 19.5 |
| | | | 50 | 24 | 2 | 19.6 | 19.6 | 19.5 | 19.6 | 19.4 |
| | | | 50 | 50 | 2 | 19.5 | 19.6 | 19.5 | 19.5 | 19.3 |
| | | | 100 | 0 | 2 | 19.6 | 19.7 | 19.6 | 19.6 | 19.4 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Avg Pwr (dBm) | | | | |
| | | | | | | 39750 | 40185 | 40620 | 41055 | 41490 |
| | | | | | | 2506 MHz | 2549.5 MHz | 2593 MHz | 2636.5 MHz | 2680 MHz |
| LTE Band 41 | 15 | QPSK | 1 | 0 | 0 | 22.5 | 22.5 | 22.5 | 22.4 | 22.3 |
| | | | 1 | 37 | 0 | 22.2 | 22.4 | 22.2 | 22.3 | 22.1 |
| | | | 1 | 74 | 0 | 22.2 | 22.3 | 22.2 | 22.2 | 22.0 |
| | | | 36 | 0 | 1 | 21.5 | 21.5 | 21.3 | 21.3 | 21.1 |
| | | | 36 | 20 | 1 | 21.4 | 21.4 | 21.3 | 21.3 | 21.1 |
| | | | 36 | 39 | 1 | 21.4 | 21.4 | 21.2 | 21.3 | 21.0 |
| | | | 75 | 0 | 1 | 21.4 | 21.4 | 21.3 | 21.3 | 21.0 |
| | | 16QAM | 1 | 0 | 1 | 21.4 | 21.3 | 21.2 | 21.2 | 21.0 |
| | | | 1 | 37 | 1 | 21.1 | 21.1 | 21.0 | 21.0 | 20.8 |
| | | | 1 | 74 | 1 | 21.1 | 21.0 | 20.9 | 21.0 | 20.7 |
| | | | 36 | 0 | 2 | 20.5 | 20.4 | 20.3 | 20.3 | 20.1 |
| | | | 36 | 20 | 2 | 20.4 | 20.4 | 20.3 | 20.3 | 20.1 |
| | | | 36 | 39 | 2 | 20.3 | 20.3 | 20.2 | 20.2 | 20.0 |
| | | | 75 | 0 | 2 | 20.4 | 20.4 | 20.3 | 20.3 | 20.1 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Avg Pwr (dBm) | | | | |
|-------------|----------|-------|---------------|-----------|-----|---------------|------------|----------|------------|----------|
| | | | | | | 39750 | 40185 | 40620 | 41055 | 41490 |
| | | | | | | 2506 MHz | 2549.5 MHz | 2593 MHz | 2636.5 MHz | 2680 MHz |
| LTE Band 41 | 10 | QPSK | 1 | 0 | 0 | 22.4 | 22.5 | 22.4 | 22.1 | 22.1 |
| | | | 1 | 25 | 0 | 22.3 | 22.4 | 22.3 | 22.1 | 22.0 |
| | | | 1 | 49 | 0 | 22.2 | 22.4 | 22.2 | 22.0 | 21.9 |
| | | | 25 | 0 | 1 | 21.4 | 21.5 | 21.3 | 21.1 | 21.1 |
| | | | 25 | 12 | 1 | 21.4 | 21.5 | 21.3 | 21.1 | 21.1 |
| | | | 25 | 25 | 1 | 21.4 | 21.4 | 21.3 | 21.1 | 21.0 |
| | | | 50 | 0 | 1 | 21.4 | 21.4 | 21.3 | 21.1 | 21.1 |
| | | 16QAM | 1 | 0 | 1 | 21.2 | 21.3 | 21.1 | 21.1 | 20.9 |
| | | | 1 | 25 | 1 | 21.1 | 21.2 | 21.0 | 21.0 | 20.8 |
| | | | 1 | 49 | 1 | 21.0 | 21.1 | 20.9 | 21.0 | 20.7 |
| | | | 25 | 0 | 2 | 20.4 | 20.5 | 20.3 | 20.2 | 20.1 |
| | | | 25 | 12 | 2 | 20.4 | 20.4 | 20.3 | 20.1 | 20.1 |
| | | | 25 | 25 | 2 | 20.3 | 20.4 | 20.2 | 20.1 | 20.0 |
| | | | 50 | 0 | 2 | 20.4 | 20.4 | 20.3 | 20.1 | 20.1 |
| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Avg Pwr (dBm) | | | | |
| | | | | | | 39750 | 40185 | 40620 | 41055 | 41490 |
| | | | | | | 2506 MHz | 2549.5 MHz | 2593 MHz | 2636.5 MHz | 2680 MHz |
| LTE Band 41 | 5 | QPSK | 1 | 0 | 0 | 22.4 | 22.4 | 22.3 | 22.1 | 22.1 |
| | | | 1 | 12 | 0 | 22.4 | 22.4 | 22.3 | 22.0 | 22.1 |
| | | | 1 | 24 | 0 | 22.3 | 22.4 | 22.2 | 22.0 | 22.0 |
| | | | 12 | 0 | 1 | 21.4 | 21.5 | 21.3 | 21.1 | 21.1 |
| | | | 12 | 7 | 1 | 21.4 | 21.4 | 21.3 | 21.1 | 21.1 |
| | | | 12 | 13 | 1 | 21.3 | 21.4 | 21.3 | 21.1 | 21.0 |
| | | | 25 | 0 | 1 | 21.4 | 21.4 | 21.2 | 21.1 | 21.1 |
| | | 16QAM | 1 | 0 | 1 | 21.2 | 21.3 | 21.1 | 20.8 | 20.9 |
| | | | 1 | 12 | 1 | 21.1 | 21.3 | 21.0 | 20.8 | 20.8 |
| | | | 1 | 24 | 1 | 21.1 | 21.3 | 21.0 | 20.8 | 20.8 |
| | | | 12 | 0 | 2 | 20.4 | 20.5 | 20.2 | 20.1 | 20.0 |
| | | | 12 | 7 | 2 | 20.4 | 20.5 | 20.3 | 20.2 | 20.1 |
| | | | 12 | 13 | 2 | 20.3 | 20.4 | 20.2 | 20.1 | 20.0 |
| | | | 25 | 0 | 2 | 20.4 | 20.4 | 20.3 | 20.1 | 20.1 |

12. PEAK TO AVERAGE RATIO

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

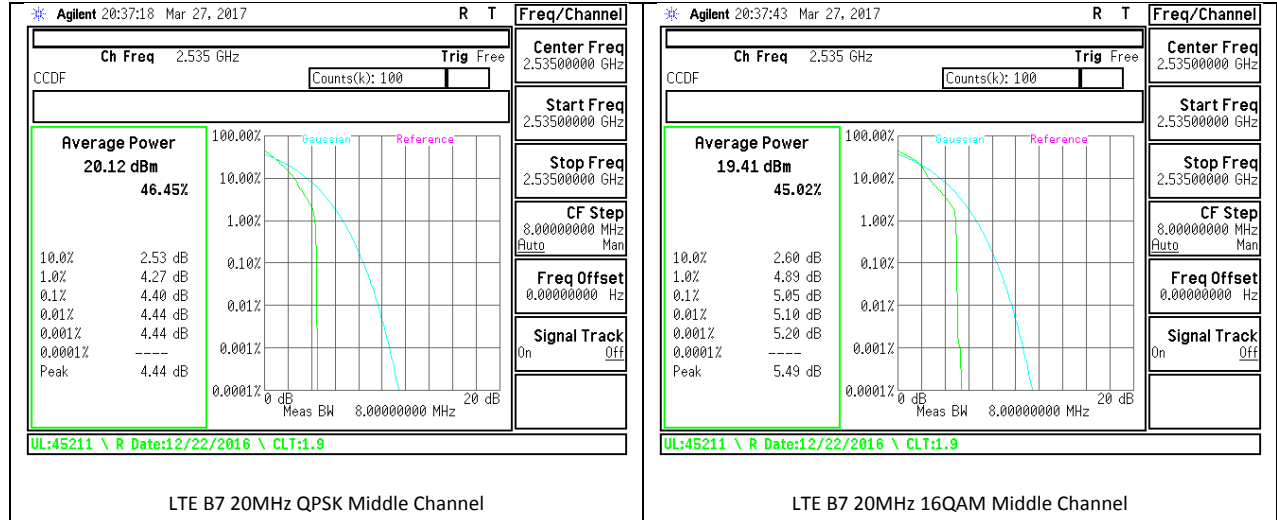
TEST SPEC

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

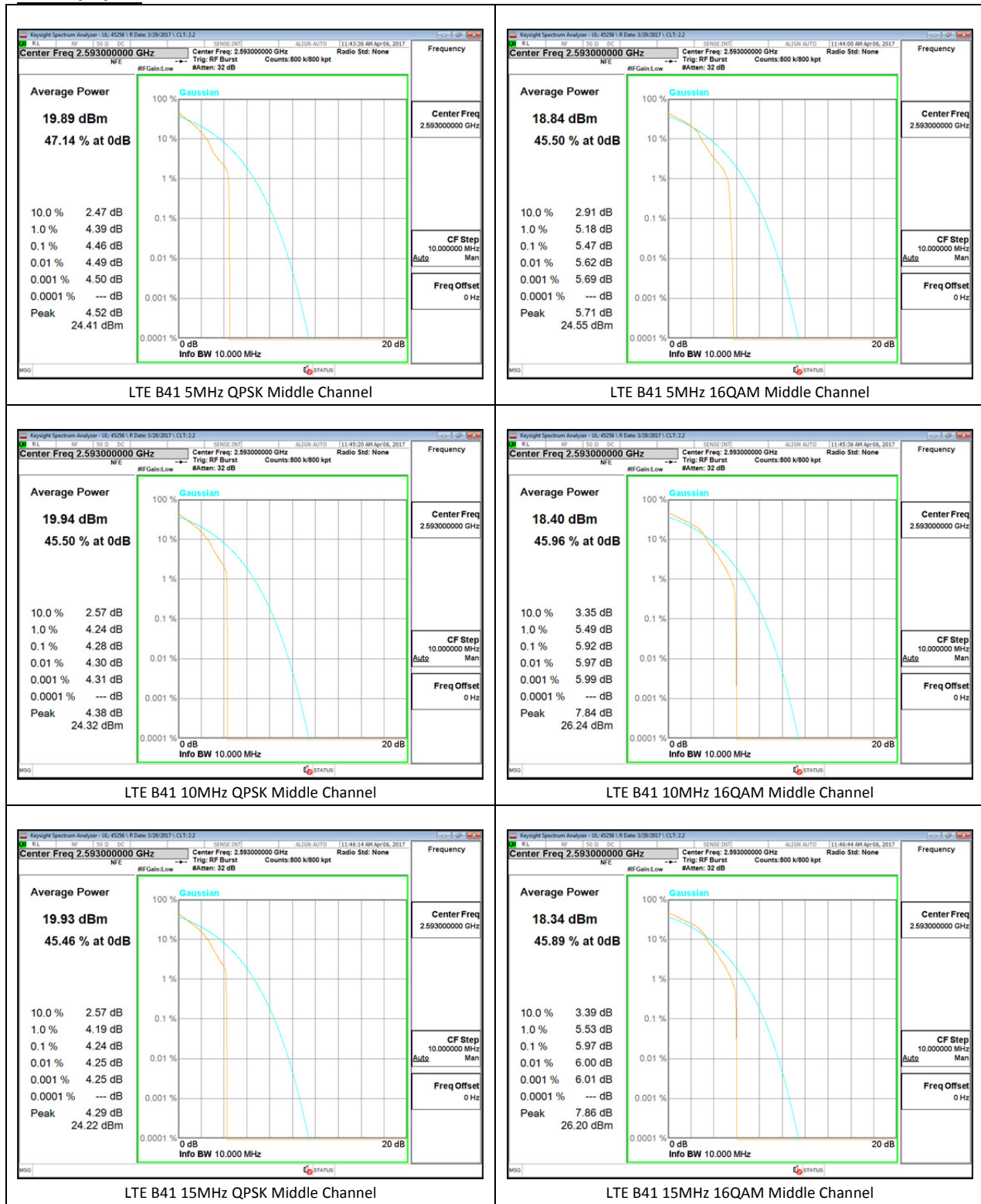
12.1. CONDUCTED PEAK TO AVERAGE RESULT

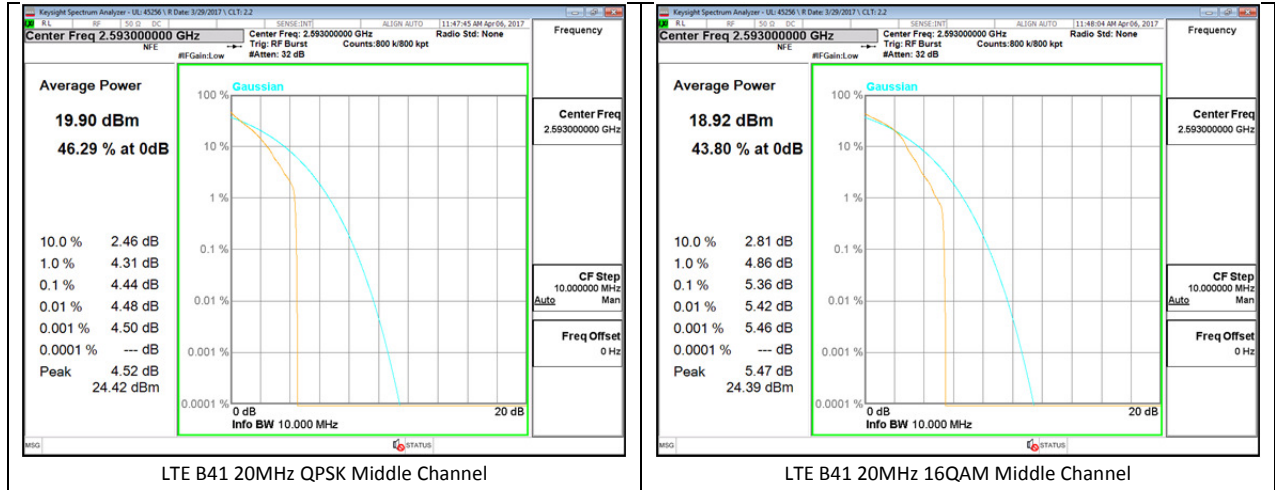
LTE Band 7





LTE Band 41





13. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

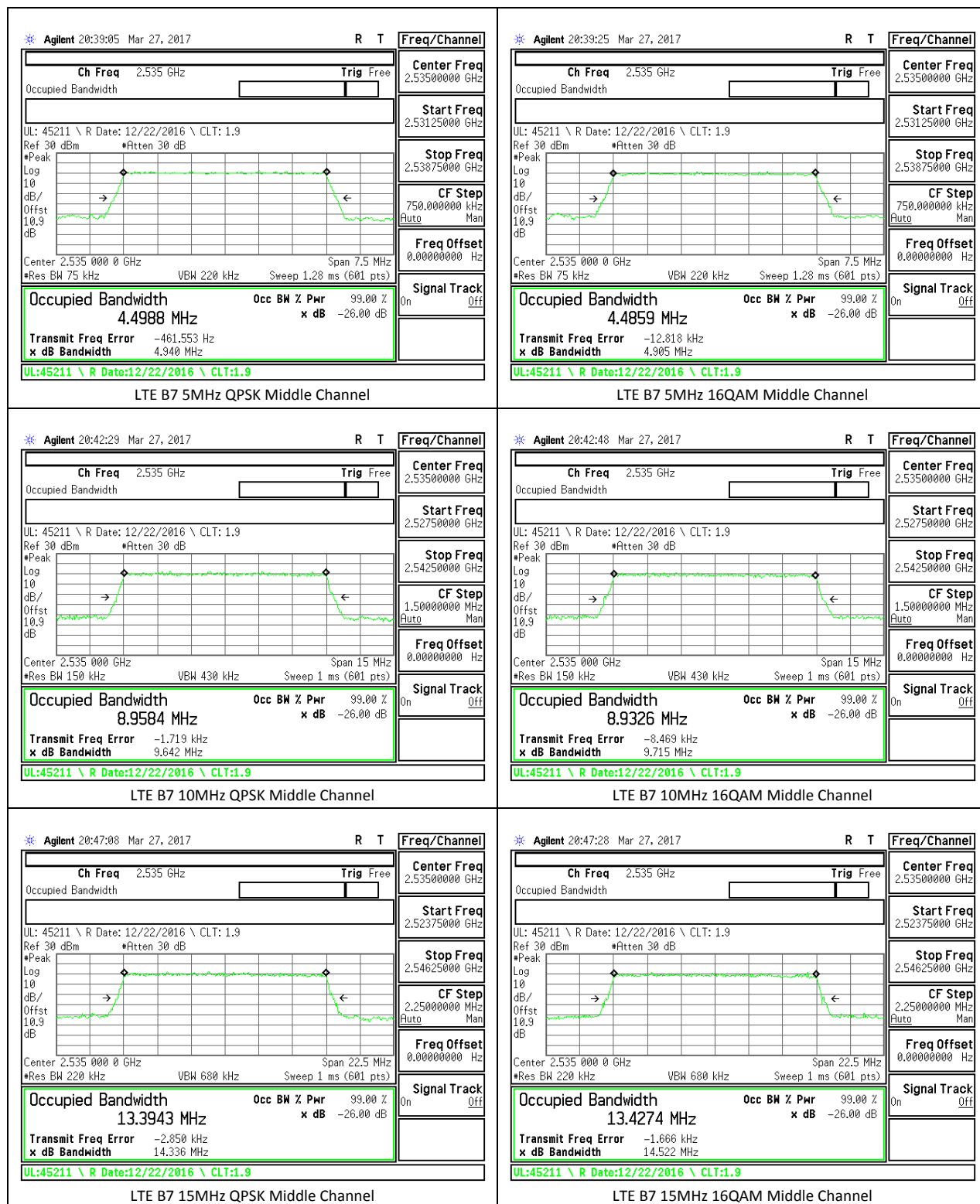
The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

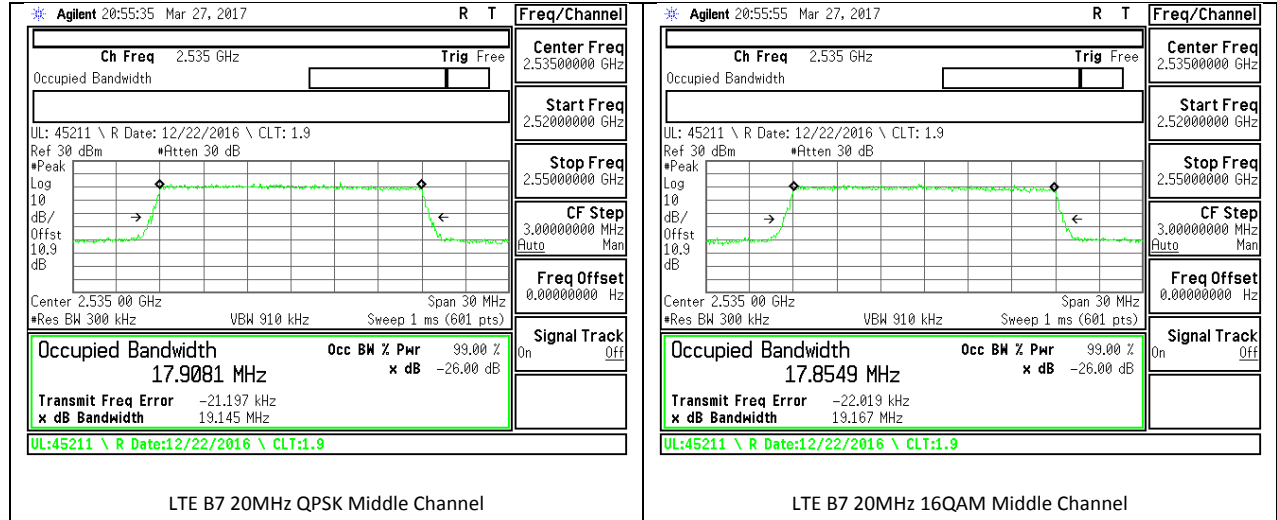
(KDB 971168 D01 Power Meas License Digital Systems v02r02)

13.1. OCCUPIED BANDWIDTH RESULTS AND PLOTS

LTE Band 7

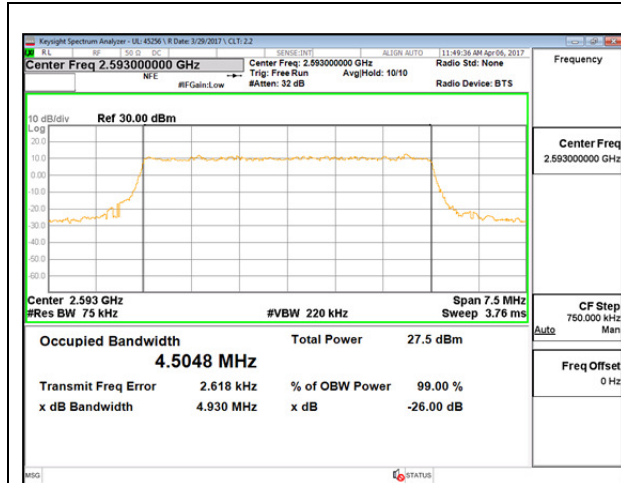
| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW |
|------|---------|-------|------------|---------|--------------|----------|
| LTE7 | 20 | 16QAM | 100/0 | 2510 | 17.92 | 19.29 |
| | | | 100/0 | 2535 | 17.85 | 19.17 |
| | | | 100/0 | 2560 | 17.83 | 19.03 |
| | | QPSK | 100/0 | 2510 | 17.84 | 19.21 |
| | | | 100/0 | 2535 | 17.91 | 19.15 |
| | | | 100/0 | 2560 | 17.84 | 19.09 |
| | 15 | 16QAM | 75/0 | 2507.5 | 13.41 | 14.43 |
| | | | 75/0 | 2535 | 13.43 | 14.52 |
| | | | 75/0 | 2562.5 | 13.4 | 14.52 |
| | | QPSK | 75/0 | 2507.5 | 13.38 | 14.35 |
| | | | 75/0 | 2535 | 13.39 | 14.34 |
| | | | 75/0 | 2562.5 | 13.39 | 14.49 |
| | 10 | 16QAM | 50/0 | 2505 | 8.95 | 9.66 |
| | | | 50/0 | 2535 | 8.93 | 9.71 |
| | | | 50/0 | 2565 | 9 | 9.66 |
| | | QPSK | 50/0 | 2505 | 8.95 | 9.72 |
| | | | 50/0 | 2535 | 8.96 | 9.64 |
| | | | 50/0 | 2565 | 8.94 | 9.69 |
| | 5 | 16QAM | 25/0 | 2502.5 | 4.5 | 4.92 |
| | | | 25/0 | 2535 | 4.49 | 4.91 |
| | | | 25/0 | 2567.5 | 4.51 | 4.99 |
| | | QPSK | 25/0 | 2502.5 | 4.5 | 4.93 |
| | | | 25/0 | 2535 | 4.5 | 4.94 |
| | | | 25/0 | 2567.5 | 4.51 | 4.91 |



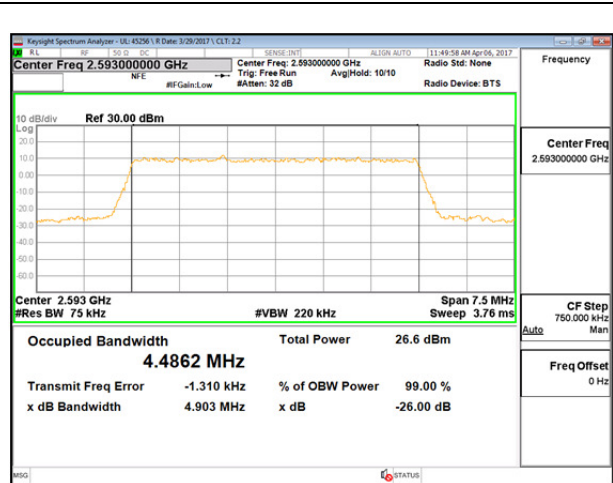


LTE Band 41

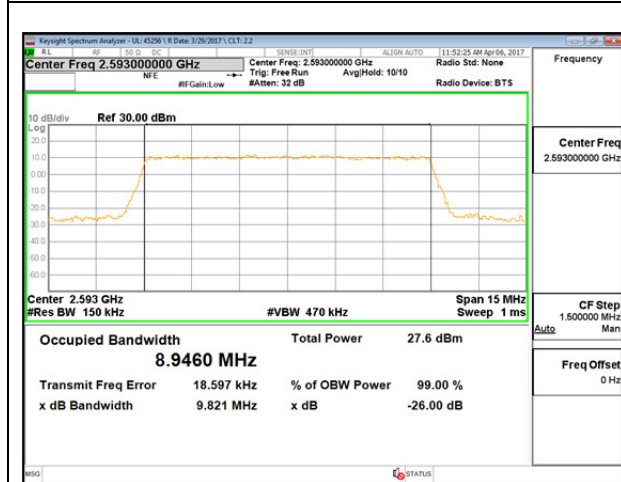
| Band | BW(MHz) | Mode | RB/RB Size | f (MHz) | 99% BW (MHz) | -26dB BW |
|-------|---------|-------|------------|---------|--------------|----------|
| LTE41 | 20 | 16QAM | 100/0 | 2506 | 17.9 | 19.21 |
| | | | 100/0 | 2593 | 17.88 | 19.27 |
| | | | 100/0 | 2680 | 17.86 | 19.21 |
| | | QPSK | 100/0 | 2506 | 17.88 | 19.28 |
| | | | 100/0 | 2593 | 17.88 | 19.16 |
| | | | 100/0 | 2680 | 17.89 | 19.24 |
| | 15 | 16QAM | 75/0 | 2503.5 | 13.41 | 14.52 |
| | | | 75/0 | 2593 | 13.43 | 14.46 |
| | | | 75/0 | 2682.5 | 13.44 | 14.59 |
| | | QPSK | 75/0 | 2503.5 | 13.44 | 14.6 |
| | | | 75/0 | 2593 | 13.43 | 14.57 |
| | | | 75/0 | 2682.5 | 13.44 | 14.52 |
| | 10 | 16QAM | 50/0 | 2501 | 9 | 9.72 |
| | | | 50/0 | 2593 | 8.97 | 9.74 |
| | | | 50/0 | 2685 | 8.96 | 9.71 |
| | | QPSK | 50/0 | 2501 | 8.97 | 9.82 |
| | | | 50/0 | 2593 | 8.95 | 9.82 |
| | | | 50/0 | 2685 | 8.96 | 9.75 |
| | 5 | 16QAM | 25/0 | 2498.5 | 4.49 | 4.93 |
| | | | 25/0 | 2593 | 4.49 | 4.9 |
| | | | 25/0 | 2687.5 | 4.49 | 4.98 |
| | | QPSK | 25/0 | 2498.5 | 4.49 | 4.91 |
| | | | 25/0 | 2593 | 4.5 | 4.93 |
| | | | 25/0 | 2687.5 | 4.5 | 5.09 |



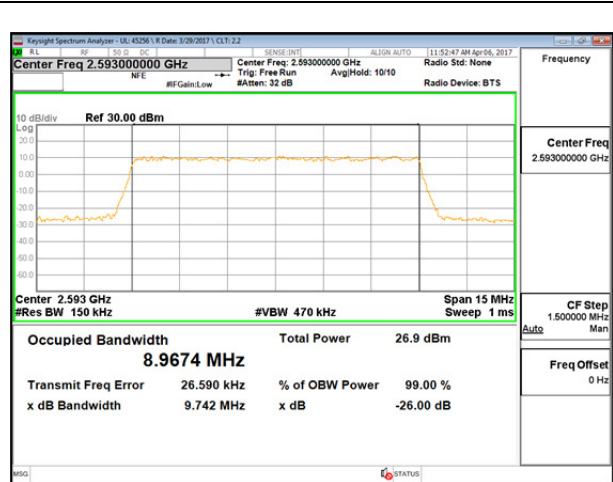
LTE B41 5MHz QPSK Middle Channel



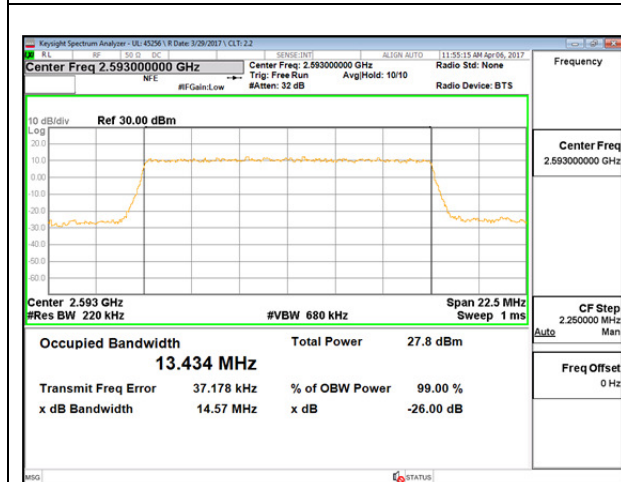
LTE B41 5MHz 16QAM Middle Channel



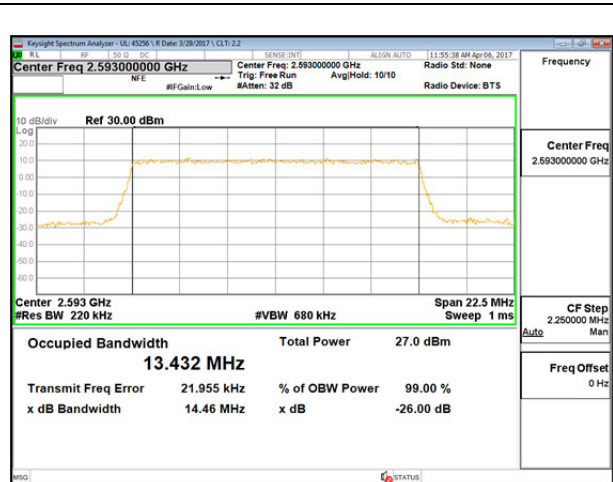
LTE B41 10MHz QPSK Middle Channel



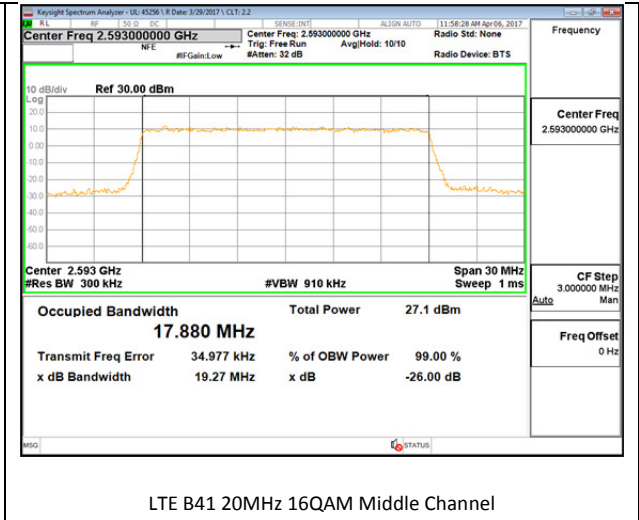
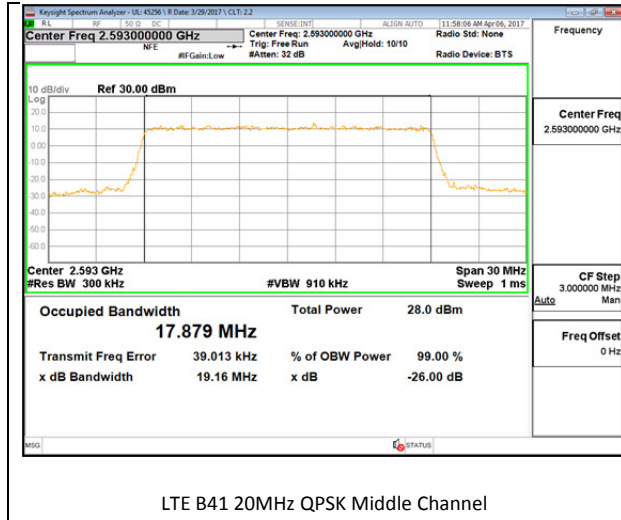
LTE B41 10MHz 16QAM Middle Channel



LTE B41 15MHz QPSK Middle Channel



LTE B41 15MHz 16QAM Middle Channel



14. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §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: (m)(4) (4) 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.

TEST PROCEDURE

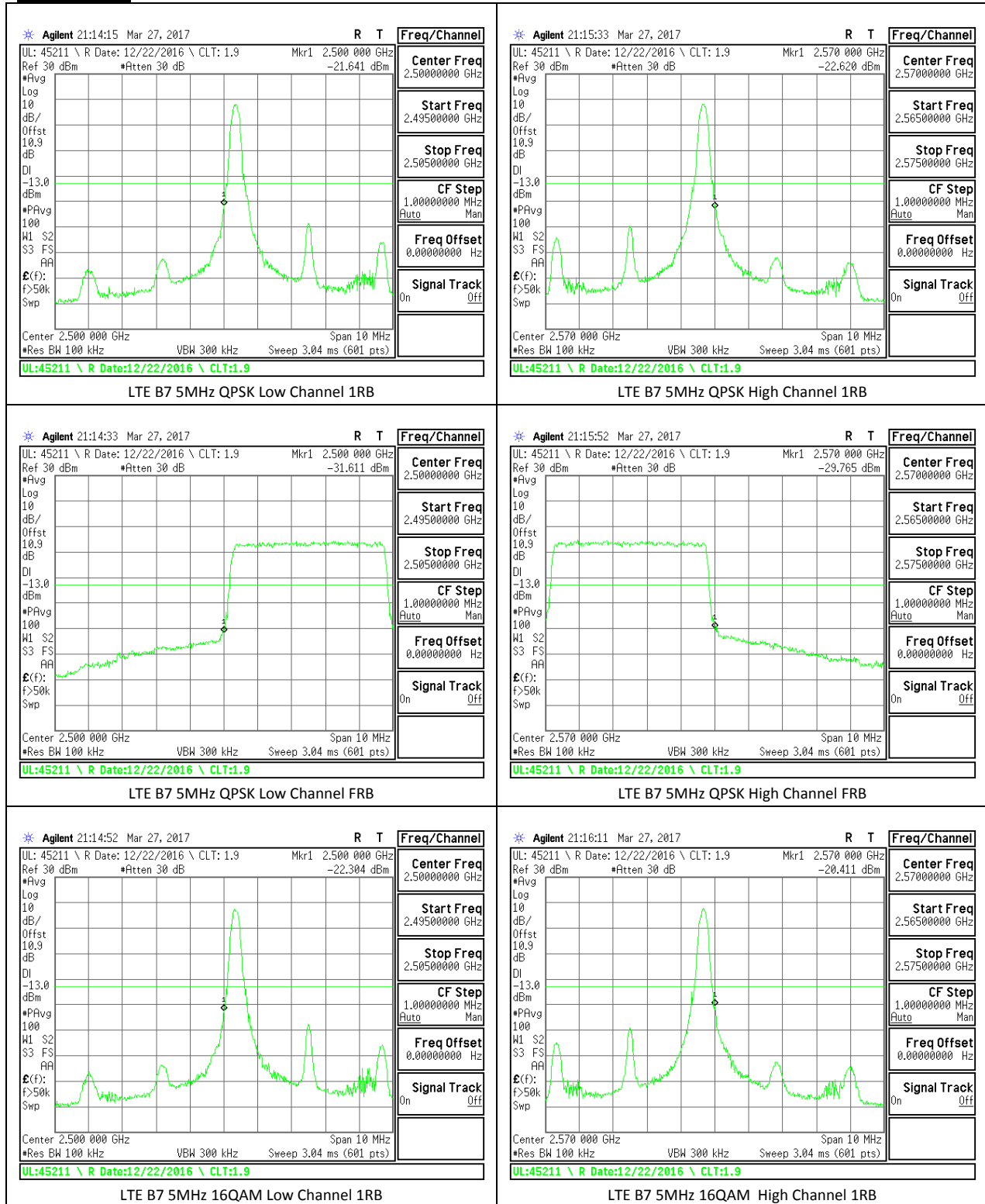
Per KDB 971168 D01 Power Meas License Digital Systems v02r02

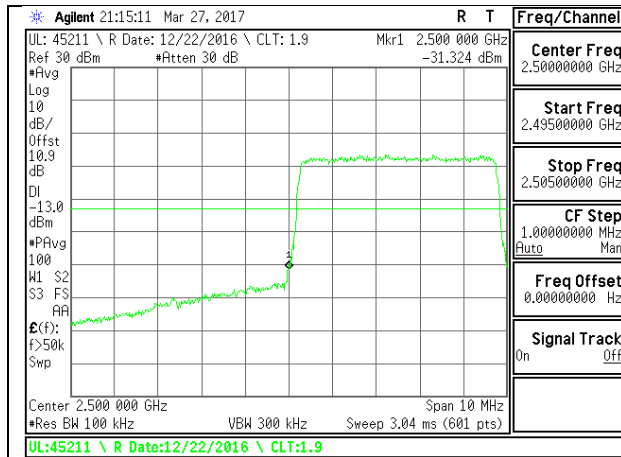
The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

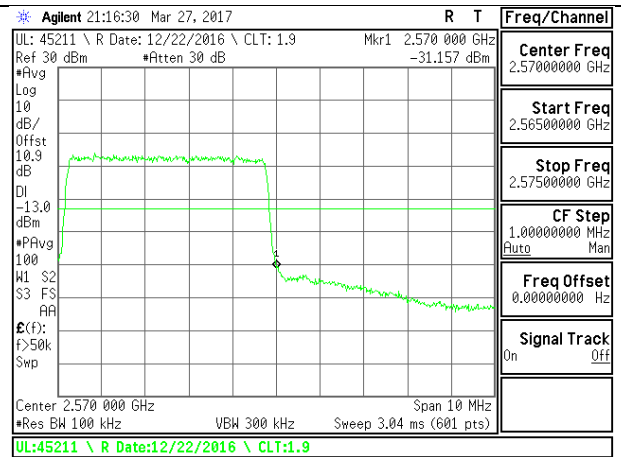
- Set the spectrum analyzer span to include the block edge frequency.
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

14.1. BAND EDGE PLOTS LTE Band 7

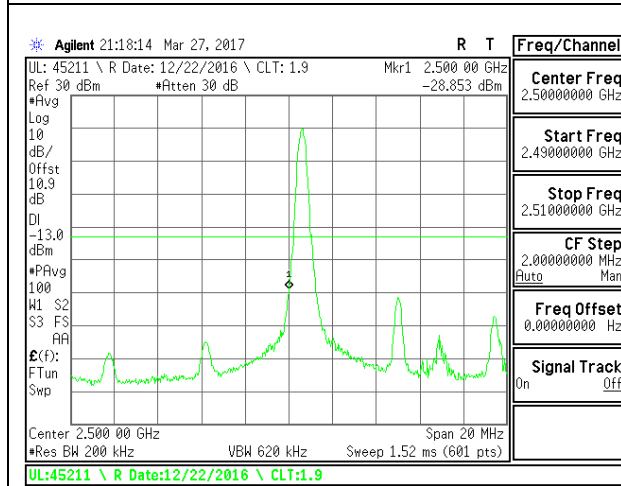




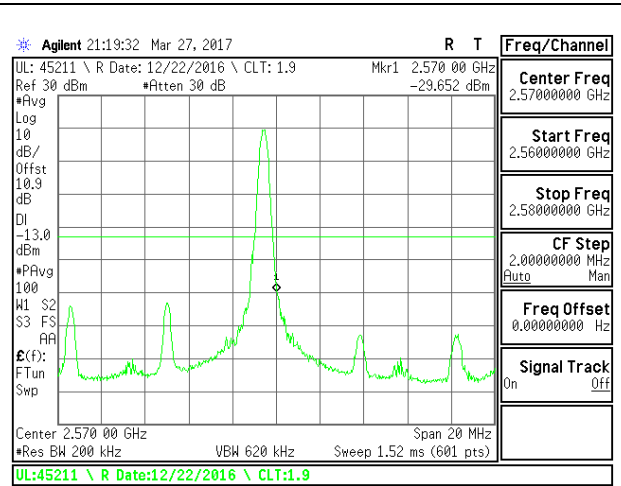
LTE B7 5MHz 16QAM Low Channel FRB



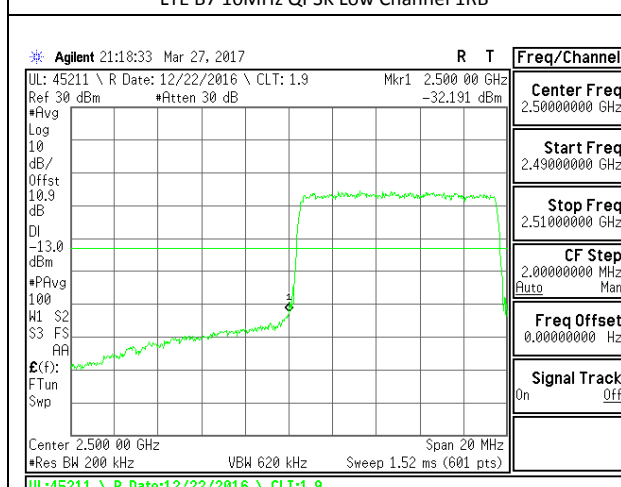
LTE B7 5MHz 16QAM High Channel FRB



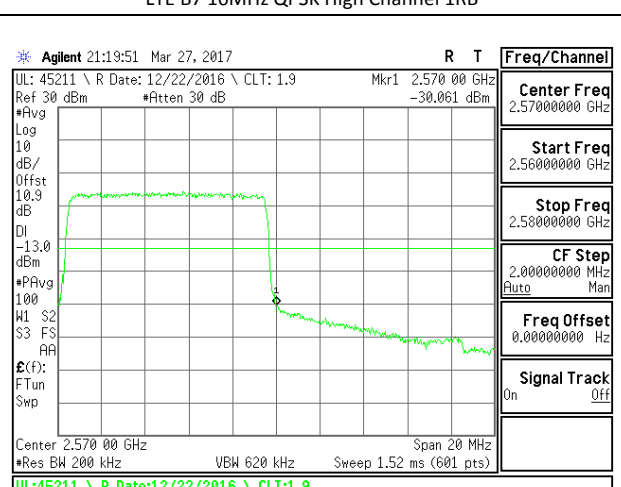
LTE B7 10MHz QPSK Low Channel 1RB



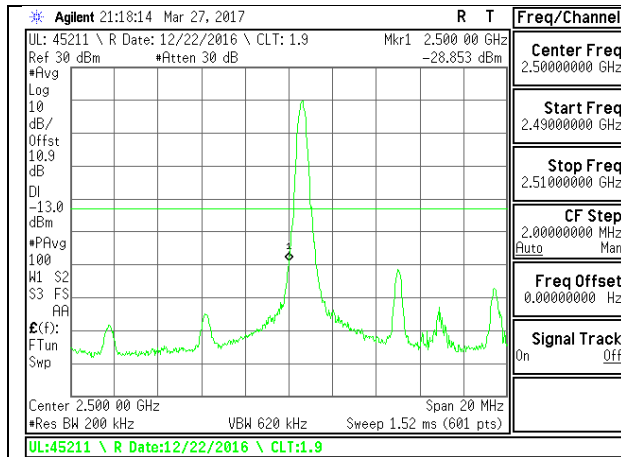
LTE B7 10MHz QPSK High Channel 1RB



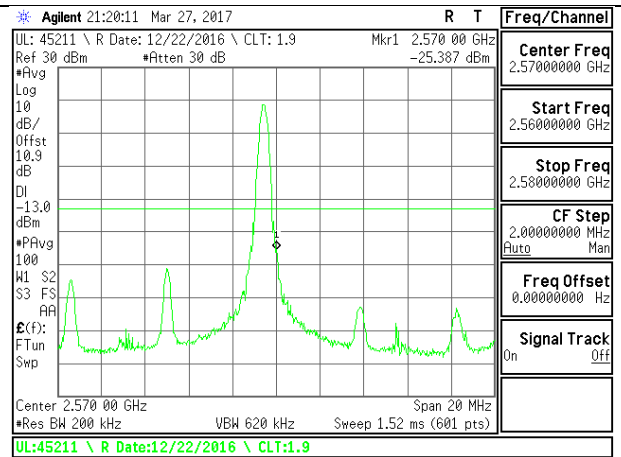
LTE B7 10MHz QPSK Low Channel FRB



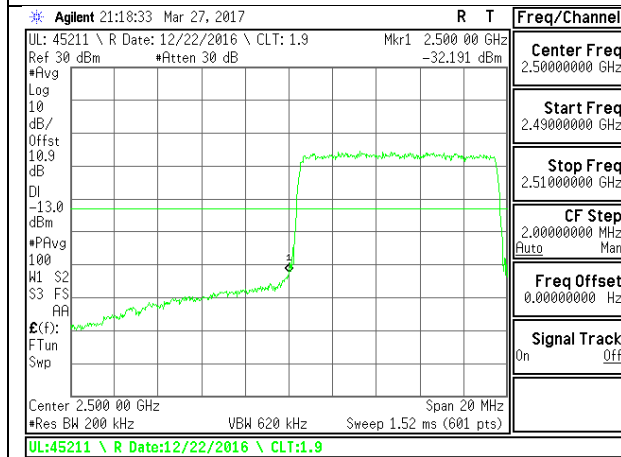
LTE B7 10MHz QPSK High Channel FRB



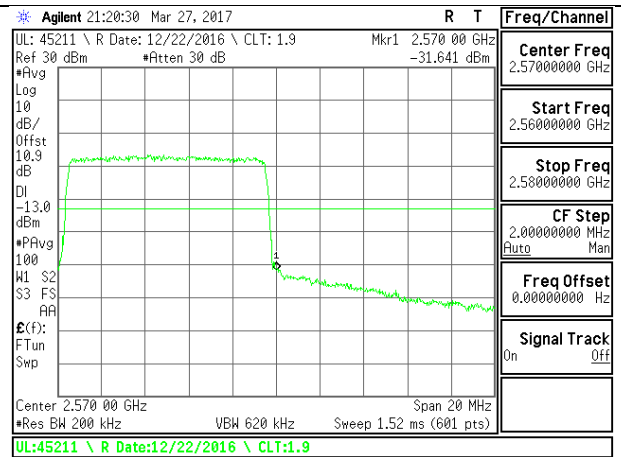
LTE B7 10MHz 16QAM Low Channel 1RB



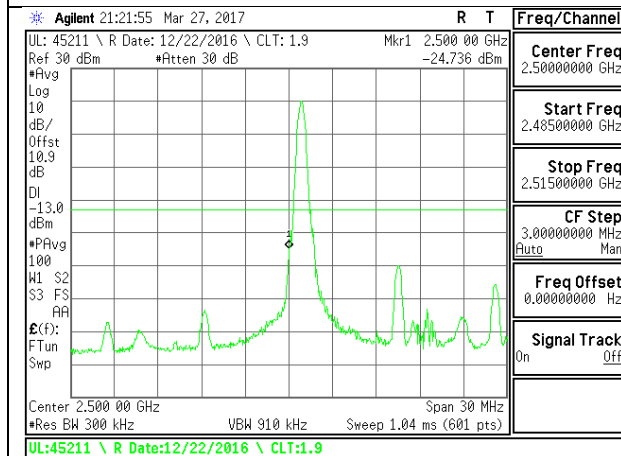
LTE B7 10MHz 16QAM High Channel 1RB



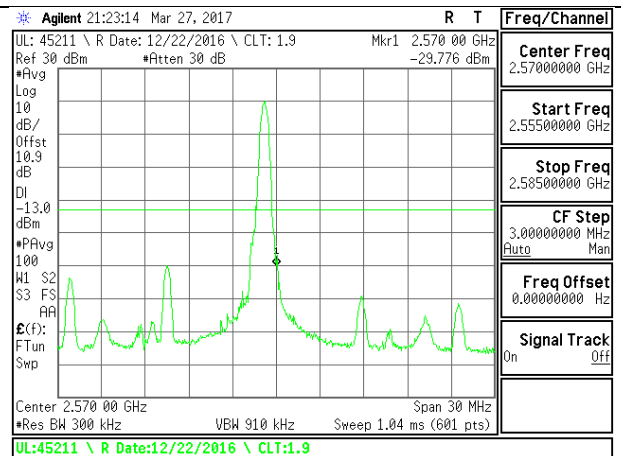
LTE B7 10MHz 16QAM Low Channel FRB



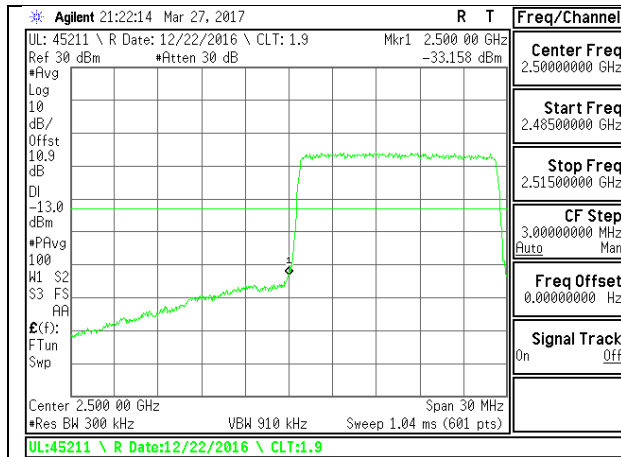
LTE B7 10MHz 16QAM High Channel FRB



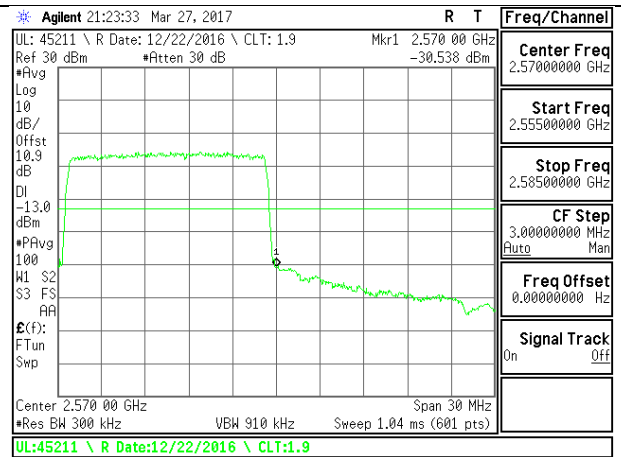
LTE B7 15MHz QPSK Low Channel 1RB



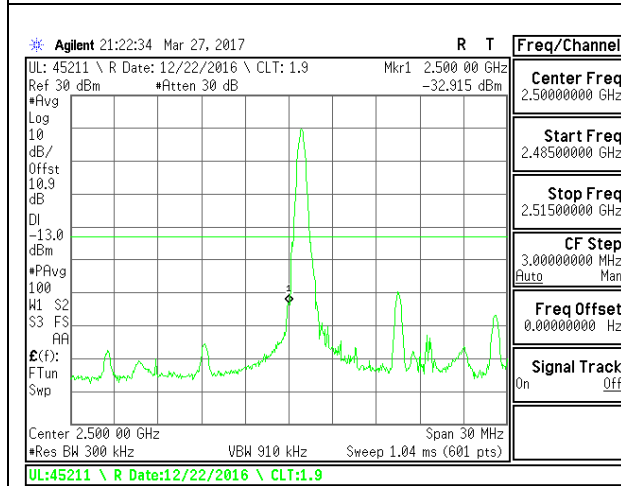
LTE B7 15MHz QPSK High Channel 1RB



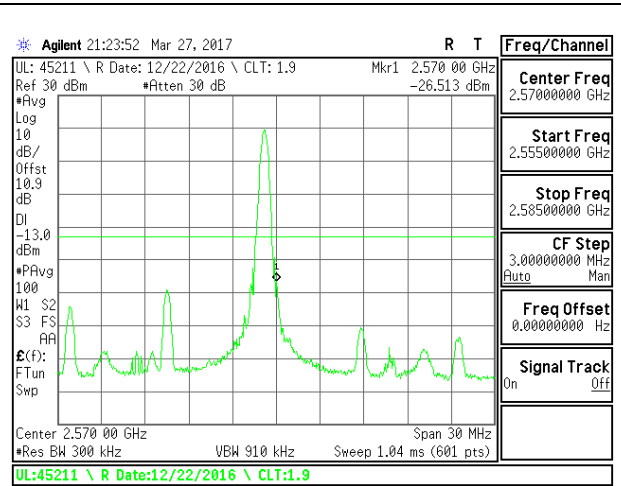
LTE B7 15MHz QPSK Low Channel FRB



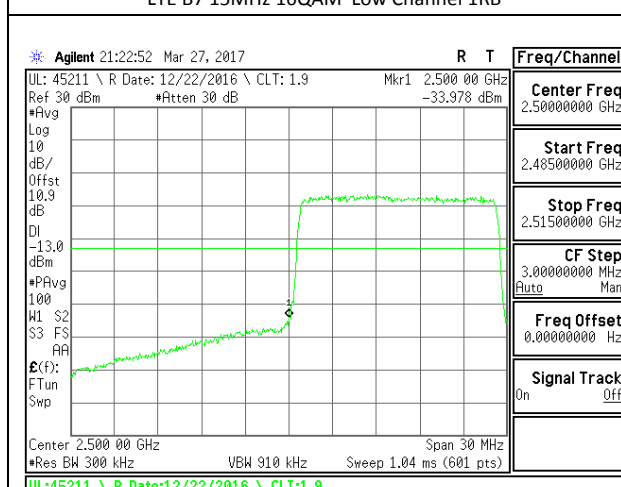
LTE B7 15MHz QPSK High Channel FRB



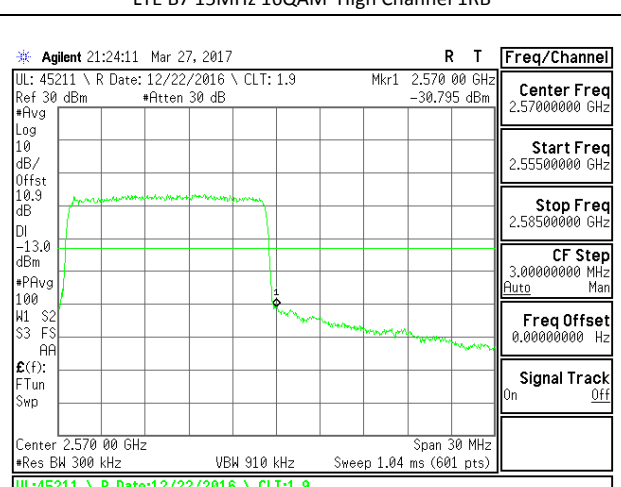
LTE B7 15MHz 16QAM Low Channel 1RB



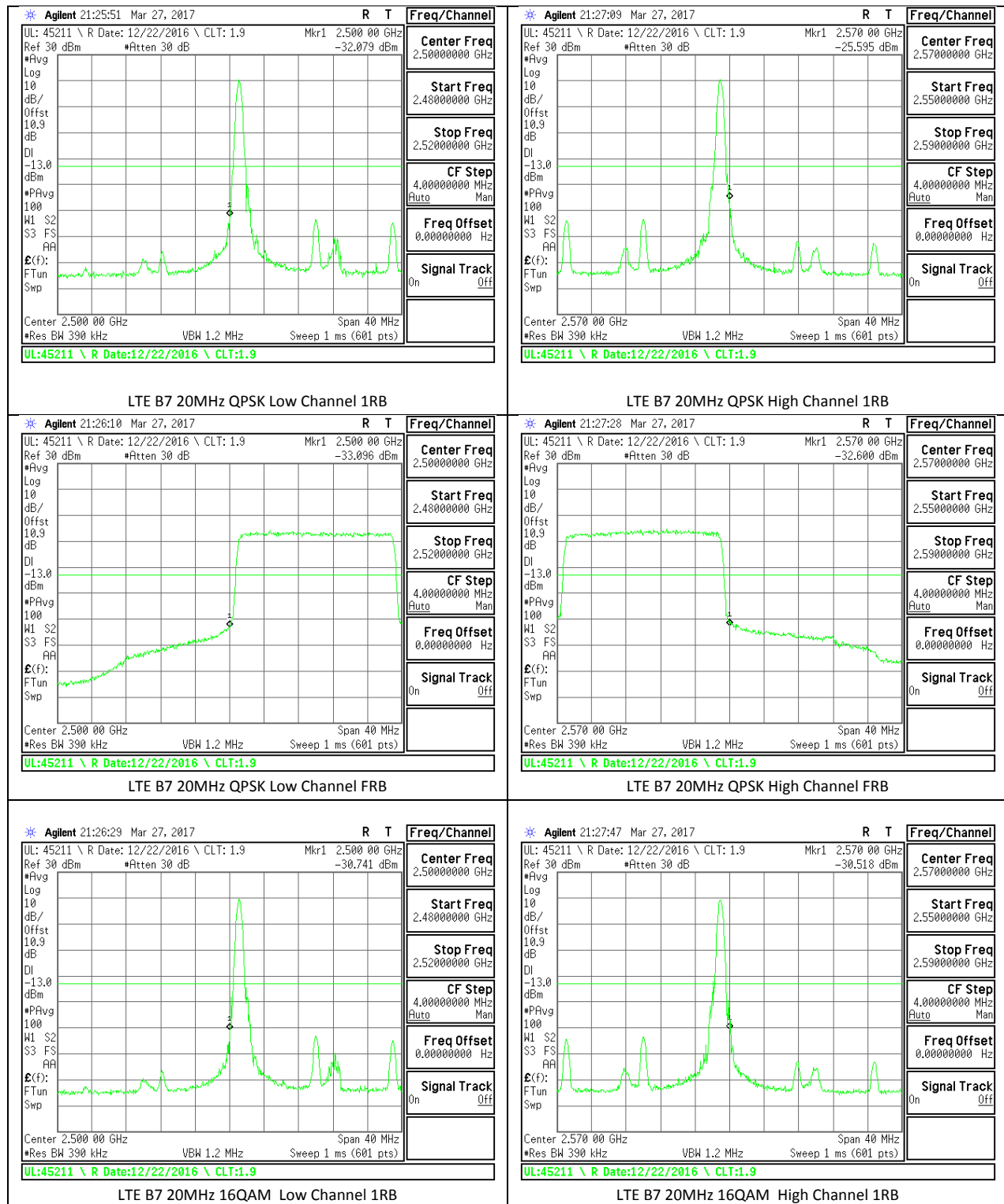
LTE B7 15MHz 16QAM High Channel 1RB

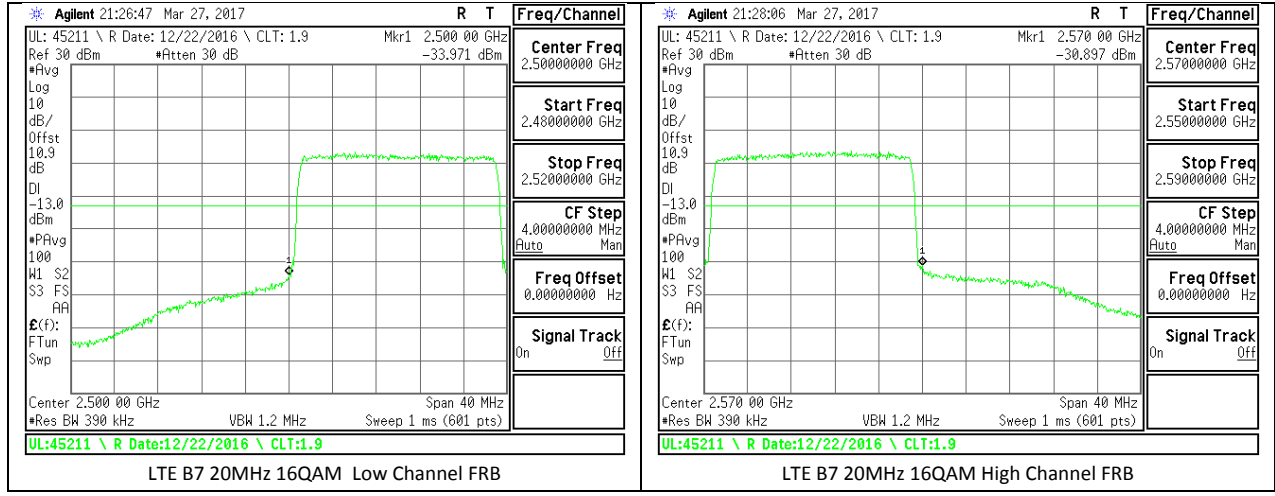


LTE B7 15MHz 16QAM Low Channel FRB

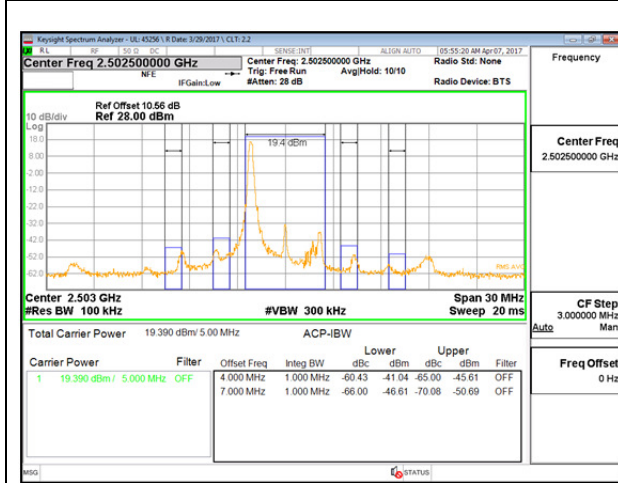


LTE B7 15MHz 16QAM High Channel FRB

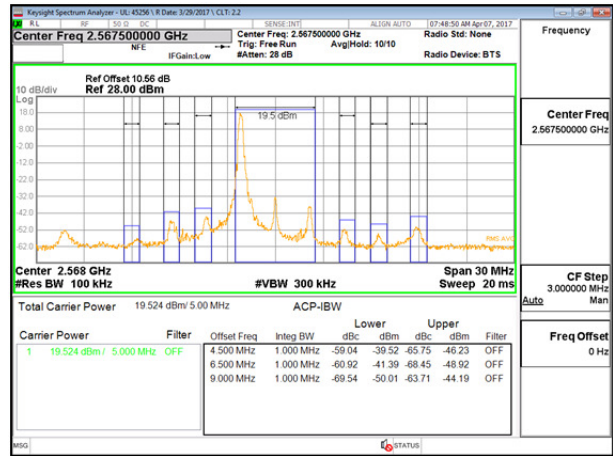




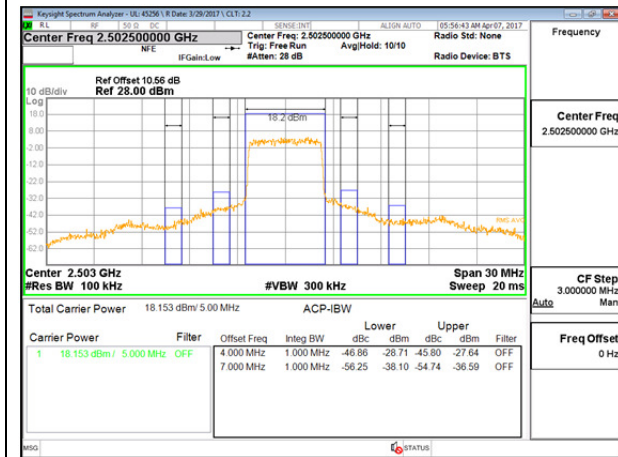
14.2. EMISSION MASK PLOTS LTE Band 7



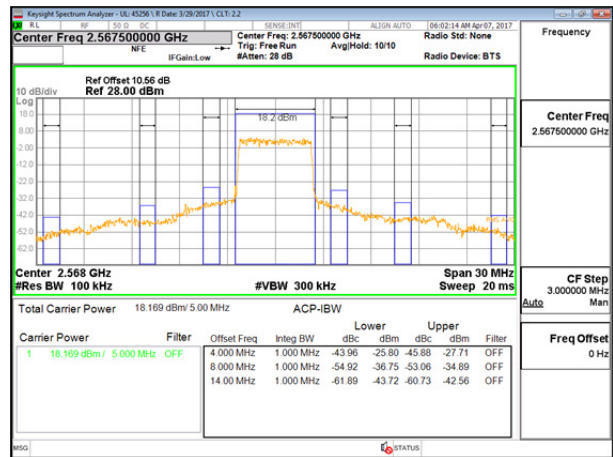
LTE B7 5MHz QPSK Low Channel 1RB



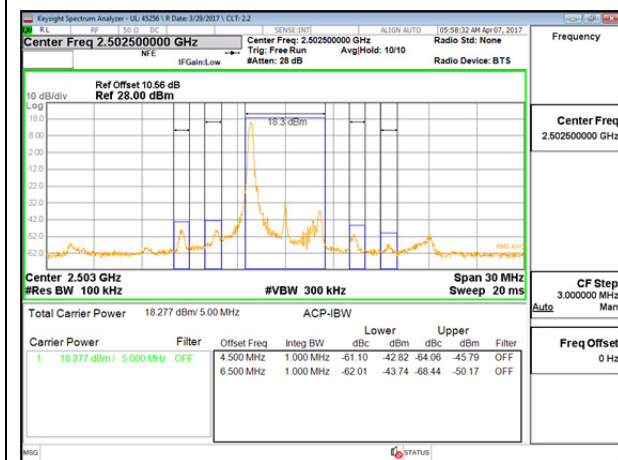
LTE B7 5MHz QPSK High Channel 1RB



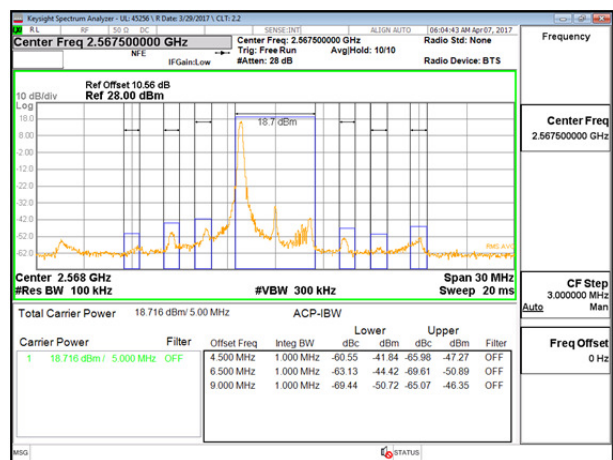
LTE B7 5MHz QPSK Low Channel FRB



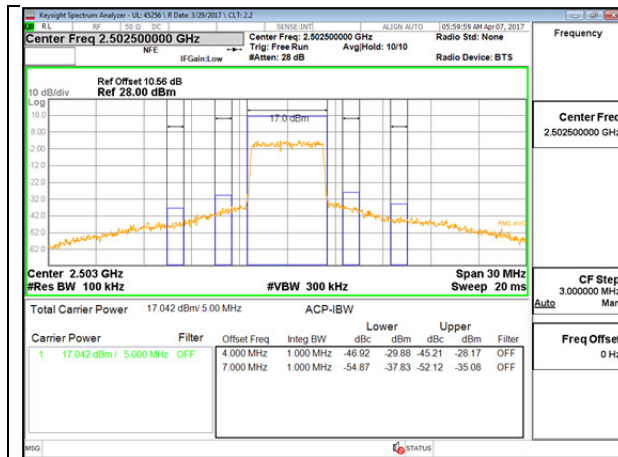
LTE B7 5MHz QPSK High Channel FRB



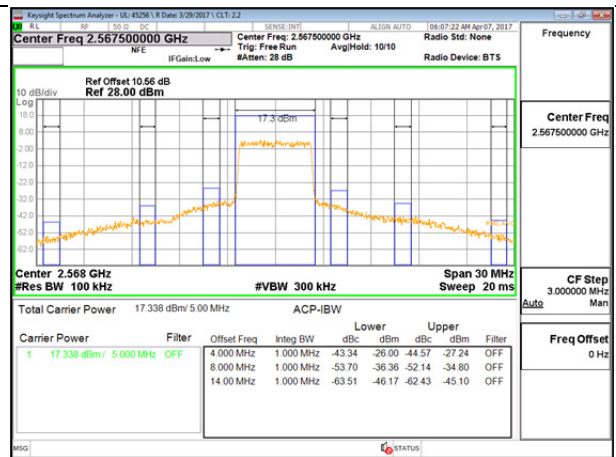
LTE B7 5MHz 16QAM Low Channel 1RB



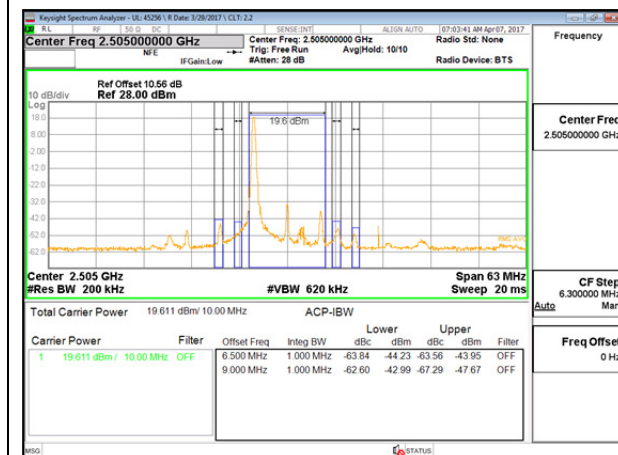
LTE B7 5MHz 16QAM High Channel 1RB



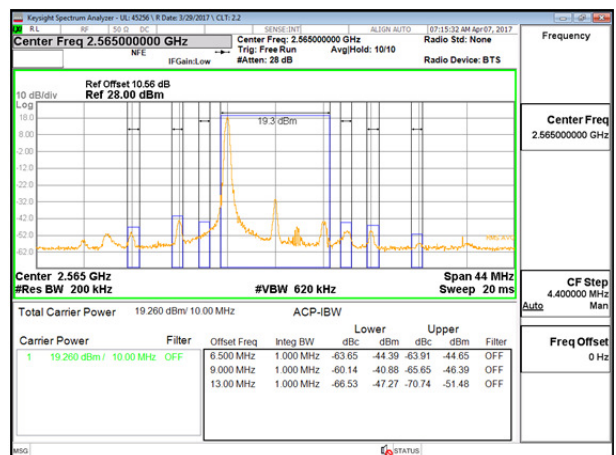
LTE B7 5MHz 16QAM Low Channel FRB



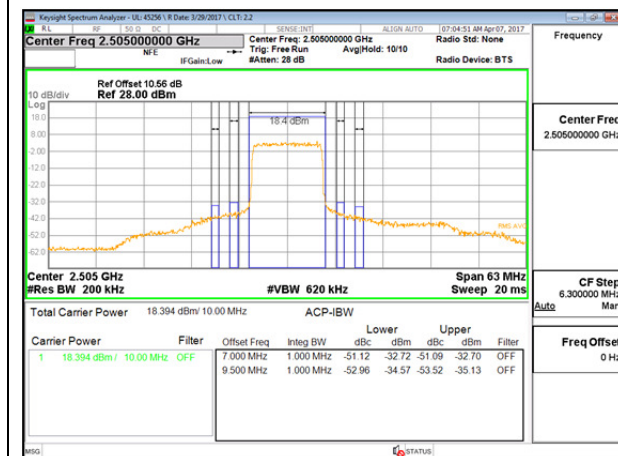
LTE B7 5MHz 16QAM High Channel FRB



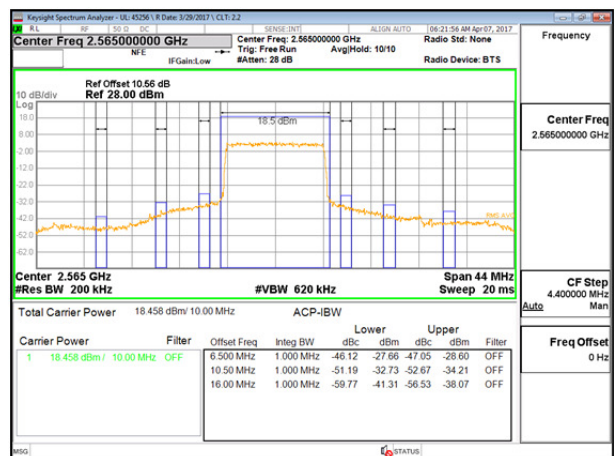
LTE B7 10MHz QPSK Low Channel 1RB



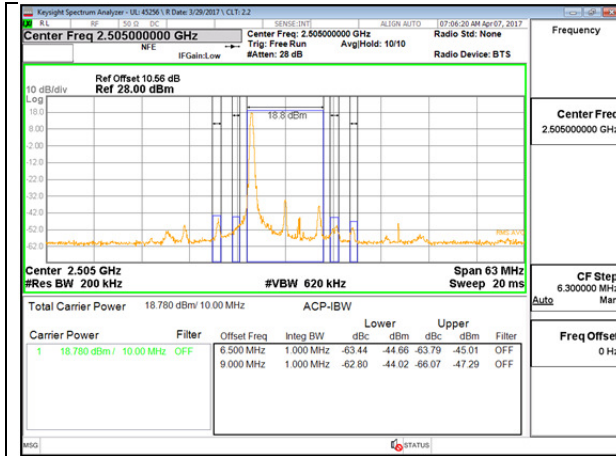
LTE B7 10MHz QPSK High Channel 1RB



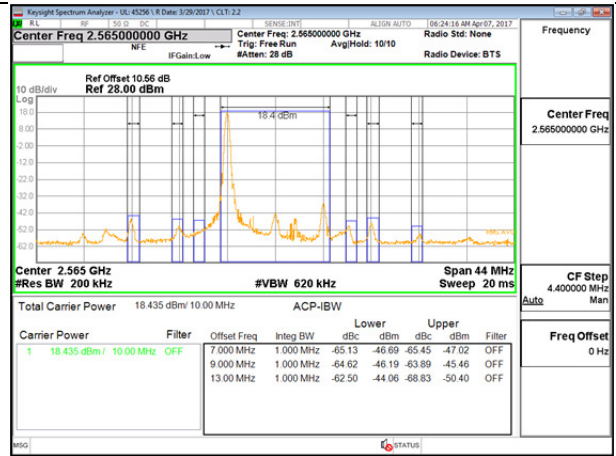
LTE B7 10MHz QPSK Low Channel FRB



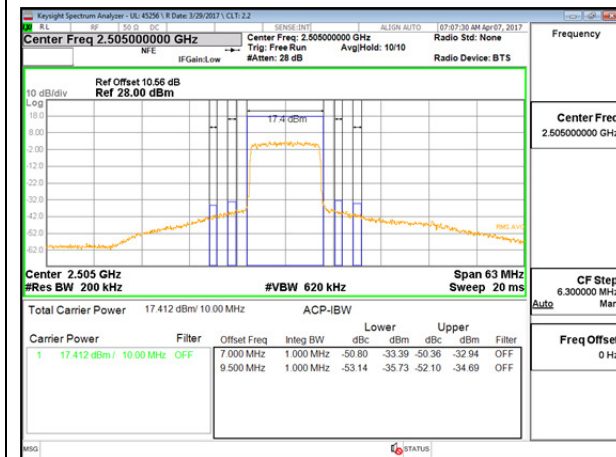
LTE B7 10MHz QPSK High Channel FRB



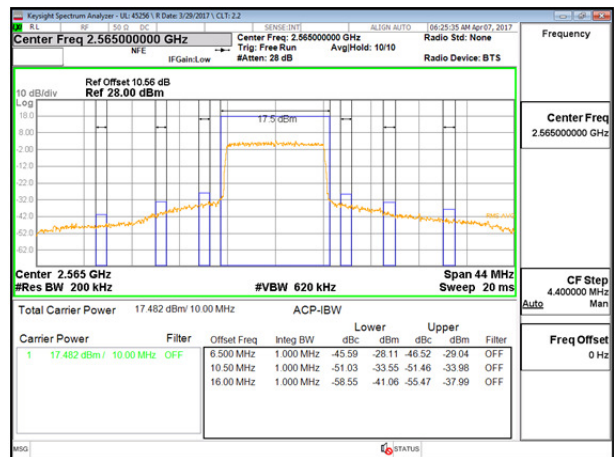
LTE B7 10MHz 16QAM Low Channel 1RB



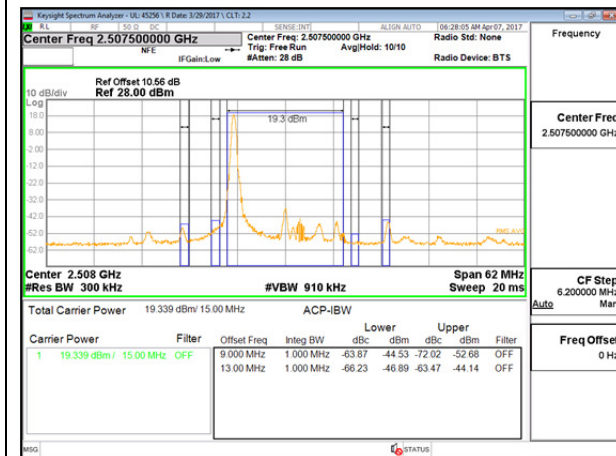
LTE B7 10MHz 16QAM High Channel 1RB



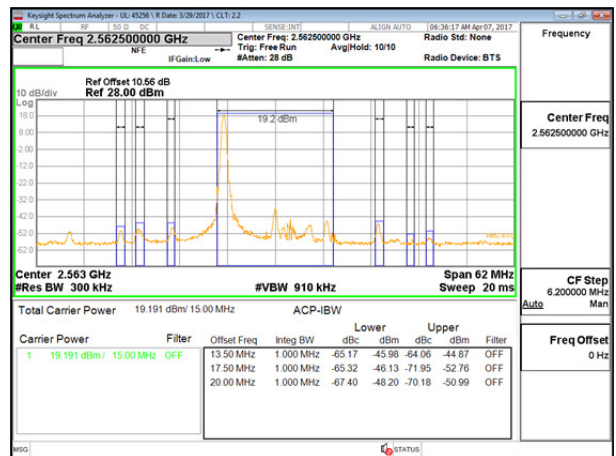
LTE B7 10MHz 16QAM Low Channel FRB



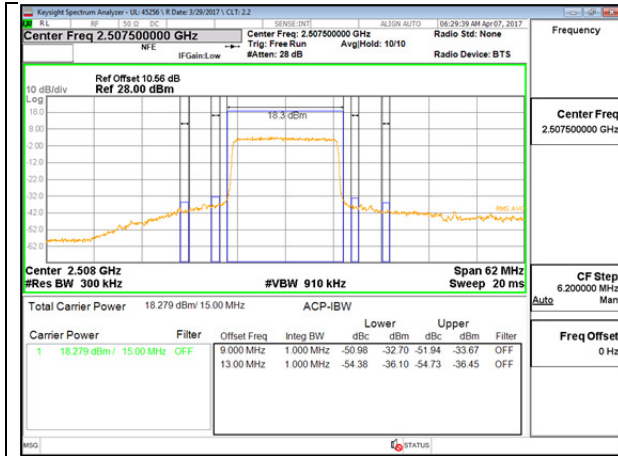
LTE B7 10MHz 16QAM High Channel FRB



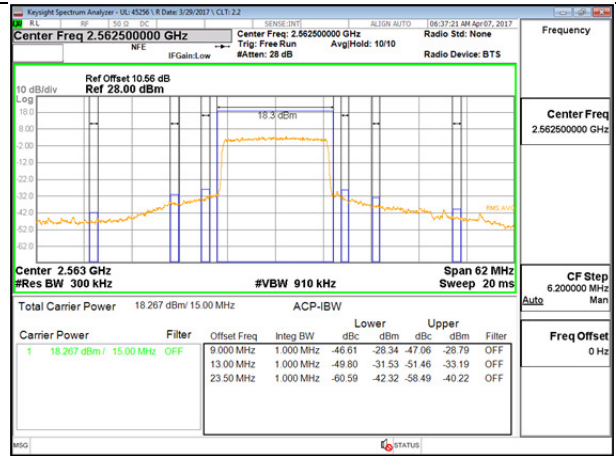
LTE B7 15MHz QPSK Low Channel 1RB



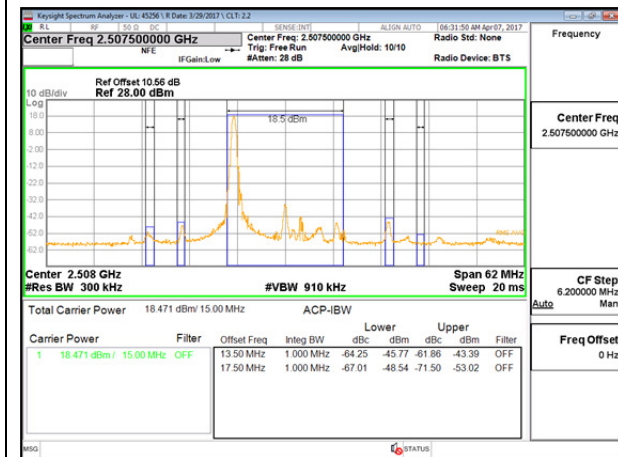
LTE B7 15MHz QPSK High Channel 1RB



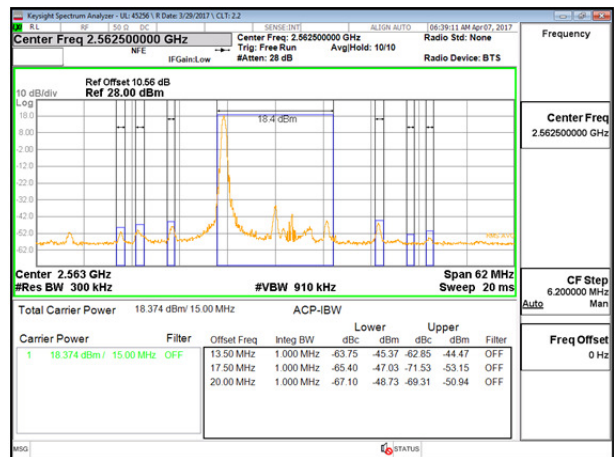
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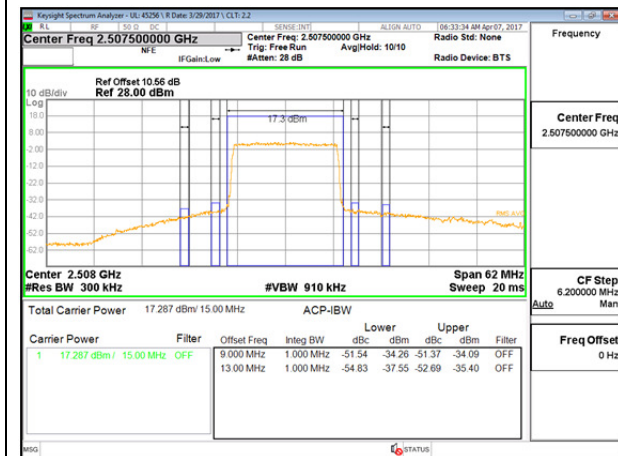
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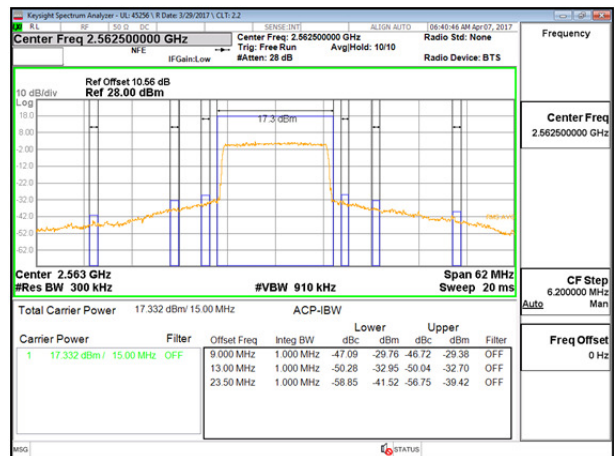
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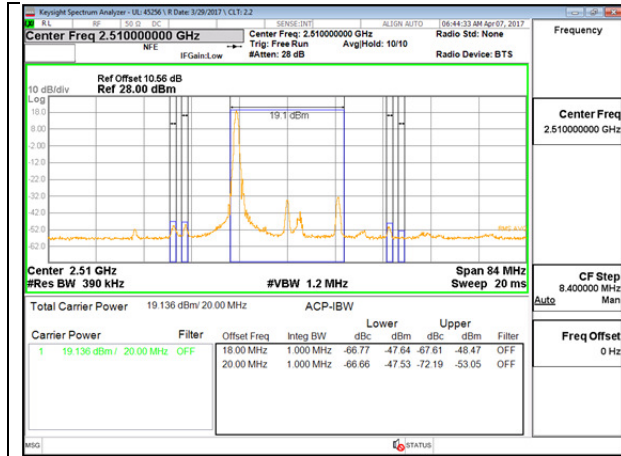
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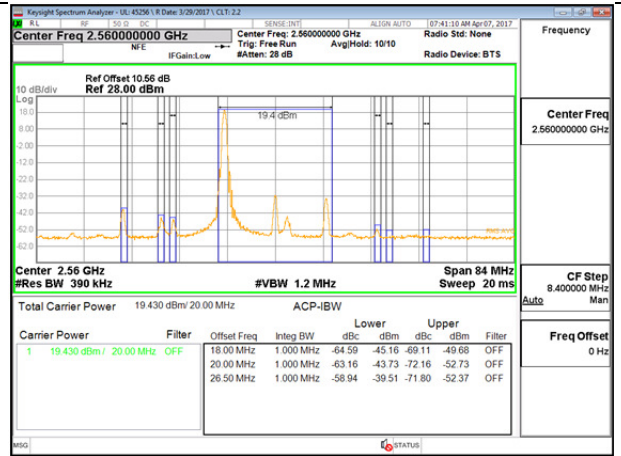
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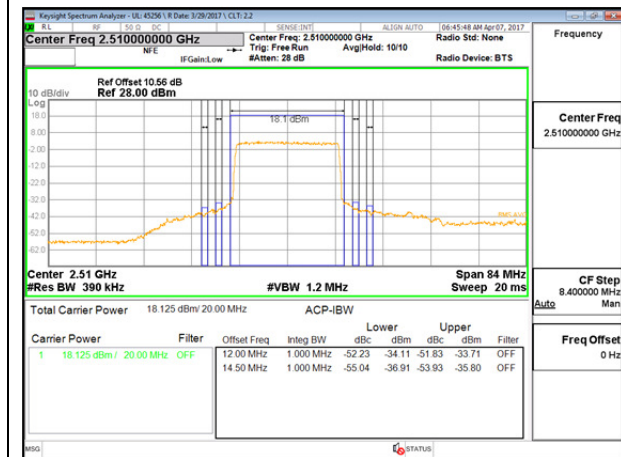
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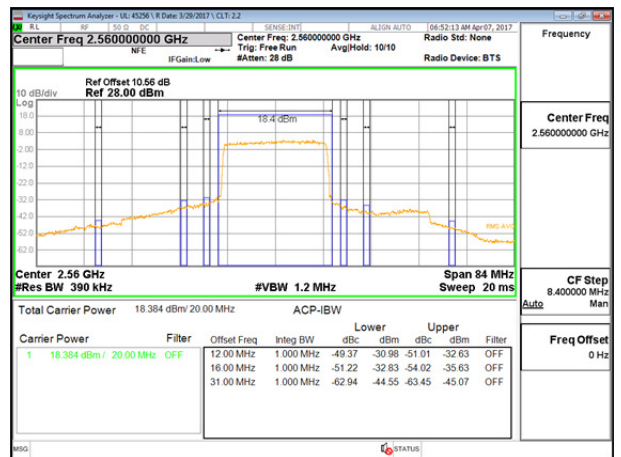
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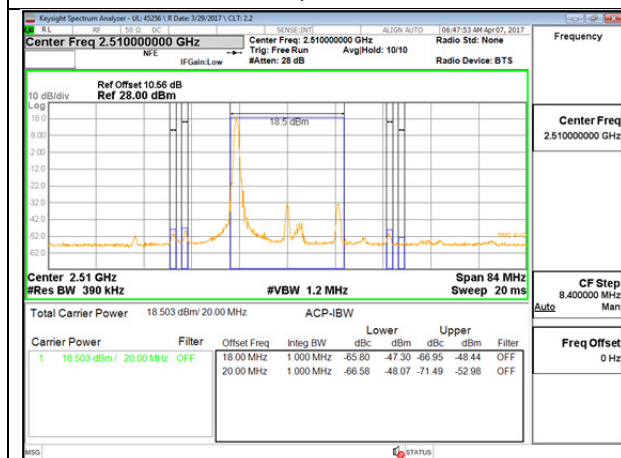
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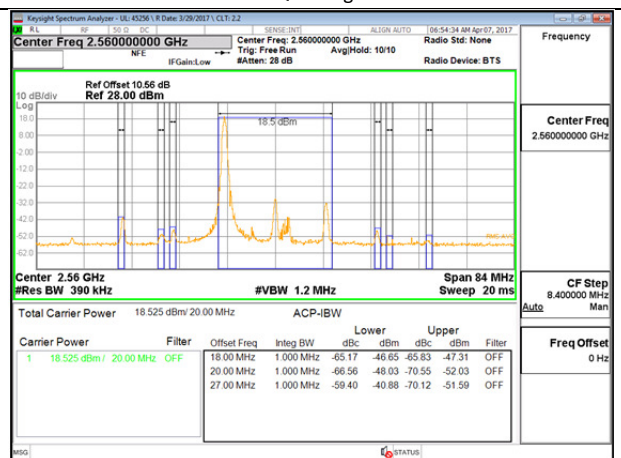
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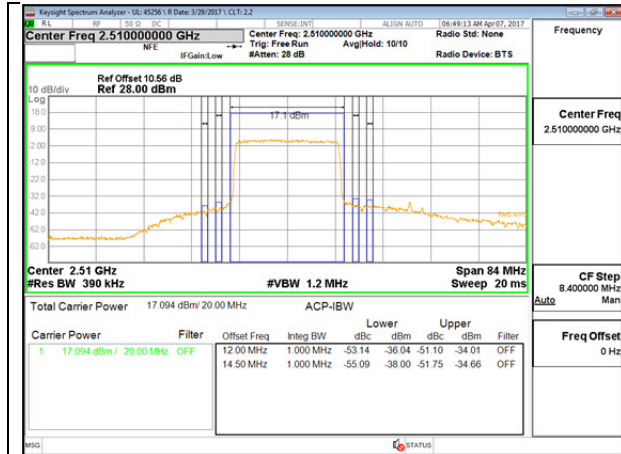
LTE B7 20MHz QPSK High Channel FRB



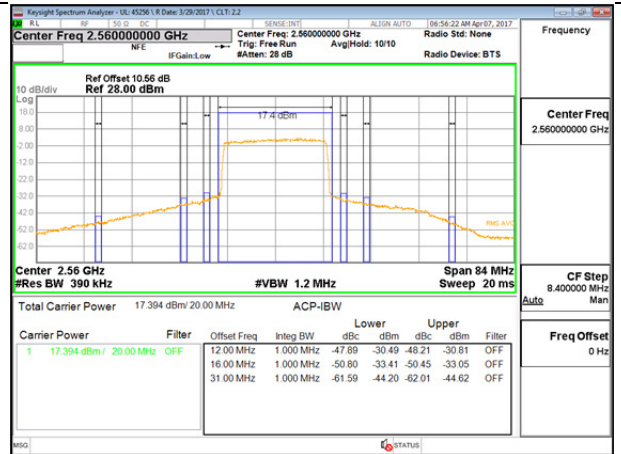
LTE B7 20MHz 16QAM Low Channel 1RB



LTE B7 20MHz 16QAM High Channel 1RB



LTE B7 20MHz 16QAM Low Channel FRB



LTE B7 20MHz 16QAM High Channel FRB