

FCC / ISED REPORT

Certification

Applicant Name:

SOLiD, Inc.

Date of Issue:

September 12, 2018

Address:10, 9th Floor, SOLiD Space, Pangyoyeok-ro
220, Bundang-gu, Seongnam-si, Gyeonggi-do, 463-
400, South Korea**Location:**HCT CO., LTD.,
74, Seoicheon-ro 578beon-gil, Majang-myeon,
Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA**Report No.:** HCT-RF-1808-FI005-R1

| | |
|-------------------|----------------------|
| FCC ID: | W6UL781921 |
| IC: | 9354A-L781921 |
| APPLICANT: | SOLiD, Inc. |

FCC/ ISED Model: N2RDU_781921**EUT Type:** ALLIANCE_2W**Frequency Ranges:** 729 ~ 768 MHz (Downlink), 862 ~ 894 MHz (Downlink),
1 930 ~ 1 995 MHz (Downlink), 2 110 ~ 2 180 MHz (Downlink)**Conducted Output Power:** 2 W (33 dBm, Downlink)**Date of Test:** July 16, 2018 ~ September 12, 2018**FCC Rule Part(s):** CFR 47 Part 2, Part 22, Part 24, Part 27, Part 90**ISED Rules :** RSS-Gen (Issue 5, April 2018), RSS-119 (Issue 12, May 2015)
RSS-130 (Issue 1, October 2013), RSS-131 (Issue 3, May 2017)
RSS-132 (Issue 3, January 2013), RSS-133 (Issue 6, January 2018)
RSS-139 (Issue 3, July 2015), RSS-140 (Issue 1, April 2018)

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC / ISED Rules under normal use and maintenance.

Report prepared by : Kyung Soo Kang
Engineer of Telecommunication testing center

Approved by : Jong Seok Lee
Manager of Telecommunication testing center

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Version

| TEST REPORT NO. | DATE | DESCRIPTION |
|----------------------|--------------------|--|
| HCT-RF-1808-FI005 | August 22, 2018 | - First Approval Report |
| HCT-RF-1808-FI005-R1 | September 12, 2018 | <ul style="list-style-type: none">- Added test results about 800 MHz PLMR band for IC- Change incorrect standard issuance date (RSS-133)- Removed the test result on page 181. (Plot of intermodulation for LTE 5 MHz in 800 IDEN band.)- Revised frequency range and test results for 700LTE band. |
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Table of Contents

| | |
|--|------------|
| 1. GENERAL INFORMATION | 4 |
| 1.1. APPLICANT INFORMATION | 4 |
| 1.2. PRODUCT INFORMATION | 4 |
| 1.3. TEST INFORMATION..... | 4 |
| 2. FACILITIES AND ACCREDITATIONS..... | 5 |
| 2.1. FACILITIES | 5 |
| 2.2. EQUIPMENT..... | 5 |
| 3. TEST SPECIFICATIONS | 6 |
| 3.1. STANDARDS..... | 6 |
| 3.2. MODE OF OPERATION DURING THE TEST | 7 |
| 3.3. MAXIMUM MEASUREMENT UNCERTAINTY..... | 8 |
| 3.4. STANDARDS ENVIRONMENTAL TEST CONDITIONS..... | 8 |
| 4. TEST EQUIPMENT..... | 9 |
| 5. RF OUTPUT POWER | 10 |
| 6. OCCUPIED BANDWIDTH | 62 |
| 7. INPUT VERSUS OUTPUT SPECTRUM..... | 111 |
| 8. OUT OF BAND REJECTION & MEAN OUTPUT POWER AND ZONE ENHANCER GAIN | 118 |
| 9. NOISE FIGURE | 124 |
| 10. SPURIOUS AND HARMONIC EMISSION AT ANTENNA TERMINAL | 126 |
| 11. RADIATED SPURIOUS EMISSIONS | 229 |
| 12. FREQUENCY STABILITY OVER TEMPERATURE AND VOLTAGE VARIATIONS | 234 |
| 13. Annex A_EUT AND TEST SETUP PHOTO | 244 |

1. GENERAL INFORMATION

1.1. APPLICANT INFORMATION

| | |
|-----------------|--|
| Company Name | SOLiD, Inc. |
| Company Address | 10, 9th Floor, SOLiD Space, Pangyo-yeok-ro 220, Bundang-gu, Seongnam-si, Gyeonggi-do, 463-400, South Korea |

1.2. PRODUCT INFORMATION

| | |
|-------------------------|---|
| EUT Type | ALLIANCE_2W |
| FCC/ISED Model | N2RDU_781921 |
| Power Supply | 120 VAC, 50 Hz / DC -48 V |
| Frequency Range | 729 ~ 768 MHz (Downlink), 862 ~ 894 MHz (Downlink), 1 930 MHz ~ 1 995 MHz (Downlink), 2 110 ~ 2 180 MHz (Downlink) |
| Conducted Output Power | 2 W (33 dBm, Downlink) |
| Supporting Technologies | 700LTE, FirstNet: LTE 5 MHz , LTE 10 MHz 800IDEN: CDMA, LTE 5 MHz 850CEL: CDMA, WCDMA, LTE 5 MHz, LTE 10 MHz 800 MHz PLMR for IC: P25 Phase 2 1900PCS: GSM, CDMA, WCDMA, LTE 5 MHz , LTE 10 MHz, LTE 20 MHz AWS13: CDMA, WCDMA, LTE 5 MHz , LTE 10 MHz, LTE 20 MHz |
| Antenna Specification | Manufacturer does not provide an antenna. |

1.3. TEST INFORMATION

| | |
|-----------------------|--|
| FCC Rule Parts | CFR 47 Part 2, Part 22, Part 24, Part 27, Part 90 |
| ISED Rule Parts | RSS-Gen (Issue 5, April 2018), RSS-119 (Issue 12, May 2015) RSS-130 (Issue 1, October 2013), RSS-131 (Issue 3, May 2017) RSS-132 (Issue 3, January 2013), RSS-133 (Issue 6, January 2018) RSS-139 (Issue 3, July 2015), RSS-140 (Issue 1, April 2018) |
| Measurement standards | ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 935210 D05 v01r02, RSS-Gen, RSS-119, RSS-130, RSS-131, RSS-132, RSS-133, RSS-139 RSS-140 |
| Place of Test | HCT CO., LTD. 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA (ISED Registration Number : 5944A) |

2. FACILITIES AND ACCREDITATIONS

2.1. FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4. (Version: 2014) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2018 (Registration Number: KR0032).

For ISED, test facility was accepted dated October 19, 2015(Registration Number: 5944A-6)

2.2. EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

3. TEST SPECIFICATIONS

3.1. STANDARDS

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 2, Part 22, Part 24, Part 27, Part 90, RSS-Gen, RSS-119, RSS-130, RSS-131, RSS-132, RSS-133, RSS-139, RSS-140

| Description | Reference (FCC) | Reference (ISED) | Results |
|--|---|---|-----------|
| Conducted RF Output Power | §2.1046, §22.913 §24.232, §27.50 §90.542, §90.635 | RSS-119, Section 5.4 RSS-130, Section 4.4 RSS-131, Section 6.2 RSS-132, Section 5.4 RSS-133, Section 6.4 RSS-139, Section 6.5 RSS-140, Section 4.3 | Compliant |
| Occupied Bandwidth | §2.1049 | RSS-Gen, Section 6.7 | Compliant |
| Input-versus-output Spectrum | - | RSS-131 Section 5.2.2 | Compliant |
| Out of Band Rejection & Mean Output Power and Zone Enhancer Gain | KDB 935210 D05 v01r01 | RSS-131, Section 5.2.1 RSS-131, Section 5.2.3 | Compliant |
| Noise Figure | §90.219 | RSS-131, Section 6.4 | Compliant |
| Spurious Emissions at Antenna Terminals | §2.1051, §22.917 §24.238, §27.53 §90.219(e)(3), §90.543, §90.691 | RSS-Gen, Section 6.13 RSS-130, Section 4.6 RSS-131, Section 6.3 RSS-131, Section 6.5 RSS-132, Section 5.5 RSS-133, Section 6.5 RSS-139, Section 6.6 RSS-140, Section 4.4 | Compliant |
| Radiated Spurious Emissions | §2.1053, §22.917 §24.238, §27.53 §90.691 | RSS-Gen, Section 7.3 RSS-133, Section 6.6 | Compliant |
| Frequency Stability | §2.1055, §22.355 §24.235, §27.54 §90.213 | RSS-119, Section 5.3 RSS-130, Section 4.3 RSS-131, Section 5.2.4 RSS-132, Section 5.3 RSS-133, Section 6.3 RSS-139, Section 6.4 RSS-140, Section 4.2 | Compliant |

3.2. MODE OF OPERATION DURING THE TEST

- * The EUT was operated in a manner representative of the typical usage of the equipment.
- * During all testing, system components were manipulated within the confines of typical usage to maximize each emission.
- * The device does not supply antenna(s) with the system, so the dummy loads were connected to the RF output ports for radiated spurious emission testing.
- * This EUT is supported power supply both of AC and DC. Test results are only attached worst cases.
- * The PLMR band from 862 MHz to 869 MHz was further tested with narrowband signal suitable for RSS-119.
- * The tests results in plots are already including the actual value of loss for the attenuator and cable combination. Please check correction factors below table.

□ Correction Factor

| Freq(MHz) | Factor(dB) |
|-----------|------------|
| 30 | 30.566 |
| 100 | 30.388 |
| 200 | 30.728 |
| 300 | 30.899 |
| 400 | 30.975 |
| 500 | 30.789 |
| 600 | 30.952 |
| 700 | 31.156 |
| 800 | 31.105 |
| 900 | 31.153 |
| 1000 | 31.324 |
| 2000 | 31.874 |
| 3000 | 31.834 |
| 4000 | 31.583 |
| 5000 | 31.963 |
| 6000 | 32.065 |
| 7000 | 32.513 |
| 8000 | 32.585 |
| 9000 | 32.294 |
| 10000 | 32.623 |
| 20000 | 36.428 |
| 26000 | 36.623 |

3.3. MAXIMUM MEASUREMENT UNCERTAINTY

The value of the measurement uncertainty for the measurement of each parameter.

Coverage factor $k = 2$, Confidence levels of 95 %

| Description | Condition | Uncertainty |
|--|-------------------------|---------------------------------|
| Conducted RF Output Power | - | ± 0.72 dB |
| Occupied Bandwidth & Input-versus-output Spectrum | OBW ≤ 25 kHz | ± 0.16 kHz |
| | OBW ≤ 20 MHz | ± 52 kHz |
| Out of Band Rejection & Mean Output Power and Zone Enhancer Gain | Gain 20 dB bandwidth | ± 0.89 dB ± 0.58 MHz |
| Noise Figure | - | ± 0.89 dB |
| Transmitter unwanted emissions | - | ± 1.08 dB |
| Radiated Spurious Emissions | $f \leq 1$ GHz | ± 4.80 dB |
| | $f > 1$ GHz | ± 6.07 dB |
| Frequency Stability | - | $\pm 1.22 \times 10^{-6}$ |

3.4. STANDARDS ENVIRONMENTAL TEST CONDITIONS

| | |
|--------------------|------------------------|
| Temperature : | + 15 °C to + 35 °C |
| Relative humidity: | 30 % to 60 % |
| Air pressure | 860 mbar to 1 060 mbar |

4. TEST EQUIPMENT

| Manufacturer | Model / Equipment | Calibration Date | Calibration Interval | Serial No. |
|------------------------|--|------------------|----------------------|----------------|
| Agilent | N9020A / Spectrum Analyzer | 09/15/2017 | Annual | MY46471250 |
| Agilent | E4438C / Signal Generator | 12/22/2017 | Annual | MY42082646 |
| Agilent | N5128A / Signal Generator | 03/05/2018 | Annual | MY50141649 |
| Agilent | N5128A / Signal Generator | 02/17/2018 | Annual | MY46240523 |
| AGILENT | 8498A / Coaxial Attenuator | 02/19/2018 | Annual | 51162 |
| Agilent | 11636A / Power Divider | 07/26/2018 | Annual | 09109 |
| KIKUSUI | CBL06185030 / DC Power Supply | 02/27/2018 | Annual | RE001149 |
| DEAYOUNG ENT | DFSS60 / AC Power Supply | 04/05/2018 | Annual | 1003030-1 |
| NANGYEUL CO., LTD. | NY-THR18750 / Temperature and Humidity Chamber | 10/21/2017 | Annual | NY-2009012201A |
| Innco system | CO3000 / Controller(Antenna mast) | N/A | N/A | CO3000-4p |
| Innco system | MA4640/800-XP-EP / Antenna Position Tower | N/A | N/A | N/A |
| Audix | EM1000 / Controller | N/A | N/A | 060520 |
| Audix | Turn Table | N/A | N/A | N/A |
| Rohde & Schwarz | Loop Antenna | 04/19/2017 | Biennial | 1513-175 |
| Schwarzbeck | VULB 9168 / Hybrid Antenna | 04/06/2017 | Biennial | 760 |
| Schwarzbeck | BBHA 9120D / Horn Antenna | 05/02/2017 | Biennial | 9120D-937 |
| Schwarzbeck | BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz) | 12/04/2017 | Biennial | BBHA9170541 |
| Rohde & Schwarz | FSP / Spectrum Analyzer | 09/03/2018 | Annual | 100688 |
| Wainwright Instruments | WHKX10-900-1000-15000-40SS | 07/20/2018 | Annual | 5 |
| Wainwright Instruments | WHK3.0/18G-10EF / High Pass Filter | 06/07/2018 | Annual | 8 |
| CERNEX | CBLU1183540 / Power Amplifier | 07/10/2018 | Annual | 22964 |
| CERNEX | CBL06185030 / Power Amplifier | 07/10/2018 | Annual | 22965 |
| CERNEX | CBL18265035 / Power Amplifier | 01/10/2018 | Annual | 22966 |

5. RF OUTPUT POWER

FCC Rules

Test Requirements:

§ 2.1046 Measurements required: RF power output:

- (a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in § 2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.
- (b) For single sideband, independent sideband, and single channel, controlled carrier radio telephone transmitters, the procedure specified in paragraph (a) of this section shall be employed and, in addition, the transmitter shall be modulated during the test as specified and as applicable in § 2.1046 (b) (1-5). In all tests, the input level of the modulating signal shall be such as to develop rated peak envelope power or carrier power, as appropriate, for the transmitter.
- (c) For measurements conducted pursuant to paragraphs (a) and (b) of this section, all calculations and methods used by the applicant for determining carrier power or peak envelope power, as appropriate, on the basis of measured power in the radio frequency load attached to the transmitter output terminals shall be shown. Under the test conditions specified, no components of the emission spectrum shall exceed the limits specified in the applicable rule parts as necessary for meeting occupied bandwidth or emission limitations.

§22.913 Effective radiated power limits.

Licensees in the Cellular Radiotelephone Service are subject to the effective radiated power (ERP) limits and other requirements in this Section. See also §22.169.

- (a) *Maximum ERP.* The ERP of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.
 - (1) Except as described in paragraphs (a)(2), (3), and (4) of this section, the ERP of base stations and repeaters must not exceed—
 - (i) 500 watts per emission; or
 - (ii) 400 watts/MHz (PSD) per sector.
- (d) Power measurement. Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB. Power measurements for base transmitters and repeaters must be made in accordance with either of the following:
 - (1) A Commission-approved average power technique (see FCC Laboratory's Knowledge Database); or
 - (2) For purposes of this section, peak transmit power must be measured over an interval of

continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

§ 24.232 Power and antenna height limits.

- (a)(1) Base stations with an emission bandwidth of 1 MHz or less are limited to 1640 watts equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.
- (2) Base stations with an emission bandwidth greater than 1 MHz are limited to 1640 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.
- (3) Base station antenna heights may exceed 300 meters HAAT with a corresponding reduction in power; see Tables 1 and 2 of this section.
- (4) The service area boundary limit and microwave protection criteria specified in §§24.236 and 24.237 apply.

Table 1—Reduced Power for Base Station Antenna Heights Over 300 Meters, With Emission Bandwidth of 1 MHz or Less

| HAAT in meters | Maximum EIRP watts |
|----------------|--------------------|
| ≤300 | 1640 |
| ≤500 | 1070 |
| ≤1000 | 490 |
| ≤1500 | 270 |
| ≤2000 | 160 |

Table 2—Reduced Power for Base Station Antenna Heights Over 300 Meters, With Emission Bandwidth Greater Than 1 MHz

| HAAT in meters | Maximum EIRP watts/MHz |
|----------------|------------------------|
| ≤300 | 1640 |
| ≤500 | 1070 |
| ≤1000 | 490 |
| ≤1500 | 270 |
| ≤2000 | 160 |

- (b)(1) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of

the Census, with an emission bandwidth of 1 MHz or less are limited to 3280 watts equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT.

(2) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census, with an emission bandwidth greater than 1 MHz are limited to 3280 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT.

(3) Base station antenna heights may exceed 300 meters HAAT with a corresponding reduction in power; see Tables 3 and 4 of this section.

(4) The service area boundary limit and microwave protection criteria specified in §§24.236 and 24.237 apply.

(5) Operation under this paragraph (b) at power limits greater than permitted under paragraph (a) of this section must be coordinated in advance with all broadband PCS licensees authorized to operate on adjacent frequency blocks within 120 kilometers (75 miles) of the base station and is limited to base stations located more than 120 kilometers (75 miles) from the Canadian border and more than 75 kilometers (45 miles) from the Mexican border.

Table 3—Reduced Power for Base Station Antenna Heights Over 300 Meters, With Emission Bandwidth of 1 MHz or Less

| HAAT in meters | Maximum EIRP watts |
|----------------|--------------------|
| ≤300 | 3280 |
| ≤500 | 2140 |
| ≤1000 | 980 |
| ≤1500 | 540 |
| ≤2000 | 320 |

Table 4—Reduced Power for Base Station Antenna Heights Over 300 Meters, With Emission Bandwidth Greater Than 1 MHz

| HAAT in meters | Maximum EIRP watts/MHz |
|----------------|------------------------|
| ≤300 | 3280 |
| ≤500 | 2140 |
| ≤1000 | 980 |
| ≤1500 | 540 |
| ≤2000 | 320 |

(c) Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

(d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

(e) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

§ 27.50 Power limits and duty cycle.

(b) The following power and antenna height limits apply to transmitters operating in the 746-758 MHz, 775-788 MHz and 805-806 MHz bands:

(4) Fixed and base stations transmitting a signal in the 746-757 MHz and 776-787 MHz bands with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP in accordance with Table 3 of this section.

(5) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal in the 746-757 MHz and 776-787 MHz bands with an emission bandwidth greater than 1 MHz must not exceed an ERP of 2000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts/MHz ERP in accordance with Table 4 of this section.

(c) The following power and antenna height requirements apply to stations transmitting in the 600 MHz band and the 698-746 MHz band:

(4) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal with an emission bandwidth greater than 1 MHz must not exceed an ERP of 2000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts/MHz ERP in accordance with Table 4 of this section;

(5) Licensees, except for licensees operating in the 600 MHz downlink band, seeking to operate a fixed or base station located in a county with population density of 100 or fewer

persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal at an ERP greater than 1000 watts must:

- (i) Coordinate in advance with all licensees authorized to operate in the 698-758 MHz, 775-788, and 805-806 MHz bands within 120 kilometers (75 miles) of the base or fixed station;
 - (ii) coordinate in advance with all regional planning committees, as identified in §90.527 of this chapter, with jurisdiction within 120 kilometers (75 miles) of the base or fixed station.
- (d) The following power and antenna height requirements apply to stations transmitting in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz and 2180-2200 MHz bands:
- (1) The power of each fixed or base station transmitting in the 1995-2000 MHz, 2110-2155 MHz, 2155-2180 MHz or 2180-2200 MHz band and located in any county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, is limited to:
 - (i) An equivalent isotropically radiated power (EIRP) of 3280 watts when transmitting with an emission bandwidth of 1 MHz or less;
 - (ii) An EIRP of 3280 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.
 - (2) The power of each fixed or base station transmitting in the 1995-2000 MHz, the 2110-2155 MHz 2155-2180 MHz band, or 2180-2200 MHz band and situated in any geographic location other than that described in paragraph (d)(1) of this section is limited to:
 - (i) An equivalent isotropically radiated power (EIRP) of 1640 watts when transmitting with an emission bandwidth of 1 MHz or less;
 - (ii) An EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.
 - (3) A licensee operating a base or fixed station in the 2110-2155 MHz band utilizing a power greater than 1640 watts EIRP and greater than 1640 watts/MHz EIRP must coordinate such operations in advance with all Government and non-Government satellite entities in the 2025-2110 MHz band. A licensee operating a base or fixed station in the 2110-2180 MHz band utilizing power greater than 1640 watts EIRP and greater than 1640 watts/MHz EIRP must be coordinated in advance with the following licensees authorized to operate within 120 kilometers (75 miles) of the base or fixed station operating in this band: All Broadband Radio Service (BRS) licensees authorized under this part in the 2155-2160 MHz band and all advanced wireless services (AWS) licensees authorized to operate on adjacent frequency blocks in the 2110-2180 MHz band.
 - (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating

in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(5) Equipment employed must be authorized in accordance with the provisions of §24.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

(6) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

(7) Fixed, mobile, and portable (hand-held) stations operating in the 2000-2020 MHz band are limited to 2 watts EIRP, except that the total power of any portion of an emission that falls within the 2000-2005 MHz band may not exceed 5 milliwatts. A licensee of AWS-4 authority may enter into private operator-to-operator agreements with all 1995-2000 MHz licensees to operate in 2000-2005 MHz at power levels above 5 milliwatts EIRP; except the total power of the AWS-4 mobile emissions may not exceed 2 watts EIRP.

(8) A licensee operating a base or fixed station in the 2180-2200 MHz band utilizing a power greater than 1640 watts EIRP and greater than 1640 watts/MHz EIRP must be coordinated in advance with all AWS licensees authorized to operate on adjacent frequency blocks in the 2180-2200 MHz band.

(9) Fixed, mobile and portable (hand-held) stations operating in the 1915-1920 MHz band are limited to 300 milliwatts EIRP.

(10) A licensee operating a base or fixed station in the 1995-2000 MHz band utilizing a power greater than 1640 watts EIRP and greater than 1640 watts/MHz EIRP must be coordinated in advance with all PCS G Block licensees authorized to operate on adjacent frequency blocks in the 1990-1995 MHz band within 120 kilometers of the base or fixed station operating in this band.

§ 90.542 Broadband transmitting power limits.

- (a) The following power limits apply to the 758-768/788-798 MHz band:
- (1) Fixed and base stations transmitting a signal in the 758-768 MHz band with an emission bandwidth of 1 MHz or less must not exceed an ERP of 1000 watts and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts ERP in accordance with Table 1 of this section.
 - (2) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal in the 758-768 MHz band with an emission bandwidth of 1 MHz or less must not exceed an ERP of 2000 watts and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts ERP in accordance with Table 2 of this section.
 - (3) Fixed and base stations transmitting a signal in the 758-768 MHz band with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP accordance with Table 3 of this section.
 - (4) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal in the 758-768 MHz band with an emission bandwidth greater than 1 MHz must not exceed an ERP of 2000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts/MHz ERP in accordance with Table 4 of this section.
 - (5) Licensees of fixed or base stations transmitting a signal in the 758-768 MHz band at an ERP greater than 1000 watts must comply with the provisions set forth in paragraph (b) of this section.
 - (6) Control stations and mobile stations transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 30 watts ERP.
 - (7) Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.
 - (8) For transmissions in the 758-768 MHz and 788-798 MHz bands, licensees may employ equipment operating in compliance with either of the following measurement techniques:
 - (i) The maximum composite transmit power shall be measured over any interval of continuous transmission using instrumentation calibrated in terms of RMS-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, etc., so as to obtain a true maximum composite measurement for the emission in question over the full bandwidth of the channel.
 - (ii) A Commission-approved average power technique.

Table 1 to §90.542(a)—Permissible Power and Antenna Heights for Base and Fixed Stations in the 758-768 MHz Band Transmitting a Signal With an Emission Bandwidth of 1 MHz or Less

| Antenna height (AAT) in meters (feet) | Effective radiated power (ERP) (watts) |
|--|---|
| Above 1372 (4500) | 65 |
| Above 1220 (4000) To 1372 (4500) | 70 |
| Above 1067 (3500) To 1220 (4000) | 75 |
| Above 915 (3000) To 1067 (3500) | 100 |
| Above 763 (2500) To 915 (3000) | 140 |
| Above 610 (2000) To 763 (2500) | 200 |
| Above 458 (1500) To 610 (2000) | 350 |
| Above 305 (1000) To 458 (1500) | 600 |
| Up to 305 (1000) | 1000 |

Table 2 to §90.542(a)—Permissible Power and Antenna Heights for Base and Fixed Stations in the 758-768 MHz Band Transmitting a Signal With an Emission Bandwidth of 1 MHz or Less

| Antenna height (AAT) in meters (feet) | Effective radiated power (ERP) (watts) |
|--|---|
| Above 1372 (4500) | 130 |
| Above 1220 (4000) To 1372 (4500) | 140 |
| Above 1067 (3500) To 1220 (4000) | 150 |
| Above 915 (3000) To 1067 (3500) | 200 |
| Above 763 (2500) To 915 (3000) | 280 |
| Above 610 (2000) To 763 (2500) | 400 |
| Above 458 (1500) To 610 (2000) | 700 |
| Above 305 (1000) To 458 (1500) | 1200 |
| Up to 305 (1000) | 2000 |

Table 3 to §90.542(a)—Permissible Power and Antenna Heights for Base and Fixed Stations in the 758-768 MHz Band Transmitting a Signal With an Emission Bandwidth Greater Than 1 MHz

| Antenna height (AAT) in meters (feet) | Effective radiated power (ERP) per MHz (watts/MHz) |
|--|---|
| Above 1372 (4500) | 65 |
| Above 1220 (4000) To 1372 (4500) | 70 |
| Above 1067 (3500) To 1220 (4000) | 75 |
| Above 915 (3000) To 1067 (3500) | 100 |
| Above 763 (2500) To 915 (3000) | 140 |
| Above 610 (2000) To 763 (2500) | 200 |
| Above 458 (1500) To 610 (2000) | 350 |
| Above 305 (1000) To 458 (1500) | 600 |
| Up to 305 (1000) | 1000 |

Table 4 to §90.542(a)—Permissible Power and Antenna Heights for Base and Fixed Stations in the 758-768 MHz Band Transmitting a Signal With an Emission Bandwidth Greater Than 1 MHz

| Antenna height (AAT) in meters (feet) | Effective radiated power (ERP) per MHz (watts/MHz) |
|--|---|
| Above 1372 (4500) | 130 |
| Above 1220 (4000) To 1372 (4500) | 140 |
| Above 1067 (3500) To 1220 (4000) | 150 |
| Above 915 (3000) To 1067 (3500) | 200 |
| Above 763 (2500) To 915 (3000) | 280 |
| Above 610 (2000) To 763 (2500) | 400 |
| Above 458 (1500) To 610 (2000) | 700 |
| Above 305 (1000) To 458 (1500) | 1200 |
| Up to 305 (1000) | 2000 |

(b) For base and fixed stations operating in the 758-768 MHz band in accordance with the provisions of paragraph (a)(5) of this section, the power flux density that would be produced by such stations through a combination of antenna height and vertical gain pattern must not exceed 3000 microwatts per square meter on the ground over the area extending to 1 km from the base of the antenna mounting structure.

§90.635 Limitations on power and antenna height

- (a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.
- (b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Table—Equivalent Power and Antenna Heights for Base Stations in the 851-869 MHz and 935-940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

| Antenna height (ATT) meters (feet) | Effective radiated power (watts) |
|--------------------------------------|----------------------------------|
| Above 1,372 (4,500) | 65 |
| Above 1,220 (4,000) to 1,372 (4,500) | 70 |
| Above 1,067 (3,500) to 1,220 (4,000) | 75 |
| Above 915 (3,000) to 1,067 (3,500) | 100 |
| Above 763 (2,500) to 915 (3,000) | 140 |
| Above 610 (2,000) to 763 (2,500) | 200 |
| Above 458 (1,500) to 610 (2,000) | 350 |
| Above 305 (1,000) to 458 (1,500) | 600 |
| Up to 305 (1,000) | 1,000 |

ISED Rules

Test Requirements:

RSS-119

5. Transmitter and Receiver Specifications

5.4 Transmitter Output Power

The output power shall be within ± 1 dB of the manufacturer's rated power listed in the equipment specifications.

The transmitter output power limits set forth in Table 2 will come into force upon the publication of Issue 12 of this standard and will apply to newly certified equipment.

| Frequency Bands (MHz) | Transmitter Output Power (W) | |
|---|------------------------------|--------------------------------------|
| | Base/Fixed Equipment | Mobile Equipment |
| 27.41-28 and 29.7-50 | 300 | 30 |
| 72-76 | No limit | 1 |
| 138-174 | 110 | 60 |
| 217-218 and 219-220 | 110 | 30 |
| 220-222 | See SRSP-512 for ERP limit | 50 |
| 406.1-430 and 450-470 | 110 | 60 |
| 768-776 and 798-806 | See SRSP-511 for ERP limit | 30 3 W ERP for portable equipment |
| 806-821/851-866 and 821-824/866-869 | 110 | 30 |
| 896-901/935-940 | 110 | 60 |
| 929-930/931-932 | 110 | 30 |
| 928-929/952-953 and 932-932.5/941-941.5 | 110 | 30 |
| 932.5-935/941.5-944 | 110 | 30 |

RSS-130

4. Transmitter and Receiver Standard Specifications

4.4 Transmitter Output Power and Equivalent Isotropic Radiated Power (e.i.r.p.)

The transmitter output power shall be measured in terms of average power.

For base and fixed equipment, refer to SRSP-518 for power limits.

The e.i.r.p. shall not exceed 50 watts for mobile equipment or for outdoor fixed subscriber equipment, nor shall it exceed 5 watts for portable equipment or for indoor fixed subscriber equipment.

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

RSS-131**6. Equipment standard specifications for zone enhancers working with equipment certified under RSS-119****6.2 Output power**

The output power of the zone enhancer shall comply with the transmitter output power of the equipment with which it is to be used (as specified in RSS-119) and shall be within ± 1.0 dB of the zone enhancer manufacturer's rated output power.

RSS-132**5. Transmitter Standard Specifications****5.4 Transmitter Output Power and Equivalent Isotropically Radiated Power**

The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts. Refer to SRSP-503 for base station e.i.r.p. limits.

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

RSS-133**6. Transmitter and Receiver Standard Specifications****6.4 Transmitter Output Power and Equivalent Isotropically Radiated Power**

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510.

In addition, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

RSS-139**6. Transmitter Standard Specifications****6.5 Transmitter Output Power**

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt.

Consult SRSP-513 for e.i.r.p. limits on fixed and base stations operating in the band 2110-2180 MHz.

In addition, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

RSS-140**4. Transmitter Specifications****4.3 Transmitter Output Power**

The equivalent radiated power (e.r.p.) for control and mobile equipment shall not exceed 30 W.

The e.r.p. for portable equipment including handheld devices shall not exceed 3 W.

Fixed and base station equipment shall comply with the e.r.p. limits in SRSP-540.

In addition, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

Test Procedures:

Measurements were in accordance with the test methods section 3.5.2 of KDB 935210 D05 v01r02.

- a) Connect a signal generator to the input of the EUT.
- b) Configure to generate the AWGN (broadband) test signal.
- c) The frequency of the signal generator shall be set to the frequency f_0 as determined from 3.3.
- d) Connect a spectrum analyzer or power meter to the output of the EUT using appropriate attenuation as necessary.
- e) Set the signal generator output power to a level that produces an EUT output level that is just below the AGC threshold (see 3.2), but not more than 0.5 dB below.
- f) Measure and record the output power of the EUT; use 3.5.3 or 3.5.4 for power measurement.
- g) Remove the EUT from the measurement setup. Using the same signal generator settings, repeat the power measurement at the signal generator port, which was used as the input signal to the EUT, and record as the input power. EUT gain may be calculated as described in 3.5.5.
- h) Repeat steps f) and g) with input signal amplitude set to 3 dB above the AGC threshold level.
- i) Repeat steps e) to h) with the narrowband test signal.
- j) Repeat steps e) to i) for all frequency bands authorized for use by the EUT.

Power measurement Method :

Guidance for performing input/output power measurements using a spectrum or signal analyzer is provided in 5.2 of KDB Publication 971168 D01 v03r01.

EUT**Signal Generator****NoteBook****Attenuator****Spectrum Analyzer****Block Diagram 1. RF Power Output Test Setup**

Test Results:

| Input Signal | Input Level | Maximum Amp Gain |
|------------------|-------------|------------------|
| 700LTE, FirstNet | | |
| 800IDEN, 850CEL | | |
| 800 MHz PLMR | -20 dBm | 53 dB |
| 1900PCS | | |
| AWS13 | | |

*Note: Due to EUT's ALC function (Auto Level Control), even if input signal is increased, the same output power is transmit.

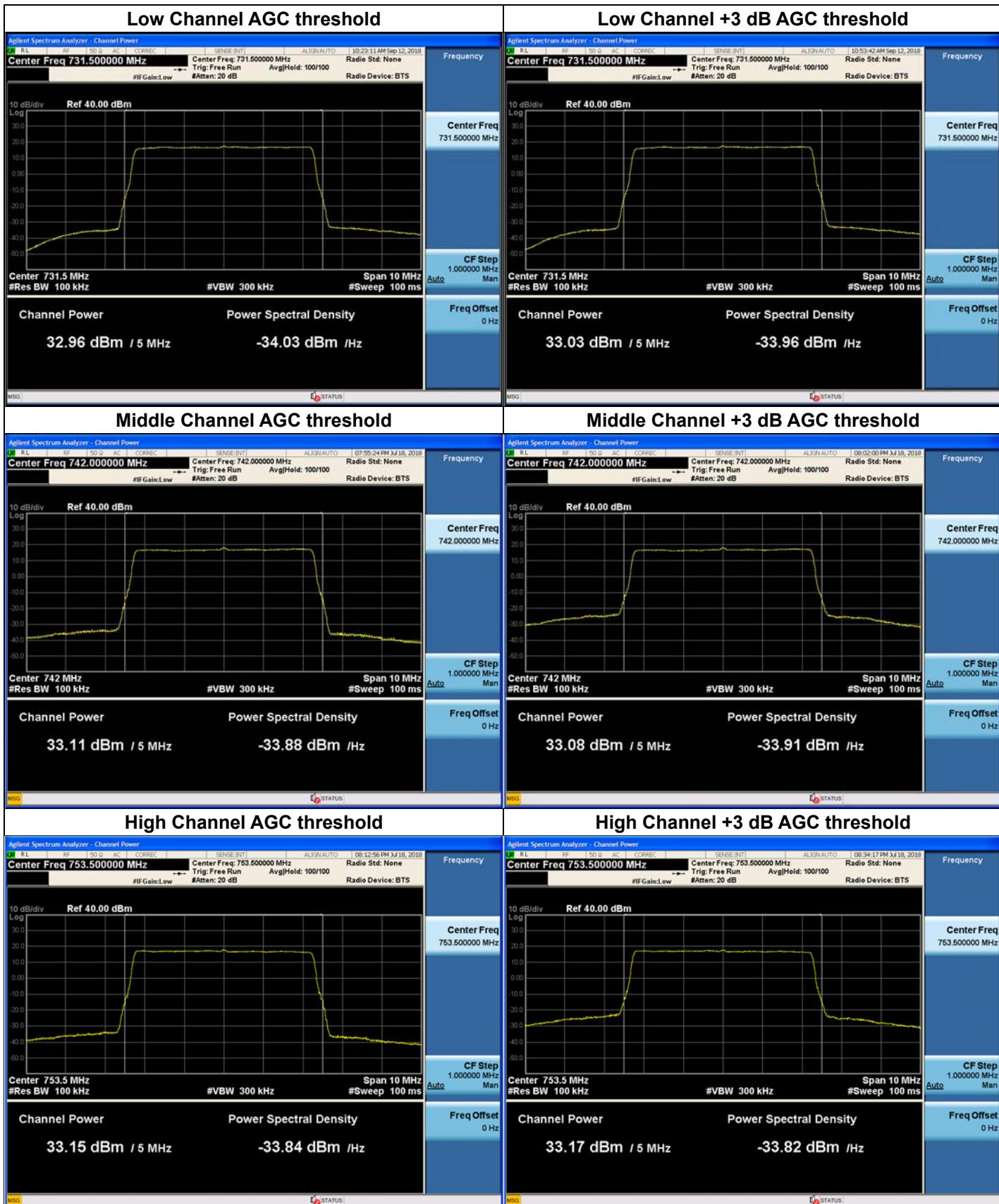
[Downlink_700 LTE]

| 700 LTE Band | Channel | Frequency (MHz) | Output Power | |
|---|---------|--------------------|--------------|-------|
| | | | (dBm) | (W) |
| LTE 5 MHz AGC threshold | Low | 731.50 | 32.96 | 1.976 |
| | Middle | 742.00 | 33.11 | 2.046 |
| | High | 753.50 | 33.15 | 2.065 |
| LTE 5 MHz +3dBm above the AGC threshold | Low | 731.50 | 33.03 | 2.010 |
| | Middle | 742.00 | 33.08 | 2.032 |
| | High | 753.50 | 33.17 | 2.075 |
| LTE 10 MHz AGC threshold | Low | 734.00 | 32.93 | 1.961 |
| | Middle | 741.00 | 33.20 | 2.089 |
| | High | 751.00 | 32.99 | 1.991 |
| LTE 10 MHz +3dBm above the AGC threshold | Low | 734.00 | 33.13 | 2.058 |
| | Middle | 741.00 | 33.13 | 2.056 |
| | High | 751.00 | 33.21 | 2.094 |

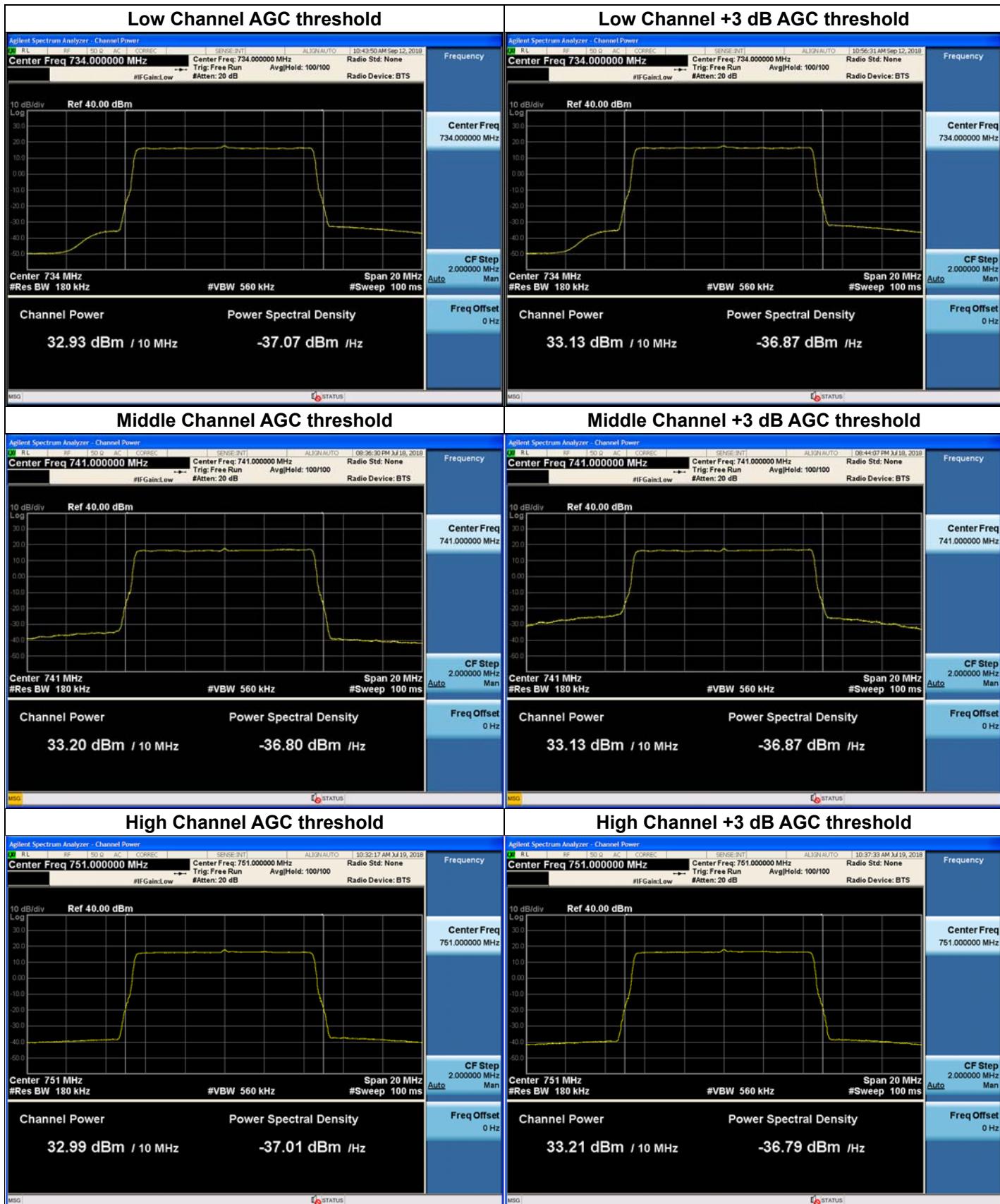
[Downlink_FirstNet]

| FirstNet Band | Channel | Frequency (MHz) | Output Power | |
|---|---------|--------------------|--------------|-------|
| | | | (dBm) | (W) |
| LTE 5 MHz AGC threshold | Low | 760.50 | 32.89 | 1.945 |
| | High | 765.50 | 32.81 | 1.910 |
| LTE 5 MHz +3dBm above the AGC threshold | Low | 760.50 | 32.90 | 1.950 |
| | High | 765.50 | 32.79 | 1.901 |
| LTE 10 MHz AGC threshold | Middle | 763.00 | 32.96 | 1.977 |
| LTE 10 MHz +3dBm above the AGC threshold | Middle | 763.00 | 32.88 | 1.941 |

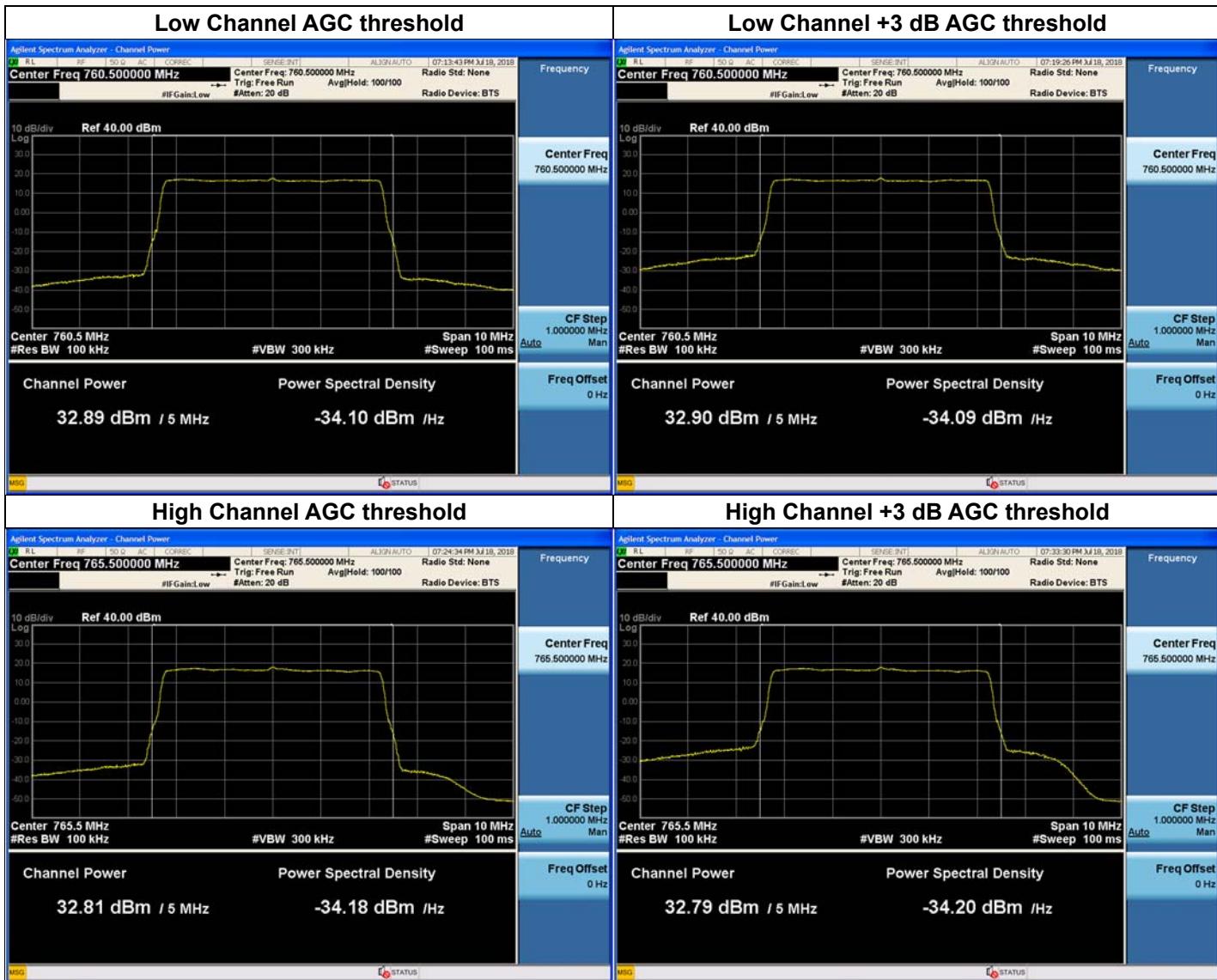
Plots of RF Output Power for LTE 5 MHz_700 LTE Band



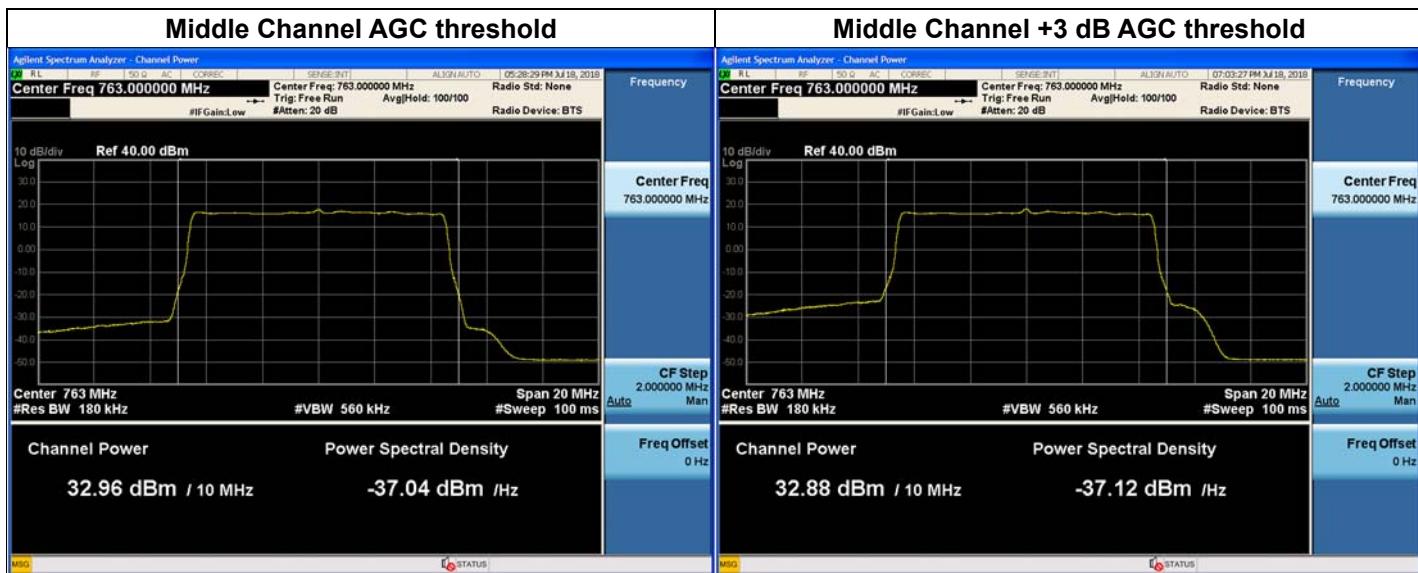
Plots of RF Output Power for LTE 10 MHz_700 LTE Band



Plots of RF Output Power for LTE 5 MHz_FirstNet Band



Plots of RF Output Power for LTE 10 MHz_FirstNet Band



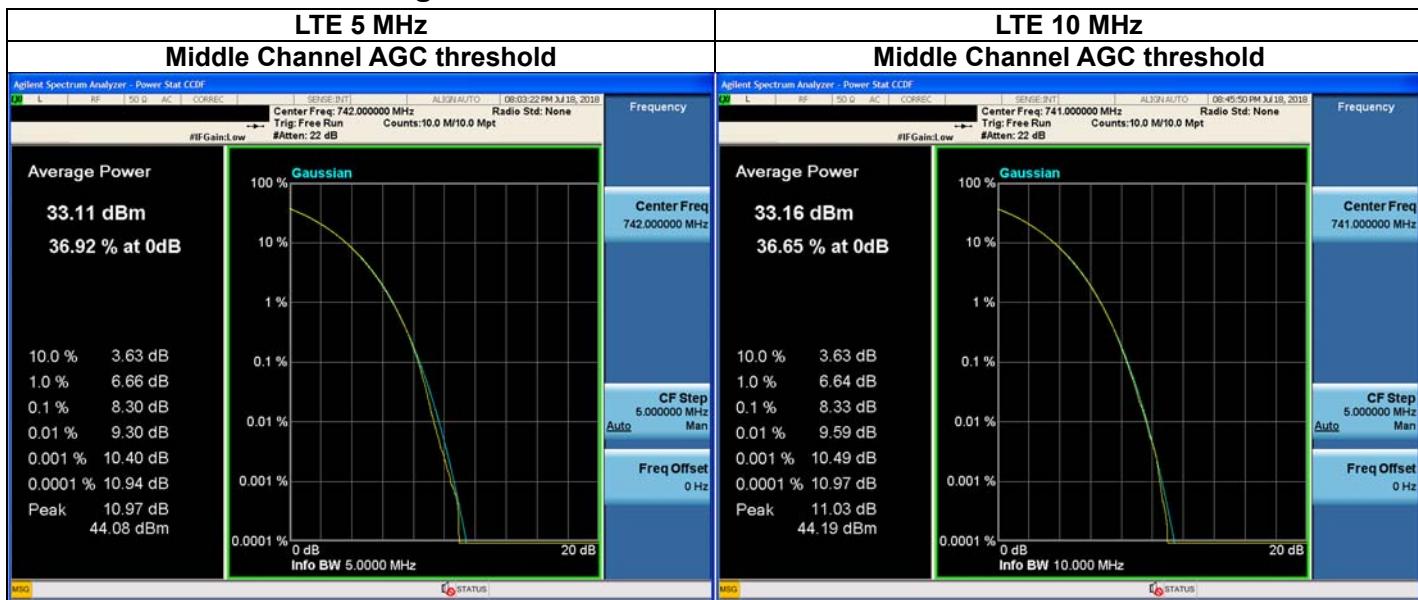
Peak-to-Average Ratio (PAR)_700 LTE

| 700 LTE Band | Channel | Frequency (MHz) | PAR (dB) |
|--------------------------|---------|-----------------|----------|
| LTE 5 MHz AGC threshold | Middle | 742.00 | 8.30 |
| LTE 10 MHz AGC threshold | Middle | 741.00 | 8.33 |

Peak-to-Average Ratio (PAR)_FirstNet

| FirstNet Band | Channel | Frequency (MHz) | PAR (dB) |
|--------------------------|---------|-----------------|----------|
| LTE 5 MHz AGC threshold | Middle | 763.00 | 8.25 |
| LTE 10 MHz AGC threshold | Middle | 763.00 | 8.22 |

Plots of Peak-to-Average Ratio for 700 LTE Band



Plots of Peak-to-Average Ratio for FirstNet Band



[Downlink_800 IDEN]

| 800 IDEN Band | Channel | Frequency (MHz) | Output Power | |
|--|---------|--------------------|--------------|-------|
| | | | (dBm) | (W) |
| LTE 5 MHz AGC threshold | Low | 864.50 | 33.00 | 1.995 |
| | High | 866.50 | 33.39 | 2.183 |
| LTE 5 MHz +3dBm above the AGC threshold | Low | 864.50 | 33.11 | 2.046 |
| | High | 866.50 | 33.35 | 2.163 |
| CDMA AGC threshold | Low | 863.25 | 33.10 | 2.042 |
| | Middle | 865.50 | 32.95 | 1.972 |
| | High | 867.75 | 32.96 | 1.977 |
| CDMA +3dBm above the AGC threshold | Low | 863.25 | 33.13 | 2.056 |
| | Middle | 865.50 | 32.94 | 1.968 |
| | High | 867.75 | 33.00 | 1.995 |

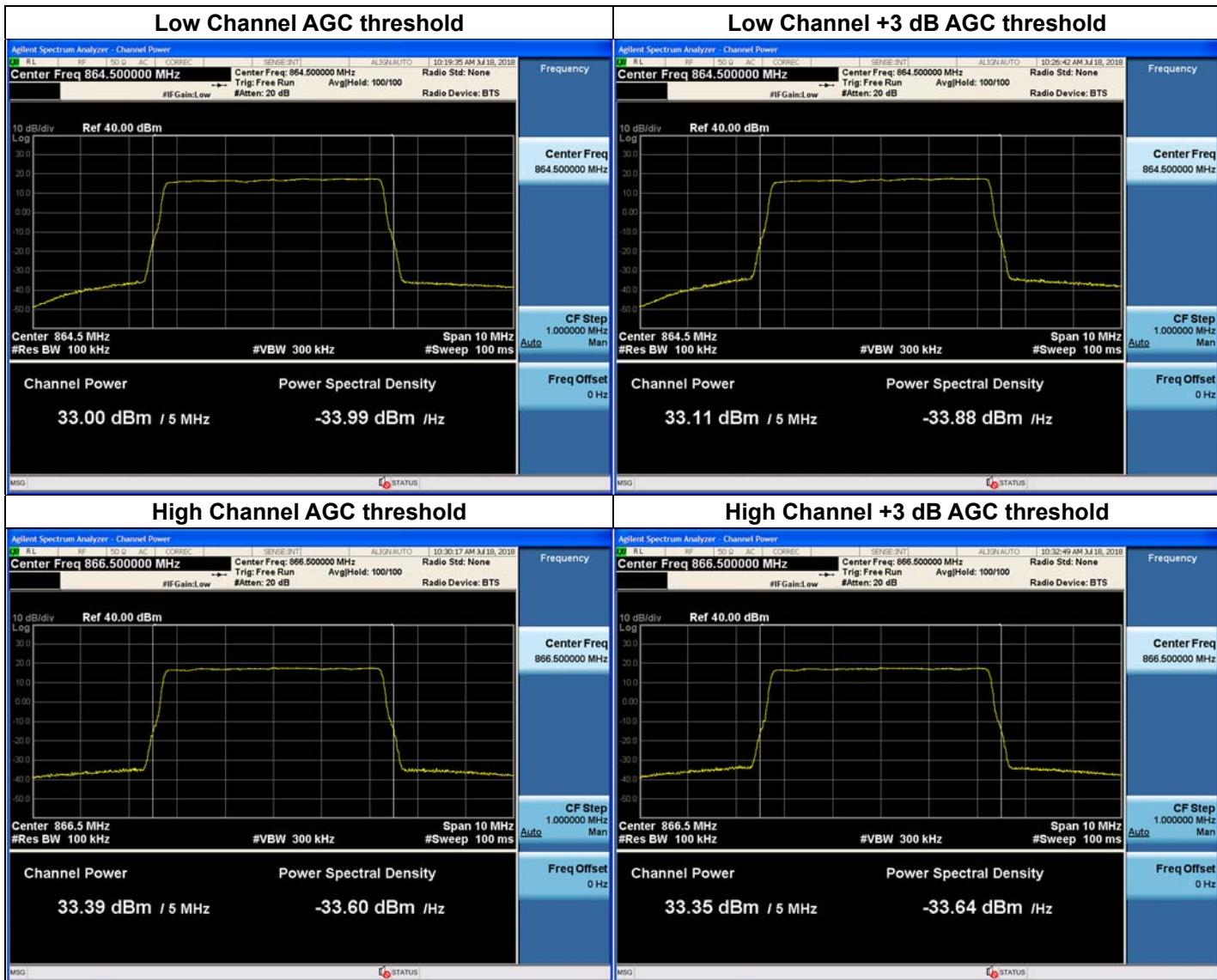
[Downlink_850 CEL]

| 850 CEL Band | Channel | Frequency (MHz) | Output Power | |
|---|---------|--------------------|--------------|-------|
| | | | (dBm) | (W) |
| LTE 5 MHz AGC threshold | Low | 871.50 | 33.31 | 2.143 |
| | Middle | 881.50 | 32.89 | 1.945 |
| | High | 891.50 | 32.99 | 1.991 |
| LTE 5 MHz +3dBm above the AGC threshold | Low | 871.50 | 33.29 | 2.133 |
| | Middle | 881.50 | 33.02 | 2.004 |
| | High | 891.50 | 32.94 | 1.969 |
| LTE 10 MHz AGC threshold | Low | 874.00 | 33.19 | 2.084 |
| | Middle | 881.50 | 32.79 | 1.901 |
| | High | 889.00 | 33.20 | 2.089 |
| LTE 10 MHz +3dBm above the AGC threshold | Low | 874.00 | 33.17 | 2.075 |
| | Middle | 881.50 | 32.85 | 1.928 |
| | High | 889.00 | 33.17 | 2.075 |
| WCDMA AGC threshold | Low | 871.50 | 33.23 | 2.104 |
| | Middle | 881.50 | 32.78 | 1.897 |
| | High | 891.50 | 32.91 | 1.954 |
| WCDMA +3dBm above the AGC threshold | Low | 871.50 | 33.21 | 2.094 |
| | Middle | 881.50 | 32.91 | 1.954 |
| | High | 891.50 | 32.89 | 1.945 |
| CDMA AGC threshold | Low | 870.25 | 33.19 | 2.084 |
| | Middle | 881.50 | 33.28 | 2.128 |
| | High | 892.75 | 32.98 | 1.986 |
| CDMA +3dBm above the AGC threshold | Low | 870.25 | 33.20 | 2.089 |
| | Middle | 881.50 | 33.27 | 2.123 |
| | High | 892.75 | 32.96 | 1.977 |

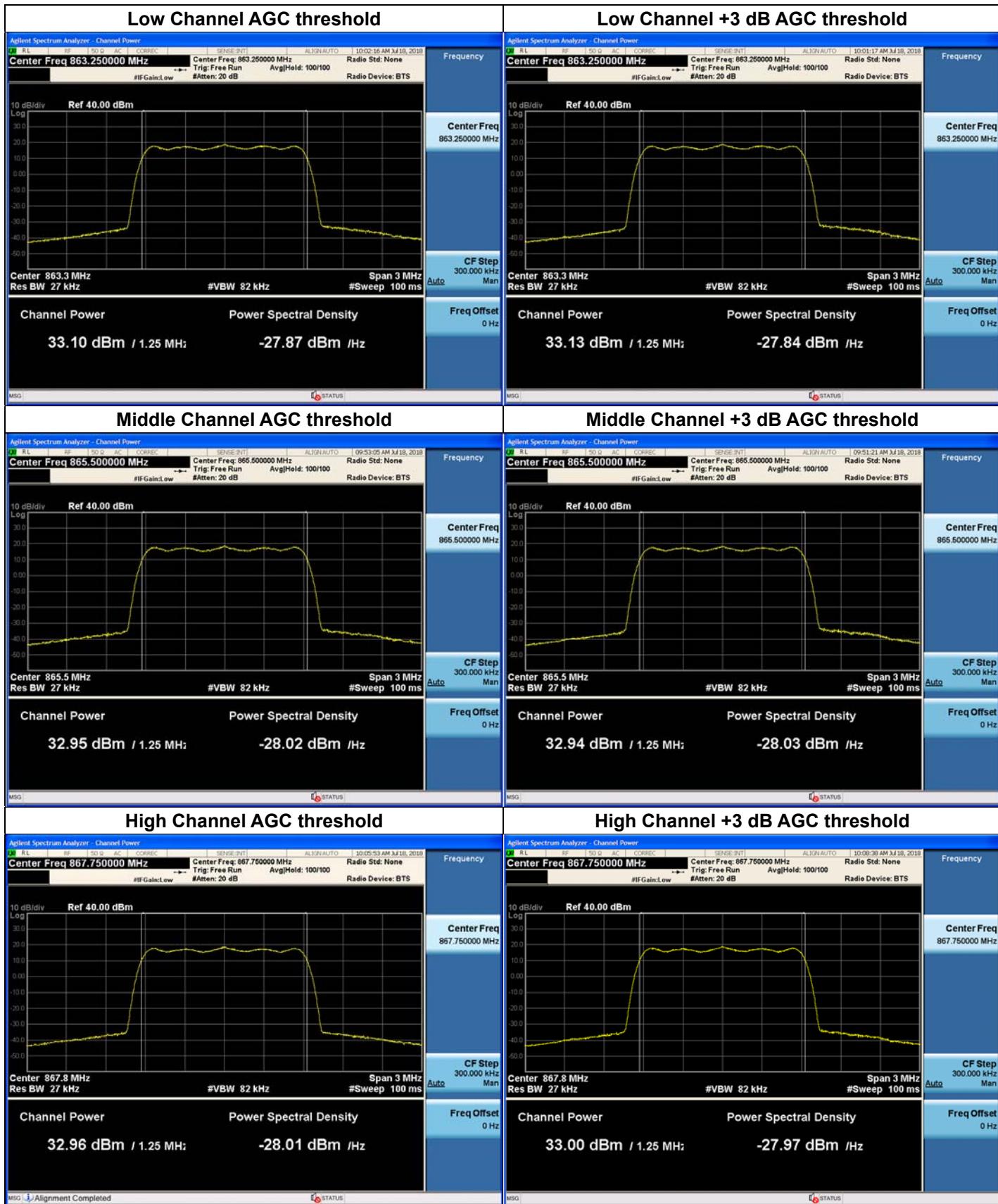
[Downlink_800 MHz PLMR]

| 800 MHz PLMR Band | Channel | Frequency (MHz) | Output Power | |
|---|----------------|----------------------------|---------------------|------------|
| | | | (dBm) | (W) |
| P25 Phase 2 | Low | 862.003125 | 32.80 | 1.905 |
| | Middle | 865.500000 | 32.96 | 1.977 |
| | High | 868.996875 | 32.68 | 1.854 |
| P25 Phase 2 +3dB above the AGC threshold | Low | 862.003125 | 32.86 | 1.932 |
| | Middle | 865.500000 | 33.27 | 2.123 |
| | High | 868.996875 | 33.01 | 2.000 |

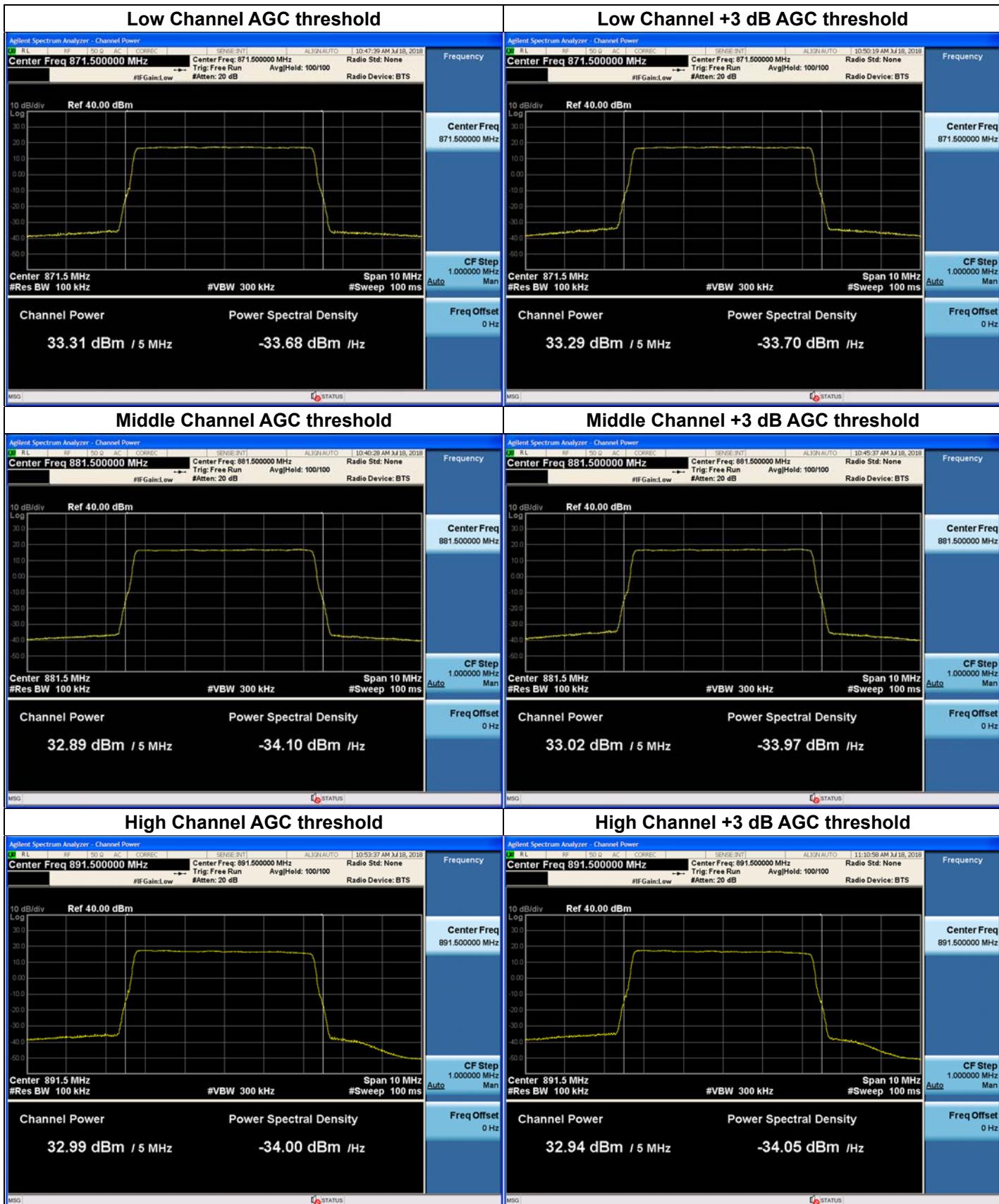
Plots of RF Output Power for LTE 5 MHz_800 IDEN Band



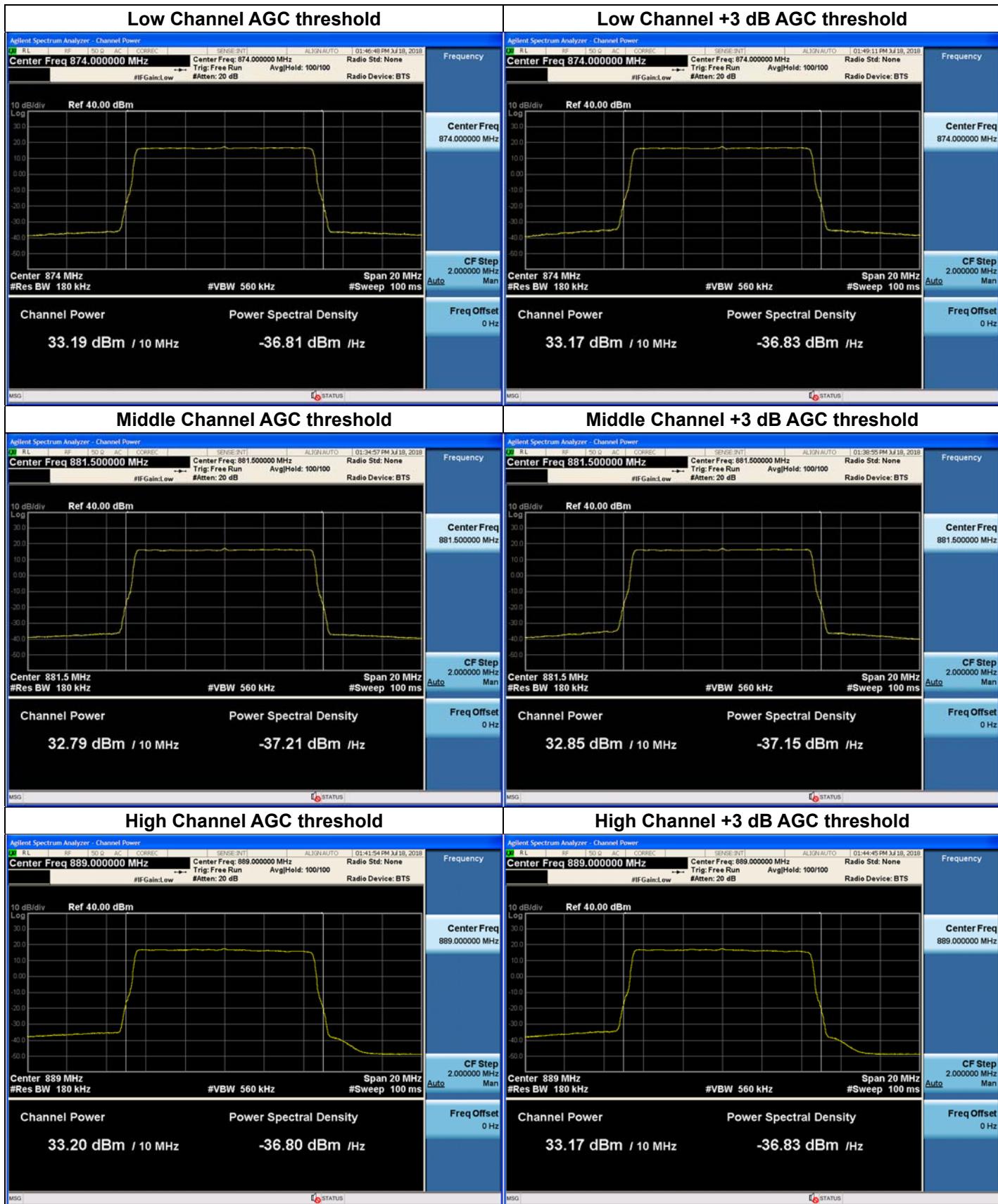
Plots of RF Output Power for CDMA_800 IDEN Band



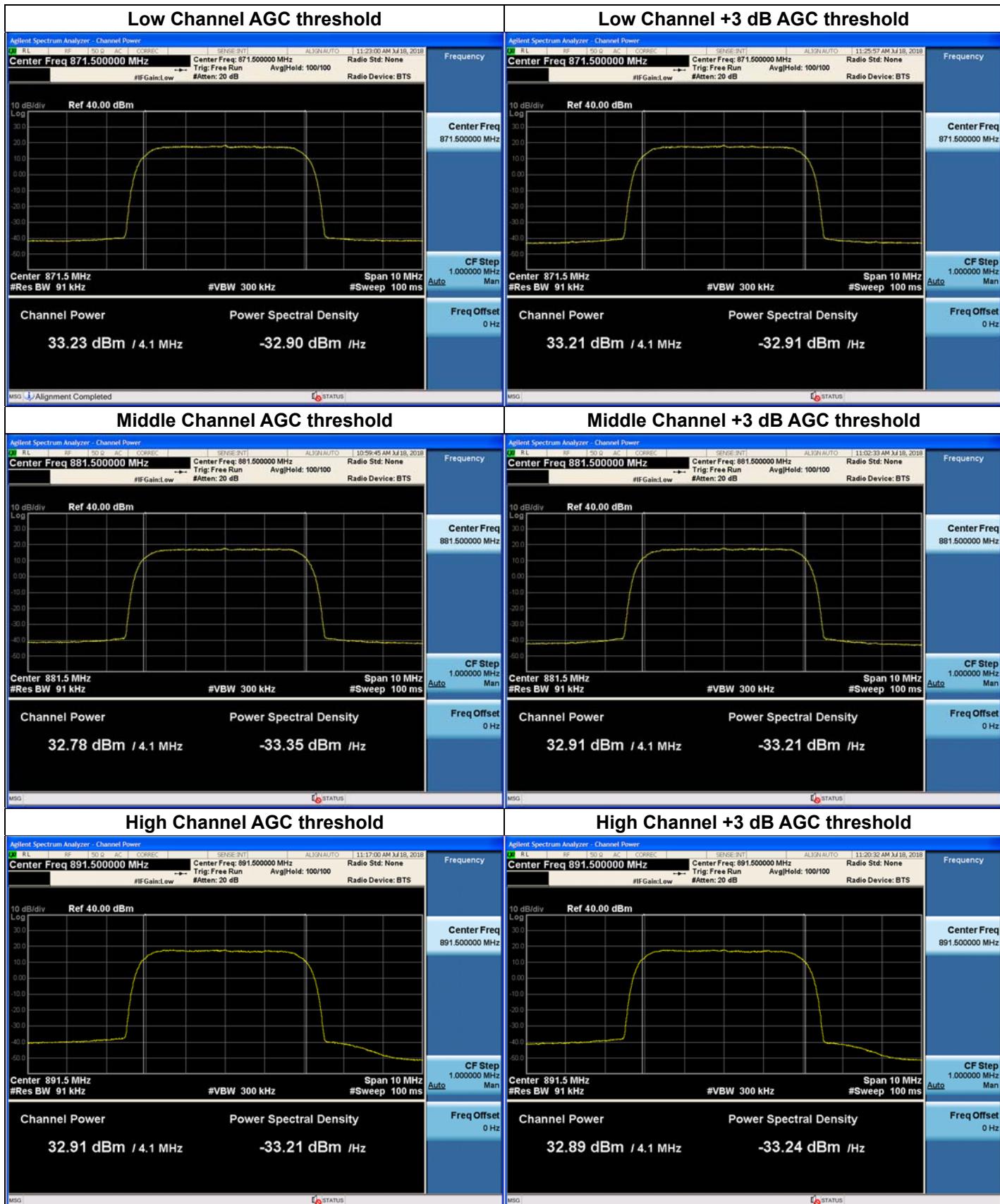
Plots of RF Output Power for LTE 5 MHz_850 CEL Band



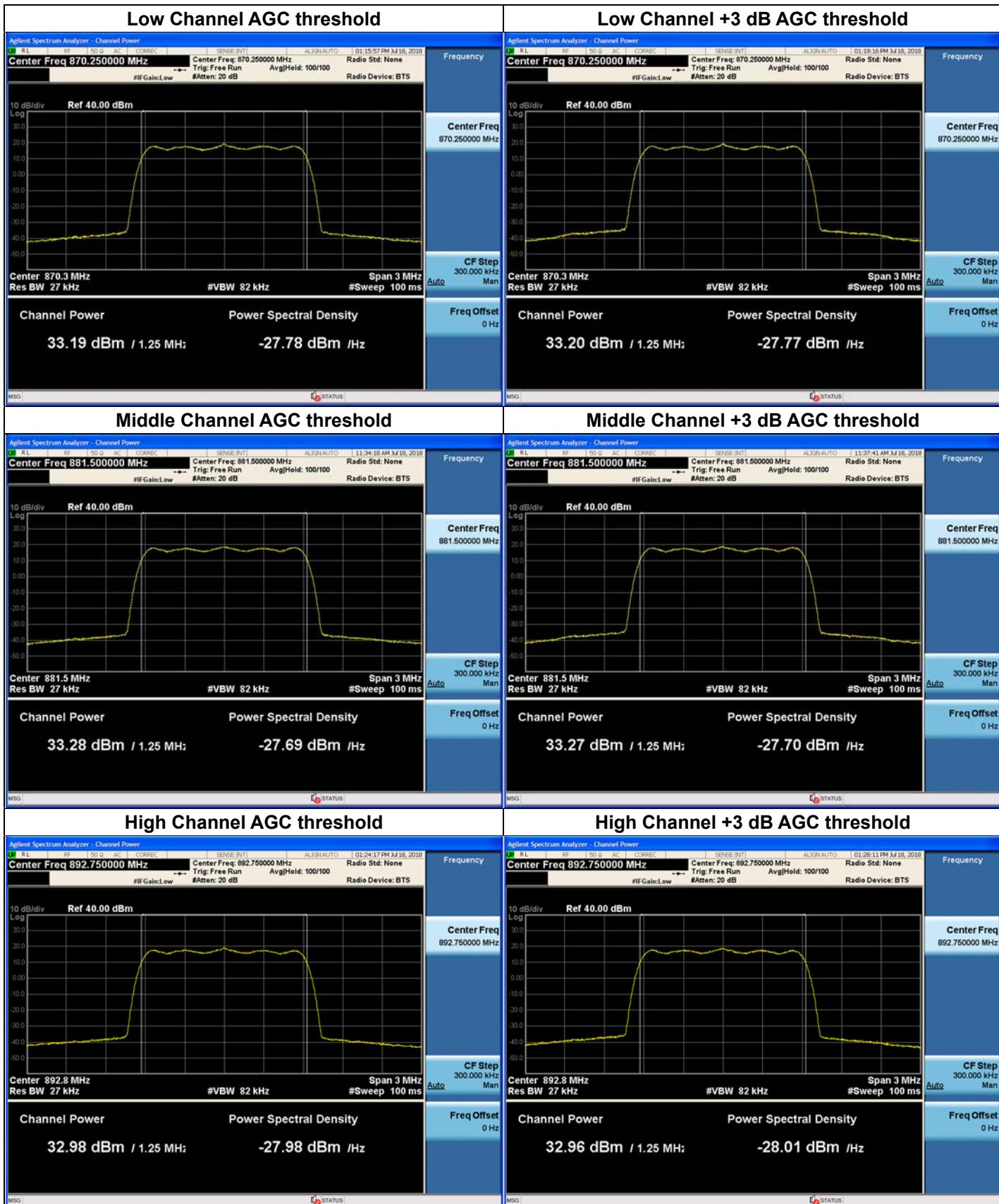
Plots of RF Output Power for LTE 10 MHz_850 CEL Band



Plots of RF Output Power for WCDMA_850 CEL Band



Plots of RF Output Power for CDMA_850 CEL Band



Plots of RF Output Power for P25 Phase2_800 MHz PLMR Band



Peak-to-Average Ratio (PAR)_800 IDEN Band

| 800 IDEN Band | Channel | Frequency (MHz) | PAR (dB) |
|----------------------------|---------|-----------------|----------|
| LTE 5 MHz AGC threshold | Middle | 865.50 | 8.29 |
| CDMA AGC threshold | Middle | 865.50 | 7.90 |

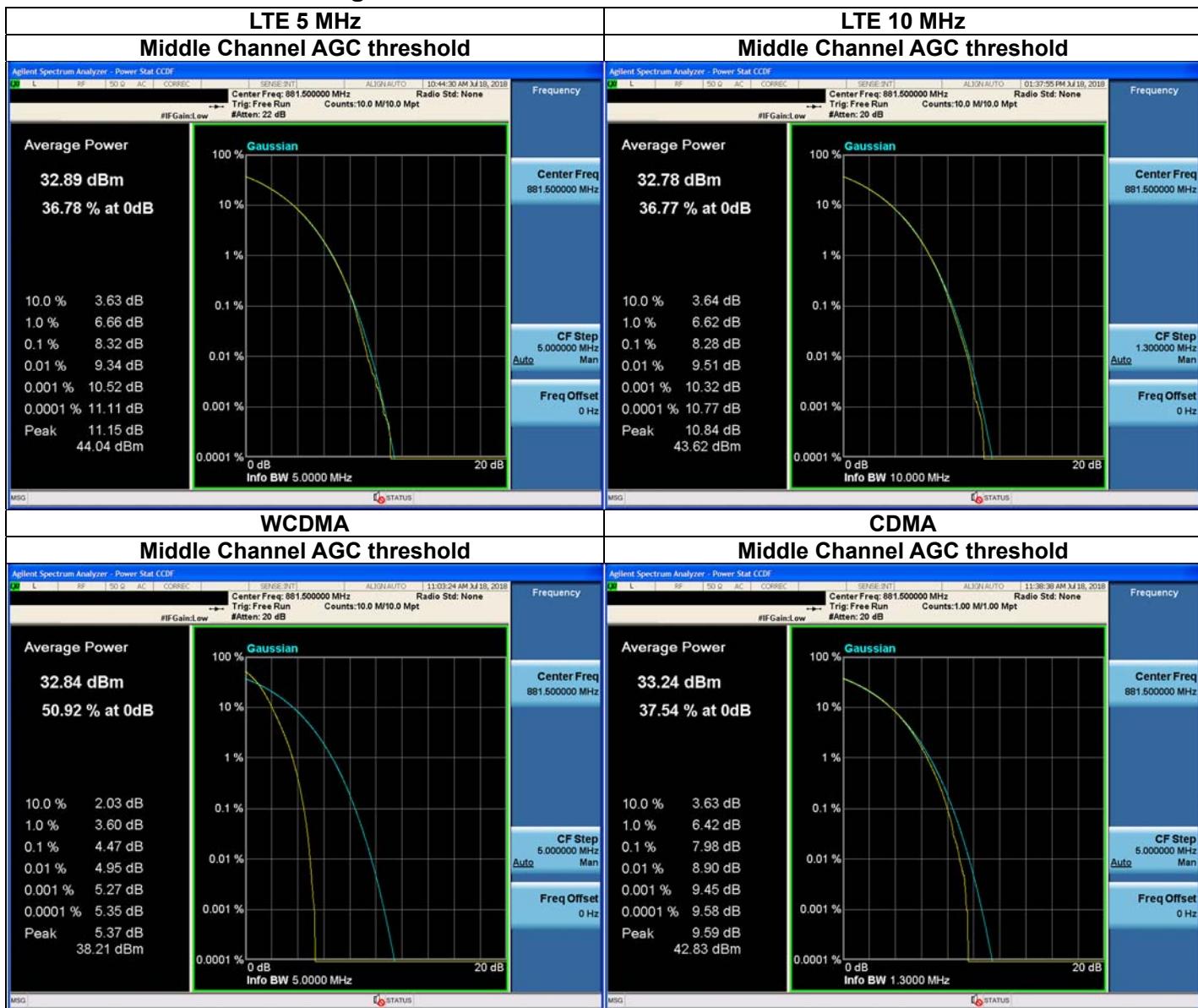
Peak-to-Average Ratio (PAR)_850 CEL

| 850 CEL Band | Channel | Frequency (MHz) | PAR (dB) |
|-----------------------------|---------|-----------------|----------|
| LTE 5 MHz AGC threshold | Middle | 881.50 | 8.32 |
| LTE 10 MHz AGC threshold | Middle | 881.50 | 8.28 |
| WCDMA AGC threshold | Middle | 881.50 | 4.47 |
| CDMA AGC threshold | Middle | 881.50 | 7.98 |

Plots of Peak-to-Average Ratio for 800 IDEN Band



Plots of Peak-to-Average Ratio for 850 CEL Band



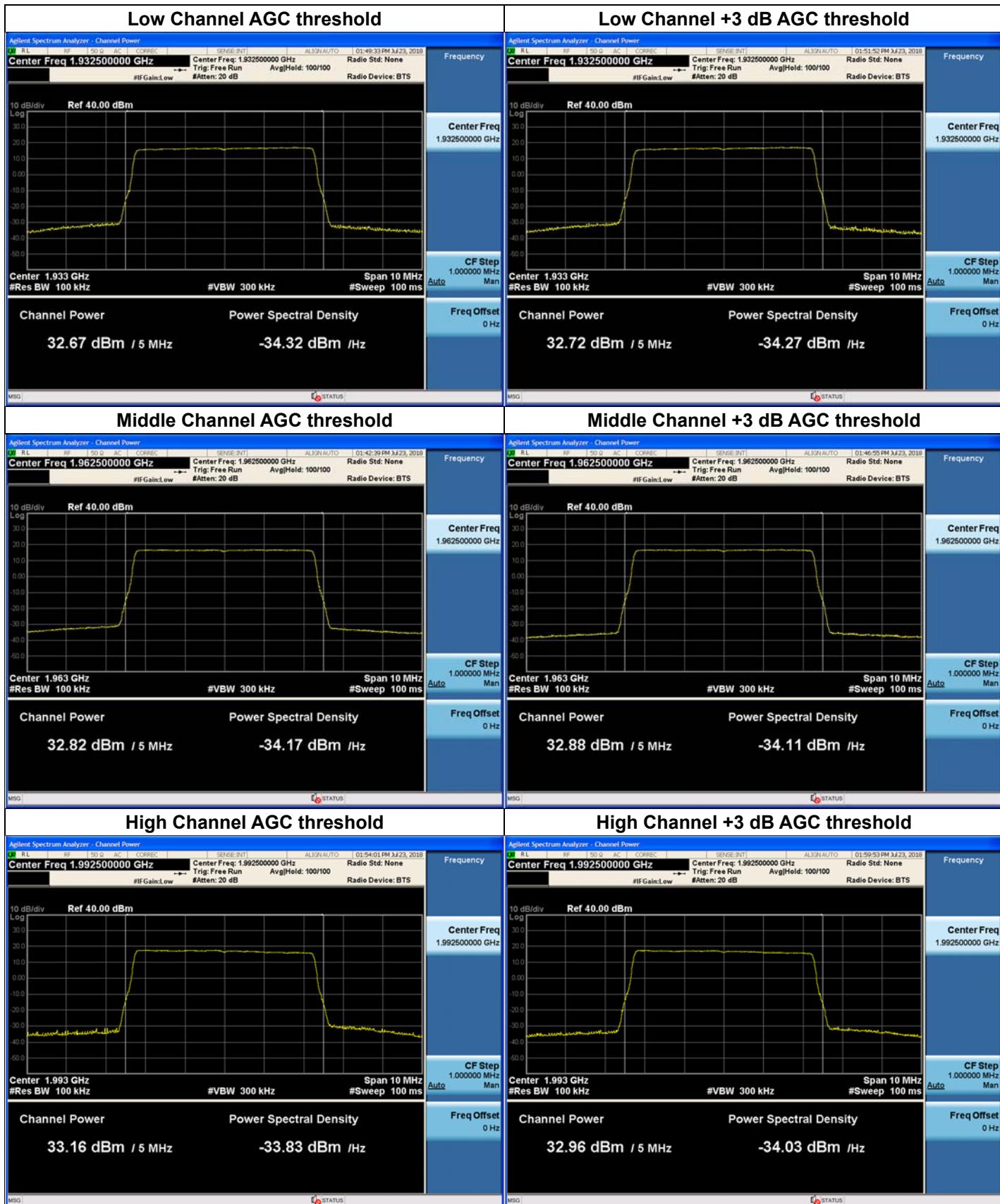
[Downlink_1900 PCS Band]

| 1900 PCS Band | Channel | Frequency (MHz) | Output Power | |
|---|----------------|----------------------------|---------------------|------------|
| | | | (dBm) | (W) |
| LTE 5 MHz AGC threshold | Low | 1932.50 | 32.67 | 1.849 |
| | Middle | 1962.50 | 32.82 | 1.914 |
| | High | 1992.50 | 33.16 | 2.070 |
| LTE 5 MHz +3 dB above the AGC threshold | Low | 1932.50 | 32.72 | 1.871 |
| | Middle | 1962.50 | 32.88 | 1.941 |
| | High | 1992.50 | 32.96 | 1.977 |
| LTE 10 MHz AGC threshold | Low | 1935.00 | 32.88 | 1.941 |
| | Middle | 1962.50 | 32.82 | 1.914 |
| | High | 1990.00 | 32.82 | 1.914 |
| LTE 10 MHz +3 dB above the AGC threshold | Low | 1935.00 | 32.82 | 1.914 |
| | Middle | 1962.50 | 33.05 | 2.018 |
| | High | 1990.00 | 33.04 | 2.014 |
| LTE 20 MHz AGC threshold | Low | 1940.00 | 32.90 | 1.950 |
| | Middle | 1962.50 | 32.78 | 1.897 |
| | High | 1985.00 | 33.12 | 2.051 |
| LTE 20 MHz +3 dB above the AGC threshold | Low | 1940.00 | 33.07 | 2.028 |
| | Middle | 1962.50 | 32.99 | 1.991 |
| | High | 1985.00 | 33.27 | 2.123 |
| WCDMA AGC threshold | Low | 1932.50 | 32.96 | 1.977 |
| | Middle | 1962.50 | 33.05 | 2.018 |
| | High | 1992.50 | 32.93 | 1.963 |
| WCDMA +3 dB above the AGC threshold | Low | 1932.50 | 32.88 | 1.941 |
| | Middle | 1962.50 | 33.34 | 2.158 |
| | High | 1992.50 | 32.79 | 1.901 |

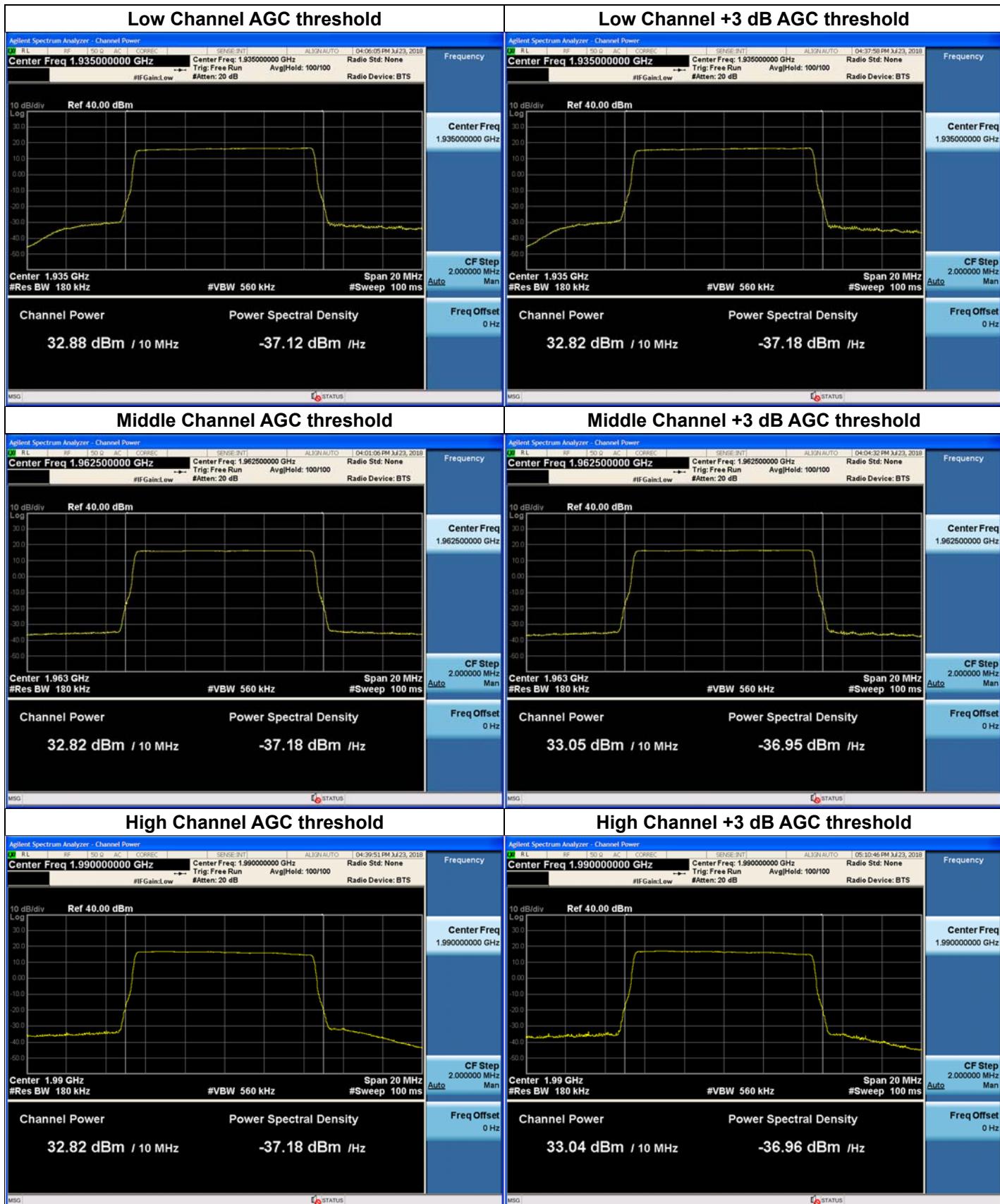
| 1900 PCS Band | Channel | Frequency (MHz) | Output Power | |
|---------------------------------------|----------------|----------------------------|---------------------|------------|
| | | | (dBm) | (W) |
| CDMA AGC threshold | Low | 1931.25 | 32.79 | 1.901 |
| | Middle | 1962.50 | 33.20 | 2.089 |
| | High | 1993.75 | 33.17 | 2.075 |
| CDMA +3 dB above the AGC threshold | Low | 1931.25 | 33.08 | 2.032 |
| | Middle | 1962.50 | 33.29 | 2.133 |
| | High | 1993.75 | 33.00 | 1.995 |
| GSM AGC threshold | Low | 1930.20 | 32.79 | 1.901 |
| | Middle | 1962.50 | 32.94 | 1.968 |
| | High | 1994.80 | 32.92 | 1.959 |
| GSM +3 dB above the AGC threshold | Low | 1930.20 | 32.68 | 1.854 |
| | Middle | 1962.50 | 33.14 | 2.061 |
| | High | 1994.80 | 32.97 | 1.982 |

*Note: We have done CDMA and 1xEVDO / GSM and EDGE modulation test in technology. Test results are only attached worst cases.

Plots of RF Output Power for 1900 PCS Band LTE 5 MHz



Plots of RF Output Power for 1900 PCS Band LTE 10 MHz



Plots of RF Output Power for 1900 PCS Band LTE 20 MHz

