HCT CO.,LTD
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
TEL: +82-31-645-6300 FAX: +82-31-645-6401

FCC / ISED REPORT

Certification

Applicant Name:
ADVANCED RF TECHNOLOGIES, INC

Address:
3116 WEST VANOWEN STREET, BURBANK,
CA 91505, USA

Date of Issue:
June 02, 2018

Location of test lab:
HCT CO., LTD.,
74, Seoicheon-ro 578beon-gil, Majang-myeon,
Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-RF-1805-FI001-R2

ISED Registration Number: 5944A-5

FCC ID:	**N52-PSR-78-9537A**
IC:	**6416A-PSR789537A**
APPLICANT:	**ADVANCED RF TECHNOLOGIES, INC**

Model: PSR-78-9537A

EUT Type: REPEATER

Frequency Range:

	Downlink (MHz)	Uplink (MHz)
PS 700	769 ~ 775 (for FCC) (768 ~ 769 Guard band) 768 ~ 775 (for ISED)	799 ~ 805 (for FCC) (798 ~ 799 Guard band) 798 ~ 805 (for ISED)
PS 800	851 ~ 861	806 ~ 816

Tx Output Power:

	Downlink (dBm)	Uplink (dBm)
PS 700	37	30
PS 800	37	30
PS 700 + PS 800	40 (37 + 37)	30

Date of Test: April 19, 2018 ~ April 27, 2018

FCC Rule Parts: CFR 47 Part 2, Part 90

IC Rules: RSS-Gen (Issue 5, April 2018), RSS-119 (Issue 12, May 2015),
RSS-131 (Issue 3, May 2017)

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 Rules under normal use and maintenance.

Report prepared by : Jae Ryang Do
Engineer of telecommunication testing center

Approved by : Jong Seok Lee
Manager of telecommunication testing center

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1805-FI001	May 24, 2018	- First Approval Report
HCT-RF-1805-FI001-R1	June 01, 2018	- Added missing rule part : §90.691 on emission mask section.(40 page) : §90.543(f) on unwanted conducted emissions section. (47 page) : §90.543 on radiated emission section (74 page). - Removed incorrect rule part : §90.219(e)(1) on radiated emission section(74 page) - Added the note to output power result that it meets the requirements of RSS-119 section 5.4 (14, 15 pages) - Changed the note about operating mode to describe the emission mask test bandwidth. (7 page)
HCT-RF-1805-FI001-R2	June 02, 2018	- Added the note about bandwidth information for emission mask test (42 page)

Table of Contents

1. GENERAL INFORMATION

1.1. APPLICANT INFORMATION

Company Name	ADVANCED RF TECHNOLOGIES, INC
Company Address	3116 WEST VANOWEN STREET, BURBANK, CA 91505, USA

1.2. PRODUCT INFORMATION

EUT Type	REPEATER
Power Supply	AC 100 V ~ 240 V
Frequency Range	

	Downlink (MHz)	Uplink (MHz)
PS 700	769 ~ 775 (for FCC) (768 ~ 769 Guard band) 768 ~ 775 (for ISED)	799 ~ 805 (for FCC) (798 ~ 799 Guard band) 798 ~ 805 (for ISED)
PS 800	851 ~ 861	806 ~ 816

Tx Output Power

	Downlink (dBm)	Uplink (dBm)
PS 700	37	30
PS 800	37	30
PS 700 + PS 800	40 (37 + 37)	30

Antenna Specification	Manufacturer does not provide an antenna.

1.3. TEST INFORMATION

FCC Rule Parts	CFR 47 Part 2, Part 90
IC Rules	RSS-Gen (Issue 5, April 2018), RSS-119 (Issue 12, May 2015), RSS-131 (Issue 3, May 2017)
Measurement standards	ANSI/TIA-603-E-2016, ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 935210 D05 v01r02, RSS-GEN, RSS-119, RSS-131
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-5)

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 July 07, 2015 (Registration Number: 90661).

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 90

Description	Reference		Result
	FCC	IC	
RF Output Power	§2.1046, §90.219 §90.541, §90.635	RSS-119 Section 5.4, RSS-131 Section 6.2, SRSP-502, SRSP-511	Compliant
Occupied Bandwidth	§2.1049	RSS-Gen, Section 6.6	Compliant
Out of Band Rejection	KDB 935210 D05 v01r02	-	Compliant
Noise Figure	§90.219(e)(2)	RSS-131, Section 6.4	Compliant
Emission Masks	§90.210	-	Compliant
Unwanted Conducted Emissions	§2.1051, §90.219, §90.543	RSS-131, Section 6.3 RSS-131, Section 6.5	Compliant
Radiated Emissions	§2.1053, §90.219, §90.543	RSS-Gen, Section 7.3	Compliant
Frequency Stability	§2.1055, §90.213, §90.539	-	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.

	Downlink (MHz)	Uplink (MHz)	Modulation
PS 700	769 ~ 775	799 ~ 805	APCO 25
PS 800	851 ~ 861	806 ~ 816	

* PSNB: 6.25 kHz x n (n = 1 ~ 12),
12.5 kHz (6.25 kHz x 2),
25 kHz (6.25 kHz x 4)
75 kHz (6.25 kHz x 12)

So, we didn't performed test about 12.5 kHz, 25 kHz, 75 kHz bandwidth except emission mask section.

* 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)	Freq(MHz)	Factor(dB)
50	28.131	3000	30.158
100	28.217	4000	30.227
200	28.480	5000	30.051
300	28.664	6000	31.108
400	28.702	7000	31.481
500	28.804	8000	31.725
600	28.803	9000	32.374
700	28.928	10000	33.112
800	29.024	11000	34.104
900	29.127	12000	33.847
1000	29.100	12800	34.862
2000	29.742		

3.3. MAXIMUM MEASUREMENTUNCERTAINTY

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

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

Description	Condition	Uncertainty
RF Output Power	-	± 0.72 dB
Occupied Bandwidth	OBW ≤ 20 MHz	± 52 kHz
Out of Band Rejection	Gain 20 dB bandwidth	± 0.89 dB ± 0.58 MHz
Unwanted Conducted Emissions	-	± 1.08 dB
Noise Figure, Emission Masks		± 0.89 dB
Radiated Emissions	f ≤ 1 GHz f > 1 GHz	± 4.80 dB ± 6.07 dB
Frequency Stability	-	± 1.22 x 10^{-6}

3.4. STANDARDS ENVIRONMENTAL TEST CONDITIONS

Temperature :	+15 ℃ to +35 ℃
Relative humidity:	30 % to 60 %
Air pressure	860 mbar to 1 060 mbar

4. TEST EQUIPMENTS

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Agilent	N9020A / Spectrum Analyzer	09/15/2017	Annual	MY46471250
Agilent	N5128A / Signal Generator	01/19/2018	Annual	MY47070406
Agilent	E4438C /Signal Generator	12/22/2017	Annual	MY42082646
Agilent	E4437B /Signal Generator	03/08/2018	Annual	US39260498
Weinschel	WA67-30-33/ Fixed Attenuator	09/14/2017	Annual	WA67-30-33-2
EAGLE	240NFNM / Notch Filter	10/13/2017	Annual	H00564-12
Agilent	11636A / Power Divider	08/01/2018	Annual	09109
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
Emco	2090 / Controller	N/A	N/A	060520
Ets	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	06/30/2017	Biennial	9120D-1300
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	04/25/2017	Biennial	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	09/21/2017	Annual	836650/016
Wainwright Instruments	WHKX10-900-1000-15000-40SS	07/21/2017	Annual	5
Wainwright Instruments	WHKX10-2700-3000-18000-40SS / High Pass Filter	08/01/2017	Annual	4
CERNEX	CBLU1183540 / Power Amplifier	01/03/2018	Annual	24613
CERNEX	CBL06185030 / Power Amplifier	01/03/2018	Annual	24615
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 radiotelephone 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 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.

§ 90.219 Use of signal boosters.

(e) Device Specifications. In addition to the general rules for equipment certification in §90.203(a)(2) and part 2, subpart J of this chapter, a signal booster must also meet the rules in this paragraph.

(1) The output power capability of a signal booster must be designed for deployments providing a radiated power not exceeding 5 Watts ERP for each retransmitted channel.

§ 90.541 Transmitting power and antenna height limits.

The transmitting power and antenna height of base, mobile, portable and control stations operating in the 769-775 MHz and 799-805 MHz frequency bands must not exceed the maximum limits in this section. Power limits are listed in effective radiated power (ERP).

(a) The transmitting power and antenna height of base stations must not exceed the limits given in paragraph (a) of §90.635.

§ 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.

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

IC 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.

Table 2 – Transmitter Output Power		
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-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.

SRSP-502

6. Technical criteria

6.3 Radiated power and antenna height limits

Within the sharing and protection zones, the ERP will be subject to the limitations in tables C3 and C4 of annex C. Outside the sharing and protection zones, the ERP shall be limited to that necessary to provide the required service as determined by the system requirements. Systems requiring an ERP greater than 125 watts may require additional justification and will be considered on a case-by-case basis by the local spectrum management office.

SRSP-511

6. Technical criteria

6.3 Technical requirements

6.3.1 Limits and co-channel assignments

The ERP shall be limited to that necessary (typically a 125 W maximum) to provide the required service as determined by the system requirements, and will be subject to the limitations in tables B4 and B5 of annex B.

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.

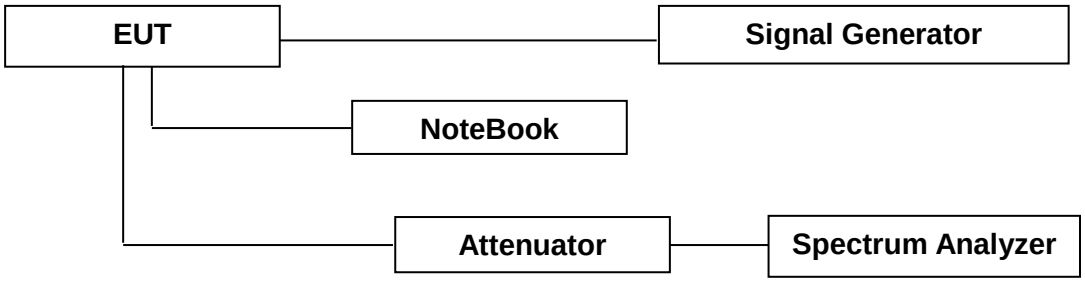
h) Repeat steps f) and g) with input signal amplitude set to 3 dB above the AGC threshold level.

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.



Block Diagram 1. RF Power Output Test Setup

Test Results:

Input Signal	Input Level (dBm)		Maximum Amp Gain (dB)	
	DL	UL	DL	UL
PS 700	-58	-65	95	95
PS 800	-58	-65	95	95

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

Data of Downlink Output Power for PS 700 Band

	Channel	Frequency (MHz)	Limit(W)	Measured Output Power	
				(dBm)	(W)
P25 6.25 kHz AGC threshold	Low	769.003125	-	36.85	4.842
	High	774.996875		37.08	5.105
P25 6.25 kHz +3 dB AGC threshold	Low	769.003125		37.07	5.093
	High	774.996875		37.07	5.093

***** PS700 output power is limited by EIRP (typically a 125 W maximum) of SRSP-511.

* All test results for output power meet 37 dBm ±1 dB tolerance about equipment specifications provided by manufacturer.

Data of Downlink Output Power for PS 800 Band

	Channel	Frequency (MHz)	Limit(W)	Measured Output Power	
				(dBm)	(W)
P25 6.25 kHz AGC threshold	Low	851.003125	110	37.03	5.047
	High	860.996875		37.10	5.129
P25 6.25 kHz +3 dB AGC threshold	Low	851.003125		37.09	5.117
	High	860.996875		37.03	5.047

* All test results for output power meet 37 dBm ±1 dB tolerance about equipment specifications provided by manufacturer.

Data of Uplink Output Power PS 700 Band

	Channel	Frequency (MHz)	Limit(W)	Measured Output Power	
				(dBm)	(W)
P25 6.25 kHz AGC threshold	Low	799.003125	-	29.93	0.984
	High	804.996875		29.89	0.975
P25 6.25 kHz +3 dB AGC threshold	Low	799.003125		29.91	0.979
	High	804.996875		29.66	0.925

***** PS700 output power is limited by EIRP (typically a 125 W maximum) of SRSP-511.

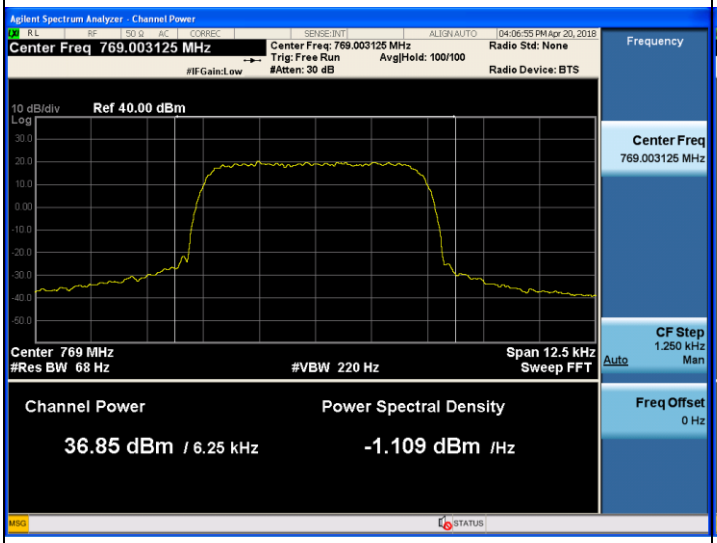
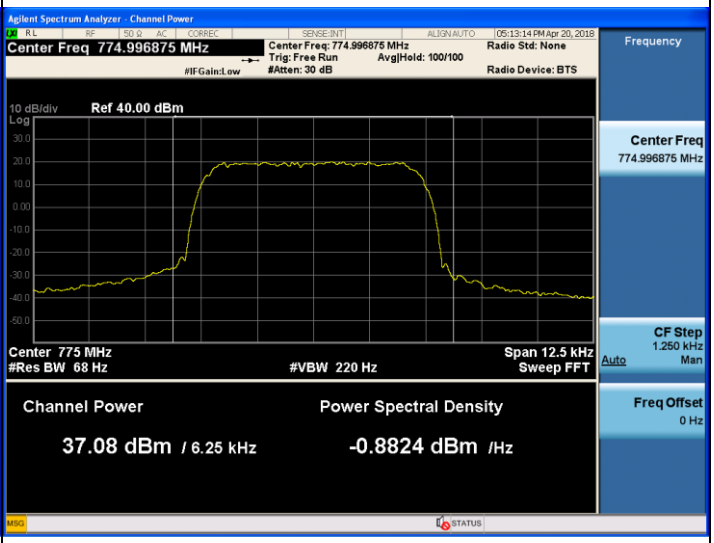
* All test results for output power meet 30 dBm ±1 dB tolerance about equipment specifications provided by manufacturer

Data of Uplink Output Power PS 800 Band

	Channel	Frequency (MHz)	Limit(W)	Measured Output Power	
				(dBm)	(W)
P25 6.25 kHz AGC threshold	Low	806.003125	110	29.94	0.986
	High	815.996875		30.04	1.009
P25 6.25 kHz +3 dB AGC threshold	Low	806.003125		30.07	1.016
	High	815.996875		30.07	1.016

* All test results for output power meet 30 dBm ±1 dB tolerance about equipment specifications provided by manufacturer.

Plot of Downlink Output Power for PS 700 Band

<table>
<tr><td colspan="2">P25 6.25 kHz</td></tr>
<tr><td>Low channel AGC threshold</td><td>High channel AGC threshold</td></tr>
<tr><td> 
</td><td> 
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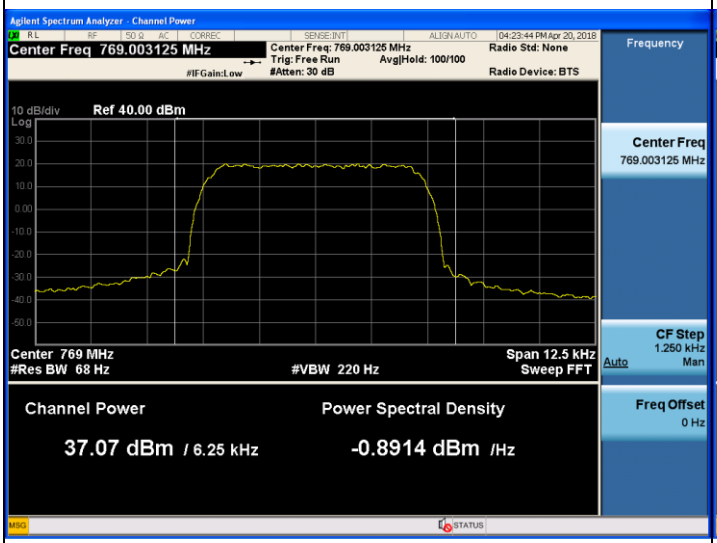
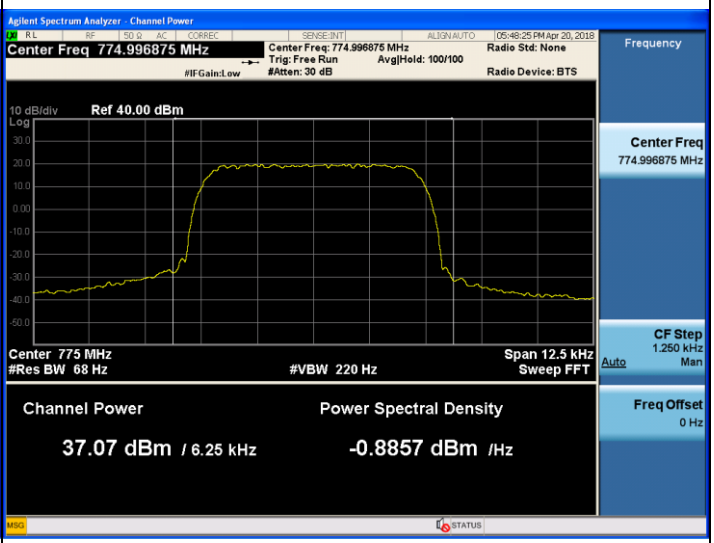
<tr><td>Low channel +3 dB AGC threshold</td><td>High channel +3 dB AGC threshold</td></tr>
<tr><td> 
</td><td> 
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Plot of Downlink Output Power for PS 800 Band

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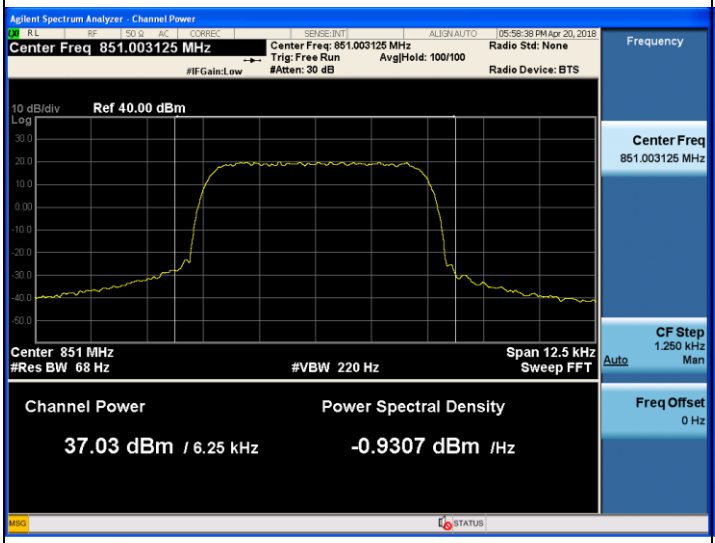
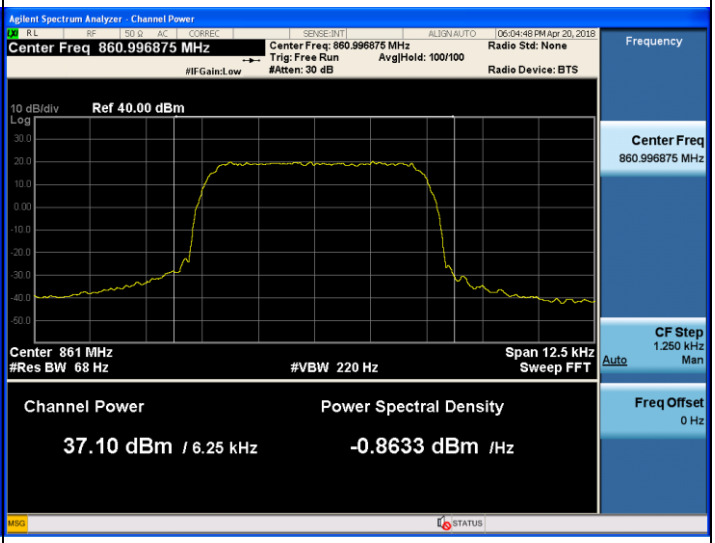
<tr><td> 
</td><td> 
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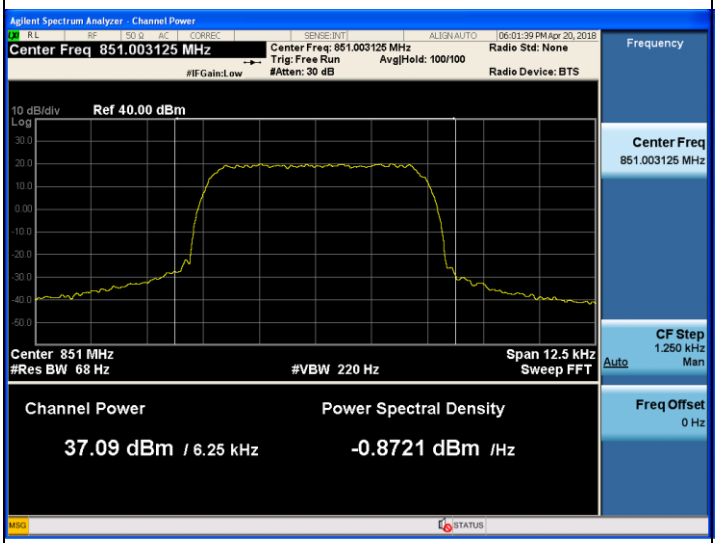
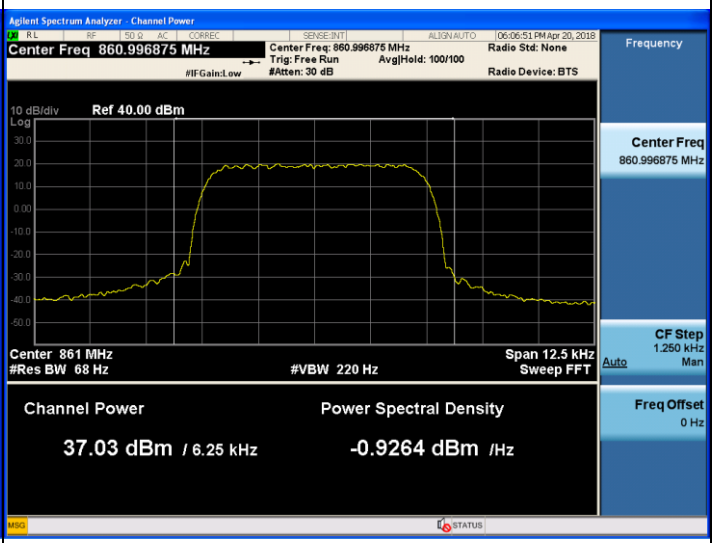
<tr><td>Low channel +3 dB AGC threshold</td><td>High channel +3 dB AGC threshold</td></tr>
<tr><td> 
</td><td> 
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Plot of Uplink Output Power for PS 700 Band

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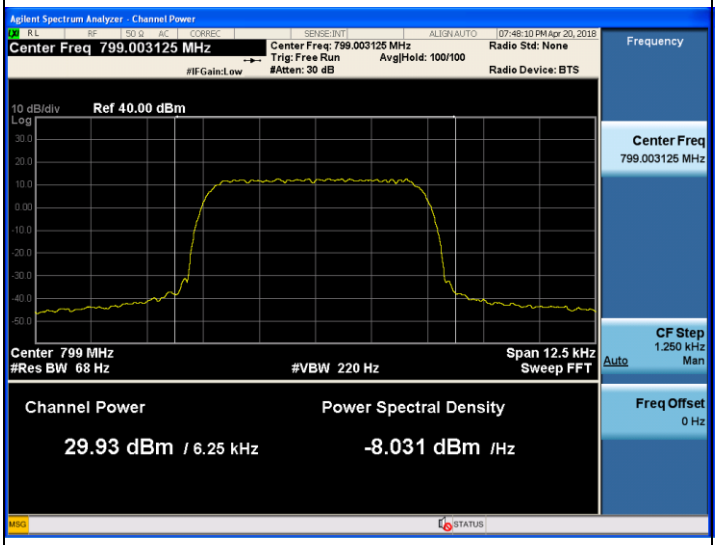
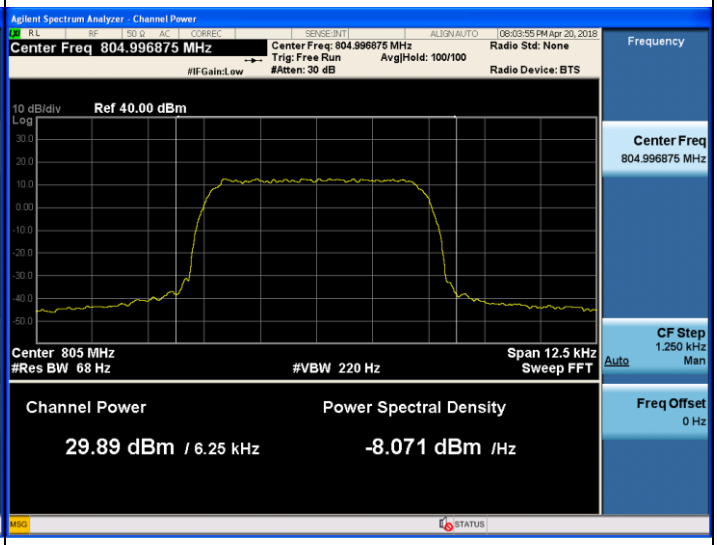
<tr><td>Low channel AGC threshold</td><td>High channel AGC threshold</td></tr>
<tr><td> 
</td><td> 
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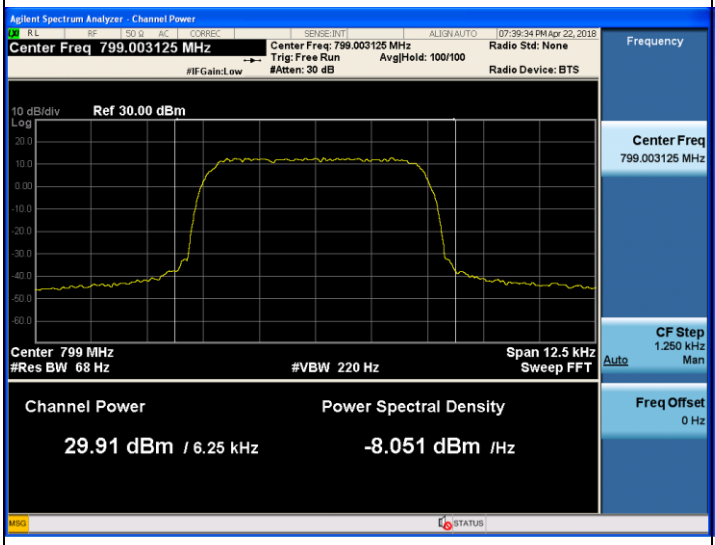
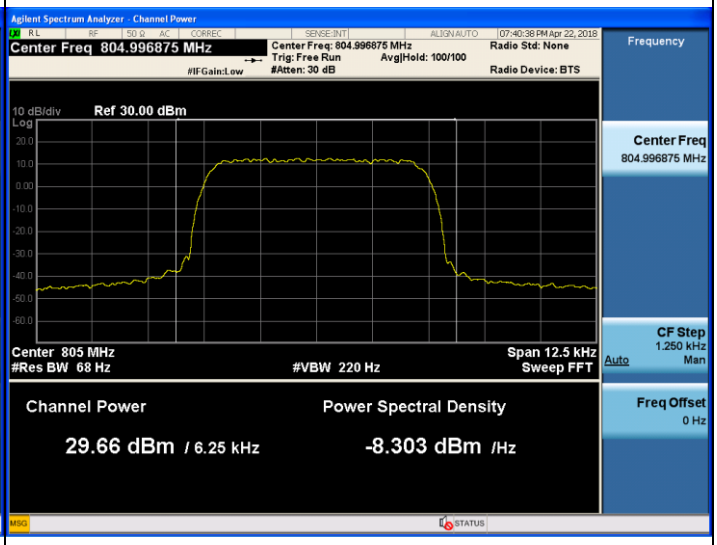
<tr><td> 
</td><td> 
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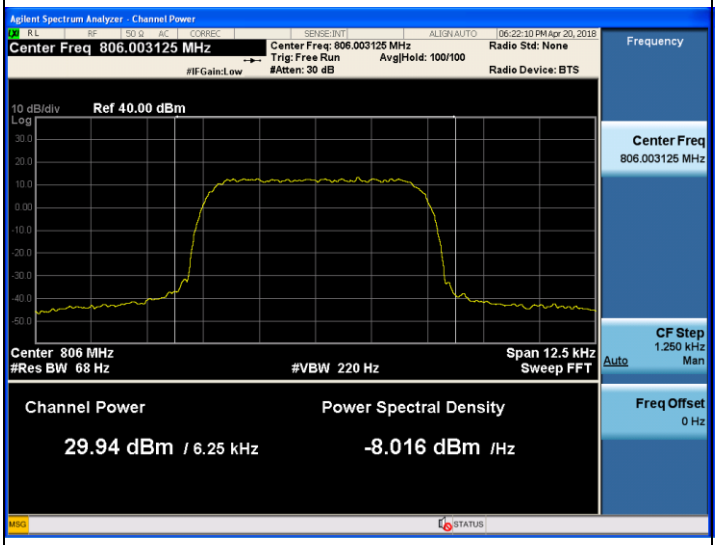
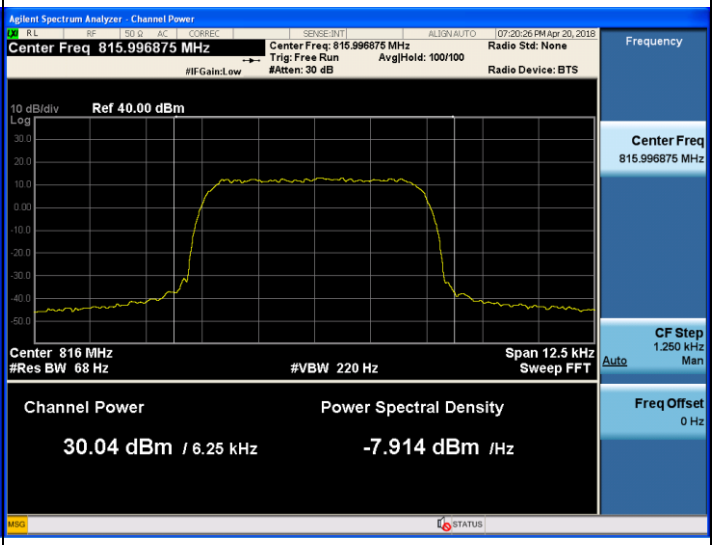
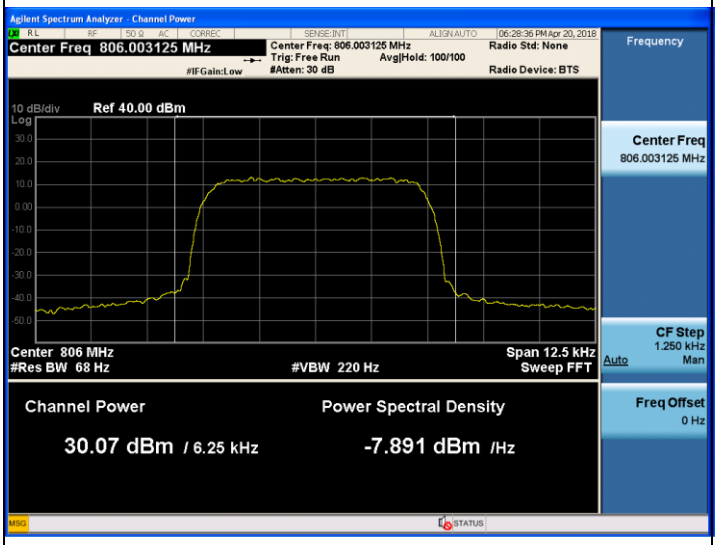
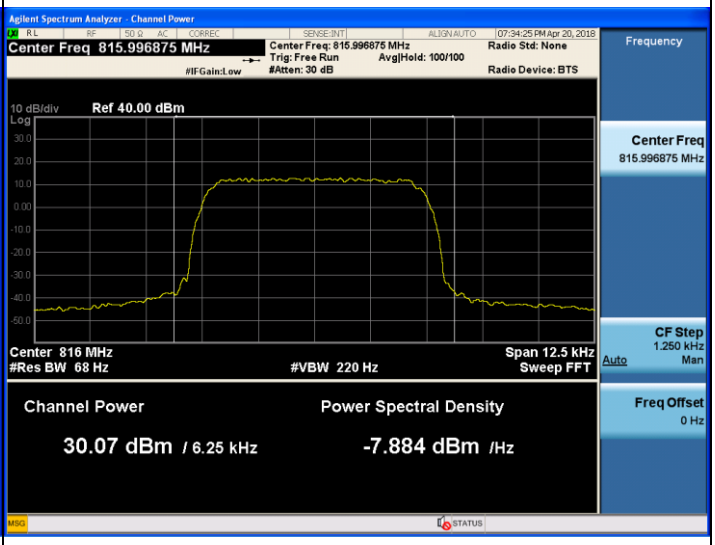
Plot of Uplink Output Power for PS 800 Band

P25 6.25 kHz	
Low channel AGC threshold	High channel AGC threshold
	
Low channel +3 dB AGC threshold	High channel +3 dB AGC threshold
	

6. OCCUPIED BANDWIDTH

FCC Rules

Test Requirements:

§ 2.1049 Measurements required: Occupied bandwidth.

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the specified conditions of § 2.1049 (a) through (i) as applicable.

IC Rules

Test Requirements:

RSS-Gen

6 Technical Requirements

6.6 Occupied Bandwidth

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99 % emission bandwidth, as calculated or measured.

Test Procedures:

Measurements were in accordance with the test methods section 3.4 of KDB 935210 D05 v01r02 and section 4.2 of KDB 971168 D01 v03r01.

Test is 99% OBW measured and used.

a) Connect a signal generator to the input of the EUT.

b) Configure the signal generator to transmit the AWGN signal.

c) Configure the signal amplitude to be just below the AGC threshold level (see 3.2), but not more than 0.5 dB below.

d) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation.

e) Set the spectrum analyzer center frequency to the center frequency of the operational band under test. The span range of the spectrum analyzer shall be between 2 times to 5 times the emission bandwidth (EBW) or alternatively, the OBW.

f) The nominal RBW shall be in the range of 1 % to 5 % of the anticipated OBW, and the VBW shall be $\geq 3 \times$ RBW.

g) Set the reference level of the instrument as required to preclude the signal from exceeding the maximum spectrum analyzer input mixer level for linear operation. In general, the peak of the spectral envelope must be more than [10 log (OBW / RBW)] below the reference level.

Steps f) and g) may require iteration to enable adjustments within the specified tolerances.

h) The noise floor of the spectrum analyzer at the selected RBW shall be at least 36 dB below

the reference level.

i) Set spectrum analyzer detection function to positive peak.

j) Set the trace mode to max hold.

k) Determine the reference value: Allow the trace to stabilize. Set the spectrum analyzer marker to the highest amplitude level of the displayed trace (this is the reference value) and record the associated frequency as f_0.

l) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the −26 dB down amplitude. The 26 dB EBW (alternatively OBW) is the positive frequency difference between the two markers. If the spectral envelope crosses the −26 dB down amplitude at multiple points, the lowest or highest frequency shall be selected as the frequencies that are the furthest removed from the center frequency at which the spectral envelope crosses the −26 dB down amplitude point.

m) Repeat steps e) to l) with the input signal connected directly to the spectrum analyzer (i.e., input signal measurement).

n) Compare the spectral plot of the input signal (determined from step m) to the output signal (determined from step l) to affirm that they are similar (in passband and rolloff characteristic features and relative spectral locations), and include plot(s) and descriptions in test report.

o) Repeat the procedure [steps e) to n)] with the input signal amplitude set to 3 dB above the AGC threshold.

p) Repeat steps e) to o) with the signal generator set to the narrowband signal.

q) Repeat steps e) to p) for all frequency bands authorized for use by the EUT.

Test Results:

Input Signal	Input Level (dBm)		Maximum Amp Gain (dB)	
	DL	UL	DL	UL
PS 700	-58	-65	95	95
PS 800	-58	-65	95	95

Data of Downlink Output Occupied bandwidth for PS 700 Band

	Channel	Frequency (MHz)	Measured OBW (kHz)
P25 6.25 kHz AGC threshold	Low	769.003125	4.853
	High	774.996875	4.818
P25 6.25 kHz +3 dB AGC threshold	Low	769.003125	4.801
	High	774.996875	4.825

Data of Downlink Output Occupied bandwidth for PS 800 Band

	Channel	Frequency (MHz)	Measured OBW (kHz)
P25 6.25 kHz AGC threshold	Low	851.003125	4.812
	High	860.996875	4.812
P25 6.25 kHz +3 dB AGC threshold	Low	851.003125	4.816
	High	860.996875	4.825

Data of Uplink Output Occupied bandwidth for PS 700 Band

	Channel	Frequency (MHz)	Measured OBW (kHz)
P25 6.25 kHz AGC threshold	Low	799.003125	4.811
	High	804.996875	4.838
P25 6.25 kHz +3 dB AGC threshold	Low	799.003125	4.844
	High	804.996875	4.850

Data of Uplink Output Occupied bandwidth for PS 800 Band

	Channel	Frequency (MHz)	Measured OBW (kHz)
P25 6.25 kHz AGC threshold	Low	806.003125	4.823
	High	815.996875	4.823
P25 6.25 kHz +3 dB AGC threshold	Low	806.003125	4.825
	High	815.996875	4.843

Data of Downlink Input Occupied bandwidth for PS 700 Band

	Channel	Frequency (MHz)	Measured OBW (kHz)
P25 6.25 kHz AGC threshold	Low	769.003125	4.830
	High	774.996875	4.822

Data of Downlink Input Occupied bandwidth for PS 800 Band

	Channel	Frequency (MHz)	Measured OBW (kHz)
P25 6.25 kHz AGC threshold	Low	851.003125	4.808
	High	860.996875	4.823

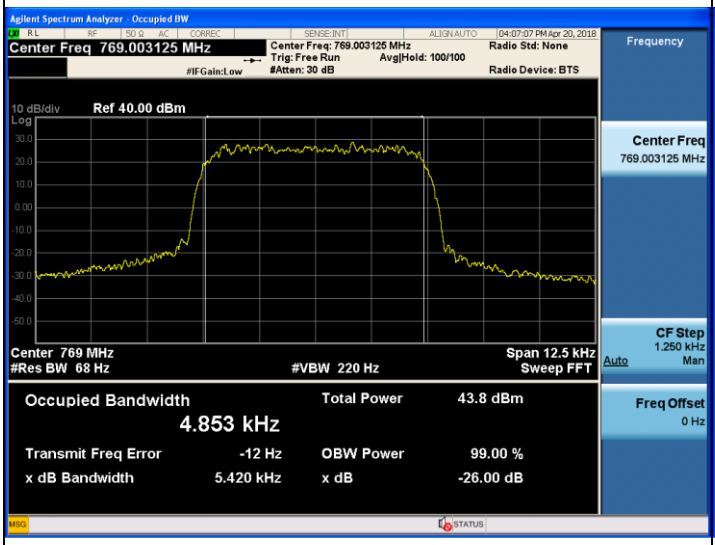
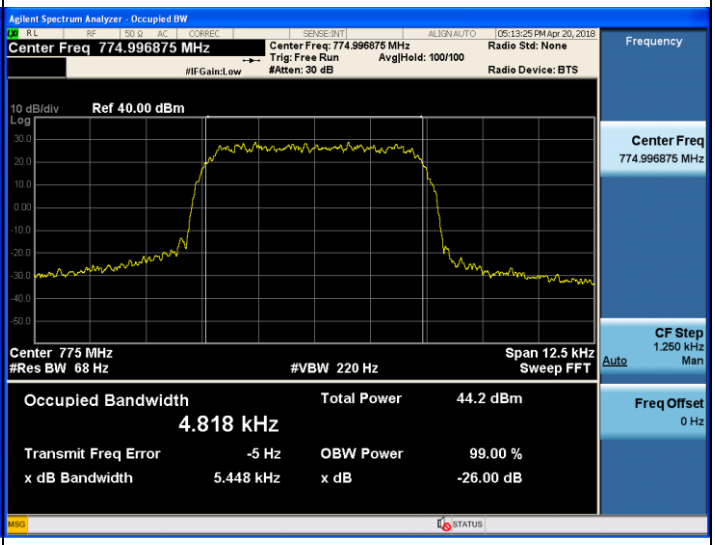
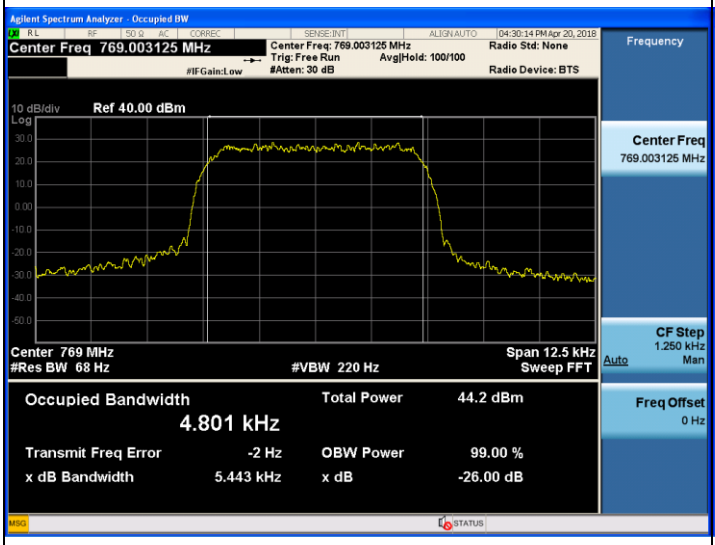
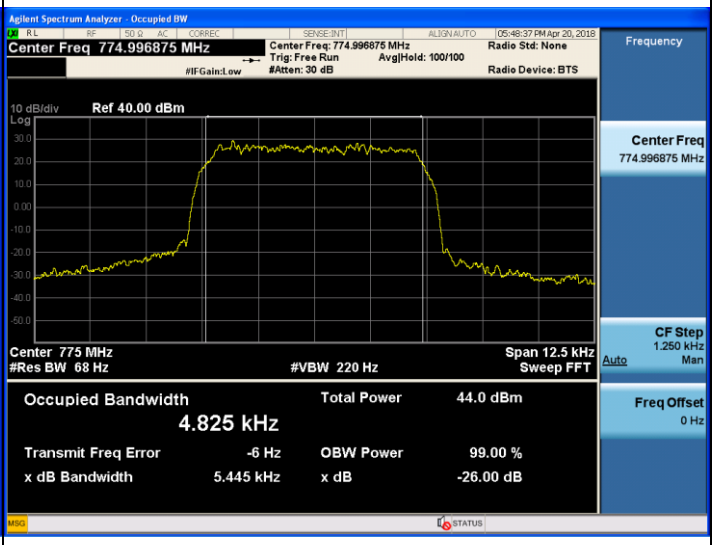
Data of Uplink Input Occupied bandwidth for PS 700 Band

	Channel	Frequency (MHz)	Measured OBW (kHz)
P25 6.25 kHz AGC threshold	Low	799.003125	4.842
	High	804.996875	4.847

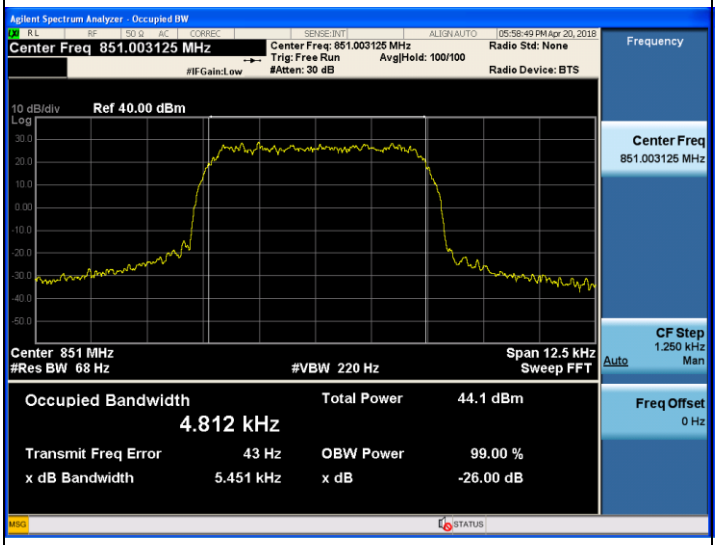
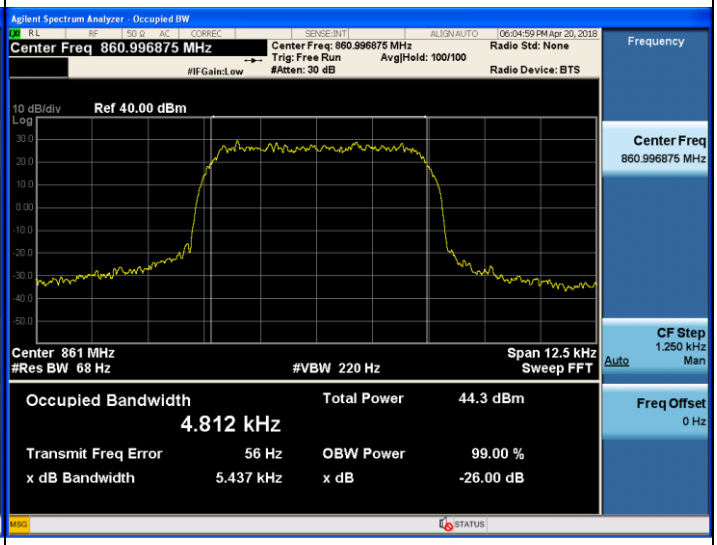
Data of Uplink Input Occupied bandwidth for PS 800 Band

	Channel	Frequency (MHz)	Measured OBW (kHz)
P25 6.25 kHz AGC threshold	Low	806.003125	4.827
	High	815.996875	4.834

Plot of Downlink Output Occupied Bandwidth for PS 700 Band

P25 6.25 kHz	
Low channel AGC threshold	High channel AGC threshold
	
Low channel +3 dB AGC threshold	High channel +3 dB AGC threshold
	

Plot of Downlink Output Occupied Bandwidth for PS 800 Band

P25 6.25 kHz	
Low channel AGC threshold	High channel AGC threshold
	
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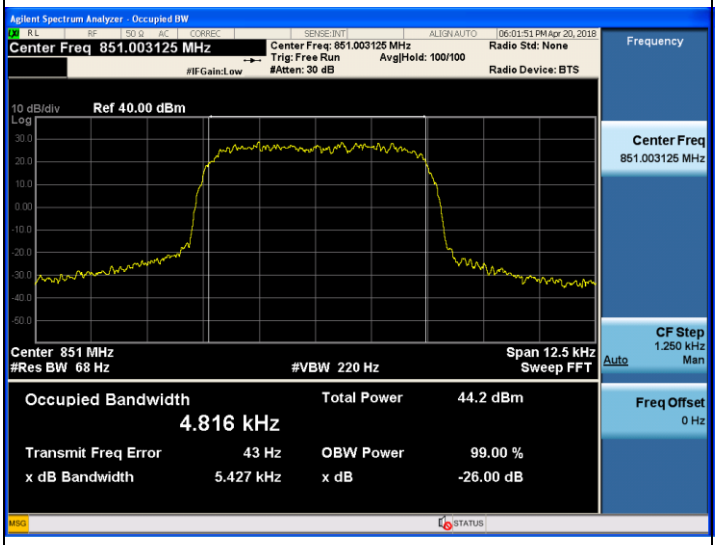
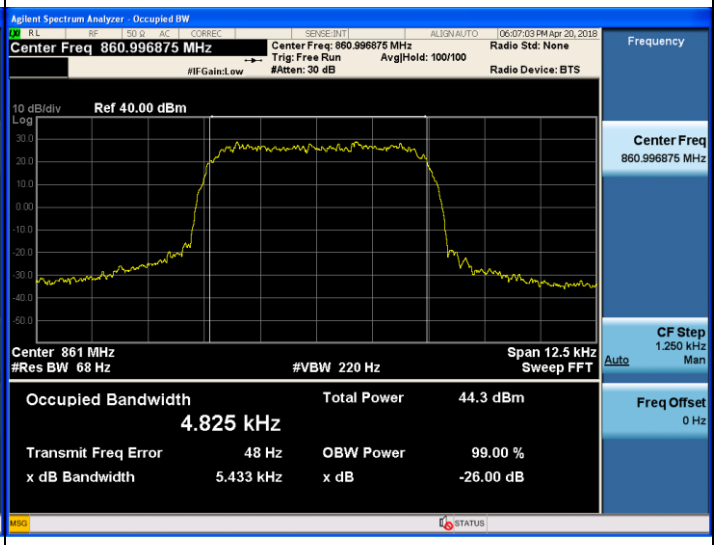
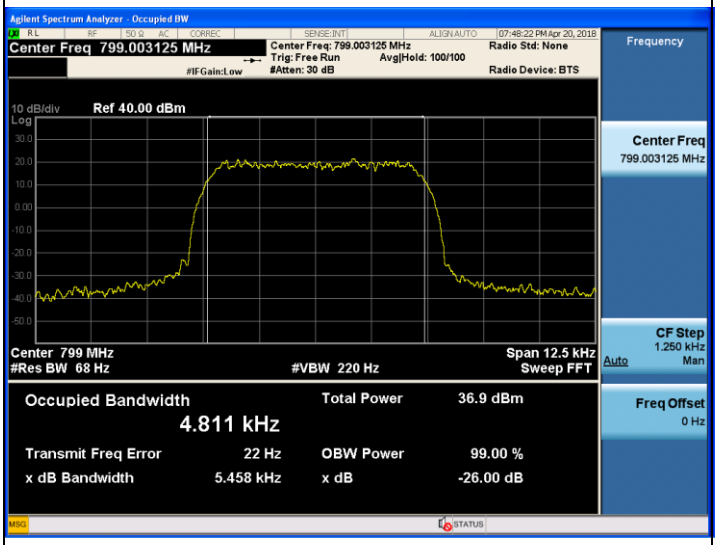
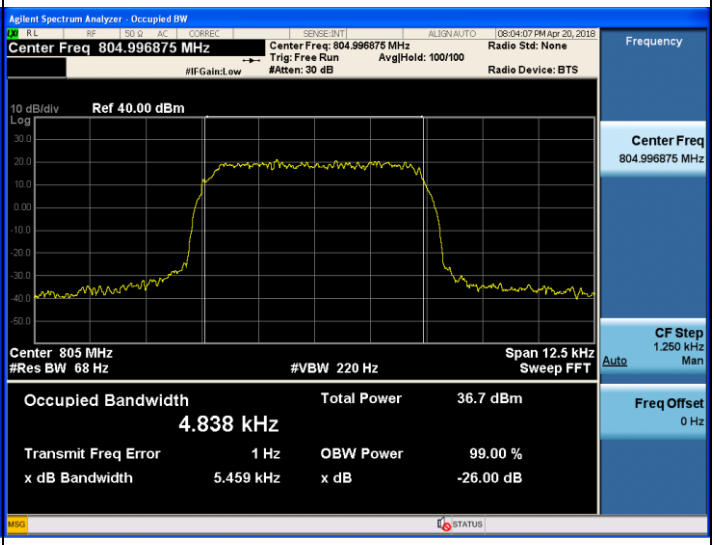
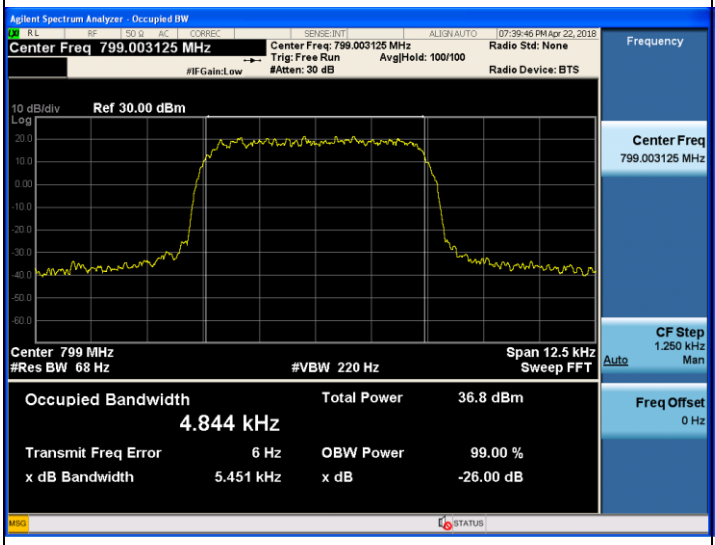
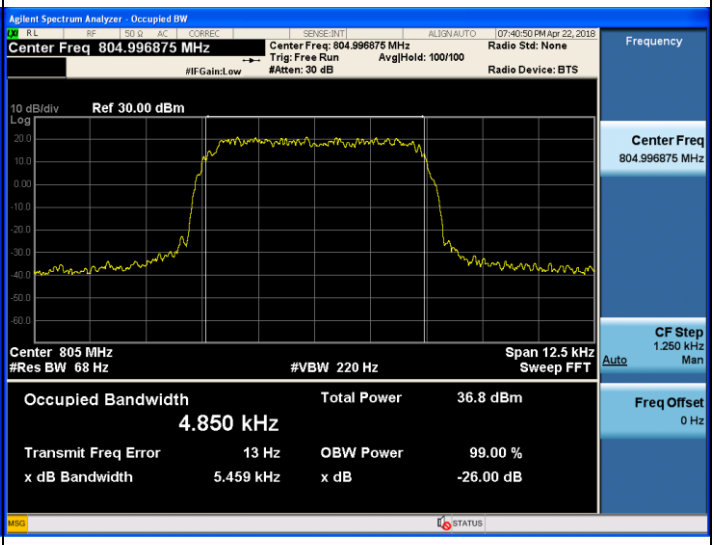
	

Plot of Uplink Output Occupied Bandwidth for PS 700 Band

P25 6.25 kHz	
Low channel AGC threshold	High channel AGC threshold
	
Low channel +3 dB AGC threshold	High channel +3 dB AGC threshold
	

Plot of Uplink Output Occupied Bandwidth for PS 800 Band

<table>
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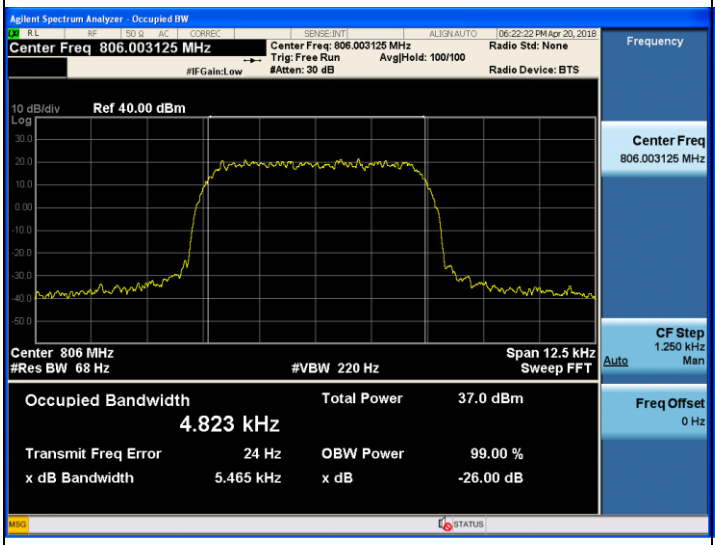
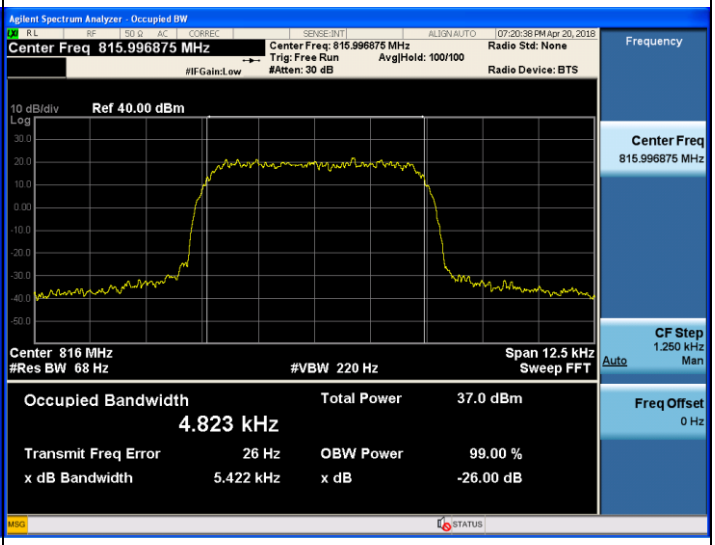
<tr><th>Low channel AGC threshold</th><th>High channel AGC threshold</th></tr>
<tr><td> 
</td><td> 
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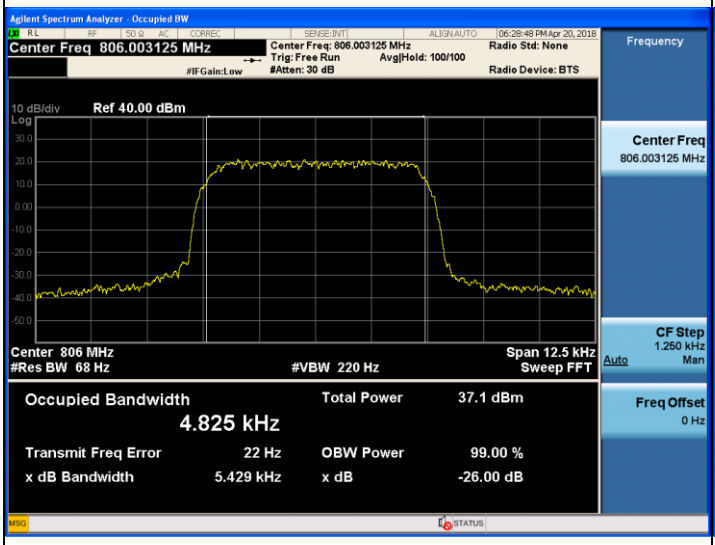
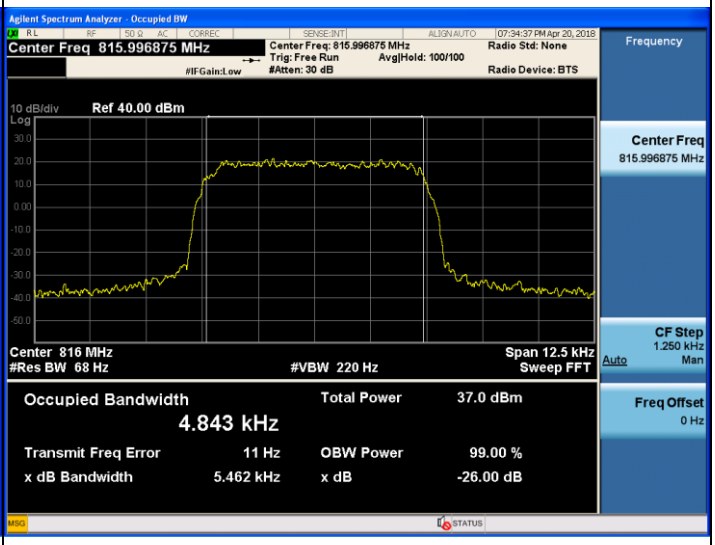
<tr><th>Low channel +3 dB AGC threshold</th><th>High channel +3 dB AGC threshold</th></tr>
<tr><td> 
</td><td> 
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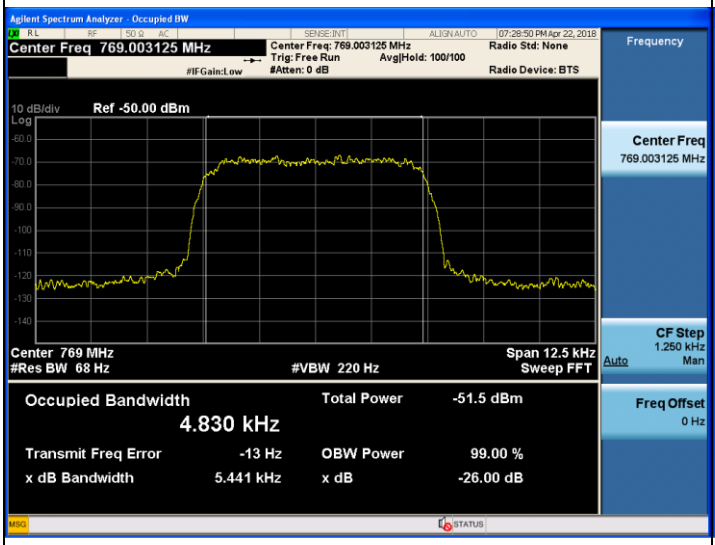
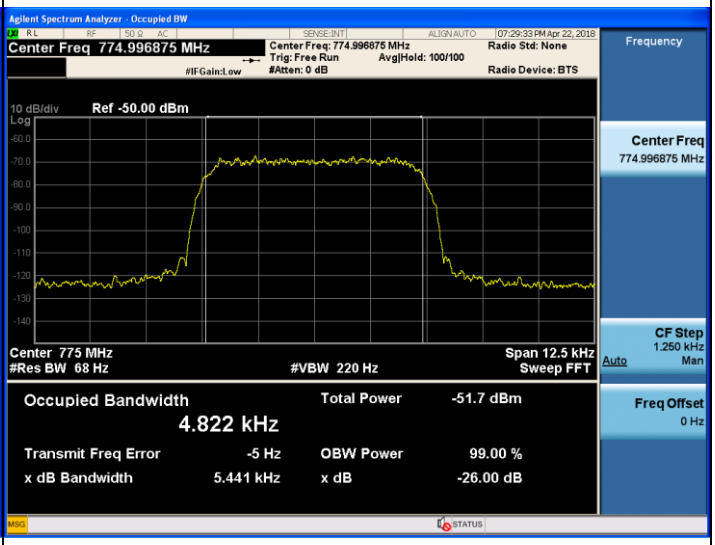
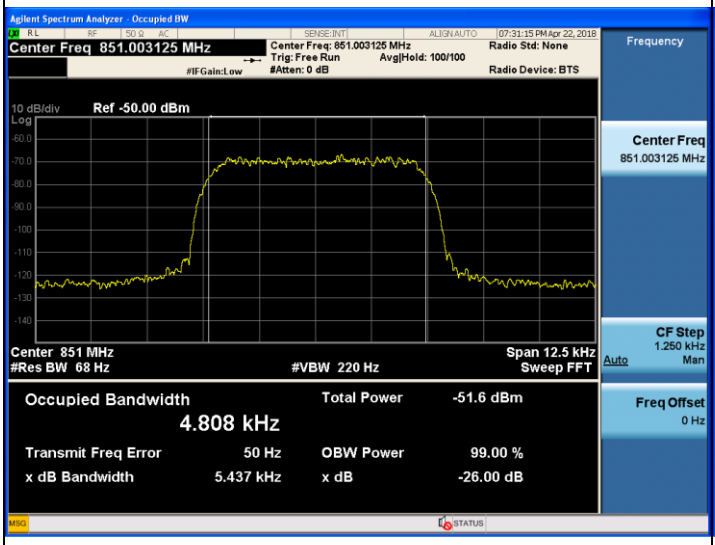
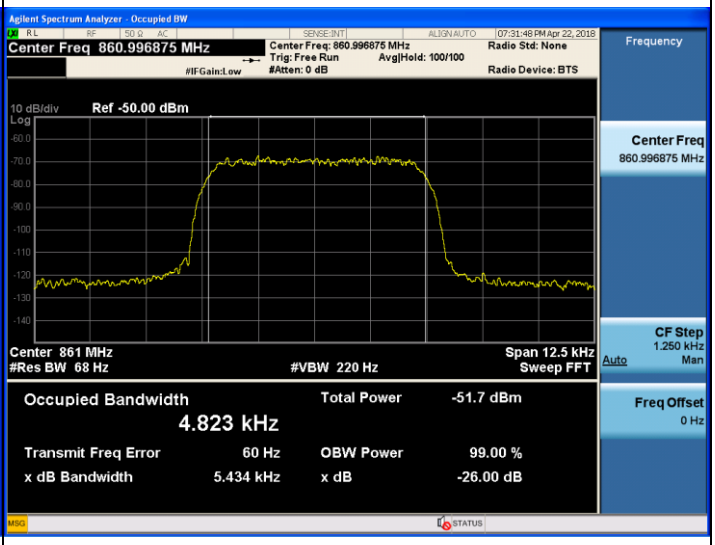
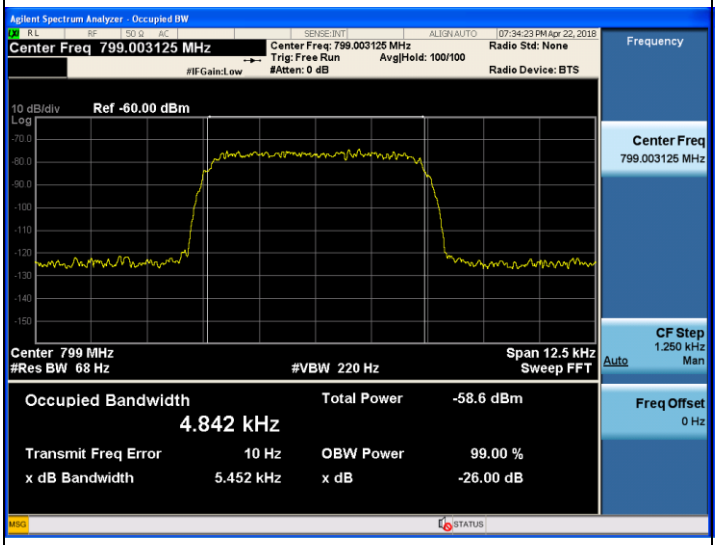
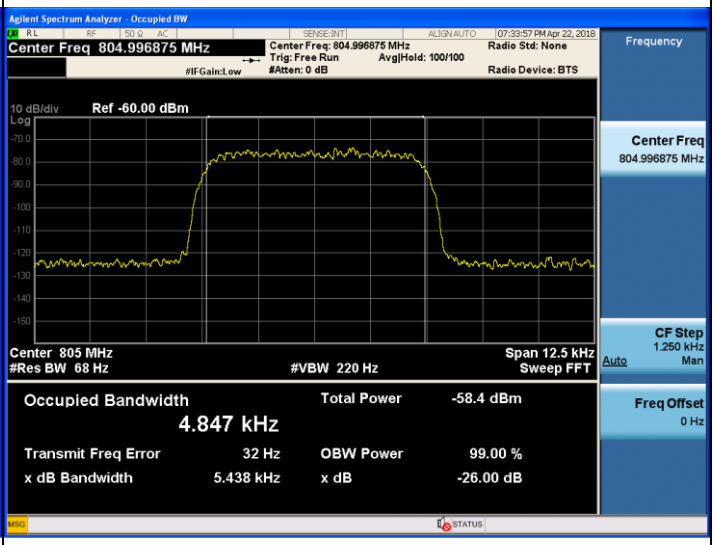
Plot of Downlink Input Occupied Bandwidth for PS 700 Band

P25 6.25 kHz	
Low channel AGC threshold	High channel AGC threshold
	

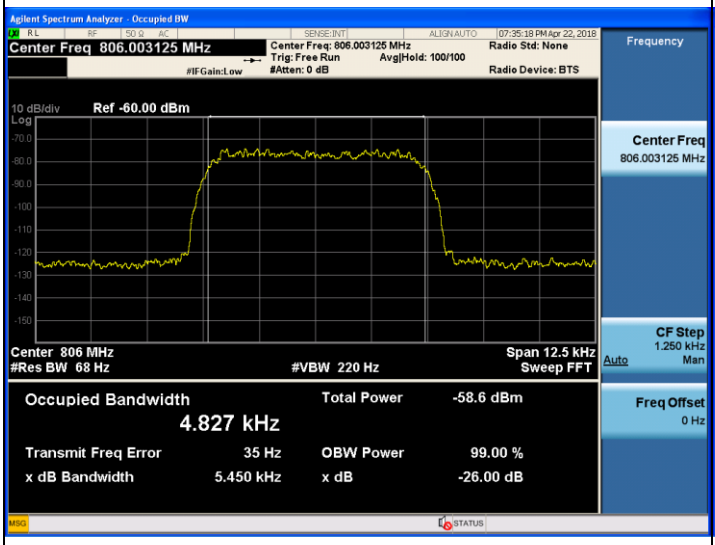
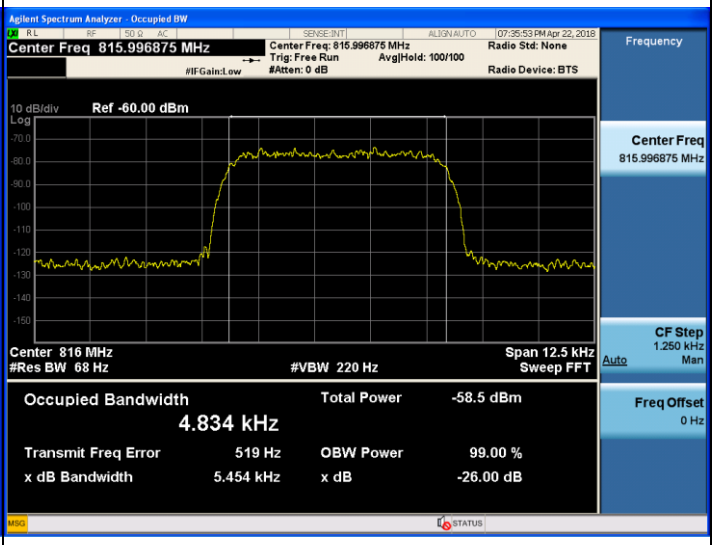
Plot of Downlink Input Occupied Bandwidth for PS 800 Band

P25 6.25 kHz	
Low channel AGC threshold	High channel AGC threshold
	

Plot of Uplink Input Occupied Bandwidth for PS 700 Band

P25 6.25 kHz	
Low channel AGC threshold	High channel AGC threshold
	

Plot of Uplink Input Occupied Bandwidth for PS 800 Band

P25 6.25 kHz	
Low channel AGC threshold	High channel AGC threshold
	

7. OUT OF BAND REJECTION

FCC Rules

Test Requirement(s):

KDB 935210 D05 v01r02

Out of Band Rejection – Test for rejection of out of band signals. Filter freq. response plots are acceptable.

Test Procedures:

Measurements were in accordance with the test methods section 3.3, 4.3 of KDB 935210 D05 v01r02.

3.3 EUT out-of-band rejection

a) Connect a signal generator to the input of the EUT.

b) Configure a swept CW signal with the following parameters:

1) Frequency range = ±250 % of the passband from the center of the passband.

2) Level = a sufficient level to affirm that the out-of-band rejection is > 20 dB above the noise floor and will not engage the AGC during the entire sweep.

3) Dwell time = approx. 10 ms.

4) Number of points = SPAN/(RBW/2).

c) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation.

d) Set the span of the spectrum analyzer to the same as the frequency range of the signal generator.

e) Set the resolution bandwidth of the spectrum analyzer to be 1 % to 5 % of the passband and the video bandwidth shall be set to ≥ 3 × RBW.

f) Set the detector to Peak Max-Hold and wait for the spectrum analyzer's spectral display to fill.

g) Place a marker to the peak of the frequency response and record this frequency as f0.

h) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the −20 dB down amplitude to determine the 20 dB bandwidth. Capture the frequency response of the EUT.

4.3 PLMRS device out-of-band rejection

Adjust the internal gain control of the equipment under test to the maximum gain for which equipment certification is sought.

a) Connect a signal generator to the input of the EUT.

b) Configure a swept CW signal with the following parameters:

c) Frequency range = ± 250 % of the manufacturer's pass band.

d) The CW amplitude will be 3 dB below the AGC threshold (see 4.2) and but not activate the AGC threshold throughout the test.

e) Dwell time = approx. 10 ms.

f) Frequency step = 50 kHz.

g) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation.

h) Set the resolution bandwidth of the spectrum analyzer between 1 % and 5 % of the manufacturer's pass band with the video bandwidth set to 3 × RBW.

i) Set the detector to Peak and the trace to Max-Hold.

j) After the trace is completely filled, place a marker at the peak amplitude, which is designated as f0, and with two additional markers (use the marker-delta method) at the 20 dB bandwidth (i.e., at the points where the gain has fallen by 20 dB).

k) Capture the frequency response plot and for inclusion in the test report.

Test Results:

Band	Input Signal	Input Level (dBm)		Maximum Amp Gain (dB)	
		DL	UL	DL	UL
PS 700	Sinusoidal	-58	-65	95	95
PS 800		-58	-65	95	95