

TEST REPORT

FCC Test for ADXV-R-33S8CPS
Certification

APPLICANT
ADRF KOREA, Inc.

REPORT NO.
HCT-RF-2604-FC064

DATE OF ISSUE
April 29, 2026

Tested by
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Applicant

ADRF KOREA, Inc.

196-16 IYEO-RO BAEKSA-MYEON ICHEON-SI, GYEONGGI-DO, 17316, KOREA

Product Name

DAS

Model Name

ADXV-R-33S8CPS

FCC ID

N52-ADXV-R33S8PSA

Date of Test

March 6, 2026 ~ April 10, 2026

Location of Test

☒ Permanent Testing Lab ☐ On Site Testing

(Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

Test Standard Used

CFR 47 Part 2, Part 90

Test Results

PASS

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	April 29, 2026	Initial Release

Notice

Content

Engineering Statement:

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.

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

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1. GENERAL INFORMATION

1.1. APPLICANT INFORMATION

Company Name	ADRF KOREA, Inc.
Company Address	196-16 IYEO-RO BAEKSA-MYEON ICHEON-SI, GYEONGGI-DO, 17316, KOREA

1.2. PRODUCT INFORMATION

EUT Type	DAS	
EUT Serial Number	ADXVR33S8CPSxxxxxx	
Power Supply	100-240VAC, 50/60Hz	
Frequency Range	Band Name	Downlink (MHz)
	NPSPAC	851 ~ 854
	B/ILT; SMR	854 ~ 861
	ESMR	862 ~ 869
Tx Output Power	Downlink: 33 dBm	
Antenna Peak Gain	Band Name	Downlink
	NPSPAC	3.9 dBi
	B/ILT; SMR	
	ESMR	1.75 dBd

1.3. TEST INFORMATION

FCC Rule Parts	CFR 47 Part 2, Part 90
Measurement Standards	KDB 935210 D05 v01r04, KDB 971168 D01 v03r01, KDB 935210 D02 v04r03, ANSI C63.26-2015
Test Location	74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea

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, Republic 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 February 26, 2026(Registration Number: KR0032).

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 CFR 47 Part 2, Part 90.

Description	Reference	Results
AGC threshold	KDB 935210 D05 v01r04 4.2	Compliant
Out-of-band rejection	KDB 935210 D05 v01r04 4.3	Compliant
Occupied Bandwidth	§ 2.1049 § 90.209, § 90.219(e)(4)(ii)	Compliant
Input-versus-output signal comparison	§ 90.210, § 90.219(e)(4)(iii)	Compliant
Input/output power and amplifier/booster gain	§ 2.1046, § 90.219(e)(1)	Compliant
Noise figure	KDB 935210 D02 v04r03 V.(j)(5) § 90.219(e)(2)	Compliant
Out-of-band/out-of-block emissions and spurious emissions	§ 2.1051, § 90.219(e)(3)	Compliant
Spurious emissions radiated	§ 2.1053	Compliant
Frequency Stability	§ 2.1055 § 90.213	Compliant

Note: The decision rule applies 'simple acceptance'

3.2. ADDITIONAL DESCRIPTIONS ABOUT TEST

- Except for the following cases, EUT was tested under normal operating conditions.
: Out-of-band rejection test requires maximum gain condition without AGC.
- The highest antenna gain among the antennas used was applied for testing.
- The test was generally based on the method of KDB 935210 D05 v01r04 and only followed ANSI C63.26-2015 if there was no test method in KDB standard.
- The EUT was tested using test signals required by the test procedures, configured based on the manufacturer's specifications.

Band Name	Downlink	
	Frequency (MHz)	Test Signal
NPSPAC	851 ~ 854	CW, P25 Phase 2 (H-DQPSK)
B/ILT; SMR	854 ~ 861	
ESMR	862 ~ 869	

The tests results included actual loss value for attenuator and cable combination as shown in the table below.

: Input Path

Correction factor table			
Frequency (MHz)	Factor (dB)	Frequency (MHz)	Factor (dB)
600	0.283	800	0.402
650	0.336	850	0.286
700	0.333	900	0.256
750	0.388	950	0.394

: Output Path

Correction factor table			
Frequency (MHz)	Factor (dB)	Frequency (MHz)	Factor (dB)
2	28.964	2 000	30.856
10	29.034	2 100	30.846
30	29.169	2 200	30.939
50	29.246	2 300	31.049
100	29.346	2 400	31.098
200	29.556	2 500	31.171
300	29.747	2 600	31.111
400	29.870	2 700	31.251
500	29.848	2 800	31.253
600	30.042	2 900	31.235
700	30.163	3 000	31.225
800	30.132	4 000	31.733
900	30.217	5 000	32.018
1 000	30.356	6 000	32.350
1 100	30.365	7 000	33.543
1 200	30.530	8 000	34.023
1 300	30.523	9 000	34.324
1 400	30.580	10 000	35.259
1 500	30.625	-	-
1 600	30.780	-	-
1 700	30.676	-	-
1 800	30.604	-	-
1 900	30.673	-	-

3.3. MEASUREMENT UNCERTAINTY

Parameter		Expanded Uncertainty
Radiated Disturbance	9 kHz ~ 30 MHz	4.36 dB
	30 MHz ~ 1 GHz	5.68 dB
	1 GHz ~ 18 GHz	5.75 dB
	18 GHz ~ 40 GHz	5.82 dB

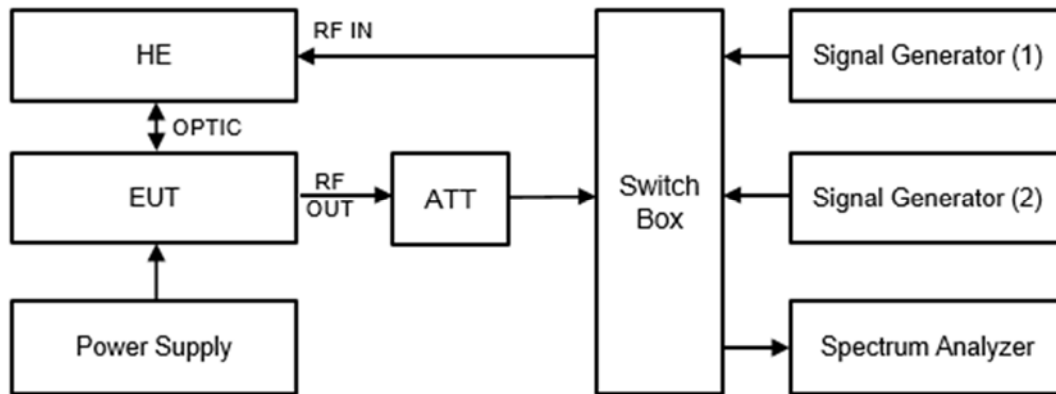
Coverage factor $k=2$, Confidence levels of 95 %

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

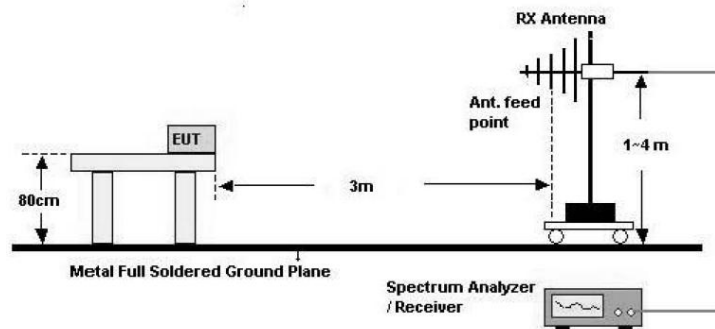
3.5. TEST DIAGRAMS

Conducted Test

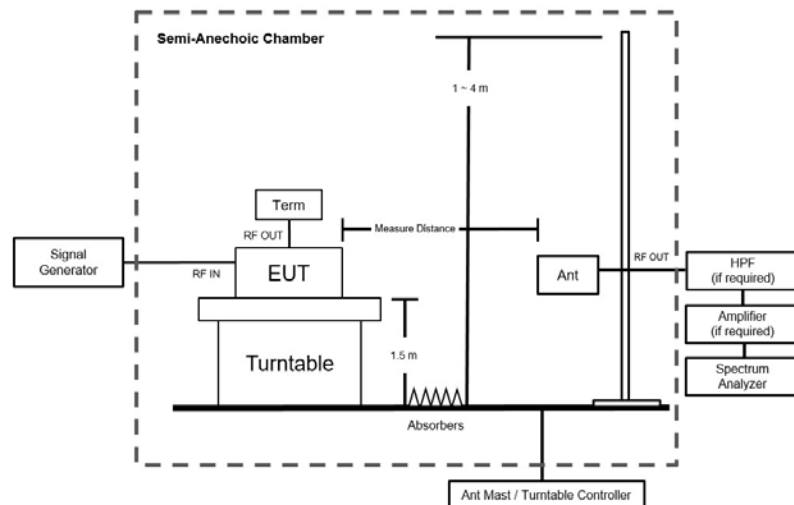


Radiated Test

30 MHz ~ 1 GHz

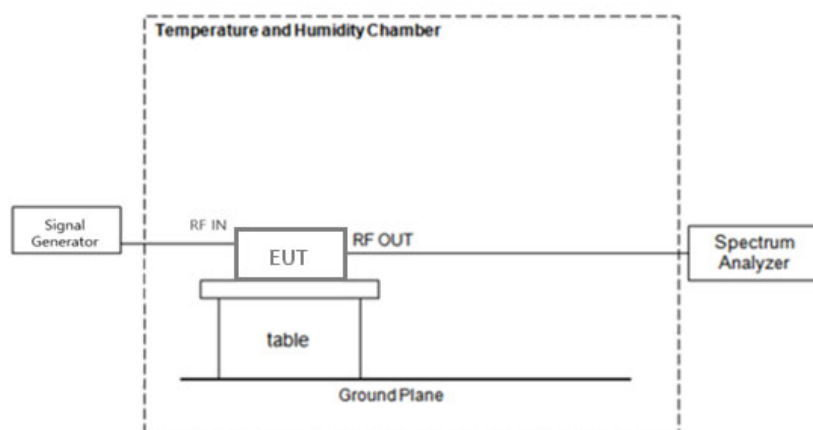


Above 1 GHz



Note: Measure distance for Above 1 GHz is 3 m.

Frequency Stability



4. TEST EQUIPMENTS

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
MXA Signal Analyzer	N9030A	Agilent	MY55410714	12/09/2026	Annual
# MXG Vector Signal Generator	N5182A	Agilent	MY46240807	03/04/2027	Annual
SIGNAL GENERATOR	SMBV100B	ROHDE&SCHWARZ	100988	02/11/2027	Annual
30 dB Attenuator	WA93-30-33	Weinschel Associates	0113	11/05/2026	Annual
AC Power Supply	PCR2000MA	KIKUSUI	ZL002530	12/17/2026	Annual
Switch	S46-SV11	KEITHLEY	1088025	N/A	N/A
50Ω Termination	908A	H.P.	N/A	N/A	N/A
Temperature and Humidity Chamber	NY-THR18750	NANGYEAL	NY-200912201A	12/16/2026	Annual
Amp & Filter Bank Switch Controller	FBSM-01B	TNM system	TM20090002	N/A	N/A
Controller(Antenna Mast & Turn Table)	CO3000	Innco systems	CO3000/1251/48920320/P	N/A	N/A
Antenna Mast	MA4640	Innco systems	S4AM	08/01/2026	Annual
Turn Table	Turn Table	Ets	N/A	N/A	N/A
Loop Antenna	FMZB 1513	Rohde & Schwarz	1513-333	06/23/2027	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	9168-0895	08/28/2026	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	9120D-937	02/07/2027	Biennial
RF Switching System	FBSR-04C (LNA)	TNM system	S4L4	03/04/2027	Annual
RF Switching System	FBSR-04C (Thru)	TNM system	S4L6	03/04/2027	Annual
High Pass Filter	WHKX10-900-1000-15000-40SS	WAINWRIGHT INSTRUMENTS	16	07/10/2026	Annual

Multiple pieces of equipment were used depending on the test configuration; however, only one is listed for simplicity.

Note: All test equipment was within its valid calibration period at the time of testing.

5. TEST RESULT

5.1. AGC THRESHOLD

Test Requirement:

KDB 935210 D05 v01r04

Testing at and above the AGC threshold is required.

Test Procedures:

Measurements were in accordance with the test methods section 4.2 of KDB 935210 D05 v01r04.

Testing at and above the AGC threshold will be required. The AGC threshold shall be determined by applying the procedure of 3.2, but with the signal generator configured to produce a test signal defined in Table 1, a CW input signal, or a digitally modulated signal, consistent with the discussion about signal types in 4.1.

Measurement were in accordance with the test methods in subclause 7.2.3.1 of ANSI C63.26.

- a) Connect a signal generator to the input of the EUT.
- b) Connect a spectrum analyzer or power meter to the output of the EUT using appropriate attenuation.
- c) The signal generator must be set for CW operation.
- d) While monitoring the output of the EUT, increase the input level until a 1 dB increase in the input signal no longer causes a 1 dB increase in the output signal.
- e) This is the AGC threshold level of the EUT.

Note: Although subclause 7.2.3.1 c) of ANSI C63.26 specifies CW operation, the signal generator was configured to produce a digitally modulated signal in accordance with section 4.2 of KDB 935210 D05 v01r04, consistent with the signal types described in section 4.1.

Test Results:

Test Band	Link	Test Signal	Center Frequency (MHz)	AGC Threshold Level (dBm)	Output Level (dBm)
NPSPAC	Downlink	P25 Phase 2 (H-DQPSK)	852.50	-15	32.64
B/ILT; SMR			857.50	-15	32.74
ESMR			865.50	-15	32.74

5.2. OUT-OF-BAND REJECTION

Test Requirement:

KDB 935210 D05 v01r04

Out-of-band rejection required.

Test Procedures:

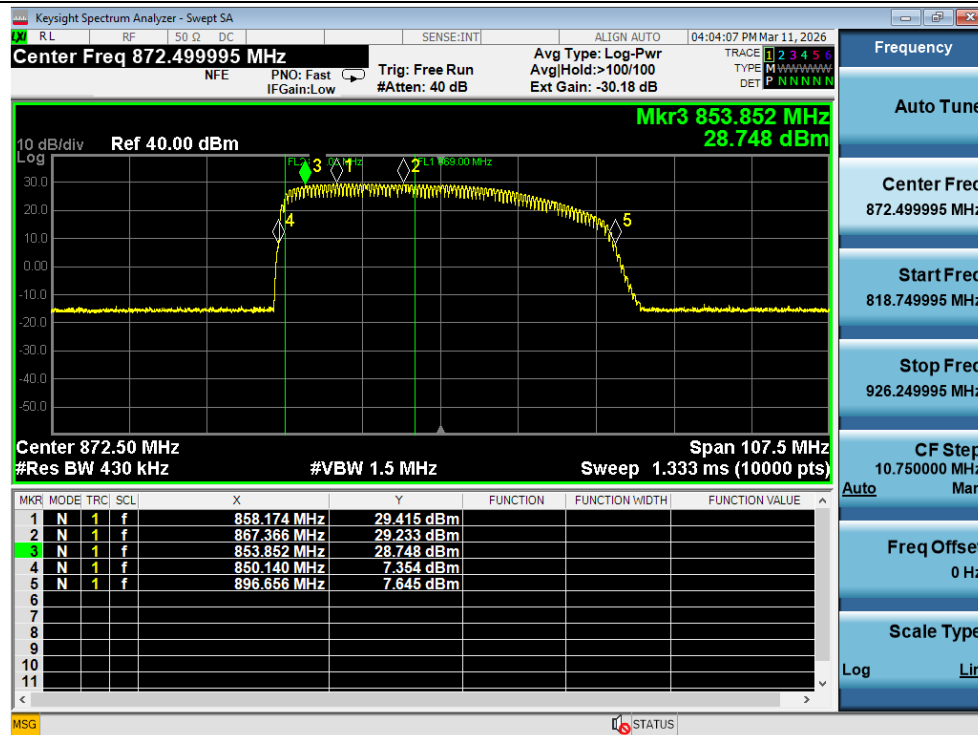
Measurements were in accordance with the test methods section 4.3 of KDB 935210 D05 v01r04.

A signal booster shall reject amplification of other signals outside of its passband. Adjust the internal gain control of the EUT 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:
 - 1) Frequency range = ± 250 % of the manufacturer's specified pass band.
 - 2) The CW amplitude shall be 3 dB below the AGC threshold (see 4.2), and shall not activate the AGC threshold throughout the test.
 - 3) Dwell time = approximately 10 ms.
 - 4) Frequency step = 50 kHz.
- c) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation.
- d) Set the RBW of the spectrum analyzer to between 1 % and 5 % of the manufacturer's rated passband, and VBW = $3 \times$ RBW.
- e) Set the detector to Peak and the trace to Max-Hold.
- f) After the trace is completely filled, place a marker at the peak amplitude, which is designated as f_0 , and with two additional markers (use the marker-delta method) at the 20 dB bandwidth (i.e., at the points where the level has fallen by 20 dB).
- g) Capture the frequency response plot for inclusion in the test report.

Test Results:

800 MHz band (NPSPAC, B/ILT; SMR, ESMR) / Downlink



Note: The EUT supports amplification from 851 to 894 MHz; however, this report uses the results for the frequency range of 851 ~ 869 MHz.

5.3. OCCUPIED BANDWIDTH

Test Requirement:

§ 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.

§ 90.209 Bandwidth limitations.

Table 1 to § 90.209(b)(5) - Standard Channel Spacing/Bandwidth

Frequency band (MHz)	Channel spacing (kHz)	Authorized bandwidth (kHz)
Below 25		
25-50	20	20
72-76	20	20
150-174	7.5	¹ 20/11.25/6
216-220	6.25	20/11.25/6
220-222	5	4
406-512	6.25	20/11.25/6
806-809/851-854 [#]	12.5	20
809-817/854-862	12.5	20/11.25
817-824/862-869	25	20
896-901/935-940	12.5	13.6
902-928		
929-930	25	20
1427-1432	12.5	12.5
2450-2483.5		
Above 2500		

§ 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.

(4) A signal booster must be designed such that all signals that it retransmits meet the following requirements:

(ii) There is no change in the occupied bandwidth of the retransmitted signals.

Test Procedures:

Measurements were in accordance with the test methods section 5.4.4 of ANSI C63.26-2015.

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of $1.5 \times \text{OBW}$ is sufficient).
- b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$.
- c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.
NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances.
- d) Set the detection mode to peak, and the trace mode to max-hold.
- e) Omit
- f) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

Test Results:

Tabular data of Input Occupied Bandwidth

Test Band	Link	Signal	Center Frequency (MHz)	99 % OBW (kHz)	26 dB OBW (kHz)
NPSPAC	Downlink	P25 Phase 2 (H-DQPSK)	852.50	9.797	12.07
B/ILT; SMR			857.50	9.802	12.07
ESMR			865.50	9.790	12.08

Tabular data of Output Occupied Bandwidth

Test Band	Link	Signal	Center Frequency (MHz)	99 % OBW (kHz)	26 dB OBW (kHz)
NPSPAC	Downlink	P25 Phase 2 (H-DQPSK)	852.50	9.791	12.10
B/ILT; SMR			857.50	9.796	12.09
ESMR			865.50	9.791	12.06

Tabular data of Input Occupied Bandwidth at 3 dB above the AGC threshold

Test Band	Link	Signal	Center Frequency (MHz)	99 % OBW (kHz)	26 dB OBW (kHz)
NPSPAC	Downlink	P25 Phase 2 (H-DQPSK)	852.50	9.801	12.08
B/ILT; SMR			857.50	9.801	12.07
ESMR			865.50	9.785	12.08

Tabular data of Output Occupied Bandwidth at 3 dB above the AGC threshold

Test Band	Link	Signal	Center Frequency (MHz)	99 % OBW (kHz)	26 dB OBW (kHz)
NPSPAC	Downlink	P25 Phase 2 (H-DQPSK)	852.50	9.784	12.06
B/ILT; SMR			857.50	9.788	12.08
ESMR			865.50	9.782	12.13

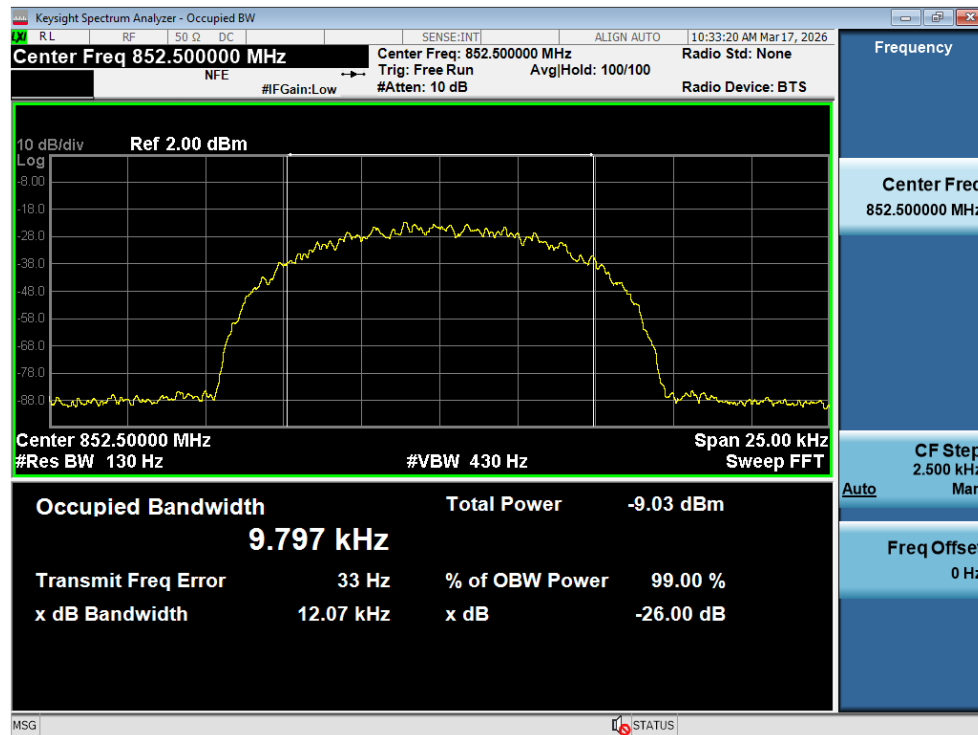
Measured Occupied Bandwidth Comparison

Test Band	Link	Signal	Variant of Input and output Occupied Bandwidth (%)	Variant of Input and output Occupied Bandwidth at 3 dB above the AGC threshold (%)
NPSPAC	Downlink	P25 Phase 2 (H-DQPSK)	0.27	-0.14
B/ILT; SMR			0.21	0.10
ESMR			-0.14	0.39

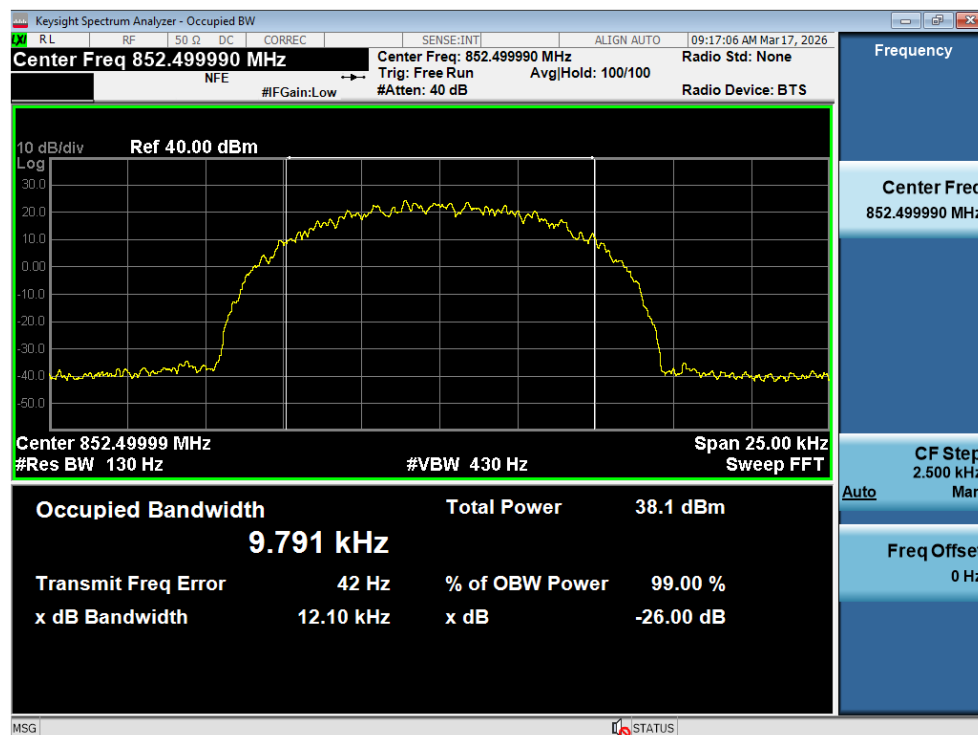
Change in input-output OBW is less than $\pm 5\%$.

Plot data of Occupied Bandwidth

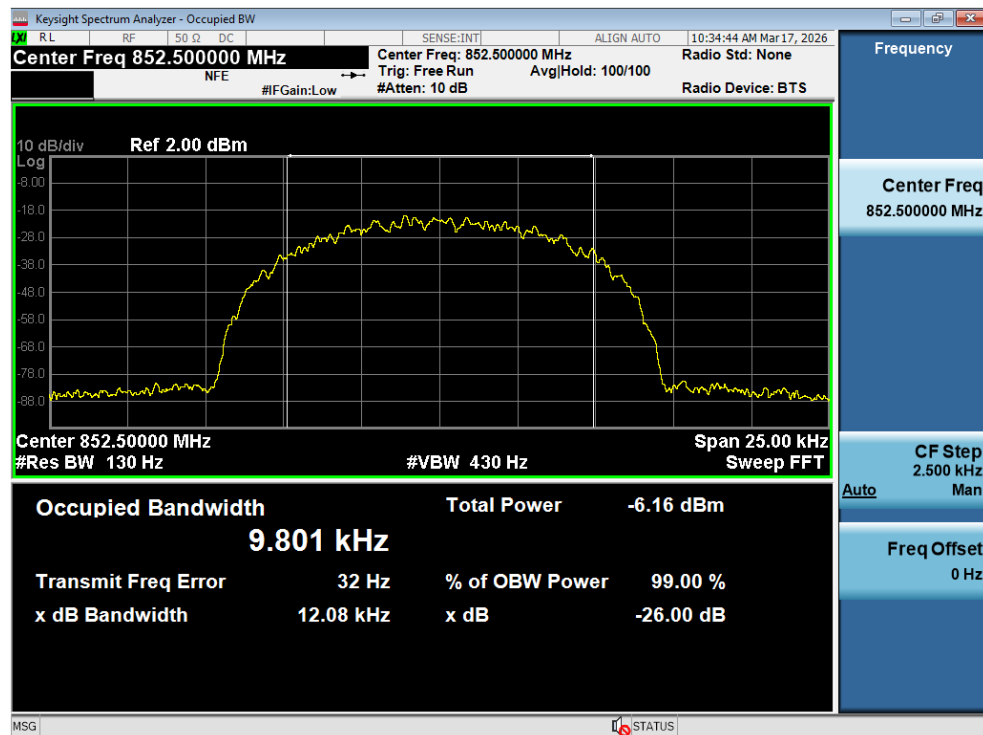
Input / NPSPAC / Downlink / P25 Phase 2 (H-DQPSK)



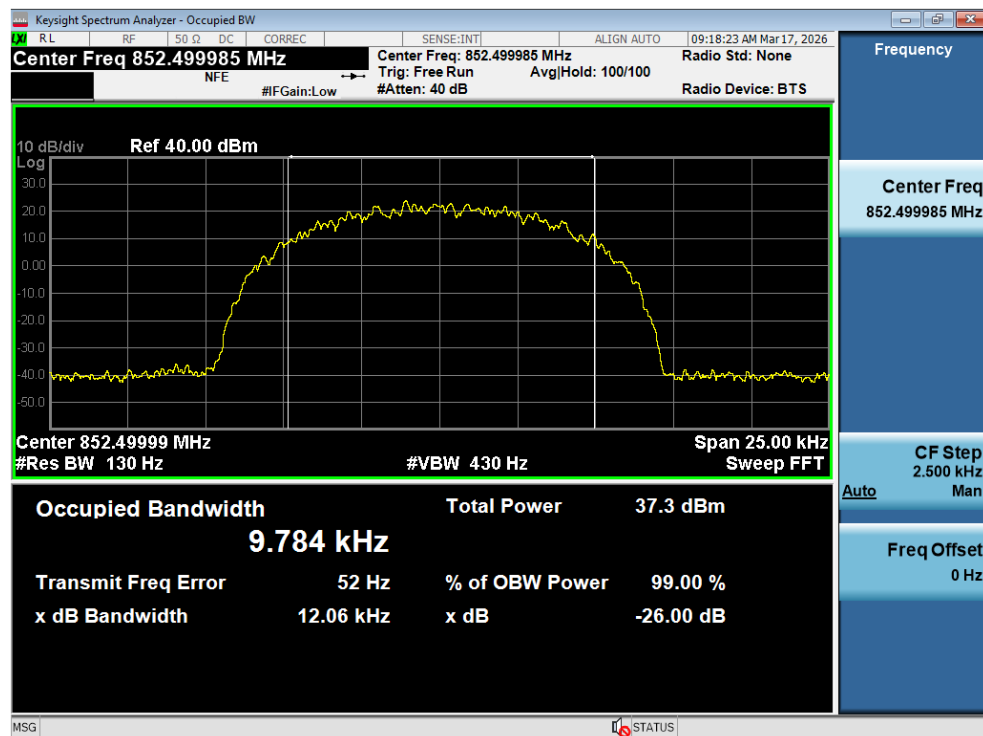
Output / NPSPAC / Downlink / P25 Phase 2 (H-DQPSK)



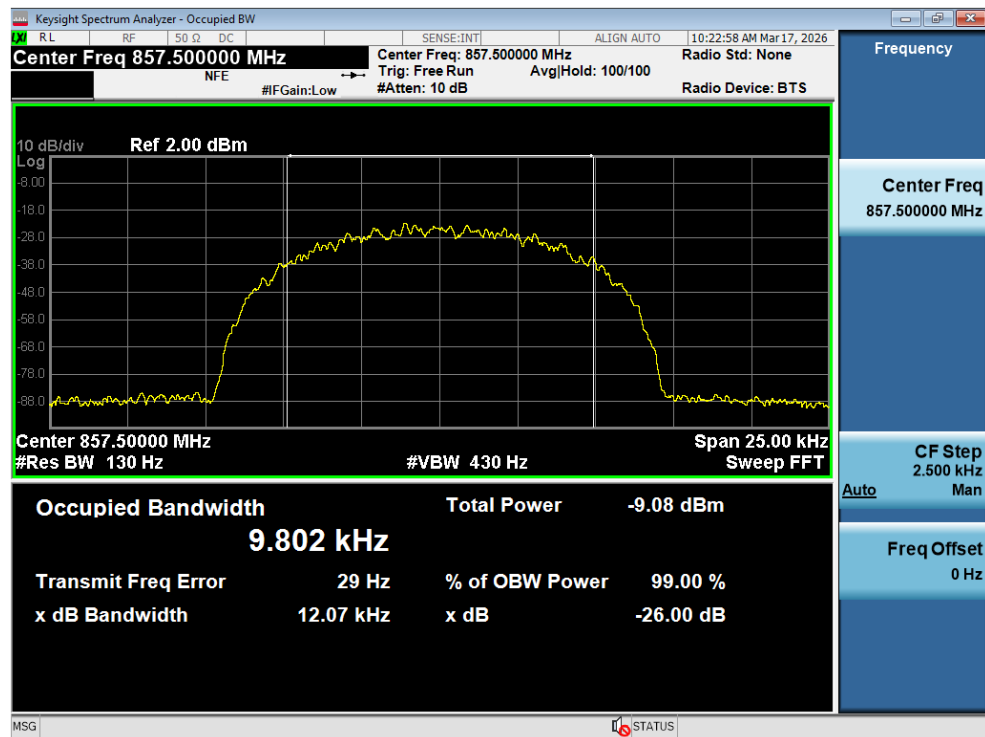
Input @ +3 dB AGC threshold / NPSPAC / Downlink / P25 Phase 2 (H-DQPSK)



Output @ +3 dB AGC threshold / NPSPAC / Downlink / P25 Phase 2 (H-DQPSK)



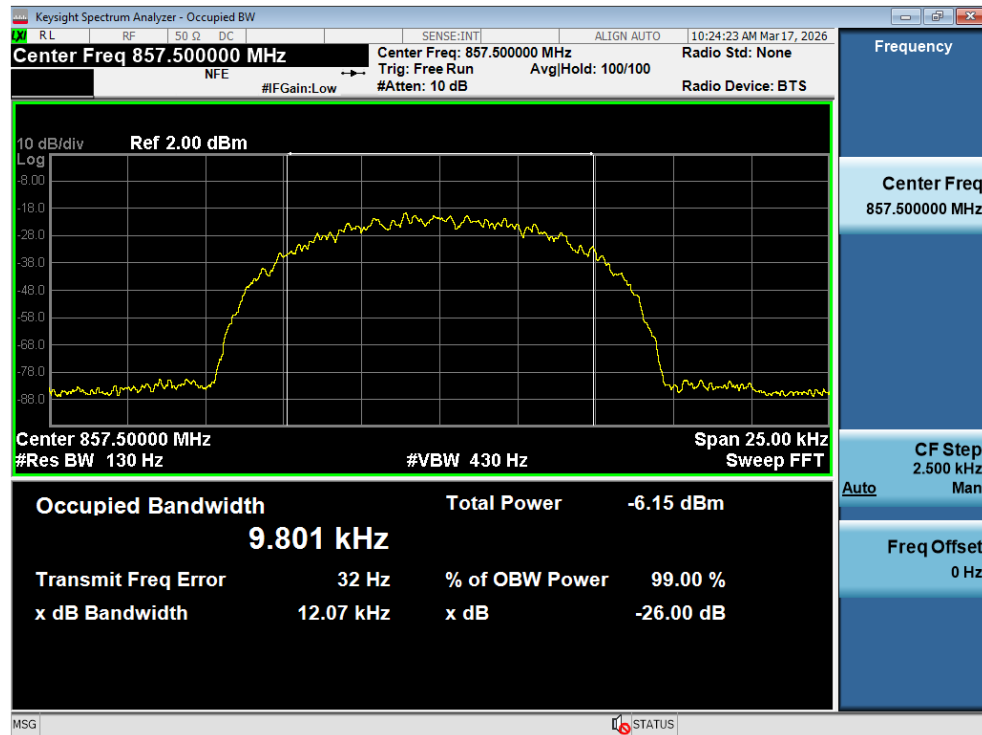
Input / B/ILT; SMR / Downlink / P25 Phase 2 (H-DQPSK)



Output / B/ILT; SMR / Downlink / P25 Phase 2 (H-DQPSK)



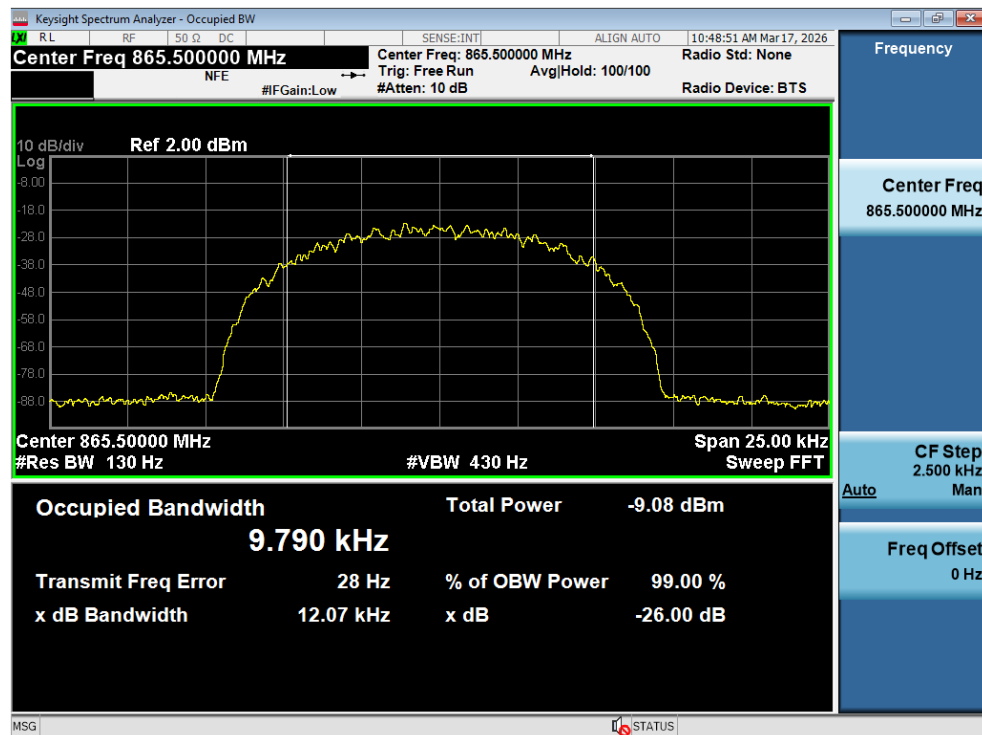
Input @ +3 dB AGC threshold / B/ILT; SMR / Downlink / P25 Phase 2 (H-DQPSK)



Output @ +3 dB AGC threshold / B/ILT; SMR / Downlink / P25 Phase 2 (H-DQPSK)



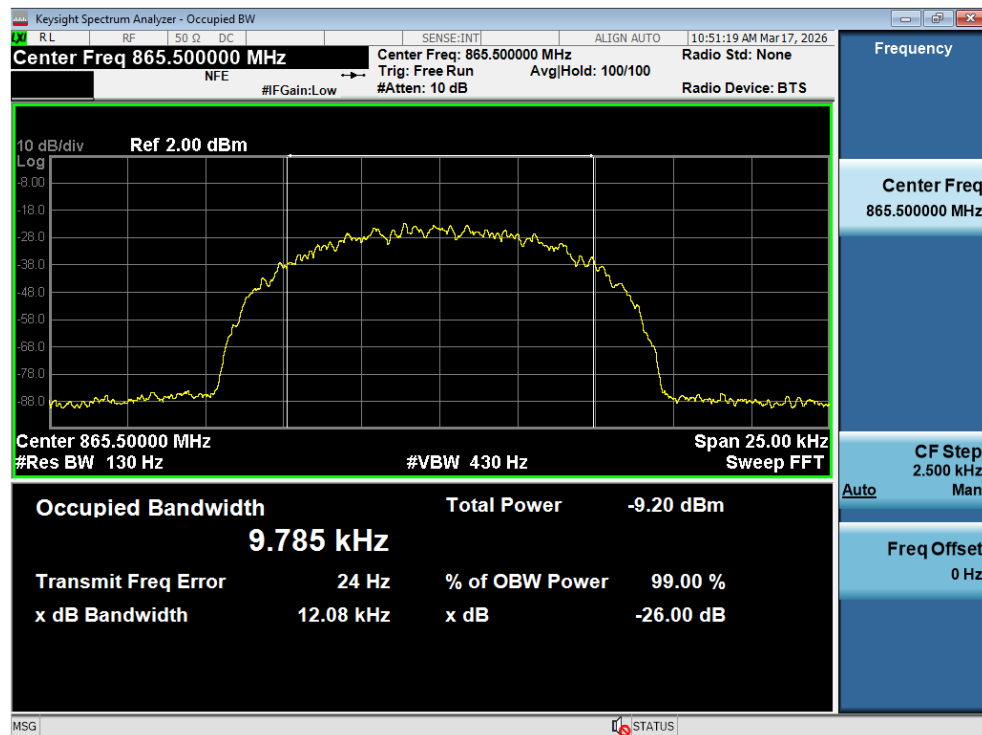
Input / ESMR / Downlink / P25 Phase 2 (H-DQPSK)



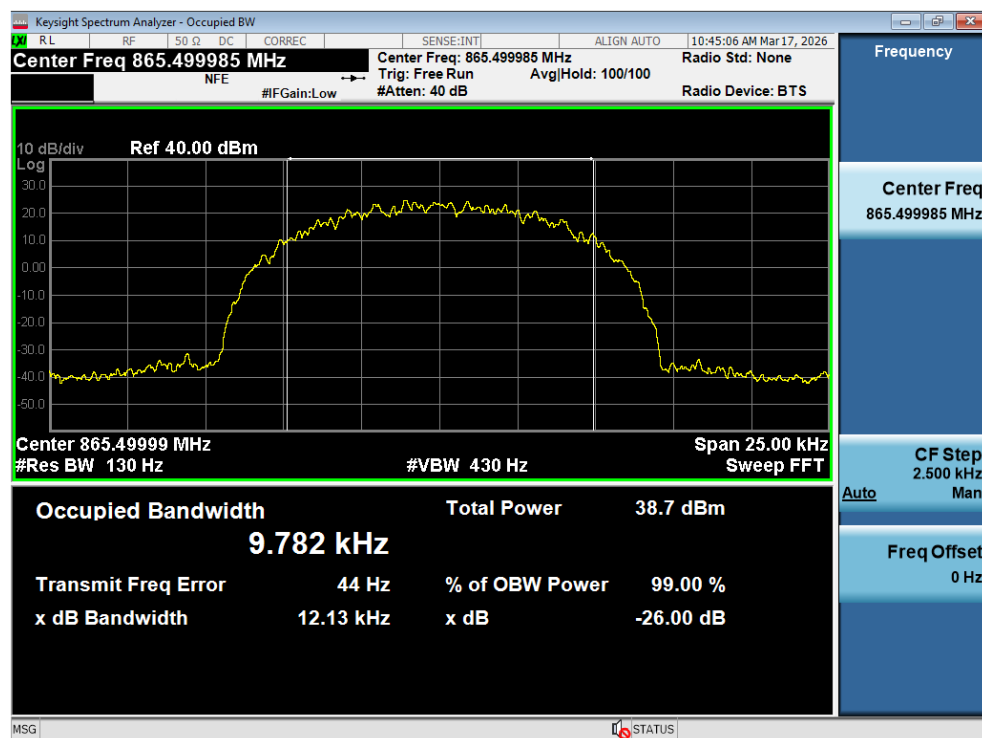
Output / ESMR / Downlink / P25 Phase 2 (H-DQPSK)



Input @ +3 dB AGC threshold / ESMR / Downlink / P25 Phase 2 (H-DQPSK)



Output @ +3 dB AGC threshold / ESMR / Downlink / P25 Phase 2 (H-DQPSK)



5.4. INPUT-VERSUS-OUTPUT SIGNAL COMPARISON

Test Requirement:

§ 90.210 Emission masks.

Except as indicated elsewhere in this part, transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section. Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (o) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere in this part, the table in this section specifies the emission masks for equipment operating under this part.

Frequency band (MHz)	Applicable Emission Masks	
	Mask for equipment with audio low pass filter	Mask for equipment without audio low pass filter
Below 25	A or B	A or C
25-50	B	C
72-76	B	C
150-174	B, D, or E	C, D or E
150 paging only	B	C
220-222	F	F
421-512	B, D, or E	C, D, or E
450 paging only	B	G
806-809/851-854	B	H
809-824/854-869 [#]	B, D	D, G.
896-901/935-940	I	J
902-928	K	K
929 ~ 930	B	G
4940-4990 MHz	L or M	L or M
5850-5925		
All other bands	B	C

[#] Equipment designed to operate on 25 kilohertz bandwidth channels must meet the requirements of either Emission Mask B or G, whichever is applicable, while equipment designed to operate on 12.5 kilohertz bandwidth channels must meet the requirements of Emission Mask D. Equipment designed to operate on 25 kilohertz bandwidth channels may alternatively meet the Adjacent Channel Power limits of § 90.221.

- (d) Emission Mask D—12.5 kHz channel bandwidth equipment. For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:
- (1) On any frequency from the center of the authorized bandwidth f_0 to 5.625 kHz removed from f_0 : Zero dB.
 - (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least $7.27(f_d - 2.88 \text{ kHz})$ dB.
 - (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least $50 + 10 \log (P)$ dB or 70 dB, whichever is the lesser attenuation.
 - (4) The reference level for showing compliance with the emission mask shall be established using a resolution bandwidth sufficiently wide (usually two or three times the channel bandwidth) to capture the true peak emission of the equipment under test. In order to show compliance with the emission mask up to and including 50 kHz removed from the edge of the authorized bandwidth, adjust the resolution bandwidth to 100 Hz with the measuring instrument in a peak hold mode. A sufficient number of sweeps must be measured to insure that the emission profile is developed. If video filtering is used, its bandwidth must not be less than the instrument resolution bandwidth. For emissions beyond 50 kHz from the edge of the authorized bandwidth, see paragraph (o) of this section. If it can be shown that use of the above instrumentation settings do not accurately represent the true interference potential of the equipment under test, an alternate procedure may be used provided prior Commission approval is obtained.
- (h) Emission Mask H. For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:
- (1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of 4 kHz or less: Zero dB.
 - (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 4 kHz, but no more than 8.5 kHz: At least $107 \log (f_d/4)$ dB;
 - (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 8.5 kHz, but no more than 15 kHz: At least $40.5 \log (f_d/1.16)$ dB;
 - (4) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 15 kHz, but no more than 25 kHz: At least $116 \log (f_d/6.1)$ dB;
 - (5) On any frequency removed from the center of the authorized bandwidth by more than 25 kHz: At least $43 + 10 \log (P)$ dB.

§ 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.
- (4) A signal booster must be designed such that all signals that it retransmits meet the following requirements:
 - (iii) The retransmitted signals continue to meet the unwanted emissions limits of § 90.210 applicable to the corresponding received signals (assuming that these received signals meet the applicable unwanted emissions limits by a reasonable margin).

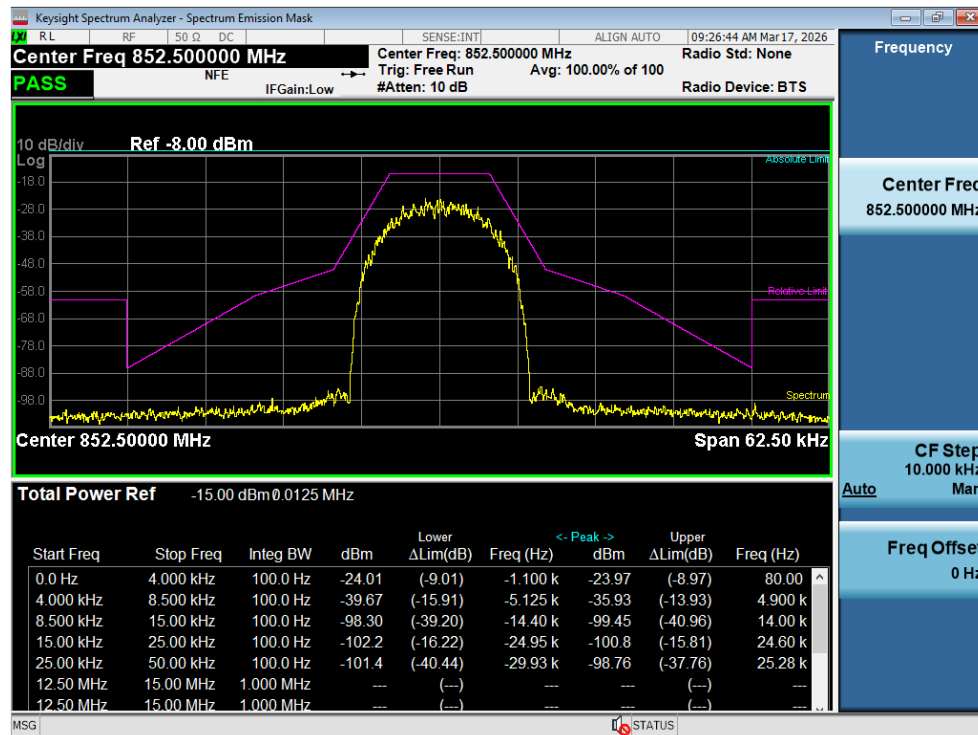
Test Procedures:

Measurements were in accordance with the test methods section 4.4 of KDB 935210 D05 v01r03.

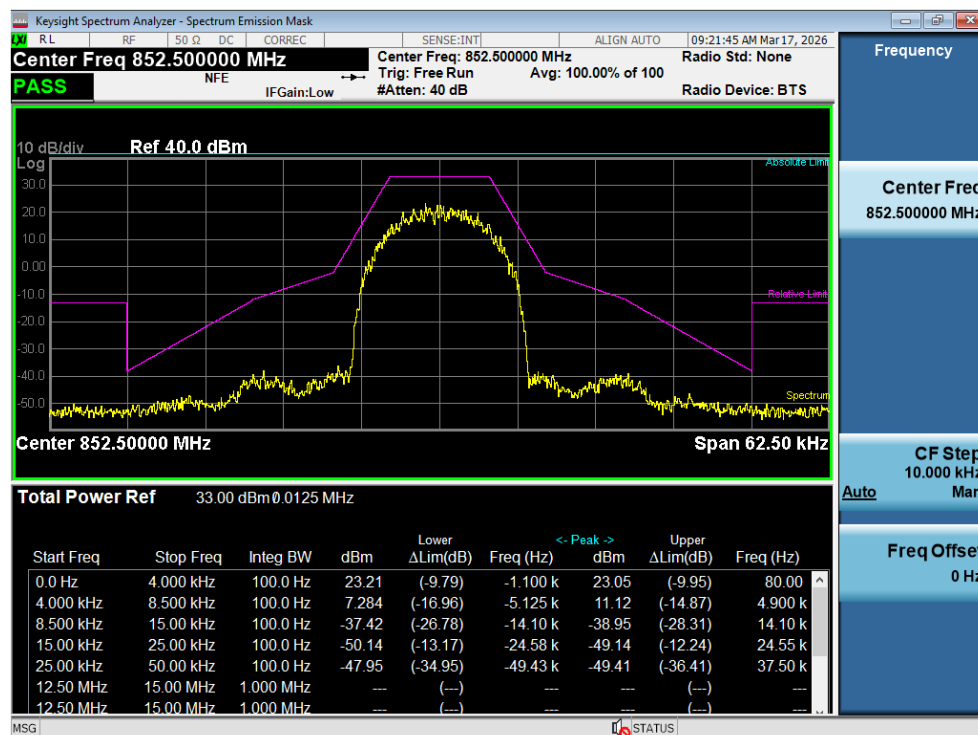
- a) Connect a signal generator to the input of the EUT.
- b) Configure the signal generator to transmit the appropriate test signal associated with the public safety emission designation.
- c) Configure the signal level to be just below the AGC threshold.
- d) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation as necessary.
- e) Set the spectrum analyzer center frequency to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between 2 times to 5 times the EBW (or OBW).
- f) The nominal RBW shall be 300 Hz for 16K0F3E, and 100 Hz for all other emissions types.
- g) Set the reference level of the spectrum analyzer to accommodate the maximum input amplitude level, i.e., the level at f_0 per Out-of-band rejection test.
- h) Set spectrum analyzer detection mode to peak, and trace mode to max hold.
- i) Allow the trace to fully stabilize.
- j) Confirm that the signal is contained within the appropriate emissions mask.
- k) Use the marker function to determine the maximum emission level and record the associated frequency.
- l) Capture the emissions mask plot for inclusion in the test report (output signal spectra).
- m) Measure the EUT input signal power (signal generator output signal) directly from the signal generator using power measurement guidance provided in KDB Publication 971168 [R8] (input signal spectra).
- n) Compare the spectral plot of the output signal (determined in step k), to the input signal (determined in step l) to affirm they are similar (in passband and rolloff characteristic features and relative spectral locations).
- o) Repeat steps d) to n) with the input signal amplitude set 3 dB above the AGC threshold.
- p) Repeat steps b) to o) for all authorized operational bands and emissions types (see applicable regulatory specifications, e.g., Section 90.210).
- q) Include all accumulated spectral plots depicting EUT input signal and EUT output signal in the test report, and note any observed dissimilarities.

Plot data of Emission mask

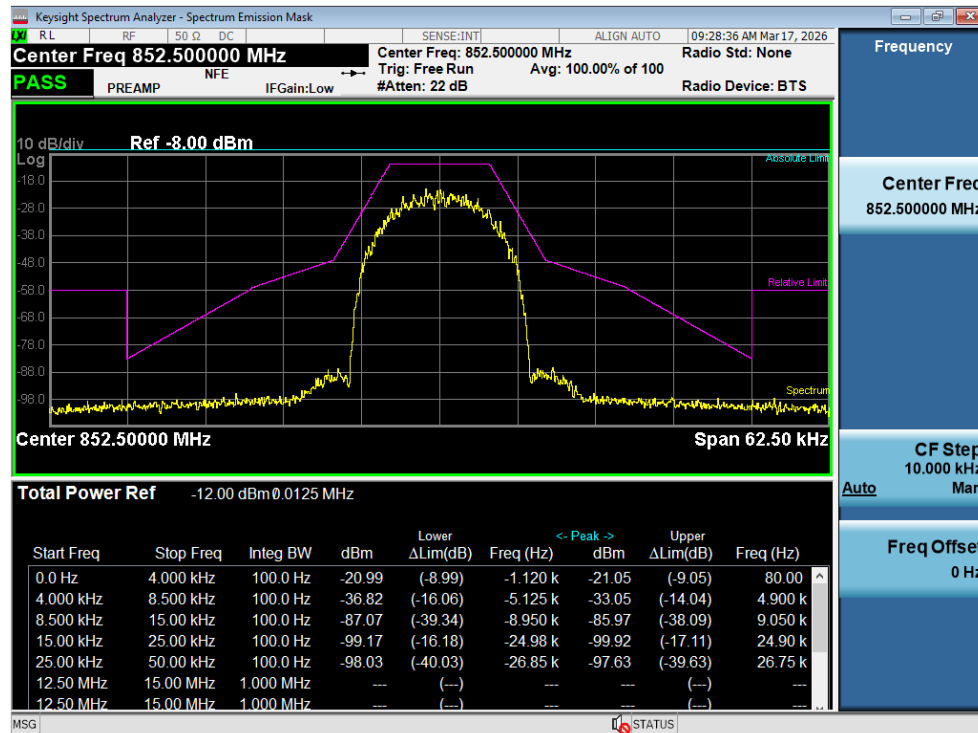
Input / NPSPAC / Downlink / P25 Phase 2 (H-DQPSK) / Mask H



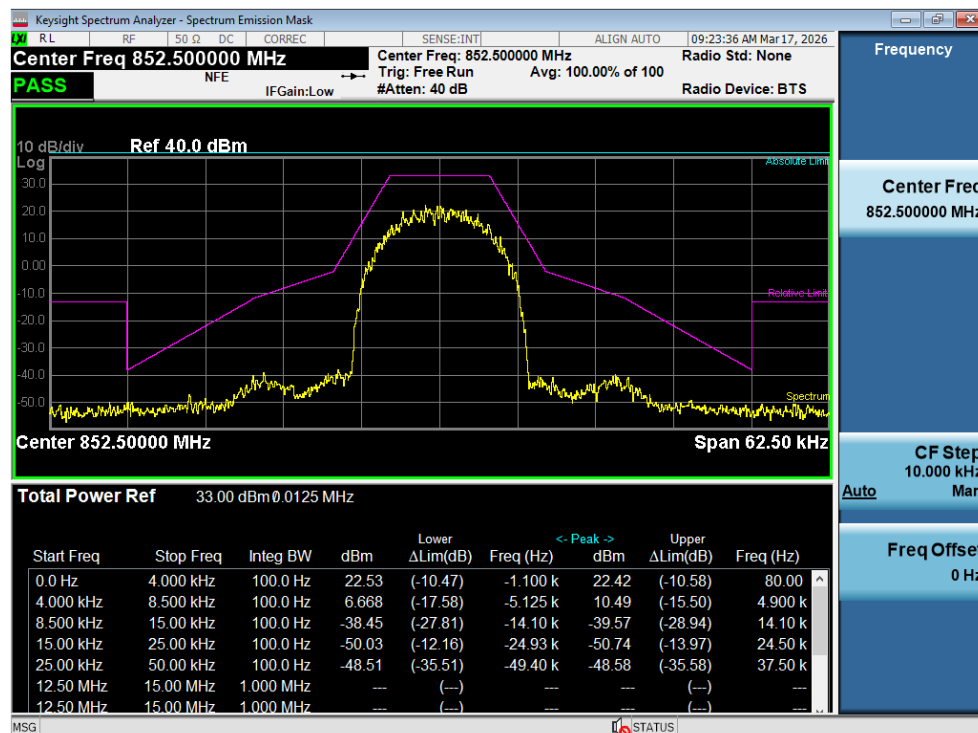
Output / NPSPAC / Downlink / P25 Phase 2 (H-DQPSK) / Mask H



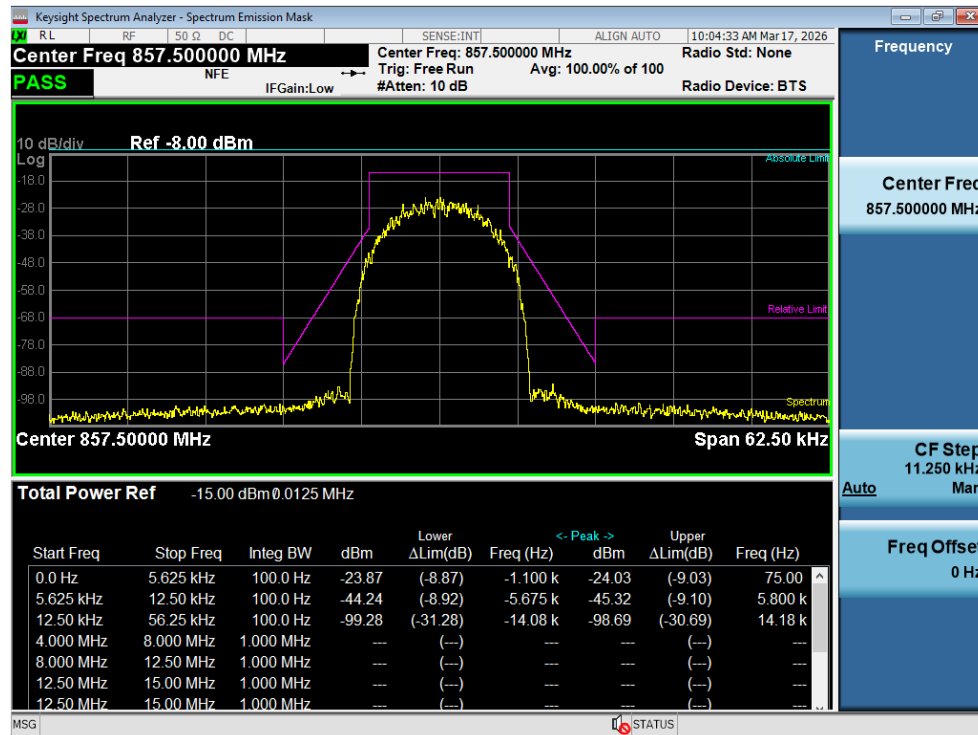
Input @ +3 dB AGC threshold / NPSPAC / Downlink / P25 Phase 2 (H-DQPSK) / Mask H



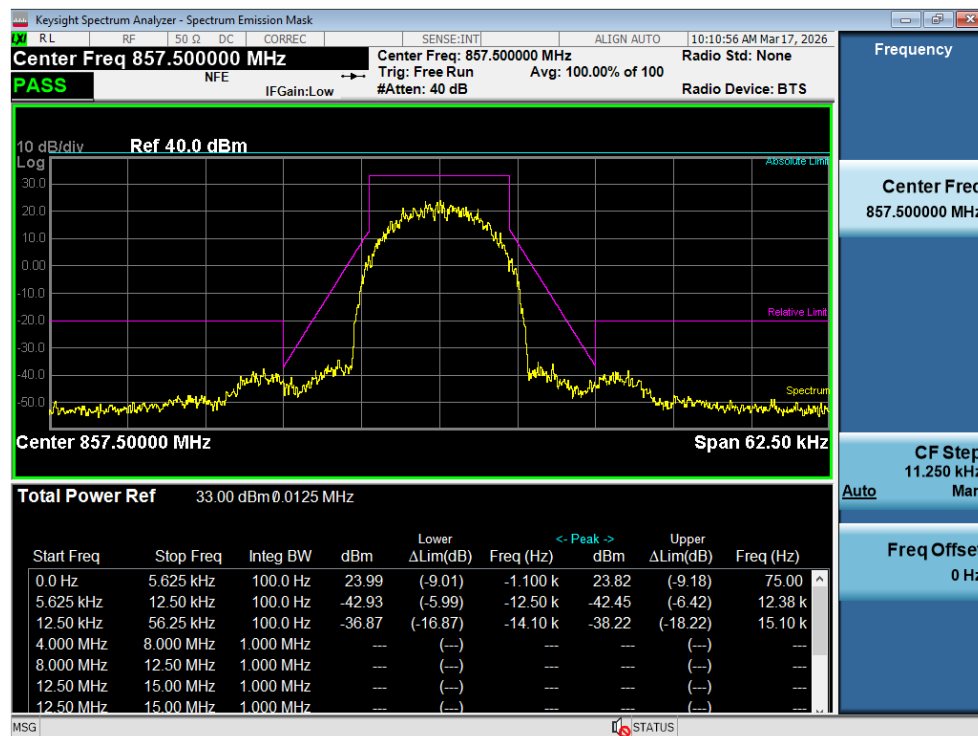
Output @ +3 dB AGC threshold / NPSPAC / Downlink / P25 Phase 2 (H-DQPSK) / Mask H



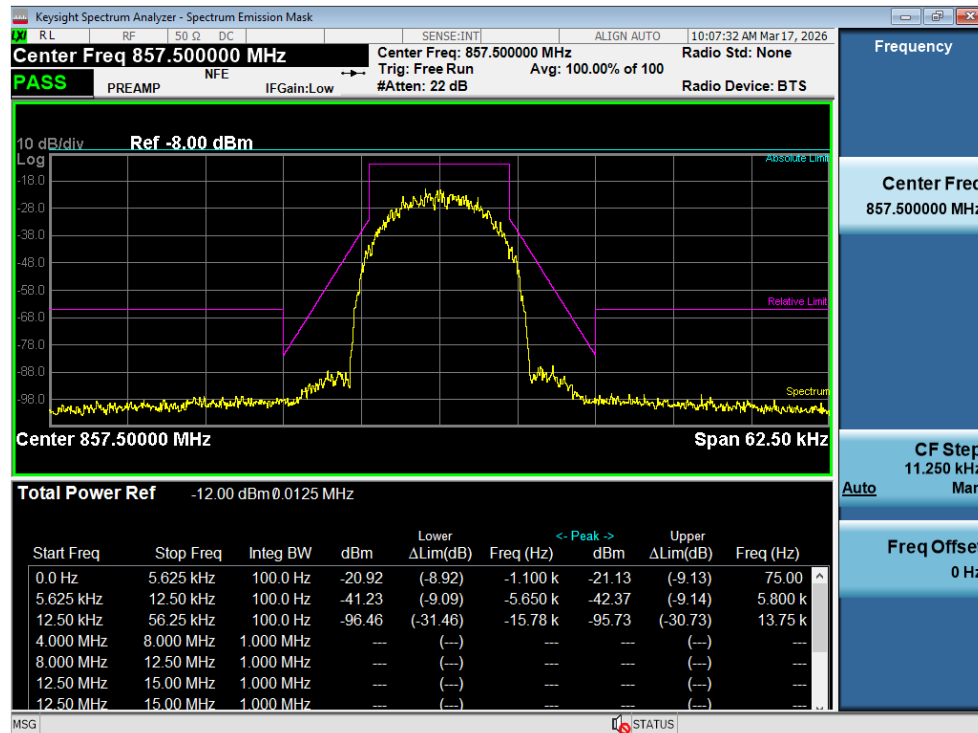
Input / B/ILT; SMR / Downlink / P25 Phase 2 (H-DQPSK) / Mask D



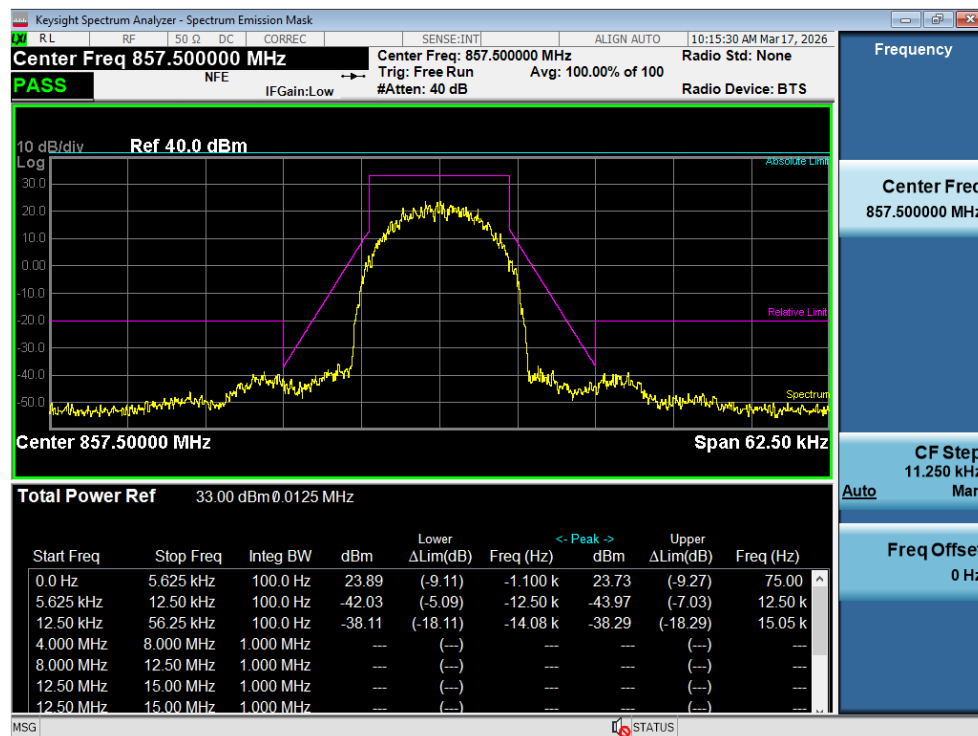
Output / B/ILT; SMR / Downlink / P25 Phase 2 (H-DQPSK) / Mask D



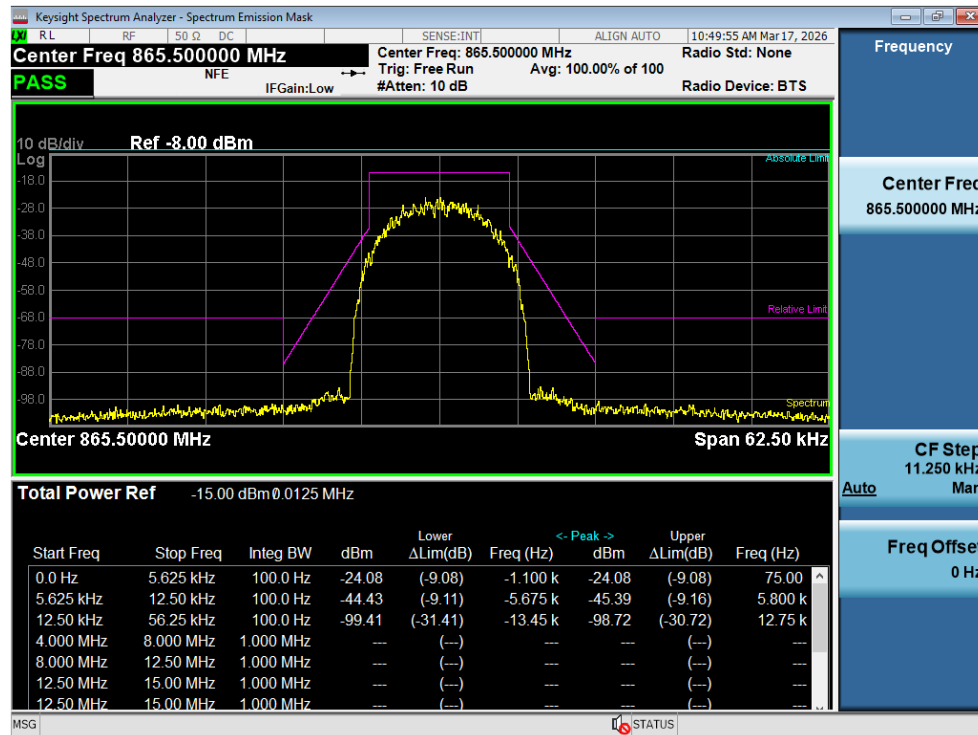
Input @ +3 dB AGC threshold / B/ILT; SMR / Downlink / P25 Phase 2 (H-DQPSK) / Mask D



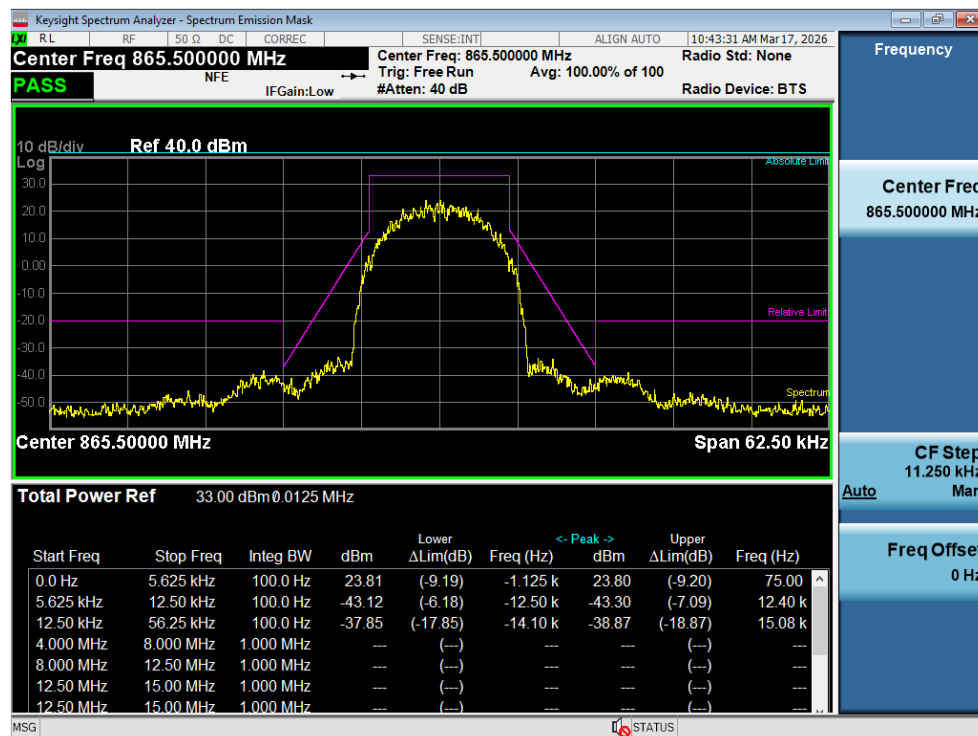
Output @ +3 dB AGC threshold / B/ILT; SMR / Downlink / P25 Phase 2 (H-DQPSK) / Mask D



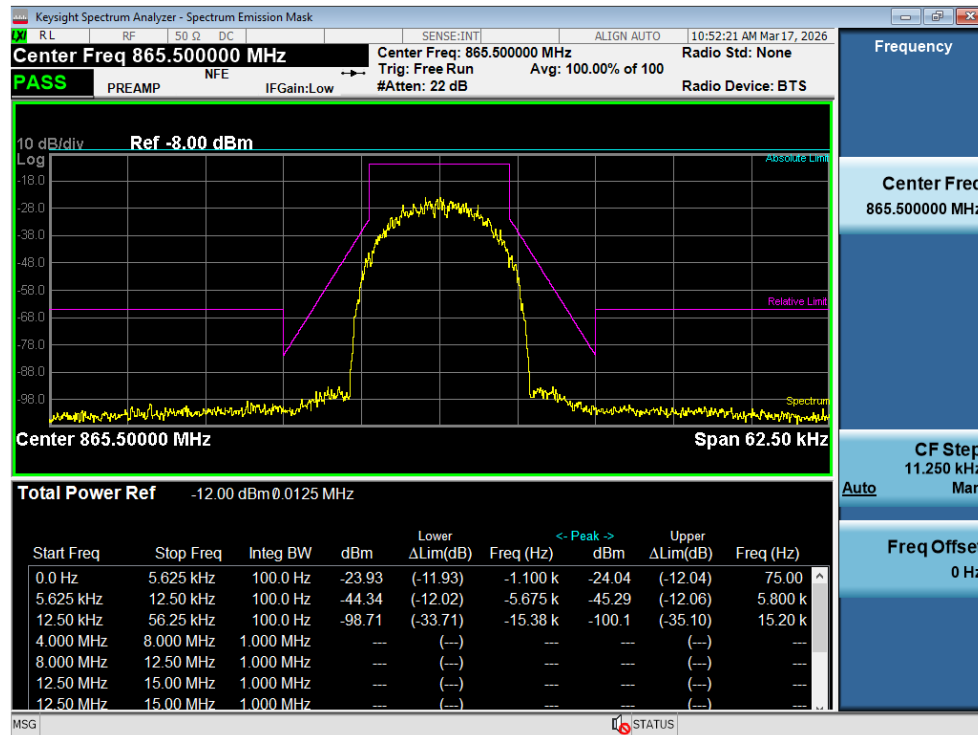
Input / ESMR / Downlink / P25 Phase 2 (H-DQPSK) / Mask D



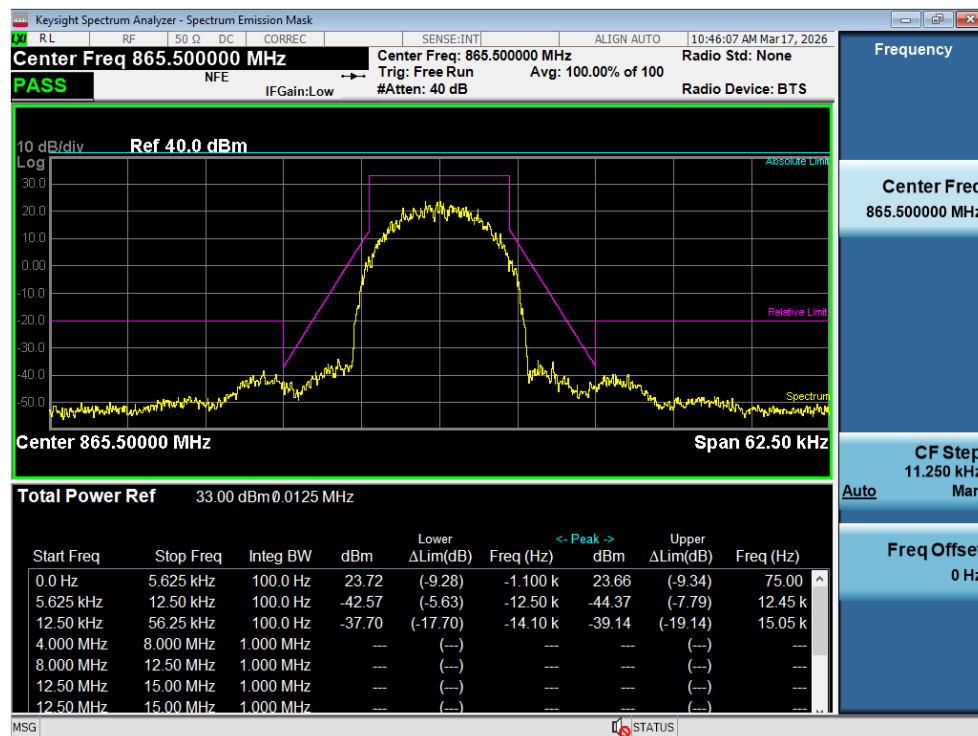
Output / ESMR / Downlink / P25 Phase 2 (H-DQPSK) / Mask D



Input @ +3 dB AGC threshold / ESMR / Downlink / P25 Phase 2 (H-DQPSK) / Mask D



Output @ +3 dB AGC threshold / ESMR / Downlink / P25 Phase 2 (H-DQPSK) / Mask D



5.5. INPUT/OUTPUT POWER AND AMPLIFIER/BOOSTER GAIN

Test Requirement:

§ 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.

Test Procedures:

Measurements were in accordance with the test methods section 4.5 of KDB 935210 D05 v01r04.

4.5.2 Measuring input and output power levels for determining amplifier/booster gain

Apply the same guidance as in 3.5.2 to measure the maximum input and output power levels necessary for computing the mean EUT gain, but with the following modifications:

- a) Configure the signal generator for CW operation, instead of AWGN,
- b) Select the spectrum analyzer positive peak detector, instead of the power averaging (rms) detector,
- c) Activate the max hold function, instead of the trace averaging function,
- d) Use in conjunction with the guidance in 4.5.3.

4.5.3 Power measurement Method 1: using a spectrum or signal analyzer

- a) Set the span to at least 1 MHz.
- b) Set the RBW 100 kHz.
- c) Set the VBW to $\geq 3 \times \text{RBW}$.
- d) Set the detector to PEAK with the trace to MAX HOLD.
- e) Place a marker on the peak of the signal, and record the value as the maximum power.
- f) Repeat step e) but with the EUT in place.
- g) EUT gain may be calculated as described in 4.5.5.

4.5.5 Calculating amplifier, repeater, or industrial booster gain

After the input and output power levels have been measured as described in the preceding subclauses, the gain of the EUT can be determined from:

$$\text{Gain (dB)} = \text{output power (dBm)} - \text{input power (dBm)}.$$

Report the gain for each authorized operating frequency band, and each test signal stimulus.

Note:

1. If the f_0 determined from the out-of-band rejection test is smaller or greater than the difference between the test signal's center frequency and the operating band block, the test is performed at the lowest or highest frequency at which the test signals can pass.
2. The Downlink ERP is calculated as follows.
 - Downlink ERP = Downlink Output Power + Ant. Peak Gain(dBi $\rightarrow$ dBd)
 $= 33.08 \text{ dBm} + (3.9 \text{ dBi} - 2.15 \text{ dB}) = 34.83 \text{ dBm}$

Test Results:

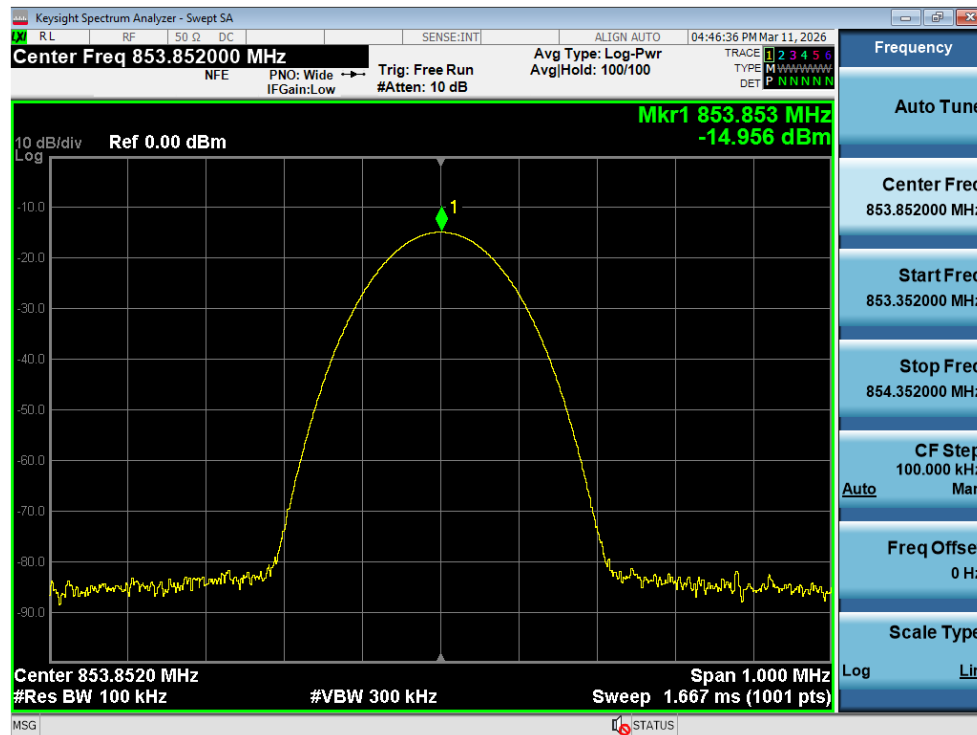
Tabular data of Input / Output Power and Gain

Test Band	Link	Signal	f ₀ Frequency	Input Power	Output Power	Gain	Peak Ant. Gain	E.R.P. [#]	
			(MHz)	(dBm)		(dB)	(dBd)	(dBm)	(W)
NPSAC	Downlink	CW	853.85	-14.96	33.08	48.04	1.75	34.83	3.04
B/ILT; SMR			858.17	-14.96	32.87	47.82	1.75	34.62	2.90
ESMR			867.37	-15.02	32.69	47.71	1.75	34.44	2.78

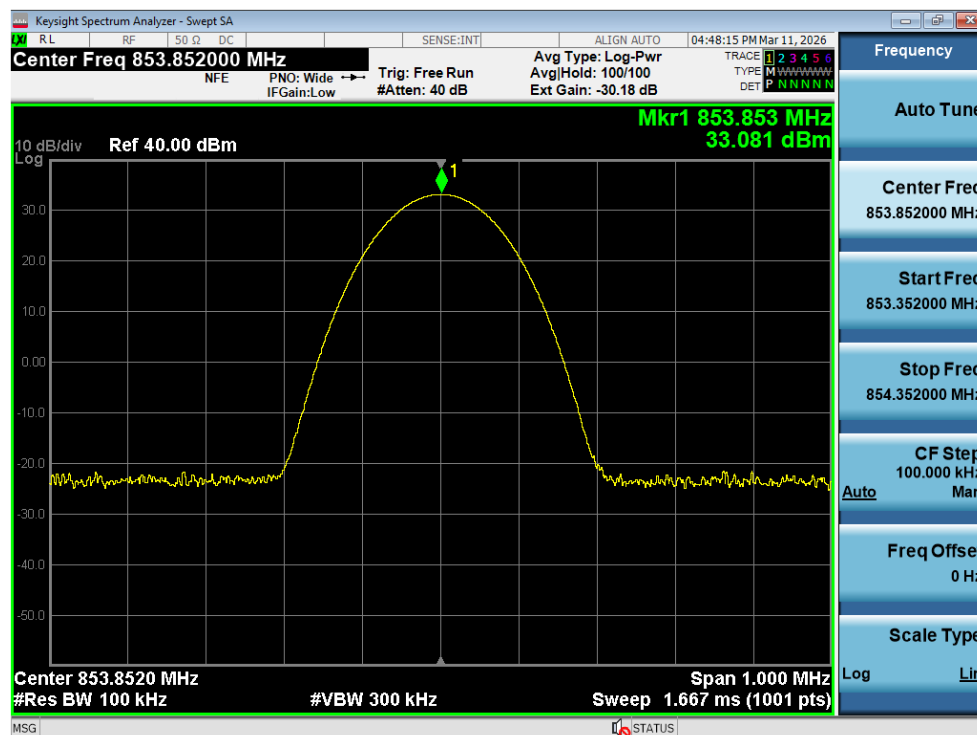
[#]E.R.P.(dBm) = Output Power(dBm) + Peak Ant. Gain(dBd)

Plot data of Input / Output Power

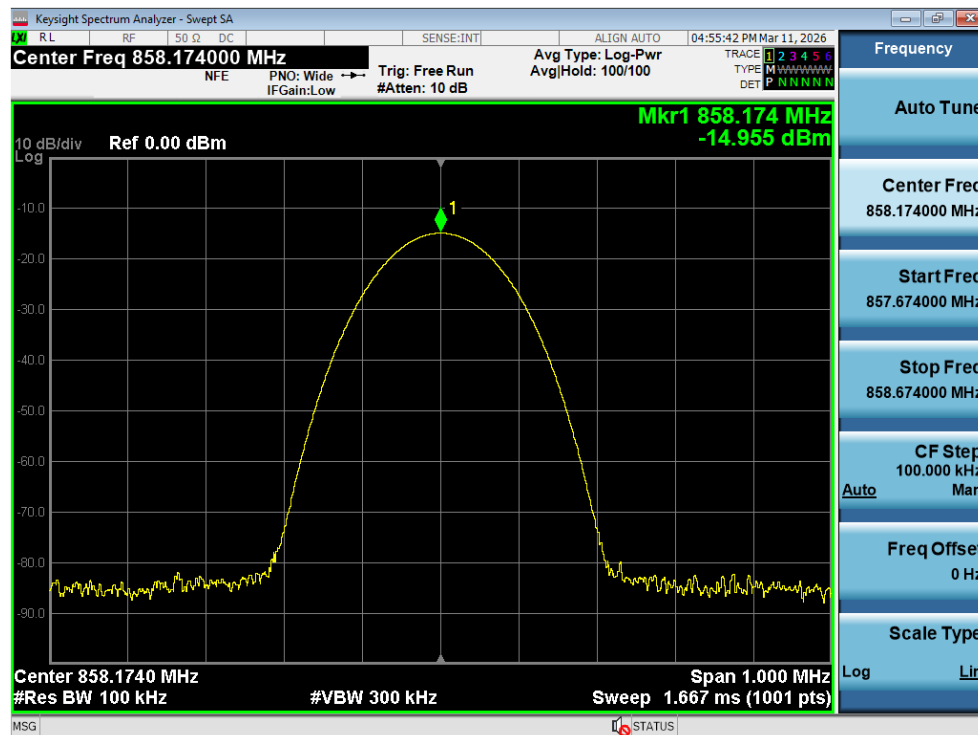
Input / NPSPAC / Downlink



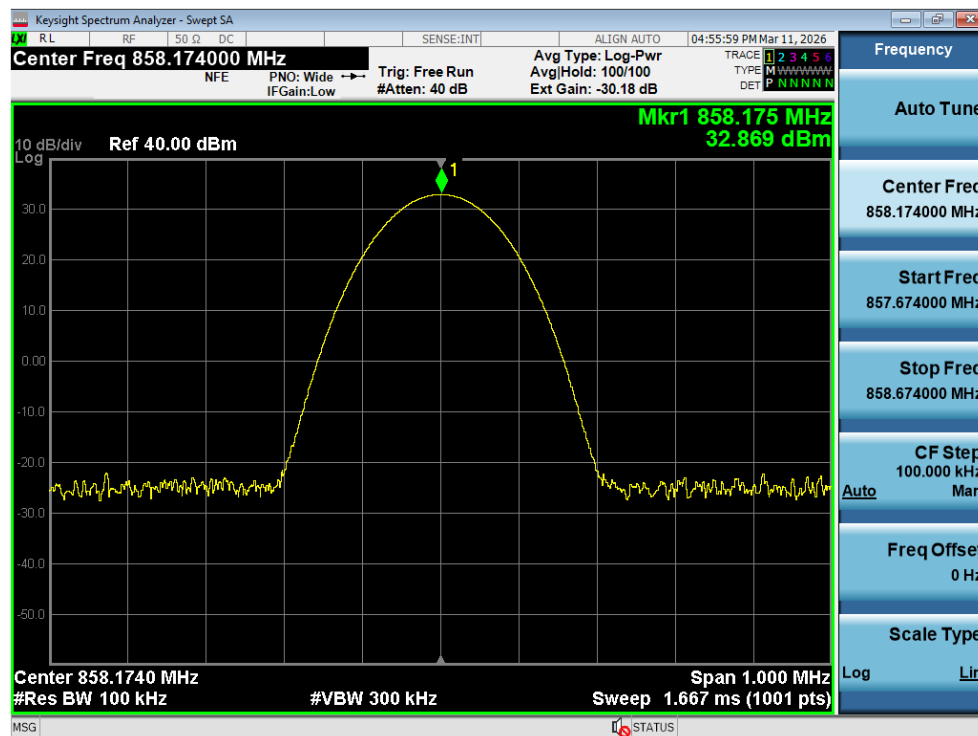
Output/ NPSPAC / Downlink



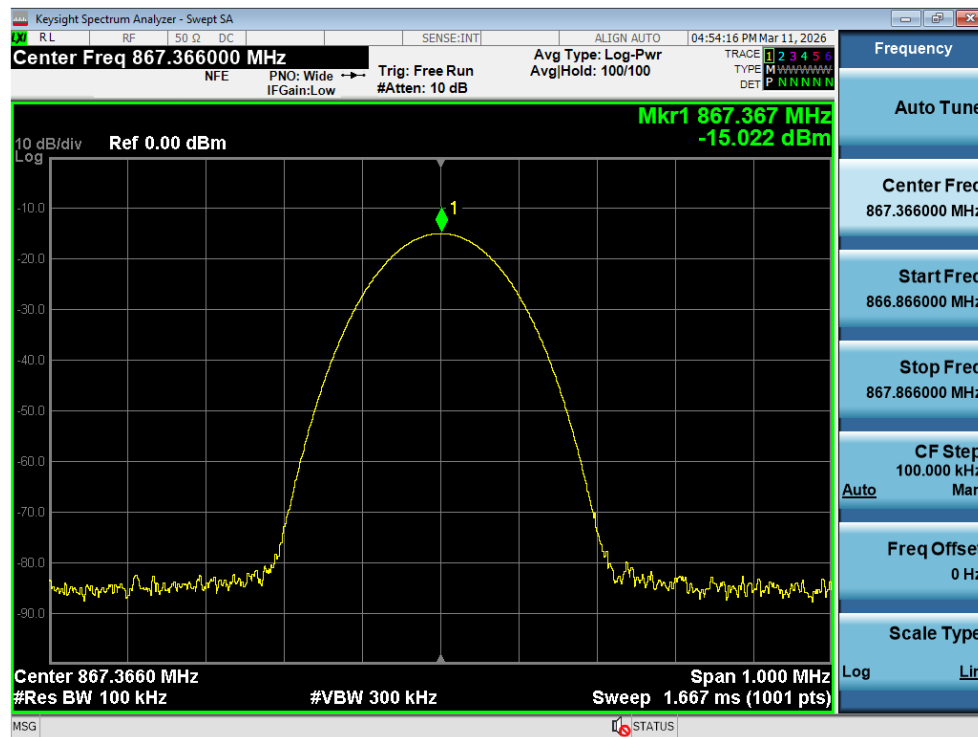
Input / B/ILT; SMR / Downlink



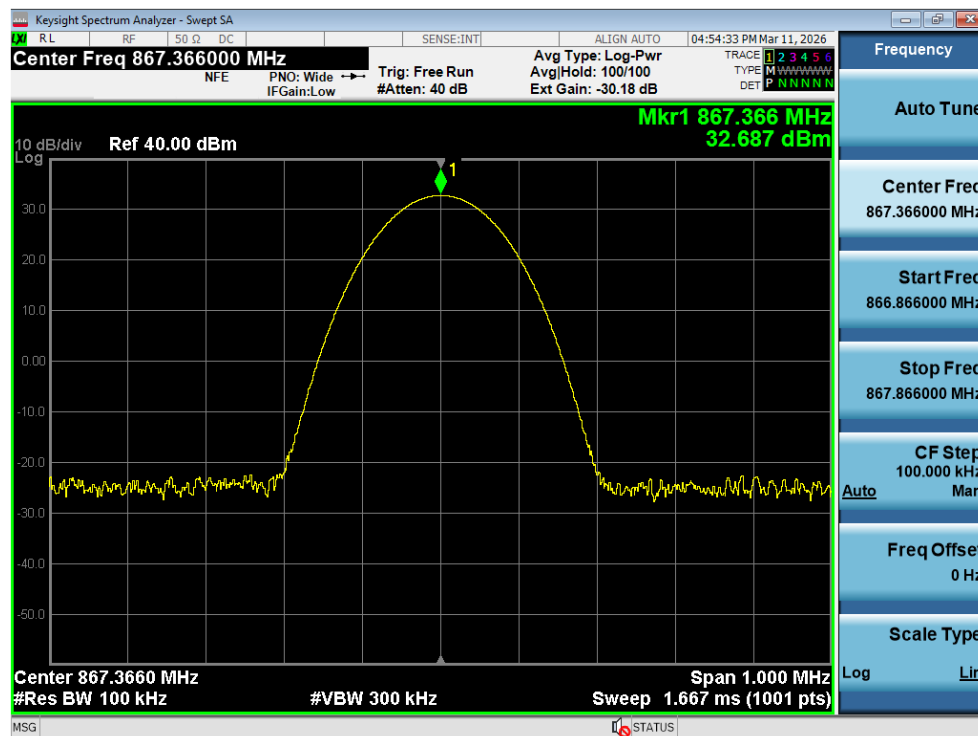
Output/ B/ILT; SMR / Downlink



Input / ESMR / Downlink



Output/ ESMR / Downlink



5.6. NOISE FIGURE

Test Requirements:

KDB 935210 D02 v04r03

V. PART 90 SIGNAL BOOSTER SPECIFIC REQUIREMENTS

- (j) Other provisions for Part 90 boosters in specific bands and/or for specific conditions
 - (5) For the remote unit of a conventional fiber-connected host/remote DAS booster system, it is acceptable to submit compliance information and test data consistent with Section 90.219(d)(6)(ii) (i.e., ERP of noise ≤ -43 dBm in 10 kHz RBW) for the downlink path only, in place of Section 90.219(e)(2) noise figure test data (i.e., NF ≤ 9 dB for both UL and DL). Test reports must provide explicit details about the instrumentation and test procedure used for Section 90.219(d)(6)(ii) testing.

§ 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.
 - (2) The noise figure of a signal booster must not exceed 9 dB in either direction.

Test Results:

Test Band	Link	Measured Value (dBm/10 kHz)	Peak Ant. Gain (dBd)	E.R.P. (dBm/10 kHz)	Limit (dBm/10 kHz)
NPSPAC	Downlink	-50.235	1.75	-48.485	-43
B/ILT; SMR		-49.486	1.75	-47.736	
ESMR		-49.225	1.75	-47.475	

Plot data of Noise Figure

Noise Figure / 800 MHz band (NPSPAC, B/ILT; SMR, ESMR) / Downlink



Note: The EUT supports amplification from 851 to 894 MHz; however, this report uses the results for the frequency range of 851 ~ 869 MHz.

5.7. OUT-OF-BAND/OUT-OF-BLOCK EMISSIONS AND SPURIOUS EMISSIONS

§ 2.1051 Measurements required: Spurious emissions at antenna terminals.

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in § 2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

§ 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.
 - (3) Spurious emissions from a signal booster must not exceed -13 dBm within any 100 kHz measurement bandwidth.

Test Procedures:

Measurements were in accordance with the test methods section 4.7 of KDB 935210 D05 v01r04.

Spurious emissions shall be measured using a single test signal sequentially tuned to frequencies within each authorized frequency band of operation.

Intermodulation products shall be measured using two CW signals with all available channel spacing with the center between these channels being equal to the center frequency f_0 as determined from Out-of-band rejection test.

4.7.2 Out-of-band/out-of-block emissions conducted measurements

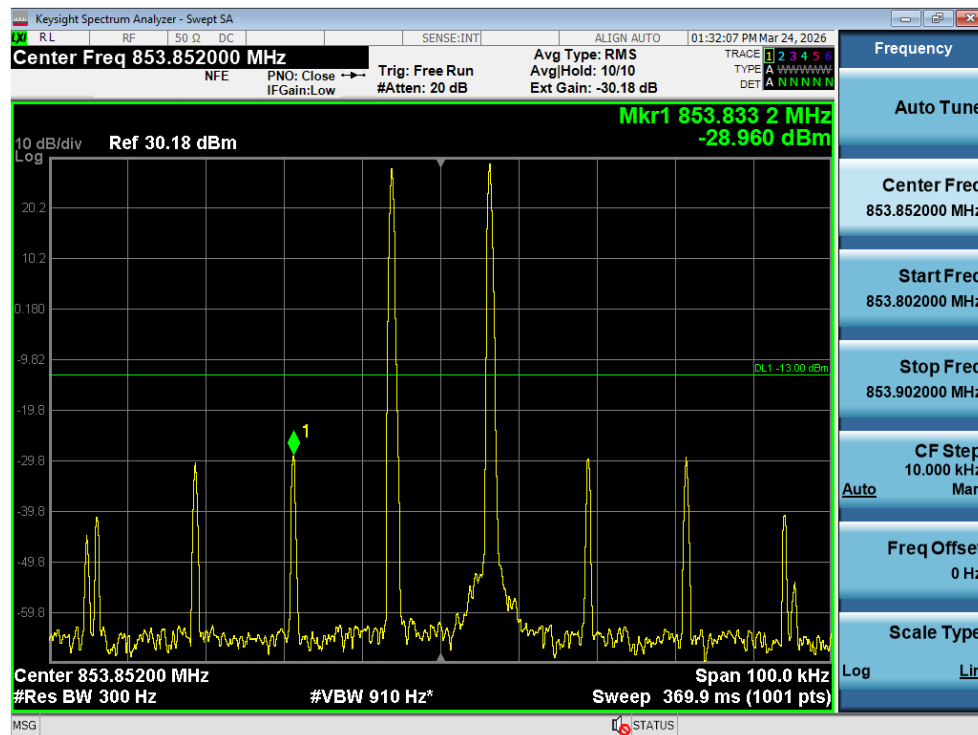
- a) Connect a signal generator to the input of the EUT.
- b) If the signal generator is not capable of producing two independent modulated carriers simultaneously, then two discrete signal generators can be connected, with an appropriate combining network to support the two-signal test.
- c) Configure the two signal generators to produce CW on frequencies spaced consistent with f_0 , with amplitude levels set to just below the AGC threshold.
- d) Connect a spectrum analyzer to the EUT output.
- e) Set the span to 100 kHz.
- f) Set RBW = 300 Hz with VBW $\geq 3 \times$ RBW.
- g) Set the detector to power averaging (rms).
- h) Place a marker on highest intermodulation product amplitude.
- i) Capture the plot for inclusion in the test report.
- j) Repeat steps c) to h) with the composite input power level set to 3 dB above the AGC threshold.
- k) Repeat steps b) to i) for all operational bands.

4.7.3 EUT spurious emissions conducted measurements

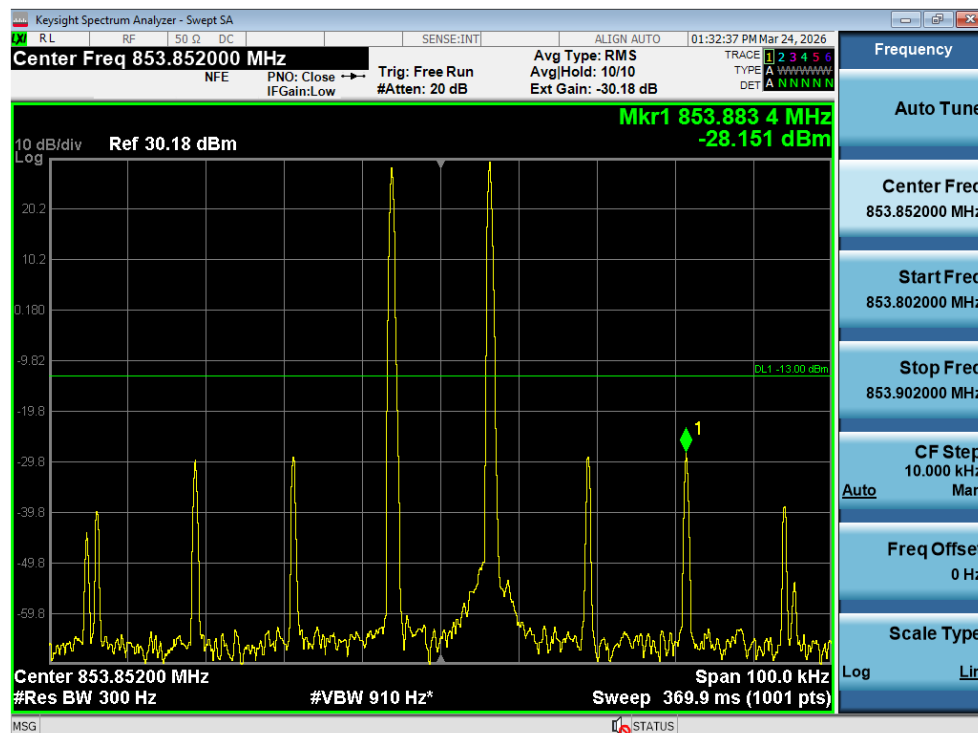
- a) Connect a signal generator to the input of the EUT.
- b) Configure the signal generator to produce a CW signal.
- c) Set the frequency of the CW signal to the center channel of the EUT passband.
- d) Set the output power level so that the resultant signal is just below the AGC threshold.
- e) Connect a spectrum analyzer to the output of the EUT, using appropriate attenuation as necessary.
- f) Set the RBW = 100 kHz. (i.e., for 30 MHz to 1 GHz PLMRS and/or PSRS booster devices)
- g) Set the VBW = $3 \times$ RBW.
- h) Set the Sweep time = auto-couple.
- i) Set the detector to PEAK.
- j) Set the spectrum analyzer start frequency to 30 MHz (or the lowest radio frequency signal generated in the EUT, without going below 9 kHz if the EUT has additional internal clock frequencies), and the stop frequency to 10 times the highest allowable frequency of the EUT passband.
- k) Select MAX HOLD, and use the marker peak function to find the highest emission(s) outside the passband. (This could be either at a frequency lesser or greater than the passband frequencies.)
- l) Capture a plot for inclusion in the test report.
- m) Repeat steps c) to l) for each authorized frequency band/block of operation.

Test Results: Plot data of Out-of-band/out-of-block emissions

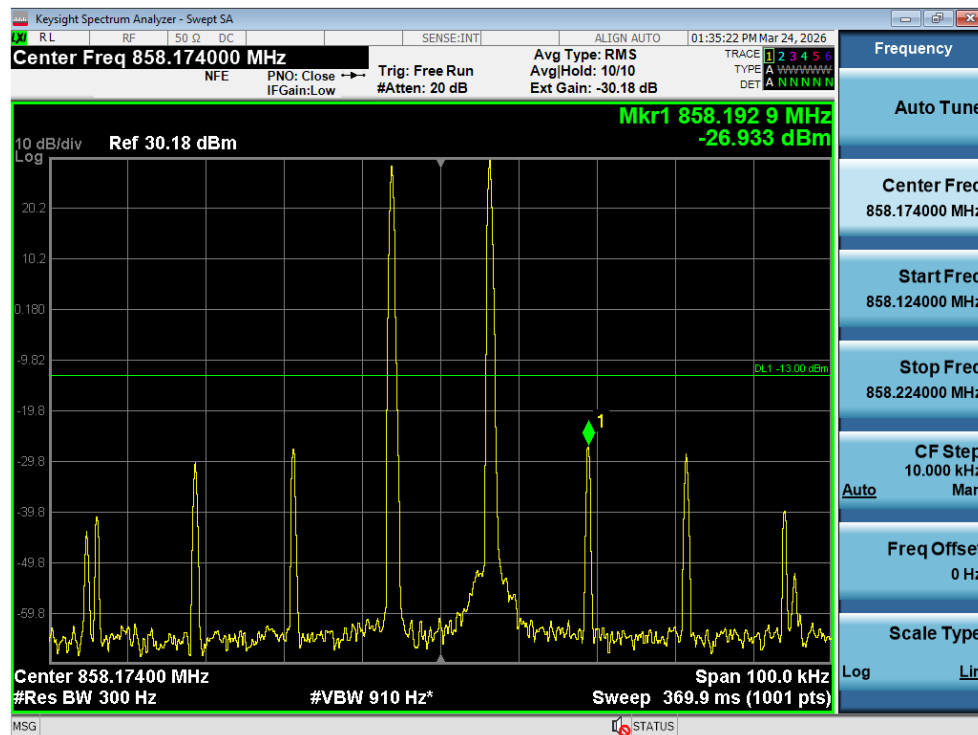
Out-of-band (two adjacent test signals) / NPSPAC / Downlink / 12.5kHz



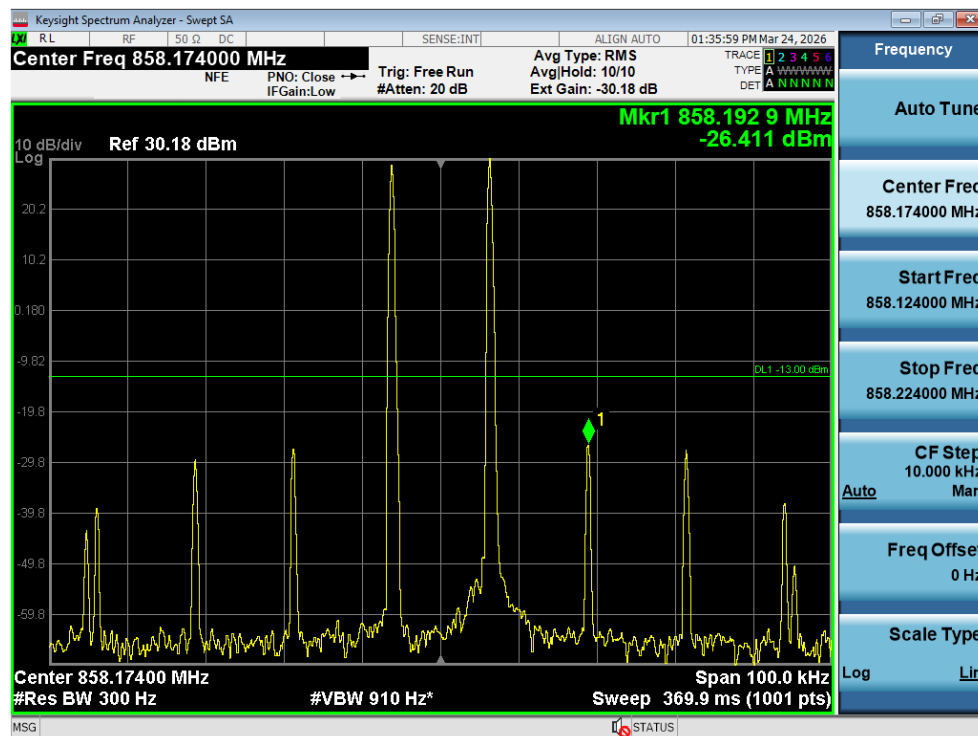
Out-of-band (two adjacent test signals) @ +3 dB AGC threshold / NPSPAC / Downlink / 12.5kHz



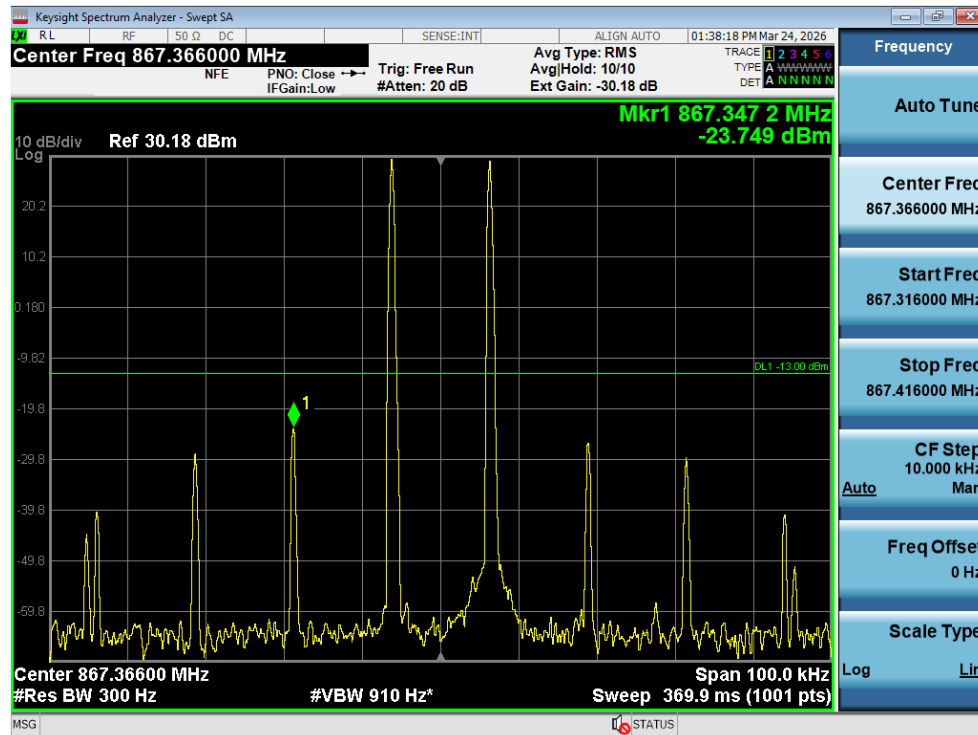
Out-of-band (two adjacent test signals) / B/ILT; SMR / Downlink / 12.5kHz



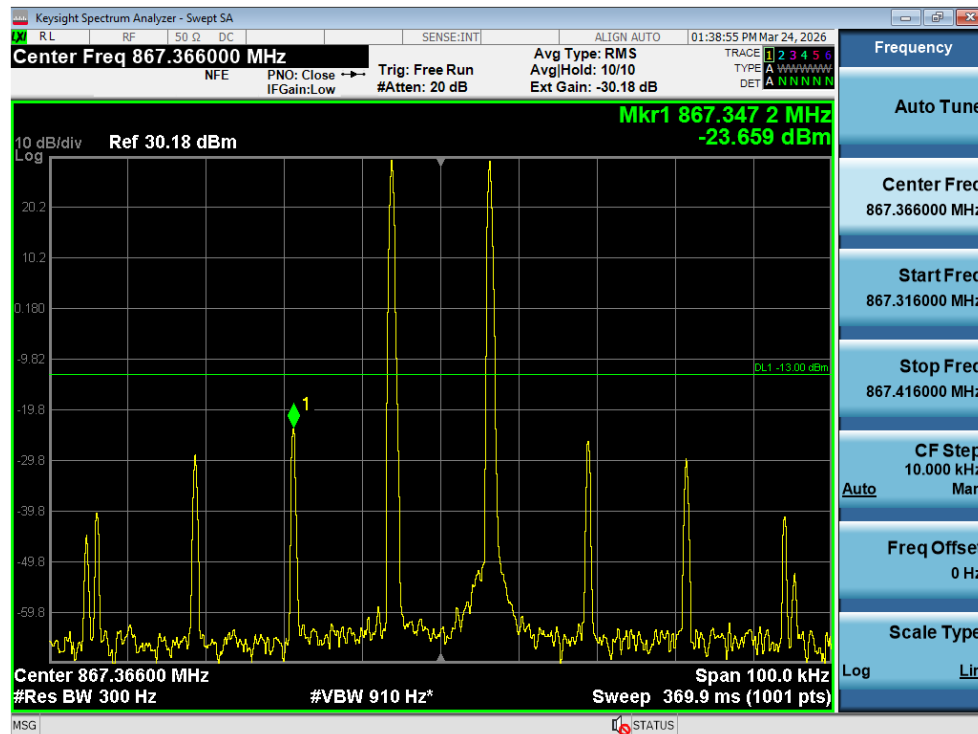
Out-of-band (two adjacent test signals) @ +3 dB AGC threshold / B/ILT; SMR / Downlink / 12.5kHz



Out-of-band (two adjacent test signals) / ESMR / Downlink / 12.5kHz

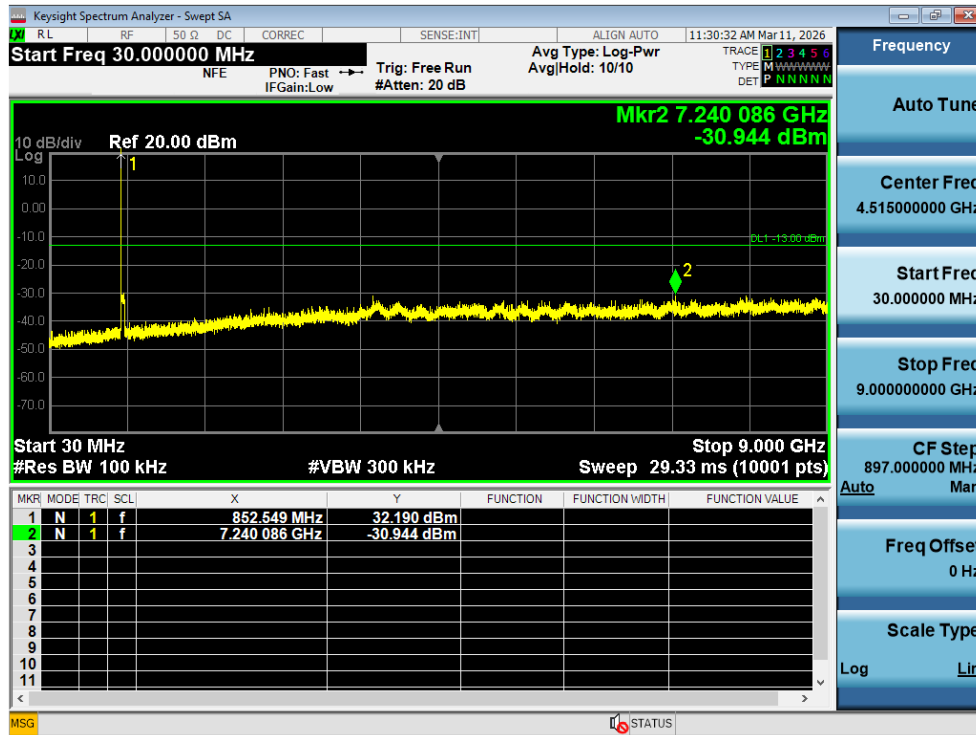


Out-of-band (two adjacent test signals) @ +3 dB AGC threshold / ESMR / Downlink / 12.5kHz

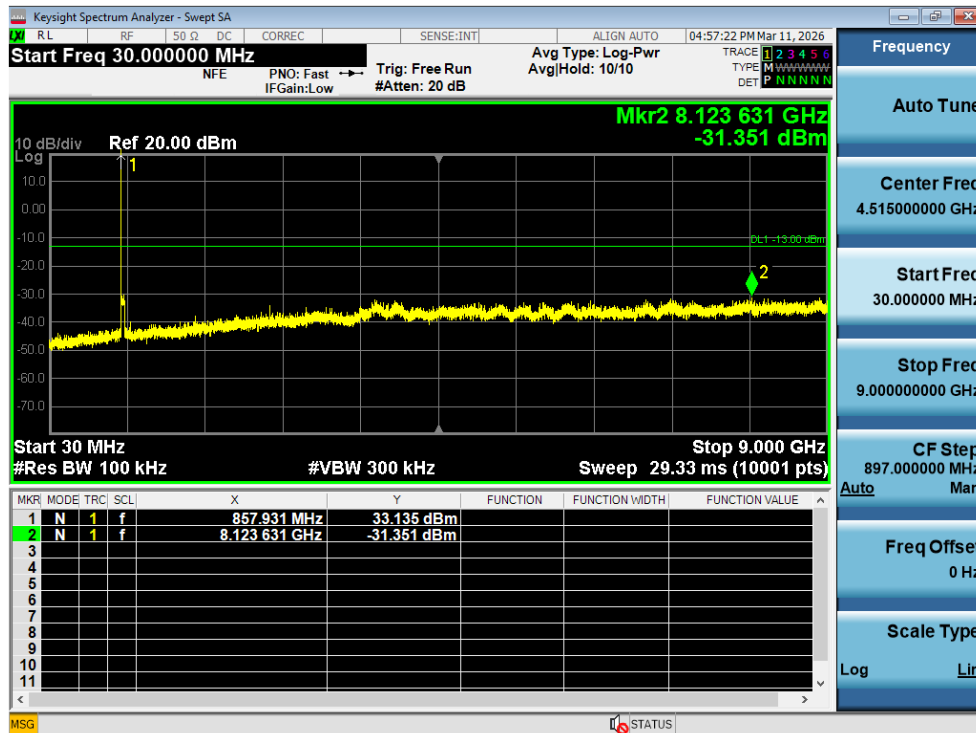


Plot data of Spurious Emissions

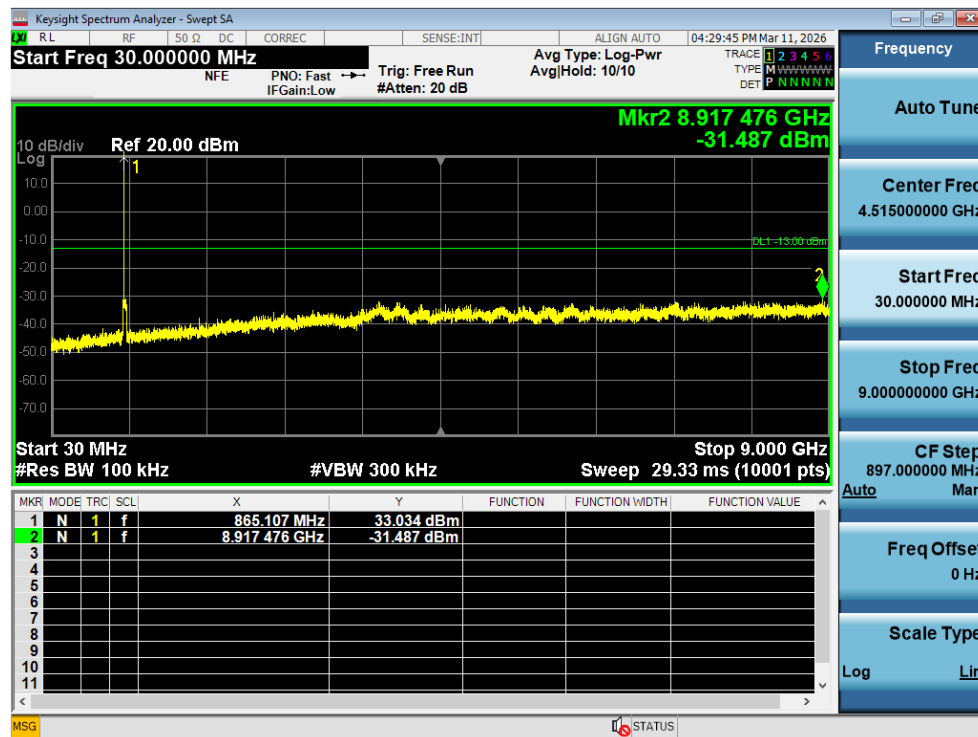
Spurious / NPSPAC / Downlink



Spurious / B/ILT; SMR / Downlink



Spurious / ESMR / Downlink



Note: Only the worst case plot for simultaneous spurious emissions.

5.8. RADIATED SPURIOUS EMISSIONS

Test Requirements:

§ 2.1053 Measurements required: Field strength of spurious radiation.

- (a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of § 2.1049, as appropriate. For equipment operating on frequencies below 890 MHz, an open field test is normally required, with the measuring instrument antenna located in the far-field at all test frequencies. In the event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurements will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from halfwave dipole antennas.
- (b) The measurements specified in paragraph (a) of this section shall be made for the following equipment:
 - (1) Those in which the spurious emissions are required to be 60 dB or more below the mean power of the transmitter.
 - (2) All equipment operating on frequencies higher than 25 MHz.
 - (3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.
 - (4) Other types of equipment as required, when deemed necessary by the Commission.

Test Procedures:

Because KDB 935210 D05 procedure does not provide this requirement, measurements were in accordance with the test methods section 5.5 of ANSI C63.26-2015

- a) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.
- b) Each emission under consideration shall be evaluated:
 - 1) Raise and lower the measurement antenna in accordance 5.5.2, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
 - 2) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.
 - 3) Return the turntable to the azimuth where the highest emission amplitude level was observed.
 - 4) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.
 - 5) Record the measured emission amplitude level and frequency using the appropriate RBW.
- c) Repeat step b) for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.

Test Result(Downlink):

Mode	Frequency [MHz]	Measured Level (dBμV)	Antenna Factor [dB/m]	A.G.+C.L.+H.P.F. [dB]	Polarization [H/V]	Measured Power [dBm]	Result [dBm]
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No emissions within 20 dB of the limit.

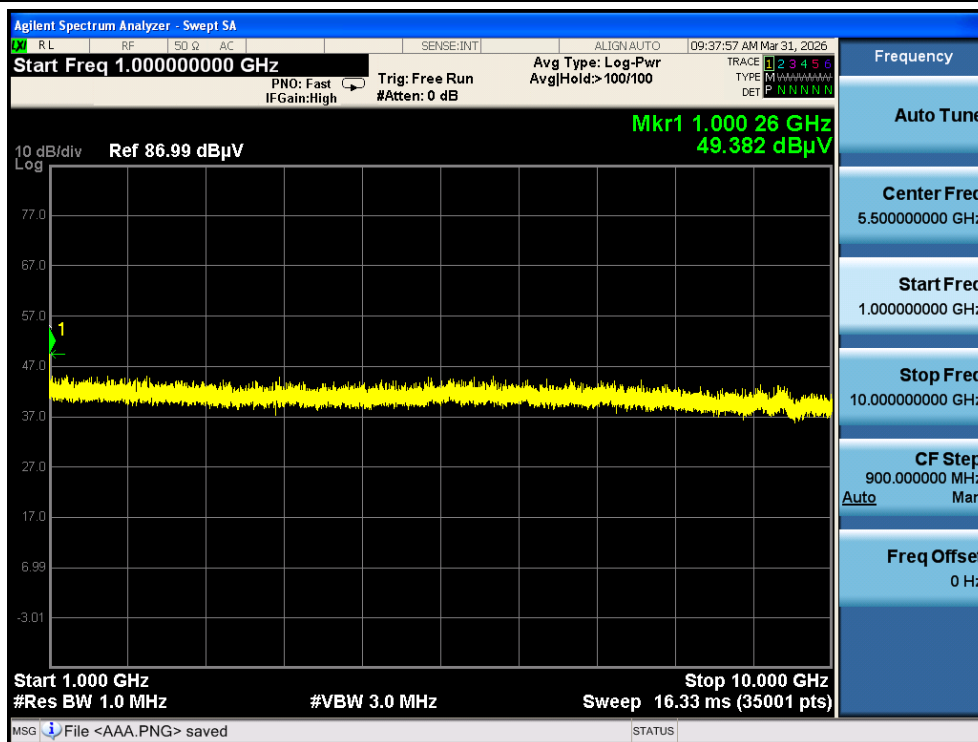
C.L.: Cable Loss / A.G.: Amp. Gain / H.P.F.: High Pass Filter

Note:

1. Radiated emissions were measured at maximum output power, and only the worst-case data are provided.
2. Measurements were performed using both horizontal and vertical polarizations of the receiving antenna.
3. Spurious emissions attenuated by more than 20 dB below the permissible limit were not recorded in accordance with ANSI C63.26 Clause 5.1.1., c).
4. Measure distance = 3 m

Plot data of radiated spurious emissions

Downlink / 800 MHz band



Note : Only the worst case plots for Radiated Spurious Emissions.

5.9. FREQUENCY STABILITY

Test Requirements:

§ 2.1055 Measurements required: Frequency stability.

- (a) The frequency stability shall be measured with variation of ambient temperature as follows:
- (1) From -30° to $+50^{\circ}$ centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.
- (d) The frequency stability shall be measured with variation of primary supply voltage as follows:
- (1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

§ 90.213 Frequency stability.

- (a) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table.

Table 1 to § 90.213(a)—Minimum Frequency Stability
[Parts per million (ppm)]

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	100	100	200
25-50	20	20	50
72-76	5		50
150-174	5	5	50
216-220	1.0		1.0
220-222	0.1	1.5	1.5
421-512	2.5	5	5
806-809	1.0	1.5	1.5
809-824	1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	0.1	1.5	1.5
902-928	2.5	2.5	2.5
902-928	2.5	2.5	2.5
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	300	300	300
Above 2450			

Test Procedures:

The measurement is performed in accordance with Section 5.6.3, 5.6.4 and 5.6.5 of ANSI C63.26.

5.6.3 Procedure for frequency stability testing

Frequency stability is a measure of the frequency drift due to temperature and supply voltage variations, with reference to the frequency measured at +20 °C and rated supply voltage.

The operating carrier frequency shall be set up in accordance with the manufacturer's published operation and instruction manual prior to the commencement of these tests. No adjustment of any frequency determining circuit element shall be made subsequent to this initial set-up. Frequency stability is tested:

- a) At 10 °C intervals of temperatures between –30 °C and +50 °C at the manufacturer's rated supply voltage, and
- b) At +20 °C temperature and $\pm 15\%$ supply voltage variations. If a product is specified to operate over a range of input voltage then the –15% variation is applied to the lowermost voltage and the +15% is applied to the uppermost voltage.

During the test all necessary settings, adjustments and control of the EUT have to be performed without disturbing the test environment, i.e., without opening the environmental chamber. The frequency stabilities can be maintained to a lesser temperature range provided that the transmitter is automatically inhibited from operating outside the lesser temperature range. For handheld equipment that is only capable of operating from internal batteries and the supply voltage cannot be varied, the frequency stability tests shall be performed at the nominal battery voltage and the battery end point voltage specified by the manufacturer. An external supply voltage can be used and set at the internal battery nominal voltage, and again at the battery operating end point voltage which shall be specified by the equipment manufacturer.

If an unmodulated carrier is not available, the mean frequency of a modulated carrier can be obtained by using a frequency counter with gating time set to an appropriately large multiple of bit periods (gating time depending on the required accuracy). Full details on the choice of values shall be included in the test report.

5.6.4 Frequency stability over variations in temperature

- a) Supply the EUT with a nominal 60 Hz ac voltage, dc voltage, or install a new or fully charged battery in the EUT.
- b) If possible a dummy load should be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, the EUT should be placed in the center of the chamber with the antenna adjusted to the shortest length possible.
- c) Turn on the EUT, and tune it to the center frequency of the operating band.
- d) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible, make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away).

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument.

- e) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits.
- f) Turn the EUT off, and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.
- g) Set the temperature control on the chamber to the highest temperature specified in the regulatory requirements for the type of device, and allow the oscillator heater and the chamber temperature to stabilize. Unless otherwise instructed by the regulatory authority, this temperature should be 50 °C.
- h) While maintaining a constant temperature inside the environmental chamber, turn on the EUT and allow sufficient time for the EUT temperature to stabilize.
- i) Measure the frequency.
- j) Switch off the EUT, but do not switch off the oscillator heater.
- k) Lower the chamber temperature to the next level that is required by the standard and allow the temperature inside the chamber to stabilize. Unless otherwise instructed by the regulators, this temperature step should be 10 °C.
- l) Repeat step h) through step k) down to the lowest specified temperature. Unless otherwise instructed by the regulators, this temperature should be –30 °C. When the frequency stability limit is stated as being sufficient such that the fundamental emissions stay within the authorized bands of operation, a reference point shall be established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as f_L and f_H respectively. The worst-case frequency offset determined in the above methods shall be added or subtracted from the values of f_L and f_H and the resulting frequencies must remain within the band.
- m) Omitted

5.6.5 Frequency stability when varying supply voltage

- a) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away)
- b) Supply the EUT with nominal ac or dc voltage. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.
- c) Turn on the EUT, and couple its output to a frequency counter or other frequency-measuring instrument.
- d) Tune the EUT to the center frequency of the operating band. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument.

- e) Measure the frequency.
- f) Unless otherwise specified, vary primary supply voltage from 85% to 115% of the nominal value for other than hand carried battery equipment.
- g) For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
- h) Repeat the frequency measurement.

NOTE—For band-edge compliance, it can be required to make these measurements at the low and High channel of the operating band.

Test Results(Downlink):

NPSPAC		Reference: 130 VAC at 20°C Freq. = 852,500,000 Hz			
Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (Hz)	ppm
100 %	+20(Ref)	852 500 003	2.877	0.000	0.00000
	-30	852 500 010	7.040	4.163	0.00488
	-20	852 500 007	4.017	1.140	0.00134
	-10	852 500 005	2.094	-0.783	-0.00092
	0	852 500 003	0.380	-2.496	-0.00293
	+10	852 500 009	6.406	3.529	0.00414
	+30	852 500 013	9.964	7.087	0.00831
	+40	852 500 010	7.231	4.354	0.00511
	+50	852 500 011	8.594	5.717	0.00671
115 %	+20	852 500 012	9.581	6.704	0.00786
85 %	+20	852 500 007	4.549	1.672	0.00196

B/ILT; SMR		Reference: 130 VAC at 20°C Freq. = 857,500,000 Hz			
Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (Hz)	ppm
100 %	+20(Ref)	857 500 003	3.337	0.000	0.00000
	-30	857 500 013	9.642	6.305	0.00735
	-20	857 500 012	8.773	5.436	0.00634
	-10	857 500 005	2.084	-1.252	-0.00146
	0	857 500 011	8.029	4.692	0.00547
	+10	857 500 006	2.613	-0.724	-0.00084
	+30	857 500 005	1.473	-1.864	-0.00217
	+40	857 500 007	3.836	0.500	0.00058
	+50	857 500 012	9.072	5.735	0.00669
115 %	+20	857 500 012	8.252	4.915	0.00573
85 %	+20	857 500 005	1.346	-1.990	-0.00232

ESMR

Reference: 130 VAC at 20°C Freq. = 865,500,000 Hz

Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (Hz)	ppm
100 %	+20(Ref)	865 500 005	5.223	0.000	0.00000
	-30	865 500 007	1.630	-3.593	-0.00415
	-20	865 500 009	3.548	-1.675	-0.00194
	-10	865 500 008	2.877	-2.346	-0.00271
	0	865 500 007	1.705	-3.518	-0.00406
	+10	865 500 007	2.000	-3.223	-0.00372
	+30	865 500 009	3.499	-1.724	-0.00199
	+40	865 500 008	2.643	-2.580	-0.00298
	+50	865 500 012	6.861	1.638	0.00189
115 %	+20	865 500 008	2.540	-2.683	-0.00310
85 %	+20	865 500 005	0.100	-5.123	-0.00592

6. Annex A_EUT AND TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2604-FC064-P