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TEST REPORT

FCC Test for FR-R5G39AO38ADU

APPLICANT
FRTEK CO., LTD.

REPORT NO.
HCT-RF-2112-FC042-R1

DATE OF ISSUE
January 25, 2022

Tested by
Kwang Il Yoon

Technical Manager
Jong Seok Lee

HCT CO., LTD.
BongJai Huh / CEO

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Additional Model
-

Applicant	**FRTEK CO., LTD.** 11-25, Simin-daero 327beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, Republic of Korea
FCC ID	2AFEG-R5G39AO38ADU
Product Name	PrimAer DU39
Model Name	FR-R5G39AO38ADU
Date of Test	November 29, 2021 ~ January 25, 2022
Test Standard Used	CFR 47 Part 2, Part 30

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test results were applied only to the test methods required by the standard.

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	December 24, 2021	Initial Release
1	January 25, 2022	Added the 1RB test results on section 5.4, 5.5, 5.6, 5.7.

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.

If this report is required to confirmation of authenticity, please contact to www.hct.co.kr

CONTENTS

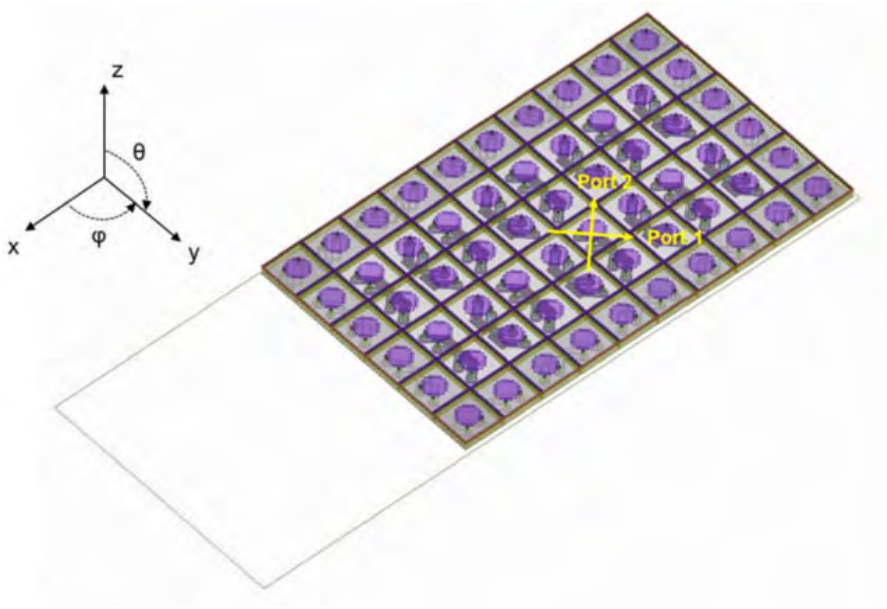
1. GENERAL INFORMATION

1.1. APPLICANT INFORMATION

Company Name	FRTEK CO., LTD.
Company Address	1001, Doosan Venture Digm, 415, Heungandaero, Dongan-Gu, Anyang-Si, Gyenggi-do, 431-755 Korea

1.2. PRODUCT INFORMATION

EUT Type	PrimAer DU39
EUT Serial Number	FRC39-21C-0001
Input Rating Power Port	-53.3 V
Power Supply	DC -53.3 V (-48 ~ -53.3 V)
Frequency Range	37 600 MHz ~ 40 000 MHz
Modulation Type	QPSK, 16QAM, 64QAM
Output Power	Mode / EIRP (dBm) / Total (2 path) (dBm) 1CC / 38.5 / 41.5 10CC / 38.5 / 41.5
Max EIRP Density	Mode / [W] 1CC / 18.793 10CC / 3.034
Channel Bandwidths	1CC: 100 MHz 10CC: 1 000 MHz

Antenna Specification (Antenna Array)	A high-performance 32-element (8x4) integrated antenna array is included in the SOB	
	Maximum Gain:	19.37 dBi
	Antenna pitch:	3.9 mm
	Antenna Size:	Length: 8 x 5.2 mm = 41.6 mm Width: 4 x 5.2 mm = 20.8 mm
	Lattice:	Rectangular
	Type:	Patch
		

1.3. TEST INFORMATION

FCC Rule Parts	CFR 47 Part 2, Part 30
Measurement standards	ANSI C63.26-2015, KDB 935210 D05 v01r04, KDB 971168 D01 v03r01, KDB 662911 D01 v02r01, KDB 662911 D02 v01, KDB 842590 D01 v01r02
Place of Test	HCT CO., LTD. 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. 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, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 (Version: 2014) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2018 (Registration Number: KR0032).

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 30

Description	Reference	Results
AGC threshold	KDB 935210 D05 v01r04 3.2	Compliant
Out-of-band rejection	KDB 935210 D05 v01r04 3.3	Compliant
Occupied Bandwidth / Input-versus-output signal comparison	§ 2.1049	Compliant
EIRP Density	§ 30.202	Compliant
Equivalent Isotropic Radiated Power / Mean output power and amplifier/booster gain	§ 2.1046	Compliant
Out-of-band/out-of-block emissions (Band Edge)	§ 2.1051, § 30.203	Compliant
Radiated Spurious Emissions	§ 2.1051, § 30.203	Compliant
Frequency Stability	§ 2.1055	Compliant

3.2. ADDITIONAL DESCRIPTIONS ABOUT TEST

- 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.
- All NR modulation types (QPSK, 16QAM, 64QAM) have been tested.
  But this report contains only worst case data.
- Except for the following cases, EUT was tested under normal operating conditions.
  : Out-of-band rejection test requires maximum gain condition without AGC.
- All tests is performed by radiated measurement and applied below conditions.
  : Used measurement distance with far field of test such as AGC threshold, Out-of-band rejection, OBW, EIRP and Band edge are as follow.

Wavelength = Speed of light / Measurement frequency = 30 / 4 000 = 0.0075 m

(2 X (EUT Antenna dimension)^2) / Wavelength = (2 X (0.04651)^2)/ 0.0075 = 0.58 ***m***

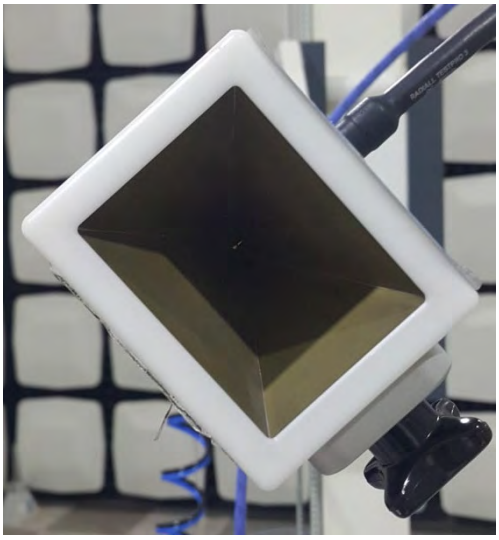
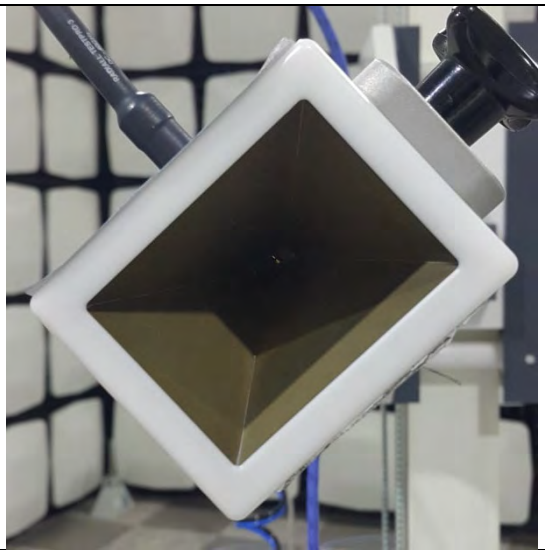
(2 X (Measurement Antenna dimension)^2) / Wavelength = (2 X (0.09605)^2)/ 0.0075 = 2.46 ***m***

In case of far-field distance for fundamental, we applied the measurement antenna dimension because the measurement antenna is bigger than the EUT antenna dimension. ***So, measurement distance is 3 m.***

: Spurious emissions measurement distance is shown in table below(Reference : Measurement Antenna Dimension).

Frequency Rage (GHz)	Wavelength (cm)	Far Field Distance (m)	Measurement Distance(m)
18 ~ 40	0.75	2.460	3.00
40 ~ 50	0.60	1.130	1.50
50 ~ 60	0.50	1.354	1.50
60 ~90	0.33	0.856	1.00
90 ~ 140	0.214	0.572	1.00
140 ~ 200	0.15	0.332	1.00

- Radiated test is performed on various angle of antenna and following location is worst test case.

45° (A)	135° (B)
	

- CC means component carriers and EUT support 1CC ~ 10CC.
- Test was performed the carrier 1 and 10 case having maximum output power and maximum PSD(It means the worst case.).
- Unwanted radiated emissions test was performed on state of all EUT antenna path is operated with a maximum output power level.
- Testing was completed with a signal generator creating a representative mmWave 5G NR signal, using DFT-s-OFDM scheme, various modulations including π/2-BPSK, QPSK, and QAM, 120kHz subcarrier spacing, with one and ten carrier configurations using 100MHz and 1000MHz bandwidths, full and single resource block allocations.
- Transmitter output signals are correlated.
- EUT was tested with following modulated signals provide by applicant.
  : NR 100 MHz (1CC, 10CC)

3.3. MAXIMUM MEASUREMENTUNCERTAINTY

Description	Condition	Uncertainty
Radiated Disturbance	9 kHz ~ 30 MHz	± 3.40 dB
	30 MHz ~ 1 GHz	± 4.80 dB
	1 GHz ~ 18 GHz	± 5.70 dB
	18 GHz ~ 40 GHz	± 5.05 dB

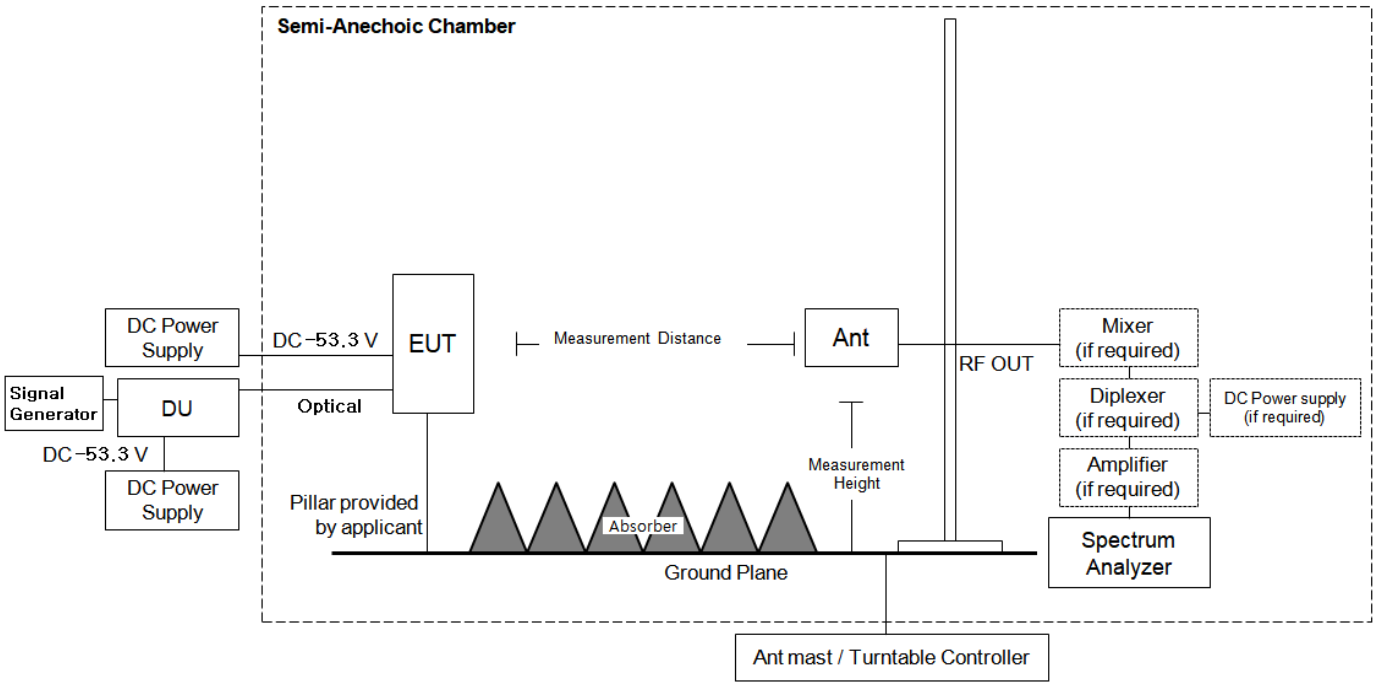
Coverage factor k = 2, Confidence levels of 95 %

3.4. STANDARDS ENVIRONMENTAL TEST CONDITIONS

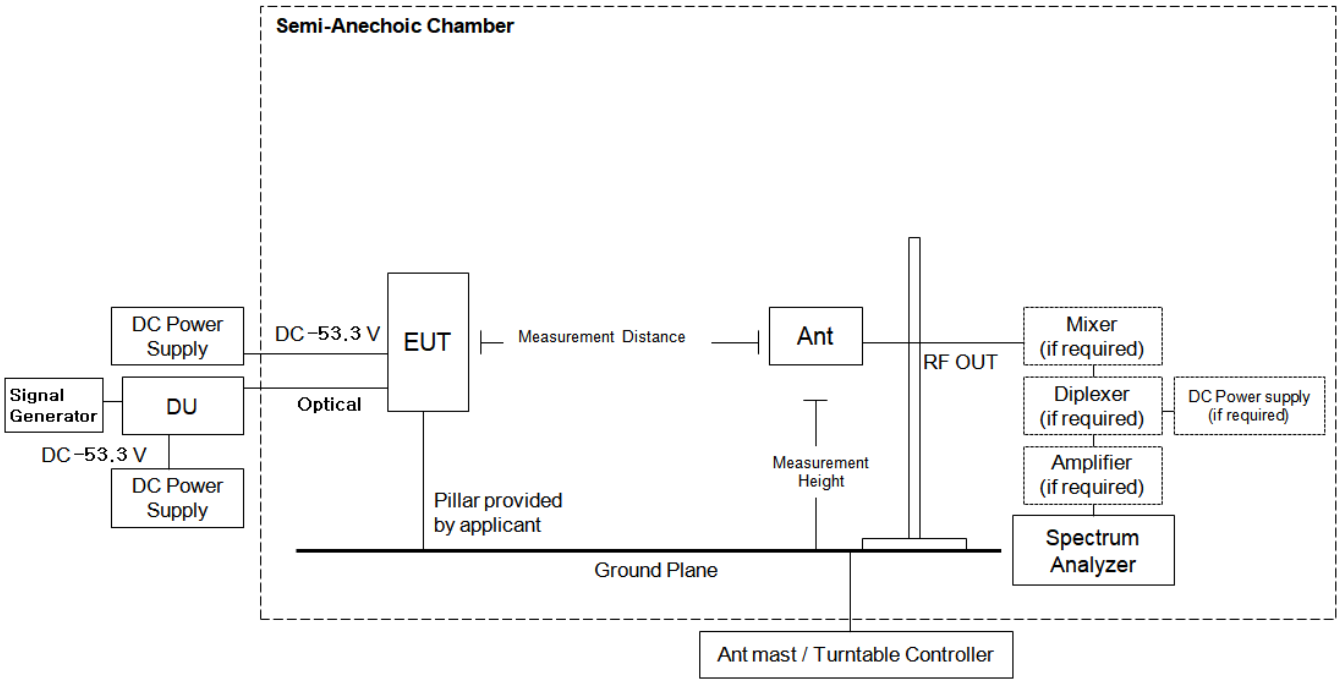
Temperature :	+15 °C to +35 °C
Relative humidity:	30 % to 60 %
Air pressure	860 mbar to 1 060 mbar

3.5. TEST DIAGRAMS

AGC / OOBR / Occupied Bandwidth / EIRP / Band Edge / Radiated Spurious Emissions in 1 GHz to 40 GHz



Radiated Spurious Emissions in other bands



4. TEST EQUIPMENTS

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
PXA Signal Analyzer	N9030B	Agilent	MY60070602	10/22/2022	Annual
Spectrum Analyzer	FSW	Rohde & Schwarz	101256	11/11/2022	Annual
Vector Signal Generator	SMW200A	Rohde & Schwarz	100988	03/15/2022	Annual
DC Power Supply	PWR800L	KIKUSUI	RE001154	03/04/2022	Annual
Controller(Antenna mast)	CO3000	Innco system	CO3000-4p	N/A	N/A
Antenna Position Tower	MA4640/800-XP-EP	Innco system	N/A	N/A	N/A
Controller	2090	Emco	060520	N/A	N/A
Turn Table	Turn Table	Ets	N/A	N/A	N/A
Turn Table	DS2000-S	Innco systems	N/A	N/A	N/A
Amp & Filter Bank Switch Controller	FBSM-01B	TNM system	N/A	N/A	N/A
Low Noise Amplifier	LLAU1183540Q	LTC Microwave	100	2022-09-16	Annual
Loop Antenna	Loop Antenna	Schwarzbeck	1513-175	06/04/2023	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	9168-0895	09/04/2022	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	02296	05/19/2022	Biennial
Horn Antenna	BBHA 9170	Schwarzbeck	BBHA9170541	11/16/2023	Biennial
Horn Antenna	WR-19 Horn Antenna	OML INC.	M19RH-160419-1	04/23/2022	Biennial
Horn Antenna	WR-19 Horn Antenna	OML INC.	M19RH-160419-2	04/23/2022	Biennial
Horn Antenna	WR-12 Horn Antenna	OML INC.	M12RH-160419-1	04/23/2022	Biennial
Horn Antenna	WR-12 Horn Antenna	OML INC.	M12RH-160419-2	04/23/2022	Biennial
Horn Antenna	WR-08 Horn Antenna	OML INC.	M08RH-160419-2	04/23/2022	Biennial
Horn Antenna	WR-08 Horn Antenna	OML INC.	M08RH-160419-1	04/23/2022	Biennial
Horn Antenna	WR-05 Horn Antenna	OML INC.	M05RH-160419-1	04/23/2022	Biennial
Horn Antenna	WR-05 Horn Antenna	OML INC.	M05RH-160419-2	04/23/2022	Biennial
SA Extension Module	WR19SAX-M	VDI	SAX771	03/17/2022	Annual
SA Extension Module	WR12SAX-M	VDI	SAX773	04/02/2022	Annual
SA Extension Module	WR8.0SAX-M	VDI	SAM779	04/02/2022	Annual
SA Extension Module	WR5.1SAX-M	VDI	SAX 774	04/02/2022	Annual
Source Module	WR-19	OML INC.	S19MS-A-160516-1	09/02/2022	Annual
Source Module	WR-12	OML INC.	S12MS-A-160419-1	09/02/2022	Annual
Source Module	WR-08	OML INC.	S08MS-A-160419-1	09/09/2022	Annual
Source Module	WR-05	OML INC.	S05MS-A-160419-1	09/07/2022	Annual
Temperature and Humidity Chamber	PL-4KP	ESPEC	14021890	08/11/2022	Annual

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

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 3.2 of KDB 935210 D05 v01r04.

In the case of fiber-optic distribution systems, the RF input port of the equipment under test (EUT) refers to the RF input of the supporting equipment RF to optical convertor; see also descriptions and diagrams for typical DAS booster systems in KDB Publication 935210 D02

Devices intended to be directly connected to an RF source (donor port) only need to be evaluated for any over-the-air transmit paths.

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 as necessary.
c) The signal generator should initially be configured to produce either of the required test signals.
d) Set the signal generator frequency to the center frequency of the EUT operating band.
e) While monitoring the output power of the EUT, measured using the methods of ANSI C63.26-2015 subclause 5.2.4.4.1, increase the input level until a 1 dB increase in the input signal power no longer causes a 1 dB increase in the output signal power.
f) Record this level as the AGC threshold level.
g) Repeat the procedure with the remaining test signal.

Output power measurement in subclause 5.2.4.4.1 of ANSI C63.26

a) Set span to 2 × to 3 × the OBW.
b) Set RBW = 1% to 5% of the OBW.
c) Set VBW ≥ 3 × RBW.
d) Set number of measurement points in sweep ≥ 2 × span / RBW.
e) Sweep time: auto-couple
f) Detector = power averaging (rms).
g) If the EUT can be configured to transmit continuously, then set the trigger to free run.
h) Omit
i) Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over multiple symbols, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.
j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power

measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

Note:

1. Test distance is determined to 3.0 m by far field condition; see test descriptions on section 3.2.
2. The angle of antenna is set as maximum radiated power conditions.
3. EIRP is calculated from measured value according to section 5.2.7 of ANSI C63.26-2015, and the formula is as follow.

$$EIRP\ (dBm) = E\ (dB\mu V/m) + 20\log(D) - 104.77$$

4. E (dBμV/m) value is considered Antenna Factor and Cable Loss (AFCL), and it as follow.

$$E\ (dB\mu V/m) = measurement\ value\ (dB\mu V) + AFCL$$

Test Results:

Path	CC	Center Frequency (GHz)	AGC Threshold Level (dBm)	Measured Level (dBuV)	Result (dBm)
A	1	38.800	-71.50	79.84	39.01
	10	38.800	-71.50	79.72	38.89
B	1	38.800	-71.50	81.30	40.47
	10	38.800	-71.50	81.22	40.39

5.2. OUT-OF-BAND REJECTION

Test Requirement:

KDB 935210 D05 v01r04

Out-of-band rejection required.

Test Procedures:

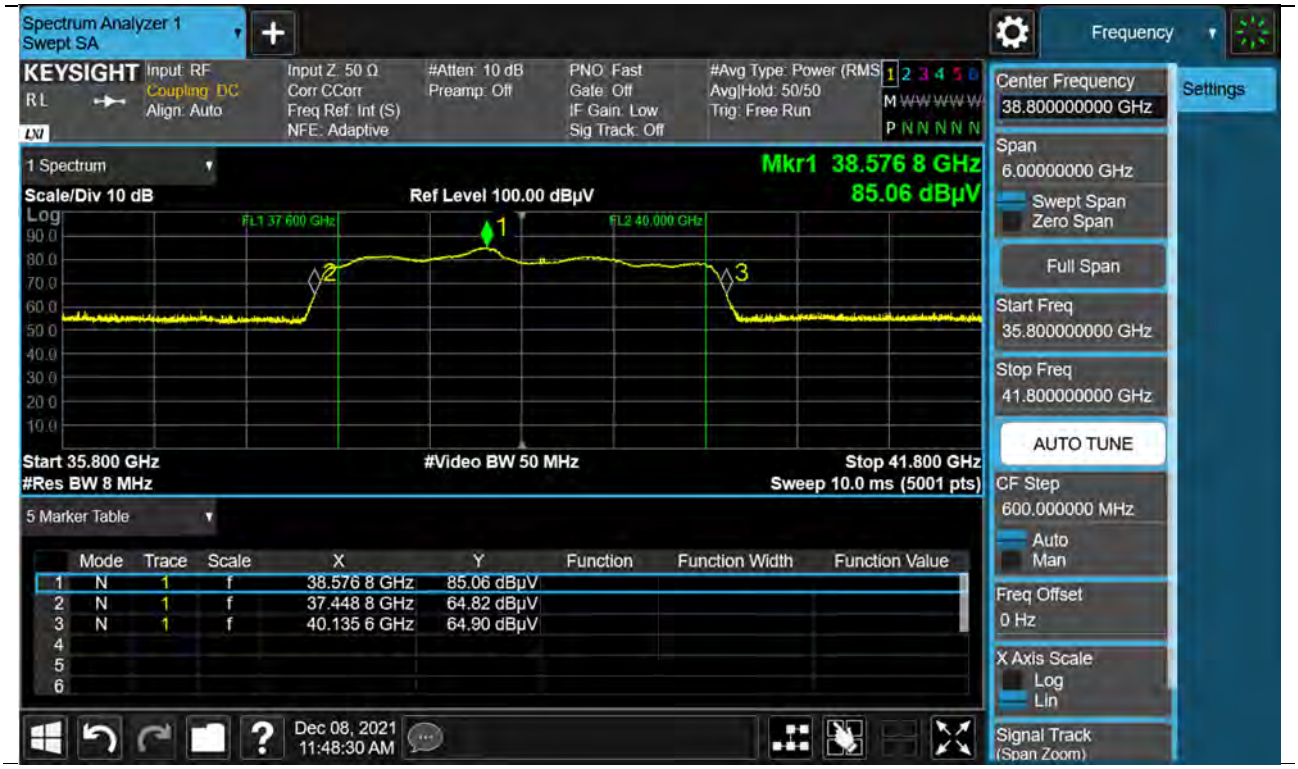
Measurements were in accordance with the test methods section 3.3 of KDB 935210 D05 v01r04.

A signal booster shall reject amplification of other signals outside of its passband. Adjust the internal gain control of the EUT (if so equipped) 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 passband, for each applicable CMRS band.
   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 = approximately 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 (RBW) of the spectrum analyzer to be 1 % to 5 % of the EUT passband, and the video bandwidth (VBW) 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 f_0.
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.
i) Capture the frequency response of the EUT.
j) Repeat for all frequency bands applicable for use by the EUT.

Test Results:

Path A



Path B

5.3. OCCUPIED BANDWIDTH / INPUT-VERSUS-OUTPUT SIGNAL COMPARISON

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.

Test Procedures:

Measurements were in accordance with the test methods section 3.4 of KDB 935210 D05 v01r04.

A 26 dB bandwidth measurement shall be performed on the input signal and the output signal; alternatively, the 99% OBW can be measured and used. See KDB Publication 971168 for more information on measuring OBW.

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

b) Configure the signal generator to transmit the 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 ≥ 3 × 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 f0.

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:

Tabular Data of Output Occupied Bandwidth

Path	CC	Center Frequency (GHz)	99% OBW (MHz)
A	1	38.800	94.276
	10	38.800	986.22
B	1	38.800	94.396
	10	38.800	990.26

Tabular Data of Input Occupied Bandwidth

Path	CC	Center Frequency (GHz)	99% OBW (MHz)
A	1	38.800	94.210
	10	38.800	996.22
B	1	38.800	94.059
	10	38.800	998.01

Tabular Data of +3 dB above the AGC threshold Output Occupied Bandwidth

Path	CC	Center Frequency (GHz)	99% OBW (MHz)
A	1	38.800	94.216
	10	38.800	985.61
B	1	38.800	94.474
	10	38.800	990.26

Tabular Data of +3 dB above the AGC threshold Input Occupied Bandwidth

Path	CC	Center Frequency (GHz)	99% OBW (MHz)
A	1	38.800	94.138
	10	38.800	992.59
B	1	38.800	94.182
	10	38.800	992.34

Measured Occupied Bandwidth Comparison

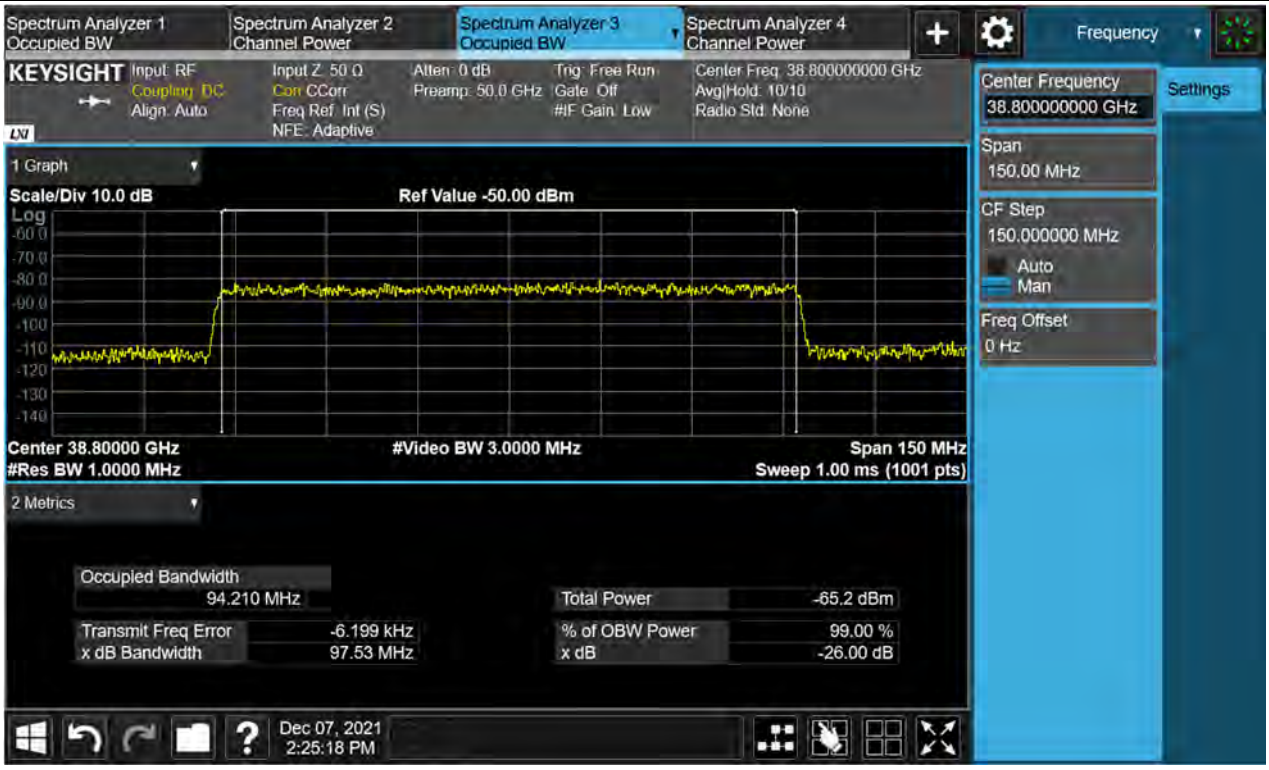
Path	CC	Variant of Input and output Occupied Bandwidth (%)	Variant of Input and +3 dB above the AGC threshold output Occupied Bandwidth (%)
A	1	0.070	0.083
	10	-1.003	-0.703
B	1	0.358	0.310
	10	-0.777	-0.210

**** Change in input-output OBW is less than ±5 %.***

Plot Data of RF Occupied Bandwidth

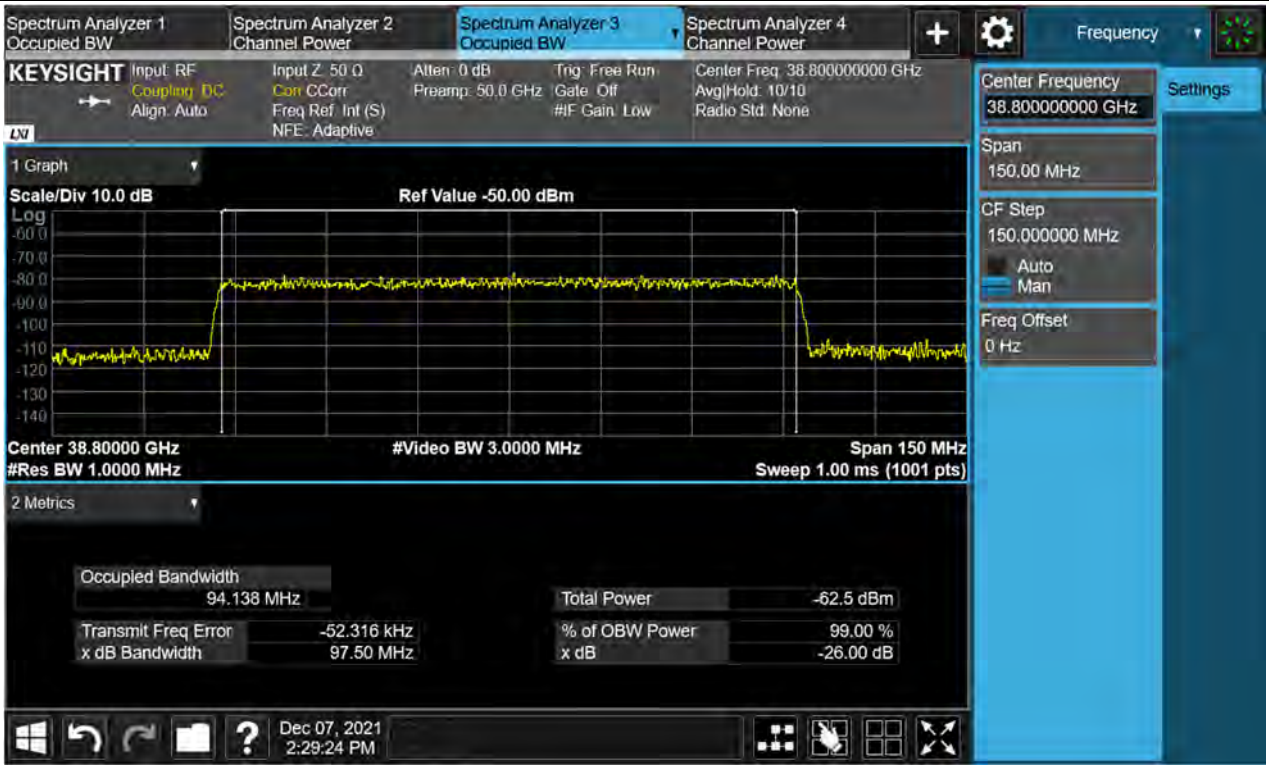
Output / Path A / 1cc

Input / Path A / 1cc



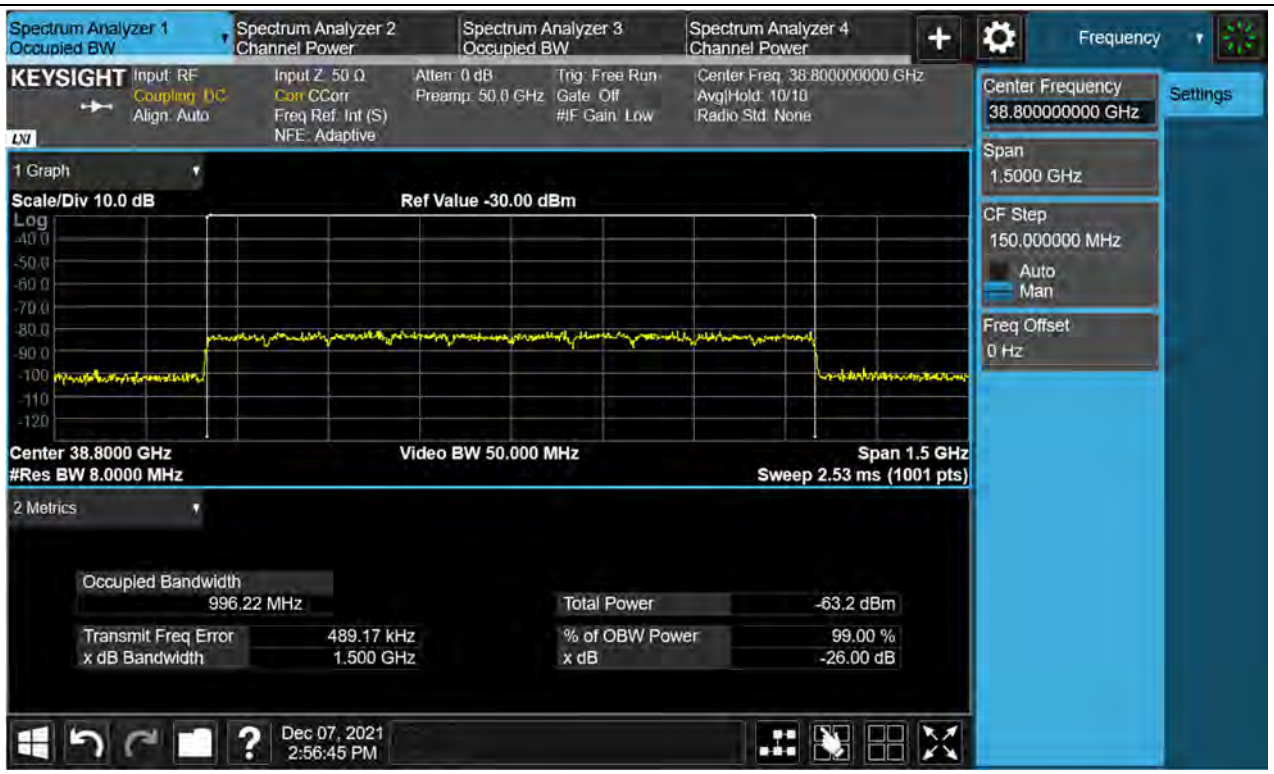
+3 dB above the AGC threshold output / Path A / 1cc

+3 dB above the AGC threshold Input / Path A / 1cc

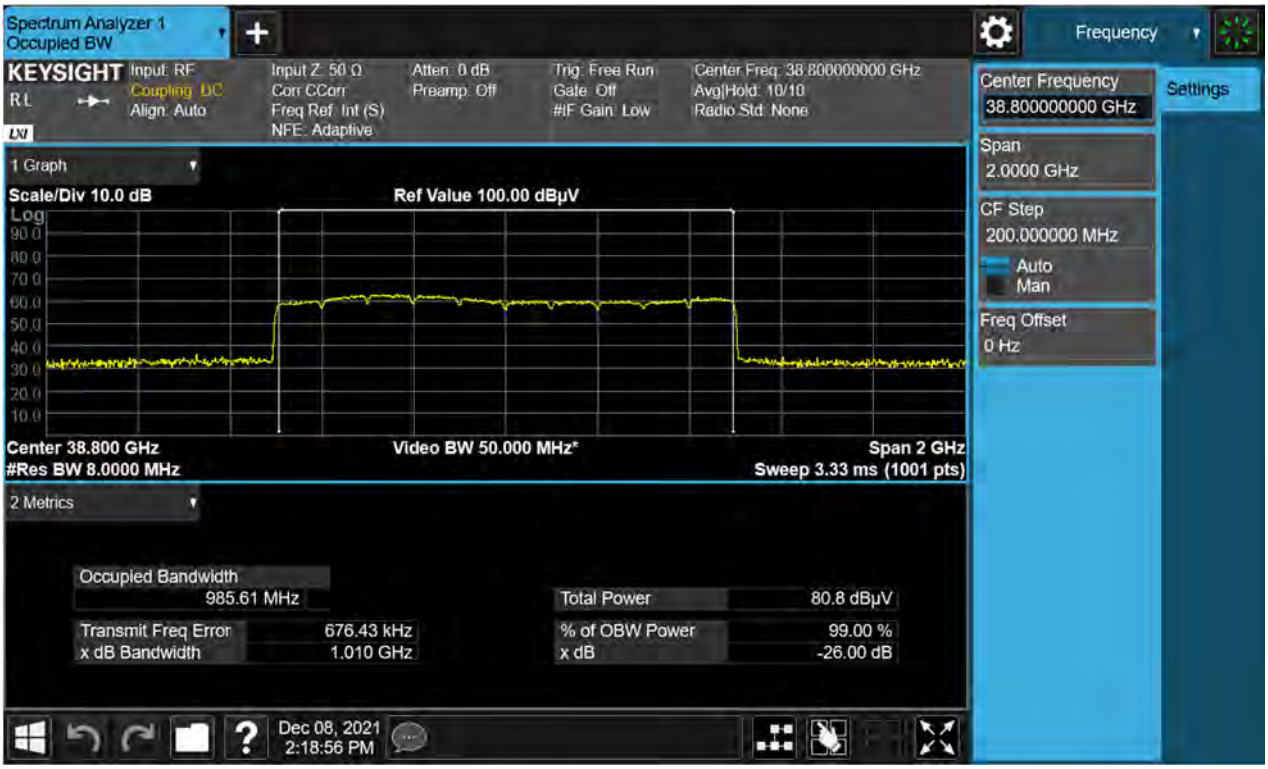


Output / Path A / 10cc

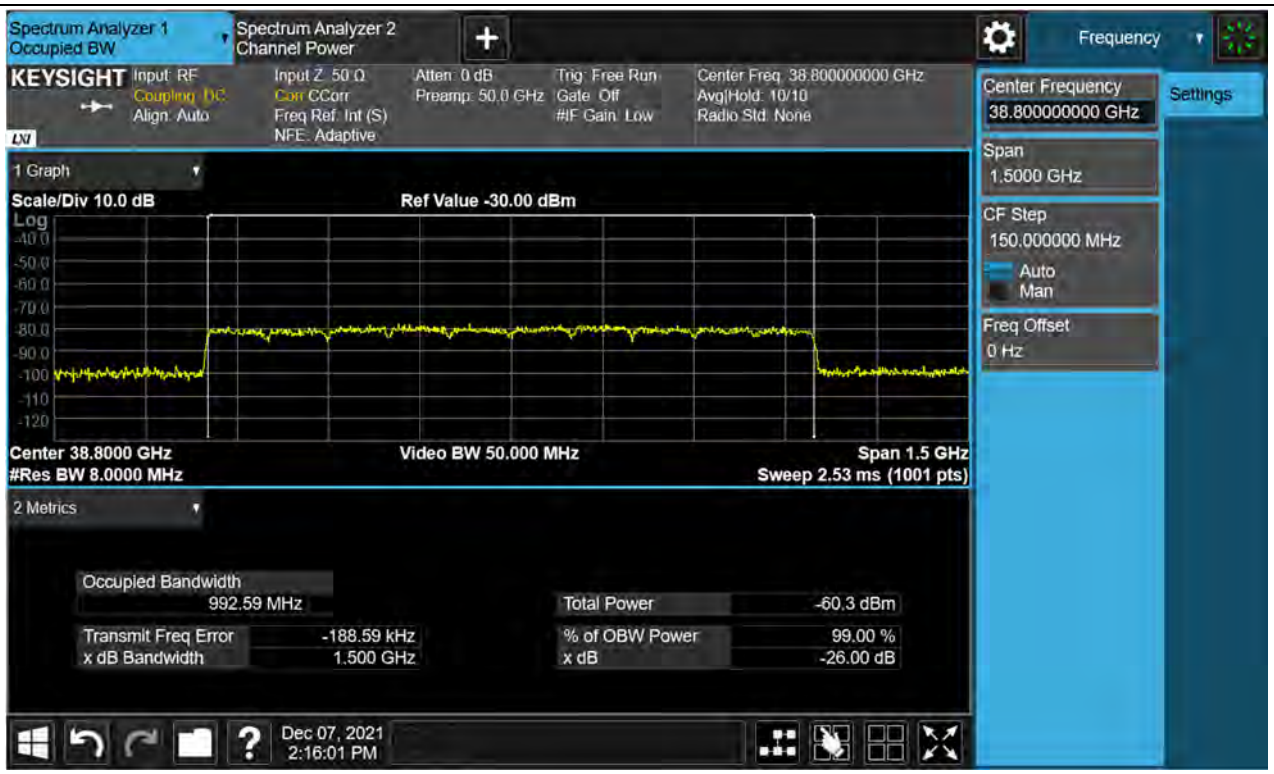
Input / Path A / 10cc



+3 dB above the AGC threshold output / Path A / 10cc

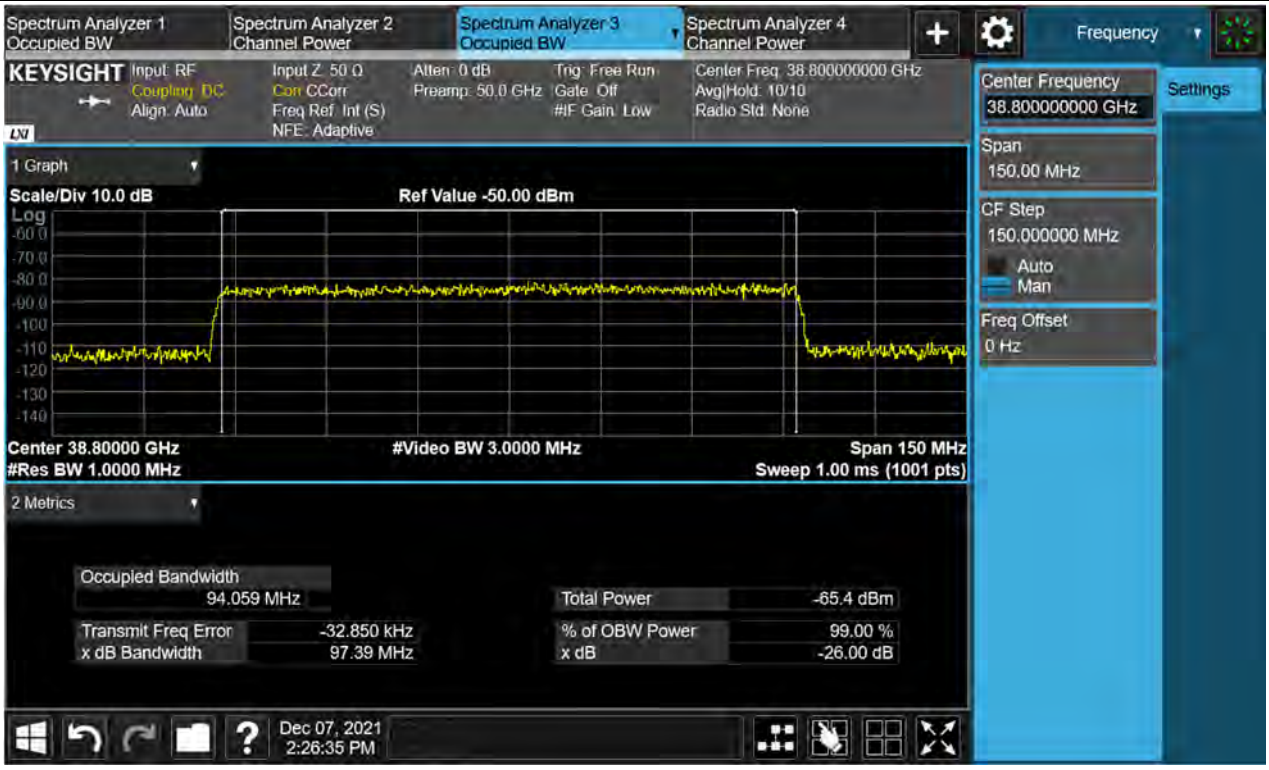


+3 dB above the AGC threshold Input / Path A / 10cc



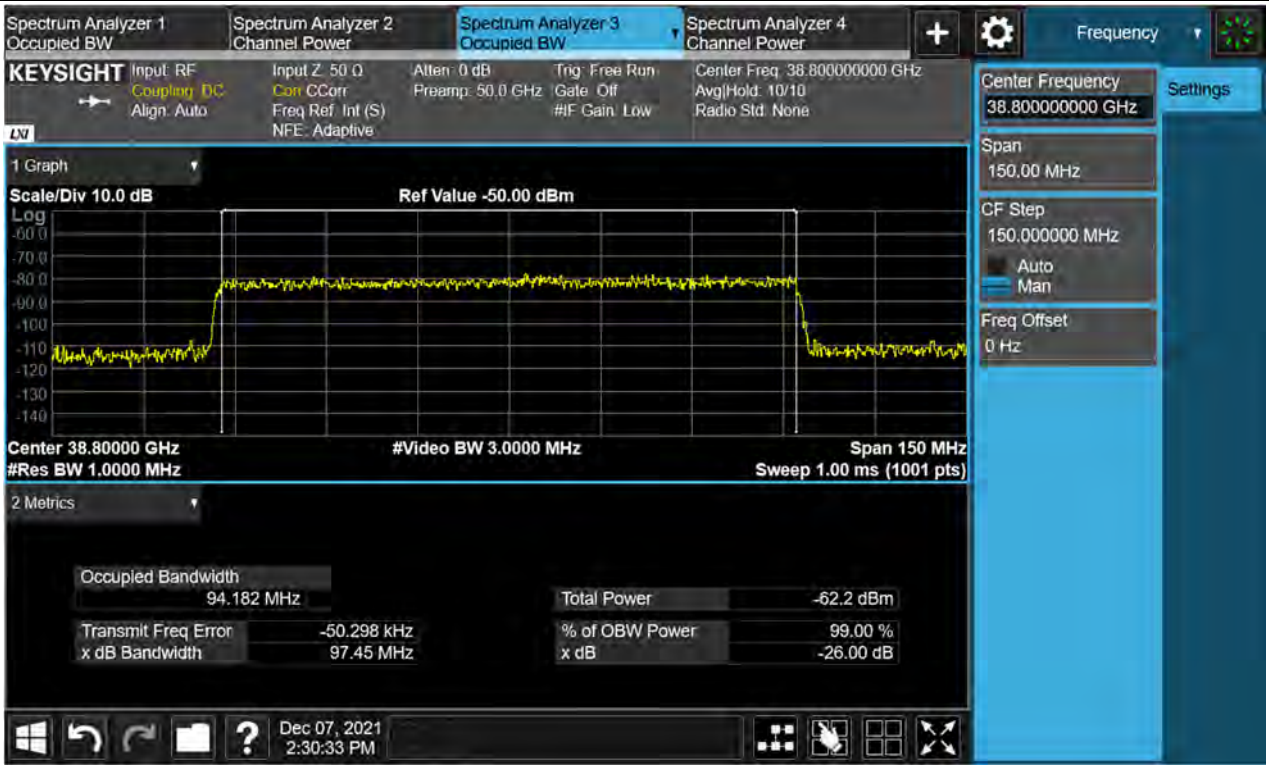
Output / Path B / 1cc

Input / Path B / 1cc

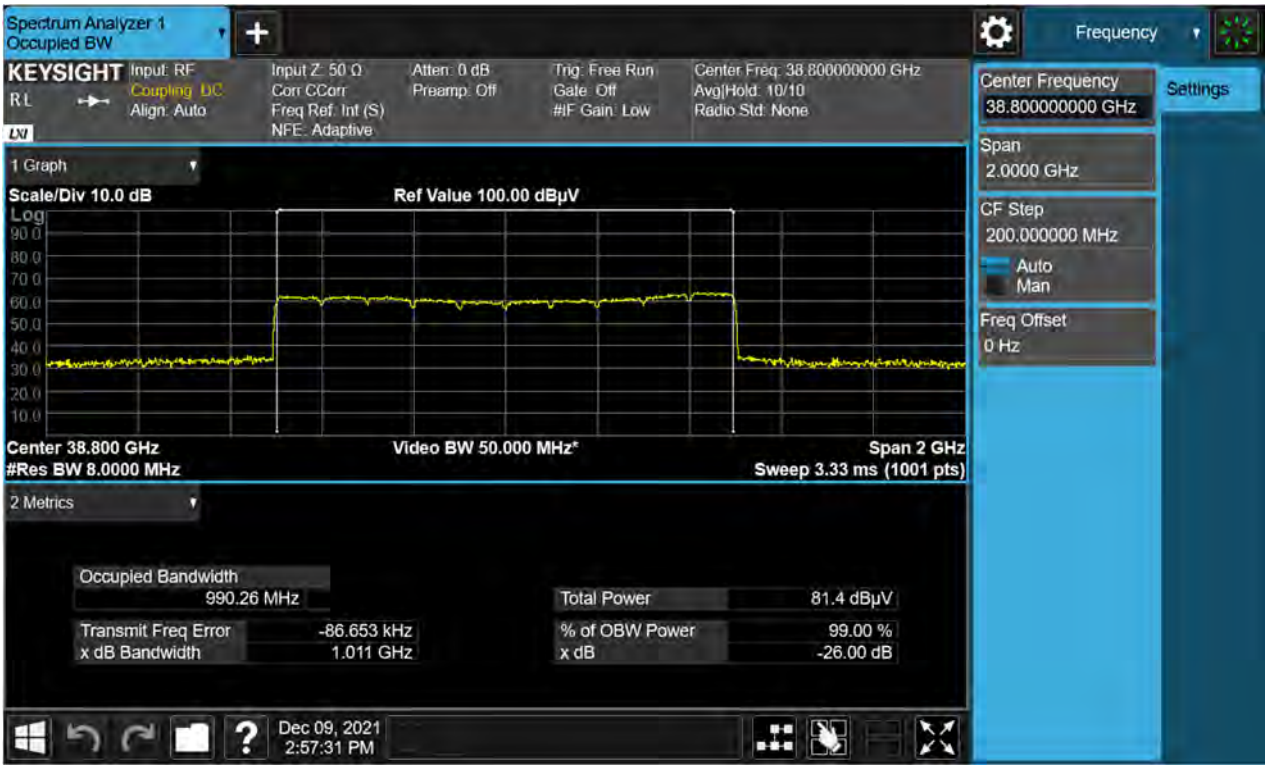


+3 dB above the AGC threshold output / Path B / 1cc

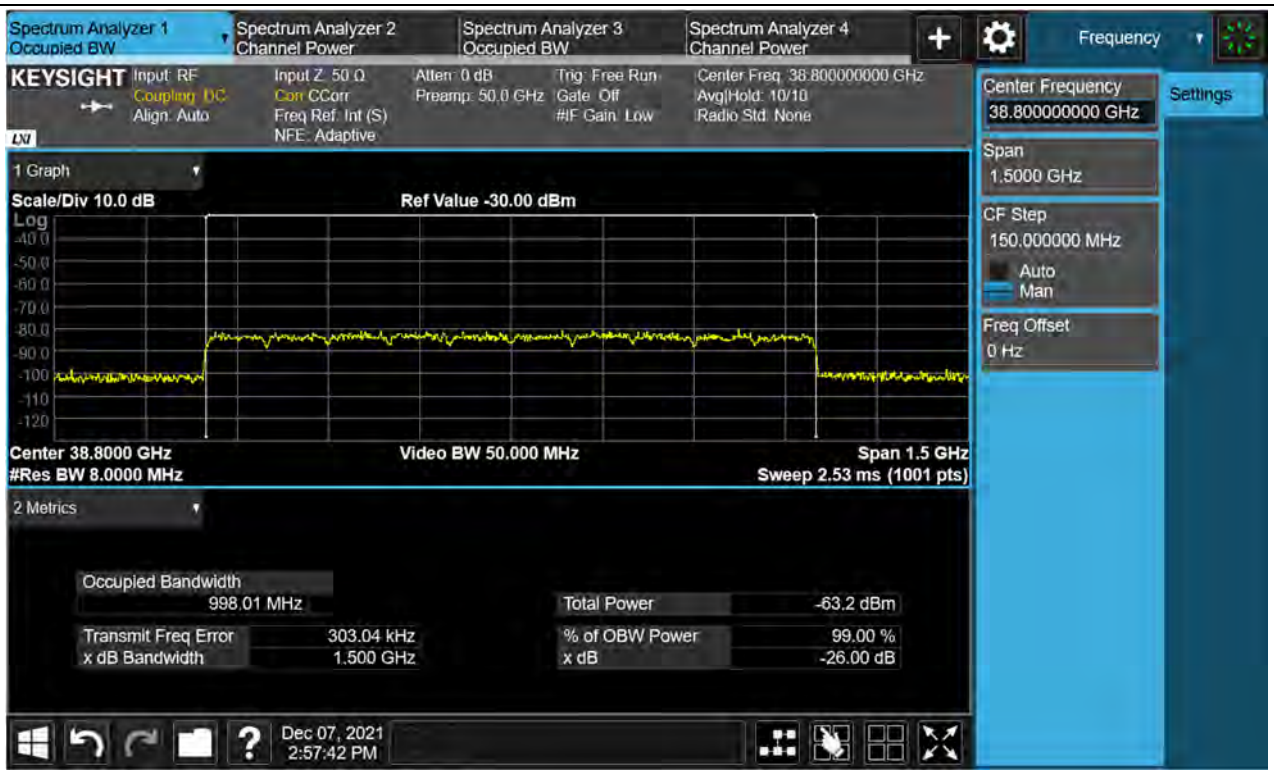
+3 dB above the AGC threshold Input / Path B / 1cc



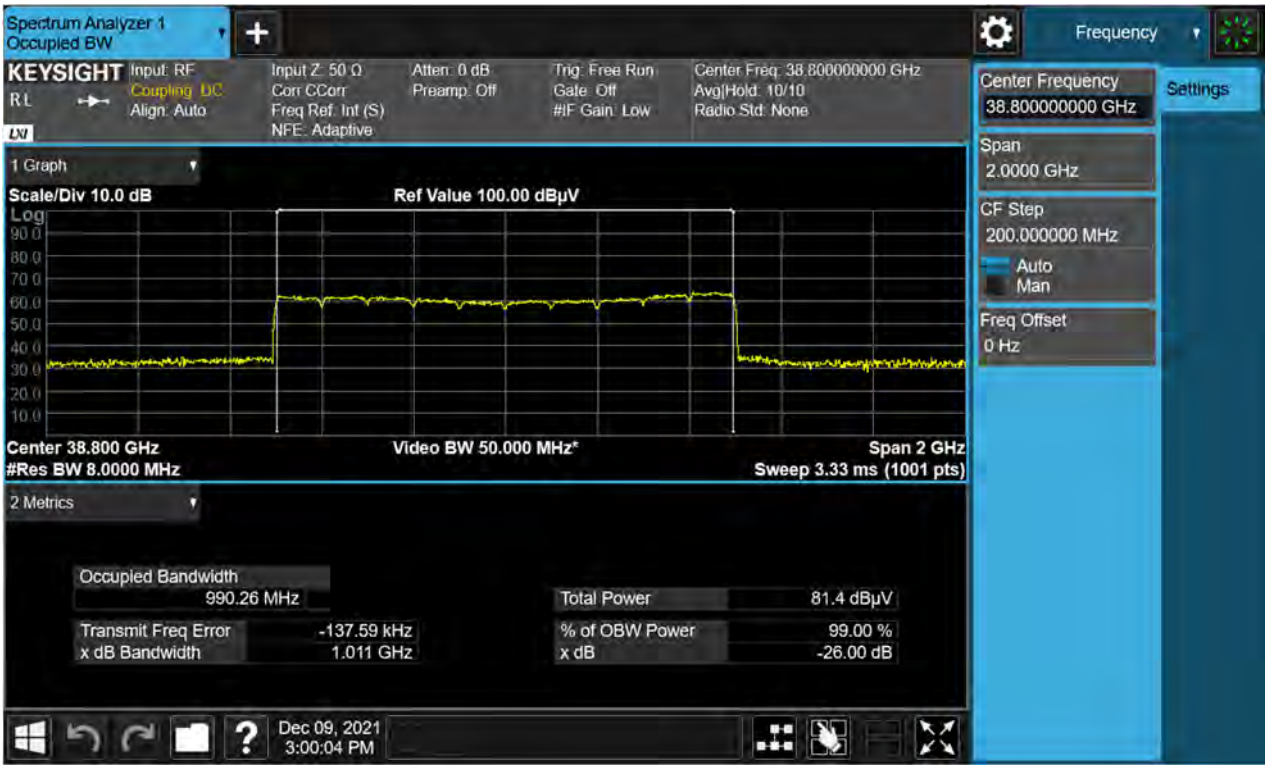
Output / Path B / 10cc



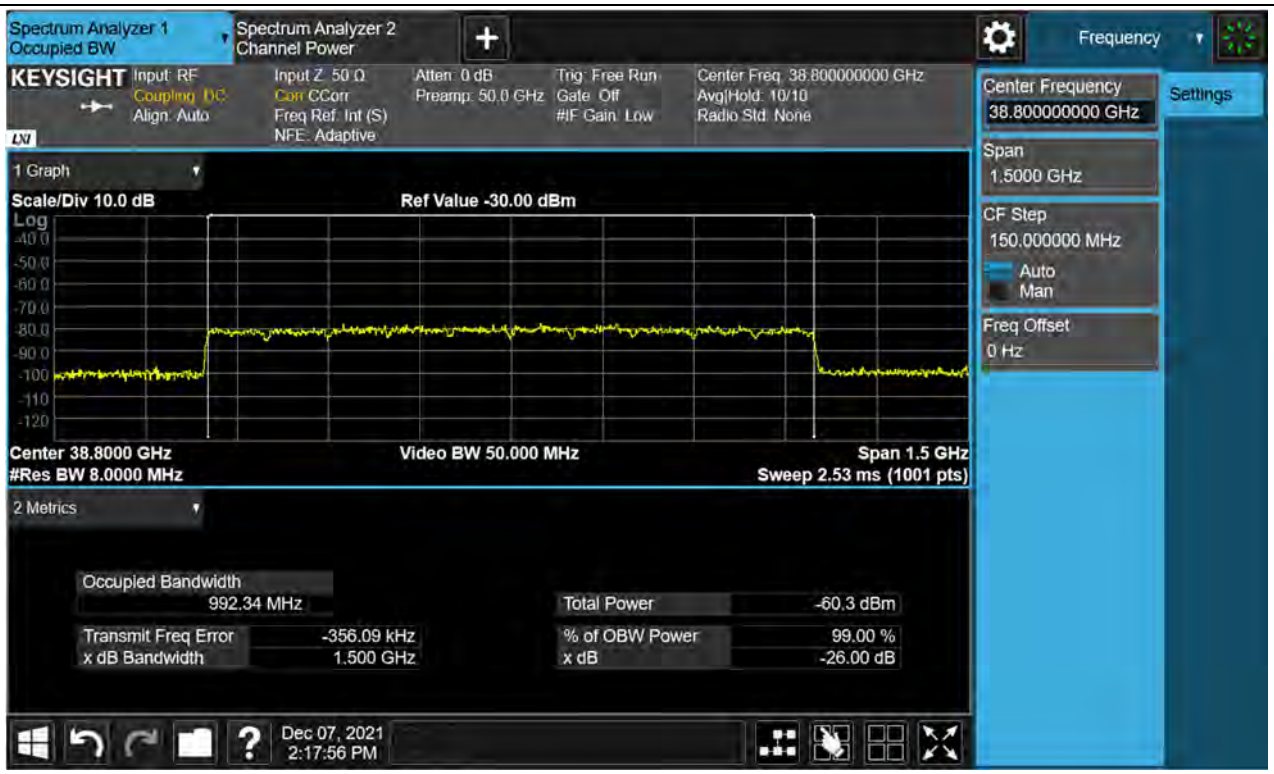
Input / Path B / 10cc



+3 dB above the AGC threshold output / Path B / 10cc



+3 dB above the AGC threshold Input / Path B / 10cc



5.4. EIRP DENSITY

Test Requirements:

§ 30.202 Power limits.

(a) For fixed and base stations operating in connection with mobile systems, the average power of the sum of all antenna elements is limited to an equivalent isotopically radiated power (EIRP) density of +75dBm/100 MHz. For channel bandwidths less than 100 megahertz the EIRP must be reduced proportionally and linearly based on the bandwidth relative to 100 megahertz.

Test Procedures:

The measurement is performed in accordance with Section 5.2.4.4.2 of ANSI C63.26.

a) Set span to 2 × to 3 × the OBW.

b) Set RBW = 1% to 5% of the OBW.

c) Set VBW ≥ 3 × RBW.

d) Set number of measurement points in sweep ≥ 2 × span / RBW.

e) Sweep time:

1) Set = auto-couple, or

2) Set ≥ [10 × (number of points in sweep) × (transmission symbol period)] for single sweep (automation-compatible) measurement.

f) Detector = power averaging (rms).

g) Set sweep trigger to “free run.”

h) Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.

i) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band or channel power measurement function with band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

j) Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.

Note:

1. Test distance is determined to 3.0 m by far field condition; see test descriptions on section 3.2.
2. The angle of antenna is set as maximum radiated power conditions.
3. EIRP is calculated from measured value according to section 5.2.7 of ANSI C63.26-2015, and the formula is as follows.

$$EIRP\ (dBm) = E\ (dB\mu V/m) + 20log(D) - 104.77$$

4. E (dBμV/m) value is considered Antenna Factor and Cable Loss (AFCL), and it as follow.

$$E\ (dB\mu V/m) = measurement\ value\ (dB\mu V) + AFCL$$

5. Sample calculation:

$$81.24\ dB\mu V\ (measured\ Value) - 95.2 + 54.396(AFCL) = 40.40\ dBm\ (Final\ EIRP)$$

Test Results:

Tabular Data of EIRP Density per path

Path	CC	Channel	Frequency (GHz)	Measured Level (dBuV)	Calculated EIRP (dBm/100MHz)	Limit (dBm/100MHz)
A	1	Low	37.650	78.72	36.84	75
		Middle	38.800	79.77	38.94	
		High	39.950	79.52	37.35	
	10	Low	38.550	72.56	31.67	
		Middle	38.650	69.54	28.61	
		High	39.250	69.98	28.65	
B	1	Low	37.650	80.63	38.75	
		Middle	38.800	81.24	40.40	
		High	39.950	79.72	37.54	
	10	Low	38.550	72.82	31.93	
		Middle	39.250	71.57	30.24	
		High	39.950	70.88	28.71	

MIMO Tabular Data of EIRP Density

Path	CC	Channel	Frequency (GHz)	Path A EIRP (dBm/100MHz)	Path B EIRP (dBm/100MHz)	Calculated EIRP (dBm/100MHz)
A+B	1	Low	37.650	36.84	38.75	40.90
		Middle	38.800	38.94	40.40	42.74
		High	39.950	37.35	37.54	40.46
	10	Low	38.550	31.67	31.93	34.82
		Middle	38.650	28.61	30.24	32.51
		High	39.250	28.65	28.71	31.69

[1 RB] Tabular Data of EIRP Density per path

Path	CC	Channel	RB Size/Offset	Frequency (GHz)	Measured Level (dBuV)	Calculated EIRP (dBm/100MHz)	Limit (dBm/100MHz)
A	1	Low	1/0	37.603	77.74	55.15	75
		Middle	1/32	38.799	78.70	57.87	
		High	1/65	39.997	77.05	54.69	
	10	Low	1/0	38.602	72.12	41.89	
		Middle	1/32	38.652	71.20	41.24	
		High	1/65	39.193	72.82	42.48	
B	1	Low	1/0	37.603	77.04	54.45	
		Middle	1/32	38.799	77.43	56.60	
		High	1/65	39.997	75.99	53.63	
	10	Low	1/0	38.503	73.25	43.48	
		Middle	1/32	39.250	71.07	40.71	
		High	1/65	39.799	71.19	40.22	

[1 RB] MIMO Tabular Data of EIRP Density

Path	CC	Channel	Frequency (GHz)	Path A EIRP (dBm/100MHz)	Path B EIRP (dBm/100MHz)	Calculated EIRP (dBm/100MHz)
A+B	1	Low	37.650	55.15	54.45	57.83
		Middle	38.800	57.87	56.60	60.29
		High	39.950	54.69	53.63	57.20
	10	Low	38.550	41.89	43.48	45.77
		Middle	38.650	41.24	40.71	43.99
		High	39.250	42.48	40.22	44.51

[Full RB] Plot Data of EIRP Density Tabular per path

Path A / 1cc / Low

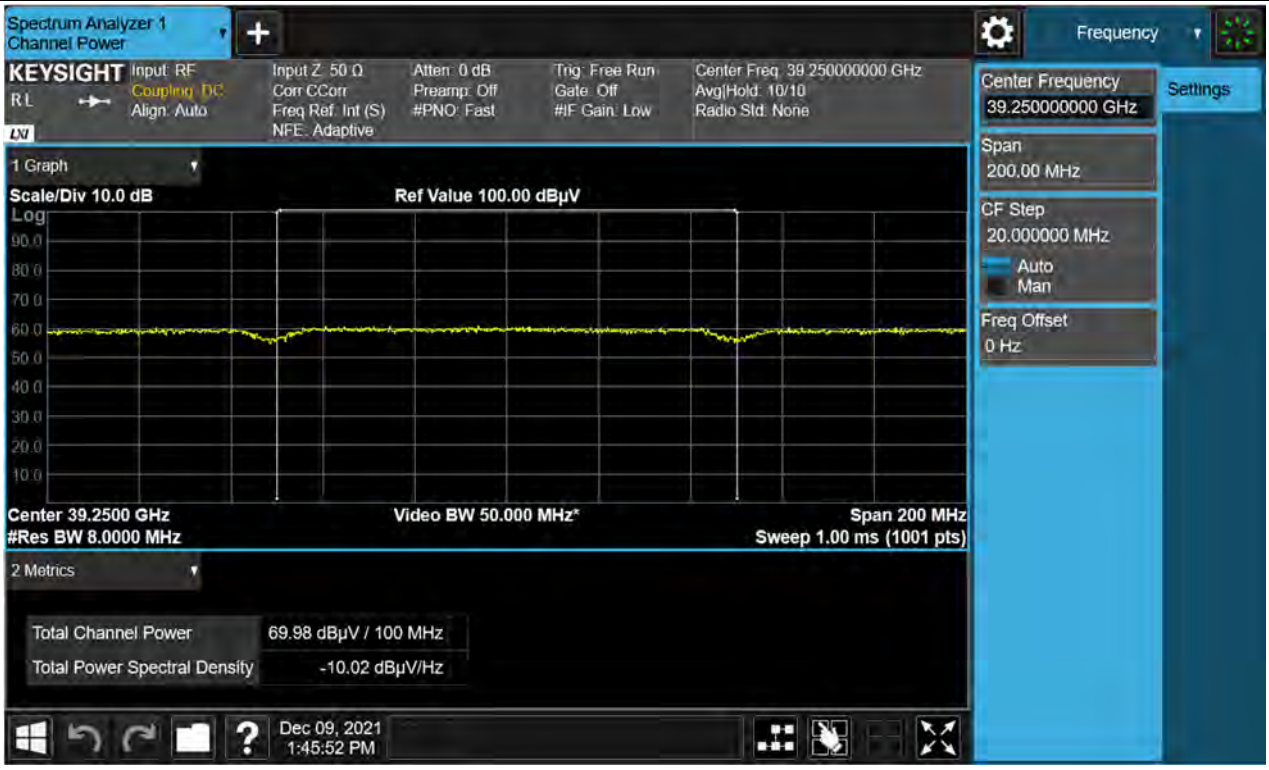
Path A / 1cc / Middle

Path A / 1cc / High

Path A / 10cc / Low

Path A / 10cc / Middle

Path A / 10cc / High

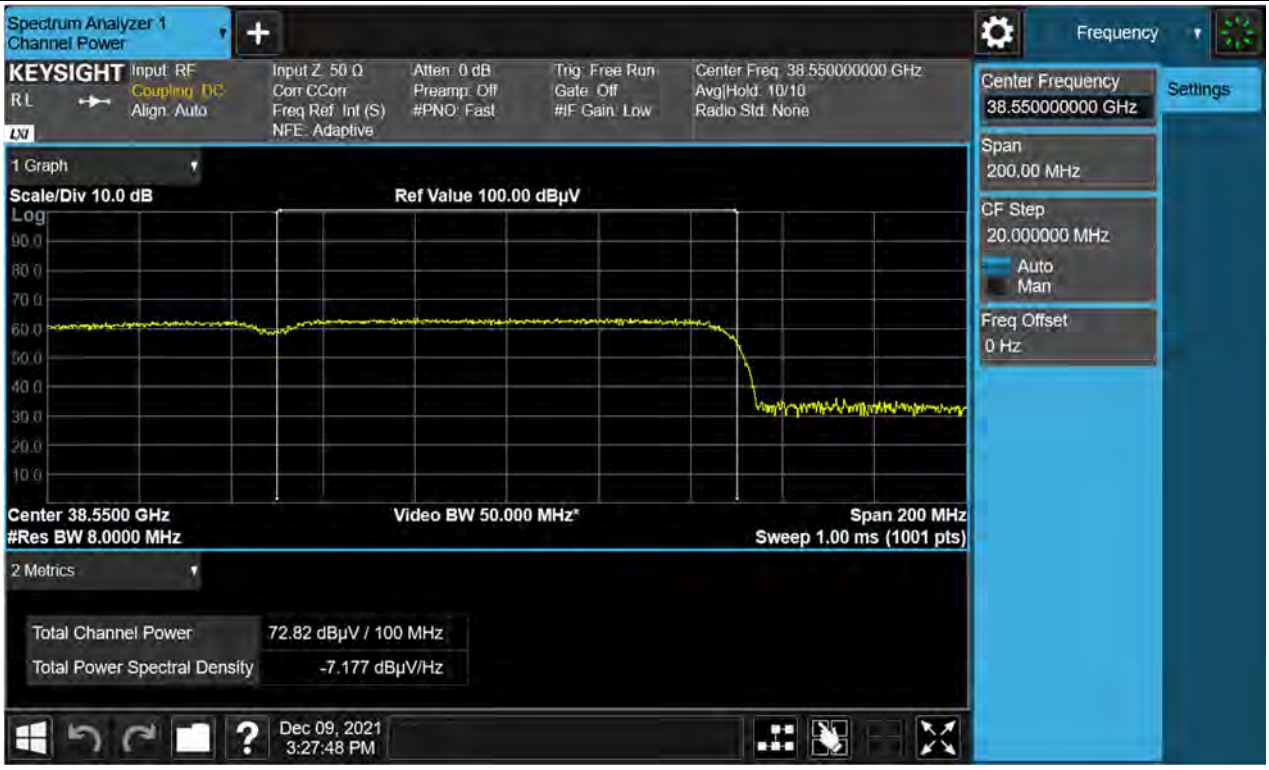


Path B / 1cc / Low

Path B / 1cc / Middle

Path B / 1cc / High

Path B / 10cc / Low

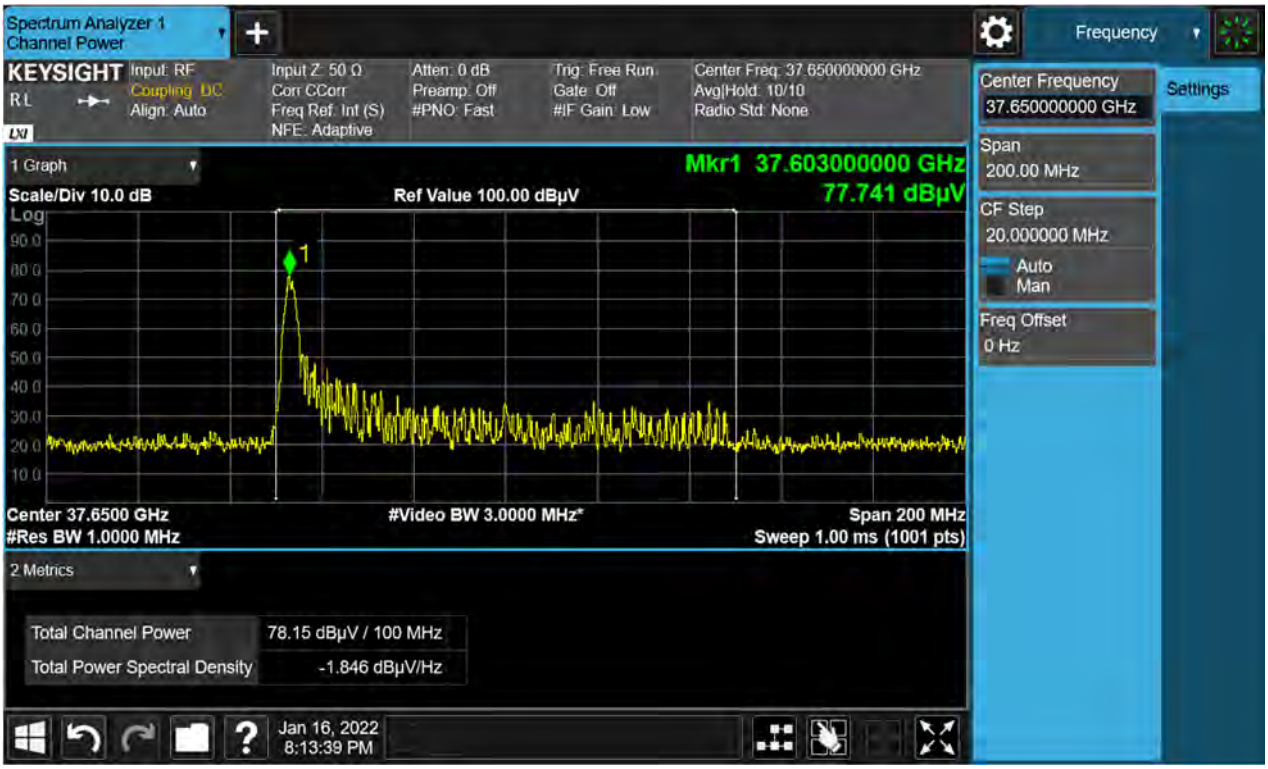


Path B / 10cc / Middle

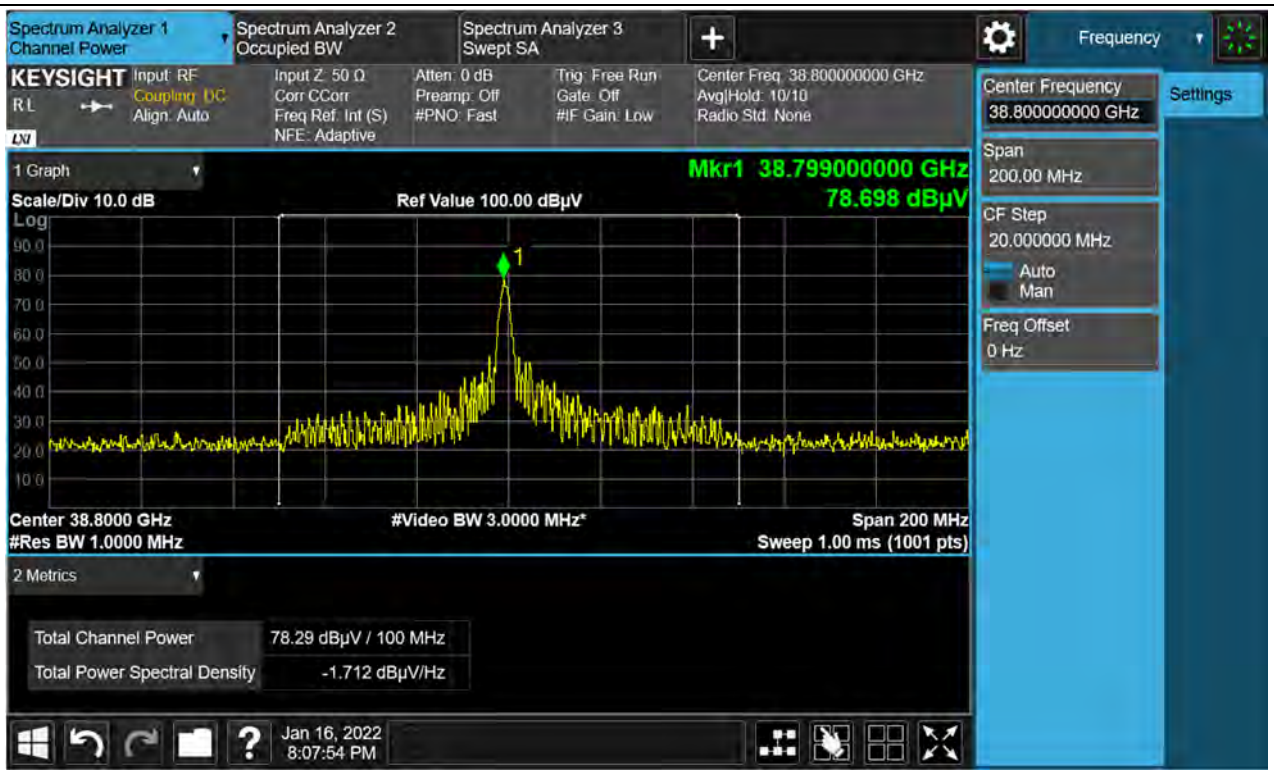
Path B / 10cc / High

[1 RB] Plot Data of EIRP Density Tabular per path

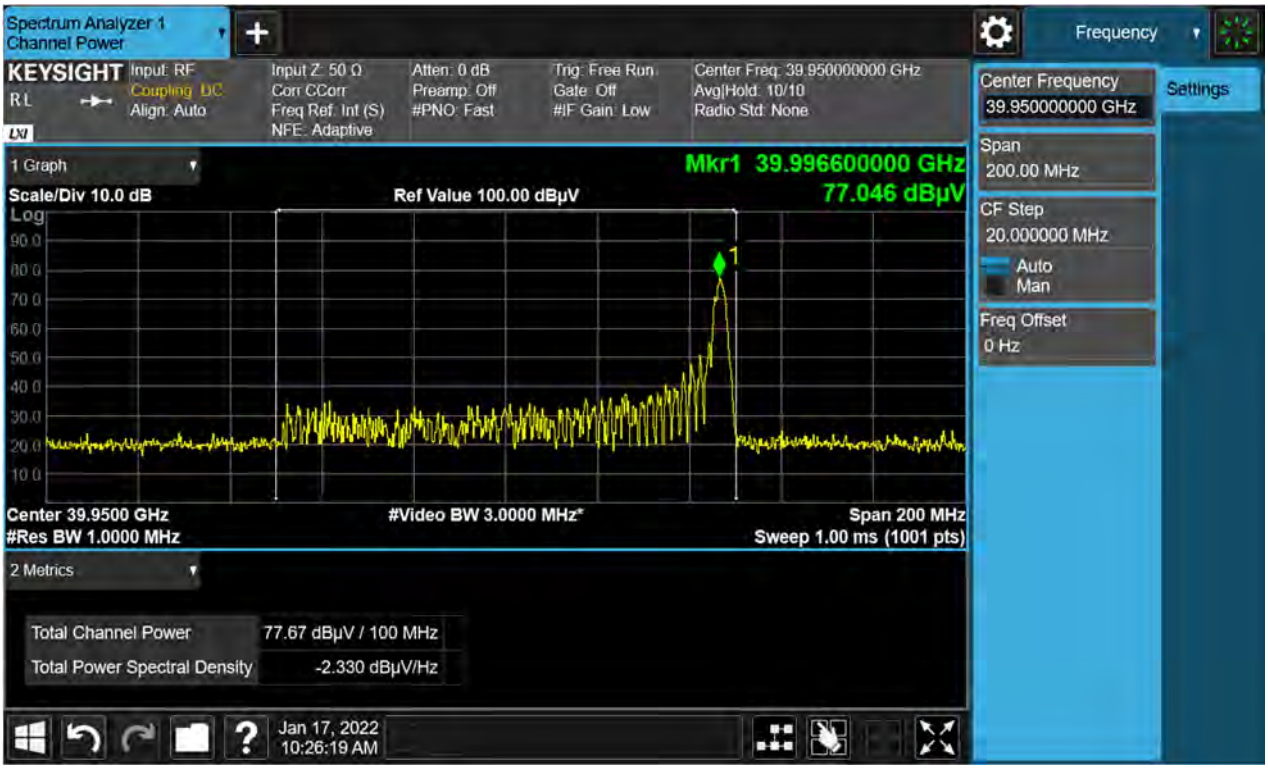
Path A / 1cc / Low



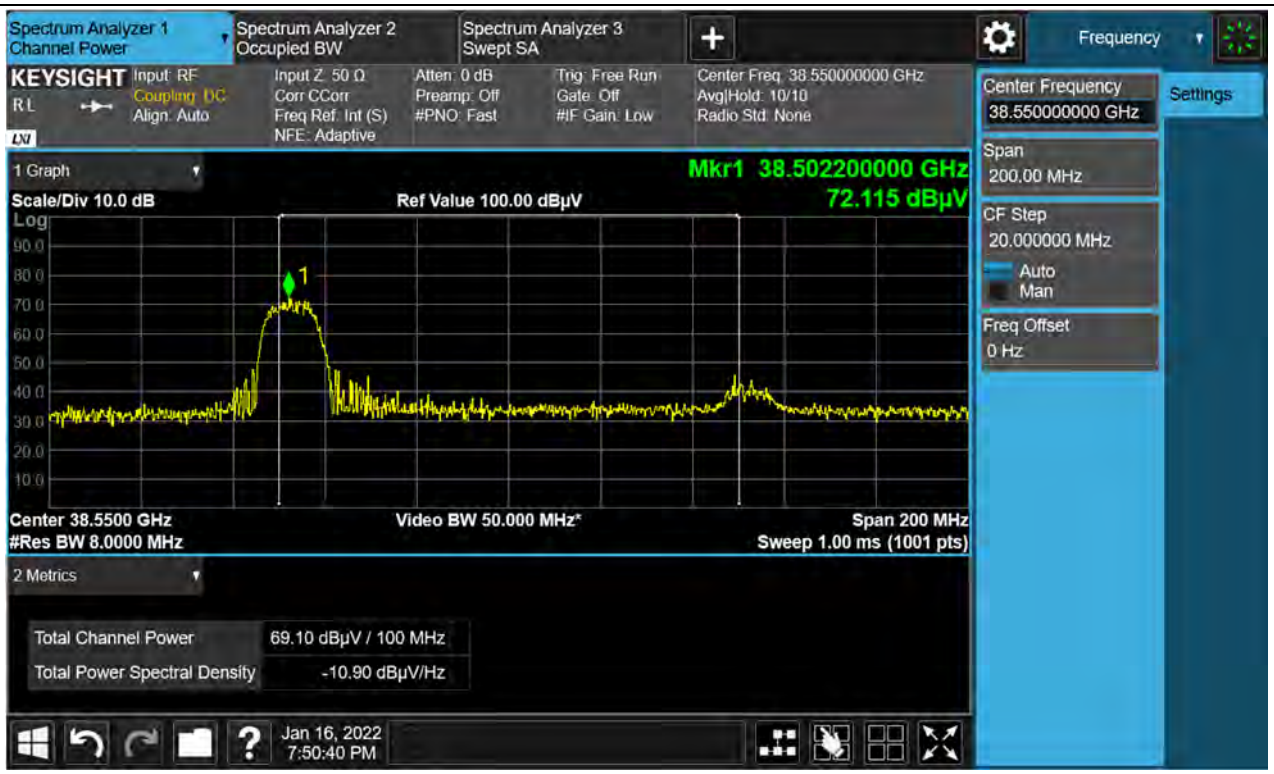
Path A / 1cc / Middle



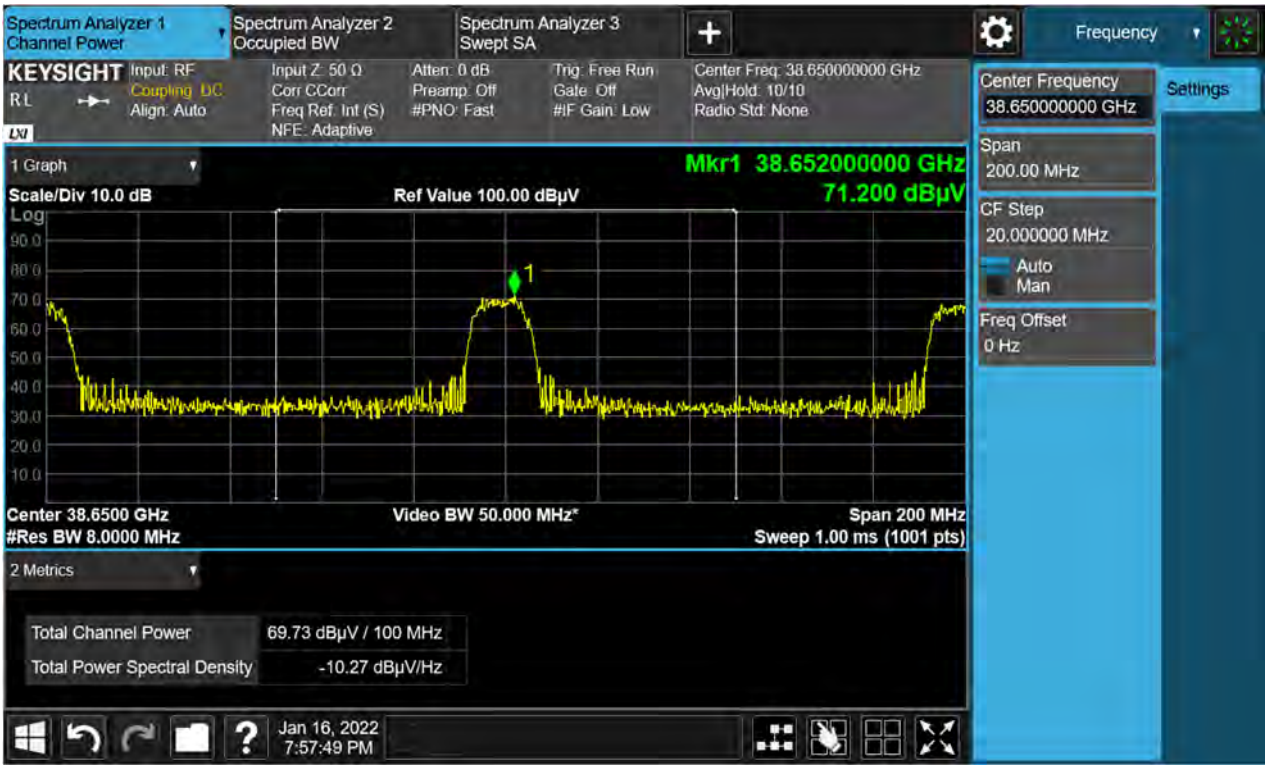
Path A / 1cc / High



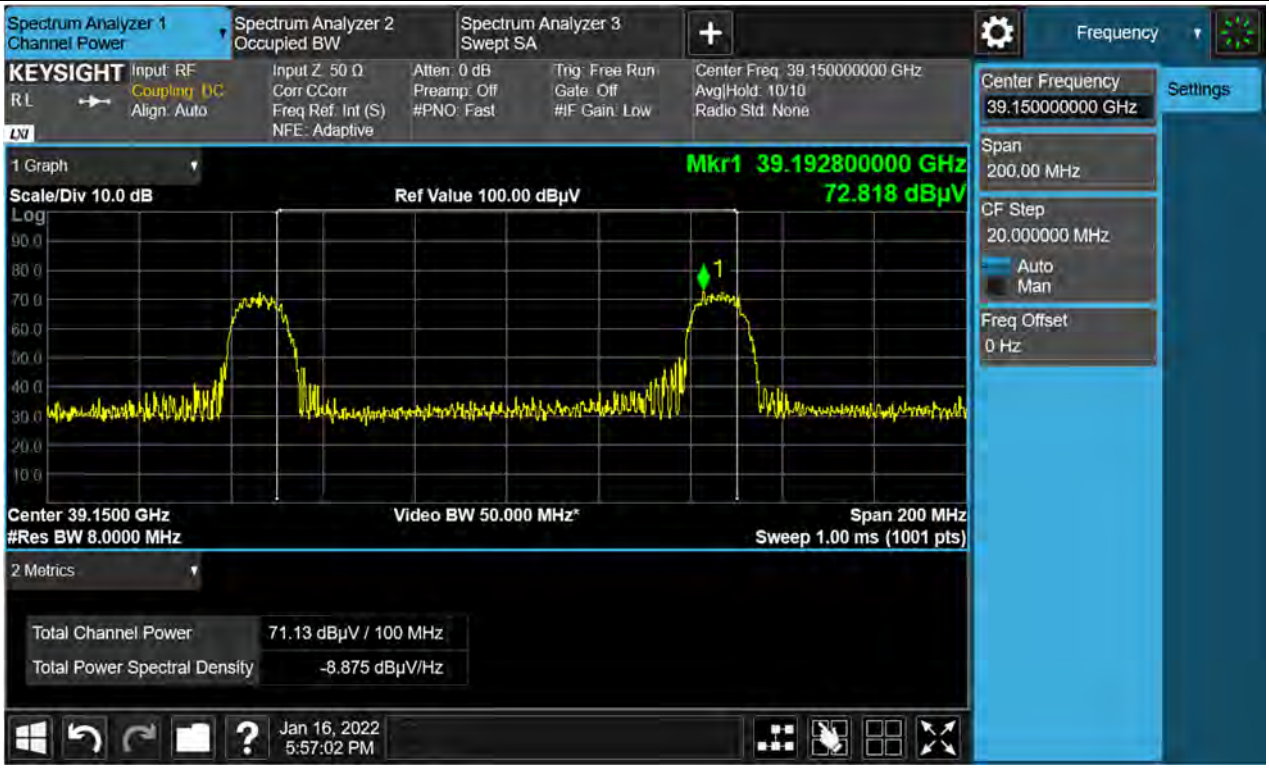
Path A / 10cc / Low



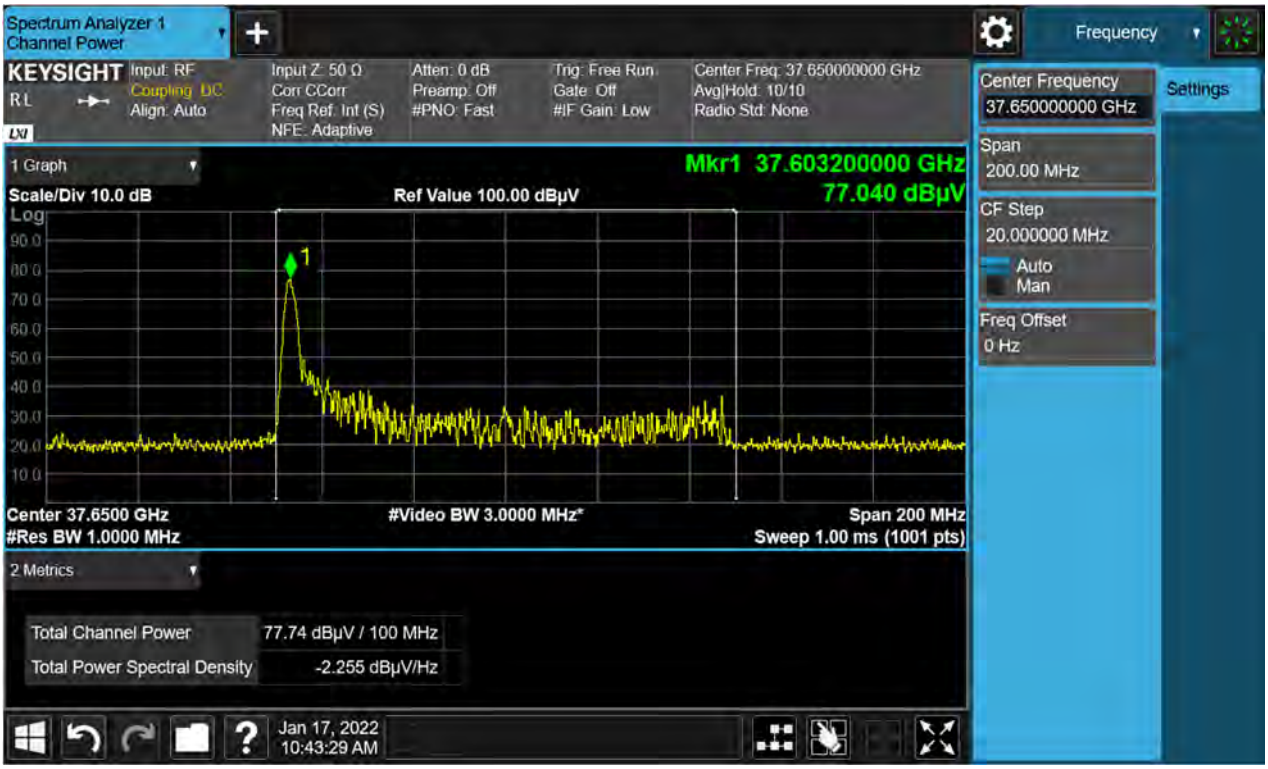
Path A / 10cc / Middle



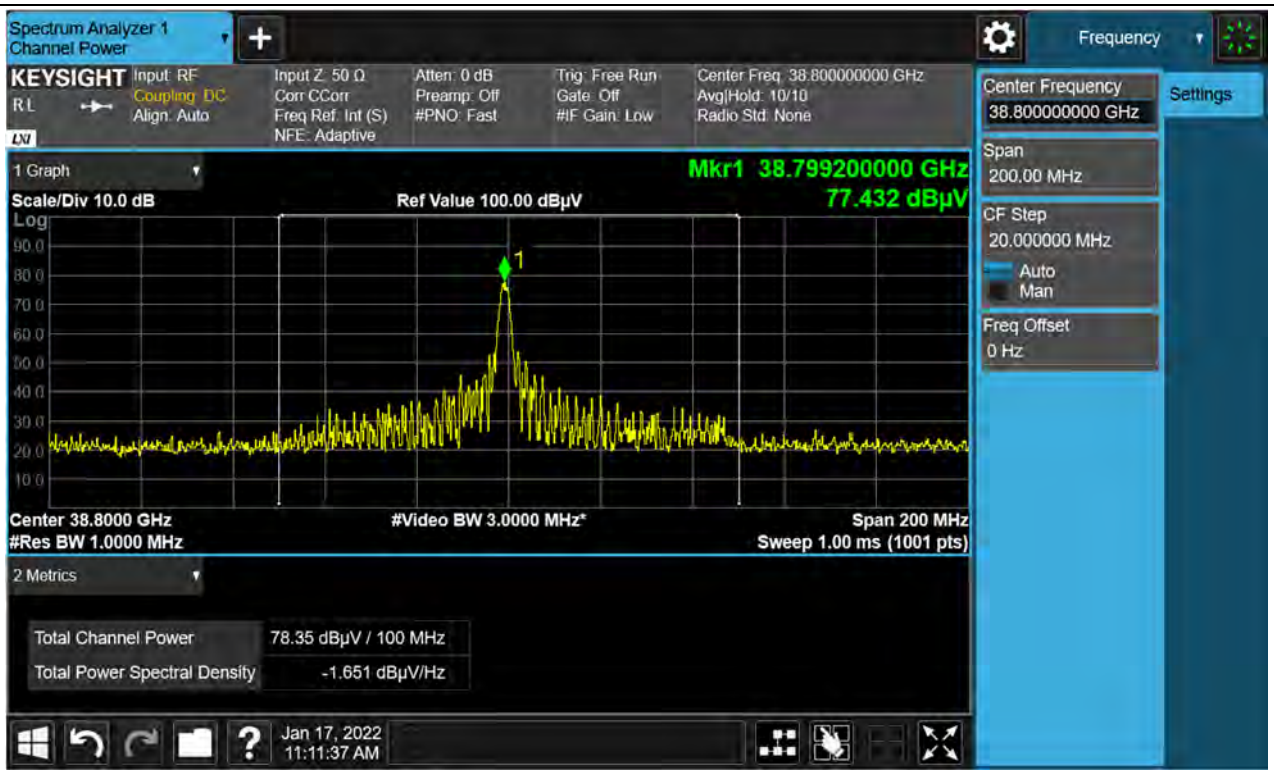
Path A / 10cc / High



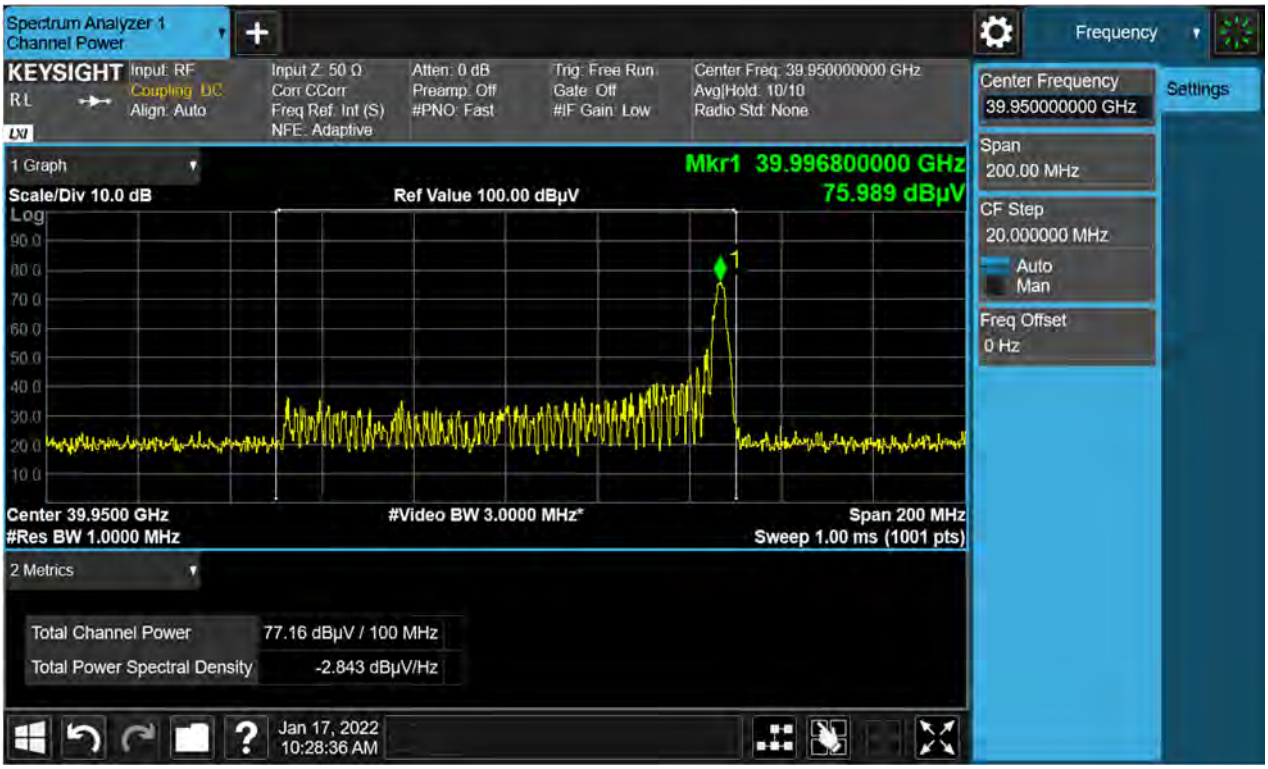
Path B / 1cc / Low



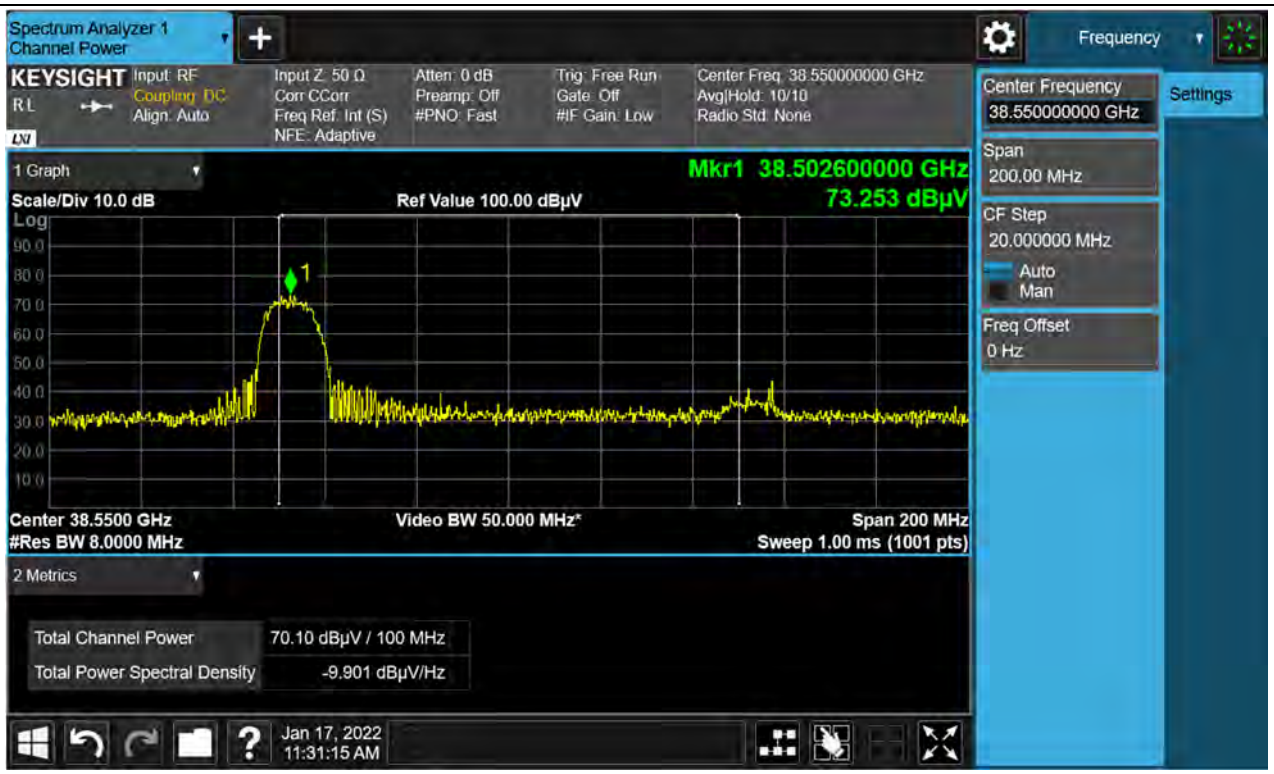
Path B / 1cc / Middle



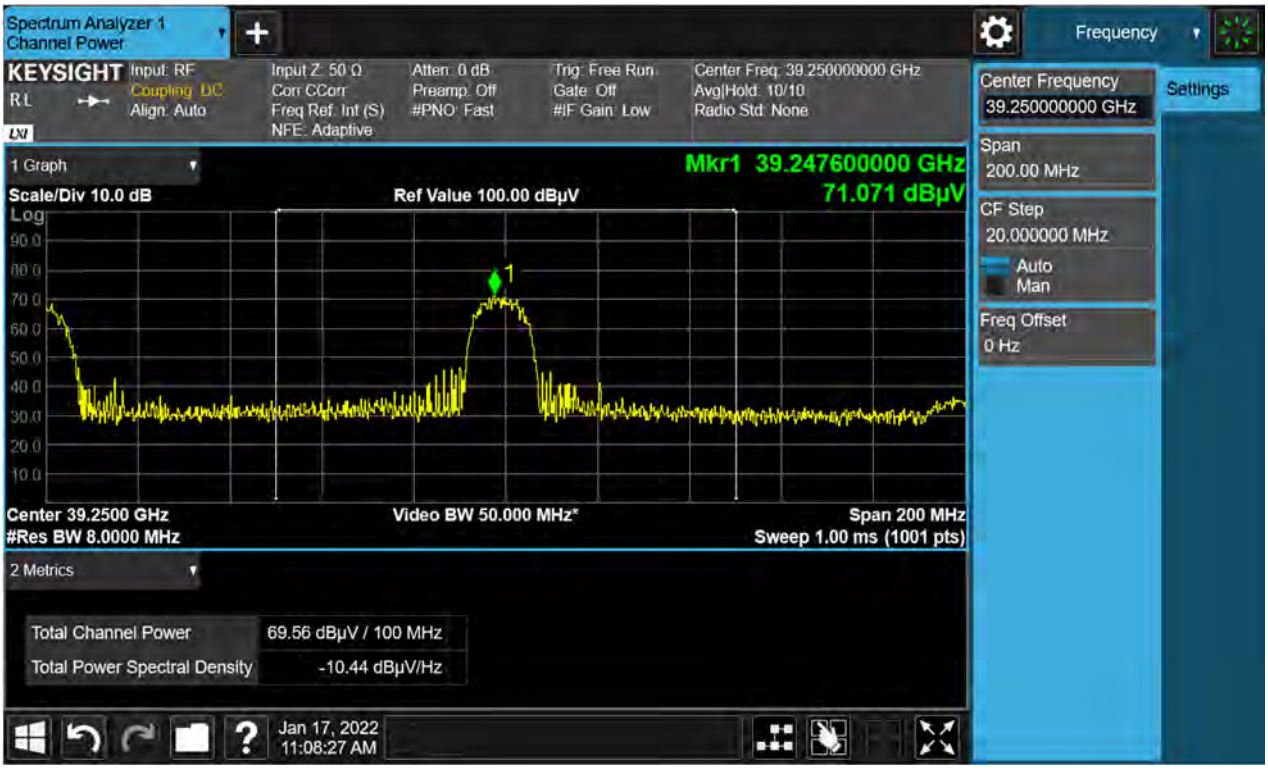
Path B / 1cc / High



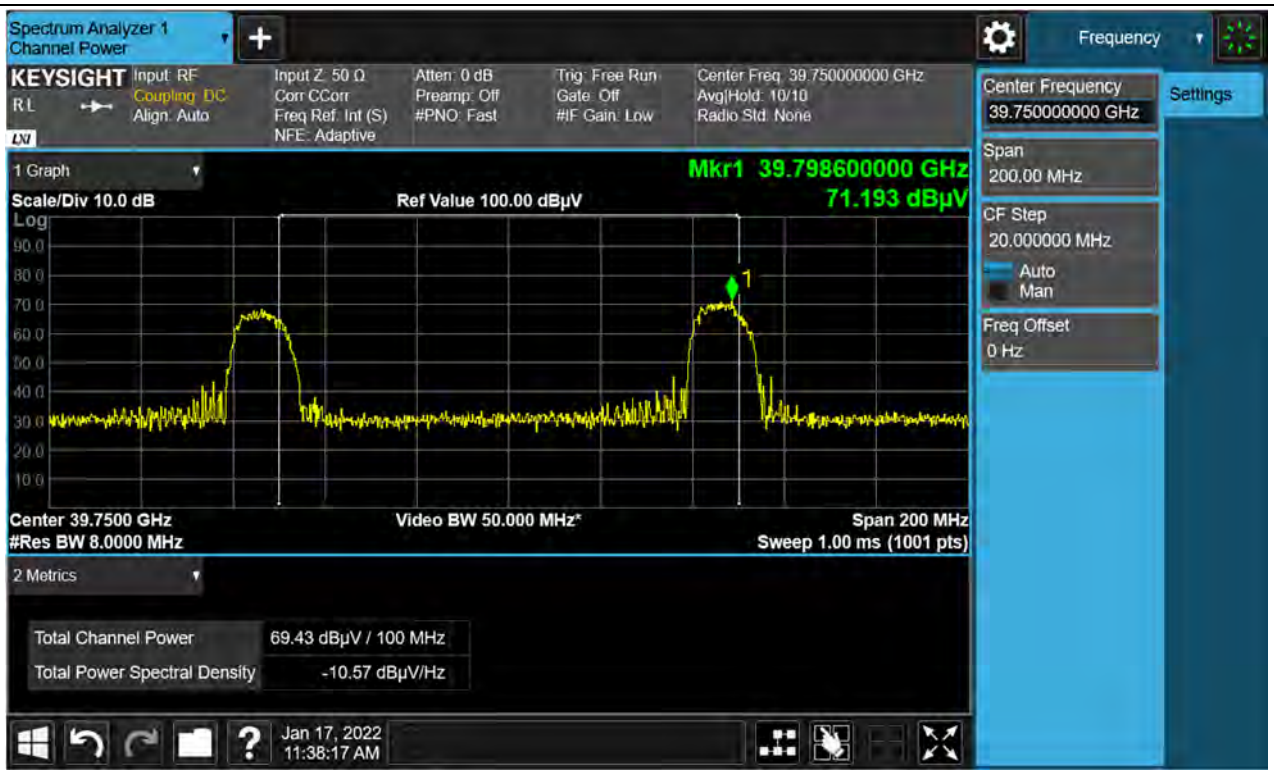
Path B / 10cc / Low



Path B / 10cc / Middle



Path B / 10cc / High



5.5. EQUIVALENT ISOTROPIC RADIATED POWER / MEAN OUTPUT POWER AND AMPLIFIER/BOOSTER GAIN

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.

Test Procedures:

Measurements were in accordance with the test methods section 3.5 of KDB 935210 D05 v01r04.

Adjust the internal gain control of the EUT to the maximum gain for which the equipment certification is being sought. Any EUT attenuation settings shall be set to their minimum value.

Input power levels (uplink and downlink) should be set to maximum input ratings while confirming that the device is not capable of operating in saturation (non-linear mode) at the rated input levels, including during the performance of the input/output power measurements.

3.5.2 Measuring the EUT mean input and output power

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

b) Configure to generate the test signal.

c) The frequency of the signal generator shall be set to the frequency f_0 as determined from out-of-band rejection test.

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, but not more than 0.5 dB below.

f) Measure and record the output power of the EUT; use ANSI C63.26-2015 subclause 5.2.4.4.1, 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.

3.5.5 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:

Gain (dB) = output power (dBm) − input power (dBm).

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

Note:

1. If f0 that determined from out-of-band test is smaller or greater than difference of test signal's center frequency and operation band block, test is performed at the lowest or the highest frequency that test signals can be passed.
2. Sample calculation:

81.49 dBμV (measured Value) – 95.2 + 54.27(AFCL) = 40.54 dBm (Final EIRP)

Test Results:

[Full RB] Tabular Data of Input & Output Power (E.I.R.P.) and Gain

Path	CC	f_0 Frequency (MHz)	Input Power	Output Power		Gain (dB)
			Measured Level (dBm)	Measured Level (dBuV)	Calculated EIRP (dBm)	
A	1	38.577	-71.45	80.25	39.16	110.61
	10	38.577	-71.47	80.23	39.13	110.60
B	1	38.528	-71.50	81.49	40.54	112.04
	10	38.528	-71.49	81.42	40.46	111.95

[Full RB] MIMO Tabular Data of Input & Output Power (E.I.R.P.)

Path	CC	Path A EIRP (dBm)	Path B EIRP (dBm)	Calculated EIRP (dBm)
A+B	1	39.16	40.54	42.91
	10	39.13	40.46	42.86

[Full RB] Tabular Data of +3 dB above AGC threshold Input & Output Power (E.I.R.P.)

Path	CC	f_0 Frequency (MHz)	Input Power	Output Power	
			Measured Level (dBm)	Measured Level (dBuV)	Calculated EIRP (dBm)
A	1	38.577	-68.51	80.21	39.12
	10	38.577	-68.47	80.11	39.01
B	1	38.528	-68.45	81.43	40.48
	10	38.528	-68.50	81.25	40.29

[Full RB] MIMO Tabular Data of +3 dB above AGC threshold Input & Output Power (E.I.R.P.)

Path	CC	Path A EIRP (dBm)	Path B EIRP (dBm)	Calculated EIRP (dBm)
A+B	1	39.12	40.48	42.86
	10	39.01	40.29	42.71

[1 RB] Tabular Data of Input & Output Power (E.I.R.P.) and Gain

Path	CC	RB Size/Offset	f_0 Frequency (MHz)	Input Power	Output Power		Gain (dB)
				Measured Level (dBm)	Measured Level (dBuV)	Calculated EIRP (dBm)	
A	1	1/32	38.577	-71.45	78.37	37.27	108.72
	10	1/32	38.577	-71.47	79.07	37.97	109.44
B	1	1/32	38.528	-71.50	78.71	37.75	109.25
	10	1/32	38.528	-71.49	78.65	37.69	109.18

[1 RB] MIMO Tabular Data of Input & Output Power (E.I.R.P.)

Path	CC	Path A EIRP (dBm)	Path B EIRP (dBm)	Calculated EIRP (dBm)
A+B	1	37.27	37.75	40.53
	10	37.97	37.69	40.85

[1 RB] Tabular Data of +3 dB above AGC threshold Input & Output Power (E.I.R.P.)

Path	CC	RB Size/Offset	f_0 Frequency (MHz)	Input Power	Output Power	
				Measured Level (dBm)	Measured Level (dBuV)	Calculated EIRP (dBm)
A	1	1/32	38.577	-68.51	78.32	37.22
	10	1/32	38.577	-68.47	78.74	37.64
B	1	1/32	38.528	-68.45	78.80	37.84
	10	1/32	38.528	-68.50	78.55	37.59

[1 RB] MIMO Tabular Data of +3 dB above AGC threshold Input & Output Power (E.I.R.P.)

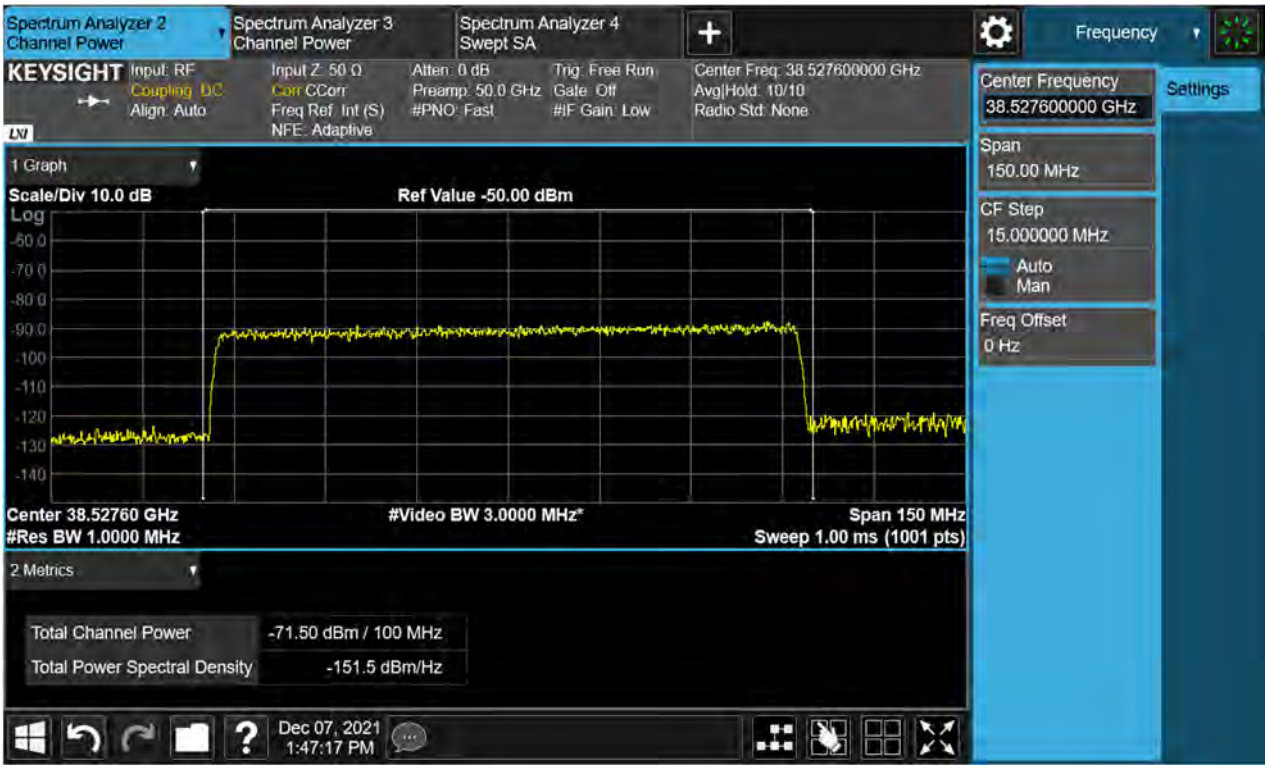
Path	CC	Path A EIRP (dBm)	Path B EIRP (dBm)	Calculated EIRP (dBm)
A+B	1	37.22	37.84	40.55
	10	37.64	37.59	40.63

[Full RB] Plot Data of Input & Output Power (E.I.R.P.)

Input Power (E.I.R.P.) / Path A / 1cc

Input Power (E.I.R.P.) / Path A / 10cc

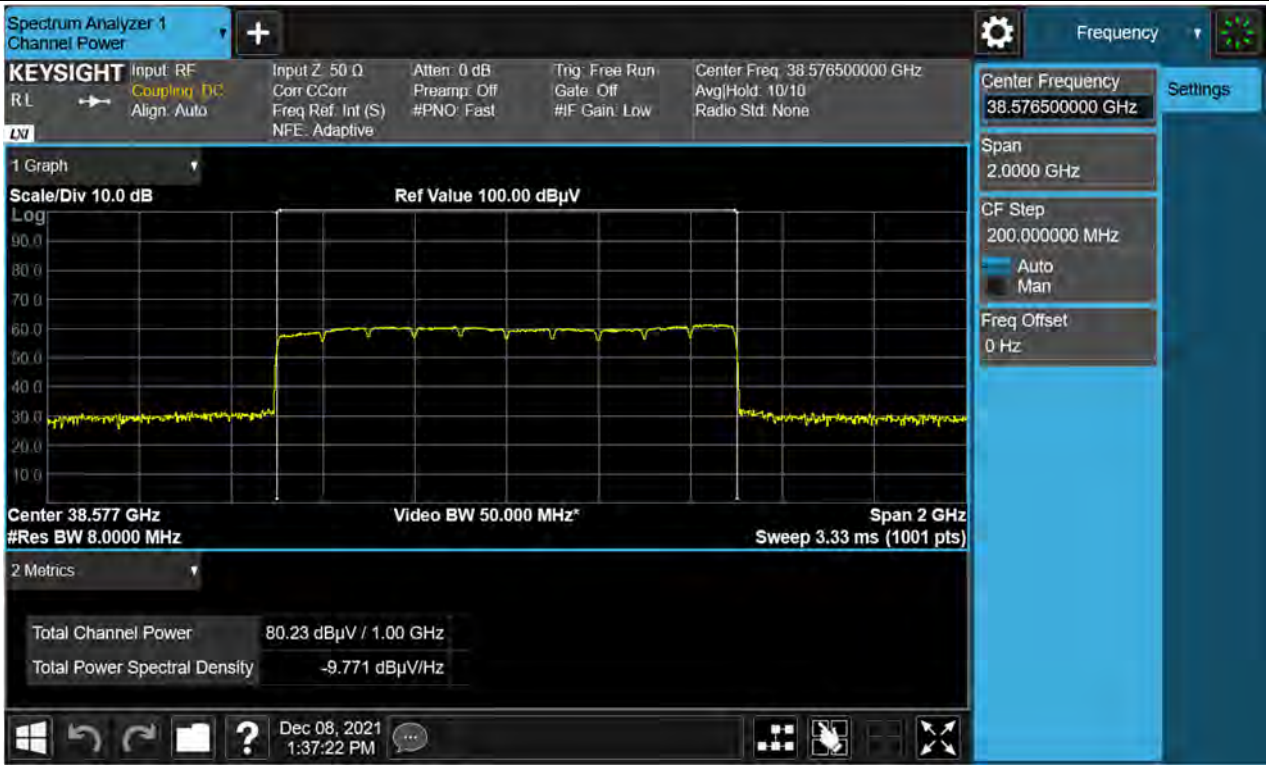
Input Power (E.I.R.P.) / Path B / 1cc



Input Power (E.I.R.P.) / Path B / 10cc

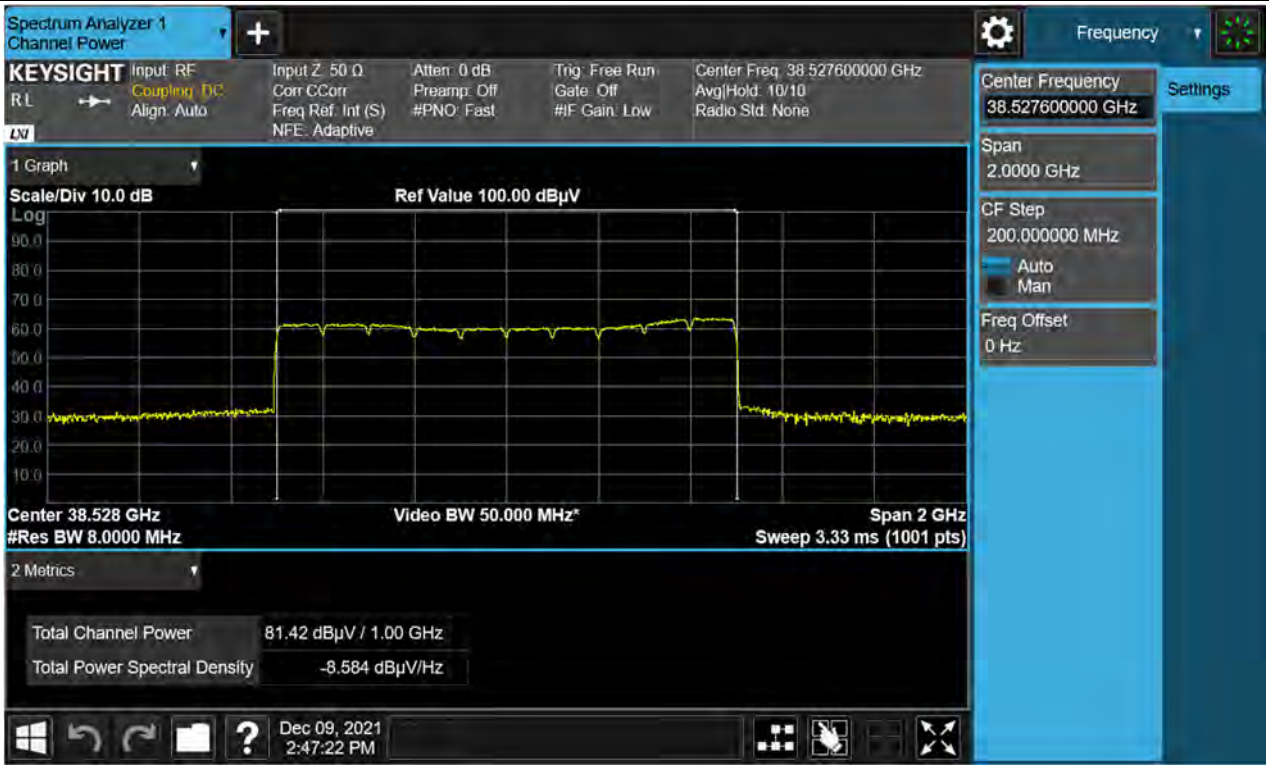
Output Power (E.I.R.P.) / Path A / 1cc

Output Power (E.I.R.P.) / Path A / 10cc



Output Power (E.I.R.P.) / Path B / 1cc

Output Power (E.I.R.P.) / Path B / 10cc



[Full RB] Tabular Data of +3 dB above AGC threshold Input & Output Power (E.I.R.P.)

+3 dB above AGC threshold Input Power (E.I.R.P.) / Path A / 1cc

+3 dB above AGC threshold Input Power (E.I.R.P.) / Path A / 10cc

+3 dB above AGC threshold Input Power (E.I.R.P.) / Path B / 1cc

+3 dB above AGC threshold Input Power (E.I.R.P.) / Path B / 10cc

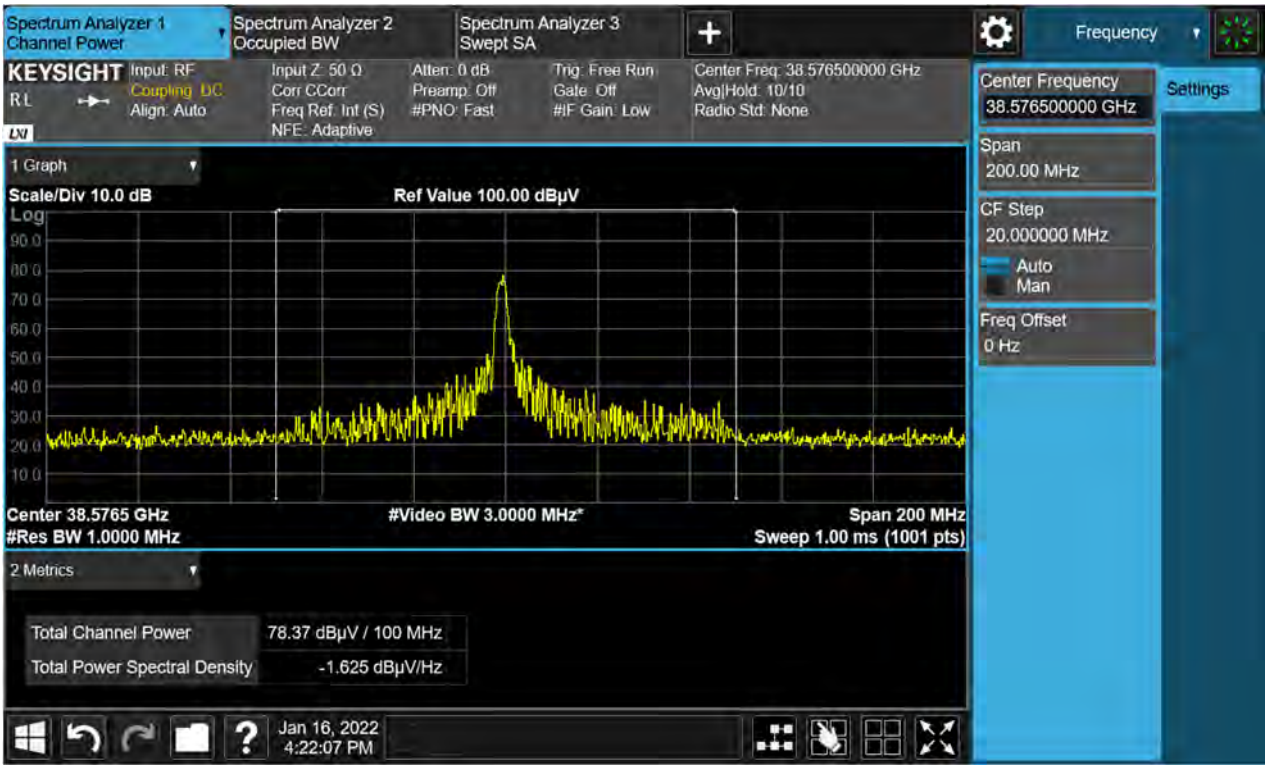
+3 dB above AGC threshold Output Power (E.I.R.P.) / Path A / 1cc

+3 dB above AGC threshold Output Power (E.I.R.P.) / Path A / 10cc

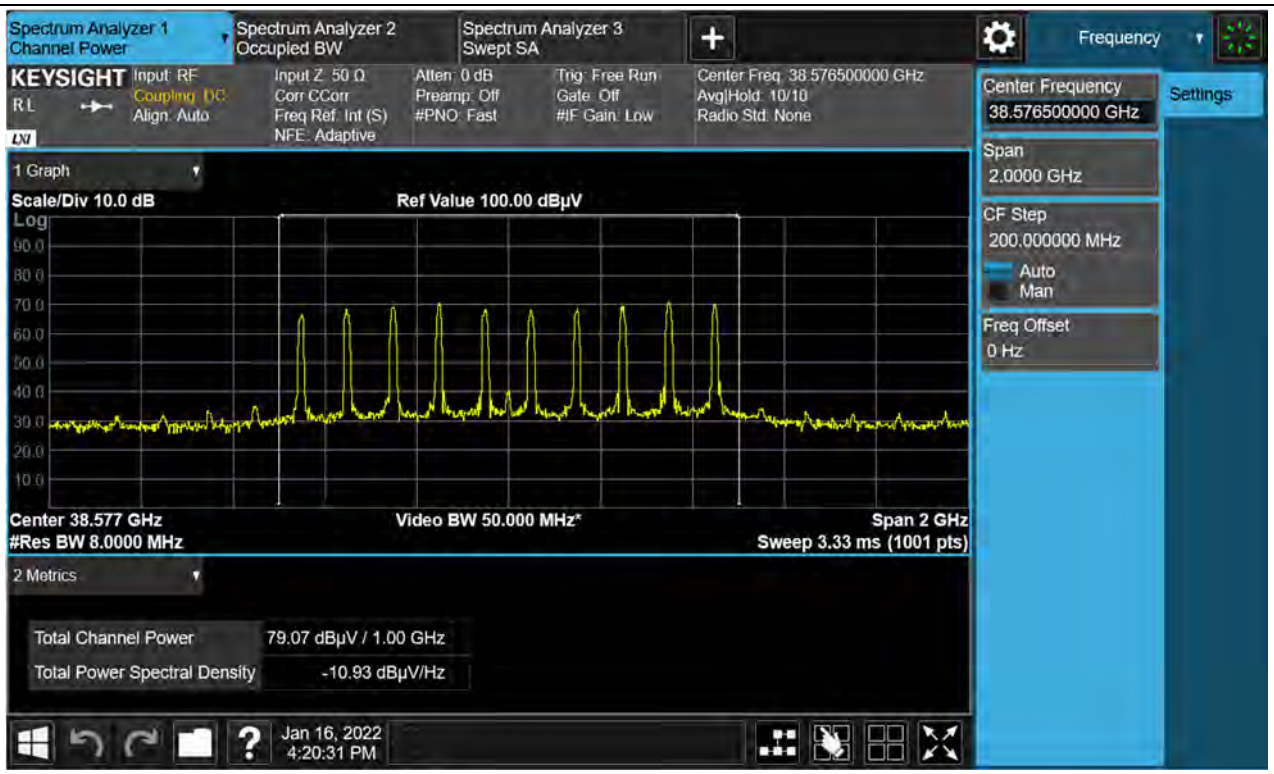
+3 dB above AGC threshold Output Power (E.I.R.P.) / Path B / 1cc

+3 dB above AGC threshold Output Power (E.I.R.P.) / Path B / 10cc

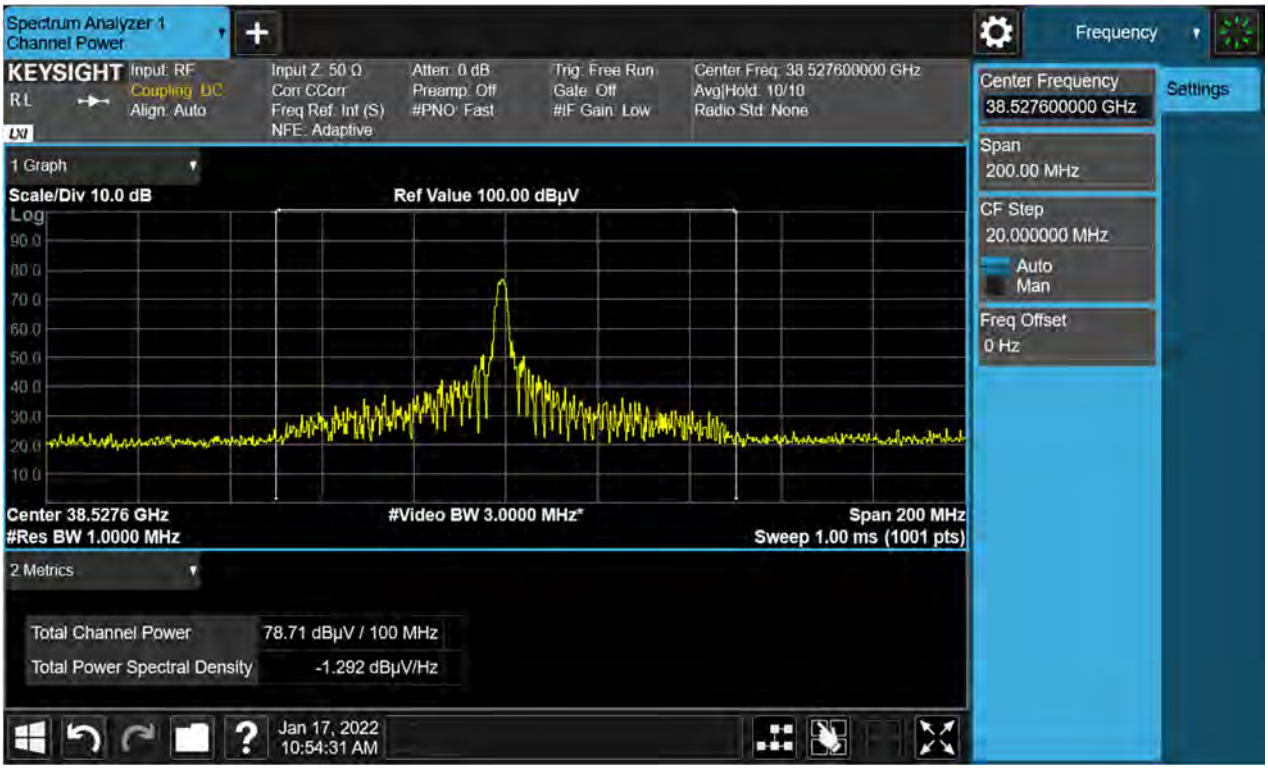
Output Power (E.I.R.P.) / Path A / 1cc



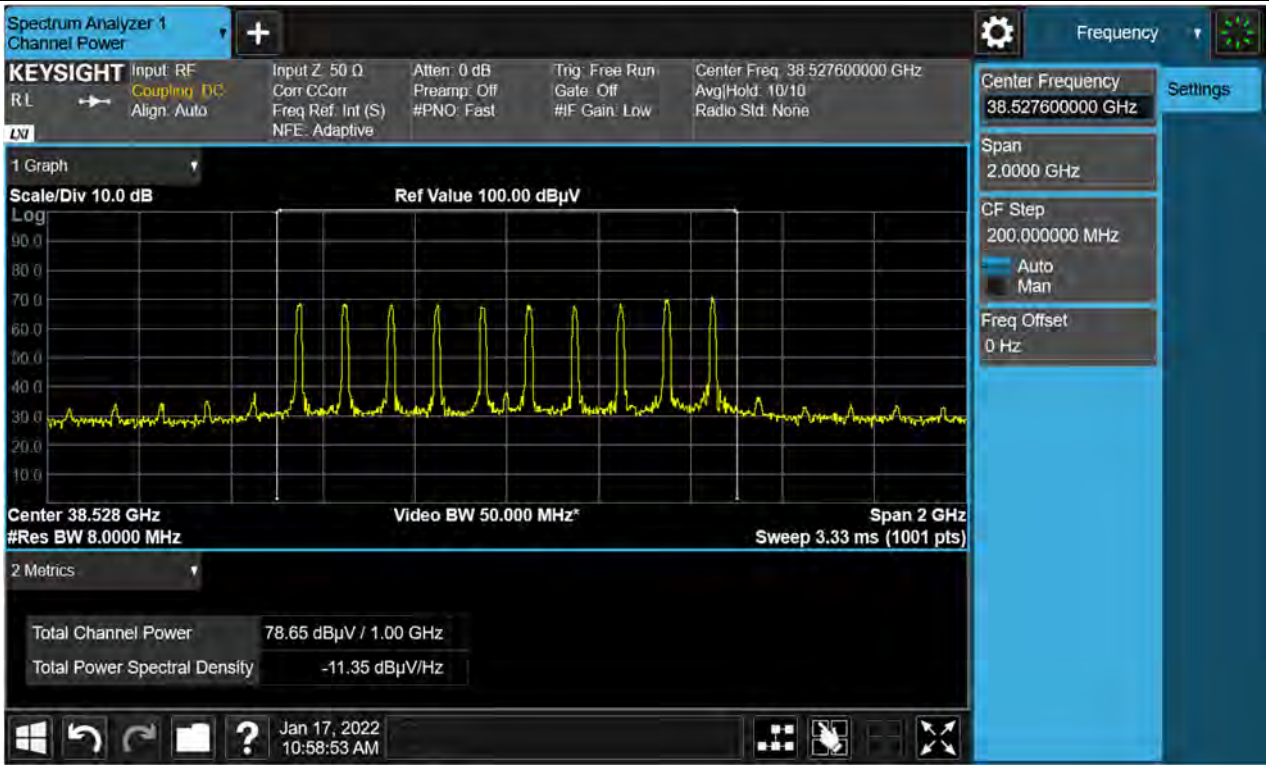
Output Power (E.I.R.P.) / Path A / 10cc



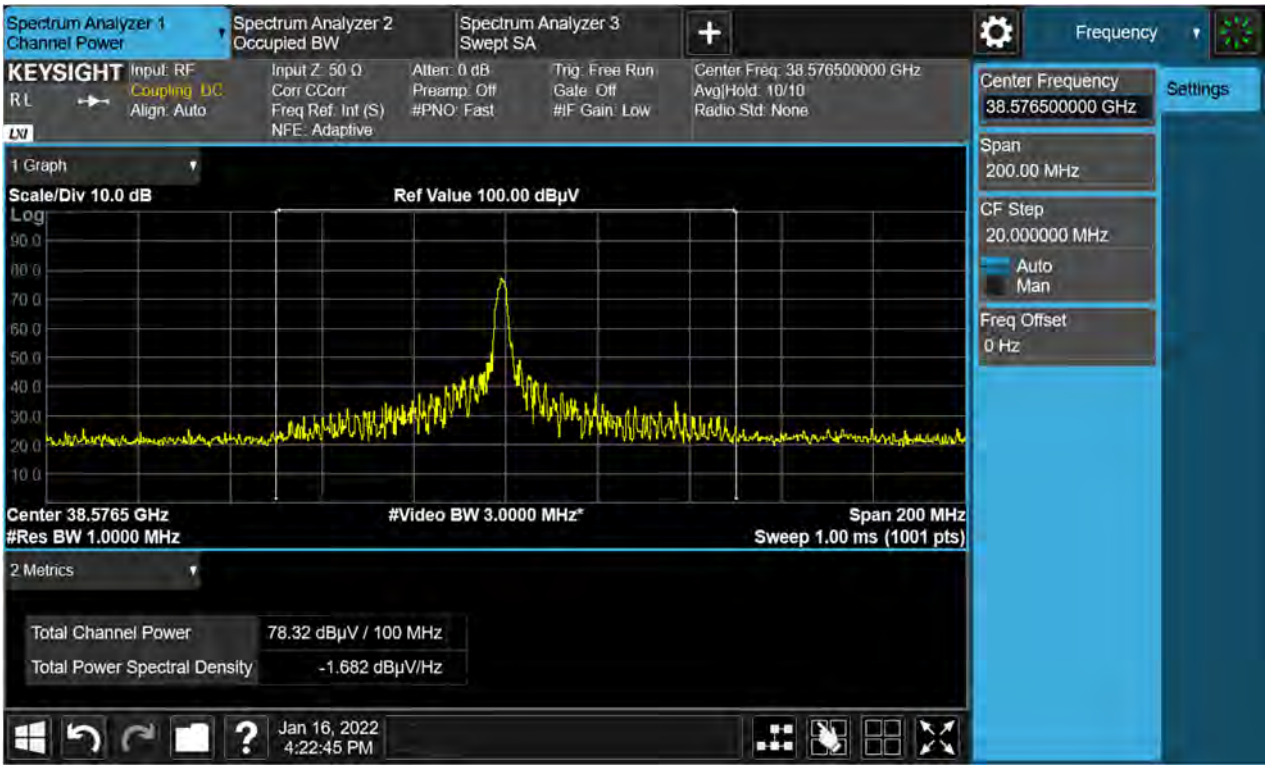
Output Power (E.I.R.P.) / Path B / 1cc



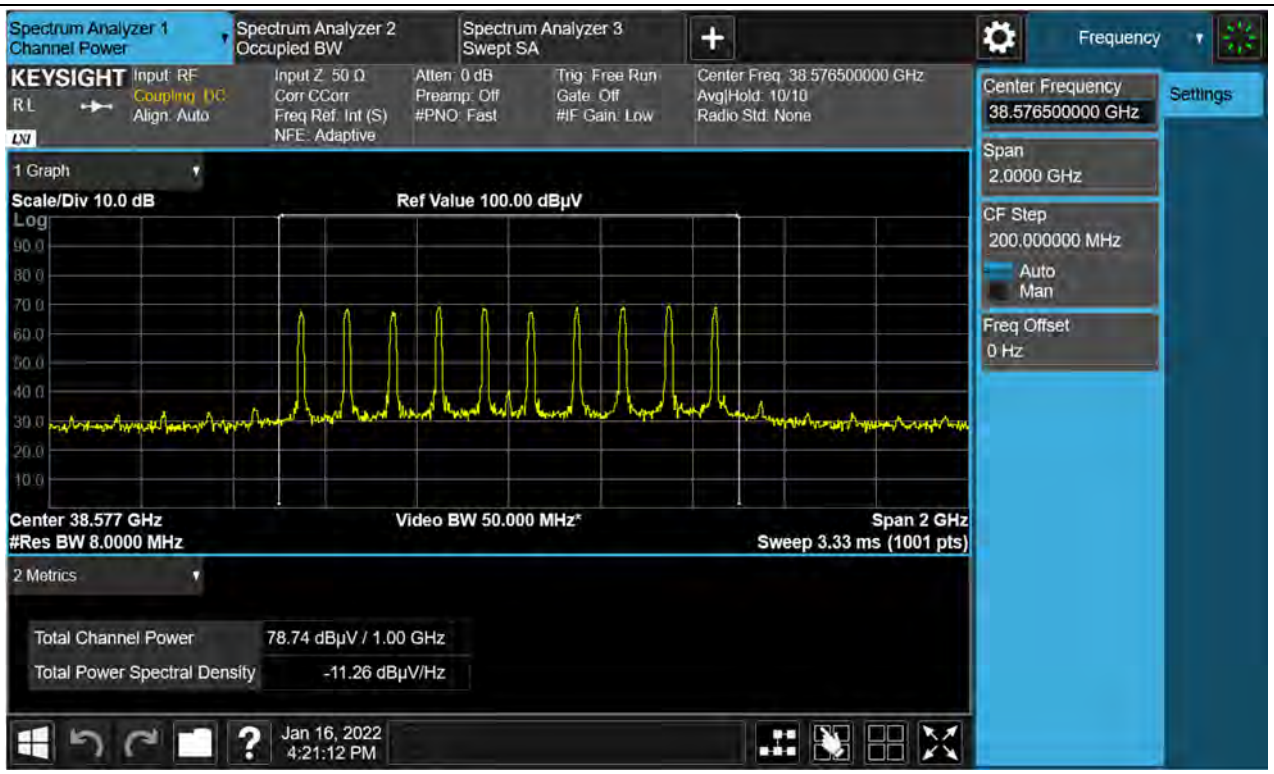
Output Power (E.I.R.P.) / Path B / 10cc



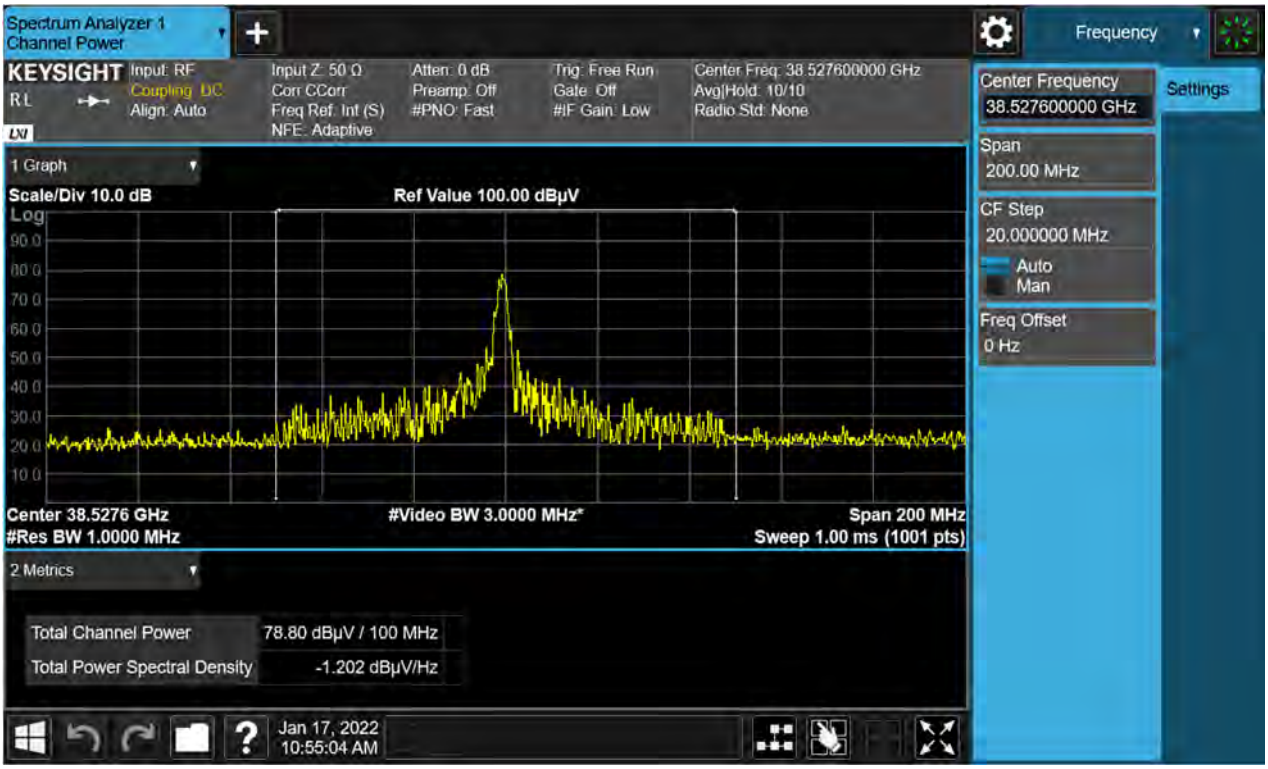
+3 dB above AGC threshold Output Power (E.I.R.P.) / Path A / 1cc



+3 dB above AGC threshold Output Power (E.I.R.P.) / Path A / 10cc



+3 dB above AGC threshold Output Power (E.I.R.P.) / Path B / 1cc



+3 dB above AGC threshold Output Power (E.I.R.P.) / Path B / 10cc

5.6. BAND EDGE / OUT-OF-BAND/OUT-OF-BLOCK EMISSIONS AND SPURIOUS EMISSIONS

Test Requirements:

§ 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.

§ 30.203 Emission limits.

(a) The conductive power or the total radiated power of any emission outside a licensee's frequency block shall be −13 dBm/MHz or lower. However, in the bands immediately outside and adjacent to the licensee's frequency block, having a bandwidth equal to 10 percent of the channel bandwidth, the conductive power or the total radiated power of any emission shall be −5 dBm/MHz or lower.

(b) (1) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater.

(2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges as the design permits.

(3) The measurements of emission power can be expressed in peak or average values.

Test Procedures:

Measurements were in accordance with the test methods section 3.6 of KDB 935210 D05 v01r04.

Spurious emissions shall be measured using a single test signal sequentially tuned to the low, middle, and high channels or frequencies within each authorized frequency band of operation.

Out-of-band/out-of-block emissions (including intermodulation products) shall be measured under each of the following two stimulus conditions:

a) two adjacent test signals sequentially tuned to the lower and upper frequency band/block edges;

b) a single test signal, sequentially tuned to the lowest and highest frequencies or channels within the frequency band/block under examination.

NOTE—Single-channel boosters that cannot accommodate two simultaneous signals within the passband may be excluded from the test stipulated in step a).

The measurement is performed in accordance with Section 5.7.3 of ANSI C63.26.

5.7.3 Out-of-band unwanted emissions measurements

a) Set the spectrum analyzer center frequency to the block, band, or channel edge frequency.

b) Set the span wide enough to capture the fundamental emission closest to the authorized block or band edge, and to include all modulation products that spill into the immediately adjacent frequency band. In some cases, it may be possible to set

the center frequency and span so as to encompass the fundamental emission and the unwanted out-of-band (band-edge) emissions on either side of the authorized block, band, or channel. This can be accomplished with a single (slow) sweep, if adequate overload protection and sufficient dynamic range can be maintained.

c) Set the number of points in sweep ≥ 2 × span / RBW.

d) Sweep time should be auto for peak detection. For rms detection the sweep time should be set as follows:

1), 2) Omitted

3) If the device cannot be configured to transmit continuously (duty cycle < 98%) and a free running sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time > (number of points in sweep) × (transmitter period) (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by [10 log (1/duty cycle)]. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation ≤ ±2%).

4) Omitted

e) The test report shall include the plots of the measuring instrument display and the measured data.

f) See Annex I for example emission mask plots.

Note:

1. In the band edge test of path A, B are individually operated and measured at the maximum emission position of each path, and the respective measurement results are summed.
2. Band edge value is calculated as follows.

Band Edge = Measured Value + AFCL + 20log(D) – 104.77 – Ant. Gain

3. Sample calculation:

30.659 dBμV (measured Value) – 95.2 + 52.867(AFCL) – 19.37 (Ant. Gain) = 40.54 dBm

4. Antenna Gain of the above formula was applied from actual measurement data of the radiation pattern document.
5. Intermodulation test is not performed for 10CC (1 000 MHz) signal, because the specification cannot accommodate two signals. (BW 1GHz among 37.6 GHz~40 GHz)

Test Results:

[Full RB] Tabular Data of Band Edge (Two Adjacent Test Signal)

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
A	3.00	1	Low	Co	37.599	25.700	-15.789	18.46	-34.249	-5
				Cross	37.590	23.306	-18.183	18.46	-36.643	
			High	Co	40.004	28.712	-13.649	19.37	-33.019	
				Cross	40.018	22.860	-19.501	19.37	-38.871	

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
B	3.00	1	Low	Co	37.589	24.628	-16.861	18.46	-35.321	-5
				Cross	37.588	22.652	-18.837	18.46	-37.297	
			High	Co	40.001	28.518	-13.843	19.37	-33.213	
				Cross	40.000	23.404	-18.957	19.37	-38.327	

[Full RB] MIMO Tabular Data of Band Edge (Two Adjacent Test Signal)

Path	cc	Edge	Pol.	Result (dBm)
A+B	1	Low	Co	-31.741
			Cross	-33.947
		High	Co	-30.104
			Cross	-35.580

[Full RB] Tabular Data of +3 dB above AGC threshold Band Edge (Two Adjacent Test Signal)

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
A	3.00	1	Low	Co	37.597	25.332	-16.157	18.46	-34.617	-5
				Cross	37.582	22.320	-19.169	18.46	-37.629	
			High	Co	40.014	28.334	-14.027	19.37	-33.397	
				Cross	40.011	24.542	-17.819	19.37	-37.189	

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
B	3.00	1	Low	Co	37.598	25.119	-16.370	18.46	-34.830	-5
				Cross	37.599	22.174	-19.315	18.46	-37.775	
			High	Co	40.004	28.078	-14.283	19.37	-33.653	
				Cross	40.008	22.638	-19.723	19.37	-39.093	

[Full RB] MIMO Tabular Data of +3 dB above AGC threshold Band Edge (Two Adjacent Test Signal)

Path	cc	Edge	Pol.	Result (dBm)
A+B	1	Low	Co	-31.711
			Cross	-34.691
		High	Co	-30.512
			Cross	-35.027

[Full RB] Tabular Data of Band Edge (Single Test Signal)

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
A	3.00	1	Low	Co	37.594	26.460	-15.029	18.46	-33.489	-5
				Cross	37.600	22.590	-18.899	18.46	-37.359	
			High	Co	40.001	31.221	-11.140	19.37	-30.510	
				Cross	40.005	25.604	-16.757	19.37	-36.127	
		10	Low	Co	37.541	23.562	-18.706	18.46	-37.166	
				Cross	37.529	22.445	-19.823	18.46	-38.283	
			High	Co	40.054	24.351	-18.010	19.37	-37.380	
				Cross	40.035	22.487	-19.874	19.37	-39.244	

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
B	3.00	1	Low	Co	37.593	27.487	-14.002	18.46	-32.462	-5
				Cross	37.591	22.630	-18.859	18.46	-37.319	
			High	Co	40.008	30.659	-11.702	19.37	-31.072	
				Cross	40.002	23.047	-19.314	19.37	-38.684	
		10	Low	Co	37.524	24.717	-17.551	18.46	-36.011	
				Cross	37.600	21.828	-19.661	18.46	-38.121	
			High	Co	40.023	24.802	-17.559	19.37	-36.929	
				Cross	40.000	22.689	-19.672	19.37	-39.042	

[Full RB] MIMO Tabular Data of Band Edge (Single Test Signal)

Path	cc	Edge	Pol.	Result (dBm)
A+B	1	Low	Co	-29.934
			Cross	-34.328
		High	Co	-27.771
			Cross	-34.209
	10	Low	Co	-33.539
			Cross	-35.191
		High	Co	-34.138
			Cross	-36.131

[Full RB] Tabular Data of +3 dB above AGC threshold Band Edge (Single Test Signal)

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
Path A	3.00	1	Low	Co	37.598	26.118	-15.371	18.46	-33.831	-5
				Cross	39.596	22.412	-19.077	18.46	-37.537	
			High	Co	40.000	29.645	-12.716	19.37	-32.086	
				Cross	40.004	24.994	-17.367	19.37	-36.737	
		10	Low	Co	37.560	23.930	-18.775	18.46	-37.235	
				Cross	37.563	22.214	-20.491	18.46	-38.951	
			High	Co	40.070	24.103	-18.258	19.37	-37.628	
				Cross	40.066	23.007	-19.354	19.37	-38.724	

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
Path B	3.00	1	Low	Co	37.598	28.367	-13.122	18.46	-31.582	-5
				Cross	37.592	22.934	-18.555	18.46	-37.015	
			High	Co	40.000	30.522	-11.839	19.37	-31.209	
				Cross	40.007	23.739	-18.622	19.37	-37.992	
		10	Low	Co	37.597	24.809	-16.680	18.46	-35.140	
				Cross	37.566	22.164	-20.541	18.46	-39.001	
			High	Co	40.019	24.899	-17.462	19.37	-36.832	
				Cross	40.055	23.216	-19.145	19.37	-38.515	

[Full RB] MIMO Tabular Data of +3 dB above AGC threshold Band Edge (Single Test Signal)

Path	cc	Edge	Pol.	Result (dBm)
A+B	1	Low	Co	-29.552
			Cross	-34.257
		High	Co	-28.615
			Cross	-34.309
	10	Low	Co	-33.052
			Cross	-35.965
		High	Co	-34.201
			Cross	-35.608

[1 RB] Tabular Data of Band Edge (Two Adjacent Test Signal)

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
A	3.00	1	Low	Co	37.600	26.602	-14.887	18.46	-33.347	-5
				Cross	37.583	23.525	-17.964	18.46	-36.424	
			High	Co	40.009	25.105	-17.256	19.37	-36.626	
				Cross	40.016	23.442	-18.919	19.37	-38.289	

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
B	3.00	1	Low	Co	37.581	22.428	-19.061	18.46	-37.521	-5
				Cross	37.582	23.920	-17.569	18.46	-36.029	
			High	Co	40.000	28.071	-14.290	19.37	-33.660	
				Cross	40.010	25.379	-16.982	19.37	-36.352	

[1 RB] MIMO Tabular Data of Band Edge (Two Adjacent Test Signal)

Path	cc	Edge	Pol.	Result (dBm)
A+B	1	Low	Co	-31.940
			Cross	-33.211
		High	Co	-31.884
			Cross	-34.203

[1 RB] Tabular Data of +3 dB above AGC threshold Band Edge (Two Adjacent Test Signal)

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
A	3.00	1	Low	Co	37.597	25.254	-16.235	18.46	-34.695	-5
				Cross	37.581	23.560	-17.929	18.46	-36.389	
			High	Co	40.002	25.584	-16.777	19.37	-36.147	
				Cross	40.004	23.280	-19.081	19.37	-38.451	

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
B	3.00	1	Low	Co	37.596	22.550	-18.939	18.46	-37.399	-5
				Cross	37.592	23.935	-17.554	18.46	-36.014	
			High	Co	40.000	27.611	-14.750	19.37	-34.120	
				Cross	40.019	26.194	-16.167	19.37	-35.537	

[1 RB] MIMO Tabular Data of +3 dB above AGC threshold Band Edge (Two Adjacent Test Signal)

Path	cc	Edge	Pol.	Result (dBm)
A+B	1	Low	Co	-32.829
			Cross	-33.187
		High	Co	-32.006
			Cross	-33.743

[1 RB] Tabular Data of Band Edge (Single Test Signal)

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
A	3.00	1	Low	Co	37.600	26.343	-15.146	18.46	-33.606	-5
				Cross	37.599	23.405	-18.084	18.46	-36.544	
			High	Co	40.000	25.541	-16.820	19.37	-36.190	
				Cross	40.004	23.164	-19.197	19.37	-38.567	
		10	Low	Co	37.600	36.244	-6.024	18.46	-24.484	
				Cross	37.599	23.949	-18.319	18.46	-36.779	
			High	Co	40.000	36.085	-6.276	19.37	-25.646	
				Cross	40.000	26.589	-15.772	19.37	-35.142	

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
B	3.00	1	Low	Co	37.600	24.927	-16.562	18.46	-35.022	-5
				Cross	37.600	21.823	-19.666	18.46	-38.126	
			High	Co	40.000	29.003	-13.358	19.37	-32.728	
				Cross	40.001	23.907	-18.454	19.37	-37.824	
		10	Low	Co	37.600	40.319	-1.949	18.46	-20.409	
				Cross	37.503	23.938	-17.551	18.46	-36.011	
			High	Co	40.002	37.359	-5.002	19.37	-24.372	
				Cross	40.019	23.608	-18.753	19.37	-38.123	

[1 RB] MIMO Tabular Data of Band Edge (Single Test Signal)

Path	cc	Edge	Pol.	Result (dBm)
A+B	1	Low	Co	-31.246
			Cross	-34.253
		High	Co	-31.112
			Cross	-35.169
	10	Low	Co	-18.974
			Cross	-33.367
		High	Co	-21.952
			Cross	-33.371

[1 RB] Tabular Data of +3 dB above AGC threshold Band Edge (Single Test Signal)

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
Path A	3.00	1	Low	Co	37.600	25.860	-15.629	18.46	-34.089	-5
				Cross	37.599	23.449	-18.040	18.46	-36.500	
			High	Co	40.000	25.618	-16.743	19.37	-36.113	
				Cross	40.009	22.419	-19.942	19.37	-39.312	
		10	Low	Co	37.599	32.123	-10.582	18.46	-29.042	
				Cross	37.548	23.318	-19.387	18.46	-37.847	
			High	Co	40.001	36.305	-6.056	19.37	-25.426	
				Cross	40.001	28.424	-13.937	19.37	-33.307	

Path	Distance (m)	cc	Channel	Pol.	Frequency (GHz)	Measured Level (dBuV)	EIRP (dBm)	Ant. Gain (dBi)	Result (dBm)	Limit (dBm/MHz)
Path B	3.00	1	Low	Co	37.600	26.630	-14.859	18.46	-33.319	-5
				Cross	37.599	22.573	-18.916	18.46	-37.376	
			High	Co	40.001	26.088	-16.273	19.37	-35.643	
				Cross	40.008	22.630	-19.731	19.37	-39.101	
		10	Low	Co	37.503	39.687	-1.802	18.46	-20.262	
				Cross	37.600	26.235	-16.470	18.46	-34.930	
			High	Co	40.000	40.302	-2.059	19.37	-21.429	
				Cross	40.001	24.904	-17.457	19.37	-36.827	

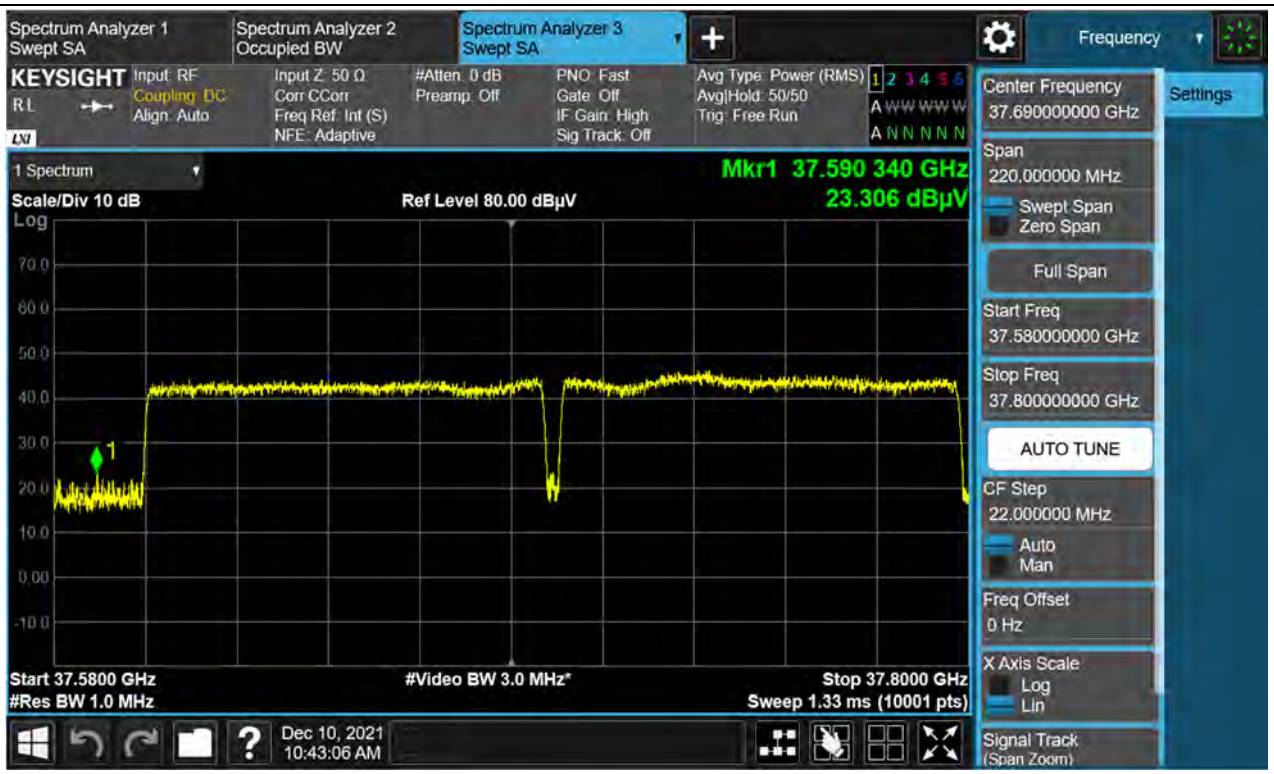
[1 RB] MIMO Tabular Data of +3 dB above AGC threshold Band Edge (Single Test Signal)

Path	cc	Edge	Pol.	Result (dBm)
A+B	1	Low	Co	-30.676
			Cross	-33.905
		High	Co	-32.861
			Cross	-36.194
	10	Low	Co	-19.721
			Cross	-33.137
		High	Co	-19.972
			Cross	-31.709

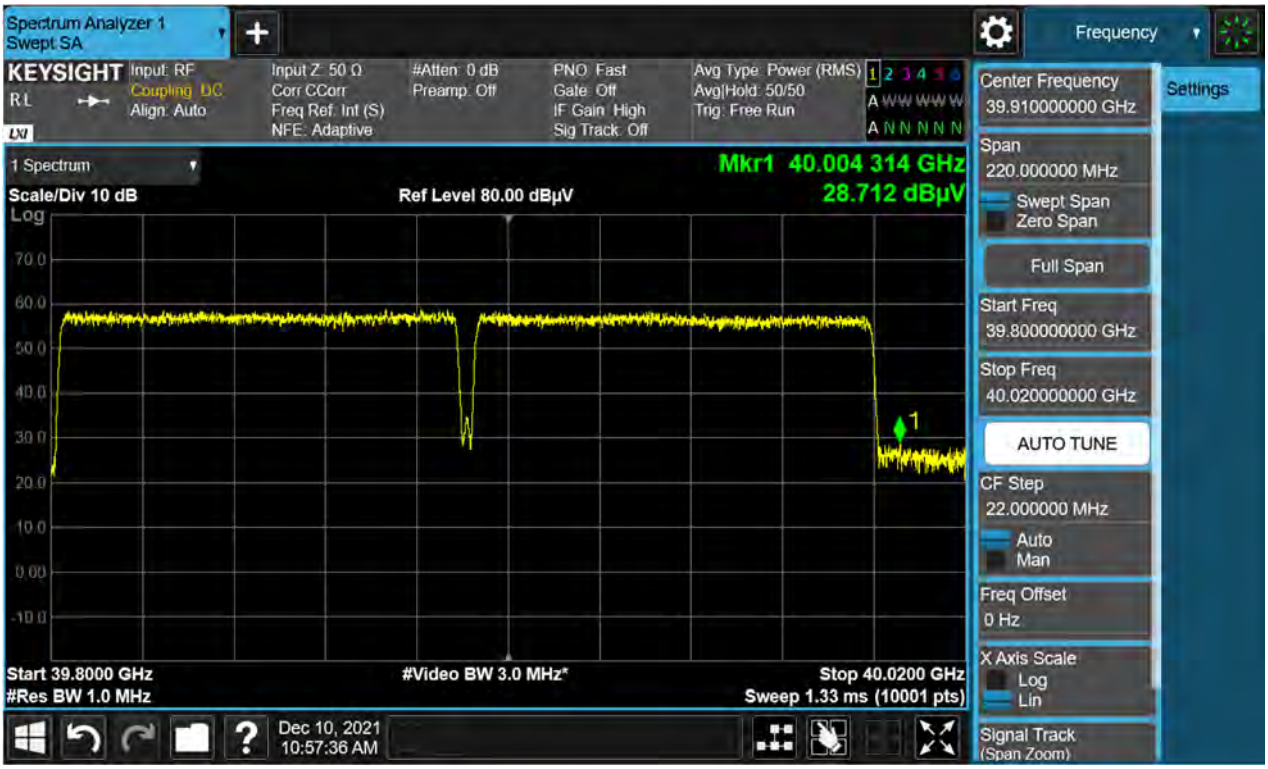
[Full RB] Plot data of Band Edge

Two Adjacent Test Signal / MAX Ant. A Position / 1cc / Low / Co-Pol.

Two Adjacent Test Signal / MAX Ant. A Position / 1cc / Low / Cross-Pol.



Two Adjacent Test Signal / MAX Ant. A Position / 1cc / High / Co-Pol.



Two Adjacent Test Signal / MAX Ant. A Position / 1cc / High / Cross-Pol.

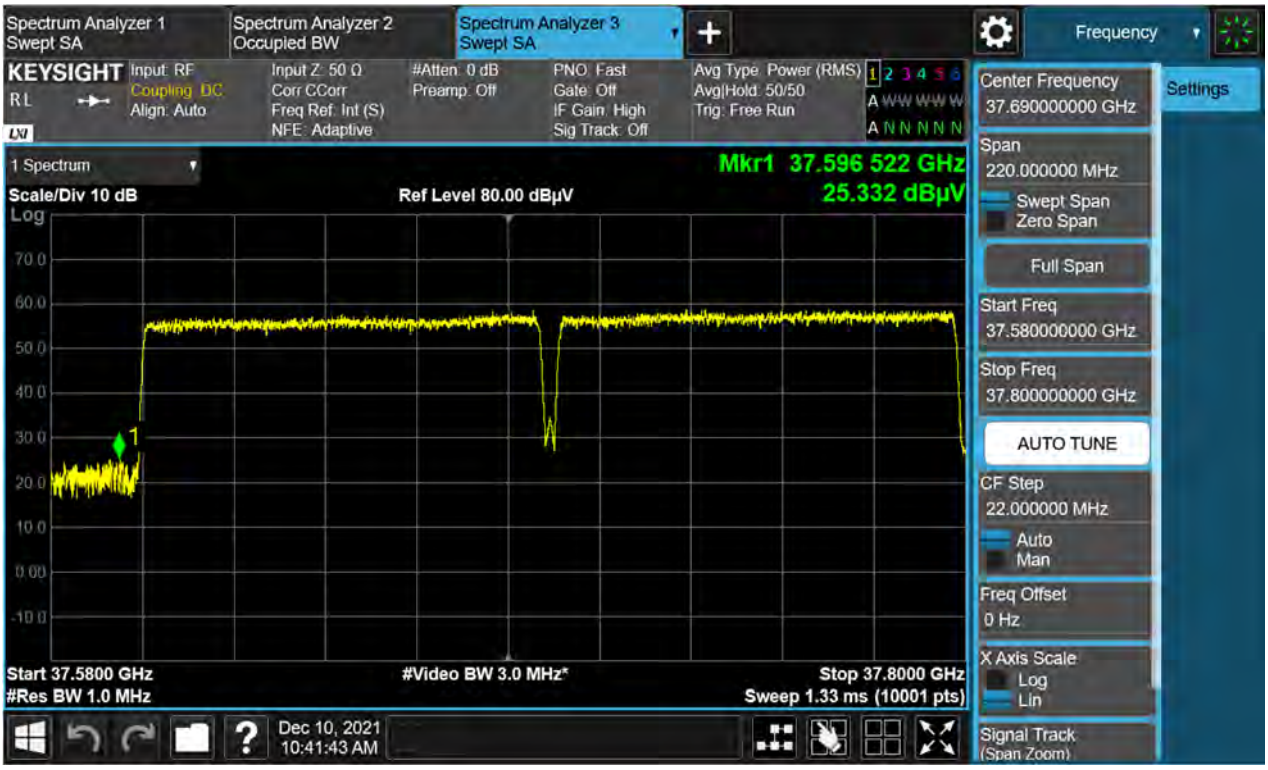
Two Adjacent Test Signal / MAX Ant. B Position / 1cc / Low / Co-Pol.

Two Adjacent Test Signal / MAX Ant. B Position / 1cc / Low / Cross-Pol.

Two Adjacent Test Signal / MAX Ant. B Position / 1cc / High / Co-Pol.

Two Adjacent Test Signal / MAX Ant. B Position / 1cc / High / Cross-Pol.

+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. A Position / 1cc / Low / Co-Pol.



+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. A Position / 1cc / Low / Cross-Pol.

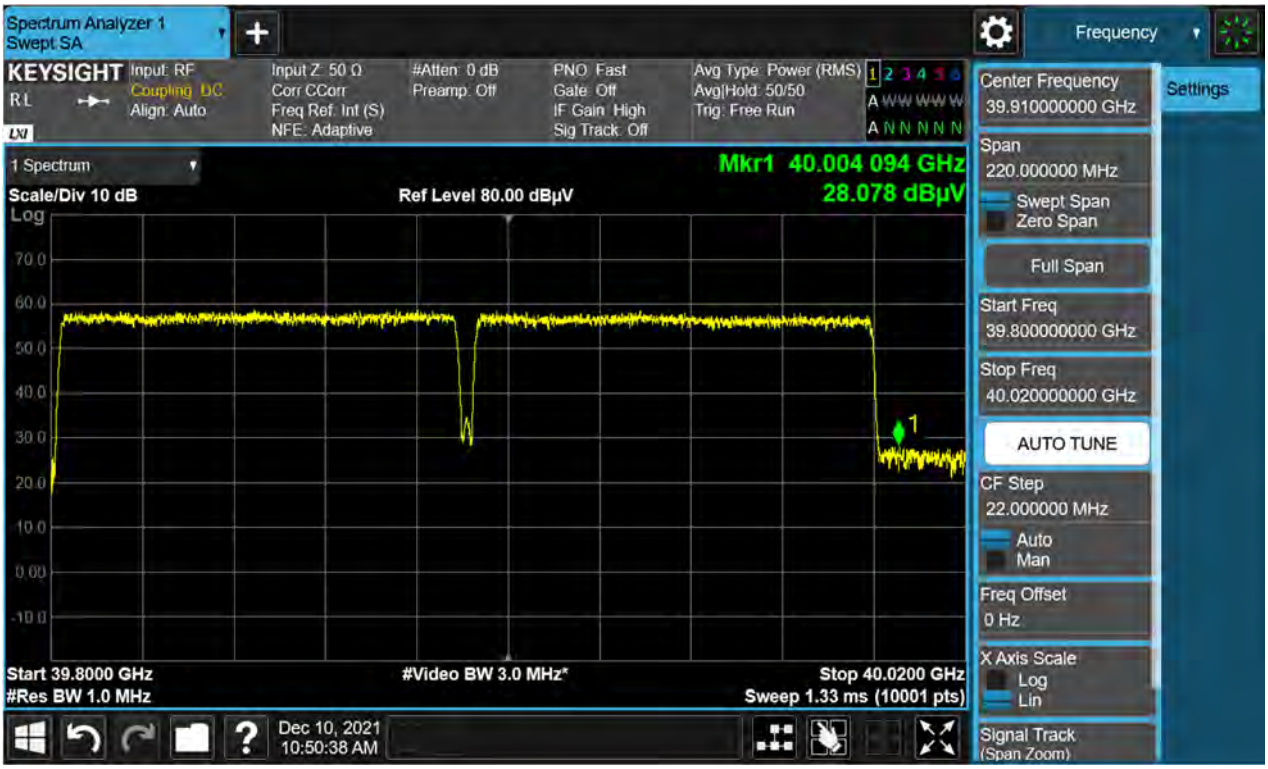
+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. A Position / 1cc / High / Co-Pol.

+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. A Position / 1cc / High / Cross-Pol.

+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. B Position / 1cc / Low / Co-Pol.

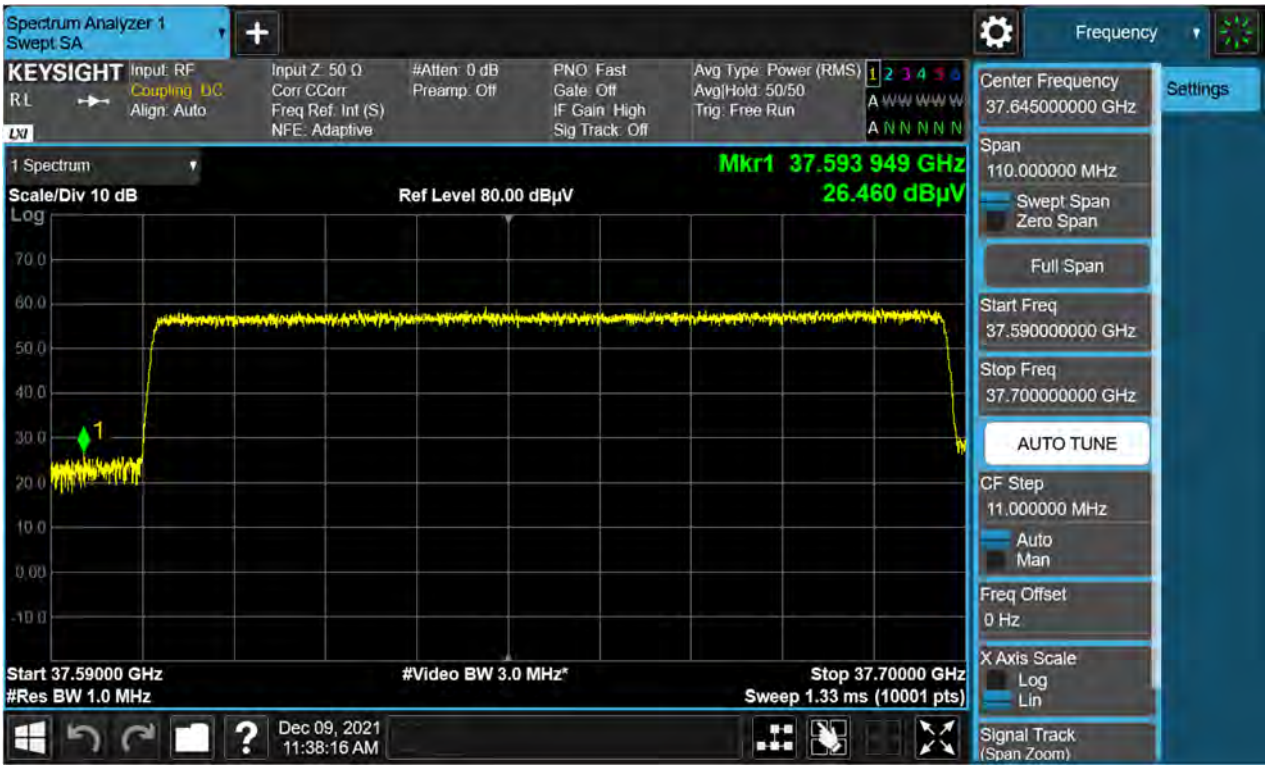
+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. B Position / 1cc / Low / Cross-Pol.

+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. B Position / 1cc / High / Co-Pol.

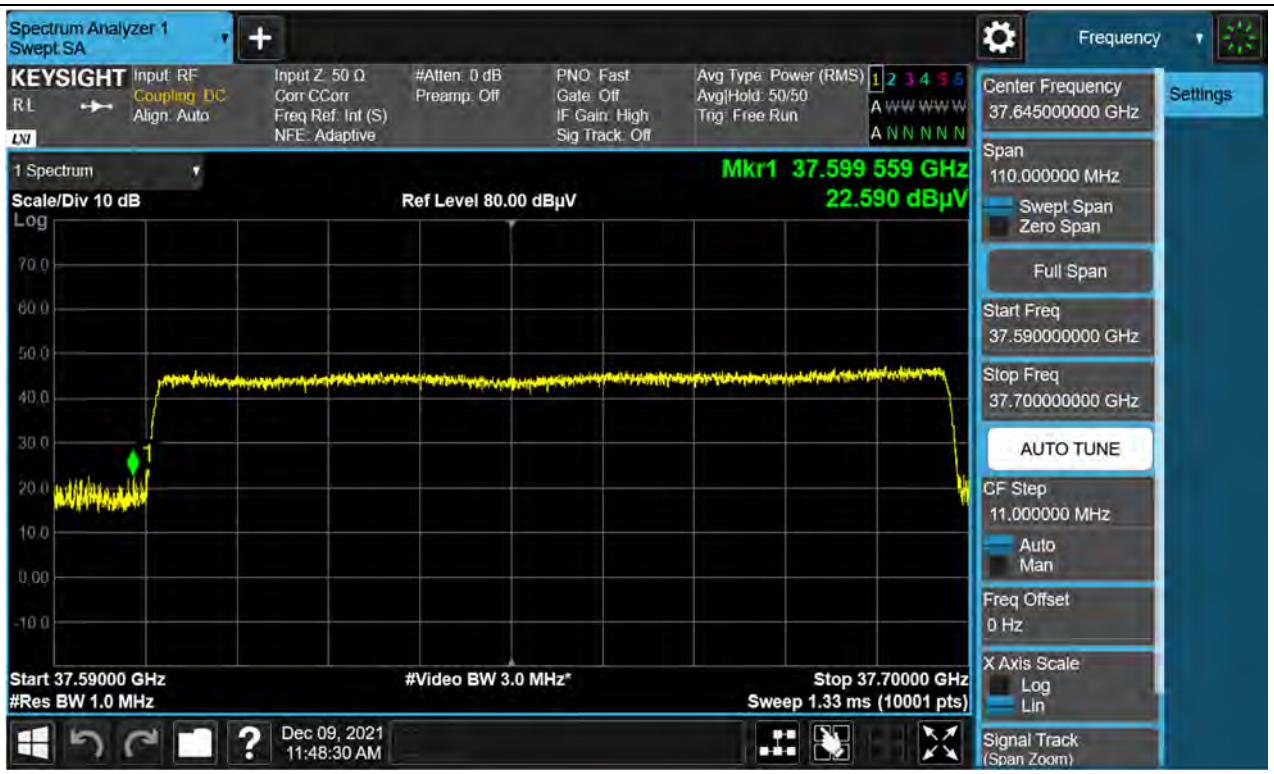


+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. B Position / 1cc / High / Cross-Pol.

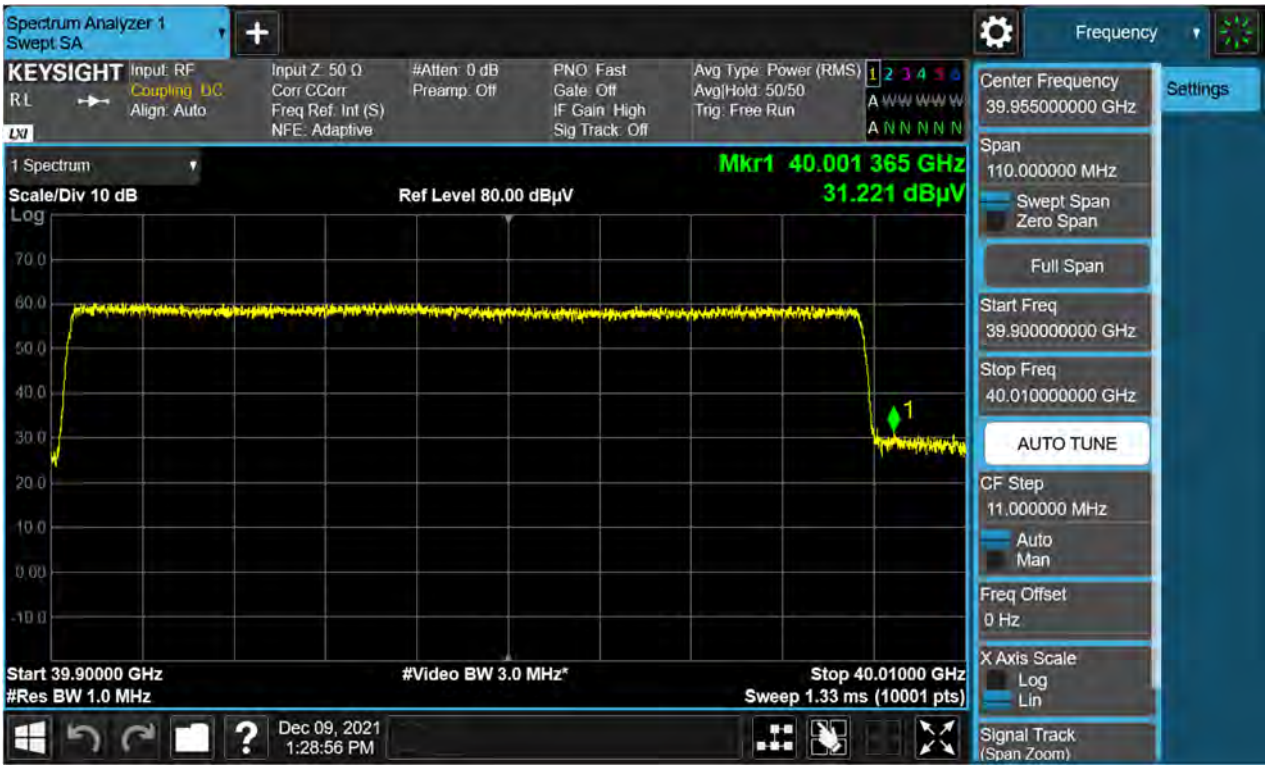
Single Test Signal / MAX Ant. A Position / 1cc / Low / Co-Pol.



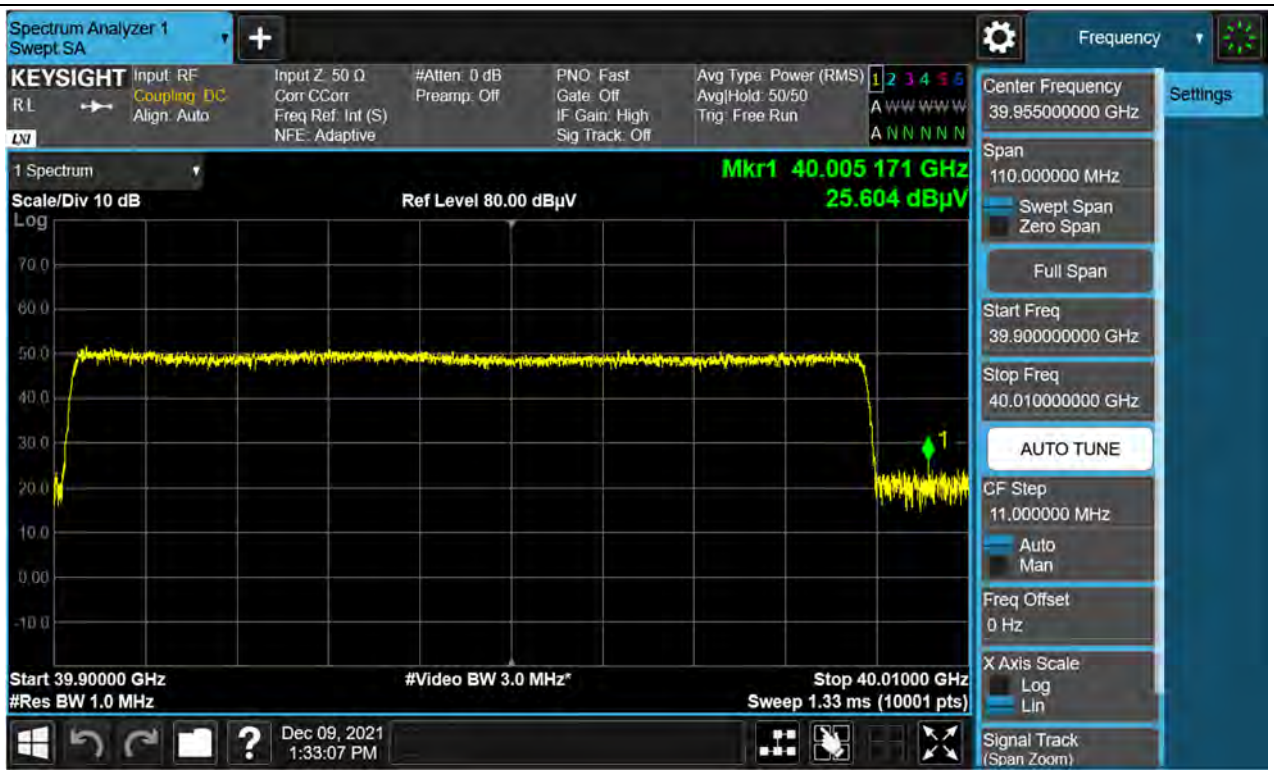
Single Test Signal / MAX Ant. A Position / 1cc / Low / Cross-Pol.



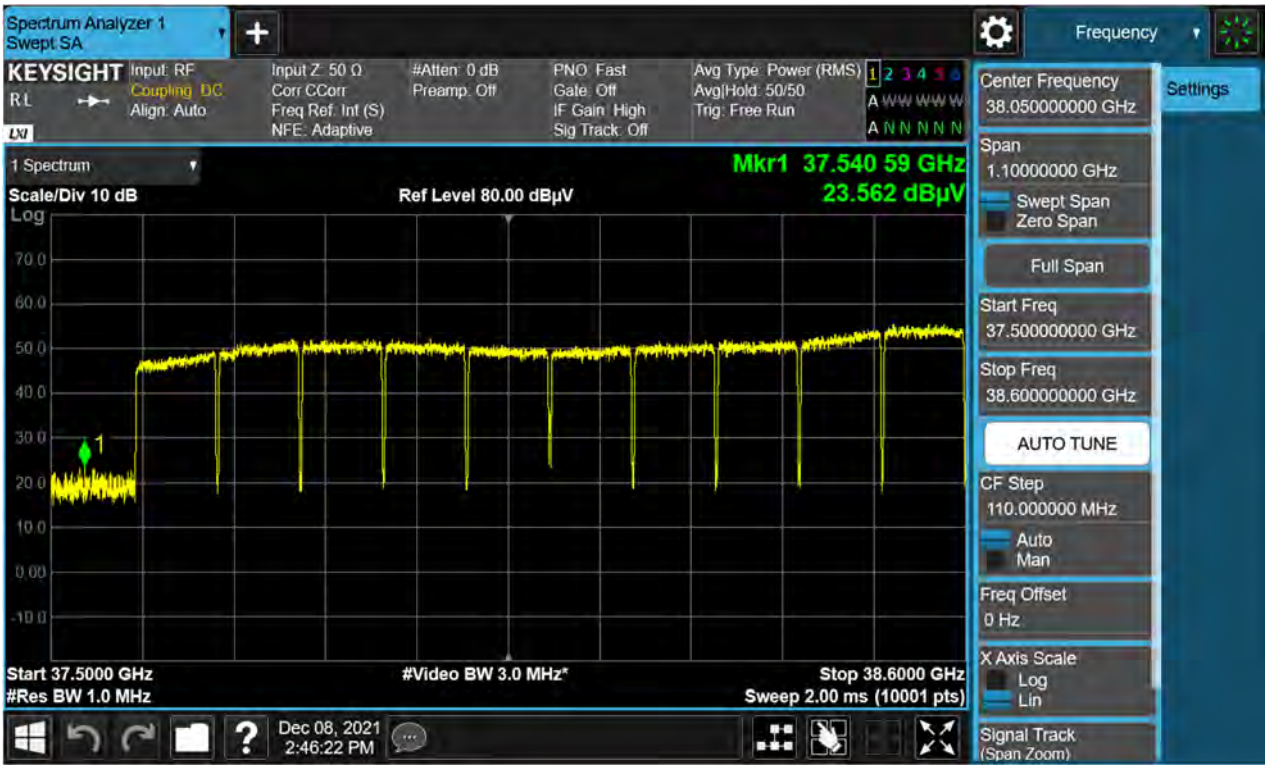
Single Test Signal / MAX Ant. A Position / 1cc / High / Co-Pol.



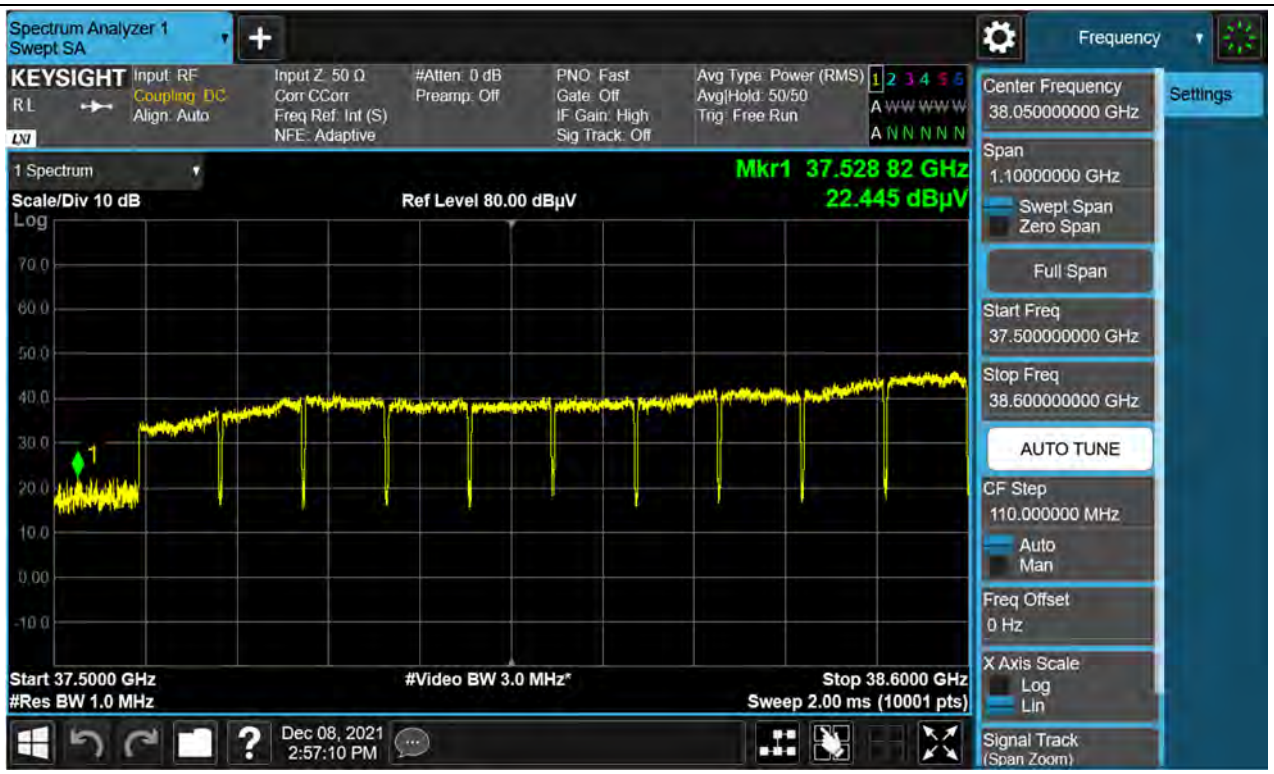
Single Test Signal / MAX Ant. A Position / 1cc / High / Cross-Pol.



Single Test Signal / MAX Ant. A Position / 10cc / Low / Co-Pol.

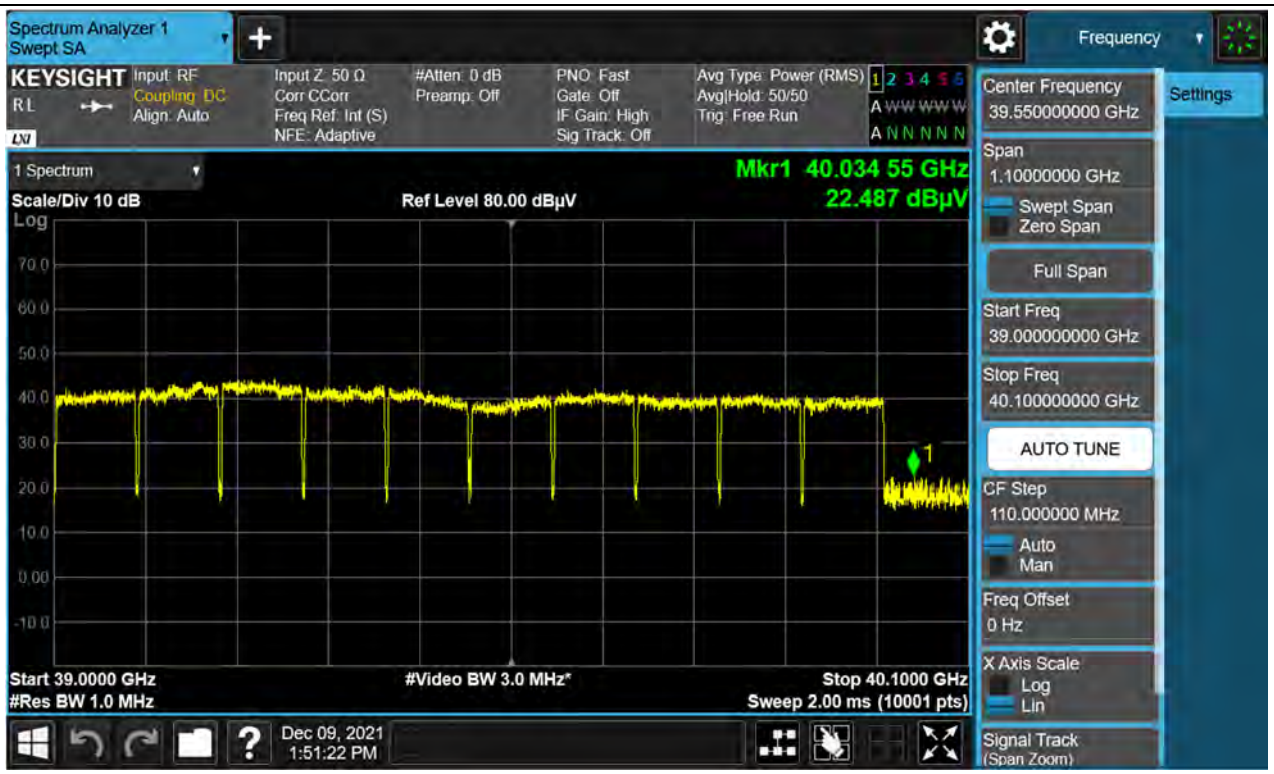


Single Test Signal / MAX Ant. A Position / 10cc / Low / Cross-Pol.

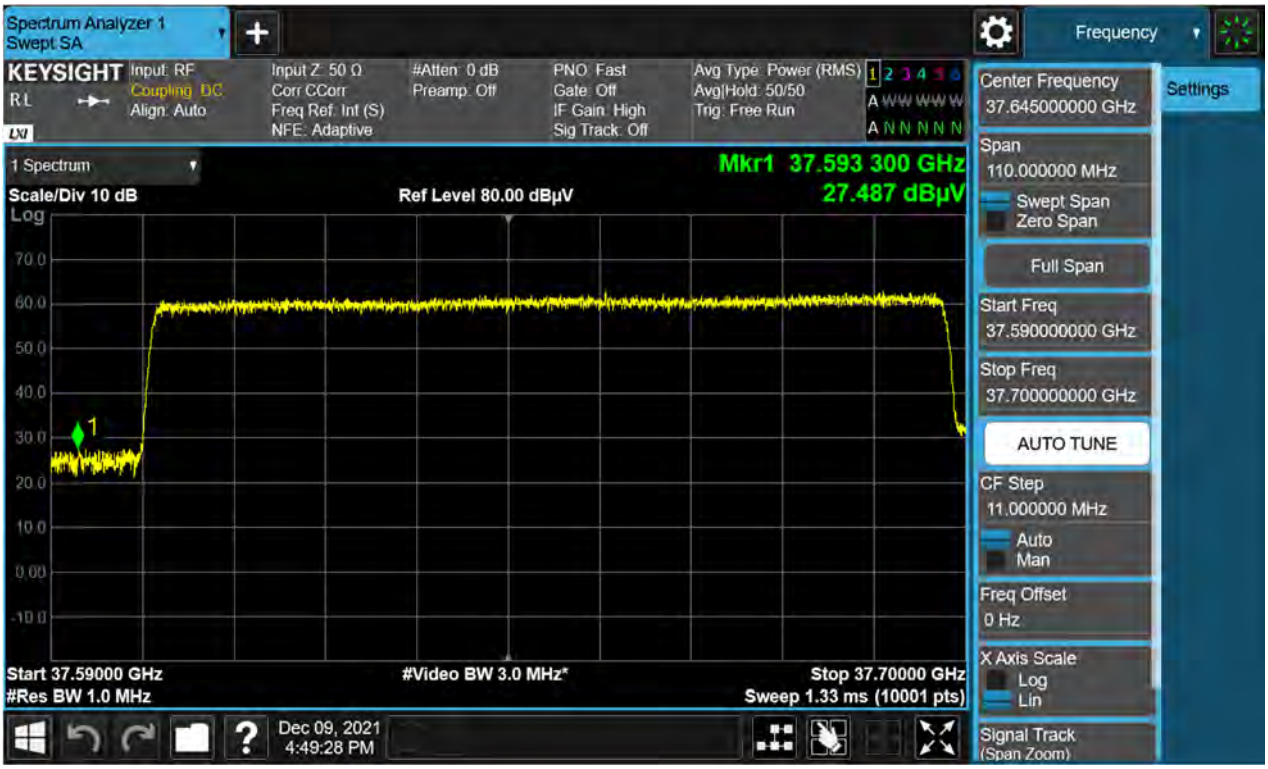


Single Test Signal / MAX Ant. A Position / 10cc / High / Co-Pol.

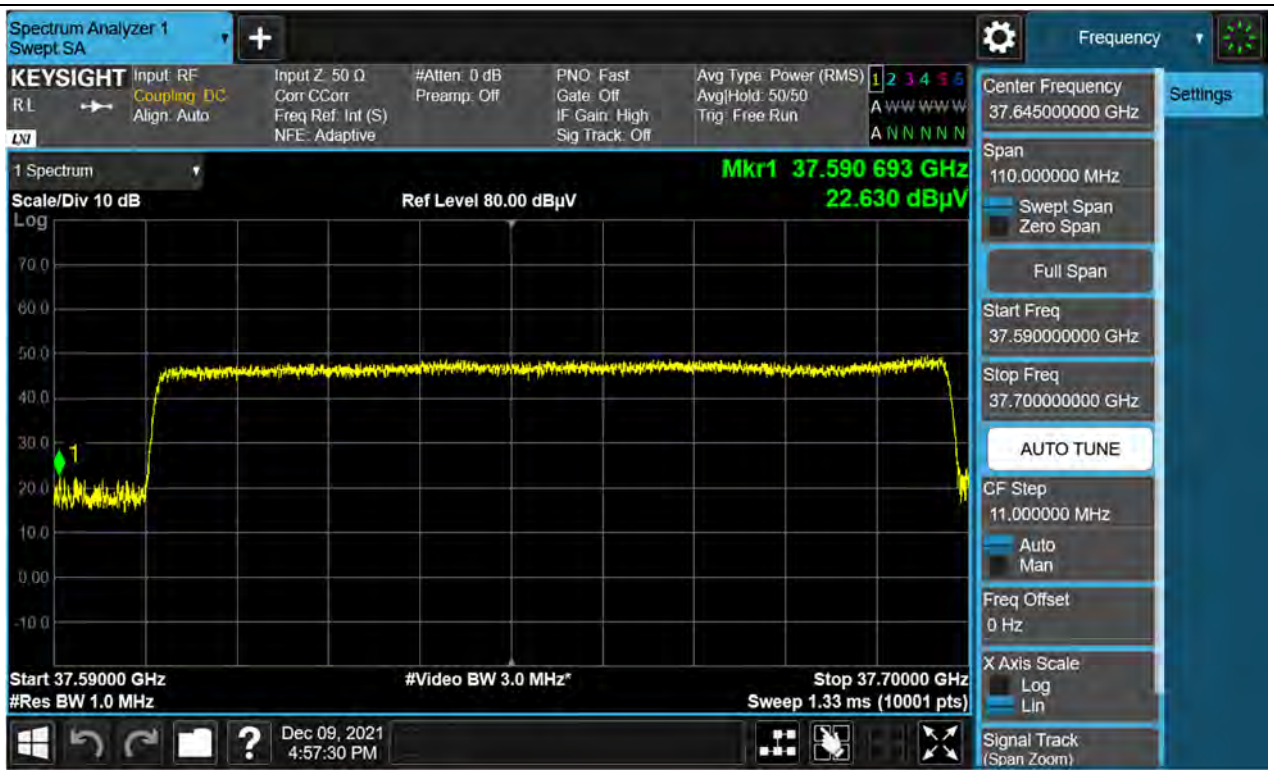
Single Test Signal / MAX Ant. A Position / 10cc / High / Cross-Pol.



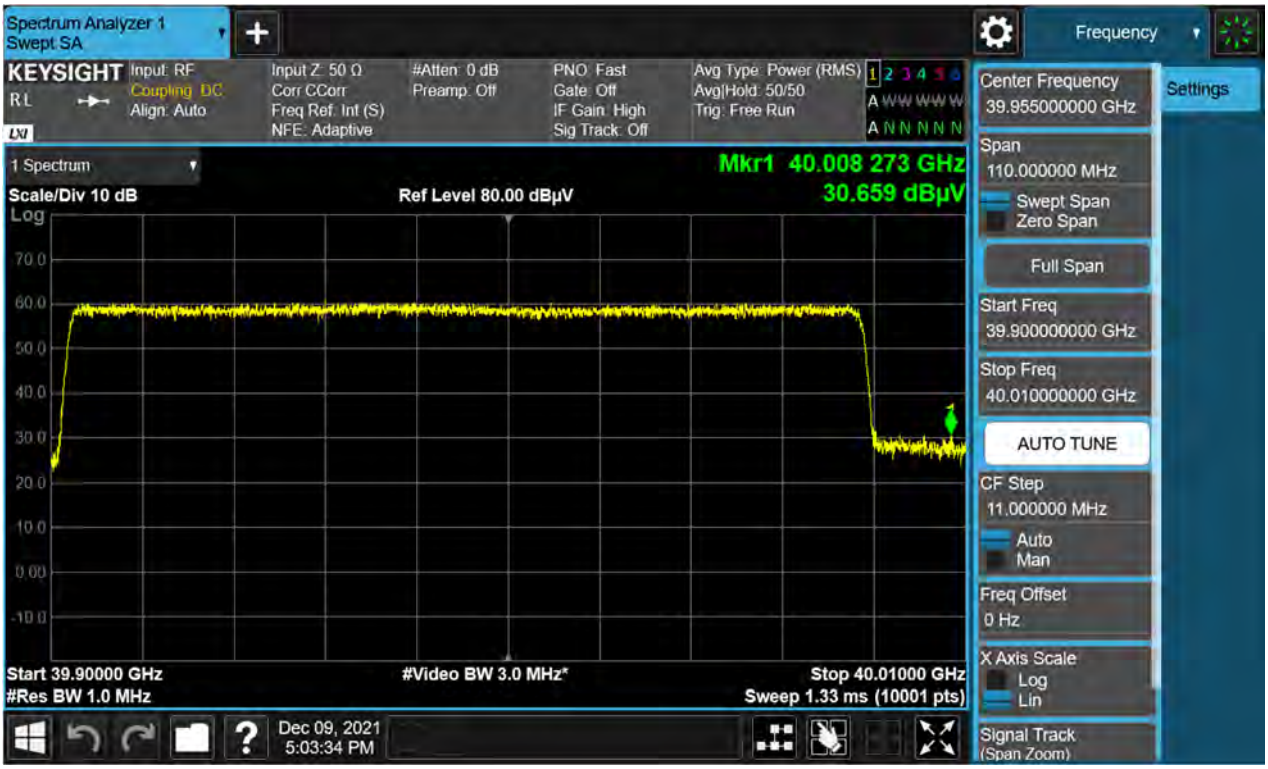
Single Test Signal / MAX Ant. B Position / 1cc / Low / Co-Pol.



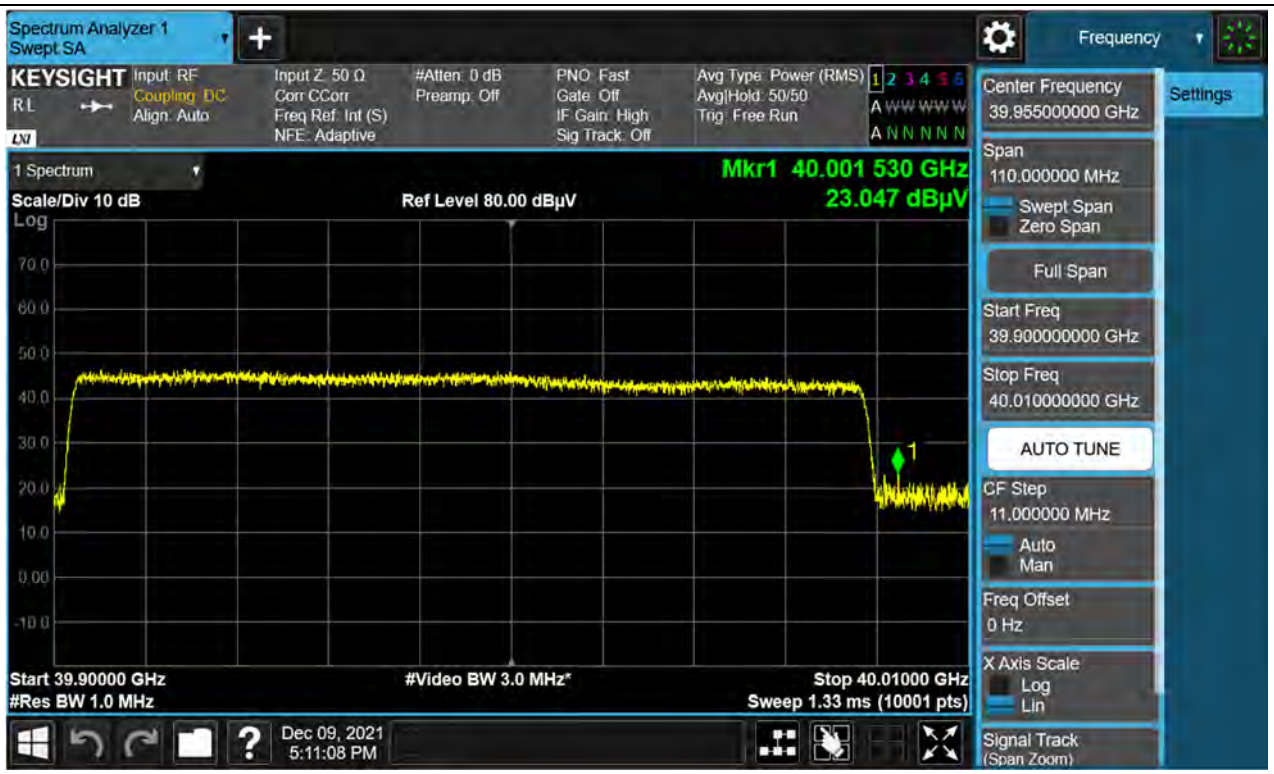
Single Test Signal / MAX Ant. B Position / 1cc / Low / Cross-Pol.



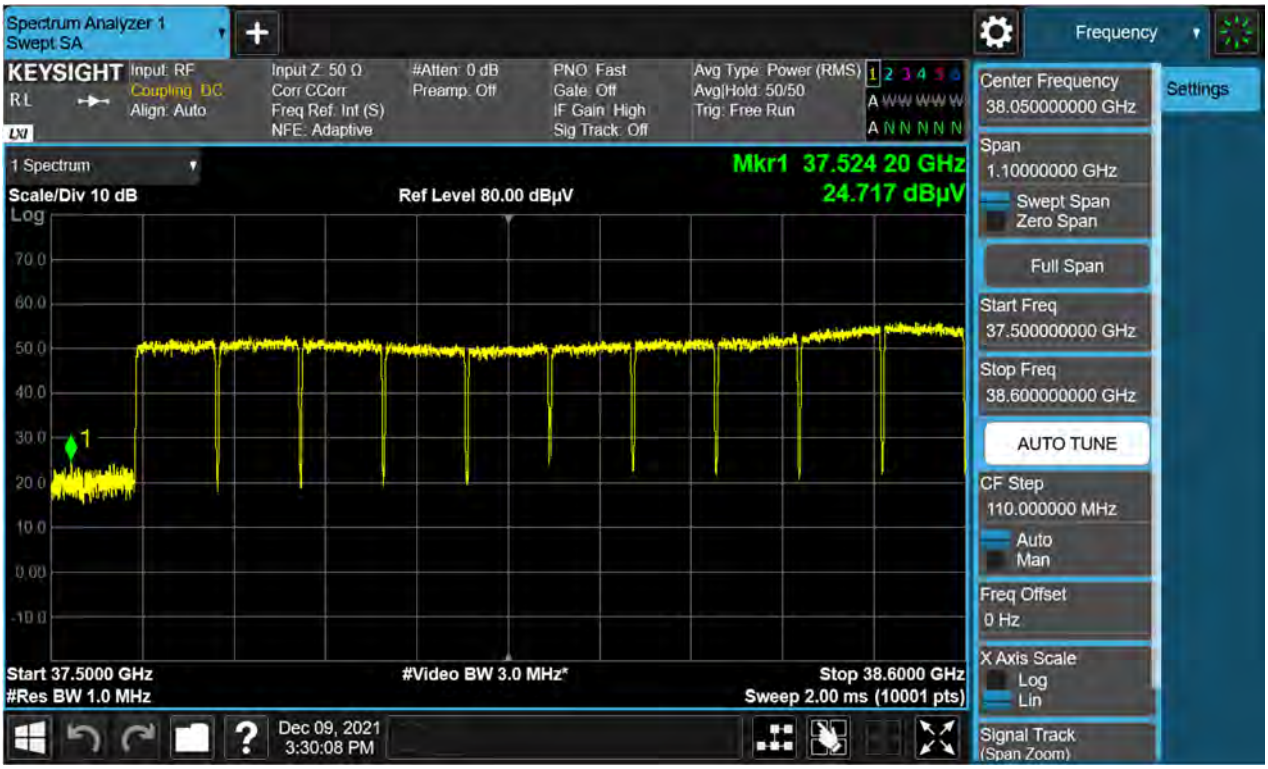
Single Test Signal / MAX Ant. B Position / 1cc / High / Co-Pol.



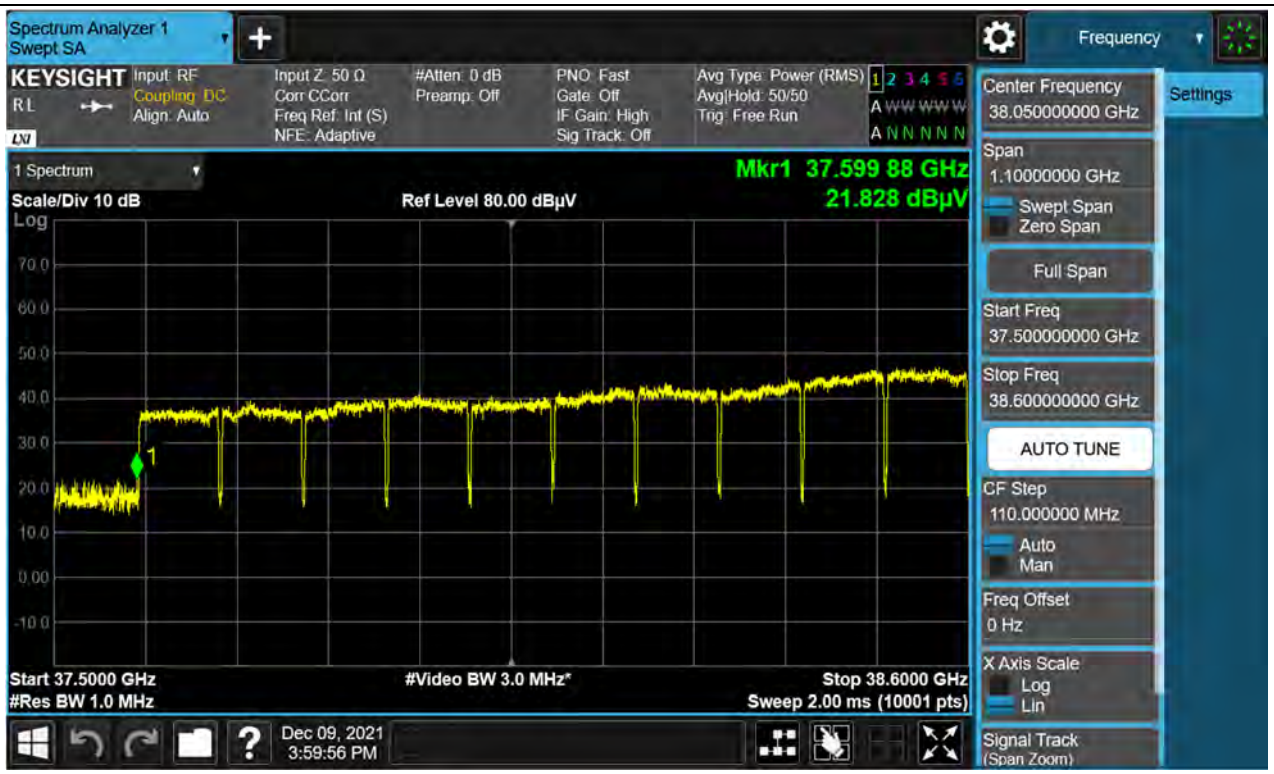
Single Test Signal / MAX Ant. B Position / 1cc / High / Cross-Pol.



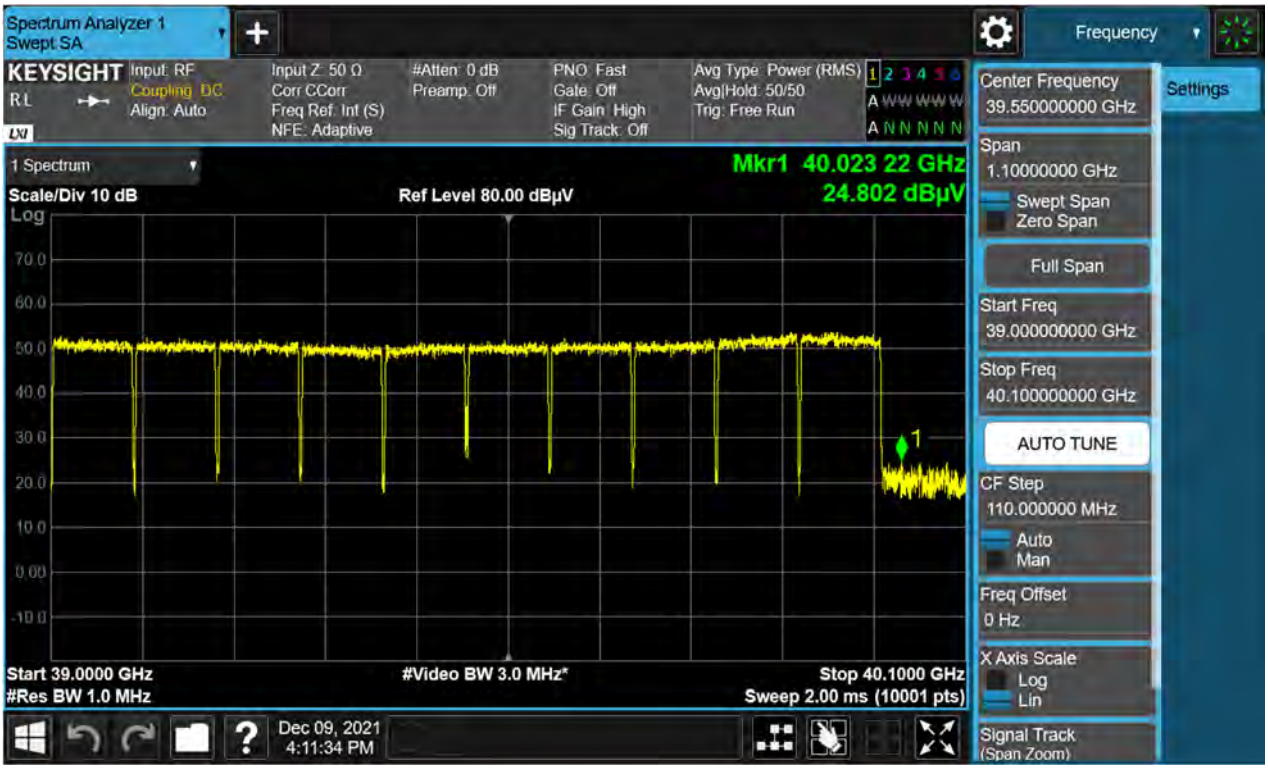
Single Test Signal / MAX Ant. B Position / 10cc / Low / Co-Pol.



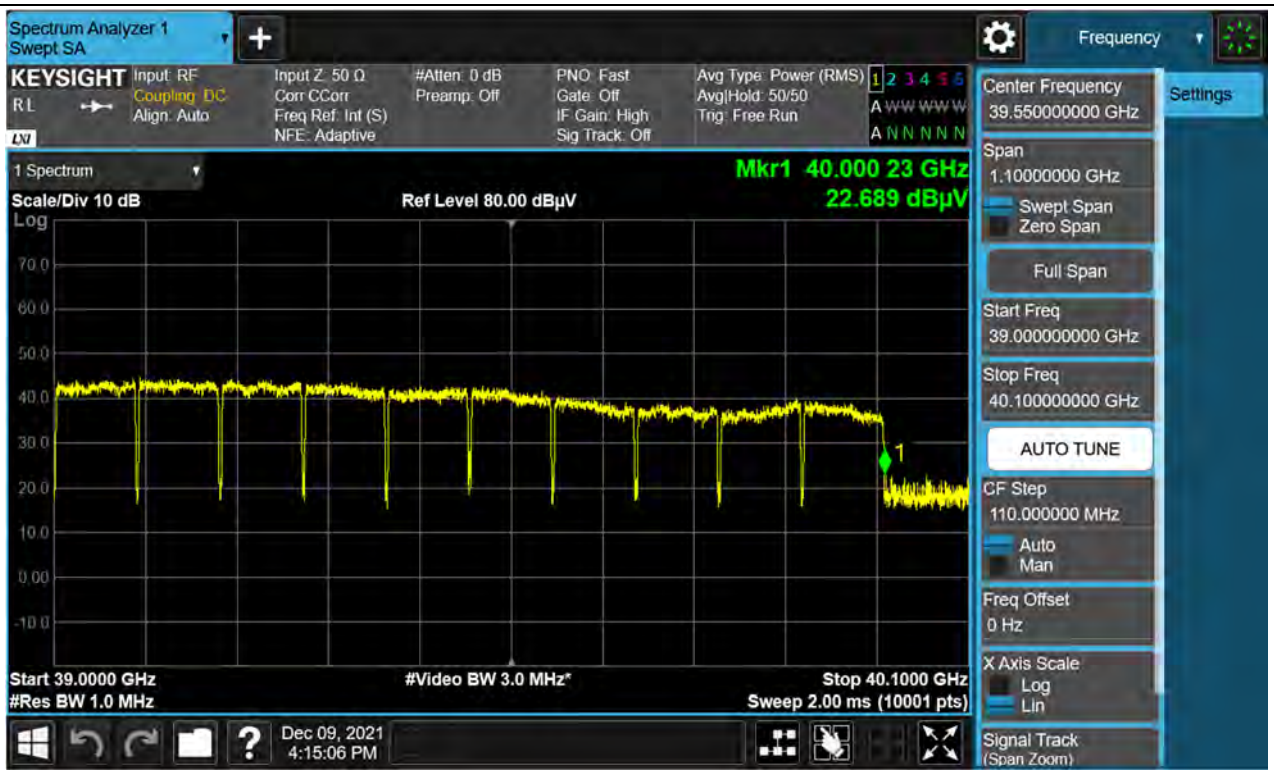
Single Test Signal / MAX Ant. B Position / 10cc / Low / Cross-Pol.



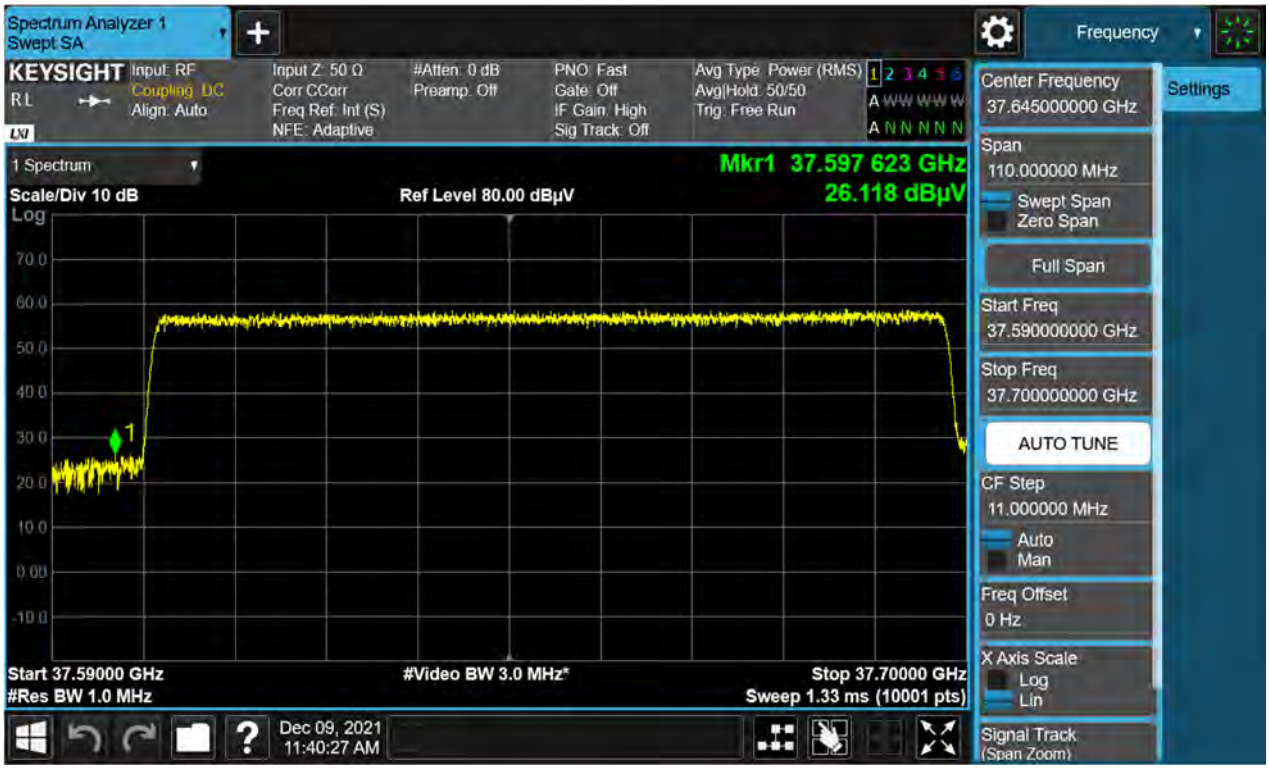
Single Test Signal / MAX Ant. B Position / 10cc / High / Co-Pol.



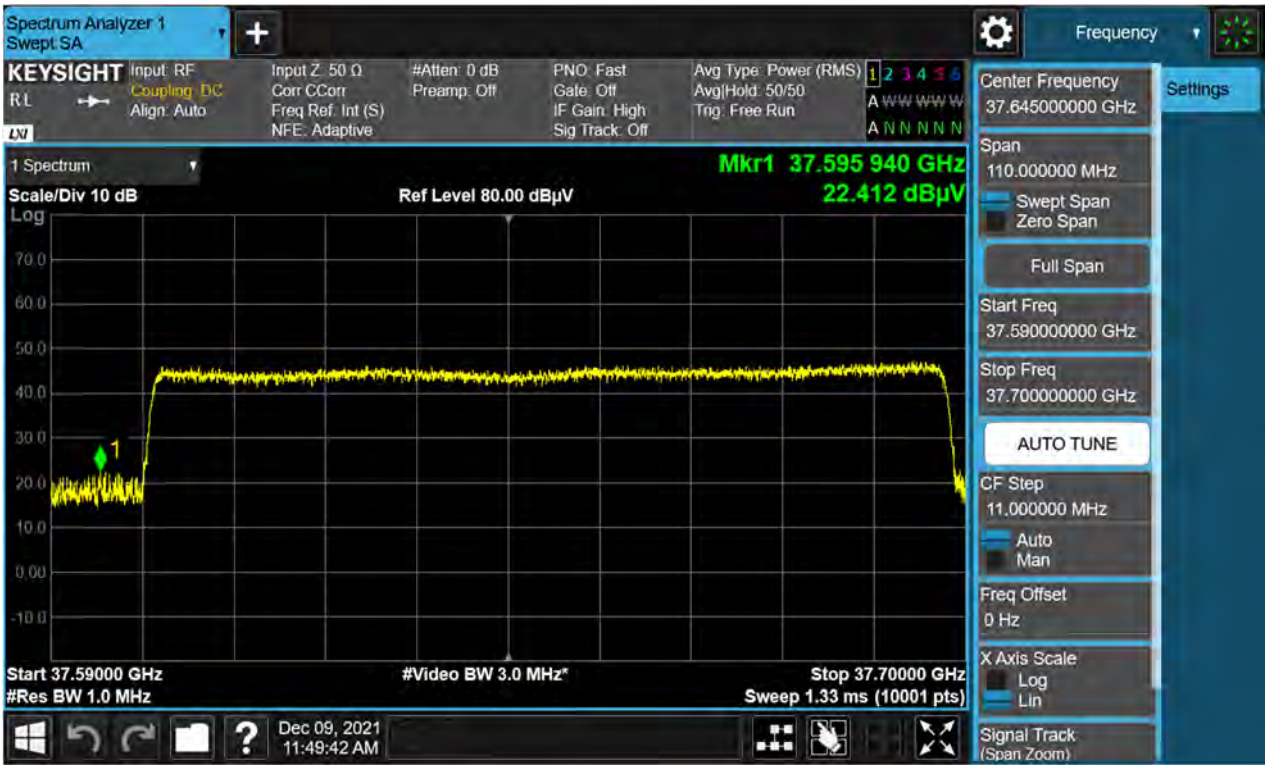
Single Test Signal / MAX Ant. B Position / 10cc / High / Cross-Pol.



+3 dB above AGC threshold Single Test Signal / MAX Ant. A Position / 1cc / Low / Co-Pol.



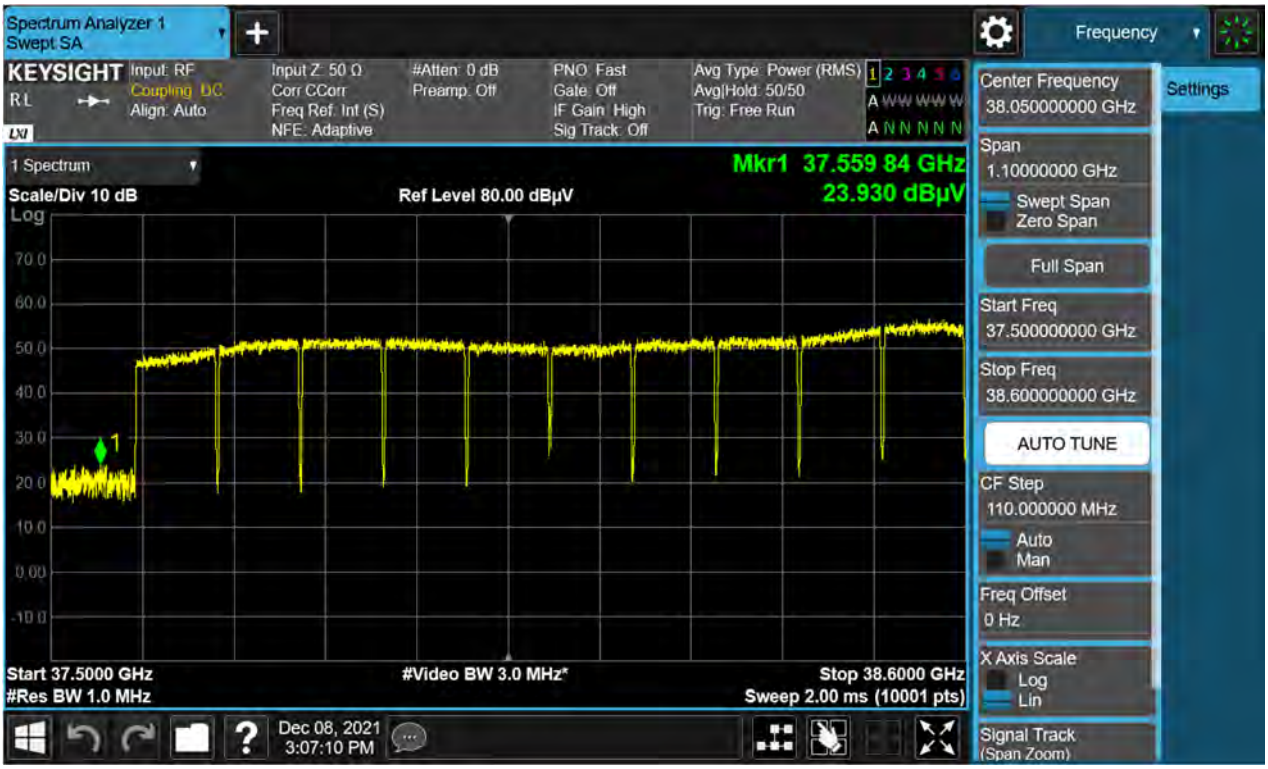
+3 dB above AGC threshold Single Test Signal / MAX Ant. A Position / 1cc / Low / Cross-Pol.



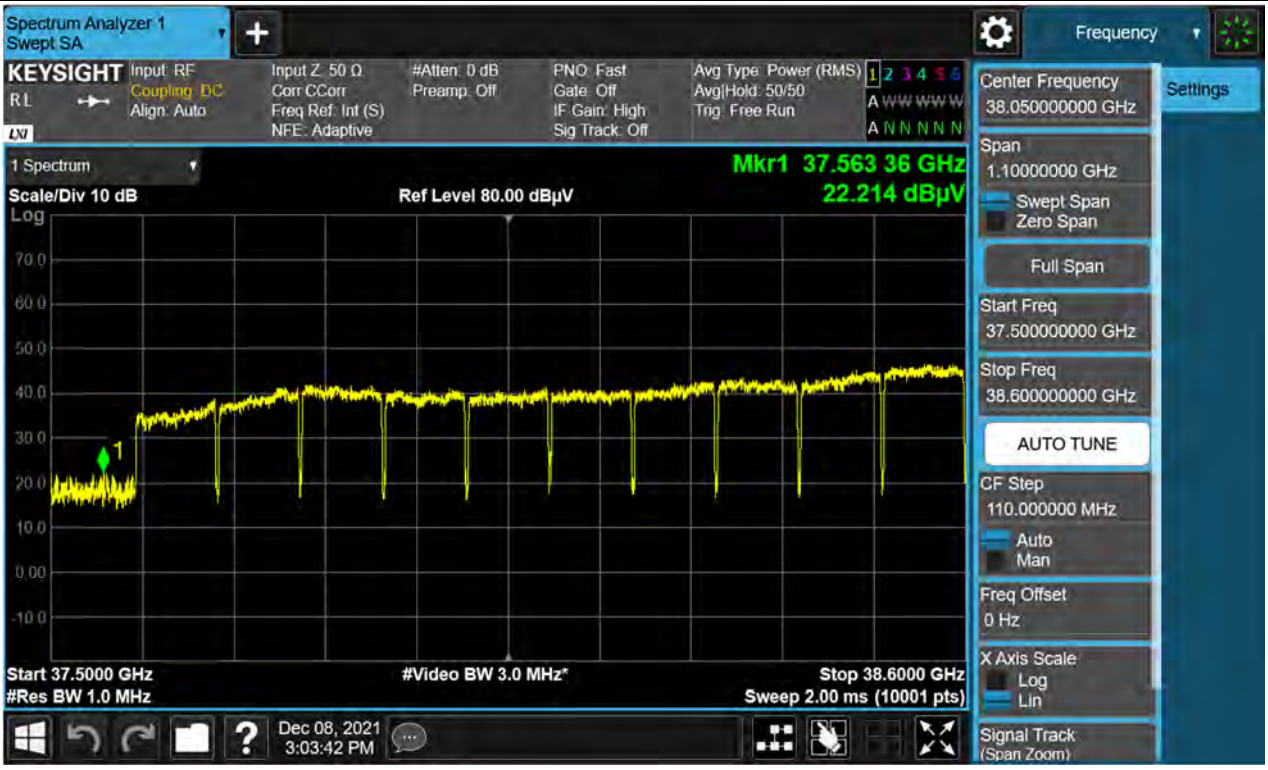
+3 dB above AGC threshold Single Test Signal / MAX Ant. A Position / 1cc / High / Co-Pol.

+3 dB above AGC threshold Single Test Signal / MAX Ant. A Position / 1cc / High / Cross-Pol.

+3 dB above AGC threshold Single Test Signal / MAX Ant. A Position / 10cc / Low / Co-Pol.

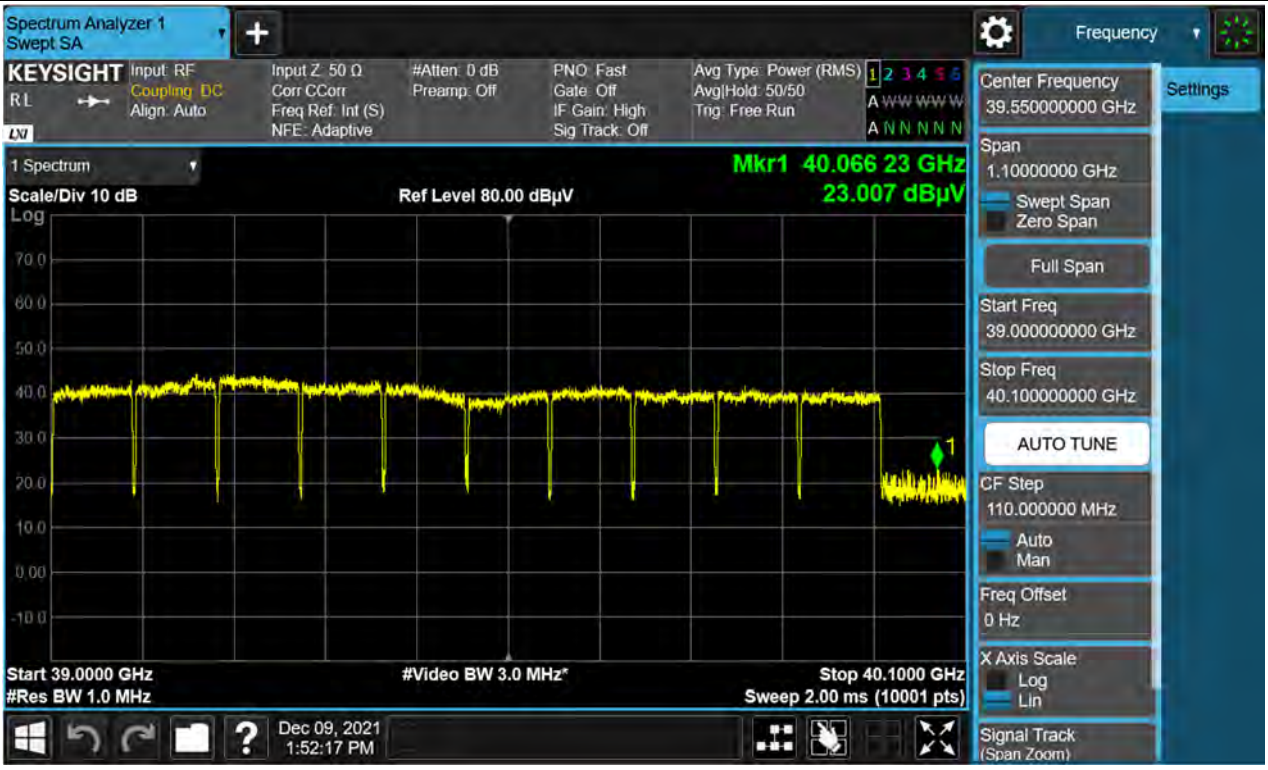


+3 dB above AGC threshold Single Test Signal / MAX Ant. A Position / 10cc / Low / Cross-Pol.

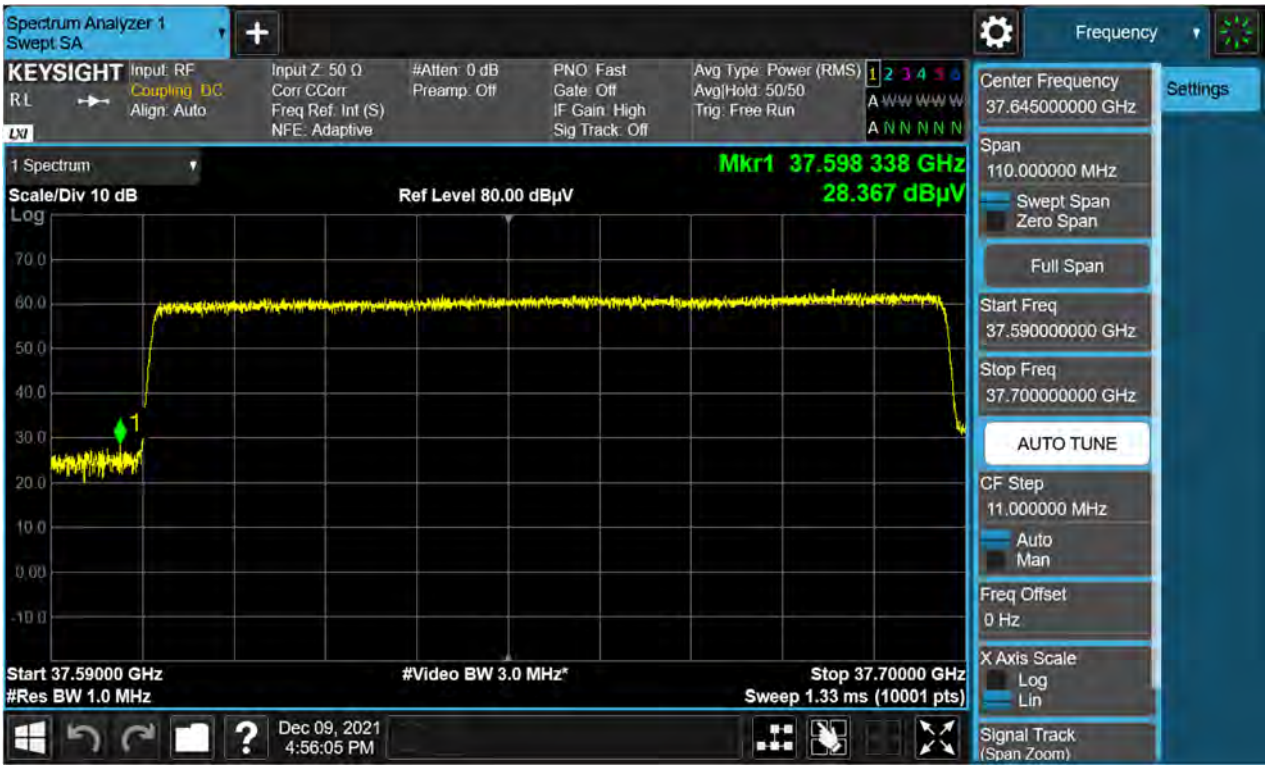


+3 dB above AGC threshold Single Test Signal / MAX Ant. A Position / 10cc / High / Co-Pol.

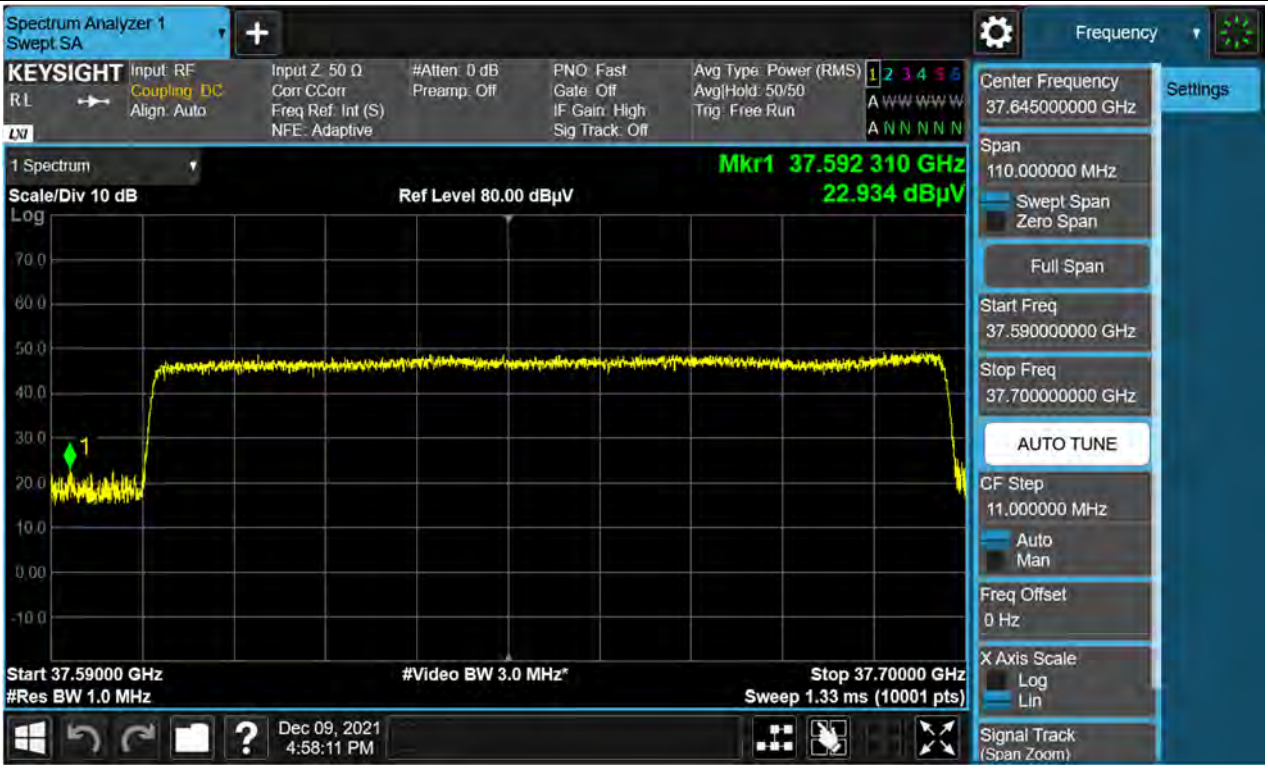
+3 dB above AGC threshold Single Test Signal / MAX Ant. A Position / 10cc / High / Cross-Pol.



+3 dB above AGC threshold Single Test Signal / MAX Ant. B Position / 1cc / Low / Co-Pol.



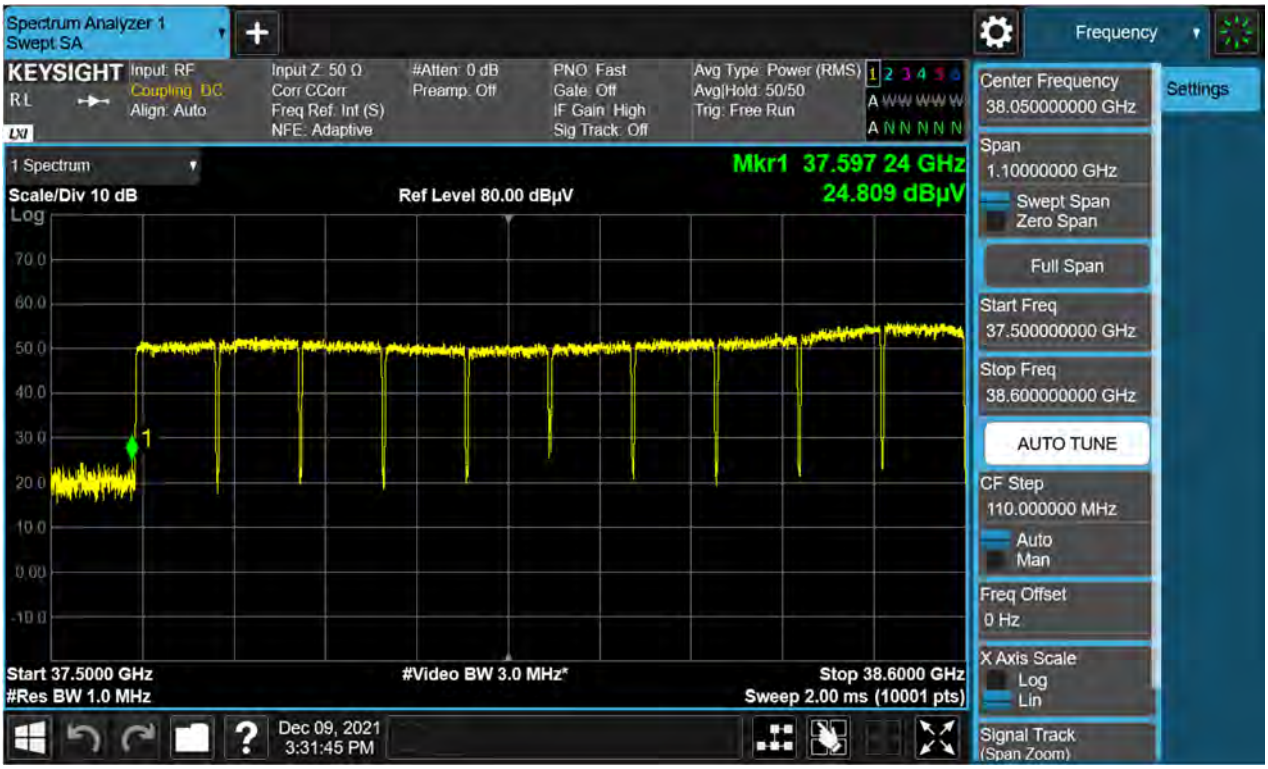
+3 dB above AGC threshold Single Test Signal / MAX Ant. B Position / 1cc / Low / Cross-Pol.



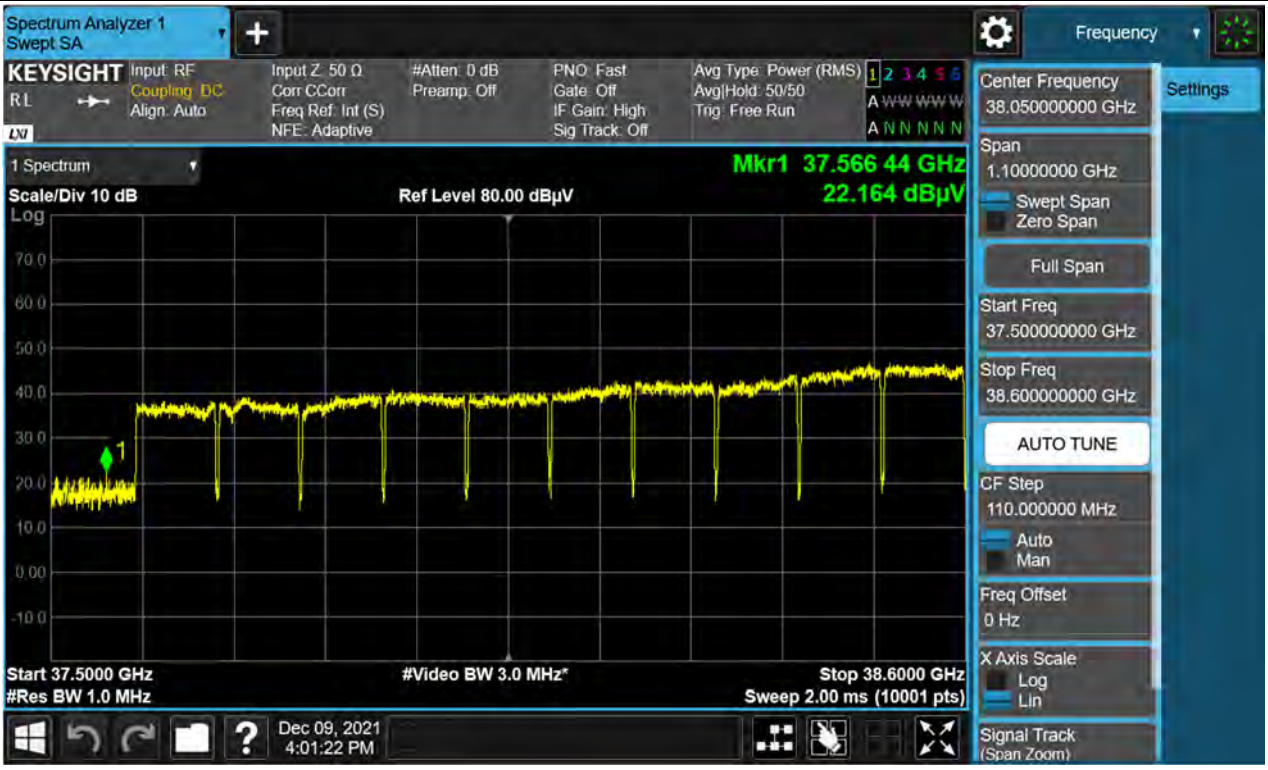
+3 dB above AGC threshold Single Test Signal / MAX Ant. B Position / 1cc / High / Co-Pol.

+3 dB above AGC threshold Single Test Signal / MAX Ant. B Position / 1cc / High / Cross-Pol.

+3 dB above AGC threshold Single Test Signal / MAX Ant. B Position / 10cc / Low / Co-Pol.

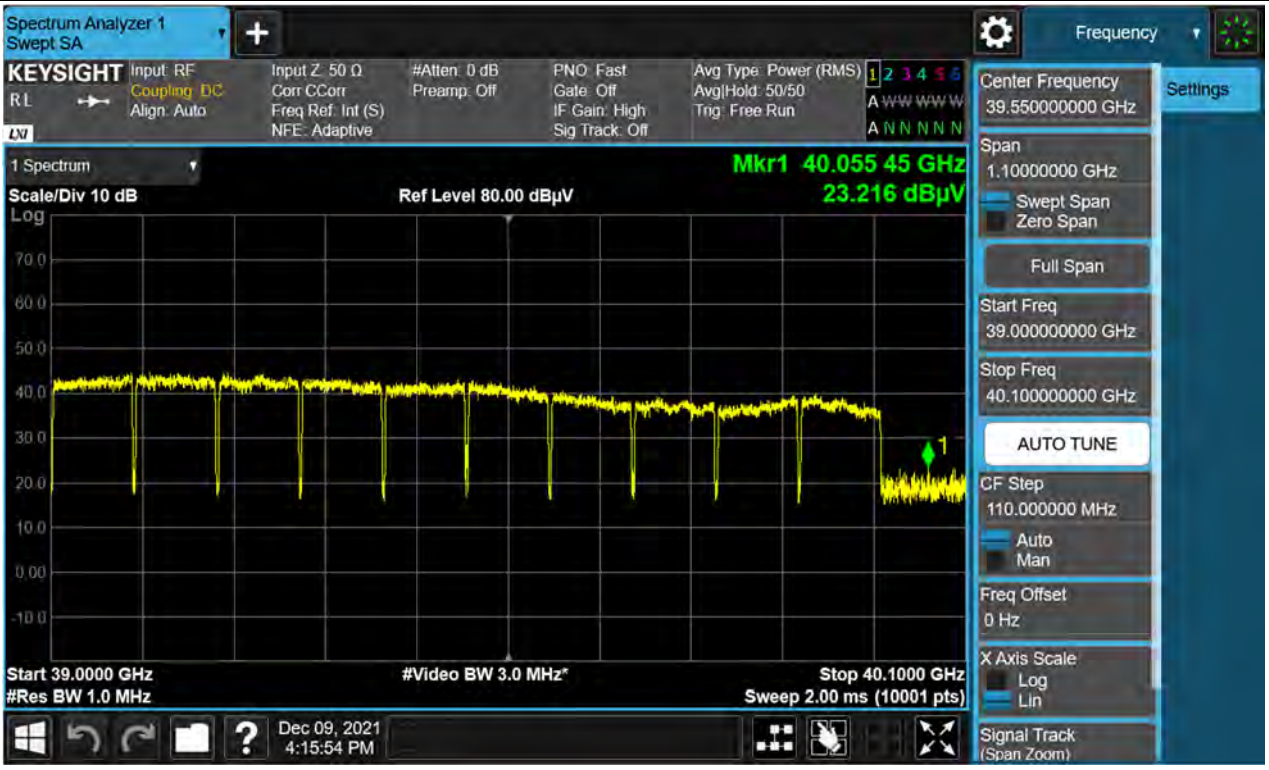


+3 dB above AGC threshold Single Test Signal / MAX Ant. B Position / 10cc / Low / Cross-Pol.



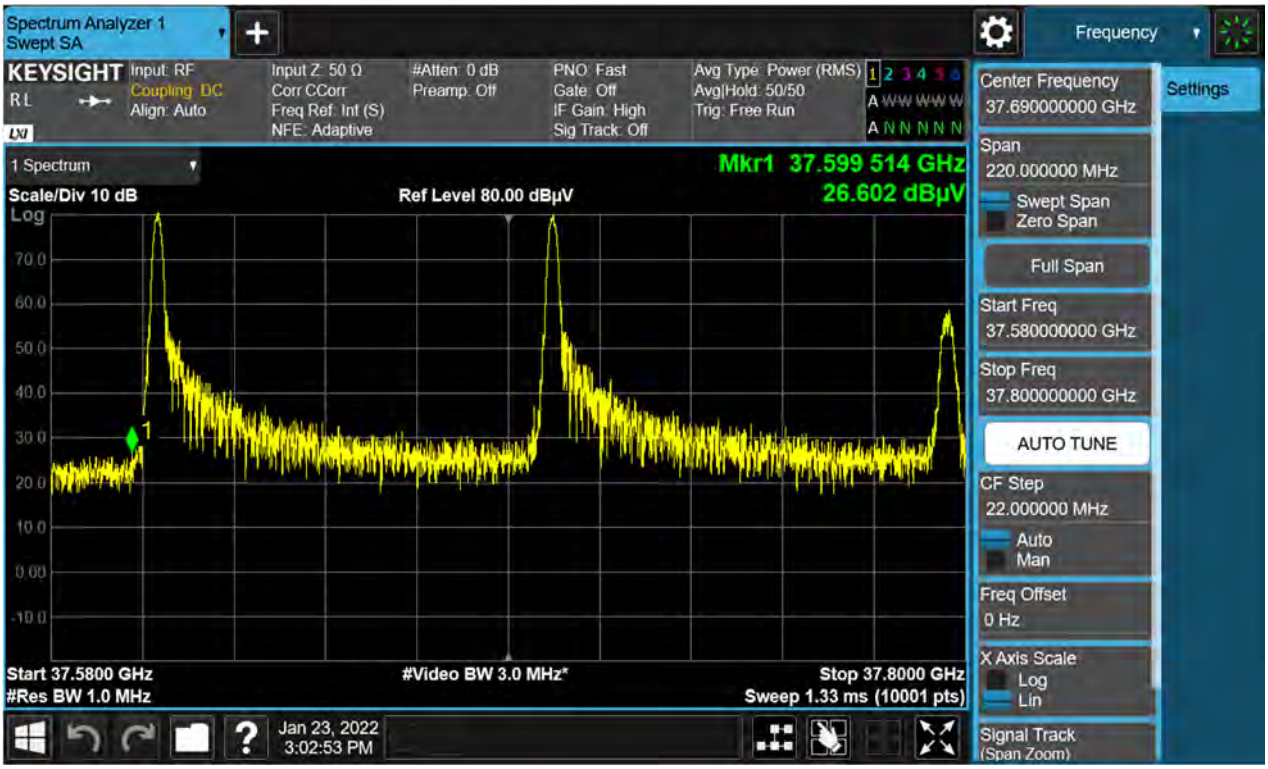
+3 dB above AGC threshold Single Test Signal / MAX Ant. B Position / 10cc / High / Co-Pol.

+3 dB above AGC threshold Single Test Signal / MAX Ant. B Position / 10cc / High / Cross-Pol.

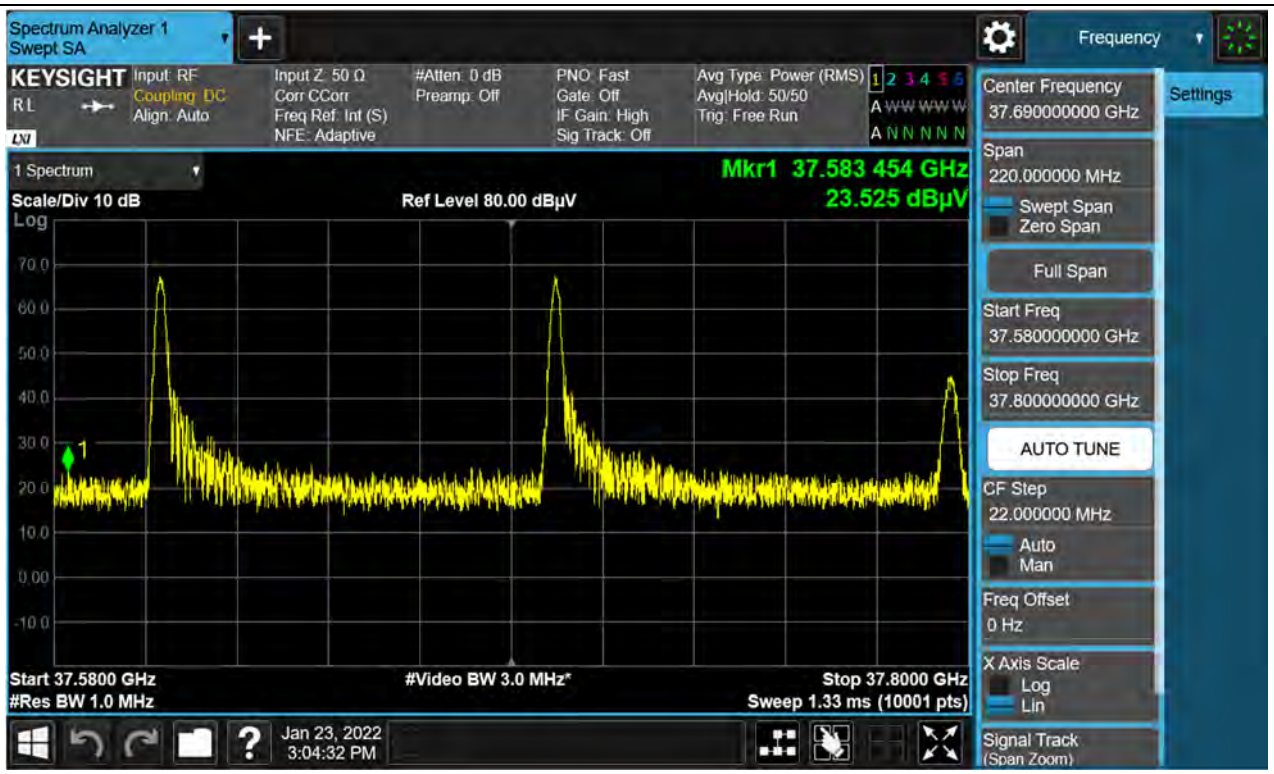


[1 RB] Plot data of Band Edge

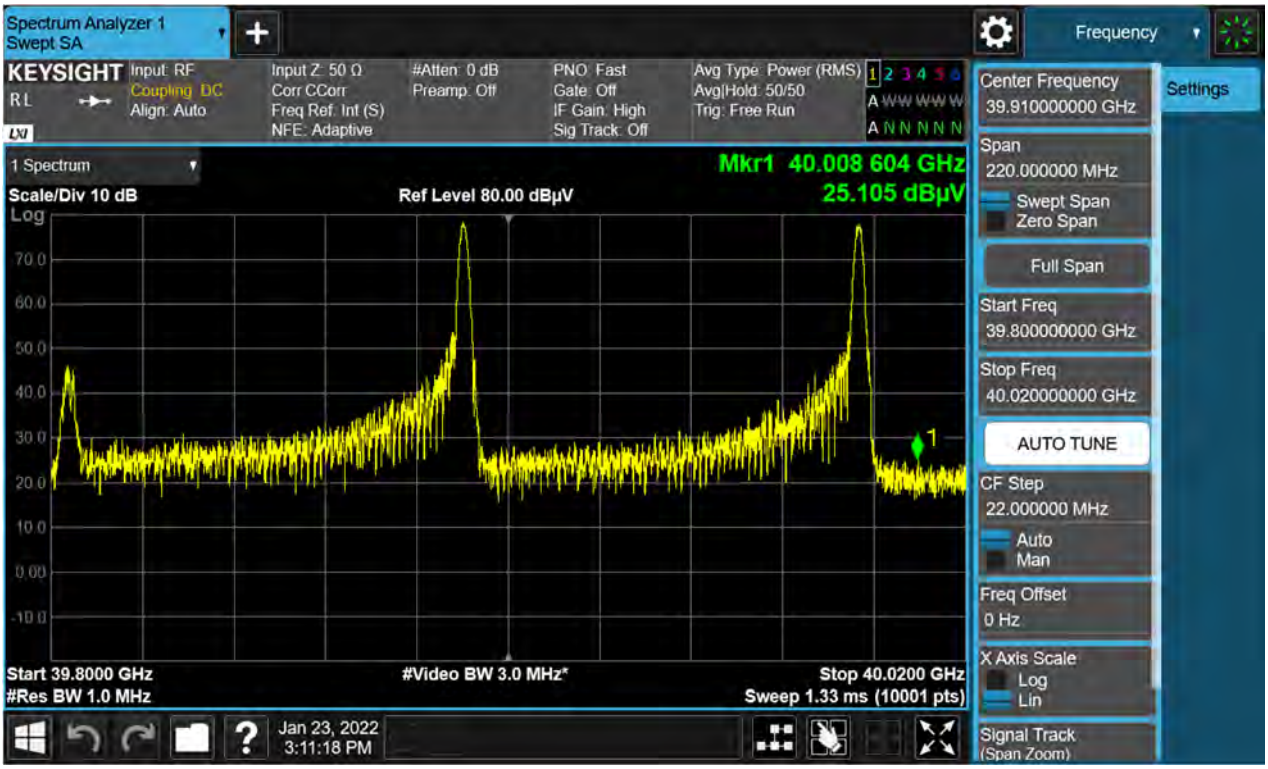
Two Adjacent Test Signal / MAX Ant. A Position / 1cc / Low / Co-Pol.



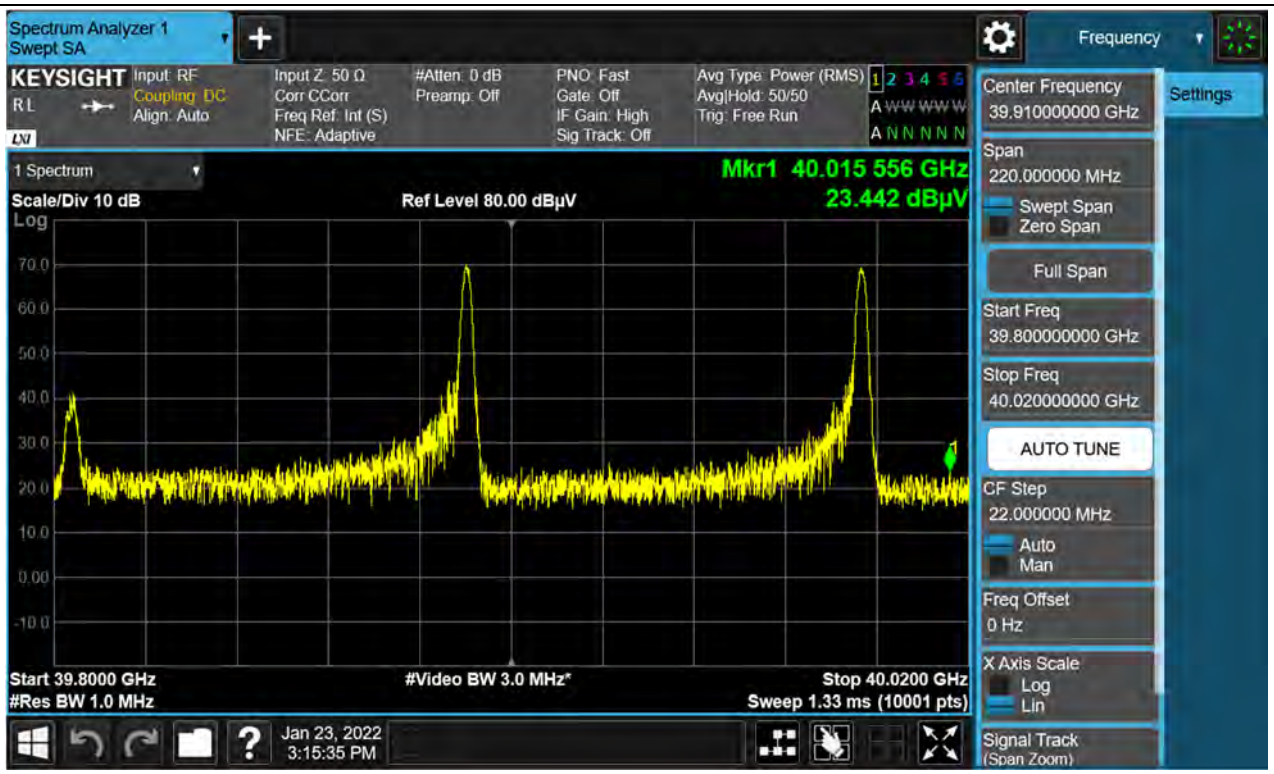
Two Adjacent Test Signal / MAX Ant. A Position / 1cc / Low / Cross-Pol.



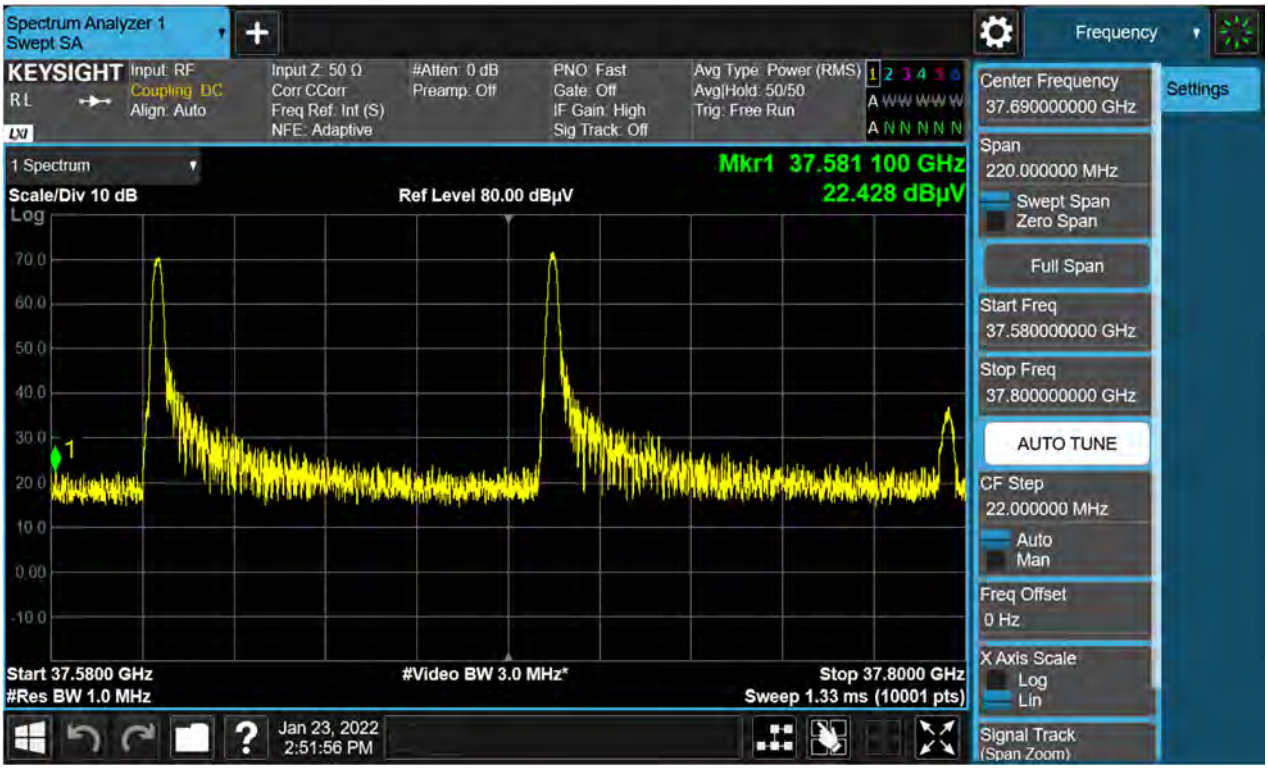
Two Adjacent Test Signal / MAX Ant. A Position / 1cc / High / Co-Pol.



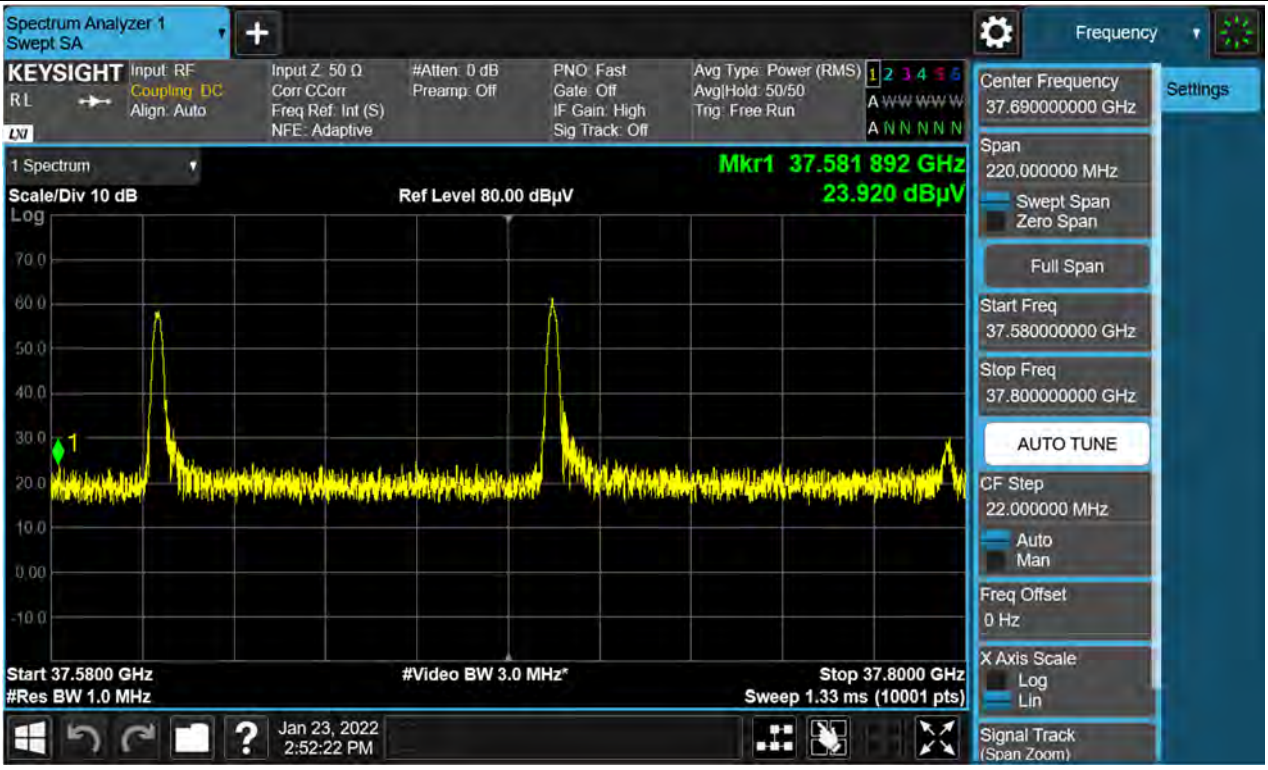
Two Adjacent Test Signal / MAX Ant. A Position / 1cc / High / Cross-Pol.



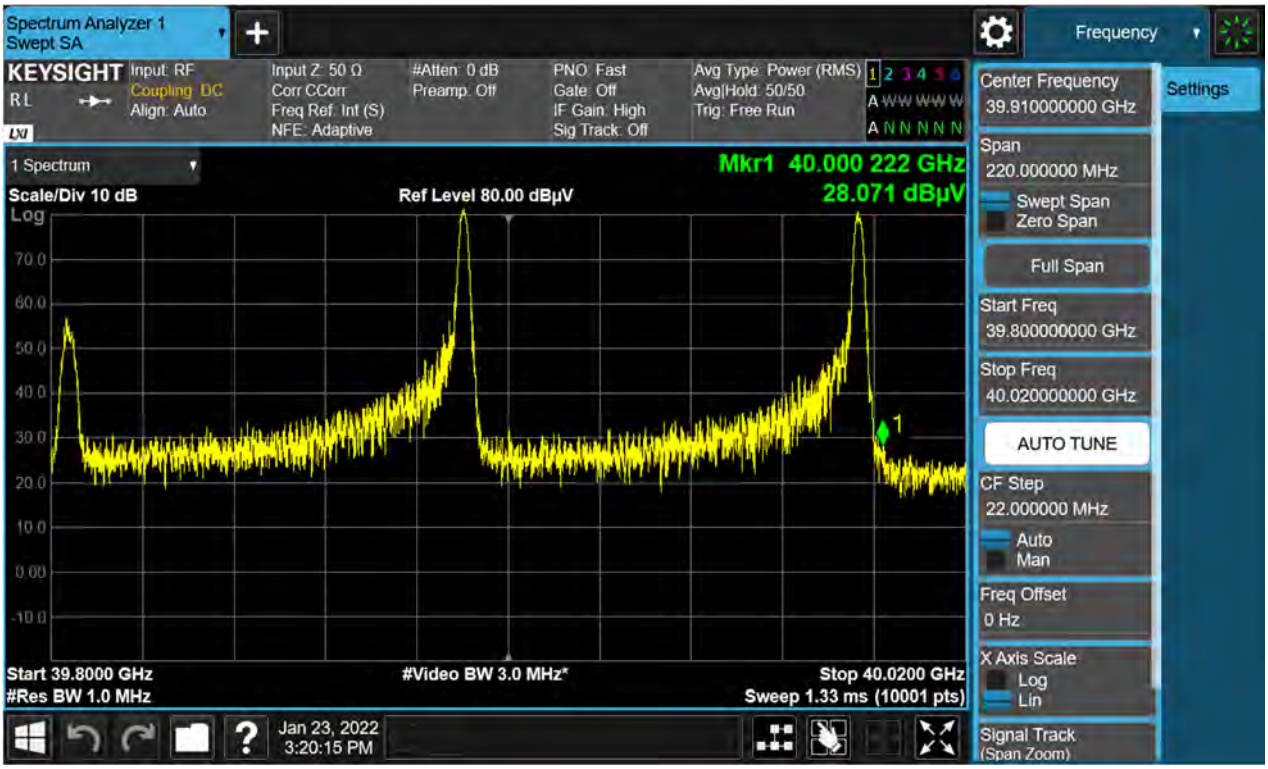
Two Adjacent Test Signal / MAX Ant. B Position / 1cc / Low / Co-Pol.



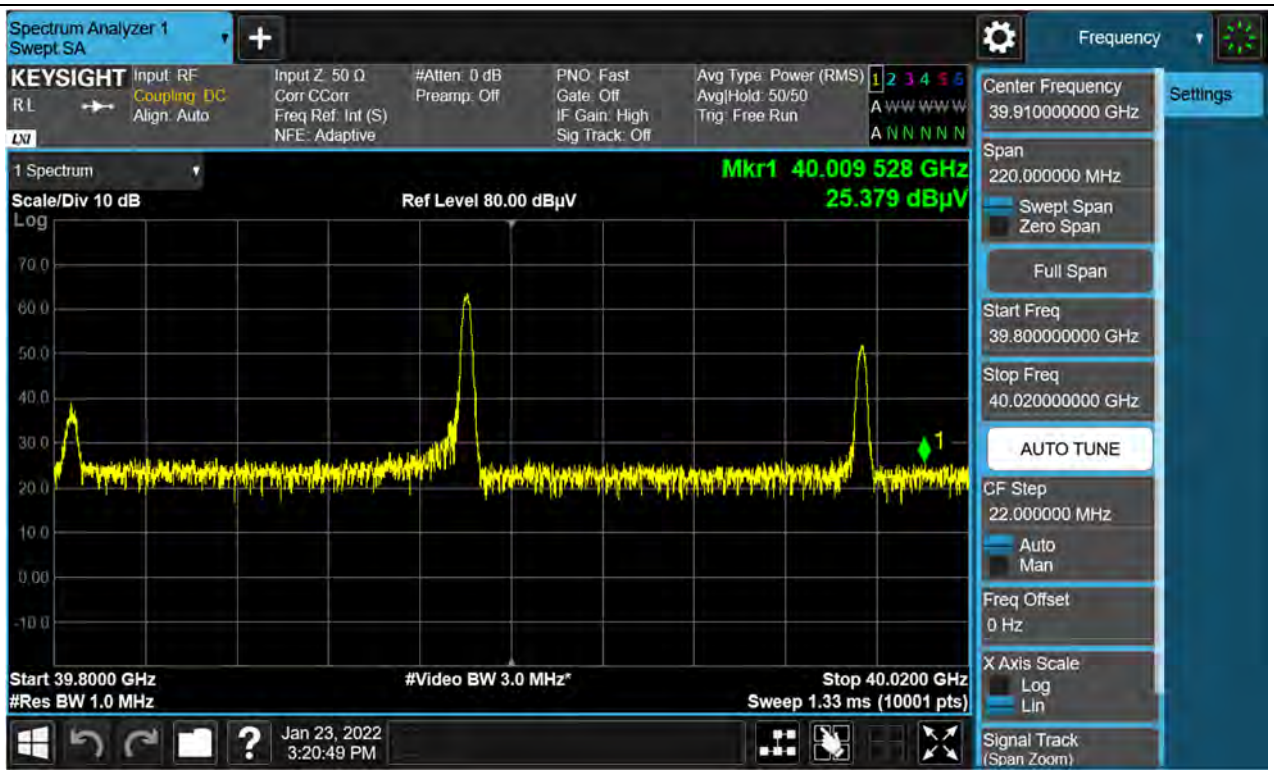
Two Adjacent Test Signal / MAX Ant. B Position / 1cc / Low / Cross-Pol.



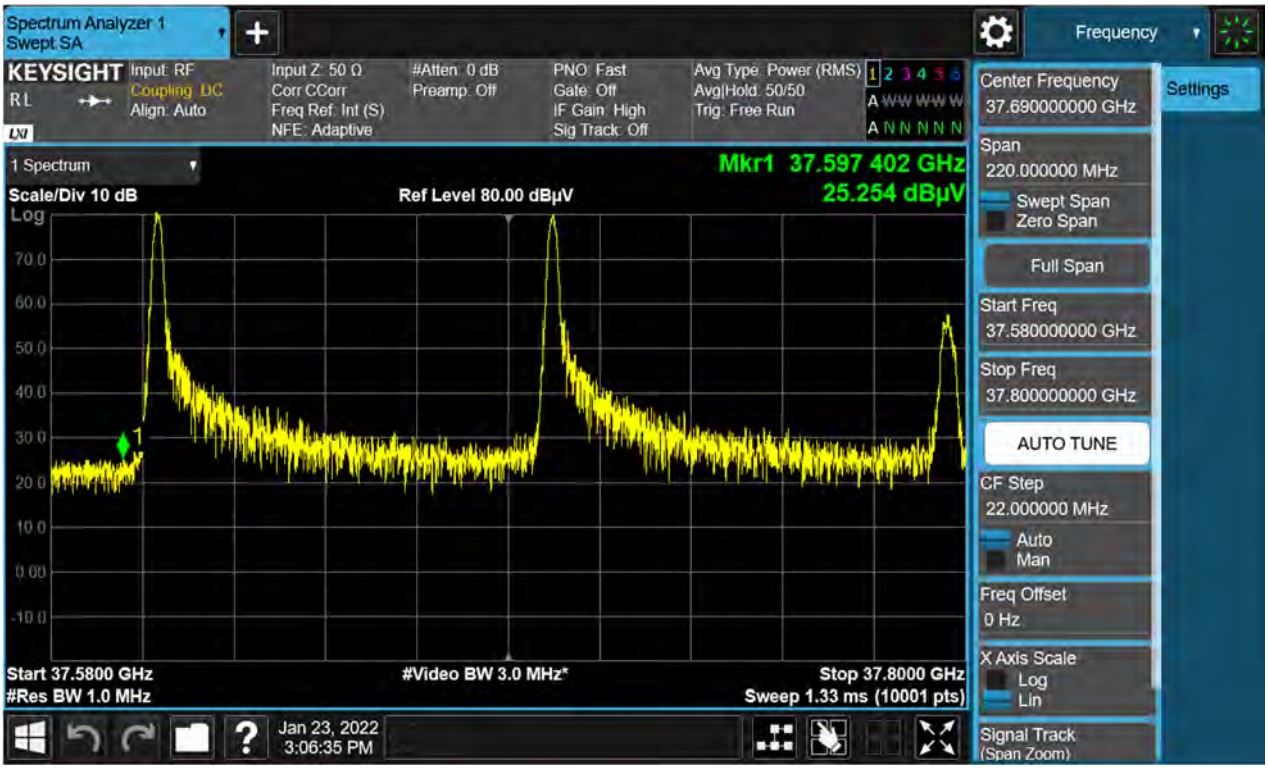
Two Adjacent Test Signal / MAX Ant. B Position / 1cc / High / Co-Pol.



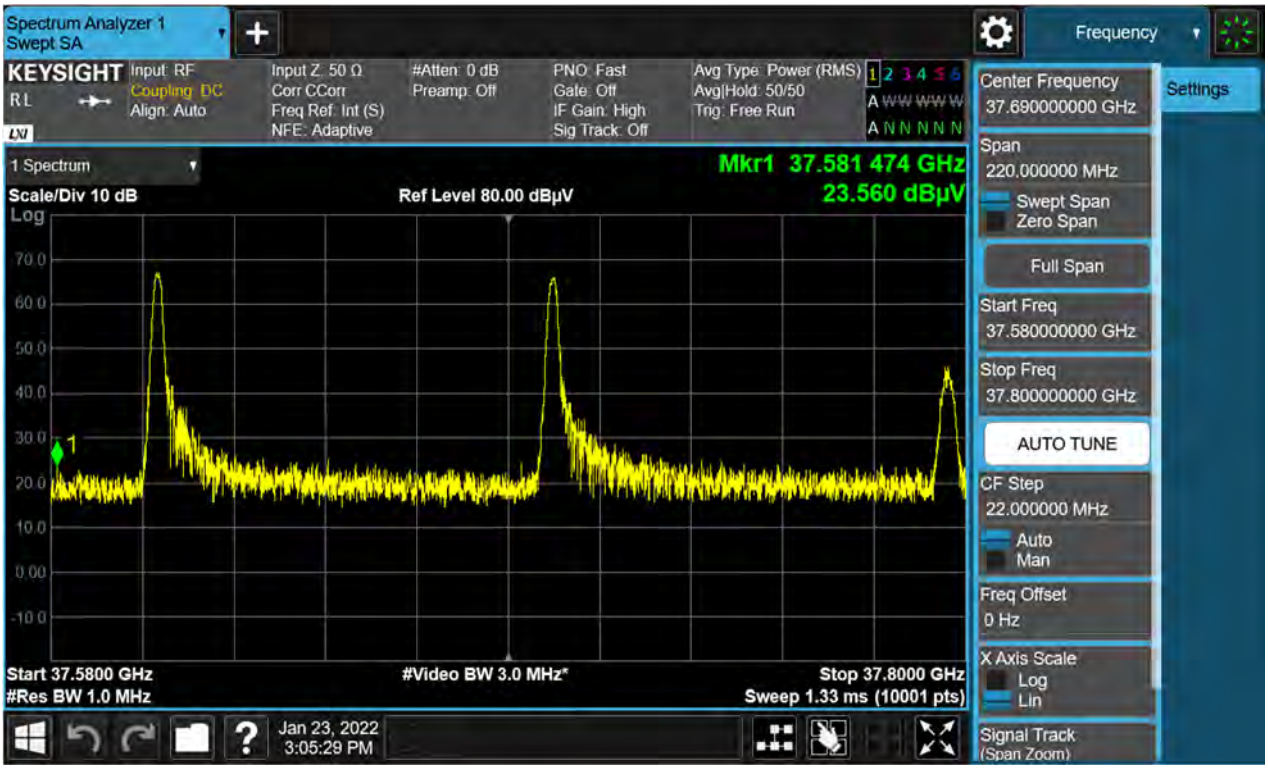
Two Adjacent Test Signal / MAX Ant. B Position / 1cc / High / Cross-Pol.



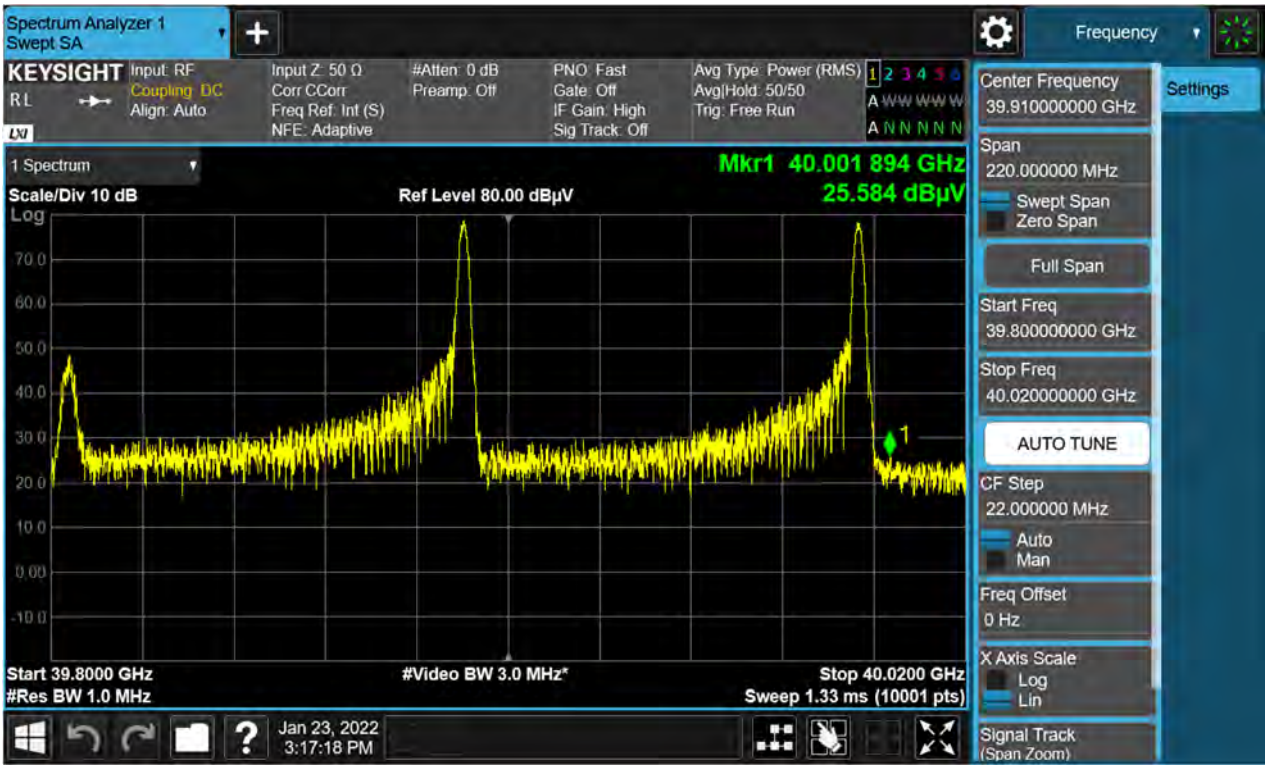
+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. A Position / 1cc / Low / Co-Pol.



+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. A Position / 1cc / Low / Cross-Pol.



+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. A Position / 1cc / High / Co-Pol.



+3 dB above AGC threshold Two Adjacent Test Signal / MAX Ant. A Position / 1cc / High / Cross-Pol.