

9 FCC §95.3379(b) & ISEDC RSS-251 §7, §11 -Emission Bandwidth & Frequency Stability

9.1 Applicable Standards

According to FCC §95.3379(b): Fundamental emissions must be contained within the frequency bands specified in this section during all conditions of operation. Equipment is presumed to operate over the temperature range -20 to +50 degrees Celsius with an input voltage variation of 85% to 115% of rated input voltage, unless justification is presented to demonstrate otherwise.

According to ISEDC RSS-251 §7.2: The radar device's occupied bandwidth (i.e. 99% emission bandwidth) shall be contained in the 76-81 GHz frequency band.

According to ISEDC RSS-251 §11.2: The radar device's occupied bandwidth (i.e. 99% emission bandwidth) shall be maintained within the 76-81 GHz frequency band while subjected to all condition of operation specified in RSS-Gen.

9.2 Measurement Procedure

The Occupied Bandwidth was measured using the 99 % OBW function on the PSA

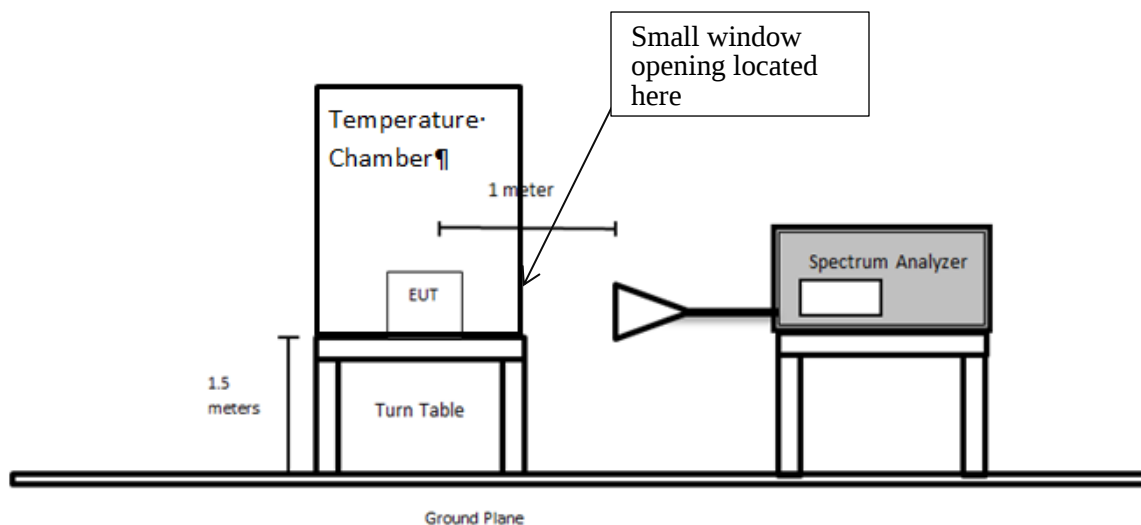
RBW = 1MHz, VBW = 3MHz

RMS detector, Maxhold trace

Appropriate Sweep Time used to ensure each bin of PSA sees 1 complete radar cycle (i.e. > EUT Cycle Time (67ms) * sweep points)

Measurements made at low, nominal and high voltage over the entire range of operating temperature in intervals of 10 degrees Celsius

9.3 Test Setup Block Diagram



Note: Small window opening is located on the outside of the chamber which permits receive antenna to make measurements on EUT

9.4 Test Equipment List and Details

BACL No.	Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
-	Keysight	UXA Signal Analyzer	N9041B	MY60100113	2021-10-22	1 year
861	OML Inc.	Horn Antenna	MR12H	17061501	N/R	N/A
-	-	RF cable	-	-	Each time ¹	N/A
1060	BACL	Temperature Chamber	BTH-150-40	30078	2021-09-23	1 year

Note¹: cables included in the test set-up will be checked each time before testing.

Statement of Traceability: BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 “A2LA Policy on Metrological Traceability”.

9.5 Test Environmental Conditions

Temperature:	23° C
Relative Humidity:	42 %
ATM Pressure:	102.7 KPa

The testing was performed by Rita Yang from 2021-11-02 to 2021-11-03 at RF Site.

9.6 Test Results

Mode 3

Voltage	Temperature (°C)	OBW (MHz)	F _L (GHz)	F _H (GHz)	OBW within 76GHz-81GHz
13.6V	-20	222.87	76.3827	76.6056	Pass
	-10	221.02	76.3836	76.6046	Pass
	0	225.17	76.3787	76.6039	Pass
	10	224.86	76.3791	76.6039	Pass
	20	229.01	76.3752	76.6042	Pass
	30	227.52	76.3759	76.6038	Pass
	40	226.95	76.3746	76.6015	Pass
	50	229.01	76.3752	76.6042	Pass
16V	-20	222.63	76.38197	76.6046	Pass
	-10	221.05	76.38297	76.60402	Pass
	0	223.96	76.38057	76.60454	Pass
	10	221.63	76.37985	76.60148	Pass
	20	229.87	76.37425	76.60412	Pass
	30	222.49	76.38106	76.60354	Pass
	40	228.70	76.37467	76.60337	Pass
	50	227.33	76.37396	76.60129	Pass
18.4V	-20	222.47	76.38314	76.6056	Pass
	-10	222.67	76.38069	76.60336	Pass
	0	224.96	76.37901	76.60397	Pass
	10	225.44	76.37825	76.60369	Pass
	20	228.63	76.37396	76.60259	Pass
	30	228.26	76.37592	76.60418	Pass
	40	224.13	76.37814	76.60228	Pass
	50	226.94	76.37451	76.60145	Pass

Mode 4

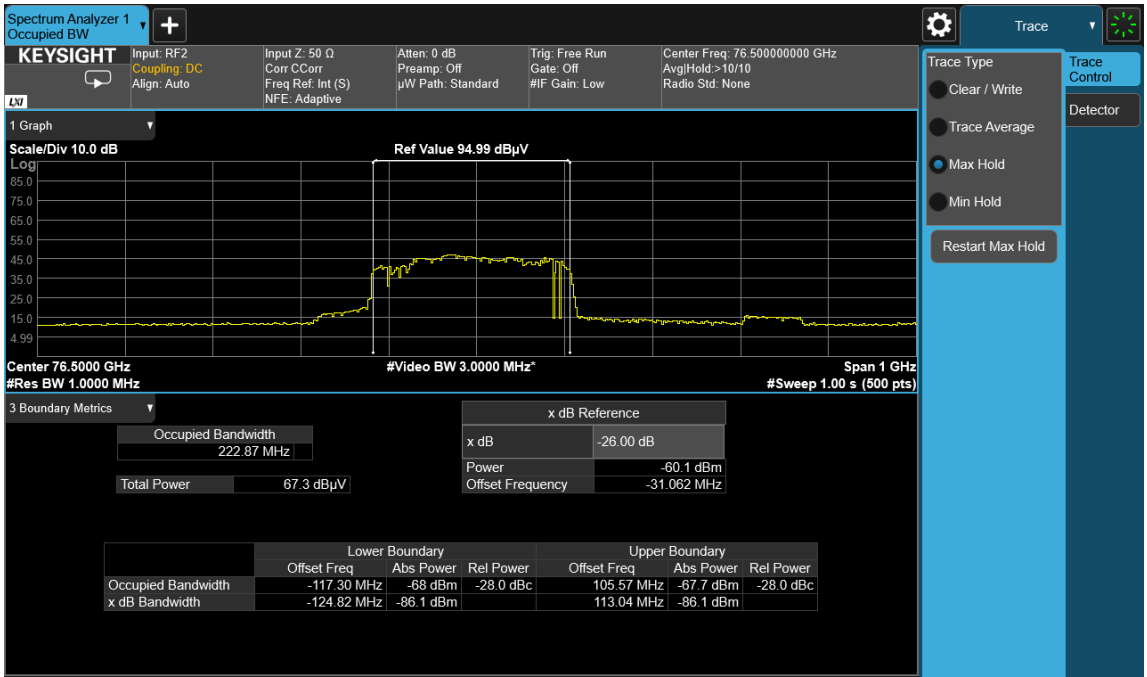
Voltage	Temperature (°C)	OBW (MHz)	F_L (GHz)	F_H (GHz)	OBW within 76GHz-81GHz
13.6V	-20	423.34	76.26576	76.68911	Pass
	-10	422.34	76.2659	76.68824	Pass
	0	428.99	76.26256	76.69155	Pass
	10	427.05	76.26173	76.68877	Pass
	20	423.47	76.26796	76.69143	Pass
	30	425.33	76.26047	76.6858	Pass
	40	426.95	76.26237	76.68933	Pass
	50	429.72	76.2554	76.68512	Pass
16V	-20	423.39	76.26652	76.68991	Pass
	-10	426.29	76.26451	76.6908	Pass
	0	425.17	76.26569	76.69086	Pass
	10	426.42	76.26486	76.69127	Pass
	20	426.01	76.2582	76.68421	Pass
	30	431.41	76.25847	76.68988	Pass
	40	427.42	76.26199	76.68941	Pass
	50	432.92	76.25598	76.68889	Pass
18.4V	-20	421.41	76.26699	76.68839	Pass
	-10	422.39	76.26465	76.68703	Pass
	0	422.16	76.26691	76.68907	Pass
	10	420.74	76.26536	76.6861	Pass
	20	424.92	76.25854	76.68345	Pass
	30	428.58	76.26273	76.6913	Pass
	40	428.58	76.26002	76.6886	Pass
	50	430.22	76.25741	76.68763	Pass

Mode 5

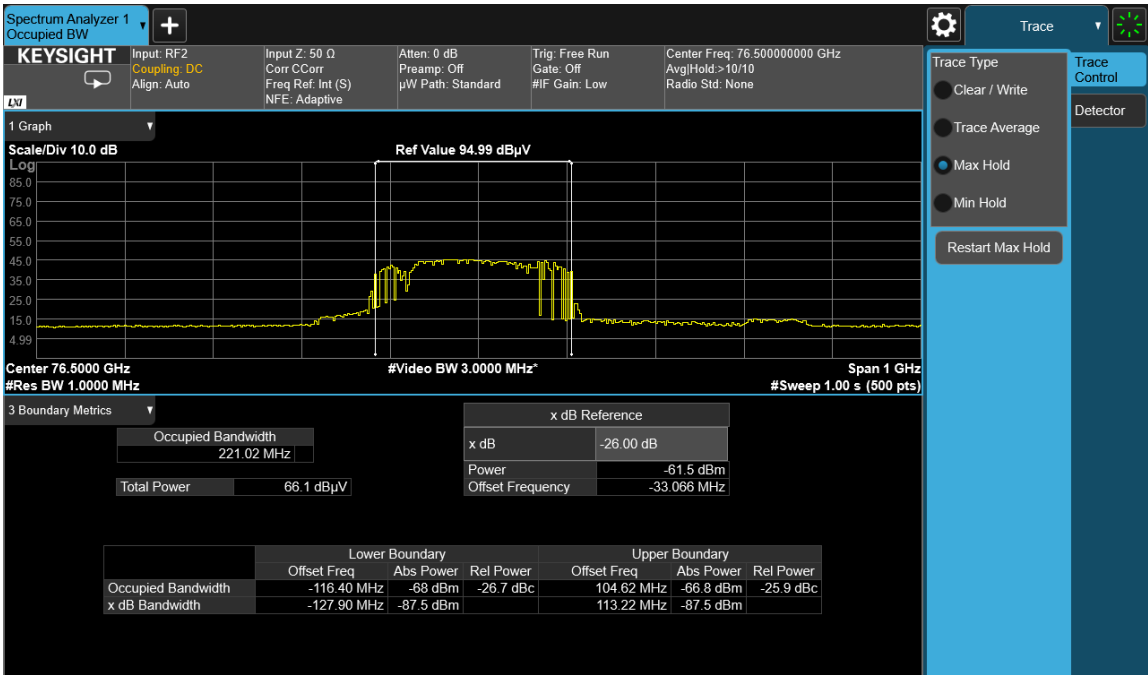
Voltage	Temperature (°C)	OBW (MHz)	F_L (GHz)	F_H (GHz)	OBW within 76GHz-81GHz
13.6V	-20	722.13	76.14061	76.86273	Pass
	-10	733.06	76.13017	76.86323	Pass
	0	735.38	76.12799	76.86338	Pass
	10	744.44	76.11922	76.86366	Pass
	20	735.08	76.12468	76.85976	Pass
	30	776.63	76.08272	76.85935	Pass
	40	753.22	76.10787	76.8611	Pass
	50	755.63	76.10611	76.86173	Pass
16V	-20	734.37	76.12828	76.86265	Pass
	-10	735.15	76.1281	76.86324	Pass
	0	735.5	76.12722	76.86272	Pass
	10	740.16	76.12333	76.86349	Pass
	20	777.71	76.08133	76.85904	Pass
	30	778.77	76.08062	76.85938	Pass
	40	757.59	76.10268	76.86027	Pass
	50	756.79	76.10324	76.86003	Pass
18.4V	-20	723.04	76.1396	76.86265	Pass
	-10	735.06	76.12817	76.86323	Pass
	0	737.53	76.12591	76.86343	Pass
	10	743.01	76.12064	76.86365	Pass
	20	755.97	76.10297	76.85894	Pass
	30	778.20	76.08216	76.86036	Pass
	40	756.65	76.10389	76.86054	Pass
	50	758.13	76.10237	76.86051	Pass

Please refer to the following plots.

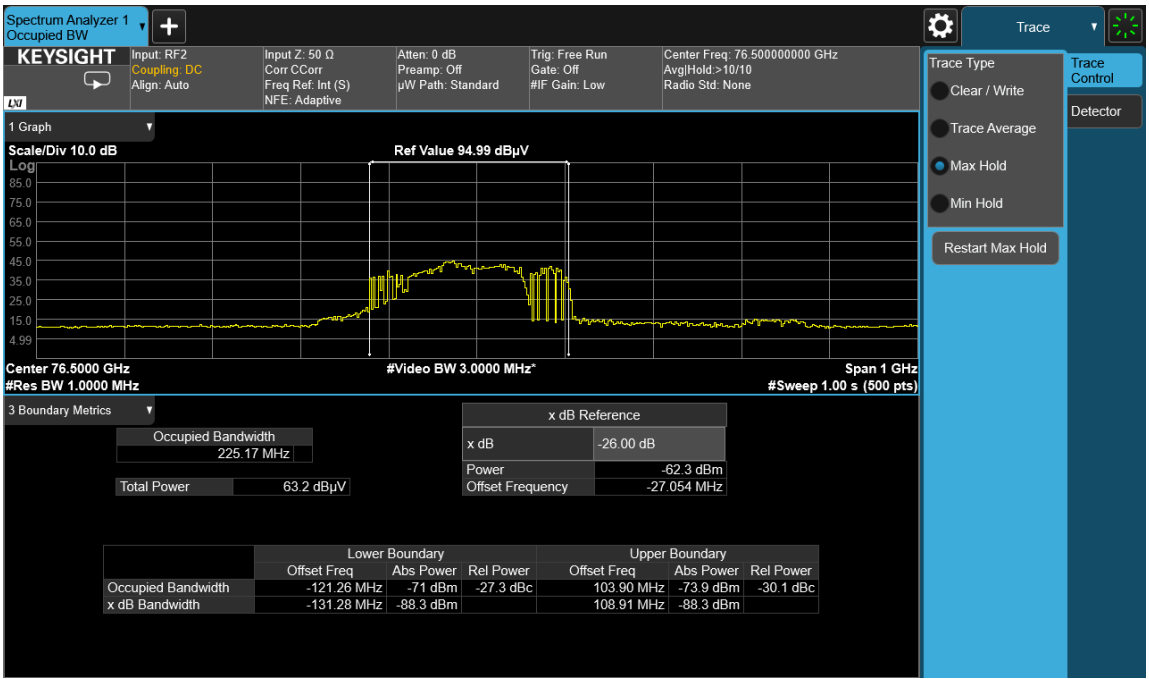
Mode 3
13.6V
-20°C



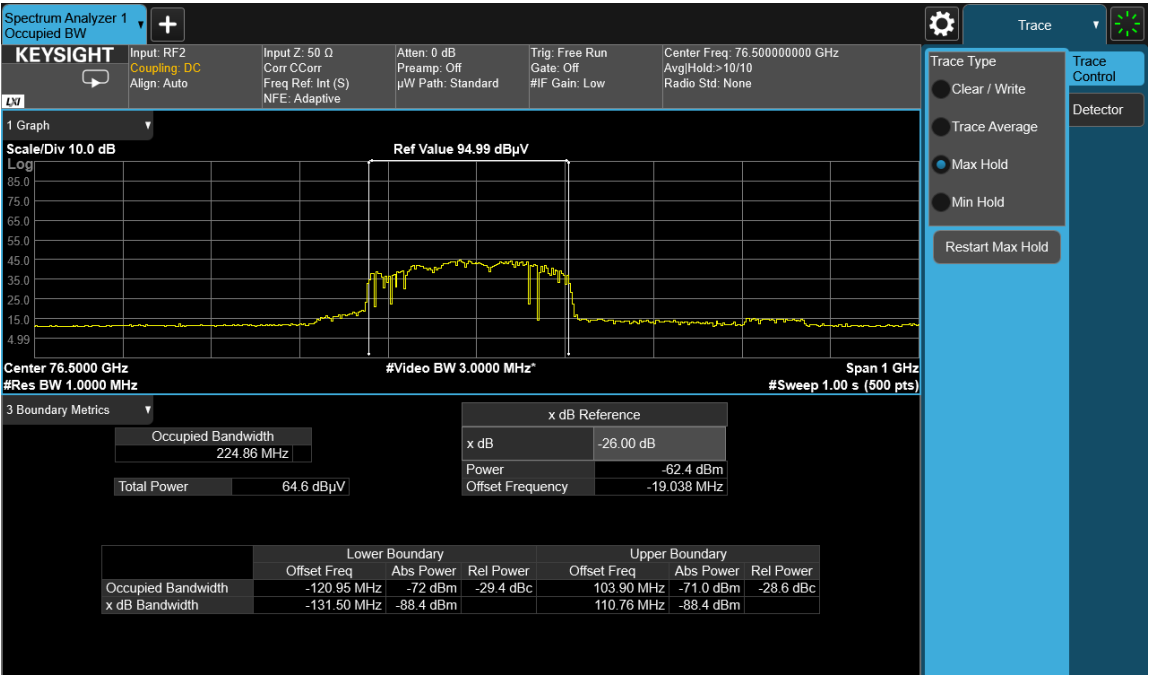
-10°C



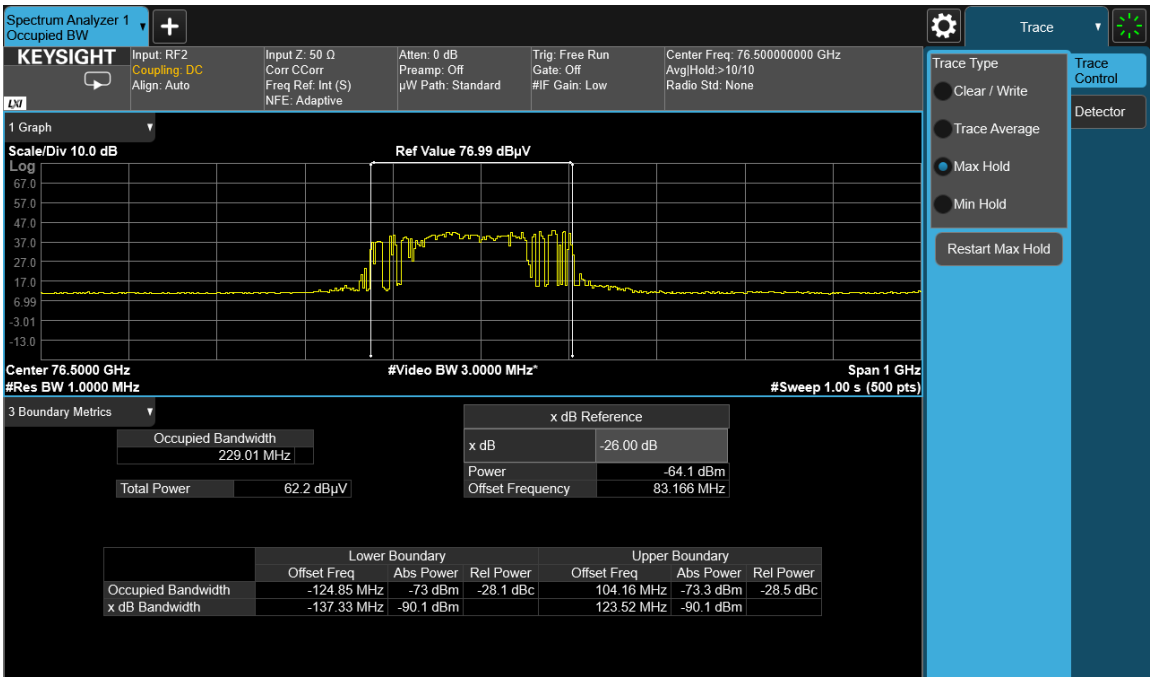
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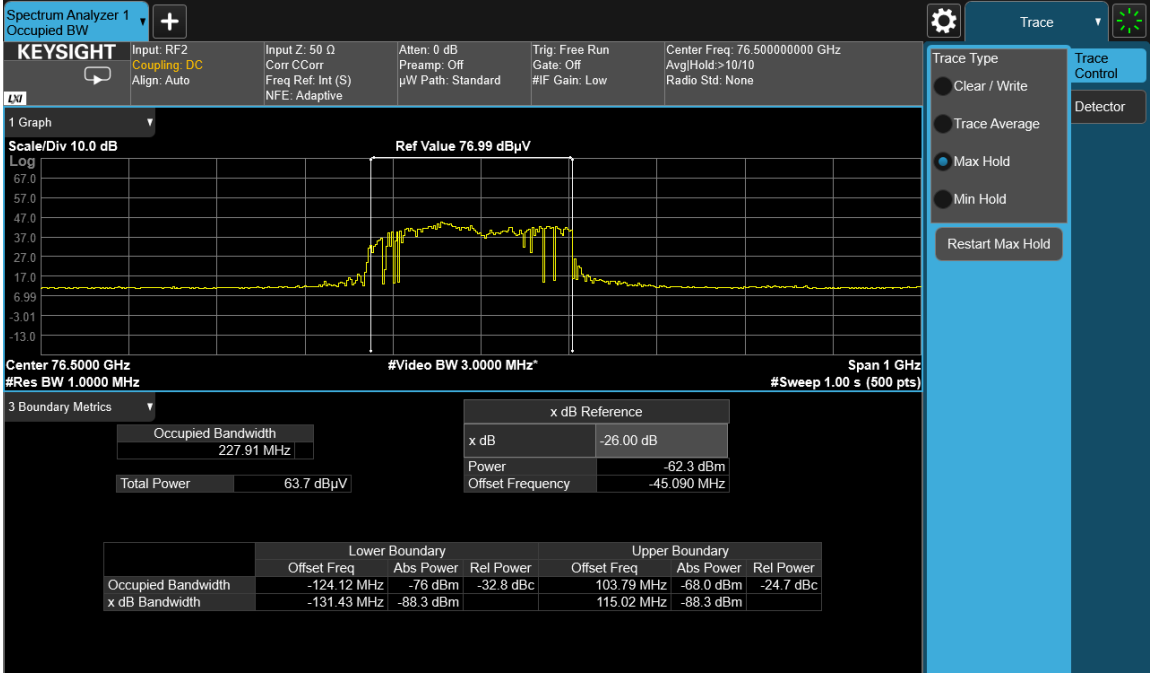
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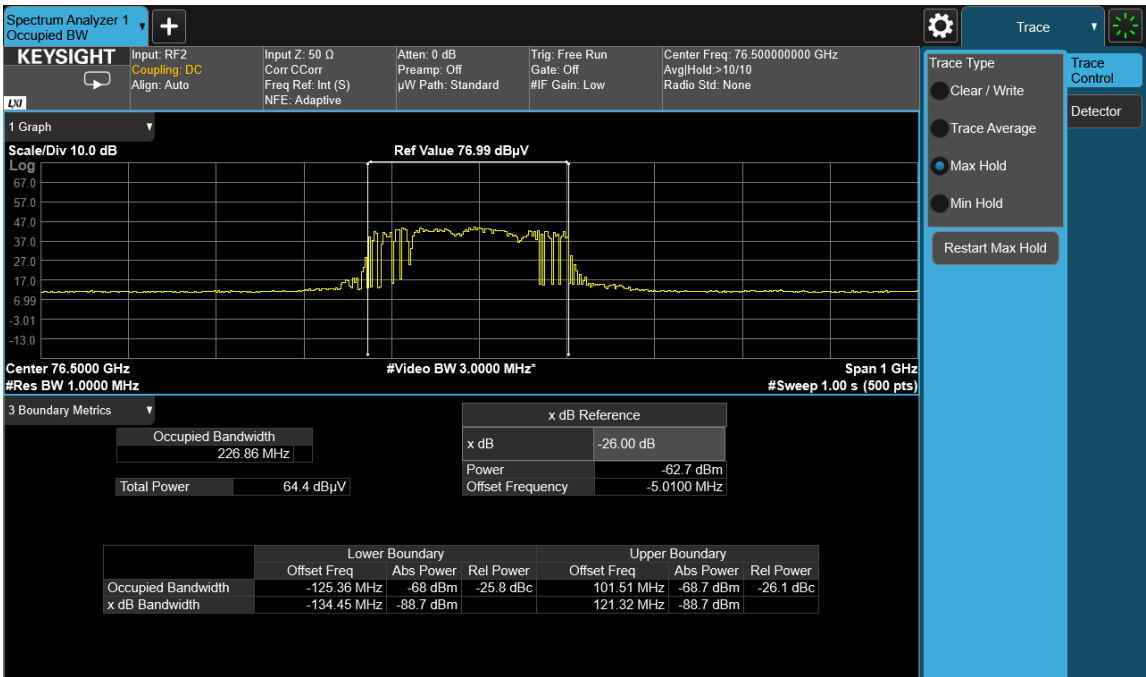
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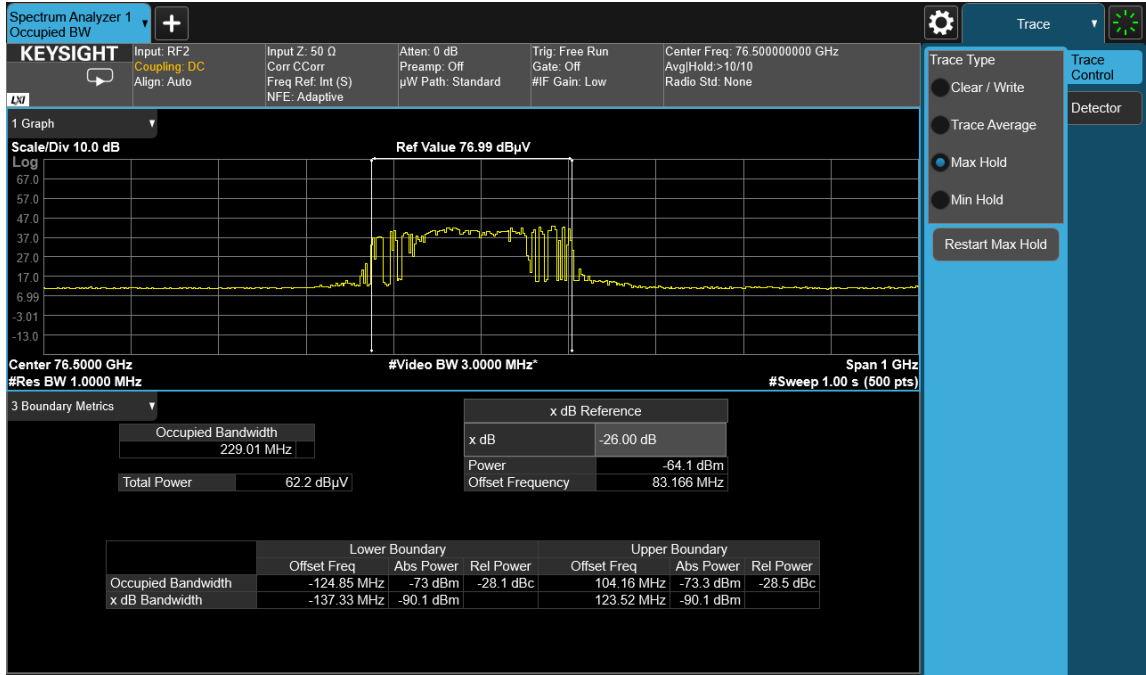
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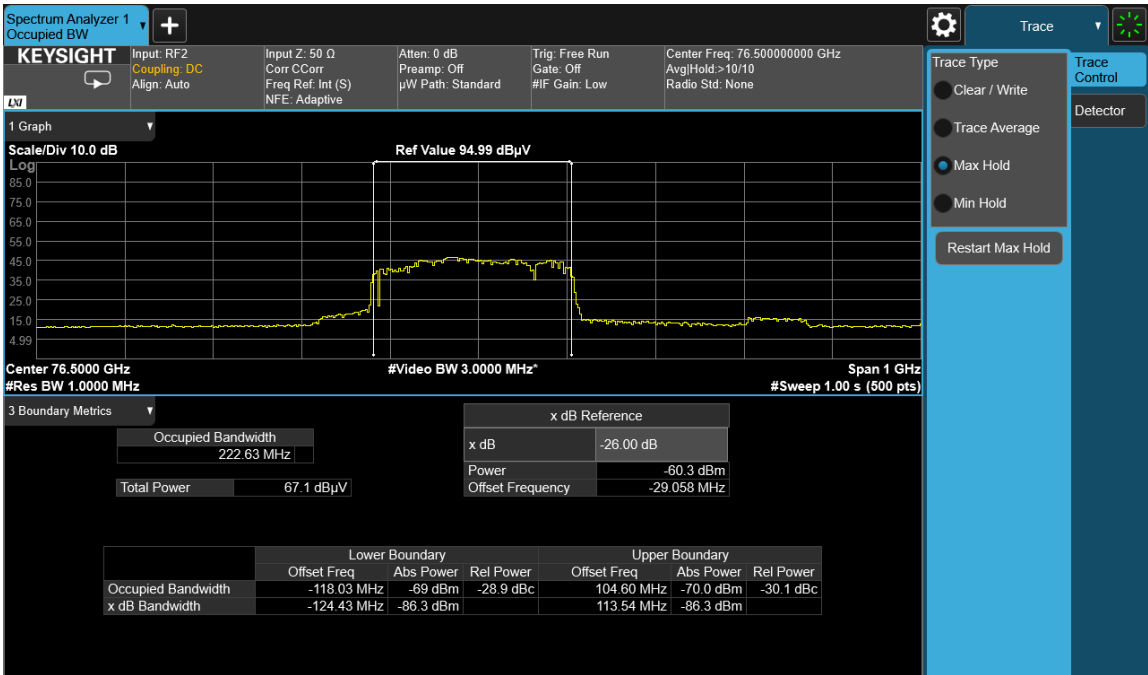
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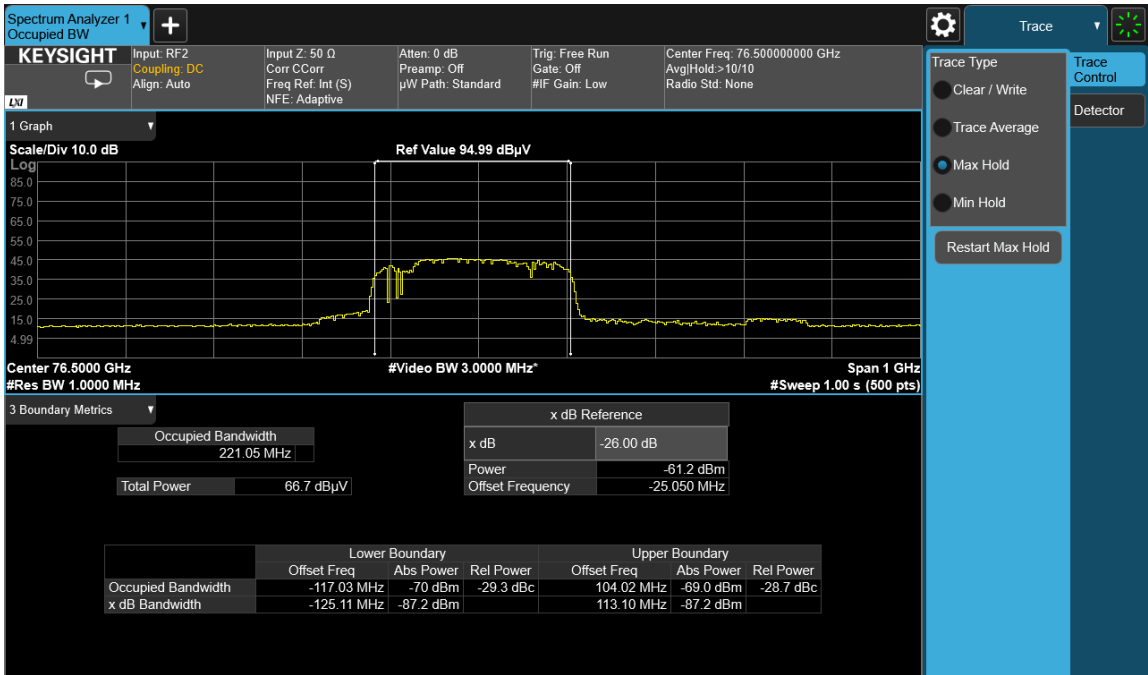
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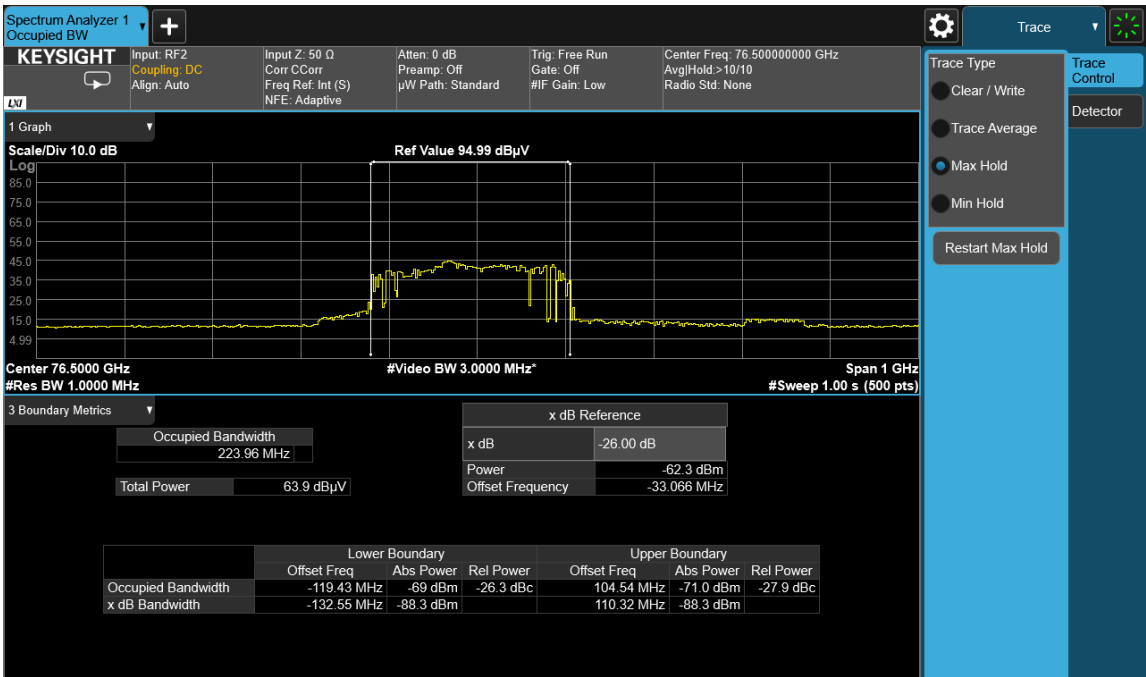
Mode 3
16V
-20°C



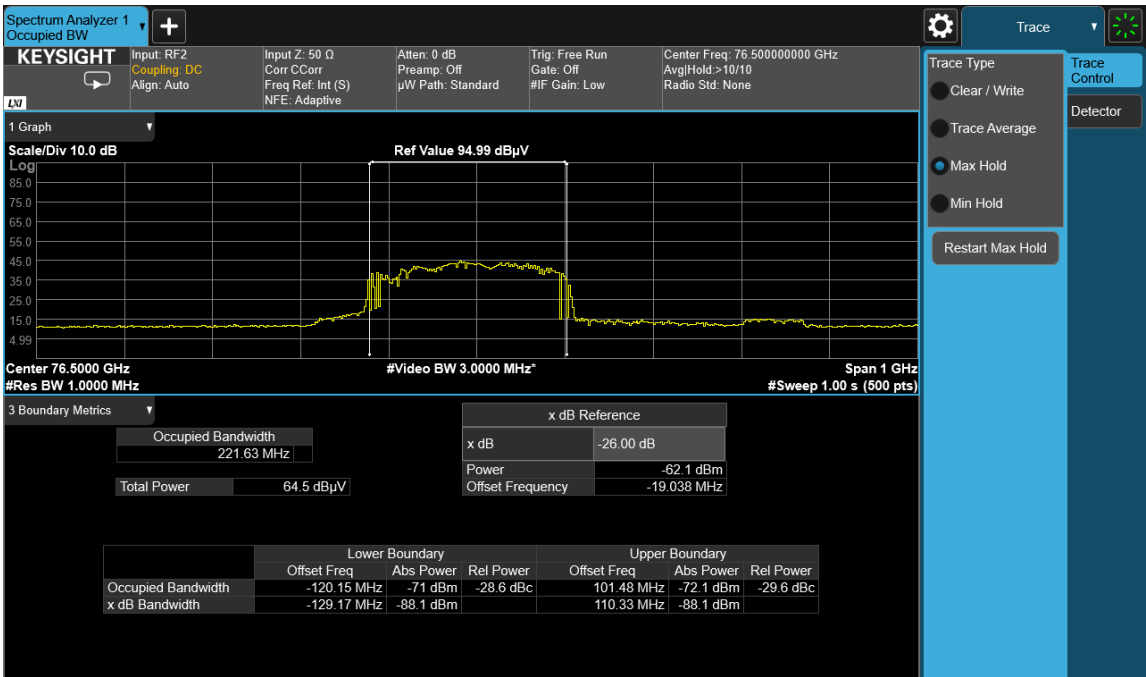
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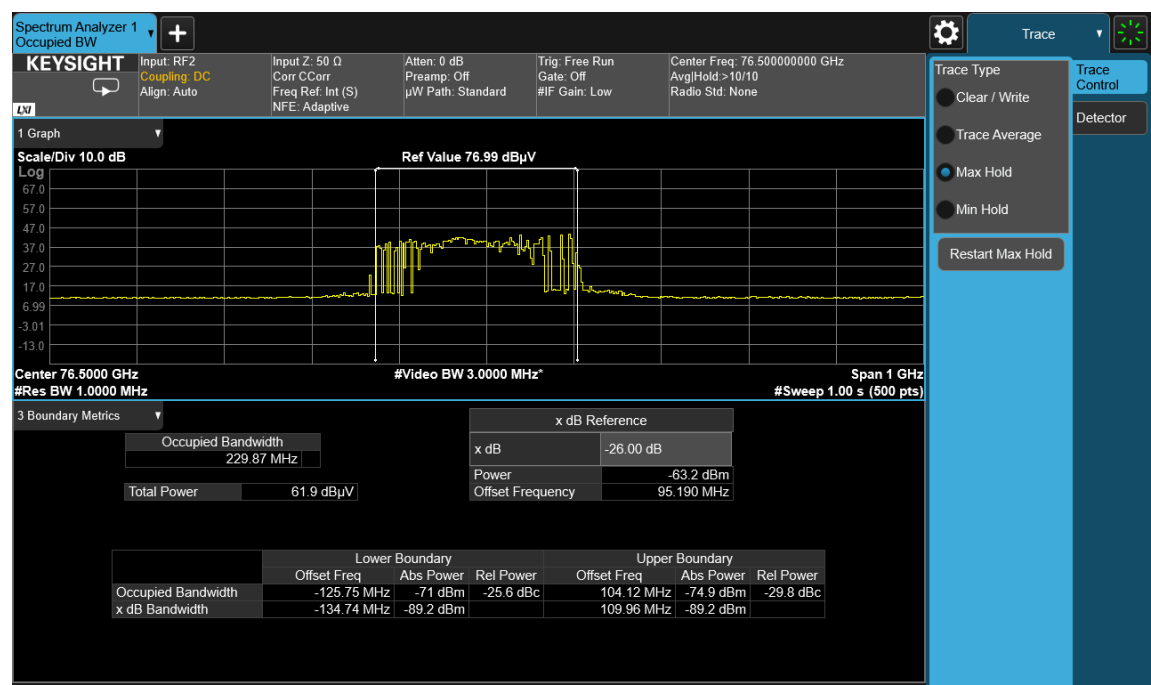
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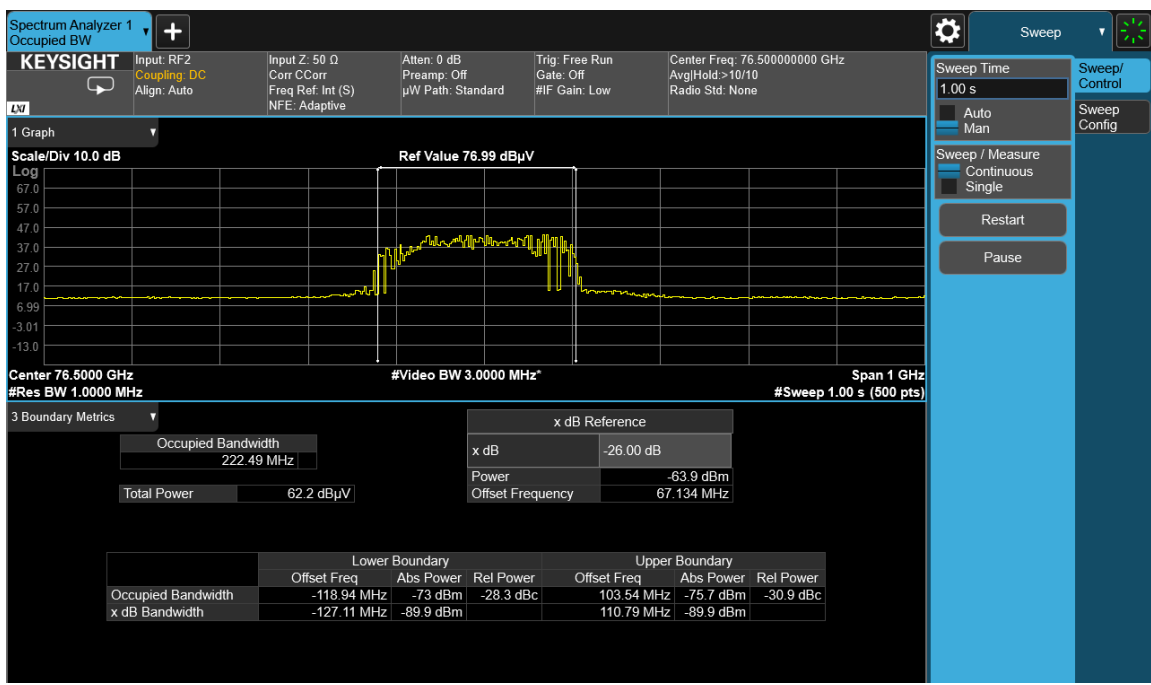
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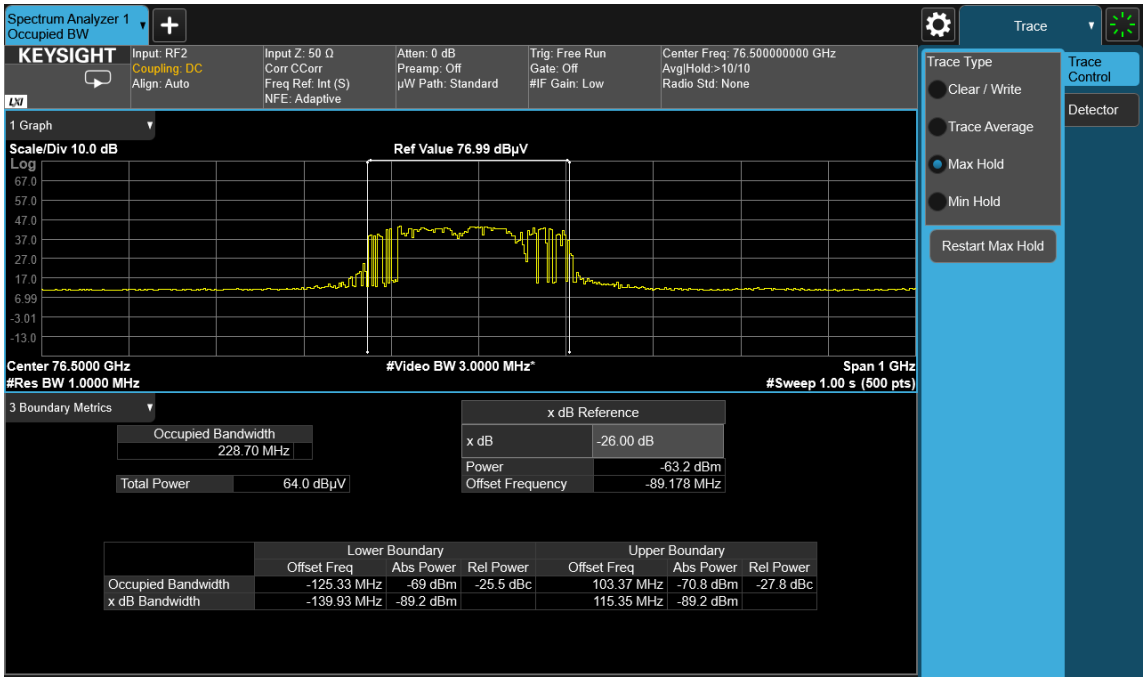
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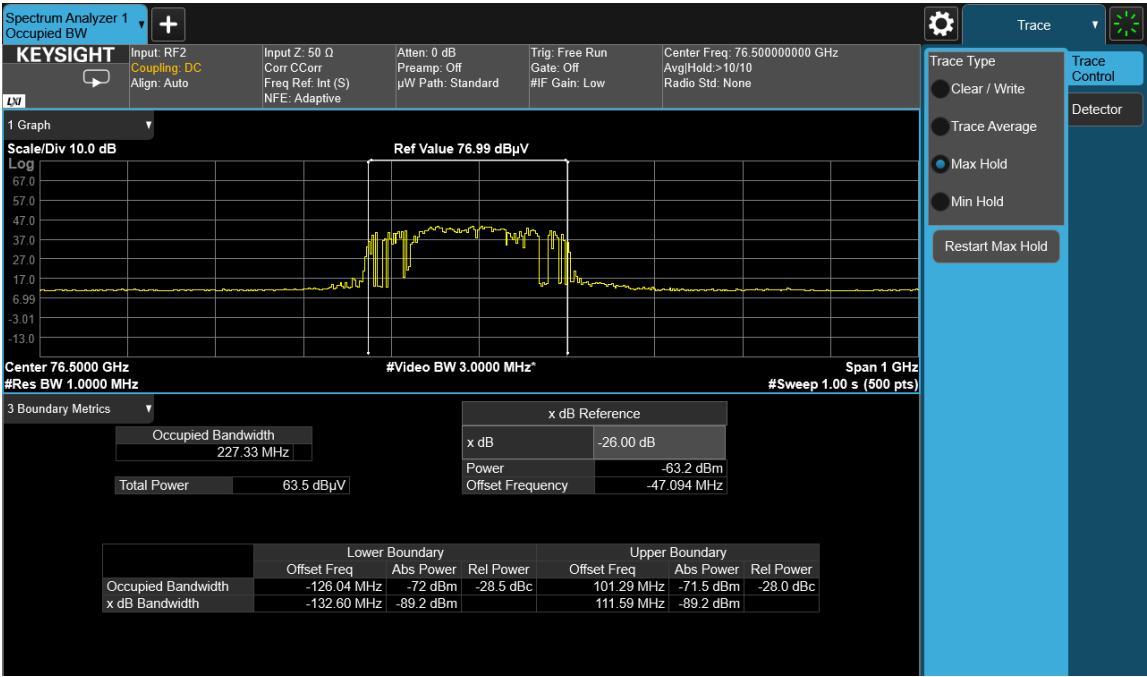
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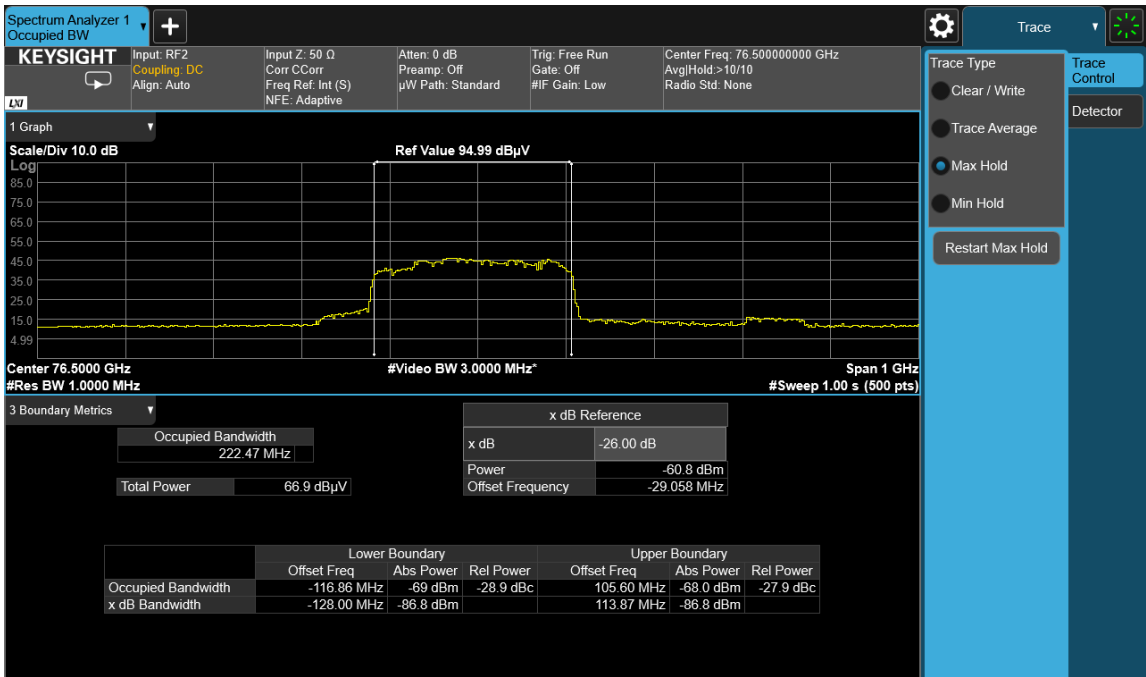
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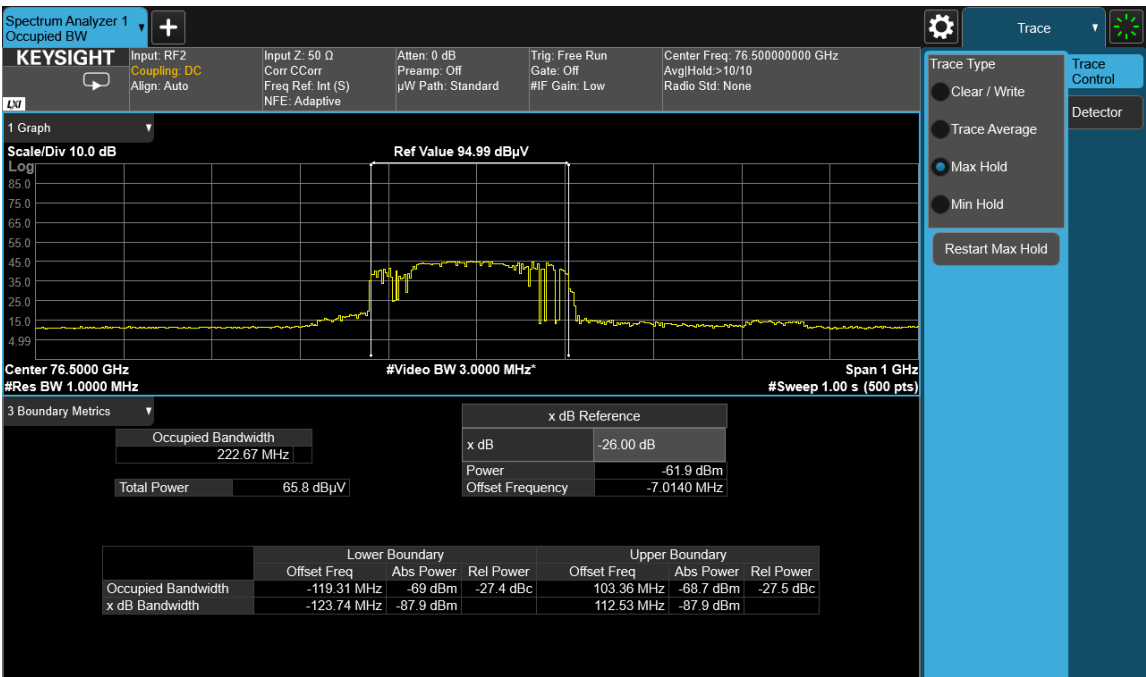
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Mode 3
18.4V
-20°C



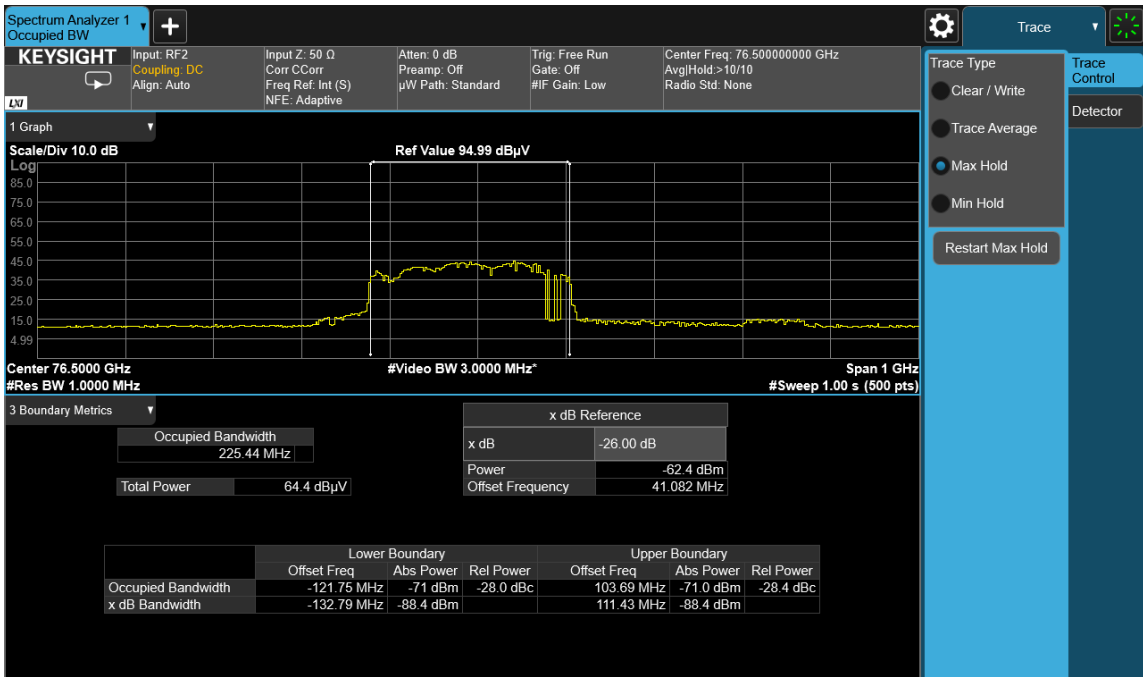
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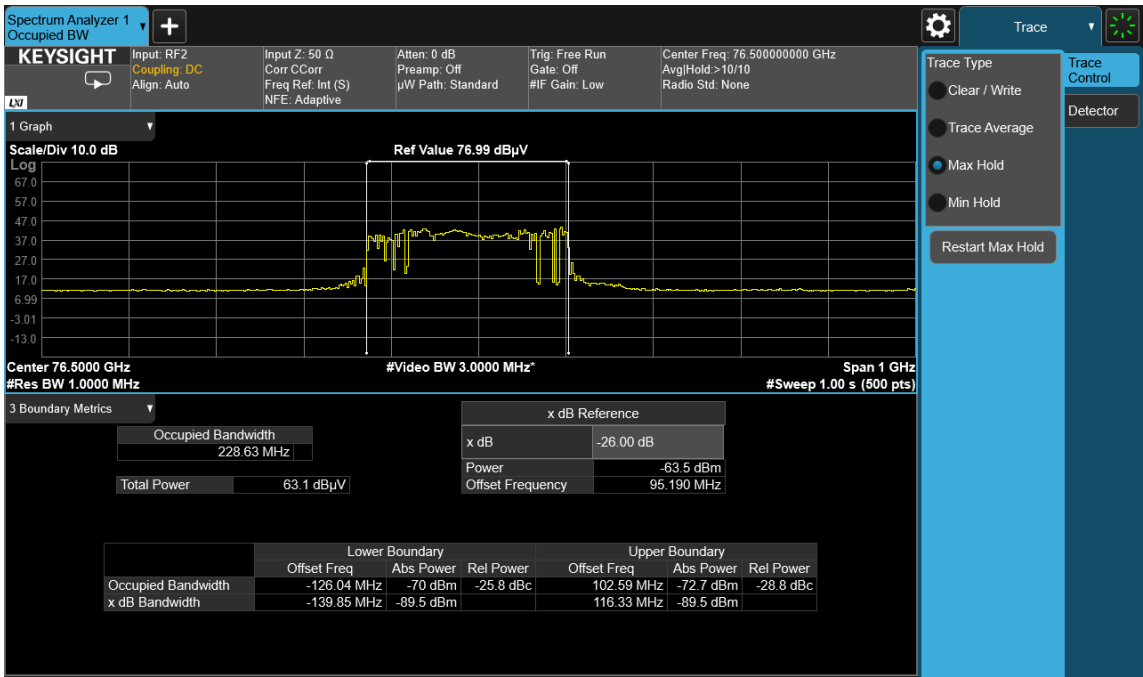
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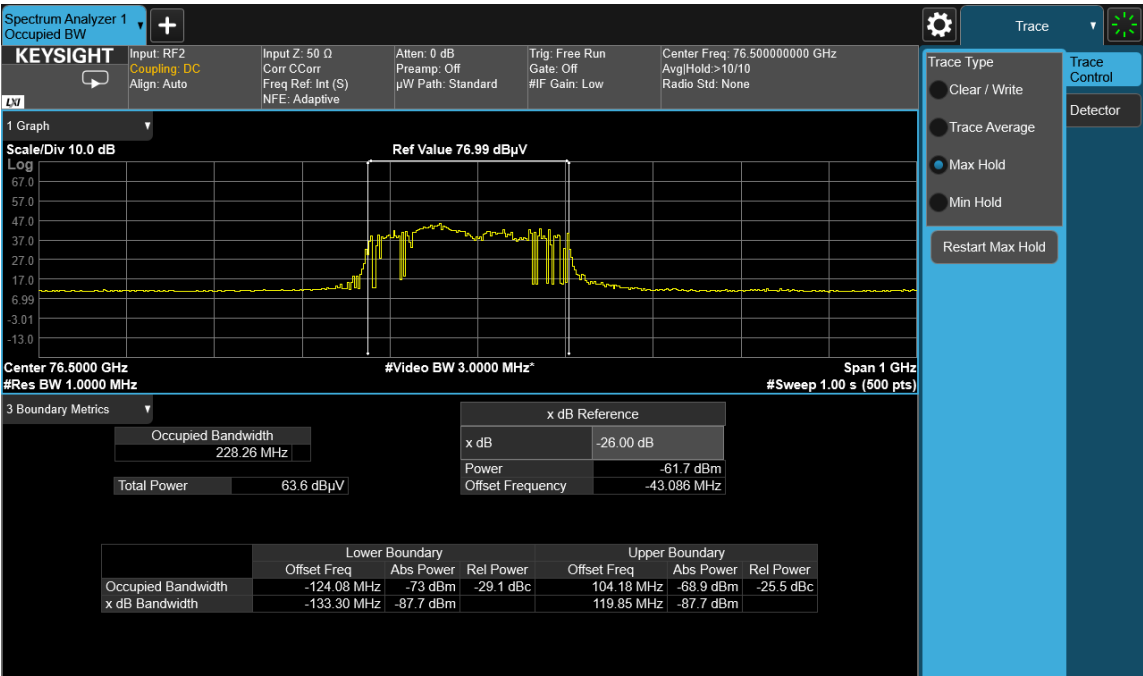
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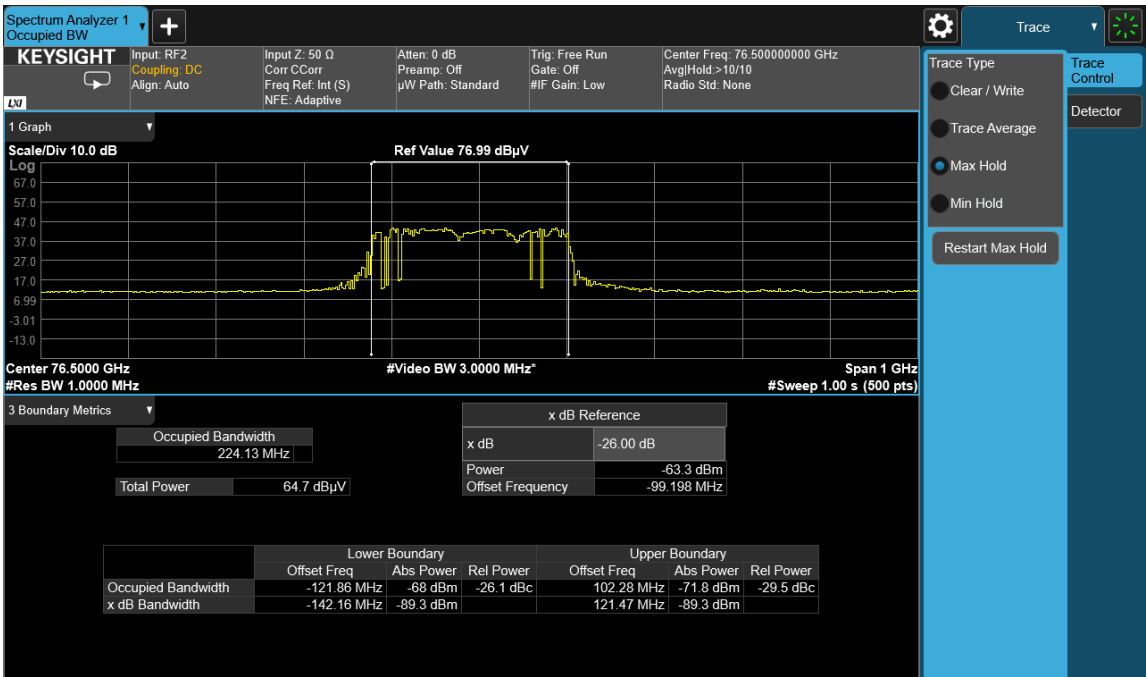
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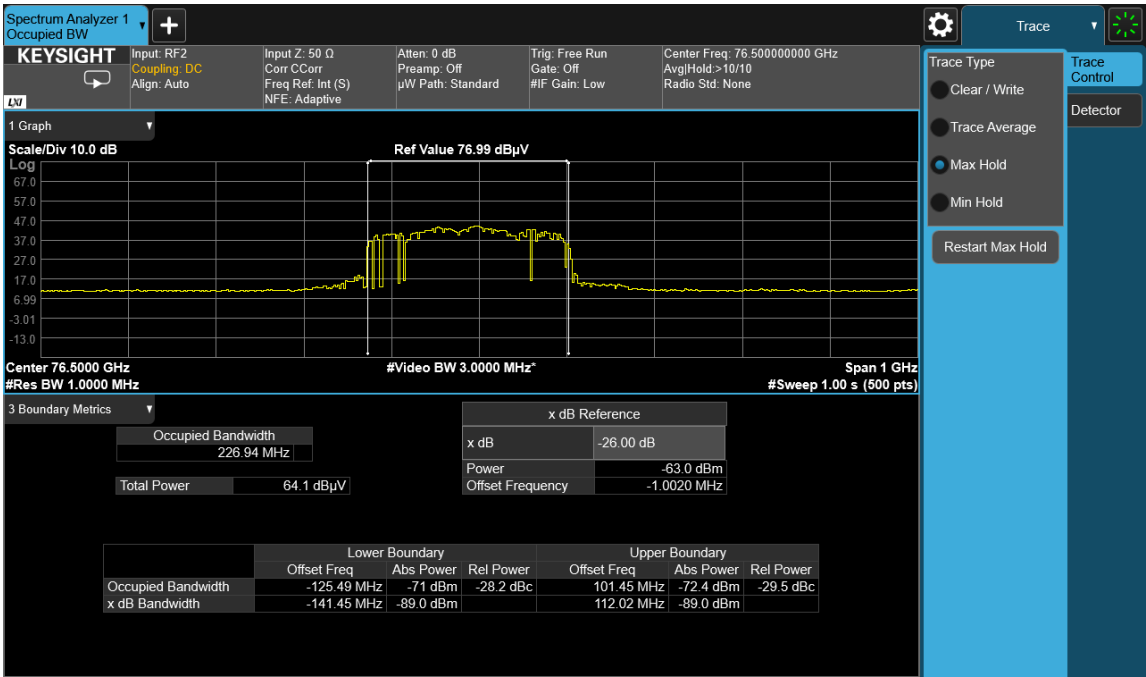
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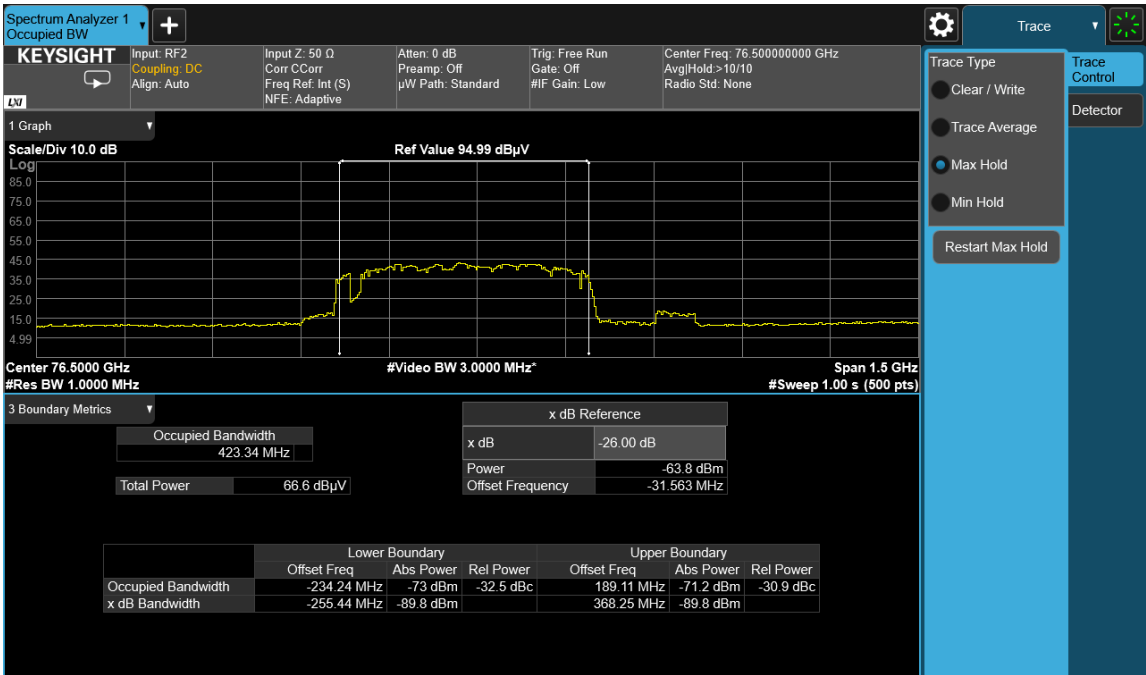
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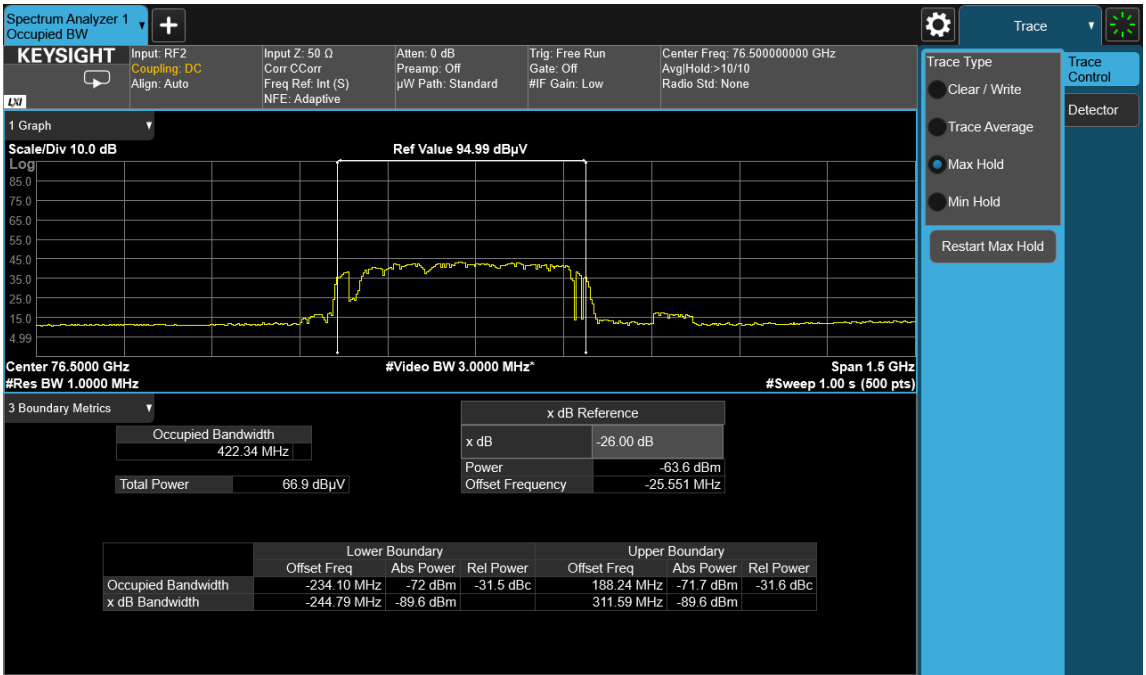
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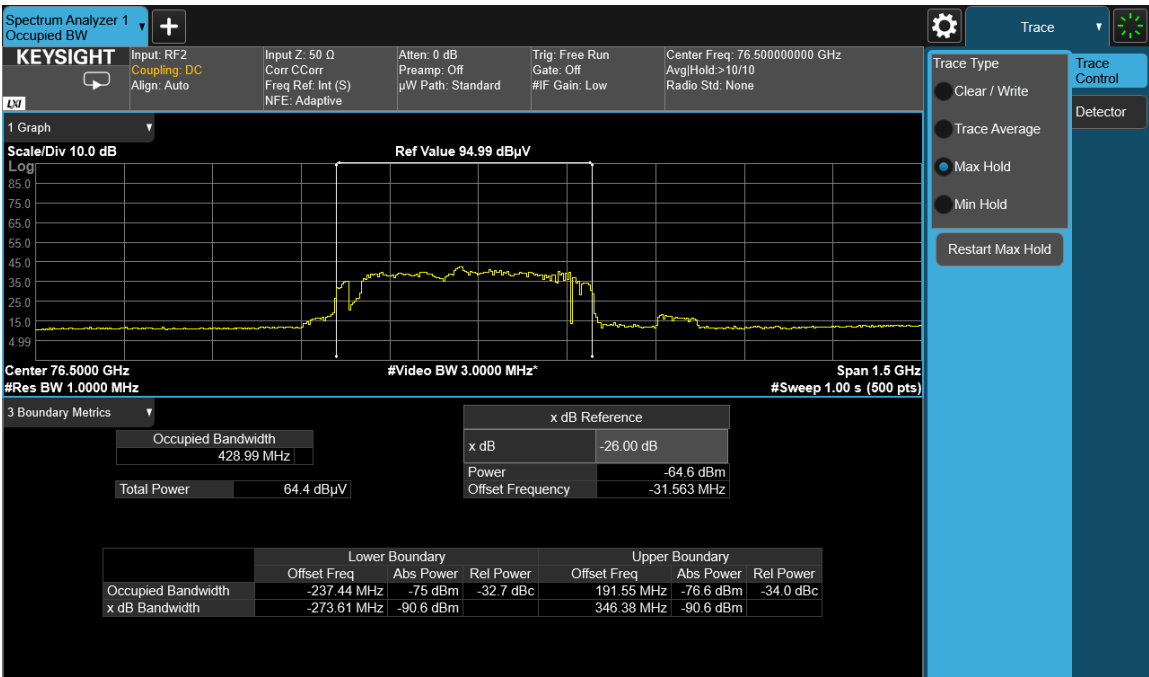
Mode4
13.6V
-20°C



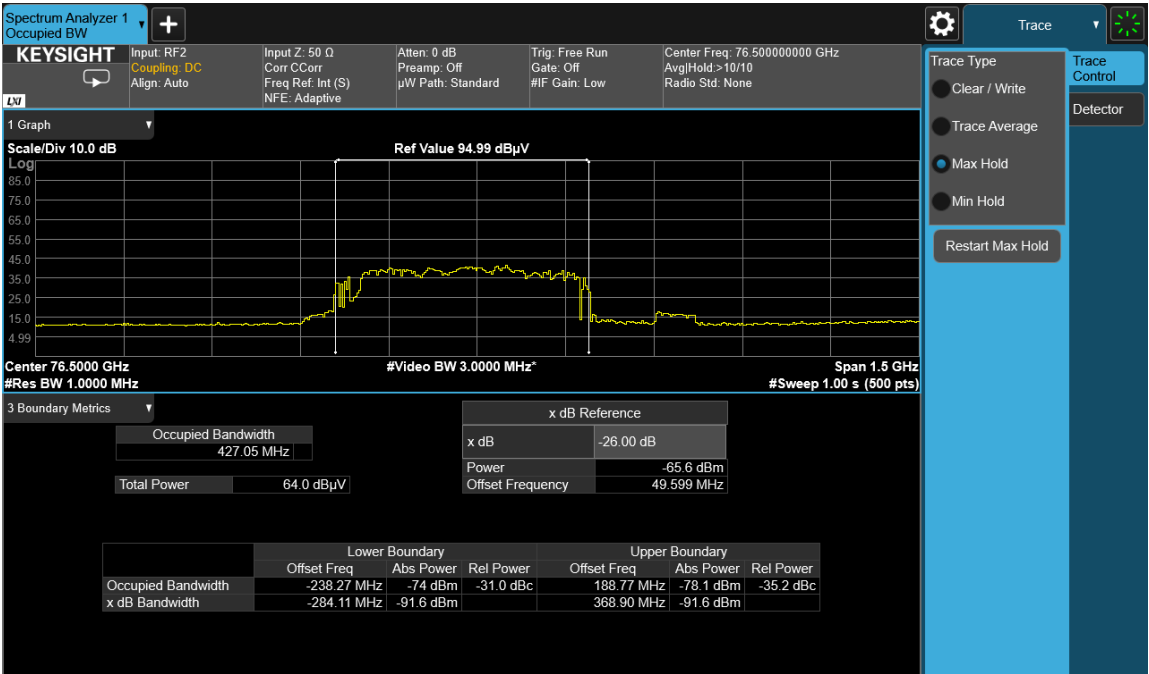
-10°C



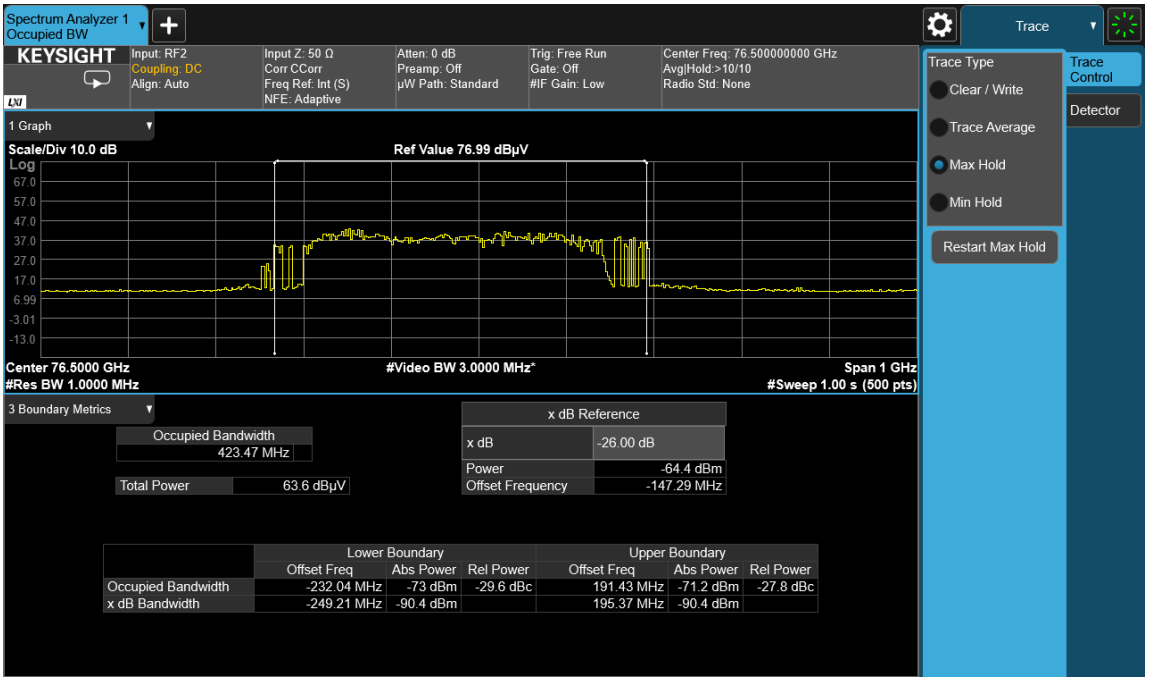
0°C



10°C



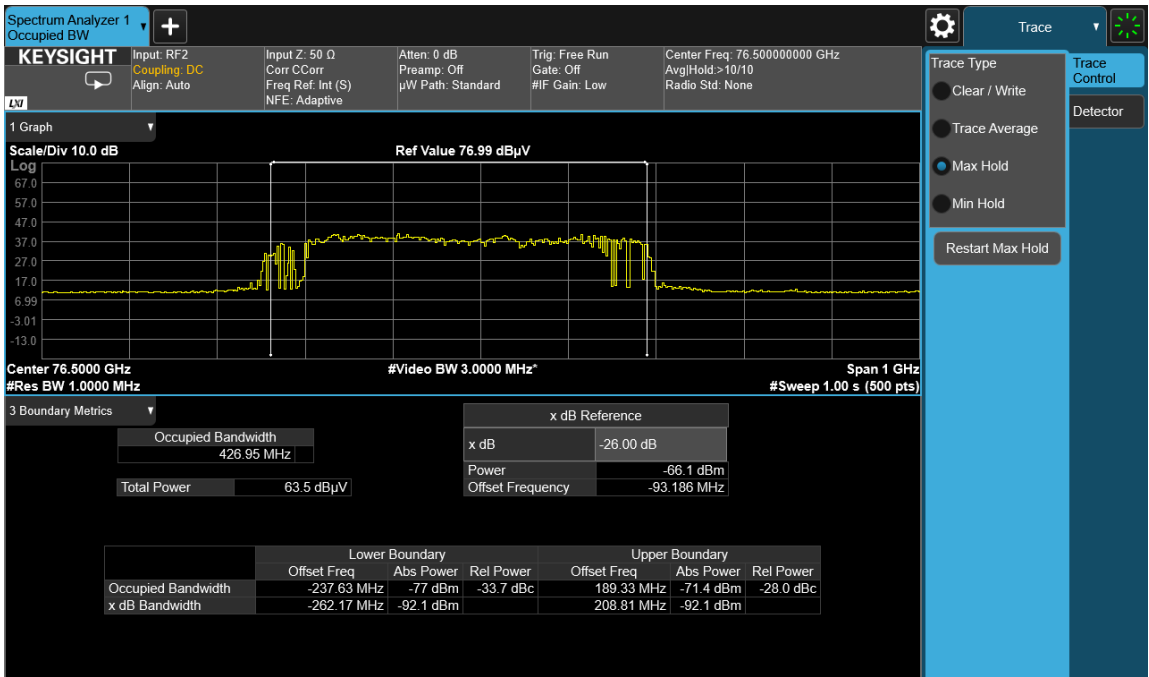
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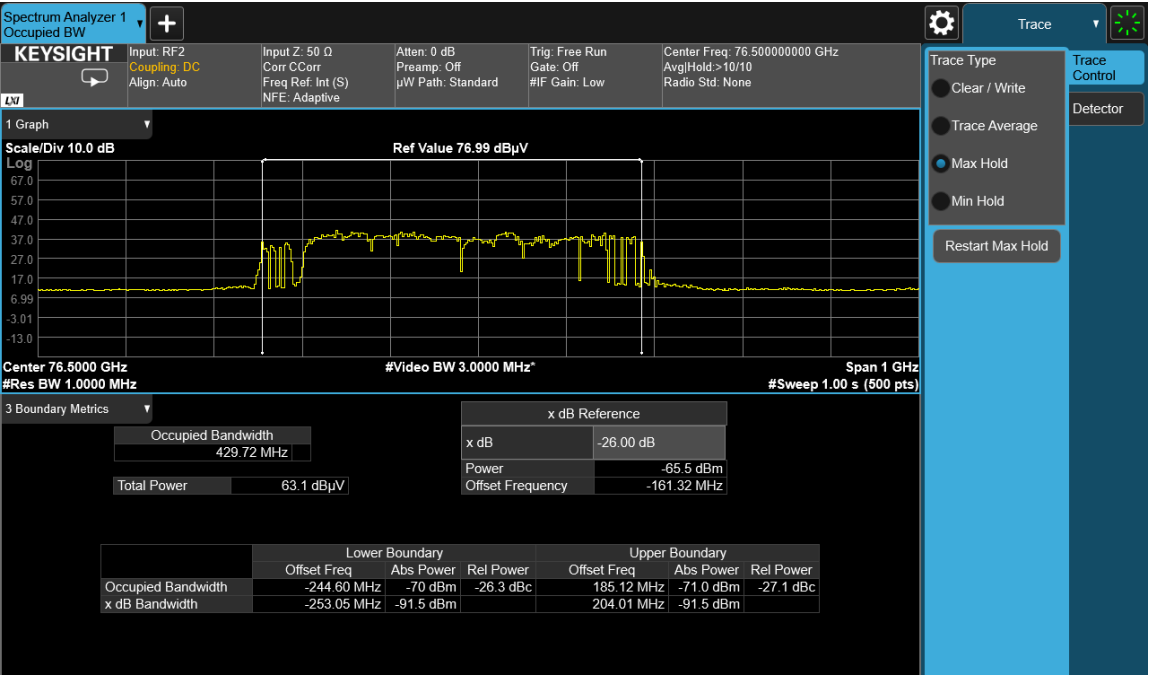
30°C



40°C



50°C



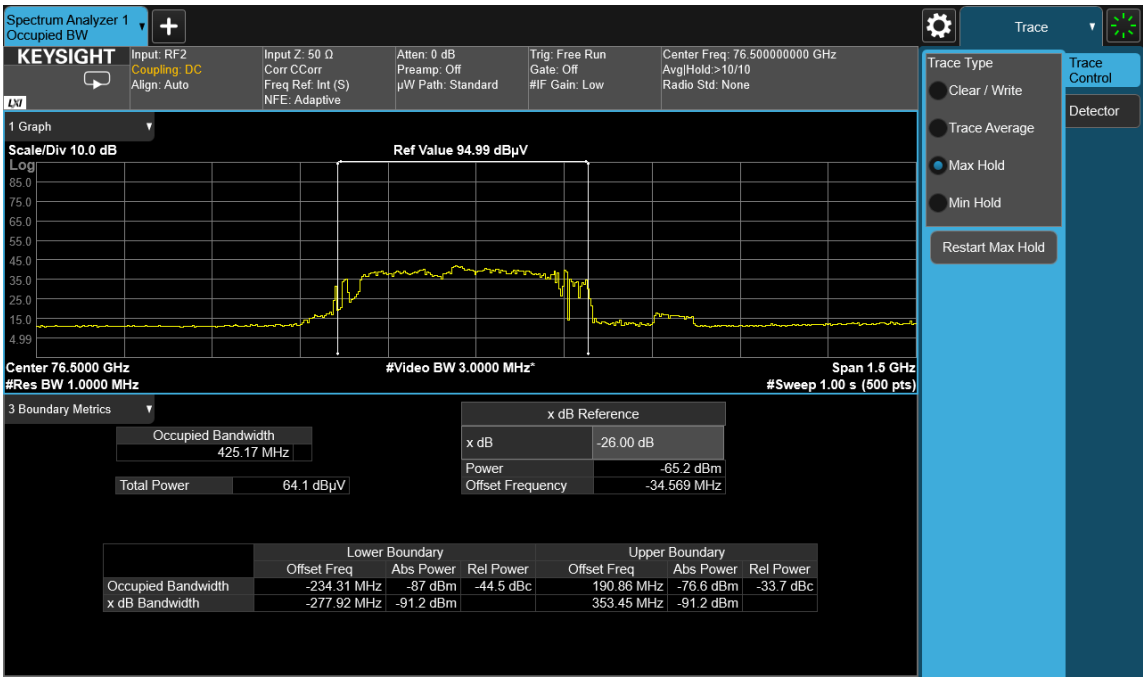
Mode4
16V
-20°C



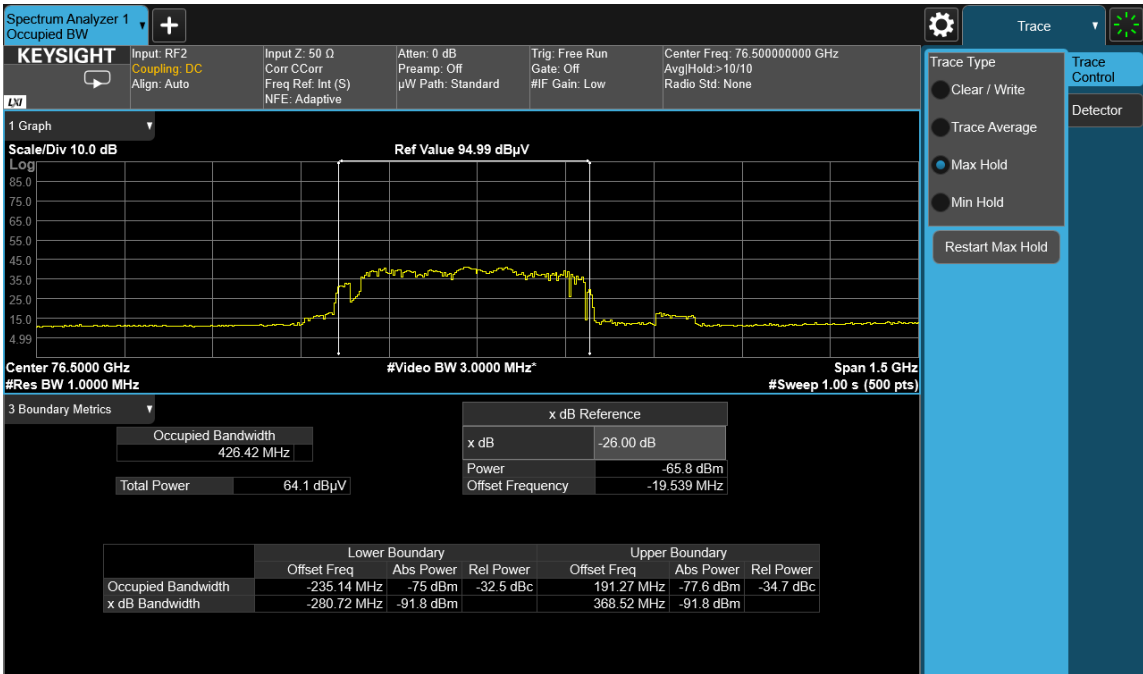
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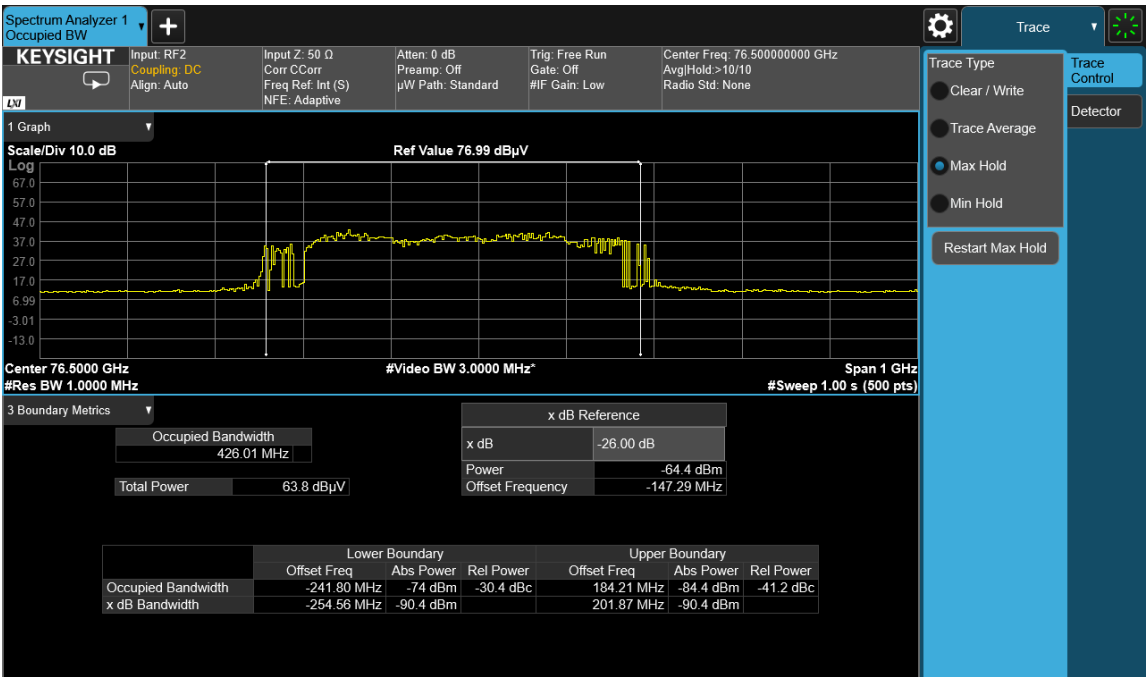
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10°C



20°C



30°C



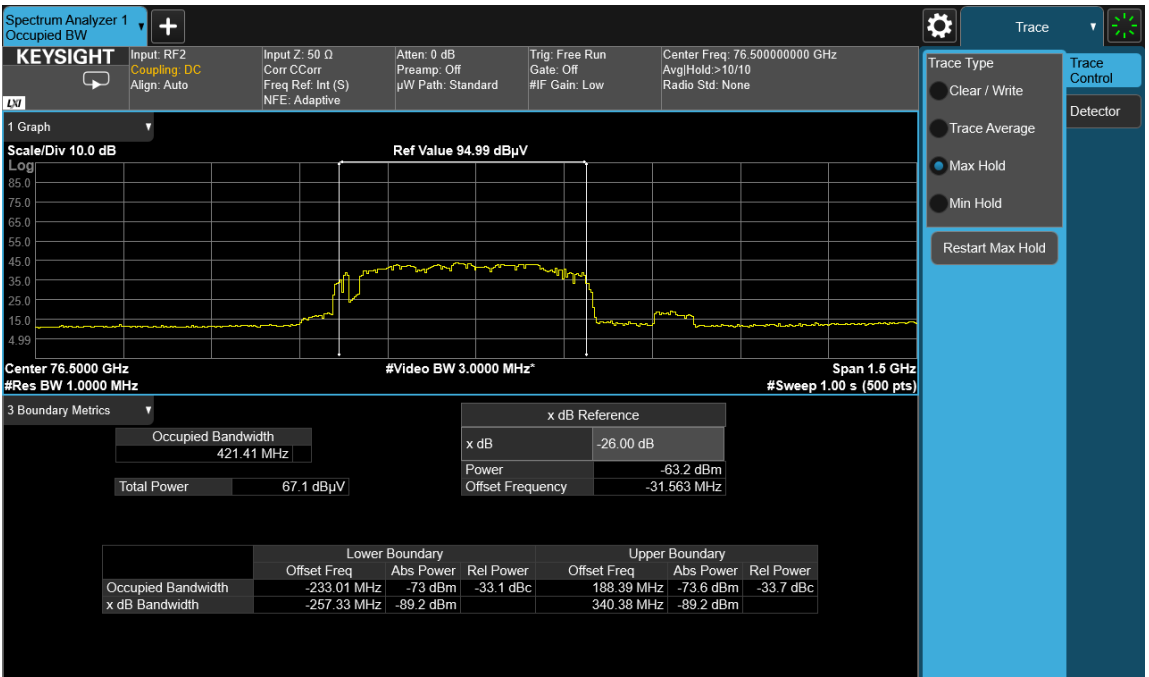
40°C



50°C



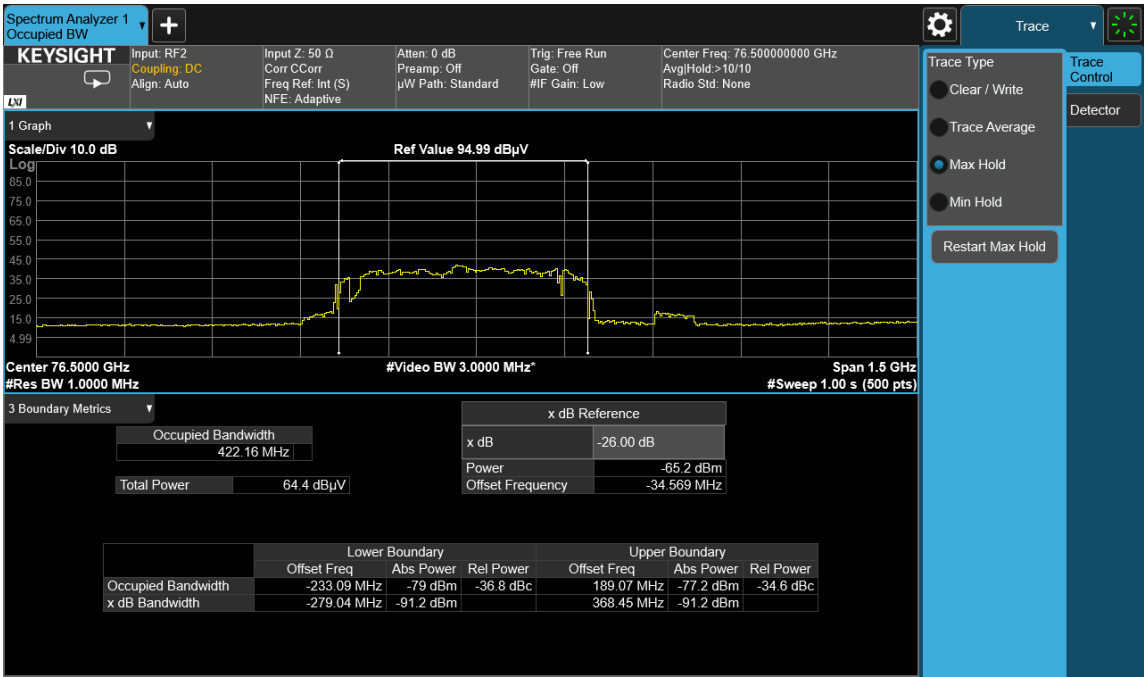
Mode4
18.4V
-20°C



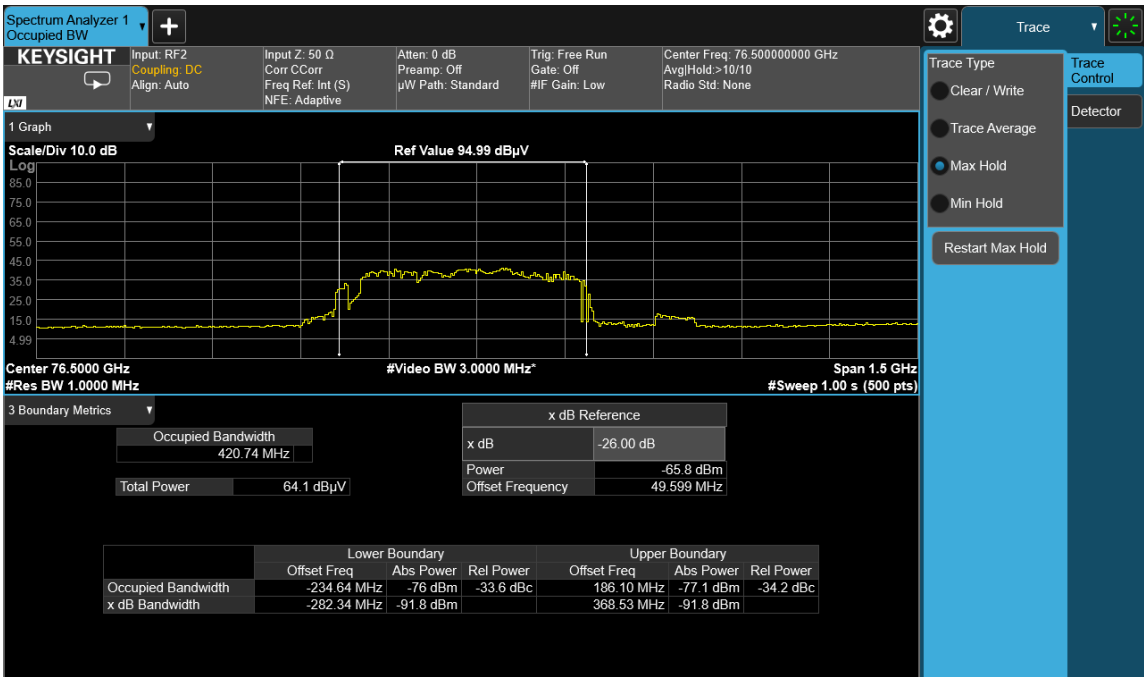
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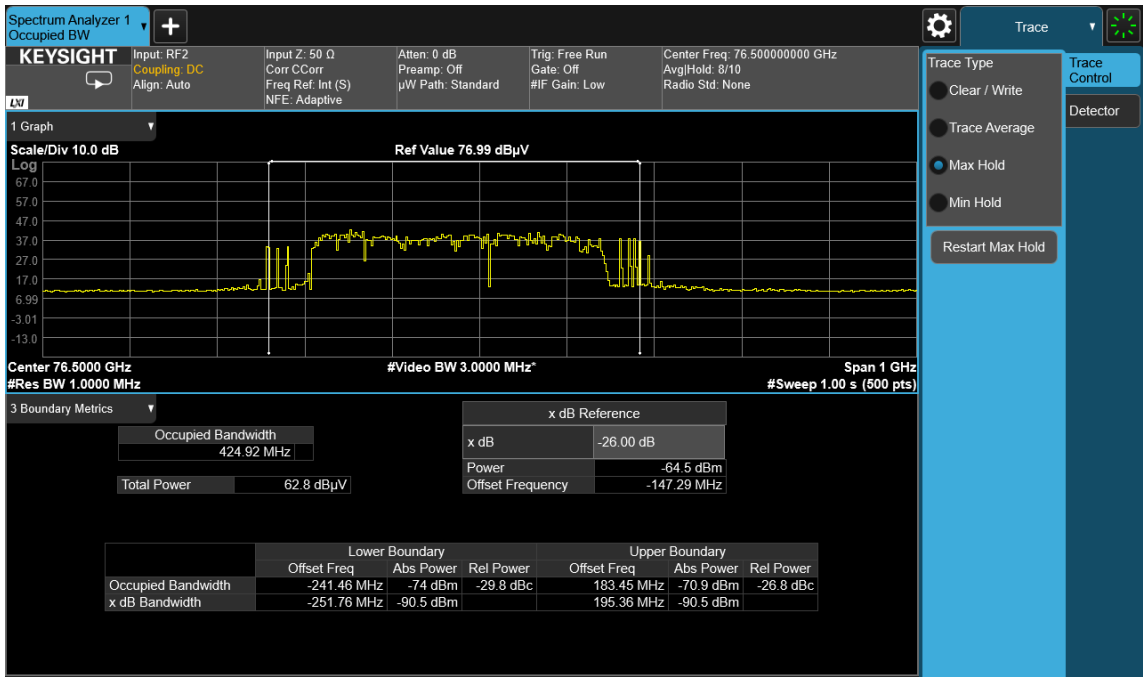
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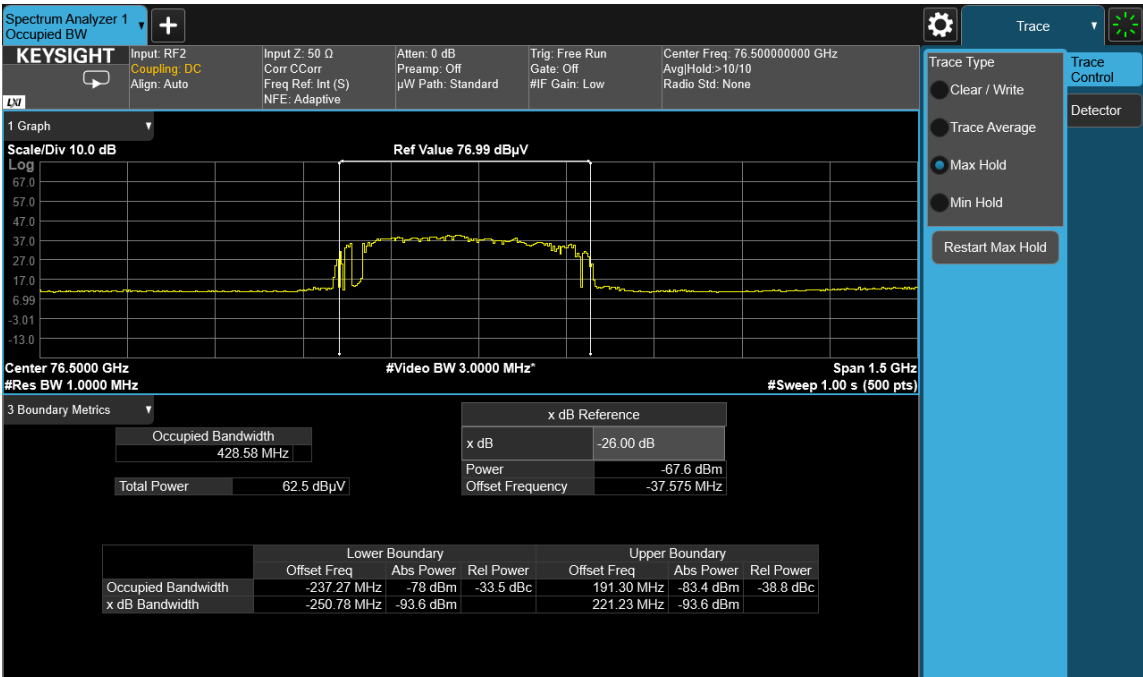
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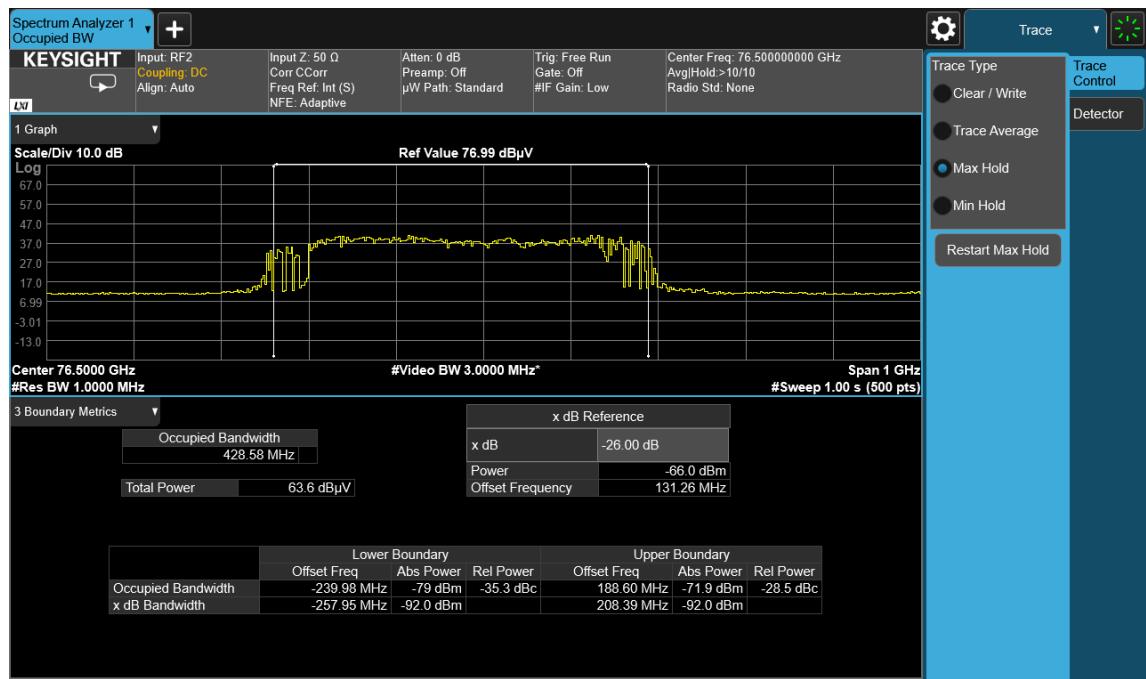
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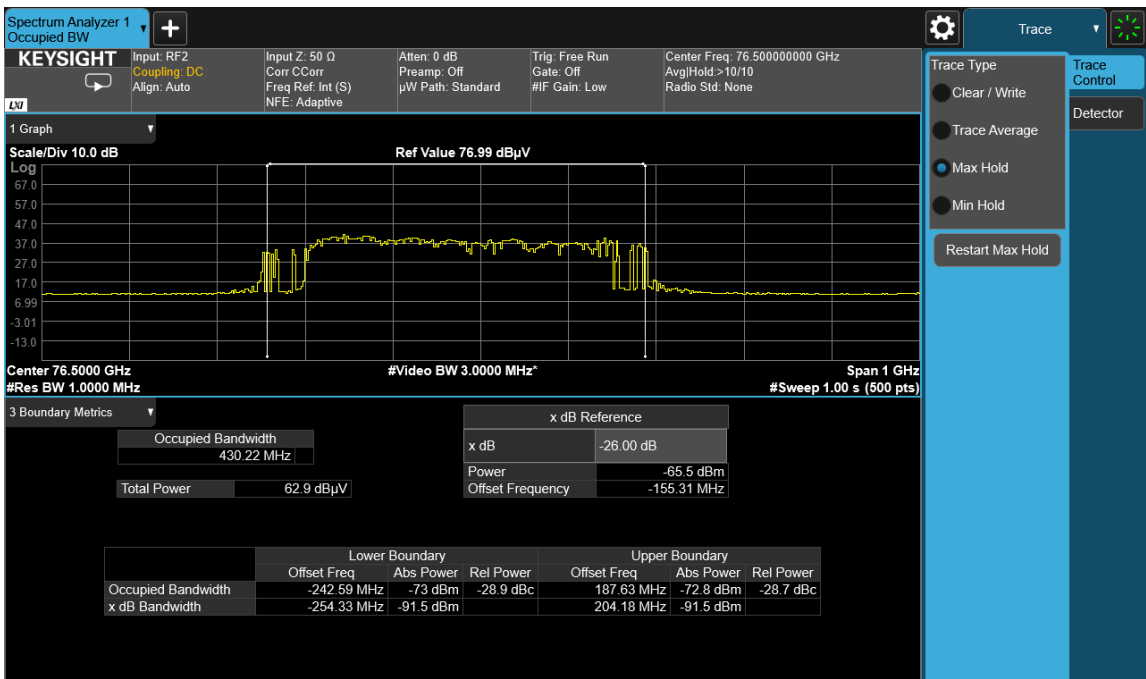
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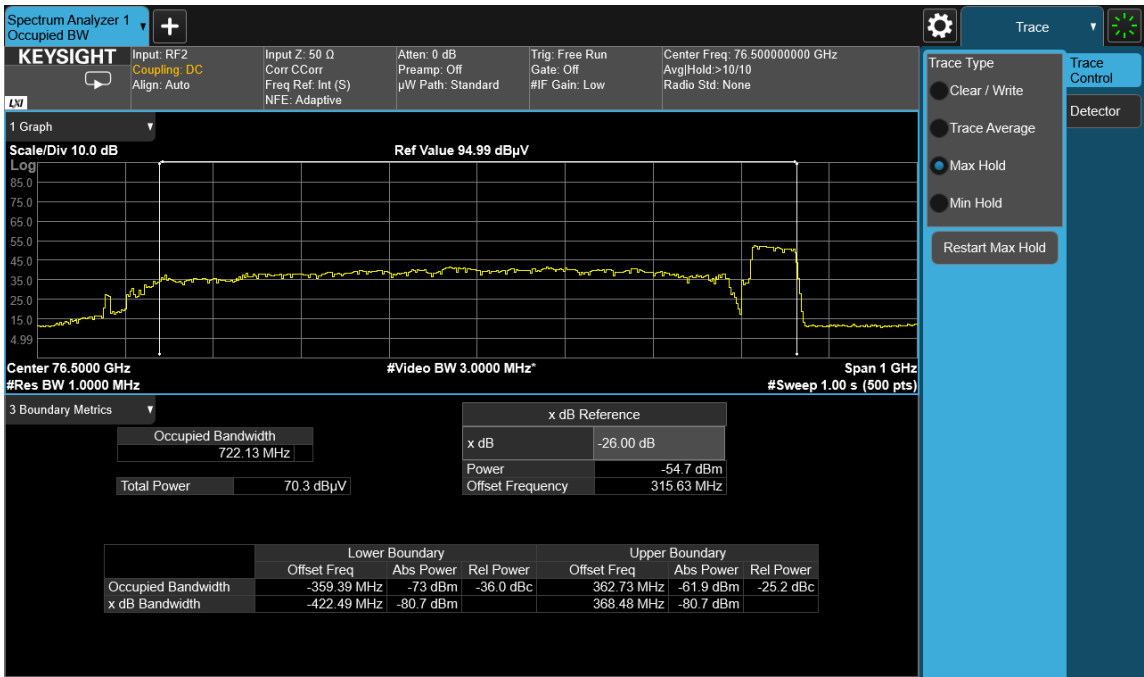
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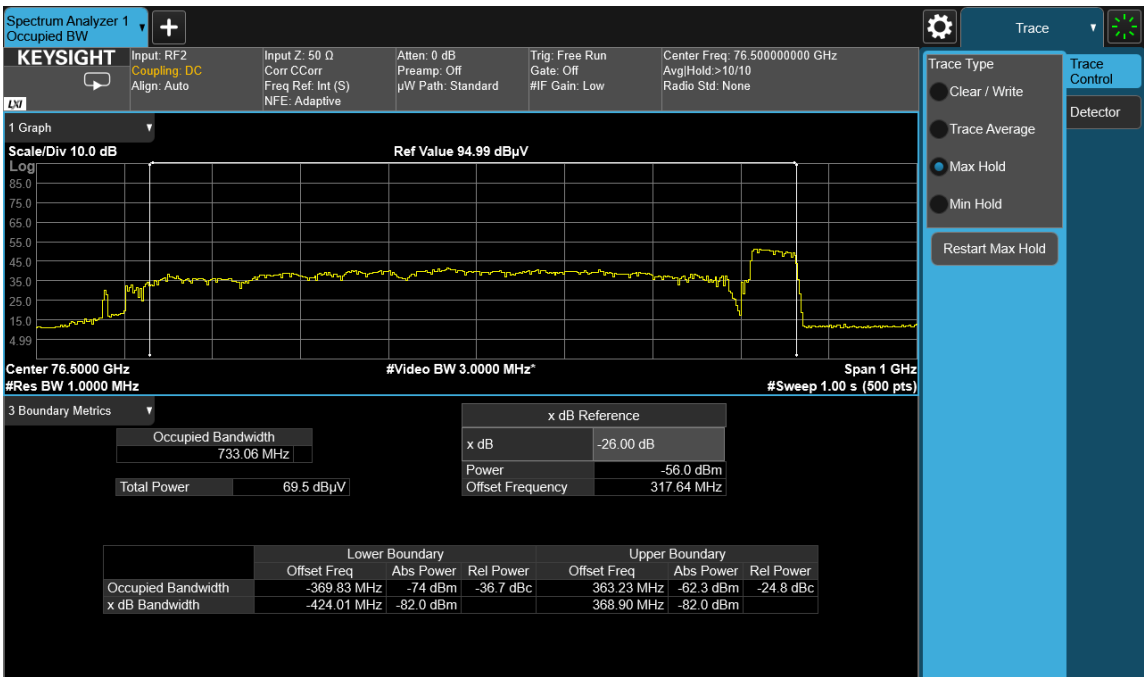
50°C



Mode 5
13.6V
-20°C



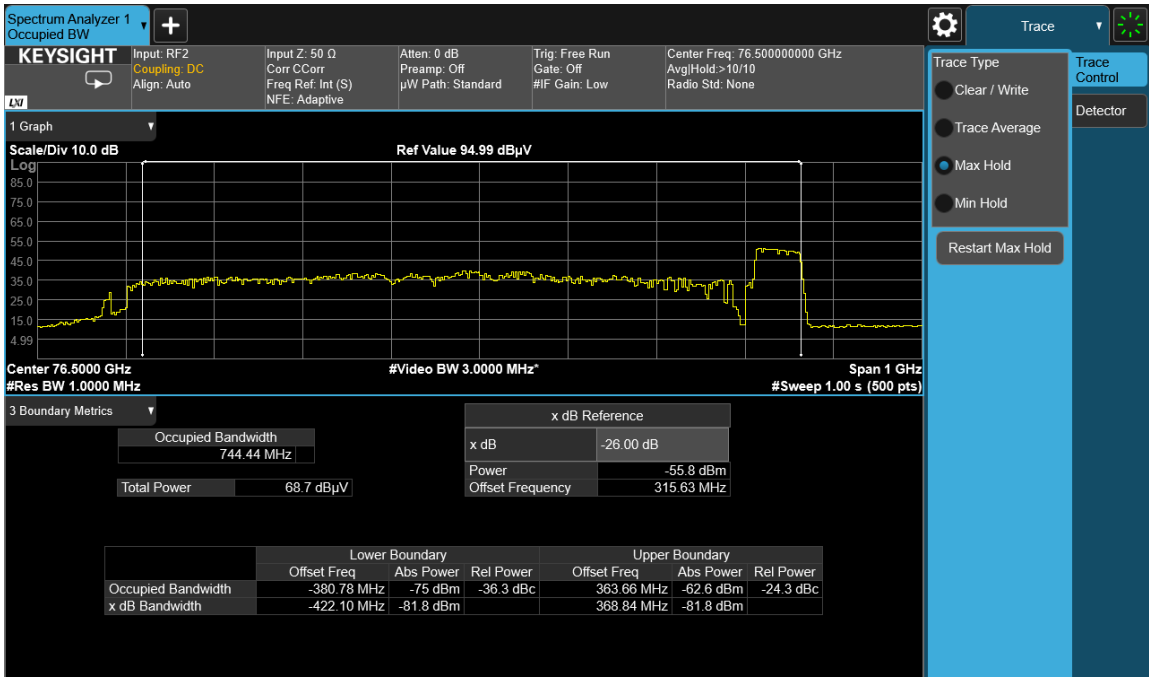
-10°C



0°C



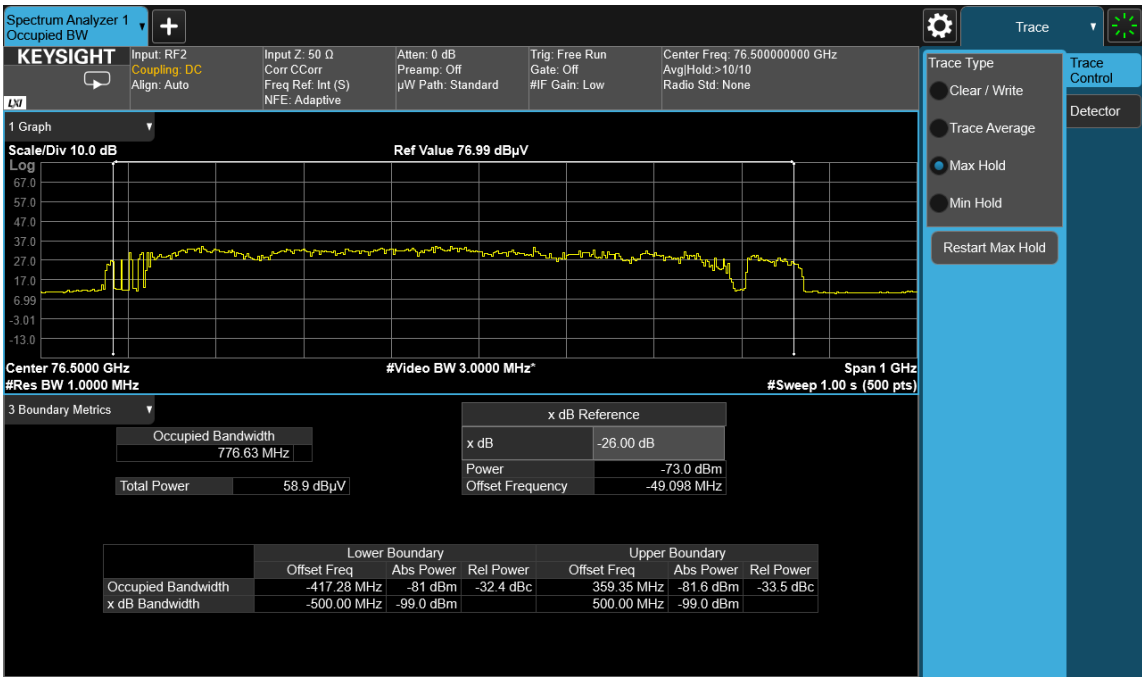
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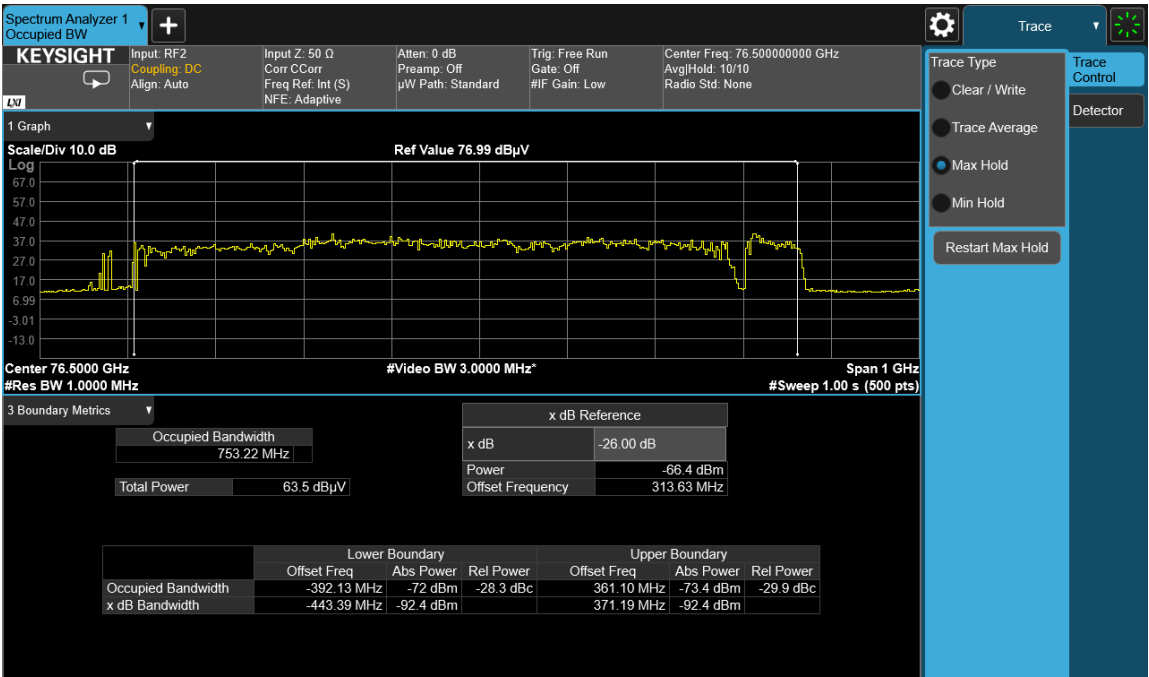
20°C



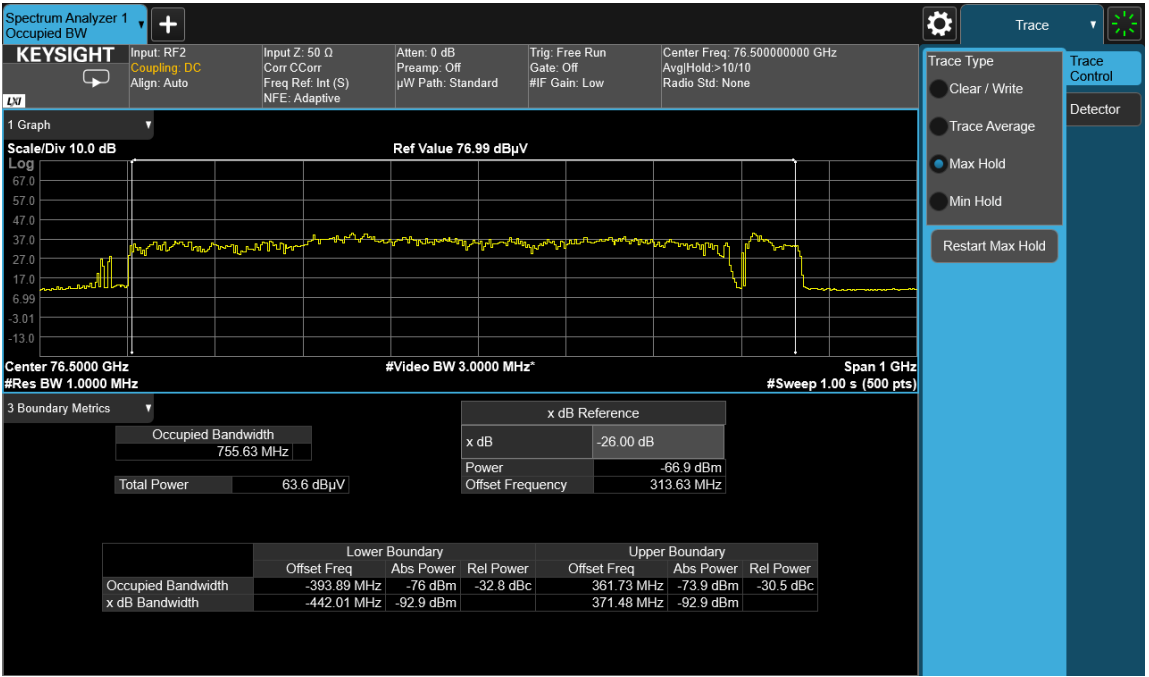
30°C



40°C



50°C



Mode5
16V
-20°C



-10°C



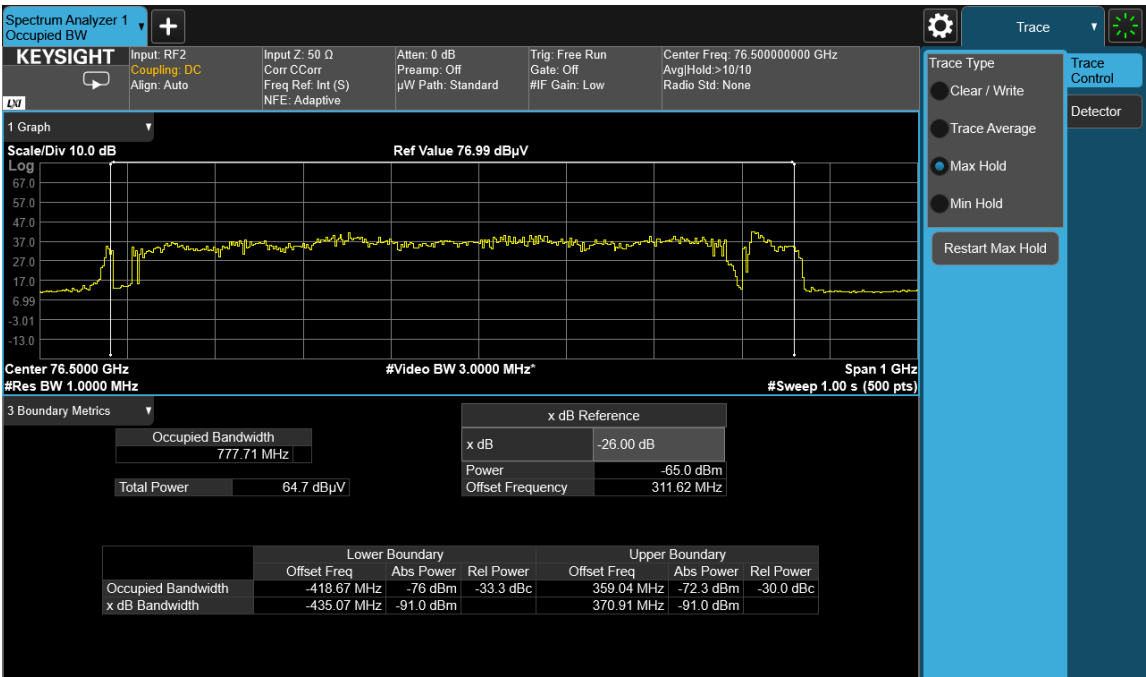
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10°C



20°C



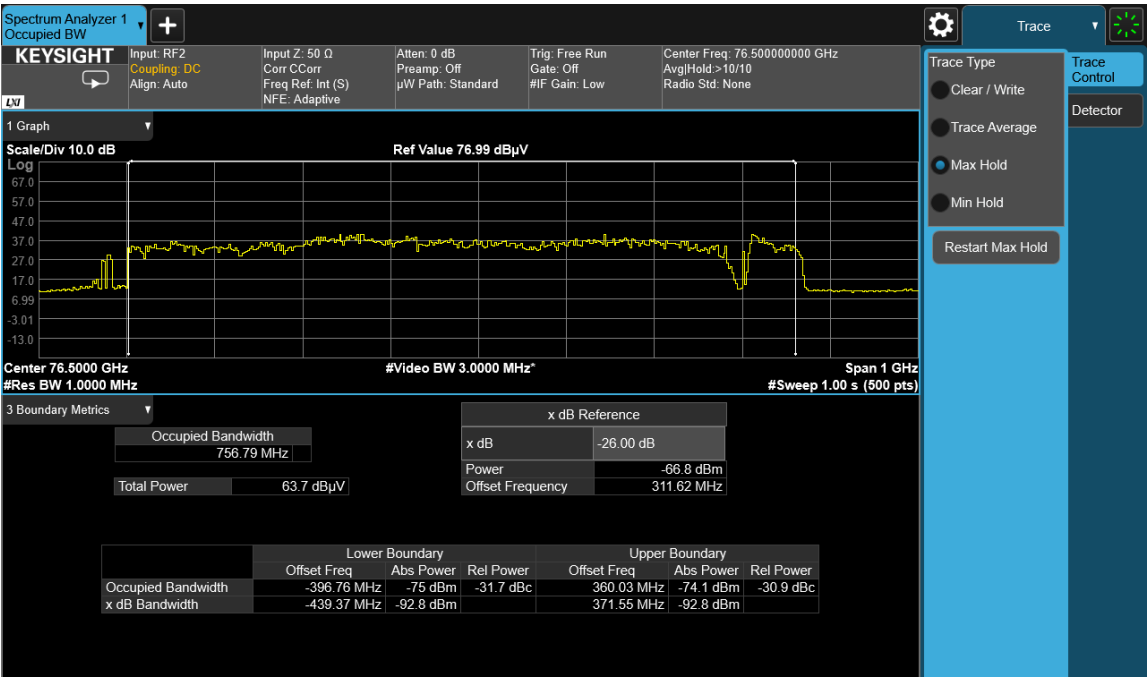
30°C



40°C



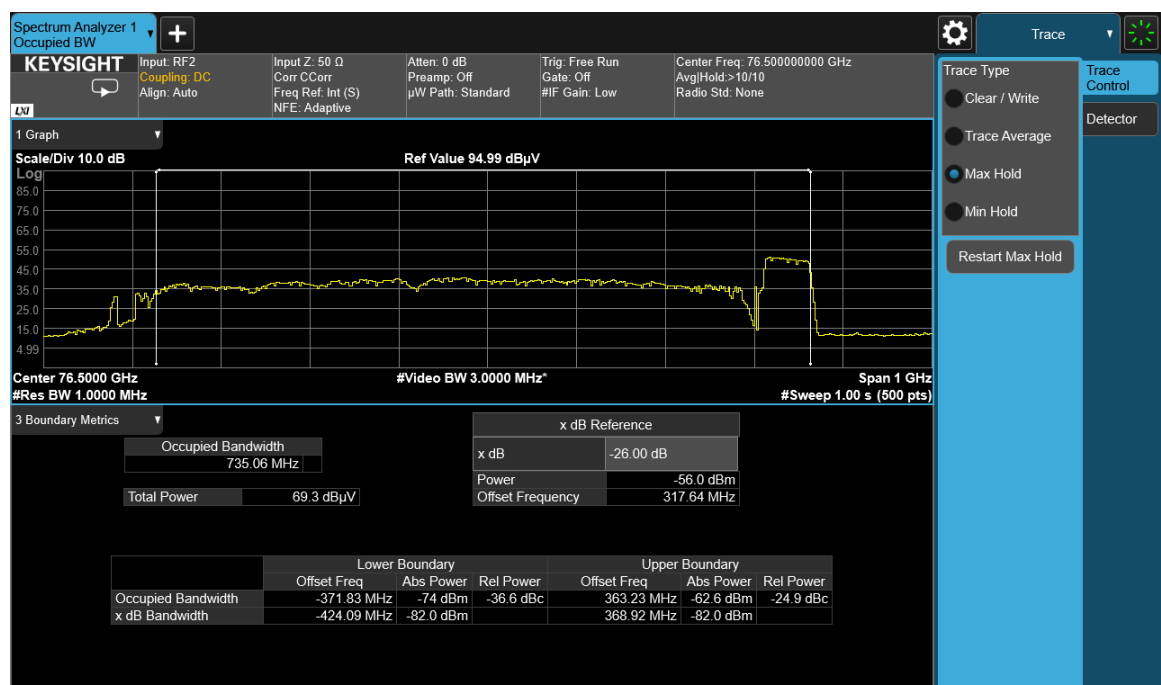
50°C



Mode5
18.4V
-20°C



-10°C



0°C



10°C



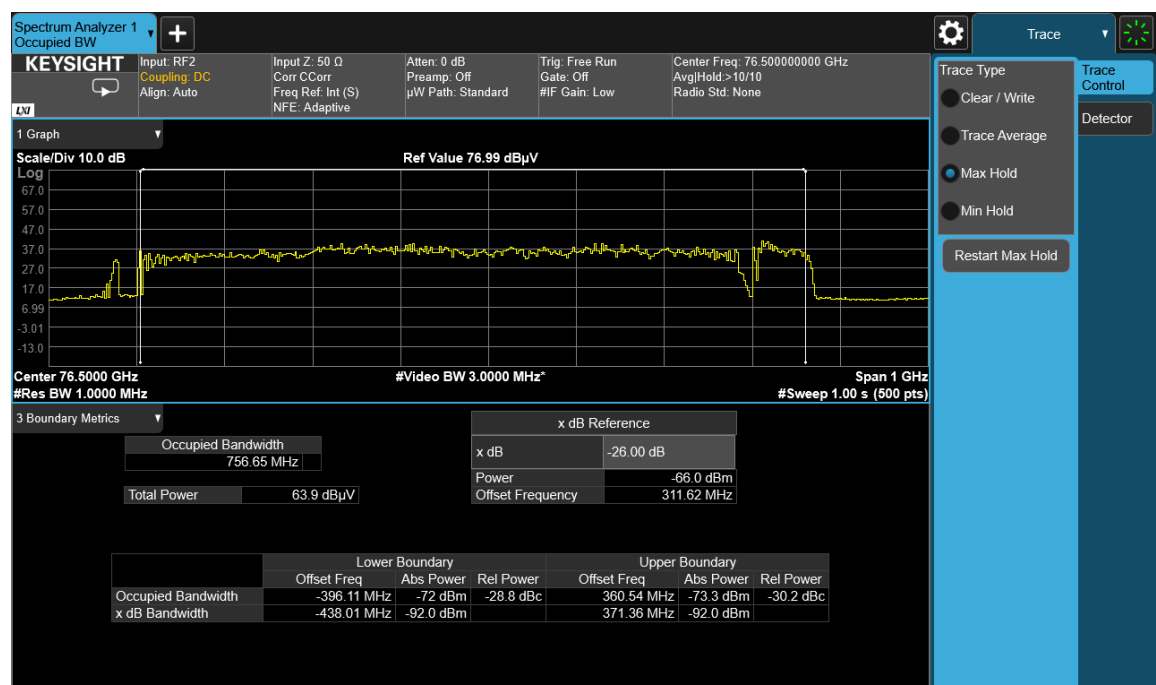
20°C



30°C



40°C



50°C



9 Annex A (Normative) - Test Setup Photographs

Please refer to the attachment

10 Annex B (Normative) - EUT External Photographs

Please refer to the attachment

11 Annex C (Normative) - EUT Internal Photographs

Please refer to the attachment

12 Annex D (Normative) - A2LA Electrical Testing Certificate**Accredited Laboratory**

A2LA has accredited

BAY AREA COMPLIANCE LABORATORIES CORP.

Sunnyvale, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This laboratory also meets A2LA R222 - Specific Requirements EPA ENERGY STAR Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

Presented this 10th day of March 2021.

A blue ink signature of Trace McInturf.

Trace McInturf, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3297.02
Valid to September 30, 2022

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

Please follow the web link below for a full ISO 17025 scope

<https://www.a2la.org/scopepdf/3297-02.pdf>

--- END OF REPORT ---