

DIVERSIFIED

T.E.S.T.

TECHNOLOGIES, INC.

4675 Burr Drive • Liverpool, NY 13088 • 1-800-724-6452 • FAX: 315-457-0428 • 315-457-0245

December 17, 2014

Mark Bullock

GOJO

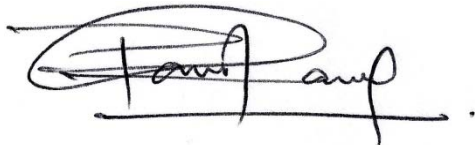
One GOJO Plaza, Suite 500
Akron, OH 44311

Enclosed is the test report for the GOJO Industries Manual POC Dispenser unit which was tested at our facility located at 4675 Burr Drive in Liverpool, NY. This facility is on file with the Federal Communications Commission (FCC) per 47 CFR 2.948. (Site File Registration Number: 306552)

As narrated in the report, the product configuration meets the requirements of the FCC per CFR 47 Part 15.249 Class C for Intentional Radiators

Thank you for selecting Diversified T.E.S.T. Technologies, Inc. for your testing needs. We look forward to working with you on future projects. Should you have any questions or concerns regarding this report, contact me at 315-457-0245. Please feel free to visit our website at www.dttlabs.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Prasanna Gautam", with a horizontal line extending from the end of the signature.

Prasanna Gautam
Technical Associate

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DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT

GOJO Industries

Manual POC Dispenser unit

Project Number:
6518

Test Information

Laboratory

DTT lab.

4675 Burr Drive

Liverpool, NY 13088

Manufacturer

GOJO Industries

One GOJO Plaza, Suite 500

Akron, OH 443110

Report Issue Date: December 17, 2014

Report Number: 6518-121514-FCC-B 15.249 (Edition 1)

Project Number: 6518

Date Received: December 2, 2014

Date Tested: December 11, 2014 - December 15, 2014

Product: Manual PRO

Part Number: 5860-510-910

FCC ID: 076-T5SG0910A

Traceability: Reference standards of measurement have been calibrated by a competent body using standards traceable to NIST.

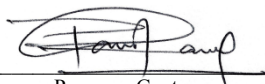
The testing performed by DTT lab, has shown that the product referenced above complies with the electromagnetic compatibility requirements according to the FCC per 47 CFR Part 15.249. The results in this test report apply only to the GOJO Manual POC Dispenser unit.

It is the responsibility of the manufacturer to ensure that the product identification and labeling are in compliance with the applicable standards requirements. The manufacturer is also responsible for ensuring that additional units are manufactured with identical mechanical and electrical characteristics.

The equipment listed above conforms to the specified requirements of the test standards listed in the Test Regulations section of this report.

Compiled by:

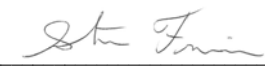
Signature:


Prasanna Gautam
Technical Associate

Date: December 17, 2014

Reviewed by:

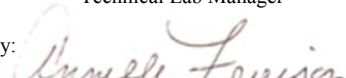
Signature:


Steve Frierson
Technical Lab Manager

Date: December 17, 2014

Authorized by:

Signature:


Annelle Frierson
Vice-President

Date: December 17, 2014

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<i>DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT</i>	
GOJO Industries Manual POC Dispenser unit	Project Number: 6518

Test Regulations

The tests were performed according to the following standards:

<input checked="" type="checkbox"/> FCC Part 15.249	<input type="checkbox"/> Class A	<input type="checkbox"/> Class B	<input checked="" type="checkbox"/> Class C
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☒ **Certification**

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GOJO Industries Manual POC Dispenser unit	Project Number: 6518

Emissions Test Conditions: FCC PART 15.249 CLASS C

The Fundamental and Harmonics measurements were tested in a horizontal and vertical polarization at the following test location:

- ☒ Diversified TEST Technologies, Inc. Open Area Test Site
☐ Diversified TEST Technologies, Inc. Lab

At a test distance of:

- ☒ 1 meter
☒ 3 meters
☐ 30 meters

Test equipment used:

Manufacturer	Model	Description	Serial #	Due Date
Hewlett Packard	8596E	Spectrum Analyzer	3235A00144	5/16/15
Hewlett Packard	7550A	Plotter	2407A00476	N/A
Electro-Metrics	BIA-25	Biconical Antenna, 20-220 MHz	001	10-29-15
Electro-Metrics	LPA-25	Log Periodic Antenna 200-1000 MHz	1242	7/8/15
Electro-Metric	RGA-60	Horn Antenna	2981	12/9/15
		Co-ax Cable, 100-foot RG 8/U, 20-foot RG 223/U		
		10-meter open field test range, grounded with 1/4" x 1/4" hardware cloth		
		AC supply cord, 100-foot, grounded		
		100-foot signal cable for remote testing,		
		Wooden turn table, 0.8 meters high		

NOTE: Calibration interval 1 year for the test equipment

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GOJO Industries Manual POC Dispenser unit	Project Number: 6518

Equipment under Test (EUT) Testing Operation Mode

The EUT was operated under the following conditions during testing:

- ☐ Standby
- ☒ Normal Operating Mode
- ☐ Practice Operation

Description / Configuration of the EUT:

Manual POC Dispenser unit

The EUT was powered with three 1.5 V Batteries during the collection of data included within this report.

Rationale for EUT setup / configuration:

ANSI C63.4-2009

Modifications:

None

Deviations from test method:

None

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GOJO Industries Manual POC Dispenser unit	Project Number: 6518

Emissions Test Results:

FCC Part 15.249 Part C 910 MHz –9100 MHz

The requirements are ☒ **MET** ☐ **NOT MET**

General Remarks: Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be less than 500 kHz.

Measurements were taken up to the tenth harmonic.

The EUT was evaluated in 1 orthogonal orientation and the worst case data is reflected in the test report.

Radiated Measurements on the EUT were performed from 910 MHz up to the 10th Harmonic and any emission found were more than 20 dB below the limit have not been reported.

The transmitter module transmits an OOK modulated data packet following a 10 second delay after an event trigger coming from the TFX dispenser. The use of the TFX dispenser to dispense soap to a customer constitutes an event and once an event occurs a trigger pulse is sent from the TFX dispenser to a microcontroller in the transmitter module. The microcontroller in the module uses the 10 second delay period to watch for additional events during that period of time. After the 10 second period has expired the total number of events that occurred during that 10 second period are sent in the transmitted data packet along with the transmitter module serial (ID) number and other information like the battery level. A drawing of the transmit packet is shown on last page of this report.

The transmitter packet starts with a 50% duty cycle Preamble for 38.76mSec followed by an off Space of 3.04mSec. After the Space, the payload is sent twice for redundancy. Each payload time is 63.84mSec in length and consists of an equal numbers of 1's and 0's. Where each of the 1's has a 25% duty cycle and each of the 0's has a 75% duty cycle. Together the payload has a combined 50% duty cycle. The total packet length is therefore the addition of the 38.76msec Preamble followed by the 3.04mSec Space followed by the two redundant payloads of 63.86mSec each for total packet length of 169.48mSec. The total packet duty cycle consists of 83.22mSec “on” bits and 86.26mSec “off” bits for a total percentage of “on” bits of 0.491%.

Therefore the duty cycle correction in terms of dB is: $20\log(0.491) = -6\text{dB}$.

Summary:

The requirements according to the technical regulations are
☒ Met.
☐ Not met.

The device under test does
☒ fulfill the general approval requirements mentioned on page 3.
☐ not fulfill the general approval requirements mentioned on page 3.

Testing Start Date: December 11, 2014

Testing End Date: December 15, 2014

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Test Setup Photographs:

FCC PART 15.249 CLASS C – 910 MHZ

Photograph 1: FCC Part 15.249 Class C



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GOJO Industries
Manual POC Dispenser unit

Project Number:
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Test Datasheets – 910 MHz- 9100 MHz

FCC Part 15.249 Transmitter Test												
Measured Field Strength (dBµV)	Res. Bandwidth (Khz)	DUT Frequency (Mhz)	Measured Frequency (Mhz)	Azimuth degrees	Cable Factor (dB)	Antenna Gain (dB)	Measurement Distance (Meters)	Duty Cycle Correction (dB)	FCC Limit (uV/M) at 3M	Corrected Field Strength to 3M in uV/M Peak	Delta Limit (dB)	Polarity
Peak	120	910	910	0	17.2	23	3	-6	50000	8,336.81	-15.56	H
40.52	1000	910	1820	180	2.1	17.3	1	-6	500	165.53	-9.60	H
39.53	1000	910	2730	180	2.2	20.2	1	-6	500	208.63	-7.59	H
31.73	1000	910	3640	135	2.4	19.02	1	-6	500	75.92	-16.37	H
31.16	1000	910	4550	90	2.5	34.74	1	-6	500	439.42	-1.12	H
28.11	1000	910	5460	0	2.7	34.83	1	-6	500	319.80	-3.88	H
27.35	1000	910	6370	0	2.8	34.21	1	-6	500	275.98	-5.16	H
34.60	1000	910	7280	0	2.8	36.56	1	-6	500	833.45	4.44	H
36.19	1000	910	8190	0	3.0	37.53	1	-6	500	1,145.19	7.20	H
34.86	1000	910	9100	0	3.1	38.51	1	-6	500	1,112.70	6.95	H
*Antenna factors are pre-calculated into Measured Field Strength (dBµV)												
Unit Under Test:		Gojo	Manual	POC	Measured Field Strength (dBµV)		12/17/2014	Full Bottle				

The measurement of the field strength over the frequency of 7280 MHz to 9100 MHz is under the noise floor. Hence the number in the spreadsheet reflects the noise floor and not the actual signal of the unit.

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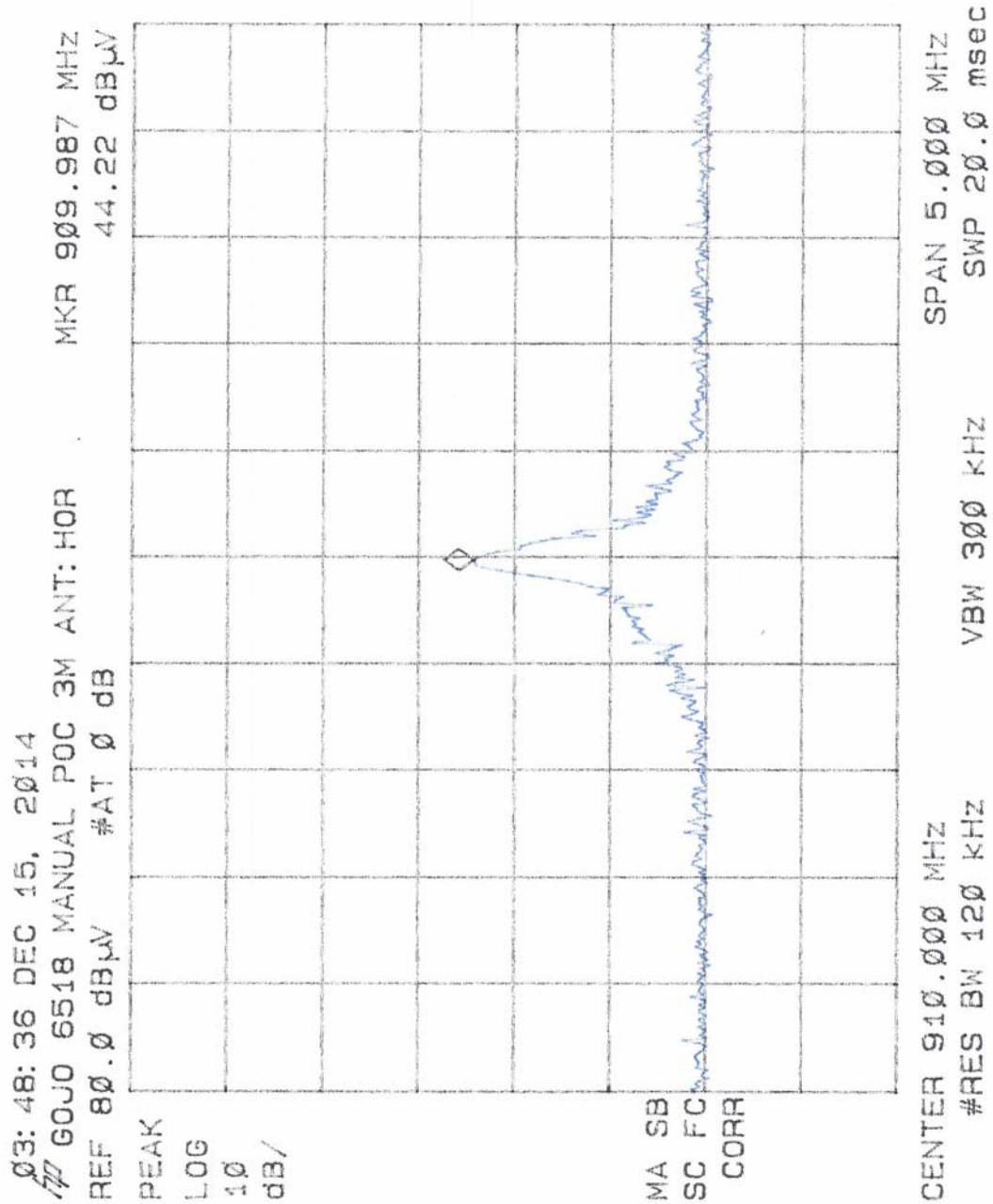
FCC Part 15.249 Transmitter Test												
6518												
Measured Field Strength (dBµV)	Res. Bandwidth (Khz)	DUT Frequency (Mhz)	Measured Frequency (Mhz)	Azimuth degrees	Cable Factor (dB)	Antenna Gain (dB)	Measurement Distance (Meters)	Duty Cycle Correction (dB)	FCC Limit (uV/M) at 3M	Corrected Field Strength in uV/M Peak to 3M	Delta Limit (dB)	Polarity
Peak												
54.99	120	910	910	0	17.2	23	3	-6	50000	28,807.13	-4.79	V
39.73	1000	910	1820	280	2.1	17.3	1	-6	500	151.14	-10.39	V
37.63	1000	910	2730	290	2.2	20.2	1	-6	500	167.64	-9.49	V
31.48	1000	910	3640	85	2.4	19.02	1	-6	500	73.77	-16.62	V
31.73	1000	910	4550	45	2.5	34.74	1	-6	500	469.22	-0.55	V
28.07	1000	910	5460	0	2.7	34.83	1	-6	500	318.33	-3.92	V
28.18	1000	910	6370	120	2.8	34.21	1	-6	500	303.65	-4.33	V
34.78	1000	910	7280	280	2.8	36.56	1	-6	500	850.90	4.62	Noise Floor
36.60	1000	910	8190	100	3.0	37.53	1	-6	500	1,200.55	7.61	Noise Floor
35.28	1000	910	9100	350	3.1	38.51	1	-6	500	1,167.83	7.37	Noise Floor
* Antenna factors are pre-calculated into Measured Field Strength (dBµV)												
Unit Under Test:				Gojo	Manual	POC	12/17/2014			Full Bottle		
The measurement of the field strength over the frequency of 7280 MHz to 9100 MHz is under the noise floor. Hence the number in the spreadsheet reflects the noise floor and not the actual signal of the unit												

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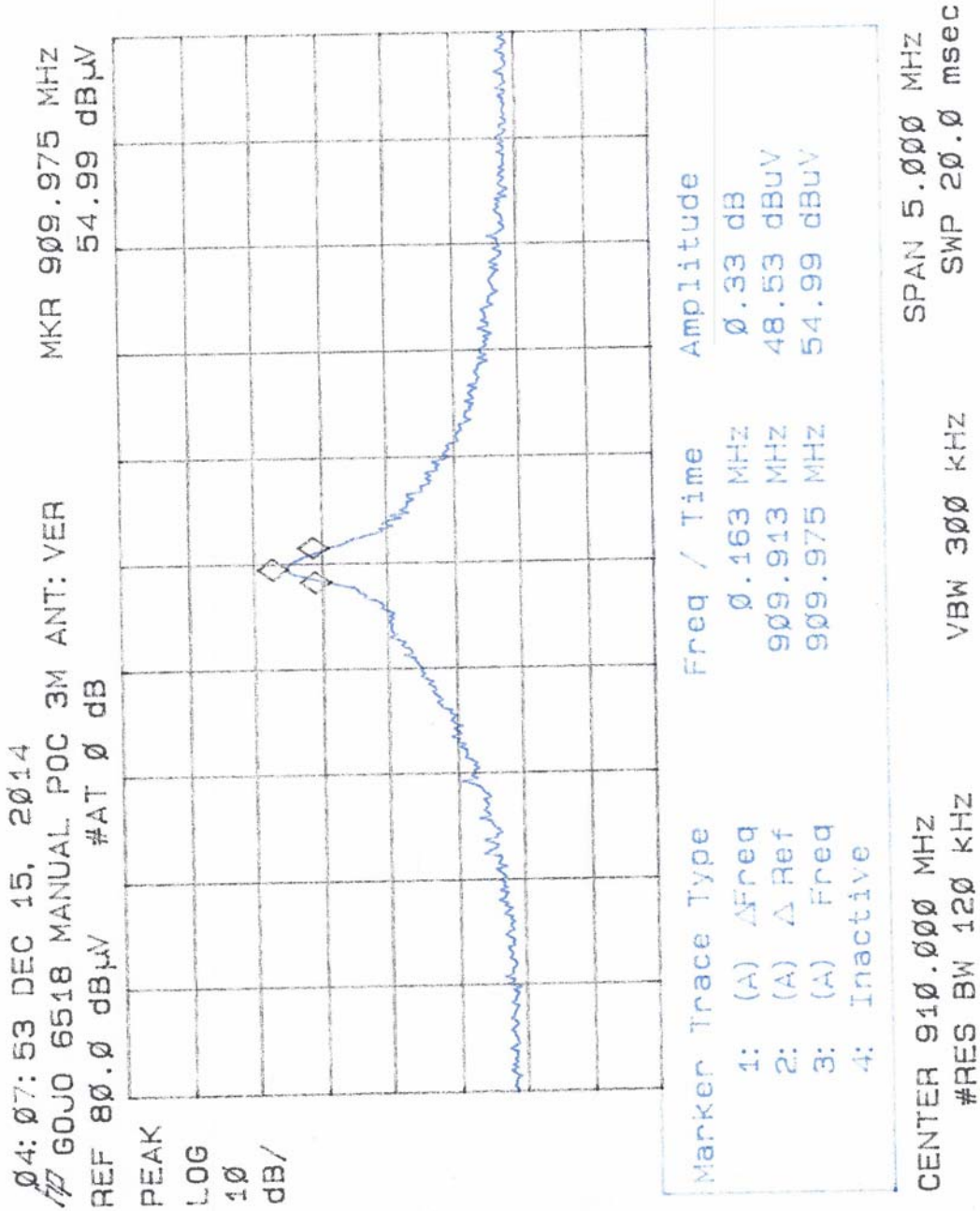
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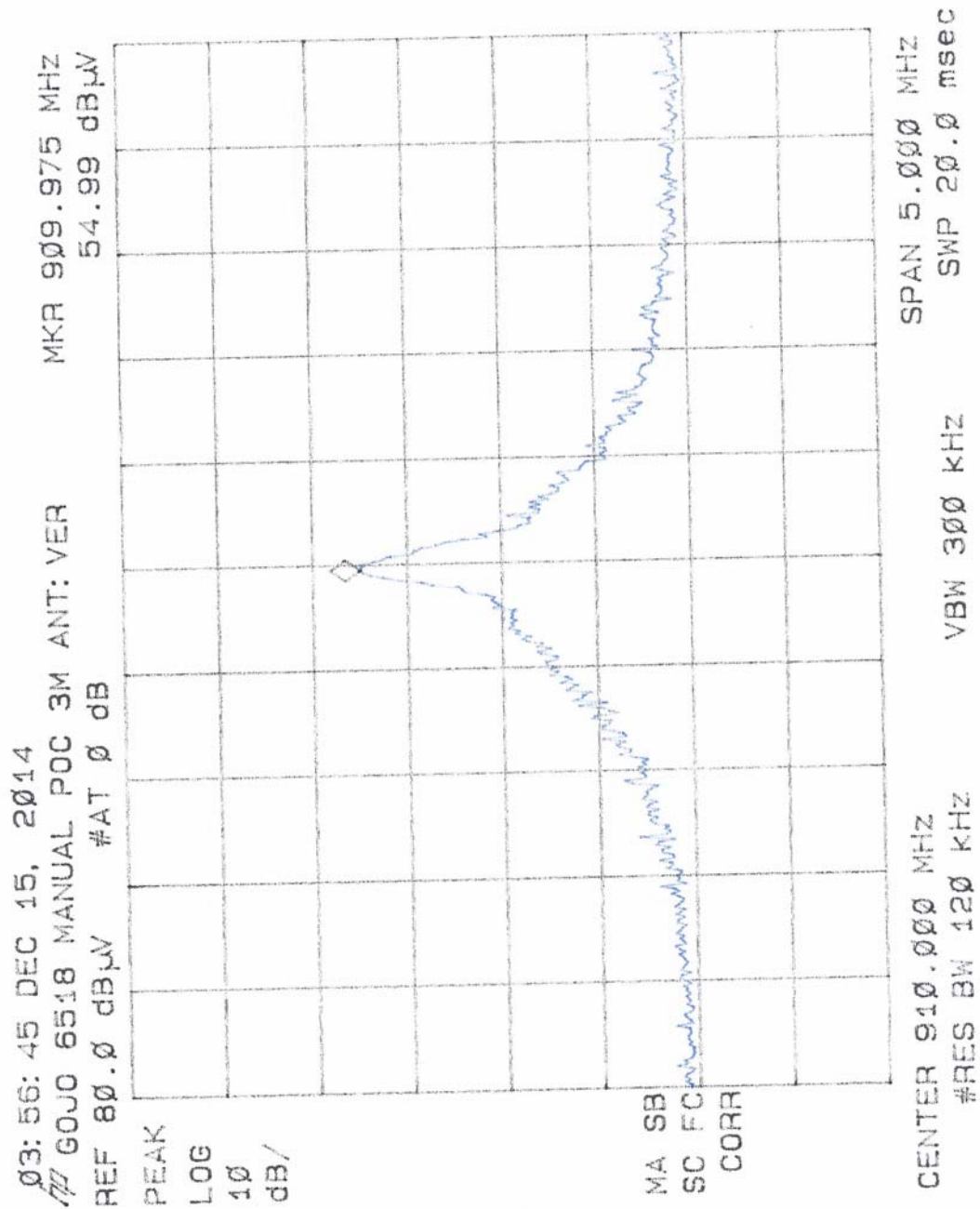
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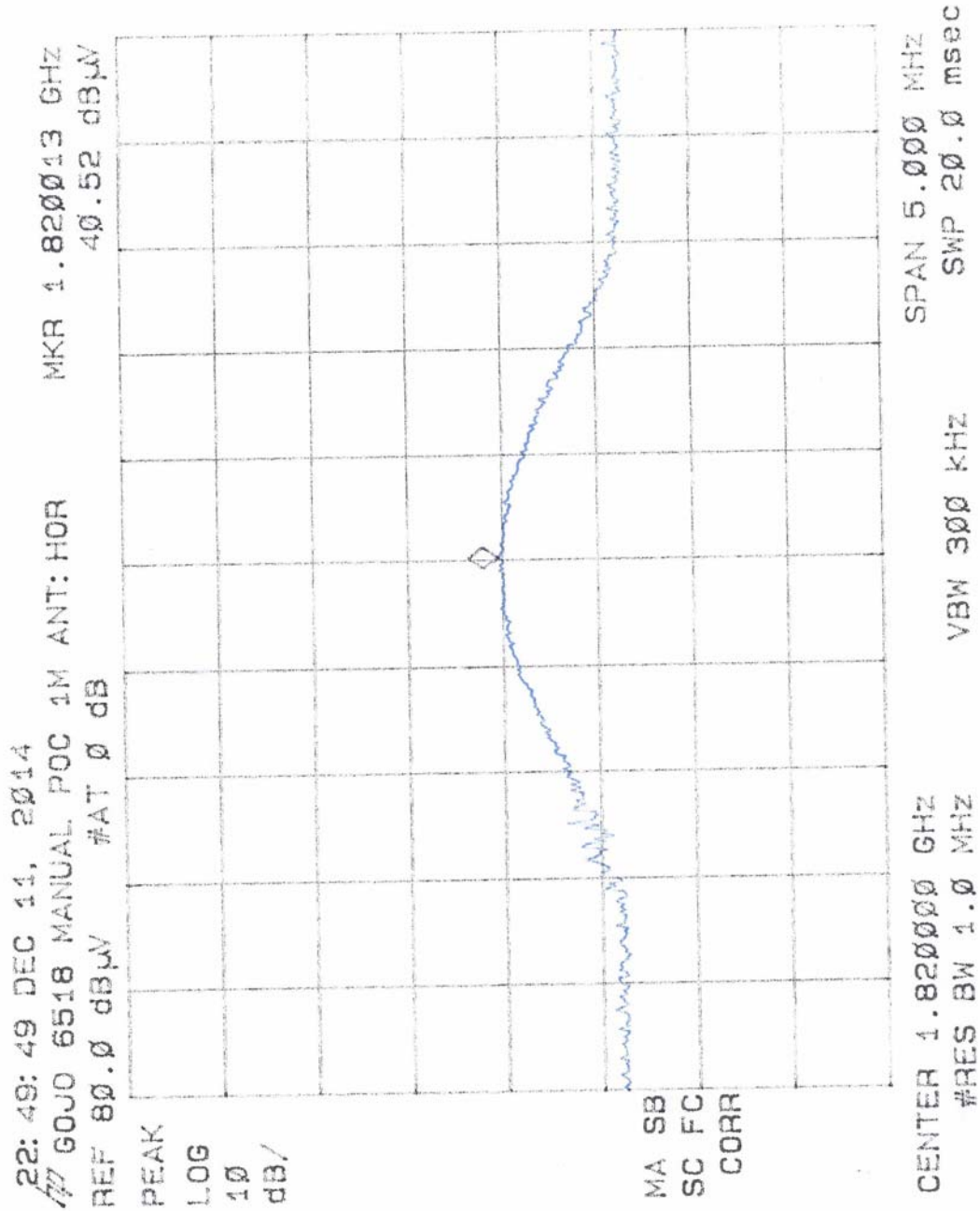
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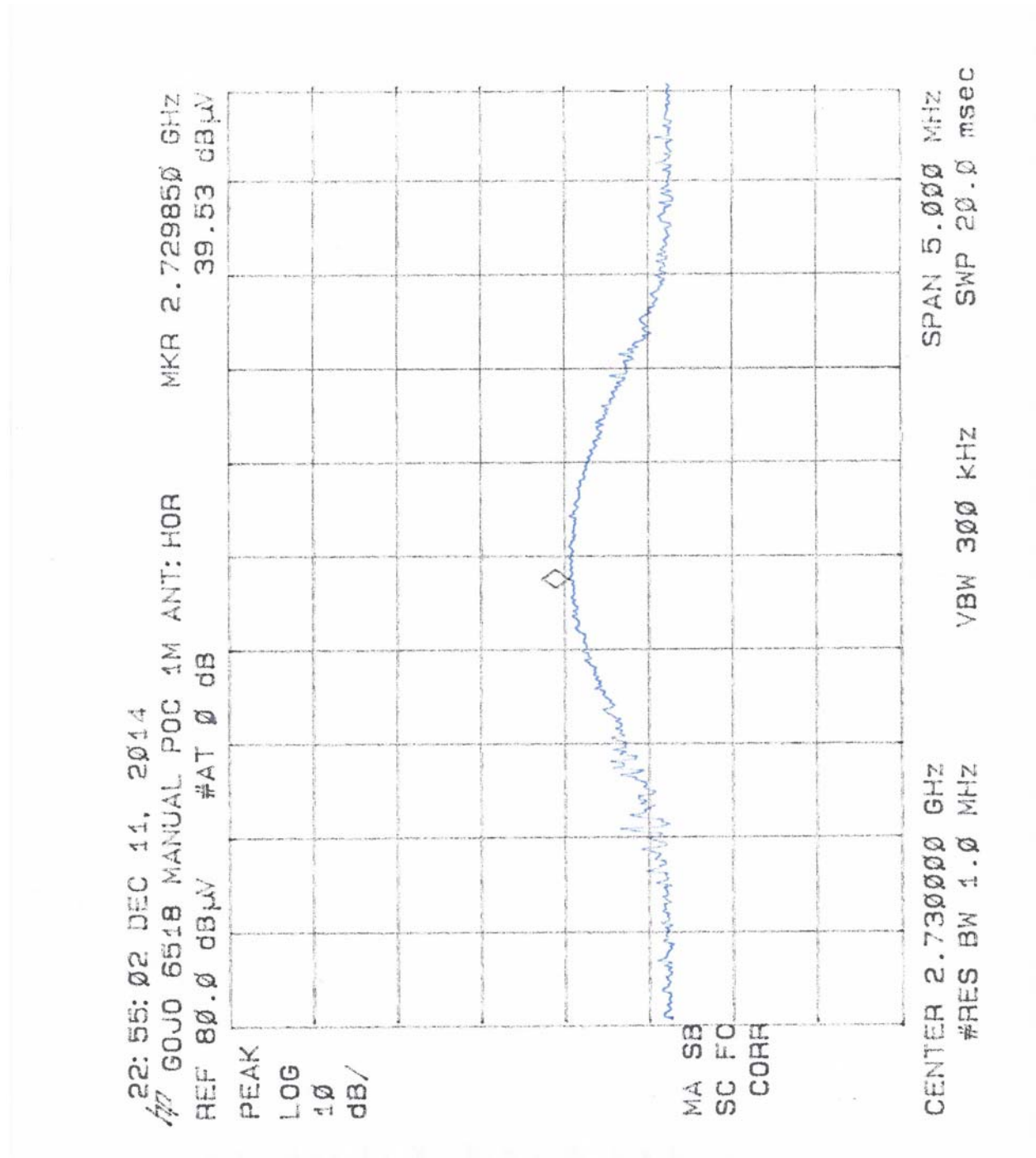
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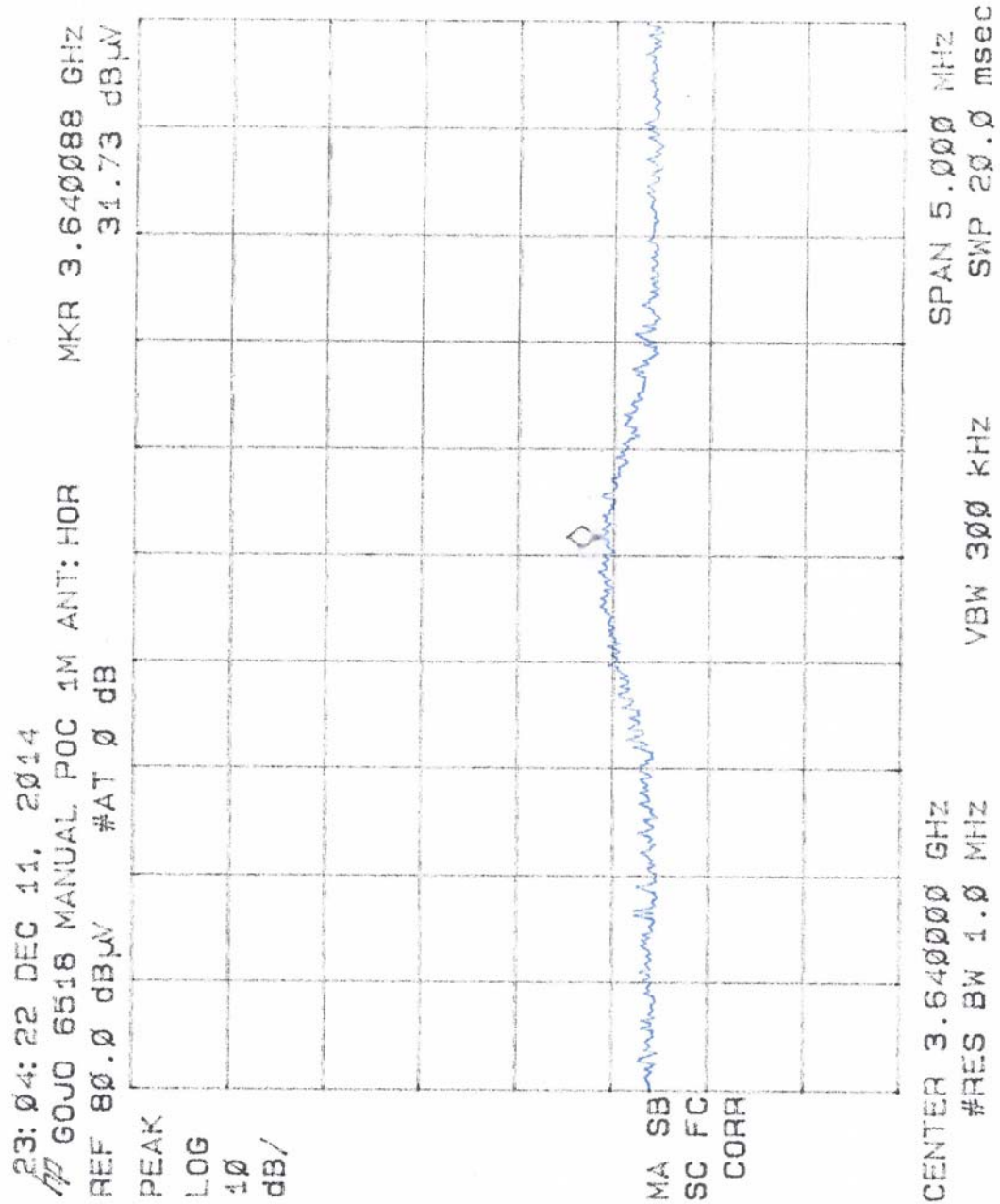
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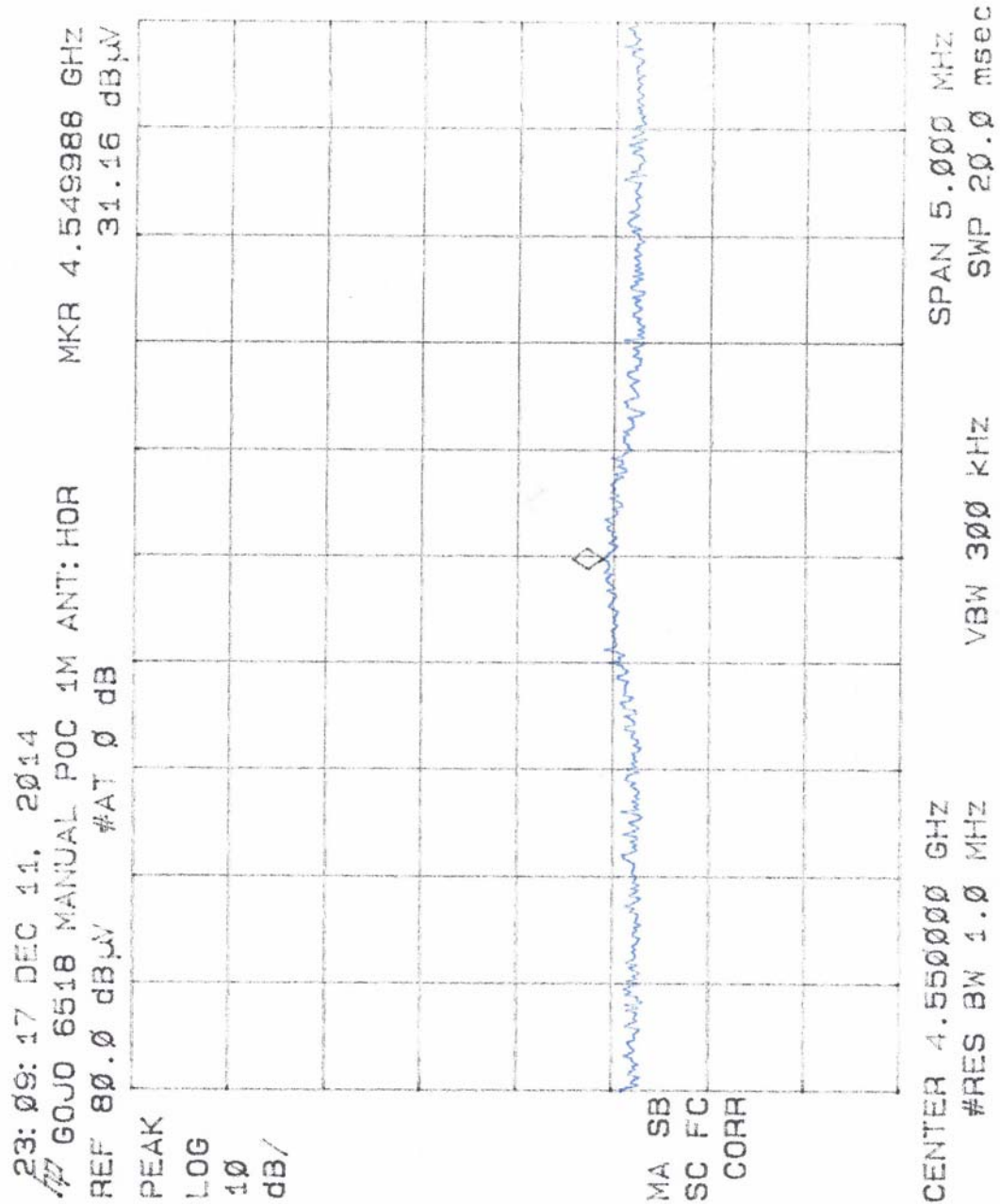
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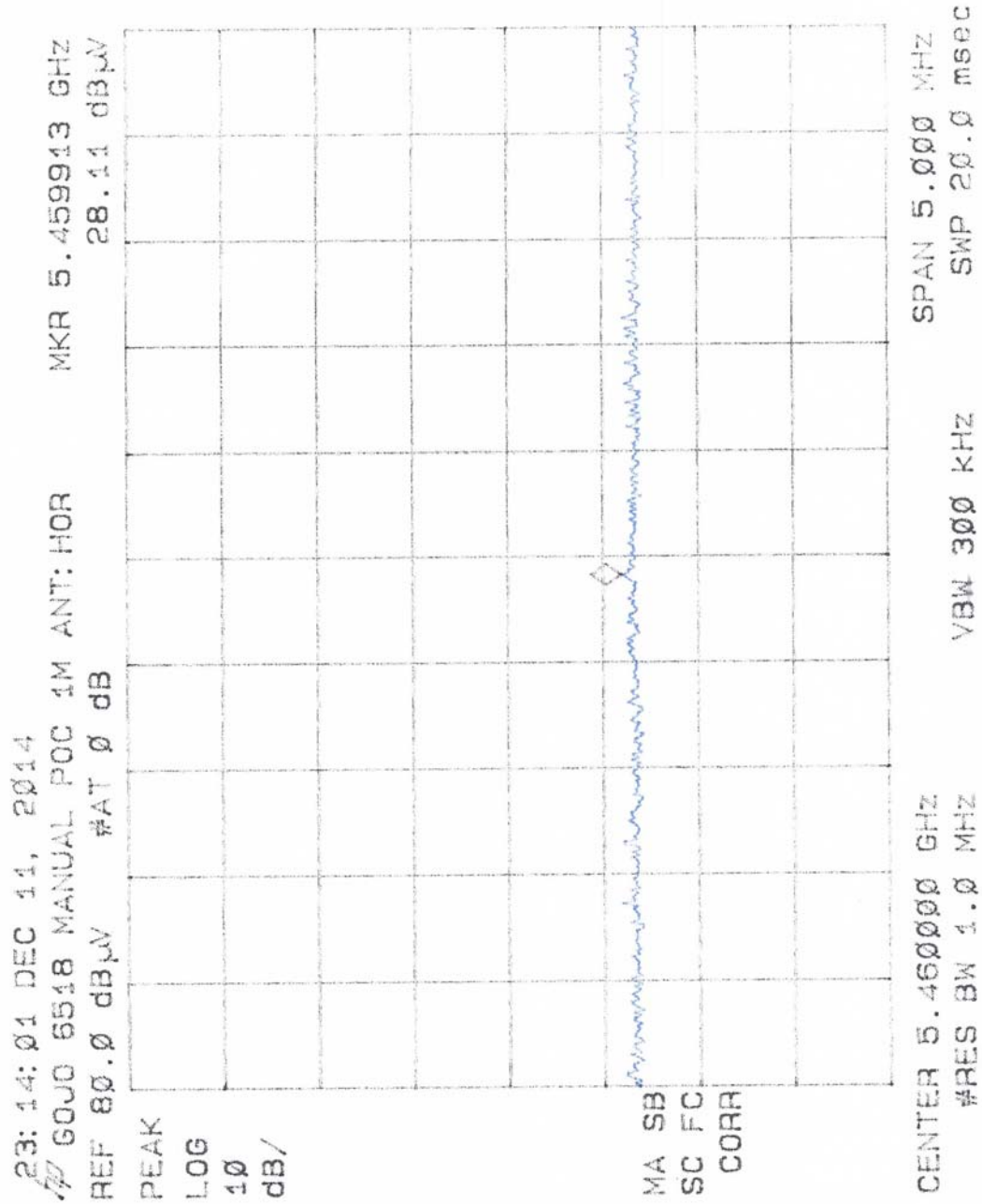


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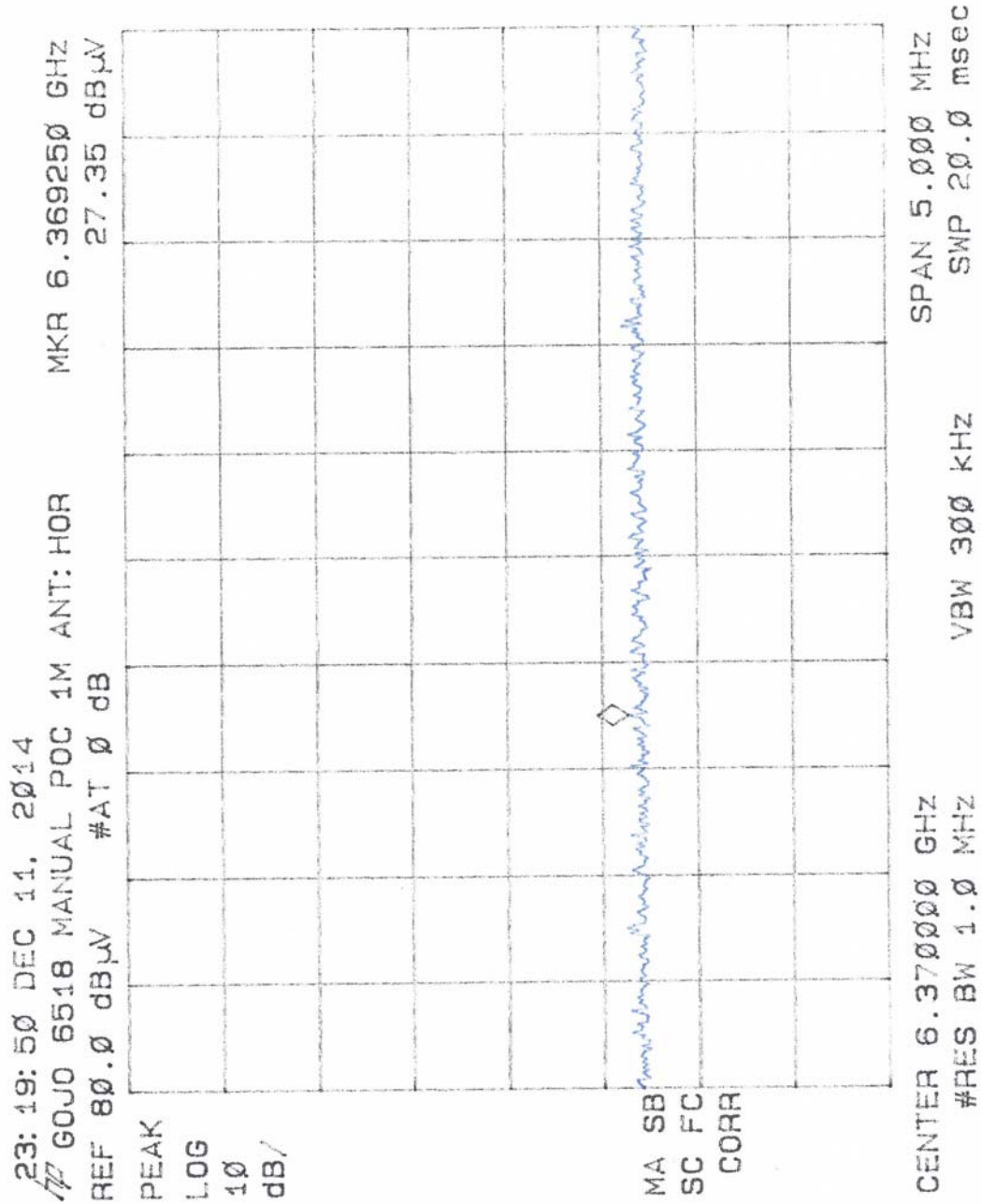
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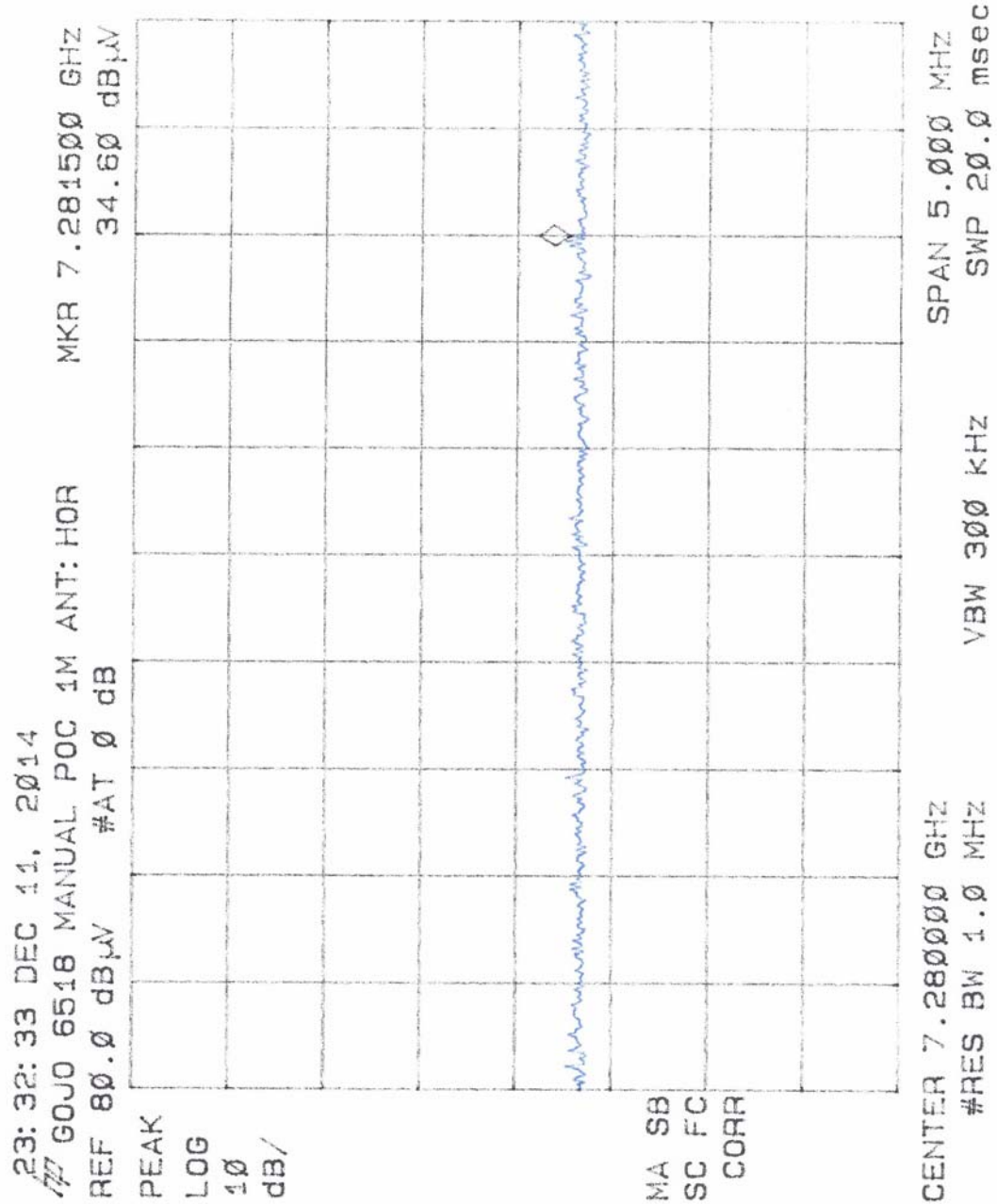
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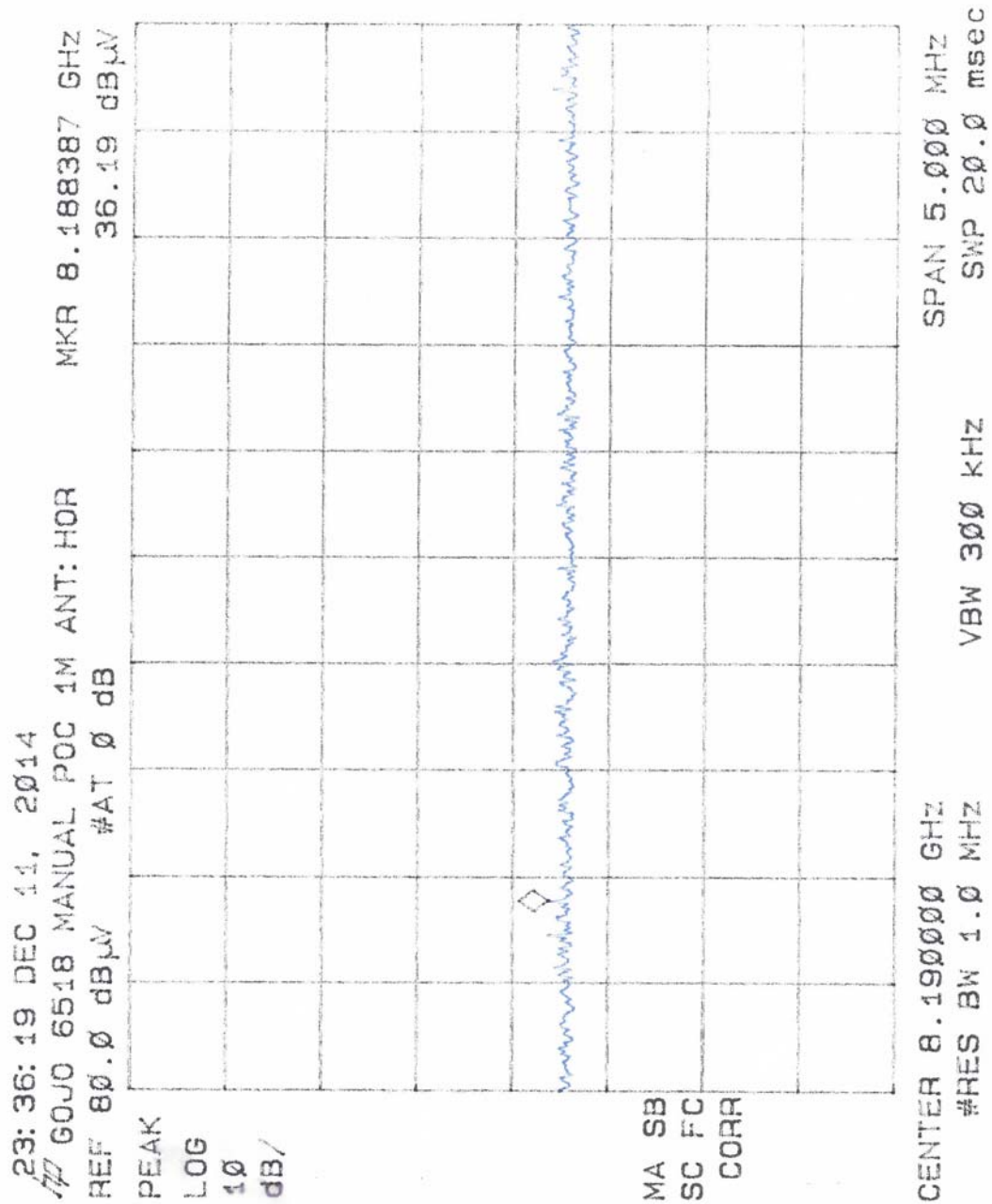
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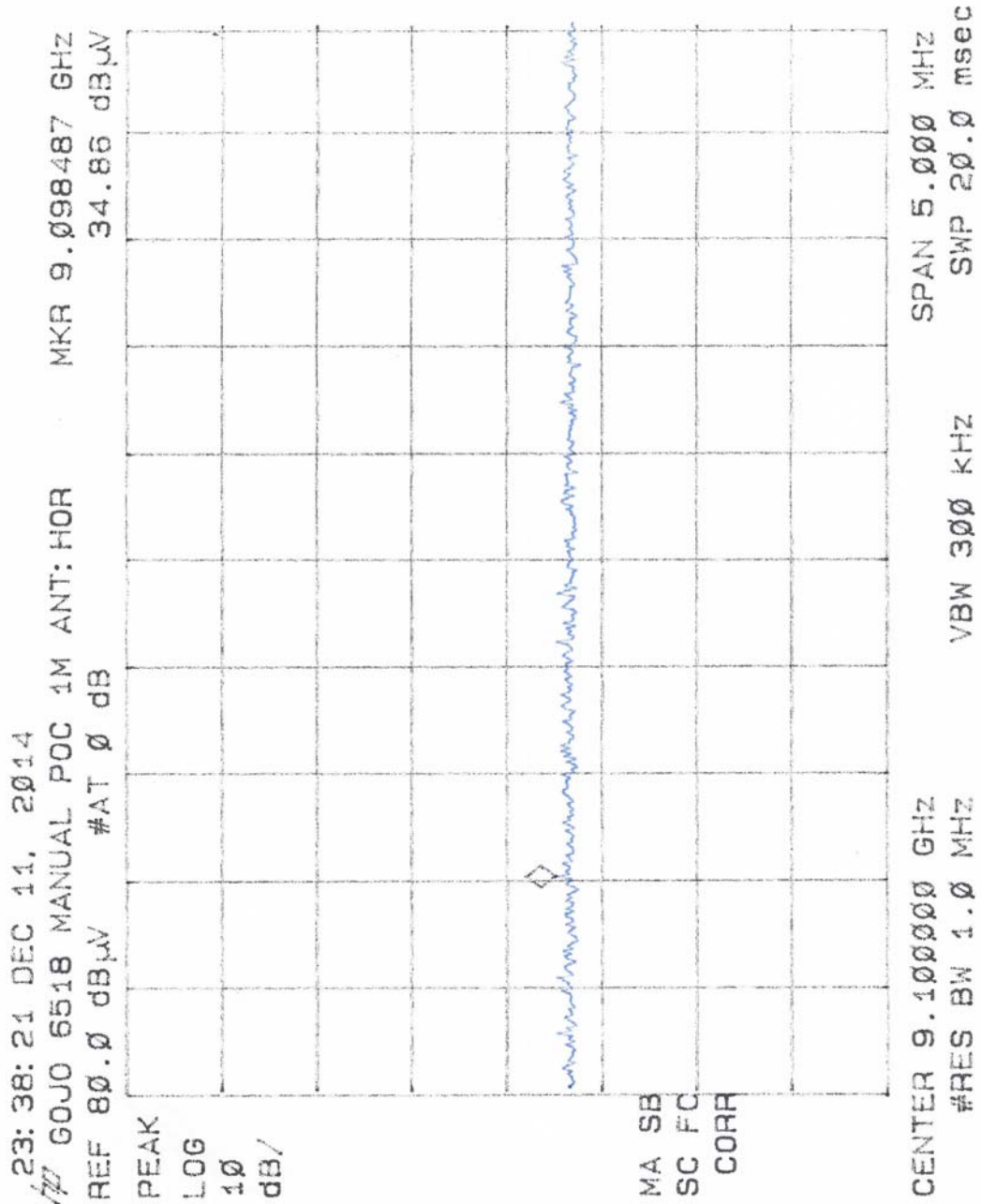
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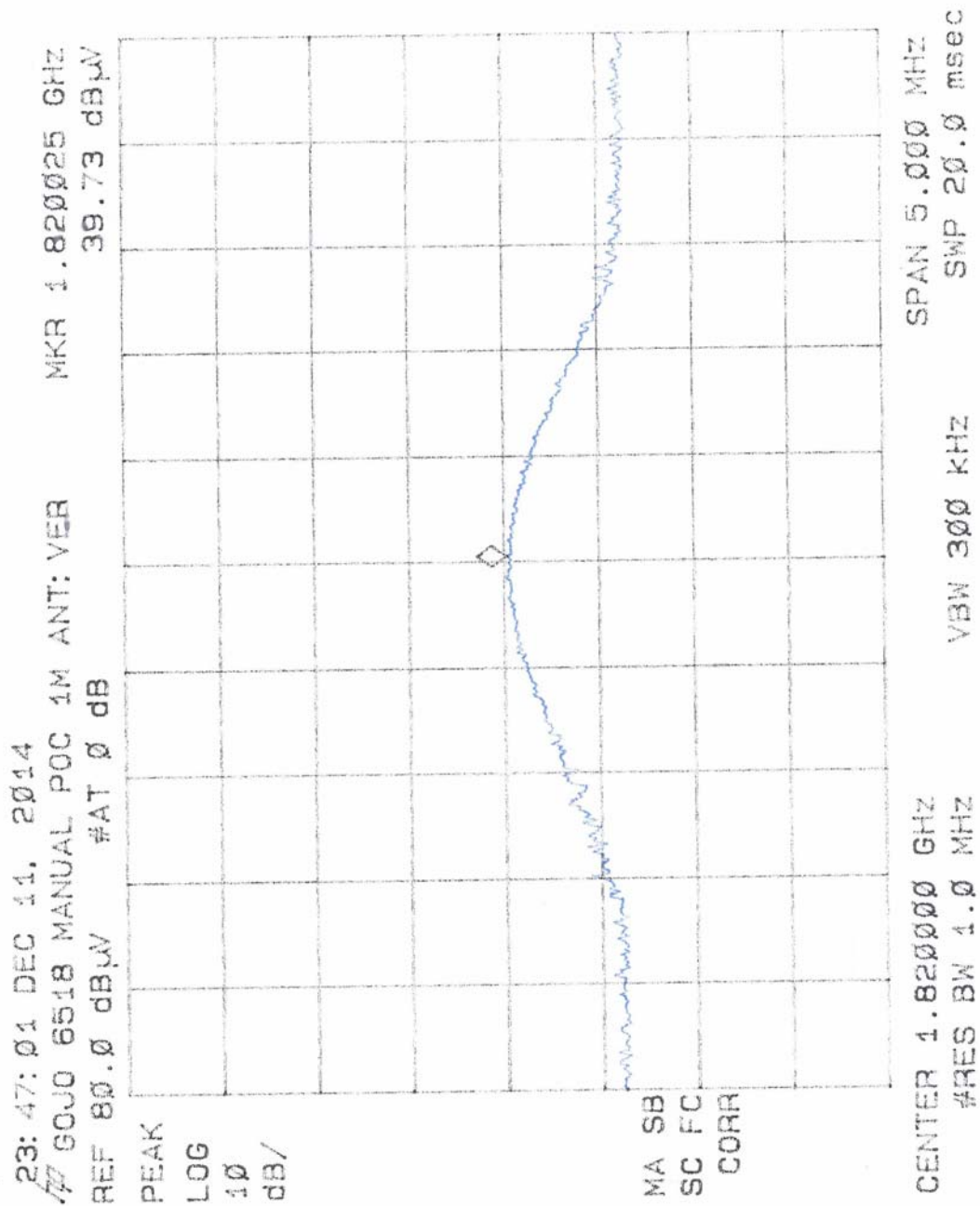


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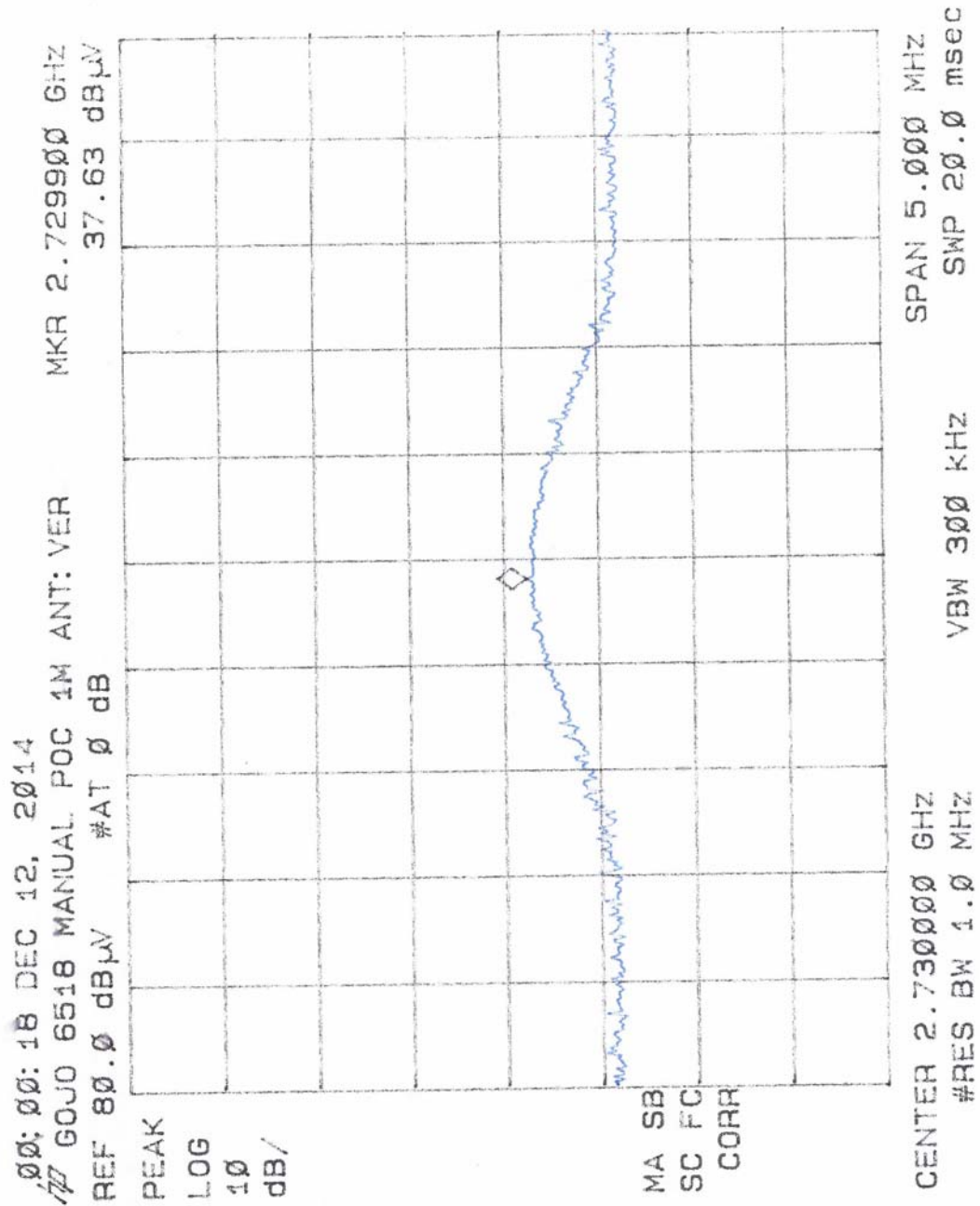


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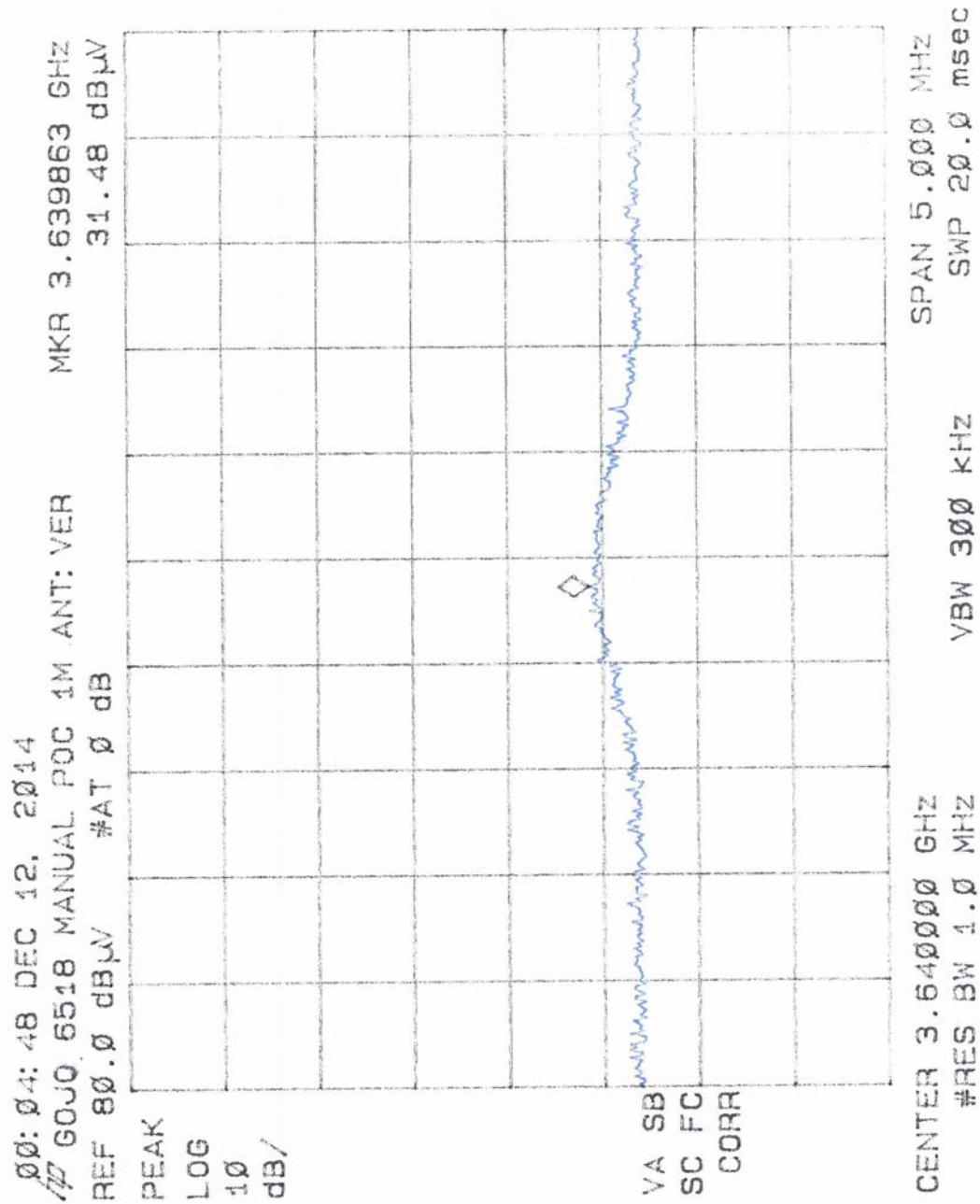


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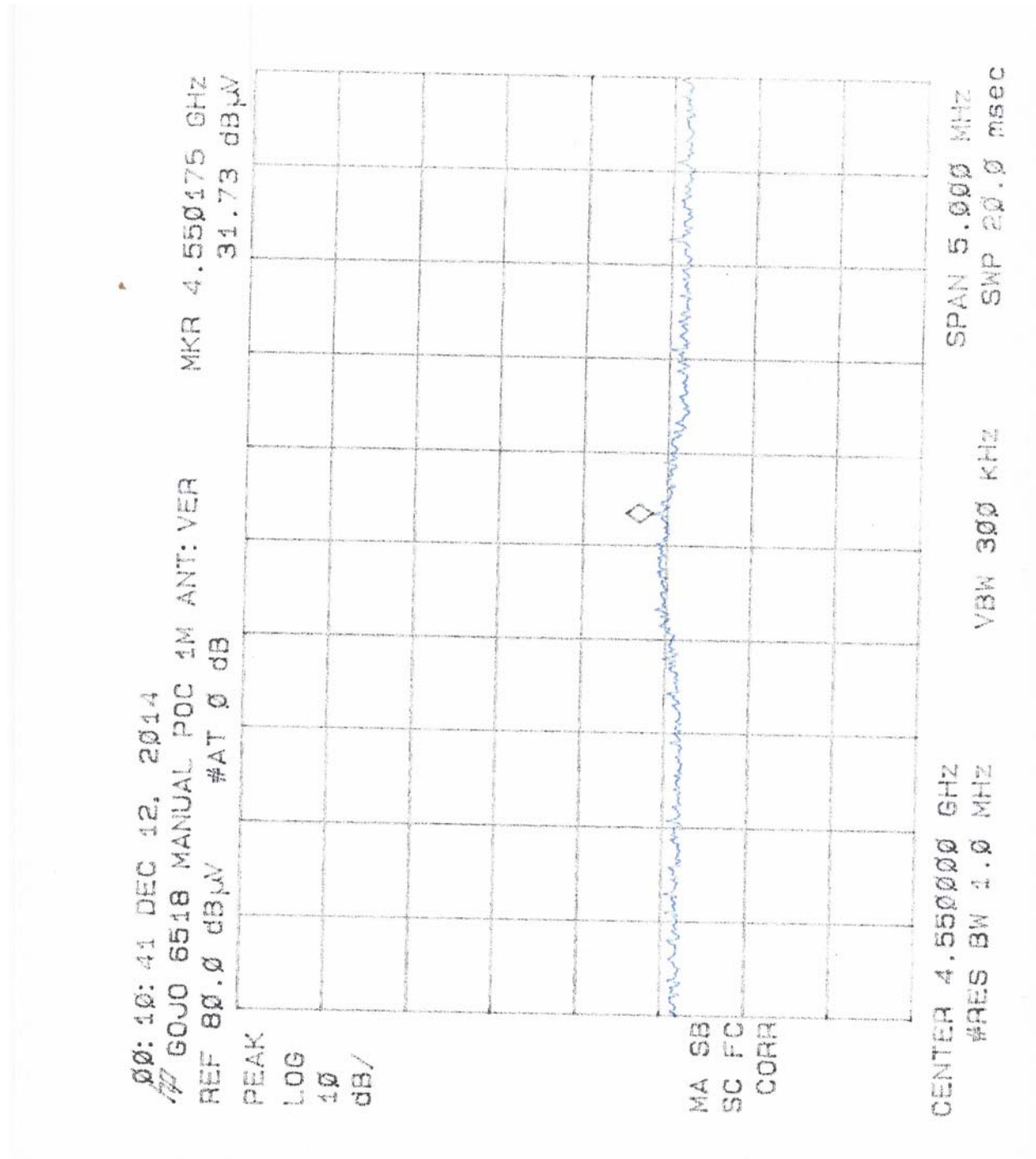


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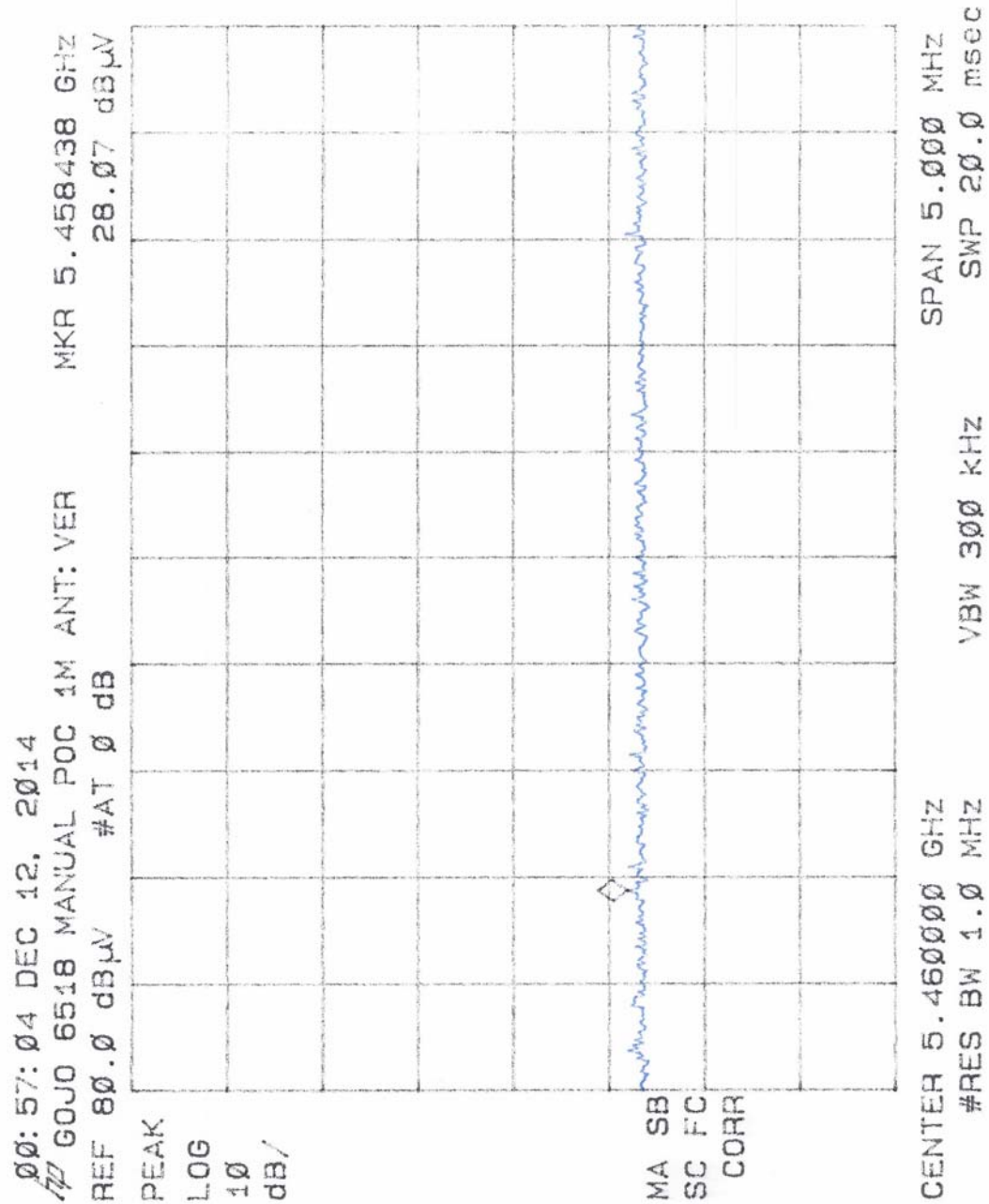
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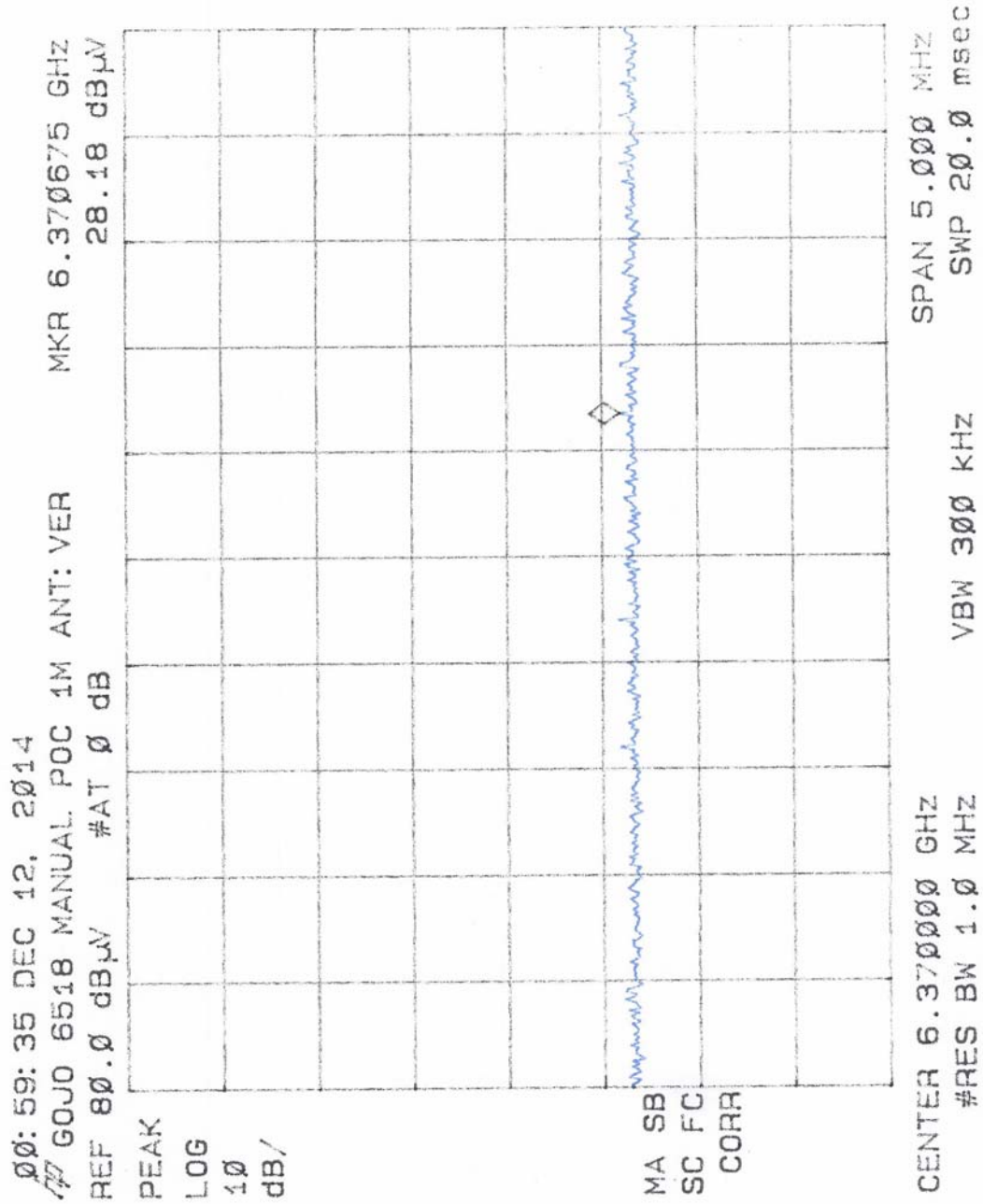
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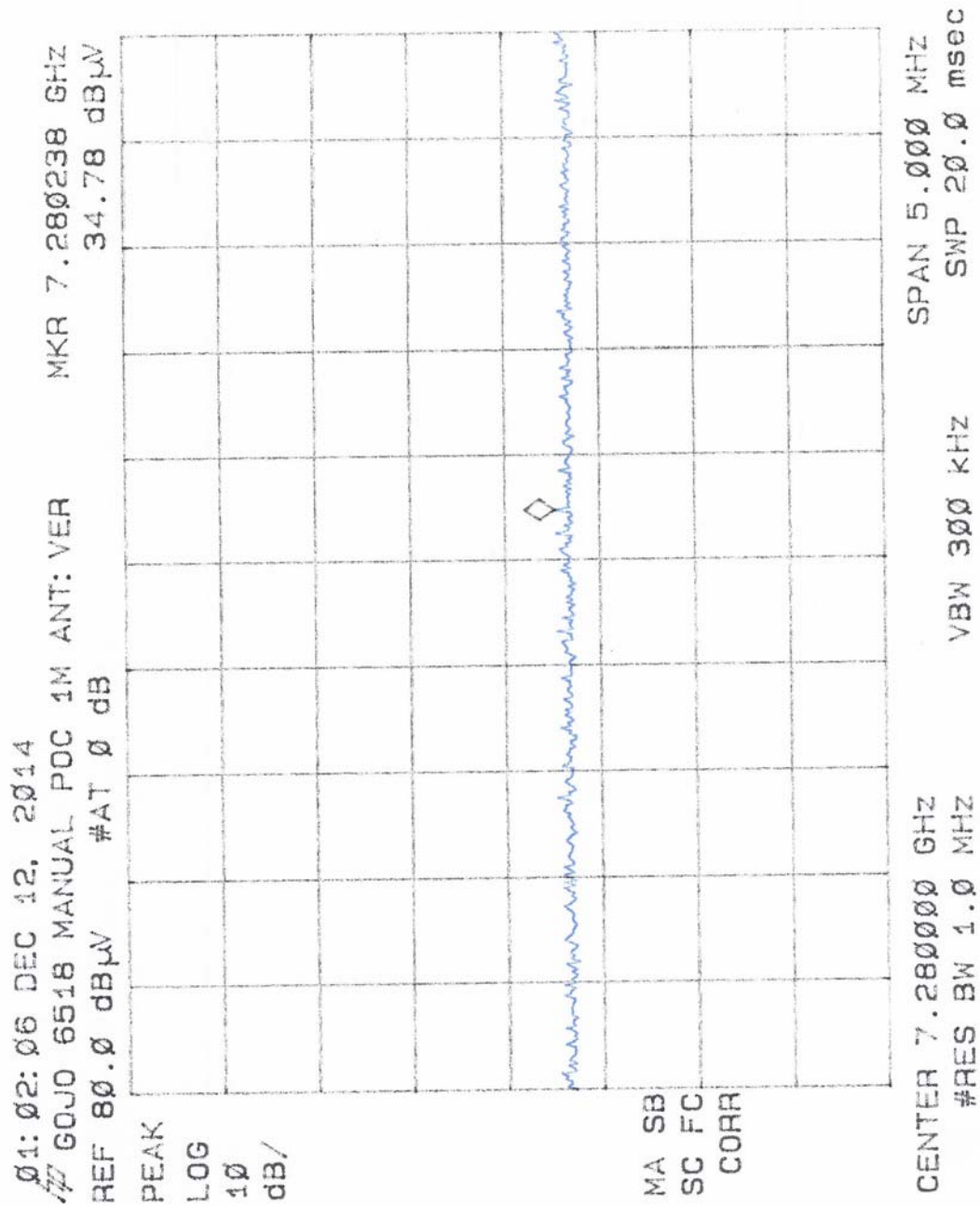


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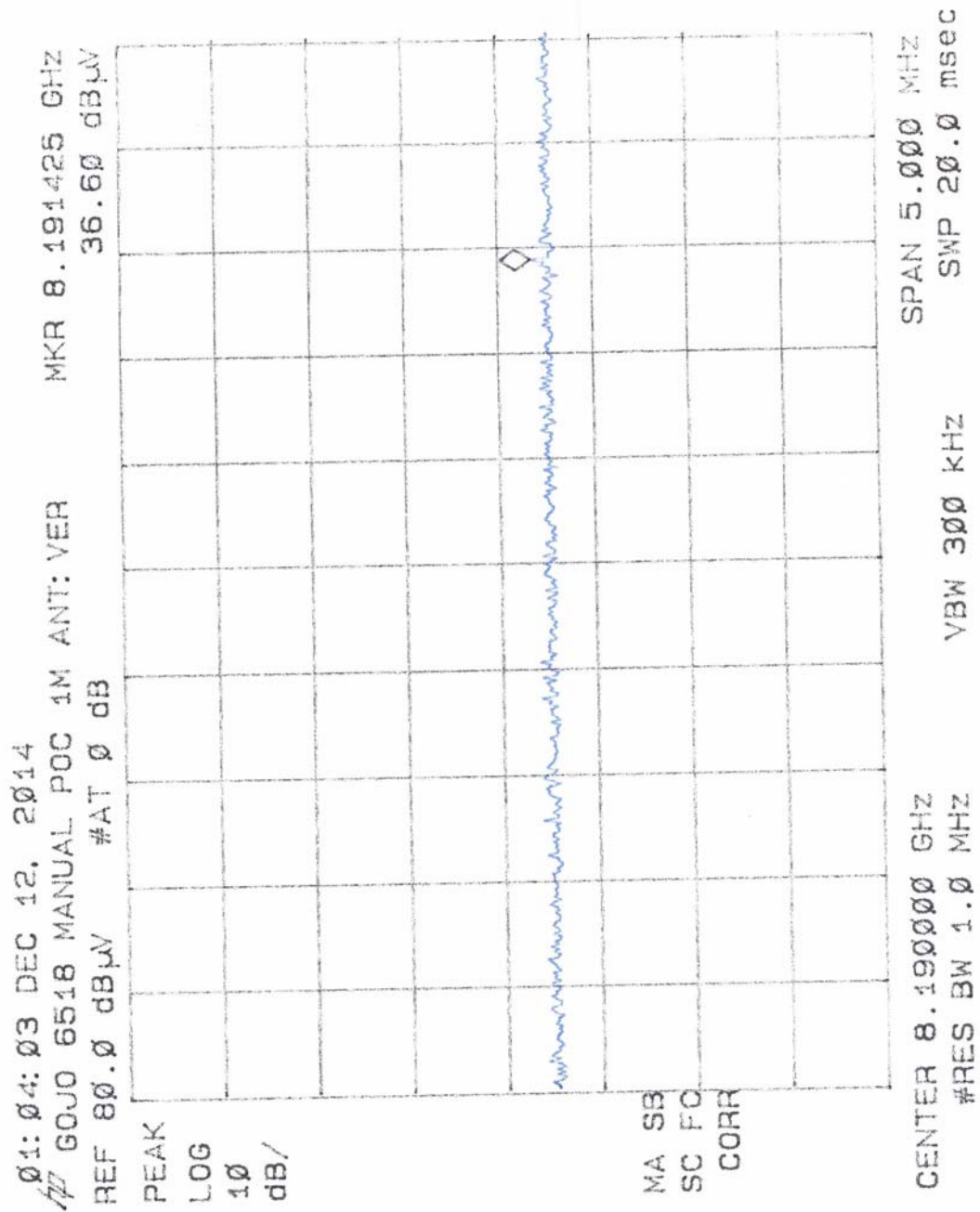
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