

February 15, 2014

Mr. Brad Lightner  
**GOJO Industries**  
1 GOJO Plaza-Suite 500  
Akron, OH 44311

Dear Mr. Lightner:

Enclosed is the test report for the GOJO Industries Limited Approval Wireless Transmitter Module 1960-501-WHT Rev. 004 and 1960-513-910 Rev. ABC in the host where the host is the Smartlink Ready LTX-7 13XX-##-YYY dispenser 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) Please see attached annex for information on the Limited Approval Wireless Module 1960-501-WHT Rev. 004 and 1930-513-910 Rev. ABC.

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. Additionally, all spurious emissions signals are greater than 20 dB below the limit of FCC Part 15.209 and are not reported. Therefore, the unit under test meets the FCC Part 15.209 requirements. The plots indicated ambient scans.

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](http://www.dttlabs.com).

Sincerely,



Michael McElroy  
Technical Associate

| <b>DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT</b>                                                                                                                                             |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>GOJO Industries</b><br>Limited Approval Wireless Transmitter Module 1960-501-WHT<br>Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is<br>Smartlink Ready LTX-7 13XX-##-YYY Dispenser | Project Number:<br>6425 |

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#### **Documentation**

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| <b>DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT</b>                                                                                                                                             |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>GOJO Industries</b><br>Limited Approval Wireless Transmitter Module 1960-501-WHT<br>Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is<br>Smartlink Ready LTX-7 13XX-##-YYY Dispenser | Project Number:<br>6425 |

## ***Test Report***

Laboratory

**Diversified TEST Technologies, Inc.**  
4675 Burr Drive  
Liverpool, NY 13088  
315-457-0245

Manufacturer

**GOJO Industries**  
1 GOJO Plaza, Suite 500  
Akron, OH. 44311

Report Issue Date: **February 15, 2014**  
Project Number: **6425**  
Report Number: **6425-070913 (Edition 2) FCCC LTX7 with Limited Approval Wireless Transmitter Module**

Date Received: **June 24, 2013**  
Date Tested: **June 24, 2013 – June 26, 2013**  
Model Numbers: **Limited Approval Wireless Transmitter Module 1960-501-WHT Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is Smartlink Ready LTX-7 13XX-##-YYY Dispenser**

**FCC ID: O76-T4SG0910A**

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

The testing performed by Diversified TEST Technologies, Inc. has shown that the product referenced above complies with the electromagnetic compatibility requirements according to the standard(s) specified on page 3 of the test report. The results in this test report apply only to the product denoted above. The manufacturer is 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 on page 3 of this report.**

Complied by:  
Signature:

  
\_\_\_\_\_  
Michael McElroy  
Technical Associate

Date: February 15, 2014

Reviewed by:  
Signature:

  
\_\_\_\_\_  
Annelle Frierson  
Vice- President

Date: February 15, 2014

| <b>DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT</b>                                                                                                                                             |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>GOJO Industries</b><br>Limited Approval Wireless Transmitter Module 1960-501-WHT<br>Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is<br>Smartlink Ready LTX-7 13XX-##-YYY Dispenser | Project Number:<br>6425 |

## ***Emissions Test Regulations***

**The emissions tests were performed according to the following regulations:**

☐ EN 50081-1:1992

☐ EN 50081-2:1995

☐ EN 55011:1998 / A1:1999 / A2:2001

☐ Group 1

☐ Group 2

☐ Class A

☐ Class B

☐ EN 55013:1990 / A12:1994 / A13:1996 / A14:1999

☐ EN 55014:1993 / A1: 1997

☐ Household appliances and similar

☐ Portable tools

☐ Semiconductor devices

☐ EN 55022:1998

☐ Class A

☐ Class B

☒ **FCC Part 15.249**

☐ Class A

☐ Class B

☒ **Class C**

☒ **Certification**

☐ Verification

☐ Declaration of Conformity

| <b>DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT</b>                                                                                                                                             |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>GOJO Industries</b><br>Limited Approval Wireless Transmitter Module 1960-501-WHT<br>Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is<br>Smartlink Ready LTX-7 13XX-##-YYY Dispenser | Project Number:<br>6425 |

## **Emissions Test Conditions: FCC PART 15.249 CLASS C**

The Harmonics, Bandwidth, and Spurious Emissions 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:

| <b>Manufacturer</b> | <b>Model</b> | <b>Description</b>                                                     | <b>Serial #</b> | <b>Cal.</b> | <b>Cal. Due</b> |
|---------------------|--------------|------------------------------------------------------------------------|-----------------|-------------|-----------------|
| Hewlett Packard     | 8593EM       | Spectrum Analyzer                                                      | 3536A00139      | 6/19/13     | 6/19/14         |
| Electro-Metrics     | RGA60        | Ridge Horn Antenna                                                     | 2981            | 8/25/12     | 8/25/13         |
| Hewlett Packard     | 7550A        | Plotter                                                                | 2407A00476      | CNR         | CNR             |
| Electro-Metrics     | LPA-25       | Log Periodic Antenna 200-1000 MHz                                      | 1242            | 9/11/12     | 9/11/13         |
|                     | MFR-57500    | Blue low-loss transmit cable                                           | 337             | CNR         | CNR             |
|                     |              | Non-conductive wooden turntable                                        |                 | CNR         | CNR             |
|                     |              | 10-meter open field test range, grounded with ¼ " x ¼ " hardware cloth |                 | CNR         | CNR             |
| Hewlett Packard     | 8595E        | Spectrum Analyzer                                                      | 3746A03177      | 7/23/12     | 7/23/13         |
| EMCO                | 6520         | Active Loop Antenna                                                    | 9110-2685       | 7/19/12     | 7/19/13         |
| Agilent             | E7402A       | Spectrum Analyzer                                                      | MY45103221      | 3/25/13     | 3/25/14         |
| Electro-Metrics     | BIA-30W      | Biconical Antenna                                                      | 103             | 9/1/12      | 9/1/13          |

| <b>DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT</b>                                                                                                                                             |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>GOJO Industries</b><br>Limited Approval Wireless Transmitter Module 1960-501-WHT<br>Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is<br>Smartlink Ready LTX-7 13XX-##-YYY Dispenser | Project Number:<br>6425 |

## **Equipment under Test (EUT) Test Operation Mode – Emissions Tests:**

**The device under test was operated under the following conditions during emissions testing:**

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

### **Description / Configuration of the device under test:**

Limited Approval Wireless Transmitter Module 1960-501-WHT Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is Smartlink Ready LTX-7 13XX-##-YYY Dispenser The unit was powered by a 6 VDC Battery during the collection of data.

### **Rationale for EUT setup / configuration:**

After numerous trial runs with a full bottle and an empty bottle it was found an empty bottle was worst case so therefore the dispenser was tested with the empty bottle for the entire test.

### **Deviations from test method:**

Testing performed at 1 meter test distance above 1 GHz to better represent harmonic emissions caused by the equipment under test. Testing using Loop Antenna was performed on 6/26/13.

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

### GOJO Industries

Limited Approval Wireless Transmitter Module 1960-501-WHT  
Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is  
Smartlink Ready LTX-7 13XX-##-YYY Dispenser

Project Number:  
6425

## Emissions Test Results:

### FCC Part 15.249 Part C 910 MHz – 9100 MHz

The requirements are ☒ MET ☐ NOT MET

### Spurious Emissions Test

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 10 MHz up to the 10<sup>th</sup> 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 LTX dispenser. The use of the LTX dispenser to dispense soap to a customer constitutes an event and once an event occurs a trigger pulse is sent from the LTX 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: June 24, 2013

Testing End Date: June 26, 2013

| <b>DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT</b>                                                                                                                                             |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>GOJO Industries</b><br>Limited Approval Wireless Transmitter Module 1960-501-WHT<br>Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is<br>Smartlink Ready LTX-7 13XX-##-YYY Dispenser | Project Number:<br>6425 |

## Test Setup Photographs:

### FCC PART 15.249 CLASS C – 910 MHZ

Photograph 1: FCC Part 15.249 Class C



| <b><i>DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT</i></b> |                         |
|-------------------------------------------------------------------|-------------------------|
| <b>GOJO Industries</b>                                            | Project Number:<br>6368 |

## **Test Datasheets – 910 MHz- 9100 MHz**

21 pages of data sheets to follow.

Limits for transmitters  
USA

| FCC Part 15.249 Transmitter Test                                        |           |           |           |             |           |         |              |            |        |                |        |          |
|-------------------------------------------------------------------------|-----------|-----------|-----------|-------------|-----------|---------|--------------|------------|--------|----------------|--------|----------|
|                                                                         |           |           |           |             |           | GOJO    | 6425         |            |        |                |        |          |
| Measured                                                                | Res.      | DUT       | Measured  | Azimuth     | Cable     | Antenna | Measurement  | Duty Cycle | FCC    | Corrected      | Delta  |          |
| Field Strength                                                          | Bandwidth | Frequency | Frequency | degrees     | Factor    | Gain    | Distance     | Correction | Limit  | Field Strength | Limit  | Polarity |
| (dBμV)                                                                  | (Khz)     | (Mhz)     | (Mhz)     |             | (dB)      | (dB)    | (Meters)     | (dB)       | (uV/M) | to 3M          | (dB)   |          |
| Peak                                                                    |           |           |           |             |           |         |              |            | at 3M  | in uV/M peak   |        |          |
| 42.92                                                                   | 120       | 910       | 910       | 135         | 17.2      | 19.6    | 3            | -6         | 50000  | 4,852.89       | -20.26 | H        |
| 47.78                                                                   | 120       | 910       | 1820      | 0.00        | 2.1       | 7.6     | 1            | -6         | 500    | 124.99         | -12.04 | H        |
| 35.35                                                                   | 1000      | 910       | 2730      | 0           | 2.2       | 9.2     | 1            | -6         | 500    | 36.34          | -22.77 | H        |
| 29.23                                                                   | 1000      | 910       | 3640      | 0           | 2.4       | 8.9     | 1            | -6         | 500    | 17.76          | -28.99 | H        |
| 28.67                                                                   | 1000      | 910       | 4550      | 0           | 2.5       | 10      | 1            | -6         | 500    | 19.12          | -28.35 | H        |
| 27.65                                                                   | 1000      | 910       | 5460      | 0           | 2.7       | 10      | 1            | -6         | 500    | 17.39          | -29.17 | H        |
| 28.70                                                                   | 1000      | 910       | 6370      | 0           | 2.8       | 12      | 1            | -6         | 500    | 25.00          | -26.02 | H        |
| 29.40                                                                   | 1000      | 910       | 7280      | 0           | 2.8       | 10.5    | 1            | -6         | 500    | 22.80          | -26.82 | H        |
| 29.61                                                                   | 1000      | 910       | 8190      | 0           | 3.0       | 10.3    | 1            | -6         | 500    | 23.35          | -26.61 | H        |
| 28.70                                                                   | 1000      | 910       | 9100      | 0           | 3.1       | 11.2    | 1            | -6         | 500    | 23.60          | -26.52 | H        |
|                                                                         |           |           |           |             |           |         |              |            |        |                |        |          |
| *Antenna factors are pre-calculated into Measured Field Strength (dBμV) |           |           |           |             |           |         |              |            |        |                |        |          |
| Unit Under Tes                                                          | GOJO      | LTX-7     |           | 13XX-##-YYY | 6/24/2013 |         | Empty Bottle |            |        |                |        |          |

Limits for transmitters  
USA

| FCC Part 15.249 Transmitter Test |                                                                         |           |           |             |           |         |              |            |        |                |        |          |
|----------------------------------|-------------------------------------------------------------------------|-----------|-----------|-------------|-----------|---------|--------------|------------|--------|----------------|--------|----------|
|                                  |                                                                         |           |           |             |           | GOJO    | 6425         |            |        |                |        |          |
| Measured                         | Res.                                                                    | DUT       | Measured  | Azimuth     | Cable     | Antenna | Measurement  | Duty Cycle | FCC    | Corrected      | Delta  |          |
| Field Strength                   | Bandwidth                                                               | Frequency | Frequency | degrees     | Factor    | Gain    | Distance     | Correction | Limit  | Field Strength | Limit  | Polarity |
| (dBμV)                           | (Khz)                                                                   | (Mhz)     | (Mhz)     |             | (dB)      | (dB)    | (Meters)     | (dB)       | (uV/M) | to 3M          | (dB)   |          |
| Peak                             |                                                                         |           |           |             |           |         |              |            | at 3M  | in uV/M peak   |        |          |
| 51.82                            | 120                                                                     | 910       | 910       | 145         | 17.2      | 19.6    | 3            | -6         | 50000  | 13,520.73      | -11.36 | V        |
| 56.24                            | 120                                                                     | 910       | 1820      | 0.00        | 2.1       | 7.6     | 1            | -6         | 500    | 331.04         | -3.58  | V        |
| 32.43                            | 1000                                                                    | 910       | 2730      | 0           | 2.2       | 9.2     | 1            | -6         | 500    | 25.96          | -25.69 | V        |
| 29.63                            | 1000                                                                    | 910       | 3640      | 0           | 2.4       | 8.9     | 1            | -6         | 500    | 18.59          | -28.59 | V        |
| 29.23                            | 1000                                                                    | 910       | 4550      | 0           | 2.5       | 10      | 1            | -6         | 500    | 20.39          | -27.79 | V        |
| 29.61                            | 1000                                                                    | 910       | 5460      | 0           | 2.7       | 10      | 1            | -6         | 500    | 21.80          | -27.21 | V        |
| 29.07                            | 1000                                                                    | 910       | 6370      | 0           | 2.8       | 12      | 1            | -6         | 500    | 26.08          | -25.65 | V        |
| 29.35                            | 1000                                                                    | 910       | 7280      | 0           | 2.8       | 10.5    | 1            | -6         | 500    | 22.67          | -26.87 | V        |
| 29.54                            | 1000                                                                    | 910       | 8190      | 0           | 3.0       | 10.3    | 1            | -6         | 500    | 23.17          | -26.68 | V        |
| 28.47                            | 1000                                                                    | 910       | 9100      | 0           | 3.1       | 11.2    | 1            | -6         | 500    | 22.98          | -26.75 | V        |
|                                  |                                                                         |           |           |             |           |         |              |            |        |                |        |          |
|                                  | *Antenna factors are pre-calculated into Measured Field Strength (dBμV) |           |           |             |           |         |              |            |        |                |        |          |
| Unit Under Tes                   | GOJO                                                                    | LTX-7     |           | 13XX-##-YYY | 6/24/2013 |         | Empty Bottle |            |        |                |        |          |

\* Agilent 08:51:14 Jun 26, 2013

G0J0#6425 LTX-TALL FCCC HARM 1 H 3M

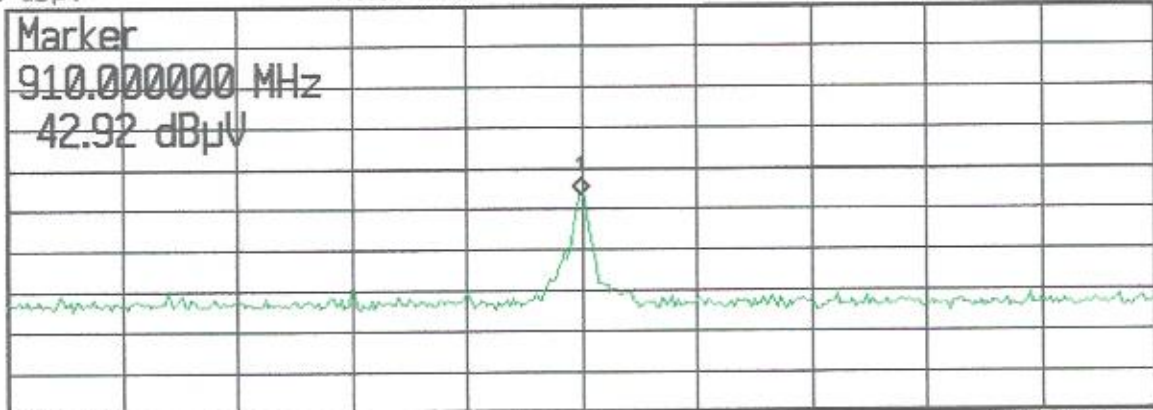
Ref 80 dBμV

Atten 5 dB

Mkr1 910.000 MHz

42.92 dBμV

Peak  
Log  
8  
dB/



Center 910 MHz

Res BW 120 kHz

VBW 300 kHz

Span 10 MHz

Sweep 4 ms (401 pts)

| Signal<br>(0) | Freq | Peak Ampl<br>dBμV | Qp Ampl<br>dBμV | Avg Ampl<br>dBμV | Peak Δ LL1<br>dB | Peak Δ LL2<br>dB |
|---------------|------|-------------------|-----------------|------------------|------------------|------------------|
|               |      |                   |                 |                  |                  |                  |

Deleted all signals.

\* Agilent 14:11:11 Jun 25, 2013

GOJO#6425 LTX-TALL FCCC HARM 2 H

Ref 80 dB $\mu$ V

Atten 5 dB

Mkr1 1.820025 GHz

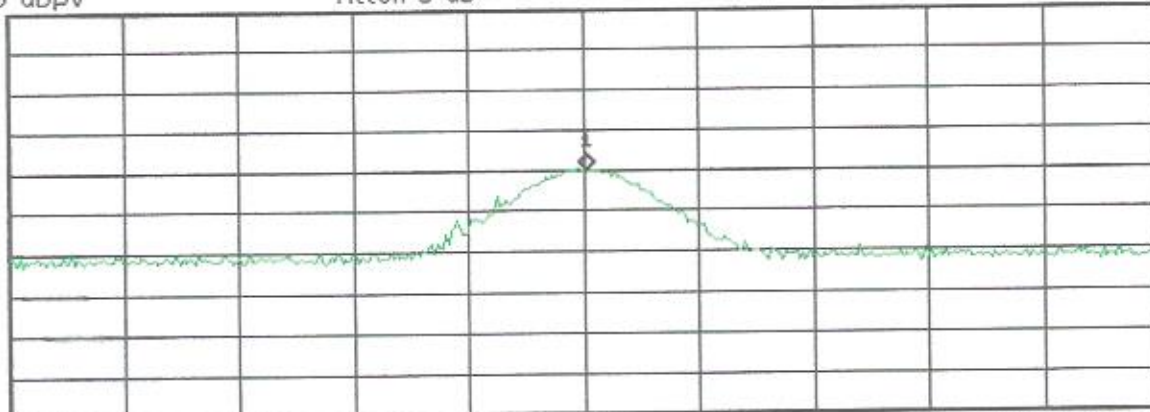
47.78 dB $\mu$ V

Peak

Log

8

dB/



Center 1.82 GHz

Res BW 1 MHz

VBW 3 MHz

Span 10 MHz

Sweep 4 ms (401 pts)

| Signal<br>(0) | Freq | Peak Ampl<br>dBμV | Qp Ampl<br>dBμV | Avg Ampl<br>dBμV | Peak Δ<br>dB | LL1 Peak Δ<br>dB | LL2<br>dB |
|---------------|------|-------------------|-----------------|------------------|--------------|------------------|-----------|
|---------------|------|-------------------|-----------------|------------------|--------------|------------------|-----------|

Deleted all signals.

✱ Agilent 14:12:34 Jun 25, 2013

GOJ0#6425 LTX-TALL FCCC HARM 3 H

Ref 80 dB $\mu$ V

Atten 5 dB

Mkr1 2.7303000 GHz

35.35 dB $\mu$ V

Peak

Log

8

dB/

|        |
|--------|
| Marker |
|--------|

2.730300000 GHz

35.35 dBμV



Center 2.73 GHz

Res BW 1 MHz

VBW 3 MHz

Span 5 MHz

Sweep 5 ms (401 pts)

| Signal<br>(0) | Freq | Peak Ampl<br>dBμV | Qp Ampl<br>dBμV | Avg Ampl<br>dBμV | Peak Δ LL1<br>dB | Peak Δ LL2<br>dB |
|---------------|------|-------------------|-----------------|------------------|------------------|------------------|
|               |      |                   |                 |                  |                  |                  |

Deleted all signals.

10: 32: 24 JUN 25. 2013  
70 60J0#6425 LTX TALL FCCC HARM 4 H

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 3.64000 GHz  
29.23 dBμV

PREAMP ON

LOG REF 80.0 dBμV

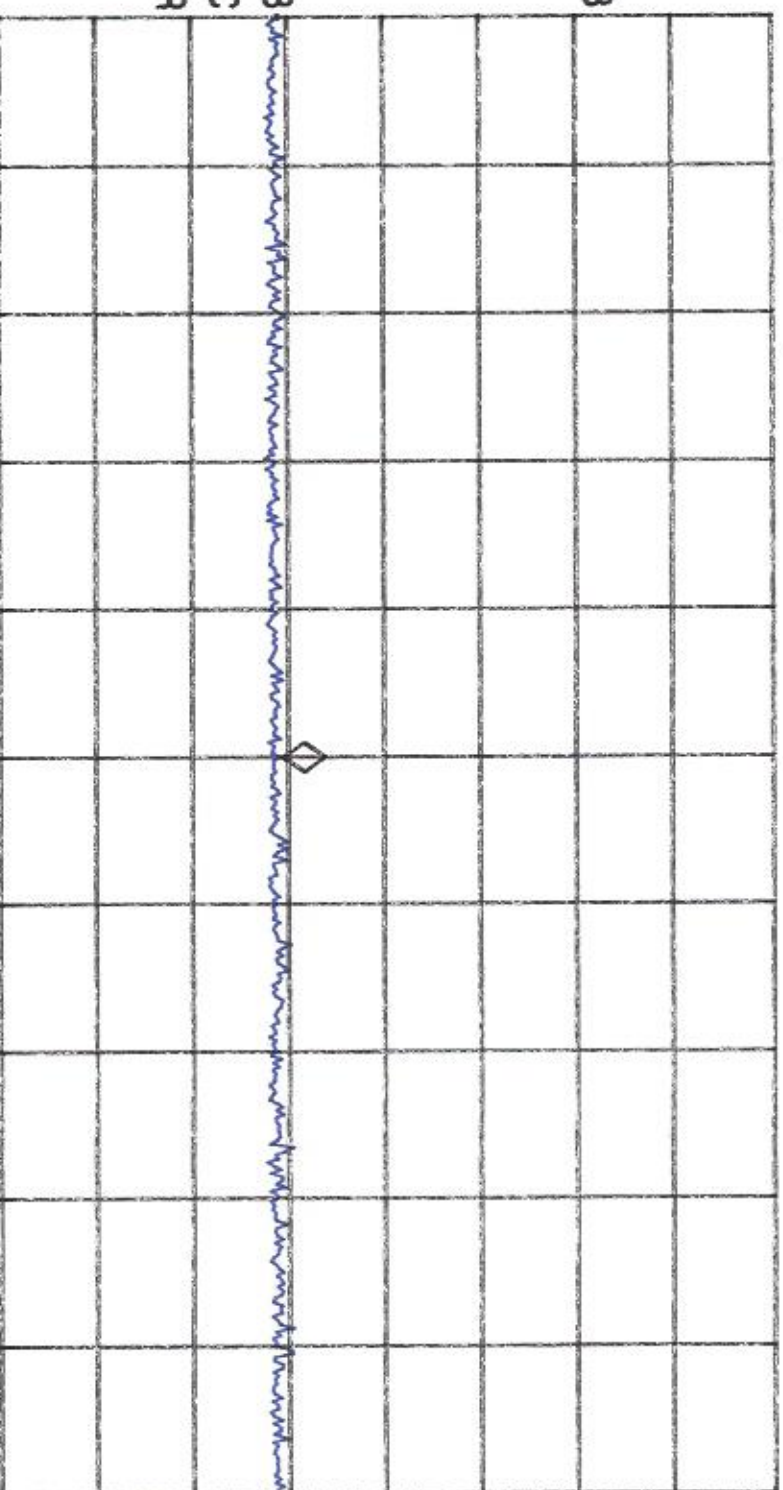
10

dB/

ATN

10 dB

VA SB  
SC FC  
CORR



CENTER 3.64000 GHz  
#IF BW 1.0 MHz  
AVG BW 300 kHz  
SPAN 10.00 MHz  
SWP 20.0 msec

10:39:57 JUN 25, 2013  
60J0#6425 LTX TALL FCCC HARM 5 H

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 4.54995 GHz  
28.67 dBμV

PREAMP ON

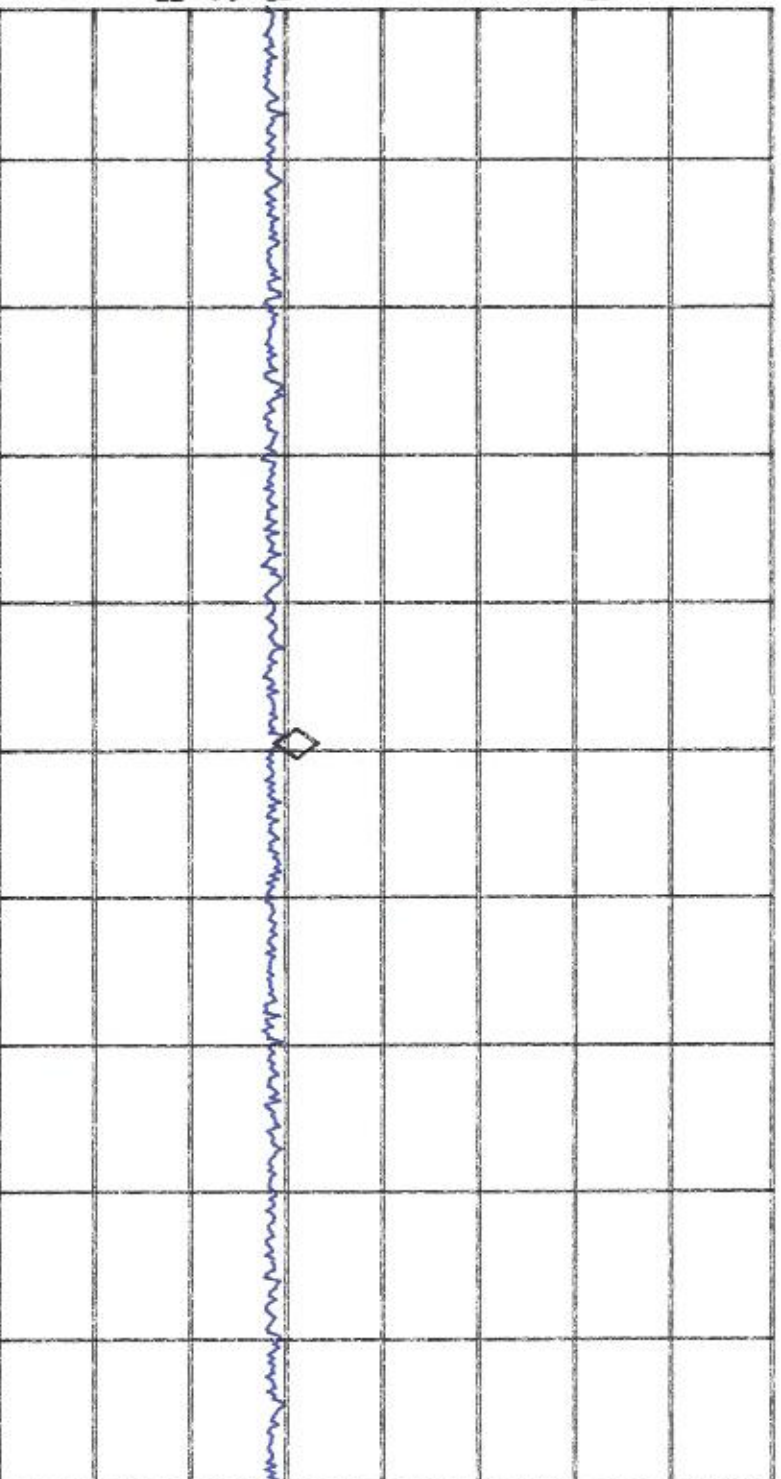
LOG REF 80.0 dBμV

10 dB/

ATTN

10 dB

VA SB  
SC FC  
CORR



CENTER 4.55000 GHz

#IF BW 1.0 MHz

AVG BW 300 kHz

SPAN 10.00 MHz

SWP 20.0 msec

10:56:28 JUN 25, 2013  
60J0#6425 LTX TALL FCCC HARM 6 H

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 5.45995 GHz  
27.65 dBμV

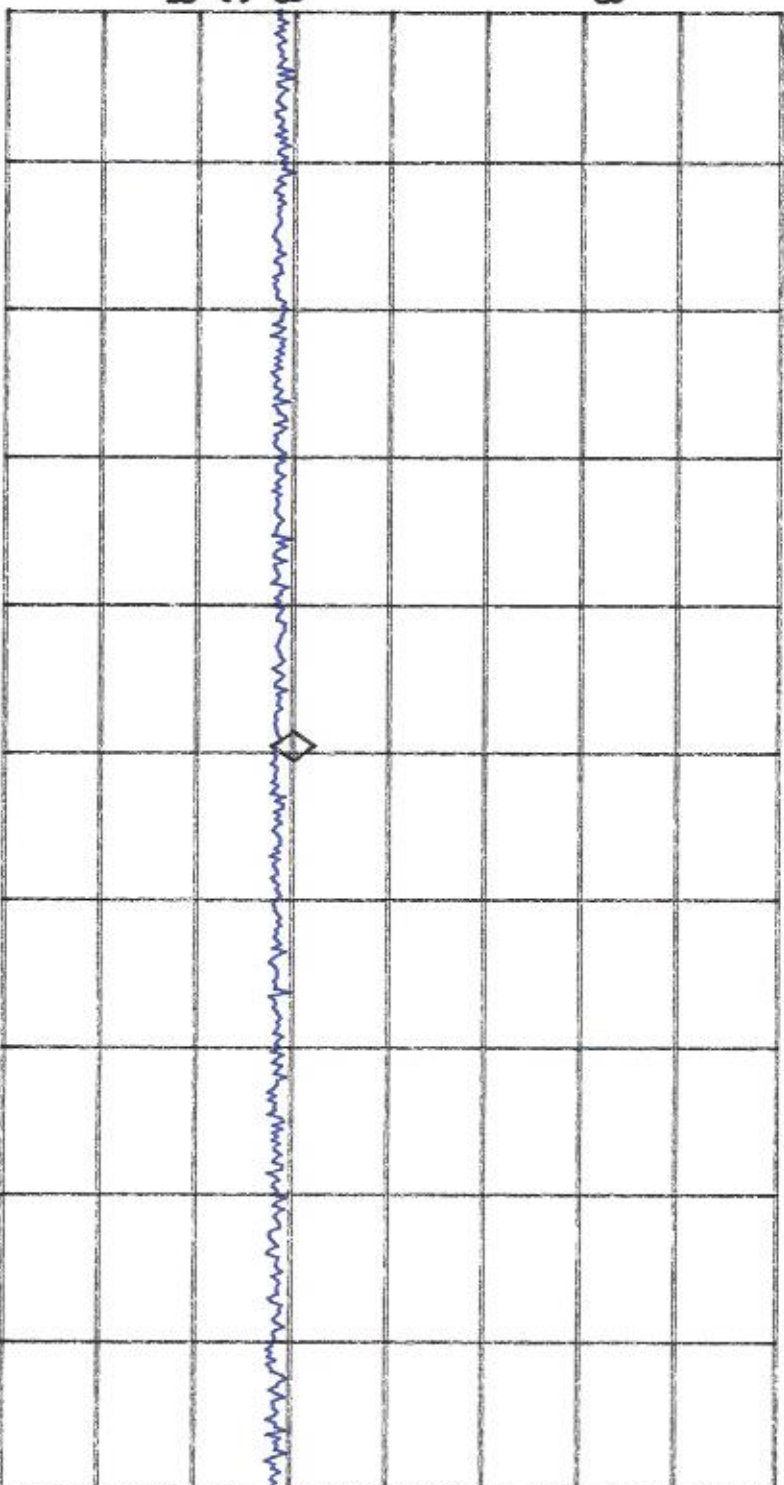
PREAMP ON

LOG REF 80.0 dBμV

10 dB/  
ATTN

10 dB

VA SB  
SC FC  
CORR



CENTER 5.46000 GHz  
#IF BW 1.0 MHz

AVG BW 300 kHz

SPAN 10.00 MHz  
SWP 20.0 msec

11:05:04 JUN 25, 2013  
G0J0#6425 LTX TALL FCCC HARM 7 H

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 6.36998 GHz  
28.70 dBμV

PREAMP ON

LOG REF 80.0 dBμV

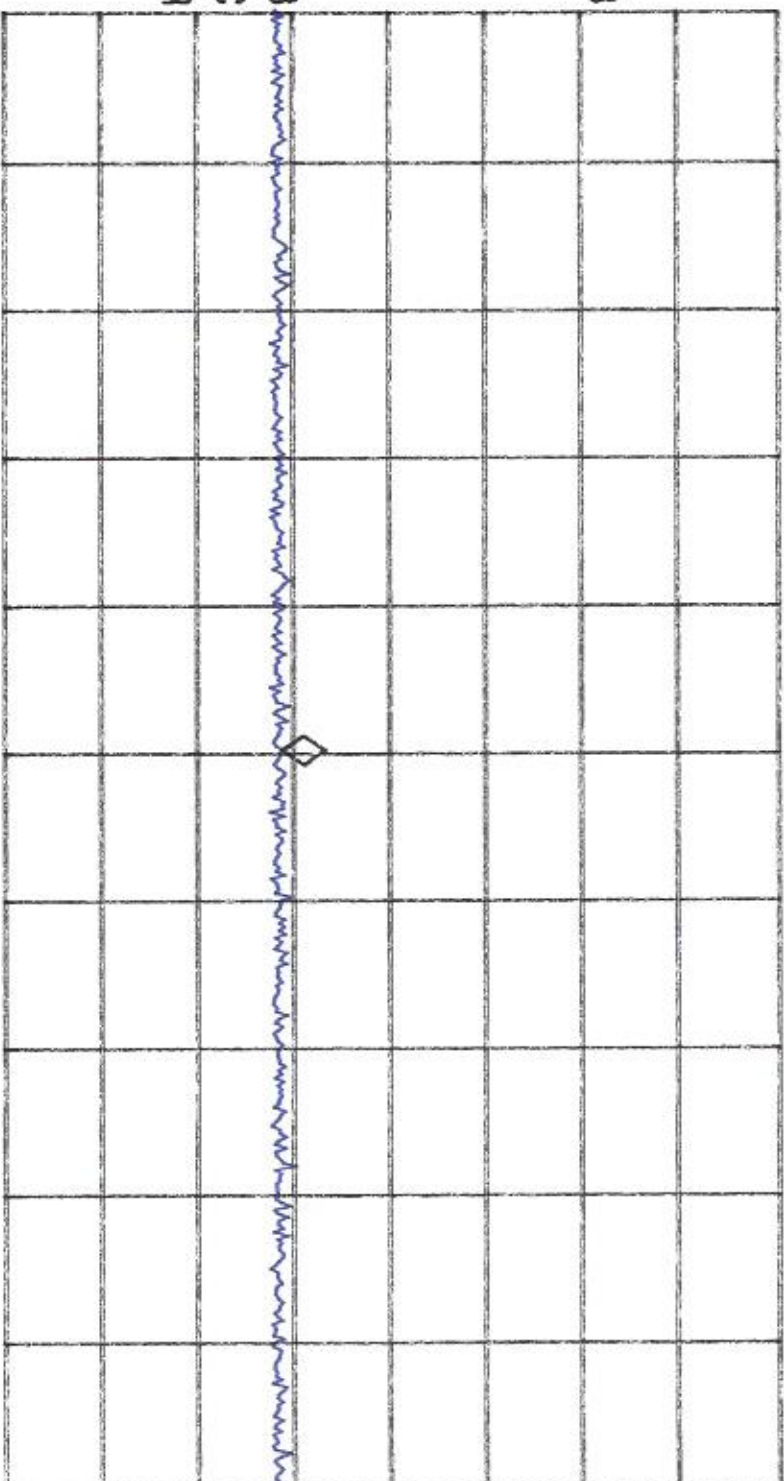
10

dB/

ATN

10 dB

VA SB  
SC FC  
CORR



CENTER 6.37000 GHz

#IF BW 1.0 MHz

AVG BW 300 kHz

SPAN 10.00 MHz  
SWP 20.0 msec

11:07:30 JUN 25, 2013  
60J0#6425 LTX TALL FCCC HARM 8 H

ACTV DET: PEAK  
MEAS DET: PEAK GP AVG

MKR 7.27975 GHz  
29.40 dBμV

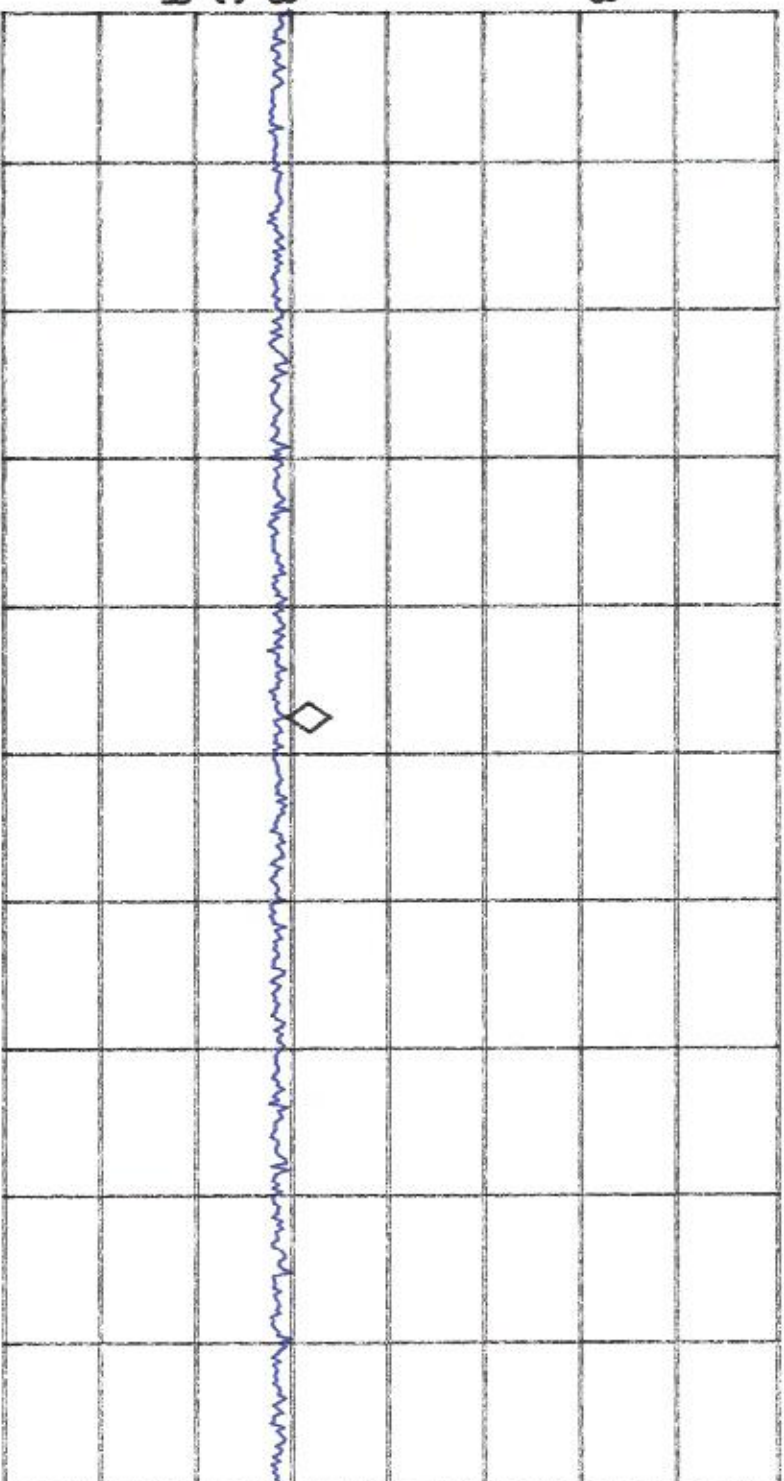
PREAMP ON

LOG REF 80.0 dBμV

10  
dB/  
ATN

10 dB

VA SB  
SC FC  
CORR

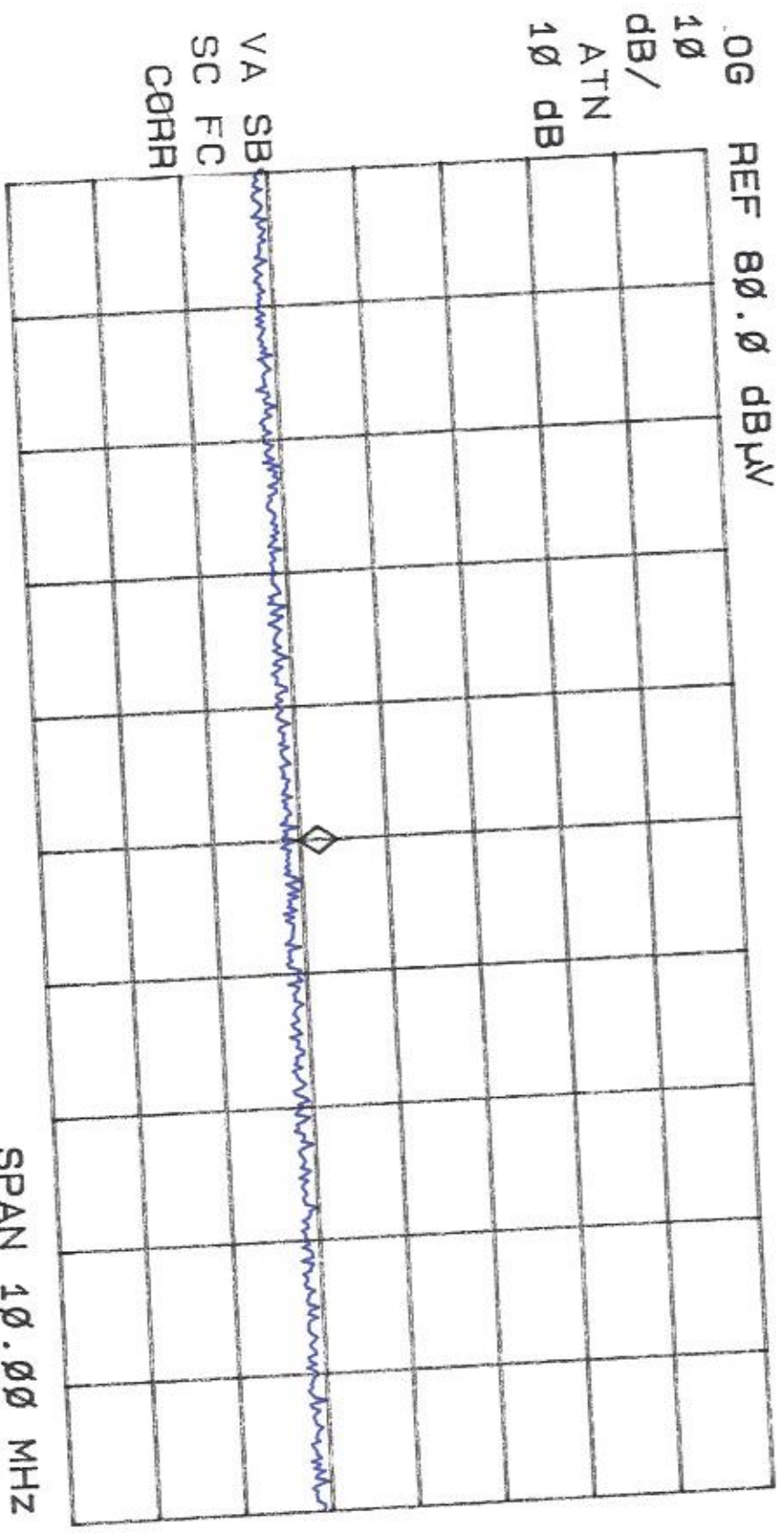


CENTER 7.28000 GHz  
#IF BW 1.0 MHz  
AVG BW 300 kHz  
SPAN 10.00 MHz  
SWP 20.0 msec

11: 12: 34 JUN 25, 2013  
HP 60J0#6425 LTX TALL FCCC HARM 9 H

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 8.19000 GHz  
29.61 dBμV

PREAMP ON



CENTER 8.19000 GHz

#IF BW 1.0 MHz

AVG BW 300 KHz

SPAN 10.00 MHz

SWP 20.0 msec

11:20:12 JUN 25, 2013  
G0J0#6425 LTX TALL FCCC HARM 10 H

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 9.09993 GHz  
28.70 dBμV

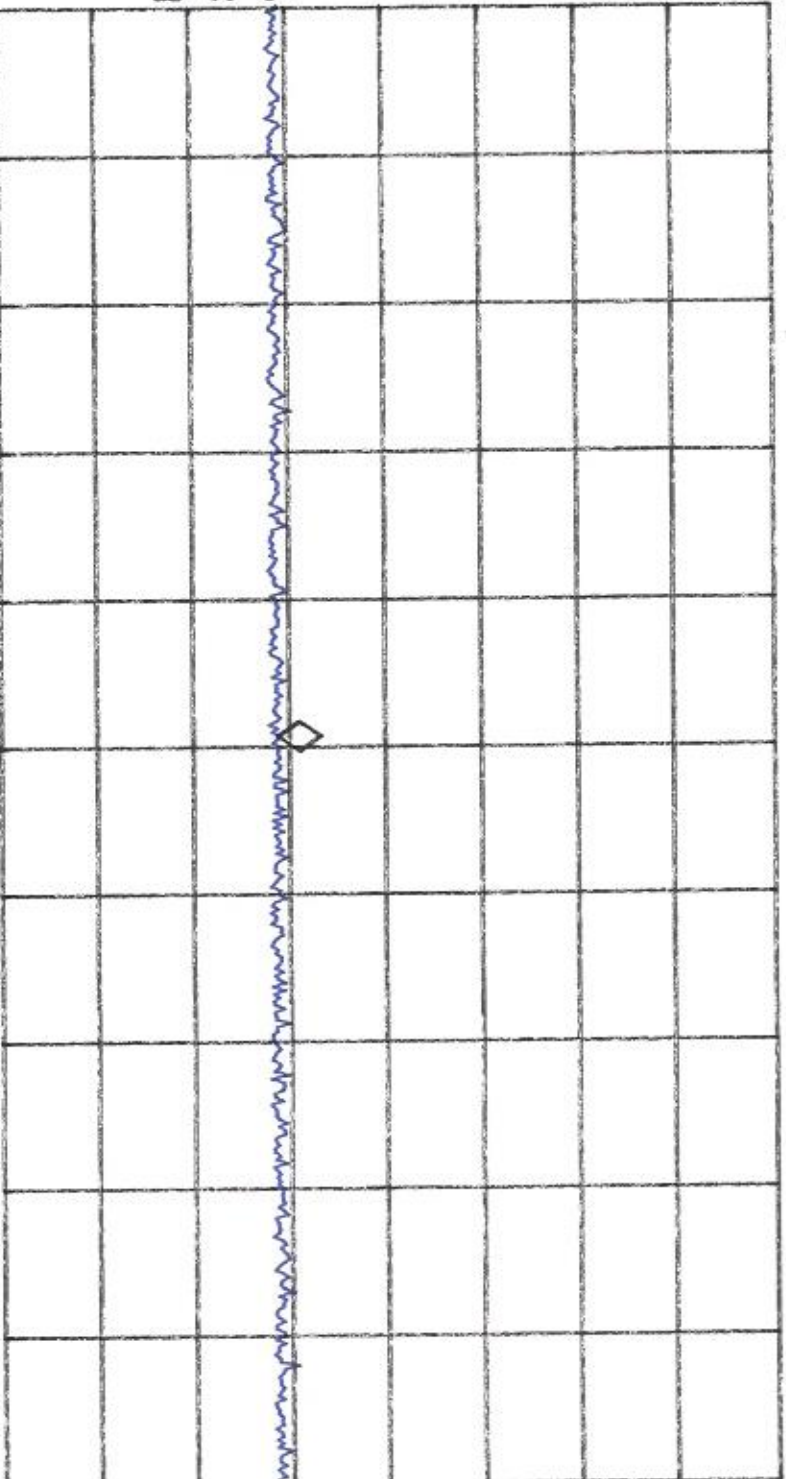
PREAMP ON

LOG REF 80.0 dBμV

10  
dB/  
ATN

10 dB

VA SB  
SC FC  
CORR



CENTER 9.10000 GHz  
#IF BW 1.0 MHz  
AVG BW 300 kHz  
SPAN 10.00 MHz  
SWP 20.0 msec

\* Agilent 08:42:36 Jun 26, 2013

G0J0#6425 LTX-TALL FCCC HARM 1 V 3M

Ref 80 dB $\mu$ V

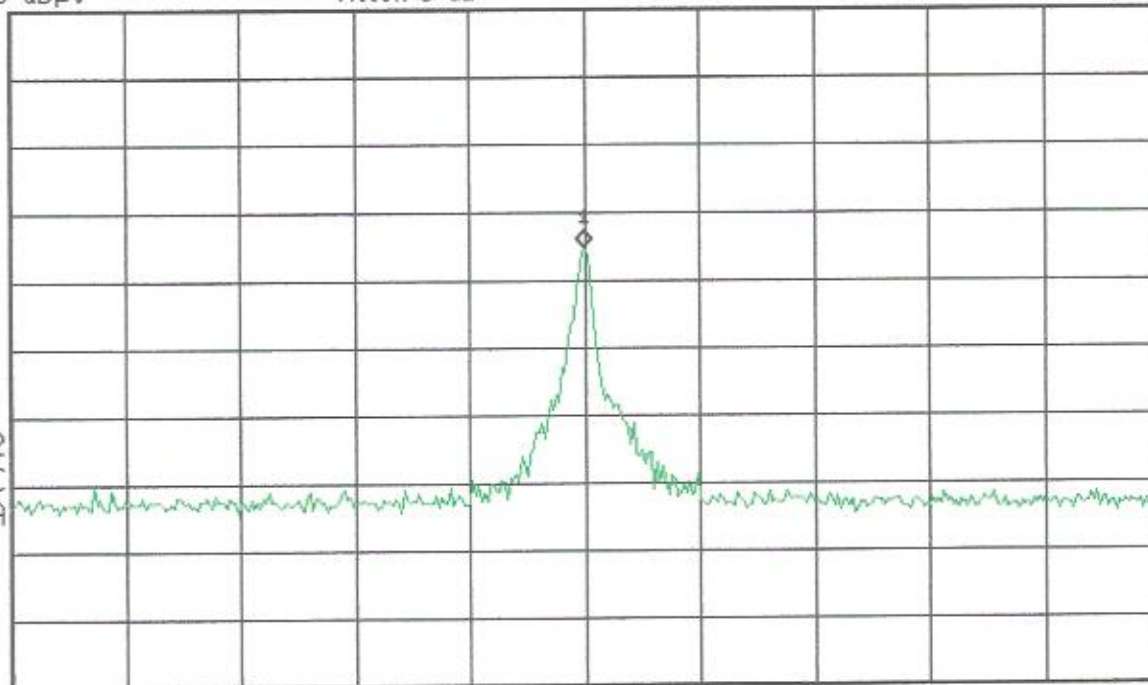
Atten 5 dB

Mkr1 910.000 MHz

51.82 dB $\mu$ V

Peak  
Log  
8  
dB/

V1 S2  
S3 FC  
RA



Center 910 MHz

Res BW 120 kHz

VBW 300 kHz

Span 10 MHz

Sweep 4 ms (401 pts)

\* Agilent 14:09:47 Jun 25, 2013

GOJ0#6425 LTX-TALL FCCC HARM 2 V

Ref 80 dB $\mu$ V

Atten 5 dB

Mkr1 1.820025 GHz

56.24 dB $\mu$ V

Peak

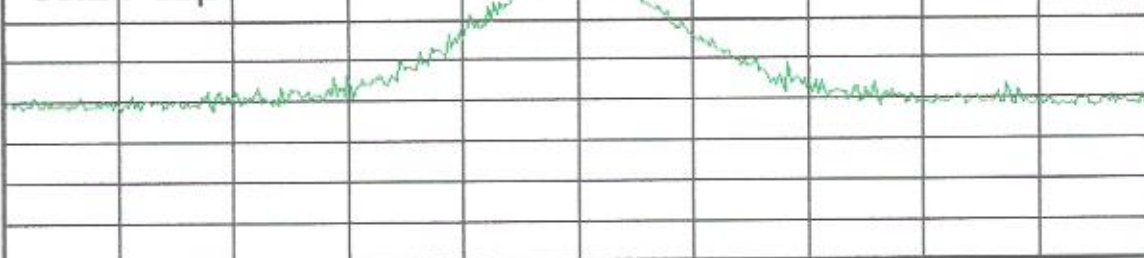
Log

8

dB/

Marker

1.820025050 GHz

56.24 dB $\mu$ V

Center 1.82 GHz

Res BW 1 MHz

VBW 3 MHz

Span 10 MHz

Sweep 4 ms (401 pts)

| Signal<br>(0) | Freq | Peak Ampl<br>dBμV | Qp Ampl<br>dBμV | Avg Ampl<br>dBμV | Peak Δ LL1<br>dB | Peak Δ LL2<br>dB |
|---------------|------|-------------------|-----------------|------------------|------------------|------------------|
|               |      |                   |                 |                  |                  |                  |

Deleted all signals.

Agilent 14:13:38 Jun 25, 2013

GOJO#6425 LTX-TALL FCCC HARM 3 V

Ref 80 dB $\mu$ V

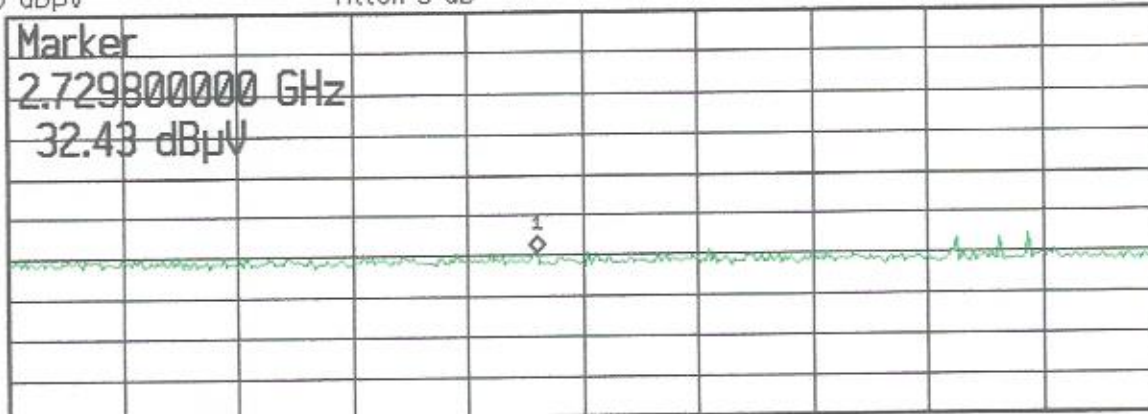
Atten 5 dB

Mkr1 2.7298000 GHz

32.43 dB $\mu$ VPeak  
Log  
8  
dB/

Marker

2.729800000 GHz

32.43 dB $\mu$ V

Center 2.73 GHz

Res BW 1 MHz

VBW 3 MHz

Span 5 MHz

Sweep 5 ms (401 pts)

| Signal<br>(0) | Freq | Peak Ampl<br>dBμV | Qp Ampl<br>dBμV | Avg Ampl<br>dBμV | Peak Δ LL1<br>dB | Peak Δ LL2<br>dB |
|---------------|------|-------------------|-----------------|------------------|------------------|------------------|
|               |      |                   |                 |                  |                  |                  |

Deleted all signals.

10:35:07 JUN 25, 2013  
60J0#6425 LTX TALL FCCC HARM 4 V

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 3.64010 GHz  
29.63 dB $\mu$ V

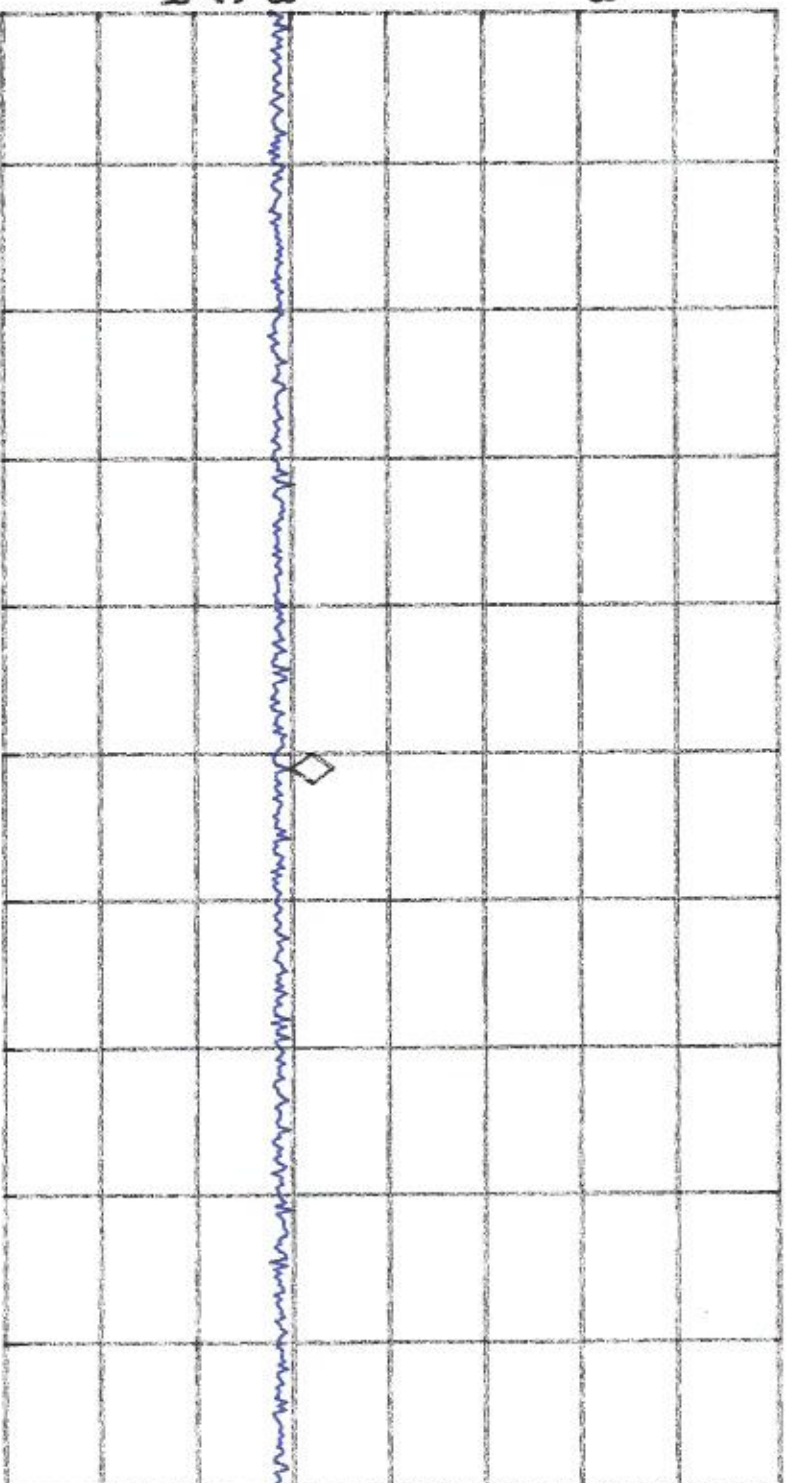
PREAMP ON

LOG REF 80.0 dB $\mu$ V

10  
dB/  
ATN

10 dB

VA SB  
SC FC  
CORR



CENTER 3.64000 GHz  
#IF BW 1.0 MHz

AVG BW 300 kHz

SPAN 10.00 MHz  
SWP 20.0 msec

10:37:38 JUN 25, 2013  
HP 6000#6425 LTX TALL FCCC HARM 5 V

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 4.54995 GHz  
29.23 dBμV

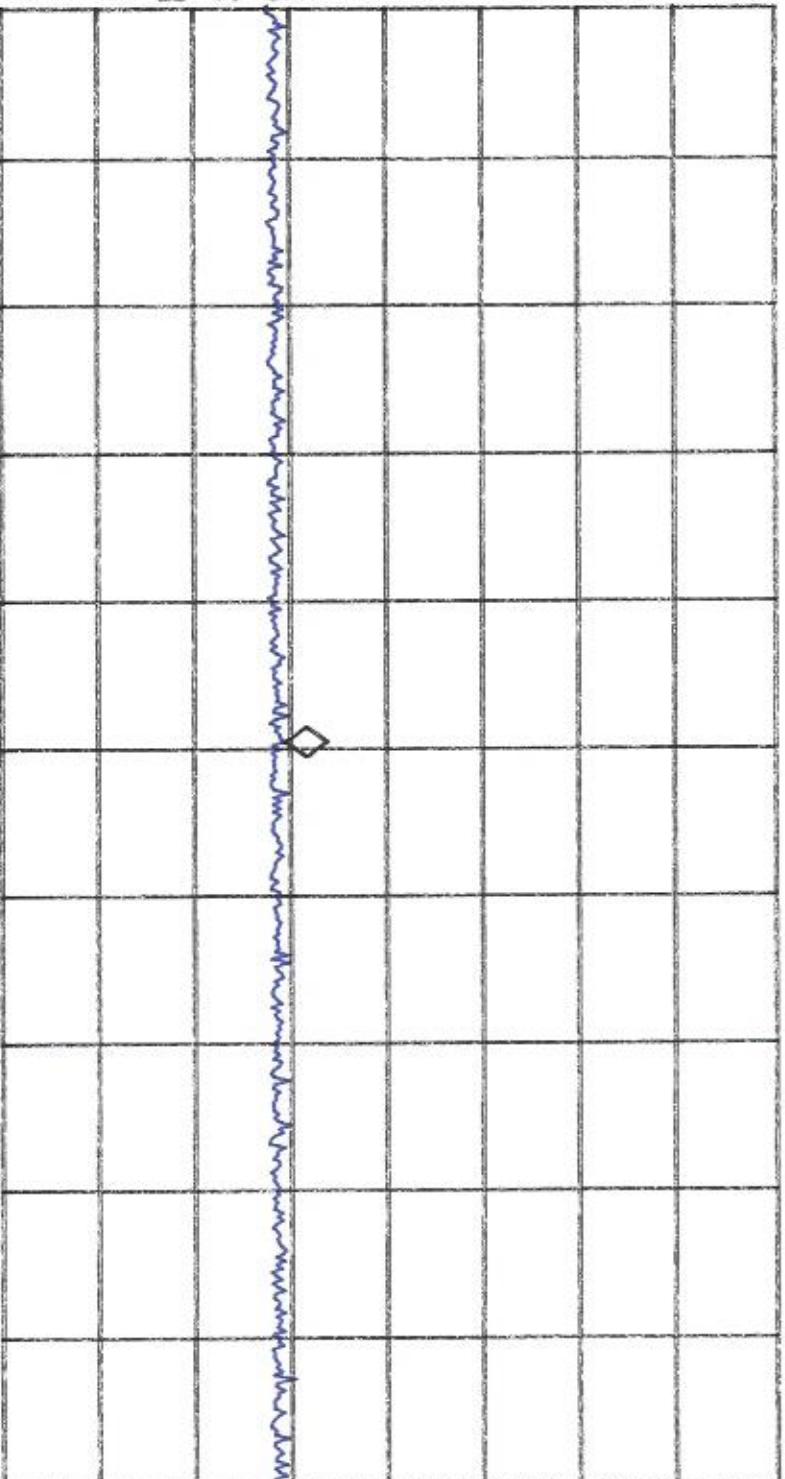
PREAMP ON

LOG REF 80.0 dBμV

10  
dB/  
ATN

10 dB

VA SB  
SC FC  
CORR



CENTER 4.55000 GHz  
#IF BW 1.0 MHz  
AVG BW 300 kHz  
SPAN 10.00 MHz  
SWP 20.0 msec

10: 58: 51 JUN 25. 2013  
hp 60J0#6425 LTX TALL FCCC HARM 6 V

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 5.45985 GHz  
29.61 dB $\mu$ V

PREAMP ON

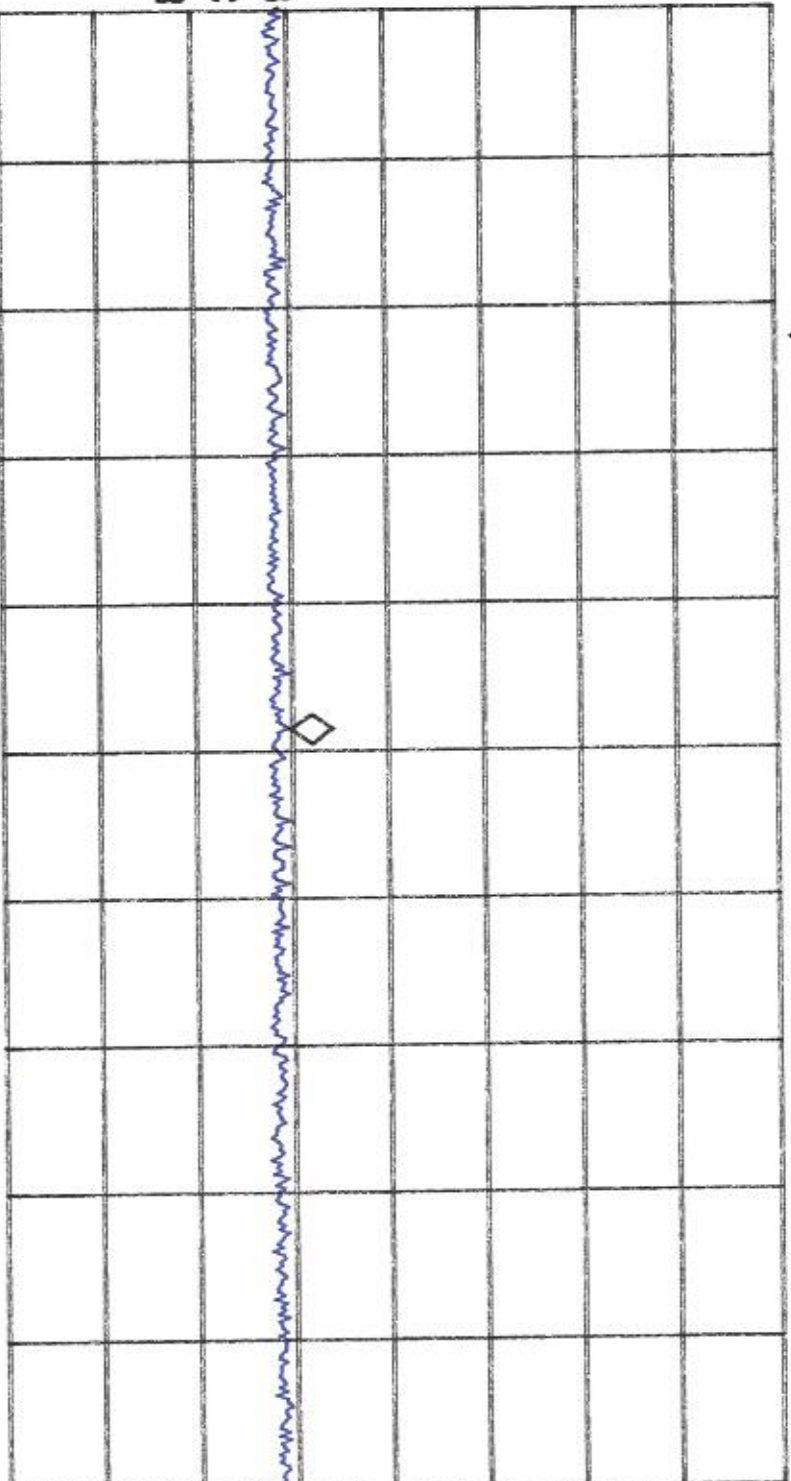
LOG REF 80.0 dB $\mu$ V

10  
dB/

ATN

10 dB

VA SB  
SC FC  
CORR



CENTER 5.46000 GHz

#IF BW 1.0 MHz

AVG BW 300 KHz

SPAN 10.00 MHz  
SWP 20.0 msec

11:02:47 JUN 25, 2013  
7P GOJO#6425 LTX TALL FCCC HARM 7 V

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 6.37005 GHz  
29.07 dBμV

PREAMP ON

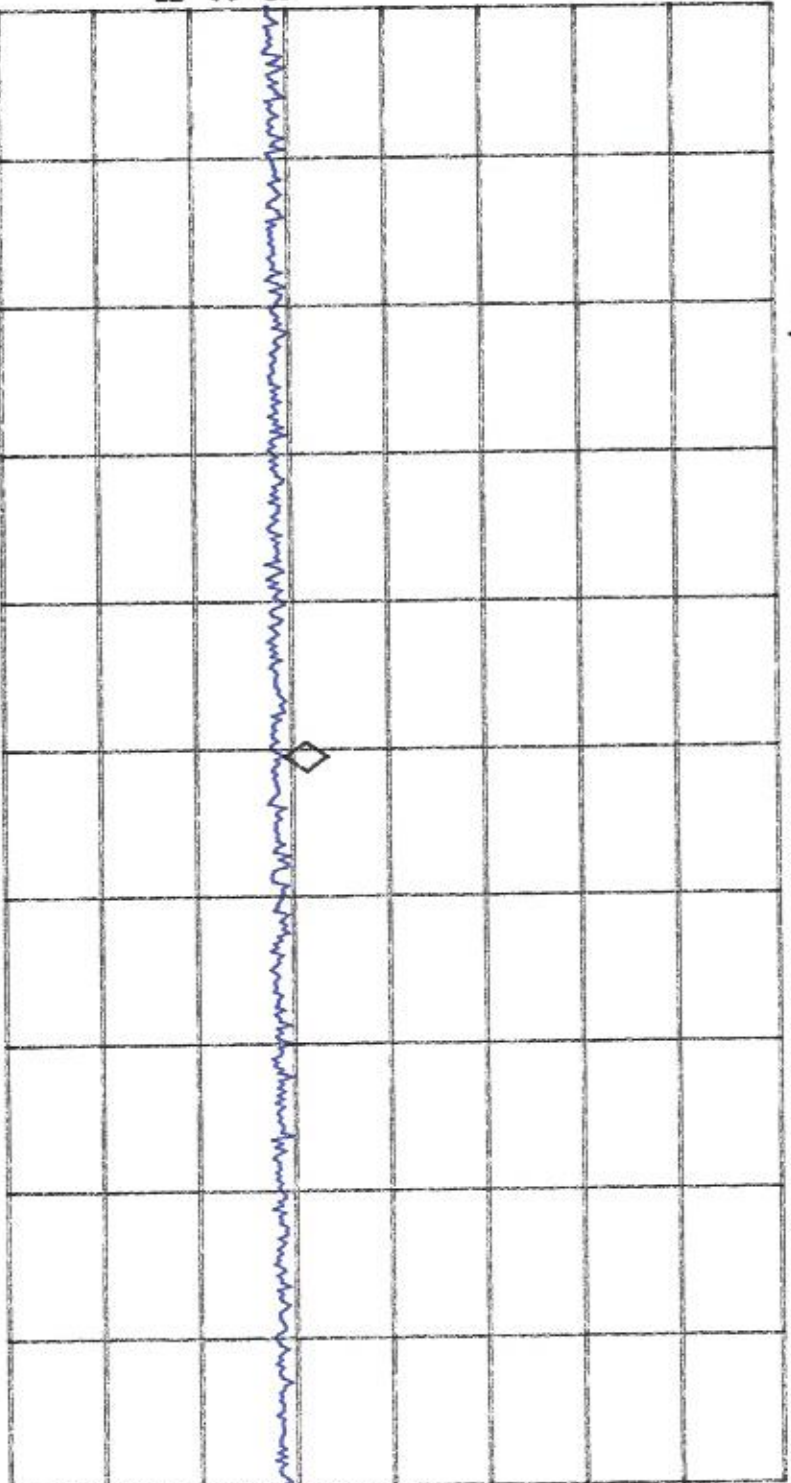
LOG REF 80.0 dBμV

10 dB/

ATN

10 dB

V A SB  
SC FC  
CORR



CENTER 6.37000 GHz

#IF BW 1.0 MHz

AVG BW 300 KHz

SPAN 10.00 MHz  
SWP 20.0 msec

11:09:53 JUN 25, 2013  
60J0#6425 LTX TALL FCCC HARM 8 V

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 7.27973 GHz  
29.35 dBμV

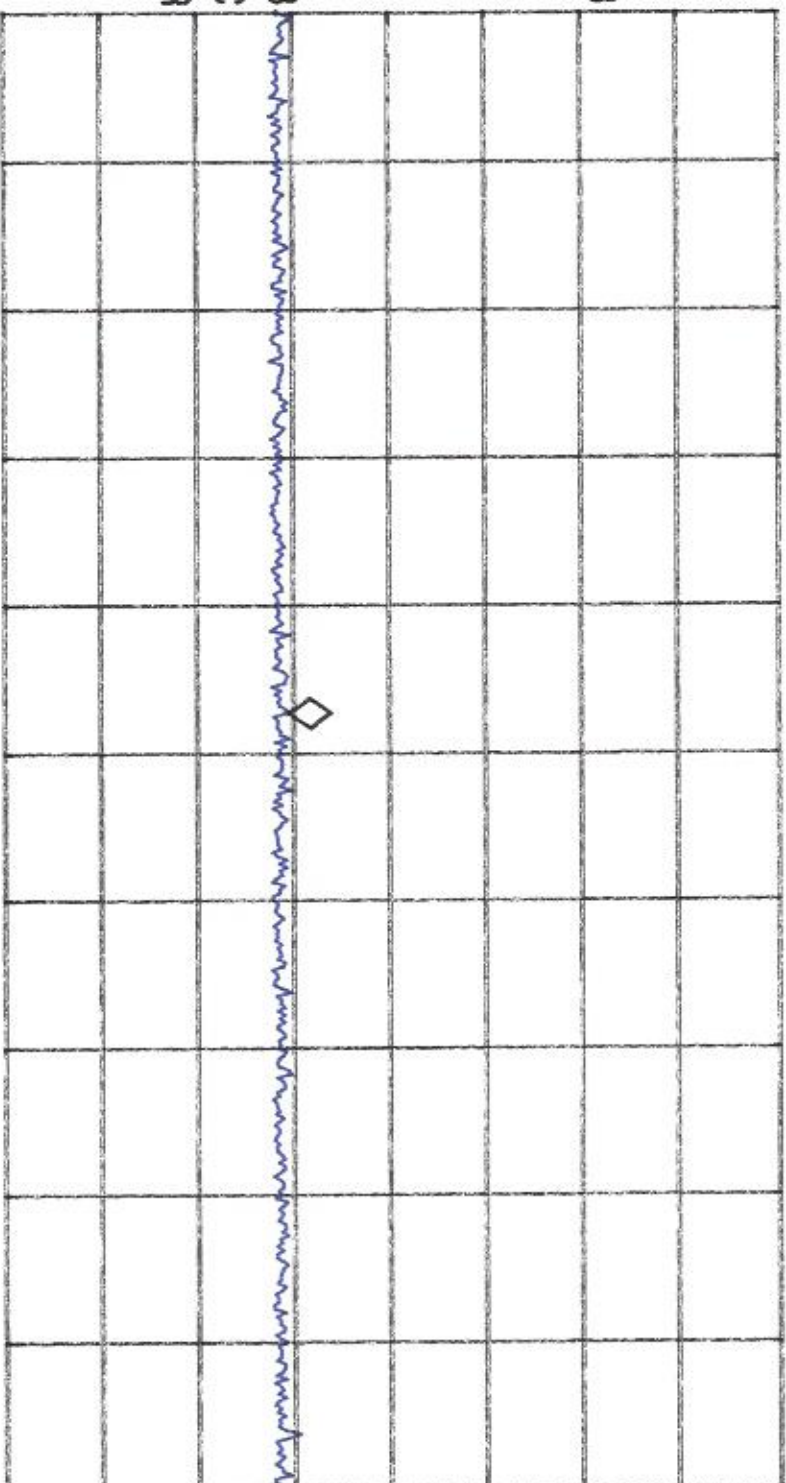
PREAMP ON

LOG REF 80.0 dBμV

10  
dB/  
ATTN

10 dB

VA SB  
SC FC  
CORR



CENTER 7.28000 GHz  
#IF BW 1.0 MHz  
AVG BW 300 kHz  
SPAN 10.00 MHz  
SWP 20.0 msec

11:15:34 JUN 25, 2013  
7P GOJ0#6425 LTX TALL FCCC HARM 9 V

ACTV DET: PEAK  
MEAS DET: PEAK GP AVG

MKR 8.19048 GHz  
29.54 dB $\mu$ V

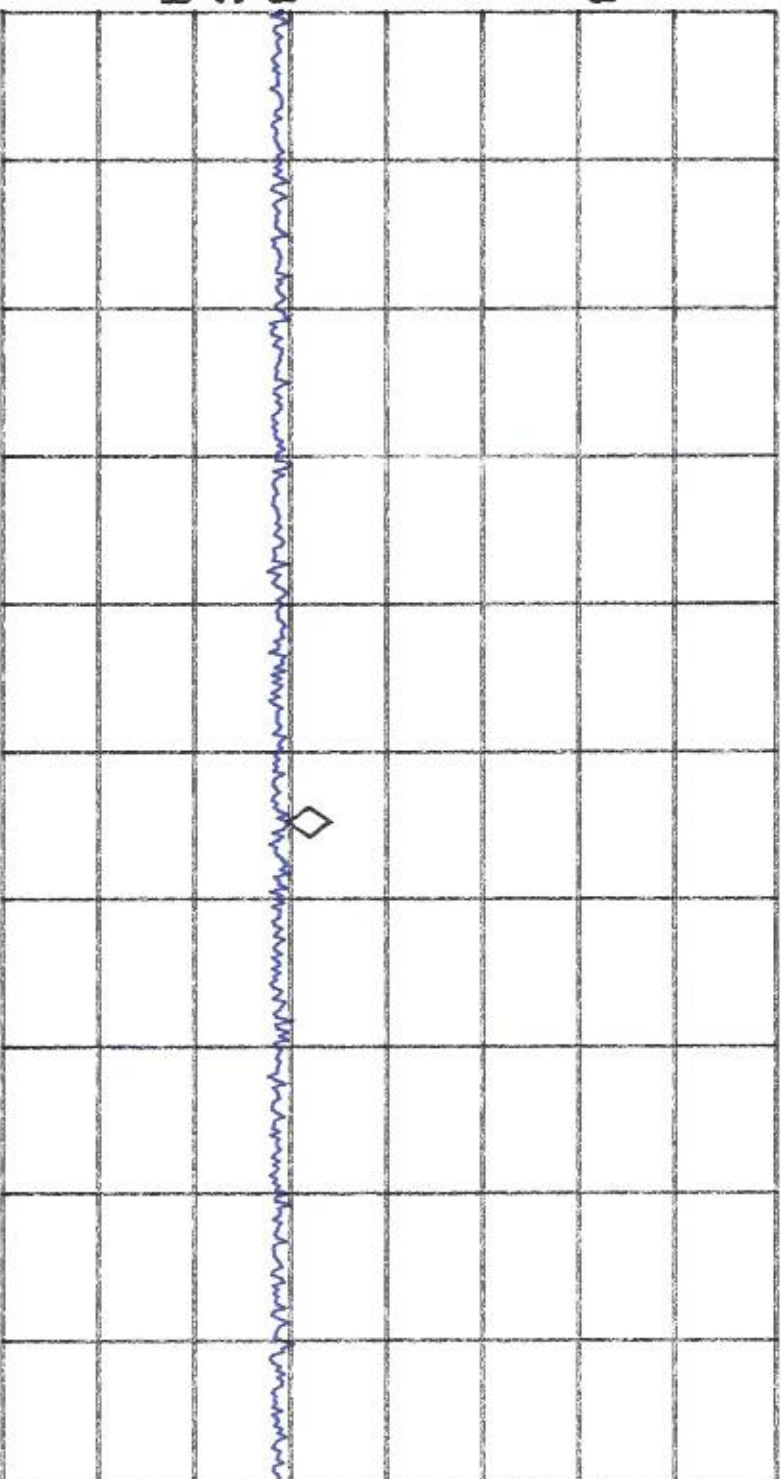
PREAMP ON

LOG REF 80.0 dB $\mu$ V

10  
dB/  
ATTN

10 dB

MA SB  
SC FC  
CORR



CENTER 8.19000 GHz  
#IF BW 1.0 MHz  
AVG BW 300 kHz  
SPAN 10.00 MHz  
SWP 20.0 msec

11: 17: 49 JUN 25, 2013  
G0J0#6425 LTX TALL FCCC HARM 10 V

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG

MKR 9.09993 GHz  
28.47 dBμV

PREAMP ON

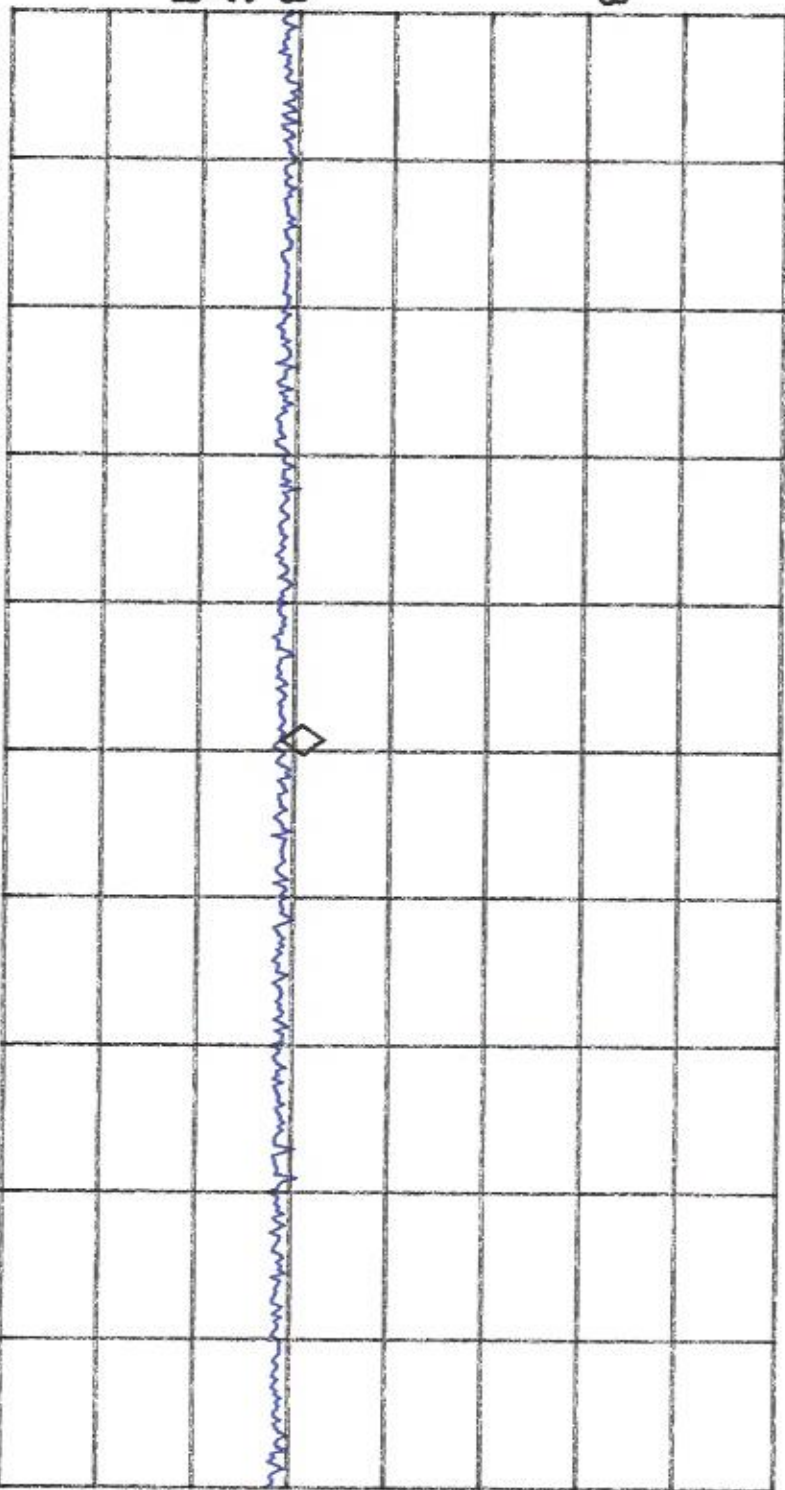
LOG REF 80.0 dBμV

10 dB/

ATN

10 dB

VA SB  
SC FC  
CORR



CENTER 9.10000 GHz

#IF BW 1.0 MHz

AVG BW 300 kHz

SPAN 10.00 MHz  
SWP 20.0 msec

| <b><i>DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT</i></b>                                                                                                                                      |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>GOJO Industries</b><br>Limited Approval Wireless Transmitter Module 1960-501-WHT<br>Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is<br>Smartlink Ready LTX-7 13XX-##-YYY Dispenser | Project Number:<br>6425 |

**Test Datasheets-Bandwidth Test Minimum 6dB Bandwidth less than 500 KHz**

2 Pages of Data to Follow

Agilent 08:54:18 Jun 26, 2013

G0J0#6425 LTX-TALL FCCC BANDWIDTH H 3M

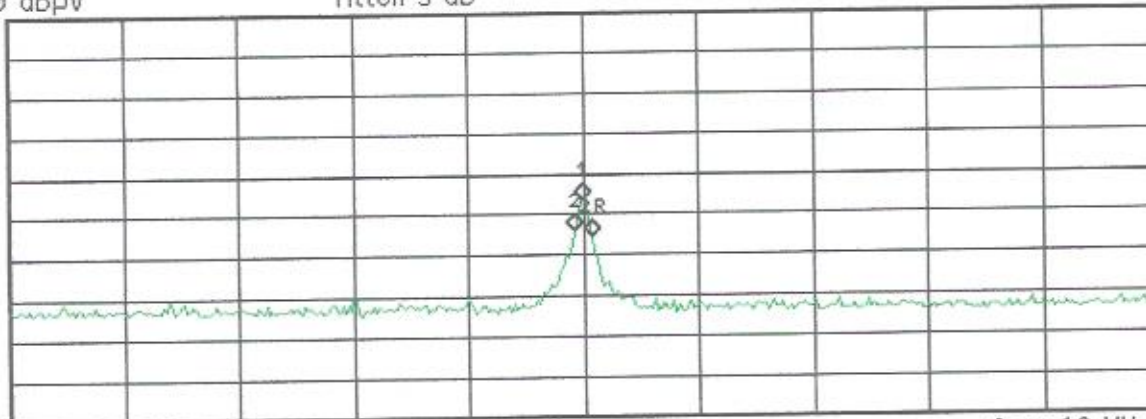
Ref 80 dBμV

Atten 5 dB

Mkr2 Δ -150 kHz

1.363 dB

Peak  
Log  
8  
dB/



Center 910 MHz

Res BW 120 kHz

VBW 300 kHz

Span 10 MHz

Sweep 4 ms (401 pts)

| Signal<br>(3) | Freq      | Peak Ampl<br>dBμV | Qp Ampl<br>dBμV | Avg Ampl<br>dBμV | Peak Δ<br>dB | LL1<br>dB | Peak Δ<br>dB | LL2<br>dB |
|---------------|-----------|-------------------|-----------------|------------------|--------------|-----------|--------------|-----------|
| 1             | 910 MHz   | 42.92             |                 |                  |              |           |              |           |
| 2             | 909.9 MHz | 36.92             |                 |                  |              |           |              |           |
| 3             | 910.1 MHz | 35.55             |                 |                  |              |           |              |           |

Signal Added To List

Agilent 08:47:27 Jun 26, 2013

G0J0#6425 LTX-TALL FCCC BANDWIDTH V 3M

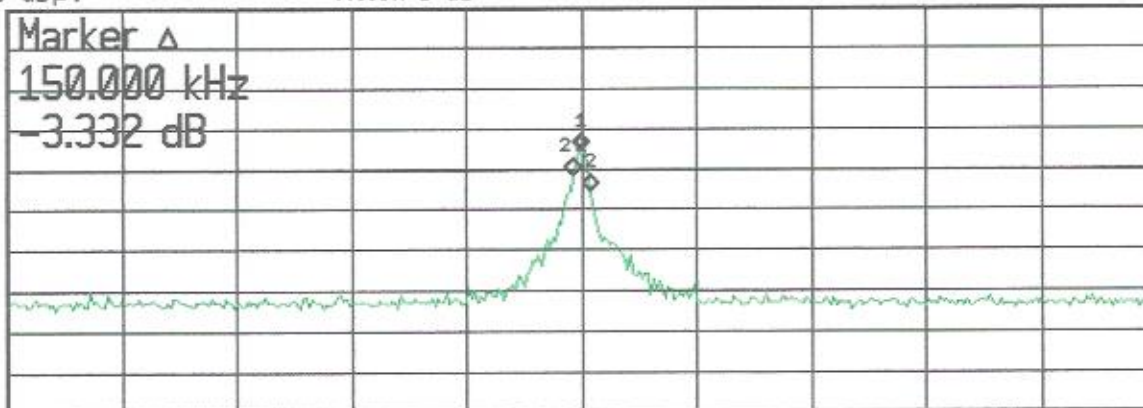
Mkr2  $\Delta$  150 kHz

Ref 80 dB $\mu$ V

Atten 5 dB

-3.332 dB

Peak  
Log  
8  
dB/



Center 910 MHz

Span 10 MHz

Res BW 120 kHz

VBW 300 kHz

Sweep 4 ms (401 pts)

| Signal<br>(3) | Freq      | Peak Ampl<br>dB $\mu$ V | Qp Ampl<br>dB $\mu$ V | Avg Ampl<br>dB $\mu$ V | Peak $\Delta$ LL1<br>dB | Peak $\Delta$ LL2<br>dB |
|---------------|-----------|-------------------------|-----------------------|------------------------|-------------------------|-------------------------|
| 1             | 910 MHz   | 51.82                   |                       |                        |                         |                         |
| 2             | 909.9 MHz | 46.87                   |                       |                        |                         |                         |
| 3             | 910.1 MHz | 43.54                   |                       |                        |                         |                         |

Signal Added To List

| <b>DIVERSIFIED T.E.S.T. TECHNOLOGIES, INC. TEST REPORT</b>                                                                                                                                             |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>GOJO Industries</b><br>Limited Approval Wireless Transmitter Module 1960-501-WHT<br>Rev. 004 and 1930-513-910 Rev. ABC in the host where the host is<br>Smartlink Ready LTX-7 13XX-##-YYY Dispenser | Project Number:<br>6425 |

## Measurement Protocol

The methodology used during the testing performed on the EUT in this report was ANSI C63.4:2009.

The EUT was powered with 6 Volts DC during the collection of data included within this report.

The data is compared to FCC Part 15.249 C limits.

**Please have a company official review this report and sign.**



## Annex

Limited Approval Wireless Transmitter Module P/N: 1960-501-WHT Rev. 004 and 1930-513-910 Rev. ABC February 15, 2014

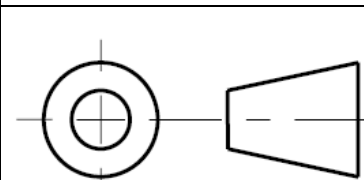
Limited Approval Wireless Transmitter Module Installed into Smartlink Ready (LTX-7 13XX-##-YYY Dispenser)



NOTES:

1. MATERIAL:  
FASSON 77113  
COLOR: WHITE  
FACESTOCK: 0.7 MIL CLEAR BOPP  
ADHESIVE: S2001  
LINER: 1.2 MIL PET
2. OVAL BOXED DIMENSIONS ARE CRITICAL.
3. BARCODE TO BE TYPE 128 TO CONTAIN SERIAL NUMBER
3. PART TO BE FREE OF DIRT, GREASE, OIL OR ANY FOREIGN MATERIAL
4. SHIPPING REQUIREMENTS:  
CAREFULLY PACKED TO AVOID DAMAGE IN QUANTITIES, IN UNIFORM SIZED SHIPPING CONTAINERS ON UNIFORM SIZED PALLET (48"LENGTH X 40"WIDTH X 66" TALL) CARTONS TO BE MARKED CLEARLY IN 1" HIGH MINIMUM LETTERS. WITH QUANTITY, GOJO PART, LOT, AND P.O. NUMBER.

SCALE 1:1

|                                                                                                           |  |                                                                         |  |                 |                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------|--|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>INTERPRET DRAWING PER<br/>ASME Y14.100<br/>UNLESS OTHERWISE SPECIFIED<br/>DIMENSIONS ARE IN INCHES</p> |  | <p>TITLE: <b>FCC LABEL, LTX AMS</b><br/>STATE: <b>Developmental</b></p> |  |                 |                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>THIRD ANGLE PROJECTION</p>                                                                             |  | <p>CONFIDENTIAL ©2013 GOJO Industries, Inc. All Rights Reserved.</p>    |  |                 |                                                                                                                                                                                                                                                                                                                                                                                     |
|                      |  | <p>TOLERANCES:</p>                                                      |  |                 | <p>THIS DRAWING IS THE PROPERTY OF<br/><b>GOJO INDUSTRIES, INC.</b><br/>ONE GOJO PLAZA, SUITE 500 AKRON, OH 44311 AND IS LOANED UPON CONDITION THAT IT IS NOT TO BE<br/>REPRODUCED OR COPIED IN WHOLE OR PART, OR USED FOR FURNISHING INFORMATION TO OTHERS OR FOR ANY<br/>OTHER PURPOSE DETRIMENTAL TO THE INTEREST OF GOJO INDUSTRIES, INC. AND WILL BE RETURNED UPON REQUEST</p> |
|                                                                                                           |  | <p>DECIMALS:<br/>X.X = 0.1<br/>X.XX = 0.01<br/>X.XXX = 0.005</p>        |  |                 |                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                           |  | <p>FRACTIONS:<br/>X/XX = 1/32</p>                                       |  |                 |                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                           |  | <p>ANGLES:<br/>X.X = 0.5<br/>X.XX = 0.50</p>                            |  |                 |                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>DRAWN BY: M. BULLOCK</p>                                                                               |  | <p>SCALE 1:1</p>                                                        |  | <p>SHEET</p>    |                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>DATE: 7/25/13</p>                                                                                      |  | <p>DO NOT SCALE</p>                                                     |  | <p>1 of 1</p>   |                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>CHKD BY:</p>                                                                                           |  | <p>SIZE</p>                                                             |  | <p>DWG. NO.</p> |                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>DATE:</p>                                                                                              |  | <p>B</p>                                                                |  | <p>1960-013</p> |                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                           |  |                                                                         |  | <p>REV 1</p>    |                                                                                                                                                                                                                                                                                                                                                                                     |

GOJO Industries, Inc.

4

3

2

1

AAA-##-XXST  
DWG. NO.

REV

ECO ECR

REVISION

APRVD. BY

DATE

APPROVAL SIGNATURES ON FILE

D

C

B

A

13XX-##-YYY

Color option:  
(blank) = Standard color  
BLK = Chrome and black

Package option:  
EA = Individual unit  
## = Pack-out quantity

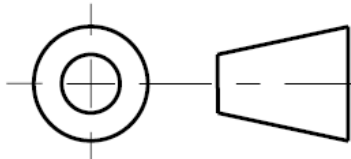
Brand:  
30 = PURELL®  
31 = PROVON®

Family Identifier:  
13 = SMARTLINK™ Ready LTX-7™ dispenser family

Example:  
1331-04-BLK = PROVON® SMARTLINK™ Ready LTX-7™ dispenser, chrome and black, 4-pack

INTERPRET DRAWING PER  
ASME Y14.100  
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES

THIRD ANGLE PROJECTION



TOLERANCES:  
  
DECIMALS:  
X.X = 0.1  
.X.XX = 0.01  
.X.XXX = 0.005  
  
FRACTIONS:  
X/XX = 1/32  
  
ANGLES:  
X.X = 0.5  
X.XX = 0.50

TITLE: SMARTLINK™ Ready LTX-7™ dispenser part numbering  
STATE: Developmental

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DRAWN BY: M. BULLOCK

SCALE 1:1

SHEET

DATE: 1/22/14

DO NOT SCALE

1 of 1

CHKD BY:

SIZE

DWG. NO.

REV

DATE:

B

13XX-##-YYY

1

Duty Cycle Chart

