

# EMC EMISSION - TEST REPORT

## UNITED STATES STANDARD 47 CFR PART 15, SUBPART E

Test Report File No. : **SC106727-06**      Date of Issue: 11 October 2001  
 Revision Date: 30 October 2001 (Rev. 1.1)

Model / Serial No. : **40400-XX<sup>1</sup> / ENGR UNIT #1**

---

Product Type : **UNII Radio FCC ID: HZB-U58-B60**

---

Applicant : **WESTERN MULTIPLEX CORPORATION**

---

Manufacturer : **WESTERN MULTIPLEX CORPORATION**

---

License holder : **WESTERN MULTIPLEX CORPORATION**

---

Address : **1196 Borregas Avenue**  
 : **Sunnyvale, CA 94089**

---

Test Result :  **Positive<sup>2</sup>**       **Negative**

Test Project Number  
 Reference(s) : **SC106727-06**

---

Total pages - Test Report : **157**

<sup>1</sup> 40400-25 (20 megabytes) and 40400-65 (20 to 60 megabytes)

<sup>2</sup> See General Remarks.

NOTE: All test equipment used during testing is calibrated and traceable to NIST.

*TÜV Product Service reports apply only to the specific sample tested under stated test conditions. It is the manufacturer's responsibility to assure the continued compliance of production units of this model. TÜV Product Service, Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV Product Service, Inc. issued reports.*

*This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval. This report shall not be used by the client to claim product endorsement by NVLAP or any agency of the US government.*

*TÜV Product Service, Inc. and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI*

## DIRECTORY - EMISSIONS Test Report

	<b>Pages</b>
Test Report	1 - 17
Directory	2
Test Regulations	3
General Remarks and Summary	17
Equipment	
15.407 (a) Output Power	5
15.407 (a) 26 dB Bandwidth	6
15.407 (a) (5) Power Density	7
15.407 (a) (6) The Ratio of the Peak Excursion of the Modulation Envelope to the Peak Transmit Power	8
15.407 (b) Out of Band Antenna Conducted Emission	9
15.407 (b) Band Edge Antenna Conducted Emission	10
15.205 Radiated Emission in Restricted Bands	11
15.207 AC Conducted Emission	12
15.209 Radiated Emission from Digital Part	13
15.209 Radiated Emission from Receiver L.O.	14
15.407 (c) Automatically Discontinue Transmission	15

### Technical Documentation

Test Data Sheets and Test Setup Drawing(s)	TD1
--	-----

### Appendices

<b>Appendix A</b> - Test Setups (Photographs)	A1
<b>Appendix B</b> - Product Information Form(s)	B1
<b>Appendix C</b> - Change History	C1
<b>Appendix D</b> - Supplemental Information	D1

**EMISSIONS TEST REGULATIONS :**

The emissions tests were performed according to the following regulations:

- EN 50081-1 / 1991
- EN 55011 / 1998
  - Group 1
  - Class A
- EN 55014 / 1993
  - Group 2
  - Class B
- EN 55022 / 1987
  - Household appliances and similar
  - Portable tools
  - Semiconductor devices
- EN 55022 / 1998
  - Class A
  - Class B
- VCCI
  - Class A
  - Class B
- VCCI
  - Class A ITE
  - Class B ITE
- - 47 CFR Part 15, Subpart E
  - - 15.407 (a)
  - - 15.407 (a) (5)
  - - 15.407 (a) (6)
  - - 15.407 (b)
  - - 15.205
  - - 15.207
  - - 15.209
  - - 15.407 (c)
- AS/NZS 3548: 1995
  - Class A
  - Class B
- CISPR 11 (1997)
  - Group 1
  - Class A
  - Group 2
  - Class B
- CISPR 22 (1997)
  - Class A
  - Class B

**Environmental Conditions In The Laboratory:**

	<u>Actual</u>
Temperature:	: 23 °C
Relative Humidity:	: 50 %
Atmospheric Pressure:	: 100.0 kPa

**Power Supply Utilized:**

Power supply system : 115 V / 60 Hz / 1 $\phi$

**Symbol Definitions:**

- - Applicable
- - Not Applicable

**Emissions Test Conditions: Output Power**

The *EMISSIONS* measurements were performed at the following test location:

- Test not applicable

■ - SR-3, Shielded Room, 12' x 20' x 8', Metal Chamber

**Test Equipment Used :**

<b>Model No.</b>	<b>Prop. No.</b>	<b>Description</b>	<b>Manufacturer</b>	<b>Serial No.</b>	<b>Cal Due Date</b>
HP8900D	802	Peak Power Meter	Hewlett Packard	3607U00653	04/02

**Result :**

■ - Pass  - Fail

Remarks: \_\_\_\_\_  
\_\_\_\_\_

**Emissions Test Conditions: 26 dB Bandwidth**

The *EMISSIONS* measurements were performed at the following test location:

- Test not applicable

■ - Western Multiplex Test Facility

**Test Equipment Used :**

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Due Date
E4404B	--	Agilent Spectrum Analyzer ESA-E Series 9kHz-6.7GHz	Agilent Technologies	US41191299	06/02

**Result :**

■ - Pass  - Fail

Remarks: Tested at customer's test facility. For calculation purpose.

---

**Emissions Test Conditions: Power Density**

The *EMISSIONS* measurements were performed at the following test location:

- Test not applicable

■ - Western Multiplex Test Facility

**Test Equipment Used :**

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Due Date
E4404B	--	Agilent Spectrum Analyzer ESA-E Series 9kHz-6.7GHz	Agilent Technologies	US41191299	06/02

**Result :**

■ - Pass  - Fail

Remarks: Tested at customer's test facility.

---

**Emissions Test Conditions: The Ratio of the Peak Excursion of the Modulation Envelope to the Peak Transmit Power**

The *EMISSIONS* measurements were performed at the following test location:

- Test not applicable

■ - TR-2, Test Room

**Test Equipment Used :**

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Due Date
HP8566B	407	Spectrum Analyzer 100Hz-22GHz with Display	Hewlett Packard	2311A02209 2542A12099	02/02

**Result :**

■ - Pass  - Fail

Remarks: \_\_\_\_\_





**Emissions Test Conditions: Band Edge Antenna Conducted Emission**

The *EMISSIONS* measurements were performed at the following test location:

- Test not applicable

■ - Western Multiplex Test Facility

**Test Equipment Used :**

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Due Date
E4404B	--	Agilent Spectrum Analyzer ESA-E Series 9kHz-6.7GHz	Agilent Technologies	US41191299	06/02

**Result :**

■ - Pass  - Fail

Remarks: Tested at customer's test facility.

---

**Emissions Test Conditions: Radiated Emission in Restricted Bands**

The *EMISSIONS* measurements were performed at the following test location:

- Test not applicable

- - Roof (Small Open Area Test Site) (Calibration Due Date: 16 July 2002)
- - SR-5, Shielded Room, 16' x 28' x 15', Metal, Semi-Anechoic Chamber

**Testing was performed at a test distance of :**

- - 3 meters
- - 1 meter

**Test Equipment Used :**

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Due Date
8566B	823	Spectrum Analyzer	Hewlett Packard	2332A02751	07/02
AMF-5D-010180-35-10P	719	PreAmp, 2GHz-20GHz	TUV PS	549460	04/02
3115	251	Antenna, Horn	Electro Mechanics Co	2595	10/02
HP8586B	407	Spectrum Analyzer	Hewlett Packard	2311A02209	02/02
HP11970K	652	Mixer	Hewlett Packard	3003A05400	--
12A18115300	6377	Antenna, Horn 18GHz-26 GHz	MI Technologies	21554MB	--

**Result :**

- - Pass
- Fail

Remarks: No signals were measurable at 3 meters. EUT moved to 1 meter distance. Special limit adjusted for 1 meter.

**Emissions Test Conditions: AC Conducted Emission**

The *EMISSIONS* measurements were performed at the following test location:

- Test not applicable

■ - SR-3, Shielded Room, 12' x 20' x 8', Metal Chamber

**Test Equipment Used :**

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Due Date
9252-50-R-24-BNC	458	LISN, 50 $\mu$ H /250 $\mu$ H/50 $\Omega$ / 0.25 $\mu$ F	Solar Electronics Co.	941719	04/02
ESHS 30	459	EMI Test Receiver	Rohde & Schwarz	832354/004	11/01
CAT-20	602	20 dB Attenuator	Mini-Circuits	--	09/02

**Result :**

■ - Pass  - Fail

Remarks: \_\_\_\_\_

**Emissions Test Conditions: Radiated Emission from Digital Part**

The *EMISSIONS* measurements were performed at the following test location:

- Test not applicable

■ - Canyon #2 (3- and 10-Meter Open Area Test Site), Carroll Canyon, San Diego (Calibration Due Date: 12 July 2002)

Testing was performed at a test distance of :

■ - 3 meters

Test Equipment Used :

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Due Date
LPB 2520/A	739	Antenna Bilog	Antenna Research	1170	04/02
ESVS 30	427	EMI Test Receiver	Rohde & Schwarz	830350/006	11/01

Result :

■ - Pass  - Fail

Remarks: \_\_\_\_\_  
\_\_\_\_\_

**Emissions Test Conditions: Radiated Emission from Receiver L.O.**

The *EMISSIONS* measurements were performed at the following test location:

- Test not applicable

- - Roof (Small Open Area Test Site) (Calibration Due Date: 16 July 2002)
- - Canyon #2 (3- and 10-Meter Open Area Test Site), Carroll Canyon, San Diego (Calibration Due Date: 12 July 2002)

**Testing was performed at a test distance of :**

- - 3 meters

**Test Equipment Used :**

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Due Date
LPB 2520/A	739	Antenna Bilog	Antenna Research	1170	04/02
ESVS 30	427	EMI Test Receiver	Rohde & Schwarz	830350/006	11/01
8566B	823	Spectrum Analyzer	Hewlett Packard	2332A02751	07/02
HP8445B	809	Automatic Preselector	Hewlett Packard	1442A01127	11/01
AFD3-0208-40-ST	367	PreAmp, 2GHz-8 GHz	Miteq Inc	155382	--
3115	251	Antenna, Horn	Electro Mechanics Co	2595	10/02
3146	244	Antenna	Electro Mechanics Co	1063	02/02
3115	453	Double Ridge Antenna 1GHz-18 GHz	EMCO	9412-4364	10/02

**Result :**

- - Pass
- Fail

Remarks: \_\_\_\_\_

---

**Emissions Test Conditions: Automatically Discontinue Transmission**

The *EMISSIONS* measurements were performed at the following test location:

- Test not applicable

■ - See Client Statement in Technical Documentation.

**Result :**

■ - Pass

- Fail

Remarks: \_\_\_\_\_

---

**Equipment Under Test (EUT) Test Operation Mode - Emissions Tests :**

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

- Standby
- Test Program (H - Pattern)
- Test Program (Color Bar)
- Test Program (Customer Specified)
- Practice Operation
- Normal Operating Mode
- \_\_\_\_\_

**Configuration of the equipment under test:**

- See Constructional Data Form in Appendix B - Page B2
- See Product Information Form(s) in Appendix B - Page B2

The following peripheral devices and interface cables were connected during the testing:

- \_\_\_\_\_ Type : \_\_\_\_\_
- \_\_\_\_\_ Type : \_\_\_\_\_
- \_\_\_\_\_ Type : \_\_\_\_\_
- \_\_\_\_\_ Type : \_\_\_\_\_
- \_\_\_\_\_ Type : \_\_\_\_\_
- \_\_\_\_\_ Type : \_\_\_\_\_
- \_\_\_\_\_ Type : \_\_\_\_\_
- \_\_\_\_\_ Type : \_\_\_\_\_
- unshielded power cable
- unshielded cables
- shielded cables                      MPS.No.: \_\_\_\_\_
- customer specific cables
- \_\_\_\_\_



**GENERAL REMARKS:**

NOTE: All photographs are representative of setup for maximum emissions.

- (\*) The following tests were performed by the customer at the customer's test site: 20 dB Bandwidth; Power Density; Out of Band Antenna Conducted Emission; 15.407(c) (automatically discontinue transmission). See customer's statements of conformity in Technical Documentation appendix.
- (\*) Radiated Emission in Restricted Bands - no signals were measurable at 3 meters. EUT moved to 1 meter distance. Special limit adjusted for 1 meter.

**SUMMARY:**

All tests according to the regulations cited on page 3 were

- Performed\*
- **Not** Performed

The Equipment Under Test

- **Fulfills** the general approval requirements cited on page 3.\*
- **Does not** fulfill the general approval requirements cited on page 3.

**Statement of Measurement Uncertainty**

The data and results referenced in this document are true and accurate. The measurement uncertainty is calculated to be  $\pm 2$  dB for conducted emissions and  $\pm 4$  dB for radiated emissions.

Equipment Received Date: 24 September 2001  
Testing Start Date: 24 September 2001  
Testing End Date: 04 October 2001

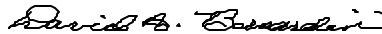
- TÜV PRODUCT SERVICE, INC. -

Responsible Engineer:



Jim Owen  
(EMC Chief Engineer)

Responsible Engineer:



Dave Bernardin  
(EMC Engineer)

## Technical Documentation

Test Data Sheets  
and  
Test Setup Drawing(s)

QAM 16 Modulation				
Frequency MHz	Output Power mW	Output Power dBm	EIRP Limit dBm	Max Gain dBi
Ch 5 5809.56	49.7	17.0	36	19.0
Ch 2 5768.06	49.3	16.9	36	19.1
Ch 0 5740.40	48.8	16.9	36	19.1

QAM 8 Modulation				
Frequency MHz	Output Power mW	Output Power dBm	EIRP Limit dBm	Max Gain dBi
Ch 5 5809.56	49.7	17.0	36	19.0
Ch 2 5768.06	49.3	16.9	36	19.1
Ch 0 5740.40	48.8	16.9	36	19.1

QPSK 3/4 Modulation				
Frequency MHz	Output Power mW	Output Power dBm	EIRP Limit dBm	Max Gain dBi
Ch 5 5809.56	49.7	17.0	36	19.0
Ch 2 5768.06	49.3	16.9	36	19.1
Ch 0 5740.40	48.8	16.9	36	19.1

10/29/2001 17:44

5627333003

WIRELESSHOME CORP

PAGE 02

On October 4, 2001 the 26-dB bandwidth test per FCC 15.407(a) was performed at Western Multiplex, Inc., 3780 Kilroy Airport Way, Suite 500, Long Beach, CA 90806.  
Model UNII Radio FCC ID: HZB-U58-B60 was tested and passed all tests.  
See data and test equipment attached.



Don Leimer, V.P. Engineering

Western Multiplex  
3780 Kilroy Airport Way  
Suite 500  
Long Beach, CA 90806  
562-733-3000  
562-733-3003



CUSTOMER: Western Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: 26 dB Bandwidth Part 15.407(a)

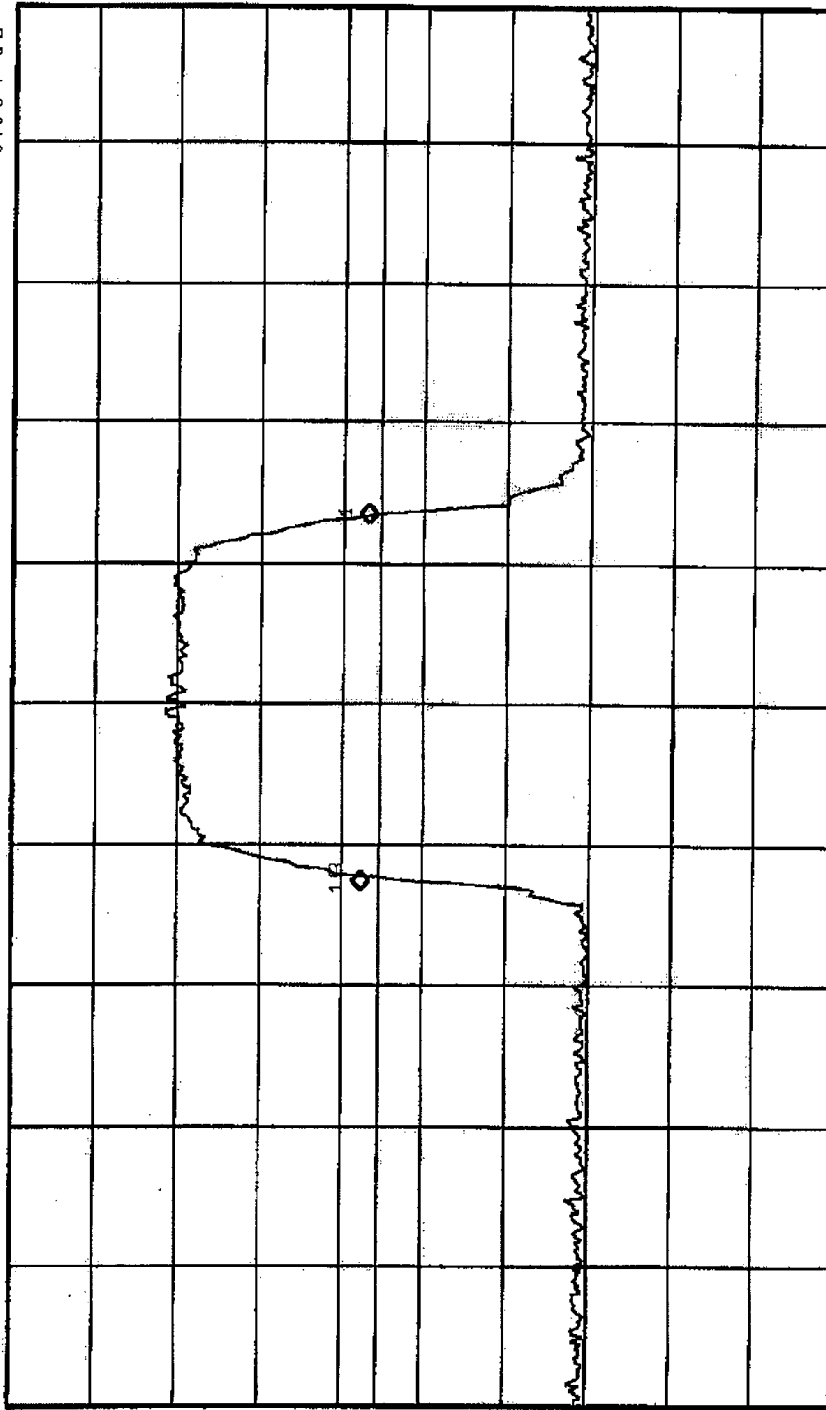
Report No. SC106727

Mode: *GAM8*  
*Highband 6F*

Oct. 04, 2001

TECH/ENGR: *[Signature]*

MODE: *GAM8 / CH 5*  
Ref 22.5 dBm  
Peak  
Log  
10  
dB/  
Offst  
2.5  
dB  
01  
-22.0  
dBm  
M1 S2  
S3 FC  
AA  
#Atten 30 dB  
A Mk11 25.8 MHz  
-0.684 dB



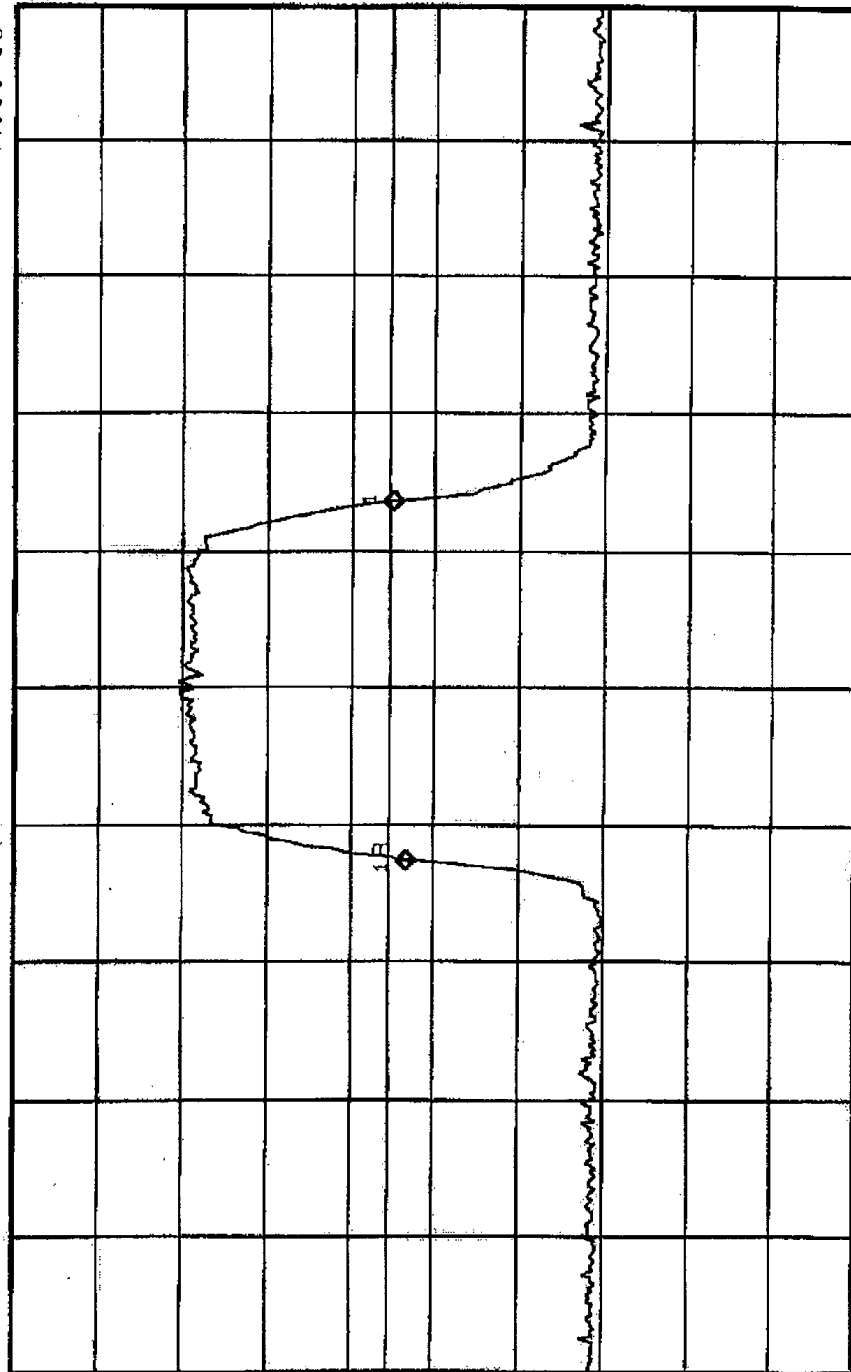
Center 5.809 GHz  
#Res BW 100 kHz  
Span 100 MHz  
Sweep 25 ms (401 pts)  
VBW 100 kHz

Report No. SC106727  
Mode: *GPS K Highband 6F*  
TECH/ENGR *[Signature]*  
Oct. 04, 2001

CUSTOMER: Western Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: 26 dB Bandwidth Part 15.407(a)

MODE: QPSK / CH 5  
Ref 22.5 dBm  
#Atten 30 dB

A Mk11 26.3 MHz  
1.685 dB



Peak  
Log  
10  
dB/  
Offst  
2.5  
dB  
DI  
-22.0  
dBm

#Atten 30 dB

M1 S2  
S3 FC  
AA

Center 5.809 GHz  
#Res BW 100 kHz  
Span 100 MHz  
Sweep 25 ms (401 pts)  
VBW 100 kHz

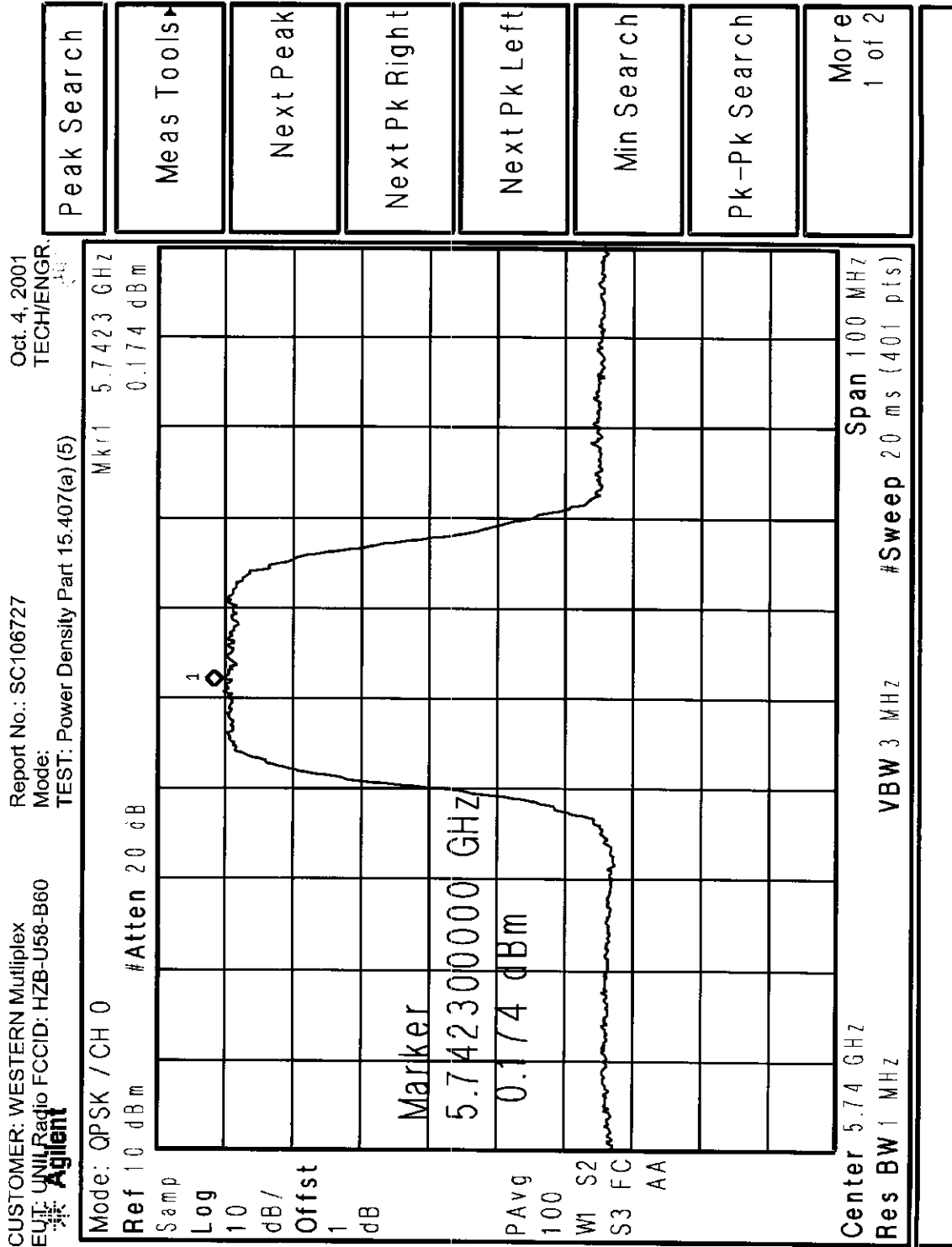
On October 4, 2001 the Power Density test per FCC 15.407 (a) (5) was performed at Western Multiplex, Inc. 3780 Kilroy Airport Way, Suite 500, Long Beach, CA 90806.  
Model UNII Radio FCC ID: HZB-U58-B60 was tested and passed all tests.  
See data and test equipment attached.



Don Leimer, V.P. Engineering

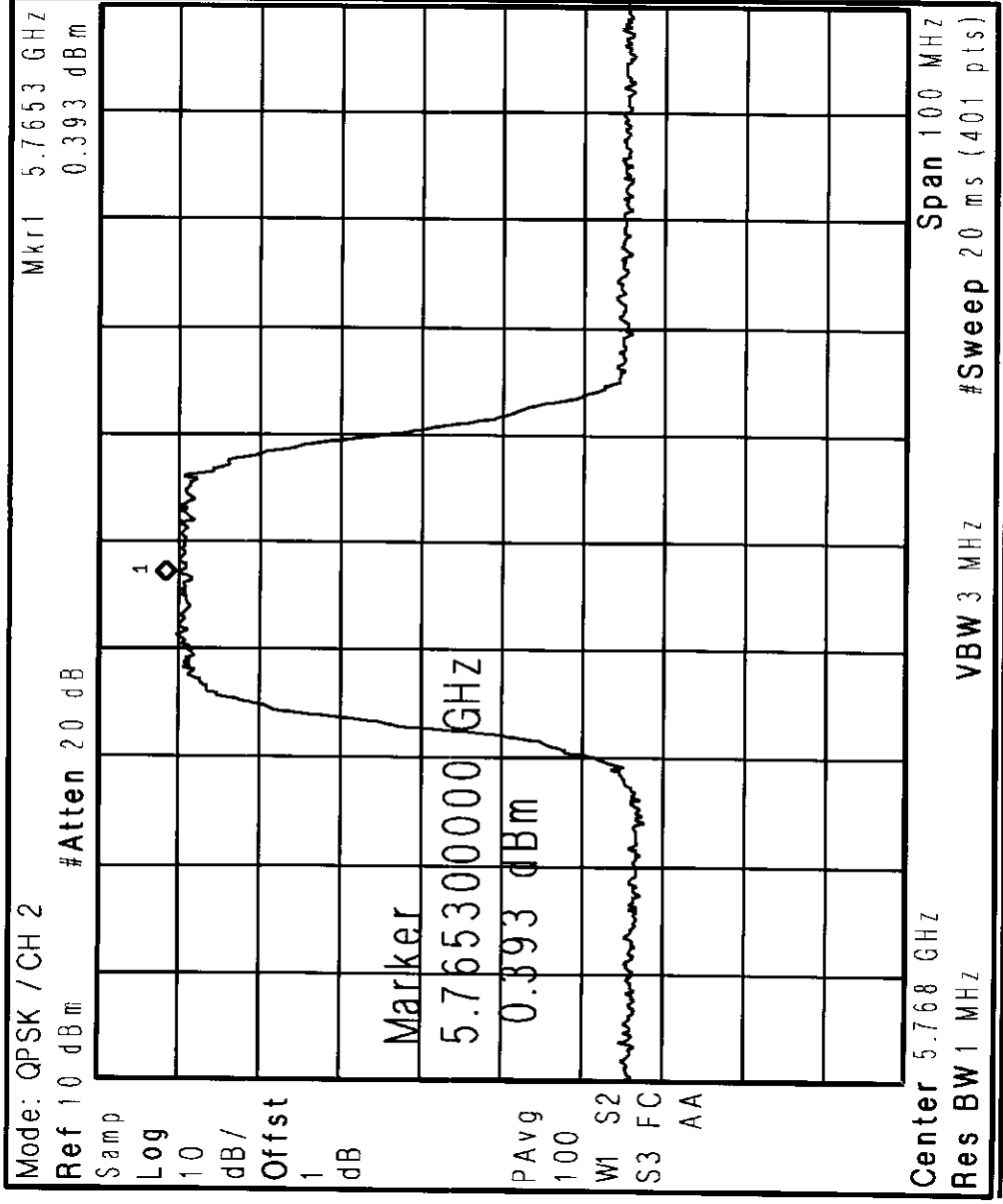
Western Multiplex  
3780 Kilroy Airport Way  
Suite 500  
Long Beach, CA 90806  
562-733-3007  
562-733-3003



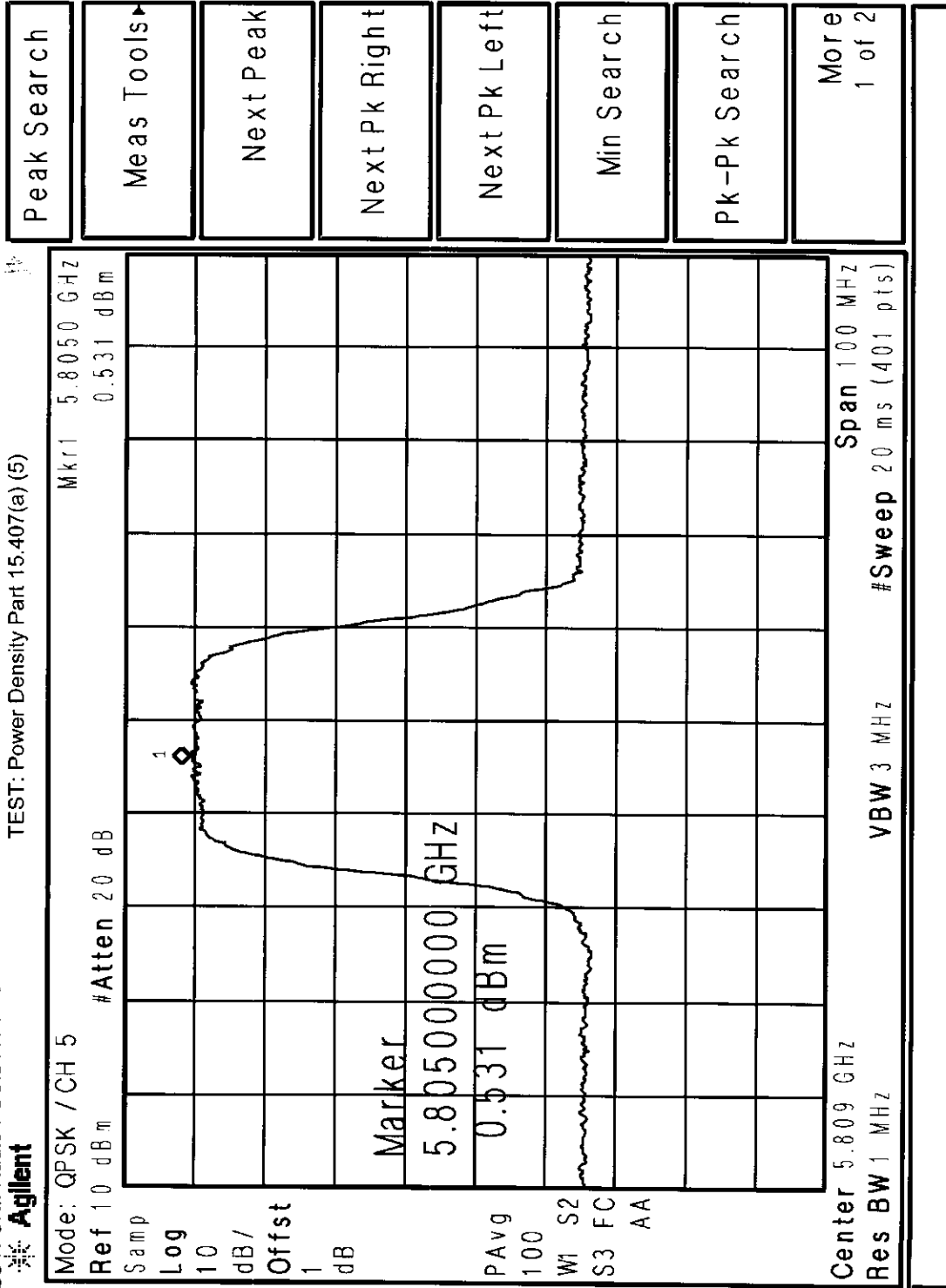


CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Report No.: SC106727  
 Mode: Power Density Part 15.407(a) (5)  
 Oct. 4, 2001  
 TECH/ENGR. jv

- Peak Search
- Meas Tools
- Next Peak
- Next Pk Right
- Next Pk Left
- Min Search
- Pk-Pk Search
- More 1 of 2



CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Report No.: SC106727  
 Mode: Power Density Part 15.407(a) (5)  
 Oct. 4, 2001  
 TECH/ENGR.



Oct. 4, 2001  
TECH/ENGR.

Report No.: SC106727

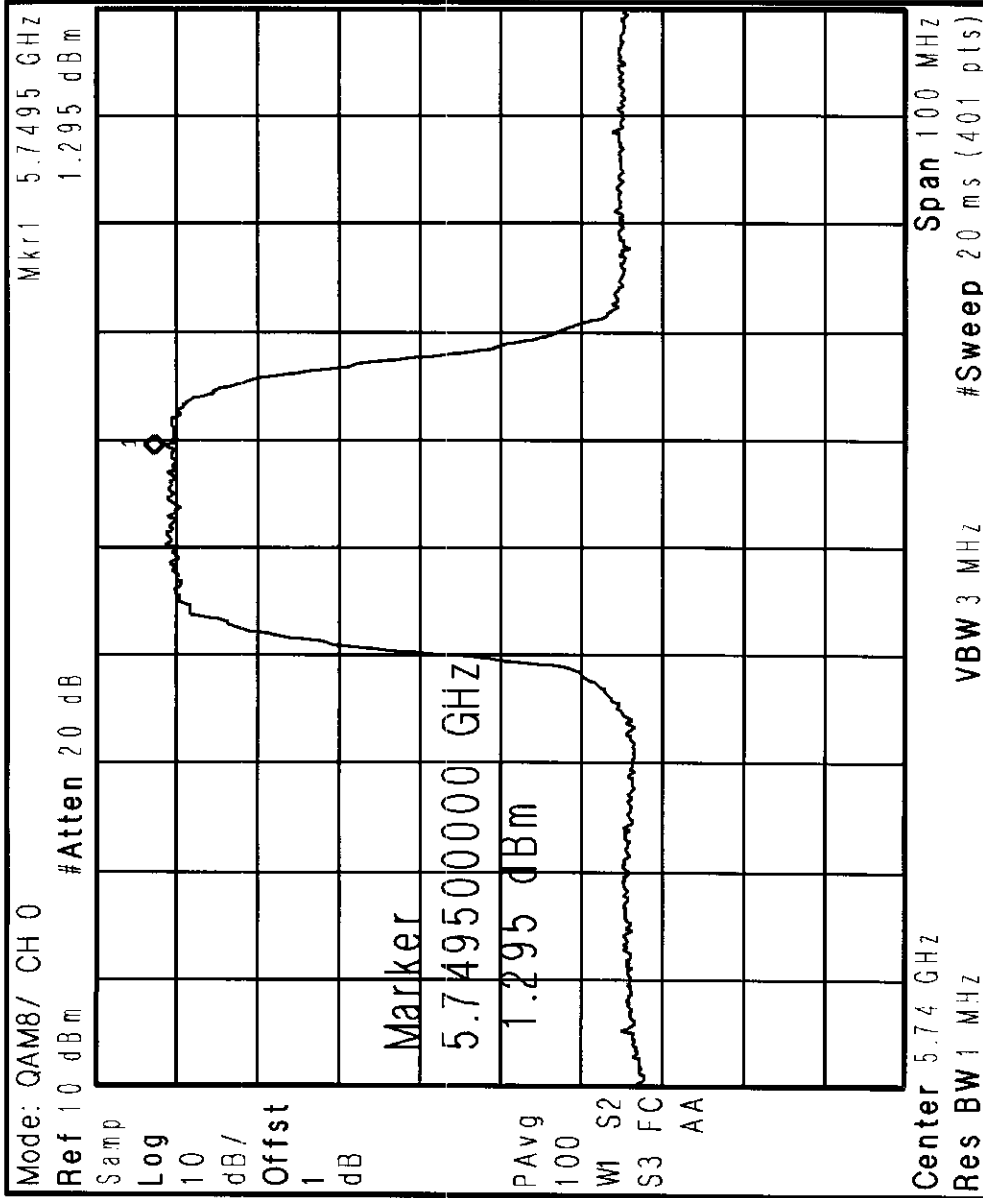
CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60

Mode:

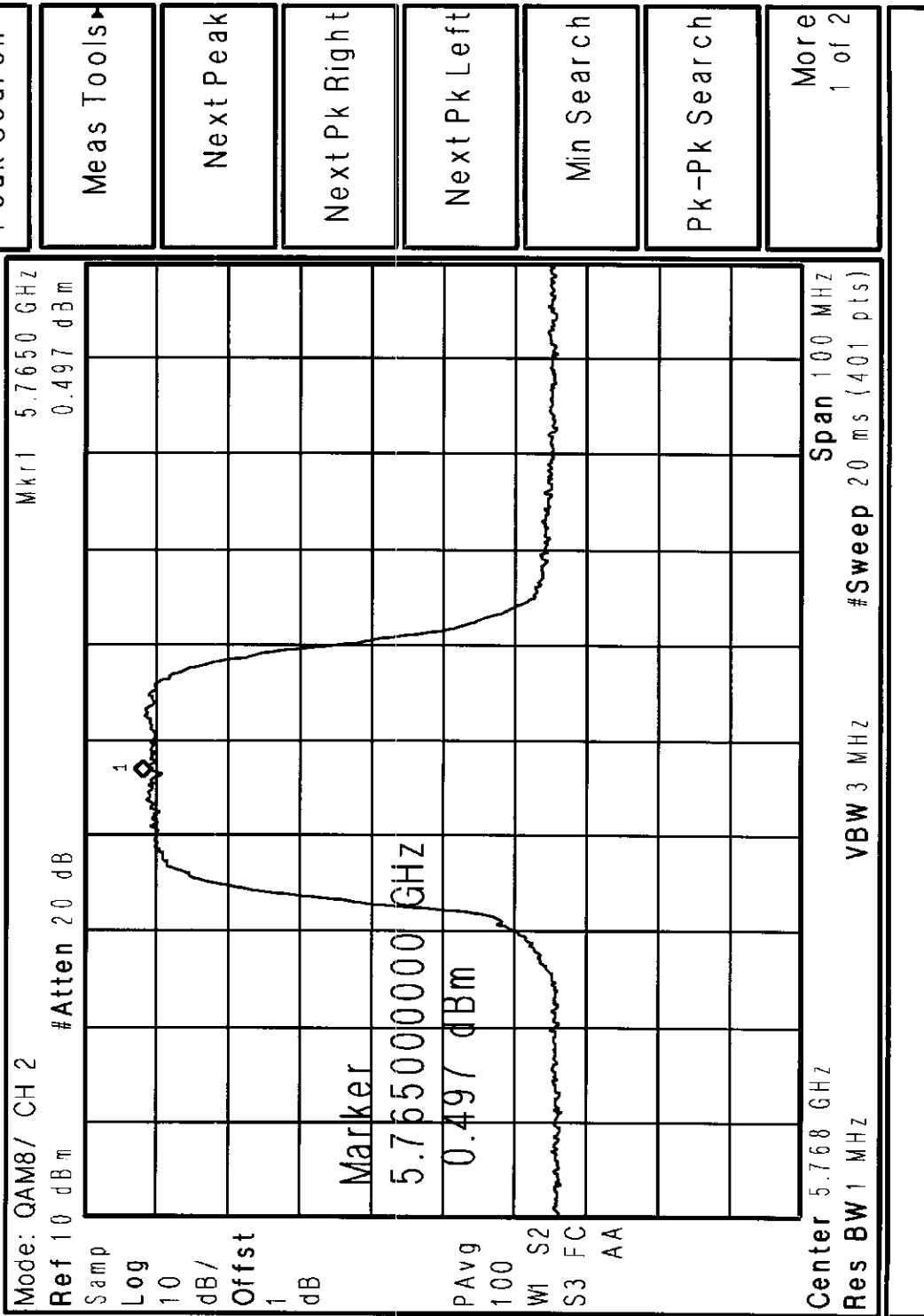
TEST: Power Density Part 15.407(a) (5)



- Peak Search
- Meas Tools
- Next Peak
- Next Pk Right
- Next Pk Left
- Min Search
- Pk-Pk Search
- More  
1 of 2



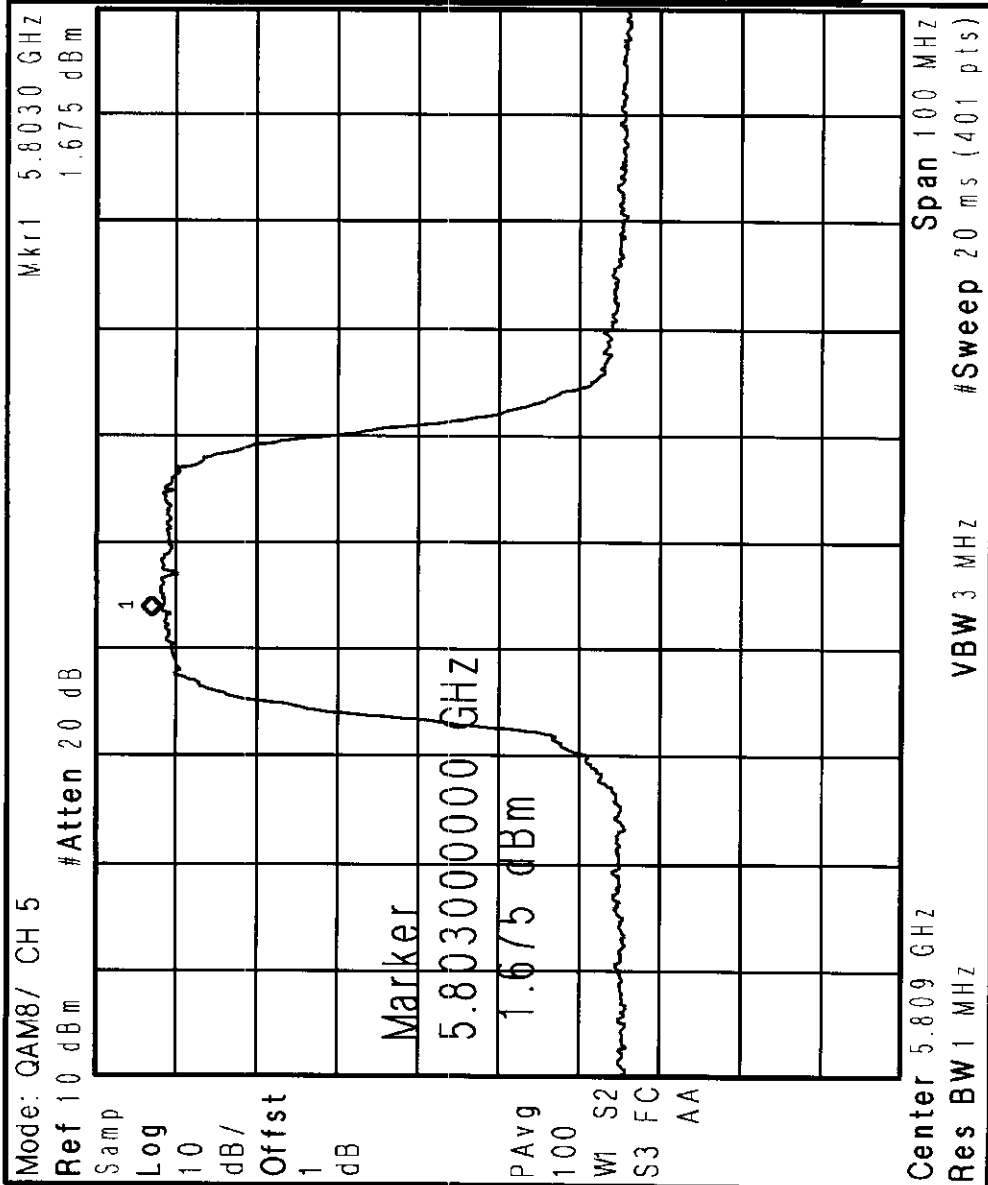
CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Report No.: SC106727  
 Mode: Power Density Part 15.407(a) (5)  
 Oct. 4, 2001  
 TECH/ENGR.



CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Report No.: SC106727  
 Mode: TECH/ENGR.  
 TEST: Power Density Part 15.407(a) (5)



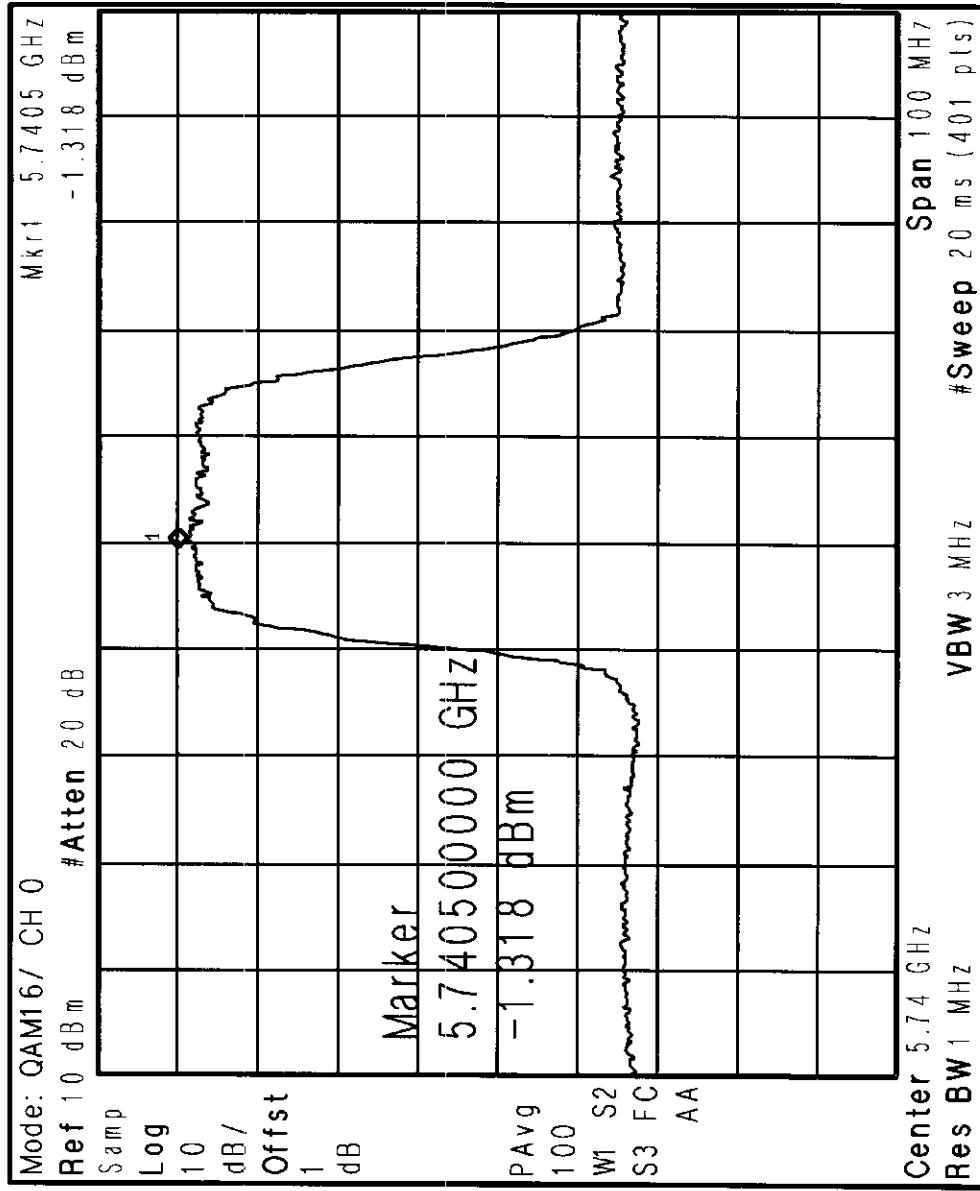
Oct. 4, 2001



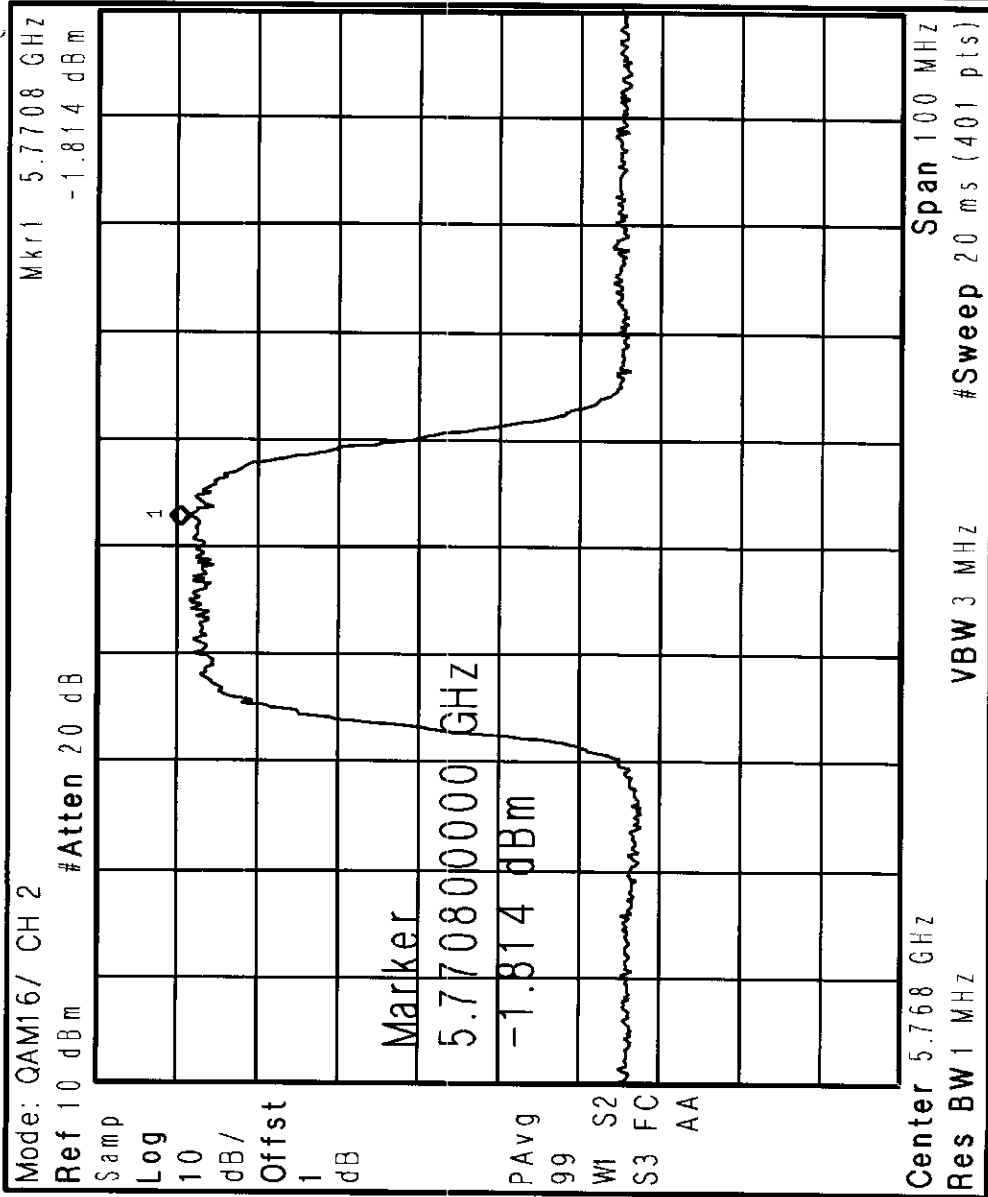
Marker
Select Marker 1 2 3 4
Normal
Delta
Band Pair Start Stop
Span Pair Span Center
Off
More 1 of 2

CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Report No.: SC106727  
 Mode: Power Density Part 15.407(a) (5)  
 Oct. 4, 2001  
 TECH/ENGR.

- Peak Search
- Meas Tools
- Next Peak
- Next Pk Right
- Next Pk Left
- Min Search
- Pk-Pk Search
- More  
1 of 2

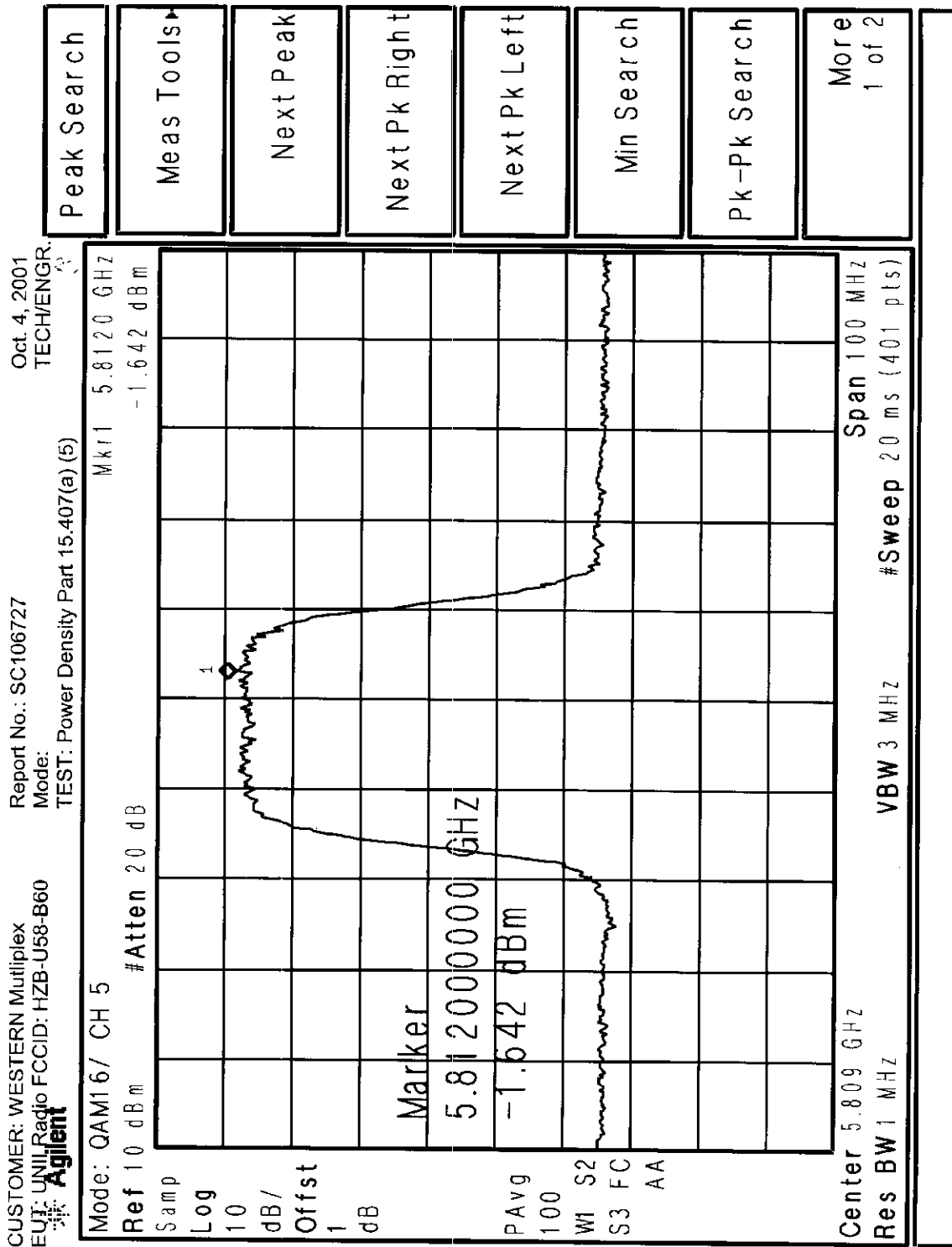


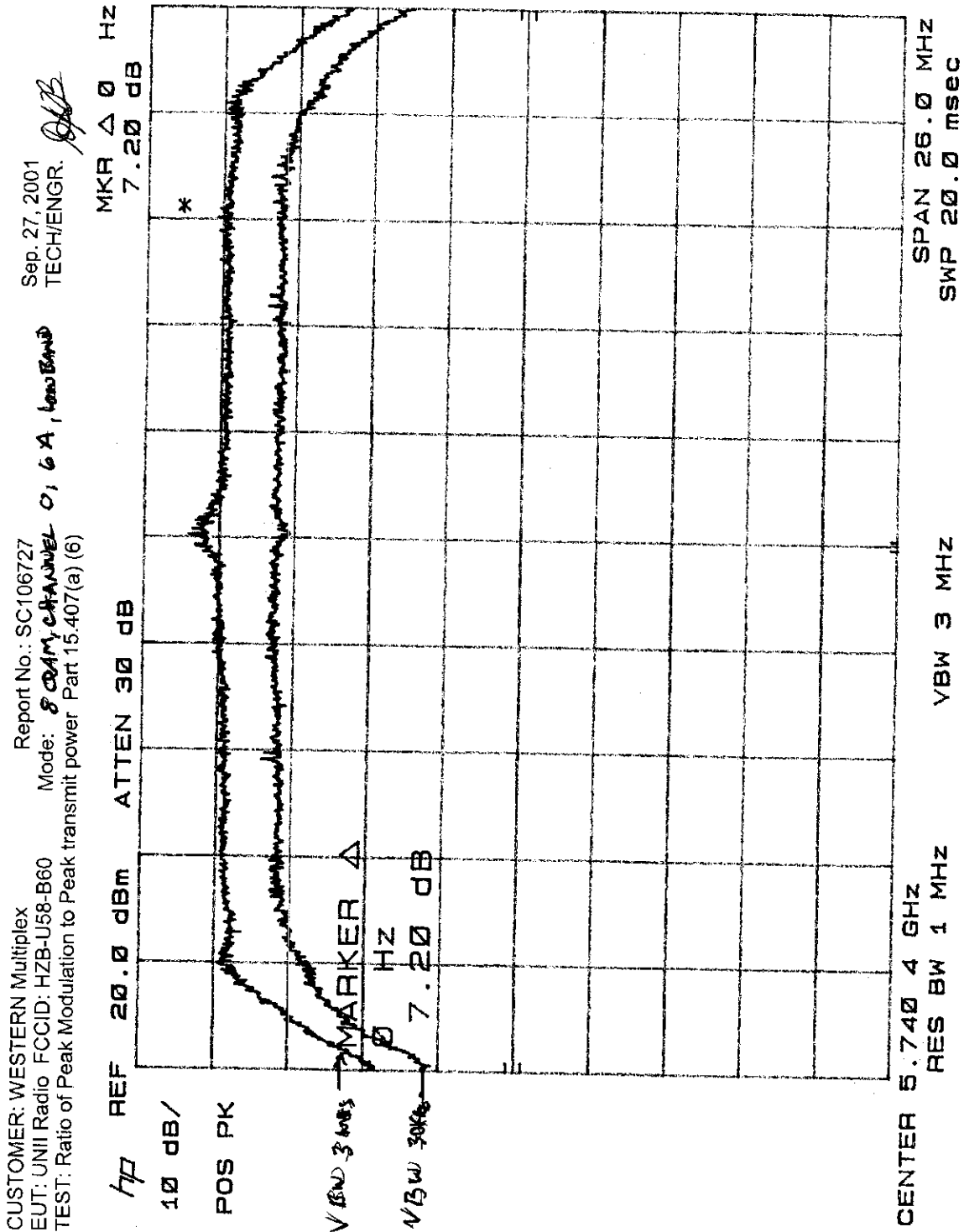
CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Agilent  
 Report No.: SC106727  
 Mode: Power Density Part 15.407(a) (5)  
 Oct. 4, 2001  
 TECH/ENGR.

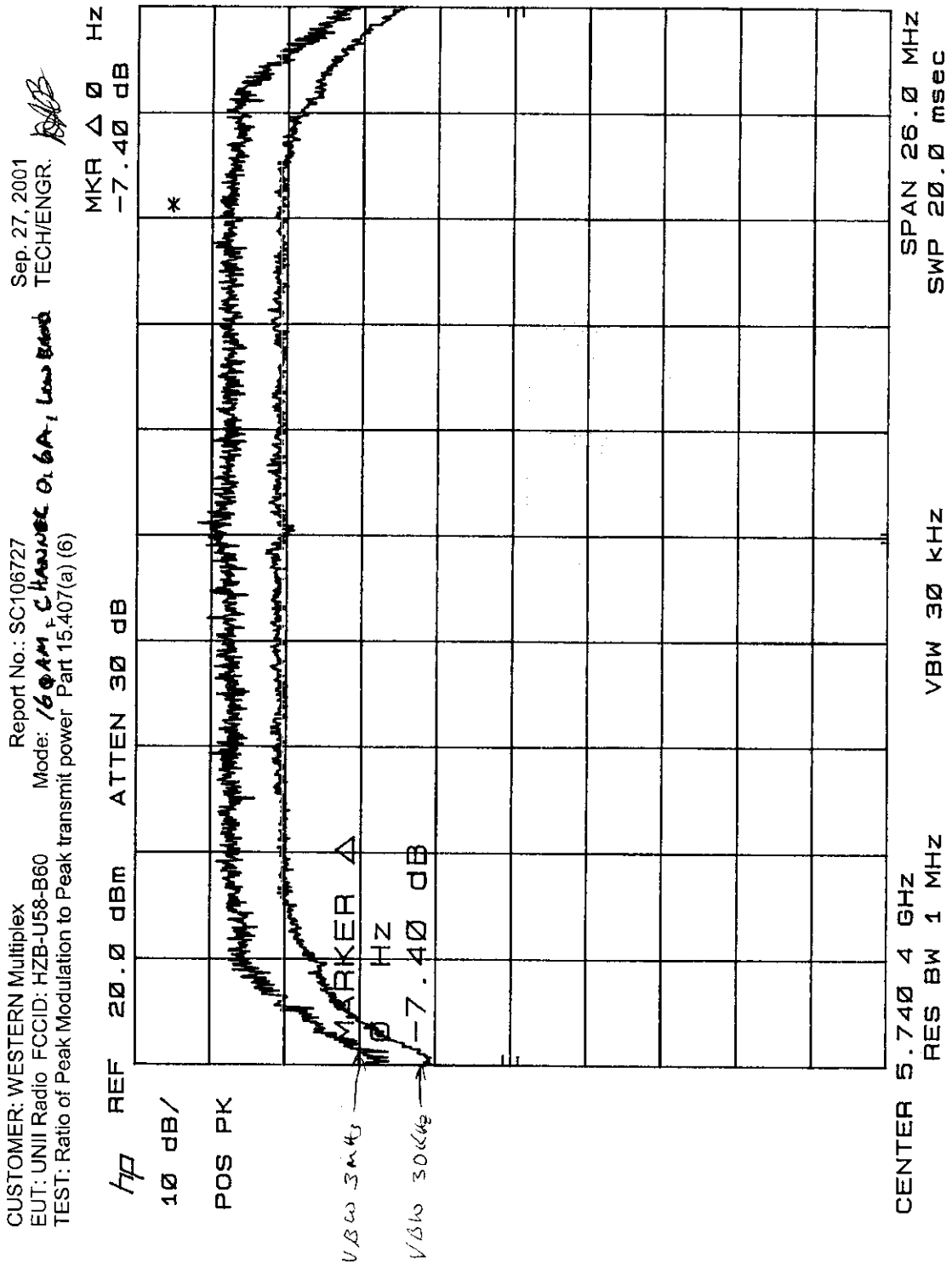


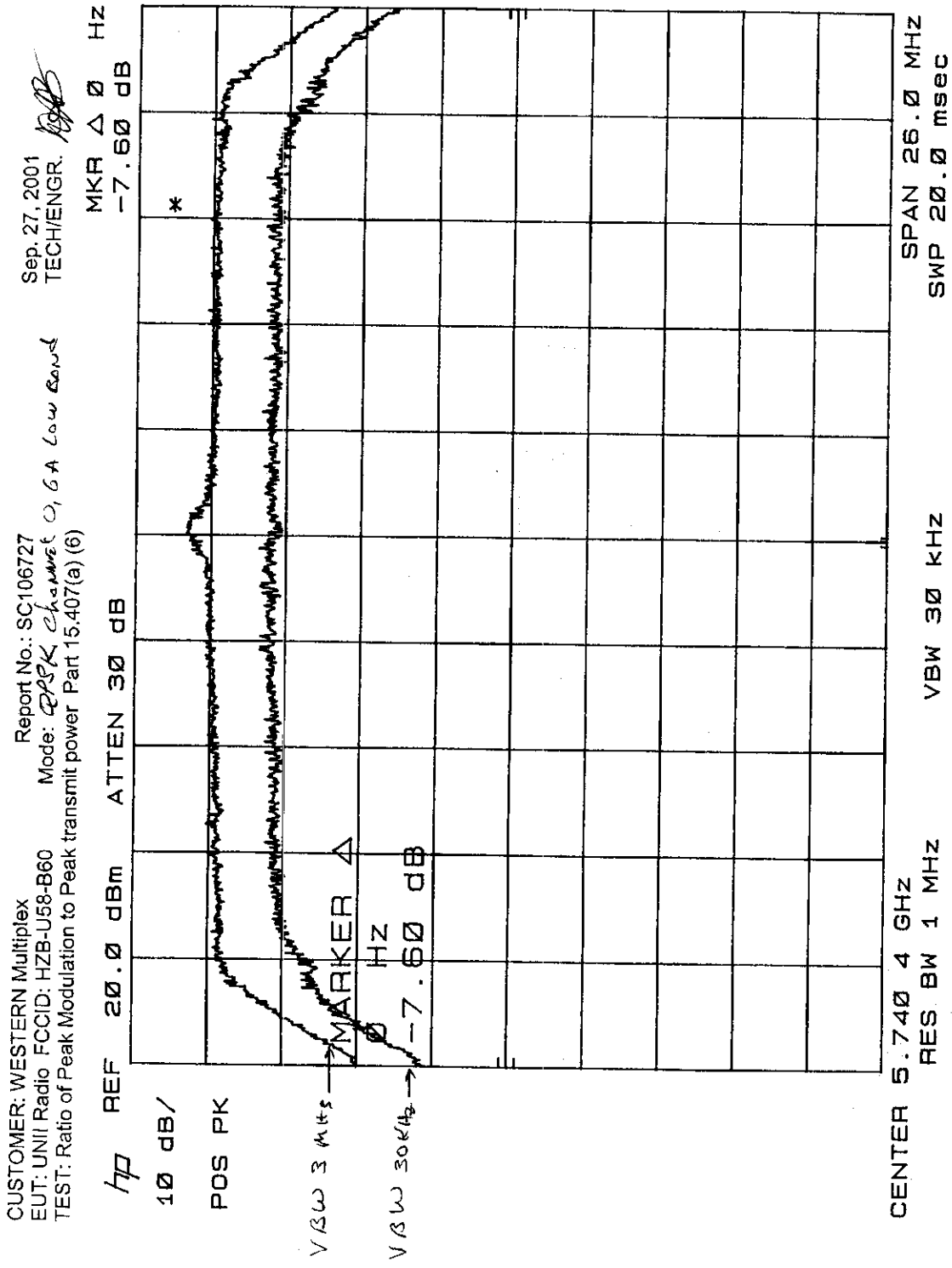
- Peak Search
- Meas Tools
- Next Peak
- Next Pk Right
- Next Pk Left
- Min Search
- Pk-Pk Search
- More  
1 of 2

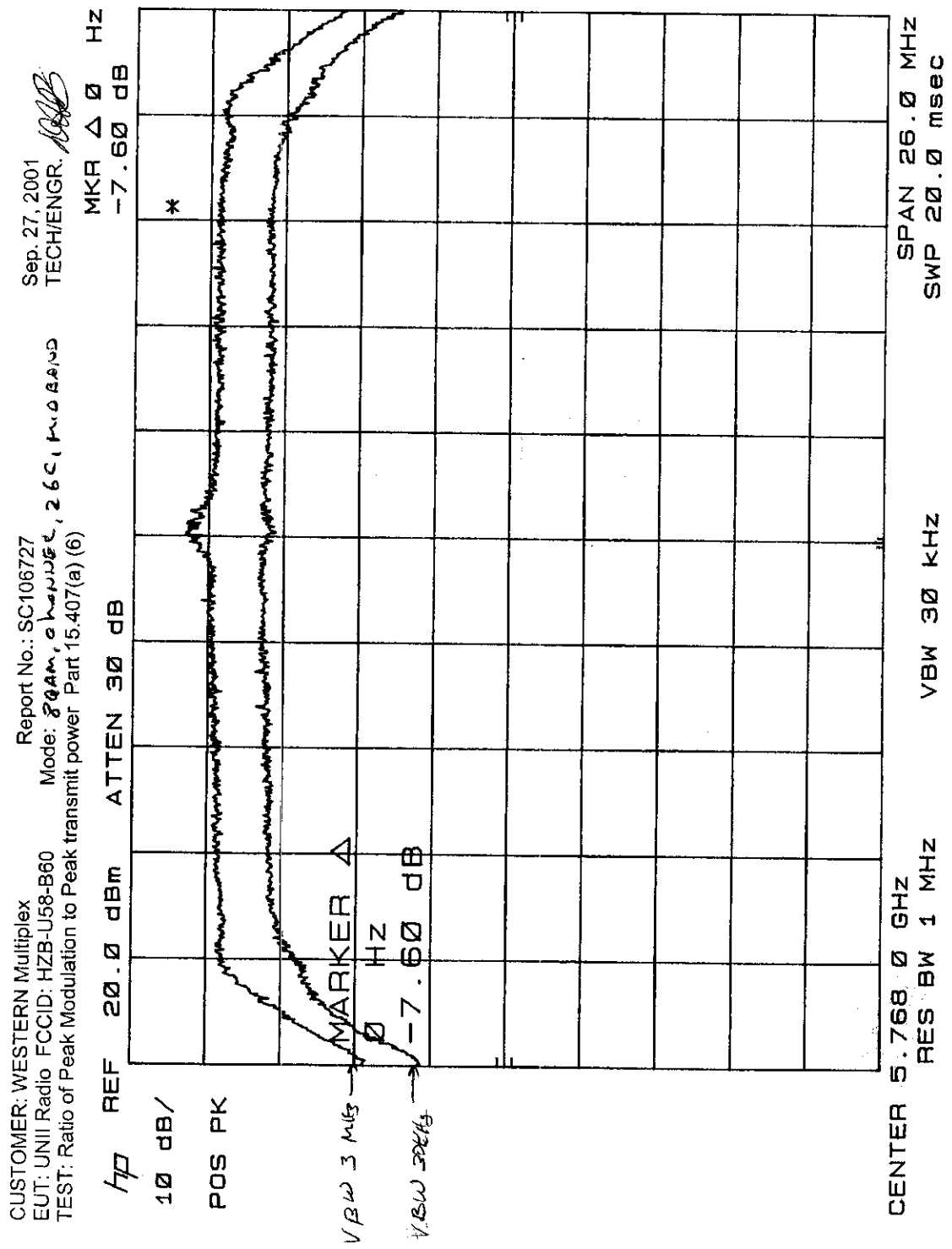


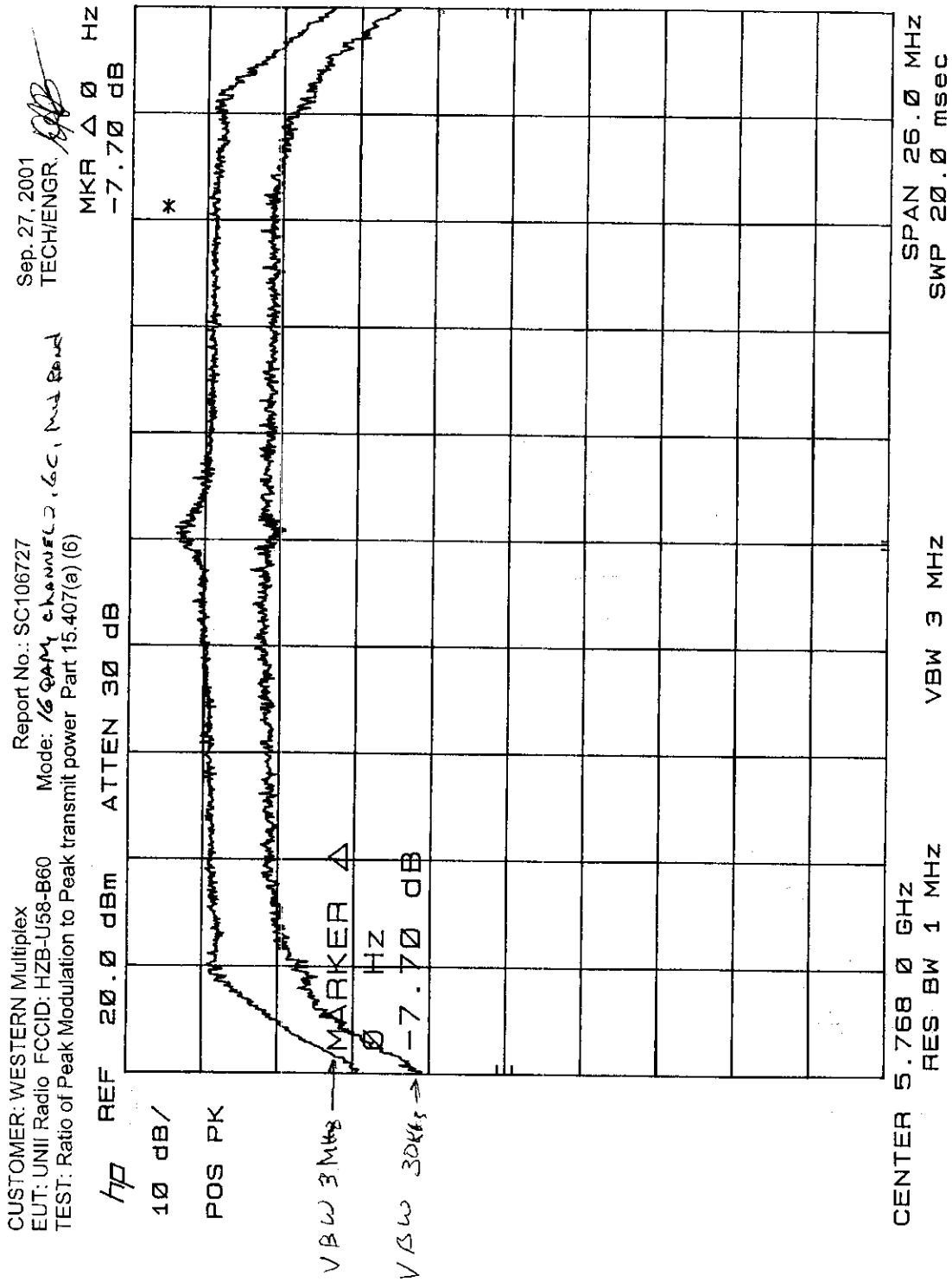


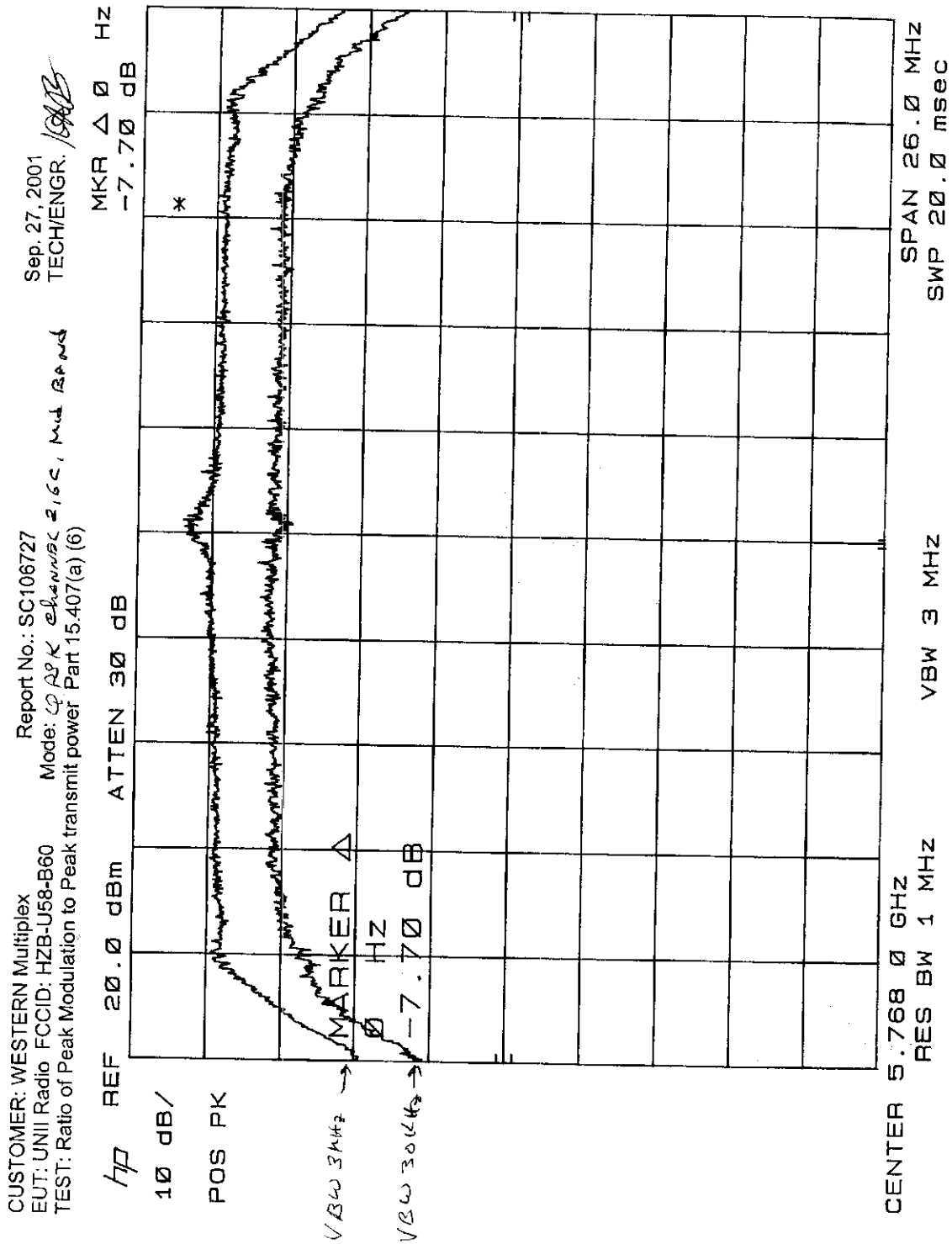


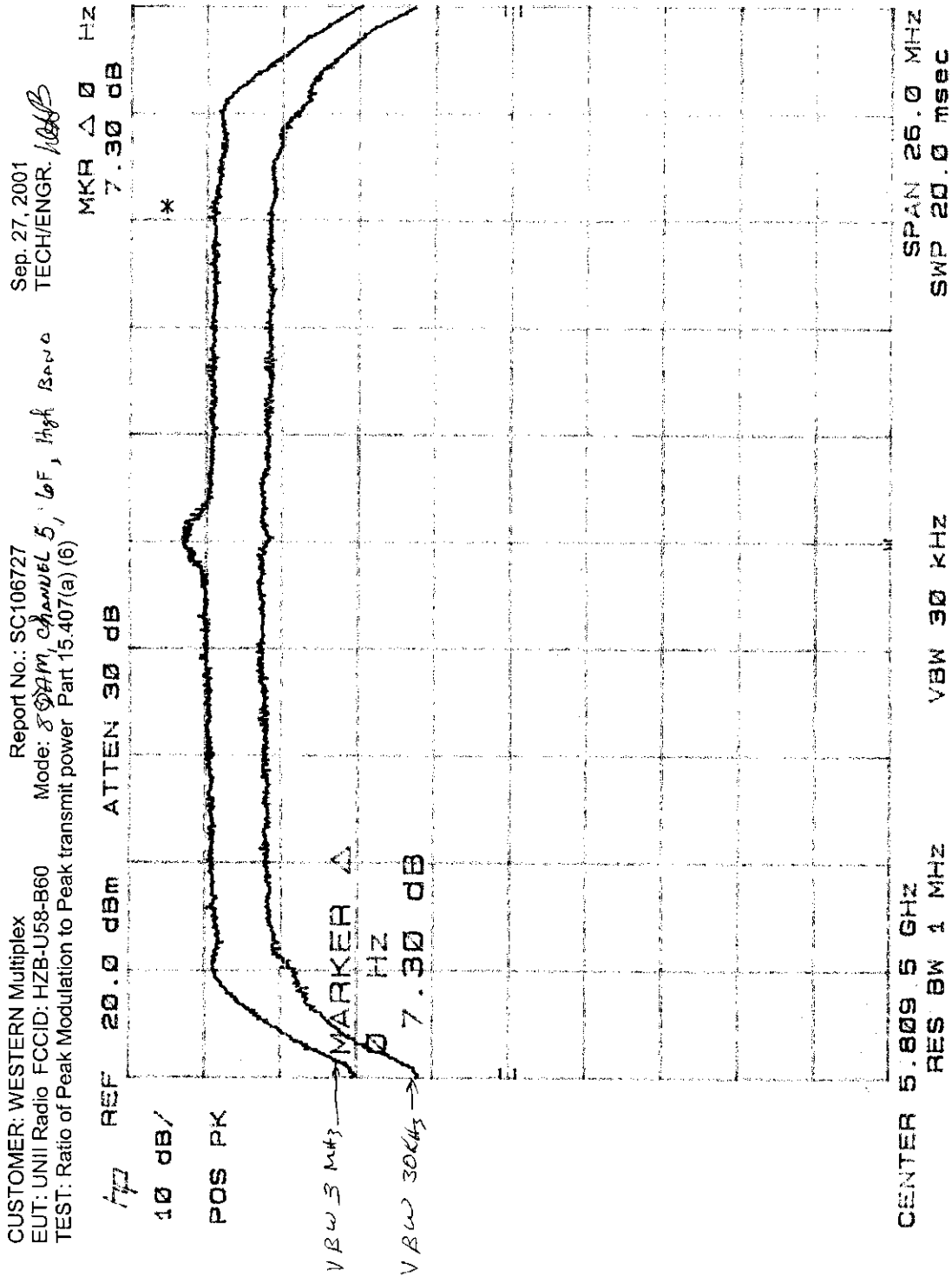




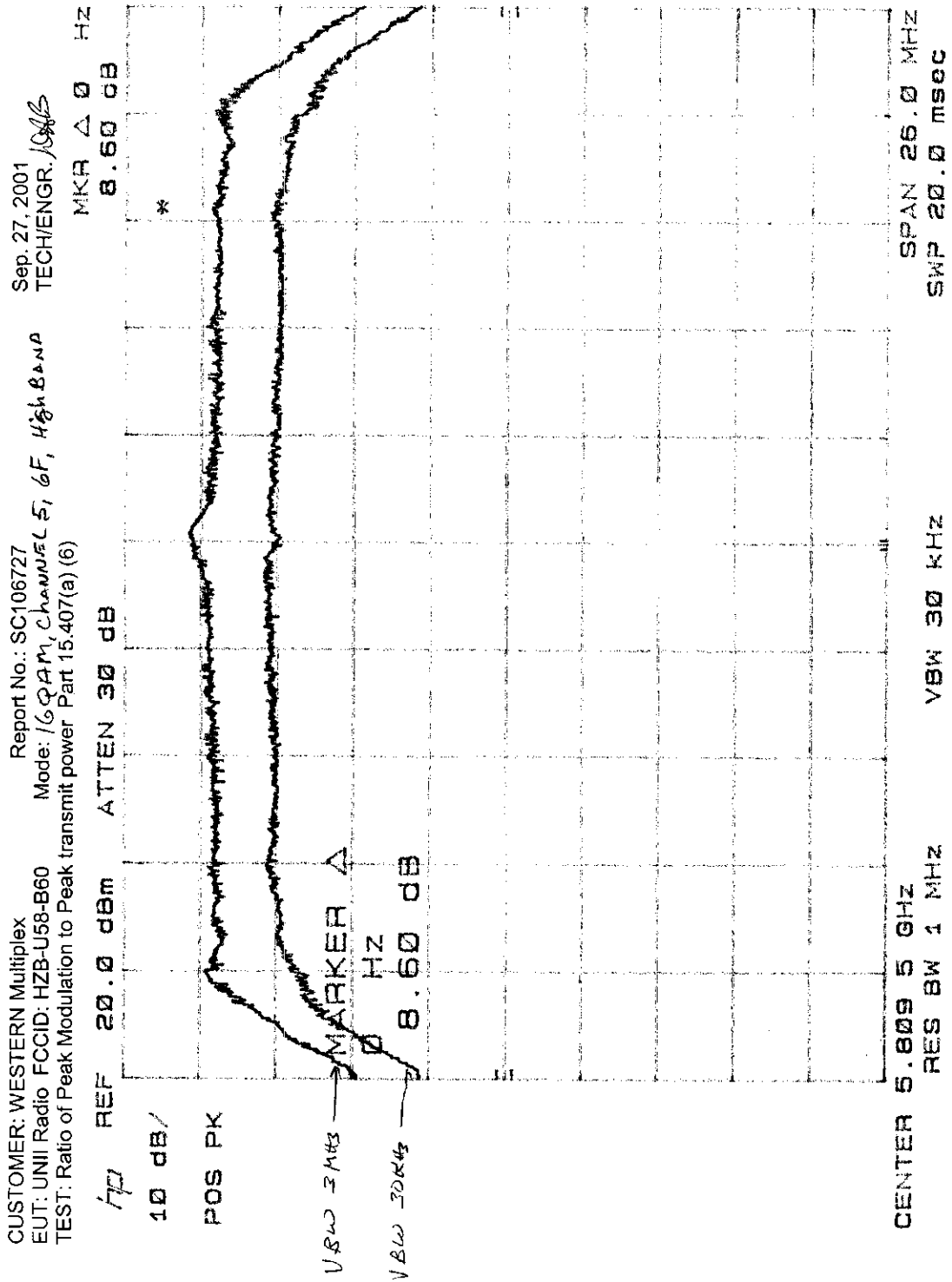








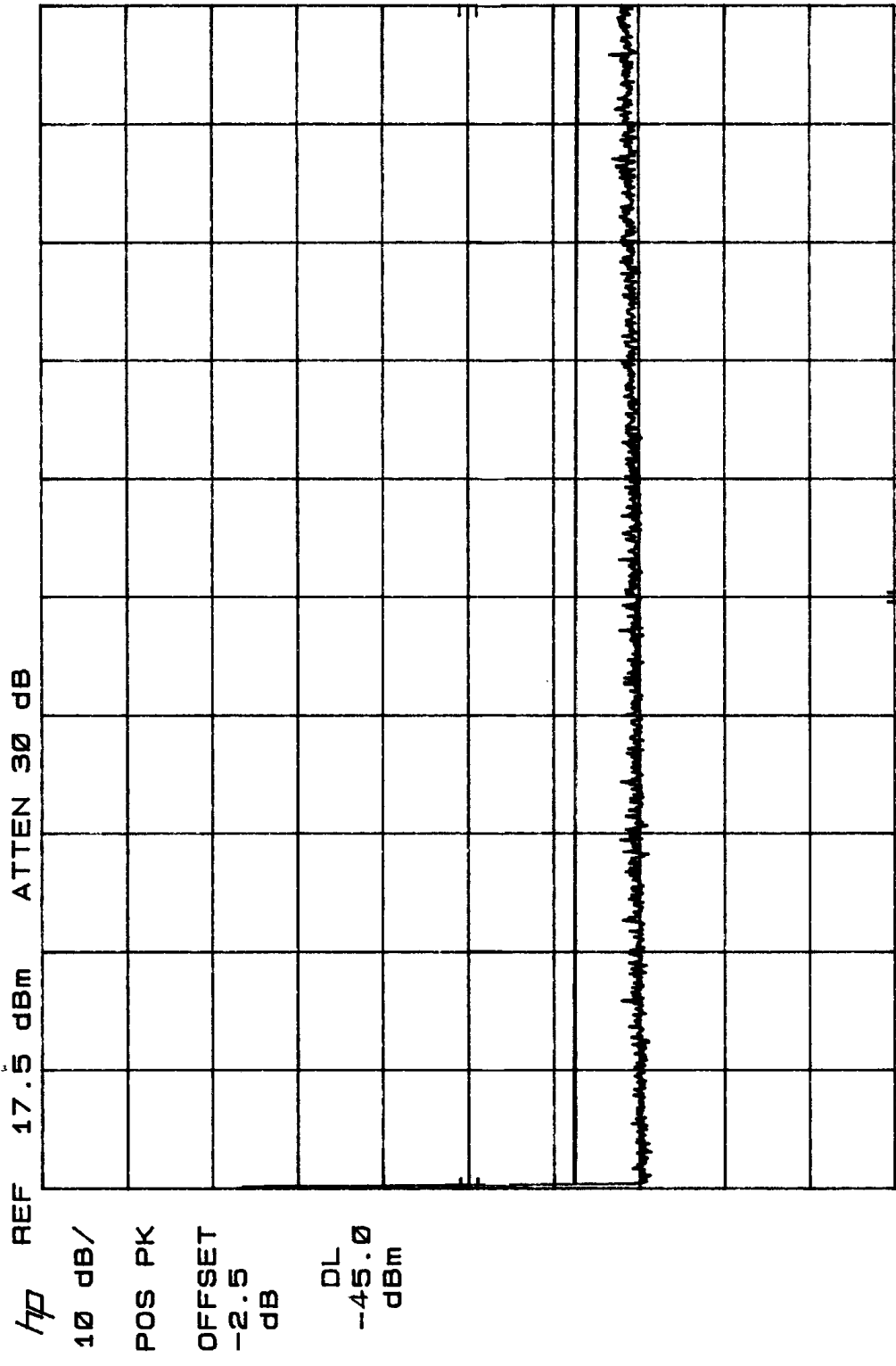




CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727  
 Mode: QPSK 3/4 Channel

Sep. 25, 2001  
 TECH/ENGR. JSB

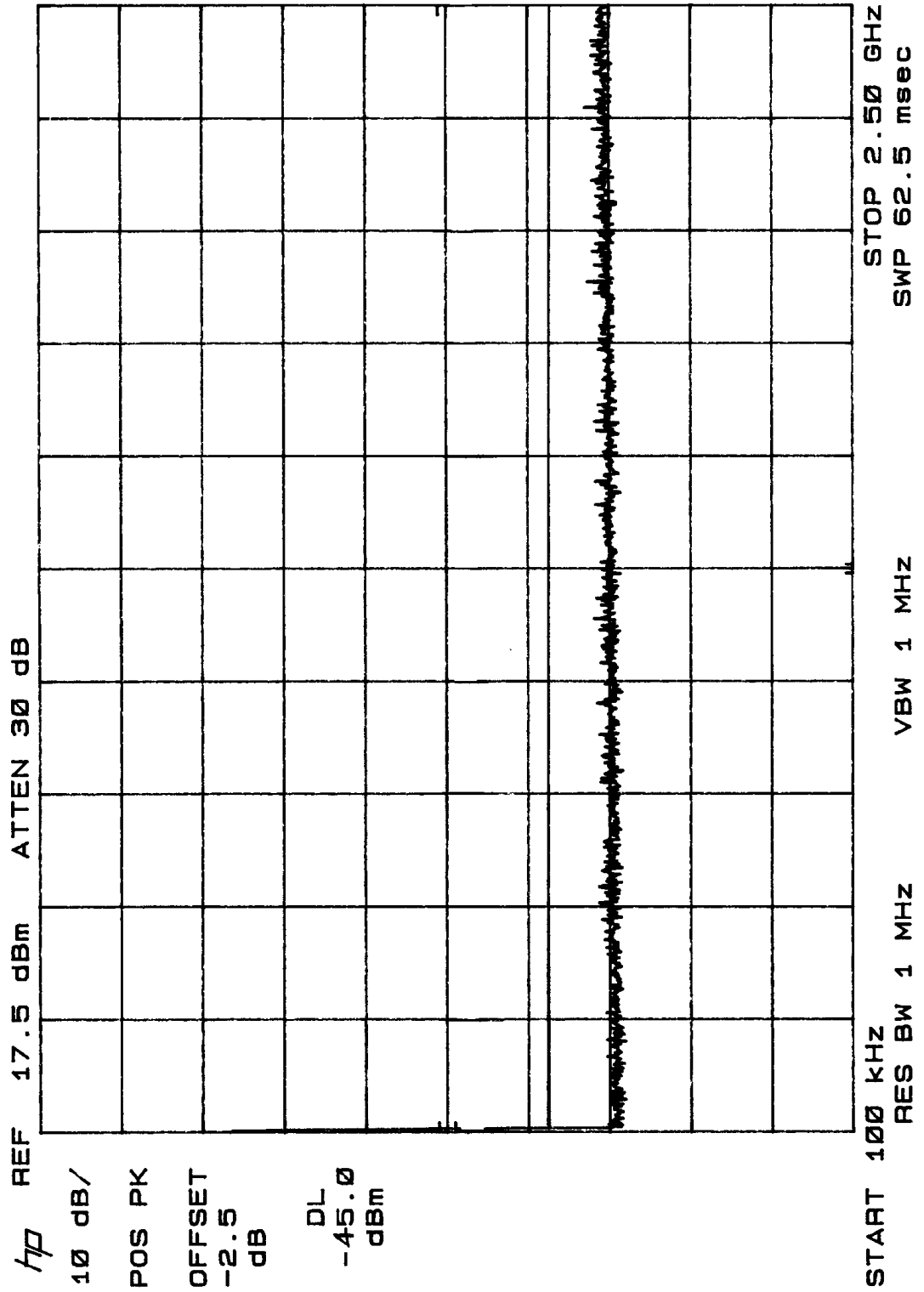


START 100 KHZ  
 RES BW 1 MHz  
 VBW 1 MHz  
 STOP 2.50 GHz  
 SWP 62.5 msec

CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727  
 Mode: 16QAM (Channel 5)

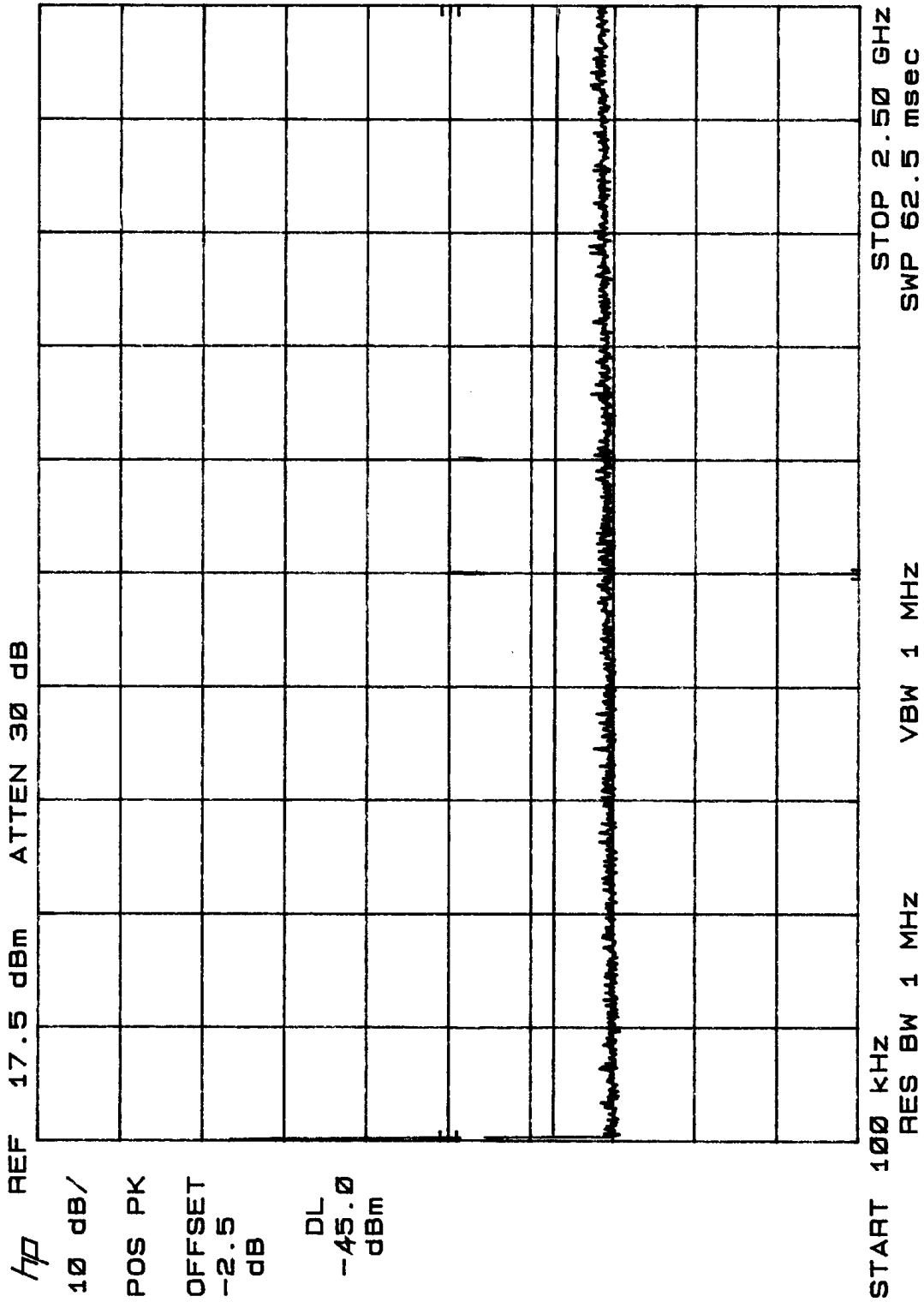
Sep. 25, 2001  
 TECH/ENGR. SAJ



Sep. 25, 2001  
TECH/ENGR. *DLZ*

Report No.: SC106727  
Mode: *2 QAM Channel*

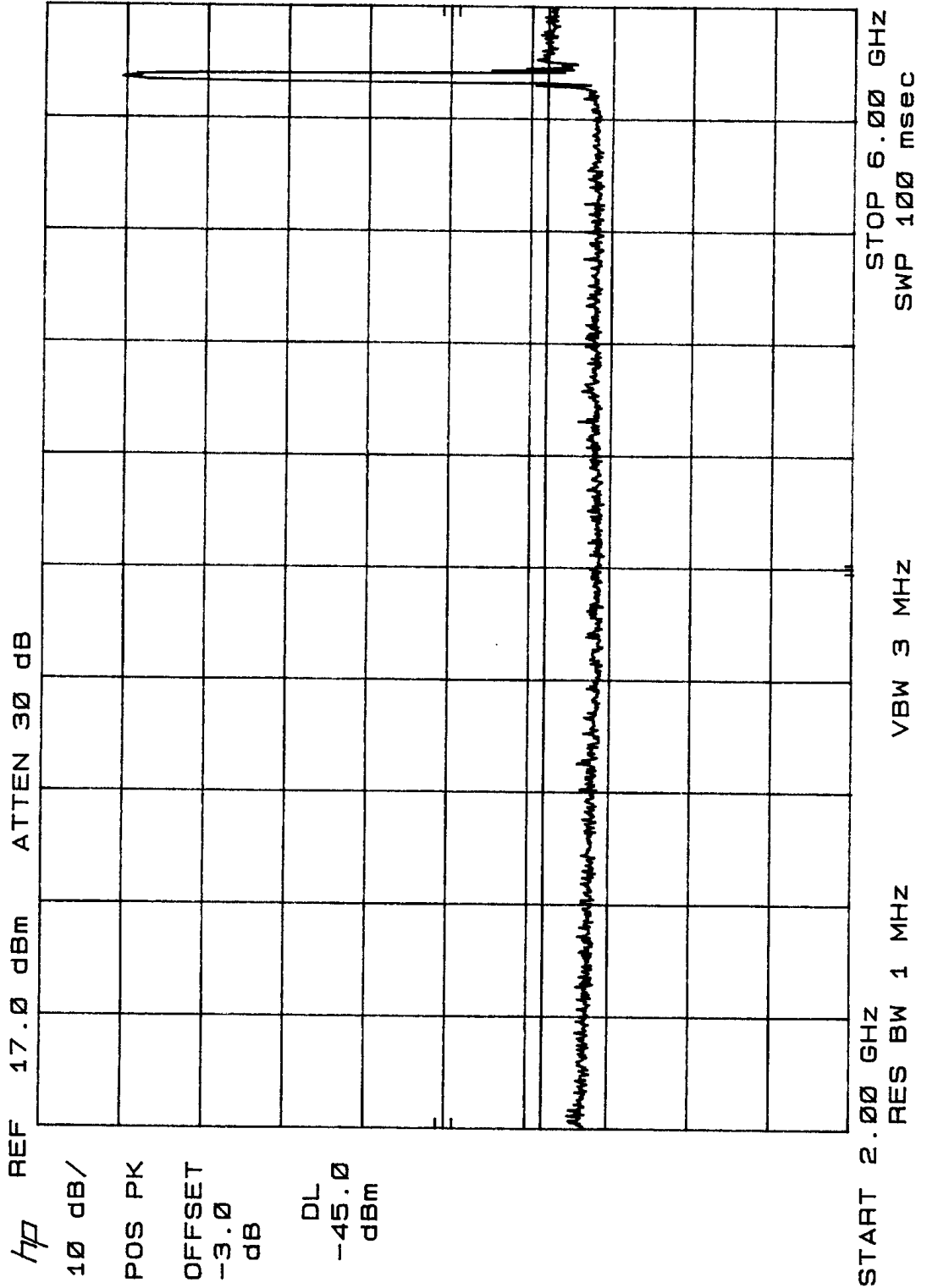
CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)



CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727  
 Mode: *Out of Band Antenna*

Sep. 27, 2001  
 TECH/ENGR. *[Signature]*

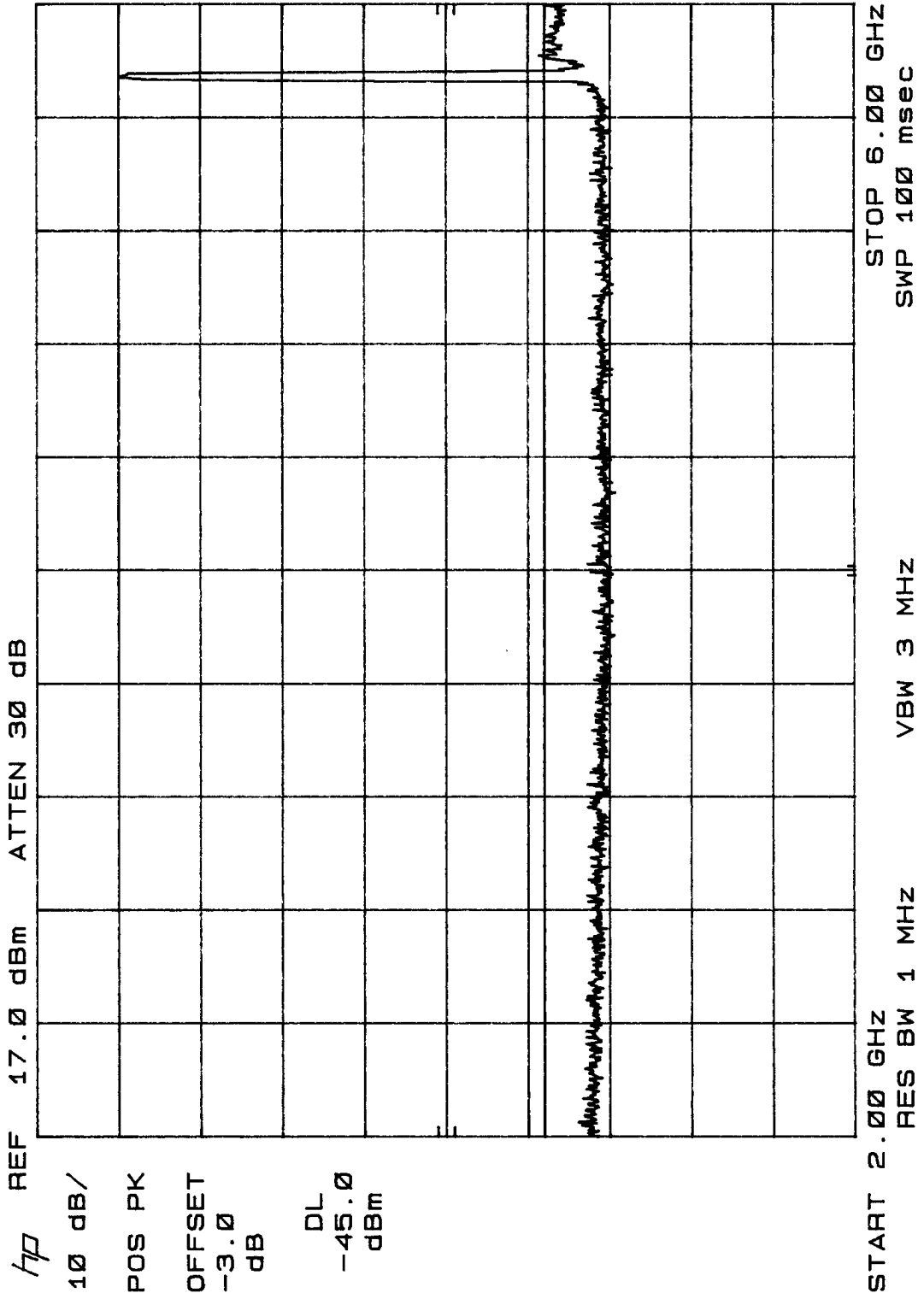


Sep. 27, 2001  
TECH/ENGR. *[Signature]*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727

Mode: *QAM 8*

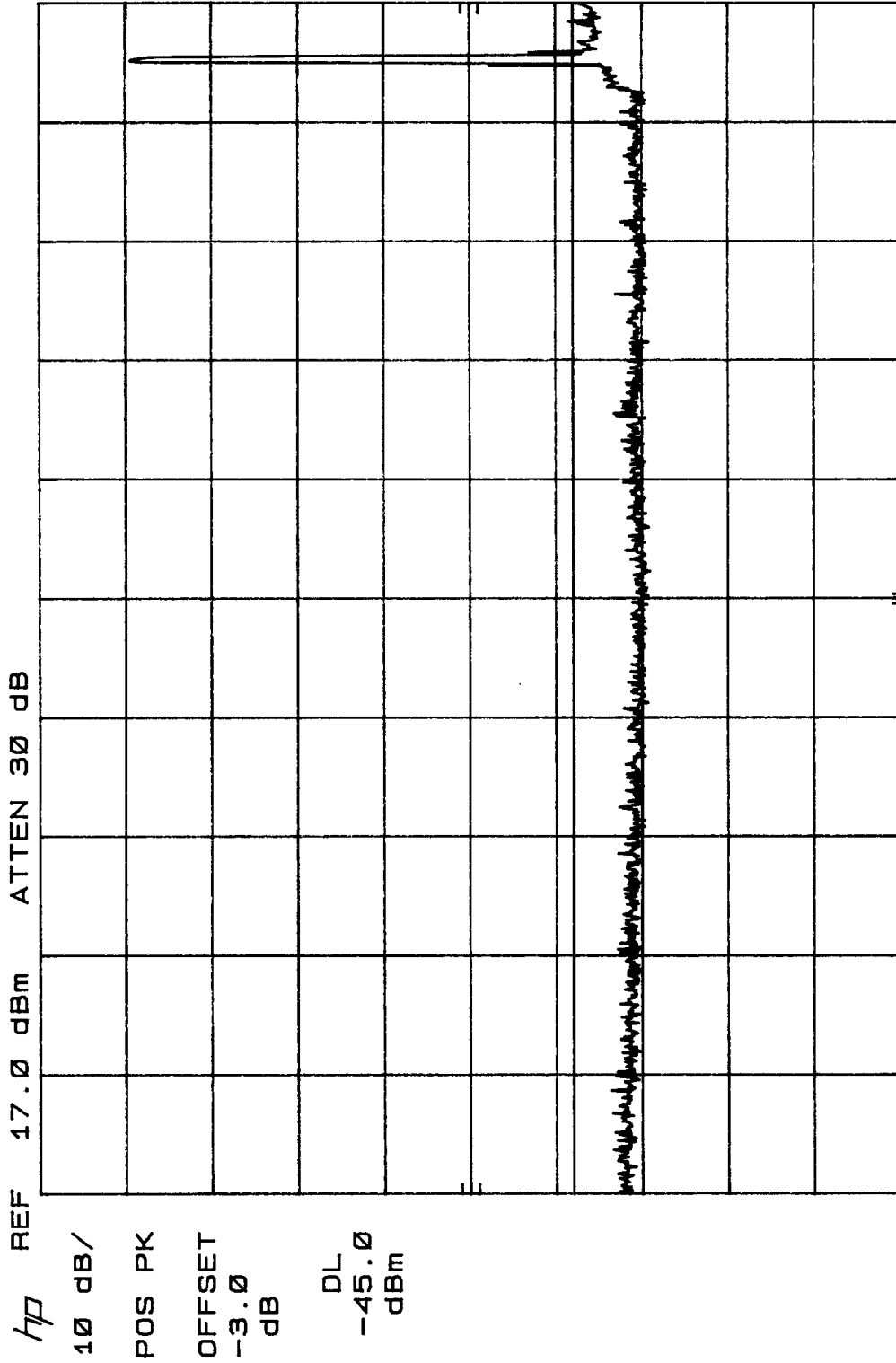


Sep. 27, 2001  
TECH/ENGR. *pkf*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727

Mode: *Out of Band Channel 0*



*hp* REF 17.0 dBm ATTEN 30 dB  
10 dB/  
POS PK  
OFFSET -3.0 dB  
DL -45.0 dBm

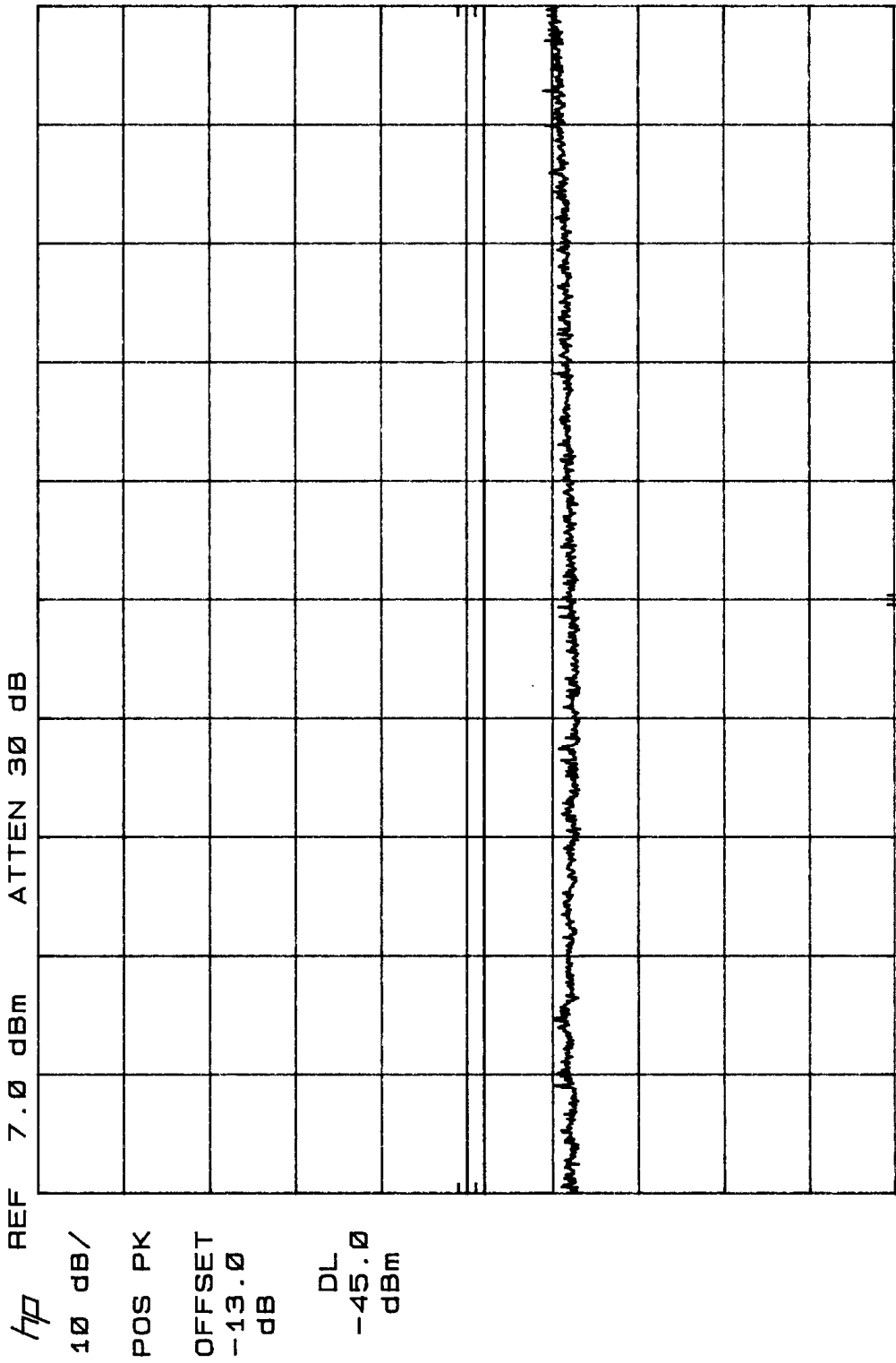
START 2.00 GHz RES BW 1 MHz VBW 3 MHz STOP 6.00 GHz  
SWP 100 msec

Sep. 27, 2001  
TECH/ENGR. *gdb*

Report No.: SC106727

Mode: *DAB* *2.4GHz* *0*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)



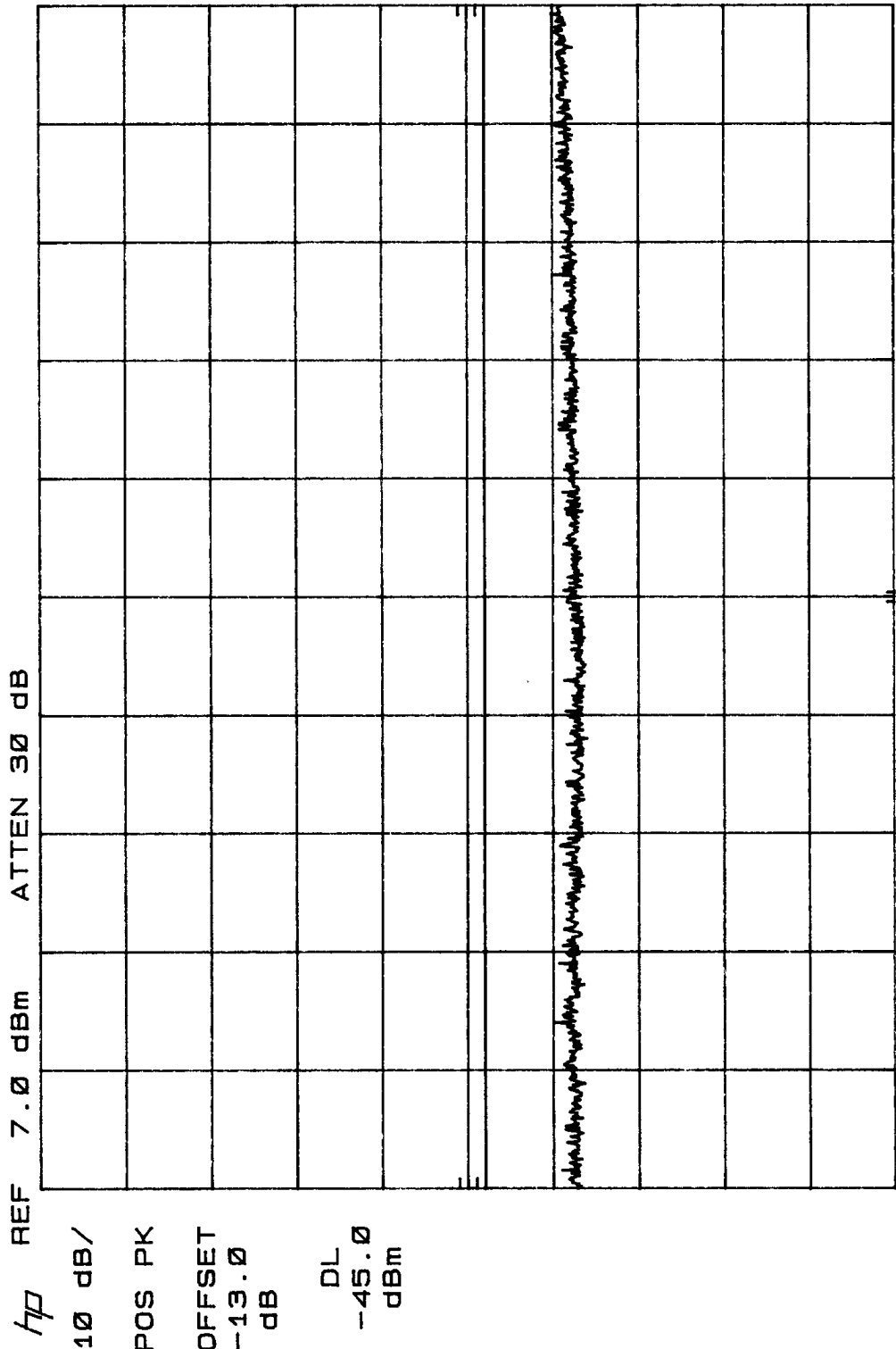
START 6.00 GHZ  
RES BW 1 MHz  
VBW 3 MHz  
STOP 12.50 GHZ  
SWP 163 msec



CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727  
 Mode: *QAM16, Channel 6*

Sep. 27, 2001  
 TECH/ENGR. *YGB*

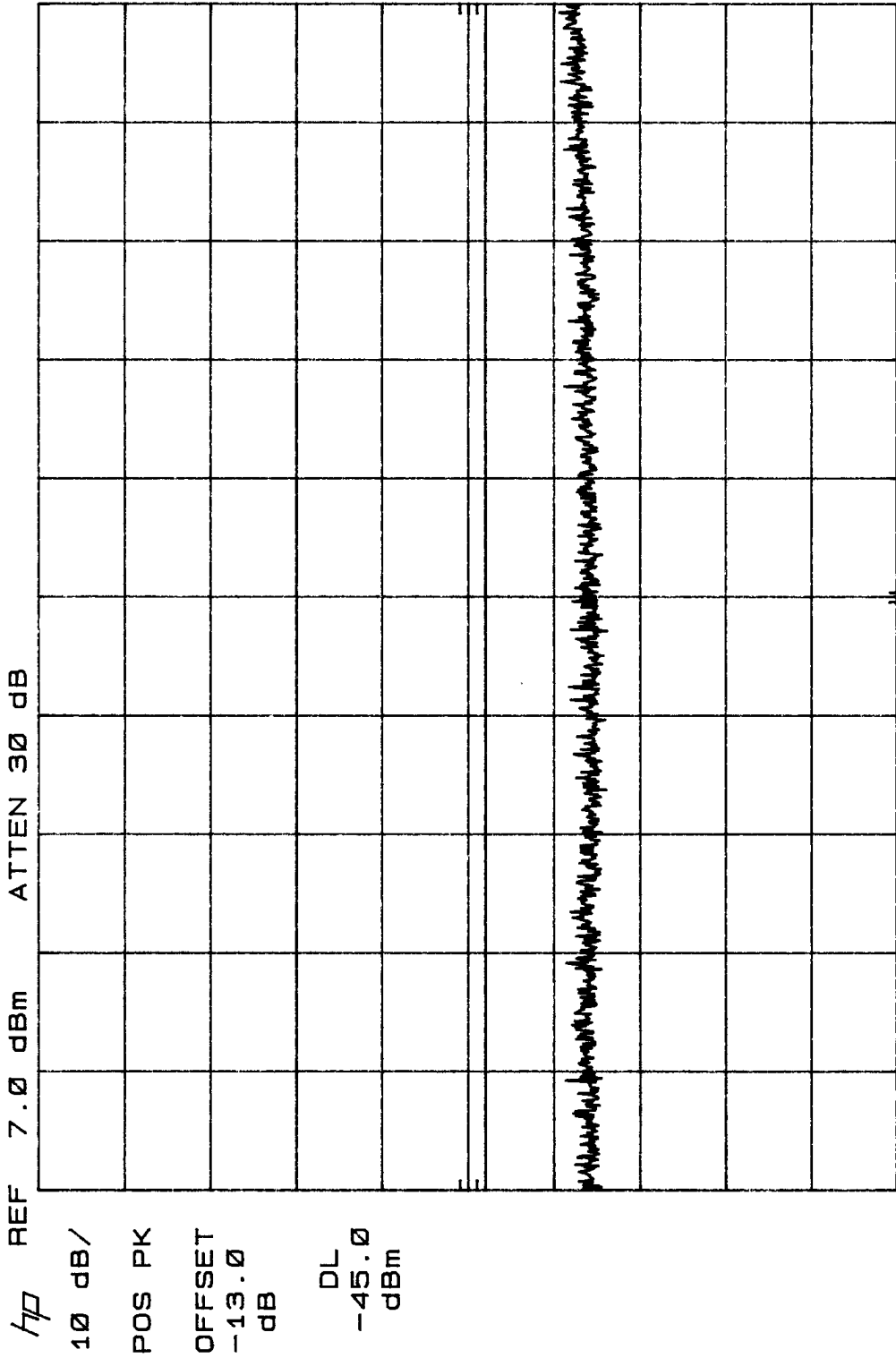


Sep. 27, 2001  
TECH/ENGR. *[Signature]*

Report No.: SC106727

Mode: *Cont. 2K 3/4, 2000, 0*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b) *2/1/01 p. 11 of 11*



*hp* REF 7.0 dBm ATTEN 30 dB

10 dB/  
POS PK  
OFFSET  
-13.0  
dB  
DL  
-45.0  
dBm

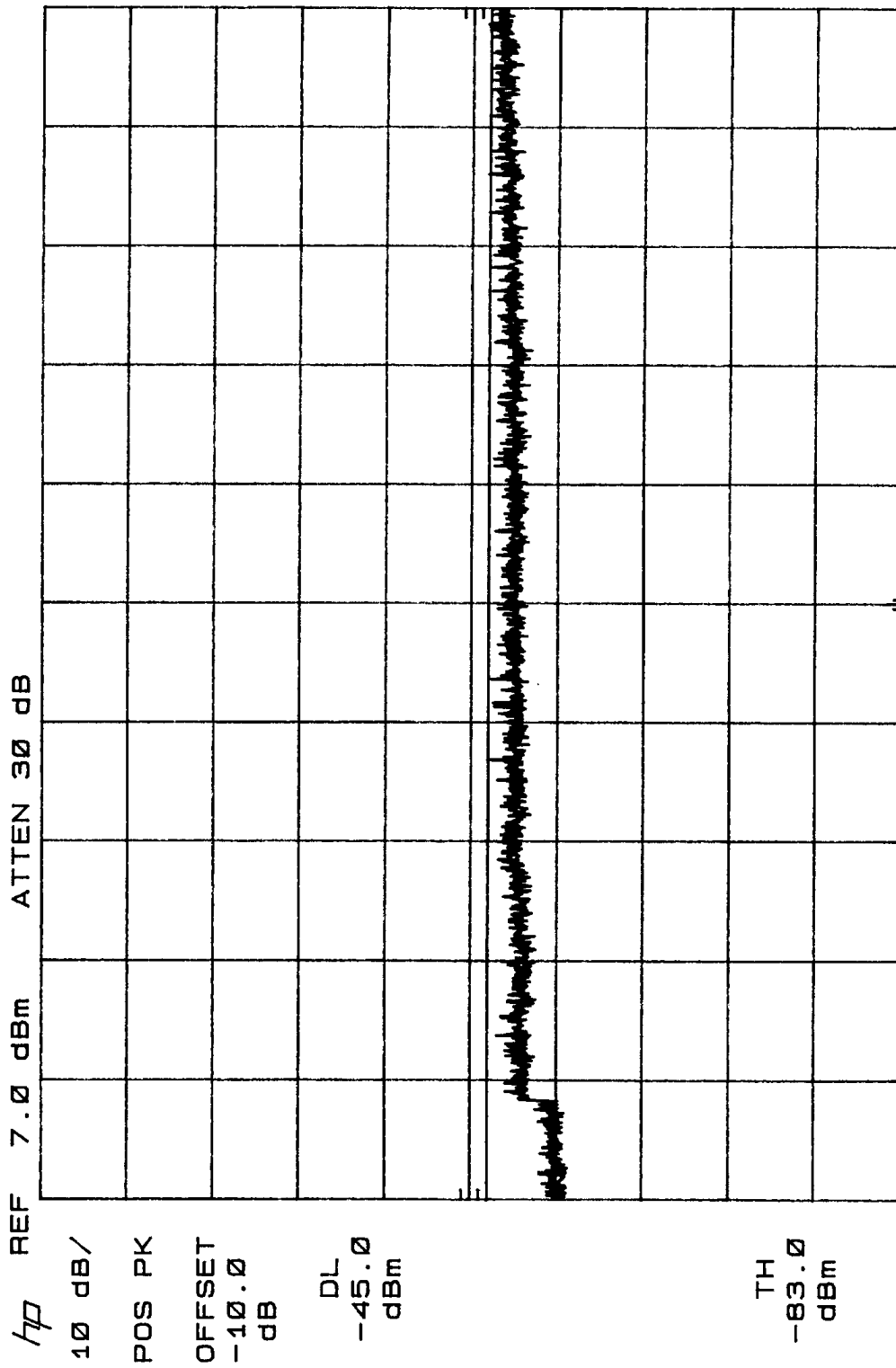
START 6.00 GHz RES BW 1 MHz VBW 3 MHz SWP 163 msec STOP 12.50 GHz

Sep. 27, 2001  
TECH/ENGR. *gfb*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727

Mode: *7.0 dB*



hp REF 7.0 dBm ATTEN 30 dB

10 dB/

POS PK

OFFSET

-10.0 dB

DL

-45.0 dBm

TH

-83.0 dBm

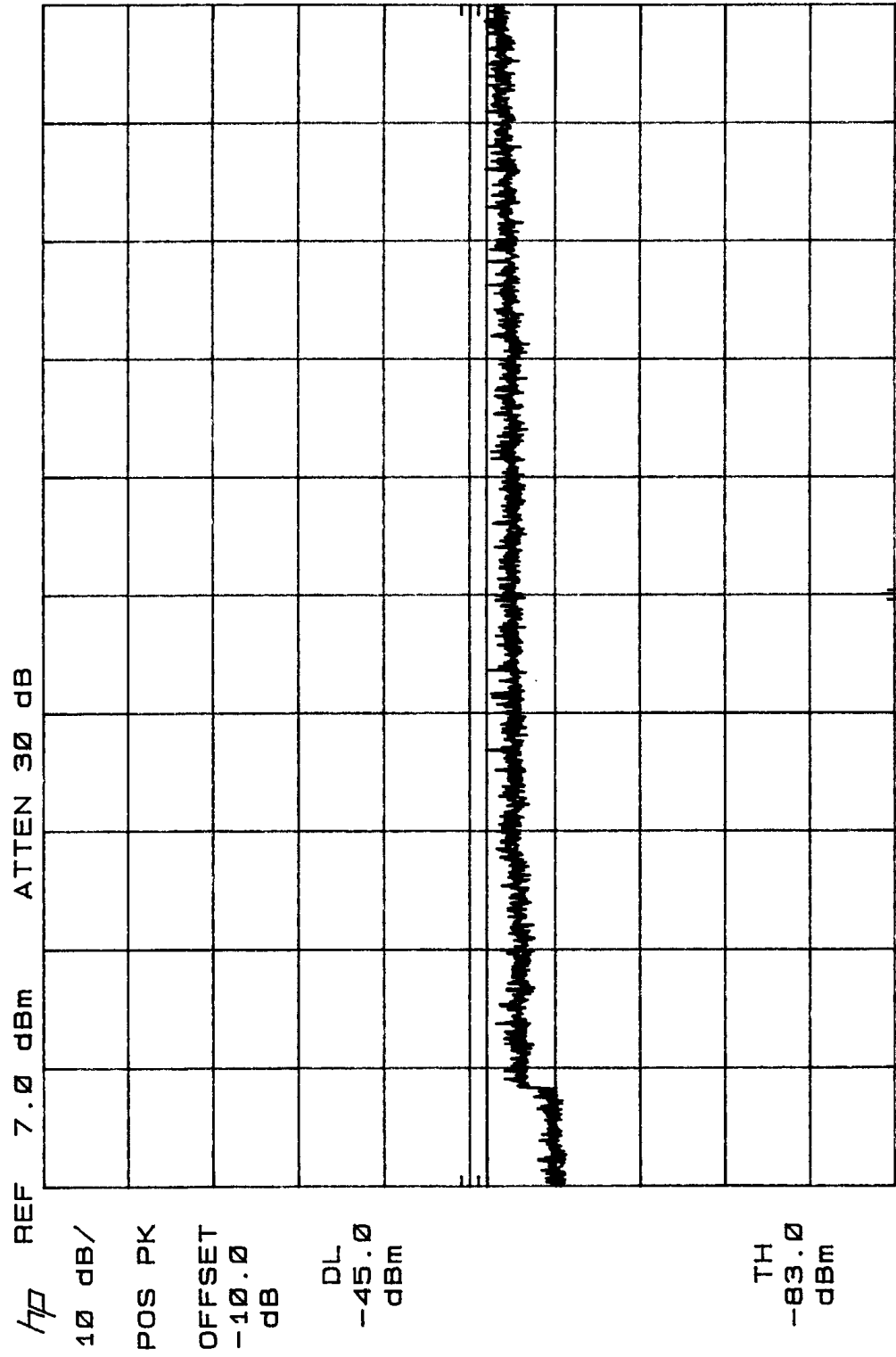
START 12.00 GHz RES BW 1 MHz VBW 3 MHz STOP 18.00 GHz SWP 150 msec

Sep. 27, 2001  
TECH/ENGR. *GB*

Report No.: SC106727

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

Mode: *Ch. 16 (15.407(b))*  
*Upper band 15.407(b)*



REF 7.0 dBm ATTEN 30 dB

10 dB/

POS PK

OFFSET

-10.0 dB

DL

-45.0 dBm

TH

-83.0 dBm

START 12.00 GHz RES BW 1 MHz VBW 3 MHz STOP 18.00 GHz SWP 150 msec

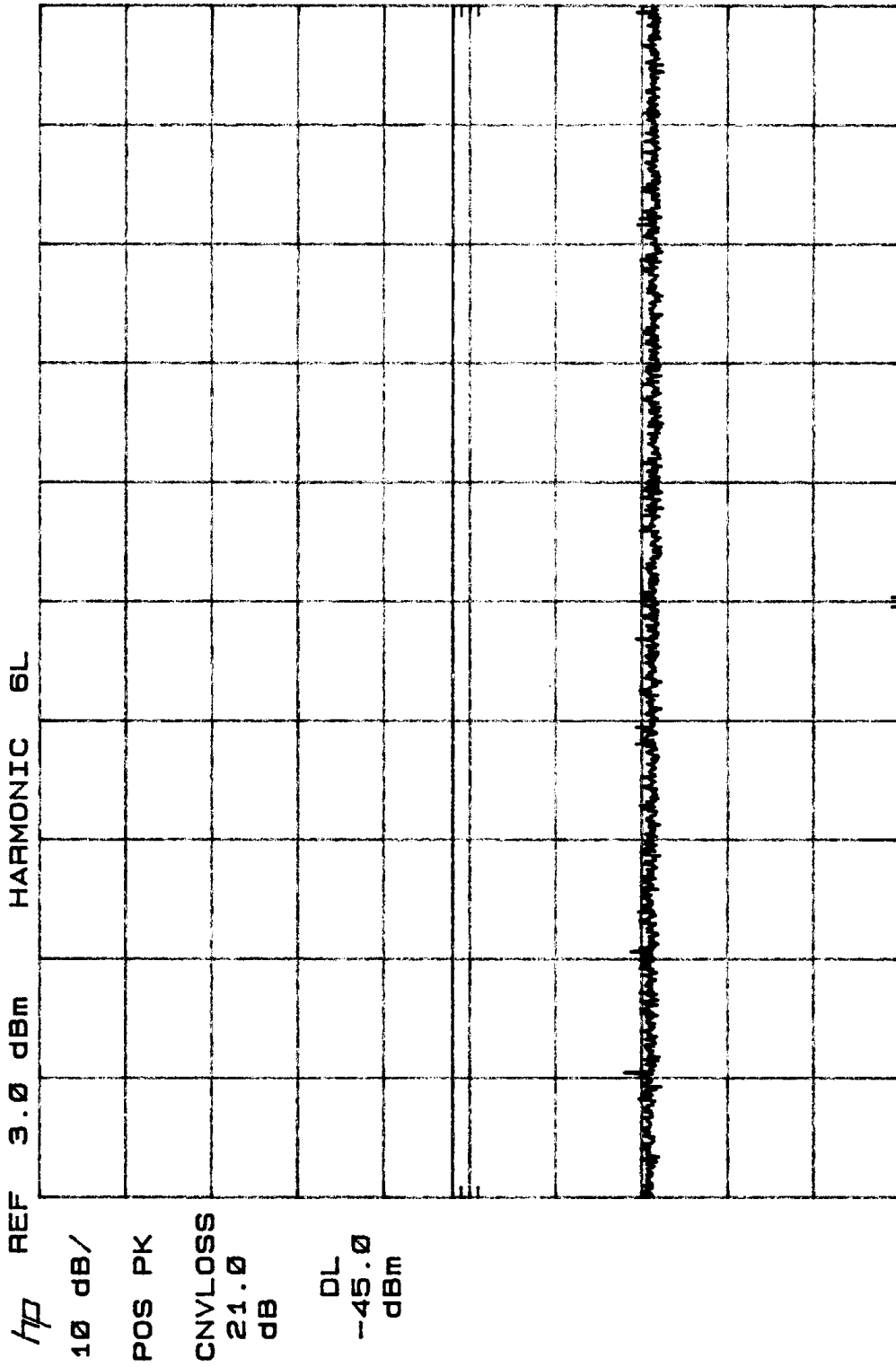


Sep. 26, 2001  
TECH/ENGR. *GBB*

Report No.: SC106727

Mode: *GPSK*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

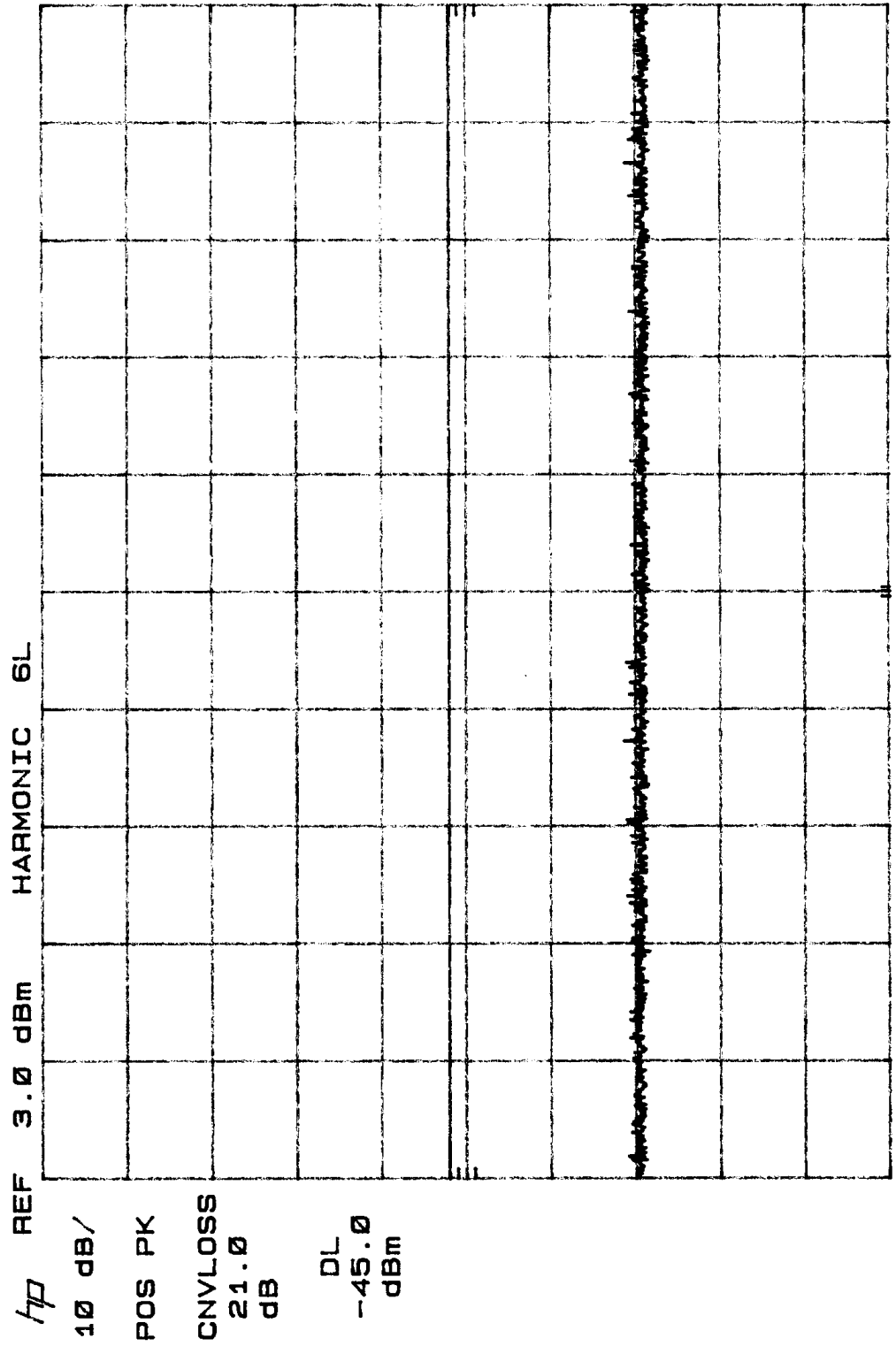


Sep. 26, 2001  
TECH/ENGR. *DB*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727

Mode: *QPSK*

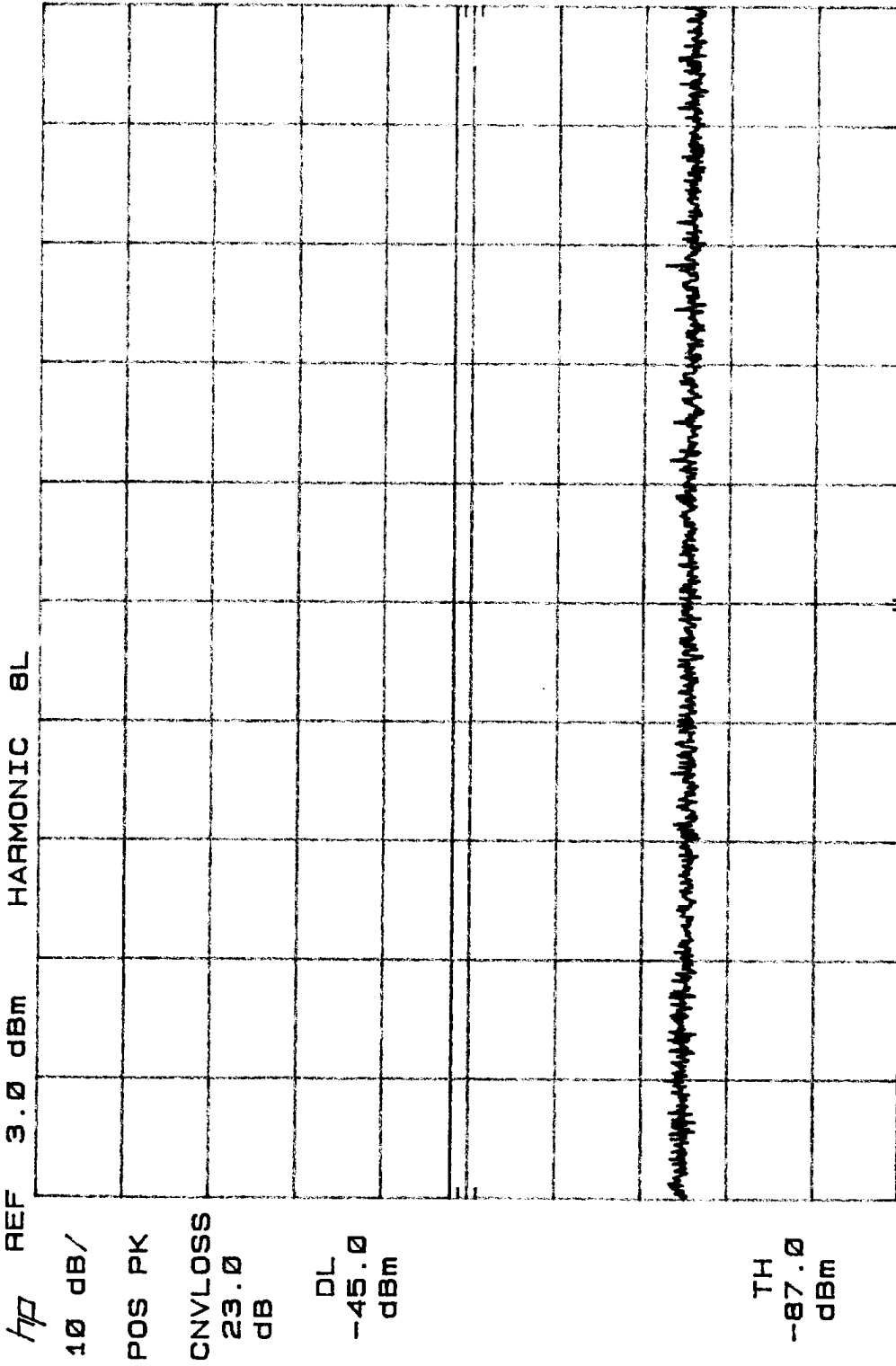


Sep. 26, 2001  
TECH/ENGR. *DB*

Report No.: SC106727

Mode: *20 AM channel 1*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)



*hp* REF 3.0 dBm HARMONIC 8L

10 dB/

POS PK

CNVLOSS  
23.0  
dB

DL  
-45.0  
dBm

TH  
-87.0  
dBm

START 26.5 GHz RES BW 1 MHz VBW 1 MHz STOP 40.0 GHz SWP 338 msec

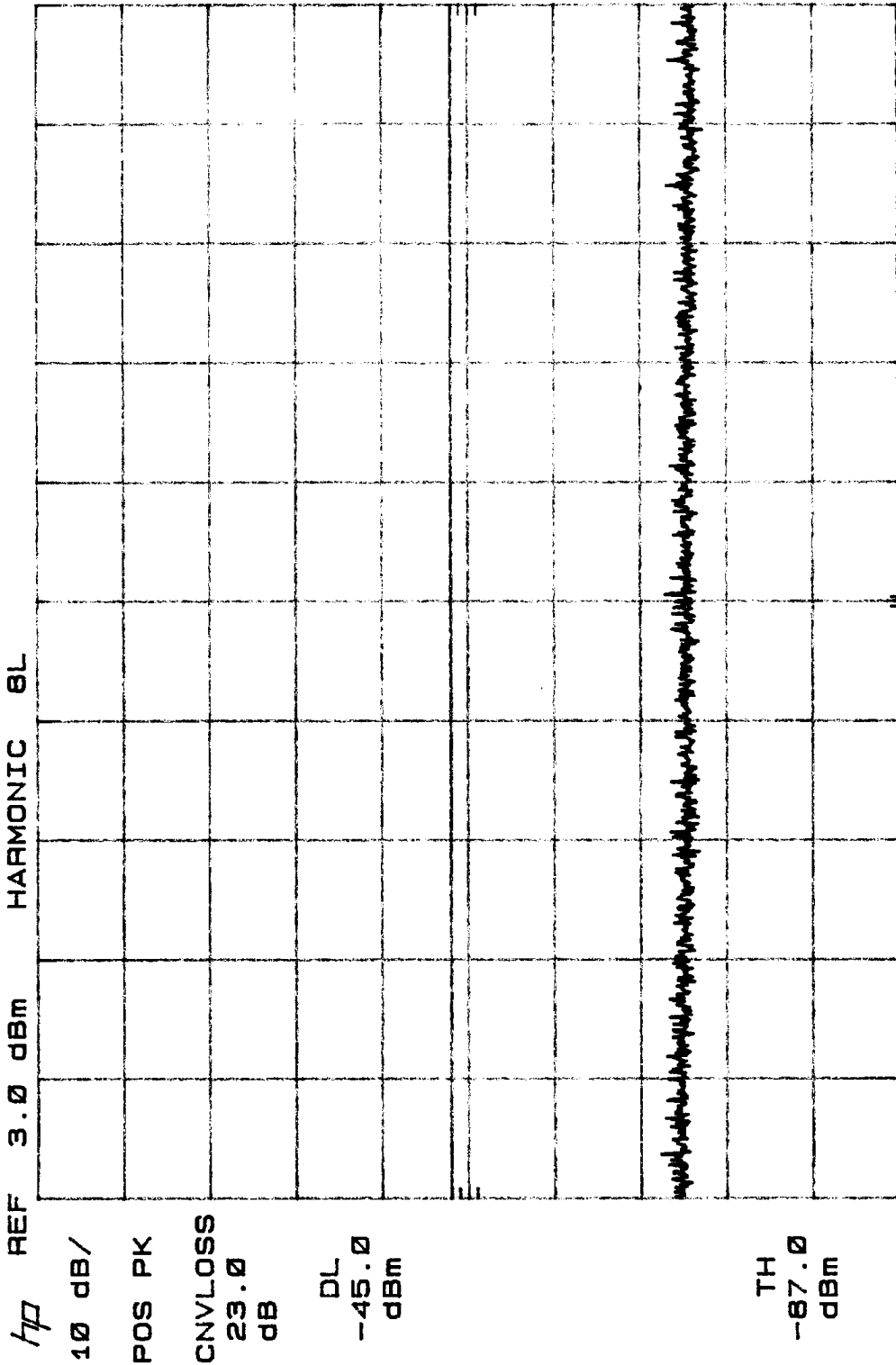


Sep. 26, 2001  
TECH/ENGR. *[Signature]*

Report No.: SC106727

Mode: *[Handwritten]*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)



HARMONIC 8L

REF 3.0 dBm

TH

10 dB/

POS PK

CNVLOSS  
23.0  
dB

DL  
-45.0  
dBm

TH  
-87.0  
dBm

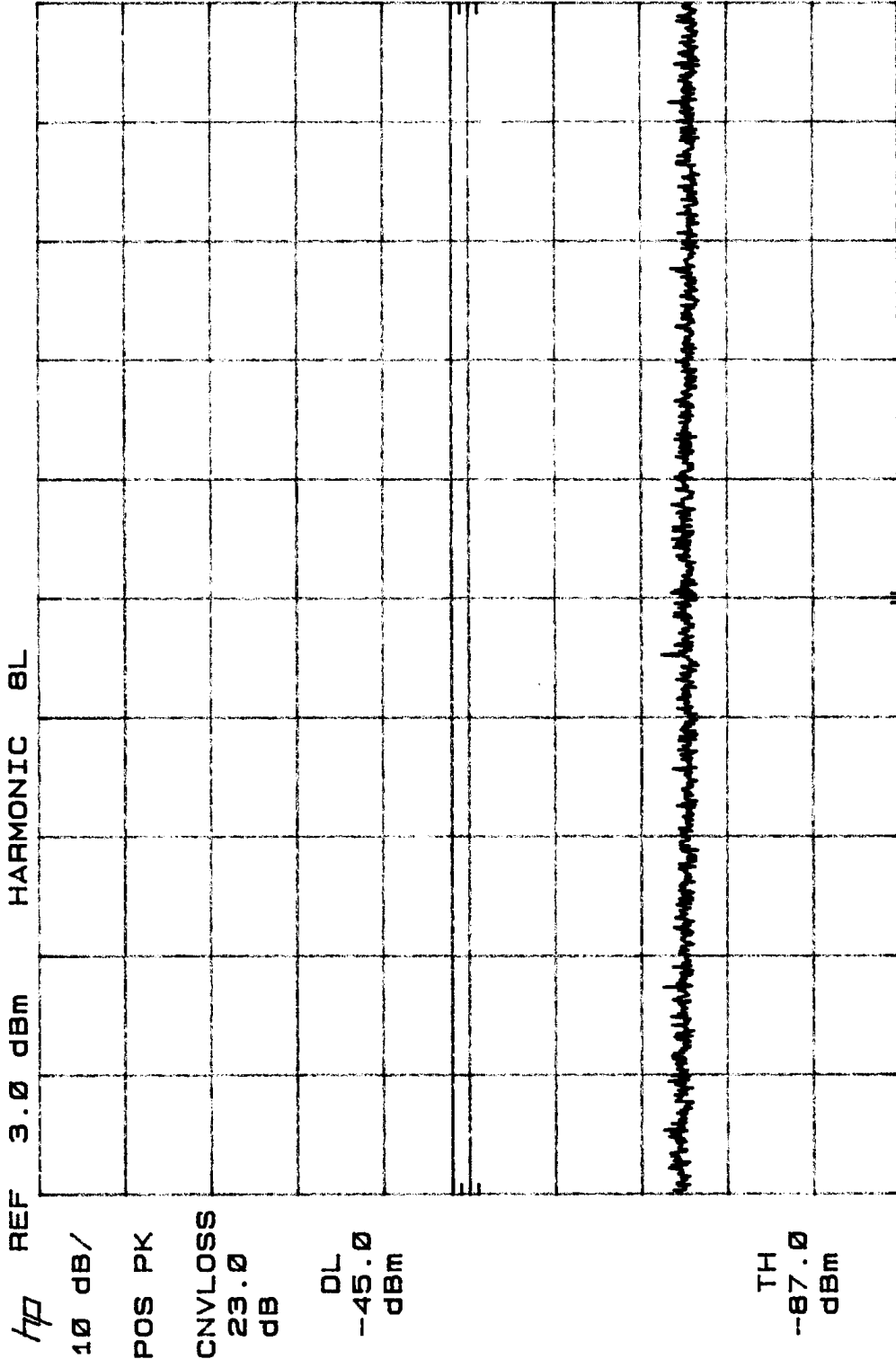
START 26.5 GHz  
RES BW 1 MHz  
VBW 1 MHz  
STOP 40.0 GHz  
SWP 338 msec

Sep. 26, 2001  
TECH/ENGR. *DLB*

Report No.: SC106727

Mode: *QPSK 3/4 channel D<sub>1</sub>*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)



START 26.5 GHz  
RES BW 1 MHz  
VBW 1 MHz  
STOP 40.0 GHz  
SWP 336 msec

REF 3.0 dBm HARMONIC BL

10 dB/

POS PK

CNVLOSS  
23.0  
dB

DL  
-45.0  
dBm

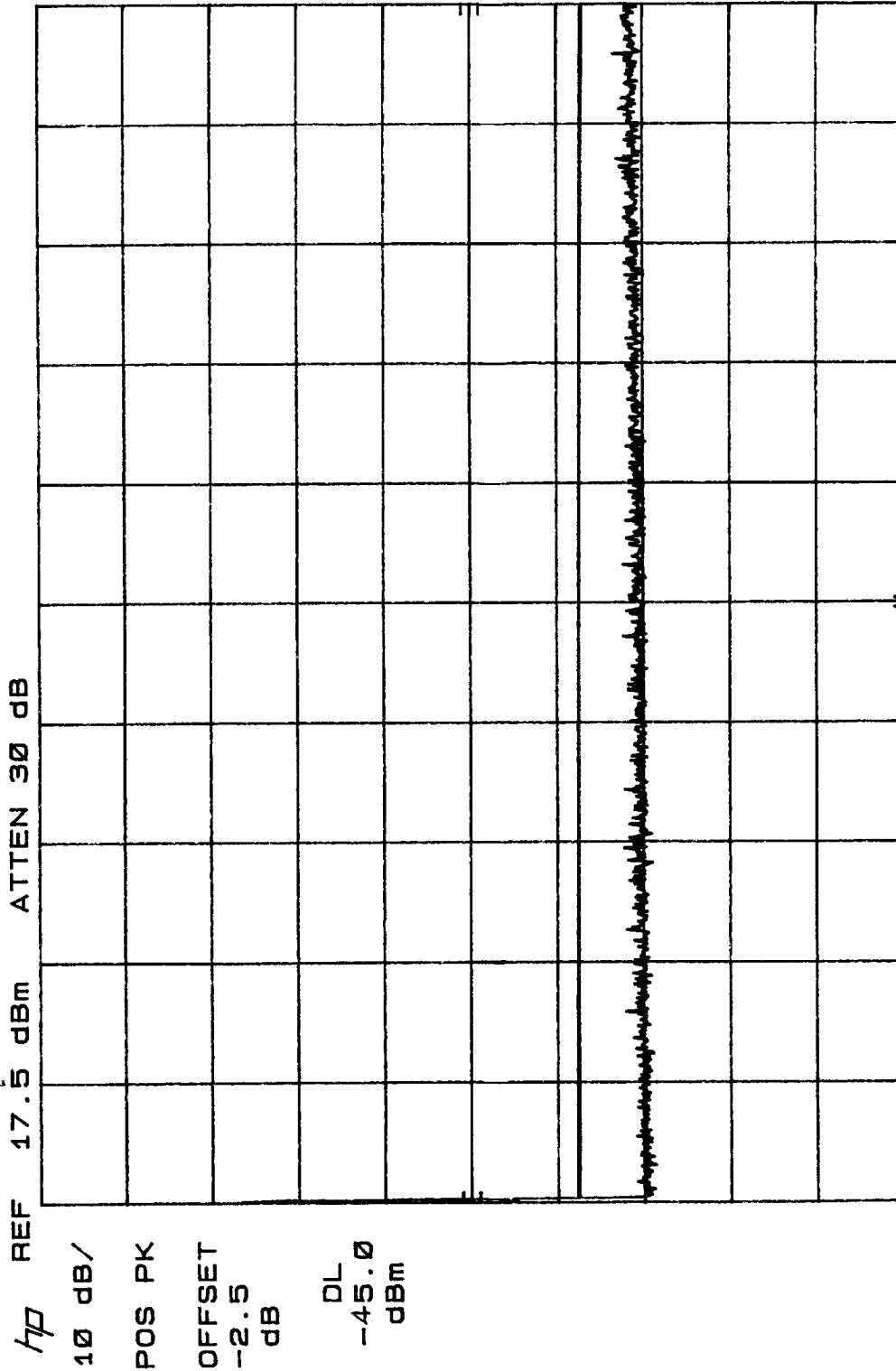
TH  
-87.0  
dBm

Sep. 25, 2001  
TECH/ENGR. *DRB*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727

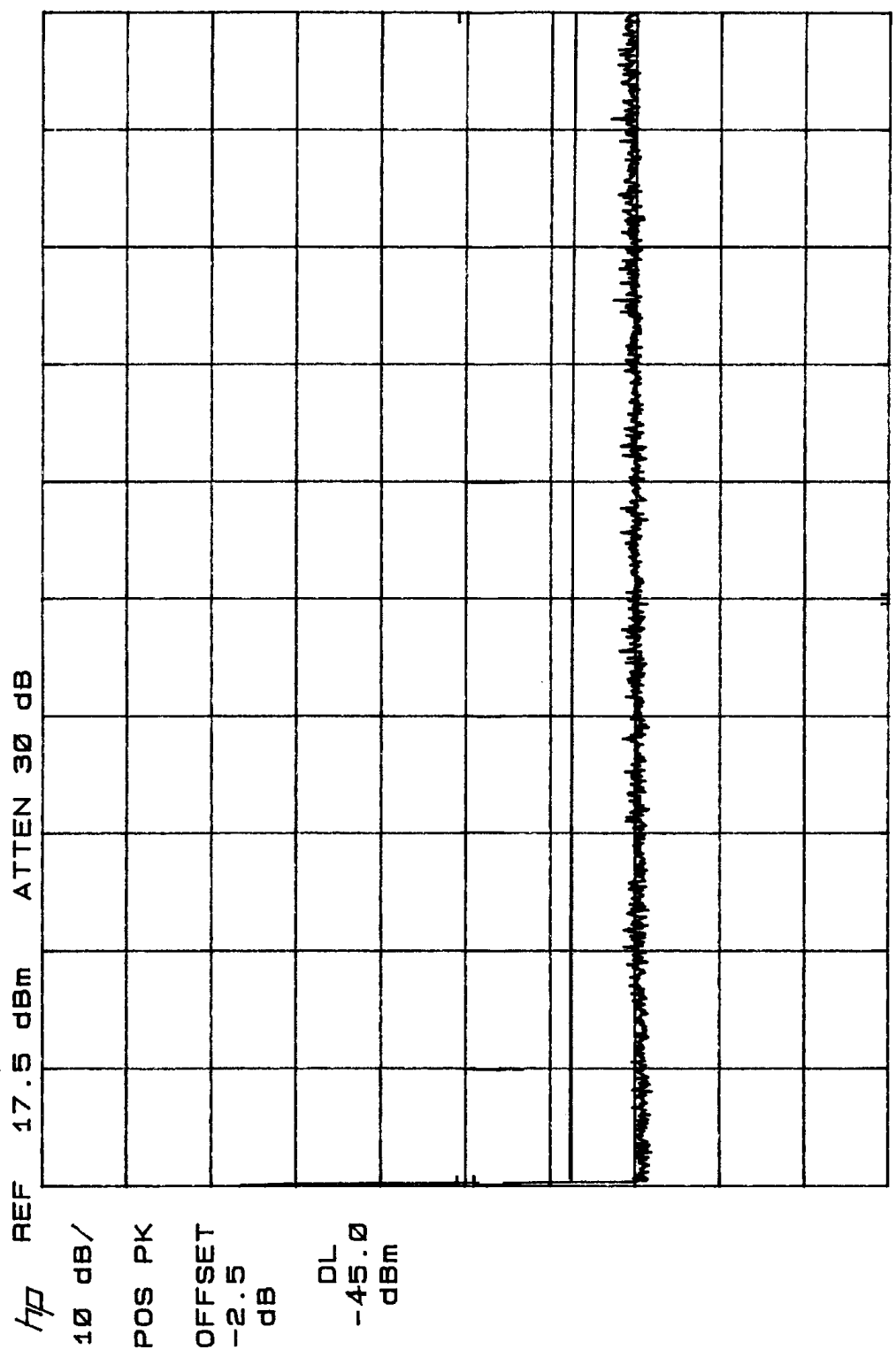
Mode: *QPSK 3/4 Channel 2*



START 100 KHZ  
RES BW 1 MHz  
VBW 1 MHz  
STOP 2.50 GHz  
SWP 62.5 msec

CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

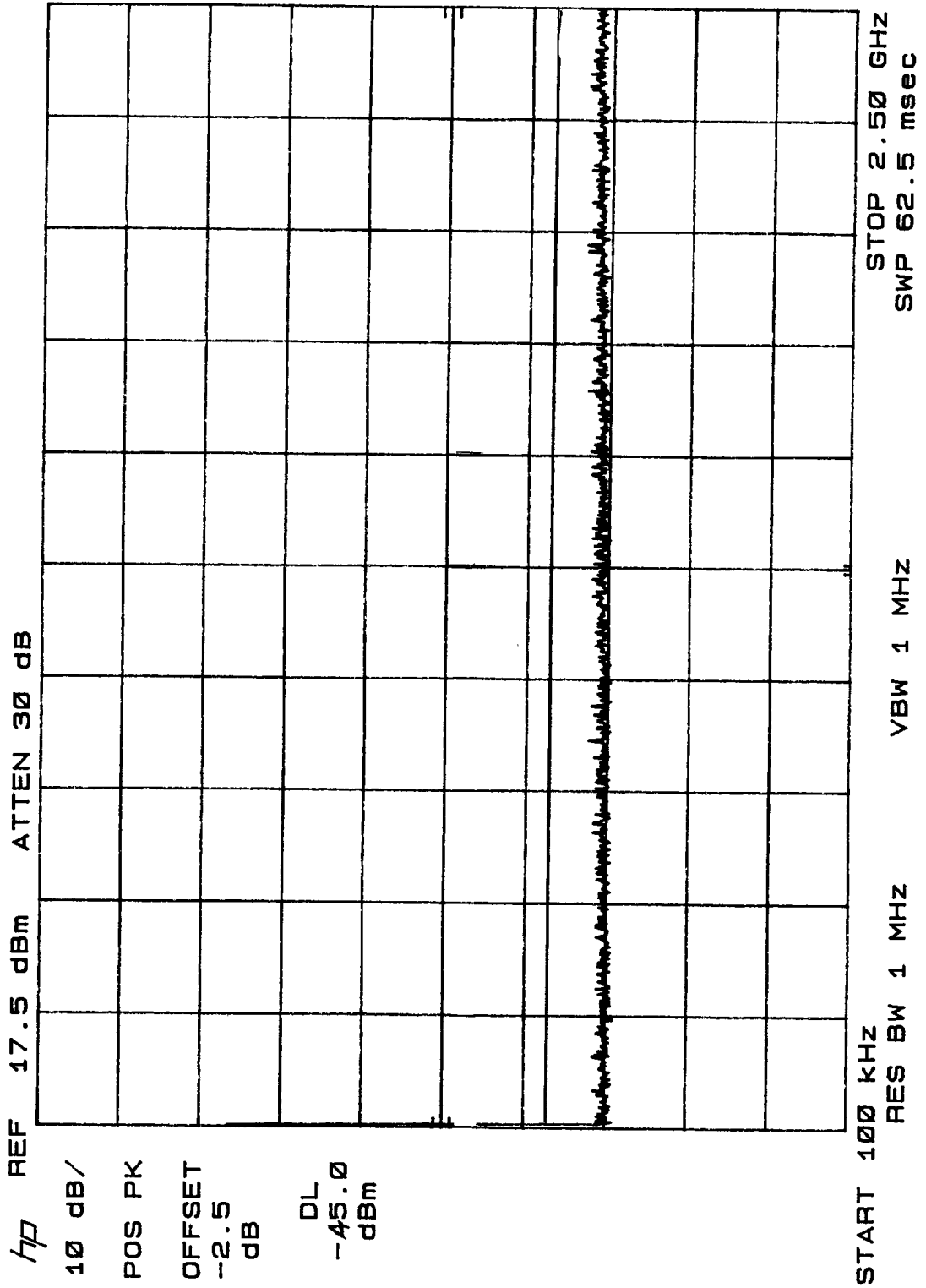
Report No.: SC106727  
 Mode: 16QAM Channel, 2  
 Sep. 25, 2001  
 TECH/ENGR. *DAZ*



CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727  
 Mode: *8 QAM Channel 2*

Sep. 25, 2001  
 TECH/ENGR. *DBS*



Sep. 27, 2001  
TECH/ENGR. *Bob*

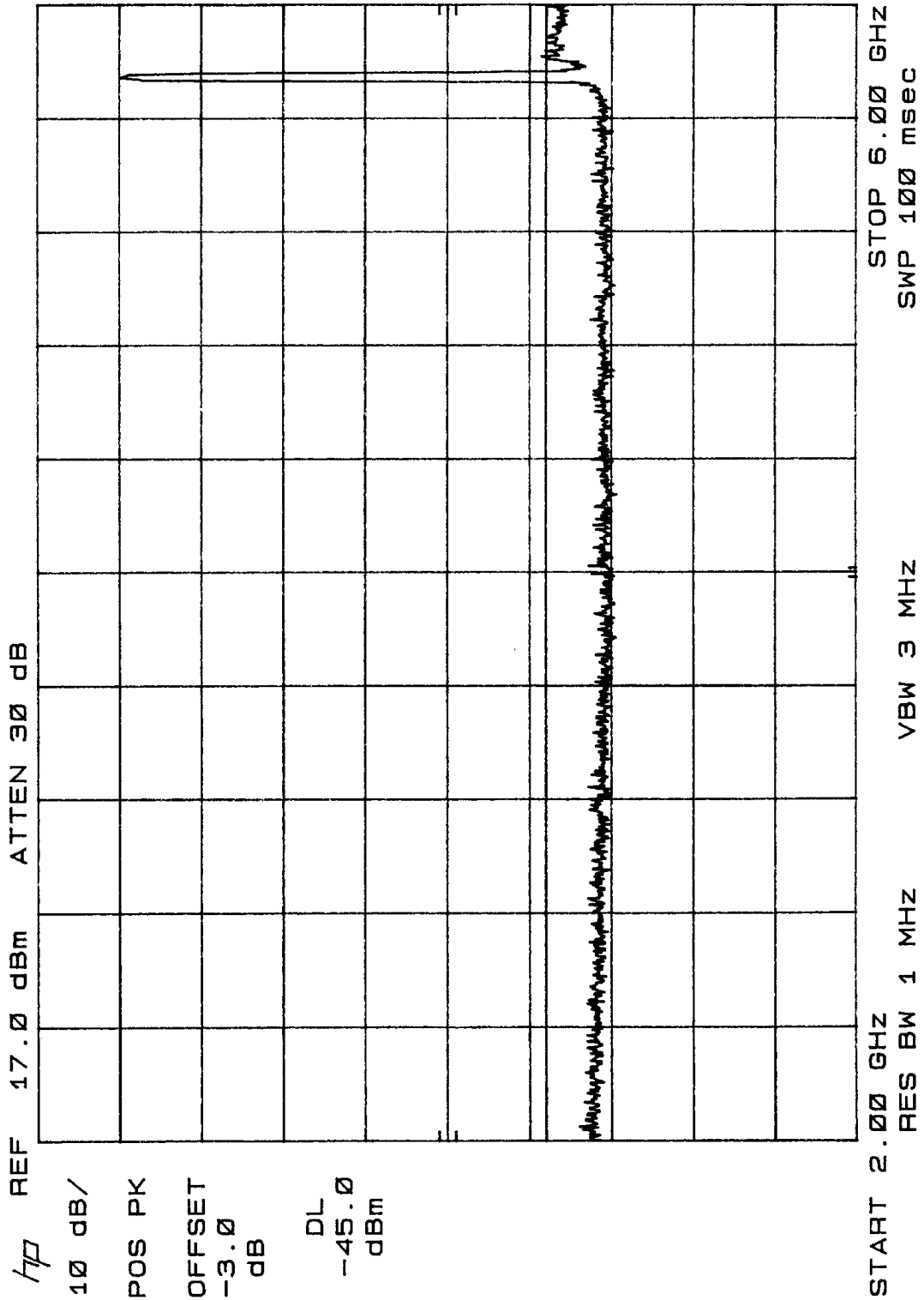
Report No.: SC106727

Mode: *QAM 8, channel 2*

CUSTOMER: WESTERN Multiplex

EUT: UNII Radio FCCID: HZB-U58-B60

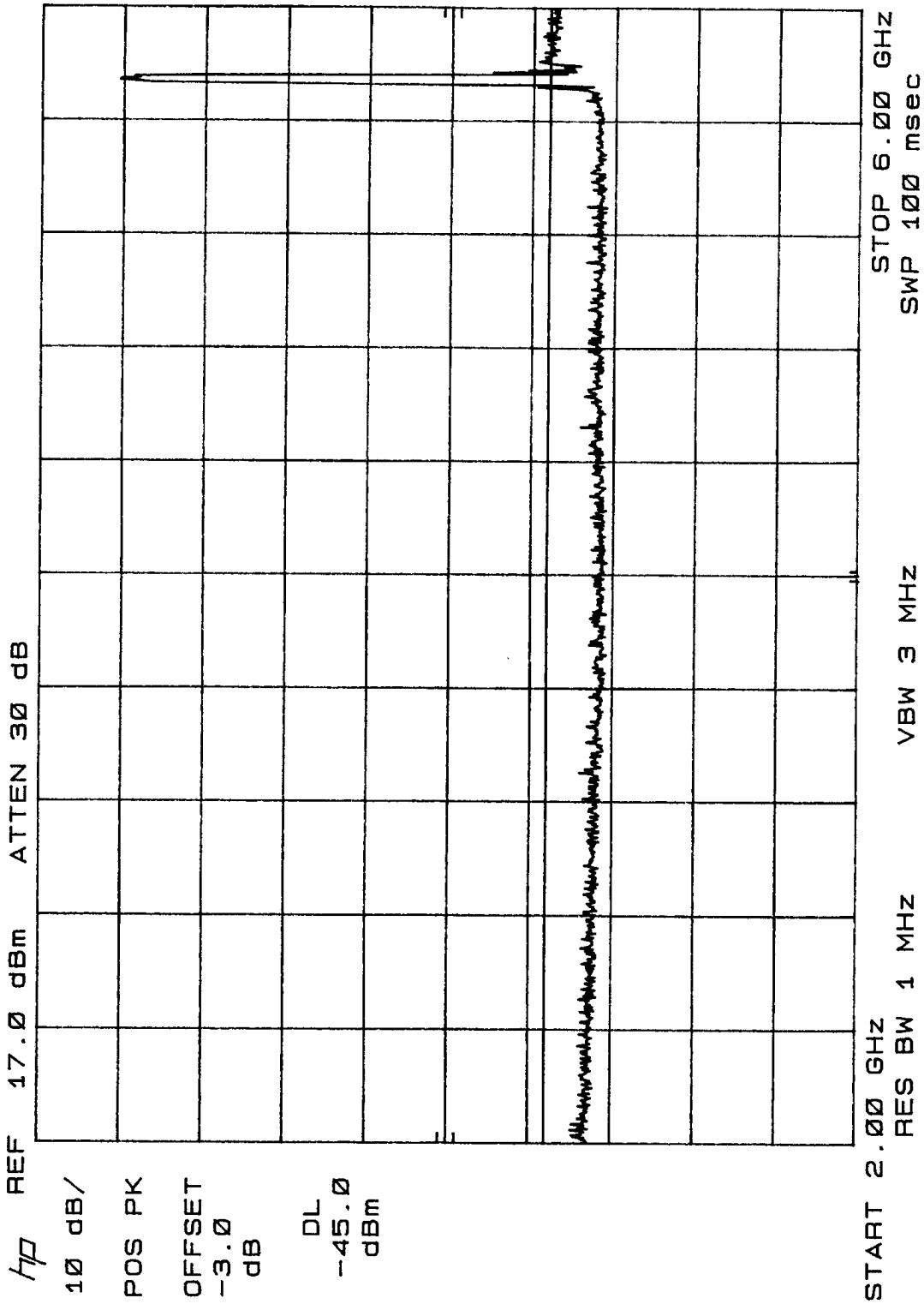
TEST: Out of Band Antenna Conducted Part 15.407(b)



Sep. 27, 2001  
TECH/ENGR. *1088*

Report No.: SC106727  
Mode: *QAM 16, channels 2*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

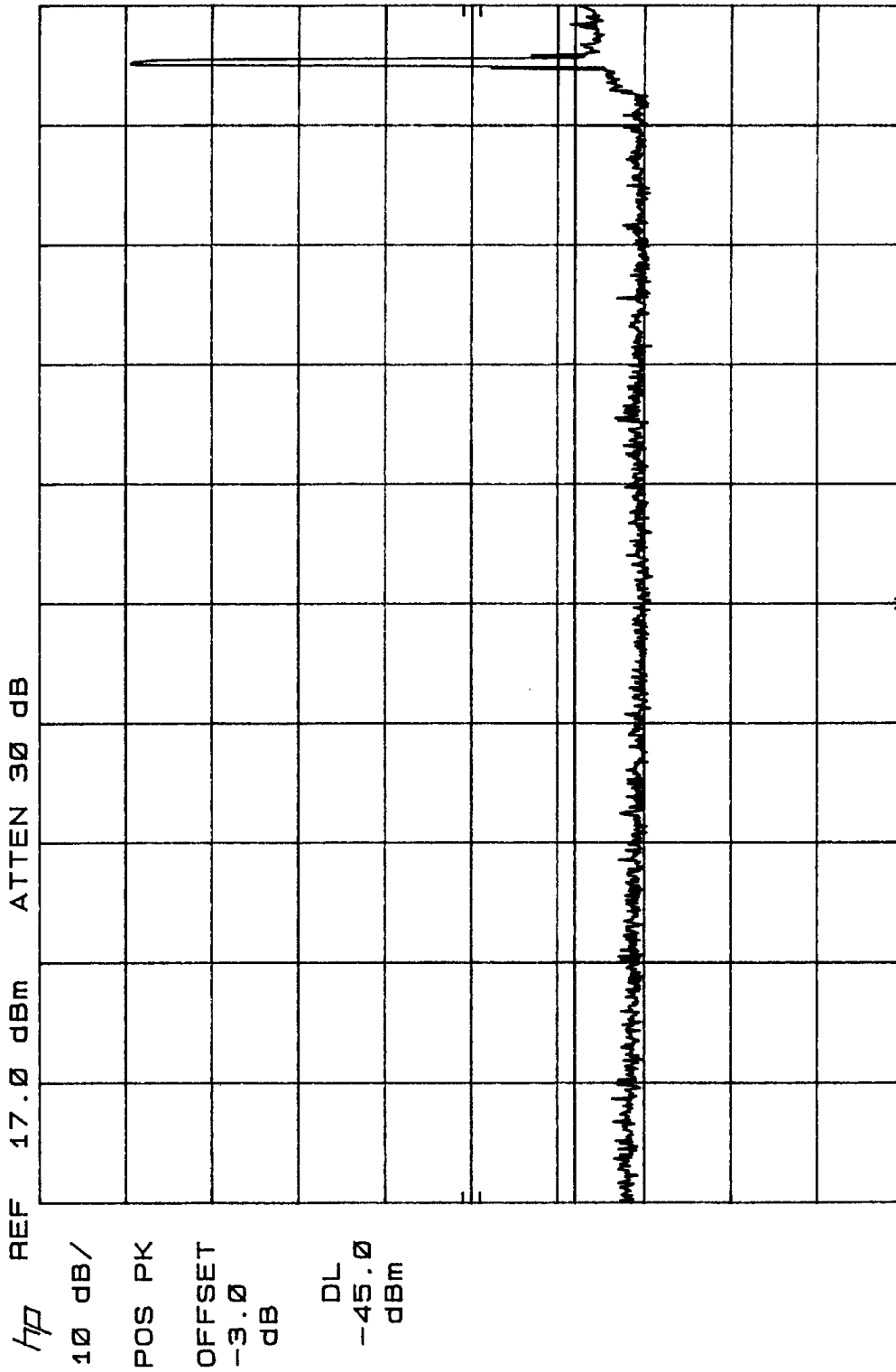


Sep. 27, 2001  
TECH/ENGR. *[Signature]*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727

Mode: *QPSK 24 channels, 2*



*HP* REF 17.0 dBm ATTEN 30 dB  
10 dB/  
POS PK  
OFFSET -3.0 dB  
DL -45.0 dBm

START 2.00 GHZ RES BW 1 MHz VBW 3 MHz STOP 6.00 GHZ SWP 100 msec

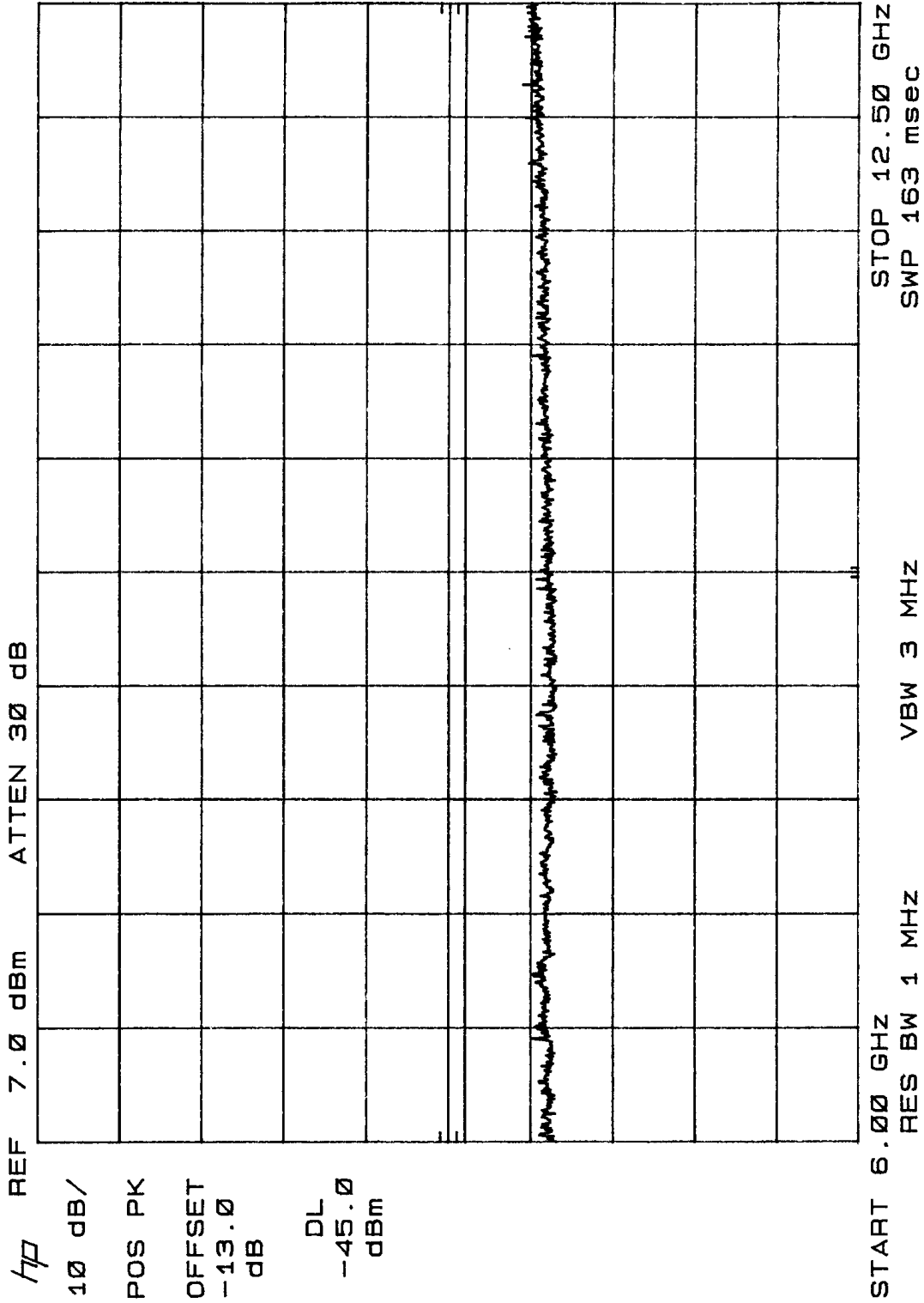


Sep. 27, 2001  
TECH/ENGR. *gdb*

Report No.: SC106727

Mode: *QAM 8, channel, 2*

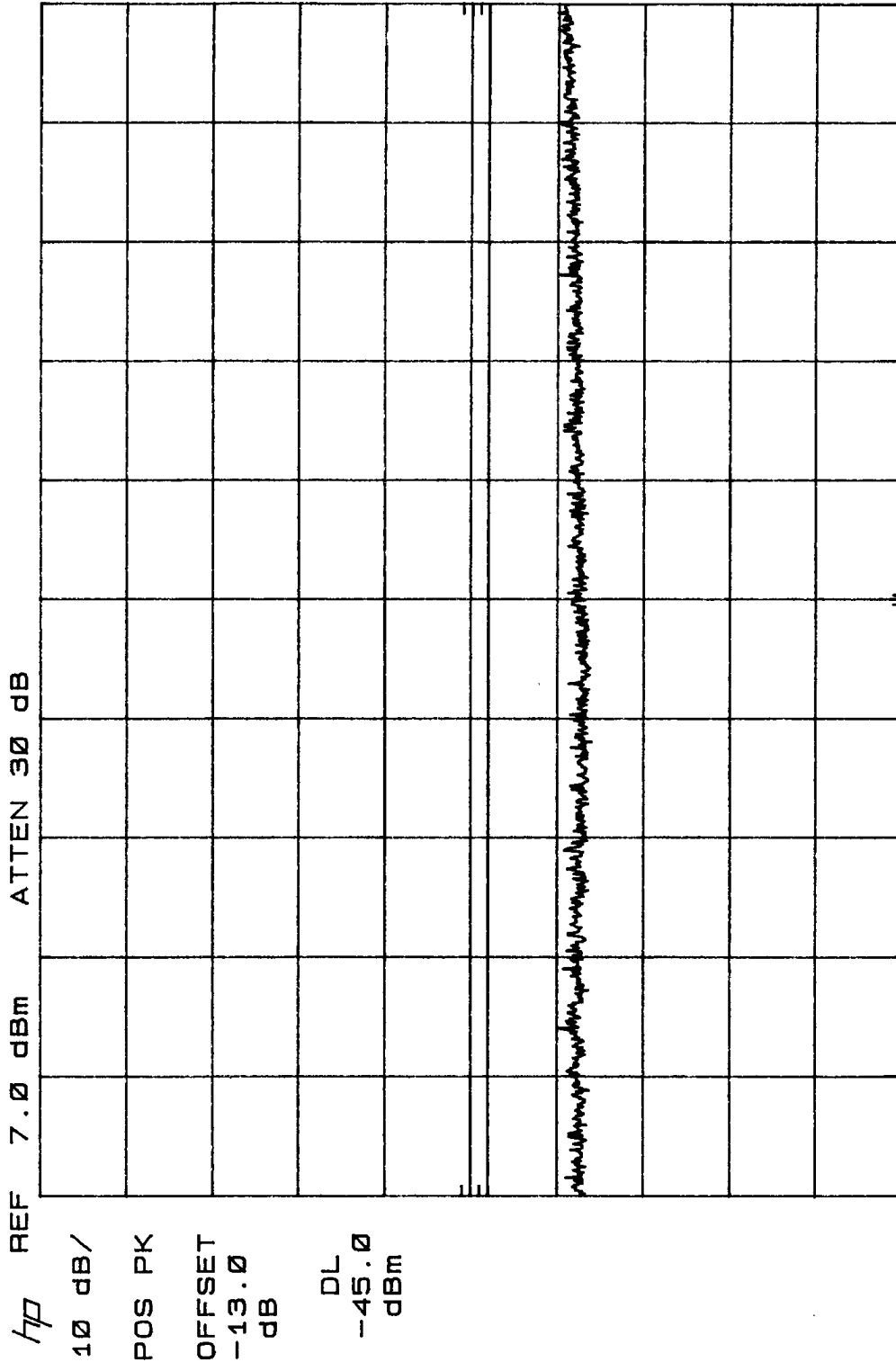
CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)



CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727  
 Mode: *PAM(6, Channel 2)*

Sep. 27, 2001  
 TECH/ENGR. *[Signature]*

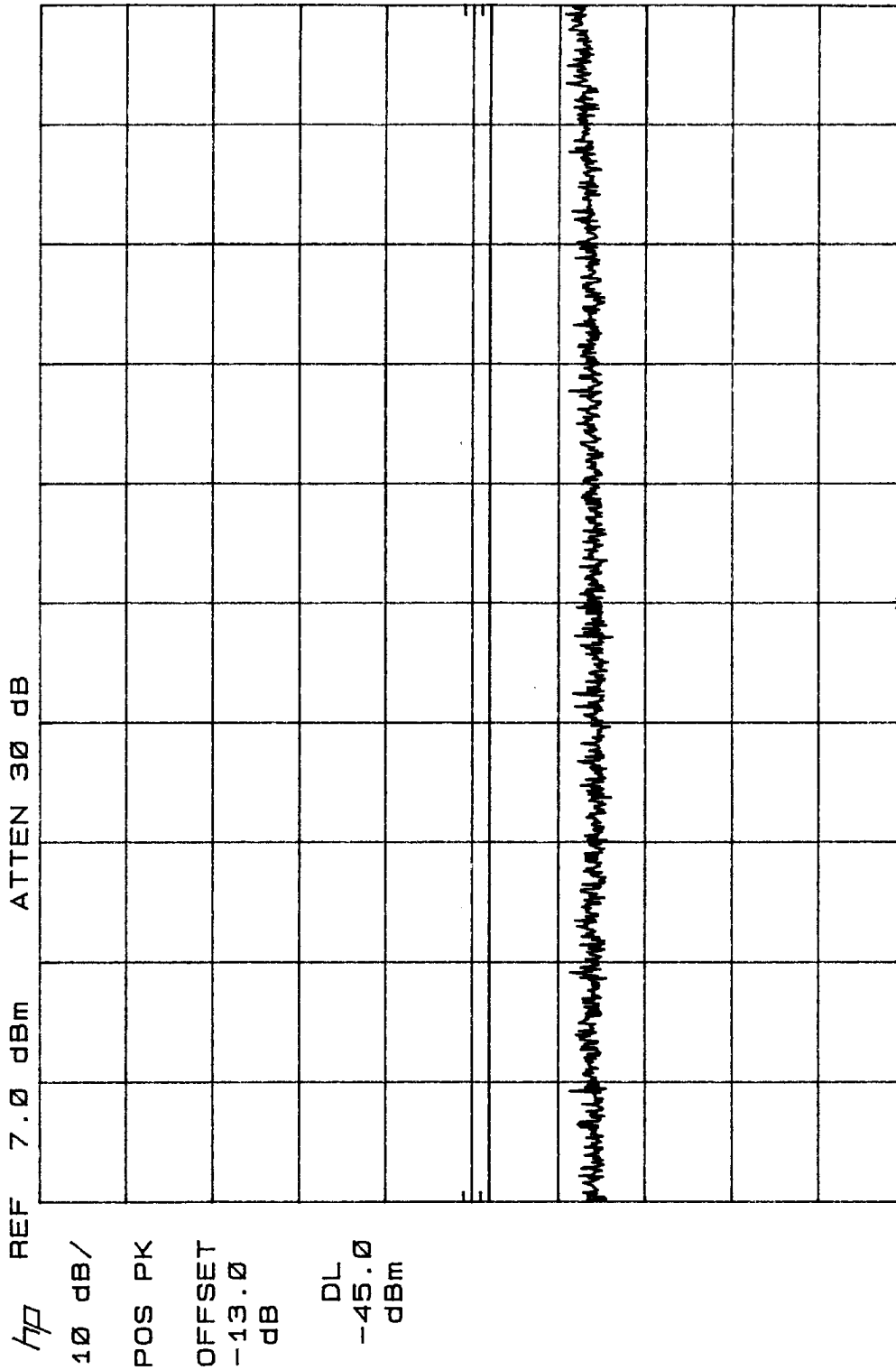


Sep. 27, 2001  
TECH/ENGR. *[Signature]*

Report No.: SC106727

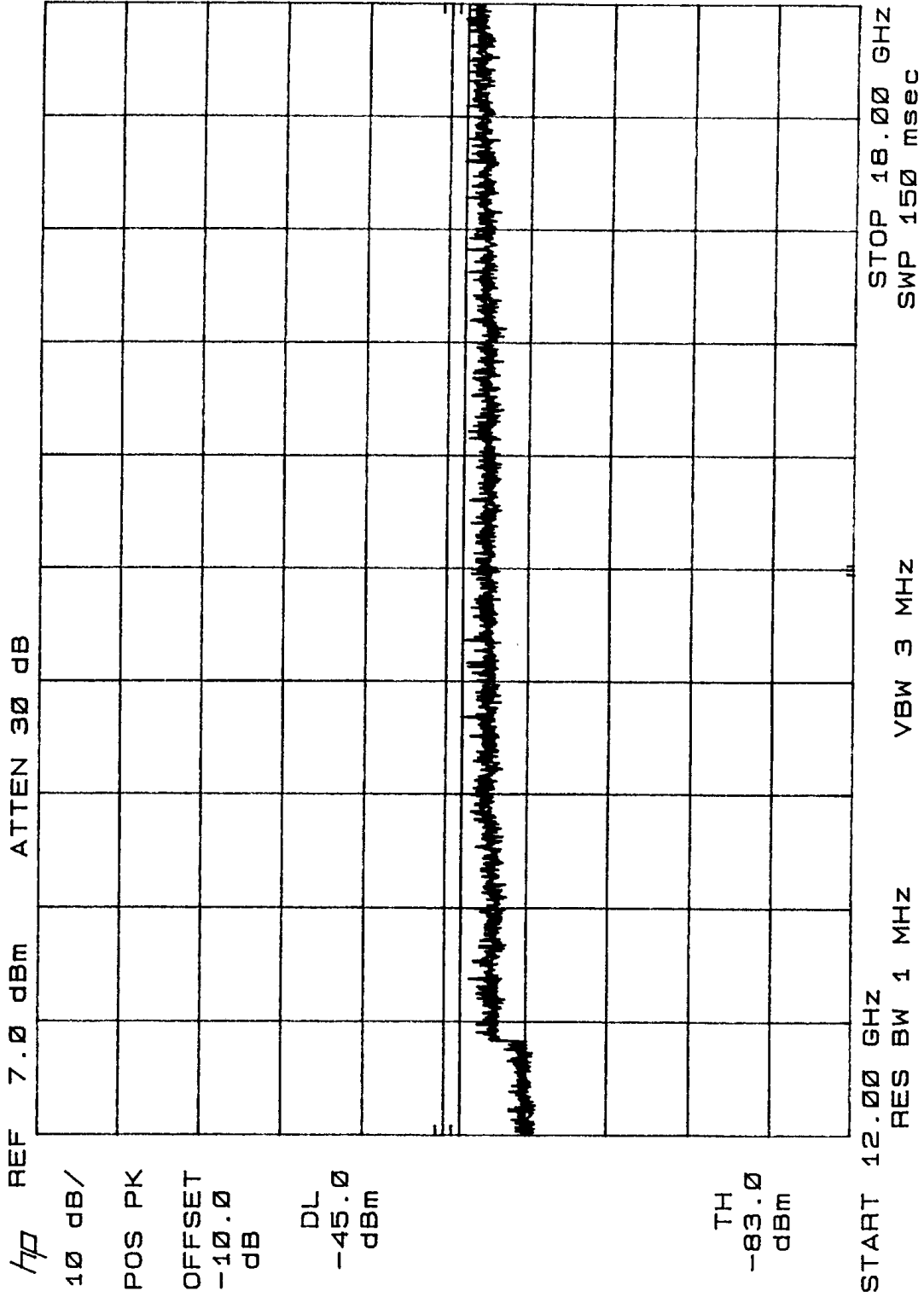
CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

Mode: *DISK 3/4, channel 2*  
*w/ the use of Pro-Bitrol*



Sep. 27, 2001  
TECH/ENGR. *gfb*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)  
Report No.: SC106727  
Mode: *QPSK 3/4* *SheniseL, J*  
*w/ Rec. Amp & Pre-Sense*

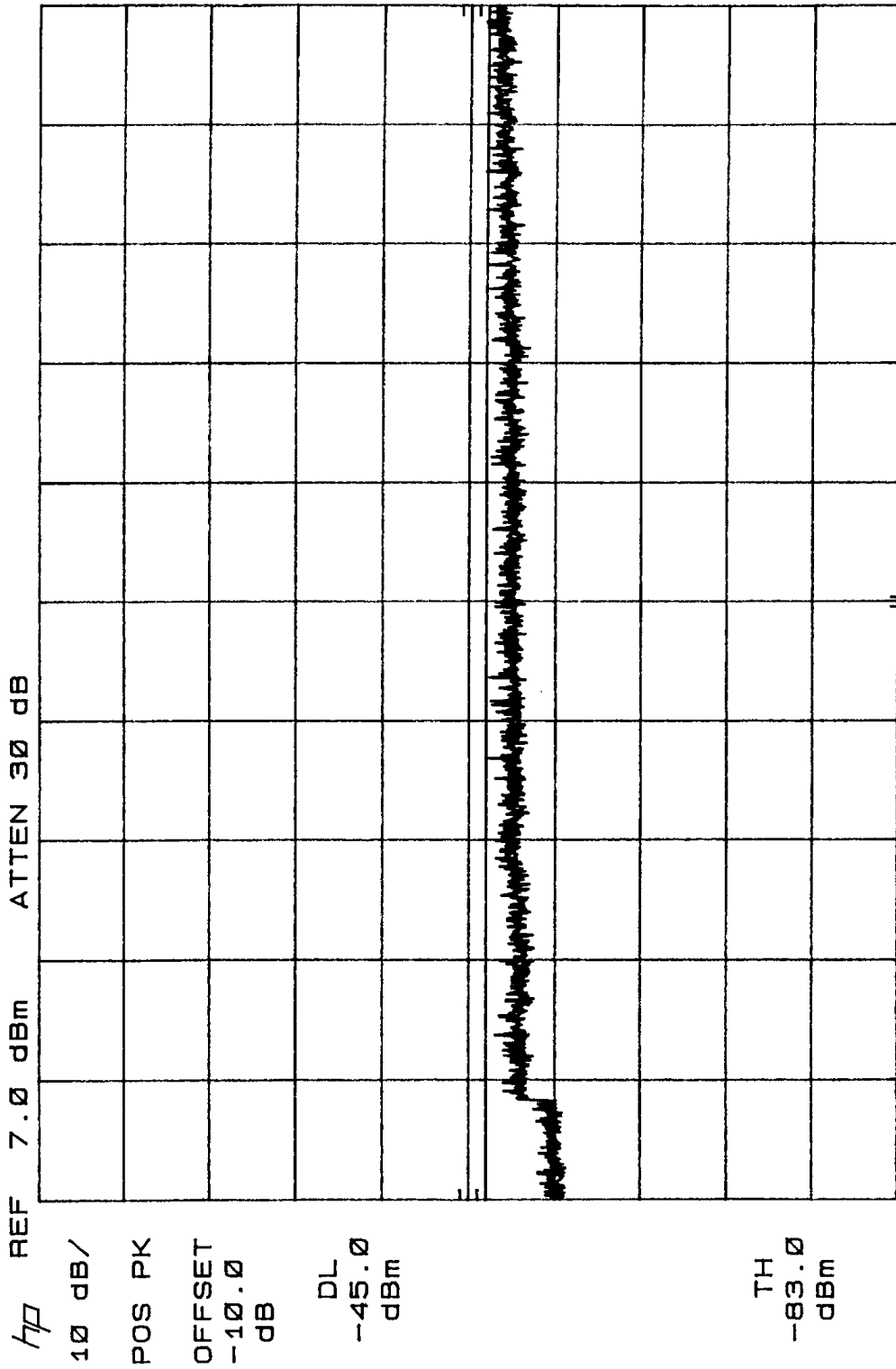


Sep. 27, 2001  
TECH/ENGR. *GPB*

Report No.: SC106727

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60

Mode: *QAM 16, C Inverted, 2*  
TEST: Out of Band Antenna Conducted Part 15.407(b) *2/100 - Amp. of Pwr. Selected*

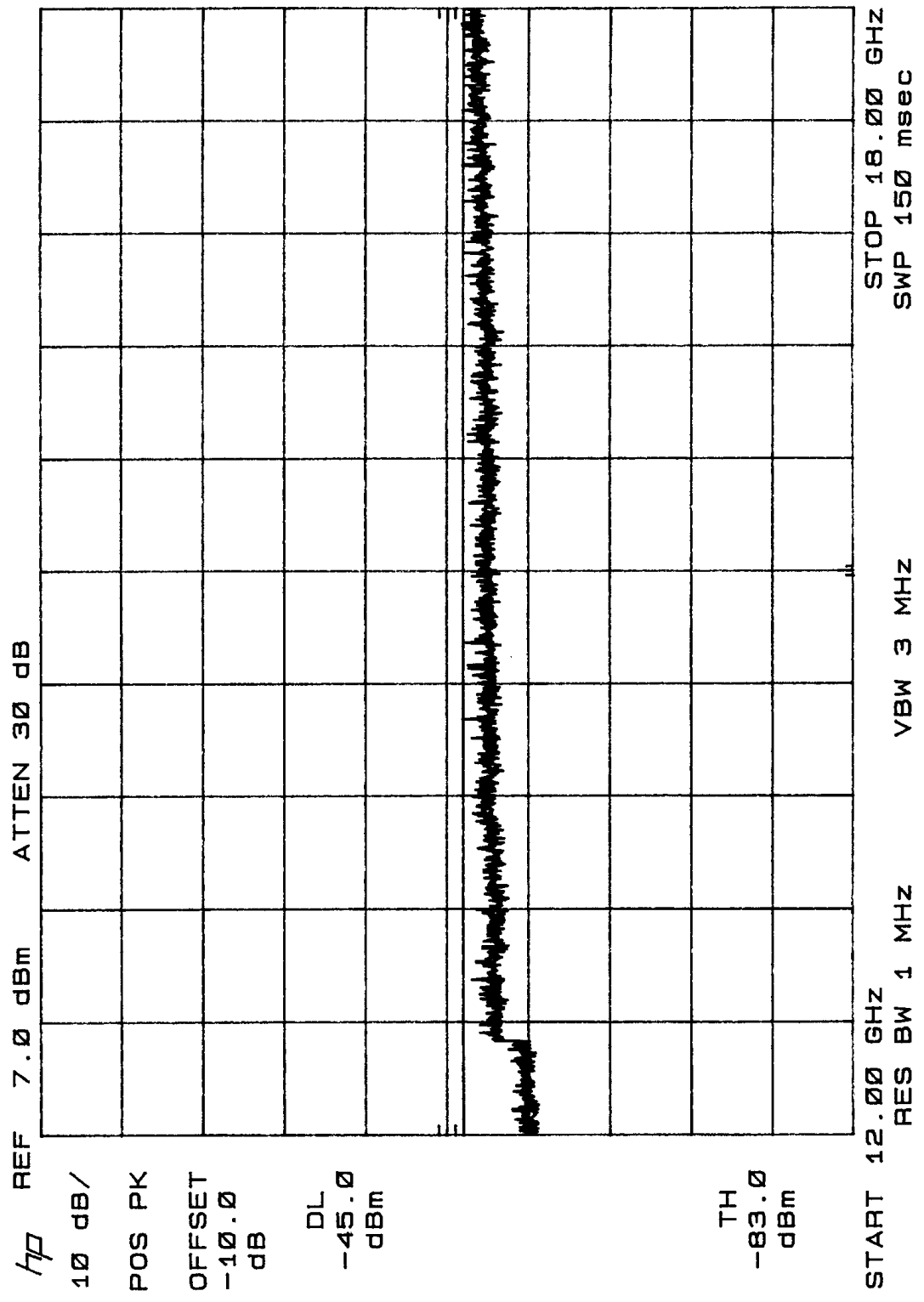


Sep. 27, 2001  
TECH/ENGR. *DB*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b) with 0.1mV of pre-selector

Report No.: SC106727

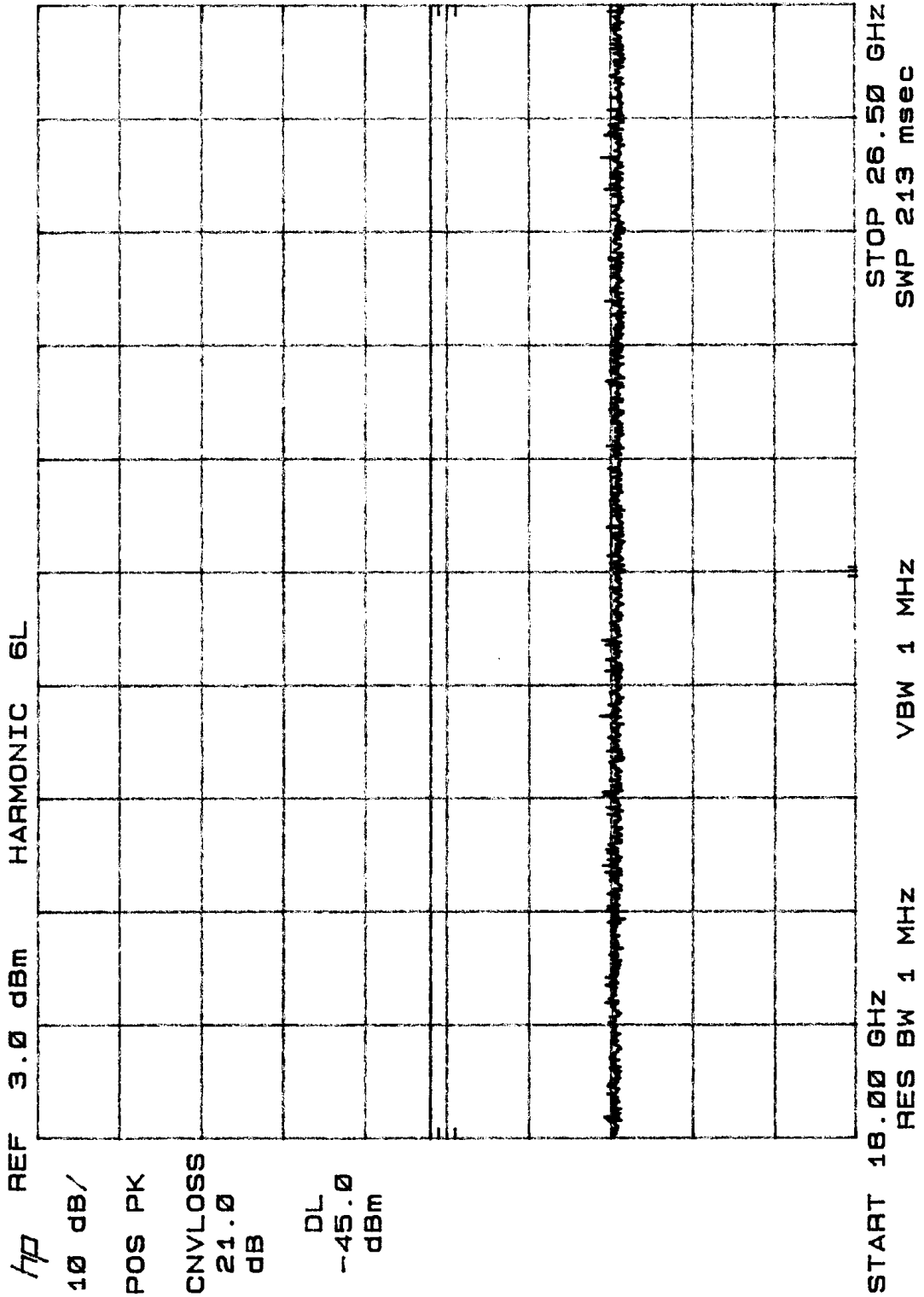
Mode: *QAM 8, Channel 2*





Sep. 26, 2001  
TECH/ENGR. *DB*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)  
Report No.: SC106727  
Mode: *10QAM channel 12*





Sep. 26, 2001  
TECH/ENGR. *GB*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727

Mode: *QPSK 3/4 Channel 1, 2*

HARMONIC 6L

REF 3.0 dBm

*hp*

10 dB/

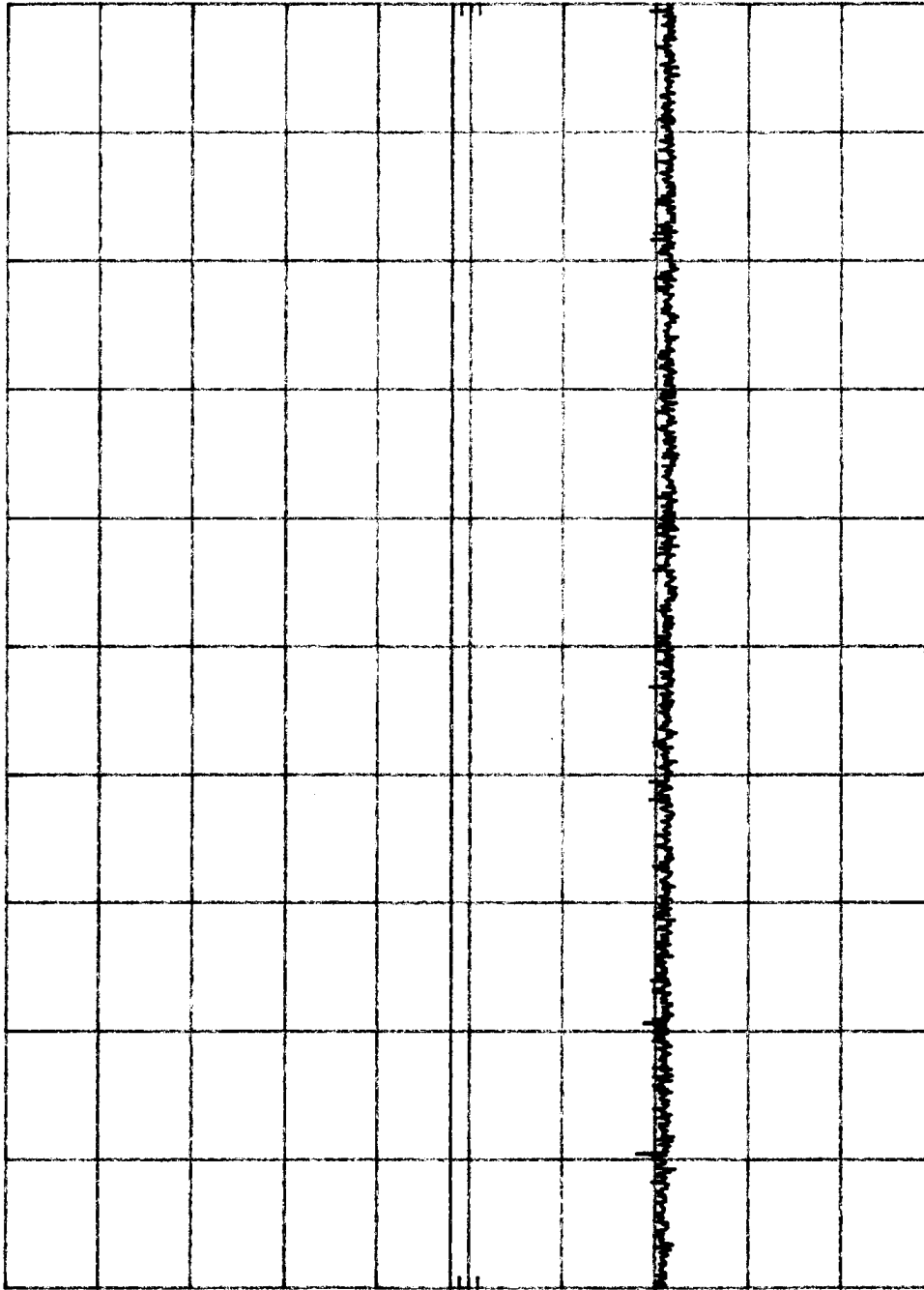
POS PK

CNVLOSS

21.0  
dB

DL

-45.0  
dBm



START 18.00 GHz

RES BW 1 MHz

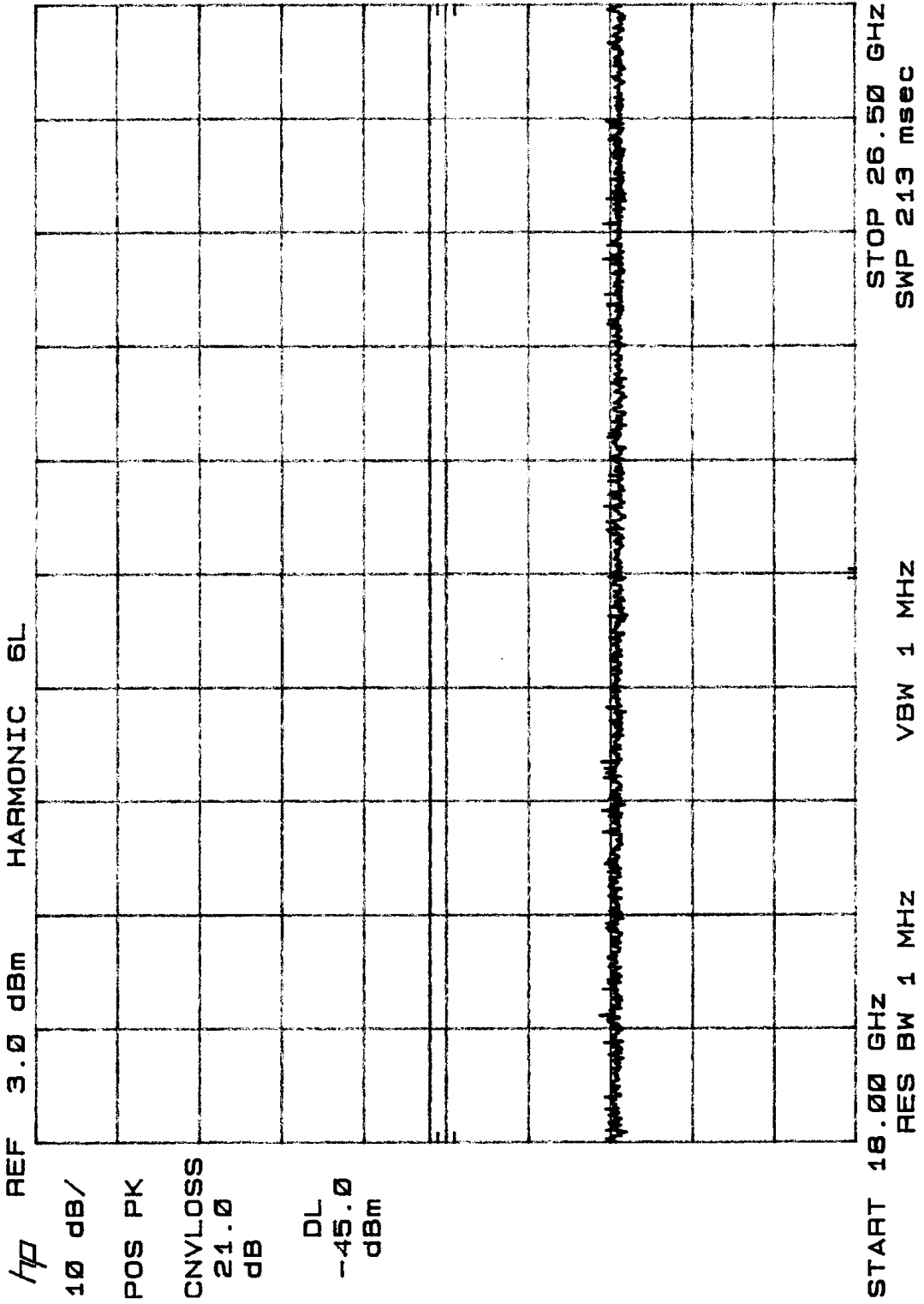
VBW 1 MHz

STOP 26.50 GHz  
SWP 213 msec

Sep. 26, 2001  
TECH/ENGR. *[Signature]*

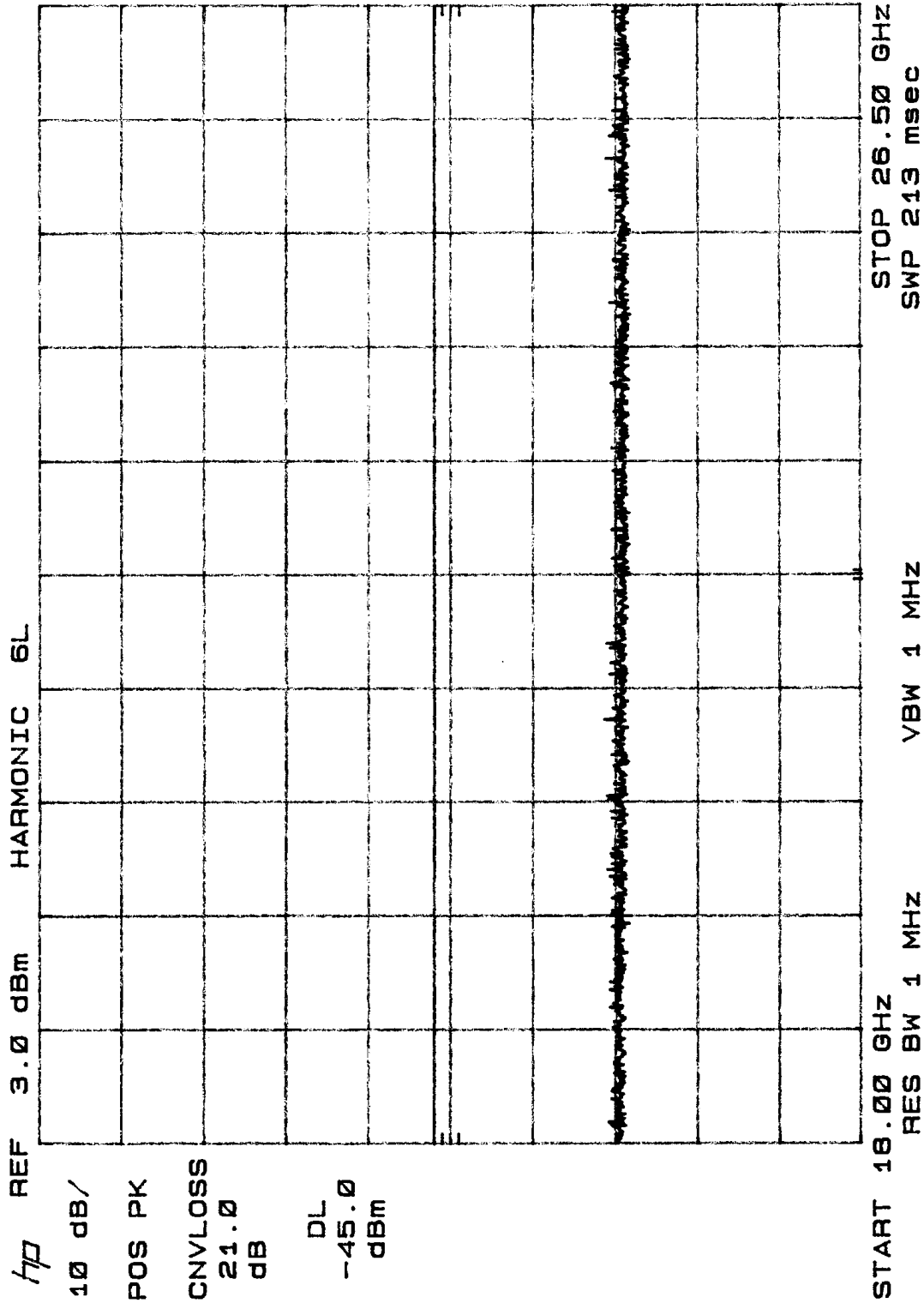
Report No.: SC106727  
Mode: *[Handwritten]*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)



Sep. 26, 2001  
TECH/ENGR. *DBB*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)  
Report No.: SC106727  
Mode: *16QAM 64Kbps, 2*

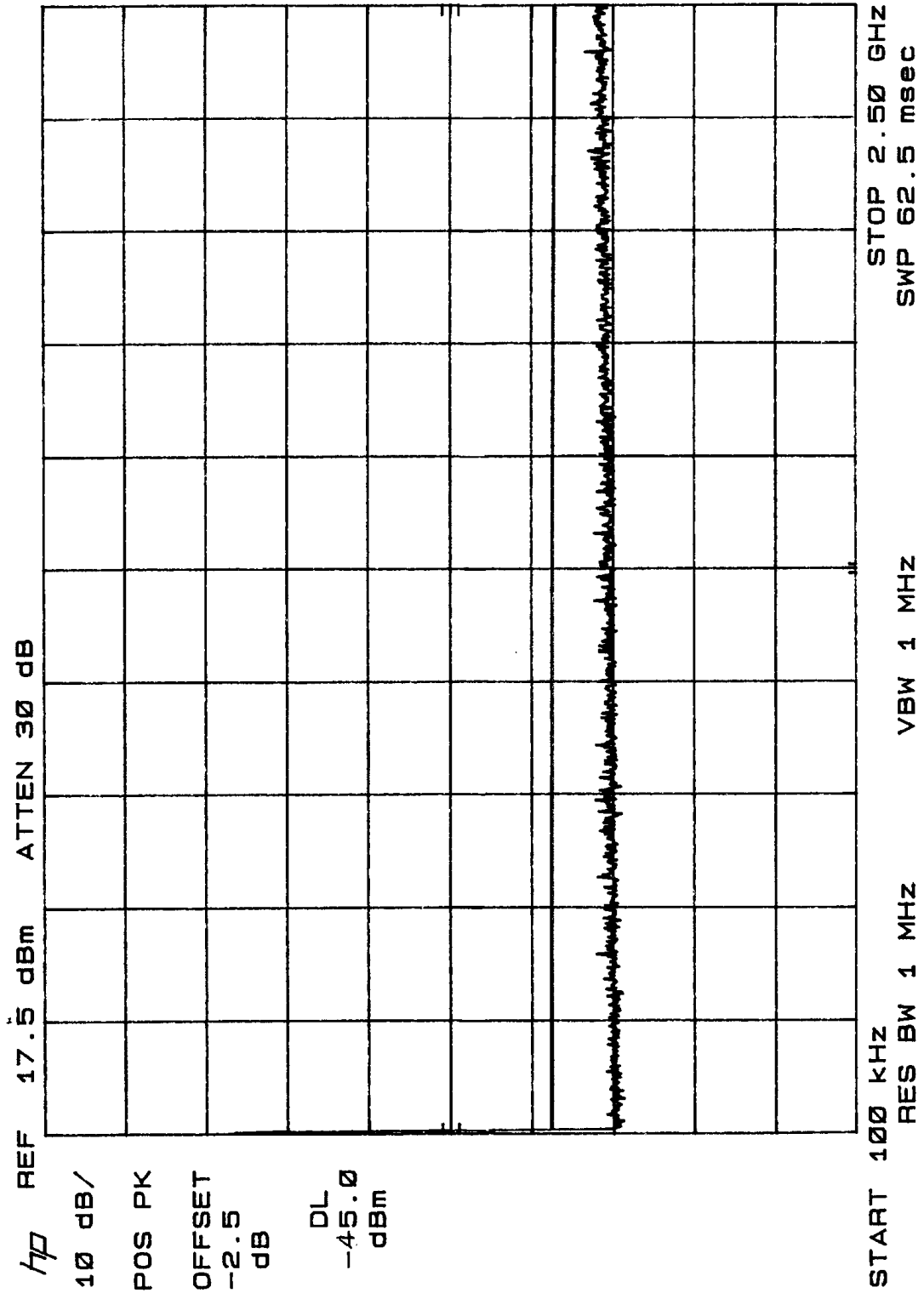


*hp* REF 3.0 dBm HARMONIC 6L  
10 dB/  
POS PK  
CNVLOSS  
21.0  
dB  
DL  
-45.0  
dBm

CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

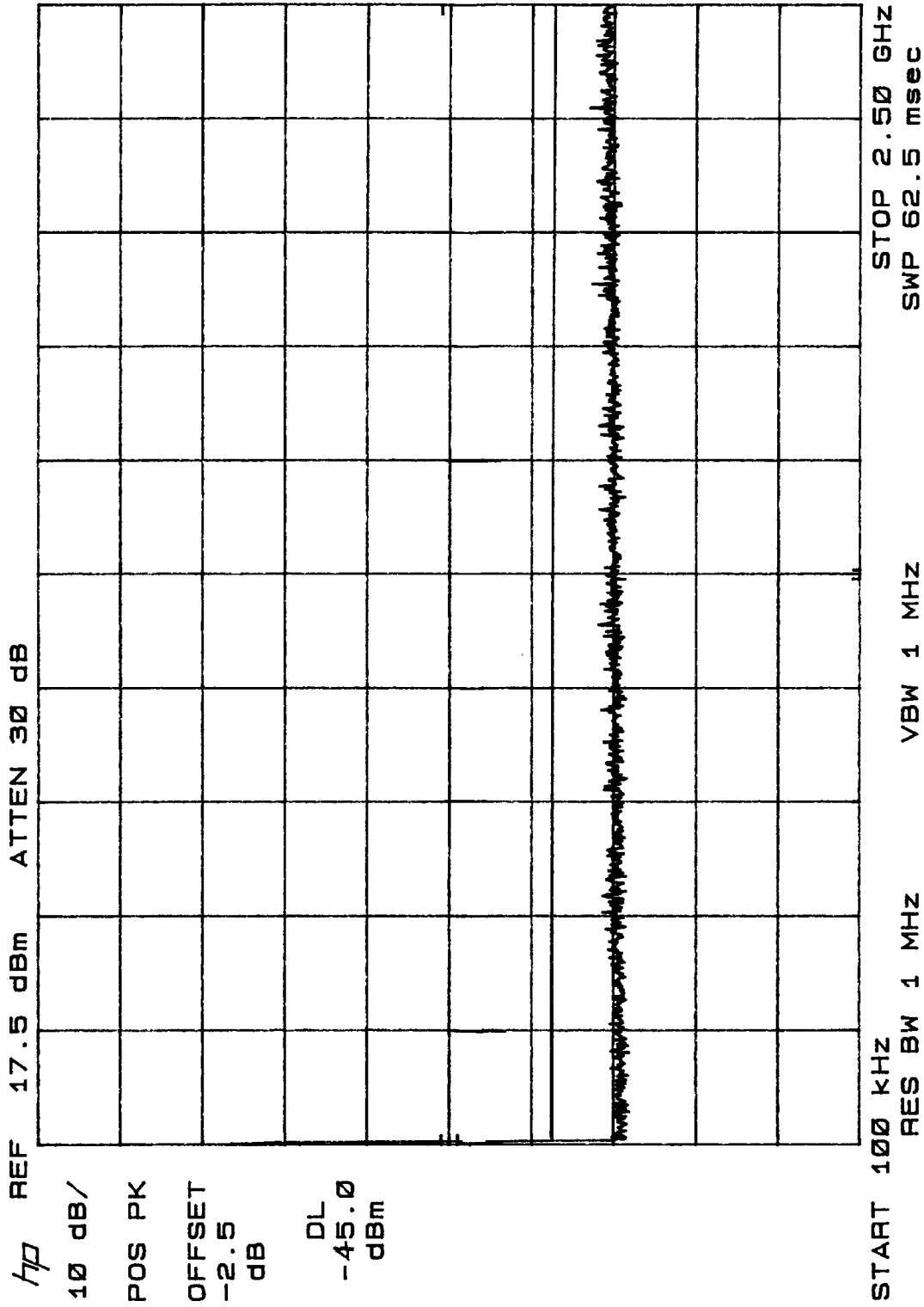
Report No.: SC106727  
 Mode: QPSK 3/4 Channel, 5

Sep. 25, 2001  
 TECH/ENGR. *DBB*



CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

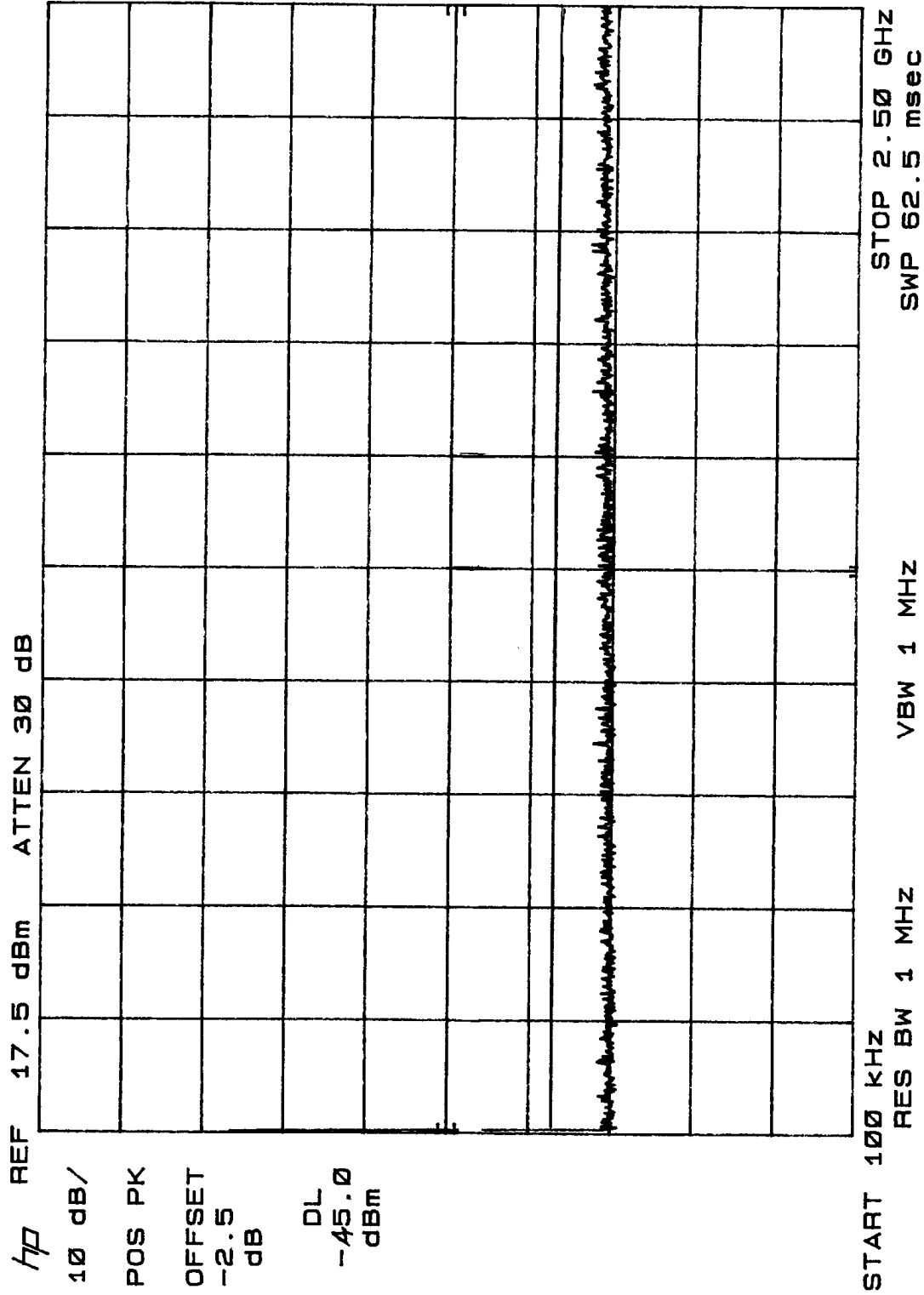
Report No.: SC106727  
 Mode: (6) QAM Channel, 5  
 Sep. 25, 2001  
 TECH/ENGR. *DAZ*



CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727  
 Mode: 8 QAM Channel 1, 5

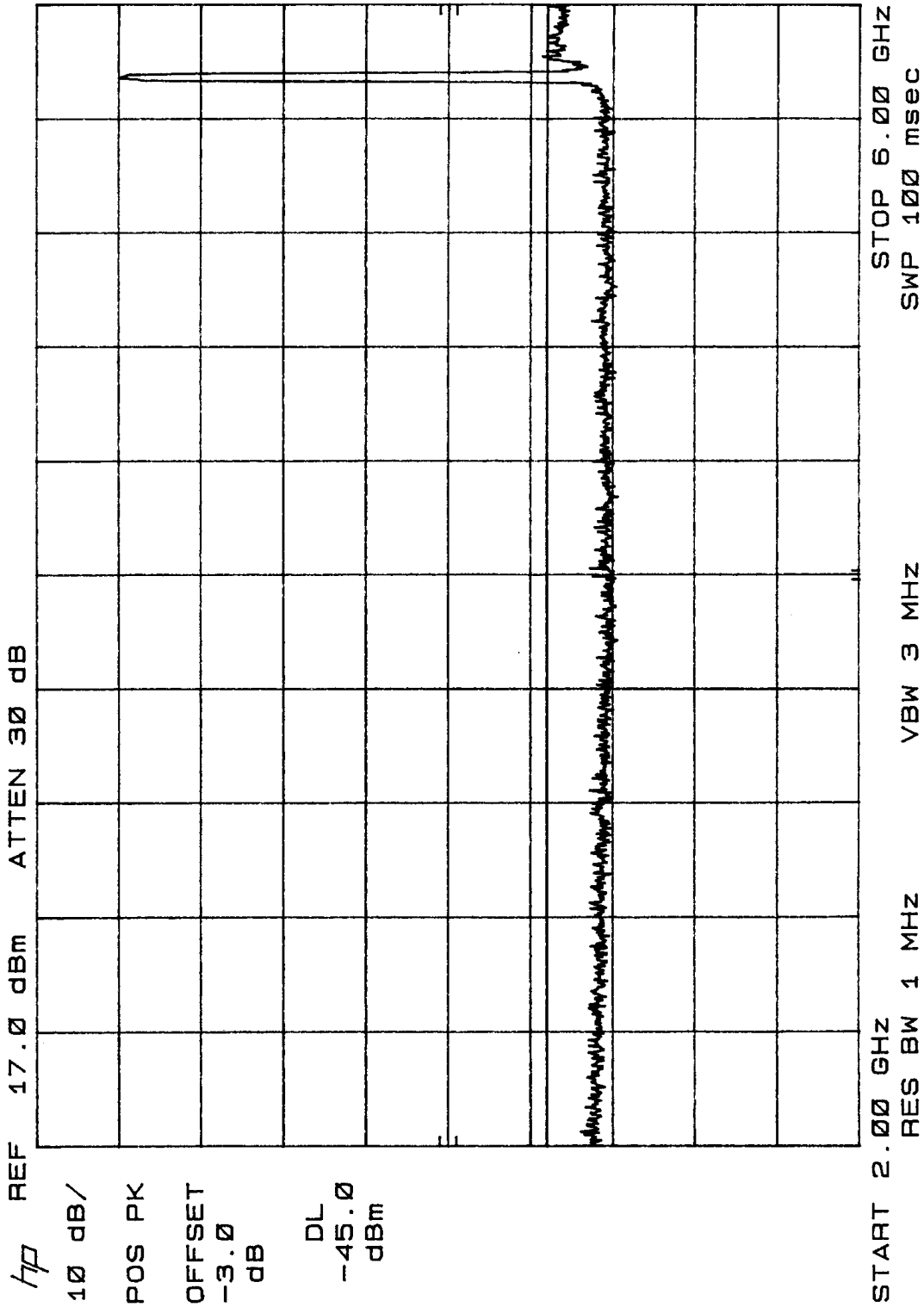
Sep. 25, 2001  
 TECH/ENGR. *DBS*



Sep. 27, 2001  
TECH/ENGR. *DB*

Report No.: SC106727  
Mode: *QAM 8, channel, 5*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

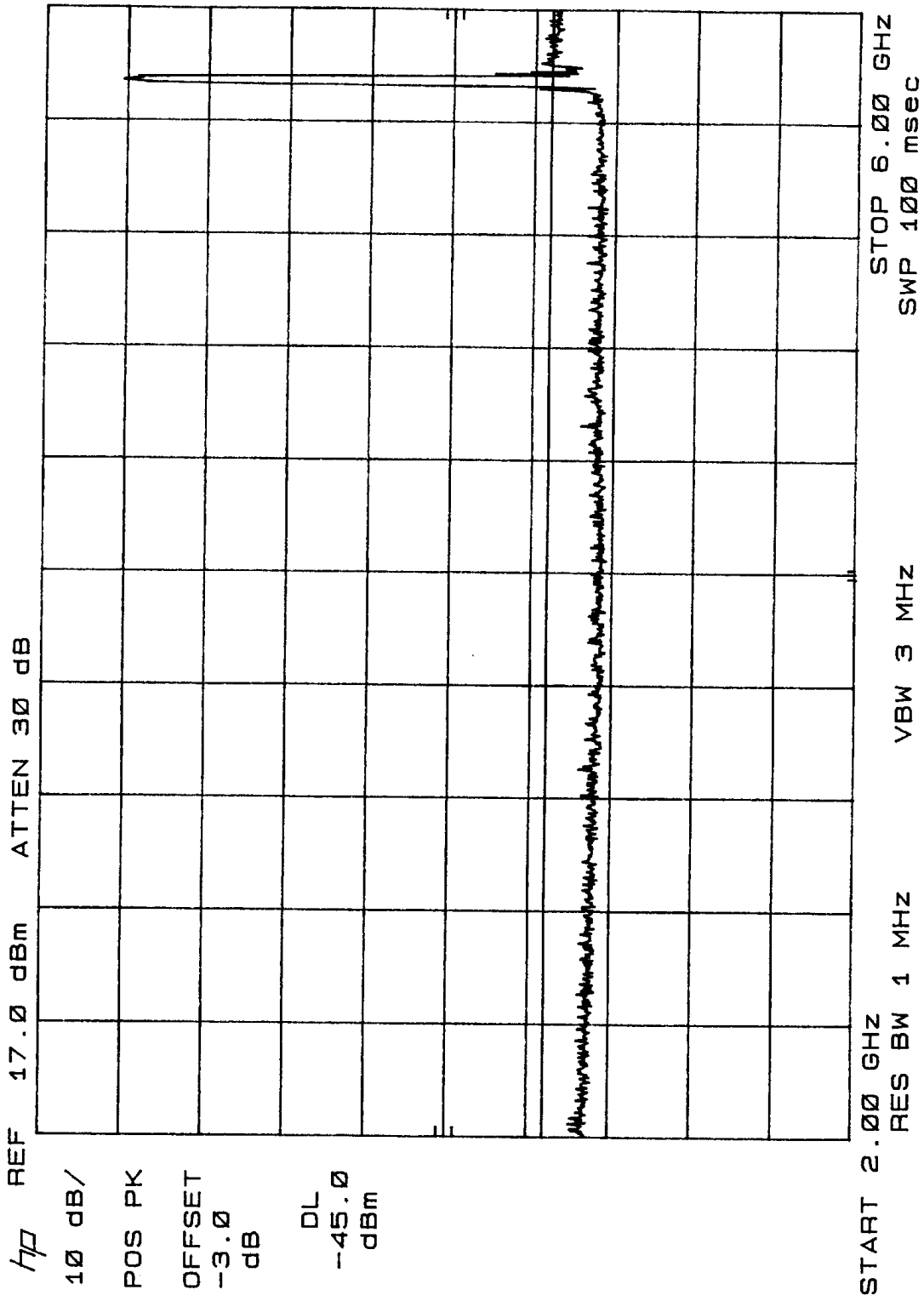


Sep. 27, 2001  
TECH/ENGR. *10/8/01*

Report No.: SC106727

Mode: *QAM 16, channels, 5*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

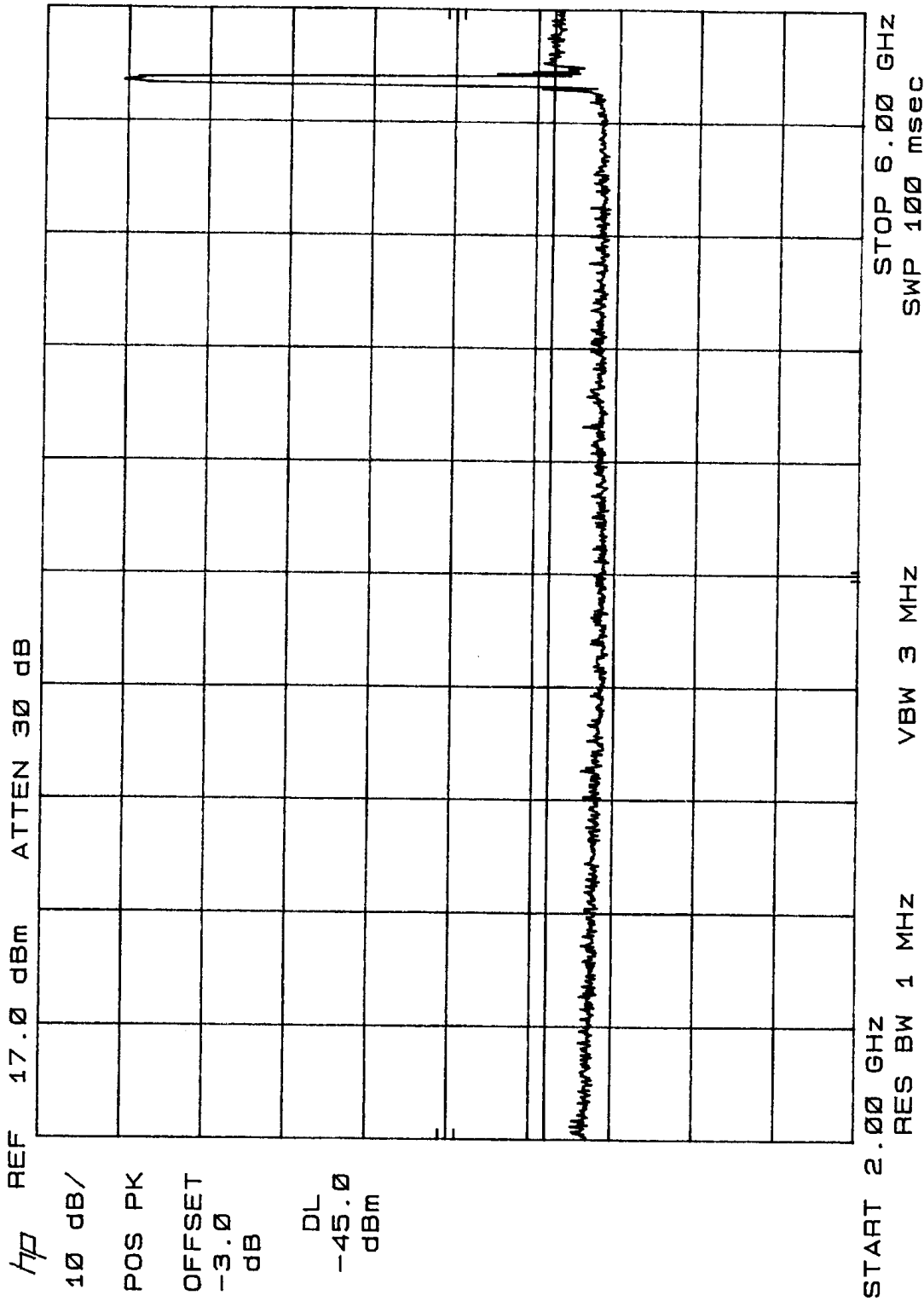




CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

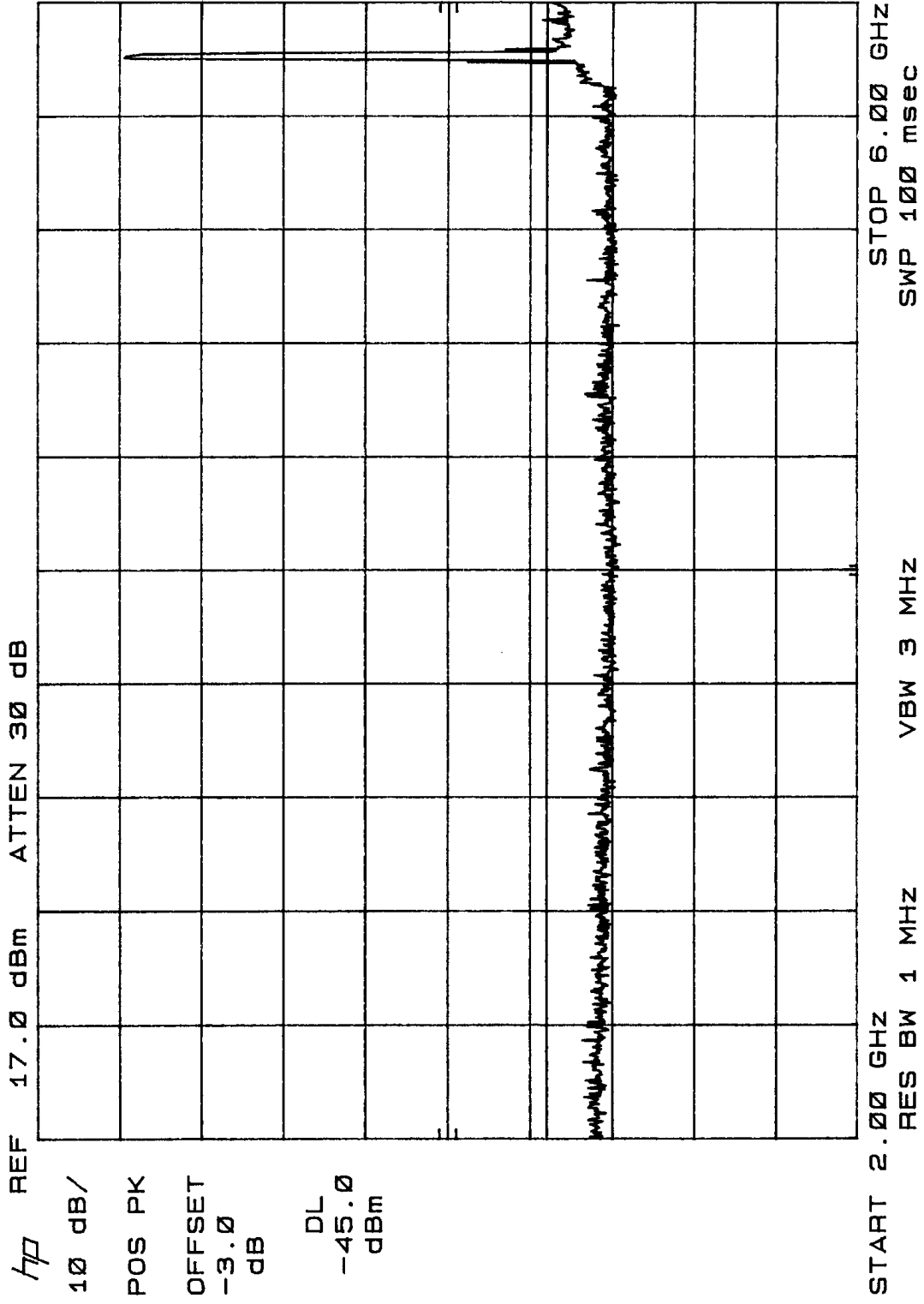
Report No.: SC106727  
 Mode: QAM 16 channels, 5

Sep. 27, 2001  
 TECH/ENGR. *[Signature]*



Sep. 27, 2001  
TECH/ENGR. *[Signature]*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)  
Report No.: SC106727  
Mode: *QPSK 34, Channel 5*

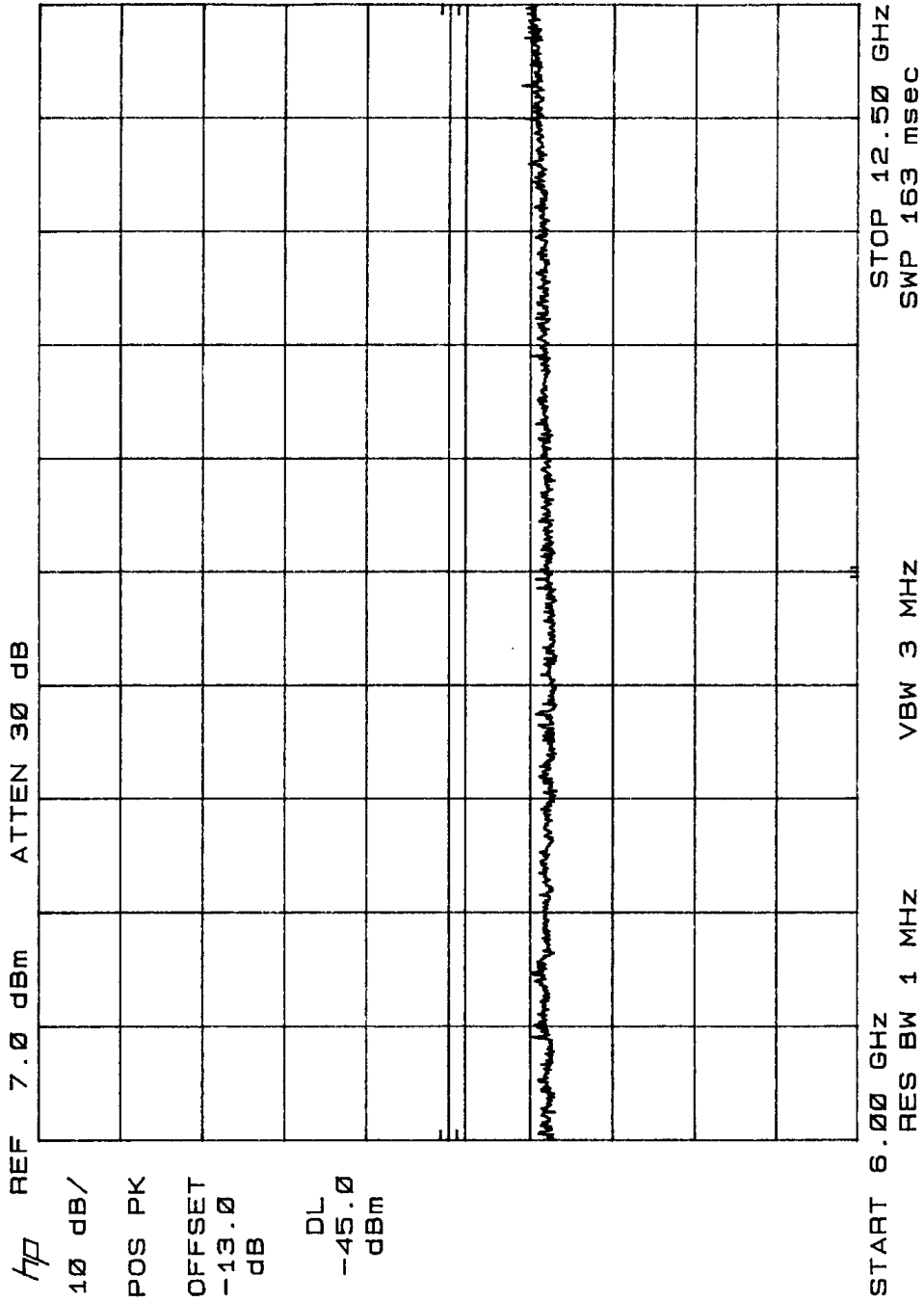


Sep. 27, 2001  
TECH/ENGR. *YGB*

Report No.: SC106727

Mode: *QAM 8, channel, 5*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

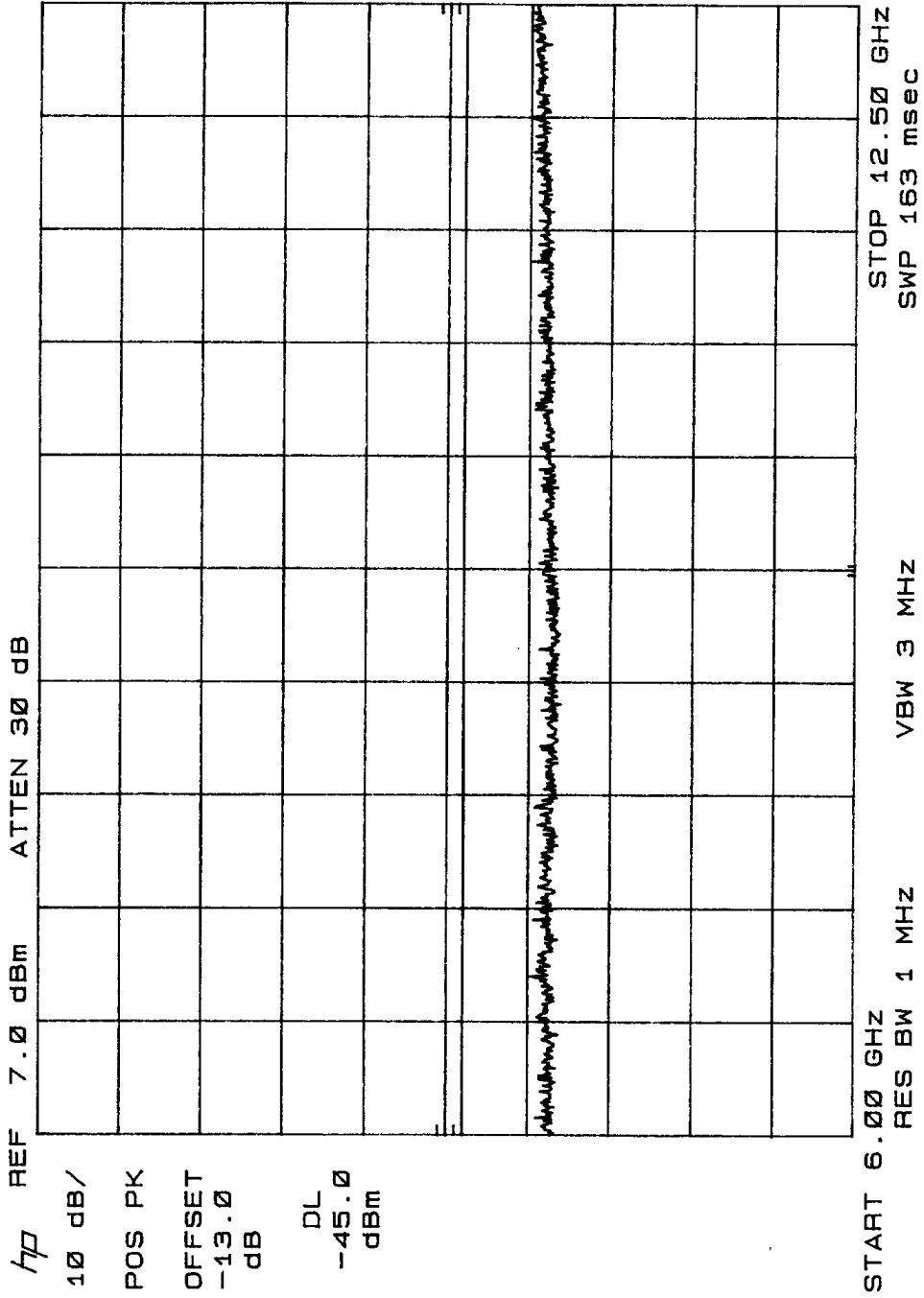


Sep. 27, 2001  
TECH/ENGR. *[Signature]*

Report No.: SC106727

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)

Mode: *RAM (b, Channel 5)*

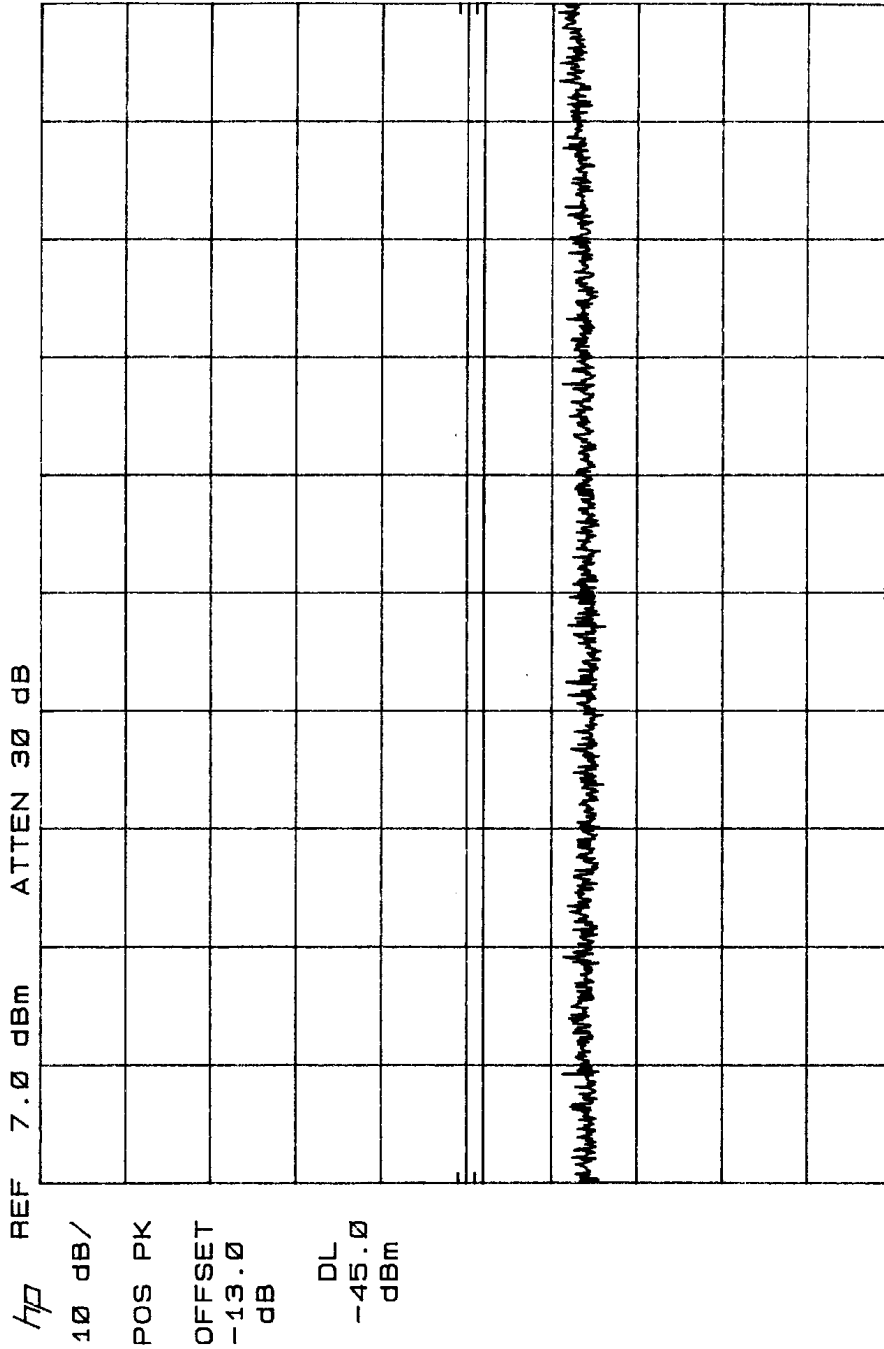


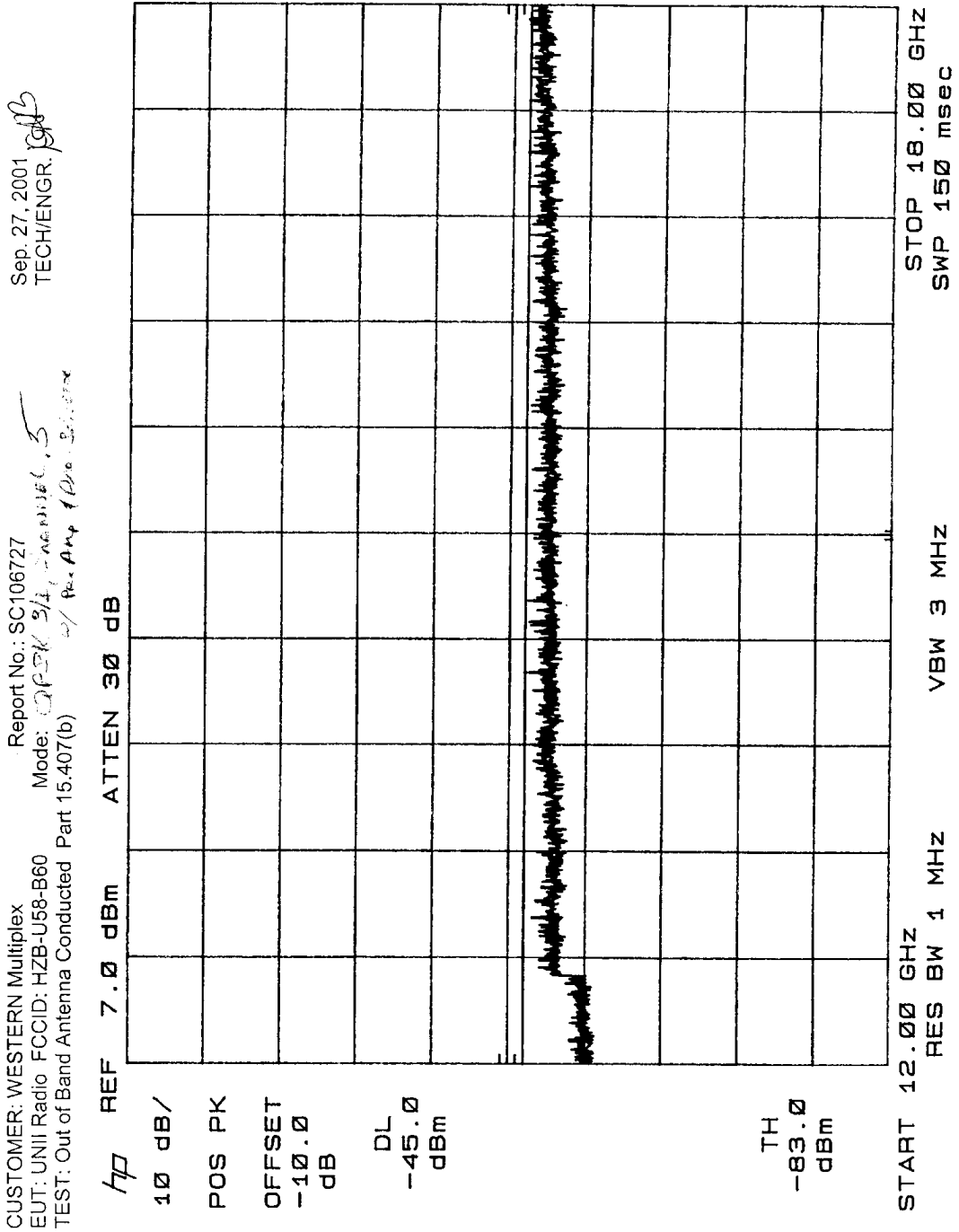
Sep. 27, 2001  
TECH/ENGR. *YDB*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b) *w/ the use of Pro-Bitac*

Report No.: SC106727

Mode: *CHSK 34 Channel, 5*



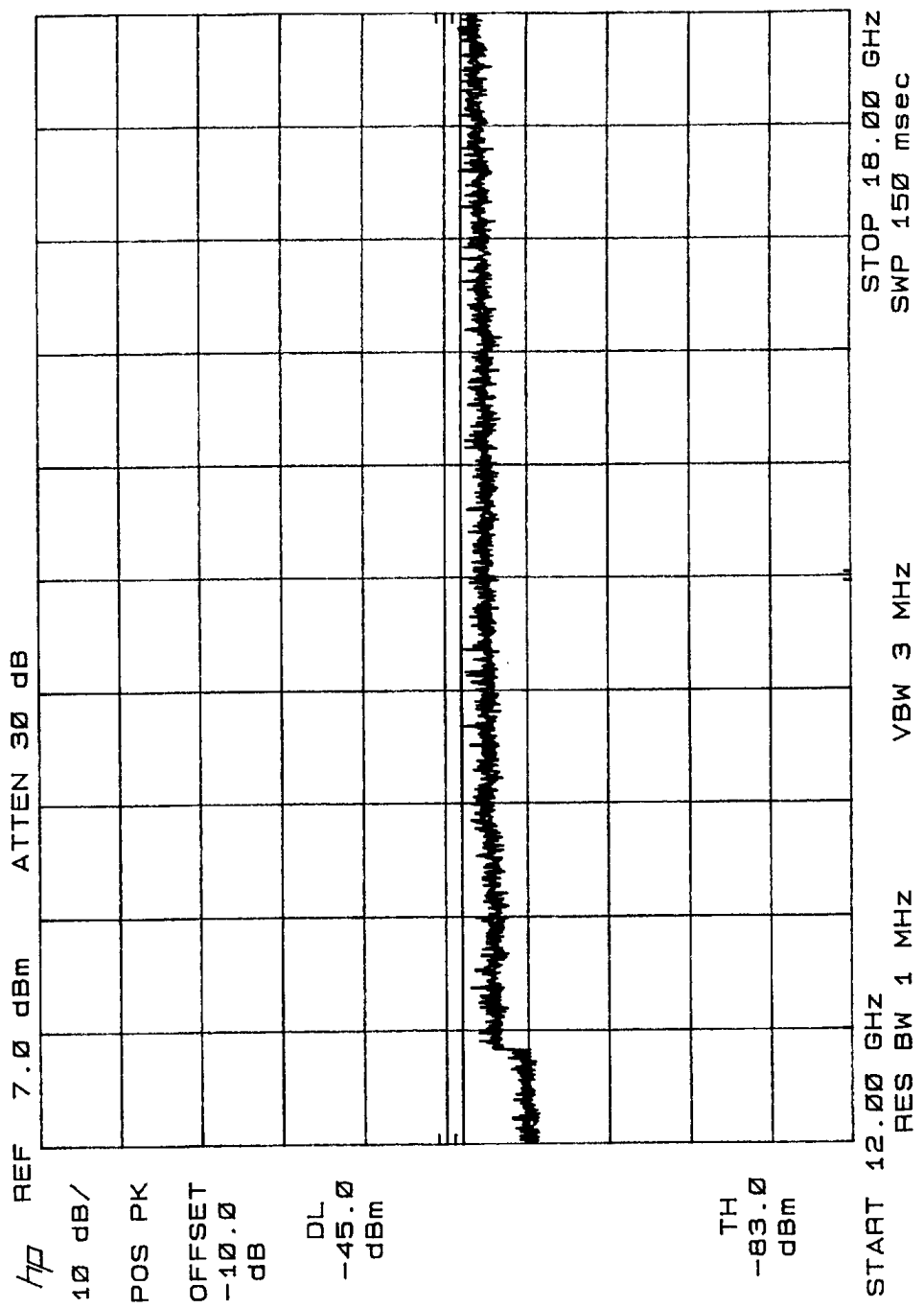


Sep. 27, 2001  
TECH/ENGR. *GPB*

Report No.: SC106727

Mode: *QAM 16, C in mod, S*  
TEST: Out of Band Antenna Conducted Part 15.407(b) *1/100 Amp of the Subcarrier*

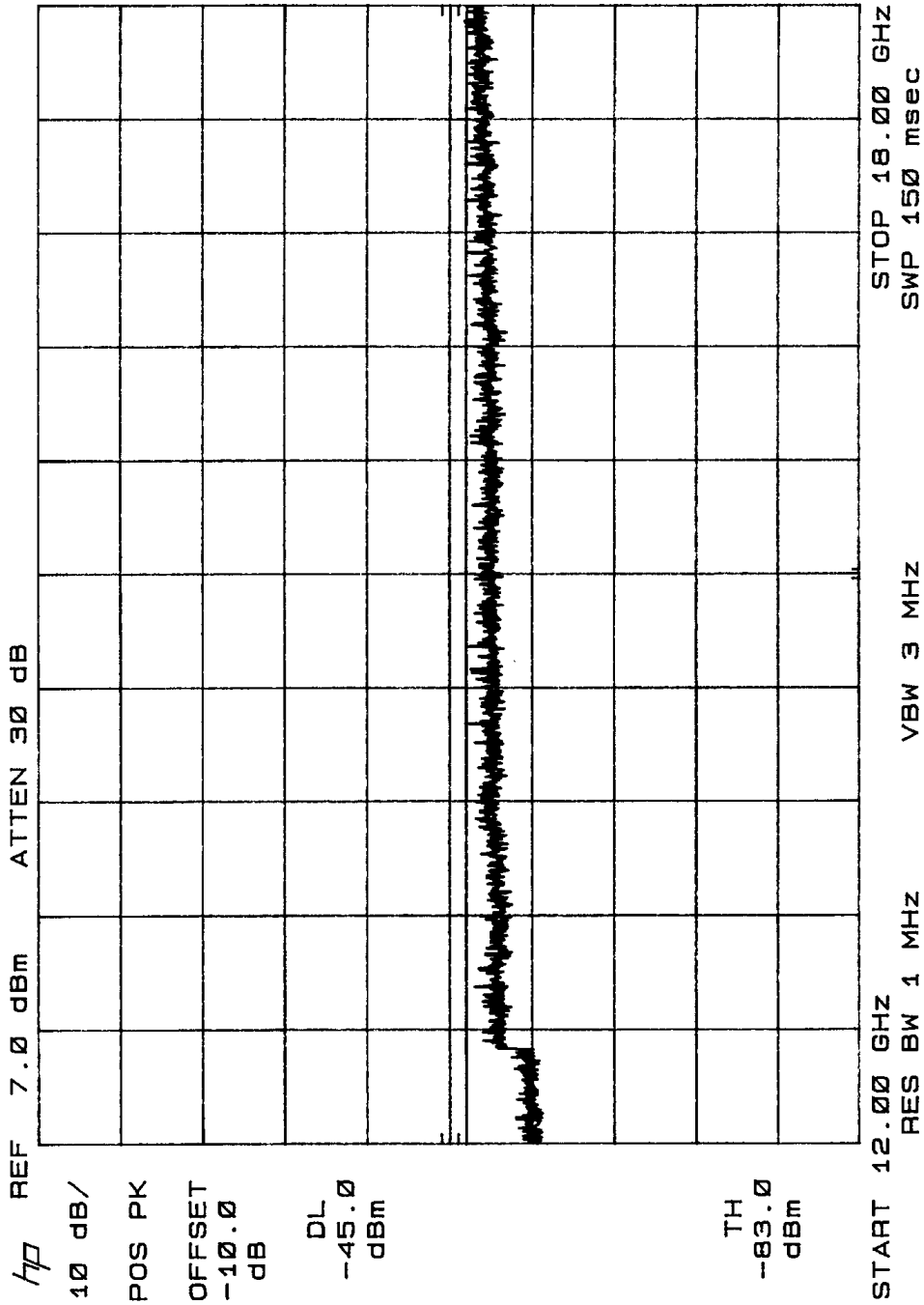
CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted



Sep. 27, 2001  
TECH/ENGR. *RFB*

Report No.: SC106727  
Mode: *QAM 8, Channel 5*  
TEST: *Out of Band Antenna Conducted Part 15.407(b) with Banding of Pre-Detector*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted

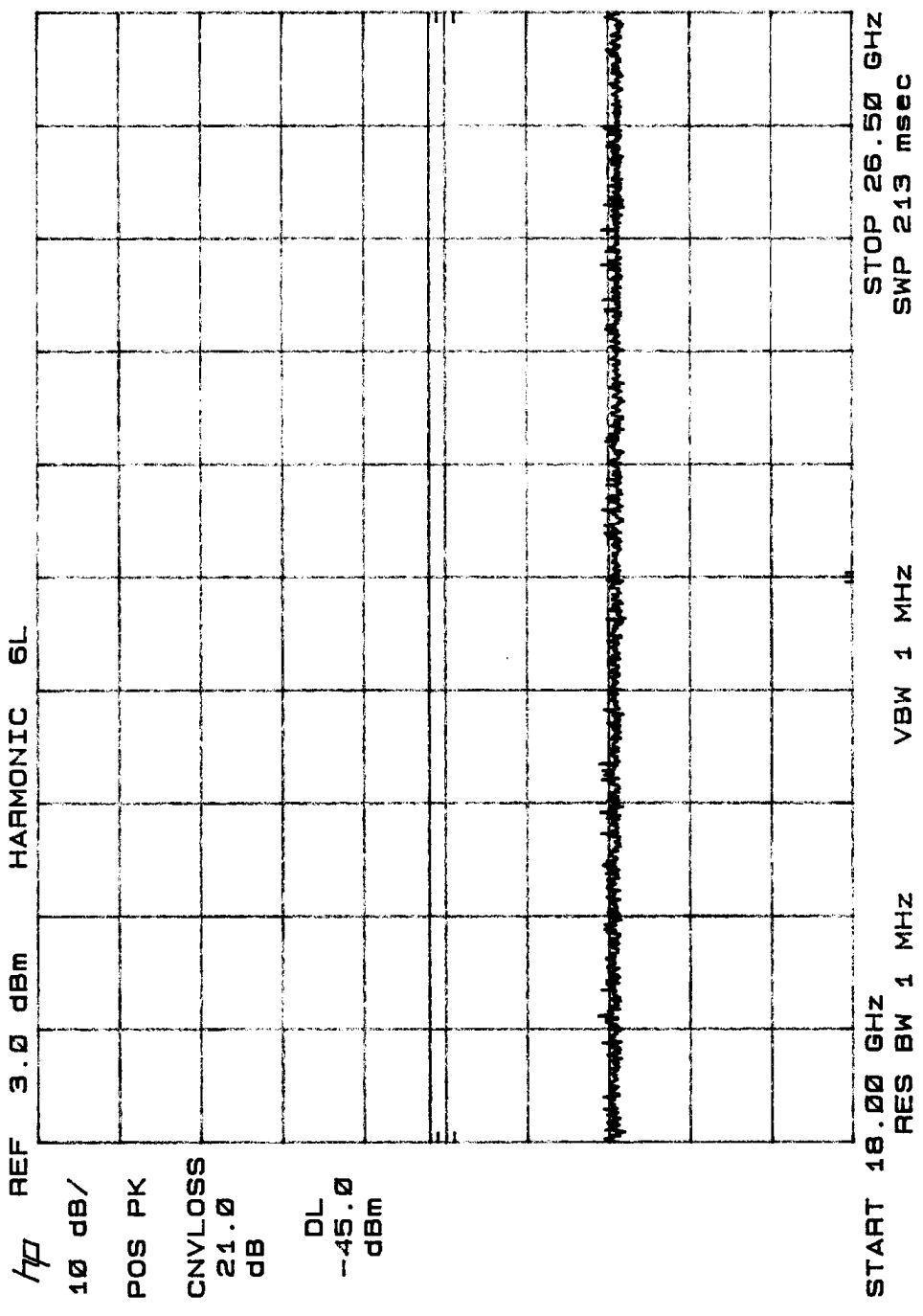




Sep. 26, 2001  
TECH/ENGR. *LRB*

Report No.: SC106727  
Mode: *15*

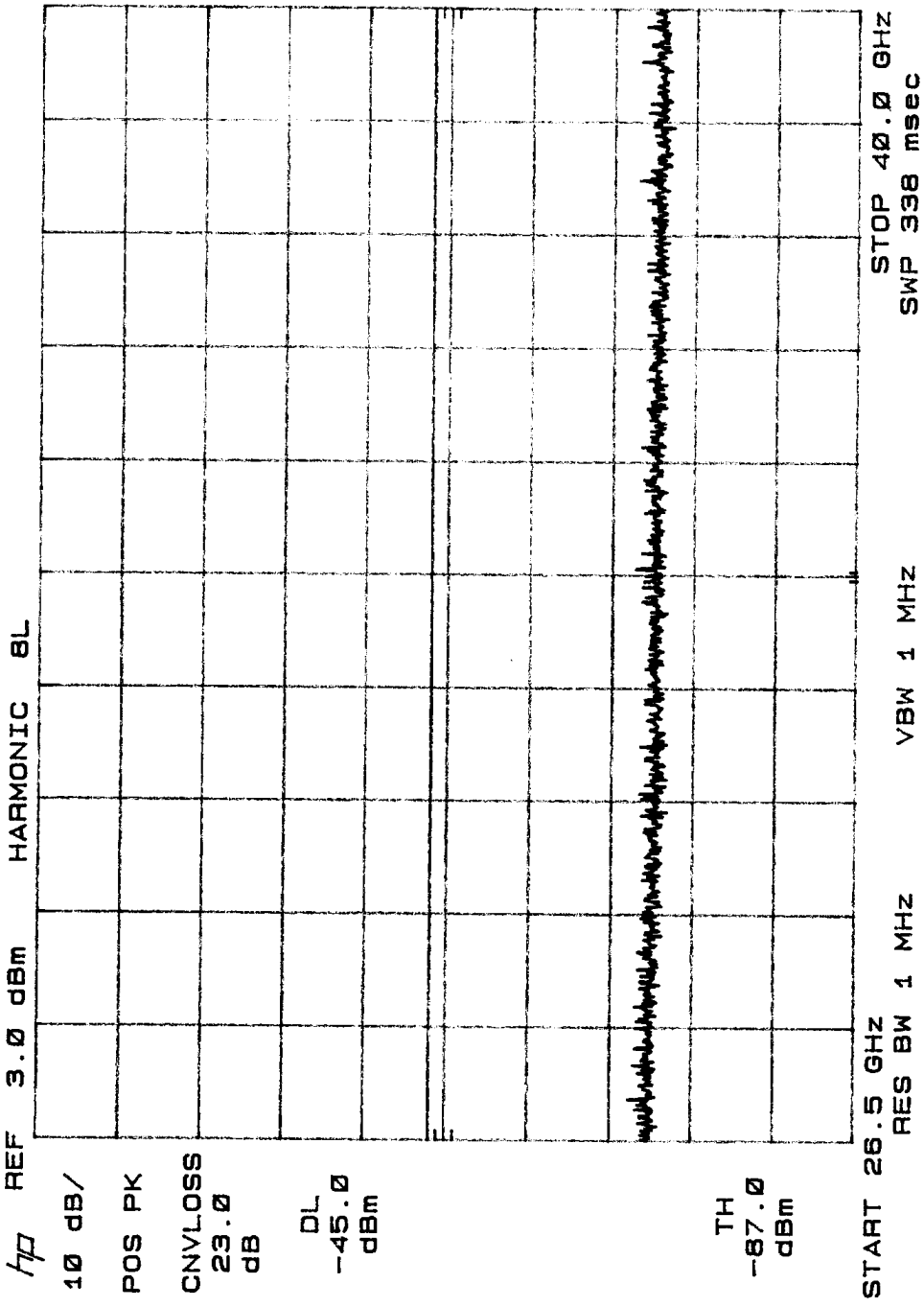
CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)



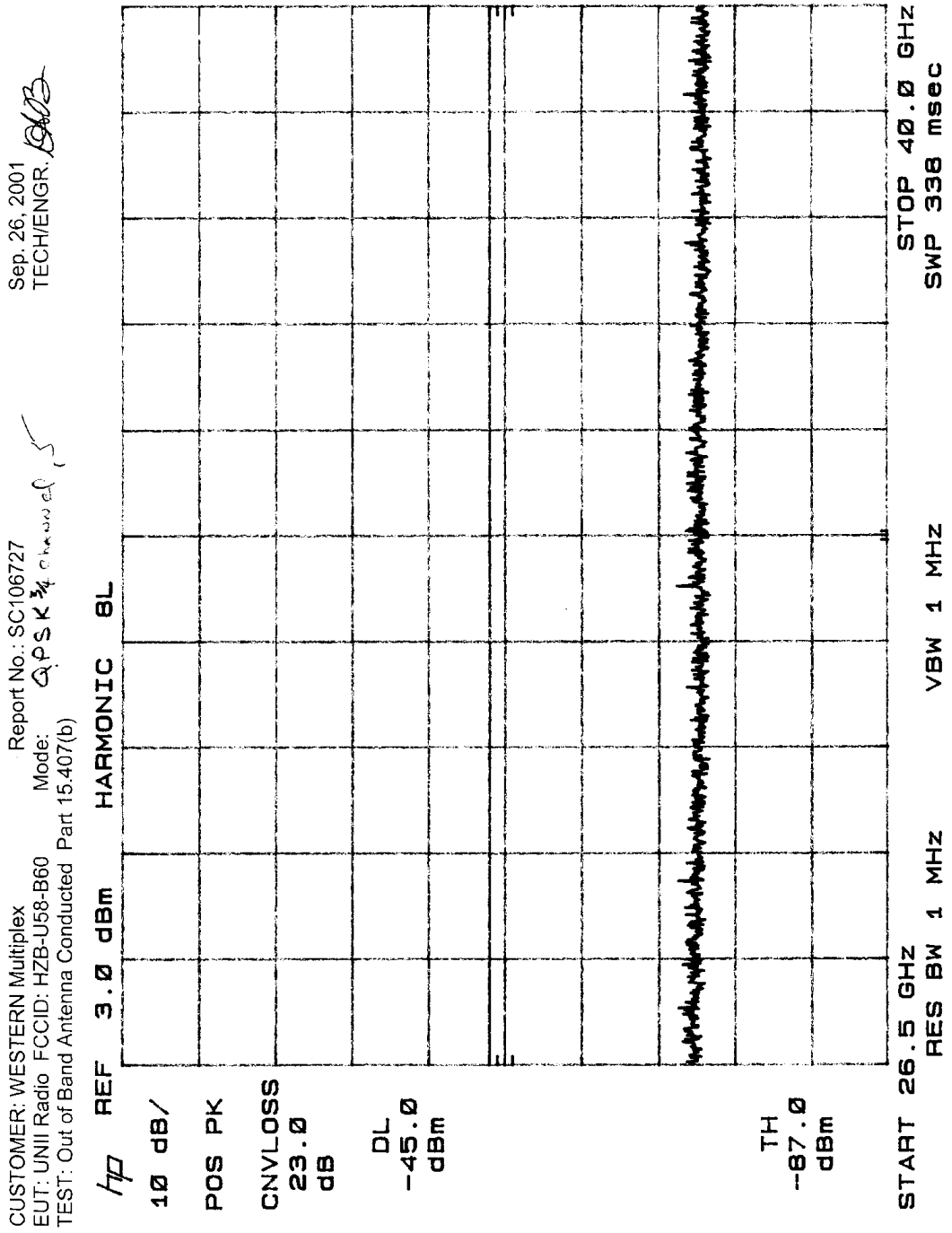
Sep. 26, 2001  
TECH/ENGR. *DB*

Report No.: SC106727  
Mode: *100A MICHIGAN (5)*

CUSTOMER: WESTERN Multiplex  
EUT: UNII Radio FCCID: HZB-U58-B60  
TEST: Out of Band Antenna Conducted Part 15.407(b)







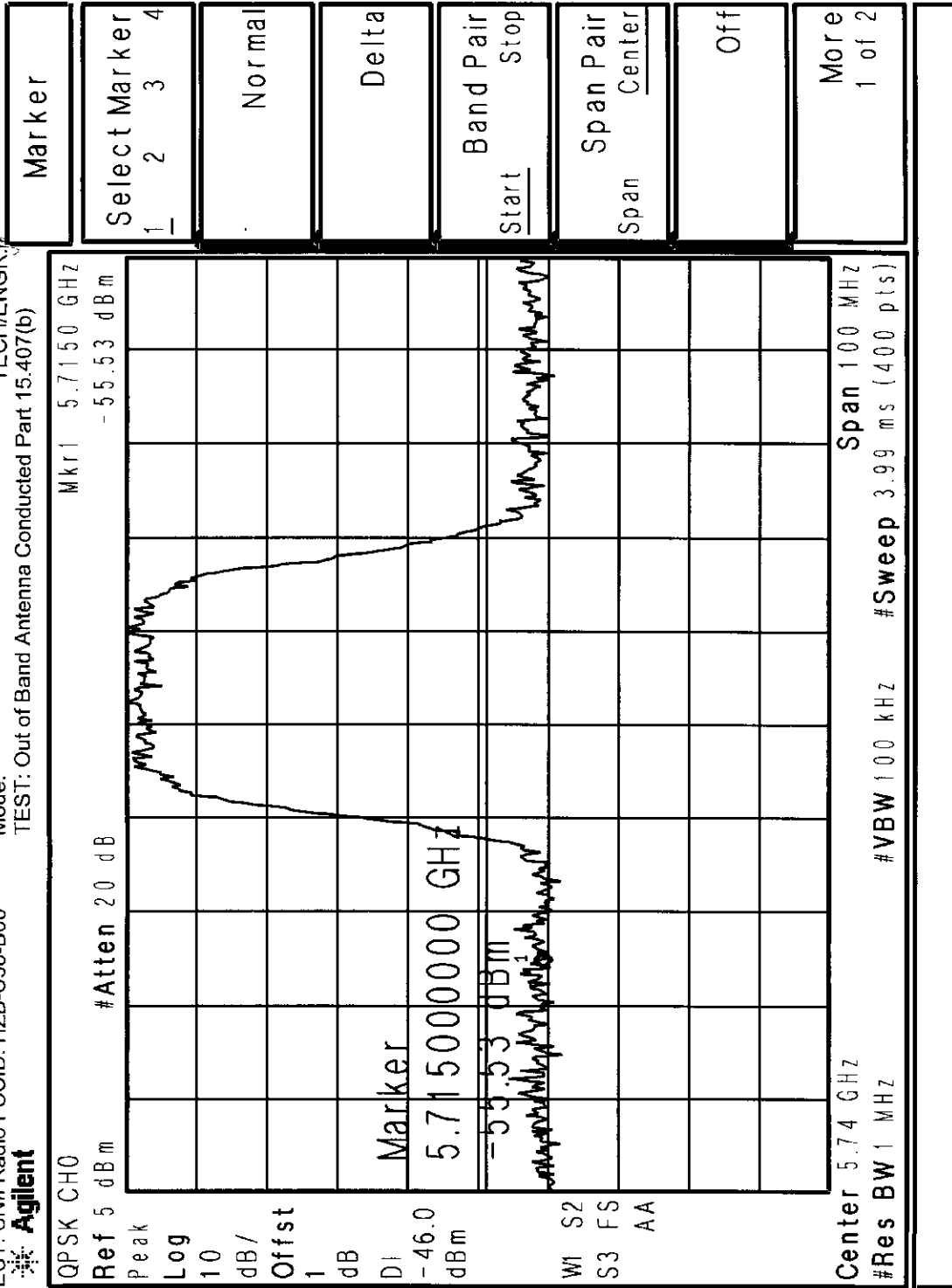
On October 4, 2001 the Undesirable Emission Limits test per FCC 15.407 (b) was performed at Western Multiplex, Inc. 3780 Kilroy Airport Way, Suite 500, Long Beach, CA 90806.  
Model LNII Radio FCC ID: HZB-U58-B60 was tested and passed all tests.  
See data and test equipment attached.



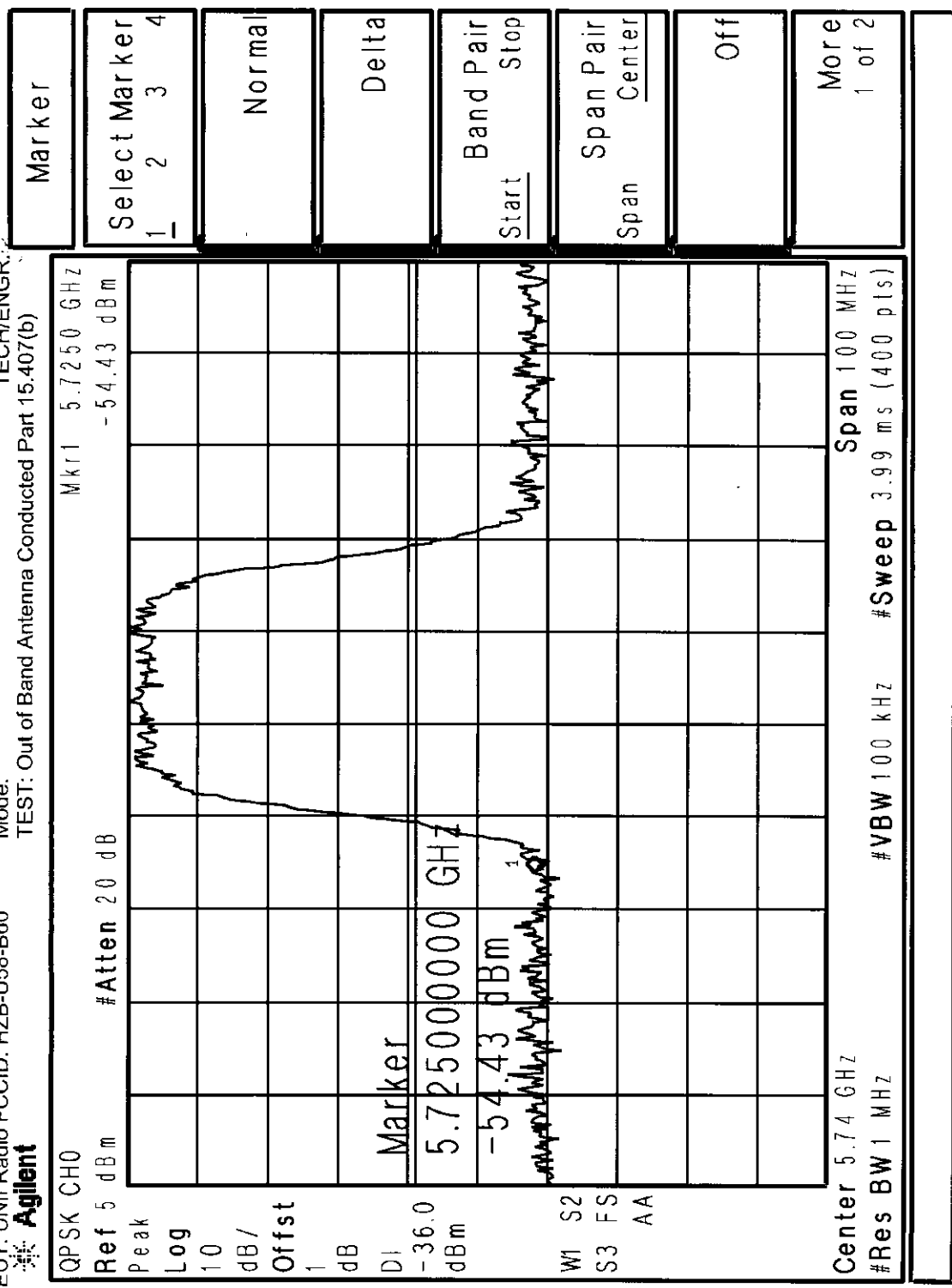
Don Leimer, V.P. Engineering

Western Multiplex  
3780 Kilroy Airport Way  
Suite 500  
Long Beach, CA 90806  
562-733-3007  
562-733-3003

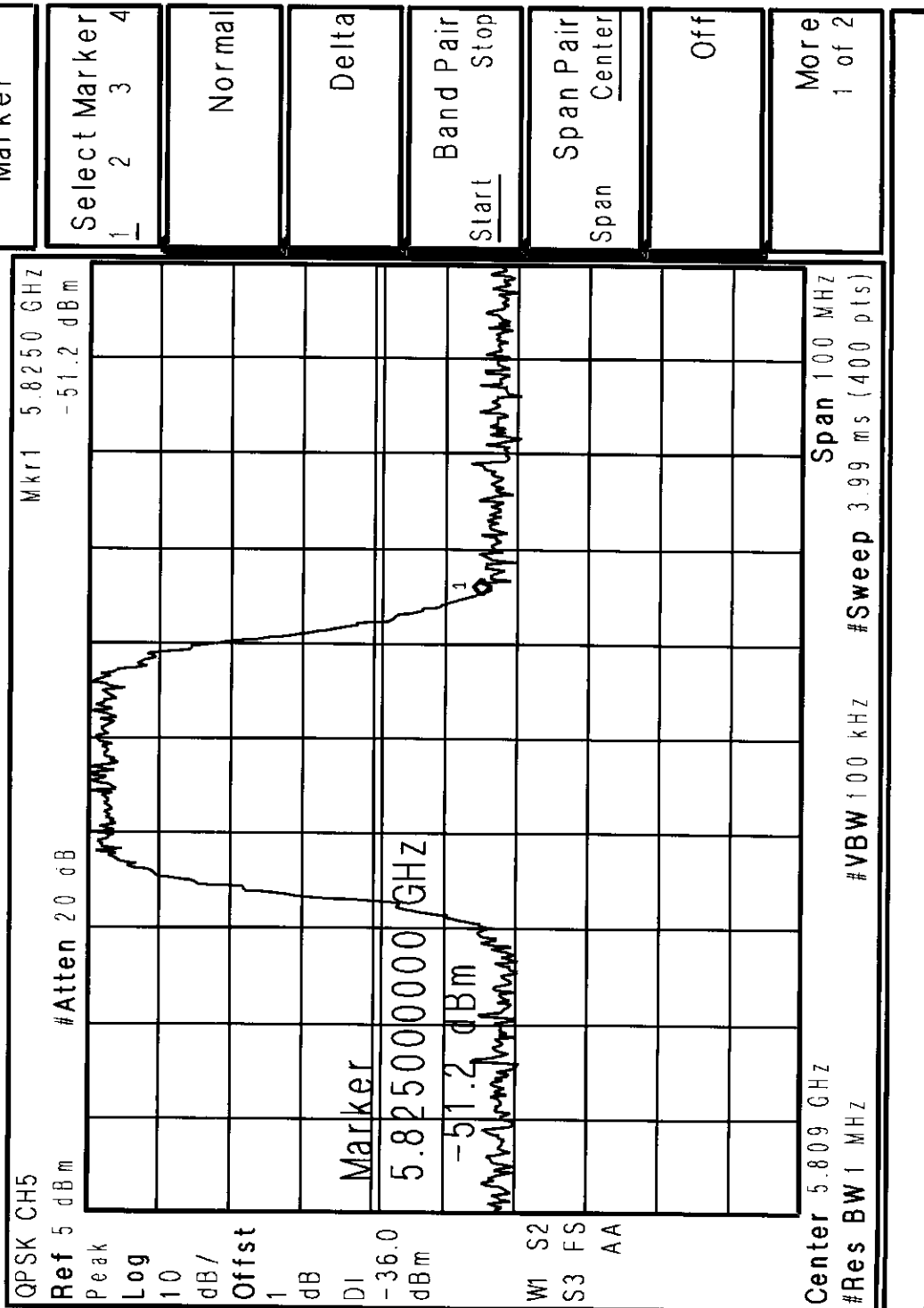
CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Agilent  
 Report No.: SC106727  
 Mode: TECH/ENGR  
 TEST: Out of Band Antenna Conducted Part 15.407(b)



CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Report No.: SC106727  
 Mode: TECH/ENGR.  
 TEST: Out of Band Antenna Conducted Part 15.407(b)



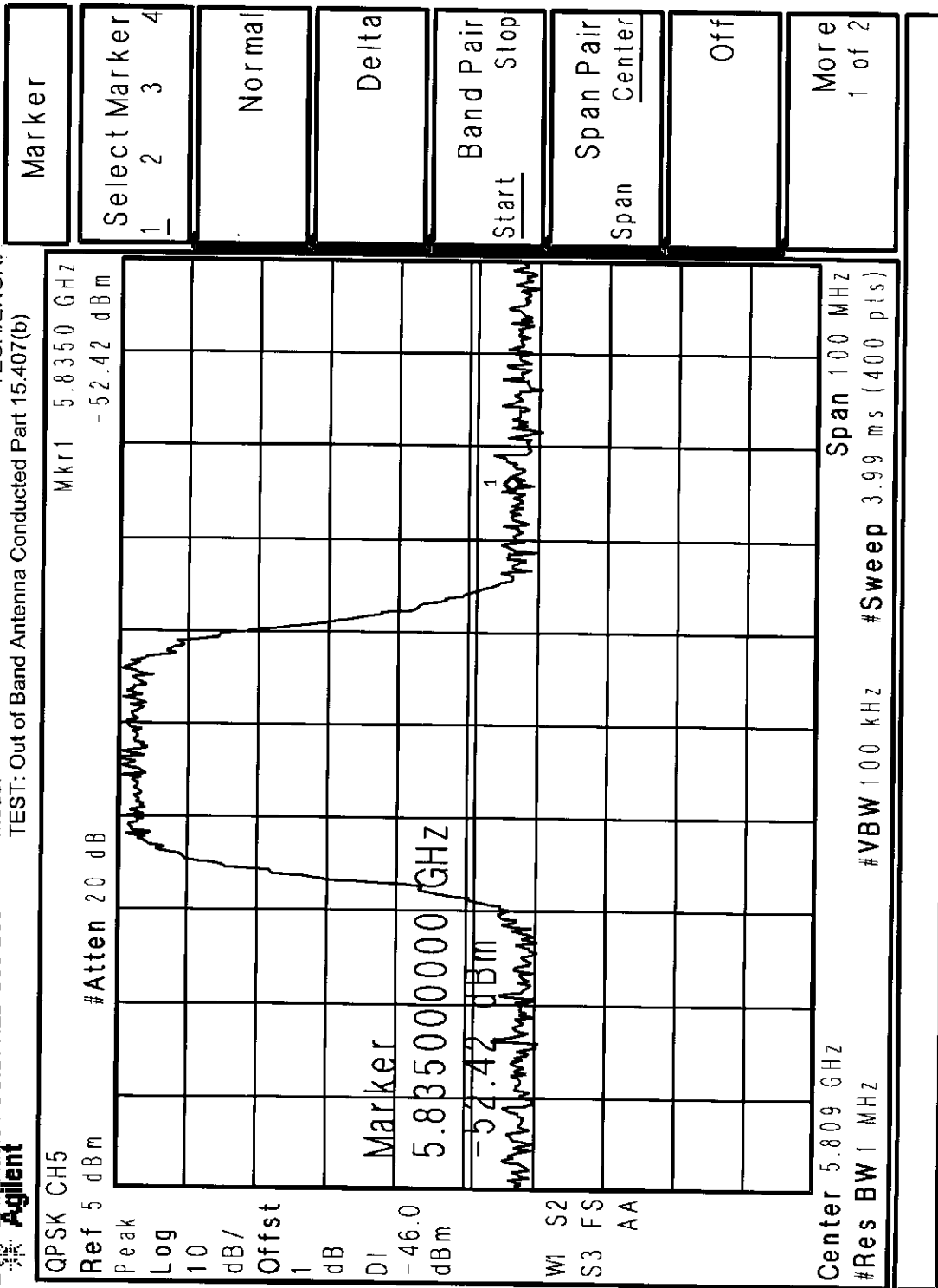
CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Agilent  
 Report No.: SC106727  
 Mode: TECH/ENGR  
 TEST: Out of Band Antenna Conducted Part 15.407(b)  
 Oct. 4, 2001



Marker
Select Marker 1 2 3 4
Normal
Delta
Band Pair Start Stop
Span Pair Span Center
Off
More 1 of 2



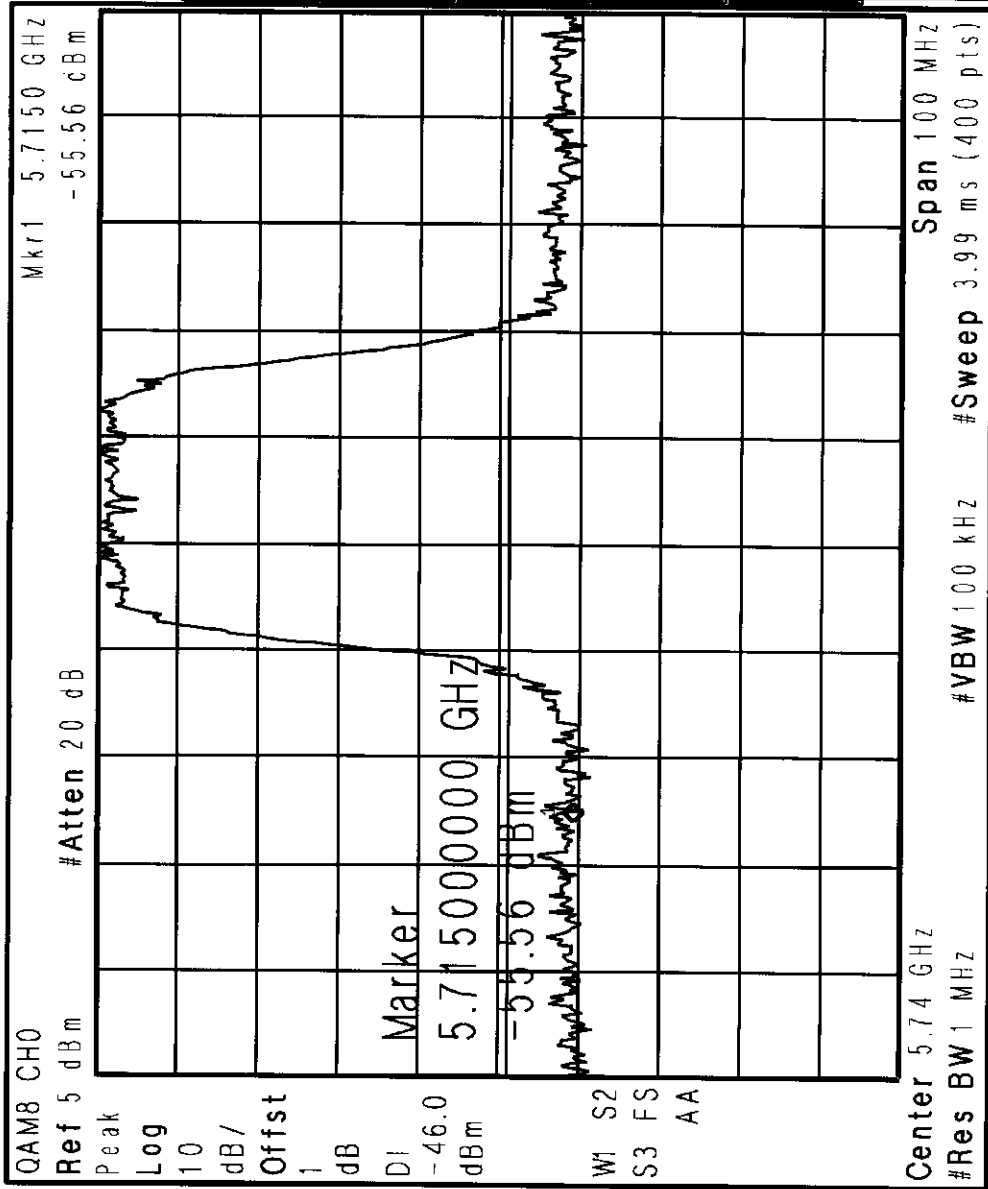
CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Agilent  
 Report No.: SC106727  
 Mode: TECH/ENGR  
 TEST: Out of Band Antenna Conducted Part 15.407(b)  
 Oct. 4, 2001

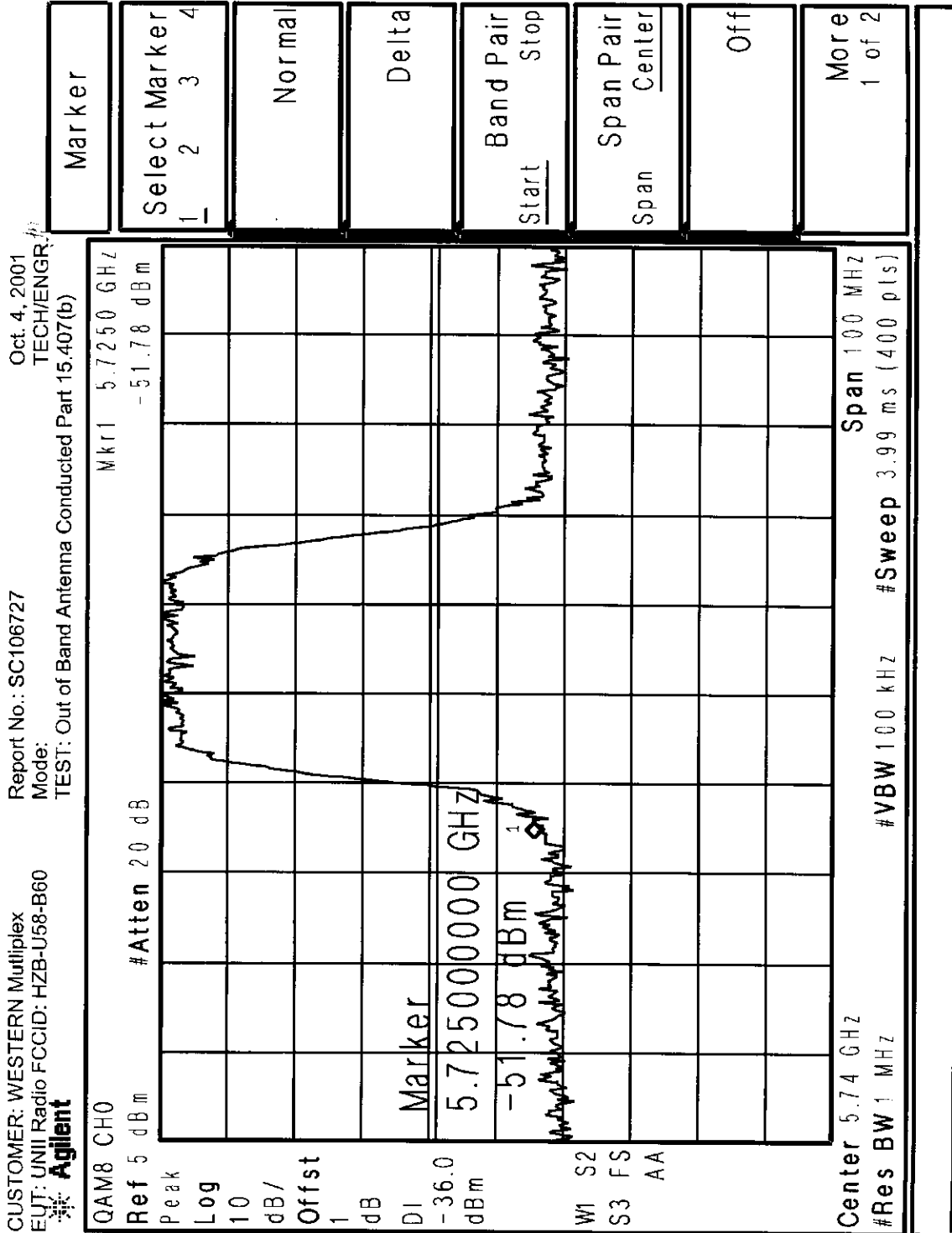


Marker
Select Marker 1 2 3 4
Normal
Delta
Band Pair Start Stop
Span Pair Span Center
Off
More 1 of 2

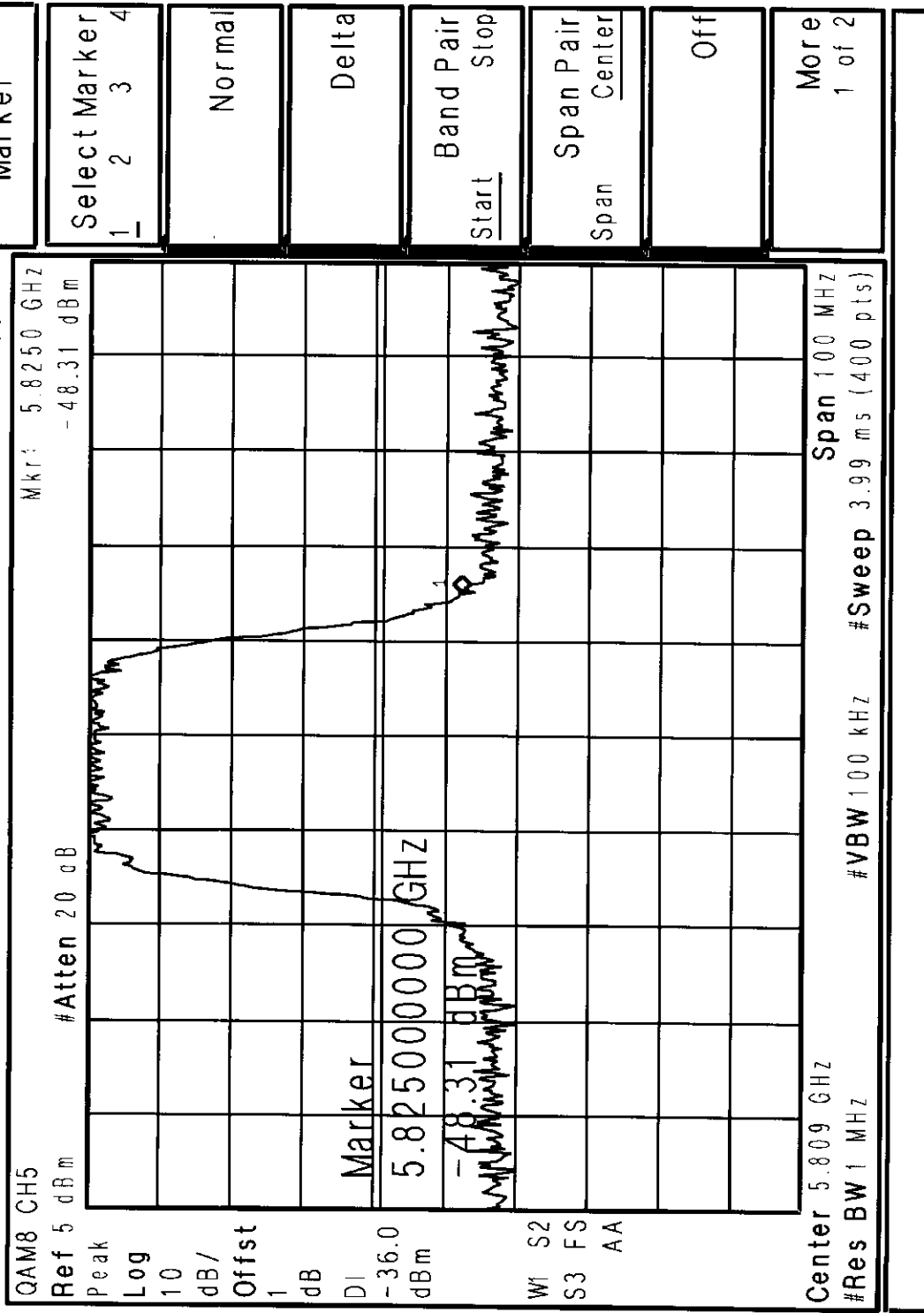
CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Report No.: SC106727  
 Mode: TECH/ENGR  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Marker
Select Marker 1 2 3 4
Normal
Delta
Band Pair Start Stop
Span Pair Span Center
Off
More 1 of 2



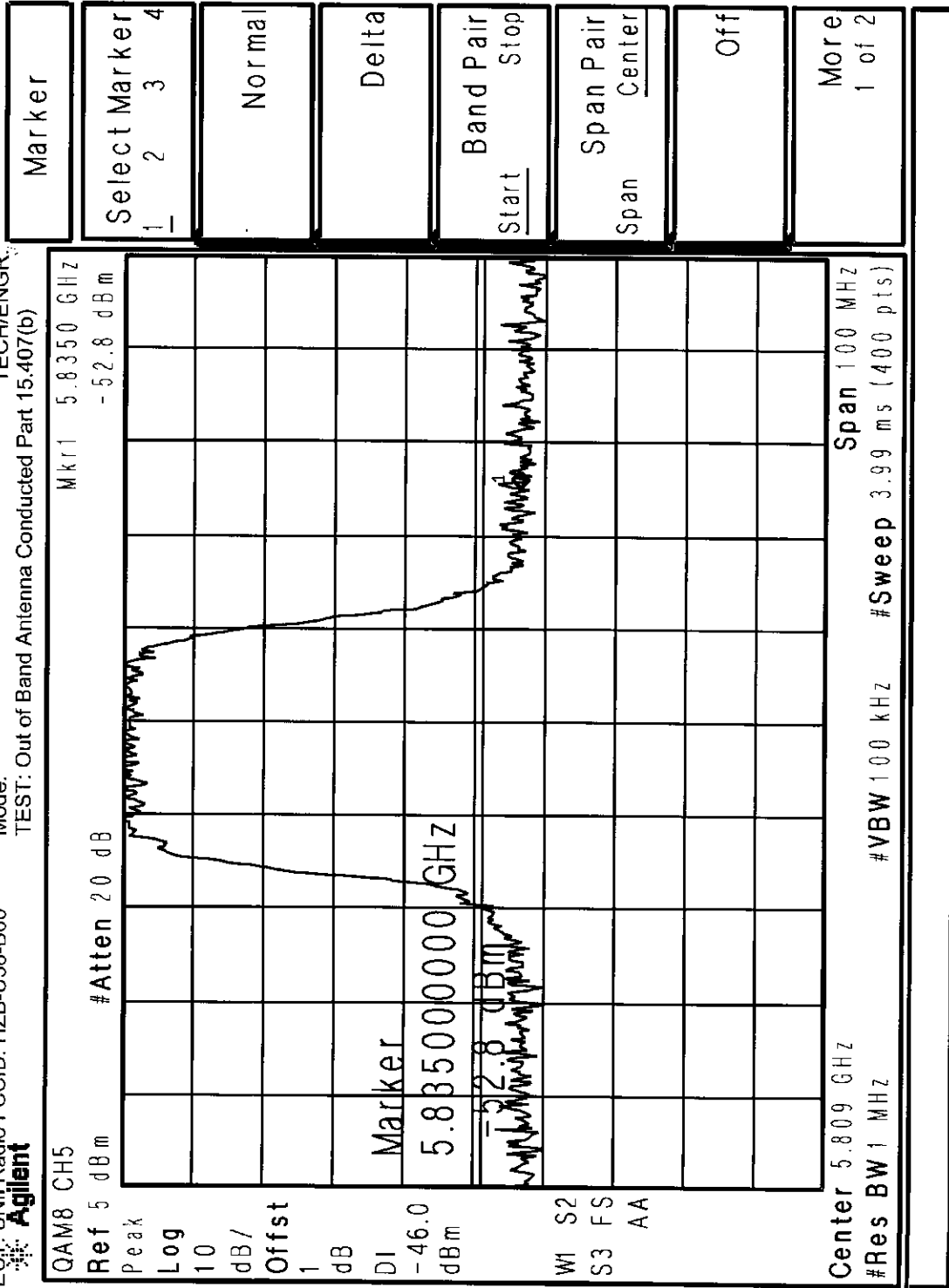


CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Agilent  
 Report No.: SC106727  
 Mode: TECH/ENGR.  
 TEST: Out of Band Antenna Conducted Part 15.407(b)  
 Oct. 4, 2001

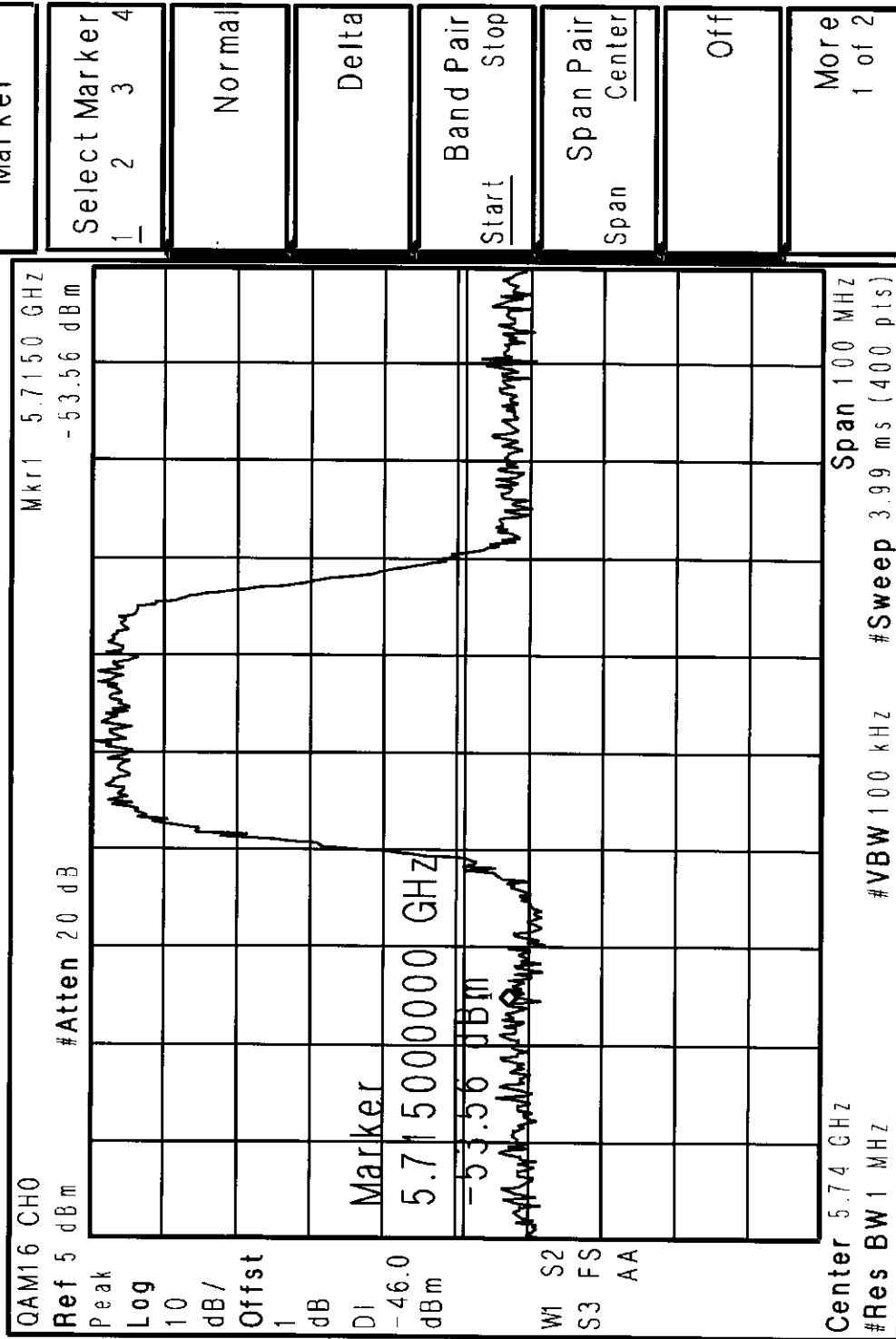


CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Agilent  
 Report No.: SC106727  
 Mode: TECH/ENGR  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Oct. 4, 2001



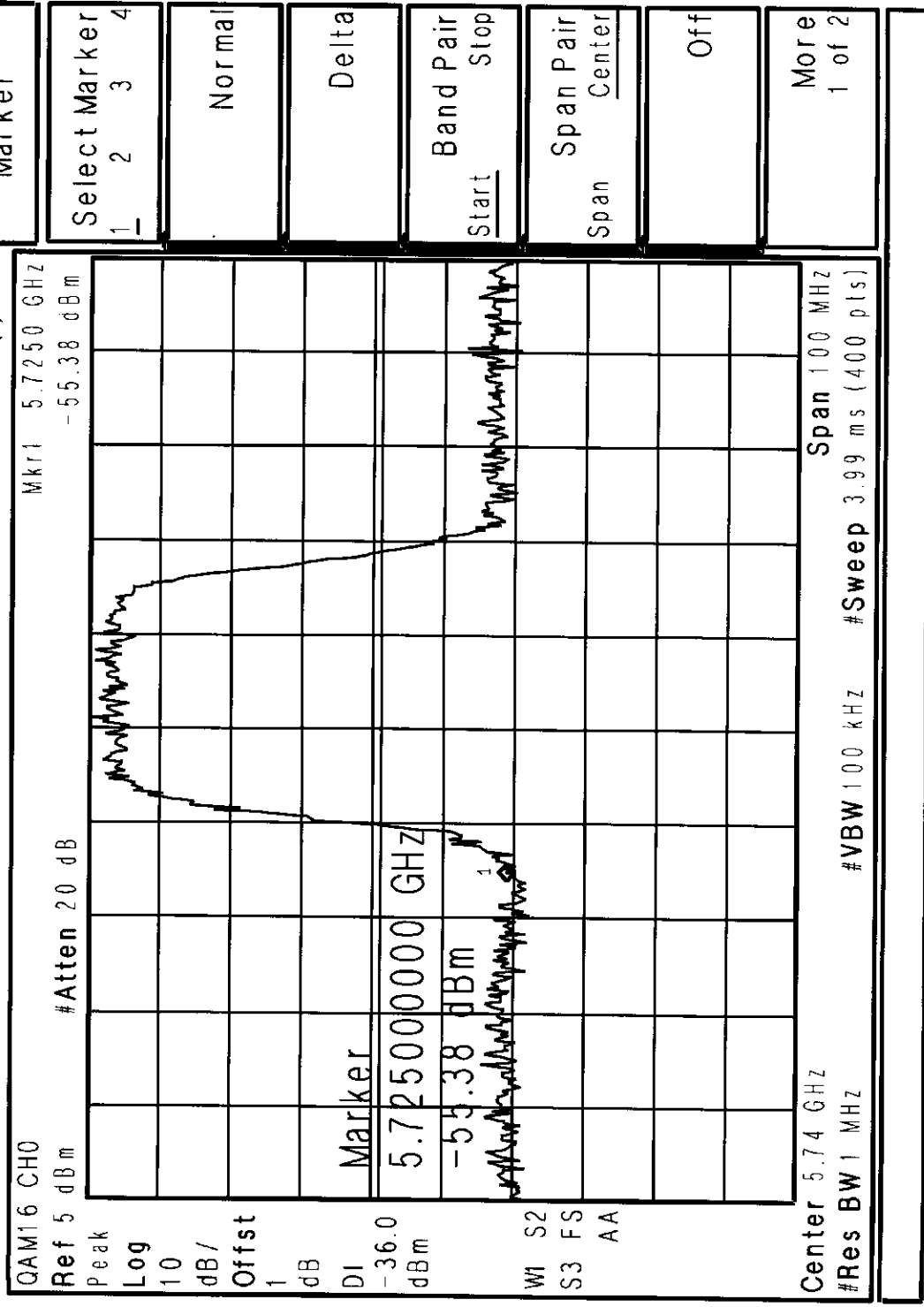
CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Report No.: SC106727  
 Mode: Agilent  
 TEST: Out of Band Antenna Conducted Part 15.407(b)  
 Oct. 4, 2001  
 TECH/ENGR.#:



Marker
Select Marker 1 2 3 4
Normal
Delta
Band Pair Start Stop
Span Pair Span Center
Off
More 1 of 2

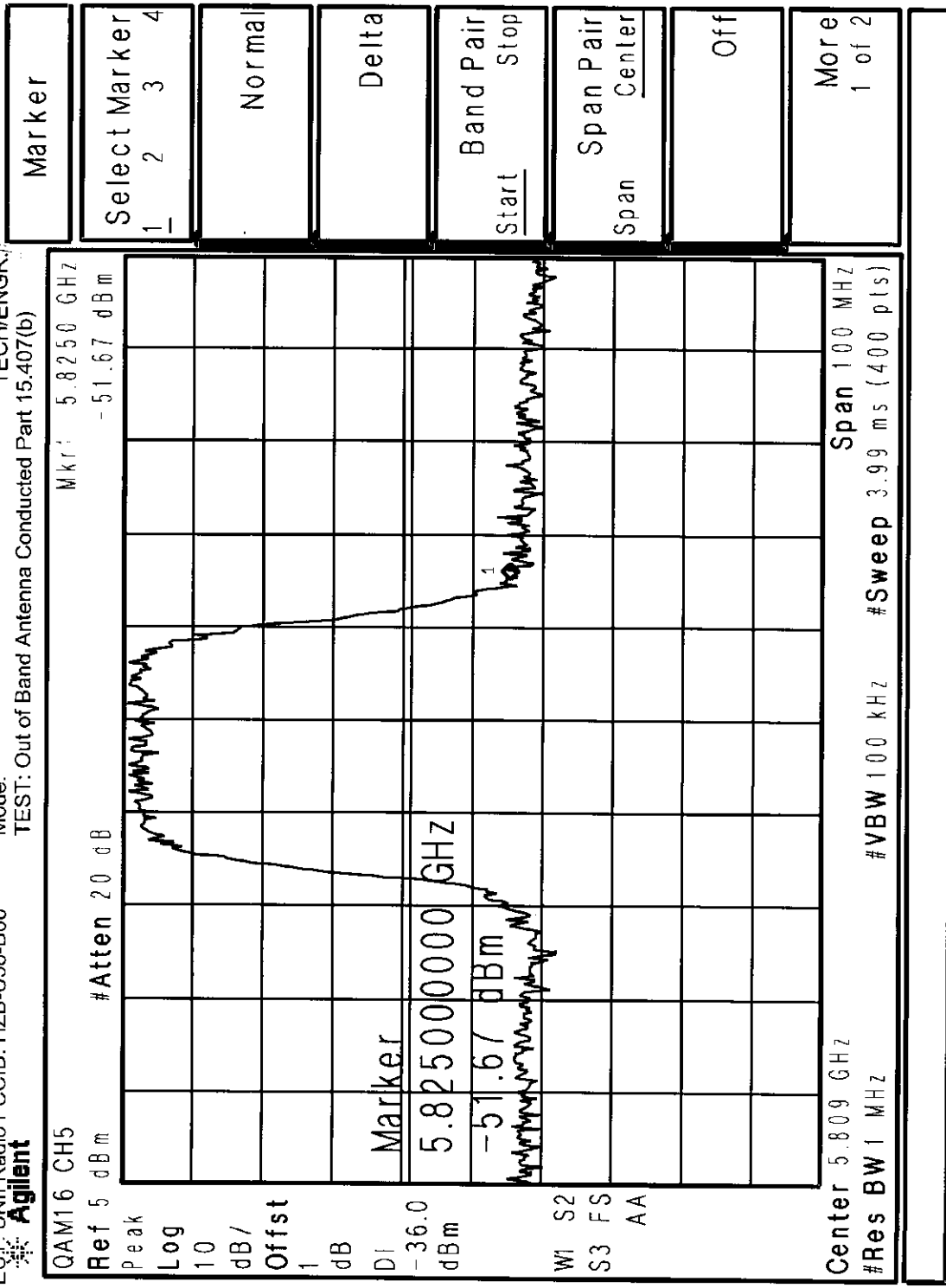
CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Agilent  
 Report No.: SC106727  
 Mode: TECH/ENGR.  
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Oct. 4, 2001



Marker
Select Marker 1 2 3 4
Normal
Delta
Band Pair Start Stop
Span Pair Span Center
Off
More 1 of 2

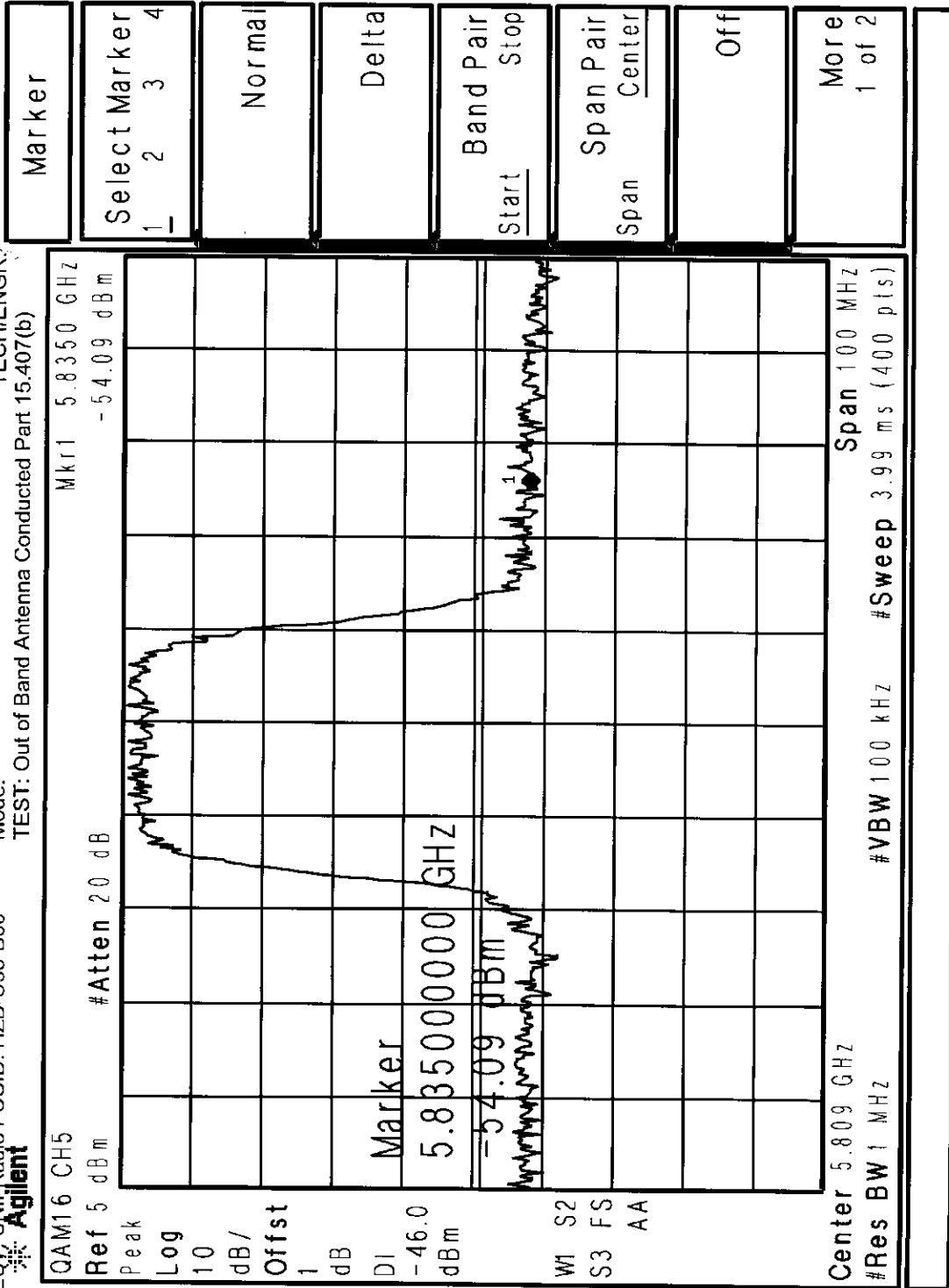
CUSTOMER: WESTERN Multiplex  
 EUT: UNIL Radio FCCID: HZB-U58-B60  
 Agilent  
 Report No.: SC106727  
 Mode: TECH/ENGR  
 TEST: Out of Band Antenna Conducted Part 15.407(b)



Marker
Select Marker 1 2 3 4
Normal
Delta
Band Pair Start Stop
Span Pair Span Center
Off
More 1 of 2



CUSTOMER: WESTERN Multiplex  
 EUT: UNII Radio FCCID: HZB-U58-B60  
 Agilent  
 Report No.: SC106727  
 Mode: TECH/ENGR  
 TEST: Out of Band Antenna Conducted Part 15.407(b)



Report No. SC106727-03



REPORT No: SC106727 TESTER: Dave Bernardin SPEC: FCC 15.209(a)/15.205  
 CUSTOMER: Wescom Multiplex TEST DIST: 3 Meters  
 E.U.T.: UNII Radio FCCID: HZB-U58-B60 TEST SITE: Roof  
 EUT MODEL: Nominal Receiver Transmitter R/C/N/C/A/L: N/A  
 DATE: Oct. 04, 2001 LOG: N/A OTHER: 0  
 NOTES: Duty Cycle: 100%  
 above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG  
 below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG  
 CF = Antenna Factor + Cable Loss - Pre-amplifier Gain

FREQ (MHz)	VERT (dBuV)		HORIZ (dBuV)		CF (dBm)	MAX LEVEL (dBuV/m)		SPEC LIMIT (dBuV/m)		MARGIN (dB)		EUT Relation	Antenna Height	Notes
	pk	av	pk	av		pk	av	pk	av	pk	av			
11480.8	43.3	31.2	42.1	31.1	15.6	58.9	46.8	74	54	-15.1	-7.21	0	1.5	8QAM Ch 0, 6A
11536.14	42.3	31.2	43.4	31.2	15.5	58.9	46.7	74	54	-15.1	-7.26	0	1.2	16QAM Ch 0, 6A
11612.14	42.8	30.7	43.1	30.6	15.4	58.5	46.1	74	54	-15.5	-7.88	0	1	QPSK 3/4 Ch 0, 6A
11480.8	44.1	31.2	42.5	31.1	15.6	59.7	46.8	74	54	-14.3	-7.21	0	1.5	8QAM Ch 2, 6C
11536.14	42.4	31.1	42.6	31.2	15.5	58.1	46.7	74	54	-15.9	-7.26	0	1.2	16QAM Ch 2, 6C
11612.14	42.6	30.7	43	30.6	15.4	58.4	46.1	74	54	-15.6	-7.88	0	1	QPSK 3/4 Ch 2, 6C
11480.8	40.8	31.1	41.5	31.1	15.6	57.1	46.7	74	54	-16.9	-7.31	0	1.5	8QAM Ch 5, 6F
11536.14	42.3	31.2	42.3	31.1	15.5	57.8	46.7	74	54	-16.2	-7.26	0	1.2	16QAM Ch 5, 6F
11612.14	42.1	30.6	42.3	30.7	15.4	57.7	46.1	74	54	-16.3	-7.88	0	1	QPSK 3/4 Ch 5, 6F

8QAM  
16QAM  
QPSK  
Ch 0  
Ch 2  
Ch 5  
Ch 0  
Ch 2  
Ch 5  
Ch 0  
Ch 2  
Ch 5

Test Report #: SC106727 Test Area: SR5 Date: 4-Oct-01

Test Method: FCC15.205(b) Restricted bands of operator  
 EUT Model #: UNII Radio EUT POWER: 115 Vac/60 Hz  
 Temperature: 23 C  
 Air Pressure: 100.1 kPa  
 Relative Humidity: 48 %

EUT Description: FCC ID: HZB-U58-B60  
 NOTES: Mode: Receiver/Transmit Normal Mode  
 No signals were measurable at 3 meters. The EUT was moved to one meter distance.  
 SPEC LIMIT was adjusted for one meter.

FREQ (MHz)	VERTICAL (dBuV)		HORIZONTAL (dBuV)		CORRECTION FACTOR (dB/m)	MAX LEVEL (dBuV/m)		SPEC LIMIT (dBuV/m)		MARGIN (dB)		EUT Rotatio	Antenna Height	Notes
	pk	av	pk	av		pk	av	pk	av	pk	av			
22961	31.5	19.8	31.5	19.8	32.92	64.42	52.72	84	64	-19.58	-11.28	0	1	8QAM CH 0, 6A
22961	32.4	19.9	32.4	19.9	32.92	65.32	52.82	84	64	-18.68	-11.18	0	1	16QAM CH 0, 6A
22961	31.5	19.8	31.5	19.8	32.92	64.42	52.72	84	64	-19.58	-11.28	0	1	QPSK 3/4 CH 0, 6A
23072	29.6	19.4	29.6	19.4	32.92	62.52	52.32	84	64	-21.48	-11.68	0	1	8QAM CH 2, 6C
23072	29.7	19.4	29.7	19.4	32.92	62.62	52.32	84	64	-21.38	-11.68	0	1	16QAM CH 2, 6C
23072	30.5	19.5	30.5	19.5	32.92	63.42	52.42	84	64	-20.58	-11.58	0	1	QPSK 3/4 CH 2, 6C
23244	29.6	19.4	29.6	19.4	32.96	62.56	52.36	84	64	-21.44	-11.64	0	1	8QAM CH 5, 6F
23244	29.4	19.4	29.4	19.4	32.96	62.36	52.36	84	64	-21.64	-11.64	0	1	16QAM CH 5, 6F
23255	29.8	19.5	29.8	19.5	32.96	62.76	52.46	84	64	-21.24	-11.54	0	1	QPSK 3/4 CH 5, 6F

Test Equipment Used:

Model Number	Prop. #	Description	Manufacturer	Serial No.	Cal. Date
hp8588B	407	Spectrum Analyzer	Hewlett Packard	2311A02209	2/15/02
hp11975A	719	Amplifier	Hewlett Packard	2517A00639	not req'r.
hp11970K	852	Mixer	Hewlett Packard	3003A05400	not req'r.
12A18 115300	0006377	Horn Antenna 18-26 GHz	MI Technologies	21554MB	not req'r.

Tested: Dave Bernardin  
 Signature:   
 Reviewed by: Alan Laudani  
 Signature:

**TUV Product Service  
Powerline Conducted Emissions**

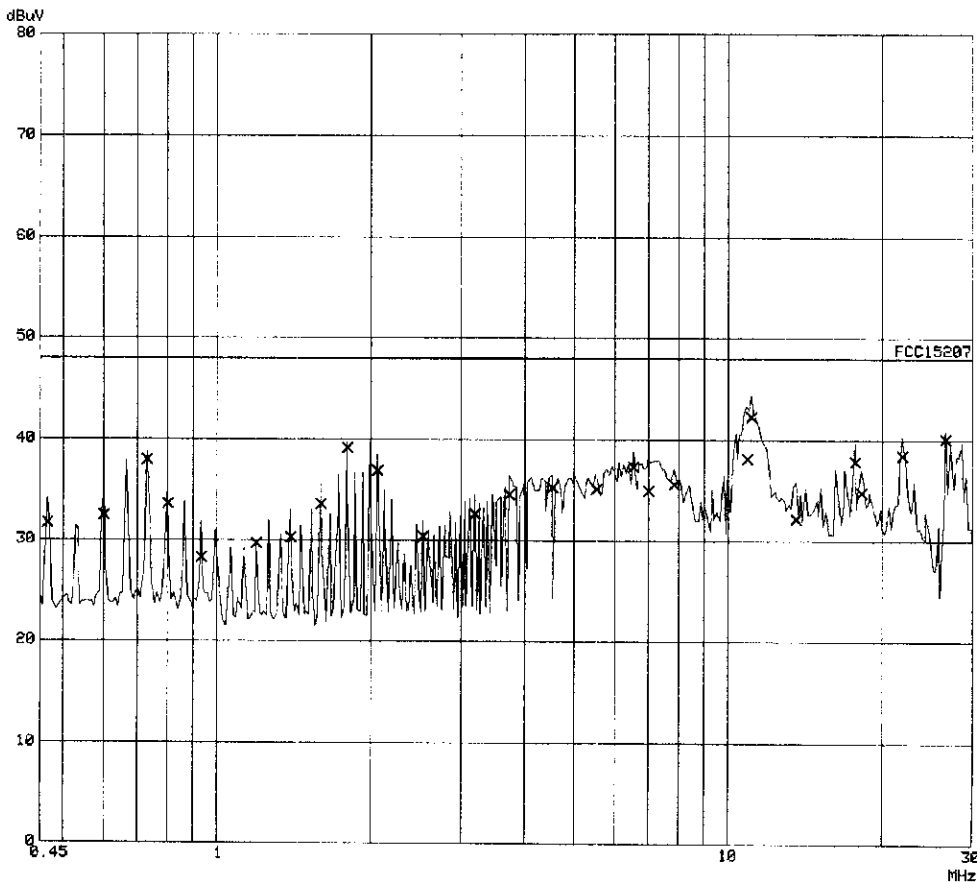
EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin *DB*  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 1Channel 6a QPSK-3/4  
 SC106727  
 Date: 24. Sep 01 10:14

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	9k	30M	20dB LISN

Final Measurement: x QP  
 Meas Time: 1 s  
 Subranges: 25  
 Acc Margin: 35dB



**TUV Product Service  
Powerline Conducted Emissions**

EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin *DB*  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 1Channel 6a QPSK-3/4  
 SC106727  
 Date: 24. Sep 01 10:14

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.46500	31.7	48.0
0.60000	32.5	48.0
0.73000	38.0	48.0
0.80000	33.6	48.0
0.93000	28.2	48.0
1.19500	29.7	48.0
1.39500	30.3	48.0
1.59500	33.6	48.0
1.79500	39.2	48.0
2.06000	36.9	48.0
2.53000	30.4	48.0
3.19500	32.6	48.0
3.72500	34.5	48.0
4.52500	35.3	48.0
5.52000	35.1	48.0
6.52000	37.3	48.0
6.99000	35.0	48.0
7.85000	35.6	48.0
10.90500	38.2	48.0
11.11000	42.2	48.0
13.57000	32.1	48.0
17.69500	37.9	48.0
18.24500	34.8	48.0
21.91000	38.5	48.0
26.61000	40.1	48.0

\* limit exceeded

**TUV Product Service  
Powerline Conducted Emissions**

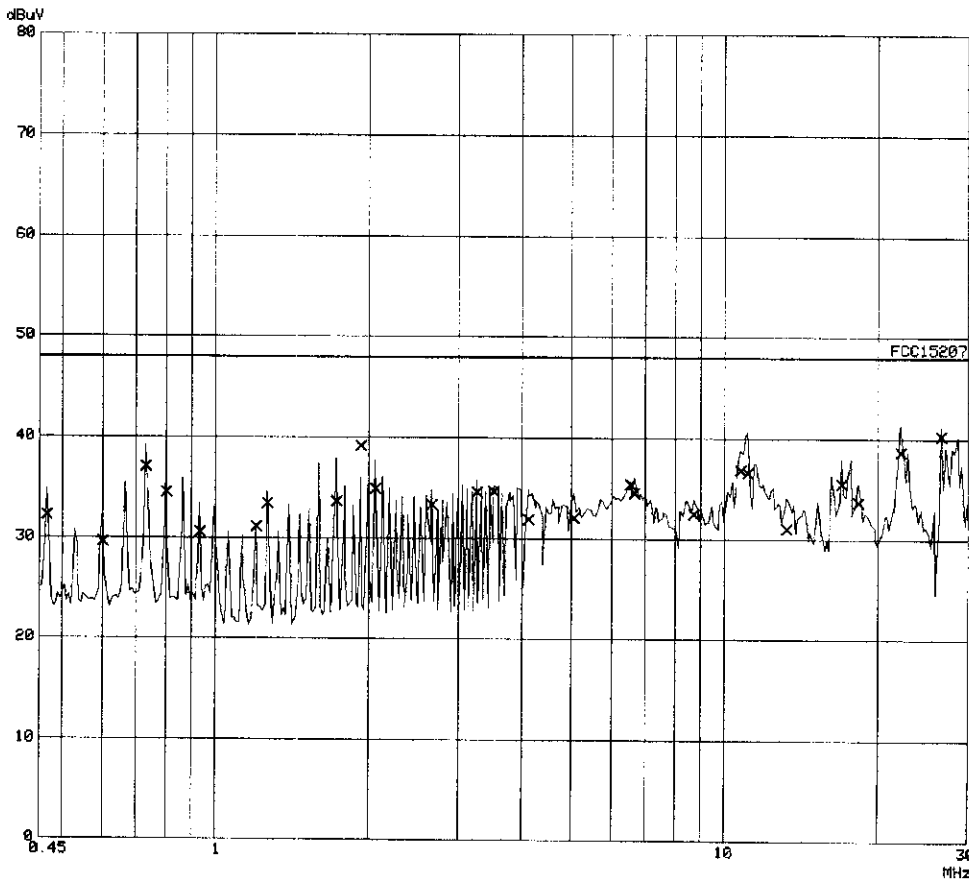
EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin *DB*  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 2Channel 6a QPSK-3/4  
 SC106727  
 Date: 24. Sep 01 10:21

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	9k	30M	20dBLISN

Final Measurement: x QP  
 Meas Time: 1 s  
 Subranges: 25  
 Acc Margin: 35dB



**TUV Product Service  
Powerline Conducted Emissions**

EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin *DB*  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 2Channel 6a QPSK-3/4  
 SC106727  
 Date: 24. Sep 01 10:21

**Final Measurement Results:**

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.46500	32.2	48.0
0.60000	29.6	48.0
0.73000	37.1	48.0
0.80000	34.6	48.0
0.93000	30.5	48.0
1.20000	31.2	48.0
1.26500	33.5	48.0
1.72500	33.7	48.0
1.93000	39.2	48.0
2.06000	34.9	48.0
2.66000	33.3	48.0
3.26000	34.6	48.0
3.52500	34.7	48.0
4.12000	31.9	48.0
5.05500	32.1	48.0
6.52000	35.4	48.0
6.65000	34.6	48.0
8.71500	32.5	48.0
10.77500	36.9	48.0
11.10500	36.6	48.0
13.24000	31.0	48.0
16.96000	35.5	48.0
18.30500	33.7	48.0
22.15000	38.7	48.0
26.61000	40.3 <i>DB</i>	48.0

\* limit exceeded

**TUV Product Service  
Powerline Conducted Emissions**

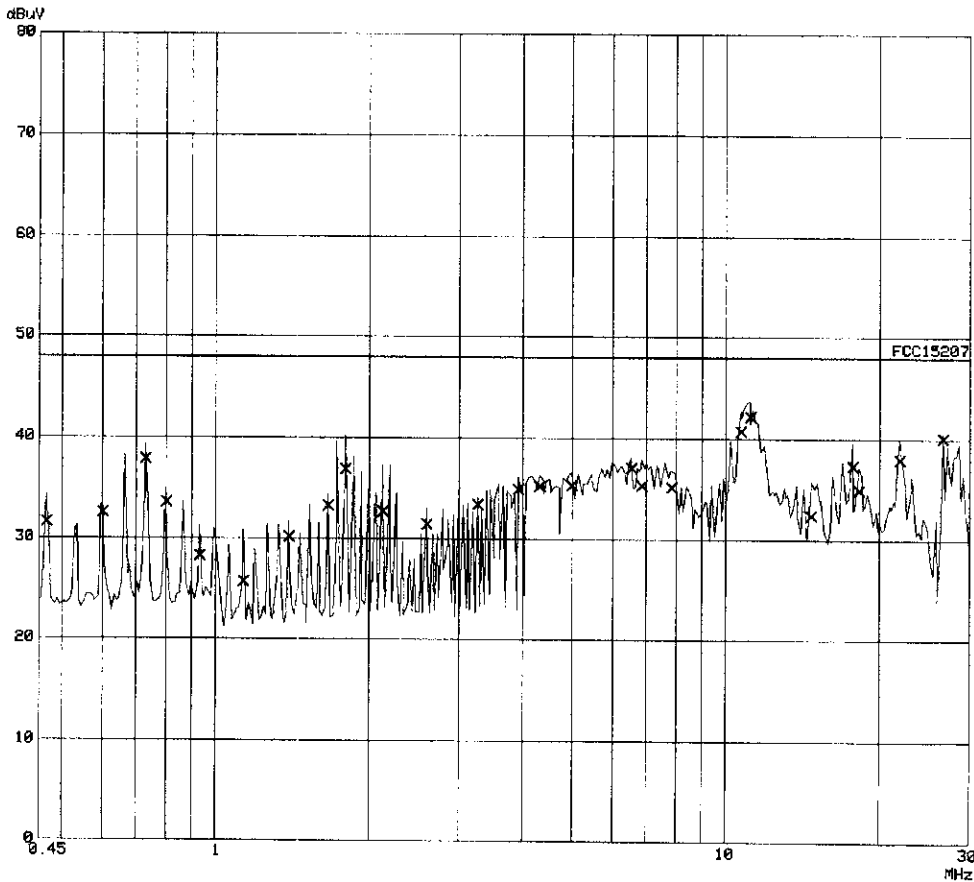
EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin *DB*  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 1Channel 6c 8QAM  
 SC106727  
 Date: 24. Sep 01 10:05

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	9k	30M	20dB LISN

Final Measurement: x QP  
 Meas Time: 1 s  
 Subranges: 25  
 Acc Margin: 35dB





**TUV Product Service  
Powerline Conducted Emissions**

EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin *DB*  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 1Channel 6c 8QAM  
 SC106727  
 Date: 24. Sep 01 10:05

**Final Measurement Results:**

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.46500	31.6	48.0
0.60000	32.6	48.0
0.73000	37.9	48.0
0.80000	33.6	48.0
0.93000	28.2	48.0
1.13500	25.7	48.0
1.39500	30.2	48.0
1.66000	33.3	48.0
1.80000	36.9	48.0
2.12500	32.7	48.0
2.59500	31.4	48.0
3.26000	33.4	48.0
3.92500	34.9	48.0
4.32500	35.3	48.0
4.99000	35.4	48.0
6.52000	37.1	48.0
6.85000	35.3	48.0
7.85000	35.2	48.0
10.71500	40.8	48.0
11.18000	42.1 <i>W</i>	48.0
14.70500	32.4	48.0
17.69500	37.3	48.0
18.24500	35.0	48.0
21.90500	38.0	48.0
26.61000	40.1	48.0

\* limit exceeded

**TUV Product Service  
Powerline Conducted Emissions**

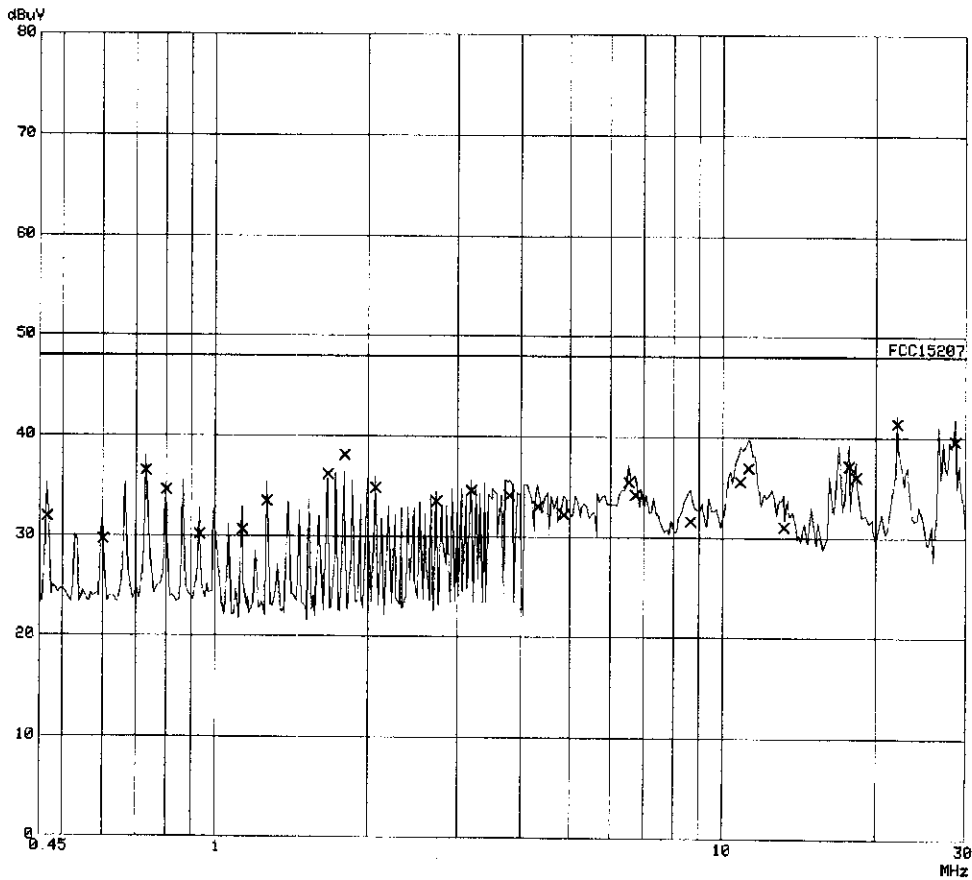
EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 2Channel 6c 8QAM  
 SC106727  
 Date: 24. Sep 01 09:56

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	9k	30M	20dB LISN

Final Measurement: x QP  
 Meas Time: 1 s  
 Subranges: 25  
 Acc Margin: 35dB



**TUV Product Service  
Powerline Conducted Emissions**

EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 2Channel 6c 8QAM  
 SC106727  
 Date: 24. Sep 01 09:56

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.46500	31.9	48.0
0.60000	29.7	48.0
0.73000	36.5	48.0
0.80000	34.6	48.0
0.93000	30.2	48.0
1.13000	30.7	48.0
1.26500	33.5	48.0
1.66500	36.2	48.0
1.79500	38.2	48.0
2.06500	34.9	48.0
2.73000	33.5	48.0
3.19500	34.6	48.0
3.79500	34.1	48.0
4.32500	33.0	48.0
4.86000	32.2	48.0
6.52000	35.5	48.0
6.72000	34.2	48.0
8.65500	31.6	48.0
10.84500	35.6	48.0
11.24500	36.9	48.0
13.18000	31.0	48.0
17.69500	37.1	48.0
18.30500	36.1	48.0
22.03000	41.4	48.0
28.68500	39.6	48.0

\* limit exceeded

**TUV Product Service  
Powerline Conducted Emissions**

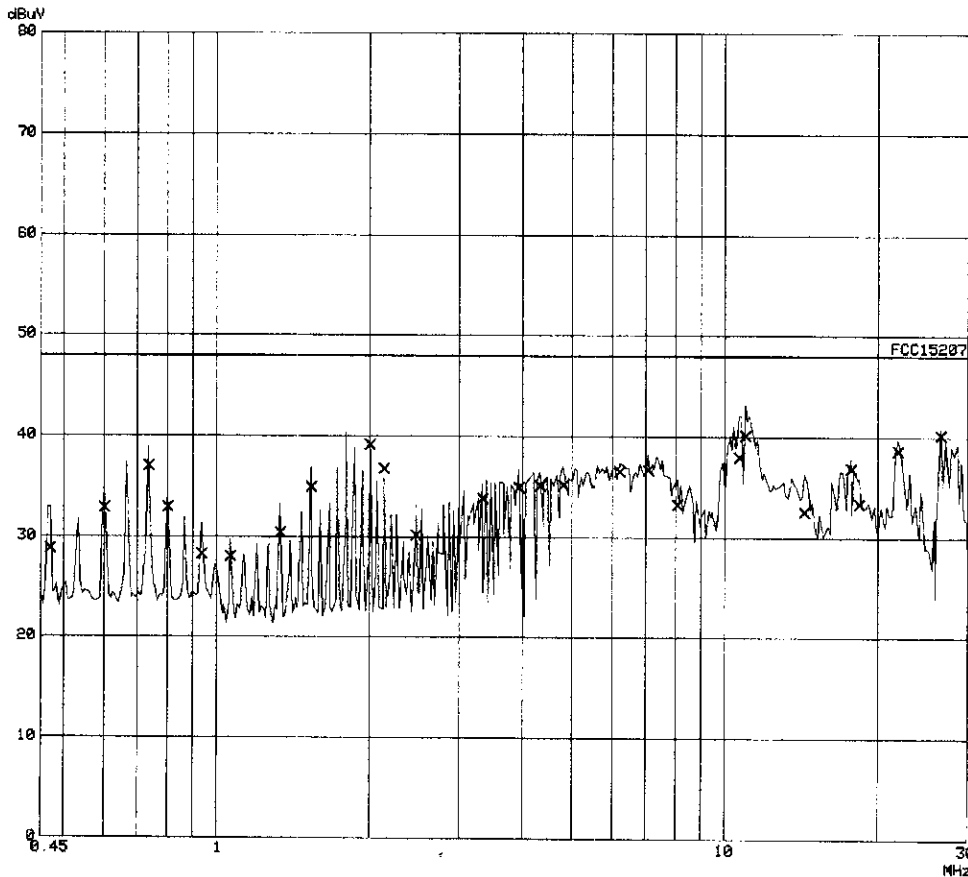
EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin *DB*  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 1Channel 6f 16QAM  
 SC106727  
 Date: 24. Sep 01 09:15

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN	OFF 60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN	OFF 60dB

Transducer No.	Start	Stop	Name
1	9k	30M	20dB LISN

Final Measurement: x QP  
 Meas Time: 1 s  
 Subranges: 25  
 Acc Margin: 35dB



**TUV Product Service  
Powerline Conducted Emissions**

EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc *OK*  
 Operator: Dave Bernardin  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 1Channel 6f 16QAM  
 SC106727  
 Date: 24. Sep 01 09:15

**Final Measurement Results:**

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.47000	28.8	48.0
0.60000	32.8	48.0
0.73500	37.0	48.0
0.80000	33.0	48.0
0.93500	28.2	48.0
1.06500	28.0	48.0
1.33500	30.4	48.0
1.53500	34.9	48.0
2.00000	39.2	48.0
2.13500	36.8	48.0
2.47000	30.2	48.0
3.33500	33.8	48.0
3.93500	35.0	48.0
4.33500	35.1	48.0
4.80500	35.2	48.0
6.20500	36.6	48.0
7.07000	36.7	48.0
8.07000	33.3	48.0
10.67000	37.9	48.0
11.00500	40.1	48.0
14.34500	32.5	48.0
17.69500	36.8	48.0
18.36500	33.3	48.0
21.91000	38.6	48.0
26.61000	40.2 <i>OK</i>	48.0

\* limit exceeded

**TUV Product Service  
Powerline Conducted Emissions**

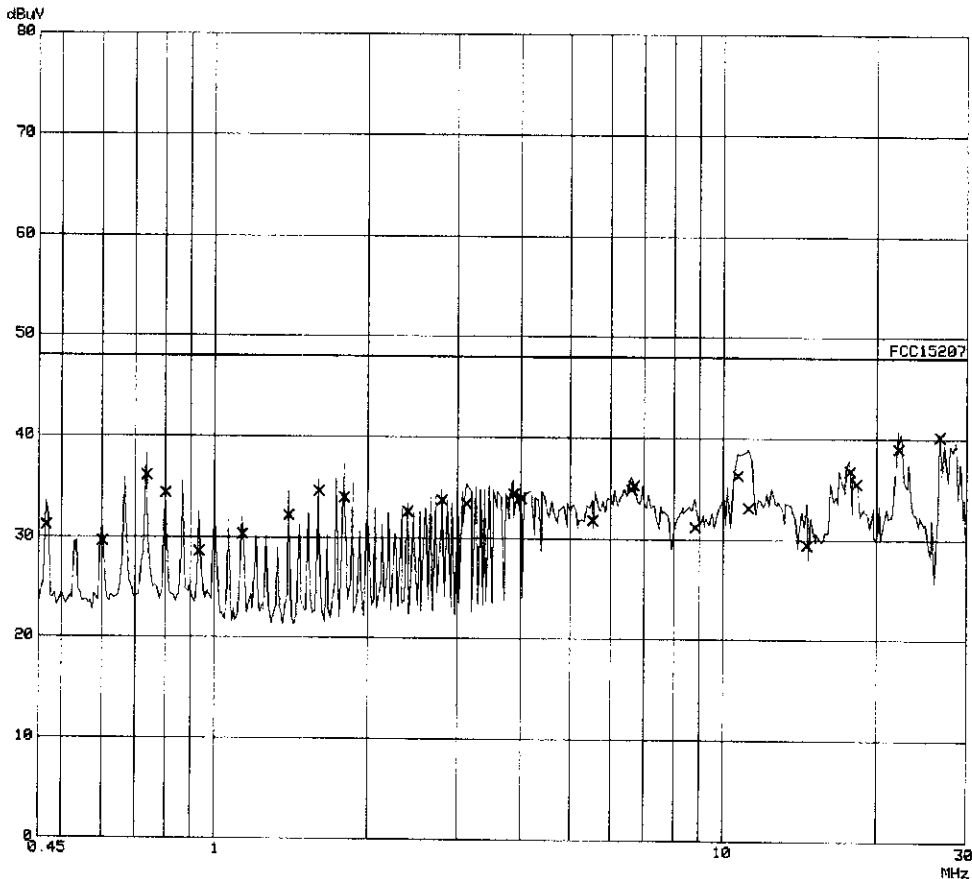
EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin *DB*  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 2Channel 6f 16QAM  
 SC106727  
 Date: 24. Sep 01 09:27

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450k	1M	5k	10k	PK	100ms	AUTO	LN OFF	60dB
1M	30M	5k	10k	PK	2ms	AUTO	LN OFF	60dB

Transducer No.	Start	Stop	Name
1	9k	30M	20dB LISN

Final Measurement: x QP  
 Meas Time: 1 s  
 Subranges: 25  
 Acc Margin: 35dB



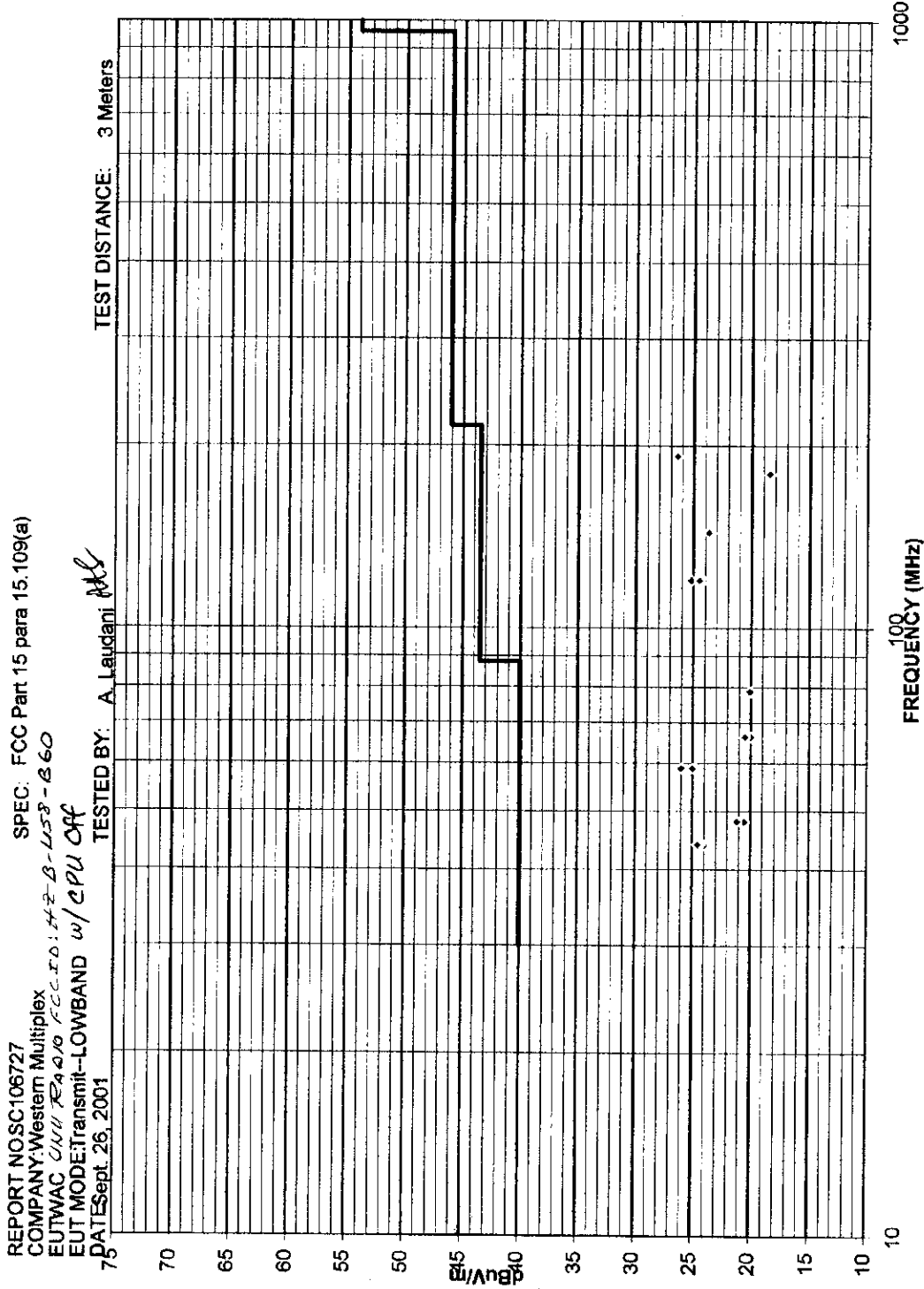
**TUV Product Service  
Powerline Conducted Emissions**

EUT: Tsunami Multipoint Base Station  
 Manuf: Western multiplex  
 Op Cond: 110 Vac to -48Vdc  
 Operator: Dave Bernardin *DB*  
 Test Spec: FCC Part 15 B  
 Comment: 110V ac 60 Hz Line 2Channel 6f 16QAM  
 SC106727  
 Date: 24. Sep 01 09:27

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.46500	31.2	48.0
0.60000	29.6	48.0
0.73500	36.1	48.0
0.80000	34.4	48.0
0.93000	28.6	48.0
1.13500	30.3	48.0
1.40000	32.3	48.0
1.60000	34.6	48.0
1.79500	34.0	48.0
2.40000	32.6	48.0
2.80000	33.8	48.0
3.13000	33.5	48.0
3.86500	34.4	48.0
4.00000	34.0	48.0
5.53000	31.8	48.0
6.60000	34.9	48.0
6.66500	35.2	48.0
8.79500	31.2	48.0
10.66500	36.3	48.0
11.19000	33.1	48.0
14.59500	29.4	48.0
17.69500	36.8	48.0
18.24500	35.5	48.0
22.06000	39.0	48.0
26.61000	40.2 <i>DB</i>	48.0

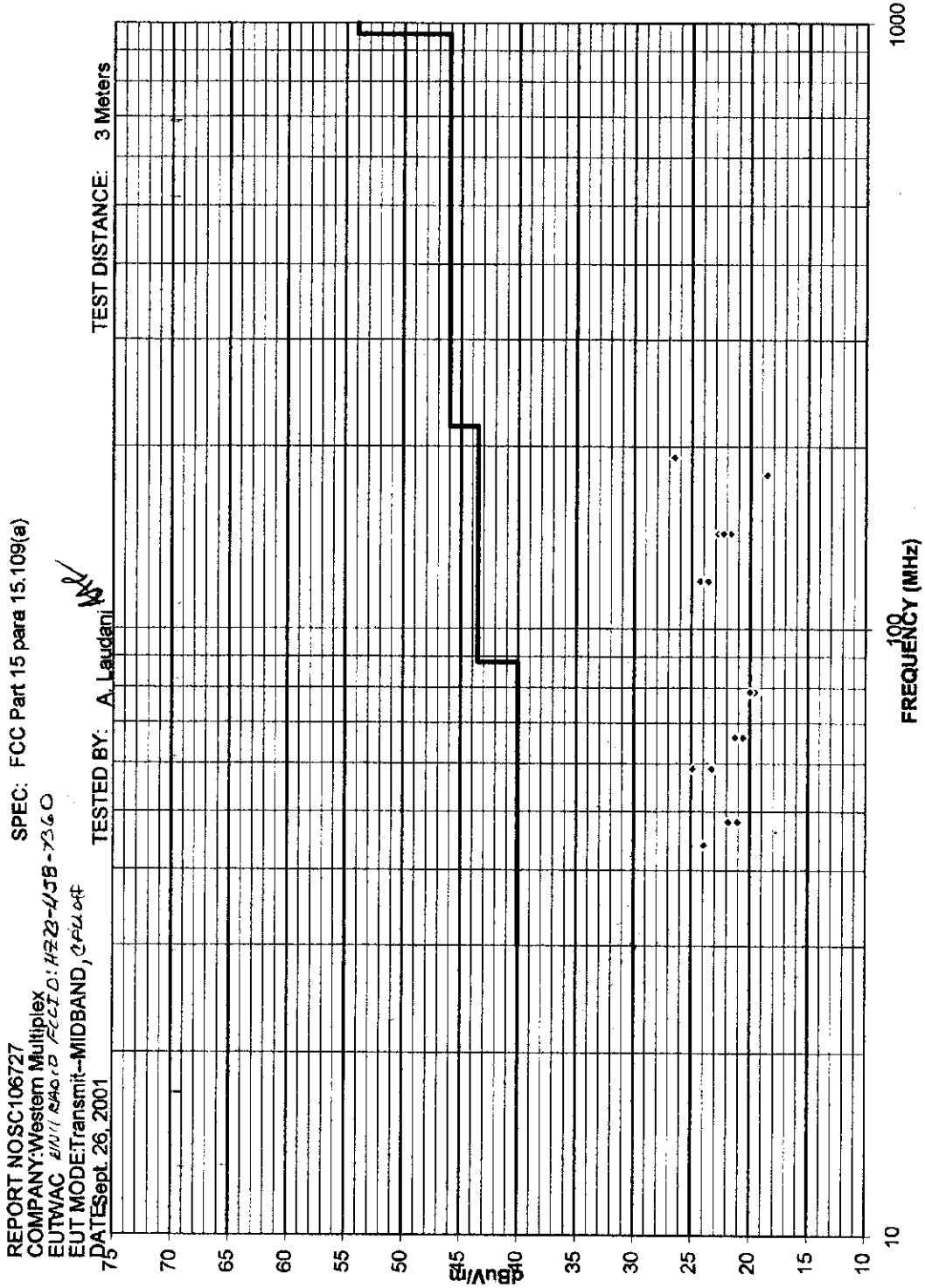
\* limit exceeded





REPORT No: SC106727  
 SPEC: FCC Part 15 para 15.109(a)  
 CUSTOMER: Western Multiplex  
 TEST DIST: 3 Meters  
 E.U.T.: WAC UNII Radio FCC ID: HZB-153-AGD  
 TEST SITE: 2  
 EUT MODE: Transmit-LOWBAND w/ CPU off  
 BICONICAL: 739  
 DATE: Sept. 26, 2000 TESTED BY: A. Lauriani  
 LOG PERIODIC: 739  
 NOTES: Quasi-Peak with 120 KHz measurement bandwidth. RCVR: 427

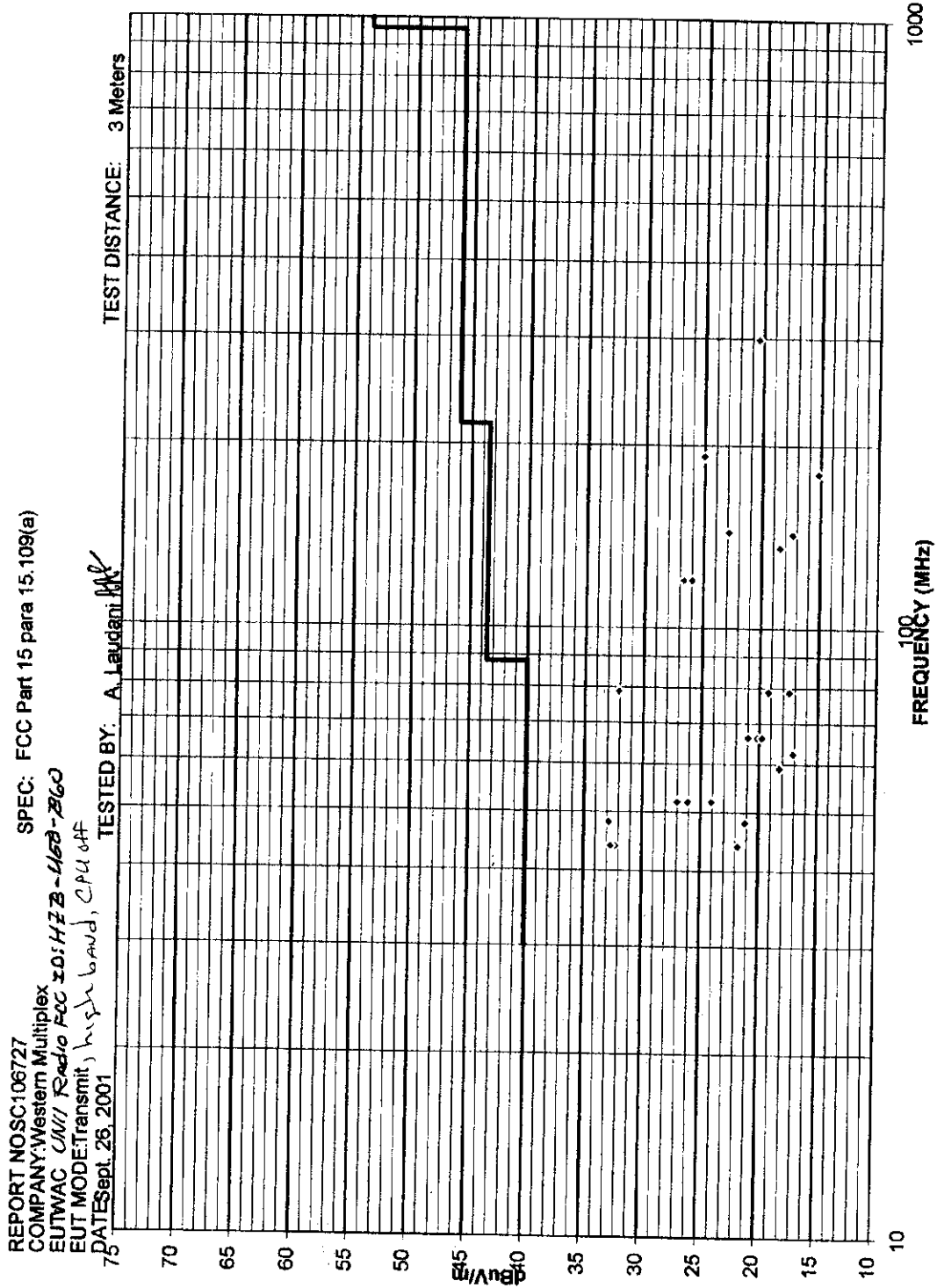
EUT MARGIN FREQUENCY (MHz)	Temperature: -14.0		28		Relative Humidity: 44		44		VM 1.8		EUT ANTENNA HEIGHT (meters)	NOTE
	VERTICAL measured (dBuV)	HORIZONTAL measured (dBuV)	CORRECTION FACTOR (dB/m)	MAXIMUM CORRECTED (dBuV/m)	SPECIFIED LIMIT (dBuV/m)	EUT MARGIN (dB)	EUT ROTATION (degrees)					
43.90	5.7	4.8	18.3	24.0	40	-16.0	0	1	8QAM -6A			
48.00	3.8	1.6	17.5	21.3	40	-18.7	0	1	8QAM -6A			
58.83	12.1	2.5	13.9	26.0	40	-14.0	60	1	8QAM -6A			
66.21	9.8	2.4	10.5	20.3	40	-19.7	60	1	8QAM -6A			
78.71	11	4.3	9.1	20.1	40	-19.9	60	1	8QAM -6A			
120.00	9.4	3.2	14.8	24.2	43.5	-19.3	60	1	8QAM -6A			
144.00	11.8	1.2	11.9	23.7	43.5	-19.8	0	1	8QAM -6A			
180.00	6.3	0	12.2	18.5	43.5	-25.0	0	1	8QAM -6A			
192.00	13.4	7.2	13.0	26.4	43.5	-17.1	300	1	8QAM -6A			
43.99	6.1	3.5	18.3	24.4	40	-15.6	0	1	16QAM -6A			
48.00	3.1	2.5	17.5	20.6	40	-19.4	0	1	16QAM -6A			
58.83	10.9	2.3	13.9	24.8	40	-15.2	60	1	16QAM -6A			
66.21	9.5	2.8	10.5	20.0	40	-20.0	60	1	16QAM -6A			
78.71	10.9	4	9.1	20.0	40	-20.0	60	1	16QAM -6A			
120.00	10.4	3.2	14.8	25.2	43.5	-18.3	60	1	16QAM -6A			
144.00	11.6	0.9	11.9	23.5	43.5	-20.0	60	1	16QAM -6A			
43.99	6.3	3.5	18.3	24.6	40	-15.4	0	1	QPSK3/4 -6A			
48.00	3.7	1.7	17.5	21.2	40	-18.8	0	1	QPSK3/4 -6A			
58.83	11.1	3.4	13.9	25.0	40	-15.0	60	1	QPSK3/4 -6A			
66.21	10	2.3	10.5	20.5	40	-19.5	60	1	QPSK3/4 -6A			
78.71	11	3.4	9.1	20.1	40	-19.9	60	1	QPSK3/4 -6A			
120.00	9.7	3.6	14.8	24.5	43.5	-19.0	60	1	QPSK3/4 -6A			
144.00	11.8	1	11.9	23.7	43.5	-19.8	60	1	QPSK3/4 -6A			



REPORT No: SC106727  
 CUSTOMER: Western Multiplex  
 EUT: WAC *WVH Radio FCC ID: H23-1158-B60*  
 EUT MODE: Transmit-MIDBAND, CPU *off*  
 DATE: Sept. 26, 200  
 NOTES: Quasi-Peak with 120 KHz measurement bandwidth.

SPEC: FCC Part 15 para 15.108(a)  
 TEST DIST: 3 Meters  
 TEST SITE: 2  
 BICONICAL: 739  
 LOG PERIODIC: 739  
 RCVR: 427

EUT MARGIN		Temperature: 28		Relative Humidity: 44		vr 1.5					
-15.1		dB at 58.83 MHz									
FREQUENCY (MHz)	VERTICAL measured (dBuV)	HORIZONTAL measured (dBuV)	CORRECTION FACTOR (dB/m)	MAXIMUM CORRECTED (dBuV/m)	SPECIFIED LIMIT (dBuV/m)	EUT MARGIN (dB)	EUT ROTATION (degrees)	ANTENNA HEIGHT (meters)	NOTE		
43.90	6	3.4	16.3	24.3	40	-15.7	0	1	8QAM -6C		
48.00	3.5	2	17.5	21.0	40	-19.0	0	1	8QAM -6C		
58.83	11	0	13.9	24.9	40	-15.1	60	1	8QAM -6C		
66.21	10.4	2.4	10.5	20.9	40	-19.1	60	1	8QAM -6C		
78.71	10.3	3.5	9.1	19.4	40	-20.6	60	1	8QAM -6C		
120.00	9.1	3.1	14.8	23.9	43.5	-19.6	60	1	8QAM -6C		
144.00	9.8	1	11.9	21.7	43.5	-21.8	0	1	8QAM -6C		
180.00	6.4	0	12.2	18.6	43.5	-24.9	0	1	8QAM -6C		
192.00	9	13.5	13.0	26.5	43.5	-17.0	0	1	8QAM -6C		
43.99	5.8	3.2	18.3	24.1	40	-15.9	0	1	16QAM -6C		
48.00	4.4	3	17.5	21.9	40	-18.1	0	1	16QAM -6C		
58.83	9.2	2.2	13.9	23.1	40	-16.9	60	1	16QAM -6C		
66.21	10.1	2.6	10.5	20.8	40	-19.4	60	1	16QAM -6C		
78.71	10.5	3.9	9.1	19.6	40	-20.4	60	1	16QAM -6C		
120.00	9.5	3.2	14.8	24.3	43.5	-19.2	60	1	16QAM -6C		
144.00	10.9	1.2	11.9	22.8	43.5	-20.7	60	1	16QAM -6C		
43.99	5.7	3.7	18.3	24.0	40	-16.0	0	1	QPSK3/4 -6C		
48.00	3.6	3	17.5	21.1	40	-18.9	0	1	QPSK3/4 -6C		
58.83	9.4	3	13.9	23.3	40	-16.7	60	1	QPSK3/4 -6C		
66.21	10.8	2.5	10.5	21.3	40	-18.7	60	1	QPSK3/4 -6C		
78.71	10.9	4.4	9.1	20.0	40	-20.0	60	1	QPSK3/4 -6C		
120.00	8.8	3.1	14.8	23.6	43.5	-19.9	60	1	QPSK3/4 -6C		
144.00	10.4	1.4	11.9	22.3	43.5	-21.2	60	1	QPSK3/4 -6C		



REPORT No: SC106727  
 CUSTOMER: Western Multiplex  
 SPEC: FCC Part 15 para 15.109(a)  
 TEST DIST: 3 Meters  
 EUT: WAC UNIII Radio FCC ID: H2B-U58-B60 TEST SITE: 2  
 EUT MODE: Transmitting high band, CPDoff BICONICAL: 739  
 DATE: Sept. 26, 200 TESTED BY: A. Laudani LOG PERIODIC: 739  
 NOTES: Quasi-Peak with 120 KHz measurement bandwidth. RCVR: 427

EUT MARGIN	Temperature: -7.1		28		Relative Humidity: 44		ver 1.8		EUT ANTENNA HEIGHT (meters)	NOTE
	FREQUENCY (MHz)	VERTICAL measured (dBuV)	HORIZONTAL measured (dBuV)	CORRECTION FACTOR (dB/m)	MAXIMUM CORRECTED (dBuV/m)	SPECIFIED LIMIT (dBuV/m)	EUT MARGIN (dB)	EUT ROTATION (degrees)		
	43.90	14	5	18.3	32.3	40	-7.7	0	1	16QAM-6F
	48.00	15.4	4.9	17.5	32.9	40	-7.1	0	1	16QAM-6F
	52.00	10.5	0.3	16.5	27.0	40	-13.0	0	1	16QAM-6F
	59.10	4.5	-0.1	13.8	18.3	40	-21.7	90	1	16QAM-6F
	62.40	5	2	12.1	17.1	40	-22.9	90	1	16QAM-6F
	66.21	8	10.5	10.5	21.0	40	-19.0	60	1	16QAM-6F
	78.71	22.3	23	9.1	32.1	40	-7.9	60	1	16QAM-6F
	120.00	11	3.3	14.8	28.8	43.5	-17.7	60	1	16QAM-6F
	136.00	5.6	-0.1	12.9	18.5	43.5	-25.0	180	1	16QAM-6F
	143.00	5.4	-1	12.0	17.4	43.5	-26.1	110	1	16QAM-6F
	144.00	11	-1	11.9	22.9	43.5	-20.6	280	1	16QAM-6F
	180.00	3	2	12.2	18.2	43.5	-28.3	190	1	16QAM-6F
	192.00	12	10.8	13.0	28.0	43.5	-18.5	270	1	16QAM-6F
	289.00	3.1	-0.2	17.4	20.5	46	-25.5	130	1	16QAM-6F
	43.90	14.4	5	18.3	32.7	40	-7.3	0	1	8QAM-6F
	48.00	3.7	3	17.5	21.2	40	-18.8	0	1	8QAM-6F
	78.71	8.4	5	9.1	17.5	40	-22.5	60	1	8QAM-6F
	52.00	7.6	0	16.5	24.1	40	-15.9	60	1	8QAM-6F
	120.00	11.9	3	14.8	28.7	43.5	-16.8	60	1	8QAM-6F
	66.21	9.7	2	10.5	20.2	40	-19.8	60	1	8QAM-6F
	43.90	3.5	-2	18.3	21.8	40	-18.2	0	1	QPSK3/4-6F
	48.00	3.7	1.4	17.5	21.2	40	-18.8	0	1	QPSK3/4-6F
	52.00	9.6	1.1	16.5	26.1	40	-13.9	60	1	QPSK3/4-6F
	66.21	9.3	2	10.5	19.8	40	-20.2	60	1	QPSK3/4-6F
	78.71	10.2	3.6	9.1	19.3	40	-20.7	60	1	QPSK3/4-6F
	120.00	11.2	3	14.8	28.0	43.5	-17.5	60	1	QPSK3/4-6F





**Compliance to 15.407(c)  
Base station (Model 40400/40500)  
Tsunami Multipoint**

The Tsunami Multipoint base station operates in a point-to-multipoint network, and only transmits under the following conditions:

- a) The base station has received information at its Ethernet interface that is addressed to a destination accessible through a subscriber unit. In the absence of information bearing data, the base station will continue to periodically transmit synchronization bursts.
- b) The base station will periodically "poll" the subscriber units by transmitting a polling command in a broadcast network control message. This is required to maintain inbound synchronization and power control for each subscriber unit.
- c) The Control Processor in the base station only enables dc power to the transmitter circuitry if the following operational conditions are met:
  - (i) The frequency synthesizers are locked.
  - (ii) The transmitter output power is below its allowable limit, as determined by coupling and detecting the output RF signal and comparing the detector output with a calibrated threshold.
  - (iii) The transmitter power-control attenuators are operating within their expected range.
  - (iv) The Control Processor is responding to interrupts as expected (checked by a watchdog timeout).
  - (v) The modem, data buffer, and Ethernet interface is processing data without checksum or synchronization errors.

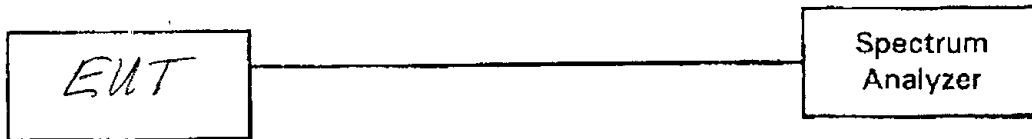
Therefore, it is shown that the base station will automatically discontinue transmission in the absence of information to transmit or operational failure to ensure compliance with 15.407(c).



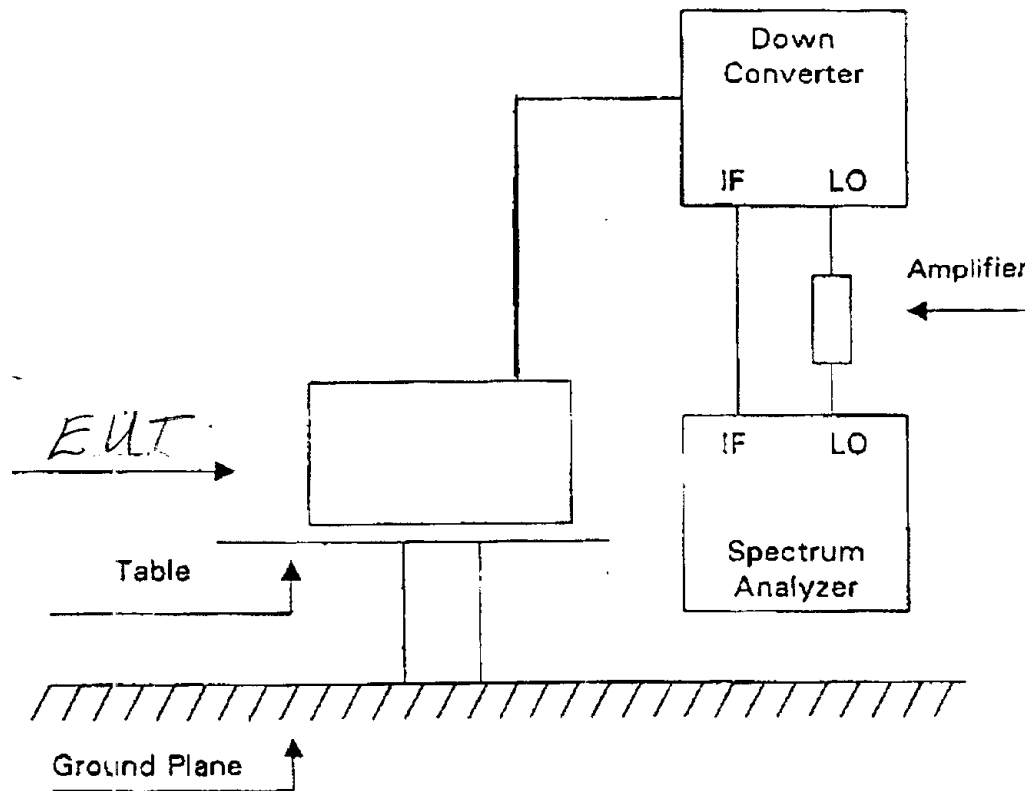
Test setup for Output Power



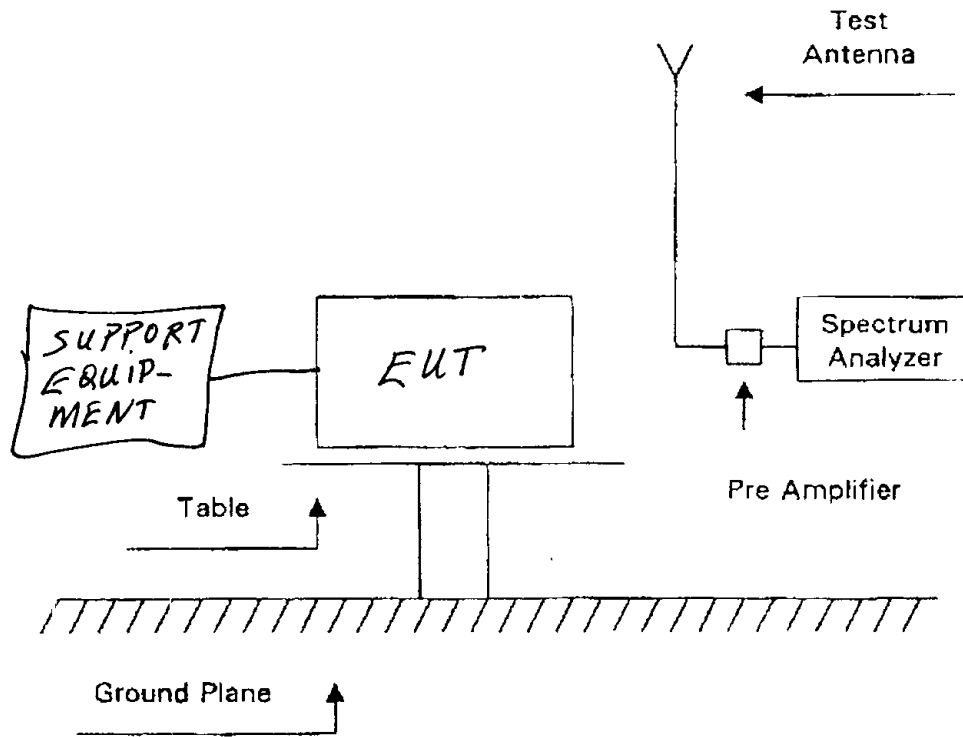
Test setup for 26dB Bandwidth, Power Density, The Ratio of the Peak Excursion of the Modulation Envelope to the Peak Transmit Power, Out of Band Antenna Conducted Emission and Band Edge Antenna Conducted Emission.



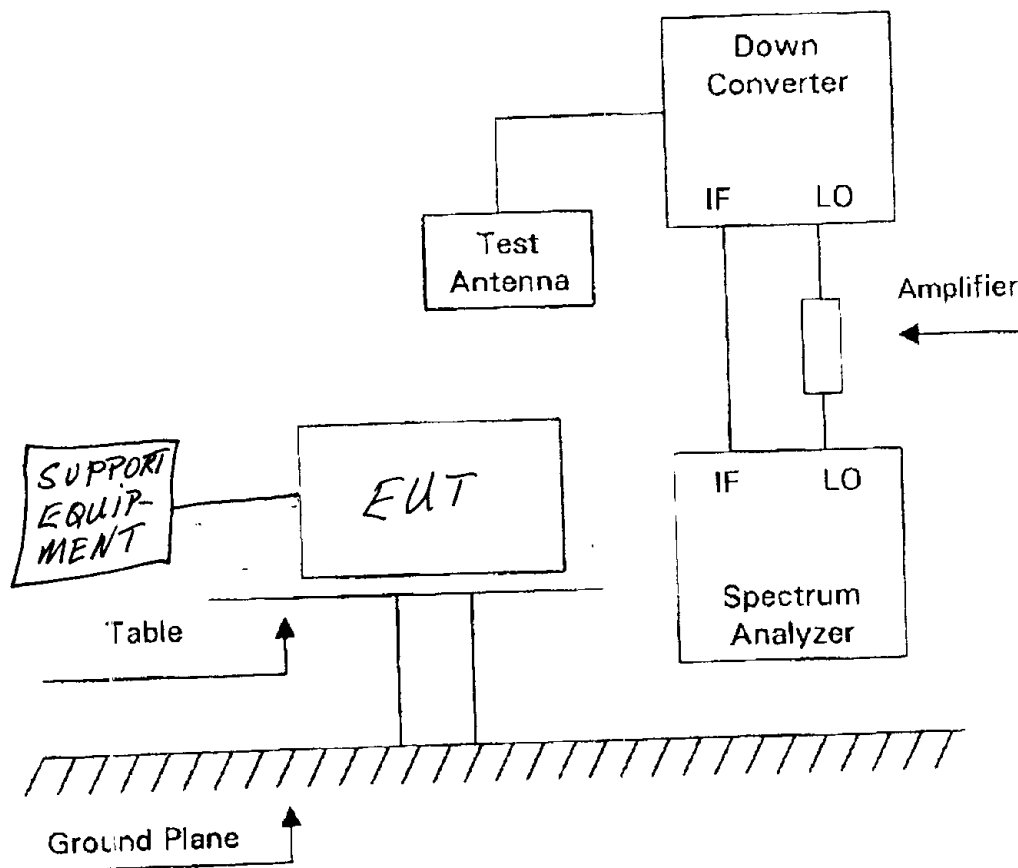
Test setup for Out of Band Antenna Conducted Emission.



Test setup for Radiated Emission in Restricted Bands and Radiated Emission from Receiver L.O.

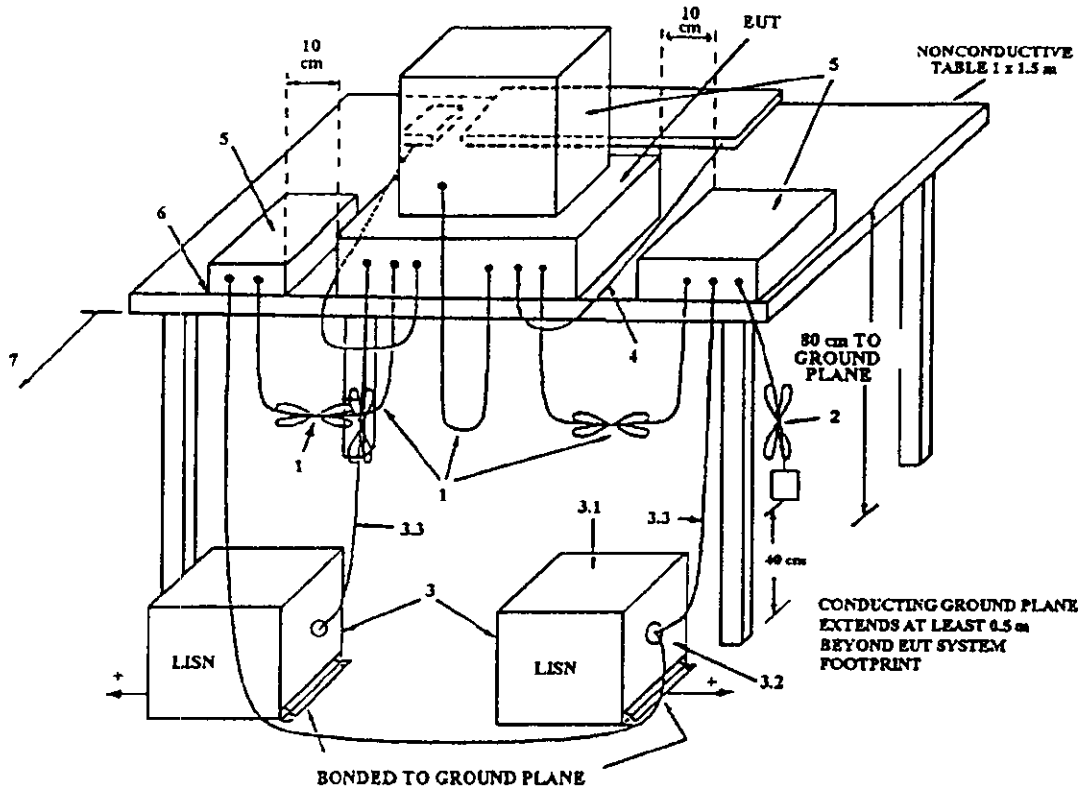


Test setup for Radiated Emission in Restricted Bands



Conducted Emissions Test Setup, 0.15 to 30 MHz

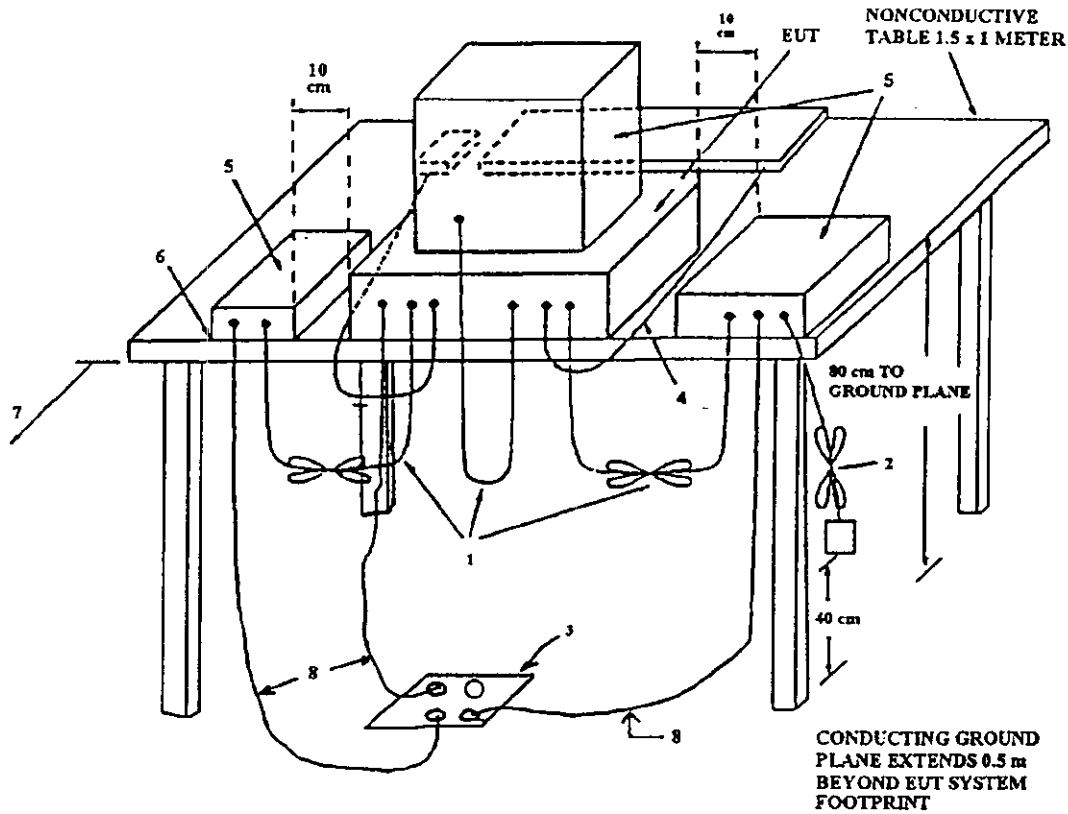
ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE RANGE OF 9 kHz to 40 GHz



**LEGEND:**

1. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth forming a bundle 30 to 40 cm long, hanging approximately in the middle between ground plane and table.
2. I/O cables that are connected to a peripheral shall be bundled in center. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1 m.
3. EUT connected to one LISN. Unused LISN connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, ground plane.
  - 3.1 All other equipment powered from second LISN.
  - 3.2 Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
  - 3.3 LISN at least 80 cm from nearest part of EUT chassis.
4. Cables of hand-operated devices, such as keyboards, mice, etc., have to be placed as close as possible to the controller.
5. Non-EUT components being tested.
6. Rear of EUT, including peripherals, shall be all aligned and flush with rear of tabletop.
7. Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the floor ground plane.

Radiated Emissions Test Setup, 30 to 1000 MHz



**LEGEND:**

1. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth forming a bundle 30 to 40 cm long, hanging approximately in the middle between ground plane and table.
2. I/O cables that are connected to a peripheral shall be bundled in center. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1 m.
3. If LISNs are kept in the test setup for radiated emissions, it is preferred that they be installed under the ground plane with the receptacle flush with the ground plane.
4. Cables of hand-operated devices, such as keyboards, mice, etc., have to be placed as close as possible to the controller.
5. Non-EUT components of EUT system being tested.
6. The rear of all components of the system under test shall be located flush with the rear of the table.
7. No vertical conducting wall used.
8. Power cords drape to the floor and are routed over to receptacle.