

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-XX¹ / 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 : ☒ **Positive²** ☐ **Negative**

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

Total pages - Test Report : **157**

¹ 40400-25 (20 megabytes) and 40400-65 (20 to 60 megabytes)

² See General Remarks.

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

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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
- ☐ - 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
- ☐ - CISPR 22 (1997)
 - ☐ - Group 2
 - ☐ - 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 ϕ

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 :

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Due Date
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: Out of Band Antenna Conducted Emission

The <i>EMISSIONS</i> measurements were performed at the following test location:
--

☐ - Test not applicable
--

■ - SR-2, Shielded Room, 12' x 24' x 10', Metal Chamber

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
HP8900D	802	Peak Power Meter	Hewlett Packard	3607U00653	04/02
HP8445B	809	Automatic Preselector	Hewlett Packard	1442A01127	11/01
HP84811A	801	Power Sensor	Hewlett Packard	3318A05185	04/02
AA-190-10.00.0	655	10' Cable	United Microwave	--	09/02
AWT-18505	6358	PreAmp 6GHz-18GHz	Avantek	F12863 8447	--
HP11870K	652	Mixer 18-26.5 GHz	Hewlett Packard	3003A05400	--
HP11970A	653	Mixer 26.5-40 GHz	Hewlett Packard	3003A07466	--
HP11975A	716	Amplifier 2-8 GHz	Hewlett Packard	2517A00639	03/02
HP8481A	726	Power Sensor	Hewlett Packard	1926A27528	08/02
HP437A	572	Power Meter	Hewlett Packard	3125U19308	04/02

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

☐ - FailRemarks: Tested at customer's test facility.

Emissions Test Conditions: Radiated Emission in Restricted Bands

The <i>EMISSIONS</i> 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 μ H /250 μ H/50 Ω / 0.25 μ 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

☐ - FailRemarks: _____

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 ± 2 dB for conducted emissions and ± 4 dB for radiated emissions.

Equipment Received Date: 24 September 2001

Testing Start Date: 24 September 2001

Testing End Date: 04 October 2001

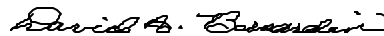
- TÜV PRODUCT SERVICE, INC. -

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)

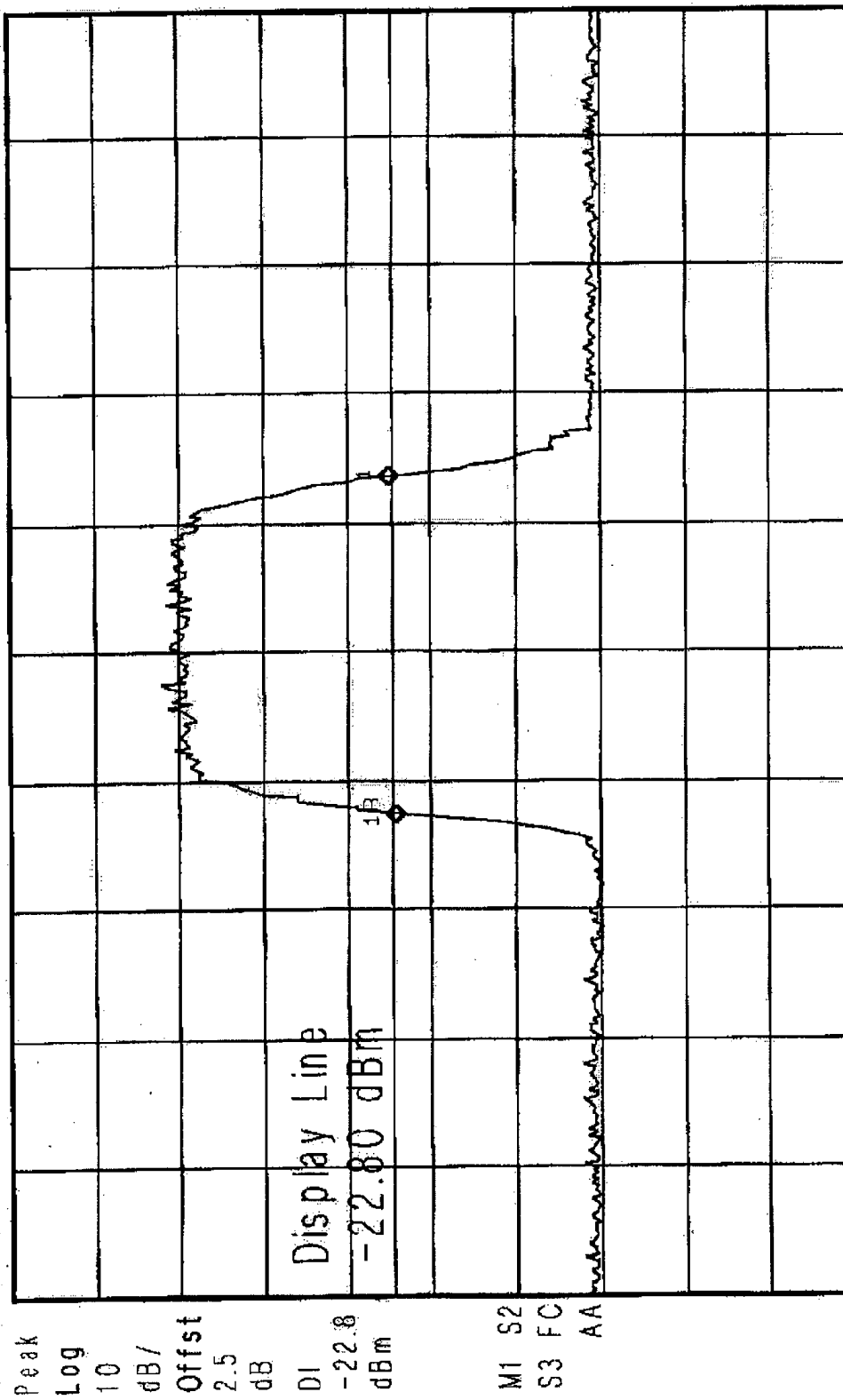
Report No. SC106727

Mode: *QAM16*
Highband CF

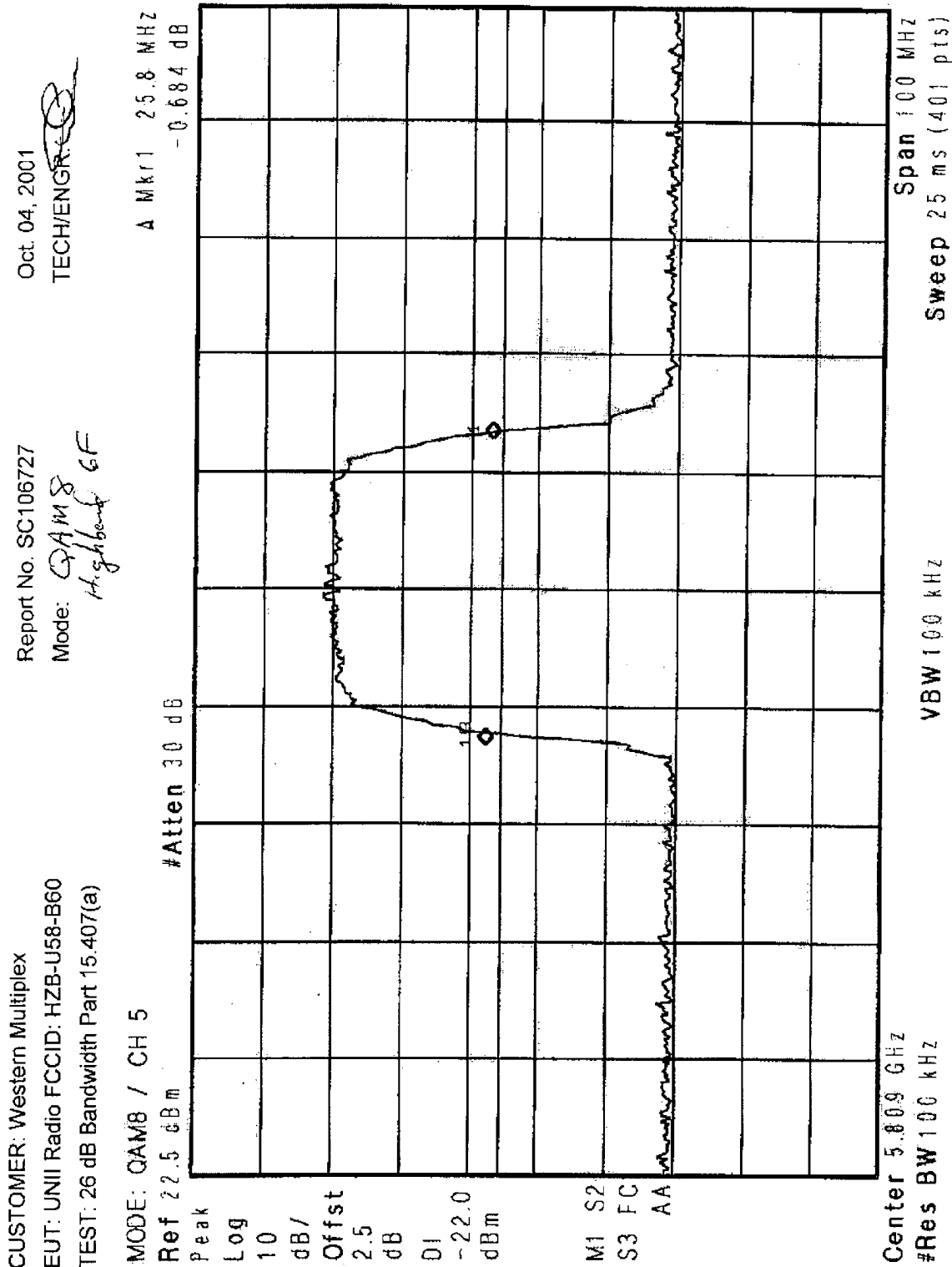
Oct. 04, 2001

TECH/ENGR: *[Signature]*

MODE: *QAM16* / CH 5
Ref 22.5 dBm
#Atten 30 dB
Δ Mkr1 26.3 MHz
0.846 dB



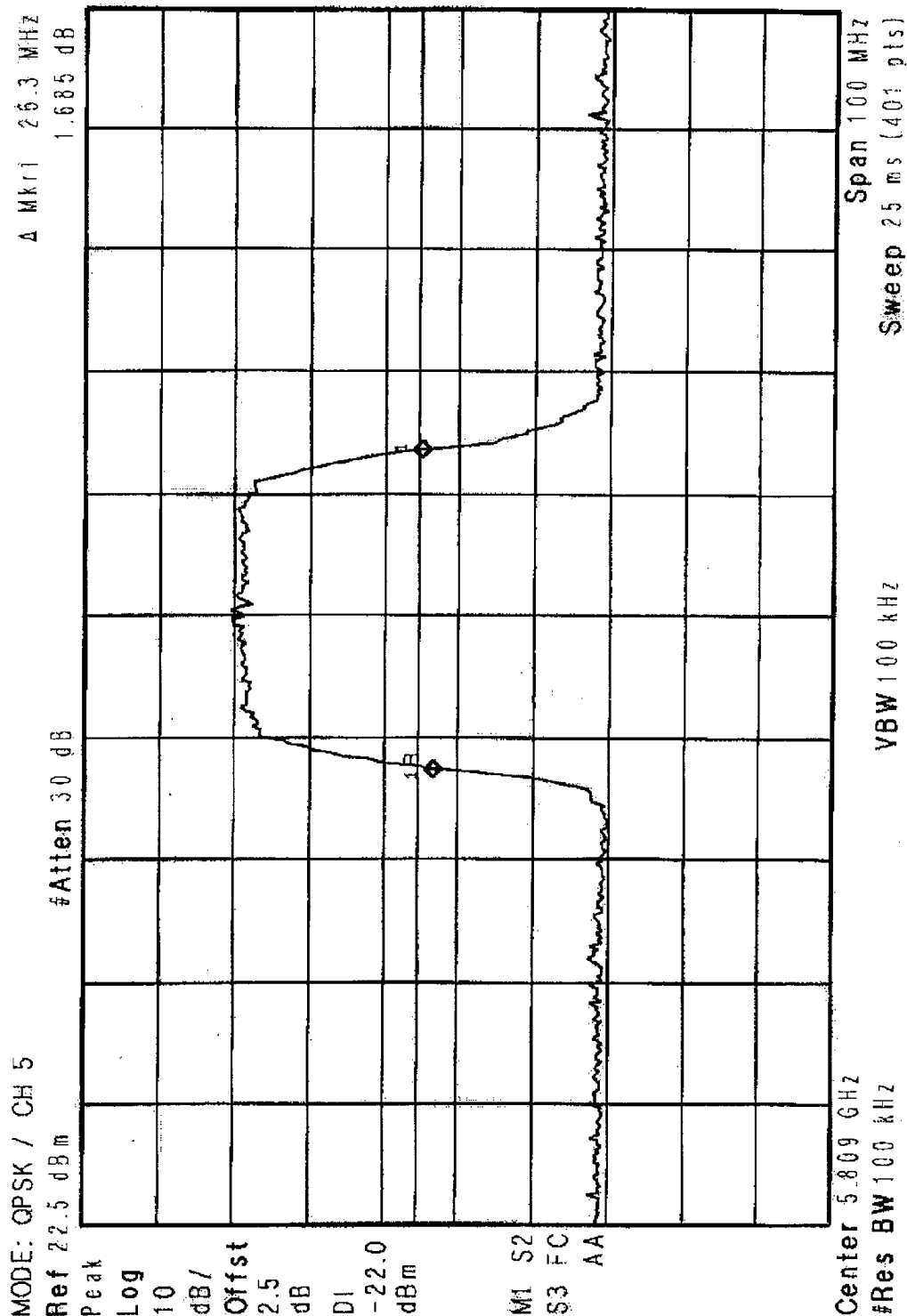
Center 5.809 GHz
#Res BW 100 kHz
Span 100 MHz
Sweep 25 ms (401 pts)
VBW 100 kHz



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

Report No. SC106727
Mode: *GPS K Highband 6F*

Oct. 04, 2001
TECH/ENGR *[Signature]*



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.

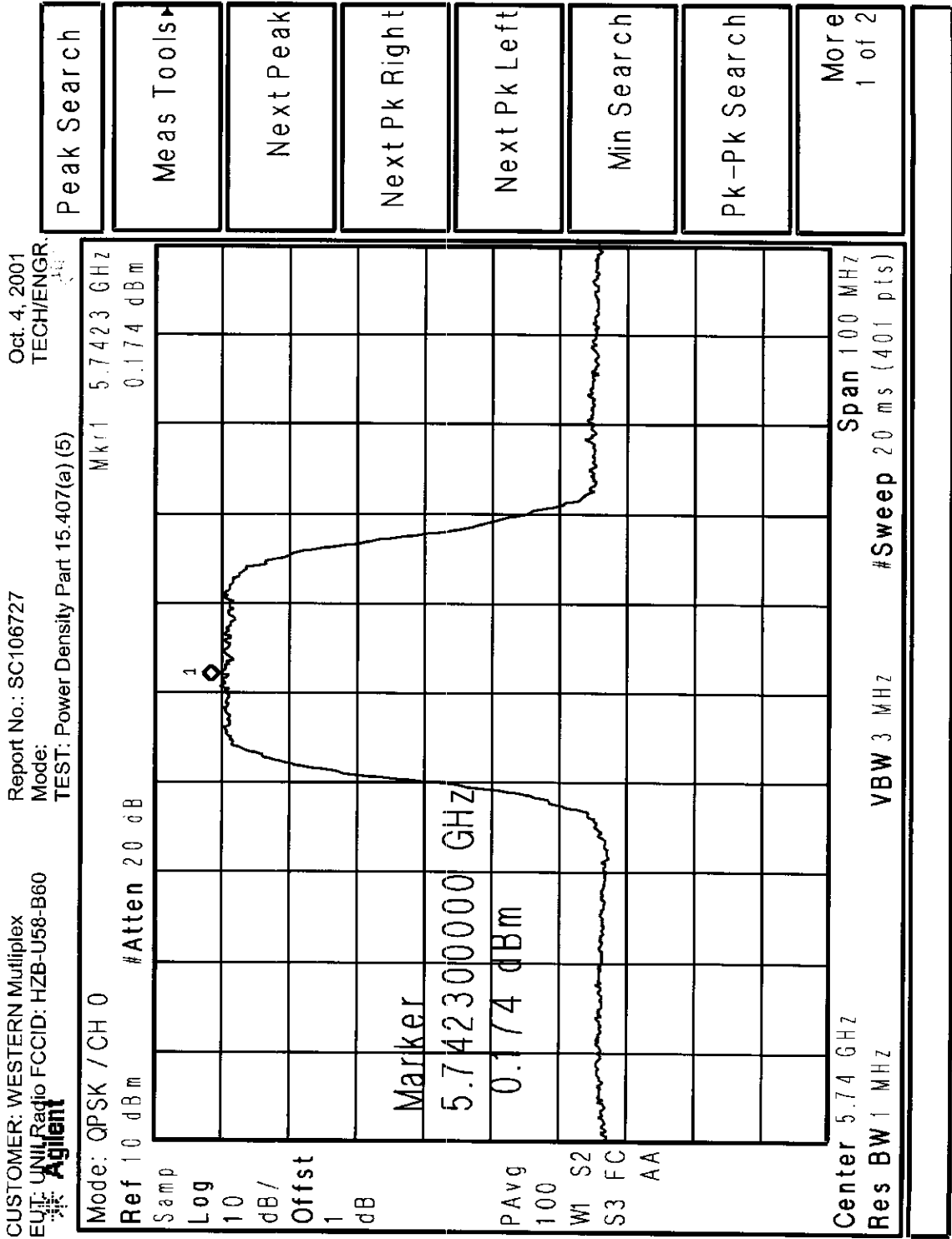
Model UNII Radio FCC ID: HZB-U58-B60 was tested and passed all tests.

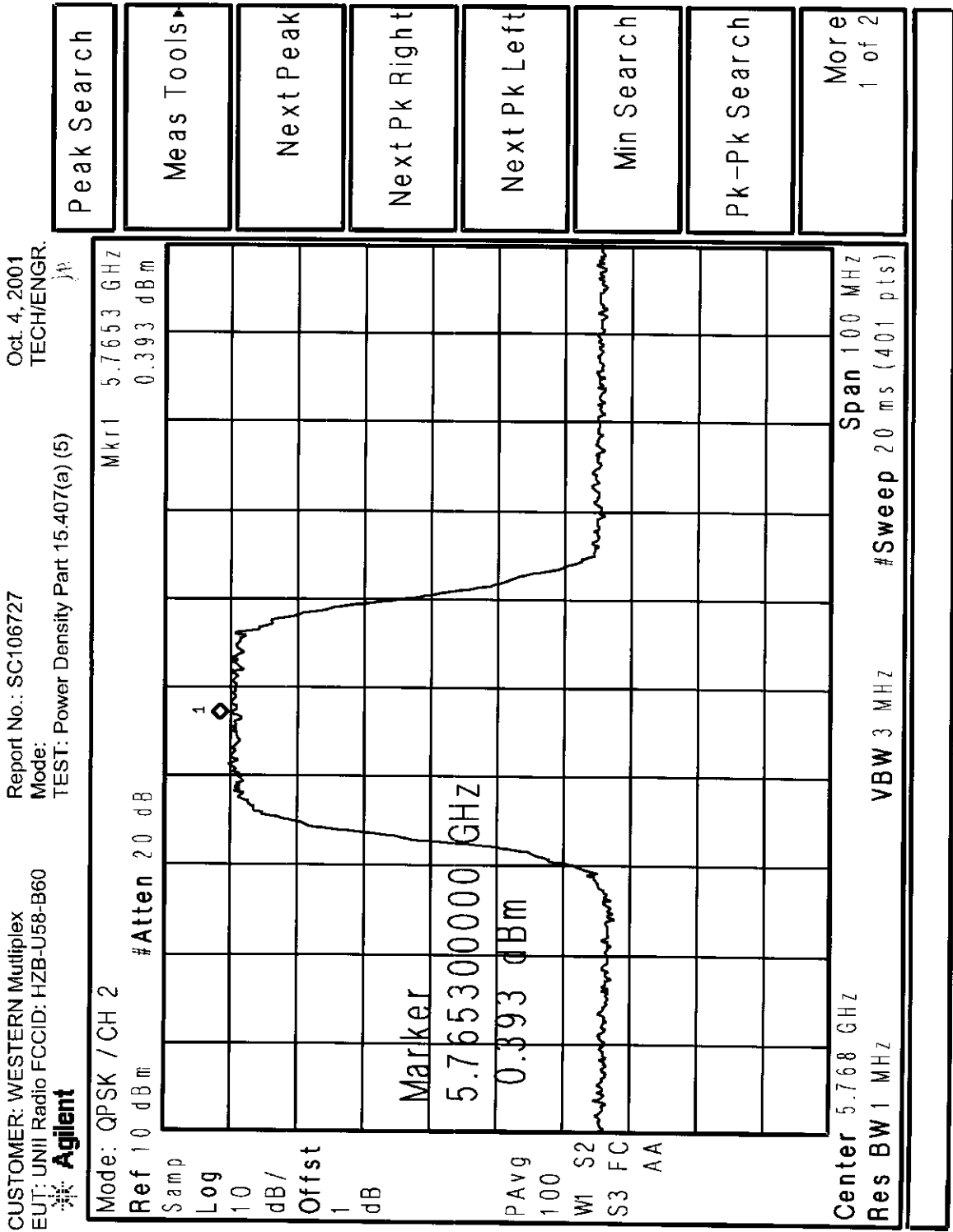
See data and test equipment attached.

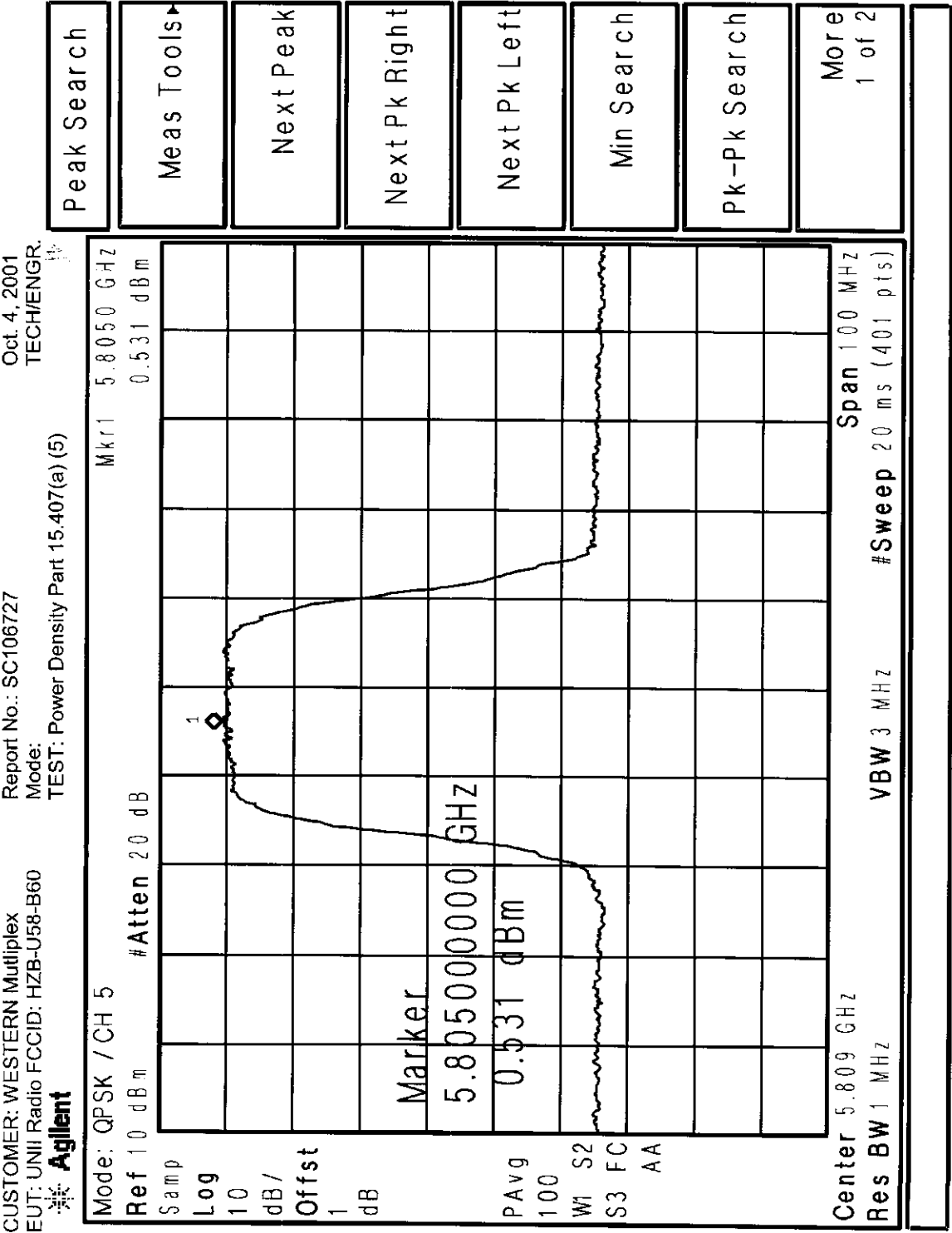


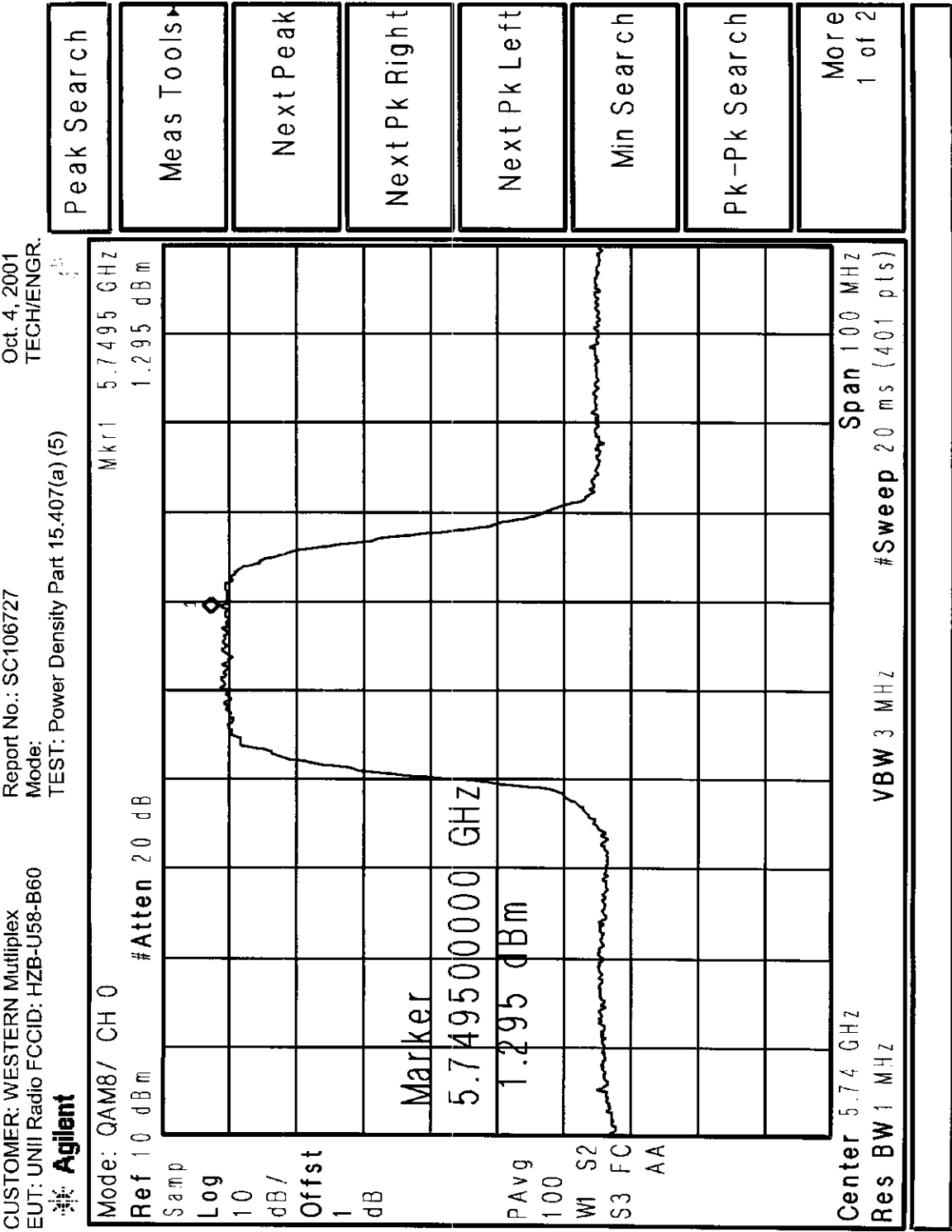
Don Leimer, V.P. Engineering

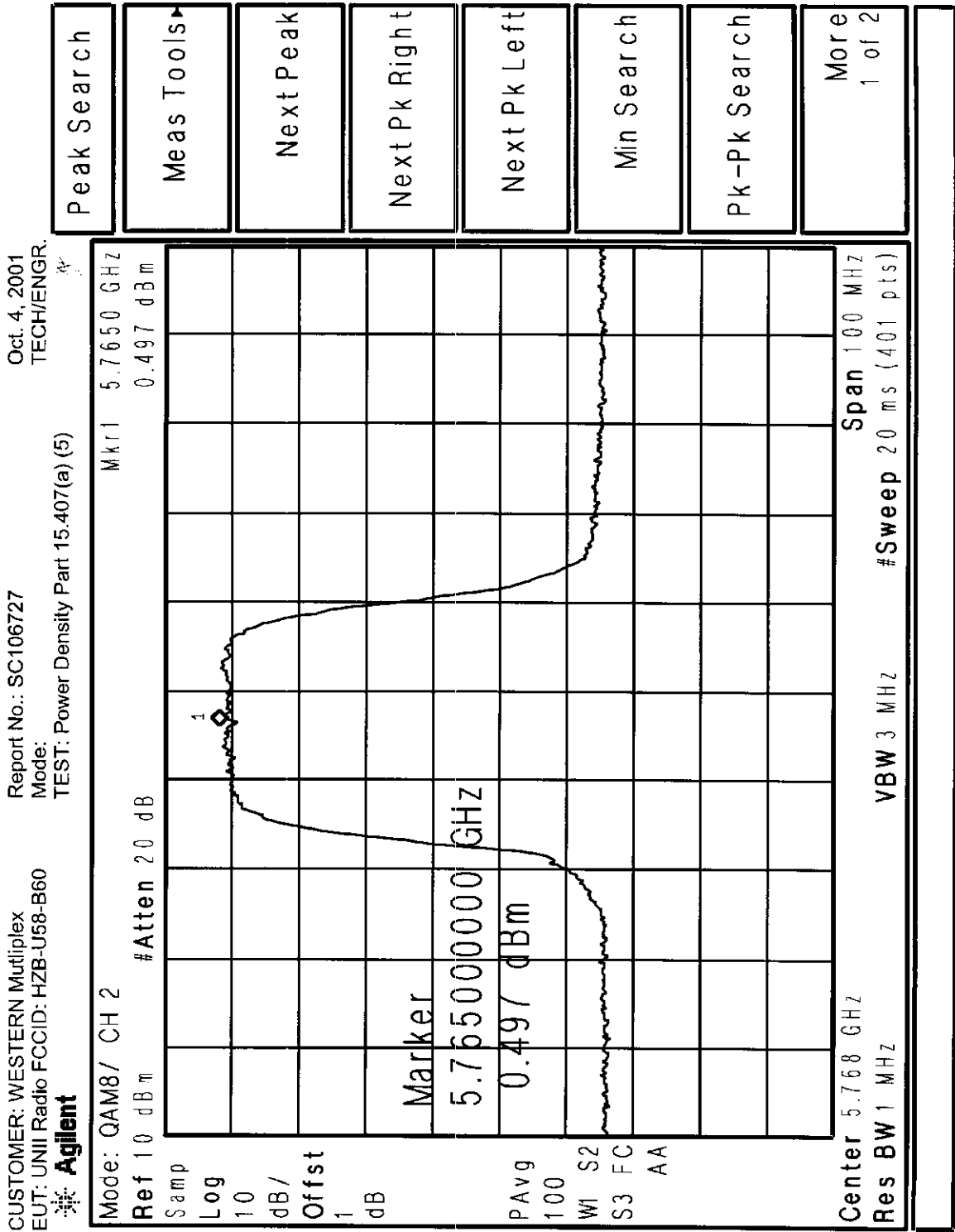
Western Multiplex
3780 Kilroy Airport Way
Suite 500
Long Beach, CA 90806
562-733 3007
562-733-3003

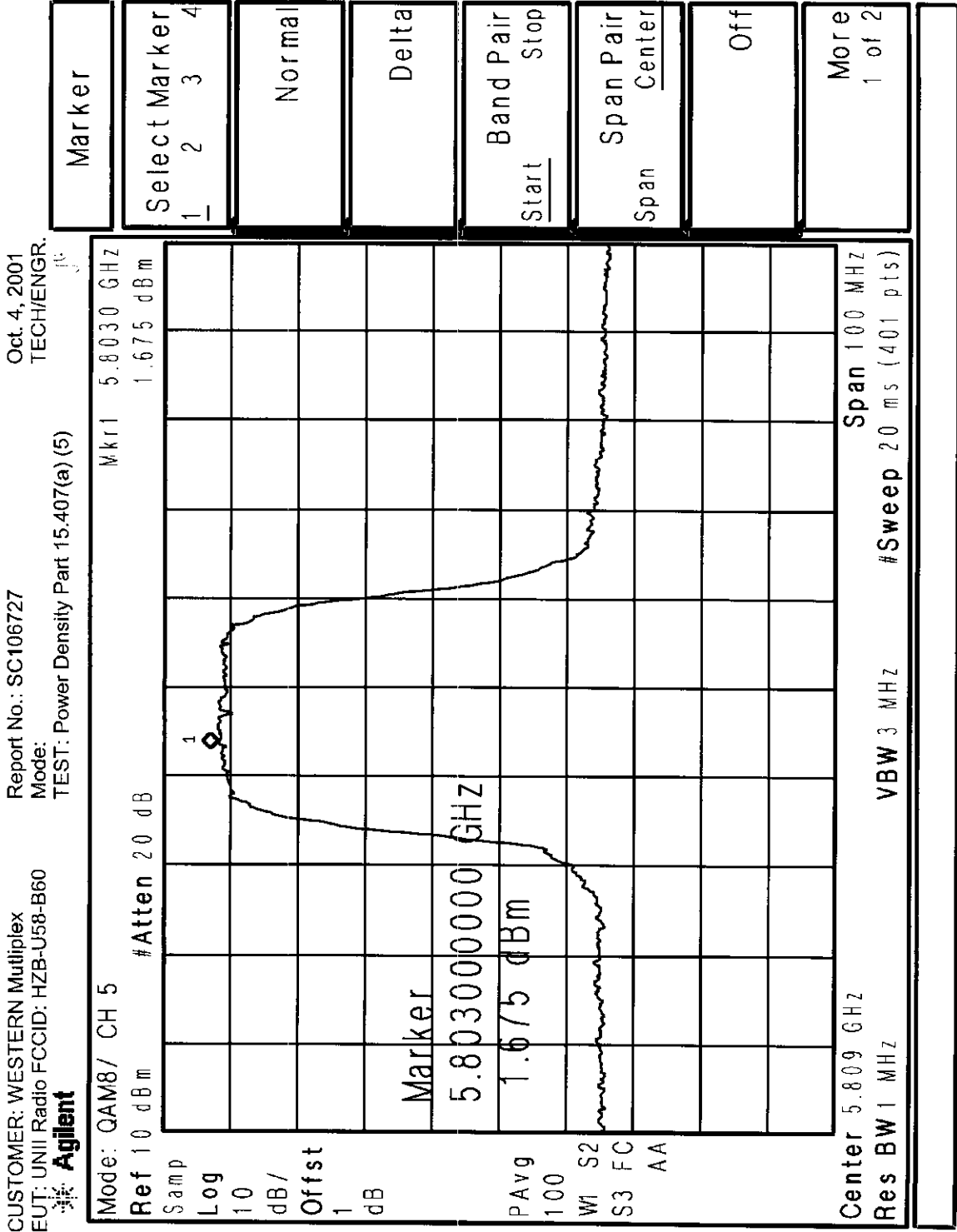


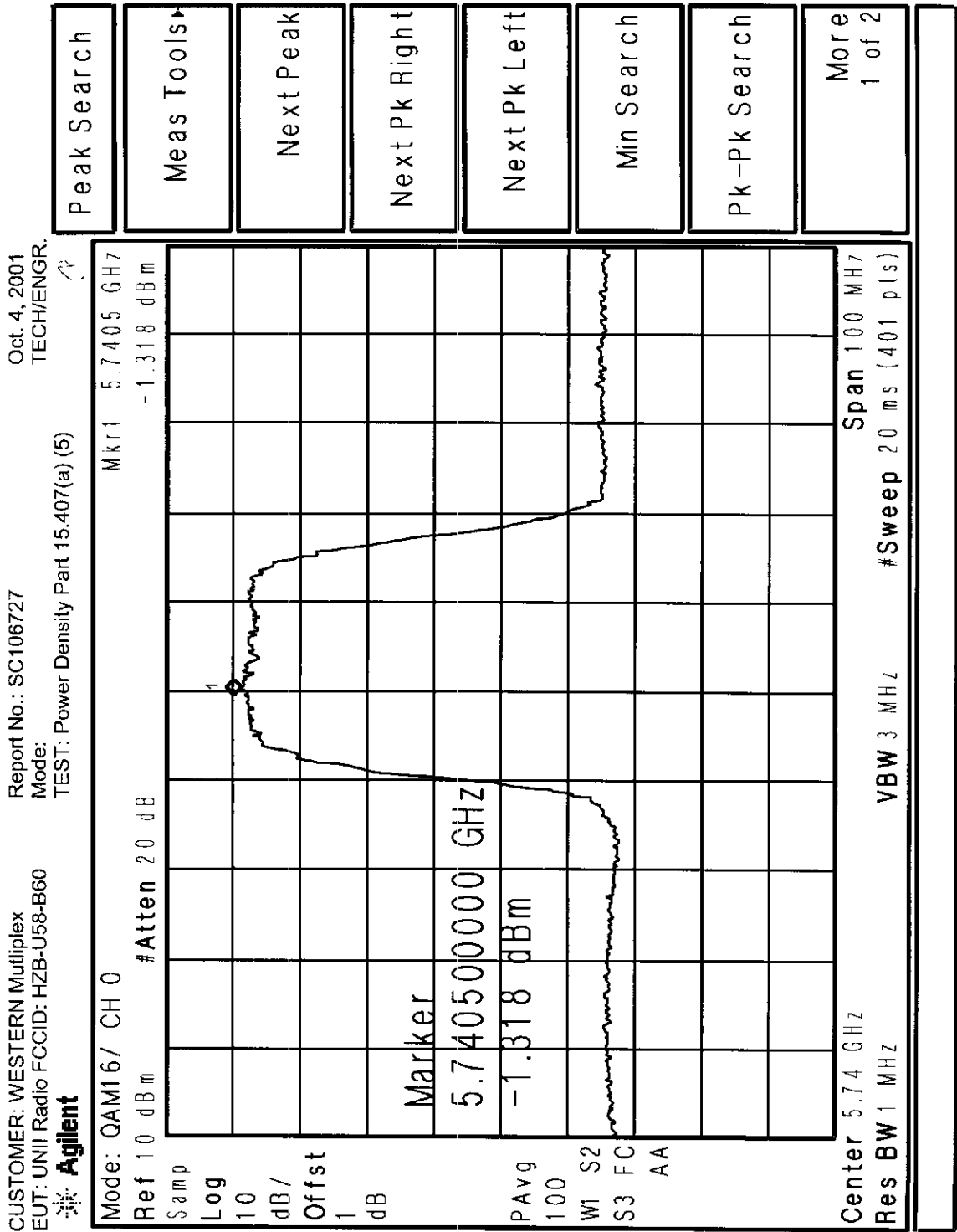


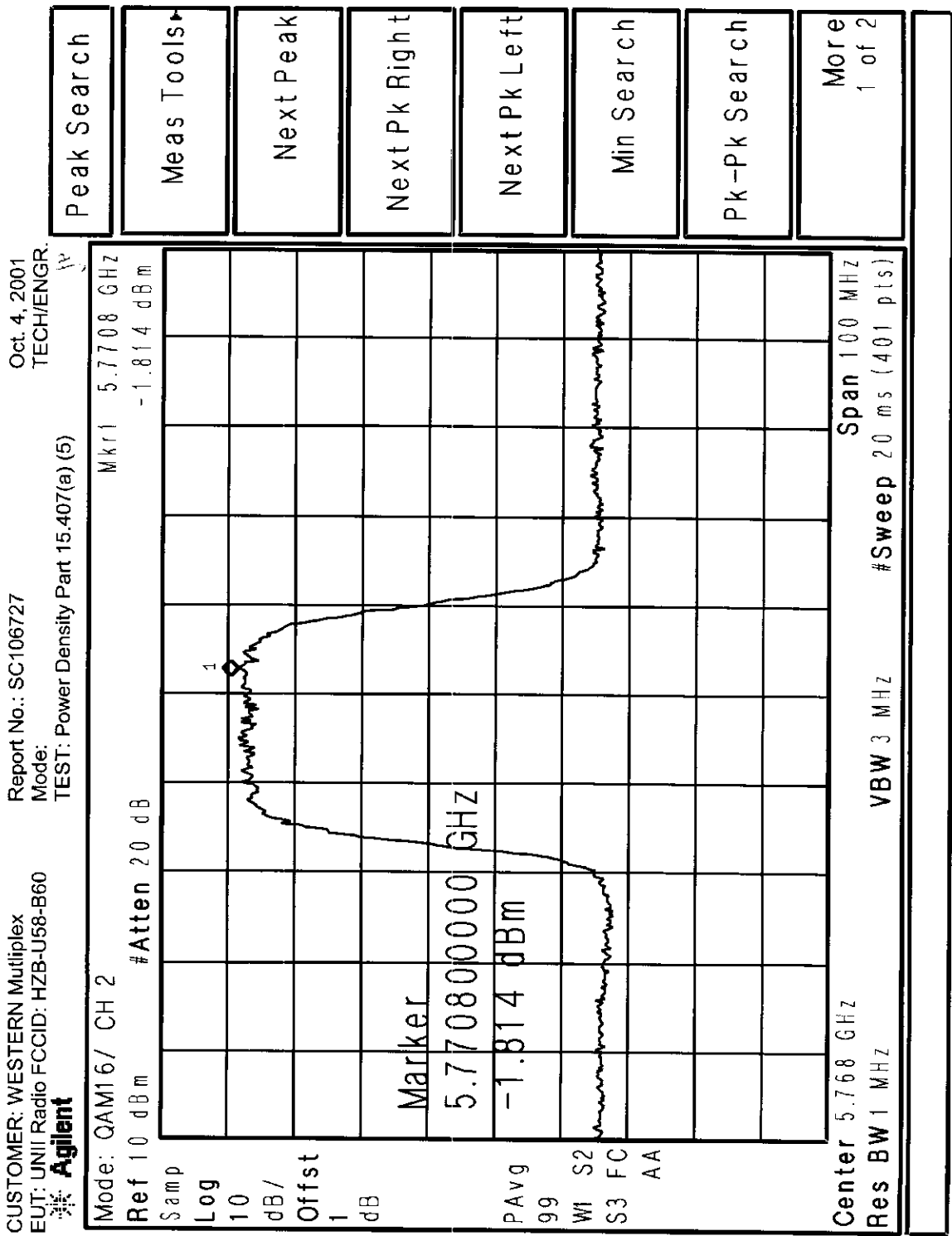


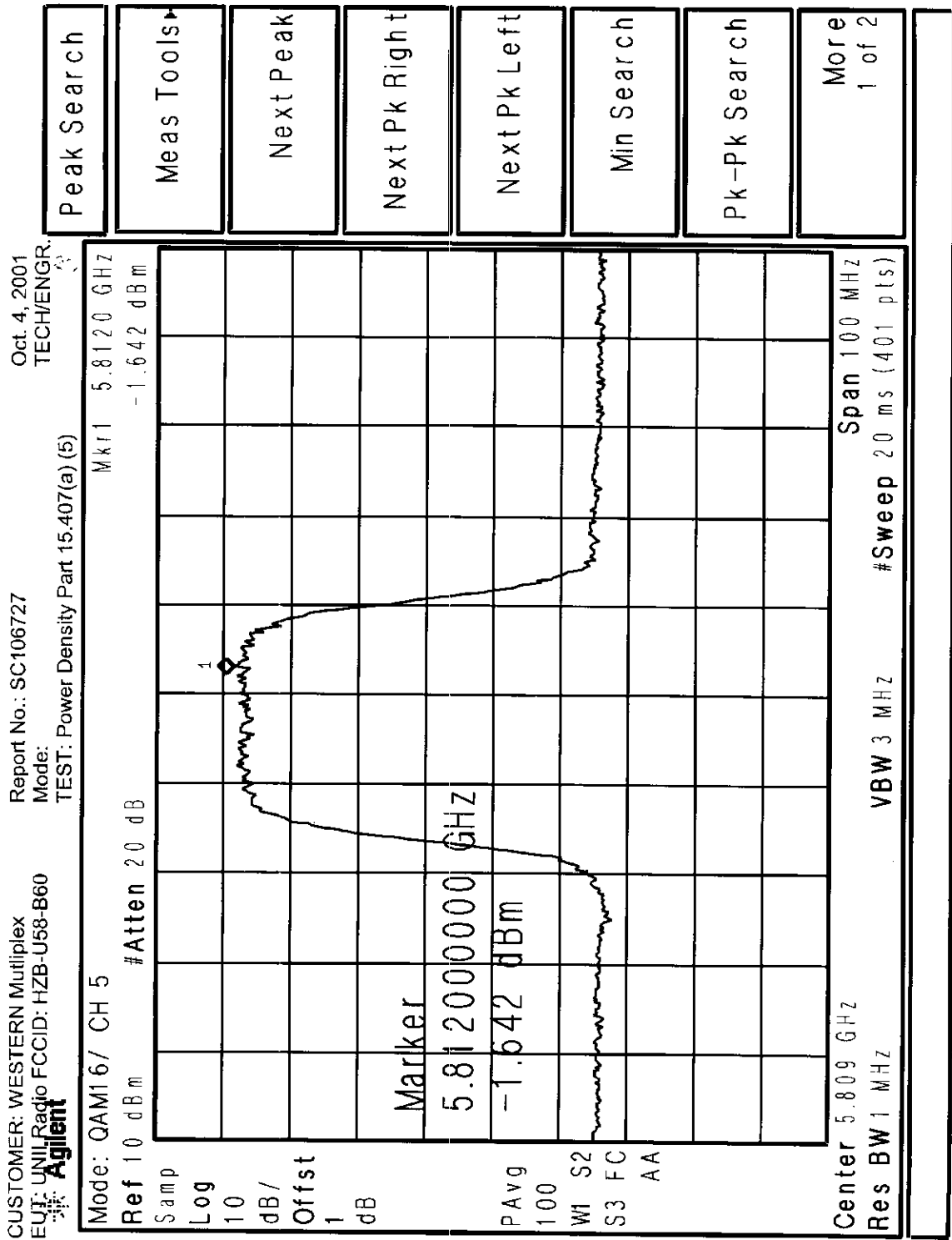


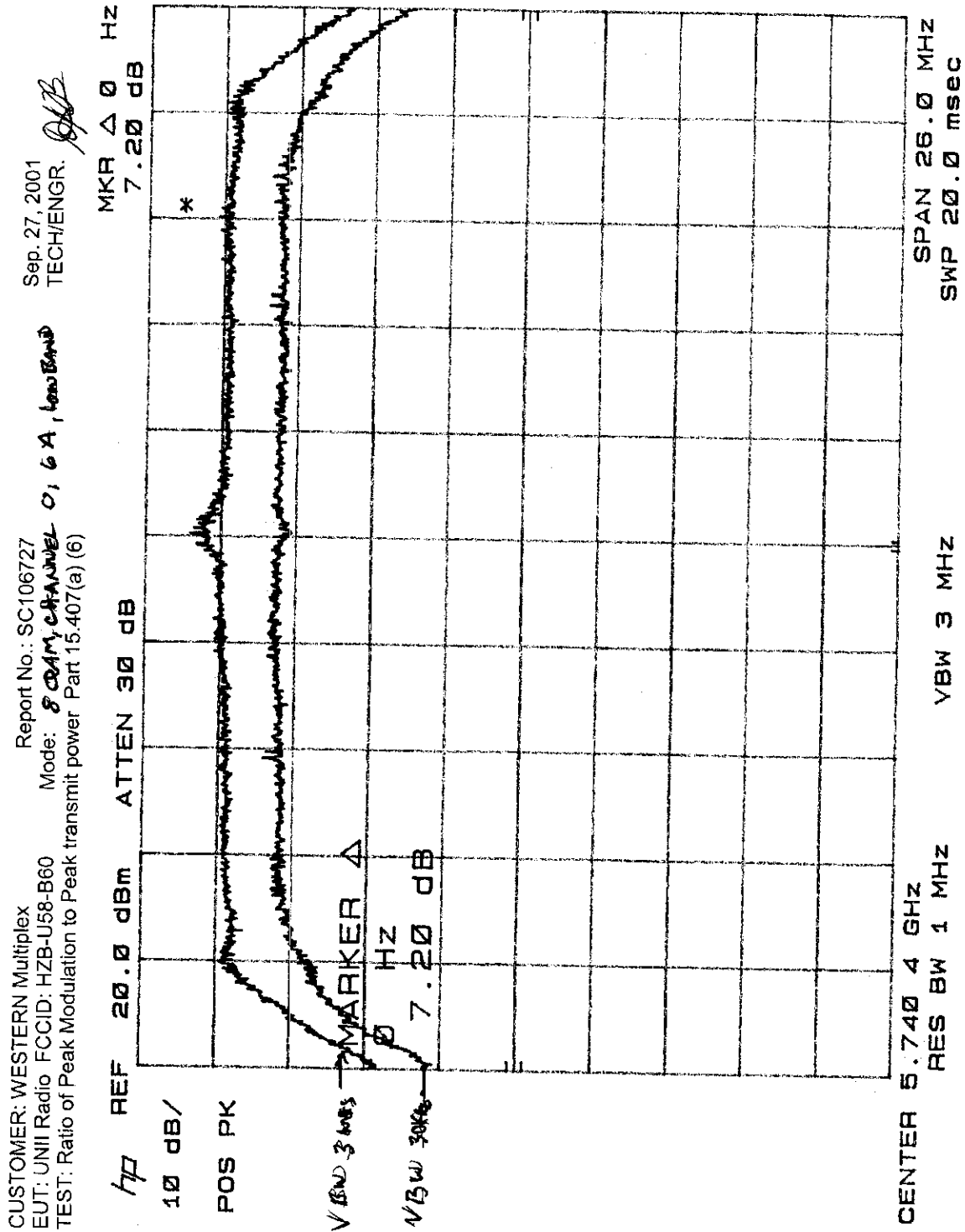


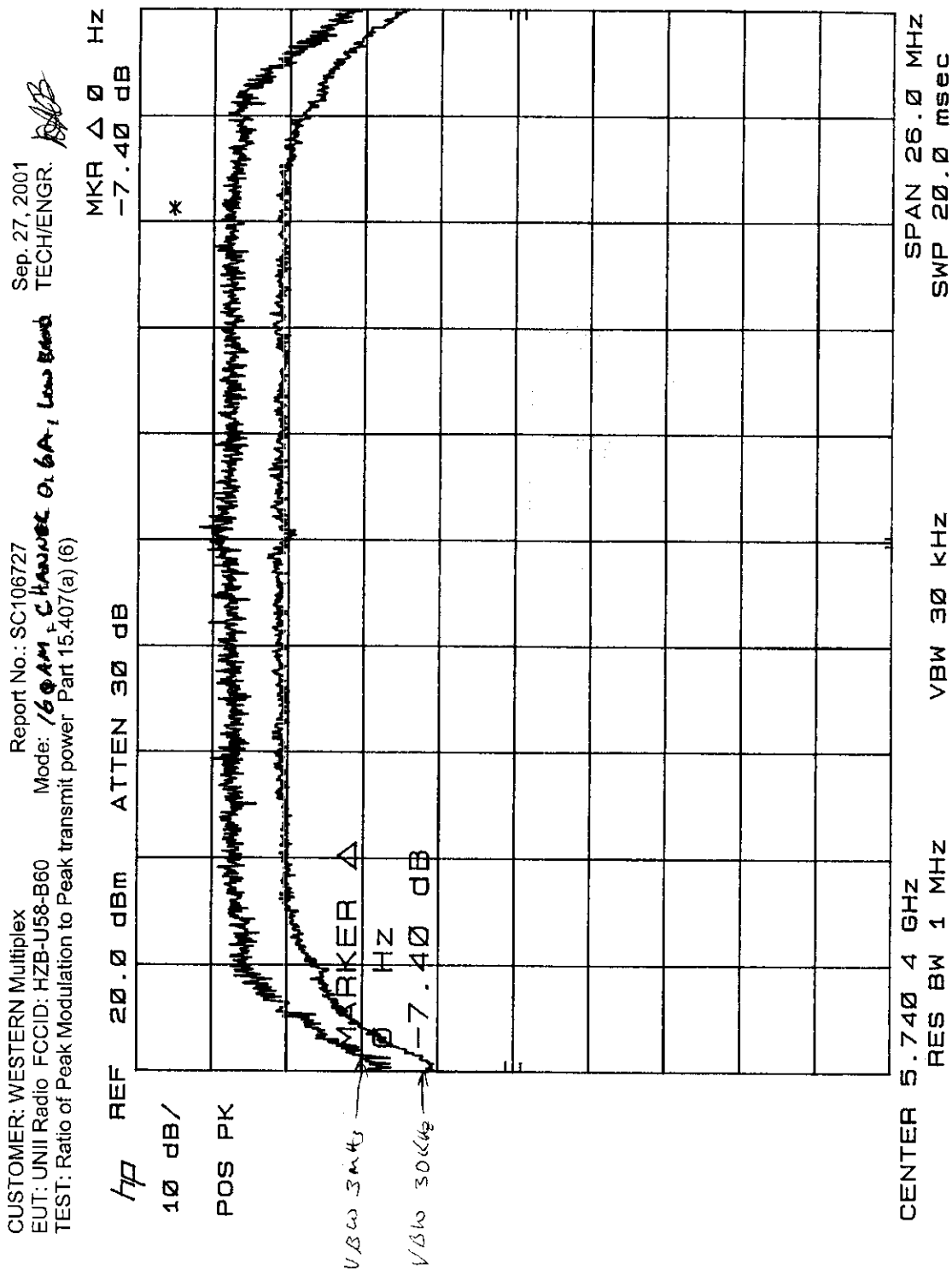


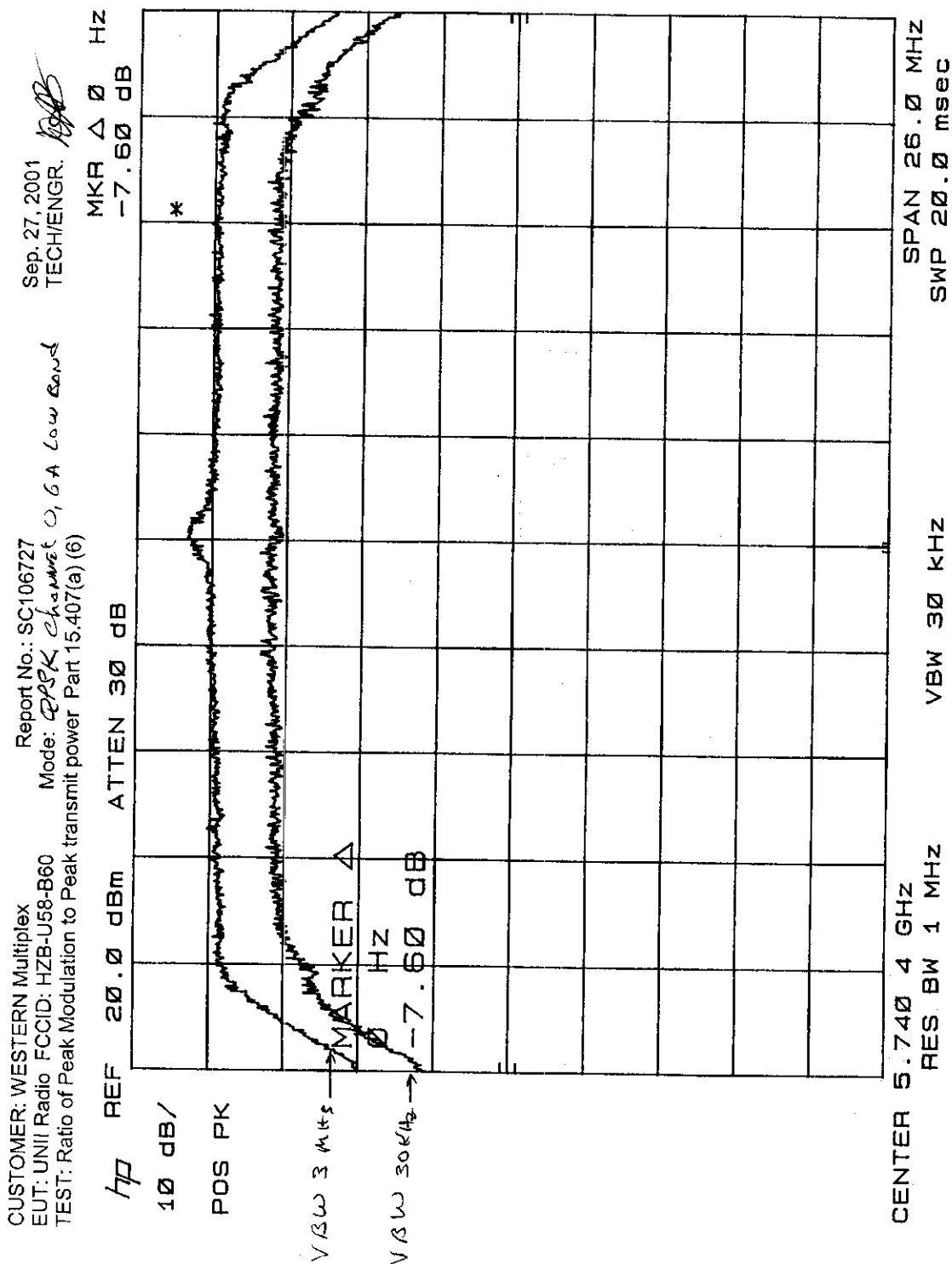


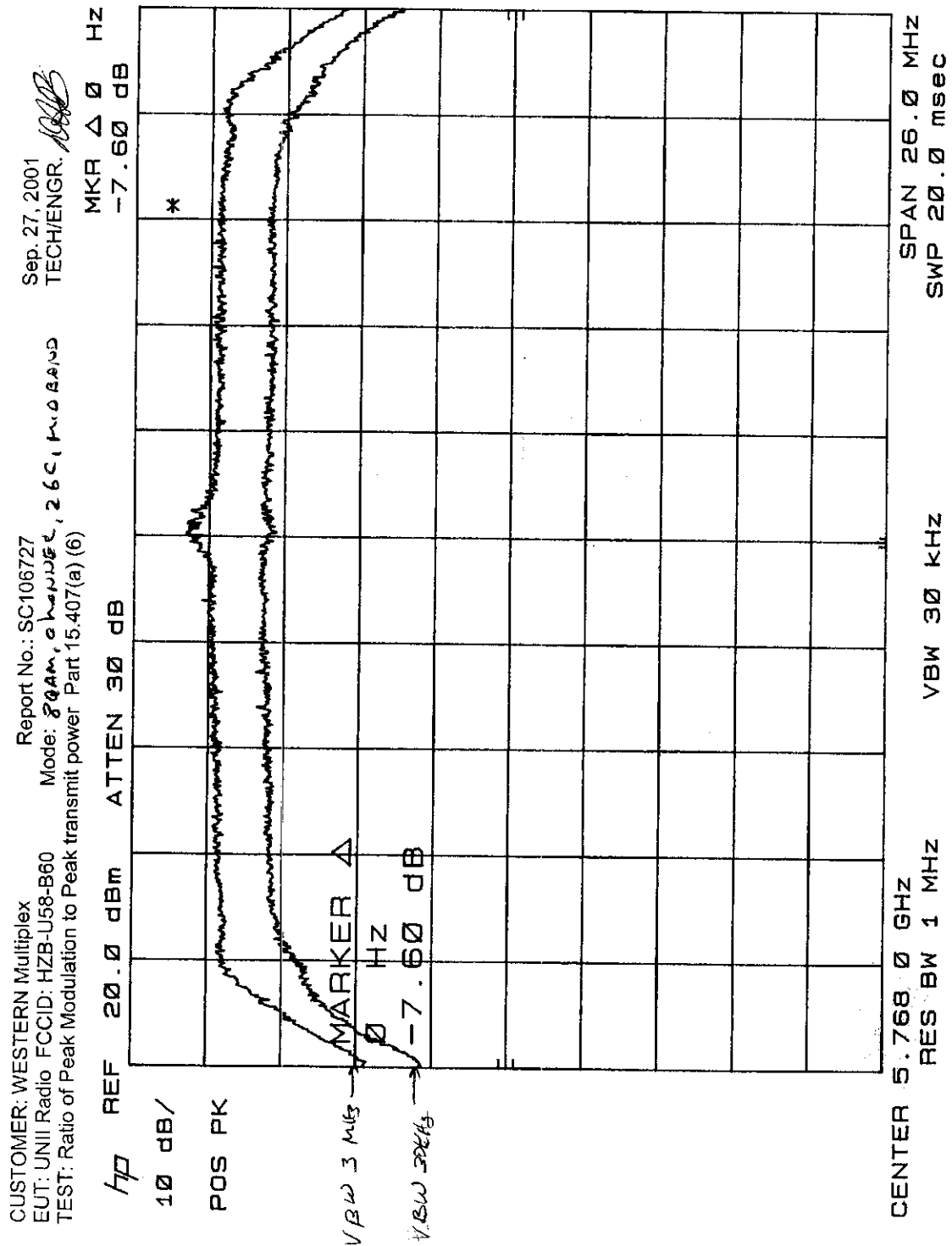


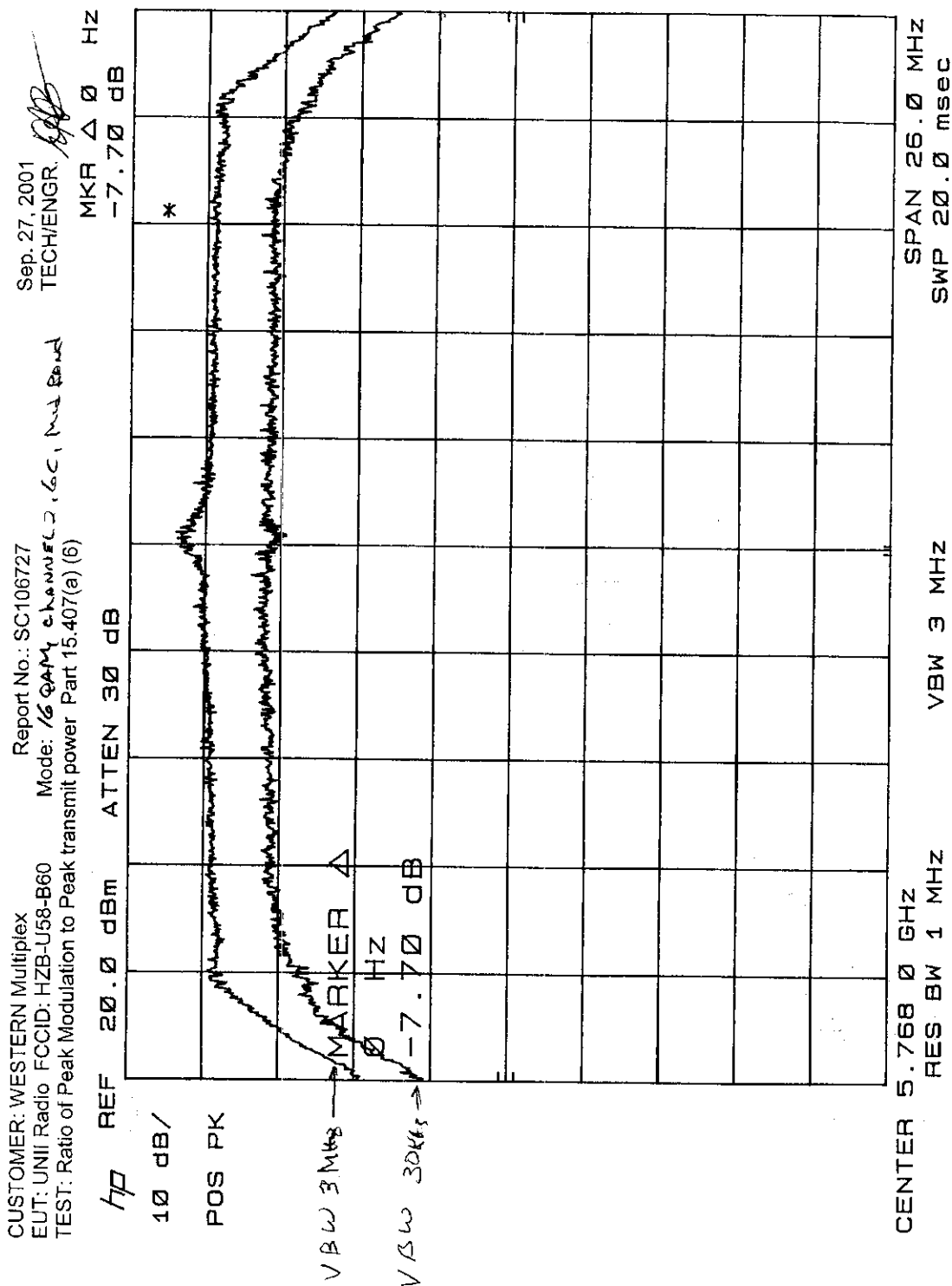


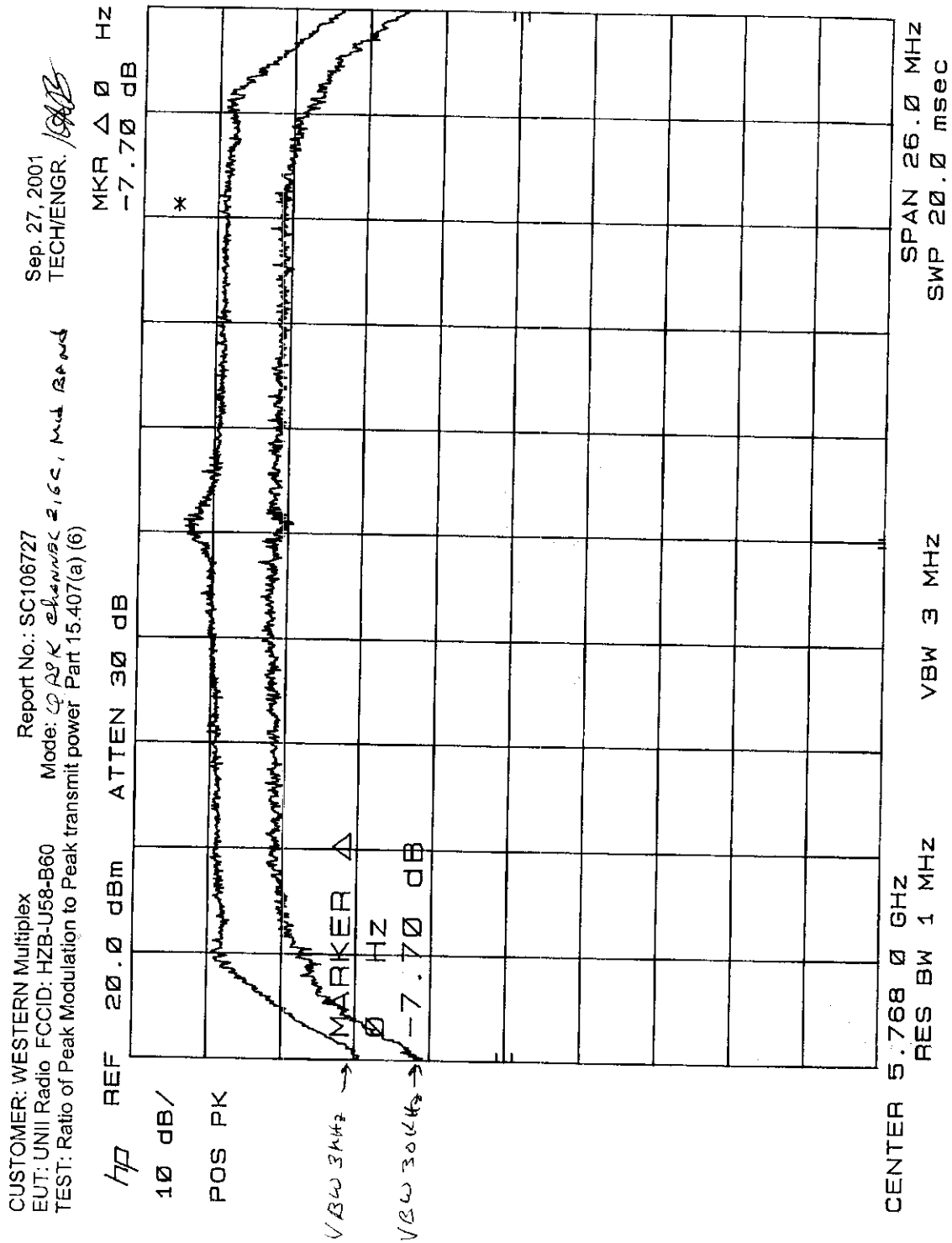


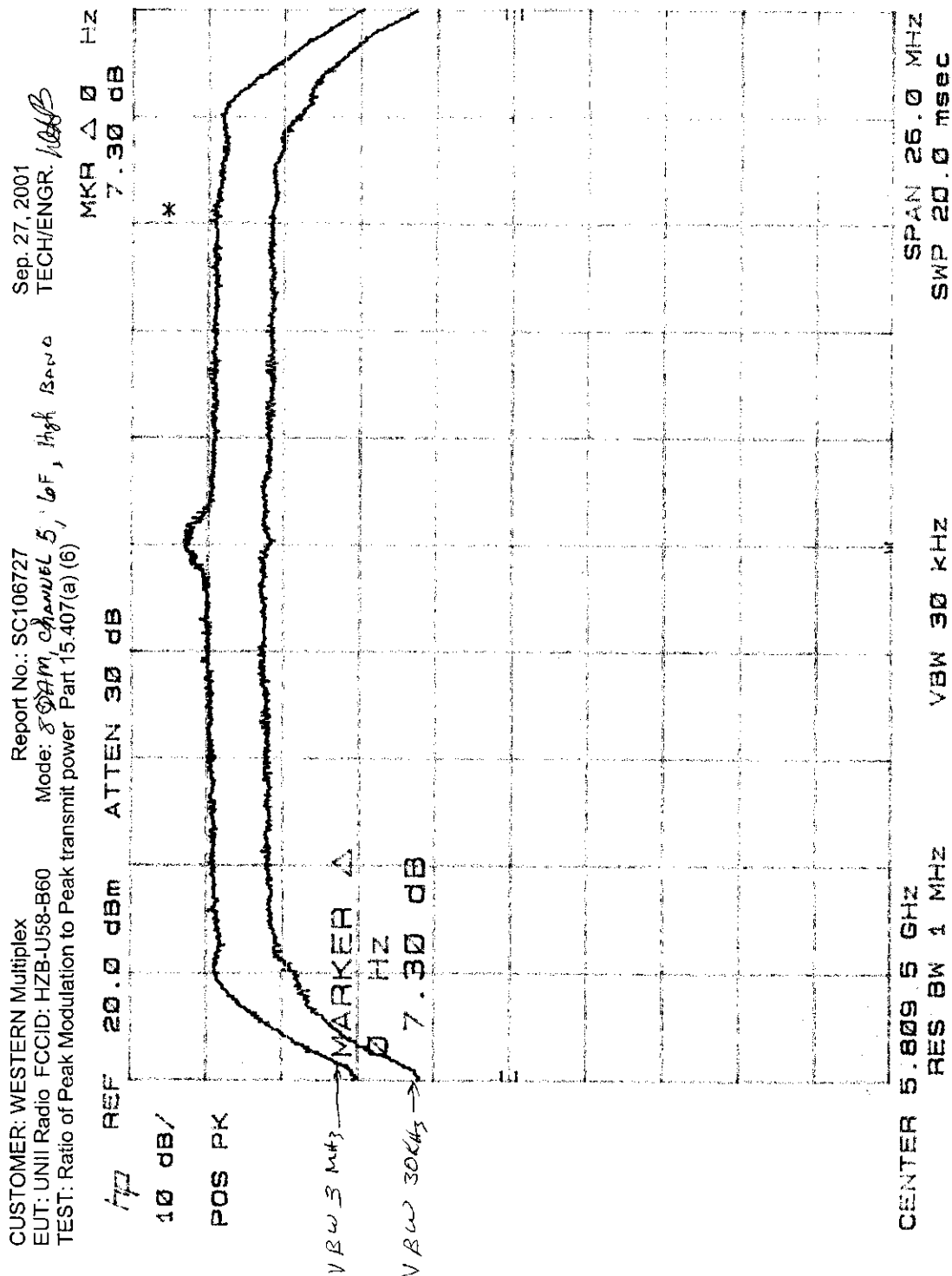


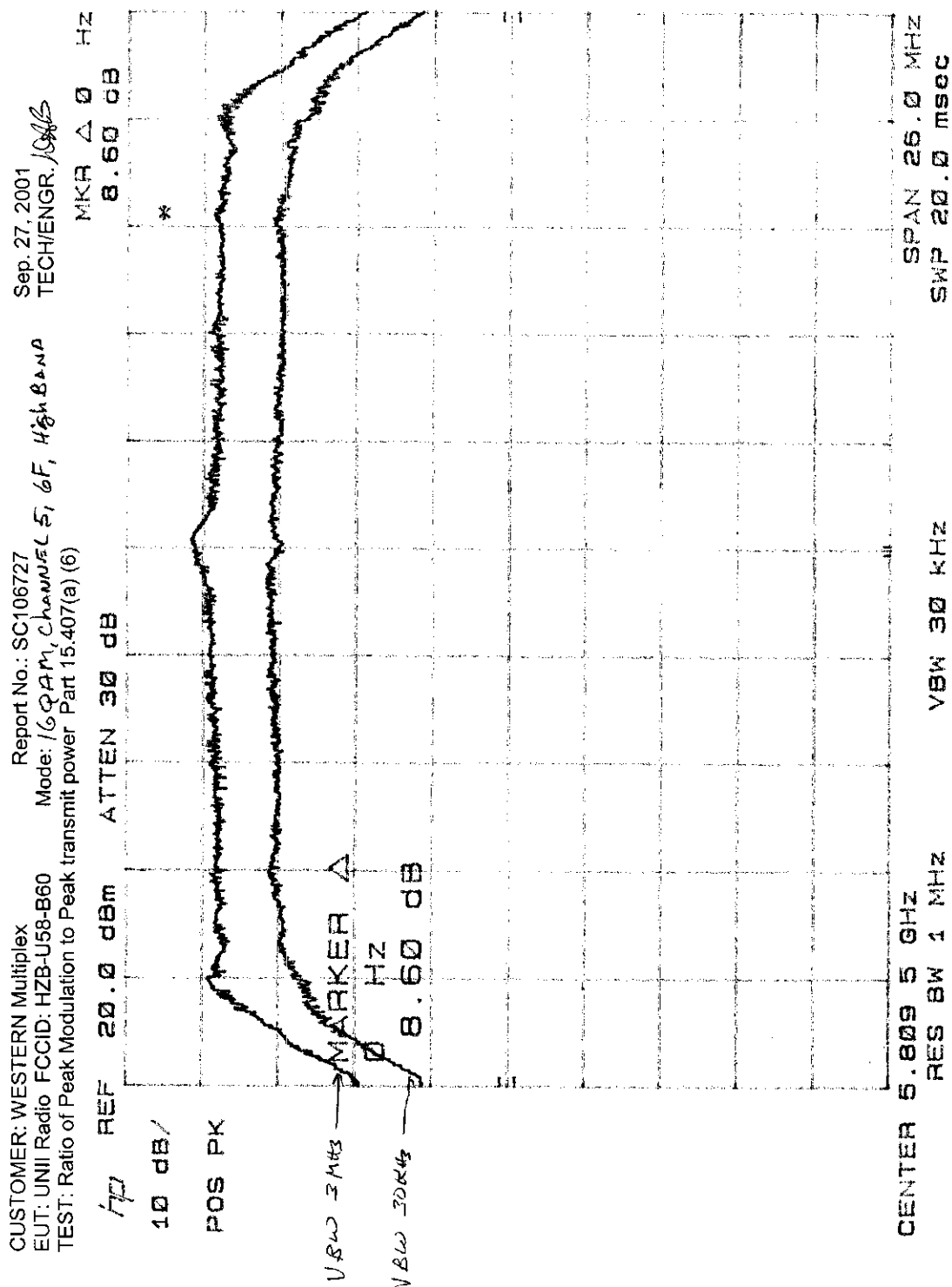






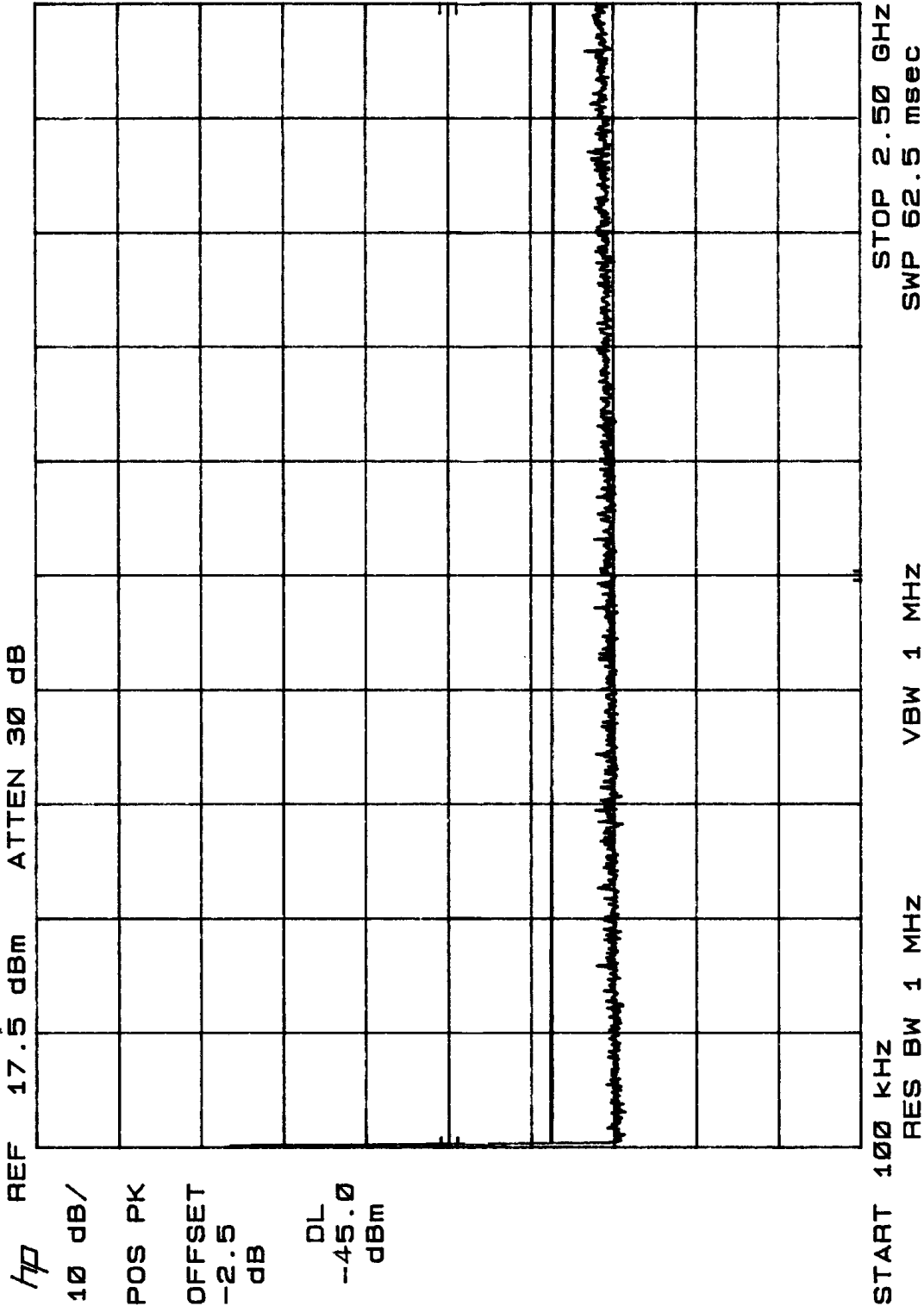






CUSTOMER: WESTERN Multiplex
EUT: UNII Radio FCCID: HZB-U58-B60
TEST: Out of Band Antenna Conducted Part 15.407(b)

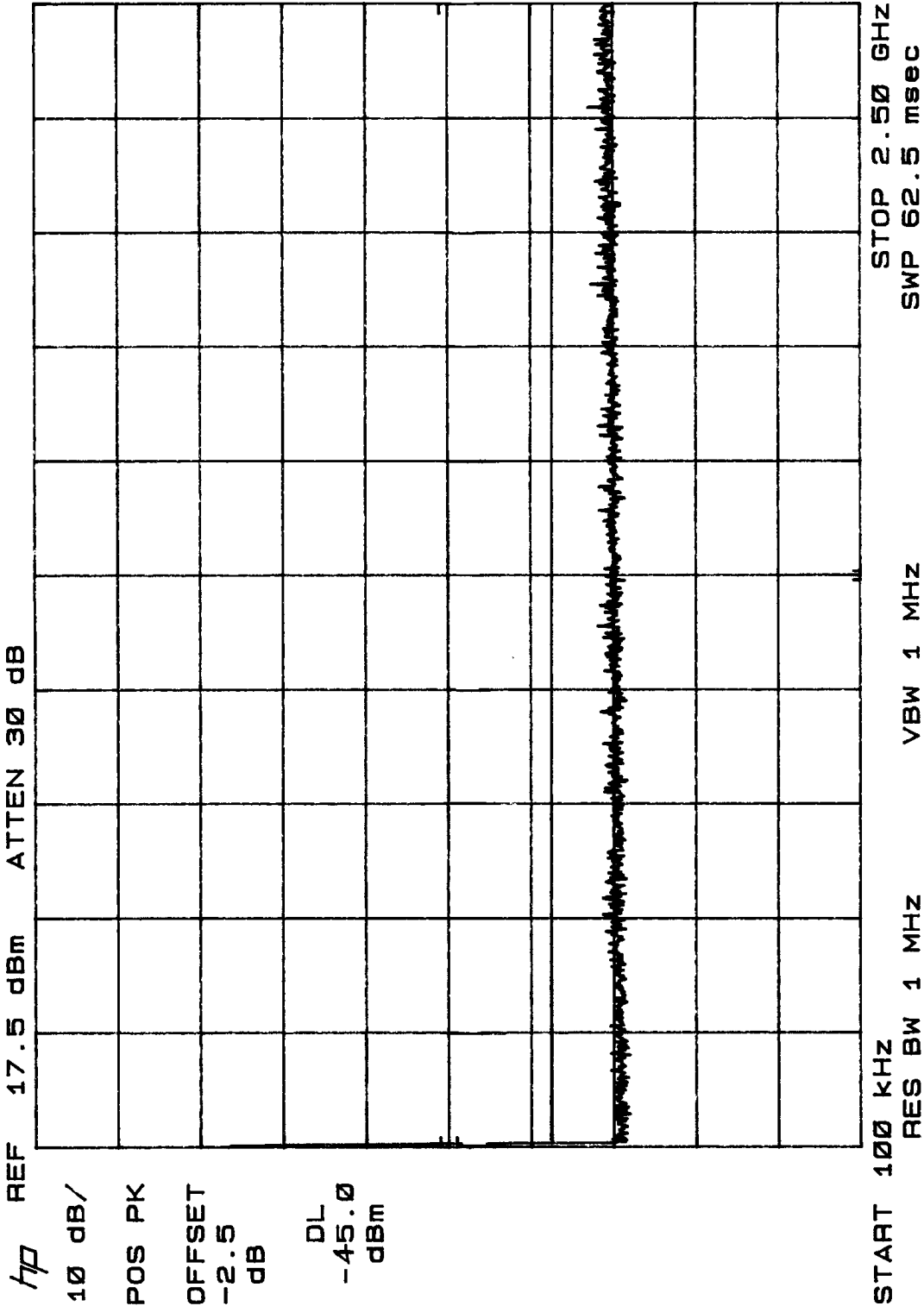
Report No.: SC106727
Mode: *QPSK 3/4 Channel*
Sep. 25, 2001
TECH/ENGR. *JSB*



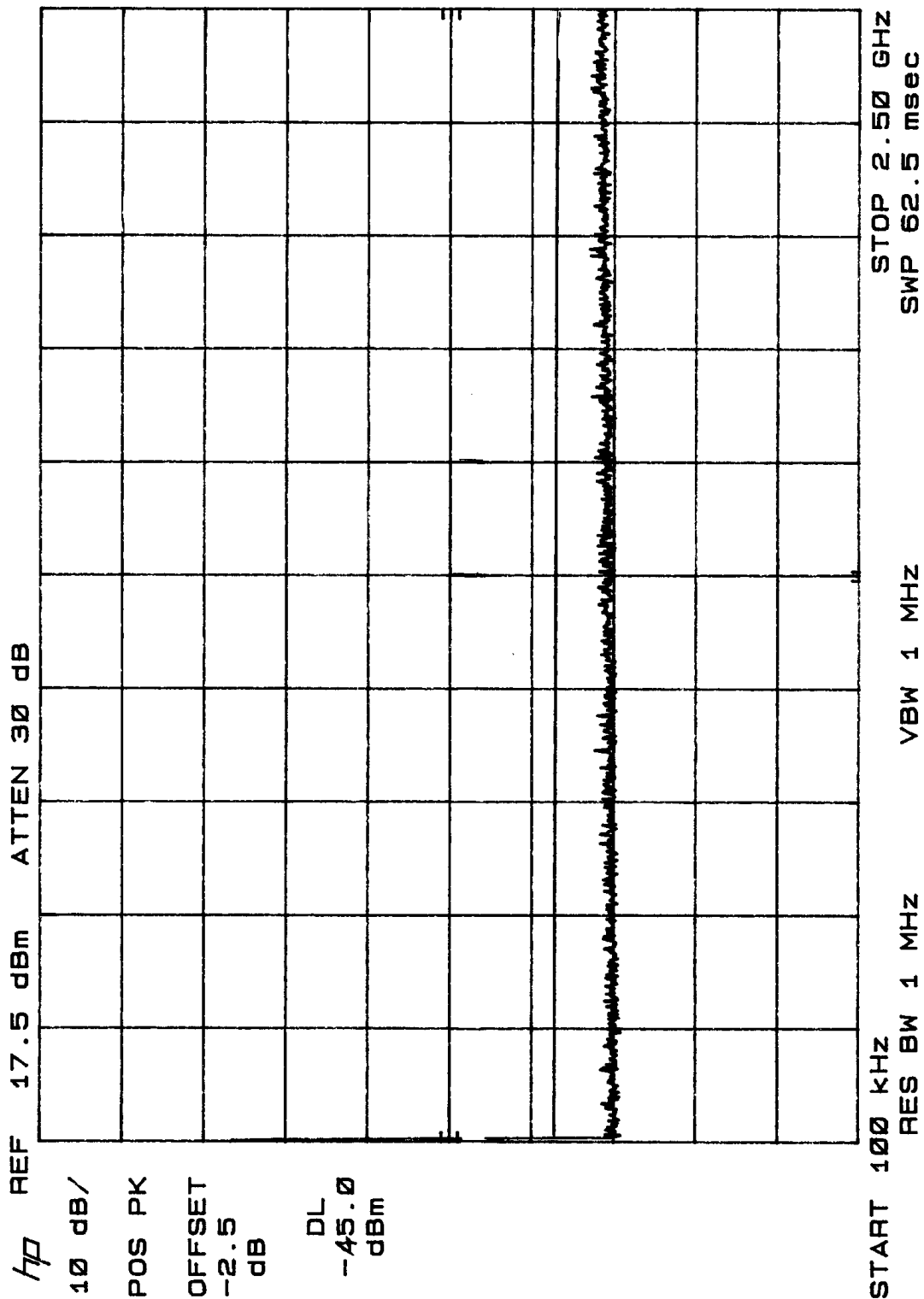
Sep. 25, 2001
TECH/ENGR. *GAJ*

Report No.: SC106727
Mode: *16 QAM Channel 10*

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: 2 QAM Channel, C
Sep. 25, 2001
TECH/ENGR. *EdL*

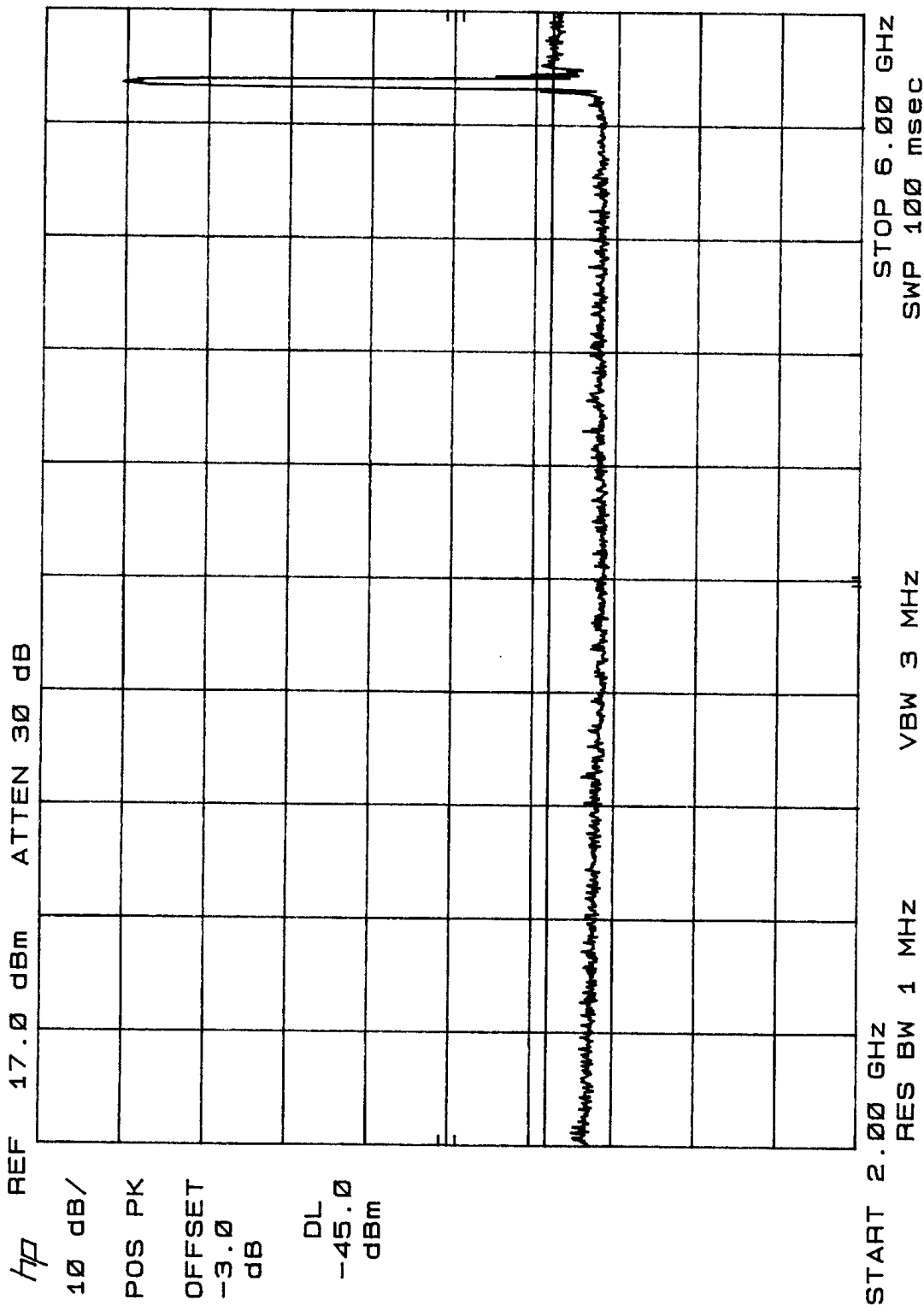


Sep. 27, 2001
TECH/ENGR. *[Signature]*

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

Report No.: SC106727

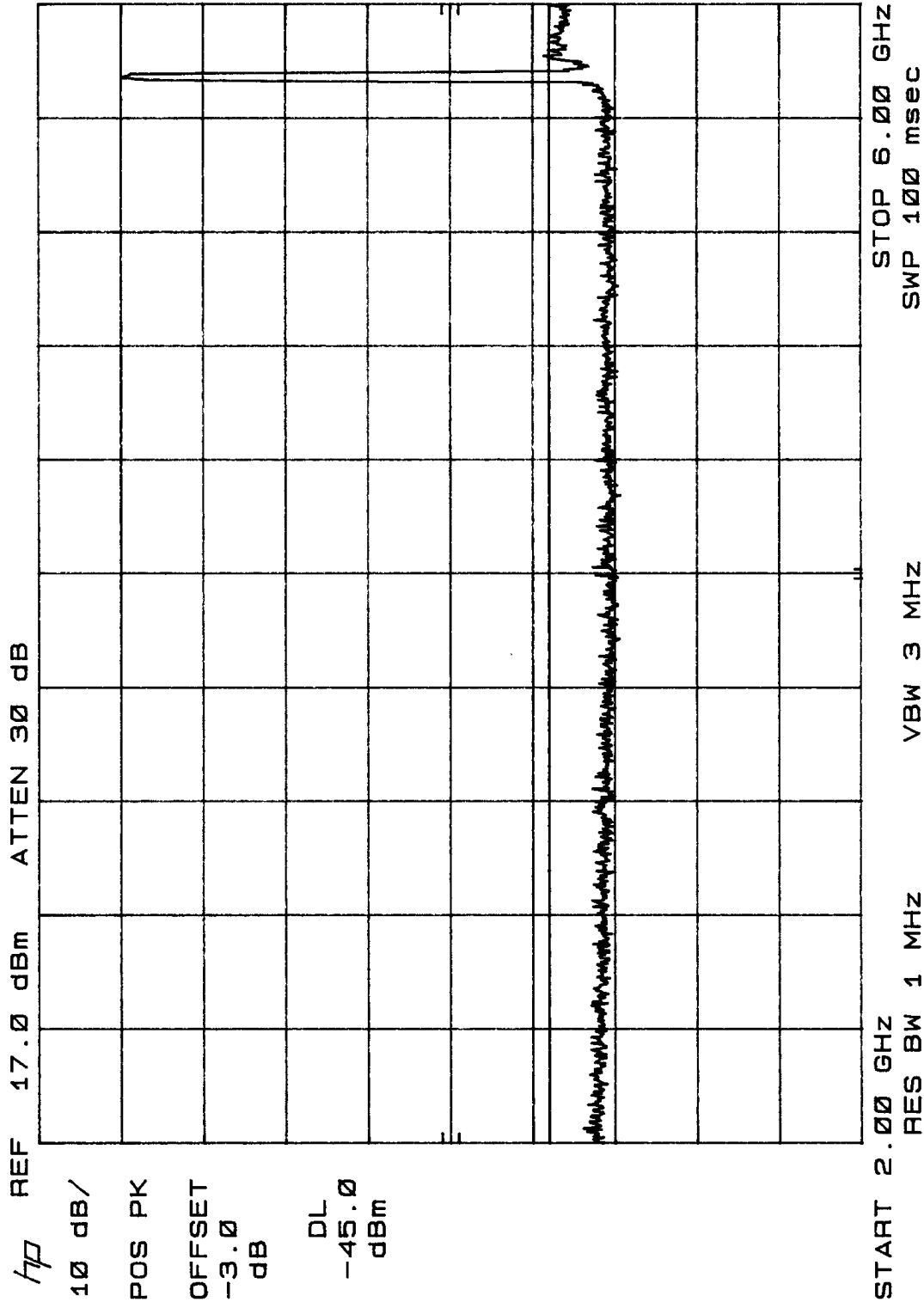
Mode: *Out of Band*



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

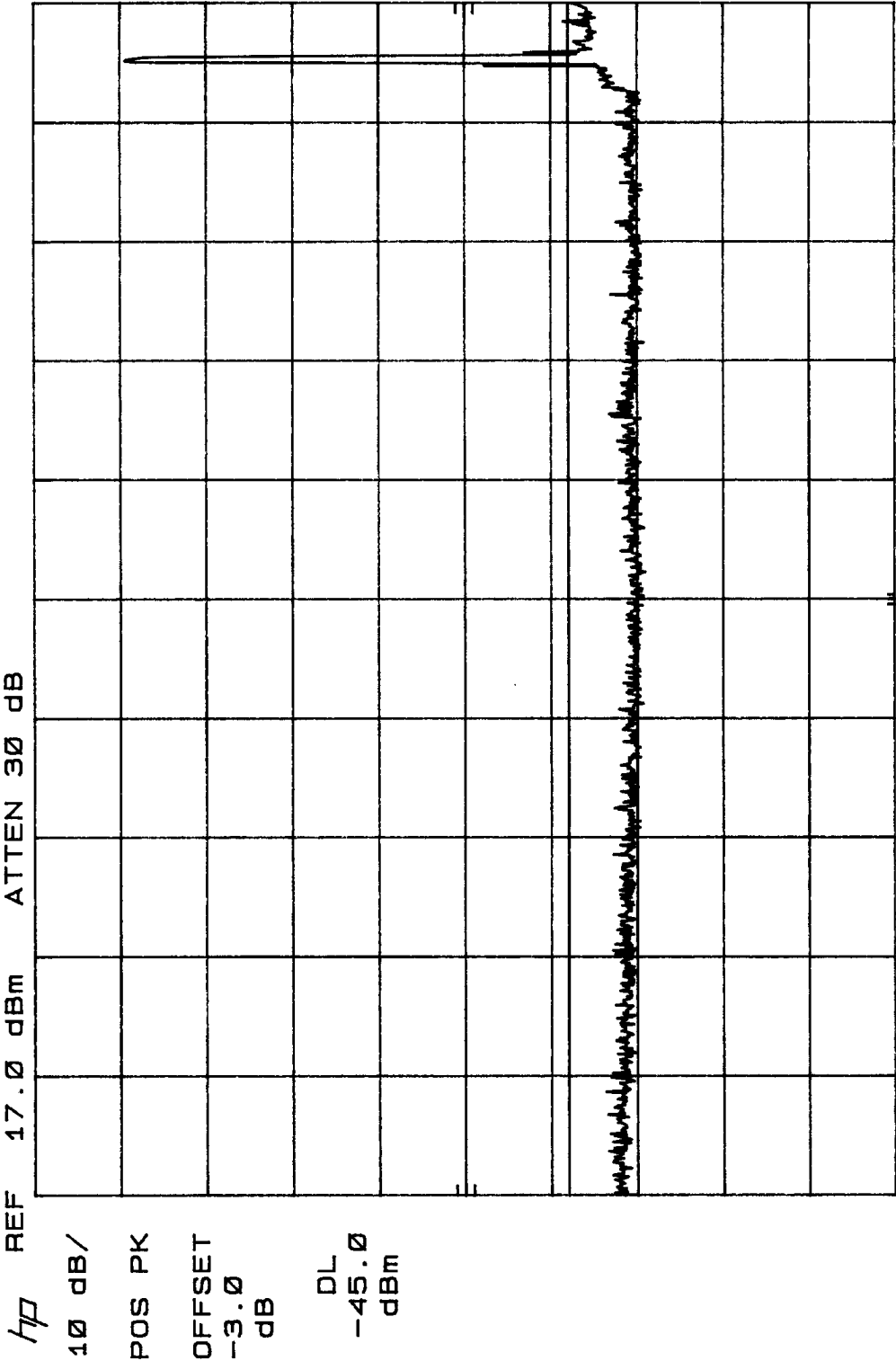
Report No.: SC106727
Mode: *QAM 8, 10, 16, 32, 64, 128, 256*

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. *DLB*

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*



Mode: 2468-00000000
5.407(b)

h_p REF 7.0 dBm ATTN 30 dB

10 dB/

POS PK

OFFSET -13.0 dB

DL -45.0 dBm

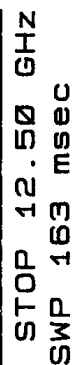
START 6.00 GHz RES BW 1 MHz VBW 3 MHz STOP 12.50 GHz SWP 163 msec

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

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

5.407(b)

TECH/ENGR.



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

hpf

10 dB/100 dB

POS PK

OFFSET -10.0 dB

DL -45.0 dBm

TH -83.0 dBm

START 12.00 GHz

STOP 18.00 GHz

SWP 150 msec

RES BW 1 MHz

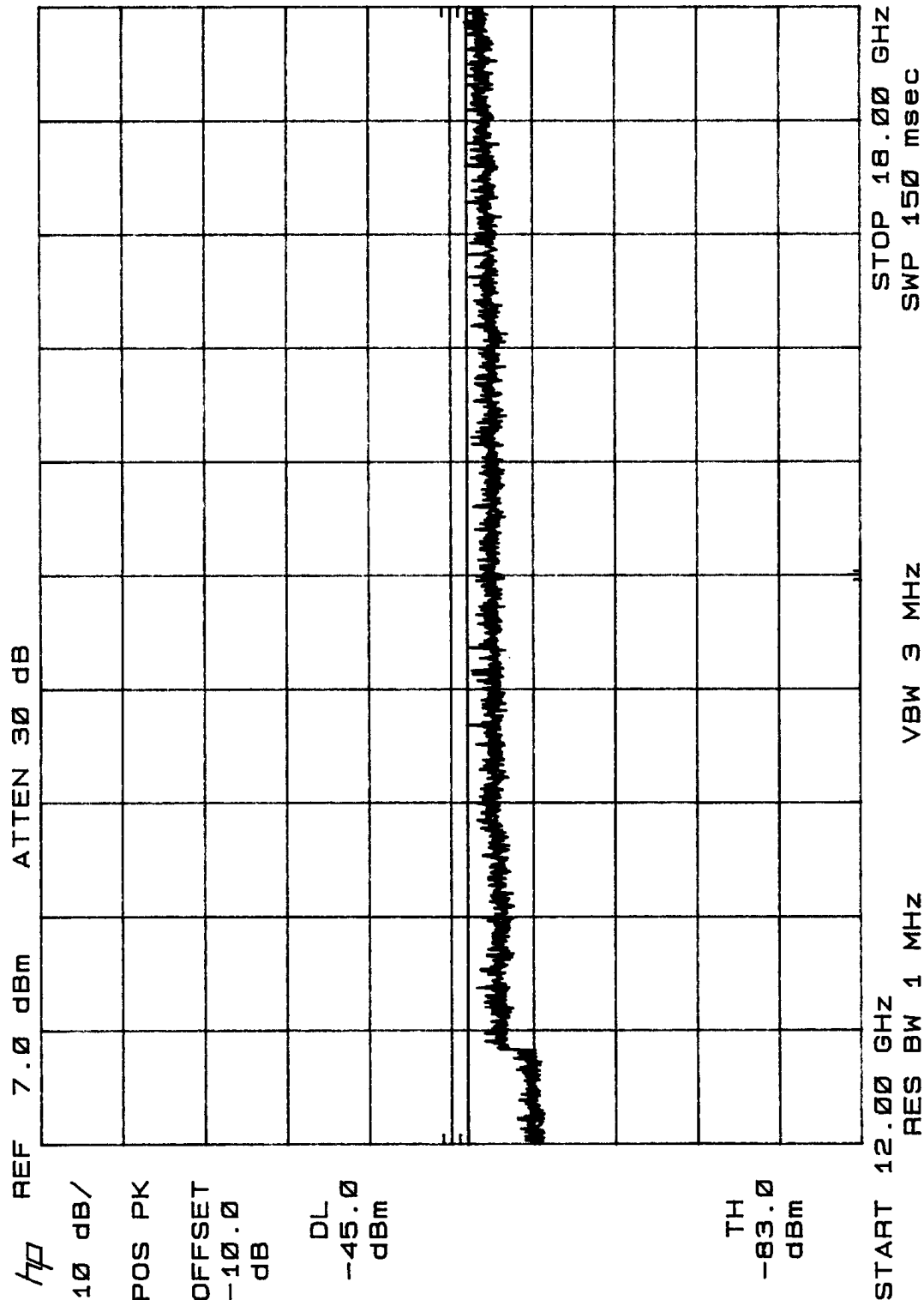
VBW 3 MHz

ATTEN 30 dB

REF 7.0 dBm

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

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



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

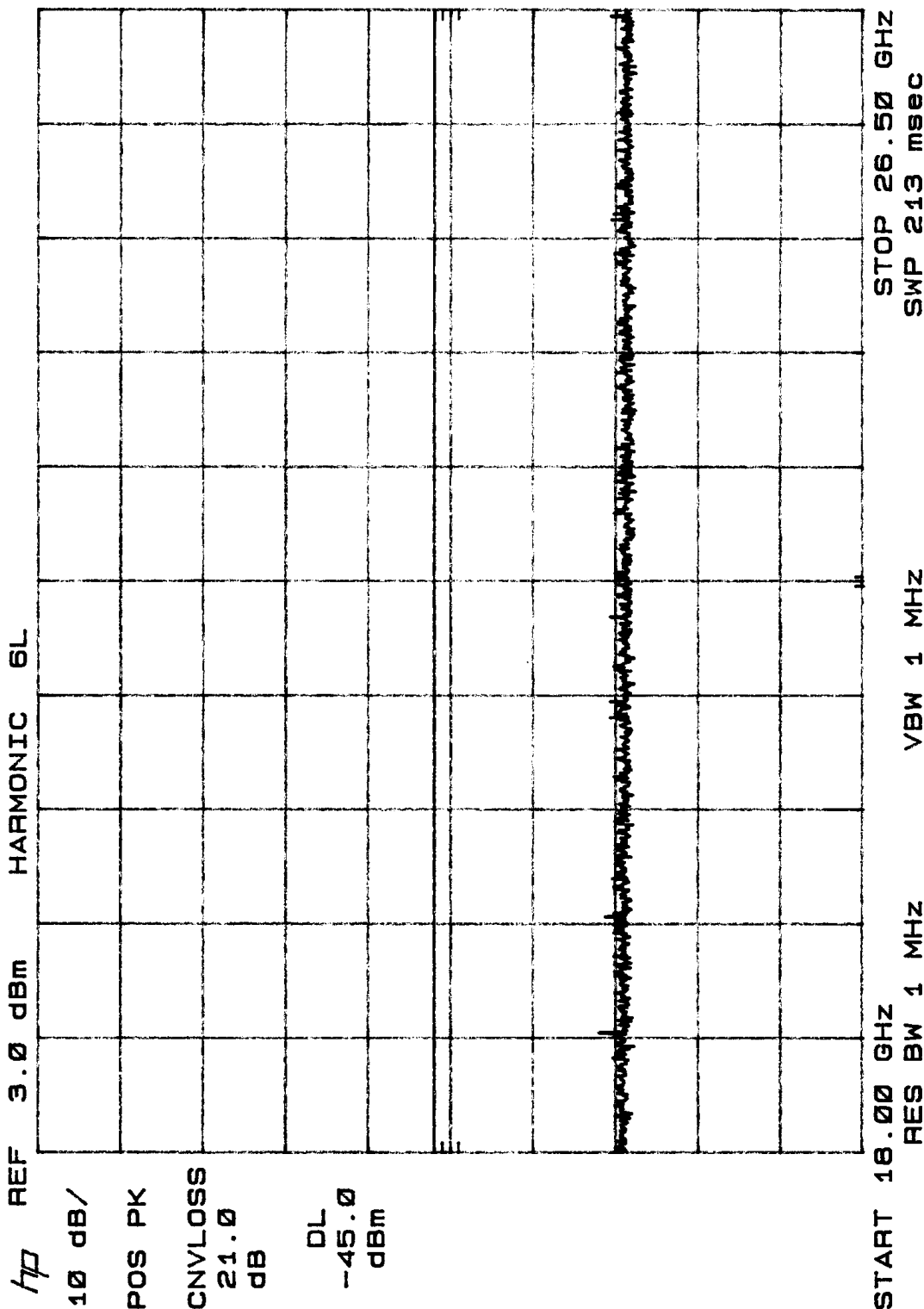
Report No.: SC106727

Mode: *QPSK 3.0 dBm*

CUSTOMER: WESTERN Multiplex

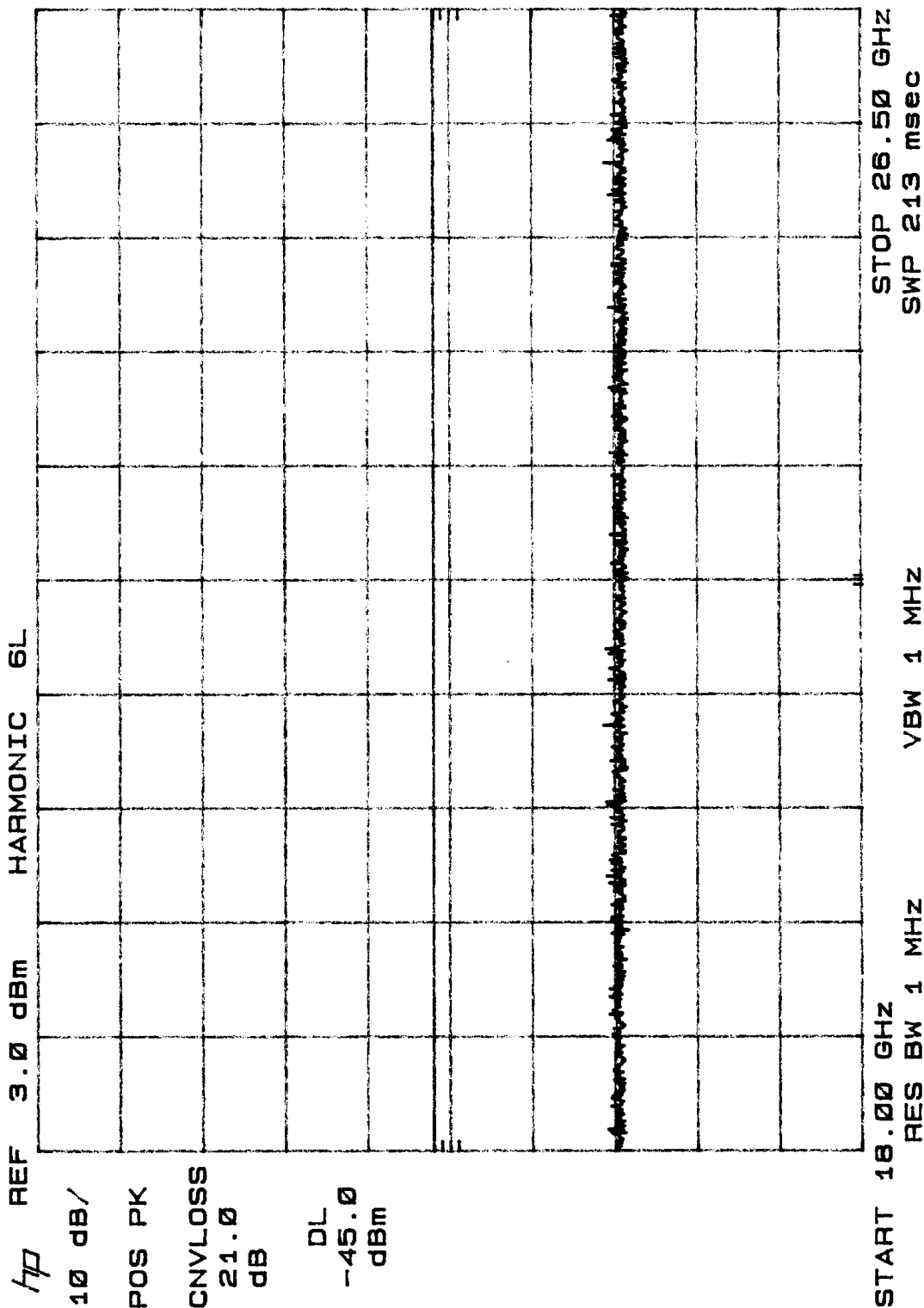
EUT: UNII Radio FCCID: HZB-U58-B60

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



Sep. 26, 2001
TECH/ENGR. *[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: *[Handwritten: 15.407(b)]*

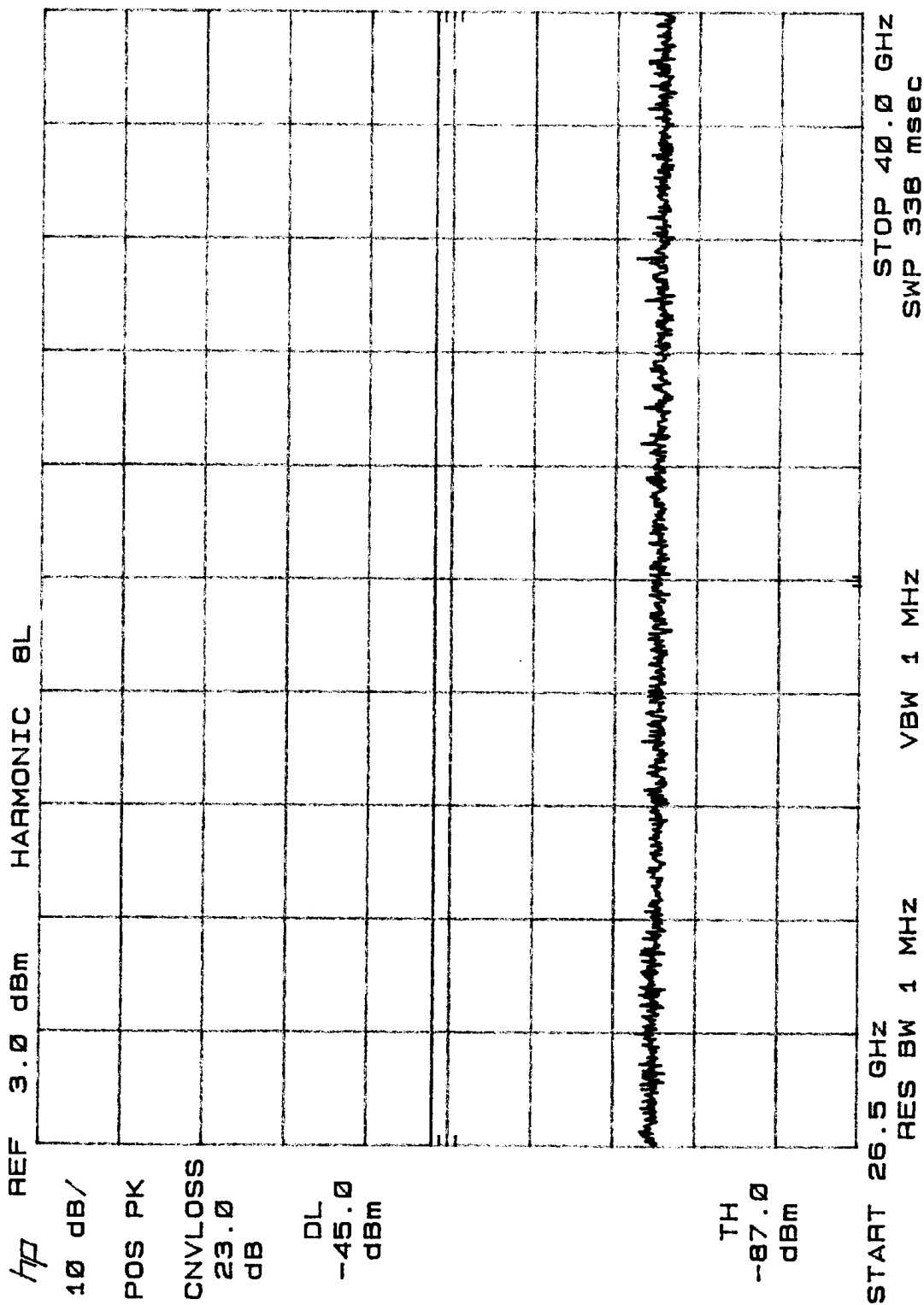


Sep. 26, 2001
TECH/ENGR. *LAB*

Report No.: SC106727

Mode: *2004M channel 1*

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

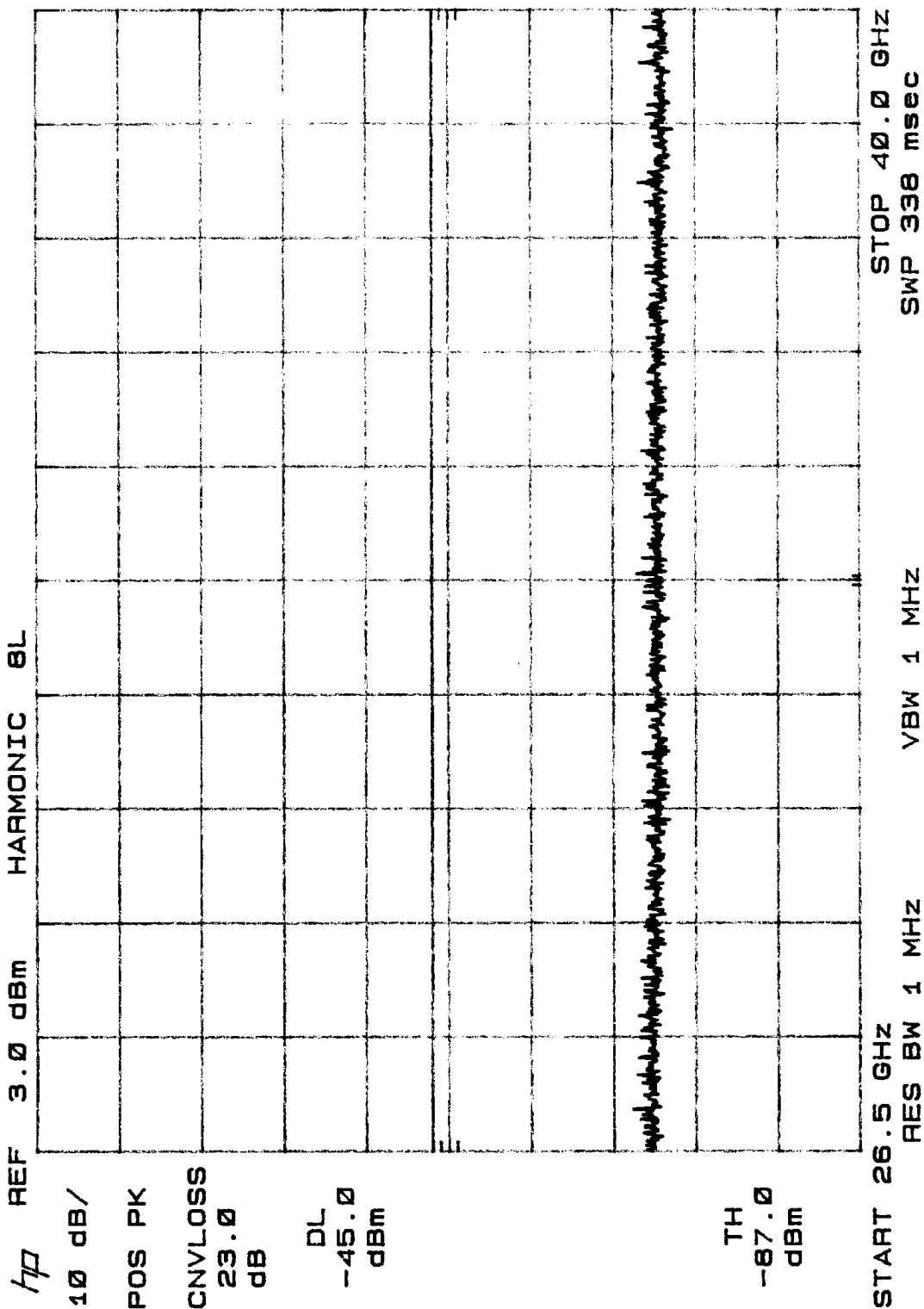


Sep. 26, 2001
TECH/ENGR. *[Signature]*

Report No.: SC106727

Mode: *Test of Band Antenna Conducted*

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

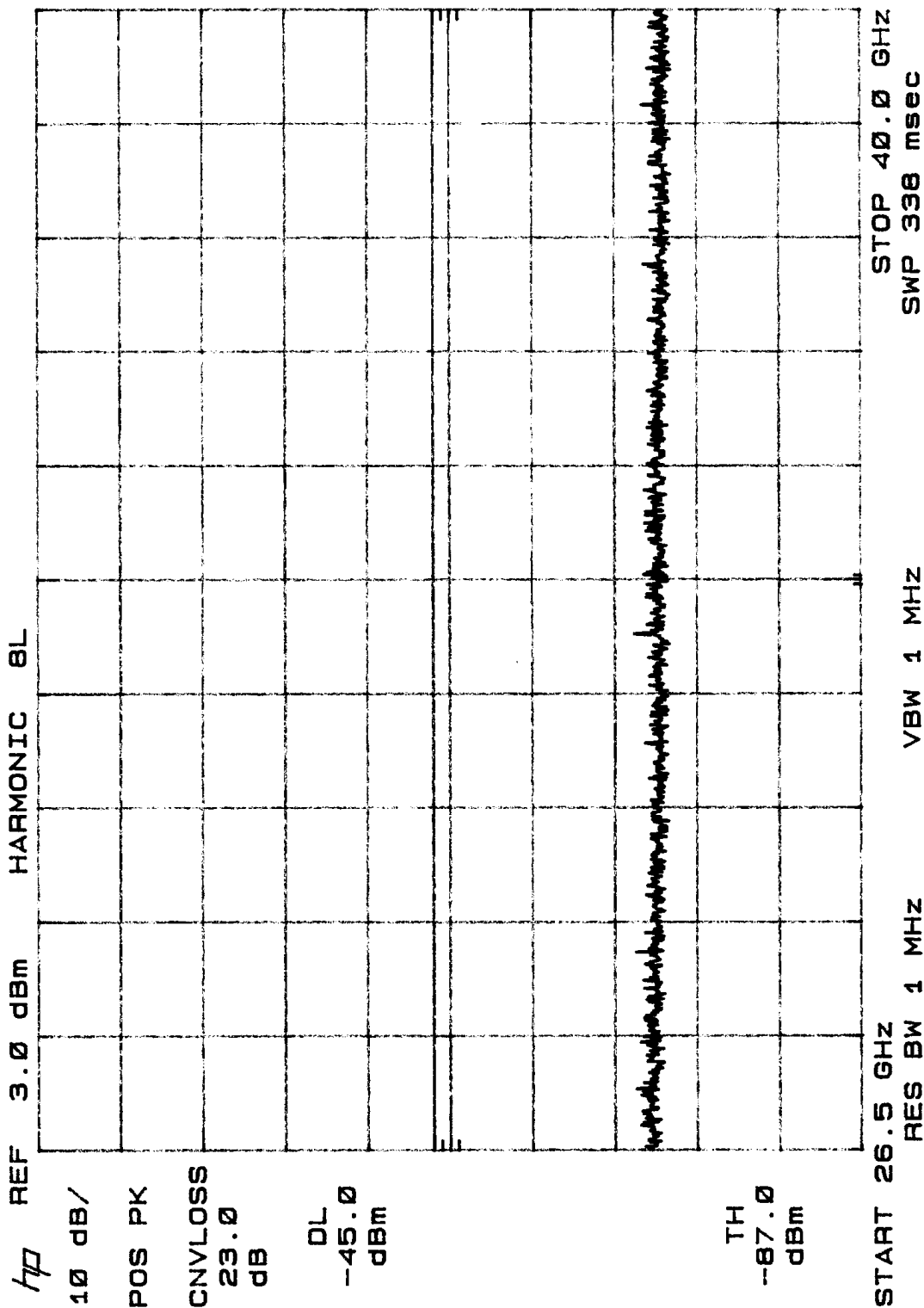


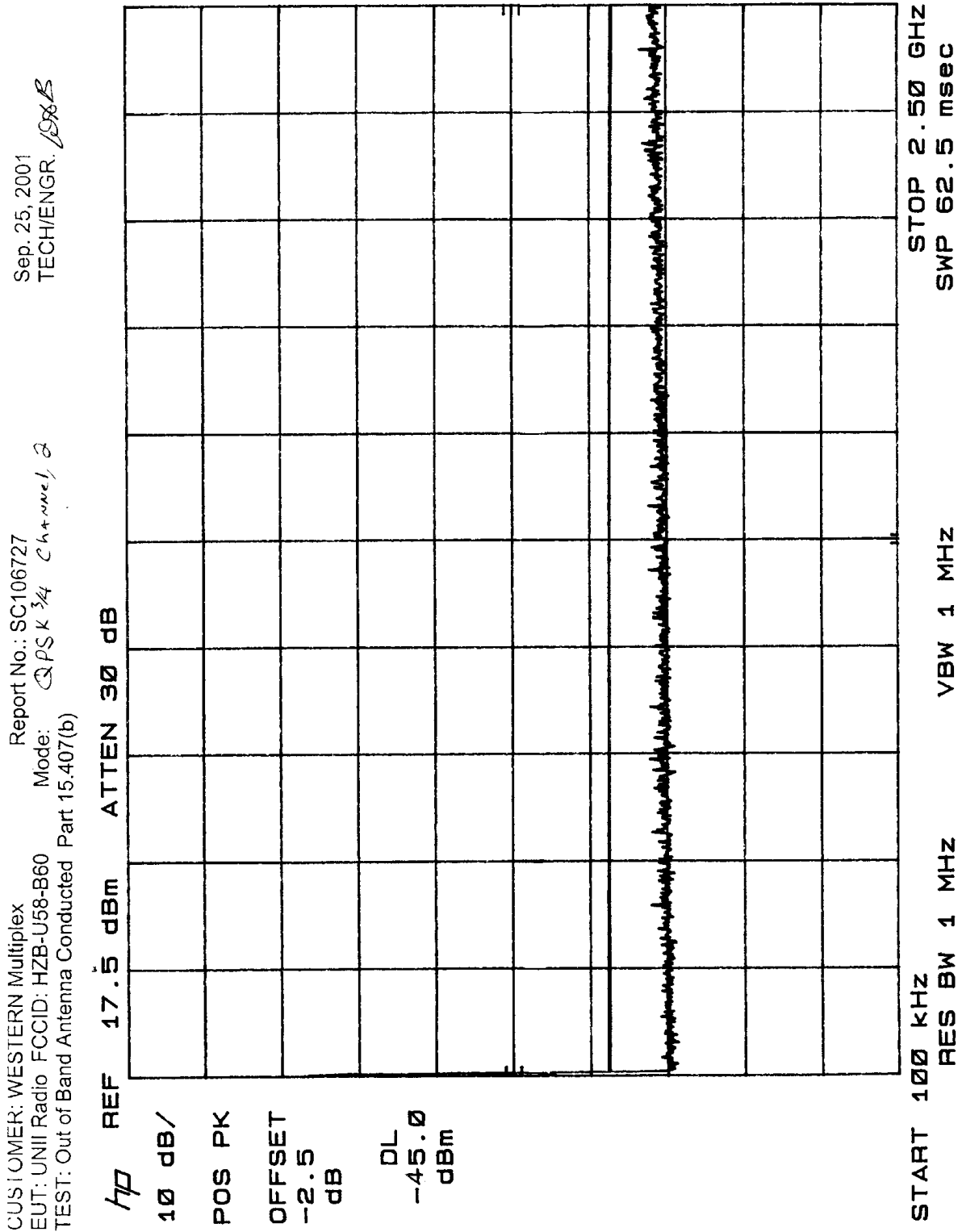
Sep. 26, 2001
TECH/ENGR. *DLB*

Report No.: SC106727

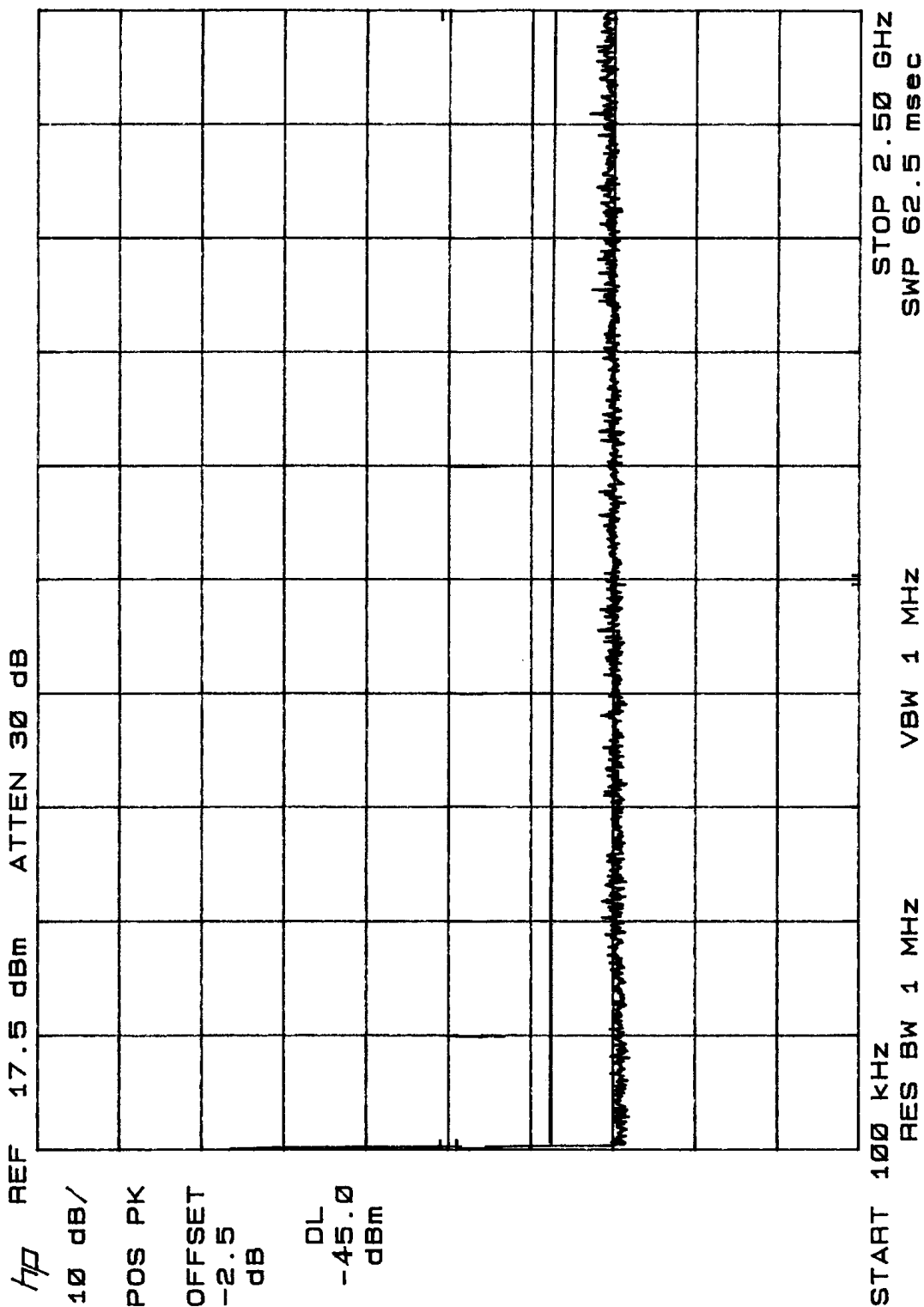
Mode: *GPS K 3/4 channel D₁*

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





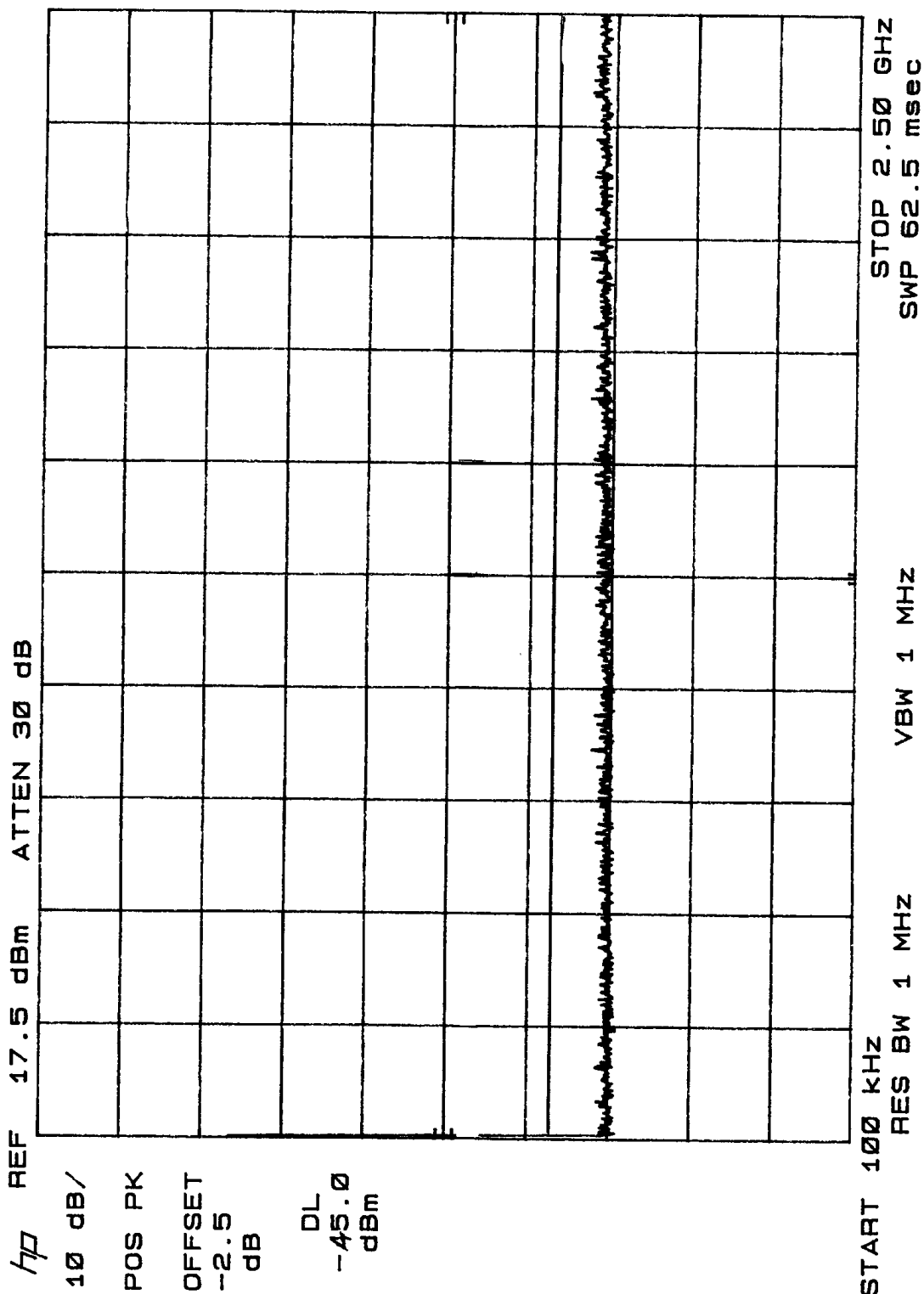
TECH/ENGR. 10423



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. *DBB*

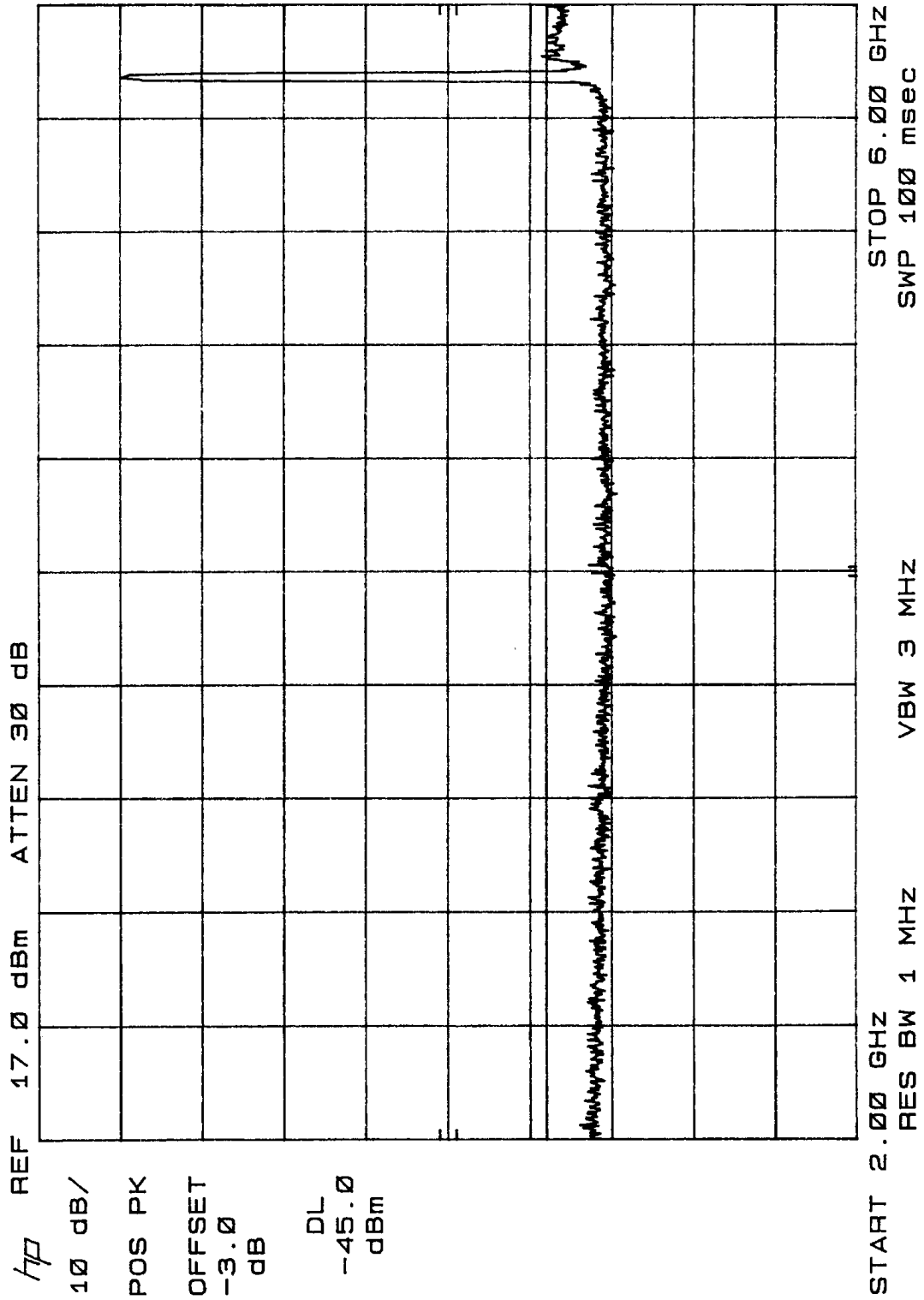


Sep. 27, 2001
TECH/ENGR. *DB*

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

Report No.: SC106727

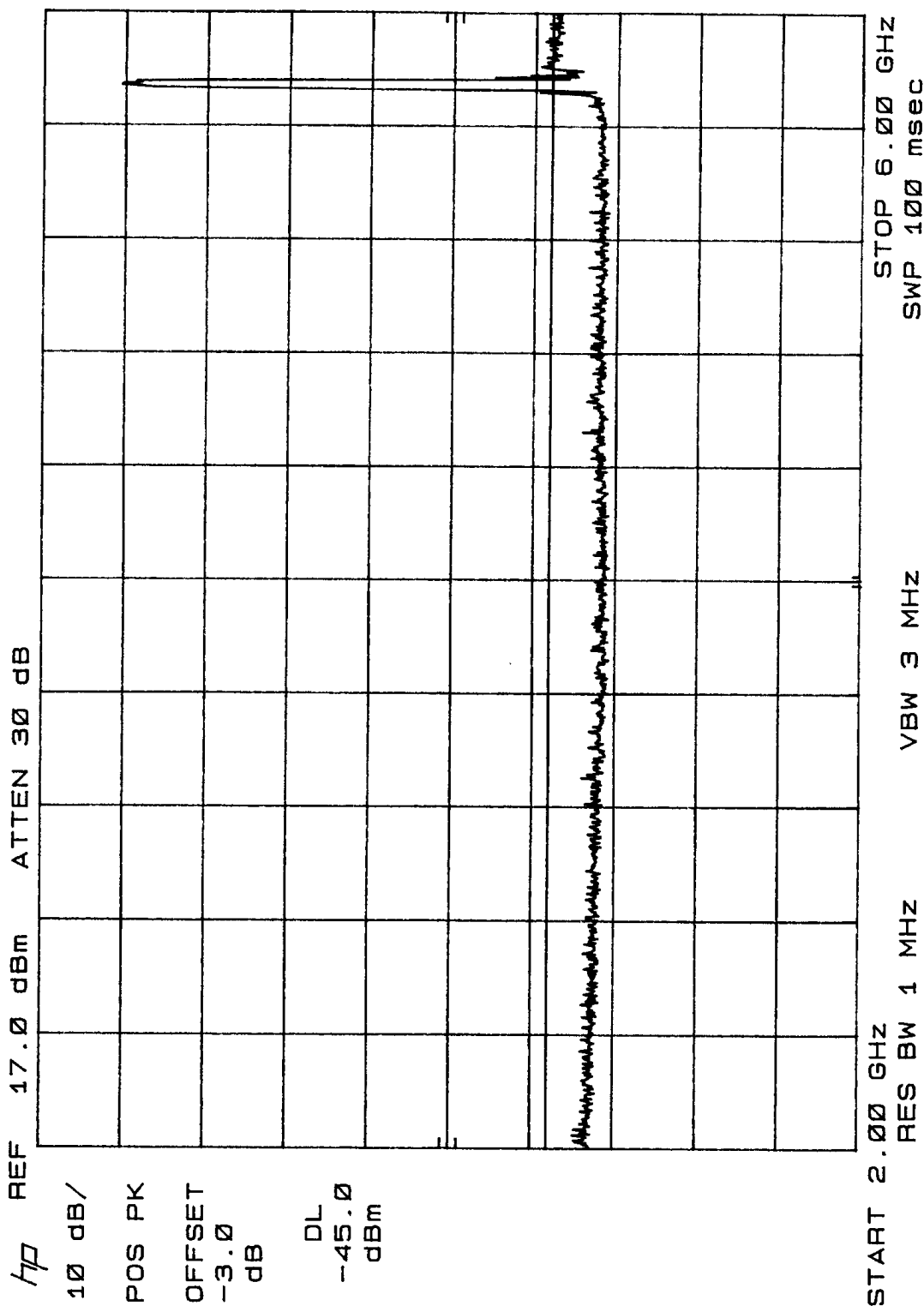
Mode: *QAM 8, channel 2*



Sep. 27, 2001
TECH/ENGR. *10/03*

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

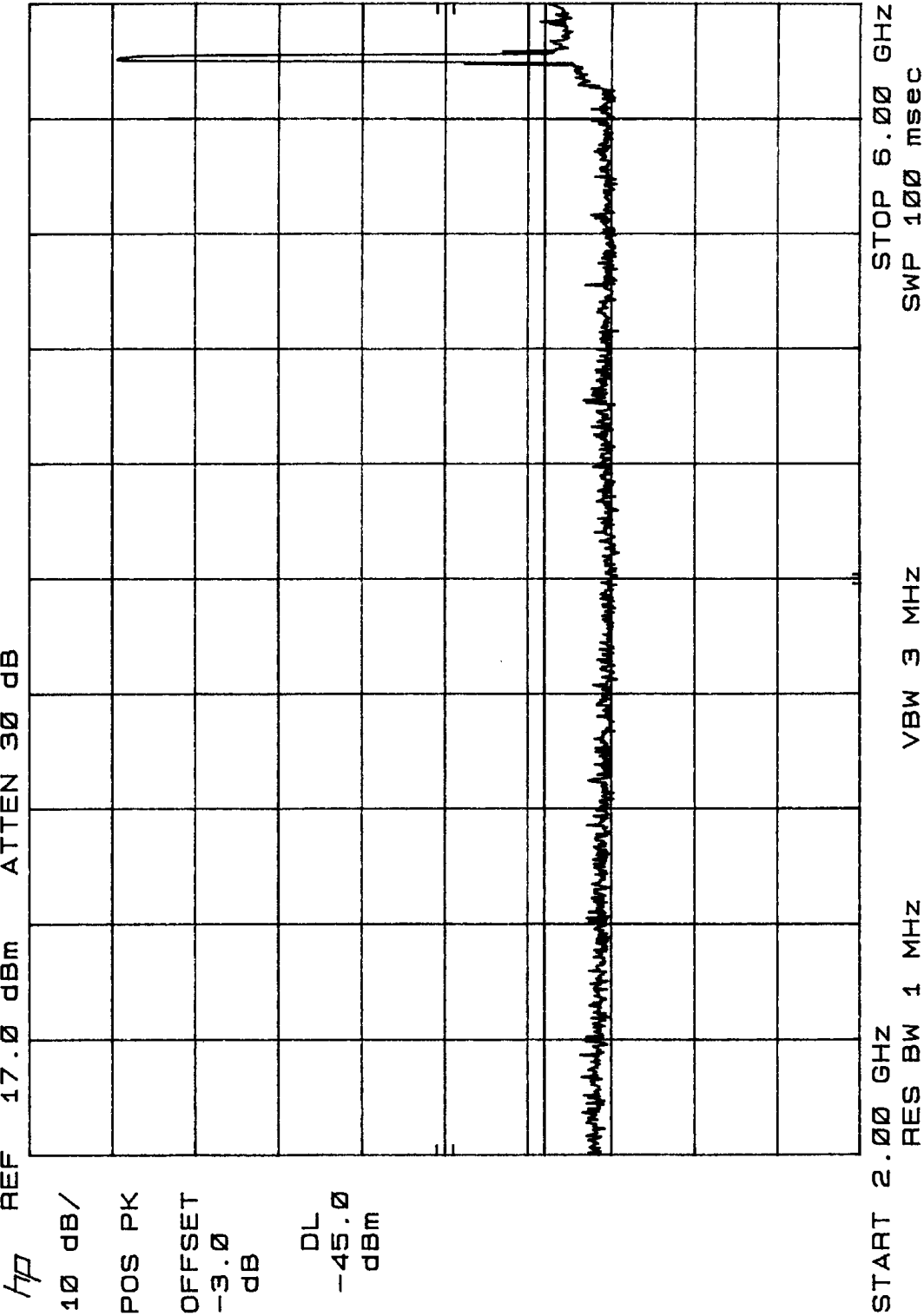
CUSTOMER: WESTERN Multiplex
EUT: UNII Radio FCCID: HZB-U58-B60
TEST: Out of Band Antenna Conducted Part 15.407(b)



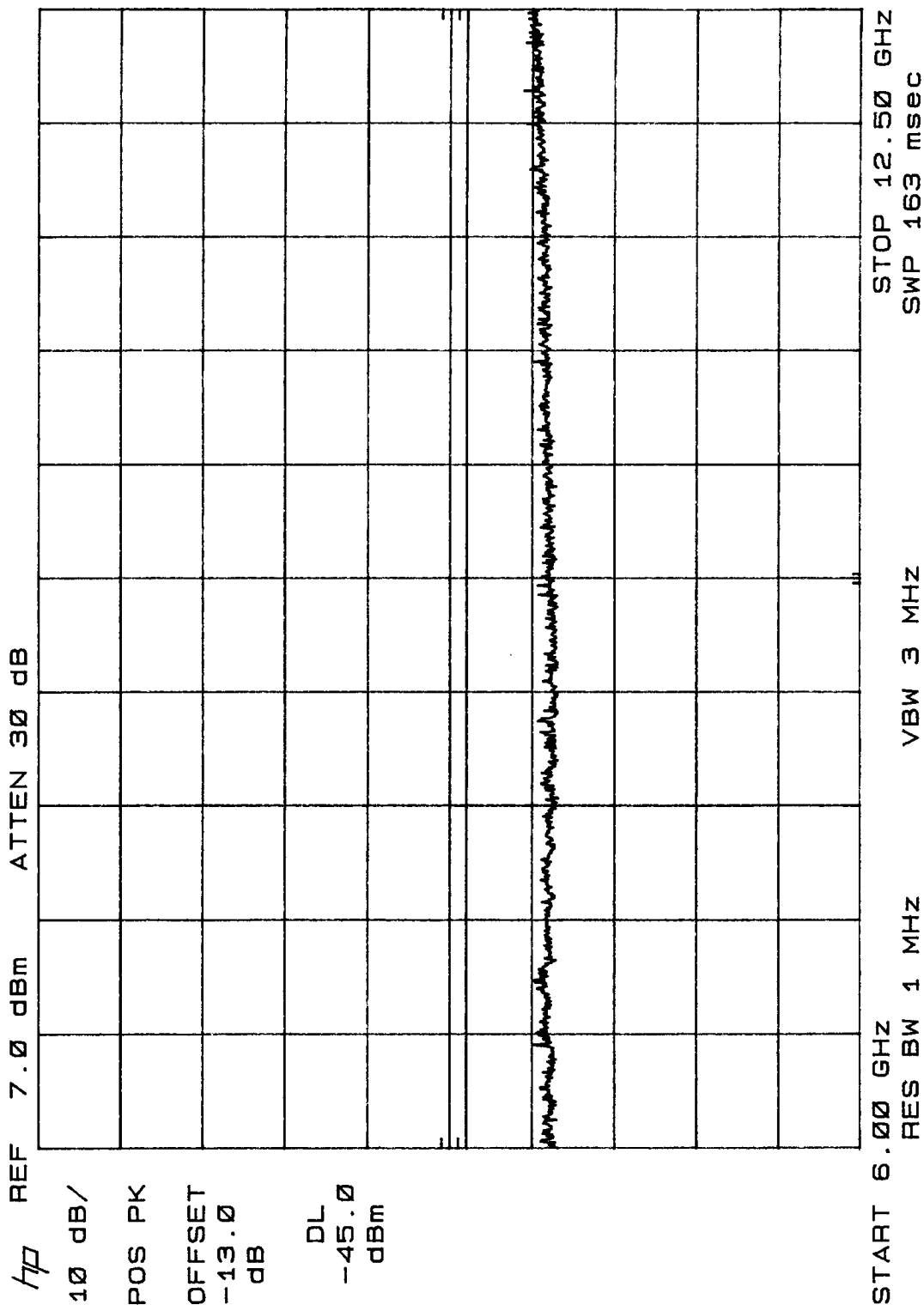
CUSTOMER: WESTERN Multiplex
EUT: UNII Radio FCCID: HZB-U58-B60
TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727
Mode: *QPSK 34, channel 8, 2*

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



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



hp REF 7.0 dBm ATTN 30 dB

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

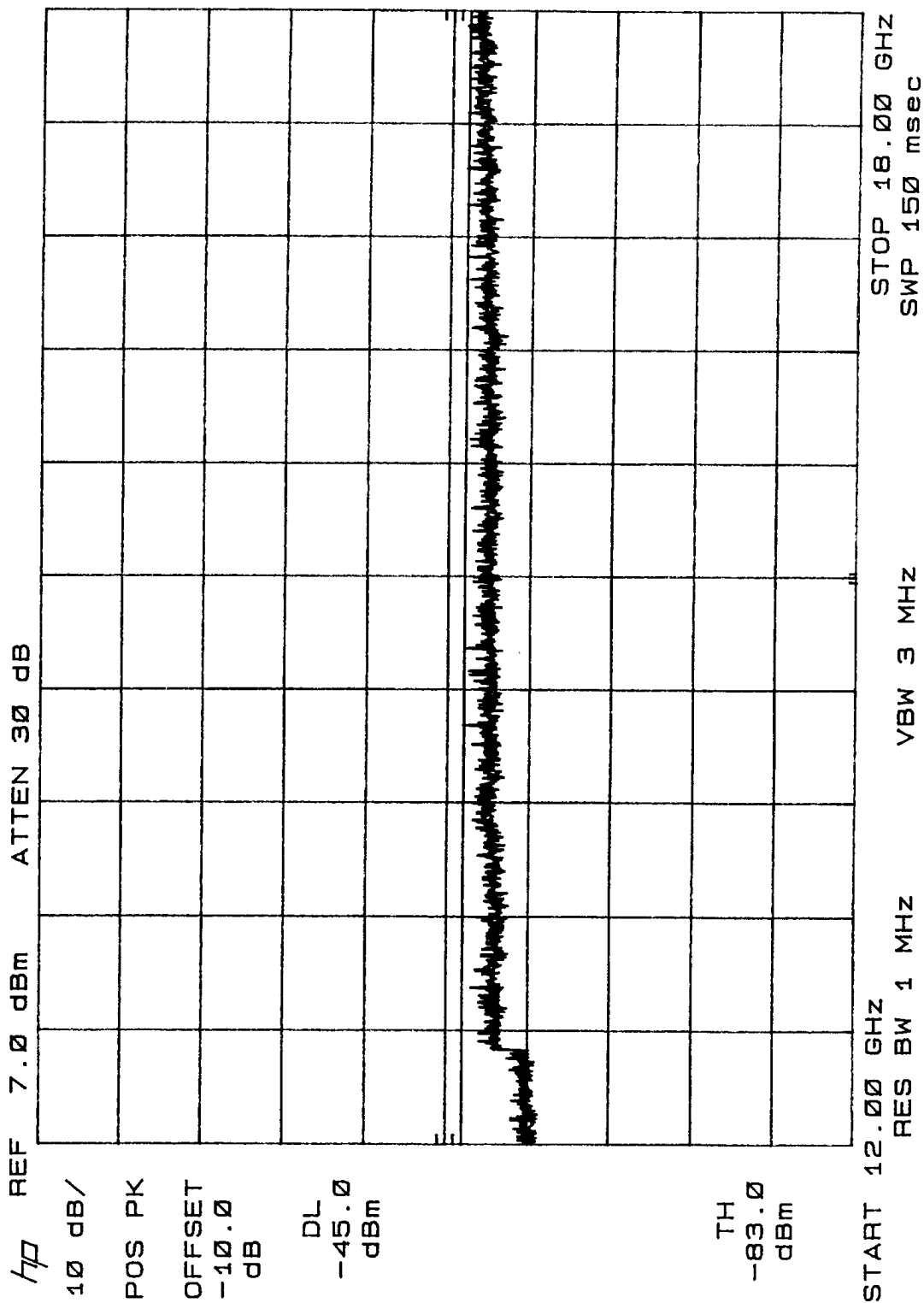
START 6.00 GHz RES BW 1 MHz VBW 3 MHz STOP 12.50 GHz SWP 163 msec

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

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

Report No.: SC106727
Mode: *QPSK 3/4, Channel 1, 2*
TEST: Out of Band Antenna Conducted Part 15.407(b) *w/ Rec. Amp & Pre-Sense*

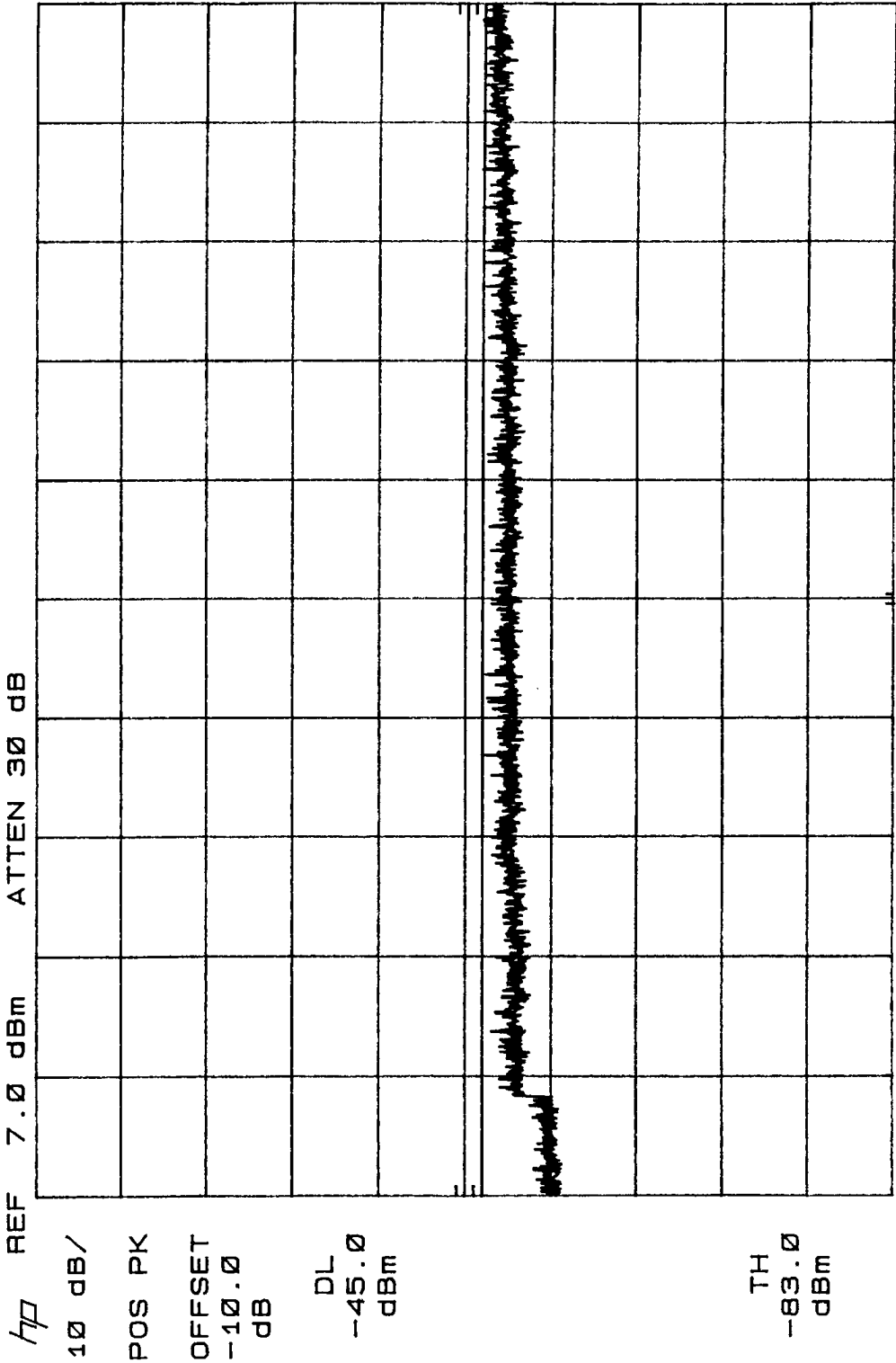
CUSTOMER: WESTERN Multiplex
EUT: UNII Radio FCCID: HZB-U58-B60
TEST: Out of Band Antenna Conducted



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

CUSTOMER: WESTERN Multiplex
EUT: UNII Radio FCCID: HZB-U58-B60
TEST: Out of Band Antenna Conducted Part 15.407(b) *20m 16, Channel 2*
Mode: *20m 16, Channel 2*
W/Pre-Amp if Pre-Selected

Report No.: SC106727



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

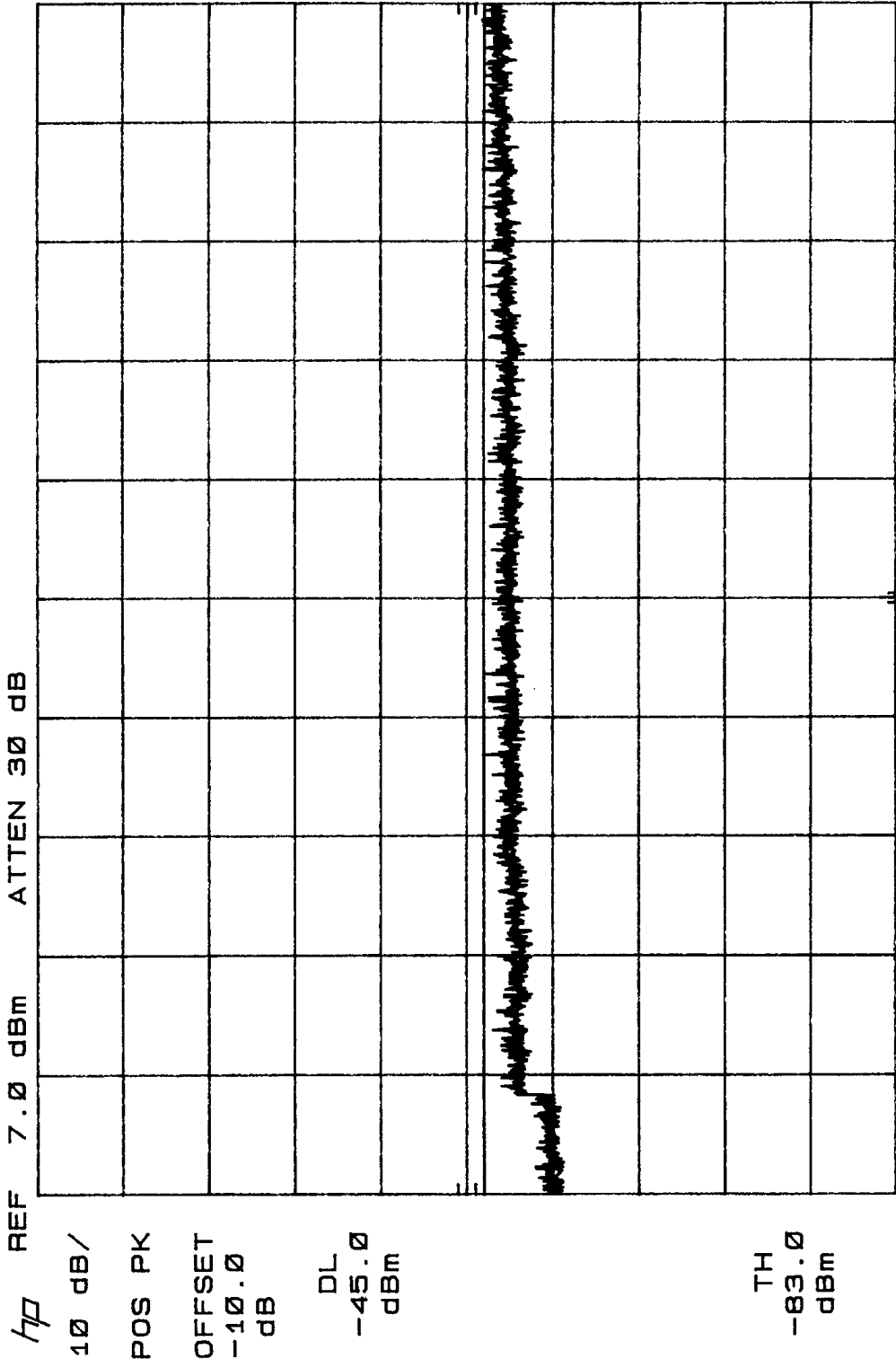


Sep. 27, 2001
TECH/ENGR. *QTB*

CUSTOMER: WESTERN Multiplex
EUT: UNII Radio FCCID: HZB-U58-B60
TEST: Out of Band Antenna Conducted Part 15.407(b) with 30 dBm & per. reflector

Report No.: SC106727

Mode: *QAM 8, channel 2*



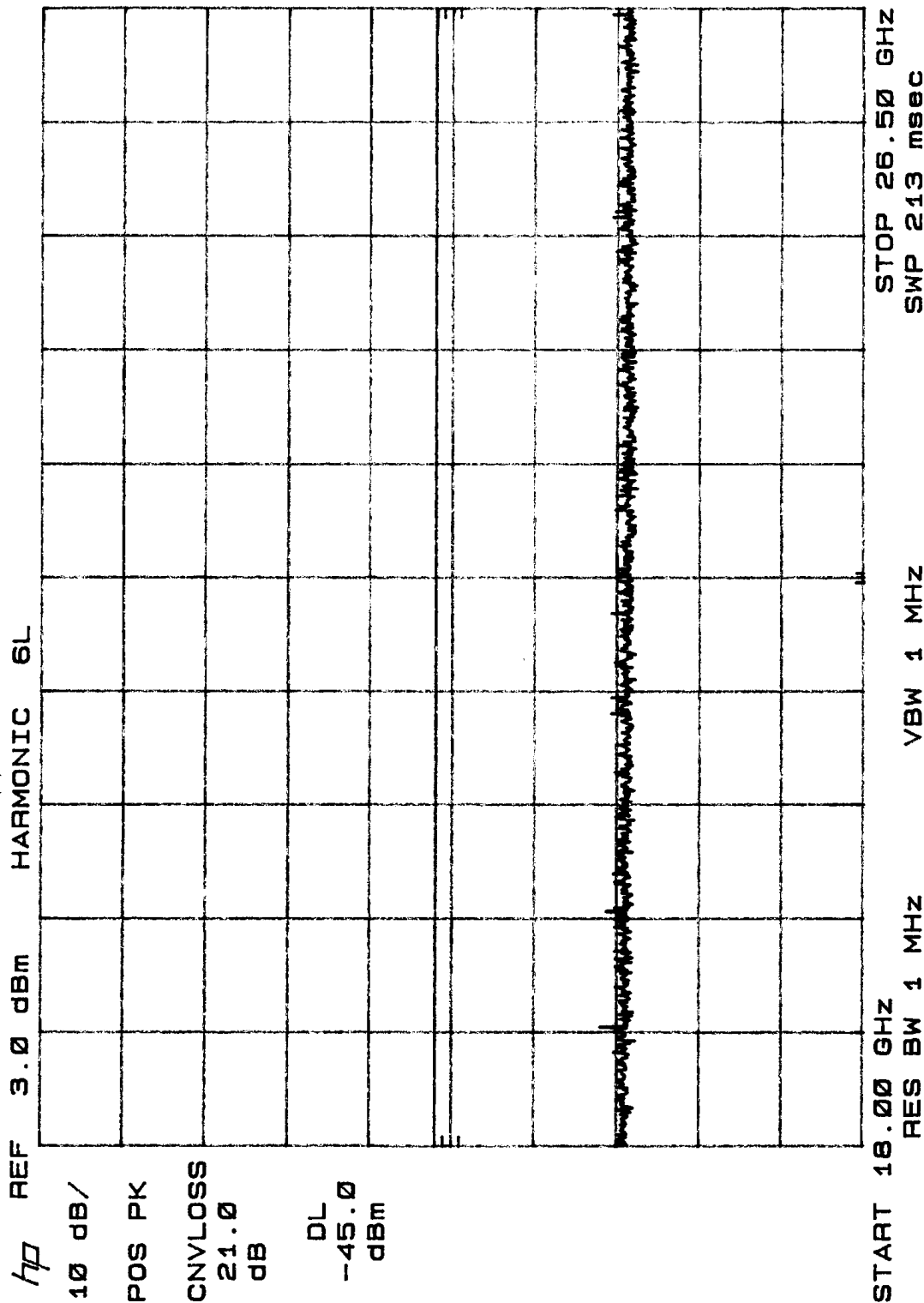
REF 7.0 dBm ATTEN 30 dB

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

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

Report No.: SC106727
Mode: *QPSK 3/4 Channel 2*

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

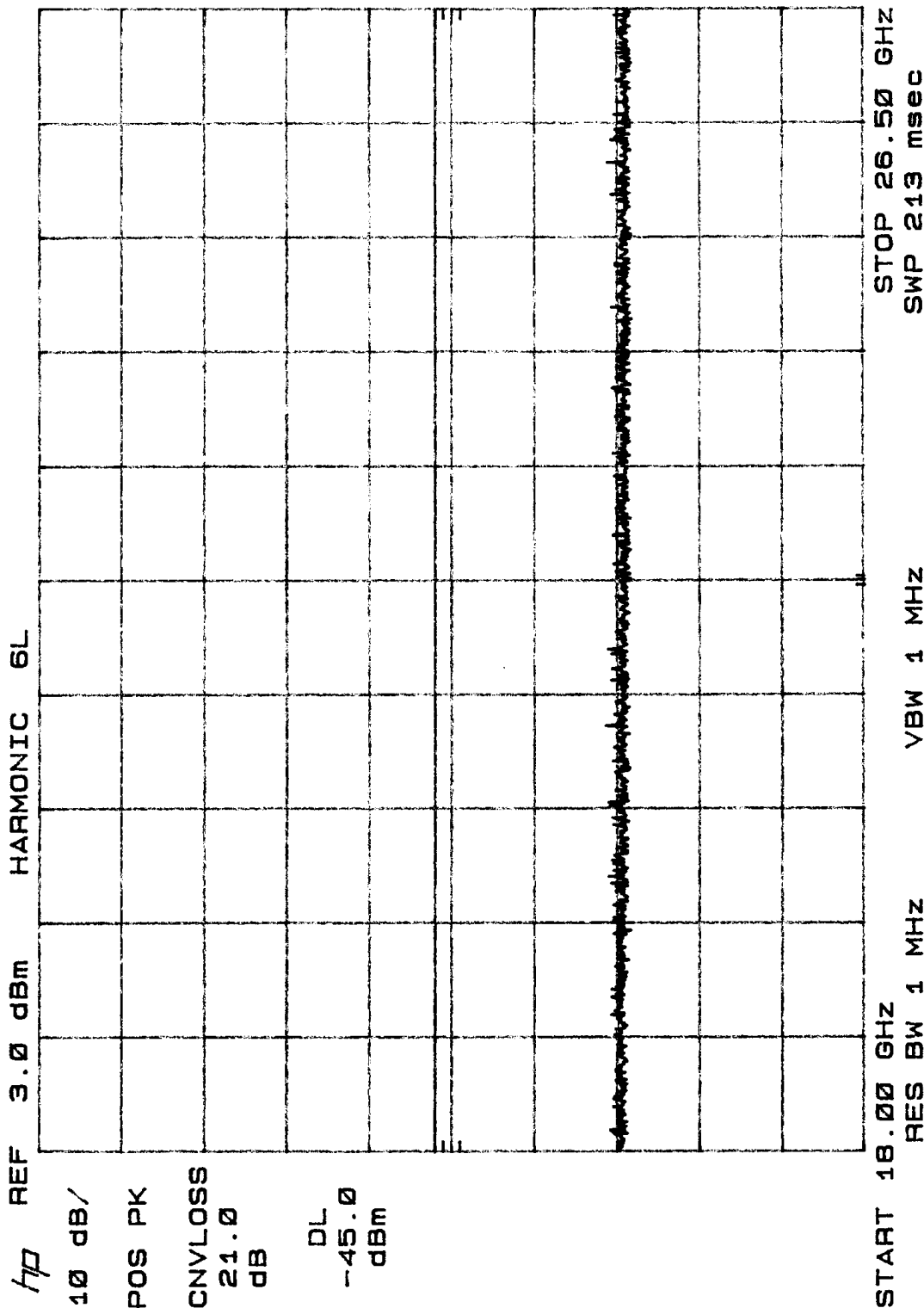


Sep. 26, 2001
TECH/ENGR. *[Signature]*

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

Report No.: SC106727

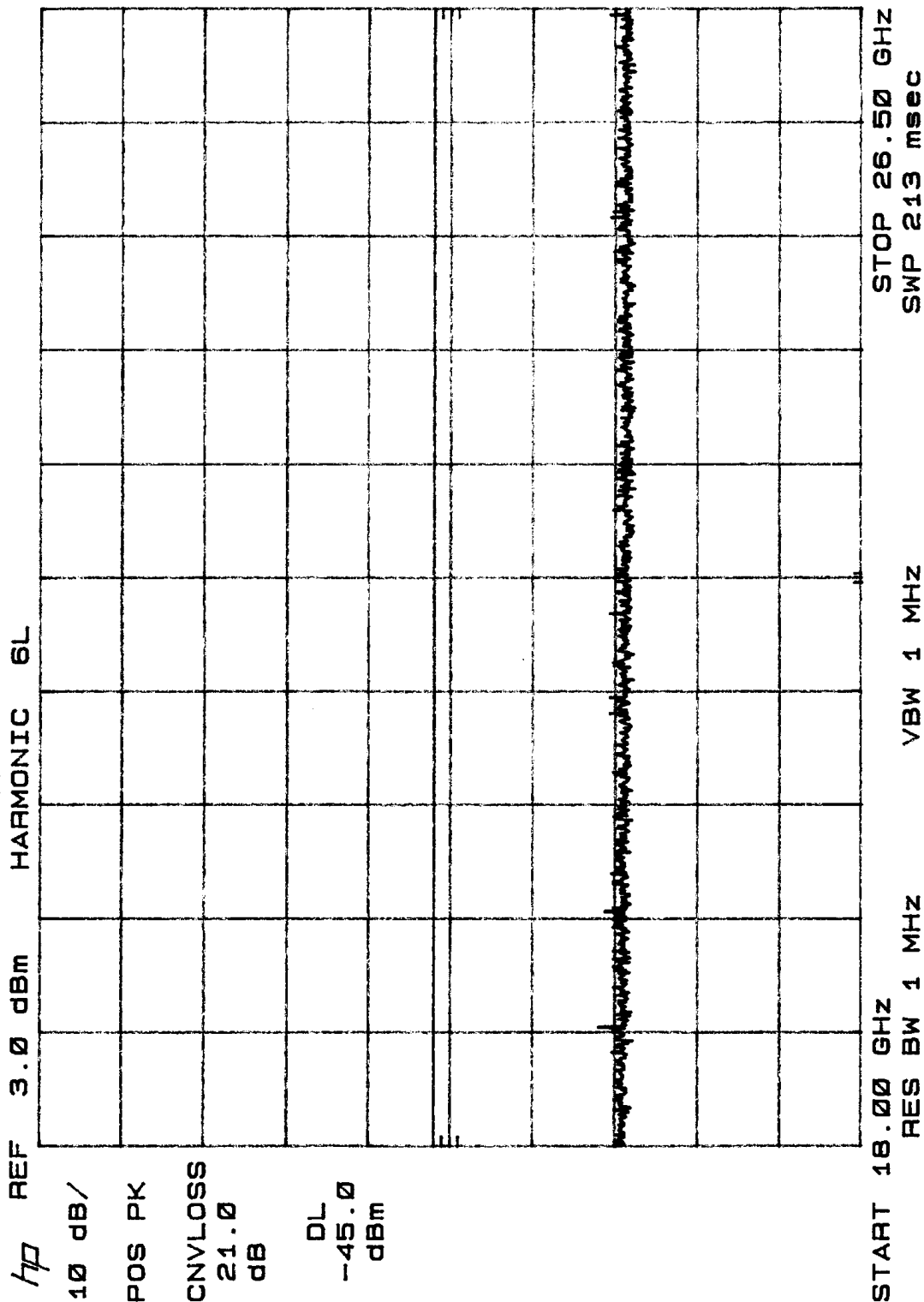
Mode: 16QAM channel 12



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

Report No.: SC106727
Mode: *QPSK 3/4 Channel 2*

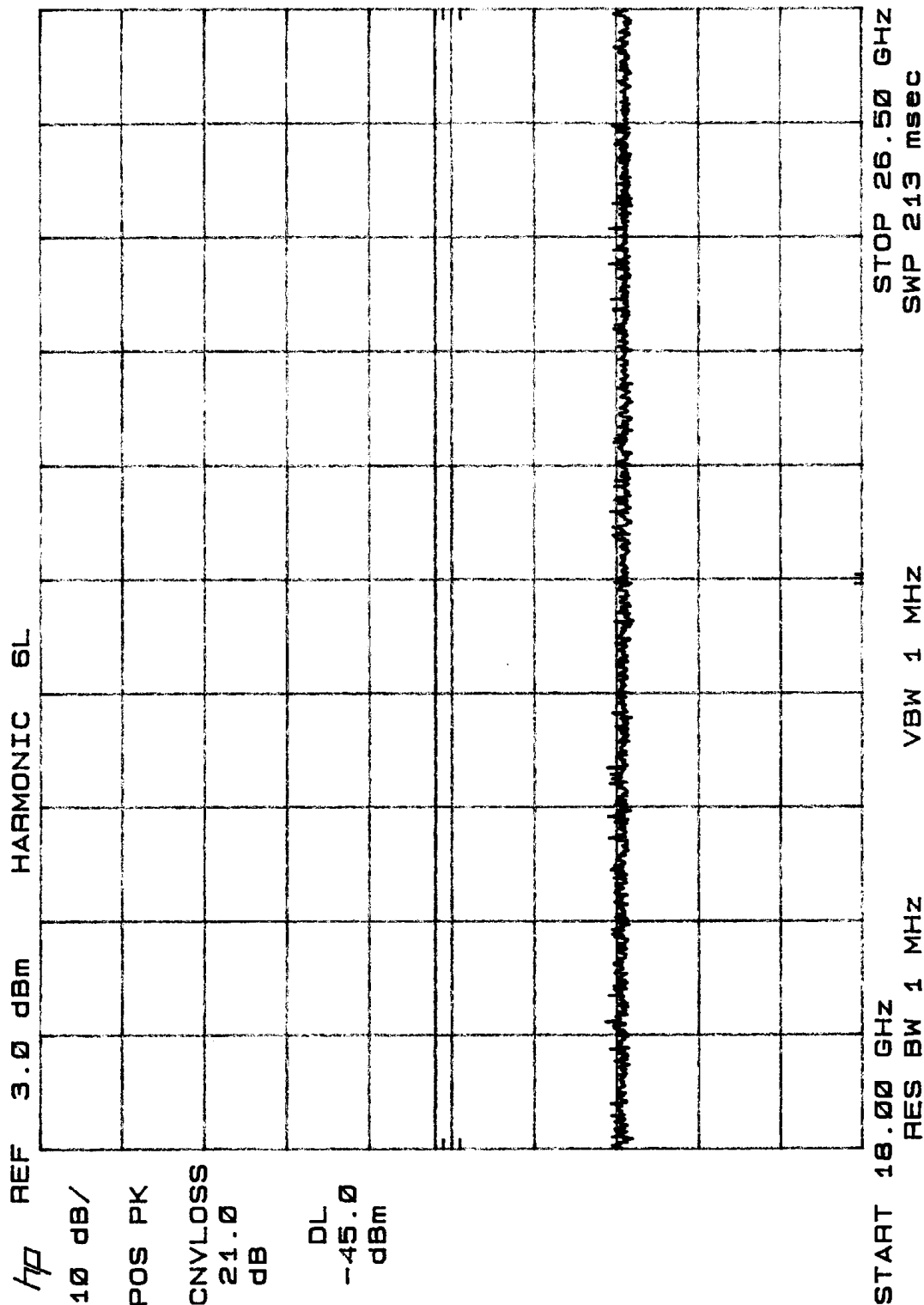
CUSTOMER: WESTERN Multiplex
EUT: UNII Radio FCCID: HZB-U58-B60
TEST: Out of Band Antenna Conducted Part 15.407(b)



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

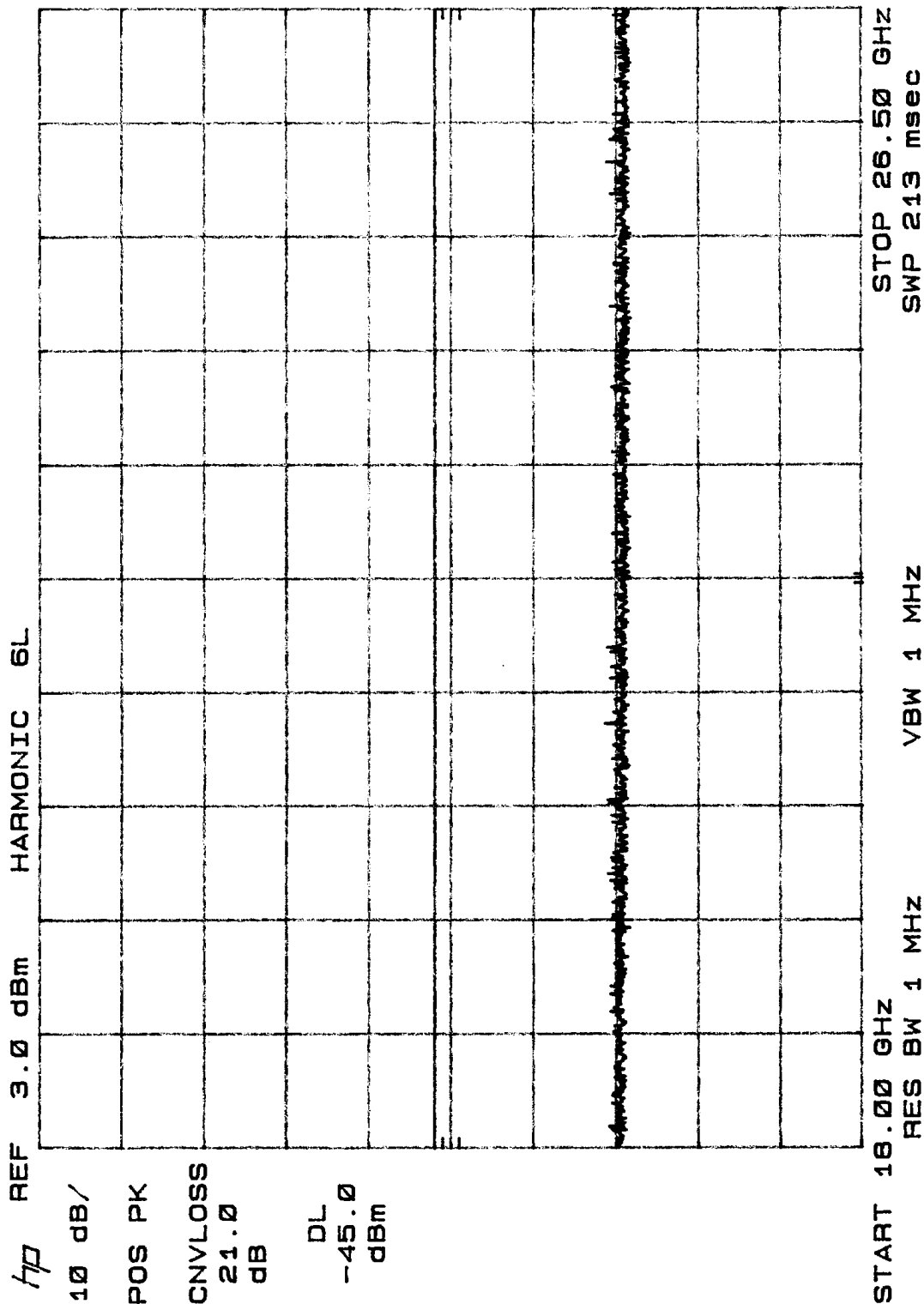
Report No.: SC106727
Mode: *OT-115, channel 12*

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. *[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: *16QAM channel 1, 2*



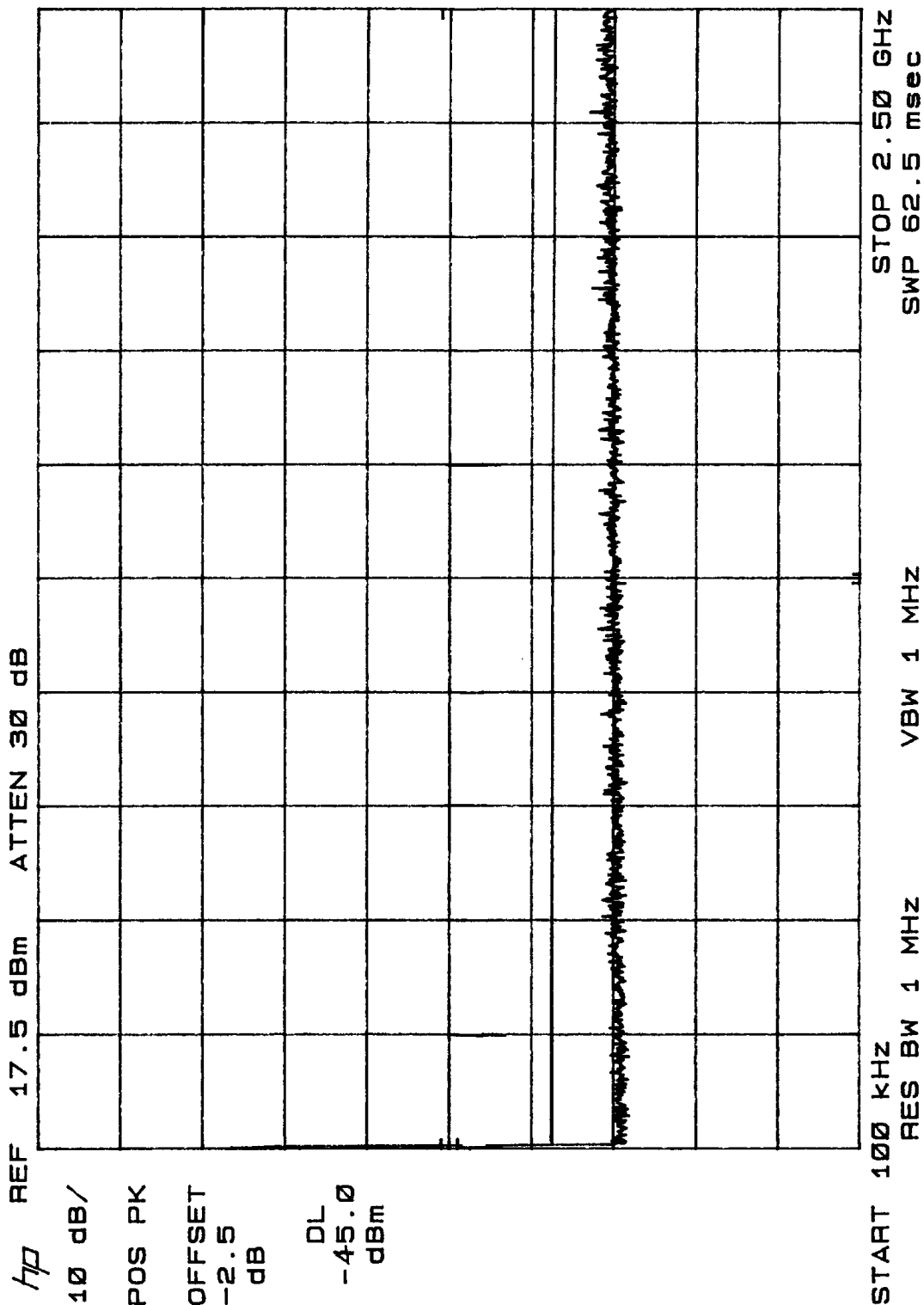
CUSTOMER: WESTERN Multiplex
EUT: UNII Radio FCCID: HZB-U58-B60
TEST: Out of Band Antenna Conducted

[illegible]

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

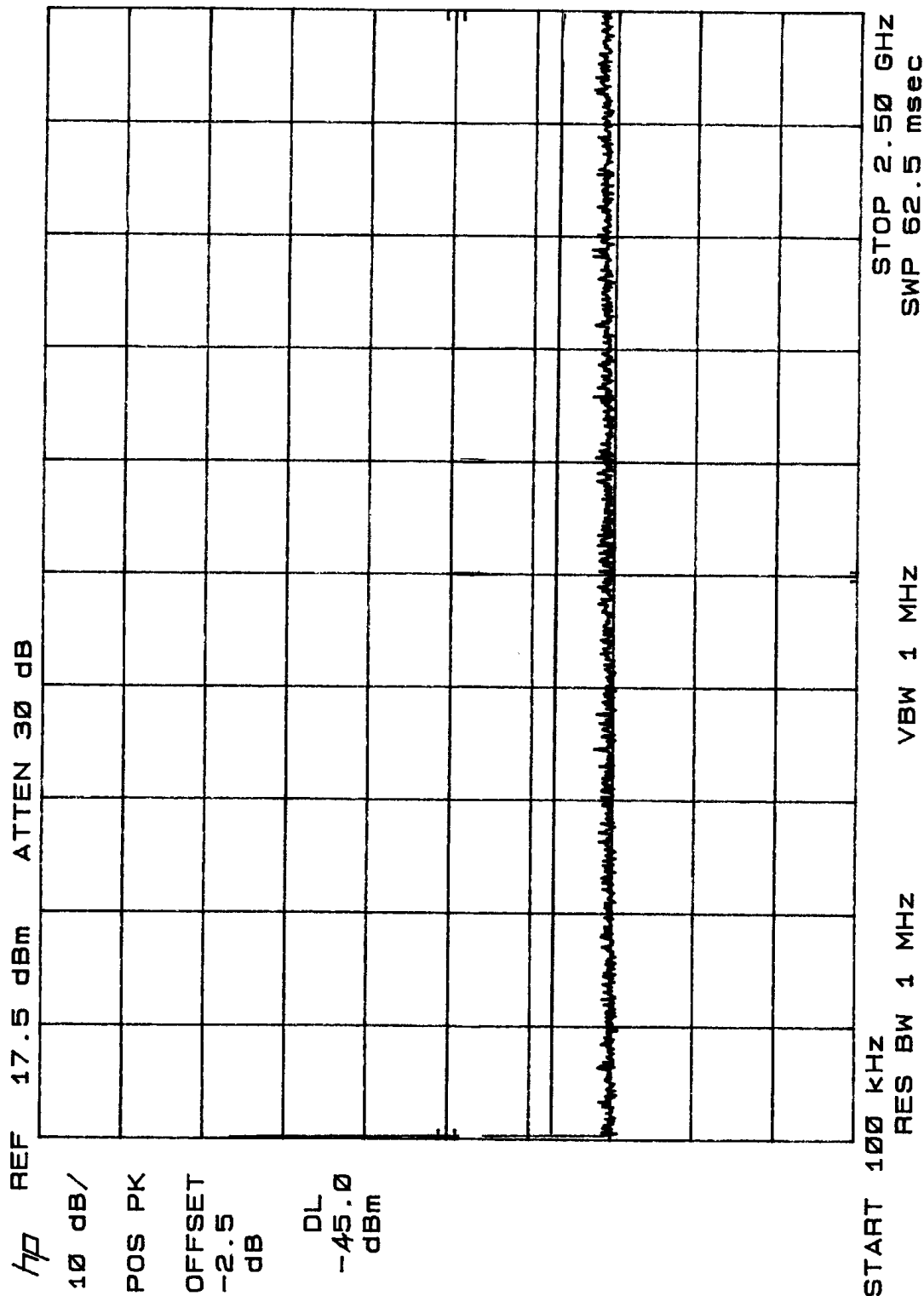
Sep. 25, 2001
TECH/ENGR. *DAZ*



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

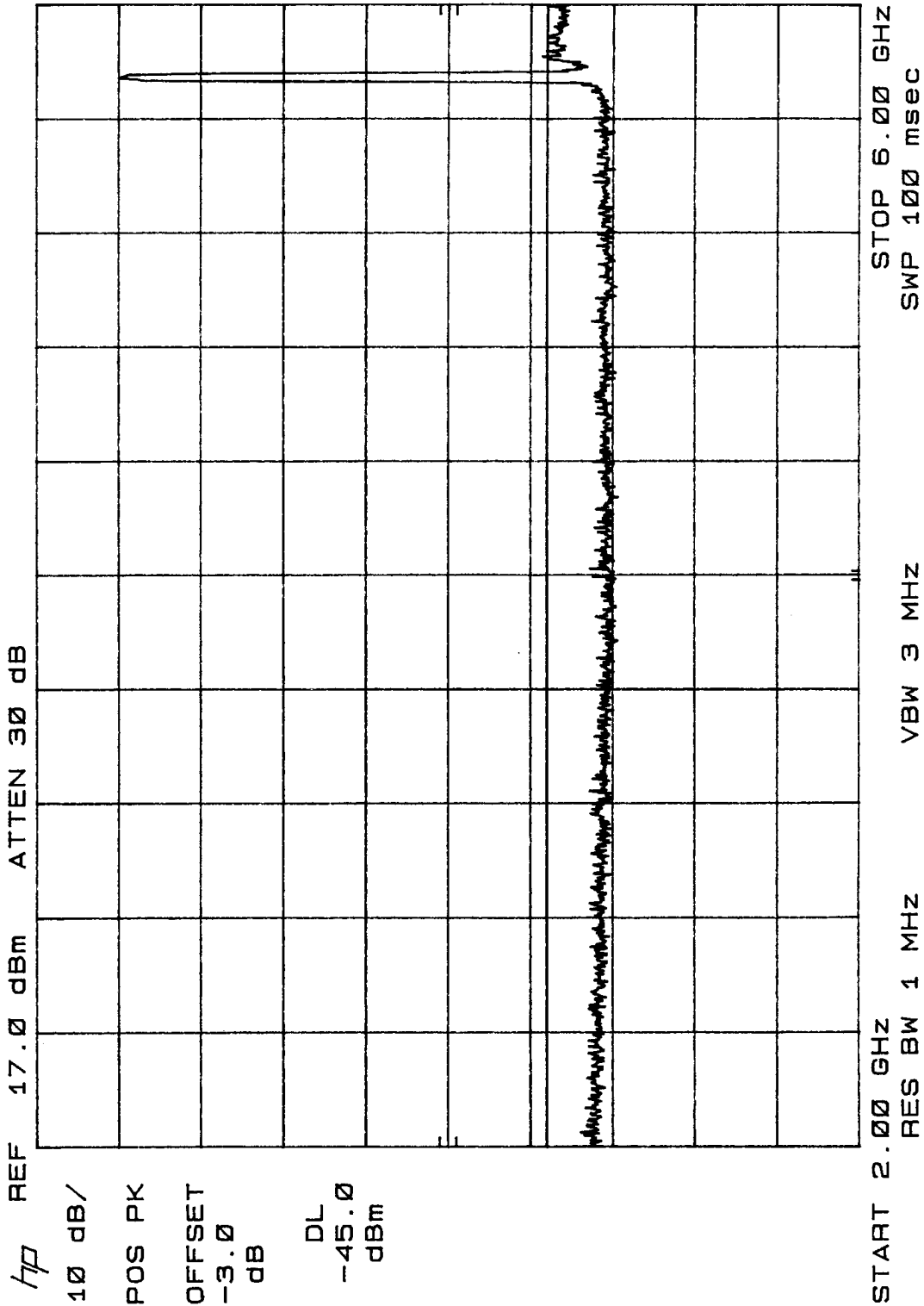
Report No.: SC106727
 Mode: 8QAM Channel 1, 5

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)

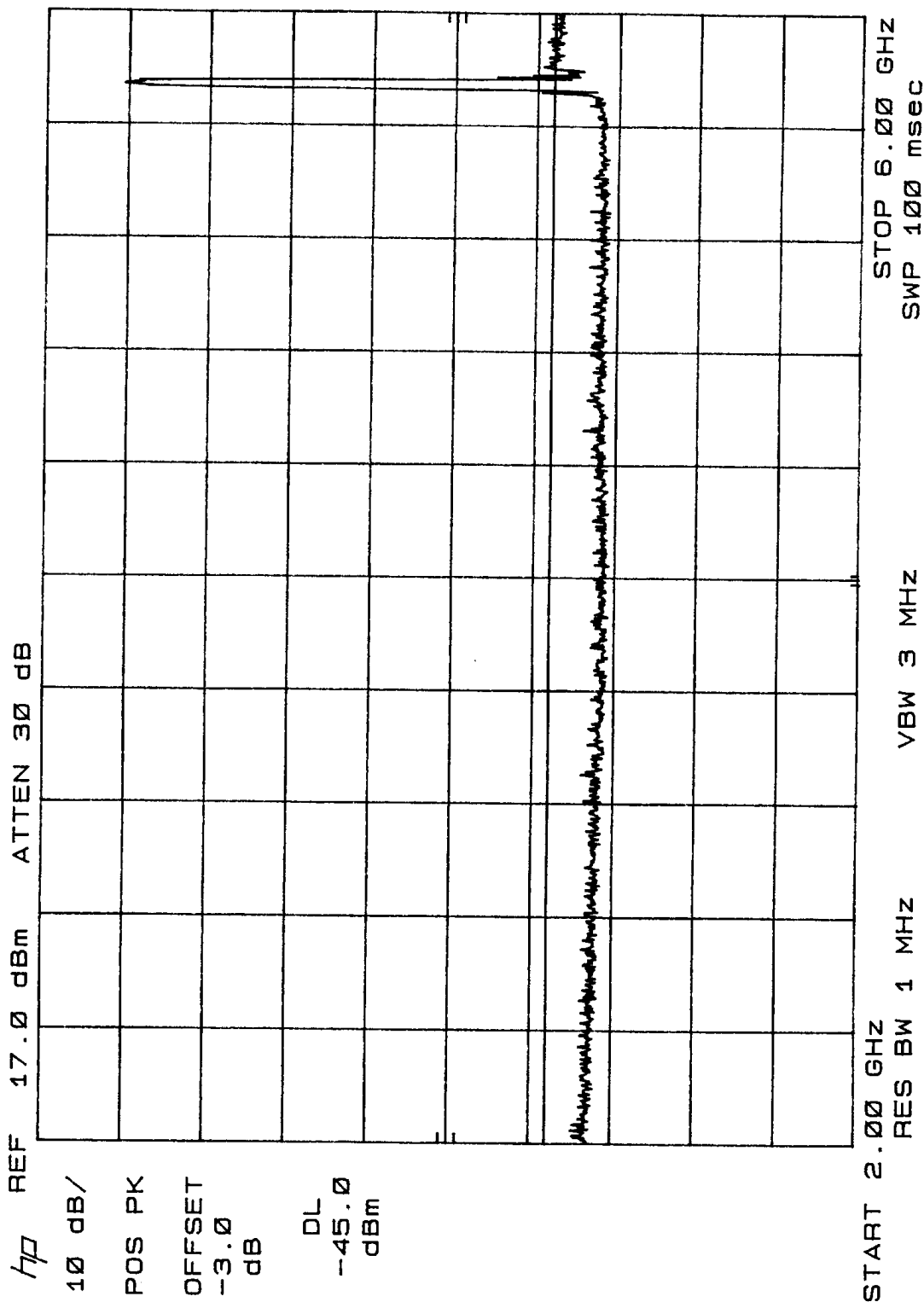
Report No.: SC106727
Mode: QAM 8, channel, 5
Sep. 27, 2001
TECH/ENGR. *DB*



Sep. 27, 2001
TECH/ENGR. *10/83*

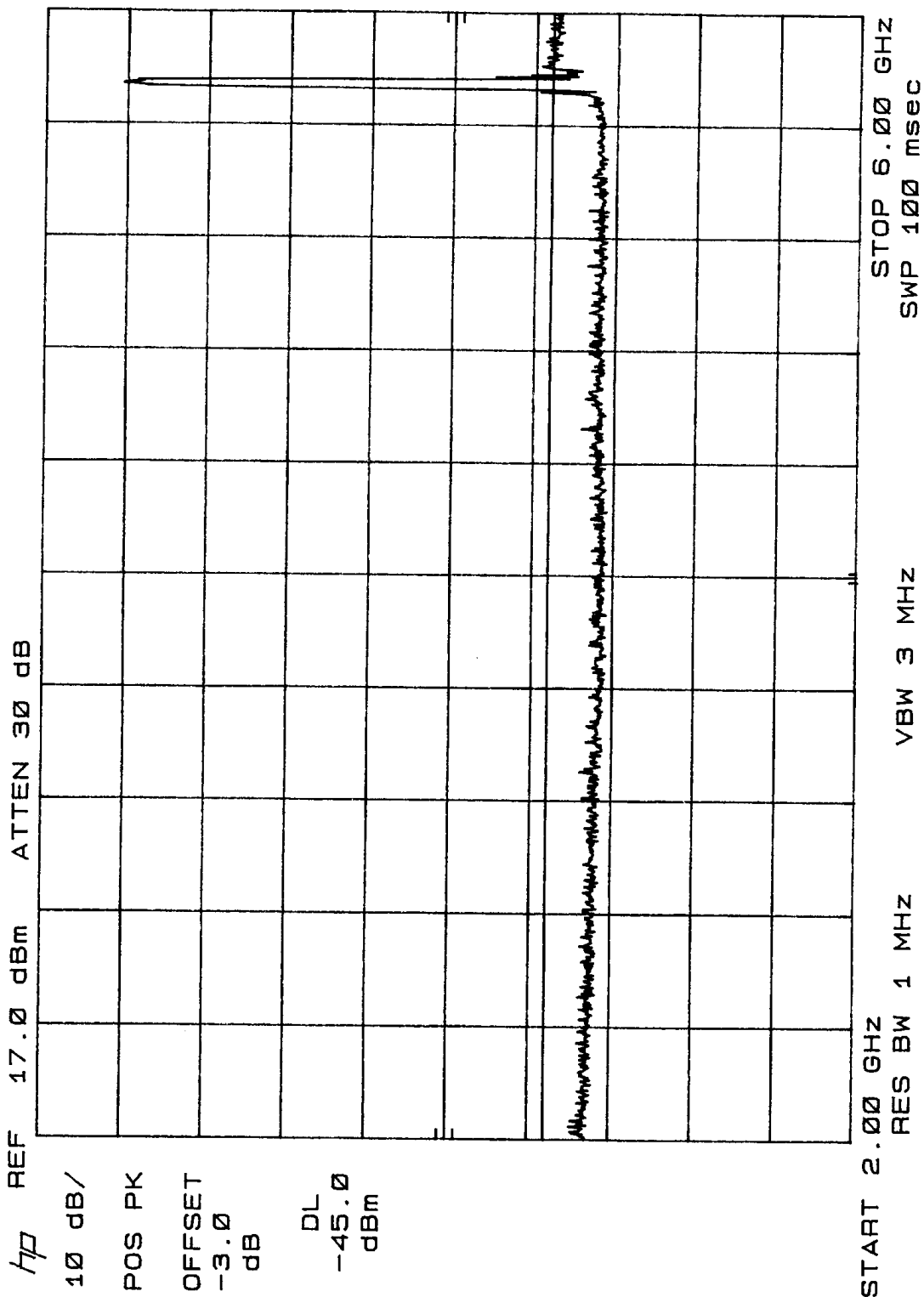
Report No.: SC106727
Mode: *QAM16, channels, 5*

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



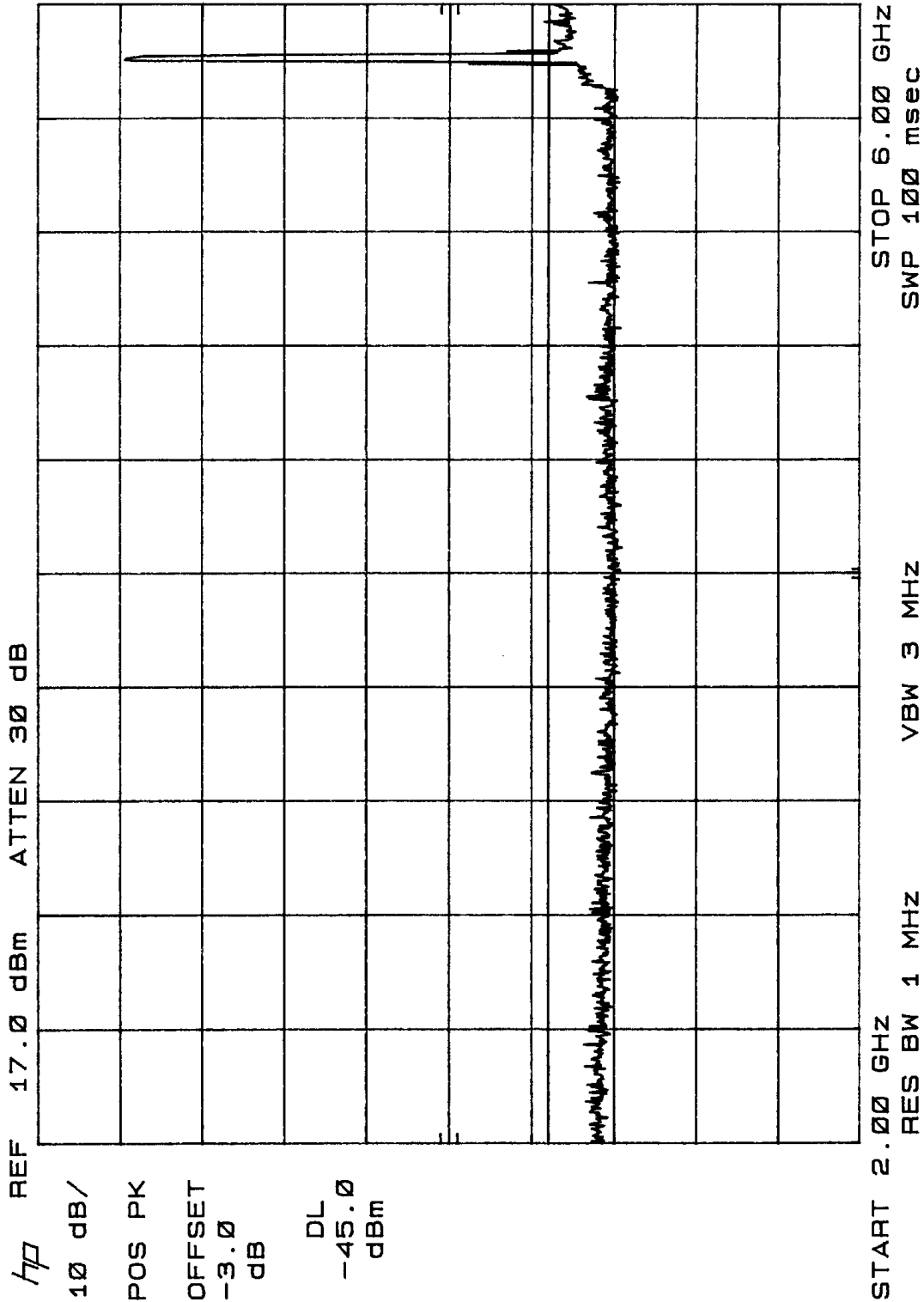
CUSTOMER: WESTERN Multiplex
 EUT: UNII Radio FCCID: HZB-U58-B60
 TEST: Out of Band Antenna Conducted Part 15.407(b)

Report No.: SC106727
 Mode: QAM16, channels, 5
 Sep. 27, 2001
 TECH/ENGR. 10003



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 *RSB*

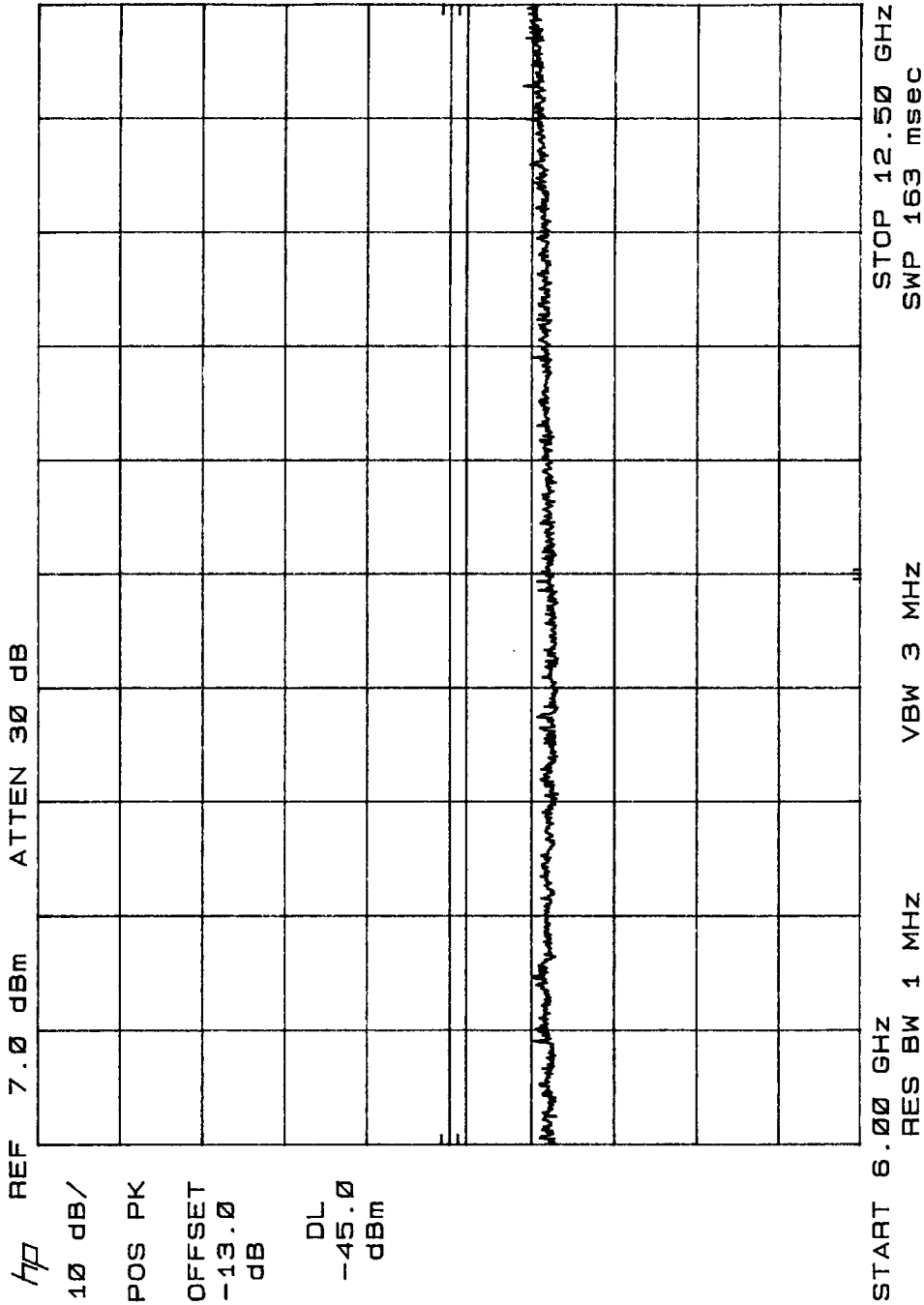


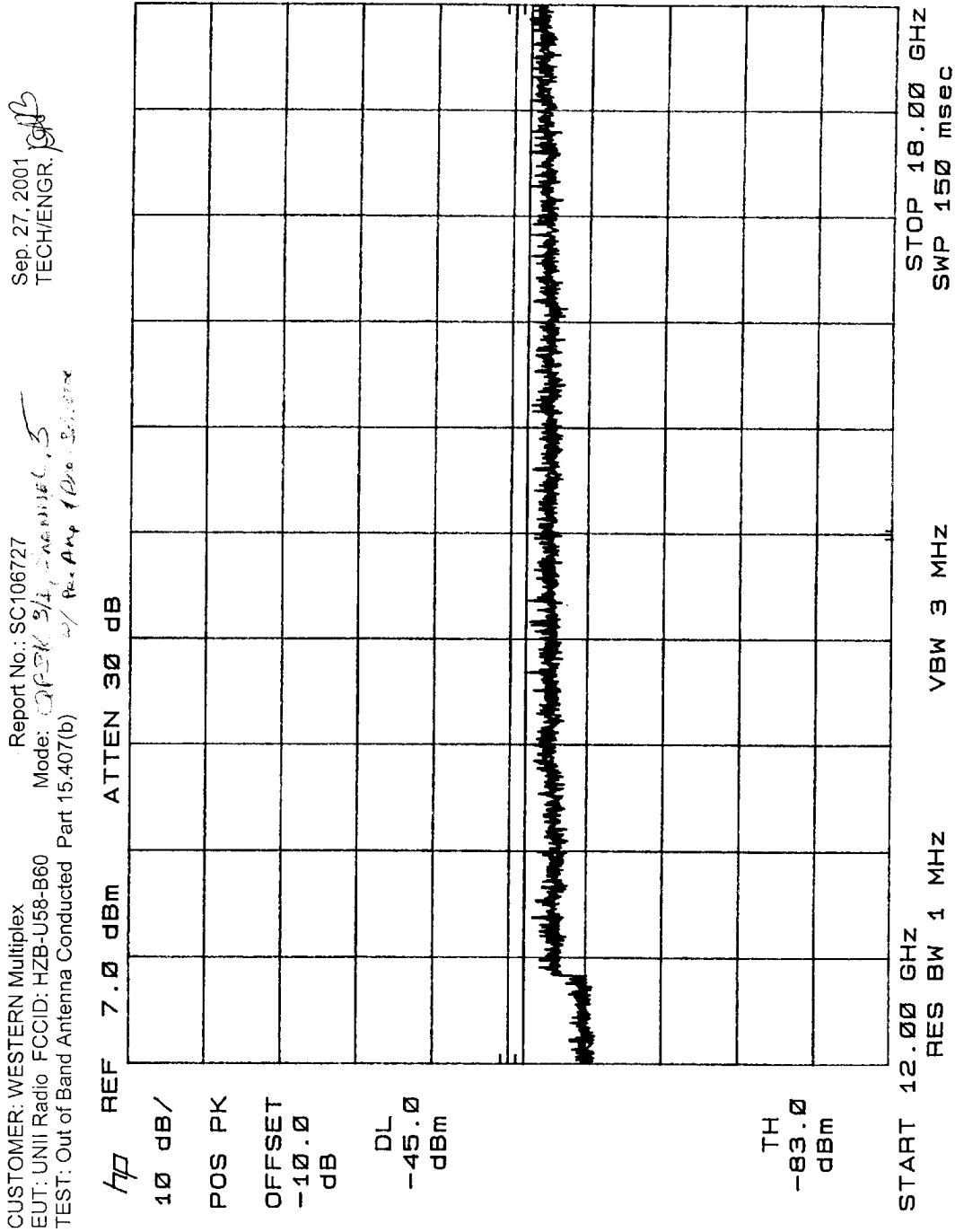


Sep. 27, 2001
TECH/ENGR. *gdb*

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)





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

hp REF 7.0 dBm ATTN 30 dB

10 dB/

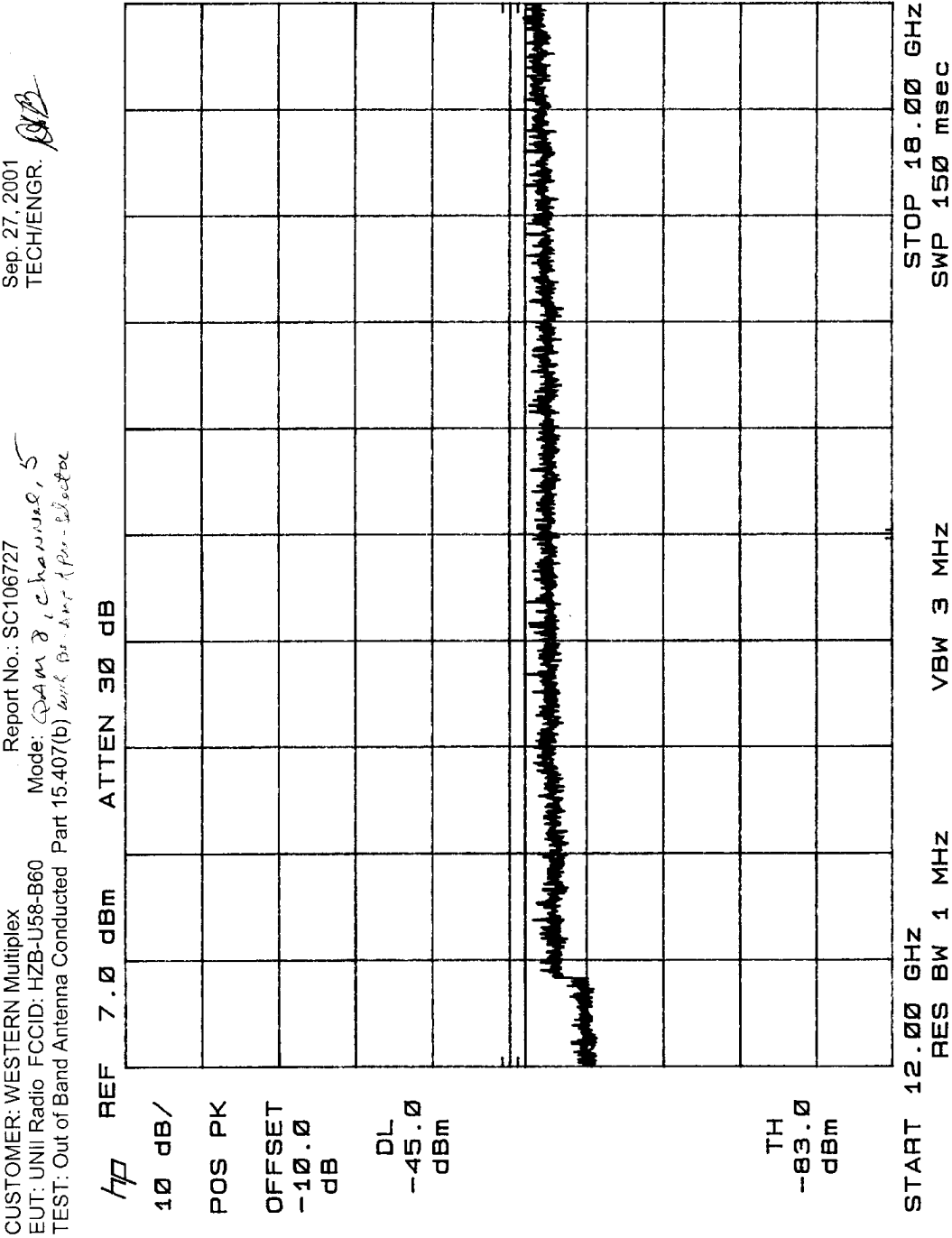
POS PK

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

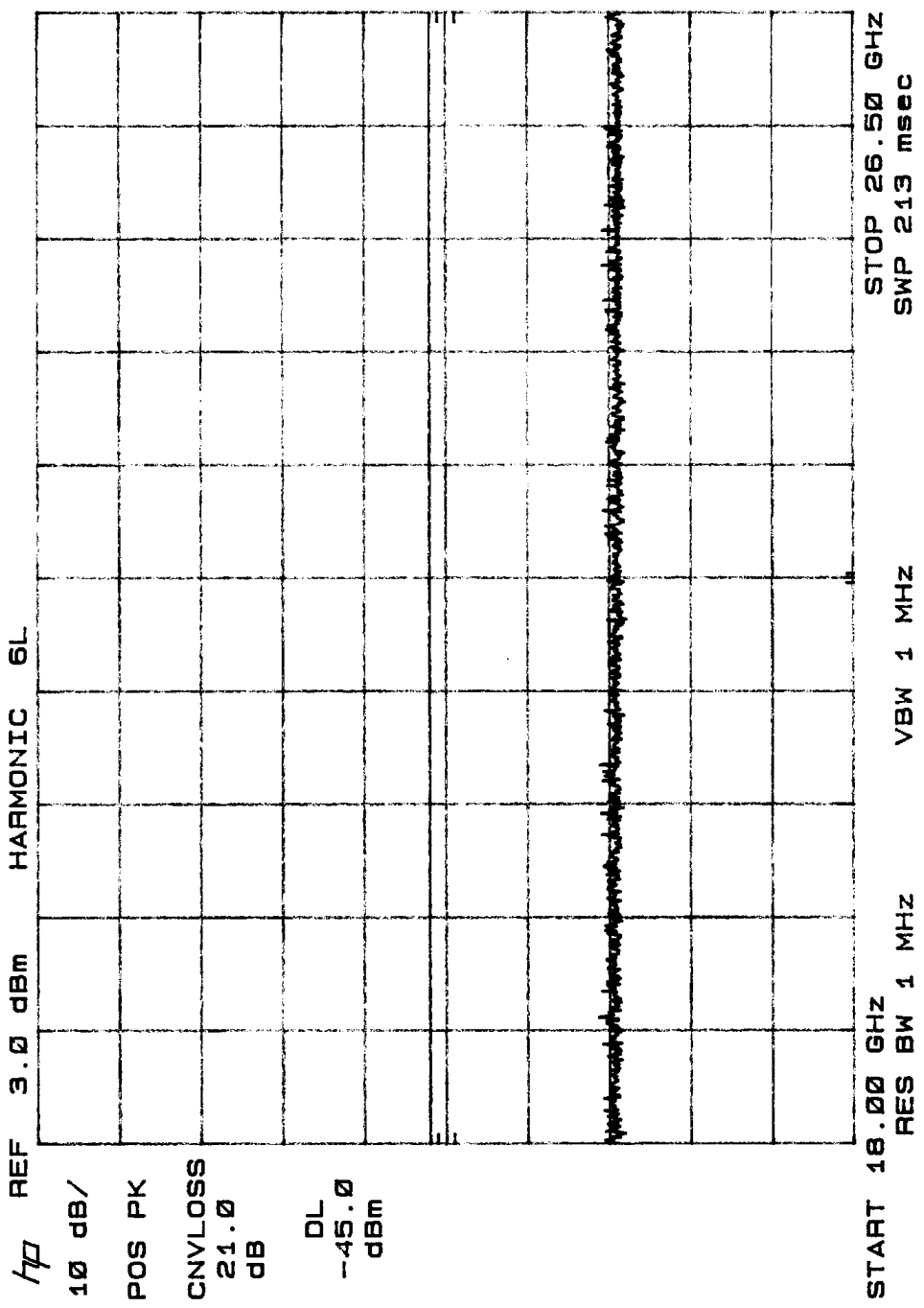




Sep. 26, 2001
TECH/ENGR. *LB*

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)

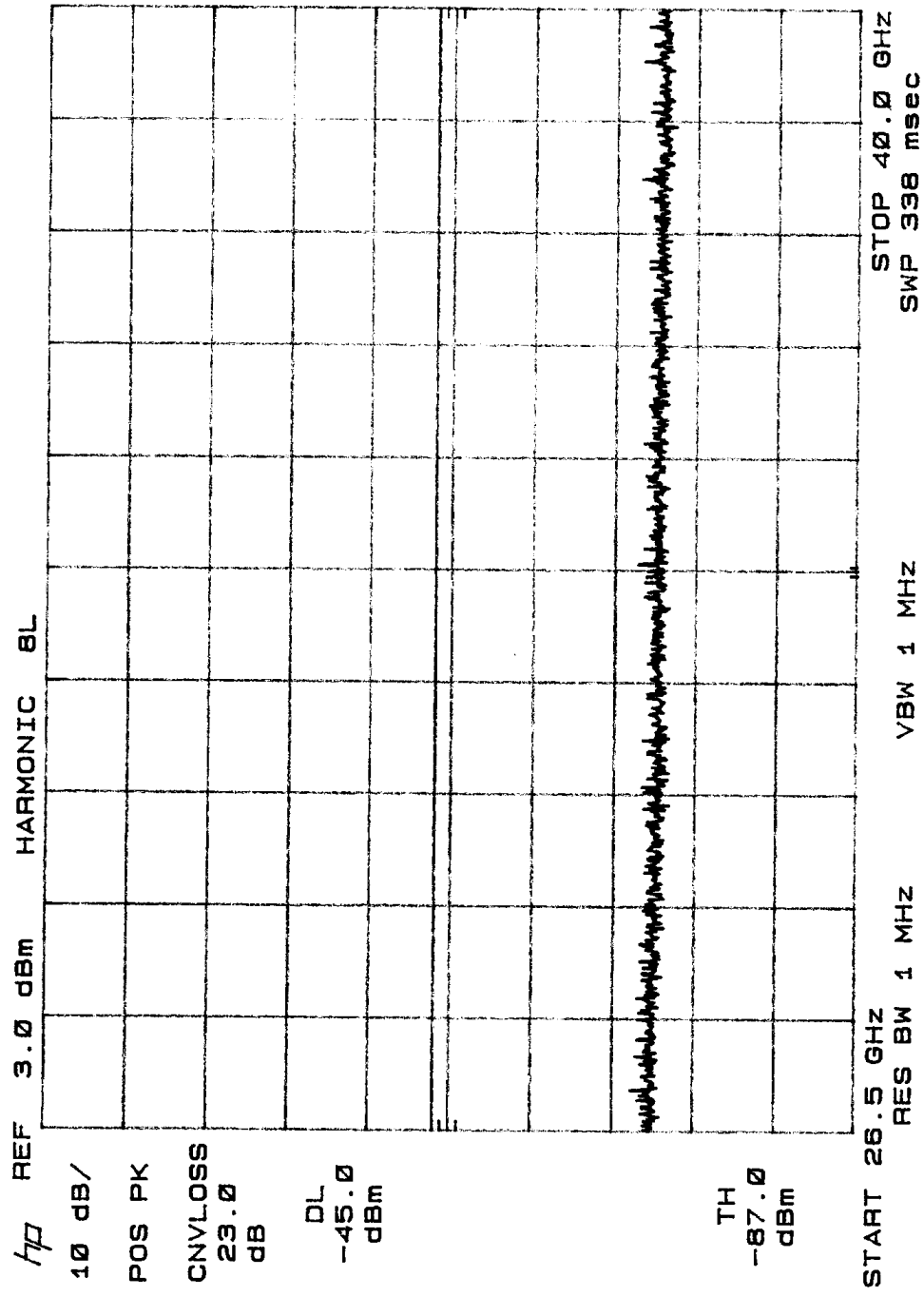


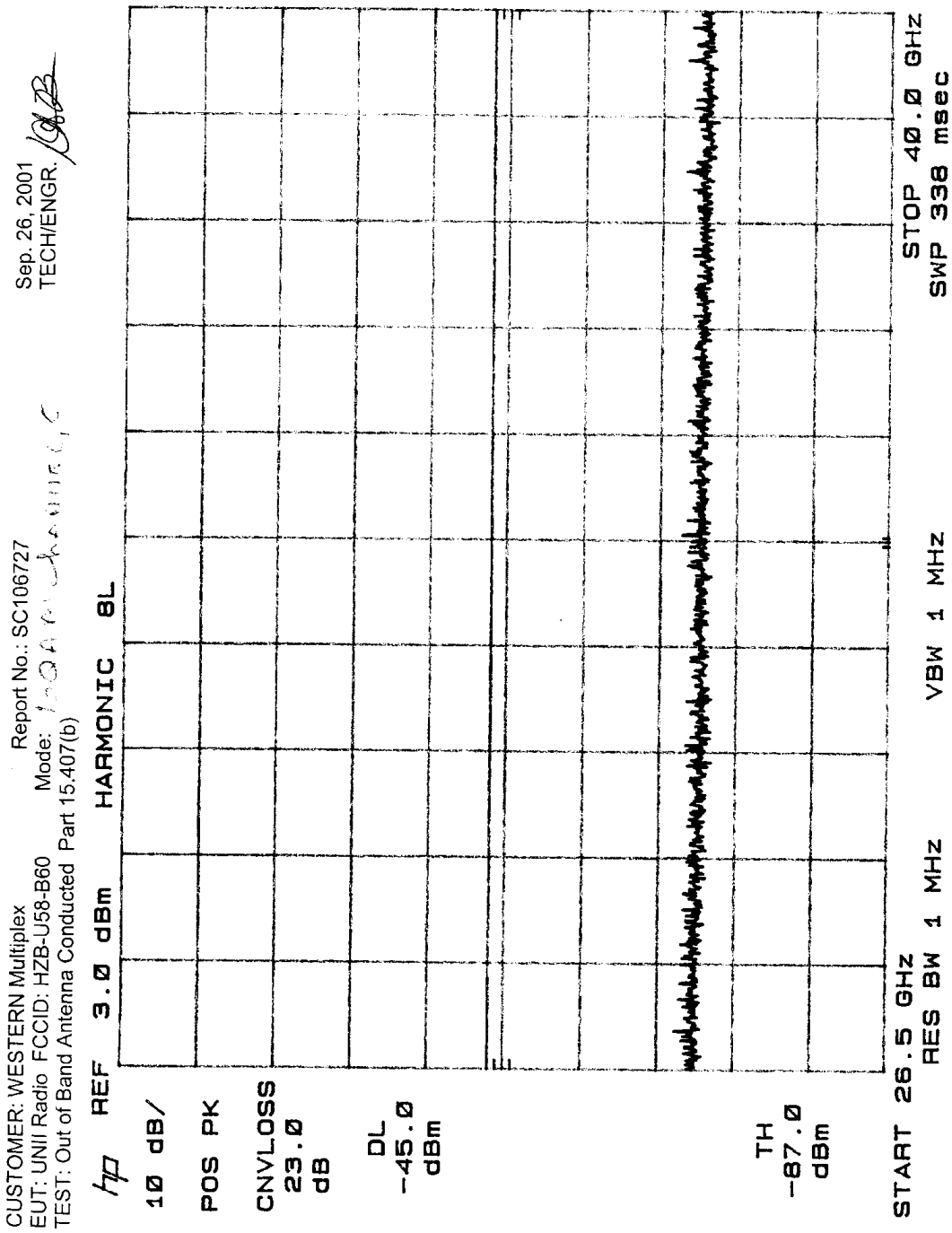


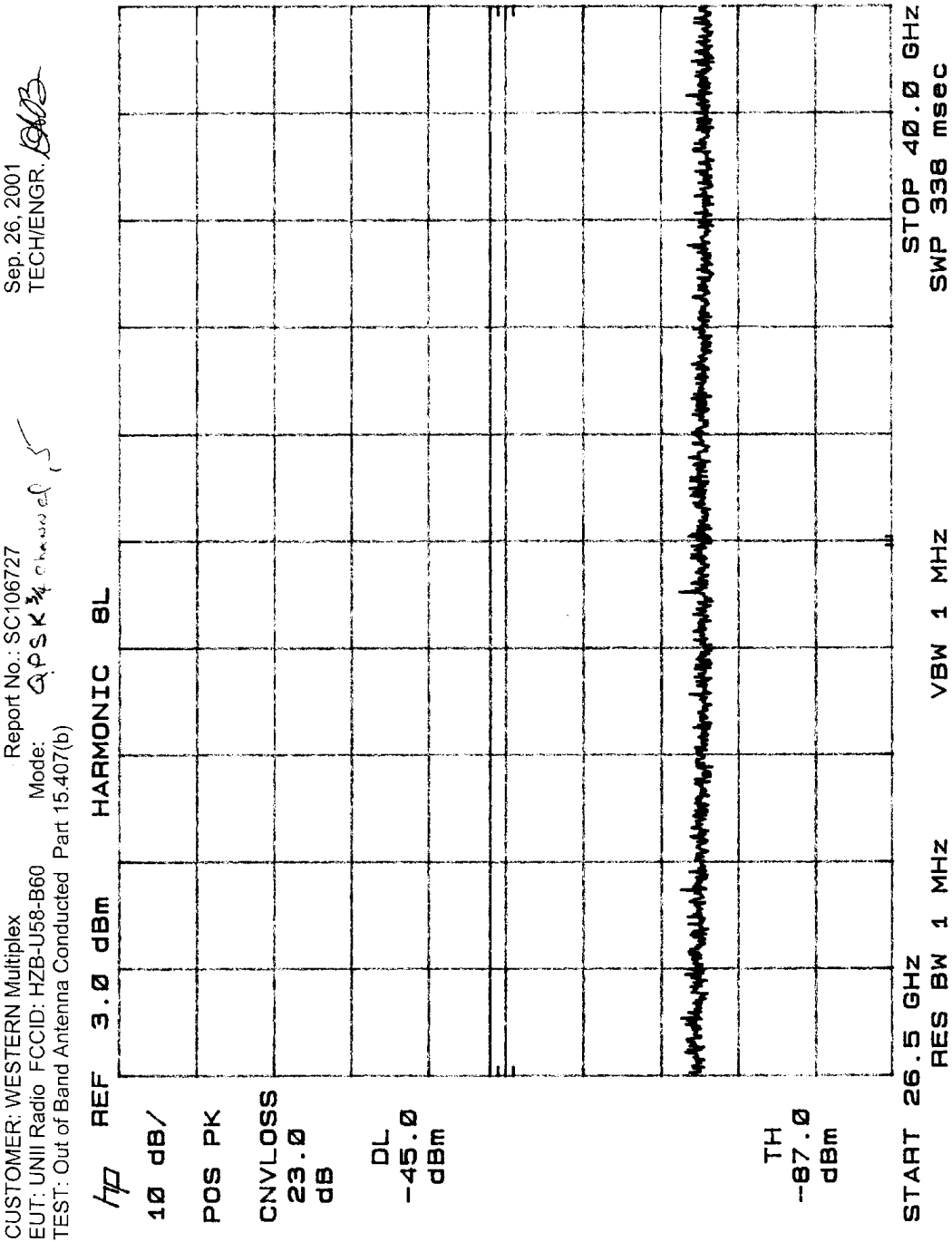
Sep. 26, 2001
TECH/ENGR. *[Signature]*

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

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





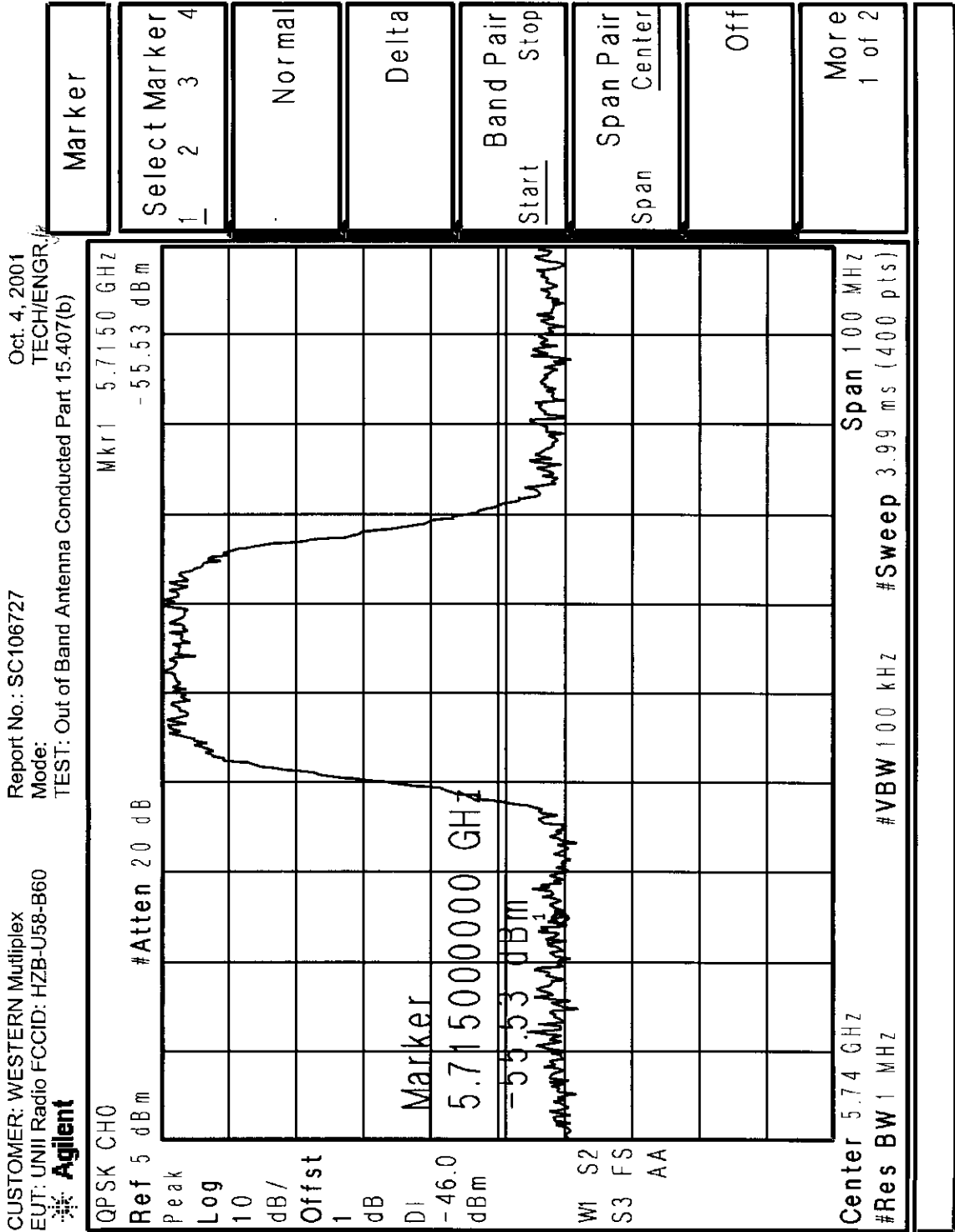


On October 4, 2001 the Undesirable Emission Limits test per FCC 15.407 (b) was performed at Western Multiplex, Inc. 3780 Kilroy Airport Way, Suite 500, Long Beach, CA 90806.
Model UNII Radio FCC ID: HZB-U58-B60 was tested and passed all tests.
See data and test equipment attached.

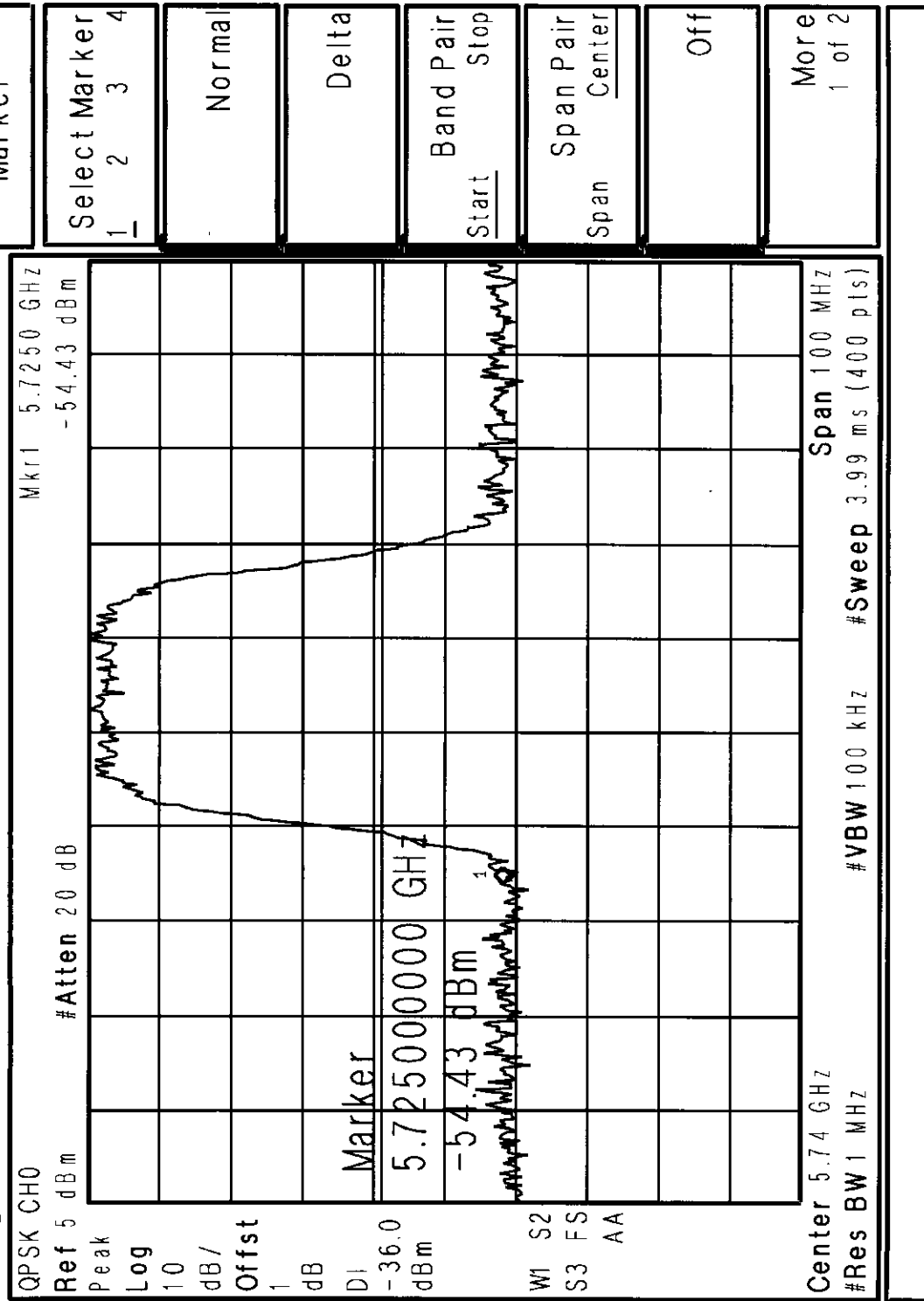


Don Leimer, V.P. Engineering

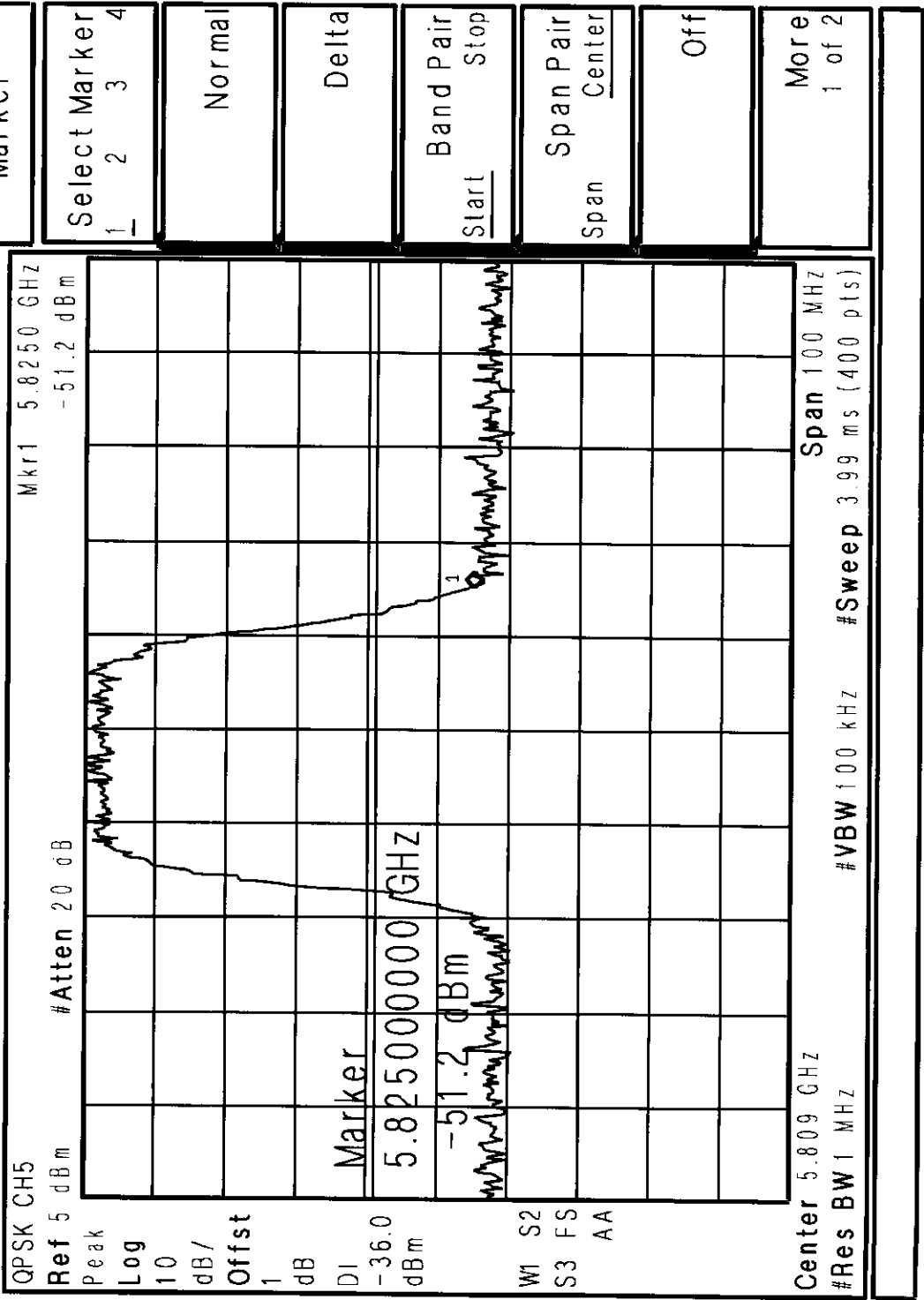
Western Multiplex
3780 Kilroy Airport Way
Suite 500
Long Beach, CA 90806
562-733-3007
562-733-3003

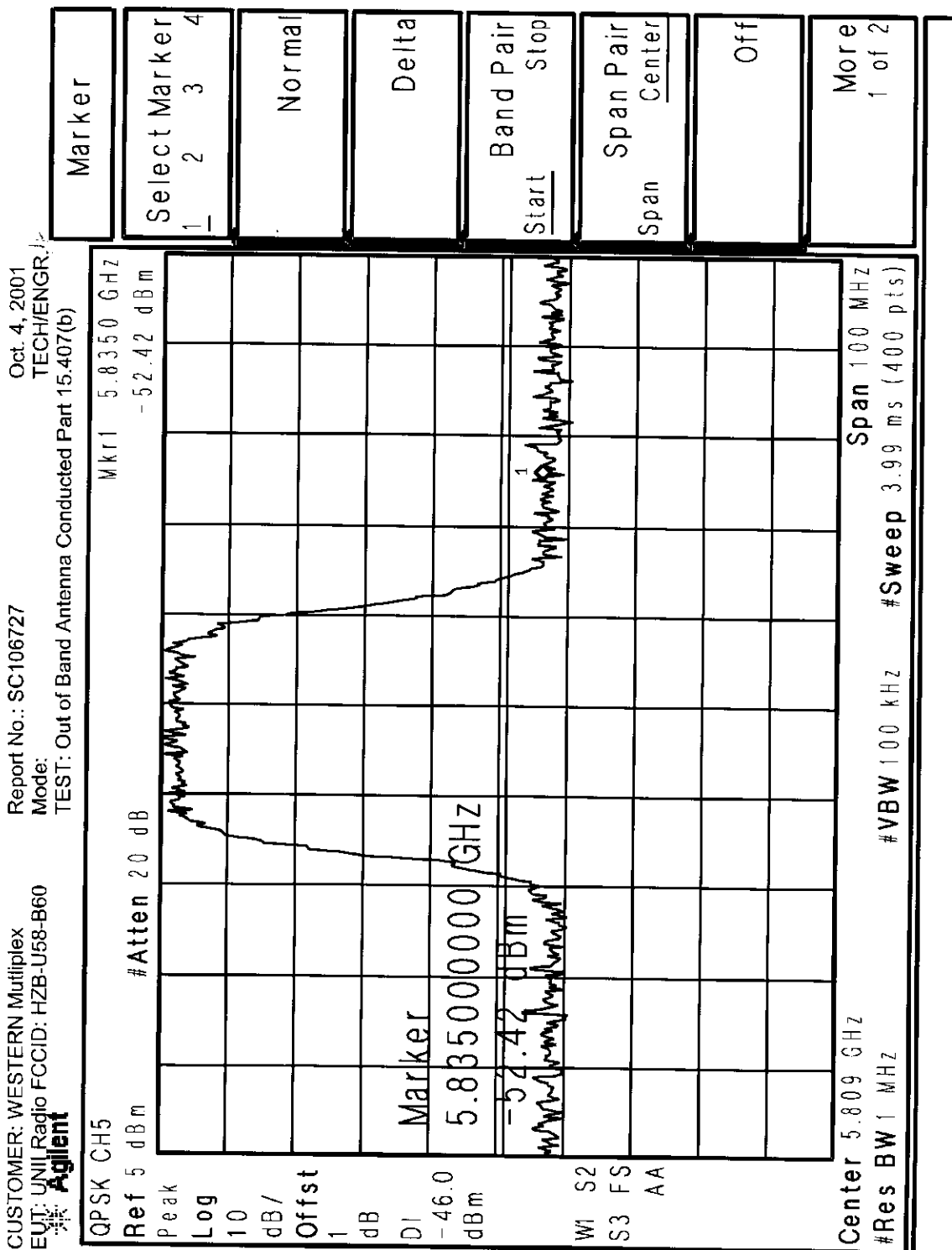


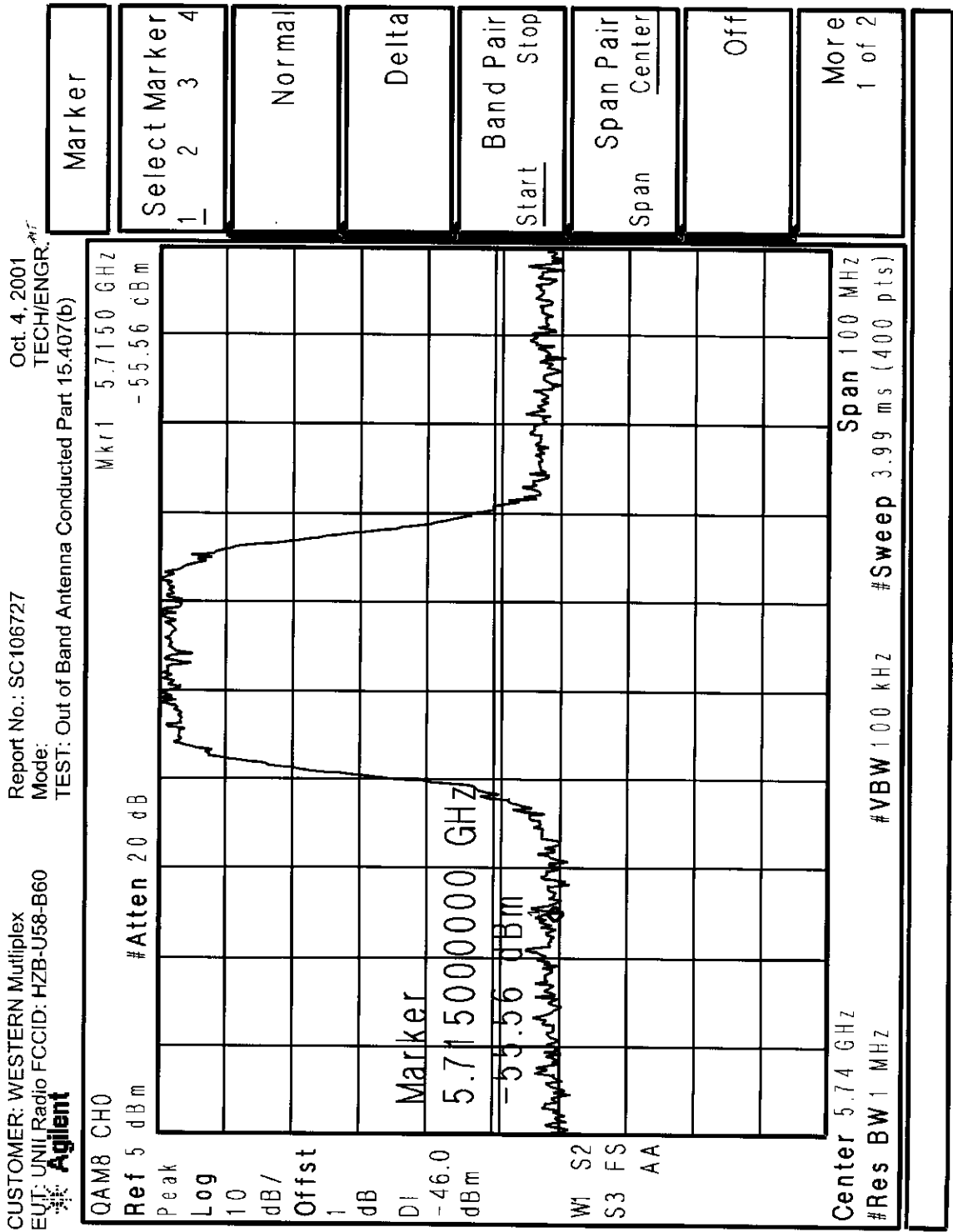
CUSTOMER: WESTERN Multiplex
EUT: UNII Radio FCCID: HZB-U58-B60
Report No.: SC106727
Mode: TECH/ENGR.
TEST: Out of Band Antenna Conducted Part 15.407(b)

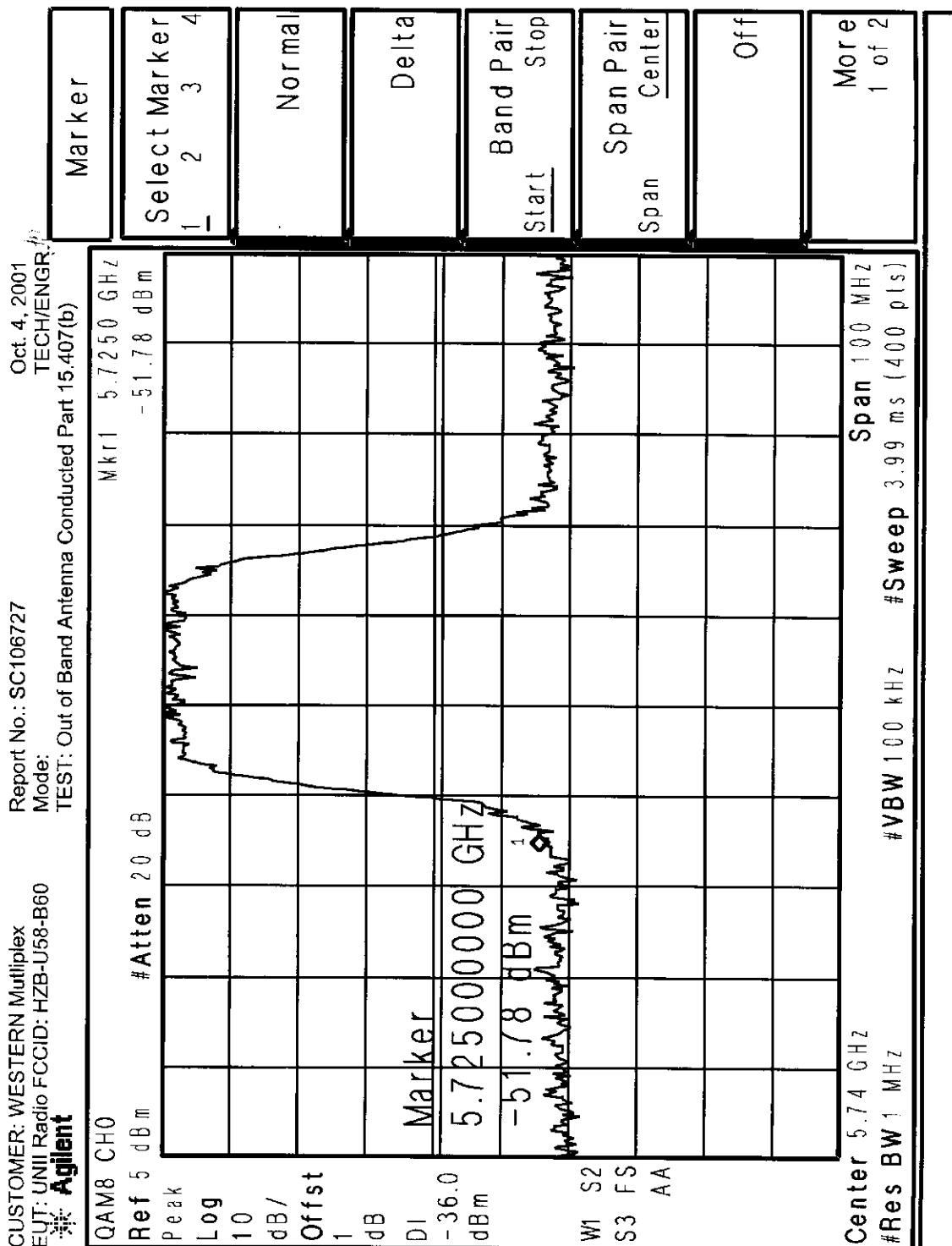


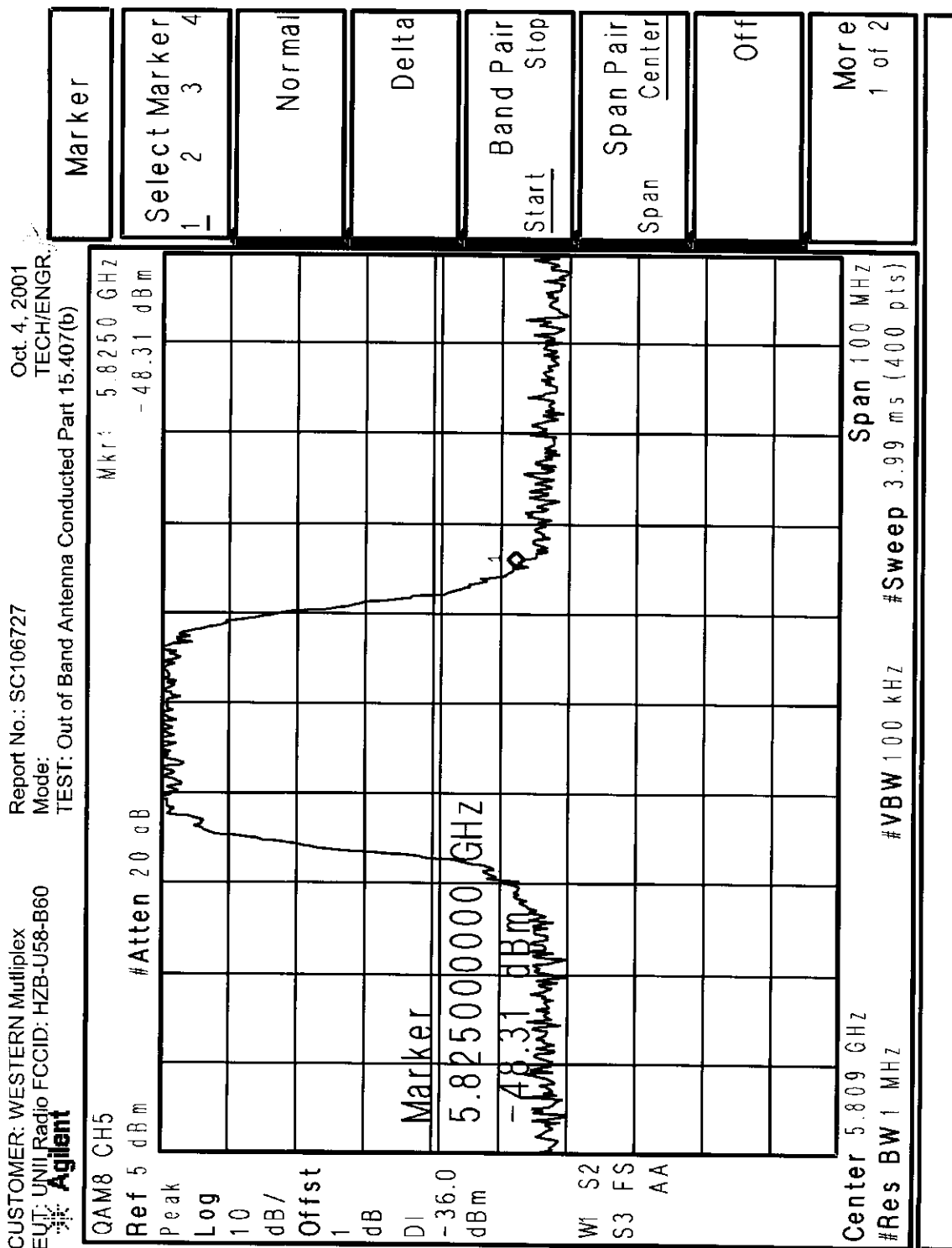
CUSTOMER: WESTERN Multiplex
EUT: UNII Radio FCCID: HZB-U58-B60
Report No.: SC106727
Mode: TECH/ENGR
TEST: Out of Band Antenna Conducted Part 15.407(b)

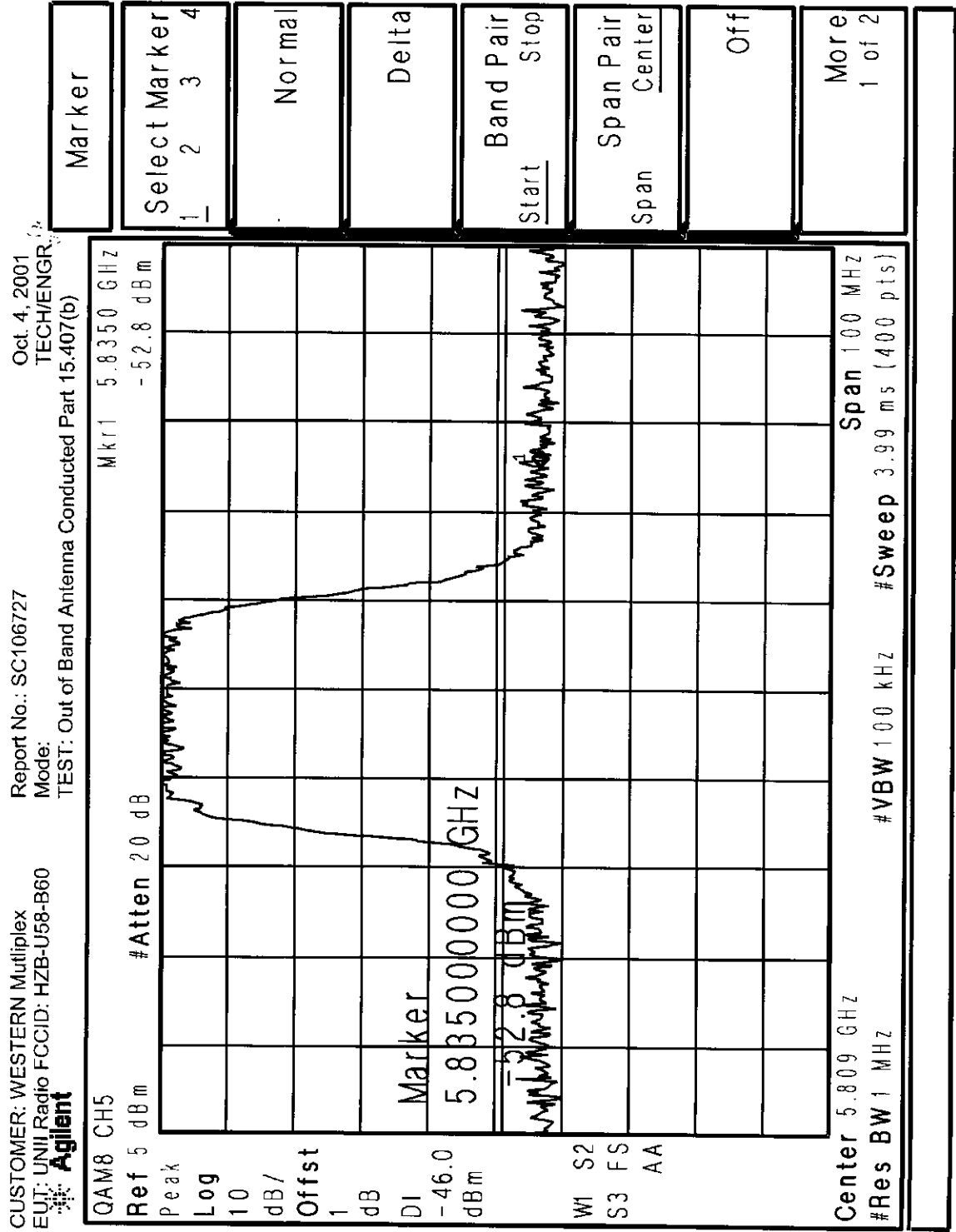


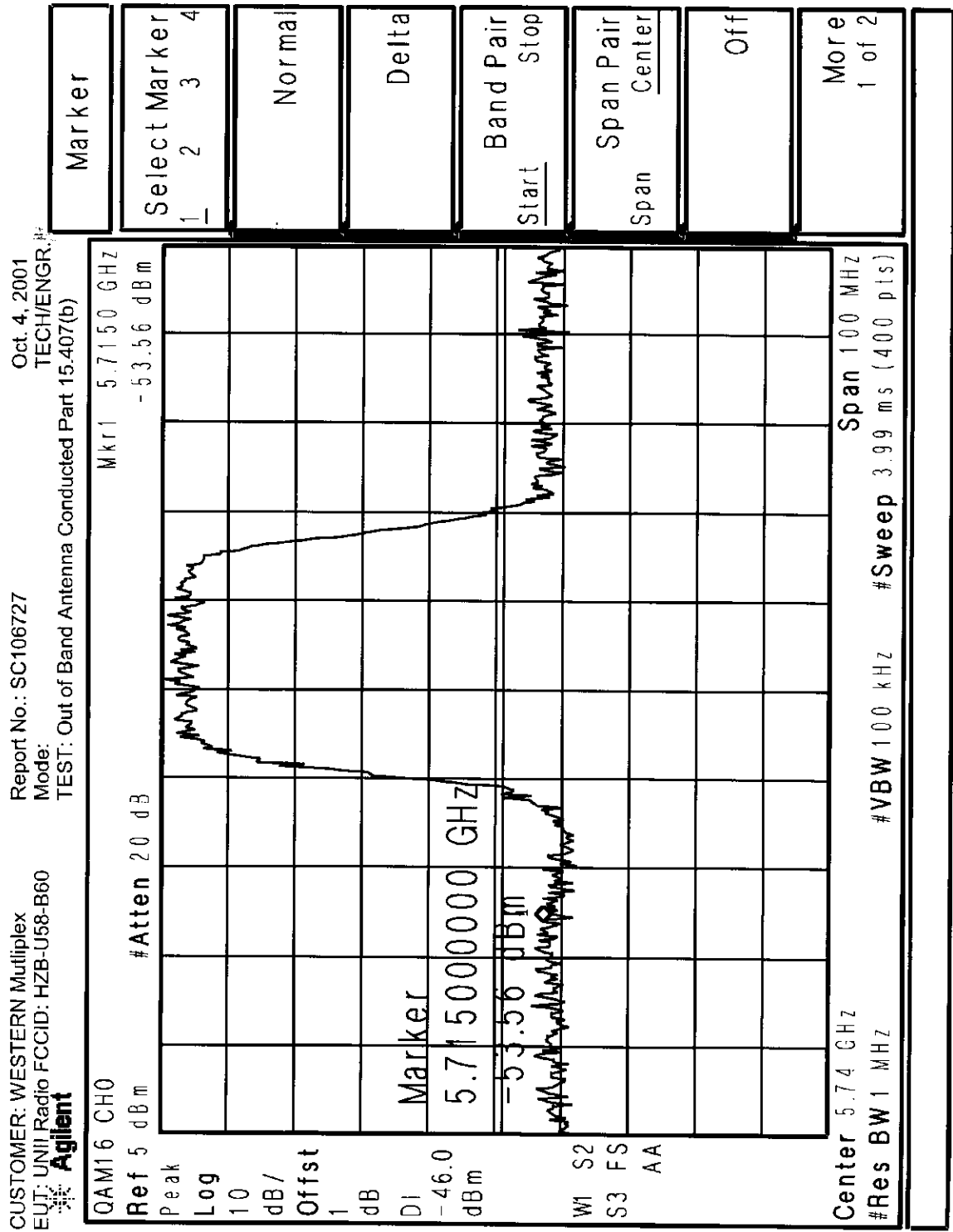


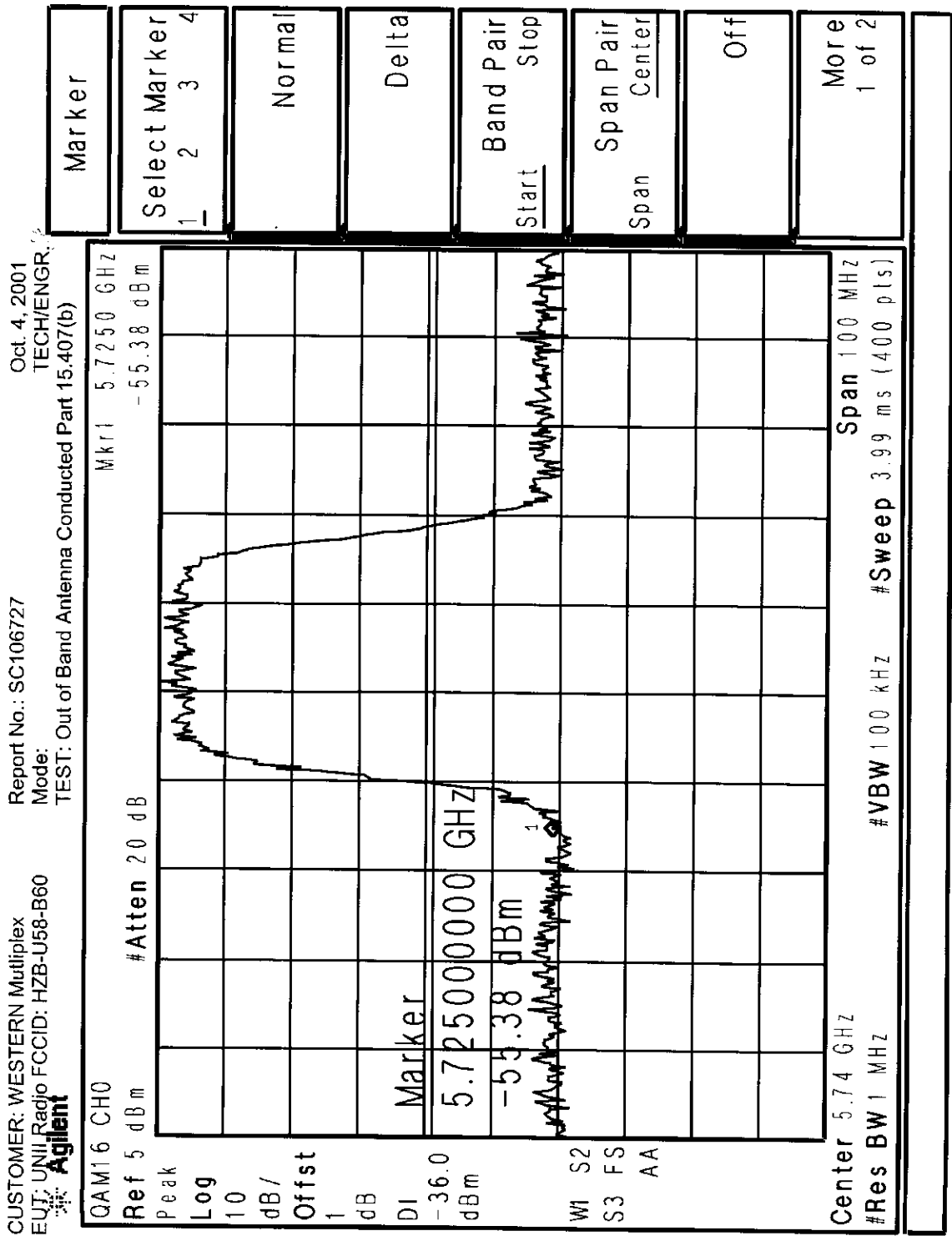




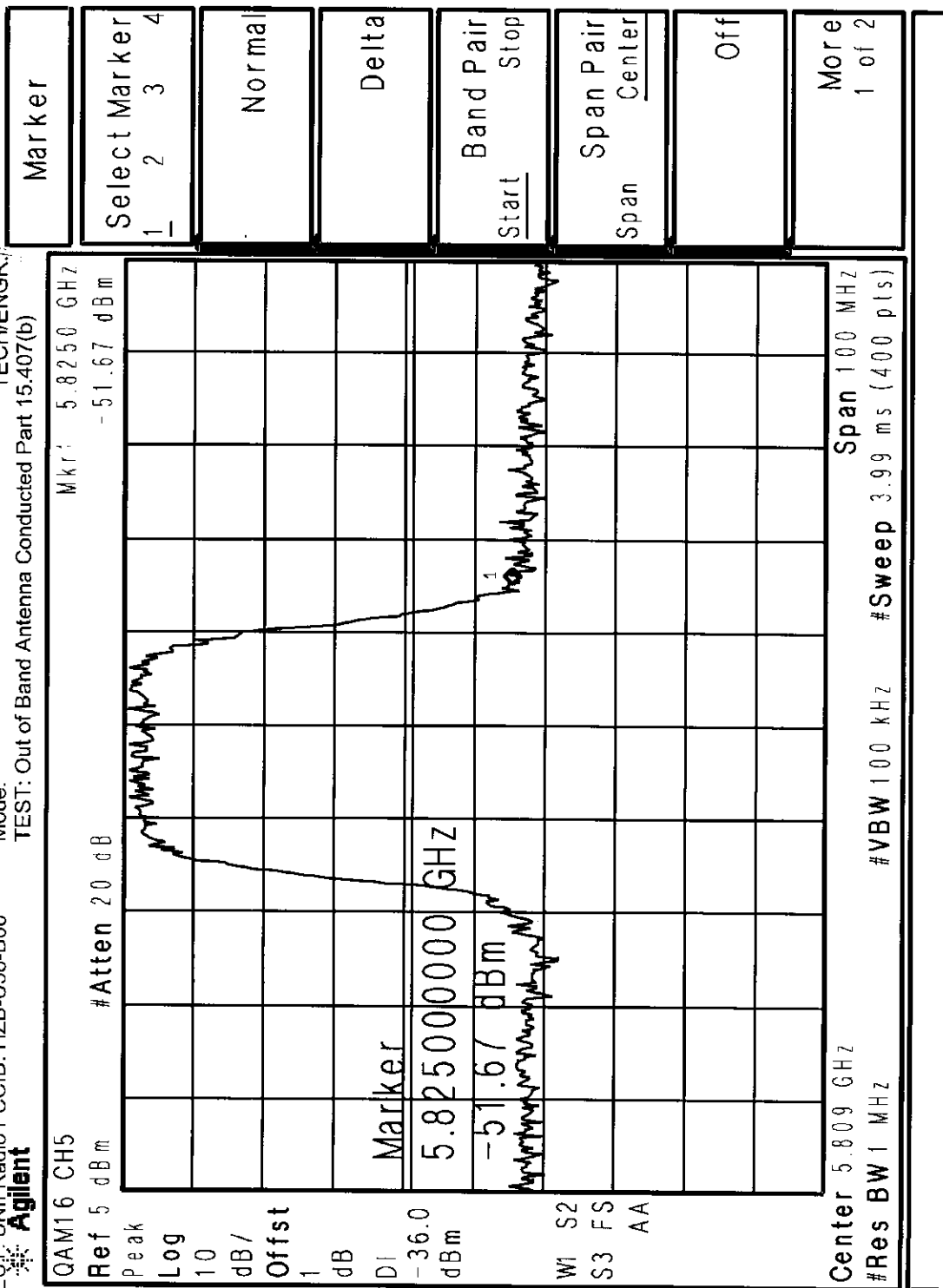




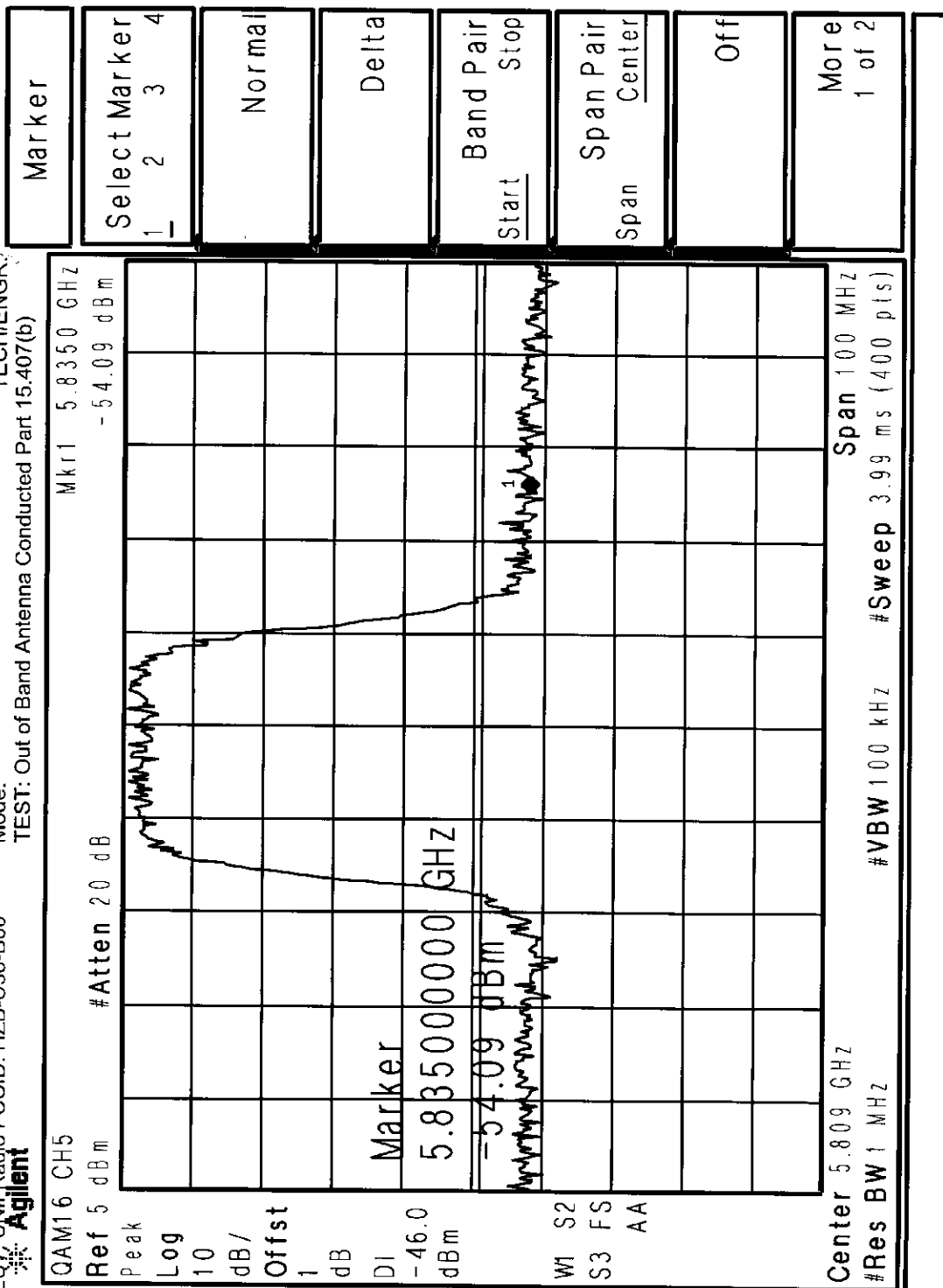




CUSTOMER: WESTERN Multiplex
EUT: UNIL Radio FCCID: HZB-U58-B60
Agilent
Report No.: SC106727
Mode: TECH/ENGR
TEST: Out of Band Antenna Conducted Part 15.407(b)
Oct. 4, 2001



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



Report No. SC106727-03



REPORT NO: SC108727	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 MODE: Normal Receiver/Transmit	R/C/N/A: N/A	
DATE: Oct. 04, 2001	LOG: N/A	
NOTES:	OTHER: 0	
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 - Preampifier Gain		

[illegible]

8QAM 16QAM QPSK

4-Oct-01

Date:

Test Area: SR5

Test Report #: SC106727

Test Method FCC15.205(b) Restricted bands of operation

Temperature 23 °C
Air Pressure: 100.1 kPa
Relative Humidity: 48 %

EUT Model #: UNII Radio
EUT POWER: 115 Vac/60 Hz

EUT Description FCC ID: HZB-U58-B60

NOTES: Mode: Receive/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 Rotation	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
hp8586B	407	Spectrum Analyzer	Hewlett Packard	2311A02209	2/15/02
hp11975A	719	Amplifier	Hewlett Packard	2517A00639	not req'd.
hp11970K	852	Mixer	Hewlett Packard	3003A05400	not req'd.
12A18 115300	0006377	Horn Antenna 18-26 GHz	MI Technologies	21554MB	not req'd.

Tested Dave Bernardin

Reviewed by: Alan Laudani

[Signature]
Signature
[Signature]
Signature

TUV Product Service
Powerline Conducted Emissions

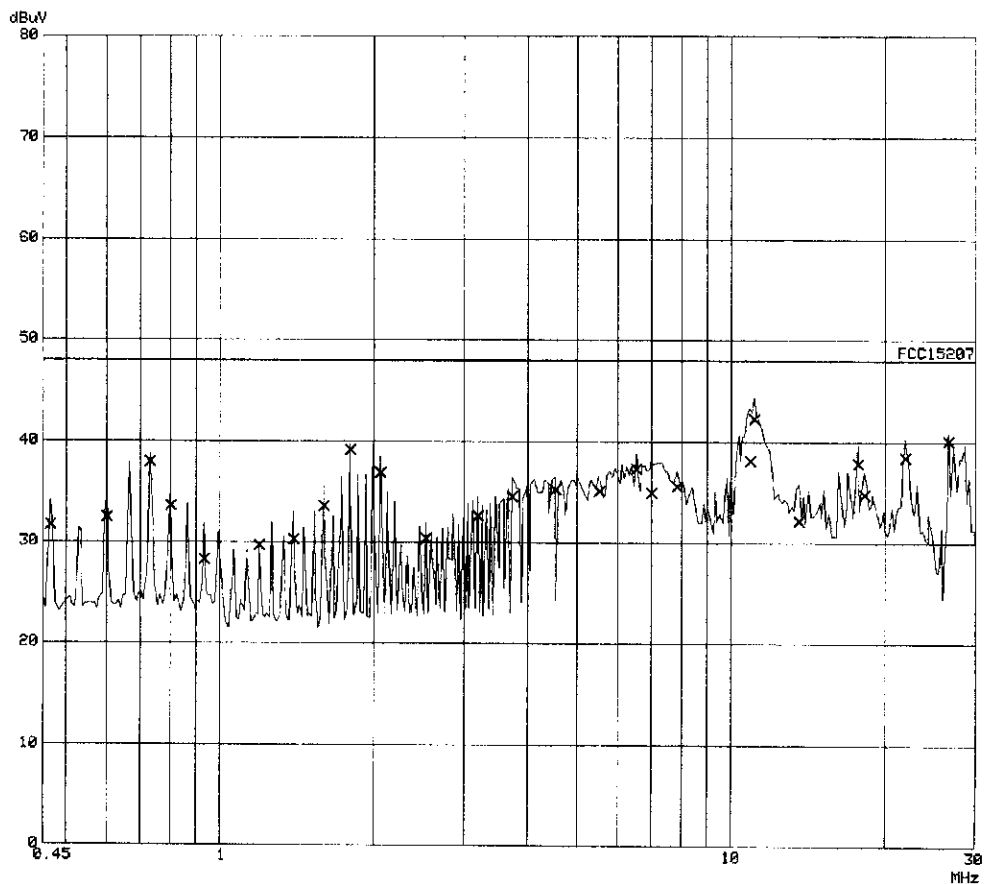
EUT: Tsunami Multipoint Base Station
Manuf: Western multiplex
Op Cond: 110 Vac to -48Vdc
Operator: Dave Bernardin *DB*
Test Spec: FCC Part 15 B
Comment: 110V ac 60 Hz Line 1Channel 6a QPSK-3/4
SC106727
Date: 24. Sep 01 10:14

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

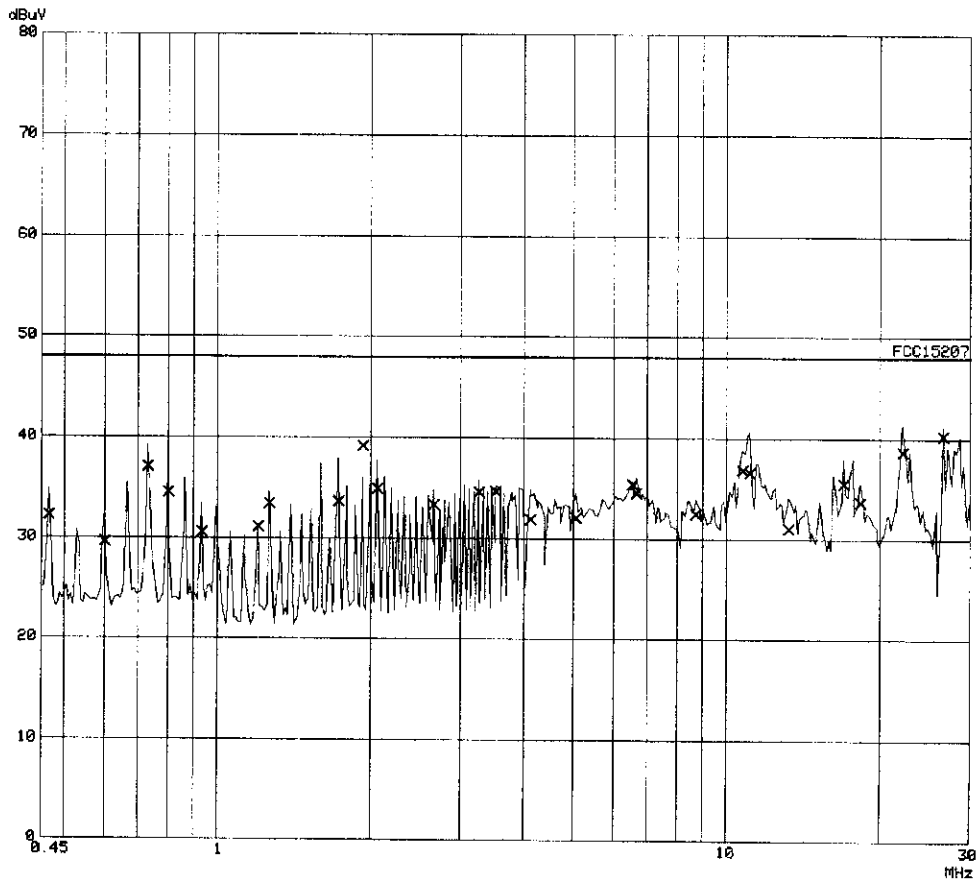
Scan Settings (2 Ranges)

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

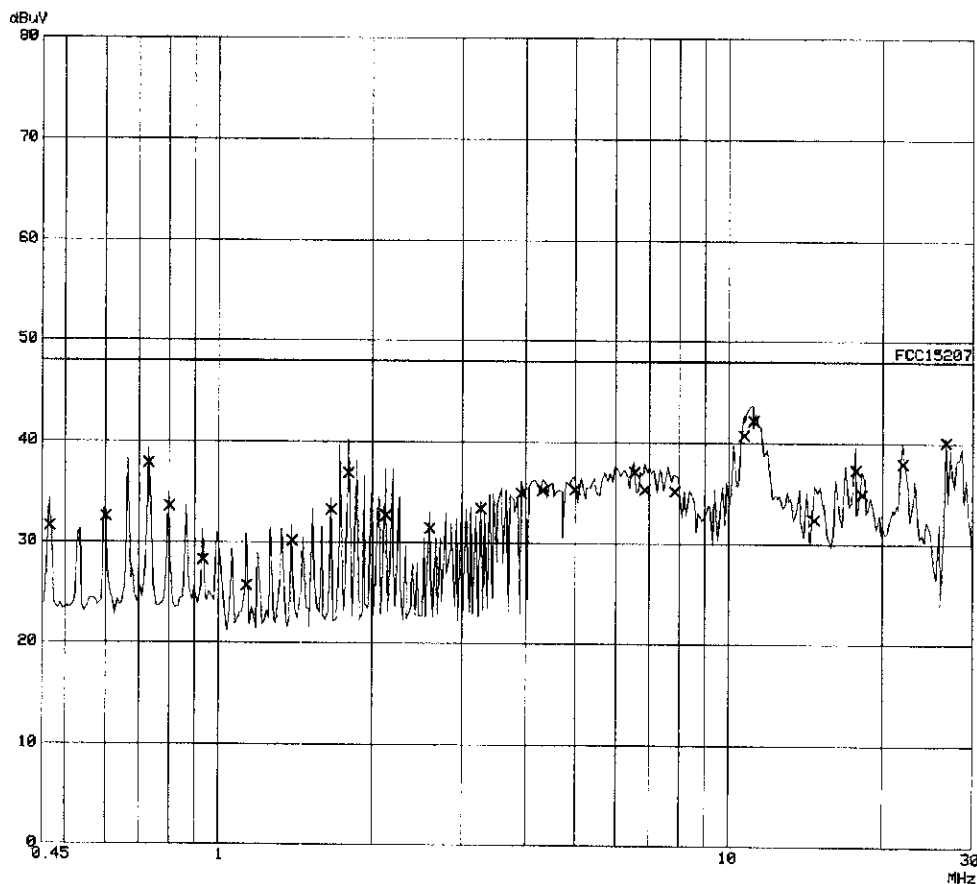
EUT: Tsunami Multipoint Base Station
 Manuf: Western multiplex
 Op Cond: 110 Vac to -48Vdc
 Operator: Dave Bernardin *OK*
 Test Spec: FCC Part 15 B
 Comment: 110V ac 60 Hz Line 1Channel 6c 8QAM
 SC106727
 Date: 24. Sep 01 10:05

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	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 *DA*
 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>h</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

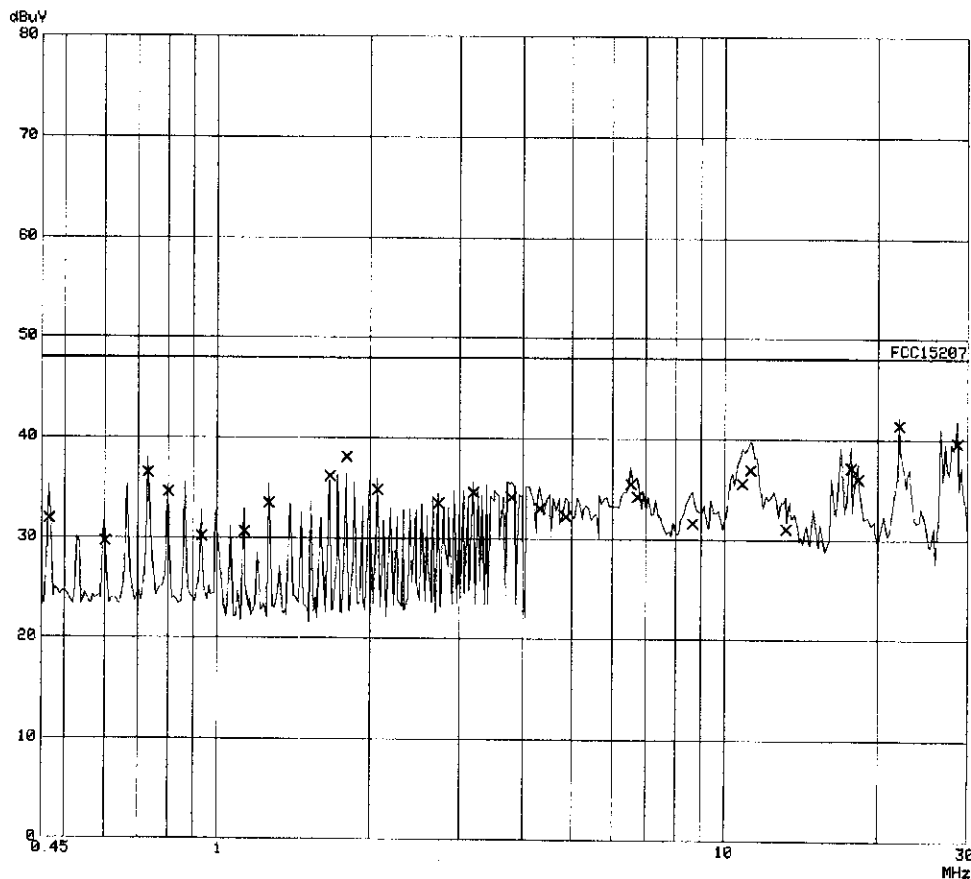
Scan Settings (2 Ranges)

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	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
 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

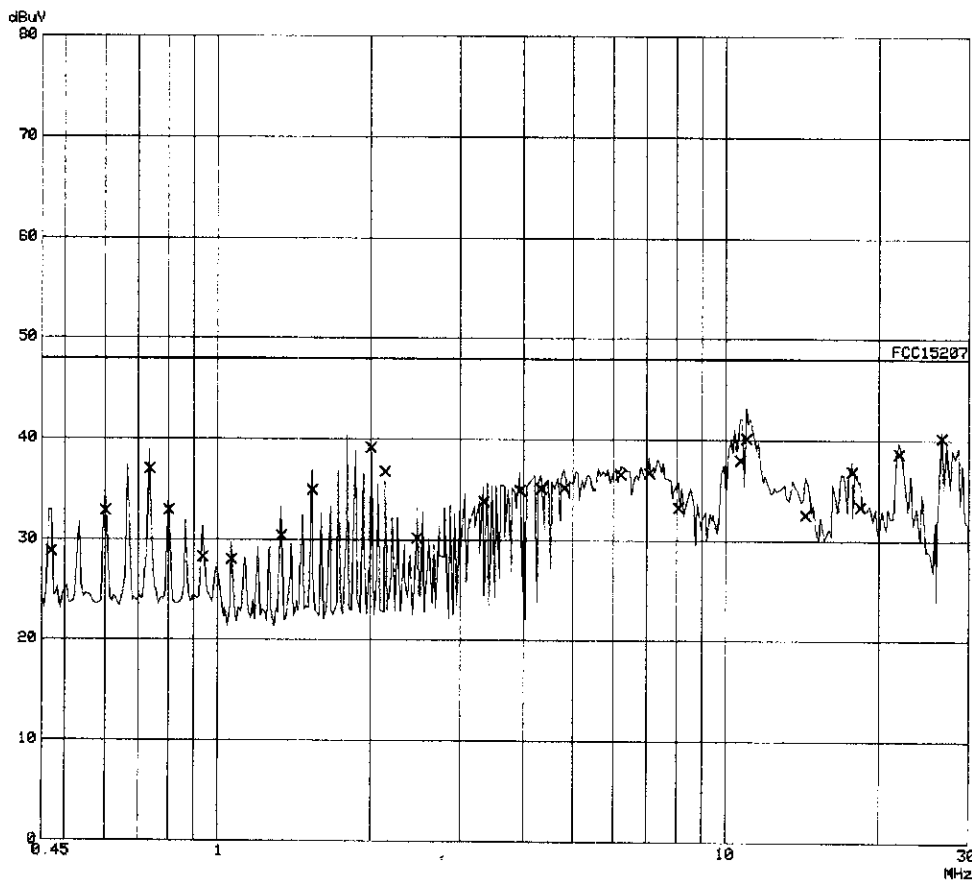
Scan Settings (2 Ranges)

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	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 *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

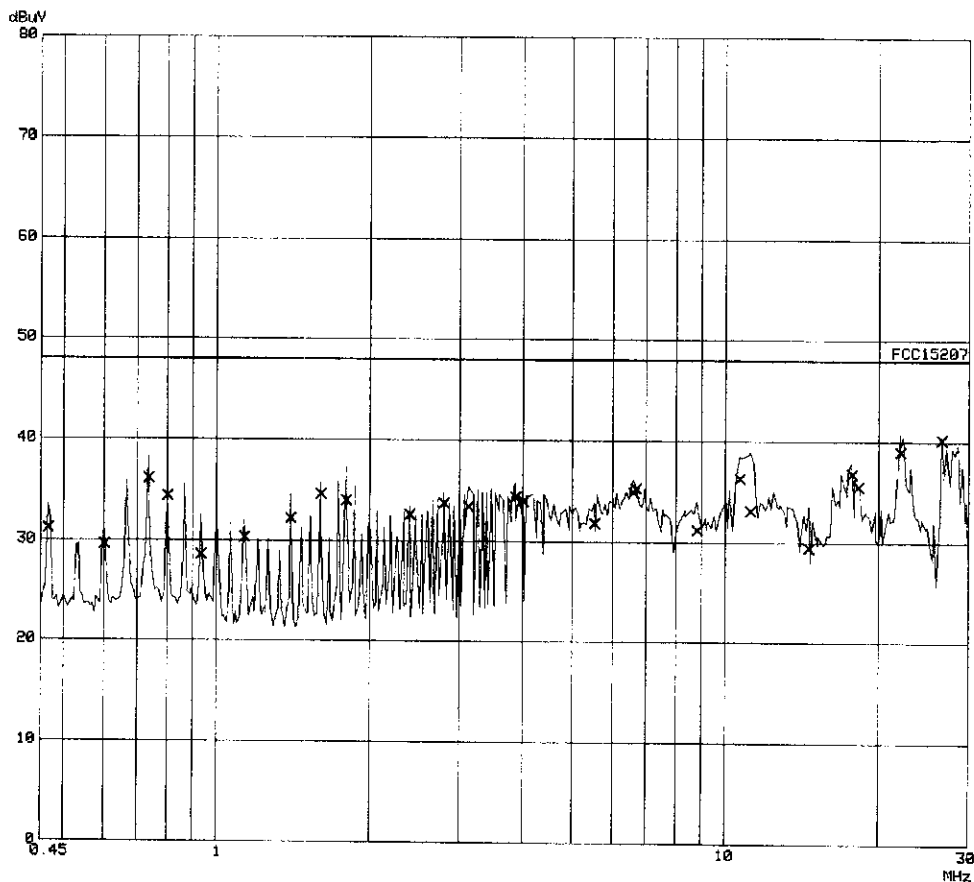
Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamplifier	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



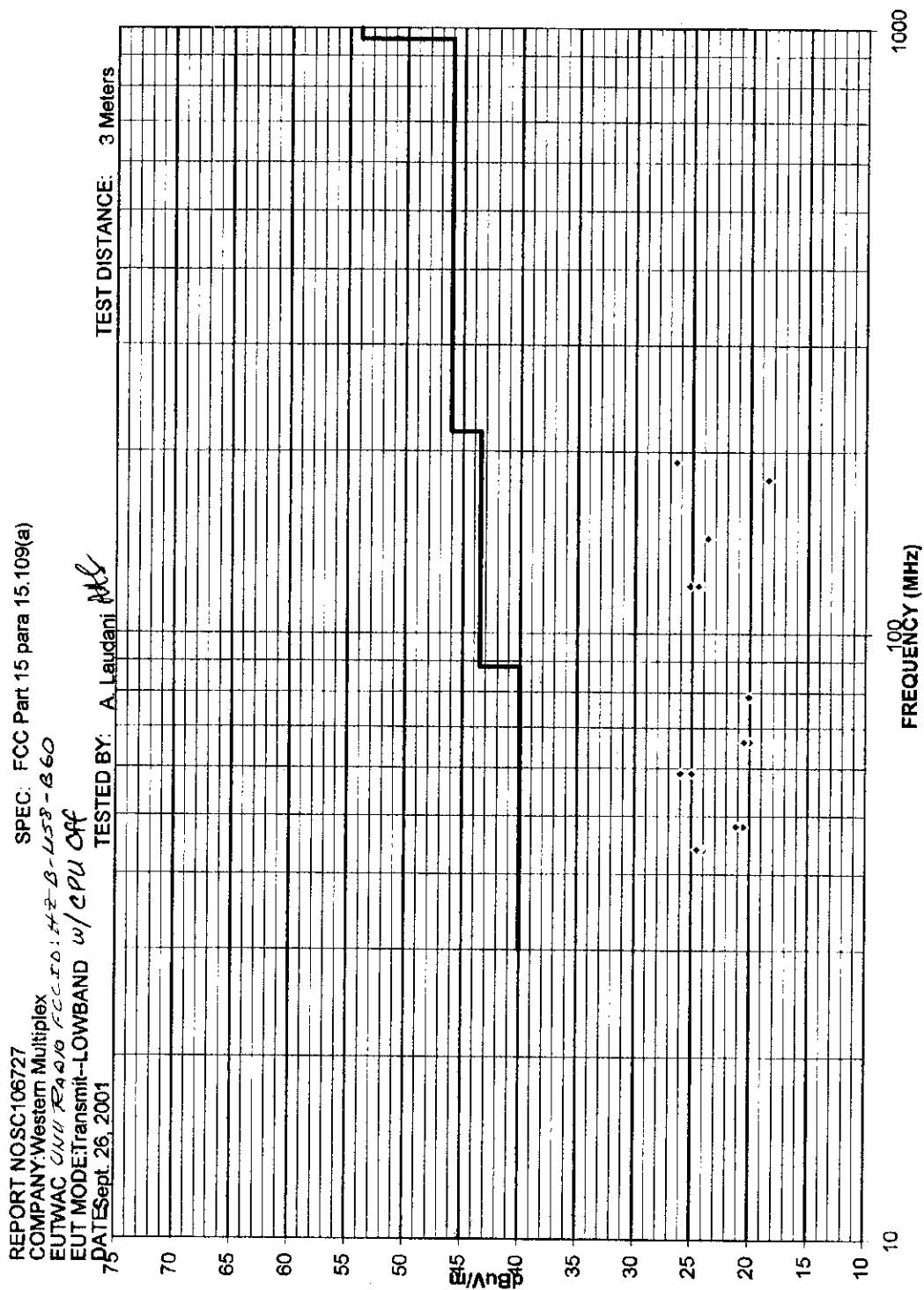
**TUV Product Service
Powerline Conducted Emissions**

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 6f 16QAM
 SC106727
 Date: 24. Sep 01 09:27

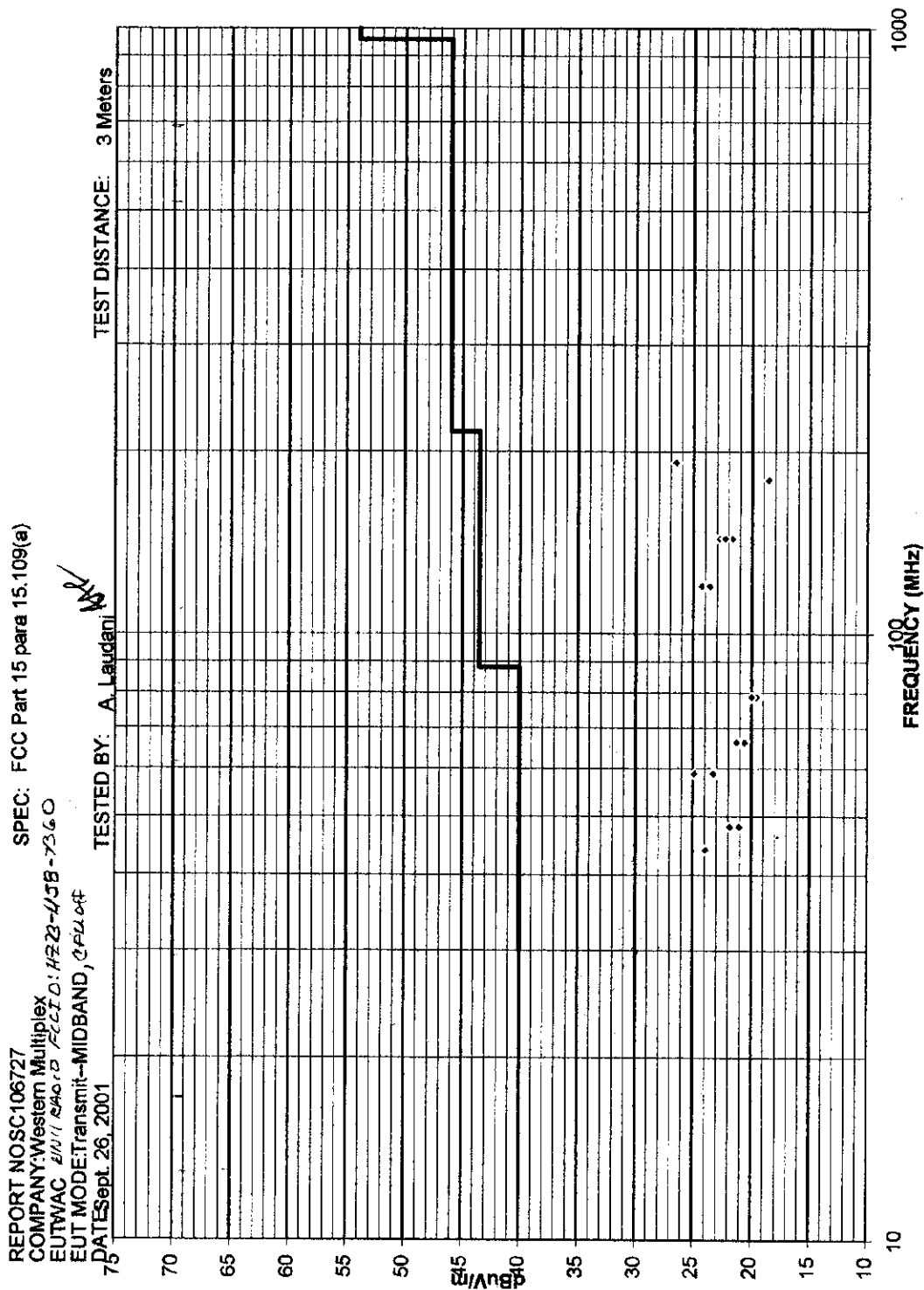
Final Measurement Results:

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

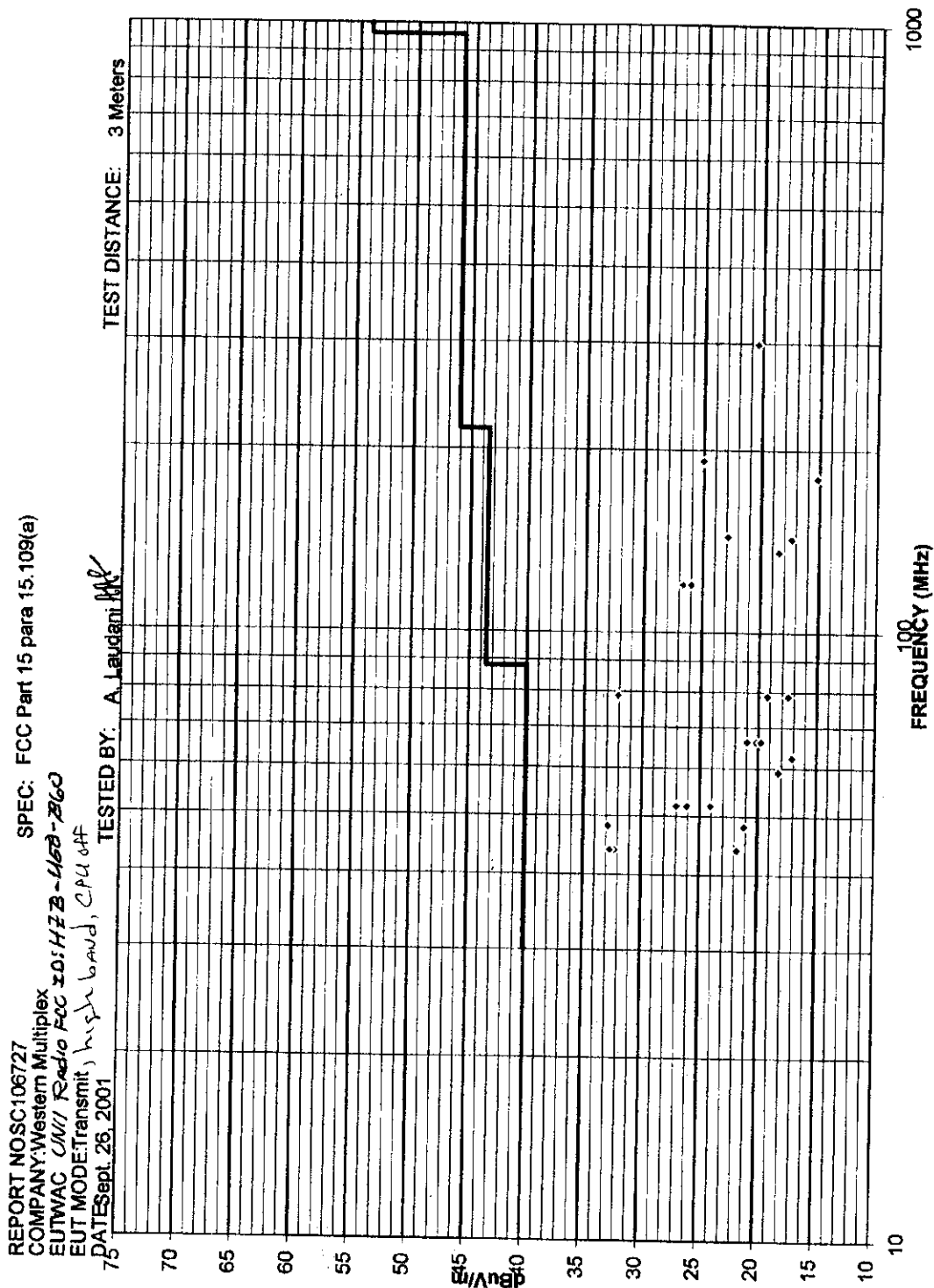
* limit exceeded



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EUT MARGIN	28		44		EUT ROTATION (degrees)	EUT MARGIN (dB)	SPECIFIED LIMIT (dBuV/m)	MAXIMUM CORRECTED (dBuV/m)	CORRECTION FACTOR (dB/m)	HORIZONTAL measured (dBuV)	28		44		EUT ANTENNA HEIGHT (meters)	NOTE
	-7.1	dB at 48 MHz	Temperature	Relative Humidity							-7.1	dB at 48 MHz	Temperature	Relative Humidity		
FREQUENCY (MHz)	43.90	14	5	18.3	32.3	40	40	32.3	18.3	5	18.3	32.3	40	40	1	16QAM -6F
	48.00	15.4	4.9	17.5	27.9	40	40	27.9	17.5	4.9	17.5	27.9	40	40	1	16QAM -6F
	52.00	10.5	0.3	16.5	32.0	40	40	32.0	16.5	0.3	16.5	32.0	40	40	1	16QAM -6F
	59.10	4.5	-0.1	13.8	18.3	40	40	18.3	13.8	-0.1	13.8	18.3	40	40	1	16QAM -6F
	62.40	5	2	12.1	17.1	40	40	17.1	12.1	2	12.1	17.1	40	40	1	16QAM -6F
	66.21	8	10.5	10.5	21.0	40	40	21.0	10.5	10.5	10.5	21.0	40	40	1	16QAM -6F
	78.71	22.3	23	9.1	32.1	40	40	32.1	9.1	23	9.1	32.1	40	40	1	16QAM -6F
	120.00	11	3.3	14.8	25.8	43.5	43.5	25.8	14.8	3.3	14.8	25.8	43.5	43.5	1	16QAM -6F
	136.00	5.6	-0.1	12.9	18.5	43.5	43.5	18.5	12.9	-0.1	12.9	18.5	43.5	43.5	1	16QAM -6F
	143.00	5.4	-1	12.0	17.4	43.5	43.5	17.4	12.0	-1	12.0	17.4	43.5	43.5	1	16QAM -6F
	144.00	11	-1	11.9	22.9	43.5	43.5	22.9	11.9	-1	11.9	22.9	43.5	43.5	1	16QAM -6F
	180.00	3	2	12.2	15.2	43.5	43.5	15.2	12.2	2	12.2	15.2	43.5	43.5	1	16QAM -6F
	192.00	12	10.8	13.0	28.0	43.5	43.5	28.0	13.0	10.8	13.0	28.0	43.5	43.5	1	16QAM -6F
	299.00	3.1	-0.2	17.4	20.5	46	46	20.5	17.4	-0.2	17.4	20.5	46	46	1	16QAM -6F
	43.60	14.4	5	18.3	32.7	40	40	32.7	18.3	5	18.3	32.7	40	40	1	8QAM -6F
	48.00	3.7	3	17.5	21.2	40	40	21.2	17.5	3	17.5	21.2	40	40	1	8QAM -6F
	78.71	8.4	5	9.1	17.5	40	40	17.5	9.1	5	9.1	17.5	40	40	1	8QAM -6F
	82.00	7.6	0	16.5	24.1	40	40	24.1	16.5	0	16.5	24.1	40	40	1	8QAM -6F
	120.00	11.9	3	14.8	28.7	43.5	43.5	28.7	14.8	3	14.8	28.7	43.5	43.5	1	8QAM -6F
	66.21	9.7	2	10.5	20.2	40	40	20.2	10.5	2	10.5	20.2	40	40	1	8QAM -6F
	43.90	3.5	-2	18.3	21.8	40	40	21.8	18.3	-2	18.3	21.8	40	40	1	QPSK3/4 -6F
	48.00	3.7	1.4	17.5	21.2	40	40	21.2	17.5	1.4	17.5	21.2	40	40	1	QPSK3/4 -6F
	52.00	9.6	1.1	16.5	26.1	40	40	26.1	16.5	1.1	16.5	26.1	40	40	1	QPSK3/4 -6F
	66.21	9.3	2	10.5	19.8	40	40									

844

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v.beta1a

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**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).

Report No. SC106727-03

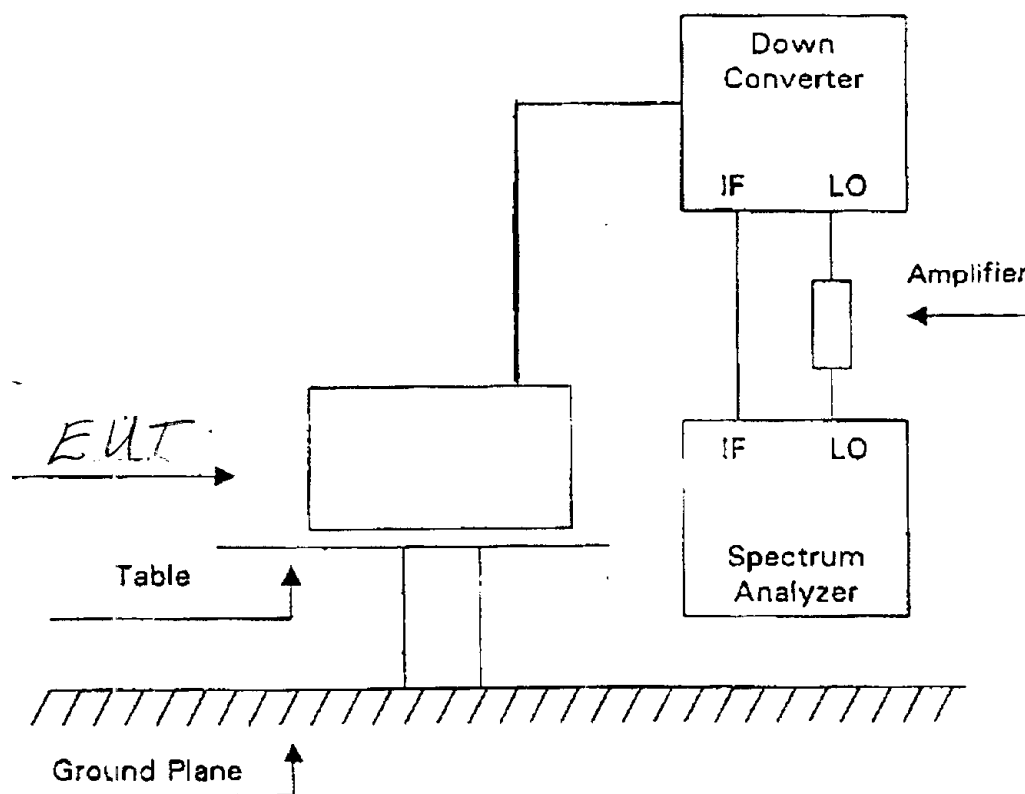
Test setup for Output Power



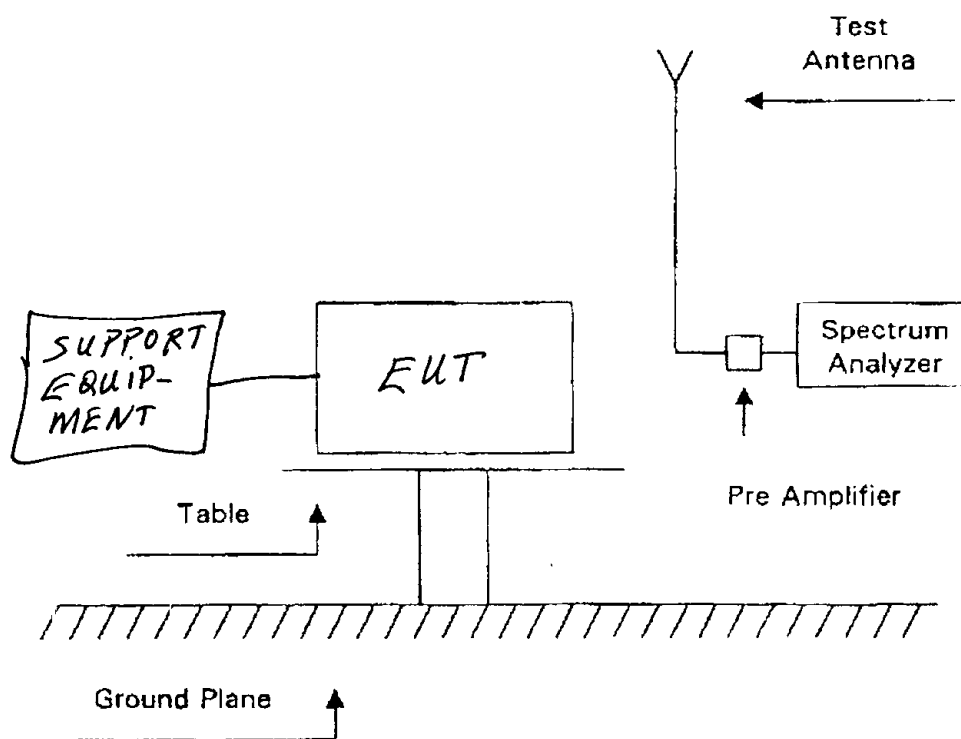
Test setup for 26dB Bandwidth, Power Density, The Ratio of the Peak Excursion of the Modulation Envelope to the Peak Transmit Power, Out of Band Antenna Conducted Emission and Band Edge Antenna Conducted Emission.



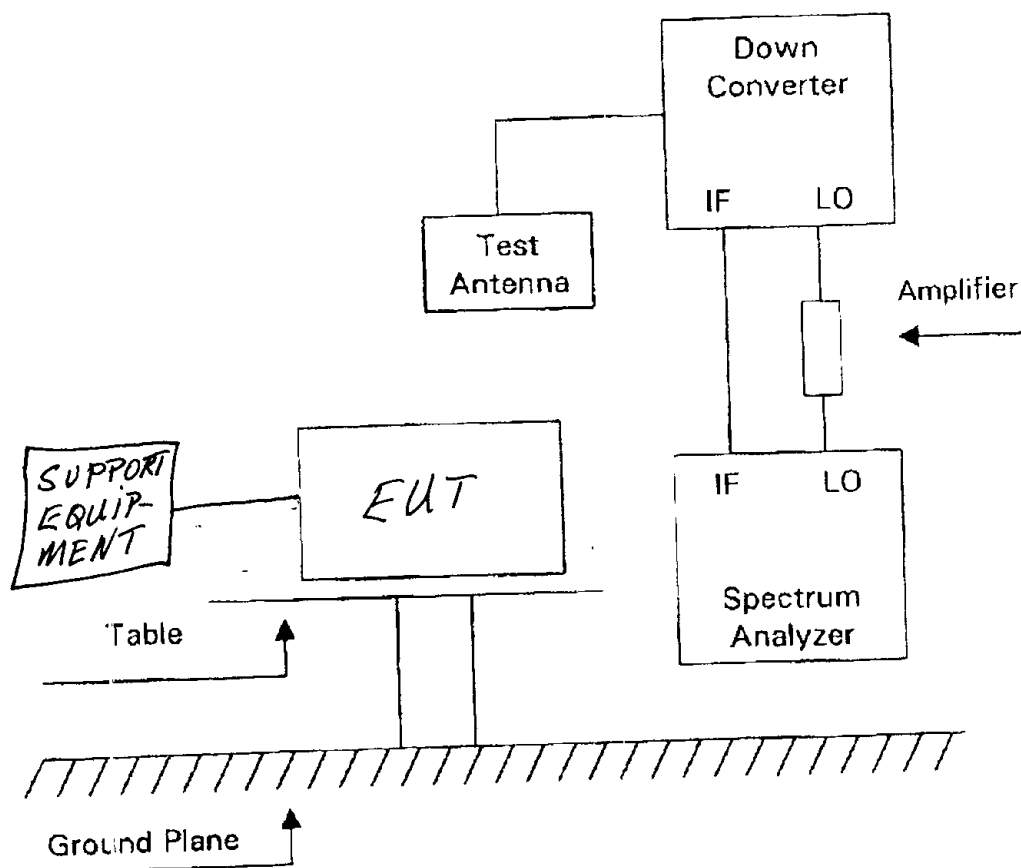
Test setup for Out of Band Antenna Conducted Emission.



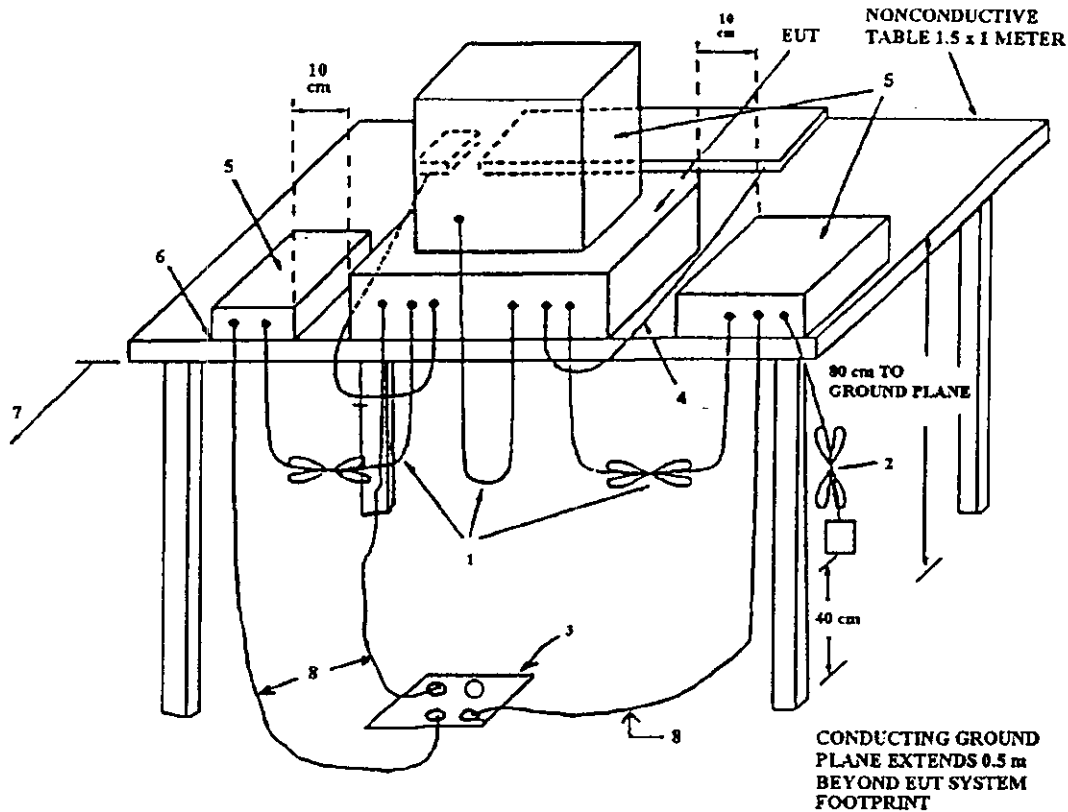
Test setup for Radiated Emission in Restricted Bands and Radiated Emission from Receiver L.O.



Test setup for Radiated Emission in Restricted Bands



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, mouses, 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.