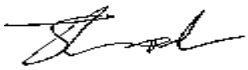
SUPPLEMENTARY TEST REPORT
FROM
RADIO FREQUENCY
INVESTIGATION LTD.

Test Of: Wood & Douglas Ltd.
ST500 Transmitter

To: FCC Part 90:1998
Incorporating
FCC Part 2:1998

Supplementary Test Report Serial No:
RFI/EMCB1/RP39403C

This Supplementary Test Report forms an addendum to
RFI Test Report No.: RFI/EMCB2/RP39403B

This Test Report Is Issued Under The Authority Of Brian Watson Technical Director:	**Checked By:**
Tested By:  **pp**	**Release Version No: PDF01**
Issue Date: 14 January 2000	**Test Date: 6 January and 7 January 2000**

This report is issued in Adobe Acrobat portable document format (PDF). It is only a valid copy of the report if it is being viewed in PDF format with the following security options not allowed: Changing the document, Selecting text and graphics, Adding or changing notes and form fields. Furthermore, the date of creation must match the issue date stated above.
This report may be copied in full.

Radio Frequency Investigation Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ, ENGLAND.
Tel: +44 (0) 1256 851193 Fax: +44 (0) 1256 851192

Registered in England, No. 211 7901.
Registered Office: Ewhurst Park, Ramsdell, Basingstoke, Hampshire RG26 5RQ

NAMAS
TESTING
0644

This page has been left intentionally blank.

Test Of: **Wood & Douglas Ltd.**
ST500 Transmitter
To: **FCC Part 90:1998 Incorporating**
FCC Part 2:1998

Table of Contents

1. Client Information 4
2. Equipment Under Test (EUT) 5
3. Test Specification, Methods And Procedures 7
4. Deviations From The Test Specification 9
5. Operation Of The EUT During Testing 10
6. Summary Of Test Results 11
7. Measurements, Examinations And Derived Results 12
8. Measurement Uncertainty 18
Appendix 1. Test Equipment Used 19
Appendix 2. Measurement Methods 20
Appendix 3. Test Configuration Drawings 24
Appendix 4. Graphical Test Results 27

This Supplementary Test Report forms an addendum to RFI Test Report No.: RFI/EMCB2/RP39403B.

1. Client Information

Company Name:	Wood & Douglas Ltd.
Address:	Lattice House Baughurst Basingstoke Hants RG26 5LP
Contact Name:	Mr A Stickland.

2. Equipment Under Test (EUT)

The following information (with the exception of the Date of Receipt) has been supplied by the client:

2.1. Identification Of Equipment Under Test (EUT)

Brand Name:	Wood & Douglas Ltd
Model Name or Number:	ST500
Unique Type Identification:	ST500 31
Serial Number:	990798023
Country of Manufacture:	UK
FCC ID Number:	Awaiting Certification from the FCC
Date of Receipt:	27 July 1999

2.2. Description Of EUT

The equipment under test is a synthesised 100 mW transmitter with 12.5 kHz channel spacing for telemetry use.

2.3. Modifications Incorporated In EUT

None stated by client.

2.4. Additional Information Related To Testing

Power Supply Requirement:	DC supply of + 9 V (customer supplied)
Intended Operating Environment:	Commercial
Weight:	0.03 kg
Dimensions:	60 mm x 40 mm x 20 mm (including pins)
Interface Ports:	10 pin connector for I/O 2 pin connector for power 3 pin connector for RF

2.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	ST500 Test Jig
Brand Name:	Wood and Douglas
Model Name or Number:	None stated by client
Serial Number:	WD011
FCC ID Number:	None stated by client
Cable Length And Type:	Not applicable (Direct Connection to the EUT)
Connected to Port:	Not applicable

Description:	Plug Top Power Supply
Brand Name:	Seung Jin Electronics Co
Model Name or Number:	SJ-1205D
Serial Number:	WD009
FCC ID Number:	None stated by client
Cable Length And Type:	1.5m Twin
Connected to Port:	DC Input Port to Test Jig

3. Test Specification, Methods And Procedures

3.1. Test Specification

Reference:	FCC Part 90: 1998 and FCC Part 2: 1998
Title:	Code of Federal Regulations, Part 90 (47CFR90) Private Land Mobile Radio Services
Comments:	A description of the test facility used for this test is on file with, and has been accepted by, the Federal Communications Commission as required by Section 2.948 of Federal Rules.
Purpose of Test:	To determine whether the equipment complied with the requirements of the specification for the purposes of certification. This Supplementary Test Report forms an addendum to RFI Test Report No.: RFI/EMCB2/RP39403B.

3.2. Methods And Procedures

The methods and procedures used were as detailed in:

ANSI C63.2 (1987)
Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (1992)
Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)
Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)
Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1 (1993)
Title: Specification for radio disturbance and immunity measuring apparatus and methods. Part 1. Radio disturbance and immunity measuring apparatus.

3.3. Definition Of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the Methods & Procedures section above. Appendix 1 contains a list of the test equipment used.

4. Deviations From The Test Specification

None.

5. Operation Of The EUT During Testing

5.1. Operating Conditions

The EUT was tested in a normal laboratory environment.

During testing, the EUT was powered by a DC supply of + 9 V (customer supplied).

5.2. Operating Modes

The EUT was tested in the following operating modes:

1. Radiated Field Strength Spurious Emissions: Unmodulated Carrier: The EUT was operated with no audio input signal applied.

2. Modulation Characteristics: Modulated Carrier: The EUT was operated with an input audio signal varied from 100 to 50000Hz, using the following steps: 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1500, 2000, 2200, 2500, 2750, 3000, 4000, 5000. A maximum audio input level of 750mV Pk-Pk was applied at all times.

3. Occupied Bandwidth: Modulated Carrier: The EUT was operated with an input audio signal of 2500Hz. A maximum audio input level of 750mV Pk-Pk was applied at all times.

The EUT was tested in Bottom Channel (430 MHz), Middle Channel (450 MHz) and Top Channel (470 MHz).

The reason for choosing this mode was that it was defined by the client as being likely to be the worst case with regards EMC.

5.3. Configuration And Peripherals

The EUT was tested in the following configuration:

The EUT was connected to a test jig to enable correct testing to be performed. Also, to provide the correct input signal, an audio generator was connected to the EUT when required. During the Radiated Field Strength Spurious Emissions tests, a suitable antenna was connected to the EUT test jig.

The reason for choosing this configuration was that it was defined by the client as being likely to be the worst case with regards EMC.

NB Section 2 of this report contains a full list of support equipment used and Appendix 3 contains a schematic diagram of the test configuration.

6. Summary Of Test Results

6.1. Radiated Emissions

Range Of Measurements	Specification Reference	Compliancy Status
Modulation Characteristics	C.F.R. 47 Part 2: 1998. Section 2.1047	Complied
Occupied Bandwidth	C.F.R. 47 Part 2: 1998. Section 2.1049	Complied
Radiated Field Strength of Spurious Emissions	C.F.R. 47 Part 2: 1998. Section 2.1053	Complied

6.2. Location Of Tests

All the measurements described in this report were performed at the premises of Radio Frequency Investigation Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ, England.

7. Measurements, Examinations And Derived Results

7.1. General Comments

7.1.1. This section contains test results only. Details of the test methods and procedures can be found in Appendix 2 of this report.

7.1.2. The measurement uncertainties stated were calculated in accordance with the requirements of NAMAS Document NIS 81 with a confidence level of 95%. Please refer to Section 8 for details of measurement uncertainties.

7.2. Test for Modulation Characteristics

7.2.1. Tests for modulation characteristics were performed as specified in Section 2.1047.

7.2.2. Measurements for performed with the EUT operated at maximum power with the input signal varied between 100 and 5000 Hz as specified in Section 5.2 of this test report at 750mV Pk-Pk.

Input Frequency (Hz)	**Measured Level (mV)**		
	Tx Frequency: 430 MHz	**Tx Frequency: 450 MHz**	**Tx Frequency: 470 MHz**
100	73.4	71.7	70.8
200	72.9	71.3	70.4
300	71.5	69.0	70.9
400	72.0	69.5	71.4
500	72.4	69.9	71.4
600	72.4	70.1	71.4
700	72.4	70.4	71.4
800	72.4	70.3	71.3
900	72.1	70.1	70.9
1000	71.6	69.8	70.4
1200	70.6	69.1	69.6
1500	70.3	69.1	69.3
2000	69.0	68.1	68.0
2200	66.9	66.4	65.7
2500	62.5	61.6	61.1
2750	58.2	57.5	57.0
3000	53.8	53.3	52.8
4000	25.2	25.2	24.8
5000	10.9	10.9	10.9

7.3. Test for Occupied Bandwidth

7.3.1. Tests for occupied bandwidth were performed as specified in Section 2.1049 to paragraph (d(1)).

7.3.2. Measurements for performed with the EUT operated at maximum power with an input signal of 2500Hz at 750mV Pk-Pk.

7.3.3. Measurements were performed with a reference level set both 23 and 30dB down from the peak of the modulator carrier.

7.3.4. Plots of the scans can be seen in Appendix 4 of this test report.

Results: Bottom Channel

Frequency (MHz)	Bandwidth (kHz)	
	23 dBc	30 dBc
430.00048	39.93057	46.52777

Results: Middle Channel

Frequency (MHz)	Bandwidth (kHz)	
	23 dBc	30 dBc
450.00048	40.06951	46.66668

Results: Top Channel

Frequency (MHz)	Bandwidth (kHz)	
	23 dBc	30 dBc
470.00048	39.93061	47.01393

7.4. Test for Electric Field Strength of Spurious Radiation

7.4.1. Measurements were performed to determine the electric field spurious emission levels of the EUT on each channel as specified in section 2.1053.

7.4.2. The EUT was configured with no input AF signal to give an un-modulated RF output. The output (RF) terminal of the EUT was configured with a suitable antenna.

7.4.3. Measurements were performed to determine that all spurious emissions were at least 30dB below the level of the fundamental frequency.

7.4.4. Initial preliminary radiated electric field strength emission scans were performed at each of the 3 operating frequencies. These initial scans showed that all levels were greater than 40dB below the level of the fundamental emission. Therefore, for each operating frequency, a single final radiated emission measurement was performed within each measurement antenna range (30 1000 MHz, 1000 to 2000 MHz, 2000 to 4000 MHz, and 4000 to 5000 MHz).

Results: Level of Fundamental Emission.

Measurements below were performed in accordance with the appropriate standard with an Average detector. (Results include antenna factors and cable losses).

430 MHz

Frequency (MHz)	Polarity	Level (dBuV/m)
430.0000	Vertical	110.7

450 MHz

Frequency (MHz)	Polarity	Level (dBuV/m)
450.0000	Vertical	116.0

470 MHz

Frequency (MHz)	Polarity	Level (dBuV/m)
470.0000	Vertical	113.7

Results: Level of Spurious Emissions (Below 1000 MHz).

Measurements below were performed in accordance with the appropriate standard with a Quasi-Peak detector. (Results include antenna factors and cable losses).

430 MHz

Frequency (MHz)	Polarity	Level (dBuV/m)	Limit (dBuV/m)	Margin	Result
860.000	Vert.	62.2	80.7	18.5	Complied

450 MHz

Frequency (MHz)	Polarity	Level (dBuV/m)	Limit (dBuV/m)	Margin	Result
900.000	Vert.	57.3	86.0	28.7	Complied

470 MHz

Frequency (MHz)	Polarity	Level (dBuV/m)	Limit (dBuV/m)	Margin	Result
940.000	Vert.	57.0	83.7	26.7	Complied

Test Of: **Wood & Douglas Ltd.**
ST500 Transmitter
To: **FCC Part 90:1998 Incorporating**
FCC Part 2:1998

Results: Level of Spurious Emissions (Above 1000 MHz).

Measurements below were performed in accordance with the appropriate standard with an Average detector. (Results include antenna factors and cable losses).

430 MHz

Frequency (GHz)	Polarity	Level (dBuV)	Antenna Factor	Cable Loss	Level (dBuV/m)	Limit (dBuV/m)	Margin	Result
1.2900	Vert.	35.8	21.7	0.7	58.2	80.7	22.5	Complied
3.8700	Vert.	48.0	21.2	1.7	70.9	80.7	9.8	Complied
4.7300	Horiz.	44.3	24.2	1.9	70.4	80.7	10.3	Complied

450 MHz

Frequency (GHz)	Polarity	Level (dBuV)	Antenna Factor	Cable Loss	Level (dBuV/m)	Limit (dBuV/m)	Margin	Result
1.3500	Vert.	41.9	21.7	0.7	64.3	86.0	21.7	Complied
3.6000	Vert.	46.0	21.2	1.7	68.9	86.0	17.1	Complied
4.9499	Vert.	46.2	24.2	2.0	72.4	86.0	13.6	Complied

470 MHz

Frequency (GHz)	Polarity	Level (dBuV)	Antenna Factor	Cable Loss	Level (dBuV/m)	Limit (dBuV/m)	Margin	Result
1.4101	Vert.	39.1	21.7	0.8	61.6	83.7	22.1	Complied
3.7600	Vert.	43.8	21.2	1.7	66.7	83.7	17.0	Complied
4.7000	Vert.	46.7	24.2	1.9	72.8	83.7	10.9	Complied

8. Measurement Uncertainty

8.1. Company Policy, as based on the NAMAS Accreditation Standard, M10, paragraph 12.11 (o), states that Test Reports shall include estimated uncertainty of the calibration or test result (this information need only appear in test reports and test certificates where it is relevant to the validity or application of the test result, where a client's instructions so require or where uncertainty affects compliance to a specification or limit).

8.2. The global uncertainties have been calculated in accordance with NAMAS NIS 81 (Edition 1, May 1994) as follows:

Measurement Type	Range	Confidence Level	Calculated Uncertainty
Modulation Characteristics	430 to 470 MHz	95%	Note 1
Occupied Bandwidth	430 to 470 MHz	95%	Note 1
Radiated Electric Field Strength Emissions	30 to 5000 MHz	95%	+/- 4.3 MHz

Note 1: The measurement uncertainty for this test is available on request only.

8.3. Measurement uncertainties have been applied in accordance with NAMAS document NIS 81 (edition 1, May 1994), and in the absence of any specification criteria, guidance, or code of practice, compliance has been judged on the basis of shared risk.

8.4. In the case of emissions tests, the measured value of the disturbance from the product sample shall be compared directly with the limits. If the measured value is equal to or less than the limit the product is deemed to pass the test.

8.5. In the case of immunity tests, the equipment is deemed to pass the test if it fulfils the stated performance criteria at the required or a higher severity level. The measurement uncertainty has been taken into account in the calibration procedures stated in the relevant basic standard.

8.6. The methods used to calculate the above uncertainties are in line with those used for calibration laboratories contained in NAMAS document NIS 3003 Edition 8 “The Expression of Uncertainty and Confidence in Measurement” May 1995, which align with international recommendations “Guide to the Expression of Uncertainty in Measurement” ISO/IEC/OIML/BIPM (Prepared by ISO/TAG 4: January 1993).

Appendix 1. Test Equipment Used

Instrument	Manufacturer	Model	RFI No.
Test Receiver	R & S	ESMI	M069
Signal Generator	R & S	SMHU	G013
Radio Test Set	R & S	CMTA	M027
Test Receiver	R & S	ESBI	M090
Bilog Antenna	Chase	CBL6111A	A259
Bilog Antenna	Chase	CBL6112B	A1037
1 to 2 GHz Horn	Eaton	91888-2	A028
2 to 4 GHz Horn	Eaton	91889-2	A031
4 to 5 GHz Horn	Flann	12240-20	A428
Coaxial Cable	Rosenberger	UFA 210A-0-1182-70x70	C371
3dB Attenuator	Suhner	6803.17.B	A392
Spectrum Monitor	R & S	EZM	M003
Test Receiver	R & S	ESVP	M023

NB In accordance with NAMAS requirements, all the measurement equipment is on a calibration schedule.

Appendix 2. Measurement Methods

A2.1. Modulation Characteristics

A2.2.1 Tests for modulation characteristics were performed as specified in accordance with section 2.1047 of the specification.

A2.2.2 Measurements for performed with the EUT operating at maximum power with the input signal varied between 100 and 5000 Hz as specified in Section 5.2 of this test report at a level of 750mV Pk-Pk.

A2.3. Occupied Bandwidth

A2.4 1 Tests for occupied bandwidth were performed as specified in accordance with section 2.1049 to paragraph (d(1)).

A2.5 2 Measurements for performed with the EUT operated at maximum power with an input signal of 2500Hz at 750mV Pk-Pk.

A2.6 3 Measurements were performed with a reference level set both 23 and 30dB down from the peak of the modulator carrier.

A2.3. Radiated Electric Field Strength Spurious Emissions

A2.7. Radiated Emissions

A2.7.1. Radiated emissions measurements were performed in accordance with the standard, against appropriate limits for a Quasi-Peak detector.

A2.7.2. Initial measurements covering the entire measurement band in the form of swept scans in a shielded enclosure were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which the EUT should be re-measured in full on the open area test site. In order to minimise the time taken for the swept measurements, a Peak detector was used in conjunction with the appropriate detector IF measuring bandwidth (see table below). Repetitive scans were performed to allow for emissions with low repetition rates, and for the duty cycle of the EUT. The test configuration was the same for the initial scans as for the final measurements.

A2.7.3. The initial scans were performed using an antenna height of 1.5 m and a measurement distance of 3 m. Following the initial scans, graphs were produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. A tolerance line was set 6 dB below the specification limit and levels above the tolerance line were re-tested on the open area test site, at the appropriate distance, using a measuring receiver with a Quasi-Peak detector.

A2.7.4. For the main (final) measurements the EUT was arranged on a non-conducting table on an open area test site, as detailed in the specification.

A2.7.5. All measurements on the open area test site were performed using broadband antennas.

A2.7.6. On the open area test site, at each frequency where a signal was found, the levels were maximised by initially rotating the turntable through 360° and then varying the antenna height between 1 m and 4 m. At this point, any signals found to be between the limit and a level 6 dB below it were further maximised by changing the configuration of the EUT, e.g. re-routing cables to peripherals and moving peripherals with respect to the EUT.

A2.7.7. The test equipment settings for radiated emissions measurements were as follows:

Receiver Function	**Initial Scan**	**Final Measurements**
Detector Type:	Peak	Quasi-Peak (CISPR)
Mode:	Max Hold	Not applicable
Bandwidth:	100 kHz	120 kHz
Amplitude Range:	60 dB	20 dB
Measurement Time:	Not applicable	> 1 s
Observation Time:	Not applicable	> 15 s
Step Size:	Continuous sweep	Not applicable
Sweep Time:	Coupled	Not applicable

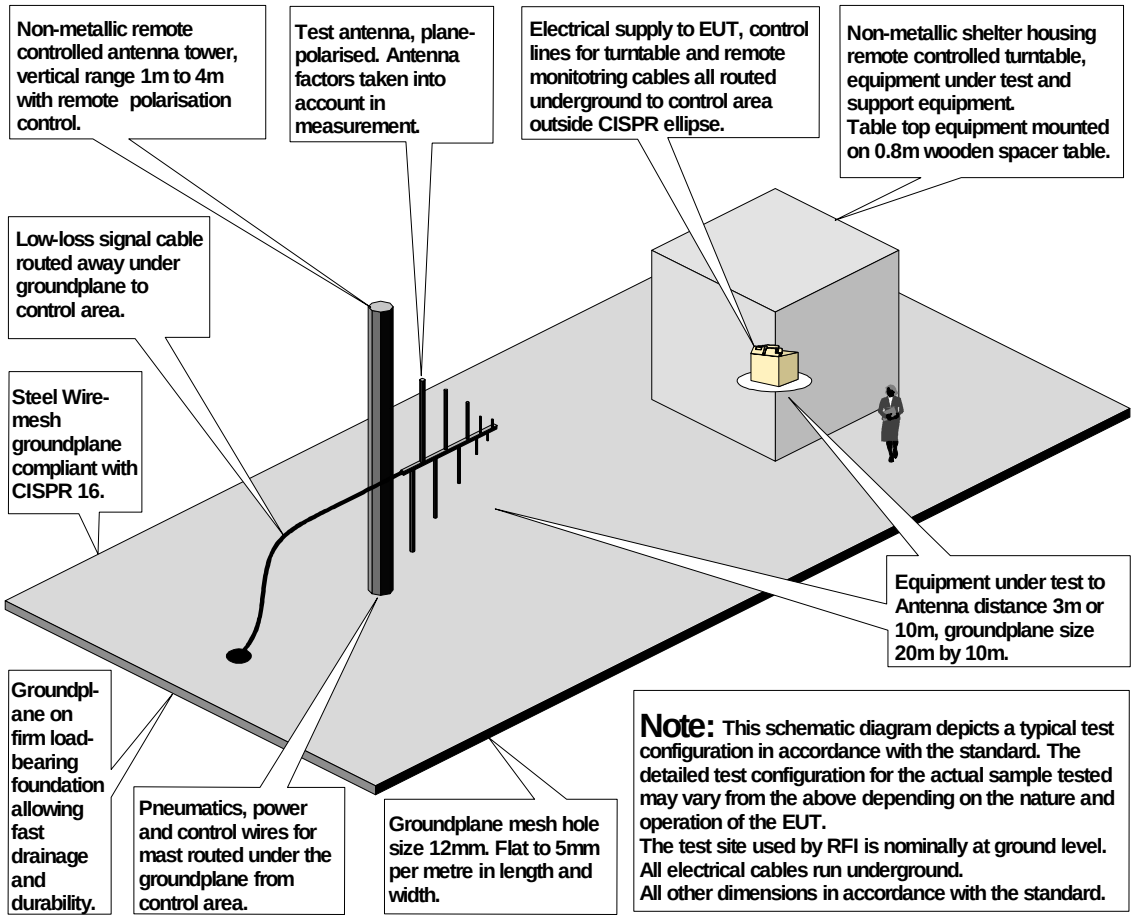
Appendix 3. Test Configuration Drawings

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\39403ETF01\EMIRAD	Test configuration for measurement of radiated emissions
DRG\39403ETF01\001	Schematic diagram of the EUT, support equipment and interconnecting cables used for the test

Test Of: **Wood & Douglas Ltd.**
ST500 Transmitter
To: **FCC Part 90:1998 Incorporating**
FCC Part 2:1998

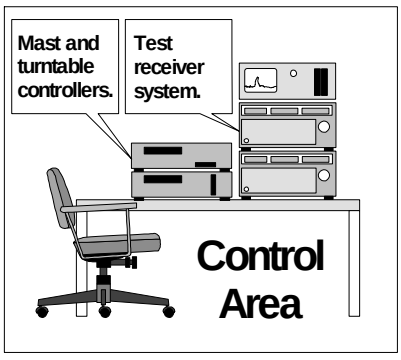
DRG\39403ETF01\EMIRAD



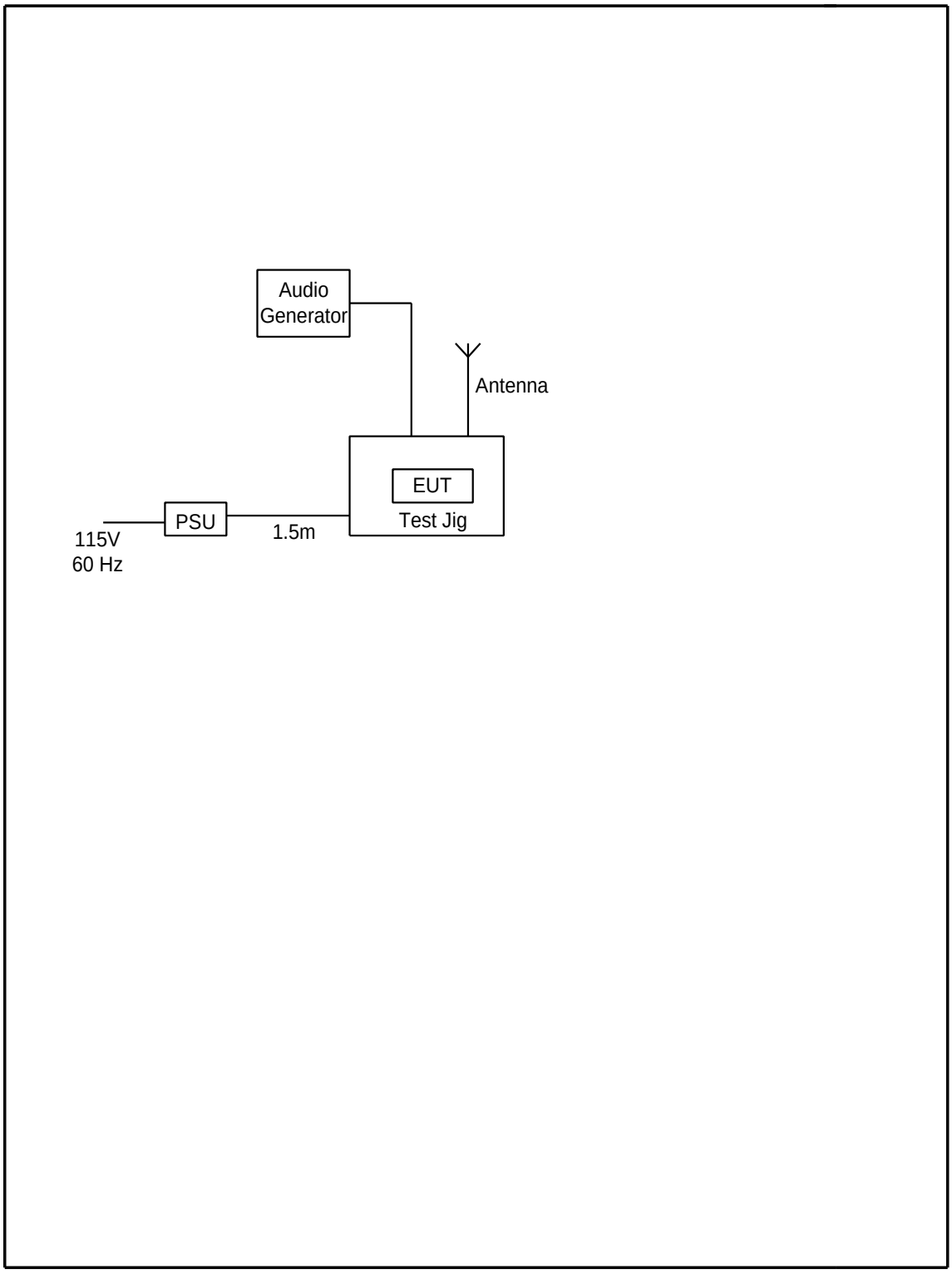
Note: This schematic diagram depicts a typical test configuration in accordance with the standard. The detailed test configuration for the actual sample tested may vary from the above depending on the nature and operation of the EUT.
The test site used by RFI is nominally at ground level.
All electrical cables run underground.
All other dimensions in accordance with the standard.

Test Configuration For Radiated Emissions Measurements

Reflection-free area: >60m by 52m (CISPR ellipse)
Groundplane Earthed
Control room outside CISPR ellipse



DRG\39403ETF01\001



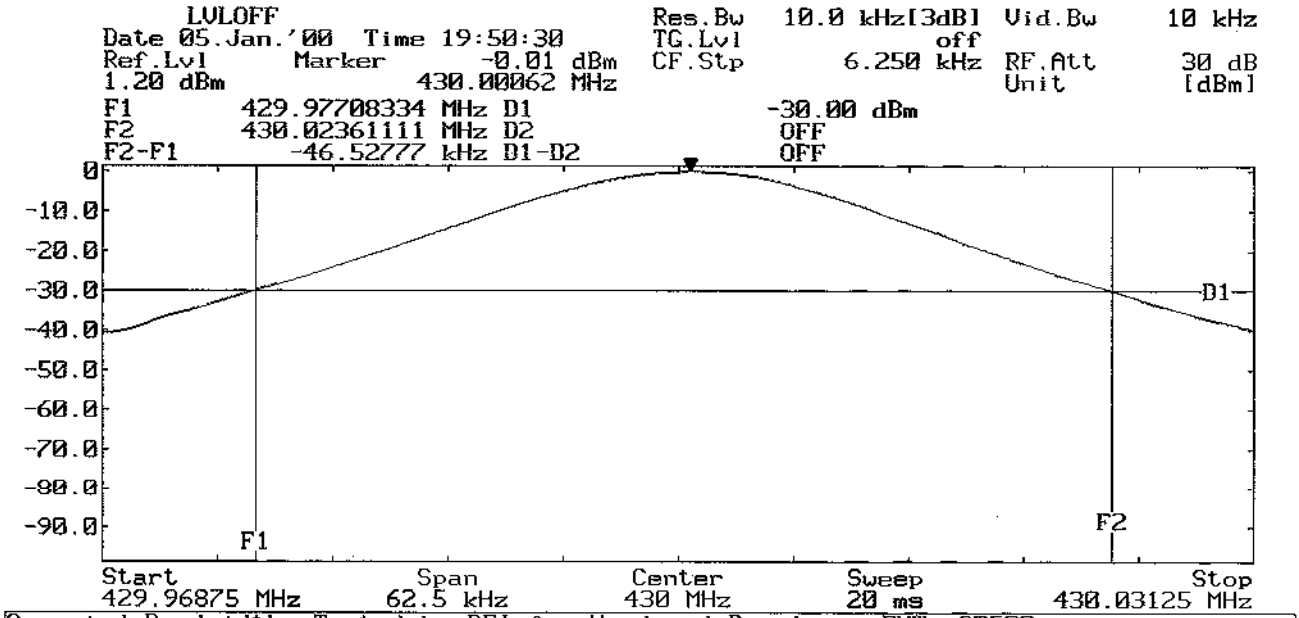
Appendix 4. Graphical Test Results

This appendix contains the following graphs:

Graph Reference Number	Title
GPH\39430\001	Occupied Bandwidth (429.96875 MHz to 430.03125 MHz) Measurements were performed with a reference level set 30 dB down from the peak of the modulator carrier.
GPH\39430\002	Occupied Bandwidth (429.96875 MHz to 430.03125 MHz) Measurements were performed with a reference level set 23 dB down from the peak of the modulator carrier.
GPH\39430\003	Occupied Bandwidth (449.96875 MHz to 450.03125 MHz) Measurements were performed with a reference level set 23 dB down from the peak of the modulator carrier.
GPH\39430\004	Occupied Bandwidth (449.96875 MHz to 450.03125 MHz) Measurements were performed with a reference level set 30 dB down from the peak of the modulator carrier.
GPH\39430\005	Occupied Bandwidth (469.96875 MHz to 470.03125 MHz) Measurements were performed with a reference level set 23 dB down from the peak of the modulator carrier.
GPH\39430\006	Occupied Bandwidth (469.96875 MHz to 470.03125 MHz) Measurements were performed with a reference level set 30 dB down from the peak of the modulator carrier.
GPH\39403\01\200	Radiated Emissions. (30 MHz to 1000 MHz) Transmitter Output Terminated, TX: 430 MHz
GPH\39403\01\201	Radiated Emissions. (30 MHz to 1000 MHz) Transmitter Output Terminated, TX: 450 MHz
GPH\39403\01\202	Radiated Emissions. (30 MHz to 1000 MHz) Transmitter Output Terminated, TX: 470 MHz
GPH\39403\01\203	Radiated Emissions. (4 GHz to 5 GHz) Transmitter Output Terminated, TX: 470 MHz
GPH\39403\01\204	Radiated Emissions. (4 GHz to 5 GHz) Transmitter Output Terminated, TX: 450 MHz
GPH\39403\01\205	Radiated Emissions. (4 GHz to 5 GHz) Transmitter Output Terminated, TX: 430 MHz
GPH\39403\01\206	Radiated Emissions. (2 GHz to 4 GHz) Transmitter Output Terminated, TX: 430 MHz
GPH\39403\01\207	Radiated Emissions. (2 GHz to 4 GHz) Transmitter Output Terminated, TX: 450 MHz
GPH\39403\01\208	Radiated Emissions. (2 GHz to 4 GHz) Transmitter Output Terminated, TX: 470 MHz

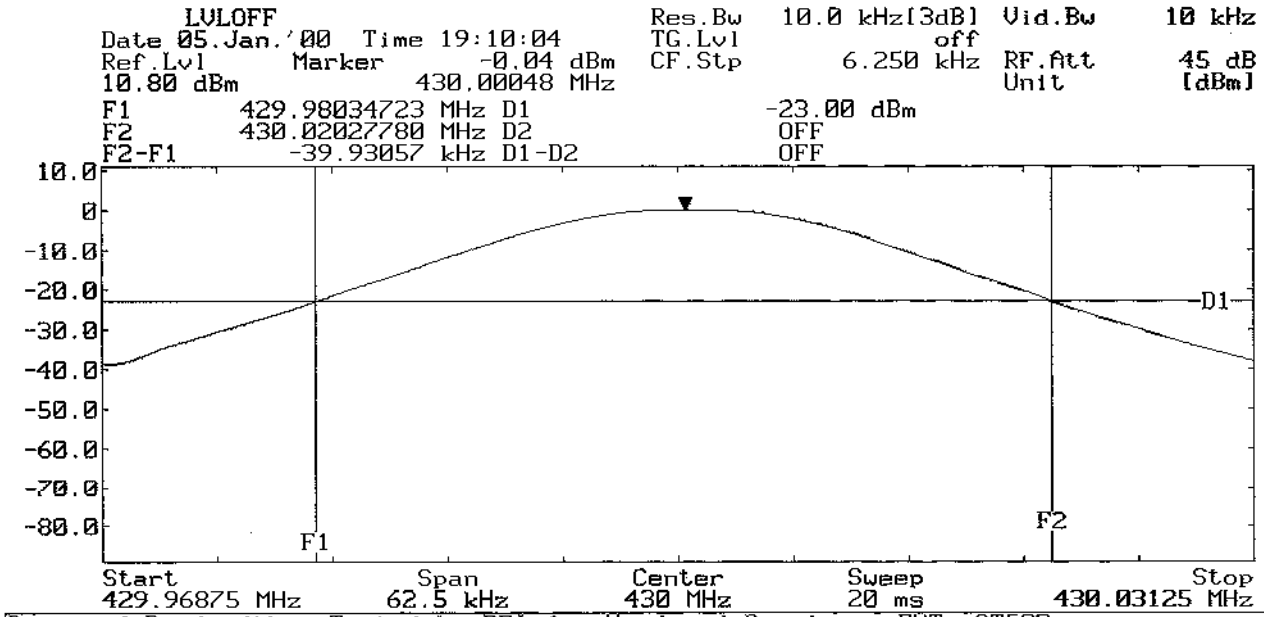
Graphical Test Results (continued)

Graph Reference Number	Title
GPH\39403\01\209	Radiated Emissions. (1 GHz to 2 GHz) Transmitter Output Terminated, TX: 470 MHz
GPH\39403\01\210	Radiated Emissions. (1 GHz to 2 GHz) Transmitter Output Terminated, TX: 450 MHz
GPH\39403\01\211	Radiated Emissions. (1 GHz to 2 GHz) Transmitter Output Terminated, TX: 430 MHz



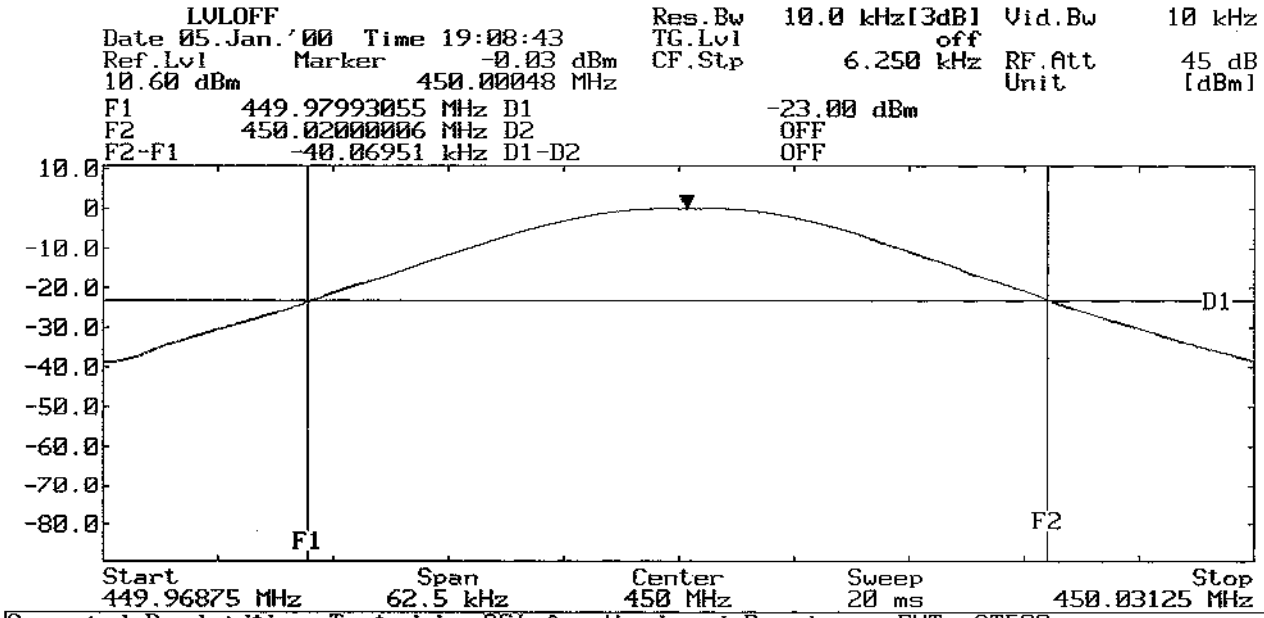
Occupied Bandwidth. Tested by RFI for Wood and Douglas. EUT: ST500
FCC Part 90: 1998

GPH\39430\001



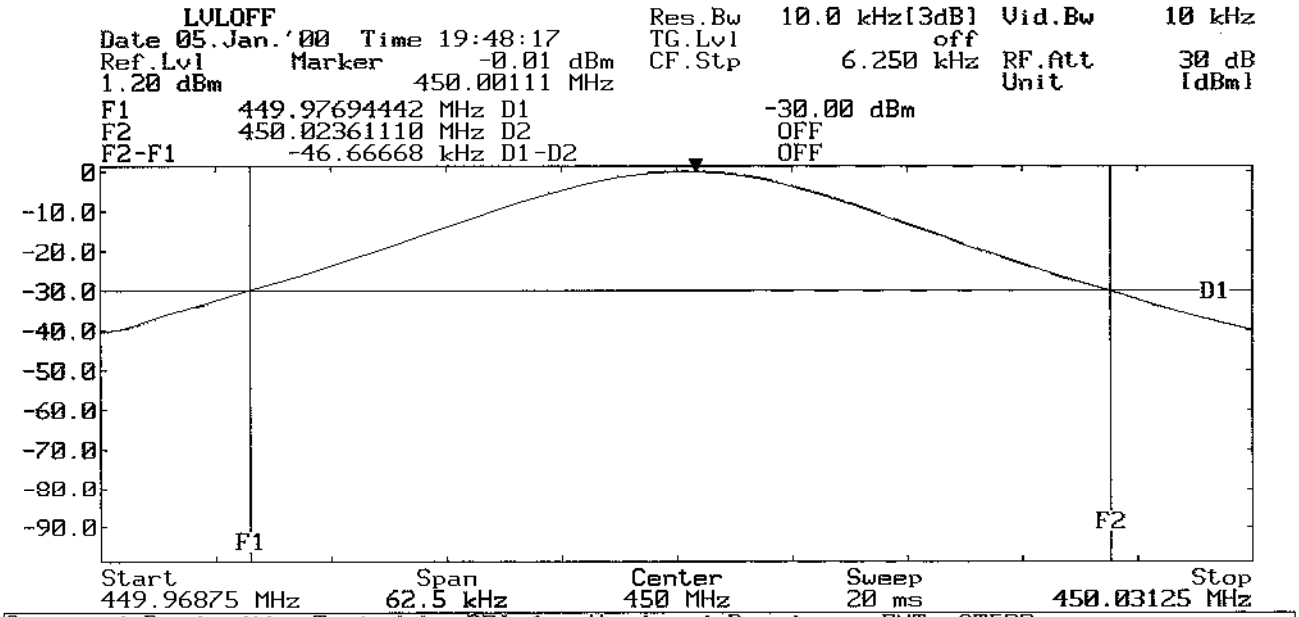
Occupied Bandwidth. Tested by RFI for Wood and Douglas.. EUT: ST500.
FCC Part 90: 1998.

GPH\39430\002



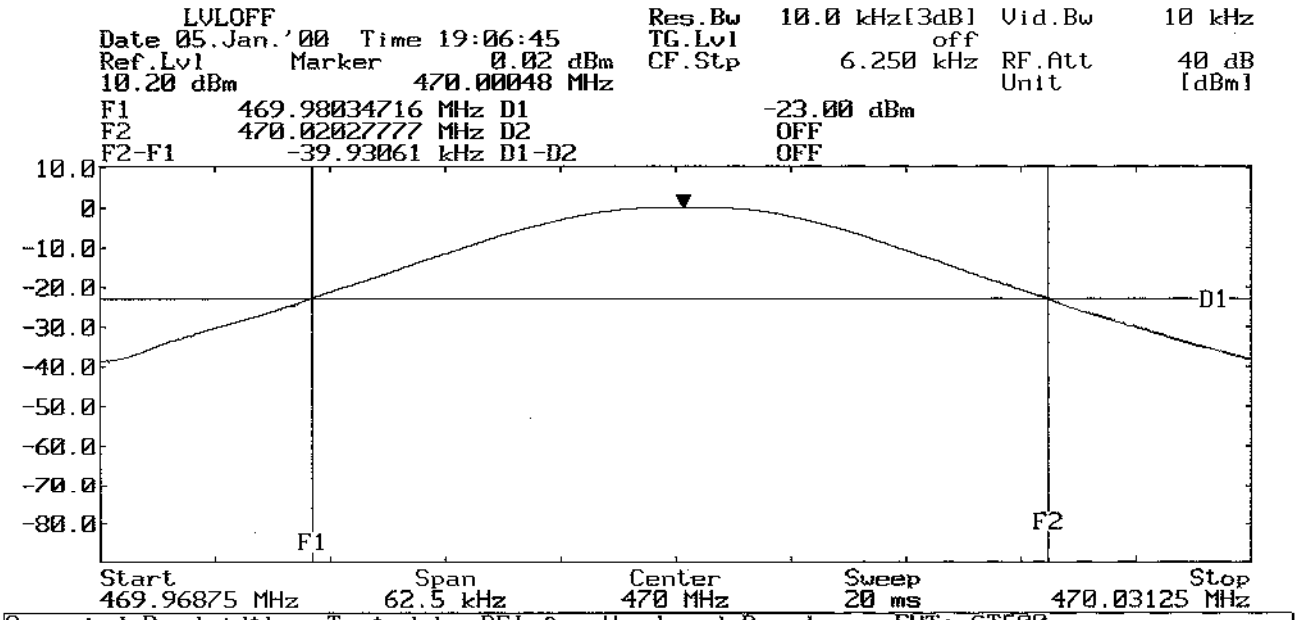
Occupied Bandwidth. Tested by RFI for Wood and Douglas.. EUT: ST500.
FCC Part 90: 1998.

GPH\39430\003



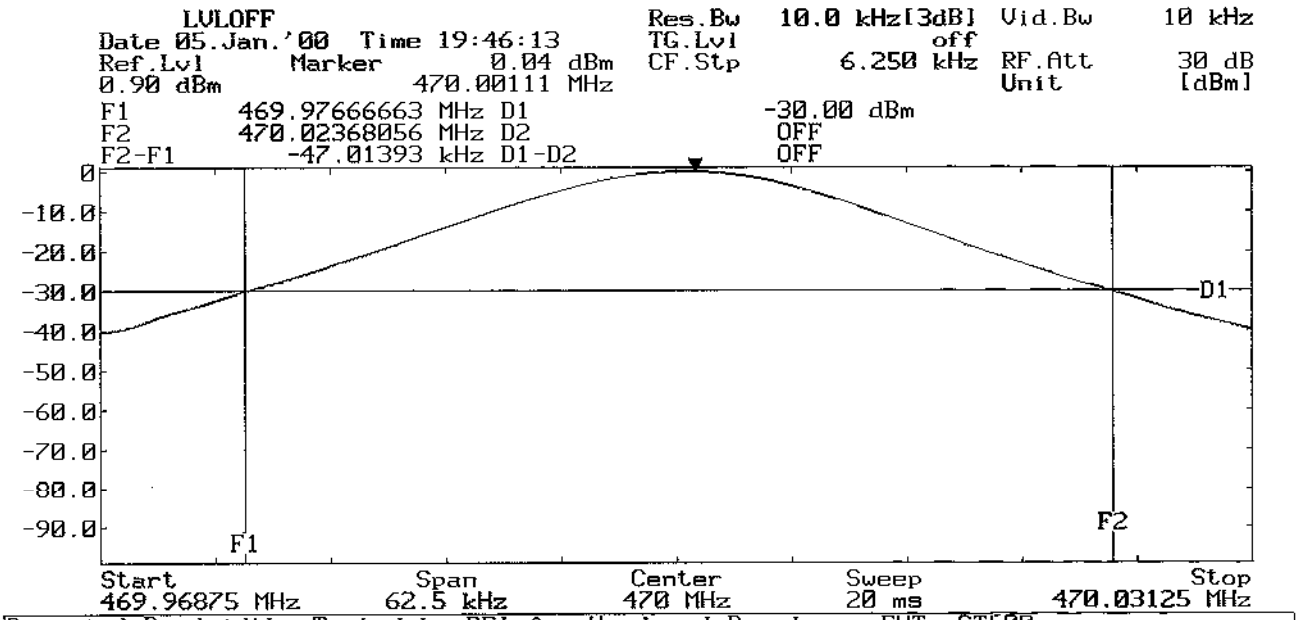
Occupied Bandwidth. Tested by RFI for Wood and Douglas. EUT: ST500
FCC Part 90: 1998

GPH\39430\004



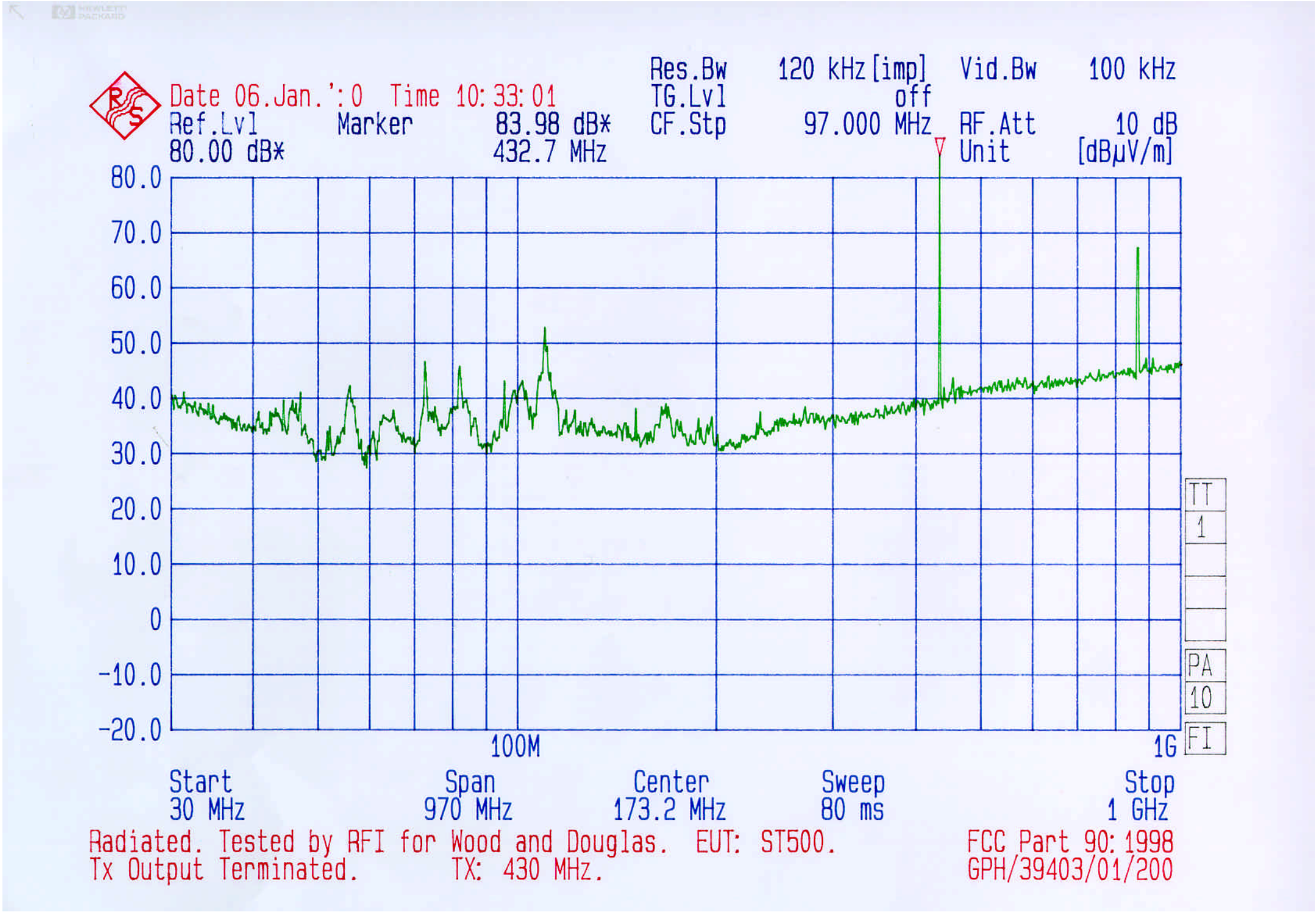
Occupied Bandwidth. Tested by RFI for Wood and Douglas.. EUT: ST500.
FCC Part 90: 1998.

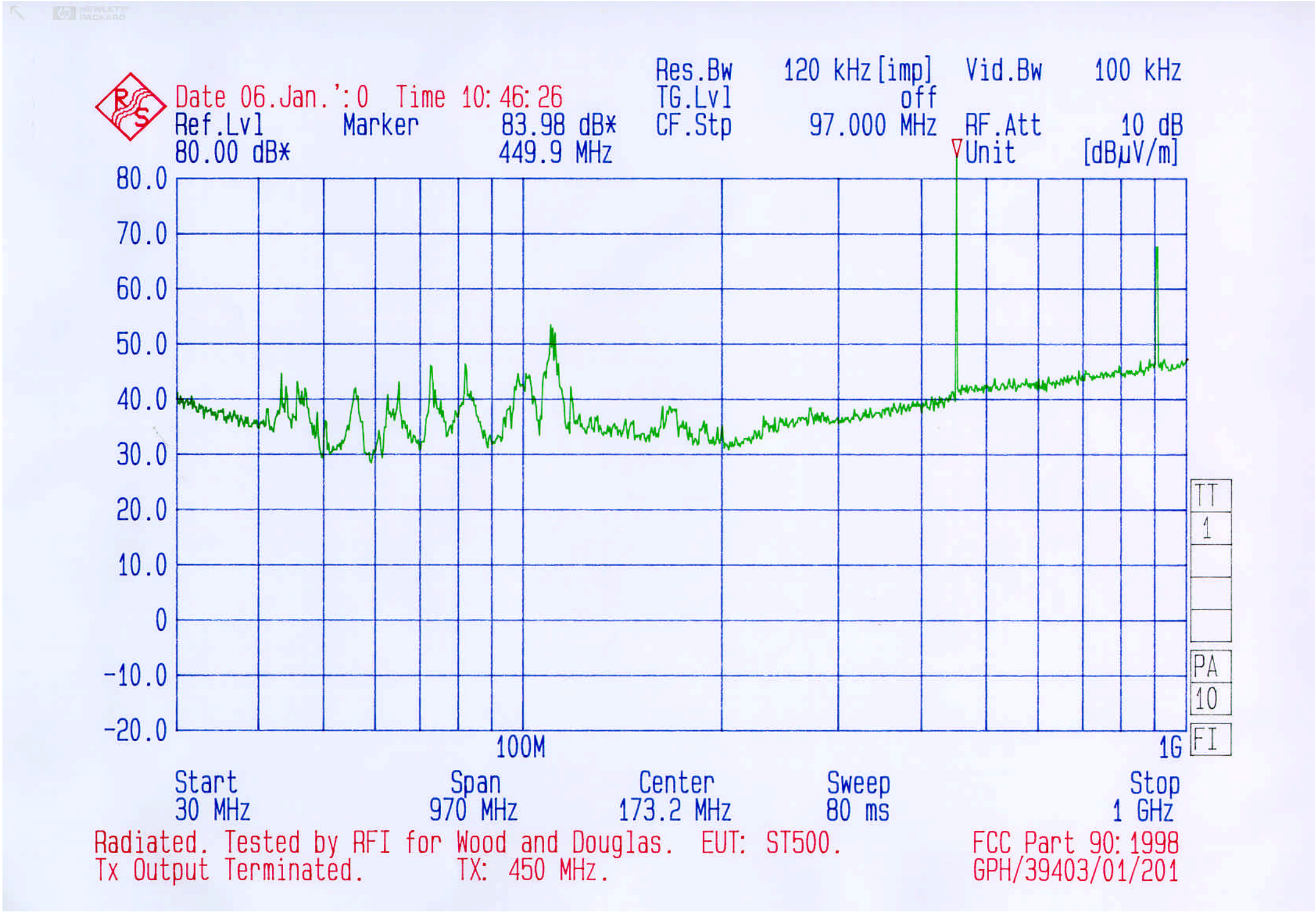
GPH\39630\005

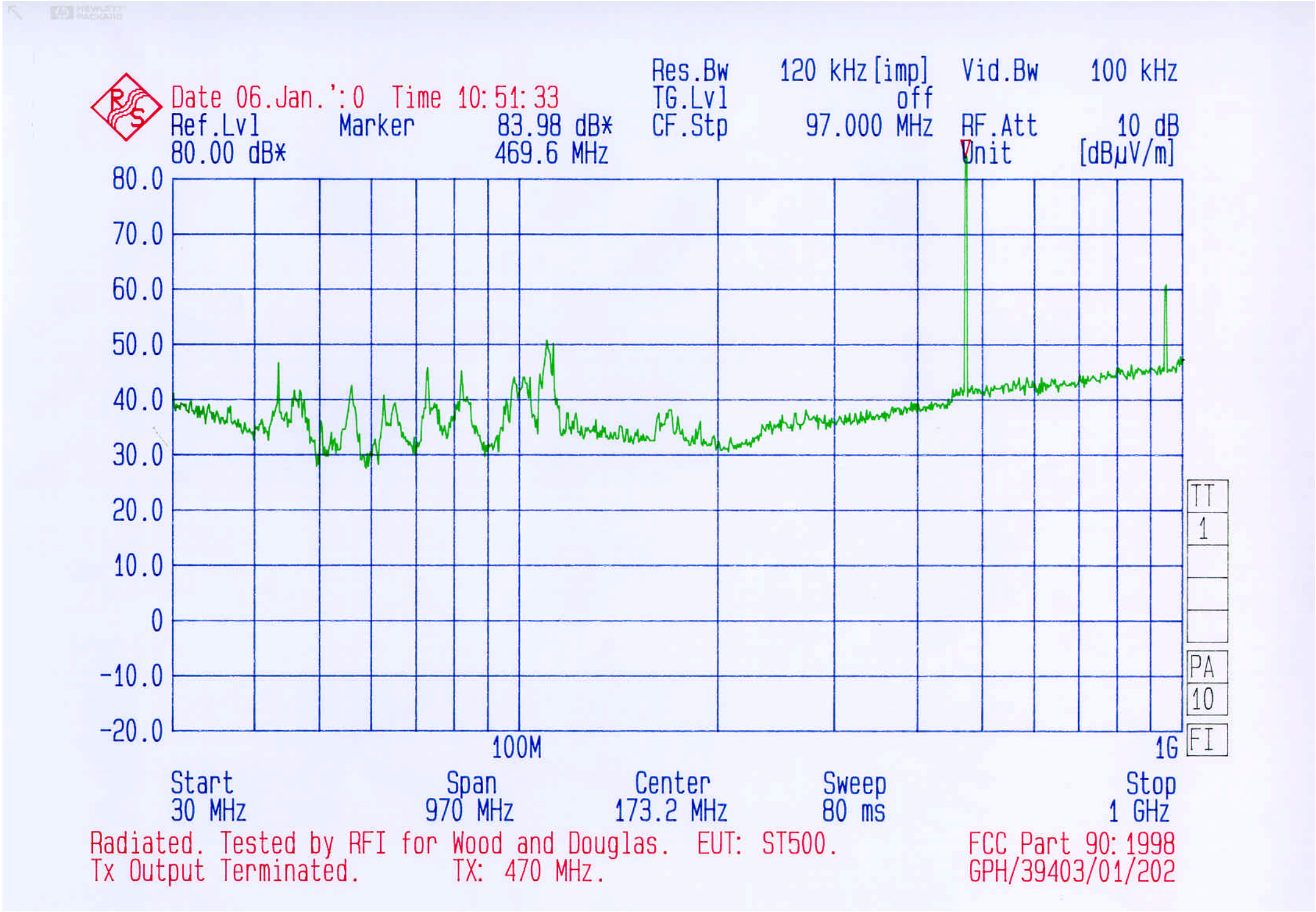


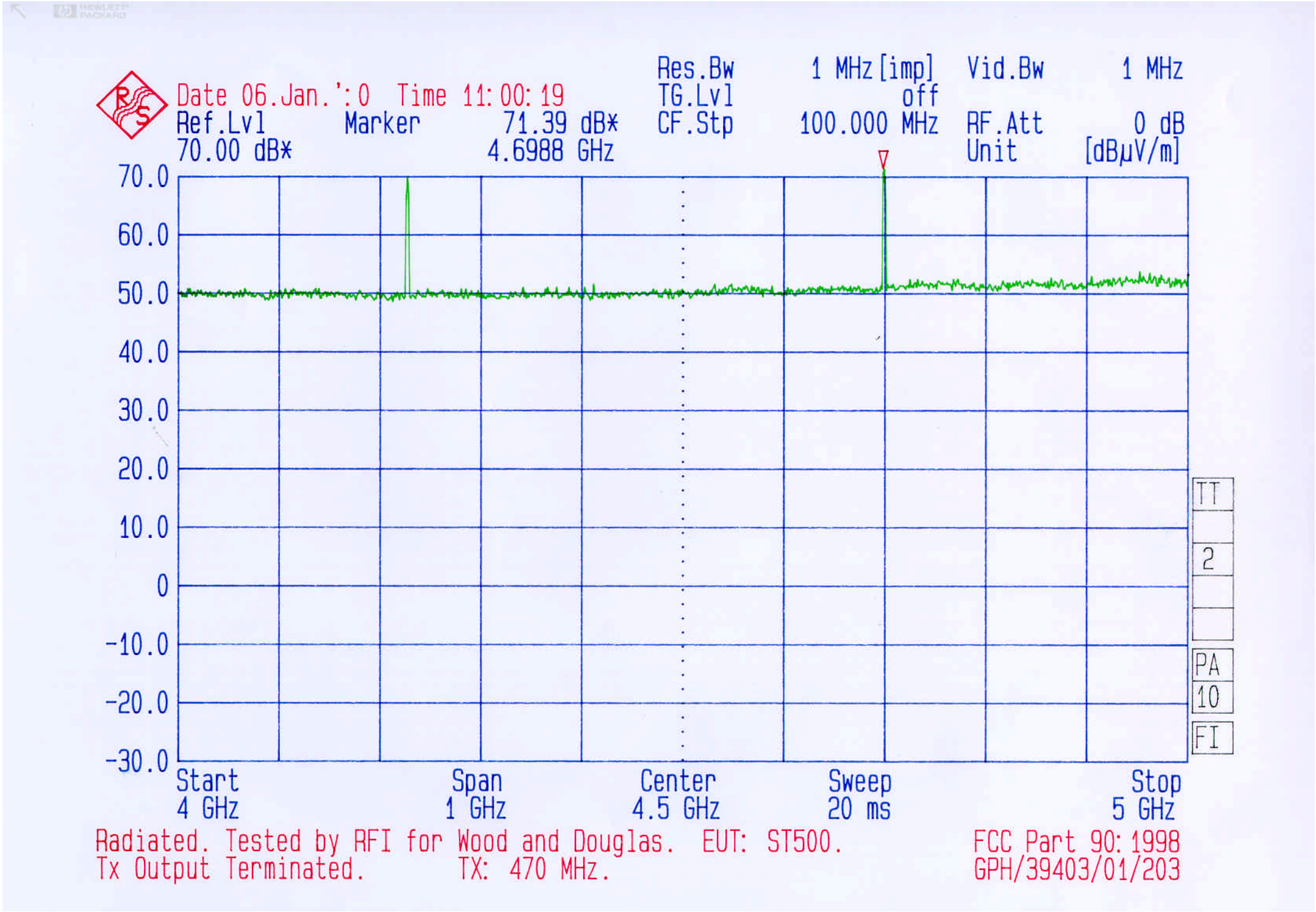
Occupied Bandwidth. Tested by RFI for Wood and Douglas. EUT: ST500
FCC Part 90: 1998

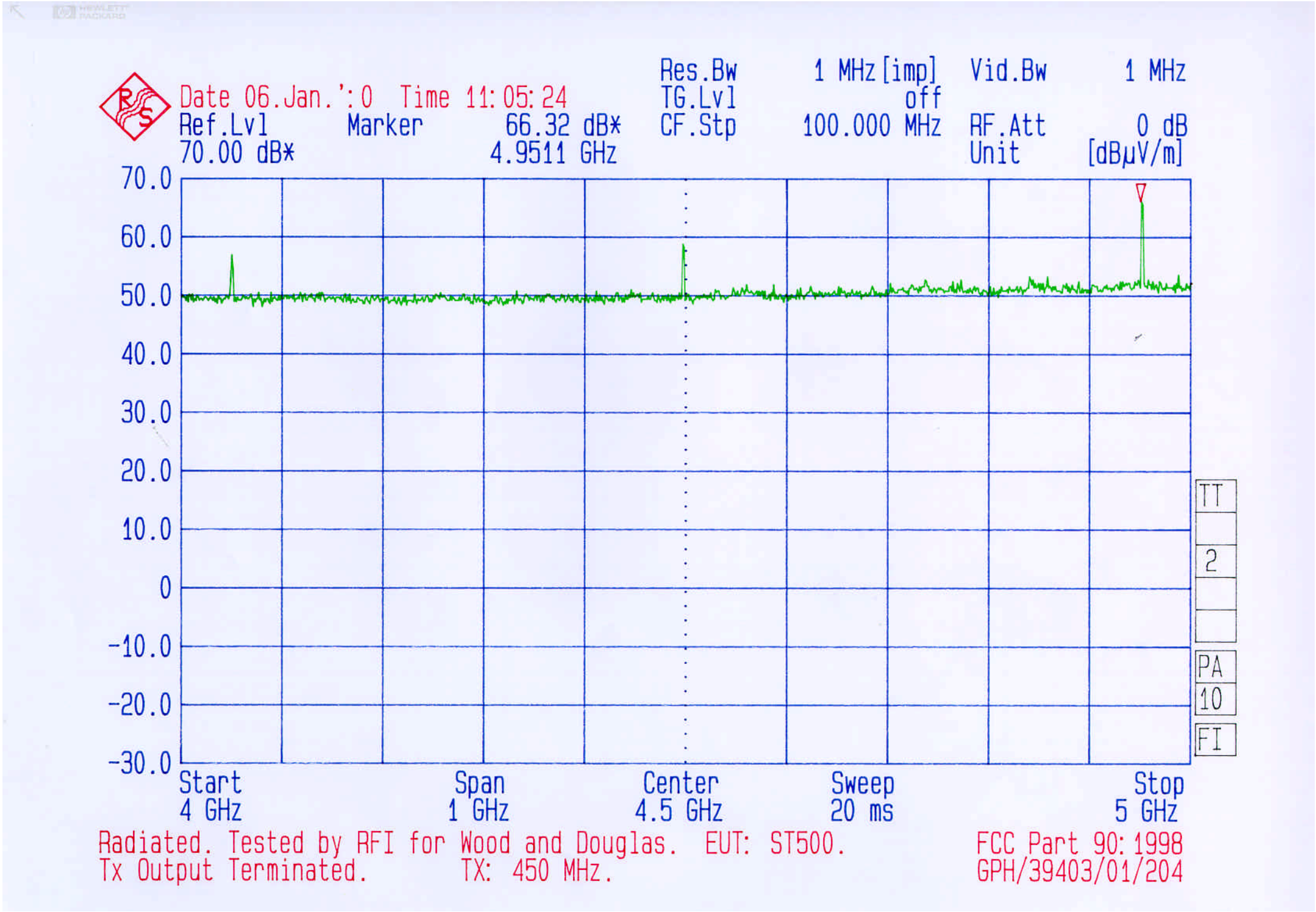
GPH/39430/006

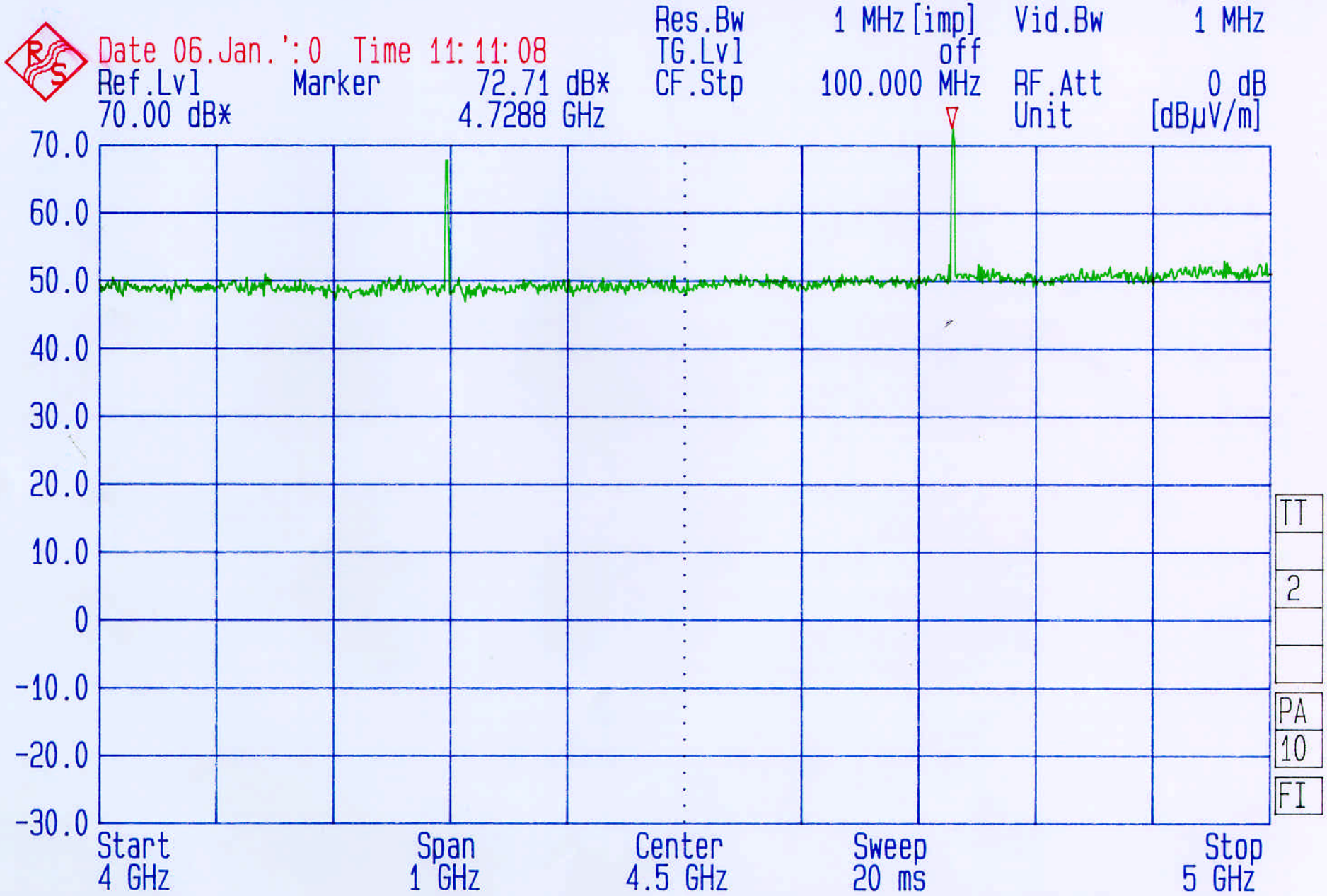

Date 06.Jan.':0 Time 10:33:01
Res.Bw 120 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 97.000 MHz
RF.Att 10 dB
Unit [dBµV/m]
Ref.Lvl 80.00 dB*
Marker 83.98 dB* 432.7 MHz
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
100M
1G
TT
1
PA
10
FI
Start 30 MHz
Span 970 MHz
Center 173.2 MHz
Sweep 80 ms
Stop 1 GHz
Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated. TX: 430 MHz.
FCC Part 90:1998
GPH/39403/01/200


Date 06.Jan.':0 Time 10:46:26
Res.Bw 120 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
CF.Stp 97.000 MHz
RF.Att 10 dB
Unit [dBµV/m]
Ref.Lvl 80.00 dB*
Marker 83.98 dB* 449.9 MHz
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
100M
1G
TT
1
PA
10
FI
Start 30 MHz
Span 970 MHz
Center 173.2 MHz
Sweep 80 ms
Stop 1 GHz
Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated. TX: 450 MHz.
FCC Part 90:1998
GPH/39403/01/201


Date 06.Jan.':0 Time 10:51:33
Res.Bw 120 kHz [imp]
Vid.Bw 100 kHz
TG.Lvl off
Ref.Lvl 80.00 dB*
Marker 83.98 dB* 469.6 MHz
CF.Stp 97.000 MHz
RF.Att 10 dB
Unit [dBµV/m]
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
100M
1G
TT
1
PA
10
FI
Start 30 MHz
Span 970 MHz
Center 173.2 MHz
Sweep 80 ms
Stop 1 GHz
Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated. TX: 470 MHz.
FCC Part 90:1998
GPH/39403/01/202

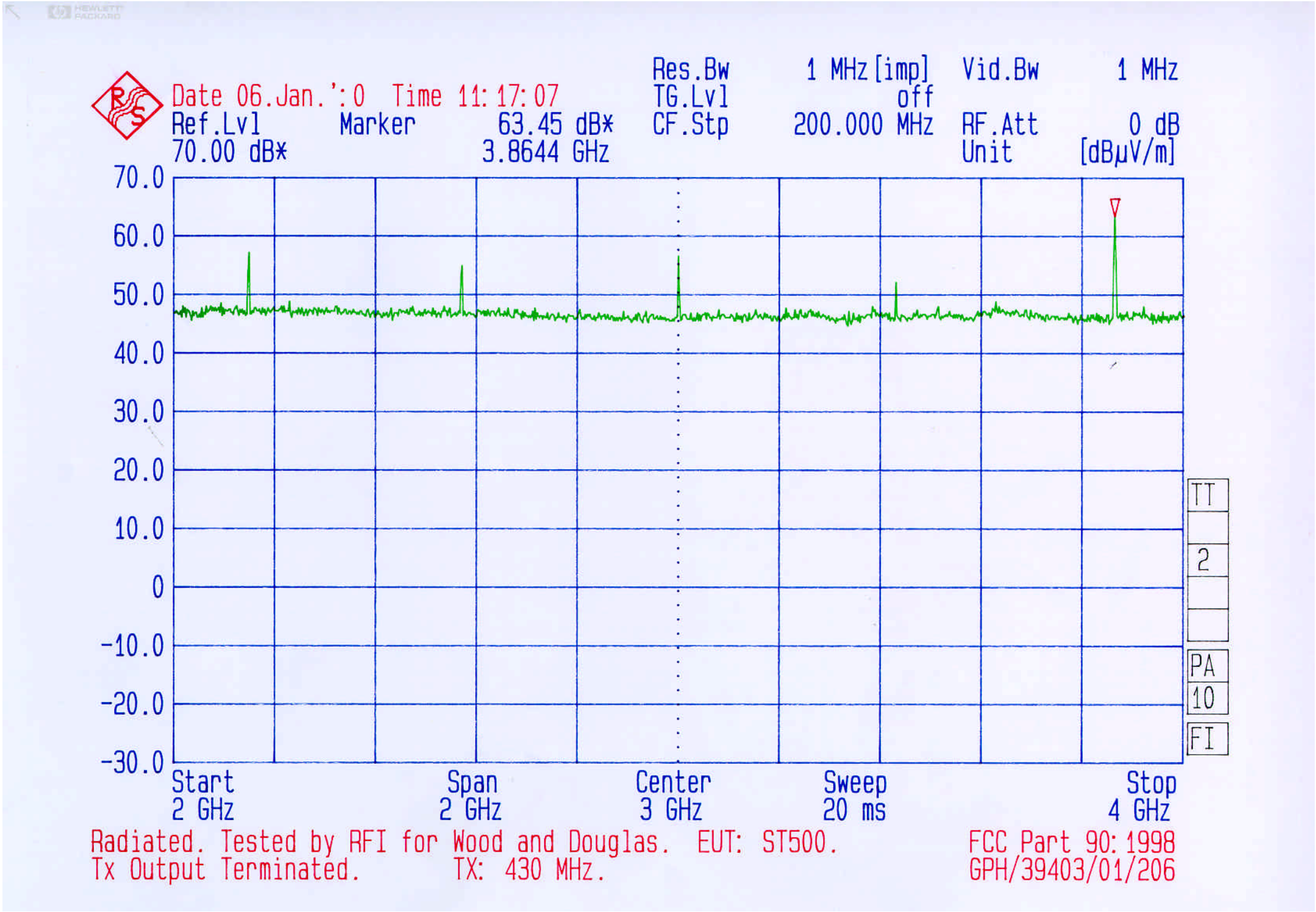

Date 06.Jan.':0 Time 11:00:19
Ref.Lvl
70.00 dB*
Marker
71.39 dB*
4.6988 GHz
Res.Bw
1 MHz [imp]
TG.Lvl
off
CF.Stp
100.000 MHz
Vid.Bw
1 MHz
RF.Att
0 dB
Unit
[dBµV/m]
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
-30.0
TT
2
PA
10
FI
Start
4 GHz
Span
1 GHz
Center
4.5 GHz
Sweep
20 ms
Stop
5 GHz
Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated.
TX: 470 MHz.
FCC Part 90:1998
GPH/39403/01/203

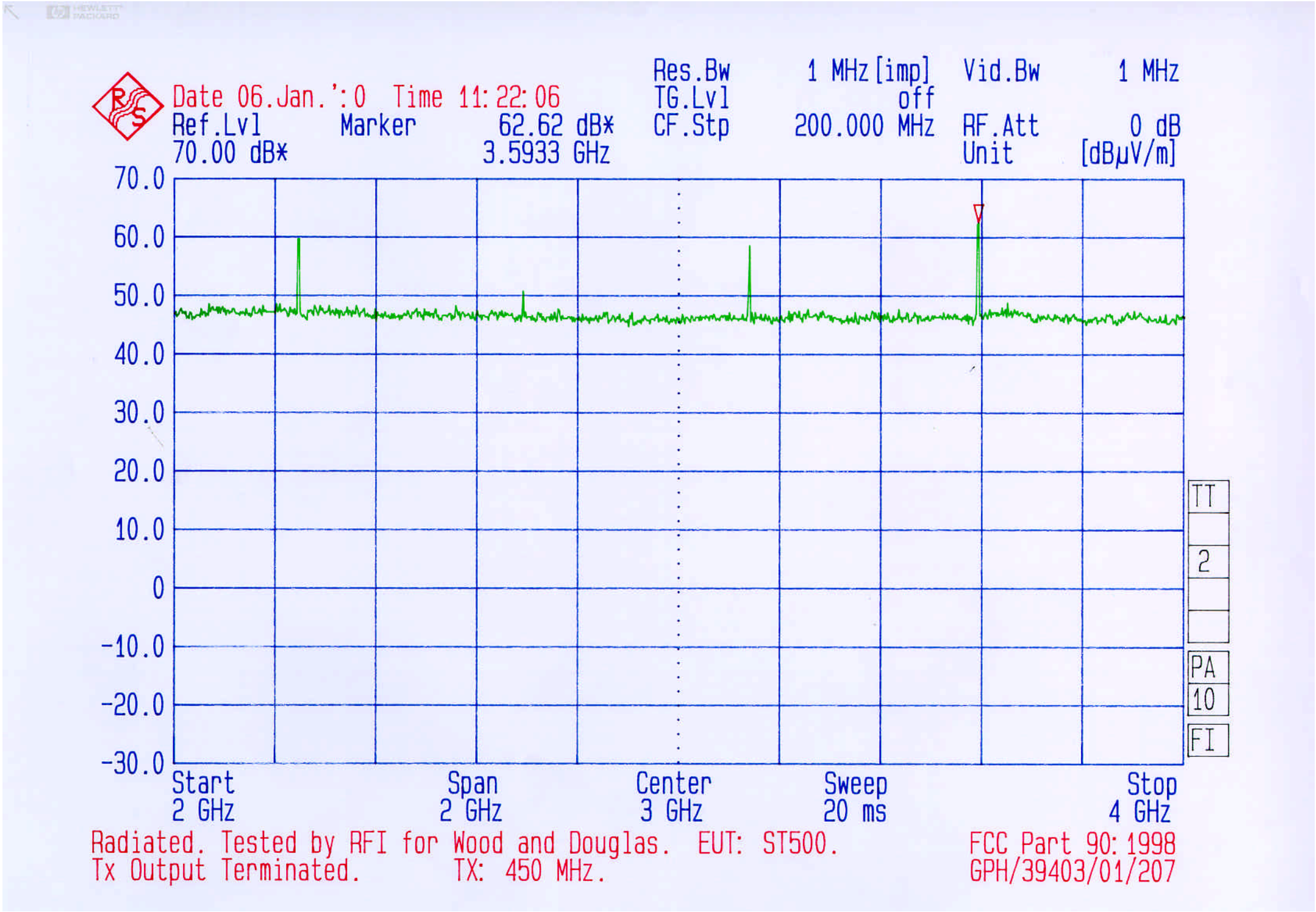

Date 06.Jan.':0 Time 11:05:24
Res.Bw 1 MHz [imp]
Vid.Bw 1 MHz
TG.Lvl off
Ref.Lvl 70.00 dB*
Marker 66.32 dB* 4.9511 GHz
CF.Stp 100.000 MHz
RF.Att 0 dB
Unit [dBµV/m]
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
-30.0
TT
2
PA
10
FI
Start 4 GHz
Span 1 GHz
Center 4.5 GHz
Sweep 20 ms
Stop 5 GHz
Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated. TX: 450 MHz.
FCC Part 90:1998
GPH/39403/01/204

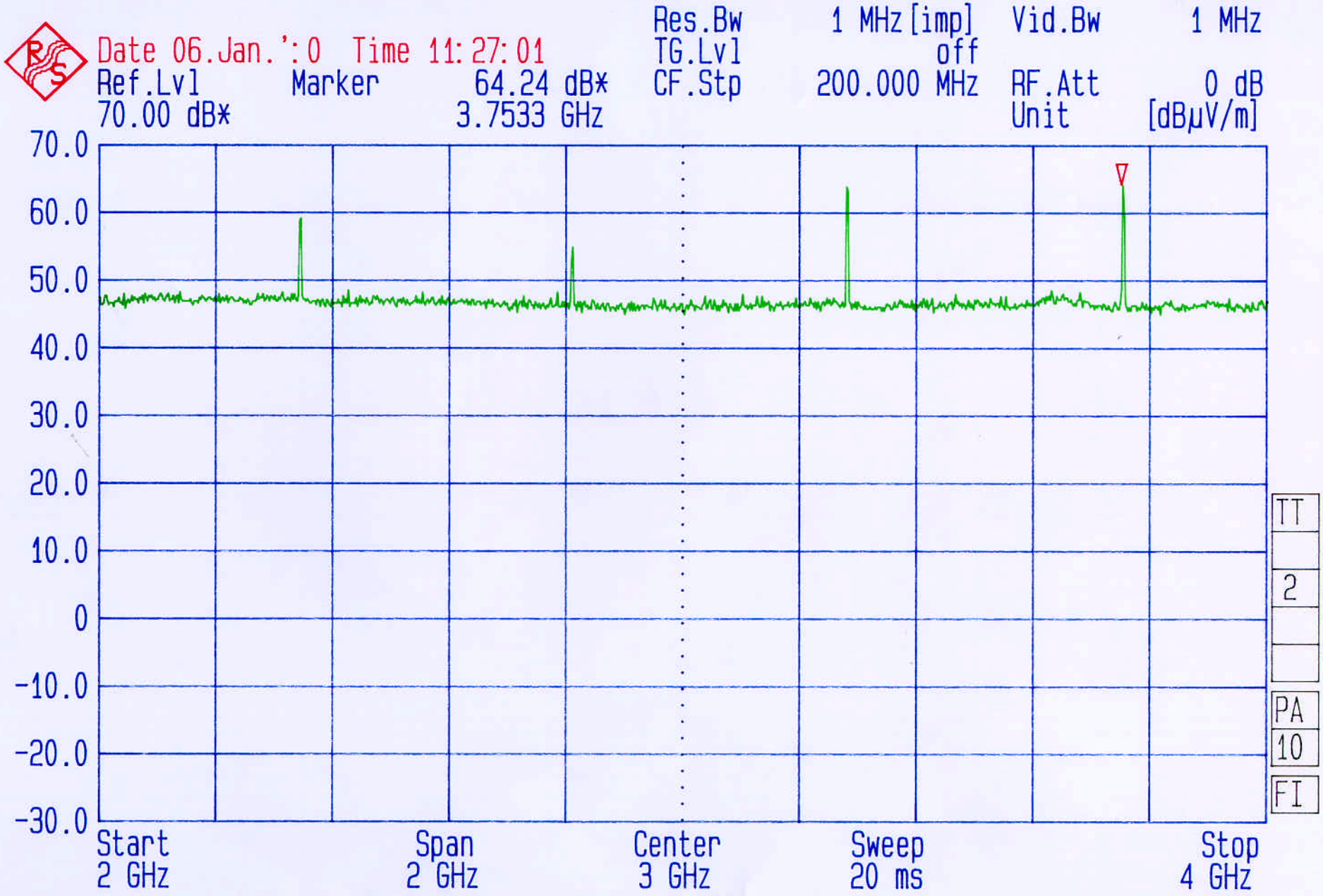


Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated. TX: 430 MHz.

FCC Part 90: 1998
GPH/39403/01/205

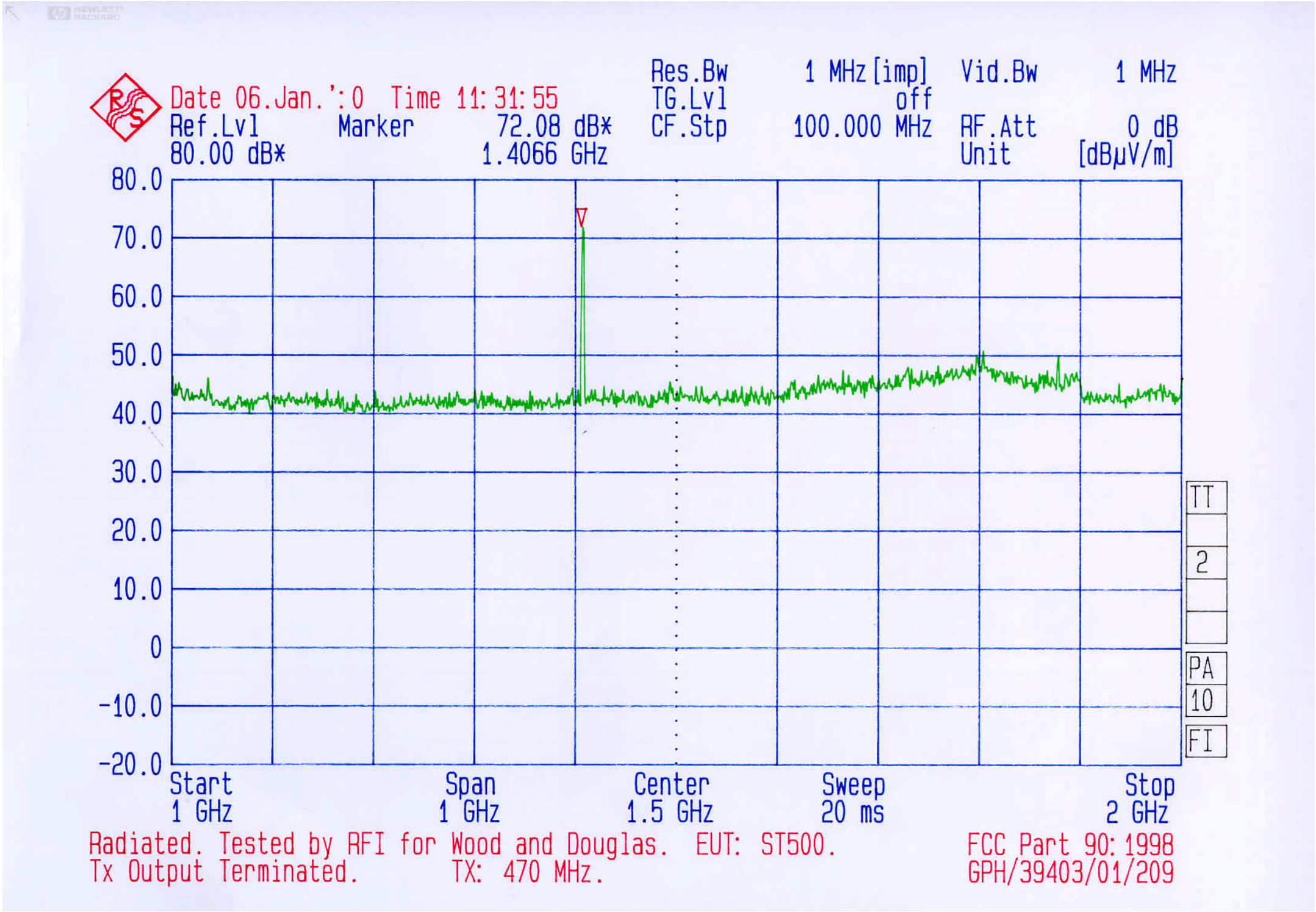

Date 06.Jan.':0 Time 11:17:07
Ref.Lvl
70.00 dB*
Marker
63.45 dB*
3.8644 GHz
Res.Bw
1 MHz [imp]
TG.Lvl
off
CF.Stp
200.000 MHz
Vid.Bw
1 MHz
RF.Att
0 dB
Unit
[dBµV/m]
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
-30.0
TT
2
PA
10
FI
Start
2 GHz
Span
2 GHz
Center
3 GHz
Sweep
20 ms
Stop
4 GHz
Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated.
TX: 430 MHz.
FCC Part 90:1998
GPH/39403/01/206

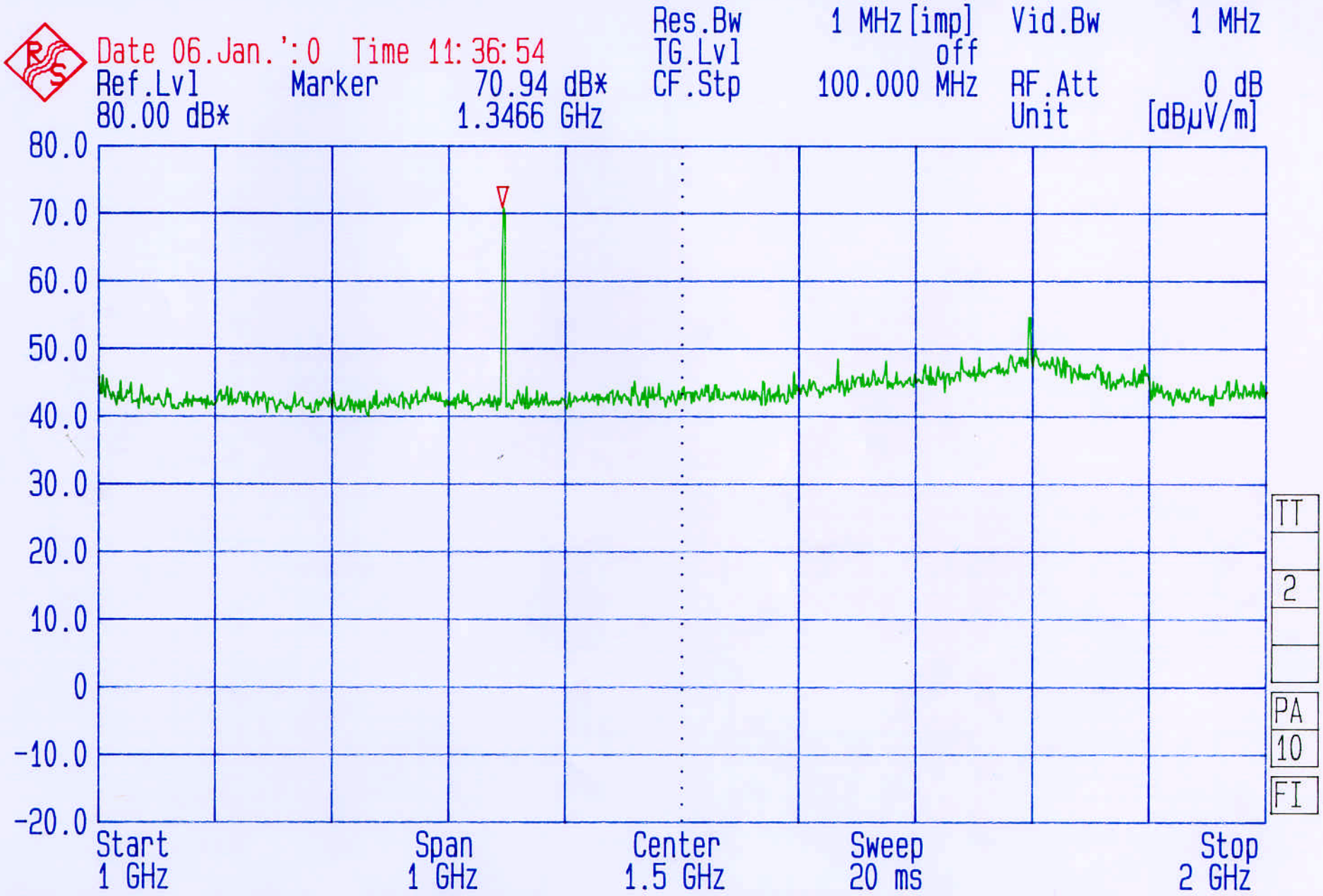

Date 06.Jan.':0 Time 11:22:06
Res.Bw 1 MHz [imp]
Vid.Bw 1 MHz
TG.Lvl off
Ref.Lvl Marker 62.62 dB*
CF.Stp 200.000 MHz
RF.Att 0 dB
70.00 dB* 3.5933 GHz
Unit [dBµV/m]
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
-30.0
TT
2
PA
10
FI
Start 2 GHz
Span 2 GHz
Center 3 GHz
Sweep 20 ms
Stop 4 GHz
Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated. TX: 450 MHz.
FCC Part 90:1998
GPH/39403/01/207



Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated. TX: 470 MHz.

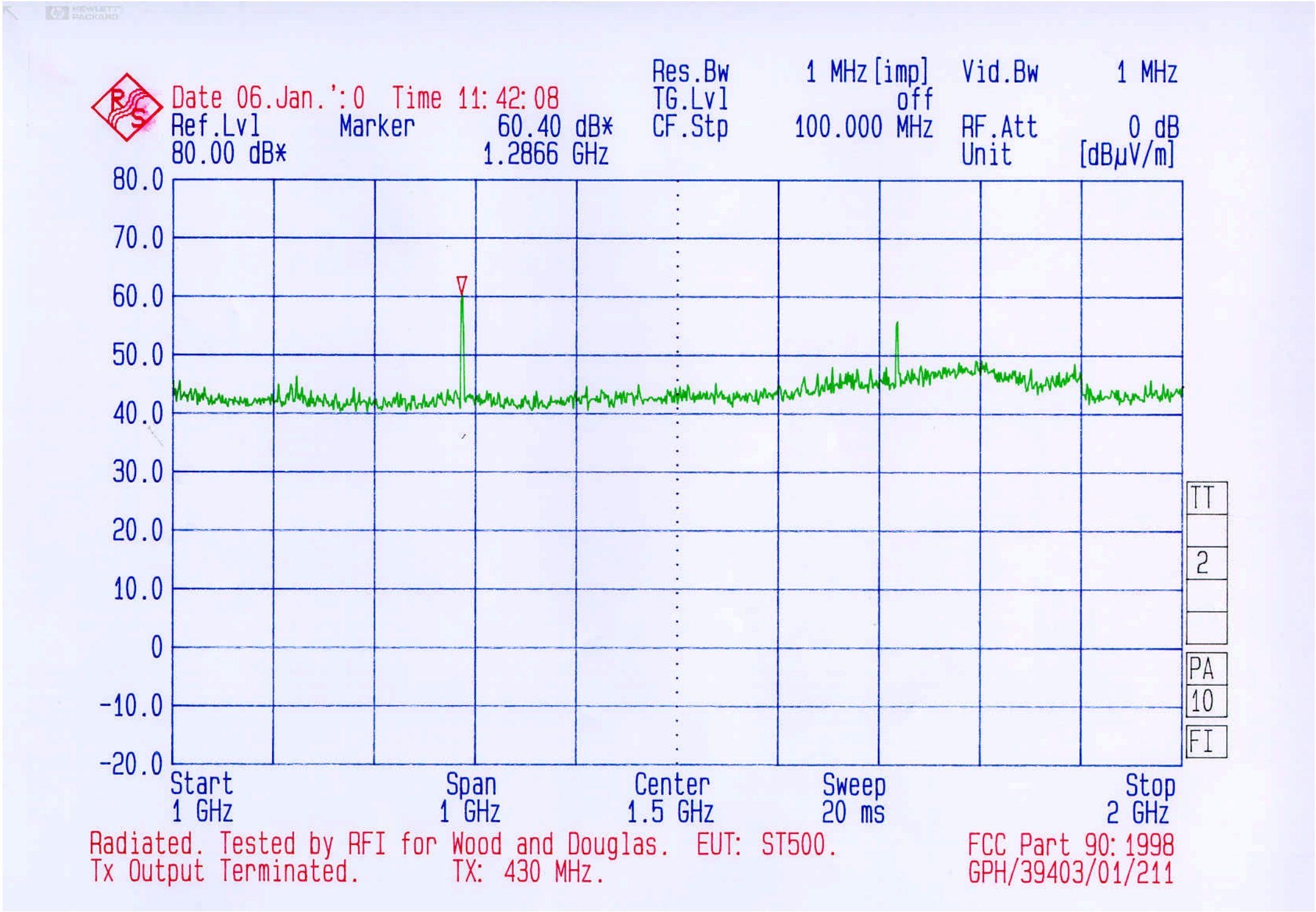
FCC Part 90:1998
GPH/39403/01/208


Date 06.Jan.':0 Time 11:31:55
Res.Bw 1 MHz [imp]
Vid.Bw 1 MHz
TG.Lvl off
Ref.Lvl 80.00 dB*
Marker 72.08 dB* 1.4066 GHz
CF.Stp 100.000 MHz
RF.Att 0 dB
Unit [dBµV/m]
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TT
2
PA
10
FI
Start 1 GHz
Span 1 GHz
Center 1.5 GHz
Sweep 20 ms
Stop 2 GHz
Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated. TX: 470 MHz.
FCC Part 90: 1998
GPH/39403/01/209



Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated. TX: 450 MHz.

FCC Part 90:1998
GPH/39403/01/~~209~~ Rev 210


Date 06.Jan.':0 Time 11:42:08
Res.Bw 1 MHz [imp]
Vid.Bw 1 MHz
TG.Lvl off
Ref.Lvl 80.00 dB*
Marker 60.40 dB* 1.2866 GHz
CF.Stp 100.000 MHz
RF.Att 0 dB
Unit [dBµV/m]
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
-10.0
-20.0
TT
2
PA
10
FI
Start 1 GHz
Span 1 GHz
Center 1.5 GHz
Sweep 20 ms
Stop 2 GHz
Radiated. Tested by RFI for Wood and Douglas. EUT: ST500.
Tx Output Terminated. TX: 430 MHz.
FCC Part 90: 1998
GPH/39403/01/211