# EXHIBIT 6A
# FCC PART 22
# TEST REPORT

ELECTRONICS TEST CENTRE
MPB TECHNOLOGIES INC.

Test Report Prepared By:
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MPBT Report No.: c05e2295-1 Rev: 2 Date: 30 July 2001

| | |
|---|---|
| Report for Emissions Testing of: | LoCate |
| FCC ID: | NJILOCA01 |
| In accordance with: | FCC Part 2 Frequency Allocations and Radio Treaty Matters; General Rules and Regulations, Subpart J (2000) |
| Test Personnel: | E. Hails |
| Prepared for: | CSI Wireless<br>Suite 260<br>6815 8th St. NE<br>Calgary, AB<br>T2E 7H7 |

_____
Client Acceptance
Authorized Signatory

Digitally signed by Todd Gallagher
cn=Todd Gallagher, o=Electronics Test Centre, c=CA
Date: 2001.07.31 13:19:30 -07'00'
Reason: I have reviewed this document

_____
David Raynes
Laboratory Supervisor
Electronics Test Centre (Airdrie)
Authorized Signatory

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# 1.0 INTRODUCTION

## 1.1 SCOPE

The purpose of this report is to present the findings and results of compliance testing performed in accordance with CFR 47 FCC Part 2, Subpart J, Equipment Authorization Procedures.

## 1.2 APPLICANT

This test report has been prepared for CSI Wireless, located in Calgary, Alberta, Canada.

## 1.3 APPLICABILITY

All test procedures, limits, and results defined in this document apply to the CSI Wireless LoCate unit, referred to herein as the Equipment Under Test (EUT).

The results contained in this report relate only to the item tested.

This report does not imply product endorsement by NVLAP or the Canadian or US governments.

## 1.4 TEST SAMPLE DESCRIPTION

The test sample provided for testing was a LoCate:

| | |
|---|---|
| Product Type: | Telecommunications |
| Model Number: | LOCA01 |
| Serial Number: | Rev 01 S/N 4 |
| Cables: | power supply, data input/output, cellular antenna, GPS antenna |
| Power Requirements: | 12 VDC, 1 A |
| Peripheral Equipment: | laptop computer, RS232 to CMOS level converter |

More detailed information is provided by CSI Wireless in Appendix A.

## 1.5 GENERAL TEST CONDITIONS AND ASSUMPTIONS

The EUT was set up and exercised using the configurations, modes of operation and arrangements defined in this report only. All inputs and outputs to and from other equipment associated with the EUT were adequately simulated.

Where relevant, the EUT was only tested using the monitoring methods and test criteria defined in this report.

All testing, unless otherwise noted, was performed under the following environmental conditions:

| | |
|---|---|
| Temperature: | 17 to 23 °C |
| Humidity: | 45 to 75 % |
| Barometric Pressure: | 68 to 106 kPa |

### 1.6 SCOPE OF TESTING

Testing was performed in accordance with FCC Part 2 Subpart J (2000).

#### 1.6.1 VARIATIONS IN TEST METHODS

There were no variations from the test procedures outlined above.

#### 1.6.2 MARGINAL EMISSIONS MEASUREMENTS

There were no emissions measured to be closer to the specified limits than -6 dB.

#### 1.6.3 TEST SAMPLE MODIFICATIONS

There were no equipment modifications during test performance.

## 2.0 ABBREVIATIONS

CE -Conducted Emissions
E -Field - Electric Field
H -Field - Magnetic Field
N/T -Not Tested
N/A -Not Applicable
RE -Radiated Emissions

## 3.0 MEASUREMENT UNCERTAINTY

For Radiated E-Field Emissions and Conducted Emissions, the uncertainties in the measurements were calculated using the methods outlined in the NAMAS document, NIS81: May 1984.

| | |
|---|---|
| Frequency | = ± 1 kHz |
| Amplitude (RE) | = ± 4.01 dB |
| Amplitude (CE) | = ± 3.25 dB |

## 4.0 TEST CONCLUSION

The EUT was subjected to the following tests. Compliance status is indicated as **PASS, Marginal Pass,** or **FAIL**.

The following table summarizes the test results in terms of the specification and class or level applied, the unique test sample identification, the EUT modification state, and configuration as applicable.

| TEST CASE | TEST TYPE | SPECIFICATION | TEST SAMPLE | MOD. STATE | CONFIGURATION | RESULT |
|---|---|---|---|---|---|---|
| §4.1 | RF Output Power | FCC Parts 2.1046 & 22.913 | LoCate NJILOCA01 | nil | Simulated Installation | **PASS** |
| §4.2 | Occupied Bandwidth | FCC Part 2.1049 | LoCate NJILOCA01 | nil | Simulated Installation | **PASS** |
| §4.3 | Spurious Emissions at Antenna Terminals | FCC Part 2.1051, 2.1057 & 22.917(e) | LoCate NJILOCA01 | nil | Simulated Installation | **PASS** |
| §4.4 | Radiated Emissions | FCC Parts 2.1053, 2.1057 & 22.917(e) | LoCate NJILOCA01 | nil | Simulated Installation | **PASS** |
| §4.5 | Frequency Stability | FCC Parts 2.1055 & 22.355 | LoCate NJILOCA01 | nil | Simulated Installation | **PASS** |
| §4.6 | Modulation Character-istics | FCC Parts 2.1047 & 22.915 | LoCate NJILOCA01 | nil | Simulated Installation | **PASS** |

### STATEMENT OF COMPLIANCE

The client equipment referred to in this report was found to comply with the requirements as stated above.

## 4.1 RF POWER OUTPUT

| | |
|---|---|
| Test Lab: Electronics Test Centre (Airdrie)<br>Test Personnel: E. Hails<br>Test Date: 26 April 2001 | Product:<br>LoCate |
| Test Result, LoCate: **PASS** | |
| Objectives/Criteria | Specifications |
| The effective radiated power emitted by a device at its carrier frequency, measured at the antenna terminal, shall not exceed the limits as specified. | FCC Part 22.913<br>ERP <= 500 W or 57.0 dBm |

| Channel | Frequency [MHz] | $ERP_{rated}$ [dBm] | $ERP_{meas}$ [dBm] |
|---|---|---|---|
| 001 – audio mode | 825.030 | 28.00 | 27.51 |
| 367 – audio mode | 836.010 | 28.00 | 25.77 |
| 800 – audio mode | 849.000 | 28.00 | 25.34 |
| 001 – data mode | 825.030 | 28.00 | 27.00 |
| 367 – data mode | 836.010 | 28.00 | 25.71 |
| 800 – data mode | 849.000 | 28.00 | 25.16 |

## 4.2 OCCUPIED BANDWIDTH

| | |
|---|---|
| Test Lab: MPB Technologies Inc. Airdrie<br>Test Personnel: E. Hails<br>Test Date: 26 April 2001 | Product:<br>LoCate |

Test Result: LoCate: PASS

| Objectives/Criteria | Specifications |
|---|---|
| The occupied bandwidth shall be measured at its antenna terminal at the carrier frequency such that:<br>99.0% of the total mean power (area under the curve of spectral density vs. frequency) emitted by the device is within the occupied bandwidth;<br>0.5% of the total mean power lies below the lower frequency limit of the occupied bandwidth; and<br>0.5% of the total mean power lies above the higher frequency limit of the occupied bandwidth | The occupied bandwidth and channel spacing for audio mode transmission is 30 kHz.<br>The occupied bandwidth and channel spacing for data mode transmission is 60 kHz. |

| Channel | Frequency [MHz] | Occupied Bandwidth [kHz] |
|---|---|---|
| 001 – Audio Mode Transmit | 825.030 | 18.45 |
| 367 – Audio Mode Transmit | 836.010 | 18.45 |
| 800 – Audio Mode Transmit | 849.000 | 18.45 |
| 001 – Data Mode Transmit | 825.030 | 34.20 |
| 367 – Data Mode Transmit | 836.010 | 34.20 |
| 800 – Data Mode Transmit | 849.000 | 34.20 |

Comments: The occupied bandwidth was measured using the occupied bandwidth softkey on the spectrum analyzer.

## 4.3 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

| | |
|---|---|
| Test Lab: MPB Technologies Inc. Airdrie<br>Test Personnel: E. Hails<br>Test Date: 26-27 April 2001 | Product:<br>LoCate |

Test Result, LoCate: PASS

| Objectives/Criteria | Specifications | |
|---|---|---|
| The spurious emissions at the antenna terminals shall not exceed the limits for the specifications as stated.<br>Emission levels should meet the requirements with a margin of 6dB.<br>(NB. $f_c$ denotes carrier frequency) | FCC Part 2.1051 and 2.1057<br>FCC Part 22.917(e)<br>Frequency<br>9 kHz to lower edge of $f_c$<br>upper edge of $f_c$ to the tenth harmonic of $f_c$ | <br><br>Emission Level<br>-13 dBm or 94 dBµV<br>-13 dBm or 94 dBµV |

Comments: The only peaks approaching the limit were harmonics of the fundamentals and so do not apply.

| Channel | Frequency [MHz] | Emission Level [dBµV] | Delta [dB from limit] |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
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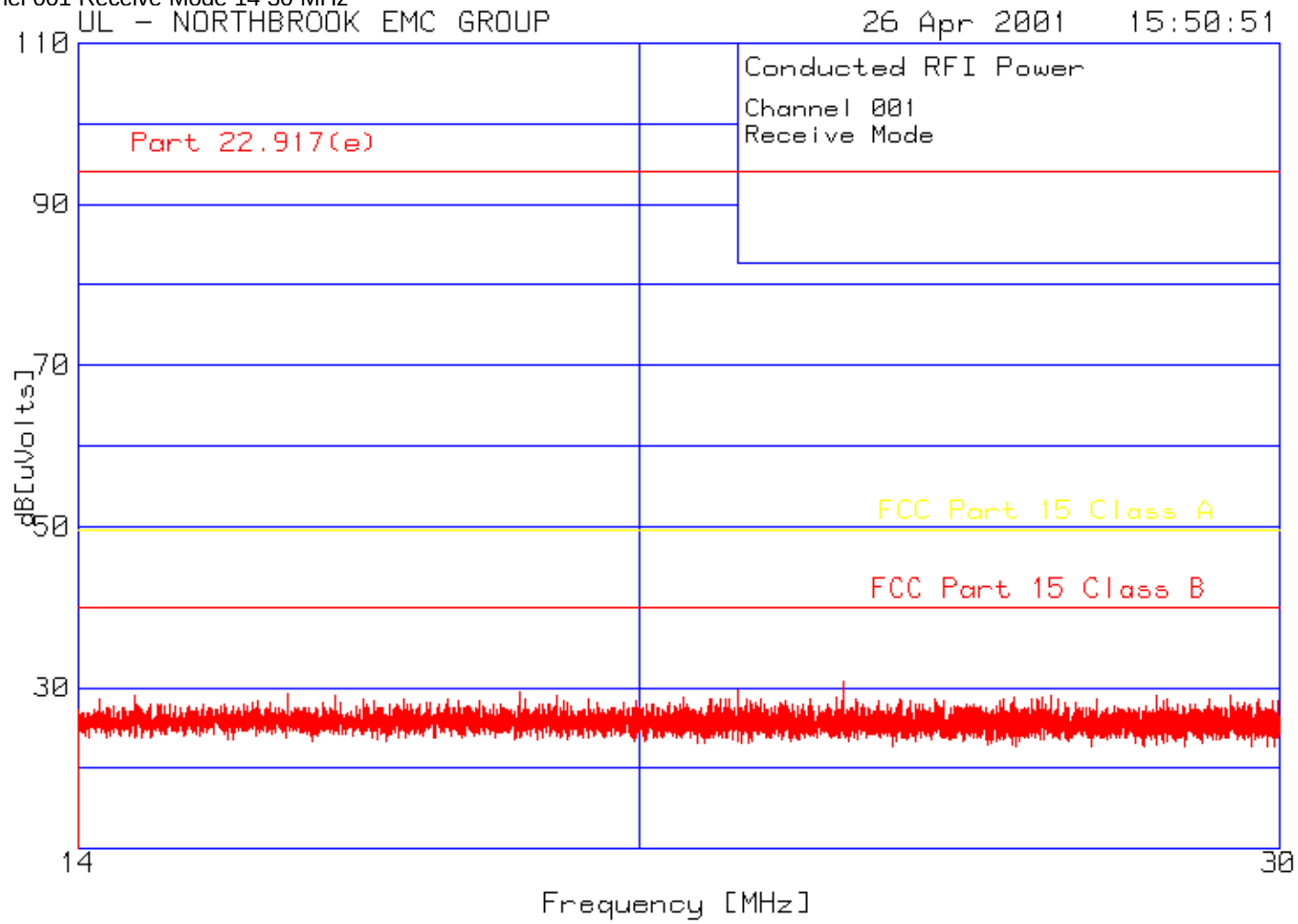
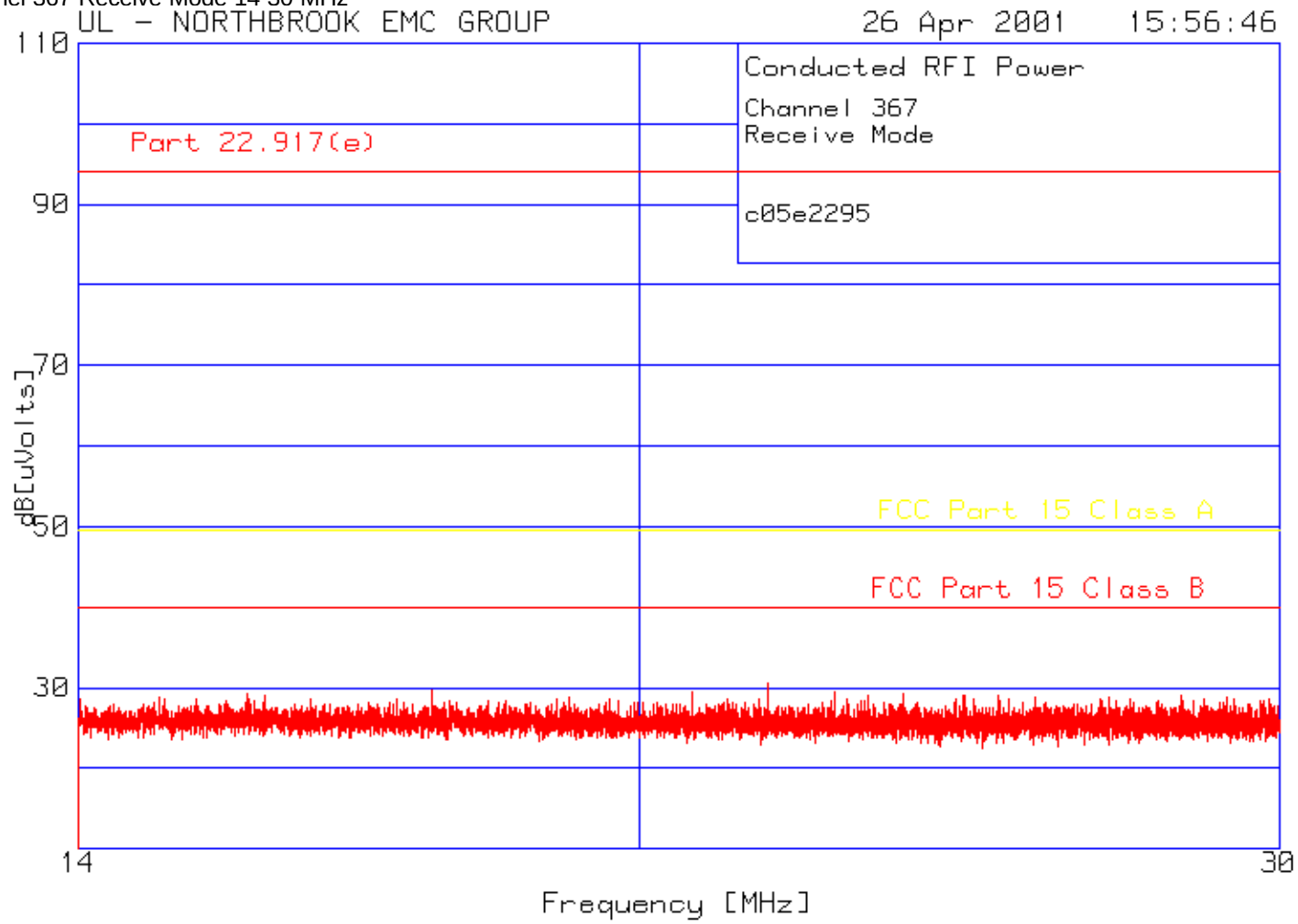
| | | | |

There were no more spurious emissions measured to be within -20 dB of the specified limit. Refer to the test data plots for more details.

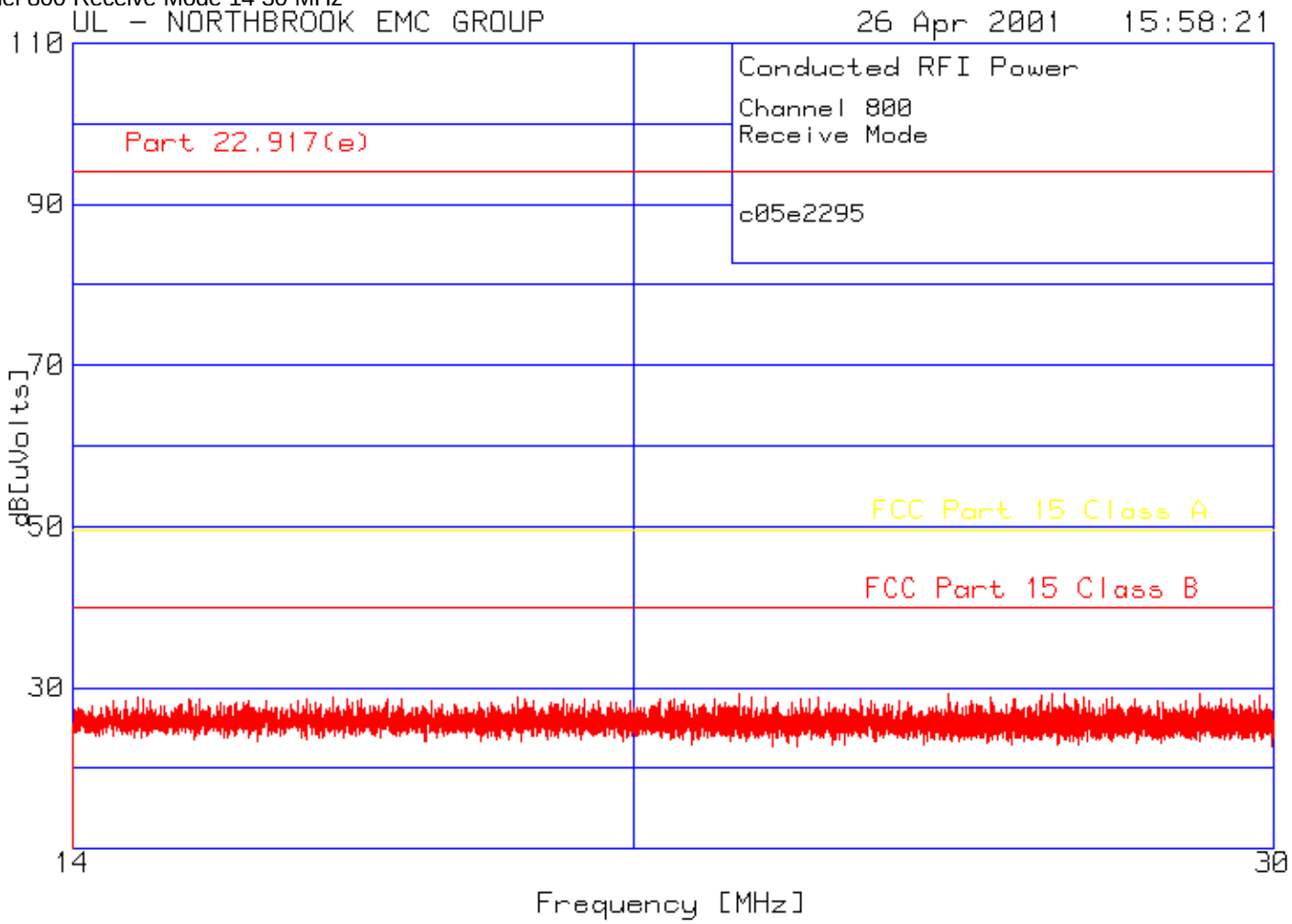
Spurious Antenna Terminal Emissions
Channel 001 Receive Mode 14-30 MHz



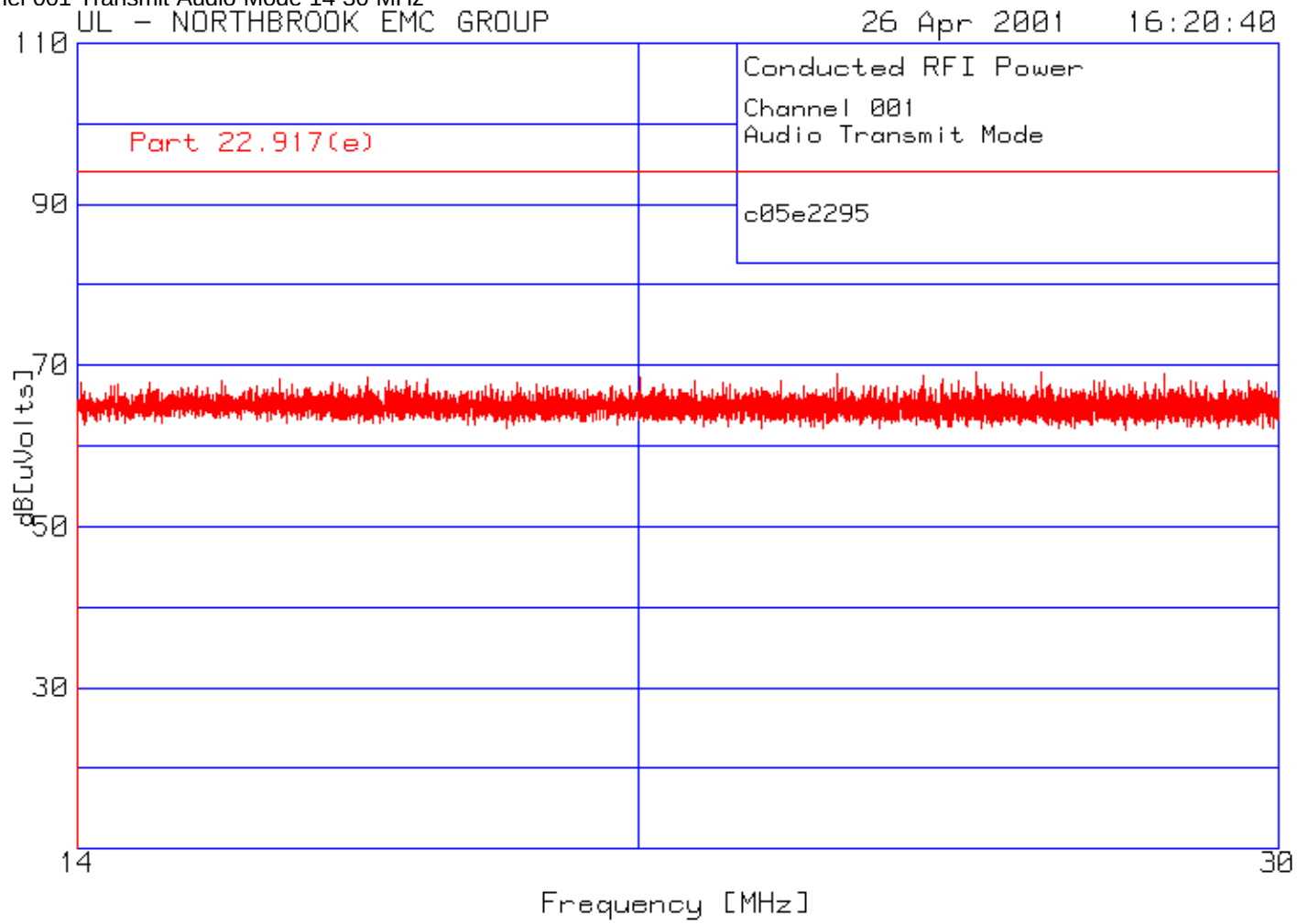
Spurious Antenna Terminal Emissions
Channel 367 Receive Mode 14-30 MHz



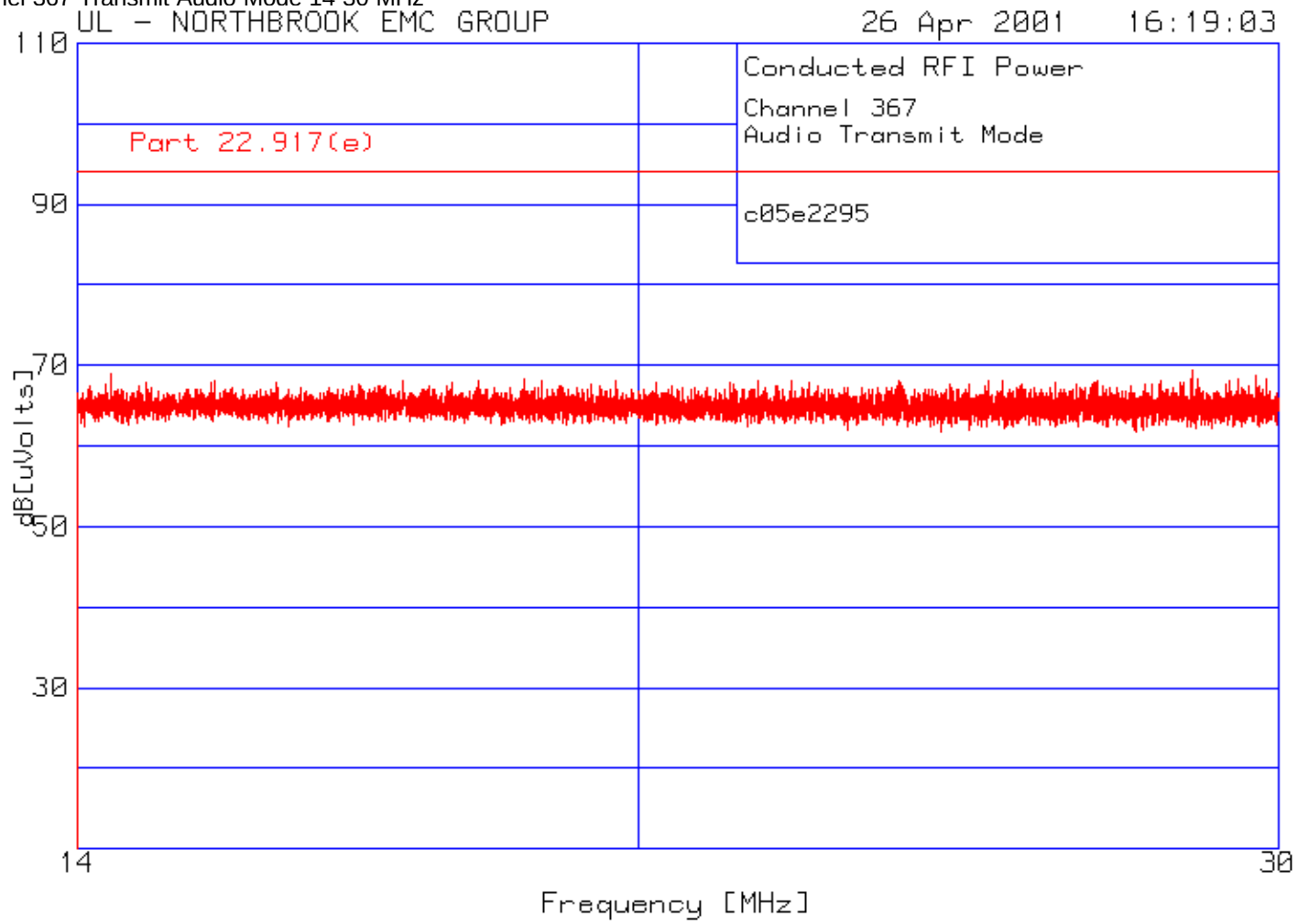
Spurious Antenna Terminal Emissions
Channel 800 Receive Mode 14-30 MHz



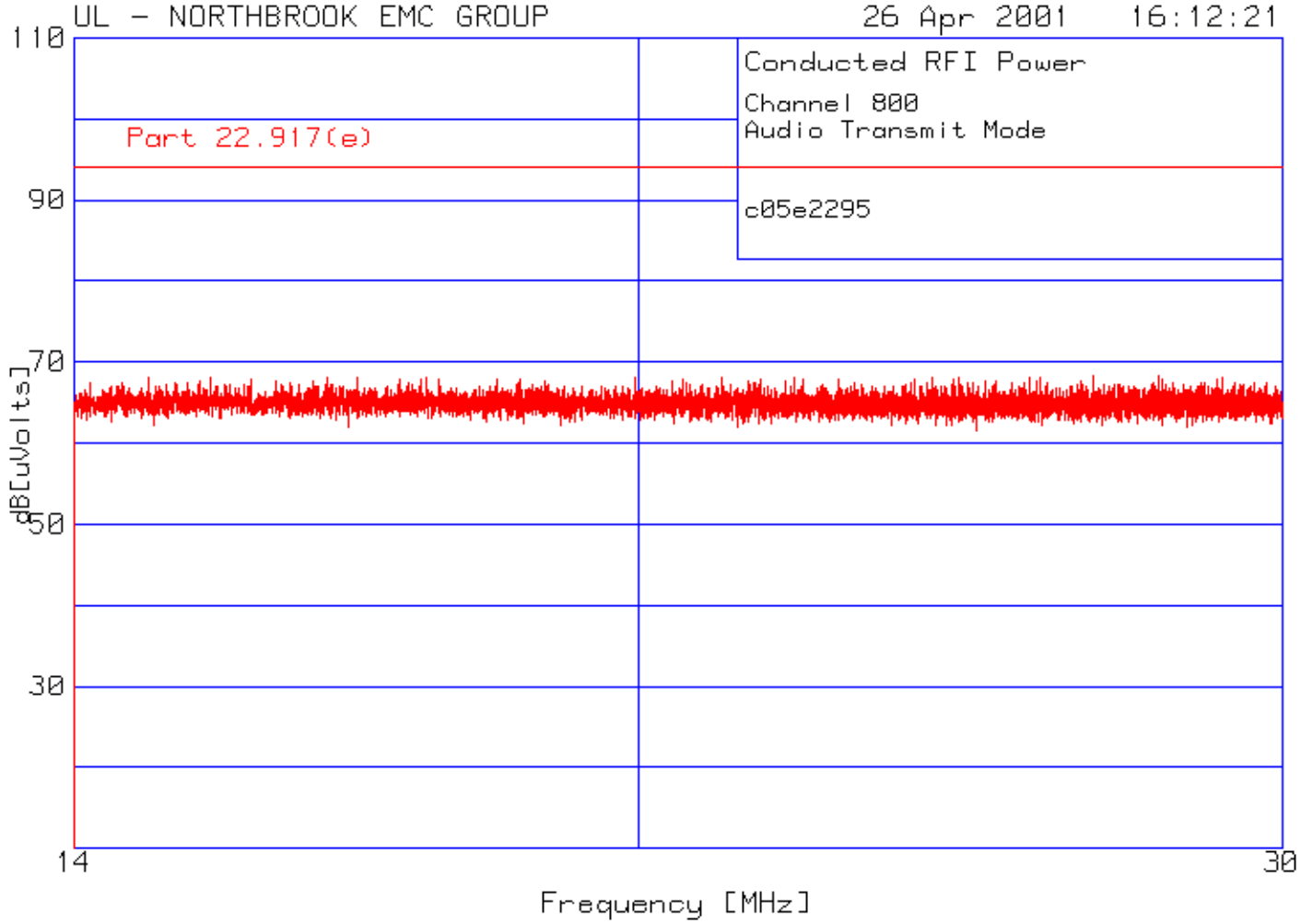
Spurious Antenna Terminal Emissions
Channel 001 Transmit Audio Mode 14-30 MHz



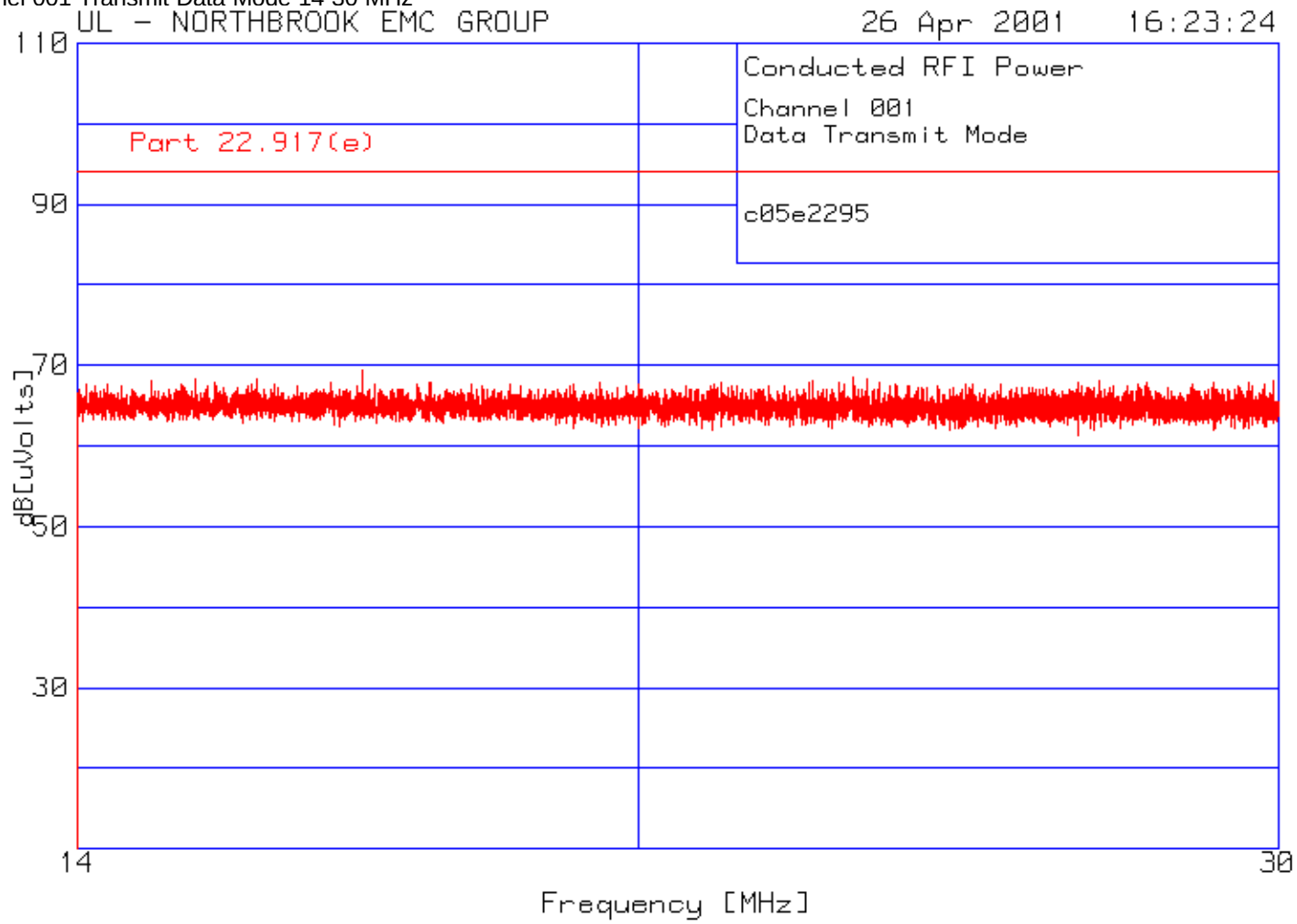
Spurious Antenna Terminal Emissions
Channel 367 Transmit Audio Mode 14-30 MHz



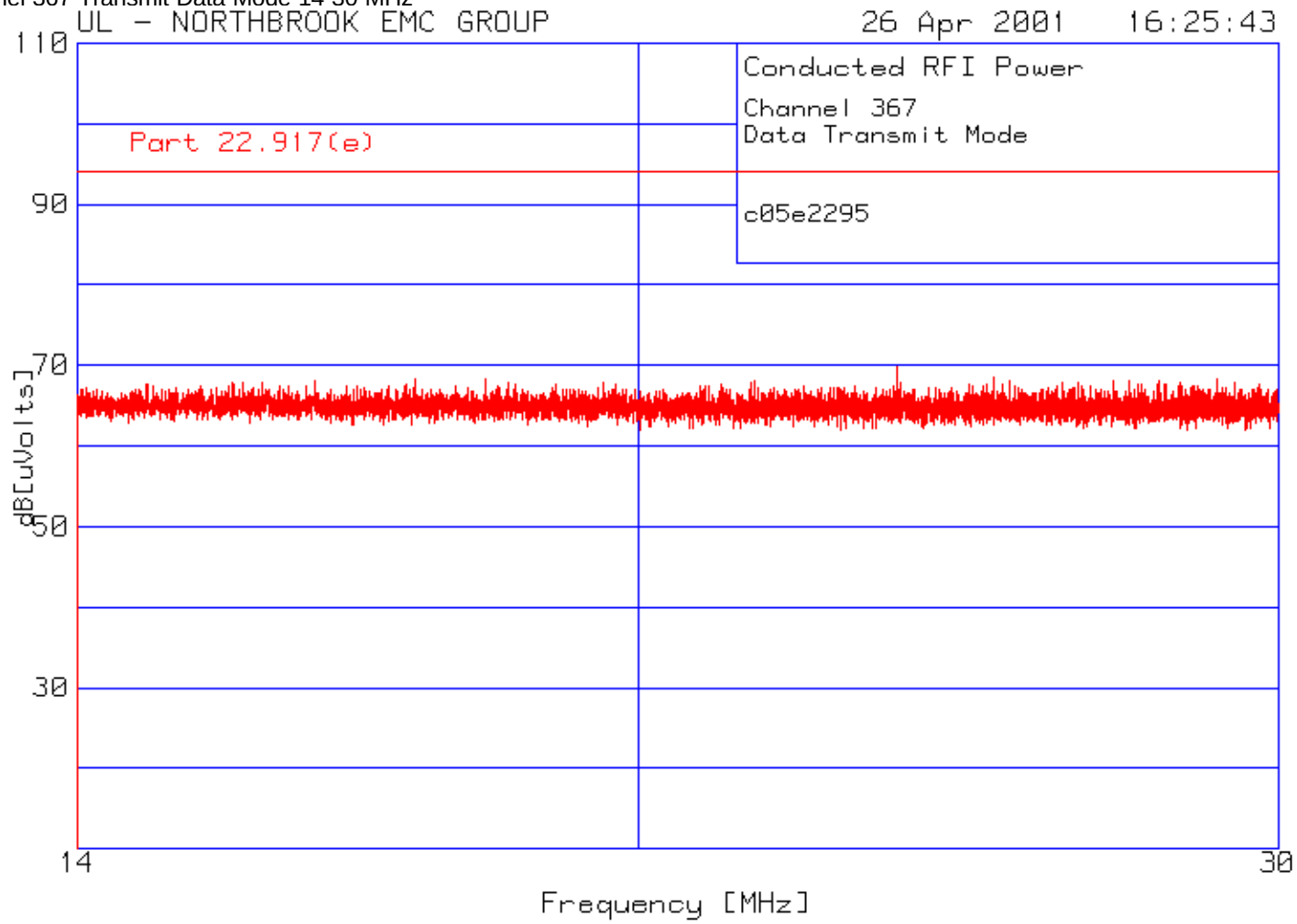
Spurious Antenna Terminal Emissions
Channel 800 Transmit Audio Mode 14-30 MHz



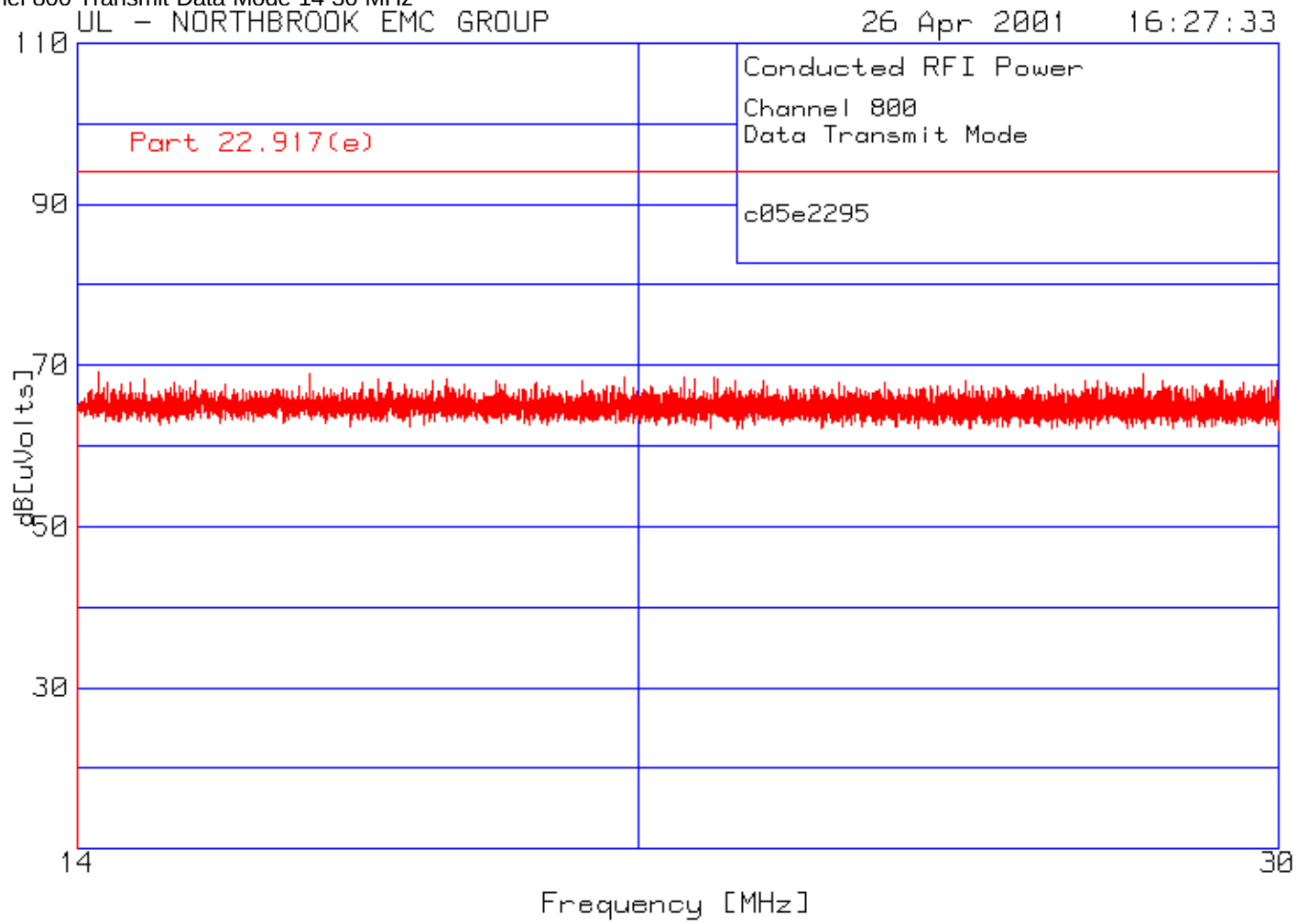
Spurious Antenna Terminal Emissions
Channel 001 Transmit Data Mode 14-30 MHz



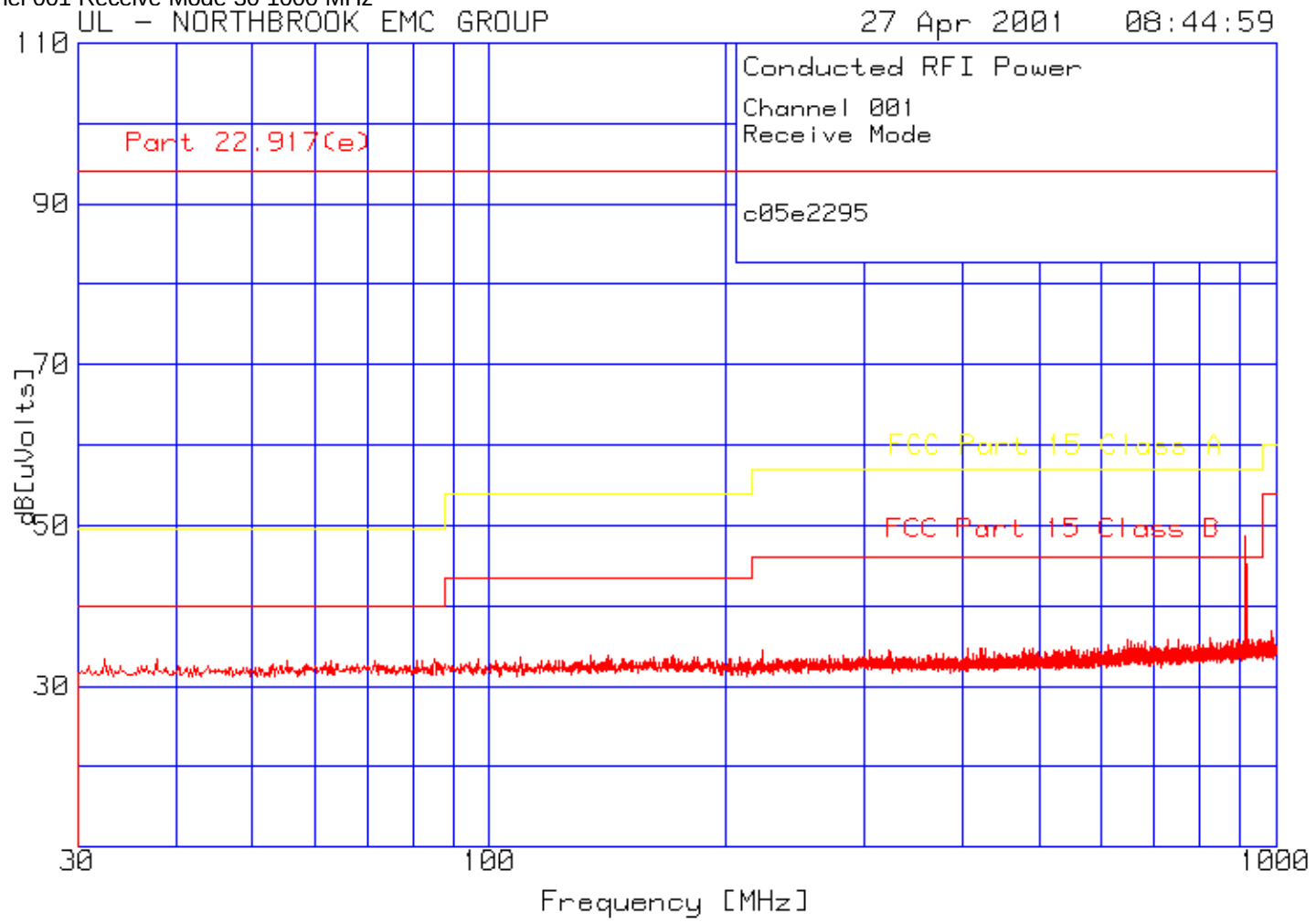
Spurious Antenna Terminal Emissions
Channel 367 Transmit Data Mode 14-30 MHz



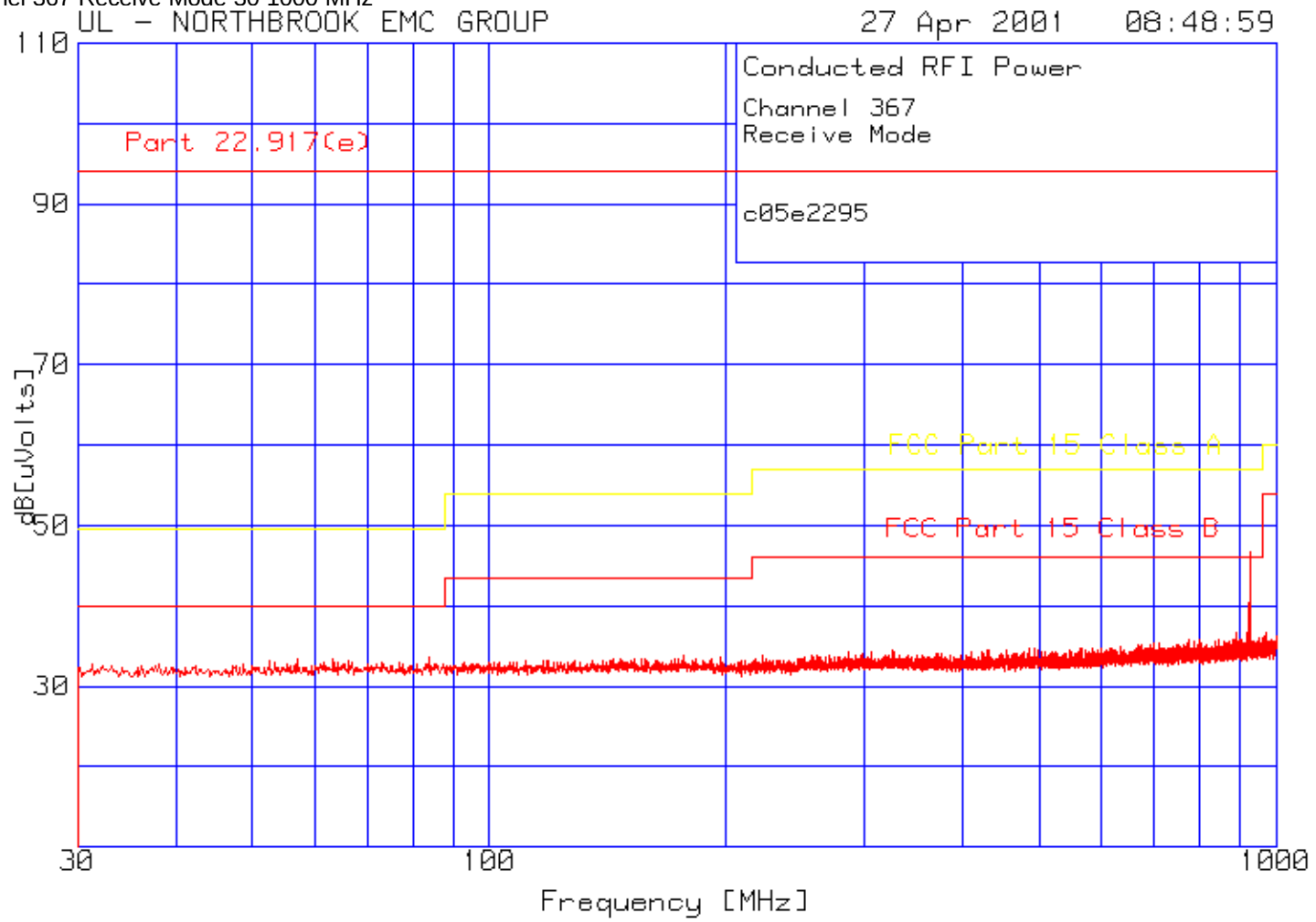
Spurious Antenna Terminal Emissions
Channel 800 Transmit Data Mode 14-30 MHz



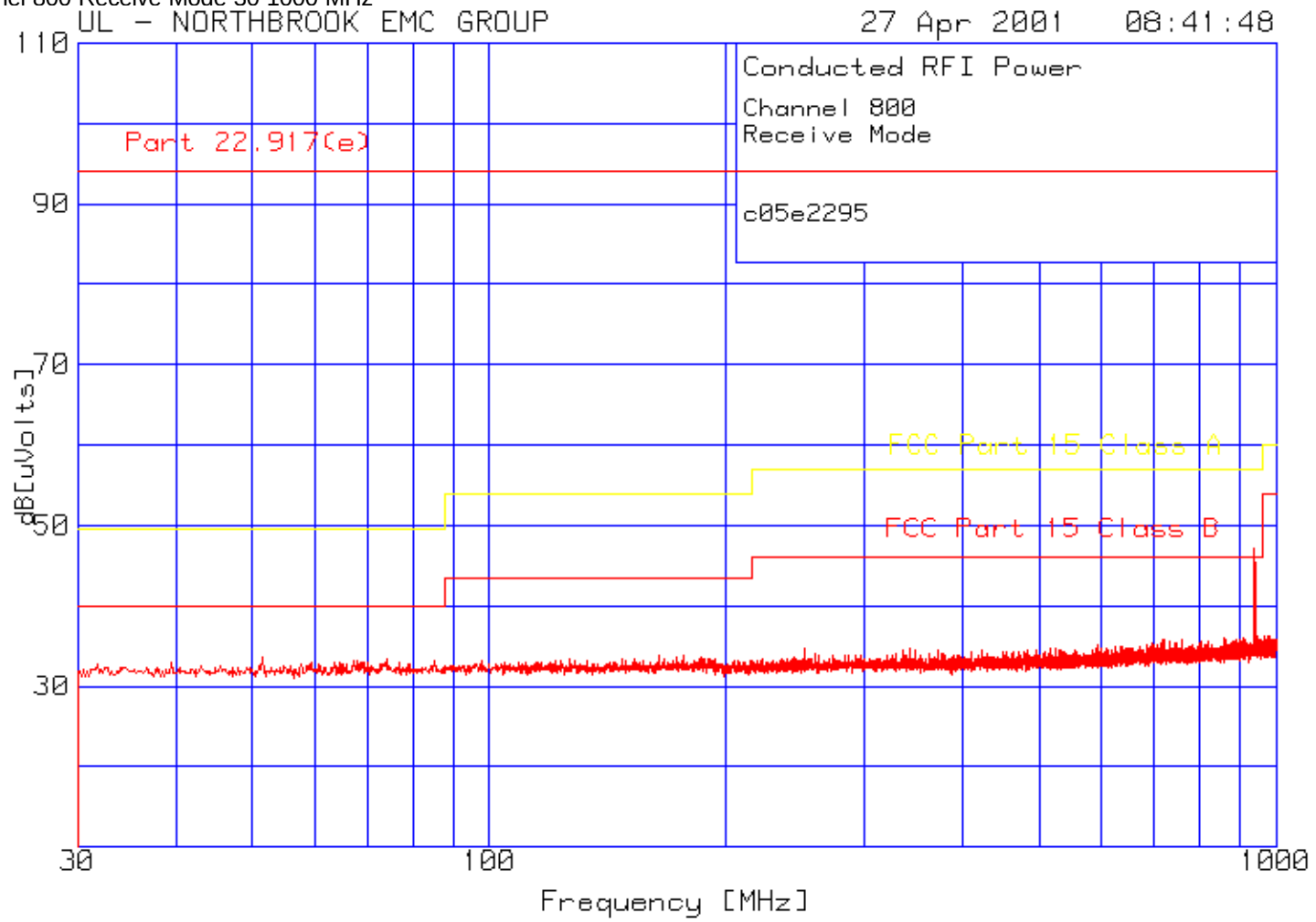
Spurious Antenna Terminal Emissions
Channel 001 Receive Mode 30-1000 MHz



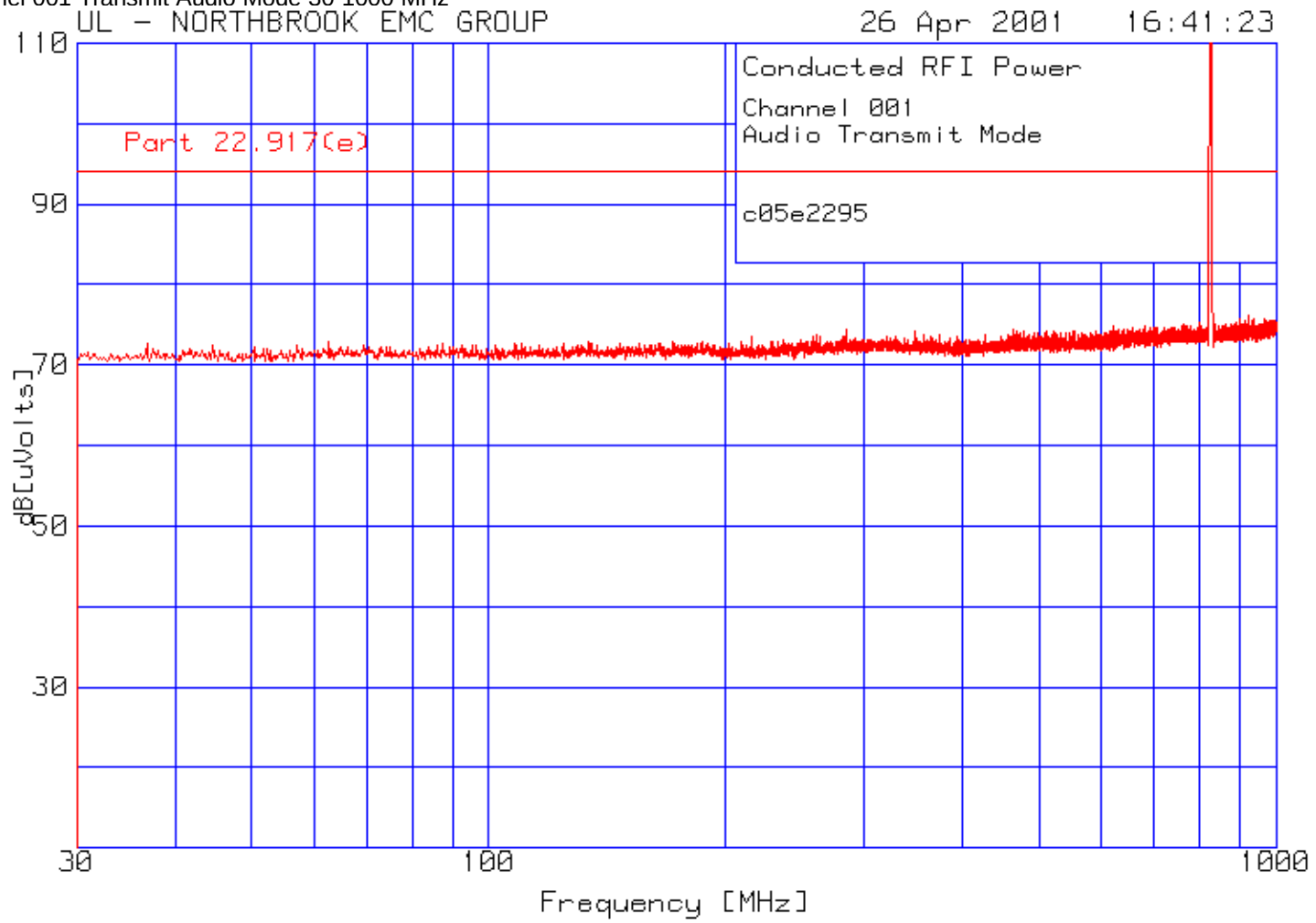
Spurious Antenna Terminal Emissions
Channel 367 Receive Mode 30-1000 MHz



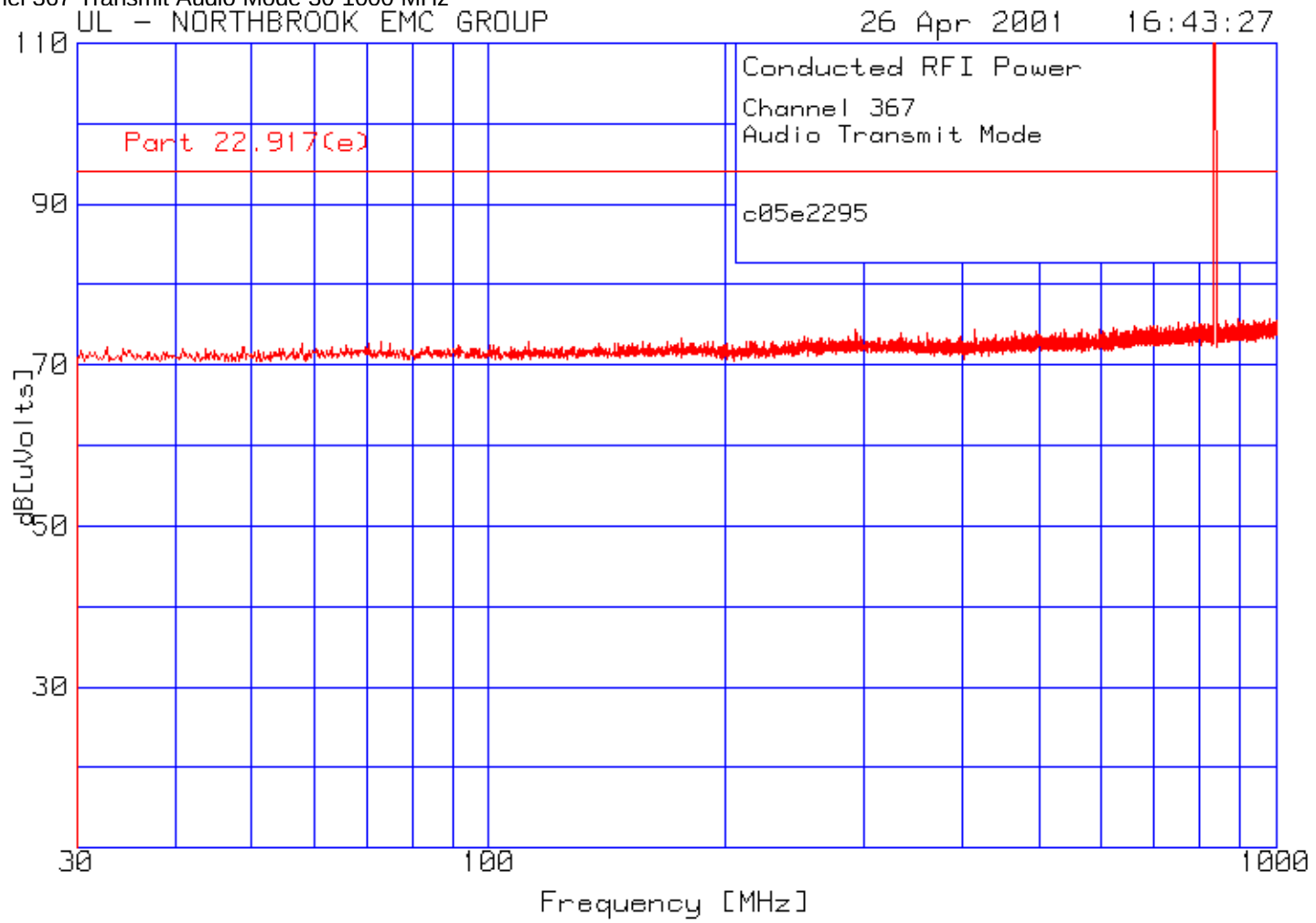
Spurious Antenna Terminal Emissions
Channel 800 Receive Mode 30-1000 MHz



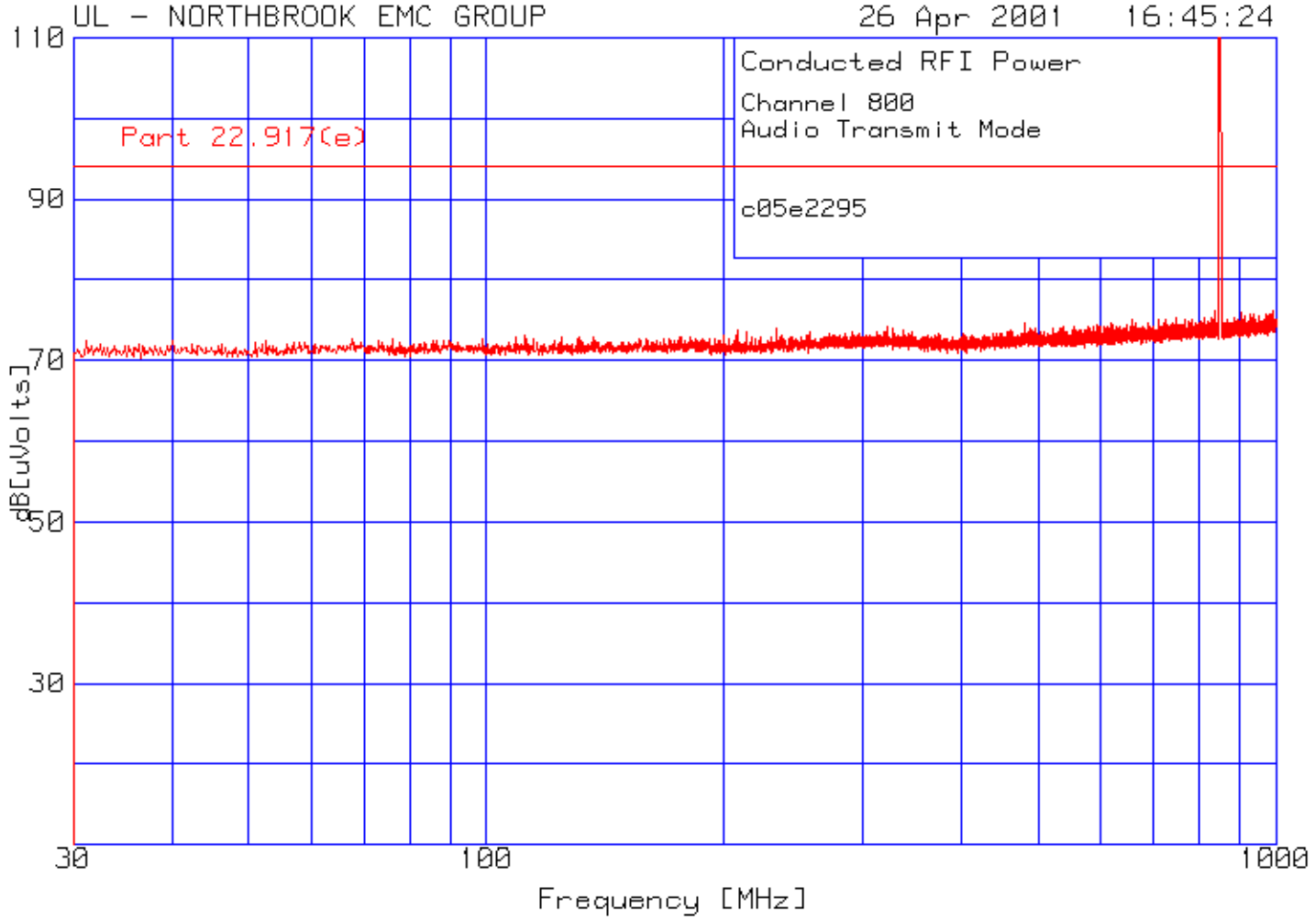
Spurious Antenna Terminal Emissions
Channel 001 Transmit Audio Mode 30-1000 MHz



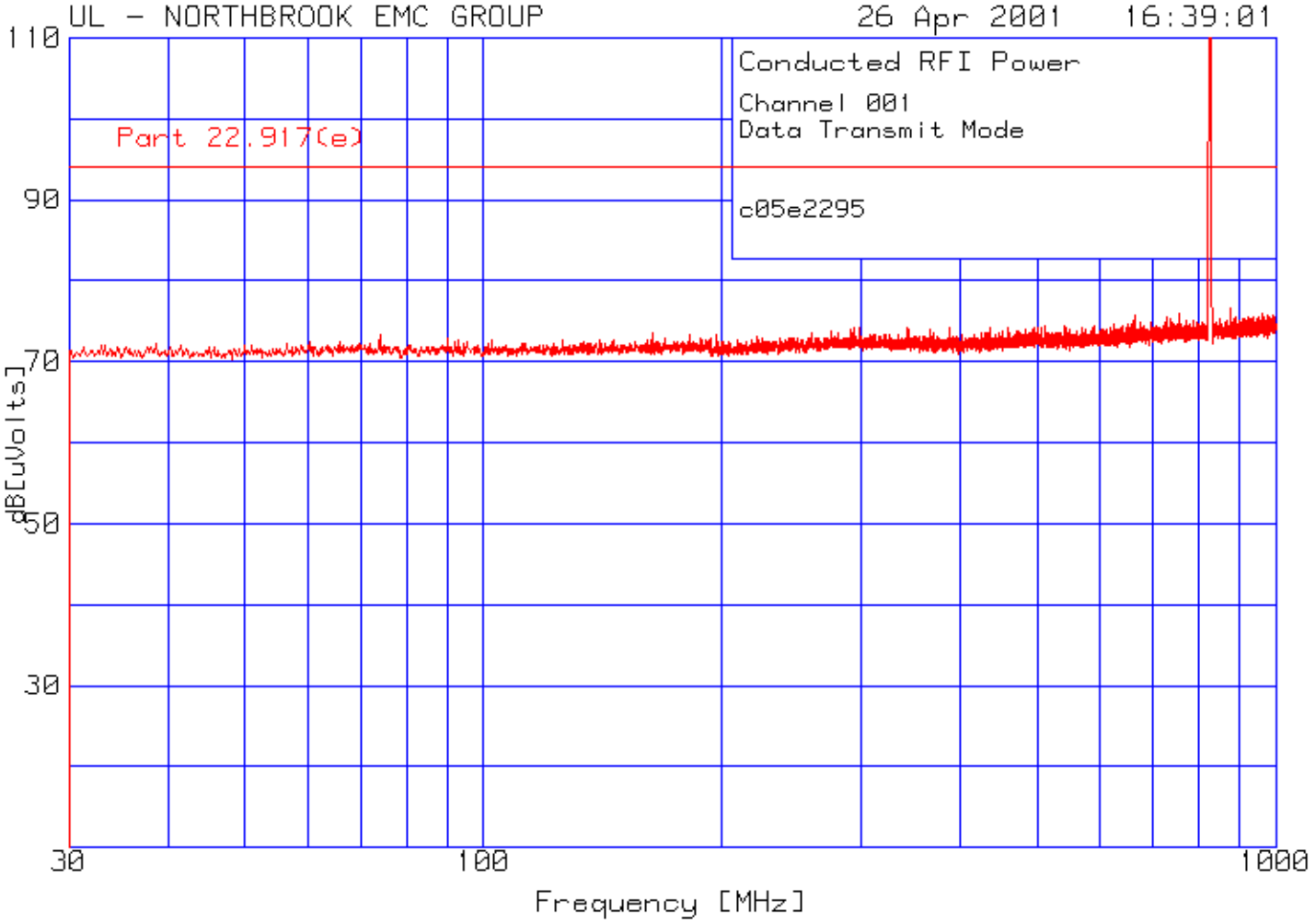
Spurious Antenna Terminal Emissions
Channel 367 Transmit Audio Mode 30-1000 MHz



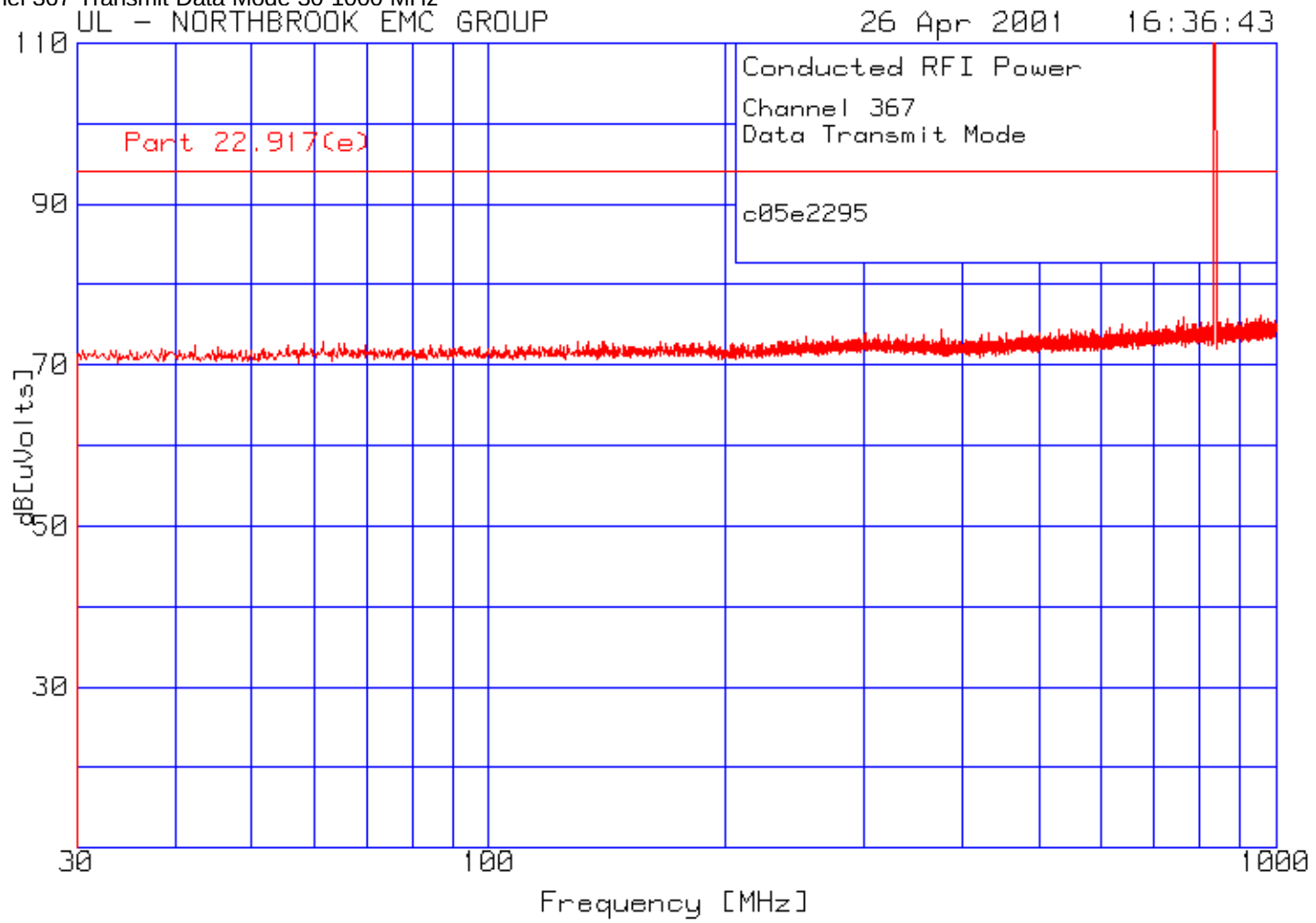
Spurious Antenna Terminal Emissions
Channel 800 Transmit Audio Mode 30-1000 MHz



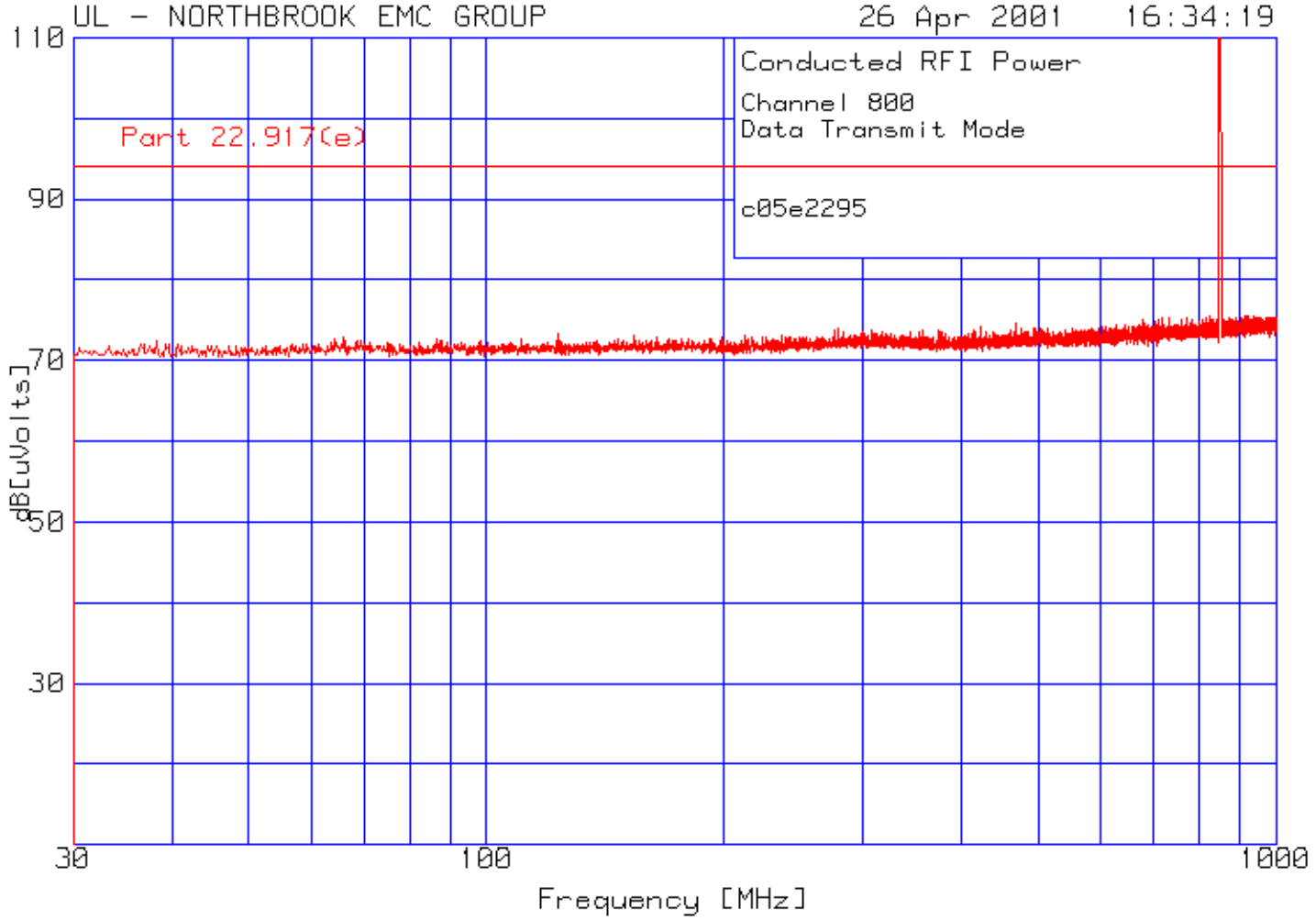
Spurious Antenna Terminal Emissions
Channel 001 Transmit Data Mode 30-1000 MHz



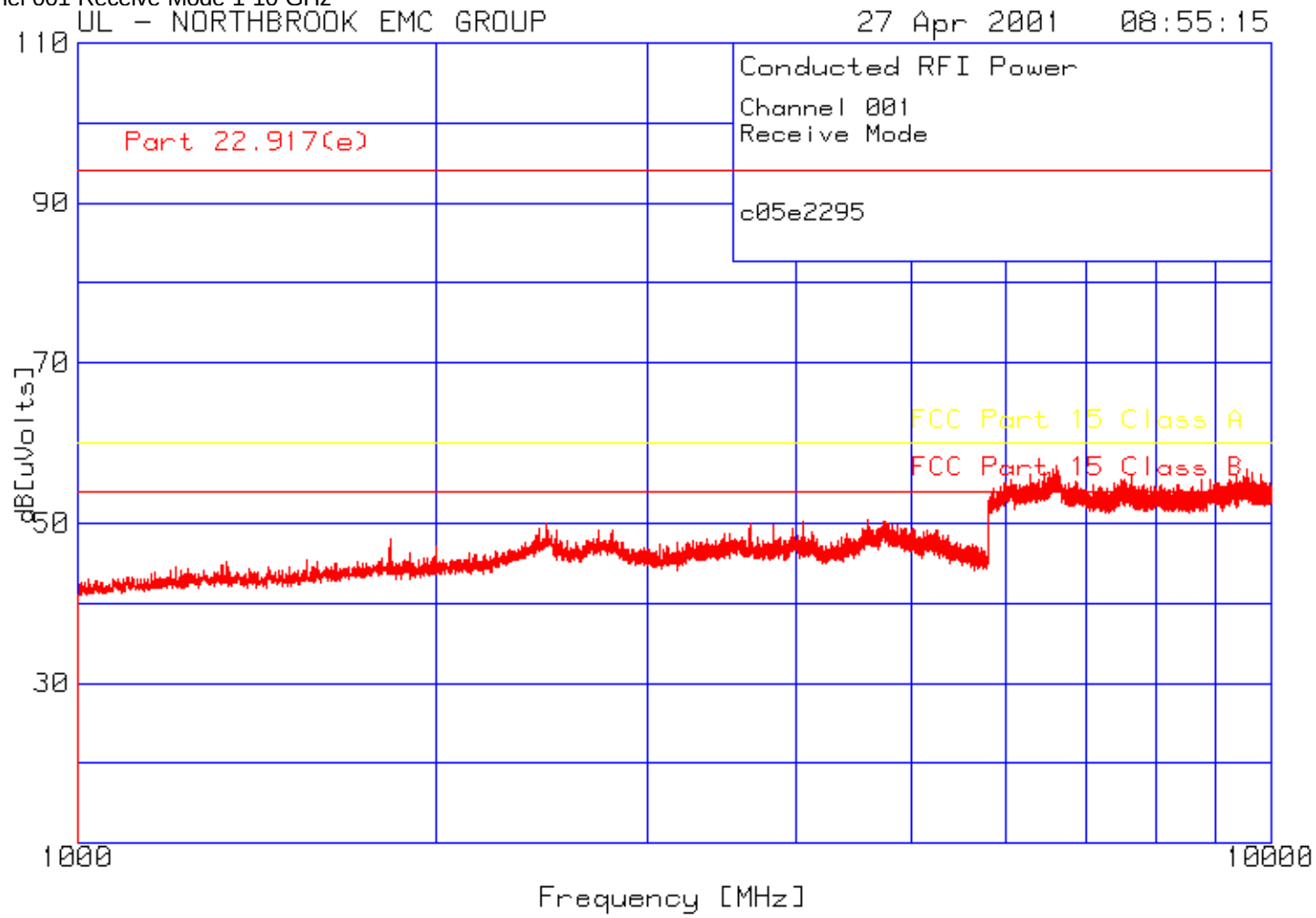
Spurious Antenna Terminal Emissions
Channel 367 Transmit Data Mode 30-1000 MHz



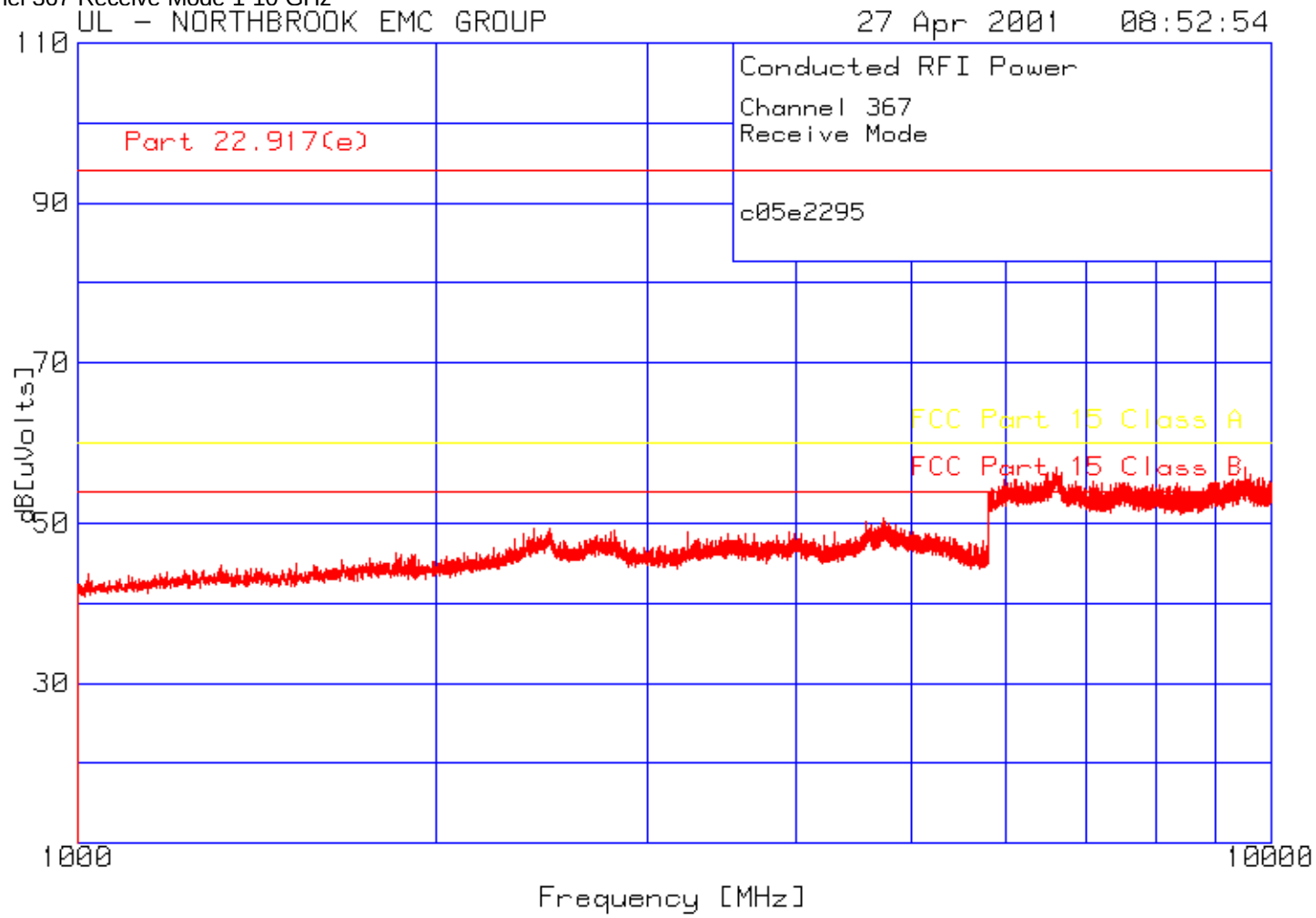
Spurious Antenna Terminal Emissions
Channel 800 Transmit Data Mode 30-1000 MHz



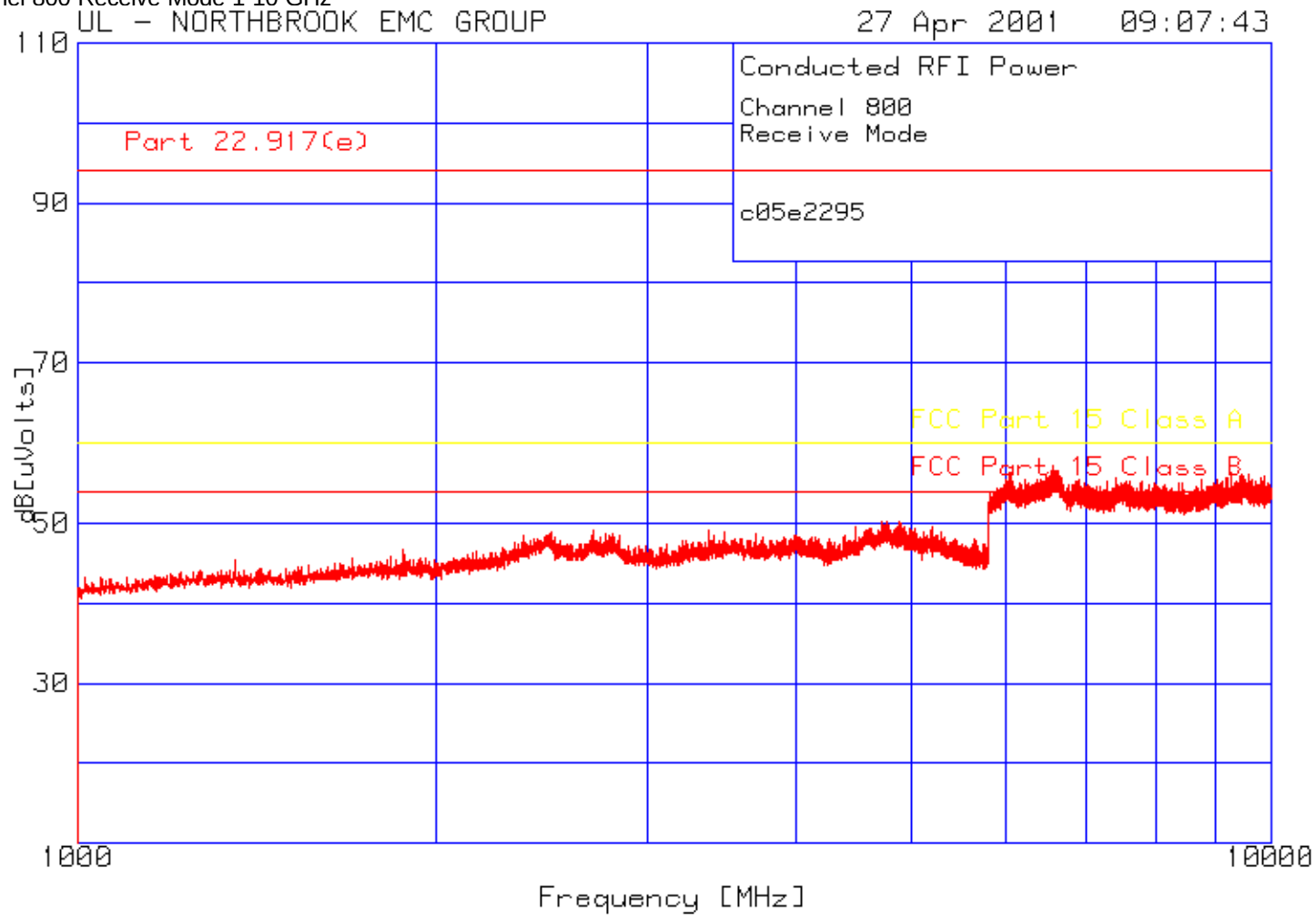
Spurious Antenna Terminal Emissions
Channel 001 Receive Mode 1-10 GHz



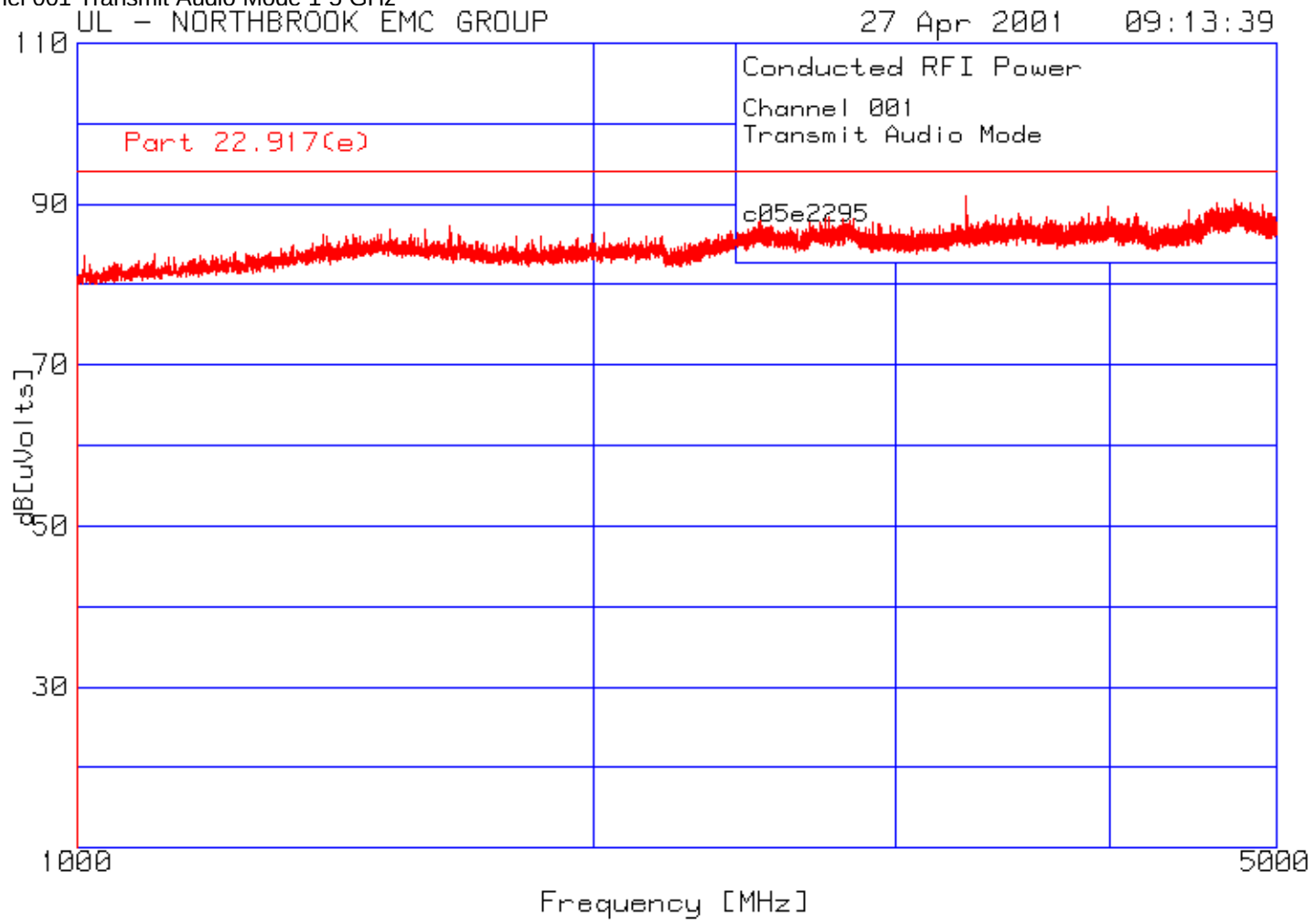
Spurious Antenna Terminal Emissions
Channel 367 Receive Mode 1-10 GHz



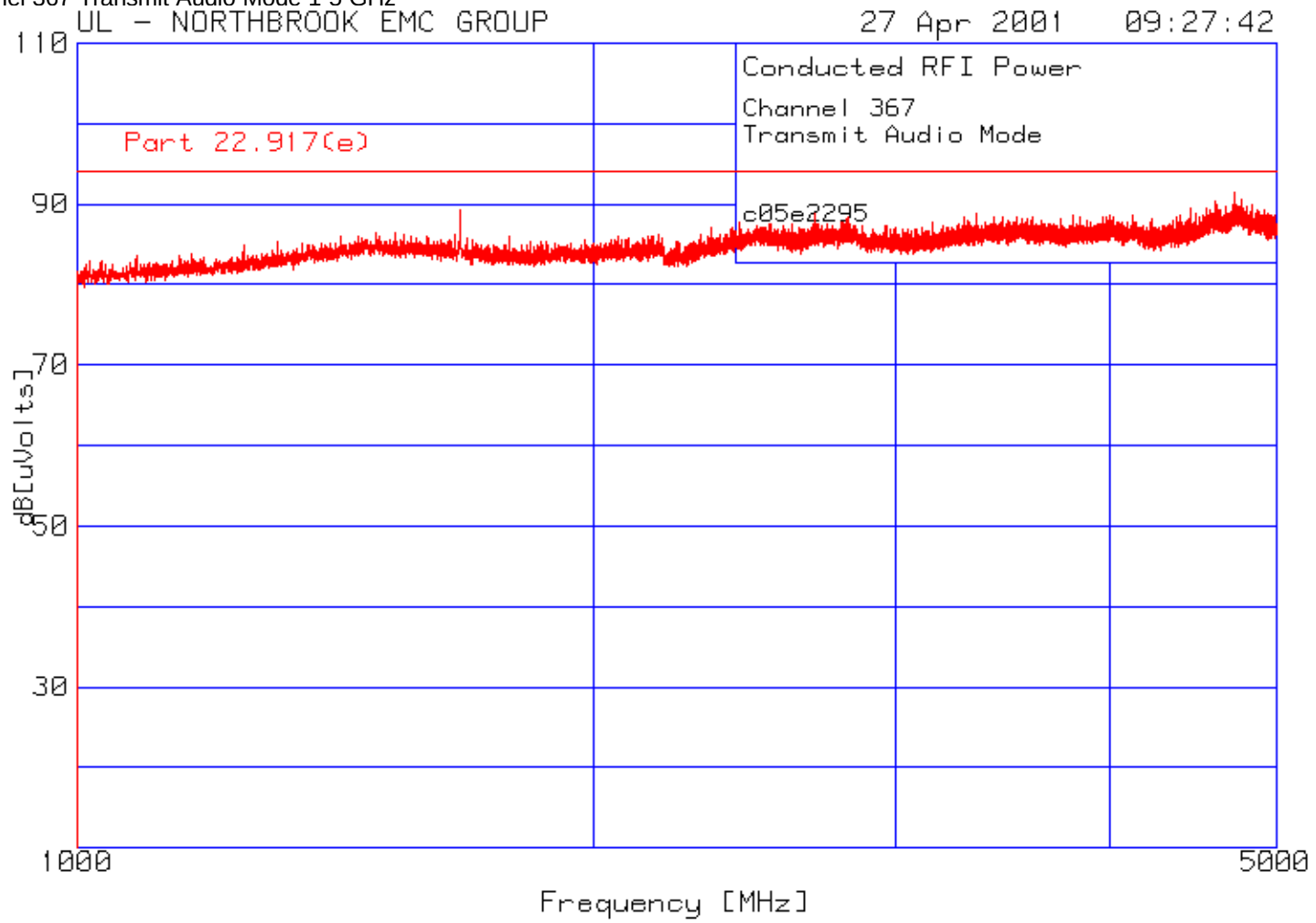
Spurious Antenna Terminal Emissions
Channel 800 Receive Mode 1-10 GHz



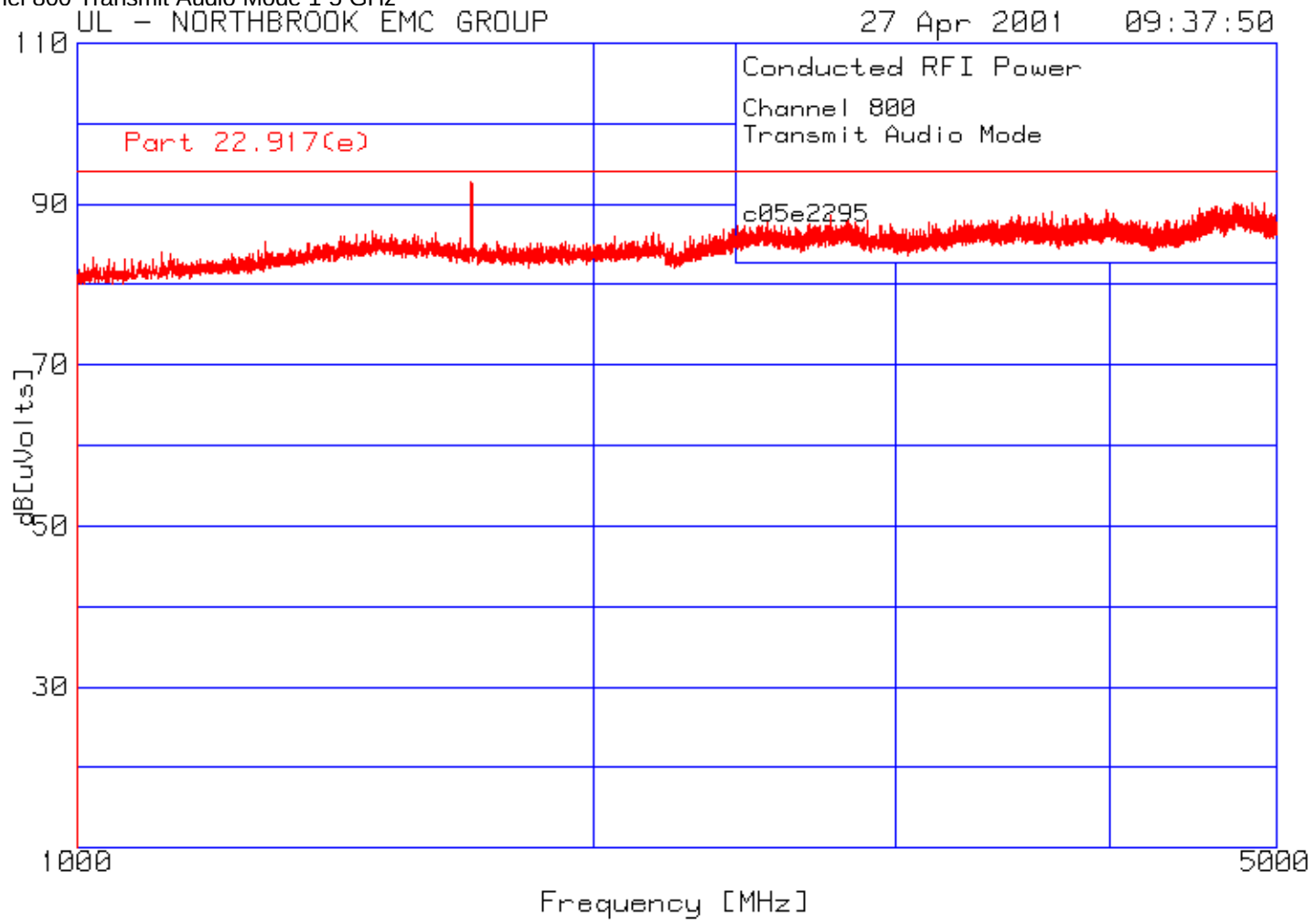
Spurious Antenna Terminal Emissions
Channel 001 Transmit Audio Mode 1-5 GHz



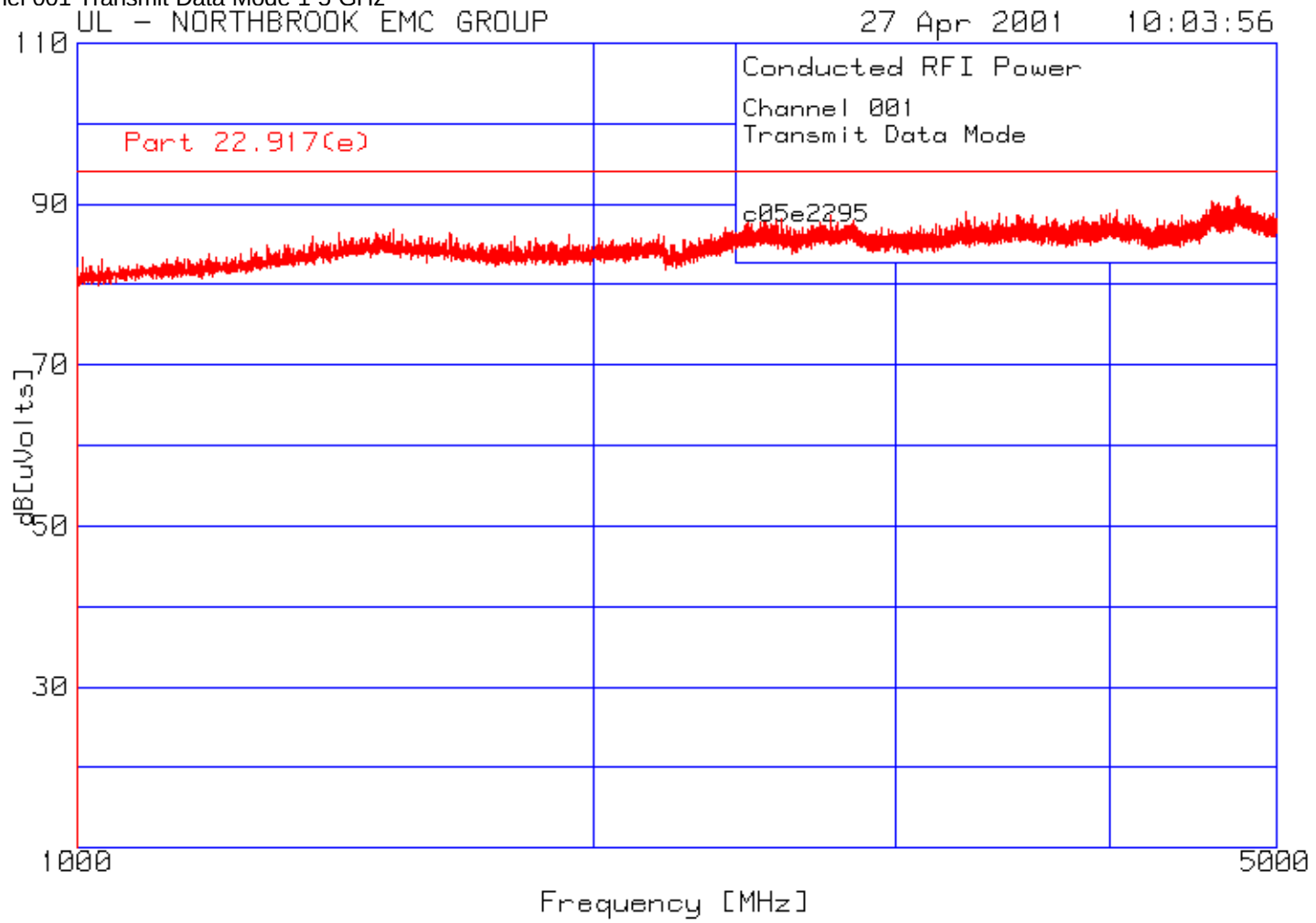
Spurious Antenna Terminal Emissions
Channel 367 Transmit Audio Mode 1-5 GHz



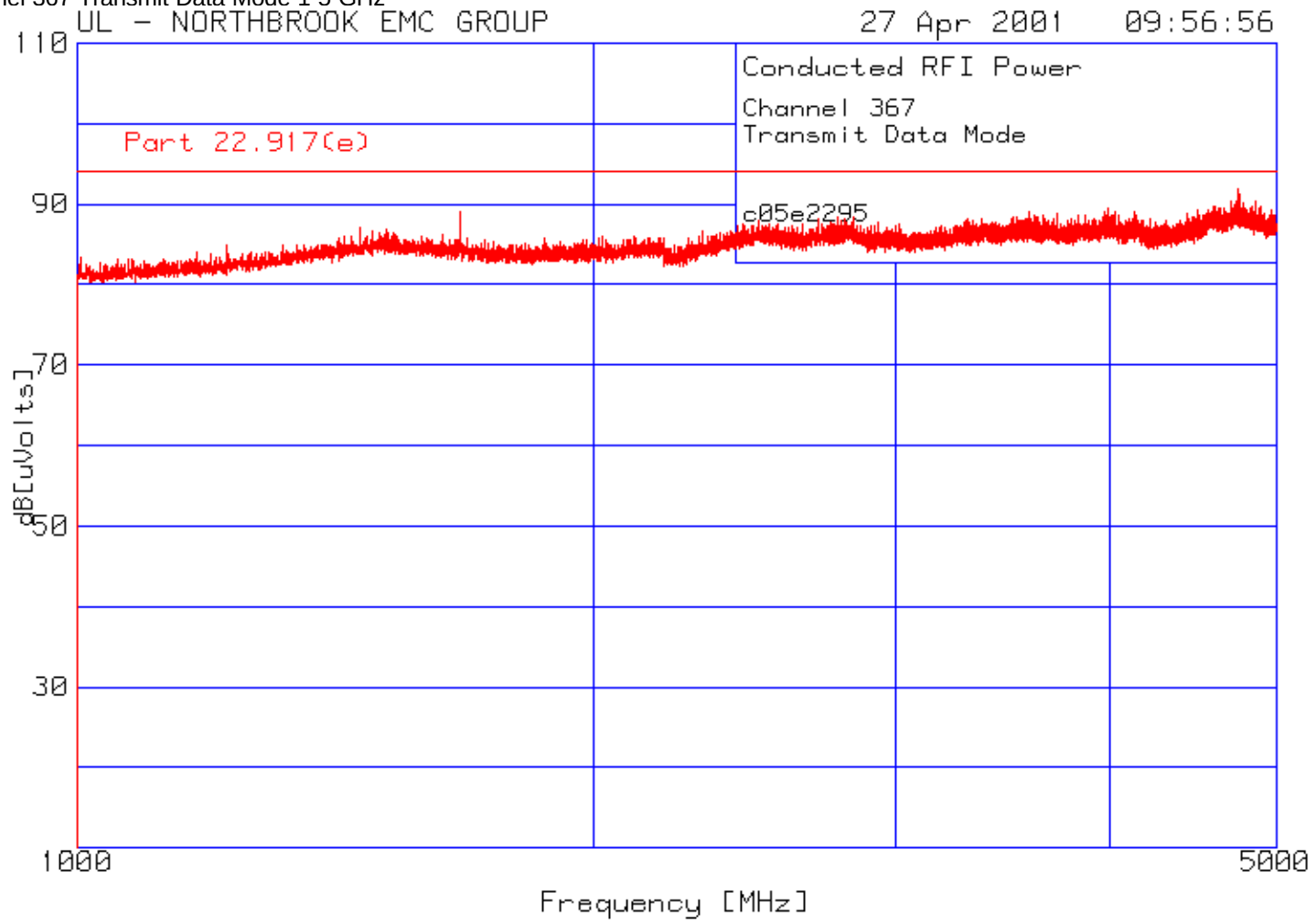
Spurious Antenna Terminal Emissions
Channel 800 Transmit Audio Mode 1-5 GHz



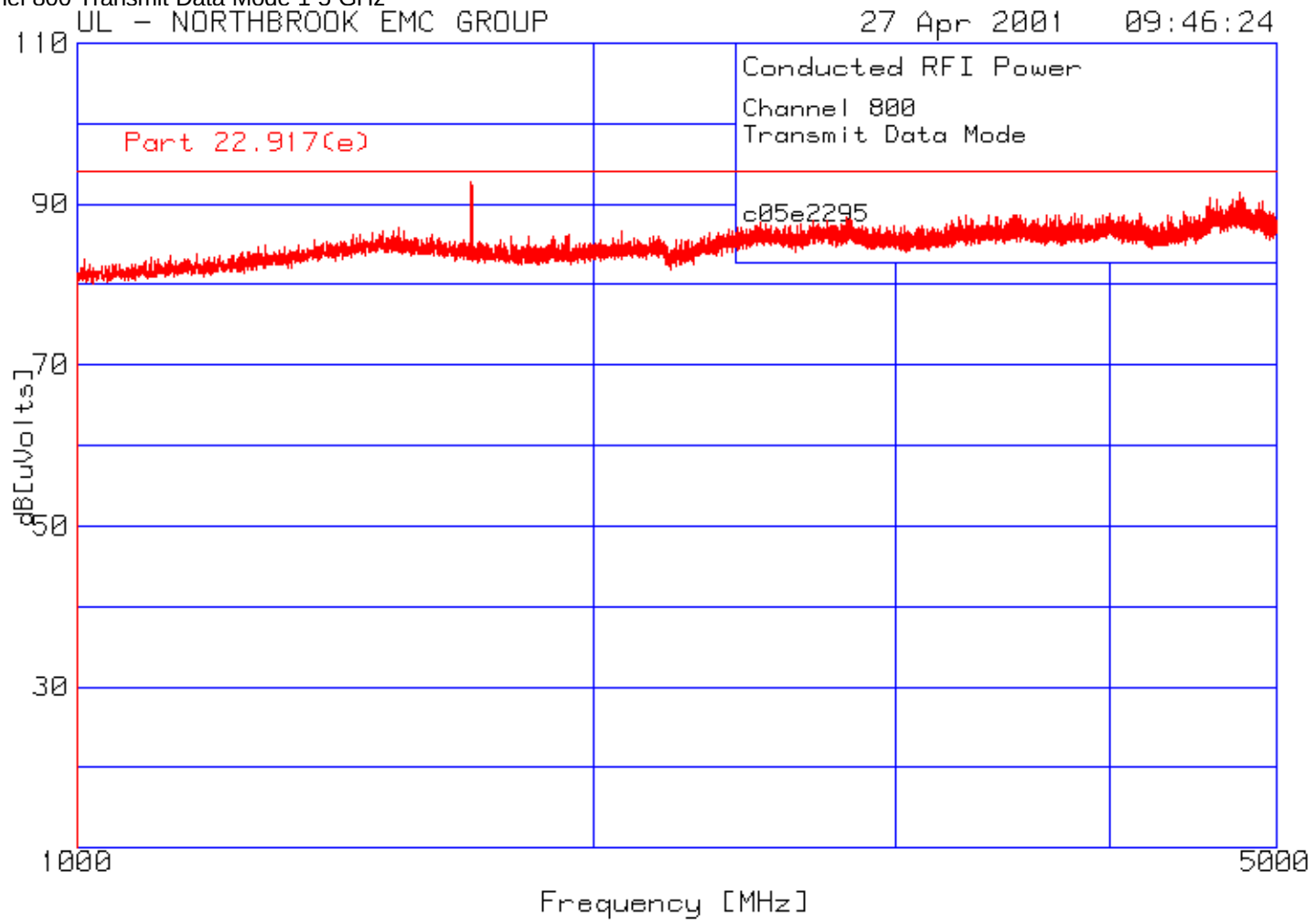
Spurious Antenna Terminal Emissions
Channel 001 Transmit Data Mode 1-5 GHz



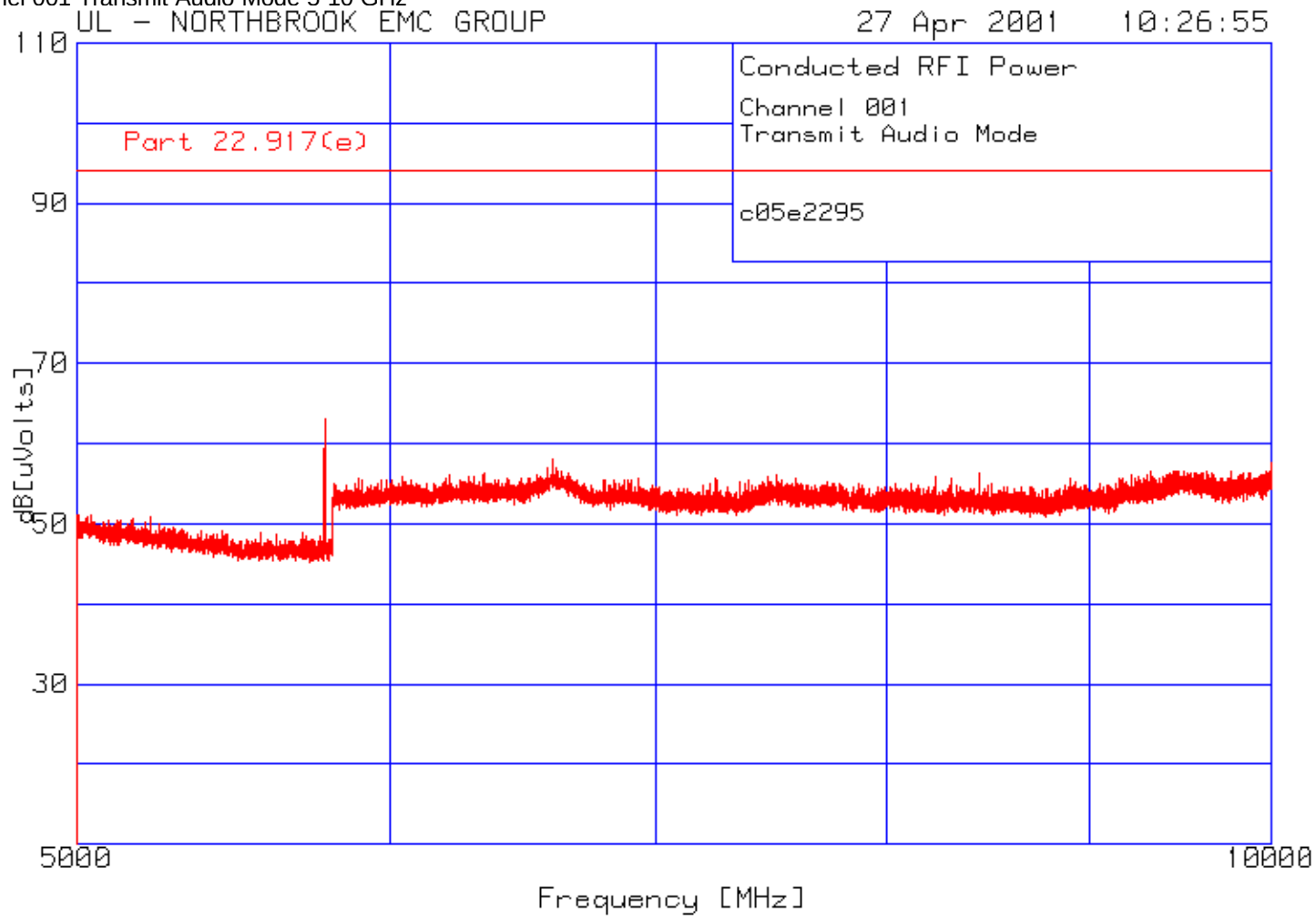
Spurious Antenna Terminal Emissions
Channel 367 Transmit Data Mode 1-5 GHz



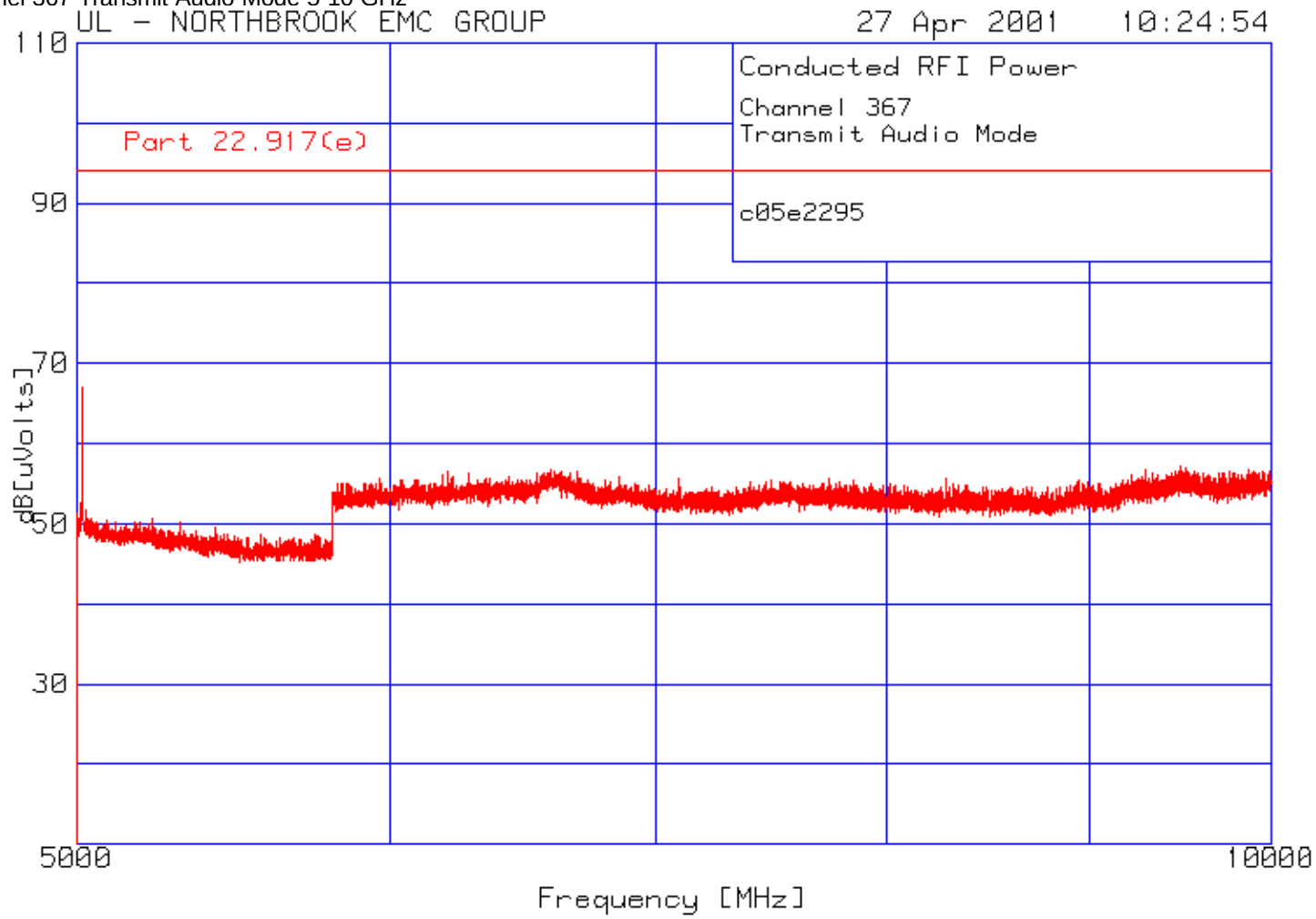
Spurious Antenna Terminal Emissions
Channel 800 Transmit Data Mode 1-5 GHz



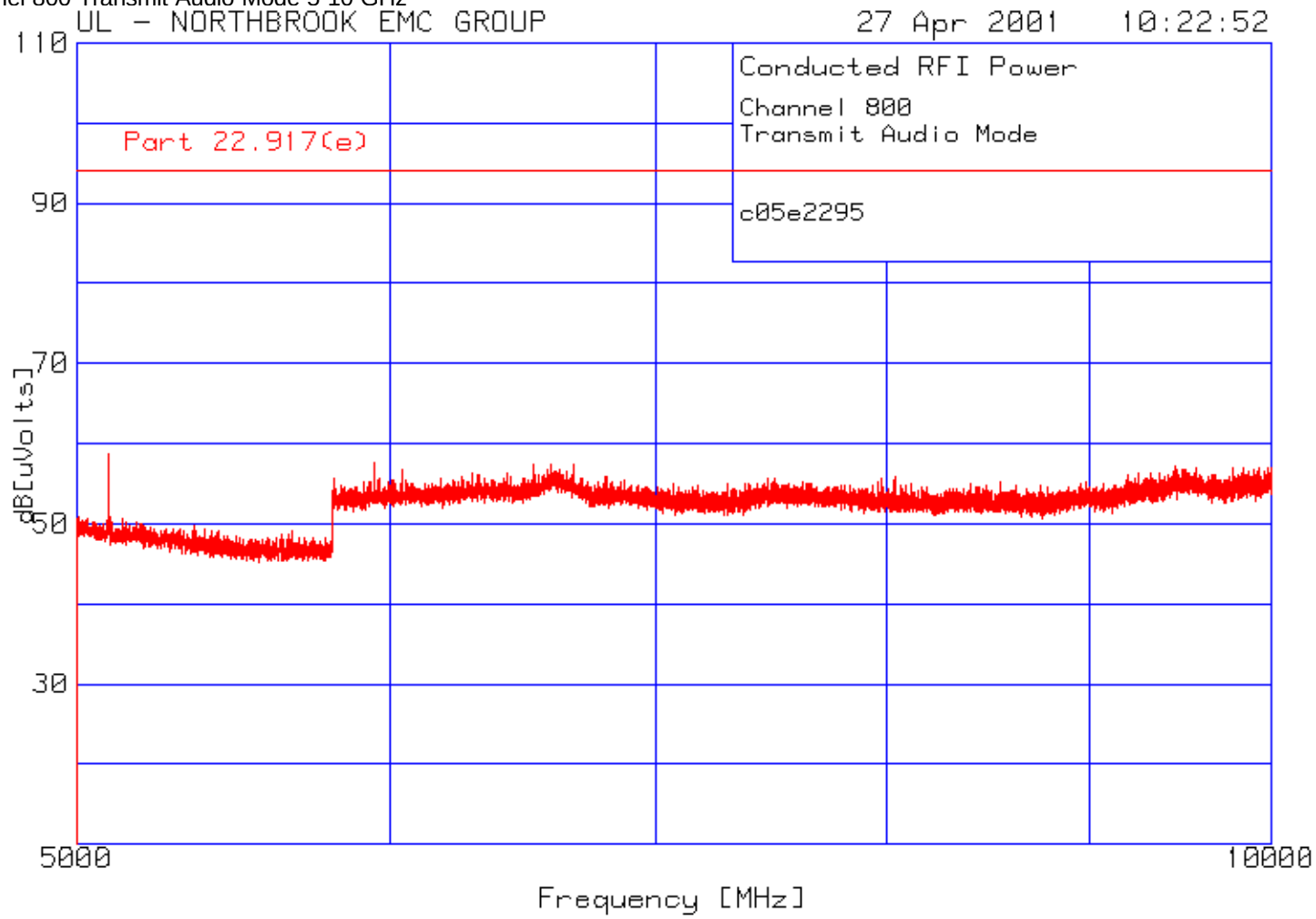
Spurious Antenna Terminal Emissions
Channel 001 Transmit Audio Mode 5-10 GHz



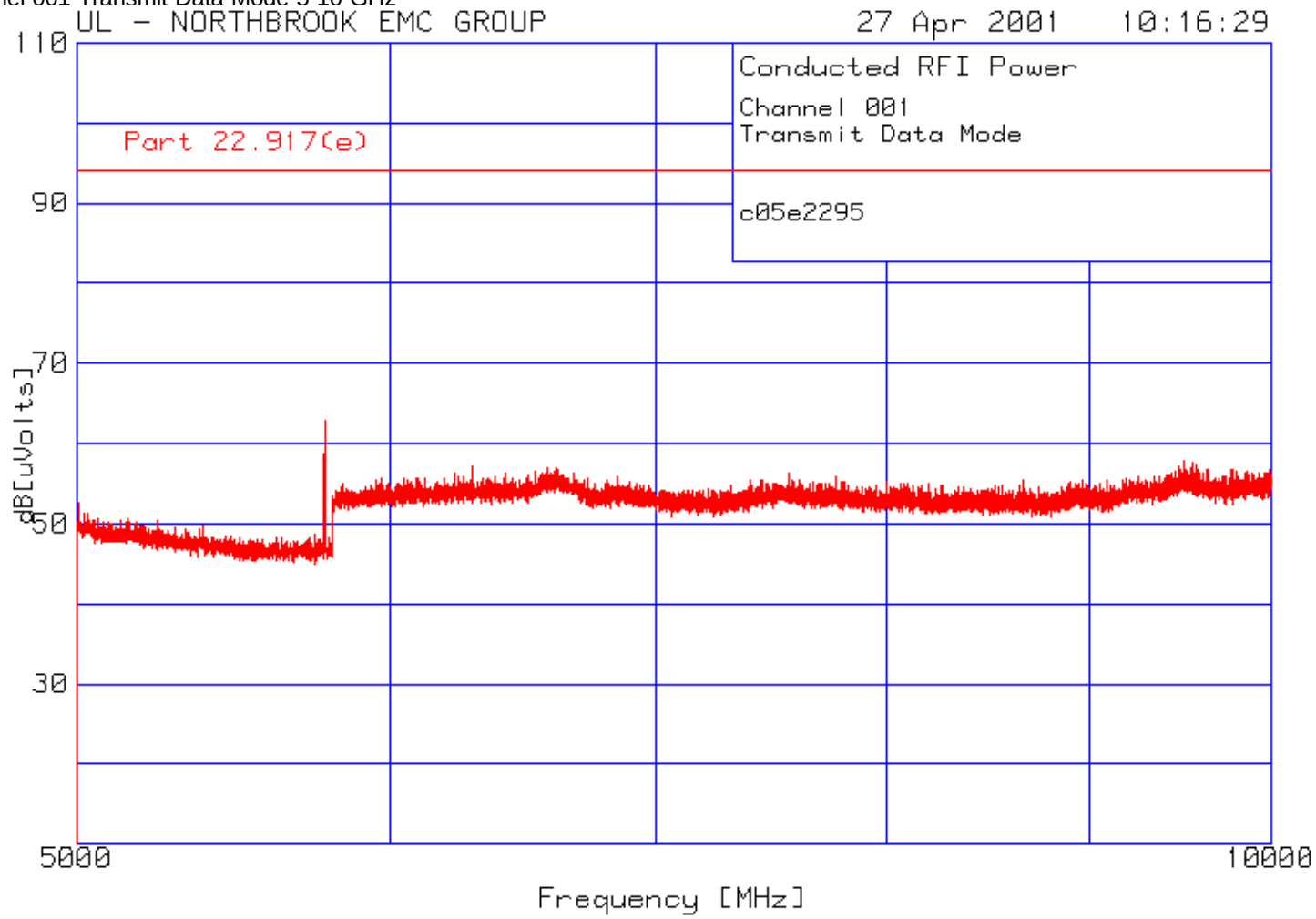
Spurious Antenna Terminal Emissions
Channel 367 Transmit Audio Mode 5-10 GHz



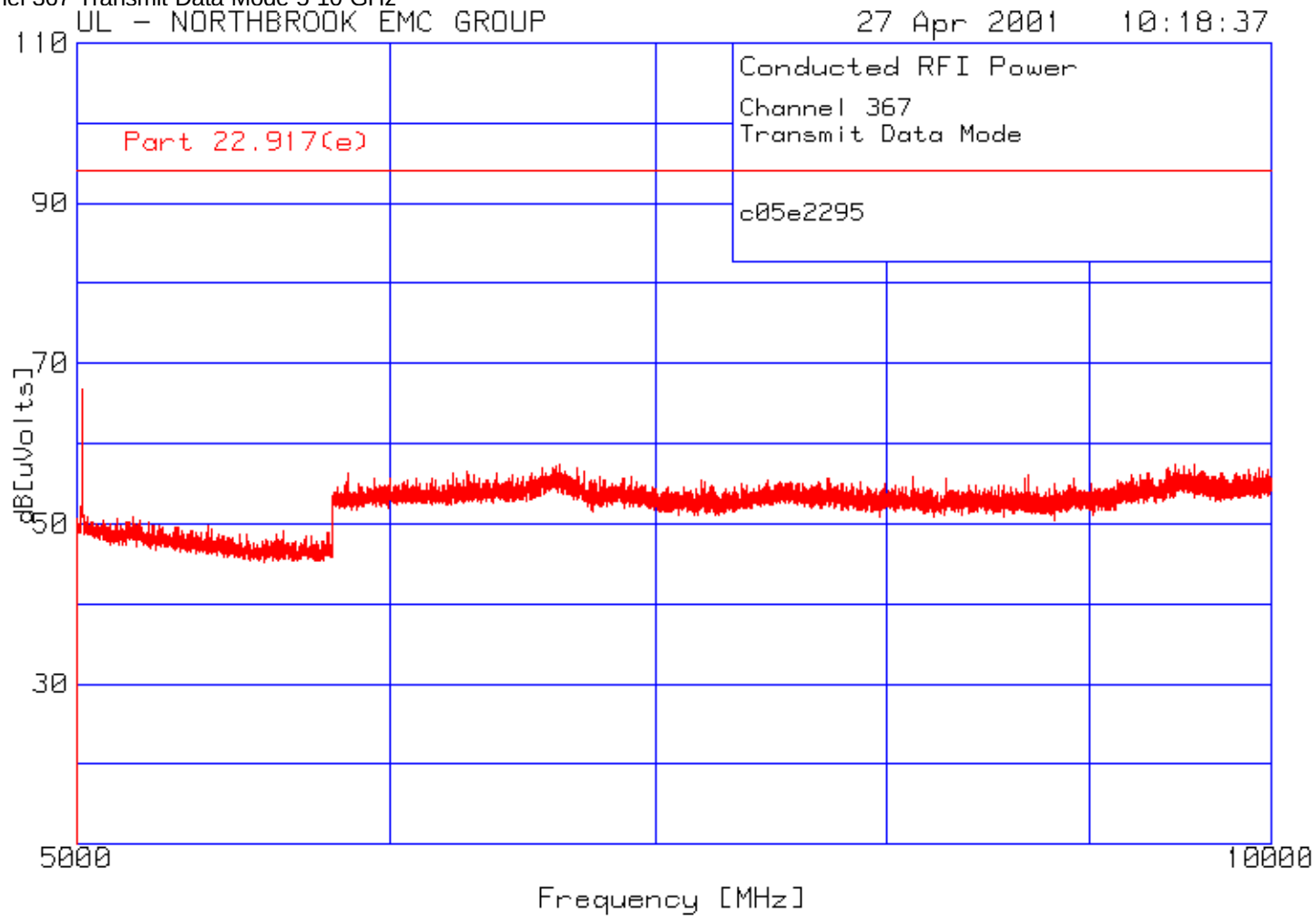
Spurious Antenna Terminal Emissions
Channel 800 Transmit Audio Mode 5-10 GHz



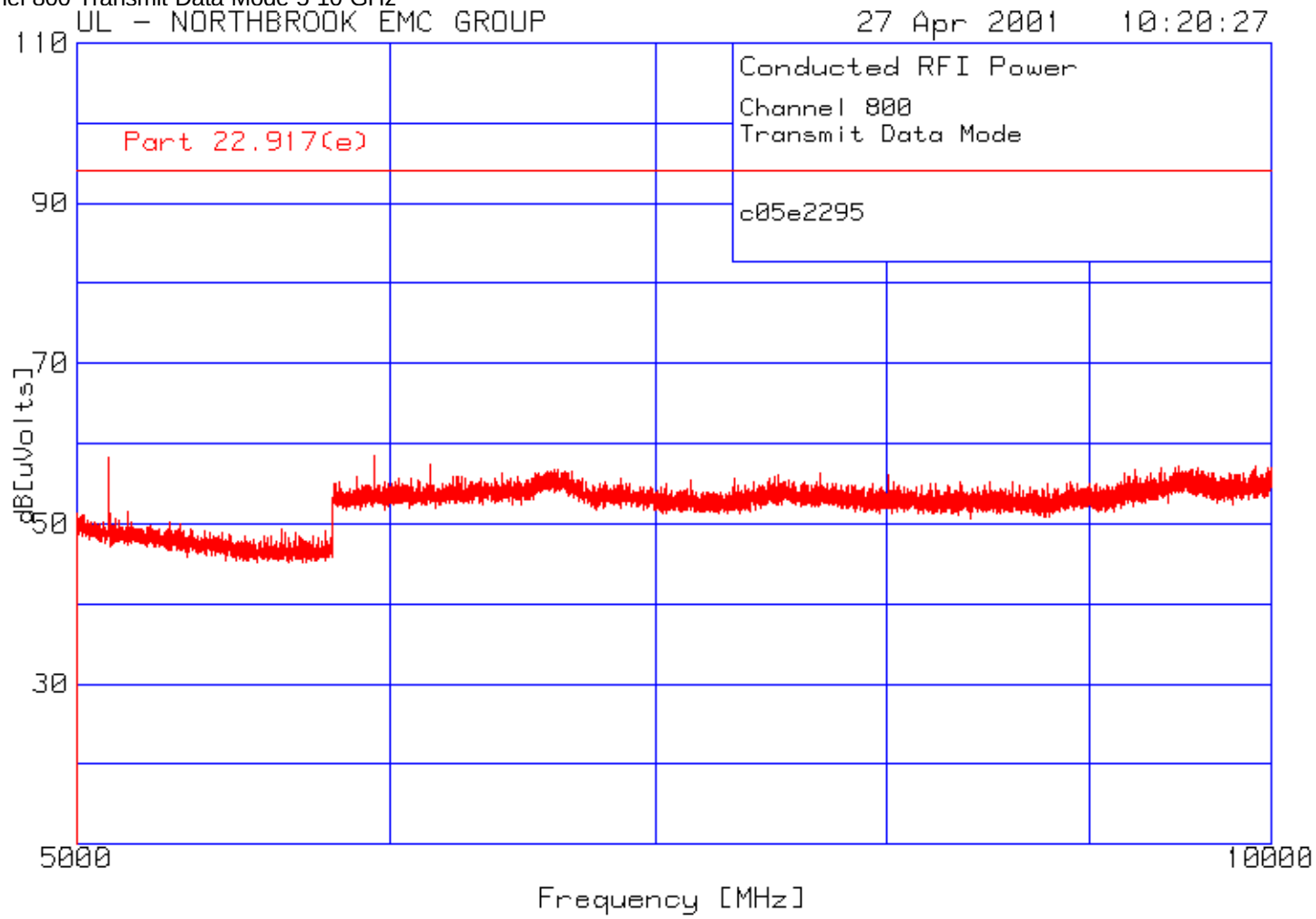
Spurious Antenna Terminal Emissions
Channel 001 Transmit Data Mode 5-10 GHz



Spurious Antenna Terminal Emissions
Channel 367 Transmit Data Mode 5-10 GHz



Spurious Antenna Terminal Emissions
Channel 800 Transmit Data Mode 5-10 GHz



## 4.4 RADIATED EMISSIONS

| | |
|---|---|
| Test Lab: MPB Technologies Inc. Airdrie<br>Test Personnel: E. Hails<br>Test Date: 23-25 April, 2-3 May 2001 | Product:<br>LoCate |

Test Result, LoCate: PASS

| Objectives/Criteria | Specifications |
|---|---|
| The field strength emissions shall not exceed the limits for the specifications as stated.<br>Emission levels should meet the requirements with a margin of 6dB.<br>Tests should be performed from the lowest internally used/generated frequency to the tenth harmonic of the highest internally used/generated frequency.<br>(NB. $f_c$ denotes carrier frequency) | FCC Part 2.1053 and 2.1057<br>FCC Part 22.917(e)<br>Frequency — Emission Level<br>9 kHz to lower edge of $f_c$ — -13 dBm or 82.2 dBµV/m<br>upper edge of $f_c$ to the tenth harmonic of $f_c$ — -13 dBm or 82.2 dBµV/m |

Comments: The only peaks approaching the limit were harmonics of the fundamentals and so do not apply.

| Channel | Frequency [MHz] | Emission Level [dBµV/m] | Delta [dB from limit] |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
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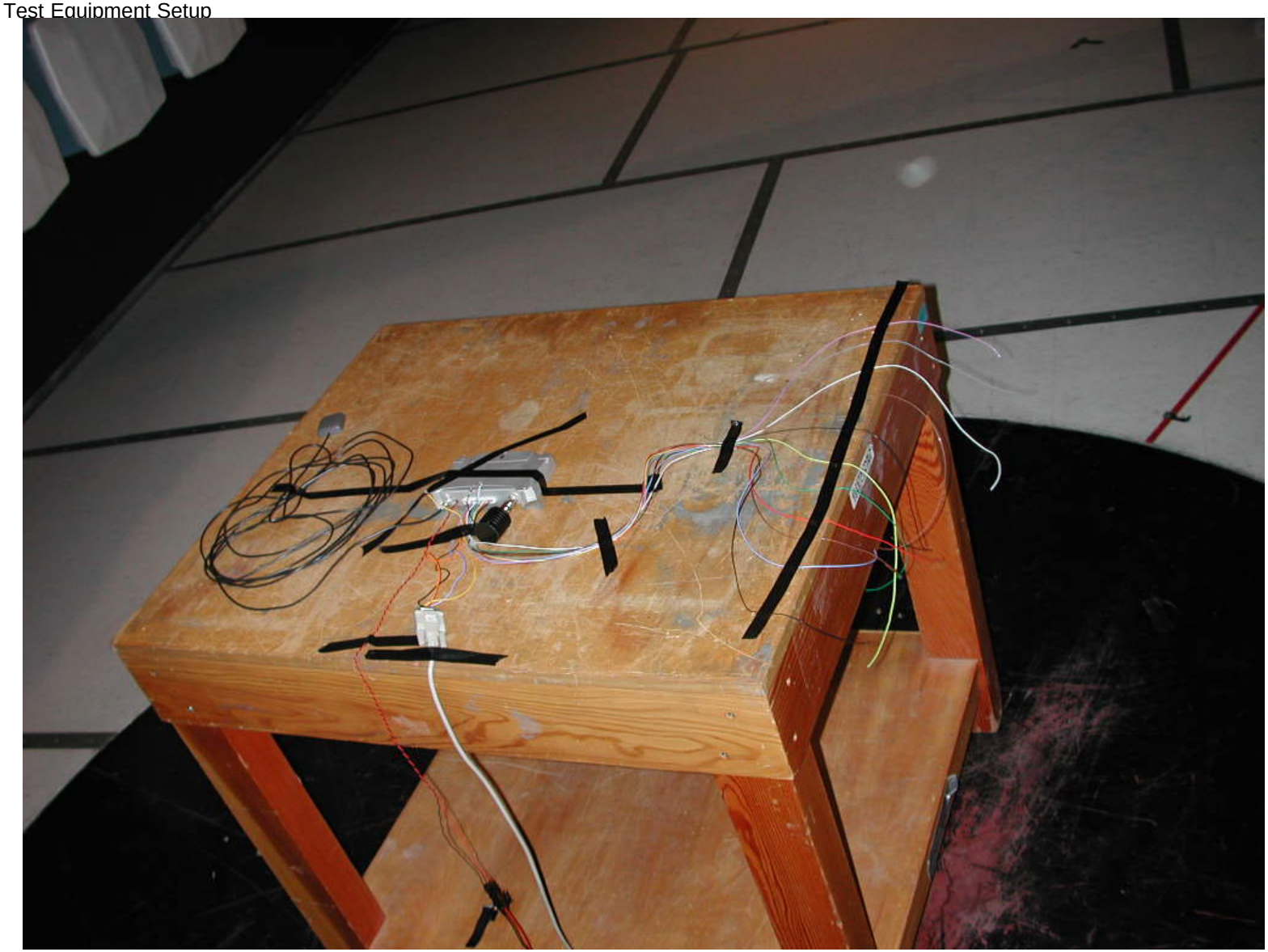
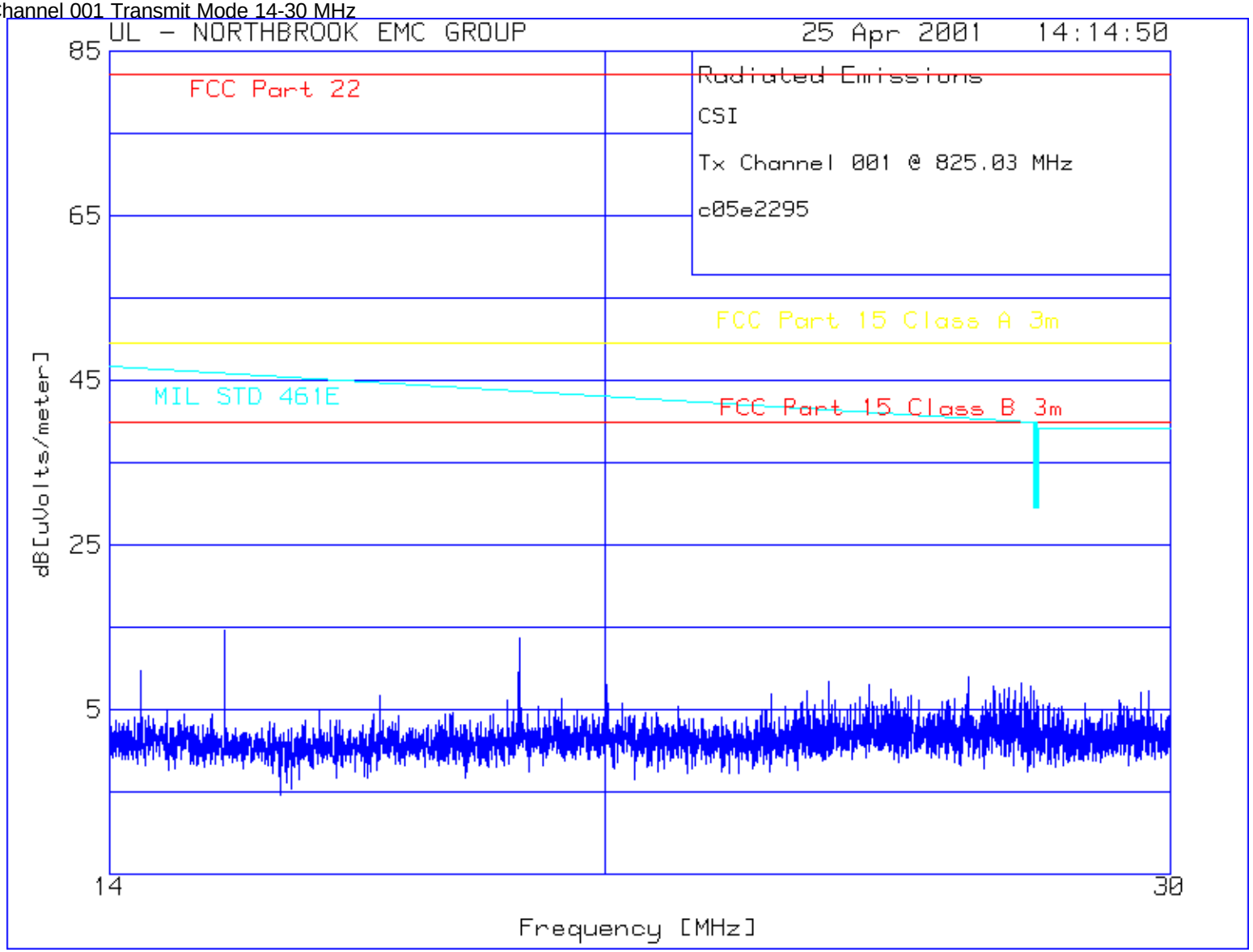
| | | | |
| | | | |

There were no spurious emissions measured to be within -20 dB of the specified limit. Refer to the test data plots for more details. Note that the test plots include MIL-STD 461E limits, but these are strictly for the purpose of comparing results. MIL-STD tests were not performed.

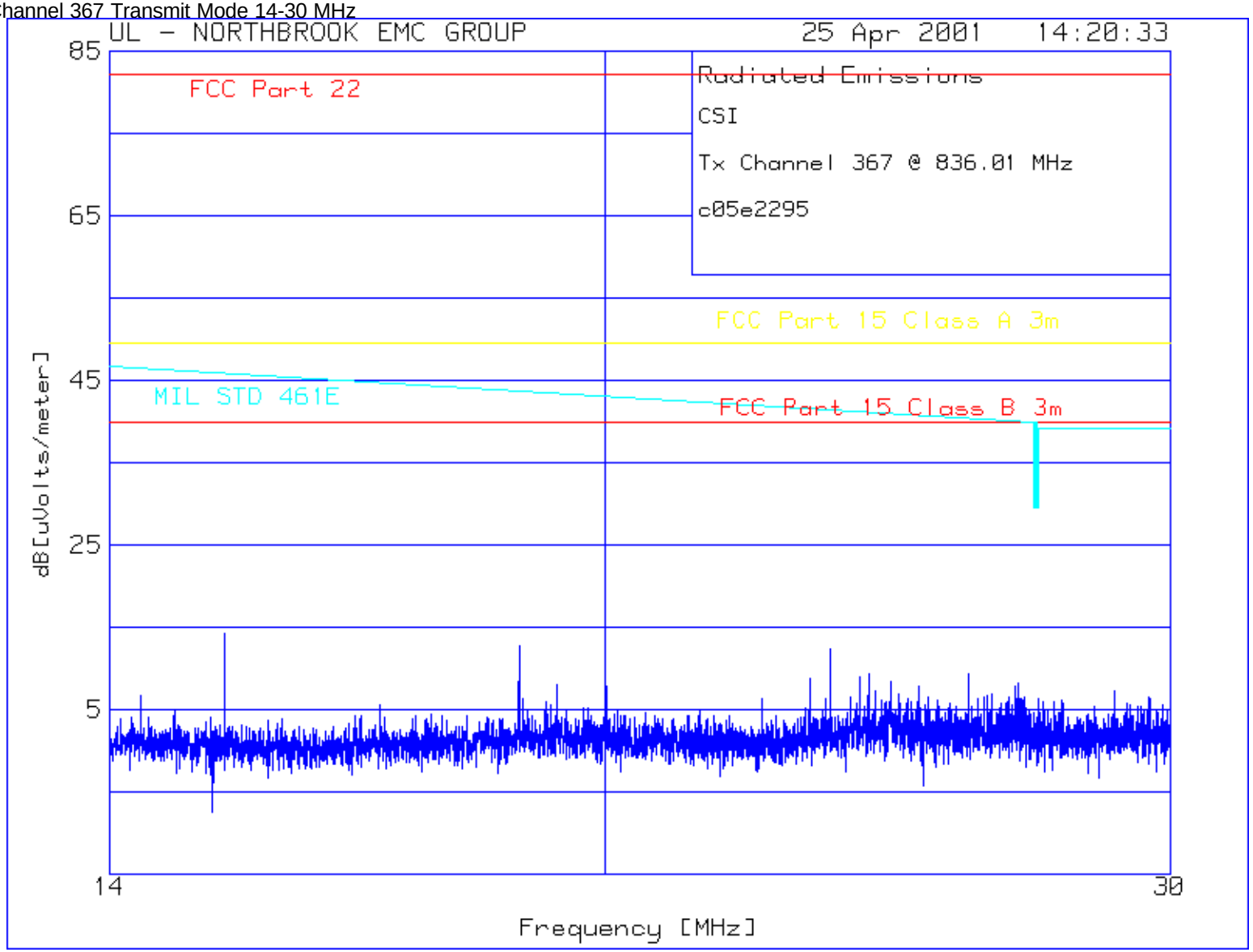
Test Equipment Setup



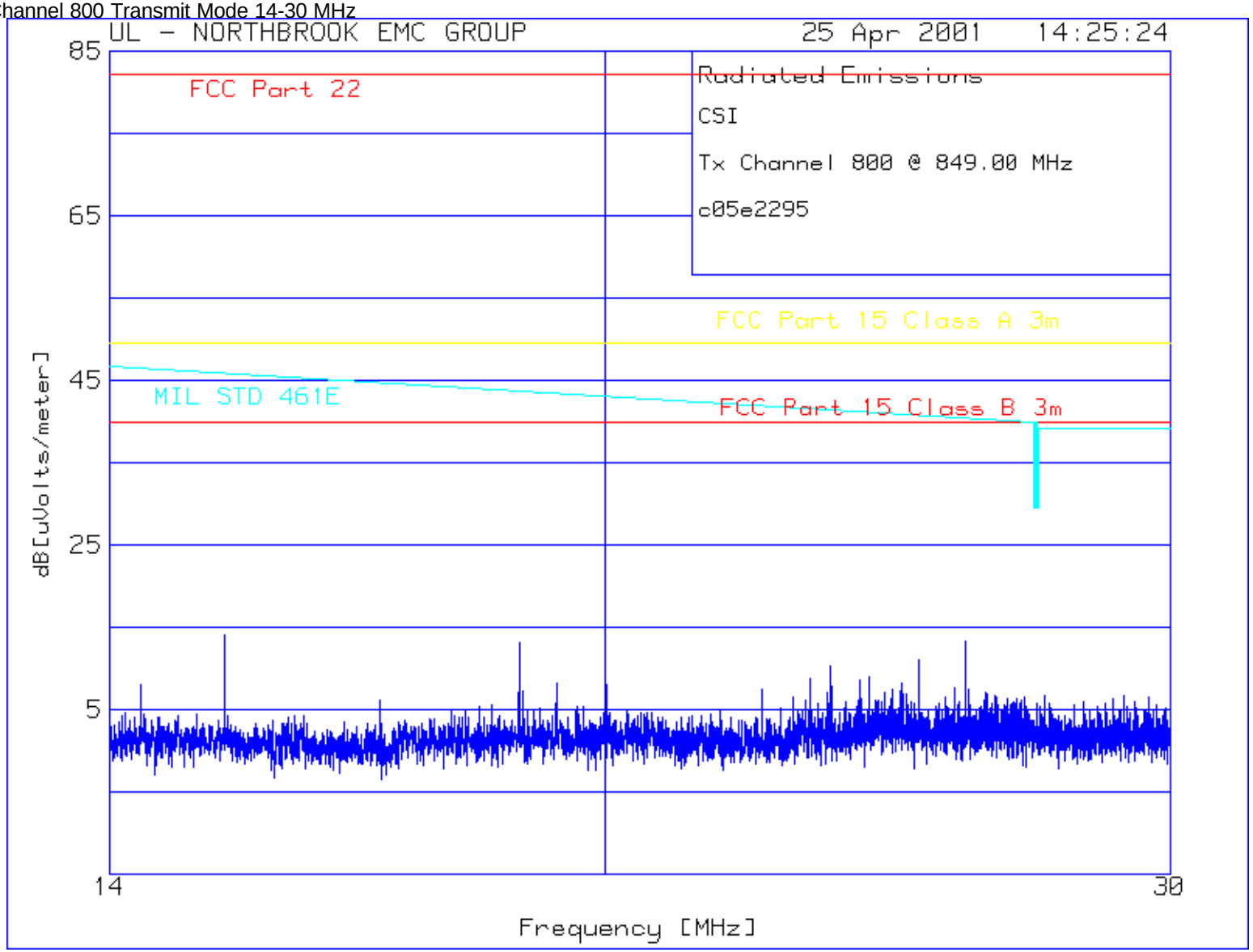
Radiated Emissions
Channel 001 Transmit Mode 14-30 MHz



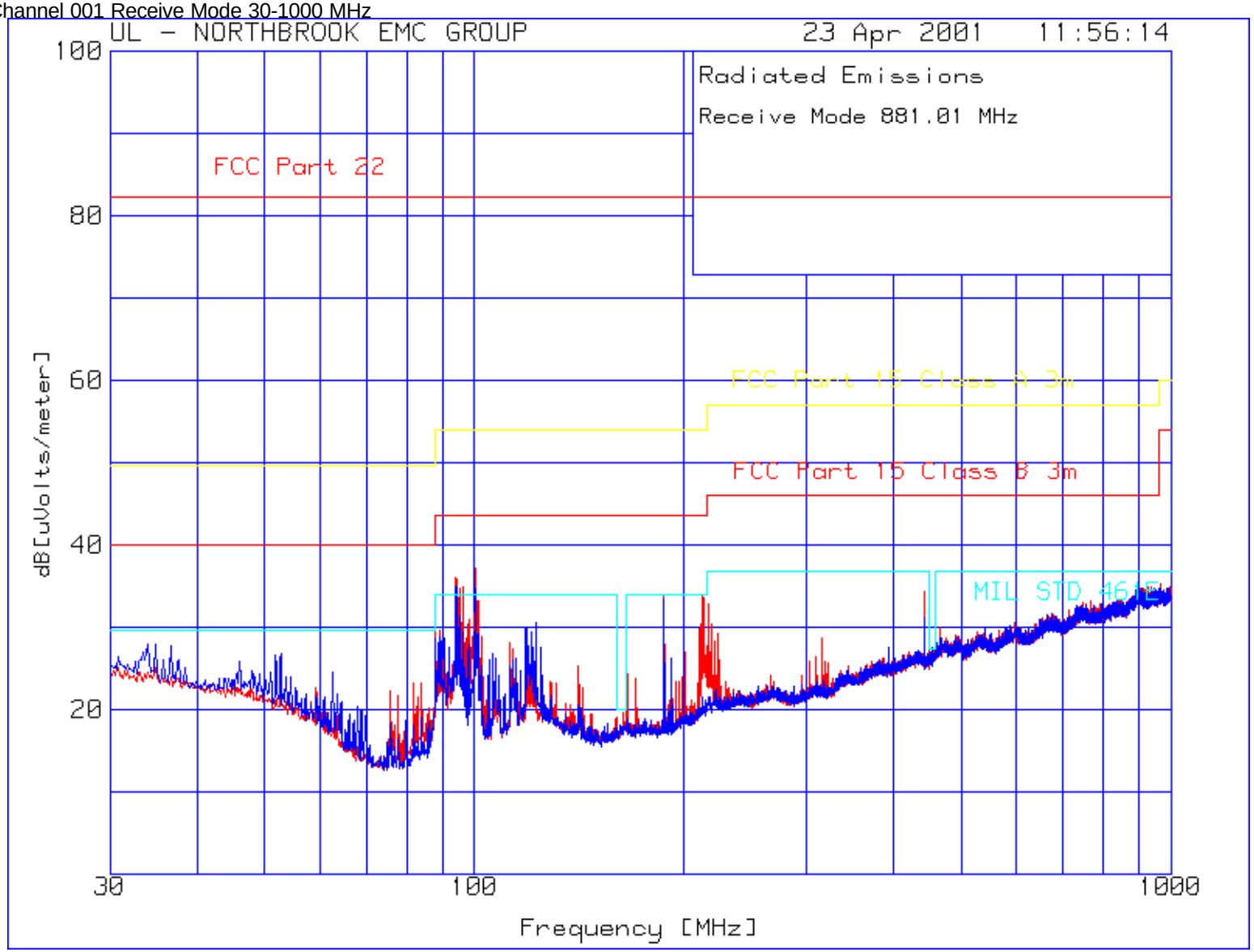
Radiated Emissions
Channel 367 Transmit Mode 14-30 MHz



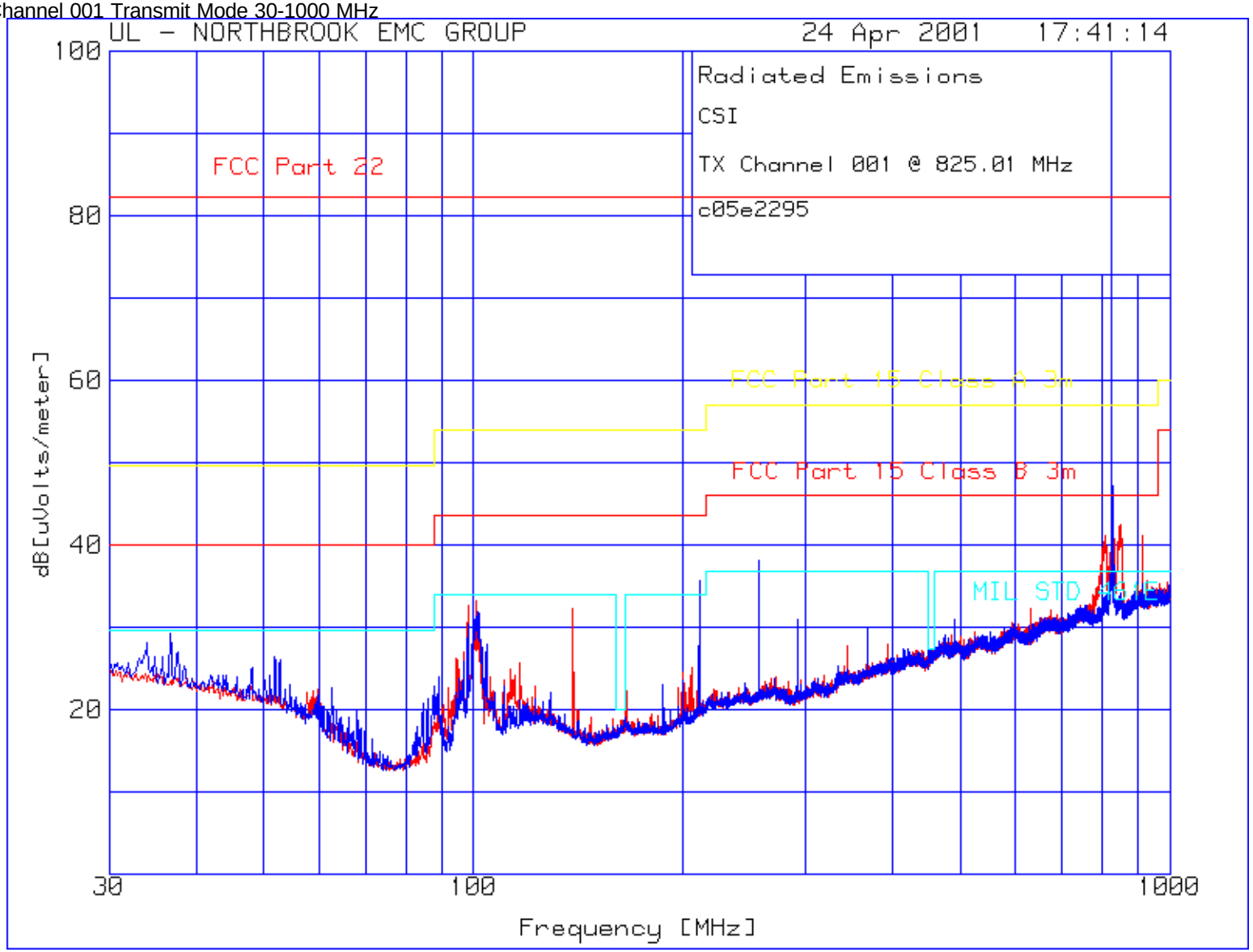
Radiated Emissions
Channel 800 Transmit Mode 14-30 MHz



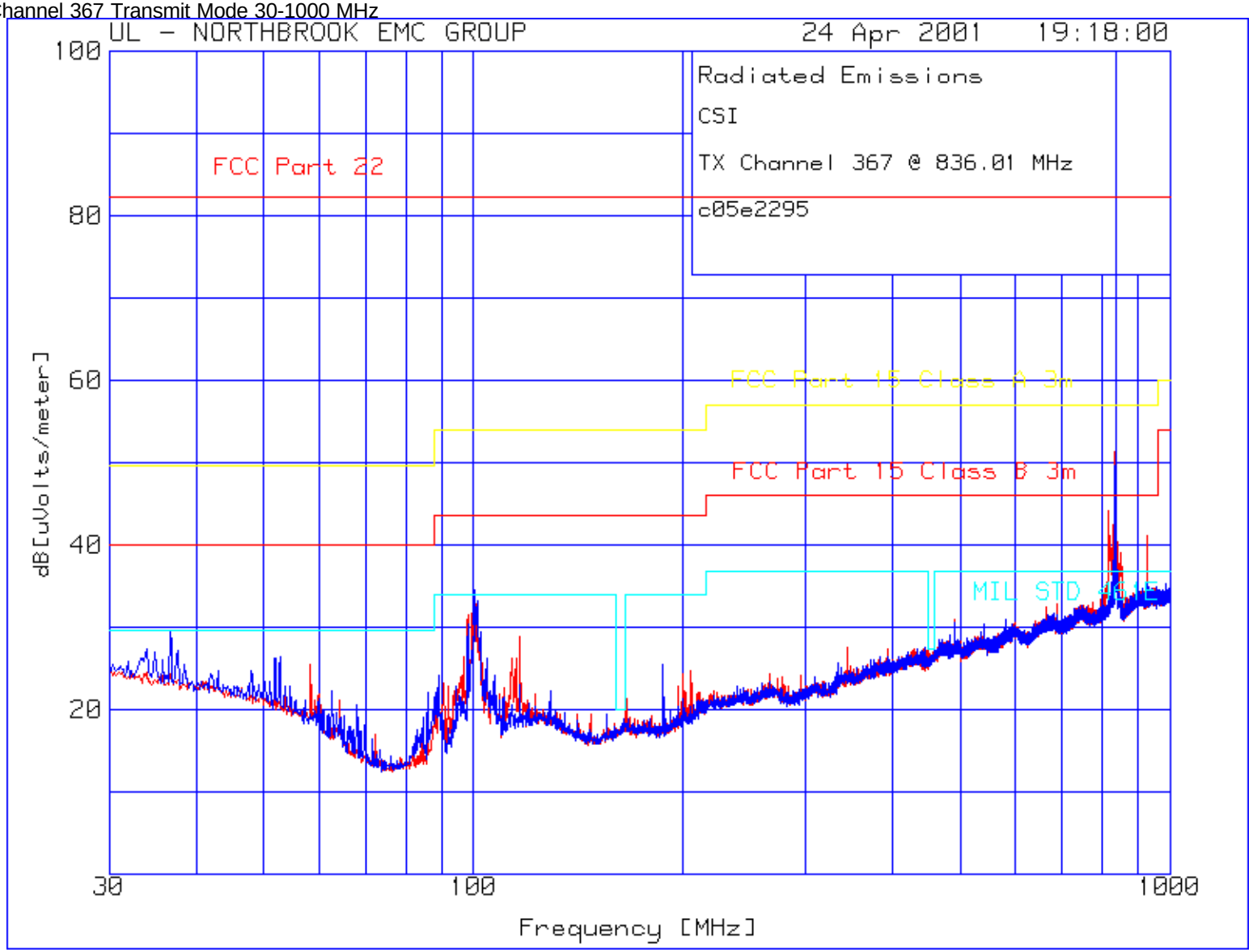
Radiated Emissions
Channel 001 Receive Mode 30-1000 MHz



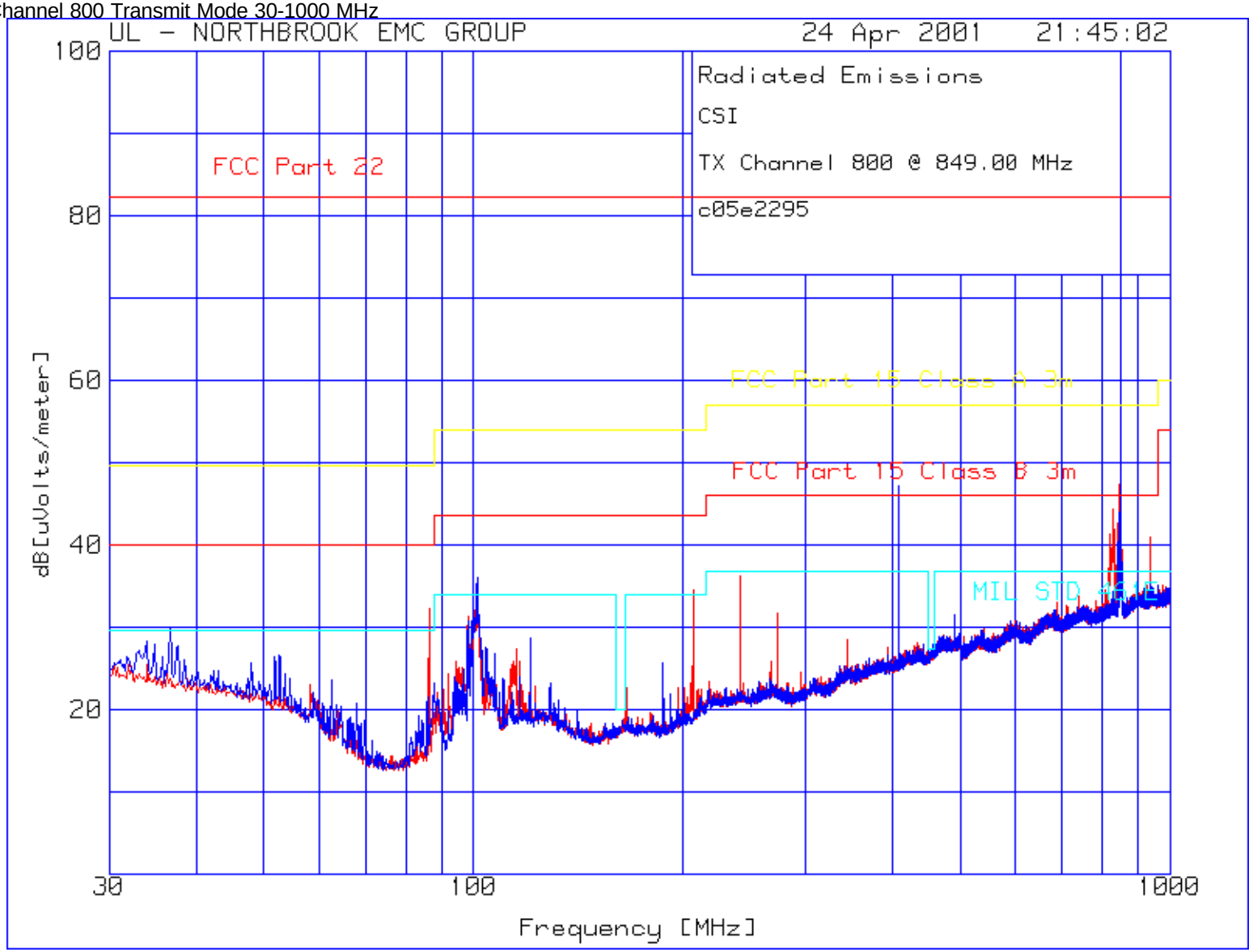
Radiated Emissions
Channel 001 Transmit Mode 30-1000 MHz



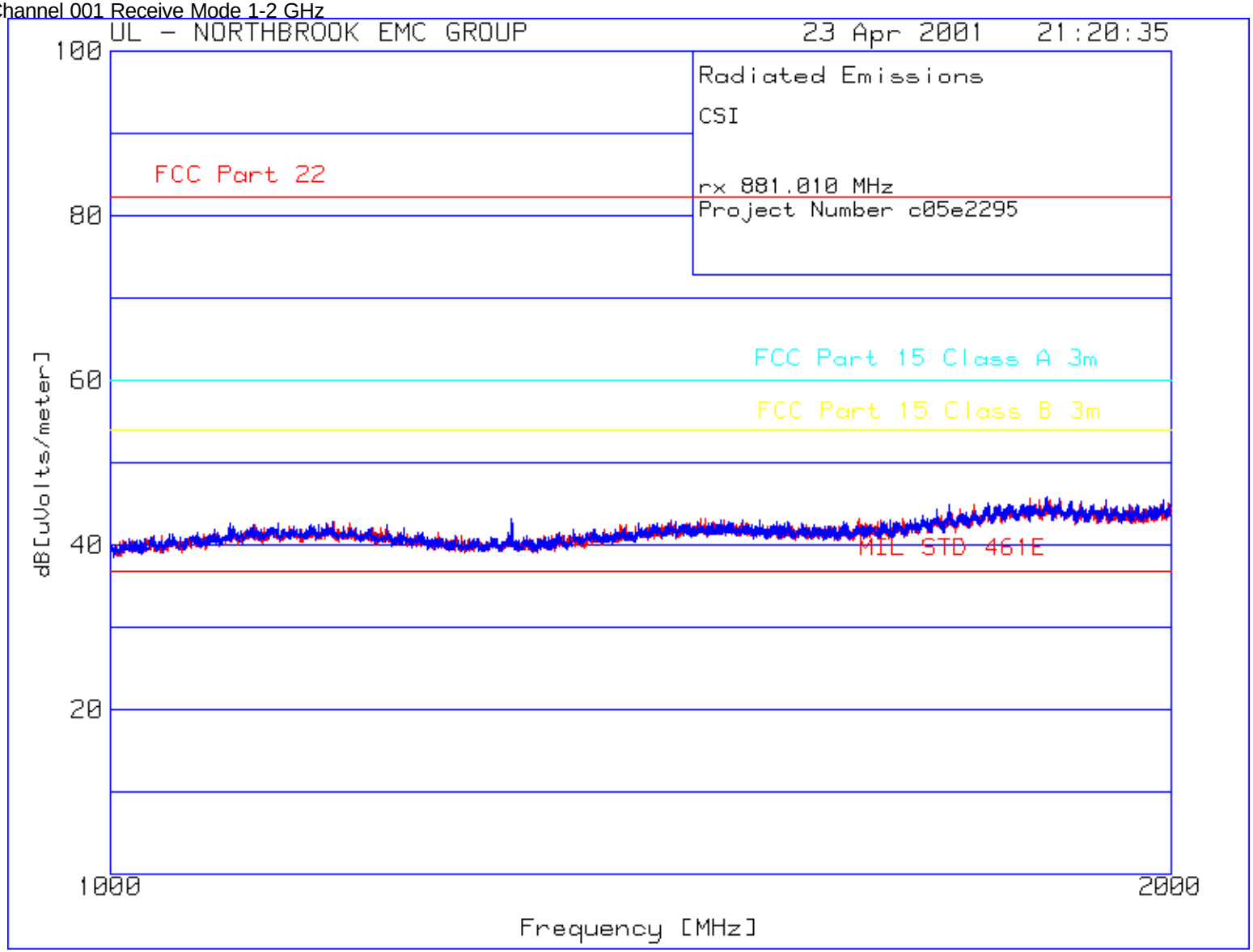
Radiated Emissions
Channel 367 Transmit Mode 30-1000 MHz



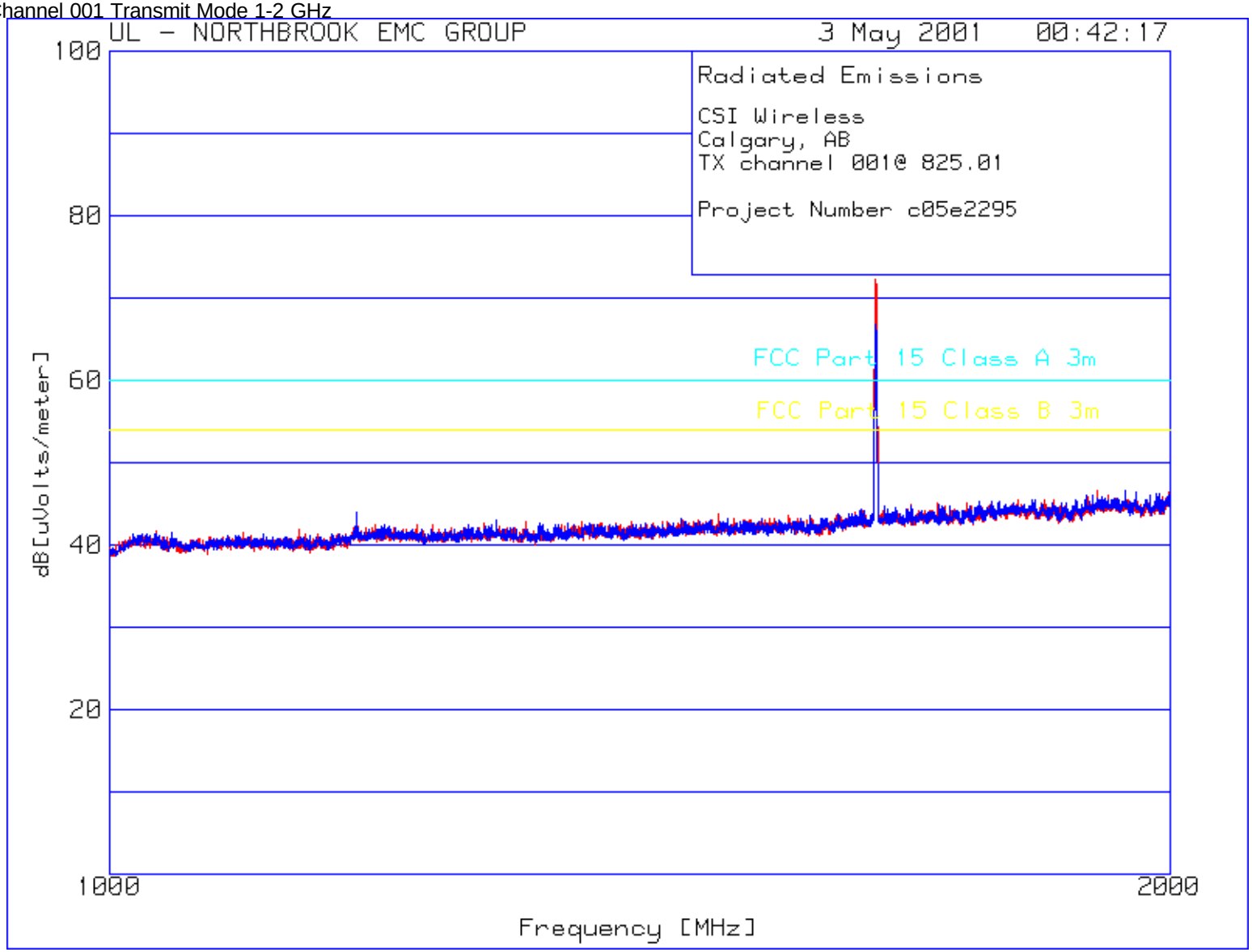
Radiated Emissions
Channel 800 Transmit Mode 30-1000 MHz



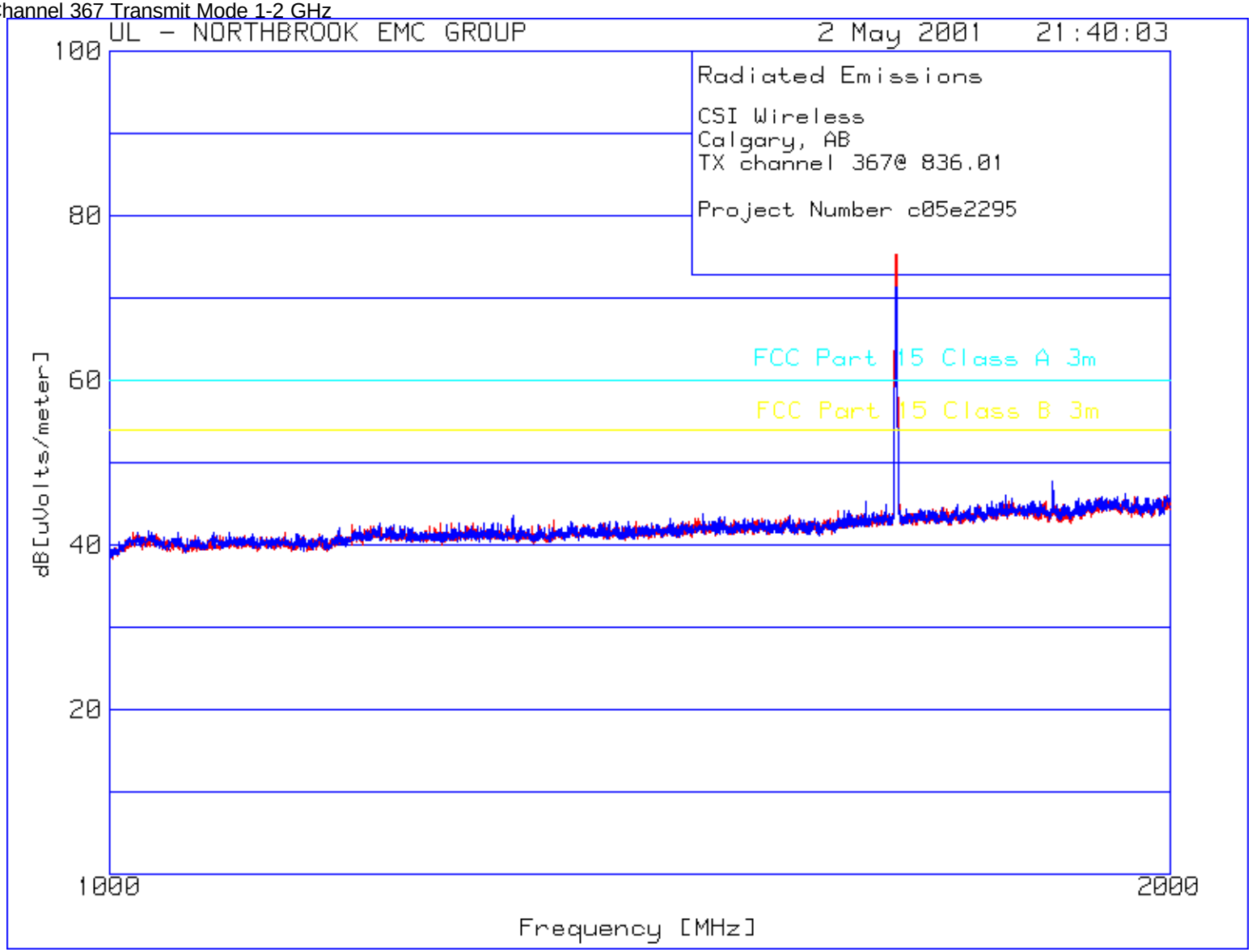
Radiated Emissions
Channel 001 Receive Mode 1-2 GHz



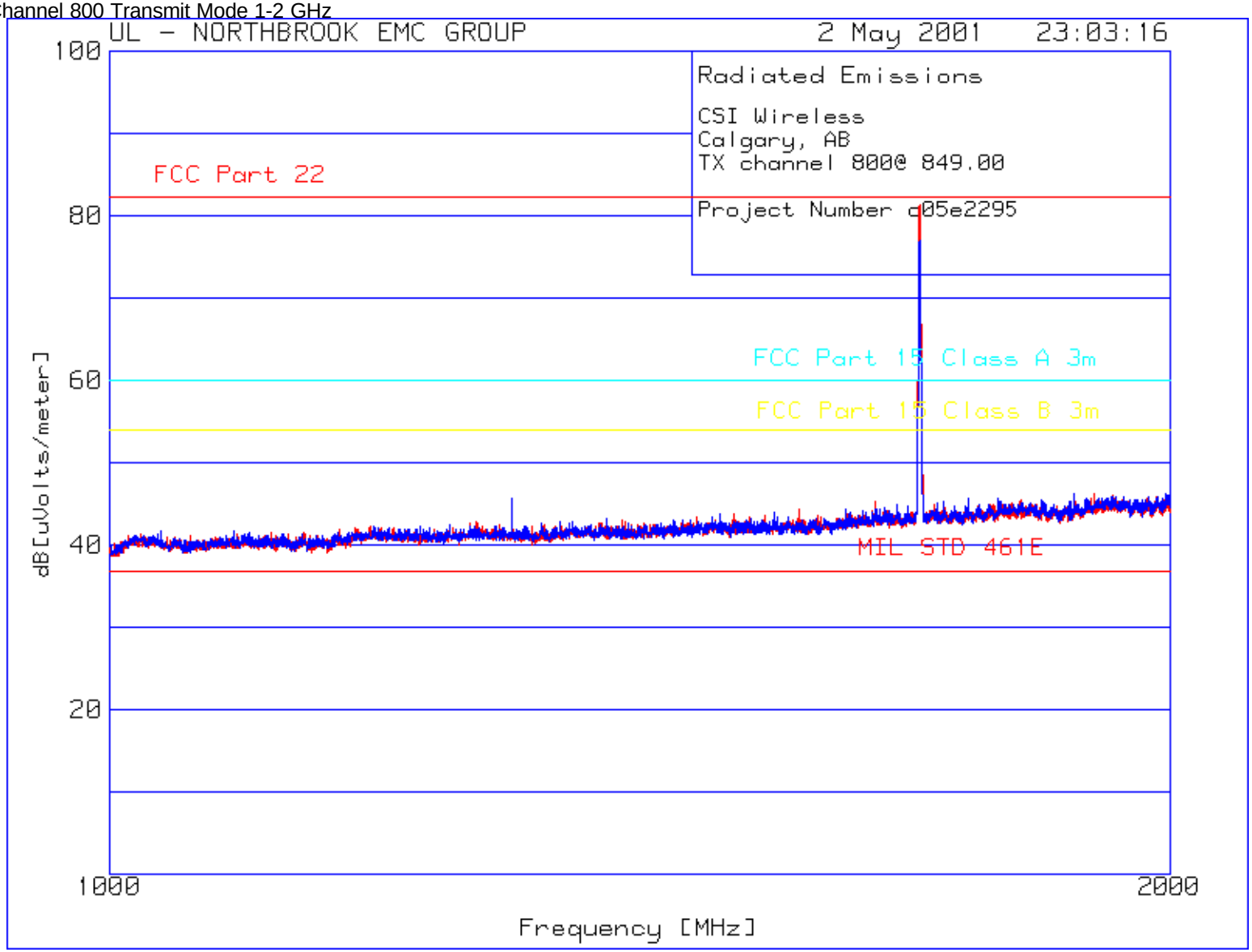
Radiated Emissions
Channel 001 Transmit Mode 1-2 GHz



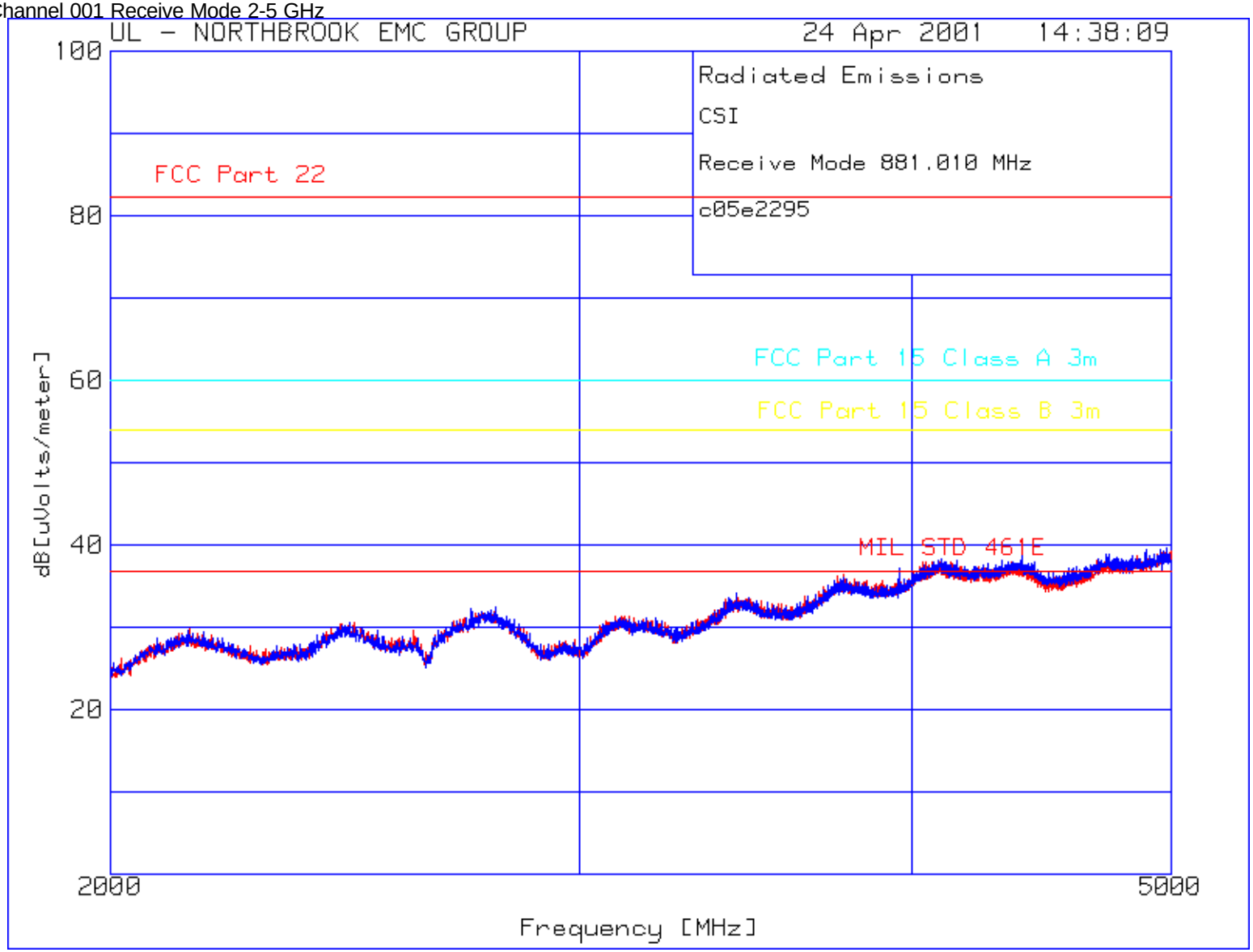
Radiated Emissions
Channel 367 Transmit Mode 1-2 GHz



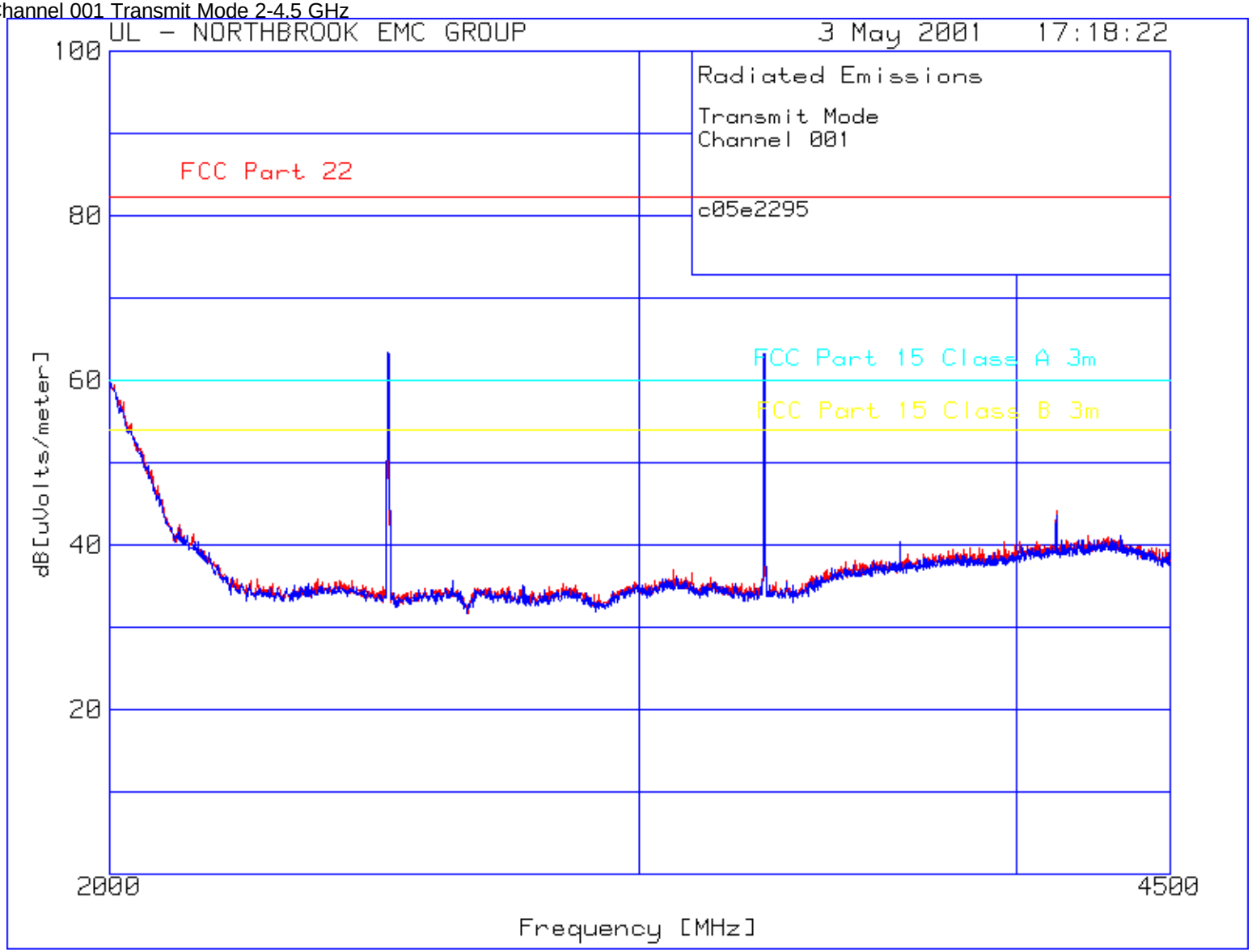
Radiated Emissions
Channel 800 Transmit Mode 1-2 GHz



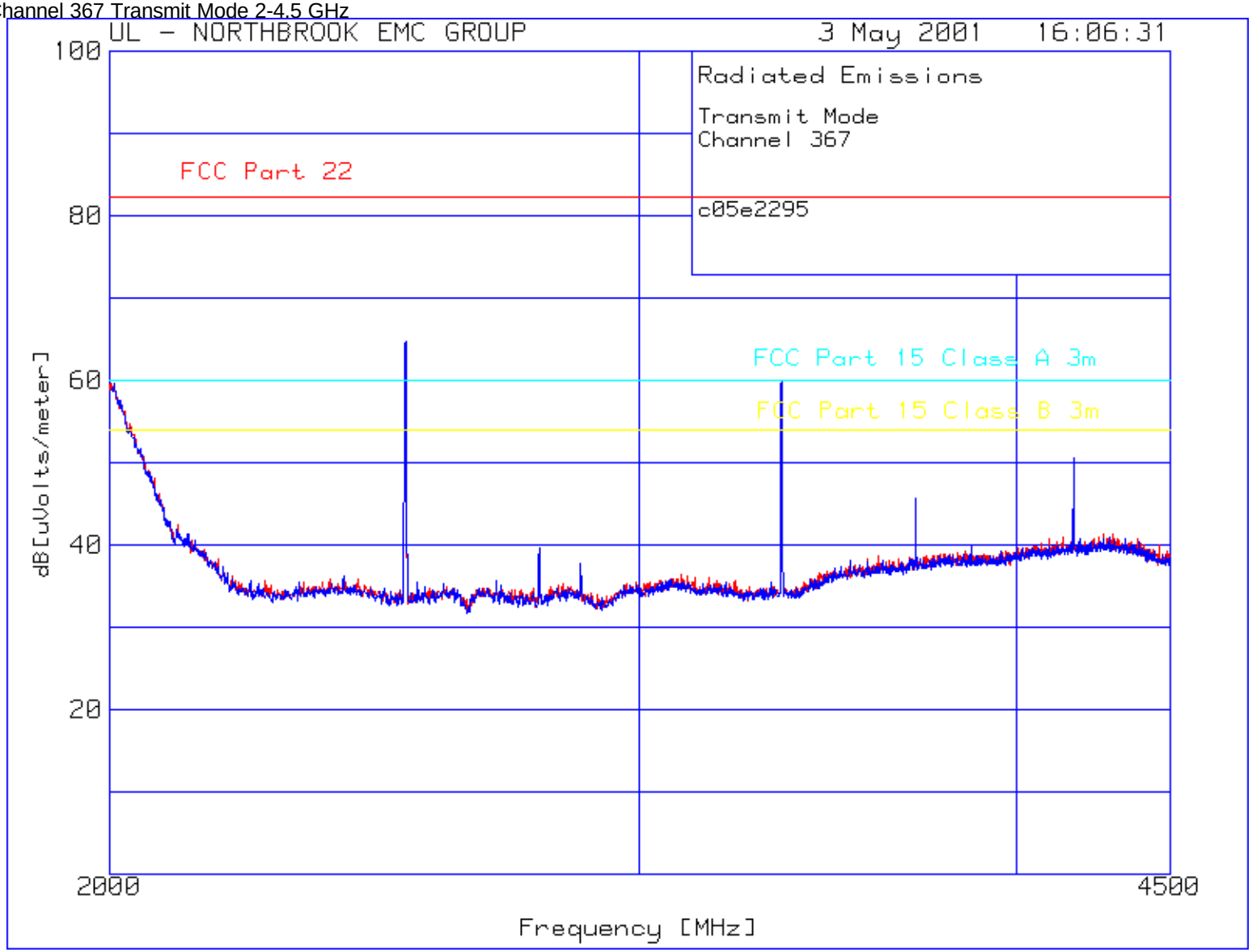
Radiated Emissions
Channel 001 Receive Mode 2-5 GHz



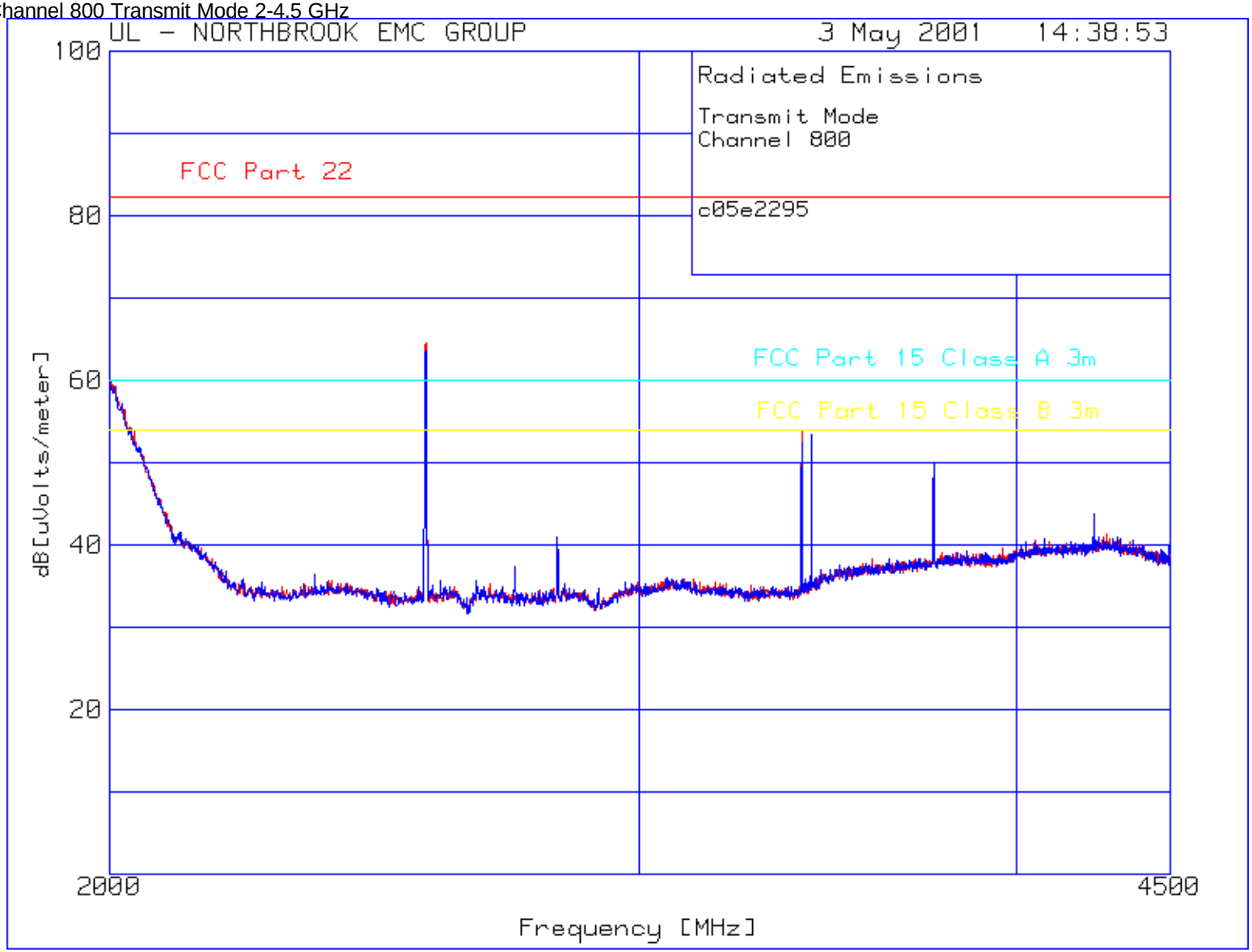
Radiated Emissions
Channel 001 Transmit Mode 2-4.5 GHz



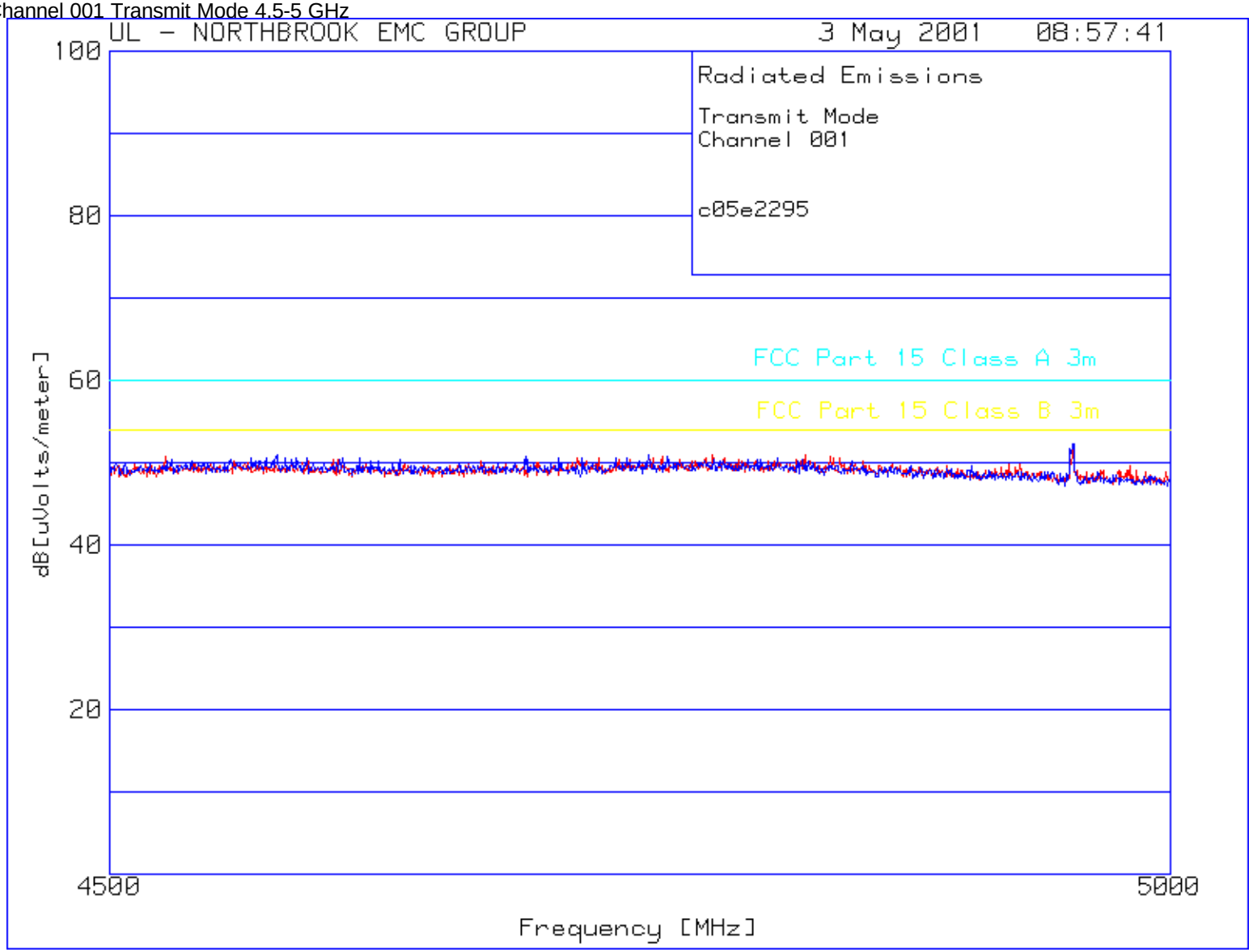
Radiated Emissions
Channel 367 Transmit Mode 2-4.5 GHz



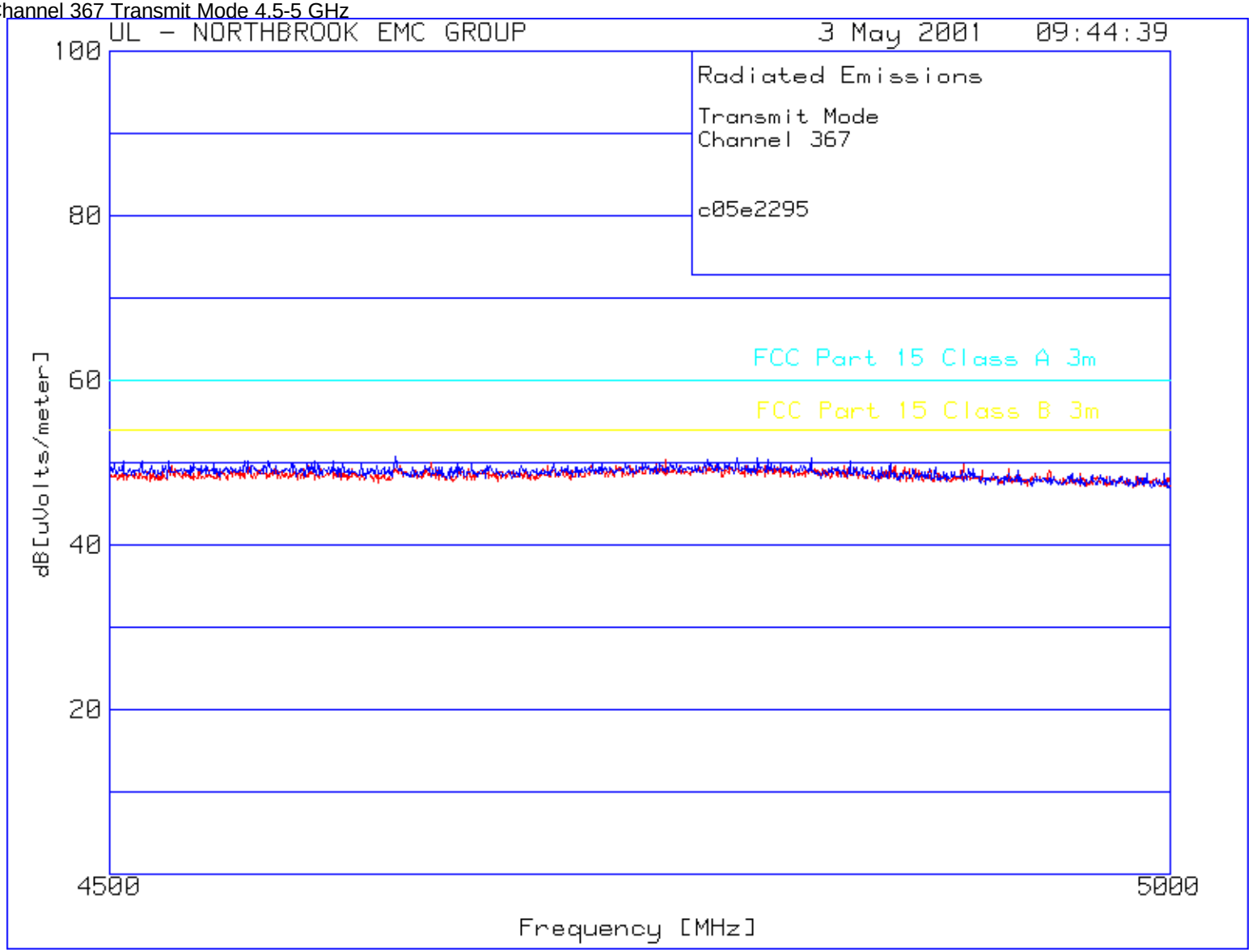
Radiated Emissions
Channel 800 Transmit Mode 2-4.5 GHz



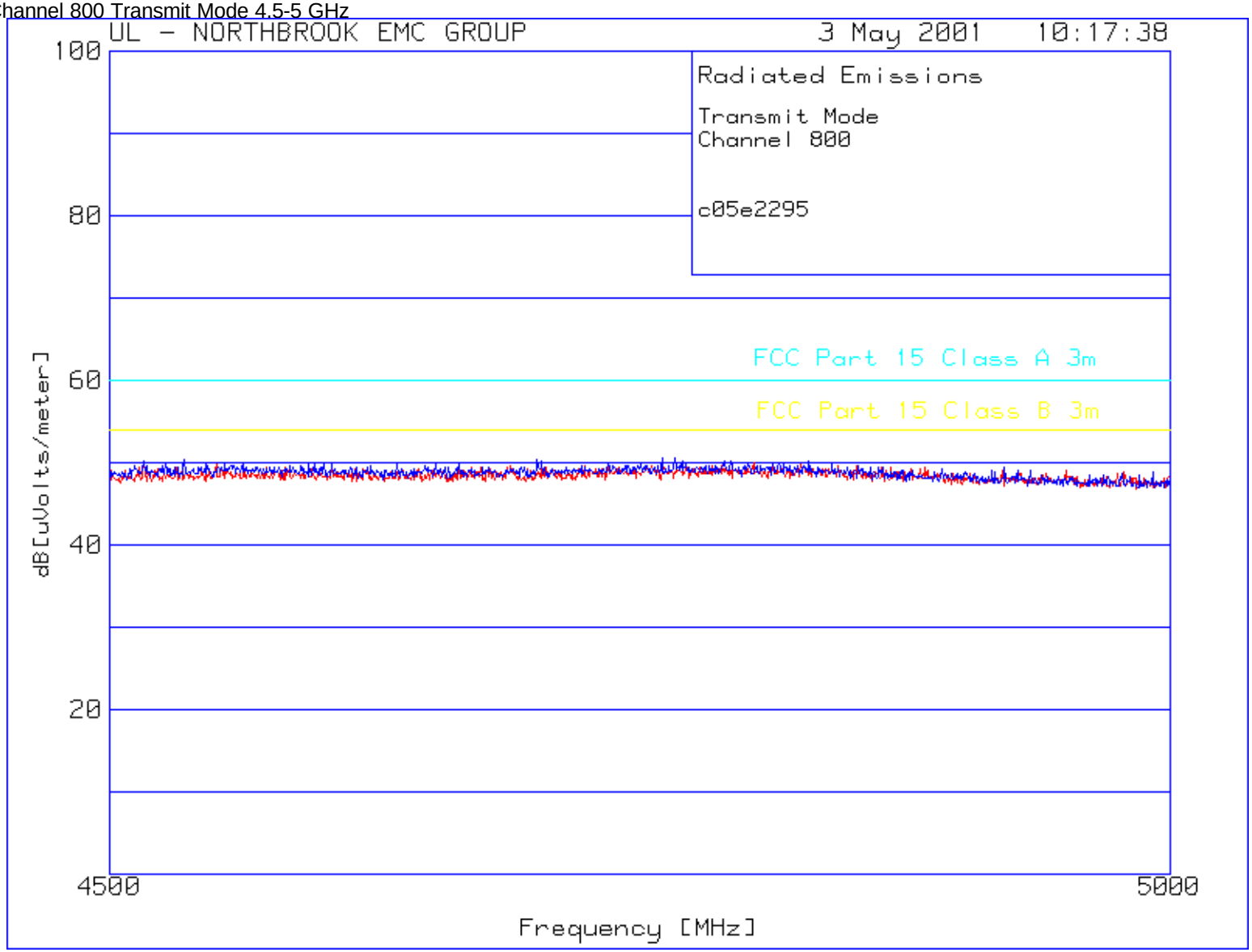
Radiated Emissions
Channel 001 Transmit Mode 4.5-5 GHz



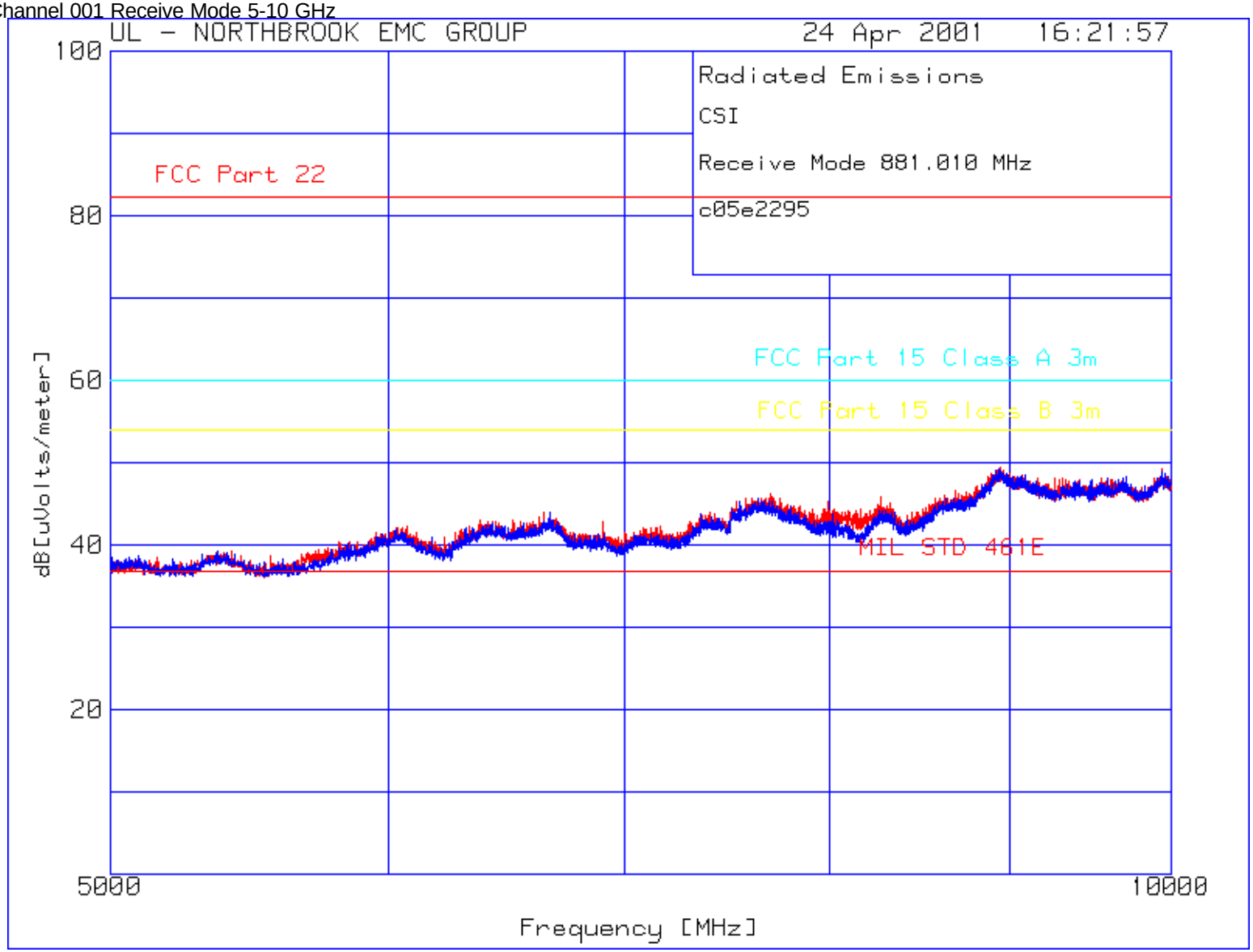
Radiated Emissions
Channel 367 Transmit Mode 4.5-5 GHz



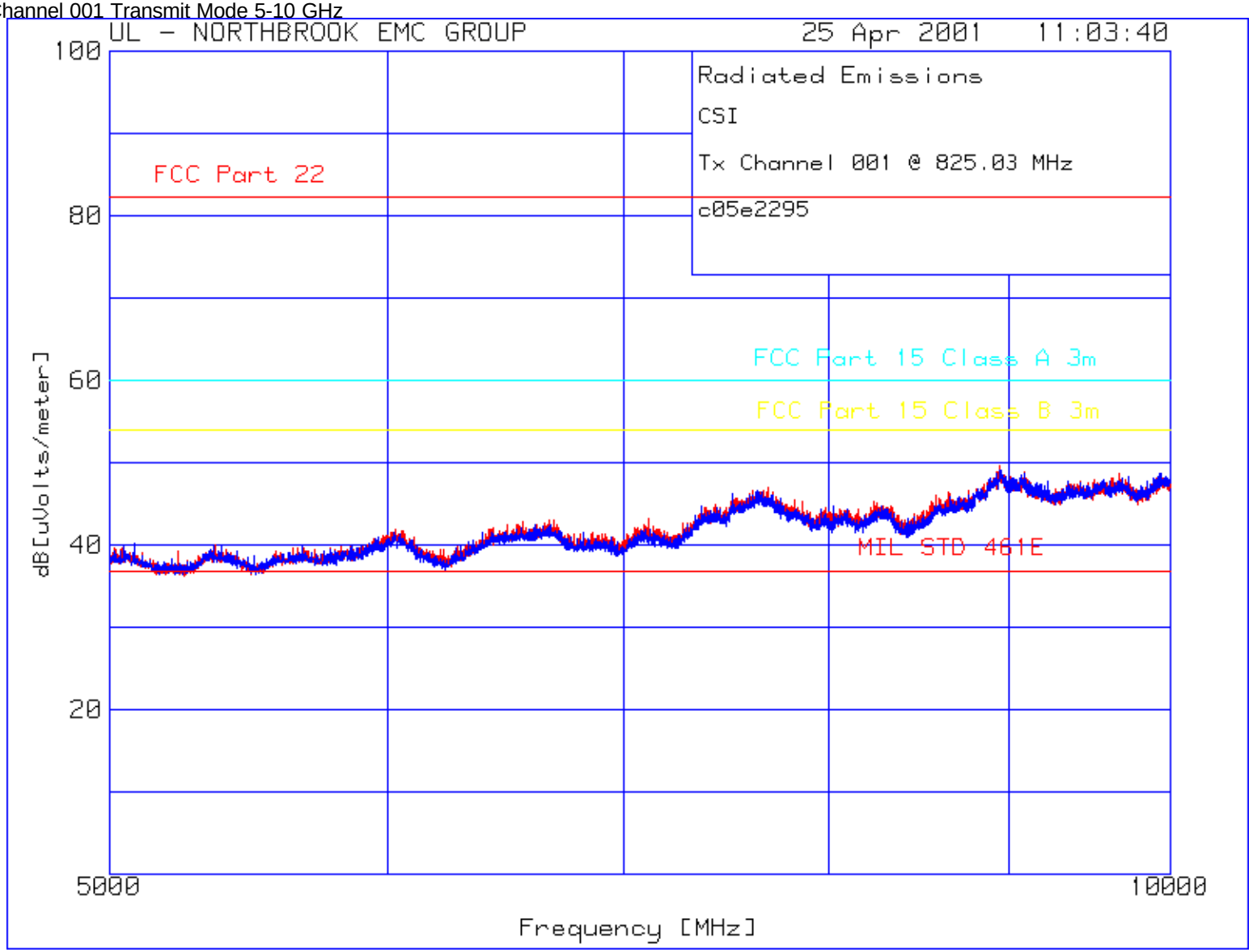
Radiated Emissions
Channel 800 Transmit Mode 4.5-5 GHz



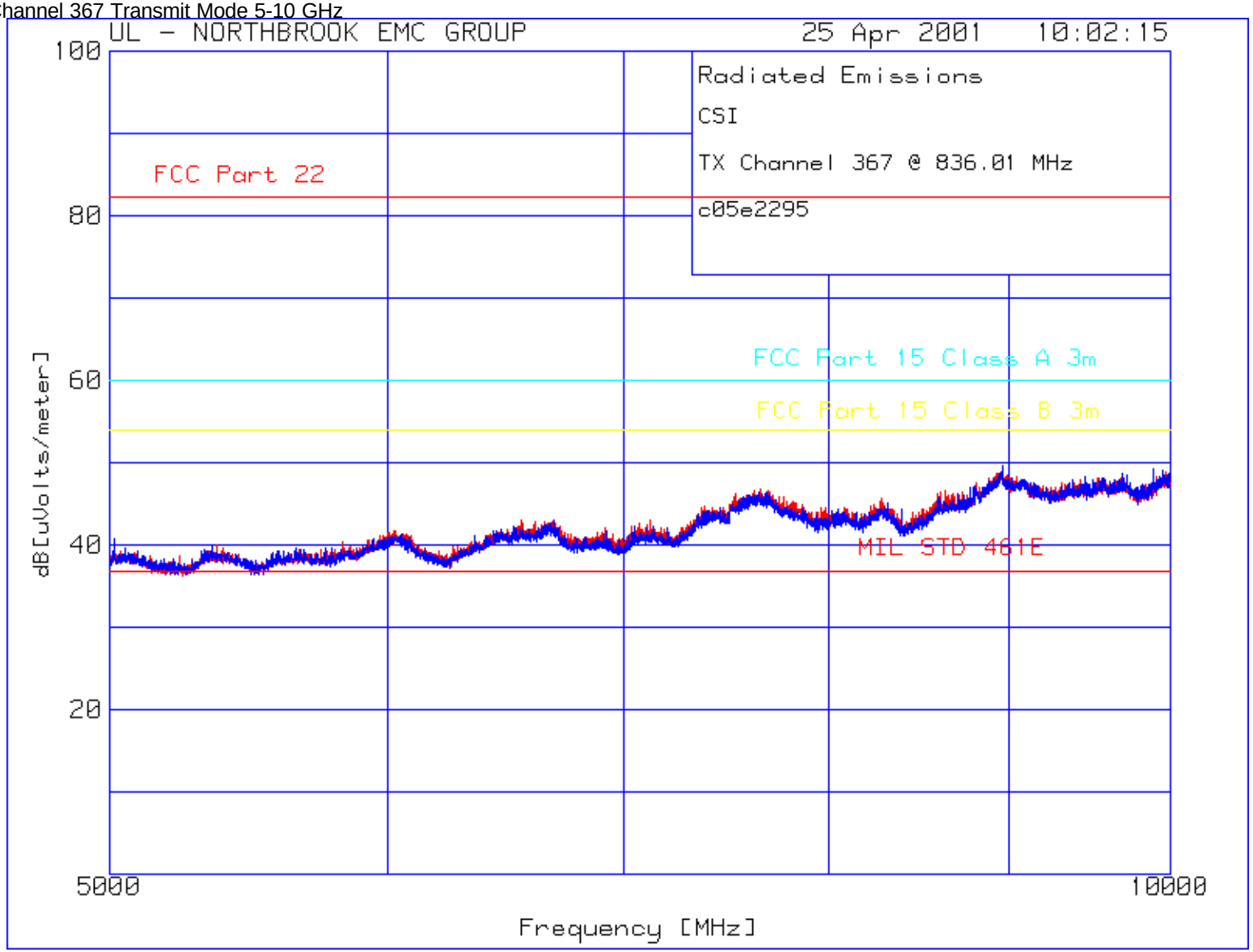
Radiated Emissions
Channel 001 Receive Mode 5-10 GHz



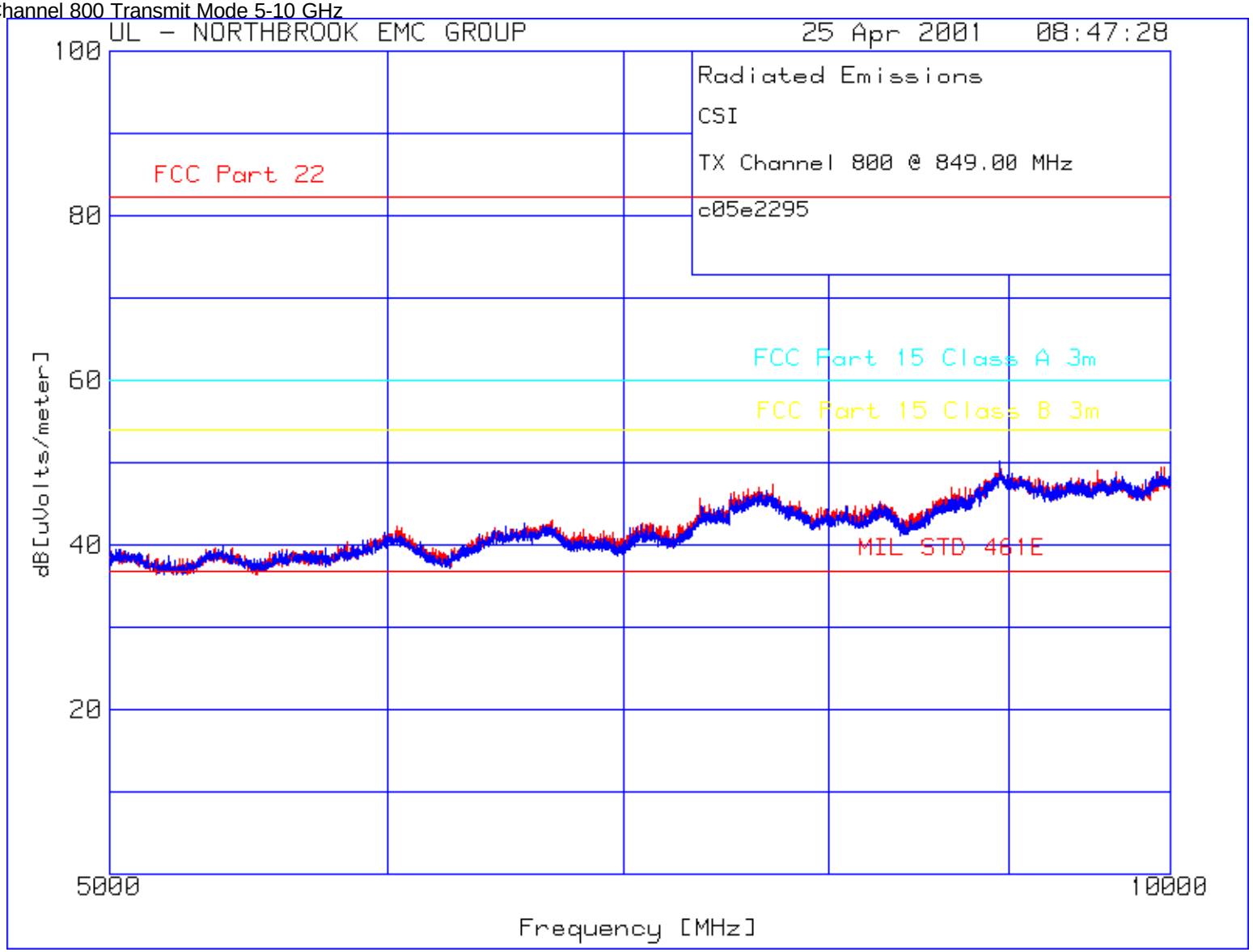
Radiated Emissions
Channel 001 Transmit Mode 5-10 GHz



Radiated Emissions
Channel 367 Transmit Mode 5-10 GHz



Radiated Emissions
Channel 800 Transmit Mode 5-10 GHz



## 4.5 FREQUENCY STABILITY

| | |
|---|---|
| Test Lab: MPB Technologies Inc. Airdrie<br>Test Personnel: E. Hails<br>Test Date: 20 July 2001 | Product:<br>LoCate |
| Test Result, LoCate: PASS | |
| Objectives/Criteria | Specifications |
| The frequency shall not deviate from the rated frequency by more the specified amount under the following conditions:<br>At the rated voltage, vary the temperature from -30ºC to +50ºC in 10ºC increments and measure the transmit frequency.<br>At room temperature, change the voltage to 85% and 115% of the rated voltage, and measure the transmit frequency. Also measure at the battery end point. | FCC Part 2.1055<br>FCC Part 22.355<br>Allowed deviation from the rated frequency:<br>± 2.5 ppm |
| Comments: The frequency as a function of voltage was measured when the temperature was still at 50ºC, in order to save time. The data are a measure of a worst-case scenario. The voltage was also reduced decrementally until it reached the battery end point, and the frequency was not significantly altered. See the next page for the test data. | |

## FREQUENCY STABILITY TEST DATA

### DEPENDENCE OF FREQUENCY ON TEMPERATURE

| | Channel 001 Frequency 825.030 MHz | | | Channel 367 Frequency 836.010 MHz | | | Channel 800 Frequency 849.000 MHz | | |
|---|---|---|---|---|---|---|---|---|---|
| Temperature | Measured | Difference | | Measured | Difference | | Measured | Difference | |
| [degrees C] | [Hz] | [Hz] | [ppm] | [Hz] | [Hz] | [ppm] | [Hz] | [Hz] | [ppm] |
| -30 | 825029550 | -450 | -0.55 | 836009618 | -382 | -0.46 | 848999508 | -492 | -0.58 |
| -20 | 825029548 | -452 | -0.55 | 836009492 | -508 | -0.61 | 848999492 | -508 | -0.60 |
| -10 | 825029428 | -572 | -0.69 | 836009370 | -630 | -0.75 | 848999310 | -690 | -0.81 |
| 0 | 825029488 | -512 | -0.62 | 836009418 | -582 | -0.70 | 848999512 | -488 | -0.57 |
| 10 | 825030038 | 38 | 0.05 | 836009958 | -42 | -0.05 | 848999994 | -6 | -0.01 |
| 20 | 825030090 | 90 | 0.11 | 836010004 | 4 | 0.00 | 849000044 | 44 | 0.05 |
| 30 | 825029954 | -46 | -0.06 | 836010000 | 0 | 0.00 | 848999872 | -128 | -0.15 |
| 40 | 825029950 | -50 | -0.06 | 836009832 | -168 | -0.20 | 848999818 | -182 | -0.21 |
| 50 | 825029852 | -148 | -0.18 | 836009868 | -132 | -0.16 | 848999812 | -188 | -0.22 |

### DEPENDENCE OF FREQUENCY ON INPUT VOLTAGE

| Channel 001 - 825.030 MHz | | | | | Channel 367 - 836.010 MHz | | | | | Channel 800 - 849.000 MHz | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Input Voltage | | Measured | Difference | | Input Voltage | | Measured | Difference | | Input Voltage | | Measured | Difference | |
| [VDC] | [% nominal] | [Hz] | [Hz] | [ppm] | [VDC] | [% nominal] | [Hz] | [Hz] | [ppm] | [VDC] | [% nominal] | [Hz] | [Hz] | [ppm] |
| 12.28 | 100 | 825029934 | -66 | -0.08 | 12.28 | 100 | 836009878 | -122 | -0.15 | 12.27 | 100 | 848999874 | -126 | -0.15 |
| 14.18 | 115 | 825029936 | -64 | -0.08 | 14.15 | 115 | 836009884 | -116 | -0.14 | 14.49 | 118 | 848999884 | -116 | -0.14 |
| 10.41 | 85 | 825029946 | -54 | -0.07 | 10.42 | 85 | 836009864 | -136 | -0.16 | 10.43 | 85 | 848999930 | -70 | -0.08 |
| 8.00 | 65 | 825029942 | -58 | -0.07 | 8.00 | 65 | 836009856 | -144 | -0.17 | 8.00 | 65 | 848999864 | -136 | -0.16 |
| 5.97 | 49 | 825029958 | -42 | -0.05 | 6.07 | 49 | 836009928 | -72 | -0.09 | 6.07 | 49 | 848999942 | -58 | -0.07 |

## 4.6 MODULATION CHARACTERISTICS

| | |
|---|---|
| Test Lab: MPB Technologies Inc. Airdrie<br>Test Personnel: E. Hails<br>Test Date: 20 July 2001 | Product:<br>LoCate |
| Test Result, LoCate: PASS | |
| Objectives/Criteria | Specifications |
| The equipment shall meet the modulation requirements in these aspects:<br>(a) Non-voice modulating signals<br>(b) Modulation levels<br>(c) Deviation limitation circuitry<br>(d) Audio filter characteristics | FCC Part 2.1047<br>FCC Part 22.915<br>See Part 22.915 for details. |
| (a) Non-voice modulating signals | PASS |
| (b) Modulation levels | PASS 11.6 kHz |
| (c) Deviation limitation circuitry | PASS |
| (d) Audio filter characteristics | PASS |

# 5.0 TEST FACILITY

## 5.1 LOCATION

The EUT was tested for Electromagnetic Compatibility at the Electronics Test Centre, located in Airdrie, Alberta, Canada.

The RF Anechoic Chamber (RFAC) is identified as Chamber 1, located in the main building complex at the Electronics Test Centre. Its usable working space measures 10.6 m long x 7.3 m wide x 6.5 m high.

This test site is listed with the FCC under Registration Number 99541. Measurements taken at this site are accepted by Industry Canada per file number IC 2046-1.

The floor, walls and ceiling consist of annealed steel panels. The walls and ceiling are covered with ferrite tile, augmented by RF absorbant foam material on the end wall nearest the turntable, and on the adjacent walls and the ceiling. The chamber floor supports a 15 cm high internal floor, constructed of annealed steel panels, that forms the ground plane, and is bonded to the chamber walls.

The 3-m diameter turntable is flush-mounted with the floor. A sub-floor cable-way is provided to route cables between the turntable pit and EUT support equipment. Cables reach the EUT through an opening in the centre of the turntable.

Test instrumentation and EUT support equipment is located in two shielded vestibules located at the side of the main room. Cables are routed through bulkhead panels between the rooms as required. Power feeds are routed into the main room and vestibules through line filters providing at least 100 dB of attenuation between 10 kHz and 10 GHz.

## 5.2 GROUNDING PLAN

The EUT was located on a wooden table 80 cm above the ground plane. The EUT was grounded according to the client's specifications.

## 5.3 POWER

AC power was supplied via an Underwriter's Laboratories ULW100-69, 100 dB, 100 Ampere wall mounted filter. Bonding to ground is implemented at the chamber wall.

## 5.4 EMISSIONS PROFILE

Ambient conducted and radiated electromagnetic emission profiles were generated throughout the tests and are included in the test data.

## 5.5 TEST CONFIGURATION

### 5.5.1 RF OUTPUT POWER

Figure 1 illustrates the configuration of the test and measurement equipment used for RF Output Power (FCC Part 2.1046).


Figure 1 - Measurement Setup for RF Output Power

### 5.5.2 OCCUPIED BANDWIDTH AND SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Figure 2 illustrates the configuration of the test and measurement equipment used for Occupied Bandwidth and Spurious Emissions at Antenna Terminals (FCC Part 2.1049, 2.1051 and 2.1057).


Figure 2 - Measurement Setup for Occupied Bandwidth and Spurious Emissions at Antenna Terminals

5.5.3 Radiated Emissions

Figure 3 illustrates the configuration of the test and measurement equipment used for Radiated Emissions (FCC Part 2.1053 and 2.1057) for *Rack-Mounted* equipment.

**Radiated Emissions**

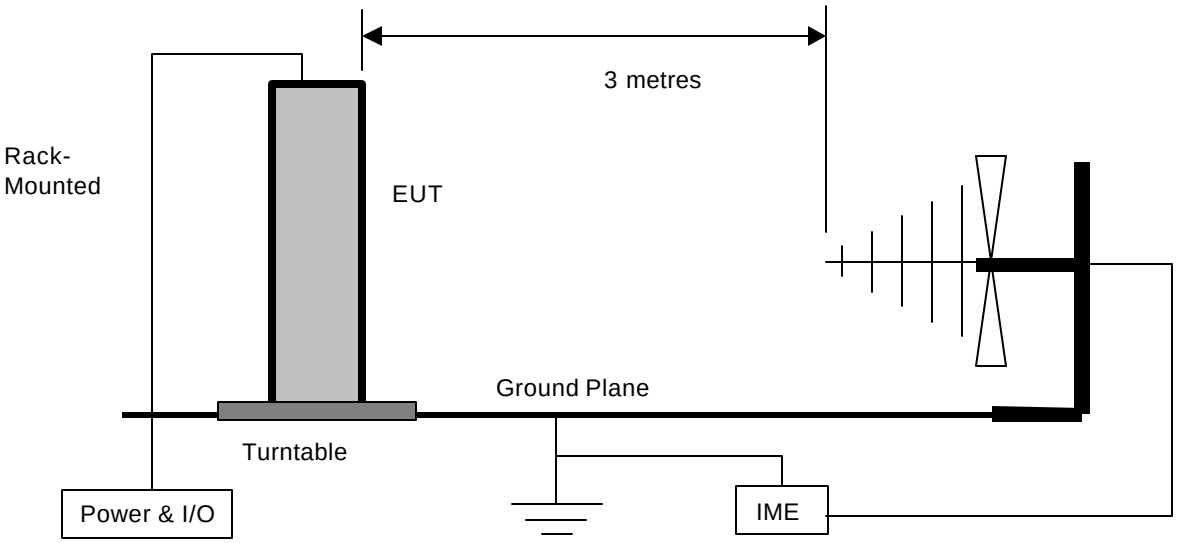



Figure 3 - Radiated Emissions for Rack-Mounted Equipment

Figure 4 illustrates the configuration of the test and measurement equipment used for Radiated Emissions (FCC Part 2.1053 and 2.1057) for *Tabletop* equipment.

**Radiated Emissions**

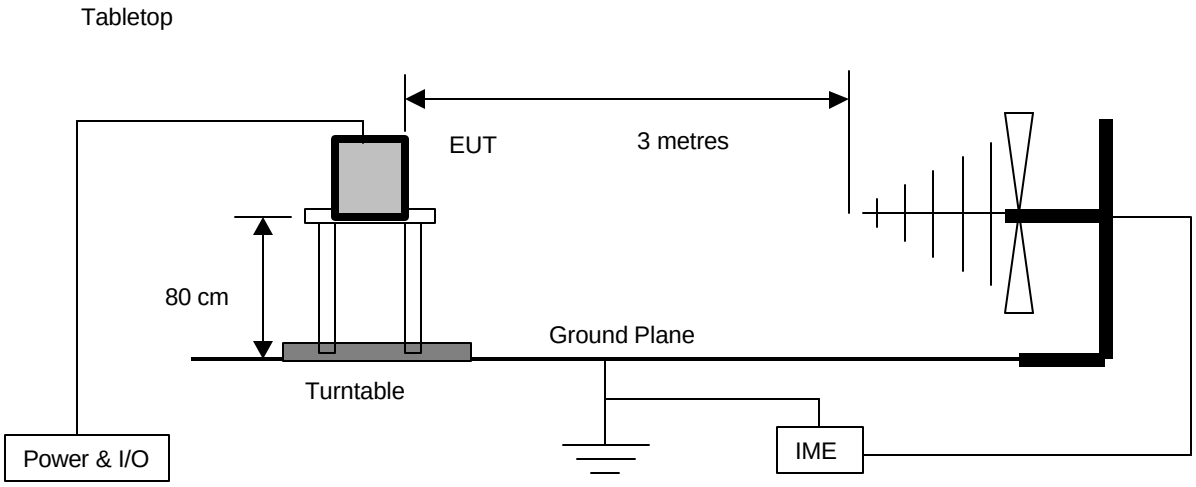



Figure 4 - Radiated Emissions for Tabletop Equipment

# 6.0 TEST EQUIPMENT

The following equipment was used for this procedure. All measurement devices are calibrated annually, traceable to NIST.

## 6.1 EQUIPMENT USED

The following equipment was used for this procedure. All measurement devices are calibrated annually, traceable to NIST.

RF Output Power:
- Power Meter

Occupied Bandwidth and Spurious Emissions at Antenna Terminals
- Spectrum Analyzer with RF Preselector
- CISPR Quasi-Peak Adapter
- Personal Computer and EMC Software

Radiated Emissions
- Spectrum Analyzer with RF Preselector
- CISPR Quasi-Peak Adapter
- Power Isolation Transformers
- Biconilog Antenna (25 MHz to 2 GHz)
- Antenna Mast Positioner and Controller
- Flush-mounted Turntable and Controller
- Personal Computer and EMC Software

Frequency Stability
- Spectrum Analyzer with RF Preselector
- CISPR Quasi-Peak Adapter
- Personal Computer and EMC Software
- Environmental Chamber

Modulation Characteristics
- Spectrum Analyzer with RF Preselector
- CISPR Quasi-Peak Adapter
- Personal Computer and EMC Software
- RF Communications Test Set

## 6.2 CALIBRATION

All measurement instrumentation conforms to ANSI C63.2. Calibration is maintained in accordance with manufacturer recommendations and ISO Guide 25. Each measurement device is labeled with its ETC asset number and calibration due date.

### 6.2.1 CALIBRATION ACCURACY

Test equipment used to provide quantitative measurements are calibrated with standards traceable to the National Research Council, National Institute of Standards and Technology or other national standards. Instrumentation systems for emissions measurements have the following accuracies:

Frequency = ± 1 kHz
Amplitude (RE) = ± 4.01 dB
Amplitude (CE) = ± 3.25 dB

### 6.2.2 TEST EQUIPMENT DESCRIPTION

The equipment used in the tests was selected from the following list.

| Instrument | Manufacturer | Model No. | Asset No. | Calibration Due |
|---|---|---|---|---|
| Spectrum Analyzer | Hewlett Packard | 8566B | 9565 | 11 April 2002 |
| Spectrum Analyzer | Hewlett Packard | 8566B | 9168 | 30 January 2002 |
| RF Preselector | Hewlett Packard | 85685A | 9563 | 21 September 2001 |
| RF Preselector | Hewlett Packard | 85685A | 9728 | 30 March 2002 |
| Quasi-Peak Adapter | Hewlett Packard | 85650A | 9243 | 16 August 2001 |
| Line Impedance Stabilization Network | EMCO | 3825/2r | 9331 | 2 November 2001 |
| Line Impedance Stabilization Network | EMCO | 3825/2r | 9259 | 2 November 2001 |
| Biconilog Antenna | ARA | Lpb-2520/A | 4318 | 13 June 2002 |
| Dual Ridged Guide Antenna | EMCO | 3115 | 9588 | 6 August 2001 |
| Low Noise Amplifier | MITEQ | JS43-01001800-21-5P | 4354 | 14 February 2002 |
| Power Meter | Hewlett Packard | 436A | 9061 | 3 August 2001 |
| Power Sensor | Hewlett Packard | 8482A | 9758 | 3 August 2001 |
| Environmental Chamber | Thermotron | 8920B | 9166 | 12 October 2001 |
| RF Communications Test Set | Hewlett Packard | 8920B | N/A | 24 November 2001 |

## Appendix A

## LoCate

### Test Sample Description
(from data provided by CSI Wireless)

| **Product Application** | **Product Category** | |
|---|---|---|
| Commercial ✓ | Telecommunications ✓ | Aerospace o |
| Military o | Information Technology o | Test & Measurement o |
| | Surface Transportation o | Other o _____ |
| **Product Name** | LoCate | |
| **Part/Model No.** | LOCA01 | |
| **Serial Number** | Rev 01 S/N 4 | |
| **Power Requirements:**<br>**(Voltage, AC/DC, Hz, Current)** | 12 VDC 1 A | |
| **Typical Installation Instructions or Configuration** | vehicle-mounted, asset tracking | |
| **Ground Connection**<br>**(in addition to power cord)** | chassis connected to ground | |
| **Internally Generated Frequencies** | 2.5 MHz, 14-88 MHz, 132 MHz, Transmit: 824-849 MHz, Receive: 869-894 MHz, 914-939 MHz (L.O.), GPS Receive: 1570 ± 10 MHz | |
| **Peripheral Support Equipment** | Laptop computer, RS232 to CMOS level converter | |
| **Description and number of interconnecting Leads & Cables** | Power supply, Data input/output, Cellular Antenna, GPS antenna | |
| **Brief Functional Description** | GPS Receiver, Cellular Digital modem, I/O interface to vehicle for asset tracking and asset status. | |