



11.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS PART 2.1053

Radiated measurements were performed at a 1 or 3 meter test distance automatically scanning the frequency range from 200 MHz to 10000 MHz, depending upon the fundamental frequency.

For the Shure UT2 Vocal Artist Transmitter, the highest fundamental frequency is 752 MHz so the scans were made up to 10000 MHz, to cover the tenth harmonic.

All signals in the frequency range of 30 MHz to 200 MHz were measured with a Biconical Antenna and from 200 MHz to 1000 MHz a Log Periodic Antenna was used as the pickup devices. From 1000 MHz to 10000 MHz, a Double Ridge Horn Antenna was used. The cables and equipment were placed and moved within the range of positions likely to find their maximum emissions. Tests were made in both the horizontal and vertical planes of polarization.

The allowed emissions for transmitters operating in the 740 to 752 MHz bands for Shure UT2 Vocal Artist Transmitter equipment are found under Part 74, Section 74.861, Paragraph e-6 for Low Power Auxiliary Stations. This paragraph states the mean power of the emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (1) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB.
- (2) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB.
- (3) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least $43 + 10 \log_{10}$ (mean output power in watts) dB.



11.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS (CON'T) PART 2.1053

To determine the limit for all spurious & harmonic emissions, the following method was used:

LIMIT for Spurious Emissions:

As stated in Part 74, Section 74.861 (e-1 ii) the limit is 250 mW in the frequency range 614 to 806 MHz.

$$43 + 10 * \text{LOG}_{10}(0.25 \text{ watts}) = 36.98 \text{ dB}$$

23.98dBm extrapolated level for 0.01 watts

-36.98 dB required reduction below the unmodulated fundamental

-13.00 dBm or 94.00 dBuV/m at 1 meter maximum spurious emissions allowed

Extrapolating the level to 3 meters:

$$94.00 \text{ dBuV/m} - 9.54 \text{ dB} = \mathbf{84.46 \text{ dBuV/m at 3 meters}}$$



EMC Test Services
1250 Peterson Drive, Wheeling, Illinois 60090, USA

Report No. 7584
09/22/99

RADIATED DATA TAKEN FOR FIELD STRENGTH

SPURIOUS EMISSION MEASUREMENTS

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SUMMARY DATA SHEET OF RADIATED EMISSIONS >1000 MHz

TEST DATE:----- August 20, 1999
 MANUFACTURER:----- Shure, Inc.
 MODEL NO:----- UT2
 S/N:----- NA
 CONFIGURATION:----- **740.375 MHz**
 RATED POWER:----- 0.0100

TEST SPECIFICATION: FCC "RULES AND REGULATION", PART 74
 SUBPART H / SECTION 74.861

******LOW POWER AUXILIARY STATIONS******

TEST EQUIPMENT: Spectrum Analyzer ----- HP 8566B
 Quasi Peak Adapter ----- HP 85650A

TYPE OF TEST: RADIATED EMISSIONS USING **VERTICAL** POLARIZATION

THE FOLLOWING ARE SIGNIFICANT RADIATED LEVELS FOUND:

FREQ IN MHz.	METER READING dBuV	ANTENNA PLUS CABLE	PRE-AMP GAIN dB	TOTAL dBuV	ANTENNA DISTANCE IN METERS	LIMIT dBuV	MARGIN dB
1481.00	33.20	29.10	0.00	62.30	3	84.46	22.16
2468.00	39.90	31.42	0.00	71.32	1	94.00	22.68



SUMMARY DATA SHEET OF RADIATED EMISSIONS >1000 MHz

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 S/N:----- NA
 CONFIGURATION:----- **740.375 MHz**
 RATED POWER:----- 0.0100

TEST SPECIFICATION: FCC "RULES AND REGULATION", PART 74
 SUBPART H / SECTION 74.861

******LOW POWER AUXILIARY STATIONS******

TEST EQUIPMENT: Spectrum Analyzer ----- HP 8566B
 Quasi Peak Adapter ----- HP 85650A

TYPE OF TEST: RADIATED EMISSIONS USING **HORIZONTAL** POLARIZATION

THE FOLLOWING ARE SIGNIFICANT RADIATED LEVELS FOUND:

FREQ IN MHz.	METER READING dBuV	ANTENNA PLUS CABLE	PRE-AMP GAIN dB	TOTAL dBuV	ANTENNA DISTANCE IN METERS	LIMIT dBuV	MARGIN dB
1481.00	34.20	29.10	0.00	63.30	3	84.46	21.16
1974.00	33.70	31.19	0.00	64.89	3	84.46	19.57
2222.02	41.90	30.60	0.00	72.50	1	94.00	21.50
2468.68	46.98	31.42	0.00	78.40	1	94.00	15.60
2715.25	42.19	33.11	0.00	75.30	1	94.00	18.70
2961.94	41.48	34.32	0.00	75.80	1	94.00	18.20



SUMMARY DATA SHEET OF RADIATED EMISSIONS >1000 MHz

TEST DATE:----- August 20, 1999
 MANUFACTURER:----- Shure, Inc.
 MODEL NO:----- UT2
 S/N:----- NA
 CONFIGURATION:----- **751.875 MHz**
 RATED POWER:----- 0.0100

TEST SPECIFICATION: FCC "RULES AND REGULATION", PART 74
 SUBPART H / SECTION 74.861

******LOW POWER AUXILIARY STATIONS******

TEST EQUIPMENT: Spectrum Analyzer ----- HP 8566B
 Quasi Peak Adapter ----- HP 85650A

TYPE OF TEST: RADIATED EMISSIONS USING **VERTICAL** POLARIZATION

THE FOLLOWING ARE SIGNIFICANT RADIATED LEVELS FOUND:

FREQ IN MHz.	METER READING dBuV	ANTENNA PLUS CABLE	PRE-AMP GAIN dB	TOTAL dBuV	ANTENNA DISTANCE IN METERS	LIMIT dBuV	MARGIN dB
1504.00	32.20	29.30	0.00	61.50	3	84.46	22.96
2252.00	44.20	30.60	0.00	74.80	1	94.00	19.20
2756.00	34.70	33.11	0.00	67.81	1	94.00	26.19
3005.00	37.80	34.90	0.00	72.70	1	94.00	21.30



SUMMARY DATA SHEET OF RADIATED EMISSIONS >1000 MHz

TEST DATE:----- August 20, 1999
 MANUFACTURER:----- Shure, Inc.
 MODEL NO:----- UT2
 S/N:----- NA
 CONFIGURATION:----- **751.875 MHz**
 RATED POWER:----- 0.0100

TEST SPECIFICATION: FCC "RULES AND REGULATION", PART 74
 SUBPART H / SECTION 74.861

******LOW POWER AUXILIARY STATIONS******

TEST EQUIPMENT: Spectrum Analyzer ----- HP 8566B
 Quasi Peak Adapter ----- HP 85650A

TYPE OF TEST: RADIATED EMISSIONS USING **HORIZONTAL** POLARIZATION

THE FOLLOWING ARE SIGNIFICANT RADIATED LEVELS FOUND:

FREQ IN MHz.	METER READING dBuV	ANTENNA PLUS CABLE	PRE-AMP GAIN dB	TOTAL dBuV	ANTENNA DISTANCE IN METERS	LIMIT dBuV	MARGIN dB
1504.00	34.20	29.30	0.00	63.50	3.00000	84.46	20.96
2256.87	46.50	30.60	0.00	77.10	1.00000	94.00	16.90
2760.36	38.39	33.11	0.00	71.50	1.00000	94.00	22.50
3008.39	48.00	34.90	0.00	82.90	1.00000	94.00	11.10



EMC Test Services
1250 Peterson Drive, Wheeling, Illinois 60090, USA

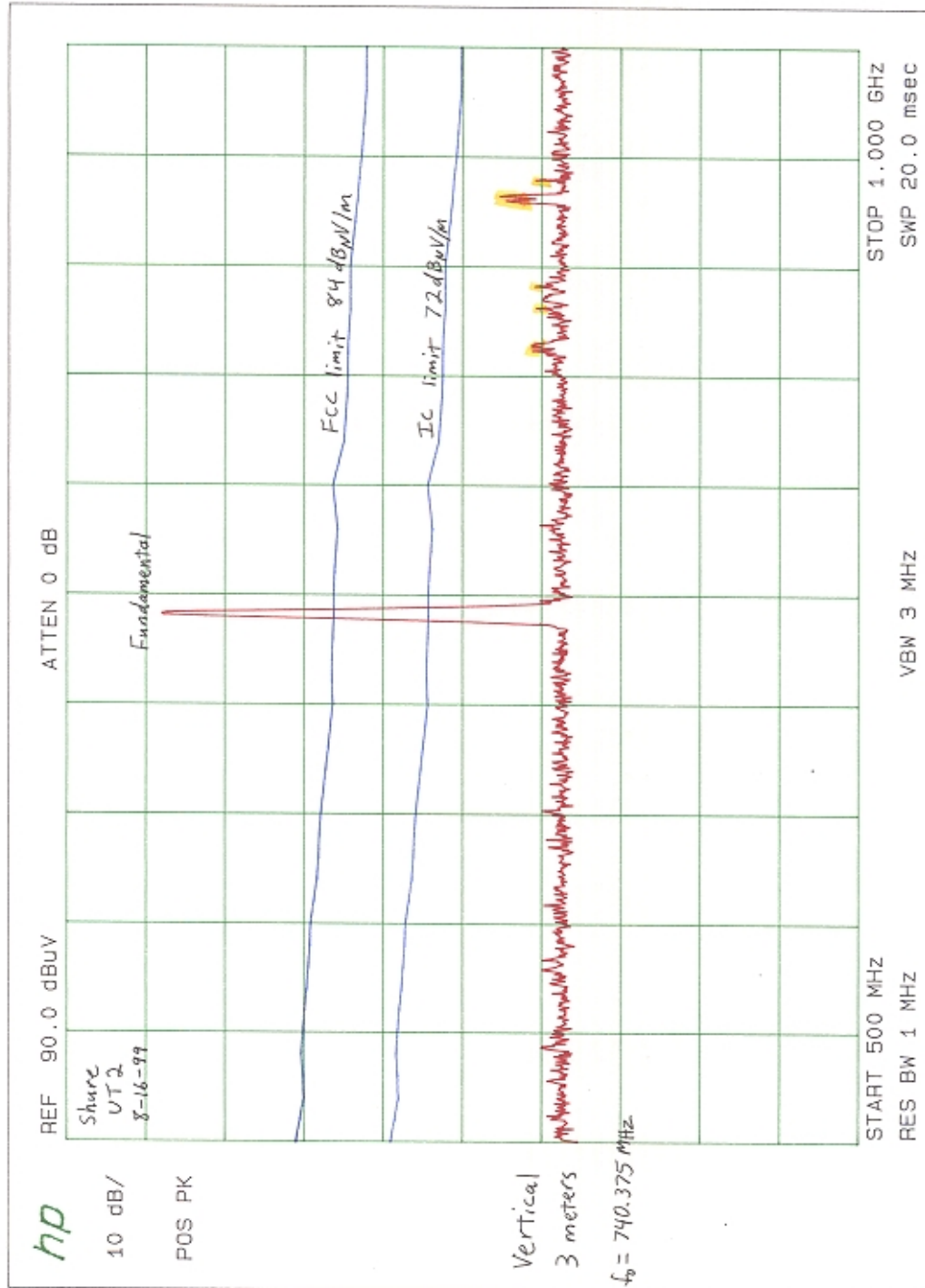
Report No. 7584
09/22/99

RADIATED GRAPHS TAKEN FOR FIELD STRENGTH

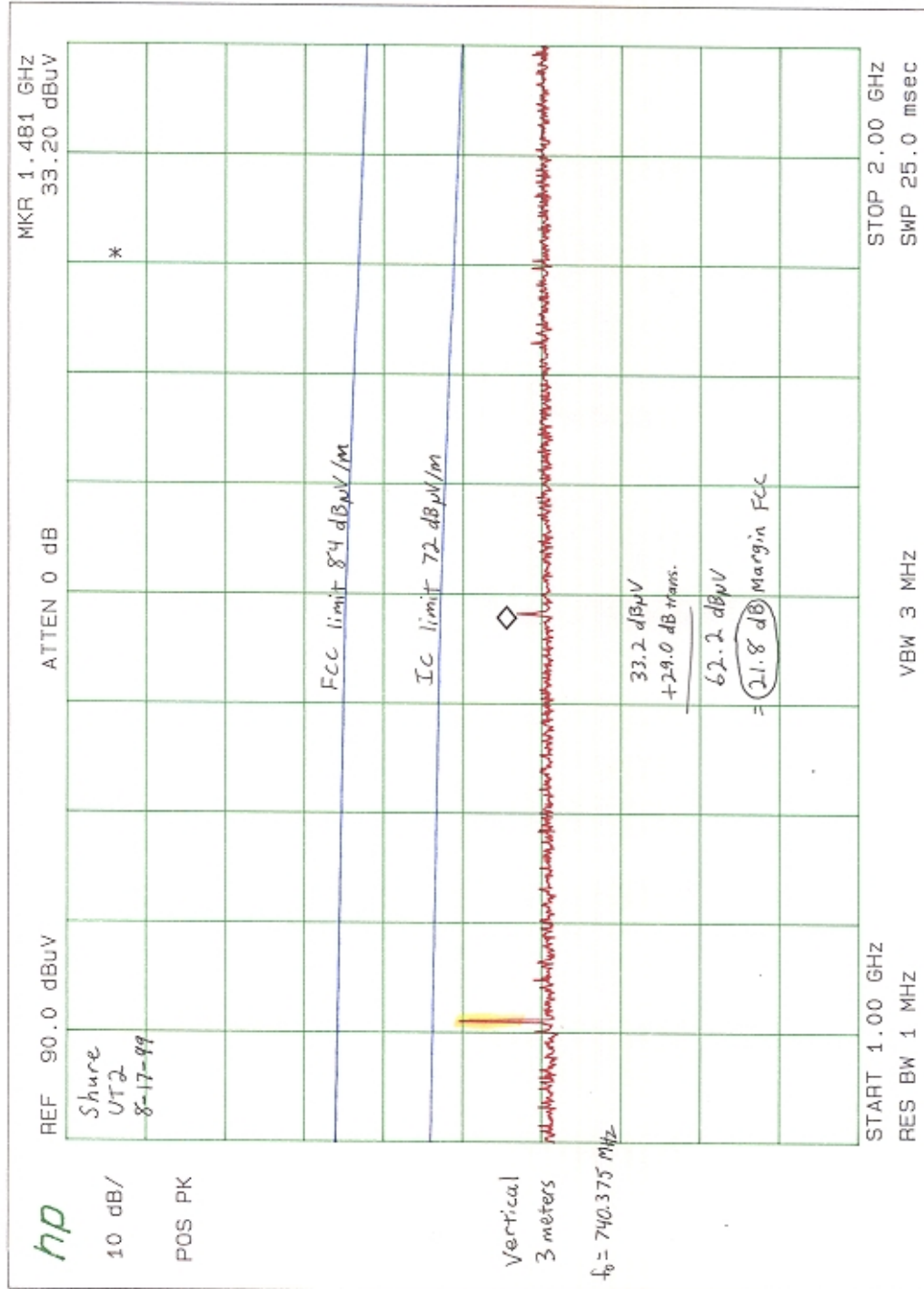
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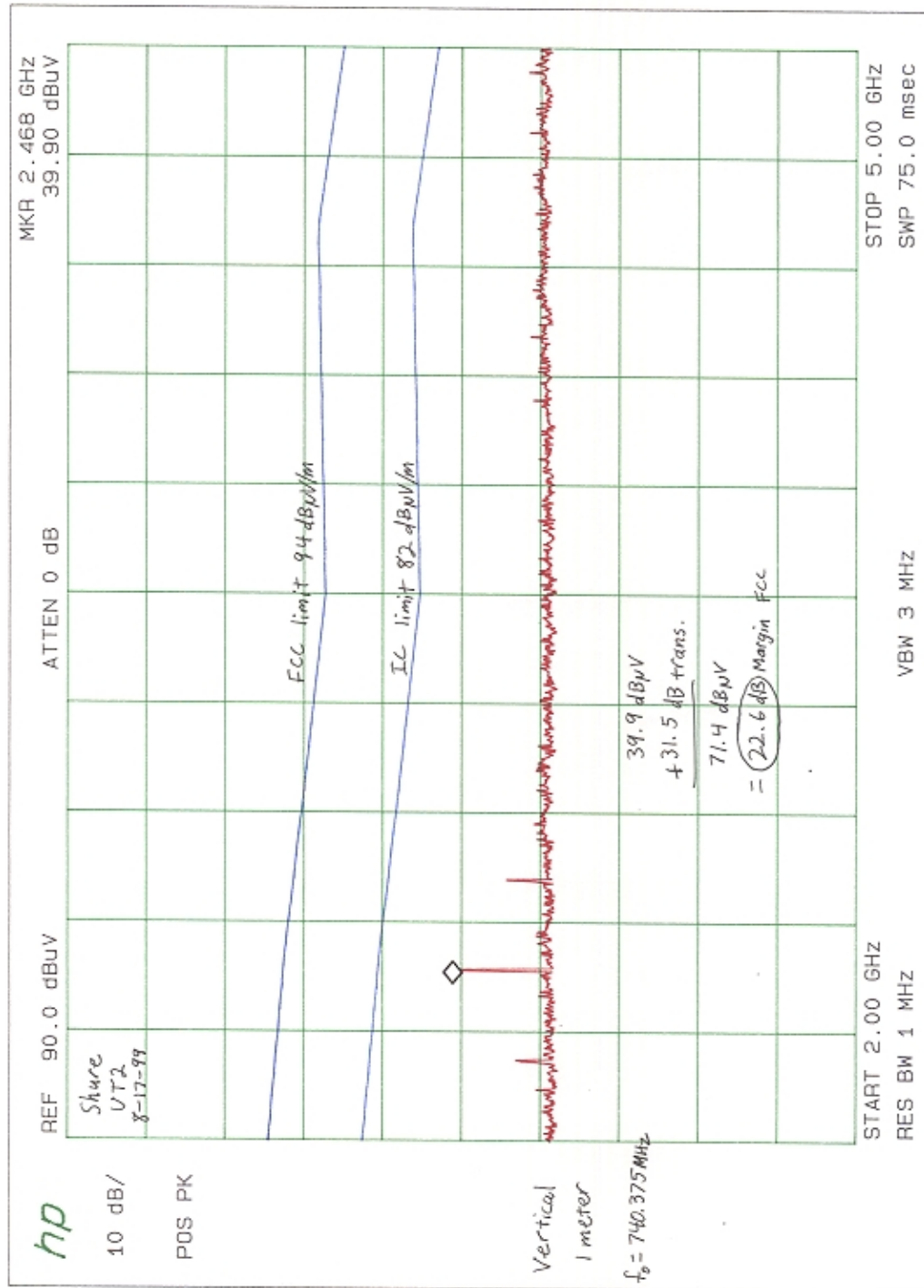
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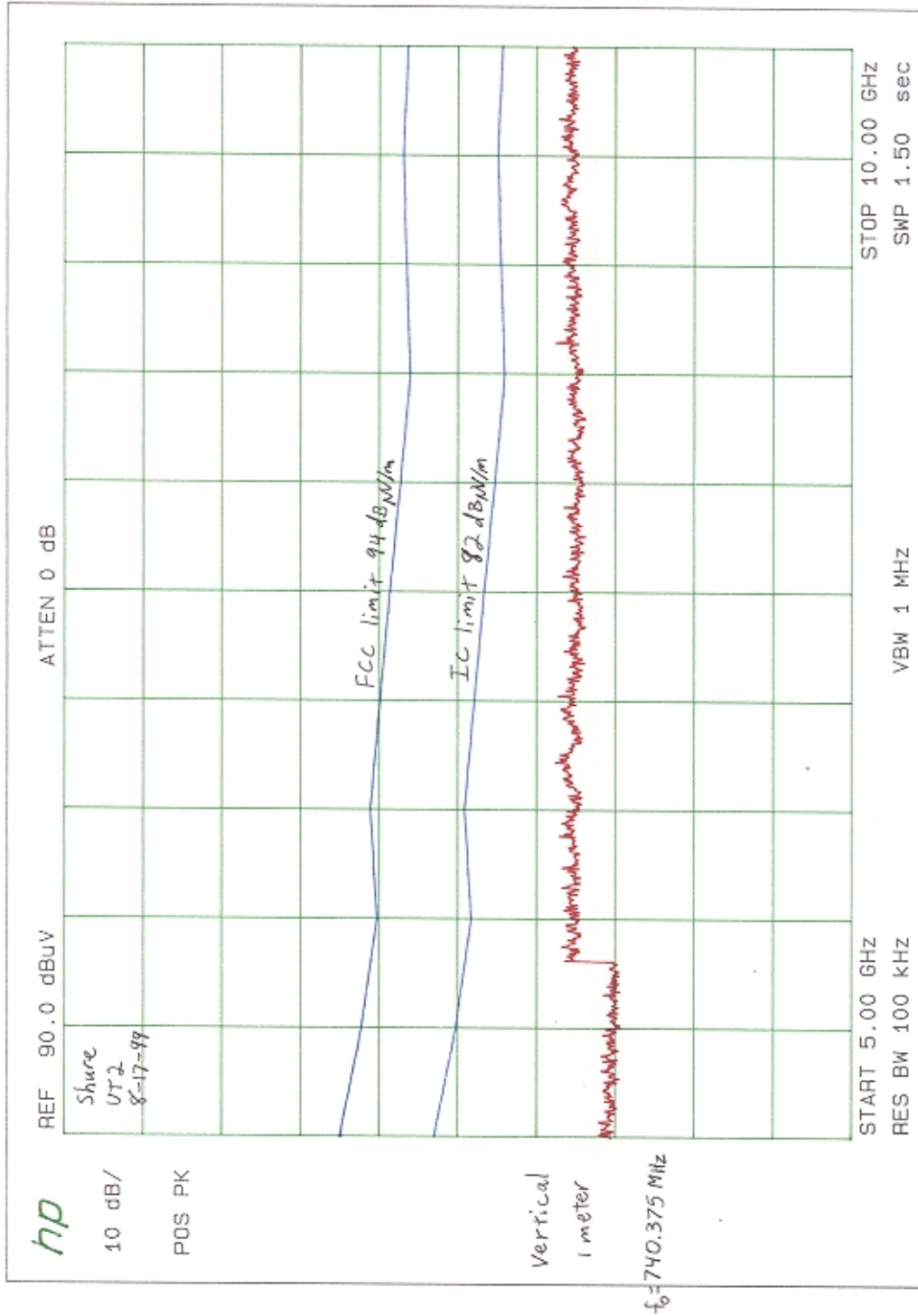
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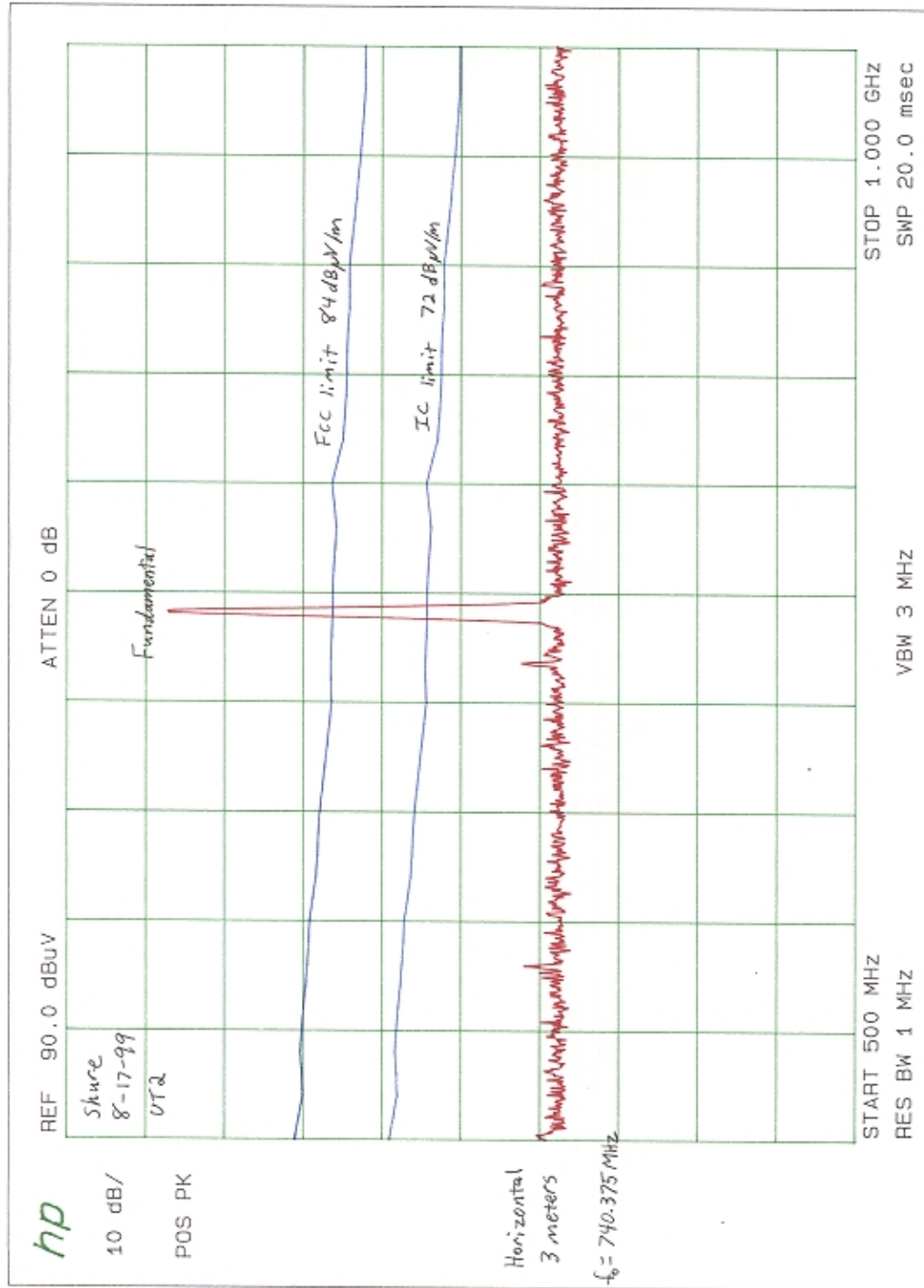
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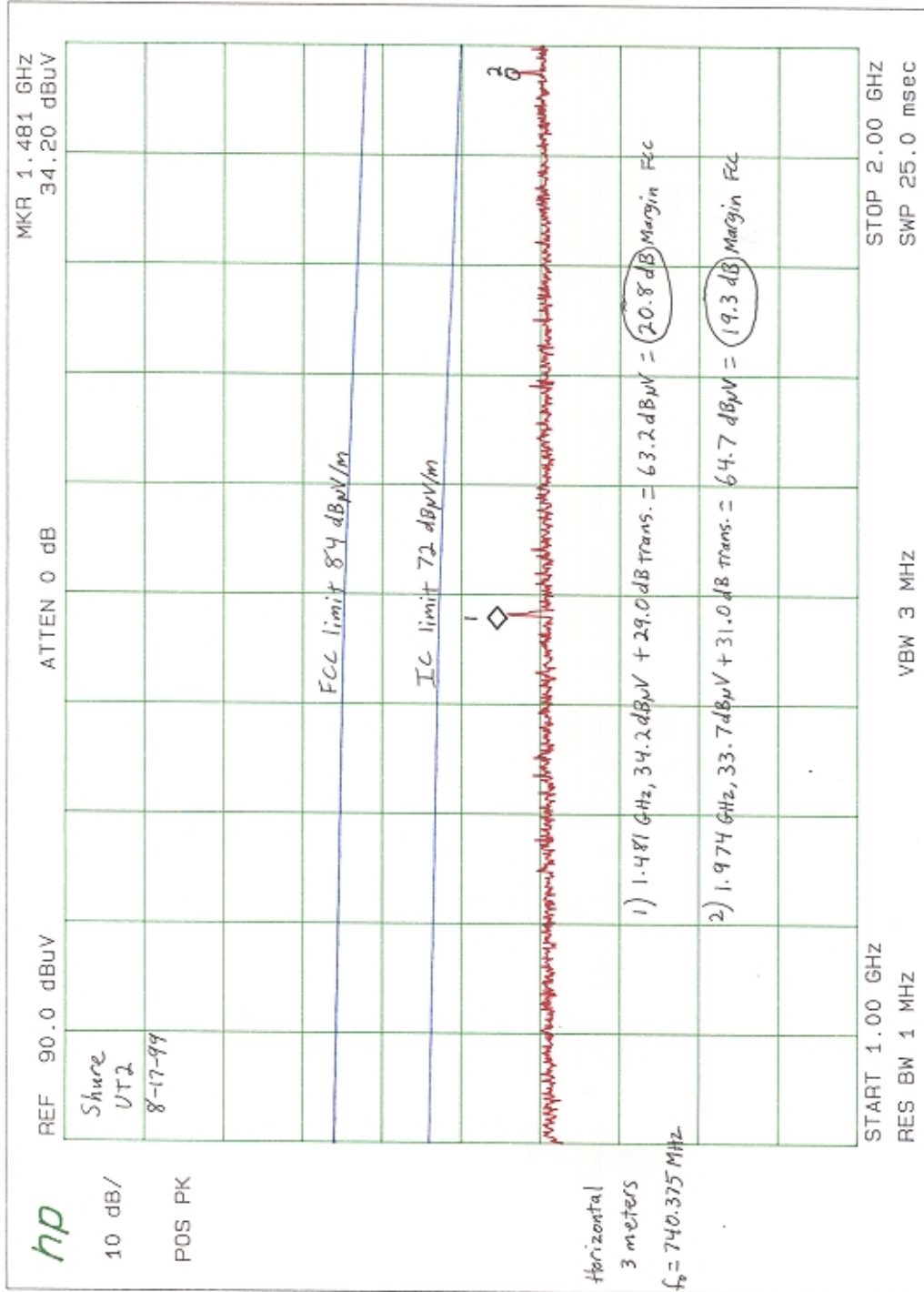
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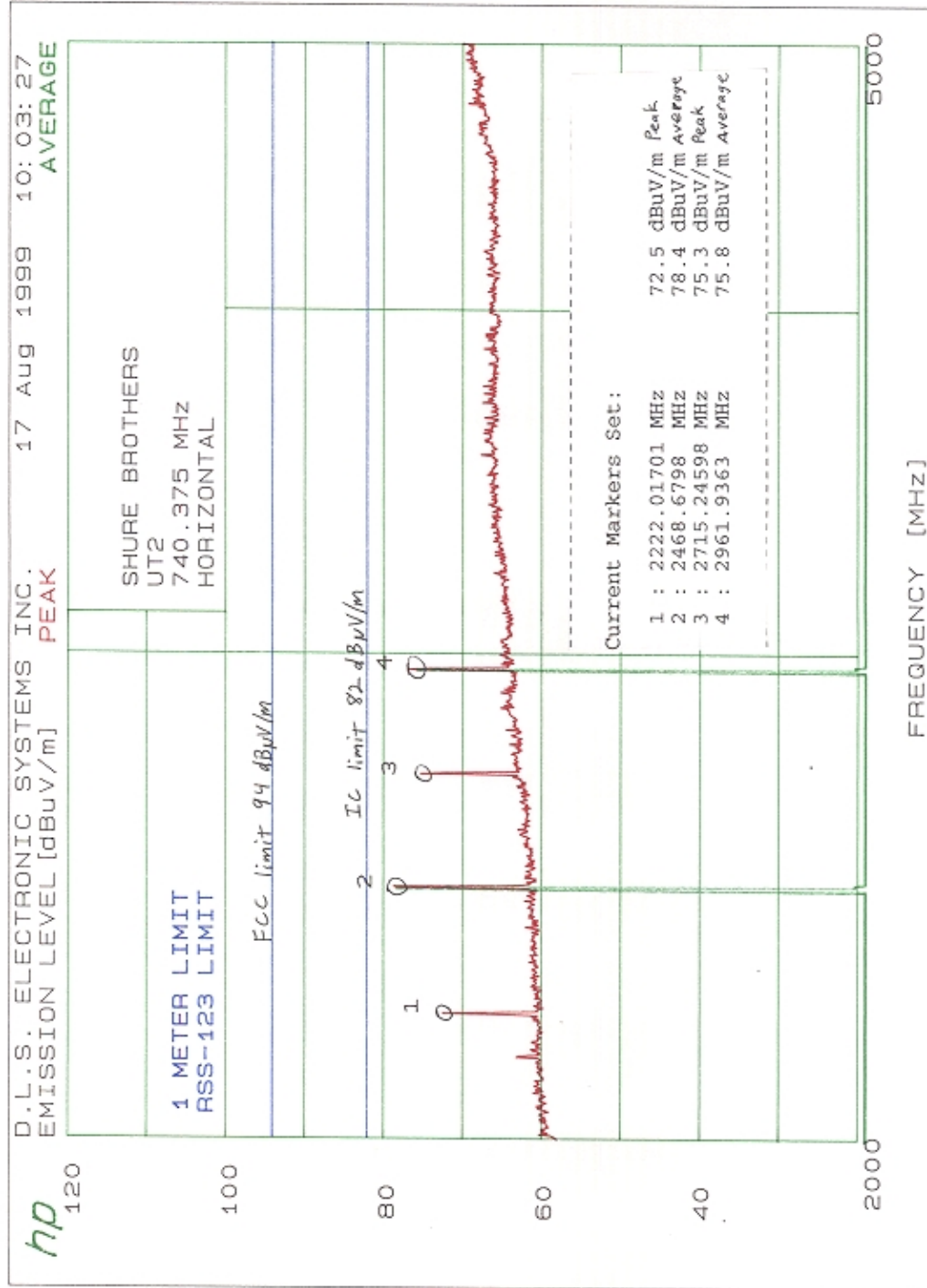
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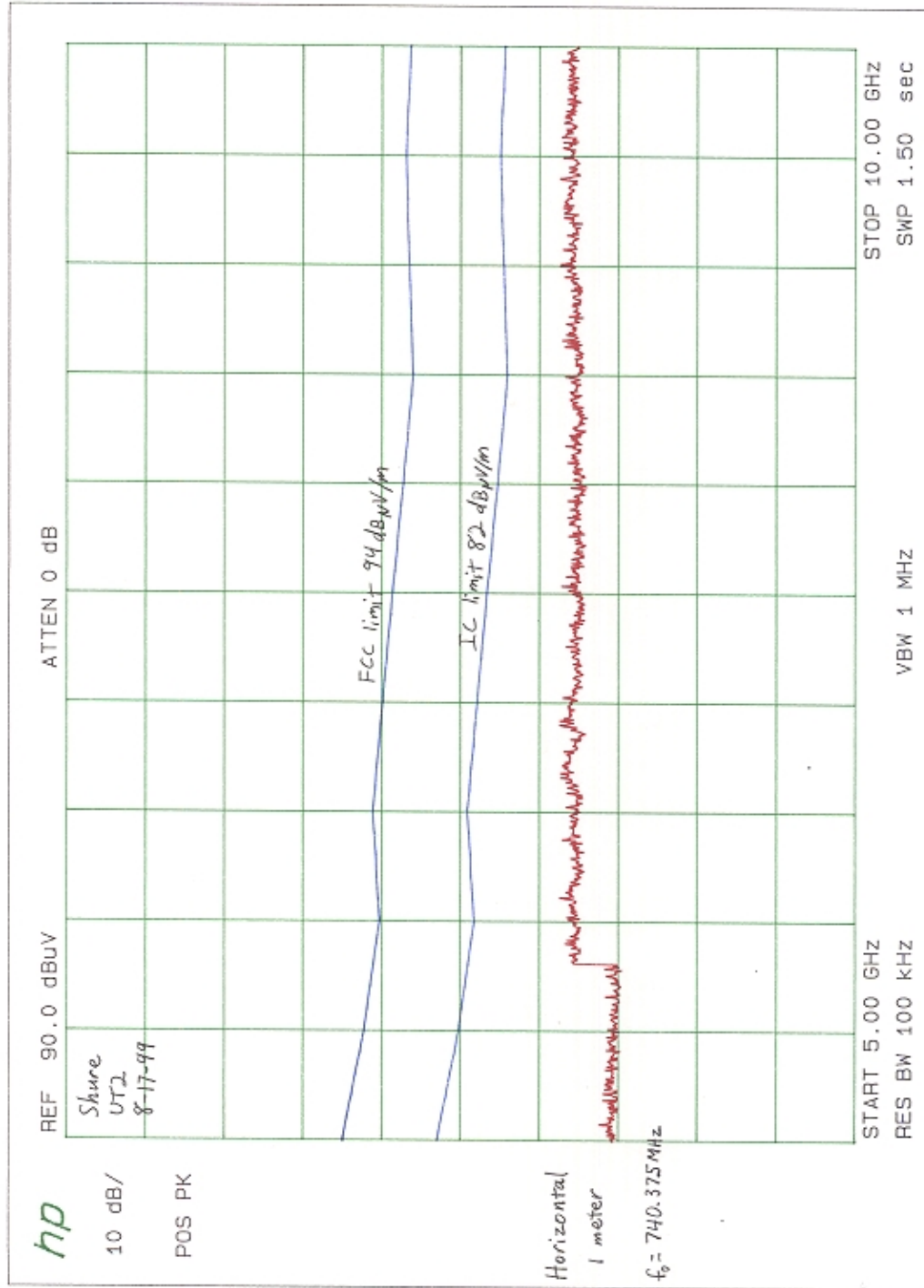
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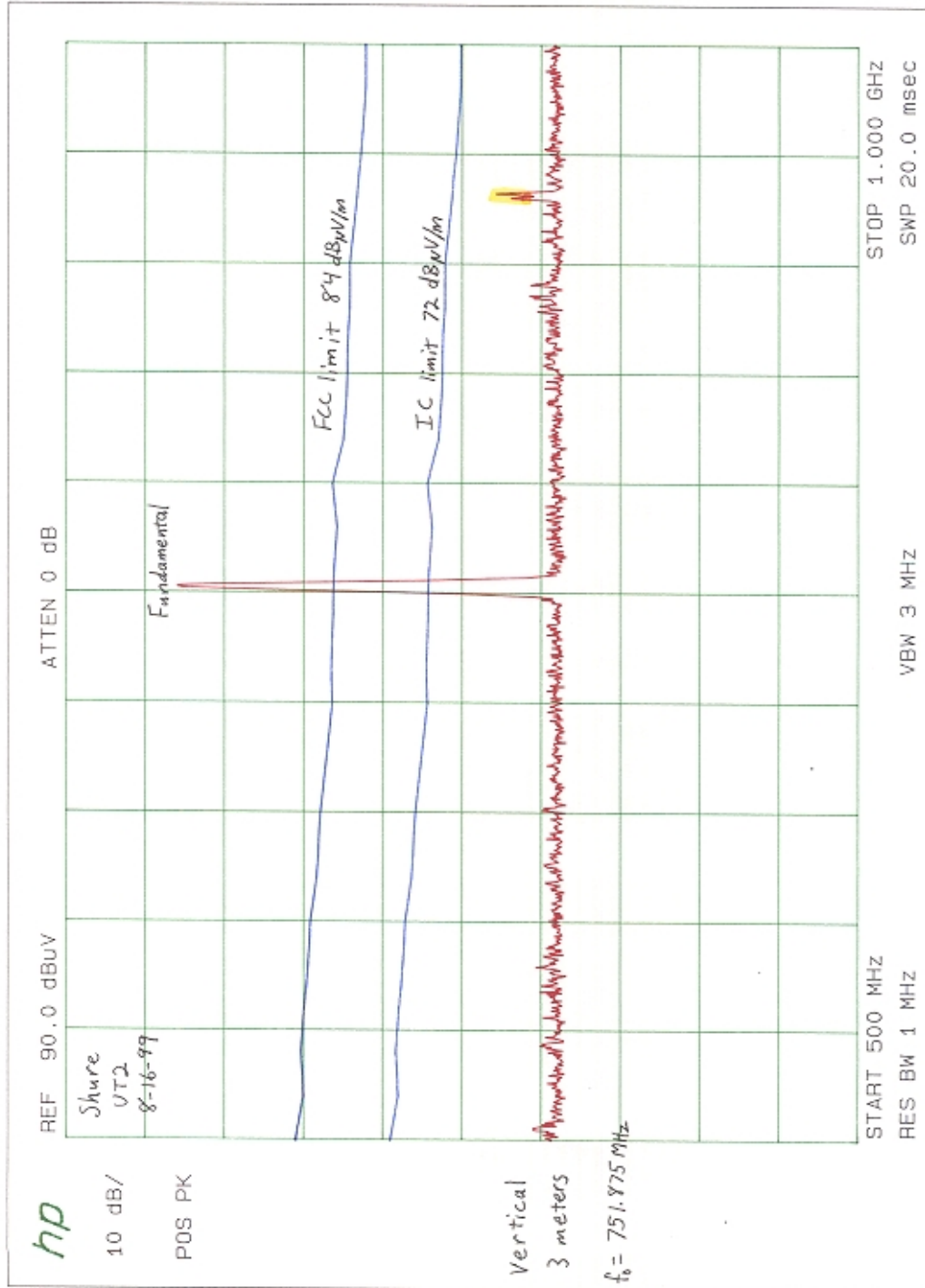
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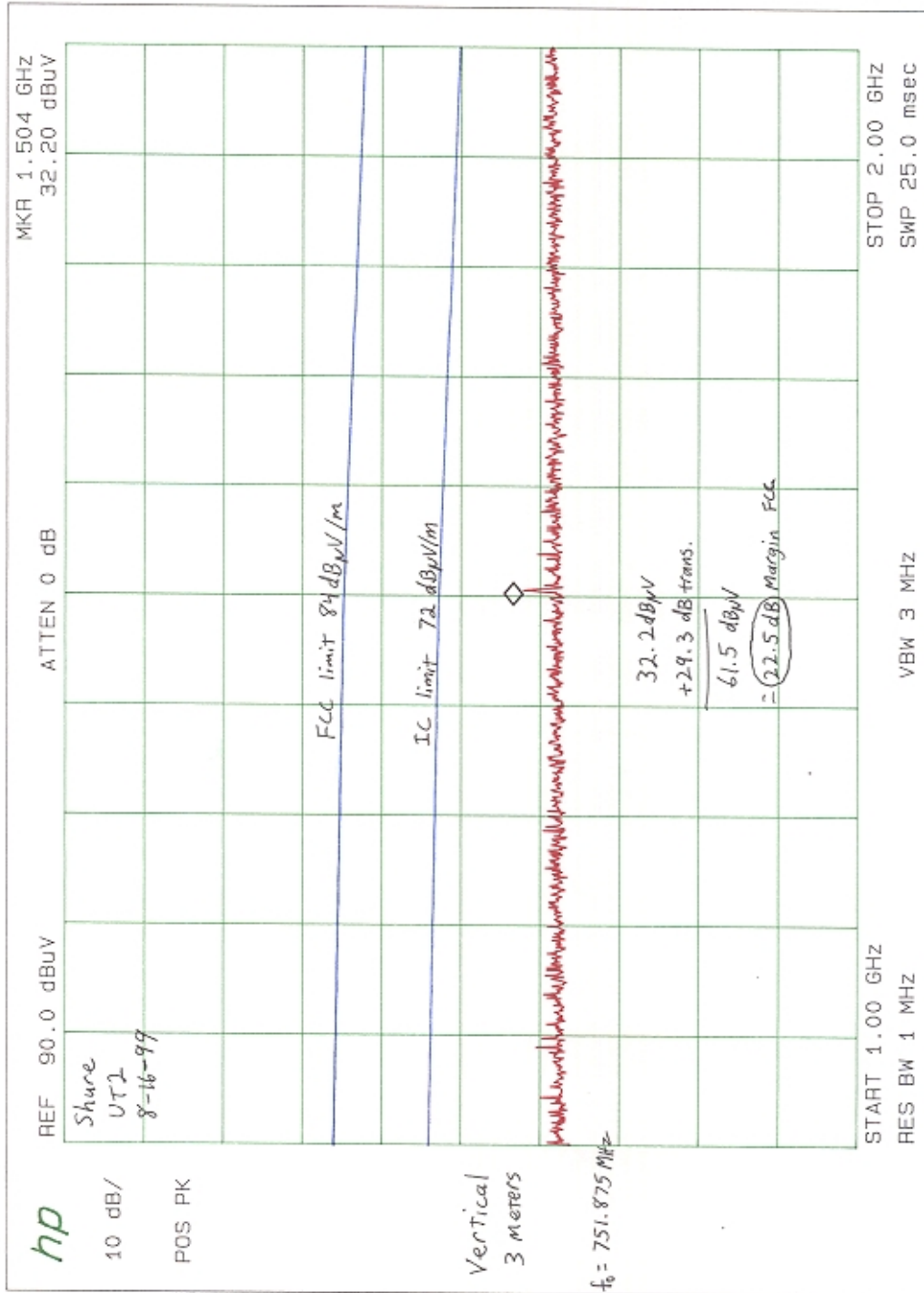
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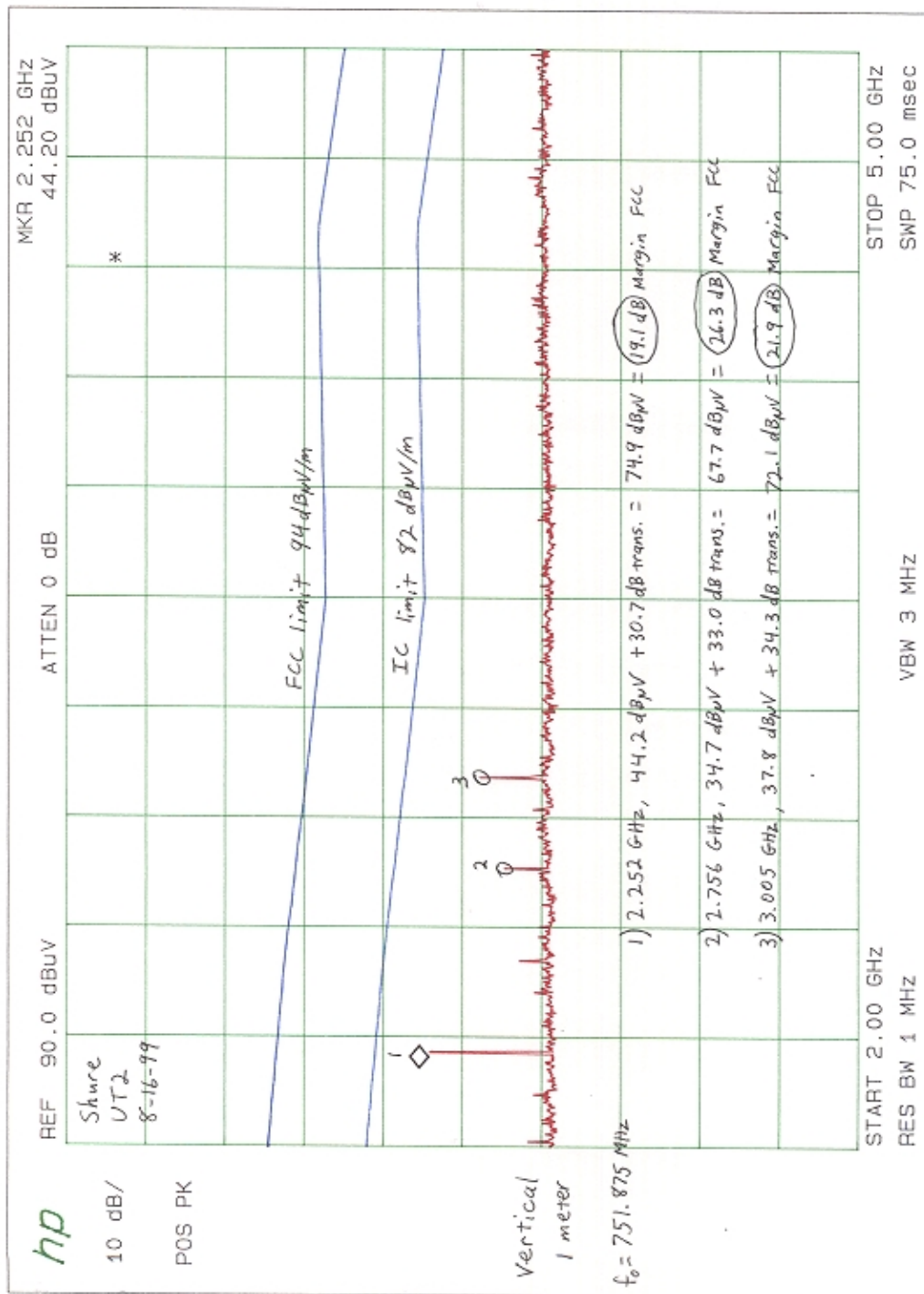
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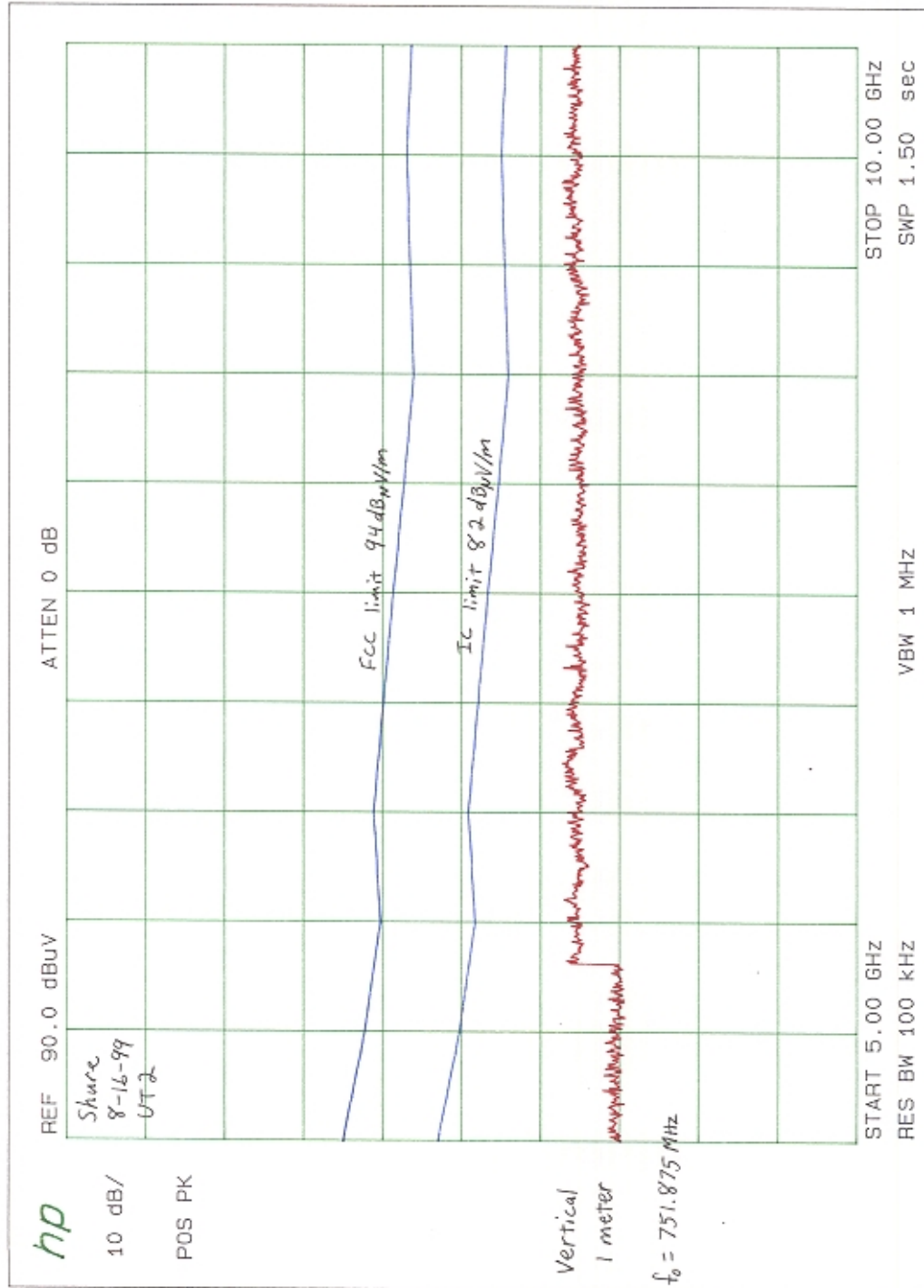
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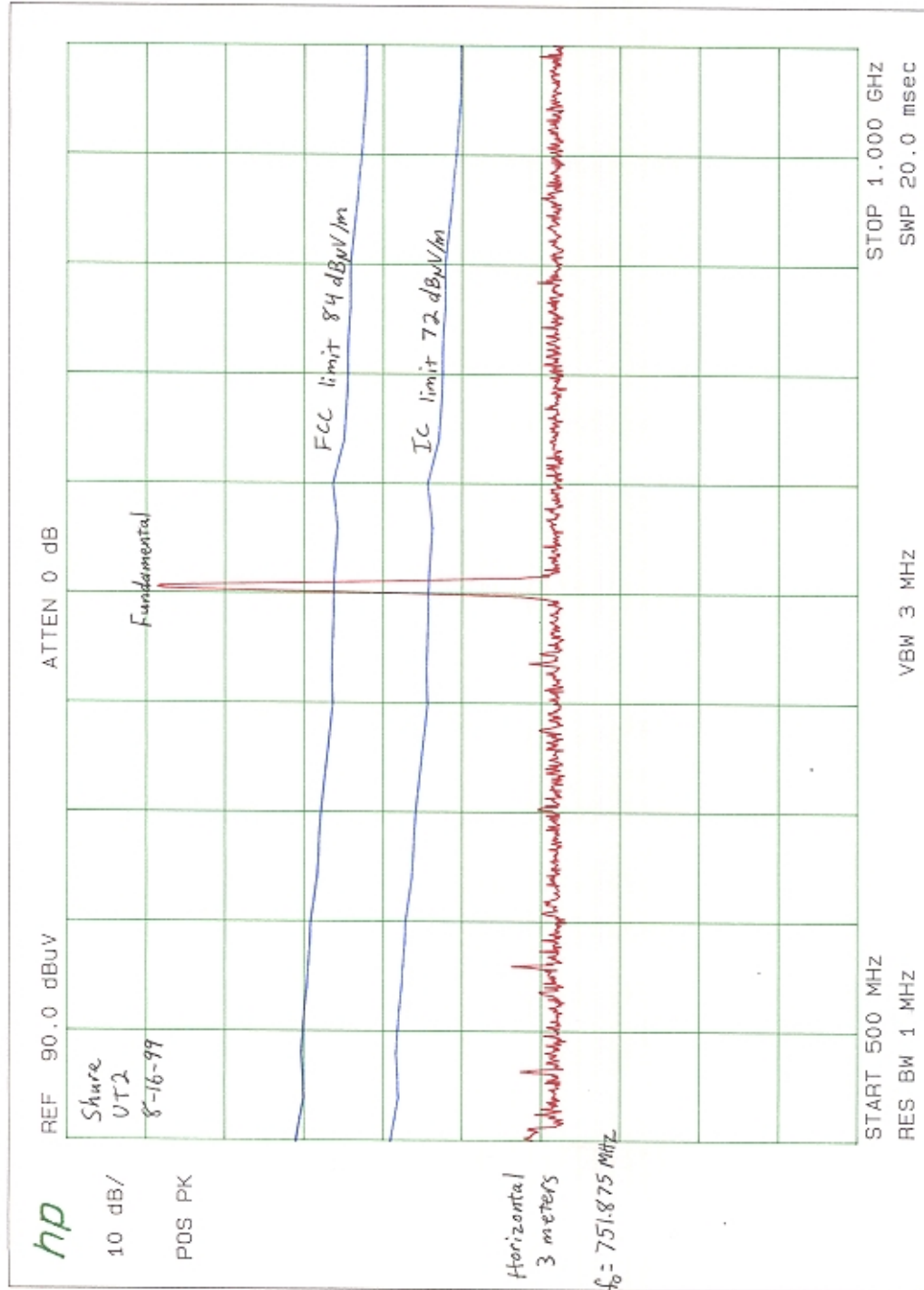
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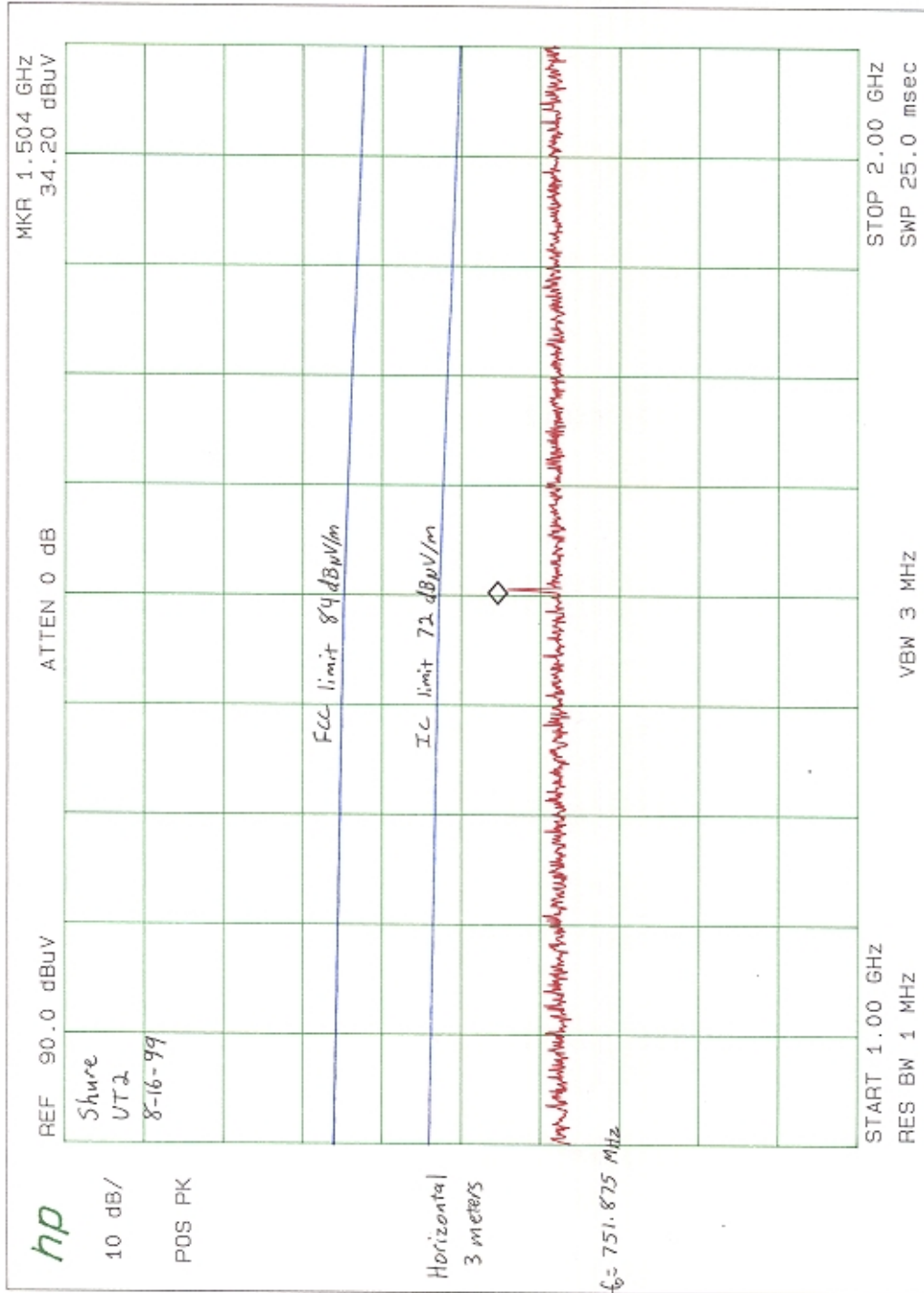
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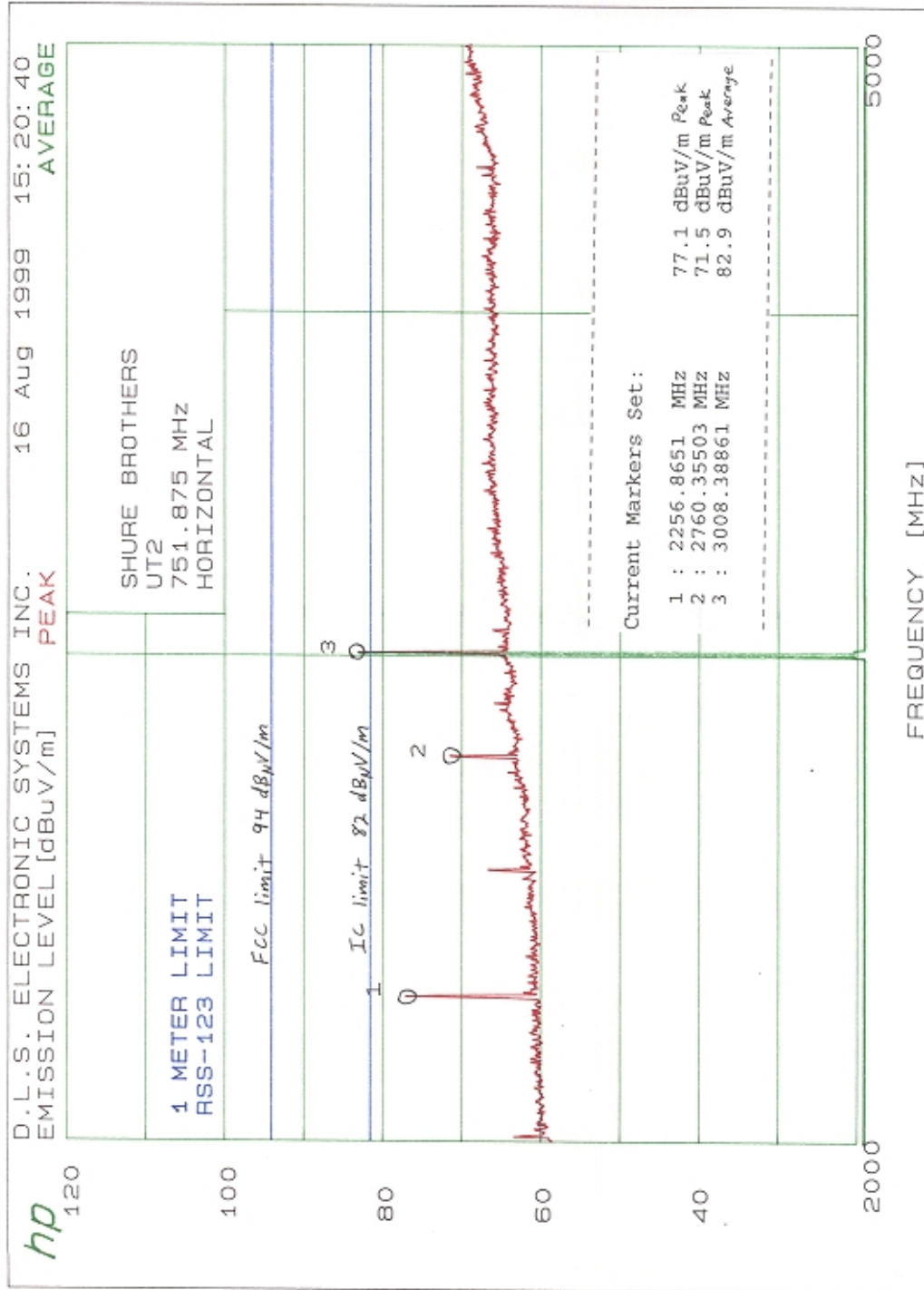
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