Measurement of RF Interference from a Model No. CHYBT13xxx Chery BlueTooth Handsfree Kit Transmitter

For	:	Continental Automotive Systems
	:	21440 West Lake Cook Road
	:	Deer Park, IL
P.O. No.	:	4510145458
Date Received	:	March 18, 2008
Date Tested	:	March 18 through March 28, 2008
Test Personnel	:	Richard E. King
Specification	:	FCC Part 15, Subpart C, Section 15.247 for Frequency Hopping Spread Spectrum Intentional Radiators within the 2400-2483.5MHz band.
	:	Industry Canada RSS-210

Test Report By : RICHARD E. KING
Richard E. King

Witnessed By : Eric Fritz
Continental Automotive Systems

Approved By : Raymond J. Klouda
Raymond J. Klouda
Registered Professional Engineer of Illinois - 44894

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REVISION HISTORY

Revision	Date	Description
—	04/14/2008	Initial release

Measurement of RF Emissions from a Continental Automotive Systems Chery BlueTooth Handsfree Kit, Part No. CHYBT13xxx transmitter

1 INTRODUCTION

1.1 Scope of Tests

This document represents the results of the series of radio interference measurements performed on a Chery BlueTooth Handsfree Kit, Part No. CHYBT13xxx, Serial No. CHYBT0000535 transmitter (hereinafter referred to as the test item). The test item is a BlueTooth hybrid spread spectrum transmitter. The transmitter was designed to transmit in 2400-2483.5 MHz, band using an internal antenna. The test item was manufactured and submitted for testing by Continental Automotive Systems located in Deer Park, IL.

1.2 Purpose

The test series was performed to determine if the test item meets the conducted and radiated RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Section 15.247 for Intentional Radiators and Industry Canada's RSS-210 for Low-power License-exempt radio communication devices. Testing was performed in accordance with ANSI C63.4-2003.

1.3 Deviations, Additions and Exclusions

There were no deviations, additions to, or exclusions from the test specification during this test series

1.4 EMC Laboratory Identification

This series of tests was performed by Elite Electronic Engineering Incorporated of Downers Grove, Illinois. The laboratory is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP Lab Code: 100278-0.

1.5 Laboratory Conditions

The temperature at the time of the test was 22.1°C and the relative humidity was 22%.

2 APPLICABLE DOCUMENTS

The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 15, Subpart C, dated 1 October 2007

- ANSI C63.4-2003, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz
  - to 40 GHz"

- Industry Canada RSS-210, Issue 7, June 2007, "Spectrum Management and
  - Telecommunications Radio Standards Specification, Low-power License-exempt radio communication devices (All Frequency Bands): Category I Equipment"

- Industry Canada RSS-GEN, Issue 2, June 2007, "Spectrum Management and Telecommunications Radio Standards Specification, General Requirements and Information for the Certification of radio communication equipment"

3 TEST ITEM SET-UP AND OPERATION

3.1 General Description

The test item is a Chery BlueTooth Handsfree Kit BlueTooth hybrid spread spectrum transmitter, Part No.

CHYBT13xxx. A block diagram of the test item setup is shown as Figure 1.

3.1.1 Power Input

The test item obtained 13.5VDC from an external power supply simulating the typical power input from an automotive battery.

3.1.2 Peripheral Equipment

No peripheral equipment was required to operate the test item.

3.1.3 Interconnect Cables

The following interconnect cables were submitted with the test item:

Item	Description
Cable harness	2.5 foot long wiring harness from the test item to the power source.

3.1.4 Grounding

The test item was grounded through the return lead of the power supply simulating typical input power in an automobile.

3.2 Operational Mode

For all tests the test item was placed on an 80cm high non-conductive stand. The test item was energized. The test item could be programmed to operate in each of the following modes: transmit at 2402.0 MHz, 2441.0 MHz and 2480.0 MHz, frequency hopping enabled or inquiry.

3.3 Test Item Modifications

No modifications were required for compliance.

4 TEST FACILITY AND TEST INSTRUMENTATION

4.1 Shielded Enclosure

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. With the exception of the floor, the reflective surfaces of the shielded chamber are lined with ferrite tiles on the walls and ceiling. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2003 for site attenuation.

4.2 Test Instrumentation

The test instrumentation and auxiliary equipment used during the tests are listed in **Error! Reference source not found.**. All equipment was calibrated per the instruction manuals supplied by the manufacturer.

Conducted emission tests were performed with a spectrum analyzer in conjunction with a quasi-peak adapter. Radiated emissions were performed with a spectrum analyzer. This receiver allows measurements with the bandwidths specified by the FCC and with the quasi-peak detector function. The receiver bandwidth was 120 kHz for the 30 MHz to 1000 MHz radiated emissions data.

4.3 Calibration Traceability

Test equipment is maintained and calibrated on a regular basis. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.4 Measurement Uncertainty

All measurements are an estimate of their true value. The measurement uncertainty characterizes, with a specified confidence level, the spread of values which may be possible for a given measurement system. The measurement uncertainty for these tests is presented below:

Conducted Emission Measurements		
Combined Standard Uncertainty	1.07	-1.07
Expanded Uncertainty (95% confidence)	2.1	-2.1

Radiated Emission Measurements		
Combined Standard Uncertainty	2.26	-2.18
Expanded Uncertainty (95% confidence)	4.5	-4.4

5 TEST PROCEDURES

5.1 Powerline Conducted Emissions

5.1.1 Requirements

Since the test item is typically powered with 13.5VDC from an automotive battery, no conducted emissions tests are required.

5.2 Radiated Measurements

5.2.1 Requirements

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated emissions measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a).

Paragraph 15.209(a) has the following radiated emission limits:

Frequency MHz	Field Strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	3
30.0-88.0	100	3
88.0-216.0	150	3
216.0-960.0	200	3
Above 960	500	3

5.2.2 Procedures

Radiated measurements were performed in a 32ft. x 20ft. x 14ft. high semi anechoic chamber. The radiated emissions were investigated over the frequency range of 30 MHz to 24.0 GHz.

1) For all harmonics not in the restricted bands, the following procedure was used:

   a) The field strength of the fundamental was measured using a double ridged waveguide antenna. The waveguide antenna was positioned at a 3 meter distance from the test item. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.

b) The field strengths of all of the harmonics not in the restricted band were then measured using a double-ridged waveguide antenna. The waveguide antenna was positioned at a 3 meter distance from the test item. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.

c) To ensure that maximum or worst case emission levels were measured, the following steps were taken when measuring the fundamental emissions and the spurious emissions:

i) The test item was rotated so that all of its sides were exposed to the receiving antenna.

ii) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.

iii) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.

iv) In instances were it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer. The measuring antenna was not raised or lowered to ensure maximized readings, instead the test item was rotated through all axis to ensure the maximum readings were recorded for the test item.

d) All harmonics not in the restricted bands must be at least 20 dB below level measured at the fundamental. However, attenuation below the general limits specified in §15.209(a) is not required.

2) For all emissions in the restricted bands, the following procedure was used:

a) The field strengths of all emissions below 1 GHz were measured using a bi-log antenna. The bi-log antenna was positioned at a 3 meter distance from the test item. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.

b) The field strengths of all emissions above 1 GHz were measured using a double-ridged waveguide antenna. The waveguide antenna was positioned at a 3 meter distance from the test item. A peak detector with a resolution bandwidth of 1 MHz was used on the spectrum analyzer.

c) To ensure that maximum or worst case emission levels were measured, the following steps were taken when taking all measurements:

i) The test item was rotated so that all of its sides were exposed to the receiving antenna.

ii) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.

iii) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.

iv) In instances were it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer. The measuring antenna was not raised or lowered to ensure maximized readings, instead the test item was rotated through all axis to ensure the maximum readings were recorded for the test item.

d) For all radiated emissions measurements below 1 GHz, if the peak reading is below the limits listed in 15.209(a), no further measurements are required. If however, the peak readings exceed the limits listed in 15.209(a), then the emissions are remeasured using a quasi-peak detector.

e) For all radiated emissions measurements above 1 GHz, the peak readings must comply with the 15.35(b) limits. 15.35(b) states that when average radiated emissions measurements are specified, there also is a limit on the peak level of the radiated emissions. The limit on the peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. Therefore all peak readings above 1 GHz must be no greater than 20 dB above the limits specified in 15.209(a).

5.2.3 Results

The preliminary radiated emissions plots are presented on pages 17 through 46. Factors for the antennas and cables were added to the data before it was plotted. This data is only presented for a reference, and is not used as official data. Final radiated emissions data are presented on data pages 47 through 52. As can be seen from the data, all emissions measured from the test item were within the specification limits. Photographs of the test configuration for radiated emission are shown as Figures 2.

5.3 20 dB Bandwidth

5.3.1 Requirements

Per section 15.247(a)(1), frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate within an output power no greater than 125 mW.

5.3.2 Procedures

The test item was setup inside the chamber. With the hopping function disabled, the test item was allowed to transmit continuously. The frequency hopping channel was set separately to low, middle, and high hopping channels. The resolution bandwidth (RBW) was set to > to 1% of the 20 dB BW.

The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined. The analyzer's display was plotted using a 'screen dump' utility.

5.3.3 Results

The plots on pages 53 through 55 show that the maximum 20 dB bandwidth was 823.6 kHz. The 99% bandwidth measurement was 864.66 kHz.

5.4 Carrier Frequency Separation

5.4.1 Requirements

Per section 15.247(a)(1), alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate within an output power no greater than 125 mW.

5.4.2 Procedures

The test item was setup inside the chamber. With the hopping function enabled, the test item was allowed to transmit continuously.

The resolution bandwidth (RBW) was set to > to 1% of the span. The peak detector and 'Max-Hold' function were engaged. The span was set wide enough to capture the peaks of at least two adjacent channels.
When the trace had stabilized after multiple scans, the marker-delta function was used to determine the separation between the peaks of the adjacent channels. The analyzer's display was plotted using a 'screen dump' utility.

5.4.3 Results

Page 56 shows the carrier frequency separation. As can be seen from this plot, the carrier frequency separation is 1.012 MHz which is greater than the 20 dB bandwidth of the hopping channel (823.6 kHz).

5.5 Number of Hopping Frequencies

5.5.1 Requirements

Per section 15.247(a)(1)(iii), frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping channels.

5.5.2 Procedures

The test item was setup inside the chamber. With the hopping function enabled, the test item was allowed to transmit continuously.

The resolution bandwidth (RBW) was set to > to 1% of the span. The peak detector and 'Max-Hold' function were engaged. The span was set wide enough to capture the entire frequency band of operation.

The test item's signal was allowed to stabilize after multiple scans. The number of hopping frequencies was counted. The analyzer's display was plotted using a 'screen dump' utility.

5.5.3 Results

Page 57 shows the number of hopping frequencies. As can be seen from this plot, the number of hopping frequencies is 79 which is greater than the minimum number of required hopping frequencies for systems operating in the 2400-2483.5 MHz band.

5.6 Time of Occupancy

5.6.1 Requirements

Per section 15.247(a)(1)(iii), for frequency hopping systems operating in the 2400-2483.5 MHz band, the average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

5.6.2 Procedures

The test item was setup inside the chamber. With the hopping function enabled, the test item was allowed to transmit continuously.

The resolution bandwidth (RBW) was set to 1 MHz. The peak detector and 'Max-Hold' function were engaged. With the span set to 0 Hz, the sweep time was adjusted to capture a single event in order to measure the dwell time per hop. The analyzer's display was plotted using a 'screen dump' utility. Then, the sweep time was expanded to greater then 0.4 seconds multiplied by the number of hopping channels employed (.4 seconds *79 hops = 31.6 seconds).

5.6.3 Results

Pages 58 through 61 show the plots for the time of occupancy (dwell time). As can be seen from the plots, the time of occupancy can be determined by 390.78 uS multiplied by 320 hops within a 31.6 second sweep. This calculated value is equal to 125.04 mS which is less than the 0.4 seconds maximum allowed.

5.7 Peak Output Power

5.7.1 Requirements

Per section 15.247(b)(1), for frequency hopping systems operating in the 2400-2483.5 MHz band and employing at least 75 non-overlapping hopping channels, the maximum peak output conducted power shall not be greater than 1 W (30 dBm). Per section 15.247(b)(4), this limit is based on the use of antennas with directional gains that do not exceed 6dBi. Since the limit allows for a 6 dBi antenna gain, the maximum EIRP can be increased by 6 dB to 4 Watt (36 dBm).

5.7.2 Procedures

The test item was placed on the non-conductive stand and set to transmit. A double ridged waveguide antenna was placed at a test distance of 3 meters from the test item. The test item was maximized for worst case emissions (or maximum output power) at the measuring antenna. The maximum meter reading was recorded. The peak power output was measured for the 2402.0 MHz, 2441.0 MHz and 2480.0 MHz hopping frequencies.

The equivalent power was determined from the field intensity levels measured at 3 meters using the substitution method. To determine the emission power, a second double ridged waveguide antenna was then set in place of the test item and connected to a calibrated signal generator. The output of the signal generator was adjusted to match the received level at the spectrum analyzer. The signal level was recorded. The reading was then corrected to compensate for cable loss and antenna gain, as required. The peak power output was calculated for 2402.0 MHz, 2441.0 MHz and 2480.0 MHz hopping frequencies.

5.7.3 Results

The results are presented on page 62. The maximum EIRP measured from the transmitter was 5.5 dBm or 400 mW which is below the 4 Watt (36 dBm) limit.

5.8 Bandedge Compliance

5.8.1 Requirements

Per section 15.247(d), the emissions at the bandedges must be at least 20 dB below the highest level measured within the band but attenuation below the general limits listed in 15.209(a) is not required. In addition, the radiated emissions which fall in the restricted band beginning at 2483.5 MHz must meet the general limits of 15.209(a).

5.8.2 Procedures

1) The test item was placed in the test chamber.
2) The test item was set to transmit continuously at the channel closest to the low band-edge (hopping function disabled).
3) The meter reading was recorded.
4) To determine the bandedge compliance, the following spectrum analyzer settings were used:
    a) Center frequency = low band-edge frequency.
    b) Span = Wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation.
    c) Resolution bandwidth (RBW) = 100 kHz (at least 1% of the span).
    d) The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined.
    e) The marker was set on the peak of the in-band emissions. A display line was placed 20 dB down from the peak of the in-band emissions. All emissions which fall outside of the authorized band of operation must be below the 20 dB down display line. (All emissions to the left of the center frequency (bandedge) must be below the display line.)
    f) The analyzer's display was plotted using a 'screen dump' utility.
5) Step 5) was repeated with the frequency hopping function enabled.
6) The test item was set to transmit continuously at the channel closest to the high band-edge (hopping function disabled).
7) The test item was maximized for worst case emissions at the measuring antenna. A peak reading was

taken with a resolution bandwidth of 1 MHz and a video bandwidth of 1 MHz or greater. An average reading was then taken with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz. The maximum peak and average meter readings were recorded.

8) To determine the bandedge compliance, the following spectrum analyzer settings were used:
    a) Center frequency = high band-edge frequency.
    b) Span = Wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation.
    c) Resolution bandwidth (RBW) = 100 kHz (at least 1% of the span).
    d) The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined.
    e) The marker was set on the peak of the in-band emissions. This level corresponds to the maximized peak reading previously taken. The "marker-delta" method described in Public Notice DA 00-705 was then used to determine bandedge compliance. The delta between the marker and the general limit (54 dBuV/m) was calculated by subtracting the general limit (54 dBuV/m) from the maximum reading taken with a 1 MHz bandwidth. This delta represents how far below the marker the emissions outside of the authorized band of operation must be. A display line was placed at this level. All emissions which fall outside of the authorized band of operation must be below the display line. (All emissions to the right of the center frequency (band-edge) must be below the display line.)
    f) The analyzer's display was plotted using a 'screen dump' utility.
9) The previous step was repeated with the frequency hopping function enabled.

5.8.3 Results

Pages 63 through 66 show the radiated band-edge compliance results. As can be seen from these plots, the emissions at the low end bandedge are within the 20 dB down limits. The emissions at the high end bandedge are within the general limits using the delta marker method.

5.9 Power Spectral Density

5.9.1 Requirements

Per section 15.247(d), the peak power spectral density from the intentional radiator shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.9.2 Procedures

The output of the test item was connected to the power meter through a 20 dB pad. The test item was put into inquiry mode. The resolution bandwidth (RBW) was initially set to 3MHz to set the reference level. Knowing the peak level, the result of this plot was used to determine the 8dBm limit. The resolution bandwidth (RBW) was set to 3kHz, the sweep time was set to the span divided by 3kHz (1 MHz/3kHz = 333 seconds). The peak detector and 'Max-Hold' function was engaged. The analyzer's display was plotted using a 'screen dump' utility.

5.9.3 Results

Data page 67 shows the power spectral density results. As can be seen from this plot, the peak power density is less than 8dBm in a 3kHz band during any time interval of continuous transmission.

6 CONCLUSIONS

It was determined that the Continental Automotive Systems Chery BlueTooth Handsfree Kit, Part No.

CHYBT13xxx BlueTooth hybrid spread spectrum transmitter, Serial No. CHYBT0000535, did fully meet the conducted and radiated emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.207 and 15.247 for Intentional Radiators Operating within the 2400-2483.5 MHz band, and Industry Canada’s RSS-210 for Low-power License-exempt radio communication devices when tested per ANSI C63.4-2003.

7 CERTIFICATION

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specifications.

The data presented in this test report pertains to the test item at the test date. Any electrical or mechanical modification made to the test item subsequent to the specified test date will serve to invalidate the data and void this certification.

8 ENDORSEMENT DISCLAIMER

This report must not be used to claim product endorsement by NVLAP or any agency of the US Government.

9 EQUIPMENT LIST

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
APW0	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-30-20G20R6G	PL2926/0646	20GHZ-26.5GHZ	11/30/2007	11/30/2008
APW3	PREAMPLIFIER	PLANAR ELECTRONICS	PE2-35-120-5R0-10-12	PL2924	1GHZ-20GHZ	11/30/2007	11/30/2008
CMA0	MULTI-DEVICE CONTROLLER	EMCO	2090	9701-1213	---	N/A	
NTA1	BILOG ANTENNA	CHASE EMC LTD.	BILOG CBL6112	2054	0.03-2GHZ	6/5/2007	6/5/2008
NWH 0	RIDGED WAVE GUIDE	TENSOR	4105	2081	1-12.4GHZ	10/13/2007	10/13/2008
NWI0	RIDGED WAVE GUIDE	AEL	H1498	153	2-18GHZ	10/13/2007	10/13/2008
NWI1	RIDGED WAVE GUIDE	AEL	H1498	154	2-18GHZ	10/13/2007	10/13/2008
RBB0	EMI TEST RECEIVER 20HZ TO 40 GHZ.	ROHDE & SCHWARZ	ESIB40	100250	20 HZ TO 40GHZ	11/5/2007	11/5/2008
XPR0	HIGH PASS FILTER	K&L MICROWAVE	11SH10-4800/X20000	001	4.8-20GHZ	7/23/2007	7/23/2008

I/O: Initial Only; N/A: Not Applicable; Note 1 - For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

Table 9-1: Equipment List

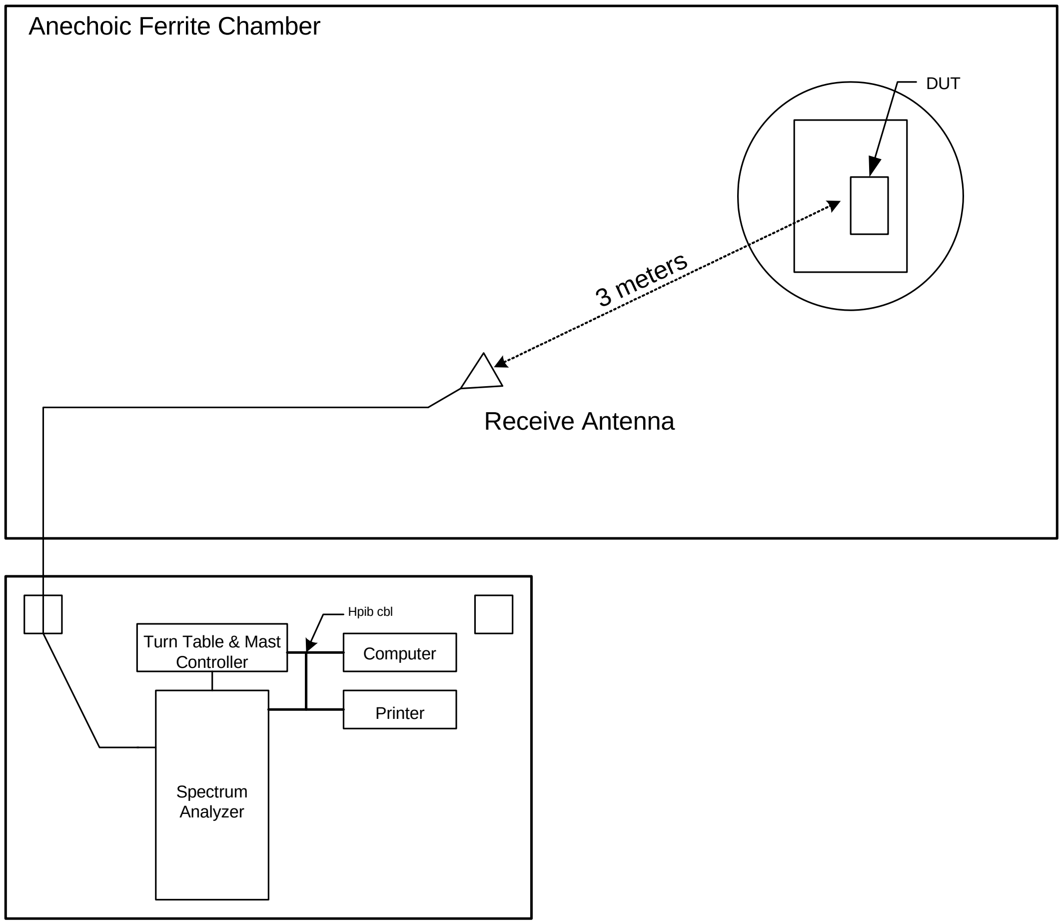
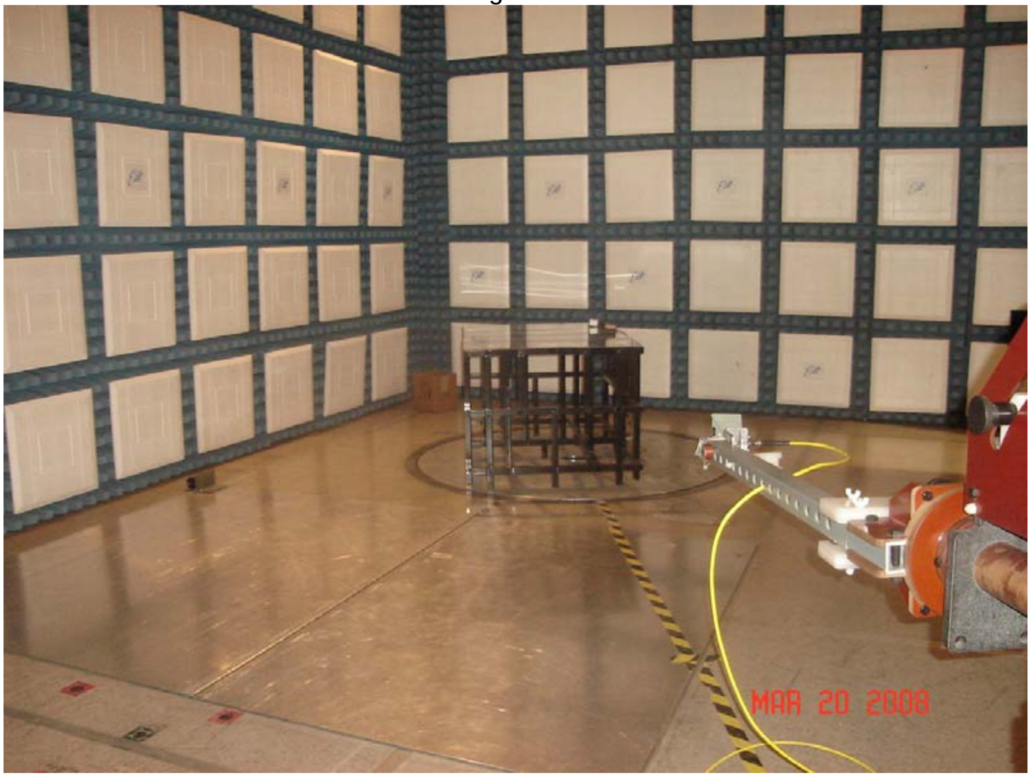


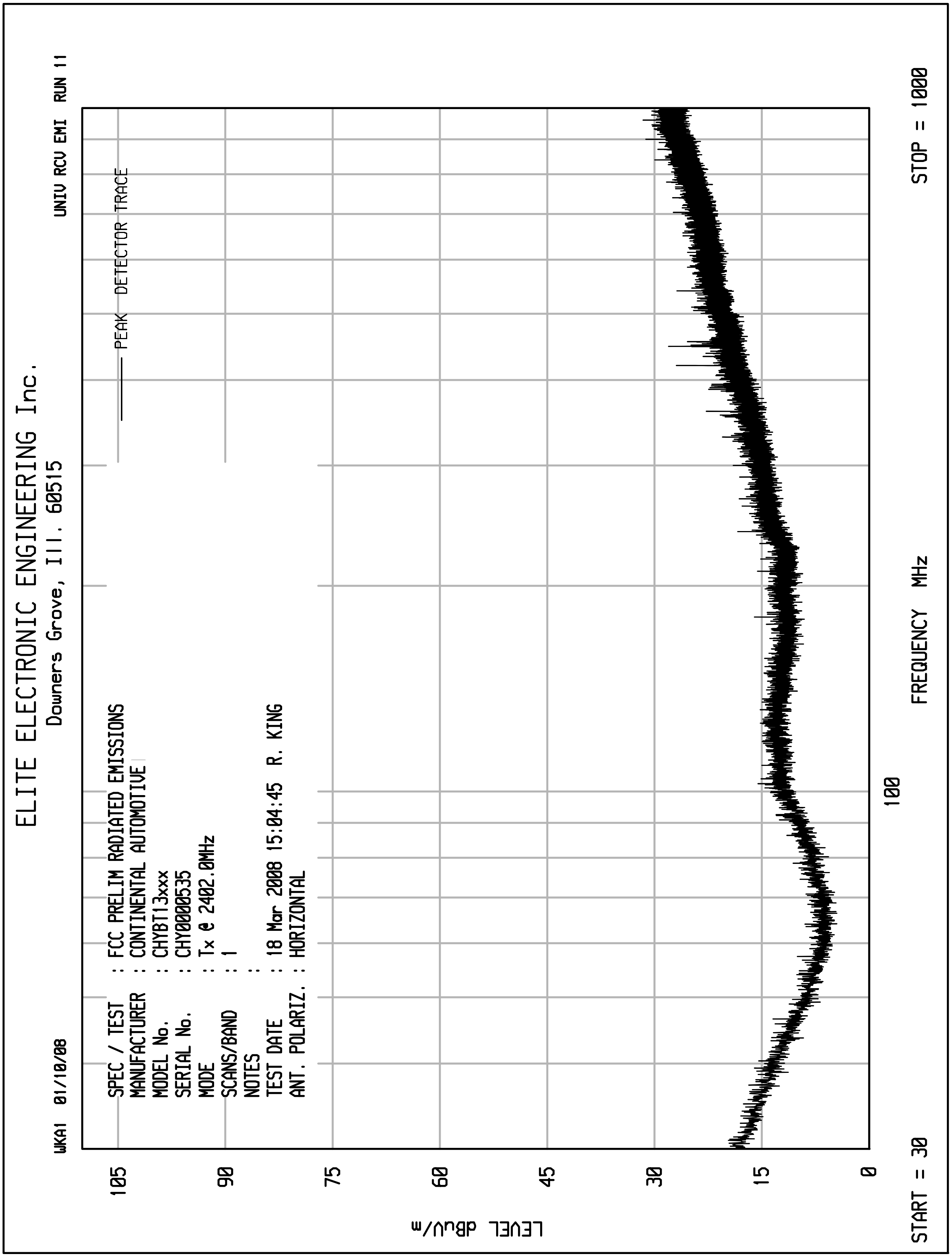
FIGURE 1 BLOCKDIAGRAM OF TEST SETUP

Figure 2



Test Set-up for Radiated Emissions – Horizontal Polarization

Test Set-up for Radiated Emissions – Vertical Polarization


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 01/10/08
UNIV RCV EMI RUN 11
SPEC / TEST : FCC PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2402.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 18 Mar 2008 15:04:45 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
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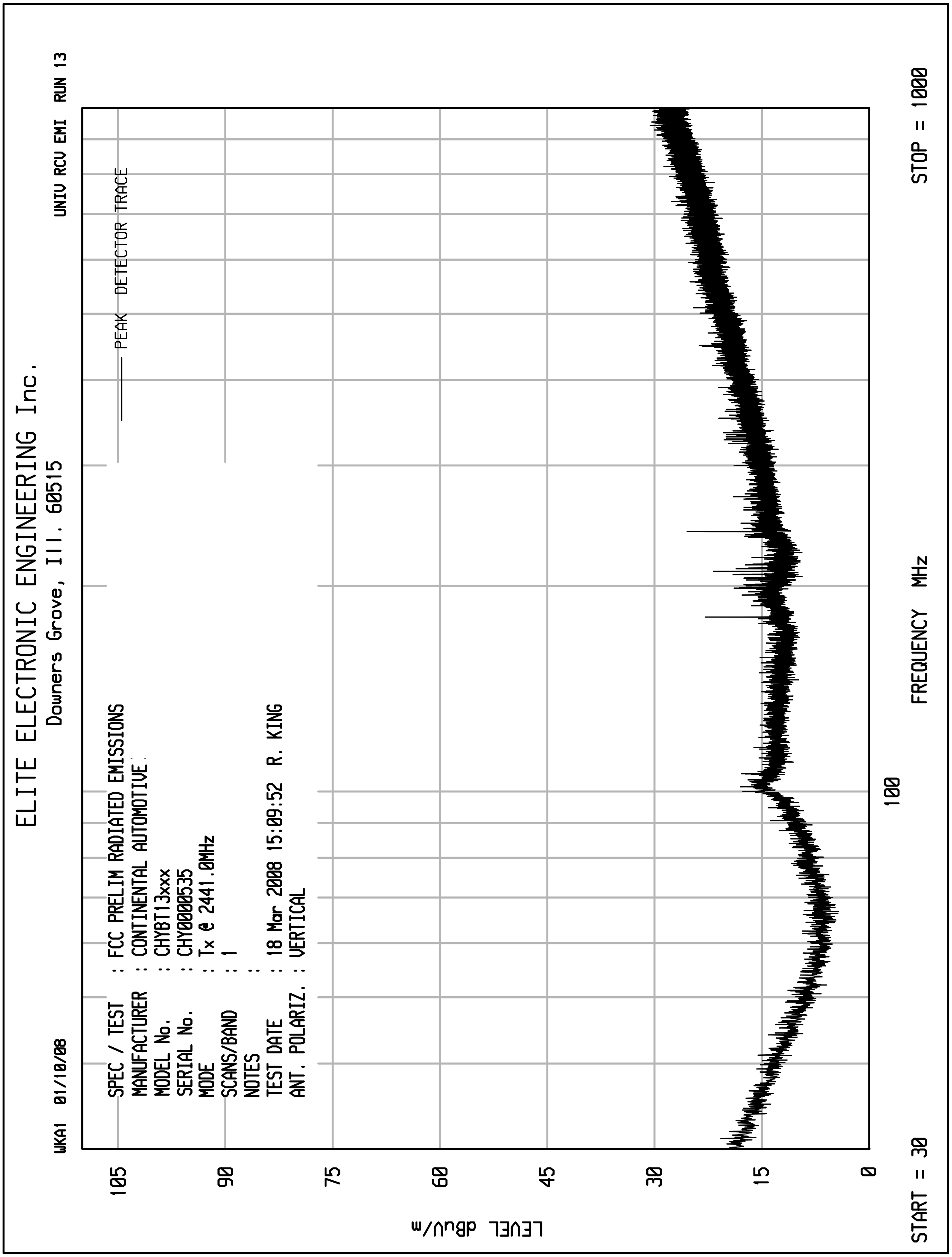
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000



ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UKA1 01/10/08
UNIV RCV EMI RUN 13
SPEC / TEST : FCC PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY0000535
MODE : Tx @ 2441.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 18 Mar 2008 15:09:52 R. KING
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60
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15
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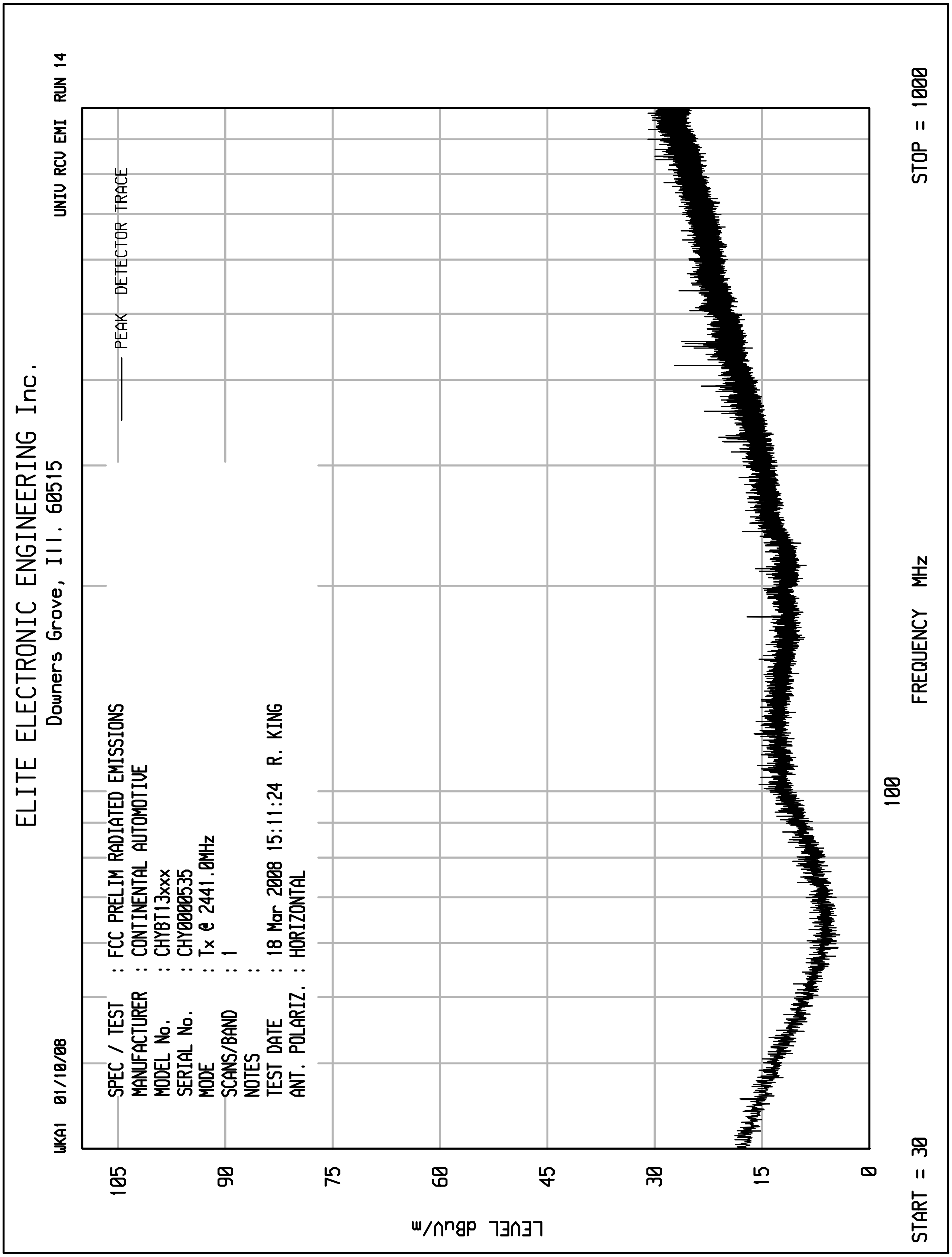
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ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
PEAK DETECTOR TRACE
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MANUFACTURER : CONTINENTAL AUTOMOTIVE
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SERIAL No. : CHY000535
MODE : Tx @ 2441.0MHz
SCANS/BAND : 1
NOTES :
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60
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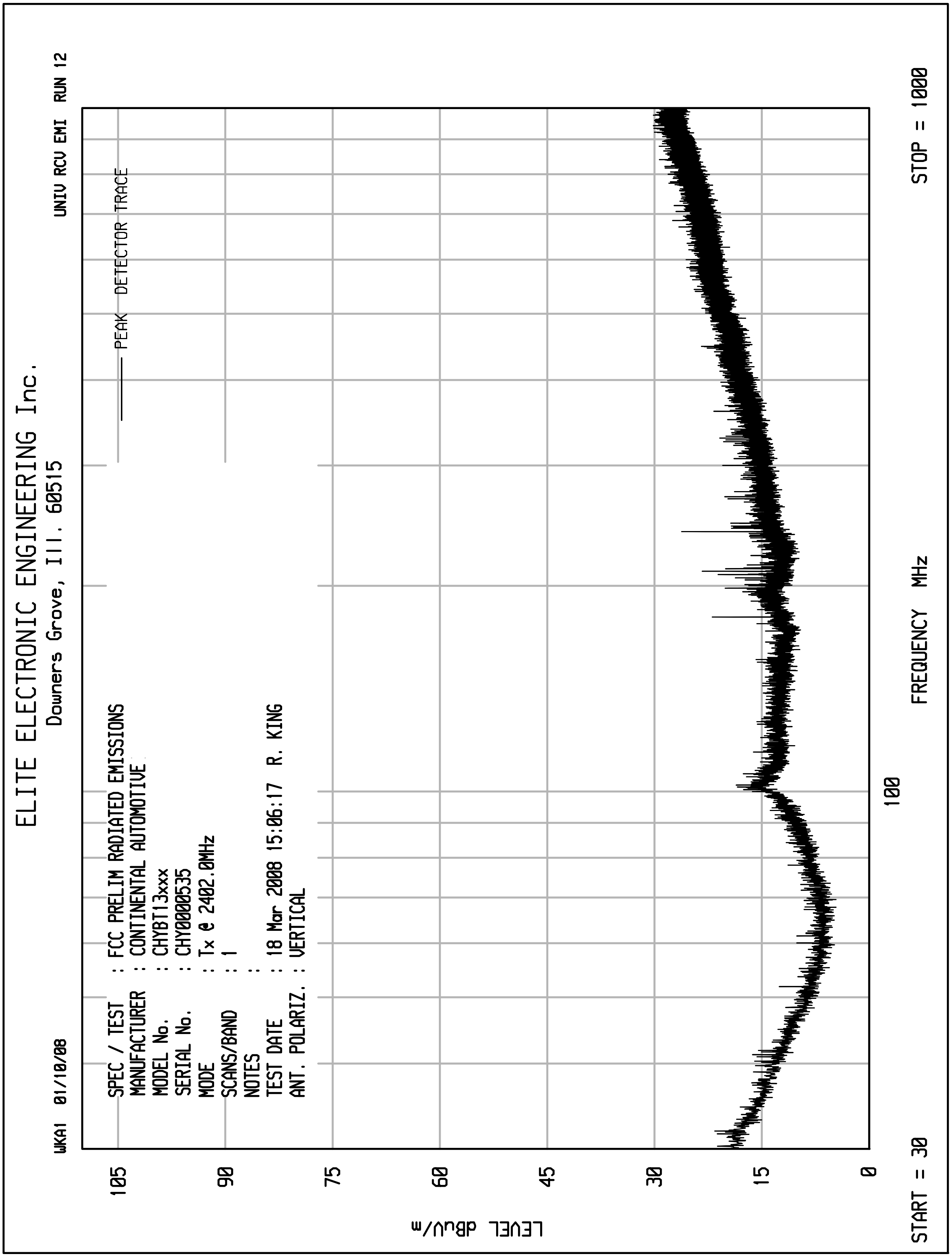
FREQUENCY MHz
STOP = 1000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 01/10/08
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SPEC / TEST : FCC PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTAL AUTOMOTIVE
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SERIAL No. : CHY000535
MODE : Tx @ 2402.0MHz
SCANS/BAND : 1
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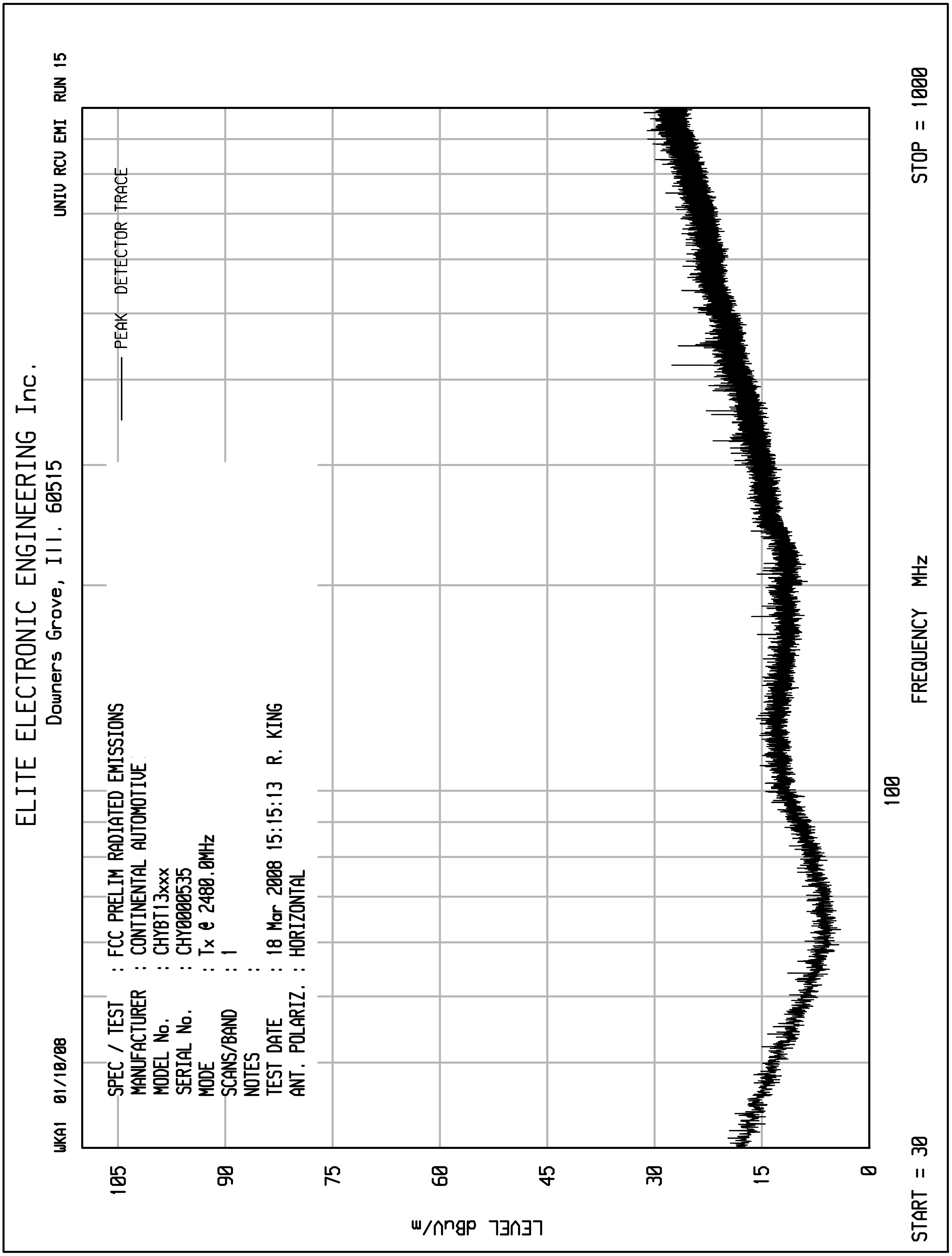
FREQUENCY MHz
STOP = 1000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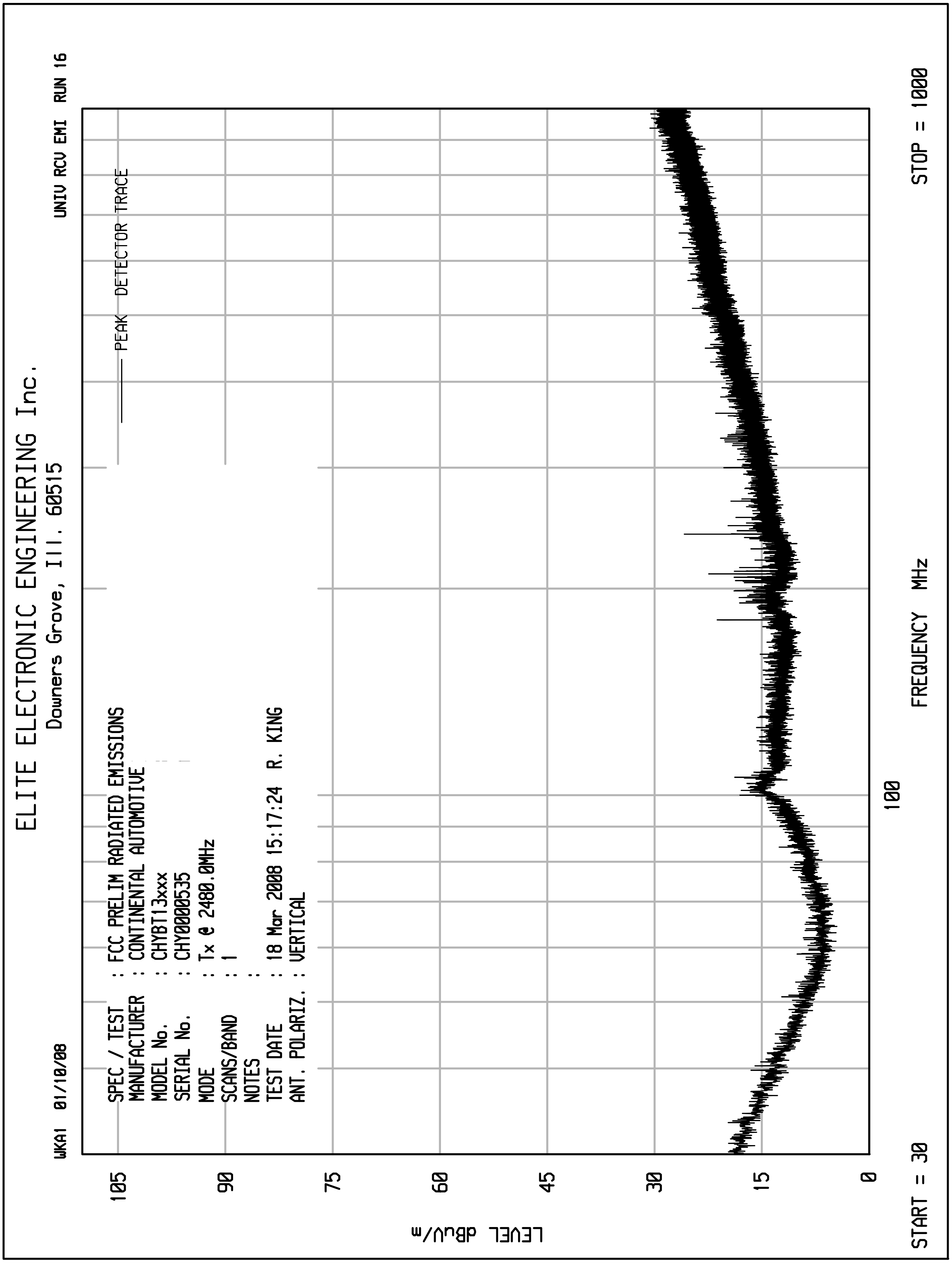
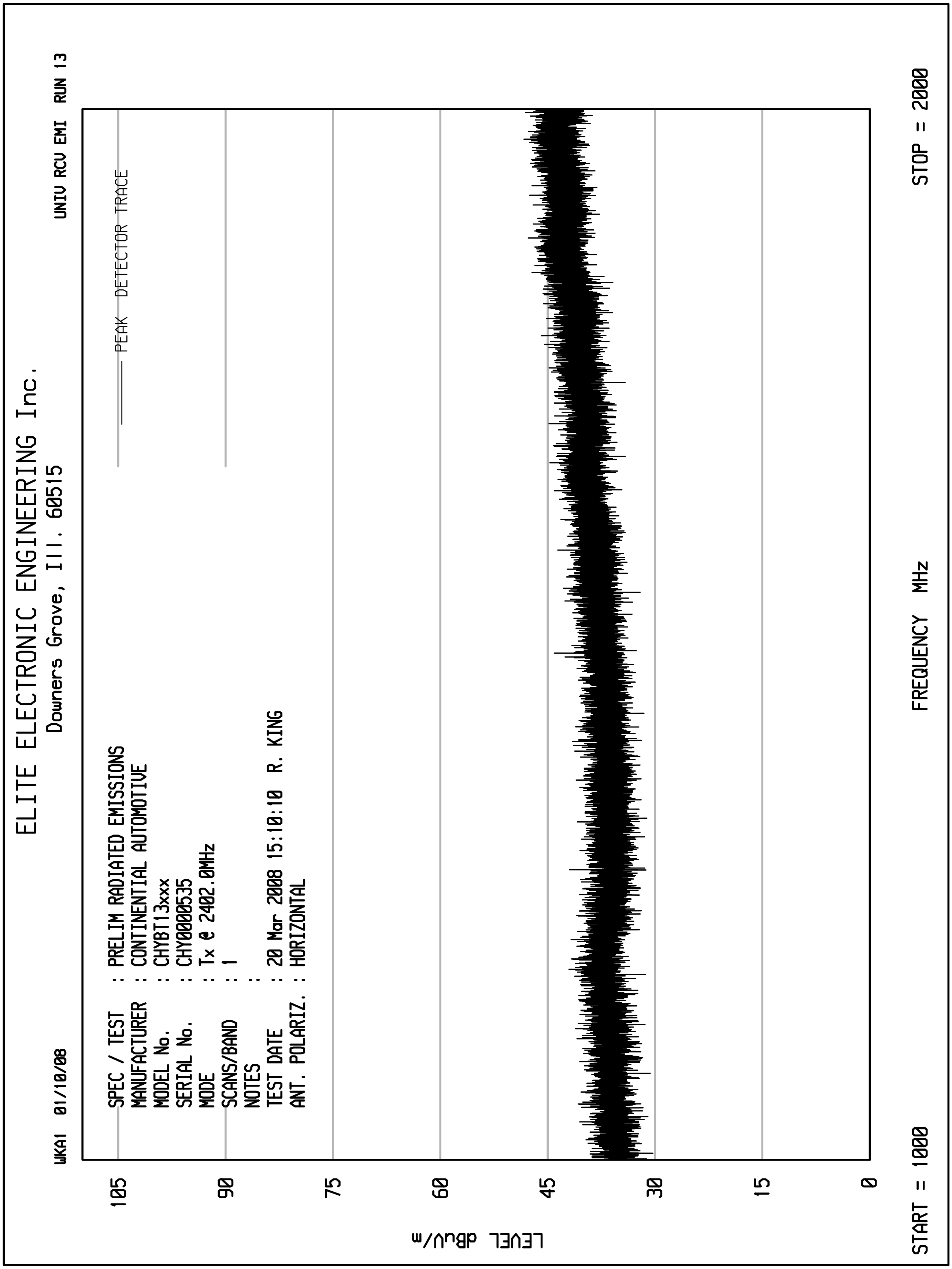
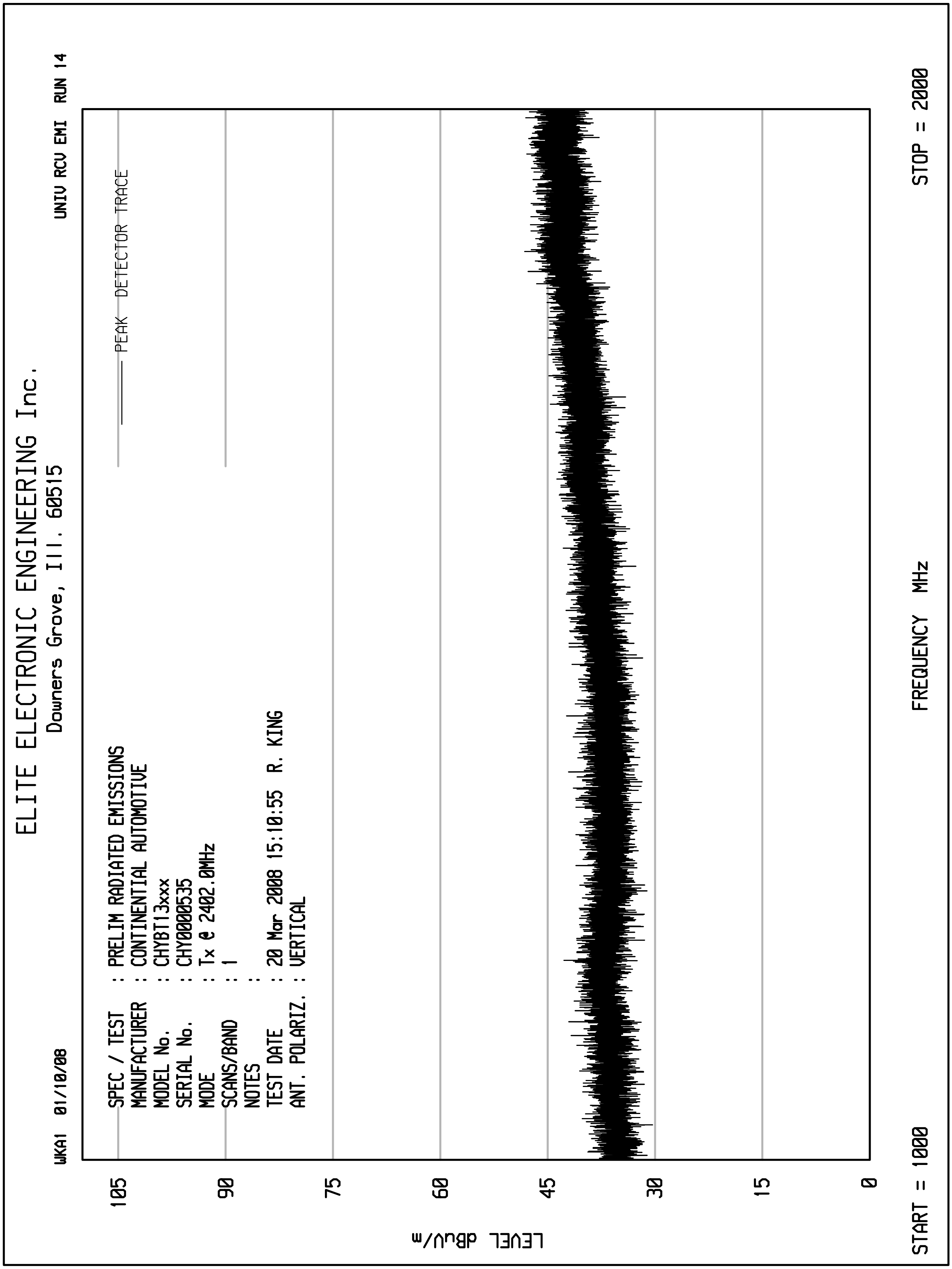
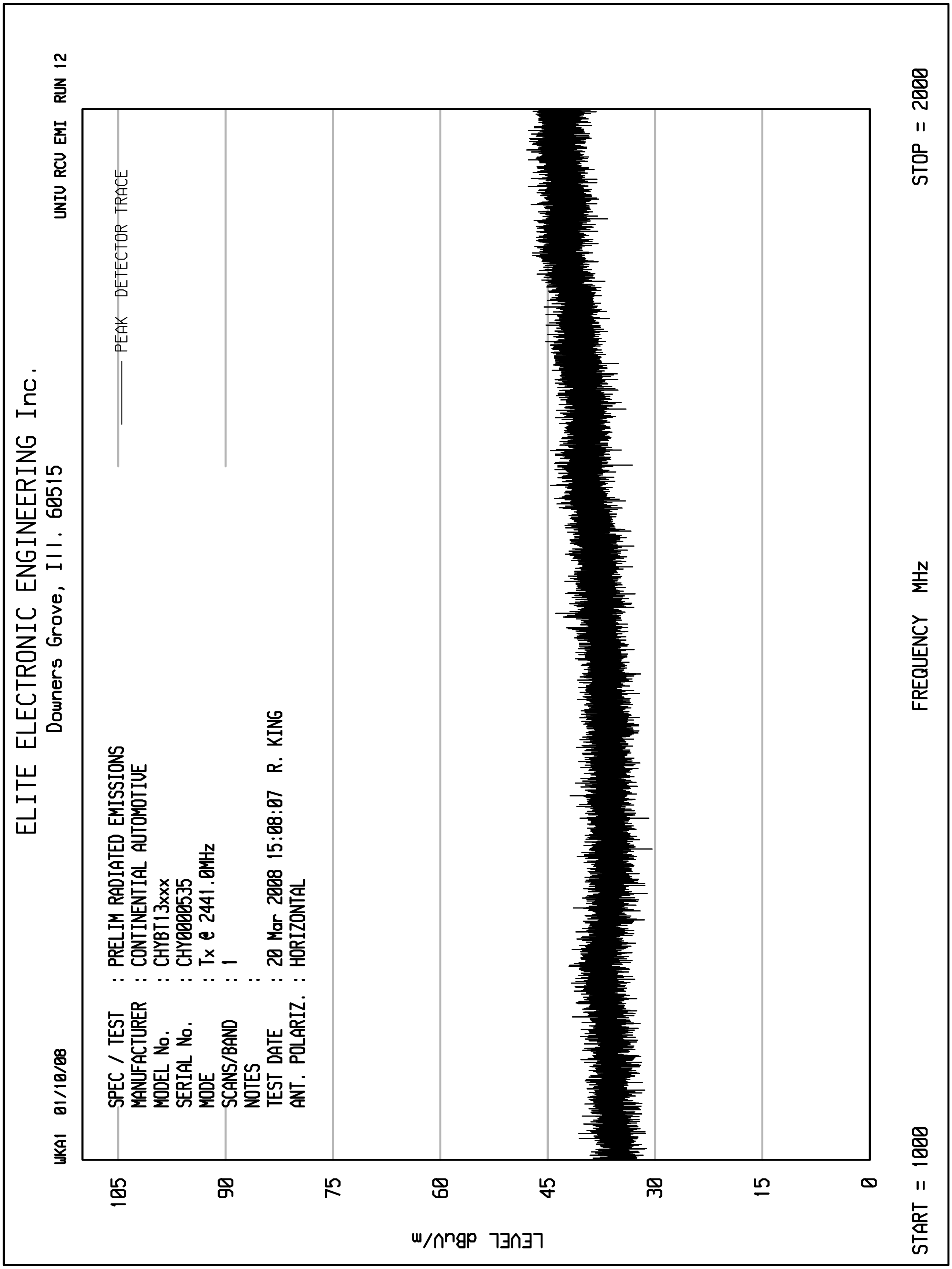
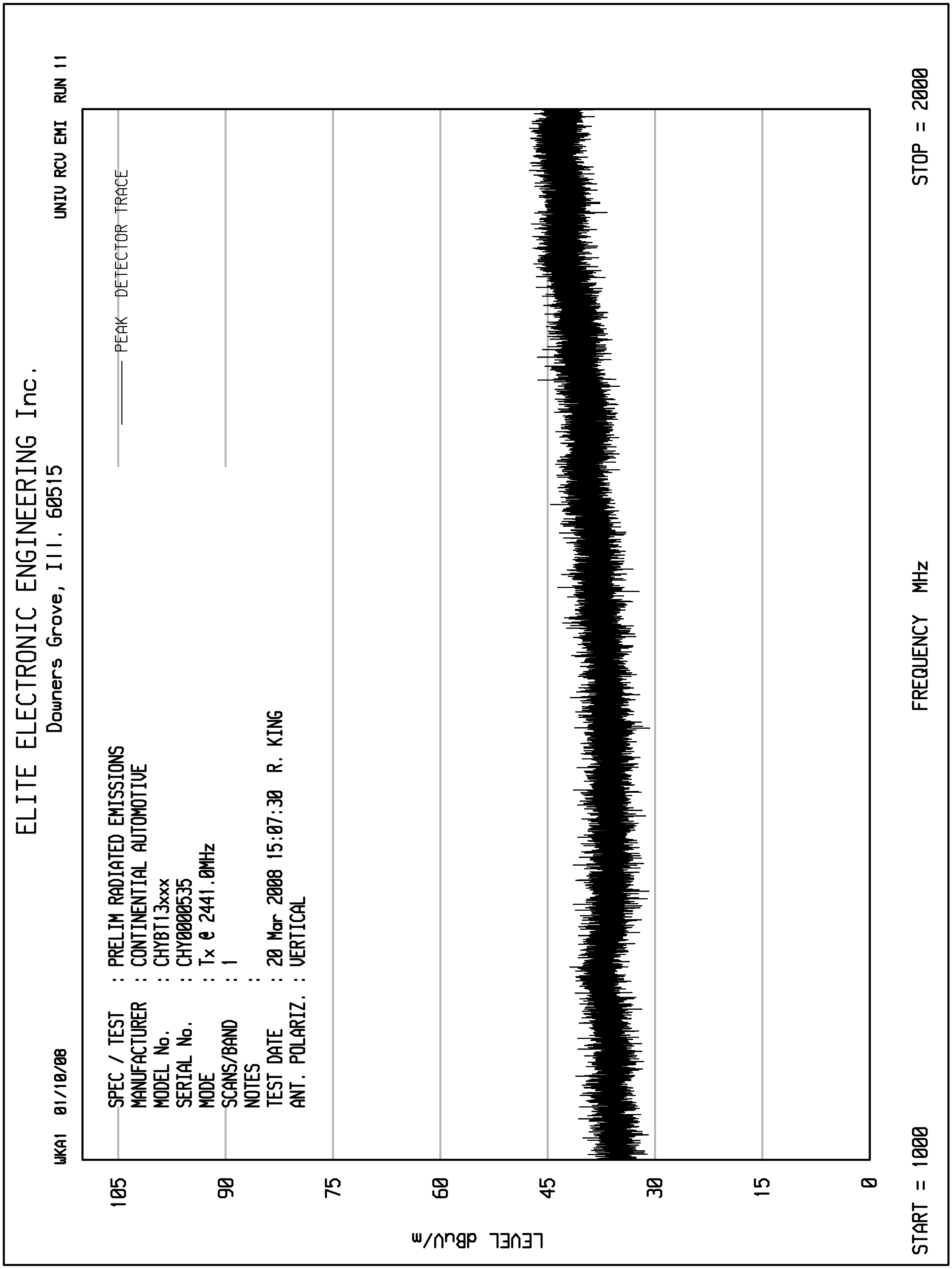
Downers Grove, Ill. 60515
WKA1 01/10/08
UNIV RCV EMI RUN 15
SPEC / TEST : FCC PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2480.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 18 Mar 2008 15:15:13 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

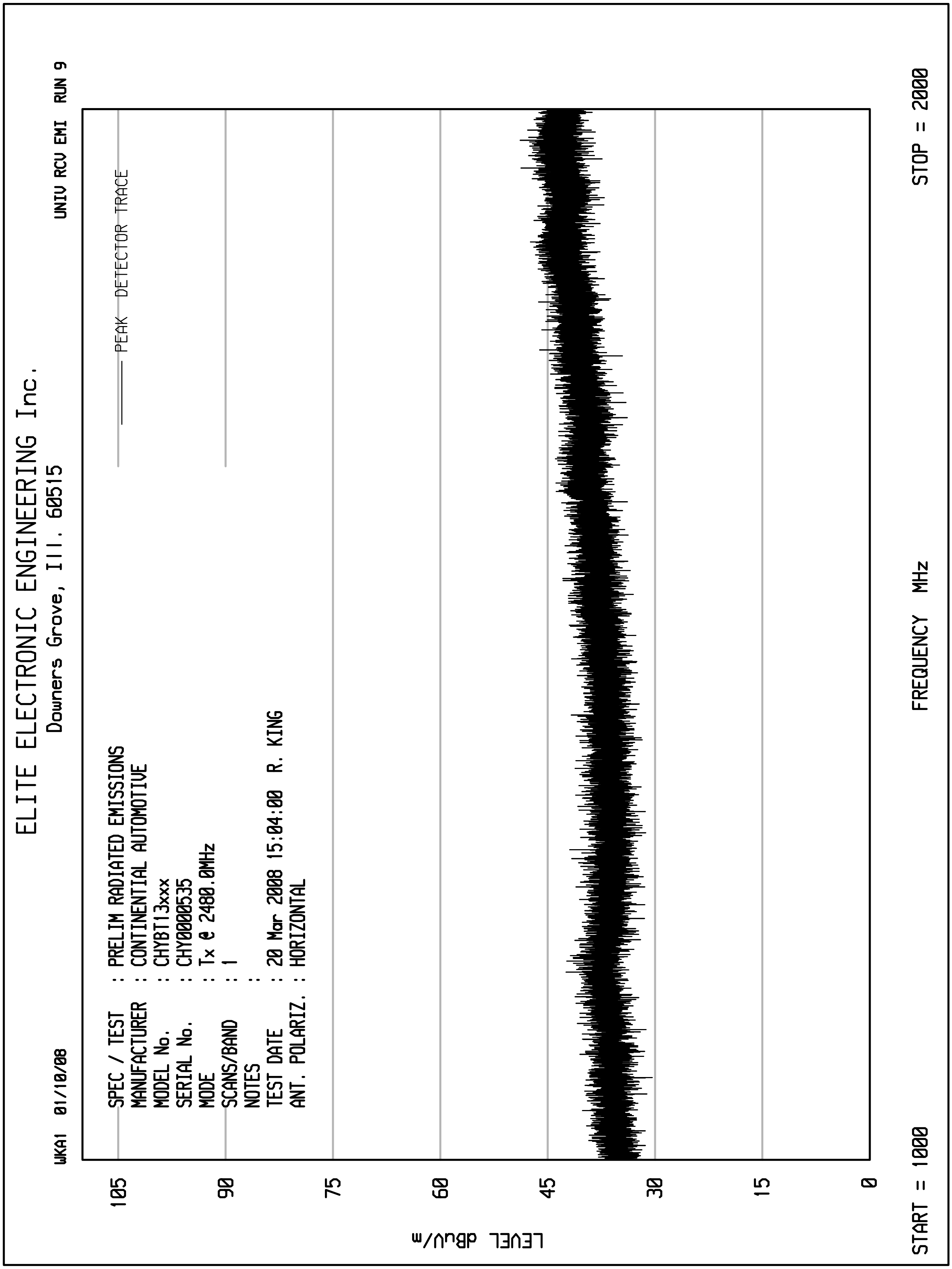

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 01/10/08
UNIV RCV EMI RUN 16
PEAK DETECTOR TRACE
SPEC / TEST : FCC PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2480.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 18 Mar 2008 15:17:24 R. KING
ANT. POLARIZ. : VERTICAL
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

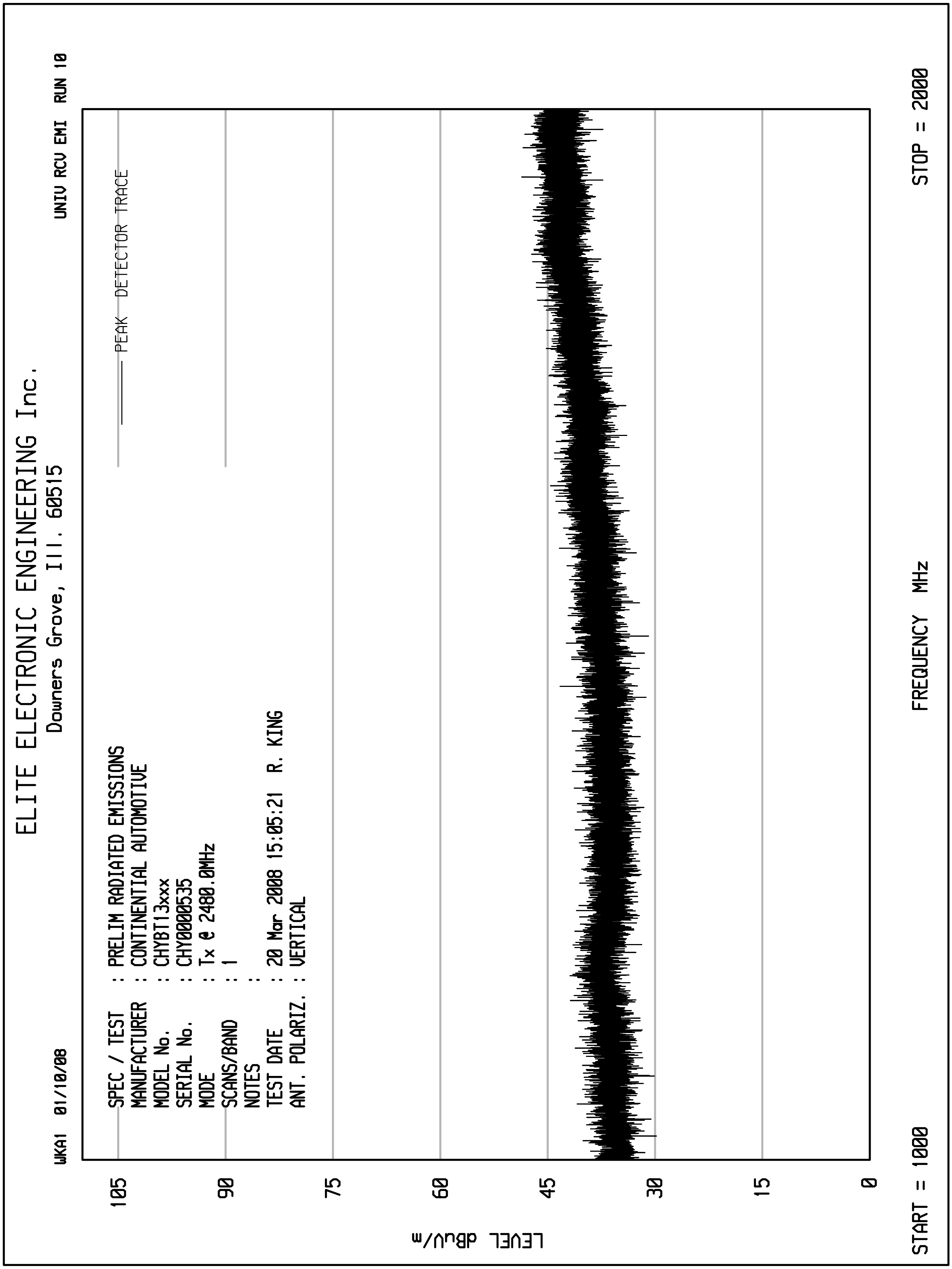

WKA1 01/10/08
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 13
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2402.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Mar 2008 15:10:10 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
105
90
75
60
45
30
15
0
LEVEL dBuV/m
START = 1000
FREQUENCY MHz
STOP = 2000

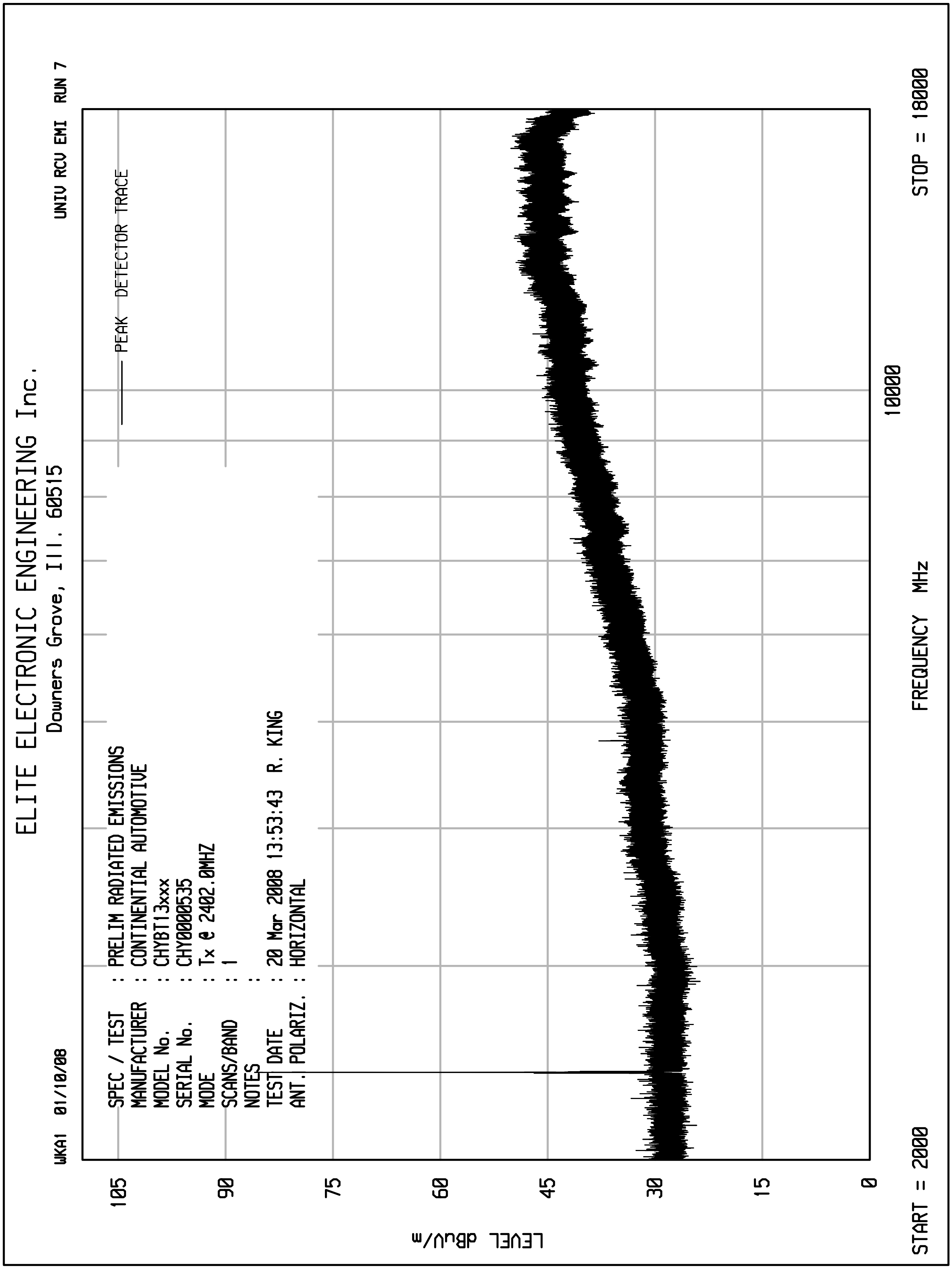

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 01/10/08
UNIV RCV EMI RUN 14
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTIAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2402.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Mar 2008 15:10:55 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 2000

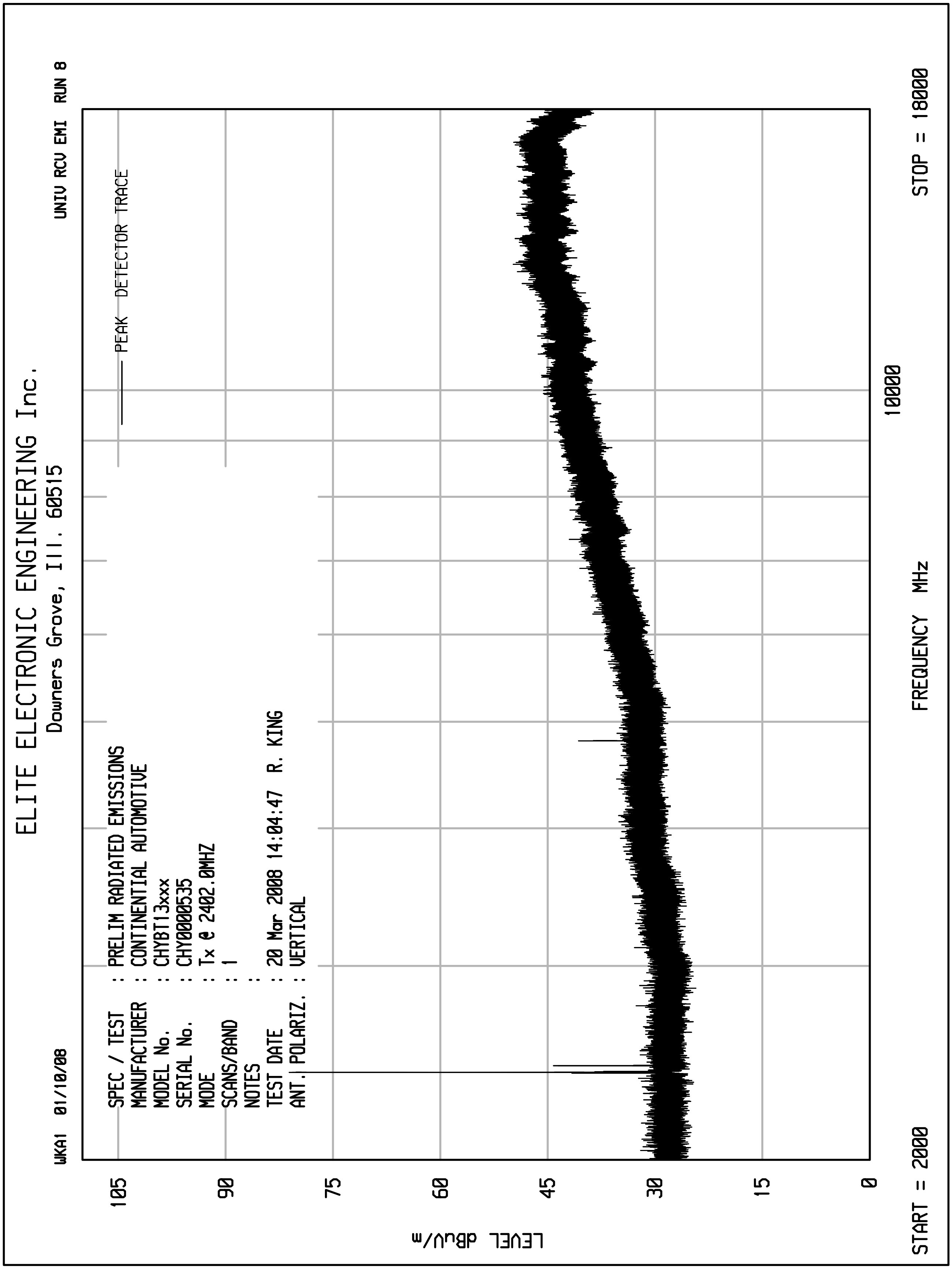

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 01/10/08
UNIV RCV EMI RUN 12
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTIAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2441.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Mar 2008 15:08:07 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 2000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 01/10/08
UNIV RCV EMI RUN 11
PEAK DETECTOR TRACE
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2441.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Mar 2008 15:07:30 R. KING
ANT. POLARIZ. : VERTICAL
105
90
75
60
45
30
15
0
LEVEL dBuV/m
START = 1000
FREQUENCY MHz
STOP = 2000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 01/10/08
UNIV RCV EMI RUN 9
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2480.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Mar 2008 15:04:00 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 2000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 01/10/08
UNIV RCV EMI RUN 10
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2480.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Mar 2008 15:05:21 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 2000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 01/10/08
UNIV RCV EMI RUN 7
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTIAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2402.0MHZ
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Mar 2008 13:53:43 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 2000
10000
FREQUENCY MHz
STOP = 18000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 01/10/08
UNIV RCV EMI RUN 8
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : CONTINENTAL AUTOMOTIVE
MODEL No. : CHYBT13xxx
SERIAL No. : CHY000535
MODE : Tx @ 2402.0MHZ
SCANS/BAND : 1
NOTES :
TEST DATE : 20 Mar 2008 14:04:47 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 2000
10000
FREQUENCY MHz
STOP = 18000