Measurement of RF Interference from a Model AAM27TRR9JA7AN, Cypher Repeater

For : Motorola Inc.
Schaumburg, IL 60196

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IC RSS-119

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REVISION HISTORY

Revision	Date	Description
—	1 Apr 2008	Initial release

Measurement of RF Emissions from a Motorola Inc.

Model AAM27TRR9JA7AN Cypher Repeater

1.0 INTRODUCTION:

1.1 Description of Test Item - This document presents the results of the series of radio interference measurements performed on a Motorola Inc., Model AAM27TRR9JA7AN Cypher Repeater, Serial No. 484TJA0A53 (hereinafter referred to as the test item). The test item is designed to transmit and receive in the frequency range of 450MHz to 512MHz in the US and 450MHz to 470MHz in Canada. The test item employs an external antenna. The receiver contained one local oscillator at 73.35MHz below the carrier. The test item was submitted for testing by Motorola Inc. located in Schaumburg, IL.

1.2 Purpose - The test series was performed to determine if the test item meets FCC and Industry Canada (IC) technical requirements for receivers and transmitter. The test item shall comply with the technical requirements of FCC Part 15 and 90; and IC RSS-119. The testing includes the conducted and radiated RF emission requirements for receivers, and the RF power output, emissions mask, spurious emissions at antenna terminal, field strength of spurious emissions, frequency stability, and transient frequency behavior requirements for the transmitters. Testing was performed in accordance with ANSI C63.4-2003 and TIA-603-C-2004.

1.3 Deviations, Additions and Exclusions - There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4 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, dated 1 October 2007
- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 90, 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"
- TIA-603-C-2004, “Land Mobile FM or PM – Communications Equipment – Measurement and Performance Standards”

- RSS-119 - Land Mobile and Fixed Radio Transmitters and Receivers
  Operating in The Frequency Range 27.41- 960 MHz Issue 8 September 2006

1.5 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.

1.6 Laboratory Conditions The temperature at the time of the test was 25^{o}C and the relative humidity was 43%.

2.0 TEST ITEM SET-UP AND OPERATION:

The test item is a Motorola Inc., Model AAM27TRR9JA7AN Cypher Repeater. The test item is designed to transmit and receive in the 450MHz to 512MHz in the US and 450MHz to 470MHz in Canada. The test item operates at two power levels, 1 Watt and 40 Watts. The test item operates with two channel bandwidths, 12.5kHz and 25kHz. Photographs of the test item are shown as Figure 2.

2.1 Power Input - The 120 VAC 60 Hz power was provided to the test item through a 3 wire, 6 foot long shielded cord.

2.2 Grounding - The test item was grounded through the third wire of its input power cord.

2.3 Peripheral Equipment - No peripheral equipment was submitted with the test item.

2.4 Interconnect Cables - A multi-pin connector was supplied to provide connections for the control functions. The control leads were connected to the USB port of a laptop computer to control the transmit and receive tuned frequencies, the power output and the channel bandwidth.

2.5 Operational Mode - For all receiver tests except conducted emissions, the test item was set to receive separately at 450MHz, 481.0MHz and 512MHz. For the conducted emissions test the receiver was set to receive at 460MHz.

For transmitter tests, the test item was set to transmit separately at 450MHz, 481.0MHz and 512MHz except the occupied bandwidth test and the transient frequency behavior test for these tests the test item was set to transmit at 460MHz.

2.6 Test Item Modifications - No modifications were required for compliance to the requirements.

3.0 TEST EQUIPMENT:

3.1 Test Equipment List - A list of the test equipment used can be found on Table I. All equipment was calibrated per the instruction manuals supplied by the manufacturer.

3.2 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).

3.3 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 budgets were based on guidelines in "ISO Guide to the Expression of Uncertainty in Measurements" and NAMAS NIS81 "The Treatment of Uncertainty in EMC Measurements".

The measurement uncertainty for these tests is presented below:

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

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

4.0 REQUIREMENTS, PROCEDURES AND RESULTS:

4.1 Receiver:

4.1.1 Powerline Conducted Emissions:

4.1.1.1 Requirements - All radio frequency voltages on the power lines of a Receiver shall be below the values shown below when using a quasi-peak detector:

CONDUCTED EMISSION LIMITS FOR RECEIVERS

Frequency MHz	RFI Voltage dBuV(QP)	RFI Voltage dBuV(Average)
0.15-0.5	66 decreasing with logarithm of frequency to 56	56 decreasing with logarithm of frequency to 46
0.5-5	56	46
5-30	60	50

Note 1: The lower limit shall apply at the transition frequencies.
Note 2: If the levels measured using the QP detector meet both the QP and the

Average limits, the test item is considered to have met both requirements and measurements do not need to be performed using the Average detector.

4.1.1.2 Procedures - The interference on each input power lead of the test item was measured by connecting the measuring equipment to the appropriate meter terminal of the LISN. The meter terminal of the LISN not under test was terminated with 50 ohm. Measurements were first made over the entire frequency range from 150 kHz through 30MHz with a peak detector and the results were automatically plotted. The data thus obtained was then searched by the computer for the highest levels. Quasi-peak measurements were automatically performed at the frequencies selected from the highest peak measurements, and the results printed.

4.1.1.3 Results - The plots of the peak preliminary conducted voltage levels on each power line, with the test item in the receive mode at 460 MHz, are presented on pages 23 and 24. The conducted limits for receivers are shown as a reference. The final quasi-peak results are presented on pages 25 and 26. As can be seen from the data, all emissions measured from the test item were within the specification limits.

4.1.2 Antenna Conducted Emissions Measurements:

4.1.2.1 Requirements - This test is performed to determine the test item configuration during the radiated RF emissions tests. The power at the antenna terminal over the frequency range 30MHz to 5000MHz may be measured. If the emissions at the antenna terminal exceed 2 nanowatts, it is necessary to perform the radiated RF emissions tests with the antenna port terminated with an equivalent antenna. If the test item does meet the 2 nanowatt requirement, the radiated emissions tests can be performed with the antenna port terminated with a shielded load.

4.1.2.2 Procedures - The measuring equipment was connected to the test item's antenna port. The emissions in the frequency range from 30MHz to 2000MHz were observed and then plotted.

4.1.2.3 Results - The results of the antenna conducted measurements are presented on pages 27 through 29. The reference line shown on the data pages represents the 2 nanowatt requirement. As can be seen from the data pages, all emissions from the test item were below the 2 nanowatt requirement. Since the emissions were below the 2 nanowatt limit, the antenna port was terminated with a shielded load for radiated emissions

measurements.

4.1.3 Radiated Measurements:

4.1.3.1 Requirements - All emanations from a receiver shall be below the levels shown on the following table:

RADIATED EMISSION LIMITS FOR RECIEVERS

Frequency MHz	Distance between Test Item And Antenna in Meters	Field Strength uV/m
30-88	3	100
88-216	3	150
216-960	3	200
Above 960	3	500

Note: The tighter limit shall apply at the edge between the two frequency bands.

4.1.3.2 Procedures - All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. 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.

The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All power lines and signal lines entering the enclosure pass through filters on the enclosure wall. The power line filters prevent extraneous signals from entering the enclosure on these leads.

Since a quasi-peak detector requires long integration times, it is not practical to automatically sweep through the quasi-peak levels. Therefore, radiated emissions from the test item were first scanned using a peak detector and automatically plotted. The frequencies where significant emission levels were noted were then remeasured using the quasi-peak detector.

The broadband measuring antenna was positioned at a 3 meter distance from the test item. The frequency range from 30MHz to 2000MHz was investigated using a peak detector function with a bilog antenna. The frequency range above 2000MHz was investigated using a peak detector function with a waveguide antenna. The maximum levels were plotted.

Final radiated emissions were performed on all significant broadband and narrowband emissions found in the preliminary sweeps using the following methods:

1) For all frequencies 1GHz and below, measurements were made using a broadband bi-log antenna.
2) For all frequencies above 1GHz, measurements were made using a waveguide antenna.
3) To ensure that the maximum, or worst case, emission levels were measured, the following steps were taken:
   (a) The test item was rotated so that all of its sides were exposed to the receiving antenna.
   (b) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
   (c) The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings.

4.1.3.3 Results - The preliminary plots are presented on pages 30 through 41. These plots are presented for a reference only, and are not used to determine compliance. The final radiated levels are presented on pages 42 through 45.

As can be seen from the final data, all emissions measured from the test item were within the specification limits. A block diagram of the radiated emissions test set-up is shown on Figure 1. Photographs of the test configuration which yielded the highest or worst case radiated emission levels are shown in Figures 2.

4.2 Transmitter:

4.2.1 RF Power Output:

4.2.1.1 Requirements - The output power shall not exceed by more than 20 percent the manufacturer's rated output power for the particular transmitter specifically listed on the authorization.

4.2.1.2 Procedures – With the test item transmitting at 450MHz, the antenna port of the test item was connected to a spectrum analyzer through 60 dB of attenuation. The resolution bandwidth of the spectrum analyzer was set wider than the bandwidth of the test item. The output power of the item was then measured. This procedure was repeated separately with the test item transmitting at 481.0MHz and 512MHz.

4.2.1.3 Results - The output power measurements are shown in a tabular form on page 46. As can be seen from the data, the power output at each frequency meets the

requirement for maximum allowable power of 20% above the manufacturer's rated output power.

4.2.2 Emission Mask

4.2.2.1 Requirements - For equipment operating in these frequency bands with a 12.5kHz channel bandwidth, any emissions must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(1) On any frequency from the center of the authorized bandwidth fo to 5.625kHz removed from fo: Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 5.625kHz but no more than 12.5kHz: At least 7.25(fd – 2.88kHz) dB.

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5kHz; At least 50 + 10log (P) dB or 70dB whichever is the lesser attenuation.

For equipment operating in these frequency bands with a 25kHz channel bandwidth, any emissions must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

(1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.

(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.

(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.

4.2.2.2 Procedures - The test item was set to transmit at 460MHz.

(a) The antenna port of the test item was connected to a spectrum analyzer through a 60dB attenuator.

(b) The following spectrum analyzer settings were employed:
- trace 1 = on
- center frequency = transmit frequency of the test item
- resolution bandwidth = 1MHz
- video bandwidth > resolution bandwidth
- frequency span = 100kHz/200kHz
- sweep = Auto
- detector function = peak
- trace = max hold

(c) Several sweeps were made with the settings listed above.

(d) Trace 1 was changed from max hold to view

(e) The following spectrum analyzer settings were employed:
- o trace 2 = on
- o resolution bandwidth = 100Hz/300Hz
- o video bandwidth = 1kHz
- o sweep = Auto
- o detector function = peak
- o trace = max hold

(f) Several sweeps were made with the settings listed above.

4.2.2.3 Results - The spectrum analyzer plots of the emissions of the test item are shown on pages 47 through 84. The limits, shown on the plots, are referenced to the power measured with a 1MHz resolution bandwidth. As can be seen from the data, the test item did comply with the emission mask requirements. The 99% bandwidth measurement is 11 kHz for the 12.5 kHz channel, 16.5 kHz for the 25 kHz channel and 7.8 kHz when using digital modulation.

4.2.3 Spurious Emissions at Antenna Terminal

4.2.3.1 Requirements - For a 12.5kHz channel - on any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5kHz the emissions must be attenuated by at least 50 + 10log (P) dB or 70dB whichever is the lesser attenuation. For a 25kHz channel - on any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 250% of the emission bandwidth, the emissions must be attenuated by at least 43 + 10log (P) dB.

4.2.3.2 Procedures - The test item was set to transmit at 450MHz.

a) The antenna port of the test item was connected to a spectrum analyzer through a 60dB attenuator.

b) The resolution bandwidth of the spectrum analyzer was set to 100kHz.

c) A sweep was made from 30MHz to 1GHz.

d) The resolution bandwidth of the spectrum analyzer was set to 1MHz.

e) A sweep was made from 1GHz to 5GHz.

f) Steps (a) through (e) were repeated with the test item set to transmit at 481.0MHz.

g) Steps (a) through (e) were repeated with the test item set to transmit at 512MHz.

4.2.3.3 Results - The plots of the antenna conducted output measurements are presented on pages 85 through 108. As can be seen from the data, the test item did not produce spurious emissions in excess of the limit.

4.2.4 Field Strength Of Spurious Emissions:

4.2.4.1 Requirements - For a 12.5kHz channel - on any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 12.5kHz the emissions must be attenuated by at least 50 + 10log (P) dB or 70dB whichever is the lesser attenuation. For a 25kHz channel - on any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 250% of the emission bandwidth, the emissions must be attenuated by at least 43 + 10log (P) dB.

4.2.4.2 Procedures - All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. 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.

The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

1. Preliminary radiated emissions measurements were first performed using a peak detector and automatically plotted. The broadband measuring antenna was positioned at a 3 meter distance from the test item. The entire frequency range from 30MHz to 5GHz was investigated using a peak detector function. All preliminary tests were performed separately with the test item operating in the transmit mode at 450MHz, 481.0MHz and 512MHz.

2. All significant broadband and narrowband signals found in the preliminary sweeps were then measured using a peak detector at a test distance of 3 meters. The measurements were made with a tuned dipole or double ridged waveguide antenna over the frequency range of 30MHz to 5GHz.

3. To ensure that maximum emission levels were measured, the following steps were taken:

   a) The test item was rotated so that all of its sides were exposed to the receiving antenna.
   b) Since the measuring antennas are linearly polarized, both horizontal and vertical field components were measured.
   c) The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings.

4. The equivalent power was determined from the field intensity levels measured at 3 meters using the substitution method. To determine the emission power a tuned dipole or double ridged waveguide antenna was 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 corrected to compensate for cable loss, as required, and when the double ridged waveguide antenna was used, increased by the difference in gain between the dipole and the waveguide antenna.

4.2.4.3 Results - The preliminary radiated emissions plots are presented on pages 109 through 160. 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.

The final radiated levels are presented on pages 161 through 173. The radiated emissions were measured through the 10th harmonic. As can be seen from the data, all emissions measured from the test item were within the specification limits. Photographs of the test configuration are shown in Figures 3.

4.2.5 Frequency Stability :

4.2.5.1 Requirements - Fixed and base stations operating in these frequency bands with a 12.5kHz channel bandwidth must have a frequency stability of 1.5ppm or less.

4.2.5.2 Procedures - The antenna port of the test item was connected to a frequency counter through a 50dB attenuator. The test item was then placed in a humidity temperature chamber.

a) The test item was set to transmit at 481.0MHz. The transmit frequency was measured and recorded at ambient temperature.
b) The temperature chamber was then set to -30ºC.
c) Once the temperature chamber had reached -30ºC, the test item was allowed to soak for 60 minutes.
d) After soaking at -30ºC for sixty minutes, the test item was turned on and set to transmit at 481.0MHz and the transmit frequency was measured and recorded.
e) Steps (b) through (d) were repeated at -20ºC.
f) Steps (b) through (d) were repeated at -10ºC.
g) Steps (b) through (d) were repeated at 0ºC.
h) Steps (b) through (d) were repeated at +10ºC.
i) Steps (b) through (d) were repeated at +20ºC.

j) Steps (b) through (d) were repeated at +30ºC.

k) Steps (b) through (d) were repeated at +40ºC.

l) Steps (b) through (d) were repeated at +50ºC.

m) The test item was then removed from the temperature chamber and allowed to adjust to nominal room temperature.

n) The supply voltage was checked and adjusted to the nominal level (120VAC). The test item was turned on and set to transmit at 481.0MHz. The transmit frequency was measured and recorded at ambient temperature.

o) The supply voltage was then varied to 85% of its nominal level (102VAC). The test item was turned on and set to transmit at 481.0MHz. The transmit frequency was measured and recorded at ambient temperature.

p) The supply voltage was then varied to 115% of its nominal level (138VAC). The test item was turned on and set to transmit at 481.0MHz. The transmit frequency was measured and recorded at ambient temperature.

4.2.5.3 Results - The frequency stability measurements are presented on pages 174 and 175. As can be seen from the data, all frequency deviations were within the 1.5 ppm limit. A photograph of the test configuration is shown on Figure 4.

4.2.6 Transient Frequency Behavior

4.2.6.1 Requirements - Transmitters designed to operate in the 450MHz to 512MHz frequency band with 12.5kHz channel spacing must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

Time intervals	Maximum Frequency Difference	Time (ms)
t_1	+/-12.5kHz	5.0
t_2	+/-6.25kHz	20.0
t_3	+/-12.5kHz	5.0

Where: t_1 is the time period immediately following t_{on}
t_2 is the time period immediately following t_1
t_3 is the time period from the instant when the transmitter is turned off until t_{off}

Transmitters designed to operate in the 450MHz to 512MHz frequency band with 25kHz channel spacing must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

Time intervals	Maximum Frequency Difference	Time (ms)
t_1	+/-25kHz	5.0

t_2	+/-12.5kHz	20.0
t_3	+/-25kHz	5.0

Where: t_1 is the time period immediately following t_{on}
t_2 is the time period immediately following t_1
t_3 is the time period from the instant when the transmitter is turned off until t_{off}

4.2.6.2 Procedures - Two test signals were connected to the test discriminator via a combining network. The transmitter was connected to a 50 ohm power attenuator. The output of the power attenuator was connected to the test discriminator via one input of the combining network. A test signal was connected to the second input of the combining network.

(a) The test signal was adjusted to the nominal frequency of the transmitter.

(b) The test signal was modulated by a 1 kHz signal with a deviation equal to the value of the relevant channel bandwidth. (12.5kHz or 25kHz).

(c) The test signal was adjusted to correspond to 0.5% of the power of the transmitter under test measured at the input of the test discriminator. This level was maintained throughout the measurement.

(d) The amplitude difference (ad) and the frequency difference (fd) output of the test discriminator were connected to a storage oscilloscope.

(e) The storage oscilloscope was set to display the channel corresponding to the (fd) input up to ±1 channel frequency difference, corresponding to the relevant channel separation, from the nominal frequency.

(f) The storage oscilloscope was set to a rate of 5 ms/div and set so that the triggering occurs at 1 div from the left edge of the display.

(g) The 1 kHz test signal was shown continuously. The storage oscilloscope was set to trigger on the channel corresponding to the amplitude difference (ad) input at a low input level, rising.

(h) The transmitter was then switched on, without modulation, to produce the trigger pulse and a picture on the display. The result of the change in the ratio of power between the test signal and the transmitter output produced two separate sides, one showing the 1 kHz test signal, the other the frequency difference of the transmitter versus time.

(i) The transmit signal suppresses the 1 kHz test signal and produces the start of the test or t_{on}. During this test time, the frequency difference was measured and recorded verses time.

(j) The transmitter was then switched off to produce the trigger pulse and a picture of the display. The result of the change in the ratio of power between the test signal and the transmitter output produced two separate sides, one showing the frequency difference of the transmitter versus time and the other showing the 1 kHz test signal.

(k) The transmitter signal no longer suppresses the 1 kHz test signal and produces t_3.

4.2.6.3 Results - The plots of the transient frequency behavior are shown on pages 176 through 179. As can be seen from the data, all transient frequencies were within the maximum frequency difference limits specified by 90.214.

5.0 CONCLUSIONS:

It was determined that the Motorola Inc., Model AAM27TRR9JA7AN Cypher Repeater, did fully comply with the selected technical requirements of FCC Part 15 and 90; and IC RSS-119 for transmitters and receivers.

The test item meets conducted and radiated emission requirements of the FCC Part 15, Subpart B; and RSS-119 for receivers.

The test item meets the RF power output, emissions mask, spurious emissions at antenna terminal, field strength of spurious emissions, frequency stability, and transient frequency behavior requirements of the FCC Part 90, and RSS-119 for transmitters.

6.0 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.

7.0 ENDORSEMENT DISCLAIMER:

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

Table I: Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
APK0	PRE-AMPLIFIER	HEWLETT PACKARD	8449B	3008A00662	1-26.5GHZ	3/26/2008	3/26/2009
CDS2	COMPUTER	GATEWAY	MFATXPNT NMZ 500L	0028483108	1.8GHZ	N/A	
CMA0	MULTI-DEVICE CONTROLLER	EMCO	2090	9701-1213	---	N/A	
ETC0	TEMPERATURE CHAMBER	TENNEY	BTR-100350	9145-17	-60C TO 100C	NOTE 1	
GBR2	SIGNAL GENERATOR	HEWLETT PACKARD	8648D	3847U00488	0.009-4000MHZ	2/12/2008	2/12/2009
GRD0	SIGNAL GENERATOR	HEWLETT PACKARD	E4432B	US38080222	250KHZ-3.0GHZ	8/28/2007	8/28/2008
HRE1	LASER JET 5P	HEWLETT PACKARD	C3150A	USHB061052	---	N/A	
MFC0	MICROWAVE FREQ. COUNTER	HEWLETT PACKARD	5343A	2133A00591	10HZ-26GHZ	5/30/2007	5/30/2008
MPC1	DUAL POWER METER	HEWLETT PACKARD	EPM-442A	US37480258	0.1MHZ-50GHZ	2/12/2008	2/12/2009
NDQ0	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	311	400-1000MHZ	3/4/2008	3/4/2009
NDQ1	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	313	400-1000MHZ	3/28/2007	3/28/2008
NTA0	BILOG ANTENNA	CHASE EMC LTD.	BILOG CBL6112	2057	0.03-2GHZ	6/20/2007	6/20/2008
NWG0	RIDGED WAVE GUIDE (DCC-MATC)	AEL	H1479	104	1-12.4GHZ	10/13/2007	10/13/2008
NWH0	RIDGED WAVE GUIDE	TENSOR	4105	2081	1-12.4GHZ	10/13/2007	10/13/2008
PLL9	50UH LISN 462D	ELITE ELECTRONIC ENG	462D/70A	010	0.01-400MHZ	3/5/2008	3/5/2009
PLLA	50UH LISN 462D	ELITE ELECTRONIC ENG	462D/70A	011	0.01-400MHZ	3/5/2008	3/5/2009
RAC1	SPECTRUM ANALYZER	HEWLETT PACKARD	85660B	3407A08369	100HZ-22GHZ	2/22/2008	2/22/2009
RACB	RF PRESELECTOR	HEWLETT PACKARD	85685A	3506A01491	20HZ-2GHZ	2/22/2008	2/22/2009
RAF3	QUASIPEAK ADAPTER	HEWLETT PACKARD	85650A	3303A01775	0.01-1000MHZ	2/22/2008	2/22/2009
RBB0	EMI TEST RECEIVER 20HZ TO 40 GHZ.	ROHDE & SCHWARZ	ESIB40	100250	20 HZ TO 40GHZ	11/5/2007	11/5/2008
RYE0	MODULATION ANALYZER	HEWLETT PACKARD	8901B	3104A03410	0.15-1300MHZ	5/4/2008	5/4/2009
T1E1	10DB 25W ATTENUATOR	WEINSCHEL	46-10-43	AU1883	DC-18GHZ	12/8/2007	12/8/2008
T1F1	10DB, 100W ATTENUATOR	BIRD ELECTRONIC CORP	8343-100	2433	DC-1GHZ	1/9/2008	1/9/2009
T2C9	20DB, 20W ATTENUATOR	NARDA	768-20	19	DC-11GHZ	1/9/2008	1/9/2009
T2DG	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-34	BN1038	DC-18GHZ	3/1/2007	3/1/2008
T2DJ	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-34	BS0923	DC-18GHZ	12/5/2007	12/5/2008
T2S3	20DB 25W ATTENUATOR	WEINSCHEL	46-20-34	BV3544	DC-18GHZ	2/14/2008	2/14/2009
XLG0	75W, 50OHM COAXIAL LOAD	VECTRONICS, INC.	DL75-1.5	---	DC-1.5GHZ	7/2/2007	7/2/2008
XLK0	100W, 50 OHM TERMINATION	JFW INDUSTRIES	50T-032-1.0	1	DC-1GHZ	7/27/2007	7/27/2008
XLK1	100W, 50 OHM TERMINATION	JFW INDUSTRIES	50T-032-1.0	2	DC-1GHZ	5/18/2007	5/18/2008
XZG0	ATTENUATOR/SWITCH DRIVER	HEWLETT PACKARD	11713A	3439A02724	---	N/A	

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.

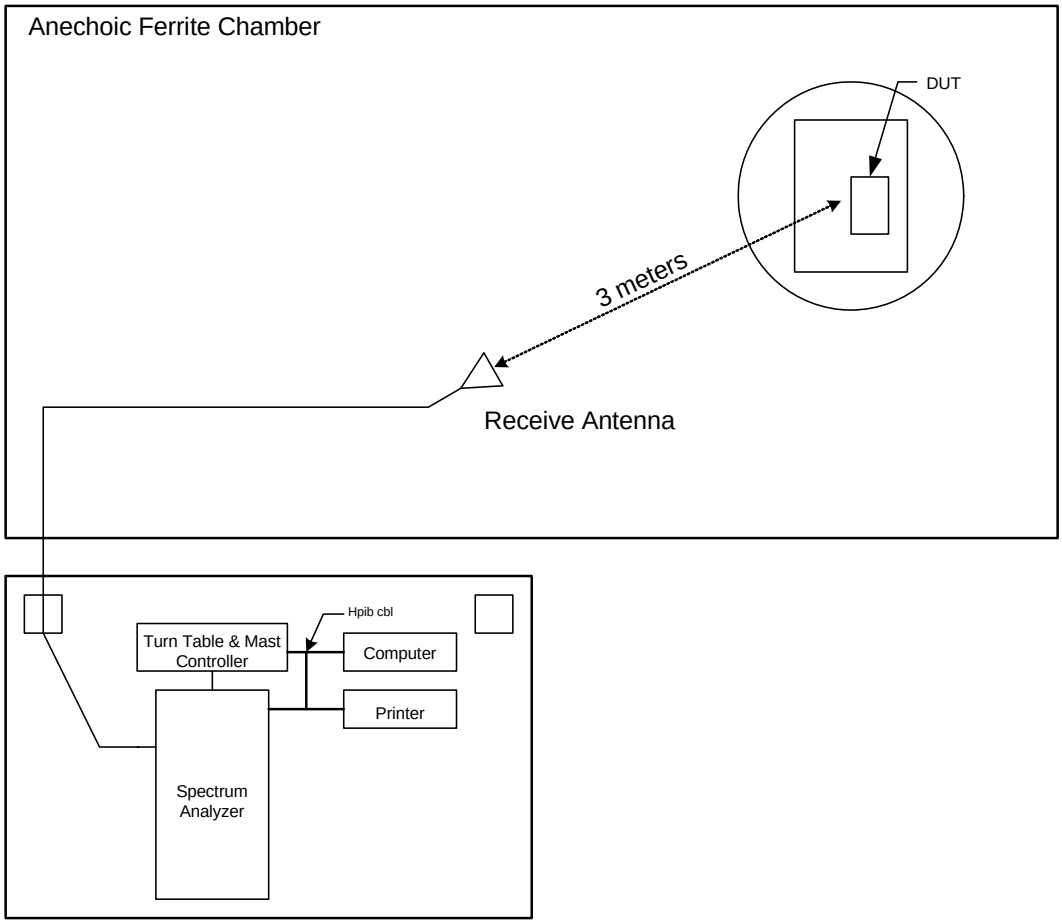
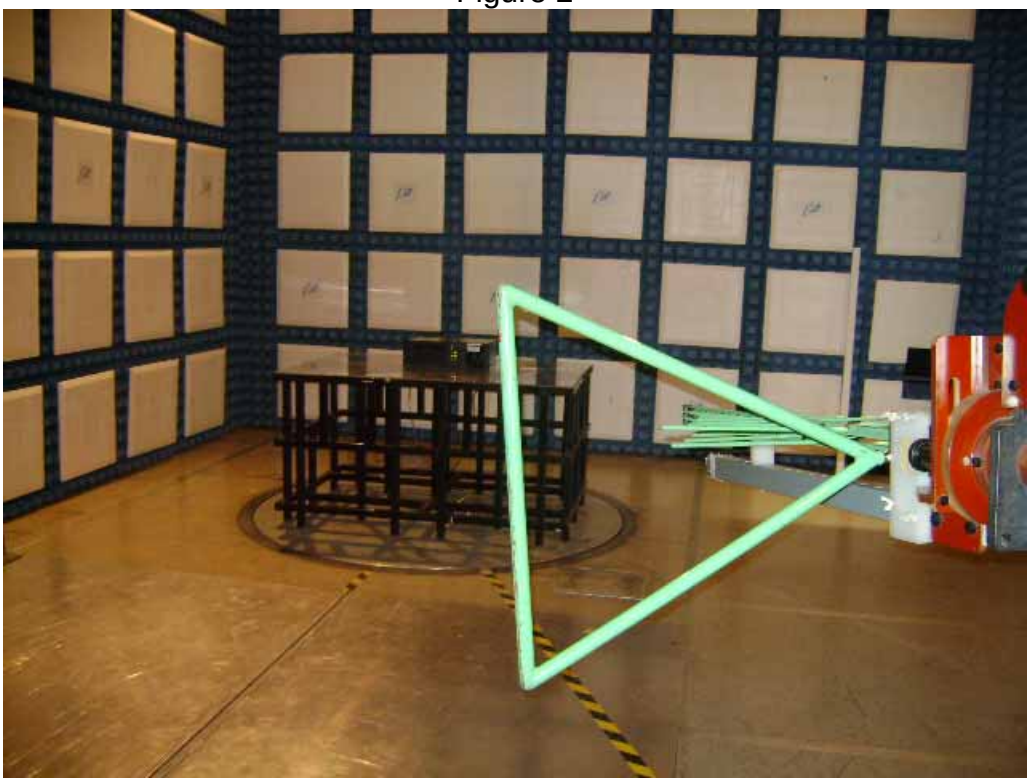
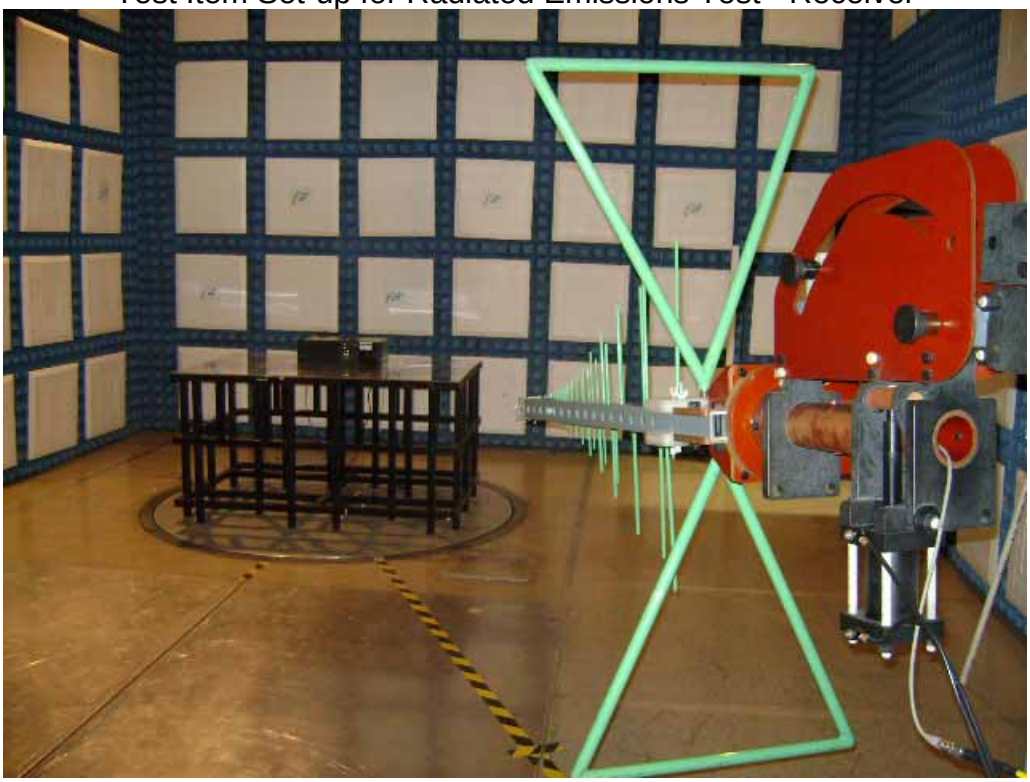


FIGURE 1 BLOCK DIAGRAM OF RADIATED EMISSIONS TEST SETUP

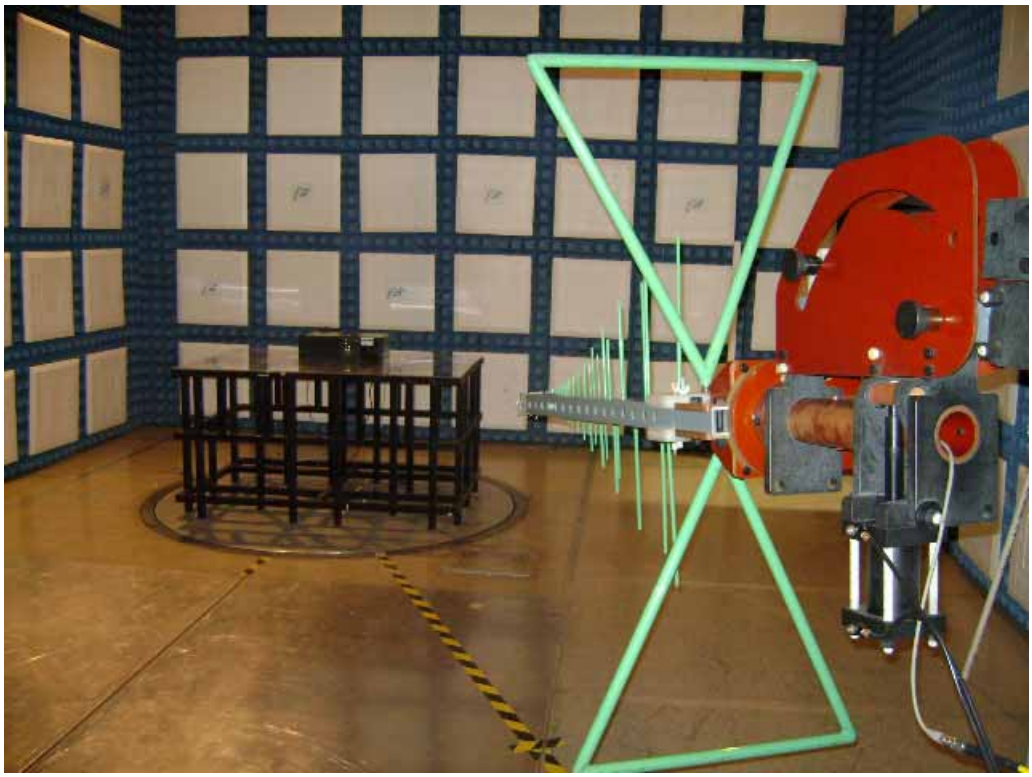
Figure 2



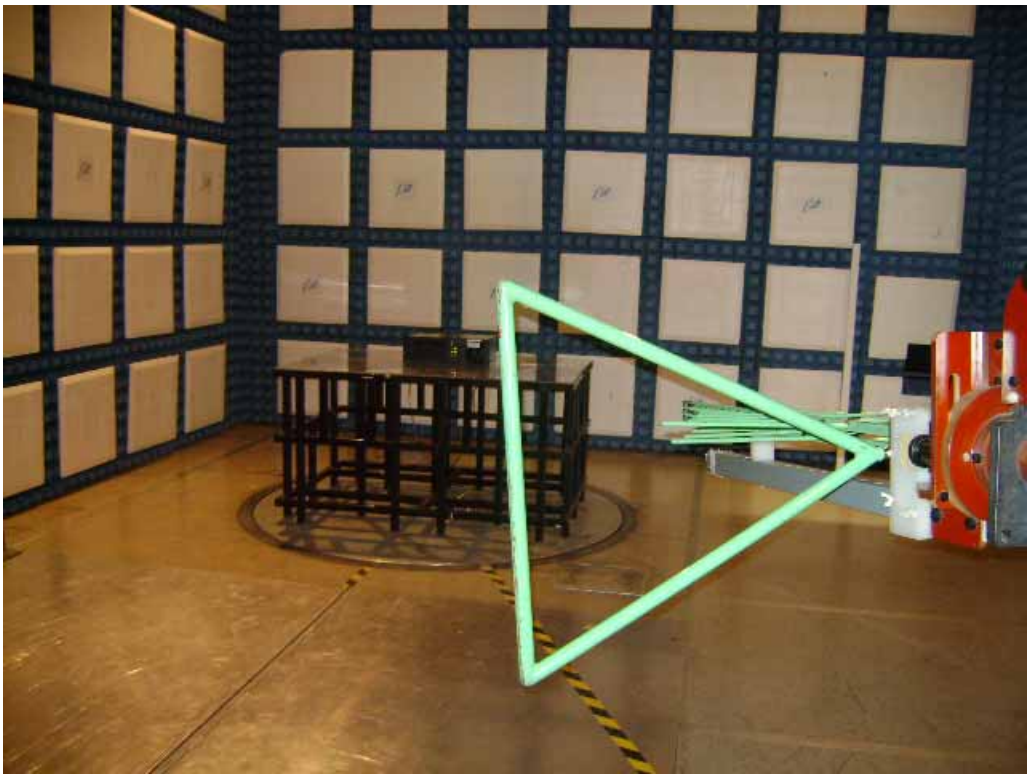
Test Item Set-up for Radiated Emissions Test - Receiver



Test Item Set-up for Radiated Emissions Test - Receiver



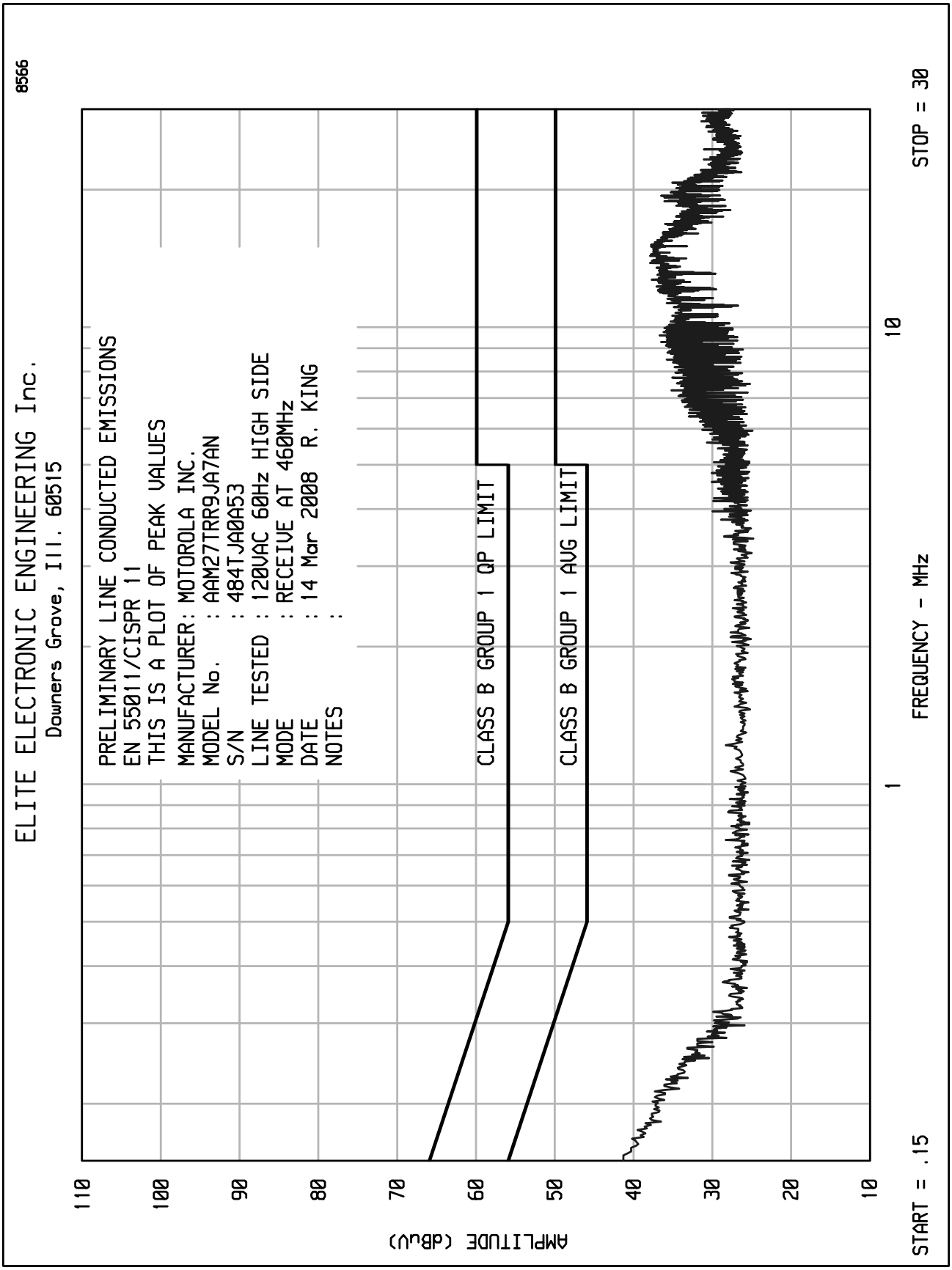
Test Set-up for Radiated Emissions, 30MHz to 1GHz - Vertical Polarization

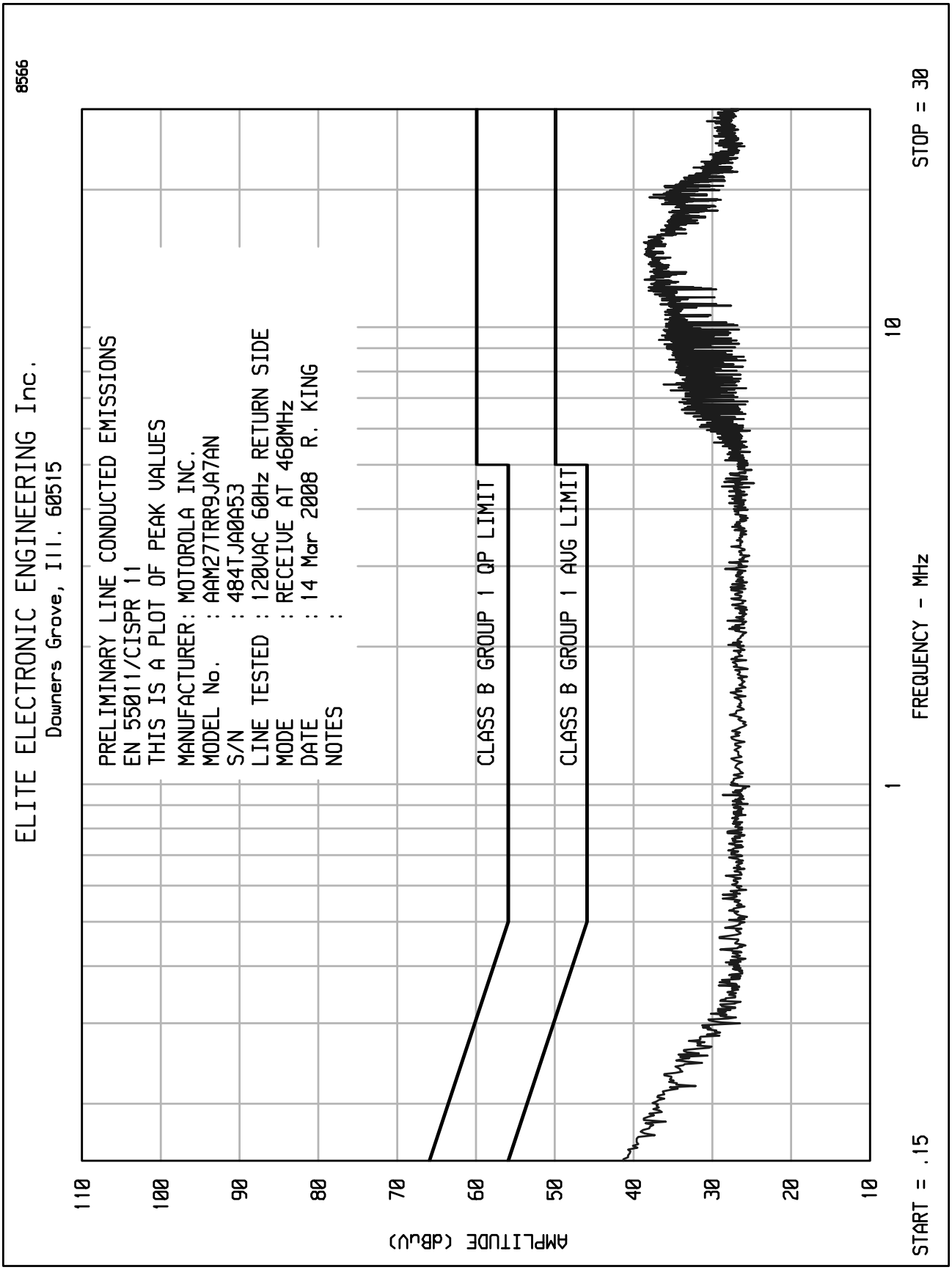


Test Set-up for Radiated Emissions, 30MHz to 1GHz - Horizontal Polarization

Figure 4

Test Set-up for Frequency Stability – Frequency vs. Temperature


8566
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
PRELIMINARY LINE CONDUCTED EMISSIONS
EN 55011/CISPR 11
THIS IS A PLOT OF PEAK VALUES
MANUFACTURER: MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
S/N : 484TJA0A53
LINE TESTED : 120VAC 60Hz HIGH SIDE
MODE : RECEIVE AT 460MHz
DATE : 14 Mar 2008 R. KING
NOTES : :
CLASS B GROUP 1 QP LIMIT
CLASS B GROUP 1 AVG LIMIT
AMPLITUDE (dBuV)
110
100
90
80
70
60
50
40
30
20
10
START = .15
1
10
STOP = 30
FREQUENCY - MHz


8566
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
PRELIMINARY LINE CONDUCTED EMISSIONS
EN 55011/CISPR 11
THIS IS A PLOT OF PEAK VALUES
MANUFACTURER: MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
S/N : 484TJA0A53
LINE TESTED : 120VAC 60Hz RETURN SIDE
MODE : RECEIVE AT 460MHz
DATE : 14 Mar 2008 R. KING
NOTES : :
CLASS B GROUP 1 QP LIMIT
CLASS B GROUP 1 AVG LIMIT
AMPLITUDE (dBuV)
110
100
90
80
70
60
50
40
30
20
10
START = .15
1
10
STOP = 30
FREQUENCY - MHz

ETR No.
ELITE ELECTRONIC ENGINEERING CO.

MANUFACTURER : MOTOROLA INC.
MODEL : AAM27TRR9JA7AN
S/N : 484TJA0A53
SPECIFICATION : EN 55011/CISPR 11, CLASS B GROUP 1
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : 120VAC 60Hz HIGH SIDE
MODE : RECEIVE AT 460MHz
DATE : 14 Mar 2008
NOTES :
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. dBuV	QP LIMIT dBuV	AVG RDG dBuV	AVG LIMIT dBuV	NOTES
.242	27.4	62.0		52.0	
.451	24.6	56.9		46.9	
.857	25.0	56.0		46.0	
2.899	24.9	56.0		46.0	
4.583	27.5	56.0		46.0	
7.166	32.0	60.0		50.0	
9.222	32.7	60.0		50.0	
11.595	33.7	60.0		50.0	
12.700	34.0	60.0		50.0	
13.795	34.7	60.0		50.0	
14.177	35.3	60.0		50.0	
15.021	35.8	60.0		50.0	
19.390	32.5	60.0		50.0	
20.705	31.6	60.0		50.0	
24.498	26.0	60.0		50.0	
28.241	26.8	60.0		50.0	

Checked BY Richard E. King :

Richard E. King

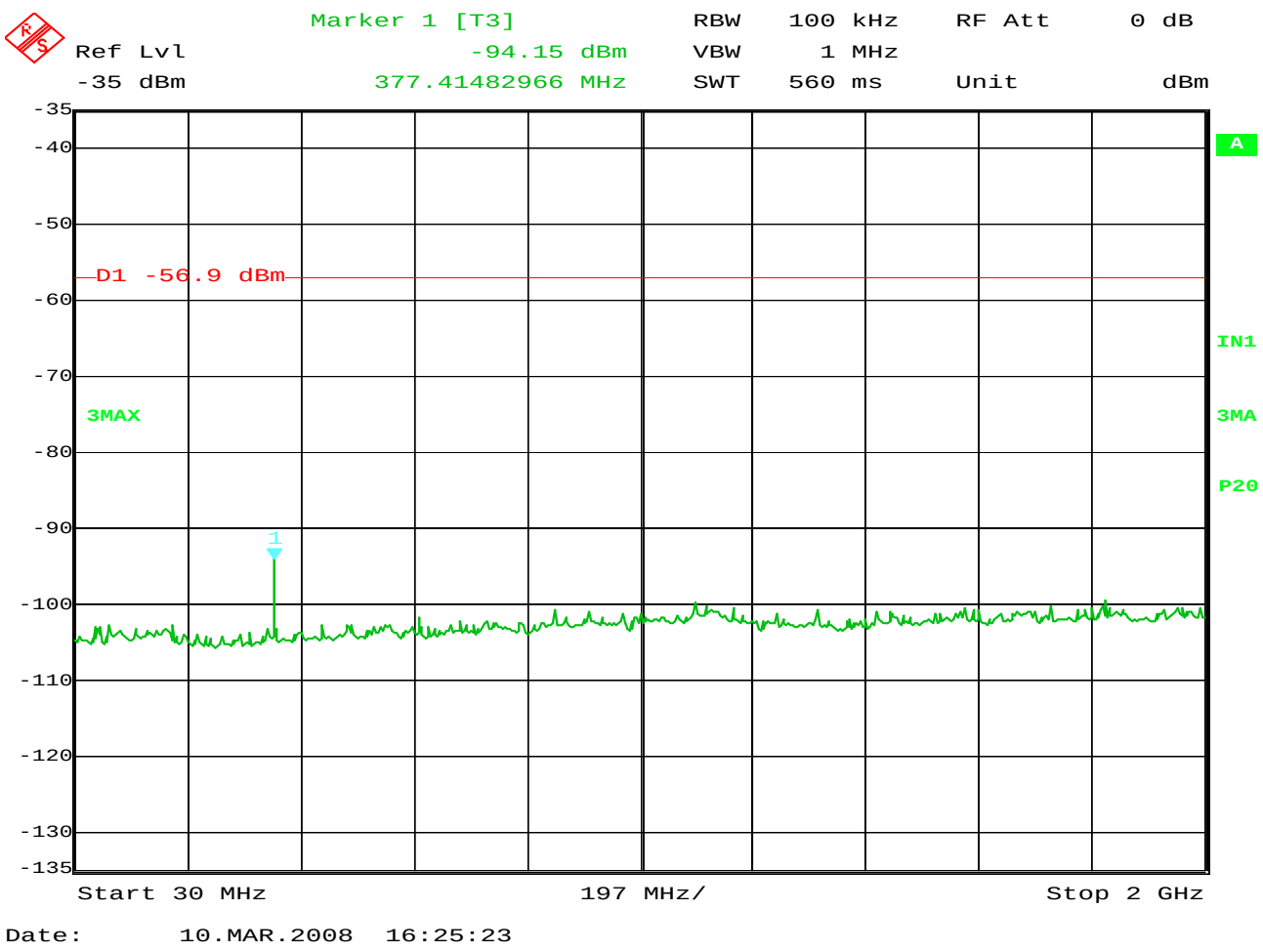
ETR No.
ELITE ELECTRONIC ENGINEERING CO.

MANUFACTURER : MOTOROLA INC.
MODEL : AAM27TRR9JA7AN
S/N : 484TJA0A53
SPECIFICATION : EN 55011/CISPR 11, CLASS B GROUP 1
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : 120VAC 60Hz RETURN SIDE
MODE : RECEIVE AT 460MHz
DATE : 14 Mar 2008
NOTES :
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. dBuV	QP LIMIT dBuV	AVG RDG dBuV	AVG LIMIT dBuV	NOTES
.330	25.9	59.5		49.5	
.522	36.9	56.0		46.0	
.949	24.8	56.0		46.0	
2.267	24.7	56.0		46.0	
3.054	25.0	56.0		46.0	
5.848	27.7	60.0		50.0	
7.482	32.7	60.0		50.0	
9.380	34.1	60.0		50.0	
12.698	35.8	60.0		50.0	
14.440	36.4	60.0		50.0	
15.231	36.4	60.0		50.0	
15.336	36.3	60.0		50.0	
19.231	33.1	60.0		50.0	
20.651	31.9	60.0		50.0	
23.866	26.4	60.0		50.0	
27.869	25.9	60.0		50.0	

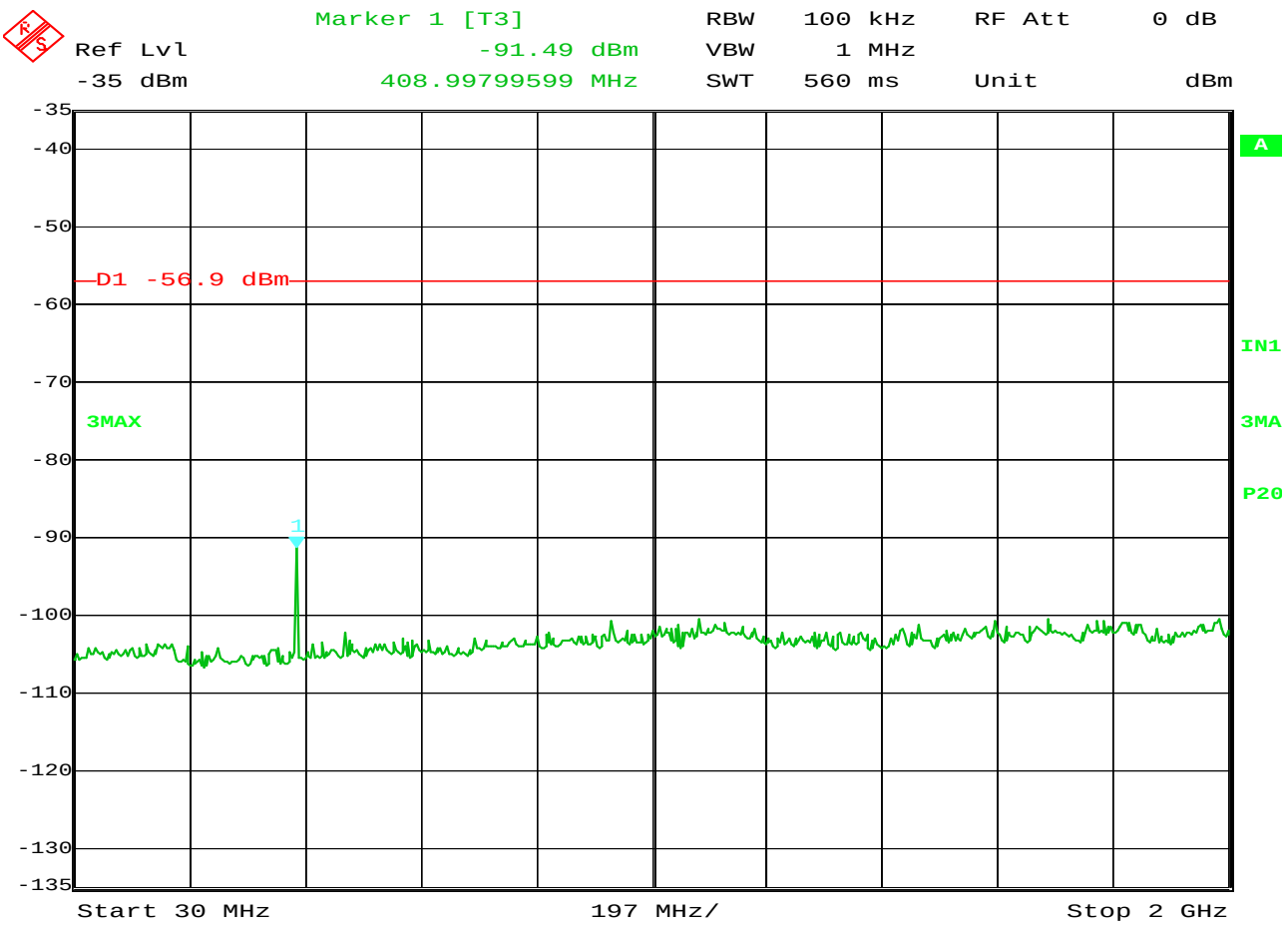
Checked BY Richard E. King :

Richard E. King



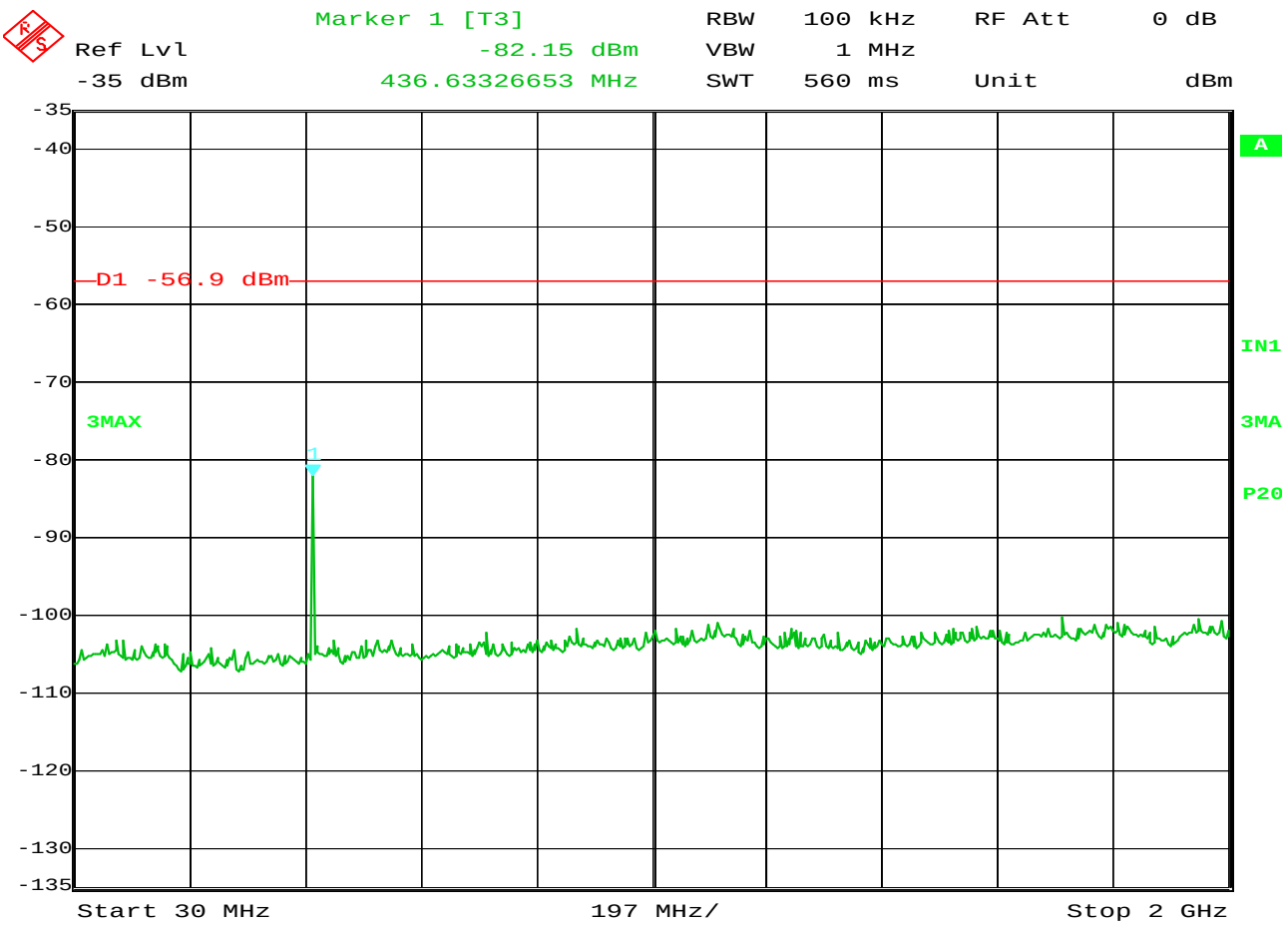
FCC 15.111 Antenna Conducted Emissions

MANUFACTURER : Motorola Inc.
MODEL : AAM27TRR9JA7AN
SERIAL NO. : 484TJA0A53
TEST MODE : Receive
TUNNED FREQ. : 450MHz
NOTES :



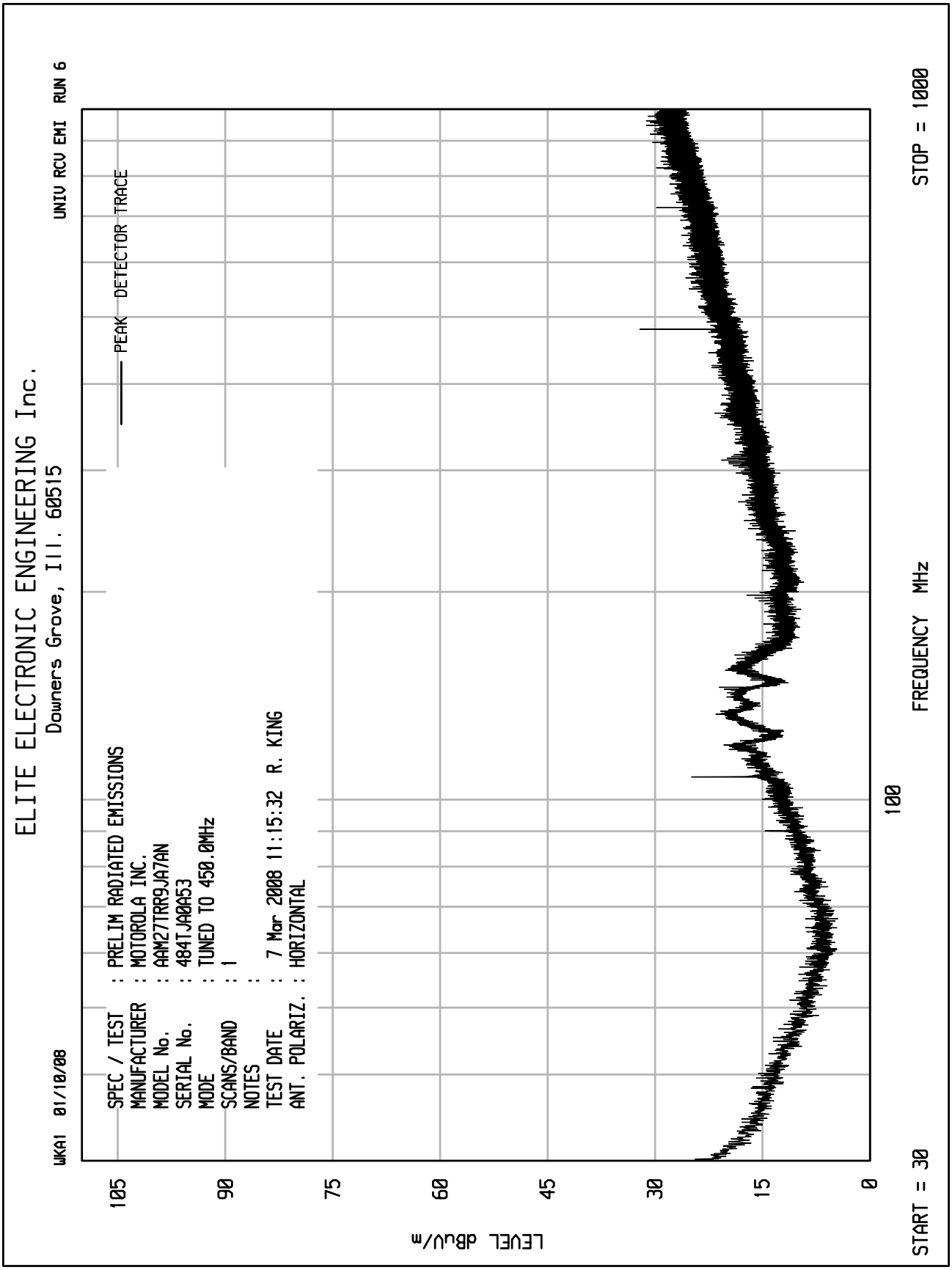
FCC 15.111 Antenna Conducted Emissions

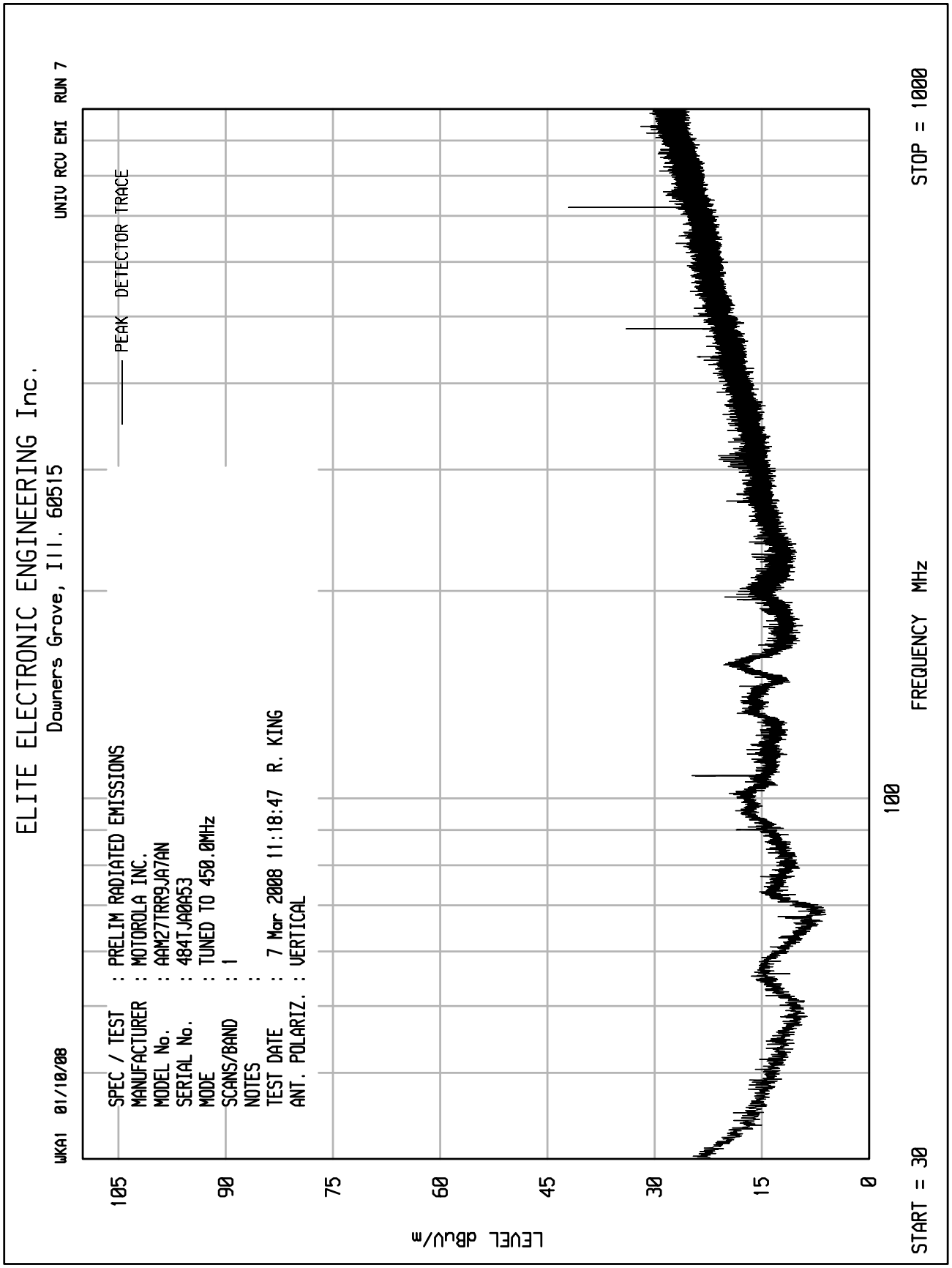
MANUFACTURER : Motorola Inc.
MODEL : AAM27TRR9JA7AN
SERIAL NO. : 484TJA0A53
TEST MODE : Receive
TUNNED FREQ. : 481MHz
NOTES :

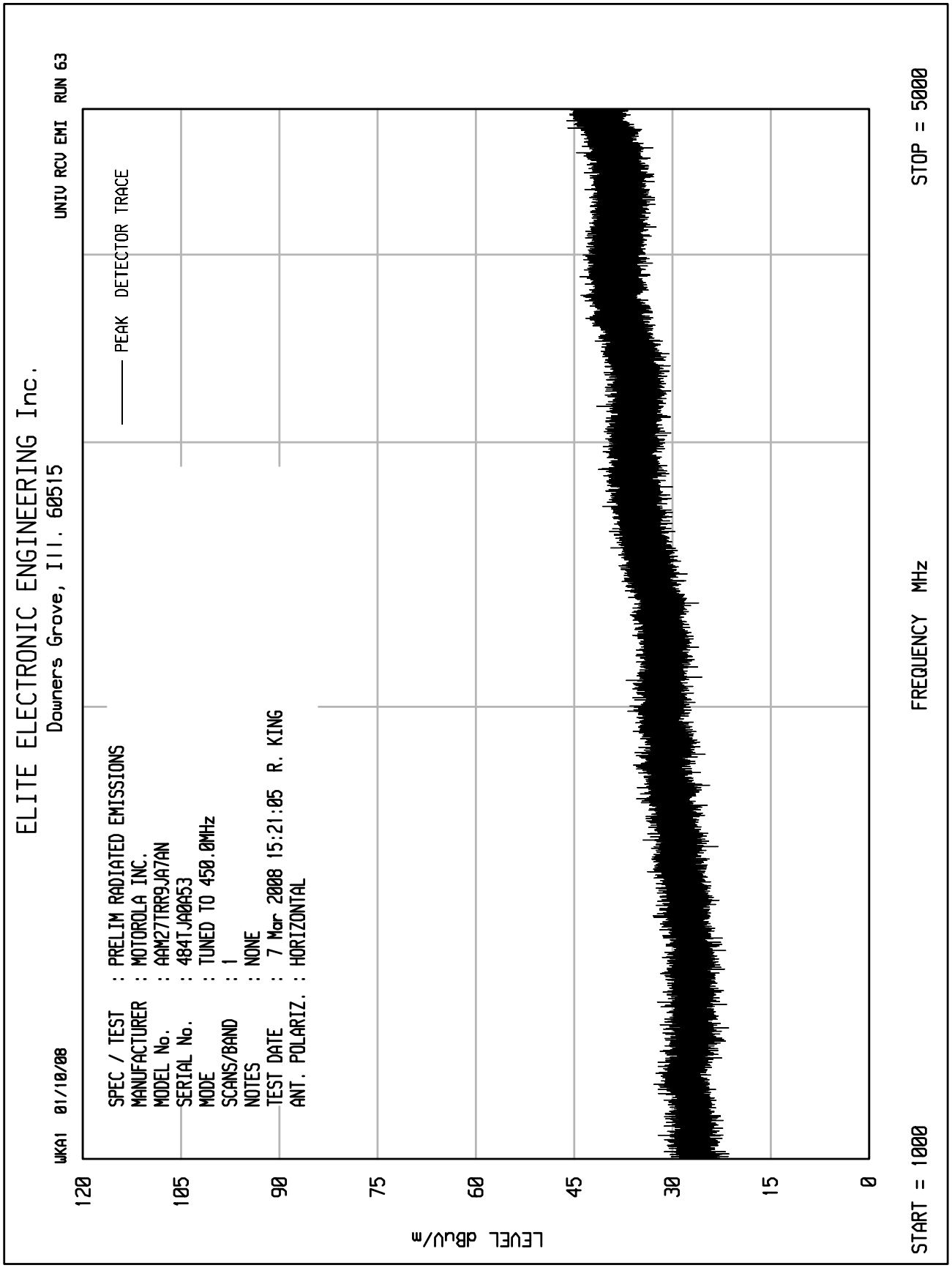


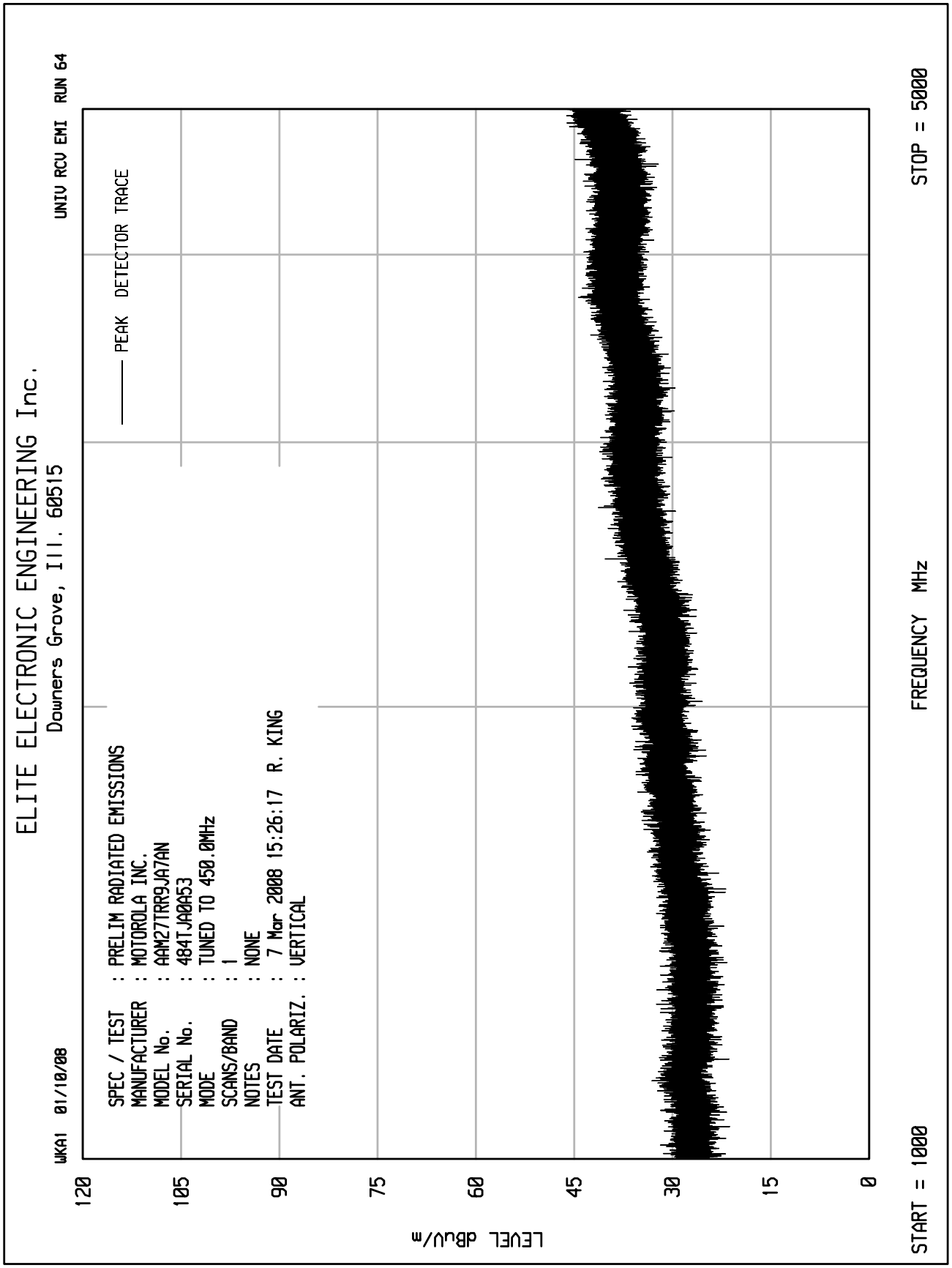
FCC 15.111 Antenna Conducted Emissions

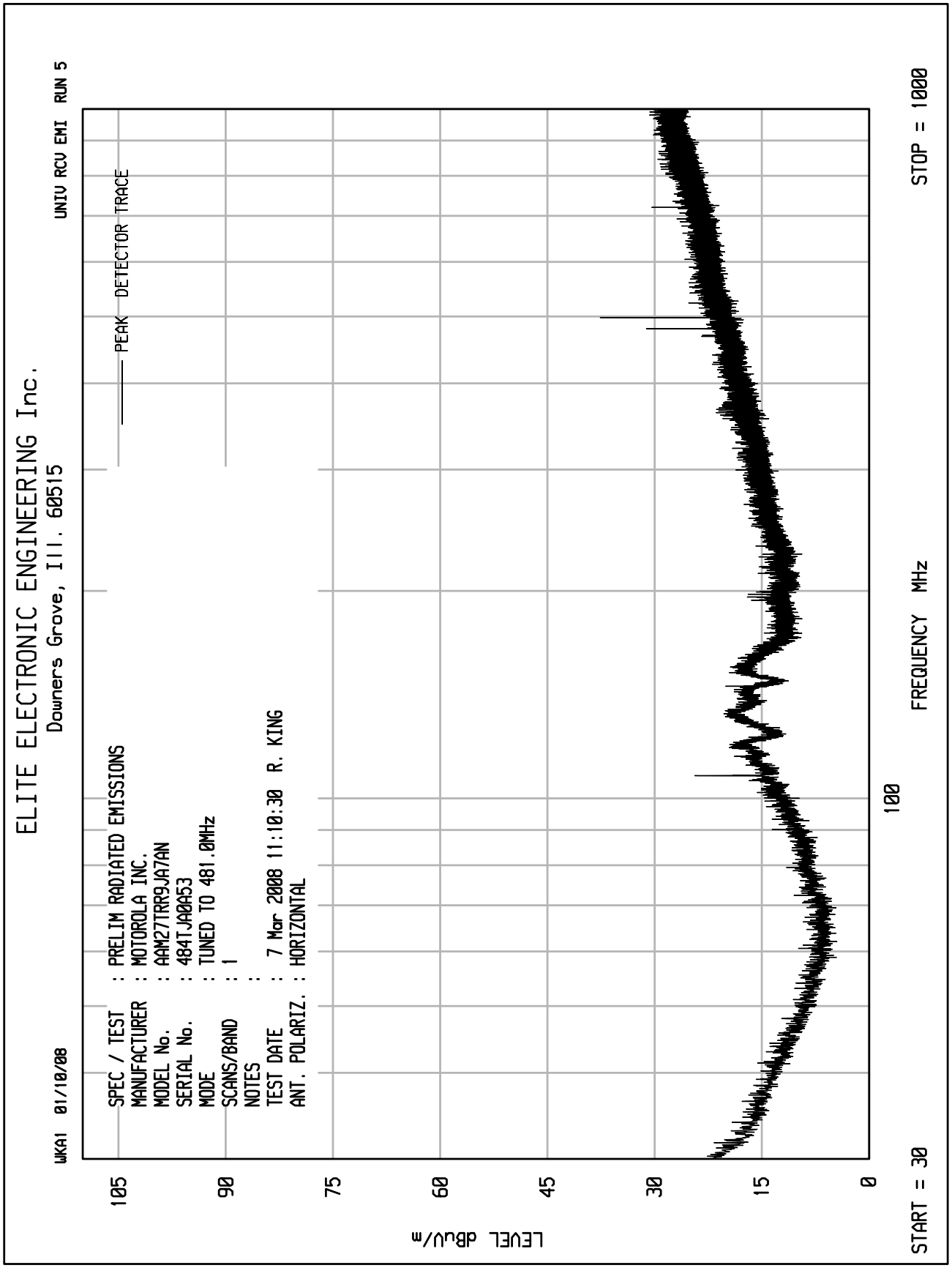
MANUFACTURER : Motorola Inc.
MODEL : AAM27TRR9JA7AN
SERIAL NO. : 484TJA0A53
TEST MODE : Receive
TUNNED FREQ. : 512MHz
NOTES :

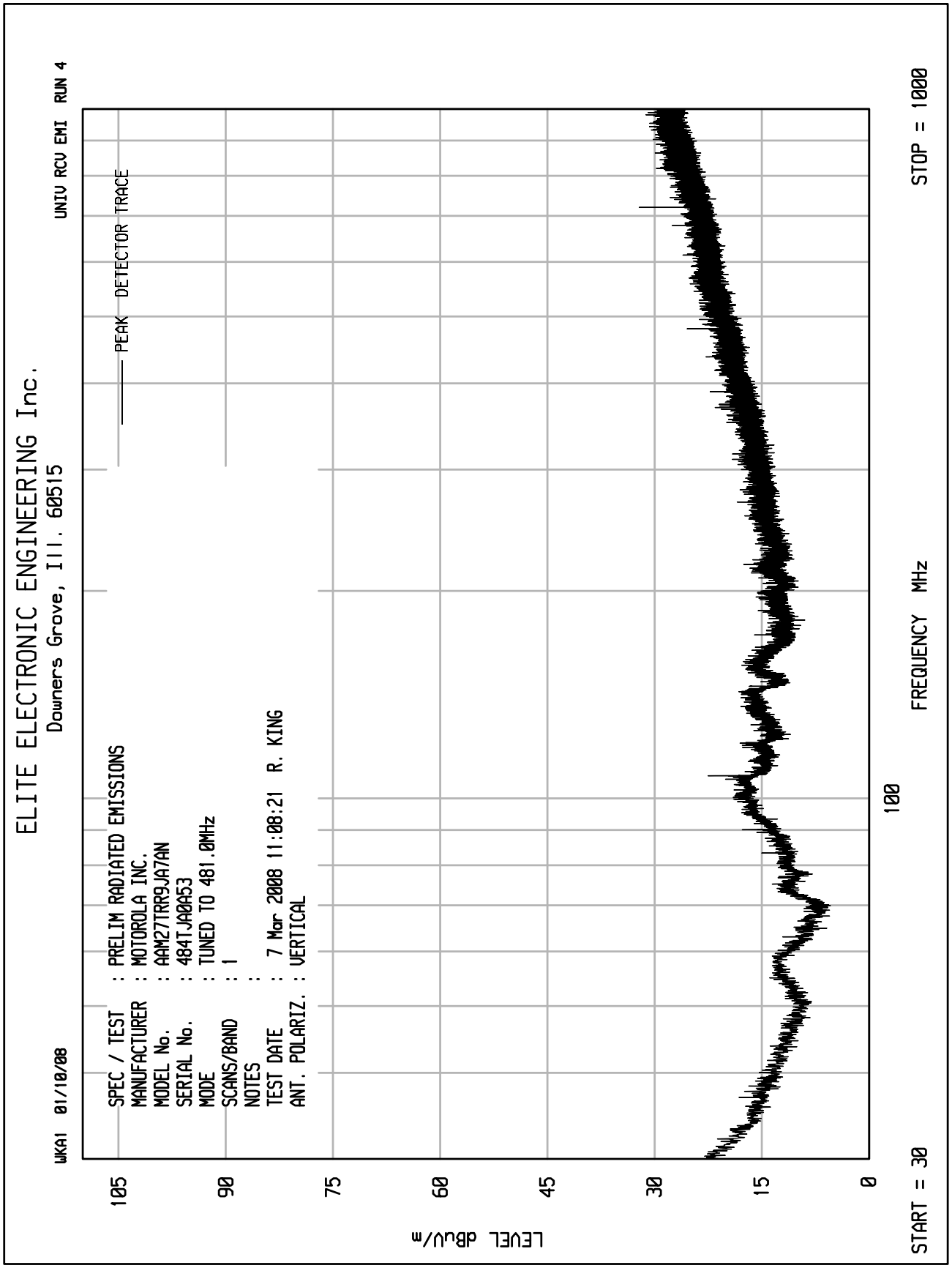

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 6
WKAI 01/10/08
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 450.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 7 Mar 2008 11:15:32 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

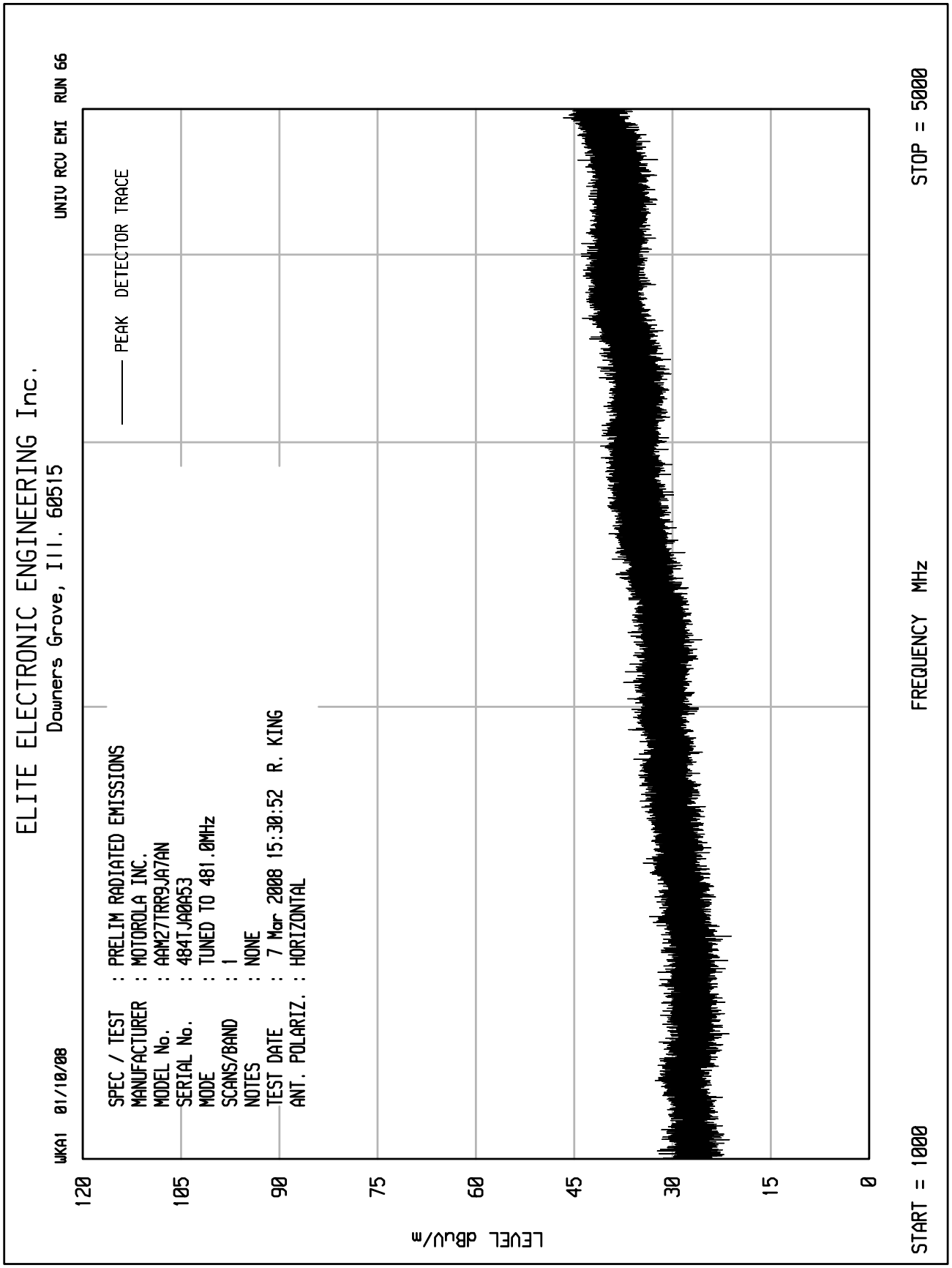

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 7
WKAI 01/10/08
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 450.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 7 Mar 2008 11:18:47 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

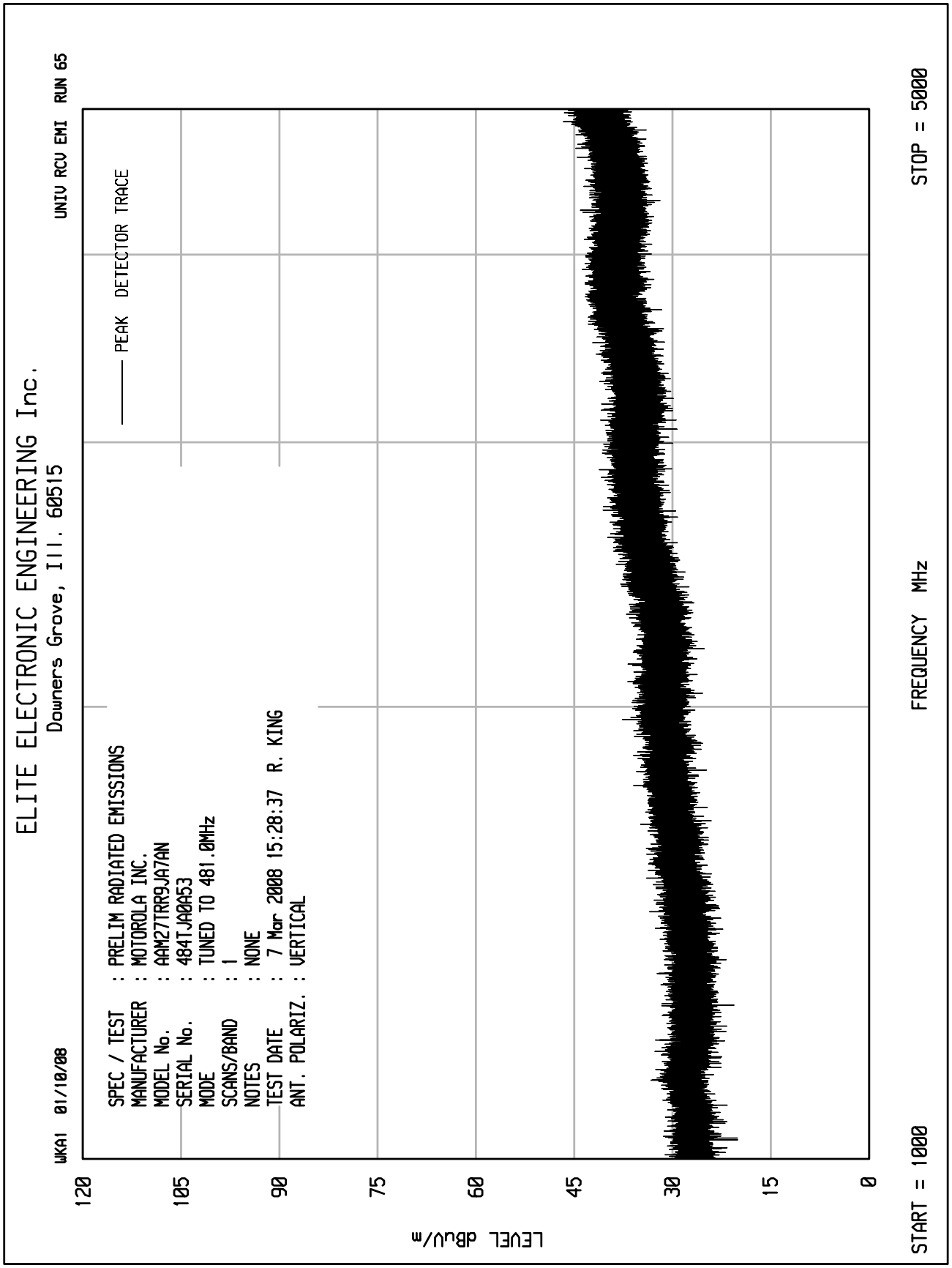

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 63
WKAI 01/10/08
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 450.0MHz
SCANS/BAND : 1
NOTES : NONE
TEST DATE : 7 Mar 2008 15:21:05 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 5000

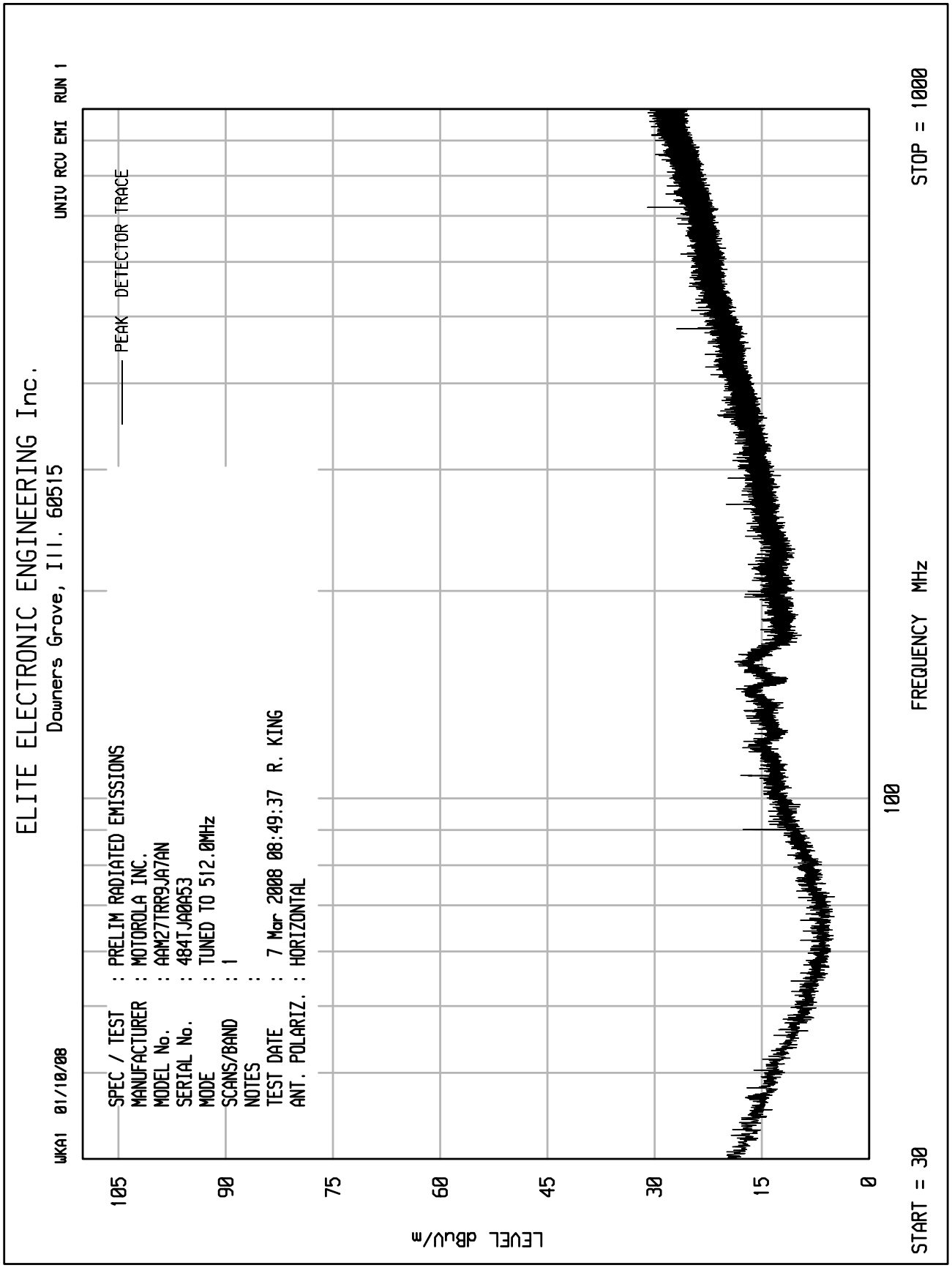

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 64
WKAI 01/10/08
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 450.0MHz
SCANS/BAND : 1
NOTES : NONE
TEST DATE : 7 Mar 2008 15:26:17 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 5000

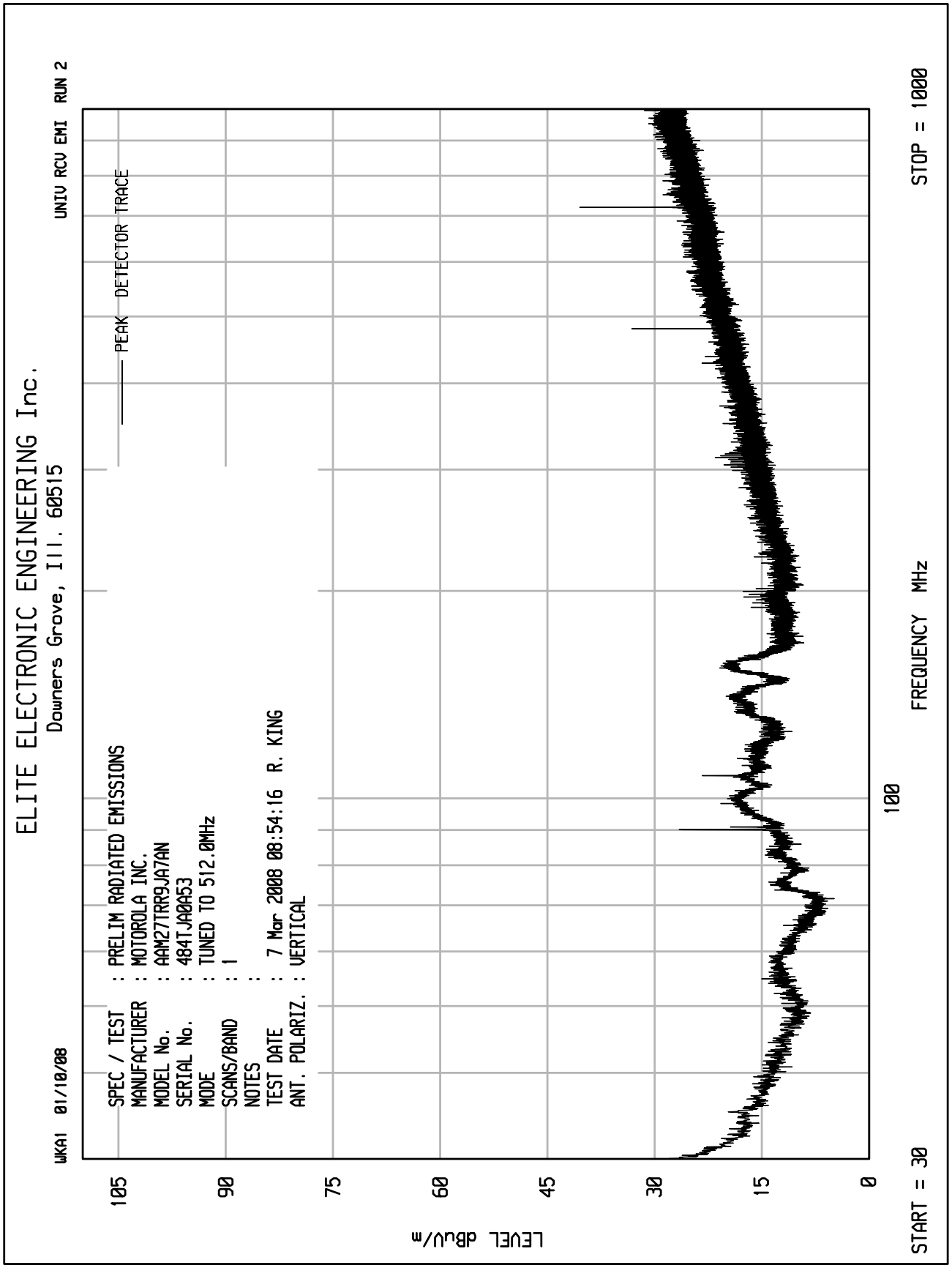

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 5
WKAI 01/10/00
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 481.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 7 Mar 2008 11:10:30 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

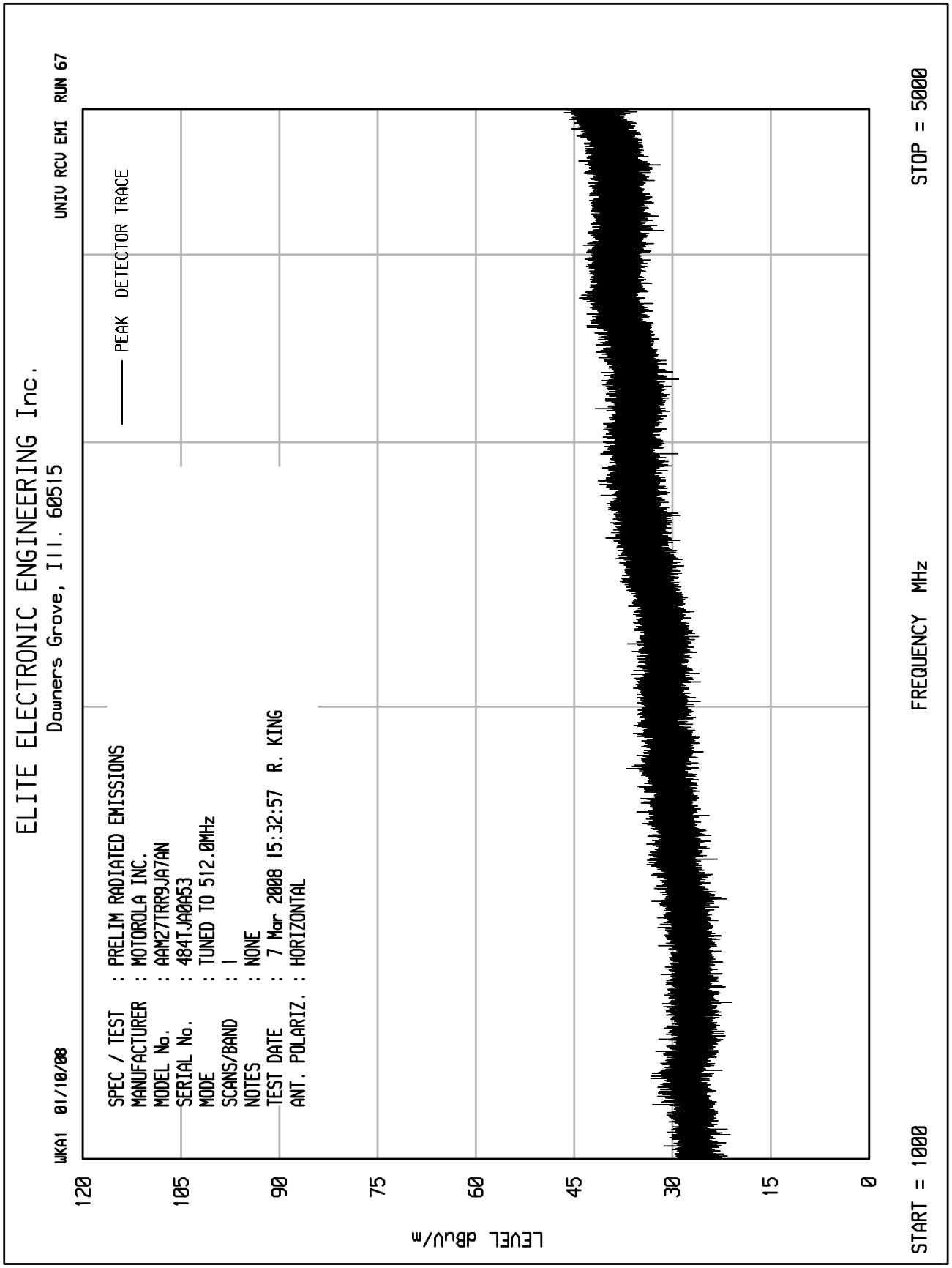

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 4
WKAI 01/10/08
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 481.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 7 Mar 2008 11:08:21 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
105
90
75
60
45
30
15
0
START = 30
100
FREQUENCY MHz
STOP = 1000

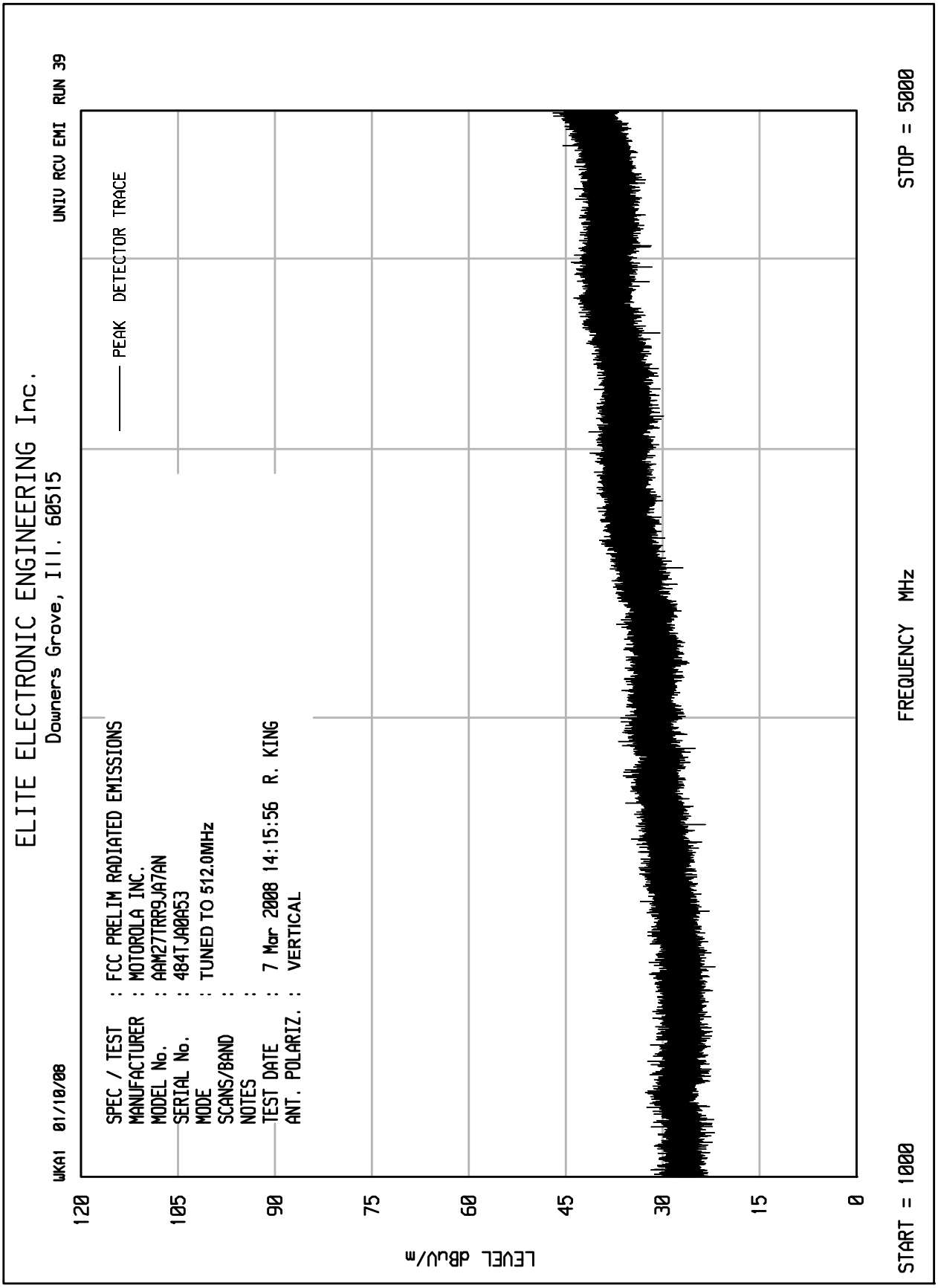

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 66
WKAI 01/10/08
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 481.0MHz
SCANS/BAND : 1
NOTES : NONE
TEST DATE : 7 Mar 2008 15:30:52 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 5000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 65
WKAI 01/10/08
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 481.0MHz
SCANS/BAND : 1
NOTES : NONE
TEST DATE : 7 Mar 2008 15:28:37 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 5000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 1
WKAI 01/10/08
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 512.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 7 Mar 2008 08:49:37 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
UNIV RCV EMI RUN 2
WKAI 01/10/08
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 512.0MHz
SCANS/BAND : 1
NOTES :
TEST DATE : 7 Mar 2008 08:54:16 R. KING
ANT. POLARIZ. : VERTICAL
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
UNIV RCV EMI RUN 67
WKAI 01/10/08
SPEC / TEST : PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 512.0MHz
SCANS/BAND : 1
NOTES : NONE
TEST DATE : 7 Mar 2008 15:32:57 R. KING
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 5000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV RCV EMI RUN 39
WKA1 01/10/08
SPEC / TEST : FCC PRELIM RADIATED EMISSIONS
MANUFACTURER : MOTOROLA INC.
MODEL No. : AAM27TRR9JA7AN
SERIAL No. : 484TJA0A53
MODE : TUNED TO 512.0MHz
SCANS/BAND : :
NOTES : :
TEST DATE : 7 Mar 2008 14:15:56 R. KING
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 5000

DATA PAGE

RADIATED QP EMISSION MEASUREMENTS in a 3 m SEMI-ANECHOIC ROOM
SPECIFICATION : FCC 15B CLASS B
MANUFACTURER : Motorola Inc.
MODEL : AAM27TRR9JA7AN
SERIAL NO. : 484TJA0A53
SPECIFICATION : FCC-15B Spurious Radiated Emissions
DATE : March 6, 2008
NOTES : Tuned to 450MHz
TEST DISTANCE : 3 m (DATA EXTRAPOLATED TO 3 m)

FREQUENCY MHz	QP READING dBuV	ANT FAC dB	CBL FAC dB	EXT ATTN dB	DIST FAC dB	TOTAL dBuV/m	QP LIMIT dBuV/m	AZ deg	ANT HT cm	POLAR
31.50	1.4	18.7	.4	0.0	0.0	20.4	40.0	135	120	V
57.73	4.5	7.1	.5	0.0	0.0	12.2	40.0	315	200	V
90.12	10.1	9.6	.5	0.0	0.0	20.1	43.5	-0	340	V
107.94	14.6	11.9	.6	0.0	0.0	27.1	43.5	135	200	V
142.65	4.4	11.8	.8	0.0	0.0	17.0	43.5	225	200	H
155.71	3.5	11.2	.8	0.0	0.0	15.5	43.5	-0	200	V
168.74	-4.3	10.6	.9	0.0	0.0	7.1	43.5	225	340	H
197.83	8.9	10.7	1.0	0.0	0.0	20.5	43.5	225	120	H
314.08	6.9	14.6	1.3	0.0	0.0	22.8	46.0	0	200	V
436.97	5.9	17.4	1.5	0.0	0.0	24.9	46.0	315	200	V
480.01	19.1	18.1	1.6	0.0	0.0	38.8	46.0	135	120	V
602.62	-5.8	19.8	1.7	0.0	0.0	15.8	46.0	225	200	V
720.00	19.9	21.0	1.8	0.0	0.0	42.7	46.0	-0	200	V

Checked BY Richard E. King :

Richard E. King

DATA PAGE

MANUFACTURER : Motorola Inc.
MODEL : AAM27TRR9JA7AN
SERIAL NO. : 484TJA0A53
SPECIFICATION : FCC-15B Spurious Radiated Emissions
DATE : March 6, 2008
NOTES : Tuned to 450MHz
: Test Distance is 3 meters

Freq (MHz)	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Total dBuV/m at 3 M	Total uV/m at 3M	Limit uV/m at 3M	Margin (dB)
376.7	H	4.5	*	1.5	15.7	21.7	12.1	200.0	-24.4
376.7	V	4.9	*	1.5	15.7	22.1	12.7	200.0	-23.9
753.3	H	6.5		1.8	20.7	29.1	28.6	200.0	-16.9
753.3	V	6.4		1.8	20.7	28.9	27.9	200.0	-17.1
1130.0	H	14.9	*	2.2	23.8	40.9	110.9	500.0	-13.1
1130.0	V	15.3	*	2.2	23.8	41.3	116.2	500.0	-12.7
1506.6	H	14.2	*	2.6	26.0	42.8	137.7	500.0	-11.2
1506.6	V	14.2	*	2.6	26.0	42.8	137.7	500.0	-11.2
1883.3	H	14.8	*	2.9	27.8	45.5	188.7	500.0	-8.5
1883.3	V	14.4	*	2.9	27.8	45.1	180.6	500.0	-8.8

V - Vertical H - Horizontal

Checked BY Richard E. King :

Richard E. King

MANUFACTURER : Motorola Inc.
MODEL : AAM27TRR9JA7AN
SERIAL NO. : 484TJA0A53
SPECIFICATION : FCC-15B Spurious Radiated Emissions
DATE : March 6, 2008
NOTES : Tuned to 481 MHz
: Test Distance is 3 meters

Freq (MHz)	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Total dBuV/m at 3 M	Total uV/m at 3M	Limit uV/m at 3M	Margin (dB)
407.7	H	3.2	*	1.5	16.7	21.4	11.7	200.0	-24.6
407.7	V	5.0		1.5	16.7	23.2	14.5	200.0	-22.8
815.3	H	7.9		1.9	21.6	31.4	37.2	200.0	-14.6
815.3	V	6.9		1.9	21.6	30.4	33.0	200.0	-15.7
1223.0	H	13.9	*	2.3	24.8	41.0	112.1	500.0	-13.0
1223.0	V	13.0	*	2.3	24.8	40.1	100.8	500.0	-13.9
1630.6	H	14.6	*	2.7	26.7	44.0	157.8	500.0	-10.0
1630.6	V	13.2	*	2.7	26.7	42.6	134.9	500.0	-11.4

V - Vertical H - Horizontal

Checked BY Richard E. King :

Richard E. King

DATA PAGE

MANUFACTURER : Motorola Inc.
MODEL : AAM27TRR9JA7AN
SERIAL NO. : 484TJA0A53
SPECIFICATION : FCC-15B Spurious Radiated Emissions
DATE : March 6, 2008
NOTES : Tuned to 512 MHz
: Test Distance is 3 meters

Freq (MHz)	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB)	Total dBuV/m at 3 M	Total uV/m at 3M	Limit uV/m at 3M	Margin (dB)
438.7	H	3.9	*	1.6	17.5	22.9	14.0	200.0	-23.1
438.7	V	3.7	*	1.6	17.5	22.7	13.6	200.0	-23.3
877.3	H	4.7	*	1.9	22.3	28.9	27.8	200.0	-17.1
877.3	V	6.7		1.9	22.3	30.9	35.0	200.0	-15.1
1316.0	H	13.4	*	2.4	25.1	40.9	110.7	500.0	-13.1
1316.0	V	14.3	*	2.4	25.1	41.8	123.0	500.0	-12.2
1754.6	H	14.8	*	2.8	27.2	44.8	174.7	500.0	-9.1
1754.6	V	14.4	*	2.8	27.2	44.5	167.2	500.0	-9.5

V - Vertical H - Horizontal

Checked BY Richard E. King :

Richard E. King