FCC/IC TEST REPORT
FOR THE
LPA DESIGN
MODEL P4-FCC
CAMERA FLASH REMOTE TRANSCEIVER
FCCID: KDS-PW4-100
IC: 2170A-PW4100

Prepared for:

LPA Design, Inc.
21 Gregory Drive, Suite 140
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USA

Submitted by:

Green Mountain Electromagnetics, Inc.

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Test Lab
Cert 898.01

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For Model P4-FCC

LPA Design, Inc.
FCC/IC EMC Testing
At
Green Mountain Electromagnetics, Inc.

Unit: Model P4-FCC Camera Flash Remote Transceiver
Received: 1/25/16
Tested: January 26 -31, 2016
Revision: February 26, 2016 to update Model Name to P4-FCC

I. Applicable Standards

The unit described in this report was measured for verification with the Code of Federal Regulations Chapter 47 – "Telecommunication, Part 2 – Frequency Allocations and Radio Treaty Matters: General Rules and Regulations, Subpart J – Equipment Authorization Procedures." Measurements required were per "47 CFR, Part 15 – Radio Frequency Devices, Subpart C: Intentional Radiators," paragraph 15.231, "Periodic Operation in the Band 40.66 - 40.70 MHz and above 70 MHz." Measurement procedures were in accordance with ANSI C63.4, "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (2014)."

The unit described in this report was also measured for certification with the Industry Canada Spectrum Management and Telecommunications Policy Radio Standards Specifications RSS-210 – "Licence-Exempt Radio Apparatus (All Frequency Bands): Category I Equipment (Issue 8, December 2010)," and RSS-Gen – "General Requirements and Information for the Certification of Radio Apparatus (Issue 3, Dec. 2010)."

Measurements required were per FCC/RSS-210 paragraphs 15.231(b)/A1.1.2(1) Field Strength of Fundamental Emissions, 15.231(b)(2)/A1.1.2(2) Duty Cycle, 15.231(b)(3)/A1.1.2(3) Field Strength of Spurious Emissions, 15.231(c)/A1.1.3 Occupied Bandwidth, and RSS-Gen 4.10 Receiver Spurious Radiation.

The device is commercial equipment with original manufacturer electronics operating from 344.04 to 354.00 MHz. Measurements were made at 344.04 MHz, center frequency and 354.00 MHz per 15.31(m) and RSS-Gen 4.3(f)(g). Per paragraph 15.33(a)(1) and RSS-Gen 4.9, the upper measurement limit is 3540 MHz. Duty cycle calculations per 15.35(c)/RSS-Gen 4.5 were applied to peak readings measured per 15.35(a)/RSS-Gen 4.4 to obtain average emissions values and verify the 20-dB requirement of 15.35(a)/RSS-Gen 7.2.1.

II. Unit Tested

The LPA Design, Inc. Model P4-FCC provides remote control of camera flash action. The Model P4-FCC uses battery power, and has a 32-channel 344-354 MHz transceiver with six modes of operation. Testing was performed with the device operating at three frequencies: highest, middle and lowest in the range of operation. The Model P4-FCC consists of the multi-piece plastic enclosure with connector hardware, the transmit/receive circuits, the microprocessor electronics, and the antenna. The table below describes the unit that was subjected to measurements determining compliance with applicable standards:

Product	Manufacturer	Model Number	Serial Number
Camera Flash Remote	LPA Design, Inc.	P4-FCC	Support IV

The following table describes the system physical and electrical properties:

Model Number	Volts	H/W/D in cm
P4-FCC	2 “AA” Batteries	4/6/11

The following table describes the support equipment used during testing:

Product	Manufacturer	Model Number
Camera	Nikon	D800
Flash	Nikon	SB-900

Power and signal cables were used for testing and are supplied by the manufacturer. The following table describes the system cables:

Cable	Manufacturer	Description
Signal (Receive)	n/a	3.5mm plug, 6”

III. Summary of Results

The LPA Design, Inc. Model P4-FCC complies with the FCC Part 15.231, RSS-210 & RSS-Gen requirements. In accordance with paragraphs 15.231(a) & IC RSS-210 A1.1 the device operates in the frequency range of 344 MHz to 354 MHz and is used for the transmission of a signal for camera remote flash control. In accordance with paragraphs 15.231(a)(1)-(5) & A1.1.1(a)-(d) the device is a manually operated, push to operate transmitter under manual control, and the device ceases transmission within 5 seconds of deactivation.

In accordance with paragraphs FCC 15.231(a)(2)-(5) and IC A1.1.1 (b) - (d): Transmission is not automatically activated and the transmitter does not perform periodic transmissions. Additionally, this device is not employed for radio-control purposes during emergencies involving fire, security systems or safety for life.

Sections X - XIV contain the results summarized in the table below.

	Test	Mode/Port	FCC/IC Paragraphs	Frequency or Range	Specified Values	Measured Values
1	Fundamental Emissions	Transmit	15.231(b)/ A1.1.2(1)	344 MHz 349 MHz 354 MHz	<77 dBuV/m <77 dBuV/m <78 dBuV/m	60 dBuV/m 61 dBuV/m 58 dBuV/m
2	Duty Cycle	Transmit	15.231(b)(2)/ A1.1.2(2)	344 - 354 MHz	>20 dB	24 dB
3	Spurious Emissions	Transmit	15.231(b)(3)/ A1.1.2(3)	30 – 88 MHz 88 – 216 MHz 216 – 960 MHz 960 – 3540 MHz	<40 dBuV/m <43.5 dBuV/m <46 dBuV/m <54 dBuV/m	Within 3m and 1m Limits
4	Occupied Bandwidth	Transmit	15.231(c)/ A1.1.3	20-dB down at 0.25% of Fundamental	<860.1 kHz <872.5 kHz <885.0 kHz	150 kHz 250 kHz 400 kHz
5	Spurious Emissions	Receive Modes 1 & 2	RSS-Gen 4.10	30 – 88 MHz 88 – 216 MHz 216 – 960 MHz 960 – 24 GHz	<40 dBuV/m <43.5 dBuV/m <46 dBuV/m <54 dBuV/m	Within 3m and 1m Limits

Exploratory measurements indicate maximum radiation is found when antenna polarization is aligned with the EUT antenna and when antenna is pointed directly at the EUT at scan heights >10% of EUT height.

Testing was performed by Kyle R. Kowalczyk, president, Green Mountain Electromagnetics and requested by:

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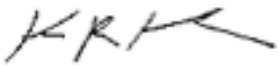
USA



Kyle R. Kowalczyk
2/10/16

IV. Measurement Location

The GME laboratory and Open Area Test Site (OATS) are located at 219 Blake Roy Road, Middlebury, VT. The OATS is a 10/3/1-meter site complete with antenna positioner, ground plane and motorized turntable. The OATS is constructed in accordance with ANSI C63.7-2005 and complies with the requirements for radiated emissions testing in ANSI C63.4-2014 and CISPR standards. GME is internationally accredited by the American Association for Laboratory Accreditation (A2LA) and meets the quality requirements in ISO/IEC 17025 (2005), "General Requirements for the Competence of Testing and Calibration Laboratories." FCC/IC sites US1087/2811A.

V. Equipment and Cable Configuration

GME witnessed the unit in satisfactory condition for testing, however the manufacturer is responsible for ensuring that the equipment under test (EUT) represents the product line. The manufacturer is also responsible for the EMC test plan and for assuring that this report is consistent with that plan. The EUT configuration was arranged to produce maximum radiated emissions as shown in the block diagram below. The equipment was subjected to complete emissions tests per the manufacturer's test plan.

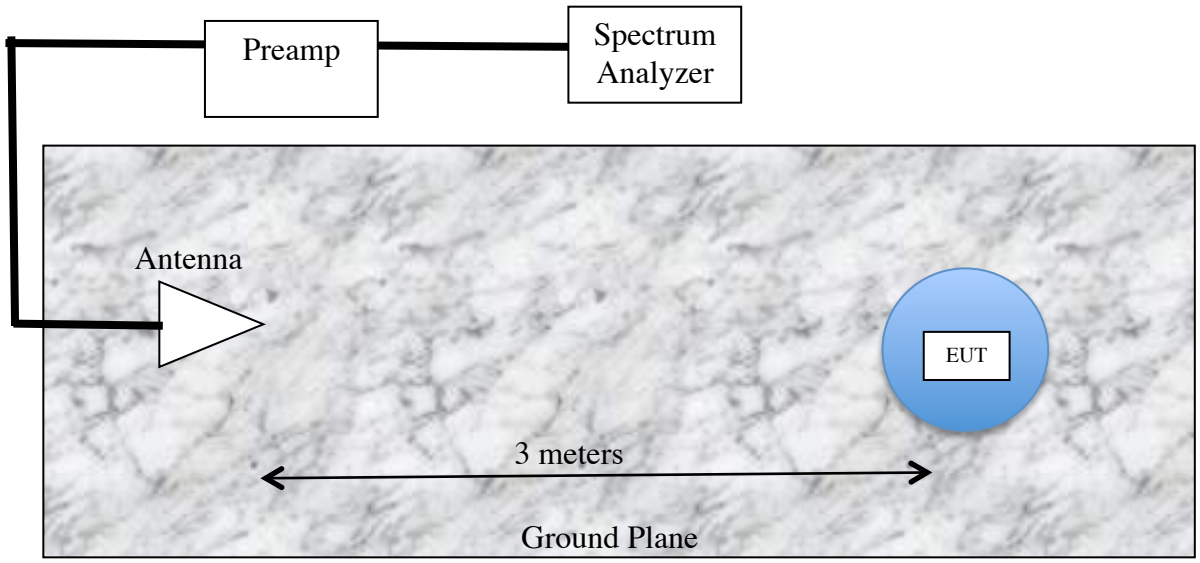


Figure 1 – Block Diagram of EUT on OATS

The EUT was operating in a continuous mode utilizing and testing its functions. The EUT was also tested upon power up. It was tested in transmit mode connected directly to both camera and flash. It was also tested in two receive modes: connected directly to flash and connected to flash via a 3.5-mm type connecting wire. New batteries were used during testing.

VI. Units of Measurement and Uncertainty

Measurements of radiated electric fields were made in units of dB referenced to 1 microvolt per meter (dBuV/m). Limits appearing on the spectrum analyzer data were corrected for the appropriate antenna factor, cable loss and amplifier gain.

The following equation was employed:
Corrected Limit (dBuV) = Limit (dBuV/m) + 20 log(X_{std}/X_{site}) + Amplifier Gain (dB) – Antenna Factor (dB/m) – Cable Loss (dB).

Sample calculation at 30 MHz:
52 dBuV Corrected Limit = 40.0 dBuV/m Limit + 20 log(3/3) dB distance + 30 dB Amplifier Gain – 17 dB/m Antenna Factor – 1 dB Cable Loss. (52 = 40 + 30 – 17 – 1).

Uncertainty
The uncertainty budgets in GME EMC measurements are identified as follows:

1. Field strength between 30 MHz and 6 GHz on a ten-meter OATS using broadband antennas:

Contribution	Probability Distribution	Uncertainty (dB)
antenna factor calibration	normal k=2	0.5
cable loss calibration	normal k=2	0.5
analyzer specification	rectangular	1.5
distance variation	rectangular	0.6
height variation	rectangular	0.5
site imperfection	rectangular	2.0
mismatch	u-shaped	1.5
repeatability	standard deviation	0.5
combined uncertainty u(y)	normal	1.946
expanded uncertainty U	normal k=2	3.892

$$u(y) = \sqrt{(\frac{0.5}{2})^2 + (\frac{0.5}{2})^2 + \frac{1.5^2 + 0.6^2 + .5^2 + 2.0^2}{3} + \frac{1.5^2}{2} + 0.5^2}$$

U = k u(y)

Other GME uncertainty values are available upon request. Note: "U" represents an expanded uncertainty expressed at an approximately 95% confidence level using a coverage factor of k=2.

VII. Measuring Equipment

The table below describes the instrumentation used by Green Mountain Electromagnetics to perform this testing:

Unit	Manufacturer	Model	Serial #	Last Cal.	Next Cal.
Spectrum Analyzer	GW Instek	GSP-830	E1180708	9/18/15	9/18/16
Spectrum Analyzer	Agilent	E7405A	MY45103086	9/28/15	9/28/16
Spectrum Analyzer	Triarchy	TSA6G1	CN61800821	8/7/15	8/7/16
Pre-Amplifier	MiniCircuits	ZKL-2R5+	739045986	2/17/15	2/17/16
Weather Station	Davis Insts.	Perception II	PC30923A07	1/20/16	1/20/17
Bilog Antenna	ARA	LPB-2513/A	1224	9/29/15	9/29/16
Horn Antenna	ElectroMetrics	RGA-60	6139	10/26/15	10/26/17

VIII. Measurement Procedures

1. Fundamental/Harmonic Emissions.

Specification: ≤7250 uV/m @ 344 MHz (77 dBuV)
Specification: ≤7458 uV/m @ 349 MHz (77.5 dBuV)
Specification: ≤7667 uV/m @ 354 MHz (78 dBuV)

a. Set up EUT on OATS and test instrumentation in laboratory.
b. Verify spectrum analyzer and EUT operation.
   i. Spectrum analyzer uses internal attenuators and peak detector.
   ii. Set analyzer to carrier frequency and use span >OBW.
c. Operate EUT at normal power unmodulated.
d. Measurement distance is 3 meters and EUT is rotated 360°.
e. Record level displayed on analyzer.

2. Duty Cycle.

Specification: >20dB

a. Set up EUT and test instrumentation in laboratory.
   i. Connect EUT to power and operate companion unit.
b. Verify spectrum analyzer and EUT operation.
   i. Use internal spectrum analyzer attenuator.
c. Verify EUT frequency and device on-time.
d. Operate EUT at power unmodulated.
e. Record level displayed on analyzer with zero span.
f. Perform calculation to determine average levels.

3. Occupied Bandwidth.

Specification: 20-dB down ≤860.1 kHz @ 344 MHz
Specification: 20-dB down ≤872.5 kHz @ 349 MHz
Specification: 20-dB down ≤885.0 kHz @ 354 MHz

a. Set up EUT and test instrumentation in laboratory.
b. Verify analyzer and EUT operation.
   i. Spectrum analyzer uses internal attenuators.
   ii. Set analyzer to carrier frequency and use specified span.
c. Operate EUT with standard modulation.
d. Record signal displayed on analyzer.

4. Spurious Emissions – Transmit and Receive.

Frequency range: 30 MHz to 88 MHz
Limit: 40 dBuV/m @ 3 meters
Frequency range: 88 kHz to 216 MHz
Limit: 43.5 dBuV/m @ 3 meters
Frequency range: 216 MHz to 960 MHz
Limit: 46 dBuV/m @ 3 meters
Frequency range: 960 MHz to 3540 MHz
Limit: 54 dBuV/m @ 3 meters

a. Set up instrumentation at open area test site.
   i. Mount EUT on ground plane and broadband antenna on antenna positioner.
   ii. Observe temperature, humidity and atmospheric pressure.
   iii. Measurement distance is 3 meters <1 GHz/1 meter >1 GHz, and antenna scan height is 1 to 4 meters. Use RF absorber on ground plane >1 GHz.

b. Verify spectrum analyzer and antenna operation.
   i. Spectrum analyzer is connected to antenna. Use broadband horn >1 GHz.
   ii. Preamplifier is inserted between antenna and analyzer to ensure analyzer noise threshold is at least 6 dB below specification limit.

c. Set up, power and operate EUT as in block diagram in Section V.

d. Perform preliminary evaluation of equipment in the near field.
   i. Vary antenna height, antenna polarization, and antenna orientation to EUT.
   ii. Repeat step d.i. while evaluating radiation in the 30-MHz to 3540-MHz spectrum.
   iii. Refer to ANSI C63.4 for exploratory measurements >1 GHz.

e. Determine frequencies and equipment orientations that produce maximum radiation.
   i. Identify processor, clock and beat frequencies, and harmonics.

f. Perform final evaluation of unit by recording spectrum analyzer data.
   i. Ensure the EUT is producing the maximum radiation found in step e.
   ii. Collect data over the entire frequency range.
   iii. Refer to ANSI C63.4 for final measurements >1 GHz – Manually ensure measurement antenna is in cone of radiation for emission areas determined in steps d.-e. by adjusting in both azimuth an elevation positions. Polarization is oriented for maximum response.

IX. Photographs of Measurement Setup

The following are photographs of the equipment as it was tested.

Photograph 1 – Fundamental/Spurious Emissions - Transmit <1 GHz

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Photograph 2 – Spurious Emissions - Transmit >1 GHz

Photograph 3 – Spurious Emissions - Receive Mode Direct Connect <1 GHz

Photograph 4 – Spurious Emissions - Receive Mode Direct Connect >1 GHz

Photograph 5 – Spurious Emissions - Receive Mode Cable Connect <1 GHz

Photograph 6 – Spurious Emissions - Receive Mode Cable Connect >1 GHz

X. Fundamental Emissions Data – Transmit

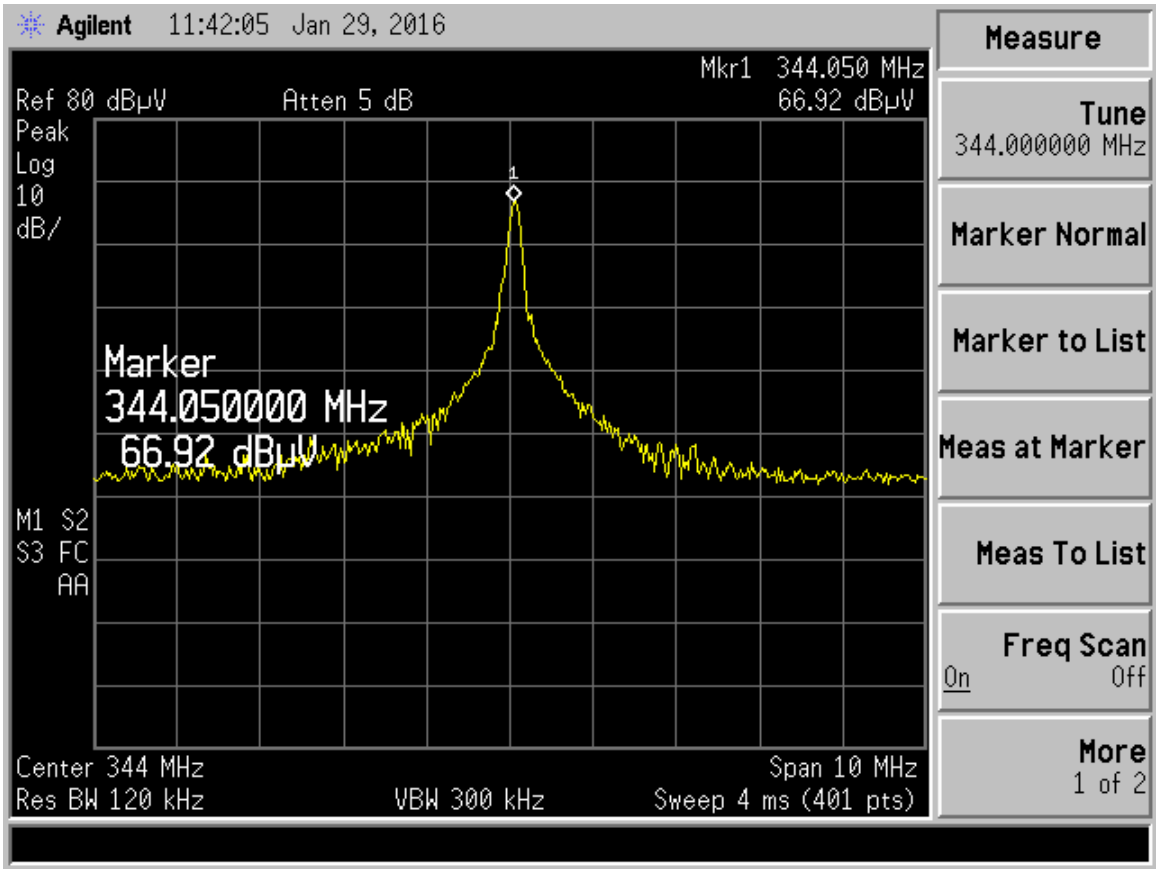
Transmit 344.04 MHz

Measured Level dBuV	Antenna Factor dB/m	Cable Loss dB	Duty Cycle dB	Corrected Level dBuV/m	Limit dBuV/m	Delta dB
67	15	2	24	60	77	17

RF-Power Corrected Limit

Corrected Level (dBuV/m) = Measured Level (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) - Duty Cycle (dB).

Model P4-FCC



X. Fundamental Emissions Data Cont'd.

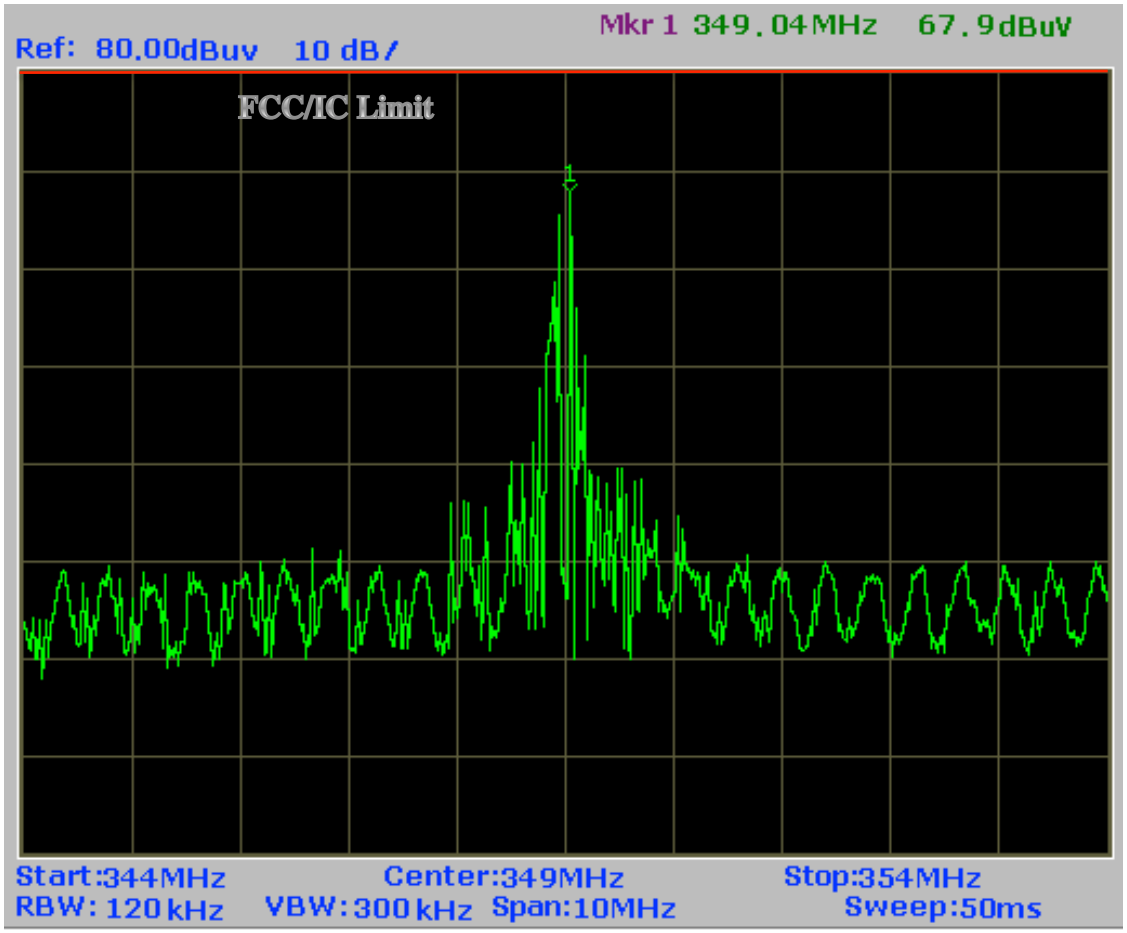
Transmit 349 MHz

Measured Level dBuV	Antenna Factor dB/m	Cable Loss dB	Duty Cycle dB	Corrected Level dBuV/m	Limit dBuV/m	Delta dB
68	15	2	24	61	77	16

RF-Power Corrected Limit

Corrected Level (dBuV/m) = Measured Level (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) - Duty Cycle (dB).

Model P4-FCC



X. Fundamental Emissions Data Cont'd.

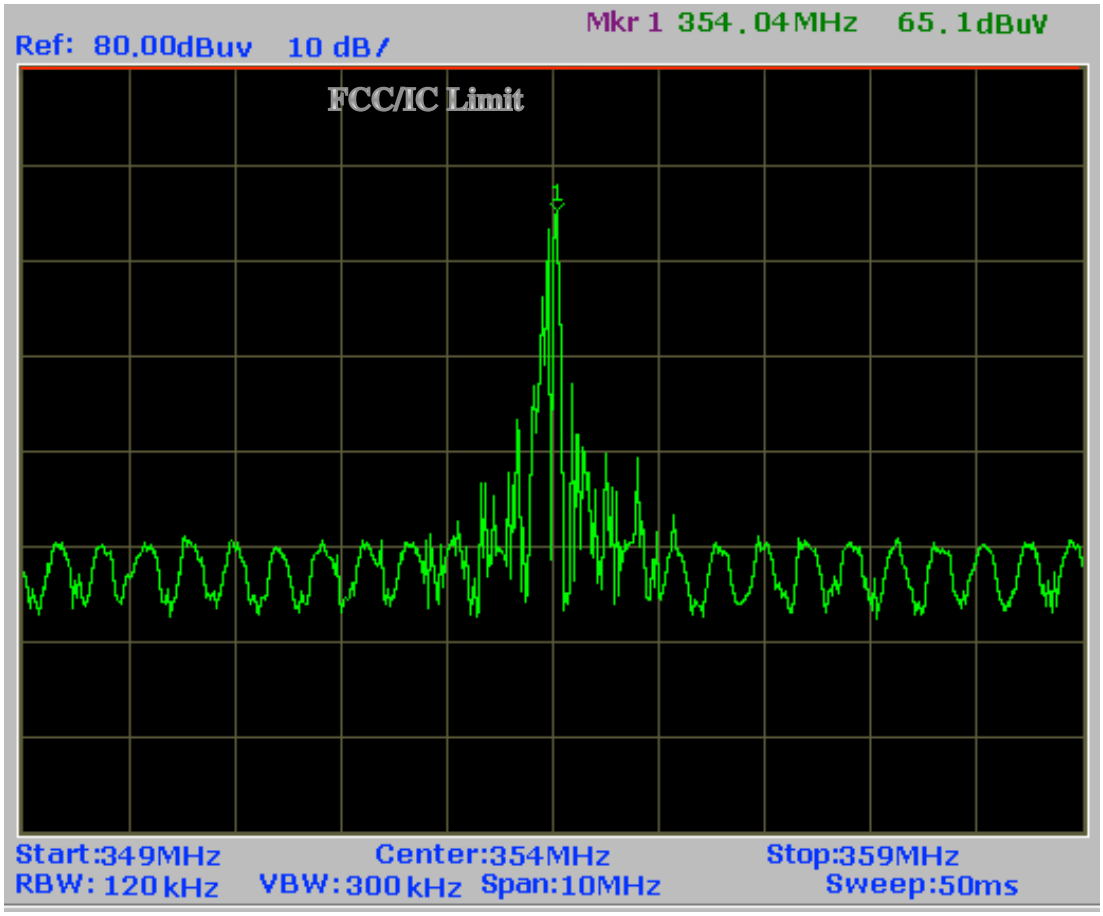
Transmit 354 MHz

Measured Level dBuV	Antenna Factor dB/m	Cable Loss dB	Duty Cycle dB	Corrected Level dBuV/m	Limit dBuV/m	Delta dB
65	15	2	24	58	77	19

RF-Power Corrected Limit

Corrected Level (dBuV/m) = Measured Level (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) - Duty Cycle (dB).

Model P4-FCC

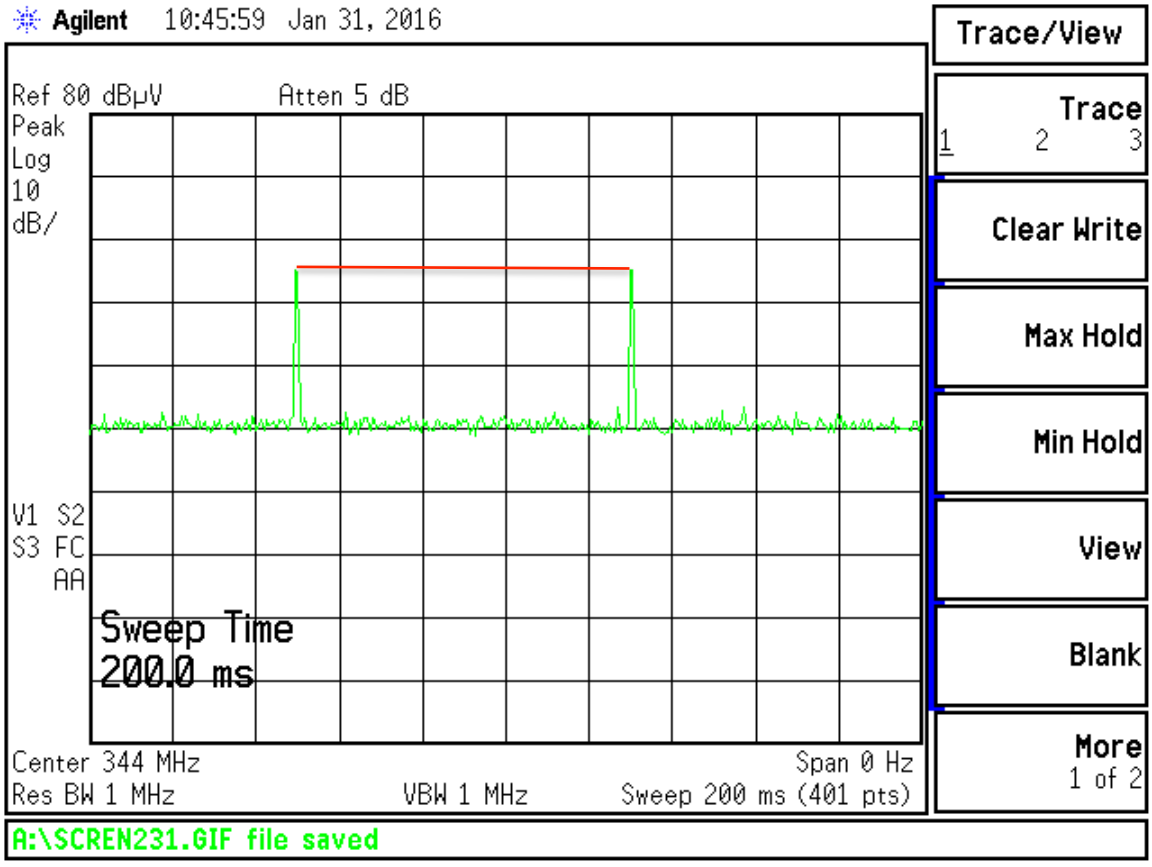


XI. Duty Cycle Data – Transmit

Duty cycle time between transmit on modes.

Measured: 80 ms

Model P4-FCC



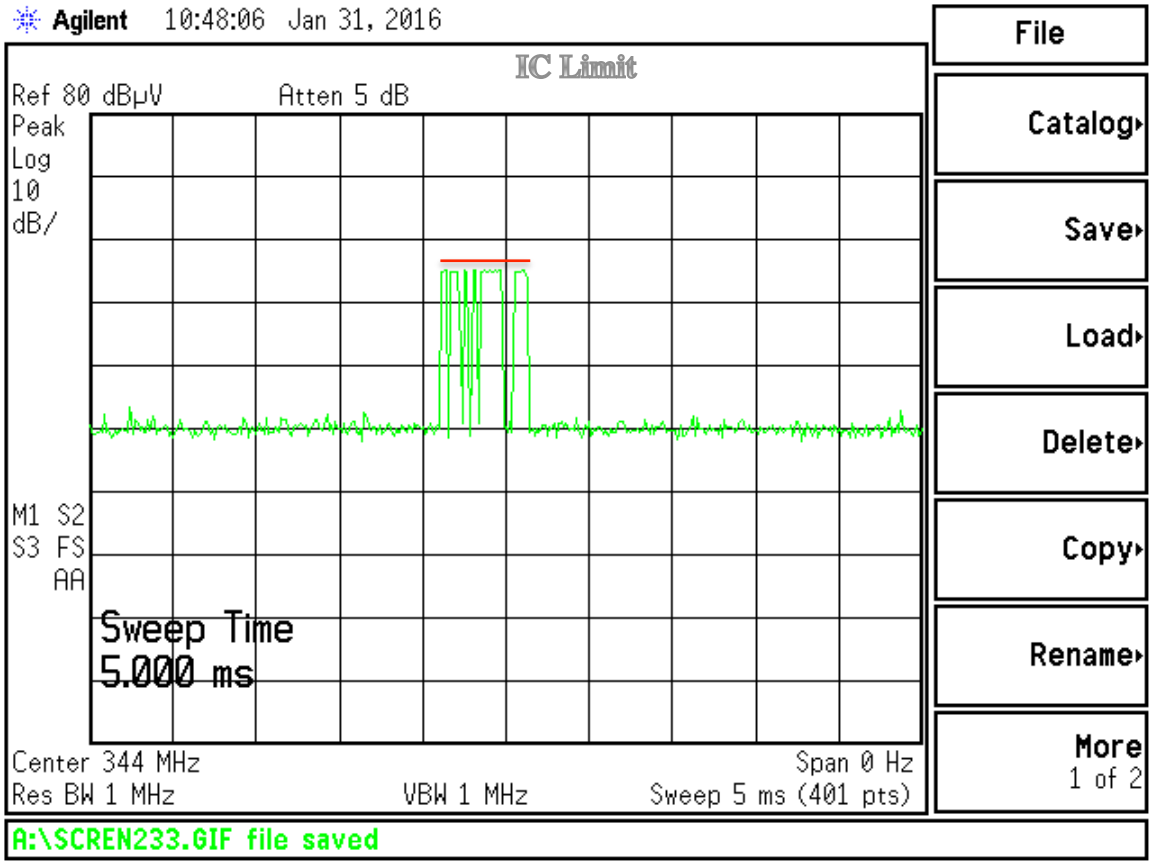
XI. Duty Cycle Data – Transmit Cont'd.

Duty cycle pulse width.

Measured: 5 ms

Calculation: Pulse width/Time between transmissions = 5ms/80ms = 6.25% = 24 dB

Model P4-FCC



XII. Spurious Emissions Data - Transmit

The table below describes the correction factors necessary to apply the limit to the spectrum analyzer output. The following page contains the spectrum analyzer output with the corrected specification limits superimposed. The green trace is the ambient condition, and the orange identifies EUT emissions. Maximum amplitudes of vertical polarization are shown in the results below.

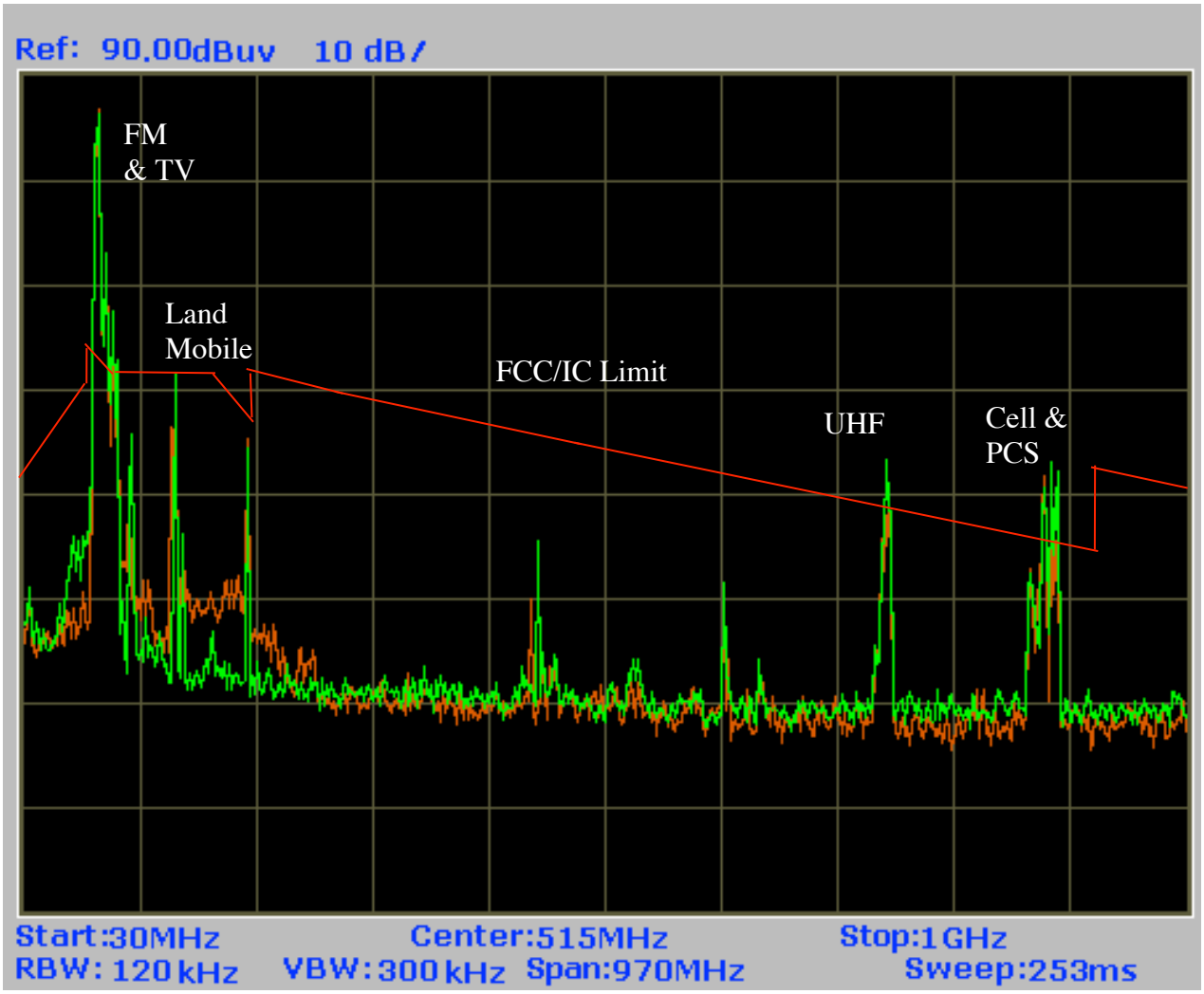
Corrected Limit (dBuV) = Limit (dBuV/m) + 20 log(X_{std}/X_{site}) + Amplifier Gain (dB) – Antenna Factor (dB/m) – Cable Loss (dB).

Frequency MHz	Class B limit @ 3m dBuV	Amp Gain dB	Antenna Factor dB	Cable Loss dB	Corrected Limit dBuV
30	40	30	17	1	52
50	40	30	13	1	56
88	40	30	8	1	61
89	43.5	30	8	1	64.5
100	43.5	30	9	2	62.5
125	43.5	30	10	2	61.5
150	43.5	30	9	3	61.5
216	43.5	30	12	3	58.5
217	46	30	12	3	61
300	46	30	14	4	58
500	46	30	17	6	53
960	46	30	23	9	44
961	54	30	23	9	52
1000	54	30	24	10	50

Table 1 – Corrected FCC/IC Limit - Vertical Polarization

XII. Spurious Emissions Data - Transmit Cont'd.

Model P4-FCC
Maximum of Vertical Polarization



XII. Spurious Emissions Data - Transmit Cont'd.

The table below describes the correction factors necessary to apply the limit to the spectrum analyzer output. The following page contains the spectrum analyzer output with the corrected specification limits superimposed. The green trace is the ambient condition, and the orange identifies EUT emissions. Maximum amplitudes of horizontal polarization are shown in the results below.

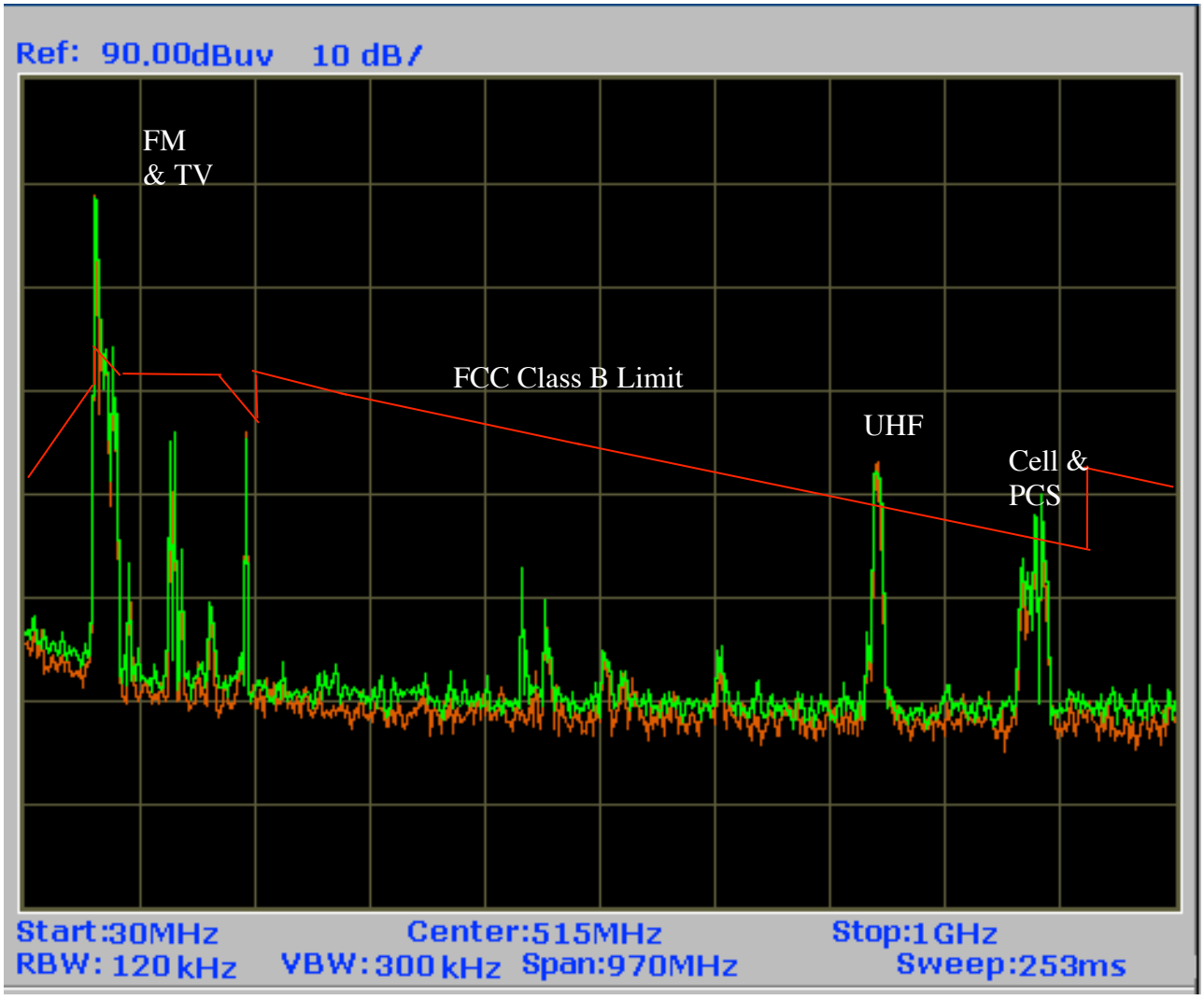
Corrected Limit (dBuV) = Limit (dBuV/m) + 20 log(X_{std}/X_{site}) + Amplifier Gain (dB) – Antenna Factor (dB/m) – Cable Loss (dB).

Frequency MHz	Class B limit @ 3m dBuV	Amp Gain dB	Antenna Factor dB	Cable Loss dB	Corrected Limit dBuV
30	40	30	18	1	51
50	40	30	15	1	54
88	40	30	7	1	62
89	43.5	30	7	1	65.5
100	43.5	30	10	2	61.5
125	43.5	30	11	2	60.5
150	43.5	30	9	3	61.5
216	43.5	30	12	3	58.5
217	46	30	12	3	61
300	46	30	13	4	59
500	46	30	17	6	53
960	46	30	23	9	44
961	54	30	23	9	52
1000	54	30	24	10	50

Table 2 – Corrected FCC/IC Limit - Horizontal Polarization

XII. Spurious Emissions Data - Transmit Cont'd.

Model P4-FCC
Maximum of Horizontal Polarization



XII. Spurious Emissions Data - Transmit Cont'd.

The table below describes the correction factors necessary to apply the limit to the spectrum analyzer output. The following page contains the spectrum analyzer output with the corrected specification limits superimposed. The green trace is the ambient condition, and the orange identifies EUT emissions. Maximum amplitudes of vertical polarization are shown in the results below.

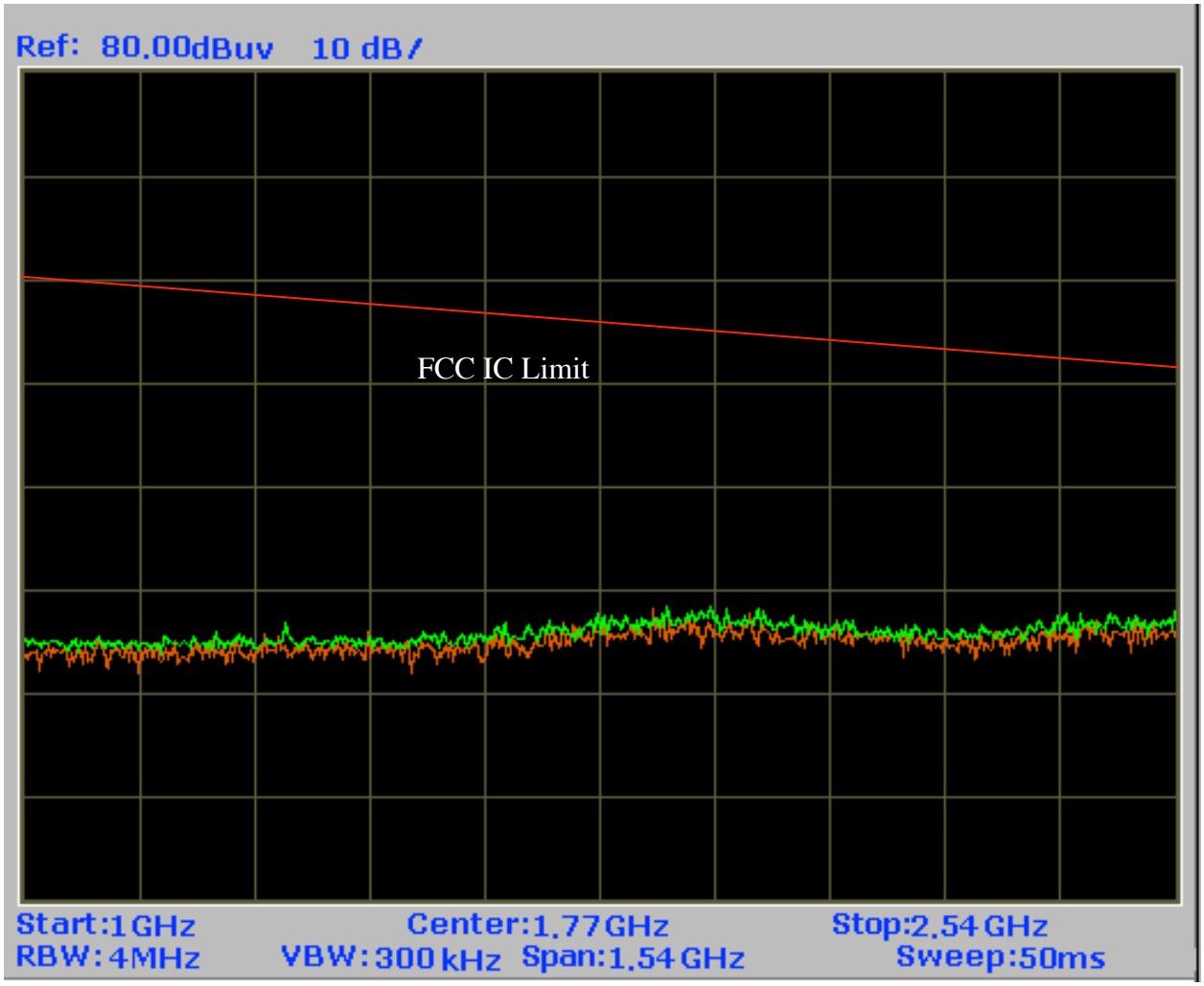
Corrected Limit (dBuV) = Limit (dBuV/m) + 20 log(X_{std}/X_{site}) + Amplifier Gain (dB) – Antenna Factor (dB/m) – Cable Loss (dB).

Frequency GHz	FCC/IC limit @ 3m dBuV	1-Meter Distance Corr. dB	Amp Gain dB	Antenna Factor dB	Cable Loss dB	Corrected Limit dBuV
1	54	10	30	24	10	60
2.54	54	10	30	29	14	51
3.54	54	10	30	32	16	46

Table 3 – Corrected FCC/IC Limit - Vertical Polarization

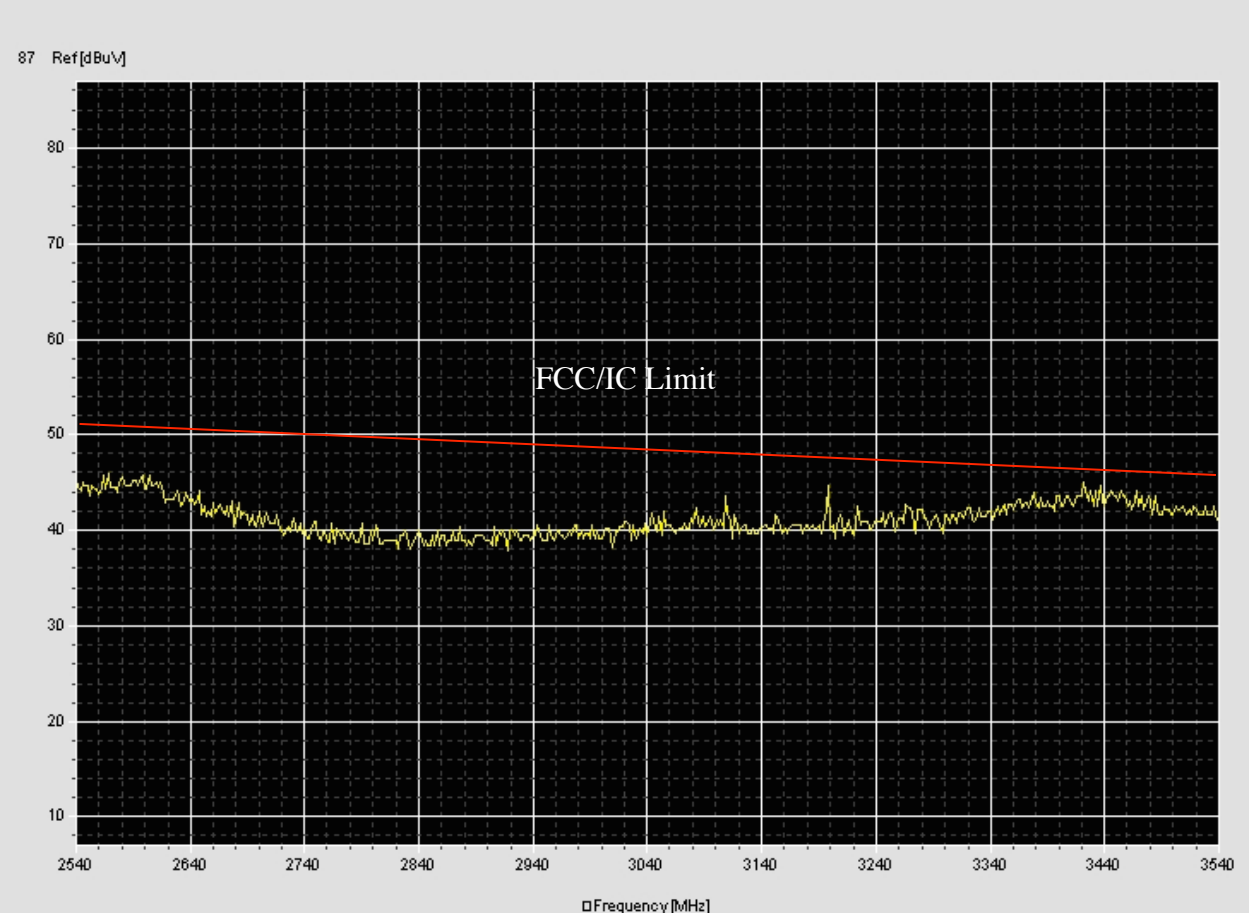
XII. Spurious Emissions Data - Transmit Cont'd.

Model P4-FCC
Maximum of Vertical Polarization



XII. Spurious Emissions Data - Transmit Cont'd.

Model P4-FCC
Maximum of Vertical Polarization



XII. Spurious Emissions Data - Transmit Cont'd.

The table below describes the correction factors necessary to apply the limit to the spectrum analyzer output. The following page contains the spectrum analyzer output with the corrected specification limits superimposed. The green trace is the ambient condition, and the orange identifies EUT emissions. Maximum amplitudes of horizontal polarization are shown in the results below.

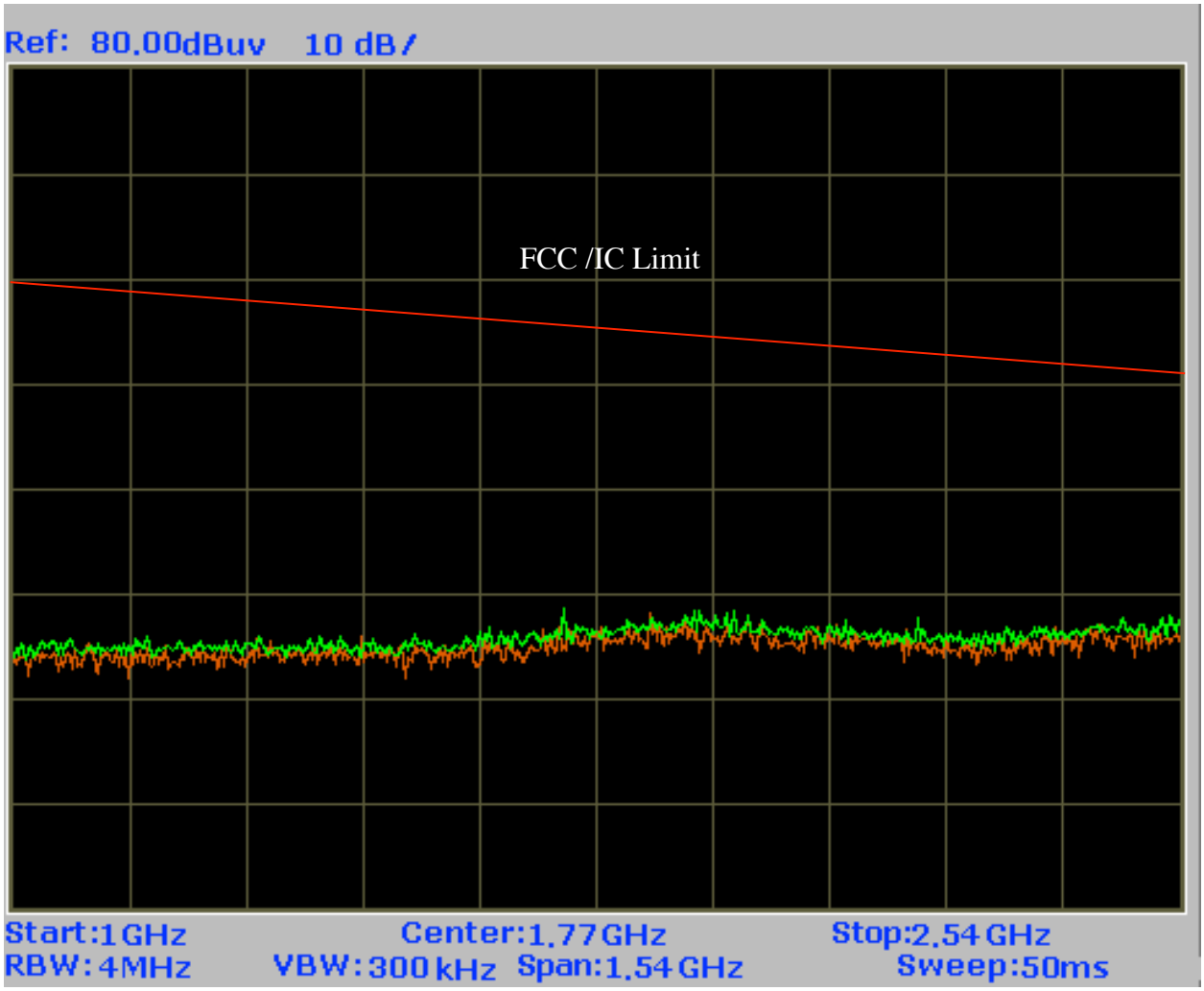
Corrected Limit (dBuV) = Limit (dBuV/m) + 20 log(X_{std}/X_{site}) + Amplifier Gain (dB) – Antenna Factor (dB/m) – Cable Loss (dB).

Frequency GHz	FCC/IC limit @ 3m dBuV	1-Meter Distance Corr. dB	Amp Gain dB	Antenna Factor dB	Cable Loss dB	Corrected Limit dBuV
1	54	10	30	24	10	60
2.54	54	10	30	29	14	51
3.54	54	10	30	32	16	46

Table 4 – Corrected FCC/IC Limit - Horizontal Polarization

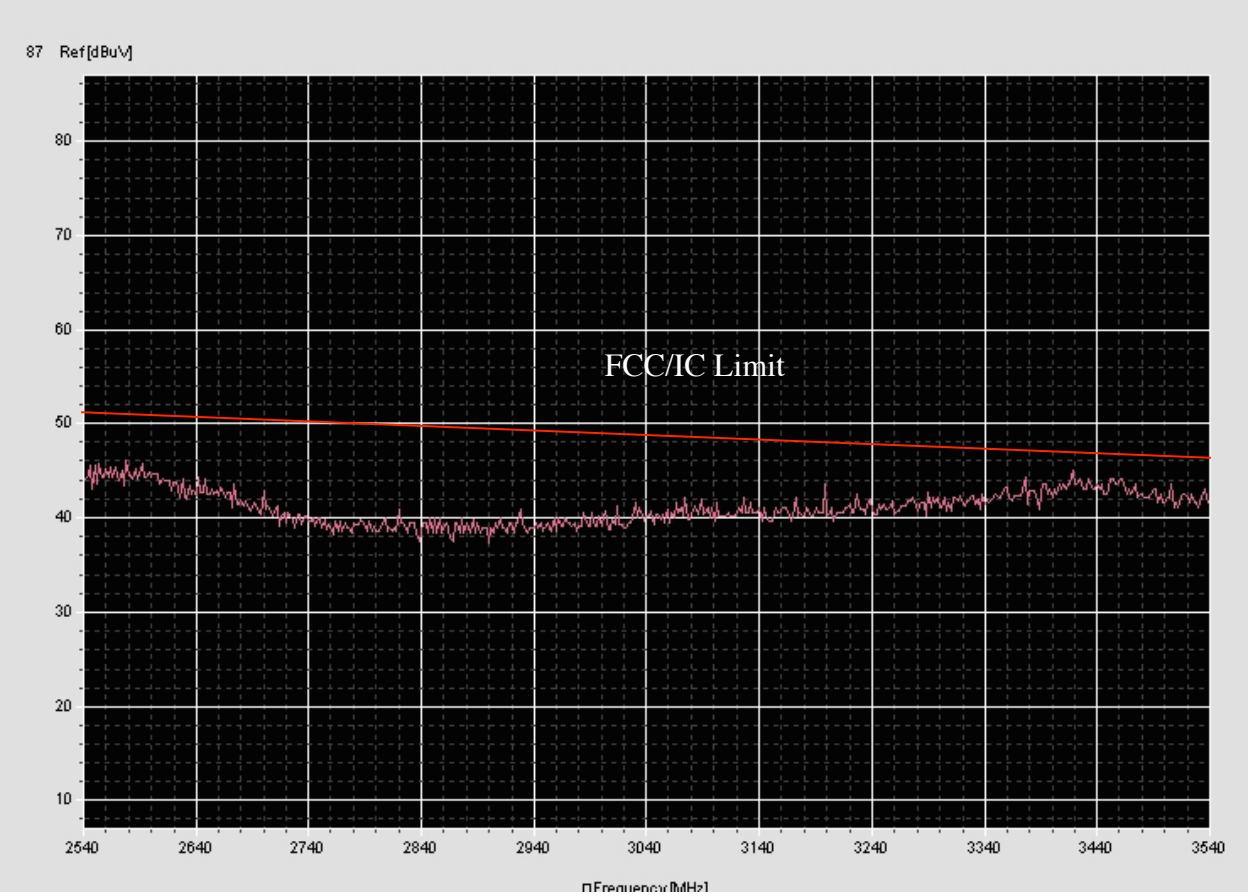
XII. Spurious Emissions Data - Transmit Cont'd.

Model P4-FCC
Maximum of Horizontal Polarization



XII. Spurious Emissions Data - Transmit Cont'd.

Model P4-FCC
Maximum of Horizontal Polarization



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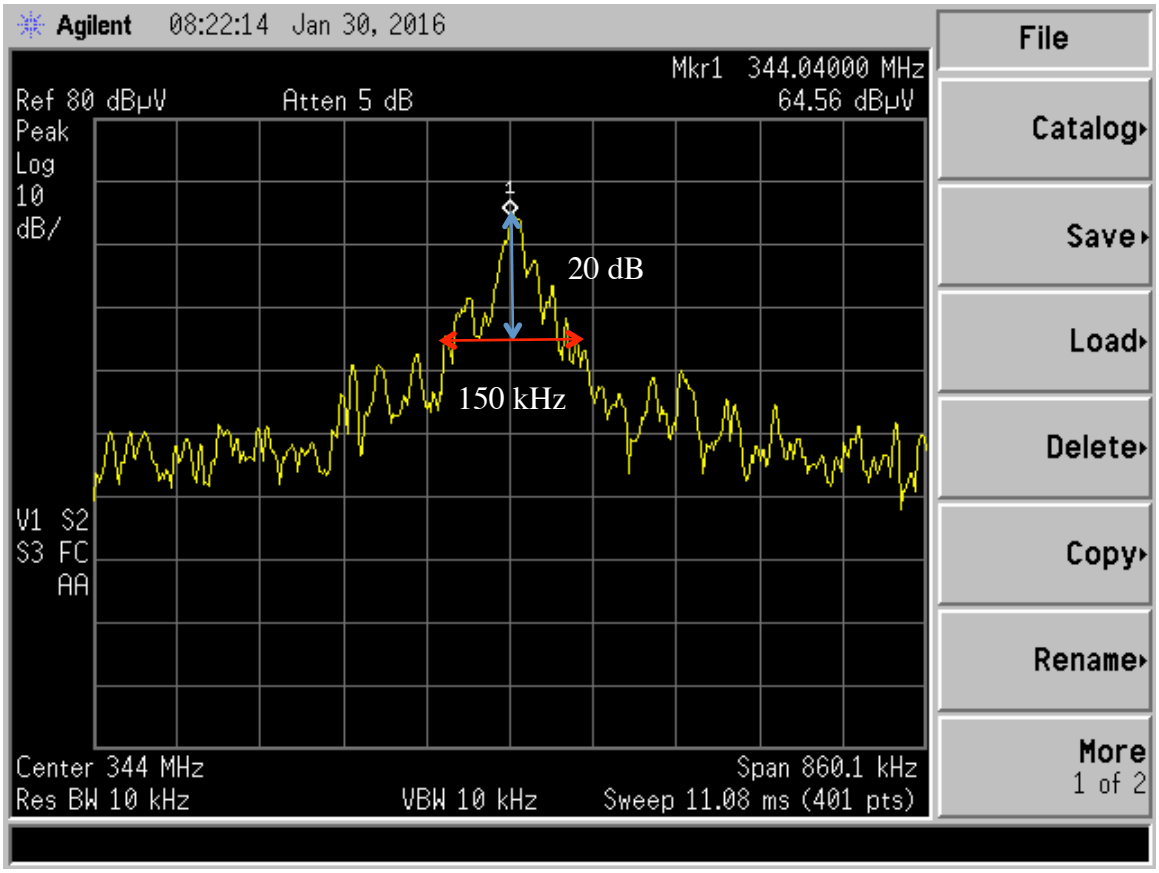
XIII. Occupied Bandwidth Data – Transmit.

Transmit 344.04 MHz

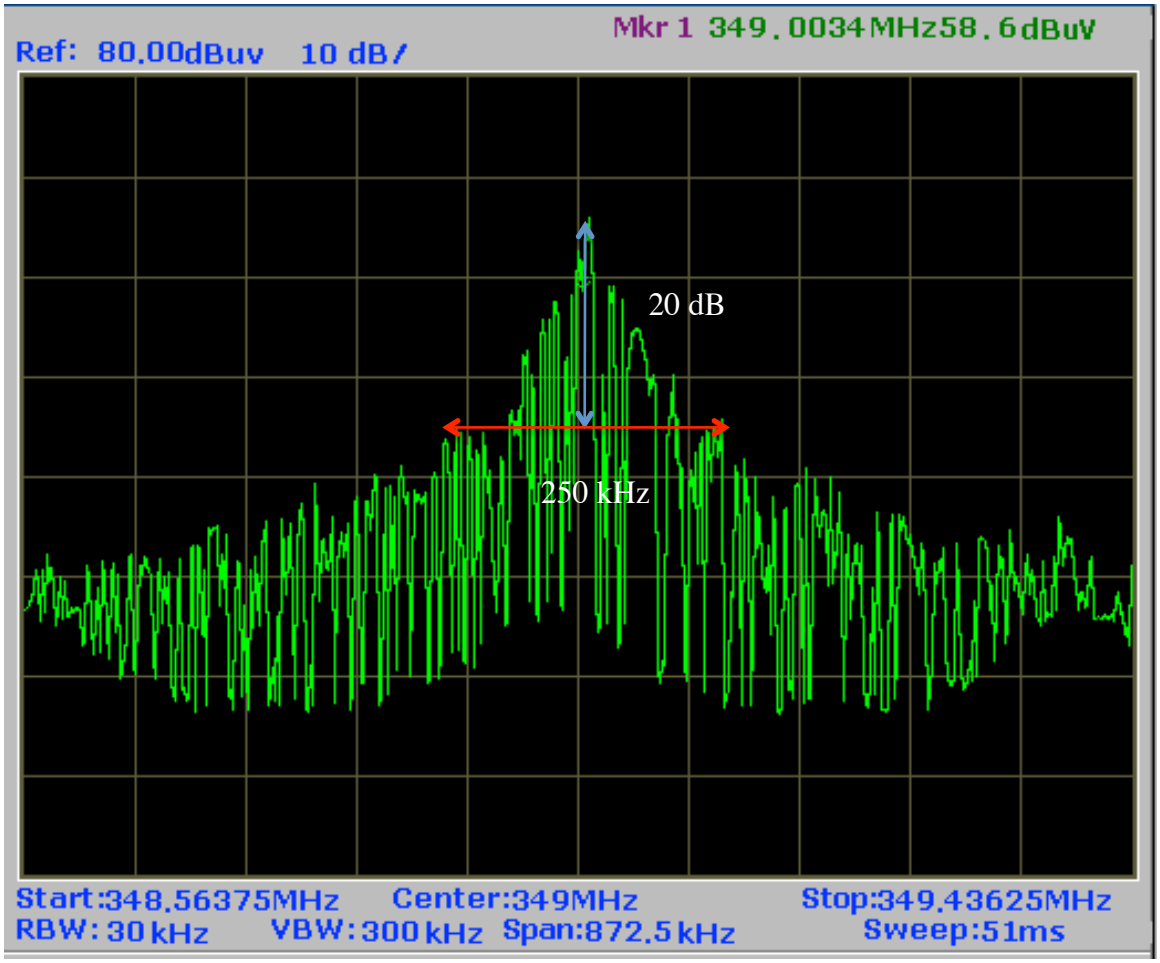
Specification: 20-dB down at 0.25% Fundamental = 344,040,000 * 0.0025 = 860.1 kHz
Measured: 150 kHz



XIII. Occupied Bandwidth Data Cont'd.

Transmit 349 MHz.

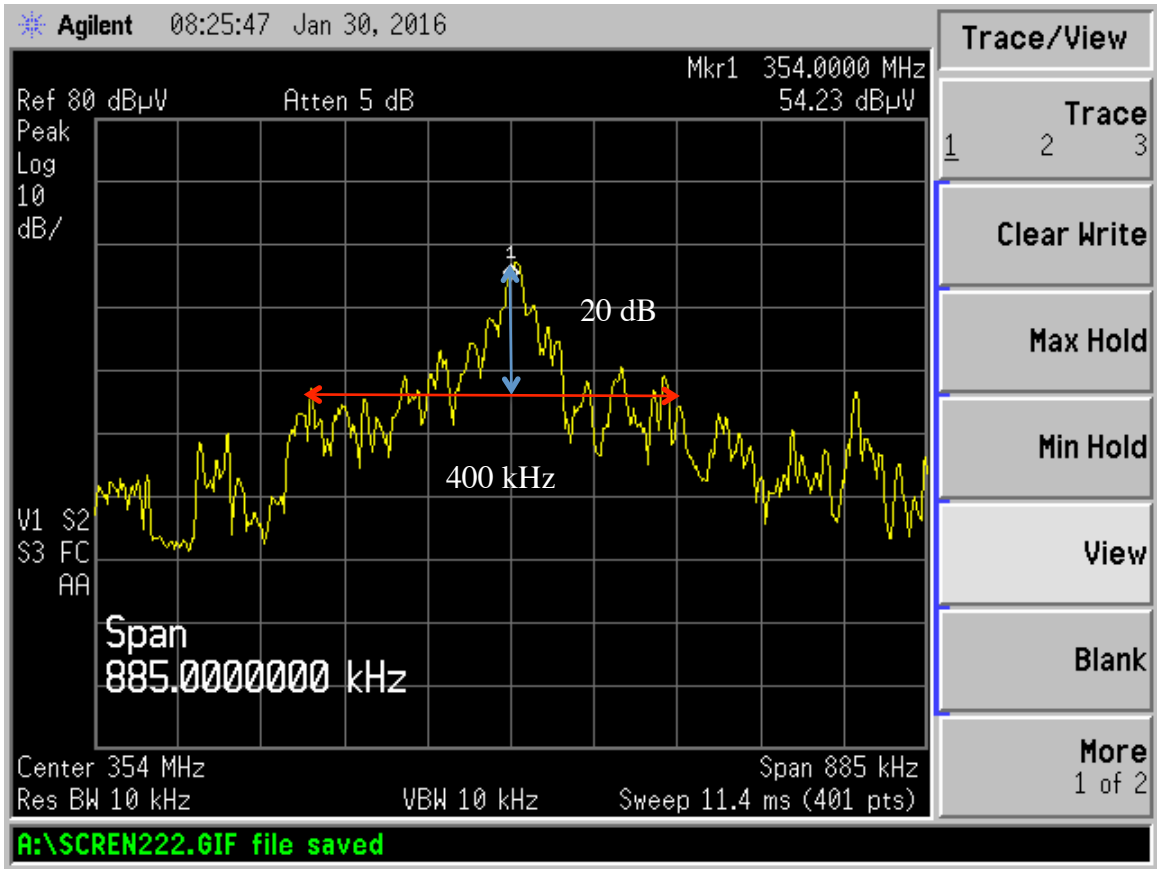
Specification: 20-dB down at 0.25% Fundamental = 349,000,000 * 0.0025 = 872.5 kHz
Measured: 250 kHz



XIII. Occupied Bandwidth Data

Transmit 354 MHz.

Specification: 20-dB down at 0.25% Fundamental = 354,000,000 * 0.0025 = 885 kHz
Measured: 400 kHz



XIV. Spurious Emissions Data - Receive Modes 1 & 2

The table below describes the correction factors necessary to apply the limit to the spectrum analyzer output. The following page contains the spectrum analyzer output with the corrected specification limits superimposed. The green trace is the ambient condition, and the orange identifies EUT emissions. Maximum amplitudes of vertical polarization are shown in the results below.

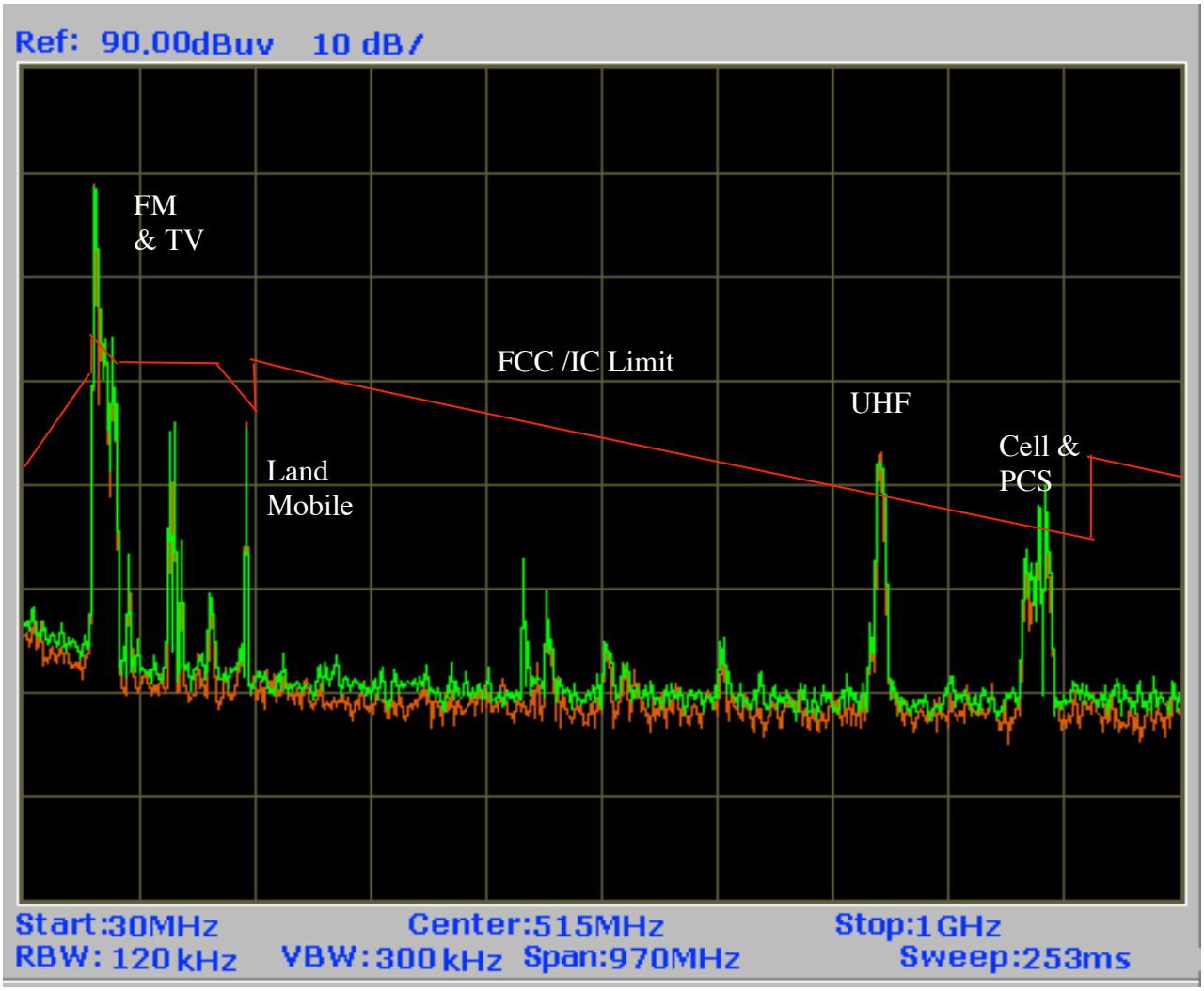
Corrected Limit (dBuV) = Limit (dBuV/m) + 20 log(X_{std}/X_{site}) + Amplifier Gain (dB) – Antenna Factor (dB/m) – Cable Loss (dB).

Frequency MHz	Class B limit @ 3m dBuV	Amp Gain dB	Antenna Factor dB	Cable Loss dB	Corrected Limit dBuV
30	40	30	17	1	52
50	40	30	13	1	56
88	40	30	8	1	61
89	43.5	30	8	1	64.5
100	43.5	30	9	2	62.5
125	43.5	30	10	2	61.5
150	43.5	30	9	3	61.5
216	43.5	30	12	3	58.5
217	46	30	12	3	61
300	46	30	14	4	58
500	46	30	17	6	53
960	46	30	23	9	44
961	54	30	23	9	52
1000	54	30	24	10	50

Table 5 – Corrected FCC/IC Limit - Vertical Polarization

XIV. Spurious Emissions Data - Receive Modes 1 & 2 Cont'd.

Model P4-FCC
Maximum of Vertical Polarization



XIV. Spurious Emissions Data - Receive Modes 1 & 2 Cont'd.

The table below describes the correction factors necessary to apply the limit to the spectrum analyzer output. The following page contains the spectrum analyzer output with the corrected specification limits superimposed. The green trace is the ambient condition, and the orange identifies EUT emissions. Maximum amplitudes of horizontal polarization are shown in the results below.

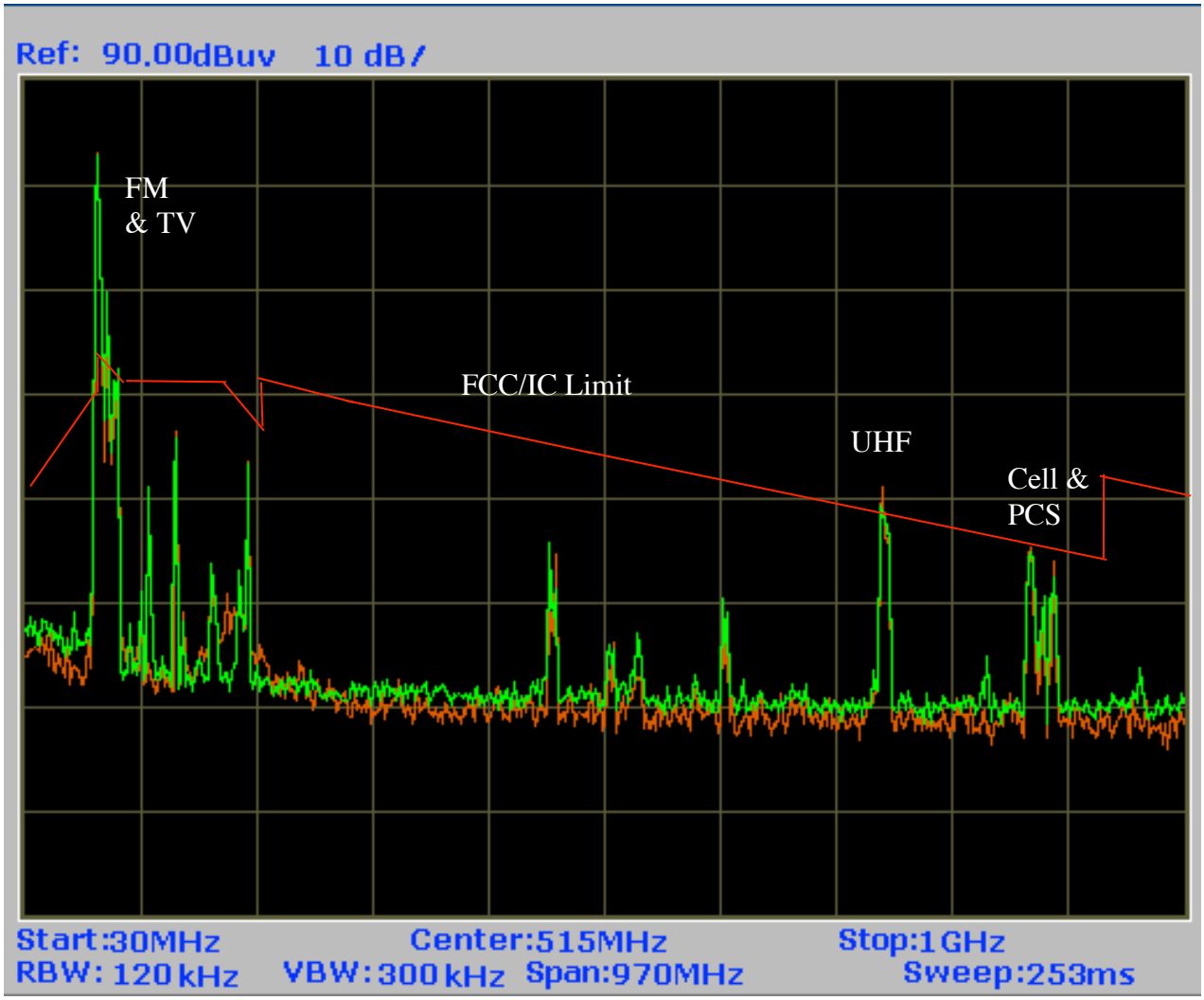
Corrected Limit (dBuV) = Limit (dBuV/m) + 20 log(X_{std}/X_{site}) + Amplifier Gain (dB) – Antenna Factor (dB/m) – Cable Loss (dB).

Frequency MHz	Class B limit @ 3m dBuV	Amp Gain dB	Antenna Factor dB	Cable Loss dB	Corrected Limit dBuV
30	40	30	18	1	51
50	40	30	15	1	54
88	40	30	7	1	62
89	43.5	30	7	1	65.5
100	43.5	30	10	2	61.5
125	43.5	30	11	2	60.5
150	43.5	30	9	3	61.5
216	43.5	30	12	3	58.5
217	46	30	12	3	61
300	46	30	13	4	59
500	46	30	17	6	53
960	46	30	23	9	44
961	54	30	23	9	52
1000	54	30	24	10	50

Table 6 – Corrected FCC/IC Limit - Horizontal Polarization

XIV. Spurious Emissions Data - Receive Modes 1 & 2 Cont'd.

Model P4-FCC
Maximum of Horizontal Polarization



XIV. Spurious Emissions Data - Receive Modes 1 & 2 Cont'd.

The table below describes the correction factors necessary to apply the limit to the spectrum analyzer output. The following page contains the spectrum analyzer output with the corrected specification limits superimposed. The green trace is the ambient condition, and the orange identifies EUT emissions. Maximum amplitudes of vertical polarization are shown in the results below.

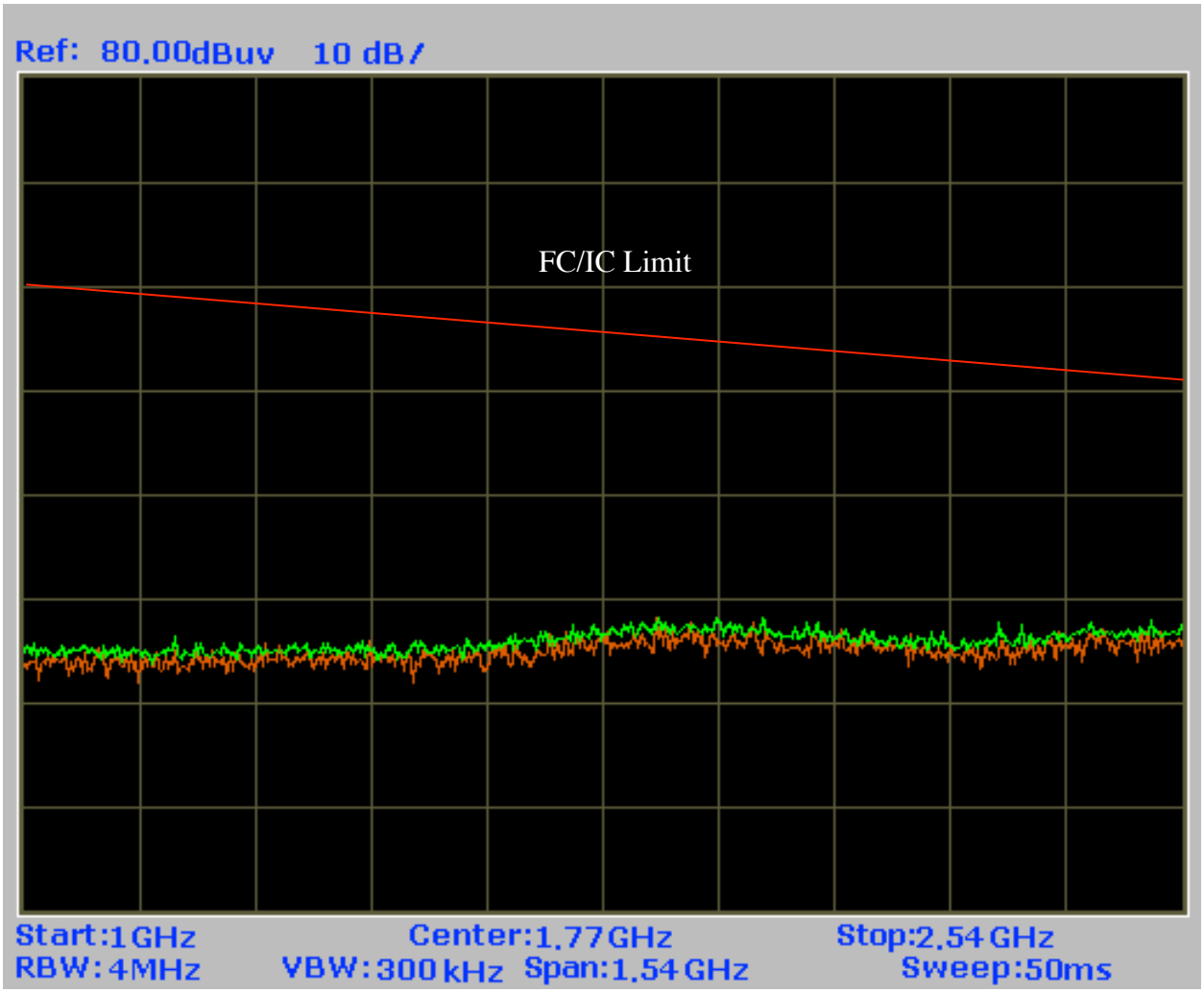
Corrected Limit (dBuV) = Limit (dBuV/m) + 20 log(X_{std}/X_{site}) + Amplifier Gain (dB) – Antenna Factor (dB/m) – Cable Loss (dB).

Frequency GHz	FCC/IC limit @ 3m dBuV	1-Meter Distance Corr. dB	Amp Gain dB	Antenna Factor dB	Cable Loss dB	Corrected Limit dBuV
1	54	10	30	24	10	60
2.54	54	10	30	29	14	51
3.54	54	10	30	32	16	46

Table 7 – Corrected FCC/IC Limit - Vertical Polarization

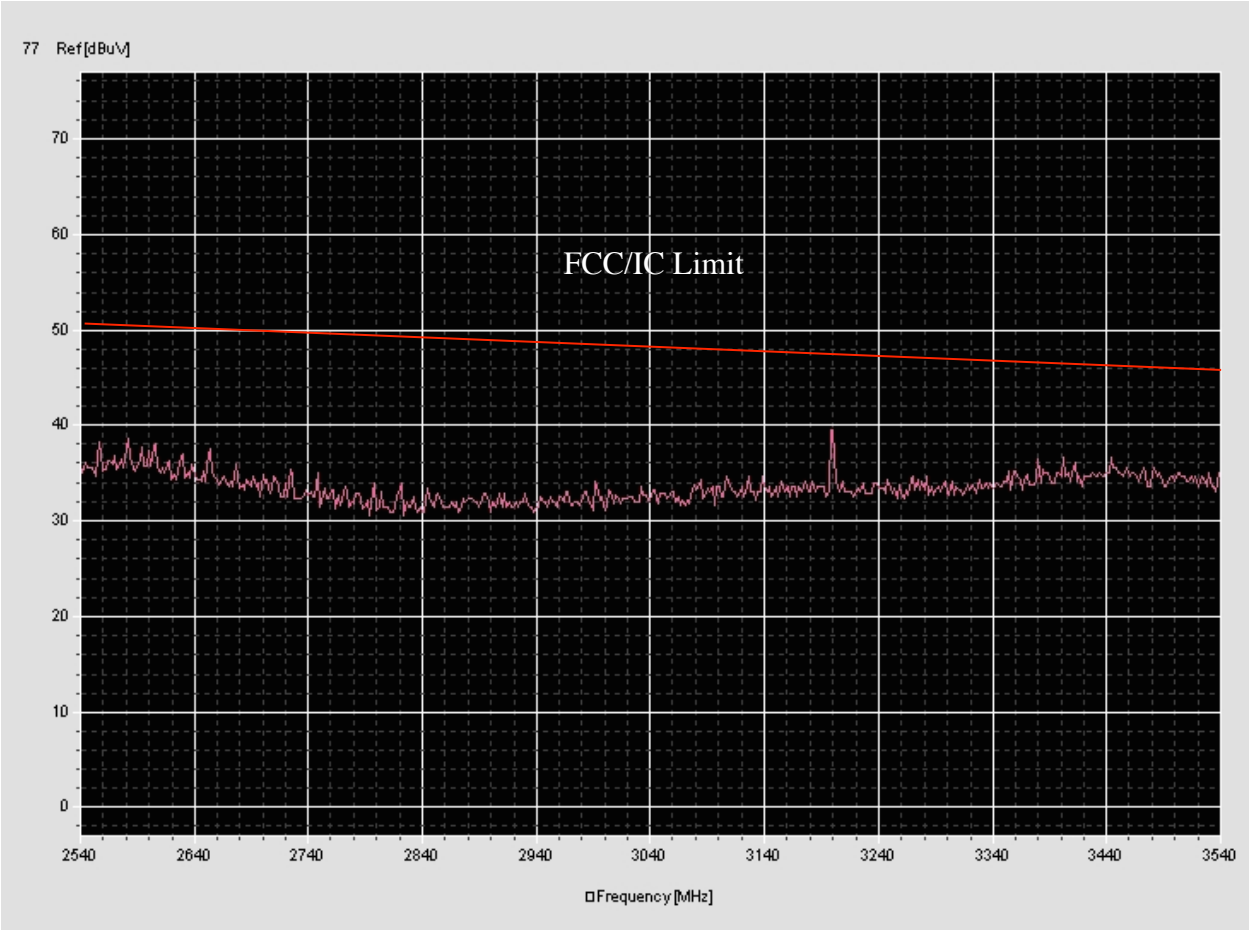
XIV. Spurious Emissions Data - Receive Modes 1 & 2 Cont'd.

Model P4-FCC
Maximum of Vertical Polarization



XIV. Spurious Emissions Data - Receive Modes 1 & 2 Cont'd.

Model P4-FCC
Maximum of Vertical Polarization



XIV. Spurious Emissions Data - Receive Modes 1 & 2 Cont'd.

The table below describes the correction factors necessary to apply the limit to the spectrum analyzer output. The following page contains the spectrum analyzer output with the corrected specification limits superimposed. The green trace is the ambient condition, and the orange identifies EUT emissions. Maximum amplitudes of horizontal polarization are shown in the results below.

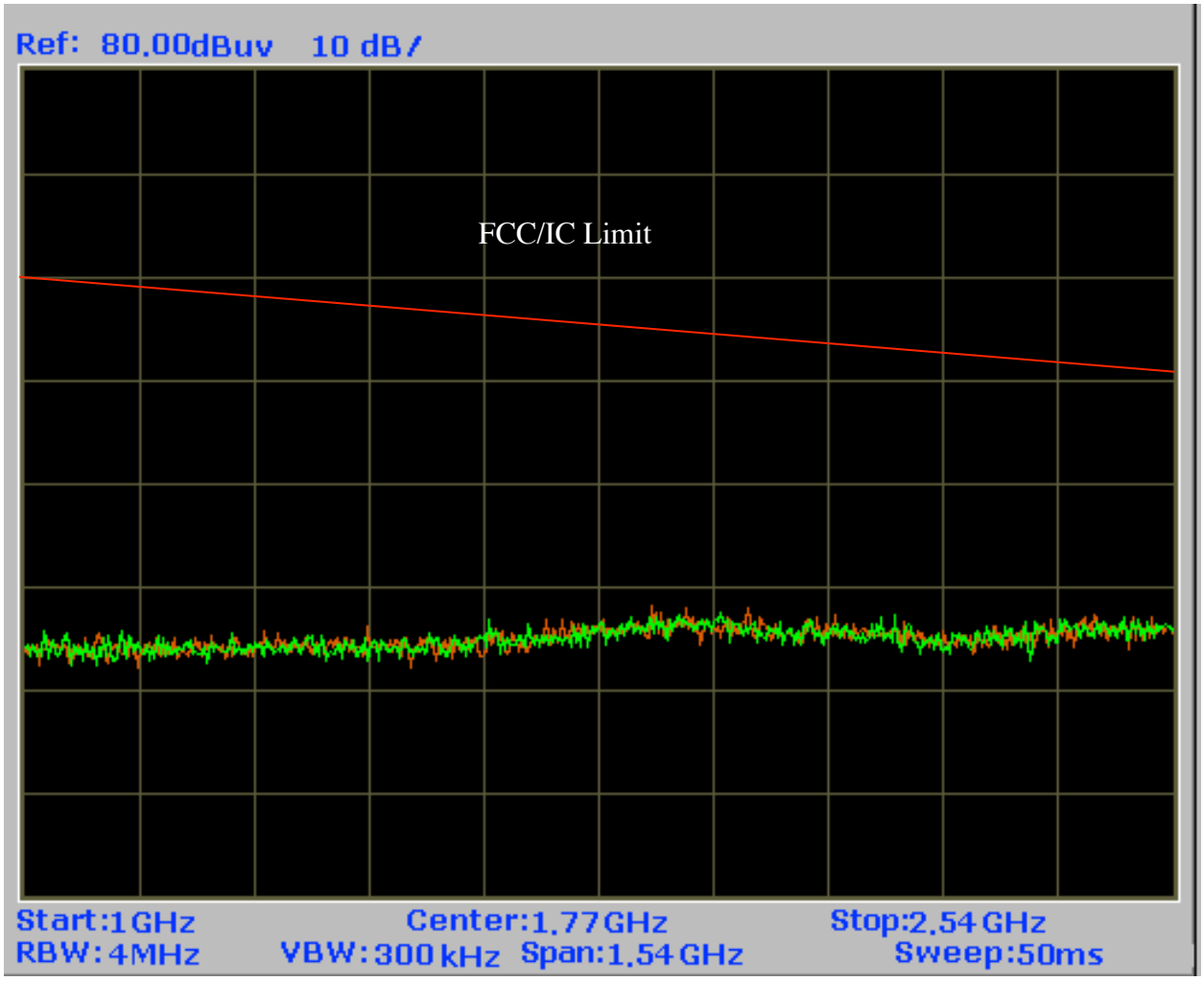
Corrected Limit (dBuV) = Limit (dBuV/m) + 20 log(X_{std}/X_{site}) + Amplifier Gain (dB) – Antenna Factor (dB/m) – Cable Loss (dB).

Frequency GHz	FCC/IC limit @ 3m dBuV	1-Meter Distance Corr. dB	Amp Gain dB	Antenna Factor dB	Cable Loss dB	Corrected Limit dBuV
1	54	10	30	24	10	60
2.54	54	10	30	29	14	51
3.54	54	10	30	32	16	46

Table 8 – Corrected FCC/IC Limit - Horizontal Polarization

XIV. Spurious Emissions Data – Receive Modes 1 & 2 Cont'd.

Model P4-FCC
Maximum of Horizontal Polarization



XIV. Spurious Emissions Data – Receive Modes 1 & 2 Cont'd.

Model P4-FCC
Maximum of Horizontal Polarization