



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

FCC Rules and Regulations / Intentional Radiators

Operational in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz, Bands

Part 15, Subpart C, Section 15.247

THE FOLLOWING **"MEETS"** THE ABOVE TEST SPECIFICATION

Formal Name: Zebra R170XiIII Bar Code Printer
Kind of Equipment: Thermal Transfer on Demand Bar Code Printer
Test Configuration: Alien EPC Class 1 RFID Printer (Tested at 120 vac, 60 Hz)
Model Number(s): 170XiIII
Model(s) Tested: 170XiIII
Serial Number(s): 7067524
Date of Tests: May 3, 2004
Test Conducted For: Zebra Technologies Corporation
333 Corporate Woods Parkway
Vernon Hills, Illinois 60061

NOTICE: "This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government". Please see the "Additional Description of Equipment Under Test" page listed inside of this report. This report must not be reproduced (except in full), without the approval of D.L.S. Electronic Systems.



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SIGNATURE PAGE

Report By:

Arnom C. Rowe
Test Engineer
EMC-001375-NE

Reviewed By:

William Stumpf
OATS Manager

Approved By:

Brian Mattson
General Manager

Company Official:

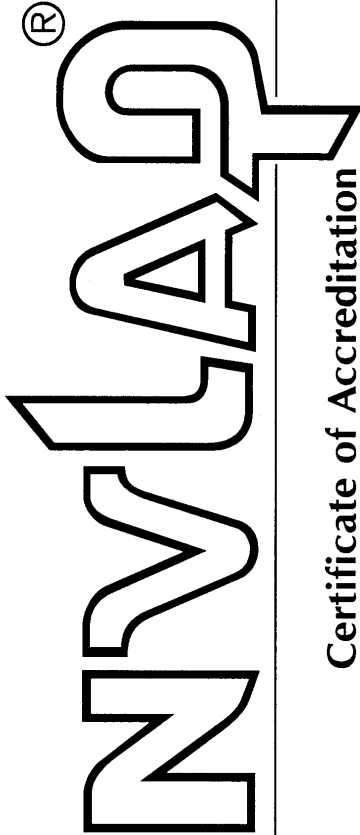
Zebra Technologies Corporation



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United States Department of Commerce
National Institute of Standards and Technology



ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

D.L.S. ELECTRONIC SYSTEMS, INC.
WHEELING, IL

is recognized by the National Voluntary Laboratory Accreditation Program
for satisfactory compliance with criteria set forth in NIST Handbook 150:2001,
all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994.
Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

September 30, 2004

Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 100276-0

NVLAP-01C (06-01)



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D.L.S. ELECTRONIC SYSTEMS, INC.

1250 Peterson Drive
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NVLAP Code Designation / Description

Emissions Test Methods:

12/160D21	RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 21 - Emission of Radio Frequency Energy
12/300220a	EN 300 220-1 V1.3.1 (2000-09): Electromagnetic compatibility and Radio spectrum Matters; Short Range Devices; Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods
12/300386a	EN 300 386 V.1.2.1: Electromagnetic compatibility and radio spectrum matter (ERM); Telecommunication network equipment; Electromagnetic compatibility (EMC) requirements
12/C63.17	ANSI C63.17-1998: American National Standard for Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices

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<i>NVLAP Code</i>	<i>Designation / Description</i>
12/C6317a	ANSI C63.17-1998: American National Standard for Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices
12/CIS11	IEC/CISPR 11 + A1 (1997), EN 55011 (1998), AS/NZS 2064 (1997), and CNS 137803 (1997): Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical Radio-Frequency Equipment
12/CIS13	IEC/CISPR 13 (2001-04), EN 55013 (2001), AS/NZS 1053 (2001), and CNS 13439 (2001): Sound and television broadcast receivers and associated equipment - Radio disturbance characteristics - Limits and methods of measurement
12/CIS14	CISPR 14-1 (March 30, 2000): Limits and methods of measurement of radio interference characteristics of household electrical appliances, portable tools and similar electrical apparatus - Part 1: Emissions
12/CIS14a	EN 55014-1 (1993) with Amendments A1 (1997) & A2 (1999)
12/CIS14d	IEC/CISPR 14-1 (2001) and A1 (2001): Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emissions
12/CIS14e	EN 55014-1 (2001) and A1 (2001): Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission

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12/CIS14f	AS/NZS 1044 (2001) and A1 (2001): Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission
12/CIS14g	CNS 13783-1 (2001) and A1 (2001): Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission
12/CIS15	IEC/CISPR 15 (2000) + A1 (2001): Limits and methods of measurements of radio disturbance characteristics of electrical lighting and similar equipment
12/CIS15a	AS/NZS CISPR (2002): Limits and methods of measurements of radio disturbance characteristics of electrical lighting and similar equipment
12/CIS15b	CNS 13439 (2000) + A1 (2001): Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
12/CIS15c	EN 55015 (2000) + A1 (2001): Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
12/CIS22	IEC/CISPR 22 (1997) and EN 55022 (1998): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22 (1993): Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.

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12/CIS22b	CNS 13438 (1997): Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/EM02a	IEC 61000-3-2, Edition 2.1 (2001-10), EN 61000-3-2 (2000), and AS/NZS 2279.1 (2000): Electromagnetic compatibility (EMC) Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A)
12/EM03	EN 61000-3-3 (1995), IEC 61000-3-3 (1995), and AS/NZS 2279.3 (1995): EMC - Part 3: Limits - Section 3. Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current up to 16A
12/F18	FCC OST/MP-5 (1986): FCC Methods of Measurement of Radio Noise Emissions for ISM Equipment (cited in FCC Method 47 CFR Part 18 - Industrial, Scientific, and Medical Equipment)
12/FCC15b	ANSI C63.4 (2001) with FCC Method - 47 CFR Part 15, Subpart B: Unintentional Radiators
12/FCC15c	ANSI C63.4 (2001) with FCC Method - 47 CFR Part 15, Subpart C: Intentional Radiators
12/FCC15d	ANSI C63.4 (2001) with FCC Method - 47 CFR Part 15, Subpart D: Unlicensed Personal Communications Service Devices

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- | | |
|-----------|---|
| 12/FCC15e | ANSI C63.4 (2001) with FCC Method - CFR Part 15, Subpart E: Unlicensed National Information Infrastructure Service Devices |
| 12/T51 | AS/NZS CISPR 22 (2002) and AS/NZS 3548 (1997): Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment |
| 12/VCCIa | Agreement of Voluntary Control Council for Interference by Information Technology Equipment - Technical Requirements: V-3/02.04 |

Immunity Test Methods:

- | | |
|-----------|---|
| 12/1089a | GR-1089-CORE, Issue 3, October 2002: Electromagnetic Compatibility and Electrical Safety - Generic Criteria for Network Telecommunications Equipment (sections 2, 3.3, and 3.5) |
| 12/160D16 | RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 16 - Power Input |
| 12/160D17 | RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 17 - Voltage Spike |
| 12/160D18 | RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 18 - Audio Frequency Conducted Susceptibility - Power Inputs |

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12/160D19	RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 19 - Induced Signal Susceptibility
12/160D20	RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 20 - Radio Frequency Susceptibility (Radiated and Conducted)
12/160D22	RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 22 - Lightning Induced Transient Susceptibility
12/160D25	RTCA/DO-160D (1997): Environmental Conditions and Test Procedures for Airborne Equipment - Section 25 - Electrostatic Discharge (ESD)
12/I01	IEC 61000-4-2 (1995) and Amendment 1 (1998) and EN 61000-4-2: Electrostatic Discharge Immunity Test
12/I02	IEC 61000-4-3 (1995) and Amendment 1 (1998) and EN 61000-4-3: Radiated, Radio-Frequency Electromagnetic Field Immunity Test
12/I03	IEC 61000-4-4 (1995) and EN 61000-4-4: Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5 (1995) and EN 61000-4-5: Surge Immunity Test

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12/I05	IEC 61000-4-6 (1996) and EN 61000-4-6: Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
12/I06	IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
12/I07	IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests
12/J111324	SAE J1113/24: Immunity to radiated electromagnetic fields; 10 kHz to 200 MHz - Crawford TEM cell and 10 kHz to 5 GHz - Wideband TEM cell
12/J111341	SAE J1113/41 (1995-07): Limits and methods of measurement of radio disturbance characteristics of components and modules for the protection of receivers used on board vehicles

Radio Test Methods

12/RSS119	RSS-119, Issue 6 (March 25, 2000): Land Mobile and Fixed Radio Transmitters and Receivers, 27.41 to 960 MHz
12/RSS123	RSS-123, Issue 1, Rev. 2 (November 6, 1999): Low Power Licensed Radiocommunication Devices
12/RSS137	RSS-137, Issue 1, Rev. 1 (September 25, 1999): Location and Monitoring Service (902 - 928 MHz)

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12/RSS139 RSS-139, Issue 1 (February 5, 2000): Licensed Radiocommunications Devices in the Band 2400 - 2483.5 MHz

12/CIS15c EN 55015 (2000) + A1 (2001): Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

MIL-STD-462 : Conducted Emissions:

12/A18 MIL-STD-461 Version E Method CE106

MIL-STD-462 : Conducted Susceptibility:

12/B12 MIL-STD-462 Version D Method CS101

12/B13 MIL-STD-462 Version D Method CS103

12/B25 MIL-STD-461 Version E Method CS114

12/B26 MIL-STD-461 Version E Method CS115

12/B27 MIL-STD-461 Version E Method CS116

MIL-STD-462 : Radiated Emissions:

12/D04 MIL-STD-462 Version D Method RE101

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12/D05 MIL-STD-462 Version D Method RE102

12/D06 MIL-STD-462 Version D Method RE103

MIL-STD-462 : Radiated Susceptibility:

12/E08 MIL-STD-462 Version D Method RS101

12/E09 MIL-STD-462 Version D Method RS103

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1.0 SUMMARY OF TEST REPORT

It was found that the Zebra R170XiIII Bar Code Printer, Model Number(s) 170XiIII, "meets" the radio interference conducted and radiated emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Section 15.247 for operational in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz, Bands. It should be noted that the amount of margin was only 1.9 dB at .174 MHz, conducted. The normal tolerance of the test equipment is ± 3 dB. Due to this tolerance and the variation in normal production, a margin of at least 6 dB is recommended. With only a 1.9 dB in margin, there is a probability that if this or another unit were tested by the Domestic or Foreign Compliance Regulatory Agency using similar test equipment, it could be found to not meet the above requirement.

This test report relates only to the items tested and contains the following number of pages.

Text: 106

2.0 INTRODUCTION

On May 3, 2004, a series of radio frequency interference measurements was performed on Zebra R170XiIII Bar Code Printer, Model Number(s) 170XiIII, Serial Number: 7067524. The tests were performed according to the procedures of the FCC as stated in the "Methods of Measurement of Radio-Noise Emissions for Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" found in the American National Standards Institute, ANSI C63.4-2001. Tests were performed by personnel of D.L.S. Electronic Systems, Inc. who are responsible to Donald L. Sweeney, Senior EMC Engineer.

3.0 OBJECT

The purpose of this series of tests was to determine if the test sample could meet the radio frequency interference emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Sections 15.205, 15.209 & 15.247 for Intentional Radiators operating in the Bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.



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4.0 TEST SET-UP

All emission tests were performed at D.L.S. Electronic Systems, Inc. and set up according to the American National Standards Institute, ANSI C63.4-2001, Section 8, (Figures 11a and 11b).

All radiated emissions tests were performed with the test item placed on a 80 cm high rotating non-conductive table, located in the test room. Equipment normally operated on the floor was placed on a metal covered turntable which is flush with the surrounding conducting ground plane. The ground plane has an electrical isolation layer over its surface approximately 7 mm thick. The EUT is separated from the turntable ground plane by a non-conductive layer. The equipment under test was set up according to ANSI C63.4-2001, Sections 6 and 8.



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5.0 TEST EQUIPMENT (Bandwidths and Detector Function)

All preliminary data below 1000 MHz was automatically plotted using the HP Spectrum Analyzer or ESI 26/40 Fixed Tuned Receiver. The data was taken using Peak, Quasi-Peak or the Average Detector Functions as required. This information was then used to determine the frequencies of maximum emissions. Above 1000 MHz, final data was taken using the Average Detector.

Below 1000 MHz, final data was taken using the HP Spectrum Analyzer and/or ESI 26/40 Fixed Tuned Receiver. These plots were made using the Peak or Quasi-Peak Detector functions, with manual measurements performed on the questionable frequencies using the Quasi-Peak or the Average Detector Function of the Analyzer or ESI 26/40 Fixed Tuned Receiver as required. Above 1000 MHz, final data was taken using the Average Detector on the Spectrum Analyzer.

The bandwidths shown below are specified by ANSI C63.4-2001, Section 4.2.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

A list of the equipment used can be found in Table 1. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.



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6.0 AMBIENT MEASUREMENTS

For emissions measurements, broadband antennas and an EMI Test Receiver with a panoramic spectrum display are used. First the frequency range is scanned and displayed on the test receiver display. Next the scanned frequency range is divided into smaller ranges, and then it is manually tuned through to determine the emissions from the EUT. A headset or loudspeaker is connected to the test receiver's AM/FM demodulated output as an aid in detecting ambient signals and finding frequencies of significant emission from the EUT. If there is any doubt as to the source of the emission, it is further investigated by rotating the EUT, or by disconnecting the power from the EUT.

The EUT is set up in its typical configuration and operated in its various modes. For tabletop systems, cables are manipulated within the range of likely configurations. For floor-standing equipment, the cables are located in the same manner as the user would install them and no further manipulation is made. If the manner of cable installation is not known, or if it changes with each installation, cables or wires for floor-standing equipment shall be manipulated to the extent possible to produce the maximum level of emissions. For each mode of operation, the frequency spectrum is monitored. Variations in antenna height, antenna polarization, EUT azimuth, and cable or wire placement (each variable within bounds specified elsewhere) are explored to produce the emissions that have the highest amplitude relative to the limit. These methods are performed to the specifications in ANSI C63.4: 2001.



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7.0 DESCRIPTION OF TEST SAMPLE: (See also Paragraph 8.0)

7.1 Description:

Zebra R170XiIII Thermal Transfer Bar Code on Demand Printer is capable of printing labels up to 39" long and 8.5" wide. Print speed up to 10 IPS (higher in narrower models). Printer powered through an IEC 320 connector, from 90-264 VAC, 47-63 Hz. Printer uses ZPL programming language, capable of receiving data via Serial Connector, Parallel Connector (covered when other communications options are installed). For this test the 10 base T print server option is installed and used for sending data packets of label data to the printer, from a Dell Laptop Computer.



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7.0 DESCRIPTION OF TEST SAMPLE: (CONT)

7.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

49.5 cm long x 33.5 cm wide x 39.5 cm high

7.3 LINE FILTER USED:

Yunpen YL06T1, Corcom 6EGG
High - Low 06SS3-SR-Q

7.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

100 kHz, 56 kHz & 46 kHz

Clock Frequencies:

133 MHz, 66 MHz, 40 MHz, 33 MHz, 32 MHz, 25 MHz, 16 MHz, 8 MHz, &
3.6469 MHz



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7.0 DESCRIPTION OF TEST SAMPLE: (CONT)

7.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

- | | |
|-------------------------------------|----------------------|
| 1. CPU Board Assembly | PN: 33008 Rev 4 |
| 2. Control Panel Board Assembly | PN: 49750 Rev 1 |
| 3. AC Power Supply Board Assembly | PN: 49785 Rev 3 |
| 4. DC Power Supply Board Assembly | PN: 49795 Rev 3 |
| 5. Print Server, 10 Base T Ethernet | PN: 46686A-001 Rev 1 |
| 6. ASM PCB INTF RFID XiIII | PN: 21050 Rev A |
| 7. PA UHF RFID Encoder Alien | PN: 21055 Rev 1 |
| 8. ASM Antenna UHF R170 | PN: V1012 |



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8.0 ADDITIONAL DESCRIPTION OF TEST SAMPLE:
(See also Paragraph 7.0)

1: There were no additional descriptions noted at the time of test.

I certify that the above, as described in paragraph 7.0, describes the equipment tested and will be manufactured as stated.

By: _____
Signature Title

For: _____
Company Date



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9.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 Zebra R170XiIII Bar Code Printer

Model Number: 170XiIII Serial Number: 7067524

Item 1 Non-shielded Category 5 Cable with Plastic Shells. (Goes to external Computer)

Item 2 Non-shielded Ethernet Cable with Plastic Shells. (Goes to external Computer)

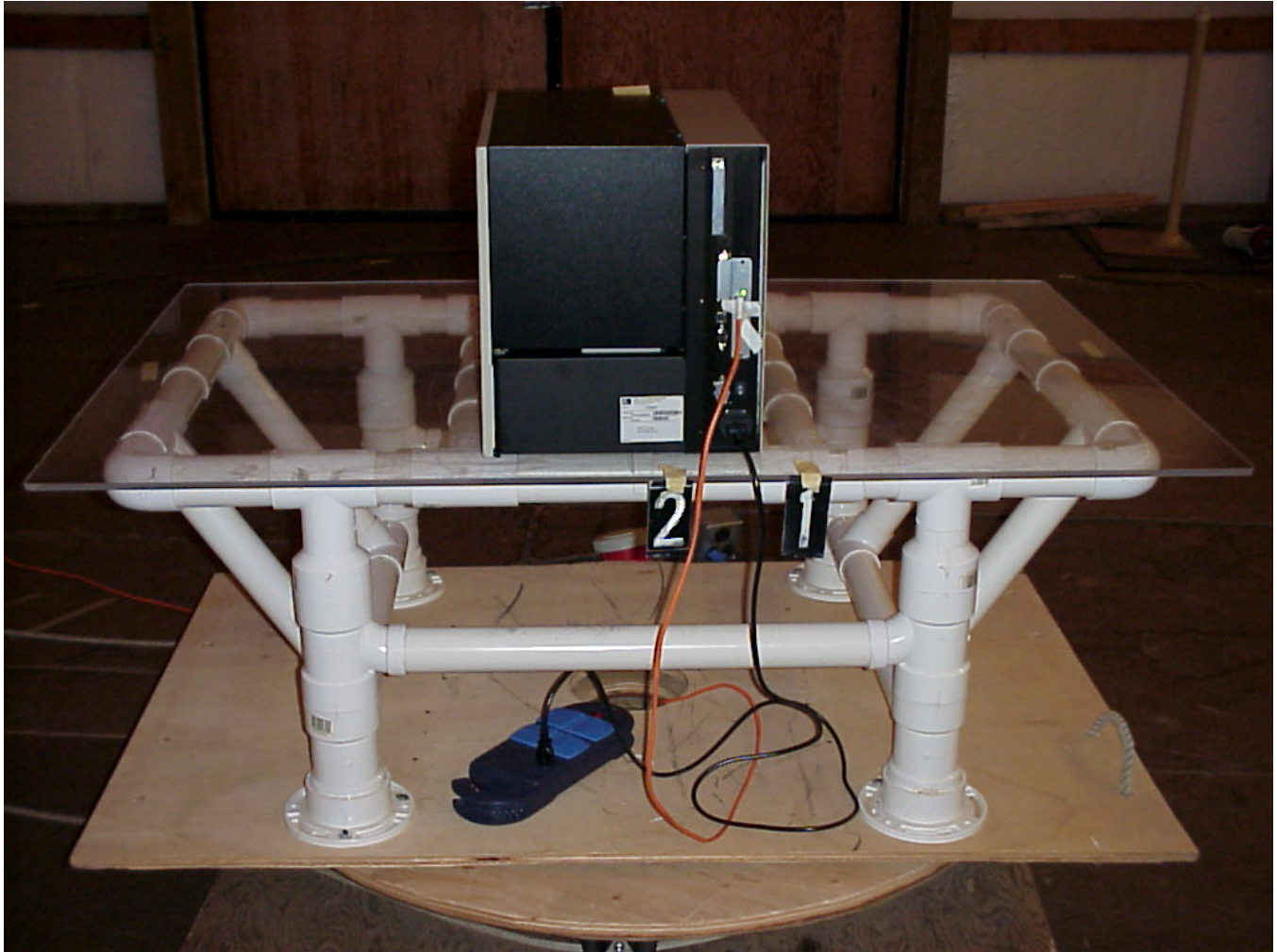
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10.0 RADIATED PHOTOS TAKEN DURING TESTING



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10.0 RADIATED PHOTOS TAKEN DURING TESTING





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11.0 RESULTS OF TESTS

The radio interference emission charts results can be seen on the pages at the end of this report. Data sheets indicating the test measurements taken during testing can also be found at the end of this report. Points on the emission charts shown with a yellow mark are background frequencies that were verified during testing.

12.0 CONCLUSION

It was found that the Zebra R170XiIII Bar Code Printer, Model Number(s) 170XiIII "meets" the radio interference conducted and radiated emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Section 15.247 for operational in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz, Bands.

It should be noted that the amount of margin was only 1.9 dB at .174 MHz, conducted. The normal tolerance of the test equipment is ± 3 dB. Due to this tolerance and the variation in normal production, a margin of at least 6 dB is recommended. With only a 1.9 dB in margin, there is a probability that if this or another unit were tested by the Domestic or Foreign Compliance Regulatory Agency using similar test equipment, it could be found to not meet the above requirement.



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TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Spectrum Analyzer	Hewlett/ Packard	8566B	2240A002041	100 Hz – 22 GHz	10/04
Quasi-Peak Adapter	Hewlett/ Packard	85650A	2043A00121	10 kHz – 1 GHz	10/04
Spectrum Analyzer	Hewlett/ Packard	8566B	2421A00452	100 Hz – 22 GHz	2/05
Quasi-Peak Adapter	Hewlett/ Packard	85650A	2043A00450	10 kHz – 1 GHz	2/05
Spectrum Analyzer	Hewlett/ Packard	8591A	3009A00700	9 kHz – 1.8 GHz	3/05
Receiver	Electrometrics	EMC-30	44168	10 kHz – 1 GHz	9/04
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	11/04
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz – 40 GHz	12/04
Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz – 40 GHz	12/04
Antenna	EMCO	3104C	00054891	20 MHz – 200 MHz	2/05
Antenna	Electrometrics	LPA-25	1114	200 MHz – 1 GHz	3/05
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	3/05

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Antenna	Electrometrics	3146	1205	200 MHz – 1 GHz	3/05
Antenna	EMCO	3104C	97014785	20 MHz – 200 MHz	2/05
Antenna	EMCO	3146	97024895	200 MHz – 1 GHz	3/05
Antenna	EMCO	3115	2479	1 GHz – 18 GHz	8/04
Antenna	EMCO	3115	99035731	1 GHz – 18 GHz	4/05
Antenna	Rohde & Schwarz	HUF-Z1	829381001	20 MHz – 1 GHz	2/05
Antenna	Rohde & Schwarz	HUF-Z1	829381005	20 MHz – 1 GHz	8/04
LISN	Solar	8012-50-R-24-BNC	8305116	10 MHz – 30 MHz	8/04
LISN	Solar	8012-50-R-24-BNC	814548	10 MHz – 30 MHz	8/04
LISN	Solar	9252-50-R-24-BNC	961019	10 MHz – 30 MHz	12/04
LISN	Solar	9252-50-R-24-BNC	971612	10 MHz – 30 MHz	10/04
LISN	Solar	9252-50-R-24-BNC	92710620	10 MHz – 30 MHz	7/04

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

Part 15, Subpart C, Section 15.247 (a-h)

OPERATION WITHIN THE BAND 902-928 MHz, 2400-2483.5 MHz
AND 5725-5857 MHz



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

1.0 CONDUCTED EMISSION MEASUREMENTS

If applicable, the conducted emissions were measured over the frequency range from 150 kHz to 30 MHz in accordance with the power line measurements as specified in the American National Standards Institute, ANSI C63.4-2001, Section 12. Since the device is operated from the public utility lines, the 115 Vac 60 Hz power leads, high and low sides, were to be measured by connecting the measuring equipment to the appropriate meter terminal of the LISN. All signals were then recorded. The allowed levels for Intentional Radiators cannot exceed 250 uV (47.96 dBuV) at any frequency between 150 kHz and 30 MHz, as stated in Section 15.207a.

All conducted emissions measurements were made at a test room temperature of 72°F at 36% relative humidity.



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

DATA AND GRAPH(S) TAKEN DURING TESTING

PART 15.207

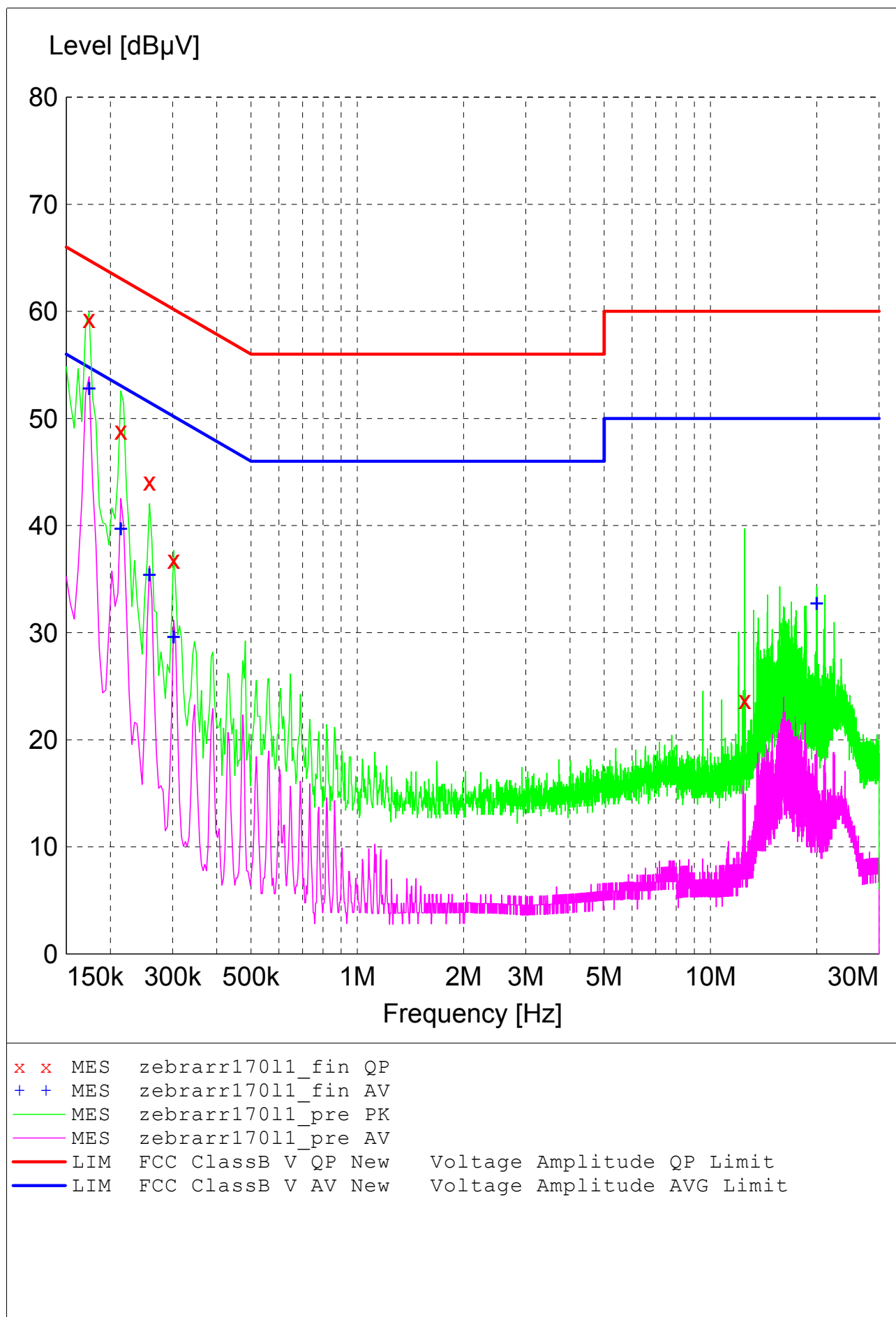
FCC Part 15 Class B

Voltage Mains Test

EUT: 170XiIII
Manufacturer: Zebra
Operating Condition: 72 deg. F, 36% R.H.
Test Site: DLS OF Screen Room
Operator: Jason L
Test Specification: 120 VAC, 60 Hz
Comment: Line 1
Date: 5/03/04

SCAN TABLE: "FCC ClassB Voltage"

Short Description:			FCC Class B Voltage			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
150.0 kHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	LISN DLS#128
			Average			



MEASUREMENT RESULT: "zebrarr17011_fin QP"

5/3/2004 2:02PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.174000	59.30	11.3	65	5.5	1	---
0.214000	48.90	10.9	63	14.1	1	---
0.258000	44.10	10.7	62	17.4	1	---
0.302000	36.80	10.6	60	23.4	1	---
12.502000	23.70	11.0	60	36.3	1	---

MEASUREMENT RESULT: "zebrarr17011_fin AV"

5/3/2004 2:02PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.174000	52.80	11.3	55	1.9	1	---
0.214000	39.70	10.9	53	13.3	1	---
0.258000	35.40	10.7	52	16.1	1	---
0.302000	29.60	10.6	50	20.6	1	---
19.998000	32.70	11.5	50	17.3	1	---

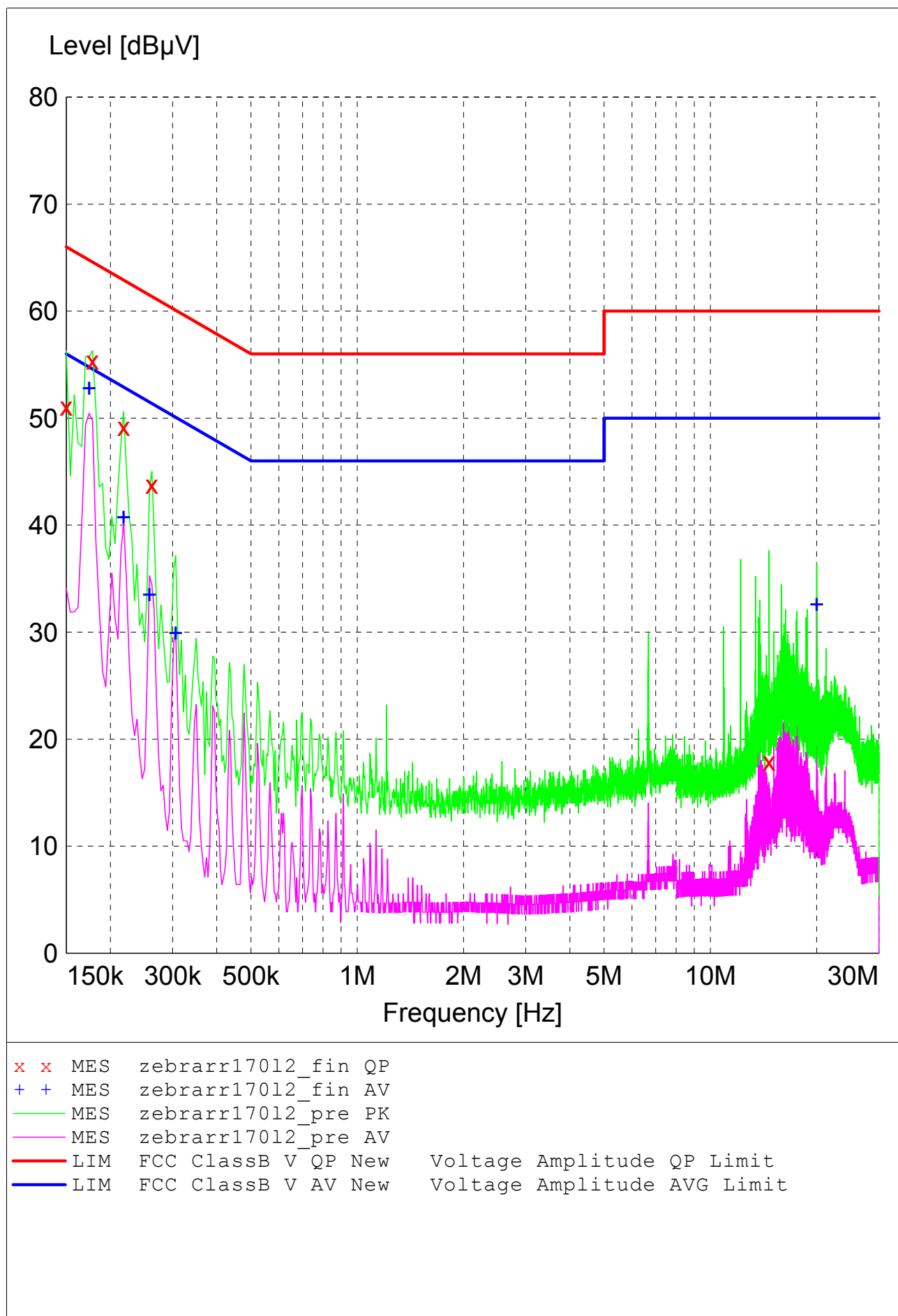
FCC Part 15 Class B

Voltage Mains Test

EUT: 170XiIII
Manufacturer: Zebra
Operating Condition: 72 deg. F, 36% R.H.
Test Site: DLS OF Screen Room
Operator: Jason L
Test Specification: 120 VAC, 60 Hz
Comment: Line 2
Date: 5/03/04

SCAN TABLE: "FCC ClassB Voltage"

Short Description:			FCC Class B Voltage			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
150.0 kHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	LISN DLS#128
			Average			



MEASUREMENT RESULT: "zebrarr17012_fin QP"

5/3/2004 2:07PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150000	51.10	11.6	66	14.9	1	---
0.178000	55.40	11.2	65	9.2	1	---
0.218000	49.20	10.8	63	13.6	1	---
0.262000	43.80	10.7	61	17.5	1	---
14.666000	17.90	11.2	60	42.1	1	---

MEASUREMENT RESULT: "zebrarr17012_fin AV"

5/3/2004 2:07PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.174000	52.80	11.3	55	2.0	1	---
0.218000	40.70	10.8	53	12.2	1	---
0.258000	33.50	10.7	52	18.0	1	---
0.306000	29.90	10.6	50	20.2	1	---
19.998000	32.60	11.5	50	17.4	1	---



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

2.0 SPURIOUS EMISSIONS AT ANTENNA TERMINALS – PART 15.247(c)

Spurious conducted emissions were measured at the antenna terminals. Plots were made showing the amplitude of each harmonic emission with the equipment operated. As shown by the radiated charts there was no reason to believe that there were any spurious emissions other than the harmonics that were than individually investigated when doing the conducted test at the antenna terminals. Measurements were made up to the 10th harmonic of the fundamental.

The allowed emissions for transmitters operating in the 902 MHz to 928 MHz bands for Zebra R170XiIII Bar Code Printer equipment are found under Part 15, Section 15.247(c). This paragraph states that in any 100 kHz bandwidth outside the frequency band which the spread spectrum intentional radiator is operating, the radio frequency power 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.

NOTE: See the following pages for the data ad graphs of the actual measurements made:



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

CONDUCTED EMISSION DATA AND GRAPH(S) TAKEN FOR SPURIOUS EMISSION MEASUREMENTS MADE AT THE ANTENNA TERMINALS

PART 15.247(c)



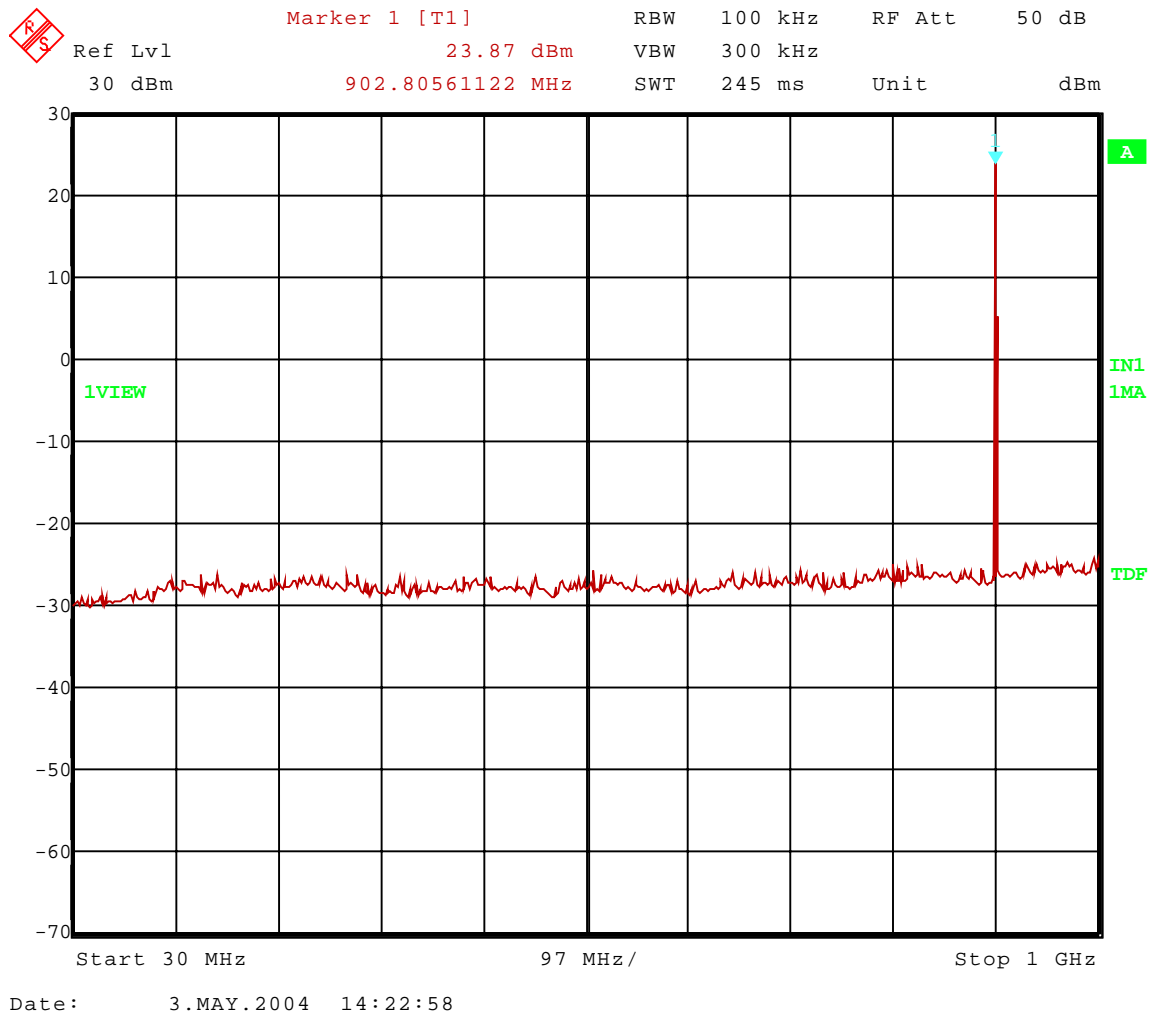
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Low Channel Transmit = 902.8 MHz
Frequency Range: 30 to 1000 MHz
Limit = 3.87 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





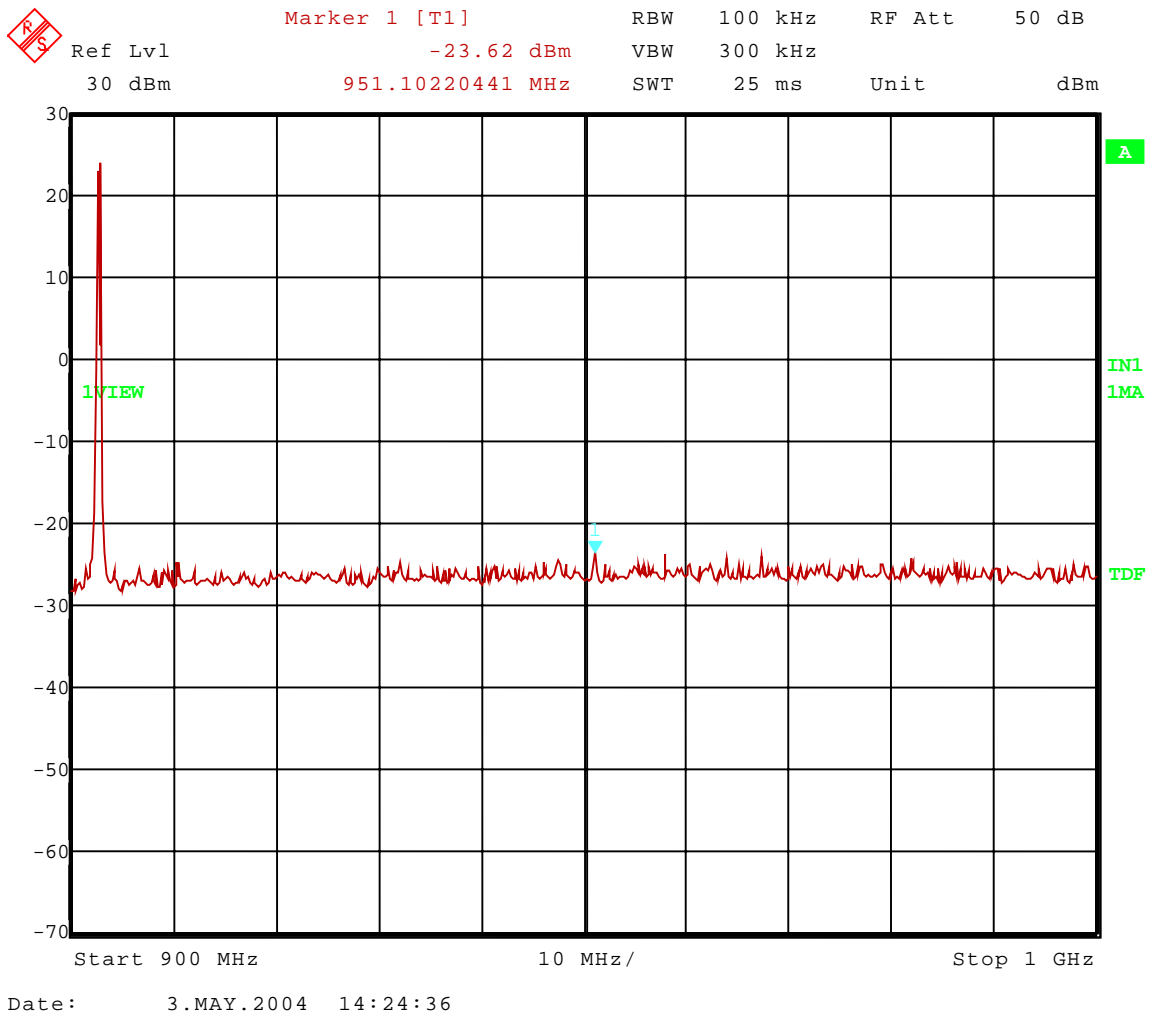
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Low Channel Transmit = 902.8 MHz
Frequency Range: 900 to 1000 MHz
Limit = 3.87 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





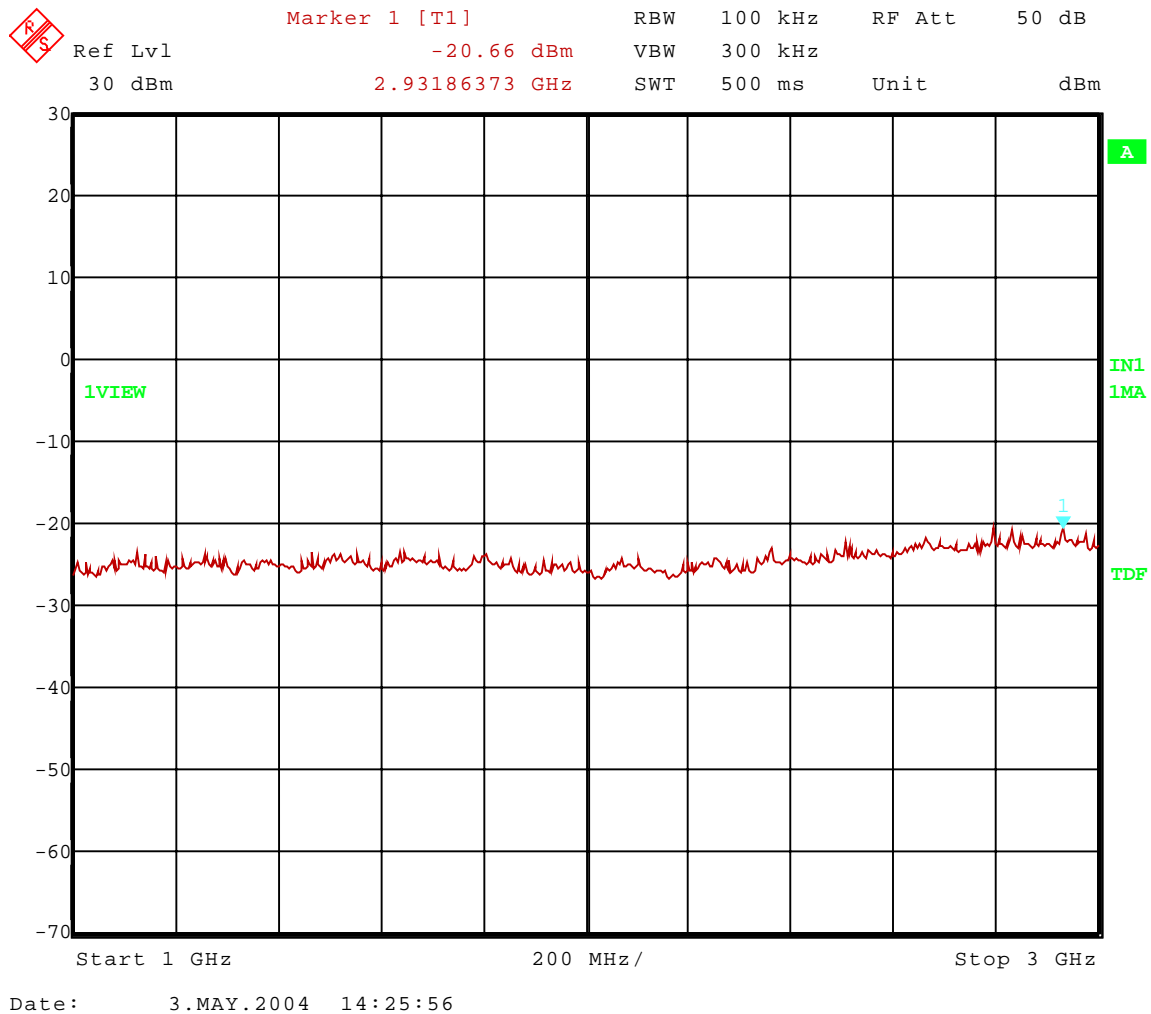
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Low Channel Transmit = 902.8 MHz
Frequency Range: 1 to 3 GHz
Limit = 3.87 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





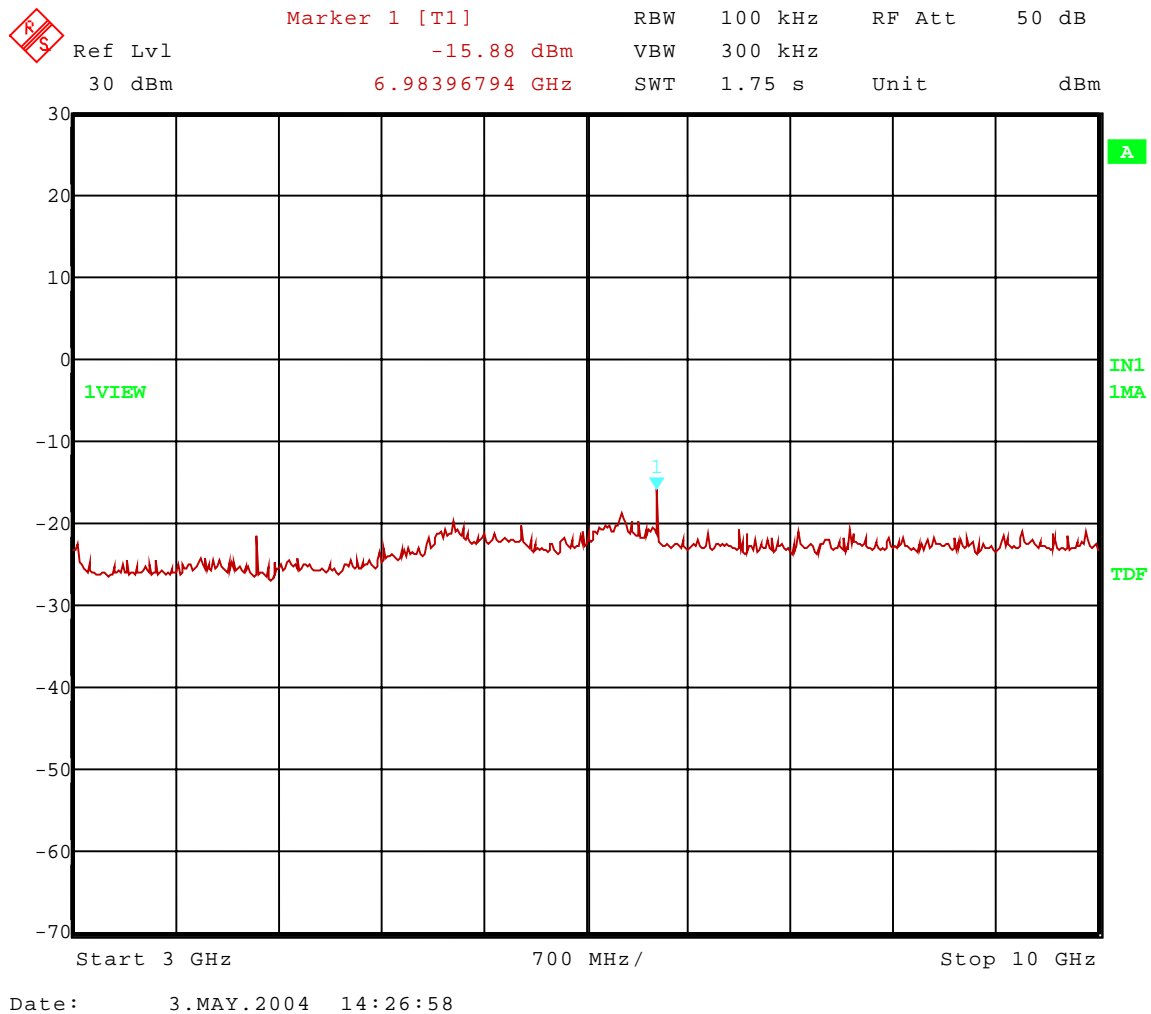
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Low Channel Transmit = 902.8 MHz
Frequency Range: 3 to 10 GHz
Limit = 3.87 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





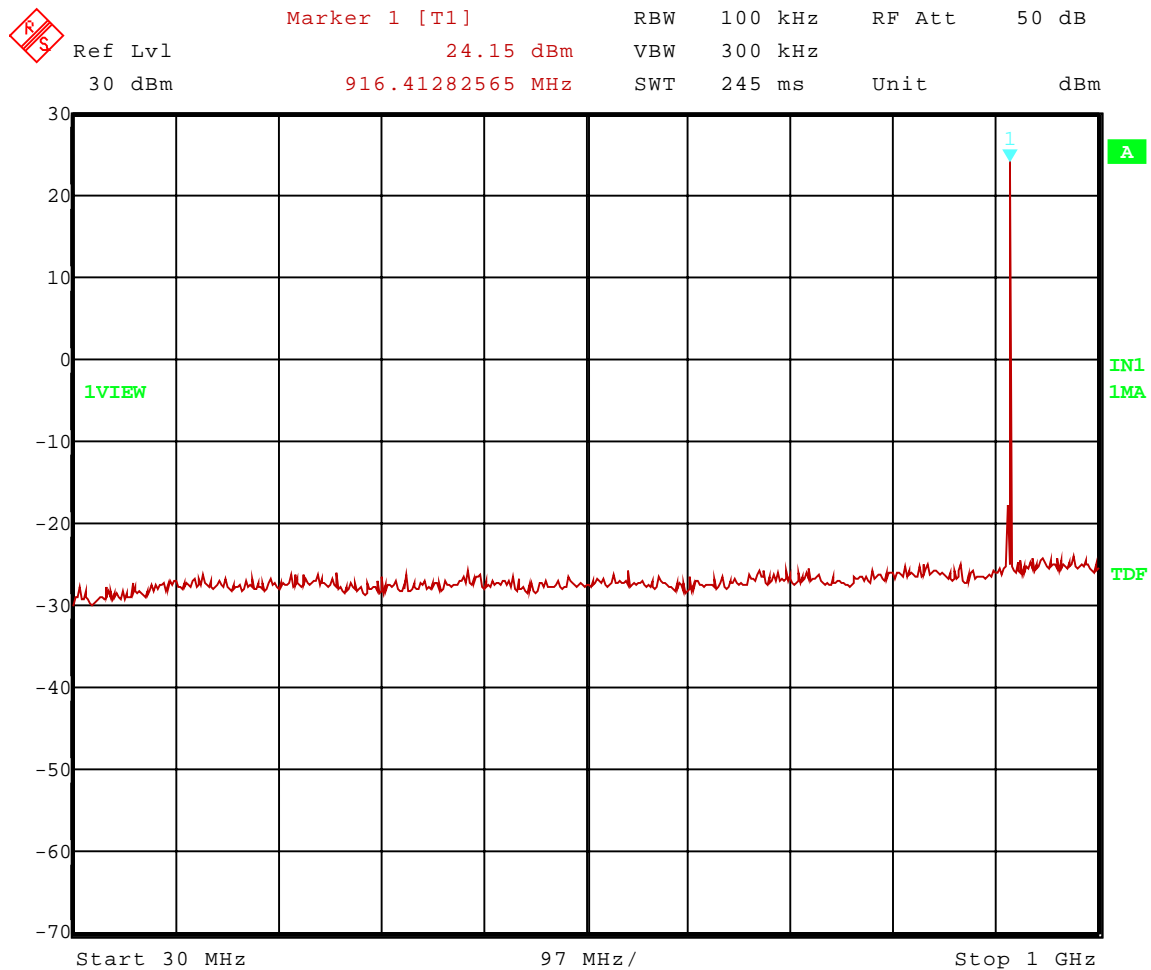
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Middle Channel Transmit = 915.20 MHz
Frequency Range: 30 to 1000 MHz
Limit = 4.15 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 3.MAY.2004 14:29:22



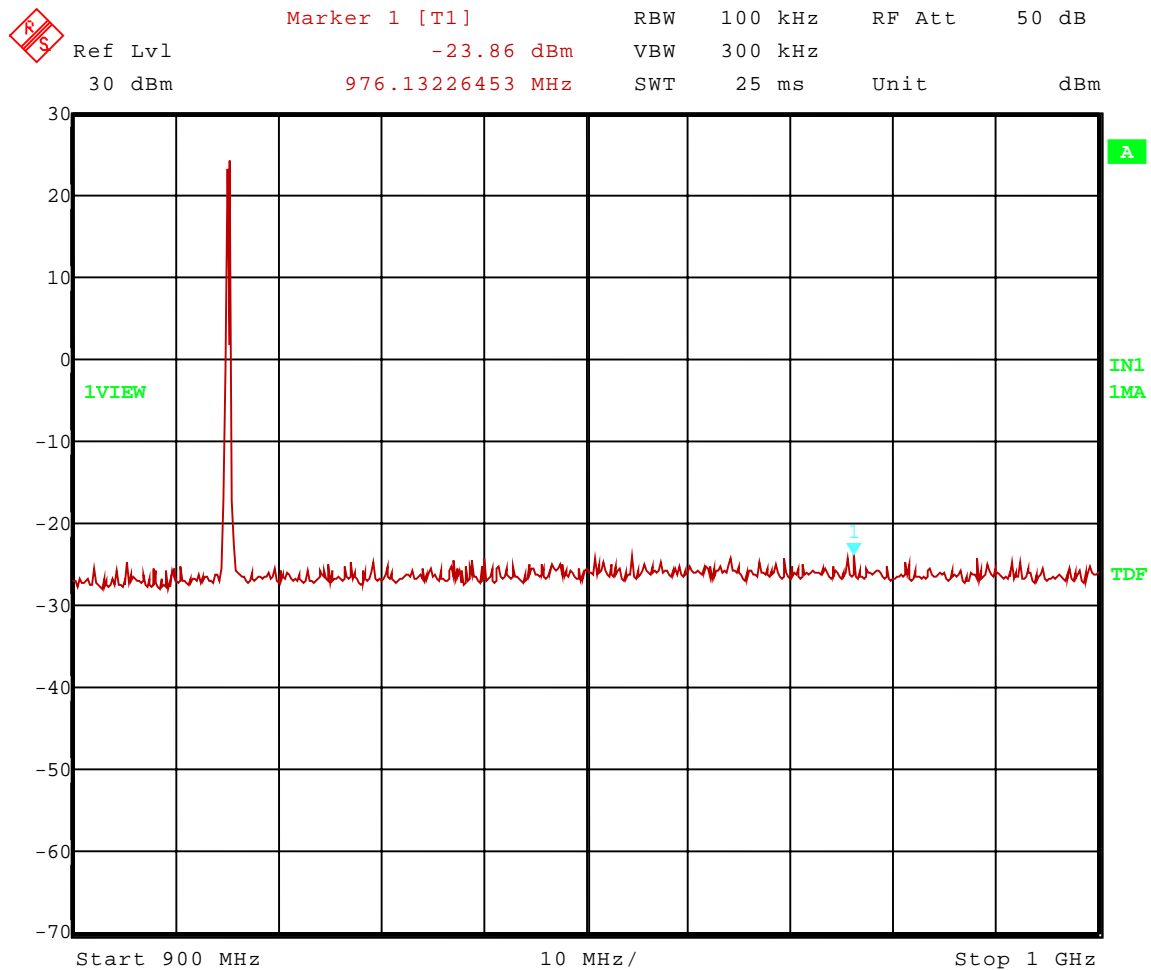
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Middle Channel Transmit = 915.20 MHz
Frequency Range: 900 to 1000 MHz
Limit = 4.15 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 3.MAY.2004 14:30:12



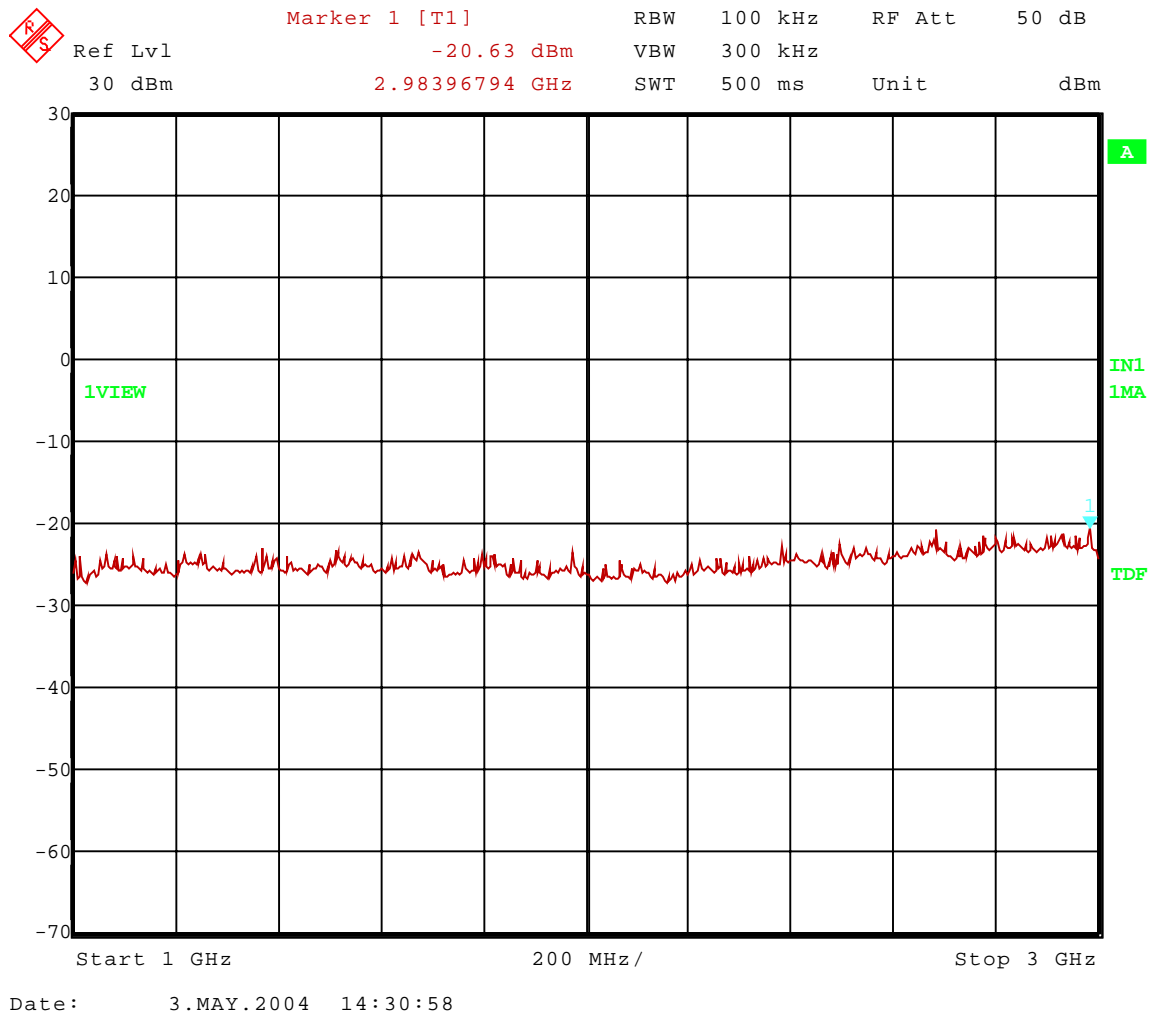
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Middle Channel Transmit = 915.20 MHz
Frequency Range: 1 to 3 GHz
Limit = 4.15 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





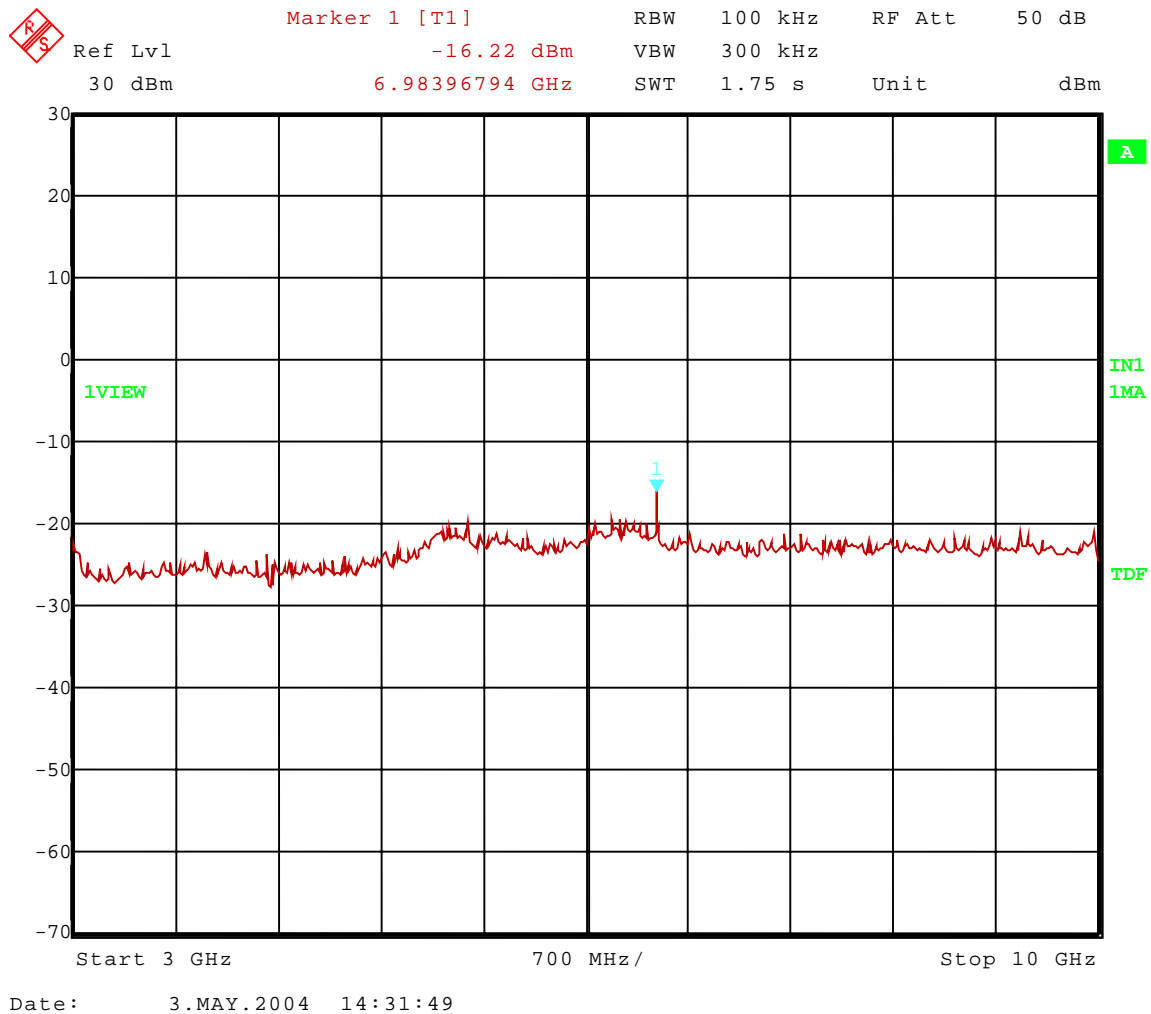
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Middle Channel Transmit = 915.20 MHz
Frequency Range: 3 to 10 GHz
Limit = 4.15 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





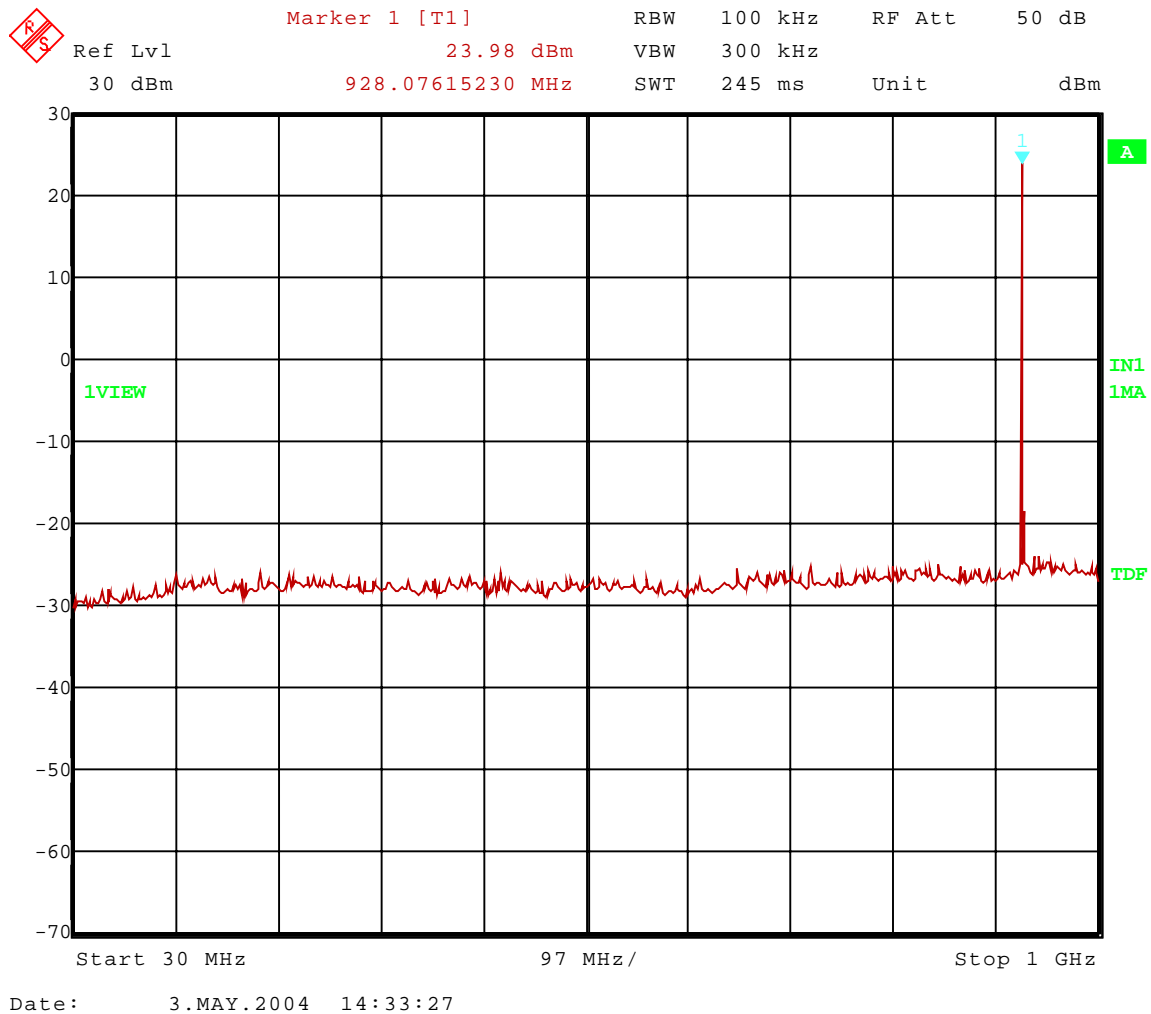
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: High Channel Transmit = 927.60 MHz
Frequency Range: 30 to 1000 MHz
Limit = 3.98 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





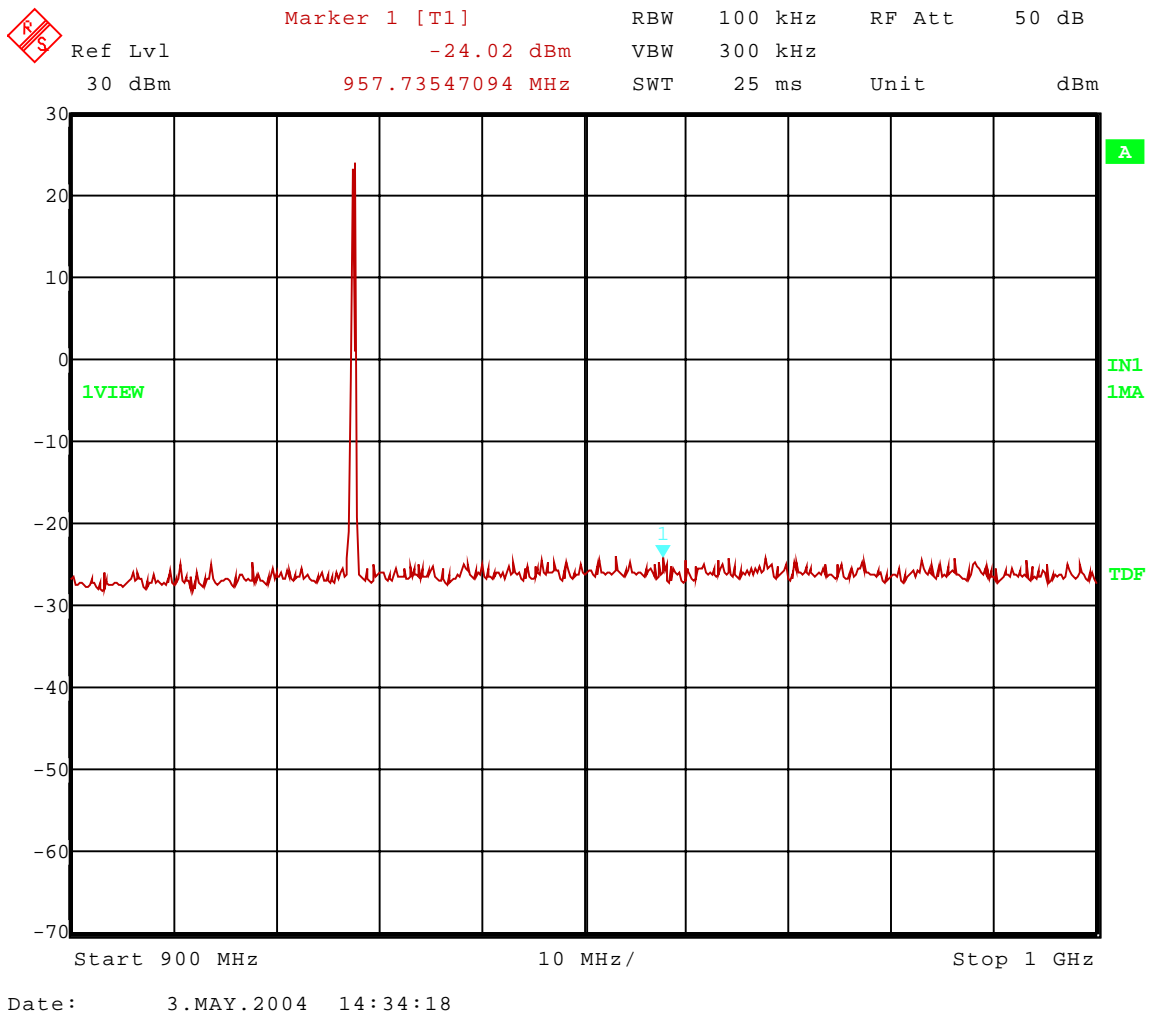
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: High Channel Transmit = 927.60 MHz
Frequency Range: 900 to 1000 MHz
Limit = 3.98 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





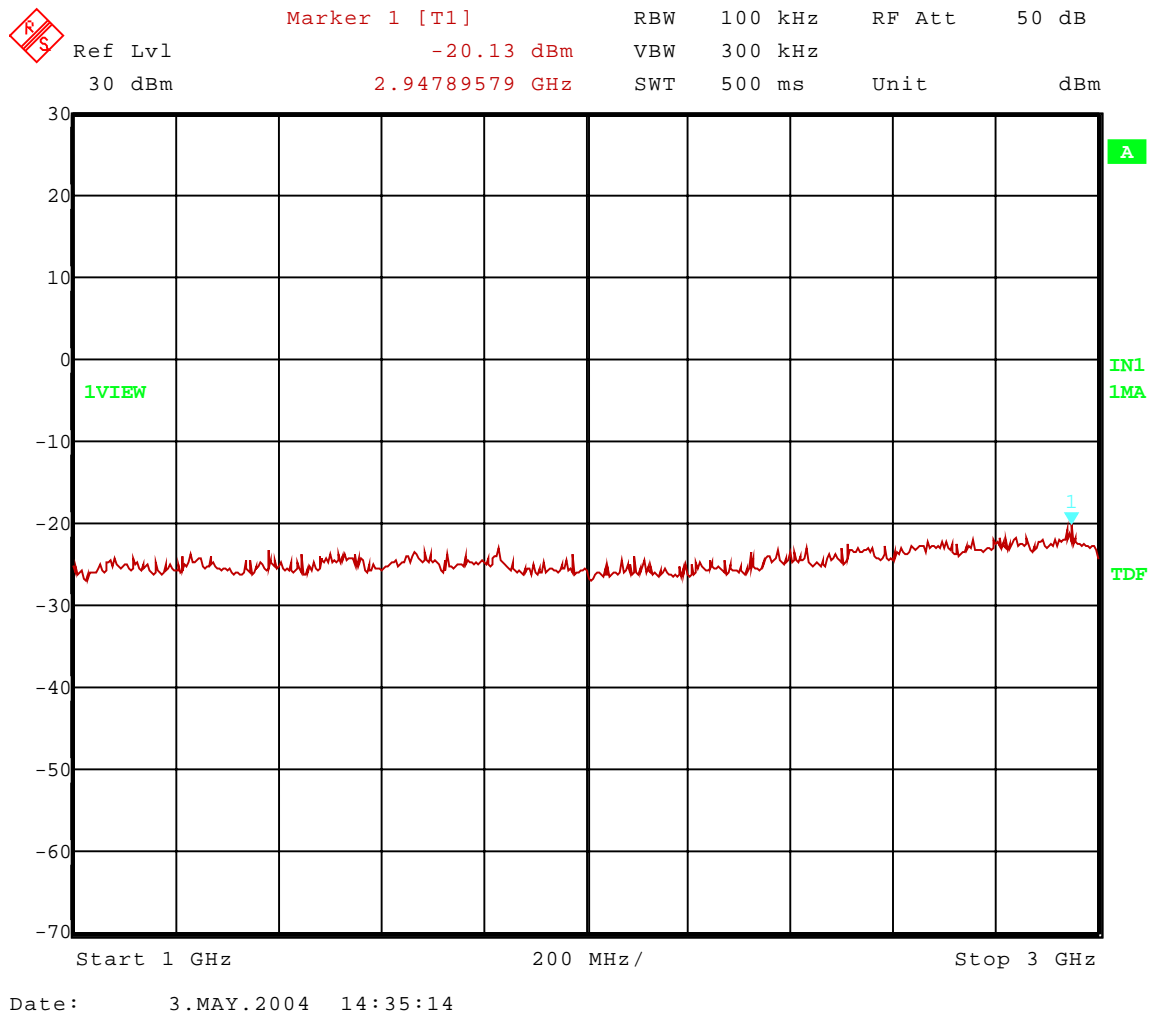
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: High Channel Transmit = 927.60 MHz
Frequency Range: 1 to 3 GHz
Limit = 3.98 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





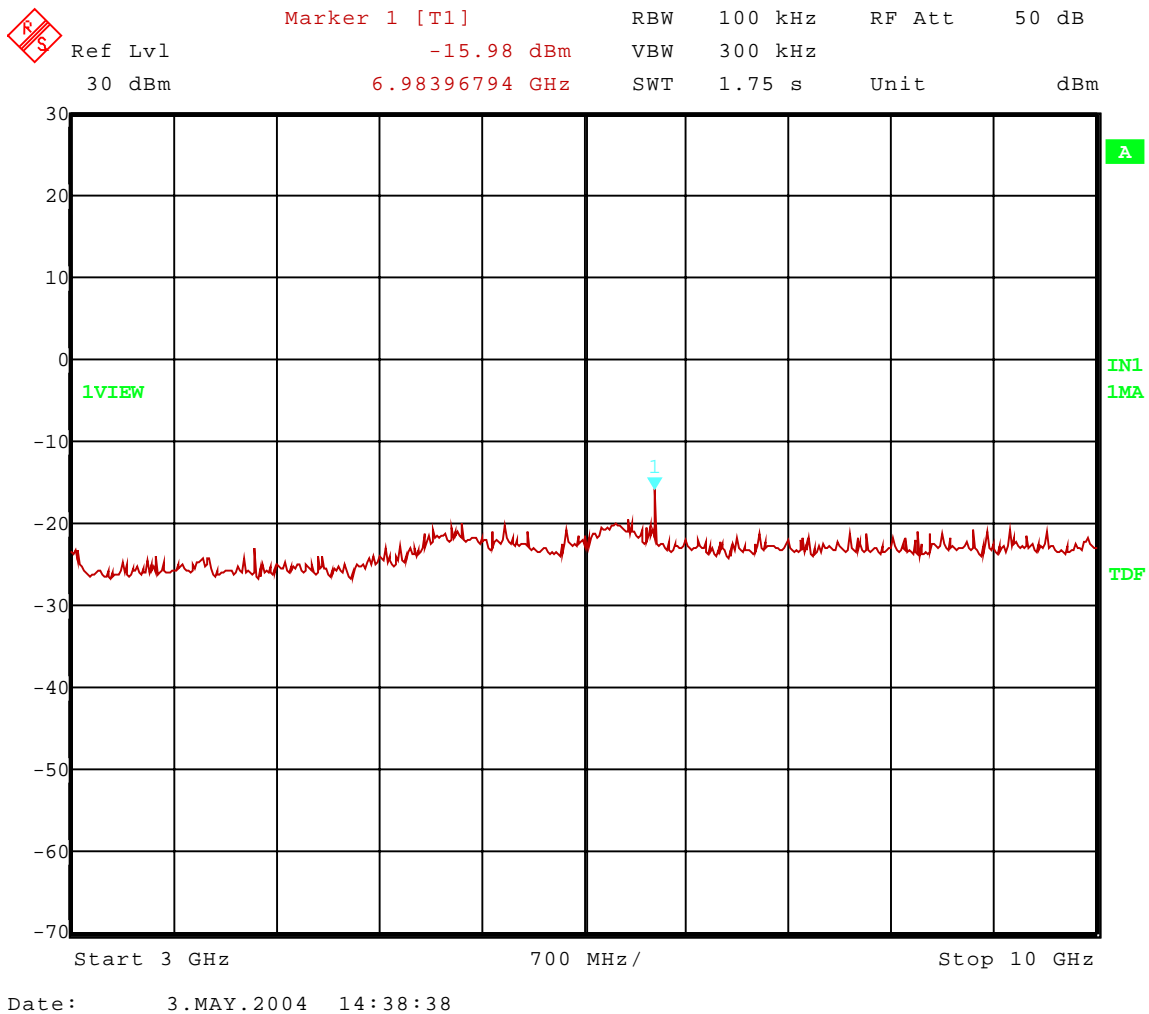
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: High Channel Transmit = 927.60 MHz
Frequency Range: 3 to 10 GHz
Limit = 3.98 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





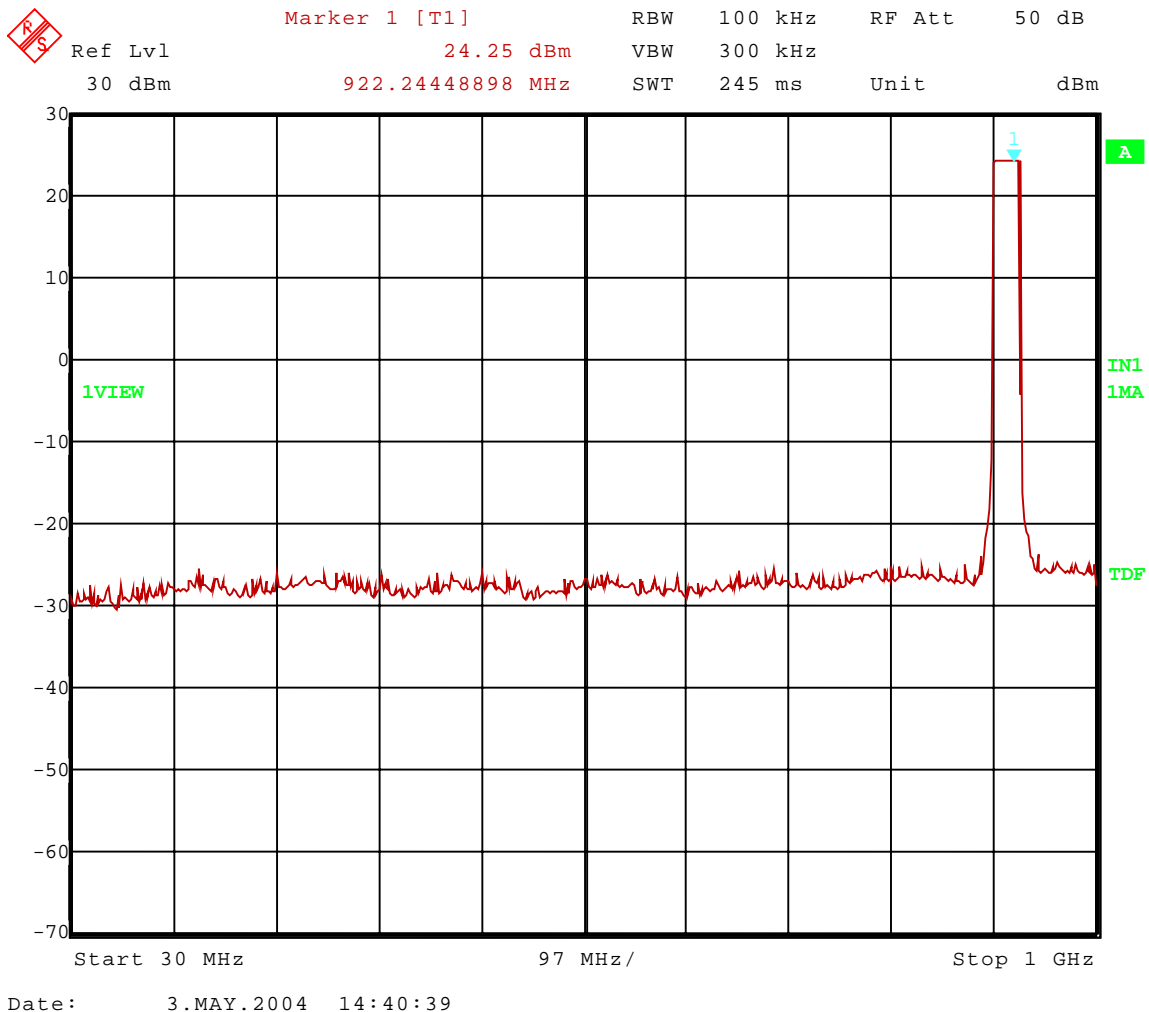
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Spread Spectrum Hopping On
Frequency Range: 30 to 1000 MHz
Limit = 4.25 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





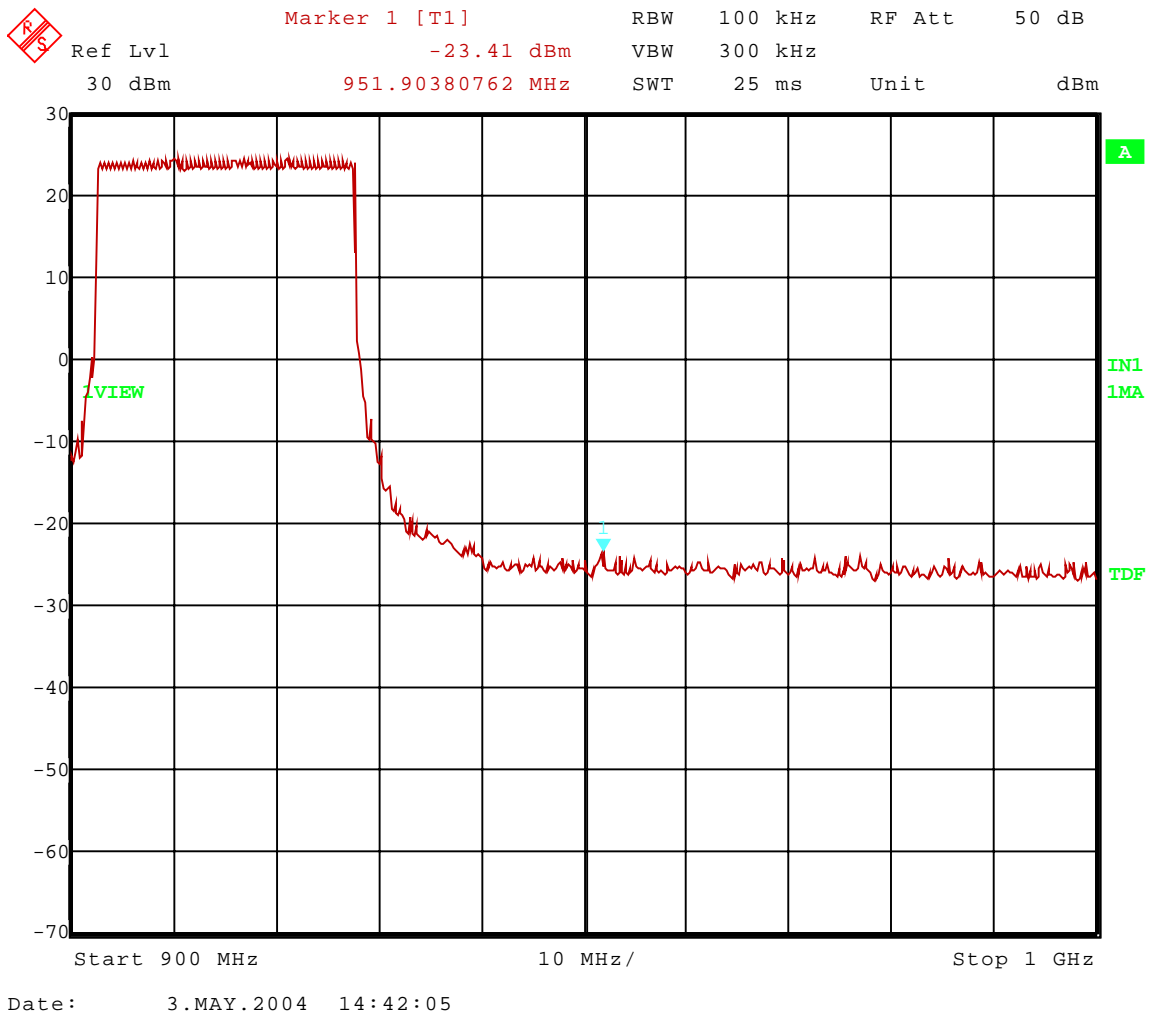
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Spread Spectrum Hopping On
Frequency Range: 900 to 1000 MHz
Limit = 4.25 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





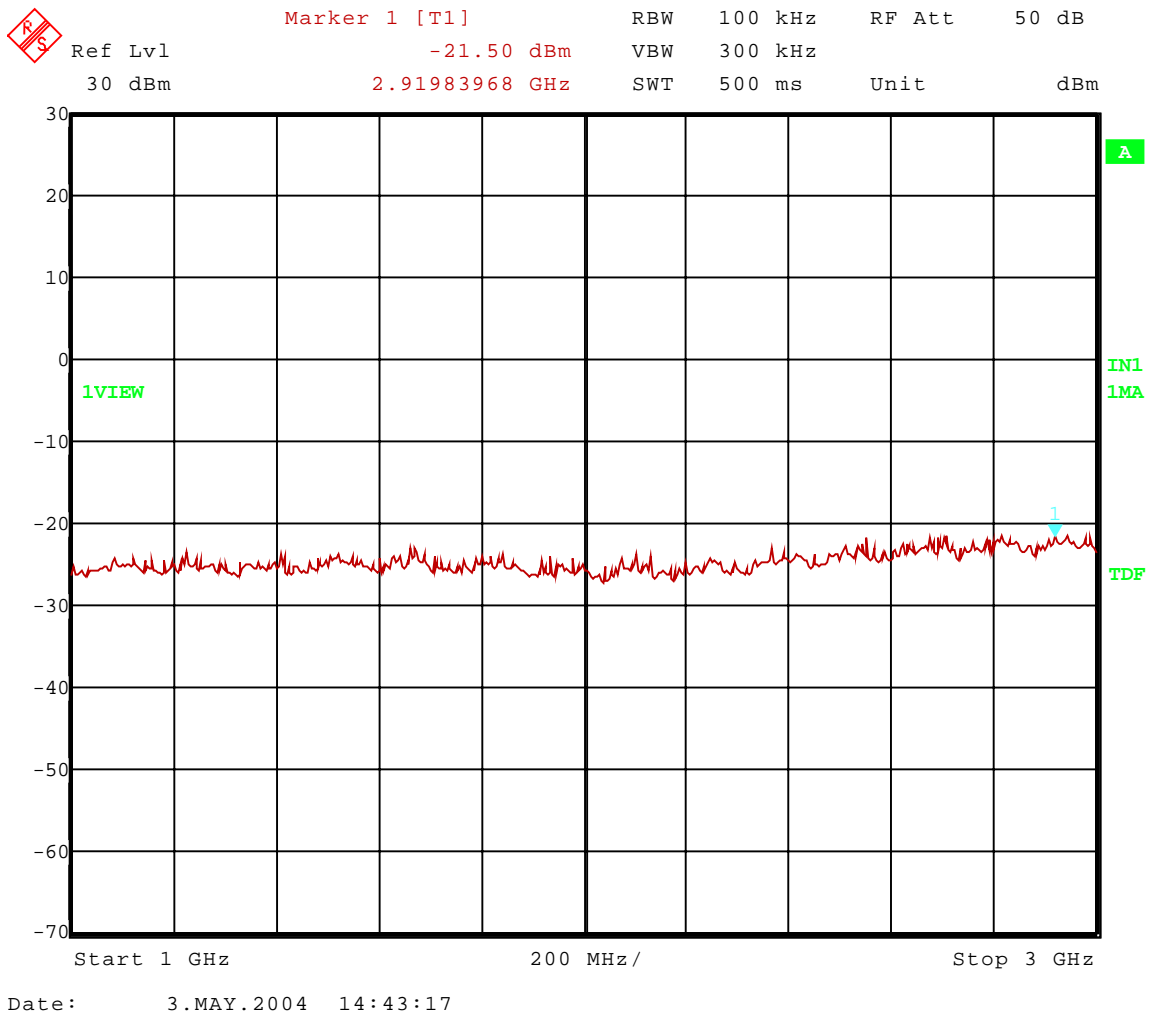
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Spread Spectrum Hopping On
Frequency Range: 1 to 3 GHz
Limit = 4.25 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





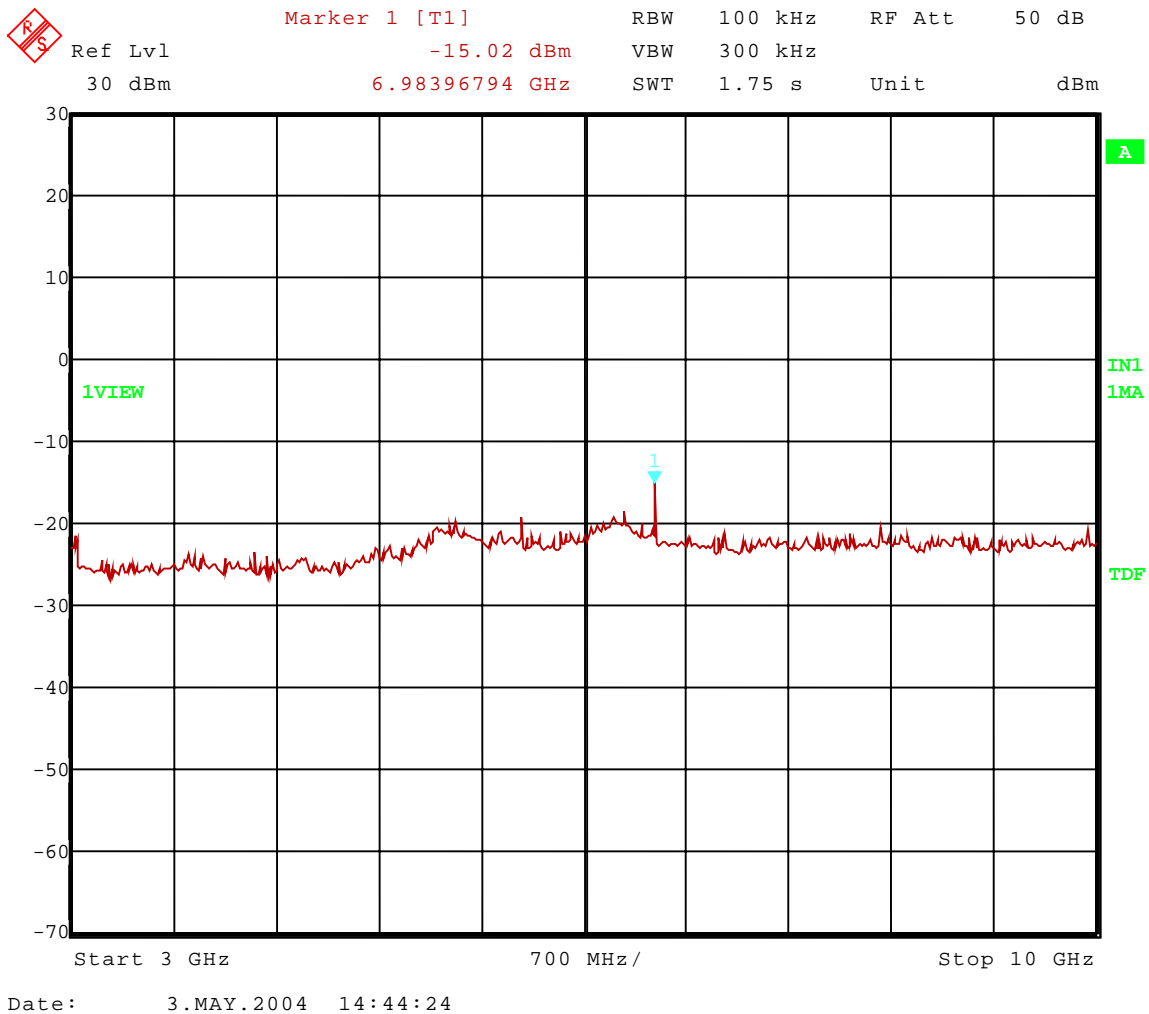
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Spread Spectrum Hopping On
Frequency Range: 3 to 10 GHz
Limit = 4.25 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



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APPENDIX A

3.0 CONDUCTED EMISSIONS (ANTENNA TERMINAL) PHOTOS TAKEN DURING TESTING





Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

4.0 RESTRICTED BANDS

As stated in Section 15.205a, the fundamental emission from the Zebra R170XiIII Bar Code Printer shall not fall within any of the bands listed below:

Frequency in MHz	Frequency in MHz	Frequency in MHz	Frequency in GHz
.0900 to .1100	162.0125 to 167.17	2310.0 to 2390	9.30 to 9.50
.4900 to .5100	167.7200 to 173.20	2483.5 to 2500	10.60 to 12.70
2.1735 to 2.1905	240.000 to 285.00	2655.0 to 2900	13.25 to 13.40
8.362 to 8.3660	322.200 to 335.40	3260.0 to 3267	14.47 to 14.50
13.36 to 13.410	399.900 to 410.00	3332.0 to 3339	15.35 to 16.20
25.50 to 25.670	608.000 to 614.00	3345.8 to 3358	17.70 to 21.40
37.50 to 38.250	960.000 to 1240.00	3600.0 to 4400	22.01 to 23.13
73.00 to 75.500	1300.000 to 1427.00	4500.0 to 5250	23.60 to 24.00
108.00 to 121.94	1435.000 to 1626.50	5350.0 to 5450	31.20 to 31.80
123.00 to 138.00	1660.000 to 1710.00	7250.0 to 7750	36.43 to 36.50
149.90 to 150.00	1718.800 to 1722.20	8025.0 to 8500	ABOVE 38.60
156.70 to 156.90	2200.000 to 2300.00	9000.0 to 9200	

NOTE:

The noise floor within the Restricted Bands for the EMC Receiver and HP Spectrum Analyzer will typically lay 20 dB below the limit.

5.0 BAND EDGE AND RESTRICT BAND COMPLIANCE

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the attenuation below the general limits specified in 15.209 is not required.

The field strength of any **radiated emissions** which fall within the restricted bands shall not exceed the general radiated emissions limits as stated Section 15.209.

NOTE: See the following page(s) for the graph(s) made showing compliance for Band Edge and Restrict Band:



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

DATA AND GRAPH(S) TAKEN SHOWING THE BAND EDGE AND RESTRICT BAND COMPLIANCE

PART 15.247(c)



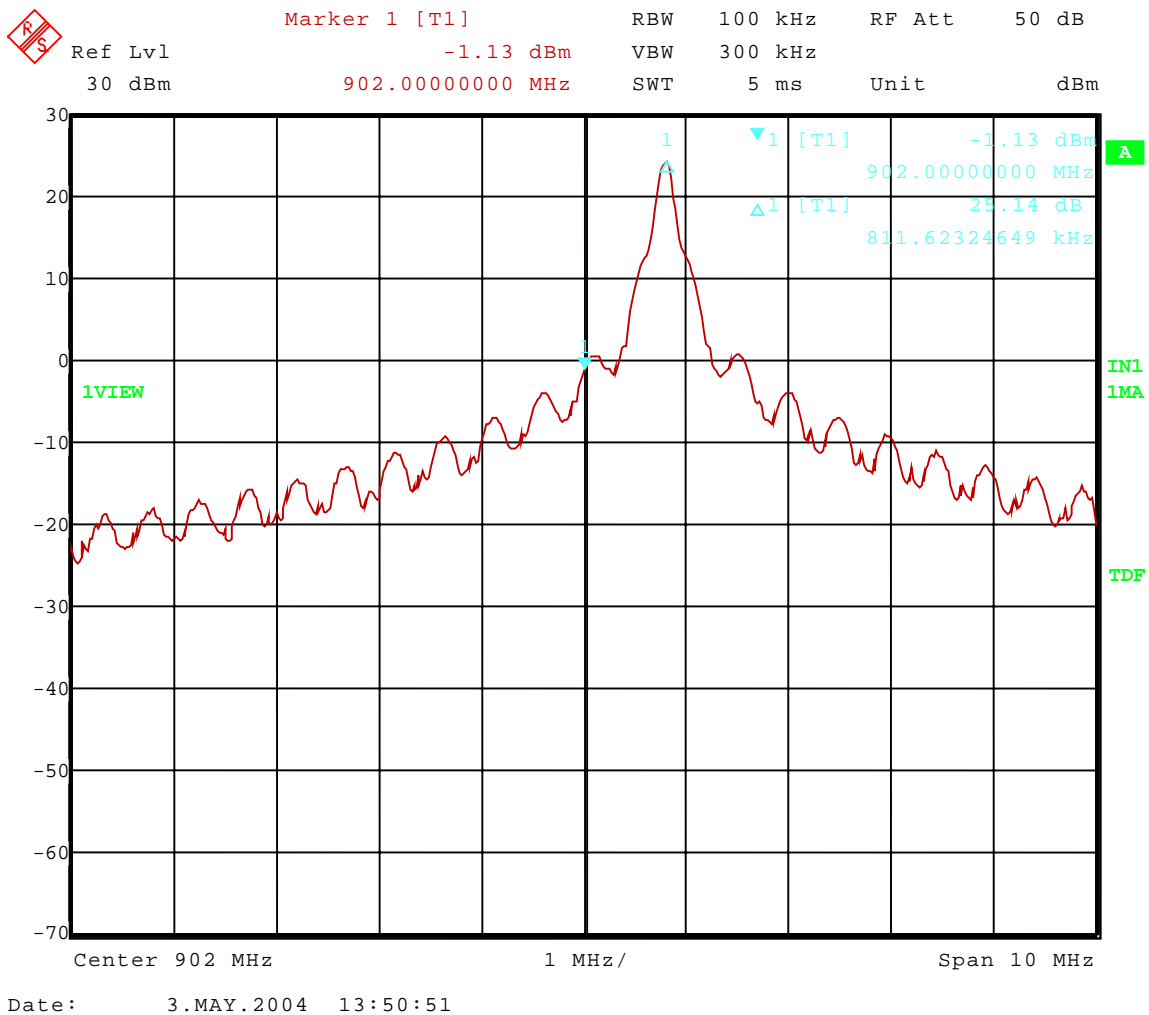
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Low Band-Edge Compliance - Conducted
Operator: Jason L.
Comment: Low Channel: Frequency – 902.8 MHz

Band-Edge Frequency = 902 MHz
Band-Edge > 20 dB Below Peak In-Band Emission





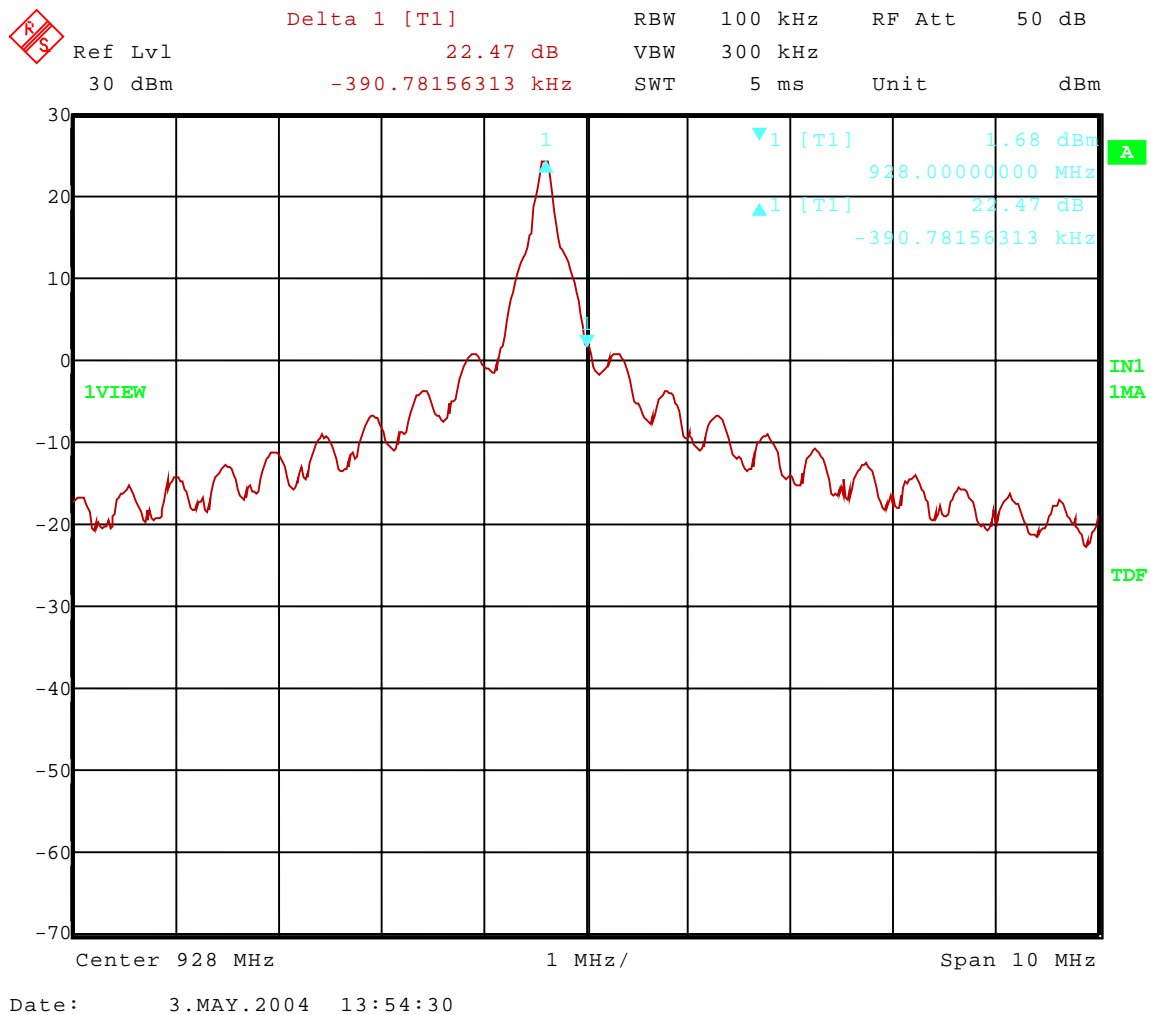
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: High Band-Edge Compliance - Conducted
Operator: Jason L.
Comment: High Channel: Frequency – 927.60 MHz

Band-Edge Frequency = 928 MHz
Band-Edge > 20 dB Below Peak In-Band Emission





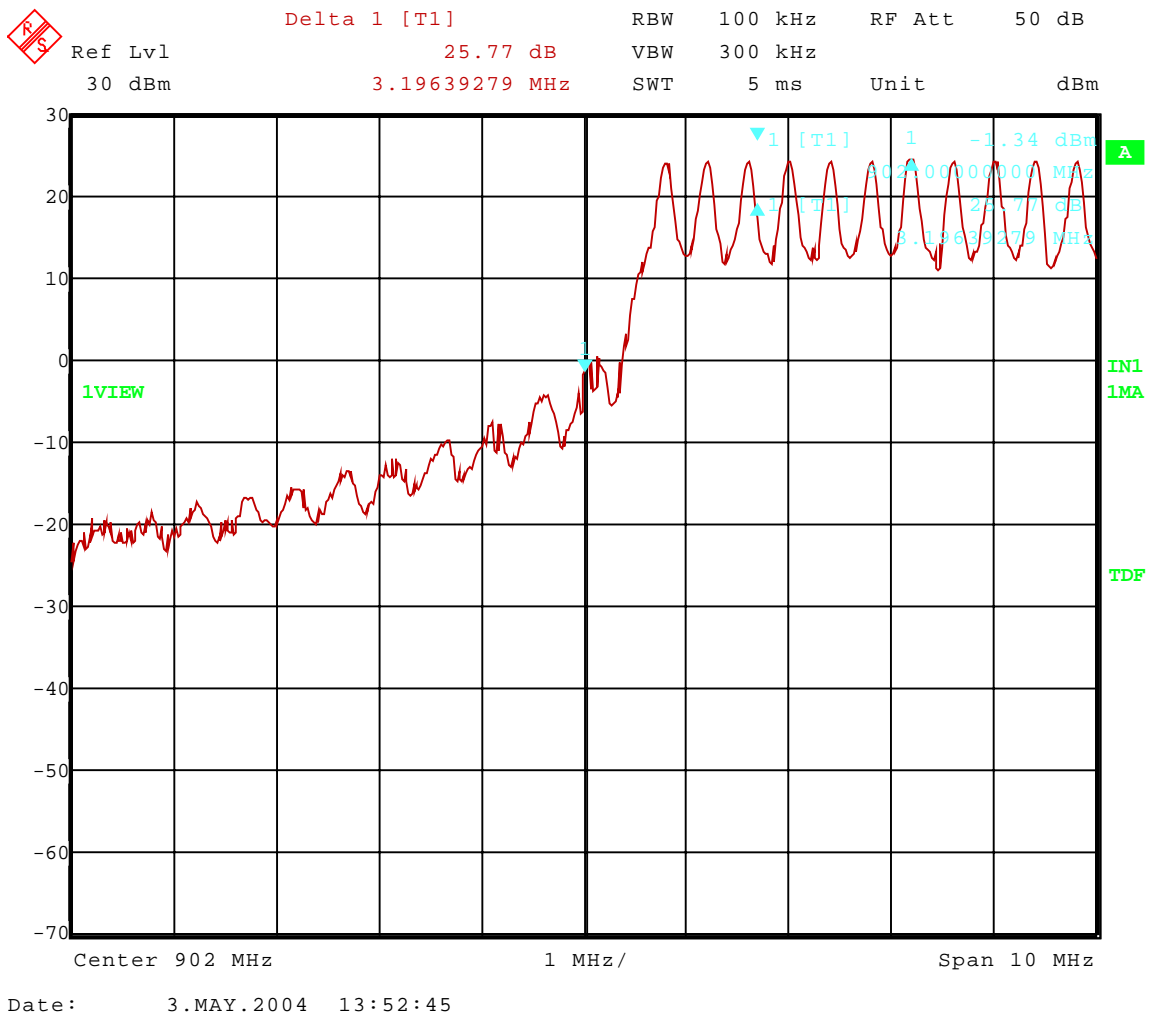
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Low Band-Edge Compliance - Conducted
Operator: Jason L.
Comment: Spread Spectrum Frequency Hopping On

Band-Edge Frequency = 902 MHz
Band-Edge > 20 dB Below Peak In-Band Emission

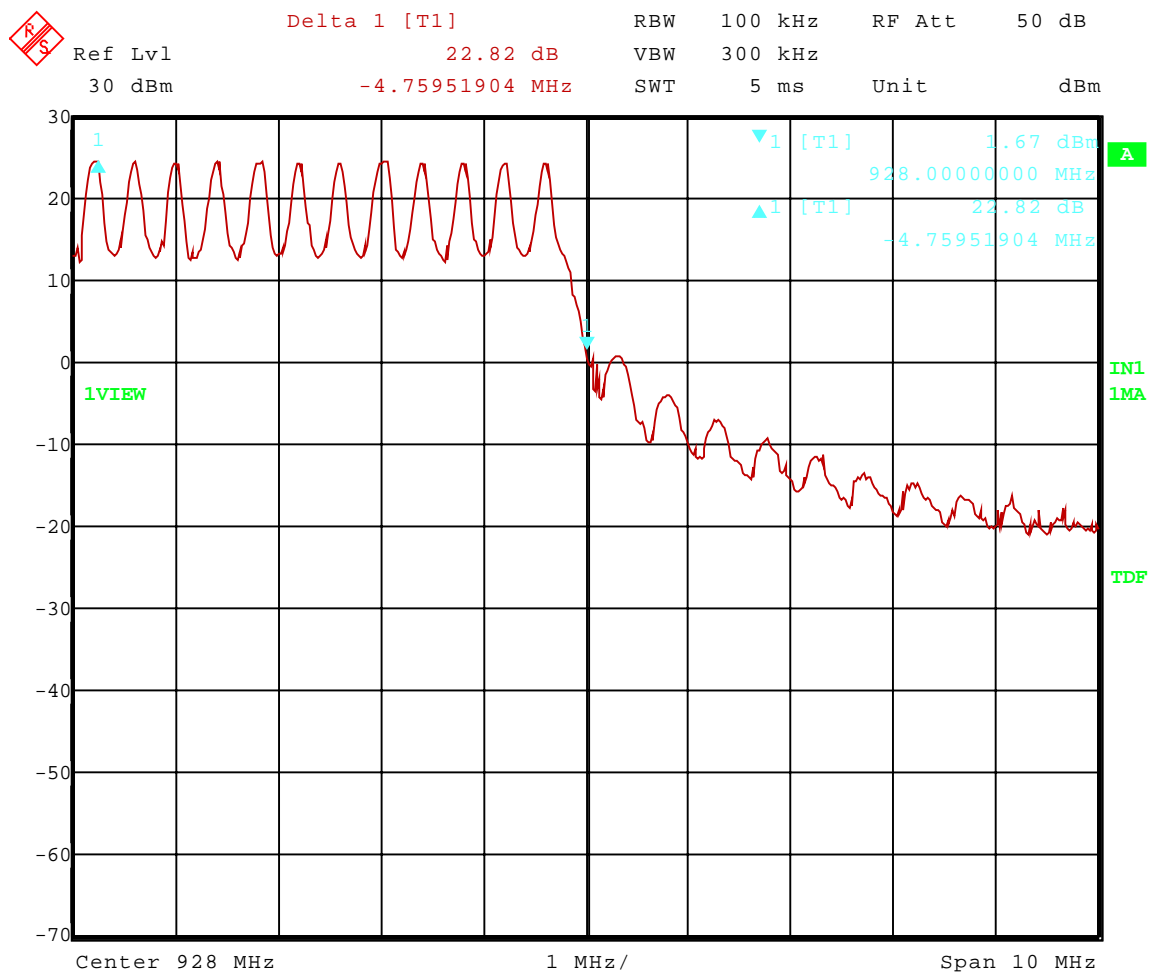


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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: High Band-Edge Compliance - Conducted
Operator: Jason L.
Comment: Spread Spectrum Frequency Hopping On

Band-Edge Frequency = 928 MHz
Band-Edge > 20 dB Below Peak In-Band Emission



Date: 3.MAY.2004 13:56:06



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

6.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS

The radiated measurements made at D.L.S. Electronic Systems, Inc., for the Zebra R170XiIII Bar Code Printer, Model Number: 170XiIII, are shown in tabulated and graph form. Preliminary radiation measurements were performed at a 3 meter test distance with the limits adjusted linearly when required. The frequency range from 30 MHz to over 960 MHz, depending upon the fundamental frequency as stated in Part 15.33a, was automatically scanned and plotted at various angles.

Measurements for the Zebra R170XiIII Bar Code Printer were made up to MHz, in accordance with Section 15.33a for Intentional Radiators with a fundamental frequency of MHz. For intentional radiators, the frequency range to be investigated is determined by the lowest radio frequency generated by the device without going below 30 MHz, up to at least the tenth harmonic of the highest fundamental frequency or 10 GHz, whichever is lower. At those frequencies where significant signals were detected, measurements were made over the entire frequency range specified in FCC Part 15, Subpart C, Section 15.247 at the open field test site, located at Genoa City, Wisconsin, FCC file number **31040/SIT**. When required, levels were extrapolated from 10 meters to 3 meters using a linear extrapolation.

All signals in the frequency range of 30 MHz to 2000 MHz were measured with a Biconical Antenna or tuned dipoles and from 200 MHz to 1000 MHz, a Log Periodic or Tuned Dipoles were used. From 1000 MHz to 25 GHz Horn Antennas were used. During the test the equipment was rotated and the antenna was raised and lowered from 1 meter to 4 meters to find the maximum level of emissions. In order to find maximum emissions, the cables were moved through all the positions the equipment would be expected to experience in the field. The EUT, peripheral equipment and cables were configured to meet the conditions in ANSI C63.4-2001, Clauses 6 & 8. Tests were made with the receive antenna(s) in both the horizontal and vertical planes of polarization. In each case, the table was rotated to find the maximum emissions.



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

6.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS (CON'T)

As stated in Section 15.247(b) the allowed maximum peak output power of the transmitter shall not exceed 1 Watt. In any 100 kHz bandwidth outside these frequency bands (the power that is produced by the modulation products of the spreading sequence), the information sequence and the carrier frequency shall be either at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Attenuation below the general limits specified in 15.209 is not required.

Field strength limits are at a distance of 3 meters. The emission limits shown are based on measurement instrumentation employing an average detector.

Emissions radiated outside of the specified frequency bands, except for harmonics are attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Preliminary radiated emission measurements were performed at a 3 meter test distance. The frequency range from 30 MHz to 1000 MHz was automatically scanned and plotted at various angles.

NOTE:

All radiated emissions measurements were made at a test room temperature of 68°F at 35% relative humidity.



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

RADIATED DATA AND GRAPH(S) TAKEN FOR FIELD STRENGTH SPURIOUS EMISSION MEASUREMENTS

PART 15.247

FCC Class B 3 Meter

Electric Field Strength

EUT: 170XiIII
Manufacturer: Zebra
Operating Condition: 69 deg. F.; 35% R.H.
Test Site: D.L.S. O.F. Site 2
Operator: Jason L
Test Specification: 120VAC; 60 Hz
Comment: Continious Tx and Rx Frequency Hopping
Date:5-3-04

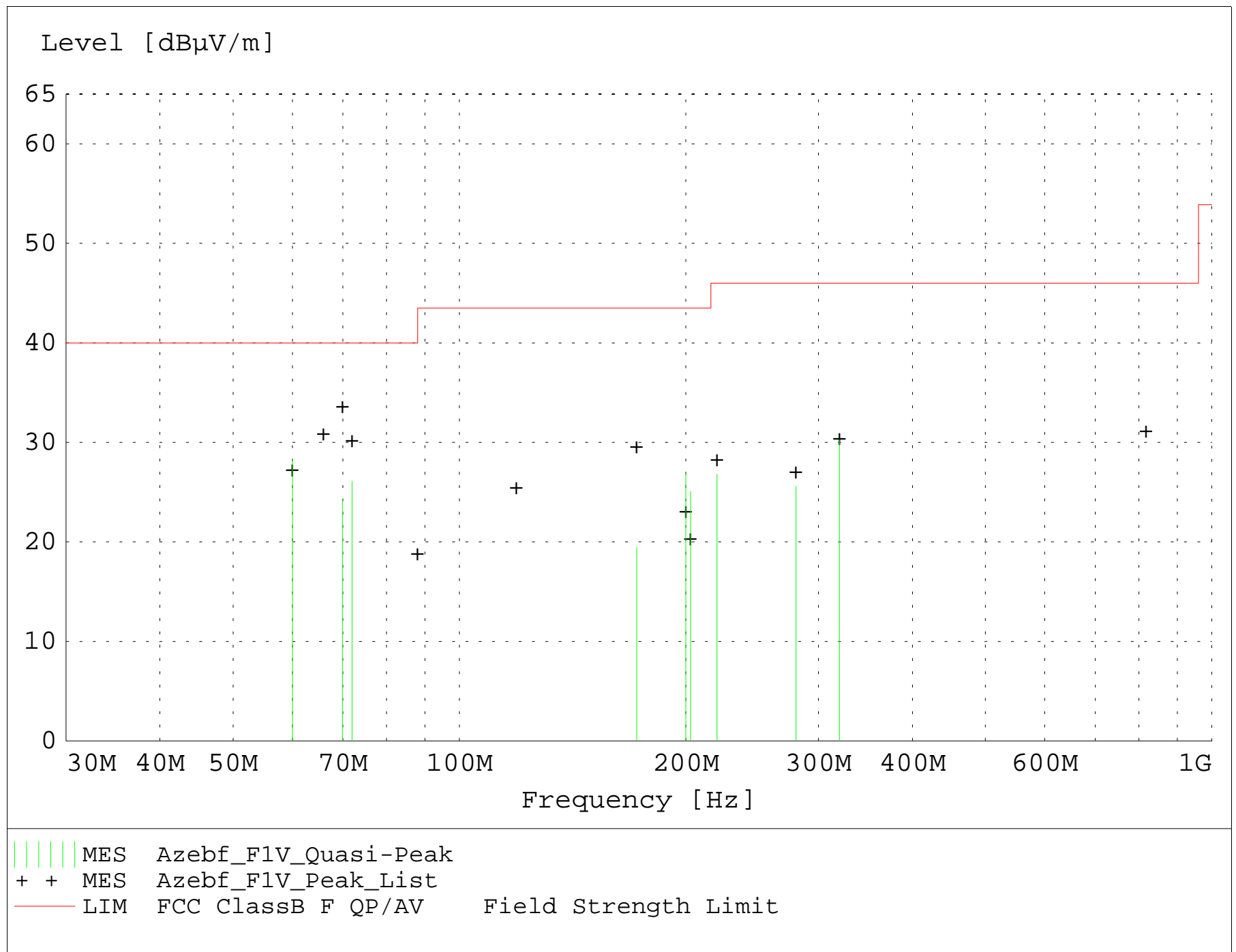
TEXT: "Site 2 MidV 3M"

Short Description: Test Set-up Vert30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/005

Antennas ---
Biconical -- EMCO 3104C SN: 0005-4892
Log Periodic -- Electro Metrics LPA-25 SN: 1205

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/004

TEST SET-UP: EuT Measured at 3 Meters with VERTICAL Antenna Polarisation



MEASUREMENT RESULT: "Azebf_F1V_Final"

5/3/04 9:31AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
0.000000	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0		
59.990000	42.85	9.56	-24.1	28.3	40.0	11.7	1.00	45	QUASI-PEAK	None
72.000000	43.20	6.74	-23.9	26.1	40.0	13.9	1.00	165	QUASI-PEAK	None
69.900000	41.37	6.84	-23.9	24.3	40.0	15.7	1.00	270	QUASI-PEAK	None
320.000000	37.01	15.36	-22.1	30.2	46.0	15.8	1.00	45	QUASI-PEAK	None
200.000000	38.00	11.89	-23.0	26.9	43.5	16.6	1.00	90	QUASI-PEAK	None
202.860000	36.45	11.63	-23.0	25.1	43.5	18.4	1.00	180	QUASI-PEAK	None
220.000000	38.14	11.42	-22.7	26.8	46.0	19.2	1.00	270	QUASI-PEAK	None
279.980000	34.30	13.71	-22.4	25.6	46.0	20.4	1.00	60	QUASI-PEAK	None
172.060000	27.57	14.95	-23.1	19.4	43.5	24.1	1.00	70	QUASI-PEAK	None

FCC Class B 3 Meter

Electric Field Strength

EUT: 170XiIII
Manufacturer: Zebra
Operating Condition: 69 deg. F.; 35% R.H.
Test Site: D.L.S. O.F. Site 2
Operator: Jason L
Test Specification: 120VAC; 60 Hz
Comment: Continious Tx and Rx Frequency Hopping
Date:5-3-04

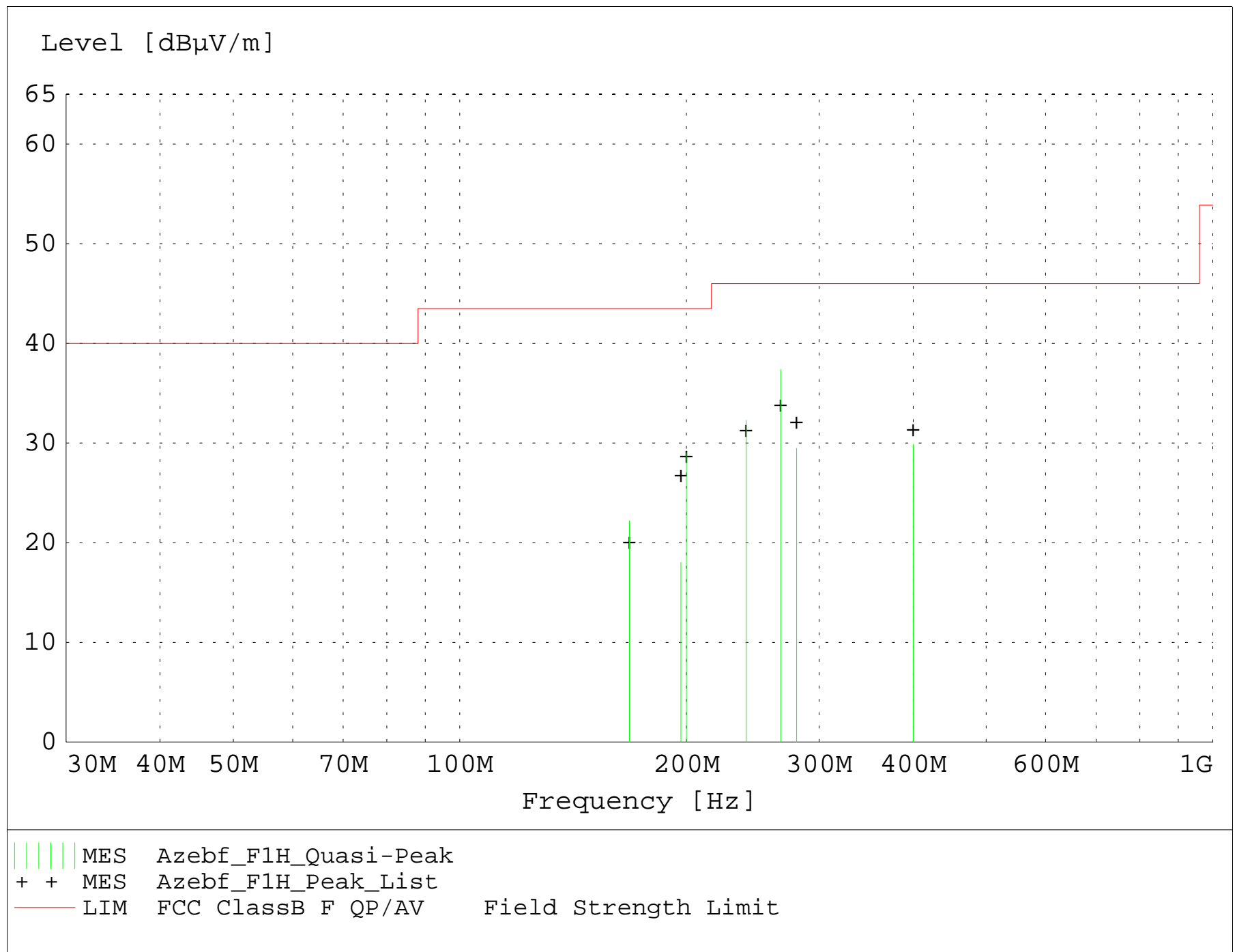
TEXT: "Site 2 MidH 3M"

Short Description: Test Set-up Horz30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/005

Antennas ---
Biconical -- EMCO 3104C SN: 0005-4892
Log Periodic -- Electro Metrics LPA-25 SN: 1205

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/004

TEST SET-UP: EuT Measured at 3 Meters with HORIZONTAL Antenna Polarisation



MEASUREMENT RESULT: "Azebf_F1H_Final"

5/3/04 9:21AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
266.670000	46.99	12.89	-22.5	37.4	46.0	8.6	1.00	225	QUASI-PEAK	None
239.990000	43.00	11.96	-22.7	32.3	46.0	13.7	1.00	225	QUASI-PEAK	None
200.000000	40.15	11.89	-23.0	29.0	43.5	14.5	2.00	225	QUASI-PEAK	None
399.990000	35.69	15.69	-21.5	29.9	46.0	16.1	2.00	250	QUASI-PEAK	None
279.980000	38.20	13.71	-22.4	29.5	46.0	16.5	1.00	225	QUASI-PEAK	None
168.010000	31.07	14.19	-23.1	22.2	43.5	21.3	2.00	270	QUASI-PEAK	None
196.590000	24.04	17.03	-23.1	18.0	43.5	25.5	1.50	0	QUASI-PEAK	None

FCC Class B

Electric Field Strength

EUT: 170XiIII
Manufacturer: Zebra
Operating Condition: 68 degF; 35% R.H.
Test Site: DLS OATS (Site 2)
Operator: Jason L
Test Specification: 120 V AC;60 Hz
Comment: Low Channel Tx and Rx Freq = 902.8 MHz
Date: 5/03/04

TEXT: "Site 2 6204&106 V3M"

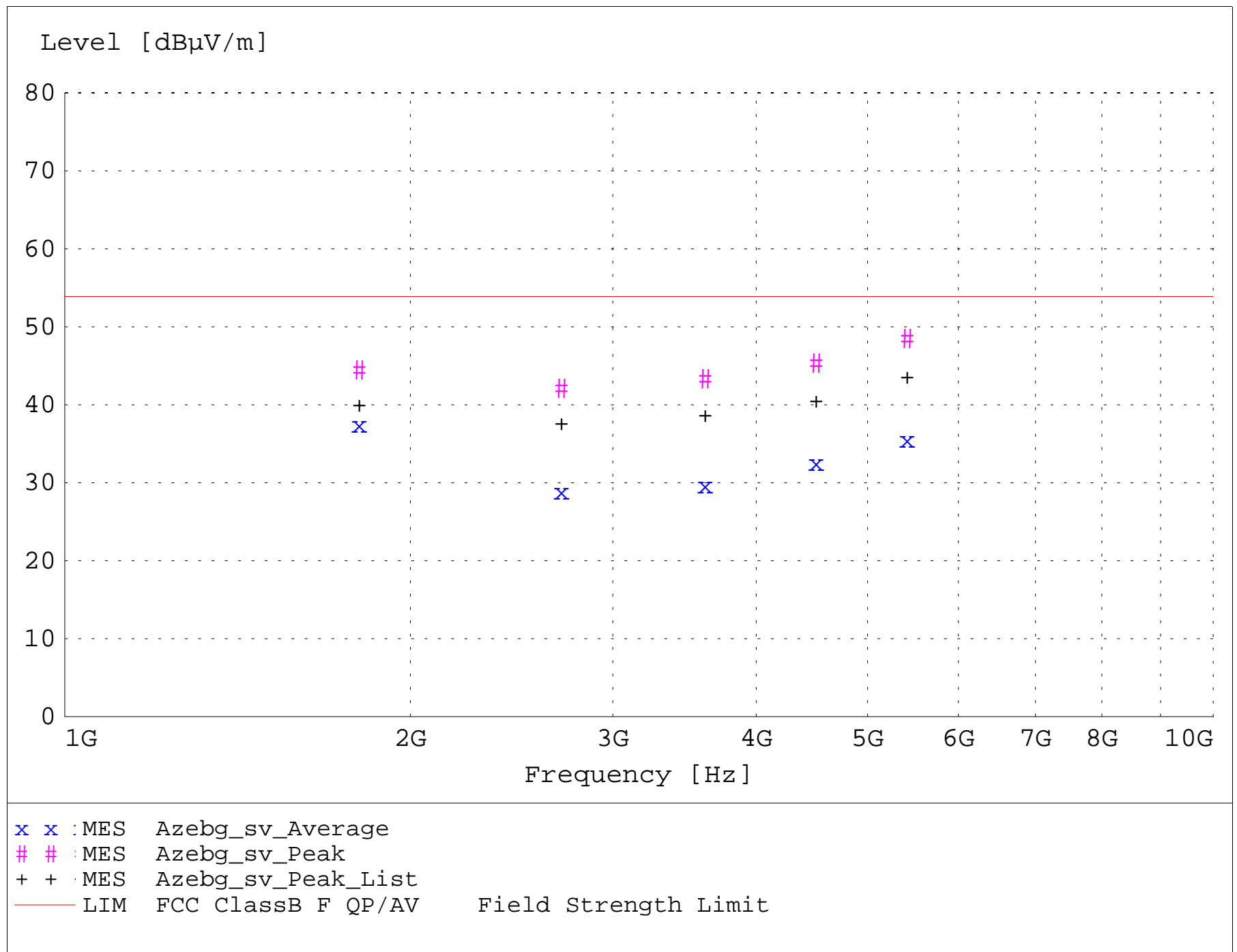
Short Description: Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz	-- Miteq AMF-6D-010100-50 SN: 213976
10 - 18 GHz	-- Miteq AMF-6B-100200-50 SN: 313936
18 - 26.5 GHz	-- Miteq AMF-8B-180265-40 SN: 438727
26.5 - 40 GHz	-- Rohde&Schwarz TS-PR40 SN: 052002/025

TEST SET-UP: EuT Measured at 3 Meters with VERTICAL Antenna Polarisation



MEASUREMENT RESULT: "Azebg_sv_Final"

5/3/04 10:06AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
		Factor	Loss	Level			Ant.	Angle	Detector	
MHz	dBμV	dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
5416.800000	47.07	34.40	-32.9	48.5	53.9	5.4	1.00	0	MAX PEAK	6th Harmonic
4514.000000	46.41	32.94	-34.0	45.4	53.9	8.5	1.00	0	MAX PEAK	5th Harmonic
1805.600000	52.69	27.62	-35.9	44.5	53.9	9.4	1.00	0	MAX PEAK	2nd Harmonic
3611.200000	46.80	31.63	-35.1	43.3	53.9	10.6	1.00	0	MAX PEAK	4th Harmonic
2708.400000	47.87	29.70	-35.5	42.1	53.9	11.8	1.00	45	MAX PEAK	3rd Harmonic
1805.600000	45.65	27.62	-35.9	37.4	53.9	16.5	1.00	0	AVERAGE	2nd Harmonic
5416.800000	33.98	34.40	-32.9	35.5	53.9	18.4	1.00	0	AVERAGE	6th Harmonic
4514.000000	33.52	32.94	-34.0	32.5	53.9	21.4	1.00	0	AVERAGE	5th Harmonic
3611.200000	33.06	31.63	-35.1	29.6	53.9	24.3	1.00	0	AVERAGE	4th Harmonic
2708.400000	34.57	29.70	-35.5	28.8	53.9	25.1	1.00	45	AVERAGE	3rd Harmonic

FCC Class B

Electric Field Strength

EUT: 170XiIII
Manufacturer: Zebra
Operating Condition: 68 degF; 35% R.H.
Test Site: DLS OATS (Site 2)
Operator: Jason L
Test Specification: 120 V AC;60 Hz
Comment: Low Channel Tx and Rx Freq = 902.8 MHz
Date: 5/03/04

TEXT: "Site 2 6204&106 H3M"

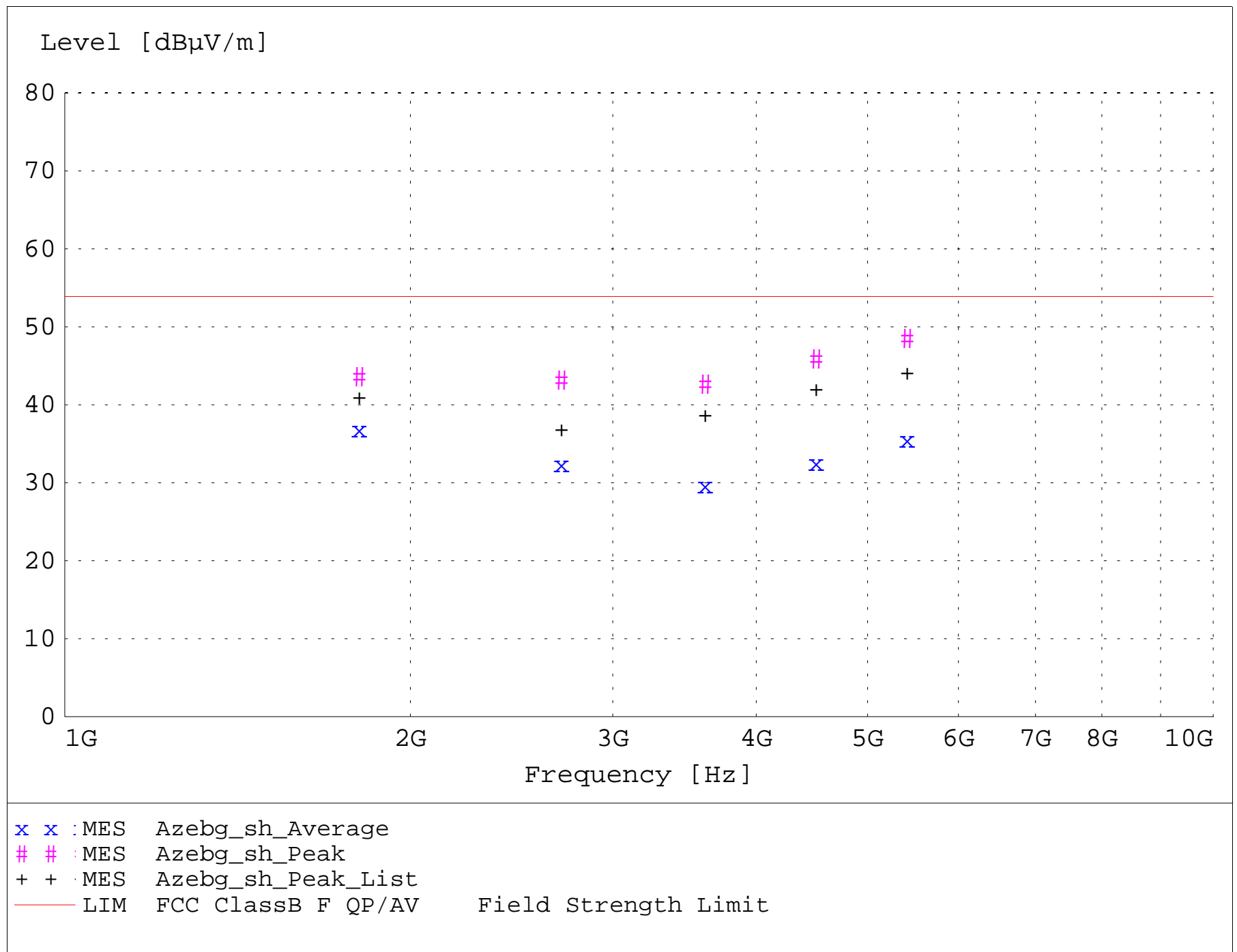
Short Description: Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz	-- Miteq AMF-6D-010100-50 SN: 213976
10 - 18 GHz	-- Miteq AMF-6B-100200-50 SN: 313936
18 - 26.5 GHz	-- Miteq AMF-8B-180265-40 SN: 438727
26.5 - 40 GHz	-- Rohde&Schwarz TS-PR40 SN: 052002/025

TEST SET-UP: EuT Measured at 3 Meters with HORIZONTAL Antenna Polarisation



MEASUREMENT RESULT: "Azebg_sh_Final"

5/3/04 10:17AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
5416.800000	47.07	34.40	-32.9	48.5	53.9	5.4	1.50	0	MAX PEAK	6th Harmonic
4514.000000	46.94	32.94	-34.0	45.9	53.9	8.0	1.50	0	MAX PEAK	5th Harmonic
1805.600000	51.86	27.62	-35.9	43.6	53.9	10.3	1.40	45	MAX PEAK	2nd Harmonic
2708.400000	48.92	29.70	-35.5	43.2	53.9	10.7	1.50	180	MAX PEAK	3rd Harmonic
3611.200000	46.14	31.63	-35.1	42.6	53.9	11.3	1.40	0	MAX PEAK	4th Harmonic
1805.600000	45.02	27.62	-35.9	36.8	53.9	17.1	1.40	45	AVERAGE	2nd Harmonic
5416.800000	34.00	34.40	-32.9	35.5	53.9	18.4	1.50	0	AVERAGE	6th Harmonic
4514.000000	33.54	32.94	-34.0	32.5	53.9	21.4	1.50	0	AVERAGE	5th Harmonic
2708.400000	38.04	29.70	-35.5	32.3	53.9	21.6	1.50	180	AVERAGE	3rd Harmonic
3611.200000	33.08	31.63	-35.1	29.6	53.9	24.3	1.40	0	AVERAGE	4th Harmonic

FCC Class B

Electric Field Strength

EUT: 170XiIII
Manufacturer: Zebra
Operating Condition: 68 degF; 35% R.H.
Test Site: DLS OATS (Site 2)
Operator: Jason L
Test Specification: 120 V AC;60 Hz
Comment: Mid Channel Tx and Rx Freq = 915.2 MHz
Date: 5/03/04

TEXT: "Site 2 6204&106 V3M"

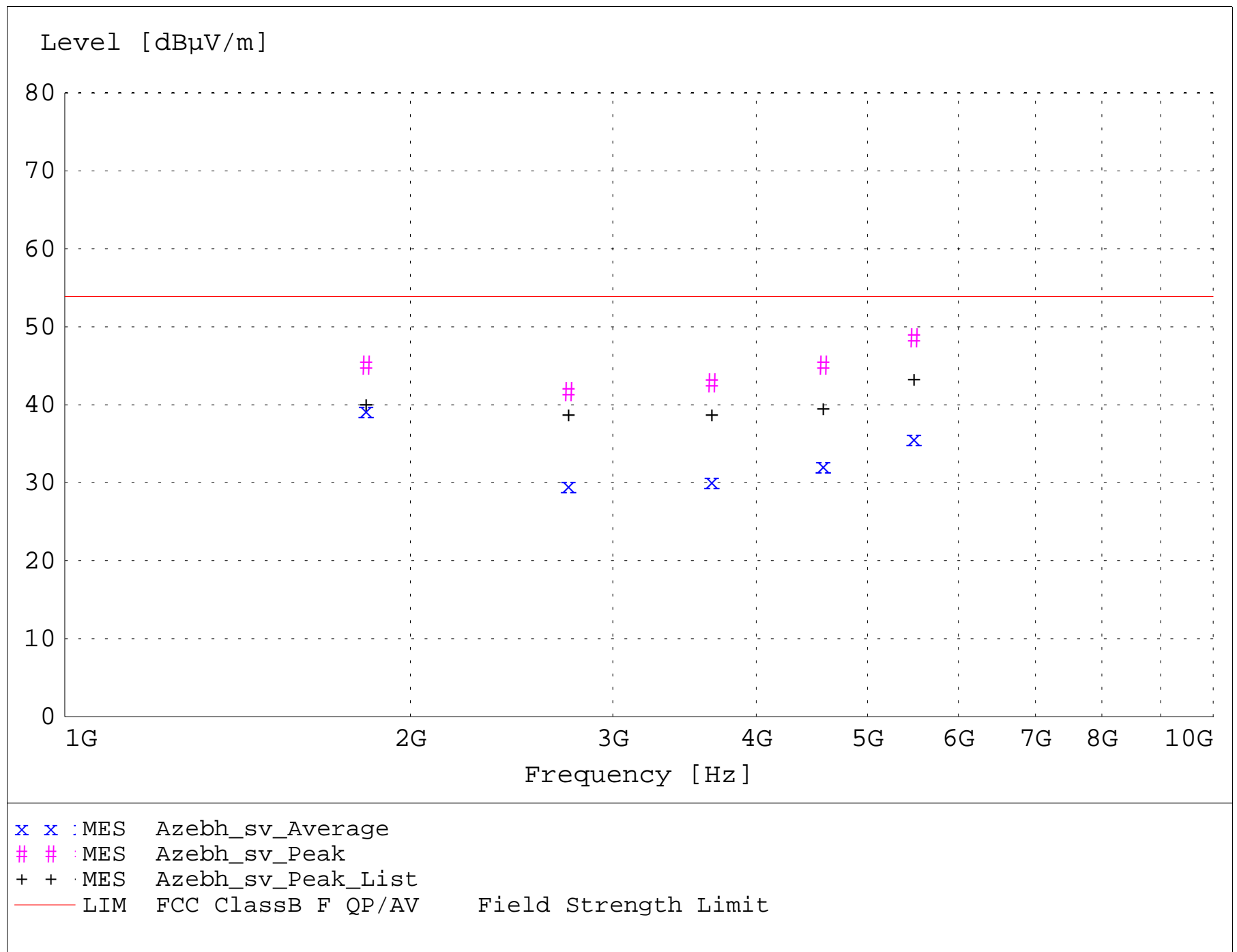
Short Description: Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz	-- Miteq AMF-6D-010100-50 SN: 213976
10 - 18 GHz	-- Miteq AMF-6B-100200-50 SN: 313936
18 - 26.5 GHz	-- Miteq AMF-8B-180265-40 SN: 438727
26.5 - 40 GHz	-- Rohde&Schwarz TS-PR40 SN: 052002/025

TEST SET-UP: EuT Measured at 3 Meters with VERTICAL Antenna Polarisation



MEASUREMENT RESULT: "Azebh_sv_Final"

5/3/04 10:42AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
5491.100000	47.33	34.40	-33.1	48.6	53.9	5.3	1.00	90	MAX PEAK	6th Harmonic
1830.400000	53.24	27.69	-35.9	45.1	53.9	8.8	1.70	60	MAX PEAK	2nd Harmonic
4575.900000	46.01	33.13	-34.1	45.0	53.9	8.9	1.70	0	MAX PEAK	5th Harmonic
3660.800000	46.14	31.78	-35.1	42.8	53.9	11.1	1.00	0	MAX PEAK	4th Harmonic
2745.600000	47.33	29.79	-35.4	41.7	53.9	12.2	1.10	120	MAX PEAK	3rd Harmonic
1830.400000	47.42	27.69	-35.9	39.2	53.9	14.7	1.70	60	AVERAGE	2nd Harmonic
5491.100000	34.34	34.40	-33.1	35.6	53.9	18.3	1.00	90	AVERAGE	6th Harmonic
4575.900000	33.13	33.13	-34.1	32.1	53.9	21.8	1.70	0	AVERAGE	5th Harmonic
3660.800000	33.47	31.78	-35.1	30.2	53.9	23.7	1.00	0	AVERAGE	4th Harmonic
2745.600000	35.18	29.79	-35.4	29.6	53.9	24.3	1.10	120	AVERAGE	3rd Harmonic

FCC Class B

Electric Field Strength

EUT: 170XiIII
Manufacturer: Zebra
Operating Condition: 68 degF; 35% R.H.
Test Site: DLS OATS (Site 2)
Operator: Jason L
Test Specification: 120 V AC;60 Hz
Comment: Mid Channel Tx and Rx Freq = 915.2 MHz
Date: 5/03/04

TEXT: "Site 2 6204&106 H3M"

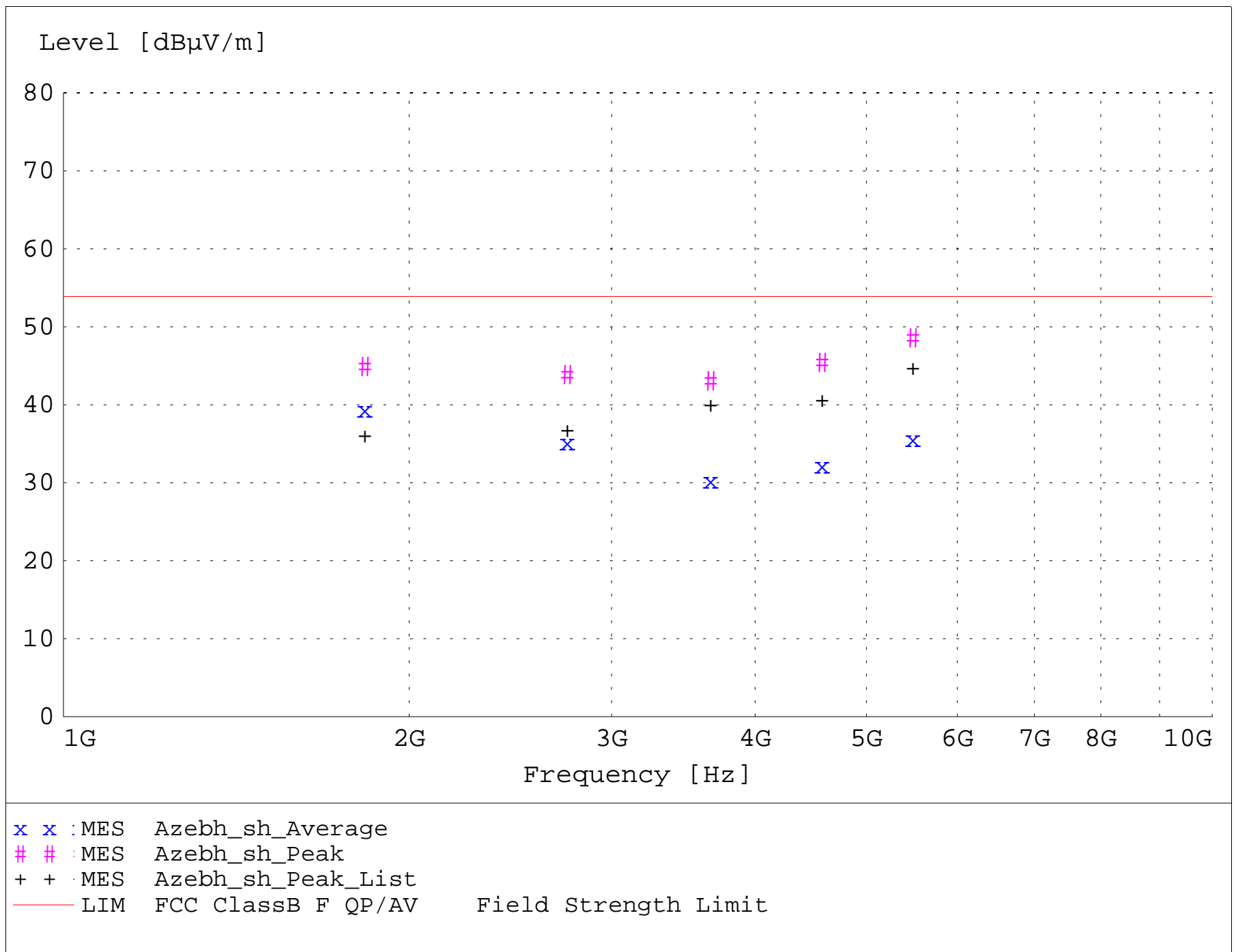
Short Description: Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz	-- Miteq AMF-6D-010100-50 SN: 213976
10 - 18 GHz	-- Miteq AMF-6B-100200-50 SN: 313936
18 - 26.5 GHz	-- Miteq AMF-8B-180265-40 SN: 438727
26.5 - 40 GHz	-- Rohde&Schwarz TS-PR40 SN: 052002/025

TEST SET-UP: EuT Measured at 3 Meters with HORIZONTAL Antenna Polarisation



MEASUREMENT RESULT: "Azebh_sh_Final"

5/3/04 10:32AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
5491.100000	47.33	34.40	-33.1	48.6	53.9	5.3	1.50	0	MAX PEAK	6th Harmonic
4575.900000	46.41	33.13	-34.1	45.4	53.9	8.5	1.50	0	MAX PEAK	5th Harmonic
1830.400000	53.11	27.69	-35.9	44.9	53.9	9.0	1.40	125	MAX PEAK	2nd Harmonic
2745.600000	49.46	29.79	-35.4	43.8	53.9	10.1	1.50	145	MAX PEAK	3rd Harmonic
3660.800000	46.41	31.78	-35.1	43.1	53.9	10.8	1.50	180	MAX PEAK	4th Harmonic
1830.400000	47.51	27.69	-35.9	39.3	53.9	14.6	1.40	125	AVERAGE	2nd Harmonic
5491.100000	34.33	34.40	-33.1	35.6	53.9	18.3	1.50	0	AVERAGE	6th Harmonic
2745.600000	40.73	29.79	-35.4	35.1	53.9	18.8	1.50	145	AVERAGE	3rd Harmonic
4575.900000	33.13	33.13	-34.1	32.2	53.9	21.7	1.50	0	AVERAGE	5th Harmonic
3660.800000	33.48	31.78	-35.1	30.2	53.9	23.7	1.50	180	AVERAGE	4th Harmonic

FCC Class B

Electric Field Strength

EUT: 170XiIII
Manufacturer: Zebra
Operating Condition: 68 degF; 35% R.H.
Test Site: DLS OATS (Site 2)
Operator: Jason L
Test Specification: 120 V AC;60 Hz
Comment: High Channel Tx and Rx Freq = 927.6 MHz
Date: 5/03/04

TEXT: "Site 2 6204&106 V3M"

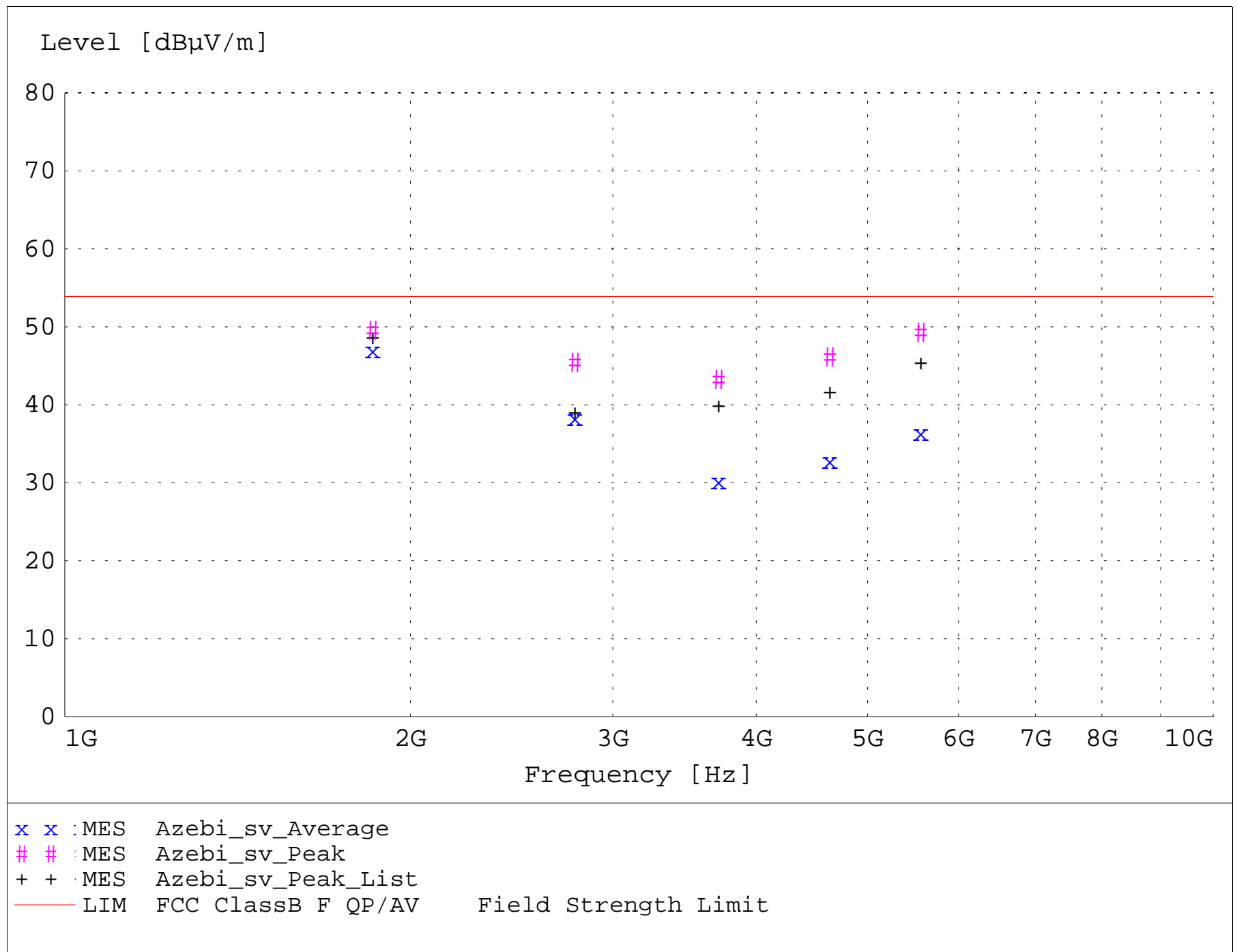
Short Description: Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz	-- Miteq AMF-6D-010100-50 SN: 213976
10 - 18 GHz	-- Miteq AMF-6B-100200-50 SN: 313936
18 - 26.5 GHz	-- Miteq AMF-8B-180265-40 SN: 438727
26.5 - 40 GHz	-- Rohde&Schwarz TS-PR40 SN: 052002/025

TEST SET-UP: EuT Measured at 3 Meters with VERTICAL Antenna Polarisation



MEASUREMENT RESULT: "Azebi_sv_Final"

5/3/04 10:58AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
1855.200000	57.72	27.77	-35.9	49.6	53.9	4.3	1.00	345	MAX PEAK	2nd Harmonic
5565.600000	46.94	34.43	-32.1	49.3	53.9	4.6	1.00	0	MAX PEAK	6th Harmonic
1855.200000	55.08	27.77	-35.9	46.9	53.9	7.0	1.00	345	AVERAGE	2nd Harmonic
4638.000000	46.67	33.31	-33.9	46.1	53.9	7.8	1.00	0	MAX PEAK	5th Harmonic
2782.800000	50.91	29.88	-35.3	45.5	53.9	8.4	1.00	90	MAX PEAK	3rd Harmonic
3710.400000	46.41	31.93	-35.1	43.3	53.9	10.6	1.00	0	MAX PEAK	4th Harmonic
2782.800000	43.70	29.88	-35.3	38.3	53.9	15.6	1.00	90	AVERAGE	3rd Harmonic
5565.600000	34.00	34.43	-32.1	36.3	53.9	17.6	1.00	0	AVERAGE	6th Harmonic
4638.000000	33.32	33.31	-33.9	32.8	53.9	21.1	1.00	0	AVERAGE	5th Harmonic
3710.400000	33.29	31.93	-35.1	30.2	53.9	23.7	1.00	0	AVERAGE	4th Harmonic

FCC Class B

Electric Field Strength

EUT: 170XiIII
Manufacturer: Zebra
Operating Condition: 68 degF; 35% R.H.
Test Site: DLS OATS (Site 2)
Operator: Jason L
Test Specification: 120 V AC;60 Hz
Comment: High Channel Tx and Rx Freq = 927.6 MHz
Date: 5/03/04

TEXT: "Site 2 6204&106 H3M"

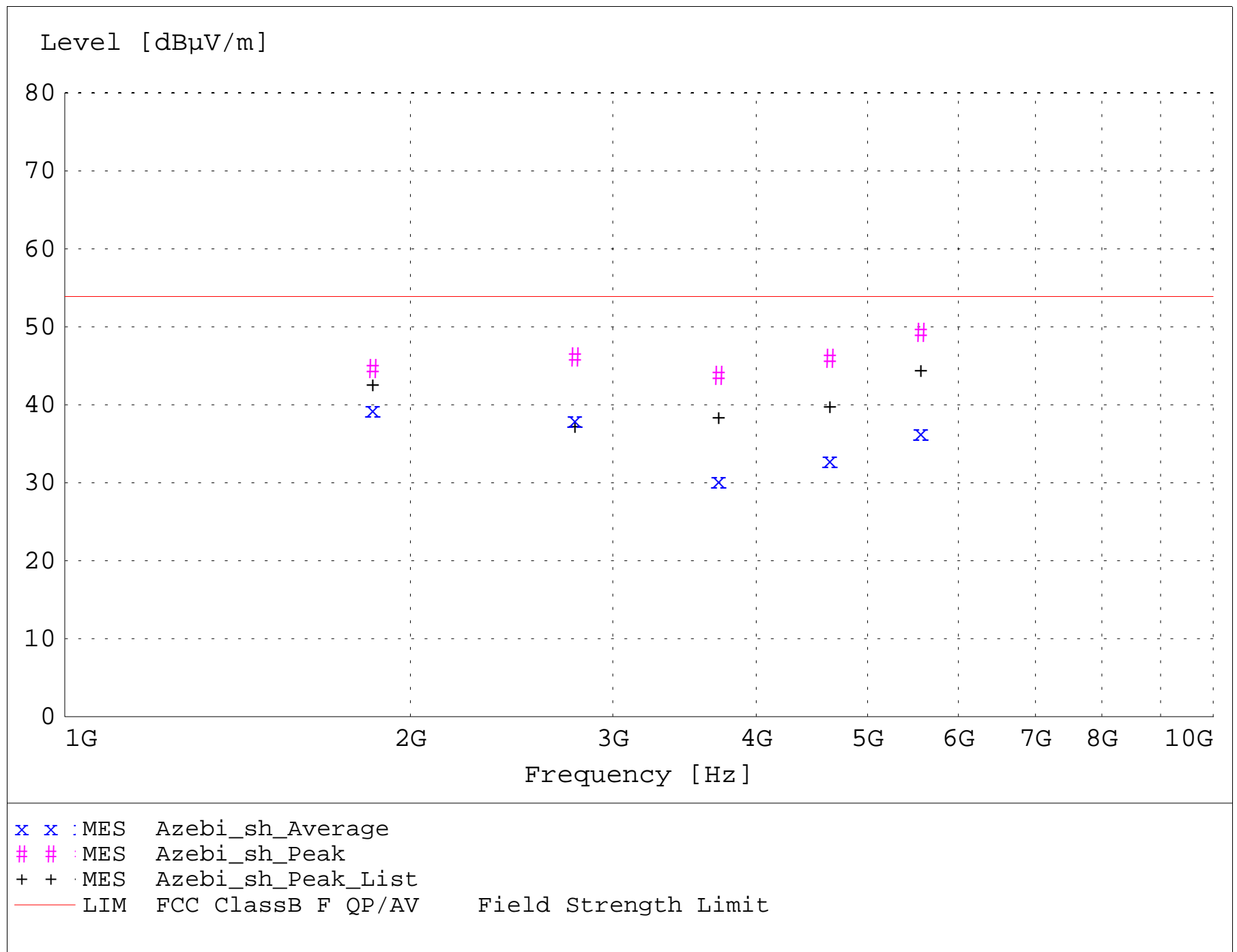
Short Description: Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz	-- Miteq AMF-6D-010100-50 SN: 213976
10 - 18 GHz	-- Miteq AMF-6B-100200-50 SN: 313936
18 - 26.5 GHz	-- Miteq AMF-8B-180265-40 SN: 438727
26.5 - 40 GHz	-- Rohde&Schwarz TS-PR40 SN: 052002/025

TEST SET-UP: EuT Measured at 3 Meters with HORIZONTAL Antenna Polarisation



MEASUREMENT RESULT: "Azebi_sh_Final"

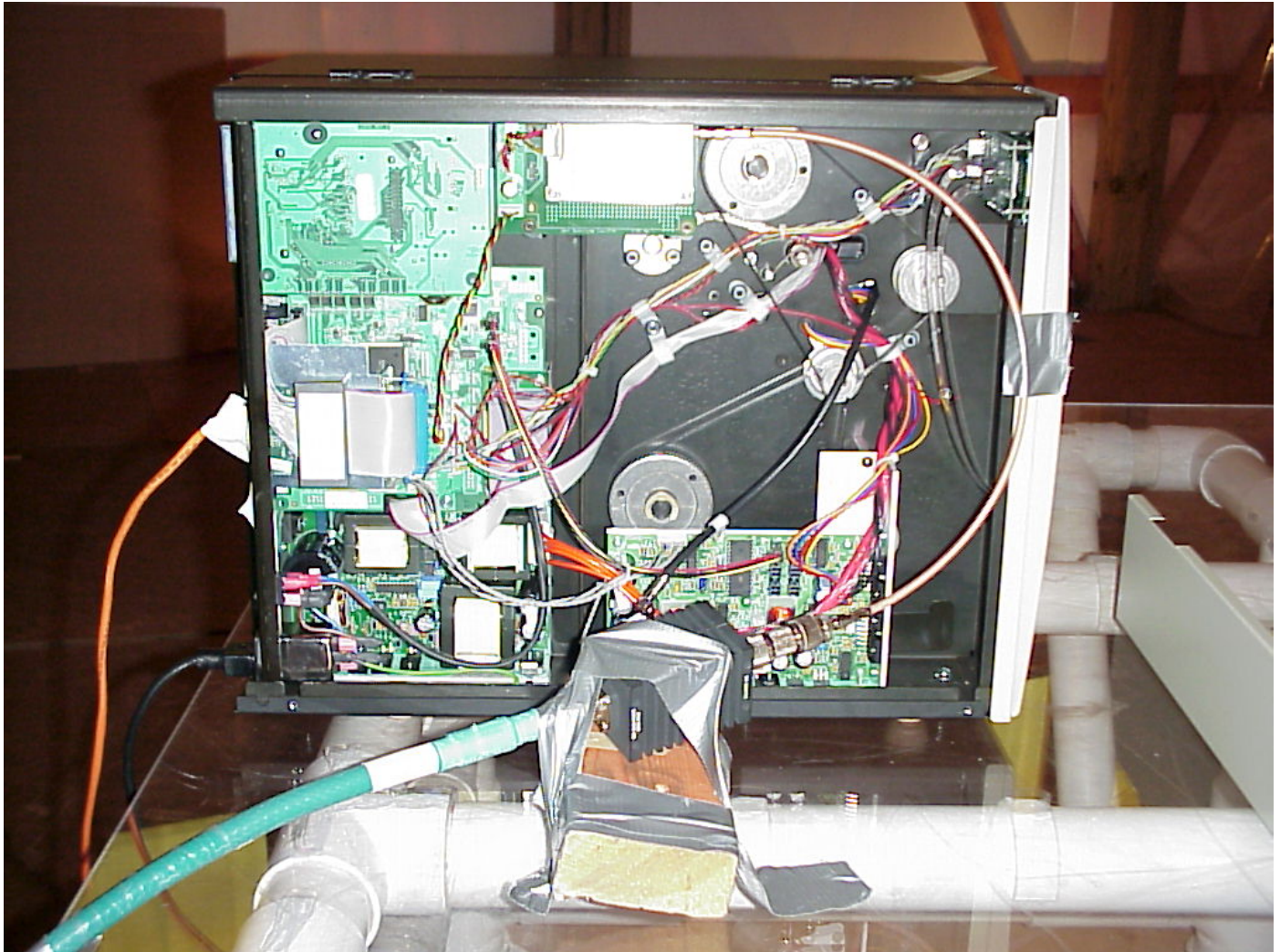
5/3/04 11:07AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
5565.600000	46.94	34.43	-32.1	49.3	53.9	4.6	1.00	0	MAX PEAK	6th Harmonic
2782.800000	51.58	29.88	-35.3	46.2	53.9	7.7	1.20	90	MAX PEAK	3rd Harmonic
4638.000000	46.54	33.31	-33.9	46.0	53.9	7.9	1.00	0	MAX PEAK	5th Harmonic
1855.200000	52.84	27.77	-35.9	44.7	53.9	9.2	1.60	325	MAX PEAK	2nd Harmonic
3710.400000	46.94	31.93	-35.1	43.8	53.9	10.1	1.00	0	MAX PEAK	4th Harmonic
1855.200000	47.42	27.77	-35.9	39.3	53.9	14.6	1.60	325	AVERAGE	2nd Harmonic
2782.800000	43.39	29.88	-35.3	38.0	53.9	15.9	1.20	90	AVERAGE	3rd Harmonic
5565.600000	34.02	34.43	-32.1	36.4	53.9	17.5	1.00	0	AVERAGE	6th Harmonic
4638.000000	33.35	33.31	-33.9	32.8	53.9	21.1	1.00	0	AVERAGE	5th Harmonic
3710.400000	33.30	31.93	-35.1	30.2	53.9	23.7	1.00	0	AVERAGE	4th Harmonic

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APPENDIX A

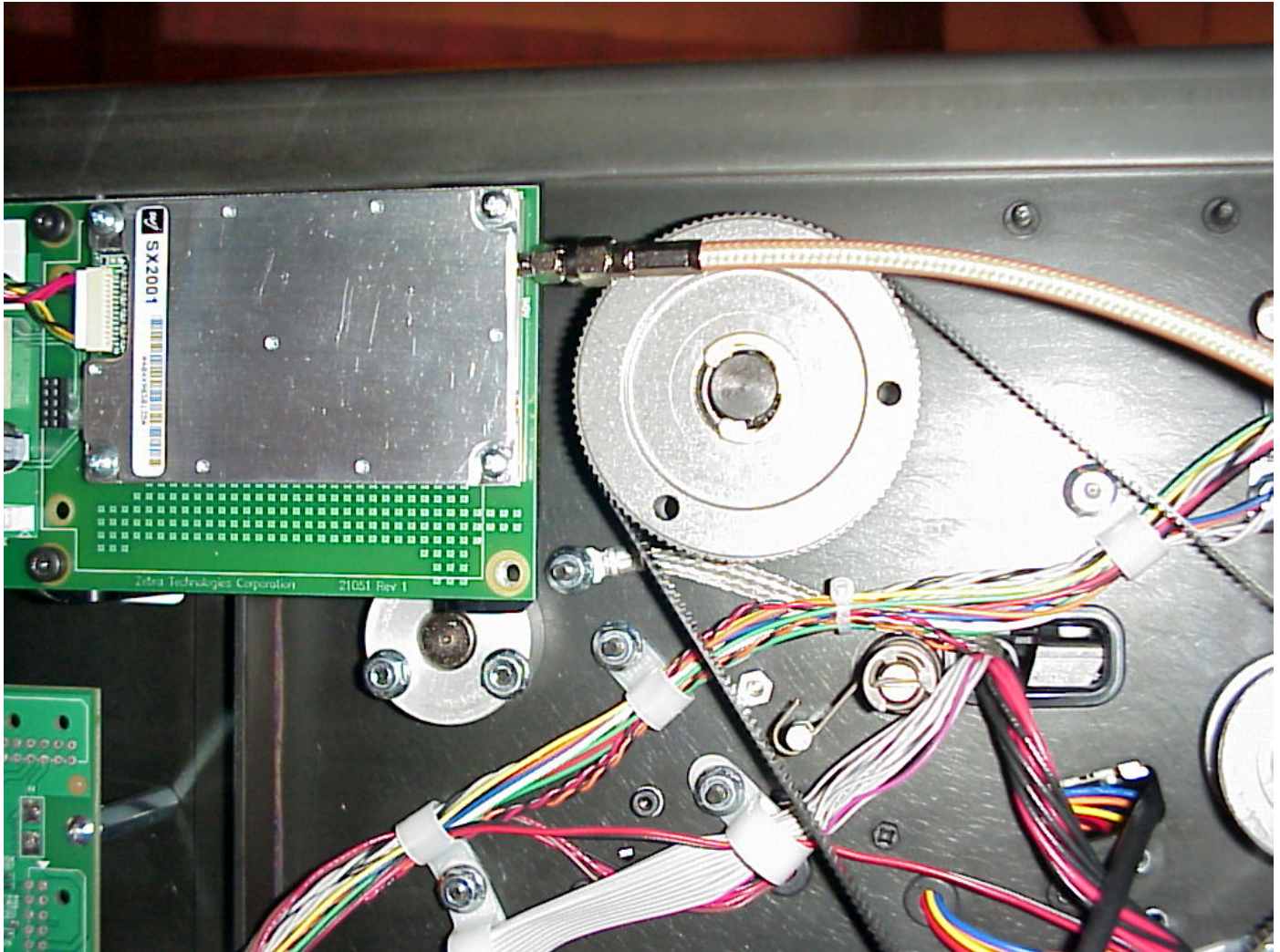
7.0 RADIATED EMISSIONS PHOTOS TAKEN DURING TESTING



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

7.0 RADIATED EMISSIONS PHOTOS TAKEN DURING TESTING





Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

20 dB BANDWIDTH GRAPHS

PART 15.247



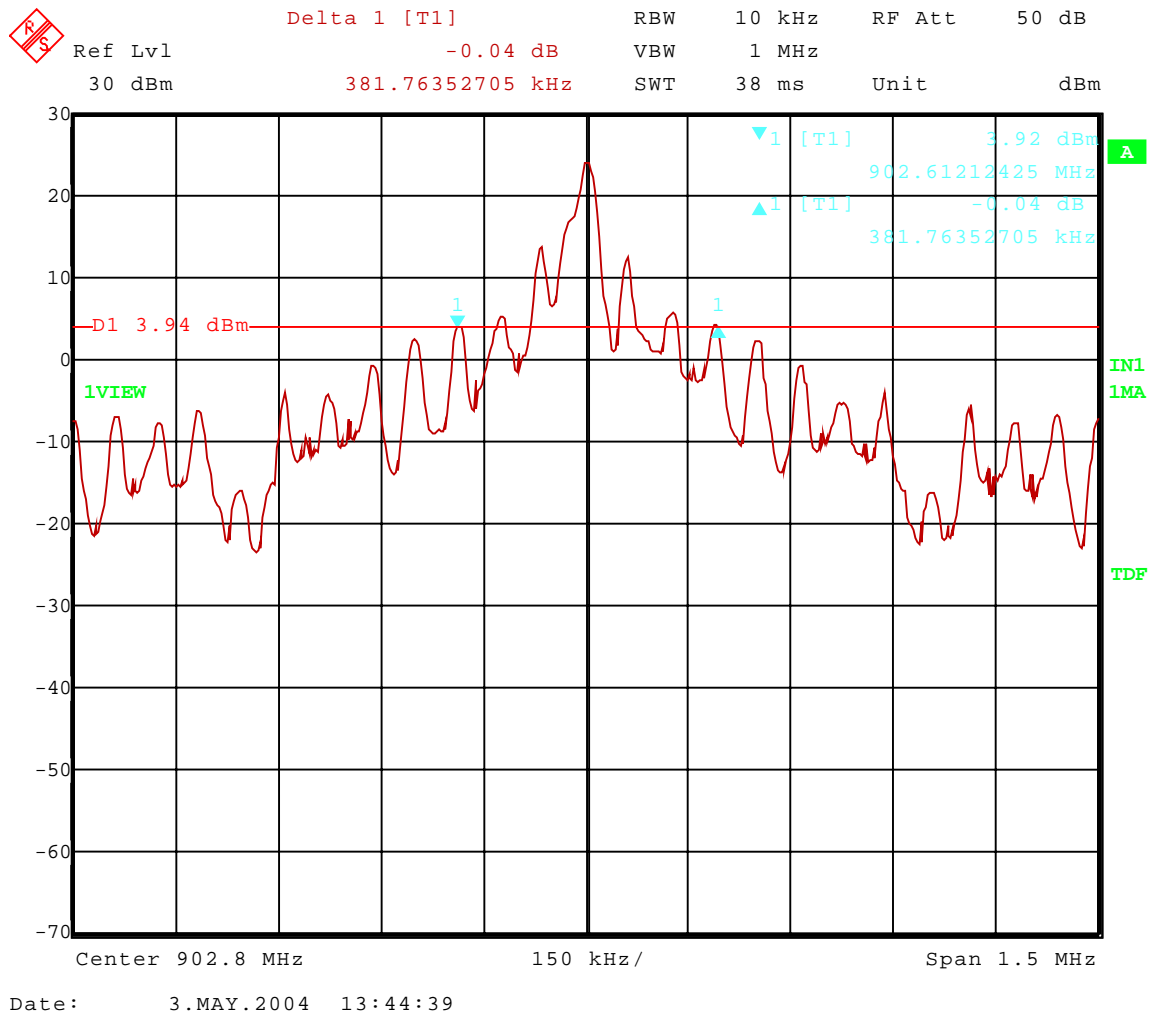
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: 20 dB Bandwidth - Conducted
Operator: Jason L.
Comment: Low Channel: Frequency – 902.80 MHz

20 dB Bandwidth = 381.76 kHz





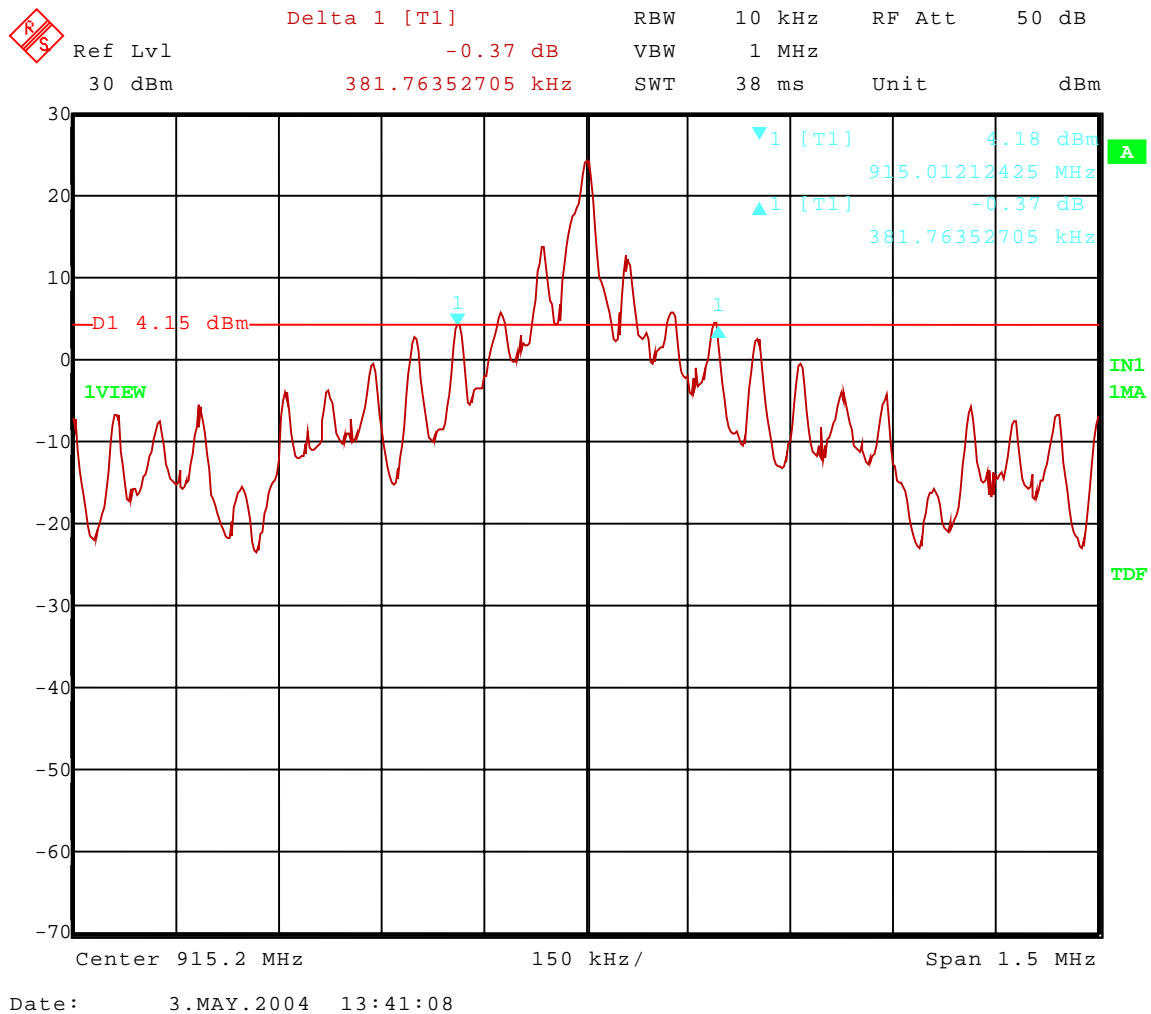
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: 20 dB Bandwidth - Conducted
Operator: Jason L.
Comment: Middle Channel: Frequency – 915.20 MHz

20 dB Bandwidth = 381.76 kHz





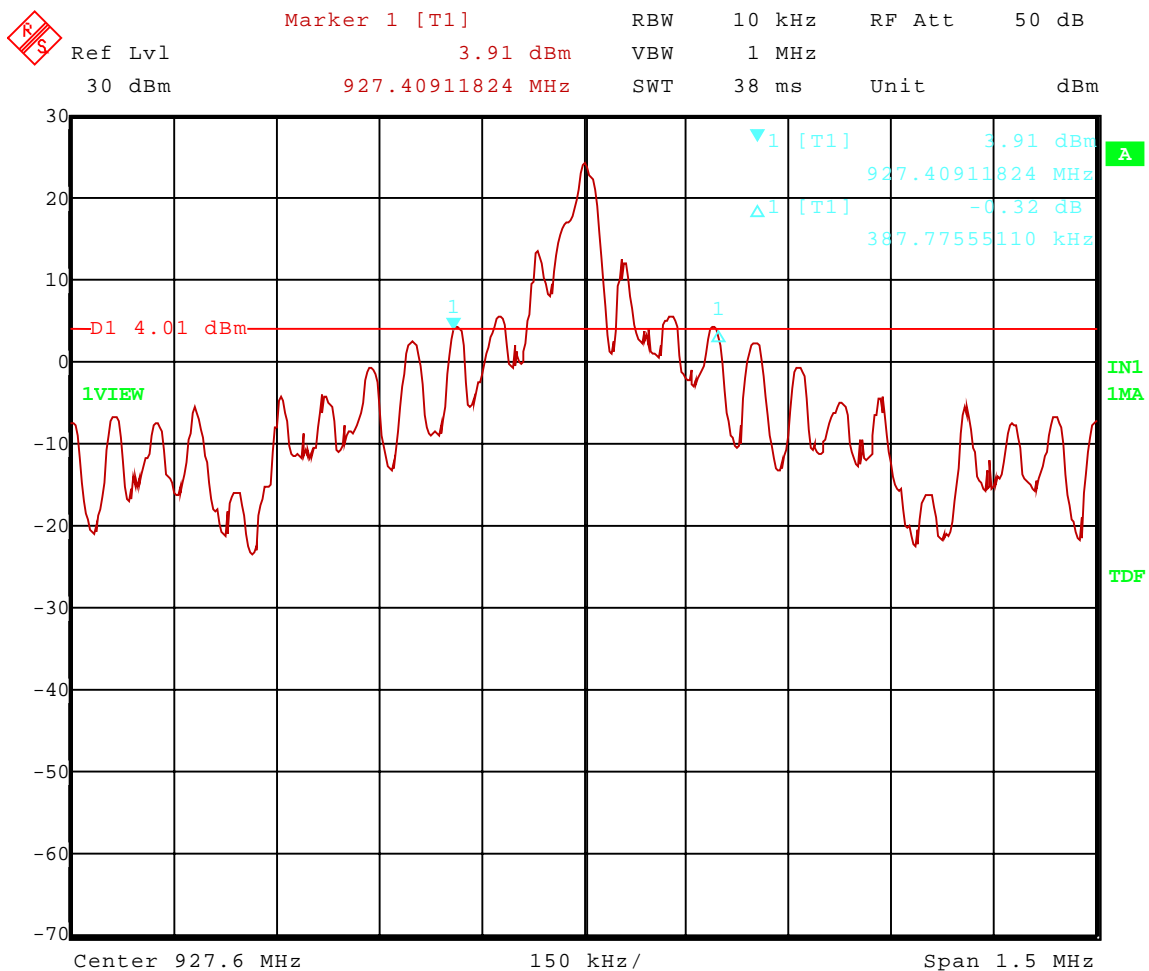
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: 20 dB Bandwidth - Conducted
Operator: Jason L.
Comment: High Channel: Frequency – 927.60 MHz

20 dB Bandwidth = 387.78 kHz



Date: 3.MAY.2004 13:36:49



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

CARRIER FREQUENCY SEPARATION GRAPH(S)

PART 15.247



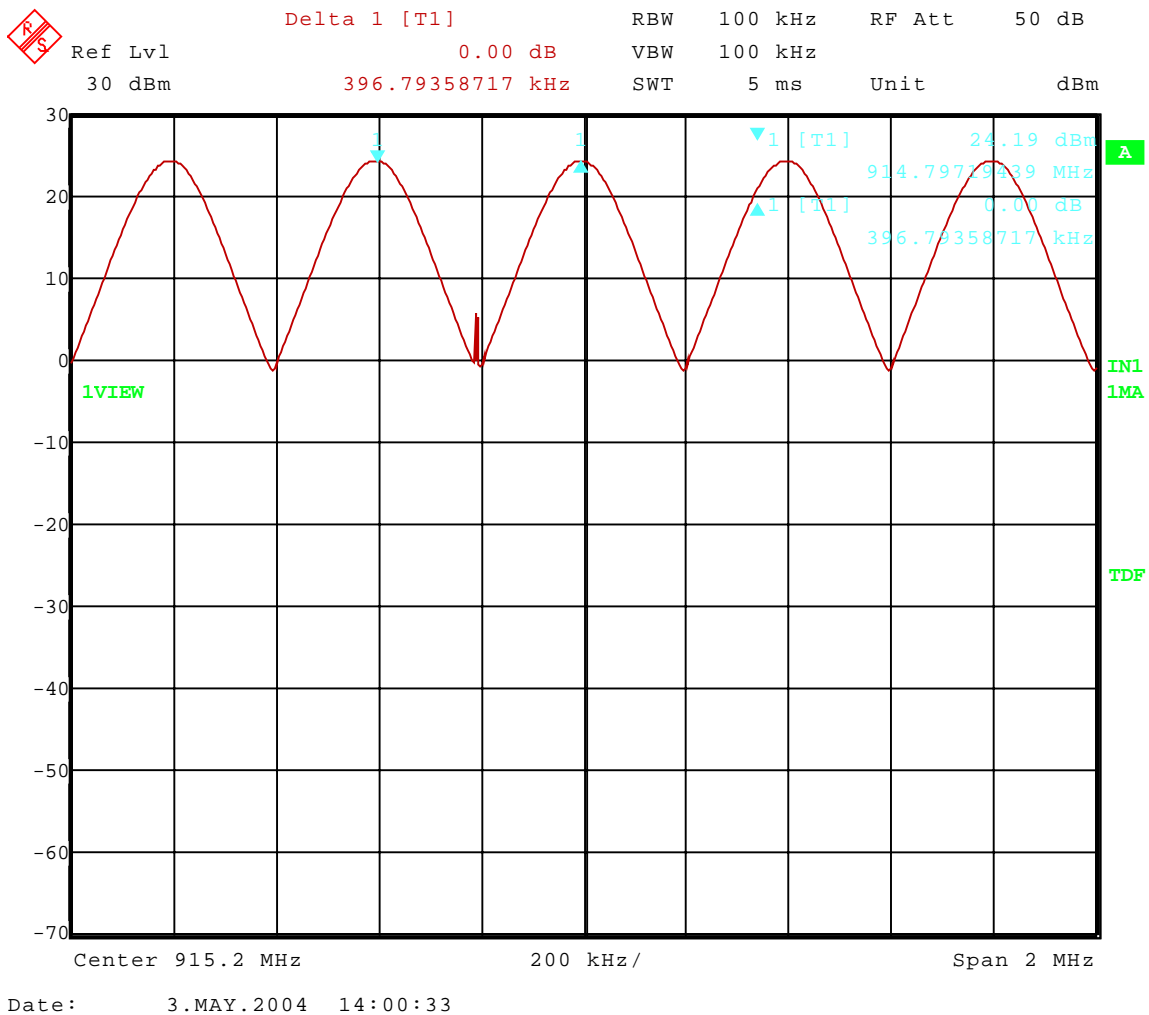
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Carrier Frequency Separation - Conducted
Operator: Jason L.
Comment: Frequency Hopping On

Carrier Freq Separation = 396.79 kHz





Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

NUMBER OF HOPPING FREQUENCIES GRAPH(S)

PART 15.247



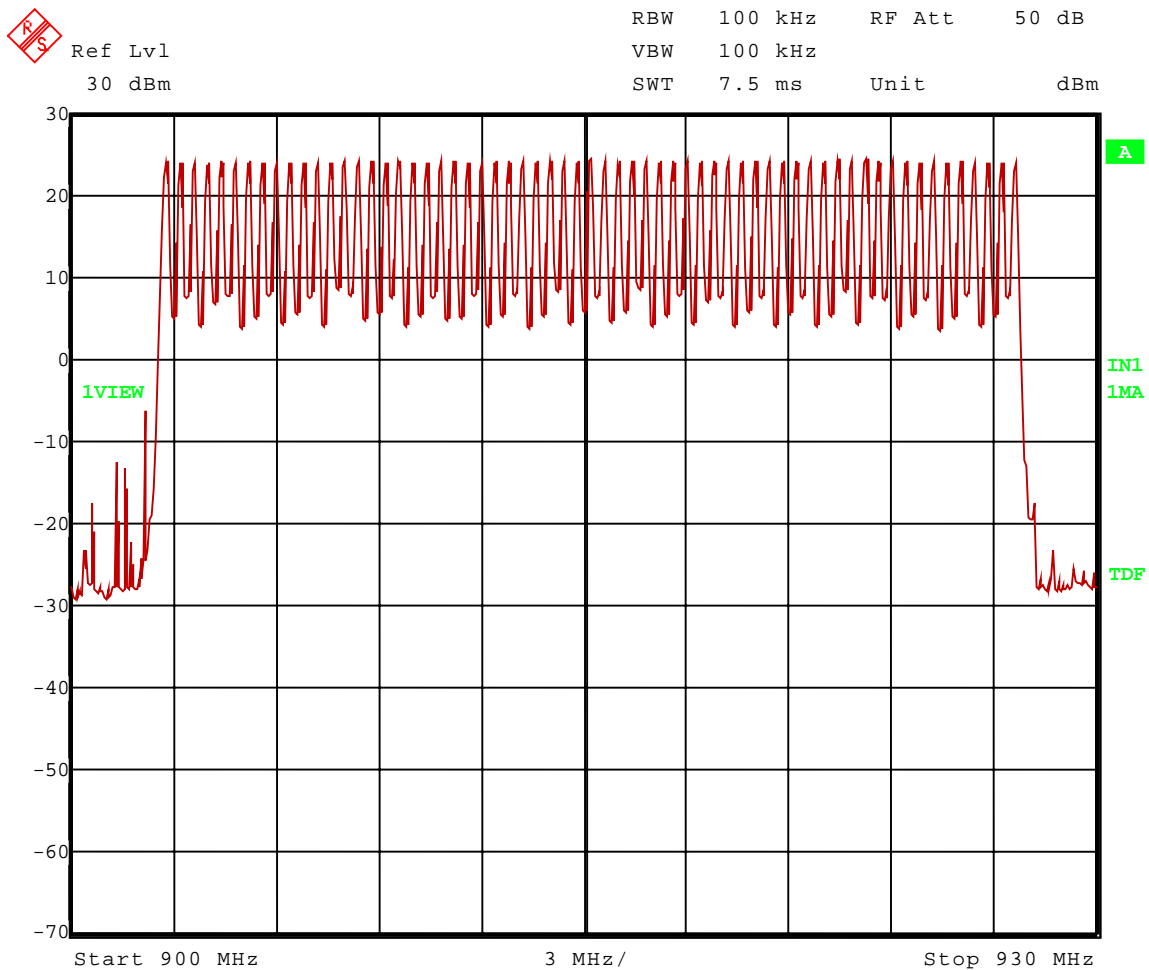
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Number of Hopping Frequencies - Conducted
Operator: Jason L.
Comment: Hopping Mode

Frequency Range = 902 MHz to 928 MHz
Number of Frequencies in Range = 63



Date: 3.MAY.2004 14:02:56



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

TIME OF OCCUPANCY GRAPHS

PART 15.247



Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

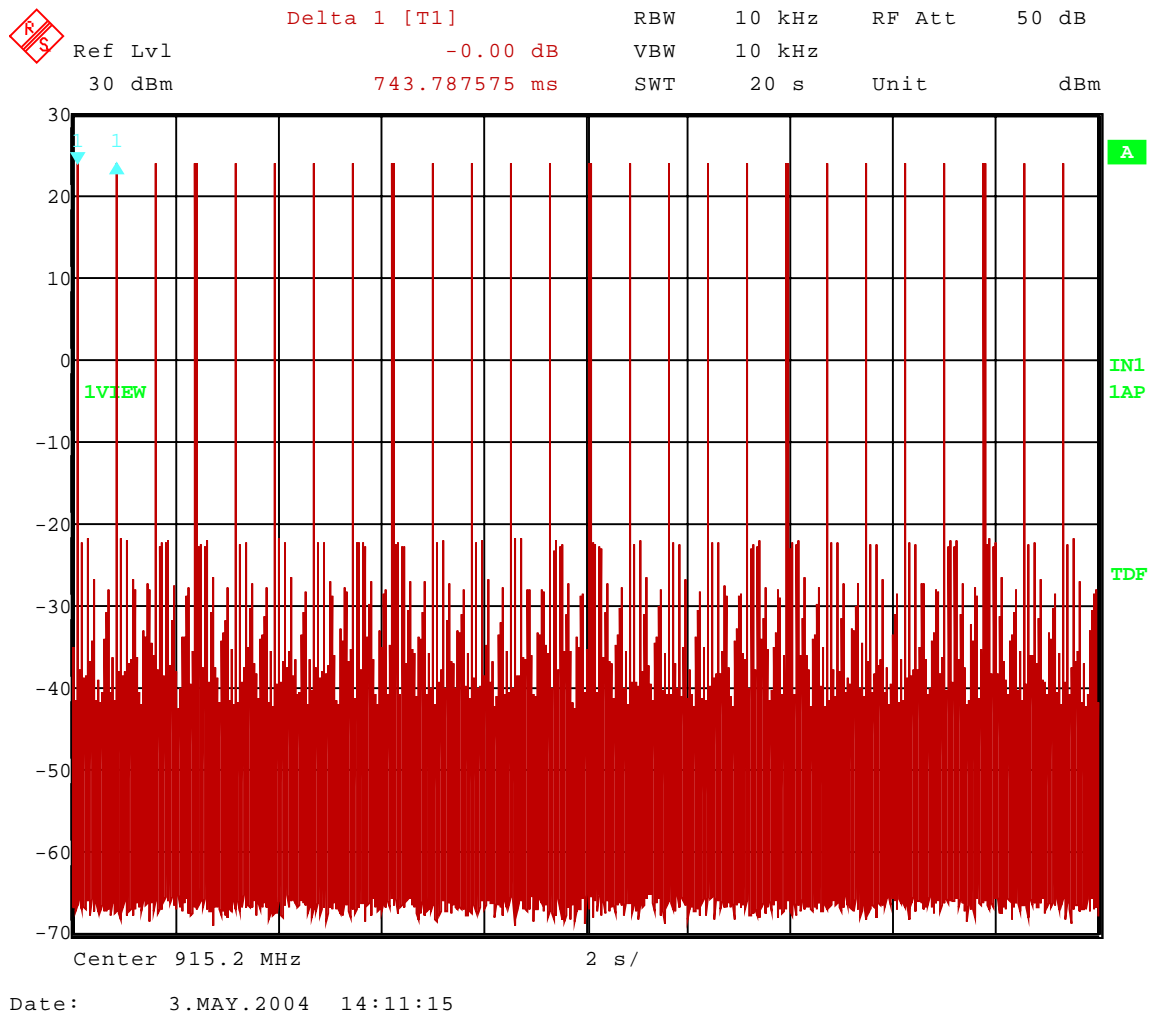
Test Date: 5-3-04
EUT: 170XiIII
Test: Dwell Time in 20 Seconds - Conducted
Operator: Jason L.
Comment: Middle Channel – Hopping Mode On

Dwell Time Limit = 0.4 Seconds in 20 Seconds

Times ON in 20 Sec = 5

Dwell Time in 20 Sec = Time Slot Length X Times On in 20 seconds

0.360 Seconds = 11.62 ms X 31





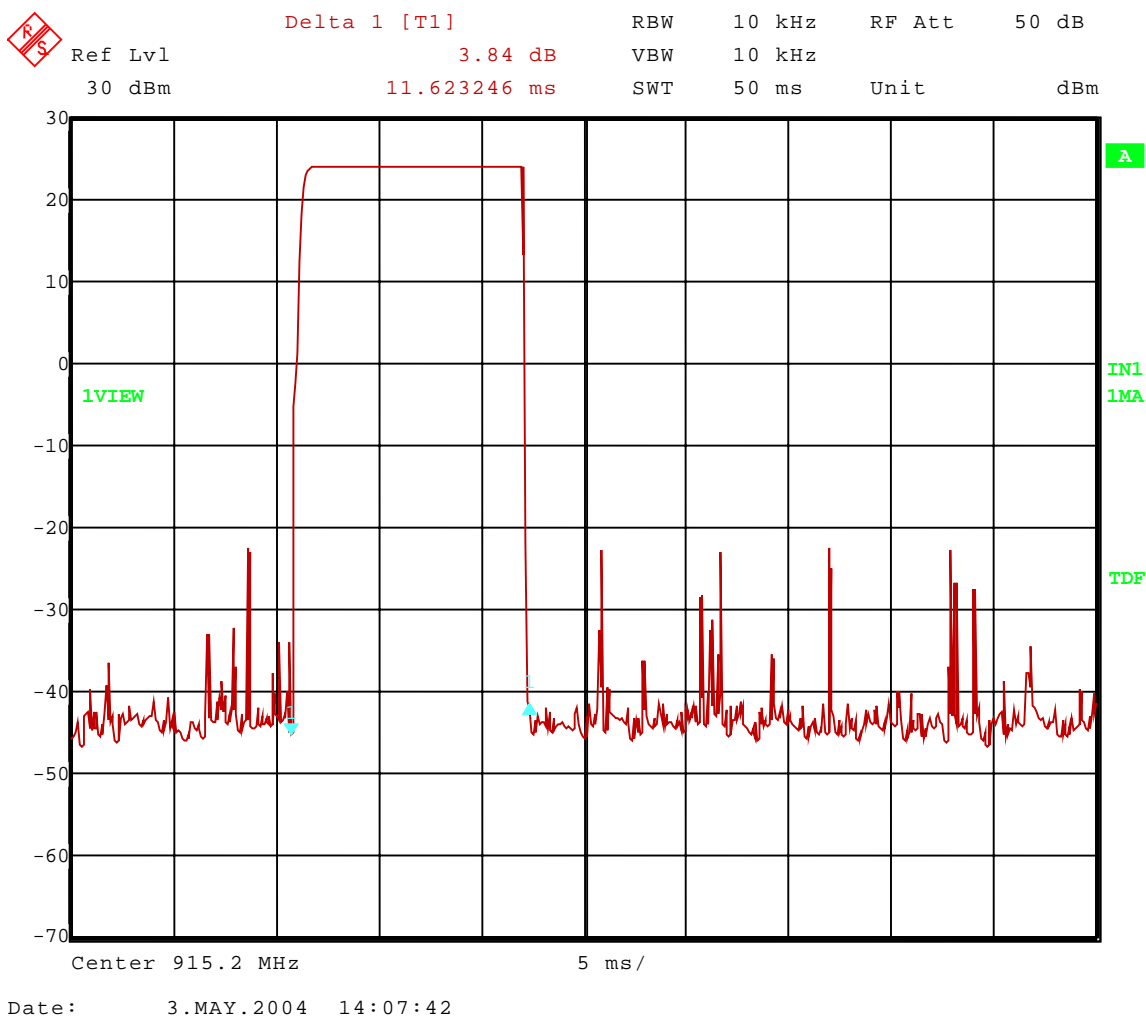
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Dwell Time - Conducted
Operator: Jason L.
Comment: Middle Channel - Hopping Mode On

Dwell Time = 11.62 mS





Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

CONDUCTED PEAK OUTPUT POWER GRAPHS

PART 15.247



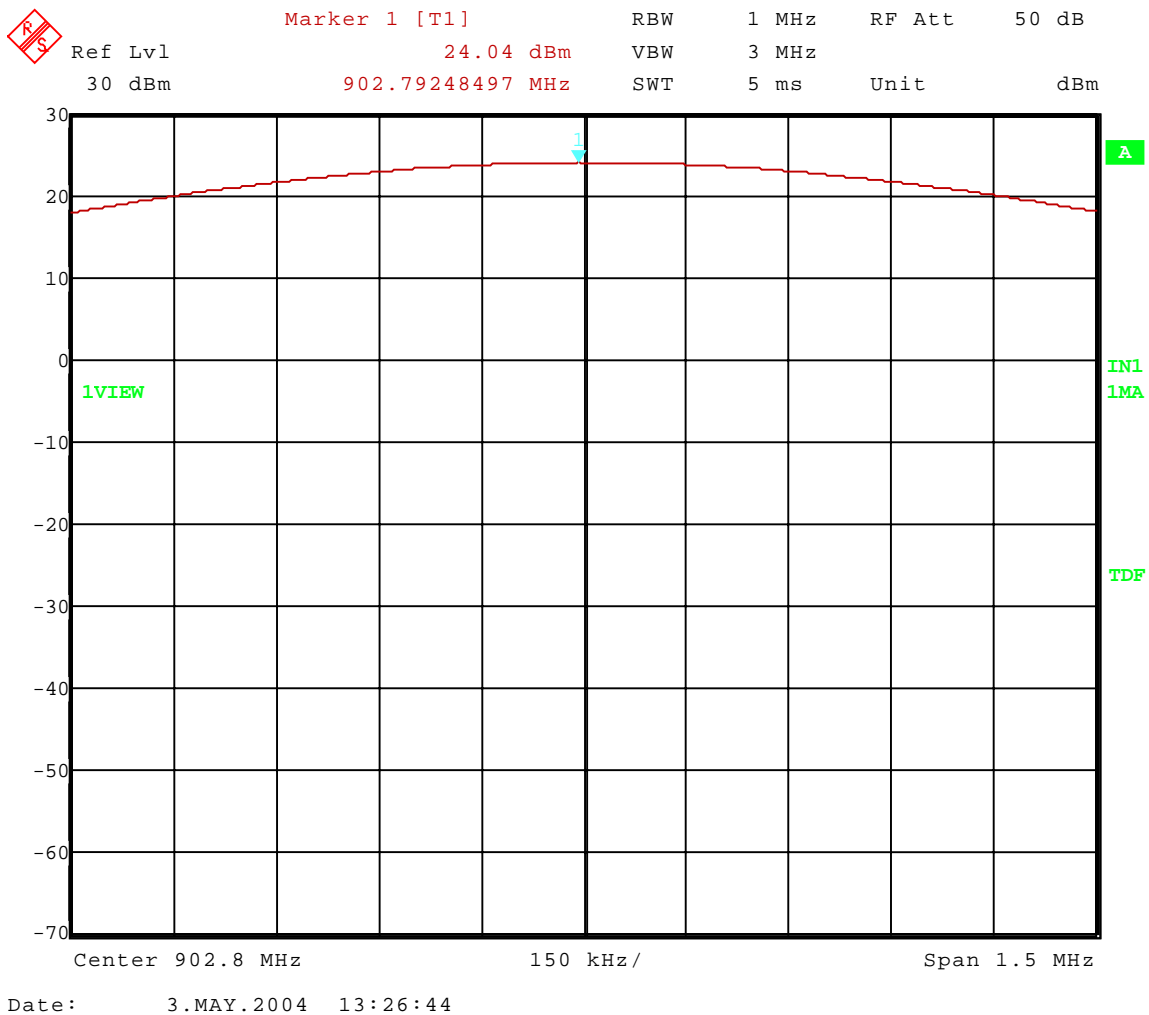
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Peak Output Power - Conducted
Operator: Jason L.
Comment: Low Channel: Frequency – 902.80 MHz

Peak Output Power = 24.04 dBm = 254 mW





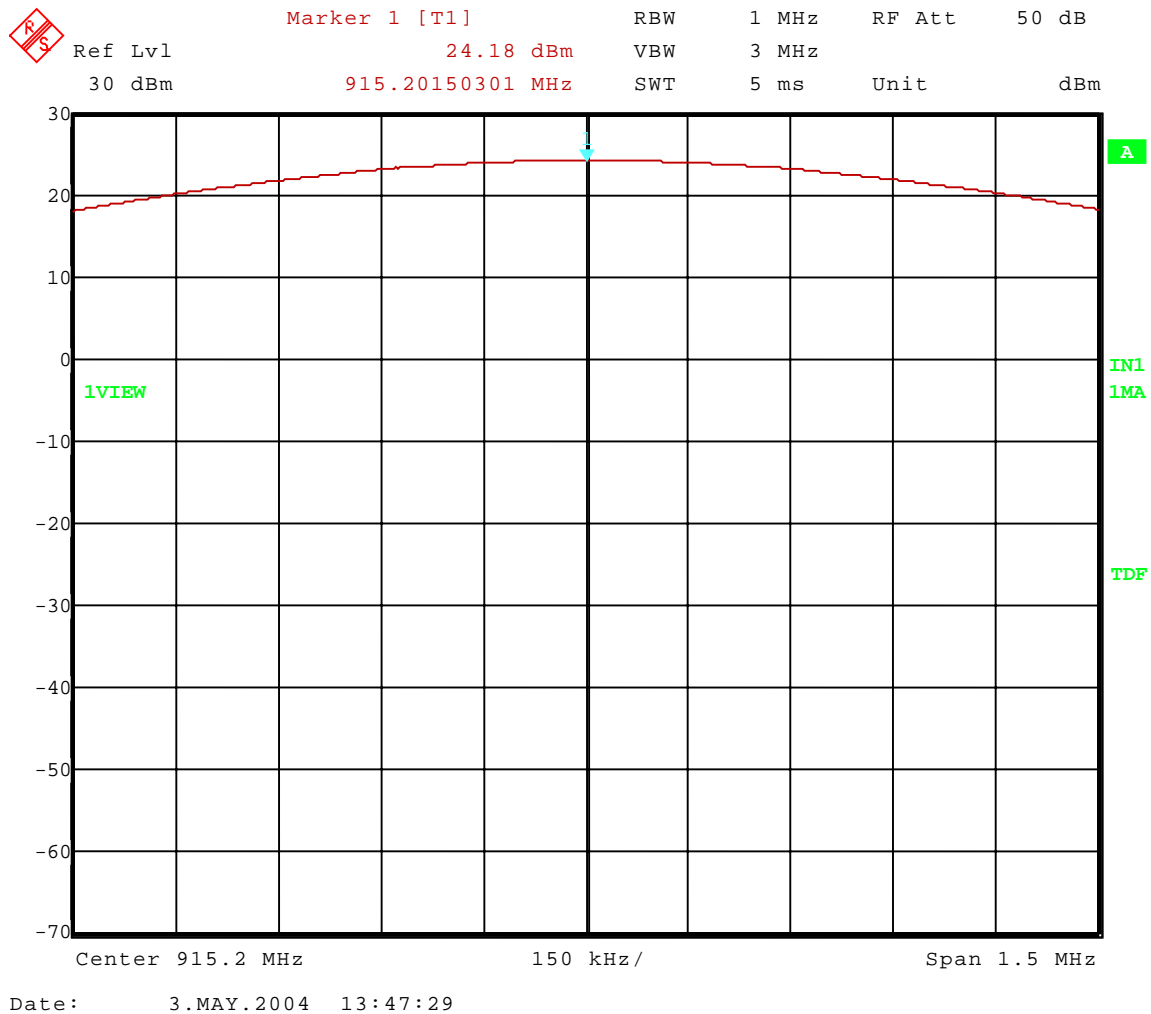
Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Peak Output Power - Conducted
Operator: Jason L.
Comment: Middle Channel: Frequency – 915.20 MHz

Peak Output Power = 24.18 dBm = 262 mW





Company: Zebra Technologies Corporation
Model Tested: 170XiIII
Report Number: 10705

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APPENDIX A

Test Date: 5-3-04
EUT: 170XiIII
Test: Peak Output Power - Conducted
Operator: Jason L.
Comment: High Channel: Frequency – 927.60 MHz

Peak Output Power = 24.07 dBm = 255 mW

