



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

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: R4Mplus
Kind of Equipment: Thermal Transfer on demand bar code printer
Test Configuration: Ethernet connection (Tested at 120 vac, 60 Hz)
Model Number(s): Z4M
Model(s) Tested: Z4M
Serial Number(s): 02C04039999
Date of Tests: August 2 & September 7, 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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Model Tested: Z4M
Report Number: 10925

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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:

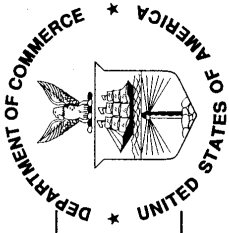
Zebra Technologies Corporation



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Model Tested: Z4M
Report Number: 10925

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United States Department of Commerce
National Institute of Standards and Technology



NVLAP[®]

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

ISO/IEC 17025:1999
ISO 9002:1994

September 30, 2004

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

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NVLAP-01C (06-01)



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009



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Page: 1 of 9

**ELECTROMAGNETIC COMPATIBILITY
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D.L.S. ELECTRONIC SYSTEMS, INC.

1250 Peterson Drive

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URL: <http://www.dlsemc.com>

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 |

September 30, 2004



Effective through

For the National Institute of Standards and Technology



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009



ISO/IEC 17025:1999
 ISO 9002:1994

Scope of Accreditation



Page: 2 of 9

**ELECTROMAGNETIC COMPATIBILITY
 AND TELECOMMUNICATIONS**

NVLAP LAB CODE 100276-0

D.L.S. ELECTRONIC SYSTEMS, INC.

<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

September 30, 2004

Effective through

For the National Institute of Standards and Technology



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009



ISO/IEC 17025:1999
 ISO 9002:1994

Scope of Accreditation



Page: 3 of 9

**ELECTROMAGNETIC COMPATIBILITY
 AND TELECOMMUNICATIONS**

NVLAP LAB CODE 100276-0

D.L.S. ELECTRONIC SYSTEMS, INC.

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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.

September 30, 2004

Effective through

For the National Institute of Standards and Technology



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009



ISO/IEC 17025:1999
 ISO 9002:1994

Scope of Accreditation



Page: 4 of 9

**ELECTROMAGNETIC COMPATIBILITY
 AND TELECOMMUNICATIONS**

NVLAP LAB CODE 100276-0

D.L.S. ELECTRONIC SYSTEMS, INC.

<i>NVLAP Code</i>	<i>Designation / Description</i>
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

September 30, 2004

Effective through

For the National Institute of Standards and Technology



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009



ISO/IEC 17025:1999
 ISO 9002:1994

Scope of Accreditation



Page: 5 of 9

**ELECTROMAGNETIC COMPATIBILITY
 AND TELECOMMUNICATIONS**

NVLAP LAB CODE 100276-0

D.L.S. ELECTRONIC SYSTEMS, INC.

<i>NVLAP Code</i>	<i>Designation / Description</i>
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/VCC1a	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

September 30, 2004



Effective through

For the National Institute of Standards and Technology



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009



ISO/IEC 17025:1999
 ISO 9002:1994

Scope of Accreditation



Page: 6 of 9

**ELECTROMAGNETIC COMPATIBILITY
 AND TELECOMMUNICATIONS**

NVLAP LAB CODE 100276-0

D.L.S. ELECTRONIC SYSTEMS, INC.

<i>NVLAP Code</i>	<i>Designation / Description</i>
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

September 30, 2004

Effective through

For the National Institute of Standards and Technology



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009



ISO/IEC 17025:1999
 ISO 9002:1994

Scope of Accreditation



Page: 7 of 9

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 100276-0

D.L.S. ELECTRONIC SYSTEMS, INC.

NVLAP Code Designation / Description

- 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)

September 30, 2004

Effective through

For the National Institute of Standards and Technology



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009



ISO/IEC 17025:1999
 ISO 9002:1994

Scope of Accreditation



Page: 8 of 9

**ELECTROMAGNETIC COMPATIBILITY
 AND TELECOMMUNICATIONS**

NVLAP LAB CODE 100276-0

D.L.S. ELECTRONIC SYSTEMS, INC.

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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

September 30, 2004




Effective through

For the National Institute of Standards and Technology



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925


1250 Peterson Dr., Wheeling, IL 6009



National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program

ISO/IEC 17025:1999
ISO 9002:1994

Scope of Accreditation



Page: 9 of 9

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS


D.L.S. ELECTRONIC SYSTEMS, INC.

<i>NVLAP Code</i>	<i>Designation / Description</i>
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

NVLAP LAB CODE 100276-0

September 30, 2004

Effective through



For the National Institute of Standards and Technology



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009

TABLE OF CONTENTS

i.	Cover Page	1
ii.	Signature Page	2
iii.	NVLAP Certificate of Accreditation	3
iv.	NVLAP Scope of Accreditation	4
v.	Table of Contents	13
1.0	Summary of Test Report	14
2.0	Introduction	14
3.0	Object	14
4.0	Test Set-Up	15
5.0	Test Equipment	15
6.0	Ambient Measurements	16
7.0	Description of Test Sample	17
8.0	Additional Description of Test Sample	19
9.0	Photo Information and Test Set-Up	20
10.0	Radiated Photos Taken During Testing	21
10.0	Conducted Photos Taken During Testing	23
11.0	Results of Tests	24
12.0	Conclusion	24
	TABLE 1 – EQUIPMENT LIST	25
	Appendix A – Electric Field Radiated Emissions Test	27
1.0	Conducted Emission Measurements	28
1.0	Conducted Data and Graph(s) taken during testing	29
2.0	Spurious Emissions at the Antenna Terminals	36
2.0	Conducted Emission Data and Charts made at the Antenna Terminals	37
3.0	Conducted Emissions Photos Taken During Testing	54
4.0	Restricted Bands	55
5.0	Band Edge and Restrict Band Compliance	55
5.0	Data and Graph(s) taken showing the Band Edge and Restrict Band Compliance	56
6.0	Field Strength of Spurious Emission Measurements	61
6.0	Radiated Data and Graph(s) taken for Field Strength Spurious Emission Measurements	63
7.0	20 dB Bandwidth Graphs taken during testing	88
7.0	Carrier Frequency Separation Graph(s) taken during testing	92
7.0	Number of Hopping Frequencies Graph(s) taken during testing	94
7.0	Time of Occupancy Graphs taken during testing	96
7.0	Conducted Peak Output Power Graphs Taken During testing	99



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009

1.0 SUMMARY OF TEST REPORT

It was found that the R4Mplus, Model Number(s) Z4M, "**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 2.8 dB at 116.69 MHz, radiated. 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 2.8 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: 102

2.0 INTRODUCTION

On August 2 & September 7, 2004, a series of radio frequency interference measurements was performed on R4Mplus, Model Number(s) Z4M, Serial Number: 02C04039999. 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.



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009

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.

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.



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009

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.



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 6009

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

7.1 Description:

Zebra brand on demand thermal transfer bar code printer. Capable of printing labels up to 4" wide and 39" long. Powered through an IEC 320 connector at from 90 volts to 264 volts, 47 thru 63 Hz. This printer, for testing purposes, is equipped with a PCMCIA card slot adapter, and an operating Printserver adapter. Communications will be through the print server adapter via a cat 5 Ethernet cable. Label packets are sent in ZPL with alpha, numeric and graphic information. The ZPL commands instruct the printer to read and write to an Alien EPC Class 1 generation 1 RFID transponder. The label prints after the RFID transaction is complete.

7.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

Length: 44.5 cm Width: 25 cm Height: 32.4 cm

7.3 LINE FILTER USED:

Yunpen PN: YA06P

7.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

122 kHz, 72 kHz & 68 kHz

Clock Frequencies:

66.66 MHz, 40 MHz, 20 MHz, 16.66 MHz, 5.5555 MHz & 32.768 kHz



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

7.0 DESCRIPTION OF TEST SAMPLE: (CONT')

7.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

- | | |
|-------------------------------|------------------|
| 1. MLB Assy, W/RTC | PN: 79000 Rev. 2 |
| 2. Power supply board Assy. | PN: 77715 Rev. 6 |
| 3. Front panel PCBA | PN: 77667 Rev. 8 |
| 4. Internal Print Server PCBA | PN: 34101 Rev. D |
| 5. PCMCIA Option PCBA | PN: 33037 Rev. 5 |
| 6. Media Sensor | PN: 77957 Rev. 1 |
| 7. Head Open/Ribbon Sensor | PN: 77766 Rev. 1 |
| 8. PA UHF RFID Encoder Alien | PN: 21055 Rev. 1 |
| 9. ASM Antenna UHF Type 1 SMT | PN: 21052 Rev. A |
| 10. ASM PCB INTF RFID R4M | PN: 21050 Rev. A |



Company: Zebra Technologies Corporation

Model Tested: Z4M

Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

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 _____



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

9.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 R4Mplus

Model Number: Z4M Serial Number: 02C04039999

Item 1 Non-shielded AC Power Line Cord.

Item 2 Non-shielded Category 5 Ethernet Cable with Plastic Shells. 50'

Item 3 Shielded RS-232 Serial Cable with Metal Shells. 2m



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

10.0 RADIATED PHOTOS TAKEN DURING TESTING



1250 Peterson Dr., Wheeling, IL 60090

10.0 RADIATED PHOTOS TAKEN DURING TESTING





Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

10.0 CONDUCTED PHOTOS TAKEN DURING TESTING





Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

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 R4Mplus, Model Number(s) Z4M "**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 2.8 dB at 116.69 MHz, radiated. 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 2.8 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.



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

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: Z4M
 Report Number: 10925

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	7/05

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



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

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: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

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 **73°F** at **45%** relative humidity.



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

DATA AND GRAPH(S) TAKEN DURING TESTING

PART 15.207

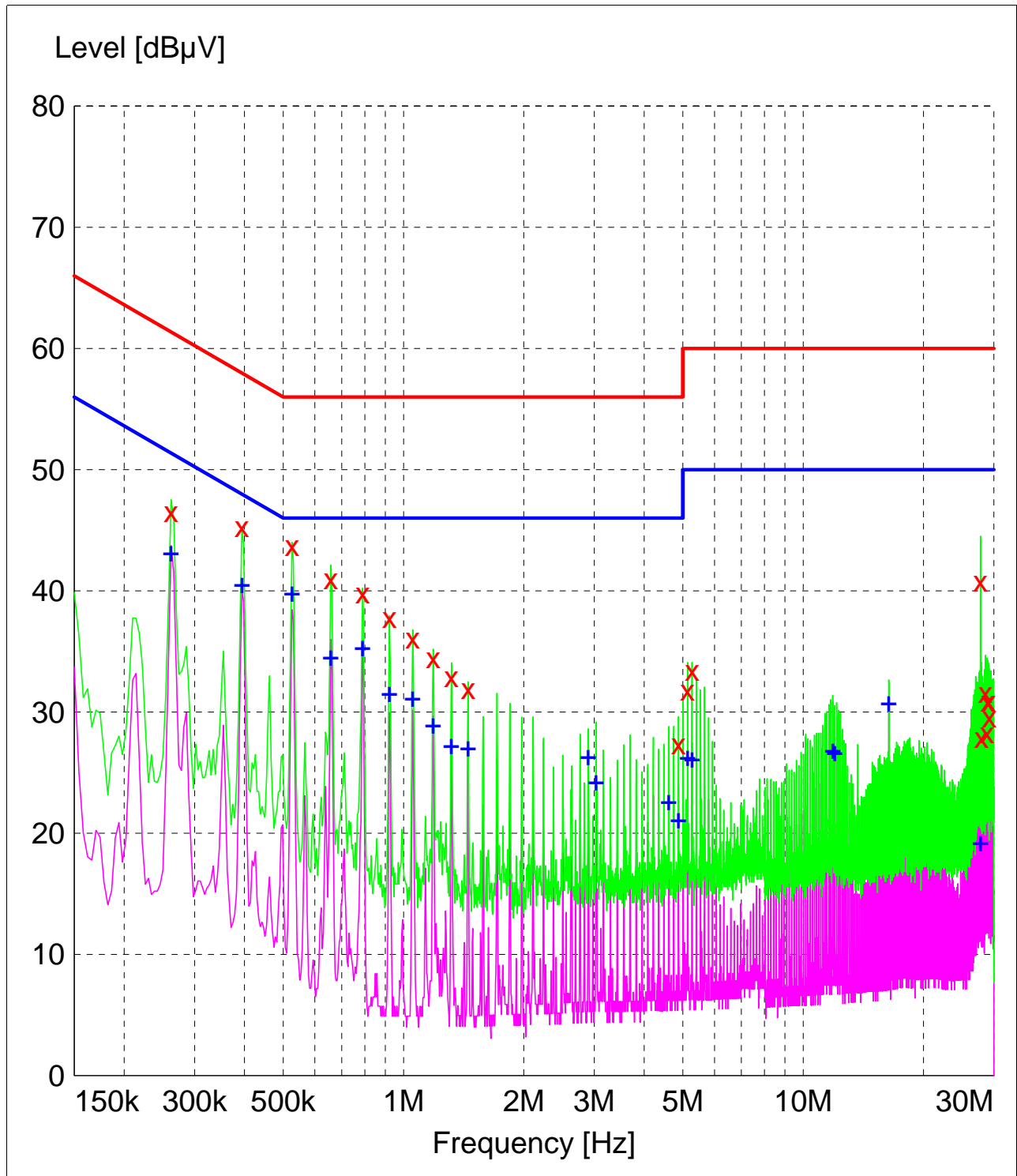
FCC Part 15 Class B

Voltage Mains Test

EUT: R4M Plus
Manufacturer: Zebra
Operating Condition: 73 deg. F, 45% R.H.
Test Site: DLS OF Screenroom
Operator: Jason L
Test Specification: 120 V; 60 Hz
Comment: Line 1
Date: 08/2/04

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			



x x	MES	r4mplus11a_fin	QP		
+ +	MES	r4mplus11a_fin	AV		
—	MES	r4mplus11a_pre	PK		
—	MES	r4mplus11a_pre	AV		
—	LIM	FCC ClassB V	QP New	Voltage Amplitude	QP Limit
—	LIM	FCC ClassB V	AV New	Voltage Amplitude	AVG Limit

MEASUREMENT RESULT: "r4mplus11a_fin QP"

8/2/2004 5:17PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.262000	46.50	10.9	61	14.9	1	---
0.394000	45.30	10.6	58	12.6	1	---
0.526000	43.70	10.5	56	12.3	1	---
0.658000	41.00	10.5	56	15.0	1	---
0.790000	39.80	10.5	56	16.2	1	---
0.922000	37.80	10.5	56	18.2	1	---
1.054000	36.10	10.5	56	19.9	1	---
1.186000	34.50	10.5	56	21.5	1	---
1.318000	32.90	10.5	56	23.1	1	---
1.450000	31.90	10.5	56	24.1	1	---
4.878000	27.40	10.9	56	28.6	1	---
5.138000	31.80	11.0	60	28.2	1	---
5.270000	33.40	11.0	60	26.6	1	---
27.778000	40.80	12.1	60	19.2	1	---
27.922000	27.90	12.1	60	32.1	1	---
28.590000	31.60	12.2	60	28.4	1	---
28.838000	28.30	12.2	60	31.7	1	---
28.986000	30.90	12.3	60	29.1	1	---
29.118000	30.90	12.3	60	29.1	1	---
29.242000	29.60	12.3	60	30.4	1	---

MEASUREMENT RESULT: "r4mplus11a_fin AV"

8/2/2004 5:17PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.262000	43.20	10.9	51	8.2	1	---
0.394000	40.60	10.6	48	7.4	1	---
0.526000	39.90	10.5	46	6.1	1	---
0.658000	34.60	10.5	46	11.4	1	---
0.790000	35.40	10.5	46	10.6	1	---
0.922000	31.60	10.5	46	14.4	1	---
1.054000	31.20	10.5	46	14.8	1	---
1.186000	29.00	10.5	46	17.0	1	---
1.318000	27.30	10.5	46	18.7	1	---
1.450000	27.10	10.5	46	18.9	1	---
2.898000	26.40	10.8	46	19.6	1	---
3.030000	24.30	10.9	46	21.7	1	---
4.610000	22.70	10.9	46	23.3	1	---
4.878000	21.20	10.9	46	24.8	1	---
5.138000	26.30	11.0	50	23.7	1	---
5.270000	26.20	11.0	50	23.8	1	---
11.858000	26.90	11.4	50	23.1	1	---
11.990000	26.70	11.4	50	23.3	1	---
16.382000	30.80	11.8	50	19.2	1	---
27.778000	19.30	12.1	50	30.7	1	---

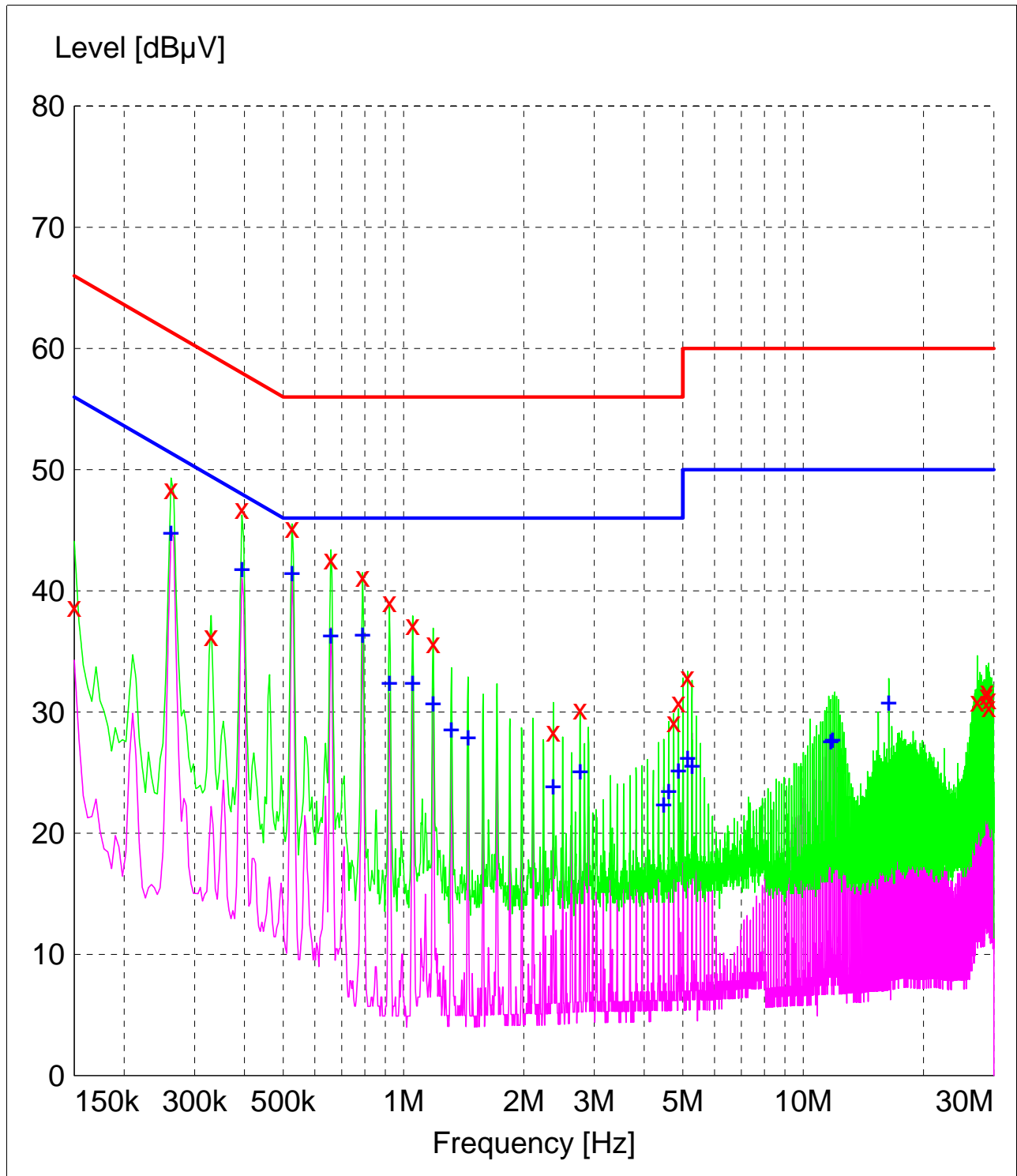
FCC Part 15 Class B

Voltage Mains Test

EUT: R4M Plus
Manufacturer: Zebra
Operating Condition: 73 deg. F, 45% R.H.
Test Site: DLS OF Screenroom
Operator: Jason L
Test Specification: 120 V; 60 Hz
Comment: Line 2
Date: 08/2/04

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			



x x	MES	r4mplusl2a_fin	QP		
+ +	MES	r4mplusl2a_fin	AV		
—	MES	r4mplusl2a_pre	PK		
—	MES	r4mplusl2a_pre	AV		
—	LIM	FCC ClassB V	QP New	Voltage Amplitude	QP Limit
—	LIM	FCC ClassB V	AV New	Voltage Amplitude	AVG Limit

MEASUREMENT RESULT: "r4mplusl2a_fin QP"

8/2/2004 5:25PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	38.70	11.7	66	27.3	1	---
0.262000	48.40	10.9	61	13.0	1	---
0.330000	36.30	10.6	60	23.2	1	---
0.394000	46.80	10.6	58	11.2	1	---
0.526000	45.20	10.5	56	10.8	1	---
0.658000	42.60	10.5	56	13.4	1	---
0.790000	41.20	10.5	56	14.8	1	---
0.922000	39.10	10.5	56	16.9	1	---
1.054000	37.20	10.5	56	18.8	1	---
1.186000	35.70	10.5	56	20.3	1	---
2.370000	28.40	10.7	56	27.6	1	---
2.766000	30.20	10.8	56	25.8	1	---
4.742000	29.20	10.9	56	26.8	1	---
4.874000	30.80	10.9	56	25.2	1	---
5.138000	32.90	11.0	60	27.1	1	---
27.266000	30.90	12.0	60	29.1	1	---
28.714000	31.40	12.2	60	28.6	1	---
28.842000	31.70	12.2	60	28.3	1	---
29.110000	30.40	12.3	60	29.6	1	---
29.238000	31.10	12.3	60	28.9	1	---

MEASUREMENT RESULT: "r4mplusl2a_fin AV"

8/2/2004 5:25PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.262000	44.90	10.9	51	6.5	1	---
0.394000	41.90	10.6	48	6.1	1	---
0.526000	41.60	10.5	46	4.4	1	---
0.658000	36.40	10.5	46	9.6	1	---
0.790000	36.50	10.5	46	9.5	1	---
0.922000	32.50	10.5	46	13.5	1	---
1.054000	32.50	10.5	46	13.5	1	---
1.186000	30.80	10.5	46	15.2	1	---
1.318000	28.70	10.5	46	17.3	1	---
1.450000	28.00	10.5	46	18.0	1	---
2.370000	24.00	10.7	46	22.0	1	---
2.766000	25.20	10.8	46	20.8	1	---
4.478000	22.50	10.9	46	23.5	1	---
4.610000	23.60	10.9	46	22.4	1	---
4.874000	25.30	10.9	46	20.7	1	---
5.138000	26.30	11.0	50	23.7	1	---
5.270000	25.70	11.0	50	24.3	1	---
11.722000	27.70	11.4	50	22.3	1	---
11.854000	27.80	11.4	50	22.2	1	---
16.382000	30.90	11.8	50	19.1	1	---



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

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 R4Mplus 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: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

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

PART 15.247(c)



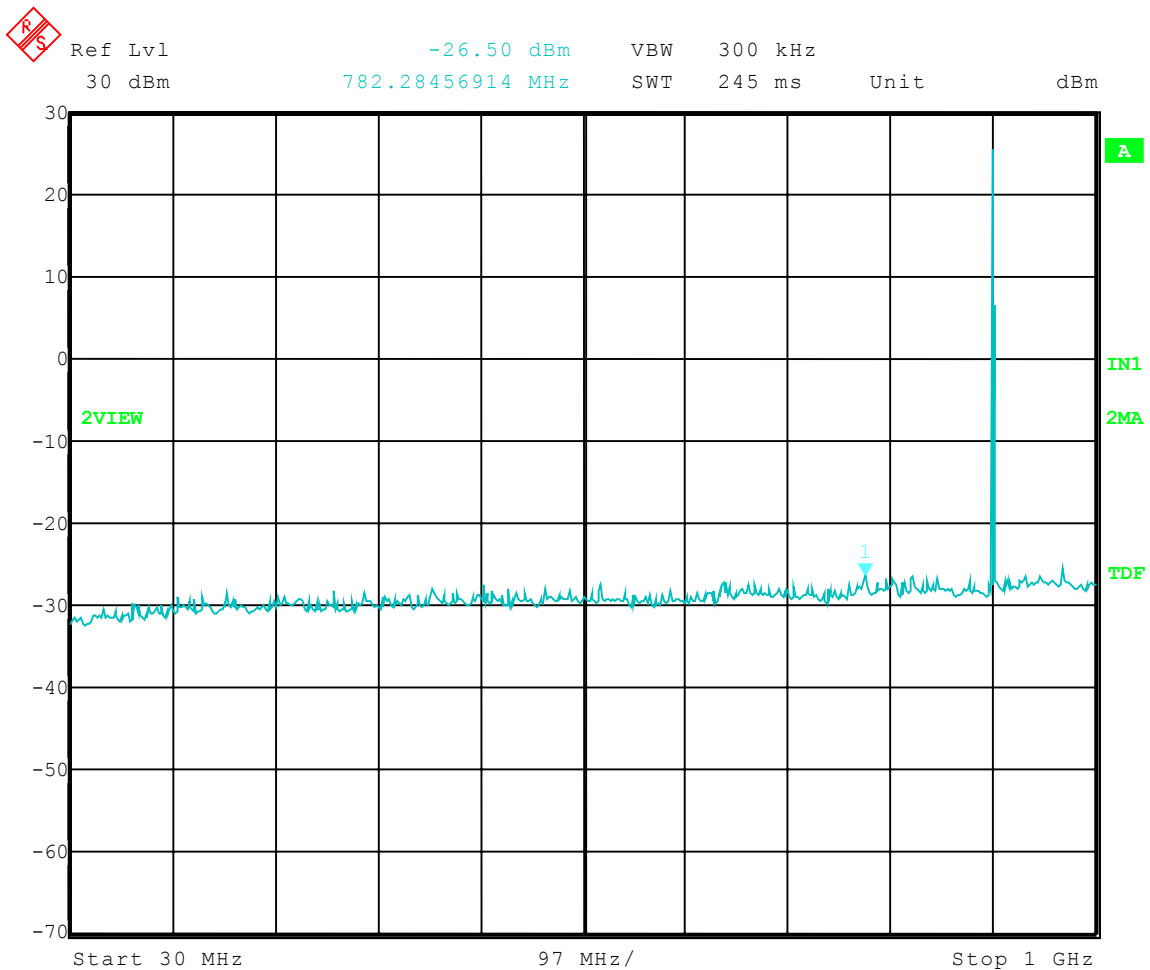
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
Company: Zebra Technologies
EUT: R4M Plus
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: **Low Channel Transmit = 902.80 MHz**
Frequency Range: 30 to 1000 MHz
Limit = 5.42 dBm

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



Date: 7.SEP.2004 11:26:58



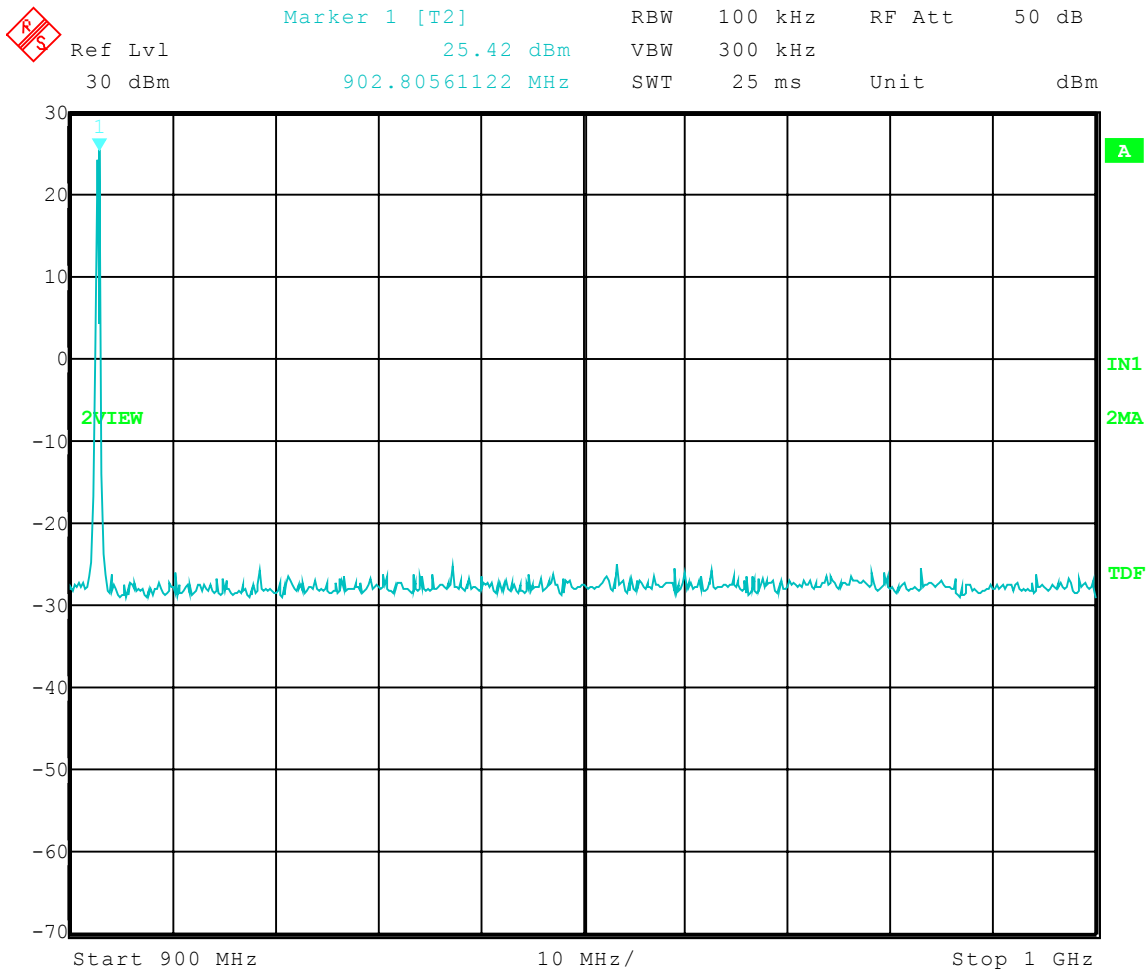
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
Company: Zebra Technologies
EUT: R4M Plus
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: **Low Channel Transmit = 902.80 MHz**
Frequency Range: 900 to 1000 MHz
Limit = 5.42 dBm

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



Date: 7.SEP.2004 11:25:33



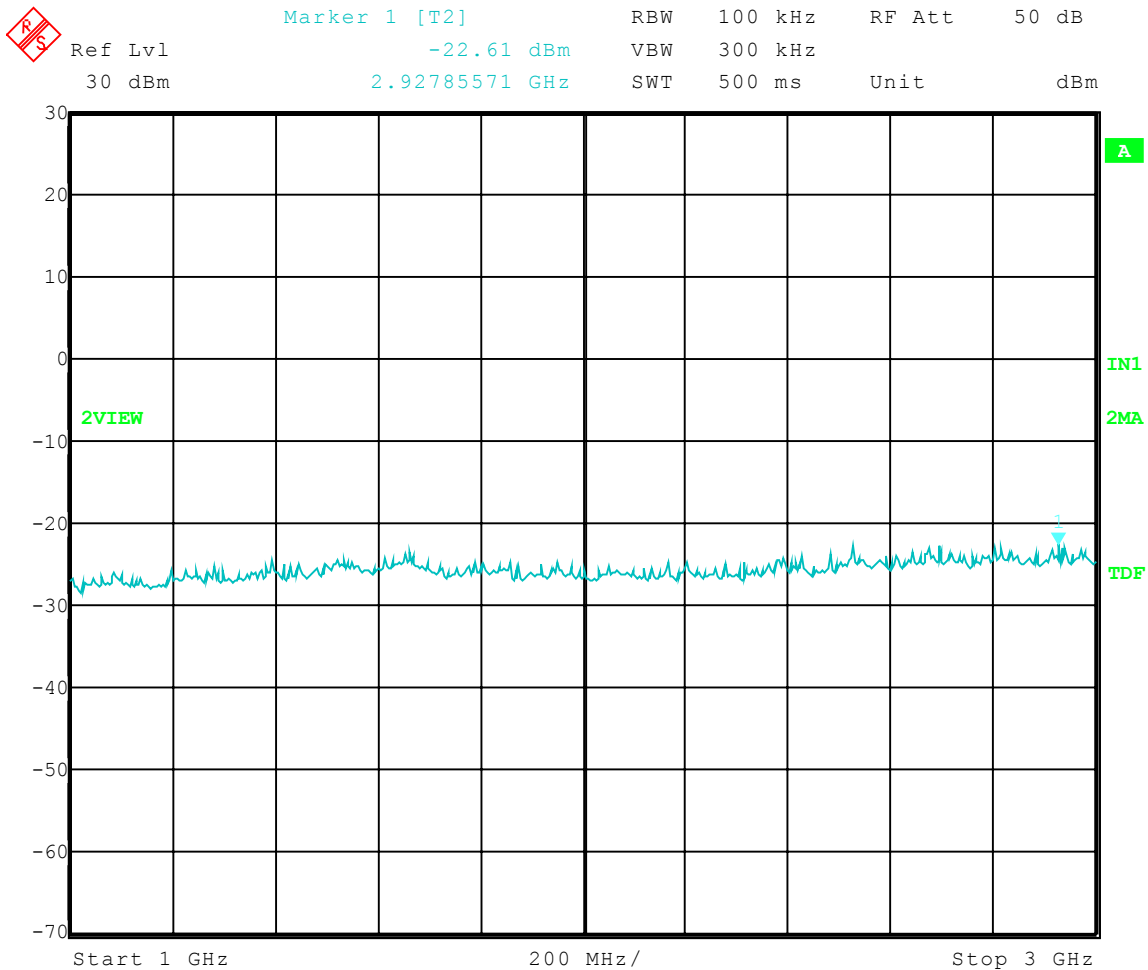
Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
 Company: Zebra Technologies
 EUT: R4M Plus
 Test: Spurious Emissions - Conducted
 Operator: Jason L.
 Comment: **Low Channel Transmit = 902.80 MHz**
 Frequency Range: 1 to 3 GHz
 Limit = 5.42 dBm

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



Date: 7.SEP.2004 11:28:02



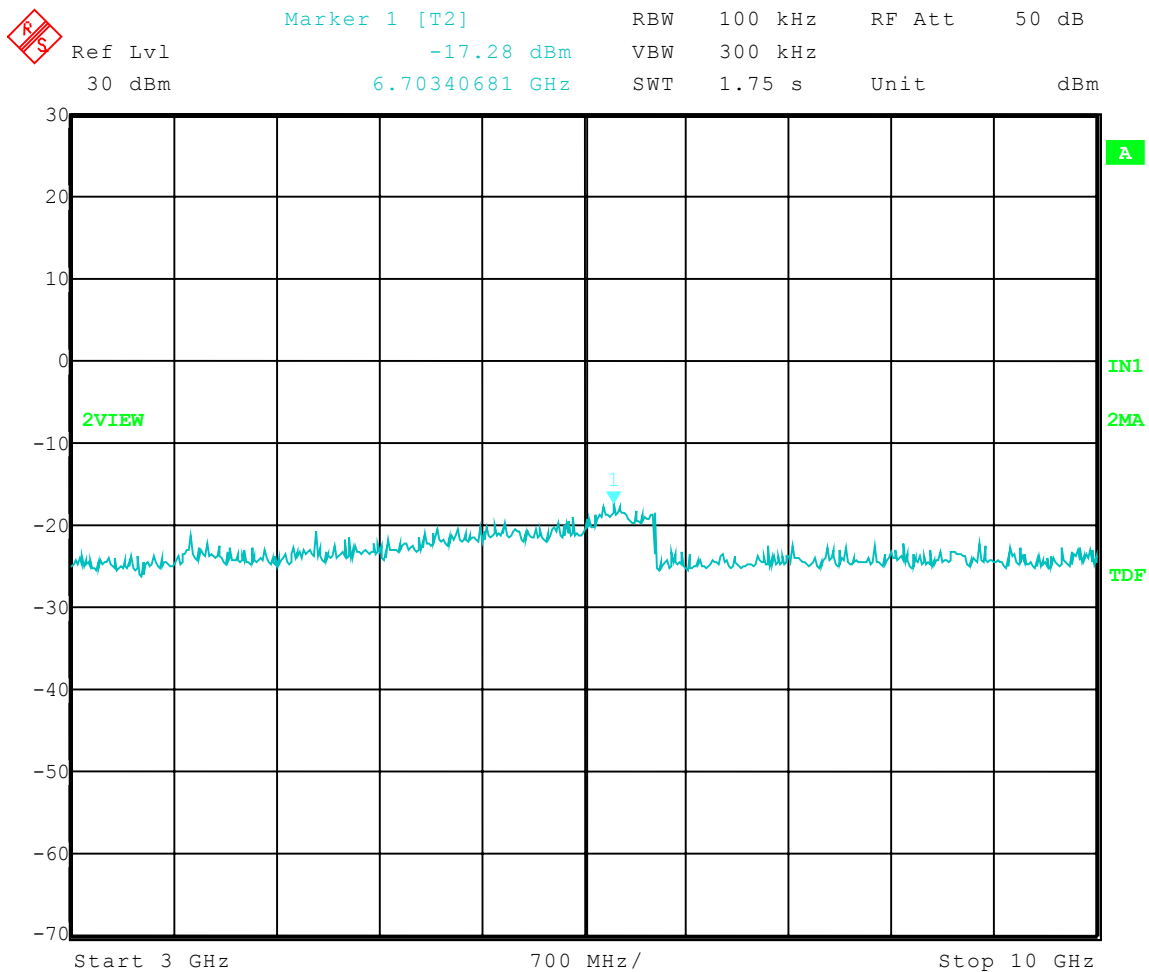
Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
 Company: Zebra Technologies
 EUT: R4M Plus
 Test: Spurious Emissions - Conducted
 Operator: Jason L.
 Comment: **Low Channel Transmit = 902.80 MHz**
 Frequency Range: 3 to 10 GHz
 Limit = 5.42 dBm

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



Date: 7.SEP.2004 11:29:23



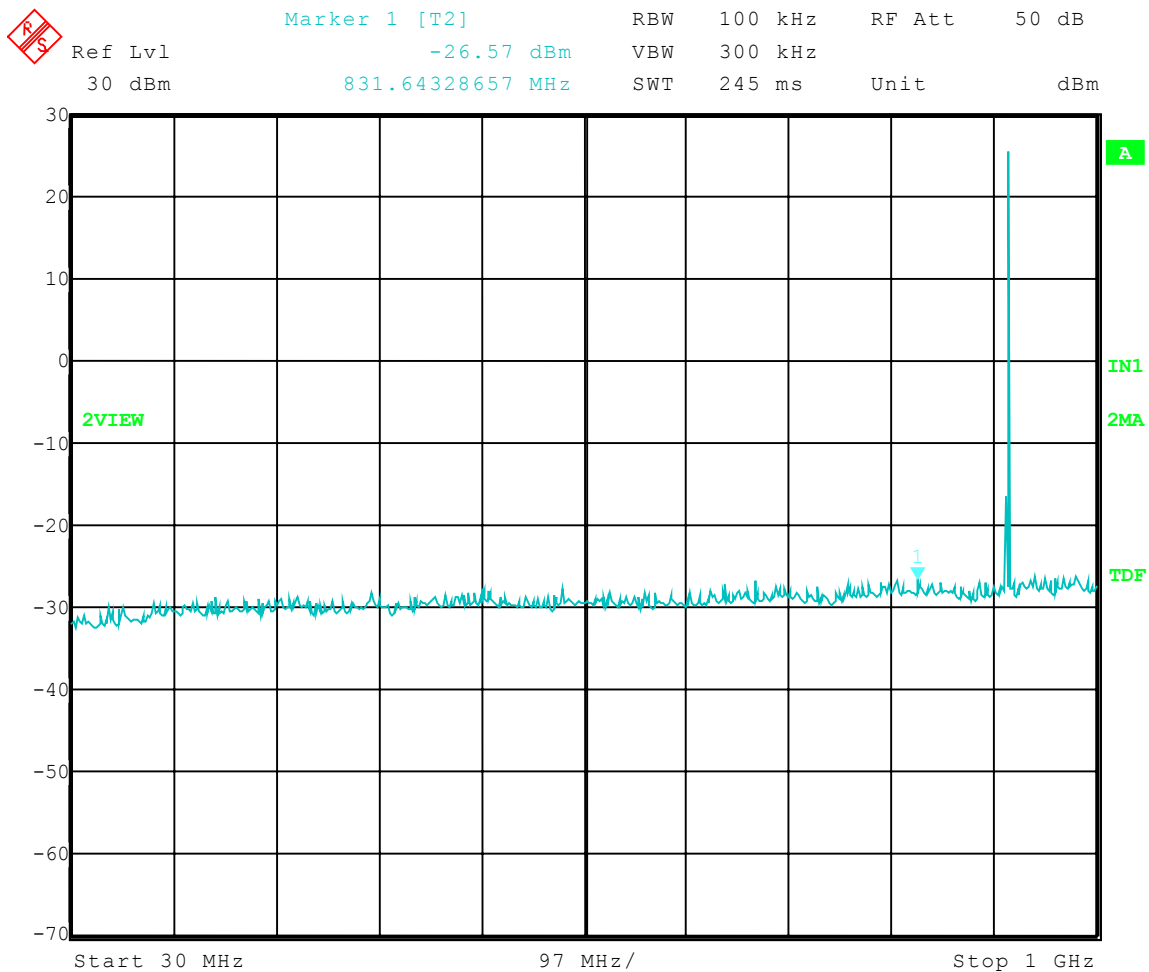
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
Company: Zebra Technologies
EUT: R4M Plus
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: **Middle Channel Transmit = 915.2 MHz**
Frequency Range: 30 to 1000 MHz
Limit = 5.32 dBm

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



Date: 7.SEP.2004 11:31:23



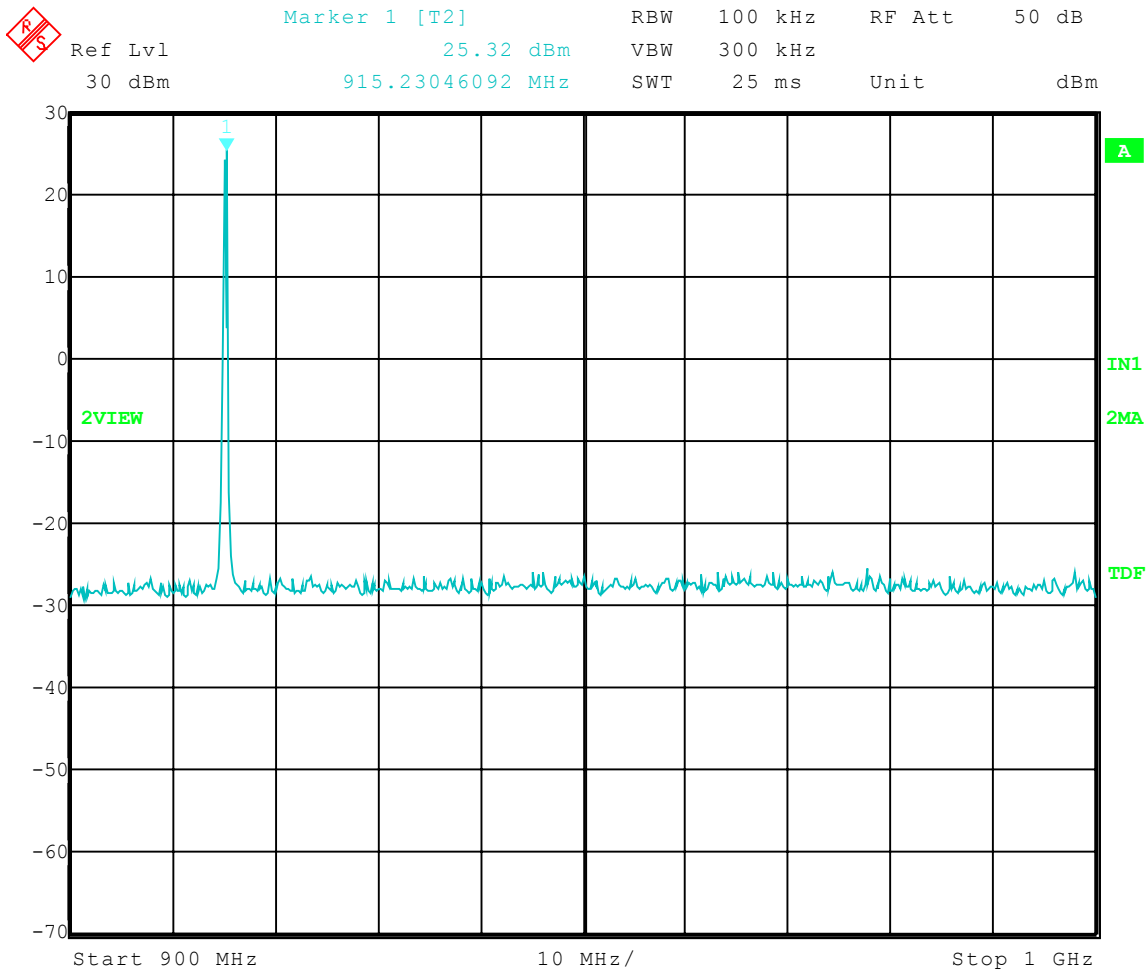
Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
 Company: Zebra Technologies
 EUT: R4M Plus
 Test: Spurious Emissions - Conducted
 Operator: Jason L.
 Comment: **Middle Channel Transmit = 915.2 MHz**
 Frequency Range: 900 to 1000 MHz
 Limit = 5.32 dBm

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



Date: 7.SEP.2004 11:30:25



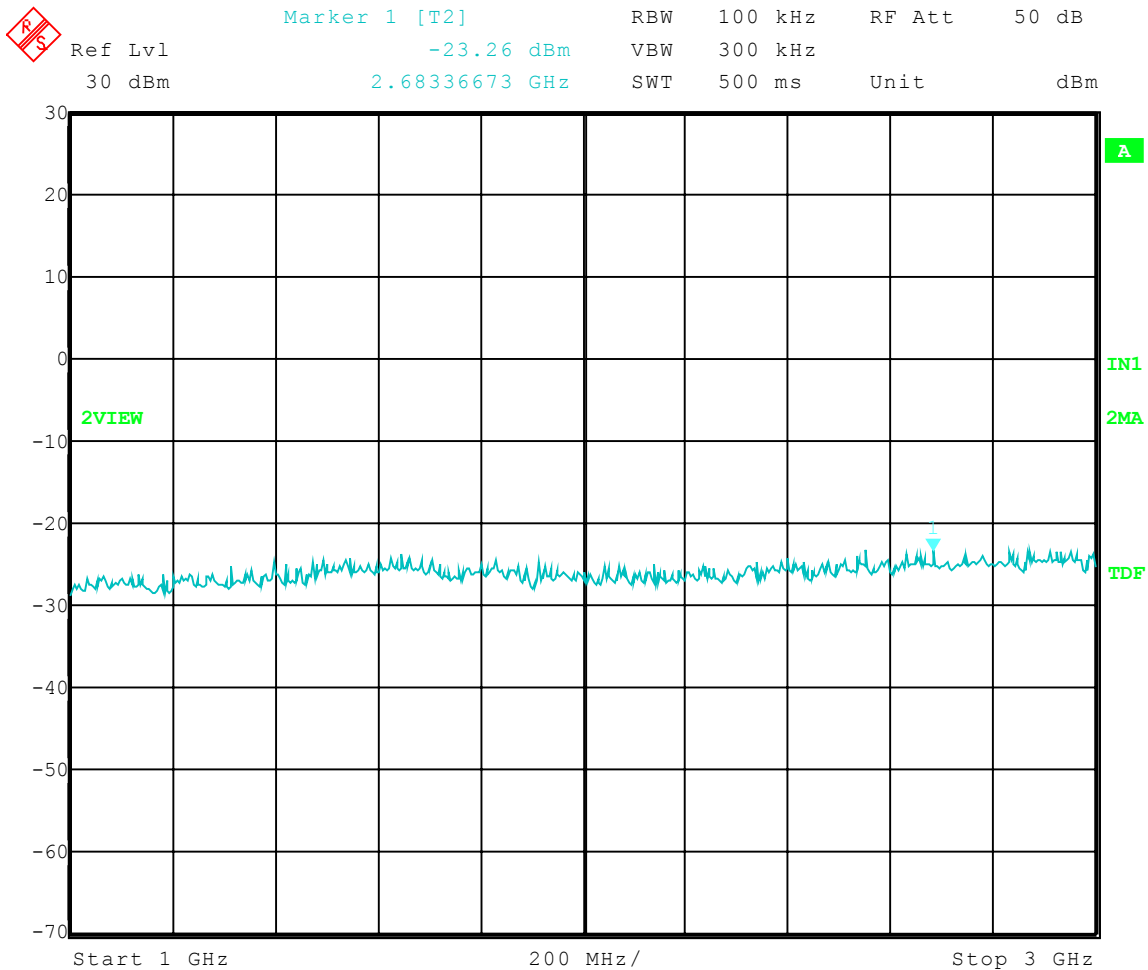
Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
 Company: Zebra Technologies
 EUT: R4M Plus
 Test: Spurious Emissions - Conducted
 Operator: Jason L.
 Comment: **Middle Channel Transmit = 915.2 MHz**
 Frequency Range: 1 to 3 GHz
 Limit = 5.32 dBm

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



Date: 7.SEP.2004 11:32:16



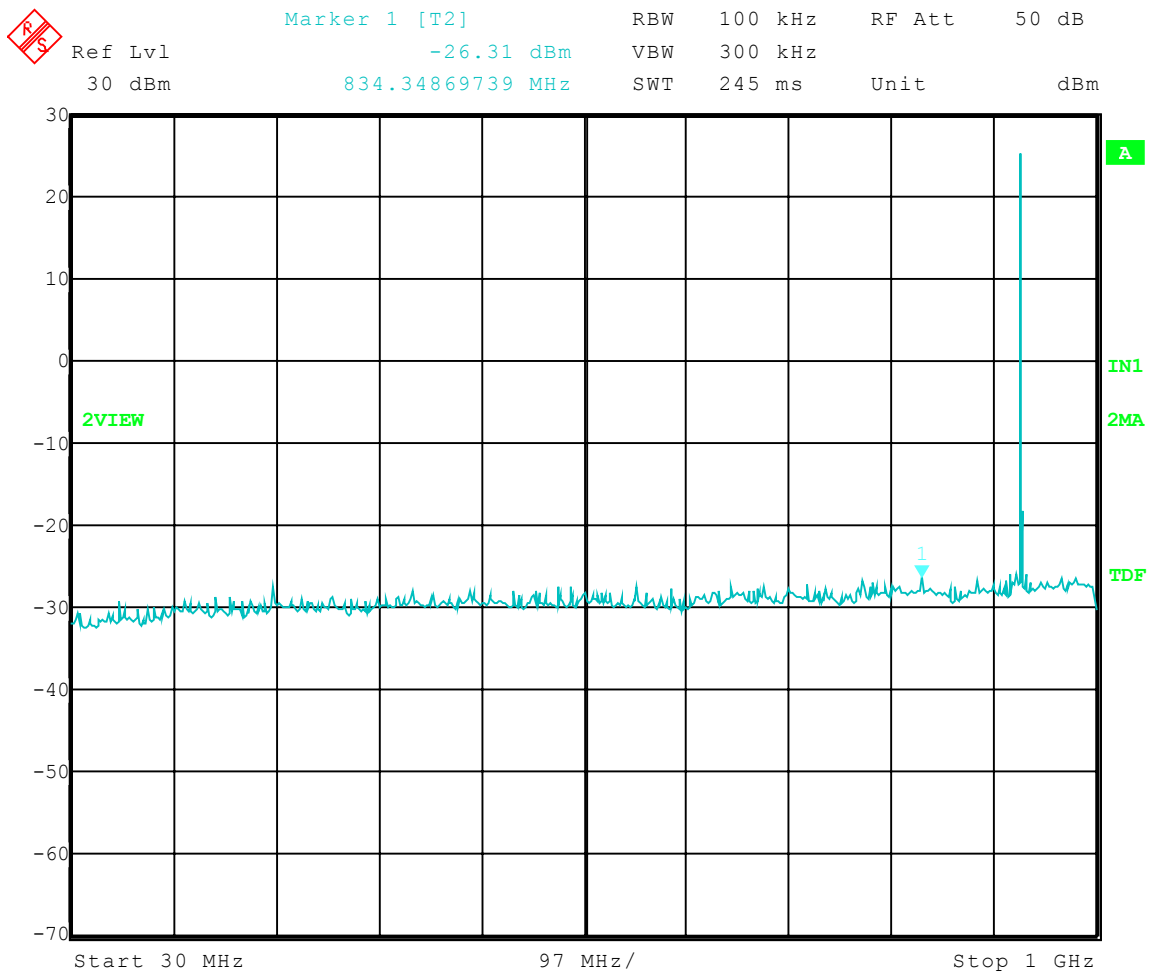
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
Company: Zebra Technologies
EUT: R4M Plus
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: **High Channel Transmit = 927.6 MHz**
Frequency Range: 30 to 1000 MHz
Limit = 5.12 dBm

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



Date: 7.SEP.2004 11:35:59



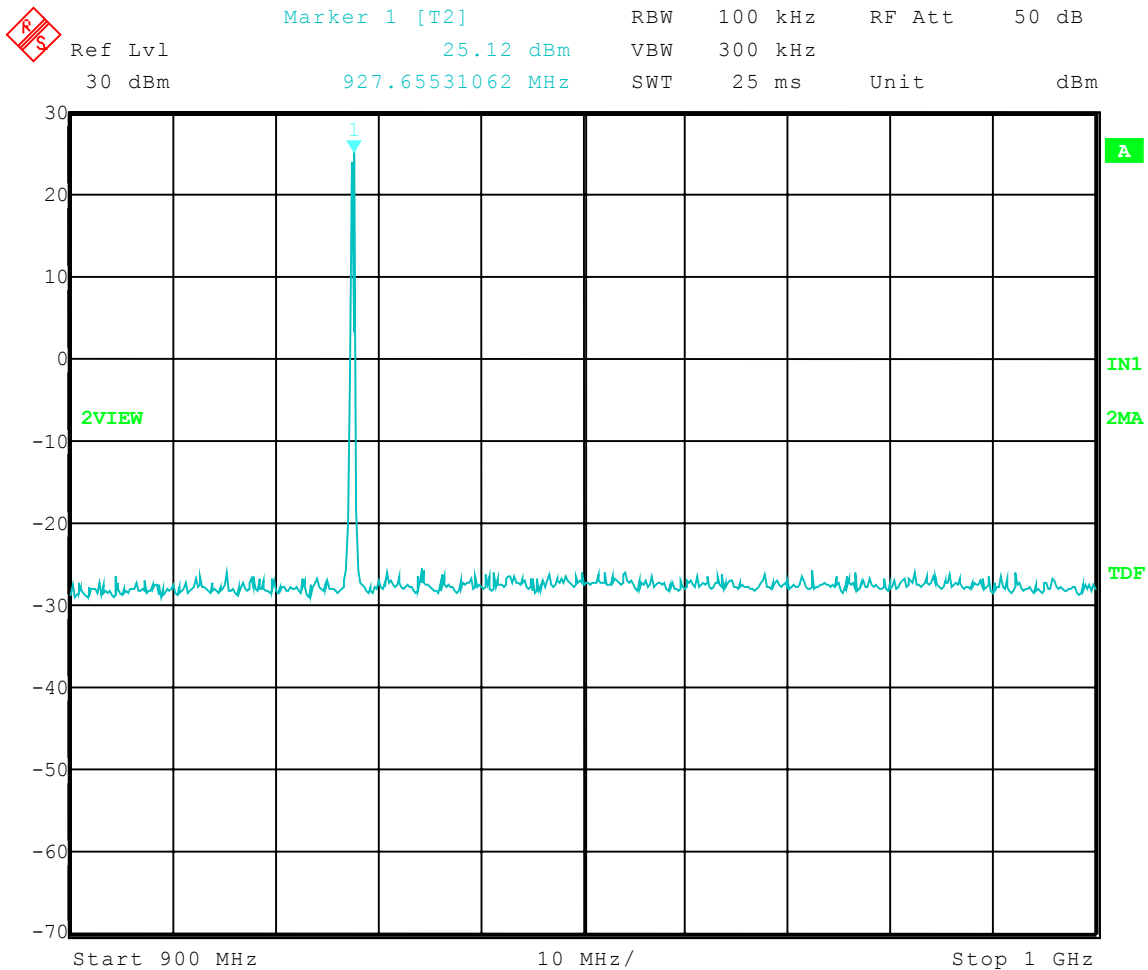
Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
 Company: Zebra Technologies
 EUT: R4M Plus
 Test: Spurious Emissions - Conducted
 Operator: Jason L.
 Comment: **High Channel Transmit = 927.6 MHz**
 Frequency Range: 900 to 1000 MHz
 Limit = 5.12 dBm

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



Date: 7.SEP.2004 11:34:35



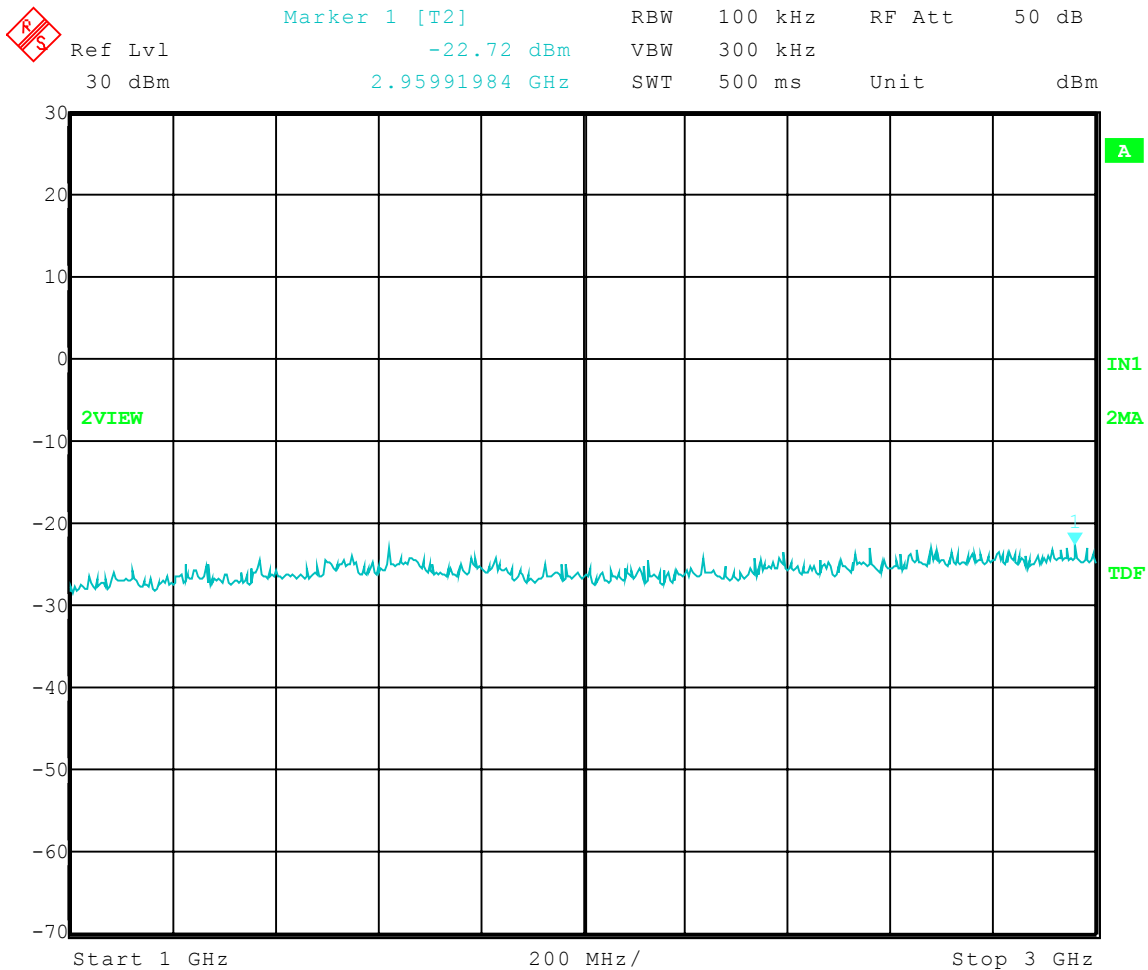
Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
 Company: Zebra Technologies
 EUT: R4M Plus
 Test: Spurious Emissions - Conducted
 Operator: Jason L.
 Comment: **High Channel Transmit = 927.6 MHz**
 Frequency Range: 1 to 3 GHz
 Limit = 5.12 dBm

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



Date: 7.SEP.2004 11:36:59



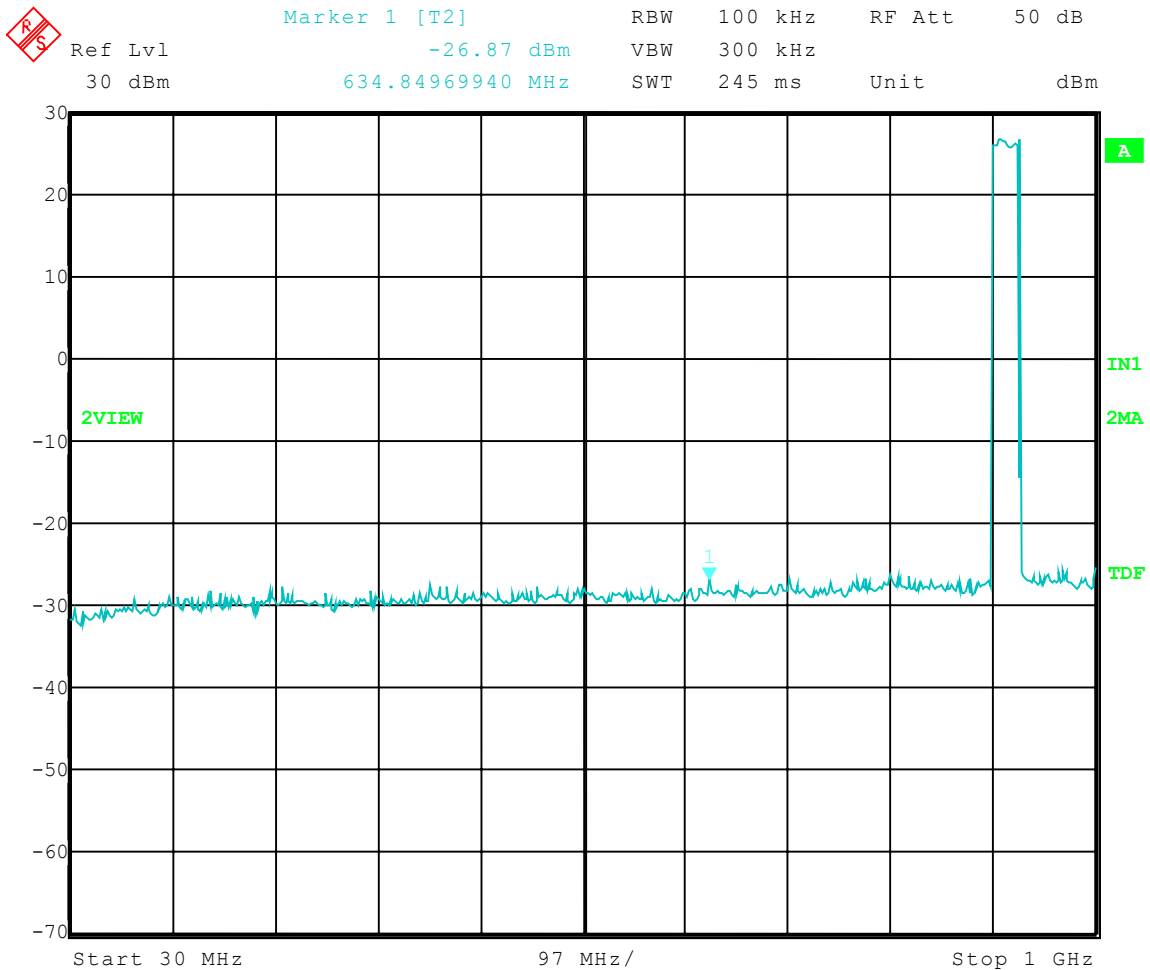
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
Company: Zebra Technologies
EUT: R4M Plus
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: **Spread Spectrum Hopping On**
Frequency Range: 30 to 1000 MHz
Limit = 6.70 dBm

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



Date: 7.SEP.2004 11:43:26



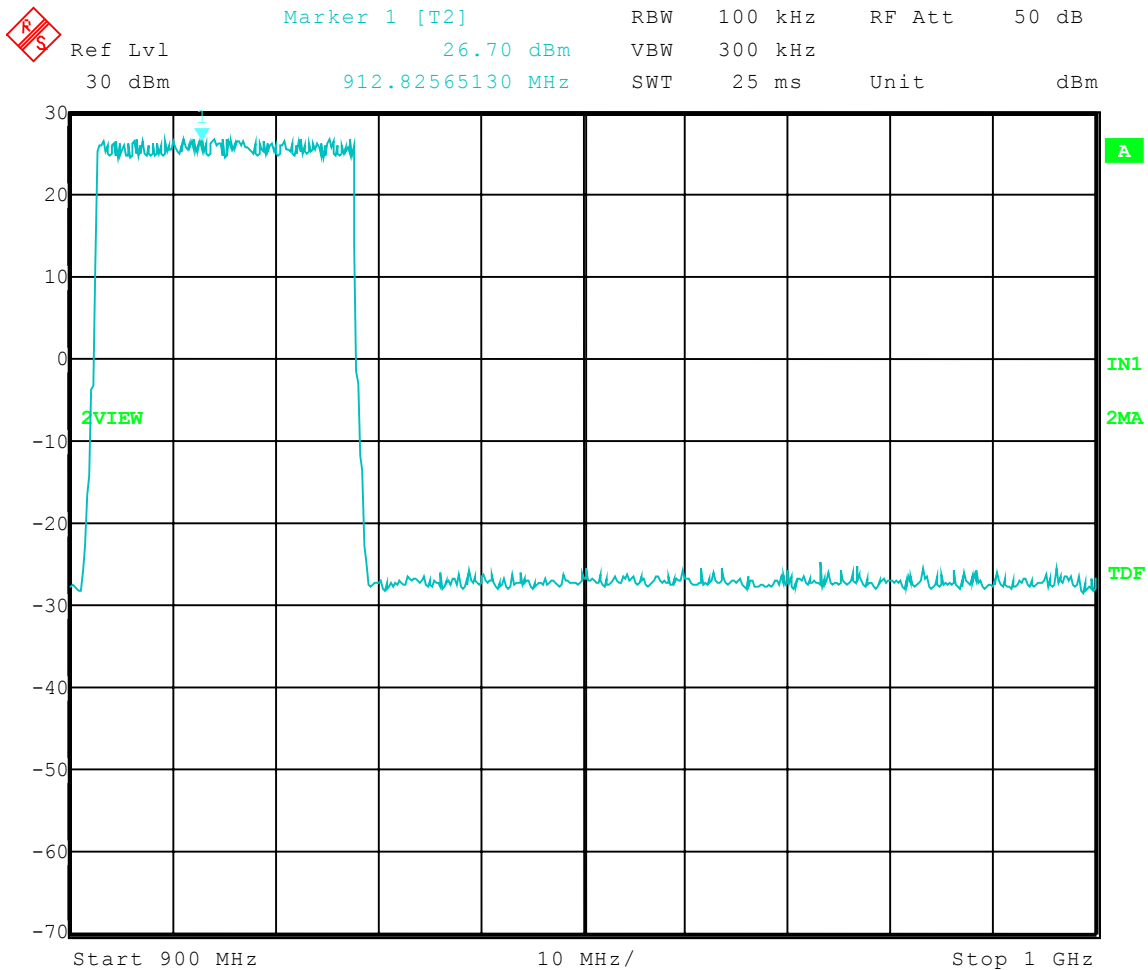
Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
 Company: Zebra Technologies
 EUT: R4M Plus
 Test: Spurious Emissions - Conducted
 Operator: Jason L.
 Comment: **Spread Spectrum Hopping On**
 Frequency Range: 900 to 1000 MHz
 Limit = 6.70 dBm

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



Date: 7.SEP.2004 11:41:15



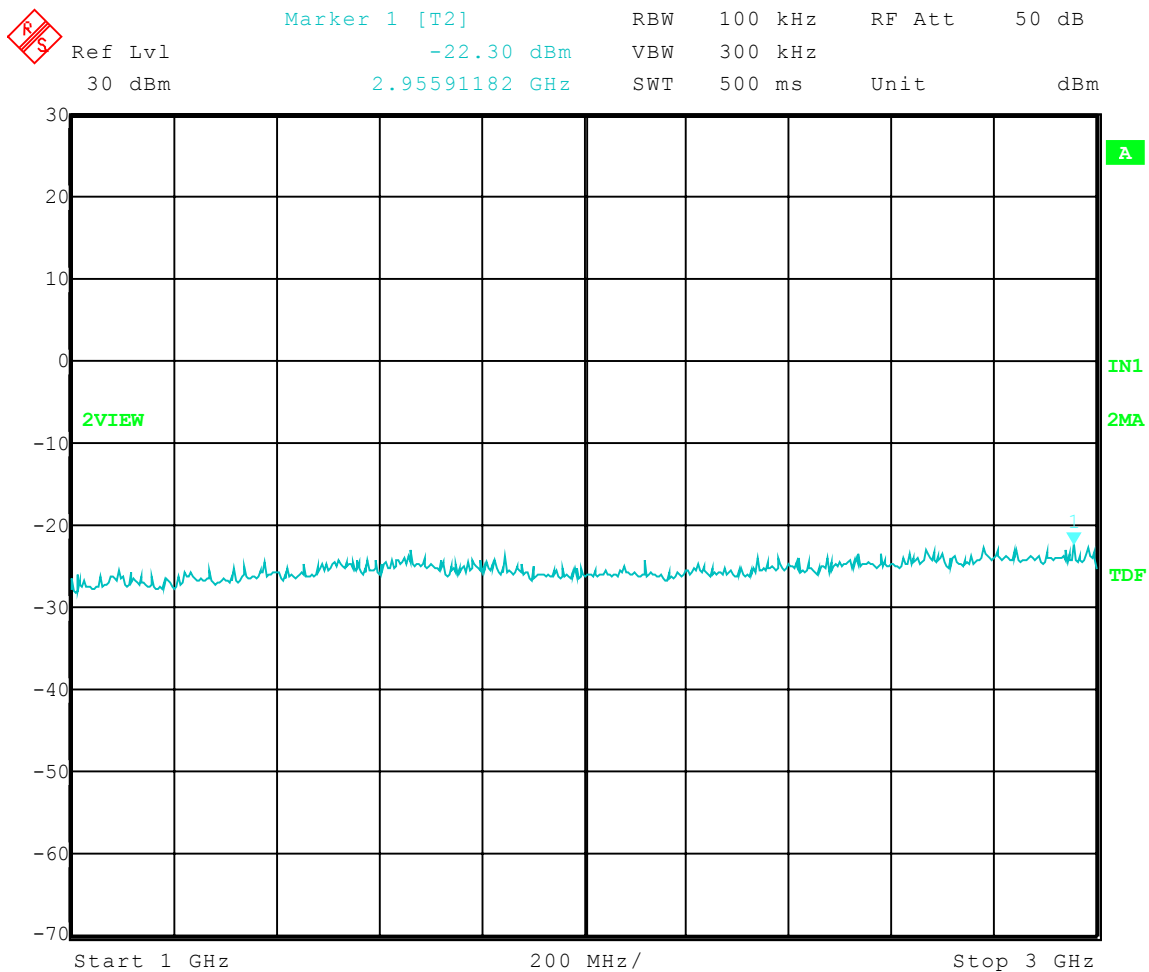
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
Company: Zebra Technologies
EUT: R4M Plus
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: **Spread Spectrum Hopping On**
Frequency Range: 1 to 3 GHz
Limit = 6.70 dBm

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



Date: 7.SEP.2004 11:44:32



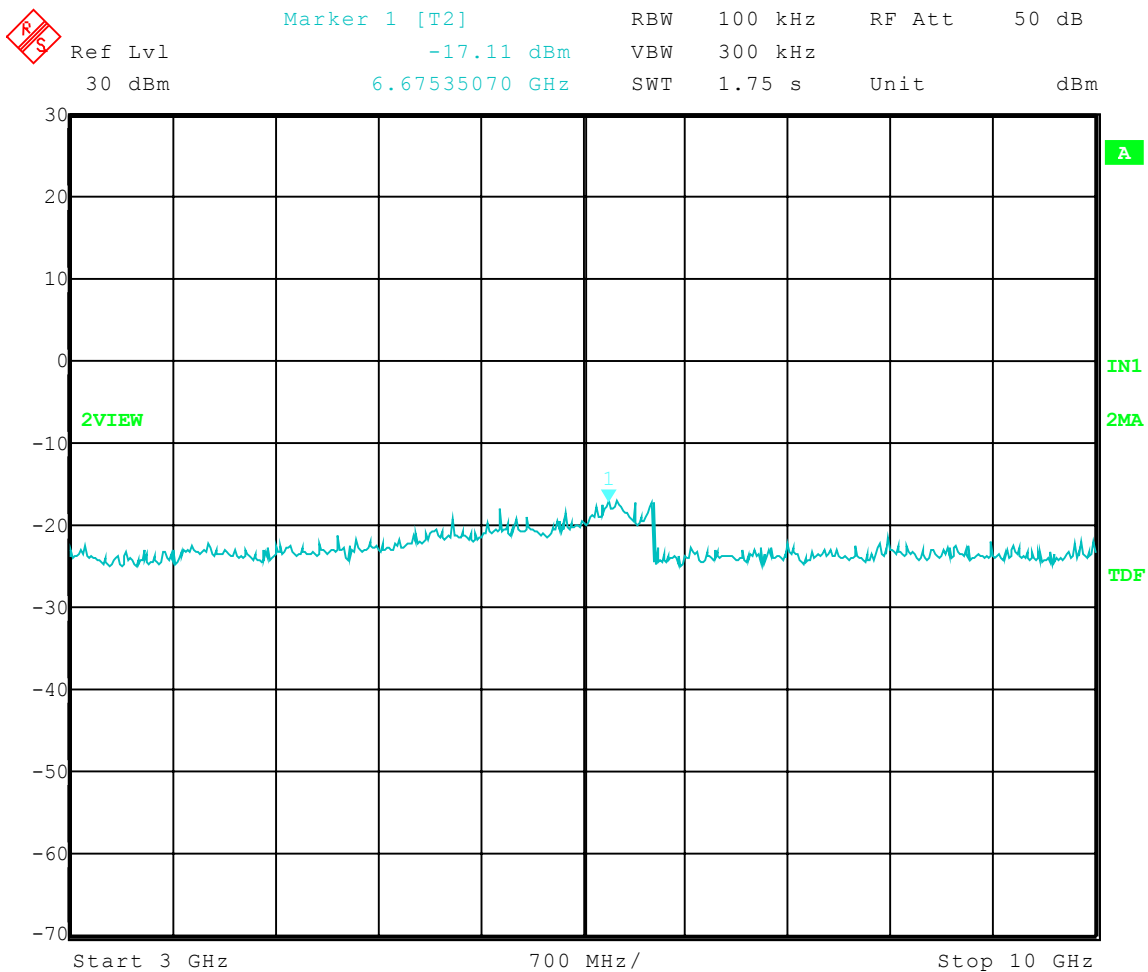
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
Company: Zebra Technologies
EUT: R4M Plus
Test: Spurious Emissions - Conducted
Operator: Jason L.
Comment: Spread Spectrum Hopping On
Frequency Range: 3 to 10 GHz
Limit = 6.70 dBm

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

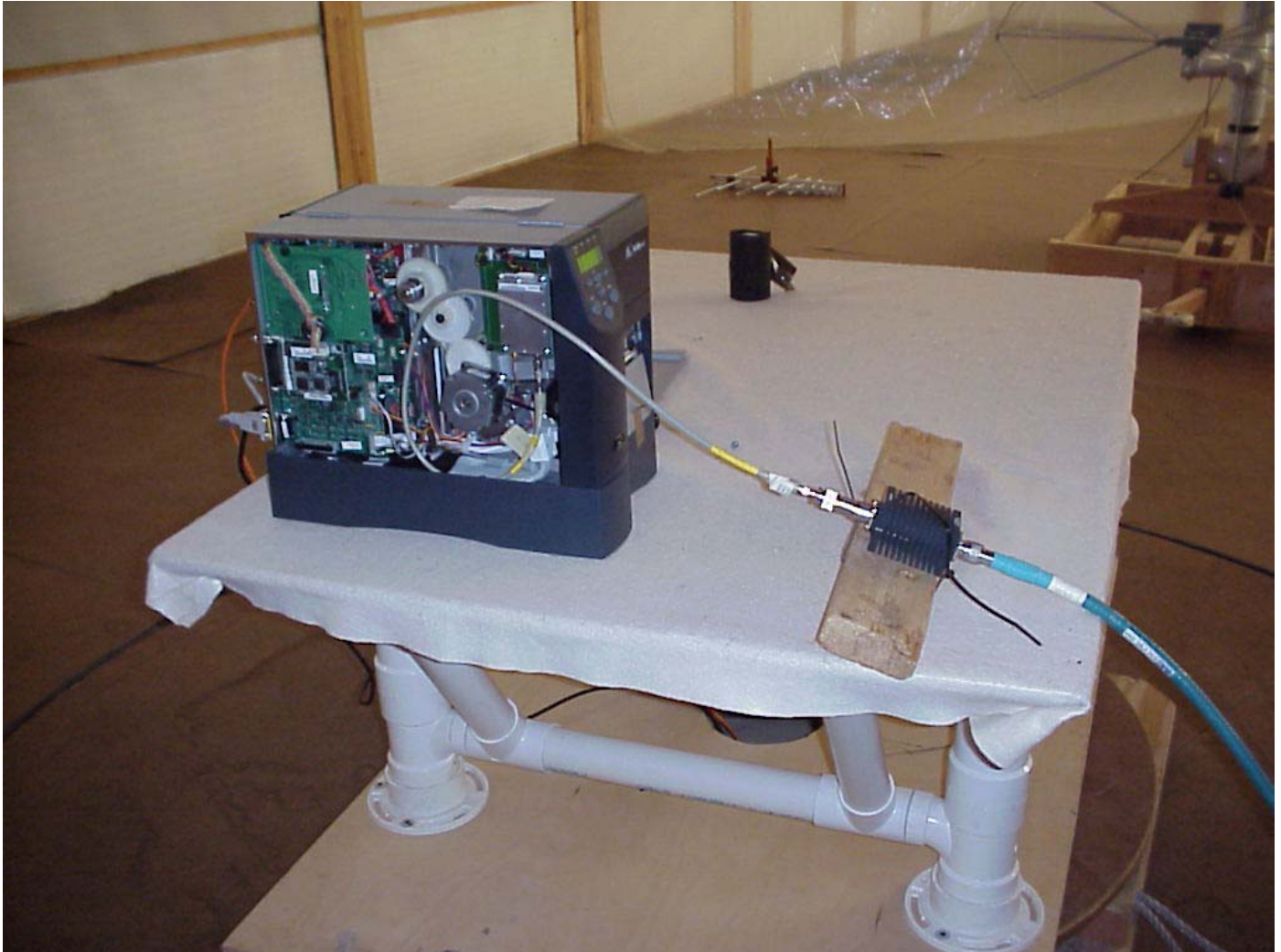


Date: 7.SEP.2004 11:45:40

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

3.0 CONDUCTED EMISSIONS (ANTENNA TERMINAL) PHOTOS TAKEN DURING TESTING





Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

4.0 RESTRICTED BANDS

As stated in Section 15.205a, the fundamental emission from the R4Mplus 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: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

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

PART 15.247(c)



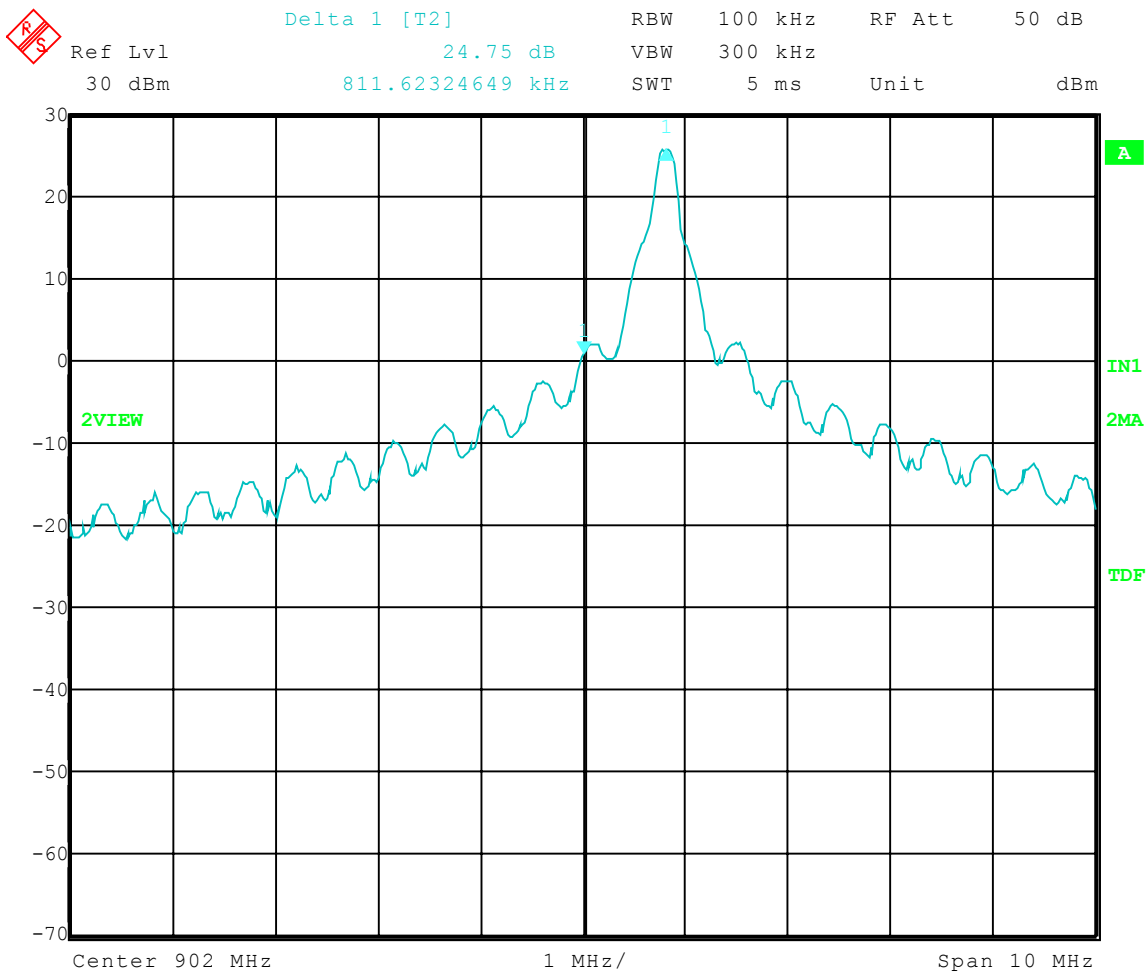
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
EUT: R4M Plus
Test: Low Band-Edge Compliance - Conducted
Operator: Jason L.
Comment: Low Channel: Frequency – 902.80 MHz

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



Date: 2.AUG.2004 13:08:48



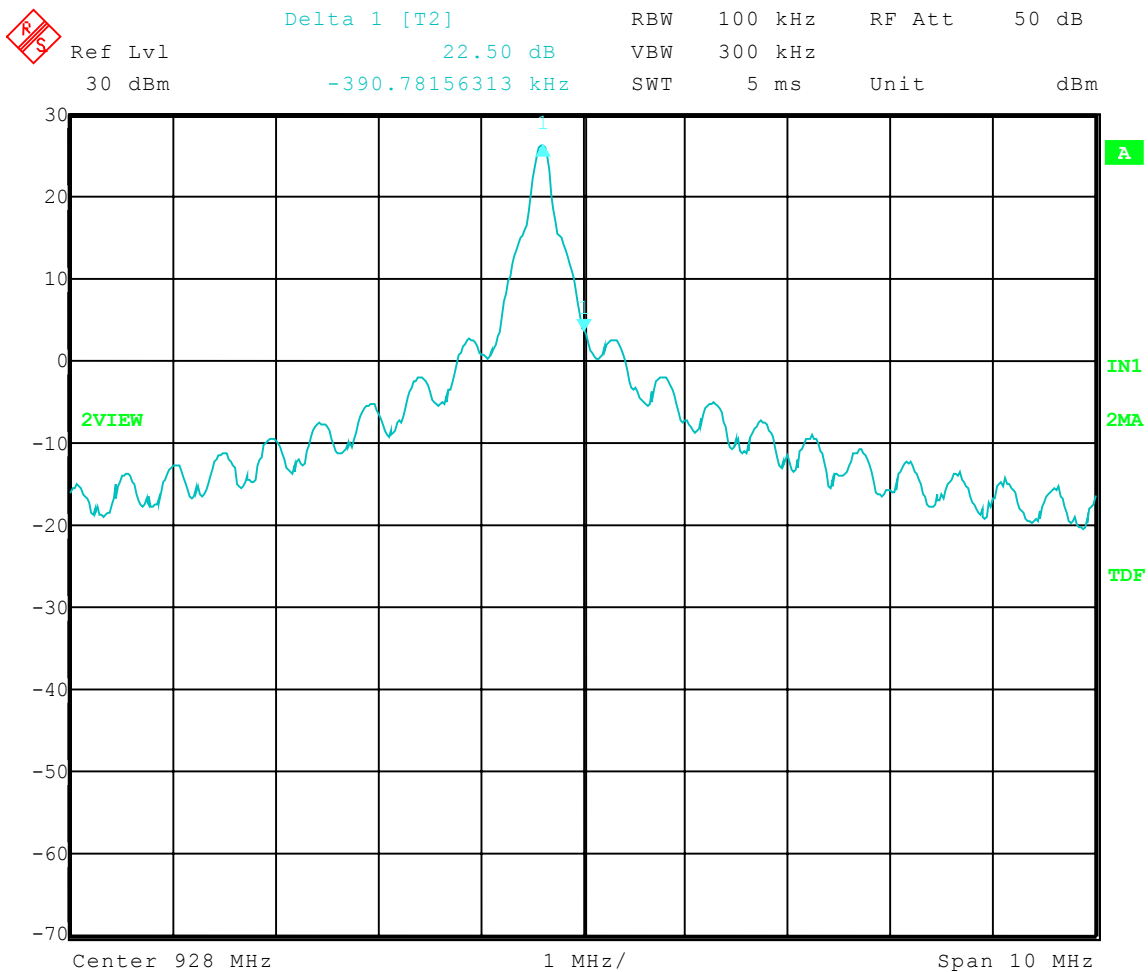
Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
 EUT: R4M Plus
 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



Date: 2.AUG.2004 13:11:04



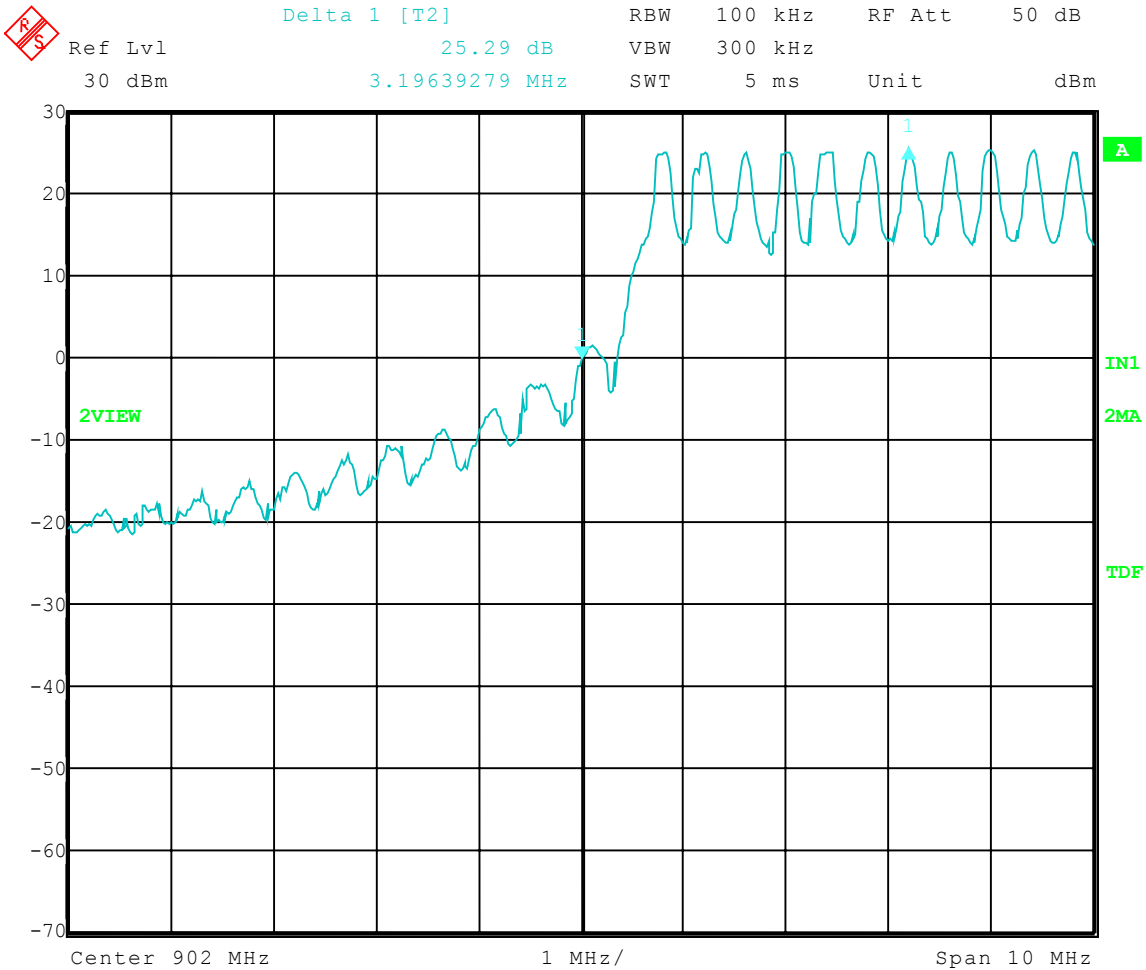
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
Company: Zebra Technologies
EUT: R4M Plus
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



Date: 2.AUG.2004 12:55:00



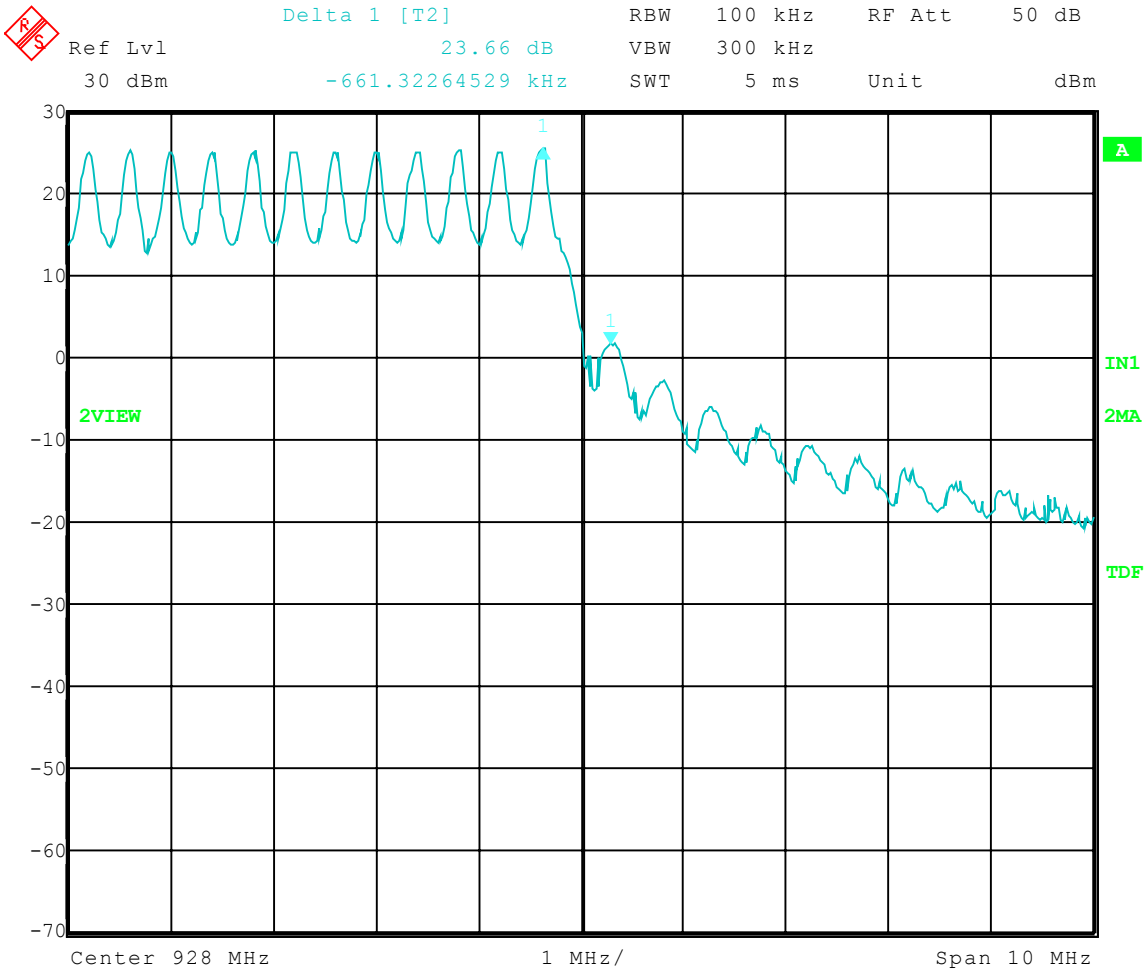
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
Company: Zebra Technologies
EUT: R4M Plus
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: 2.AUG.2004 12:57:08



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

6.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS

The radiated measurements made at D.L.S. Electronic Systems, Inc., for the R4Mplus, Model Number: Z4M, 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 R4Mplus were made up to 10000 MHz, in accordance with Section 15.33a for Intentional Radiators with a fundamental frequency of 927 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: Z4M
Report Number: 10925

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 73°F at 53% relative humidity.



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

RADIATED DATA AND GRAPH(S) TAKEN FOR

FIELD STRENGTH

SPURIOUS EMISSION MEASUREMENTS

PART 15.247

FCC Part 15 Class B

Electric Field Strength

EUT: R4M Plus
Manufacturer: Zebra
Operating Condition: 73 deg. F; 53% R.H.
Test Site: DLS OF Site 3
Operator: Jason L
Test Specification: 120 V; 60 Hz
Comment:
Date: 08/2/04

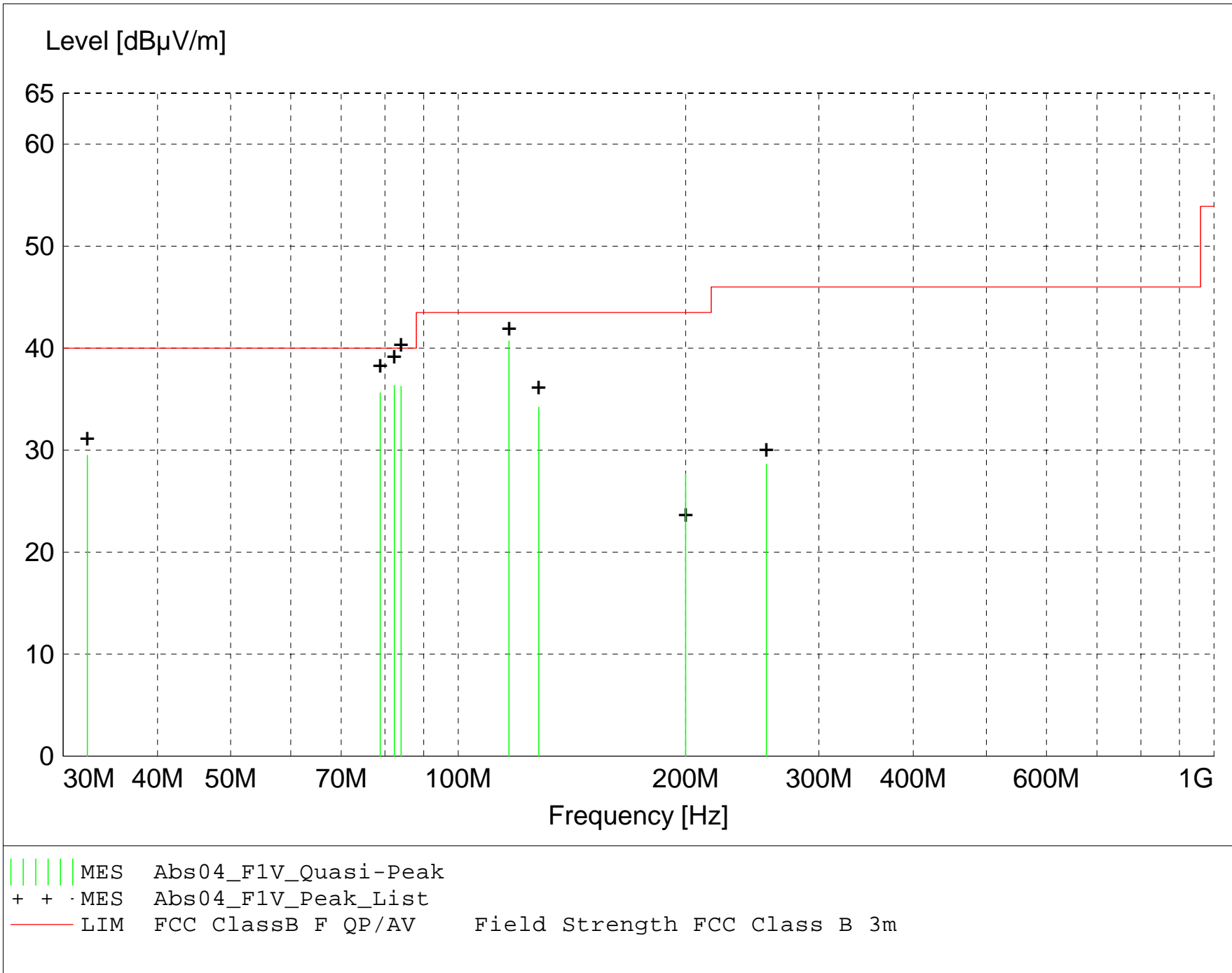
TEXT: "Site 3 MidV 3M"

Short Description: Test Set-up Vert30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 26 SN: 837491/010

Antennas ---
Biconical -- EMCO 3104C SN: 9701-4785
Log Periodic -- EMCO 3146 SN: 9702-4895

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/005

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



MEASUREMENT RESULT: "Abs04_F1V_Final"

8/2/2004 4:53PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dB μ V	Factor	Loss	Level	dB μ V/m	dB	Ant.	Angle	Detector	
		dB μ V/m	dB	dB μ V/m	dB μ V/m		m	deg		
116.690000	51.08	12.87	-23.3	40.7	43.5	2.8	1.00	90	QUASI-PEAK	None
82.280000	52.88	7.33	-23.9	36.4	40.0	3.6	1.00	325	QUASI-PEAK	None
83.970000	52.29	7.78	-23.8	36.3	40.0	3.7	1.00	0	QUASI-PEAK	None
78.810000	52.83	6.74	-23.9	35.6	40.0	4.4	1.00	0	QUASI-PEAK	None
127.770000	44.83	12.63	-23.2	34.2	43.5	9.3	1.00	0	QUASI-PEAK	None
32.280000	42.60	11.52	-24.6	29.5	40.0	10.5	1.00	180	QUASI-PEAK	None
200.000000	38.39	12.04	-22.7	27.7	43.5	15.8	1.00	0	QUASI-PEAK	None
255.580000	38.15	12.65	-22.2	28.6	46.0	17.4	1.00	345	QUASI-PEAK	None

FCC Part 15 Class B

Electric Field Strength

EUT: R4M Plus
Manufacturer: Zebra
Operating Condition: 73 deg. F; 53% R.H.
Test Site: DLS OF Site 3
Operator: Jason L
Test Specification: 120 V; 60 Hz
Comment:
Date: 08/2/04

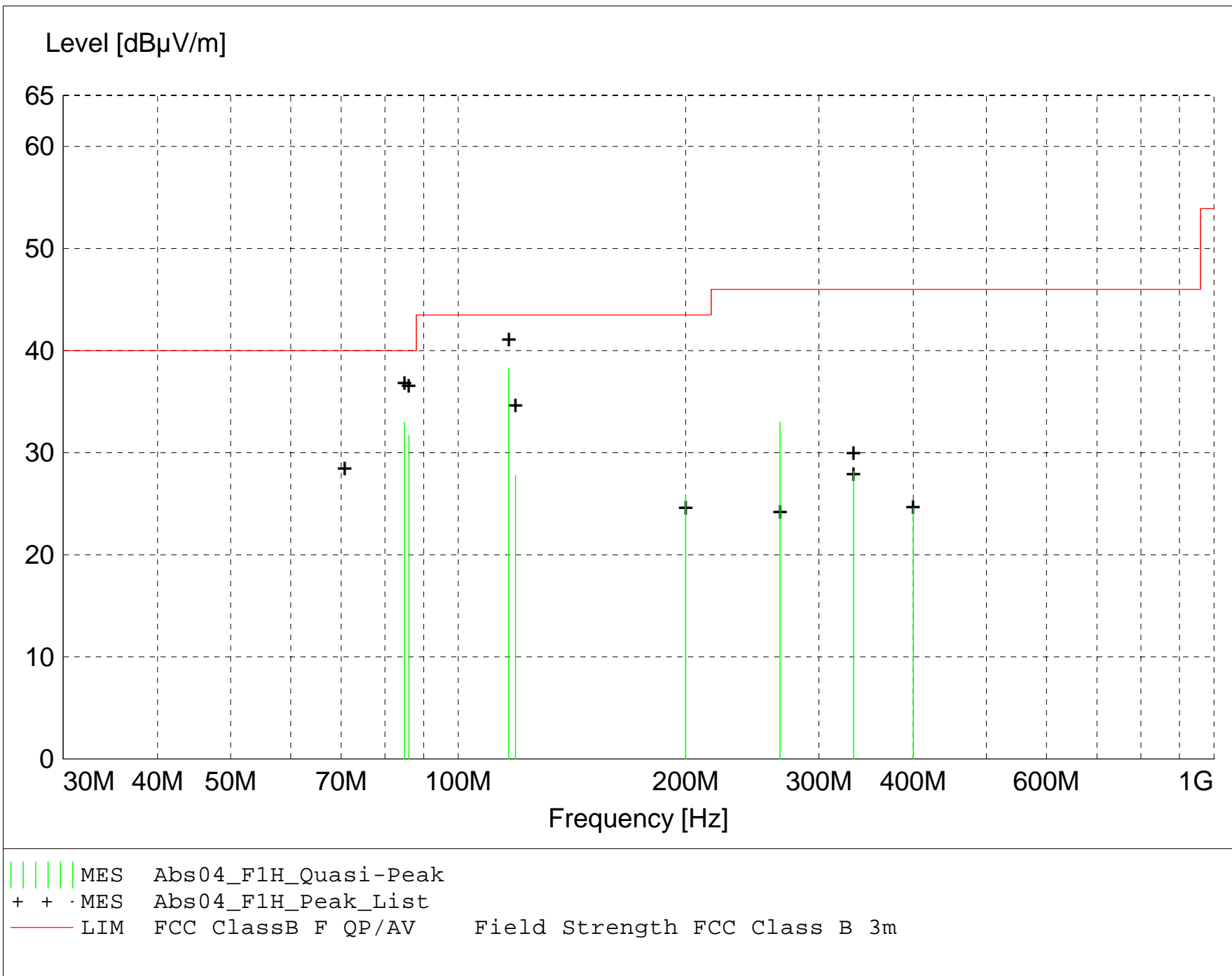
TEXT: "Site 3 MidH 3M"

Short Description: Test Set-up Horz30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Antennas ---
Biconical -- EMCO 3104C SN: 9701-4785
Log Periodic -- EMCO 3146 SN: 9702-4895

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/005

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



MEASUREMENT RESULT: "Abs04_F1H_Final"

8/2/2004 4:47PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dB μ V	Factor	Loss	Level	dB μ V/m	dB	Ant.	Angle	Detector	
		dB μ V/m	dB	dB μ V/m	dB μ V/m		m	deg		
116.660000	48.62	12.87	-23.3	38.2	43.5	5.3	3.00	100	QUASI-PEAK	None
84.900000	48.76	8.03	-23.8	33.0	40.0	7.0	2.00	300	QUASI-PEAK	None
86.040000	47.25	8.27	-23.8	31.7	40.0	8.3	2.00	270	QUASI-PEAK	None
266.690000	41.88	13.16	-22.0	33.0	46.0	13.0	1.00	225	QUASI-PEAK	None
119.000000	37.79	13.18	-23.2	27.8	43.5	15.7	3.00	270	QUASI-PEAK	None
200.000000	36.48	12.04	-22.7	25.8	43.5	17.7	1.50	90	QUASI-PEAK	None
333.350000	34.88	14.97	-21.7	28.1	46.0	17.9	2.75	325	QUASI-PEAK	None
400.010000	30.14	15.85	-21.4	24.6	46.0	21.4	2.00	0	QUASI-PEAK	None

FCC Part 15 Class B

Electric Field Strength

EUT: R4M Plus
Manufacturer: Zebra Technologies
Operating Condition: 70 deg F; 63% R.H.
Test Site: DLS O.F. Site 3
Operator: Jason L
Test Specification: 120 VAC; 60 Hz
Comment: Transmit and Receive @ 902.8 MHz Low Channel
Date: 09/07/04

TEXT: "Site 3 6204&184 V3M"

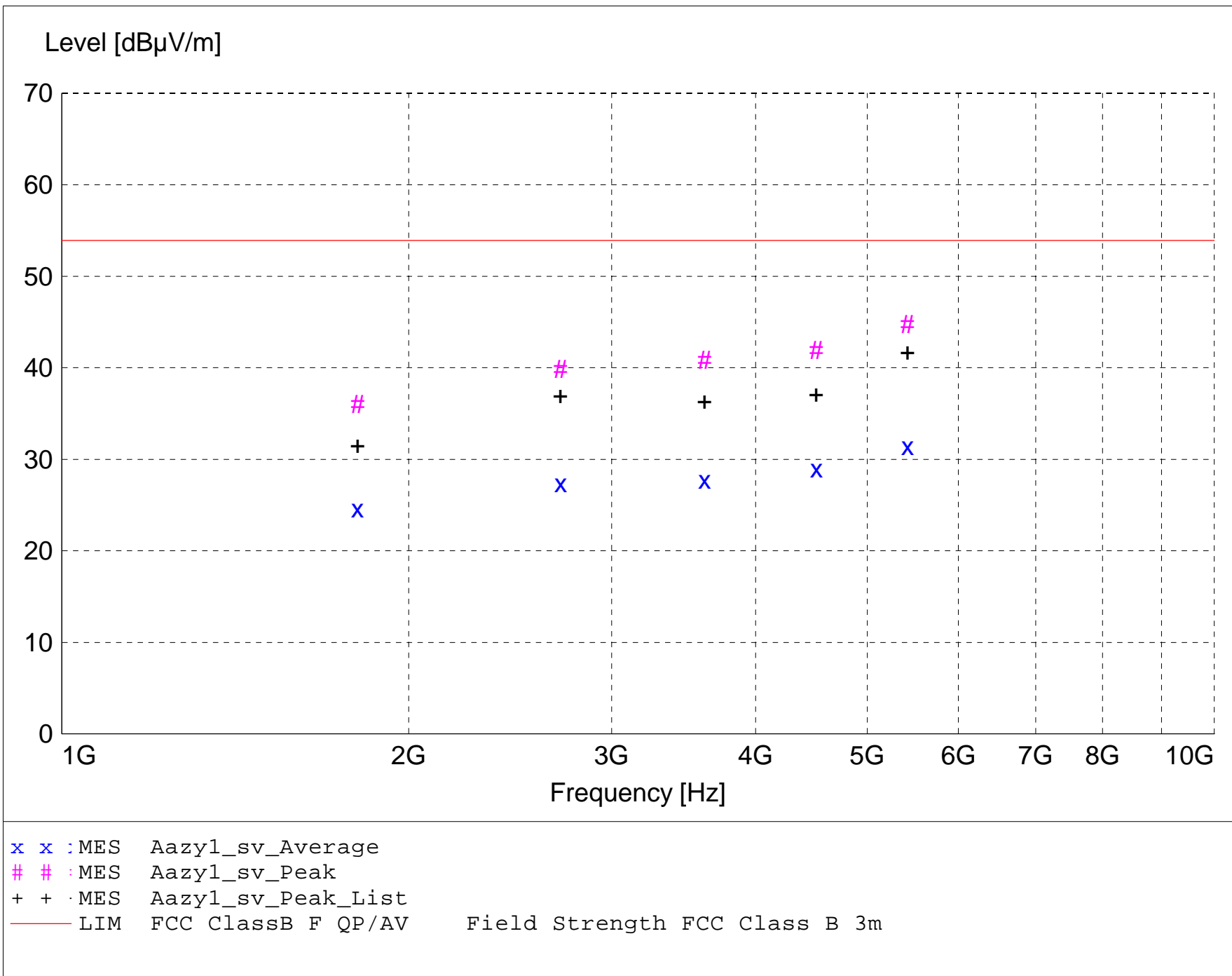
Short Description: Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



MEASUREMENT RESULT: "Aazy1_sv_Final"

9/7/2004 9:44AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
5416.800000	48.37	33.97	-37.6	44.7	53.9	9.2	1.00	0	MAX PEAK	6th Harmonic
4514.000000	47.14	32.33	-37.6	41.9	53.9	12.0	1.00	0	MAX PEAK	5th Harmonic
3611.200000	48.10	31.51	-38.7	40.9	53.9	13.0	1.10	100	MAX PEAK	4th Harmonic
2708.400000	50.53	29.21	-39.9	39.8	53.9	14.1	1.10	100	MAX PEAK	3rd Harmonic
1805.600000	49.32	26.44	-39.8	36.0	53.9	17.9	1.00	0	MAX PEAK	2nd Harmonic
5416.800000	35.03	33.97	-37.6	31.4	53.9	22.5	1.00	0	AVERAGE	6th Harmonic
4514.000000	34.23	32.33	-37.6	29.0	53.9	24.9	1.00	0	AVERAGE	5th Harmonic
3611.200000	34.94	31.51	-38.7	27.7	53.9	26.2	1.10	100	AVERAGE	4th Harmonic
2708.400000	38.10	29.21	-39.9	27.4	53.9	26.5	1.10	100	AVERAGE	3rd Harmonic
1805.600000	37.92	26.44	-39.8	24.6	53.9	29.3	1.00	0	AVERAGE	2nd Harmonic

FCC Part 15 Class B

Electric Field Strength

EUT: R4M Plus
Manufacturer: Zebra Technologies
Operating Condition: 70 deg F; 63% R.H.
Test Site: DLS O.F. Site 3
Operator: Jason L
Test Specification: 120 VAC; 60 Hz
Comment: Transmit and Receive @ 902.8 MHz Low Channel
Date: 09/07/04

TEXT: "Site 3 6204&184 H3M"

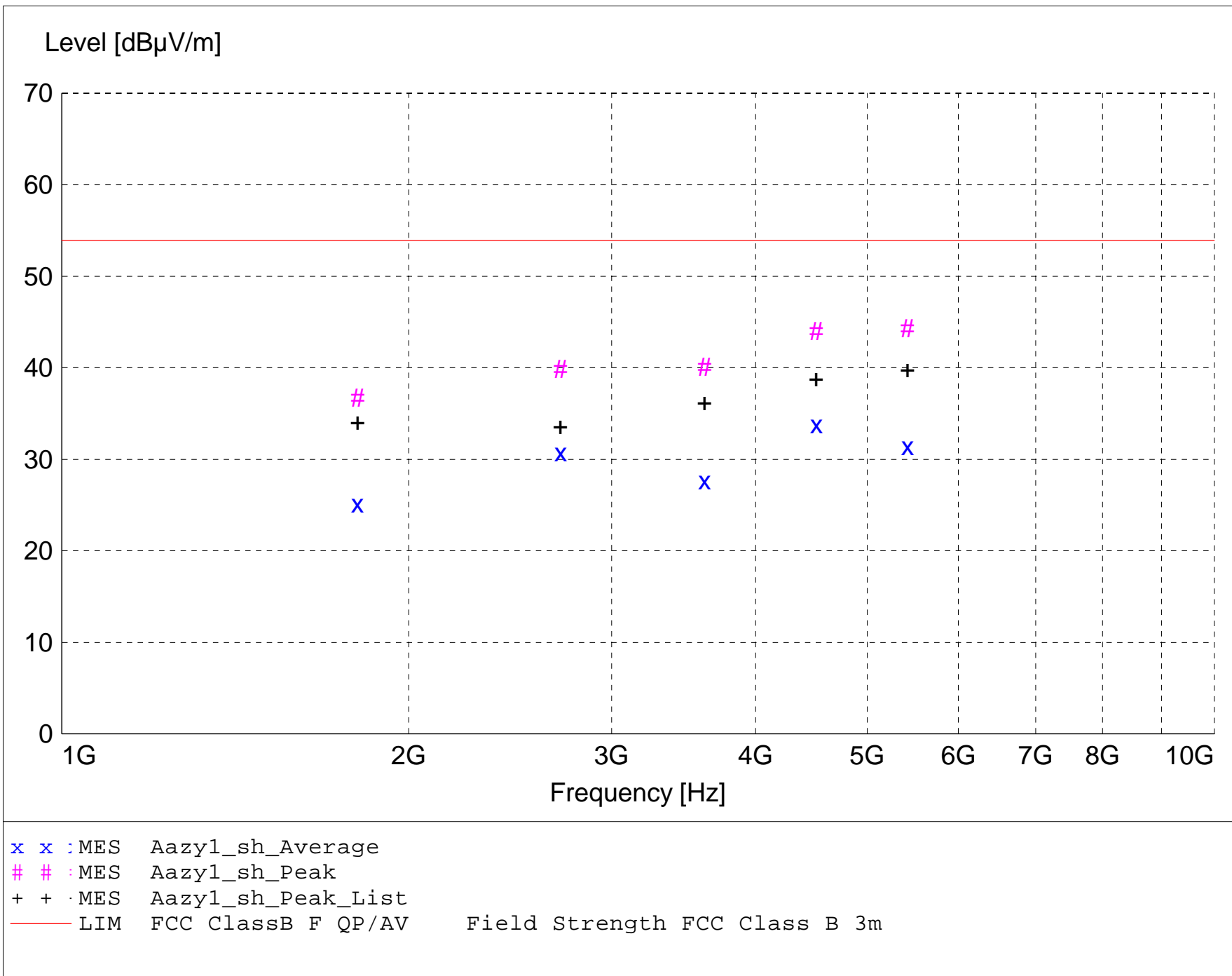
Short Description: Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



MEASUREMENT RESULT: "Aazy1_sh_Final"

9/7/2004 9:57AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
5416.800000	47.97	33.97	-37.6	44.3	53.9	9.6	1.00	0	MAX PEAK	6th Harmonic
4514.000000	49.18	32.33	-37.6	43.9	53.9	10.0	1.00	90	MAX PEAK	5th Harmonic
3611.200000	47.28	31.51	-38.7	40.1	53.9	13.8	1.00	0	MAX PEAK	4th Harmonic
2708.400000	50.53	29.21	-39.9	39.8	53.9	14.1	1.10	110	MAX PEAK	3rd Harmonic
1805.600000	50.01	26.44	-39.8	36.7	53.9	17.2	1.10	45	MAX PEAK	2nd Harmonic
4514.000000	39.01	32.33	-37.6	33.8	53.9	20.1	1.00	90	AVERAGE	5th Harmonic
5416.800000	35.01	33.97	-37.6	31.4	53.9	22.5	1.00	0	AVERAGE	6th Harmonic
2708.400000	41.41	29.21	-39.9	30.7	53.9	23.2	1.10	110	AVERAGE	3rd Harmonic
3611.200000	34.88	31.51	-38.7	27.6	53.9	26.3	1.00	0	AVERAGE	4th Harmonic
1805.600000	38.46	26.44	-39.8	25.1	53.9	28.8	1.10	45	AVERAGE	2nd Harmonic

FCC Part 15 Class B

Electric Field Strength

EUT: R4M Plus
Manufacturer: Zebra Technologies
Operating Condition: 72 deg F; 62% R.H.
Test Site: DLS O.F. Site 3
Operator: Jason L
Test Specification: 120 VAC; 60 Hz
Comment: Transmit and Receive @ 915.2 MHz Middle Channel
Date: 09/07/04

TEXT: "Site 3 6204&184 V3M"

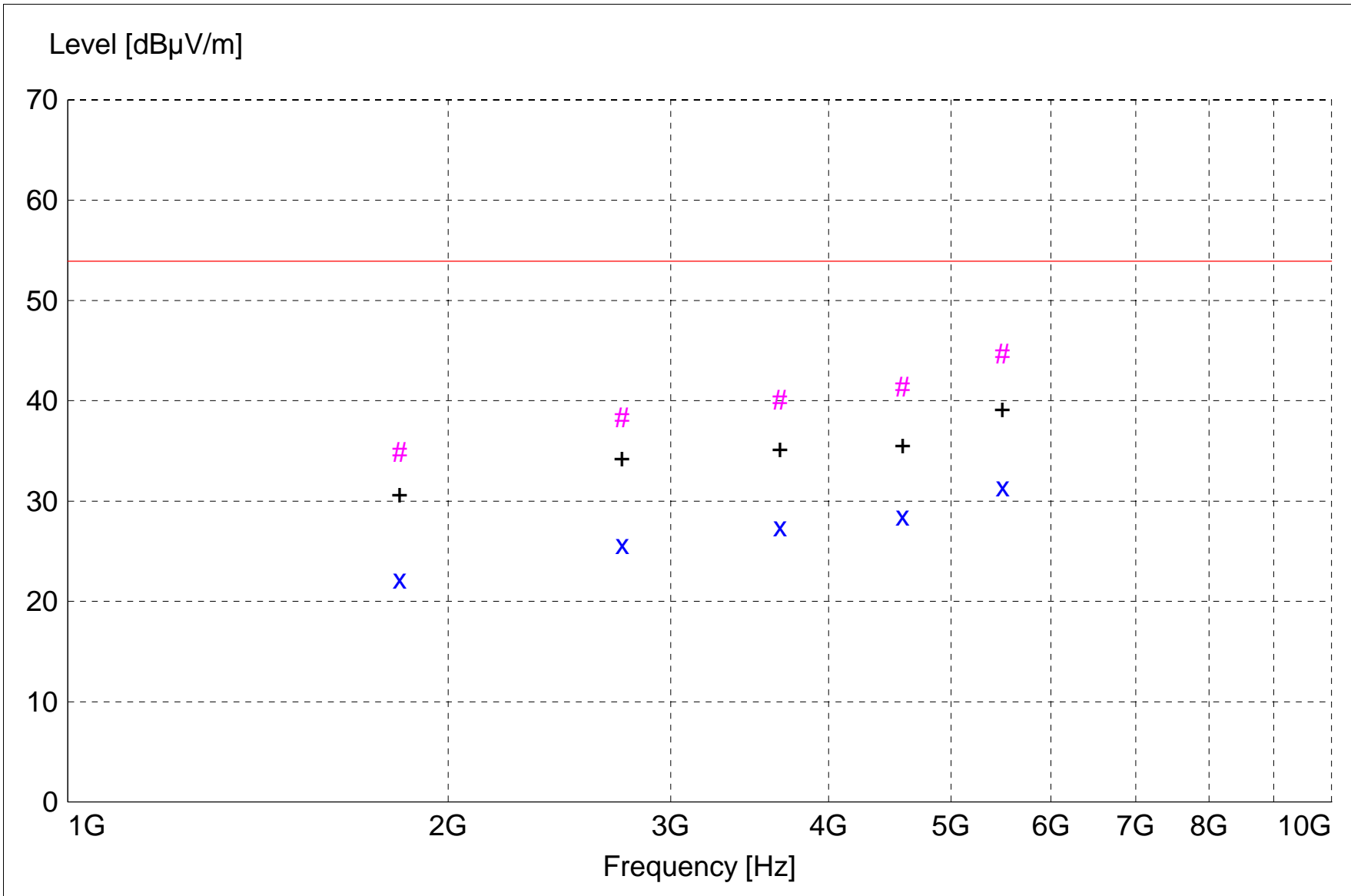
Short Description: Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



x x :MES Aazy2_sv_Average
 # # :MES Aazy2_sv_Peak
 + + :MES Aazy2_sv_Peak_List
 — LIM FCC ClassB F QP/AV Field Strength FCC Class B 3m

MEASUREMENT RESULT: "Aazy2_sv_Final"

9/7/2004 10:23AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
5491.200000	48.37	34.09	-37.8	44.7	53.9	9.2	1.00	0	MAX PEAK	6th Harmonic
4576.000000	46.58	32.45	-37.7	41.4	53.9	12.5	1.00	0	MAX PEAK	5th Harmonic
3660.800000	47.28	31.65	-38.8	40.1	53.9	13.8	1.00	0	MAX PEAK	4th Harmonic
2745.600000	48.63	29.34	-39.7	38.3	53.9	15.6	1.00	45	MAX PEAK	3rd Harmonic
1830.400000	47.83	26.55	-39.6	34.8	53.9	19.1	1.00	110	MAX PEAK	2nd Harmonic
5491.200000	35.06	34.09	-37.8	31.4	53.9	22.5	1.00	0	AVERAGE	6th Harmonic
4576.000000	33.74	32.45	-37.7	28.5	53.9	25.4	1.00	0	AVERAGE	5th Harmonic
3660.800000	34.63	31.65	-38.8	27.4	53.9	26.5	1.00	0	AVERAGE	4th Harmonic
2745.600000	36.00	29.34	-39.7	25.7	53.9	28.2	1.00	45	AVERAGE	3rd Harmonic
1830.400000	35.25	26.55	-39.6	22.2	53.9	31.7	1.00	110	AVERAGE	2nd Harmonic

FCC Part 15 Class B

Electric Field Strength

EUT: R4M Plus
Manufacturer: Zebra Technologies
Operating Condition: 72 deg F; 62% R.H.
Test Site: DLS O.F. Site 3
Operator: Jason L
Test Specification: 120 VAC; 60 Hz
Comment: Transmit and Receive @ 915.2 MHz Middle Channel
Date: 09/07/04

TEXT: "Site 3 6204&184 H3M"

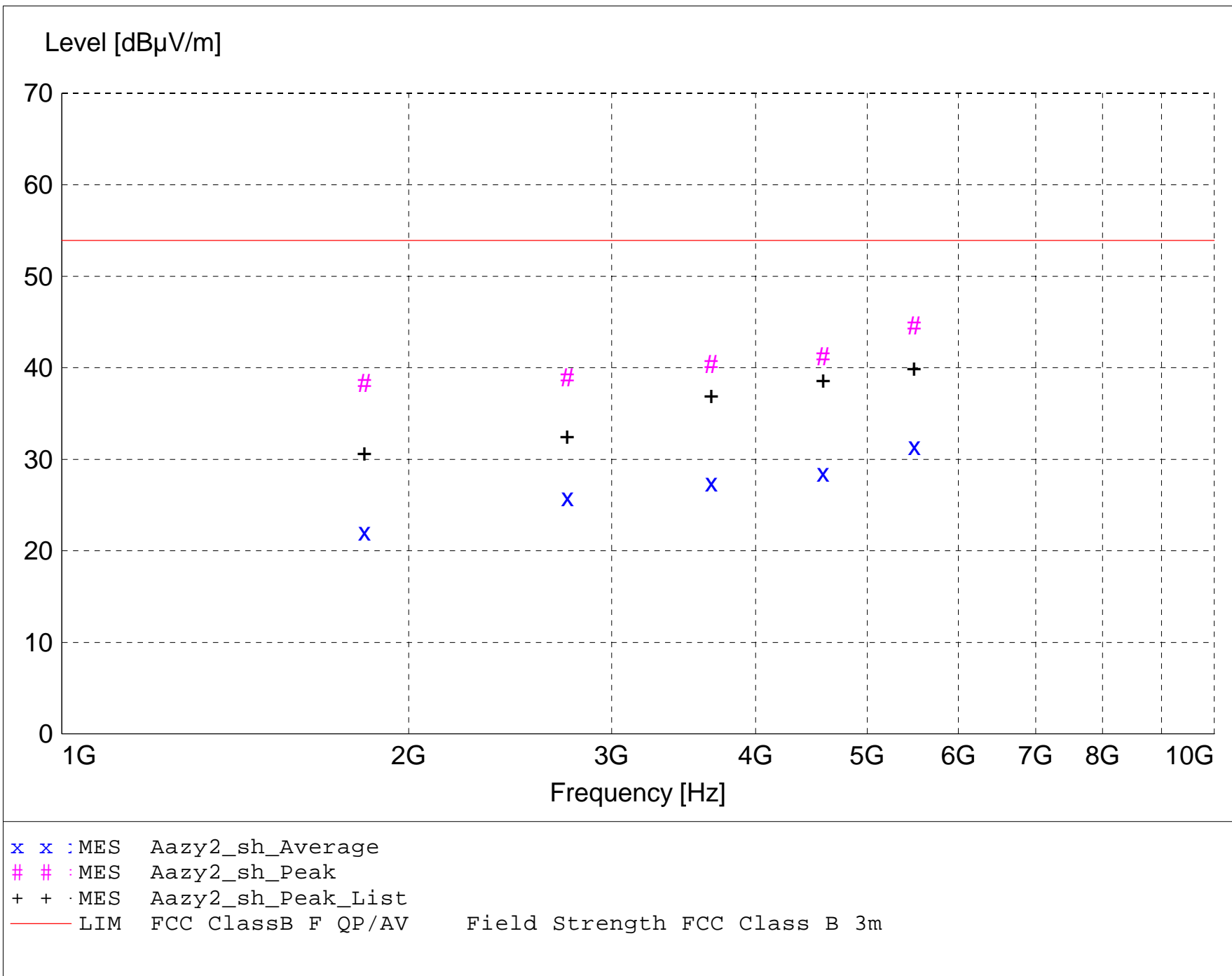
Short Description: Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



MEASUREMENT RESULT: "Aazy2_sh_Final"

9/7/2004 10:21AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dB μ V	Factor	Loss	Level	dB μ V/m	dB	Ant.	Angle	Detector	
		dB μ V/m	dB	dB μ V/m	dB μ V/m		m	deg		
5491.200000	48.23	34.09	-37.8	44.6	53.9	9.3	1.00	0	MAX PEAK	6th Harmonic
4576.000000	46.43	32.45	-37.7	41.2	53.9	12.7	1.00	0	MAX PEAK	5th Harmonic
3660.800000	47.56	31.65	-38.8	40.4	53.9	13.5	1.00	0	MAX PEAK	4th Harmonic
2745.600000	49.32	29.34	-39.7	39.0	53.9	14.9	1.00	110	MAX PEAK	3rd Harmonic
1830.400000	51.31	26.55	-39.6	38.3	53.9	15.6	1.00	170	MAX PEAK	2nd Harmonic
5491.200000	35.05	34.09	-37.8	31.4	53.9	22.5	1.00	0	AVERAGE	6th Harmonic
4576.000000	33.74	32.45	-37.7	28.5	53.9	25.4	1.00	0	AVERAGE	5th Harmonic
3660.800000	34.61	31.65	-38.8	27.4	53.9	26.5	1.00	0	AVERAGE	4th Harmonic
2745.600000	36.19	29.34	-39.7	25.8	53.9	28.1	1.00	110	AVERAGE	3rd Harmonic
1830.400000	35.08	26.55	-39.6	22.1	53.9	31.8	1.00	170	AVERAGE	2nd Harmonic

FCC Part 15 Class B

Electric Field Strength

EUT: R4M Plus
Manufacturer: Zebra Technologies
Operating Condition: 73 deg F; 60% R.H.
Test Site: DLS O.F. Site 3
Operator: Jason L
Test Specification: 120 VAC; 60 Hz
Comment: Transmit and Receive @ 927.8 MHz High Channel
Date: 09/07/04

TEXT: "Site 3 6204&184 V3M"

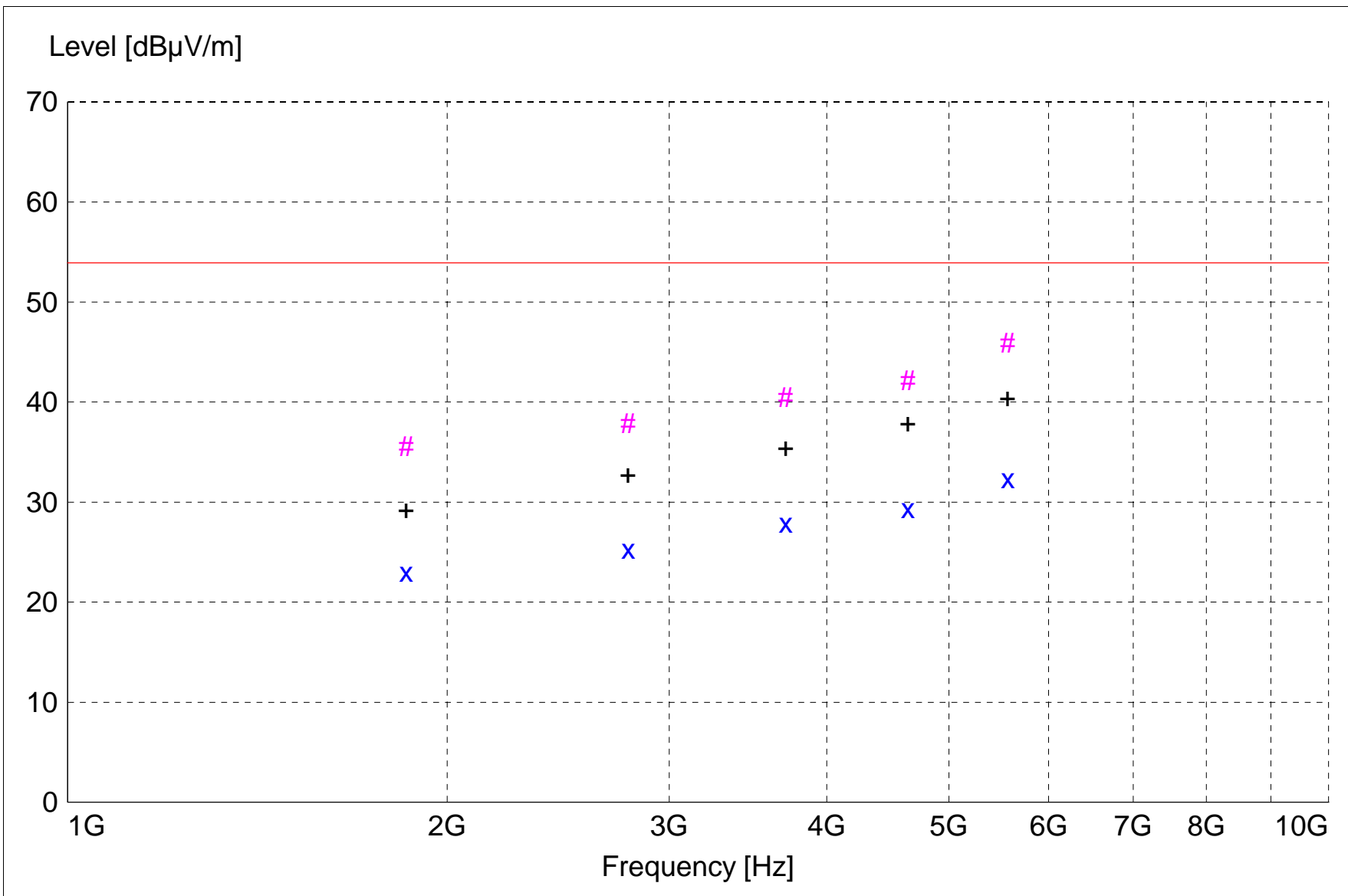
Short Description: Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



x x :MES Aazy3_sv_Average
 # # :MES Aazy3_sv_Peak
 + + :MES Aazy3_sv_Peak_List
 — LIM FCC ClassB F QP/AV Field Strength FCC Class B 3m

MEASUREMENT RESULT: "Aazy3_sv_Final"

9/7/2004 10:34AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
5565.600000	49.18	34.14	-37.4	45.9	53.9	8.0	1.00	0	MAX PEAK	6th Harmonic
4638.000000	47.28	32.58	-37.7	42.2	53.9	11.7	1.00	0	MAX PEAK	5th Harmonic
3710.400000	47.42	31.79	-38.7	40.5	53.9	13.4	1.00	90	MAX PEAK	4th Harmonic
2782.800000	47.97	29.46	-39.6	37.9	53.9	16.0	1.00	110	MAX PEAK	3rd Harmonic
1855.200000	48.37	26.66	-39.5	35.5	53.9	18.4	1.00	110	MAX PEAK	2nd Harmonic
5565.600000	35.59	34.14	-37.4	32.3	53.9	21.6	1.00	0	AVERAGE	6th Harmonic
4638.000000	34.48	32.58	-37.7	29.4	53.9	24.5	1.00	0	AVERAGE	5th Harmonic
3710.400000	34.85	31.79	-38.7	27.9	53.9	26.0	1.00	90	AVERAGE	4th Harmonic
2782.800000	35.37	29.46	-39.6	25.3	53.9	28.6	1.00	110	AVERAGE	3rd Harmonic
1855.200000	35.81	26.66	-39.5	23.0	53.9	30.9	1.00	110	AVERAGE	2nd Harmonic

FCC Part 15 Class B

Electric Field Strength

EUT: R4M Plus
Manufacturer: Zebra Technologies
Operating Condition: 73 deg F; 60% R.H.
Test Site: DLS O.F. Site 3
Operator: Jason L
Test Specification: 120 VAC; 60 Hz
Comment: Transmit and Receive @ 927.8 MHz High Channel
Date: 09/07/04

TEXT: "Site 3 6204&184 H3M"

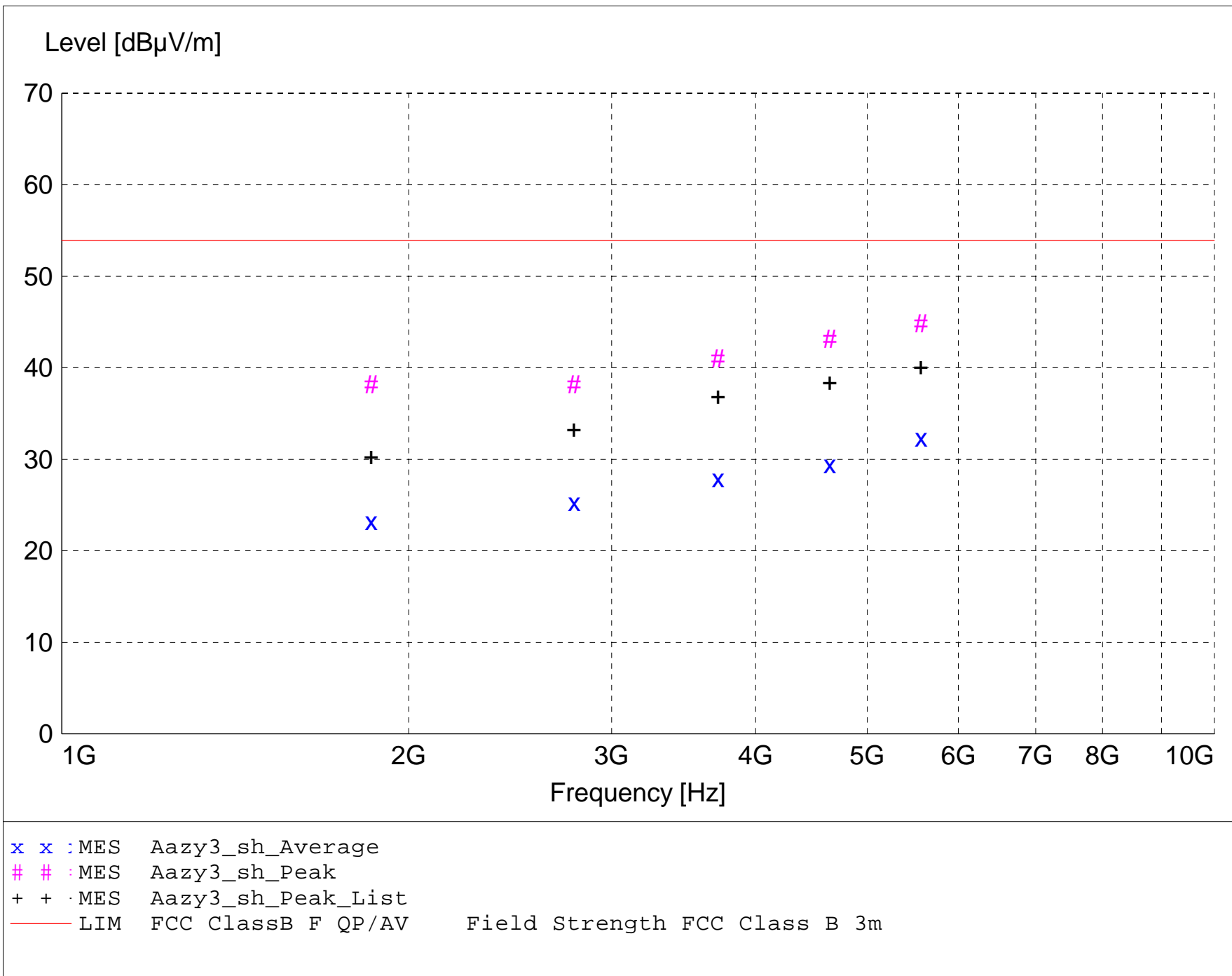
Short Description: Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- ETS 3115 SN: 6204

Pre-Amps ---

1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 682425
10 - 18 GHz -- Miteq AMF-6F-100200-50-10P SN: 668382

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



MEASUREMENT RESULT: "Aazy3_sh_Final"

9/7/2004 10:44AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level	dBµV/m	dB	Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m		m	deg		
5565.600000	48.10	34.14	-37.4	44.8	53.9	9.1	1.00	0	MAX PEAK	6th Harmonic
4638.000000	48.24	32.58	-37.7	43.1	53.9	10.8	1.00	0	MAX PEAK	5th Harmonic
3710.400000	47.97	31.79	-38.7	41.0	53.9	12.9	1.00	0	MAX PEAK	4th Harmonic
1855.200000	51.05	26.66	-39.5	38.2	53.9	15.7	1.10	110	MAX PEAK	2nd Harmonic
2782.800000	48.23	29.46	-39.6	38.1	53.9	15.8	1.00	90	MAX PEAK	3rd Harmonic
5565.600000	35.59	34.14	-37.4	32.3	53.9	21.6	1.00	0	AVERAGE	6th Harmonic
4638.000000	34.52	32.58	-37.7	29.4	53.9	24.5	1.00	0	AVERAGE	5th Harmonic
3710.400000	34.84	31.79	-38.7	27.9	53.9	26.0	1.00	0	AVERAGE	4th Harmonic
2782.800000	35.35	29.46	-39.6	25.2	53.9	28.7	1.00	90	AVERAGE	3rd Harmonic
1855.200000	36.02	26.66	-39.5	23.2	53.9	30.7	1.10	110	AVERAGE	2nd Harmonic



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

20 dB BANDWIDTH GRAPHS

PART 15.247



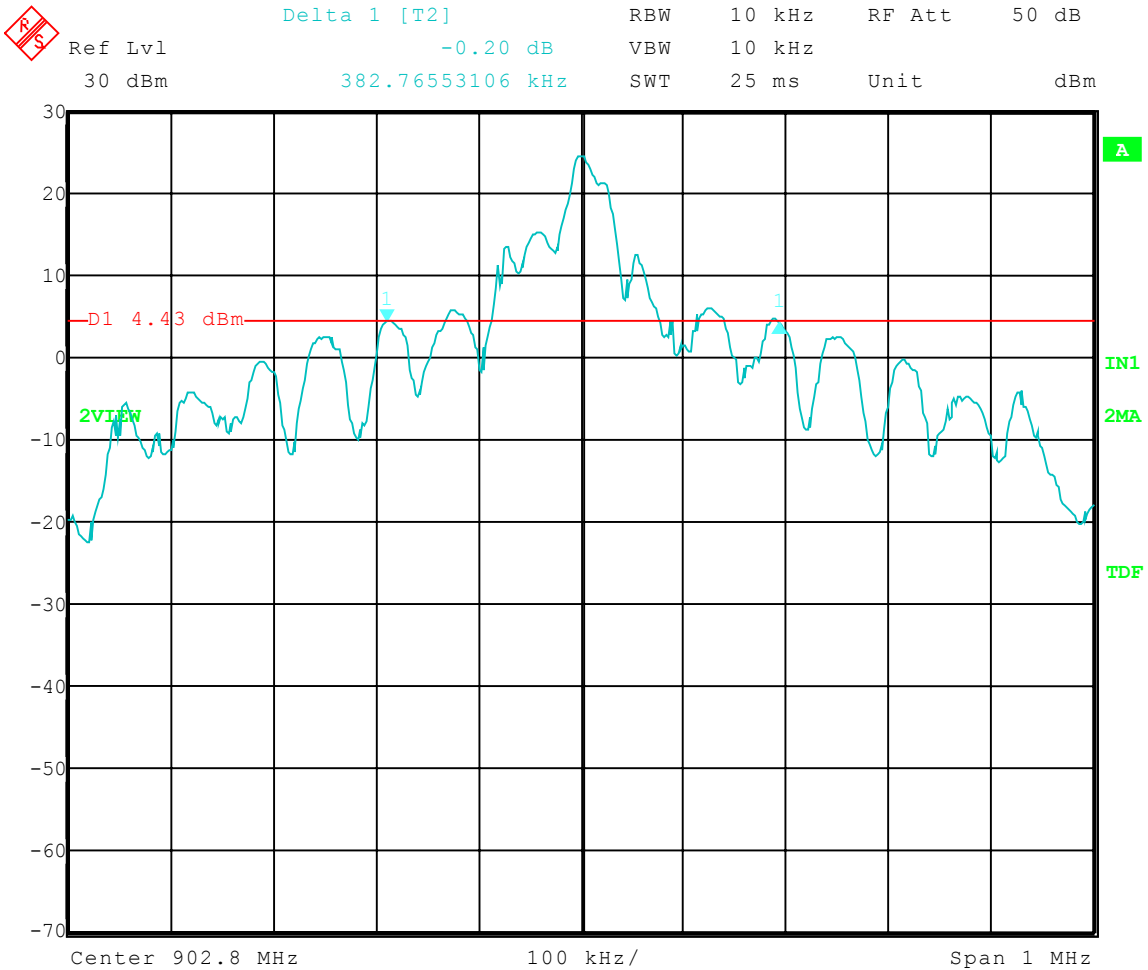
Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
 EUT: R4M Plus
 Test: 20 dB Bandwidth - Conducted
 Operator: Jason L.
 Comment: Low Channel: Frequency – 902.80 MHz

20 dB Bandwidth = 382.77 kHz



Date: 2.AUG.2004 12:03:48



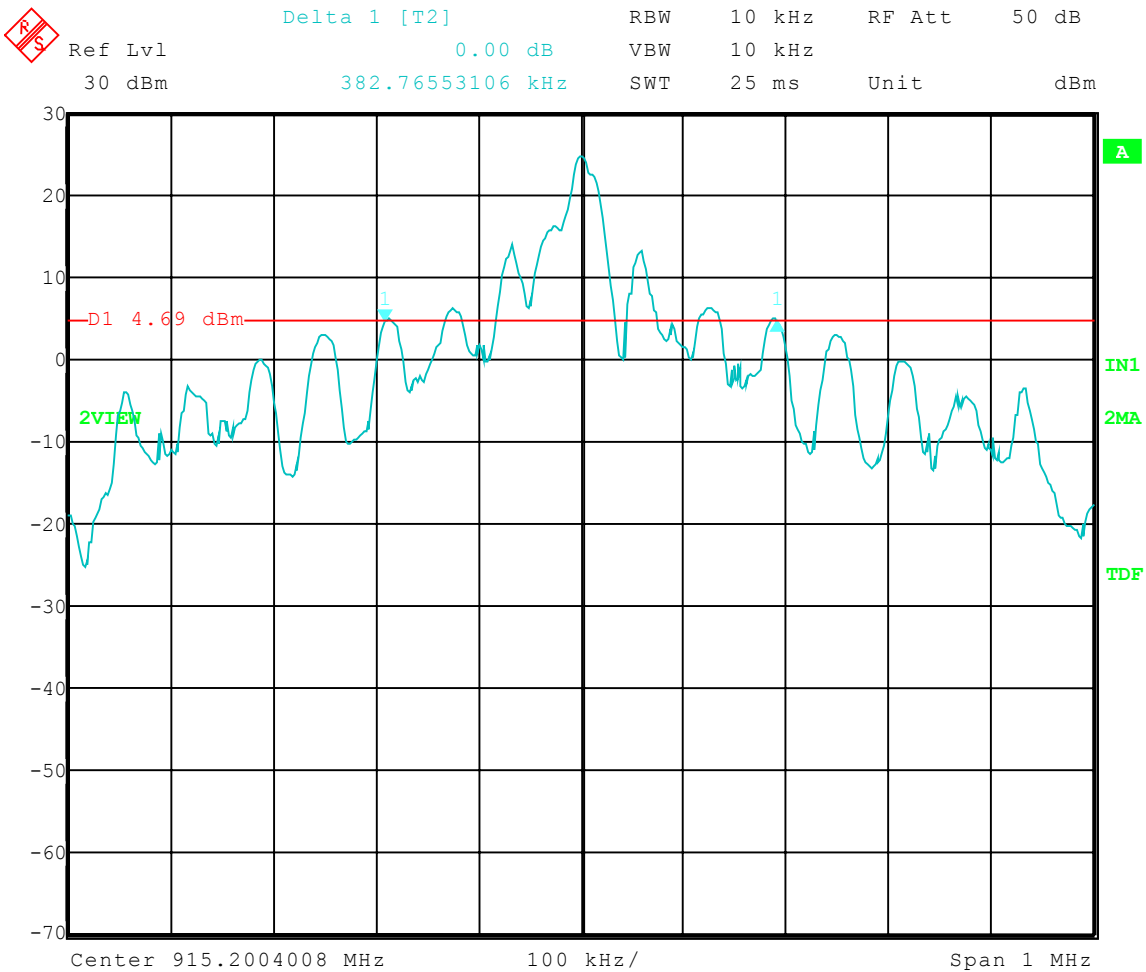
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
EUT: R4M Plus
Test: 20 dB Bandwidth - Conducted
Operator: Jason L.
Comment: Middle Channel: Frequency – 915.20 MHz

20 dB Bandwidth = 382.77 kHz





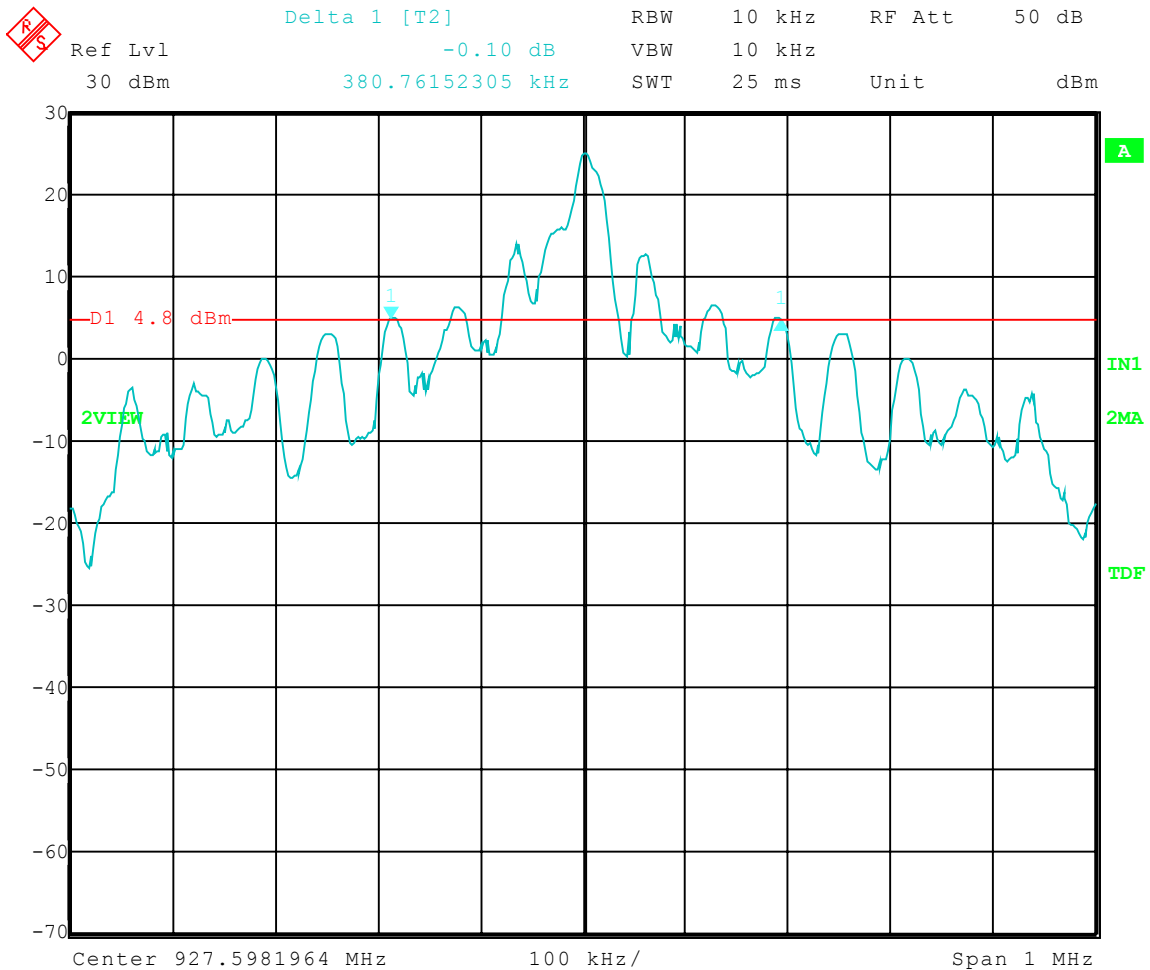
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
EUT: R4M Plus
Test: 20 dB Bandwidth - Conducted
Operator: Jason L.
Comment: High Channel: Frequency – 927.60 MHz

20 dB Bandwidth = 380.76 kHz



Date: 2.AUG.2004 11:57:22



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

CARRIER FREQUENCY SEPARATION GRAPH(S)

PART 15.247



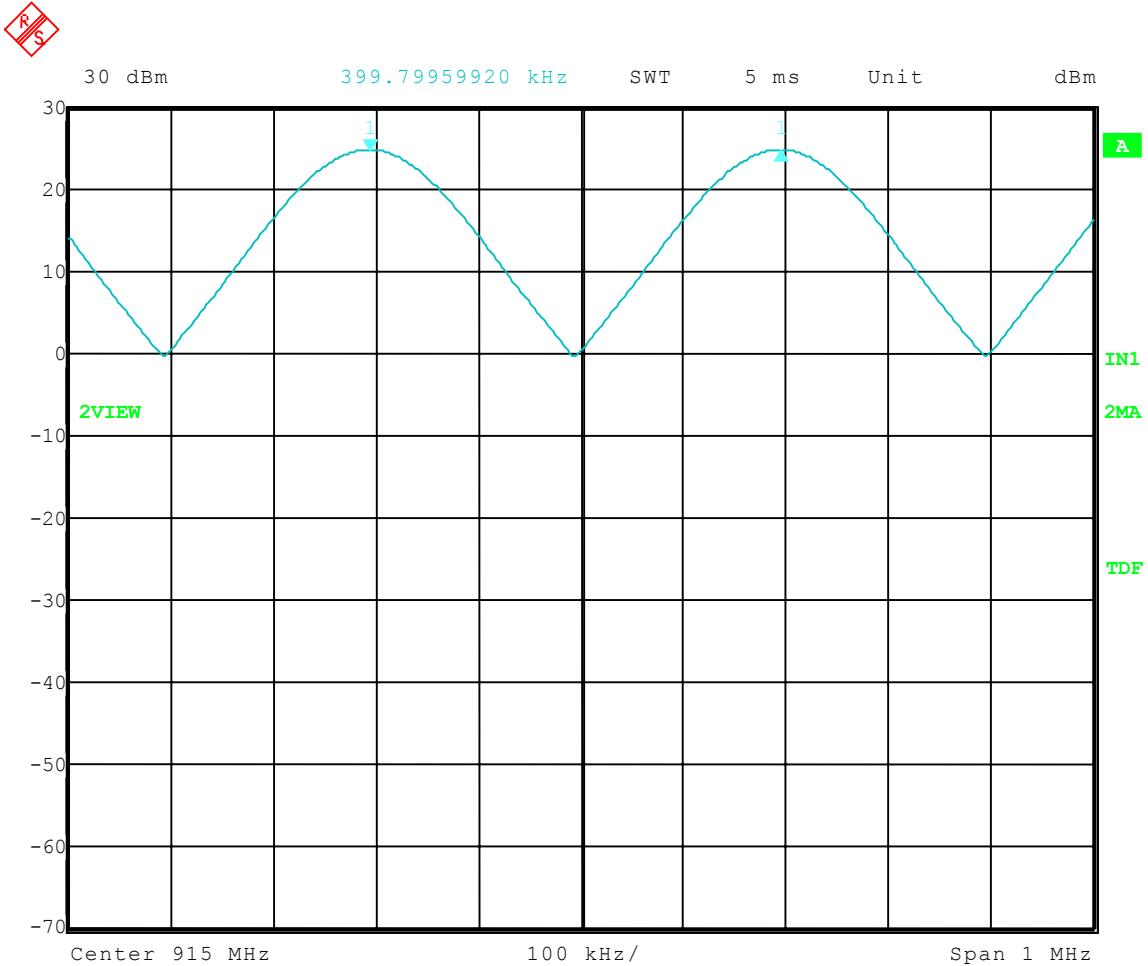
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
EUT: R4M Plus
Test: Carrier Frequency Separation - Conducted
Operator: Jason L.
Comment: Frequency Hopping On

Carrier Freq Separation = 400 kHz



Date: 2.AUG.2004 12:15:23



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

NUMBER OF HOPPING FREQUENCIES GRAPH(S)

PART 15.247



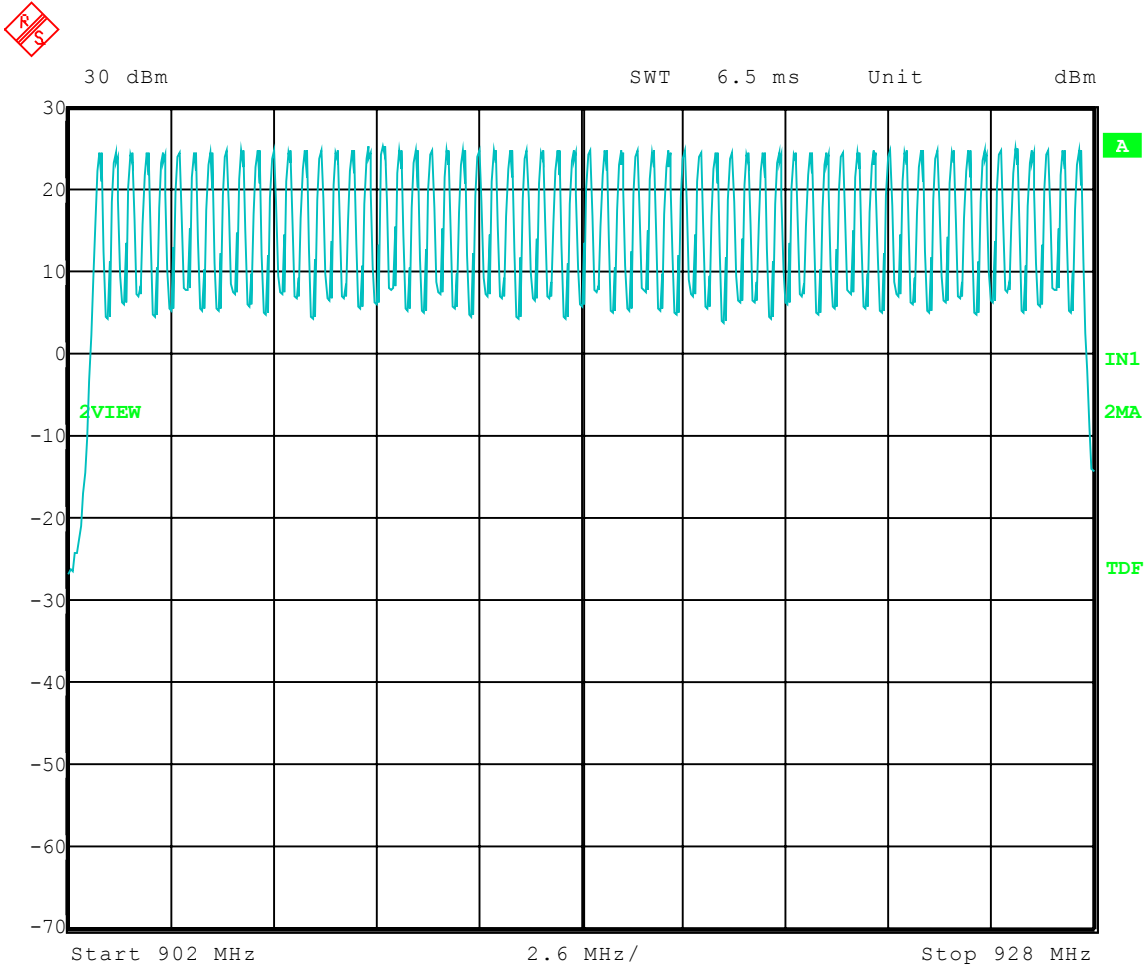
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
EUT: R4M Plus
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: 2.AUG.2004 12:16:58



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TIME OF OCCUPANCY GRAPHS

PART 15.247



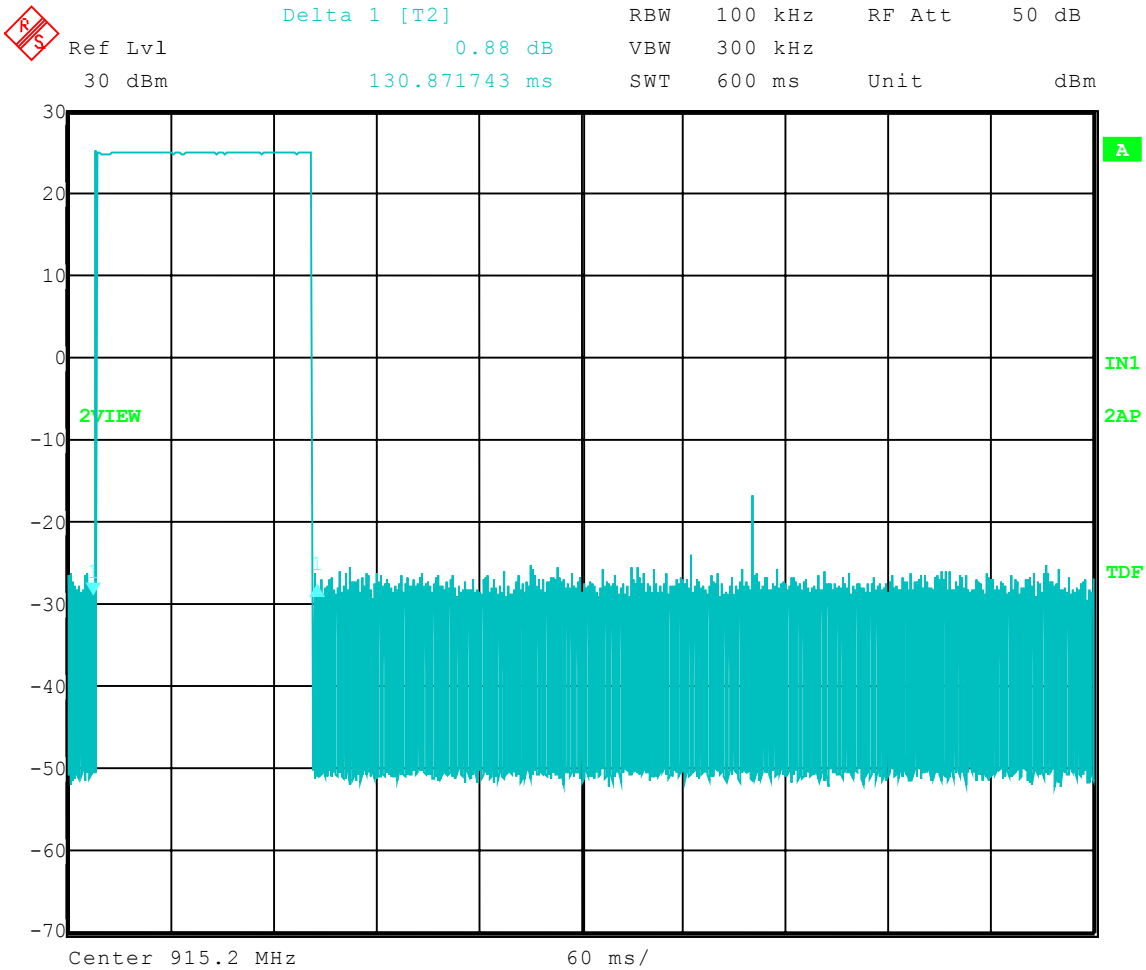
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
EUT: R4M Plus
Test: Dwell Time - Conducted
Operator: Jason L.
Comment: Middle Channel - Hopping Mode On

Dwell Time = 130.87 mS



Date: 2.AUG.2004 13:19:03



Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

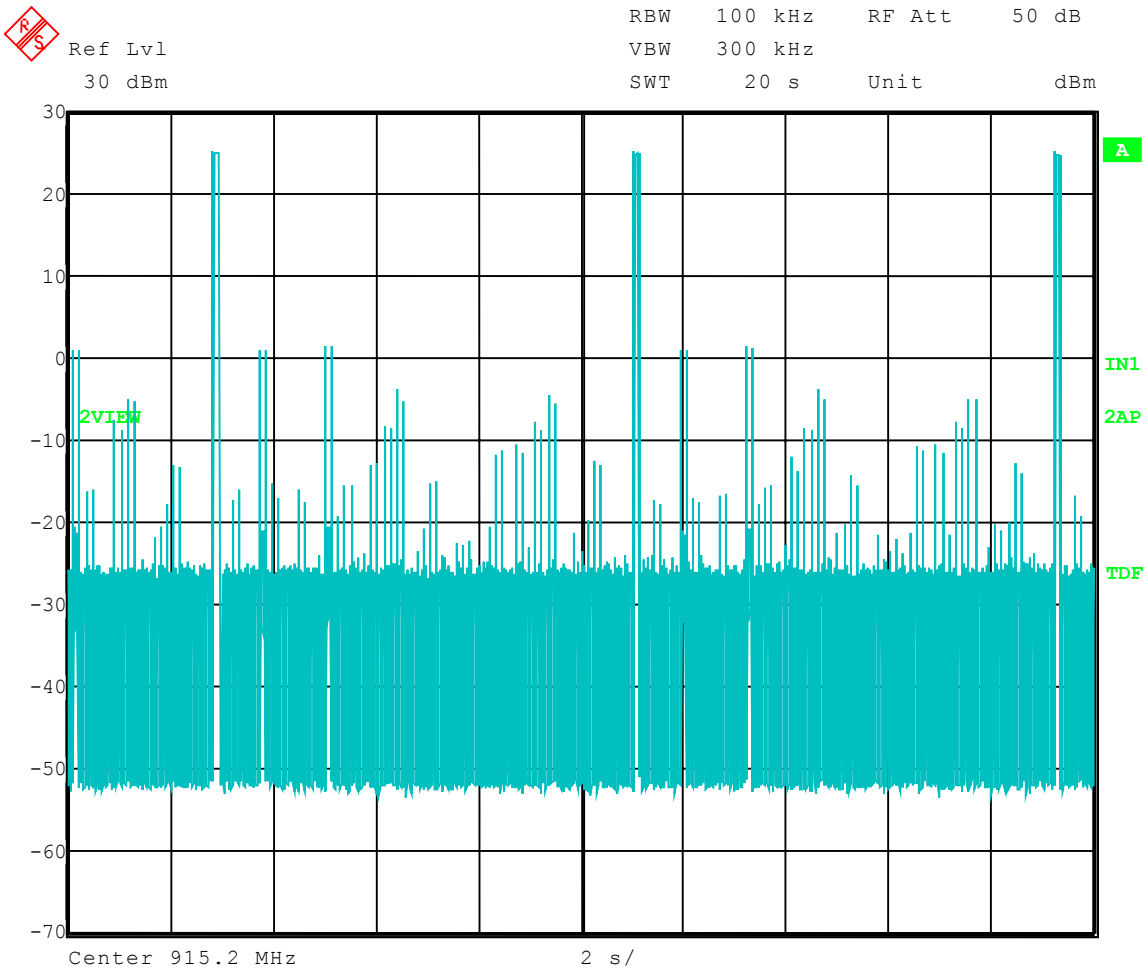
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 8-2-04
 EUT: R4M Plus
 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 = 3
 Dwell Time in 20 Sec = Time Slot Length X Times On in 20 s
0.393 Seconds = 130.87 ms X 3



Date: 2.AUG.2004 13:21:10



Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

CONDUCTED PEAK OUTPUT POWER GRAPHS

PART 15.247



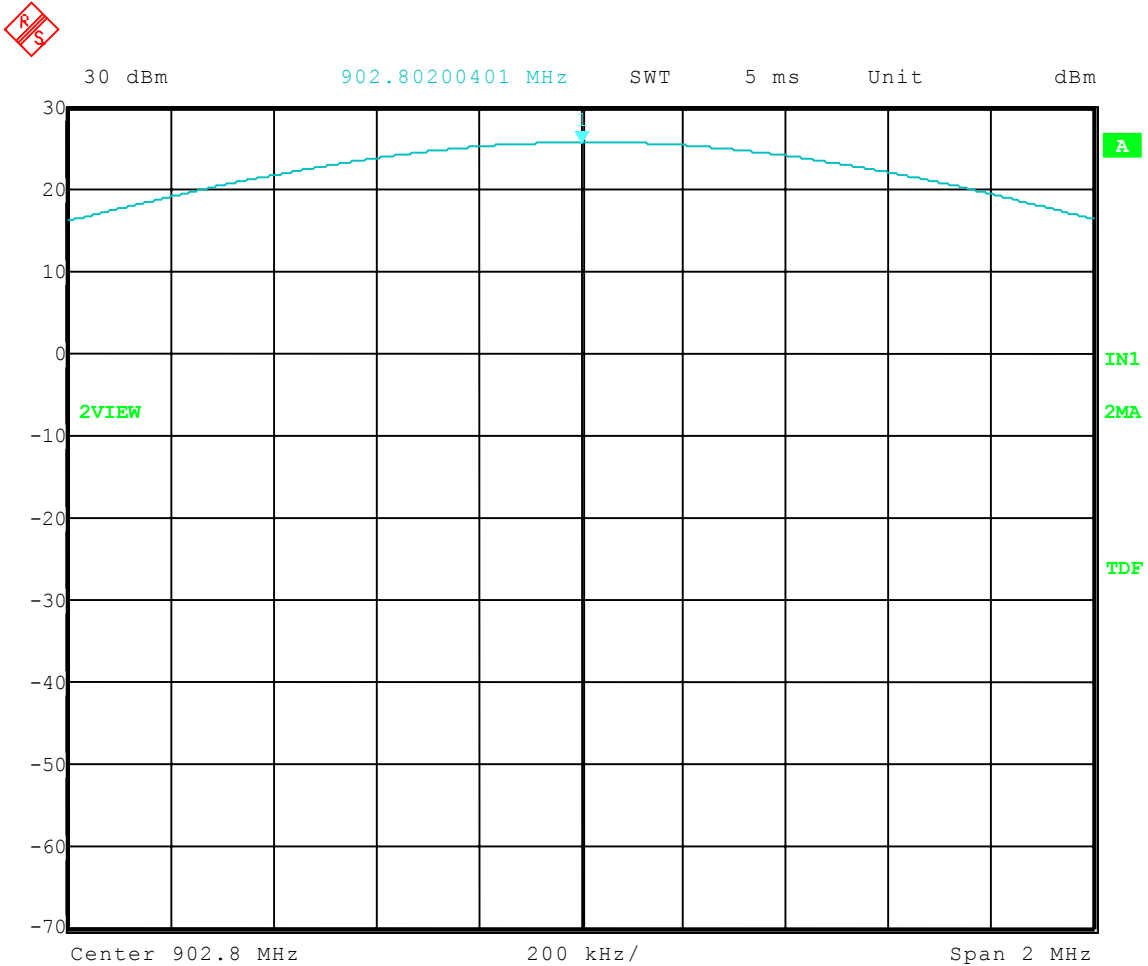
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
Company: Zebra Technologies
EUT: R4M Plus
Test: Peak Output Power - Conducted
Operator: Jason L.
Comment: Low Channel: Frequency – 902.80 MHz

Peak Output Power = 25.67 dBm = 369.0 mW



Date: 7.SEP.2004 08:59:48



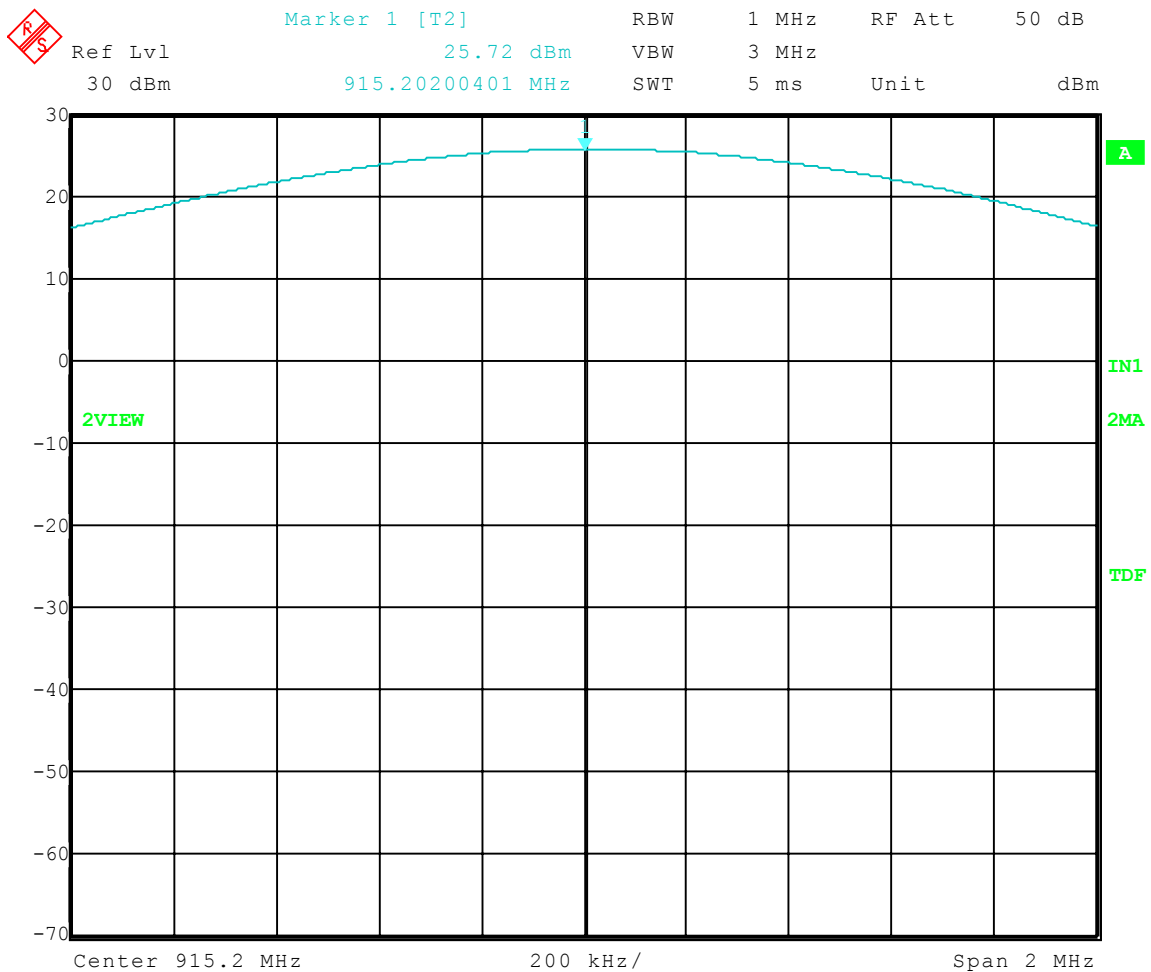
Company: Zebra Technologies Corporation
 Model Tested: Z4M
 Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
 Company: Zebra Technologies
 EUT: R4M Plus
 Test: Peak Output Power - Conducted
 Operator: Jason L.
 Comment: Middle Channel: Frequency – 915.20 MHz

Peak Output Power = 25.72 dBm = 373.3 mW



Date: 7.SEP.2004 09:01:43



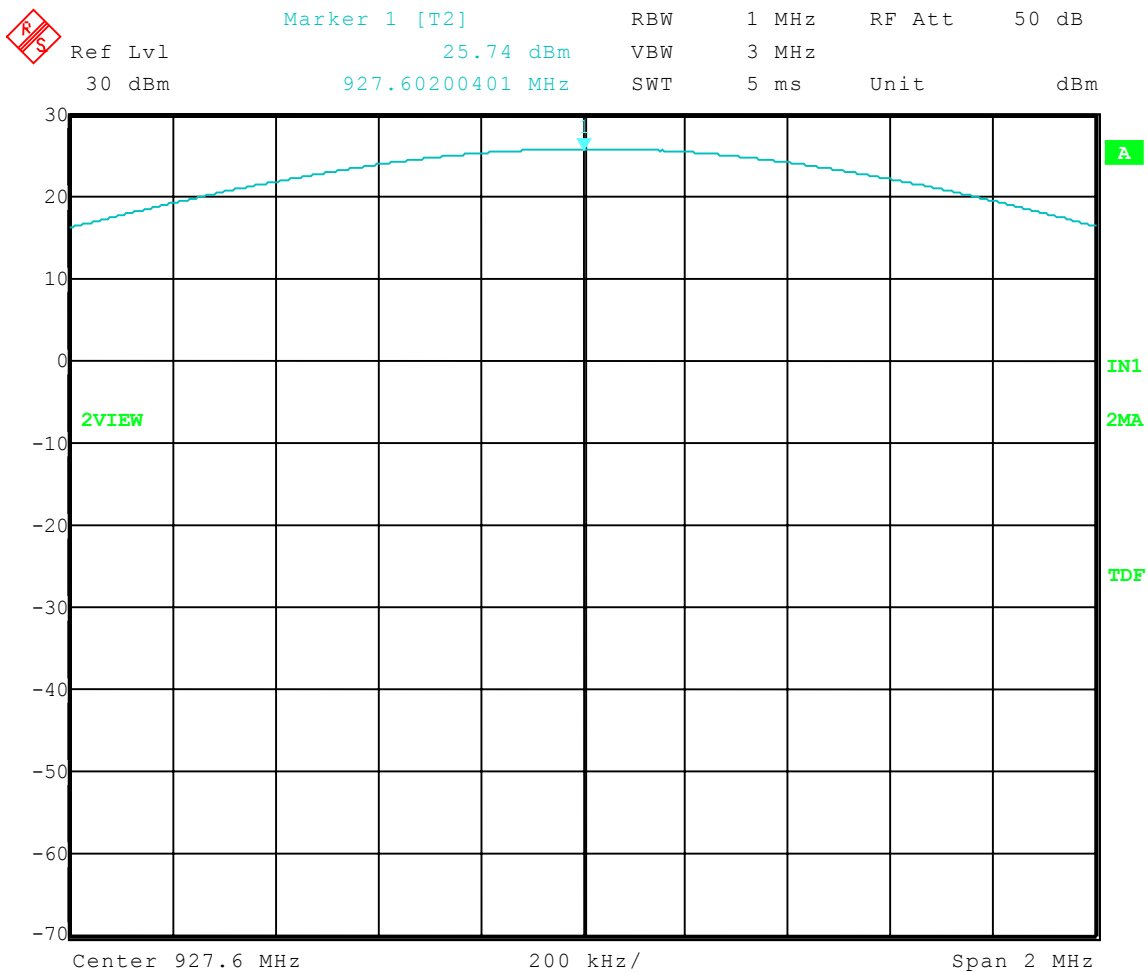
Company: Zebra Technologies Corporation
Model Tested: Z4M
Report Number: 10925

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 9-7-04
Company: Zebra Technologies
EUT: R4M Plus
Test: Peak Output Power - Conducted
Operator: Jason L.
Comment: High Channel: Frequency – 927.6 MHz

Peak Output Power = 25.74 dBm = 375.0 mW



Date: 7.SEP.2004 09:03:43