Zebra Technologies Corporation

TEST REPORT FOR

WherePort III
Model: WPT-3200

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.207, 15.209
and
RSS 210 Issue 8

Report No.: 94067-5

Date of issue: February 21, 2013

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Zebra Technologies Corporation
333 Corporate Woods Parkway
Vernon Hills, IL 60061

Representative: Gus Medina

REPORT PREPARED BY:

Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 94067

DATE OF EQUIPMENT RECEIPT: February 12, 2013
DATE(S) OF TESTING: February 12-14, 2013

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Mariposa A	US0103	SL2-IN-E-1147R	3082A-2	90477	A-0136
Mariposa D	US0103	SL2-IN-E-1147R	3082A-1	784962	A-0136

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C 15.207, 15.209 and RSS 210 Issue 8

Description	Test Procedure/Method	Results
Conducted Emissions	FCC Part 15 Subpart C Section 15.207 / ANSI C63.4 (2003)	Pass
RF Power Output	FCC Part 15 Subpart C Section 15.209 / ANSI C63.4 (2003)	Pass
Radiated Spurious Emissions	FCC Part 15 Subpart C Section 15.209 / ANSI C63.4 (2003)	Pass
-20dBc & 99% Occupied Bandwidth	FCC Part 15 Subpart C / RSS 210 Issue 8	Pass

Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

WherePort III
Manuf: Zebra Technologies Corporation
Model: WPT-3200
Serial: NA
FCC ID: NSQWPT-3200

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Switching Power Supply
Manuf: MEPOS
Model: STDA40-S10
Serial: NA

FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) 47 CFR 15C requirements for Unlicensed Radio Frequency Devices, Subpart C - Intentional Radiators.

15.207 AC Conducted Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • (209) 966-5240

Customer:	**Zebra Technologies Corporation**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**94067**	Date:	2/13/2013
Test Type:	**Conducted Emissions**	Time:	14:38:52
Equipment:	**WherePort III**	Sequence#:	1
Manufacturer:	Zebra Technologies Corporation	Tested By:	Eddie Mariscal
Model:	WPT-3200		120V 60Hz
S/N:	NA		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP00082	Attenuator	PE7002-10	6/7/2011	6/7/2013
T2	ANMACOND	Cable		8/17/2012	8/17/2014
T3	AN00374	50uH LISN-Black Lead Amplitude (dB)	8028-TS-50-BNC	10/31/2011	10/31/2013
	AN00374	50uH LISN-White Lead Amplitude (dB)	8028-TS-50-BNC	10/31/2011	10/31/2013
	AN00069	Quasi Peak Adapter	85650A	5/4/2011	5/4/2013
	AN01183	Spectrum Analyzer Display	85662A	5/4/2011	5/4/2013
	AN01184	Spectrum Analyzer	8568B	5/4/2011	5/4/2013
T4	AN02609	High Pass Filter	HE9615-150K-50-720B	3/15/2012	3/15/2014

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
WherePort III*	Zebra Technologies Corporation	WPT-3200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switching Power Supply	MEPOS	STDA40-S10	NA

Test Conditions / Notes:

EUT is placed atop a nonconductive wooden table of height 80cm. EUT is located 40cm from vertical coupling plane, and 80cm from LISN. EUT is placed in Power Level 8 and is in full operational mode.

Highest clock: 32MHz

Transmit Frequency: 127kHz
Frequencies of interest: .150-30MHz

RBW = 9kHz; VBW > 3x RBW

Atmospheric conditions:
Temperature = 18°C
Relative Humidity = 40%
Atmospheric Pressure = 97.8kPa

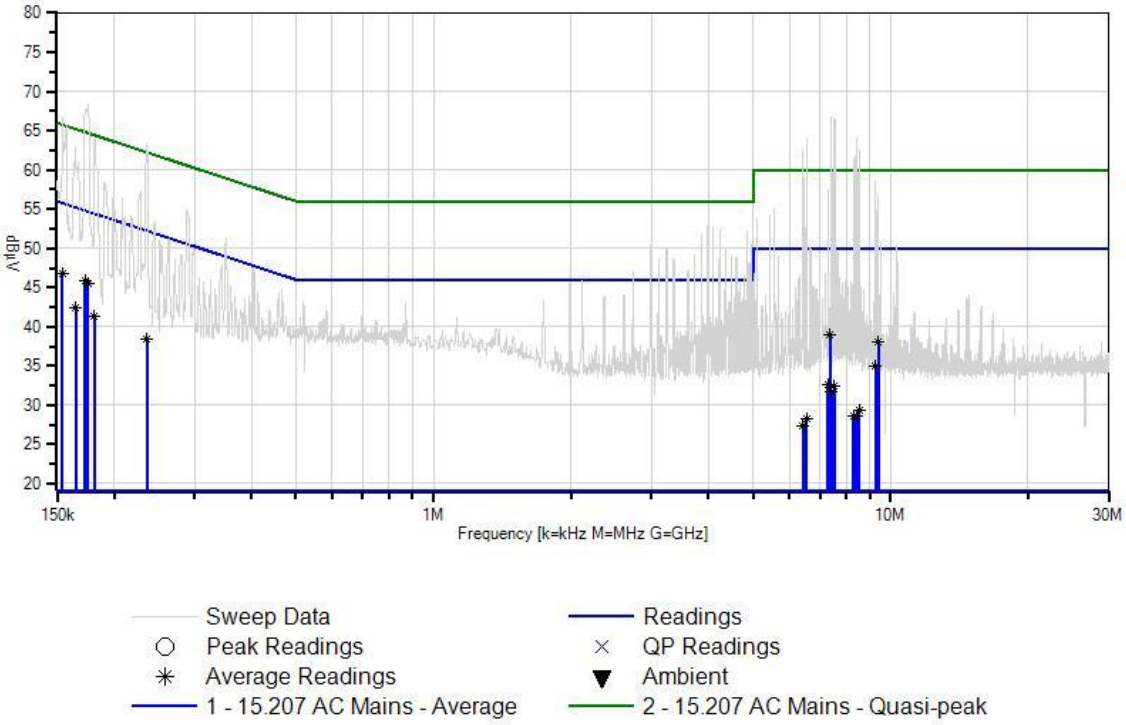
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	154.000k Ave	27.4	+10.0	+0.1	+4.8	+4.5	+0.0	46.8	55.8	-9.0	Black
^	154.363k	47.5	+10.0	+0.1	+4.8	+4.3	+0.0	66.7	55.8	+10.9	Black
3	173.000k Ave	30.5	+10.0	+0.1	+4.8	+0.4	+0.0	45.8	54.8	-9.0	Black
4	175.000k Ave	30.2	+10.0	+0.1	+4.8	+0.4	+0.0	45.5	54.7	-9.2	Black
^	175.452k	53.0	+10.0	+0.1	+4.8	+0.4	+0.0	68.3	54.7	+13.6	Black
6	7.363M Ave	27.9	+10.1	+0.8	+0.1	+0.1	+0.0	39.0	50.0	-11.0	Black
7	9.394M Ave	26.9	+10.1	+0.9	+0.1	+0.1	+0.0	38.1	50.0	-11.9	Black
^	9.400M	45.6	+10.1	+0.9	+0.1	+0.1	+0.0	56.8	50.0	+6.8	Black
9	165.000k Ave	27.1	+10.0	+0.1	+4.8	+0.4	+0.0	42.4	55.2	-12.8	Black
^	164.544k	47.7	+10.0	+0.1	+4.8	+0.4	+0.0	63.0	55.2	+7.8	Black
11	181.000k Ave	26.1	+10.0	+0.1	+4.8	+0.3	+0.0	41.3	54.4	-13.1	Black
^	181.270k	48.7	+10.0	+0.1	+4.8	+0.3	+0.0	63.9	54.4	+9.5	Black
13	236.000k Ave	23.4	+10.0	+0.2	+4.7	+0.2	+0.0	38.5	52.2	-13.7	Black
^	235.810k	48.2	+10.0	+0.2	+4.7	+0.2	+0.0	63.3	52.2	+11.1	Black
15	9.267M Ave	23.7	+10.1	+0.9	+0.1	+0.1	+0.0	34.9	50.0	-15.1	Black
^	9.274M	47.4	+10.1	+0.9	+0.1	+0.1	+0.0	58.6	50.0	+8.6	Black

17 Ave	7.301M	21.6	+10.1	+0.8	+0.1	+0.1	+0.0	32.7	50.0	-17.3	Black
^	7.301M	46.4	+10.1	+0.8	+0.1	+0.1	+0.0	57.5	50.0	+7.5	Black
19 Ave	7.541M	21.3	+10.1	+0.8	+0.1	+0.1	+0.0	32.4	50.0	-17.6	Black
^	7.535M	55.5	+10.1	+0.8	+0.1	+0.1	+0.0	66.6	50.0	+16.6	Black
21 Ave	7.418M	20.6	+10.1	+0.8	+0.1	+0.1	+0.0	31.7	50.0	-18.3	Black
^	7.418M	55.6	+10.1	+0.8	+0.1	+0.1	+0.0	66.7	50.0	+16.7	Black
23 Ave	8.535M	18.3	+10.1	+0.8	+0.1	+0.1	+0.0	29.4	50.0	-20.6	Black
^	8.535M	51.6	+10.1	+0.8	+0.1	+0.1	+0.0	62.7	50.0	+12.7	Black
25 Ave	8.409M	17.6	+10.1	+0.8	+0.1	+0.1	+0.0	28.7	50.0	-21.3	Black
^	8.409M	53.0	+10.1	+0.8	+0.1	+0.1	+0.0	64.1	50.0	+14.1	Black
27 Ave	8.292M	17.6	+10.1	+0.8	+0.1	+0.1	+0.0	28.7	50.0	-21.3	Black
^	8.292M	50.3	+10.1	+0.8	+0.1	+0.1	+0.0	61.4	50.0	+11.4	Black
29 Ave	6.553M	17.3	+10.1	+0.7	+0.1	+0.1	+0.0	28.3	50.0	-21.7	Black
^	6.553M	52.8	+10.1	+0.7	+0.1	+0.1	+0.0	63.8	50.0	+13.8	Black
31 Ave	6.427M	16.4	+10.1	+0.7	+0.1	+0.1	+0.0	27.4	50.0	-22.6	Black
^	6.427M	51.6	+10.1	+0.7	+0.1	+0.1	+0.0	62.6	50.0	+12.6	Black

Date: 2/13/2013 Time: 14:38:52 Zebra Technologies, Corp WO#: 94067
15.207 AC Mains - Average Test Lead: Black 120V 60Hz Sequence#: 1 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • (209) 966-5240

Customer: **Zebra Technologies, Corporation**
Specification: **15.207 AC Mains - Average**
Work Order #: **94067** Date: 2/13/2013
Test Type: **Conducted Emissions** Time: 15:01:05
Equipment: **WherePort III** Sequence#: 2
Manufacturer: Zebra Technologies Corporation Tested By: Eddie Mariscal
Model: WPT-3200 120V 60Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP00082	Attenuator	PE7002-10	6/7/2011	6/7/2013
T2	ANMACOND	Cable		8/17/2012	8/17/2014
	AN00374	50uH LISN-Black Lead Amplitude (dB)	8028-TS-50-BNC	10/31/2011	10/31/2013
T3	AN00374	50uH LISN-White Lead Amplitude (dB)	8028-TS-50-BNC	10/31/2011	10/31/2013
	AN00069	Quasi Peak Adapter	85650A	5/4/2011	5/4/2013
	AN01183	Spectrum Analyzer Display	85662A	5/4/2011	5/4/2013
	AN01184	Spectrum Analyzer	8568B	5/4/2011	5/4/2013
T4	AN02609	High Pass Filter	HE9615-150K-50-720B	3/15/2012	3/15/2014

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
WherePort III*	Zebra Technologies Corporation	WPT-3200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switching Power Supply	MEPOS	STDA40-S10	NA

Test Conditions / Notes:

EUT is placed atop a nonconductive wooden table of height 80cm. EUT is located 40cm from vertical coupling plane, and 80cm from LISN. EUT is placed in Power Level 8 and is in full operational mode.

Highest clock: 32MHz

Transmit Frequency: 127kHz
Frequencies of interest: .150-30MHz

RBW = 9kHz; VBW > 3 x RBW

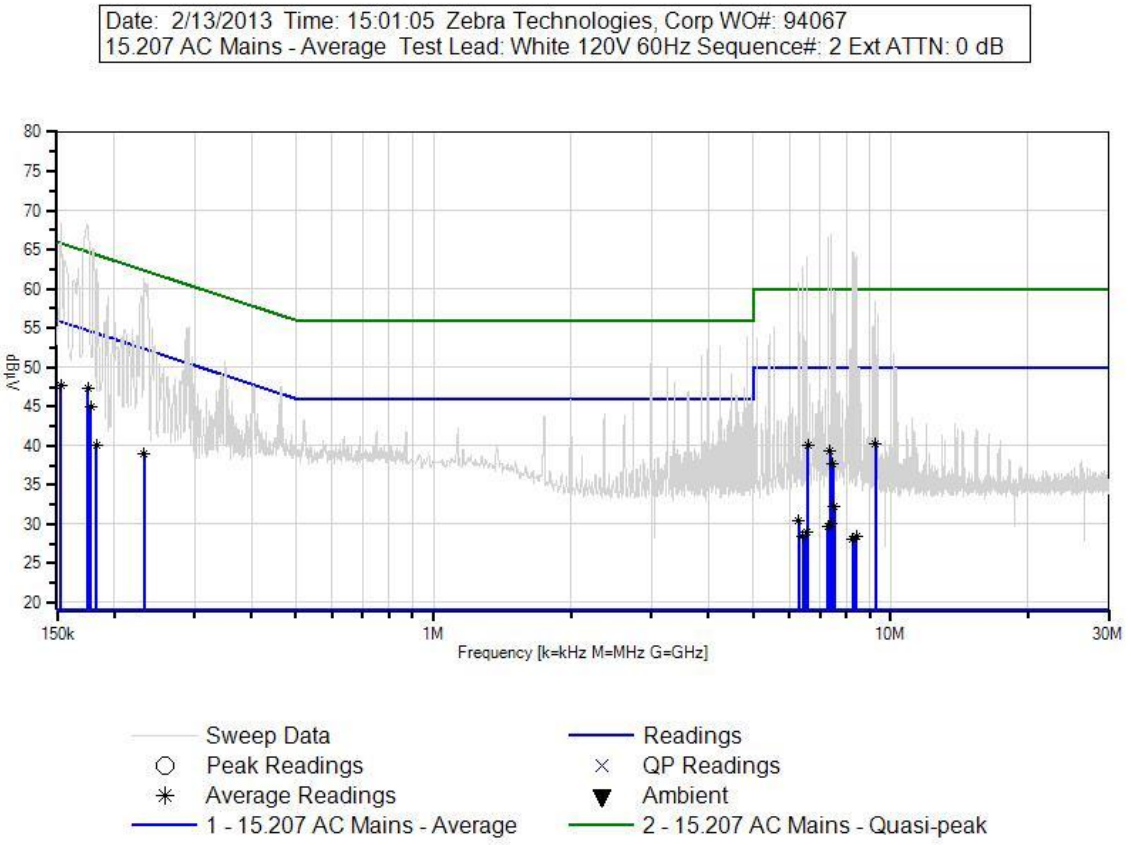
Atmospheric conditions:
Temperature = 18°C
Relative Humidity = 40%
Atmospheric Pressure = 97.8kPa

Ext Attn: 0 dB

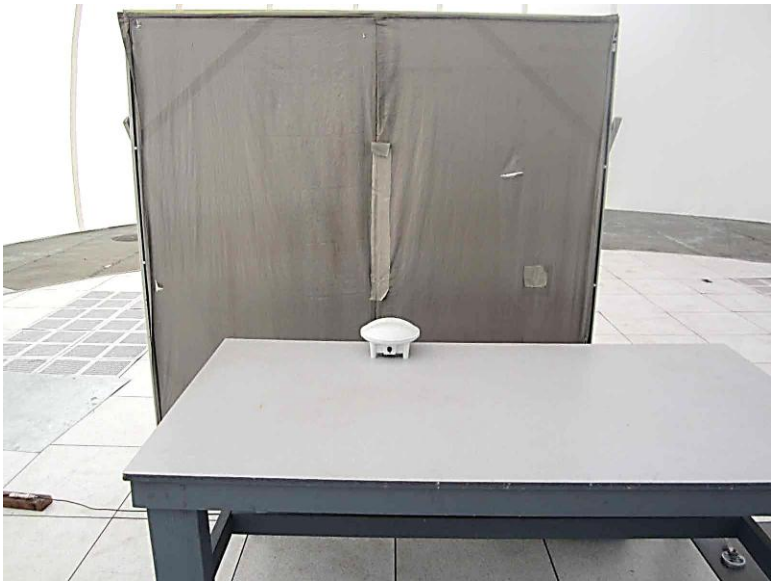
Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	175.000k Ave	32.0	+10.0	+0.1	+4.8	+0.4	+0.0	47.3	54.7	-7.4	White
2	153.000k Ave	27.5	+10.0	+0.1	+4.8	+5.2	+0.0	47.6	55.8	-8.2	White
^	152.909k	48.2	+10.0	+0.1	+4.8	+5.3	+0.0	68.4	55.8	+12.6	White
^	155.818k	45.5	+10.0	+0.1	+4.8	+3.3	+0.0	63.7	55.7	+8.0	White
5	178.000k Ave	29.8	+10.0	+0.1	+4.7	+0.3	+0.0	44.9	54.6	-9.7	White
^	174.725k	52.9	+10.0	+0.1	+4.8	+0.4	+0.0	68.2	54.7	+13.5	White
7	9.268M Ave	29.0	+10.1	+0.9	+0.1	+0.1	+0.0	40.2	50.0	-9.8	White
^	9.274M	47.3	+10.1	+0.9	+0.1	+0.1	+0.0	58.5	50.0	+8.5	White
9	6.600M Ave	29.1	+10.1	+0.7	+0.1	+0.1	+0.0	40.1	50.0	-9.9	White
10	7.366M Ave	28.3	+10.1	+0.8	+0.1	+0.1	+0.0	39.4	50.0	-10.6	White
11	7.489M Ave	26.6	+10.1	+0.8	+0.1	+0.1	+0.0	37.7	50.0	-12.3	White
12	233.000k Ave	24.0	+10.0	+0.2	+4.6	+0.2	+0.0	39.0	52.3	-13.3	White
^	232.901k	46.4	+10.0	+0.2	+4.6	+0.2	+0.0	61.4	52.3	+9.1	White
14	183.000k Ave	25.0	+10.0	+0.1	+4.7	+0.3	+0.0	40.1	54.3	-14.2	White
^	179.815k	50.1	+10.0	+0.1	+4.7	+0.3	+0.0	65.2	54.5	+10.7	White
^	183.451k	47.5	+10.0	+0.1	+4.7	+0.3	+0.0	62.6	54.3	+8.3	White
17	7.538M Ave	21.2	+10.1	+0.8	+0.1	+0.1	+0.0	32.3	50.0	-17.7	White
^	7.535M	48.9	+10.1	+0.8	+0.1	+0.1	+0.0	60.0	50.0	+10.0	White
19	6.301M Ave	19.5	+10.1	+0.7	+0.1	+0.1	+0.0	30.5	50.0	-19.5	White
^	6.301M	49.9	+10.1	+0.7	+0.1	+0.1	+0.0	60.9	50.0	+10.9	White
21	7.409M Ave	19.0	+10.1	+0.8	+0.1	+0.1	+0.0	30.1	50.0	-19.9	White
^	7.409M	55.8	+10.1	+0.8	+0.1	+0.1	+0.0	66.9	50.0	+16.9	White
23	7.292M Ave	18.7	+10.1	+0.8	+0.1	+0.1	+0.0	29.8	50.0	-20.2	White
^	7.292M	55.5	+10.1	+0.8	+0.1	+0.1	+0.0	66.6	50.0	+16.6	White

25 Ave	6.544M	18.0	+10.1	+0.7	+0.1	+0.1	+0.0	29.0	50.0	-21.0	White
^	6.544M	53.1	+10.1	+0.7	+0.1	+0.1	+0.0	64.1	50.0	+14.1	White
27 Ave	8.409M	17.4	+10.1	+0.8	+0.1	+0.1	+0.0	28.5	50.0	-21.5	White
^	8.409M	53.1	+10.1	+0.8	+0.1	+0.1	+0.0	64.2	50.0	+14.2	White
29 Ave	6.427M	17.5	+10.1	+0.7	+0.1	+0.1	+0.0	28.5	50.0	-21.5	White
^	6.427M	51.8	+10.1	+0.7	+0.1	+0.1	+0.0	62.8	50.0	+12.8	White
31 Ave	8.283M	16.9	+10.1	+0.8	+0.1	+0.1	+0.0	28.0	50.0	-22.0	White
^	8.283M	53.7	+10.1	+0.8	+0.1	+0.1	+0.0	64.8	50.0	+14.8	White



Test Setup Photos



15.209 RF Power Output

Test Data

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • (209) 966-5240

Customer: **Zebra Technologies Corporation**
Specification: **15.209 Radiated Emissions**
Work Order #: **94067** Date: 2/12/2013
Test Type: **Maximized Emissions** Time: 15:48:58
Equipment: **WherePort III** Sequence#: 1
Manufacturer: Zebra Technologies Corporation Tested By: Eddie Mariscal
Model: WPT-3200
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANMA10M	Cable		8/17/2012	8/17/2014
T2	AN00226	Loop Antenna	6502	3/28/2012	3/28/2014
T3	AN02660	Spectrum Analyzer	E4446A	8/23/2012	8/23/2014

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
WherePort III*	Zebra Technologies Corporation	WPT-3200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switching Power Supply	MEPOS	STDA40-S10	NA

Test Conditions / Notes:

EUT is placed atop nonconductive Styrofoam tablets atop a nonconductive plastic cart at a height of 1m. Nonconductive cart is placed 10m from receive antenna located off ground plane in order to minimize reflections. EUT is powered by 36VDC transformer.

Measured IAW 15.31(e): AC voltage was varied from 85% to 115% and no change in the transmitter output was detected.

EUT was investigated along three orthogonal axes and worst case was presented.

Transmit Frequency: 127kHz
Frequency of interest: 127kHz

RBW = 200Hz; VBW > 3 x RBW

Atmospheric conditions:
Temperature = 18°C
Relative Humidity = 40%
Atmospheric Pressure = 97.8kPa

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	127.004k Ave	67.2	+0.3	+10.3	+0.0		-59.1	18.7	25.5	-6.8	Vert
^	127.004k	82.8	+0.3	+10.3	+0.0		-59.1	34.3	25.5	+8.8	Vert
3	127.004k Ave	-5.9	+0.3	+10.3	+0.0		-59.1	-54.4	25.5	-79.9	Horiz

Test Setup Photos

X Axis

Y Axis

Z Axis

15.209 Radiated Spurious Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • (209) 966-5240

Customer: **Zebra Technologies Corporation**
Specification: **15.209 Radiated Emissions**
Work Order #: **94067** Date: 2/14/2013
Test Type: **Maximized Emissions** Time: 10:14:33
Equipment: **WherePort III** Sequence#: 1
Manufacturer: Zebra Technologies Corporation Tested By: Eddie Mariscal
Model: WPT-3200
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANMA10M	Cable		8/17/2012	8/17/2014
T2	AN00226	Loop Antenna	6502	3/28/2012	3/28/2014
	AN02660	Spectrum Analyzer	E4446A	8/23/2012	8/23/2014

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
WherePort III*	Zebra Technologies Corporation	WPT-3200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switching Power Supply	MEPOS	STDA40-S10	NA

Test Conditions / Notes:

The EUT is placed atop nonconductive Styrofoam tablets atop a nonconductive wooden table of height 1m. The EUT is placed 10m from receive antenna located at the center of 40' flush mounted ground plane. EUT is powered by 36VDC transformer. EUT was investigated on 3 orthogonal axes and worst case was presented.

Measured IAW 15.31(e): AC voltage was varied from 85% to 115% and no change in the transmitter output was detected.

Highest clock: 32MHz

Transmit Frequency: 127kHz
Frequency of interest: .009-30MHz

9-150kHz: RBW = 200Hz; VBW > RBW
.150-30MHz: RBW = 9kHz; VBW >RBW

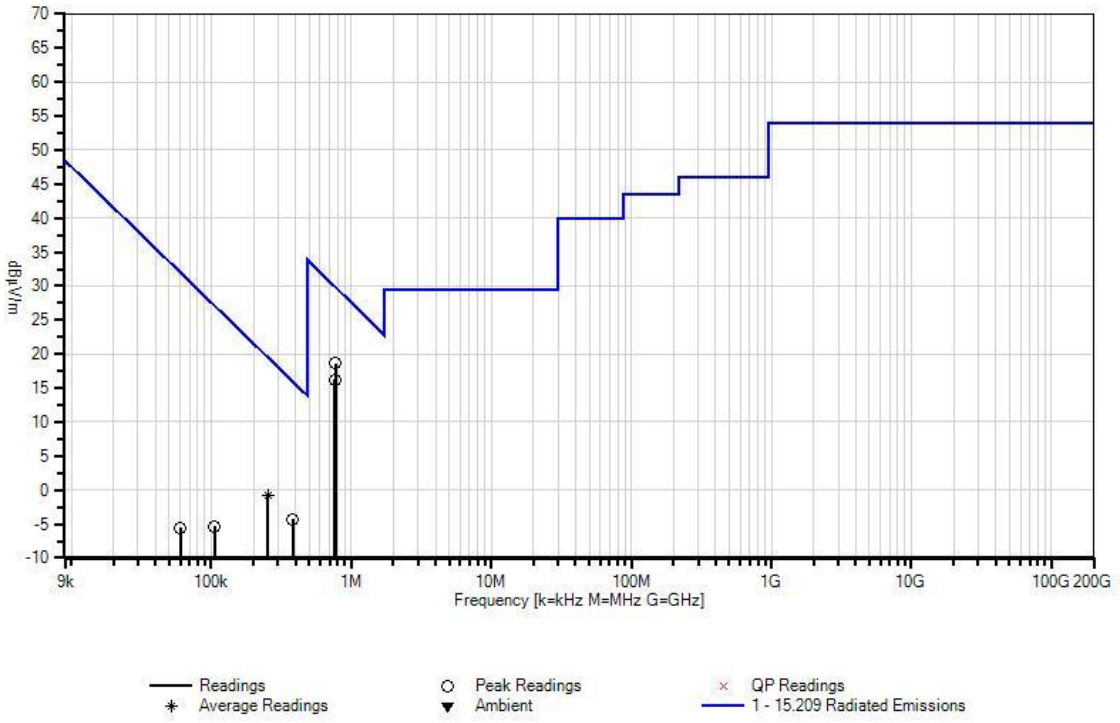
Atmospheric conditions:
Temperature = 18°C
Relative Humidity = 40%
Atmospheric Pressure = 97.8kPa

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	770.000k	27.1	+0.3	+10.4			-19.1	18.7	29.8	-11.1	Vert
2	761.900k	24.6	+0.3	+10.4			-19.1	16.2	29.9	-13.7	Vert
3	381.000k	44.8	+0.3	+9.8			-59.1	-4.2	16.0	-20.2	Vert
4	253.970k Ave	48.2	+0.3	+9.8			-59.1	-0.8	19.5	-20.3	Vert
^	253.970k	54.2	+0.3	+9.8			-59.1	5.2	19.5	-14.3	Vert
6	105.530k	43.0	+0.4	+10.4			-59.1	-5.3	27.1	-32.4	Vert
7	60.000k	42.9	+0.3	+10.4			-59.1	-5.5	32.0	-37.5	Vert

Date: 2/14/2013 Time: 10:14:33 Zebra Technologies, Corp WO#: 94067
15.209 Radiated Emissions Test Distance: 10 Meters Sequence#: 1 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • (209) 966-5240

Customer: **Zebra Technologies Corporation**
Specification: **15.209 Radiated Emissions**
Work Order #: **94067** Date: 2/13/2013
Test Type: **Maximized Emissions** Time: 13:00:21
Equipment: **WherePort III** Sequence#: 1
Manufacturer: Zebra Technologies Corporation Tested By: Eddie Mariscal
Model: WPT-3200
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANMA10M	Cable		8/17/2012	8/17/2014
	AN02660	Spectrum Analyzer	E4446A	8/23/2012	8/23/2014
T2	AN01991	Biconilog Antenna	CBL6111C	3/14/2012	3/14/2014
T3	AN00062	Preamp	8447D	6/6/2012	6/6/2014

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
WherePort III*	Zebra Technologies Corporation	WPT-3200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switching Power Supply	MEPOS	STDA40-S10	NA

Test Conditions / Notes:

The EUT is placed atop nonconductive Styrofoam tablets atop a nonconductive wooden table of height 1m. The EUT is placed 10m from receive antenna located at the center of 40' flush mounted ground plane. EUT is powered by 36VDC transformer. EUT was investigated on 3 orthogonal axes and worst case was presented.

Measured IAW 15.31(e): AC voltage was varied from 85% to 115% and no change in the transmitter output was detected.

Highest clock: 32MHz

Transmit Frequency: 127kHz
Frequency range of interest: 30-1000MHz

RBW = 120kHz; VBW > 3 x RBW

Atmospheric conditions:
Temperature = 18°C
Relative Humidity = 40%
Atmospheric Pressure = 97.8kPa

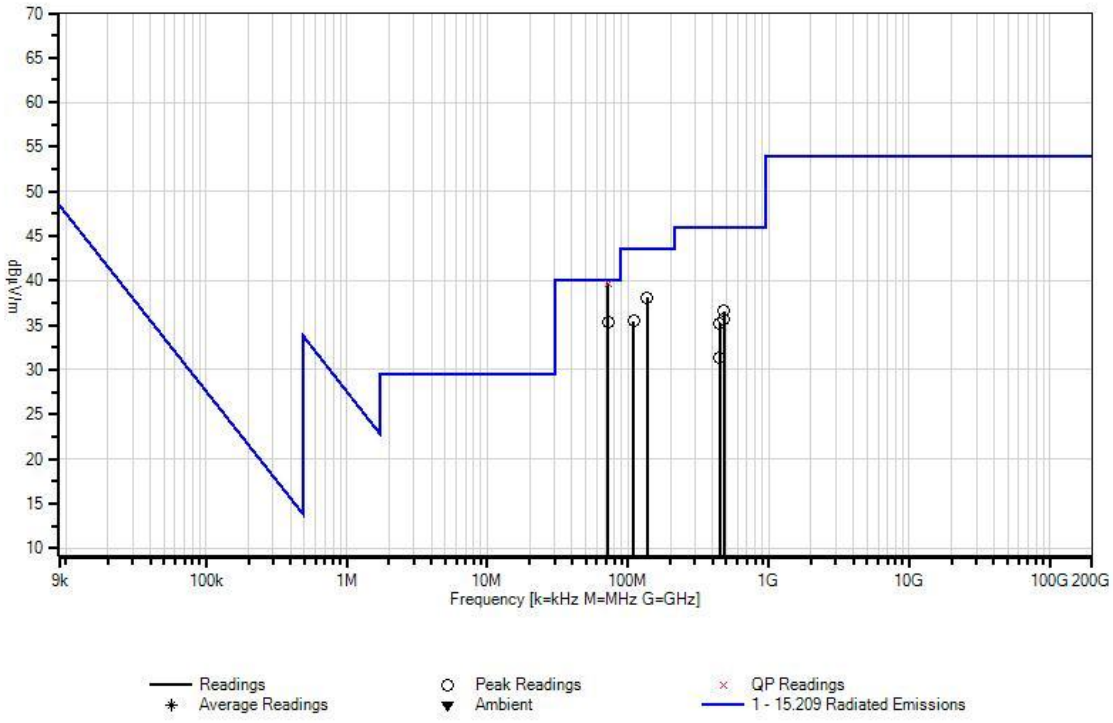
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

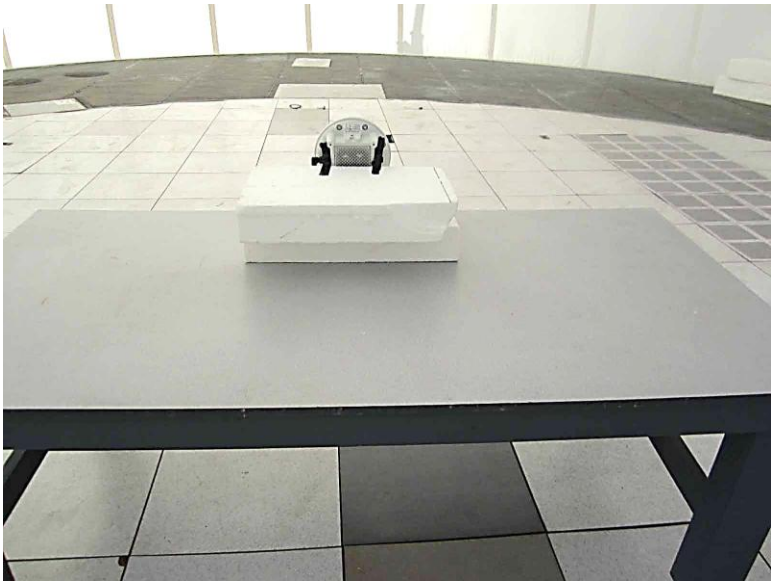
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1 QP	72.005M	50.2	+2.6	+6.7	-30.3		+10.5	39.7	40.0	-0.3	Vert
^	72.000M	58.1	+2.6	+6.7	-30.3		+10.5	47.6	40.0	+7.6	Vert
3	72.350M	45.7	+2.6	+6.8	-30.3		+10.5	35.3	40.0	-4.7	Horiz

4	137.099M	42.0	+3.6	+12.0	-30.0	+10.5	38.1	43.5	-5.4	Vert
5	110.006M	41.4	+3.2	+10.5	-30.1	+10.5	35.5	43.5	-8.0	Vert
6	480.042M	31.7	+7.1	+17.3	-30.0	+10.5	36.6	46.0	-9.4	Vert
7	480.042M	30.8	+7.1	+17.3	-30.0	+10.5	35.7	46.0	-10.3	Horiz
8	448.042M	31.1	+6.8	+16.7	-29.9	+10.5	35.2	46.0	-10.8	Vert
9	448.120M	27.3	+6.8	+16.7	-29.9	+10.5	31.4	46.0	-14.6	Horiz

Date: 2/13/2013 Time: 13:00:21 Zebra Technologies, Corp WO#: 94067
15.209 Radiated Emissions Test Distance: 10 Meters Sequence#: 1 Ext ATTN: 0 dB



Test Setup Photos



-20dBc / 99% Occupied Bandwidth

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • (209) 966-5240

Customer:	**Zebra Technologies Corporation**		
Specification:	**-20dB Bandwidth / 99% Bandwidth**		
Work Order #:	**94067**	Date:	2/12/2013
Test Type:	**Maximized Emissions**	Time:	15:48:58
Equipment:	**WherePort III**	Sequence#:	1
Manufacturer:	Zebra Technologies Corporation	Tested By:	Eddie Mariscal
Model:	WPT-3200		
S/N:	NA		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	ANMA10M	Cable		8/17/2012	8/17/2014
	AN00226	Loop Antenna	6502	3/28/2012	3/28/2014
	AN02660	Spectrum Analyzer	E4446A	8/23/2012	8/23/2014

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
WherePort III*	Zebra Technologies Corporation	WPT-3200	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Switching Power Supply	MEPOS	STDA40-S10	NA

Test Conditions / Notes:

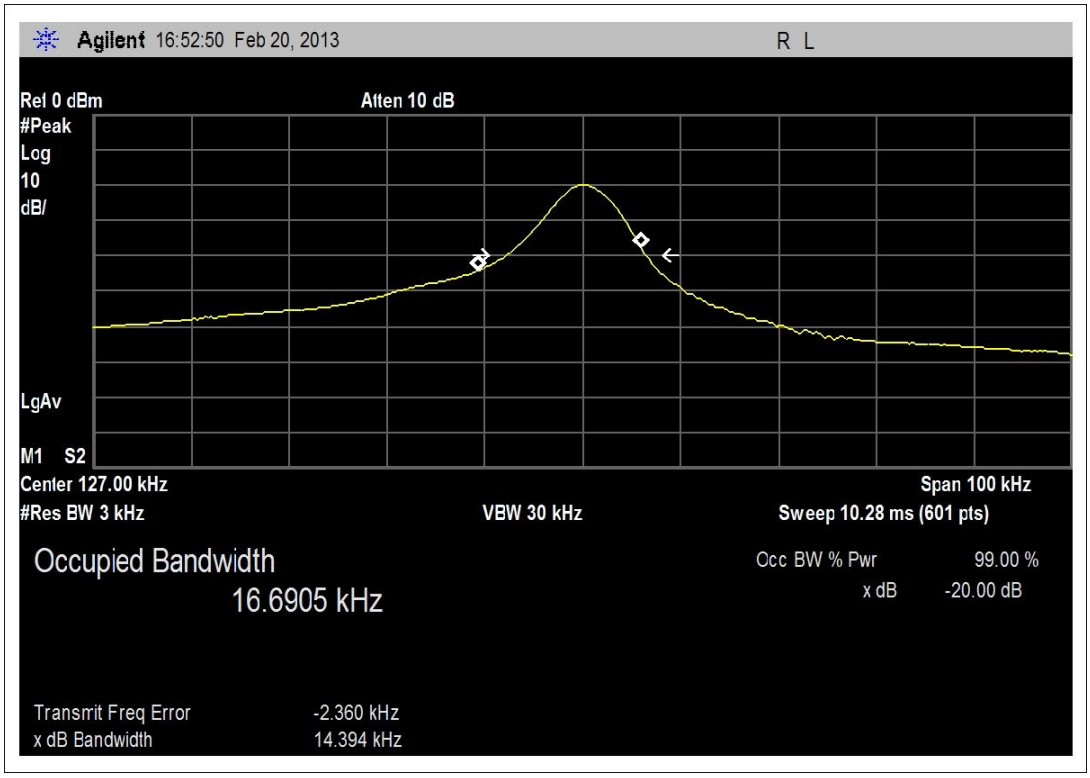
EUT is placed atop nonconductive Styrofoam tablets atop a nonconductive plastic cart at a height of 1m. Nonconductive cart is placed 10m from receive antenna located off ground plane in order to minimize reflections. EUT is powered by 36VDC transformer.

Transmit Frequency: 127kHz
Frequency of interest: 127kHz

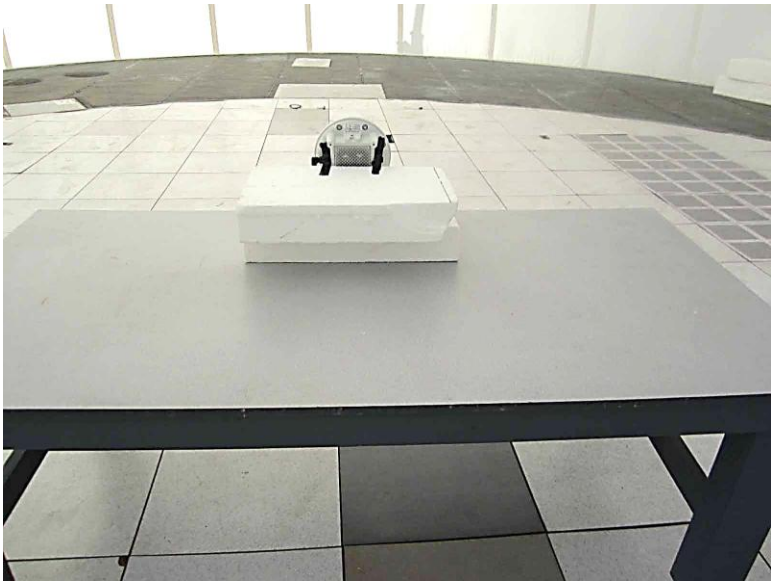
RBW = 3kHz; VBW = 10kHz

Atmospheric conditions:
Temperature = 18°C
Relative Humidity = 40%
Atmospheric Pressure = 97.8kPa

Test Plots


Agilent 16:52:50 Feb 20, 2013
R L
Ref 0 dBm
Atten 10 dB
#Peak
Log
10
dB/
LgAv
M1 S2
Center 127.00 kHz
Span 100 kHz
#Res BW 3 kHz
VBW 30 kHz
Sweep 10.28 ms (601 pts)
Occupied Bandwidth
16.6905 kHz
Occ BW % Pwr 99.00 %
x dB -20.00 dB
Transmit Freq Error -2.360 kHz
x dB Bandwidth 14.394 kHz

Test Setup Photos



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or carrot ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.