

# FCC CERTIFICATION RADIO MEASUREMENT TECHNICAL REPORT

On Model Name: 915MHz RF Module

Model Number : VZ38915AZ

Trademark : AZ

FCC ID : TN2-VZ38915AZ

Prepared for AZ Instrument Corporation

According to FCC Part 15 (2007), Subpart C 15.249

*Test Report #:* AZI-0809-8063-FCC

*Prepared by:* Chris Huang

*Reviewed by:* Harry Zhao

*QC Manager:* Paul Chen

*Test Report Released by:* \_\_\_\_\_

*Paul J. Chen*

Paul Chen

*2008, October 17*

Date

## **Test Location**

*Tests performed in a Certified ANSI Semi-Anechoic Chamber and Shielded Room performed testing.*

**Test Site Location:**            *Jiangsu Electronic Products  
Supervision & Inspection Institute  
No 107 Ge lane ZhongQiao  
WuXi, JiangSu, China*

**Tel:**                                *86-510-85140038*

**Fax:**                                *86-510-85140037*

**FCC Registration Number:**    *399439*

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## **Administrative Data**

*Test Sample* : 915MHz RF Module

*Model Number* : VZ38915AZ

*Trade Mark* : AZ

*Date Tested* : 2007, October 9 & 2008, October 17

*Applicant* : AZ Instrument Corporation  
No.3-2 Chien-kuo Road, TEPZ Tantzsu, 427  
Taichung, Taiwan R.O.C

*Telephone* : 886-4-25326898

*Fax* : 886-4-25326593

*Manufacturer* : AZ Instrument Corporation  
No.3-2 Chien-kuo Road, TEPZ Tantzsu, 427  
Taichung, Taiwan R.O.C

### **EUT Description**

*AZ Instrument Corporation Model number VZ38915AZ (referred to as the EUT in this report) is a 915MHz RF Module.*

*It used two kinds of antenna and both of the antennas were used during the tests.*

<i>Antenna</i>	<i>Model</i>	<i>Manufacturer</i>	<i>Gain</i>
<i>#1</i>	<i>AP02-b</i>	<i>Senton Enterprise Co., Ltd.</i>	<i>0dBi</i>
<i>#2</i>	<i>AP915</i>	<i>Shenzhen Gerbole Elec. Technology Co., Ltd.</i>	<i>0dBi</i>

### **Test Summary**

*The Electromagnetic Compatibility requirements on model VZ38915AZ for this test are stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.*

<b>EMC Test Items</b>			
<i>Reference FCC Part 15 (2008), Subpart C</i>			
<i>Specification</i>	<i>Description</i>	<i>Test Results</i>	<i>Remark</i>
<i>FCC Part 15.203</i>	<i>Antenna Requirement</i>	<i>Compliance</i>	<i>Integral Antenna</i>
<i>FCC Part 15.205</i>	<i>Restricted Band of Operation</i>	<i>Compliance</i>	<i>Attachment 1</i>
<i>FCC Part 15.209</i>	<i>Radiated Emission Limits</i>	<i>Compliance</i>	<i>Attachment 1</i>
<i>FCC Part 15.249 (a)</i>	<i>Fundamental and Harmonics</i>	<i>Compliance</i>	<i>Attachment 2</i>
<i>FCC Part 15.249 (d)</i>	<i>Band Edge</i>	<i>Compliance</i>	<i>Attachment 3</i>
<i>FCC Part 15.207</i>	<i>Conducted Emission Limits</i>	<i>Compliance</i>	<i>Attachment 4</i>

### ***Test Mode Justification***

*This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.*

### ***EUT Exercise Software***

*The EUT doesn't use software during test.*

### ***Equipment Modification***

*Any modifications installed previous to testing by AZ Instrument Corporation will be incorporated in each production model sold or leased in United States.*

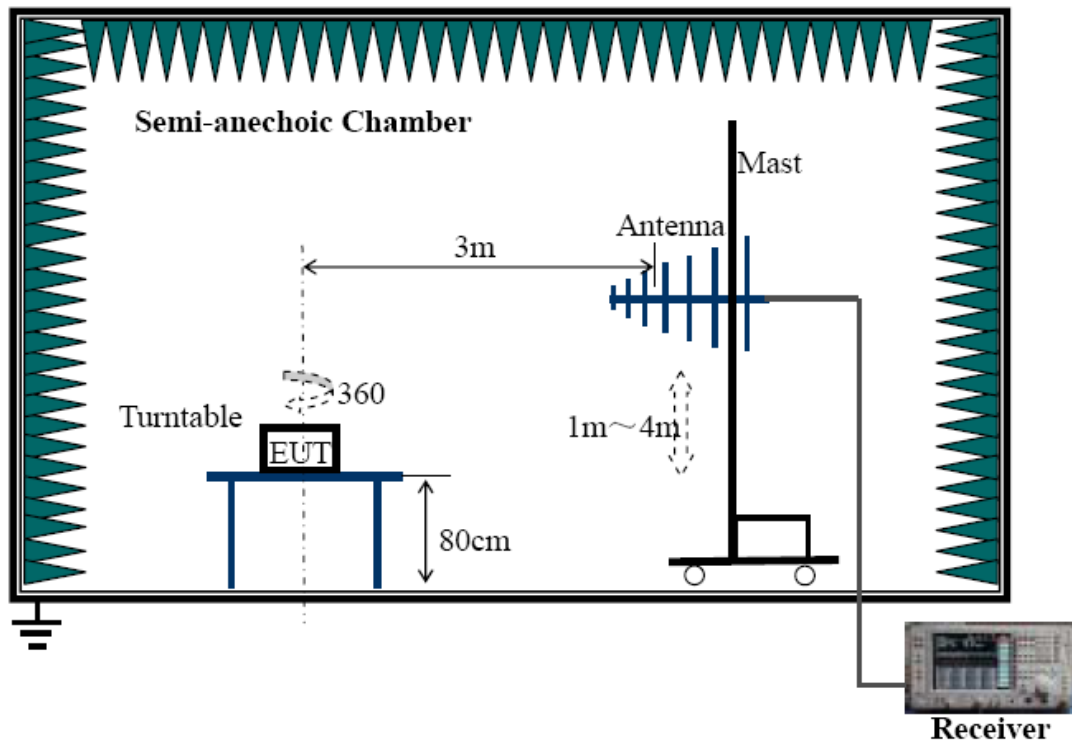
*There were no modifications installed by ECMG Worldwide Certification Solution, Inc. (China) test personnel.*

## Test System Details

<i>EUT</i>			
<i>Model Number:</i>	<i>VZ38915AZ</i>		
<i>Trademark:</i>	<i>AZ</i>		
<i>Serial Number:</i>	<i>Engineering Sample</i>		
<i>Input Voltage:</i>	<i>120V~ 60Hz</i>		
<i>Description:</i>	<i>915MHz RF Module</i>		
<i>Manufacturer:</i>	<i>AZ Instrument Corporation</i>		
<i>EUT Power Supply</i>			
<i>Name</i>	<i>Model</i>	<i>Input</i>	<i>Output</i>
<i>Switching Adapter</i>	<i>SW9-120U</i>	<i>100V~240V AC</i>	<i>9V 1A</i>
<i>Support Equipment</i>			
<i>None</i>			
<i>Cable Description</i>			
<i>None</i>			



## Configuration of Tested System



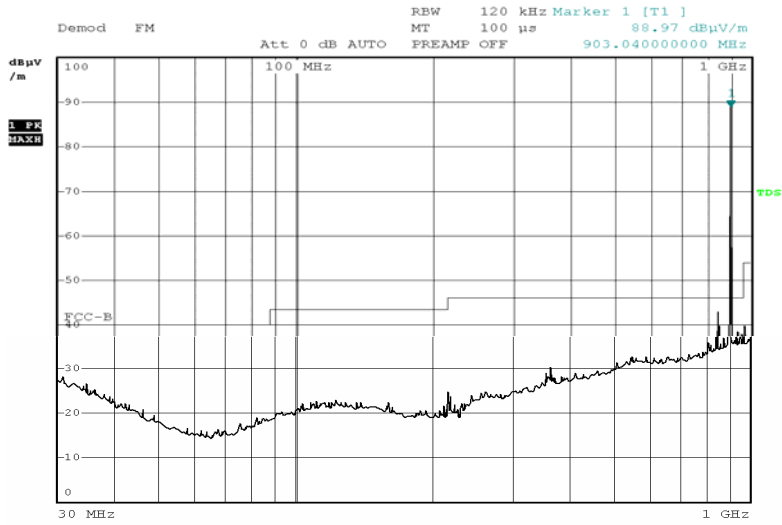
## ATTACHMENT 1 – RADIATED EMISSION TEST RESULTS

<b>CLIENT:</b>	AZ Instrument Corporation	<b>TEST STANDARD:</b>	FCC Part 15.209 FCC Part 15.205
<b>MODEL NUMBER:</b>	VZ38915AZ	<b>PRODUCT:</b>	915MHz RF Module
<b>SERIAL NO.:</b>	Engineering Sample	<b>EUT DESIGNATION:</b>	RF Equipment
<b>TEMPERATURE:</b>	21°C	<b>HUMIDITY:</b>	53%RH
<b>ATM PRESSURE:</b>	101.6 kPa	<b>GROUNDING:</b>	No Grounding
<b>TESTED BY:</b>	Shi Xiting	<b>DATE OF TEST:</b>	2007, October 9
<b>SETUP METHOD:</b>	ANSI C63.4 : 2003		
<b>TEST PROCEDURE:</b>	<p>a. The EUT was placed on a rotatable table with 0.8 meters above ground.</p> <p>b. The EUT was set 3 meters from the interference-receiving antenna, which was mounted on the top of a variable height antenna tower.</p> <p>c. The antenna was varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna were set to make measurement.</p> <p>d. For each suspected emission the EUT was arranged to its worst case and then change the antenna tower height (from 1m to 4m) and turn table (from 0 degree to 360 degree) to find the maximum reading.</p> <p>e. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported.</p> <p>f. Broadband antenna (Calibrated antenna) was used as receiving antenna below 1000MHz. Horn antenna were used as receiving antenna above 1000MHz.</p> <p>g. The bandwidth is 120 kHz below 1000 MHz, and 1 MHz above 1000 MHz</p> <p>Explanation of the Correction Factor are given as follows:</p> $FS = RA + AF + CF - AG$ <p>Where: FS = Field Strength  RA = Receiver Amplitude  AF = Antenna Factor  CF = Cable Attenuation Factor  AG = Amplifier Gain</p>		
<b>TESTED RANGE:</b>	30MHz to 10000MHz for the transmitter		
<b>TEST VOLTAGE:</b>	120V/60Hz		

CONTINUE ON THE NEXT PAGE...

<b>TEST STATUS:</b>	For transmitter, keep Tx in normal continuous transmission mode, modulated
<b>RESULTS:</b>	The EUT meets the requirements of field strength test.  The test results relate only to the equipment under test provided by cli
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by ECMG Worldwide Certification Solution, Inc. (China) test personnel.
<b>M. UNCERTAINTY:</b>	Freq. $\pm 2 \times 10^{-7}$ x Center Freq., Amp $\pm 2.6$ dB

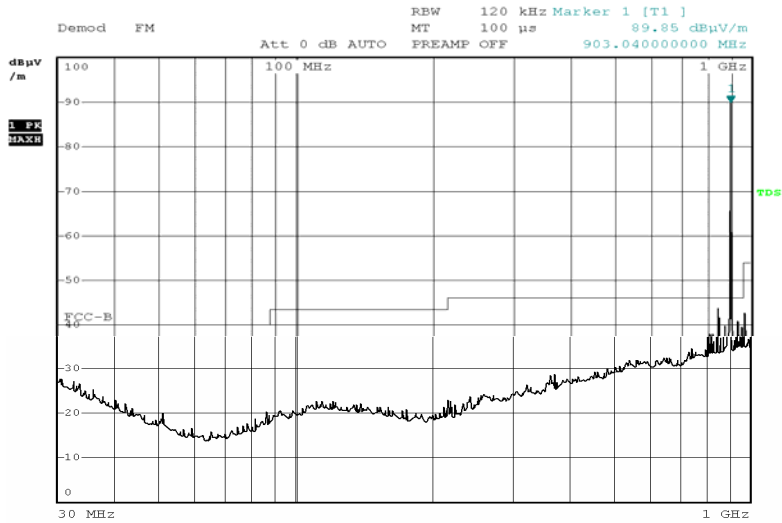
**Model: VZ38915AZ  
Antenna #1  
Low Channel**



6598821-H

Date: 9.OCT.2007 09:32:34

**Radiated Emission Plot -Horizontal Polarization  
(Peak, Max Hold Mode)**



6598821-H

Date: 9.OCT.2007 09:26:25

**Radiated Emission Plot -Vertical Polarization  
(Peak, Max Hold Mode)**

## Test Results (30MHz~1GHz)

<i>Horizontal</i>								
Signal	Frequency (MHz)	Antenna Factor (dB/m)	Cable Factor (dB)	Corrected QP Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Angle of Turner (degree)	Height of Tower (cm)
1	33.1575	15.8	0.3	15.2	40.0	-24.8	25	101
2	381.6125	15.0	1.6	22.1	46.0	-23.9	358	165
3	439.1645	16.0	2.0	24.3	46.0	-21.7	20	142
<i>Vertical</i>								
Signal	Frequency (MHz)	Antenna Factor (dB/m)	Cable Factor (dB)	Corrected QP Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Angle of Turner (degree)	Height of Tower (cm)
1	30.6860	17.7	0.3	16.2	40.0	-23.8	280	100
2	98.1775	10.1	0.7	23.5	43.5	-20.0	267	100
3	674.5380	18.9	2.8	24.4	46.0	-21.6	35	243
<p>Note: All readings are quasi-peak unless stated otherwise, using a QP bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.</p>								

## Test Results (1GHz~10GHz)

<i>Horizontal</i>									
Signal	Frequency (MHz)	Antenna Factor (dB)	Cable Factor (dB)	Corrected AV Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Corrected PK Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)
<b>1</b>	1119.37	25.2	5.0	33.8	54.0	-20.2	40.8	74.0	-33.2
<b>2</b>	1904.65	29.7	6.9	39.7	54.0	-14.3	44.9	74.0	-29.1
<b>3</b>	2089.11	31.5	8.3	40.5	54.0	-13.5	50.1	74.0	-23.9
<i>Vertical</i>									
Signal	Frequency (MHz)	Antenna Factor (dB)	Cable Factor (dB)	Corrected AV Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Corrected PK Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)
<b>1</b>	1119.25	25.2	5.0	36.8	54.0	-17.2	42.8	74.0	-31.2
<b>2</b>	1904.65	29.7	6.9	40.1	54.0	-13.9	44.0	74.0	-30.0
<b>3</b>	2089.11	31.5	8.3	40.8	54.0	-13.2	47.6	74.0	-26.4
<p>Note: All readings are average and peak unless stated otherwise, using a bandwidth of 1000kHz, with a 30 ms sweep time. A video filter was not used.</p>									

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/07	03/19/08
Preamplifier	HP	8449B	2944A06849	03/20/07	03/19/08
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	513	03/20/07	03/19/08
Bilog Antenna	CHASE	CBL6112	117.0800.20	02/17/07	02/16/08
Anechoic Chamber	LINDGREN	FACT-3	601	01/10/07	01/09/08

Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.

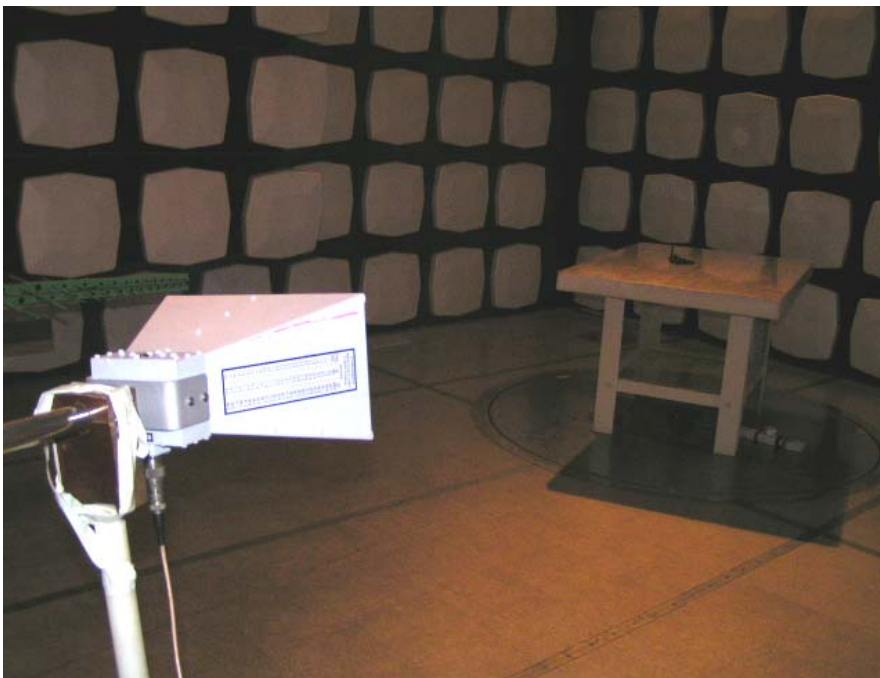
SIGNED BY: Shi-xiting  
ENGINEER

REVIEWED BY: Hongshao  
SENIOR ENGINEER

*For Model VZ38915AZ*



*Radiated Emission Strength Test Set-up View - Low Frequency*



*Radiated Emission Strength Test Set-up View - High Frequency*



**ATTACHMENT 2 – FUNDAMENTAL AND HARMONIC FIELD STRENGTH  
TEST RESULTS**

<b>CLIENT:</b>	AZ Instrument Corporation	<b>TEST STANDARD:</b>	FCC Part 15.249 (a)			
<b>MODEL NUMBER:</b>	VZ38915AZ	<b>PRODUCT:</b>	915MHz RF Module			
<b>SERIAL NO.:</b>	Engineering Sample	<b>EUT DESIGNATION:</b>	RF Equipment			
<b>TEMPERATURE:</b>	21°C	<b>HUMIDITY:</b>	53%RH			
<b>ATM PRESSURE:</b>	101.6 kPa	<b>GROUNDING:</b>	No Grounding			
<b>TESTED BY:</b>	Shi Xiting	<b>DATE OF TEST:</b>	2007, October 9			
<b>SETUP METHOD:</b>	ANSI C63.4 : 2003					
<b>TEST PROCEDURE:</b>	<p>a. The EUT was placed on a rotatable table with 0.8 meters above ground.</p> <p>b. The EUT was set 3 meters from the interference-receiving antenna, which was mounted on the top of a variable height antenna tower.</p> <p>c. The antenna was varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna were set to make measurement.</p> <p>d. For each suspected emission the EUT was arranged to its worst case and then change the antenna tower height (from 1m to 4m) and turn table (from 0 degree to 360 degree) to find the maximum reading.</p> <p>e. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported.</p> <p>f. Broadband antenna (Calibrated antenna) was used as receiving antenna below 1000MHz. Horn antenna were used as receiving antenna above 1000MHz.</p> <p>g. The bandwidth is 120 kHz below 1000 MHz, and 1 MHz above 1000 MHz</p> <p>Explanation of the Correction Factor are given as follows:</p> <p>FS= RA + AF + CF - AG</p> <p>Where: FS = Field Strength</p> <p>RA = Receiver Amplitude</p> <p>AF = Antenna Factor</p> <p>CF = Cable Attenuation Factor</p> <p>AG = Amplifier Gain</p> <p>FCC 15.249 limit</p> <p>15.249 (a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:</p> <table border="1" data-bbox="502 1877 1364 1989"> <tr> <td>Fundamental Frequency</td> <td>Field Strength of Fundamental (milivolts/meter)</td> <td>Field Strength of Harmonics (microvolts/meter)</td> </tr> </table>			Fundamental Frequency	Field Strength of Fundamental (milivolts/meter)	Field Strength of Harmonics (microvolts/meter)
Fundamental Frequency	Field Strength of Fundamental (milivolts/meter)	Field Strength of Harmonics (microvolts/meter)				

	902-928MHz	50	500
	2400-2483.5MHz	50	500
	5725-5875MHz	50	500
	24.0-24.25GHz	250	2500
<b>TESTED RANGE:</b>	900MHz to 10000MHz for the transmitter		
<b>TEST VOLTAGE:</b>	120V/60Hz		
<b>TEST STATUS:</b>	Set transmitter to generate signal at low, middle and high channels continually		
<b>RESULTS:</b>	The EUT meets the requirements of the fundamental and harmonic field strength. The test results relate only to the equipment under test provided by client.		
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by ECMG Worldwide Certification Solution, Inc.(China) test personnel.		
<b>M. UNCERTAINTY:</b>	Freq. $\pm 2 \times 10^{-7}$ x Center Freq., Amp $\pm 2.6$ dB		

*For transmitter of VZ38915AZ  
 For Antenna #1  
 For Channel 1 (903.04MHz)  
 Test Results*

<i>Horizontal</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	903.04	0.4	88.9	94.0	-5.1
2	1806.08	0.5	56.2	74.0	-17.8
3	2709.12	0.7	50.8	54.0	-3.2
4	3612.16	0.9	47.6	54.0	-6.4
<b>Higher Harmonics</b>			<44	74.0	-30.0
<i>Vertical</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	903.04	0.4	89.8	94.0	-4.2
2	1806.08	0.5	57.4	74.0	-16.6
3	2709.12	0.7	50.3	54.0	-3.7
4	3612.16	0.9	46.9	54.0	-7.1
<b>Higher Harmonics</b>			<44	74.0	-30.0
Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.					

*For transmitter of VZ38915AZ  
 For Antenna #1  
 For Channel 5 (915.04MHz)  
 Test Results*

<i>Horizontal</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	915.04	0.4	85.6	94.0	-8.4
2	1830.08	0.5	53.0	74.0	-21.0
3	2745.12	0.7	48.9	54.0	-5.1
4	3660.16	0.9	46.8	54.0	-7.2
<b>Higher Harmonics</b>			<44	74.0	-30
<i>Vertical</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	915.04	0.4	91.4	94.0	-2.6
2	1830.08	0.5	54.8	74.0	-19.2
3	2745.12	0.7	50.7	54.0	-3.3
4	3660.16	0.9	45.3	54.0	-8.7
<b>Higher Harmonics</b>			<44	74.0	-30
<p>Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.</p>					

*For transmitter of VZ38915AZ  
 For Antenna #1  
 For Channel 9 (927.04MHz)  
 Test Results*

<i>Horizontal</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	927.04	0.4	85.4	94.0	-8.6
2	1854.08	0.5	52.9	74.0	-21.1
3	2781.12	0.7	49.4	54.0	-4.6
4	3708.16	0.9	44.8	54.0	-9.2
<b>Higher Harmonics</b>			<44	74.0	-30
<i>Vertical</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	927.04	0.4	88.3	94.0	-5.7
2	1854.08	0.5	54.5	74.0	-19.5
3	2781.12	0.7	50.6	54.0	-3.4
4	3708.16	0.9	46.9	54.0	-7.1
<b>Higher Harmonics</b>			<44	74.0	-30
Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.					

*For transmitter of VZ38915AZ  
 For Antenna #2  
 For Channel 1 (903.04MHz)  
 Test Results*

<i>Horizontal</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	903.04	0.4	80.3	94.0	-13.7
2	1806.08	0.5	53.9	74.0	-20.1
3	2709.12	0.7	48.0	54.0	-6.0
4	3612.16	0.9	46.9	54.0	-7.1
<b>Higher Harmonics</b>			<44	74.0	-30.0
<i>Vertical</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	903.04	0.4	86.6	94.0	-7.4
2	1806.08	0.5	55.9	74.0	-18.1
3	2709.12	0.7	49.3	54.0	-4.7
4	3612.16	0.9	47.8	54.0	-6.2
<b>Higher Harmonics</b>			<44	74.0	-30.0
Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.					

*For transmitter of VZ38915AZ*  
*For Antenna #2*  
*For Channel 5 (915.04MHz)*  
**Test Results**

<i>Horizontal</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	915.04	0.4	80.9	94.0	-13.1
2	1830.08	0.5	50.8	74.0	-23.2
3	2745.12	0.7	46.9	54.0	-7.1
4	3660.16	0.9	44.9	54.0	-9.1
<b>Higher Harmonics</b>			<44	74.0	-30
<i>Vertical</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	915.04	0.4	89.7	94.0	-4.3
2	1830.08	0.5	53.6	74.0	-20.4
3	2745.12	0.7	50.1	54.0	-3.9
4	3660.16	0.9	47.1	54.0	-6.9
<b>Higher Harmonics</b>			<44	74.0	-30
Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.					

*For transmitter of VZ38915AZ*  
*For Antenna #2*  
*For Channel 9 (927.04MHz)*  
**Test Results**

<i>Horizontal</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	927.04	0.4	80.5	94.0	-13.5
2	1854.08	0.5	51.9	74.0	-22.1
3	2781.12	0.7	48.7	54.0	-5.3
4	3708.16	0.9	44.5	54.0	-9.5
<b>Higher Harmonics</b>			<44	74.0	-30
<i>Vertical</i>					
Signal	Frequency (MHz)	Factor (dB)	Corrected PK Level (dBuV/m)	3 Meter AV Limits (dB uV/m)	Margin (dB)
1	927.04	0.4	88.5	94.0	-5.5
2	1854.08	0.5	54.8	74.0	-19.2
3	2781.12	0.7	48.9	54.0	-5.1
4	3708.16	0.9	45.8	54.0	-8.2
<b>Higher Harmonics</b>			<44	74.0	-30
Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.					



Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/07	03/19/08
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	513	03/20/07	03/19/08
Preamplifier	HP	8449B	2944A06849	03/20/07	03/19/08
Bilog Antenna	CHASE	CBL6112	117.0800.20	02/17/07	02/16/08
Anechoic Chamber	LINDGREN	FACT-3	601	01/10/07	01/09/08

Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.

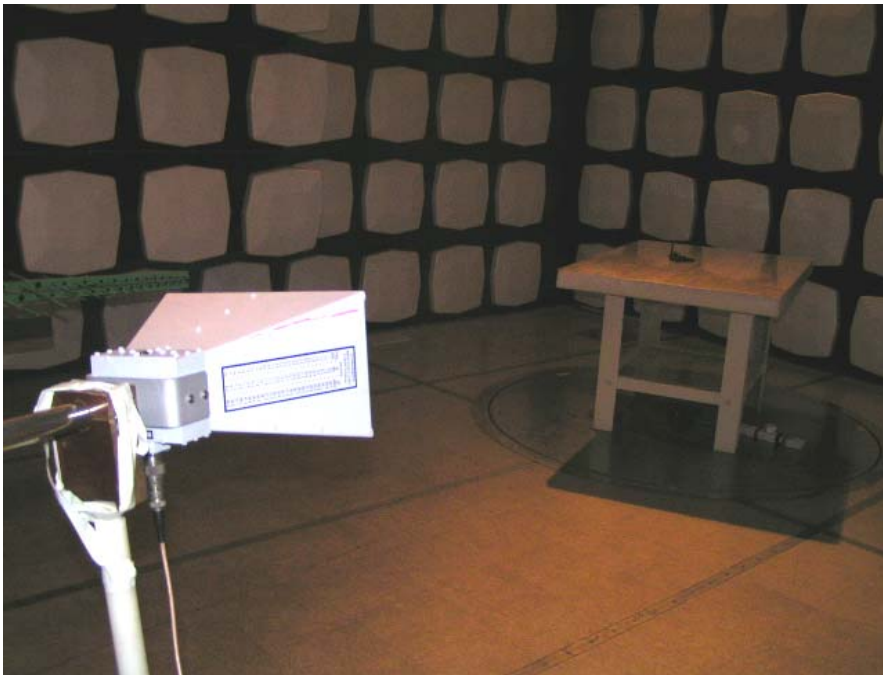
SIGNED BY: Shi-xiting  
ENGINEER

REVIEWED BY: Hongshao  
SENIOR ENGINEER

**Model Number: VZ38915AZ**



***Fundamental & Harmonics Strength Test Set-up View - Low Frequency***

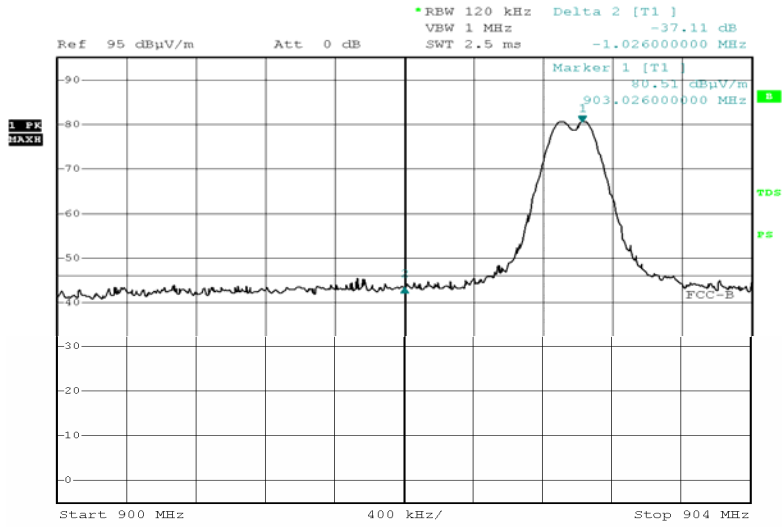


***Fundamental & Harmonics Strength Test Set-up View - High Frequency***

### ATTACHMENT 3 – Band Edge Test

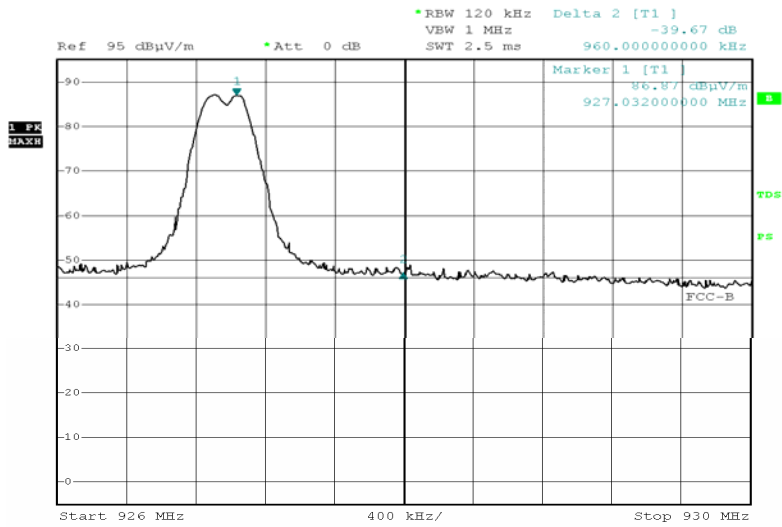
<b>CLIENT:</b>	AZ Instrument Corporation	<b>TEST STANDARD:</b>	FCC Part 15.249 (d)
<b>MODEL NUMBER:</b>	VZ38915AZ	<b>PRODUCT:</b>	915MHz RF Module
<b>SERIAL NO.:</b>	Engineering Sample	<b>EUT DESIGNATION:</b>	RF Equipment
<b>TEMPERATURE:</b>	21°C	<b>HUMIDITY:</b>	53%RH
<b>ATM PRESSURE:</b>	101.6 kPa	<b>GROUNDING:</b>	No Grounding
<b>TESTED BY:</b>	Shi Xiting	<b>DATE OF TEST:</b>	2007, October 9
<b>SETUP METHOD:</b>	ANSI C63.4 - 2003		
<b>BANDEDGE REQUIREMENT:</b>	FCC 15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to general radiated emission limits in Section 15.209, which is the lesser attenuation.		
<b>TEST PROCEDURE:</b>	<p>Set the spectrum as follow:</p> <p>Span=wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation.</p> <p>RBW=100kHz; VBW ≧ RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold;</p> <p>Allow the trace to stabilize and use the search peak function to set the marker to the peak of the useful emission, then use delta-mark function to mark the maximum emission outside of the band, record the delta level to see if it's more than 50dB. Or see if the emissions outside the operating frequencies can satisfy the limit 15.209.</p>		
<b>TEST VOLTAGE:</b>	120V/60Hz		
<b>TEST STATUS:</b>	Channel 1 for low and Channel 9 for high		
<b>RESULTS:</b>	The EUT meets band edge requirement. The test results relate only to the equipment under test provided by client.		
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by ECMG Worldwide Certification Solution, Inc.(China) test personnel.		
<b>M. UNCERTAINTY:</b>	Freq. $\pm 2 \times 10^{-7}$ x Center Freq., Amp $\pm 2.6$ dB		

## Test data of Model VZ38915AZ For Antenna #1



6598821-H  
 Date: 9.OCT.2007 09:41:37

### Channel 1



6598821-H  
 Date: 9.OCT.2007 11:16:54

### Channel 9 Band Edge Test Plot with antenna horizontal

## Band Edge Test Table

<b>Antenna Horizontal</b>								
Signal	Frequency (MHz)	QP Reading Level (dBuV)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Factor (dB)	Corrected QP Level (dBuV)	Limits QP (dBuV/m)	Margin QP (dB)
1	902.0	40.5	27.2	32.8	6.0	40.9	46.0	-5.1
2	928.0	43.4	27.5	32.8	6.2	44.3	46.0	-1.7
<b>Antenna Vertical</b>								
Signal	Frequency (MHz)	QP Reading Level (dBuV)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Factor (dB)	Corrected QP Level (dBuV)	Limits QP (dBuV/m)	Margin QP (dB)
1	902.0	41.2	27.2	32.8	6.0	41.6	46.0	-4.4
2	928.0	42.6	27.5	32.8	6.2	43.5	46.0	-2.5
<p>Note #1: The QP readings are using a resolution bandwidth of 120kHz and video bandwidth of 1MHz.</p> <p>Note #2: Corrected QP level= QP reading level + Antenna Factor + Cable Factor – Preamp Gain.</p>								

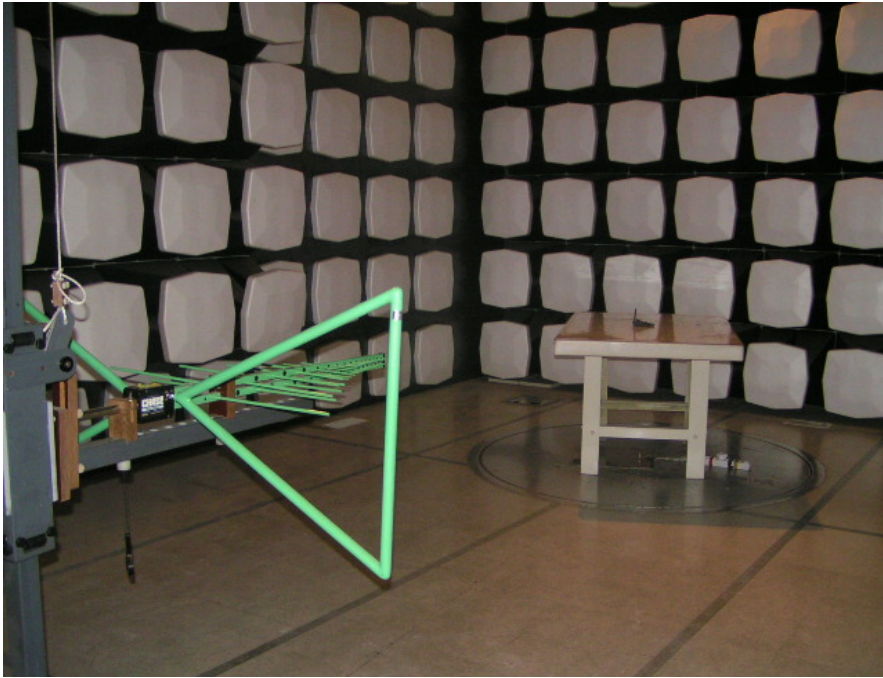
Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/07	03/19/08
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	513	03/20/07	03/19/08
Preamplifier	HP	8449B	2944A06849	03/20/07	03/19/08
Anechoic Chamber	LINDGREN	FACT-3	601	01/10/07	01/09/08

Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.

SIGNED BY: Shi-xiting  
ENGINEER

REVIEWED BY: Hangzhan  
SENIOR ENGINEER

**Model Number: VZ38915AZ**

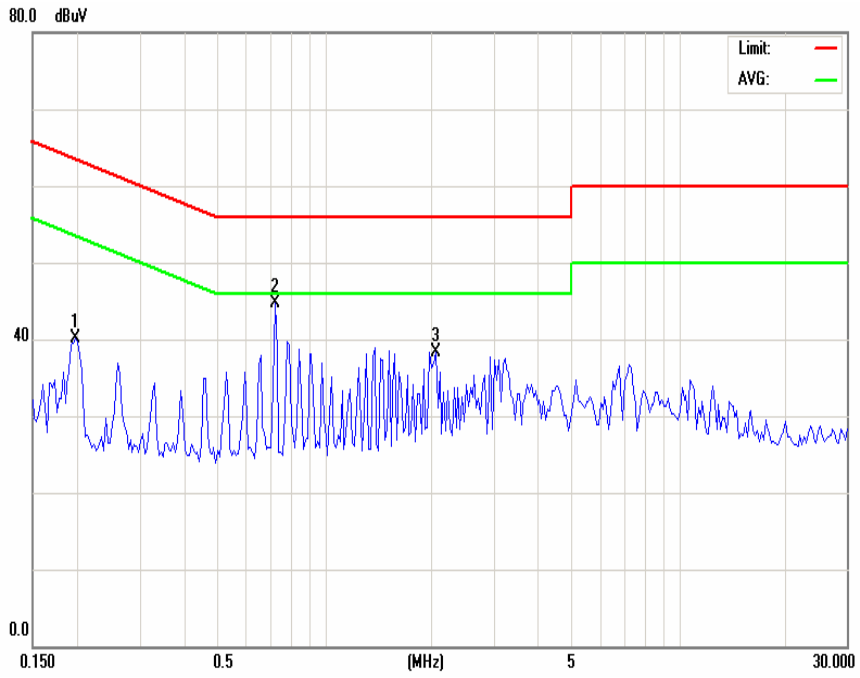


***Band Edge Test Set-up***

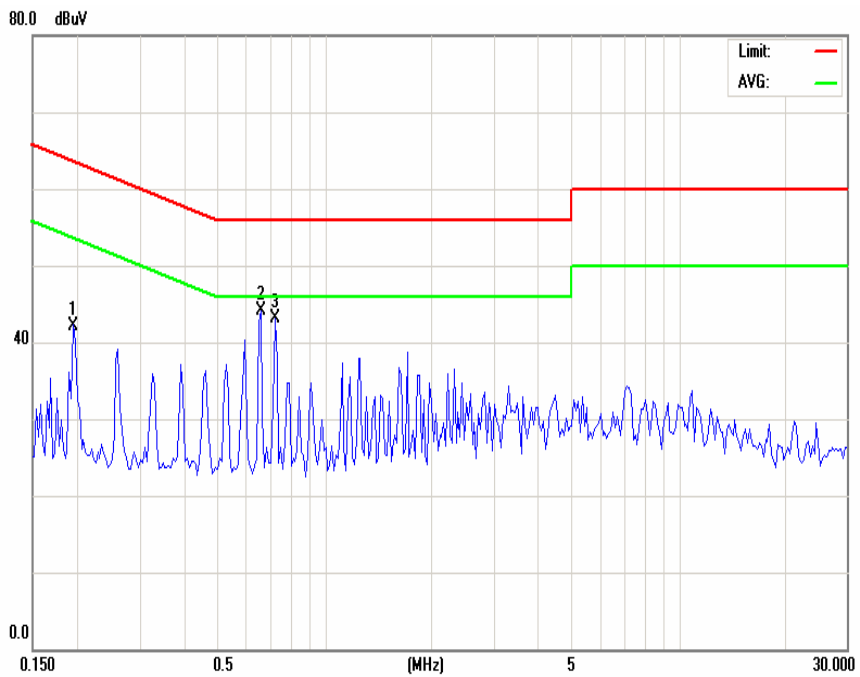
## ATTACHMENT 4 - CONDUCTED EMISSION TEST RESULTS

<b>CLIENT:</b>	AZ Instrument Corporation	<b>TEST STANDARD:</b>	FCC Part 15.207
<b>MODEL NUMBER:</b>	VZ38915AZ	<b>PRODUCT:</b>	915MHz RF Module
<b>SERIAL NO.:</b>	Engineering Sample	<b>EUT DESIGNATION:</b>	RF Equipment
<b>TEMPERATURE:</b>	21°C	<b>HUMIDITY:</b>	53%RH
<b>ATM PRESSURE:</b>	101.6 kPa	<b>GROUNDING:</b>	No Grounding
<b>TESTED BY:</b>	Shi Xiting	<b>DATE OF TEST:</b>	2008, October 17
<b>SETUP METHOD:</b>	ANSI C63.4-2003		
<b>TEST PROCEDURE:</b>	<p>a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.</p> <p>b. Connect EUT to the power mains through a line impedance stabilization network(LISN)</p> <p>c. The LISN provides 50ohm coupling impedance for the measuring instrument</p> <p>d. Both sides of AC line were checked for maximum conducted interference.</p> <p>e. The frequency range from 150KHz to 30MHz was searched..</p> <p>f. Set the test-receiver system to Peak Detect Function and Specified bandwidth.</p> <p>g. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported.</p>		
<b>TESTED RANGE:</b>	150kHz to 30MHz		
<b>TEST VOLTAGE:</b>	120VAC/60Hz		
<b>RESULTS:</b>	<p>The EUT meets the requirements of test reference for Conducted Emissions.</p> <p>The test results relate only to the equipment under test provided by client.</p>		
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by ECMG Worldwide Certification Solution, Inc (China) test personnel.		
<b>M. UNCERTAINTY:</b>	Freq. $\pm 2 \times 10^{-7}$ x Center Freq., Amp $\pm 2.6$ dB		





**Line L Conducted Emission Graph**



**Line N Conducted Emission Graph**

<b>Line L (Hot Lead)</b>								
Signal	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Margin QP (dB)	Frequency (MHz)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Margin AVE (dB)
1	0.1980	40.13	63.69	-23.56	0.1980	36.43	53.69	-17.26
2	0.7255	44.78	56.00	-11.22	0.7255	32.09	46.00	-13.91
3	2.0659	38.23	56.00	-17.77	2.0659	28.56	46.00	-17.44
<b>Line N (Neutral Lead)</b>								
Signal	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Margin QP (dB)	Frequency (MHz)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Margin AVE (dB)
1	0.1955	42.20	63.80	-21.60	0.1955	34.82	53.80	-18.98
2	0.6611	44.17	56.00	-11.83	0.6611	36.18	46.00	-9.82
3	0.7255	43.14	56.00	-12.86	0.7255	35.43	46.00	-10.57
Note: All readings are using a bandwidth of 9 kHz, with a 30 ms sweep time. A video filter was not used.								

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
EMI Receiver	HP	85462A	3650A00363	11/29/07	11/28/08
LISN	R&S	ESH3-Z5	844249/018	12/04/07	12/03/08

Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.

SIGNED BY: Shi-xiting  
ENGINEER

REVIEWED BY: Hongshen  
SENIOR ENGINEER

**Model Number: VZ38915AZ**



***Conducted Emission Test Set-up View***