

HYUNDAI CALIBRATION & CERTIFICATION TECH. CO., LTD.



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CERTIFICATION

AXESSTEL INC.

6305 LUSK BLVD
SAN DIEGO, CA 92121
FRN: 0008827313

Date of Issue: December 5, 2005
Test Report No.: HCT-SAR05-1203
Test Site: HYUNDAI CALIBRATION & CERTIFICATION
TECHNOLOGIES CO., LTD.
FRN: 0005866421

FCC ID :

PH7AXWL1900

APPLICANT :

AXESSTEL INC.

FCC Rule Part(s): Part 15 & 2; ET Docket 95-19
Classification: FCC Class B / CISPR 22 CLASSB
Standard(s): FCC Part 15 Class B: 2001
Equipment(EUT) Type: Fixed WLL Telephone (PCS CDMA)
Trade Name/Model(s): AXESSTEL / AXW-L1900
Port/ Connector(s) DC Input Port

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003.(See Test Report if any modifications were made for compliance)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

HYUNDAI C-Tech. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse of 1988,21 U.S.C.853(a).

Report prepared by : Ki-Soo Kim
Manager of Product Compliance Team



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1. GENERAL INFORMATION

1.1 Product Description

The AXESSTEL INC. AXW-L1900 Fixed WLL Telephone (PCS CDMA). Its basic purpose is used for communications. It transmits from CDMA(1851.25 — 1908.75)MHz and receives from CDMA(1931.25 — 1988.75)MHz.

The RF power is rated at CDMA (0.303 W)

FCC ID	PH7AXWL1900
EUT Type	Fixed WLL Telephone (PCS CDMA)
Model	AXW-P1900
TX Frequency	1851.25 — 1908.75 MHz (PCS CDMA)
RX Frequency	1931.25 — 1988.75 MHz (PCS CDMA)
FCC Classification	Licensed Non-Broadcast station Transmitter - TNB
Max RF. Output Power	0.303 W ERP CDMA (24.8 dBm)
Modulation	CDMA

1.2 Related Submittal(s) / Grant(s)

ORIGINAL SUBMITTAL ONLY

1.3 Tested System Details

The Model names for all equipment, plus descriptions used in the tested system (including inserted cards) are:

DEVICE TYPE	MANUFACTURER	MODEL NUMBER	FCC ID / DoC	CONNECTED TO
WLL Phone	AXESSTEL INC.	AXW-L1900	PH7AXWL800	Adaptor/ P.C
Adaptor	SUNLIN	SR802	N/A	WLL Phone
P.C	SAMSUNG Co., Ltd.	SENS830	DoC	N/A
PRINTER	H/P	C4569A	DoC	P.C

1.4 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4/2003. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1, Maekok-Ri, Hobup-Myun, Ichon-Si, Kyoungki-Do, 467-701, KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 23, 2003(Confirmation Number: 90661)

2.SYSTEM TEST CONFIGURATION

2.1 Cable Description

The marked "(D)" means the Data Cable and "(P)" means the Power Cable.

	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
WLL Phone(EUT)	N	N	1.8(P), 5.0(D)
Adapter	N	N/A	1.8(P)
MOUSE	N/A	Y	1.8(D)
PRINTER	N	Y	1.8(P),1.8(D)

2.2 Noise Suppression Parts on Cable.

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
WLL Phone(EUT)	Y	P.C END	Y	P.C END
Adapter	Y	Adapter END	Y	WLL Phone END
PRINTER	N	N/A	Y	BOTH END

2.3 EUT exercise Software

The EUT was tested on the standby during the radiated and conducted emission testing

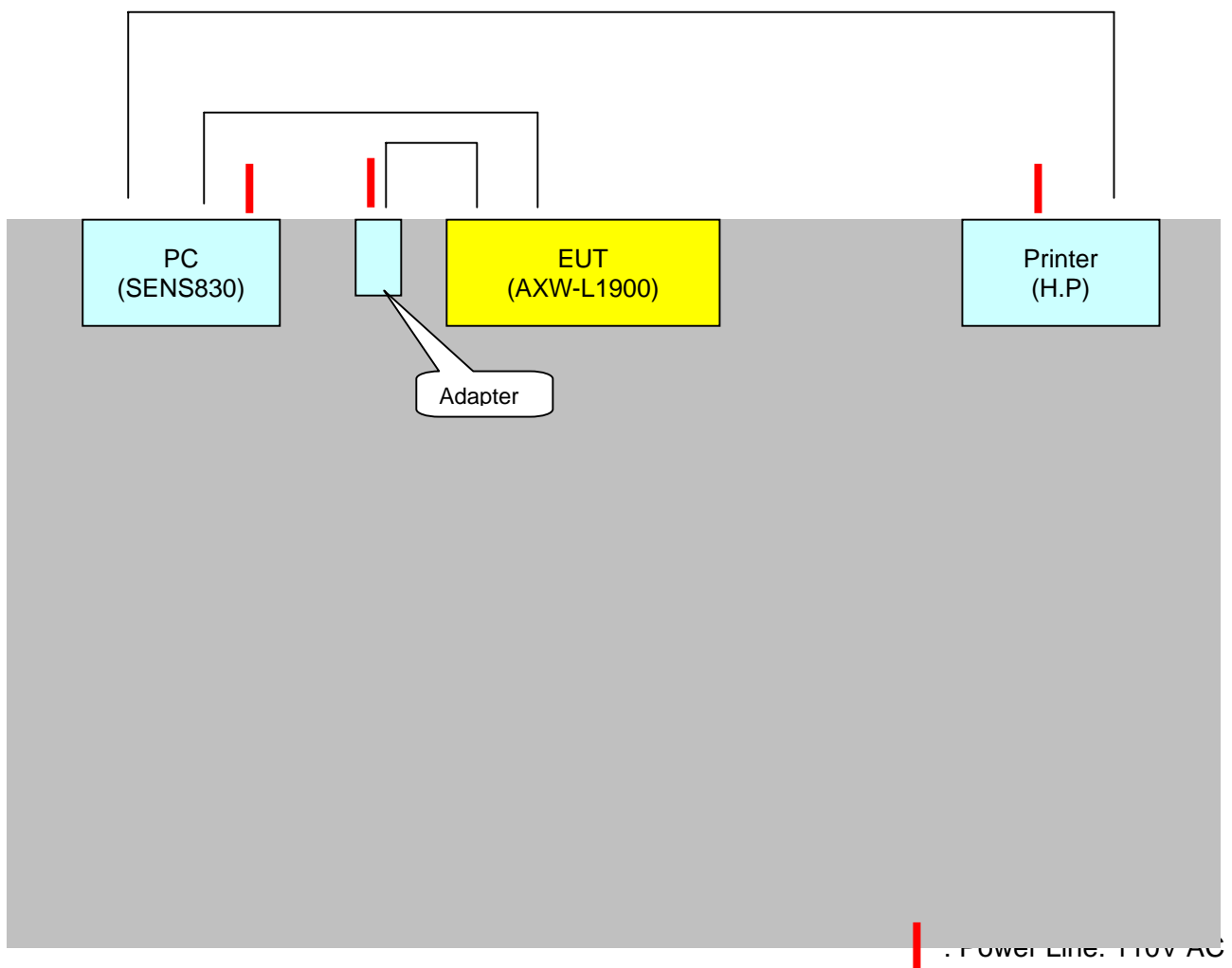
2.4 Equipment Modifications

N/A

2.5 Configuration of Test system

Line Conducted Test : EUT was connected to LISN, all other supporting equipment were connected to another LISN. Preliminary Power line Conducted Emission tests were performed by using the procedure in ANSI C63.4/2003 7.2.3 to determine the worse operating conditions.

Radiated Emission Test : Preliminary Radiated Emissions tests were conducted using the procedure in ANSI C63.4/2003 8.3.1.1 to determine the worse perating condition. Final Radiated Emission tests were conducted at 3 meter open area test site.



[Configuration of Tested System]

3. CONDUCTED AND RADIATED EMISSION TESTS SUMMARY

3.1 Conducted Emissions Tests

The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

```

=====
Humidity Level      : 21 %                               Temperature: 20.4 °C
Limit apply to     : CISPR 22
Type of Tests      : CLASS B
Result             : PASSED BY -3.9 dB
Operating Condition : CHARGING BATTERY
Detector           : CISPR Quasi-Peak (6 dB Bandwidth: 9 KHz)
    
```

Power Line Conducted Emissions				FCC Class B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Result	Limit (dBuV)	Margin (dB)
0.155	59.9	NEUTRAL	Quasi-Peak	66	-5.8
0.157	48.7	NEUTRAL	Average	56	-6.9
0.150	61.9	HOT	Quasi-Peak	66	-4.1
0.150	52.1	HOT	Average	56	-3.9

Line Conducted Emissions Tabulated Data



Measured by : Keun-Ho Park / Engineer

Date : December 2, 2005

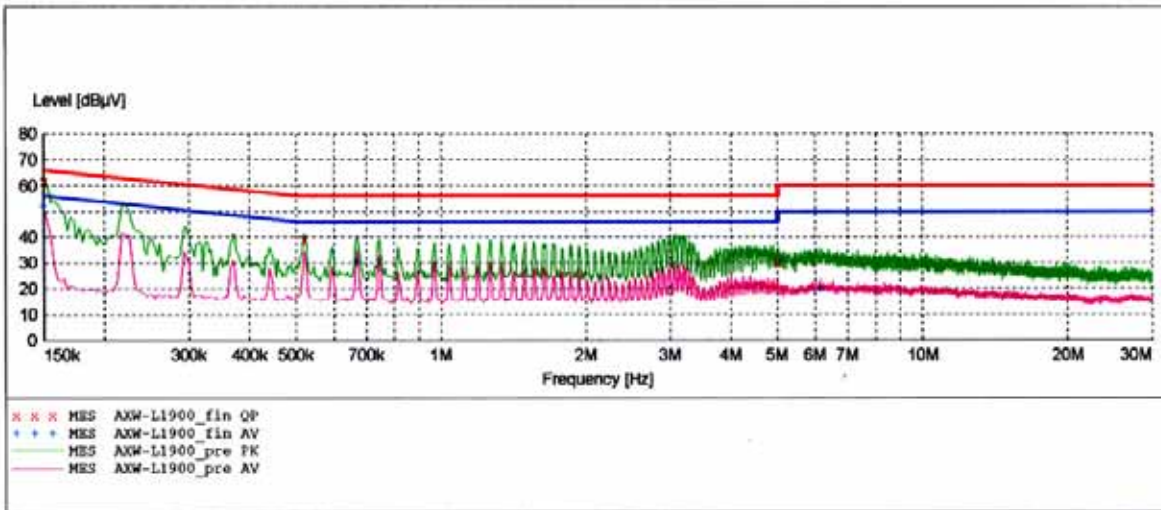
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EMC TEST LAB

EUT: AXW-L1900
 Manufacturer: AXESSTEL
 Operating Condition: NORMAL
 Test Site: SHIELD ROOM
 Operator: KEUN-HO PARK
 Test Specification: CISPR 22 CLASS B
 Comment: H

SCAN TABLE: "CISPR 22 Voltage"

Short Description:			CISPR 22 Voltage			
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.1 kHz	500.0 kHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "AXW-L1900_fin OP"

12/12/2005 2:52PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150100	61.90	10.1	66	4.1	---	---
0.520000	39.20	10.1	56	16.8	---	---
5.000000	30.30	10.3	56	25.7	---	---

MEASUREMENT RESULT: "AXW-L1900_fin AV"

12/12/2005 2:52PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150100	52.10	10.1	56	3.9	---	---
0.670000	30.30	10.2	46	15.7	---	---
6.140000	19.80	10.3	50	30.2	---	---

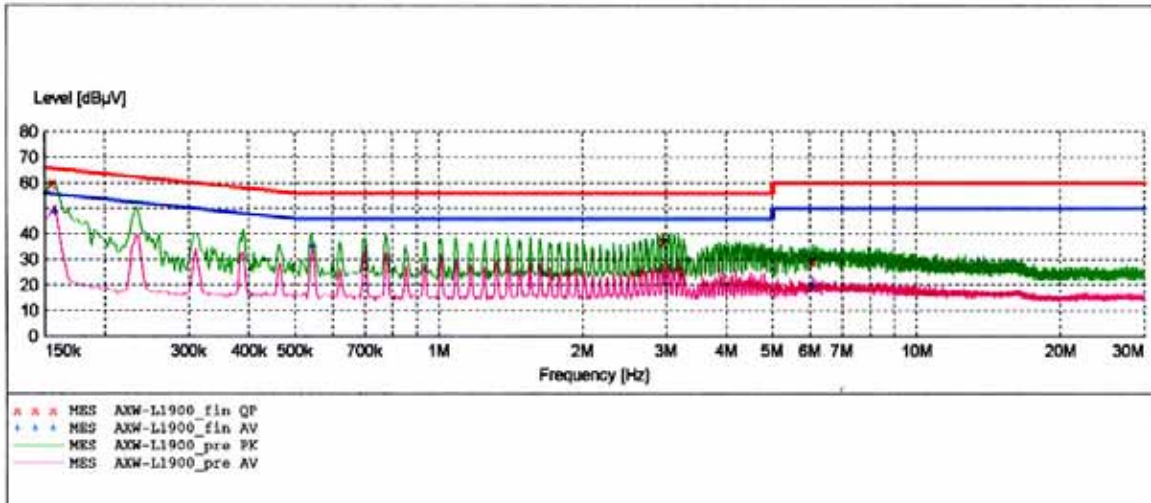
HCT

EMC TEST LAB

EUT: AXW-L1900
 Manufacturer: AXESSTEL
 Operating Condition: NORMAL
 Test Site: SHIELD ROOM
 Operator: KEUN-HO PARK
 Test Specification: CISPR 22 CLASS B
 Comment: N

SCAN TABLE: "CISPR 22 Voltage"

Short Description:		CISPR 22 Voltage				
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.1 kHz	500.0 kHz	2.5 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "AXW-L1900_fin QP"

12/12/2005 2:55PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.155100	59.90	10.1	66	5.8	---	---
2.945000	37.40	10.2	56	18.6	---	---
6.065000	29.60	10.3	60	30.4	---	---

MEASUREMENT RESULT: "AXW-L1900_fin AV"

12/12/2005 2:55PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.157600	48.70	10.1	56	6.9	---	---
0.545000	35.30	10.1	46	10.7	---	---
6.065000	19.70	10.3	50	30.3	---	---

3.2 Radiated Emissions Tests

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

```

=====
Humidity Level      : 21%                      Temperature: 20.3 °C
Limit apply to     : FCC PART 15
Type of Tests      : CLASS B
Result             : PASSED BY -5.4 dB
Operating Condition : Charging Battery
Detector           : CISPR Quasi-Peak (6 dB Bandwidth: 120 KHz)
    
```

Frequency MHz	Reading dBuV	Ant. Factor dB	Cable Loss dB	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
68.90	23.3	6.4	1.8	V	31.5	40	-8.5
97.00	24.7	9.7	2.2	V	36.6	43.5	-6.9
195.60	18.8	16.2	3.2	V	38.1	43.5	-5.4
215.80	16.8	16.7	3.3	V	36.8	43.5	-6.7
249.70	17.3	17.4	3.6	V	38.3	46	-7.7
325.60	17.0	16.3	4.1	V	37.5	46	-8.5
214.70	16.1	16.7	3.3	H	36.1	43.5	-7.4
259.80	15.7	17.7	3.7	H	37.0	46	-9.0
325.40	17.6	16.3	4.1	H	38.1	46	-7.9
389.70	18.2	16.8	4.5	H	39.6	46	-6.4
395.10	15.9	16.9	4.6	H	37.4	46	-8.6
463.20	15.3	18.6	4.9	H	38.8	46	-7.2

Keun Ho, Park

Measured by : Keun-Ho Park / Engineer

Date : December 2, 2005

3.3 Test Setup Photos

3.3.1 Conducted Radiated Emission



3.3.2 Radiated Emission



4.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor.

The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 21.5 dBuV is obtained. The Antenna Factor of 7.4 and a Cable Factor of 1.1 is added. The 30 dBuV/m value was mathematically converted to its corresponding level in uV/m.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dBuV/m}$$

$$\text{Level in uV/m} = \text{Common Antilogarithm} [(30 \text{ dBuV/m})/20] = 31.6 \text{ uV/m}$$

5.1 Test Equipment

Type	Manufacture	Model Number	CAL Date
EMI Test Receiver	Rohde & Schwarz	ESI40	2005.11.16
EMI Test Receiver	Rohde & Schwarz	ESVS30	2005.07.16
LISN	Rohde & Schwarz	ESH2-Z5	2005.07.28
LISN	EMCO	ESH3-Z5	2005.07.28
Attenuator	Rohde & Schwarz	ESH3-Z2	2005.11.16
Amplifier	Hewlett-Packard	8447E	2005.08.23
TRILOG Antenna	Schwarzbeck	9160	2005.04.06
Antenna Position Tower	EMCO	1051-12	N/A
Turn Table	EMCO	1060-06	N/A
Power Analyzer	Voltech	PM 3300	2005.02.15
Reference Network Impedance	Voltech	IEC 555	N/A
AC Power Source	PACIFIC	Magnetic Module	N/A
AC Power Source	PACIFIC	360-AMX	2005.11.25
Controller	HD GmbH	HD 100	N/A
SlideBar	HD GmbH	KMS 560	N/A

6.1 Conclusion

The data collected shows that the **AXESSTEL INC.** Fixed WLL Telephone (CDMA) **FCC ID: PH7AXWL1900**. Complies with §15.107 and §15.109 of the FCC Rules.