ECMG Worldwide Certification Solutions
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EMI Test Report

On Model Name: TPMS TOOLS
Model Number: PRO-101
Broad Name: CUB
Trade Mark: CUB
FCC ID: VVF49D041

Prepared for Shanghai Vei Sheng Auto Parts Manufacturing Co., Ltd.

According to FCC Part 15 B, Class B

Test Report #:	*SHA-0804-0208SH-FCC-2*
Prepared by:	*Chris Huang*
Reviewed by:	*Harry Zhao*
QC Manager:	*Paul Chen*

Test Report Released by: Paul J. Chen _____ *2008, July 15th*

Paul Chen *Date*

Test Location

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

Test Site Location: *ECMG Worldwide Certification Solution, Inc. (China)*
Building 2, 1298 Lian Xi Road,
Pu Dong New Area, Shanghai,
P.R. China 201204

Tel: *86-21-51909300*
Fax: *86-21-51909333*

FCC Registration Number: *172634*

Accreditation Bodies

The report is prepared by ECMG Worldwide Certification Solution, Inc., which is a fully accredited Test Laboratory for ITE, ISM and Telecommunications Products.

Table of Contents

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Administrative Data

Test Sample : TPMS TOOLS

Model Number : PRO-101

Trade Mark : CUB

Serial Number : Engineering Sample

Date Tested : 2008, June 30th

Applicant : Shanghai Vei Sheng Auto Parts Manufacturing Co., Ltd.
No. 51, Jinwen Road, Airport Industrial Zone, Zhuqiao Town, Nanhui District, Shanghai

Telephone : 86-21-33756999

Fax : 86-21-33756100

Manufacturer : Shanghai Vei Sheng Auto Parts Manufacturing Co., Ltd.
No. 51, Jinwen Road, Airport Industrial Zone, Zhuqiao Town, Nanhui District, Shanghai

EUT Description

Shanghai Vei Sheng Auto Parts Manufacturing Co., Ltd., model PRO-101 (referred to as the EUT in this report) is a TPMS tool.

The EUT can updated by PC through USB port.

Test Summary

The Electromagnetic Compatibility requirements on model PRO-101 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.

Emission Tests				
Specifications	***Description***	***Test Results***	***Test Point***	***Remark***
FCC Part 15.107 (150kHz – 30MHz)	*Conducted Emission*	***For Update Mode:*** *Passed by 0.72 dB of QP* *Passed by 1.38 dB of AVE*	*AC Input Port*	*Attachment 1*
FCC Part 15.109 (30MHz – 1000MHz)	*Radiated Emission*	***For Update Mode:*** *Passed by 3.59 dB of QP*	*Enclosure*	*Attachment 2*

Test Mode Justification

This device complies with Part 15 Class B of the FCC rules. The system was tested in the program mode and update Mode.

In update mode: The EUT is connected to PC and use software to update.

EUT Exercise Software

When playing update mode, an executive program, under WINXP, "CUB TPMS Pro101 Programmer" was used to update the EUT.

Equipment Modification

Any modifications installed previous to testing by Shanghai Vei Sheng Auto Parts Manufacturing Co., Ltd. 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

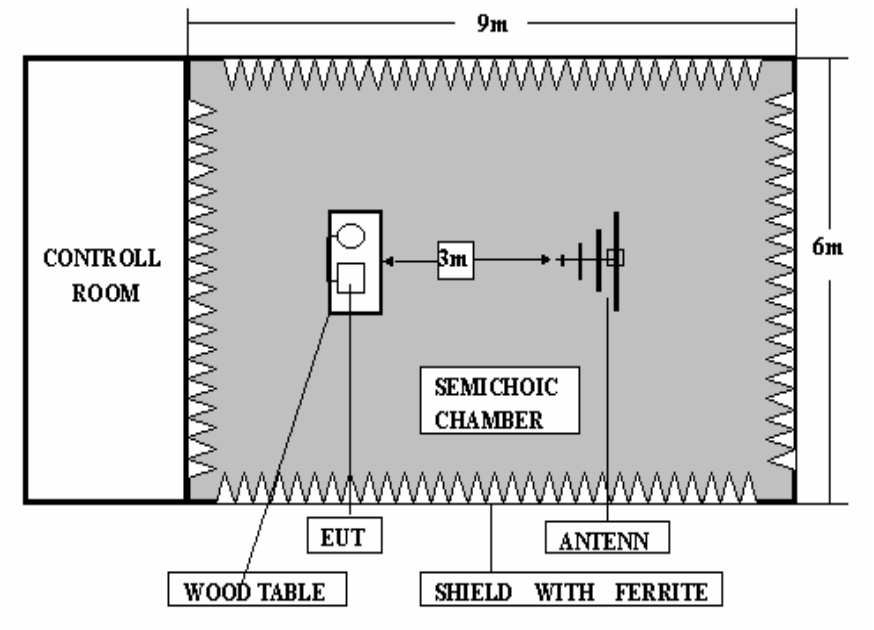
EUT	
Model Number:	PRO-101
Trade Mark:	CUB
Input Voltage:	AC 120V/60Hz
Serial Number:	Engineering Sample
Description:	TPMS TOOLS
Manufacturer:	Shanghai Vei Sheng Auto Parts Manufacturing Co., Ltd.
EUT Power Supply	
Model Name:	AC Adapter
Model Number:	GM-150100
Serial Number:	84038560
Input:	100-240V, 50/60Hz,
Output:	15V DC, 1.0A

Continue on to next page...

Support Equipment				
Description	**Model Number**	**Serial Number**	**Manufacturer**	**Power Cable Description**
PC	OPTIPLEX 330	HBSF92X	DELL	1.8m unshielded
Monitor	E178FPC	CN0WR979641 807CA7L4C	DELL	1.8m unshielded
Keyboard	L100	CN0RH656658 907C401F9	DELL	N/A
Mouse	MOC5UO	G1D02BPQ	DELL	N/A
Remote control box	IT-251B	N/A	N/A	N/A
Printer converter	45CV	961217	INTEL LIGENT	N/A

Cable Description					
Description	**From**	**To**	**Length (Meters)**	**Shielded (Y/N)**	**Ferrite (Y/N)**
VGA Cable	Monitor	PC	1.8m	N	YX2
DC Cable	Adapter	EUT	1.0m	N	YX2 (3cm to the DC connector)
USB Cable	EUT	PC	0.8	N	N
Serial Cable	Remote box	PC	1.5m	N	N
Parallel Cable	Converter	PC	0.5m	N	N

Configuration of Tested System

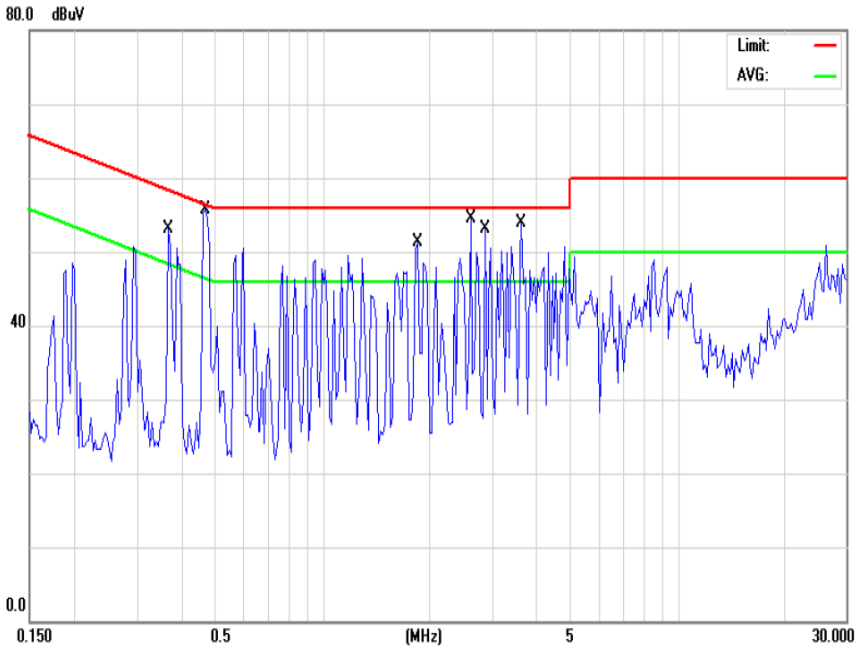


ATTACHMENT 1 - CONDUCTED EMISSION TEST RESULTS

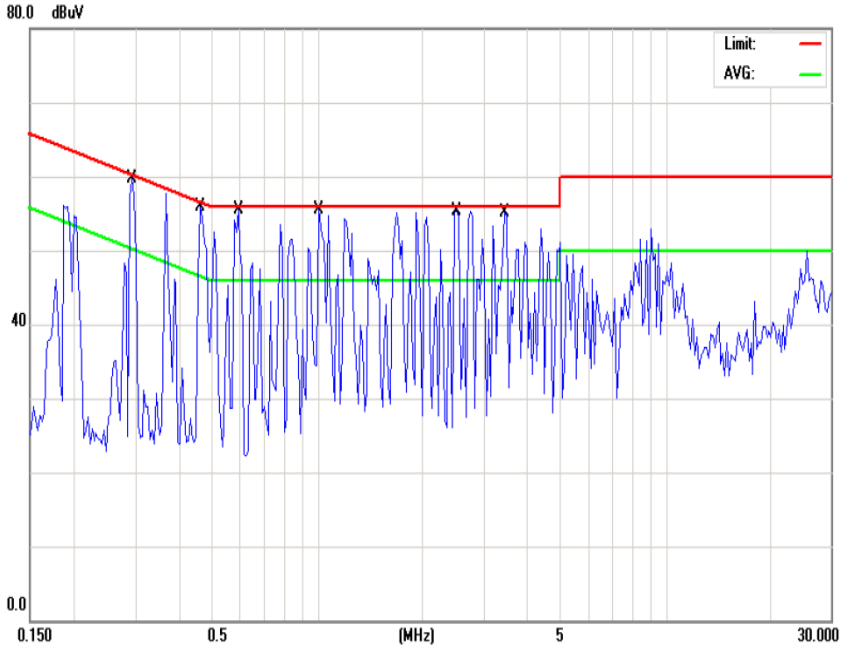
CLIENT:	Shanghai Vei Sheng Auto Parts Manufacturing Co., Ltd.	**TEST REFERENCE:**	FCC Part 15B, Class B
MODEL NUMBER:	PRO-101	**PRODUCT:**	TPMS TOOLS
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	ITE equipment
TEMPERATURE:	23°C	**HUMIDITY:**	60%
ATM PRESSURE:	101.8Pa	**GROUNDING:**	None
TESTED BY:	Cloud Feng	**DATE OF TEST:**	2008, June 30

SETUP METHOD:	ANSI C63.4-2003
TEST PROCEDURE:	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. b. Connect EUT to the power mains through a line impedance stabilization network(LISN) c. The LISN provides 50ohm coupling impedance for the measuring instrument d. Both sides of AC line were checked for maximum conduced interference. e. The frequency range from 150KHz to 30MHz was searched.. f. Set the test-receiver system to Peak Detect Function and Specified bandwidth. 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.
TESTED RANGE:	150kHz to 30MHz
TEST VOLTAGE:	120VAC/60Hz
RESULTS:	**For Update Mode:** The EUT meets the requirements of test reference for Conducted Emissions on line N by 0.72 dB of Quasi-Peak detector and by 1.38 dB of Average detector. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ 2x10^{-7} x Center Freq., Amp $\pm$ 2.6 dB

For Update Mode:



Line L Conducted Emission Graph



Line N Conducted Emission Graph

Line L (Hot Lead)								
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	0.3650	46.19	58.61	-12.42	0.3650	39.02	48.61	-9.59
2	0.4690	52.95	56.53	-3.58	0.4690	42.68	46.53	-3.85
3	1.8580	48.35	56.00	-7.65	1.8580	40.55	46.00	-5.45
4	2.6220	50.25	56.00	-5.75	2.6220	42.09	46.00	-3.91
5	2.8770	47.59	56.00	-8.41	2.8770	38.55	46.00	-7.45
6	3.6500	50.46	56.00	-5.54	3.6500	44.36	46.00	-1.64
Line N (Neutral Lead)								
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	0.2900	59.80	60.52	-0.72	0.2900	46.12	50.52	-4.40
2	0.4620	53.94	56.66	-2.72	0.4620	44.62	46.66	-2.04
3	0.5950	54.40	56.00	-1.60	0.5950	44.62	46.00	-1.38
4	1.0110	55.23	56.00	-0.77	1.0110	43.77	46.00	-2.23
5	2.5200	53.61	56.00	-2.39	2.5200	42.92	46.00	-3.08
6	3.4580	54.84	56.00	-1.16	3.4580	42.17	46.00	-3.83
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: _____ **REVIEWED BY:** _____

ENGINEER **SENIOR ENGINEER**

Model Number: PRO-101
For Update Mode:

Conducted Emission Test Set-up - Front View

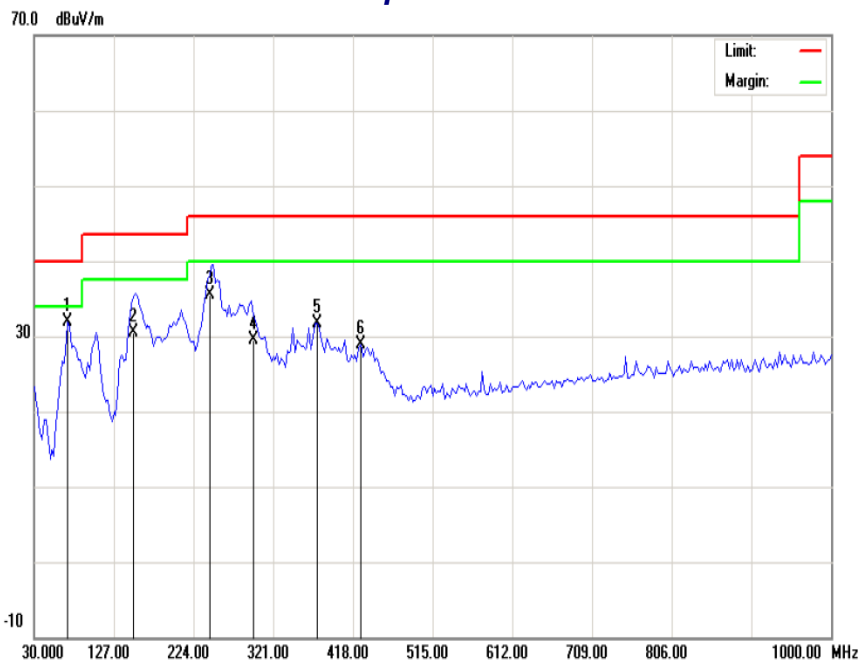
Conducted Emission Test Set-up - Side View

ATTACHMENT 2 - RADIATED EMISSION TEST RESULTS

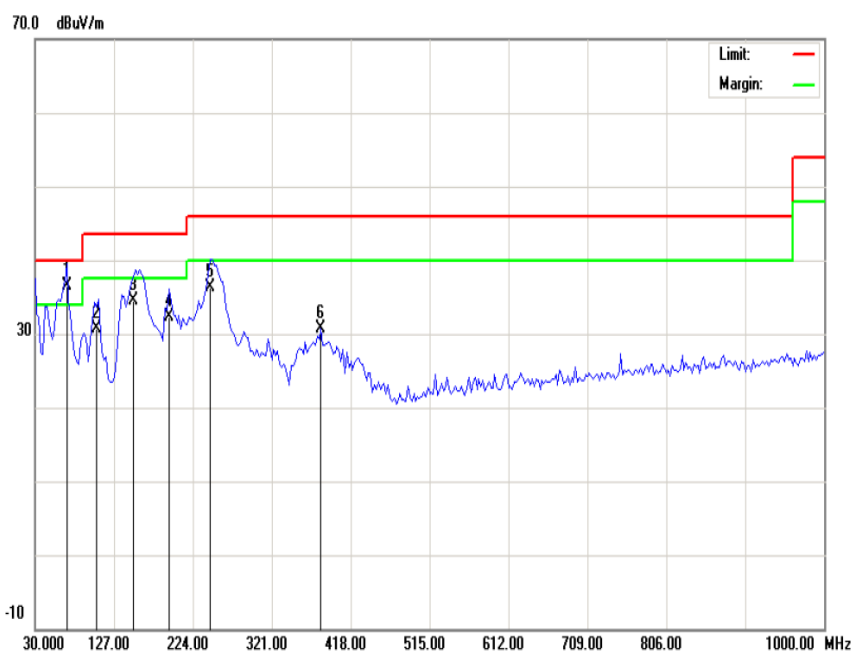
CLIENT:	Shanghai Vei Sheng Auto Parts Manufacturing Co., Ltd.	**TEST REFERENCE:**	FCC Part 15 B, Class B
MODEL NUMBER:	PRO-101	**PRODUCT:**	TPMS TOOLS
SERIAL NO.:	Engineering Sample	**EUT DESIGNATION:**	ITE equipment
TEMPERATURE:	21°C	**HUMIDITY:**	60%
ATM PRESSURE:	102.1Pa	**GROUNDING:**	None
TESTED BY:	Cloud Feng	**DATE OF TEST:**	2008, June 30

SETUP METHOD:	ANSI C63.4-2003
TEST PROCEDURE:	a. The EUT was placed on a rotatable table with 0.8 meters above ground. b. The EUT was set 3 meters from the interference-receiving antenna, which was mounted on the top of a variable height antenna tower. c. For each suspected emission the EUT was arranged to its worst case and turn table (from 0 degree to 360 degree) to find the maximum reading. d. 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. Explanation of the Correction Factor are given as follows: FS= RA + AF + CF - AG Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain
TESTED RANGE:	30MHz to 1000MHz
TEST VOLTAGE:	120VAC / 60Hz
RESULTS:	**For Update Mode:** The EUT meets the requirements of test reference for Radiated Emissions on vertical polarization by 3.59 dB at 66.5000 MHz. The test results relate only to the equipment under test provided by client.
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Worldwide Certification Solution, Inc (China) test personnel.
M. UNCERTAINTY:	Freq. $\pm$ $2x10^{-7}$ x Center Freq., Amp $\pm$ 2.6 dB

For Update Mode:



Field strength Emission Plot (Peak, Max Hold Mode Horizontal)



Field strength Emission Plot (Peak, Max Hold Mode Vertical)

For Update Mode

Horizontal

Signal	Frequency (MHz)	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	71.2249	9.34	31.82	40.00	-8.18	161	182
2	149.6000	11.94	30.59	43.50	-9.41	203	180
3	242.5800	14.45	35.50	46.00	-11.50	155	210
4	295.8800	15.42	29.47	46.00	-17.53	178	164
5	374.3500	17.14	31.71	46.00	-15.29	135	198
6	427.6099	18.37	28.88	46.00	-18.12	100	200

Vertical

Signal	Frequency (MHz)	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	66.5000	9.18	36.41	40.00	-3.59	121	104
2	104.8500	10.19	30.69	43.50	-12.81	143	185
3	150.6500	11.97	34.47	43.50	-9.03	218	121
4	192.8001	13.32	32.32	43.50	-11.18	264	100
5	245.0000	14.50	36.30	46.00	-9.70	174	105
6	381.6250	17.30	30.70	46.00	-15.30	188	128

Set-up/Configuration: ANSI C63.4-2003

Comments: None

Note: All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, 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
Broadband Antenna	Sunol	JB5	A110503	11/29/07	11/28/08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: _____ **REVIEWED BY:** _____

ENGINEER **SENIOR ENGINNER**

Radiated Emission Test Set-Up – Front View

Radiated Emission Test Set-Up – Back View