EMC TEST REPORT

No. SH12050254-001

Applicant	:	Vivax-Metrotech (Shanghai) Ltd. 3F, No. 90, Lane 1122 Qinzhou Rd. (N), Shanghai 200233 China
Manufacturer	:	Vivax-Metrotech (Shanghai) Ltd. 3F, No. 90, Lane 1122 Qinzhou Rd. (N), Shanghai 200233 China
Equipment	:	Pipe and Cable Locator
Type/Model	:	VM-810Tx

SUMMARY

The equipment complies with the requirements according to the following standard(s):

47CFR Part 15 (2010): Radio Frequency Devices

ANSI C63.4 (2009): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

ANSI C63.10 (2009): American National Standard for Testing Unlicensed Wireless Devices

Date of issue: July 19, 2012

Prepared by:

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Reviewed by:

Daniel Zhao (*Reviewer*)

Description of Test Facility

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Content

1. General Information

1.1 Applicant Information

Applicant:	Vivax-Metrotech (Shanghai) Ltd. 3F, No. 90, Lane 1122 Qinzhou Rd. (N), Shanghai 200233 China
Name of contact:	Ms Snow Yang
Tel:	86-21-51099980-840
Fax:	86-21-22819562-47
Manufacturer:	Vivax-Metrotech (Shanghai) Ltd. 3F, No. 90, Lane 1122 Qinzhou Rd. (N), Shanghai 200233 China
Sample received date:	May 4, 2012
Sample Identification No:	*0120504-13-004*
Date of test:	May 4, 2012 ~ June 12, 2012

1.2 Identification of the EUT

Equipment:	Pipe and Cable Locator
Type/model:	VM-810Tx
FCC ID:	N6N2012061801HE
IC:	Not applied

1.3 Technical specification

Operation Frequency Band:	83kHz – 83kHz
Modulation:	PWM
Antenna Designation:	Integral
Rating:	DC 9V
Description of EUT:	There is one model only. The EUT contains two RF output power level setting. Testing for both settings were conducted and marked as “high reading” & “low reading”.
Channel Description:	There is one channel higher than 9kHz and assessed in this report.

1.4 Mode of operation during the test / Test peripherals used

Within this test report, EUT was tested under its rating voltage and frequency.
It was set up and tested as its normal use.

2. Test Specification

2.1 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
RMS Multimeter	Model 189	Fluke	EC 2560	2012-3-4	2013-3-3

2.2 Test Standard

47CFR Part 15 (2010): Radio Frequency Devices

ANSI C63.4 (2009): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

ANSI C63.10 (2009): American National Standard for Testing Unlicensed Wireless Devices

2.3 Test Summary

This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.

TEST ITEM	FCC REFERANCE	RESULT
Input Power	15.213	Pass
Power line conducted emission	15.207	NA

3. Input Power

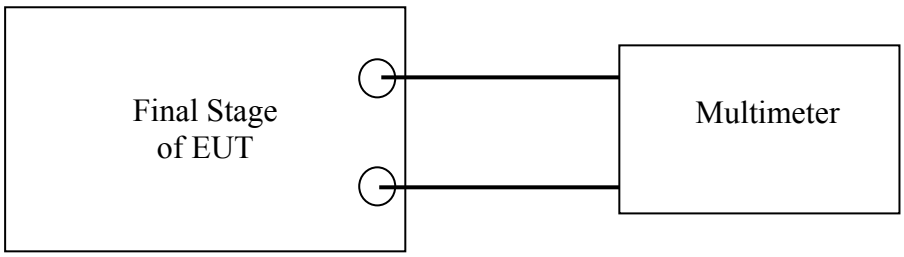
Test result: **PASS**

3.1 Test limit

The input power should comply with the limits below:

Fundamental Frequency (kHz)	Power limit (W)
☐ 9 – 45	10
☒ 45 – 490	1

3.2 Test Configuration



3.3 Test procedure and test setup

a) Identify the final radio frequency stage and all passive and active components associated therewith.

b) Measure the dc voltage applied to the final radio frequency stage

c) Measure the dc current into the final radio frequency stage;

d) Compute the total dc power by multiplying the dc voltage times the dc current.

3.4 Test protocol

PK Voltage (mV)	PK Current (mA)	Calculated Power (W)
210	320	0.067

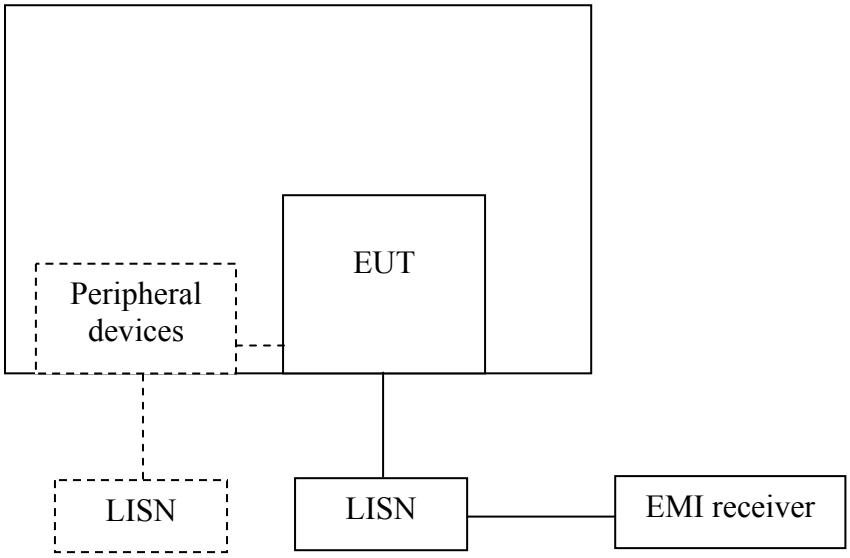
4. Power line conducted emission

Test result: **NA**

4.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

4.2 Test configuration



☐ For table top equipment, wooden support is 0.8m height table

☐ For floor standing equipment, wooden support is 0.1m height rack.

4.3 Test procedure and test set up

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50Ω/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50Ω/50uH coupling impedance with 50Ω termination.
Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement.
The bandwidth of the test receiver is set at 9 kHz.

4.4 Test protocol

Power line: L

Frequency	Correct Factor (dB)	Corrected Reading (dBuV)		Limit (dBuV)		Margin (dB)	
		QP	AV	QP	AV	QP	AV
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Remark: 1. Correction Factor (dB) = LISN Factor (dB) + Cable Loss (dB).
2. Margin (dB) = Limit - Corrected Reading.
3. If the margin higher than 20dB, it would be marked as *.

Power line: N

Frequency	Correct Factor (dB)	Corrected Reading (dBuV)		Limit (dBuV)		Margin (dB)	
		QP	AV	QP	AV	QP	AV
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Remark: 1. Correction Factor (dB) = LISN Factor (dB) + Cable Loss (dB).
2. Margin (dB) = Limit - Corrected Reading.
3. If the margin higher than 20dB, it would be marked as *.