







ISO/IEC17025Accredited Lab.

Report No: FCC 1304070 File reference No: 2013-04-28

Applicant: Videotech Technology Development co., Ltd.

Product: 2.4GHz Digital Wireless Transmitter

Model No: VT-9303TX

Trademark: N/A

Test Standards: FCC Part 15 Subpart C, Paragraph 15.247

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.4 and FCC Part 15 Subpart C, Paragraph 15.247 regulations for the evaluation of

electromagnetic compatibility

Approved By

Jack Chung

Jack Chung Manager

Dated: April 28, 2013

Results appearing herein relate only to the sample tested The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD

5/F, Block 4, Anhua Industrial Zone., No.8 TaiRan Rd.CheGongMiao, FuTian District, Shenzhen, CHINA.

Tel (755) 83448688 Fax (755) 83442996

Report No: 1304070 Page 2 of 43



Special Statement:

Date: 2013-04-28

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAL-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 899988.

IC-Registration No.: IC5205A-02

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-02.

Page 3 of 43

Report No: 1304070 Date: 2013-04-28



Test Report Conclusion

Content

1.0	General Details	4
1.1	Test Lab Details.	4
1.2	Applicant Details.	4
1.3	Description of EUT	4
1.4	Submitted Sample.	5
1.5	Test Duration.	5
1.6	Test Uncertainty.	5
1.7	Test By	5
2.0	List of Measurement Equipment	6
3.0	Technical Details	7
3.1	Summary of Test Results.	7
3.2	Test Standards.	7
4.0	EUT Modification.	7
5.0	Power Line Conducted Emission Test.	8
5.1	Schematics of the Test.	8
5.2	Test Method and Test Procedure.	8
5.3	Configuration of the EUT	8
5.4	EUT Operating Condition.	9
5.5	Conducted Emission Limit.	9
5.6	Test Result.	9
6.0	Radiated Emission test.	12
6.1	Test Method and Test Procedure.	12
6.2	Configuration of the EUT	12
6.3	EUT Operation Condition.	12
6.4	Radiated Emission Limit.	13
7.0	6dB Bandwidth Measurement.	21
8.0	Maximum Peak Output Power.	26
9.0	Power Spectral Density Measurement.	28
10.0	Out of Band Measurement.	33
11.0	Antenna Requirement.	36
12.0	FCC ID Label	37
13.0	Photo of Test Setup and EUT View.	38



1.0 General Details

Date: 2013-04-28

1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD

Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District,

Shenzhen, CHINA.

Telephone: (755) 83448688 Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-02

For 3m & 10 m OATS

1.2 Applicant Details

Applicant: Videotech Technology Development co., Ltd.

Address: Bldg 12, Section B, BaoSheng Industrial Area, BaiNiKeng, PingHu Town, ShenZhen,

Guangdong, China

Telephone: 0755-82977587 Fax: 0755-82977631

1.3 Description of EUT

Product: 2.4GHz Digital Wireless Transmitter

Manufacturer: Videotech Technology Development co., Ltd.

Address: Bldg 12, Section B, BaoSheng Industrial Area, BaiNiKeng, PingHu Town,

ShenZhen, Guangdong, China

Brand Name: N/A

Model Number: VT-9303TX

Additional Model Number: N/A
Additional Trade Name: N/A

Type of Modulation 16QAM

Frequency range 2403-2478MHz;

Channel Spacing 1MHz

Frequency Selection By software

Input Voltage: DC12-24V (used in vehicle)

Channel Number 76 Channels

Antenna: Patch Antenna with maximum gain 2.5dBi.

1.4 Submitted Sample: 2 Samples

The report refers only to the sample tested and does not apply to the bulk.

Report No: 1304070 Page 5 of 43 Date: 2013-04-28



1.5 Test Duration 2013-01-10 to 2013-04-27

1.6 Test Uncertainty Conducted Emissions Uncertainty = 3.6dB Radiated Emissions Uncertainty =4.7dB

Terry Tang Test Engineer 1.7 The sample tested by

Print Name: Terry Tang

Page 6 of 43

Report No: 1304070 Date: 2013-04-28



2.0	Test Equipments							
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date			
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2012-08-21	2013-08-20			
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2012-08-21	2013-08-20			
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2012-08-21	2013-08-20			
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2012-08-21	2013-08-20			
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2012-08-21	2013-08-20			
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2012-08-21	2013-08-20			
System Controller	CT	SC100	-					
Printer	EPSON	РНОТО ЕХЗ	CFNH234850					
Computer	IBM	8434	1S8434KCE99BLXL O*	-	-			
Loop Antenna	EMCO	6502	00042960	2012-08-21	2013-08-20			
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2012-08-21	2013-08-20			
3m OATS			N/A	2012-08-21	2013-08-20			
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2012-08-21	2013-08-20			
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2012-08-21	2013-08-20			
Power meter	Anritsu	ML2487A	6K00003613	2012-08-21	2013-08-20			
Power sensor	Anritsu	MA2491A	32263	2012-08-21	2013-08-20			
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2012-08-21	2013-08-20			
LISN	AFJ	LS16C	10010947251	2012-08-21	2013-08-20			
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2012-08-21	2013-08-20			
9*6*6 Anechoic			N/A	2012-08-21	2013-08-20			
EMI Test Receiver	RS	ESCS30	100139	2012-08-21	2013-08-20			
LISN	AFJ	LS16C	10010947251	2012-08-21	2013-08-20			
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2012-08-21	2013-08-20			

Report No: 1304070 Date: 2013-04-28



3.0 **Technical Details**

3.1 **Summary of test results**

The EUT has been tested according to the following specifications:					
Standard	Test Type	Result	Notes		
FCC Part 15, Paragraph 15.107 & 15.207	Conducted Emission Test	PASS	Complies		
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz	PASS	Complies		
FCC Part 15, Paragraph 15.247(b)	Maximum peak output power Limit: max. 30dBm	PASS	Complies		
FCC Part 15, Paragraph 15.109,15.205 & 15.209	Transmitter Radiated Emission Limit: Table 15.209	PASS	Complies		
FCC Part 15, Paragraph 15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Complies		
FCC Part 15, Paragraph 15.247(d)	Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209	PASS	Complies		

3.2 **Test Standards**

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

EUT Modification 4.0

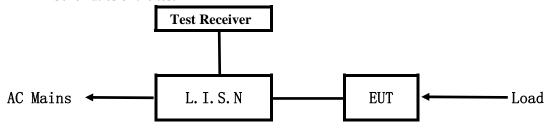
No modification by Shenzhen Timeway Technology Consulting Co., Ltd

Report No: 1304070 Date: 2013-04-28



5. Power Line Conducted Emission Test

5.1 Schematics of the test

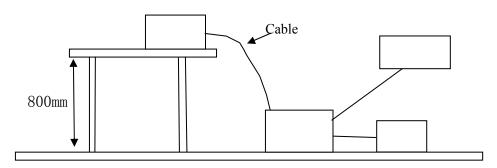


EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4-2003.

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the

appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model	FCC ID
2.4GHz Digital	Videotech Technology Development	VT-9303TX	W3DVT-9303TX
Wireless Transmitter	co., Ltd.	V 1-93031 A	W3DV1-93031A

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
--------	--------------	-------	------------

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Shenzhen Timeway Technology Consulting Co.,Ltd. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Shenzhen Timeway Technology Consulting co.,Ltd to his customer. Supplier or others persons directly concerned. Shenzhen Timeway Technology Consulting co.,Ltd will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

Report No: 1304070

Date: 2013-04-28

Page 9 of 43

NT/A		
I IN/A		
1 1/1 1		

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A				

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207.

Frequency		Class A Limits (dB µ V)		Class B Limits (dB μ V)		
(M	IHz)	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level	
0.15 ~	0.50	79.0	66.0	66.0~56.0*	56.0~46.0*	
0.50 ~	5.00	73.0	60.0	56.0	46.0	
5.00 ~	30.00	73.0	60.0	60.0	50.0	

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

Report No: 1304070 Page 10 of 43
Date: 2013-04-28



A: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Charging and Keep Transmitting

Equipment Level: Class B

Results: N/A

Please refer to following diagram for individual

Frequency	Line	Reading(dBμV)	Limit(c	dBμV)
(MHz)	Line	Quasi-peak	Average	Quasi-peak	Average
	Live				

Report No: 1304070 Page 11 of 43

Date: 2013-04-28

B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Charging and Keep Transmitting

Equipment Level: Class B

Results: N/A

Please refer to following diagram for individual

Frequency	Line	Reading(dBμV)	Limit(c	dBμV)
(MHz)	Line	Quasi-peak	Average	Quasi-peak	Average
	Neutral				

N/A --- EUT powered by vehicle battery, this test item not applicable.

Date: 2013-04-28



6 Radiated Emission Test

- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup Distance = 3m Computer Pre -Amplifier Furn-table Receiver

- 6.2 Configuration of The EUT
 Same as section 5.3 of this report
- 6.3 EUT Operating Condition
 Same as section 5.4 of this report.

Report No: 1304070

Date: 2013-04-28



6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Page 13 of 43

Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 2. In the Above Table, the higher limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

Note: EUT used in vehicle environment. The input voltage is DC12-24V. After pre-scanning, the DC24V is the worse case.

Report No: 1304070 Date: 2013-04-28



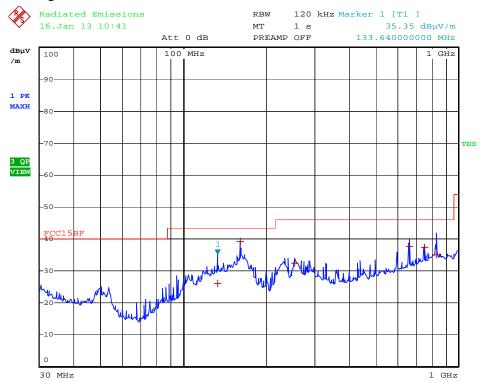
Test result

General Radiated Emission Data and Harmonics Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep transmitting

Results: Pass

Test Figure:



Date: 16.JAN.2013 10:41:39

Polarizatio n	Frequenc y(MHz)	Read Value (dBuV/m)	Antenna Factor(dB)	Cable Loss(dB)	Measured Result (dBuV/m)	QP limit (dBuV/m	margin (dB)
Н	133.64	18.1	7.3	0.8	26.2	43.5	-17.3
Н	162.00	30.1	8.3	0.8	39.2	43.5	-4.3
Н	254.12	19.6	11.6	1.2	32.4	46.0	-13.6
Н	665.80	15.8	19.7	2.1	37.6	46.0	-8.4
Н	756.00	13.9	21.3	2.1	37.3	46.0	-8.7
Н	831.56	10.8	22.0	2.3	35.1	46.0	-10.9

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Shenzhen Timeway Technology Consulting Co.,Ltd. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Shenzhen Timeway Technology Consulting co.,Ltd to his customer. Supplier or others persons directly concerned. Shenzhen Timeway Technology Consulting co.,Ltd will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

Report No: 1304070 Date: 2013-04-28



Test result

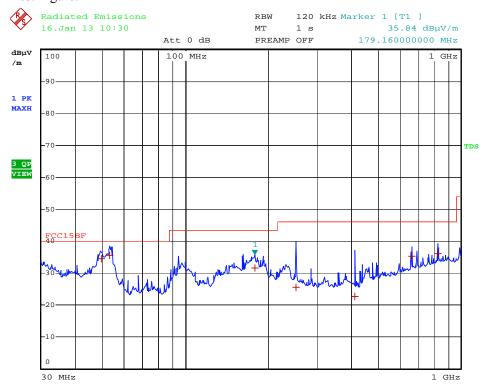
General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep transmitting

Results: Pass

Test Figure:



Date: 16.JAN.2013 10:30:40

Polarizatio n	Frequenc y(MHz)	Read Value (dBuV/m)	Antenna Factor(dB)	Cable Loss(dB)	Measured Result (dBuV/m)	QP limit (dBuV/m	margin (dB)
V	49.84	26.4	7.7	0.5	34.6	40.0	-5.4
V	53.28	27.5	7.7	0.5	35.7	40.0	-4.3
V	179.16	22.4	8.3	0.9	31.6	43.5	-11.9
V	253.76	13.0	11.3	1.2	25.5	46.0	-20.5
V	413.16	5.8	15.8	1.2	22.8	46.0	-23.2
V	665.32	13.8	19.6	2.0	35.4	46.0	-10.6
V	830.28	11.9	22.0	2.3	36.2	46.0	-9.8

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Shenzhen Timeway Technology Consulting Co.,Ltd. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Shenzhen Timeway Technology Consulting co.,Ltd to his customer. Supplier or others persons directly concerned. Shenzhen Timeway Technology Consulting co.,Ltd will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

Report No: 1304070 Page 16 of 43

Date: 2013-04-28



Operation Mode: Transmitting under Low Channel (2403MHz)

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \u03b4 V/m)
2403	85.58 (PK)	Н	Fundamental Frequency
2403	86.98 (PK)	V	Fundamental Frequency
4806	-	H/V	74(Peak)/ 54(AV)
7209	-	H/V	74(Peak)/ 54(AV)
9612	ı	H/V	74(Peak)/ 54(AV)
12015	1	H/V	74(Peak)/ 54(AV)
14418	-	H/V	74(Peak)/ 54(AV)
16821	-	H/V	74(Peak)/ 54(AV)
19224	1	H/V	74(Peak)/ 54(AV)
21627		H/V	74(Peak)/ 54(AV)
24030		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

Operation Mode: Transmitting g under Middle Channel (2441MHz)

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \(\mu \)V/m)	
2441	85.52 (PK)	Н	Fundamental Frequency	
2441	86.28 (PK)	V	Tundamental Frequency	
4882	1	H/V	74(Peak)/ 54(AV)	
7323	1	H/V	74(Peak)/ 54(AV)	
9764	1	H/V	74(Peak)/ 54(AV)	
12205		H/V	74(Peak)/ 54(AV)	
14646	-1	H/V	74(Peak)/ 54(AV)	
17087	1	H/V	74(Peak)/ 54(AV)	
19528	1	H/V	74(Peak)/ 54(AV)	
21969		H/V	74(Peak)/ 54(AV)	
24410		H/V	74(Peak)/ 54(AV)	

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

Report No: 1304070 Page 17 of 43

Date: 2013-04-28



Operation Mode: Transmitting under High Channel (2478MHz)

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
2478	87.56 (PK)	Н	Eundomontal Eroguanov
2478	87.57 (PK)	V	Fundamental Frequency
4956	1	H/V	74(Peak)/ 54(AV)
7434	1	H/V	74(Peak)/ 54(AV)
9912		H/V	74(Peak)/ 54(AV)
12390	1	H/V	74(Peak)/ 54(AV)
14868	-	H/V	74(Peak)/ 54(AV)
17346	1	H/V	74(Peak)/ 54(AV)
19824		H/V	74(Peak)/ 54(AV)
22303	1	H/V	74(Peak)/ 54(AV)
24780		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

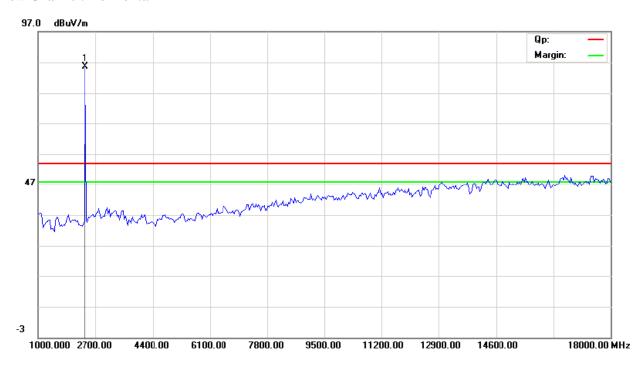
^{2.} Remark "---" means that the emissions level is too low to be measured

Report No: 1304070 Date: 2013-04-28

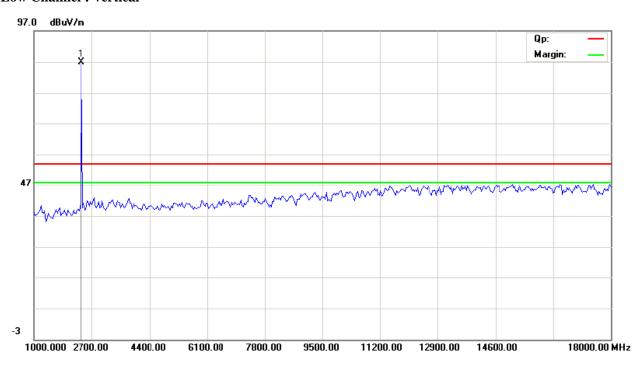


Please refer to the following test plots for details:

Low Channel: Horizontal



Low Channel: Vertical



The report refers only to the sample tested and does not apply to the bulk.

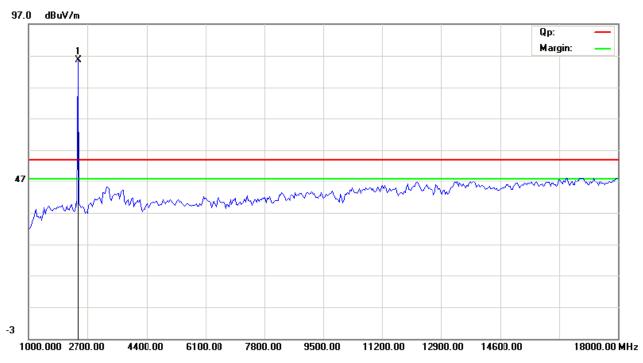
This report is issued in confidence to the client and it will be strictly treated as such by the Shenzhen Timeway Technology Consulting Co.,Ltd. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Shenzhen Timeway Technology Consulting co.,Ltd to his customer. Supplier or others persons directly concerned. Shenzhen Timeway Technology Consulting co.,Ltd will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The Shenzhen Timeway Technology Consulting co .,Ltd reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

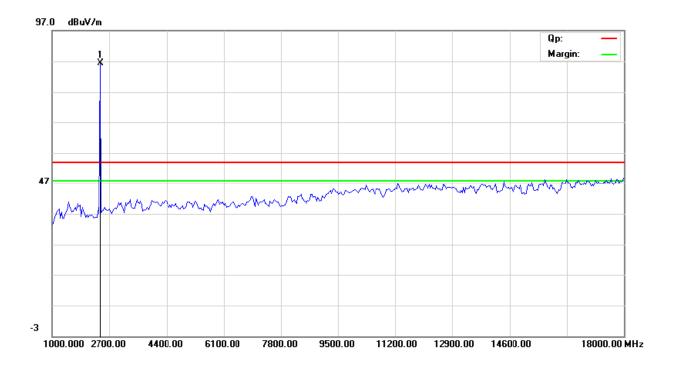
Report No: 1304070 Date: 2013-04-28



Middle Channel: Horizontal



Middle Channel: Vertical



The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Shenzhen Timeway Technology Consulting Co.,Ltd. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Shenzhen Timeway Technology Consulting co.,Ltd to his customer. Supplier or others persons directly concerned. Shenzhen Timeway Technology Consulting co.,Ltd will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

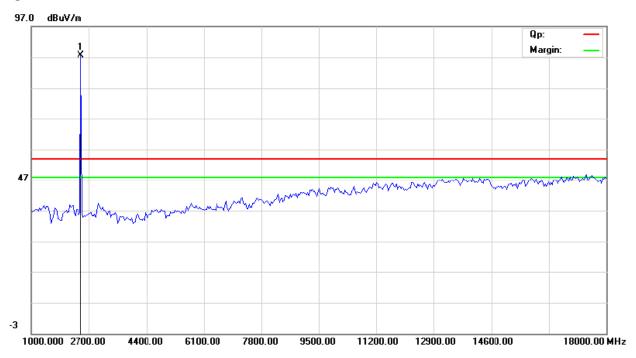
In the event of the improper use of the report. The Shenzhen Timeway Technology Consulting co .,Ltd reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Page 20 of 43

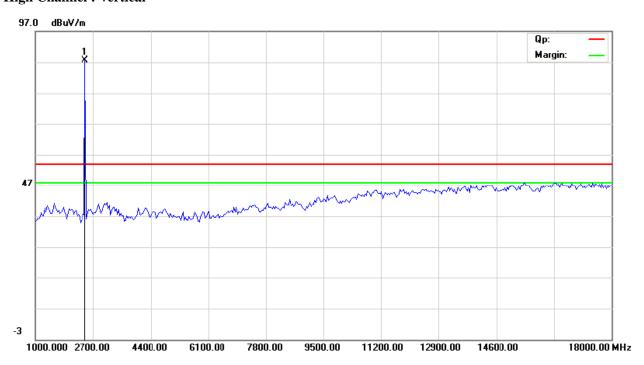
Report No: 1304070 Date: 2013-04-28



High Channel: Horizontal



High Channel: Vertical



Note: for the radiated emissions above 18G, it is the floor noise.

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Shenzhen Timeway Technology Consulting Co.,Ltd. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Shenzhen Timeway Technology Consulting co.,Ltd to his customer. Supplier or others persons directly concerned. Shenzhen Timeway Technology Consulting co.,Ltd will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The Shenzhen Timeway Technology Consulting co.,Ltd reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

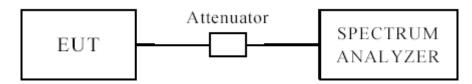
Report No: 1304070 Page 21 of 43

Date: 2013-04-28



7.0 6dB Bandwidth Measurement

7.1 Test Setup



7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

7.3 Test Procedure

- 1. Set resolution bandwidth (RBW) = 100 kHz
- 2. Set the video bandwidth (VBW) \geq 3 x RBW.
- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.
- 7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.4 Test Result

Report No: 1304070 Page 22 of 43

Date: 2013-04-28



6dB Occupied Bandwidth

EUT	2.4GHz Digital Wireless Transmitter	Model	VT-9303TX
Mode	Keep Transmitting	Input Voltage	DC24V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
Low	2403	1	2.86	0.5	Pass
Middle	2441	1	2.86	0.5	Pass
High	2478	1	2.89	0.5	Pass

Note: EUT used in vehicle environment. The input voltage is DC12-24V. After pre-scanning, the DC24V is the worse case.

Page 23 of 43

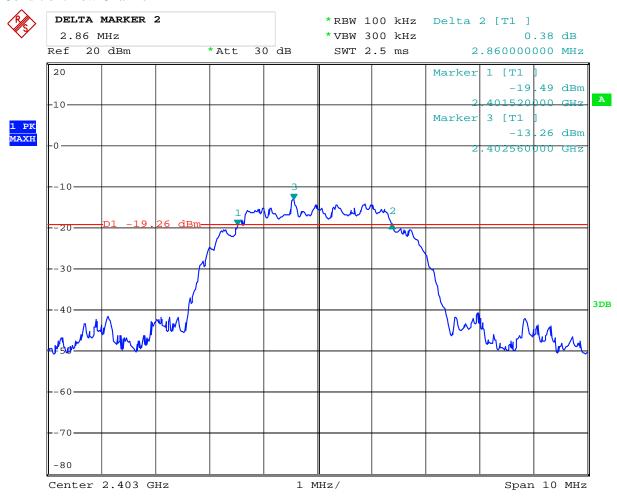
Date: 2013-04-28

Report No: 1304070



Test Figure:

1. Condition: Low Channel



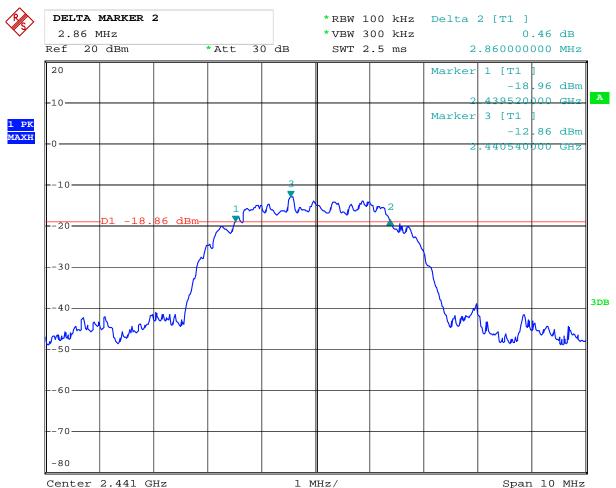
Date: 27.APR.2013 18:04:33

Report No: 1304070 Page 24 of 43

Date: 2013-04-28



2. Condition: Middle Channel



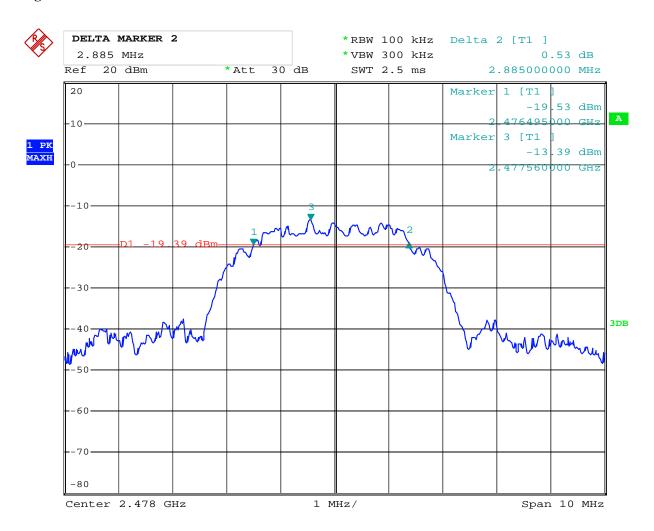
Date: 27.APR.2013 18:09:13

Report No: 1304070 Page 25 of 43

Date: 2013-04-28



3. High Channel



Date: 27.APR.2013 18:13:08

Report No: 1304070 Page 26 of 43

Date: 2013-04-28

8. Maximum Peak Output Power

8.1 Test Setup



8.2 Limits of Maximum Peak Output Power

The Maximum Peak Output Power Measurement is 30dBm.

8.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: the peak power was measured

Report No: 1304070 Page 27 of 43

Date: 2013-04-28



8.4Test Results

EUT		2.4GHz Digital V	Wireless Transmitter	Model		VT-9303TX	
Mode	de Keep Tr		ransmitting Input Voltage		Input Voltage		DC24V
Temperati	ure	24 0	leg. C,	Humidity		56% RH	
Channel	Cha	annel Frequency (MHz)	Peak Power Output (dBm)		P	Peak Power Limit (dBm)	Pass/ Fail
Low		2403	0.23			30	Pass
Middle		2441	0.58			30	Pass
High		2478	0.05			30	Pass

Note:

- 1. The result basic equation calculation as follow: Peak Power Output = Peak Power Reading + Cable loss + Attenuator
- 2. EUT used in vehicle environment. The input voltage is DC12-24V. After pre-scanning, the DC24V is the worse case.

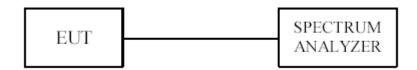
Report No: 1304070 Page 28 of 43

Date: 2013-04-28



9. Power Spectral Density Measurement

9.1 Test Setup



9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm.

9.3 Test Procedure

- 1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
- 2. Set the RBW = 10 kHz.
- 3. Set the VBW \geq 30 kHz.
- 4. Set the span to 1.5 times the DTS channel bandwidth.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
- 11. The resulting peak PSD level must be ≤ 8 dBm.

Report No: 1304070 Page 29 of 43

Date: 2013-04-28



9.4Test Result

EUT		2.4GHz Digital Wireless Transmitter		Model		VT-9303TX
Mode		Keep Transmitting Input Voltage		e	DC24V	
Temperati	ure	24 d	eg. C,	Humidity		56% RH
Channel	Cha	annel Frequency (MHz)	Final RF Power	Level (dBm)	Maximum Limit (dBm)	Pass/ Fail
Low		2403	-16.70	6	8	Pass
Middle		2441	-16.20	6	8	Pass
High		2478	-16.4:	5	8	Pass

Note: EUT used in vehicle environment. The input voltage is DC12-24V. After pre-scanning, the DC24V is the worse case.

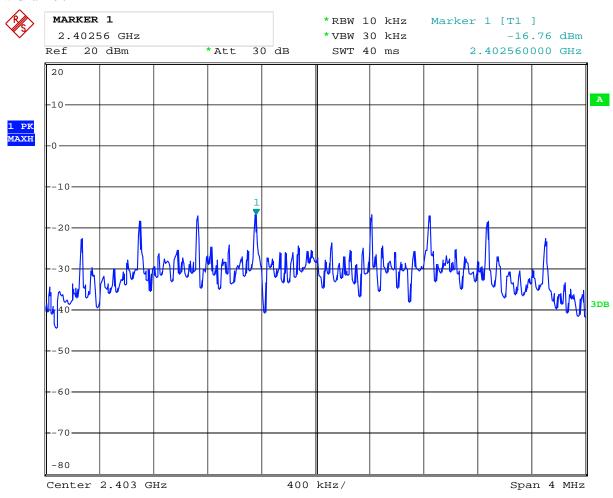
Page 30 of 43

Report No: 1304070 Date: 2013-04-28



Test Plots:

Low Channel:



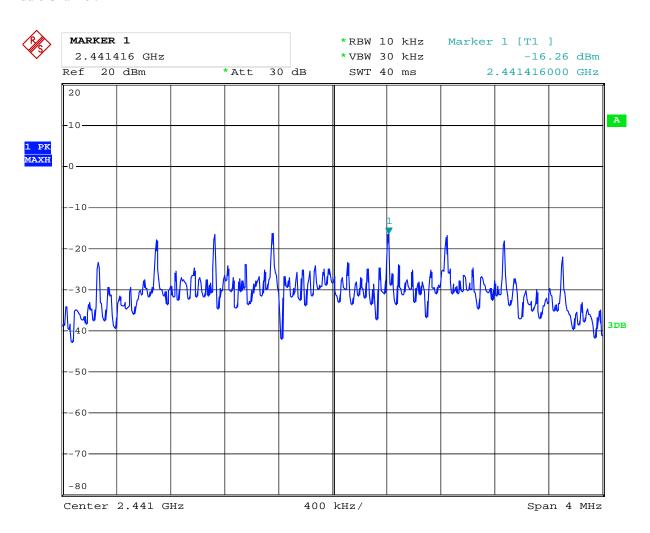
Date: 27.APR.2013 18:06:19

Page 31 of 43

Report No: 1304070 Date: 2013-04-28



Middle Channel:



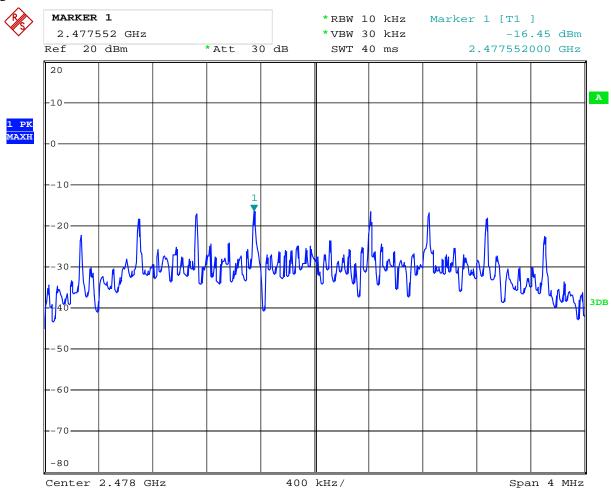
Date: 27.APR.2013 18:10:43

Report No: 1304070 Page 32 of 43

Date: 2013-04-28



High Channel



Date: 27.APR.2013 18:11:44

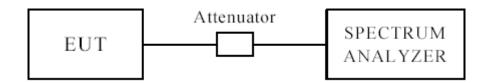
Report No: 1304070 Page 33 of 43

Date: 2013-04-28



10 Out of Band Measurement

10.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

10.2 Limits of Out of Band Emissions Measurement

- 1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

10.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test.(Peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector)

For bandage test, the spectrum set as follows: RBW=VBW=100 kHz. A conducted measurement used

10.4 Test Result

Please see next pages

Note: 1. for band-edge measurement, the frequency from 30 MHz-25 GHz was tested. And It met the FCC rule.

2. EUT used in vehicle environment. The input voltage is DC12-24V. After pre-scanning, the DC24V is the worse case.

Page 34 of 43

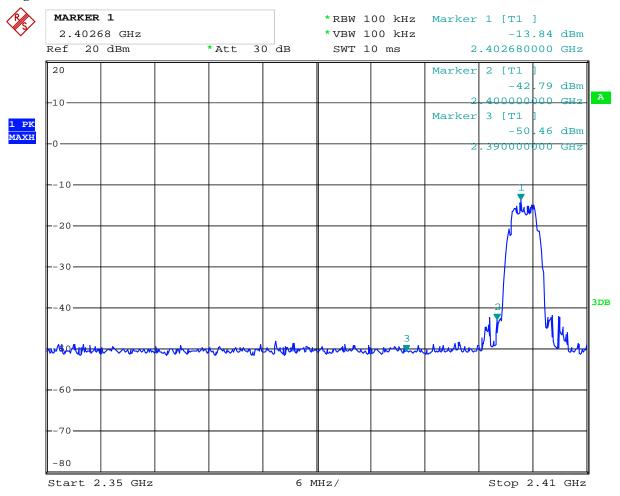
Report No: 1304070 Date: 2013-04-28



10.4 Band-edge and Restricted band Measurement

EUT	2.4GHz Digital Wireless Transmitter		Model	VT-9303TX
Mode	Keeping	g Transmitting	Input Voltage	DC24V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2400	PK (dBµV/m)	43.05	Limit	74(dBμV/m)
	AV (dBμV/m)		Limit	54(dBµV/m)
2390	PK (dBμV/m)	37.29	Limit	74(dBµV/m)
	AV (dBμV/m)		Lillit	54(dBµV/m)

Test Figure:



Date: 27.APR.2013 18:07:27

Note: The Max. FS in Restrict Band are measured in conventional method.

Page 35 of 43

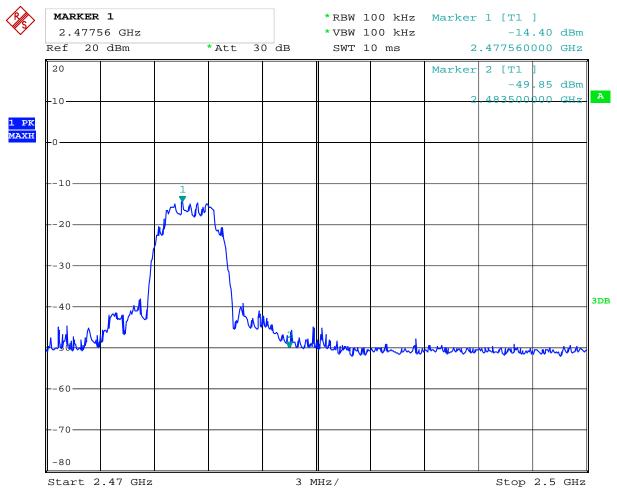
Report No: 1304070 Date: 2013-04-28



10.4 Band-edge and Restricted band Measurement

EUT	2.4GHz Digita	l Wireless Transmitter	Model	VT-9303TX
Mode	Keepin	g Transmitting	Input Voltage	DC24V
Temperature	24	4 deg. C,	Humidity	56% RH
Test Result:	Pass		Detector	PK
2483.5		PK (dBμV/m) 41.46		$74(dB\mu V/m)$
	AV (dBμV/m)		Limit	$54(dB\mu V/m)$

Test Figure:



Date: 27.APR.2013 18:15:01

Note: The Max. FS in Restrict Band are measured in conventional method.

Report No: 1304070 Page 36 of 43

Date: 2013-04-28



11.0 Antenna Requirement

11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

11.2 Antenna Connected construction

Patch Antenna used. The maximum Gain of the antennas is 2.5dBi.

Report No: 1304070 Page 37 of 43

Date: 2013-04-28



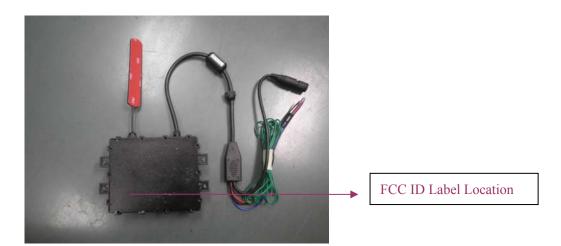
12.0 FCC ID Label

FCC ID: W3DVT-9303TX

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.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



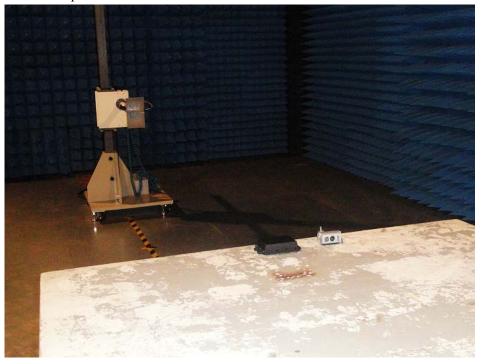
Report No: 1304070 Date: 2013-04-28

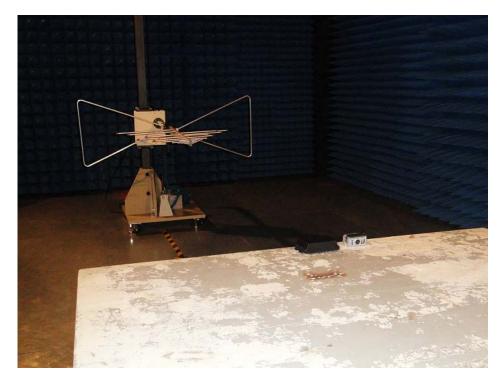


13.0 Photo of testing

Conducted Emission Test Setup:--N/A

Radiated Emission Test Setup:





The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Shenzhen Timeway Technology Consulting Co., Ltd. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Shenzhen Timeway Technology Consulting co .,Ltd to his customer. Supplier or others persons directly concerned. Shenzhen Timeway Technology Consulting co., Ltd will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The Shenzhen Timeway Technology Consulting co .,Ltd reserves the rights to withdraw it and to

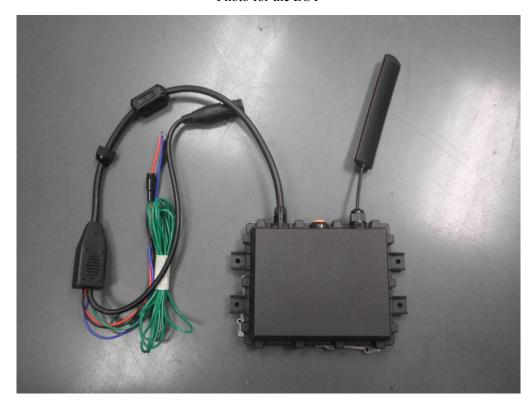
adopt any other remedies which may be appropriate.

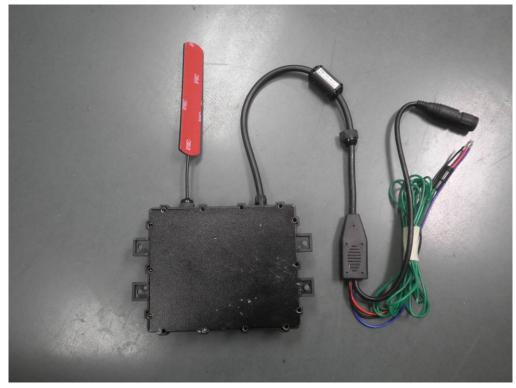
Page 39 of 43

Report No: 1304070 Date: 2013-04-28



Photo for the EUT





The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Shenzhen Timeway Technology Consulting Co.,Ltd. It may not be reproduced rather in its entirety or in part and it may not be used for adverting. The client to whom the report is issued may, however, show or send it. or a certified copy there of prepared by the Shenzhen Timeway Technology Consulting co.,Ltd to his customer. Supplier or others persons directly concerned. Shenzhen Timeway Technology Consulting co.,Ltd will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The Shenzhen Timeway Technology Consulting co .,Ltd reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Page 40 of 43

Report No: 1304070 Date: 2013-04-28



Photo for the EUT

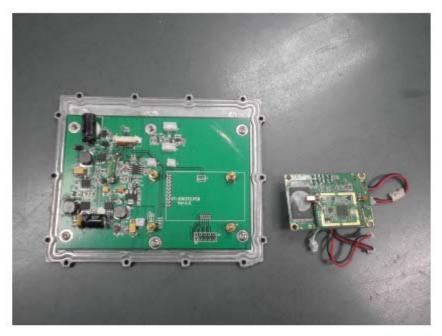




Page 41 of 43

Report No: 1304070 Date: 2013-04-28







Page 42 of 43

Report No: 1304070 Date: 2013-04-28





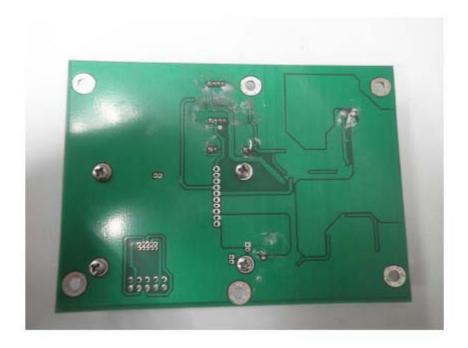


Report No: 1304070

Date: 2013-04-28

Page 43 of 43





End of the report