



Hong Kong

FCC - TEST REPORT

Report Number : **60/790.13.012.01** (Version 2.0) Date of Issue: 16th May 2013

Model : **POWERCALBLE**

Product Type : **Digital HRM TRANSMITTER**

Applicant : **Dayton Industrial Co., Ltd.**

Address : **2-12 Kwai Fat Road, 11-A Kwai Chung, New Territories, Hong Kong**

Production Facility : **Kendy Enterprise Ltd.**

Address : **2-12 Kwai Fat Road, 11-A Kwai Chung, New Territories, Hong Kong**

Test Result : **Positive** **Negative**

Total pages including Appendices : 39

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Report Number: **60/790.13.012.01 (Version 2.0)**

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Rev. no.: 2.1



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2. Details about the Test Laboratory

Details about the Test Laboratory

Test site 1:

Company name: TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2,
10 Science Park West Avenue,
Science Park, Shatin
HK.

Telephone: 852 2776 1323

Fax: 852 2776 1372

Test site 2:

Company name: TMC-Telecommunication Metrology Center of M.I.I.T
No. 52 Hua Yuanbei Road, Haidian District, Beijing, P.R.China

3. Description of the Equipment Under Test

Description of the Equipment Under Test

Product: Digital HRM TRANSMITTER
Model no.: POWERCALBLE
Serial number: NIL
Options and accessories: NIL
Rated Voltage: 3.0VDC – 1 x CR2032 size battery
Rated Current: NIL
Rated Power: NIL
Frequency: NIL
Modulation type: GFSK
Antenna gain: 0 dBi
RF Transmission
Frequency: 2402MHz-2480MHz

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
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Hong Kong

4. Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C, Intentional Radiators, 10-1-12 Edition	PART 15 – RADIO FREQUENCY DEVICES Subpart C – Intentional Radiators

5. Summary of Test Results

Technical Requirements					
FCC Part 15 Subpart C					
Test Condition	Pages	Test site	Test Result		
			Pass	Fail	N/A
15.207 Conducted Emission AC Power Port	NIL	NIL	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15.247 (b) (1) Conducted peak output power	8	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.247(d) band edge compliance of RF radiated emission	11	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.247(d) Spurious RF conducted emissions	17	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.247(d) 15.209 Spurious radiated emissions	22	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.247(a)(2) 6dB bandwidth	30	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.247(e) Power spectral density	35	Site 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. General Remarks

Remarks

This submittal(s) (test report) intended for FCC ID: O4GPWRCALBLE complies with Section 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

All the configurations of the product were tested and only the worst test results listed in the report.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: 18th April 2013

Testing Start Date: 18th April 2013

Testing End Date: 14th May 2013

- TÜV SÜD HONG KONG LTD. -

Reviewed by:



Edmond FUNG



Prepared by:



Sam WONG

7. Technical Requirement

7.1 Conducted peak output power

Test Method

The transmitter output connected to the Spectrum analyzer and set to the peak power detection.

Limits for conducted peak output power measurements

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	≤ 1.0	≤ 30.0



Hong Kong

Conducted peak output power

Date of test : 07th May 2013

Test requirement : FCC Part 15

Test method : ANSI C63.10:2009

Remarks : NIL

Test Result

Passed

Not Passed

Type	Channel		
	2402 MHz	2442 MHz	2480 MHz
GFSK	-0.95 dBm	1.08 dBm	3.16 dBm

Conducted peak output power**Test Equipment**

DESCRIPTION	Type No.	Serial No.	Calibrated until
Antenna	VULB9163	9163 330	2014.02.24
Antenna	3164-05	85724	2014.02.17
Loop Antenna	6512	29604	2013.09.24
Spectrum Analyzer	FSP 40	100378	2013.12.22
EMI Test Receiver	ESCI	100701	2013.08.03
Spectrum Analyzer	FSV40	100903	2014.01.26
Test Cable	SUCOFLEX 104	MY2320/4	2014.02.17
Amplifier	150A250	326446	2014.03.17

7.2 Band edge Measurement

Test Method

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.4 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW and VBW to 1MHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength.

The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW and VBW to 100kHz, to measure the conducted peak band edge.

Limits

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

Frequency MHz	Limit Average dBuV/m	Limit Peak dBuV/m
Below 2390 Above 2483.5	54	74

Band edge Measurement

Date of test : 08th May 2013

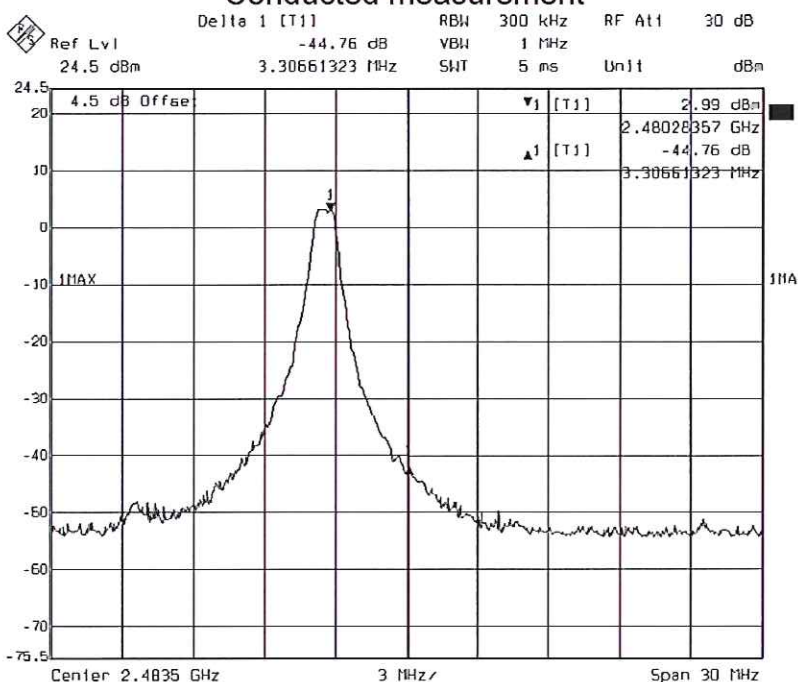
Test requirement : FCC Part 15

Test method : ANSI C63.10:2009

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Conducted measurement



Frequency (MHz)	Reading (dBm)	Limit (-20dBc)	Margin (dB)
2480.028	2.99	-	-
2483.500	-41.77	-22.99	-18.78

Band edge Measurement

Date of test : 08th May 2013

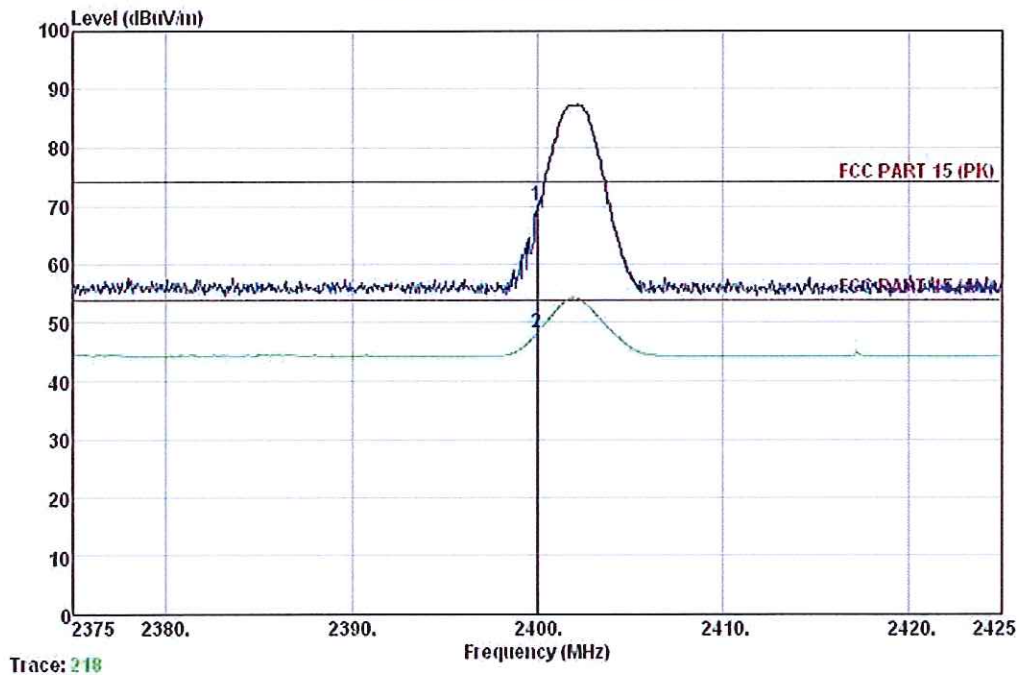
Test requirement : FCC Part 15

Test method : ANSI C63.10:2009

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Radiated measurement



	Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark		
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	dB
		dBm	dB/m	dB	dB	dBm/m	dBm/m		
1	2400.000	36.84	27.58	5.67	0.00	70.09	74.00	-3.91	Peak
2	2400.000	15.00	27.58	5.67	0.00	48.25	54.00	-5.75	Average

Band edge Measurement

Date of test : 08th May 2013

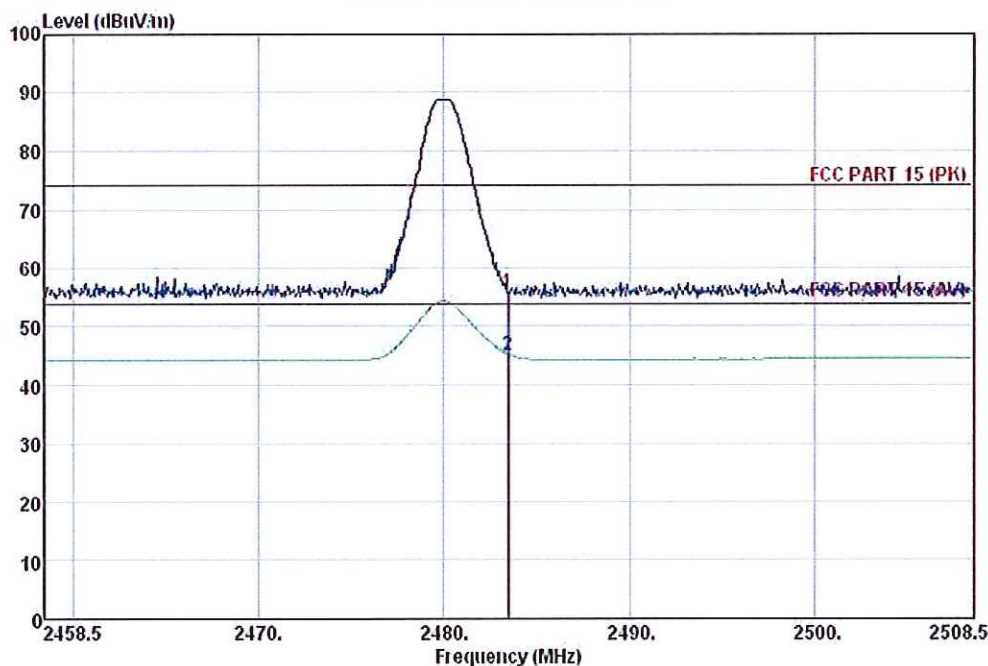
Test requirement : FCC Part 15

Test method : ANSI C63.10:2009

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Radiated measurement



	Read Freq	Antenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	2483.500	22.61	27.52	5.70	0.00	55.83	74.00	-18.17	Peak
2	2483.500	11.97	27.52	5.70	0.00	45.19	54.00	-8.81	Average

Band edge Measurement**Test Equipment List**

DESCRIPTION	Type No.	Serial No.	Calibrated until
Antenna	VULB9163	9163 330	2014.02.24
Antenna	3164-05	85724	2014.02.17
Loop Antenna	6512	29604	2013.09.24
Spectrum Analyzer	FSP 40	100378	2013.12.22
EMI Test Receiver	ESCI	100701	2013.08.03
Spectrum Analyzer	FSV40	100903	2014.01.26
Test Cable	SUCOFLEX 104	MY2320/4	2014.02.17
Amplifier	150A250	326446	2014.03.17

7.3 Spurious RF conducted emissions

Test Method

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The resolution bandwidth(RBW) and the video bandwidth (VBW) of the spectrum analyzer were respectively set to 100kHz and 100kHz.

Limit

Frequency Range MHz	Limit (dBc)
1000-25000	-20

Spurious RF conducted emissions

Date of test : 08th May 2013

Test requirement : FCC Part 15

Test method : ANSI C63.10:2009

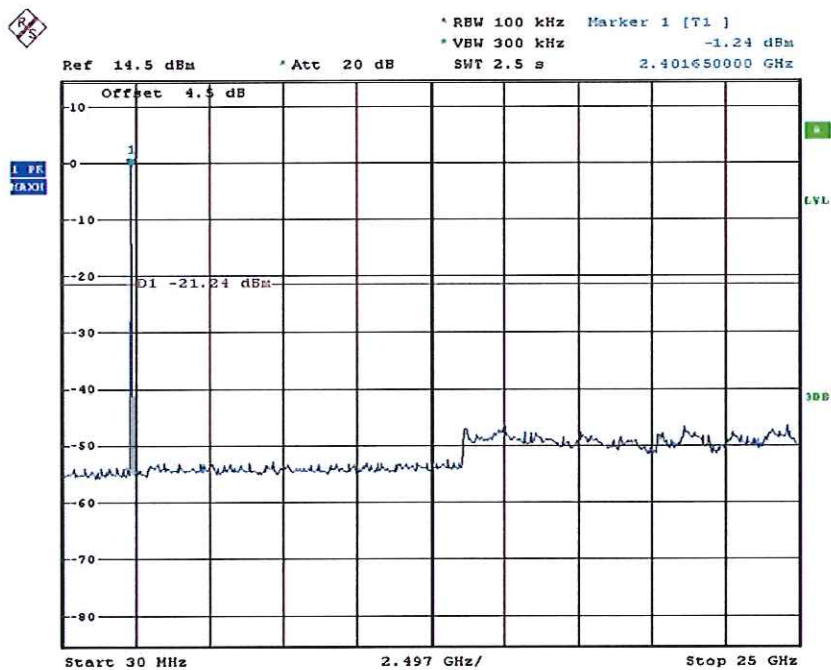
Channel : 2402 MHz

Remark : NIL

Test Result

Passed

Not Passed



Spurious RF conducted emissions

Date of test : 08th May 2013

Test requirement : FCC Part 15

Test method : ANSI C63.10:2009

Channel : 2442MHz

Remark : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

