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Report On

FCC Testing of the GENERAL TOOLS & INSTRUMENTS COMPANY
LLC.

Short Range Device Wireless USB Receiver DCS100R

In accordance with FCC CFR 47 Part 15 Part B

COMMERCIAL-IN-CONFIDENCE

FCC ID: YRKDCS100R

Document 57010088 Report 02 Issue 1

September 2010





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COMMERCIAL-IN-CONFIDENCE

REPORT ON

FCC CRF 47 Parts 15 B: 2008 Testing of the
GENERAL TOOLS & INSTRUMENTS COMPANY LLC.
Short Range Device Wireless USB Receiver DCS100R

Document 57010088 Report 02 Issue 1

September 2010

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DATED

28 Sep. 10



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SECTION 1

REPORT SUMMARY

FCC Testing of the GENERAL TOOLS & INSTRUMENTS COMPANY LLC.
Short Range Device Wireless USB Receiver DCS100R
in accordance with FCC CFR 47 Part 15B



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1.1 INTRODUCTION

The information contained in this report is intended to show verification of the GENERAL TOOLS & INSTRUMENTS COMPANY LLC. Short Range Device Wireless USB Receiver DCS100R to the requirements of FCC CFR 47 Part 15B: 2008.

Testing was carried out in support of an application for Grant of Equipment Authorisation of Short Range Device Wireless USB Receiver DCS100R.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	GENERAL TOOLS & INSTRUMENTS COMPANY LLC.
Model Number(s)	Wireless USB Receiver DCS100R
Serial Number(s)	Engineering sample
Antenna Gain	0dBi
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15B: 2008
Incoming Release Date	Declaration of Build Status 24 August 2010
Start of Test	31 August 2010
Finish of Test	14 September 2010
Related Document(s)	ANSI C63.4:2003



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1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results in accordance with FCC CFR 47 Part 15B: 2008 is shown below.

Configuration - Short Range Device Wireless USB Receiver						
Section	FCC Clause	Test Description	Mode	Mod State	Result	Comments
2.1	15.107	Conducted Emissions on Power Line	Idle/receive	0	Pass	
2.2	15.109	Enclosure Radiated Emissions	Idle/receive	0	Pass	



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1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Short Range Device Wireless USB Receiver
MANUFACTURER	GENERAL TOOLS & INSTRUMENTS COMPANY LLC.
TYPE	DCS100R
SERIAL NUMBER	Engineering sample
COUNTRY OF ORIGIN	America
FCC ID	YRKDCS100R
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	DCS100R is a Short Range Device Wireless USB Receiver
MANUFACTURING DESCRIPTION	The Wireless USB Receiver DCS100R was powered by Notebook Computer; Model Type: X200 Manufacturer: Lenovo Serial Number: 74595FC

No responsibility will be accepted by TÜV Product Service Beijing Branch as to the accuracy of the information declared in this document by the manufacturer.



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1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) DCS100R was a GENERAL TOOLS & INSTRUMENTS COMPANY LLC.Short Range Device Wireless USB Receiver as shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.



Equipment Under Test



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1.4.2 Test Configuration

The EUT was configured in accordance with FCC CFR 47 Part 15: 2008.

1.4.3 Modes of Operation

Operation Modes

Mode 1 – Idle / receiver

Information on the specific test modes utilised are detailed in the test procedure for each individual test.



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1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or an open test area as appropriate.

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.7 MODIFICATION RECORD

Modification State	Description of Modification fitted to EUT	Sample S/N
0	Initial sample supplied by customer	Engineering sample

No modifications were made to the EUT during testing.

1.8 ALTERNATIVE TEST SITE

The testing was conducted at following site registrations:

FCC Accreditation 800392
QuieTek Technology (Suzhou) Co., Ltd.
No.99 Hongye RD.Suzhou Industrial Park Loufeng Hi-New-Tech Development
Area,Suzhou,China



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SECTION 2

TEST DETAILS

FCC Testing of the GENERAL TOOLS & INSTRUMENTS COMPANY LLC.
Short Range Device Wireless USB Receiver DCS100R
in accordance with FCC CFR 47 Part 15B



Product Service

2.1 CONDUCTED EMISSIONS ON POWER LINE

2.1.1 Specification Reference

FCC CFR 47 Part 15: 2008, Subpart B, Clause 15.107

2.1.2 Equipment Under Test

Short Range Device Wireless USB Receiver DCS100R

2.1.3 Date of Test and Modification State

2 September 2010– Modification State 0

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of ANSI C63.4.

The EUT was placed 0.4 meters from the conducting wall of the shield room, with the USB port of the EUT being connected to a notebook which was connected to the AC power mains of 120V/60Hz through an artificial mains network (AMN). The distance between the computer and AMN was 80cm.

Emissions were formally measured using a Quasi-Peak and Average Detectors, which meet the CISPR requirements. The details of the worst-case emissions for the Live and Neutral Lines are presented in the tables below.

Conducted Emission were measured on Live and Neutral Lines in turn.

Measurements were made over the frequency range 0.15MHz to 30MHz.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1

2.1.6 Environmental Conditions

31 August 2010

Ambient Temperature 23.2°C

Relative Humidity 24.1%



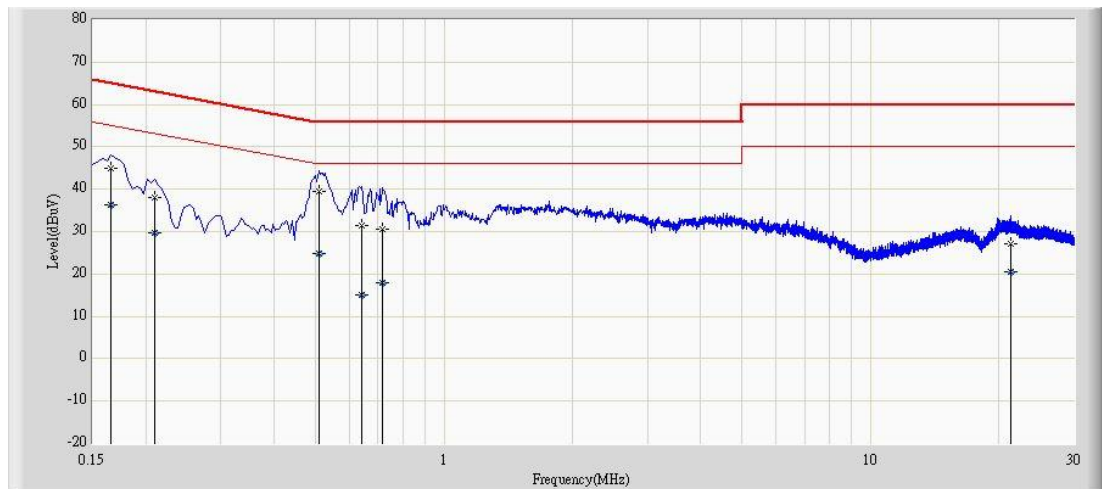
2.1.7 Test Results

For the period of test the EUT met the Class B requirements of FCC CFR 47 Part 15: 2008 for Conducted Emissions on AC Power Ports.

Test results are shown in the following tables.

Configuration 1 - Mode 1

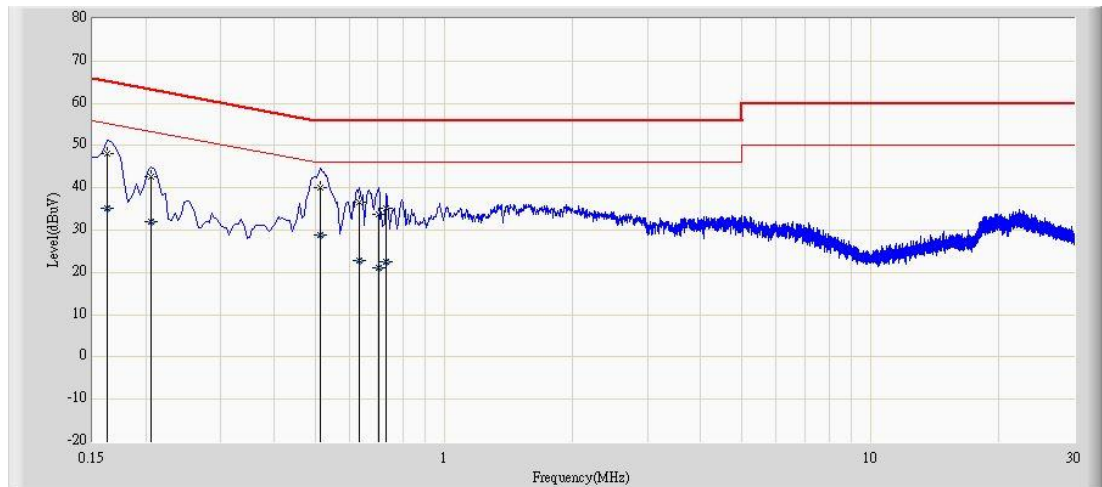
Live Line



Emission Frequency (MHz)	Measure Level	Margin	Limit	Type
	dBμV	dB	dBμV μV	AV/QP
0.166	44.913	-20.245	65.158	QP
0.166	36.213	-18.945	55.158	AV
0.210	38.138	-25.068	63.205	QP
0.210	29.837	-23.368	53.205	AV
0.510	39.435	-16.565	56.000	QP
0.510	24.697	-21.303	46.000	AV
0.642	31.463	-24.537	56.000	QP
0.642	15.191	-30.809	46.000	AV
0.718	30.507	-25.493	56.000	QP
0.718	17.990	-28.010	46.000	AV
21.274	27.075	-32.925	60.000	QP
21.274	20.497	-29.503	50.000	AV



Neutral Line



Emission Frequency (MHz)	Measure Level	Margin	Limit	Type
	dBμV	dB	dBμV μV	AV/QP
0.162	48.210	-17.151	65.361	QP
0.162	35.207	-20.154	55.361	AV
0.206	42.514	-20.851	63.365	QP
0.206	31.982	-21.383	53.365	AV
0.514	39.979	-16.021	56.000	QP
0.514	28.781	-17.219	46.000	AV
0.634	36.635	-19.365	56.000	QP
0.634	22.862	-23.138	46.000	AV
0.702	33.775	-22.225	56.000	QP
0.702	21.213	-24.787	46.000	AV
0.730	35.074	-20.926	56.000	QP
0.730	22.439	-23.561	46.000	AV

Limit

Emission Frequency (MHz)	Limit ---dBμV	
	QP	Average
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		



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2.2 ENCLOSURE RADIATED EMISSIONS

2.2.1 Specification Reference

FCC CFR 47 Part 15: 2008, Subpart B, Clause 15.109

2.2.2 Equipment Under Test

Short Range Device Wireless USB Receiver DCS100R

2.2.3 Date of Test and Modification State

2 September 2010 – Modification State 0

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Method and Operating Modes

The test was applied in accordance with ANSI C63.4.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber, with the USB port of the EUT being connected to a notebook which was connected to the AC power mains of 120V/60Hz.

Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Emissions identified within the range 30MHz – 1GHz were formally measured using a CISPR Quasi-Peak detector.

The measurements were performed at a 3m distance unless otherwise stated.

The test was performed with the EUT in the following modes of operation:

Configuration 1 - Mode 1

2.2.6 Environmental Conditions

31 August 2010

Ambient Temperature 23.2°C

Relative Humidity 24.1%

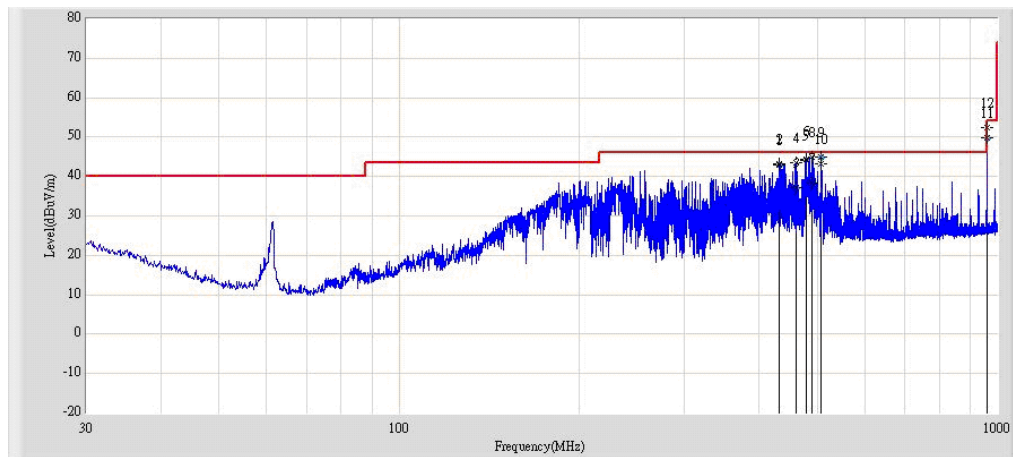


2.2.7 Test Results

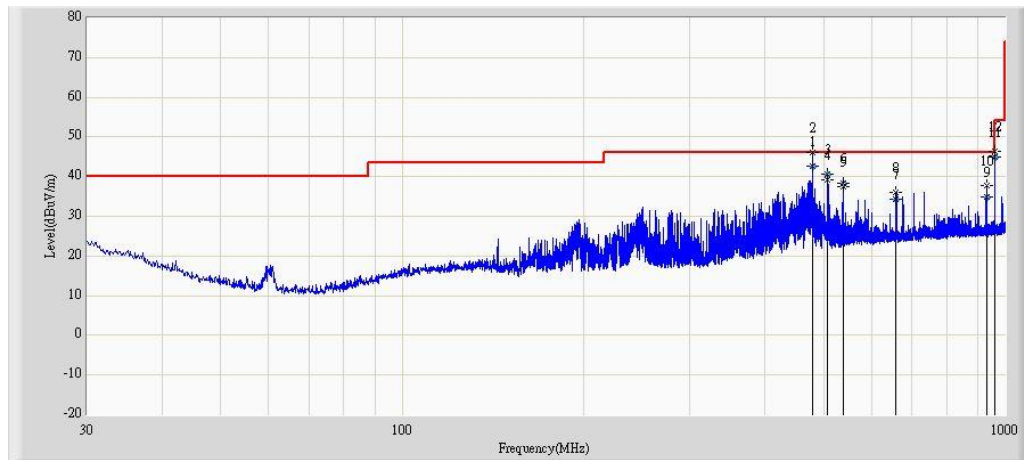
For the period of test the EUT met the Class B requirements of FCC CFR 47 Part 15: 2008 Subpart B for Spurious Radiated Emissions (30MHz – 1GHz).

The test results are shown below.

- Mode 1



Frequency (MHz)	Polarisation (Vertical/Horizontal)	Reading Level	Factor	Field Strength	Over Limit	Limit	Type
		(dBuV)	(dB)	dBμV/m	(dB)	dBμV/m	QP/PK
431.000	H	25.300	17.634	42.934	-3.066	46.000	QP
431.580	H	25.604	17.640	43.244	-2.756	46.000	PK
460.000	H	19.100	17.969	37.069	-8.931	46.000	QP
460.074	H	25.533	17.971	43.504	-2.496	46.000	PK
480.000	H	25.645	18.677	44.322	-1.678	46.000	QP
480.080	H	25.354	18.680	44.034	-1.966	46.000	PK
490.000	H	19.400	18.873	38.273	-7.727	46.000	QP
490.992	H	26.003	18.843	44.846	-1.154	46.000	PK
508.260	H	26.000	18.900	44.899	-1.101	46.000	QP
508.331	H	24.376	18.899	43.275	-2.725	46.000	PK
960.002	H	27.100	22.708	49.808	-4.192	54.000	QP
960.230	H	29.604	22.710	52.314	-1.686	54.000	PK



Frequency (MHz)	Polarisation (Vertical/Horizontal)	Reading Level	Factor	Field Strength	Over Limit	Limit	Type
		(dBμV)	(dB)	(dBμV/m)	(dB)	(dBμV/m)	AV/PK
480.000	V	24.000	18.677	42.678	-3.322	46.000	QP
480.080	V	26.505	18.680	45.185	-0.815	46.000	PK
508.000	V	21.700	18.889	40.589	-5.411	46.000	QP
508.331	V	20.211	18.899	39.110	-6.890	46.000	PK
539.977	V	17.543	19.790	37.333	-8.667	46.000	PK
540.000	V	18.400	19.791	38.192	-7.808	46.000	QP
660.000	V	13.600	20.710	34.310	-11.690	46.000	QP
660.015	V	15.383	20.710	36.093	-9.907	46.000	PK
931.000	V	12.500	22.319	34.819	-11.181	46.000	QP
931.857	V	15.351	22.327	37.678	-8.322	46.000	PK
960.000	V	22.100	22.708	44.808	-1.192	46.000	QP
960.109	V	23.655	22.709	46.364	-7.636	54.000	PK

Note: Field Strength = Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Limit

Frequency (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance (meters)
30 – 88	100	40.0	3
88 – 216	150	43.5	3
216 – 960	200	46.0	3
Above 960	500	54.0	3

Remarks

The EUT does not exceed the limit at the measured frequency.



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SECTION 3

TEST EQUIPMENT USED



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3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	Serial No.	Calibration Date
3m Semi-Anechoic Chamber (AC2)				
EMI Test Receiver	R&S	ESCI	100573	2010.04.23
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2009.11.12
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2010.05.05
Conducted Emission Testing Room (TR1)				
EMI Test Receiver	R&S	ESCI	100906	2010.01.15
Two-Line V-Network	R&S	ENV 216	101043	2010.06.18



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3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Worst case error for both Time and Frequency measurement 12 parts in 10 ⁶ .		

* In accordance with CISPR 16-4



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SECTION 4

DISCLAIMERS AND COPYRIGHT



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4.1 DISCLAIMERS AND COPYRIGHT

This report relates only to the actual item/items tested.

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TÜV Product Service Limited Beijing Branch

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