

TEST REPORT

Reference No..... :	WTX22X08156832W004
Manufacturer..... :	Descartes Systems Group Inc.
Address..... :	105 Trafalgar Street, Floor 2, Nelson, Tasman 7011, New Zealand
Product Name..... :	COREInsight® Reader
Model No..... :	RDR001
Standards..... :	EN IEC 62311:2020 EN 50665:2017
Date of Receipt sample :	2022-08-01
Date of Test..... :	2022-08-01 to 2022-08-28
Date of Issue..... :	2022-08-28
Test Report Form No. :	WTX_ EN 50665_2017W
Test Result..... :	Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

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Report version

Version No.	Date of issue	Description
Rev.00	2022-08-28	Original
/	/	/

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	COREInsight® Reader
Trade Name:	/
Model No.:	RDR001
Adding Model(s):	/
Rated Voltage:	DC12V
Rated Current:	3A
Adapter Model:	Model:ATS036T-W120V Input:AC240V ~ 50-60Hz 1A MAX Output:DC12V,3A
Software Version:	/
Hardware Version:	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

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Technical Characteristics of EUT	
3G	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Bands:	WCDMA Band 1, WCDMA Band 8
Frequency Range:	WCDMA Band 1: Tx: 1920-1980MHz, Rx: 2110-2170MHz
	WCDMA Band 8: Tx: 880-915MHz, Rx: 925-960MHz
RF Output Power:	WCDMA Band 1: 23.43dBm, WCDMA Band 8: 23.56dBm
Modulation Type:	BPSK, QPSK, 16QAM
Antenna Type:	External Antenna
Antenna Gain:	WCDMA Band 1: 1dBi, WCDMA Band 8: 1dBi
4G	
Support Bands:	FDD-LTE Band1, 3, 7, 8, 20 TDD-LTE Band 38, 40
Frequency Range:	FDD-LTE Band 1: Tx: 1920-1980MHz, Rx: 2110-2170MHz
	FDD-LTE Band 3: Tx: 1710-1785MHz, Rx: 1805-1880MHz
	FDD-LTE Band 7: Tx: 2500-2570MHz, Rx: 2620-2690MHz
	FDD-LTE Band 8: Tx: 880-915MHz, Rx: 925-960MHz
	FDD-LTE Band 20: Tx: 832-862MHz, Rx: 791-821MHz
	TDD-LTE Band 38: Tx: 2570-2620MHz, Rx: 2570-2620MHz
Max.RF Output Power:	TDD-LTE Band 40: Tx: 2300-2400MHz, Rx: 2300-2400MHz
	FDD-LTE Band 1: 23.95dBm, FDD-LTE Band 3: 23.97dBm, FDD-LTE Band 7: 24.41dBm, FDD-LTE Band 8: 24.16dBm, FDD-LTE Band 20: 23.82dBm, TDD-LTE Band 38: 24.25dBm, TDD-LTE Band 40: 23.87dBm
Modulation Type:	QPSK, 16QAM
Antenna Type:	Main : External Antenna DIV: FPC Antenna
Antenna Gain:	FDD-LTE Band 1: 1dBi, FDD-LTE Band 3: 1dBi, FDD-LTE Band 5: 1dBi, FDD-LTE Band 7: 1dBi, FDD-LTE Band 8: 1dBi, TDD-LTE Band 38: 1dBi, TDD-LTE Band 40: 1dBi,
Bluetooth	
Bluetooth Version:	Bluetooth V5.0(Only BLE)
Frequency Range:	2402-2480MHz
Max.RF Output Power:	5.09dBm (EIRP)
Type of Modulation:	GFSK
Data Rate:	1Mbps
Quantity of Channels	40
Channel Separation:	2MHz
Type of Antenna:	FPC Antenna
Antenna Gain:	1dBi
<i>Note: The Antenna Gain is provided by the customer and can affect the validity of results.</i>	



1.2 Compliance Standards

The tests were performed according to following standards:

EN 50665:2017: Generic standard for assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0Hz - 300GHz).

EN IEC 62311:2020: Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0Hz to 300GHz)

1.3 Test Methodology

All measurements contained in this report were conducted with EN 50665,

The equipment under test (EUT) was configured to measure its highest possible emission level. For more detail refer to the Operating Instructions.

1.4 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. 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. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.



2. RF EXPOSURE REFERENCE LEVELS

2.1 Standard Applicable

This International Standard applies to electronic and electrical equipment for which no dedicated product- or product family standard regarding human exposure to electromagnetic fields applies. The frequency range covered is 0 Hz to 300 GHz.

The object of this generic standard is to provide assessment methods and criteria to evaluate such equipment against basic restrictions or reference levels on exposure of the general public related to electric, magnetic and electromagnetic fields and induced and contact current.

2.2 Reference Levels Limit

According to the EN 62311:2020, the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation.

Reference levels of electric, magnetic, and electromagnetic fields
(0MHz to 300GHz, imperturbed rms values)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (nT)	Equivalent plane wave power density S_{Eq} (W/m ²)
0-1Hz	—	3.2×10^4	4×10^4	—
1-8Hz	10000	$3.2 \times 10^4 / f^2$	$4 \times 10^4 / f^2$	—
8-25Hz	10000	$4000 / f$	$5000 / f$	—
0.025-0.8kHz	$250 / f$	$4 / f$	$5 / f$	—
0.8-3kHz	$250 / f$	5	6.25	—
3-150kHz	87	5	6.25	—
0.15-1MHz	87	$0.73 / f$	$0.92 / f$	—
1-10MHz	$87 / f^{1/2}$	$0.73 / f$	$0.92 / f$	—
10-400MHz	28	0.073	0.092	2
400-2000MHz	$1,375 f^{1/2}$	$0.0037 f^{1/2}$	$0.0046 f^{1/2}$	$f / 200$
2-300GHz	61	0.16	0.20	10

Note:

1. f as indicated in the frequency range column
2. For frequencies between 100kHz and 10GHz, S_{Eq} , E^2 , H^2 , and B^2 are to be averaged over any sixty-minute period.
3. For frequencies exceeding 10GHz, S_{Eq} , E^2 , H^2 , and B^2 are to be averaged over any $68/f^{1.05}$ -minute period (f in GHz).
4. No E-field value is provided for frequencies < 1 Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 25kV/m, Spark discharges causing stress or annoyance should be avoided.



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2.3 Evaluation Methods

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user. Warning statement to the user to keeping at least 20 cm separation distance and the prohibition of operating to a person has been printed on the user's manual. So, this product under normal use is located on electromagnetic far field between the human body.

Far Field Calculation Formula

$$E = \eta_0 H = \frac{\sqrt{30PG(\theta, \phi)}}{r}$$

G=antenna gain relative to an isotropic antenna

θ, ϕ =elevation and azimuth angles to point of investigation

r=distance from observation point to the antenna

η_0 =Characteristic impedance of free space

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2.4 Evaluation Results

Mode	Output Power (dBm)	Antenna Gain $G(\theta, \phi)$	min distance m	E-field Strength (V/m)	E-field Strength Limit (V/m)	Result Pass/Fail
BLE/00	4.09	1.258925412	0.2	1.56	61.00	Pass
BLE/19	4.09	1.258925412	0.2	1.56	61.00	Pass
BLE/39	3.59	1.258925412	0.2	1.47	61.00	Pass

3G

Support Bands	Output Power (dBm)	Antenna Gain $G(\theta, \phi)$	min distance m	E-field Strength (V/m)	E-field Strength Limit (V/m)	Result Pass/Fail
Band 1	22.43	1.258925412	0.2	12.85	60.40	Pass
Band 8	22.56	1.258925412	0.2	13.05	40.90	Pass

4G

Support Bands	Output Power	Antenna Gain $G(\theta, \phi)$	min distance	E-field Strength (V/m)	E-field Strength Limit (V/m)	Result
	(dBm)					Pass/Fail
Band 1	22.95	1.258925412	0.2	13.65	60.40	Pass
Band 3	22.97	1.258925412	0.2	13.68	57.48	Pass
Band 7	23.41	1.258925412	0.2	14.39	61.00	Pass
Band 8	23.16	1.258925412	0.2	13.98	40.90	Pass
Band 20	22.82	1.258925412	0.2	13.44	40.02	Pass
Band 38	23.25	1.258925412	0.2	14.13	61.00	Pass
Band 40	22.87	1.258925412	0.2	13.52	61.00	Pass

Note: $G(\theta, \phi) = 10^{(G/10)}$

Since the maximum E-field strength of this device based on 20cm separation distance cannot exceed the E-field strength of reference levels limit.



EXHIBIT 1 - EUT PHOTOGRAPHS

Please refer to “ANNEX”.

***** END OF REPORT *****

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