



element

CORE Transport Technologies, LTD

CoreInsight Reader

RSS-102, Issue 5:2015

Bluetooth Low Energy & Cellular Radios

Report: RCAL0005.2



NVLAP Lab Code: 200630-0

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CERTIFICATE OF EVALUATION

Last Date of Evaluation: Monday, December 21, 2020
CORE Transport Technologies, LTD
EUT: CoreInsight Reader

RF Exposure Evaluation

Standards

Specification	Method
RSS-102, Issue 5:2015	RSS-102, Issue 5:2015

Results

Method Clause	Description	Applied	Results	Comments
2.5.2	Exemption for RF Exposure Evaluation	Yes	Pass	None

Deviations From Evaluation Standards

None

Approved By:

Donald Fecteau, Process Architect

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing

REVISION HISTORY



Revision Number	Description	Date (yyyy-mm-dd)	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS



United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

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FACILITIES



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NVLAP				
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157



PRODUCT DESCRIPTION



Client and Equipment Under Evaluation Information

Company Name:	CORE Transport Technologies, LTD
Address:	105 Trafalgar Street, Level 2
City, State, Zip:	Nelson, New Zealand 7010
Evaluation Requested By:	Casimir Mackenzie
EUT:	CoreInsight Reader
Date of Evaluation:	Monday, December 21, 2020

Information Provided by the Party Requesting the Evaluation

Functional Description of the Equipment:

The CoreInsight Reader is used to monitor the movement of goods and equipment with attached Core Tags. The equipment contains four Bluetooth Low Energy modules (FCC ID: XPYNINAB1, IC ID: 8595A-NINAB1) and a 3G/2G cellular radio module (FCC ID: RI7HE910, IC ID: 5131A-HE910). GSM 850 and EDGE 850 modes are supported.

Objective:

To demonstrate compliance with the Industry Canada RF Exposure requirements for mobile devices operated greater than 20cm from the head or torso of the user.

RF Exposure Condition



The following RF Exposure conditions were used for the assessment documented in this report:	
Intended Use	Mobile
Location on Body (if applicable)	NA
How is the Device Used	The CoreInsight Reader is used at a distance of greater than 20 cm from the user.
Radios Contained in the Same Host Device	4 Bluetooth Low Energy (BTLE 0, BTLE 1, BTLE 2, BTLE 3) Cellular
Simultaneous Transmitting Radios	BTLE 0, BTLE 1, BTLE 2, BTLE 3, Cellular
Body Worn Accessories	N/A
Environment	General Population/Uncontrolled Exposure

EXEMPTION FROM RF EXPOSURE EVALUATION



OVERVIEW

RSS-102 Issue 5 sets out the requirements and measurement techniques used to evaluate RF exposure compliance of radiocommunication apparatus (Category I and Category II equipment) that are designed to be used within the vicinity of the human body. This standard applies to radiocommunication apparatus having an integral antenna, systems requiring licensing with detachable antennas sold with the transmitters or licence-exempt transmitters with detachable antennas, as defined in RSS-Gen.

COMPLIANCE WITH RSS-102 Issue 5

Per section 2.5 of RSS-102, “All transmitters are exempt from routine SAR and RF exposure evaluations provided that they comply with the requirements of sections 2.5.1 or 2.5.2. If the equipment under test (EUT) meets the requirements of sections 2.5.1 or 2.5.2, applicants are only required to submit a properly signed declaration of compliance (see Annex C). The information contained in the RF exposure technical brief may be limited to the value(s) of the maximum output power, the information that demonstrates how the maximum output power of the transmitter was derived and the rationale for the separation distances applied (see Table 1), which must be based on the most conservative exposure condition for the applicable module or host platform test procedure requirements...It must be emphasized that the above exemption from routine evaluation is not an exemption from compliance.”

The device will only be used with a separation distance between the antenna and the body of the user or nearby persons as shown in the table below. It operates with an EIRP below the limits stated in RSS-102, Section 2.5.2.

LIMITS

Per section 2.5.2 of RSS-102, “RF exposure evaluation is required if the separation distance between the user and/or bystander and the device’s radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.”

ASSESSMENT

The exemption from RF exposure evaluation is summarized in the following table(s):

EXEMPTION FROM RF EXPOSURE EVALUATION



Radio	Transmit Frequency (MHz)	Measured Conducted Output Power (dBm)	Duty Cycle	Antenna Assembly Gain (dBi)	Minimum Separation Distance (cm)	Calculated Radiated Exposure Power (mW) EIRP	Limit (mW)	Ratio
BTLE 0	2402	4.2	1	2.8	20	5	2676	0.002
BTLE 1	2402	4.2	1	2.8	20	5	2676	0.002
BTLE 2	2402	4.2	1	2.8	20	5	2676	0.002
BTLE 3	2402	4.2	1	2.8	20	5	2676	0.002
Sum of Ratios								0.008

The information in the table above was obtained from:

From client supplied information and 7layers test report MDE_UBLOX_1625_FCCa for FCC ID: XPYNINAB1 and IC ID: 5131A-HE910.

Cellular Radio	Transmit Frequency (MHz)	Measured Conducted Output Power (W)	Duty Cycle	Antenna Gain (dBi)	Minimum Separation Distance (cm)	Calculated Radiated Exposure Power (mW) EIRP	Limit (mW)	Ratio
WCDMA Band V	826.4	0.5 W	100%	1	20	579	1291	0.45
GSM 850	824.2	1.9 W	12.5%	1	20	293	1289	0.23
GPRS 850 4 Down 1 Up	842.2	2.0 W	12.5%	1	20	314	1308	0.24
GPRS 850 3 Down 2 Up	842.2	1.7 W	37.5%	1	20	766	1308	0.63
GPRS 850 2 Down 3 Up	842.2	1.5 W	37.5%	1	20	731	1308	0.56
GPRS 850 1 Down 4 Up	842.2	1.2 W	50%	1	20	757	1308	0.58
EGPRS 850 4 Down 1 Up	824.2	1.0 W	12.5%	1	20	154	1289	0.12
EGPRS 850 3 Down 2 Up	848.8	0.9 W	25%	1	20	294	1315	0.22
EGPRS 850 2 Down 3 Up	848.8	0.8 W	0.375	1	20	375	1315	0.29
EGPRS 850 1 Down 4 Up	848.8	0.7 W	0.5	1	20	446	1315	0.34
Max Ratio								0.63

The information in the table above was obtained from:

From client supplied information and Telit RF exposure assessment for FCC ID: R17HE910/IC ID: 5131A-HE910. Duty cycle values are source-based.

Sum of Maximum Ratios	Limit	Compliant
0.638	1	Yes