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Kunden Referenz-Nr.: <i>Client Reference No.:</i> N/A		Auftragsdatum: <i>Order date:</i> 01.15.2018 (mm-dd-yyyy)			
Auftraggeber: <i>Client:</i> Dimo System B.V. Avelingen-West 11 4202 MS, Gorinchem The Netherlands		Maarten Crezee maarten@dimosystems.com +31(0) 653 683 980			
Prüfgegenstand: <i>Test item:</i> Xignal Mouse-/Rattrap					
Produkt: <i>Product type:</i> Mouse-/Rattrap utilizing LoRaWAN device monitoring					
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i> Xignal					
Auftrags-Inhalt: <i>Order content:</i> Certification by Similiarity according LoRaWAN™ Specification V1.0.1					
Prüfgrundlage: <i>Test specification:</i> LoRa Alliance Process Description Certification Process for LoRaWANDevices V1.0_1951_1 Similarity Case 1 – Module Integration LoRa End Device Certification EU Version1.2					
Wareneingangsdatum: <i>Date of receipt:</i> 01-15-2018					
Prüfmuster-Nr.: <i>Test sample No.:</i> N/A					
Prüfzeitraum:* <i>Review period:</i> 01-15-2018 to 01-19-2018 *Document Review only					
Ort der Prüfung: <i>Place of testing:</i> Pleasanton, CA					
Prüflaboratorium: <i>Testing laboratory:</i> TÜV Rheinland of North America, Inc.					
Prüfergebnis: <i>Test results:</i> PASS					
Geprüft von <i>Tested by:</i> Bernd Jungbluth		Kontrolliert von <i>Reviewed by:</i> Adeola Alade			
 01-19-2017 Bernd Jungbluth/ Senior Test Engineer		 01-19-2017 Adeola Alade / Principal Test Engineer			
Datum	Name / Stellung	Unterschrift	Datum	Name / Stellung	Unterschrift
<i>Date (mm-dd-yyyy)</i>	<i>Name / Position</i>	<i>Signature</i>	<i>Date (mm-dd-yyyy)</i>	<i>Name / Position</i>	<i>Signature</i>
Sontiges / Other: -					
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Revisions
Revisions

Revision Revision	Datum Date (mm-dd-yyyy)	Anmerkung Remark	Verfasser Author
0	01-18-2018	Original Report	B. Jungbluth

Note: Latest revision report will replace all previous reports

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1 Product Information

The equipment under review are Dimo System B.V. Xignal mouse and rat-traps which are LoRaWAN connected devices that monitor and communicate the trap-status: armed or un-armed, with or with-out catch, and the temperature. Xignal provides a web based portal and apps to manage the traps and data.

The Xignal device integrates the RN2483A-I/RM103 following Microchip design guidelines and doesn't alter anything in the design. The RN2483A-I/RM103 module is only used as a modem for the LoRaWAN communication.

General information	
Product name:	Xignal Mouse-/Rattrap
Model:	Xignal
Description:	Mouse-/Rattrap utilizing LoRaWAN device monitoring
Series:	-
Manufacturer SKU	Dimo System B.V.
Hardware version:	1.3
Software version:	1.3
Firmware Version:	1.3
Technical contact person:	Job Nijenhuis
Email:	development@dimosystems.com
Phone number:	+31 (0) 634 728 480

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2 General Device Description

Description of Similarity between referenced devices

Document review according	LoRa Alliance Process Description Certification Process for LoRaWANDevices V1.0_1951_1
LoRa Device Class	A
LoRaWAN physical regional	US863-870 MHz
LoRaWAN™ Specification Version	1.0.1
Brief description of the differences between the primary and the variant device	The Xignal device integrates the RN2483A-I/RM103 following Microchip design guidelines and doesn't alter anything in the design. The RN2483 module is only used as a modem for the LoRaWAN communication.

Manufacturer supplied device integration description

01. DoC_xignal dimosystems RN2483.pdf

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3 Similarity Overview

LoRaWAN – Similarity Overview		
	Similarity Application	Listed Device
Manufacturer	Dimo Systems B.V.	Microchip
Product name	Xignal	RN2483A-I/RM103
Kind of product	Mouse-/Rattrap	Radio Module (with embedded MCU and LoRaWAN stack)
Type of DUT	End Device/Sensor	Module
LoRa Device Class	A	A
Internal Hardware Version	1.3	1.0.4
Internal Software Version	1.3	1.0.4
Internal Firmware Version	1.3	1.0.4
Type and Version of used Stack	Microchip RN2903	Own developed stack (Microchip)
Stack version	1.0.4	1.0.4
LoRaWAN physical regional	US863-870	US863-870
Adaptive Data Rate (ADR) supported?	Yes	Yes
Optional data rates supported?	N/A	N/A
Activation possibilities	Over the Air only	Both Over the air and by personalization
LoRaWAN™ Specification version	1.0.1	1.0.1
Output Power	+20 dBm	+20 dBm, programmable down to +2 dBm
Number / Type of Antenna(s)	1 SMD Antenna	1 antenna port (SMA port on carrier board)
Antenna Gain	+2.0 dB @ 860 MHz +1.7 dB @ 870 MHz	N/A

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4 Similarity Case

Pre-requisite	
A similar device (from same manufacturer or module from different manufacturer) has already been certified.	Document review executed
	Device listed: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	Comment: Module RN2483A-I/RM103 certified, Website listing pending during date of application

Change descriptions – general overview		
Case 1	Module Integration: the Variant device to be certified embeds a LoRa certified module.	Applicable <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Comment: End device utilizing the Microchip RN2483A-I/RM103 Module as a LoRaWAN modem.
Case 2	Module Family: the Variant device to be certified is a Module from the same family of a LoRa certified module.	Applicable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Comment:
Case 3	Device Certification by similarity: the Variant device to be certified uses the same Module of an already LoRa certified device.	Applicable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Comment:

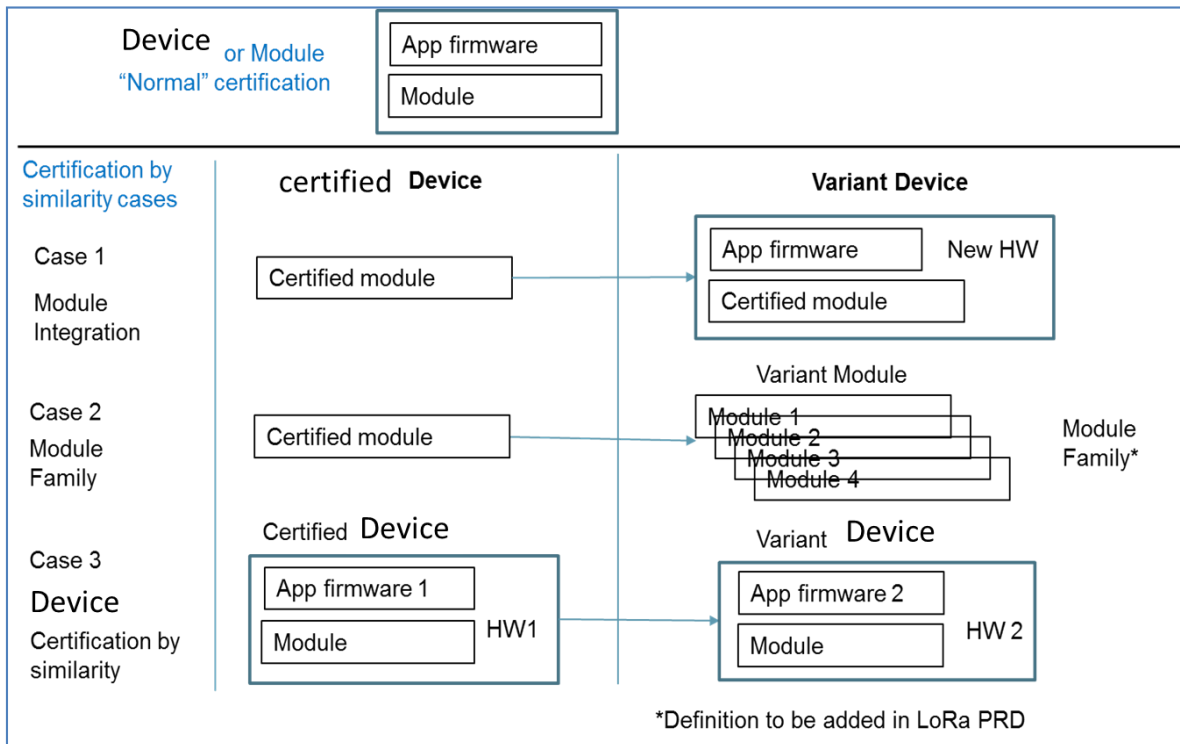


Figure 1 - Module class According LoRa Alliance certification Process description

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5 General permissible changes

Any stated change in following section is informative and does not automatically disqualify for Similarity application. The type of changed is reviewed by the test house and according verdict stated.

Change descriptions – general overview			
Change details		Document review executed	
1	Mother product PCB schematic has changed but Module is same	Change to listed device:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Type of change: Module implemented on end device PCB according module manufacturer guidelines.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
2	I/O additions on the dev board	Change to listed device:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: No I/O additions on the dev board.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
3	Changes in interfaces that do not affect e.g. display, LED, buttons, switches, location of read pins layout configuration of mother PCB where module is placed etc..	Change to listed device:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Type of change: Module implemented in End Device. No changes to Module section applied.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
4	Product packaging changes (colour, shape, Enclosure form, language etc.)	Change to listed device:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		Type of change: Altered end device Packaging.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
Summarized Verdict		<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL	

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6 Primary design changes

Any stated change in following section disqualifies for Similarity application.

Change descriptions – Major change verification		
Change details		Document review executed
1	LoRaWAN protocol changes (V1.0 to V 1.0.1 etc..)	Change to listed device : <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: Identical LoRaWAN version implemented.
		Permissible change verdict: <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
2	SW / FW change in Module	Change to listed device : <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: No Software or Firmware changes applied to listed module.
		Permissible change verdict: <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
3	Major Bug Fixes	Change to listed device : <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: No major bug fixes applied.
		Permissible change verdict: <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
4	Change in Radio IC	Change to listed device : <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: No changes to radio IC applied.
		Permissible change verdict: <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
5	Change in Power Amplifier or Low Noise Amplifier components on the module or board	Change to listed device : <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: No changes to Amplifier components applied.
		Permissible change verdict: <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
6	Change or modification in clock design and implementation	Change to listed device : <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: No changes to clock design applied
		Permissible change verdict: <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
7	HW changes to Module including layout of PCB	Change to listed device : <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change:
		Permissible change verdict: <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
Summarized Verdict		<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

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7 Secondary design changes

Any stated change in following section needs a detailed change description to allow the verification and justified verdict to qualify for the similarity application.

Change descriptions – general Checkpoint overview			
Change details		Document review executed	
1	Stack software (SW/FW)	Change to listed device :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: Stack unchanged.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
2	HW version	Change to listed device :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: Identical Module HW version.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
3	Minor Bug Fixes not affecting LoRaWAN functionality	Change to listed device :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: No bug fixes applied to original stack.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
4	Microcontroller change which does not affect the LoRaWAN stack	Change to listed device :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: No changes to the Microcontroller applied.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
5	Addition of radio features apart of LoRaWAN (e.g. additional radio implementations)	Change to listed device :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: No radio additions implemented.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
6	Product driver changes	Change to listed device :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: Original device manufacturer driver implemented.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
7	Mother board schematic change	Change to listed device :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change:	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
9	Is the Test mode still part of end device	Change to listed device :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change:	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
10	When 1.0.1 certified: Link ADR decay revision corrected?	Change to listed device :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
		Type of change: Module certified against identical v1.0.1 revision.	
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

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10	Firmware Check is needed for Stack	Applicable:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
		Note: Reviewed production line log file. EUT Firmware flash process restricts device Firmware applications other than FW V1.0.4. See supportive document: 06.Xignal_logfile_example.csv		
		Permissible change verdict:	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL
Summarized Verdict			<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL

Overall Review Result: PASS

Submitted Documents:

01. DoC_xignal dimosystems RN2483.pdf
02. LoRaCertificationQuestionnaireV20_1842_1_v1.2 Xignal with RN2483.pdf
03. LoRaCertificationQuestionnaireV2018421_2035_1 Microchip RN2483A-104.pdf
04. Report_Certification by Similiarity_Dimosystem_Xignal.pdf
05. Application note - OnBoard SMD 868 rev 2.0.pdf
06. Antenna info_RFA-09-C55-U-B70-2
07. Antenna Info_OnBoard SMD 868 rev 2.0
08. Xignal_logfile_example.csv

Remarks:

-

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8 Document List

01. Verdict based on following supplied information

Manufacturer supplied documents reviewed by the test house		
nr.	Document Titel	Document content
1	DoC_xignal dimosystems RN2483.pdf	Certification by Similiarity Declaration
2	LoRaCertificationQuestionnaireV20_1842_1_v1.2 Xignal with RN2483.pdf	Certification Questionnaire - Xignal
3	LoRaCertificationQuestionnaireV2018421_2035_1 Microchip RN2483A-104.pdf	Certification Questionnaire - Microchip
4	Report_Certification by Similiarity_Dimosystem_Xignal.pdf	Test Report
5	Antenna Info_OnBoard SMD 868 rev 2.0	SMD antenna characteristics
6	Antenna info_RFA-09-C55-U-B70-2	Antenna Info
7	Xignal_logfile_example.csv	Manufacturer production line FW control log

Disclaimer:

The verdicts stated by the test house in the scope of this report are based on the manufacturer supplied device datasheets and documentation. The supplied documents are stored digitally by the test lab and available to the LoRa Alliance on request. No protocol tests have been executed, if not specifically stated otherwise. It is the manufacturer's responsibility to ensure correctly provided data which is representative for the similarity declared device to allow the correct verdict by the test house and the LoRa Alliance application acceptance.

9 Device Pictures

Device under application



Photo 1: Sample Picture 1



Photo 2: Sample Picture 2



Photo 3: Sample Picture 3



Photo 4: Sample Picture 4

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