



Evaluation Report: 2016-SENS- CDTLE:20160218_3 _MPE_0001_V1.0	
Evaluation report for:	CDTLE:20160218_3
	1101012
FCC ID:	2AHIR-001
Client Name:	Sensitive AB
Client address	Mobilvägen 10
	223 62 Lund, Sweden
According to:	FCC 47 CFR §2.1091
Report Issued By:	Niall Forrester / Technical Manager
Issue Date:	2016-05-26
On Behalf of:	CDTL Europe, Tech Mahindra Ltd.
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Review Date:	2016-05-26

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This test report includes no annexes. The total number of pages is 7

CONTENTS

1.	GENERAL CONDITIONS	3
2.	APPLICANT DETAILS	3
3.	DETAILS OF DEVICE	4
4.	EVALUATION.....	5
5.	DETAILED MPE CALCULATIONS	6
6.	AMENDMENT HISTORY	7

1. GENERAL CONDITIONS

1. This report refers only to the item or items that have undergone the evaluation (see section 3. "Details of Device").
2. This document supersedes all previous versions of the report. For details, please refer to "Amendment History"
3. This report does not constitute or imply on its own an approval of the device by the Certification Bodies or competent Authorities.
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6. The evaluation summarised in this report was not performed as part of the accredited scope of the CDTL Europe lab.

2. APPLICANT DETAILS

Table 1 Applicant Details	
Company Name	Sensative AB
Address:	Mobilvägen 10
	223 62 Lund
	Sweden
e-mail	info@sensative.com
Telephone:	-
Contact Name	Mats Pettersson
e-mail	Mats.pettersson@sensative.com
Telephone:	-

3. DETAILS OF DEVICE

Strips by Sensative is a magnetic sensor using Z-Wave radio technology to communicate with other devices in smart home systems. It is designed to monitor and protect windows, doors and other valuables. A Sigma Design ZM5101 chip-set is used as transceiver, the antenna is of the ceramic chip type.

Table 3.1 Details of device

Description of device:	Magnetic sensor using Z-Wave radio technology
Manufacturer:	Sensative AB
Model Name:	1101012
FCC ID	2AHIR-001
Hardware Version	R1A

Table 3.2 Wireless Technologies and Frequency Bands supported by the DUT

Technology	Band	Frequency Range (Tx)	Power Class	Modulations	Evaluation Performed
Z-Wave	900 MHz	902 MHz – 928 MHz	N/A	FSK	YES

Table 3.3 DUT Transmitter Characteristics

Technology	Band	Max. Avg. Output Power*	Antenna Gain
Z-Wave	900 MHz	2.0 dBm	0.5 dBi

*These figures represent the maximum average conducted output power attainable by the device type, including manufacturing tolerances. They are based on the manufacturer's own data.

4. EVALUATION

4.1 SUMMARY

At 20cm, the device is compliant with the “General Population / Uncontrolled” requirements set out in FCC 47 CFR §1.1310 Table 1 (B) for all wireless technologies supported by the device.

See chapter 5 for further details of the tests.

4.2 APPLICABLE STANDARDS

- FCC 47 CFR §2.1091
- FCC 47 CFR §1.1307
- FCC 47 CFR §1.1310
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- IEEE C95.1-2005

5. DETAILED MPE CALCULATIONS

The Power Density at 20cm separation distance has been calculated for the transmitter technology supported by the device according to a re-arrangement of the Friis formula, as below:

:

$$S = \frac{P * G}{4\pi * r^2}$$

Where:

“S” is power density in mW/cm²

“P” is maximum avg. conducted power (incl. tolerances) in mW according to data from the manufacturer

“G” is the peak antenna gain (numerical) according to data from the manufacturer

“r” is the separation distance (20 cm)

Since the device is not capable of simultaneous transmissions for any of these technologies, each technology has been evaluated individually.

MPE Calculations for Mobile Equipment								
General population/ Uncontrolled use								
Technology	Frequency Range (MHz)	[P] (dBm)	P (mW)	[G] (dBi)	G (Numerical)	r (cm)	S (mW/cm ²)	Limit* (mW/cm ²)
Z-Wave	902 – 928	2.0	1.58	0.5	1.12	20	0.00035	0.60

*The limits listed are from FCC 47 CFR §1.1310 Table 1 (B): “Limits for General Population/Uncontrolled”

For uncontrolled exposure from 300MHz to 1500MHz, the limit is calculated as $f/1500 \text{ mW/cm}^2$

Using the lowest frequency gives the most conservative limit: Limit = $902/1500 \text{ mW/cm}^2 = 0.60 \text{ mW/cm}^2$

6. AMENDMENT HISTORY

Version	Date	Author(s)/ Function	Reviewed by	Approved by	Nature of Changes
1.0	2016-05-26	Niall Forrester	Kaushlendra Tripathi	Håkan Sjöberg	First release