

Certification Report – FCC 2.1033

**Engineering Exhibit in Support of Form 731
for
Certification According to FCC part 2.1033(b)**

for the

Unlicensed transmitter based on digital modulation (DTS)

manufactured by

M2S Electronics LTD

FCC ID: T8E-E1000

Canada : 1557A-E1000

Trade Name: Santorio Meteo Systems

Certification Report – FCC 2.1033**Rule (2.1031, 2.911(d)) - Preliminary cross-reference for written application**

Qualification of the supervisor of the project 05042:

NAME & TITLE: Constantin Pintilei, Certification Adviser

TECHNICAL EDUCATION: Bachelor of Science Degree in Electrical Engineering, specialization Radioelectronic (1993) Technical University of Iasi, Romania.

TECHNICAL EXPERIENCE: Professional Engineer since 2001, registered with Engineering Order of Quebec (OIQ- Ordre des Ingenieurs du Quebec). 13 Years experience in radio frequency measurements.

Rule (2.1033(a))- Form 731

On-line submission of the application makes use of the Form 731 on-line.

Rule (2.1033(b)(1),(2),(4)) - General information about the grantee and the equipment

APPLICANT Linear Hertz Inc.,
6550 Francois Mauriac,
Laval, H7R 6B7 , Quebec, Canada

MANUFACTURER: M2S Electronics LTD
2855 De Celles,
Quebec city, G2C 1K7, Quebec, Canada

MODEL NAME: Santorio Meteo System

PART NUMBER: E1000

EUT SERIAL NUMBER (S): s/n 372951 registered as LHZ05042#1
s/n 372986 registered as LHZ05042#2
s/n 372945 registered as LHZ05042#3
s/n 372977 registered as LHZ05042#4

FCC ID NUMBER: T8E-E1000

FCC RULES AND REGS: FCC Part 15 Subpart C and 15.247, 15.249.

FREQUENCY RANGE: 2400.00 MHz - 2450.00 MHz

EIRP POWER RATING: max 4mW in peak mode, max 0.16µW in average mode.

NUMBER OF CHANNELS: 8 Channels selectable at power-on through DIP switches

ANTENNA: Incorporated Planar-Inverted F Antenna on PCB

VOLTAGE REQUIREMENTS: 3.0VDC (2XAAA batteries for indoor receiver unit, 2xAA batteries for outdoor transmitter unit)

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Equipment description of Santorio Meteo System. The Santorio Meteo System is a telemetry system (for temperature and humidity) based on MC13192FC Freescale-made transceiver in 2.4GHz ISM frequency band. The system is comprised of at least two units for data readings inside and outside the residence.

The unit placed outside and is hardened environmentally to face all kinds of weather. It is a transmit-only outdoor temperature remote sensor.



Tx (outdoor) unit

The other unit(s) placed indoor has temperature and the humidity sensors, LCD display and relays data received from outdoor unit to other indoor receivers/relays using store-and-forward techniques through the same RF channel.



indoor unit

The two units share the same RF, hardware and PCB design. The differences are mechanical (the units have batteries and cases appropriate to their environments) and at the peripherals (the outdoor unit does not have LCD, driver, humidity sensor and push button).

Certification Report – FCC 2.1033**Rule (2.1033(b)(3)) - Installation and operating instructions**

User guide: A preliminary 2 pages 1 sheet user guide is attached as **Annex D**. The statement:

"This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation."

is comprised in the user guide, as required by 15.19.

Rule (2.1033(b)(4),(5)) - description of operations, ground and antenna, block diagrams and schematics.

The units are stand-alone units with incorporated PIFA (Planar Inverted F Antenna) tuned to 2.40-2.45 GHz band by design. There is no output antenna connector available on either model (outdoor/indoor). There are no special grounding requirements and there is no ground connector available on either model (outdoor/indoor).

Block diagrams: Bloc diagrams clearly showing all clocks and buffers along with technical working is provided as **Annex B**, deemed confidential

Schematics are provided in **Annex C**, deemed confidential.

Rule (2.1033(b)(6)) - report of measurements showing compliance with FCC technical requirements.

A technical brief is provided as **Annex A**. It is comprised by a cross reference table detailing all the applicable tests as required by FCC rules Part 15 subpart C with the additional provisions concerning operations in 2400-2483.5MHz of part 15.247 and 15.249.

The tests involving field strength measurements were subcontracted to be made using a calibrated open area test site at Aprel Laboratories, **OATS registration 90416**. The test report issued by Aprel Laboratories is provided as **Annex A1**

Certification Report – FCC 2.1033**Rule (2.1033(b)(7)) - photographs of exterior, interior and label**

Internal photographs are provided in **Annexes E1** to **E4**: component side and soldering side with a detailed picture of LCD and LCD driver circuitry on side view to show stacked placement.

External photographs are provided in **Annexes F1** and **F2**

The Labels are different depending on the model. On the transmitter (outdoor) unit the label is affixed on the top lid. The same sticker reads product's logo, the trade name and the seller's website, the FCC ID is toward the right-bottom, as shown in the picture of **Annex G1**.

On the receiver (indoor) unit the FCC ID is embossed on the bottom cover, toward the edge, as shown in the picture of **Annex G2**. Due to the lack of space on the unit only the Canada ID and FCC ID were recorded. The receiver (indoor) unit must have an transmitter (outdoor) unit's RF signal in order to transmit therefore any system sold will have the trade name information as required by 2.1033(b)(7).

Rule (2.1033(b)(8),(9)(10),(11),(12): Not Applicable, this unit is not designed for the mentioned purposes