DEKRA Testing and Certification, S.A.U.
Parque Tecnológico de Andalucía,
c/ Severo Ochoa nº 2 · 29590 Campanillas · Málaga · España
C.I.F. A29 507 456

ENSAYOS Nº 51/LE147

Test report No:
NIE: 64800REM.001A1

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 6 (January 2016, Updated 2019-04)

(*) Identification of item tested	Smart Gas Meter
(*) Trademark	Mesura Metering
(*) Model and /or type reference tested	PRODIGI US1
Other identification of the product	HW version: 1.0 SW version: 1.0 FCC ID: 2AWRB-PRODIGI1 IC: 26345-PRODIGI1
(*) Features	LoRa communication
Manufacturer	Mesura Metering Srl Via Statale 11/13, Ponte San Marco 25011 Calcinato – Brescia (Italy)
Test method requested, standard	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 6 (January 2016, Updated 2019-04)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Rafael López Martín EMC Consumer & RF Lab. Manager RAFAEL LÓPEZ MARTÍN 2021.01.28 13:28:32 +01'00'
Date of issue	2021-01-28
Report template No	FDT08_22 (*) "Data provided by the client"

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Competences and guarantees

DEKRA Testing and Certification is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification at the time of performance of the test.

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The results presented in this Test Report apply only to the particular item under test established in this document.

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Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Testing and Certification internal document PODT000.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is I = ± 4,9 dB for quasi-peak measurements, I = ± 4,6 dB for peak measurements (k = 2).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1000 MHz to 6 GHz is I = ± 2,6 dB for peaks and average measurements (k = 2).

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The sample consists of a Smart Gas Meter, which is able to record gas consumption and send the information remotely.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples under test have been selected by: The client.

Sample S/01 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
64800B/003	Smart Gas meter	PRODIGI US1	CGOD031000000015	2020-06-01

Test sample description

Ports…… :	Port name and description		Cable					
			Specified length [m]	Attached during test	Shielded			
	N/A			☐	☐			
Supplementary information to the ports…… :								
Rated power supply .....:	Voltage and Frequency		Reference poles					
			L1	L2	L3	N	PE	
	☐	AC:	☐	☐	☐	☐	☐	
	☒	DC: Vnom:3.6V						
Rated Power .....:	2.7W							
Internal operating frequencies ....:	10MHz MCU – 32.768 kHz RTC							
Other parameters .....:	--							
Software version .....:	1.0							
Hardware version .....:	1.0							
Dimensions in cm (L x W x D).....:	Data not provided							
Mounting position .....:	☐	Table top equipment						
	☐	Wall/Ceiling mounted equipment						
	☐	Floor standing equipment						
	☐	Hand-held equipment						
	☒	Other: Dedication installation						
Modules/parts.....:	Module/parts of test item	Type	Manufacturer					
	SX1262	LoRa	Semtech					
Accessories (not part of the test item) .....:	Description	Type	Manufacturer					
	--							
Documents as provided by the applicant.....:	Description	File name	Issue date					
	--							

Copy of marking plate:


Identification of the client

Via Statale 11/13, Ponte San Marco
25011
Calcinato – Brescia (Italy)

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2020-06-02
Date (finish)	2020-06-02

Document history

Report number	Date	Description
64800REM.001	2020-10-21	First release
64800REM.001A1	2021-01-28	Second release Typos corrected. This modification test report cancels and replaces the test report 61800REM.001

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The test have been performed by the technical personnel: Daniel Mejias & Antonio Ruiz.

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

List of equipment used during the test

Control Number	Description	Model	Manufacturer	Next Calibration
2942	EMI TEST RECEIVER 20Hz-40GHz	ESU40	ROHDE AND SCHWARZ	2021-09-17
4523	EMI TEST RECEIVER 20Hz-26.5GHz	ESU26	ROHDE AND SCHWARZ	2022-05-27
5641	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2021-07-31
6064	SEMIANECHOIC ABSORBER LINED CHAMBER	SAC-3	Frankonia	---
6121	PRE-AMPLIFIER G>40dB 10MHz-6GHz	BLNA 0160-01N	BONN ELEKTRONIK	2020-09-19
6126	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2021-04-17
6132	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2021-04-20
6330	SHIELDED ROOM		FRANKONIA	---

Summary

Emission Test Requirement – Test case	Verdict	Remark
Radiated emission test (30 MHz – 1000 MHz)	Pass	--
Radiated emission test (1 GHz – 6 GHz)	Pass	See 1
Conducted emission test (150 kHz to 30 MHz)	N/A	See 2
Supplementary information and remarks: 1) Range: f>6 GHz. Test required only to the 5th harmonics of the maximum internal work frequency in the EUT. 2) The test is not applicable, not required by the standard. Equipment powered by DC.		

Appendix A: Test results

Appendix A Content

DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. The operation modes used by the samples to which the present report refers, are shown in the following table:

OPERATION MODE	DESCRIPTION
OM#01	EUT ON. LoRa IDLE mode (worst case). Power supply: 3.6Vdc (Internal battery)
OM#02	EUT ON. LoRa in RX mode. Power supply: 3.6Vdc (Internal battery)

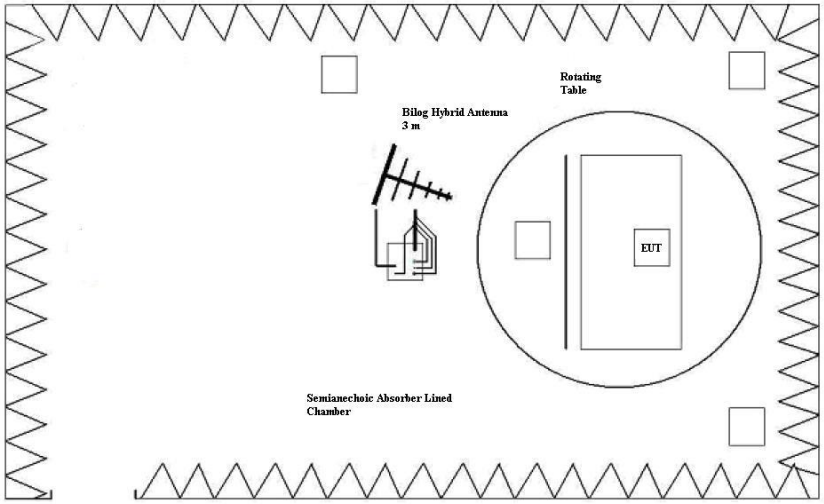
RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

LIMITS:	Product standard:	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition)& ICES-003 Issue 6 (January 2016, Updated 2019-04)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 6 (January 2016, Updated 2019-04)

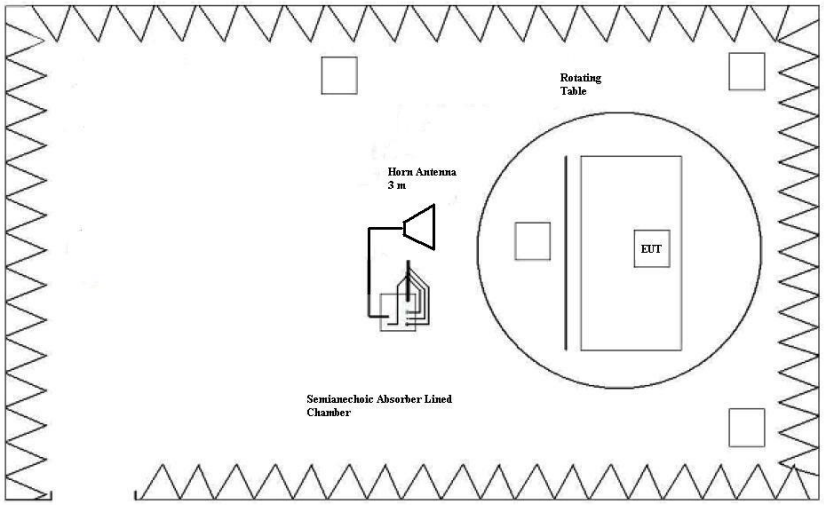
Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-19 Edition), Secs. 15.109 & ICES-003 Issue 6 (January 2016, Updated 2019-04) in the frequency range 30 MHz to 6 GHz for class B equipments.

Frequency range (MHz)	QP Limit for 3 m		PK Limit for 3 m
	(μV/m)	(dBμV/m)	(dBμV/m)
30 to 88	100	40	---
88 to 216	150	43.5	---
216 to 960	200	46	---
Above 960	500	54	74



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

TESTED SAMPLE:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	CRmmnnRRPP: CR, Radiated Condition; mm: Sample number; nn: Operation mode; RR: Range; PP: Polarization.

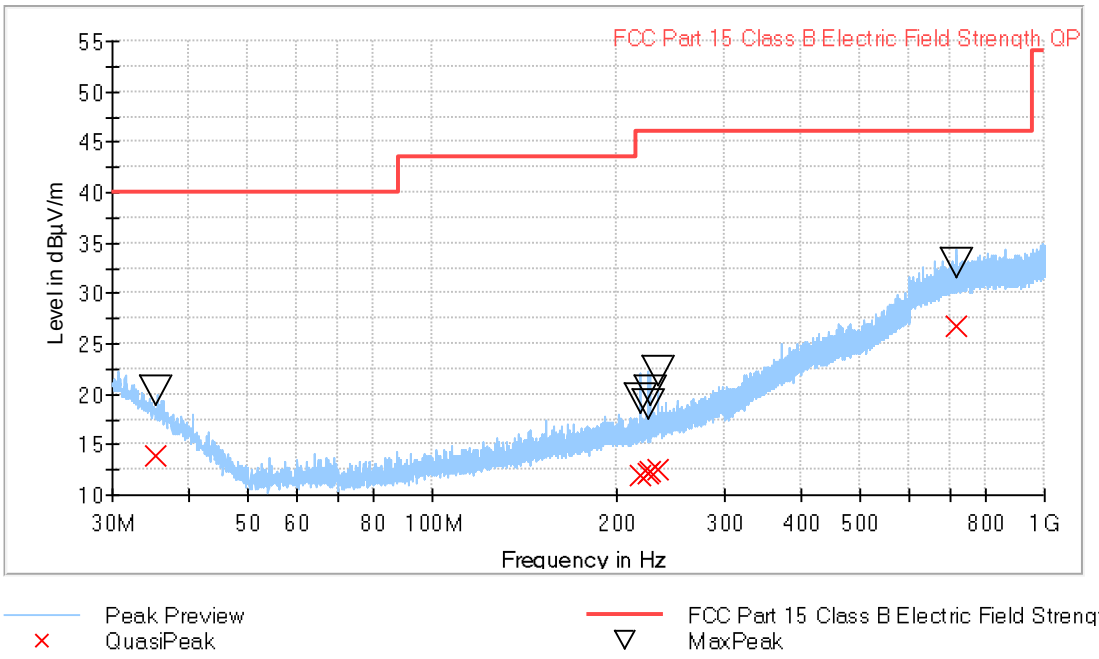
CRmmnnRRPP	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz.	P
CR0101HR1_VP&HP	Range: 1 GHz – 6 GHz. Vertical and horizontal Polarization.	P

Note: Range: f>6 GHz. Test required only to the 5th harmonics of the maximum internal work frequency in the EUT.

Radiated Emission. CR0101LR

Project:	64800REM.001
Company:	Mesura Metering Srl
Sample:	S/01
Operation mode:	OM#01
Description:	EUT ON. LoRa in IDLE mode (worst case). Power supply: 3.6Vdc (Internal battery)

RE FCC Part 15 Class B



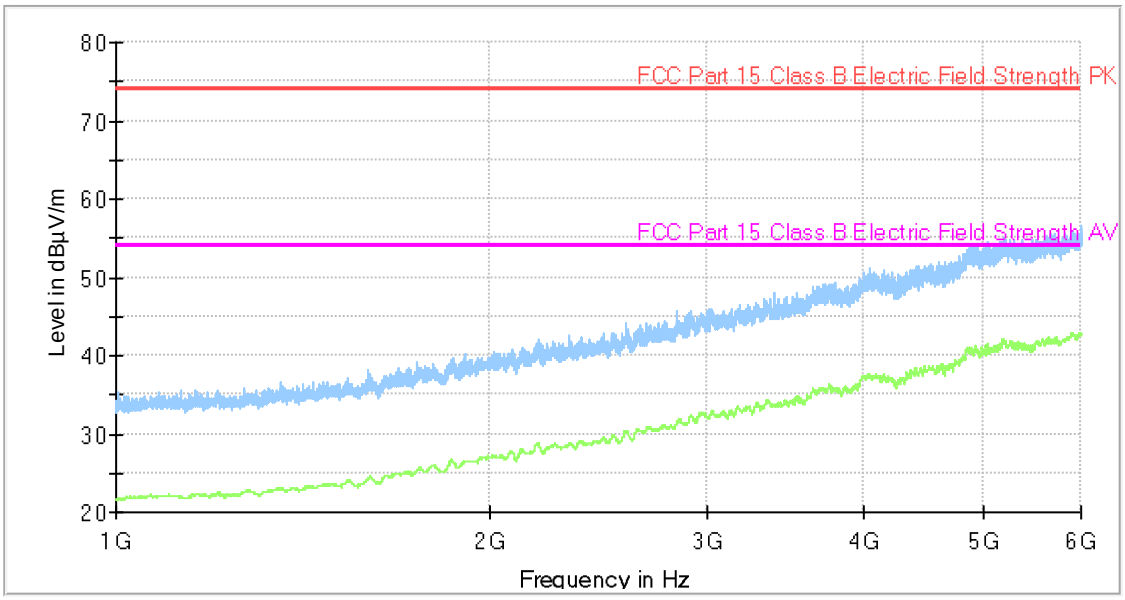
Maximizations

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Azimuth (deg)
35.314000	13.96	20.35	40.00	26.04	V	143.0
218.835000	11.97	19.55	46.00	34.03	H	14.0
224.620000	12.21	19.01	46.00	33.79	H	-104.0
226.597000	12.25	20.27	46.00	33.75	H	-171.0
233.018000	12.52	22.28	46.00	33.48	H	103.0
719.232000	26.82	32.99	46.00	19.18	H	2.0

Radiated Emission. CR0101HR1_VP&HP

Project:	64800REM.001
Company:	Mesura Metering Srl
Sample:	S/01
Operation mode:	OM#01
Description:	EUT ON. LoRa in IDLE mode (worst case). Power supply: 3.6Vdc (Internal battery). Vertical and horizontal polarization

RE FCC Part 15 Class B



Subrange Maxima

Frequency (MHz)	PK+_CLRWR (dBµV/m)	AVG_CLRWR (dBµV/m)	Pol
1478.000000	36.7	23.4	V
1910.000000	40.3	26.4	H
2472.400000	42.9	29.4	V
2834.400000	45.8	31.6	H
3389.200000	48.0	33.6	H
3984.000000	49.7	36.8	V
4418.400000	51.5	38.2	V
4924.400000	54.1	40.9	H
5189.600000	55.2	41.8	H
5997.200000	56.7	42.6	V