

EMF ASSESSMENT REPORT FCC Rules: Code of Federal Regulations (CFR) no. 47 **RF** Exposure Report Number. AR24-0101409-01 Rev.1 - Modified FCC ID number on page 1 Rev.2 - Modified date of issue Date of issue 2024-12-11 Total number of pages..... 8 Name of Testing Laboratory preparing the Report IMQ S.p.A. Applicant's name..... Intermodal Telematics BV Address Korte Huifakkerstraat 8 – 4815 PS Breda – NL Test specification: 47 CFR Part 15 and 447498 D01 V06 Standards Test Report Form No..... TRF 3609/6 Test Report Form(s) Originator....: IMQ S.p.A. Master TRF: Dated 2024-01-19 Test item description Dual-mode IEEE 802.15.4 and Low Energy (LE) Bluetooth® radio module mounted on dedicated board employed for collecting data of wireless sensors Trademark or brand name IMT - Intermodal Telematics BV Manufacturer Intermodal Telematics BV Model/Type reference(s): CLT20-Ex FCC ID..... 2BG2S-CLT20EX1

General disclaimer:

The results of tests and checks reported in this Test Report refer exclusively to the samples tested and described in the Report itself.

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Responsible Assessment Laboratory and testing location(s):

☑ Assessment Laboratory:	IMQ S.p.A.
Assessment location/ address:	Viale Lombardia, 20 – IT-20021 Bollate (MI)
Assessed by (name, function, signature):	Robertino Torri [Laboratory technician]
On behalf of Robertino Torri signed by:	Roberto Colombo [Laboratory manager]
Approved by (name, function, signature):	Roberto Colombo [Laboratory manager]

List of Attachments (including a total number of pages in each attachment):

	Summary of testing				
Tests performed (name of test and test clause)		performed (name of test and test clause)	Testing location:		
	3.1	RF exposure evaluation (MPE)	Viale Lombardia, 20 – 20021 Bollate (MI) - Italy		



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Possible test case verdicts:				
- test case does not apply to the test item. :	N/A (Not Applica	able)		
- test item does meet the requirement :	P (Pass)			
- test item does not meet the requirement. :	st item does not meet the requirement. : F (Fail)			
IMQ reference samples	BEM 116412			
	(Item(s) sample	ed and sent by	/ applicant)	
Date of receipt of test item:	2024-02-28			
Date of acceptance of test item	2024-02-28			
Date (s) of performance of tests:	2024-03-11			
General remarks:				
Throughout this report a □ comma / ⊠ point Throughout this report, the term "Test item" is us	is used as the d	ecimal separa ch as Test obje	i tor. ect, EUT or DUT.	
Name and address of factory (ies):	Intermodal Teler	matics BV		
	Korte Huifakkers	straat 8 – 4815	PS Breda – NL	
General product information (GPI) and other	remarks:			
The ability or reliability of this product to perform investigated.	its intended funct	tion in a particu	ular application has not been	
The test results apply to the sample as received.				
All information relating to the details of the equip the applicant.	ment under test a	it the § 1 of this	s document was provided by	
IMQ declines any responsibility derived from mis	sing or wrong info	ormation provid	ded aside by the applicant.	
Environmental reference conditions :	nvironmental reference conditions: The climatic conditions during the tests are within the lim specified by the manufacturer for the operation of the EU and the test equipment. The climatic conditions during the tests were within the following limits:			
	Temperature	Humidity	Atmospheric pressure	
	15 °C – 35 °C	30 % - 60 %	86 kPa – 106 kPa	
	If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.			
	The laboratory is monitored by a continuous environmental conditions measurements system.			
	Temperature, hu a weekly basis a	umidity and pre	essure data are recorded on cal archive.	



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1 General description of test item

Note: The information in this section has been provided by the applicant.

1.1 Test item(s)

No.	ltem	Unique identification / type / description Extent of			
1	CLT20-Ex	Dual-mode IEEE 802.15.4 and Low Energy (LE) Bluetooth® radio module mounted on dedicated board employed for collecting data of wireless Tested in sensors			
Engi	ineering stat	tement for untested va	riants / product family:		
/					
Supp	plementary in	formation:			
The	EUT contain	s below radio as followin	ng table:		
	Radio FCC/IC ID				
2G/	2G/3G Pentaband modem XPY1CGM5NNN / 8595A-1CGM5NNN				
4G/	4G/5G LTE-M (CAT M1) & NB-IOT KPY2AGQN4NNN / 8595A-2AGQN4NNN				
Acc	According to manufacturer declaration no simultaneous transmissions are allowed				

1.2 Radio parameters

Radio module model:	/			
Operating frequencies:	2400-2483.5MHz (IEEE 802.15.4 and BLE)			
Antenna parameters:	: Type 🛛 Integral 🛛 🖂 De		☑ Dedicated	External
	Model	/		
	Gain	4.9 dBi		
Transmission protocol:	/			



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2 Verdict summary section

Rationale for verdicts, including N/A (Not Applicable), are listed on each test sheet.

Requirements					
Clause	Requirement – Test case	Basic standard	Verdict		
3.1	RF exposure evaluation (MPE)	47 CFR § 1.1307 and Table 1 to §1.1310(e)(1) KBD 447498 D01 v06	Ρ		
Supplementary information: /					



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3 Conformity assessment

3.1 RF exposure evaluation (MPE)

TEST REQUIREMENT

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines § 1.1310.

EUT classification (fixed, mobile or portable devices)	Fixed according to § 1.1307 of this Chapter
LIMITS	According to Table 1 to §1.1310(e)(1) — Limits for Maximum Permissible Exposure (MPE)
Testing dates	2024-04-09

TABLE 1-LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
ational/Controlle	d Exposure		
614	1.63	* 100	6
1842/f	4.89/f	* 900/f2	6
61.4	0.163	1.0	6
		f/300	6
		5	6
	Electric field strength (V/m) Dational/Controlle 614 1842/f 61.4	Electric field strength (V/m) Magnetic field strength (A/m) Dational/Controlled Exposure 614 1842/f 61.4 0.163	Electric field strength (V/m) Magnetic field strength (A/m) Power density (mW/cm ²) pational/Controlled Exposure 1.63 * 100 614 1.63 * 900/f ² 61.4 0.163 1.0 5

(B) Limits for General Population/Uncontrolled Exposure

	•				
0.3–1.34	614	1.63	* 100	30	
1.34–30	824/f	2.19/f	* 180/f2	30	
30–300	27.5	0.073	0.2	30	
300-1,500			f/1500	30	
1,500–100,000			1.0	30	
f = frequency in MHz * = Plane-wave equivalent power density					

The power density at any given distance in any direction can be calculated in the far field using the following equation:

$S = PG_i / (4\pi r^2)$

where:

S: power density (W/m2) in a given direction.

P: power (W) supplied to the radiation source, assuming a lossless system;

Gi: gain factor of the radiation source in the relevant direction, relative to an isotropic radiator;

r: distance (m) from the radiation source.

The product **PGi** in equation is known as the e.i.r.p. which represents the power that a fictitious isotropic radiator would have to emit in order to produce the same field intensity at the receiving point.



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CALCULATION FOR SINGLE TRASMISSION - MPE

Operating band (MHz)	Max power (dBm)	Max E.I.R.P. (mW)	Equivalent plane wave power density @ 20 cm S (mW/cm²)	Limits (mW/cm²)	
2400 IEEE 802.15.4	17.86	61.0942	0.0122	1.0	
2400 BLE	17.88	61.3762	0.0122	1.0	
Supplementary information:					

No simultaneous transmission

TEST RESULT

This value is less than the low threshold limit for Maximum Permissible Exposure.

END OF ASSESSMENT REPORT