

ISED CABid: ES1909

Test report No:
NIE: 70499REM.002A2

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B
(10-1-21 Edition) & ICES-003 Issue 7 (October 2020)

(*) Identification of item tested	Door Handle Sensor with NFC Reader
(*) Trademark	Vitesco
(*) Model and /or type reference	DHSEQ5NFC
Other identification of the product	---
(*) Features	FCC ID: 2A6TC-DHSEQ5NFC IC: 28616-DHSEQ5NFC HW version: AAA2064150000 HVIN: AAA2064150000 SW version: X190 – AUN119__ Features: NFC
Manufacturer	Vitesco Technologies 44 Avenue du General de Croutte, Toulouse France 31100
Test method requested, standard	FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-21 Edition) & ICES-003 Issue 7 (October 2020)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Rafael López EMC Consumer & RF Lab. Manager
Date of issue	2022-10-11
Report template No	FDT08_24 (*) "Data provided by the client"



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Acronyms

Acronym ID	Acronym Description
Code	EMC Test Code
Freq Rng	Frequency Range
MP	Measurement Point
OM	Operation Mode
S/	Sample
V	Verdict

Competences and guarantees

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Uncertainty

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

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 6000 MHz is $l = \pm 4,7$ dB for quasi-peak measurements, $l = \pm 4,3$ dB for peak 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 of the model DHSEQ5NFC is a door handle sensor that is a standalone module with capacitive and NFC functions. This module is integrated into a door handle, and used in Keyless Entry System, enabling "key-free" Vehicle Unlocking and Locking.

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

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial N°	Date of Reception	Application
S/01	70499_3.1	Doorhandle device	H05 X200 17H	95169924366929	2022-06-02	Element Under Test
S/01	70499_22.1	Connecting cable	--	--	2022-07-05	Auxiliary Element

Notes referenced to samples during the project.

Test sample description

Test Sample description (compulsory information for EMC and RF testing services)

Ports..... :	Port name and description	Cable					
		Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾		
	CAN H (blue)	.....	[X]	[]	[]		
	CAN L (green)	.....	[X]	[]	[]		
	GND (black)	.....	[X]	[]	[]		
	VBATT (grey)	.....	[X]	[]	[]		
			[]	[]	[]		
			[]	[]	[]		
Supplementary information to the ports..... :	.....						
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	[]	AC:	[]	[]	[]	[]	[]
	[]	AC:	[]	[]	[]	[]	[]
	[X]	DC: 12 V					
	[]	DC:					
Rated Power	4 mW mean						
Clock frequencies.....	.....						
Other parameters .....	.....						
Software version	X190 – AUN119__						
Hardware version	AAA2064150000 HVIN: AAA2064150000						
Dimensions in cm (W x H x D)	15 x 4 x 2 cm						

Mounting position	☒ [X]	Table top equipment		
	☐ []	Wall/Ceiling mounted equipment		
	☐ []	Floor standing equipment		
	☐ []	Hand-held equipment		
	☐ []	Other:		
Modules/parts.....	Module/parts of test item		Type	Manufacturer
	Door handle sensor connected and powered		.....	.....
				
				
				
Accessories (not part of the test item)	Description		Type	Manufacturer
	Test box		.....	.....
				
				
				
				
				
Documents as provided by the applicant.....	Description		File name	Issue date
	Test box manual		.....	.....
				
				
				

⁽³⁾ Only for Medical Equipment

Identification of the client

Vitesco Technologies
44 Avenue du General de Crouette, Toulouse
France 31100

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2022-07-28
Date (finish)	2022-07-28

Document history

Report number	Date	Description
70499REM.002	2022-10-11	First release
70499REM.002A1	2022-11-18	Second release: It was corrected minor typos. This test report cancels and replaces the report: 70499REM.002
70499REM.002A2	2022-11-30	Third release: It was corrected minor typos. This test report cancels and replaces the report: 70499REM.002A1

Environmental conditions

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

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

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

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

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

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

Remarks and comments

The tests have been performed by the technical personnel: Jia Hao Luo Chen.

Testing verdicts

Fail	F
Inconclusive	I
Not applicable	N/A
Not measured	N/M
Pass	P
Partial Passed	P*

List of equipment used during the test

Control No.	Equipment	Model	Manufacturer	Next Calibration
4523	EMI TEST RECEIVER 20Hz-26.5GHz	ESU26	ROHDE AND SCHWARZ	2023-11-05
5862	EMI TEST RECEIVER 9kHz-7GHz	ESR7	ROHDE AND SCHWARZ	2022-12-12
7763	HORN ANTENNA 1-18GHz	BBHA 9120D	SCHWARZBECK MESS-ELEKTRONIK	2022-11-15
7769	PREAMPLIFIER 30dB 500MHz-18GHz	BBV 9718 C	SCHWARZBECK	2023-03-25
8130	SEMIANECHOIC ABSORBER LINED CHAMBER	P29419	ALBATROSS	--
8134	SHIELDED ROOM	P29419	ALBATROSS PROJECTS GMBH	--
4848	SOFTWARE FOR EMC/RF TESTING	EMC32	ROHDE AND SCHWARZ	--
7550	TEMPERATURE AND HUMIDITY PROBE	HWg-STE	HW GROUP	2023-05-09
7549	TEMPERATURE AND HUMIDITY PROBE	HWg-STE	HW GROUP	2023-05-09
7826	ULTRALOG ANTENNA 30MHz-6GHz	HL562E_UPG	ROHDE AND SCHWARZ	2022-10-15

Summary

Test Specification.	Requirement – Test case	Verdict	Remark
FCC 47 CFR Part 15B	RE Radiated emission. Electromagnetic field measure	Pass	--
<u>Supplementary information and remarks:</u> None			

Appendix A: Test results

Appendix A content

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Description of the operation modes

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. Every operation mode takes a failure criteria for the immunity test that they were applying to it and a monitoring to guarantee performance of the same ones.

The operation modes used by the samples to which the present report refers, are shown in the following table:

Id	Description
OM/01	EUT ON. NFC in reception mode. Power supply:12 Vdc

Test standards version applied

The product standards and test standards applied for each test cases are shown in the following table:

Product Test Standard	Test standard	Requirement – Test case
FCC CFR 47, Part 15, Subpart B (10-1-21 Edition) & ICES-003 Issue 7 (October 2020)	ANSI C63.4 (2014)	RE Radiated emission.

Test Cases Details

FCC 47 CFR Part 15B

RE Radiated emission. Electromagnetic field measure

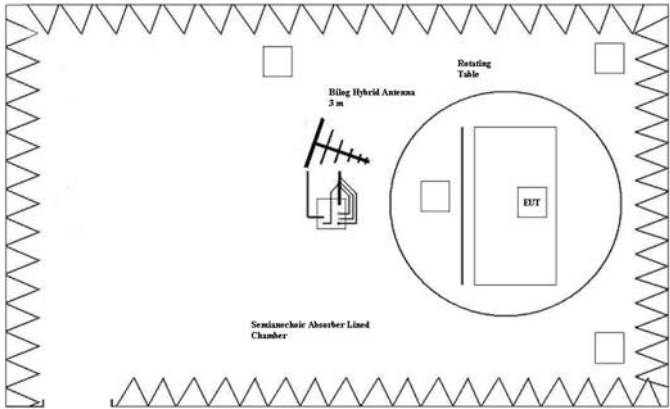
Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according to the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-21 Edition), Secs. 15.109 & ICES-003 Issue 7 (October 2020)

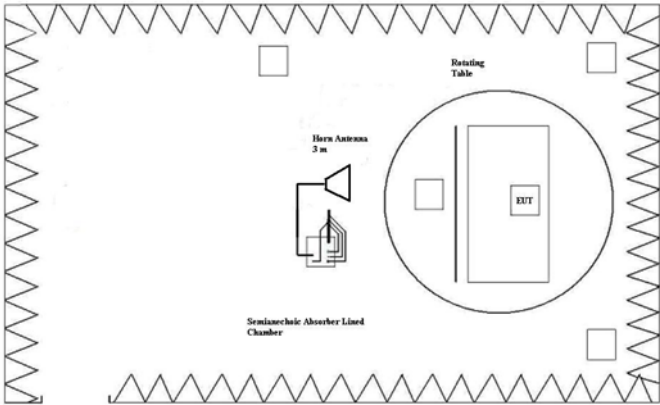
Frequency range (MHz)	FCC Part 15B		ICES-003 Issue 7		FCC Part 15B & ICES-003 Issue 7	
	QP Limit for 3 m		QP Limit for 3 m		PK Limit for 3 m	AVG Limit for 3 m
	(µV/m)	(dBµV/m)	(µV/m)	(dBµV/m)	(dBµV/m)	(dBµV/m)
30 to 88	100	40	100	40	---	---
88 to 216	150	43.5	150	43.5	---	---
216 to 230	200	46	200	46	---	---
230 to 960	200	46	224	47		
960 to 1000	500	54	500	54	---	---
Above 1000	---	---	---	---	74	54

NOTE: FCC QP and AVG limits are in concordance with RSS-Gen Issue 5 (March 2019), Secs. 7.1 and 7.3.
Limits according to FCC Part 15B, are equal or more stringent than those of ICES-003 Issue 7.

Setup for measurements



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

Results

SI	OM	Code	Freq Rng (MHz)	V
01	OM/01	RE0101LR	[30, 1000]	P
01	OM/01	RE0101HR	[1000, 12750]	P

Verdict

Pass

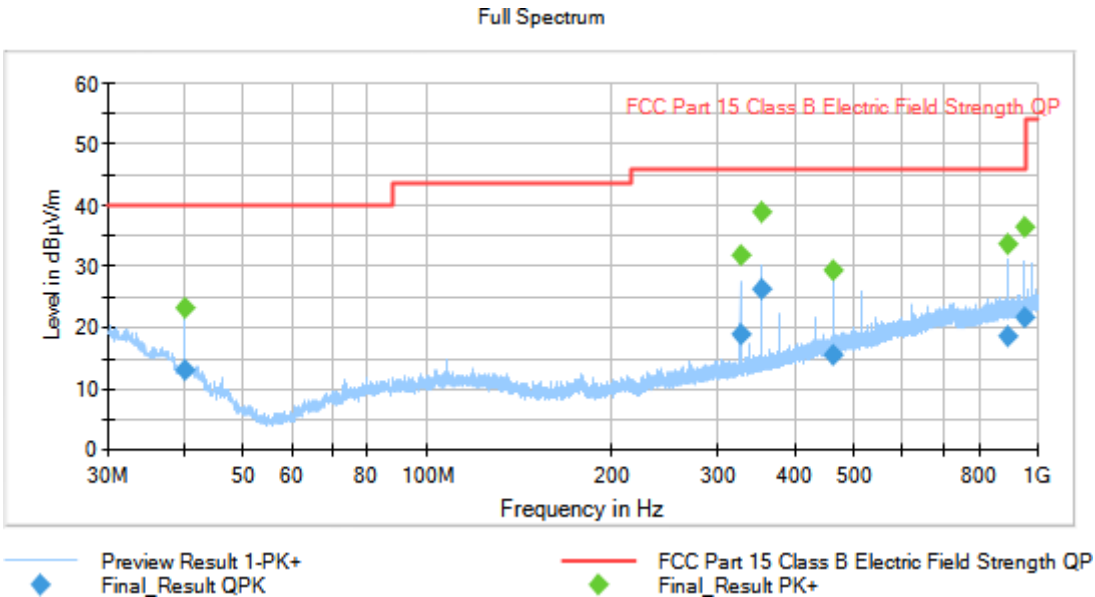
Attachments

EMC Test Code = RE0101LR, Frequency Range MHz = [30, 1000]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. NFC in reception mode. Power supply:12 Vdc

Images:



Tables:

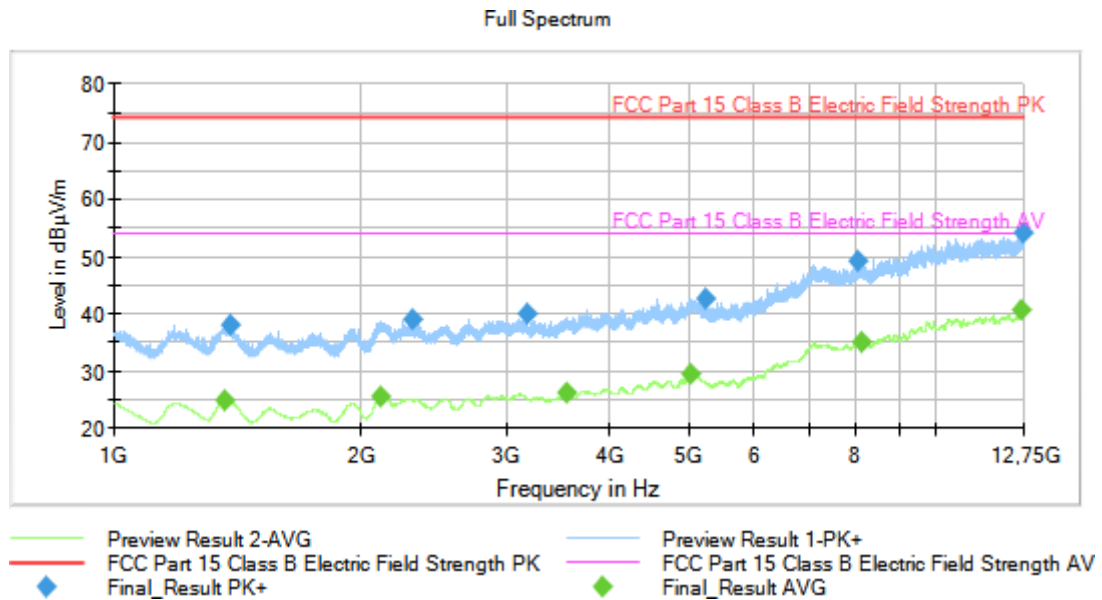
Frequency(MHz)	QuasiPeak(dBµV/m)	MaxPeak(dBµV/m)	Limit(dBµV/m)	Margin(dB)	Height(cm)	Pol	Azimuth(deg)
40.047000	13.08	---	40.00	26.92	110.0	V	323.0
40.047000	---	23.21	---	---	110.0	V	323.0
325.427000	18.93	---	46.00	27.07	122.0	V	92.0
325.427000	---	31.96	---	---	122.0	V	92.0
352.528000	---	38.87	---	---	142.0	V	211.0
352.528000	26.39	---	46.00	19.61	142.0	V	211.0
461.027000	---	29.45	---	---	100.0	V	186.0
461.027000	15.51	---	46.00	30.49	100.0	V	186.0
894.979000	---	33.80	---	---	100.0	H	133.0
894.979000	18.47	---	46.00	27.53	100.0	H	133.0
949.196000	---	36.35	---	---	158.0	H	128.0
949.196000	21.77	---	46.00	24.23	158.0	H	128.0

EMC Test Code = RE0101HR, Frequency Range MHz = [1000, 12750]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. NFC in reception mode. Power supply:12 Vdc

Images:



Tables:

Frequency(MHz)	MaxPeak(dBµV/m)	Average(dBµV/m)	Limit(dBµV/m)	Margin(dB)	Meas. Time(ms)	Height(cm)	Pol	Azimuth(deg)
1365.200000	---	25.00	53.97	28.97	10.0	80.0	H	0.0
1387.600000	37.96	---	73.97	36.01	10.0	80.0	V	0.0
2115.200000	---	25.64	53.97	28.33	10.0	80.0	H	0.0
2309.600000	39.13	---	73.97	34.84	10.0	80.0	H	0.0
3177.600000	40.15	---	73.97	33.82	10.0	80.0	H	0.0
3553.600000	---	26.09	53.97	27.88	10.0	80.0	V	0.0
5021.600000	---	29.40	53.97	24.57	10.0	80.0	H	0.0
5248.800000	42.74	---	73.97	31.23	10.0	80.0	H	0.0
8037.600000	49.14	---	73.97	24.83	10.0	80.0	V	0.0
8095.200000	---	35.14	53.97	18.83	10.0	80.0	H	0.0
12685.200000	---	40.57	53.97	13.40	10.0	80.0	H	0.0
12722.800000	54.25	---	73.97	19.72	10.0	80.0	V	0.0