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Independent Testing Laboratory

TEST REPORT
Nr. R21164201

Federal Communication Commission (FCC)

Report Reference No. .....:	R21164201
Date of issue: .....:	10.09.2021
Total number pages: .....:	15
Applicant´s name .....:	Teleco Automation S.r.l.
Address .....:	Via Calmaggiore, 10/4 – 31100 Treviso (TV) – Italy
Test specification:	
Standards .....:	KDB 447498 D01 General RF Exposure Guidance v06
Non-standard test method .....:	N/A
Test Report Form No. .....:	15-247_HoppingCMC
Test Report Form(s) Originator ..:	CMC Centro Misure Compatibilità S.r.l.
Master TRF .....:	2021-06

General disclaimer:

The test results presented in this report relate only to the object tested.
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Test item description .....:	DAISY WI-FI
Trademark .....:	Teleco Automation
Manufacturer .....:	Teleco Automation S.r.l.
Model / Type reference .....:	TVDAY916A01
FCC ID .....:	P59TVDAY916
Rating(s) .....:	5 Vdc from USB

Report

Tested by (name + signature).....:	M. Segalla	.....
Approved by (name + signature) .....:	R. Beghetto	.....

1 Summary

1 Summary 2
2 Reference standard 3
3 List of attachments 3
4 Deviation(s) from test specification 3
5 Testing location 3
6 General description of tested item and testing condition(s) 5
6.1 Photos of the test item 6
7 Verdict summary section 8
8 Test conditions 10
8.1 General 10
9 Test results 11
9.1 RF Exposure Analysis 11

2 Reference standard	
KDB 447498 D01 General RF Exposure Guidance v06	RF exposure procedures and equipment authorization policies for mobile and portable devices
3 List of attachments	
Attachment 1: Instruments list, measurement uncertainty, judgement of compliance and quality manual references	
4 Deviation(s) from test specification	
None	
5 Testing location	
CMC Centro Misure Compatibilità S.r.l. Via della Fisica, 20 – 36016 Thiene (VI) – Italy Test site facility's FCC registration number: 182474	

Revision index	***Date***	***Change history***
1.0	10.09.2021	--

Testing and sampling:	
Date of receipt of test item	06.07.2021
Testing start date	10.09.2021
Testing end date	10.09.2021
Sampling procedure	Equipment used for testing was picked up by the manufacturer, at the end of the production process with random criterion. The results relate to the sample as it has been received.
Internal identification	Adhesive label with the product number P210803
General remarks:	
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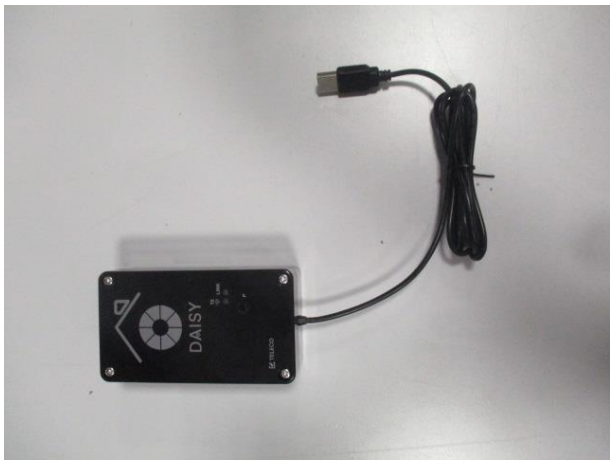
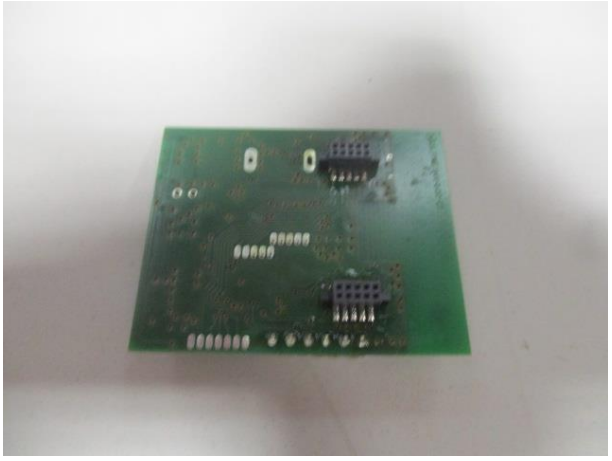
Possible test case verdicts:	
Test case does not apply to the test object:	N/A (Not Applicable)
Test object does meet the requirement:	P (Pass)
Test object does not meet the requirement:	F (Fail)
Test object does not performed:	N/E (Not Executed)
Definition of symbols used in this test report:	
☒ Indicates that the listed condition, standard or equipment is applicable for this report. ☐ Indicates that the listed condition, standard or equipment is not applicable for this report.	

6 General description of tested item and testing condition(s)

Description .....:	DAISY WI-FI						
Model Number .....:	TVDAY916						
FCC ID .....:	P59TVDAY916						
Serial Number .....:	--						
Brand name .....:	Teleco Automation						
Frequency band .....:	902 – 928 MHz						
Nominal frequency .....:	F_C: 916 MHz						
Test power supply.....:		Voltage and Frequency	Reference poles				
			N	L1	L2	L3	PE
	☐	AC:	☐	☐	☐	☐	☐
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: 5 V from USB					☐
Test configuration .....:	☒	Table top equipment					
	☐	Floor standing equipment					
	☐	Hand-held equipment					
Type of equipment .....:	☒	Transmitter unit					
	☐	Receiver unit					
Type of station .....:	☐	Portable station					
	☒	Mobile station					
Operating modes .....:	No.	Operating mode of test item					
	1	EUT in continuous transmission at maximum power, WiFi in normal operation (search for associated WiFi network)					

6.1 Photos of the test item





7 Verdict summary section

KDB 447498 D01 General RF Exposure Guidance v06			
Clause	**Requirement – Test case**	**Basic standard**	**Verdict**
cl. 4	RF Exposure Analysis	--	**P**

Normative references	
Reference no.	***Description***
KDB 447498 D01 General RF Exposure Guidance v06	RF exposure procedures and equipment authorization policies for mobile and portable devices

8 Test conditions

8.1 General

<table>
<tr><td rowspan="4">Environmental reference conditions.....:</td><td colspan="3">The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.
The climatic conditions during the tests were within the following limits:</td></tr>
<tr><td>Temperature</td><td>Humidity</td><td>Atmospheric pressure</td></tr>
<tr><td>15 °C – 35 °C</td><td>30 % - 60 %</td><td>800 hPa – 1060 hPa</td></tr>
<tr><td colspan="3">If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.</td></tr>
<tr><td>Measurement uncertainties .....:</td><td colspan="3">Attachment 1</td></tr>
</table>

9 Test results

9.1 RF Exposure Analysis

Tested by ..... :	M. Segalla
Test date ..... :	10.09.2021
Test location (stand) ..... :	Laboratory
Reference standards ..... :	KDB 447498 D01 cl. 4 ANSI C63.10
Supplementary information..... :	--

Acceptance limits
1 mW/cm^2 max at 20 cm of distance

Result

Standalone operation

FCC ID	*Transmission channel (MHz)*	*Measured level*	*Peak Output Power (mW)*	*Power Density at 20 cm (mW/cm^2)*	*Power Density Limit (mW/cm^2)*
P59TVDAY916	916,00	93,55 dBµV/m	0,415	1,35E-04	1,00
QOQWGM160P	2412	17,91 dBm	61,802	2,01E-02	1,00
QOQWGM160P	2437	18,82 dBm	76,208	2,48E-02	1,00
QOQWGM160P	2462	17,76 dBm	59,704	1,94E-02	1,00

Remarks
P = (E x d)^2/ (30 x G) x 1000
Where:
E = the measured maximum fundamental field strength in V/m
G = the numeric gain of the transmitting antenna: 1,637 (2,14 dBi)
d = the distance in meters from which the field strength was measured (3 m)
P = the power in mW
Power Density = (P x G) / (4πR^2)

Simultaneous transmission

FCC ID of module	*Transmission channel (MHz)*	*Highest Peak Output Power*	*Power Density at 20 cm (mW/cm^2)*	*Overall Power Density (mW/cm^2)*	*Power Density Limit (mW/cm^2)*
P59TVDAY916	916,00	93,55 dBµV/m	1,35E-04	1,96E-02	1,00
QOQWGM160P	2437	18,82 dBm	2,48E-02		

Remarks
P = (E x d)^2/ (30 x G) x 1000
Where:
E = the measured maximum fundamental field strength in V/m
G = the numeric gain of the transmitting antenna: 1,637 (2,14 dBi)
d = the distance in meters from which the field strength was measured (3 m)
P = the power in mW
Power Density = (P x G) / (4πR^2)

Attachment 1

Instruments list

Id. number	*Manufacturer*	*Model*	*Description*	*Serial number*	*Last calibration*	*Due date calibration*
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052	January '21	January '22

Attachment 1

Measurement uncertainty

Test	*Test Setup*	*Expanded uncertainty*	*Note*
Conducted emission CISPR 16 LISN 50uH 0,009-0,0150 MHz	PE001_01	3,4 dB	1
Conducted emission CISPR 16 LISN 50uH 0,150-30,0 MHz	PE001_01	3,0 dB	1
Conducted emission CISPR 16 Voltage Probe 0,15-30 MHz	PE001_02	2,3 dB	1
Conducted emission CISPR 16 Current Probe 0,15-30 MHz	PE001_03	2,6 dB	1
Conducted emission CISPR 16 ISN 0,15-30 MHz	PE001_04	4,7 dB	1
Clic CISPR 16 LISN 50uH 0,150-30,0 MHz	PE001_05	2,9 dB	1
Radiated Emission CDNE 30-300 MHz	PE001_06	3,3 dB	1
Disturbance Power 30-300 MHz	PE002_01	3,8 dB	1
Radiated Emission LAS 0,15-30 MHz	PE003_01	2,0 dB	1
Radiated Emission CISPR 16 Loop Ant. 0,15-30 MHz	PE004_01	4,2 dB	1
Radiated Emission CISPR 16 Bicon. Ant. 30-300 MHz	PE004_02	4,1 dB	1
Radiated Emission CISPR 16 LogP. Ant. 300-1000 MHz	PE004_03	3,9 dB	1
Radiated Emission CISPR 16 Horn Ant. 1-18 GHz	PE004_04	4,1 dB	1
Human Exposure to electromagnetic fields	PE005_01	16,7 %	1
Harmonics	PE006_01	10 mA + 2,9 %	1
Flicker	PE007_01	4,36 %	1
Radiated Immunity 80 MHz - 6 GHz	PE102_XX	2,20 dB 0,87 V/m a 3V/m	1
Conducted Immunity 0,15 - 230 MHz	PE105_XX	1,20 dB 0,44 V a 3V	1
AC Magnetic field	PE106_01	1,55 % 0,15 A/m a 10A/m	1
Pulse Magnetic field	PE107_01	6,23 % 18,7 A/m a 300A/m	1
Dumped Magnetic field	PE108_01	6,23 % 1,87 A/m a 30A/m	1
Common mode conducted immunity	PE112_01	2,16 % 0,22 V a 10V	1

Attachment 1

Test	Test Setup	Expanded uncertainty	Note
Power/Spurious 9kHz-30MHz	PR001_01	4,2 dB	1
Power/Spurious ERP 30-1000MHz d=10m	PR001_02+03	4,7 dB	1
Misura della potenza EiRP 1-18GHz d=3m	PR001_04+05	4,7 dB	1
Misura della potenza EiRP 18-40GHz d=3m	PR001_06	5,4 dB	1
Frequency error	PR002_01+02	< 1x10-7	1
Timing zero span (1001pts.)	PR002_01+02	0,2 % SWT	1
Modulation bandwidth	PR002_01+02	< 1x10-7	1
Conducted RF power and spurious emission	PR002_01+02	1,1 dB	1
Adjacent channel power	PR002_01+02	1,1 dB	1
Blocking	PR002_01+02	1,1 dB	1

Test	Test Setup	Expanded uncertainty	Note
Electrostatic discharge immunity test	PE101_0X		2
Electrical fast transients / burst immunity test	PE103_0X		2
Surge immunity test	PE104_0X		2
Short interruption immunity test	PE109_01		2
Ring Wave immunity test	PE110_01		2
Low frequency immunity test	PE111_01		2
Dumped Oscillotary immunity test	PE113_01		2
Rev_21_01 date 23/02/2021			

Note 1:

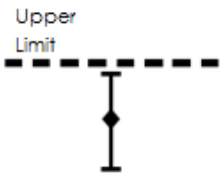
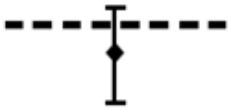
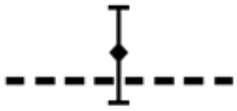
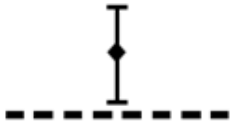
The expanded uncertainty reported according to the document EA-4-02 is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of p = 95%

Note 2:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor k=2

Attachment 1

Judgement of compliance

Case 1	Case 2	Case 3	Case 4
			
The sample complies with the requirements.	The sample complies with the requirements.	The sample does not comply with the requirements.	The sample does not comply with the requirements.
The measurement results is within the specification limit when the measurement uncertainty is taken into account.	It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty although the measurement result is below the limit.	It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty also the measurement result is upper the limit.	The measurement results is outside the specification limit when the measurement uncertainty is taken into account.

In agreement with ILAC-G8:09/2019 cl.4.2.1 Guidelines on Decision Rules and Statements of Conformity

Quality manual references – Internal procedure

Internal Procedure PM001 rev. 3.1 (Quality Manual)	Measure procedure
Internal Procedure INC_M rev. 9.5 (Quality Manual)	Measurement uncertainty calculation