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

Test report No:
NIE: 67584REM.002A1

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 7 (October 2020)

(*) Identification of item tested	Connected watch
(*) Trademark	Tissot SA
(*) Model and /or type reference	T-Touch Connect
Other identification of the product	HW Version: T121420 AB SW Version: 1.0.0 FCC ID: 2AH93T121420AB IC: 25567-T121420AB
(*) Features	---
Manufacturer	TISSOT, S.A. Chemin des Tourelles 17 CH-2400 Le Locle. Switzerland
Test method requested, standard	FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 7 (October 2020)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Rafael López EMC & RF Lab. Manager  2021.05.05 11:23:42 +02'00'
Date of issue	2021-04-12
Report template No	FDT08_23 (*) “Data provided by the client”

Index

ACRONYMS 3
COMPETENCES AND GUARANTEES 3
GENERAL CONDITIONS 4
UNCERTAINTY 4
DATA PROVIDED BY THE CLIENT 4
USAGE OF SAMPLES 5
TEST SAMPLE DESCRIPTION 6
IDENTIFICATION OF THE CLIENT 7
TESTING PERIOD AND PLACE 7
DOCUMENT HISTORY 7
ENVIRONMENTAL CONDITIONS 8
REMARKS AND COMMENTS 9
TESTING VERDICTS 9
LIST OF EQUIPMENT USED DURING THE TEST 9
SUMMARY 10
APPENDIX A: TEST RESULTS 11

Acronyms

Acronym ID	Acronym Description
Avg	Radiated Average Level
Az	Azimuth
Code	EMC Test Code
Freq	Frequency
Freq Rng	Frequency Range
H	Height
Line	Conducted Emissions - Tested Line
MP	Measurement Point
MaxPeak	Radiated Maximum Peak Level
OM	Operation Mode
Pol	Polarization
QuasiPeak	Radiated Quasi Peak Level
S/	Sample
V	Verdict

Competences and guarantees

DEKRA Testing and Certification S.A.U. 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 S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. 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 S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

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

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Testing and Certification S.A.U.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

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 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 12.75 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 an analog-digital connected watch with typical Swiss watchmaking design. The product is equipped with features such as notifications, pedometer, altimeter, and navigation. The product can be recharged by light and by inductive recharging.

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 under test have been selected by: The client.

Sample 01 (S/01):

Control Number	Description	Model	Serial Nº	Date of Reception	Application
67584_02	Connected Watch	T-Touch Connect	CE12	2021-02-26	Element under test

Notes referenced to samples during the project.

Id	Note
	N/A

Test sample description

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

<table>
<tr><td rowspan="2">Ports…… :</td><td rowspan="2">Port name and description</td><td colspan="4">Cable</td></tr>
<tr><td>Specified max length [m]</td><td>Attached during test</td><td>Shielded</td><td>Coupled to patient(3)</td></tr>
<tr><td></td><td>N/A</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Supplementary information to the ports…… :</td><td colspan="5">N/A</td></tr>
<tr><td rowspan="3">Rated power supply .....:</td><td colspan="2" rowspan="2">Voltage and Frequency</td><td colspan="5">Reference poles</td></tr>
<tr><td>L1</td><td>L2</td><td>L3</td><td>N</td><td>PE</td></tr>
<tr><td>☐</td><td>AC:</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>☒</td><td colspan="5">DC: 3.7Vdc (Battery)</td></tr>
<tr><td>Rated Power .....:</td><td colspan="6">Not provided data</td></tr>
<tr><td>Clock frequencies.....:</td><td colspan="6">Not provided data</td></tr>
<tr><td>Other parameters .....:</td><td colspan="6">Not provided data</td></tr>
<tr><td>Software version .....:</td><td colspan="6">1.0.0</td></tr>
<tr><td>Hardware version .....:</td><td colspan="6">T121420 AB</td></tr>
<tr><td>Dimensions in cm (W x H x D) ....:</td><td colspan="6">Not provided data</td></tr>
<tr><td rowspan="5">Mounting position .....:</td><td></td><td colspan="5">Table top equipment</td></tr>
<tr><td></td><td colspan="5">Wall/Ceiling mounted equipment</td></tr>
<tr><td></td><td colspan="5">Floor standing equipment</td></tr>
<tr><td></td><td colspan="5">Hand-held equipment</td></tr>
<tr><td>X</td><td colspan="5">Other: Wearable</td></tr>
<tr><td rowspan="2">Modules/parts.....:</td><td colspan="3">Module/parts of test item</td><td>Type</td><td colspan="2">Manufacturer</td></tr>
<tr><td colspan="3">N/A</td><td></td><td colspan="2"></td></tr>
<tr><td rowspan="2">Accessories (not part of the test item) .....:</td><td colspan="3">Description</td><td>Type</td><td colspan="2">Manufacturer</td></tr>
<tr><td colspan="3">Wireless charger</td><td></td><td colspan="2"></td></tr>
<tr><td rowspan="2">Documents as provided by the applicant.....:</td><td colspan="3">Description</td><td>File name</td><td colspan="2">Issue date</td></tr>
<tr><td colspan="3">N/A</td><td></td><td colspan="2"></td></tr>
</table>

Identification of the client

ETA SA, MANUFACTURE HORLOGERE SUISSE
Schmelzistrasse 16
2540 Grenchen
Switzerland

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2021-03-11
Date (finish)	2021-03-15

Document history

Report number	Date	Description
67584REM.002	2021-04-12	First release
67584REM.002A1	2021-05-05	First modification: correction on description of the operation modes. This modification test report cancels and replaces the test report 67584REM.002

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. = 20 % Max. = 75 %

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

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %

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. = 20 % Max. = 75 %

Remarks and comments

The tests have been performed by the technical personnel: Rosa Gallardo.

Testing verdicts

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

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
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	---
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
6329	SHIELDED ROOM	---	FRANKONIA	---
4612	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK MESS-ELEKTRONIK	2021-06-14
6195	PRE-AMPLIFIER G>55dB 1-18GHz	AMF-7D-01001800-22-10P	NARDA	2021-05-19

Summary

Test Specification.	Requirement – Test case	Verdict	Remark
FCC CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 7 (October 2020) & ANSI C63.4 – 2014	Continuous conducted emission	N/A	(1)
FCC CFR 47, Part 15, Subpart B (10-1-19 Edition) & ICES-003 Issue 7 (October 2020) & ANSI C63.4 – 2014	Radiated emission. Electromagnetic field measure	Pass	---

Supplementary information and remarks:

(1) Equipment powered by DC (Internal battery).

Appendix A: Test results

Appendix A content

DESCRIPTION OF THE OPERATION MODES 13
TEST STANDARDS VERSION APPLIED 14
TEST CASES DETAILS 15
Radiated emission. Electromagnetic field measure *15*

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
01	EUT ON. Bluetooth Low Energy OFF. GPS RX Charging battery (worst case). Power supply: 3.7 Vdc (Internal battery)

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 (10-1-19 Edition) Sec. 15.109 & ICES-003 Issue 7 (October 2020).	ANSI C63.4 (2014)	Radiated emission.

Test Cases Details

Radiated emission. Electromagnetic field measure

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), Sec. 15.109 & ICES-003 Issue 7 (Updated 10-2020)

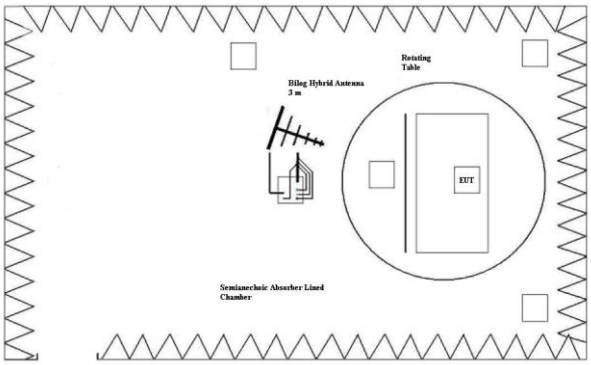
Table 2: Radiated emission limits

Frequency range (MHz)	FCC Part 15B Class B (3 m) Quasi-Peak (dBµV/m)	ICES-003 Issue 7 Limit for 3 m Quasi-Peak (dBµV/m)	FCC Part 15B & ICES-003 Issue 7	
			PK Limit for 3m (dBµV/m)	AVG Limit for 3m (dBµV/m)
30-88	40.0	40.0	---	---
88-216	43.5	43.5	---	---
216-230	46.0	46.0	---	---
230-960	46.0	47.0	---	---
960-1000	54.0	54.0	---	---
1 GHz – F_M	---	---	74	54

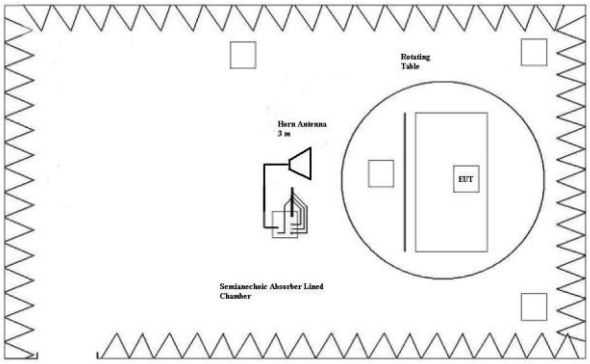
Above 1 GHz, except for outdoor units of home satellite receiving systems, the ITE or digital apparatus shall comply with the limits specified in table 4 up to the frequency F_M, which shall be determined as per table 3.

Table 3: Required highest measurement frequency for radiated emission

Highest internal Frequency (F_x)	Highest measurement Frequency (F_M)
$F_X \leq 108$ MHz	1 GHz
108 MHz < $F_X \leq 500$ MHz	2 GHz
500 MHz < $F_X \leq 1$ GHz	5 GHz
$F_X > 1$ GHz	5 x F_X up to a maximum of 40 GHz
*F_x is the highest fundamental frequency generated and/or used in the ITE or digital apparatus under test.	



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

RESULTS

REmmnnRR	Description	Result
RE0101LR	Range: 30 MHz - 1000 MHz.	P
RE0101HR	Range: 1 GHz – 17 GHz.	P

REmmnnRR: **RE**: Radiated Emission; **mm**: Sample number; **nn**: Operation mode; **RR**: Measurement range.

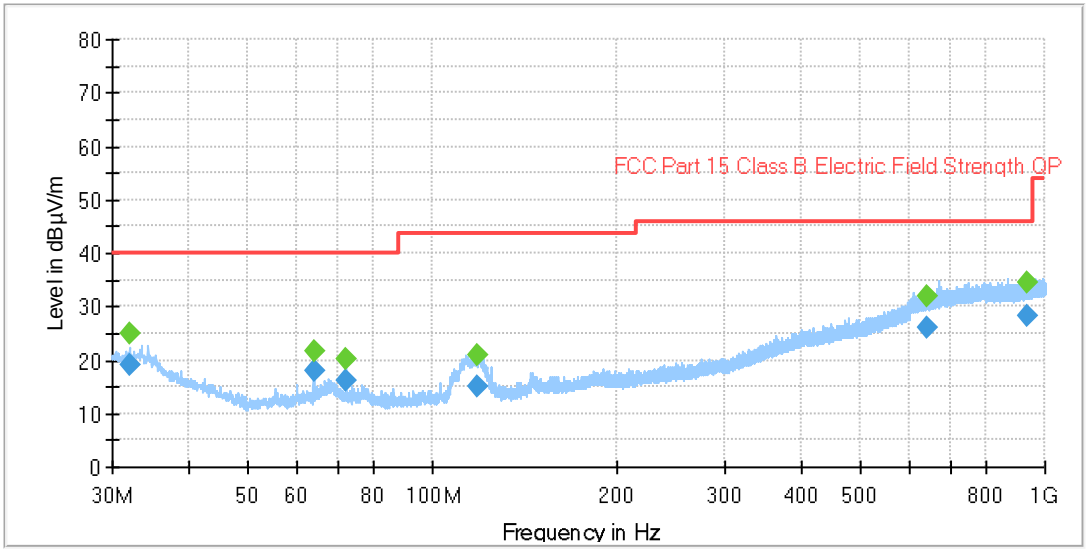
According to FCC 47 CFR Part 15B / ICES-003 Issue 7, this measurement is only needed up to the fifth harmonic of the internal working frequency.

VERDICT

Pass

Project:	67584REM.002
Company:	ETA-Swatch Group
Sample:	S/01
Operation mode:	01
Graphical code:	RE0101LR
Description:	EUT ON. Bluetooth Low Energy OFF. Power supply: 3.7 Vdc (battery)
Verdict:	Passed

Full Spectrum

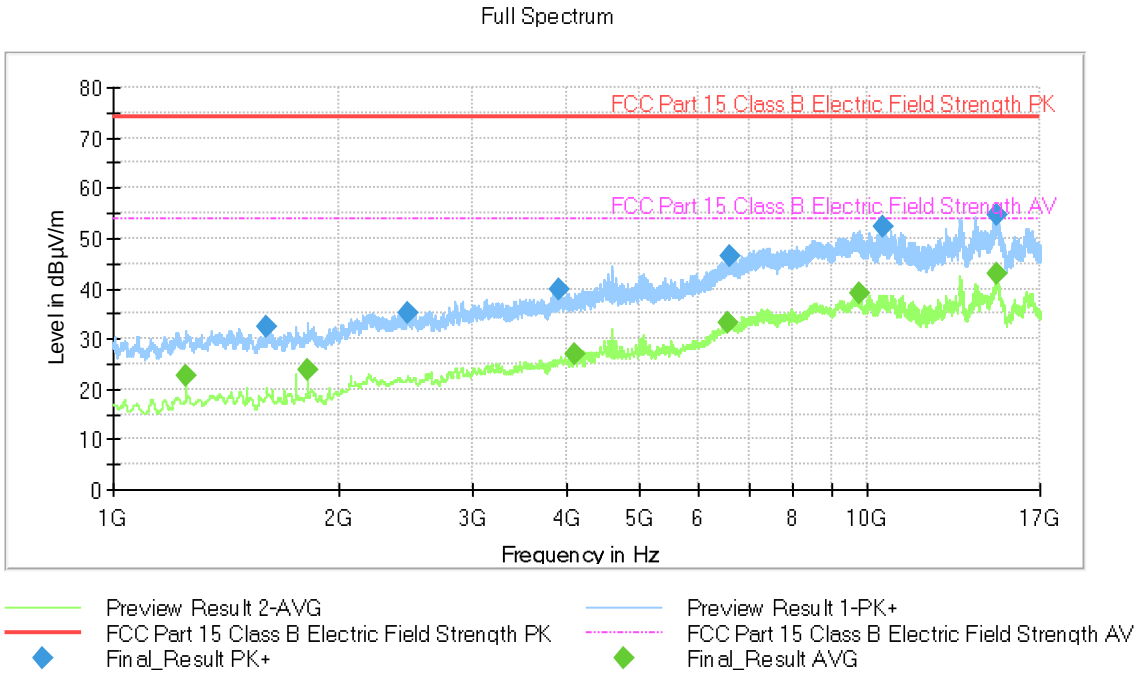


Preview Result 1-PK+
Final_Result QPK
FCC Part 15 Class B Electric Field Strength QP
Final_Result PK+

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
32.030000	---	24.78	---	---	151.0	V	99.0
32.030000	19.13	---	40.00	20.87	151.0	V	99.0
63.983000	17.98	---	40.00	22.02	152.0	V	180.0
63.983000	---	21.54	---	---	152.0	V	180.0
72.398000	---	20.17	---	---	198.0	V	154.0
72.398000	16.33	---	40.00	23.67	198.0	V	154.0
118.635000	---	20.91	---	---	138.0	V	-36.0
118.635000	14.93	---	43.52	28.59	138.0	V	-36.0
643.329000	---	32.06	---	---	330.0	H	-5.0
643.329000	26.07	---	46.00	19.93	330.0	H	-5.0
936.634000	28.22	---	46.00	17.79	390.0	V	-145.0
936.634000	---	34.40	---	---	390.0	V	-145.0

Project:	67584REM.002
Company:	ETA-Swatch Group
Sample:	S/01
Operation mode:	01
Graphical code:	RE0101HR
Description:	EUT ON. Bluetooth Low Energy OFF. Power supply: 3.7 Vdc (battery)
Verdict:	Passed



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1250.000000	---	22.76	53.97	31.21
1599.200000	32.26	---	73.97	41.71
1812.400000	---	23.93	53.97	30.04
2463.200000	35.02	---	73.97	38.95
3913.200000	39.77	---	73.97	34.20
4095.600000	---	27.07	53.97	26.90
6529.200000	---	33.11	53.97	20.86
6568.400000	46.44	---	73.97	27.53
9764.400000	---	38.92	53.97	15.05
10524.000000	52.26	---	73.97	21.71
14852.400000	54.74	---	73.97	19.23
14889.200000	---	42.88	53.97	11.09