

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
Date of issue	2021-04-12
Report template No	FDT08_23 (*) "Data provided by the client"

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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

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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 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 $l = \pm 4,9$ dB for quasi-peak measurements, $l = \pm 4,6$ 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 $l = \pm 2,6$ 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 N°	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)

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

Identification of the client

ETA SA, MANUFACTURE HORLOGERE SUISSE
Schmelzstrasse 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 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

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

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

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. = 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	---
<u>Supplementary information and remarks:</u> (1) Equipment powered by DC (Internal battery).			

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
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)

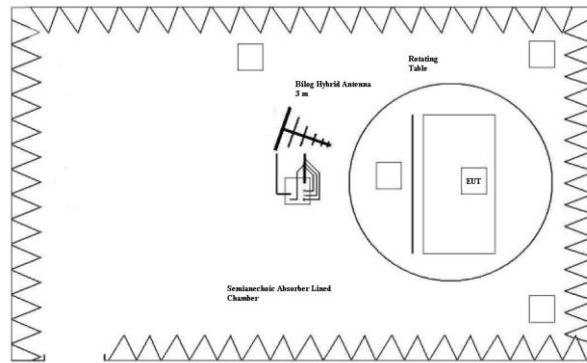
Table 2: Radiated emission limits

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

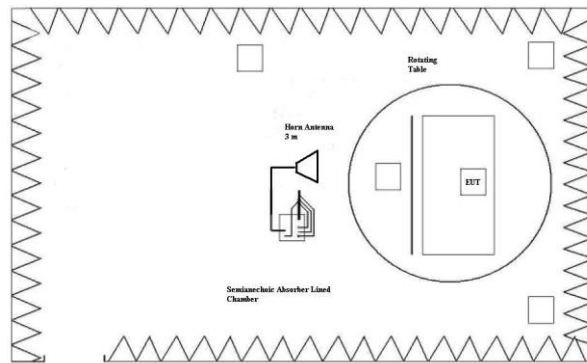
Above 1 GHz, except for outdoor units of home satellite receiving systems, the ITE or digital apparatus shall comply with the limits specified in table 4 up to the frequency F_M, which shall be determined as per table 3.

Table 3: Required highest measurement frequency for radiated emission

Highest internal Frequency (F _x)	Highest measurement Frequency (F _M)
F _x ≤ 108 MHz	1 GHz
108 MHz < F _x ≤ 500 MHz	2 GHz
500 MHz < F _x ≤ 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.

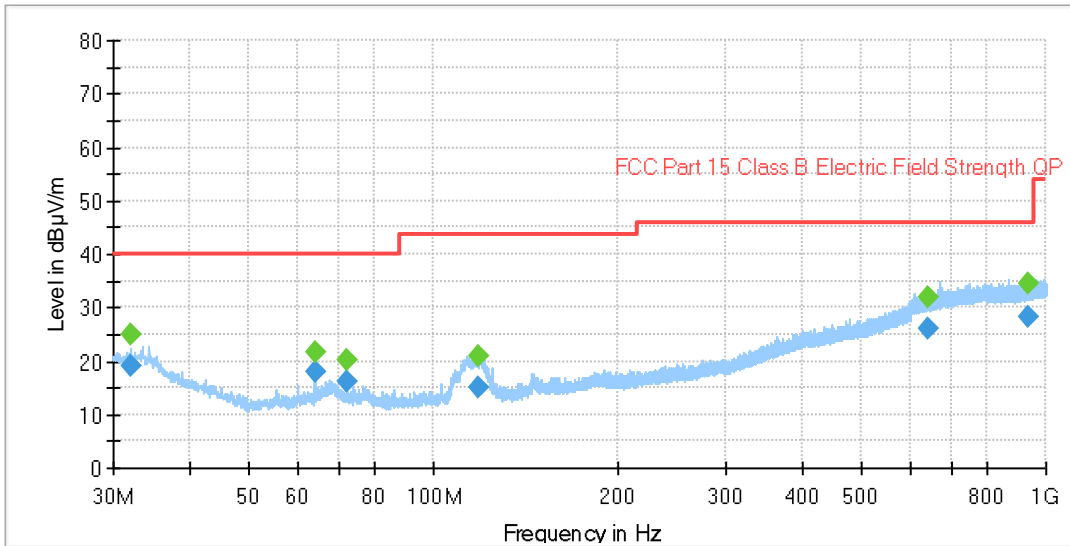
According to FCC 47 CFR Part 15B / ICES-003 Issue 7, this measurement is only needed up to the fifth harmonic of the internal working frequency.

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



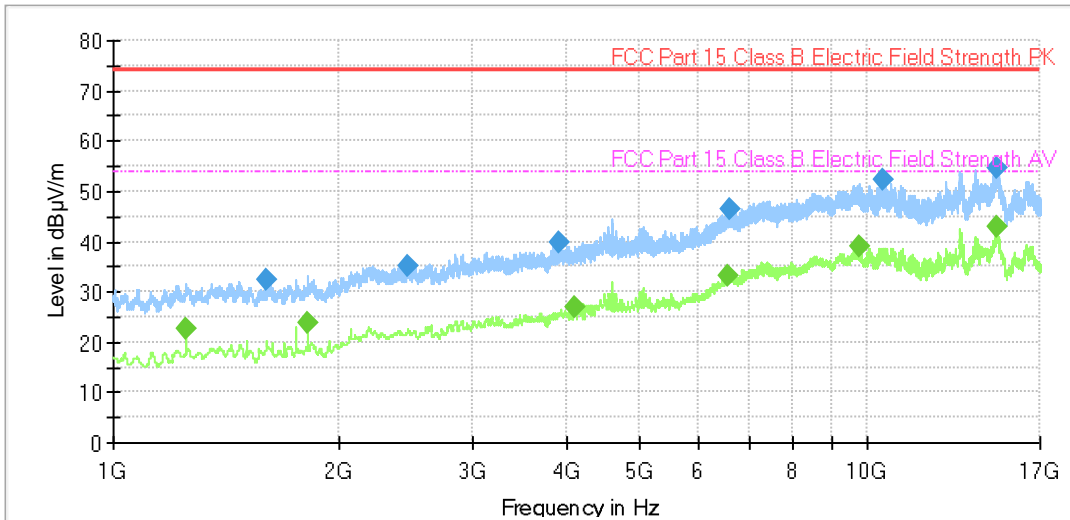
◆ Preview Result 1-PK+
◆ Final_Result QPK
 ◆ FCC Part 15 Class B Electric Field Strength QP
◆ Final_Result PK+

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

Full Spectrum



— Preview Result 2-AVG
— FCC Part 15 Class B Electric Field Strength PK
◆ Final_Result PK+

— Preview Result 1-PK+
— FCC Part 15 Class B Electric Field Strength AV
◆ Final_Result AVG

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