

RF Exposure Evaluation Report

Product : Suunto Wing
Trade mark : SUUNTO
Model/Type reference : HS231
Serial Number : N/A
Report Number : EED32P80496803
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: 47 CFR Part 1.1307
: 47 CFR Part 2.1093
Test Standards : KDB447498D01 General RF
: Exposure Guidance v06
Test result : PASS

Prepared for:

Suunto Sports Technology(Dongguan)Co., Ltd.
Room 108, No. 5, Longxi Road, Nancheng Street, Dongguan City,
Guangdong Province

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385

Compiled by:

mark.chen.

Reviewed by:

Tom Chen

Mark Chen

Tom Chen

Approved by:

Aaron Ma

Date:

Jun. 19, 2023

Aaron Ma

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1 Version

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3 General Information

3.1 Client Information

Applicant:	Suunto Sports Technology(Dongguan)Co., Ltd.
Address of Applicant:	Room 108, No. 5, Longxi Road, Nancheng Street , Dongguan City, Guangdong Province
Manufacturer:	Suunto Sports Technology(Dongguan)Co., Ltd.
Address of Manufacturer:	Room 108, No. 5, Longxi Road, Nancheng Street , Dongguan City, Guangdong Province
Factory:	Suunto Sports Technology(Dongguan)Co., Ltd.
Address of Factory:	Room 108, No. 5, Longxi Road, Nancheng Street , Dongguan City, Guangdong Province

3.2 General Description of EUT

Product Name:	Suunto Wing
Model No.(EUT):	HS231
Trade mark:	SUUNTO
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Power Supply:	Battery DC 3.8V
Test Voltage:	DC 3.8V

3.3 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK
Number of Channel:	40
Antenna Type:	PIFA Antenna
Antenna Gain:	1.23dBi

3.4 General Description of BT Classic

Operation Frequency:	2402MHz~2480MHz
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Antenna Type:	PIFA Antenna
Antenna Gain:	1.23dBi

3.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

3.6 Deviation from Standards

None.

3.7 Abnormalities from Standard Conditions

None.

3.8 Other Information Requested by the Customer

None.

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06
Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

Appendix C

SAR Test Exclusion Thresholds for < 100 MHz and < 200 mm

Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	< 50	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	237	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	mW
50	308	617	625	634	643	651	660	669	677	686	695	703	712	721	729	738	
10	474	948	961	975	988	1001	1015	1028	1041	1055	1068	1081	1095	1108	1121	1135	
1	711	1422	1442	1462	1482	1502	1522	1542	1562	1582	1602	1622	1642	1662	1682	1702	
0.1	948	1896	1923	1949	1976	2003	2029	2056	2083	2109	2136	2163	2189	2216	2243	2269	
0.05	1019	2039	2067	2096	2125	2153	2182	2211	2239	2268	2297	2325	2354	2383	2411	2440	
0.01	1185	2370	2403	2437	2470	2503	2537	2570	2603	2637	2670	2703	2737	2770	2803	2837	

4.1.2 EUT RF Exposure

1) For Bluetooth LE

Measurement Data

1M:

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	4.89	3.9±1	4.9	3.090
Middle(2440MHz)	4.8	3.9±1	4.9	3.090
Highest(2480MHz)	3.91	3.0±1	4.0	2.512

2M:

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	4.9	3.9±1	4.9	3.090
Middle(2440MHz)	4.8	3.9±1	4.9	3.090
Highest(2480MHz)	4.01	3.1±1	4.1	2.570

Worst case: GFSK 2M

Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	4.9	3.9±1	4.9	3.090	0.973	3.0
Middle (2440MHz)	4.8	3.9±1	4.9	3.090	0.973	
Highest (2480MHz)	4.01	3.1±1	4.1	2.570	0.809	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: EED32P80496801.

2) For Bluetooth Classic
Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	3.25	3.0±1	4.0	2.512
Middle(2441MHz)	2.73	2.0±1	3.0	1.995
Highest(2480MHz)	1.47	1.0±1	2.0	1.585
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	0.82	0.0±1	1.0	1.259
Middle(2441MHz)	0.47	0.0±1	1.0	1.259
Highest(2480MHz)	-0.51	0.0±1	1.0	1.259
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	1.42	1.0±1	2.0	1.585
Middle(2441MHz)	1.08	1.0±1	2.0	1.585
Highest(2480MHz)	-0.02	0.0±1	1.0	1.259

Worst case: GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	3.25	3.0±1	4.0	2.512	0.791	3.0
Middle (2441MHz)	2.73	2.0±1	3.0	1.995	0.628	
Highest (2480MHz)	1.47	1.0±1	2.0	1.585	0.499	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: EED32P80496802.

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*** End of Report ***