

Justification of SAR compliance

APPLICANT : Garmin International Inc.
EQUIPMENT : Hardware adapter
BRAND NAME : Garmin
MODEL NAME : Garmin ANT+adapter for iPhone
FCC ID : IPH-01955

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

1. Administration Data

1.1 Testing Laboratory

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

1.2 Applicant

Company Name	Garmin International Inc.
Address	1200 East 151st Street, Olathe, Kansa 66062

1.3 Manufacturer

Company Name	Garmin International Inc.
Address	No. 68, Zhangshu 2nd Rd., Xizhi Dist., New Taipei City 221, Taiwan(R.O.C)

2. General Information

2.1 Description of Device Under Test (DUT)

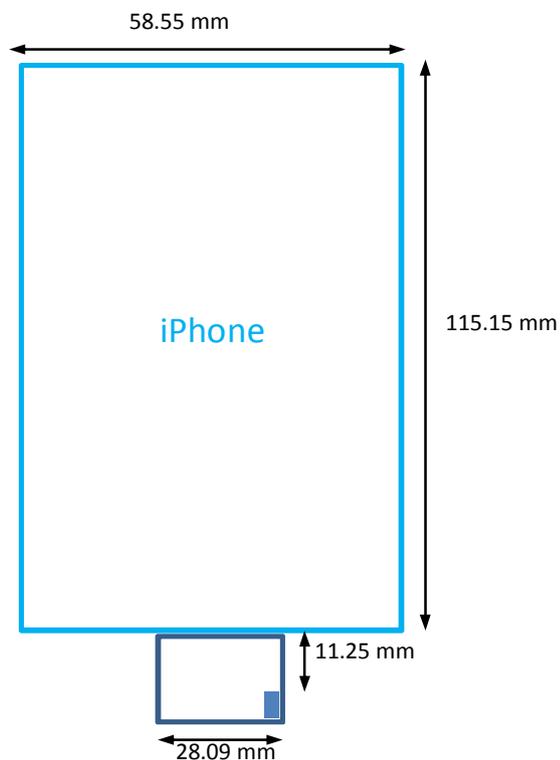
Product Feature & Specification	
DUT Type	Hardware adapter
Brand Name	Garmin
Model Name	Garmin ANT+adapter for iPhone
FCC ID	IPH-01955
Tx Frequency	ANT+: 2457 MHz
Rx Frequency	ANT+: 2457 MHz
Maximum Output Power to Antenna	ANT+: 0 dBm
Antenna Type	Chip Antenna
Type of Modulation	GFSK
Dimension	28.09mm(W) * 17.6mm (L)
Remark: The above DUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	

3. Justification of SAR compliance

3.1 Introduction

DUT is designed for Apple iPhone 3Gs and iPhone 4, to enable ANT+ feature. Per KDB 388624, the DUT should be categorized as PBA list, and DUT should be verified not affecting RF exposure compliance of the host device, when DUT connected to the host.

Since DUT ANT+ transmission characteristic is of very low duty cycle and mostly it acts as an ANT+ receiver, the size is small, and the DUT antenna distance to host SAR peak is large than 1.5cm, therefore SAR compliance is not a concern. The detailed DUT transmission characteristic is described in “operational description” exhibit, and the antenna distance to host peak SAR is summarized in the next section.



3.2 SAR Peak Distance Analysis

		Head SAR (W/kg)						Body-Worn SAR (W/kg) Test Distance: 1cm					
		850		1900		2450		850		1900		2450	
	FCC ID	SAR	Distance (cm)	SAR	Distance (cm)	SAR	Distance (cm)	SAR	Distance (cm)	SAR	Distance (cm)	SAR	Distance (cm)
iPhone 3Gs	A1303A	0.563	3.5	1.19	3.8	0.52	11.3	0.67	5.3	0.329	1.5	0.061	9
iPhone 4 -WCDMA	E2380A	1	4.2	1.17	4.5	0.871	11.3	1.11	4.5	0.433	2.3	0.073	11.5
iPhone 4 -WCDMA	E2380B	0.987	4.2	1.17	4.5	0.881	11	1.11	4.2	0.424	2.5	0.067	12.6
iPhone 4 -CDMA	E2422A	1.06	3.5	1.18	4.3	0.459	10.5	1.08	6	0.552	1.7	0.152	10.5
iPhone 4 -CDMA	E2422B	1.06	3.5	1.15	4	0.538	10.5	1.1	3.5	0.574	1.5	0.226	9.8

Remark:

1. The distance is DUT antenna distance to host peak SAR distance.
2. The distance for BCGA1303A is obtained, based on DUT antenna location, and BCGA1303A SAR report exhibit 09U12393-5 page 35,36,39,40,43,44.
3. The distance for BCG-E2380A is obtained, based on DUT antenna location, and BCG-E2380A SAR report exhibit 10U13135-2C1 page 31,32,33,34,35,36.
4. The distance for BCG-E2380B is obtained, based on DUT antenna location, and BCG-E2380B SAR report exhibit 10U13135-1C3 page 35,36,37,38,39,40
5. The distance for BCG-E2422A is obtained, based on DUT antenna location, and BCG-E2422A SAR report exhibit 10U13472-7B2 page 49,51,53,55,59,61
6. The distance for BCG-E2422B is obtained, based on DUT antenna location, and BCG-E2422B SAR report exhibit 10U13472-6B2 page 49,51,53,55,59,61
7. Through the analysis, the distance of "peak SAR to DUT antenna" is not less than 1.5cm.