

RF Exposure Evaluation

FCC ID: 2ALLD-SW1305H

1. Client Information

Applicant	:	Synergy Technologies Limited
Address	:	Units 18D-18E, Hankin Centre, 23 Deng Liang Road, Nanshan District, Shenzhen, Guangdong 518054, China
Manufacturer	:	Synergy Technologies Limited
Address	:	Units 18D-18E, Hankin Centre, 23 Deng Liang Road, Nanshan District, Shenzhen, Guangdong 518054, China

2. General Description of EUT

EUT Name	:	Smart Watch
Models No.	:	SW1305H, NOXQH
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is sales to different customers.
Product Description	Operation Frequency:	Bluetooth 4.2(BT): 2402MHz~2480MHz
	RF Output Power:	GFSK: 3.962dBm π /4-DQPSK: 2.688dBm 8-DPSK: 3.225dBm BLE:4.038dBm
	Antenna Gain:	0.71dBi FPC Antenna
Power Supply	:	DC Voltage Supply from USB Port. DC Voltage supplied by Li-ion battery.
Power Rating	:	DC 5.0V by USB cable DC 3.7V by 350mAh Li-ion battery
Software Version	:	N/A
Hardware Version	:	N/A
Connecting I/O Port(S)	:	Please refer to the User's Manual

Note: More test information about the EUT please refer the RF Test Report.

SAR Test Exclusion Calculations

1. FCC: According to KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

- (1) Clause 4.3: General SAR test reduction and exclusion guidance

- Sub clause 4.31: Standalone SAR test exclusion considerations

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6GHz at test separation distance ≤ 5 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] * [\sqrt{f_{(\text{GHz})}}] \leq 3.0 \text{ for 1-g SAR}$$
$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] * [\sqrt{f_{(\text{GHz})}}] \leq 7.5.0 \text{ for 10-g SAR}$$

2. Calculation:

Test separation: 5mm						
Bluetooth Mode (GFSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	3.671	3±1	4	2.512	0.779	3.0
2.441	3.962	3±1	4	2.512	0.785	3.0
2.480	3.602	3±1	4	2.512	0.791	3.0
Bluetooth Mode (π/4-DQPSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	2.430	2±1	3	1.995	0.618	3.0
2.441	2.560	2±1	3	1.995	0.623	3.0
2.480	2.688	2±1	3	1.995	0.628	3.0
Bluetooth Mode (8-DPSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	3.058	3±0.5	3.5	2.239	0.694	3.0
2.441	3.080	3±0.5	3.5	2.239	0.700	3.0
2.480	3.225	3±0.5	3.5	2.239	0.705	3.0
BLE Mode (GFSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	4.001	3.5±1	4.5	2.818	0.874	3.0
2.442	4.038	3.5±1	4.5	2.818	0.881	3.0
2.480	3.590	3.5±1	4.5	2.818	0.888	3.0

Test separation: 5mm	
The worst RF Exposure Evaluation	
Worst Calculation Value	Threshold Value
0.888	3.0

The worst RF Exposure Evaluation is **0.888 / cm² < limit 3.0**, So standalone SAR measurements are not required.

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