RF Exposure Evaluation
FCC ID: 2A32H-KL2

1. Client Information

Applicant	:	Shenzhen JunKangYuan Intelligent Technology Co., Ltd.
Address	:	B802,plant 3, Longgang Tian'an Digital Innova Park, Longcheng street, Longgang District, Shenzhen.China.
Manufacturer	:	Shenzhen JunKangYuan Intelligent Technology Co., Ltd.
Address	:	B802,plant 3, Longgang Tian'an Digital Innova Park, Longcheng street, Longgang District, Shenzhen.China.

2. General Description of EUT

EUT Name	:	SMART WATCH	
Model(s) No.	:	KL2	
Product Description	:	Operation Frequency:	Bluetooth 5.0:2402MHz~2480MHz
		Number of Channel:	Bluetooth 5.0 (BT): 79 channels Bluetooth 5.0 (BLE): 40 channels
		RF Output Power:	BT: 3.47dbm (Max) BLE: -12.84dbm (Max)
		Antenna Gain:	0.5dBi Ceramic Antenna
		Modulation Type:	GFSK(1/2Mbps) π/4-DQPSK(2Mbps) 8-DPSK(3Mbps)
		Bit Rate of Transmitter:	Bluetooth 5.0:1/2/3Mbps
Power Supply	:	Input: 5V, 0.2A Max	
Software Version	:	V3.4	
Hardware Version	:	V1.2	
Remark: The antenna gain provided by the applicant, the adapter and verified for the RF conduction test and adapter provided by TOBY test lab.			

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

1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, China
Tel: +86 75526509301 Fax: +86 75526509195

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

2. Calculation:

Test separation: 5mm						
BLE (GFSK) 1Mbps						
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	-12.84	-12±1	-11	0.079	0.025	3.0
2.440	-16.19	-16±1	-15	0.032	0.010	3.0
2.480	-14.62	-14±1	-13	0.050	0.016	3.0
BLE (GFSK) 2Mbps						
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	-14.96	-14±1	-13	0.050	0.016	3.0
2.440	-15.87	-15±1	-14	0.040	0.012	3.0
2.480	-15.25	-15±1	-14	0.040	0.013	3.0
BT (GFSK) 1Mbps						
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
2402	0.27	0±1	1	1.259	0.390	3.0
2441	0.45	0±1	1	1.259	0.393	3.0
2480	-0.61	0±1	1	1.259	0.397	3.0
BT(π/4DQPSK) 2Mbps						
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
2402	3.11	3±1	4	2.512	0.779	3.0
2441	3.04	3±1	4	2.512	0.785	3.0
2480	1.84	1±1	2	1.585	0.499	3.0
BT(8DPSK) 3Mbps						
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
2402	3.11	3±1	4	2.512	0.779	3.0
2441	3.04	3±1	4	2.512	0.785	3.0
2480	1.84	1±1	2	1.585	0.499	3.0

Conducted Power Results

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
BT(GFSK) 1Mbps	0	2402	0.27
	39	2441	0.45
	78	2480	-0.61
BT(π/4DQPSK) 2Mbps	0	2402	3.11
	39	2441	3.04
	78	2480	1.84
BT(8DPSK) 3Mbps	0	2402	3.43
	39	2441	3.47
	78	2480	2.43
BLE (GFSK) 1Mbps	0	2402	-12.84
	19	2440	-16.19
	39	2480	-14.62
BLE (GFSK) 2Mbps	0	2402	-14.96
	19	2440	-15.87
	39	2480	-15.25

Evaluation Results

Standalone

Mode	f (GHz)	Antenna Distance (mm)	RF output power		SAR Test Exclusion Threshold	SAR Test Exclusion
			dBm	mW		
BT(GFSK) 1Mbps	2.5	5	1	1.259	0.393 < 3.0	1.259
BT(π /4DQPSK) 2Mbps	2.5	5	4	2.512	0.779 < 3.0	1.259
BT(8DPSK) 3Mbps	2.5	5	4	2.512	0.779 < 3.0	1.259
BLE (GFSK) 1Mbps	2.5	5	-11	0.079	0.025 < 3.0	1.259
BLE (GFSK) 2Mbps	2.5	5	-13	0.040	0.012 < 3.0	1.259

Remark:
1. Output power including tune up tolerance;
2. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to f) in section 4.1 is applied to determine SAR test exclusion.

Simultaneous Transmission for SAR Exclusion

The sample support one BT modular and one BLE modular, they supports difference antenna, need consider simultaneous transmission;
∑ of (the highest measured or estimated SARBT+SARBLE)/1.6 = (0.1059+0.0033)/1.6 = 0.2 < 1.0;

Conclusion
The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06.

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