EMC
TEST REPORT

For

Kids GPS Watches

Model No.:	**GW100, GW200, GW300, GW400, GW500, GW600, GW700, GW800, GW900, GW1000, GW100S, GW200S, GW300S, GW400S, GW500S, GW600S, GW700S, GW800S, GW900S, GW1000S, Q50, H1, EW100, EW200, EW300, EW400, EW500, EW600, EW700, EW800, EW900, EW1000, EW100S, EW200S, EW300S, EW400S, EW500S, EW600S EW700S, EW800S, EW900S, EW1000S**
Applicant :	**Shenzhen Wonlex Technology Co., Ltd.** **Room 807, Shi Feng Building, 6267 Bao'an Road, Bao'an District, Shenzhen, China.**
Manufacturer :	**Shenzhen Wonlex Technology Co., Ltd.** **2nd Floor, Building D, Funing Hi-tech Industry Park, Xintian Road, Bao'an District, Shenzhen City, China.**
Issued By :	**Global-Standard Testing Service Co., Ltd.** **Room 1911-1914, Noble Plaza, Qian Jin 1st Road Bao An district, Shenzhen, Guangdong, China**
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Report Number :	**GST1512241260E**
Issued Date :	**December 29, 2015**
Date of Report :	**December 29, 2015**

Note:

1. *The test data and result is based on the tested sample only.*
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Product Description for Equipment Under Test (EUT)

Product:	**Kids GPS Watches**
Model:	H1
Applicant:	**Shenzhen Wonlex Technology Co., Ltd.** Room 807, Shi Feng Building, 6267 Bao'an Road, Bao'an District, Shenzhen, China.
Factory:	**Shenzhen Wonlex Technology Co., Ltd.** 2nd Floor, Building D, Funing Hi-tech Industry Park, Xintian Road, Bao'an District, Shenzhen City, China.
Test Voltage:	DC 3.7V
Applicable Standards:	**ETSI EN 301 489-1 V1.9.2(2011-09)** **ETSI EN 301 489-17 V2.2.1(2012-09)**

Deviation from Applicable Standard
None

The above equipment has been tested by Global-Standard Testing Service Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: Jerry Hu **Date:** December 25, 2015

Approved By: Tim Sun **Date:** December 29, 2015

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1. GENERAL INFORMATION

1.1. Product Description for Equipment Under Test (EUT)

EUT	**:** Kids GPS Watches
Model No.	**:** H1
Frequency Range	**:** 2402.00-2480.00MHz
Channel Number	**:** 79
Channel Spacing	**:** 1MHz
Modulation Type	**:** GFSK(1Mbps), π /4-DQPSK(2Mbps), 8-DPSK(3Mbps)
Bluetooth Version	**:** V3.0
Antenna Gain	**:** Integral antenna, 2.0dBi(Max.)
Input Voltage	**:** DC 3.7V

1.2. Objective

ETSI EN 301 489-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
ETSI EN 301 489-17	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment Part 17: Specific conditions for Broadband Data Transmission Systems

The objective is to determine EUT compliance with ETSI EN 301 489-1 V1.9.2 (2011-09) and ETSI EN 301 489-17 V2.2.1 (2012-09).

1.3. Related Submittal(s)/Grant(s)

No Related Submittals.

1.4. Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 489-1 V1.9.2 (2011-09) and ETSI EN 301 489-17 V2.2.1 (2012-09).

1.5. Facilities

All measurement facilities used to collect the measurement data are located at 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China.
The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

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1.6. Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
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1.7. External I/O

I/O Port Description	Quantity	Cable
USB Charging Port	1	0.6m, unshielded
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1.8. Description Of Test Modes

MODE 1：
Normal Operating (Bluetooth is active)
MODE 2：
Idle

1.9. Measurement Uncertainty

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.42dB	
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.54dB	Polarize: V
	4.10dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.08dB	Polarize: H
	2.56dB	Polarize: V

2. SUMMARY OF TEST RESULTS

Rule	Description of Test	Result
§7.1	Reference to clauses EN 301 489-1 §8.4 AC mains power input/output ports	N/A
§7.1	Reference to clauses EN 301 489-1§8.3 DC power input/output ports	N/A*
§7.1	Reference to clauses EN 301 489-1 §8.2 Enclosure of ancillary equipment measured on a stand alone basis	Compliant
§7.1	Reference to clauses EN 301 489-1 §8.5 Harmonic current emissions (AC mains input port)	N/A
§7.1	Reference to clauses EN 301 489-1 §8.6 Voltage fluctuations and flicker (AC mains input port)	N/A
§7.1	Reference to clauses EN 301 489-1§8.7 Telecommunication ports	N/A*
§7.2	Reference to clauses EN 301 489-1 §9.3 Electrostatic discharge (EN 61000-4-2)	Compliant
§7.2	Reference to clauses EN 301 489-1 §9.2 Radio frequency electromagnetic field (80 MHz to 1 000 MHz and 1 400 MHz to 2 000 MHz)(EN 61000-4-3)	Compliant
§7.2	Reference to clauses EN 301 489-1§9.4 Fast transients, common mode (EN 61000-4-4)	N/A
§7.2	Reference to clauses EN 301 489-1§9.8 Surges (EN 61000-4-5)	N/A
§7.2	Reference to clauses EN 301 489-1§9.5 Radio frequency, common mode (EN 61000-4-6)	N/A
§7.2	Reference to clauses EN 301 489-1 §9.6 Transients and surges in the vehicular environment (ISO 7637-2)	N/A*
§7.2	Reference to clauses EN 301 489-1§9.7 Voltage dips and interruptions (EN 61000-4-11)	N/A

3. RADIATED DISTURBANCE

3.1. Radiated Emission Limit

ETSI 301 489-1 V1.9.2 (2011-09)/EN 55022 Class B

Limits for radiated disturbance Blow 1GHz

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47
Note**:** (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.		

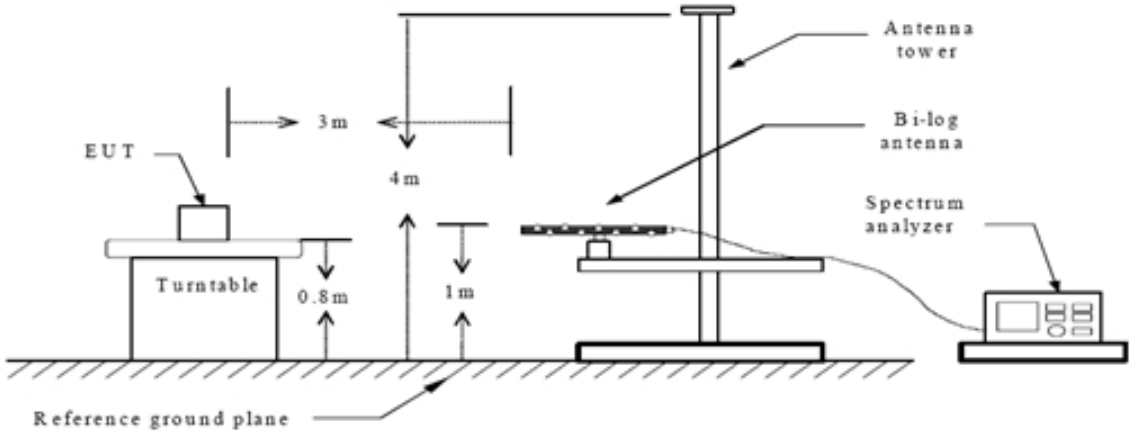
Limits for radiated disturbance Above 1GHz

FREQUENCY (MHz)	DISTANCE (Meters)	Average Limit (dBμV/m)	Peak Limit (dBμV/m)
1000-3000	3	50	70
3000-6000	3	54	74
Note**:** The lower limit applies at the transition frequency.			

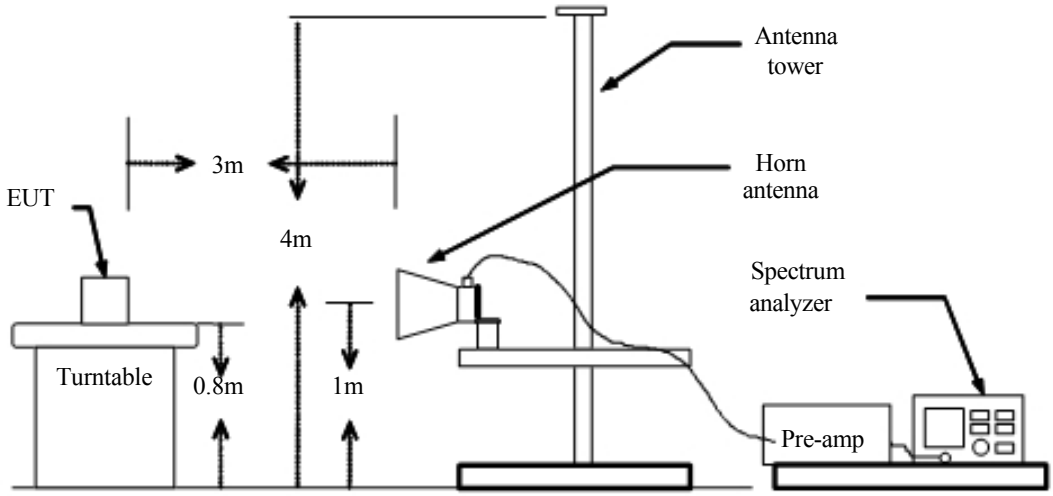
3.2. Test Equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101142	2015-06-18	2016-06-17
2	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2015-06-18	2016-06-17
3	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2015-06-18	2016-06-17
4	Amplifier	SCHAFFNER	COA9231A	18667	2015-06-18	2016-06-17
5	Amplifier	Agilent	8449B	3008A02120	2015-06-16	2016-06-15
6	Amplifier	MITEQ	AMF-6F-260400	9121372	2015-06-16	2016-06-15
7	Spectrum Analyzer	Agilent	E4407B	MY41440292	2015-06-16	2016-06-15
8	Signal analyzer	Agilent	E4448A(External mixers to 40GHz)	US44300469	2015-06-16	2016-06-15
9	Loop Antenna	R&S	HFH2-Z2	860004/001	2015-06-18	2016-06-17
10	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2015-06-10	2016-06-09
11	Horn Antenna	EMCO	3115	6741	2015-06-10	2016-06-09
12	Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	2015-06-10	2016-06-09
13	RF Cable-R03m	Jye Bao	RG142	CB021	2015-06-18	2016-06-17
14	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2015-06-18	2016-06-17

3.3. Test Configuration



Below 1000MHz



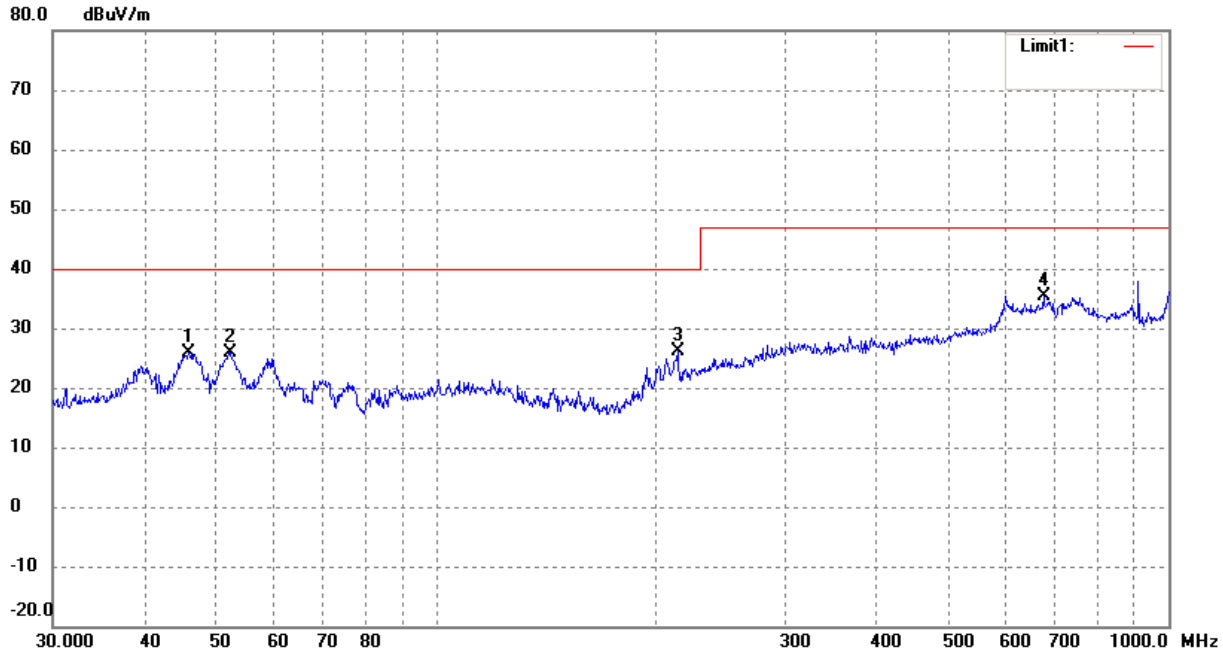
Above 1000MHz

3.4. Test Procedure

Please refer to ETSI EN 301 489-1 Clause 8.2.3 and EN 55022 Clause 6 for the measurement methods.

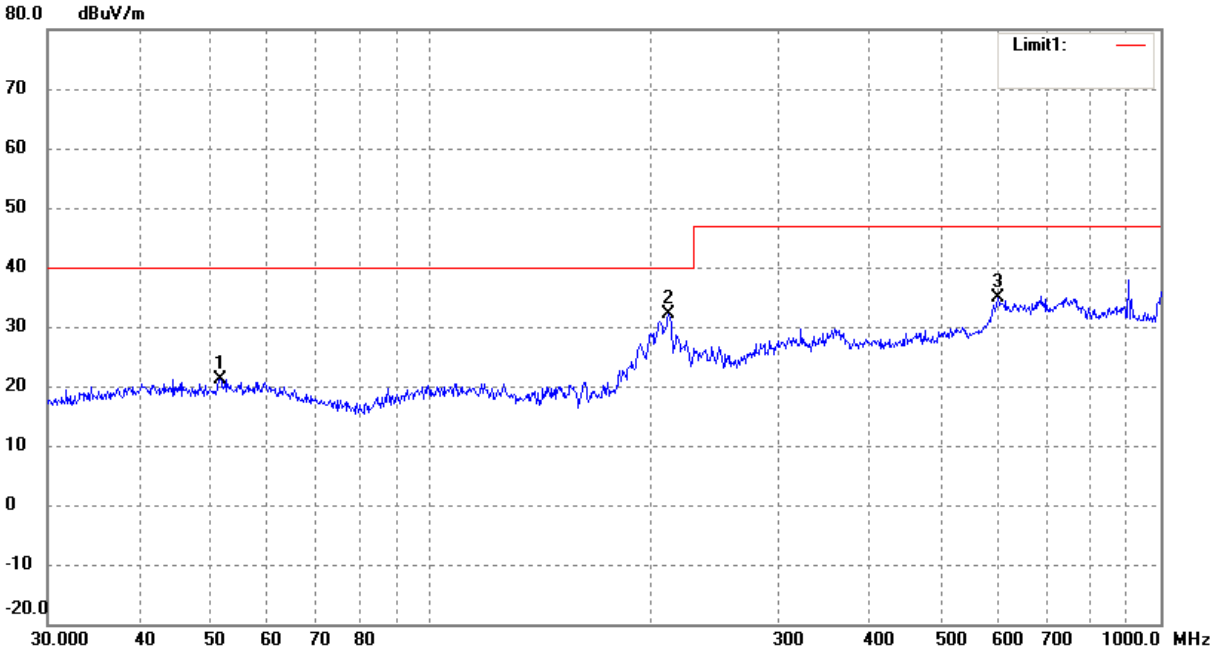
3.5. Test Data

The worst test mode of the EUT was Mode 1, and its test data was showed as the follow:



EUT:	Kids GPS Watches	Model Name :	H1
Temperature:	24 ℃	Relative Humidity:	54%
Pressure:	1010 hPa	Test Date :	December 25, 2015
Test Mode :	Normal Operating	Polarization :	Vertical
Test Voltage :	DC 3.7V		

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	46.0164	20.68	5.26	25.94	40.00	-14.06			peak
2	52.3913	20.63	5.29	25.92	40.00	-14.08			peak
3	213.7634	19.31	6.73	26.04	40.00	-13.96			peak
4	675.2080	16.29	18.99	35.28	47.00	-11.72			peak



EUT:	Kids GPS Watches	Model Name :	H1
Temperature:	24 ℃	Relative Humidity:	54%
Pressure:	1010 hPa	Test Date :	December 25, 2015
Test Mode :	Normal Operating	Polarization :	Vertical
Test Voltage :	DC 3.7V		

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	51.6616	15.95	5.29	21.24	40.00	-18.76			peak
2	212.2695	25.63	6.40	32.03	40.00	-7.97			peak
3	599.3213	15.57	19.19	34.76	47.00	-12.24			peak

Test Mode: Mode 1(above 1GHz)	**Tested by:** Jerry
Test voltage: DC 3.7V	**Test Distance:** 3m
Detector Function: Peak+AV	**Test Results:** Passed

Polarization	Frequency MHz	Emission Level dBμV/m		Limits dBμV/m		Margin dBμV/m	
Horizontal	1409.03	54.04	37.18	70.00	50.00	-15.96	-12.82
	1876.08	55.53	34.83	70.00	50.00	-14.47	-15.17
	3229.96	57.40	33.81	74.00	54.00	-16.60	-20.19
	3948.39	60.77	34.74	74.00	54.00	-13.23	-19.26
	4478.73	61.67	37.12	74.00	54.00	-12.33	-16.88
	4857.83	63.60	34.72	74.00	54.00	-10.40	-19.28
Vertical	1368.83	53.07	35.30	70.00	50.00	-16.93	-14.70
	1874.96	54.78	34.77	70.00	50.00	-15.22	-15.23
	3212.21	58.48	36.55	74.00	54.00	-15.52	-17.45
	3725.11	60.63	34.72	74.00	54.00	-13.37	-19.28
	4450.58	61.52	34.90	74.00	54.00	-12.48	-19.10
	4824.72	63.51	34.86	74.00	54.00	-10.49	-19.14

1. Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
2. Measurements above show only up to 6 maximum emissions noted.
3. Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

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4. GENERAL PERFORMANCE CRITERIA FOR IMMUNITY TEST

4.1. Performance criteria for Continuous phenomena applied to Transmitter (CT)

For equipment of type II or type III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence.
Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur.

4.2. Performance criteria for Transient phenomena applied to Transmitter (TT)

For equipment of type II or type III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur.

4.3. Performance criteria for Continuous phenomena applied to Receiver (CR)

For equipment of type II or III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

4.4. Performance criteria for Transient phenomena applied to Receiver (TR)

For equipment of type II or type III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

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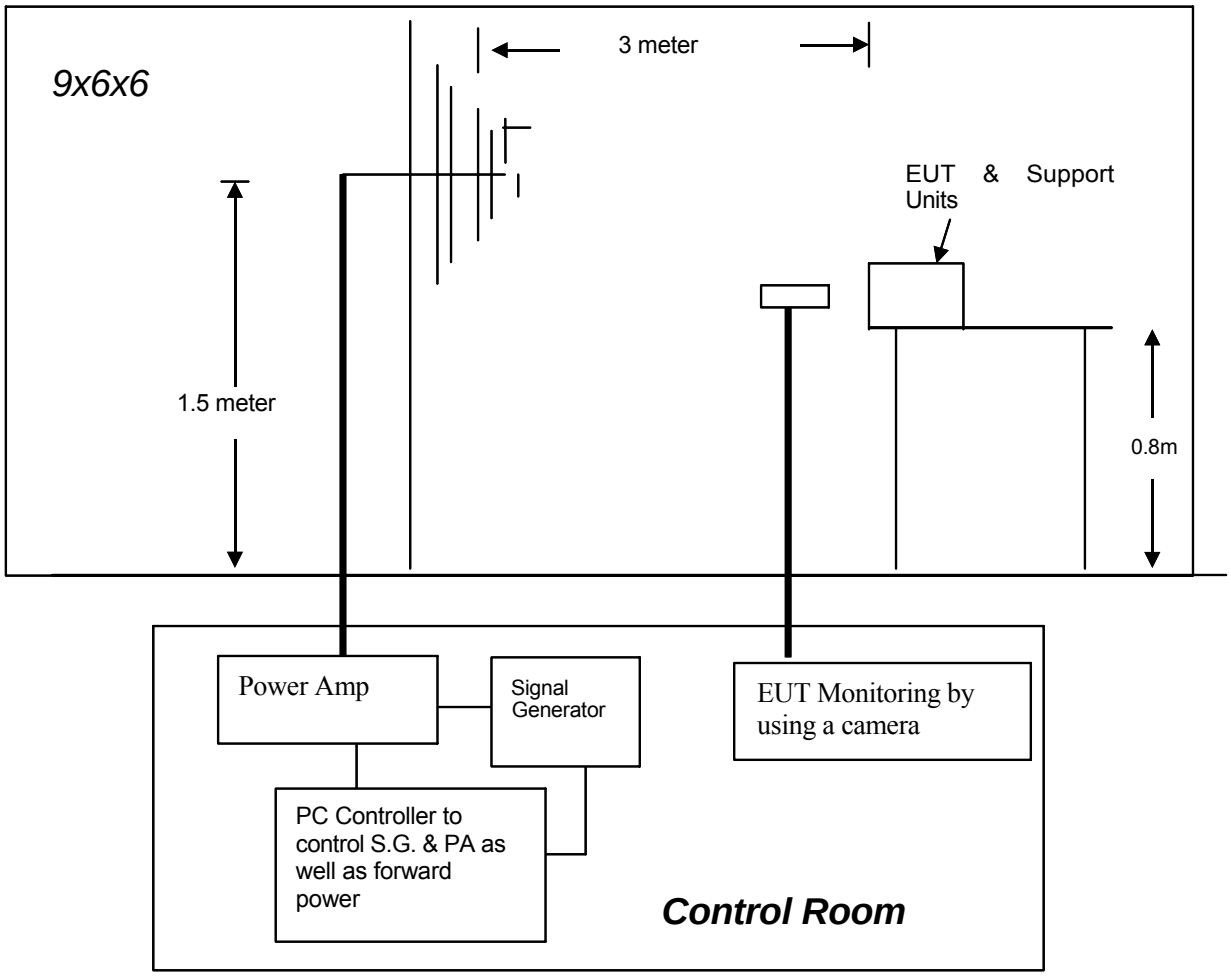
5. ETSI EN 301 489-17 V2.2.1 §7.2 - RF ELECTROMAGNETIC FIELD (80 MHz -1000 MHz and 1400 MHz -2700 MHz)

Please refer to ETSI EN 301 489-1, ETSI EN 301 489-17 and EN 61000-4-3.

5.1. Test Equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Cal.
1	Signal Generator	R&S	SMR40	10016	2015-06-16	2016-06-15
2	Amplifier	AR	500A100	17034	2015-06-18	2016-06-17
3	Amplifier	AR	100W/1000M1	17028	2015-06-18	2016-06-17
4	Isotropic Field Monitor	AR	FM2000	16829	2015-06-18	2016-06-17
5	Isotropic Field Probe	AR	FP2000	16755	2015-06-18	2016-06-17
6	Bi-conic Antenna	EMCO	3108	9507-2534	2015-06-18	2016-06-17
7	By-log-periodic Antenna	AR	AT1080	16812	2015-06-18	2016-06-17
8	EMS Test Software	ROHDE & SCHWARZ	ESK1	N/A	2015-06-18	2016-06-17

5.2. Test Configuration



5.3. Test Standard

ETSI 301 489-1 V1.9.2 (2011-09)/ (EN 61000-4-3: 2006+A1: 2008+A2: 2010)

Test level 2 at 3V / m

Test Level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

Performance criterion: **A**

5.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor EUT screen. All the scanning conditions are as follows:

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80 - 1000 1400-2700MHz
4. Dwell time of radiated	0.0015 decade/s
5. Waiting Time	3 Sec.

5.5. Test Data

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

Standard	⑥ IEC 61000-4-3 EN 61000-4-3		
Applicant	Shenzhen Wonlex Technology Co., Ltd.		
EUT	Kids GPS Watches	**Temperature**	24℃
M/N	H1	**Humidity**	53%
Field Strength	3V/m	**Criterion**	A
Test Mode	Mode 1	**Test Engineer**	Jerry
Frequency Range	80-1000MHz, 1.4GHz-2.7GHz,	**Test Date**	December 25, 2015
Modulation	⑥None ⑥ Pulse AM 1KHz 80%		
Steps	1%		

Field	Modulation	Polarity	Position	Observation	Result
3V/m	Yes	H/V	Right, Left, Front, Back	CT, CR	PASS
3V/m	Yes	H/V	Right, Left, Front, Back	CT, CR	PASS
3V/m	Yes	H/V	Right, Left, Front, Back	CT, CR	PASS
3V/m	Yes	H/V	Right, Left, Front, Back	CT, CR	PASS

Note:
During the test, the communication link is maintained. Unintentional transmission is not founded from the EUT.

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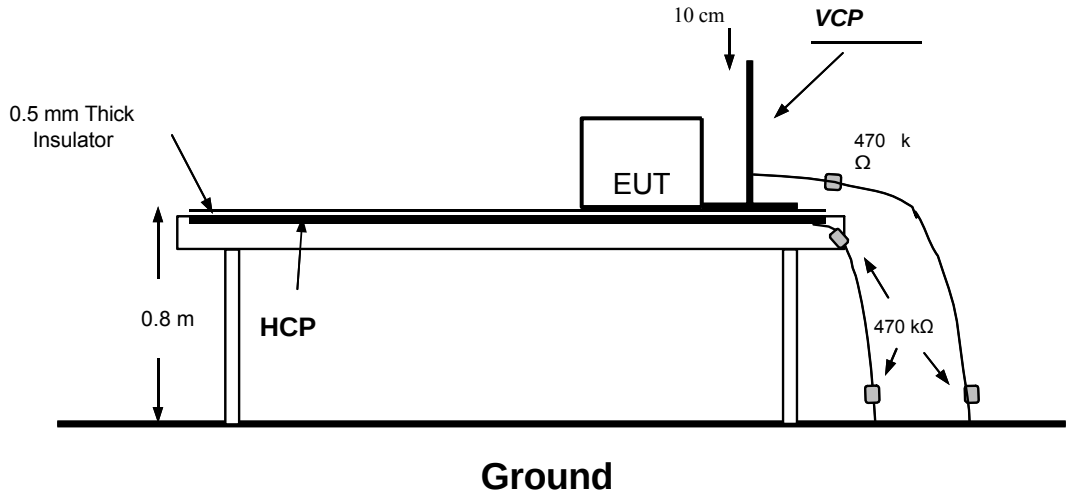
6. ELECTROSTATIC DISCHARGE

Please refer to ETSI EN 301 489-1 and EN 61000-4-2.

6.1. Test Equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Cal.
1	ESD Simulator	KIKUSUI	KC001311	KES4021	2015-06-18	2016-06-17

6.2. Test Configuration



EN 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.5 by 1.0-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by 0.5-millimeter thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

6.3. Test Procedure

ETSI 301 489-1 V1.9.2 (2011-09)/ EN 61000-4-2: 2009
Test level 3 for Air Discharge at ±8 kV
Test level 2 for Contact Discharge at ±4 kV

6.3.1. Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

6.3.2. Contact Discharge

All the procedure shall be same as Section 9.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

6.3.3. Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

6.3.4. Indirect Discharge For Vertical Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

6.4. Test Data

PASS.

Electrostatic Discharge Test Results

Standard	⑥ IEC 61000-4-2 EN 61000-4-2		
Applicant	Shenzhen Wonlex Technology Co., Ltd.		
EUT	Kids GPS Watches	**Temperature**	24℃
M/N	H1	**Humidity**	54%
Criterion	B	**Pressure**	1021mbar
Test Mode	Mode 1 & Mode 2	**Test Date**	December 25, 2015
Test Engineer	Jerry		

Test Result Of Mode 1

Test Voltage	Coupling	Observation	Result (Pass/Fail)
±2KV, ±4kV	Contact Discharge	TT, TR	Pass
±2KV, ±4kV, ±8kV	Air Discharge	TT, TR	Pass
±2KV, ±4kV	Indirect Discharge HCP	TT, TR	Pass
±2KV, ±4kV	Indirect Discharge VCP	TT, TR	Pass

Note:
During the test, the communication link is maintained. Unintentional transmission is not founded from the EUT.

7. MANUFACTURER/ APPROVAL HOLDER DECLARATION

Belong to the tested device:

Product description : Kids GPS Watches

Model name : H1

----------THE END OF REPORT----------