

S

T

S

L

A

B



RADIO TEST REPORT

Report No:STS1904141W02

Issued for

Shenzhen Wonlex Technology Co., Ltd.

7-8 Floor, BLK B, GangHuaXing Fifth Industrial Park, No.118
YongFu Rd, QiaoTou Area, BaoAn District, Shenzhen, China.

Product Name:	KIDS GPS WATCH
Brand Name:	wonlex
Test Model Name:	GW400S
Series Model:	KT01, KT02, KT03, KT04, KT05, KT06, KT07, KT08, KT09, KT10, KT11, KT12, KT13, EW400S, PT02, Q50, GW100, GW400X, GW500S, GW600, GW700S, EW100S, S01
Test Standard:	ETSI EN 303 413 V1.1.1 (2017-06)
	EN 300 440 V2.1.1 (2017-03) Clause 4.3.4

Any reproduction of this document must be done in full. No single part of this document may be reproduced without permission from STS, All Test Data Presented in this report is only applicable to presented Test sample.

Shenzhen STS Test Services Co., Ltd.
1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China
TEL: +86-755 3688 6288 FAX: +86-755 3688 6277 E-mail: sts@stsapp.com





TEST REPORT CERTIFICATION

Applicant's name : Shenzhen Wonlex Technology Co., Ltd.
 Address : 7-8 Floor, BLK B, GangHuaXing Fifth Industrial Park, No.118
 YongFu Rd, QiaoTou Area, BaoAn District, Shenzhen, China.

Manufacture's Name..... : Shenzhen Wonlex Technology Co., Ltd.
 Address : 7-8 Floor, BLK B, GangHuaXing Fifth Industrial Park, No.118
 YongFu Rd, QiaoTou Area, BaoAn District, Shenzhen, China.

Product description

Product name : KIDS GPS WATCH
 Trade mark : wonlex
 Test model name : GW400S

Standards : ETSI EN 303 413 V1.1.1 (2017-06)
 EN 300 440 V2.1.1 (2017-03) Clause 4.3.4

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the 2014/53/EU RED Directive Art.3.2 requirements. And it is applicable only to the tested sample identified in the report.
 This report shall not be reproduced except in full, without the written approval of STS, this document may be altered or revised by STS, personal only, and shall be noted in the revision of the document.

Date of Test :
 Date (s) of performance of tests : 25 Jan. 2018 ~01 Feb. 2018
 Date of Issue..... : 10 Apr. 2019
 Test Result..... : **Pass**

Testing Engineer : *Chris chen*

 (Chris chen)

Technical Manager : *Sean she*

 (Sean she)

Authorized Signatory : *Vita Li*

 (Vita Li)





TABLE OF CONTENTS

1. SUMMARY OF TEST RESULTS	5
1.1 TEST FACTORY	6
1.2 MEASUREMENT UNCERTAINTY	6
2. GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 DESCRIPTION OF TEST CONDITIONS	8
2.3 DESCRIPTION OF SUPPORT UNITS	8
2.4 EQUIPMENTS LIST FOR ALL TEST ITEMS	9
3. SPURIOUS EMISSIONS – RECEIVER	10
3.1 APPLIED PROCEDURES / LIMIT	10
3.2 MEASURING INSTRUMENTS AND SETTING	10
3.3 TEST PROCEDURES	10
3.4 EUT OPERATION DURING TEST	10
3.5 TEST RESULTS	11
4. ADJACENT SIGNAL SELECTIVITY	12
4.1 APPLIED PROCEDURES / LIMIT	12
4.2 TEST PROCEDURES	13
4.3 TEST SETUP LAYOUT	14
4.4 TEST RESULTS	14
5. BLOCKING OR DESENSITIZATION	15
5.1 APPLIED PROCEDURES / LIMIT	15
5.2 TEST PROCEDURES	15
5.3 TEST SETUP LAYOUT	15
5.4 TEST RESULTS	15

**Revision History**

Rev.	Issue Date	Report No.	Effect Page	Contents
00	01 Feb. 2018	STS1801246W02	ALL	Initial Issue
00	10 Apr. 2019	STS1904141W02	ALL	Update series model name

Note: **Format version** of the report -V01





1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

ETSI EN 303 413 V1.1.1 (2017-06)			
Clause	Description of Test Item	Remarks	Results
4.2.1	Adjacent signal selectivity	Radiated	Pass
4.2.2	Spurious emissions	Radiated	Pass

ETSI EN 300 440 V2.1.1 (2017-03)			
Clause	Description of Test Item	Remarks	Results
4.3.4	Blocking or desensitization	Radiated	Pass





1.1 TEST FACTORY

Company Name:	Shenzhen STS Test Services Co., Ltd.
Address:	1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	+86-755 3688 6288
Fax:	+86-755 3688 6277
Registration No.:	CNAS Registration No.: L7649; FCC Registration No.: 625569 IC Registration No.: 12108A; A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	RF power, conducted	± 0.71 dB
2	Spurious emissions, conducted	± 0.63 dB
3	Spurious emissions, radiated (>1G)	± 2.25 dB
4	Spurious emissions, radiated (<1G)	± 2.21 dB



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	KIDS GPS WATCH
Brand Name	wonlex
Model Name	GW400S
Series Model	KT01, KT02, KT03, KT04, KT05, KT06, KT07, KT08, KT09, KT10, KT11, KT12, KT13, EW400S, PT02, Q50, GW100, GW400X, GW500S, GW600, GW700S, EW100S, S01
Model Difference	Only different in model design and colors
Receiver Frequency	1.57542GHz
Battery	Battery(rating): Rated Voltage: 3.7V Charge Limit: 4.2V Capacity :420mAh
Antenna	PIFA
Hardware version number	G72S-MB-V2.0
Software version number	G72S-SW-V1.0
Extrem Temperature	-20°C / 40°C

Note: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



2.2 DESCRIPTION OF TEST CONDITIONS

E-1
EUT

2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.



2.4 EQUIPMENTS LIST FOR ALL TEST ITEMS

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Signal Analyzer	Agilent	N9020A	MY49100060	2017.03.11	2018.03.10
Bilog Antenna	TESEQ	CBL6111D	34678	2017.03.24	2018.03.23
Horn Antenna	Schwarzbeck	BBHA 9120D(1201)	9120D-1343	2017.03/06	2018.03.05
Power Amplifier	Agilent	8449B	60538	2017.10.15	2018.10.14
Signal Generator	Agilent	N5182A	MY46240556	2017.10.15	2018.10.14
Pre-mpplier (18G-40G)	MINI-CIRCUIT S	AP-040G	1382501	2017.05.02	2018.05.01
Low frequency cable	EM	R01	N/A	2017.03.12	2018.03.11
Low frequency cable	EM	R06	N/A	2017.03.12	2018.03.11
High frequency cable	SCHWARZBE CK	R04	N/A	2017.03.12	2018.03.11
High frequency cable	SCHWARZBE CK	R02	N/A	2017.03.12	2018.03.11
trun table	EM	SC100_1	60531	N/A	N/A
Antnna mast	EM	SC100	N/A	N/A	N/A
SHF-EHF Horn Antenna (15G-40GHz)	BBHA 9170	SCHWARZB ECK	BBHA9170367	2017.05.02	2018.05.01
Pre-mpplier (0.1M-3GHz)	EM	EM330	60538	2017.03.12	2018.03.11
Semi-anechoic chamber	Changling	966	N/A	2017.10.15	2018.10.14
EMI Test Receiver	R&S	ESW	101535	2017.06.01	2018.05.31
Spectrum Analyzer	Agilent	E4407B	MY50140340	2017.03.11	2018.03.10
Universal Radio Communication Tester	R&S	CMW500	117239	2017.06.15	2018.06.14



3. SPURIOUS EMISSIONS – RECEIVER

3.1 APPLIED PROCEDURES / LIMIT

Clause	Frequency(MHz)	Limit	Bandwidth
4.2.2.2	30-1000	-57dBm	100KHz
	1000-8300	-47dBm	1MHz

3.2 MEASURING INSTRUMENTS AND SETTING

The following table is the setting of the Spectrum Analyzer.

Spectrum Analyzer	Setting
Attenuation	Auto
Start Frequency	30 MHz
Stop Frequency	9000MHz
Detector	Positive Peak
Sweep Time	Auto
RB / VB	100 kHz / 300 kHz(below 1GHz) 1MHz/3MHz(Above 1GHz)

3.3 TEST PROCEDURES

- a. The EUT was placed on the top of the turntable in open test site area.
- b. The test shall be made in the receiving mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- c. For 30MHz~16 GHz spurious emissions measurement, the broad band bi-log receiving antenna was placed 3 meters far away from the turntable.
- d. The broadband receiving antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization. Each recorded suspected value is indicated as Read Level (Raw).
- e. Replace the EUT by standard antenna and feed the RF port by signal generator.
- f. Adjust the frequency of the signal generator to the suspected emission and slightly rotate the turntable to locate the position with maximum reading.
- g. Adjust the power level of the signal generator to reach the same reading with Read Level (Raw).
- h. The level of the spurious emission is the power level of (7) plus the gain of the standard antenna in dBi and minus the loss of the cable used between the signal generator and the standard antenna.
- i. The measurement shall be repeated at the lowest and the highest channel of the stated frequency range.

3.4 EUT OPERATION DURING TEST

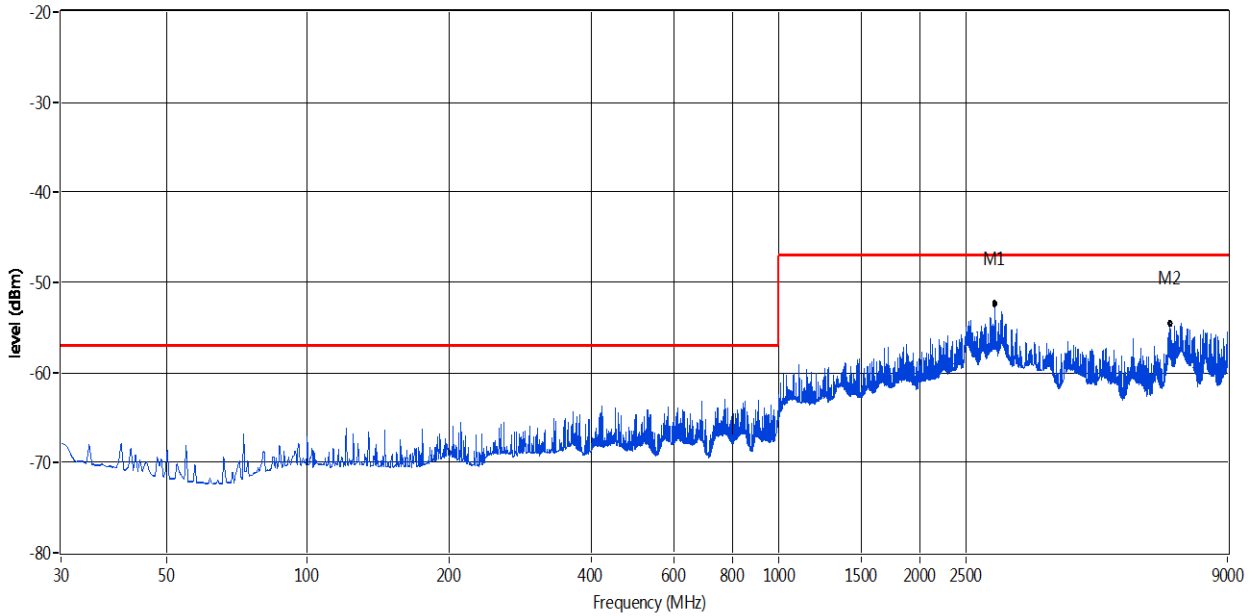
The EUT was programmed to be in continuously receiving mode.



3.5 TEST RESULTS

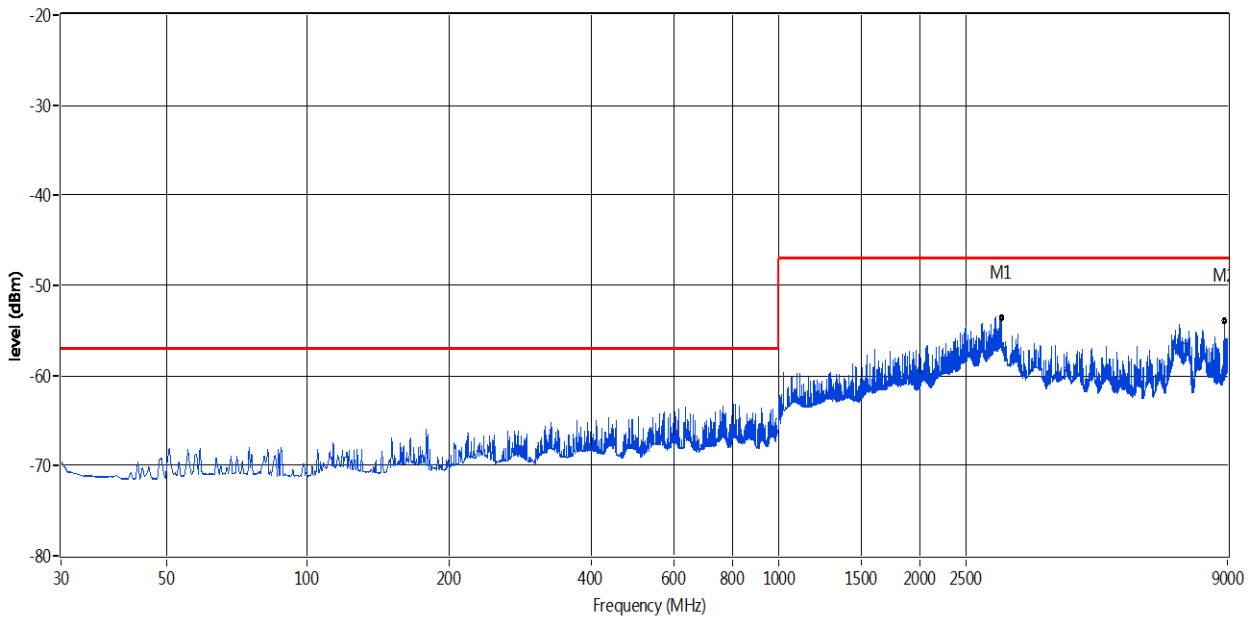
Horizontal

EN_RSE_303 413_RX-30-9GHz



Vertical

EN_RSE_303 413_RX-30-9GHz



Remark:

1. The emission behaviour belongs to narrowband spurious emission.

4. ADJACENT SIGNAL SELECTIVITY

4.1 APPLIED PROCEDURES / LIMIT

The C/N_0 metric reported by the GUE for all GNSS and GNSS signals given in table 4-1 and supported by the GUE shall not degrade by more than the value given in equation 4-1 when an adjacent frequency signal is applied. The adjacent frequency signal is defined in table 4-4, with the frequencies and power levels defined in table 4-2 and/or in table 4-3 depending on the RNSS bands supported by the GUE. Equation 4-1: Maximum degradation in C/N_0

$$\Delta C/N_0 \leq 1 \text{ dB}$$

Table 4-1: GNSS, GNSS signals and RNSS frequency bands

GNSS	GNSS Signal Designations	RNSS Frequency Band (MHz)
BDS	B1I	1559 to 1610
Galileo	E1	1559 to 1610
	E5a	1164 to 1215
	E5b	1164 to 1215
	E6	1215 to 1300
	G1	1559 to 1610
GLONASS	G2	1215 to 1300
	L1	1559 to 1610
GPS	L2	1215 to 1300
	L5	1164 to 1215
	L1	1559 to 1610
SBAS	L5	1164 to 1215

Table 4-2: Frequency bands, adjacent frequency signal test point centre frequencies and power levels for the 1 559 MHz to 1 610 MHz RNSS band

Frequency band (MHz)	Test point centre frequency (MHz)	Adjacent frequency signal power level (dBm)	Comments
1518 to 1525	1524	-65	MSS (space-to-Earth) band
1525 to 1549	1548	-95	MSS (space-to-Earth) band
1549 to 1559	1554	-105	MSS (space-to-Earth) band
1559 to 1610	GUE RNSS band under test		
1610 to 1626	1615	-105	MSS (space-to-Earth) band
1626 to 1640	1627	-85	MSS (space-to-Earth) band

**Table 4-3: Frequency bands, adjacent frequency signal test point centre frequencies and power levels for the 1 164 MHz to 1 300 MHz RNSS band**

Frequency band (MHz)	Test point centre frequency (MHz)	Adjacent frequency signal power level (dBm)	Comments
960 to 1164	1154	-75	AM(R)S, ARNS band
1164 to 1215	GUE RNSS band under test		
1215 to 1260	GUE RNSS band under test		
1260 to 1300	GUE RNSS band under test		
1300 to 1350	1310	-85	Radiolocation, ARNS, RNSS (Earth-to-space) band

Table 4-4: Adjacent frequency signal

Parameter	Value	Comments
Frequency	See table 4-2 and table 4-3	
Power level	See table 4-2 and table 4-3	
Bandwidth	1 MHz	See clause B.1 for details
Format	AWGN	

4.2 TEST PROCEDURES

1. Please refer to ETSI EN 303 413 (V1.1.1) clause 5.4.2. for the test conditions.
2. Please refer to ETSI EN 303 413 (V1.1.1) clause 5.4.3 for the measurement method.

4.3 TEST SETUP LAYOUT

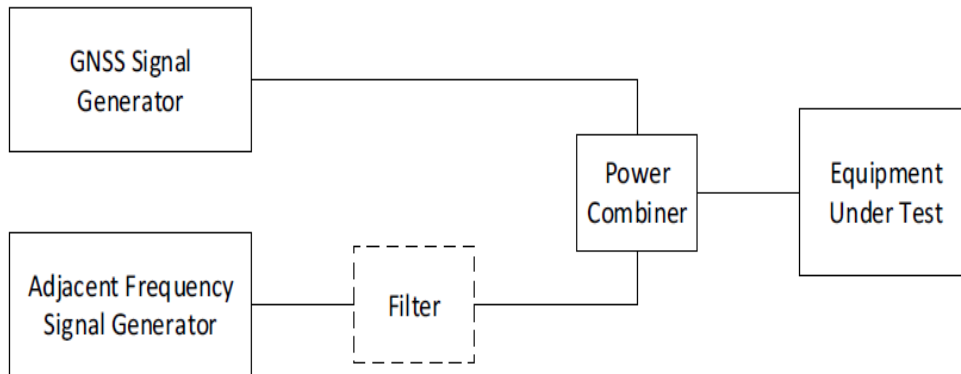


Figure 5-1: Conducted measurement setup for EUT adjacent frequency band selectivity

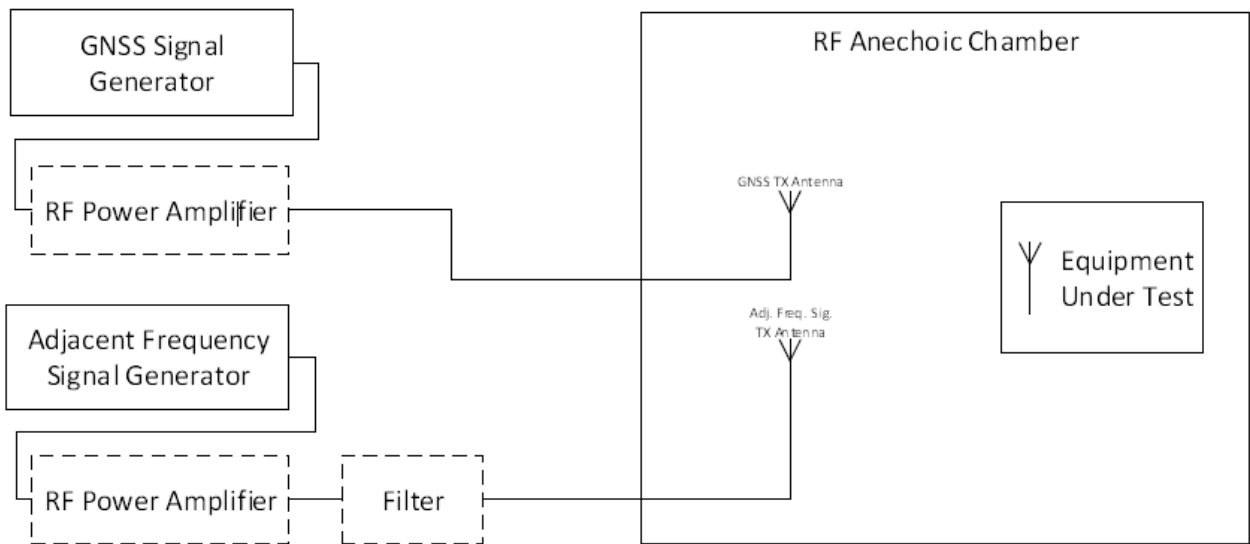


Figure 5-2: Radiated measurement setup for EUT adjacent frequency band selectivity performance

The EUT was programmed to be in continuously receive mode.

4.4 TEST RESULTS

Operating frequency (GHz)	Adjacent frequency (MHz)	Adjacent frequency signal power level (dBm)	Δ C/N0 (dBm)	Limit
1.57542	1524	-65	0.002	1
	1548	-95	0.003	
	1554	-105	0.004	
	1615	-105	0.007	
	1627	-85	0.005	

5. BLOCKING OR DESENSITIZATION

5.1 APPLIED PROCEDURES / LIMIT

The blocking level, for any frequency within the specified ranges, shall not be less than the values given in table 7, except at frequencies on which spurious responses are found

Table 7 Limits for blocking or desensitization

Receiver category	Limit
1	-30 dBm + K
2	-45 dBm + K
3	No limit

The correction factor, k, is as follows:

$$k = -20\log f - 10\log BW$$

Where:

- f is the frequency in GHz;
- BW is the channel bandwidth in MHz.

The factor k is limited within the following:

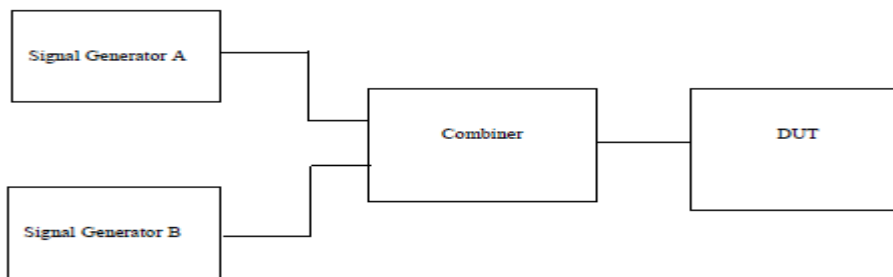
$$- 0 < k < 40 \text{ dB.}$$

The measured blocking level shall be stated in the test report.

5.2 TEST PROCEDURES

1. Please refer to ETSI EN 300 440 (V2.1.1) clause 5.3 & 5.4. for the test conditions.
2. Please refer to ETSI EN 300 440 (V2.1.1) clause 4.3.4.3. for the measurement method.

5.3 TEST SETUP LAYOUT



The EUT was programmed to be in continuously transmitting mode.

5.4 TEST RESULTS

Operation Frequency (GHz)	Bandwidth (MHz)	Reading (dBm)	Limit (dBm)
1.57542	5	-25.88	-40.938



Measurement Photos



※※※※※END OF THE REPORT※※※※※