



EMC TEST REPORT

Applicant Phicomm(Shanghai)Co.,Ltd
FCC ID YJY2018W301
Product PHICOMM W3 Fitness Band
Brand PHICOMM
Model PHICOMM W3
Report No. R1806A0280-E1
Issue Date July 13, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2017)/ ANSI C63.4 (2014)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Wei Liu

Guangchang Fan

Performed by: Wei Liu/ Manager

Approved by: Guangchang Fan/ Director

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000



Table of Contents

1	Test Laboratory.....	4
1.1	Notes of the Test Report.....	4
1.2	Test facility.....	4
1.3	Testing Location.....	5
2	General Description of Equipment under Test.....	6
2.1	Client Information.....	6
2.2	General information.....	6
2.3	Applied Standards.....	7
2.4	Test Configuration.....	8
3	Test Case Results.....	9
3.1	Radiated Emission.....	9
3.2	Conducted Emission.....	15
4	Main Test Instrument.....	18
	ANNEX A: The EUT Appearance and Test Configuration.....	19
	A.1 EUT Appearance.....	19
	A.2 Test Setup.....	20



Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	15.107, ANSI C63.4-2014	PASS
Date of Testing: June 30, 2018 ~ July 9, 2018			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City: Shanghai
Post code: 201201
Country: P. R. China
Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

2.1 Client Information

Applicant	Phicomm(Shanghai)Co.,Ltd
Applicant address	No.3666,Sixian Rd.,Songjiang District,Shanghai,P.R.China
Manufacturer	Phicomm(Shanghai)Co.,Ltd
Manufacturer address	No.3666,Sixian Rd.,Songjiang District,Shanghai,P.R.China

2.2 General information

EUT Description			
Device Type:	Portable Device		
Model Number:	PHICOMM W3		
IMEI	/		
HW Version:	V1.3		
SW Version:	W3_B5_V2.16_A01_0720_WB		
Antenna Type:	Internal Antenna		
Test Mode:	Transfer Data Mode		
Frequency:		TX:	RX:
	Bluetooth:	2400MHz ~ 2483.5MHz	2400MHz ~ 2483.5MHz
	GPS L1	/	1559MHz ~ 1610 MHz
	GLONASS G1	/	1559MHz ~ 1610 MHz
Modulation:	Bluetooth: GFSK, $\pi/4$ -DQPSK, 8-DPSK Bluetooth v4.2 LE: GFSK GPS: BPSK GLONASS: BPSK		
EUT Accessory			
Battery	Manufacturer: HUIZHOU EVERPOWER TECHNOLOGY CO.,LTD Model: PL351428V		
Auxiliary test equipment			
PC	PC Manufacturer: Dell Model: E5430 (SN : R98M9 A02)		
Note: The information of the EUT is declared by the manufacturer.			



2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC Code CFR47 Part15B (2017)

ANSI C63.4 (2014)

2.4 Test Configuration

Test Mode	
Mode 1:	GNSS Rx +Idle mode
Mode 2:	USB Copy(EUT with PC) + USB cable + GNSS Rx +Idle

During the test, the preliminary test was performed in all modes, mode 2 (USB Copy + USB cable + GNSS Rx +Idle) selected as the worst condition. The test data of the worst-case condition was recorded in this report.

3 Test Case Results

3.1 Radiated Emission

Ambient condition

Temperature	Relative humidity	Pressure
24°C~26°C	45%~50%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

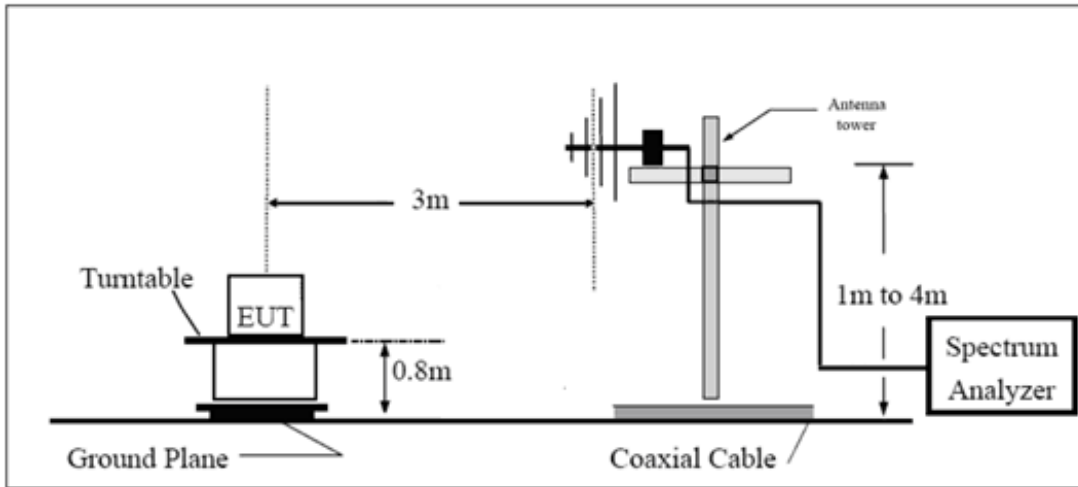
(a) PEAK: RBW=1MHz / VBW=3MHz/ Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=1Hz / Sweep=AUTO

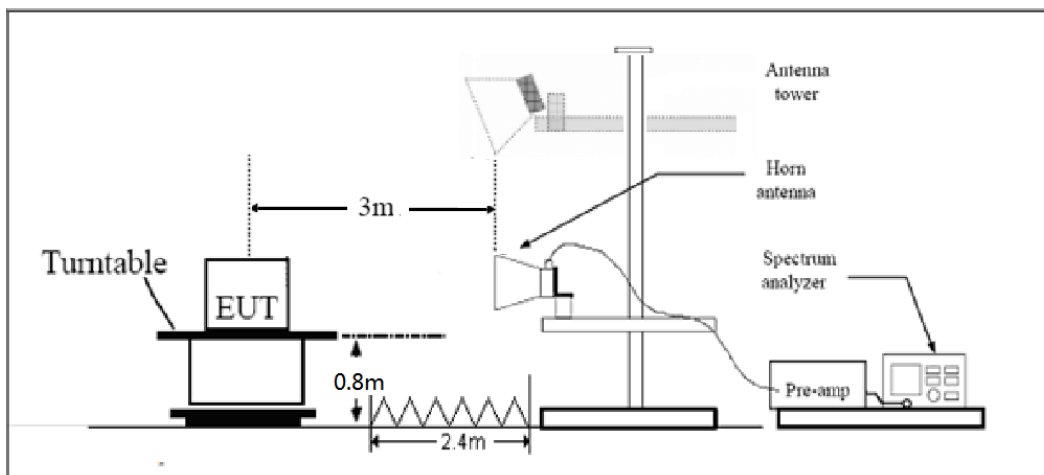
The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

Test Setup

Below 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

Limits

Frequency (MHz)	Field Strength (dB μ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 th harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

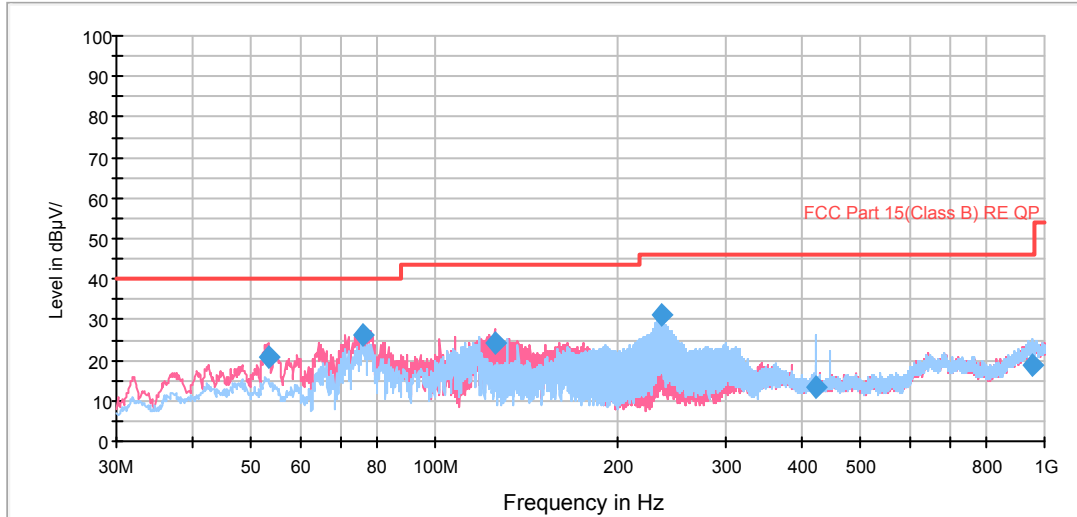
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U = 3.704$ dB.

Test Results

The following graphs display the maximum values of horizontal and vertical by software.
 For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

RE 30M-1GHz QP

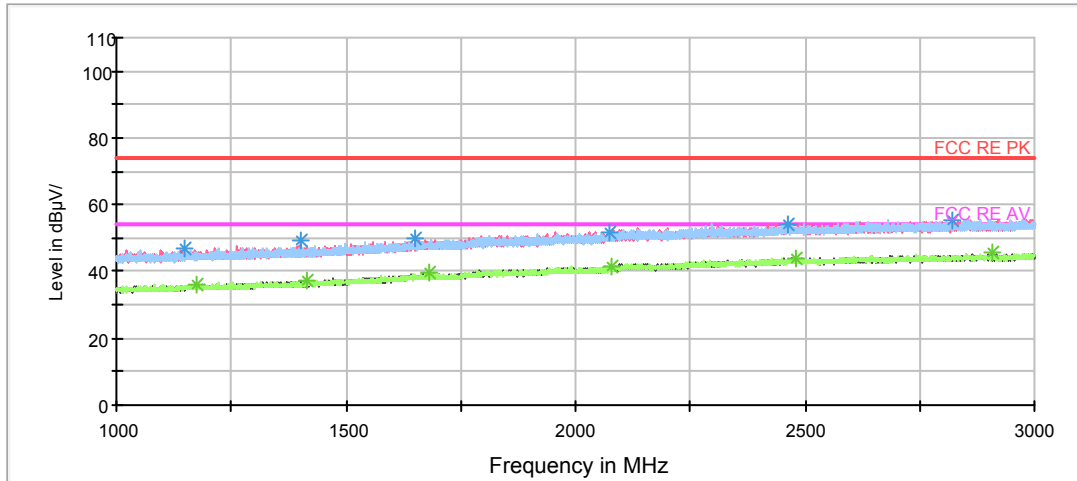


Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
53.185853	20.9	40.4	146.0	V	111.0	-19.5	19.1	40.0
76.326706	26.2	53.2	208.0	V	328.0	-27.0	13.8	40.0
125.148297	24.2	51.8	125.0	V	0.0	-27.6	19.3	43.5
234.643500	31.1	55.4	145.0	H	32.0	-24.3	14.9	46.0
421.140750	13.4	33.8	225.0	H	246.0	-20.4	32.6	46.0
953.471500	18.8	29.4	145.0	H	0.0	-10.6	27.2	46.0

- Remark:**
1. Quasi-Peak = Reading value + Correction factor
 2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
 3. Margin = Limit – Quasi-Peak

FCC RE 1G-18GHz PK+AV Class B



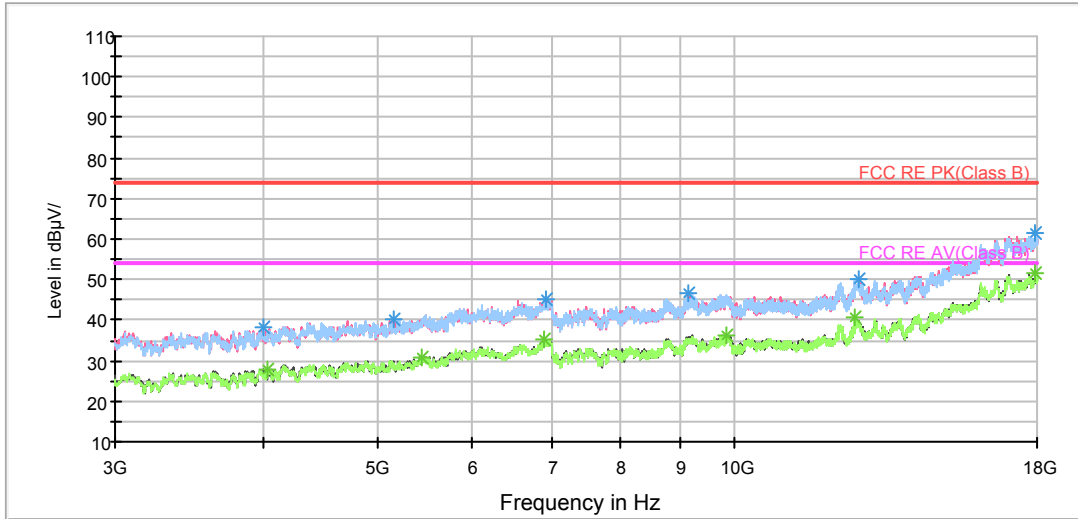
Radiated Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1148.250000	46.7	16.4	100.0	H	4.0	30.3	27.3	74
1400.000000	49.1	17.6	100.0	V	3.0	31.5	24.9	74
1649.000000	49.7	16.9	200.0	V	4.0	32.8	24.3	74
2075.250000	51.8	16.5	100.0	H	0.0	35.3	22.2	74
2464.750000	54.2	16.9	200.0	H	85.0	37.3	19.8	74
2820.250000	55.4	17.5	100.0	H	15.0	37.9	18.6	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1175.250000	36.1	5.7	200.0	V	80.0	30.4	17.9	54
1413.000000	37.2	5.6	200.0	V	154.0	31.6	16.8	54
1681.000000	39.4	6.4	200.0	V	167.0	33.0	14.6	54
2079.250000	41.6	6.3	200.0	V	204.0	35.3	12.4	54
2480.750000	43.8	6.5	100.0	H	0.0	37.3	10.2	54
2906.500000	45.6	7.6	100.0	V	357.0	38.0	8.4	54



RE 3-18GHz PK+AV



Radiated Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4003.125000	38.1	39.2	100.0	H	69.0	-1.1	35.9	74
5152.500000	40.4	38.4	100.0	V	0.0	2.0	33.6	74
6935.625000	45.0	38.9	200.0	H	238.0	6.1	29.0	74
9153.750000	46.8	36.6	200.0	V	192.0	10.2	27.2	74
12729.375000	50.3	36.3	200.0	H	104.0	14.0	23.7	74
17911.875000	61.3	35.8	100.0	H	144.0	25.5	12.7	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
4040.625000	27.7	28.7	200.0	V	51.0	-1.0	26.3	54
5448.750000	30.7	27.9	100.0	V	212.0	2.8	23.3	54
6916.875000	35.3	29.1	200.0	V	239.0	6.2	18.7	54
9828.750000	36.2	26.2	200.0	H	347.0	10.0	17.8	54
12641.250000	40.5	26.0	200.0	V	0.0	14.5	13.5	54
17917.500000	51.4	25.7	100.0	H	276.0	25.7	2.6	54

3.2 Conducted Emission

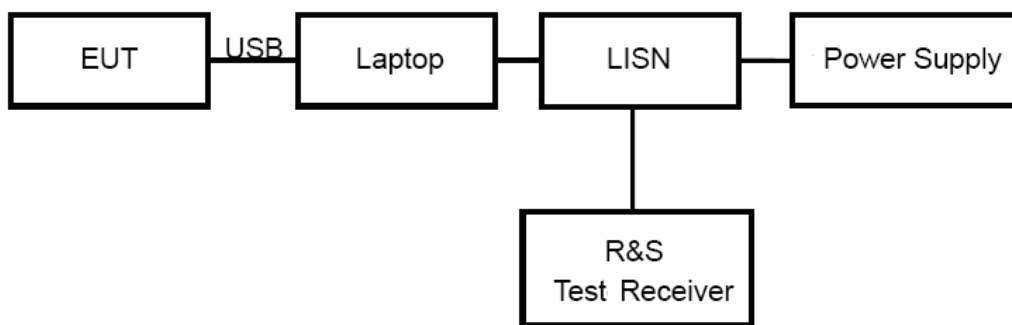
Ambient condition

Temperature	Relative humidity	Pressure
24°C ~26°C	50%~55%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50

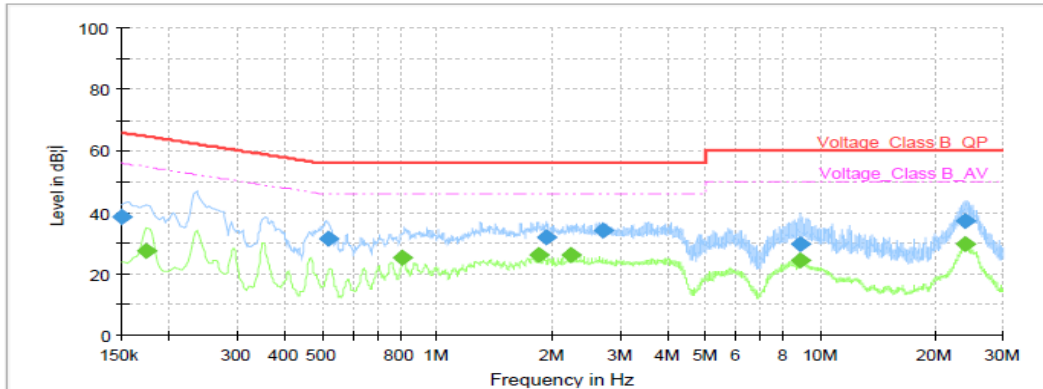
*: Decreases with the logarithm of the frequency.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U = 2.57\text{dB}$.

Test Results

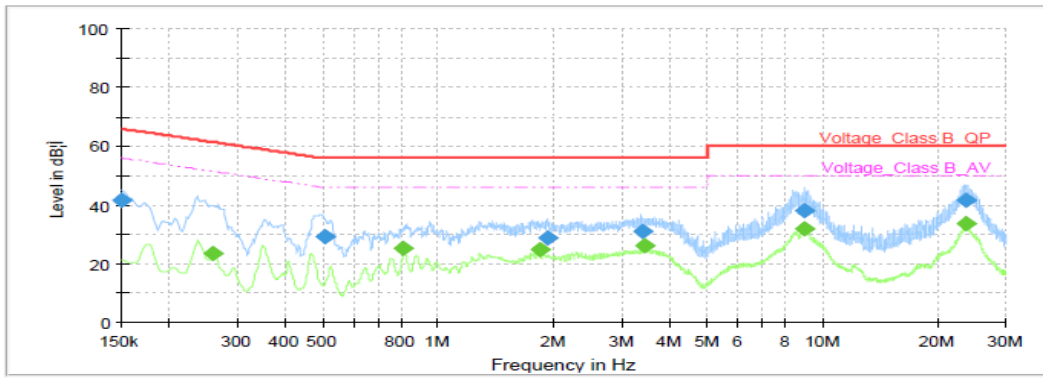
Following plots, Blue trace uses the peak detection; Green trace uses the average detection.



Frequency (MHz)	QuasiPeak (dB _i V)	Average (dB _i V)	Limit (dB _i V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	38.44	---	66.00	27.56	1000.0	9.000	L1	ON	19.1
0.174750	---	27.47	54.73	27.26	1000.0	9.000	L1	ON	19.2
0.516750	31.50	---	56.00	24.50	1000.0	9.000	L1	ON	19.2
0.813750	---	25.22	46.00	20.78	1000.0	9.000	L1	ON	19.2
1.830750	---	26.18	46.00	19.82	1000.0	9.000	L1	ON	19.2
1.920750	31.90	---	56.00	24.10	1000.0	9.000	L1	ON	19.2
2.240250	---	26.05	46.00	19.95	1000.0	9.000	L1	ON	19.1
2.712750	34.28	---	56.00	21.72	1000.0	9.000	L1	ON	19.0
8.850750	---	24.46	50.00	25.54	1000.0	9.000	L1	ON	19.3
8.853000	29.86	---	60.00	30.14	1000.0	9.000	L1	ON	19.3
23.986500	36.99	---	60.00	23.01	1000.0	9.000	L1	ON	19.7
24.000000	---	29.61	50.00	20.39	1000.0	9.000	L1	ON	19.7

L line

Conducted Emission from 150 KHz to 30 MHz



Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	41.47	---	66.00	24.53	1000.0	9.000	N	ON	19.1
0.260250	---	23.51	51.42	27.91	1000.0	9.000	N	ON	19.1
0.507750	29.15	---	56.00	26.85	1000.0	9.000	N	ON	19.2
0.813750	---	25.30	46.00	20.70	1000.0	9.000	N	ON	19.2
1.830750	---	24.72	46.00	21.28	1000.0	9.000	N	ON	19.2
1.936500	28.94	---	56.00	27.06	1000.0	9.000	N	ON	19.1
3.421500	31.13	---	56.00	24.87	1000.0	9.000	N	ON	19.0
3.435000	---	25.90	46.00	20.10	1000.0	9.000	N	ON	19.0
8.967750	38.03	---	60.00	21.97	1000.0	9.000	N	ON	19.3
8.990250	---	31.66	50.00	18.34	1000.0	9.000	N	ON	19.3
23.570250	---	33.48	50.00	16.52	1000.0	9.000	N	ON	19.6
23.689500	41.78	---	60.00	18.22	1000.0	9.000	N	ON	19.6

N line
Conducted Emission from 150 KHz to 30 MHz

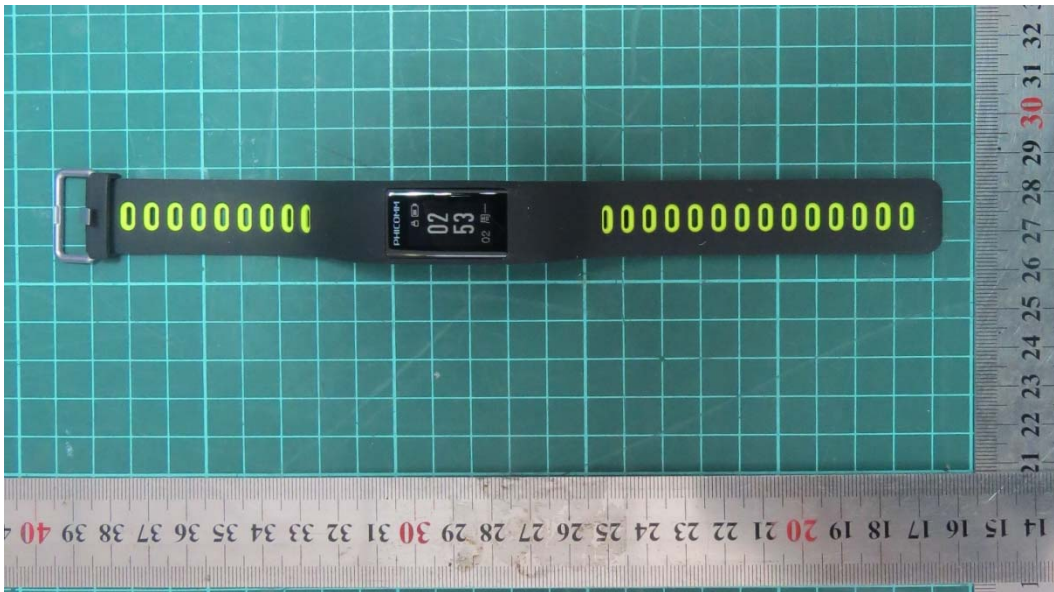
4 Main Test Instrument

Name	Manufacturer	Type	Serial Number	Last Cal.	Cal. Due Date
Signal Analyzer	R&S	FSV30	100815	2017-12-17	2018-12-16
EMI Test Receiver	R&S	ESCI	100948	2018-05-20	2019-05-19
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-02-18	2019-02-17
Trilog Antenna	SCHWARZBECK	VULB 9163	9163-201	2017-11-18	2020-11-17
Horn Antenna	R&S	HF907	100126	2014-12-06	2019-12-05
Horn Antenna	ETS-Lindgren	3160-09	00102643	2015-01-30	2020-01-29
EMI Test Receiver	R&S	ESR	101667	2017-09-06	2018-09-05
LISN	R&S	ENV216	101171	2016-12-16	2019-12-15
Bore Sight Antenna mast	ETS	2171B	00058752	NA	NA
Test software	EMC32	R&S	V9.26.0	NA	NA

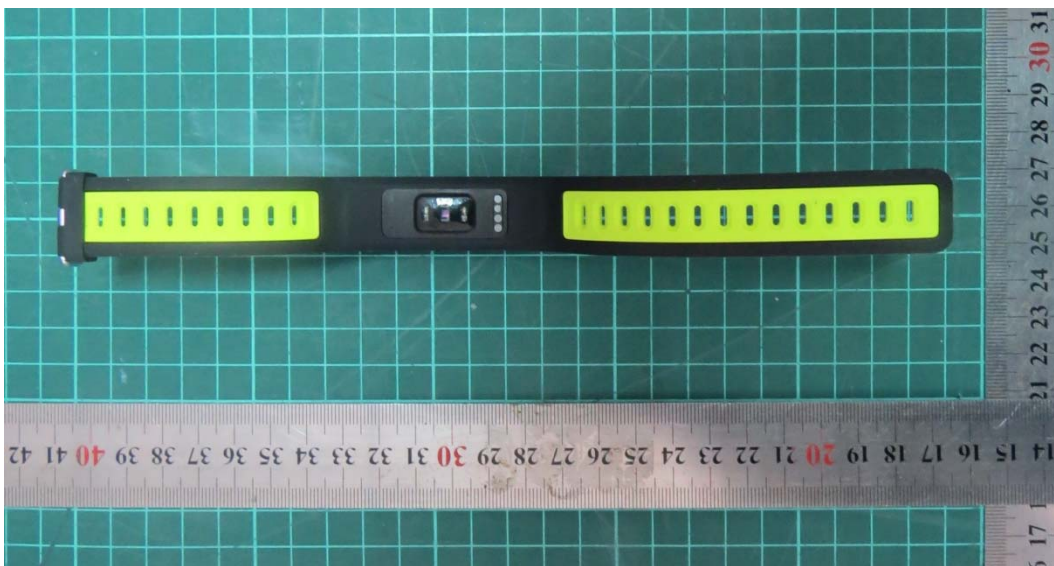
*****END OF REPORT *****

ANNEX A: The EUT Appearance and Test Configuration

A.1 EUT Appearance



Front Side



Back Side

a: EUT

Picture 1 EUT

A.2 Test Setup

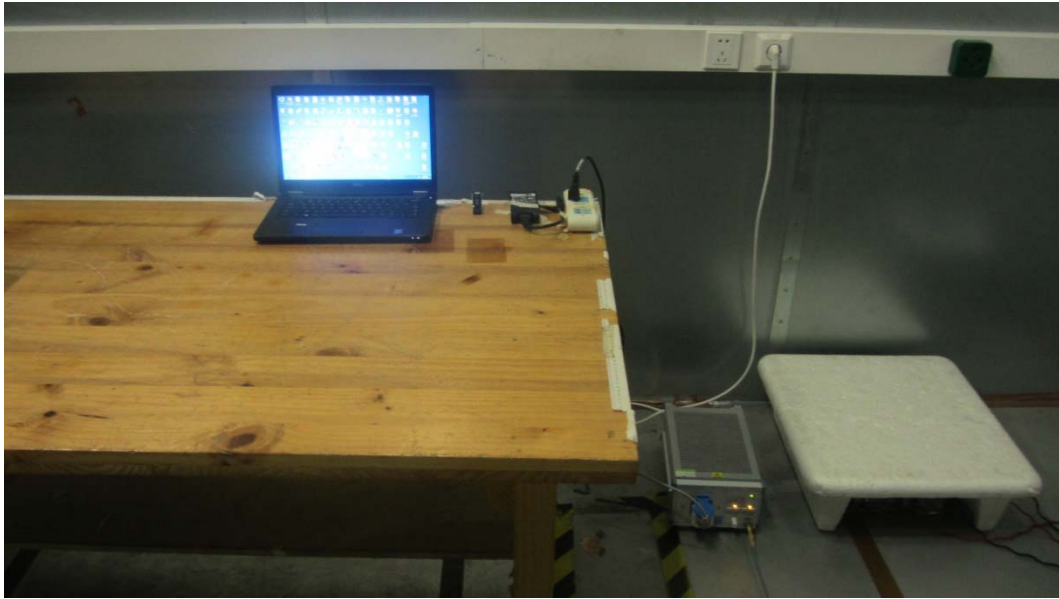


a: Below 1GHz



b: Above 1GHz

Picture 2 Radiated Emission Test Setup



Picture 3 Conducted Emission Test Setup