

FCC Part 15B

Measurement and Test Report

For

Shenzhen inWatch technology Co., Ltd

Floor 3A, No3 Building, Huangguan Technic Park, No.21 Tianran 9 Road,

Futian District, Shenzhen, China

FCC ID: 2AD6NA180

Test Rule(s): FCC Part 15 Subpart B

Product Description: inWatch Z

Tested Model: A180

Report No.: STR15018297I-5

Tested Date: 2015-01-29 to 2015-03-05

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Tested By: Lebron Wang / Engineer

Reviewed By: Lahm Peng / EMC Manager

Approved & Authorized By: Jandy So / PSQ Manager

Prepared By:

Shenzhen SEM.Test Technology Co., Ltd.

1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C. (518101)

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Shenzhen inWatch technology Co., Ltd
Address of applicant: Floor 3A, No3 Building, Huangguan Technic Park, No.21
Tianran 9 Road, Futian District, Shenzhen, China
Manufacturer: Foxconn precision Component (Shen zhen) CO., LTD.
Address of manufacturer: BaoYuan Industrial Park, Dashuikeng Village, GuanLan
Town, Bao'An District, ShenZhen, China

General Description of EUT	
Product Name:	inWatch Z
Trade Name:	inWatch
Model No.:	A180
Adding Model(s):	/
<i>The EUT is GSM850/900/DCS1800/PCS1900, WCDMA Band V inWatch. The inWatch is intended for speech and Multimedia Message Service (MMS) transmission. It is equipped with GPRS/EDGE class 12 for GSM850 and GSM1900 and Bluetooth, Wi-Fi, GPS and camera functions. For more information see the following datasheet</i>	
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	5.0V
Rated Current:	/
Rated Power:	/
Power Adapter Model:	/
Lowest Internal Frequency:	32.768KHz
Highest Internal Frequency:	1.3GHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the Shenzhen inWatch technology Co., Ltd in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

- **FCC – Registration No.: 934118**

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

- **Industry Canada (IC) Registration No.: 11464A**

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Charging & Playing	Connect to PC
TM2	Downloading	Connect to PC

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	0.6	Shielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E10	LR-63C8R

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

N/A: not applicable

3. Conducted Emissions

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

3.2 Test Equipment List and Details

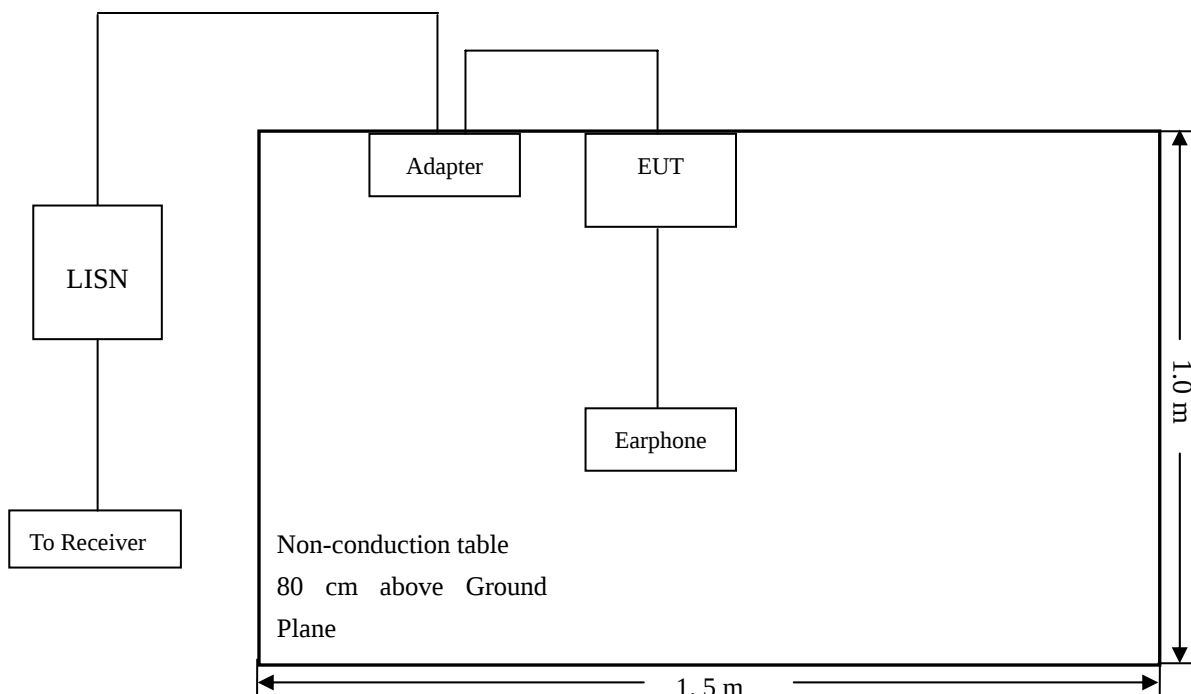
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2014-05-28	2015-05-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2014-05-28	2015-05-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2014-05-28	2015-05-27

3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

Note: Base on the calibrated result, for the impedance characteristic and insertion loss, the effect shall be ignored from the placed multiple outlet power strip between the device and LISN.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

-8.17 dB at 3.6460 MHz in the Line, Peak detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

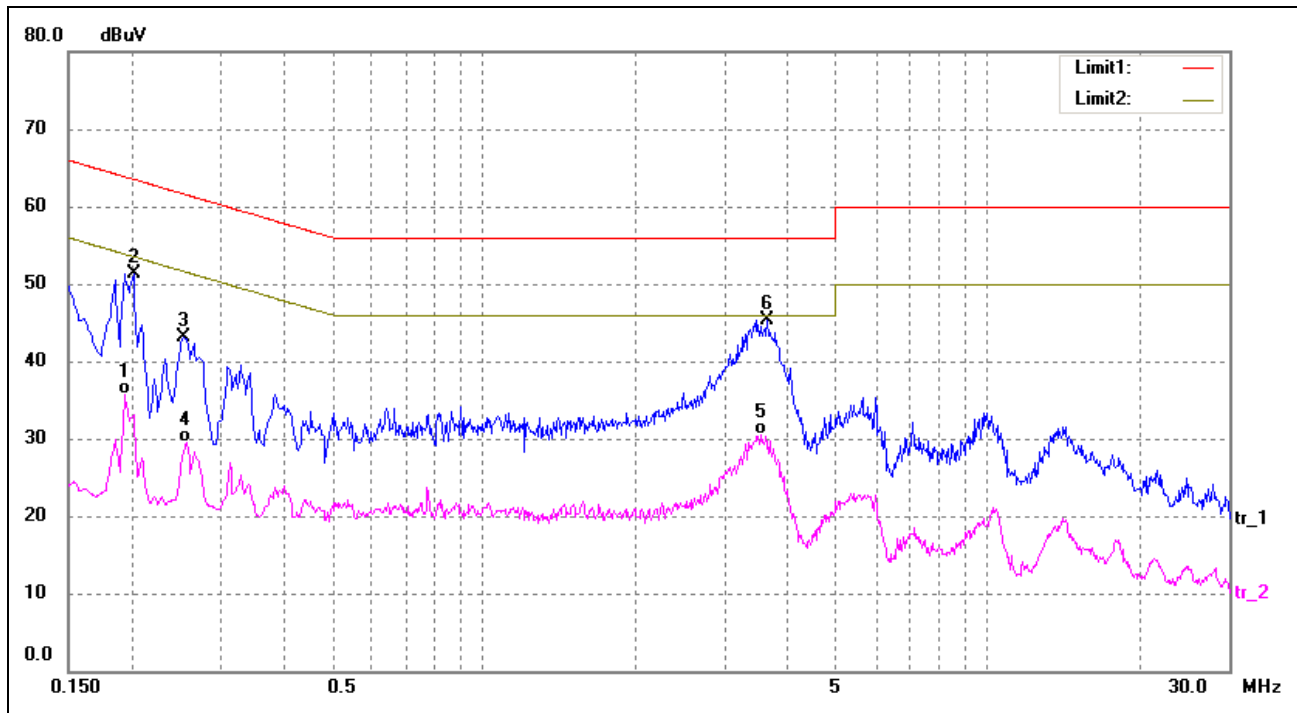
EUT: inWatch Z

Tested Model: A180

Operating Condition: TM1

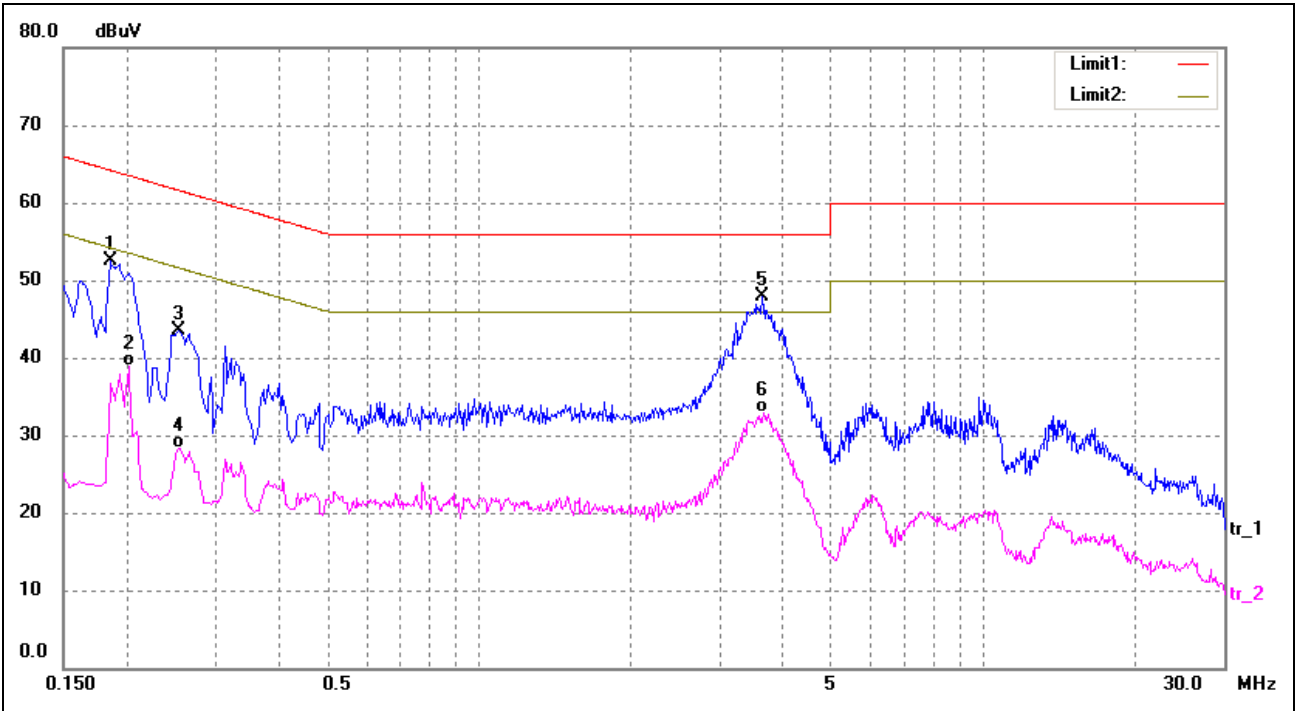
Comment: AC 120V/60Hz,USB DC 5V

Test Specification: Neutral



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1940	26.15	9.50	35.65	53.86	-18.21	AVG
2	0.2020	41.83	9.50	51.33	63.53	-12.20	peak
3	0.2540	33.57	9.50	43.07	61.63	-18.56	peak
4	0.2580	20.04	9.50	29.54	51.50	-21.96	AVG
5	3.5620	20.58	10.00	30.58	46.00	-15.42	AVG
6	3.6500	35.28	10.00	45.28	56.00	-10.72	peak

Test Specification: Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1860	43.01	9.50	52.51	64.21	-11.70	peak
2	0.2020	29.37	9.50	38.87	53.53	-14.66	AVG
3	0.2540	34.00	9.50	43.50	61.63	-18.13	peak
4	0.2540	18.80	9.50	28.30	51.63	-23.33	AVG
5	3.6460	37.83	10.00	47.83	56.00	-8.17	peak
6	3.6660	22.93	10.00	32.93	46.00	-13.07	AVG

4. Radiated Emissions

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

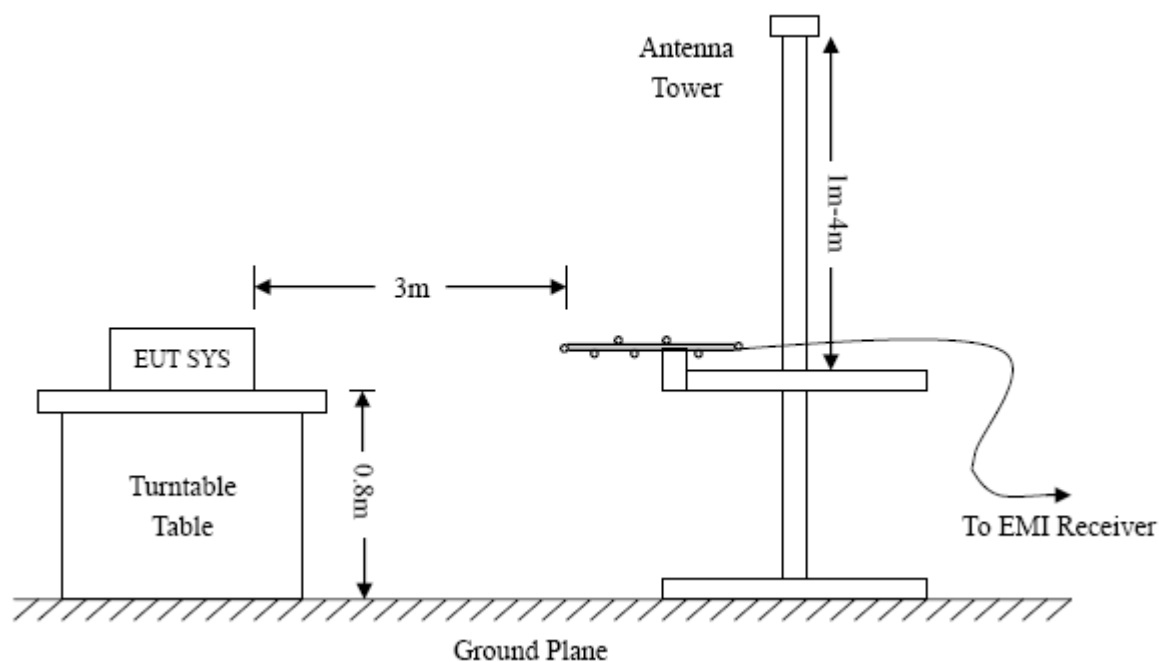
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2014-05-28	2015-05-27
EMI Test Receiver	R&S	ESVB	825471/005	2014-05-28	2015-05-27
Pre-amplifier	Agilent	8447F	3113A06717	2014-05-28	2015-05-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2014-05-28	2015-05-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2014-05-24	2015-05-23
Horn Antenna	ETS	3117	00086197	2014-05-24	2015-05-23
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2014-05-28	2015-05-27

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



4.4 Test Receiver Setup

Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

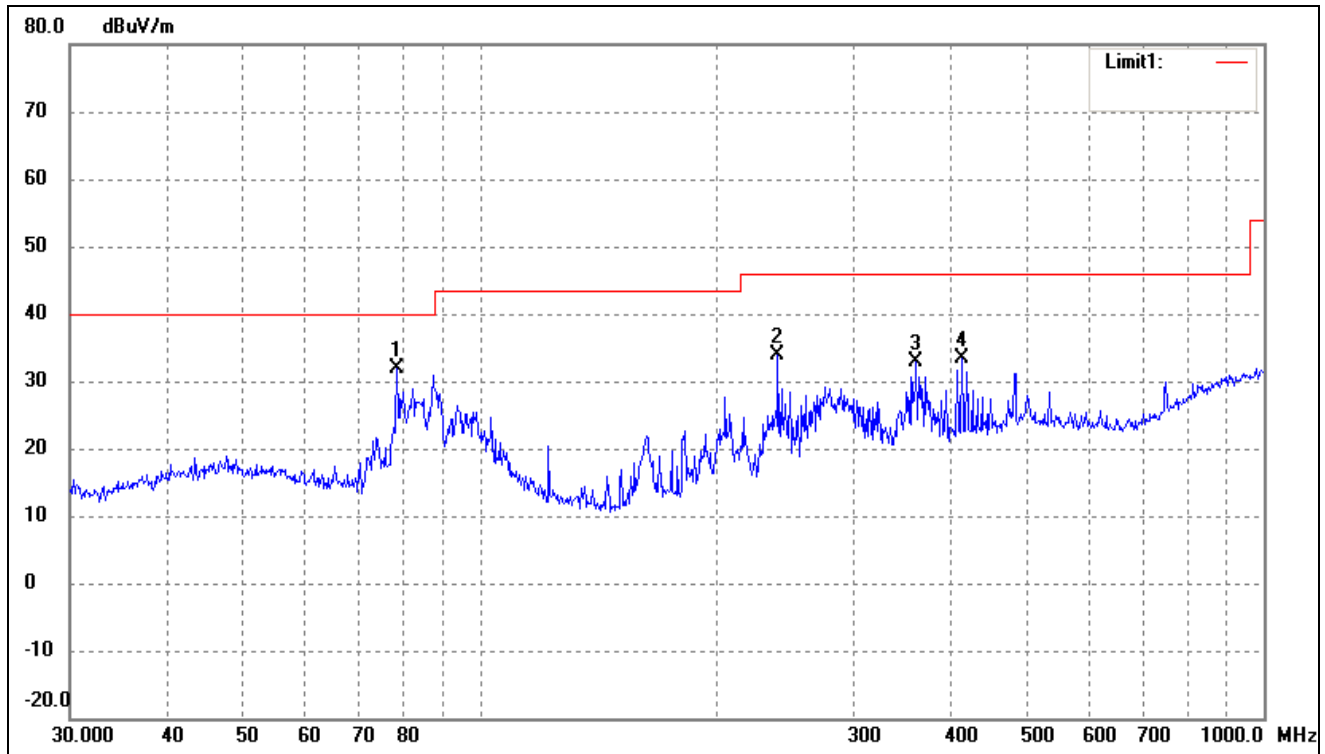
4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

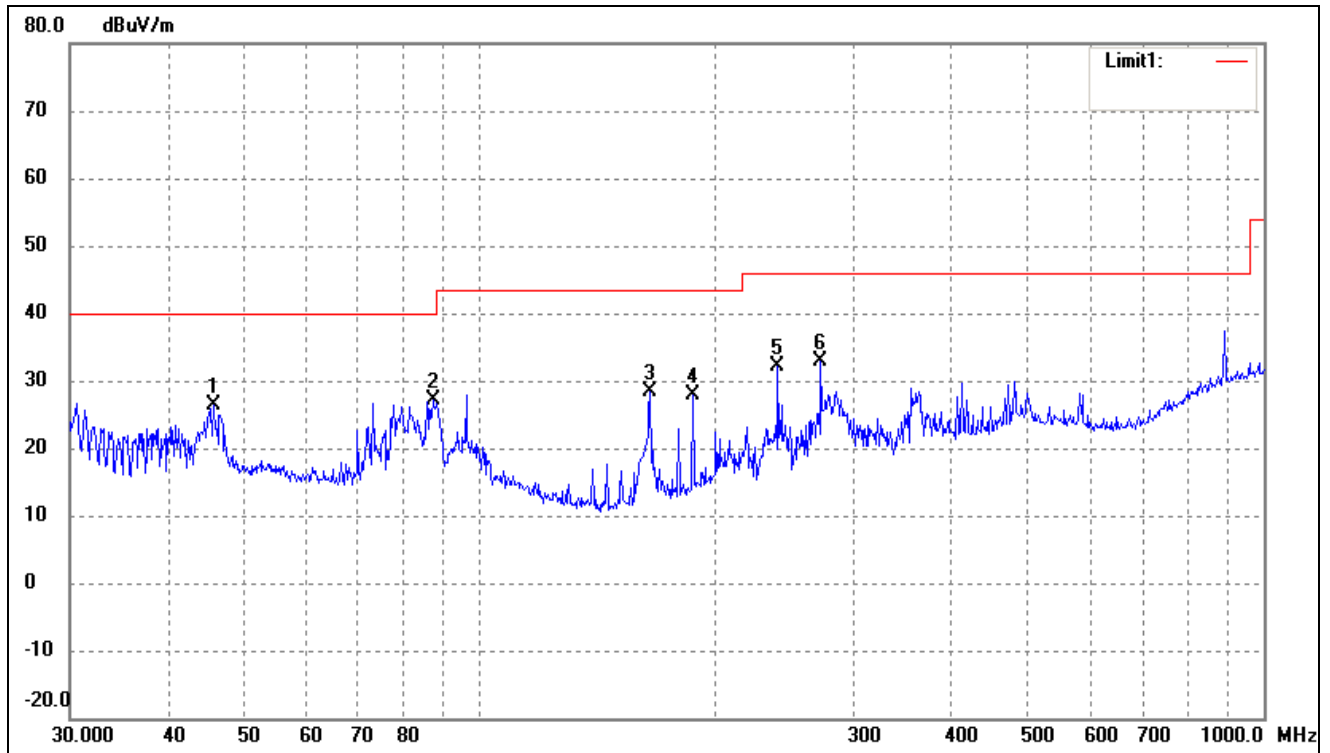
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-1.67 dB at 198.5880 MHz in the Horizontal polarization, TM2 mode, 9 kHz to 6 GHz, 3Meters

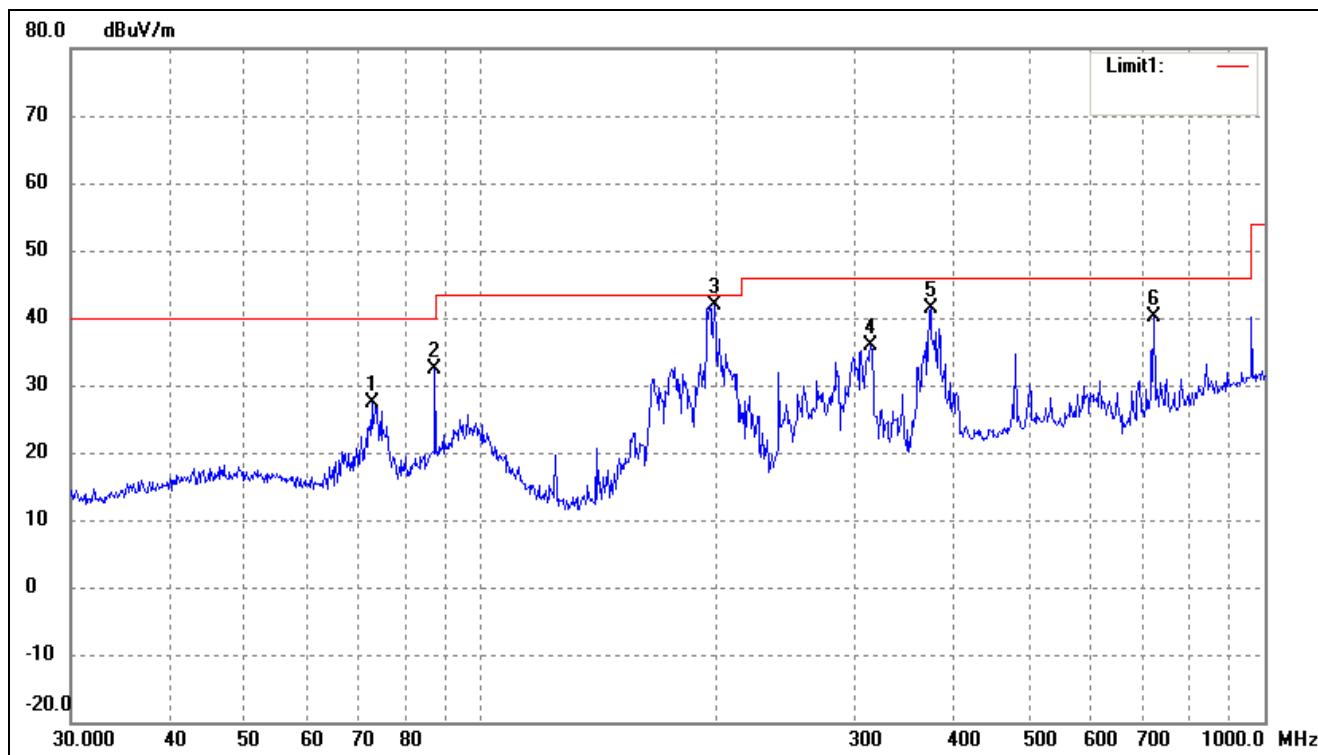
Plot of Radiated Emissions Test DataEUT: *inWatch Z*Tested Model: *A180*Operating Condition: *TM1*Comment: *AC 120V/60Hz,USB DC 5V*Test Specification: *Horizontal*

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	78.4134	45.38	-13.53	31.85	40.00	-8.15	108	150	peak
2	239.9874	41.78	-7.79	33.99	46.00	-12.01	130	100	peak
3	360.4477	36.88	-4.05	32.83	46.00	-13.17	229	150	peak
4	411.8240	35.99	-2.65	33.34	46.00	-12.66	120	100	peak

Test Specification: Vertical

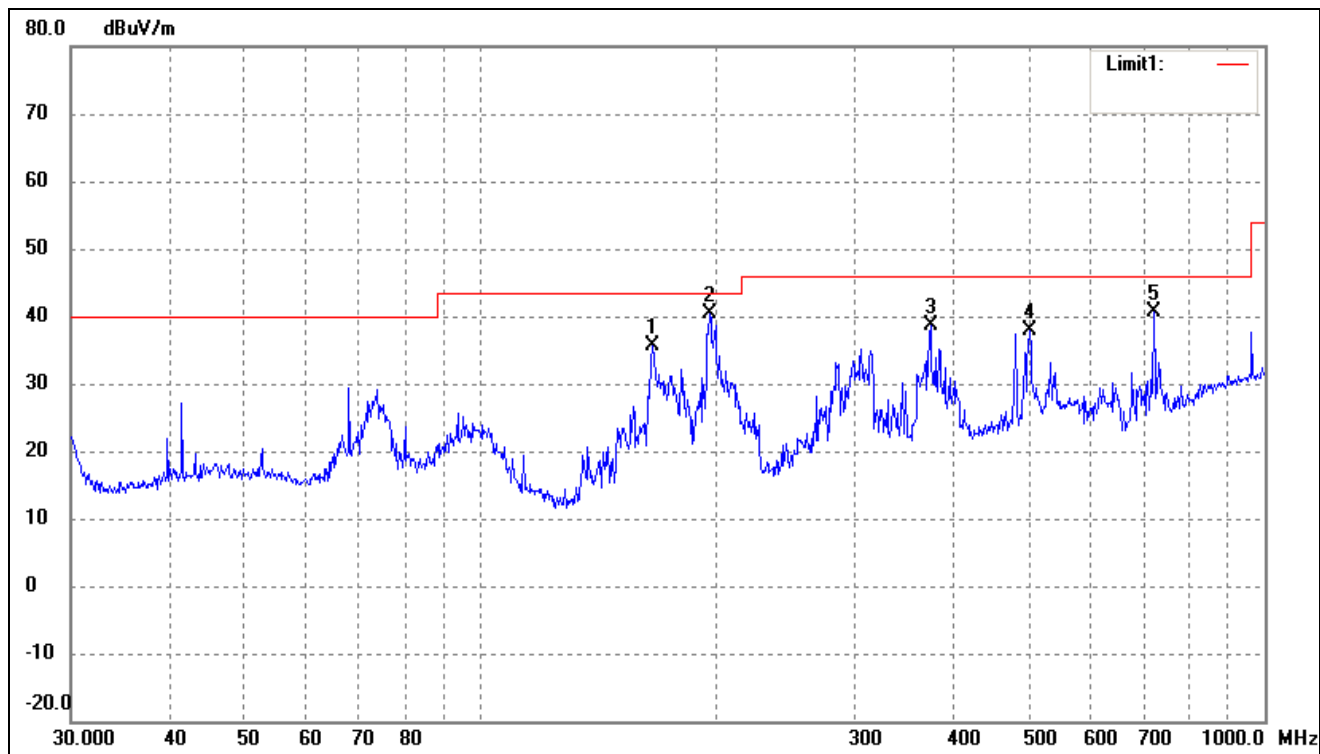


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	45.6948	33.85	-7.46	26.39	40.00	-13.61	251	100	peak
2	87.1117	39.09	-11.99	27.10	40.00	-12.90	308	100	peak
3	164.9075	40.48	-12.09	28.39	43.50	-15.11	120	100	peak
4	187.0958	38.25	-10.36	27.89	43.50	-15.61	359	100	peak
5	239.9874	40.02	-7.79	32.23	46.00	-13.77	158	100	peak
6	272.2776	39.75	-6.88	32.87	46.00	-13.13	164	100	peak

Plot of Radiated Emissions Test DataEUT: *inWatch Z*Tested Model: *A180*Operating Condition: *TM2*Comment: *AC 120V/60Hz,USB DC 5V*Test Specification: *Horizontal*

No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	72.5917	39.95	-12.49	27.46	40.00	-12.54	158	100	peak
2	87.4177	44.29	-11.90	32.39	40.00	-7.61	226	100	peak
3	198.5880	51.03	-9.20	41.83	43.50	-1.67	129	100	peak
4	314.3765	41.52	-5.71	35.81	46.00	-10.19	109	100	peak
5	374.6226	45.04	-3.71	41.33	46.00	-4.67	112	100	peak
6	721.7259	40.23	-0.02	40.21	46.00	-5.79	164	100	peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	165.4867	47.65	-12.07	35.58	43.50	-7.92	51	100	peak
2	195.8220	49.82	-9.47	40.35	43.50	-3.15	308	100	peak
3	374.6226	42.42	-3.71	38.71	46.00	-7.29	120	100	peak
4	501.1790	38.94	-1.10	37.84	46.00	-8.16	359	100	peak
5	721.7259	38.04	2.55	40.59	46.00	-5.41	125	100	peak

Note: Testing is carried out with frequency rang 9kHz to the 6GHz, which above 1GHz is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

The measurements greater than 20dB below the limit from 9kHz to 30MHz and test data are not provided.

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