

FCC Part 15B Measurement and Test Report

For

SHEN ZHEN HONG JU FU TECHNOLOGY CO.,LTD

Building A, 12C, Baoyuan central avenue, Bao'an District,

Shenzhen

FCC ID: 2AGM2H8

Test Rule(s): FCC Part 15 Subpart B

Product Description: Smart Watch

Tested Model: H8

Report No.: STR15118093I-4

Tested Date: 2015-11-12 to 2015-11-24

Issued Date: 2015-11-24

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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.

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	3
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
1.2 TEST STANDARDS.....	4
1.3 TEST METHODOLOGY.....	4
1.4 TEST FACILITY.....	4
1.5 EUT SETUP AND OPERATION MODE.....	5
1.6 TEST EQUIPMENT LIST AND DETAILS.....	5
2. SUMMARY OF TEST RESULTS.....	6
3. CONDUCTED EMISSIONS.....	7
3.1 MEASUREMENT UNCERTAINTY.....	7
3.2 TEST PROCEDURE.....	7
3.3 BASIC TEST SETUP BLOCK DIAGRAM.....	7
3.4 ENVIRONMENTAL CONDITIONS.....	8
3.5 SUMMARY OF TEST RESULTS/PLOTS.....	8
3.6 CONDUCTED EMISSIONS TEST DATA.....	8
4. RADIATED EMISSIONS.....	11
4.1 MEASUREMENT UNCERTAINTY.....	11
4.2 TEST PROCEDURE.....	11
4.3 TEST RECEIVER SETUP.....	12
4.4 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	12
4.5 ENVIRONMENTAL CONDITIONS.....	12
4.6 SUMMARY OF TEST RESULTS/PLOTS.....	12

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: SHEN ZHEN HONG JU FU TECHNOLOGY CO.,LTD
Address of applicant: Building A, 12C, Baoyuan central avenue, Bao'an District, Shenzhen

Manufacturer: SHEN ZHEN HONG JU FU TECHNOLOGY CO.,LTD
Address of manufacturer: Building A, 12C, Baoyuan central avenue, Bao'an District, Shenzhen

General Description of EUT	
Product Name:	Smart Watch
Brand Name:	HJF
Model No.:	H8
Adding Model(s):	H8S, H2, H3, H5, H6, L1, H9, H16, H18
Hardware Version:	V3.0
Software Version:	L2S_H8S_128_T5_L2_G10_A_151111
IMEI:	355287080044187
Battery Capacity:	270mAh
Rated Voltage:	Battery: DC 3.7V
<i>Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model H8, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	Battery: DC 3.7V
Rated Current:	/
Rated Power:	/
Lowest Internal Frequency:	32.768KHz
Highest Internal Frequency	260MHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the SHEN ZHEN HONG JU FU 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 C63.4-2014, 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	/
TM2	Downloading	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Earphone Cable	1.25	Unshielded	Without Core
USB Cable	0.8	Unshielded	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
/	/	/	/

1.6 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2015-06-17	2016-06-16
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2015-06-17	2016-06-16
Amplifier	Agilent	8447F	3113A06717	2015-06-17	2016-06-16
Amplifier	C&D	PAP-1G18	2002	2015-06-17	2016-06-16
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2015-06-17	2016-06-16
Horn Antenna	ETS	3117	00086197	2015-06-17	2016-06-16
Horn Antenna	ETS	3116B	00088203	2015-06-17	2016-06-16
Loop Antenna	Schwarz beck	FMZB 1516	9773	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-06-17	2016-06-16
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-06-17	2016-06-16
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-06-17	2016-06-16

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

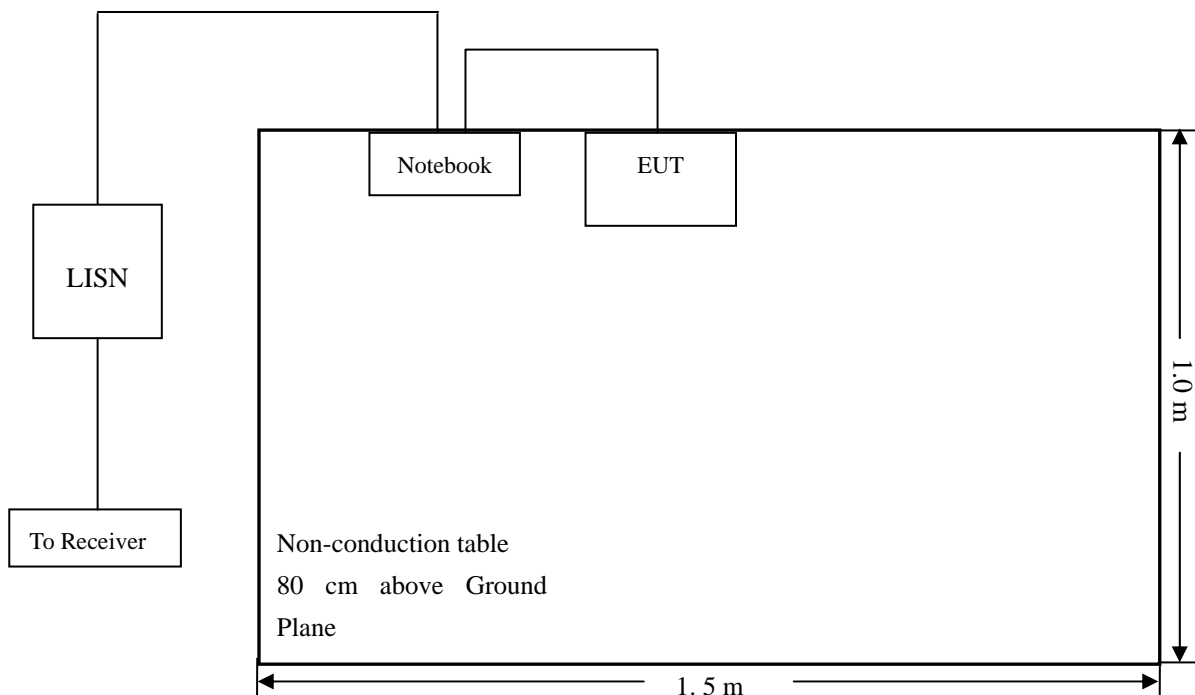
3.1 Measurement Uncertainty

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 Procedure

Test is conducting under the description of ANSI C63.4-2014, 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.

3.3 Basic Test Setup Block Diagram



3.4 Environmental Conditions

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

3.5 Summary of Test Results/Plots

According to the data in section 3.6, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

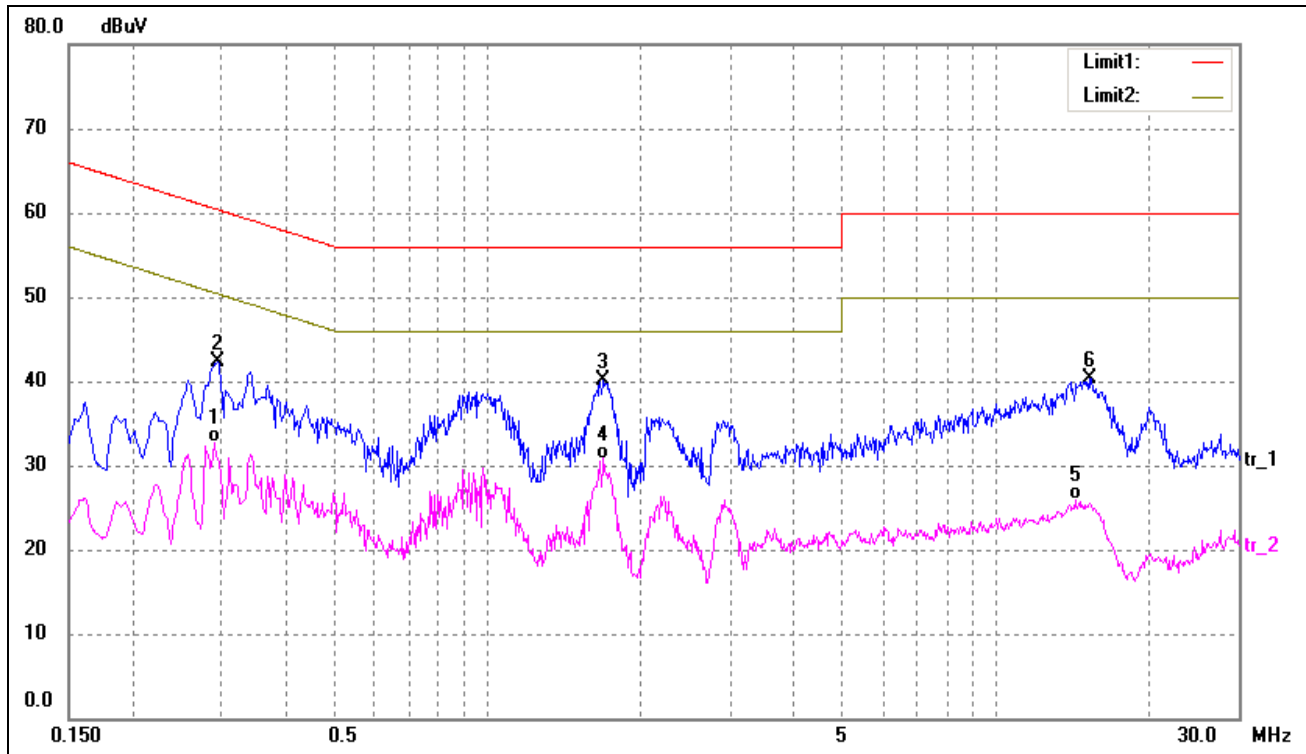
-13.63 dB at 1.7060 MHz in the Line mode, QP detector, 0.15-30MHz

3.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

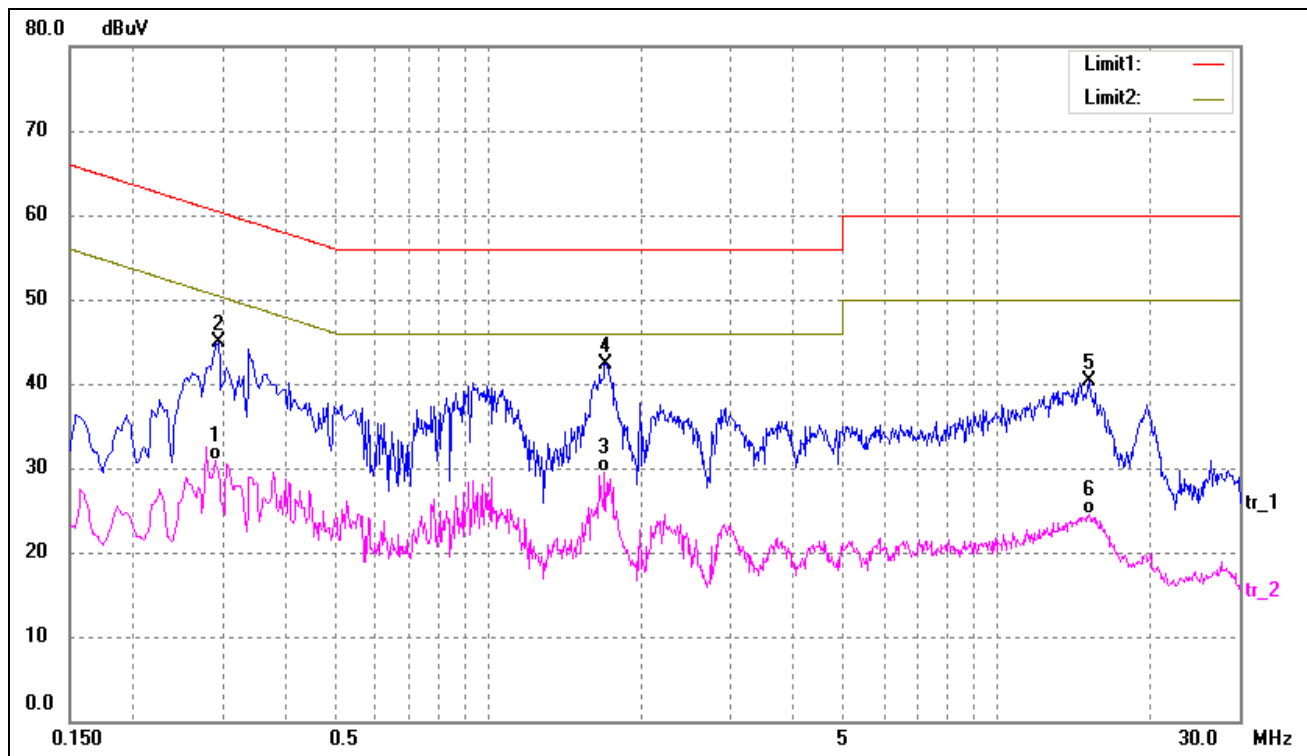
EUT: Smart Watch
 Tested Model: H8
 Operating Condition: TM1
 Comment: AC 120V/60Hz; USB 5V

Test Specification: Neutral



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.2900	23.11	9.50	32.61	50.52	-17.91	AVG
2	0.2940	32.79	9.50	42.29	60.41	-18.12	QP
3	1.6940	30.13	10.00	40.13	56.00	-15.87	QP
4	1.6940	20.80	10.00	30.80	46.00	-15.20	AVG
5	14.2940	15.00	10.86	25.86	50.00	-24.14	AVG
6	15.2660	29.24	11.05	40.29	60.00	-19.71	QP

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2900	21.37	9.50	30.87	50.52	-19.65	AVG
2	0.2940	35.42	9.50	44.92	60.41	-15.49	QP
3	1.6940	19.44	10.00	29.44	46.00	-16.56	AVG
4	1.7060	32.37	10.00	42.37	56.00	-13.63	QP
5	15.1660	29.24	11.03	40.27	60.00	-19.73	QP
6	15.1660	13.54	11.03	24.57	50.00	-25.43	AVG

4. Radiated Emissions

4.1 Measurement Uncertainty

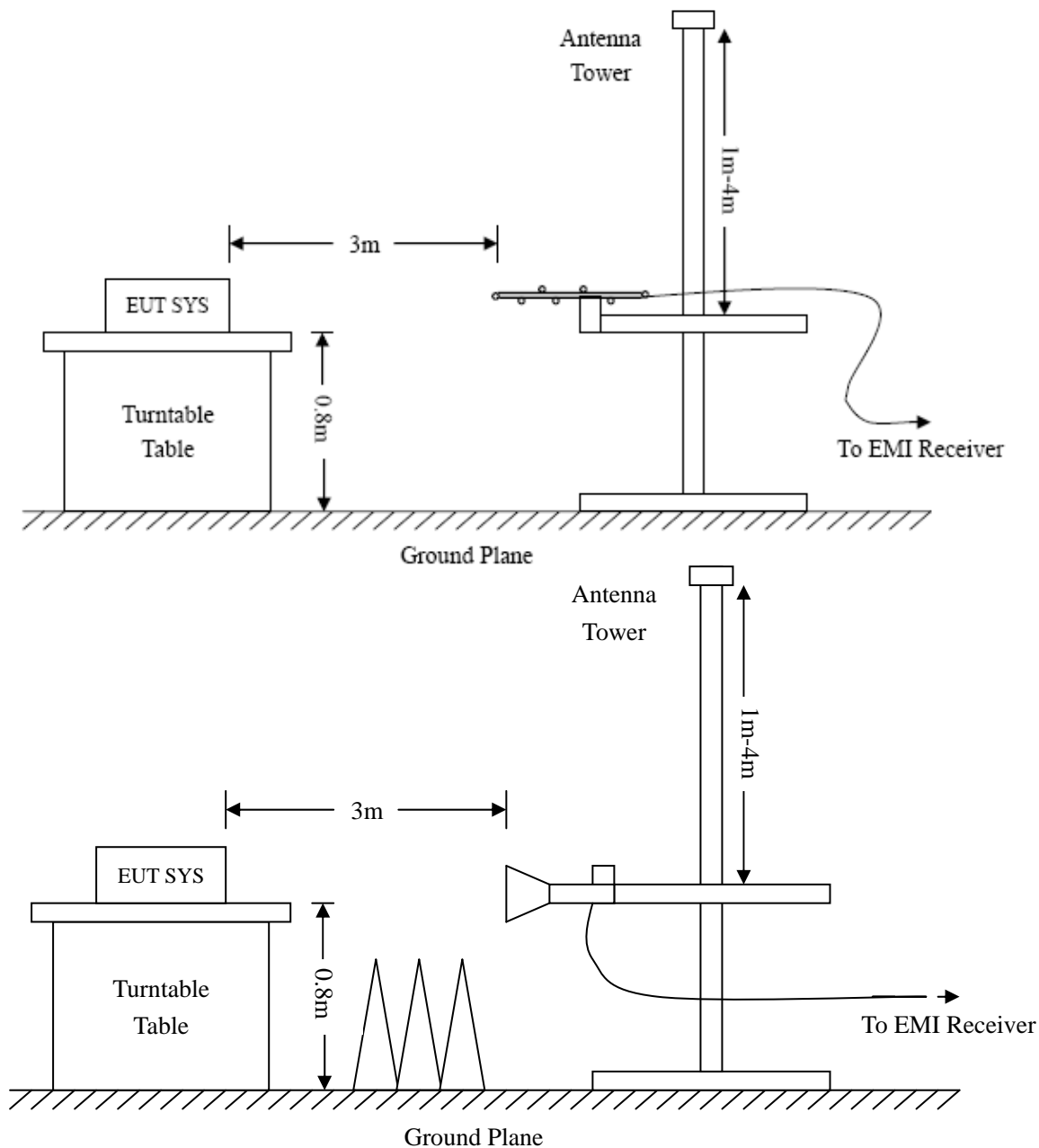
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 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.



4.3 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

4.4 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:

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

4.5 Environmental Conditions

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

4.6 Summary of Test Results/Plots

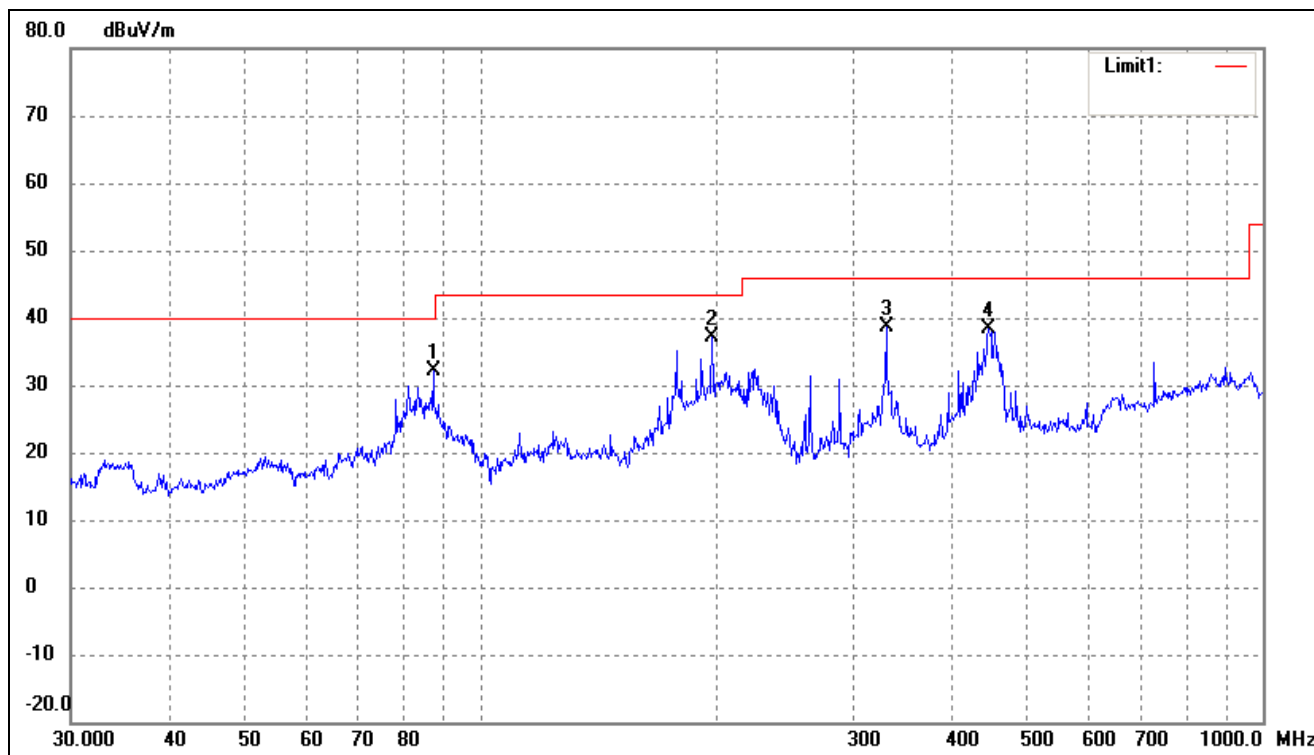
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-2.28 dB at 39.0245 MHz in the Horizontal polarization, TM2 Mode 9 kHz to 2 GHz, 3Meters

Plot of Radiated Emissions Test Data (Below 1GHz)

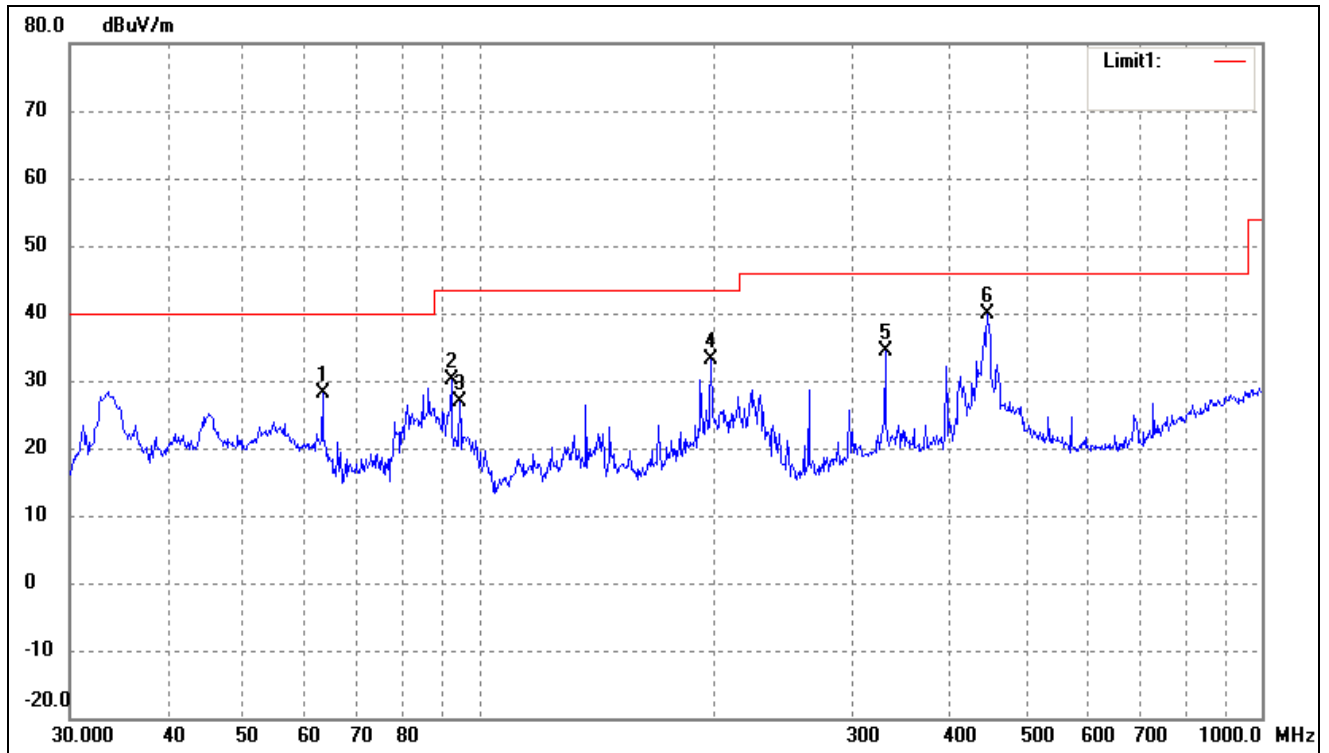
EUT: Smart Watch
 Tested Model: H8
 Operating Condition: TM1
 Comment: AC 120V/60Hz; USB 5V

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	87.1116	44.10	-11.99	32.11	40.00	-7.89	9	100	QP
2	197.8927	46.29	-9.27	37.02	43.50	-6.48	156	100	QP
3	330.1949	43.71	-5.00	38.71	46.00	-7.29	231	100	QP
4	446.4141	40.59	-2.21	38.38	46.00	-7.62	56	100	QP

Test Specification: Vertical

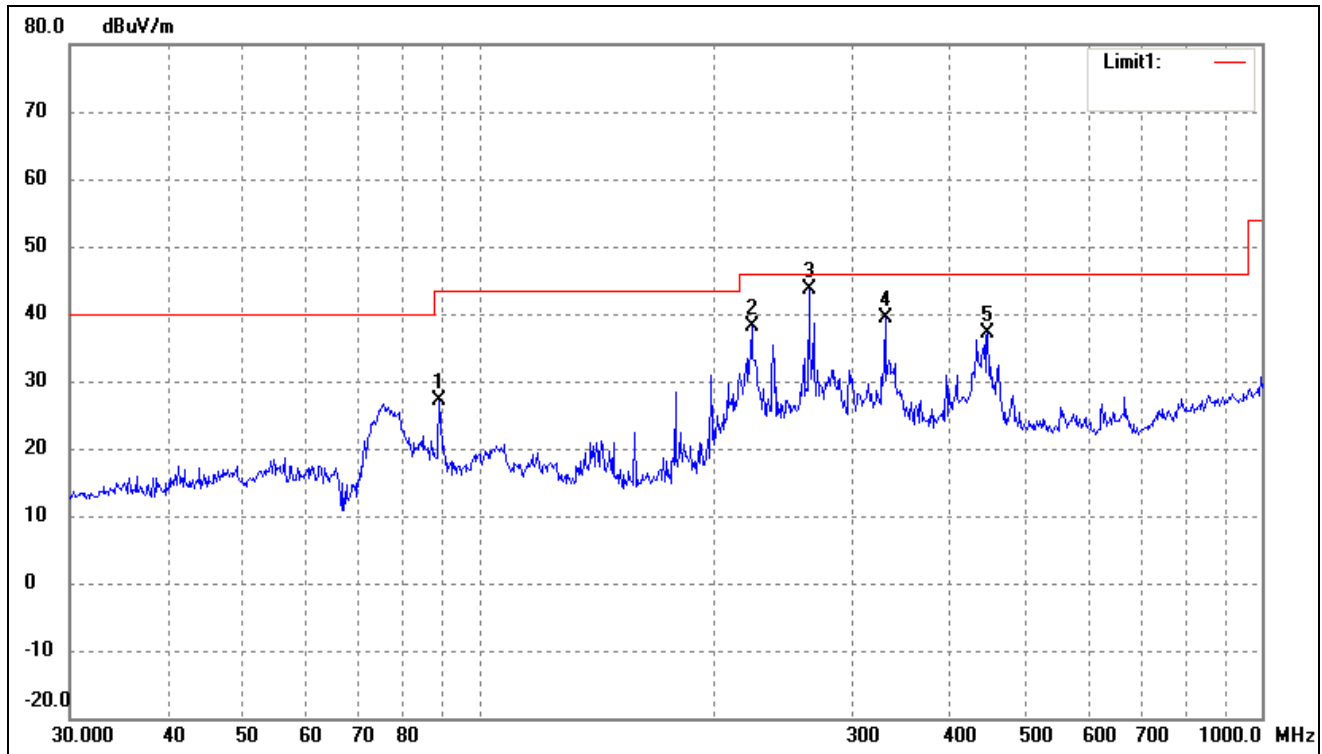


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	63.0915	37.63	-9.53	28.10	40.00	-11.90	95	100	QP
2	92.1388	40.99	-10.76	30.23	43.50	-13.27	21	100	QP
3	94.4283	37.09	-10.32	26.77	43.50	-16.73	68	100	QP
4	197.8927	42.52	-9.27	33.25	43.50	-10.25	174	100	QP
5	330.1949	39.38	-5.00	34.38	46.00	-11.62	201	100	QP
6	446.4141	41.98	-2.21	39.77	46.00	-6.23	23	100	QP

Plot of Radiated Emissions Test Data(Below 1GHz)

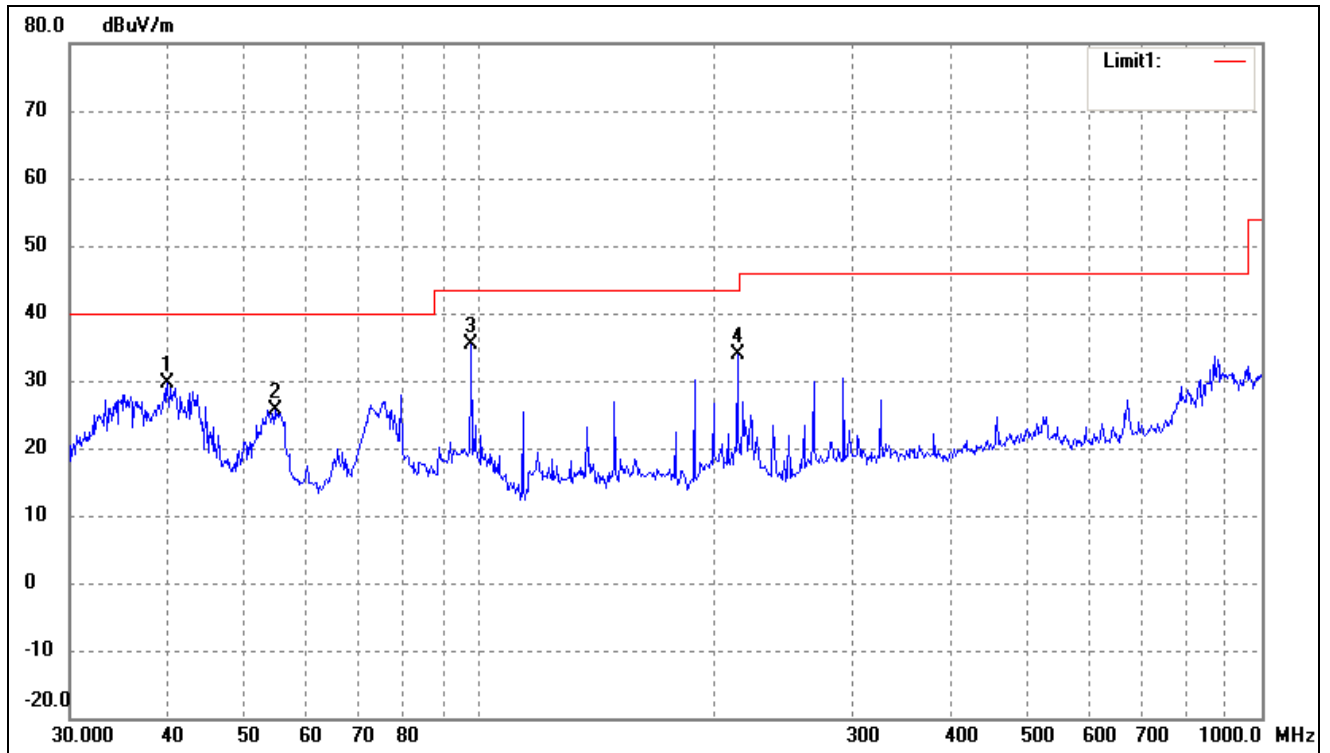
EUT: Smart Watch
 Tested Model: H8
 Operating Condition: TM2
 Comment: AC 120V/60Hz USB: DC5V

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	88.9638	38.53	-11.46	27.07	43.50	-16.43	305	100	QP
2	222.9501	46.86	-8.74	38.12	46.00	-7.88	98	100	QP
3	263.8190	50.81	-7.09	43.72	46.00	-2.28	201	100	QP
4	330.1949	44.36	-5.00	39.36	46.00	-6.64	55	100	QP
5	446.4141	39.39	-2.21	37.18	46.00	-8.82	65	100	QP
6	88.9638	38.53	-11.46	27.07	43.50	-16.43	305	100	QP

Test Specification: Vertical

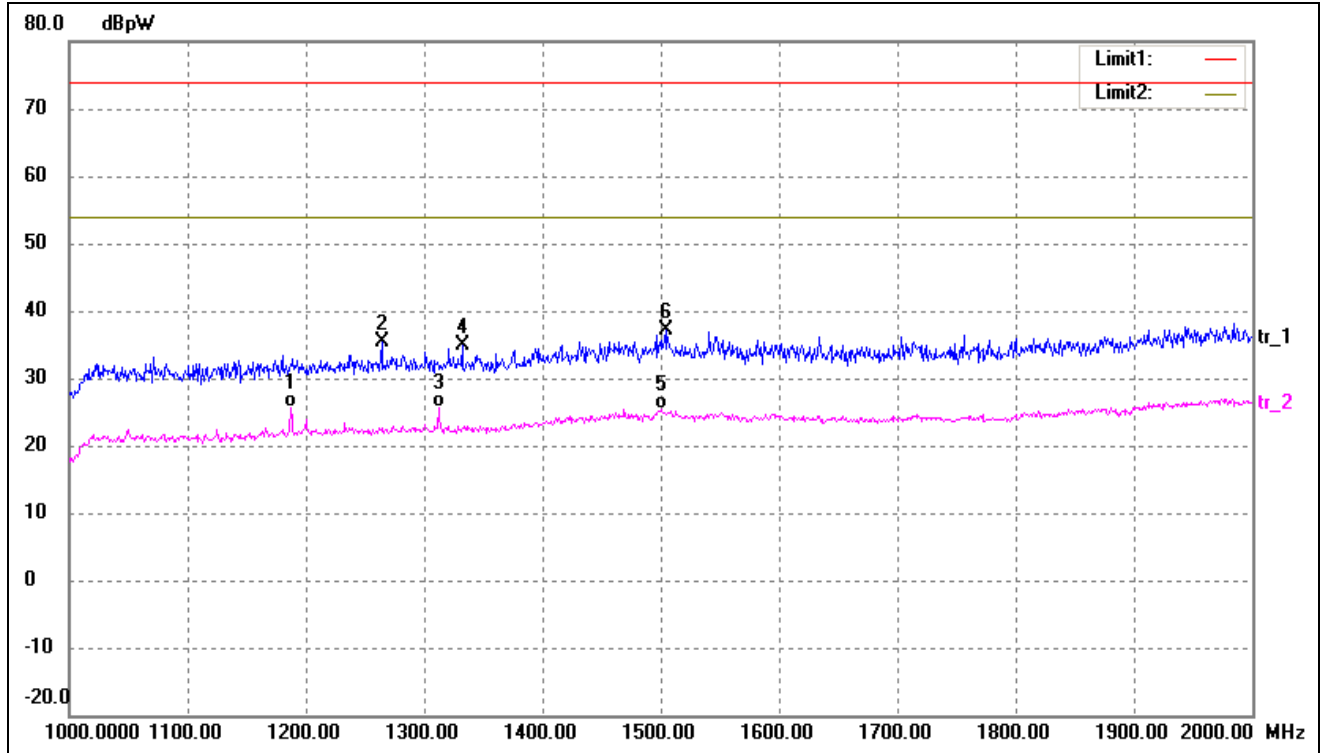


No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	39.9941	38.19	-8.44	29.75	40.00	-10.25	325	100	QP
2	54.8348	33.63	-7.93	25.70	40.00	-14.30	56	100	QP
3	97.7982	45.11	-9.82	35.29	43.50	-8.21	98	100	QP
4	213.7633	42.94	-8.96	33.98	43.50	-9.52	121	100	QP

Plot of Radiated Emissions Test Data (Above 1GHz)

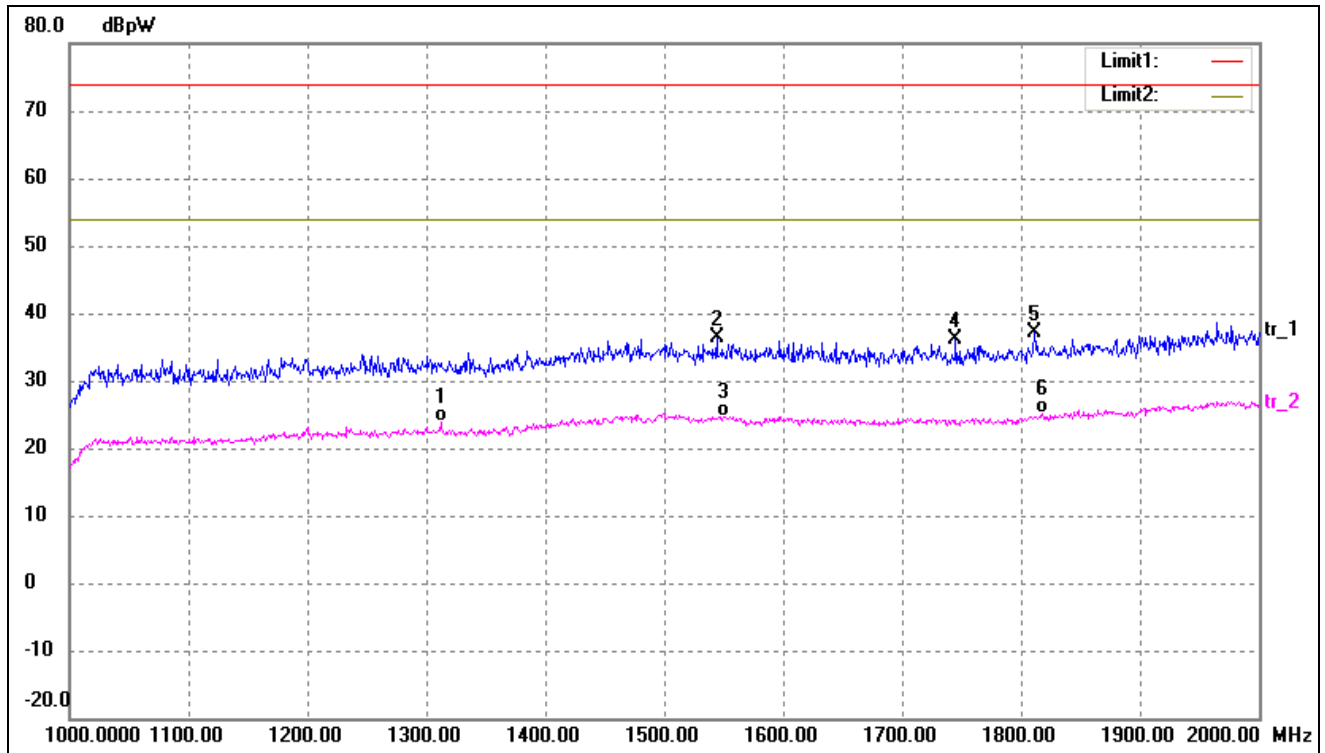
EUT: Smart Watch
 Tested Model: H8
 Operating Condition: TM1
 Comment: AC 120V/60Hz; USB 5V

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	1187.000	35.82	-10.08	25.74	54.00	-28.26	147	100	AVG
2	1264.000	44.69	-9.43	35.26	74.00	-38.74	56	100	peak
3	1312.000	34.78	-9.26	25.52	54.00	-28.48	26	100	AVG
4	1332.000	44.02	-9.19	34.83	74.00	-39.17	125	100	peak
5	1500.000	32.29	-6.84	25.45	54.00	-28.55	78	100	AVG
6	1504.000	43.98	-6.86	37.12	74.00	-36.88	55	100	peak

Test Specification: Vertical

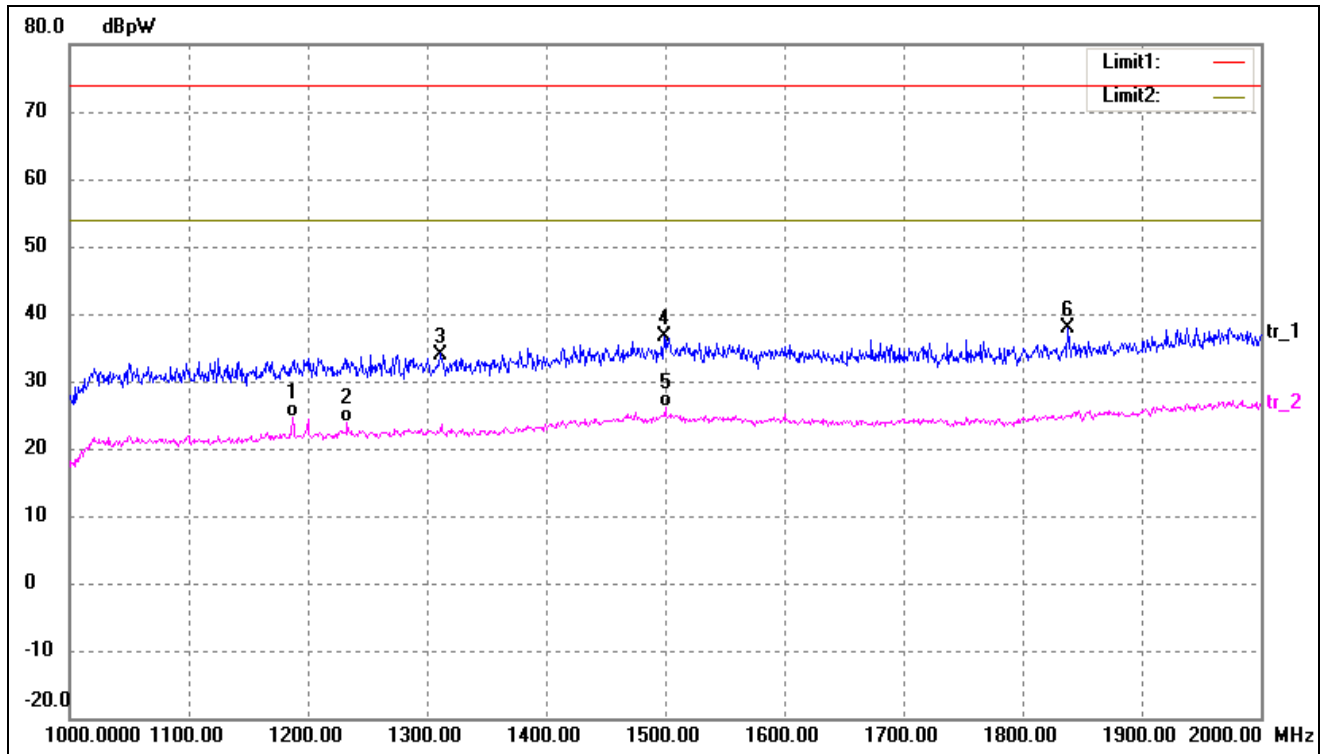


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	1312.000	33.20	-9.26	23.94	54.00	-30.06	153	100	AVG
2	1544.000	43.47	-7.02	36.45	74.00	-37.55	25	100	peak
3	1550.000	31.79	-7.06	24.73	54.00	-29.27	47	100	AVG
4	1745.000	43.12	-7.10	36.02	74.00	-37.98	125	100	peak
5	1811.000	44.02	-6.84	37.18	74.00	-36.82	66	100	peak
6	1818.000	31.86	-6.74	25.12	54.00	-28.88	54	100	AVG

Plot of Radiated Emissions Test Data(Above 1GHz)

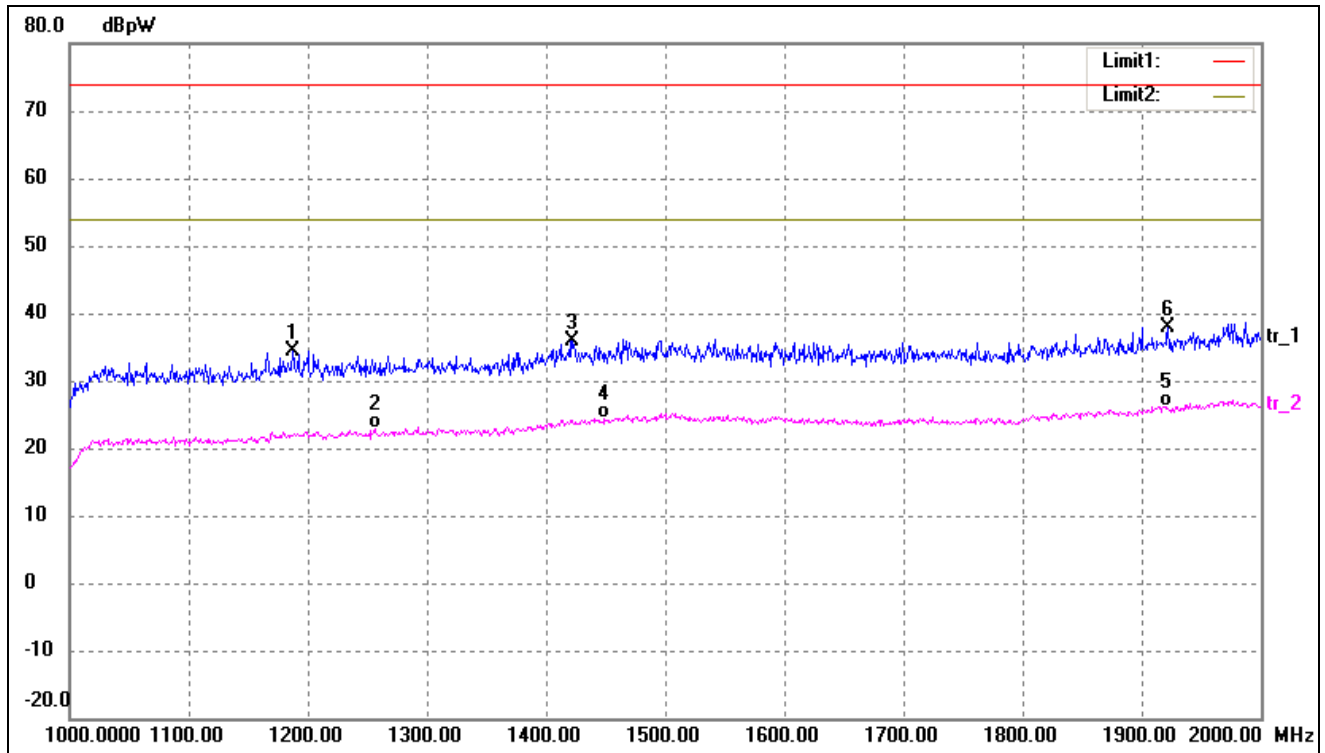
EUT: Smart Watch
 Tested Model: H8
 Operating Condition: TM2
 Comment: AC 120V/60Hz USB: DC5V

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	1187.000	34.61	-10.08	24.53	54.00	-29.47	155	100	AVG
2	1233.000	33.39	-9.54	23.85	54.00	-30.15	35	100	AVG
3	1311.000	43.26	-9.26	34.00	74.00	-40.00	77	100	peak
4	1499.000	43.58	-6.83	36.75	74.00	-37.25	49	100	peak
5	1500.000	32.97	-6.84	26.13	54.00	-27.87	55	100	AVG
6	1838.000	44.33	-6.47	37.86	74.00	-36.14	261	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	1187.000	44.58	-10.08	34.50	74.00	-39.50	15	100	peak
2	1256.000	32.25	-9.45	22.80	54.00	-31.20	47	100	AVG
3	1422.000	43.81	-8.01	35.80	74.00	-38.20	99	100	peak
4	1449.000	32.02	-7.55	24.47	54.00	-29.53	87	100	AVG
5	1921.000	31.54	-5.35	26.19	54.00	-27.81	48	100	AVG
6	1922.000	43.30	-5.34	37.96	74.00	-36.04	41	100	peak

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

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