FCC PART 15B
TEST REPORT

No. 24T04Z101135-015

for

Schok LLC

ChronoVolt Smartwatch

Model Name: ChronoVolt_CV16

FCC ID: 2AM9L-CV16

with

Hardware Version: 1V0

Software Version: CV16_01.02.01

Issued Date: 2024-09-20

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Description	Issue Date
24T04Z101135-015	Rev.0	1st edition	2024-09-20

Note: the latest revision of the test report supersedes all previous version.

CONTENTS

1. Test Laboratory

1.1. Testing Location

CTTL (huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

1.2. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2024-06-25

Testing End Date: 2024-08-08

1.4. Signature

Wang Xue

(Prepared this test report)

Zhang Ying

(Reviewed this test report)

Zhang Xia

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Schok LLC
Address /Post:	5850 Town and Country Blvd, Suite 203, Frisco, TX 75034, USA
Contact:	Michael Harshbarger
Email:	mike.harsh@schokgear.com
Telephone:	+1-847-809-3294

2.2. Manufacturer Information

Company Name:	Schok LLC
Address /Post:	5850 Town and Country Blvd, Suite 203, Frisco, TX 75034, USA
Contact:	Michael Harshbarger
Email:	mike.harsh@schokgear.com
Telephone:	+1-847-809-3294

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	ChronoVolt Smartwatch
Model Name	ChronoVolt_CV16
FCC ID:	2AM9L-CV16

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, CAICT.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	357167500000167	1V0	CV16_01.02.01

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	Manufacturer	Remark
AE1	Battery1	572829A	HUATIANTONG	/
AE2	Charger1	UT-681A-5100UY	Baijunda	/
AE3	USB Cable1	K1-USB	pomagtor	/

*AE ID: is used to identify the test sample in the lab internally.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1 + AE1 +AE2+AE3	Charger1+F Camera
Set.2	EUT1 + AE1 +AE2+AE3	USB + LTE B5 idle

Note:

Equipment Under Test (EUT) is a model of ChronoVolt_CV16.

It supports

LTE Band FDD Bands 2/4/5/12/13/25/66/71

It has Camera, Bluetooth V4.2, Wi-Fi (802.11b/g/n) function.

The device contains receivers which tune and operate between 30MHz-960MHz in the following mode: LTE Band 5/12/13/71. All licensed band receivers that tune in the range of 30MHz-960MHz are investigated. Only the worst-case emissions are reported.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	2019
ANSI C63.4	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	2014

Note: The test methods have no deviation with standards.

5. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	B.1	P	**CTTL(huayuan North Road)**
2	Conducted Emission	15.107(a)	B.2	P	**CTTL(huayuan North Road)**

6. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESW44	103144	R&S	2024-10-27	1 year
2	Test Receiver	ESCI 3	100344	R&S	2025-04-01	1 year
3	LISN	ENV216	101200	R&S	2025-05-16	1 year
4	EMI Antenna	VULB 9163	01223	SCHWARZBECK	2024-07-19	2 years
5	EMI Antenna	3115	00167250	ETS-Lindgren	2025-04-11	1 year
6	Universal Communication Tester	CMW500	150344	R&S	2025-01-03	1 year

Test software information		
Test Item	Software	Version
Radiated Emission	EMC32	V11.50.00
Conducted Emission	EMC32	V8.53.00

Semi-anechoic chamber utilized did not exceed following limits along the testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 10 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 6GHz

Shielded room utilized did not exceed following limits along the testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz－1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

7. Measurement Uncertainty

Where relevant, the following measurement uncertainty(worse case) levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Location 1: CTTL(huayuan North Road)

Test item	Frequency ranges	Measurement uncertainty
Radiated Emission	30MHz-1GHz	4.72dB(*k*=2)
	1GHz-18GHz	4.84dB(*k*=2)
Conducted Emission	150kHz-30MHz	AC Power Line: 3.08dB(*k*=2)

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a).

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (USB/OTG mode of MS and charging mode of MS) at distances of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3/10 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.1.2 EUT Operating Mode

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode, and is connected to the other device for charging in OTG mode and is connected to a charger in the case of charging mode.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

The model of the PC is M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note：I/O information：Printer – USB, Mouse – PS/2, Keyboard – USB.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

A.1.3 Measurement Limit

Frequency range (MHz)	Field strength limit (μV/m)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

Note: the above limit is for 3 meters test distance. 10 meters' limit is got by converting.

A.1.4 Test Condition

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/3MHz	15	Peak, Average

A.1.5 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”. It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

Result = $P_{Mea} + A_{Rpl} = P_{Mea} + G_A + G_{PL}$

Where

G_A: Antenna factor of receive antenna

G_{PL}: Path Loss

P_{Mea}: Measurement result on receiver.

Measurement results for Set.1:

Charing Mode/Average detector

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17750.100	45.90	-29.61	45.95	29.56	54.00	8.10	H
17755.540	45.90	-29.61	45.95	29.56	54.00	8.10	H
17696.380	45.80	-29.98	45.25	30.53	54.00	8.20	V
17587.240	45.60	-29.70	45.25	30.05	54.00	8.40	V
17730.380	45.60	-29.67	45.25	30.02	54.00	8.40	H
17711.680	45.60	-29.73	45.25	30.09	54.00	8.40	H

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17992.180	56.80	-29.06	46.66	39.20	74.00	17.20	H
17724.600	56.60	-29.67	45.25	41.02	74.00	17.40	V
17782.740	56.40	-29.89	45.95	40.33	74.00	17.60	H
17762.000	56.30	-29.63	45.95	39.97	74.00	17.70	V
17855.840	56.20	-29.34	45.95	39.58	74.00	17.80	V
17644.360	56.10	-29.60	45.25	40.45	74.00	17.90	H

Measurement results for Set.2:

USB Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17686.520	57.50	-29.98	45.25	42.23	74.00	16.50	H
17763.020	57.30	-29.63	45.95	40.97	74.00	16.70	V
17726.980	57.10	-29.67	45.25	41.52	74.00	16.90	V
17695.020	57.00	-29.98	45.25	41.73	74.00	17.00	H
17998.980	56.90	-29.06	46.66	39.30	74.00	17.10	V
17717.120	56.70	-29.73	45.25	41.19	74.00	17.30	H

USB Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17739.220	46.40	-29.67	45.95	30.11	54.00	7.60	H
17716.780	46.30	-29.73	45.25	30.79	54.00	7.70	H
17763.020	46.20	-29.63	45.95	29.87	54.00	7.80	V
17725.280	46.20	-29.67	45.25	30.62	54.00	7.80	H
17720.180	46.20	-29.67	45.25	30.62	54.00	7.80	V
17692.980	46.10	-29.98	45.25	30.83	54.00	7.90	V

Measurement results for Set.1:

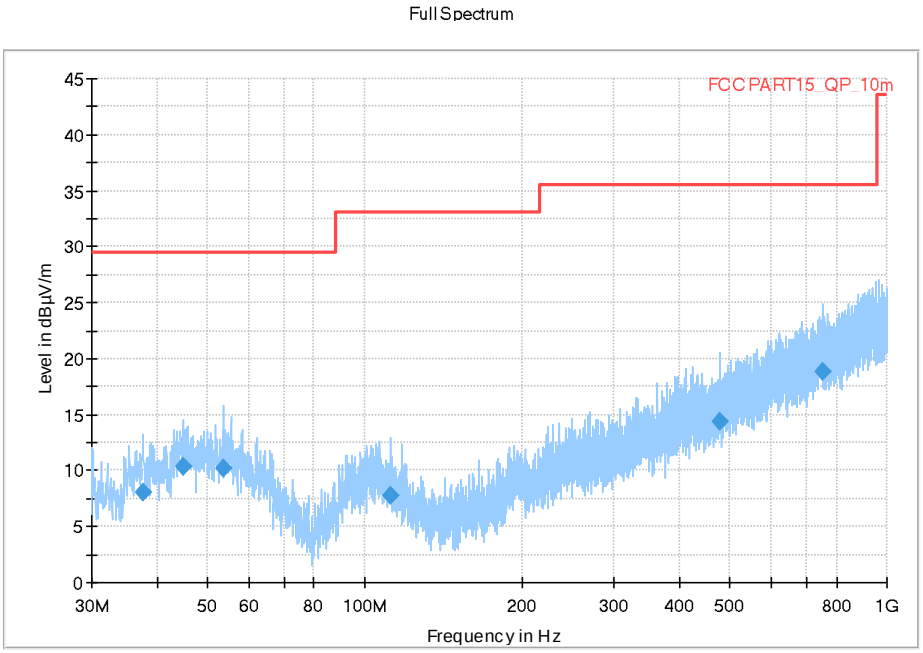

Fig A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
37.614500	8.05	29.54	21.49	120.000	184.0	V	264.0
44.841000	10.37	29.54	19.17	120.000	299.0	V	17.0
53.716500	10.25	29.54	19.29	120.000	300.0	V	-45.0
111.771000	7.83	33.06	25.23	120.000	284.0	H	278.0
479.158500	14.35	35.56	21.21	120.000	125.0	V	2.0
753.183500	18.88	35.56	16.68	120.000	225.0	H	315.0

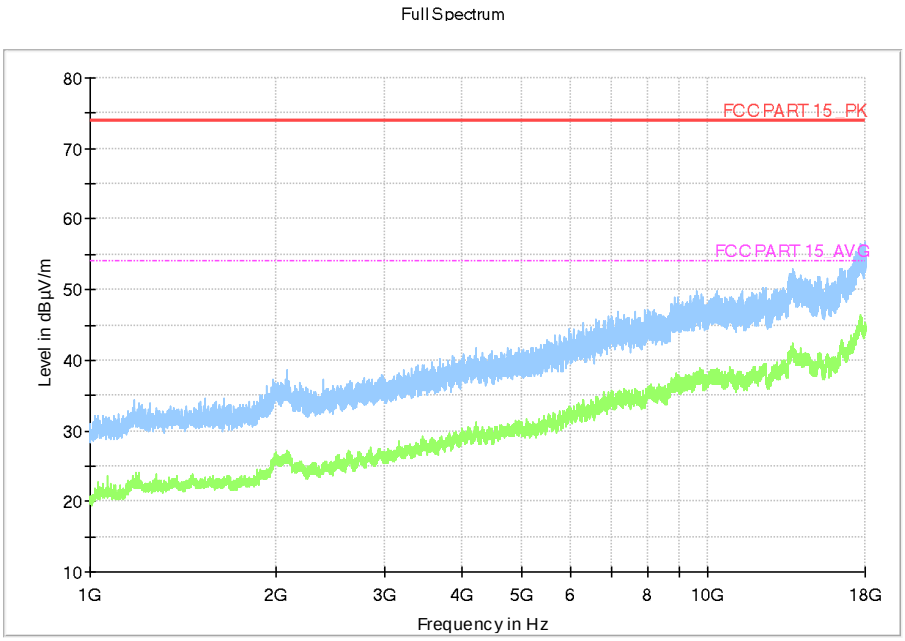

Fig A.2 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.2:

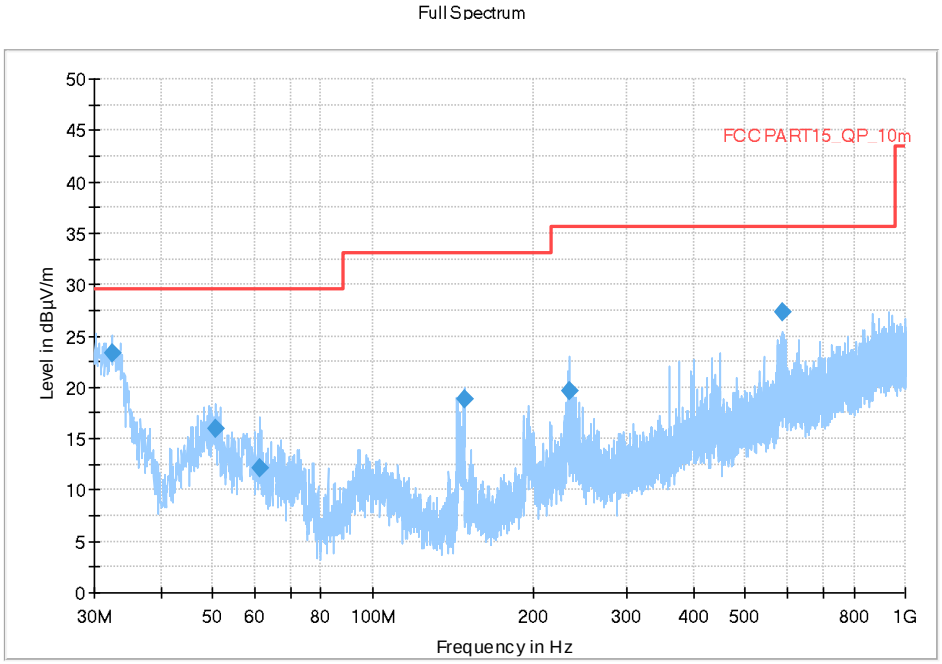

Fig A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
32.376500	23.37	29.54	6.17	120.000	101.0	V	67.0
50.709500	15.90	29.54	13.64	120.000	102.0	V	151.0
61.476500	12.14	29.54	17.40	120.000	276.0	V	264.0
148.388500	18.88	33.06	14.18	120.000	179.0	V	-43.0
234.379000	19.65	35.56	15.91	120.000	320.0	H	181.0
587.847000	27.24	35.56	8.32	120.000	220.0	V	309.0

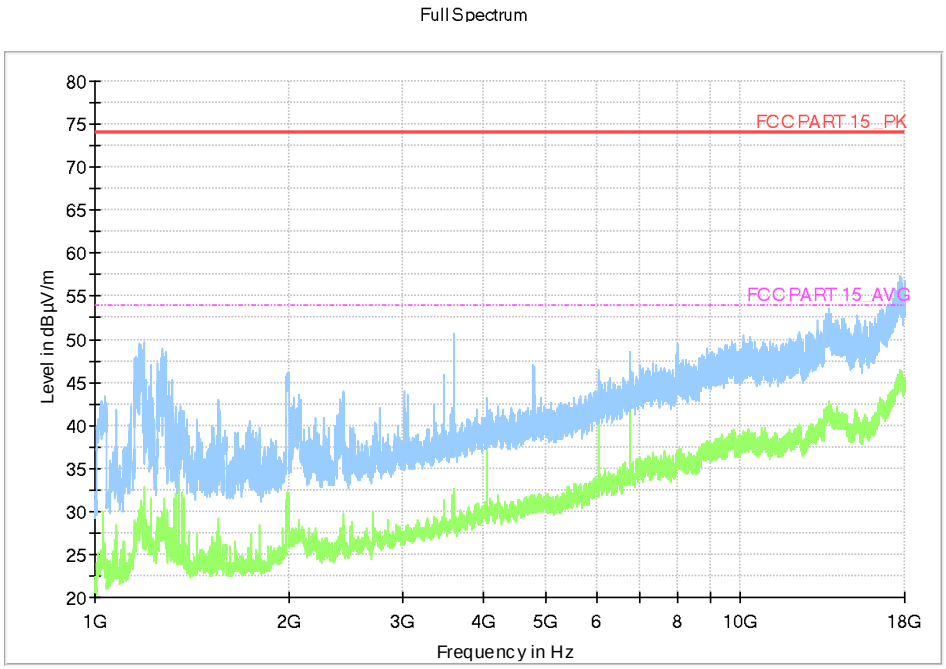

Fig A.4 Radiated Emission from 1GHz to 18GHz

A.2 Conducted Emission

Reference

FCC: CFR Part 15.107(a).

A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 7.3.

A.2.2 EUT Operating Mode

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note：I/O information：Printer – USB, Mouse – PS/2, Keyboard – USB.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (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		

A.2.4 Test Condition in charging mode

Voltage（V）	Frequency（Hz）
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

Measurement uncertainty: *U*= 3.08 dB, *k*=2.

Charging Mode, Set.1:

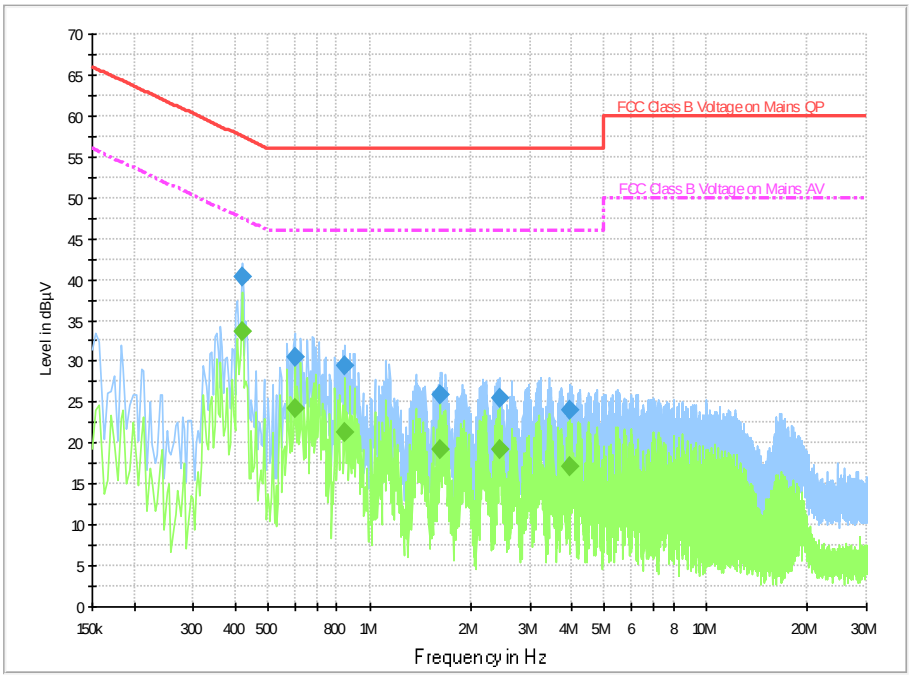

Fig A.5 Conducted Emission from 150kHz to 30MHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.418000	40.2	2000.0	9.000	On	L1	20.0	17.2	57.5	
0.598000	30.5	2000.0	9.000	On	L1	20.0	25.5	56.0	
0.846000	29.5	2000.0	9.000	On	L1	19.9	26.5	56.0	
1.630000	26.0	2000.0	9.000	On	L1	19.8	30.0	56.0	
2.430000	25.5	2000.0	9.000	On	L1	19.8	30.5	56.0	
3.938000	24.0	2000.0	9.000	On	L1	19.8	32.0	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.418000	33.7	2000.0	9.000	On	L1	20.0	13.8	47.5	
0.598000	24.2	2000.0	9.000	On	L1	20.0	21.8	46.0	
0.846000	21.4	2000.0	9.000	On	L1	19.9	24.6	46.0	
1.618000	19.2	2000.0	9.000	On	L1	19.8	26.8	46.0	
2.430000	19.2	2000.0	9.000	On	L1	19.8	26.8	46.0	
3.950000	17.1	2000.0	9.000	On	L1	19.8	28.9	46.0	

USB Charging Mode, Set.2:

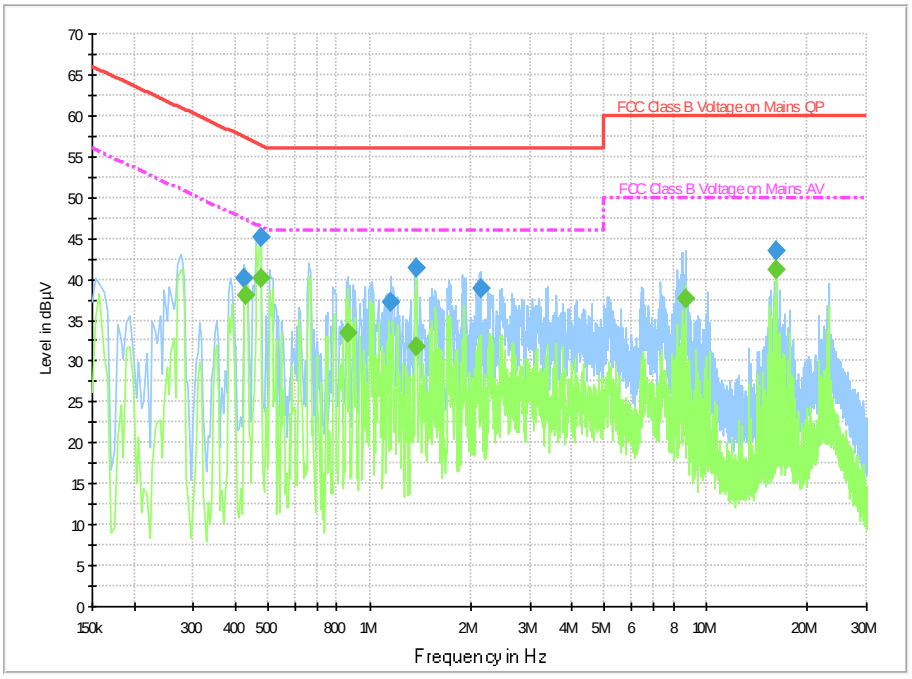

Fig A.6 Conducted Emission from 150kHz to 30MHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.426000	40.1	2000.0	9.000	On	L1	20.0	17.2	57.3	
0.474000	45.2	2000.0	9.000	On	N	19.9	11.2	56.4	
1.158000	37.1	2000.0	9.000	On	L1	19.9	18.9	56.0	
1.382000	41.3	2000.0	9.000	On	L1	19.9	14.7	56.0	
2.134000	38.9	2000.0	9.000	On	L1	19.8	17.1	56.0	
16.226000	43.5	2000.0	9.000	On	L1	20.0	16.5	60.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.430000	38.1	2000.0	9.000	On	L1	20.0	9.2	47.3	
0.474000	40.1	2000.0	9.000	On	N	19.9	6.4	46.4	
0.862000	33.4	2000.0	9.000	On	N	19.8	12.6	46.0	
1.382000	31.7	2000.0	9.000	On	L1	19.9	14.3	46.0	
8.718000	37.6	2000.0	9.000	On	L1	19.9	12.4	50.0	
16.226000	41.1	2000.0	9.000	On	L1	20.0	8.9	50.0	

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