



FCC 15B TEST REPORT

No. I21Z61038-EMC01

for

Gabb Wireless Inc.

Watch Lite

Model Name: UT310AG

FCC ID: 2AZDOUT310AG

with

Hardware Version: V0.30

Software Version: V1.3

Issued Date: 2021-07-14

Note:

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The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

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CTTL, Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z61038-EMC01	Rev.0	1 st edition	2021-07-14

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1. Test Laboratory

1.1. Testing Location

Location 1: 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℃
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2021-07-02
Testing End Date: 2021-07-13

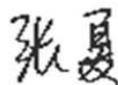
1.4. Signature



An Hui
(Prepared this test report)



Zhang Ying
(Reviewed this test report)



Zhang Xia
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Gabb Wireless Inc.
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Contact: Colin Cole
Email: colin.cole@gabbwireless.com
Telephone: 385 248 7798

2.2. Manufacturer Information

Company Name: Shenzhen Tinno Mobile Technology Corp.
Address /Post: Building, No.33, Xiandong Rd, Xili, Nanshan District, Shenzhen, PRC
Contact: xiaoping.li
Email: xiaoping.li@tinno.com
Telephone: 0755-86095550

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

3.1. About EUT

Description	Watch Lite
Model Name	UT310AG
FCC ID	2AZDOUT310AG

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

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	866368050000037	V0.30	V1.3

*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	SN	Note
AE1	Battery	/	/
AE2	Charger	/	/
AE3	USB Cable	/	/

AE1

Model	ZWD382025V
Manufacturer	ZHONGSHAN ZHONGWANGDE NEW ENERGY TECHNOLOGY Co.,LTD
Capacitance	210mAh
Nominal voltage	3.8V

AE2

Model	Charger
Manufacturer	/
Length of cable	/

AE3

Model	/
Manufacturer	Dong Guan City GangQi Electronic Co., Ltd.
Length of cable	/

*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	Charger

Note:

The device contains receivers which tune and operate between 30MHz-960MHz in the following bands: LTE Band 13.

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. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters × 17meters × 10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
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
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

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

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

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail
	BR	Re-use test data from basic model report.

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

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRAT ION INTERVAL
1	Test Receiver	ESCI	100344	R&S	2022-02-23	1 year
2	LISN	ENV216	101200	R&S	2022-05-30	1 year
3	Universal Radio Communication Tester	CMW500	166204	R&S	2021-10-29	1 year
4	Test Receiver	ESU 26	100235	R&S	2022/02/23	1 Year
5	EMI Antenna	VULB 9163	483	SCHWARZBECK	2021/08/27	1 year
6	EMI Antenna	3115	6914	ETS-Lindgren	2022-02-03	1 year

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01.0	R&S
Conducted Emission	EMC32 V8.52.0	R&S

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 (charging mode) at distances of 10 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) 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 charging mode. During the test MS 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.

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.

$$\text{Limit}(10\text{m})=\text{Limit}(3\text{m})+20[\log(3/10)]$$

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/1MHz	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:

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

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): 30MHz-1GHz: 5.40dB, 1GHz-18GHz: 4.32dB, $k=2$.

Note: The measurement results showed here are worst cases of the combinations of different Battery, cables and Headset.

Note: The measurement results showed here are worst cases.

Measurement results for Set.1:

EUT1 Charger + NB-IoT Band 13 idle Mode/QP detector

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
38.439000	10.96	29.50	18.58	1000.0	120.000	187.0
59.876000	25.61	29.50	3.93	1000.0	120.000	207.0
62.301000	26.48	29.50	3.06	1000.0	120.000	106.0
93.923000	10.09	33.10	22.97	1000.0	120.000	125.0
101.877000	13.44	33.10	19.62	1000.0	120.000	110.0
257.465000	10.00	35.60	25.56	1000.0	120.000	106.0

EUT1 Charger + NB-IoT Band 13 idle Mode/Average detector

Frequency (MHz)	Result (dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBμV)	Polarity	Limit (dBμV/m)	Margin (dB)
17991.500	47.4	-29.1	46.7	29.798	V	54	6.6
17941.067	47.2	-28.9	46.7	29.483	V	54	6.8
17943.900	47.0	-28.9	46.7	29.283	V	54	7
17949.567	47.0	-28.9	46.7	29.283	H	54	7
17946.167	46.9	-28.9	46.7	29.183	V	54	7.1
17965.433	46.6	-29.1	46.7	29.001	V	54	7.4

EUT1 Charger + NB-IoT Band 13 idle Mode/Peak detector

Frequency (MHz)	Result (dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dBμV)	Polarity	Limit (dBμV/m)	Margin (dB)
17935.967	55.8	-29.4	46.7	38.539	H	74	18.2
17996.033	55.7	-29.1	46.7	38.098	V	74	18.3
17948.433	55.5	-28.9	46.7	37.783	H	74	18.5
17933.133	55.3	-29.4	46.7	38.039	V	74	18.7
17974.500	55.3	-29.1	46.7	37.701	V	74	18.7
17960.900	55.2	-29.1	46.7	37.601	H	74	18.8

EUT1 Charger + NB-IoT Band 13 idle Mode, Set.1

Full Spectrum

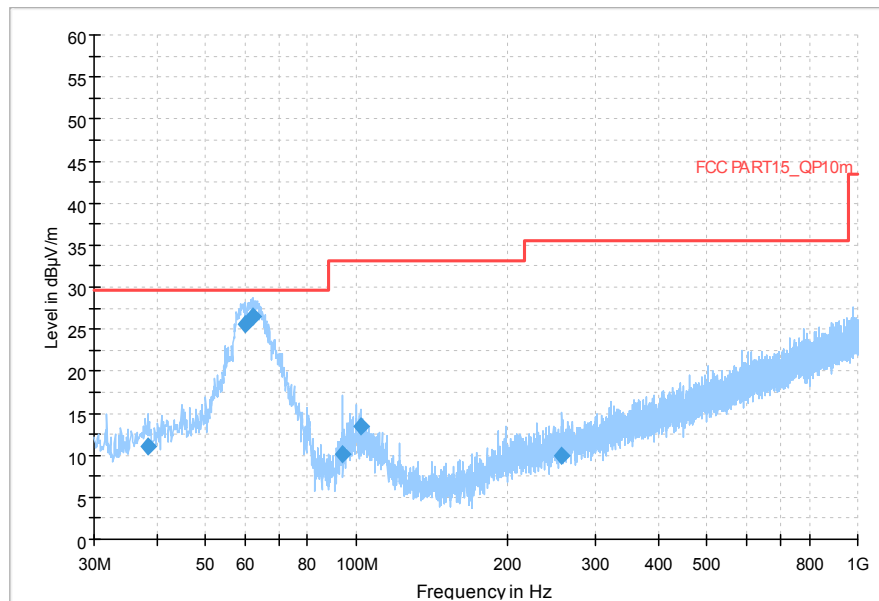


Figure A.1 Radiated Emission from 30MHz to 1GHz

Full Spectrum

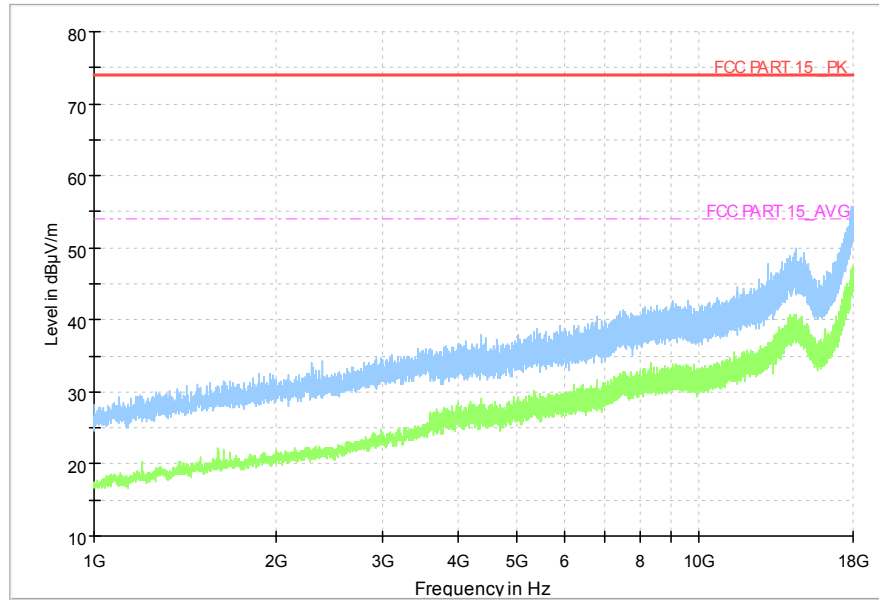


Figure A.2 Radiated Emission from 1GHz to 18GHz

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 charging mode. During the test MS is connected to a charger in the case of charging mode.

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: $U=3.10\text{dB}$, $k=2$.

Note: The measurement results showed here are worst cases of the combinations of different Battery, cables and Headset.

Note: The measurement results showed here are worst cases.

EUT1 Charger + NB-IoT Band 13 idle Mode, Set.1

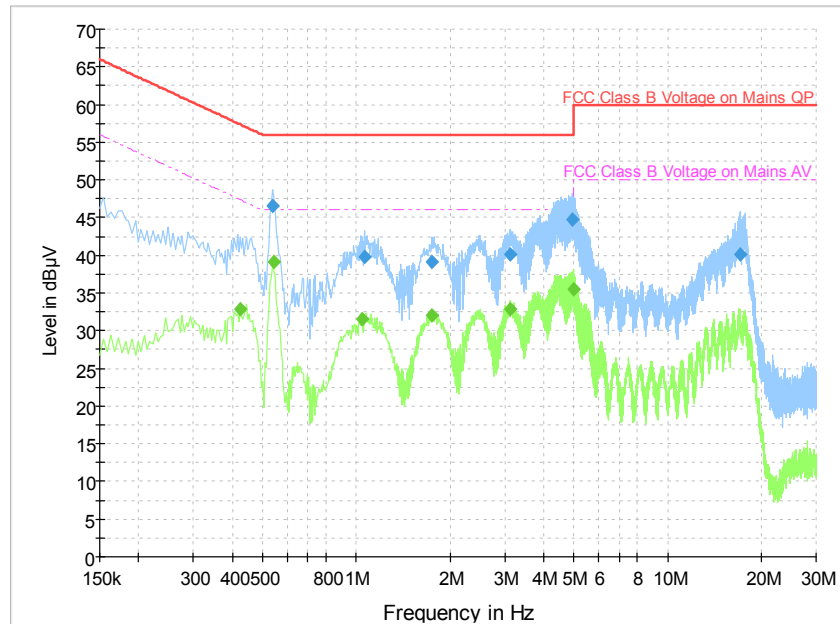


Figure A.10 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Line	Margin (dB)	Limit (dBμV)
0.537000	46.5	L1	9.5	56.0
1.063500	39.7	L1	16.3	56.0
1.756500	39.2	L1	16.8	56.0
3.111000	40.1	L1	15.9	56.0
4.929000	44.7	L1	11.3	56.0
17.128500	40.2	L1	19.8	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Line	Margin (dB)	Limit (dBμV)
0.424500	32.9	L1	14.4	47.4
0.541500	39.2	L1	6.8	46.0
1.045500	31.5	L1	14.5	46.0
1.756500	32.0	L1	14.0	46.0
3.120000	32.8	L1	13.2	46.0
4.969500	35.5	L1	10.5	46.0

ANNEX B: Persons involved in this testing

Test Item	Tester
Conducted Continuous Emission	Zhang Tianli
Radiated Continuous Emission	Zhang Tianli

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