FCC PART 15B

TEST REPORT

For

Shenzhen Aodasen Technology Co.,Ltd

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FCC ID: 2ARY7-A1

Report Type: Original Report	**Product Type:** Earpods
Tester:	Walker Chen , Lee Li, Jeremy Liang
Report Number:	DG1210823-35924E-00C
Report Date:	2021-09-03
Reviewed By:	Gavin Xu RF Engineer
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	Earpods
EUT Model:	A1-TWS
Multiple Models:	A2-TWS, A3-TWS, A12-TWS, A25-TWS, A29-TWS, A30-TWS, A16C-TWS,A31-TWS
Model Difference:	Refer to Dos
Rated Input Voltage:	DC3.7V from battery or DC5V from USB
Serial Number:	DG1210823-35924E-RF-S1
EUT Received Date:	2021.8.25
EUT Received Status:	Good

Note: The series product, models A1-TWS, A2-TWS, A3-TWS, A12-TWS, A25-TWS, A29-TWS, A30-TWS, A16C-TWS,A31-TWS are electrically identical, the model A1-TWS was fully tested. The difference between them please refer to the declaration letter for details.

Objective

This report is prepared on behalf of ***Shenzhen Aodasen Technology Co.,Ltd***in accordance with Part 2, Subpart J, and Part 15, Subpart A and B of the Federal Communications Commission's rules.

The objective is to determine the compliance of EUT with:FCC Part 15B.

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.

Measurement Uncertainty

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.55 dB,200M~1GHz: 5.92 dB,1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB,18G~26.5G:5.47 dB,26.5G~40G:5.63 dB
Temperature	±1℃
Humidity	±5%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier : CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol"▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in typical use mode.

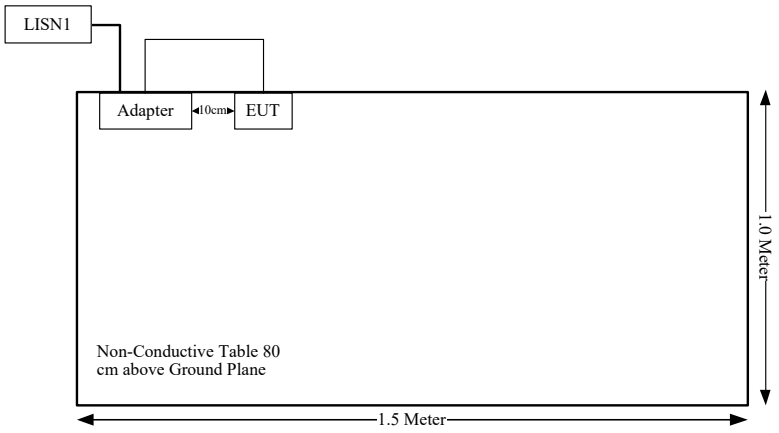
Equipment Modifications

No modification was made to the EUT.

EUT Exercise Software

N/A

Block Diagram of Test Setup



Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Dongguan Aohai Technology Co.,Ltd	adapter	A138A-120150U-US2	AH2002105372

Support Cable List and Details

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
USB Cable	yes	No	0.5	USB Port of adapter	EUT

Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted emission					
R&S	LISN	ENV 216	101614	2020-09-12	2021-09-12
R&S	EMI Test Receiver	ESCI	101121	2021-07-22	2022-07-21
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2020-09-05	2021-09-05
R&S	Test Software	EMC32	Version 9.10.00	N/A	N/A
Radiated emissions below 1GHz					
Sunol Sciences	Antenna	JB3	A060611-2	2020-08-25	2023-08-25
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Radiated emissions above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Agilent	Spectrum Analyzer	E4440A	SG43360054	2021-07-22	2022-07-21
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2020-09-05	2021-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2020-09-05	2021-09-05
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Environmental Conditions

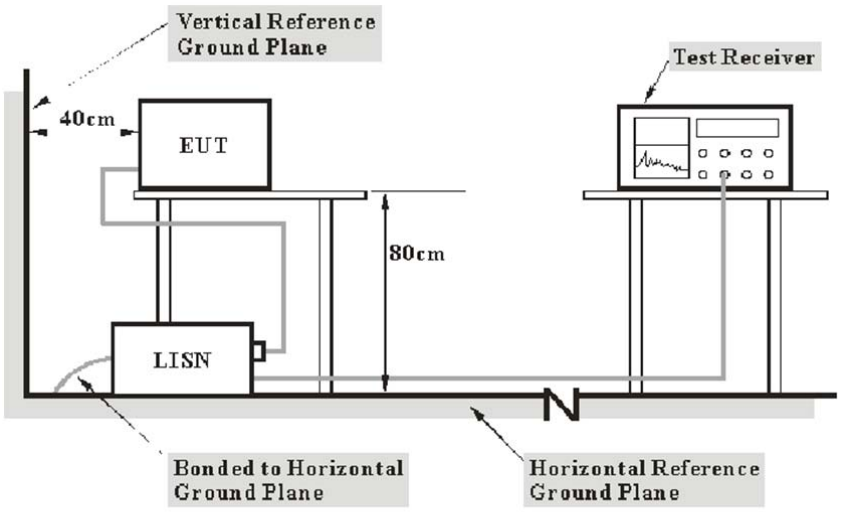
Test Item:	Conducted emission	Radiated emissions below 1GHz	Radiated emissions above 1GHz
Temperature:	26.1°C	26.8°C	29.1°C
Relative Humidity:	64%	55%	55%
ATM Pressure:	100.4kPa	100.6kPa	100.6kPa
Tester:	Walker Chen	Johnson Huang	Lee Li
Test Date:	2021.09.02	2021.08.31	2021.08.31

SUMMARY OF TEST RESULTS

SN	Rule and Clause	Description of Test	Test Result
1	FCC §15.107	Conducted emissions	Compliance
2	FCC §15.109	Radiated emissions	Compliance

1 – CONDUCTED EMISSIONS

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

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

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

FrequencyRange	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapterwas connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit,measured over all the current-carrying conductors of the EUT power cords, and the operating frequency orfrequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are morethan 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carriedout only on each of the phase ("hot") line(s) and (if used) on the neutral line(s), but not on the ground[protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noiselevel of the measuring instrument at representative frequencies should be reported. The specific conductorof the power-line cord for each of the reported emissions should be identified. Measure the six highestemissions with respect to the limit on each current-carrying conductor of each power cord associated withthe EUT (but not the power cords of associated or peripheral equipment that are part of the testconfiguration). Then, report the six highest emissions with respect to the limit from among all themeasurements identifying the frequency and specific current-carrying conductor identified with theemission. The six highest emissions should be reported for each of the current-carrying conductors, or thesix highest emissions may be reported over all the current-carrying conductors.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result (QuasiPeak or Average) = Meter Reading + Corr.

Note:
Corr. = Cable loss + Factor of coupling device

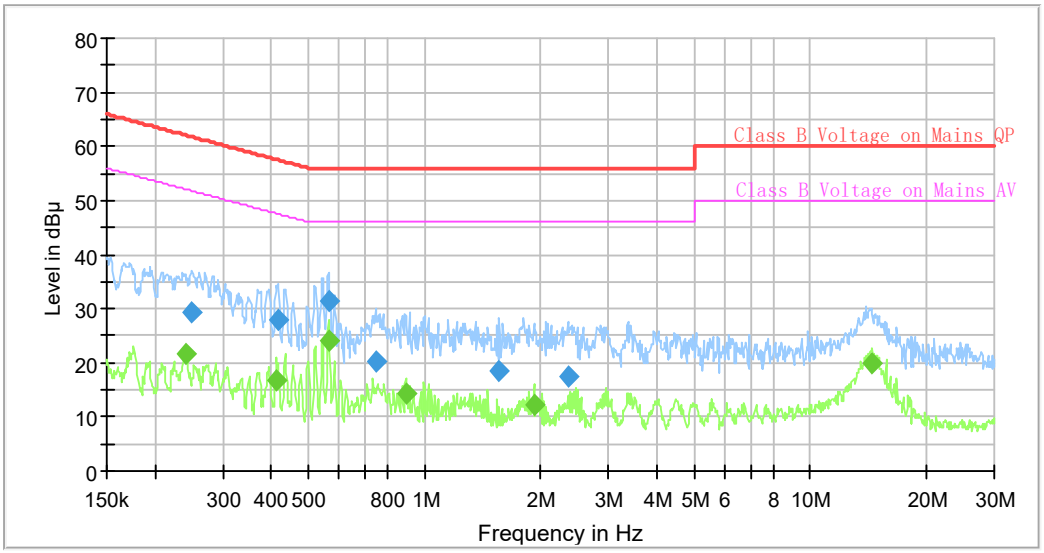
The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit –Result

Test Data

Please refer to following table and plots:

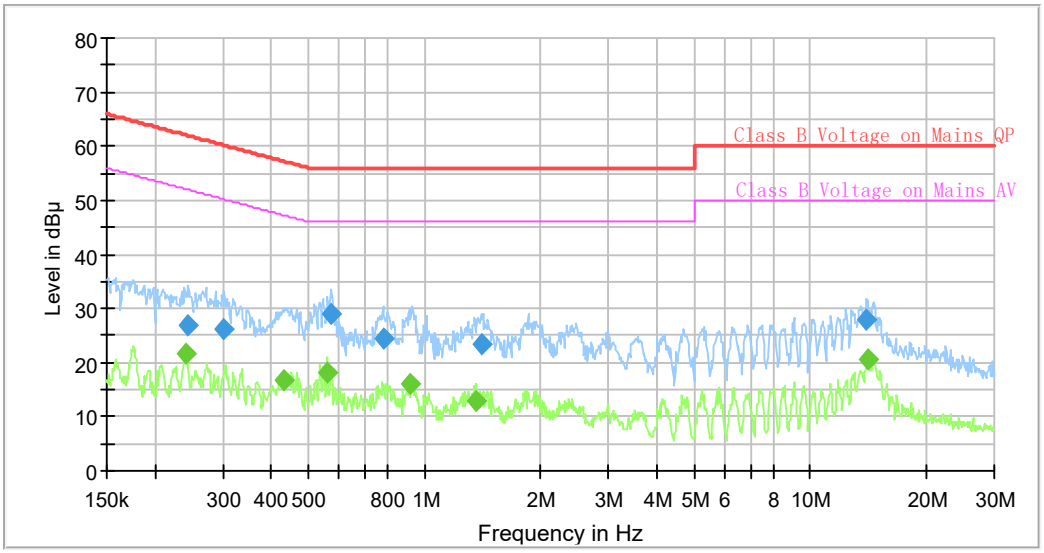
Port:	L
Test Mode:	Charging
Power Source:	AC 120V/60Hz
Note:	



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.239718	---	21.67	52.11	30.44	9.000	L1	9.6
0.249476	29.23	---	61.77	32.54	9.000	L1	9.6
0.412859	---	16.84	47.59	30.75	9.000	L1	9.6
0.416998	27.82	---	57.51	29.69	9.000	L1	9.6
0.565280	---	24.05	46.00	21.95	9.000	L1	9.6
0.565280	31.46	---	56.00	24.54	9.000	L1	9.6
0.747417	20.32	---	56.00	35.68	9.000	L1	9.7
0.894420	---	14.20	46.00	31.80	9.000	L1	9.7
1.563653	18.42	---	56.00	37.58	9.000	L1	9.7
1.918443	---	12.31	46.00	33.69	9.000	L1	9.7
2.353734	17.58	---	56.00	38.42	9.000	L1	9.7
14.461183	---	20.00	50.00	30.00	9.000	L1	10.2

Port: N
Test Mode: Charging
Power Source: AC 120V/60Hz
Note:



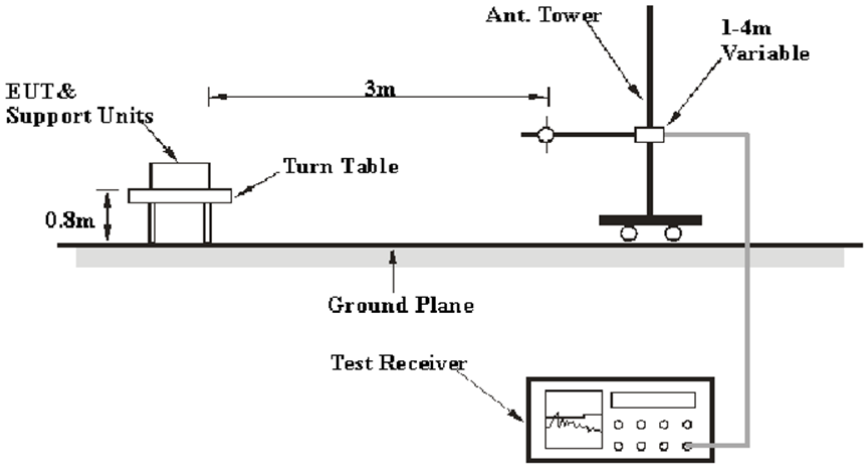
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.239718	---	21.57	52.11	30.54	9.000	N	9.6
0.244549	26.76	---	61.94	35.18	9.000	N	9.6
0.301537	26.14	---	60.20	34.06	9.000	N	9.6
0.431814	---	16.84	47.22	30.38	9.000	N	9.6
0.559669	---	18.24	46.00	27.76	9.000	N	9.6
0.573802	29.07	---	56.00	26.93	9.000	N	9.6
0.781732	24.31	---	56.00	31.69	9.000	N	9.6
0.912443	---	15.99	46.00	30.01	9.000	N	9.6
1.359849	---	12.86	46.00	33.14	9.000	N	9.6
1.401157	23.36	---	56.00	32.64	9.000	N	9.6
14.034840	28.09	---	60.00	31.91	9.000	N	9.8
14.105014	---	20.51	50.00	29.49	9.000	N	9.8

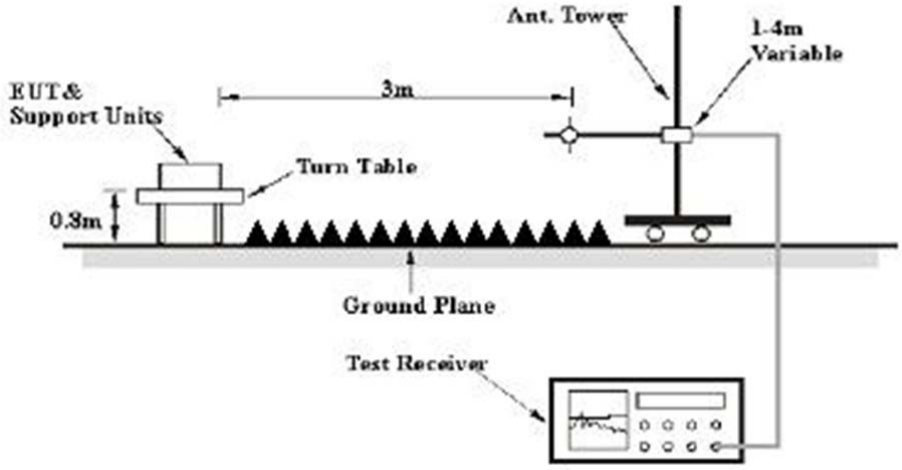
2 – RADIATED EMISSIONS

EUT Setup

Below 1GHz:



Above 1-26.5 GHz:



The radiated emission below 1GHz tests were performed in the 10 meters chamber test site, above 1GHz tests were performed in the 3 meters chamber test siteB, using the setup accordance with the ANSI C63.4-2014. The specification used was with the FCC Part 15 B Class B limits.

EMI Test Receiver Setup

The system was investigatedfrom 30 MHz to 13 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

FrequencyRange	RBW	Video B/W	IF B/W	Measurement
30MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	Reduced video bandwidth	/	AVG

Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

All emissions under the average limit and under the noise floor have not recorded in the report.

Corrected Amplitude & Margin Calculation

For the range 30MHz-1GHz, the Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit - Corrected Amplitude

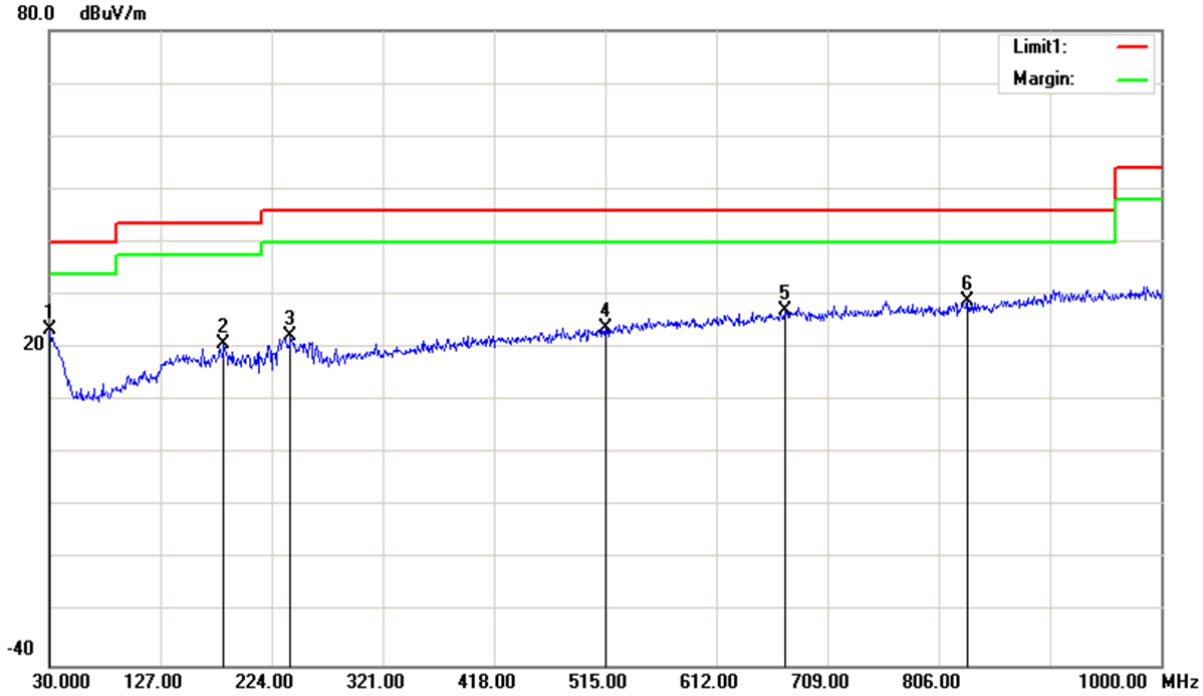
The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit-Corrected Amplitude

Test Data

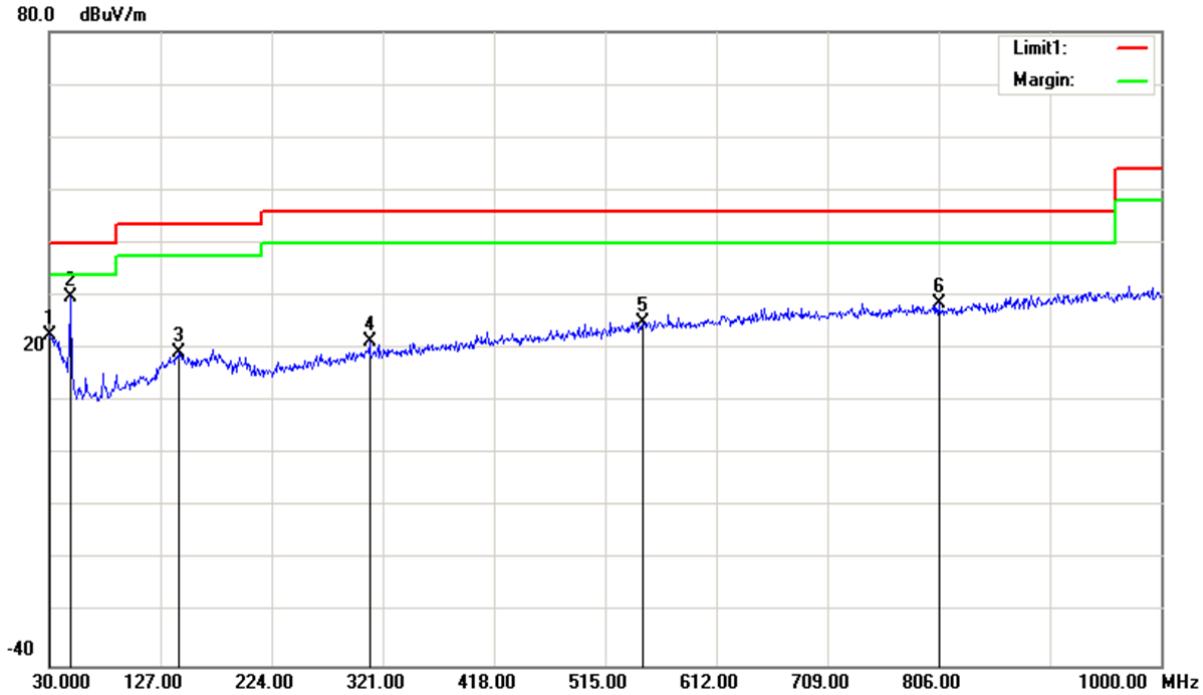
Please refer to following table and plots:

Condition:	FCC Part 15B Class B	**Polarization:**	Horizontal
EUT:	Earpods	**Power:**	AC 120V/60Hz
Model:	A1-TWS	**Distance:**	3m
Test Mode:	M1:charging		
Note:			



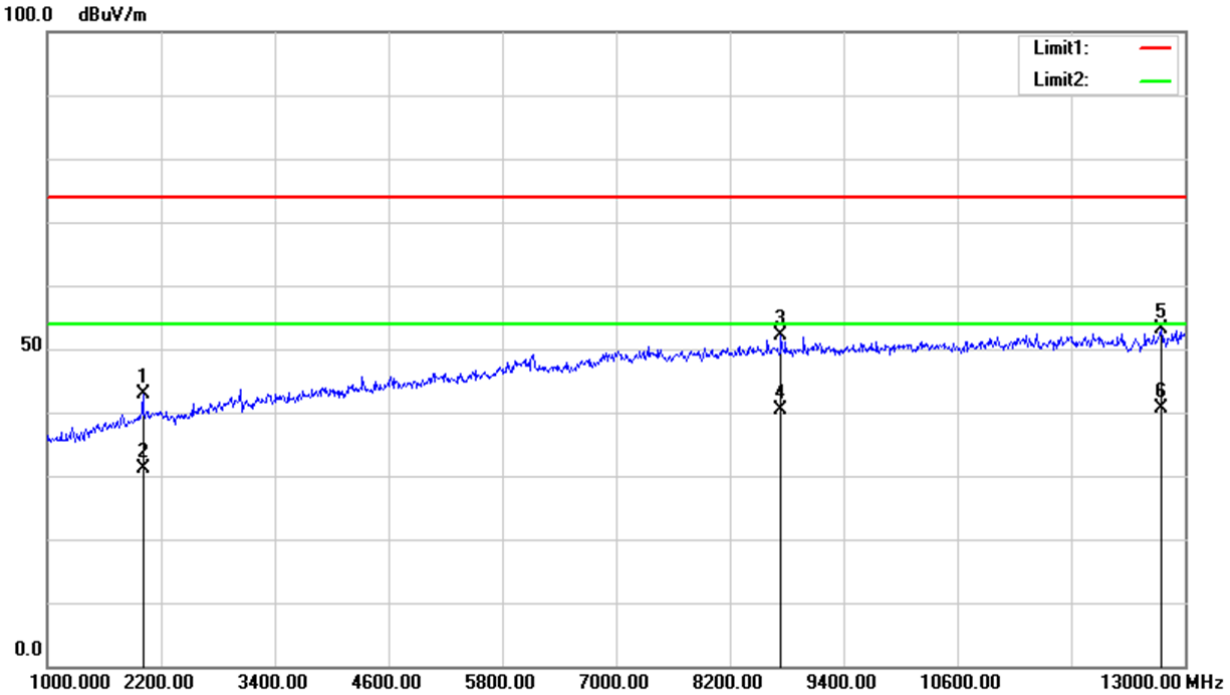
No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	30.0000	27.61	peak	-4.06	23.55	40.00	16.45
2	182.2900	31.00	peak	-10.10	20.90	43.50	22.60
3	240.4900	32.29	peak	-10.15	22.14	46.00	23.86
4	515.0000	26.41	peak	-2.77	23.64	46.00	22.36
5	672.1400	26.87	peak	0.13	27.00	46.00	19.00
6	831.2200	26.91	peak	1.91	28.82	46.00	17.18

Condition:	FCC Part 15B Class B	**Polarization:**	Vertical
EUT:	Earpods	**Power:**	AC 120V/60Hz
Model:	A1-TWS	**Distance:**	3m
Test Mode:	M1:charging		
Note:			



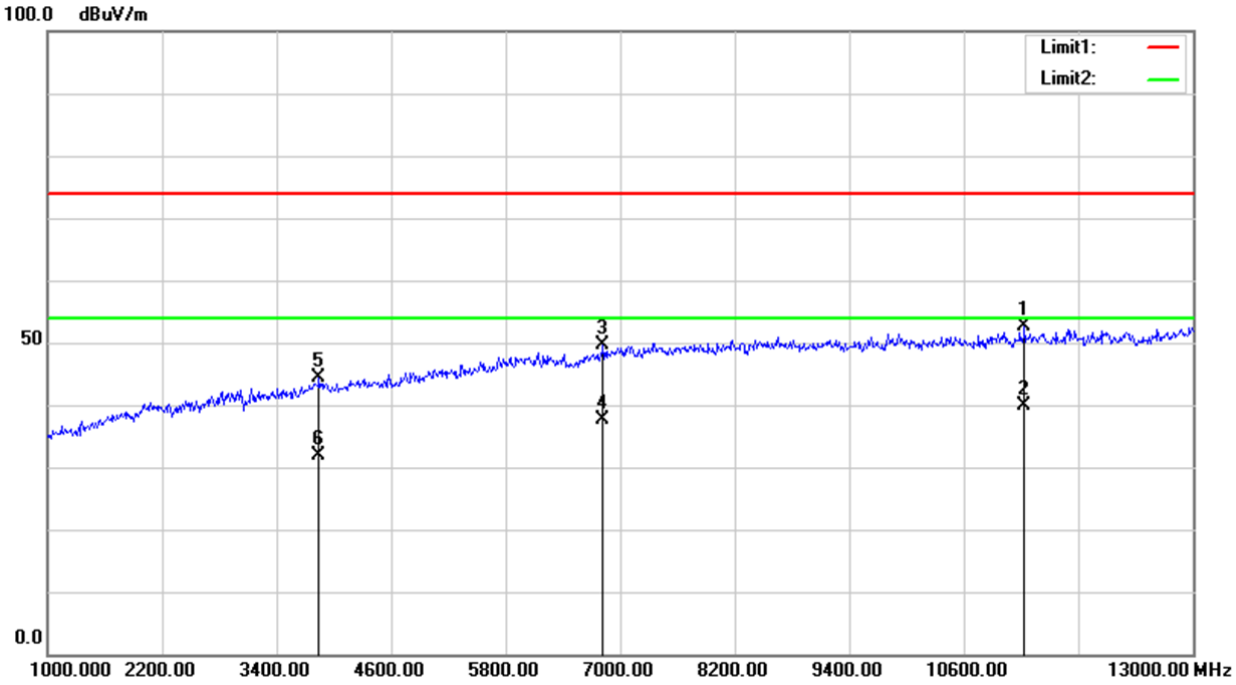
No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	30.0000	26.74	peak	-4.06	22.68	40.00	17.32
2	48.4300	44.90	peak	-15.10	29.80	40.00	10.20
3	142.5200	28.12	peak	-9.00	19.12	43.50	24.38
4	309.3600	28.39	peak	-7.16	21.23	46.00	24.77
5	547.9800	26.88	peak	-1.86	25.02	46.00	20.98
6	806.0000	27.25	peak	1.28	28.53	46.00	17.47

Condition:	FCC Part 15B Class B	**Polarization:**	Horizontal
EUT:	Earpods	**Power:**	AC 120V/60Hz
Model:	A1-TWS	**Distance:**	3m
Test Mode:	M1:charging		
Note:			



No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	2014.000	39.24	peak	3.71	42.95	74.00	31.05
2	2014.000	27.38	AVG	3.71	31.09	54.00	22.91
3	8746.000	35.25	peak	16.93	52.18	74.00	21.82
4	8746.000	23.54	AVG	16.93	40.47	54.00	13.53
5	12748.000	31.94	peak	21.09	53.03	74.00	20.97
6	12748.000	19.63	AVG	21.09	40.72	54.00	13.28

Condition:	FCC Part 15B Class B	**Polarization:**	Vertical
EUT:	Earpods	**Power:**	AC 120V/60Hz
Model:	A1-TWS	**Distance:**	3m
Test Mode:	M1:charging		
Note:			



No.	Frequency (MHz)	Reading (dBµV)	Detector	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1	11242.000	32.70	peak	19.84	52.54	74.00	21.46
2	11242.000	20.01	AVG	19.84	39.85	54.00	14.15
3	6826.000	35.19	peak	14.52	49.71	74.00	24.29
4	6826.000	23.05	AVG	14.52	37.57	54.00	16.43
5	3850.000	35.47	peak	8.82	44.29	74.00	29.71
6	3850.000	23.07	AVG	8.82	31.89	54.00	22.11

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