

FCC AND IC CERTIFICATION TEST REPORT

FOR

Applicant	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
Equipment under Test	:	Portable Bluetooth Speaker
Model No.	:	PULSE4
Trade Mark	:	JBL
FCC ID	:	APIJBLPULSE4
IC	:	6132A-JBLPULSE4
Manufacturer	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan
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REPORT

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TEST REPORT DECLARE

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Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C, RSS-210 Issue 10 December 2019.

Test procedure used:

ANSI C63.10:2013, RSS-Gen Issue 5, Apr. 2018.

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC&IC standards.

Report No:	DDT-R19032112-5E6		
Date of Receipt:	Mar. 25, 2019	Date of Test:	Mar. 25, 2019 ~ Jun. 05, 2019
	Nov 21, 2019		Nov 21, 2019 ~ Jan 05, 2020
	Apr. 21, 2020		Apr. 21, 2020 ~ Apr. 30, 2020

Prepared By:

Talent Zhang

Talent Zhang /Engineer

Approved By:



Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision history

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Jul. 01, 2019	Sam Li
Rev.01	Added two new battery model based on the original report. The data of the new battery model is added in this report.	Jan. 05, 2020	Talent Zhang
Rev.02	Added mainboard based on the original report. The data of mainboard is added in this report.	May 29, 2020	Talent Zhang

1. Summary of test results

The EUT have been tested according to the applicable standards as referenced below.

Description of Test Item	Standard	Results
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.249 ANSI C63.10:2013 RSS-210 Issue 10 RSS-Gen Issue 5	PASS
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10:2013 RSS-Gen Issue 5	PASS

Note 1: There are two kinds of products for two factories in this report, the main PCB of the products, Battery Model, software and hardware versions are different, but antenna type and RF module are the same, so only radiated emission and Power Line Conducted Emissions were tested respectively and recorded in this report.

Note 2: This report added mainboard based on the original report, this change doesn't influence the RF performance, so only power line conducted and radiated emission (below 1GHz) were tested and updated in this report.

2. General test information

2.1. Description of EUT

EUT* Name	: Portable Bluetooth Speaker
Model Number	: PULSE4
EUT function description	: Please reference user manual of this device
Power supply	: DC 5 V from external AC Adapter DC 3.6 V Polymer Li-ion built-in battery
Operation frequency	: 2407MHz-2475MHz
Modulation	: GFSK, $\pi/4$ -DQPSK, 8DPSK
Antenna Type	: Dedicated FPCB antenna, maximum PK gain: 3.25 dBi
Sample Type	: Series production

Note: EUT is the ab. of equipment under test.

EUT channels and frequencies list:

Channel information					
Channel	Frequency	Channel	Frequency	Channel	Frequency
5	2407MHz	28	2430MHz	51	2453MHz
6	2408MHz	29	2431MHz	52	2454MHz
7	2409MHz	30	2432MHz	53	2455MHz
8	2410MHz	31	2433MHz	54	2456MHz
9	2411MHz	32	2434MHz	55	2457MHz
10	2412MHz	33	2435MHz	56	2458MHz
11	2413MHz	34	2436MHz	57	2459MHz
12	2414MHz	35	2437MHz	58	2460MHz
13	2415MHz	36	2438MHz	59	2461MHz
14	2416MHz	37	2439MHz	60	2462MHz
15	2417MHz	38	2440MHz	61	2463MHz
16	2418MHz	39	2441MHz	62	2464MHz
17	2419MHz	40	2442MHz	63	2465MHz
18	2420MHz	41	2443MHz	64	2466MHz
19	2421MHz	42	2444MHz	65	2467MHz
20	2422MHz	43	2445MHz	66	2468MHz
21	2423MHz	44	2446MHz	67	2469MHz
22	2424MHz	45	2447MHz	68	2470MHz
23	2425MHz	46	2448MHz	69	2471MHz
24	2426MHz	47	2449MHz	70	2472MHz
25	2427MHz	48	2450MHz	71	2473MHz
26	2428MHz	49	2451MHz	72	2474MHz
27	2429MHz	50	2452MHz	73	2475MHz

2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Description	Remark
USB cable	Harman	N/A	Length: 1.2m, unshielded	N/A
Battery Pack	ICON ENERGY SYSTEM (SHENZHEN) CO., LTD	IY1091	3.6V, 7260mAh, 26.136Wh	Alternative for factory 1
Battery Pack	ICON ENERGY SYSTEM (SHENZHEN) CO., LTD	IAA033NA	3.6V, 7260mAh	
Battery Pack	SUNWODA Electronic Co., Ltd	SUN-INTE-16 8	3.6V, 7260mAh, 26.14Wh	Alternative for factory 2
Battery Pack	SUNWODA Electronic Co., Ltd	SUN-INTE-27 7	1S3P 3.6V 7260mAh Lithium-ion Battery	

New mainboard:

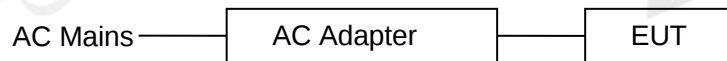
Description of Accessories	Hardware Version
mainboard	V1.0

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
Notebook	DELL	Latitude D610	FCC DOC	00045-534-136-300
Adapter	SAMSUNG	EP-TA200	N/A	Input: 100-240~, 50/60Hz, 0.5A; Output: 9V/1.67A or 5V/2A

2.4. Block diagram of EUT configuration for test

Tx Mode:



Test software: FCCTool.exe

The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table.

Tested mode, channel, information		
Mode	Channel	Frequency (MHz)
GFSK Tx mode	CH5	2407
	CH39	2441
	CH73	2475
$\pi/4$ -DQPSK Tx mode	CH5	2407
	CH39	2441
	CH73	2475
8DPSK Tx mode	CH5	2407
	CH39	2441
	CH73	2475

2.5. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25°C
Humidity range:	40-75%
Pressure range:	86-106kPa

2.6. Deviations of test standard

No Deviation.

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com

CNAS Accreditation No. L6451; A2LA Accreditation No. 3870.01

Designation Number: CN1182; Test Firm Registration Number: 540522

Industry Canada site registration number: 10288A-1

2.8. Measurement uncertainty

Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86dB ($10\text{MHz} \leq f < 3.6\text{GHz}$); 1.38dB ($3.6\text{GHz} \leq f < 8\text{GHz}$)
Peak Output Power (Conducted) (Power Sensor)	0.74dB
Power Spectral Density	0.74dB ($10\text{MHz} \leq f < 3.6\text{GHz}$); 1.38dB ($3.6\text{GHz} \leq f < 8\text{GHz}$)
Conducted spurious emissions	0.86dB ($10\text{MHz} \leq f < 3.6\text{GHz}$); 1.40dB ($3.6\text{GHz} \leq f < 8\text{GHz}$) 1.66dB ($8\text{GHz} \leq f < 22\text{GHz}$)
Uncertainty for radio frequency (RBW<20kHz)	3×10^{-8}
Temperature	0.4°C
Humidity	2%
Uncertainty for Radiation Emission test (30MHz-1GHz)	4.70dB (Antenna Polarize: V) 4.84dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1GHz-18GHz)	4.10dB (1-6GHz) 4.40dB (6GHz-18GHz)
Uncertainty for Power line conduction emission test	3.32dB (150kHz-30MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

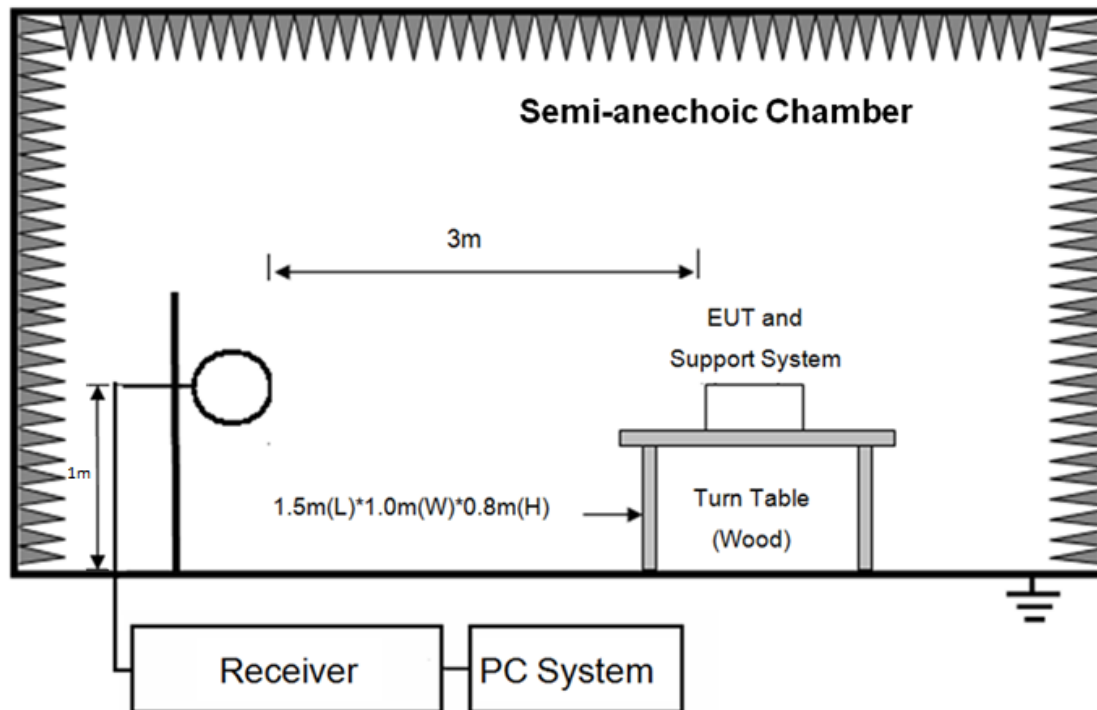
3. Equipment used during test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
RF Connected Test (Tonscend RF Measurement System)					
Spectrum analyzer	R&S	FSU26	200071	Sep. 29, 2019	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	Jun. 25, 2019	1 Year
Vector Signal Generator	Agilent	E8267D	US49060192	Sep. 29, 2019	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180737	Jun. 25, 2019	1 Year
Power Sensor	Agilent	U2021XA	MY55150010	Jun. 28, 2019	1 Year
Power Sensor	Agilent	U2021XA	MY55150011	Jun. 28, 2019	1 Year
DC Power Source	MATRIS	MPS-3005L-3	D813058W	Jun. 25, 2019	1 Year
RF Cable	Micable	C10-01-01-1	100309	Sep. 29, 2019	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	Oct. 21, 2019	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.7	N/A	N/A
Radiation 1#chamber					
EMI Test Receiver	R&S	ESU8	100316	Sep. 29, 2019	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jun. 25, 2019	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	Nov. 15, 2019	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 29, 2019	1 Year
Double Ridged Horn Antenna	R&S	HF907	100276	Nov. 15, 2019	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Sep. 29, 2019	1 Year
Pre-amplifier	A.H.	PAM-0118	360	Sep. 29, 2019	1 Year
Pre-amplifier	TERA-MW	TRLA-0040 G35	101303	Sep. 29, 2019	1 Year
RF Cable	HUBSER	CP-X2+ CP-X1	W11.03+ W12.02	Sep. 29, 2019	1 Year
RF Cable	N/A	5m+6m+1m	06270619	Sep. 29, 2019	1 Year
MI Cable	HUBSER	C10-01-01-1 M	1091629	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Power Line Conducted Emissions Test					
EMI Test Receiver	R&S	ESU8	100316	Sep. 29, 2019	1 Year
LISN 1	R&S	ENV216	101109	Sep. 29, 2019	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 29, 2019	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 29, 2019	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

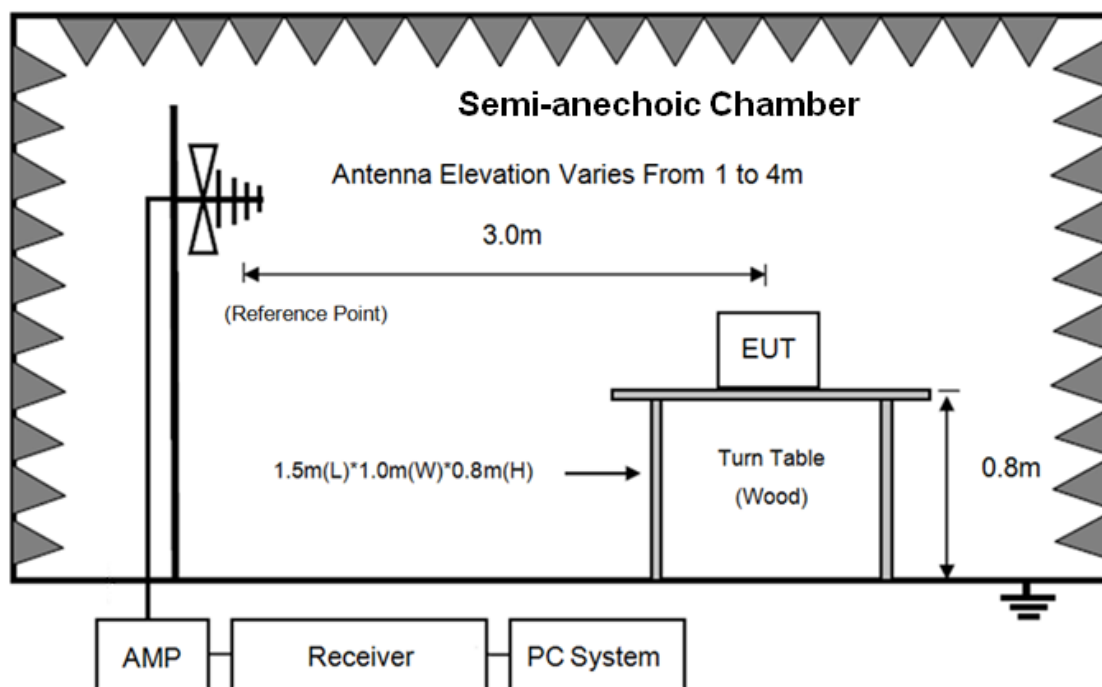
4. Radiated emission

4.1. Block diagram of test setup

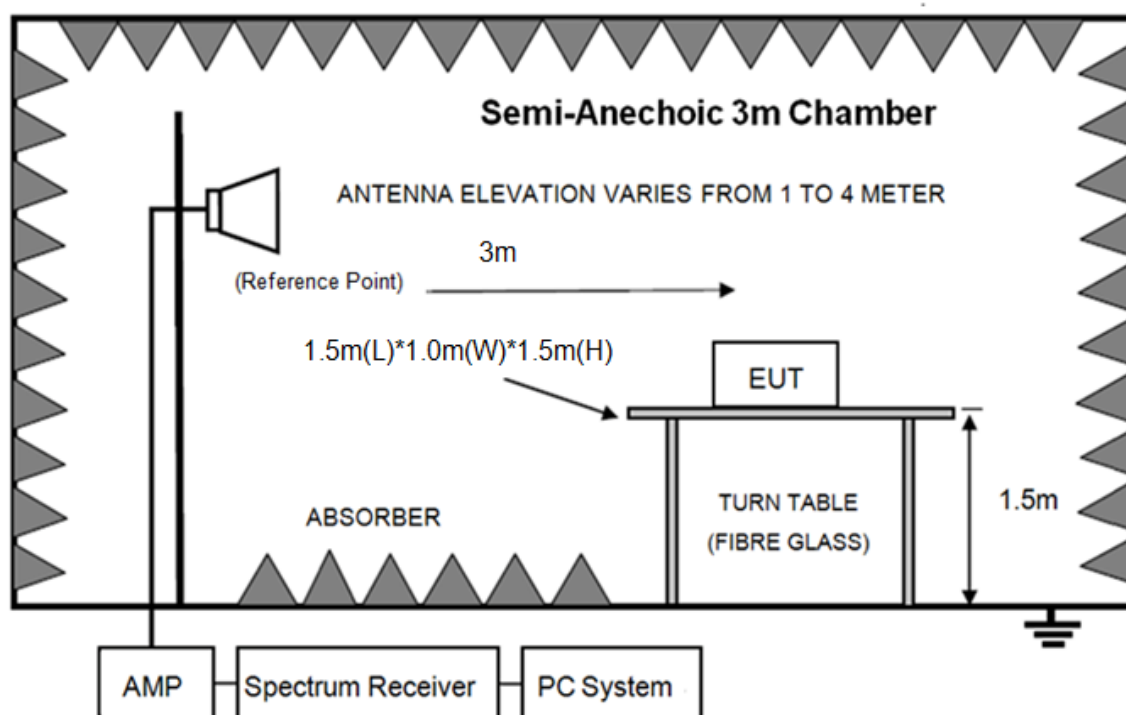
In 3m Anechoic Chamber Test Setup Diagram for 9kHz-30MHz



In 3m Anechoic Chamber Test Setup Diagram for 30MHz-1GHz



In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

4.2. Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000MHz	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	
Field Strength of Fundamental emission for 2.4GHz-2.4835GHz	3	94.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average) 114.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak)	
Field Strength of Harmonics	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

Remark:

- (1) Emission level $\text{dB}\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
- (4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000MHz, radiated emission limits in these three bands are based on measurements employing an average detector.

4.3. Test Procedure

- (1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.
- (2) Setup EUT and assistant system according clause 2.3 and 4.2
- (3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.
 - (a) Change work frequency or channel of device if practicable.
 - (b) Change modulation type of device if practicable.
 - (c) Change power supply range from 85% to 115% of the rated supply voltage
 - (d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions
- (4) Spectrum frequency from 9kHz to 25GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9kHz to 30MHz and 18GHz to 25GHz, so below final test was performed with frequency range from 30MHz to 18GHz.
- (5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.
- (6) For emissions from 30MHz to 1GHz, Quasi-Peak values were measured with EMI Receiver and the bandwidth of Receiver is 120 kHz.
- (7) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure. Peak detector is used for both PK and AV test.
- (8) For fundamental frequency test, set spectrum analyzer's RBW=3MHz, VBW=10MHz. peak detector for PK, RMS detector for AV, Read the Level in spectrum analyzer and record.
- (9) X axis, Y axis, Z axis are tested, and worse setup X axis is reported.

4.4. Test result

PASS. (See below detailed test result)

All the emissions except fundamental emission from 9kHz to 25GHz were comply with 15.209 limit.

Note1: According exploratory test no any obvious emission was detected from 9kHz to 30MHz and 18GHz to 25GHz, so the final test was performed with frequency range from 30MHz to 18GHz and recorded in below.

Note2: For emissions below 1GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1GHz, the final test was only performed with EUT working in GFSK, Tx 2407MHz mode.

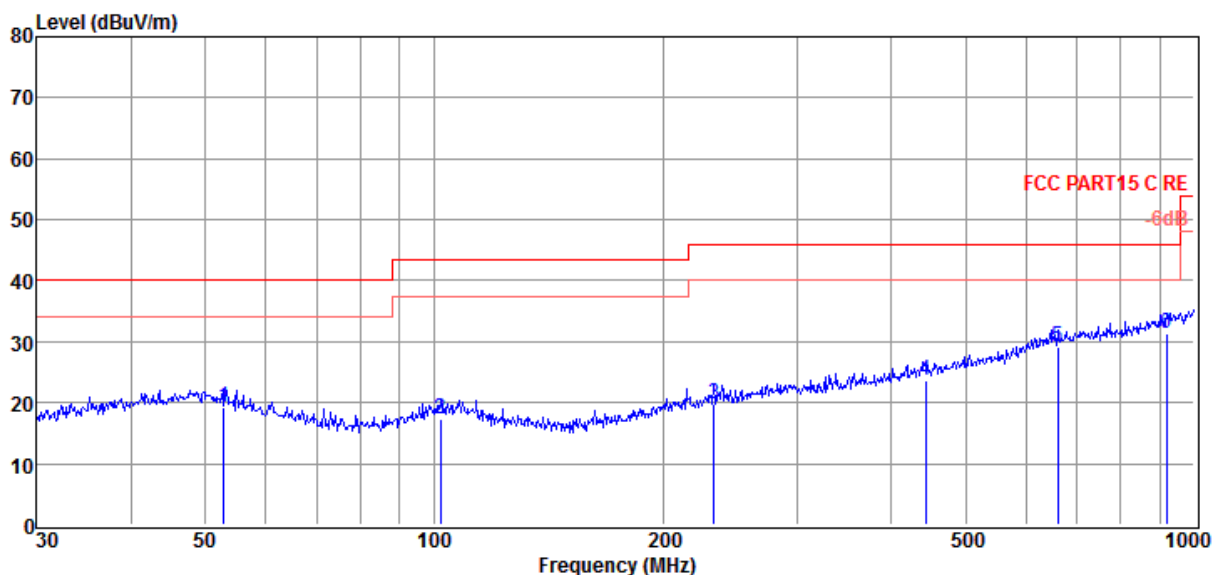
Note3: For emissions above 1GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

Radiated Emission test (below 1GHz)

Original data:

TR-4-E-009 Radiated Emission Test Result**Test Site** : DDT 3m Chamber 1#D:\2019 RE1# Report Data\Q18121103-1E Y400Wireless\FCC
BELOW1G.EM6**Test Date** : 2019-06-05**Tested By** : Talent**EUT** : Portable Bluetooth Speaker**Model Number** : PULSE4**Power Supply** : Battery**Test Mode** : Tx mode**Condition** : Temp:24.5'C, Humi:55%, Press:100.1kPa **Antenna/Distance** : 2018 VULB 9163 1#/3m/HORIZONTAL**Memo** : Factory 1

Data: 18



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	52.95	1.68	13.60	3.89	19.17	40.00	-20.83	QP	HORIZONTAL
2	102.00	1.47	11.72	4.22	17.41	43.50	-26.09	QP	HORIZONTAL
3	233.35	2.56	12.39	4.93	19.88	46.00	-26.12	QP	HORIZONTAL
4	443.29	1.77	16.29	5.65	23.71	46.00	-22.29	QP	HORIZONTAL
5	661.15	3.24	19.51	6.27	29.02	46.00	-16.98	QP	HORIZONTAL
6	919.29	2.48	21.92	7.01	31.41	46.00	-14.59	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

D:\2019 RE1# Report Data\Q18121103-1E Y400Wireless\FCC
BELOW1G.EM6

Test Date : 2019-06-05

Tested By : Talent

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

Power Supply : Battery

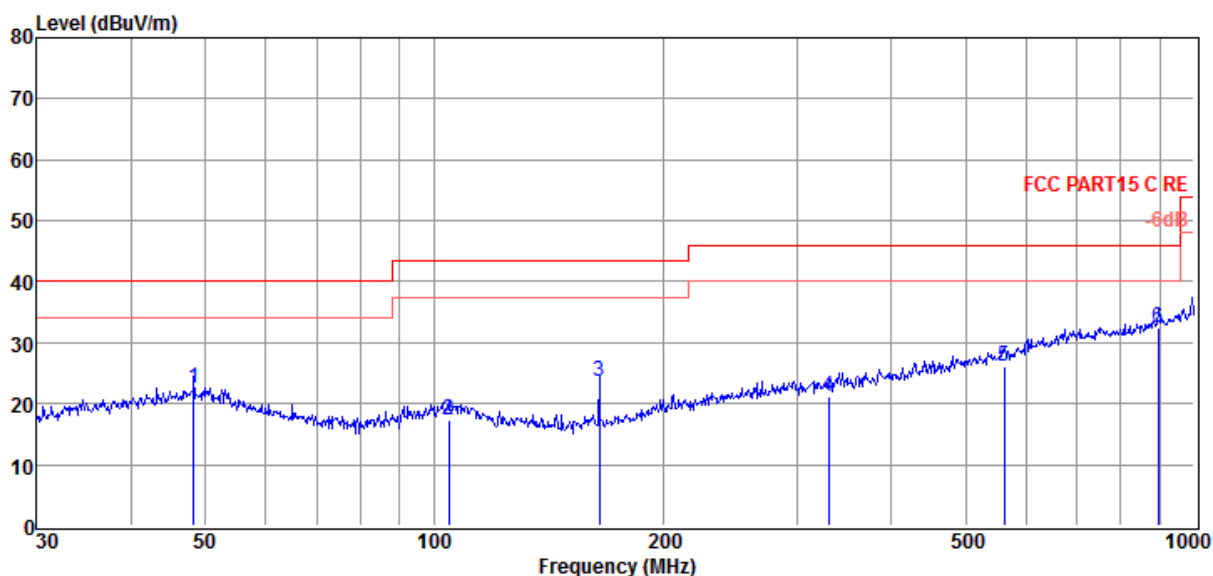
Test Mode : Tx mode

Condition : Temp:24.5°C, Humi:55%, Press:100.1kPa

Antenna/Distance : 2018 VULB 9163 1#/3m/VERTICAL

Memo : Factory 1

Data: 17



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBUV/m)	Limit Line (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	48.33	4.31	14.42	3.85	22.58	40.00	-17.42	QP	VERTICAL
2	104.54	1.24	11.75	4.23	17.22	43.50	-26.28	QP	VERTICAL
3	164.91	10.14	8.85	4.63	23.62	43.50	-19.88	QP	VERTICAL
4	330.20	1.25	14.53	5.29	21.07	46.00	-24.93	QP	VERTICAL
5	562.66	2.03	18.01	5.99	26.03	46.00	-19.97	QP	VERTICAL
6	897.00	3.78	21.67	6.90	32.35	46.00	-13.65	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

D:\2019 RE1# Report Data\Q18121103-1E Y400Wireless\FCC
BELOW1G.EM6

Test Date : 2019-06-05

Tested By : Talent

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

Power Supply : battery

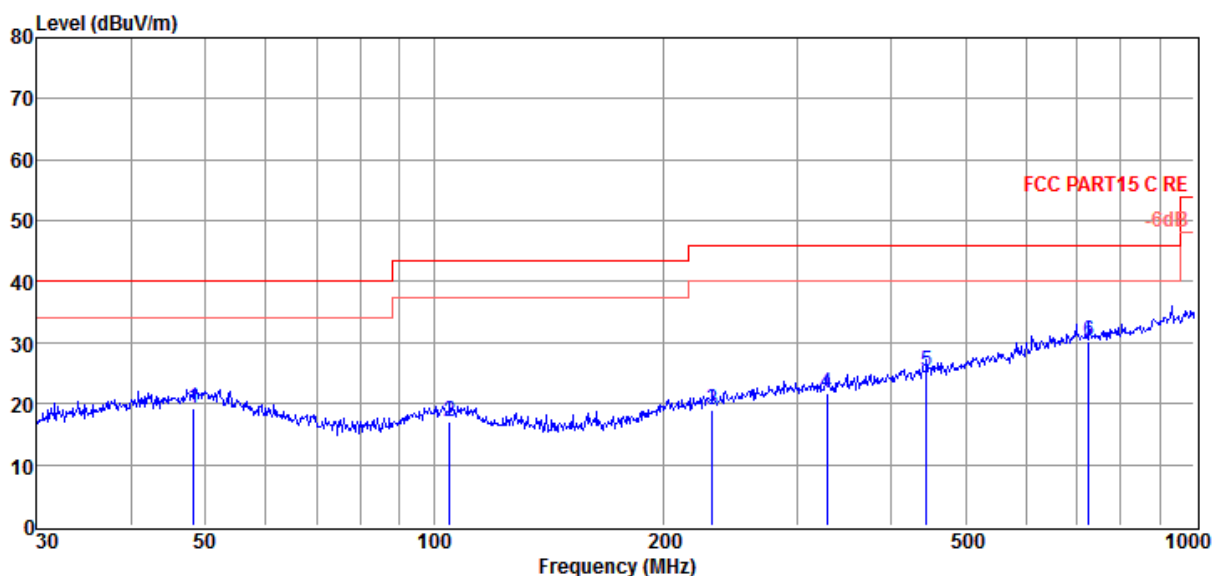
Test Mode : Tx mode

Condition : Temp:24.5°C, Humi:55%, Press:100.1kPa

Antenna/Distance : 2018 VULB 9163 1#/3m/HORIZONTAL

Memo : Factory 2

Data: 10



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	48.33	1.03	14.42	3.85	19.30	40.00	-20.70	QP	HORIZONTAL
2	104.90	1.00	11.75	4.23	16.98	43.50	-26.52	QP	HORIZONTAL
3	232.53	1.76	12.37	4.93	19.06	46.00	-26.94	QP	HORIZONTAL
4	329.04	1.96	14.51	5.29	21.76	46.00	-24.24	QP	HORIZONTAL
5	444.85	3.31	16.31	5.66	25.28	46.00	-20.72	QP	HORIZONTAL
6	726.81	3.44	20.27	6.45	30.16	46.00	-15.84	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

D:\2019 RE1# Report Data\Q18121103-1E Y400Wireless\FCC
BELOW1G.EM6

Test Date : 2019-06-05

Tested By : Talent

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

Power Supply : battery

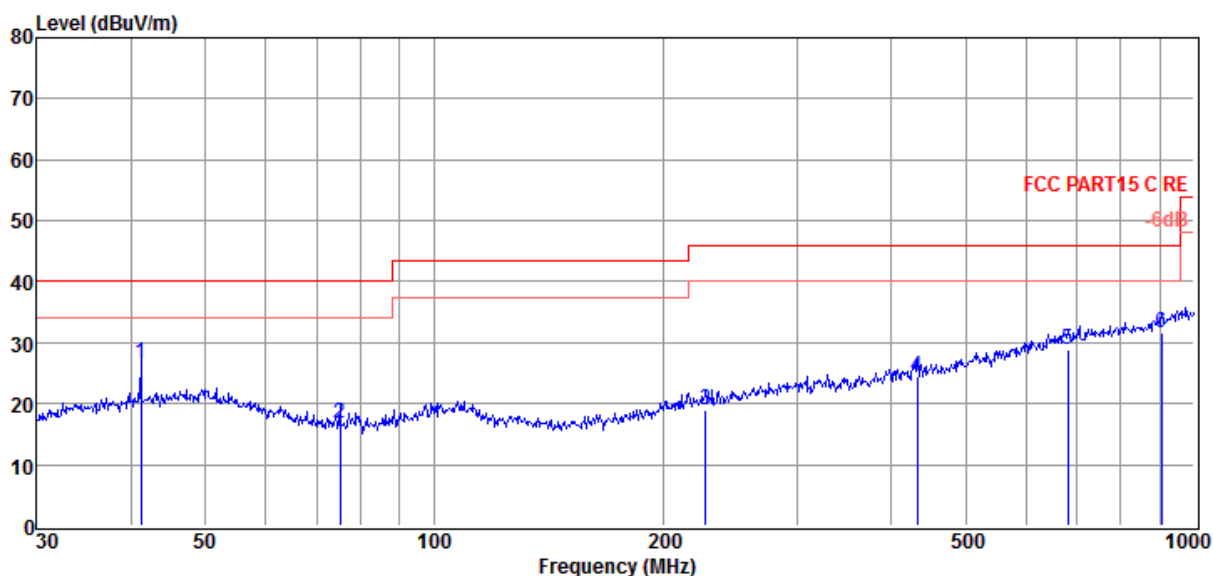
Test Mode : Tx mode

Condition : Temp:24.5°C, Humi:55%, Press:100.1kPa

Antenna/Distance : 2018 VULB 9163 1#/3m/VERTICAL

Memo : Factory 2

Data: 9



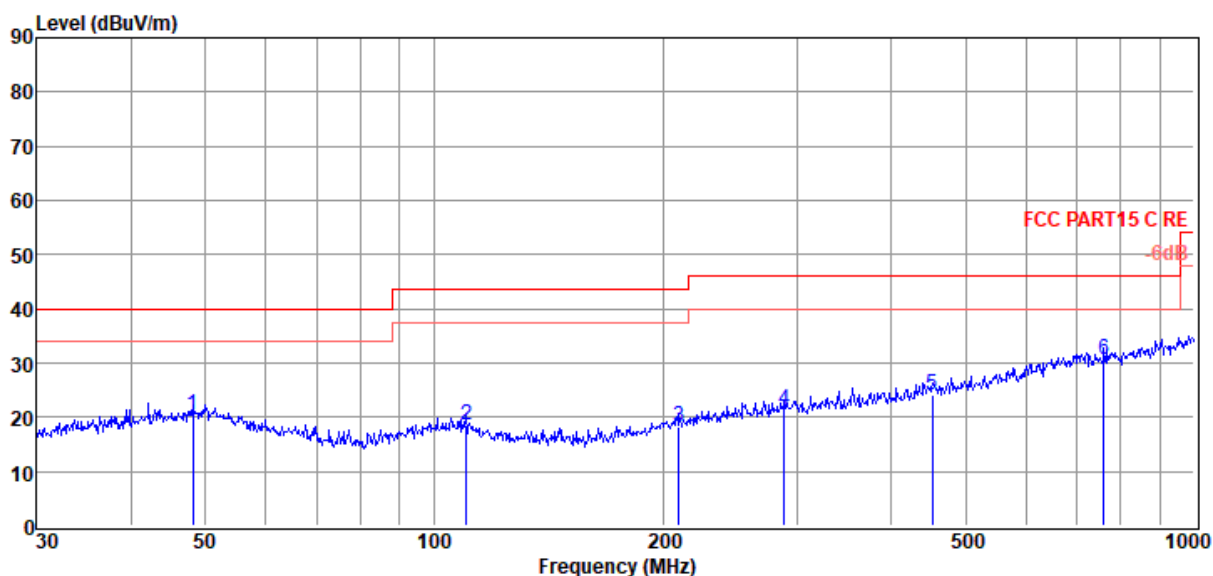
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	41.13	9.47	13.55	3.78	26.80	40.00	-13.20	QP	VERTICAL
2	75.18	3.60	9.18	4.05	16.83	40.00	-23.17	QP	VERTICAL
3	227.69	1.86	12.23	4.91	19.00	46.00	-27.00	QP	VERTICAL
4	432.55	2.80	16.13	5.62	24.55	46.00	-21.45	QP	VERTICAL
5	682.35	2.63	19.83	6.33	28.79	46.00	-17.21	QP	VERTICAL
6	906.48	2.95	21.77	6.95	31.67	46.00	-14.33	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Battery: IAA033NA:

TR-4-E-009 Radiated Emission Test Result**Test Site** : DDT 3m Chamber 1#D:\2019 RE1# Report Data\Q19103115-1E PULSE4\FCC
BELOW1G.EM6**Test Date** : 2019-11-25**Tested By** : Talent**EUT** : Portable Bluetooth Speaker**Model Number** : PULSE4**Power Supply** : Battery**Test Mode** : TX mode**Condition** : Temp:24.5°C,Humi:55%,Press:100.1kPa**Antenna/Distance** : 2018 VULB 9163 1#/3m/HORIZONTAL**Memo** :

Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	48.16	2.09	14.40	3.85	20.34	40.00	-19.66	Peak	HORIZONTAL
2	110.18	2.52	11.76	4.26	18.54	43.50	-24.96	Peak	HORIZONTAL
3	210.05	1.83	11.71	4.85	18.39	43.50	-25.11	Peak	HORIZONTAL
4	289.00	2.40	13.76	5.14	21.30	46.00	-24.70	Peak	HORIZONTAL
5	452.72	2.15	16.43	5.68	24.26	46.00	-21.74	Peak	HORIZONTAL
6	760.70	3.65	20.47	6.52	30.64	46.00	-15.36	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

D:\2019 RE1# Report Data\Q19103115-1E PULSE4\FCC
BELOW1G.EM6

Test Date : 2019-11-25

Tested By : Talent

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

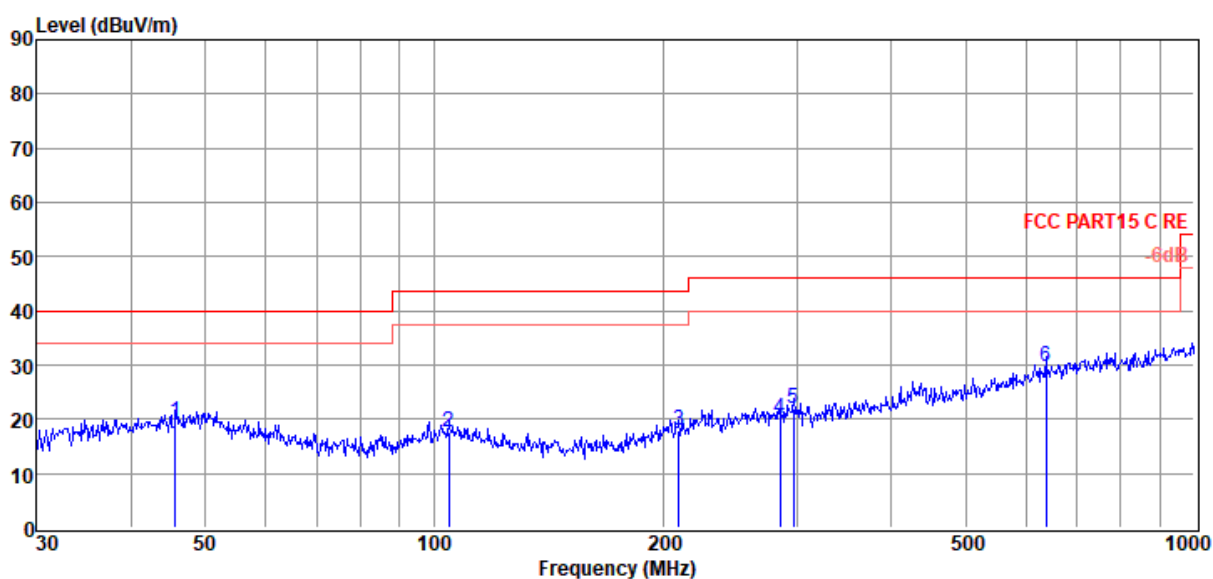
Power Supply : Battery

Test Mode : TX mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2018 VULB 9163 1#/3m/VERTICAL

Memo :



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	45.70	1.68	14.12	3.83	19.63	40.00	-20.37	Peak	VERTICAL
2	104.54	1.68	11.75	4.23	17.66	43.50	-25.84	Peak	VERTICAL
3	210.05	1.38	11.71	4.85	17.94	43.50	-25.56	Peak	VERTICAL
4	284.98	1.29	13.67	5.13	20.09	46.00	-25.91	Peak	VERTICAL
5	297.22	2.71	13.94	5.18	21.83	46.00	-24.17	Peak	VERTICAL
6	638.37	4.25	19.14	6.20	29.59	46.00	-16.41	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Battery: SUN-INTE-277:

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

D:\2019 RE1# Report Data\Q19103115-4E 三诺 pulse4\FCC
BELOW 1G.EM6

Test Date : 2019-12-19

Tested By : Jacky

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

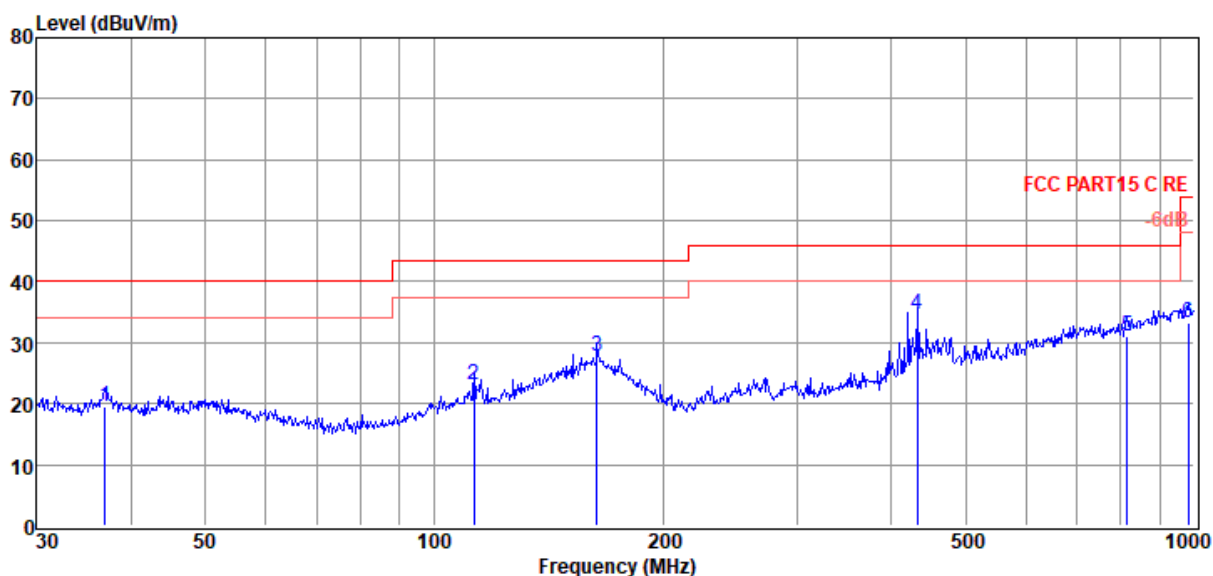
Power Supply : battery

Test Mode : Tx mode

Condition : Temp:24.5'C,Humi:55%,Press:101.4kPa

Antenna/Distance : 2018 VULB 9161/3m/VERTICAL

Memo :



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	36.90	3.25	12.56	3.73	19.54	40.00	-20.46	QP	VERTICAL
2	112.92	5.64	13.12	4.27	23.03	43.50	-20.47	QP	VERTICAL
3	163.76	4.29	18.90	4.62	27.81	43.50	-15.69	QP	VERTICAL
4	432.55	13.02	16.10	5.62	34.74	46.00	-11.26	QP	VERTICAL
5	815.97	2.84	21.52	6.64	31.00	46.00	-15.00	QP	VERTICAL
6	982.62	3.04	23.15	7.06	33.25	54.00	-20.75	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

D:\2019 RE1# Report Data\Q19103115-4E 三诺 pulse4\FCC
BELOW 1G.EM6

Test Date : 2019-12-19

Tested By : Jacky

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

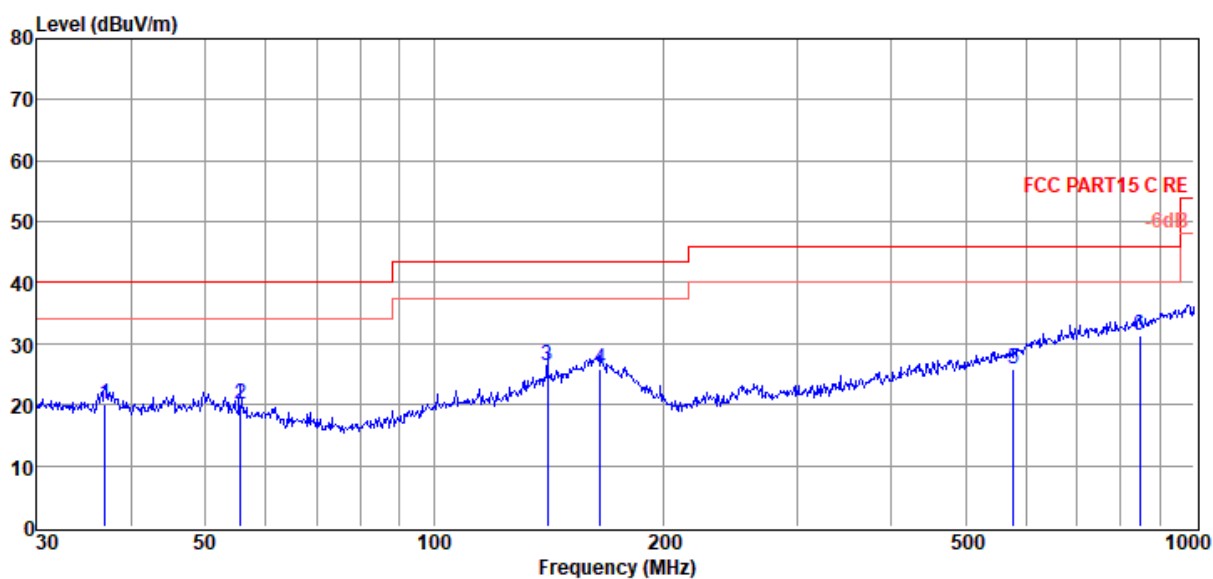
Power Supply : Battery

Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:101.4kPa

Antenna/Distance : 2018 VULB 9161/3m/HORIZONTAL

Memo :



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	36.90	3.82	12.56	3.73	20.11	40.00	-19.89	QP	HORIZONTAL
2	55.61	4.64	11.50	3.92	20.06	40.00	-19.94	QP	HORIZONTAL
3	140.84	5.75	16.12	4.44	26.31	43.50	-17.19	QP	HORIZONTAL
4	165.49	2.42	18.90	4.63	25.95	43.50	-17.55	QP	HORIZONTAL
5	578.67	1.71	18.16	6.03	25.90	46.00	-20.10	QP	HORIZONTAL
6	848.06	2.74	21.84	6.73	31.31	46.00	-14.69	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

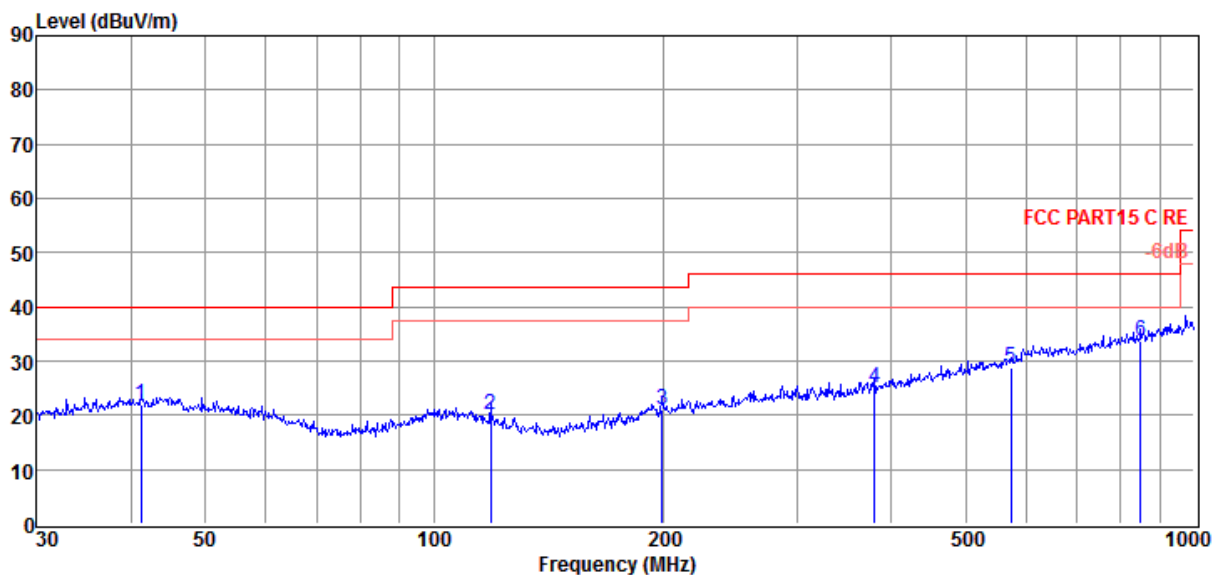
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

New mainboard:

TR-4-E-009 Radiated Emission Test Result**Test Site** : DDT 3m Chamber 2#E:\2020 RE2# Report Data\Q20042112-1E JBL PULSE4\FCC
BELOW1G.EM6**Test Date** : 2020-04-23**Tested By** : KENNSY**EUT** : Portable Bluetooth Speaker**Model Number** : PULSE4**Power Supply** : Battery**Test Mode** : Tx mode**Condition** : Temp:24.5°C,Humi:55%,Press:100.1kPa**Antenna/Distance** : 2019 VULB 9163 2#/3m/HORIZONTAL**Memo** :

Data: 5



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	41.13	3.89	14.35	3.71	21.95	40.00	-18.05	QP	HORIZONTAL
2	118.60	5.56	10.30	4.35	20.21	43.50	-23.29	QP	HORIZONTAL
3	199.29	4.96	11.37	4.84	21.17	43.50	-22.33	QP	HORIZONTAL
4	379.91	4.05	15.23	5.75	25.03	46.00	-20.97	QP	HORIZONTAL
5	574.63	3.07	18.92	6.65	28.64	46.00	-17.36	QP	HORIZONTAL
6	851.04	4.43	21.67	7.74	33.84	46.00	-12.16	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 2#

E:\2020 RE2# Report Data\Q20042112-1E JBL PULSE4\FCC
BELOW1G.EM6

Test Date : 2020-04-23

Tested By : KENNSY

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

Power Supply : Battery

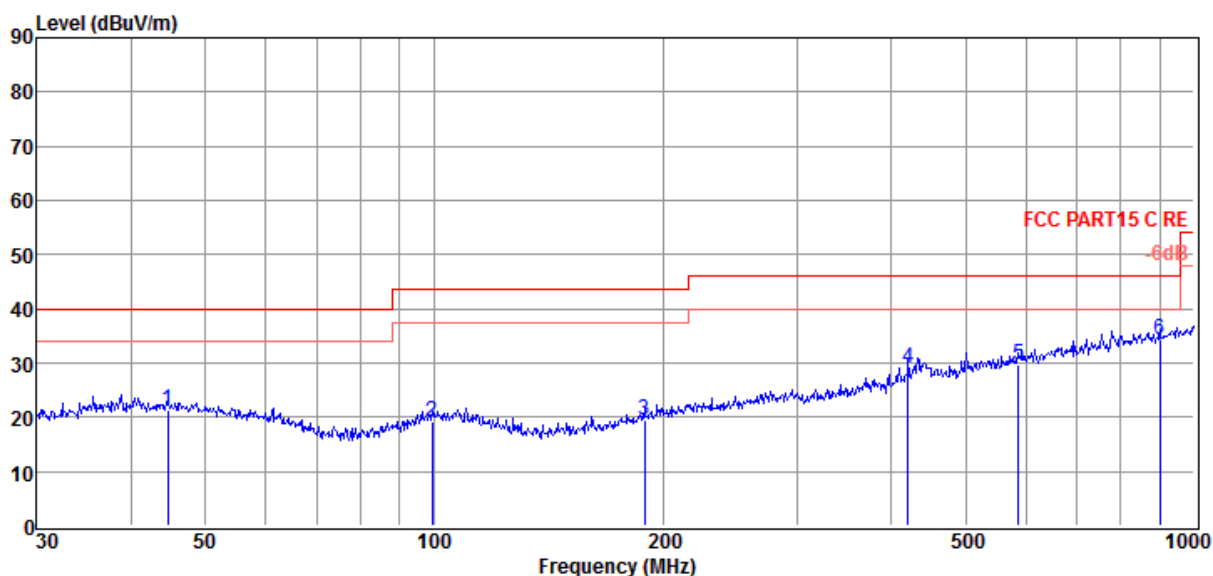
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 VULB 9163 2#/3m/VERTICAL

Memo :

Data: 6



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	44.59	3.63	13.92	3.74	21.29	40.00	-18.71	QP	VERTICAL
2	99.53	3.28	11.63	4.20	19.11	43.50	-24.39	QP	VERTICAL
3	189.07	3.94	10.89	4.78	19.61	43.50	-23.89	QP	VERTICAL
4	420.58	7.15	15.99	5.93	29.07	46.00	-16.93	QP	VERTICAL
5	586.84	3.90	19.11	6.70	29.71	46.00	-16.29	QP	VERTICAL
6	900.15	4.21	22.10	7.92	34.23	46.00	-11.77	QP	VERTICAL

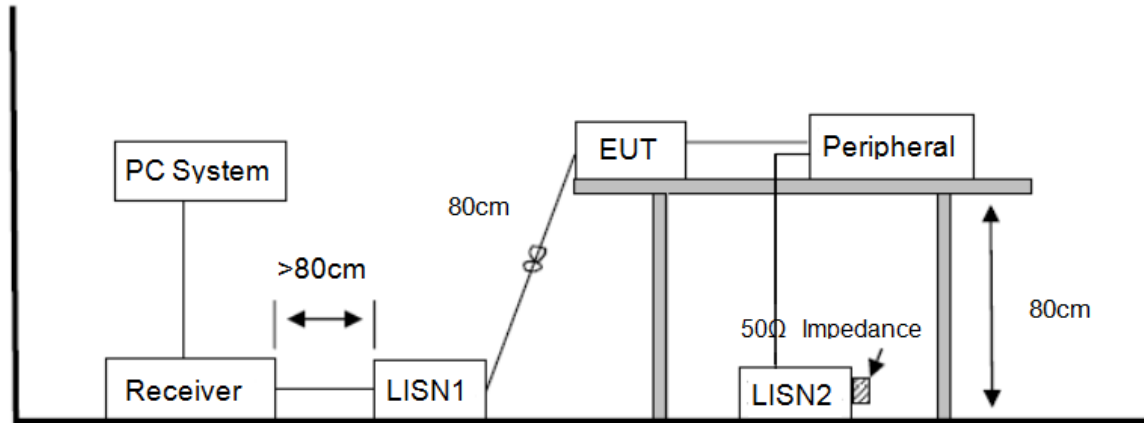
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

5. Power Line Conducted Emission

5.1. Block diagram of test setup



5.2. Power Line Conducted Emission Limits

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

5.3. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level. The EUT configuration and worse cable configuration of the above highest emission levels were

recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

5.4. Test Result

PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

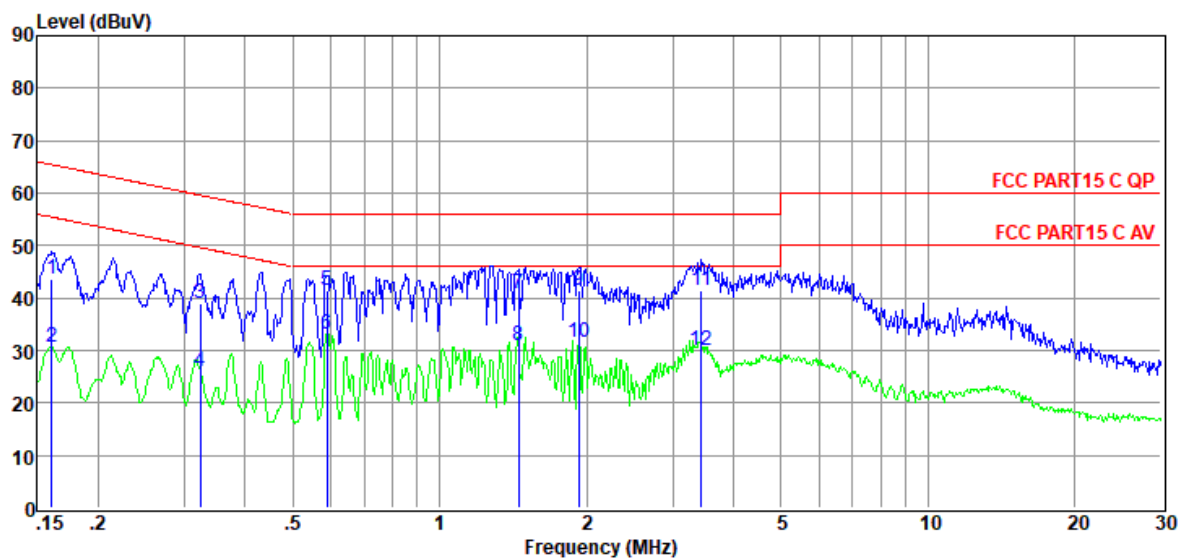
Note2: “----” means Peak detection; “-----” means Average detection.

Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/60Hz, recorded worst case. (AC 240V/60Hz)

Original data:

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **D:\2019 CE report data\Q19032112-1E\CE.EM6**
Test Date : 2019-06-03 **Tested By** : Alan
EUT : Portable Bluetooth Speaker **Model Number** : PULSE4
Power Supply : AC 240V/60Hz **Test Mode** : Tx mode
Condition : Temp:24.5°C, Humi:71.2%,
 Press:101.4kPa **LISN** : 2018 ENV216/NEUTRAL
Memo : Factory 1



Item	Freq.	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.16	24.14	9.64	0.02	9.86	43.66	65.43	-21.77	QP	NEUTRAL
2	0.16	11.03	9.64	0.02	9.86	30.55	55.43	-24.88	Average	NEUTRAL
3	0.32	19.34	9.64	0.02	9.86	38.86	59.62	-20.76	QP	NEUTRAL
4	0.32	6.41	9.64	0.02	9.86	25.93	49.62	-23.69	Average	NEUTRAL
5	0.59	21.85	9.64	0.03	9.86	41.38	56.00	-14.62	QP	NEUTRAL
6	0.59	13.57	9.64	0.03	9.86	33.10	46.00	-12.90	Average	NEUTRAL
7	1.45	21.30	9.66	0.08	9.87	40.91	56.00	-15.09	QP	NEUTRAL
8	1.45	11.29	9.66	0.08	9.87	30.90	46.00	-15.10	Average	NEUTRAL
9	1.93	21.98	9.67	0.06	9.87	41.58	56.00	-14.42	QP	NEUTRAL
10	1.93	12.09	9.67	0.06	9.87	31.69	46.00	-14.31	Average	NEUTRAL
11	3.44	21.73	9.68	0.05	9.87	41.33	56.00	-14.67	QP	NEUTRAL
12	3.44	10.27	9.68	0.05	9.87	29.87	46.00	-16.13	Average	NEUTRAL

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room

D:\2019 CE report data\Q19032112-1E\CE.EM6

Test Date : 2019-06-03

Tested By : Alan

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

Power Supply : AC 240V/60Hz

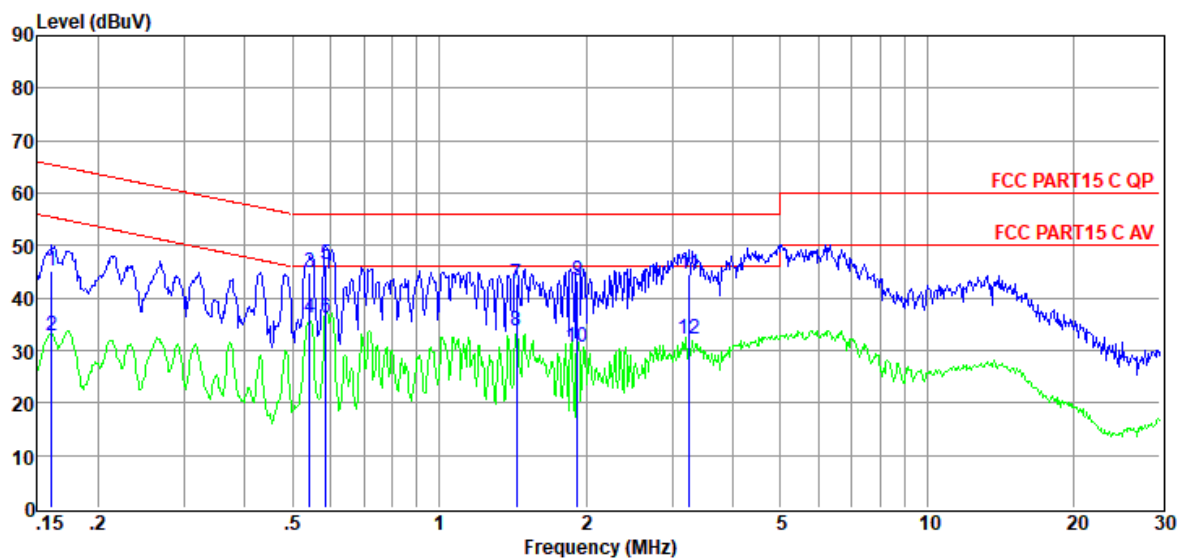
Test Mode : Tx mode

Condition : Temp:24.5°C, Humi:71.2%,
Press:101.4kPa

LISN : 2018 ENV216/LINE

Memo : Factory 1

Data: 44



Item	Freq.	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.16	25.60	9.63	0.02	9.86	45.11	65.43	-20.32	QP	LINE
2	0.16	13.37	9.63	0.02	9.86	32.88	55.43	-22.55	Average	LINE
3	0.54	25.43	9.64	0.02	9.86	44.95	56.00	-11.05	QP	LINE
4	0.54	16.63	9.64	0.02	9.86	36.15	46.00	-9.85	Average	LINE
5	0.59	26.99	9.64	0.03	9.86	46.52	56.00	-9.48	QP	LINE
6	0.59	16.70	9.64	0.03	9.86	36.23	46.00	-9.77	Average	LINE
7	1.44	23.14	9.65	0.08	9.87	42.74	56.00	-13.26	QP	LINE
8	1.44	14.15	9.65	0.08	9.87	33.75	46.00	-12.25	Average	LINE
9	1.92	23.76	9.65	0.06	9.87	43.34	56.00	-12.66	QP	LINE
10	1.92	10.91	9.65	0.06	9.87	30.49	46.00	-15.51	Average	LINE
11	3.26	24.86	9.67	0.04	9.87	44.44	56.00	-11.56	QP	LINE
12	3.26	12.63	9.67	0.04	9.87	32.21	46.00	-13.79	Average	LINE

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 5# Shield Room

D:\2019 report data\Q19032112-4E\20190509 CE.EM6

Test Date : 2019-05-09

Tested By : Only

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

Power Supply : AC 240V/60Hz

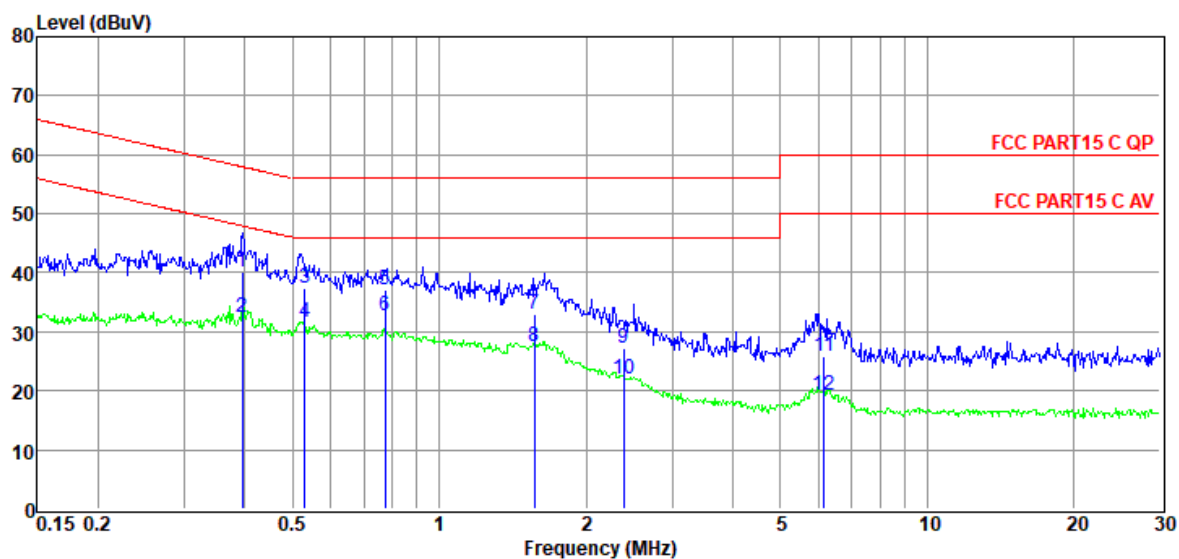
Test Mode : Tx mode

Condition : Temp:24.5°C, Humi:55.5%,
Press:100.1kPa

LISN : 2018 ENV216 2#/NEUTRAL

Memo : Factory 2

Data: 26



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.40	20.60	9.65	0.20	9.78	40.23	57.95	-17.72	QP	NEUTRAL
2	0.40	12.90	9.65	0.20	9.78	32.53	47.95	-15.42	Average	NEUTRAL
3	0.53	17.63	9.64	0.20	9.78	37.25	56.00	-18.75	QP	NEUTRAL
4	0.53	11.86	9.64	0.20	9.78	31.48	46.00	-14.52	Average	NEUTRAL
5	0.78	17.54	9.64	0.21	9.78	37.17	56.00	-18.83	QP	NEUTRAL
6	0.78	13.17	9.64	0.21	9.78	32.80	46.00	-13.20	Average	NEUTRAL
7	1.57	13.29	9.64	0.28	9.78	32.99	56.00	-23.01	QP	NEUTRAL
8	1.57	7.89	9.64	0.28	9.78	27.59	46.00	-18.41	Average	NEUTRAL
9	2.38	7.67	9.64	0.33	9.70	27.34	56.00	-28.66	QP	NEUTRAL
10	2.38	2.34	9.64	0.33	9.70	22.01	46.00	-23.99	Average	NEUTRAL
11	6.15	6.43	9.67	0.38	9.35	25.83	60.00	-34.17	QP	NEUTRAL
12	6.15	-0.25	9.67	0.38	9.35	19.15	50.00	-30.85	Average	NEUTRAL

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 5# Shield Room

D:\2019 report data\Q19032112-4E\20190509 CE.EM6

Test Date : 2019-05-09

Tested By : Only

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

Power Supply : AC 240V/60Hz

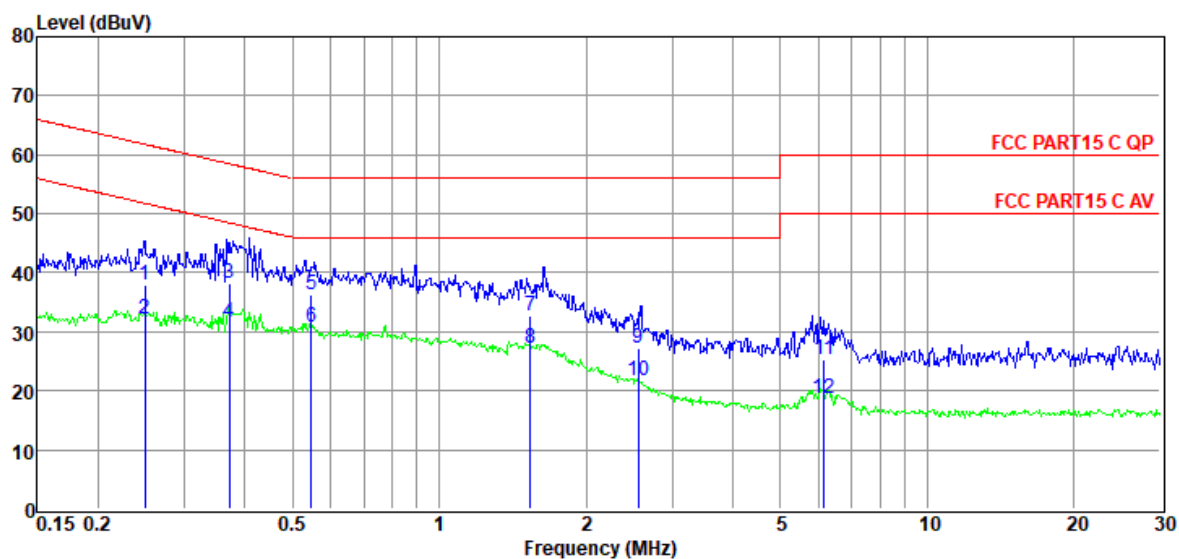
Test Mode : Tx mode

Condition : Temp:24.5°C, Humi:55.5%,
Press:100.1kPa

LISN : 2018 ENV216 2#/LINE

Memo : Factory 2

Data: 28



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.25	18.39	9.66	0.18	9.78	38.01	61.78	-23.77	QP	LINE
2	0.25	12.65	9.66	0.18	9.78	32.27	51.78	-19.51	Average	LINE
3	0.37	18.71	9.65	0.19	9.78	38.33	58.47	-20.14	QP	LINE
4	0.37	11.94	9.65	0.19	9.78	31.56	48.47	-16.91	Average	LINE
5	0.55	16.73	9.64	0.20	9.78	36.35	56.00	-19.65	QP	LINE
6	0.55	11.17	9.64	0.20	9.78	30.79	46.00	-15.21	Average	LINE
7	1.54	13.05	9.64	0.28	9.78	32.75	56.00	-23.25	QP	LINE
8	1.54	7.57	9.64	0.28	9.78	27.27	46.00	-18.73	Average	LINE
9	2.55	7.49	9.64	0.34	9.67	27.14	56.00	-28.86	QP	LINE
10	2.55	2.13	9.64	0.34	9.67	21.78	46.00	-24.22	Average	LINE
11	6.15	5.82	9.67	0.38	9.35	25.22	60.00	-34.78	QP	LINE
12	6.15	-0.60	9.67	0.38	9.35	18.80	50.00	-31.20	Average	LINE

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

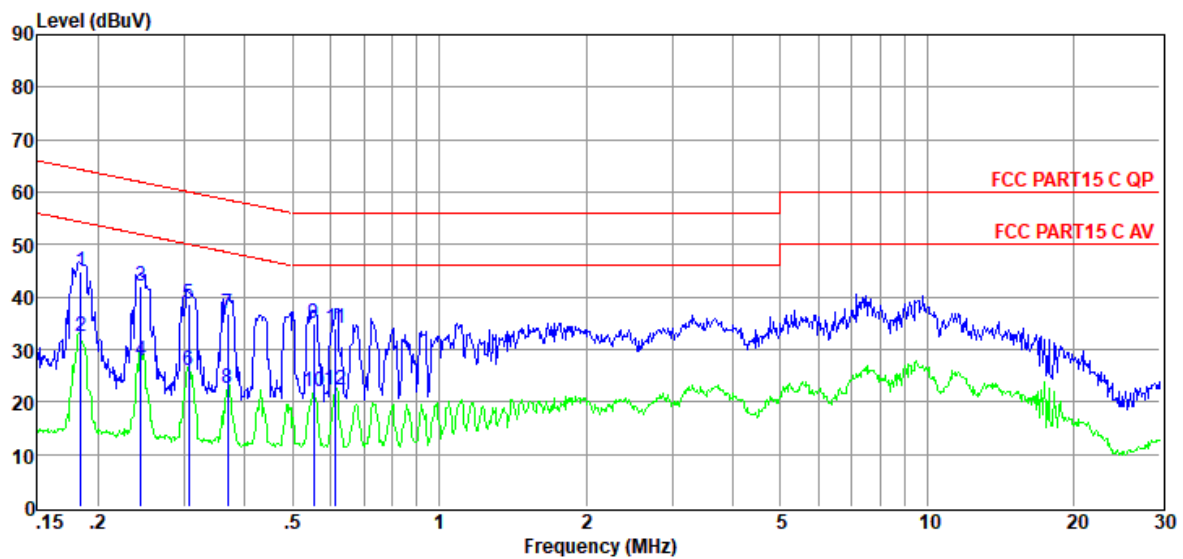
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

Battery: IAA033NA:

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **D:\2019 CE report data\Q19103115-1E\1122 ce.EM6**
Test Date : 2019-12-02 **Tested By** : Lori
EUT : Portable Bluetooth Speaker **Model Number** : PULSE4
Power Supply : AC 240V/60Hz **Test Mode** : Tx mode
Condition : Temp:24'C,Humi:54%,Press:101.4kPa **LISN** : 2018 ENV216/NEUTRAL

Memo :



Item (Mark)	Freq. (MHz)	Read Level (dBUV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBUV)	Limit Line (dBUV)	Over Limit (dB)	Detector	Phase
1	0.18	25.22	9.64	0.02	9.86	44.74	64.28	-19.54	QP	NEUTRAL
2	0.18	12.85	9.64	0.02	9.86	32.37	54.28	-21.91	Average	NEUTRAL
3	0.24	22.39	9.64	0.02	9.86	41.91	61.95	-20.04	QP	NEUTRAL
4	0.24	8.35	9.64	0.02	9.86	27.87	51.95	-24.08	Average	NEUTRAL
5	0.31	19.09	9.64	0.02	9.86	38.61	60.06	-21.45	QP	NEUTRAL
6	0.31	6.38	9.64	0.02	9.86	25.90	50.06	-24.16	Average	NEUTRAL
7	0.37	17.27	9.64	0.02	9.86	36.79	58.52	-21.73	QP	NEUTRAL
8	0.37	3.19	9.64	0.02	9.86	22.71	48.52	-25.81	Average	NEUTRAL
9	0.55	15.40	9.64	0.02	9.86	34.92	56.00	-21.08	QP	NEUTRAL
10	0.55	2.33	9.64	0.02	9.86	21.85	46.00	-24.15	Average	NEUTRAL
11	0.61	14.44	9.64	0.03	9.86	33.97	56.00	-22.03	QP	NEUTRAL
12	0.61	2.85	9.64	0.03	9.86	22.38	46.00	-23.62	Average	NEUTRAL

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

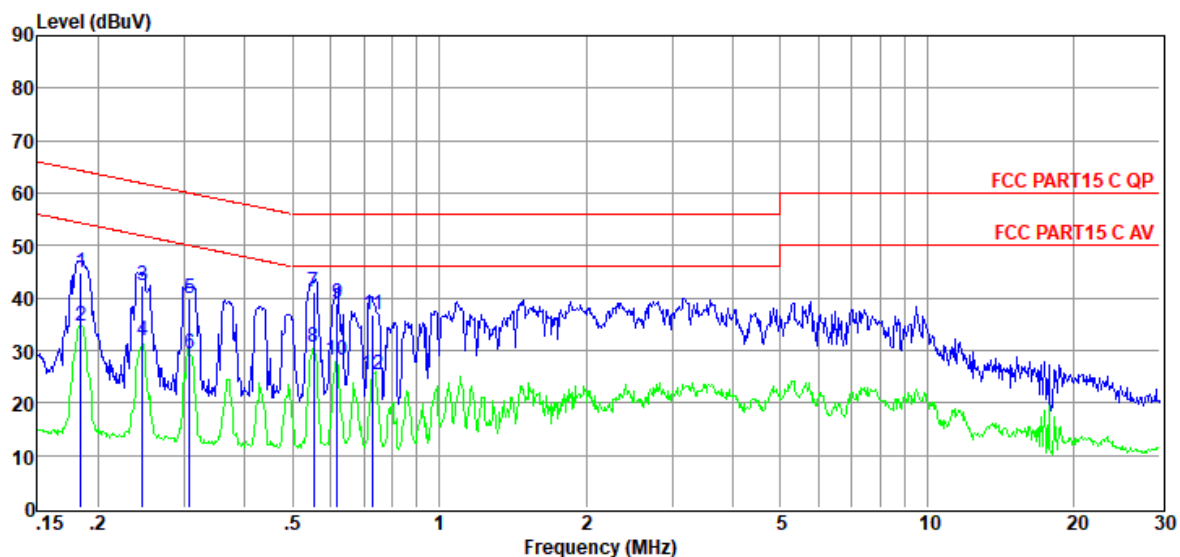
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **D:\2019 CE report data\Q19103115-1E\1122 ce.EM6**
Test Date : 2019-12-02 **Tested By** : Lori
EUT : Portable Bluetooth Speaker **Model Number** : PULSE4
Power Supply : AC 240V/60Hz **Test Mode** : Tx mode
Condition : Temp:24'C,Humi:54%,Press:101.4kPa **LISN** : 2018 ENV216/LINE
Memo :



Item	Freq.	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.18	25.48	9.63	0.02	9.86	44.99	64.28	-19.29	QP	LINE
2	0.18	15.12	9.63	0.02	9.86	34.63	54.28	-19.65	Average	LINE
3	0.25	22.87	9.63	0.02	9.86	42.38	61.86	-19.48	QP	LINE
4	0.25	12.31	9.63	0.02	9.86	31.82	51.86	-20.04	Average	LINE
5	0.31	20.33	9.63	0.02	9.86	39.84	60.02	-20.18	QP	LINE
6	0.31	9.92	9.63	0.02	9.86	29.43	50.02	-20.59	Average	LINE
7	0.55	21.66	9.64	0.02	9.86	41.18	56.00	-14.82	QP	LINE
8	0.55	11.15	9.64	0.02	9.86	30.67	46.00	-15.33	Average	LINE
9	0.62	19.47	9.64	0.03	9.86	39.00	56.00	-17.00	QP	LINE
10	0.62	8.49	9.64	0.03	9.86	28.02	46.00	-17.98	Average	LINE
11	0.73	17.39	9.64	0.04	9.86	36.93	56.00	-19.07	QP	LINE
12	0.73	5.88	9.64	0.04	9.86	25.42	46.00	-20.58	Average	LINE

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

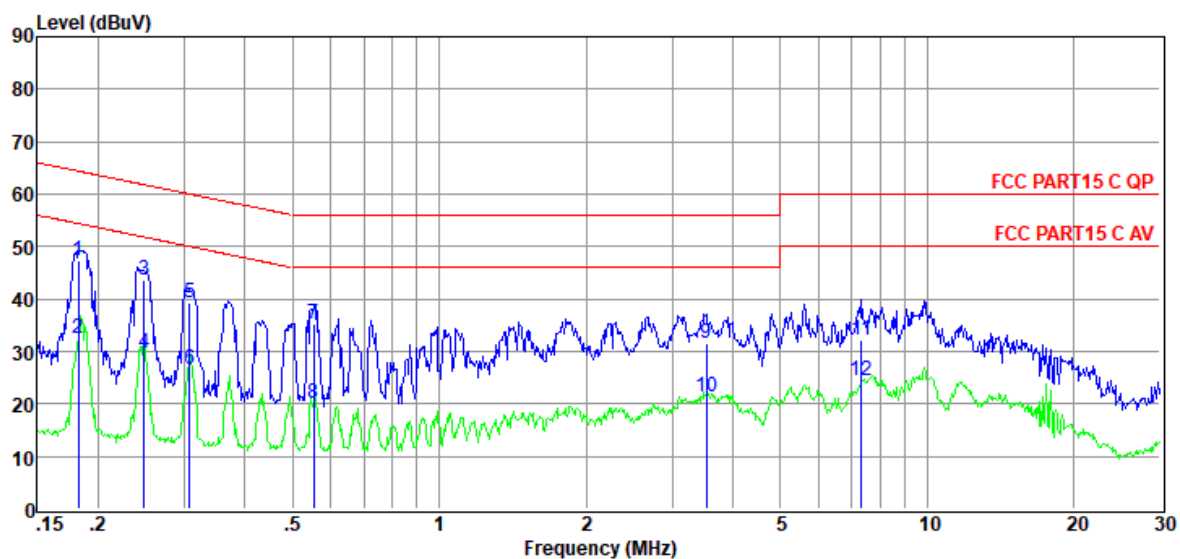
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

Battery: SUN-INTE-277:

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **D:\2019 CE report data\Q19103115-4E\1216 ce.EM6**
Test Date : 2019-12-16 **Tested By** : Lori
EUT : Portable Bluetooth Speaker **Model Number** : PULSE4
Power Supply : AC 240V/60Hz **Test Mode** : Tx mode
Condition : Temp:24'C,Humi:54%,Press:101.4kPa **LISN** : 2018 ENV216/LINE

Memo :



Item (Mark)	Freq. (MHz)	Read Level (dBUV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBUV)	Limit Line (dBUV)	Over Limit (dB)	Detector	Phase
1	0.18	27.75	9.63	0.02	9.86	47.26	64.37	-17.11	QP	LINE
2	0.18	12.88	9.63	0.02	9.86	32.39	54.37	-21.98	Average	LINE
3	0.25	24.24	9.63	0.02	9.86	43.75	61.82	-18.07	QP	LINE
4	0.25	10.23	9.63	0.02	9.86	29.74	51.82	-22.08	Average	LINE
5	0.31	19.85	9.63	0.02	9.86	39.36	60.02	-20.66	QP	LINE
6	0.31	7.17	9.63	0.02	9.86	26.68	50.02	-23.34	Average	LINE
7	0.55	15.76	9.64	0.02	9.86	35.28	56.00	-20.72	QP	LINE
8	0.55	0.69	9.64	0.02	9.86	20.21	46.00	-25.79	Average	LINE
9	3.53	11.96	9.68	0.05	9.87	31.56	56.00	-24.44	QP	LINE
10	3.53	1.63	9.68	0.05	9.87	21.23	46.00	-24.77	Average	LINE
11	7.33	12.60	9.73	0.03	9.89	32.25	60.00	-27.75	QP	LINE
12	7.33	4.64	9.73	0.03	9.89	24.29	50.00	-25.71	Average	LINE

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

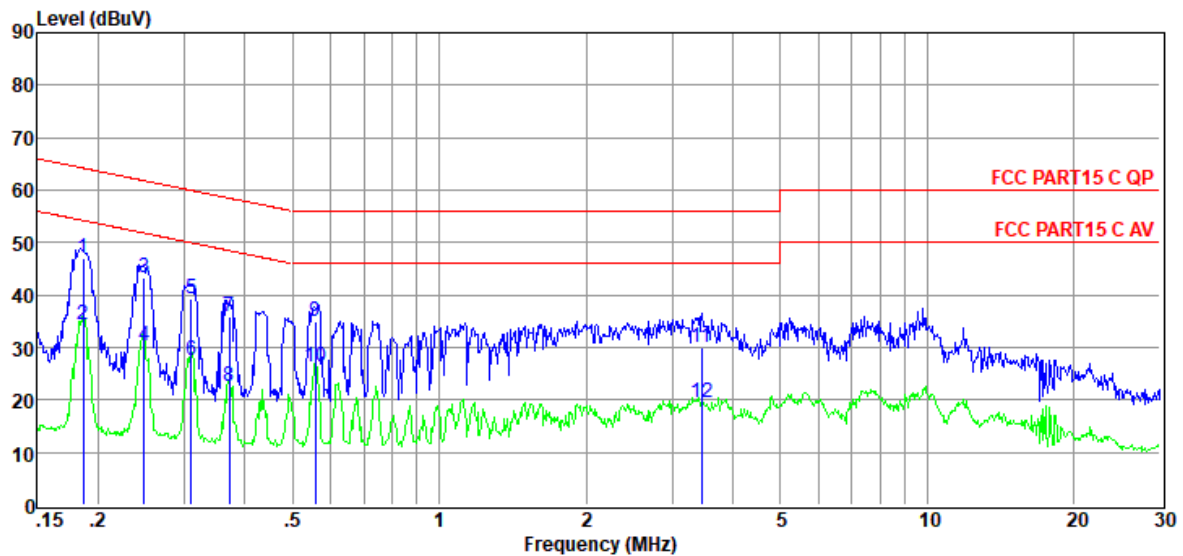
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room **D:\2019 CE report data\Q19103115-4E\1216 ce.EM6**
Test Date : 2019-12-16 **Tested By** : Lori
EUT : Portable Bluetooth Speaker **Model Number** : PULSE4
Power Supply : AC 240V/60Hz **Test Mode** : Tx mode
Condition : Temp:24'C,Humi:54%,Press:101.4kPa **LISN** : 2018 ENV216/NEUTRAL
Memo :



Item	Freq.	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.19	27.48	9.64	0.02	9.86	47.00	64.20	-17.20	QP	NEUTRAL
2	0.19	14.73	9.64	0.02	9.86	34.25	54.20	-19.95	Average	NEUTRAL
3	0.25	23.79	9.64	0.02	9.86	43.31	61.82	-18.51	QP	NEUTRAL
4	0.25	10.80	9.64	0.02	9.86	30.32	51.82	-21.50	Average	NEUTRAL
5	0.31	19.90	9.64	0.02	9.86	39.42	59.97	-20.55	QP	NEUTRAL
6	0.31	7.96	9.64	0.02	9.86	27.48	49.97	-22.49	Average	NEUTRAL
7	0.37	16.32	9.64	0.02	9.86	35.84	58.47	-22.63	QP	NEUTRAL
8	0.37	3.04	9.64	0.02	9.86	22.56	48.47	-25.91	Average	NEUTRAL
9	0.56	15.41	9.64	0.03	9.86	34.94	56.00	-21.06	QP	NEUTRAL
10	0.56	6.82	9.64	0.03	9.86	26.35	46.00	-19.65	Average	NEUTRAL
11	3.45	10.43	9.68	0.05	9.87	30.03	56.00	-25.97	QP	NEUTRAL
12	3.45	-0.05	9.68	0.05	9.87	19.55	46.00	-26.45	Average	NEUTRAL

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

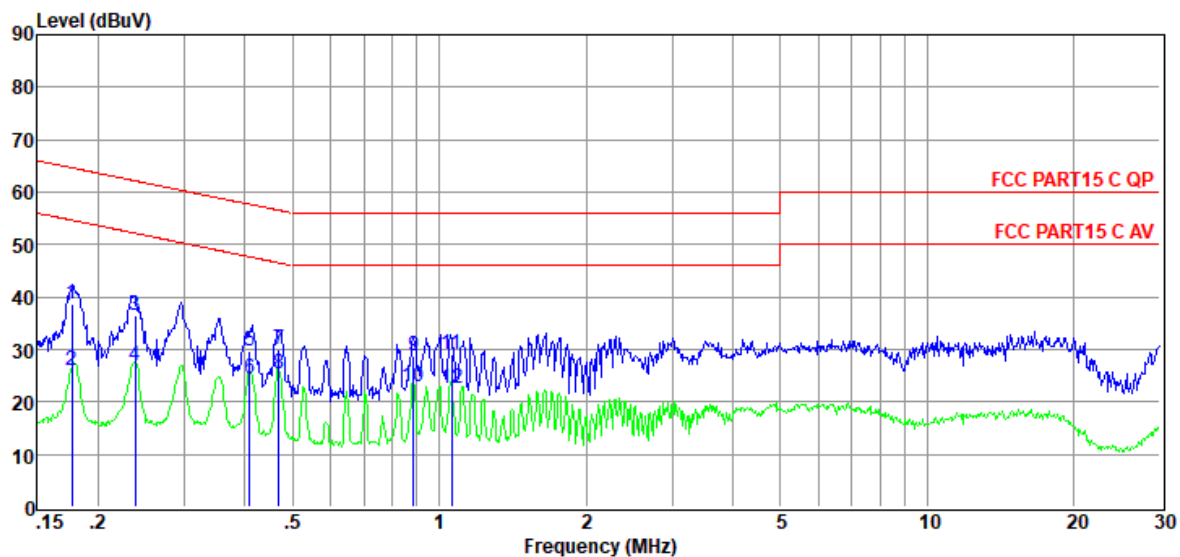
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

New mainboard:

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	D:\2020 CE report data\Q20042112-1E\20200430 CE.EM6
Test Date	: 2020-04-30	Tested By : Chunchieh
EUT	: Portable Bluetooth Speaker	Model Number : PULSE4
Power Supply	: AC 120V/60Hz	Test Mode : Tx mode
Condition	: Temp:24.5°C, Humi:55.5%, Press:100.1kPa	LISN : 2019 ENV216 1#/NEUTRAL
Memo	:	

Data: 10



Item	Freq.	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.18	19.07	9.60	0.01	9.86	38.54	64.64	-26.10	QP	NEUTRAL
2	0.18	6.49	9.60	0.01	9.86	25.96	54.64	-28.68	Average	NEUTRAL
3	0.24	17.02	9.60	0.02	9.86	36.50	62.17	-25.67	QP	NEUTRAL
4	0.24	7.40	9.60	0.02	9.86	26.88	52.17	-25.29	Average	NEUTRAL
5	0.41	10.14	9.60	0.02	9.86	29.62	57.68	-28.06	QP	NEUTRAL
6	0.41	4.91	9.60	0.02	9.86	24.39	47.68	-23.29	Average	NEUTRAL
7	0.47	10.62	9.60	0.02	9.86	30.10	56.54	-26.44	QP	NEUTRAL
8	0.47	5.90	9.60	0.02	9.86	25.38	46.54	-21.16	Average	NEUTRAL
9	0.88	9.38	9.60	0.03	9.86	28.87	56.00	-27.13	QP	NEUTRAL
10	0.88	3.34	9.60	0.03	9.86	22.83	46.00	-23.17	Average	NEUTRAL
11	1.06	9.52	9.60	0.03	9.86	29.01	56.00	-26.99	QP	NEUTRAL
12	1.06	3.24	9.60	0.03	9.86	22.73	46.00	-23.27	Average	NEUTRAL

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 1# Shield Room

D:\2020 CE report data\Q20042112-1E\20200430 CE.EM6

Test Date : 2020-04-30

Tested By : Chunchieh

EUT : Portable Bluetooth Speaker

Model Number : PULSE4

Power Supply : AC 120V/60Hz

Test Mode : Tx mode

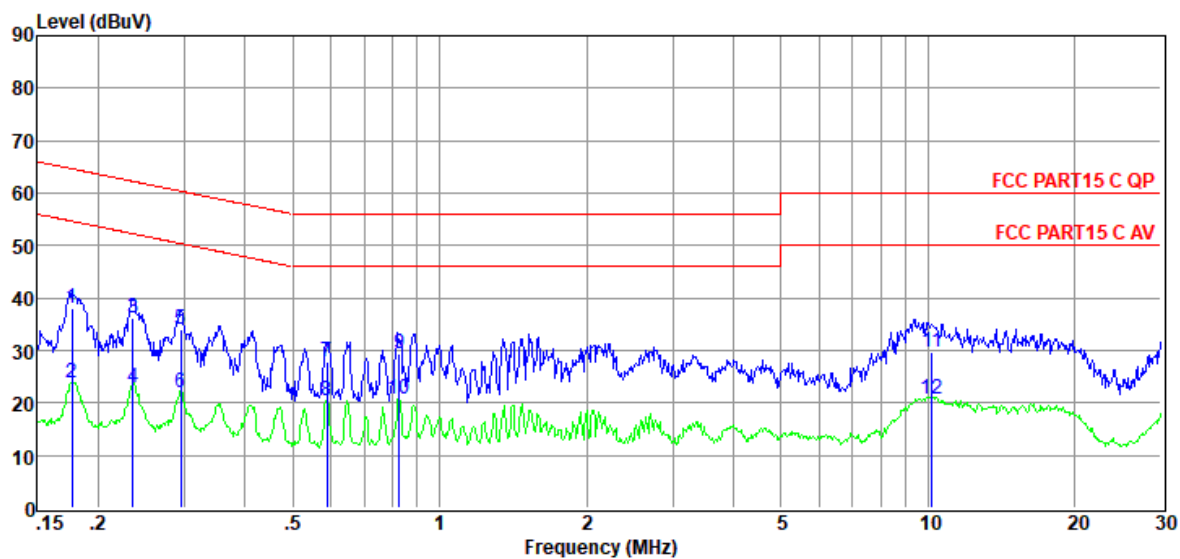
Condition : Temp:24.5°C, Humi:55.5%,

LISN : 2019 ENV216 1#/LINE

Press:100.1kPa

Memo :

Data: 12



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.18	18.64	9.60	0.01	9.86	38.11	64.64	-26.53	QP	LINE
2	0.18	4.24	9.60	0.01	9.86	23.71	54.64	-30.93	Average	LINE
3	0.24	16.68	9.60	0.02	9.86	36.16	62.26	-26.10	QP	LINE
4	0.24	3.51	9.60	0.02	9.86	22.99	52.26	-29.27	Average	LINE
5	0.30	14.40	9.60	0.02	9.86	33.88	60.37	-26.49	QP	LINE
6	0.30	2.37	9.60	0.02	9.86	21.85	50.37	-28.52	Average	LINE
7	0.59	8.31	9.60	0.03	9.86	27.80	56.00	-28.20	QP	LINE
8	0.59	0.83	9.60	0.03	9.86	20.32	46.00	-25.68	Average	LINE
9	0.83	9.83	9.60	0.03	9.86	29.32	56.00	-26.68	QP	LINE
10	0.83	1.13	9.60	0.03	9.86	20.62	46.00	-25.38	Average	LINE
11	10.18	10.22	9.60	0.11	9.89	29.82	60.00	-30.18	QP	LINE
12	10.18	1.24	9.60	0.11	9.89	20.84	50.00	-29.16	Average	LINE

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

END OF REPORT