



FCC Test Report

Application No.: DNT2504140337R3621-04781

Applicant: SHENZHEN ZEALOT DIGITAL TECHNOLOGY CO.,LTD

Address of Applicant: 401,501,building 3,NO.8,Yong Tai Road,east District,BaiShi xia
Community,Fu Yong street,BaoAn District,ShenZhen China

EUT Description: WIRELESS SPEAKER

Model No.: ZEALOT-P12

FCC ID: 2AFKR-P12

Power Supply Input:DC 5V;
DC 7.4V from rechargeable lithium-ion battery

Trade Mark: ZEALOT

Standards: 47 CFR FCC Part 2, Subpart J
47 CFR Part 15, Subpart C
ANSI C63.10: 2013

Date of Receipt: 2025/4/17

Date of Test: 2025/4/20 to 2025/4/28

Date of Issue: 2025/4/30

Test Result: **PASS**

Prepared By: Wayne Lin (Testing Engineer)

Reviewed By: Pengfei Chen (Project Engineer)

Approved By: Heise Chen (Manager)



Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Apr.30, 2025	Valid	Original Report



1 Test Summary

Test Item	Test Requirement	Test Method	Test Result	Result
Antenna Requirement	15.203/247(b)	--	Clause 3.1	PASS
20dB Emission Bandwidth	15.247 (a)(1)	ANSI C63.10: 2013	Clause 3.2	PASS
Conducted Peak Output Power	15.247 (b)(1)	ANSI C63.10: 2013	Clause 3.3	PASS
Carrier Frequencies Separation	15.247 (a)(1)	ANSI C63.10: 2013	Clause 3.4	PASS
Dwell Time	15.247 (a)(1)	ANSI C63.10: 2013	Clause 3.5	PASS
Hopping Channel Number	15.247 (a)(1)	ANSI C63.10: 2013	Clause 3.6	PASS
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10: 2013	Clause 3.7	PASS
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10: 2013	Clause 3.8	PASS
Radiated Spurious emissions	15.247(d); 15.205/15.209	ANSI C63.10: 2013	Clause 3.9	PASS
Restricted bands around fundamental frequency (Radiated Emission)	15.247(d); 15.205/15.209	ANSI C63.10: 2013	Clause 3.10	PASS
AC Power Line Conducted Emission	15.207	ANSI C63.10: 2013	Clause 3.11	PASS

Note:

1. "N/A" denotes test is not applicable in this test report.



Contents

1 Test Summary	3
2 General Information	5
2.1 Test Location	5
2.2 General Description of EUT	6
2.3 Channel List	7
2.4 5Test Environment and Mode	8
2.5 Power Setting of Test Software	9
2.6 Description of Support Units	9
2.7 Test Facility	9
2.8 Measurement Uncertainty (95% confidence levels, k=2)	10
2.9 Equipment List	11
2.10 Assistant equipment used for test	12
3 Test results and Measurement Data	13
3.1 Antenna Requirement	13
3.2 20dB Emission Bandwidth	14
3.3 Conducted Output Power	15
3.4 Carrier Frequencies Separation	16
3.5 Dwell Time	17
3.6 Hopping Channel Number	18
3.7 Band-edge for RF Conducted Emissions	19
3.8 RF Conducted Spurious Emissions	20
3.9 Radiated Spurious Emissions	21
3.10 Restricted bands around fundamental frequency	29
3.11 AC Power Line Conducted Emissions	33
4 Appendix	36
Appendix A: 20dB Emission Bandwidth	36
Appendix B: Maximum conducted output power	40
Appendix C: Carrier frequency separation	44
Appendix D: Dwell Time	46
Appendix E: Number of hopping channels	50
Appendix F: Band edge measurements	52
Appendix G: Conducted Spurious Emission	53



2 General Information

2.1 Test Location

Company:	Dongguan DN Testing Co., Ltd
Address:	No. 1, West Fourth Street, South Xinfu Road, Wusha Liwu, Chang 'an Town, Dongguan City, Guangdong P.R.China
Test engineer:	Wayne Lin



2.2 General Description of EUT

Manufacturer:	SHENZHEN ZEALOT DIGITAL TECHNOLOGY CO.,LTD
Address of Manufacturer:	401,501,building 3,NO.8,Yong Tai Road,east District,BaiShi xia Community,Fu Yong street,BaoAn District,ShenZhen China
Test EUT Description:	WIRELESS SPEAKER
Model No.:	ZEALOT-P12
Additional Model(s):	/
Chip Type:	ATS2853P
Serial number:	PR2504140337R3621
Power Supply	Input:DC 5V; DC 7.4V from rechargeable lithium-ion battery
Trade Mark:	ZEALOT
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	2402 MHz to 2480 MHz
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Type of Modulation:	GFSK, $\pi/4$ -DQPSK,8DPSK
Sample Type:	☒ Portable Device, ☐ Module, ☐ Mobile Device
Antenna Type:	☐ External, ☒ Integrated
Antenna Ports:	☒ Ant 1, ☐ Ant 2, ☐ Ant 3
Antenna Gain*:	☒ Provided by applicant
	1.7dBi
RF Cable*:	☒ Provided by applicant
	0.5dB(0.6~1GHz); 0.8dB(1.4~2GHz); 1.0dB(2.1~2.7GHz); 1.5dB(3~4GHz); 1.8dB(4.4~6GHz);

Remark:

*All models are just color differences, motherboard, PCB circuit board, chip, electronic components, appearance is all the same.

*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information, DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.



2.3 Channel List

Operation Frequency of each channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
6	2408MHz	26	2428MHz	46	2448MHz	66	2468MHz
7	2409MHz	27	2429MHz	47	2449MHz	67	2469MHz
8	2410MHz	28	2430MHz	48	2450MHz	68	2470MHz
9	2411MHz	29	2431MHz	49	2451MHz	69	2471MHz
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
12	2414MHz	32	2434MHz	52	2454MHz	72	2474MHz
13	2415MHz	33	2435MHz	53	2455MHz	73	2475MHz
14	2416MHz	34	2436MHz	54	2456MHz	74	2476MHz
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz		

Remark:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest channel	2402MHz
The Middle channel	2441MHz
The Highest channel	2480MHz



2.4 5Test Environment and Mode

Operating Environment:	
Temperature:	20~25.0 °C
Humidity:	45~56 % RH
Atmospheric Pressure:	101.0~101.30 KPa
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.



2.5 Power Setting of Test Software

Software Name	FCC_Test_Tools_V2.24		
Frequency(MHz)	2402	2441	2480
GFSK Setting	5	5	5
$\pi/4$ -DQPSK Setting	5	5	5
8DPSK	5	5	5

2.6 Description of Support Units

The EUT has been tested independent unit.

2.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Lab A:

• FCC, USA

Designation Number: CN1348

• A2LA (Certificate No. 7050.01)

DONGGUAN DN TESTING CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 7050.01.

• Innovation, Science and Economic Development Canada

DONGGUAN DN TESTING CO., LTD. EMC Laboratory has been recognized by ISED as an accredited testing laboratory. CAB identifier is CN0149.

IC#: 30755.

**2.8 Measurement Uncertainty (95% confidence levels, k=2)**

No.	Item	Measurement Uncertainty
1	20dB Emission Bandwidth	$\pm 0.0196\%$
2	Carrier Frequency Separation	$\pm 1.9\%$
3	Number of Hopping Channel	$\pm 1.9\%$
4	Time of Occupancy	$\pm 0.028\%$
5	Max Peak Conducted Output Power	± 0.743 dB
6	Band-edge Spurious Emission	± 1.328 dB
7	Conducted RF Spurious Emission	9KHz-1GHz: ± 0.746 dB 1GHz-26GHz: ± 1.328 dB

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0 dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8 dB (Below 1GHz)
		± 4.8 dB (1GHz to 6GHz)
		± 4.5 dB (6GHz to 18GHz)
		± 5.02 dB (Above 18GHz)



2.9 Equipment List

For Connect EUT Antenna Terminal Test					
Description	Manufacturer	Model	Serial Number	Cal date	Due date
Signal Generator	Keysight	N5181A-6G	MY48180415	2024-10-23	2025-10-22
Signal Generator	Keysight	N5182B	MY57300617	2024-10-23	2025-10-22
Power supply	Keysight	E3640A	ZB2022656	2024-10-23	2025-10-22
Radio Communication Tester	R&S	CMW500	105082	2024-10-23	2025-10-22
Spectrum Analyzer	Aglient	N9010A	MY52220200	2024-10-23	2025-10-22
BT/WIFI Test Software	Tonscend	JS1120 V3.1.83	NA	NA	NA
RF Control Unit	Tonscend	JS0806-2	22F8060581	NA	NA
Power Sensor	Anritsu	ML2495A	2129005	2024-10-23	2025-10-22
Pulse Power Sensor	Anritsu	MA2411B	1911397	2024-10-23	2025-10-22
temperature and humidity box	SCOTEK	SCD-C40-80PRO	6866682020008	2024-10-23	2025-10-22
RF Cable	ETS-LINDGREN	RFC-NMS-100-NMS-350-IN	NA	2024-10-23	2025-10-22

Test Equipment for Conducted Emission					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Receiver	R&S	ESCI3	101152	2024-10-23	2025-10-22
LISN	R&S	ENV216	102874	2024-10-23	2025-10-22
ISN	R&S	ENY81-CA6	1309.8590.03	2024-10-23	2025-10-22
RF Cable	ETS-LINDGREN	Cable-CE TS01	/	2024-10-23	2025-10-22

Test Equipment for Radiated Emission(30MHz-1000MHz)					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Receiver	R&S	ESR7	102497	2024-10-23	2025-10-22
Test Software	ETS-LINDGREN	TILE-FULL	NA	NA	NA
RF Cable	ETS-LINDGREN	RE Cable-TS01	NA	2024-10-23	2025-10-22
Log periodic antenna	ETS-LINDGREN	VULB 9168	01475	2022-11-28	2025-11-27
Pre-amplifier	Schwarzbeck	BBV9743B	00423	2024-10-23	2025-10-22



Attenuator 1	Shanghai Huaxiang	TS2-6-18-A	22061803	2025-5-6	2026-5-5
Attenuator 2	Shanghai Huaxiang	TS2-6-6-A	230927163	2025-5-6	2026-5-5

Test Equipment for Radiated Emission(Above 1000MHz)					
Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Frequency analyser	Keysight	N9010A	MY52221458	2024-10-23	2025-10-22
RF Cable	ETS-LINDGREN	RE Cable-TS02	NA	2024-10-23	2025-10-22
Horn Antenna	ETS-LINDGREN	3117	00252567	2022-11-28	2025-11-27
Double ridged waveguide antenna	ETS-LINDGREN	3116C	00251780	2022-11-28	2025-11-27
Test Software	ETS-LINDGREN	TILE-FULL	NA	NA	NA
Pre-amplifier	ETS-LINDGREN	3117-PA	252567	2024-10-23	2025-10-22
Pre-amplifier	ETS-LINDGREN	3116C-PA	251780	2024-10-23	2025-10-22

2.10 Assistant equipment used for test

Code	Equipment	Manufacturer	Model No.	Equipment No.
1	Computer	acer	N22C8	EMC notebook01
2	Adapter	HUAWEI	HW-100225C00	NA



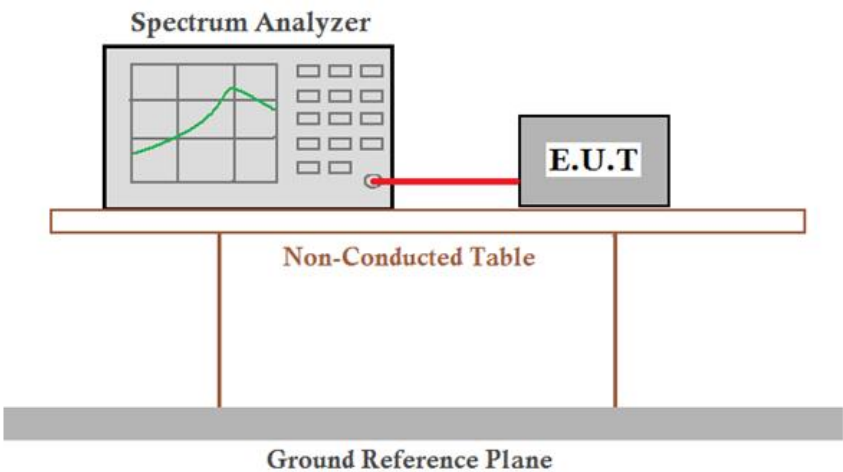
3 Test results and Measurement Data

3.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1.7dBi.	



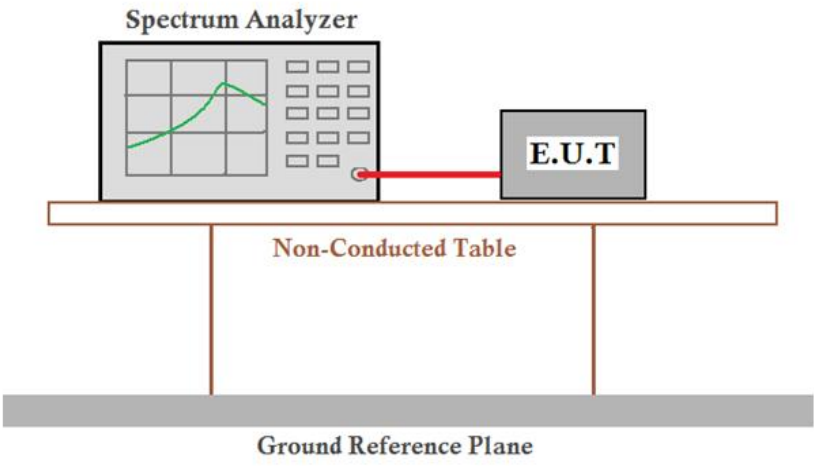
3.2 20dB Emission Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10: 2013 Section 7.8.7
Test Setup:	
Instruments Used:	Refer to section 2.9 for details
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the worst case of all modulation type.
Limit:	NA
Test Results:	Pass

The detailed test data see: **Appendix A**



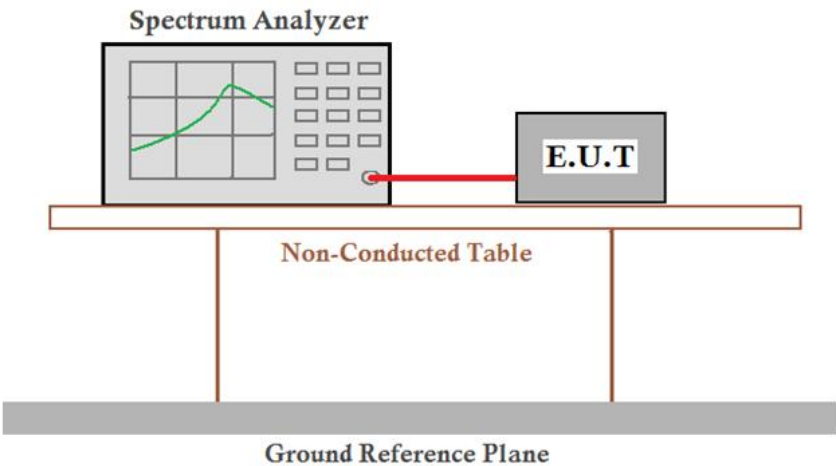
3.3 Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(1)
Test Method:	ANSI C63.10: 2013 Section 7.8.5
Test Setup:	
Test Instruments:	Refer to section 2.9 for details
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the worst case of all modulation type.
Limit:	(20.97dBm) 125mW
Test Results:	Pass

The detailed test data see: **Appendix B**



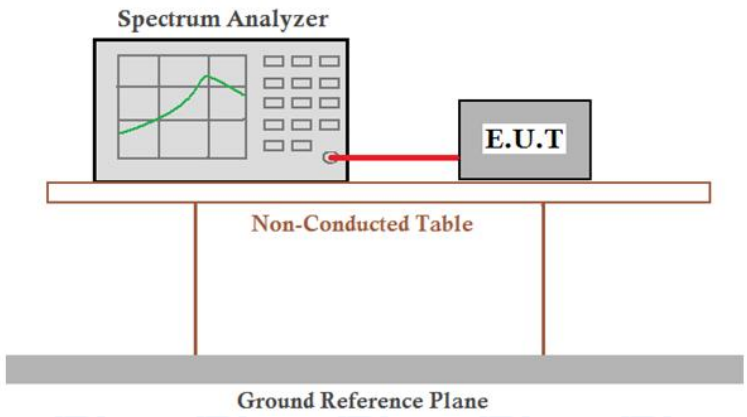
3.4 Carrier Frequencies Separationy

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10: 2013 Section 7.8.2
Test Setup:	
Test Instruments:	Refer to section 2.9 for details
Exploratory Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the worst case of all modulation type.
Limit:	2/3 of the 20dB bandwidth
	Remark: the transmission power is less than 0.125W.
Test Results:	Pass

The detailed test data see: **Appendix C**



3.5 Dwell Time

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10: 2013 Section 7.8.4
Test Setup:	
Instruments Used:	Refer to section 2.9 for details
Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type.
Limit:	0.4 Second
Test Results:	Pass

The detailed test data see: **Appendix D**