

WSET

# TEST REPORT

FCC ID: 2AXYP-OTW-323-L

**Product: True Wireless Earbuds** 

Model No.: OTW-323

Trade Mark: oraimo

Report No.: WSCT-ANAB-R&E241200074A-BT

Issued Date: 03 January 2025

WSCT

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Issued for:

ORAIMO TECHNOLOGY LIMITED FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG

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Issued By:

WSCT

World Standardization Certification & Testing Group(Shenzhen) Co.,Ltd. Building A-B, Baoli'an Industrial Park, No. 58 and 60, Tangtou Avenue, Shiyan Street, Bao'an District, Shenzhen City, Guangdong Province, China

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Page 1 of 75

Report No.: WSCT-ANAB-R&E241200074A -BT

W5CT

# **TABLE OF CONTENTS**

	WSET WSET	WSET	W5LT	W5 CT
\/I.	Test Certification		······	3
2.	Test Result Summary			4
W5 [13.	EUT Description	WSC	T W.S.C.	5
4.	Genera Information			7
	4.1. TEST ENVIRONMENT AND MODE			7
	4.2. DESCRIPTION OF SUPPORT UNITS	WSCT	WSCT	
5.	Facilities and Accreditations			8
	5.1. FACILITIES		$\overline{}$	8
W5ET	5.2. ACCREDITATIONS			
	5.3. MEASUREMENT UNCERTAINTY			9
	5.4. MEASUREMENT INSTRUMENTS			10
6./	<b>Test Results and Measurement</b>	Data	WSCT	11/5 <i>CT</i>
	6.1. ANTENNA REQUIREMENT			11
X	6.2. CONDUCTED EMISSION		X	12
WSET	6.3. CONDUCTED OUTPUT POWER	luce c	The second	14
	6.4. 20DB OCCUPY BANDWIDTH			21
	6.5. CARRIER FREQUENCIES SEPARATION			28
	6.6. HOPPING CHANNEL NUMBER			35 5 7 7
	6.7. DWELL TIME			39
X	6.8. PSEUDORANDOM FREQUENCY HOPPING SEC	QUENCE	X	50
WSCT	6.9. CONDUCTED BAND EDGE MEASUREMENT	(V/27)		51
	6.10. CONDUCTED SPURIOUS EMISSION MEASURE	MENT		54
	6.11. RADIATED SPURIOUS EMISSION MEASUREM	ENT	X	64
	WS CT WS CT	WSET	WSCT	WSET
X	X	X	X	
WSET	WSCT WSCT	WSE	WSE	
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# **Test Certification**

True Wireless Earbuds Product:

WSET

Model No.:

OTW-323

Trade Mark:

oraimo

**Applicant:** 

ORAIMO TECHNOLOGY LIMITED

FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE

19-25 SHAN MEI STREET FOTAN NT HONGKONG

Manufacturer:

**ORAIMO TECHNOLOGY LIMITED** 

FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE

19-25 SHAN MEI STREET FOTAN NT HONGKONG

NSET

Date of Test: 15 December 2024 to 03 January 2025 15 LT

**Applicable** Standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

The above equipment has been tested by World Standardization Certification & Testing Group(Shenzhen)Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. W5 C

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Tested By:

Checked By:

(Wang Xiang) W/S

(Chen Xu) V/5

Approved By:

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Date: 04

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(Li Huaibi)

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Page 3 of 75

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Report No.: WSCT-ANAB-R&E241200074A -BT

# 2. Test Result Summary

	MARCO NACE O	THE CT	WEE CT.
7	Requirement	CFR 47 Section	Result
	Antenna Requirement	§15.203/§15.247 (c)	PASS
<b>7</b> °	AC Power Line Conducted Emission	<b>W5ET</b> §15.207	NA NA
_	Conducted Peak Output W5 [7] Power W5 [	§15.247 (b)(1) §2.1046	W5 PASS
	20dB Occupied Bandwidth	§15.247 (a)(1) §2.1049	PASS
	Carrier Frequencies Separation	§15.247 (a)(1)	PASS
	Hopping Channel Number	§15.247 (a)(1)	W5 C PASS
/	Dwell Time	§15.247 (a)(1)	PASS
7°	Radiated Emission	§15.205/§15.209 \$2.1053, §2.1057 W5 ET	PASS <sub>V5ET</sub>
	Band Edge	§15.247(d) §2.1051, §2.1057	PASS

### Note:

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- 1. PASS: Test item meets the requirement.
- 2. Fail: Test item does not meet the requirement.
- 3. N/A: Test case does not apply to the test object.
- 4. The test result judgment is decided by the limit of test standard.

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W5 CT

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Page 4 of 75

WSET



Report No.: WSCT-ANAB-R&E241200074A -BT

W5CT

# 3. EUT Description

	Product Name:	True Wireless Earbuds 7 W5 [7]	SET
$\times$	Model :	OTW-323	
WSET	Trade Mark:	oraimo	
ZVPIG	Operation Frequency:	2402MHz~2480MHz	
	Channel Separation:	1MHz	
	Number of Channel:	797 WSCT WSCT	SET
X	Modulation Type:	GFSK, π/4-DQPSK, 8-DPSK	
WSET	Modulation Technology:	FHSS WSET WSET WSET	
	Antenna Type:	Chip Antenna	$\times$
	Antenna Gain:	1.73dBi <b>W</b> 5/7° <b>W</b> 5/7°	VS CT
WSET		Charging Box: Model: OTW-323 Input: 5V1A Output: 5V400mA Capacity: 500mAh 3.7V 1.85Wh	
	Operating Voltage	Charging Box Battery: Li-ion Battery: 802035 Voltage: 3.7V Rated Capacity: 500mAh 1.85Wh	75.77
X		Earphone Battery: Li-ion Battery: 451012 Rated Voltage: 3.7V Rated Capacity: 35mAh 0.1895Wh	
WSET	Remark:	N/A. WSL WSL	

	AWS CT		W5CT	W5 ET	WSCT	WS CT
	X	X	V	$\mathbf{V}$		X
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Page 5 of 75

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Report No.: WSCT-ANAB-R&E241200074A -BT

Operation Frequency each of channel for GFSK, π/4-DQPSK, 8DPSK

			,			,,	7	<u> </u>
	Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
	MO5 [7	2402MHz	V20 57	2422MHz	40 [	2442MHz	605 4	2462MHz
	1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
0	10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
	11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
	X		$\sim$		X		X	
	18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
	<b></b>	2421MHz	<b>V39 C7</b>	2441MHz	<b>159 C</b>	2461MHz	W5 E	7°-
	Domark:	Channal 0 3	0 8 78 ha	vo boon too	ted for C	ESK TI/I-DO	JDCK 8L	JDSK /

X	Remark: modulation		9 &78 have bee	n tested for G	FSK, π/4-DQ	PSK, 8DPSK	X	
WSCI		WSET	WS	ET	W5 LT		W5 ET	
	X		$\times$	$\times$		X		X
	WSET		WSET	WSE		WSET	/v	VS ET
WSGI		WSET	Ws	ET	WSET		WSET	,
<b>A</b>	WSCI		WSCT	WSE		WSET		VS GT
WSG		WSCT		ET	WSET		WSET	
	WSET		WSCT	WSG		WSLT		VS CT
WSEI		WSET		ET	WSET		WSET	,
	WSCI		WSET	WSCI		WSET		
WSE		WSCT		CT .	WSET		WS E	Group (Shenzhen)
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Report No.: WSCT-ANAB-R&E241200074A -BT

#### **Genera Information** 4.

### 4.1. Test environment and mode

Operating Environment:							
Temperature:	25.0 °C						
Humidity:	56 % RH						
Atmospheric Pressure:	1010 mbar						

**Test Mode:** 

Engineering mode: Keep the EUT in continuous transmitting by select channel and modulations with Fully-charged battery

The sample was placed 0.8m & 1.5m for the measurement below & above 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

# **Description of Support Units**

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

8	Equipment	Model No.	Serial No.	FCC ID	Trade Name
	Adapter	XCU32	1	1	X /

#### Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
- 3. For conducted measurements (Output Power, 20dB Occupied Bandwidth, Carrier Frequencies Separation, Hopping Channel Number, Dwell Time, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

Page 7 of 75





# 5. Facilities and Accreditations

# 5.1. Facilities

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All measurement facilities used to collect the measurement data are located at World Standardization Certification & Testing Group (Shenzhen) Co., Ltd. Building A-B,Baoli'an Industrial Park,No.58 and 60,Tangtou Avenue, Shiyan Street, Bao'an District, Shenzhen City, Guangdong Province, China

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### **5.2.ACCREDITATIONS**

**ANAB - Certificate Number: AT-3951** 

The EMC Laboratory has been accredited by the American Association for Laboratory
Accreditation (ANAB). Certification Number: AT-3951

WSET	W5E	T WS	ET W	SET	W5 ET
WSET	WSET	WSET	WSET	WSCT	
WSET	$\langle \hspace{0.1cm} \rangle$	$\langle \hspace{0.1cm} \rangle$		VSET	WSET
WSCT	WSET	WSET	WSLT	WSCT	
WSET	WSC	W.5	ET V	VSET	WSET
WSCT	WSCT	WSET	WSET	WSCT	
WSCI	$\langle \hspace{0.1cm} \rangle$	$\langle \hspace{0.1cm} \rangle$		X	na Testic T
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Page 8 of 75

WSET W





Report No.: WSCT-ANAB-R&E241200074A -BT

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# 5.3. Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

				<u> </u>
WSCT	No.	Item	MU	
	1	Conducted Emission Test	±3.2dB	X
	2	RF power, conducted	±0.16dB	
	3	Spurious emissions, conducted	±0.21dB	W5 C
X	4	All emissions, radiated(<1GHz)	±4.7dB	
WSET	5	All emissions, radiated(>1GHz)	±4.7dB/5	
	6	Temperature	±0.5°C	X
	7	Humidity	±2.0%	west

WSET	WSET	WSET	WSET	WSET	
W5	$\langle \hspace{0.1cm} \rangle$			VSET .	WSCT
WSCT	WSET	WSCT	WSET	WSCT	
WS	ET W5	ET W.	V V	VS ET	WSCT
WSET	WSET	WSET	WSET	WSCT	
WS				V5ET neation	n& Testion
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Page 9 of 75

WSET WSET

W5 CT







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Report No.: WSCT-ANAB-R&E241200074A -BT

# **5.4. MEASUREMENT INSTRUMENTS**

	5.4. WEASU			$\wedge$			
	NAME OF EQUIPMENT	MANUFACTURER	MODEL	SERIAL NUMBER	Calibration Date	Calibration Due.	'S E T
<	Test software		EZ-EMC	CON-03A	-	X-	
r	Test software	- /	MTS8310	WSCT	- /	VS CT°	
	EMI Test Receiver	R&S	ESCI	100005	11/05/2024	11/04/2025	
	LISN	AFJ	LS16	16010222119	11/05/2024	11/04/2025	$\wedge$
	LISN(EUT)	Mestec	AN3016	04/10040	11/05/2024	11/04/2025	'S E T
<	Universal Radio Communication Tester	R&S	CMU 200	1100.0008.02	11/05/2024	11/04/2025	
C	Coaxial cable	Megalon	LMR400	N/A	11/05/2024	11/04/2025	
	GPIB cable	Megalon	GPIB	N/A	11/05/2024	11/04/2025	
	Spectrum Analyzer	R&S	FSU	100114	11/05/2024	11/04/2025	$\wedge$
	Pre Amplifier	IH.P. <i>ET</i>	HP8447E 5 /	2945A02715	11/05/2024	11/04/2025	15 ET
	Pre-Amplifier	CDSI	PAP-1G18-38	<u> </u>	11/05/2024	11/04/2025	
	Bi-log Antenna	SCHWARZBECK	VULB9168	01488	11/05/2024	11/04/2025	
C	9*6*6 Anechoic	ET V	V5 CT	W.S.ET	11/05/2024	11/04/2025	
	Horn Antenna	COMPLIANCE ENGINEERING	CE18000		11/05/2024	11/04/2025	X
	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-631	11/05/2024	11/04/2025	15 E T
	Cable	TIME MICROWAVE	LMR-400	N-TYPE04	11/05/2024	11/04/2025	
	System-Controller	ccs	N/A	N/A	N.C.R	N.C.R	
C	Turn Table	ccs	N/A	N/A	N.C.R	N.C.R	
	Antenna Tower	ccs	N/A	N/A	N.C.R	N.C.R	
	RF cable	Murata	MXHQ87WA300 0	-	11/05/2024	11/04/2025	
	Loop Antenna	EMCO7	6502W51	7 00042960	11/05/2024	11/04/2025	rs et
1	Horn Antenna	SCHWARZBECK	BBHA 9170	1123	11/05/2024	11/04/2025	
	Power meter	Anritsu	ML2487A	6K00003613	11/05/2024	11/04/2025	
4	Power sensor	Anritsu	MX248XD	WSET	11/05/2024	11/04/2025	
	Spectrum Analyzer	Keysight	N9010B	MY60241089	11/05/2024	11/04/2025	X

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Page 10 of 75

WS CT WS C





Report No.: WSCT-ANAB-R&E241200074A -BT

#### Test Results and Measurement Data 6.

# 6.1. Antenna requirement

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### Standard requirement:

FCC Part15 C 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. 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(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### E.U.T Antenna:

The Bluetooth antenna is a Chip Antenna. it meets the standards, and the best case gain of the antenna is 1.73dBi.

Please refer to the attachment "OTW-323(L) Internal Photo" for the antenna location

Page 11 of 75







Report No.: WSCT-ANAB-R&E241200074A -BT

#### **Conducted Emission** 6.2.

	6.2.1. Test Specification 5	T WSET WSET	W5CT°
X	Test Requirement:	FCC Part15 C Section 15.207	
WSET	Test Method: 5 77	ANSI C63.10:2014 W5 [T] W5 [T]	
	Frequency Range:	150 kHz to 30 MHz	$\times$
	Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto	Wester
WSET	Limits: W5CT	Frequency range (MHz)         Limit (dBuV) Quasi-peak         Average           0.15-0.5         66 to 56*         56 to 46*           0.5-5         56         46           5-30         60         50	WS ET®
		Reference Plane	
X	WSET* WSE	40cm 80cm LISN Filter AC power	WS CT°
WSET	Test Setup: WS CT WS C	Test table/Insulation plane  Remark  E.U.T. Equipment Under Test  LISN: Line Impedence Stabilization Network  Test table height=0.8m	WSET
X	Test Mode:	Refer to item 4.1	
WSCT	WSCT WSC	<ol> <li>The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>The peripheral devices are also connected to the main</li> </ol>	
WSET	Test Procedure:	power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).  3. Both sides of A.C. line are checked for maximum	
	WSET WSE	conducted interference. In order to find the maximum emission, the relative positions of equipment and all of	Testing God
X	Test Result:	NA S	oup(Sh







Report No.: WSCT-ANAB-R&E241200074A -BT

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#### 6.2.2. EUT OPERATING CONDITIONS

The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

#### Test data:

Note: EUT is powered by batteries and cannot transmit normally while charging. This project does not require testing

WSET	WSET°	WSET	WSET	WSCT	
	$\times$	SET WS	$\langle \ \ \ \ \ \rangle$		VSET
WSET	WSET	WSET	WSET	WSET	
	$\times$	SET WS	$\langle \hspace{0.1cm} \rangle$		VSCT
WSET	WSET	WSET	WSET	WSCT	,
	$\times$	SET WS			VSET
WSET	WSET	WSCT	WSCT	WSCT	,
	$\times$	SCT WS	$\langle \hspace{0.1cm} \rangle$		
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Page 13 of 75

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W5 C1

Report No.: WSCT-ANAB-R&E241200074A -BT

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# 6.3. Conducted Output Power

6.3.1. Test Specification	
---------------------------	--

	X		_
	Test Requirement:	FCC Part15 C Section 15.247 (b)(3)	
	Test Method:	ANSI C63.10:2014	
	Limit:	Section 15.247 (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following: (1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts.	W5
7	Test Setup:	Spectrum Analyzer EUT	W5
	Test Mode:	Transmitting mode with modulation	
	Test Procedure:	Use the following spectrum analyzer settings:  Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel  RBW > the 20 dB bandwidth of the emission being measured VBW ≥ RBW  Sweep = auto  Detector function = peak  Trace = max hold  Allow the trace to stabilize.  Use the marker-to-peak function to set the marker to the peak of the emission.	W5
	Test Result:	PASS	
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Page 14 of 75

SET WSE

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W5 CI

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Report No.: WSCT-ANAB-R&E241200074A -BT

W5 CT

# 6.3.2. Test Data

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W5 CT

	GFSK mode					
	Test channel	Peak Output Power (dBm)	Limit (dBm)	Result		
10	Lowest	4.35	20.97	PASS		
1	Middle	4.07	20.97	PASS		
	Highest	3.5	20.97	PASS		

7		Pi/4DQPSK	mode	
	Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
9	Lowest	5.14 <i>5 [ T</i> ]	20.97	PASS CT
	Middle	4.96	20.97	PASS
	Highest	4.21	20.97	PASS

7						
	8DPSK mode					
6	Test channel	Peak Output Power (dBm)	Limit (dBm)	Result		
	Lowest	5.44	20.97	PASS		
	Middle	5.26	20.97	PASS		
	Highest	W5 [T 4.66	20.97	75 CT PASS		

### Test plots as follows:

_					
	WSET	W5 CT°	W5 CT°	WSET	W5CT°
				1100	11714
			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<b>V</b>	$\checkmark$

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Page 15 of 75

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W5 C1

Page 16 of 75





W5 CT



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W5 CT



Report No.: WSCT-ANAB-R&E241200074A -BT









W5 CT



Report No.: WSCT-ANAB-R&E241200074A -BT











Page 20 of 75 **W5CT** 

W5C1







Report No.: WSCT-ANAB-R&E241200074A -BT

W5 CT

#### 20dB Occupy Bandwidth 6.4.

W5E7

W5 C7

W5 CI

# 6.4.1. Test Specification

WSCT	Test Requirement:	FCC Part15 C Section 15.247 (a)(1)			
Z 11 F 1 4 B	Test Method:	ANSI C63.10:2014			
	Limit:	N/A	$\times$		
	Test Setup:	Spectrum Analyzer EUT	W5ET°		
WSET"	Test Mode:	Transmitting mode with modulation			
WSET	Test Procedure:	<ol> <li>The testing follows ANSI C63.10:2014 Measurement Guidelines.</li> <li>The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>Use the following spectrum analyzer settings for 20dB Bandwidth measurement.</li> <li>Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel; 1%≤</li> </ol>	WS CT		
WSET	Tool Docults	RBW≤5% of the 20 dB bandwidth; VBW≥3RBW; Sweep = auto; Detector function = peak; Trace = max hold.  5. Measure and record the results in the test report.			
	Test Result:	PASS			

W5 CT W5 CT W5E1 W5 CT

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### 6.4.2. Test data

Test channel	-20	dB Occupy Band	dwidth (MHz	)
rest channel	GFSK	π/4-DQPSK	8DPSK	Conclusion
Lowest	0.953w5/	1.317	w <u>5</u> 1.31	PASS <sub>V5</sub>
Middle	0.96	1.277	1.296	PASS
Highest	0.956	1.281	1.293	PASS

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Page 22 of 75 W5 [7]

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Page 24 of 75

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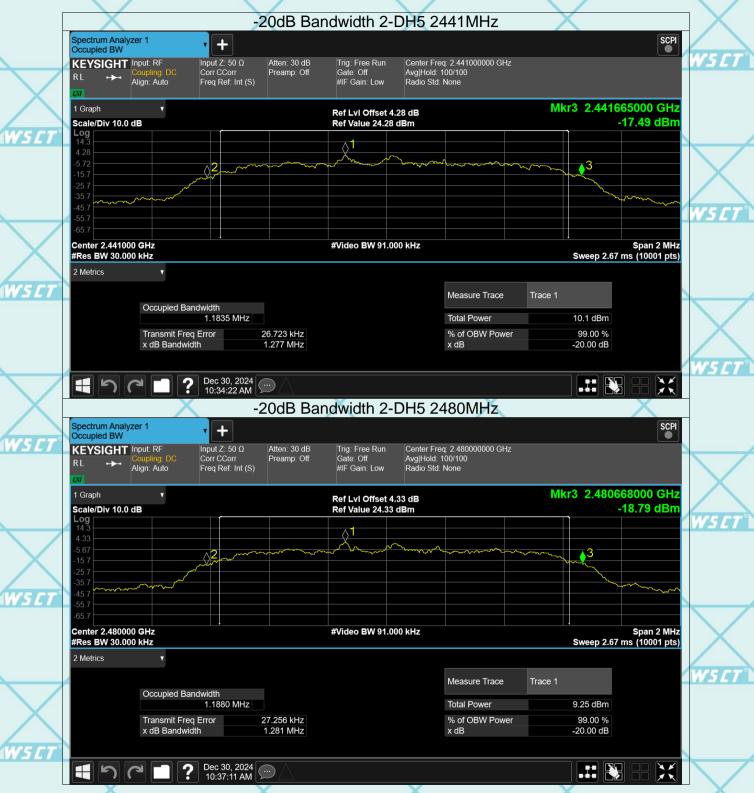
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W5 CT

#### **Carrier Frequencies Separation** 6.5.

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X	Test Requirement:	FCC Part15 C Section 15.247 (a)(1)	
W5 CT	Test Method:	ANSI C63.10:2014 W5 [T] W5 [T]	
	Limit:	Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.	WSET
WSLT	Test Setup:	Spectrum Analyzer EUT W5.5.7	
	Test Mode:	Hopping mode	
WSET	Test Procedure:	<ol> <li>The testing follows ANSI C63.10:2014 Measurement Guidelines.</li> <li>The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>Enable the EUT hopping function.</li> <li>Use the following spectrum analyzer settings:         <ul> <li>Span = wide enough to capture the peaks of two adjacent channels; RBW is set to approximately 30% of the channel spacing, adjust as necessary to best identify the center of each individual channel; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold.</li> </ul> </li> <li>Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Record the value in report.</li> </ol>	WS CT
	Test Result:	PASS	

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W5 CT

W5 C7

Page 28 of 75

W5 CT



W5C7

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Report No.: WSCT-ANAB-R&E241200074A -BT

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# 6.5.2. Test data

	WELL		IS IT		1
1		GFSK mo	ode		
	Test channel	Carrier Frequencies Separation (MHz)	Limit (MHz)	Result	
0	Lowest	1.004	0.635	PASS	-
	Middle	1.024	0.640	PASS	
	Highest	1.018	0.637	PASS	4

	Pi/4 DQPSK mode					
0	Test channel	Carrier Frequencies Separation (MHz)	Limit (MHz)	Result		
	Lowest	1.002	0.878	PASS		
	Middle	1.004	0.851	PASS		
	Highest	W5CT 0.996	0.854	5 CT PASS		

8DPSK mode					
	Test channel	Carrier Frequencies Separation (MHz)	Limit (MHz)	Result	
	Lowest	1.004	0.873	PASS	
	Middle	0.994	0.864	PASS	
1	Highest	WST	0.862	PASS	

W5		W5 ET	NS ET	W5 CT	WSET	

	W5 CT	W5 CT°	W5 CT	W5 CT	W5 CT 1
7					

_					
	W5CT"	W5CT°	WSCT	W5CT	W5CT

W5 CT	W5 ET°	WSCT	WSET	suncation& Testing C
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Page 29 of 75

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Page 30 of 75

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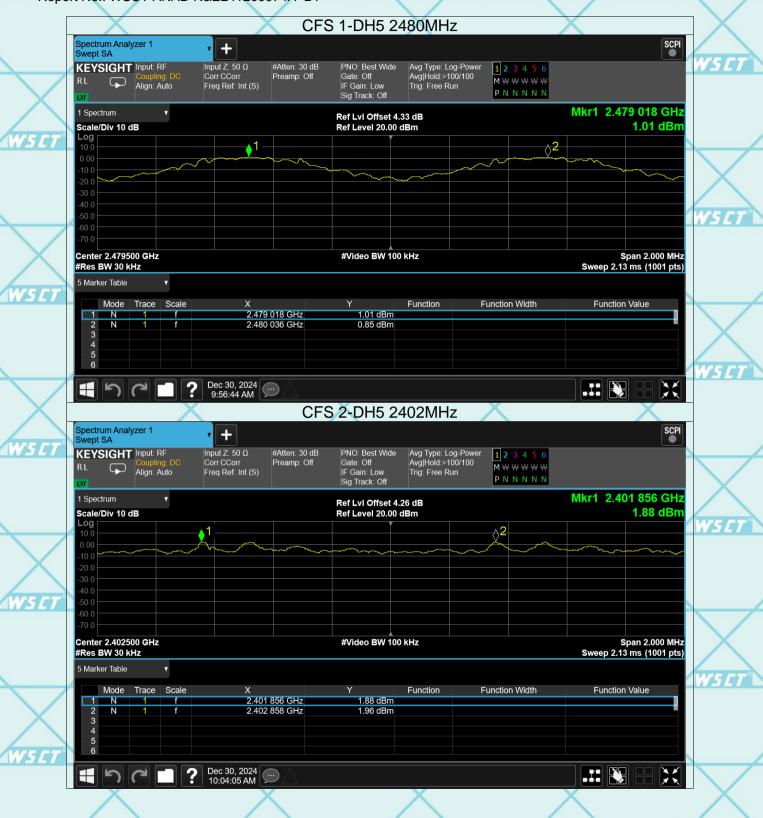




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Page 32 of 75

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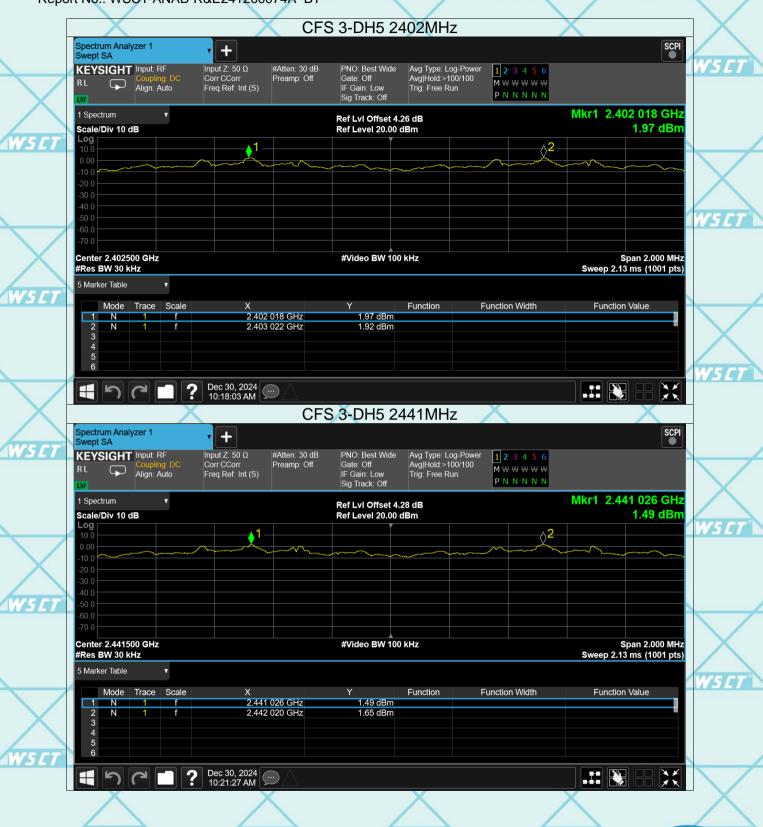




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# 6.6. Hopping Channel Number

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# 6.6.1. Test Specification

WSCT	Test Requirement:	FCC Part15 C Section 15.247 (a)(1)	
2112151	Test Method:	ANSI C63.10:2014	
	Limit:	Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.	$\triangle$
WSET	Test Setup:	Spectrum Analyzer EUT	WS ET
	Test Mode:	Hopping mode	
WSET		<ol> <li>The testing follows ANSI C63.10:2014 Measurement Guidelines.</li> <li>The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> </ol>	WS ET
WSET	Test Procedure:	<ul> <li>4. Enable the EUT hopping function.</li> <li>5. Use the following spectrum analyzer settings: Span = the frequency band of operation; set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold.</li> <li>6. The number of hopping frequency used is defined as the number of total channel.</li> </ul>	WSET
	Test Result:	7. Record the measurement data in report. PASS	WSET

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Page 35 of 75

W5 CT

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## 6.6.2. Test data

_	Mode	Hopping channel numbers	Limit	Result	WSET
	GFSK, P/4-DQPSK, 8DPSK	79	15	PASS	
,					

WS CT Test plots as follows: WS CT WS CT WS CT

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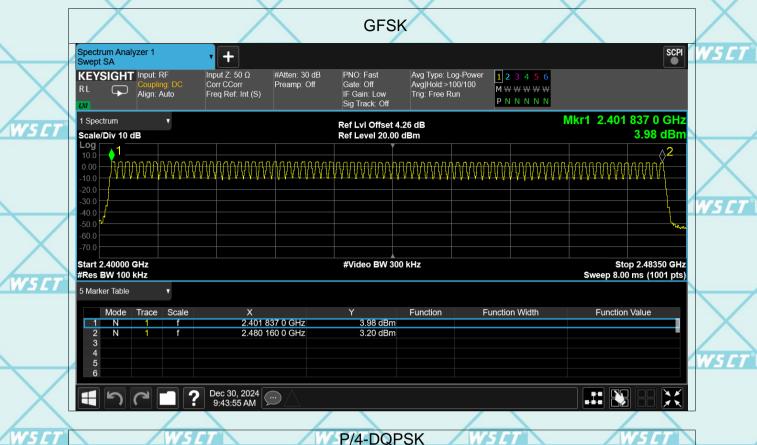
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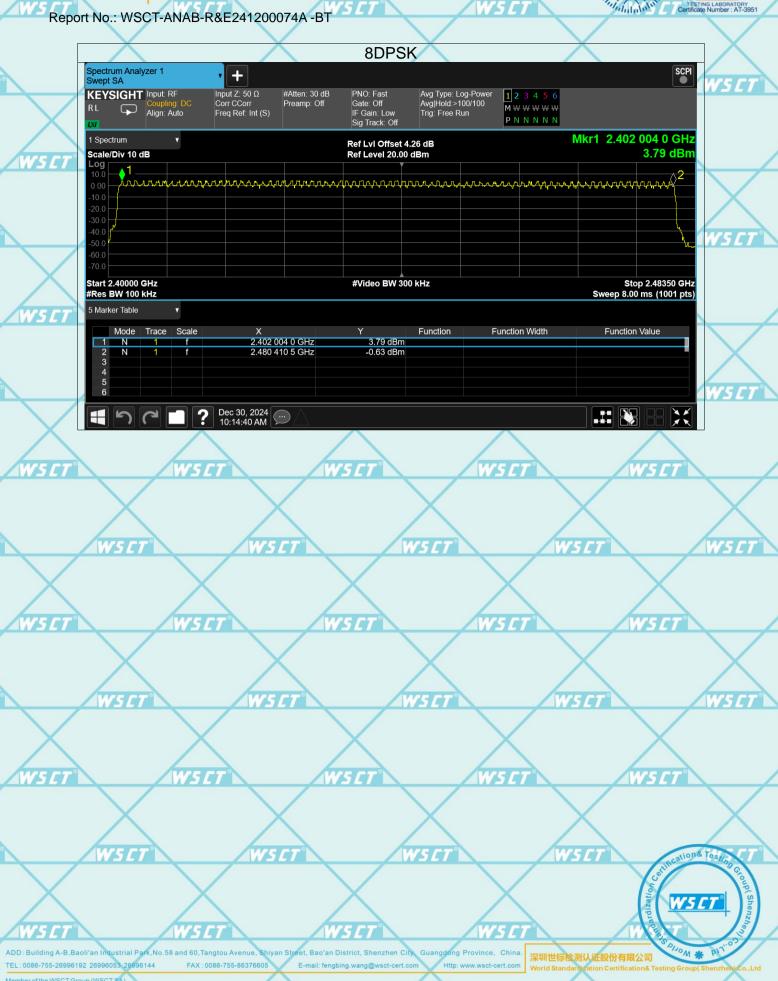
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Page 38 of 75

W5 C1

W5 CT





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6.7. **Dwell Time** 

# 6.7.1. Test Specification

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X	Test Requirement:	FCC Part15 C Section 15.247 (a)(1)	
WSET	Test Method:	ANSI C63.10:2014 W5 [7] W5 [7]	
	Limit:	The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.	WSET
X	Test Setup:	Spectrum Analyzer EUT	
W5 ET	Test Mode:	Hopping mode W5 [T] W5 [T]	
WSET	Test Procedure:	<ol> <li>The testing follows ANSI C63.10:2014 Measurement Guidelines.</li> <li>The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.</li> <li>Set to the maximum power setting and enable the EUT transmit continuously.</li> <li>Enable the EUT hopping function.</li> <li>Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW shall be ≤ channel spacing and where possible RBW should be set &gt;&gt; 1 / T, where T is the expected dwell time per channel; VBW≥RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.</li> <li>Measure and record the results in the test report.</li> </ol>	WSET
	Test Result:	PASS	
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Page 39 of 75

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400

Pass

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### **6.7.2. Test Data**

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**Total Dwell Time** Frequency **Period Time** Limit Verdict Mode **Pulse Time** Burst (MHz) Count (ms) (ms) (ms) (ms) 121.794 1-DH1 Pass 2402 0.383 318 31600 400 1-DH1 2441 0.382 121.094 400 Pass 317 31600 0.383 1-DH1 2480 121.411 317 31600 400 Pass 1-DH3 2402 1.639 255.684 156 31600 400 **Pass** 1-DH3 2441 1.639 267.157 163 31600 400 Pass 1-DH3 2480 1.64 259.12 158 31600 400 Pass 1-DH5 2402 2.887 282.926 98 31600 400 **Pass** 113 400 Pass 1-DH5 2441 2.887 326.231 31600

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Note: 1. In normal mode, hopping rate is 1600 hops/s with 6 slots in 79 hopping channels.

2.887

For DH1, With channel hopping rate (1600/2/79) in Occupancy Time Limit  $(0.4 \times 79)$  (s), Hops Over Occupancy Time comes to  $(1600/2/79) \times (0.4 \times 79) = 320$  hops

297.361

For DH3, With channel hopping rate (1600 / 4 / 79) in Occupancy Time Limit (0.4 x 79) (s), Hops Over Occupancy Time comes to  $(1600 / 4 / 79) \times (0.4 \times 79) = 160$  hops

103

For DH5, With channel hopping rate (1600 / 6 / 79) in Occupancy Time Limit  $(0.4 \times 79)$  (s), Hops Over Occupancy Time comes to  $(1600 / 6 / 79) \times (0.4 \times 79) = 106.67$  hops

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2. Dwell Time(s) = Hops Over Occupancy Time (hops) x Package Transfer Time

Test plots as follows:

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